START

Title: OFFICIAL GAZETTE OF THE UNITED STATES PATENT AND TRADEMARK OFFICE. PATENTS.

Volume: 1189

Issues: 1 - 4
PATENT: 5,542,121-5,551,080

Date: AUGUST 6 - 27, 1996

UMI Number: 10426.00

Note:

REEL: 11

UMI
300 North Zeeb Road
Ann Arbor, MI 48103

UMI

THE PAPER AND INK USED IN THE ORIGINAL PUBLICATION MAY AFFECT THE QUALITY OF THE MICORFORM EDITION.

VOL
1189
ISS
1
AG
6
1996
UMI

Vol. 1189 Number 1

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

ute to:

PATENTS



U.S.
DEPARTMENT
OF COMMERCE

Patent
and
Trademark
Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

VOL
1189
SS
1
AG
6
1996
UMI

OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
August 6, 1996 Volume 1189 Number 1

CONTENTS

			Page
Patent and Trademark Office Notices			
Patent Cooperation Treaty (PCT) Information	1189	OG	3
Notice of Maintenance Fees Payable	1189	OG	3
Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee	1189	OG	4
Reissue Applications Filed	1189	OG	11
Requests for Reexaminations Filed	1189	OG	12
Notice of Expiration of Trademark Registrations Due to Failure to Renew	1189	OG	12
Service by Publication	1189	OG	14
Elimination of Requirement for Proof of Service	1189	OG	14
Registration to Practice	1189	OG	15
Patent Certificate of Correction	1189	OG	15
Summary of Final Decisions			
Issued by the Trademark Trial and Appeal Board	1189	OG	17
Special Boxes for Mail	1189	OG	19
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1189	OG	21
Patent Examining Corps	1189	OG	23
Condition of Trademark Applications	1189	OG	24
Reexaminations			1
Statutary Invention Registrations			3
Reissue Patents Granted (35,309)			9
Plant Patents Granted (9,618)			11
Patents Granted			
General and Mechanical (5,542,121)			13
Chemical (5,542,950)			301
Electrical (5,543,577)			481
Design Patents Granted (372,351)			775
Index of Patentees		PI	1
Indices of Reissue, Reexaminations, Design and Plant Patents		PI	108
Classification of			
Patents (Including Reissues and Reexaminations)		PI	117
Designs and Plants Applications		PI	121
Statutory Invention Registrations		PI	122
Geographical Index of Residence of Inventors			
Patents (Including Reissues and Reexaminations)		PI	123
Designs and Plants Applications		PI	125
Statutory Invention Registrations		PI	126
Change of Address Form		PI	127
Subscription Order Form		PI	129

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402, to whom all subscriptions should be made payable and all communications addressed. VISA or MasterCard may be used for telephone orders, (202)-512-1800.

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly. Stock No. 703-033-00000-8
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly. Stock No. 703-034-00000-4
PATENT AND TRADEMARK OFFICE NOTICES, issued weekly. Stock No. 703-035-00000-1
GENERAL INFORMATION concerning PATENTS. Stock No. 003-004-00661-7

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $3.00 each; PLANT PATENTS in color, $12.00 each; copies of TRADEMARKS at $3.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S.P.T.O.

For sale by the U.S. Government Printing Office
Superintendent of Documents, Mail Stop: SSOP, Washington, DC 20402–9328

170–651 O.G.–96–1: QL3

VOL
1189
SS
1
AG
6
1996
UMI

Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1187 O.G. 49, on June 18, 1996.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective July 1, 1996, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1187 O.G. 73, on June 25, 1996.

International fees were changed, effective on January 1, 1996, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1181 O.G. 49, on December 19, 1995.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1995, and were announced in the *Official Gazette* at 1177 O.G. 171, on August 29, 1995.

The schedule of PCT fees (in U.S. dollars), effective July 1, 1996, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	220.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed	660.00
— Corresponding prior U.S. national application filed	430.00
— Supplemental search fee, per additional invention (payable only upon invitation)	190.00
European Patent Office as ISA	1585.00
International fees	
Basic fee	677.00
Basic supplemental fee (for each page over 30)	13.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	164.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	164.00
— Confirmation fee	82.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	207.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	470.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	710.00
— Additional examination fee, per additional invention (payable only upon invitation)	250.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	47.00	94.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	340.00	680.00
USPTO was ISA but not IPEA	375.00	750.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	505.00	1010.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	440.00	880.00
Other National fees		
— For each independent claim in excess of 3	39.00	78.00
— For each claim in excess of 20	11.00	22.00
— For each application containing a multiple dependent claim	125.00	250.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

June 4, 1996

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

---

Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on August 03, 1993 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,231,700 through 5,233,702
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on August 01, 1989 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,852,185 through 4,853,972
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on July 30, 1985 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,532,241 through 4,532,652
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1994, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $495.00
By other than a small entity $990.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $995.00
By other than a small entity $1,990.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,495.00
By other than a small entity $2,990.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $660.00
(2) unintentional $1,550.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED May 29, 1996
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,691	06/868,215	06/07/88
(4,451,107)	(06/410,197)	(05/29/84)
Re. 33,758	07/413,579	12/03/91
(4,746,153)	(07/052,914)	(05/24/88)
4,450,595	06/426,718	05/29/84
4,450,597	06/381,186	05/29/84
4,450,601	06/430,930	05/29/84
4,450,607	06/448,470	05/29/84
4,450,616	06/393,336	05/29/84
4,450,619	06/271,835	05/29/84
4,450,623	06/332,346	05/29/84
4,450,624	06/373,040	05/29/84
4,450,635	06/422,800	05/29/84
4,450,642	06/397,551	05/29/84
4,450,644	06/426,150	05/29/84
4,450,645	06/371,524	05/29/84
4,450,655	06/411,439	05/29/84
4,450,661	06/318,642	05/29/84
4,450,669	06/268,958	05/29/84
4,450,671	06/383,851	05/29/84
4,450,677	06/433,107	05/29/84
4,450,679	06/225,608	05/29/84
4,450,683	06/409,548	05/29/84
4,450,684	06/411,024	05/29/84
4,450,688	06/270,077	05/29/84
4,450,692	06/430,846	05/29/84
4,450,693	06/497,779	05/29/84
4,450,694	06/328,362	05/29/84
4,450,695	06/323,231	05/29/84
4,450,704	06/461,636	05/29/84
4,450,714	06/356,987	05/29/84
4,450,717	06/377,499	05/29/84
4,450,723	06/358,743	05/29/84
4,450,724	06/434,437	05/29/84
4,450,730	06/365,004	05/29/84
4,450,740	06/468,033	05/29/84
4,450,754	06/464,639	05/29/84
4,450,755	06/345,576	05/29/84
4,450,756	06/336,934	05/29/84
4,450,763	06/459,945	05/29/84
4,450,766	06/390,597	05/29/84
4,450,767	06/459,620	05/29/84
4,450,769	06/383,817	05/29/84
4,450,770	06/462,288	05/29/84
4,450,771	06/343,527	05/29/84
4,450,789	06/466,054	05/29/84
4,450,814	06/357,646	05/29/84
4,450,816	06/333,775	05/29/84
4,450,821	06/417,629	05/29/84
4,450,822	06/417,630	05/29/84
4,450,841	06/428,687	05/29/84
4,450,851	06/330,885	05/29/84
4,450,874	06/436,463	05/29/84
4,450,890	06/294,262	05/29/84
4,450,894	06/503,074	05/29/84
4,450,895	06/317,326	05/29/84
4,450,907	06/399,544	05/29/84
4,450,909	06/313,748	05/29/84
4,450,913	06/388,389	05/29/84

Patent Number	Serial Number	Issue Date	4,451,280	06/365,932	05/29/84
			4,451,288	06/393,467	05/29/84
4,450,918	06/374,765	05/29/84	4,451,289	06/323,363	05/29/84
4,450,920	06/327,246	05/29/84	4,451,299	06/421,553	05/29/84
4,450,923	06/450,676	05/29/84	4,451,302	06/412,113	05/29/84
4,450,926	06/361,753	05/29/84	4,451,304	06/477,420	05/29/84
4,450,927	06/376,500	05/29/84	4,451,306	06/361,778	05/29/84
4,450,943	06/341,436	05/29/84	4,451,308	06/484,507	05/29/84
4,450,952	06/332,970	05/29/84	4,451,315	06/434,475	05/29/84
4,450,953	06/362,626	05/29/84	4,451,317	06/384,438	05/29/84
4,450,954	06/342,061	05/29/84	4,451,318	06/304,095	05/29/84
4,450,961	06/400,891	05/29/84	4,451,319	06/343,573	05/29/84
4,450,962	06/366,161	05/29/84	4,451,322	06/371,212	05/29/84
4,450,970	06/332,092	05/29/84	4,451,332	06/403,070	05/29/84
4,450,976	06/350,874	05/29/84	4,451,352	06/285,038	05/29/84
4,451,001	06/402,775	05/29/84	4,451,356	06/371,455	05/29/84
4,451,002	06/515,315	05/29/84	4,451,360	06/342,561	05/29/84
4,451,009	06/336,480	05/29/84	4,451,370	06/388,236	05/29/84
4,451,010	06/317,203	05/29/84	4,451,375	06/526,303	05/29/84
4,451,014	06/407,146	05/29/84	4,451,376	06/518,181	05/29/84
4,451,016	06/366,504	05/29/84	4,451,381	06/402,096	05/29/84
4,451,023	06/300,125	05/29/84	4,451,384	06/309,503	05/29/84
4,451,025	06/469,762	05/29/84	4,451,385	06/357,917	05/29/84
4,451,028	06/325,159	05/29/84	4,451,386	06/427,987	05/29/84
4,451,030	06/334,663	05/29/84	4,451,389	06/343,641	05/29/84
4,451,031	06/340,361	05/29/84	4,451,390	06/390,772	05/29/84
4,451,043	06/419,093	05/29/84	4,451,397	06/443,759	05/29/84
4,451,044	06/308,415	05/29/84	4,451,406	06/520,704	05/29/84
4,451,047	06/429,533	05/29/84	4,451,408	06/453,312	05/29/84
4,451,054	06/377,084	05/29/84	4,451,409	06/346,691	05/29/84
4,451,059	06/347,193	05/29/84	4,451,412	06/428,162	05/29/84
4,451,061	06/334,984	05/29/84	4,451,415	06/397,778	05/29/84
4,451,067	06/383,501	05/29/84	4,451,424	06/417,494	05/29/84
4,451,071	06/334,786	05/29/84	4,451,426	06/350,098	05/29/84
4,451,077	06/328,265	05/29/84	4,451,429	06/396,355	05/29/84
4,451,080	06/238,993	05/29/84	4,451,431	06/436,469	05/29/84
4,451,081	06/337,465	05/29/84	4,451,435	06/387,853	05/29/84
4,451,093	06/472,630	05/29/84	4,451,437	06/337,187	05/29/84
4,451,094	06/318,317	05/29/84	4,451,443	06/402,510	05/29/84
4,451,095	06/386,855	05/29/84	4,451,444	06/313,256	05/29/84
4,451,097	06/344,672	05/29/84	4,451,445	06/413,534	05/29/84
4,451,099	06/376,077	05/29/84	4,451,447	06/334,206	05/29/84
4,451,105	06/347,799	05/29/84	4,451,449	06/278,569	05/29/84
4,451,118	06/219,770	05/29/84	4,451,454	06/274,386	05/29/84
4,451,122	06/256,337	05/29/84	4,451,456	06/390,149	05/29/84
4,451,123	06/451,647	05/29/84	4,451,458	06/379,272	05/29/84
4,451,125	06/479,235	05/29/84	4,451,463	06/353,416	05/29/84
4,451,134	06/447,883	05/29/84	4,451,464	06/427,282	05/29/84
4,451,144	06/423,525	05/29/84	4,451,466	06/394,968	05/29/84
4,451,148	06/348,879	05/29/84	4,451,467	06/337,454	05/29/84
4,451,149	06/286,862	05/29/84	4,451,472	06/394,554	05/29/84
4,451,151	06/351,403	05/29/84	4,451,474	06/327,141	05/29/84
4,451,155	06/459,344	05/29/84	4,451,478	06/357,679	05/29/84
4,451,156	06/309,856	05/29/84	4,451,480	06/369,163	05/29/84
4,451,166	06/354,343	05/29/84	4,451,482	06/371,023	05/29/84
4,451,167	06/391,156	05/29/84	4,451,483	06/367,068	05/29/84
4,451,170	06/404,812	05/29/84	4,451,487	06/377,277	05/29/84
4,451,171	06/376,370	05/29/84	4,451,496	06/456,460	05/29/84
4,451,172	06/356,707	05/29/84	4,451,497	06/410,137	05/29/84
4,451,174	06/464,481	05/29/84	4,451,502	06/409,952	05/29/84
4,451,194	06/371,673	05/29/84	4,451,506	06/422,589	05/29/84
4,451,195	06/387,747	05/29/84	4,451,509	06/455,222	05/29/84
4,451,196	06/395,310	05/29/84	4,451,511	06/403,560	05/29/84
4,451,210	06/378,402	05/29/84	4,451,519	06/452,796	05/29/84
4,451,216	06/355,544	05/29/84	4,451,520	06/452,069	05/29/84
4,451,217	06/284,128	05/29/84	4,451,522	06/315,295	05/29/84
4,451,224	06/361,996	05/29/84	4,451,524	06/500,382	05/29/84
4,451,228	06/379,879	05/29/84	4,451,527	06/287,773	05/29/84
4,451,231	06/458,504	05/29/84	4,451,528	06/418,807	05/29/84
4,451,232	06/406,670	05/29/84	4,451,534	06/438,981	05/29/84
4,451,241	06/338,240	05/29/84	4,451,535	06/253,483	05/29/84
4,451,251	06/428,899	05/29/84	4,451,536	06/388,560	05/29/84
4,451,253	06/427,136	05/29/84	4,451,542	06/328,665	05/29/84
4,451,256	06/372,739	05/29/84	4,451,548	06/353,889	05/29/84
4,451,264	06/424,058	05/29/84	4,451,550	06/403,108	05/29/84
4,451,265	06/256,206	05/29/84	4,451,552	06/346,324	05/29/84
4,451,267	06/427,229	05/29/84	4,451,558	06/500,270	05/29/84
4,451,268	06/428,486	05/29/84	4,451,560	06/441,687	05/29/84
4,451,275	06/382,738	05/29/84	4,451,561	06/487,729	05/29/84

Patent Number	Serial Number	Issue Date
4,451,567	06/288,467	05/29/84
4,451,577	06/261,319	05/29/84
4,451,578	06/372,252	05/29/84
4,451,593	06/401,717	05/29/84
4,451,595	06/460,689	05/29/84
4,451,600	06/451,249	05/29/84
4,451,601	06/465,079	05/29/84
4,451,607	06/461,321	05/29/84
4,451,611	06/330,988	05/29/84
4,451,618	06/427,370	05/29/84
4,451,622	06/484,248	05/29/84
4,451,627	06/415,076	05/29/84
4,451,628	06/417,249	05/29/84
4,451,630	06/505,419	05/29/84
4,451,631	06/422,277	05/29/84
4,451,637	06/463,024	05/29/84
4,451,642	06/420,511	05/29/84
4,451,643	06/456,185	05/29/84
4,451,644	06/465,010	05/29/84
4,451,650	06/436,667	05/29/84
4,451,652	06/380,981	05/29/84
4,451,653	06/440,934	05/29/84
4,451,655	06/378,945	05/29/84
4,451,662	06/387,604	05/29/84
4,451,664	06/422,792	05/29/84
4,451,666	06/405,911	05/29/84
4,451,667	06/411,725	05/29/84
4,451,668	06/402,664	05/29/84
4,451,670	06/438,443	05/29/84
4,451,673	06/426,662	05/29/84
4,451,674	06/412,963	05/29/84
4,451,675	06/398,747	05/29/84
4,451,682	06/446,387	05/29/84
4,451,683	06/337,998	05/29/84
4,451,684	06/402,490	05/29/84
4,451,685	06/485,228	05/29/84
4,451,689	06/402,492	05/29/84
4,451,690	06/413,063	05/29/84
4,451,691	06/424,937	05/29/84
4,451,692	06/404,155	05/29/84
4,451,706	06/451,589	05/29/84
4,451,707	06/517,005	05/29/84
4,451,715	06/384,683	05/29/84
4,451,717	06/339,604	05/29/84
4,451,718	06/351,314	05/29/84
4,451,723	06/382,096	05/29/84
4,451,726	06/381,371	05/29/84
4,451,734	06/379,139	05/29/84
4,451,736	06/369,006	05/29/84
4,451,740	06/397,206	05/29/84
4,451,750	06/344,042	05/29/84
4,451,751	06/423,077	05/29/84
4,451,757	06/342,531	05/29/84
4,451,758	06/288,208	05/29/84
4,451,760	06/372,508	05/29/84
4,451,761	06/339,117	05/29/84
4,451,762	06/389,806	05/29/84
4,451,770	06/493,405	05/29/84
4,451,777	06/300,842	05/29/84
4,451,784	06/313,275	05/29/84
4,451,786	06/353,238	05/29/84
4,451,790	06/319,842	05/29/84
4,451,791	06/359,014	05/29/84
4,451,795	06/301,159	05/29/84
4,451,799	06/286,714	05/29/84
4,451,802	06/387,311	05/29/84
4,451,818	06/395,387	05/29/84
4,451,820	06/296,733	05/29/84
4,451,830	06/280,180	05/29/84
4,451,834	06/409,221	05/29/84
4,451,835	06/434,390	05/29/84
4,451,836	06/434,204	05/29/84
4,451,848	06/330,944	05/29/84
4,451,854	06/315,657	05/29/84
4,451,864	06/414,154	05/29/84
4,451,866	06/367,854	05/29/84
4,451,868	06/398,484	05/29/84
4,451,875	06/353,997	05/29/84
4,451,878	06/283,173	05/29/84
4,451,882	06/323,276	05/29/84
4,451,887	06/268,526	05/29/84
4,451,893	06/311,969	05/29/84
4,451,894	06/496,984	05/29/84
4,451,899	06/331,546	05/29/84
4,451,914	06/368,668	05/29/84
4,451,920	06/324,816	05/29/84
4,451,921	06/289,970	05/29/84
4,451,929	06/352,809	05/29/84
4,745,634	06/875,183	05/24/88
4,745,635	06/937,886	05/24/88
4,745,636	07/016,110	05/24/88
4,745,637	07/029,052	05/24/88
4,745,642	07/073,196	05/24/88
4,745,648	07/088,552	05/24/88
4,745,653	06/890,733	05/24/88
4,745,664	06/920,236	05/24/88
4,745,665	07/032,758	05/24/88
4,745,674	06/757,978	05/24/88
4,745,675	06/478,658	05/24/88
4,745,677	06/873,142	05/24/88
4,745,678	06/944,489	05/24/88
4,745,685	07/083,278	05/24/88
4,745,694	06/916,323	05/24/88
4,745,695	06/849,280	05/24/88
4,745,696	06/921,482	05/24/88
4,745,697	06/901,530	05/24/88
4,745,700	06/852,813	05/24/88
4,745,704	07/035,877	05/24/88
4,745,707	06/870,341	05/24/88
4,745,709	07/071,814	05/24/88
4,745,717	06/943,711	05/24/88
4,745,719	06/363,675	05/24/88
4,745,720	07/029,547	05/24/88
4,745,721	06/808,266	05/24/88
4,745,723	07/025,405	05/24/88
4,745,725	06/730,351	05/24/88
4,745,729	07/106,219	05/24/88
4,745,733	07/012,727	05/24/88
4,745,735	06/947,239	05/24/88
4,745,737	07/038,148	05/24/88
4,745,738	07/006,280	05/24/88
4,745,739	06/819,625	05/24/88
4,745,742	07/085,965	05/24/88
4,745,745	07/069,003	05/24/88
4,745,746	07/106,919	05/24/88
4,745,748	07/068,734	05/24/88
4,745,751	07/010,361	05/24/88
4,745,753	06/867,540	05/24/88
4,745,771	07/038,840	05/24/88
4,745,772	07/040,073	05/24/88
4,745,776	07/016,070	05/24/88
4,745,777	07/032,281	05/24/88
4,745,782	06/920,149	05/24/88
4,745,787	07/016,485	05/24/88
4,745,799	06/907,998	05/24/88
4,745,806	06/822,110	05/24/88
4,745,815	06/939,407	05/24/88
4,745,817	06/734,875	05/24/88
4,745,831	06/909,767	05/24/88
4,745,840	07/018,352	05/24/88
4,745,848	06/751,317	05/24/88
4,745,852	06/745,300	05/24/88
4,745,854	06/911,113	05/24/88
4,745,858	06/911,781	05/24/88
4,745,863	07/008,844	05/24/88
4,745,866	07/033,751	05/24/88
4,745,867	07/127,199	05/24/88
4,745,868	06/843,186	05/24/88
4,745,869	07/064,723	05/24/88
4,745,871	07/012,825	05/24/88
4,745,872	07/001,771	05/24/88
4,745,874	07/011,546	05/24/88
4,745,884	07/055,173	05/24/88
4,745,889	06/880,805	05/24/88
4,745,890	06/914,082	05/24/88
4,745,892	06/874,578	05/24/88

Patent Number	Serial Number	Issue Date
4,745,895	07/032,985	05/24/88
4,745,896	07/104,356	05/24/88
4,745,899	06/920,390	05/24/88
4,745,903	07/030,189	05/24/88
4,745,905	07/075,275	05/24/88
4,745,918	06/929,570	05/24/88
4,745,926	06/853,887	05/24/88
4,745,929	07/013,309	05/24/88
4,745,930	06/919,880	05/24/88
4,745,932	06/882,683	05/24/88
4,745,935	06/917,106	05/24/88
4,745,938	07/104,170	05/24/88
4,745,940	07/035,894	05/24/88
4,745,941	06/932,915	05/24/88
4,745,942	06/947,692	05/24/88
4,745,946	07/017,162	05/24/88
4,745,949	07/053,059	05/24/88
4,745,950	06/850,854	05/24/88
4,745,955	06/867,841	05/24/88
4,745,958	06/733,461	05/24/88
4,745,959	06/942,279	05/24/88
4,745,961	07/027,425	05/24/88
4,745,965	06/894,738	05/24/88
4,745,971	06/740,827	05/24/88
4,745,972	07/060,564	05/24/88
4,745,973	07/041,460	05/24/88
4,745,976	06/908,634	05/24/88
4,745,979	06/828,779	05/24/88
4,745,981	06/760,389	05/24/88
4,745,989	07/063,546	05/24/88
4,745,990	07/032,837	05/24/88
4,745,991	07/032,539	05/24/88
4,745,992	07/057,357	05/24/88
4,745,994	06/892,578	05/24/88
4,745,997	07/076,336	05/24/88
4,745,999	07/056,708	05/24/88
4,746,005	07/044,812	05/24/88
4,746,008	07/068,444	05/24/88
4,746,015	06/876,775	05/24/88
4,746,018	06/906,334	05/24/88
4,746,021	06/894,644	05/24/88
4,746,025	06/894,661	05/24/88
4,746,027	07/042,739	05/24/88
4,746,033	06/897,370	05/24/88
4,746,039	06/941,097	05/24/88
4,746,041	07/007,098	05/24/88
4,746,042	06/866,131	05/24/88
4,746,043	06/893,162	05/24/88
4,746,045	07/015,688	05/24/88
4,746,046	06/880,057	05/24/88
4,746,048	07/025,751	05/24/88
4,746,049	06/929,954	05/24/88
4,746,051	06/447,777	05/24/88
4,746,052	07/043,598	05/24/88
4,746,062	07/098,287	05/24/88
4,746,066	07/022,188	05/24/88
4,746,068	06/924,709	05/24/88
4,746,080	07/032,243	05/24/88
4,746,088	07/020,062	05/24/88
4,746,093	07/103,455	05/24/88
4,746,105	06/901,897	05/24/88
4,746,108	06/937,304	05/24/88
4,746,110	06/875,541	05/24/88
4,746,115	07/023,855	05/24/88
4,746,117	06/758,314	05/24/88
4,746,118	06/880,147	05/24/88
4,746,123	07/013,636	05/24/88
4,746,124	06/854,029	05/24/88
4,746,129	07/096,915	05/24/88
4,746,131	06/941,110	05/24/88
4,746,132	07/011,608	05/24/88
4,746,137	07/006,739	05/24/88
4,746,139	06/690,882	05/24/88
4,746,141	06/877,143	05/24/88
4,746,144	06/903,942	05/24/88
4,746,145	06/829,767	05/24/88
4,746,149	07/070,398	05/24/88
4,746,150	07/042,716	05/24/88
4,746,152	07/090,218	05/24/88
4,746,161	07/042,327	05/24/88
4,746,162	06/929,432	05/24/88
4,746,163	06/863,867	05/24/88
4,746,165	07/069,107	05/24/88
4,746,167	06/946,793	05/24/88
4,746,168	06/888,922	05/24/88
4,746,170	06/825,455	05/24/88
4,746,174	06/931,553	05/24/88
4,746,175	06/945,658	05/24/88
4,746,176	06/947,779	05/24/88
4,746,186	07/094,069	05/24/88
4,746,187	06/784,969	05/24/88
4,746,189	06/787,951	05/24/88
4,746,195	06/711,415	05/24/88
4,746,202	07/107,906	05/24/88
4,746,205	07/009,842	05/24/88
4,746,206	06/929,301	05/24/88
4,746,208	06/847,945	05/24/88
4,746,209	07/022,896	05/24/88
4,746,220	06/852,220	05/24/88
4,746,221	06/861,012	05/24/88
4,746,224	06/943,489	05/24/88
4,746,227	06/893,159	05/24/88
4,746,229	07/064,093	05/24/88
4,746,232	06/928,438	05/24/88
4,746,243	06/867,934	05/24/88
4,746,244	06/897,104	05/24/88
4,746,246	06/311,261	05/24/88
4,746,247	07/008,946	05/24/88
4,746,249	06/881,380	05/24/88
4,746,251	06/821,707	05/24/88
4,746,252	07/052,629	05/24/88
4,746,253	07/082,330	05/24/88
4,746,255	07/012,667	05/24/88
4,746,257	06/740,368	05/24/88
4,746,262	06/885,771	05/24/88
4,746,263	06/929,578	05/24/88
4,746,266	07/094,392	05/24/88
4,746,270	07/075,407	05/24/88
4,746,272	06/888,612	05/24/88
4,746,273	06/892,849	05/24/88
4,746,277	07/008,009	05/24/88
4,746,291	07/078,529	05/24/88
4,746,294	07/008,691	05/24/88
4,746,297	06/934,306	05/24/88
4,746,307	07/038,551	05/24/88
4,746,308	06/921,953	05/24/88
4,746,314	06/870,019	05/24/88
4,746,315	06/877,479	05/24/88
4,746,319	06/253,914	05/24/88
4,746,320	06/248,020	05/24/88
4,746,327	06/715,628	05/24/88
4,746,328	06/886,822	05/24/88
4,746,330	07/072,787	05/24/88
4,746,334	07/058,230	05/24/88
4,746,335	07/101,140	05/24/88
4,746,337	07/069,930	05/24/88
4,746,338	07/037,227	05/24/88
4,746,343	06/924,771	05/24/88
4,746,346	07/007,094	05/24/88
4,746,349	06/893,838	05/24/88
4,746,351	06/861,817	05/24/88
4,746,355	06/886,151	05/24/88
4,746,356	07/039,492	05/24/88
4,746,357	07/052,610	05/24/88
4,746,358	07/007,912	05/24/88
4,746,359	07/048,757	05/24/88
4,746,362	07/029,989	05/24/88
4,746,364	06/883,916	05/24/88
4,746,367	06/943,296	05/24/88
4,746,369	07/018,224	05/24/88
4,746,371	06/944,402	05/24/88
4,746,376	06/924,294	05/24/88
4,746,380	07/053,690	05/24/88
4,746,386	06/921,055	05/24/88
4,746,389	07/081,192	05/24/88
4,746,401	06/816,456	05/24/88

Patent Number	Serial Number	Issue Date
4,746,402	06/853,984	05/24/88
4,746,403	06/833,248	05/24/88
4,746,406	06/945,299	05/24/88
4,746,413	06/936,840	05/24/88
4,746,414	07/096,572	05/24/88
4,746,415	06/936,910	05/24/88
4,746,416	06/837,419	05/24/88
4,746,417	06/896,927	05/24/88
4,746,418	07/002,157	05/24/88
4,746,425	06/900,750	05/24/88
4,746,428	06/928,645	05/24/88
4,746,433	06/786,807	05/24/88
4,746,434	07/065,857	05/24/88
4,746,435	06/470,138	05/24/88
4,746,438	07/103,462	05/24/88
4,746,439	07/050,351	05/24/88
4,746,442	07/022,265	05/24/88
4,746,445	06/849,240	05/24/88
4,746,448	06/839,994	05/24/88
4,746,451	06/892,023	05/24/88
4,746,460	06/800,959	05/24/88
4,746,463	06/939,722	05/24/88
4,746,467	06/873,585	05/24/88
4,746,469	06/924,761	05/24/88
4,746,472	06/917,725	05/24/88
4,746,473	06/917,425	05/24/88
4,746,474	06/917,731	05/24/88
4,746,475	06/917,982	05/24/88
4,746,476	06/917,998	05/24/88
4,746,480	06/895,420	05/24/88
4,746,485	06/932,078	05/24/88
4,746,486	06/895,981	05/24/88
4,746,487	06/272,331	05/24/88
4,746,488	06/890,436	05/24/88
4,746,489	06/848,438	05/24/88
4,746,493	06/907,245	05/24/88
4,746,495	06/838,438	05/24/88
4,746,496	06/773,005	05/24/88
4,746,497	06/923,143	05/24/88
4,746,499	07/078,426	05/24/88
4,746,501	07/082,173	05/24/88
4,746,502	06/769,633	05/24/88
4,746,505	06/727,582	05/24/88
4,746,508	06/614,115	05/24/88
4,746,509	07/014,190	05/24/88
4,746,513	06/849,366	05/24/88
4,746,516	06/921,856	05/24/88
4,746,519	06/944,940	05/24/88
4,746,520	06/860,180	05/24/88
4,746,529	06/817,732	05/24/88
4,746,531	06/853,570	05/24/88
4,746,538	07/002,265	05/24/88
4,746,540	06/894,941	05/24/88
4,746,547	06/946,818	05/24/88
4,746,551	06/643,727	05/24/88
4,746,554	06/868,991	05/24/88
4,746,555	07/019,512	05/24/88
4,746,560	06/932,928	05/24/88
4,746,564	06/744,747	05/24/88
4,746,569	06/863,039	05/24/88
4,746,577	07/017,837	05/24/88
4,746,579	07/046,761	05/24/88
4,746,581	06/903,988	05/24/88
4,746,585	06/849,001	05/24/88
4,746,587	06/903,044	05/24/88
4,746,592	06/900,938	05/24/88
4,746,610	06/463,123	05/24/88
4,746,611	06/814,478	05/24/88
4,746,612	06/660,478	05/24/88
4,746,616	06/886,528	05/24/88
4,746,619	07/079,084	05/24/88
4,746,631	06/732,445	05/24/88
4,746,645	06/942,400	05/24/88
4,746,646	06/855,635	05/24/88
4,746,648	06/826,375	05/24/88
4,746,649	07/033,366	05/24/88
4,746,660	07/005,622	05/24/88
4,746,665	06/873,537	05/24/88
4,746,668	06/896,366	05/24/88
4,746,669	07/030,313	05/24/88
4,746,673	07/000,920	05/24/88
4,746,676	06/649,797	05/24/88
4,746,677	07/068,526	05/24/88
4,746,688	07/052,680	05/24/88
4,746,691	07/004,676	05/24/88
4,746,693	06/941,151	05/24/88
4,746,695	06/882,919	05/24/88
4,746,699	07/057,750	05/24/88
4,746,702	07/003,079	05/24/88
4,746,710	06/773,113	05/24/88
4,746,711	06/918,787	05/24/88
4,746,712	07/015,022	05/24/88
4,746,716	06/937,257	05/24/88
4,746,732	06/636,363	05/24/88
4,746,735	06/933,503	05/24/88
4,746,736	06/923,065	05/24/88
4,746,740	06/886,318	05/24/88
4,746,746	06/757,194	05/24/88
4,746,747	06/901,367	05/24/88
4,746,748	06/941,125	05/24/88
4,746,750	07/091,166	05/24/88
4,746,751	07/047,690	05/24/88
4,746,753	06/880,657	05/24/88
4,746,756	06/899,197	05/24/88
4,746,757	06/887,119	05/24/88
4,746,759	06/923,327	05/24/88
4,746,760	06/703,640	05/24/88
4,746,761	07/065,775	05/24/88
4,746,769	06/772,125	05/24/88
4,746,770	07/014,943	05/24/88
4,746,771	07/005,192	05/24/88
4,746,773	06/812,197	05/24/88
4,746,774	07/103,121	05/24/88
4,746,778	06/935,040	05/24/88
4,746,781	07/068,577	05/24/88
4,746,784	06/871,112	05/24/88
4,746,791	06/935,205	05/24/88
4,746,806	07/087,944	05/24/88
4,746,808	07/019,975	05/24/88
4,746,811	07/007,700	05/24/88
4,746,820	07/012,293	05/24/88
4,746,827	07/015,630	05/24/88
4,746,833	06/853,267	05/24/88
4,746,835	06/912,126	05/24/88
4,746,836	07/029,841	05/24/88
4,746,841	06/883,048	05/24/88
4,746,843	06/694,705	05/24/88
4,746,846	06/852,535	05/24/88
4,746,851	06/854,848	05/24/88
4,746,859	06/944,958	05/24/88
4,746,870	07/065,631	05/24/88
4,746,873	06/898,176	05/24/88
4,746,875	07/027,742	05/24/88
4,746,879	06/901,439	05/24/88
4,746,881	06/736,943	05/24/88
4,746,882	07/065,760	05/24/88
4,746,883	06/874,183	05/24/88
4,746,886	06/860,344	05/24/88
4,746,905	06/887,388	05/24/88
4,746,909	06/902,484	05/24/88
4,746,910	06/915,057	05/24/88
4,746,913	06/872,269	05/24/88
4,746,921	06/923,769	05/24/88
4,746,925	06/889,465	05/24/88
4,746,929	07/004,017	05/24/88
4,746,930	06/883,720	05/24/88
4,746,939	06/326,976	05/24/88
4,746,948	06/877,782	05/24/88
4,746,954	06/860,217	05/24/88
4,746,982	07/037,390	05/24/88
4,746,987	06/865,321	05/24/88
4,746,997	06/828,211	05/24/88
4,747,005	06/720,269	05/24/88
4,747,006	06/871,865	05/24/88
4,747,007	06/775,526	05/24/88
4,747,013	07/014,501	05/24/88

Patent Number	Serial Number	Issue Date
4,747,016	06/803,130	05/24/88
4,747,027	07/043,825	05/24/88
4,747,028	07/056,258	05/24/88
4,747,032	07/024,375	05/24/88
4,747,035	06/944,008	05/24/88
4,747,044	06/643,512	05/24/88
4,747,049	06/491,428	05/24/88
4,747,060	06/846,533	05/24/88
4,747,062	06/686,097	05/24/88
4,747,063	06/860,298	05/24/88
4,747,076	07/059,140	05/24/88
4,747,088	06/890,757	05/24/88
4,747,096	06/853,412	05/24/88
4,747,110	06/829,090	05/24/88
4,747,117	07/063,738	05/24/88
4,747,118	06/856,611	05/24/88
4,747,141	06/544,752	05/24/88
4,747,143	06/755,235	05/24/88
4,747,145	06/934,126	05/24/88
4,747,159	06/887,906	05/24/88
5,115,517	07/693,807	05/26/92
5,115,518	07/607,111	05/26/92
5,115,519	07/736,798	05/26/92
5,115,521	07/594,691	05/26/92
5,115,522	07/519,391	05/26/92
5,115,524	07/599,451	05/26/92
5,115,525	07/683,805	05/26/92
5,115,528	07/708,469	05/26/92
5,115,534	07/659,721	05/26/92
5,115,539	07/667,901	05/26/92
5,115,540	07/616,201	05/26/92
5,115,553	07/094,160	05/26/92
5,115,556	07/670,871	05/26/92
5,115,566	07/486,812	05/26/92
5,115,570	07/570,389	05/26/92
5,115,572	07/710,977	05/26/92
5,115,574	07/703,449	05/26/92
5,115,580	07/714,911	05/26/92
5,115,584	07/471,550	05/26/92
5,115,588	07/509,020	05/26/92
5,115,593	07/614,233	05/26/92
5,115,595	07/714,555	05/26/92
5,115,597	07/706,761	05/26/92
5,115,599	07/550,851	05/26/92
5,115,602	07/484,179	05/26/92
5,115,604	07/557,366	05/26/92
5,115,610	07/557,039	05/26/92
5,115,611	07/570,262	05/26/92
5,115,612	07/493,388	05/26/92
5,115,613	07/306,419	05/26/92
5,115,616	07/402,899	05/26/92
5,115,630	07/526,538	05/26/92
5,115,632	07/500,759	05/26/92
5,115,645	07/621,251	05/26/92
5,115,647	07/657,401	05/26/92
5,115,653	07/680,621	05/26/92
5,115,656	07/665,259	05/26/92
5,115,657	07/589,609	05/26/92
5,115,661	07/510,250	05/26/92
5,115,666	07/477,309	05/26/92
5,115,668	07/620,108	05/26/92
5,115,677	07/504,799	05/26/92
5,115,679	07/704,498	05/26/92
5,115,680	07/663,733	05/26/92
5,115,681	07/513,220	05/26/92
5,115,685	07/529,507	05/26/92
5,115,686	07/487,558	05/26/92
5,115,696	07/593,811	05/26/92
5,115,700	07/749,609	05/26/92
5,115,702	07/640,103	05/26/92
5,115,710	07/674,275	05/26/92
5,115,717	07/648,789	05/26/92
5,115,720	07/503,279	05/26/92
5,115,723	07/693,633	05/26/92
5,115,731	07/782,915	05/26/92
5,115,733	07/328,448	05/26/92
5,115,736	07/605,508	05/26/92
5,115,738	07/393,597	05/26/92
5,115,739	07/445,023	05/26/92
5,115,742	07/719,426	05/26/92
5,115,744	07/410,717	05/26/92
5,115,750	07/618,663	05/26/92
5,115,752	07/609,805	05/26/92
5,115,753	07/713,054	05/26/92
5,115,754	07/565,015	05/26/92
5,115,757	07/665,065	05/26/92
5,115,760	07/500,903	05/26/92
5,115,762	07/592,836	05/26/92
5,115,766	07/645,556	05/26/92
5,115,771	07/684,954	05/26/92
5,115,778	07/651,017	05/26/92
5,115,789	07/744,584	05/26/92
5,115,790	07/593,447	05/26/92
5,115,795	07/568,134	05/26/92
5,115,796	07/584,980	05/26/92
5,115,797	07/726,240	05/26/92
5,115,799	07/641,654	05/26/92
5,115,800	07/577,913	05/26/92
5,115,813	07/469,441	05/26/92
5,115,821	07/182,241	05/26/92
5,115,822	07/672,451	05/26/92
5,115,825	07/702,012	05/26/92
5,115,827	07/645,133	05/26/92
5,115,831	07/653,948	05/26/92
5,115,832	07/733,176	05/26/92
5,115,834	07/772,952	05/26/92
5,115,844	07/678,032	05/26/92
5,115,845	07/693,661	05/26/92
5,115,851	07/659,725	05/26/92
5,115,862	07/564,268	05/26/92
5,115,865	07/723,946	05/26/92
5,115,869	07/690,663	05/26/92
5,115,874	07/588,098	05/26/92
5,115,882	07/330,052	05/26/92
5,115,885	07/754,619	05/26/92
5,115,886	07/696,986	05/26/92
5,115,889	07/581,745	05/26/92
5,115,894	07/726,566	05/26/92
5,115,898	07/654,619	05/26/92
5,115,906	07/736,257	05/26/92
5,115,909	07/709,274	05/26/92
5,115,919	07/739,309	05/26/92
5,115,921	07/636,423	05/26/92
5,115,925	07/521,368	05/26/92
5,115,933	07/534,480	05/26/92
5,115,935	07/523,895	05/26/92
5,115,939	07/751,124	05/26/92
5,115,940	07/742,375	05/26/92
5,115,941	07/535,766	05/26/92
5,115,949	07/498,336	05/26/92
5,115,953	07/703,846	05/26/92
5,115,956	07/541,168	05/26/92
5,115,957	07/557,298	05/26/92
5,115,965	07/597,822	05/26/92
5,115,975	07/556,476	05/26/92
5,115,987	07/657,485	05/26/92
5,115,998	07/546,134	05/26/92
5,116,000	07/629,764	05/26/92
5,116,001	07/548,706	05/26/92
5,116,002	07/548,248	05/26/92
5,116,005	07/621,379	05/26/92
5,116,006	07/776,725	05/26/92
5,116,010	07/539,573	05/26/92
5,116,012	07/647,428	05/26/92
5,116,014	07/714,631	05/26/92
5,116,021	07/748,341	05/26/92
5,116,025	07/566,247	05/26/92
5,116,028	07/587,024	05/26/92
5,116,045	07/473,999	05/26/92
5,116,046	07/725,659	05/26/92
5,116,047	07/539,184	05/26/92
5,116,048	07/552,791	05/26/92
5,116,052	07/697,567	05/26/92
5,116,056	07/579,355	05/26/92
5,116,059	07/759,872	05/26/92
5,116,061	07/702,189	05/26/92

VOL
1189
ISS
1
AG
6
1996
UMI

Patent Number	Serial Number	Issue Date
5,116,063	07/658,051	05/26/92
5,116,065	07/601,933	05/26/92
5,116,067	07/607,812	05/26/92
5,116,070	07/647,590	05/26/92
5,116,071	07/321,510	05/26/92
5,116,073	07/432,240	05/26/92
5,116,076	07/626,456	05/26/92
5,116,078	07/608,981	05/26/92
5,116,081	07/728,878	05/26/92
5,116,087	07/570,424	05/26/92
5,116,090	07/617,562	05/26/92
5,116,095	07/642,198	05/26/92
5,116,098	07/529,538	05/26/92
5,116,102	07/553,571	05/26/92
5,116,103	07/653,630	05/26/92
5,116,104	07/563,265	05/26/92
5,116,105	07/620,616	05/26/92
5,116,107	07/552,569	05/26/92
5,116,110	07/318,671	05/26/92
5,116,115	07/521,487	05/26/92
5,116,116	07/489,284	05/26/92
5,116,118	07/545,014	05/26/92
5,116,120	07/626,683	05/26/92
5,116,121	07/646,082	05/26/92
5,116,128	07/631,372	05/26/92
5,116,130	07/607,453	05/26/92
5,116,131	07/510,976	05/26/92
5,116,145	07/586,899	05/26/92
5,116,151	07/729,325	05/26/92
5,116,161	07/678,600	05/26/92
5,116,164	07/598,135	05/26/92
5,116,166	07/609,728	05/26/92
5,116,174	07/435,243	05/26/92
5,116,175	07/657,525	05/26/92
5,116,180	07/518,471	05/26/92
5,116,182	07/598,969	05/26/92
5,116,189	07/608,709	05/26/92
5,116,190	07/561,809	05/26/92
5,116,195	07/643,734	05/26/92
5,116,199	07/630,651	05/26/92
5,116,205	07/619,444	05/26/92
5,116,207	07/650,294	05/26/92
5,116,219	07/668,091	05/26/92
5,116,224	07/542,889	05/26/92
5,116,225	07/668,969	05/26/92
5,116,226	07/592,963	05/26/92
5,116,234	07/755,295	05/26/92
5,116,240	07/622,000	05/26/92
5,116,242	07/699,365	05/26/92
5,116,243	07/602,325	05/26/92
5,116,244	07/706,885	05/26/92
5,116,251	07/671,121	05/26/92
5,116,253	07/582,668	05/26/92
5,116,255	07/257,091	05/26/92
5,116,260	07/706,865	05/26/92
5,116,262	07/533,278	05/26/92
5,116,264	07/645,033	05/26/92
5,116,267	07/697,964	05/26/92
5,116,268	07/712,784	05/26/92
5,116,270	07/581,452	05/26/92
5,116,273	07/691,816	05/26/92
5,116,278	07/637,020	05/26/92
5,116,285	07/555,456	05/26/92
5,116,288	07/732,485	05/26/92
5,116,290	07/622,979	05/26/92
5,116,292	07/739,229	05/26/92
5,116,300	07/706,346	05/26/92
5,116,320	07/770,160	05/26/92
5,116,341	07/640,315	05/26/92
5,116,348	07/550,587	05/26/92
5,116,351	07/419,782	05/26/92
5,116,359	07/622,636	05/26/92
5,116,371	07/549,096	05/26/92
5,116,372	07/762,734	05/26/92
5,116,378	07/517,766	05/26/92
5,116,382	07/532,918	05/26/92
5,116,386	07/656,284	05/26/92
5,116,389	07/545,520	05/26/92
5,116,390	07/293,813	05/26/92
5,116,392	07/457,953	05/26/92
5,116,406	07/540,062	05/26/92
5,116,408	07/622,429	05/26/92
5,116,411	07/456,112	05/26/92
5,116,421	07/626,572	05/26/92
5,116,422	07/637,500	05/26/92
5,116,427	07/790,141	05/26/92
5,116,428	07/665,676	05/26/92
5,116,437	07/588,739	05/26/92
5,116,445	07/631,523	05/26/92
5,116,450	07/556,679	05/26/92
5,116,453	07/520,034	05/26/92
5,116,463	07/717,767	05/26/92
5,116,468	07/776,554	05/26/92
5,116,480	07/499,011	05/26/92
5,116,485	07/644,473	05/26/92
5,116,487	07/560,055	05/26/92
5,116,489	07/640,974	05/26/92
5,116,495	07/455,502	05/26/92
5,116,508	07/483,870	05/26/92
5,116,516	07/668,980	05/26/92
5,116,518	07/621,644	05/26/92
5,116,524	07/598,732	05/26/92
5,116,538	07/445,362	05/26/92
5,116,540	07/318,386	05/26/92
5,116,550	07/499,647	05/26/92
5,116,551	07/698,373	05/26/92
5,116,553	07/636,204	05/26/92
5,116,567	07/553,073	05/26/92
5,116,577	07/490,437	05/26/92
5,116,580	07/256,712	05/26/92
5,116,588	07/591,096	05/26/92
5,116,590	07/727,202	05/26/92
5,116,591	07/336,759	05/26/92
5,116,604	07/765,811	05/26/92
5,116,608	07/411,979	05/26/92
5,116,620	07/742,319	05/26/92
5,116,625	07/634,064	05/26/92
5,116,626	07/736,028	05/26/92
5,116,627	07/666,036	05/26/92
5,116,635	07/513,907	05/26/92
5,116,641	07/570,063	05/26/92
5,116,648	07/672,468	05/26/92
5,116,655	07/385,883	05/26/92
5,116,656	07/513,633	05/26/92
5,116,663	07/621,676	05/26/92
5,116,670	07/589,578	05/26/92
5,116,673	07/498,284	05/26/92
5,116,679	07/385,248	05/26/92
5,116,683	07/536,536	05/26/92
5,116,689	07/509,932	05/26/92
5,116,690	07/682,160	05/26/92
5,116,695	07/520,642	05/26/92
5,116,707	07/558,339	05/26/92
5,116,720	07/426,412	05/26/92
5,116,729	07/321,724	05/26/92
5,116,732	07/405,754	05/26/92
5,116,744	07/595,684	05/26/92
5,116,746	07/764,083	05/26/92
5,116,747	07/392,351	05/26/92
5,116,754	07/592,518	05/26/92
5,116,755	07/131,137	05/26/92
5,116,758	07/458,990	05/26/92
5,116,759	07/544,681	05/26/92
5,116,763	07/256,559	05/26/92
5,116,781	07/568,803	05/26/92
5,116,791	07/740,416	05/26/92
5,116,795	07/506,577	05/26/92
5,116,812	07/545,164	05/26/92
5,116,817	07/587,494	05/26/92
5,116,822	07/546,928	05/26/92
5,116,826	07/637,304	05/26/92
5,116,831	07/560,394	05/26/92
5,116,835	07/447,414	05/26/92
5,116,838	07/614,389	05/26/92
5,116,842	07/524,441	05/26/92
5,116,843	07/543,350	05/26/92
5,117,300	07/501,042	05/26/92
5,117,318	07/671,909	05/26/92
5,117,319	07/420,190	05/26/92
5,117,327	07/629,887	05/26/92
5,117,330	07/507,336	05/26/92
5,117,337	07/732,473	05/26/92
5,117,338	07/765,665	05/26/92
5,117,340	07/415,253	05/26/92
5,117,343	07/705,785	05/26/92
5,117,344	07/696,236	05/26/92
5,117,348	06/845,969	05/26/92
5,117,350	07/284,529	05/26/92
5,117,359	07/470,385	05/26/92
5,117,365	07/328,856	05/26/92
5,117,366	07/372,730	05/26/92
5,117,367	07/579,429	05/26/92
5,117,377	07/253,965	05/26/92
5,117,378	07/551,143	05/26/92
5,117,396	06/835,860	05/26/92
5,117,397	07/771,661	05/26/92
5,117,400	07/632,528	05/26/92
5,117,402	07/300,195	05/26/92
5,117,403	07/710,758	05/26/92
5,117,406	07/652,133	05/26/92
5,117,424	07/603,394	05/26/92
5,117,434	07/641,585	05/26/92
5,117,438	07/427,618	05/26/92
5,117,443	07/435,181	05/26/92
5,117,444	07/559,076	05/26/92
5,117,456	07/552,495	05/26/92
5,117,467	07/714,368	05/26/92
5,117,471	07/725,623	05/26/92
5,117,481	07/737,652	05/26/92
5,117,492	07/420,321	05/26/92

Patent Number	Serial Number	Issue Date
5,116,845	07/519,067	05/26/92
5,116,848	07/176,079	05/26/92
5,116,850	07/543,855	05/26/92
5,116,853	07/413,458	05/26/92
5,116,856	07/483,156	05/26/92
5,116,857	07/450,422	05/26/92
5,116,859	07/207,947	05/26/92
5,116,868	07/346,700	05/26/92
5,116,876	07/520,222	05/26/92
5,116,877	07/471,596	05/26/92
5,116,889	07/470,880	05/26/92
5,116,896	07/708,381	05/26/92
5,116,900	07/479,566	05/26/92
5,116,906	07/476,740	05/26/92
5,116,911	07/476,879	05/26/92
5,116,913	07/470,196	05/26/92
5,116,915	07/138,153	05/26/92
5,116,920	07/470,200	05/26/92
5,116,923	07/545,011	05/26/92
5,116,927	07/712,394	05/26/92
5,116,934	07/732,884	05/26/92
5,116,945	07/478,534	05/26/92
5,116,946	07/358,932	05/26/92
5,116,950	07/184,303	05/26/92
5,116,957	07/603,595	05/26/92
5,116,960	07/367,390	05/26/92
5,116,971	07/584,815	05/26/92
5,116,974	07/546,590	05/26/92
5,116,979	07/578,494	05/26/92
5,116,984	07/333,967	05/26/92
5,116,986	07/696,677	05/26/92
5,116,987	07/763,202	05/26/92
5,116,988	07/703,521	05/26/92
5,116,995	07/702,507	05/26/92
5,116,999	07/507,799	05/26/92
5,117,014	07/694,612	05/26/92
5,117,019	07/648,714	05/26/92
5,117,032	07/534,592	05/26/92
5,117,036	07/313,864	05/26/92
5,117,038	07/482,134	05/26/92
5,117,043	07/388,570	05/26/92
5,117,049	07/718,915	05/26/92
5,117,058	07/612,659	05/26/92
5,117,061	06/861,823	05/26/92
5,117,069	07/589,220	05/26/92
5,117,077	07/693,025	05/26/92
5,117,084	07/576,412	05/26/92
5,117,090	07/559,675	05/26/92
5,117,101	07/567,015	05/26/92
5,117,116	07/624,748	05/26/92
5,117,127	07/589,626	05/26/92
5,117,137	07/574,455	05/26/92
5,117,138	07/762,165	05/26/92
5,117,139	07/691,609	05/26/92
5,117,140	07/699,091	05/26/92
5,117,141	07/559,030	05/26/92
5,117,142	07/648,016	05/26/92
5,117,143	07/673,672	05/26/92
5,117,155	07/592,691	05/26/92
5,117,157	07/508,733	05/26/92
5,117,161	07/647,088	05/26/92
5,117,172	07/619,551	05/26/92
5,117,184	07/608,504	05/26/92
5,117,185	07/500,514	05/26/92
5,117,188	07/605,563	05/26/92
5,117,203	07/627,011	05/26/92
5,117,211	07/610,649	05/26/92
5,117,214	07/646,270	05/26/92
5,117,221	07/568,395	05/26/92
5,117,224	07/310,321	05/26/92
5,117,225	07/346,141	05/26/92
5,117,238	07/656,882	05/26/92
5,117,243	07/506,683	05/26/92
5,117,245	07/467,863	05/26/92
5,117,248	07/707,964	05/26/92
5,117,256	07/708,191	05/26/92
5,117,288	07/618,566	05/26/92

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

Re. 34,532, Re. S.N. 08/592,492, Jan. 26, 1996, Cl. 439/651, PLUG-IN ELECTRIC OUTLET, Lionel T.V. Lun, et. al., Owner of Record: *Pacusma Co. LTD., Kowloon, Hong Kong,* Attorney or Agent: Stephen A. Soffen, Ex. Gp.: 3202

4,769,540, Re. S.N. 08/600,715, Feb. 13, 1996, Cl. 250/288, ATMOSPHERIC PRESSURE IONIZATION MASS SPECTROMETER, Yasuhiro Mitsui, et. al., Owner of Record: *Hitachi, LTD., Tokyo, Japan,* Attorney or Agent: Ronald L. Wanke, Ex. Gp.: 2506

4,861,622, Re. S.N. 08/562,647, Nov. 27, 1995, Cl. 427/457, METHOD FOR FORMING A FILM COAT ON THE INSIDE OF A DEPRESSION, Shunpei Yamazaki, et. al., Owner of Record: *Semiconductor Energy Laboratory Co., LTD., Atsugi-Shi, Japan,* Attorney or Agent: Gerald J. Ferguson, Jr., Ex. Gp.: 1112

4,866,077, Re. S.N. 08/648,240, May 13, 1996, Cl. 514/326, 1,2,3,TRIAZOLE AND TETRAZOLE SUBSTITUTED PIPERIDINE OR TETRAHYDROPYRIDINE COMPOUNDS USEFUL AS ACETYLCHOLINE AGONISTS, Klaus Bogeso, et. al., Owner of Record: *H. Lundbeck A/S, Copenhagen-Valby, Denmark,* Attorney or Agent: S. Peter Ludwig, Ex. Gp.: 1205

5,072,841, Re. S.N. 08/649,918, May 16, 1996, Cl. 215, PLASTIC CONTAINER, Aziz A. Okhai, Owner of Record: *Norderney Investients Limited, Sahelier, N.J.,* Attorney or Agent: Steven R. Trybus, Ex. Gp.: 3207

5,293,723, Re. S.N. 08/615,109, Mar. 14, 1996, Cl. 52/213, SYNTHETIC DOOR FRAME, E.M. Slessor, Owner of Record: *Canadian Heritage Window MFG. Inc., Barrie, Canada,* Attorney or Agent: Marc J. Pensabene, Ex. Gp.: 3504

5,304,504, Re. S.N. 08/635,295, Apr. 19, 1996, Cl. 437/44, METHOD OF FORMING A GATE OVERLAP LDD STRUCTURE, Che-Chia Wei, et. al., Owner of Record: *SGS-Thomson Microelectronics, Inc., Milan, Italy,* Attorney or Agent: Betty Formby, Ex. Gp.: 1107

5,308,998, Re. S.N. 08/620,857, Mar. 4, 1996, Cl. 257/57, INSULATED GATE FIELD EFFECT SEMICONDUCTOR DEVICES AND METHOD OF MANUFACTURING THE SAME, Shunpei Yamazaki, et. al., Owner of Record: *Semiconductor Energy Laboratory Co., LTD., Atsugi-Shi, Japan,* Attorney or Agent: Jeffrey L. Costellia, Ex. Gp.: 2508

5,313,837, Re. S.N. 08/650,953, May 20, 1996, Cl. 73/622, ULTRASONIC THICKNESS GAGE FOR PIPE, John Haynes, Owner of Record: *Ico, Inc., Houston, Tex.,* Attorney or Agent: Loren G. Helmreich, Ex. Gp.: 2212

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,887,622, Reexam. No. 90/004,284, June 17, 1996, Cl. 132/320, BRUSH FOR THE APPLICATION OF MASCARA TO THE EYELASHES, Jean-Louis Gueret, Owner of Record: *L'Oreal, Paris, France,* Attorney or Agent: Kevin Joyce, Cushman Darby & Cushman, Washington, D.C., Ex. Gp.: 3303, Requester: Gerald J. Elintoft, Pennie & Edmonds, New York, N.Y.

5,134,013, Reexam. No. 90/004,287, June 26, 1996, Cl. 428/182, FOLDING AND CRIMPING APPARATUS, Johnny M. Parker, Owner of Record: *Ranpak Corp., Concord Township, Ohio,* Attorney or Agent: Don W. Bulson, Renner, Otto, Boiselle & Sklar, Cleveland, Ohio, Ex. Gp.: 1508, Requester: Owner

5,173,352, Reexam. No. 90/004,288, June 26, 1996, Cl. 428/174, RESILIENT PACKING PRODUCT AND METHOD AND APPARATUS FOR MAKING THE SAME, Johnny M. Parker, Owner of Record: *Ranpak Corp., Concord Township, Ohio,* Attorney or Agent: Don W. Bulson, Renner, Otto, Boiselle & Sklar, Cleveland, Ohio, Ex. Gp.: 1508, Requester: Owner

5,311,100, Reexam. No. 90/004,292, June 28, 1996, Cl. 315/129, WATER ACTIVATED SURVIVAL LAMP UNIT AND AN IMPROVED SENSING SWITCH THEREFOR, John E. Brain, Owner of Record: *Errington John Enterprises, Ltd., Kirkland, Canada,* Attorney or Agent: Schweitzer, Cornman & Gross, New York, N.Y., Ex. Gp.: 2502, Requester: Owner

5,353,713, Reexam. No. 90/004,286, June 24, 1996, Cl. 105/310, APPARATUS FOR CONTROLLING OPERATION OF A RAILCAR DISCHARGE GATE ASSEMBLY HAVING A LOST MOTION MECHANISM FOR UNLOCKING THE GATE PRIOR TO MOVEMENT, Jeremy J. Dohr, et. al., Owner of Record: *White Welding And Mfg., Inc., Kenosha, Wis.,* Attorney or Agent: John A. Schaerli, Geneva, Ill., Ex. Gp.: 3103, Requester: Keystone Industries, Inc., Camp Hill, Pa., c/o Robert M. Gerstein, Marshall O'Toole Gerstein, Murray & Borum, Chicago, Ill.

5,353,948, Reexam. No. 90/004,293, June 28, 1996, Cl. 049/446, CURL SPRING SHOE BASED WINDOW BALANCE SYSTEM, Norman R. Westfall, Owner of Record: *Caldwell Manufacturing Co., Rochester, N.Y.,* Attorney or Agent: Eugene S. Stephens, Stephens & Associates, Rochester, N.Y., Ex. Gp.: 3509, Requester: Thomas K. Stine, Wallenstein & Wagner, Chicago, Ill.

5,425,598, Reexam. No. 90/004,290, June 28, 1996, Cl. 405/128, SYSTEM FOR SPARGING GROUND WATER CONTAMINANTS, Leslie H. Pennington, Owner of Record: *Inventor,* Attorney or Agent: Thorpe, North & Western, Sandy, Utah, Ex. Gp.: 3506, Requester: EG & G Environmental, Pittsburgh, Pa., c/o Elizabeth A. Levy, Lappin & Kusmer, Boston, Mass.

5,441,490, Reexam. No. 90/004,289, June 27, 1996, Cl. 604/289, TRANSDERMAL PERFUSION OF FLUIDS, Pal Svedman, Owner of Record: *Inventor,* Attorney or Agent: Michael A. Kaufman, Flehr, Hobbach, Test, Albritton & Herbert, San Francisco, Calif., Ex. Gp.: 3308, Requester: Owner

5,448,109, Reexam. No. 90/004,285, June 20, 1996, Cl. 257/719, THERMOELECTRIC MODULE, Charles J. Cauchy, Owner of Record: *Tellurex Corp., Traverse City, Mich.,* Attorney or Agent: Terryence F. Chapman, Flynn Thiel Boutell & Tanis, Kalamazoo, Mich., Ex. Gp.: 2503, Requester: Martin E. Goldstein, Darby & Darby, New York, N.Y.

5,458,006, Reexam. No. 90/004,291, June 28, 1996, Cl. 073/861.42, GAS-METERING DEVICE, Alexander Roqueta, Owner of Record: *Pacific Energy, Commerce, Calif.,* Attorney or Agent: LeRoy T. Rahn, Christie Parker & Hale, Pasadena, Calif., Ex. Gp.: 2214, Requester: Landfill Gas & Environmental Projects, Inc., c/o Michael H. Jester, Baker, Maxham, Jester & Meador, San Diego, Calif.

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED MARCH 19, 1996
DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
104,789	71/083,746	06/15/1915
104,820	71/067,288	06/15/1915
325,055	71/361,263	06/11/1935
325,056	71/361,236	06/11/1935
325,126	71/360,211	06/11/1935
325,134	71/360,440	06/11/1935
325,144	71/355,114	06/11/1935
325,176	71/352,130	06/11/1935
325,198	71/358,739	06/11/1935
583,285	71/617,558	12/08/1953
607,157	71/667,441	06/14/1955
607,160	71/669,649	06/14/1955
607,164	71/637,179	06/14/1955
607,167	71/661,063	06/14/1955
607,172	71/669,201	06/14/1955
607,175	71/670,842	06/14/1955
607,176	71/671,575	06/14/1955
607,177	71/672,340	06/14/1955
607,178	71/672,953	06/14/1955
607,183	71/665,873	06/14/1955
607,185	71/666,997	06/14/1955
607,187	71/668,845	06/14/1955
607,192	71/671,826	06/14/1955

Reg. Number	Serial Number	Reg. Date	1,012,802	73/029,514	06/10/1975
			1,012,803	73/001,174	06/10/1975
607,201	71/660,939	06/14/1955	1,012,805	73/004,485	06/10/1975
607,202	71/662,889	06/14/1955	1,012,807	73/006,741	06/10/1975
607,204	71/668,805	06/14/1955	1,012,808	73/007,683	06/10/1975
607,216	71/667,909	06/14/1955	1,012,810	73/009,682	06/10/1975
607,217	71/669,306	06/14/1955	1,012,811	73/012,208	06/10/1975
607,229	71/646,753	06/14/1955	1,012,812	73/013,086	06/10/1975
607,239	71/667,097	06/14/1955	1,012,817	73/021,604	06/10/1975
607,246	71/640,199	06/14/1955	1,012,818	73/005,819	06/10/1975
607,248	71/659,792	06/14/1955	1,012,819	73/005,857	06/10/1975
607,250	71/666,349	06/14/1955	1,012,820	73/020,548	06/10/1975
607,262	71/670,482	06/14/1955	1,012,823	73/018,008	06/10/1975
607,279	71/672,465	06/14/1955	1,012,826	73/004,019	06/10/1975
607,285	71/661,103	06/14/1955	1,012,830	73/005,790	06/10/1975
607,286	71/666,577	06/14/1955	1,012,833	73/008,629	06/10/1975
607,293	71/658,385	06/14/1955	1,012,839	73/015,035	06/10/1975
607,296	71/666,568	06/14/1955	1,012,840	73/015,044	06/10/1975
607,299	71/656,399	06/14/1955	1,012,842	73/015,130	06/10/1975
607,301	71/668,384	06/14/1955	1,012,843	73/016,661	06/10/1975
607,304	71/673,516	06/14/1955	1,012,845	73/017,409	06/10/1975
607,315	71/666,970	06/14/1955	1,012,847	73/019,550	06/10/1975
607,353	71/652,562	06/14/1955	1,012,856	73/023,519	06/10/1975
607,354	71/652,580	06/14/1955	1,012,861	73/032,283	06/10/1975
607,355	71/653,727	06/14/1955	1,012,863	73/023,866	06/10/1975
607,379	71/668,249	06/14/1955	1,012,868	73/004,041	06/10/1975
607,380	71/668,382	06/14/1955	1,012,870	73/014,203	06/10/1975
607,382	71/668,726	06/14/1955	1,012,872	73/018,789	06/10/1975
607,391	71/670,461	06/14/1955	1,012,874	73/027,775	06/10/1975
607,393	71/670,568	06/14/1955	1,012,876	73/034,758	06/10/1975
607,402	71/671,509	06/14/1955	1,012,877	73/001,128	06/10/1975
607,406	71/669,146	06/14/1955	1,012,879	73/004,413	06/10/1975
607,407	71/669,855	06/14/1955	1,012,882	73/009,849	06/10/1975
607,416	71/669,323	06/14/1955	1,012,883	73/013,415	06/10/1975
607,430	71/618,004	06/14/1955	1,012,890	73/021,696	06/10/1975
607,448	71/672,261	06/14/1955	1,012,893	73/026,476	06/10/1975
607,458	71/641,276	06/14/1955	1,012,896	73/029,747	06/10/1975
607,460	71/660,012	06/14/1955	1,012,897	73/031,262	06/10/1975
607,466	71/666,787	06/14/1955	1,012,901	73/010,949	06/10/1975
607,467	71/667,136	06/14/1955	1,012,902	73/018,469	06/10/1975
607,470	71/628,494	06/14/1955	1,012,906	73/003,801	06/10/1975
1,012,698	73/001,512	06/10/1975	1,012,911	73/009,641	06/10/1975
1,012,700	73/003,423	06/10/1975	1,012,912	73/010,268	06/10/1975
1,012,704	73/016,724	06/10/1975	1,012,915	73/015,936	06/10/1975
1,012,705	73/018,633	06/10/1975	1,012,916	73/016,342	06/10/1975
1,012,707	73/017,460	06/10/1975	1,012,919	73/019,176	06/10/1975
1,012,709	73/021,589	06/10/1975	1,012,920	73/022,659	06/10/1975
1,012,710	73/023,334	06/10/1975	1,012,923	73/025,188	06/10/1975
1,012,713	73/027,171	06/10/1975	1,012,924	73/027,018	06/10/1975
1,012,714	73/027,542	06/10/1975	1,012,930	73/004,960	06/10/1975
1,012,716	73/029,325	06/10/1975	1,012,931	73/011,730	06/10/1975
1,012,717	73/030,757	06/10/1975	1,012,935	73/025,228	06/10/1975
1,012,718	73/031,498	06/10/1975	1,012,941	73/022,843	06/10/1975
1,012,721	73/032,240	06/10/1975	1,012,943	73/026,208	06/10/1975
1,012,726	73/021,701	06/10/1975	1,012,944	73/027,274	06/10/1975
1,012,730	73/024,497	06/10/1975	1,012,948	73/016,459	06/10/1975
1,012,731	73/024,725	06/10/1975	1,012,951	73/022,470	06/10/1975
1,012,732	73/024,726	06/10/1975	1,012,953	73/023,956	06/10/1975
1,012,733	73/024,728	06/10/1975	1,012,955	73/005,711	06/10/1975
1,012,734	73/025,027	06/10/1975	1,012,958	73/025,771	06/10/1975
1,012,741	73/027,101	06/10/1975	1,012,960	73/026,588	06/10/1975
1,012,746	73/028,819	06/10/1975	1,012,963	73/011,457	06/10/1975
1,012,747	73/028,824	06/10/1975	1,012,964	73/011,819	06/10/1975
1,012,750	73/028,829	06/10/1975	1,012,965	73/002,013	06/10/1975
1,012,755	73/033,302	06/10/1975	1,012,973	73/031,709	06/10/1975
1,012,756	73/033,303	06/10/1975	1,012,975	73/015,742	06/10/1975
1,012,757	73/001,551	06/10/1975	1,012,988	73/000,955	06/10/1975
1,012,760	73/009,885	06/10/1975	1,012,985	73/002,633	06/10/1975
1,012,763	73/010,563	06/10/1975	1,012,989	73/009,782	06/10/1975
1,012,764	73/012,305	06/10/1975	1,012,992	73/015,307	06/10/1975
1,012,782	73/021,938	06/10/1975	1,012,993	73/016,181	06/10/1975
1,012,783	73/023,382	06/10/1975	1,012,997	73/026,454	06/10/1975
1,012,786	73/023,822	06/10/1975	1,013,003	73/027,298	06/10/1975
1,012,787	73/023,823	06/10/1975	1,013,013	73/003,814	06/10/1975
1,012,791	73/029,433	06/10/1975	1,013,020	73/017,384	06/10/1975
1,012,794	73/005,220	06/10/1975	1,013,022	73/024,949	06/10/1975
1,012,796	73/008,996	06/10/1975	1,013,023	73/001,944	06/10/1975
1,012,797	73/021,407	06/10/1975	1,013,025	73/022,570	06/10/1975
1,012,801	73/024,716	06/10/1975	1,013,027	73/028,772	06/10/1975

Reg. Number	Serial Number	Reg. Date
1,013,028	73/029,291	06/10/1975
1,013,029	73/022,728	06/10/1975
1,013,031	73/008,422	06/10/1975
1,013,032	73/019,594	06/10/1975
1,013,033	73/028,240	06/10/1975
1,013,035	73/000,971	06/10/1975
1,013,036	73/001,685	06/10/1975
1,013,039	73/013,541	06/10/1975
1,013,042	73/026,744	06/10/1975
1,013,044	73/011,836	06/10/1975
1,013,050	73/016,042	06/10/1975
1,013,052	73/021,094	06/10/1975
1,013,053	73/022,029	06/10/1975
1,013,055	73/008,746	06/10/1975
1,013,056	73/013,187	06/10/1975
1,013,058	73/020,284	06/10/1975
1,013,063	73/009,047	06/10/1975
1,013,068	73/002,077	06/10/1975
1,013,069	73/010,261	06/10/1975
1,013,075	73/016,353	06/10/1975
1,013,077	73/019,017	06/10/1975
1,013,078	73/019,194	06/10/1975
1,013,080	73/024,604	06/10/1975
1,013,082	73/028,624	06/10/1975
1,013,083	73/002,600	06/10/1975
1,013,089	73/008,585	06/10/1975
1,013,090	73/010,635	06/10/1975
1,013,093	73/017,762	06/10/1975
1,013,096	73/020,282	06/10/1975
1,013,112	73/034,315	06/10/1975
1,013,115	73/001,823	06/10/1975
1,013,116	72/444,408	06/10/1975
1,013,117	72/450,760	06/10/1975
1,013,124	72/466,977	06/10/1975
1,013,125	72/459,578	06/10/1975
1,013,127	72/464,266	06/10/1975
1,013,131	72/435,904	06/10/1975
1,013,133	72/444,048	06/10/1975
1,013,138	72/464,416	06/10/1975
1,013,140	72/466,138	06/10/1975
1,013,141	72/450,833	06/10/1975
1,013,150	72/465,070	06/10/1975
1,013,151	72/435,905	06/10/1975
1,013,152	72/459,912	06/10/1975
1,013,153	72/423,479	06/10/1975
1,013,157	72/439,711	06/10/1975
1,013,160	72/460,224	06/10/1975
1,013,161	72/463,251	06/10/1975
1,013,164	72/462,966	06/10/1975
1,013,176	72/423,446	06/10/1975
1,013,178	72/450,915	06/10/1975
1,013,179	72/451,943	06/10/1975
1,013,181	72/452,946	06/10/1975
1,013,183	72/418,782	06/10/1975
1,013,184	72/450,901	06/10/1975
1,013,185	72/464,002	06/10/1975
1,013,191	72/426,546	06/10/1975
1,013,193	72/443,564	06/10/1975
1,013,194	72/422,937	06/10/1975
1,013,196	72/443,263	06/10/1975
1,013,197	72/446,158	06/10/1975
1,013,208	72/455,925	06/10/1975
1,013,210	72/457,435	06/10/1975
1,013,213	72/428,870	06/10/1975
1,013,214	72/435,906	06/10/1975
1,013,216	72/454,994	06/10/1975
1,013,218	72/461,945	06/10/1975
1,013,222	72/435,661	06/10/1975
1,013,223	72/436,471	06/10/1975
1,013,226	72/461,703	06/10/1975
1,013,227	72/464,267	06/10/1975
1,013,229	72/449,694	06/10/1975
1,013,230	72/453,465	06/10/1975
1,013,232	72/419,852	06/10/1975
1,013,237	72/456,101	06/10/1975
1,013,238	72/460,019	06/10/1975
1,013,239	72/461,943	06/10/1975
1,013,241	72/465,666	06/10/1975
1,013,245	72/443,160	06/10/1975
1,013,249	72/462,609	06/10/1975
1,013,252	72/459,696	06/10/1975
1,013,253	72/465,396	06/10/1975
1,013,258	72/454,411	06/10/1975
1,013,261	72/460,395	06/10/1975
1,013,262	72/463,037	06/10/1975

Service by Publication

A petition to cancel the registrations identified below having been filed, and the notice of such proceeding sent by certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

Michael B. Gotfredson, LaJolla, Calif., Reg. No. 1,896,984, for the mark "10K", Canc. No. 24,279.

Northern Technologies, Inc., Northbrook, Ill., Reg. No. 1,682,683, for the mark "HELIX", Canc. No. 24,592.

Blue Lion Software Corp., Belmont, Mass., Reg. No. 1,542,275, for the mark "RSVP", Canc. No. 24,395.

Tangas, Inc., Clearwater, Fla., Reg. No. 1,575,130, for the mark "JACQUALINE FORD", Canc. No. 24,327.

J. Serra & Sons, Limited, New York, N.Y., Reg. No. 1,071,571, for the mark "SERRA", Canc. No. 24,021.

JEAN BROWN
Technical Support Manager,
Trademark Trial
and Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner
for Trademarks

Department of Commerce
Patent and Trademark Office

37 CFR Part 2
[Docket No. 960621181-6181-01]
RIN 0651-AA89

Elimination of Requirement for Proof of Service in Consented Requests for Extensions of Time to File a Notice of Opposition

Agency: Patent and Trademark Office, Commerce.
Action: Final Rule
Summary: This rule deletes the requirement for proof of service when a request for an extension of time to oppose registration of a trademark is based upon a statement that applicant has consented to the request. This rule will simplify opposition proceedings by eliminating an unnecessary requirement.
Effective Date: July 15, 1996. This rule will be applicable to all relevant correspondence filed with the Office on or after the effective date.
For Further Information Contact: David Sams by telephone at (703) 308-9330, by facsimile transmission at (703) 308-9333, or by mail marked to his attention and addressed to the Assistant Commissioner for Trademarks, Box TTAB, 2900 Crystal Drive, Arlington, Virginia 22202-3513.
Supplementary Information: Section 2.102(c)(2), which provides for an extension of time for filing an opposition under 37 CFR Part 2, is revised to delete the requirement that proof of service be included in consented extension requests. This change permits potential opposers to request an extension of time to oppose aggregating more than 120 days from the date

of publication based on a written statement that the applicant or its authorized representative has consented to the request. The Office believes that the requirement for proof of service is unnecessary when the applicant has assertedly consented to the filing of the extension request. The Trademark Trial and Appeal Board sends a copy of the request together with the Board's action thereon to the applicant, which may file a request for reconsideration of the Board's action if necessary.

The Patent and Trademark Office has determined that this revision is procedural and remedial in nature, and this revision is therefore being published as a final rule. 5 U.S.C. 553(b)(3)(A) & (B). This rule is not a significant rule for the purposes of Executive Order 12866. No notice of proposed rulemaking is required for this rule under 5 U.S.C. 553 or any other law, so a regulatory flexibility analysis is not required and has not been prepared. 5 U.S.C. 603(a).

List of Subjects in 37 CFR Part 2

Administrative practice and procedure, Conflicts of interest, Courts, Inventions and patents, Lawyers.

For the reasons set forth in the preamble, and pursuant to the authority contained in 15 U.S.C. 1123 and 35 U.S.C. 6, part 2 of title 37 of the Code of Federal Regulations is amended as set forth below:

PART 2 - RULES OF PRACTICE IN TRADEMARK CASES

1. The authority citation for 37 CFR Part 2 continues to read as follows:

Authority: 15 U.S.C. 1123; 35 U.S.C. 6, unless otherwise noted.

2. Section 2.102(c)(2) is revised to read as follows:

§ 2.102—Extension of time for filing an opposition.

*****

(c) ***

(2) a written request by the potential opposer or its authorized representative stating that the applicant or its authorized representative has consented to the request, or

*****

July 2, 1996 BRUCE A. LEHMAN
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

Registration to Practice

The following person successfully passed the registration examination that was held April 8, 1992, and has been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office until applicant's registration certificate is mailed to applicant. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of the following applicant on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before September 20, 1996.

Warnick, Spencer K., IV, 1404 N. 12th St., #26, Arlington, Va. 22314

July 11, 1996 KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

Registration to Practice

The following person successfully passed the registration examination that was held May 3, 1995, and has been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office until applicant's registration certificate is mailed to applicant. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of the following applicant on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before September 20, 1996.

Cornelison, Michael J., 5440 N. 22nd Rd., Arlington, Va. 22205

July 11, 1996 KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

Registration to Practice

The following person successfully passed the registration examination that was held April 21, 1993, and has been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office until applicant's registration certificate is mailed to applicant. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of the following applicant on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before September 20, 1996.

DeWitt, LaVonda R., 5223 Apt. E Penrith Dr., Durham, N.C. 27713

July 11, 1996 KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

Registration to Practice

The following list contains the name of a person applying for registration to practice before the United States Patent and Trademark Office who has been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office until her registration certificate is mailed to her. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of the following applicant on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before September 20, 1996.

Scalzo, Catherine S. Kilby, 3702 Lyones Ln., Alexandria, Va. 22302

July 11, 1996 KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

Certificate of Correction For Week of August 6, 1996

Re. 35,182	D. 368,676	5,062,876	5,155,339
D. 365,179	D. 368,876	5,076,540	5,160,861
D. 365,540	D. 368,970	5,107,944	5,182,503
D. 367,239	D. 369,721	5,130,328	5,188,835
D. 367,340	4,666,434	5,139,580	5,189,657
D. 368,445	5,059,081	5,147,734	5,202,690

VOL 1189 ISS 1 AUG 6 1996 UMI

5,229,526	5,429,512	5,462,164	5,480,194	5,489,024	5,499,290	5,505,350	5,512,595
5,292,663	5,430,581	5,462,869	5,480,481	5,489,481	5,499,332	5,505,476	5,512,660
5,299,814	5,430,685	5,463,348	5,480,691	5,489,527	5,499,362	5,505,517	5,512,962
5,301,167	5,432,076	5,463,437	5,480,771	5,489,933	5,499,884	5,505,543	5,512,994
5,301,776	5,432,310	5,464,753	5,480,861	5,490,760	5,500,254	5,505,717	5,513,073
5,303,207	5,434,136	5,464,990	5,481,083	5,490,766	5,500,751	5,505,741	5,513,361
5,317,801	5,435,403	5,465,148	5,481,291	5,490,860	5,500,939	5,505,910	5,513,372
5,321,698	5,436,163	5,465,581	5,481,509	5,490,956	5,501,151	5,505,987	5,514,065
5,326,778	5,437,625	5,466,000	5,481,548	5,490,961	5,501,203	5,506,206	5,514,377
5,334,639	5,437,952	5,466,532	5,482,392	5,491,001	5,501,360	5,506,237	5,514,671
5,335,016	5,438,092	5,468,847	5,482,432	5,492,947	5,501,987	5,506,239	5,514,853
5,346,486	5,439,967	5,469,154	5,483,358	5,493,030	5,502,032	5,506,240	5,514,933
5,352,778	5,440,267	5,469,197	5,483,846	5,493,216	5,502,052	5,506,273	5,515,214
5,362,647	5,442,054	5,470,227	5,484,037	5,493,243	5,502,062	5,506,603	5,515,220
5,364,873	5,442,171	5,470,403	5,484,220	5,493,252	5,502,560	5,506,863	5,515,396
5,366,783	5,442,799	5,470,490	5,484,282	5,493,256	5,502,581	5,507,393	5,515,558
5,368,581	5,443,776	5,470,661	5,484,718	5,493,412	5,502,584	5,507,587	5,515,600
5,384,713	5,443,946	5,470,718	5,485,184	5,493,554	5,502,588	5,507,959	5,516,562
5,385,553	5,444,963	5,470,776	5,485,187	5,493,564	5,502,657	5,508,167	5,516,576
5,394,046	5,445,069	5,471,523	5,485,262	5,493,798	5,502,674	5,508,580	5,516,666
5,396,911	5,446,017	5,472,752	5,485,331	5,494,540	5,502,830	5,508,634	5,516,685
5,397,702	5,447,816	5,473,487	5,485,433	5,494,600	5,503,221	5,508,798	5,516,690
5,398,210	5,447,883	5,474,507	5,485,440	5,494,797	5,503,236	5,508,842	5,517,507
5,398,542	5,448,450	5,474,538	5,485,451	5,495,104	5,503,328	5,509,118	5,517,793
5,400,132	5,449,526	5,474,795	5,485,665	5,495,536	5,503,592	5,509,486	5,518,015
5,402,200	5,450,589	5,474,943	5,485,827	5,495,698	5,503,646	5,509,512	5,518,181
5,402,441	5,451,146	5,476,065	5,486,138	5,495,944	5,503,838	5,509,859	5,518,610
5,403,666	5,451,515	5,476,544	5,486,892	5,496,006	5,504,005	5,509,931	5,518,751
5,411,362	5,451,643	5,476,658	5,487,001	5,496,806	5,504,322	5,510,366	5,518,753
5,411,790	5,454,264	5,476,709	5,487,008	5,497,247	5,504,496	5,510,439	5,518,884
5,412,408	5,455,075	5,477,418	5,487,090	5,497,282	5,504,534	5,510,468	5,519,990
5,413,799	5,455,829	5,477,694	5,487,440	5,497,375	5,504,595	5,510,664	5,520,199
5,415,090	5,456,204	5,477,963	5,487,546	5,497,937	5,504,618	5,511,087	5,520,224
5,417,870	5,456,997	5,478,149	5,487,740	5,498,029	5,504,769	5,511,627	5,520,265
5,421,827	5,457,398	5,478,663	5,487,773	5,498,035	5,504,784	5,511,646	5,521,632
5,422,706	5,458,127	5,479,144	5,488,398	5,498,083	5,504,886	5,511,737	5,521,888
5,423,725	5,458,607	5,479,196	5,488,399	5,499,130	5,504,972	5,512,024	5,521,896
5,423,999	5,459,256	5,479,939	5,488,459	5,499,226	5,505,122	5,512,473	5,521,913
5,429,436	5,460,680	5,480,071	5,488,610	5,499,259	5,505,343	5,512,551	5,523,219
							5,523,420

Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
May 20-24, 1996

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
5-21	EX	74/005,786	Medos S.A.	2(e)(1) [genericness]	Refusal Reversed (in both grounds)		"HAKIM" [medical devices, namely, hydrocephalus valves] and "HAKIM" [medical devices, namely, external programmers for hydrocephalus valves]		No
5-21	EX	74/494,179	Nobl Laboratories, Inc.	2(e)(1)	Refusal Affirmed		design of two pigs [swine vaccines]		No
5-21	EX	74/350,184	Sonoscan, Inc.	2(d)	Refusal Reversed		"SONOSCAN" [medical testing and diagnostic services]	"SONOSCAN" (in stylized lettering) [acoustic microscopes and parts therefor, instructing others in techniques of acoustic microscopy; analysis of microstructure of optically opaque materials by acoustic microscopy; and development of acoustical and optical instrumentation for others]	No
5-21	EX	74/315,068	Stig R. Erlander	2(d)	Refusal Affirmed		"STIG ERLANDER'S JUBILEE" [olive oil]	"JUBILEE" [vegetable shortening, salad oil, and oleomargarine]	No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (R)=REQ. FOR RECONSIDERATION

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision
5-21	EX	74/514,384	Atlas Air, Inc.	2(d)	Refusal Affirmed
5-22	EX	74/393,436	BC Int'l. Cosmetic & Image Services, Inc.	2(e)(1)	Refusal Affirmed
5-22	EX	74/346,755	Web Printing Controls Co., Inc.	2(e)(1)	Refusal Reversed
5-23	EX	74/324,888	John M. Sanders	whether the matter asserted for registration functions as a trademark for the goods recited in the application	Refusal Reversed

Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
	"ATLAS AIR" (and design) [air cargo services]	"ATLAS" [freight forwarding services]	No
	"BODY GLUE" [adhesives to affix clothing to the skin]		No
	"MICRODENSITOMETER" [computerized apparatus for use with commercial multi-color web printing presses for acquiring and analyzing images to determine color density values of printed indicia]		No
	"FOR SALE" [windshield covers, rear window covers, window covers, and vehicle covers]		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (R)=REQ. FOR RECONSIDERATION

SPECIAL BOXES FOR PATENT MAIL

Special box designations should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special boxes. If any documents other than the specified type identified for each special box are addressed to that box, they will be significantly delayed in reaching the appropriate area for which they are intended.

Please address mail as follows:

Box _____
Assistant Commissioner for Patents
Washington, D.C. 20231

Box Designations	Explanation
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 12	Contributions to the Examiner Education Program.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or materials related to the Disclosure Document Program.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	All communications following the receipt of a PTOL–85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box M Fee	Correspondence related to a patent that is subject to the payment of a maintenance fee.
Box Missing Parts	Response to the Notice to File Missing Parts of Application and associated papers and fees.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent applications and associated papers and fees.
Box Patent Ext.	Applications for patent term extension and any communications relating thereto.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filing of all provisional patent applications and any communications relating thereto.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

SPECIAL BOXES FOR TRADEMARK MAIL

Special box designations should be used to allow forwarding of particular types of trademark mail to the appropriate areas as quickly as possible. In addition to these box designations, filers are encouraged to indicate whether the contents of the envelope contain a fee. Envelopes containing a fee should be marked "FEE;" envelopes not containing a fee should be marked "NO FEE." Box designations and "FEE/NO FEE" indicators should appear on the envelope as well as on the cover sheet or first page of any document.

Please address mail as follows:

Box _____
FEE (or NO FEE)
Assistant Commissioner for Trademarks
2900 Crystal Drive
Arlington, Virginia 22202-3513

Box Designations	Explanation
Box NEW APP FEE	New trademark applications and fees.
Box ITU FEE	Statements of Use (SOUs) and extension requests.
Box TTAB FEE	Oppositions, cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions, and extension requests.
Box STATUS NO FEE	Written status inquiries.
Box POST REG FEE	Affidavits, renewals, corrections and amendments.
Box RESPONSES NO FEE	Responses to Examining Attorneys' Office actions and Post Registration actions.

▼ MISCSB 162510 18:26:22 22-JUL-96

SPECIAL BOXES APPLICABLE TO *BOTH* PATENT AND TRADEMARK MAIL

The following special box designations are applicable to both patent and trademark related mail, and the recommendations for "Special Boxes for Patent Mail" (above) should be followed for the types of mail listed below.

Please address mail as follows:

Box _____
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Box Designations	Explanation
Box 3	Mail for the Office of Personnel from NFC.
Box 4	Mail for the Deputy Assistant Secretary of Commerce and Deputy Commissioner of Patents and Trademarks; Office of Legislative and International Affairs.
Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation and disciplinary proceedings*; papers relating to pending litigation in court cases shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box OED	Mail for the Office of Enrollment and Discipline.

Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries

The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information in various formats from the U.S. Patent and Trademark Office. Many PTDLs have on file all full-text patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PTDLs have both the patent and trademark sections of the *Official Gazette of the U.S. Patent and Trademark Office*. The full-text utility and design patents are distributed numerically on 16 mm microfilm, and plant patents on color microfiche. Patent and trademark search systems on CD-ROM (Compact Disc-Read Only) format are available at all PTDLs to increase utilization of and enhance access to the information found in patents and trademarks. It is through the CD-ROM systems that preliminary patent and trademark searches can be conducted through the numerically arranged collections.

All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 844-1747
	Birmingham Public Library	(205) 226-3620
Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4488
	Sunnyvale Center for Innovation, Invention and Ideas	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6249
Connecticut	New Haven: Science Park Library	(203) 786-5447
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(317) 494-2872
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
Kansas	Wichita: Ablah Library, Wichita State University	(316) 689-3155
Kentucky	Louisville Free Public Library	(502) 574-1611
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maine	Orono: Raymond H. Fogler Library, University of Maine	(207) 581-1678
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Media Union Library, University of Michigan	(313) 647-5735
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit: Great Lakes Patent and Trademark Center	(313) 833-3379
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada, Reno Library	(702) 784-6579
New Hampshire	Concord: New Hampshire State Library	Not Yet Operational
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
New York	Albany: New York State Library	(518) 474-5355
	Buffalo and Erie County Public Library	(716) 858-7101

Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries—(continued)

State	*Name of Library*	*Telephone Contact*
	New York Public Library (The Research Libraries)	(212) 592-7000
North Carolina	Raleigh: D.H. Hill Library, North Carolina State University	(919) 515-3280
North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Akron - Summit County Public Library	Not Yet Operational
	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Portland: Paul L. Boley Law Library, Lewis & Clark College	(503) 768-6786
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Puerto Rico	Mayaquez General Library, University of Puerto Rico	Not Yet Operational
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Clemson University Libraries	(803) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	(605) 394-6822
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
	Lubbock: Texas Tech University	Not Yet Operational
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3051
Wyoming	Casper: Natrona County Public Library	(307) 237-4935

PATENT EXAMINING CORPS

BRUCE A. LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
EDWARD R. KAZENSKE, Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—JOHN E. KITTLE, Director	308-0661	09/29/94
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200—RICHARD V. FISHER, Director	308-1235	07/15/94
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—BARRY S. RICHMAN, Director	308-0651	09/14/94
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	12/22/94
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	07/08/94
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	08/02/94
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	12/13/94
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—BOBBY R. GRAY, Director	305-9600	09/30/93
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3800	04/18/94
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	12/09/94
TELECOMMUNICATIONS, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	11/01/94
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	12/05/94
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	05/30/94
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—CARLTON R. CROYLE, Director	308-1148	08/25/94
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	04/10/95
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	03/09/95
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	09/27/94

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

UMI 1189 OG 6 1996

TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Philip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of July 1, 1996

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 101—Ron Williams, Managing Attorney, (703) 308–9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/30/95	03/15/96
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308–9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/19/95	01/06/96
Law Office 103—Kathryn Erskine, Managing Attorney, (703) 308–9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/26/95	05/28/96
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/05/96	04/13/96
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/26/96	04/03/96
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/03/96	03/07/96
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/16/96	03/21/96
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/13/96	03/22/96
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308–9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/28/96	04/12/96
**Collective Marks—Class 200 **Certification Marks—Classes A & B		
Office of Trademark Services—Vacant (703) 308-9100 Trademark Assistance Center—(703) 308-9000 Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188 Intent-To-Use—(ITU)—(703) 308-9500 Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126		
Affidavits Under Sections 8 & 15 (All Classes)	01/15/96	—0—
Renewals (All Classes)	04/15/96	—0—
Section 12(c) Publications (All Classes)	01/25/96	—0—

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

REEXAMINATIONS

AUGUST 6, 1996

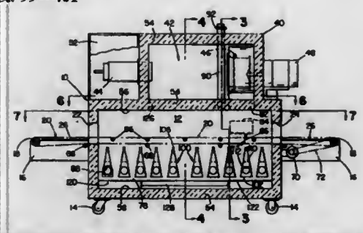
Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,377,109 (2963rd)

APPARATUS FOR BAKING FOOD PRODUCTS SUCH AS PIZZAS AND THE LIKE

Ernest C. Brown, Danvers, and Walter E. Baske, Amesbury, both of Mass., assignors to Wolverine Corporation, Methuen, Mass.

Reexamination Request No. 90/003,720, Feb. 13, 1995.
Reexamination Certificate for Patent 4,377,109, issued Mar. 22, 1983, Ser. No. 266,199, May 22, 1981.
Int. Cl.[6] A47J *37/00*
U.S. Cl. 99—401



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1** and **8** are determined to be patentable as amended.

Claims **2–7**, dependent on an amended claim, are determined to be patentable.

1. An oven system for cooking food products and the like comprising

a thermally insulated chamber defining a treatment zone,

a conveyor for supporting products to be treated in said treatment zone,

means for moving said conveyor to transport products through said treatment zone,

said conveyor being substantially open to permit flow of air therethrough,

an array of nozzles below said conveyor and disposed along the length and across the width of said treatment zone,

a *planar* deflection surface *spaced above and extending* above said conveyor forming an upper boundary of said treatment zone,

exhaust port means below said conveyor, and

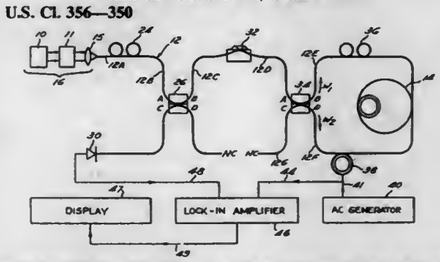
means for flowing heated gas to said nozzle array for discharge with substantial upward velocity for flow through said conveyor against bottom surfacs of food products on said conveyor with a portion of said upwardly flowing gas that bypasses said products flowing upwardly through said treatment zone for impact against said deflection surface and drawing the deflected gas downwardly in countercurrent flow for infringement on the top surfaces of products being transported through said treatment zone in supplemental low velocity heat exchange treatment and flow through said conveyor for exhaust from said treatment zone through said exhaust port means.

B1 4,773,759 (2964th)

INTERFEROMETER WITH KERR EFFECT COMPENSATION

Ralph A. Bergh, Menlo Park, Calif.; Brian Culshaw, Kilmacolm, Scotland; Herve C. Lefevre, Paris, France; Herbert J. Shaw, Stanford, and C. Chapin Cutler, Palo Alto, both of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Reexamination Request No. 90/004,085, Dec. 22, 1995.
Reexamination Certificate for Patent 4,773,759, issued Sep. 27, 1988, Ser. No. 49,805, May 12, 1987.
Int. Cl.[6] G01C *19/72*; G01B *9/02*
U.S. Cl. 356—350



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–48** is confirmed.

1. A fiber optic ring interferometer, having Kerr effect compensation, comprising:

a light source;

a loop of fiber optic material;

means for coupling light from said source to said loop, said coupling means splitting said light from source into first and second waves which counterpropagate through said loop, and combining said waves after propagation through said loop to form an output signal, the intensity of said waves being sufficiently high to cause the electric fields of said counterpropagating waves to alter the propagation constant of said fiber optic material in accordance with the Kerr effect to produce a self effect and a cross effect for each of said waves, the relative intensity of said waves being unequal to cause the self effect and cross effect of said first wave to be different than the self effect and cross effect, respectively, of said second wave; and

means for intensity modulating light produced by said light source to cause said counterpropagating waves to be modulated in accordance with a waveform selected to reduce difference in the average propagation constants for said waves caused by the Kerr effect, the average value of the square of the waveform intensity equal to a constant times the average value of the waveform intensity squared, said constant having a value between 1.6 and 2.4.

VOL 1189 SEC 1 AG 6 1996 UMI

STATUTORY INVENTION REGISTRATIONS

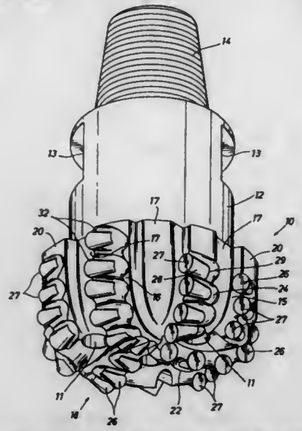
PUBLISHED AUGUST 6, 1996

A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157.

H1566
MATRIX DIAMOND DRAG BIT WITH PCD CYLINDRICAL CUTTERS

Michael G. Azar, Houston, Tex., assignor to Smith International, Inc., Houston, Tex.

Filed Nov. 9, 1993, Ser. No. 149,582
Int. Cl.[6] B21K *5/02*
U.S. Cl. 76—108.2 **10 Claims**



1. A process of forming a matrix type diamond drag bit cutter head having a multiplicity of cylindricall.y shaped polycrystalline diamond inserts strategically positioned and metallurgically secured to a drag bit face comprising the steps of:

forming a female mold of heat resisting material,

milling a multiplicity of first cylindrically shaped insert channels in said mold, said channels being formed in a direction of rotation of said drag bit and at an angle to an earthen formation such that a negative rake angle is established with respect to a cutting face of said cylindrically shaped polycrystalline diamond insert,

milling a second non-parallel channel substantially axially aligned with and superimposed over said first channel but at a shallower angle and at a depth less than the depth of said first cylindrically shaped channel, said second non-parallel channel being milled by a milling cutter slightly larger than the milling cutter used to form said first cylindrically shaped insert channels, said second, slightly larger channel provides a relatively small pocket surrounding said first channel thus providing a matrix filled fillet type support for said cylindrically shaped insert, said fillet support secures said insert without insert penetration limitations,

securing a heat resistant cylindrically shaped stud in each of said first cylindrically shaped insert channels,

inserting said matrix material in powder form in said female mold,

heating said matrix material in said mold in a furnace thereby forming said cutter head,

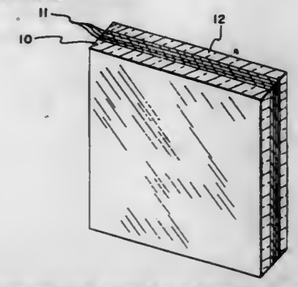
removing said heat resistant studs from said first cylindrically shaped insert channels; and

bonding metallurgically, said cylindrically shaped polycrystalline diamond inserts into each of said first insert channels, said inserts having additional support provided by the relatively small matrix filled second channel at a different angle and a lesser depth surrounding said insert.

H1567
TRANSPARENT CERAMIC ARMOR

Gordon R. Parsons, Everett, and Fred E. Mooney, Harvard, both of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 7, 1967, Ser. No. 667,624
Int. Cl.[6] F41H *5/26*
U.S. Cl. 89—36.02 **5 Claims**



1. A transparent light weight armor affording complete ballistic protection against small arms ammunition up to and including caliber .30 AP M2 projectiles comprising, a light weight composite having a hard shatterable transparent ceramic face plate containing by weight substantially 71.5

aluminum oxide and 28.5

magnesium oxide with a high elastic modulus and a low density, a transparent intermediate laminated layer of polysulfone sheets hot pressed to form a tough resilient unitary plate of low density and of lower elastic modulus than the face plate, a back-up layer of even greater toughness and resiliency than intermediate layer being a single sheet of polycarbonate of low density and even lower elastic modulus than said intermediate layer, the several layers bonded by heat and pressure to each other with a transparent adhesive so constructed and arranged to form a low density composite with the elastic modulus of the several layers decreasing from front to back and the resiliency increasing in the same direction.

H1568
ACOUSTIC SEPARATION OF LIQUID HYDROCARBONS FROM WASTEWATER

Pin Y. Huang, Bellarie, and Yuh-Hwang Tsao, Houston, both of Tex., assignors to Exxon Production Research Company, Houston, Tex.

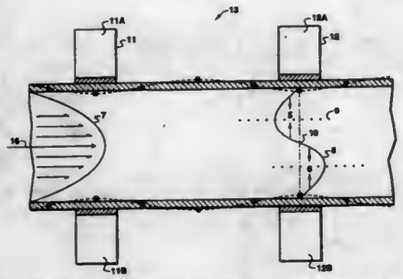
Filed May 26, 1994, Ser. No. 249,823
Int. Cl.[6] C02E *1/48*
U.S. Cl. 210—748 **10 Claims**

1. A process for separating liquid hydrocarbons from wastewater; said process comprising the steps of:

introducing a continuous flow of said wastewater into a vessel sized to accommodate a large volume of wastewater; said vessel further having at least two groups of acoustic transducers attached thereto, wherein each of said acoustic transducer groups comprises two transducers attached to said vessel at positions opposite each other in the radial direction of said vessel; and wherein each of said transducer groups are positioned axially along said vessel;

applying acoustic energy to said wastewater within said vessel at an intensity below cavitation level and sufficient to induce at least one standing wave within said wastewater;

allowing a portion of said liquid hydrocarbons to coalesce within said vessel; and



separating at least a portion of said resulting coalesced hydrocarbons from said wastewater.

H1569

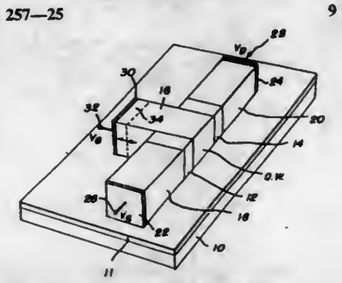
Patent Not Issued For This Number

H1570

VARIABLE LATERAL QUANTUM CONFINEMENT TRANSISTOR

Robert A. Lux, Toms River, and James F. Harvey, Tinton Falls, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 31, 1993, Ser. No. 44,783
Int. Cl.[6] H01L *29/06*
U.S. Cl. 257—25 **9 Claims**



1. A quantum interference device, comprising:

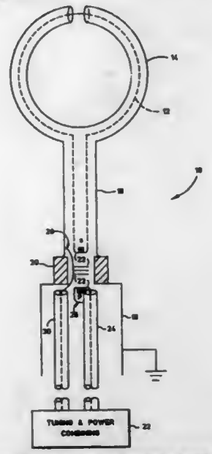
a semiconductor quantum waveguide structure comprising a primary current transmission path disposed between source and drain electrodes; a resonance region disposed between the source and drain electrodes and in the primary current transmission path, wherein the resonance region includes a quantum well and tunneling barrier regions disposed on opposite sides of the quantum well, wherein the resonance region is disposed within the primary current transmission path so as to form a quantum tunneling resonator; and a current control electrode located on said quantum waveguide structure remote from said primary current transmission path, said control electrode comprising a gate electrode, wherein a bias voltage is applied to the gate electrode which causes a change in dimensions of said resonance region and thereby changes in the current flow between said current carrying electrodes occur as a result of a change in the resonance tunneling and wherein said source, drain, quantum well, and barrier regions are smaller in width than the coherence length of the electron wave function.

H1571

DUAL-FEED, DUAL-MODE ANTENNA FOR MONO-DIRECTIONAL PATTERN

Peder M. Hansen, 4021 Caminito Dehesa, San Diego, Calif. 92107, and James H. Schukantz, 7210 Astoria St., San Diego, Calif. 92111

Filed Jun. 29, 1994, Ser. No. 267,995
Int. Cl.[6] H01Q *7/04;21/00*
U.S. Cl. 343—728 **16 Claims**



1. A transmitting and receiving antenna apparatus comprising:

a loop antenna;

a monopole antenna including a ground isolated tubular mast and a tubular loop shield electrically coupled to said mast, said mast and shield surrounding said loop antenna except at a gap in said shield opposite said mast;

a loop antenna feed;

an isolation transformer providing electrical coupling between said loop antenna and said loop antenna feed; and

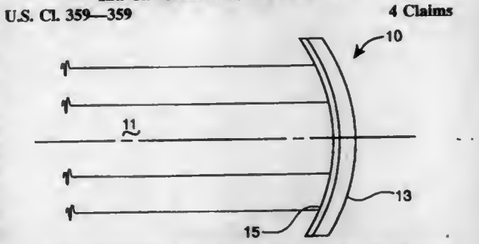
a monopole antenna feed electrically coupled to said monopole antenna.

H1572

WAVELENGTH STABILIZING LASER MIRROR

Patrick J. Hood, Beavercreek, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 3, 1995, Ser. No. 367,633
Int. Cl.[6] G02B *5/08;5/20;* **F21V** *9/00*
U.S. Cl. 359—359 **4 Claims**



1. A high performance wavelength stabilizing laser mirror/output coupler device for stabilizing a laser cavity within a narrow bandwidth, which comprises:

(a) a substrate of selected optical material;

(b) a coating of optical material deposited to a preselected thickness on said substrate; and

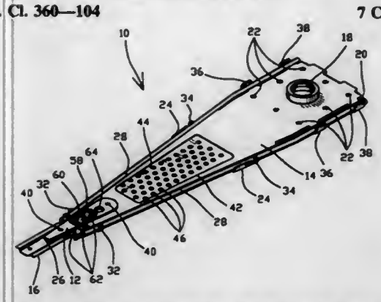
(c) wherein said coating has a refractive index profile over said thickness thereof which is selectively continuously modulated between preselected high and low values to define a preselected narrow reflectance spectrum for said coating.

H1573

REDUCED MASS/INERTIA SUSPENSION

Richard A. Budde, 19000 Stratford Rd. Apt. #304, Minnetonka, Minn. 55345

Filed Jul. 1, 1993, Ser. No. 85,767
Int. Cl.[6] G11B *5/48*
U.S. Cl. 360—104 **7 Claims**



6. In a disk drive for positioning transducer heads at selected locations on respective surfaces of axially mounted rotatable disk media, a head suspension for attachment to a rigid actuator arm of said disk drive, said head suspension comprising, in combination:

(a) a load beam element joined to a proximal end of the arm; and

(b) a gimballing flexure portion at a distal end of the load beam element;

the improvement comprising that the flexure portion, proximal of flexure arms, has a first thickness and is provided with zones of a second thickness relatively less than the first thickness and a conjoined grille structure of a third thickness relatively greater than the second thickness and relatively less than the first thickness, the grille structure at least partially surrounding at least some of said zones.

H1574

EVACUATED FOAM INSULATION PANEL CONTAINING A GETTER MATERIAL

Gregg A Motter, and James E. Kosinski, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 7, 1996, Ser. No. 597,658
Int. Cl.[6] B32B *1/04;3/02*
U.S. Cl. 428—69 **7 Claims**

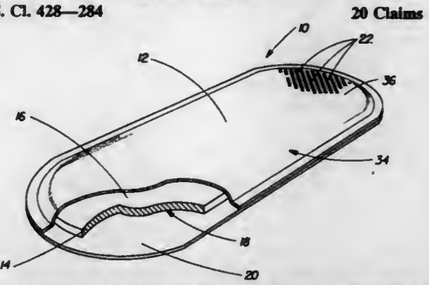
1. An evacuated polymer foam insulation panel, ıe panel comprising a corestock of an extruded, microcellular, open-cell foam and a receptacle capable of enclosing the corestock and being hermetically-sealed, the corestock being situated within the receptacle, the interior of the receptacle and the corestock being evacuated to a subatmospheric pressure, the foam comprising an alkenyl aromatic polymer material comprising greater than 50 percent by weight alkenyl aromatic monomeric units, the foam having an open cell content of 70 percent or more, the foam having an average cell size of about 70 micrometers or less, the interior of the receptacle having a getter material.

H1575

APERTURED HYDROPHILIC POLYMER FILM TOPSHEET WITH IMPROVED ABSORBENCY AND COMFORT PROPERTIES

Thomas H. Daugherty, and Barbara J. H. Daugherty, both of The Procter & Gamble Company, Winton Hill Technical Center, 6100 Center Hill Rd., Cincinnati, Ohio 45224

Filed Sep. 19, 1994, Ser. No. 308,776
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—284 **20 Claims**



1. A topsheet for an absorbent article, said topsheet comprising a three-dimensional hydrophilic polymer film having a plurality of openings for fluid passage, said openings being tapered capillaries each having a base in a surface plane of said topsheet and an apex remote from said surface plane, said capillaries having an angle of taper such that said tapered capillaries are of decreasing cross-section in the direction from said capillary base to said capillary apex, said film having inherent and permanent hydrophilic properties whereby said film has hydrophilic properties without the necessity of a surface active agent.

H1576

SOLID POLYMER ELECTROLYTE HAVING AN INCREASED CONDUCTIVITY AND SOLID STATE CELL INCLUDING THE ELECTROLYTE

Charles W. Walker, Jr., Neptune; Edward J. Plichta, Howell, and Wishvender K. Behl, Ocean, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 7, 1994, Ser. No. 315,213
Int. Cl.[6] H01M *6/16*
U.S. Cl. 429—192 **6 Claims**

1. A solid polymer electrolyte for use in an electrochemical cell, said polymer electrolyte including a solution of at least one lithium salt in at least one polymer host and wherein said solid polymer electrolyte also includes a solid solution of lithium germanium oxide and lithium vanadium oxide having the general formula $Li_{3+x}Ge_xV_{1-x}O_4$ where x has a value between 0.2 and 0.8.

H1577

TONER AND DEVELOPER COMPOSITIONS WITH HIGH SURFACE ADDITIVE LOADINGS

Cheryl A. Hanzlik, 316 Loud St., Fairport, N.Y. 14450; Charles A. Radulski, 502 Tanner La., Macedon, N.Y. 14502, and Cynthia H. Barg, 80 Presque St., Rochester, N.Y. 14609

Filed May 26, 1995, Ser. No. 449,130
Int. Cl.[6] G03G *9/08*
U.S. Cl. 430—120 **33 Claims**

1. An imaging process which comprises the formation of an image on an imaging member, development of the image with a toner comprised of resin, pigment, and surface additives, and wherein the toner surface area coverage is from about 30 to about 80 percent; transferring the image developed to a substrate; and optionally fixing the image thereto.

H1578
SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Masaaki Taguchi, c/o Konica Corporation 1 Sakura-machi, Hino-shi, Tokyo, Japan

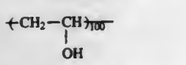
Filed Dec. 8, 1994, Ser. No. 351,753
Claims priority, application Japan, Dec. 21, 1993, 5-322481
Int. Cl.[6] G03C *1/76*
U.S. Cl. 430—523 **1 Claim**

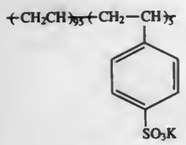
1. A silver halide photographic light-sensitive material comprising a support having thereon

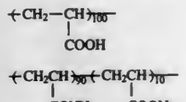
a silver halide emulsion layer, and optionally a hydrophilic colloid layer, at least one of said layers containing a water-soluble polymer, and

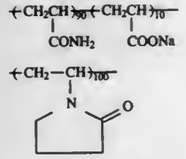
an electric conductive layer being provided between said support and said silver halide emulsion layer and comprising a binder and fine particles of an electric conductive crystalline metal oxide selected from the group consisting of ZnO, TiO_2, SnO_2, Al_2O_3, In_2O_3, SiO_2, MgO, BaO, MoO_3, V_2O_5 and a mixture thereof, each of which has a volumetric resistivity of not higher than 10^7 Ωcm; and

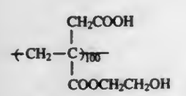
wherein said water-soluble polymer is selected from the group consisting of

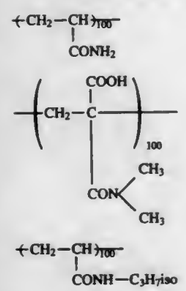

(8,000) I-1


(15,000) I-2


(4,800) I-3


(9,000) I-4


(3,100) I-5

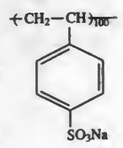

(11,000) I-6

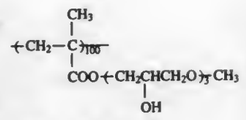

(3,000) I-7

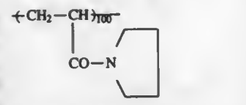

(8,000) I-8

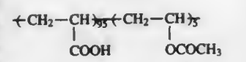
(6,000) I-9

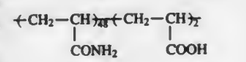
-continued

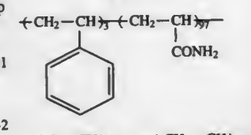

(7,800) I-10

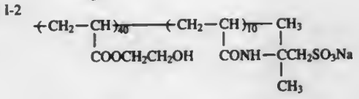

(10,000) I-11

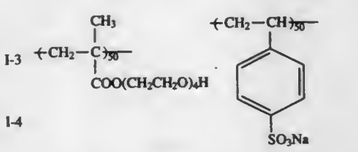

(9,500) I-12

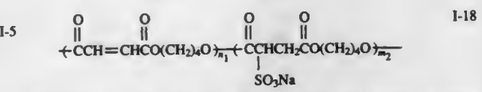

(9,000) I-13


(12,000) I-14

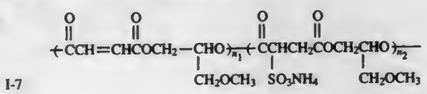

(5,300) I-15


(8,000) I-16


(10,500) I-17

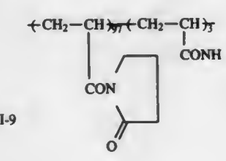

I-18

Wherein, n_1:n_2=50 mol %: 50 mol %, and the number average molecular weight (Mn)=about 10,000,

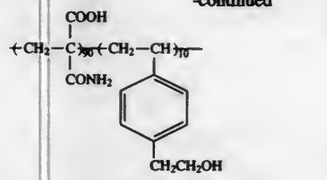

I-19

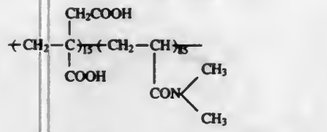
Wherein, n_1:n_2=75 mol %: 25 mol %, and Mn=about 20,000,

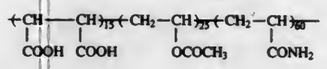
I-20


(8,000)

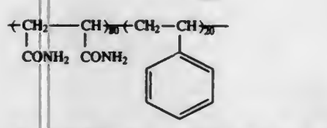
-continued


(11,000) I-21


(9,000) I-22


(11,500) I-23

and


(8,500) I-24

wherein in the above, the values written in parentheses are number average molecular weight.

H1579
ODOR-CONTROLLING COMPOSITIONS AND ARTICLES

Diane L. Furio, 11511 Reed Hartman Hwy., Cincinnati, Ohio 45241

Continuation of Ser. No. 28,646, Mar. 4, 1993, which is a continuation of Ser. No. 914,486, Jul. 15, 1992, abandoned, which is a continuation of Ser. No. 714,111, Jun. 11, 1991, abandoned, which is a continuation-in-part of Ser. No. 478,802, Feb. 12, 1990, abandoned. This application Nov. 23, 1993, Ser. No. 156,512
Int. Cl.[6] B01J *20/20*
U.S. Cl. 502—402 **4 Claims**

1. A sanitary napkin or pantiliner, comprising a fluid-absorbing pad, said pad containing one or more water-wettable fluid-absorbing materials and at least about 0.2 g. of a synthetic zeolite, said zeolite being characterized by an SiO_2/AlO_2 ratio from 2 to 7 , said zeolite being in the protonic, sodium, potassium ammonium or alkylammonium form.

H1580
ASPHALT COMPOSITION CONTAINING HIGHLY COUPLED RADIAL POLYMERS

Robert Q. Kluttz, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 8, 1994, Ser. No. 336,025
Int. Cl.[6] C08K *5/07*
U.S. Cl. 524—58 **7 Claims**

1. A bituminous composition comprising a compatible bituminous component and a completely non-tapered radial block copolymer of a conjugated diolefin and a vinyl aromatic hydrocarbon wherein the block copolymer has from 3 to 6 arms, a molecular weight of from 150,000 to 400,000, a coupling efficiency of at least 95 percent, and at least 98.5% of the vinyl aromatic hydrocarbon is contained in the vinyl aromatic hydrocarbon blocks.

H1581
PROCESS FOR THE REDUCTION OF DIENE POLYMER HOT MELT ADHESIVE COLOR (II)

Jeffrey G. Southwick, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 5, 1993, Ser. No. 148,742
Int. Cl.[6] C08J *3/20;* **C08K** *5/18*
U.S. Cl. 524—258 **8 Claims**

1. A method of reducing the color of a hot melt adhesive formulation comprising a coupled polymer of a conjugated diene which comprises adding to the formulation an amount of 4,4'-bis(alpha,alpha-dimethylbenzyl)diphenylamine sufficient to reduce color formation.

H1582
PROCESS FOR PREPARATION OF CHLORINATED AND CHLOROSULFONATED OLEFIN POLYMERS HAVING LOW LEVELS OF RESIDUAL MONOFLUOROBENZENE REACTION SOLVENT AND ITS CHLORINATED BY-PRODUCTS

Christopher J. Bish, Chancy, Switzerland; Edward G. Brugel, Wilmington, Del.; Royce E. Ennis, Silsbee, and Jerry W. Soape, Beaumont, both of Tex., assignors to E. I. Du pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 85,527, Jun. 30, 1993, abandoned. This application Jun. 15, 1994, Ser. No. 260,123
Int. Cl.[6] C08L *23/28;23/34*
U.S. Cl. 525—344 **17 Claims**

1. A process for preparation of chlorinated olefin polymers having low residual solvent content which comprises

(a) forming a solution or .suspension of an olefin polymer in a solvent consisting essentially of monofluorobenzene having a water content of less than 50 ppm, by bringing together the olefin polymer, a free radical catalyst, the monofluorobenzene, and a chlorinating agent selected from the group consisting of chlorine, sulfuryl chloride, a mixture of chlorine and sulfur dioxide, and mixtures thereof, the water content of the monofluorobenzene being reduced to less than 50 ppm i) prior to introduction to the reactor or ii) in situ, with the proviso that the chlorinating agent is introduced simultaneously with the addition of the free radical catalyst or following addition of the free radical catalyst;

(b) chlorinating the olefin polymer to a level of up to 70 percent chlorine by weight while maintaining a level of free radical catalyst sufficient to suppress chlorination of the monofluorobenzene; and

(c) separating the chlorinated olefin polymer and solvent, one from the other, substantially in the absence of oxygen, by means of a series of two or more vented closed-loop extruders, the first extruder having at least twice the cross sectional area of the second;

thereby producing a non-discolored chlorinated olefin polymer having a total residual level of combined monofluorobenzene and chlorinated by-products of monofluorobenzene of less than 0.5 percent by weight.

H1583
ELASTOMERIC POLYBUTYLENE POLYMER

Charles C. Hwo, Sugar Land, and Dale J. Wilpers, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 1, 1993, Ser. No. 70,876
Int. Cl.[6] C08F *10/08*
U.S. Cl. 526—348.6 **6 Claims**

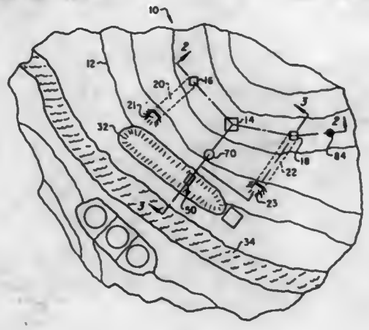
1. A polymer composition consisting essentially of elastomeric polybutylene-1 (ELPB) wherein said elastomeric polybutene-1 has and exhibits syndiotacticity of greater than ten percent.

H1584

MINE TAILINGS REPLACEMENT

Terry J. Moore, and Winton G. Aubert, both of Plano, Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Aug. 22, 1995, Ser. No. 518,072
Int. Cl.[6] B09B *1/00*
U.S. Cl. 588—250 9 Claims



1. A method for disposing of mine tailings and similar materials comprising the steps of:

forming a slurry of said mine tailings;

transporting said slurry to an underground mineworks; and

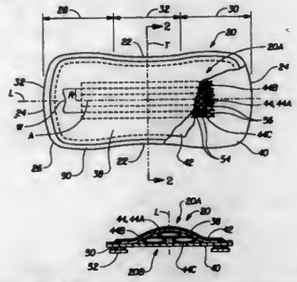
depositing said slurry in said mineworks.

H1585

ABSORBENT ARTICLE HAVING A BRAIDED WICKING STRUCTURE

Nicholas A. Ahr, 6100 Center Hill Rd., Cincinnati, Ohio 45224

Filed Jun. 30, 1994, Ser. No. 268,894
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—378 1 Claim



1. A disposable absorbent article having a longitudinal centerline, two longitudinal side edges, and two transverse end edges, said absorbent article comprising:

a liquid pervious topsheet;

a liquid impervious backsheet joined to said topsheet;

an absorbent core positioned between said topsheet and backsheet; and

a braided wicking structure positioned between said topsheet and said backsheet, said braided wicking structure having a pair of ends and being comprised of strands comprised of a twisted tow, said tow comprising a plurality of substantially non-absorbent fibers, wherein said fibers have, in cross section, a substantially regular geometric shape and said ends of said braided wicking structure are in contact with said absorbent core.

REISSUES

AUGUST 6, 1996

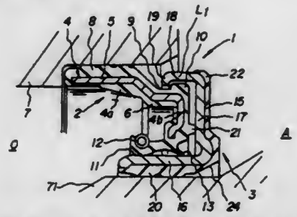
Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,309

SEALING DEVICE

Noboru Matsushima, and Noriyuki Wada, both of Fukushima, Japan, assignors to NOK Corporation, Tokyo, Japan

Original No. 4,981,303, dated Jan. 1, 1991, Ser. No. 425,900, Oct. 24, 1989. Continuation of Ser. No. 66,936, May 25, 1993, abandoned, which is a continuation of Ser. No. 855,058, Mar. 19, 1992, abandoned. Application for reissue Jun. 21, 1994, Ser. No. 263,403
Claims priority, application Japan, Oct. 25, 1988, 63-139031 U; Dec. 23, 1988, 63-166542 U
Int. Cl.[6] F16J *15/34;15/32*
U.S. Cl. 277—37 5 Claims



1. A sealing device for sealing between concentric inner and outer members which are relatively rotatable with respect to one another, the sealing device comprising:

a seal member to be mounted onto the outer member, said seal member having a side facing outward towards the atmosphere, a seal lip for sealing a liquid in slidable contact with a sleeve member, an annular projected portion having a rubber-like elastic member on the outer periphery of said seal member, and an end portion on the atmosphere side of said seal member; and

a sleeve member to be mounted onto the inner member, said sleeve member having a flange portion protruding so as to face the atmosphere side of said seal member, and an outer cylindrical portion over-lapping with the projected portion of said seal member for covering an opening defined between the flange portion of said sleeve member and the end portion of said seal member,

the outer cylindrical portion of said sleeve member having a [lip] *tip* with a bend portion of axially over-lapping and inter-engaging with the projected portion of said seal member.

Re. 35,310

COLOR CORRECTED PROJECTION LENS

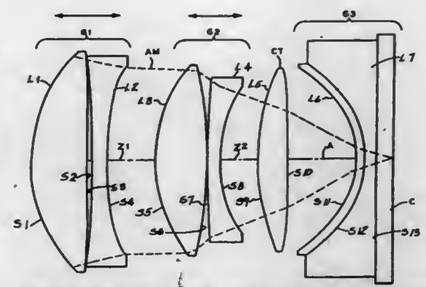
Jacob Moskovich, Cincinnati, Ohio, assignor to U.S. Precision Lens Incorporated, Cincinnati, Ohio

Original No. 4,963,007, dated Oct. 16, 1990, Ser. No. 403,139, Sep. 5, 1989. Application for reissue Oct. 15, 1992, Ser. No. 961,510
Int. Cl.[6] G02B *3/02;13/18*
U.S. Cl. 359—649 45 Claims

41. A projection lens for a cathode ray tube comprising from the long conjugate side:

(a) a first lens unit of weak power comprising first and second elements, the first element having a lower dispersion than the second element and the second element having at least one aspheric surface, said first and second elements having positive and negative powers, respectively, at least in the vicinity of their clear apertures which serve to correct the lens' axial chromatic aberration;

(b) a second lens unit providing most of the positive power of the lens comprising third and fourth elements, the third element having a lower dispersion than the fourth element and the fourth element having at least one aspheric surface, said third and fourth elements having positive and negative powers, respectively, at least in the vicinity of their clear apertures which serve to correct the lens' axial chromatic aberration; and



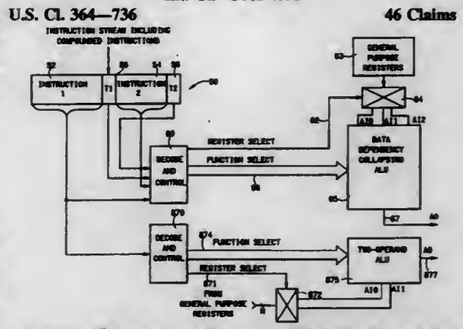
(c) a third lens unit of negative power adapted to be closely coupled to a cathode ray tube.

Re. 35,311

DATA DEPENDENCY COLLAPSING HARDWARE APPARATUS

Stamatis Vassiliadis, Vestal; James E. Phillips, Binghamton, and Bartholomew Blaner, Newark Valley, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Original No. 5,051,940, dated Sep. 24, 1991, Ser. No. 504,910, Apr. 4, 1990. Continuation of Ser. No. 931,624, Aug. 18, 1992, abandoned. Application for reissue Aug. 18, 1994, Ser. No. 292,606
Int. Cl.[6] G06F *7/38*
U.S. Cl. 364—736 46 Claims



1. In a computer architected for serial execution of a sequence of single scalar instructions in a succession of execution cycles, an apparatus for supporting parallel execution of a plurality of scalar instructions in a single instruction cycle, the apptratus comprising:

an instruction means for receiving a plurality of scalar instructions, a first of the scalar instructions producing a *calculation* result used as an operand by a second of the scalar instructions;

an operand means for substantially simultaneously providing a plurality of operands, at least two of said operands being used by the first and second scalar instructions;

a control means connected to the instruction means for generating control signals to indicate operations which execute the plurality of scalar instructions; and

an execution means connected to the operand means and to the control means and responsive to the control signals and to a plurality of operands including the two operands for producing, in a single execution cycle, a single result corresponding to the performance of said operations on said plurality of operands.

Re. 35,312

CHRISTOUDIAS ENDOSPONGESTICK PROBE

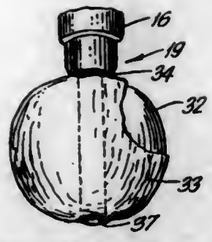
George C. Christoudias, New Milford, N.J., assignor to Surgical Inventions & Innovations, Inc., New Milford, N.J.

Original No. 5,188,630, dated Feb. 23, 1993, Ser. No. 674,470, Mar. 25, 1991. Application for reissue Oct. 21, 1994, Ser. No. 327,404

Int. Cl.[6] A61B *17/00*

U.S. Cl. 600—207 **14 Claims**

12. A spongestick for manipulating, and retracting tissues and/or organs in endoscopic procedures within a body cavity used inconjunction with endoscopic instruments comprising:



a rigid stem comprising an elongated cylinder having an axial aperture extending therethrough;

a retractable cylindrical sheath slidably mounted about the cylindrical stem for insertion into a body cavity;

a central tube having a lower portion and an upper portion for insertion of endoscopic instruments therethrough mounted within the stem aperture and extendable outwardly therefrom;

a balloon and a gauze member surrounding the balloon mounted at the lower portion of the central tube; and,

means for inflating the balloon to provide means to, manipulate, and retract tissues within the body cavity.

PLANT PATENTS

GRANTED AUGUST 6, 1996

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,618

IMPATIENS PLANT NAMED 'SPARKLER SALMON'

Ellen F. Leue, West Chicago, Ill., assignor to Geo. J. Ball, Inc., West Chicago, Ill.

Filed May 19, 1995, Ser. No. 445,379

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—87.6 **1 Claim**

1. A new and distinct cultivar of *Impatiens wallerana* plant named 'Sparkler Salmon' substantially as herein shown and described, which:

(a) exhibits in abundance attractive fully double bicolored blooms that are salmon with irregular streaks of near white,
(b) is early blooming,
(c) forms medium green foliage,
(d) exhibits a good basal-branching character, and
(e) exhibits a medium upright mounded growth habit.

9,619

GERANIUM PLANT NAMED 'NEILA'

Gerd Endisch, Geranienweg, Hagenbach, D-76767; Ursula Endisch-Burmeister, Bad Kreuznach, both of, Germany, and Wolf Endisch, Teneriffa, Spain, assignors to Gerd Endisch, Hagenbach, Germany

Filed Feb. 6, 1995, Ser. No. 384,143

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—87.12 **1 Claim**

1. A new and distinct cultivar of geranium plant known as 'Neila' as described and illustrated and particularly characterized by a rose colored flower, a semi-double flower form, dark foliage, early flower response, a compact habit and good heat tolerance.

9,620

GERANIUM PLANT NAMED 'GUIVIN'

Jacques Guillou; Bernard Guillou, and Maurice Guillou, all of Saint-Malo, France, assignors to Ets, Guillon Freres, Saint-Malo, France

Filed Feb. 1, 1995, Ser. No. 384,523

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—87.12 **1 Claim**

1. A new and distinct cultivar of geranium plant named Guivin, as illustrated and described.

9,621

CALATHEA PLANT NAMED ECLIPSE

Ann E. Lamb, Sebring, Fla., assignor to Twyford International Inc., Santa Paula, Calif.

Filed May 3, 1995, Ser. No. 434,367

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct cultivar of Calathea plant named 'Eclipse', as illustrated and described.

VOL 1189 ISS 1 AUG 6 1996 UMI

VOI
1189
SS
1
AG
6
1996
UMI

PATENTS

GRANTED August 6, 1996

ERRATA

For CLASS	See PATENT NO.
062–502	5,542,271
071–389	5,542,282
071–466	5,542,283
091–375	5,542,342
220–256	5,542,575
220–328	5,542,576
220–759	5,542,577
229–116	5,542,597
229–242	5,542,598
229–403	5,542,599
473–363	5,542,663
473–305	5,542,664
473–313	5,542,665
473–314	5,542,666
463–059	5,542,668
463–013	5,542,669
220–714	5,542,670
463–037	5,542,672
296–037	5,542,727
296–039	5,542,728
075–732	5,542,957
510–515	5,543,066
106–287	5,543,067
510–151	5,543,072
510–417	5,543,073
510–122	5,543,074
508–194	5,543,081
510–118	5,543,085
428–623	5,543,130
435–219	5,543,264
436–057	5,543,314

VOL 1189 ISS 1 AUG 6 1996 UMI

ERRATA–CONTINUED

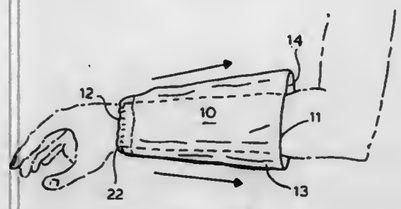
For CLASS	See PATENT NO.
436–161	5,543,315
504–271	5,543,416
424–061	5,543,436
514–590	5,543,573
330–282	5,543,759
330–298	5,543,760
331–044	5,543,761
341–022	5,543,786
341–020	5,543,787
342–357	5,543,813
395–800	5,544,092
378–207	5,544,238
382–236	5,544,239
382–270	5,544,240
381–187	5,544,253
375–261	5,544,328

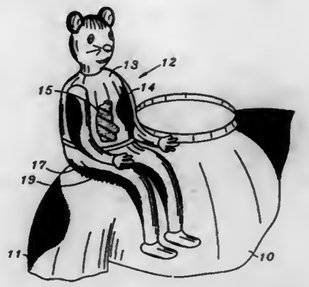
PATENTS

GRANTED AUGUST 6, 1996

GENERAL AND MECHANICAL

5,542,121
DISPENSABLE, DISPOSABLE REVERSIBLE FOREARM PROTECTOR
Pierre Lahaussois, Darien, Conn., and Margaret T. Strohl, New Hope, Pa., assignors to Dale Strohl, Ridgefield, Conn.
Filed Jun. 30, 1994, Ser. No. 269,149
Int. Cl.[6] A41D *13/08;27/12*
U.S. Cl. 2—59 **1 Claim**





1. A dispensable, disposable and reversible forearm protector, which comprises

(a) an opposed pair of first sheet-like elements of trapezoidal configuration having parallel end edges and convergent side edges whereby one of said end edges is of smaller dimensions than the other,

(b) said first sheet-like elements being formed of liquid impervious thermoplastic material and being sealed together along narrow margins of said convergent side edges and being separable in all areas except said narrow margins,

(c) a pair of second sheet-like elements of identical trapezoidal configuration to said first sheet-like elements and bonded to outer surfaces of said first sheet-like elements in directly overlying relation thereto,

(d) said second sheet-like elements being formed of an absorbent paper material,

(e) said bonded sheet-like elements forming a tapered tubular structure, open at both ends, for receiving a hand, wrist and forearm of a user, with the hand exposed, and having respective smaller and larger openings at opposite ends,

(f) a marginal portion of said tubular structure at the end with said smaller opening being positioned on said wrist with the end edge of smaller dimensions facing away from the hand,

(g) an elastic means urging said marginal portion snugly against said wrist at a distance from said end edge of smaller dimensions, and

(h) portions of said tubular structure extending from said marginal portion to the end with said larger opening being folded over at said elastic means and extending along the wrist and forearm of the wearer, whereby an exterior of said protector comprises said sheets of thermoplastic material, and an interior of said protector comprises said sheets of absorbent material.

5,542,122
ORNAMENTAL FEATURE WITH APPAREL OR CARRYING ARTICLE
Jack Moldovan, 7368 Melrose Ave., Los Angeles, Calif. 90046
Filed Jul. 21, 1995, Ser. No. 505,105
Int. Cl.[6] A41D *1/00*
U.S. Cl. 2—69 **21 Claims**

1. An apparel article comprising:

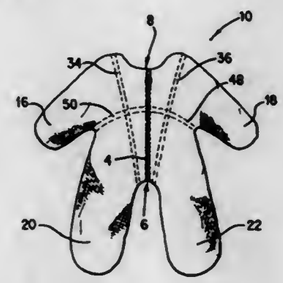
a surface to cover at least part of the human body, the surface being formed, at least in part, of a first material,

a three-dimensional ornamental feature having a surface of a second material, the ornamental feature being for affixation to part of the first material, the ornamental feature being raised relative to the surface of the first material thereby to provide the three-dimensional effect, the ornamental feature including an imprinted or embroidered material which is affixed to the first material, the feature being encased substantially totally by the second material,

pliable washable stuffing within the encasing second material such that the three-dimensional ornamental feature is pliable as the first material adopts a different position on the body, the washable characteristic permitting pliability after washing, and

the ornamental feature being affixed to the first surface material by means of stitching, the stitching being effected only partially about substantially the perimeter of the ornamental feature so that the feature can be raised from the first material where there is no perimeter stitching, the ornamental feature being permanently attached to the first material through the stitching, and the surface of the first material forming an unbroken base underneath the ornamental feature.

5,542,123
CHILDREN'S GARMENT WITH CARRYING MEMBER
Don DiPietro, 5656 Tuxedo Ter., Los Angeles, Calif. 90068
Filed May 27, 1994, Ser. No. 250,269
Int. Cl.[6] A41D *1/00*
U.S. Cl. 2—80 **16 Claims**



1. A garment for a child, comprising:

a torso portion;

two sleeve portions;

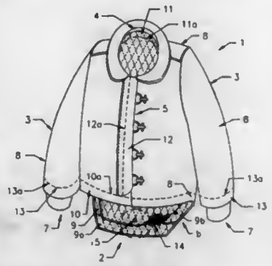
two leg portions;

two pads located on said torso portion; and

a handle secured to said two pads for permitting carrying of the child via said handle without injury to the child wherein said garment further includes a pattern of seams attached to said two pads for reinforcing the garment to support the child such that at least one of said seams passes around the crotch of the

child to permit carrying of the child via the garment in both prostrate and upright positions.

5,542,124
FIREFIGHTERS COAT HAVING A PARTIALLY REMOVABLE LINER
William L. Grilliot, and Mary I. Grilliot, both of Dayton, Ohio, assignors to Morning Pride, Dayton, Ohio
Continuation of Ser. No. 185,447, Jan. 24, 1994, abandoned, which is a continuation of Ser. No. 911,856, Jul. 10, 1992, abandoned. This application Jan. 13, 1995, Ser. No. 372,590
Int. Cl.[6] A41D *13/00*
U.S. Cl. 2—81 **7 Claims**



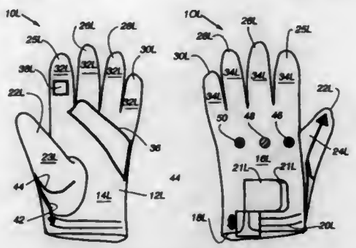
1. A firefighter's jacket, comprising:
a) an outer layer having a torso portion and arm portions, said torso portion having a terminal edge area at the periphery thereof and said arm portions each having a terminal edge area at the ends thereof;
b) an inner layer comprising a thermal insulative material and having a torso portion and arm portions, said torso portion of the inner layer having a major portion and a minor portion and said arm portions of the inner layer having a major portion and a minor portion;
c) means for permanently fixing; 1) said minor portion of said torso portion of the inner layer to the terminal edge area of the torso portion of the outer layer, and 2) said minor portions of said arm portions of the inner layer to the terminal edge areas of the arm portions of the outer layer; and
d) means for releasably securing: 1) the major portion of the torso portion of the inner layer to the minor portion of the torso portion of the inner layer, and 2) the major portions of the arm portions of the inner layer to the minor portions of the arm portions of the inner layer, said means for releasably securing allowing the major and minor portions to be repeatedly released and reattached from one another without destroying the structural integrity of the jacket.

5,542,125
GLOVES WITH INTERCHANGEABLE FINGER AND MITTEN CAPS
Richard J. Zuckerwar, Gloversville, N.Y., assignor to The Grandoe Corp., Gloversville, N.Y.
Filed Sep. 2, 1994, Ser. No. 300,042
Int. Cl.[6] A41D *13/10;19/01*
U.S. Cl. 2—158 **5 Claims**

1. A glove having interchangeable finger and mitten caps comprising:
a body portion, said body portion being configured to receive the thumb, palm and back of the hand of a wearer, a circumferential opening disposed in the body portion at the base of the wearers fingers, first attachment means disposed along the entire periphery of the circumferential opening;
a finger cap, said finger cap having individual pockets for each of the wearers fingers other than the thumb, a circumferential opening located at the base of the fingers configured to conform to the circumferential opening of the body portion and second attachment means disposed around the entire periphery of the circumferential opening for releasible engagement with the attachment means of the body;
a mitten cap, said mitten cap having a single pocket for the wearer's fingers other than the thumb, a circumferential opening located at the base of the single pocket configured to conform to the circumferential opening of the body portion and third attachment means disposed around the entire periphery of the circumferential opening for releasible engagement with the attachment means of the body;
said first, second and third attachment means permitting the alternative attachment of said body portion to one of said finger cap and said mitten cap; and
means, disposed proximal to the attachment means on at least one of said body portion, said finger cap and said mitten cap, for overlapping the corresponding attachment means to cover said attachment means.



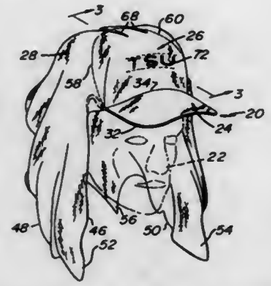
5,542,126
INSTRUCTIONAL HAND GLOVE
Daniel Harvanek, 10840 Park Range Rd., Littleton, Colo. 80127
Filed Nov. 8, 1994, Ser. No. 336,175
Int. Cl.[6] A41D *19/00*
U.S. Cl. 2—161.2 **18 Claims**



1. An instructional hand glove worn on a wearer's hand to instruct the wearer in proper hand placement of the hand of the wearer about a handle of an implement, said instructional hand glove comprising:
a central glove piece having a palm section positionable adjacent to the palm of the wearer's hand and a top face section positionable adjacent to the back of the wearer's hand;
a thumb pocket extending substantially radially beyond said central glove piece, said thumb pocket positionable about a thumb of the wearer's hand; and

curved markings formed upon said thumb pocket including an arrowed marking extending longitudinally along said thumb pocket and a transversely-extending arcuate marking intersecting the arrowed marking,
said curved markings for providing a visual indication to the wearer of the proper hand placement of the wearer's hand about the handle of the implement.

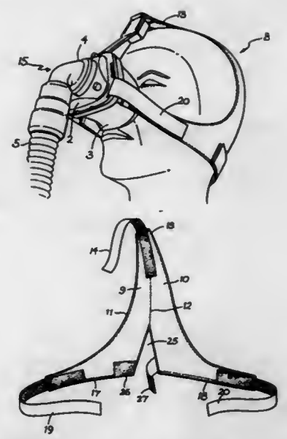
5,542,127
COMBINED BANDANA AND VISOR HEADWEAR
Matthew Bezanis, 3113 Fairfield St., Philadelphia, Pa. 19136
Filed Oct. 13, 1995, Ser. No. 542,609
Int. Cl.[6] A42B *1/06*
U.S. Cl. 2—172 **6 Claims**



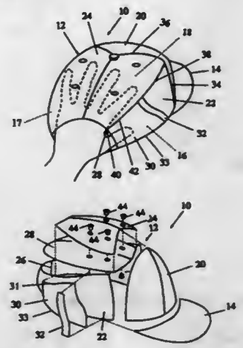
1. An article of headwear for disposition on the head of a person, said article comprising a visor brim, a crown, and a bandana cloth, said visor brim being in the form of a bill of a flexible, self-supporting material, said bill having a front edge and an arcuate rear edge, said bandana cloth comprising a triangular shaped flexible fabric having an outer surface, an inner surface, a front edge and a pair of angularly extending side edges, said front edge of said bandana cloth having a central portion, said front edge of said bandana cloth merging with each of said side edges in a pair of pointed ends, said side edges of said bandana cloth merging with each other in another pointed end, said arcuate rear edge of said bill being fixedly secured to said central portion of said front edge of said bandana cloth between said pair of pointed ends, said crown being a generally triangular shaped, slightly concave, member made of a self-supporting material and having a concave inner surface, a convex outer surface, an arcuate bottom edge and a pair of arcuate side edges, said crown being disposed under said bandana cloth with said inner surface of said bandana cloth engaging said convex surface of said crown, and said bottom edge of said crown being secured to said arcuate rear edge of said bill to form a self-supporting portion of said article of headwear arranged for disposition on the forehead of a person wearing the article of headwear so that said brim is located above the eyes of the person, whereupon the remaining portion of the bandana cloth can be disposed over the head with all the pointed ends thereof being releasably securable to one another by the formation of at least one knot thereat to secure the article of headwear in place.

5,542,128
HEADWEAR FOR SUPPORTING A BREATHING APPARATUS
Christiane Lomas, 23/30 Dutruc Street, Randwick NSW 2031, Australia
Filed Apr. 19, 1994, Ser. No. 229,917
Claims priority, application Australia, Apr. 20, 1993, PL8358
Int. Cl.[6] A42B *1/04*
U.S. Cl. 2—173 **12 Claims**

1. A hood of flexible material for use with a face mask, said hood being formed of two halves of substantially crescent shape having a concave edge and a convex edge, the convex edges of the respective halves being secured together to form an apex at one end providing a narrow front piece adapted to extend over the top of the head of a wearer and having a front edge extending towards the forehead of a wearer adjacent the nostrils, the convex and concave edges of each of said halves and said front edge merging into a longitudinally extending arm having vertical connection means whereby the hood is vertically connectable to the top of the face mask, said halves merging into a wider back piece having a bottom edge to encompass at least the rear of the head and the rear of the neck of a wearer, the hood being provided with transverse connection means whereby the hood is connectable to each side of the face mask.



5,542,129
CONVERTIBLE HAT AND CATCHING GLOVE
Douglas G. Munoz, 9 W. Belvidere St., St. Paul, Minn. 55107
Filed Jul. 8, 1993, Ser. No. 89,079
Int. Cl.[6] A42B *1/04*
U.S. Cl. 2—209.12 **10 Claims**



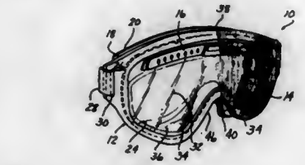
1. In a hat or cap having a concave crown formed by joined panels, the crown including sides and a top, the improvement comprising:
a finger panel disposed within the crown adjacent the top, the finger panel being connected to the crown to form a finger pocket;
at least one thumb panel disposed outside the crown adjacent one of the sides, the thumb panel being connected to the

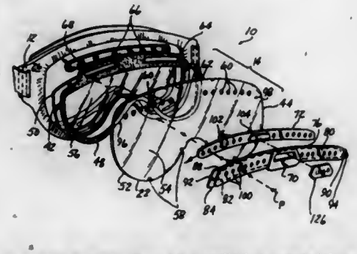
crown to form a thumb pocket, wherein the finger pocket and the thumb pocket form a glove.

5,542,130
PROTECTIVE GOGGLE AND LENS WITH ADJUSTABLE VENTILATION

Fred F. Grabos, Jr., and George V. Donders, both of Ketchum, Id., assignors to Smith Sport Optics, Inc., Ketchum, Id.

Continuation of Ser. No. 828,434, Jan. 30, 1992, Pat. No. 5,363,512. This application Oct. 28, 1994, Ser. No. 330,897
Int. Cl.[6] A61F *9/02*
U.S. Cl. 2—436 **20 Claims**





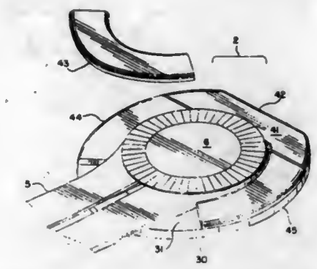
16. A goggle having adjustable ventilation, comprising:
a frame having an annular structure with a lens mounting section defining an interior space, a plurality of frame ventilation apertures formed in the annular structure to allow air-flow ventilation through the frame and into the interior space;
a lens mounted in said lens mounting section and having a plurality of lens ventilation apertures formed through the lens and located near a periphery of the lens to allow air-flow ventilation through the periphery of the lens and into the interior space;
a slidable shutter having a plurality of shutter ventilation apertures formed through the slidable shutter;
continuous adjustment means for slidably mounting the shutter adjacent the plurality of lens ventilation apertures to progressively superimpose the shutter and lens ventilation apertures in and out of alignment to thereby provide a continuous range of air-flow ventilation into the interior space through the lens and in supplement to the air-flow ventilation through the frame.

5,542,131
SECTIONAL TOILET SEAT

Robert F. Brantman, 1400 Waukegan Rd., Lake Forest, Ill. 60045

Filed Oct. 18, 1994, Ser. No. 324,788
Int. Cl.[6] A47K *13/00*
U.S. Cl. 4—239 **7 Claims**

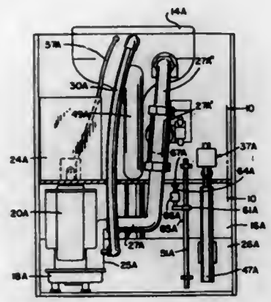
1. A toilet seat comprising:
a) a lower seat member including a front portion and a rear portion, wherein the lower seat member is substantially oval-shaped; and
b) an upper seat member including a first section, a second section, a third section, and a fourth section, the first, second, third and fourth sections being adjacently disposed to form a substantially contiguous seating surface, wherein the first section is fixedly attached to the rear portion of the lower seat member, the second section is removably disposed on the front portion of the lower seat member such that when the second section is removed less than a majority of a top surface of the lower seat member is exposed, the third and fourth sections are removably disposed on the front portion of the lower seat member, and the second, third and fourth sections cover substantially equal portions of the oval-shaped lower seat member.



5,542,132
PUMP OPERATED PLUMBING FIXTURE

Norman J. Jaeckels, and Randy O. Mesun, both of Sheboygan, Wis., assignors to Kohler Co., Kohler, Wis.

Division of Ser. No. 976,109, Nov. 13, 1992, Pat. No. 5,305,475. This application Feb. 4, 1994, Ser. No. 192,331
Int. Cl.[6] E03D *1/00*
U.S. Cl. 4—313 **1 Claim**

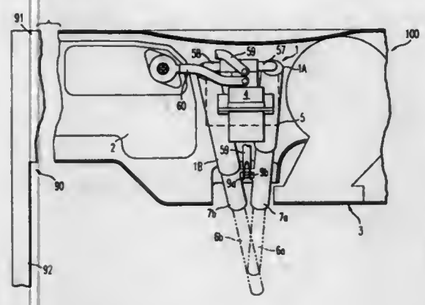


1. A toilet comprising:
a toilet bowl having an upper periphery defining a top;
a reservoir tank for storing a volume of flush water;
pump means including a pump outlet and a pump motor in fluid communication with the reservoir tank, the pump motor being positioned in the tank;
a conduit connected between the pump outlet and the toilet bowl;
control means selectively and operatively connected to the pump means to operate the pump means for a period of time to deliver a quantity of flush water to the pump outlet; and
water level sensing means positioned in the reservoir tank and operatively connected to the motor to sense a potential overflow condition in the tank and operate the motor upon contact of water with the sensing means.

5,542,133
SANITARY DEVICE

Tetsuo Makino, Okazaki; Hideki Furukawa, Toyota; Osamu Matsubara, Kariya; Atsushi Sawaki, Taketoyo-cho, and Shinji Kawai, Wakabashihigashi-machi, all of, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 30, 1994, Ser. No. 314,272
Claims priority, application Japan, Sep. 30, 1993, 5-245312
Int. Cl.[6] E03D *9/08*
U.S. Cl. 4—420.4 **1 Claim**



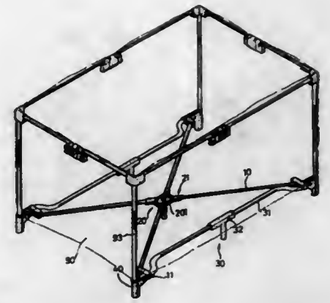
1. A sanitary device comprising:
a tank storing an amount of water;
a water pressure source;
a cylinder;
a nozzle pipe slidably fitted in the cylinder such that a base side chamber and a distal side chamber are defined in the cylinder, the base side chamber being separated from the distal side chamber by the nozzle pipe;
a return spring accommodated in the distal side chamber and urging the nozzle pipe toward the retracted position thereof; and
a control means serving for establishing either a first fluid communication between the tank and the base side chamber or a second fluid communication between the tank and the distal side chamber in such a manner that the first fluid communication brings the nozzle pipe into its operating position for ejecting the water while the water pressure is being supplied to the tank and the second fluid communication, together with the return spring, brings the nozzle pipe into is retracted position;
wherein the control means includes an electromagnetic valve disposed between the water pressure source and the tank, a changeover valve connecting the tank to either the base side chamber or the distal chamber, a CPU for controlling the electromagnetic valve and the changeover valve; and
wherein the changeover valve includes a rotary plate having a passageway being in fluid communication with the tank, and a stationary plate having a pair of passageways which are in fluid communication with the base side chamber of the cylinder and the distal side chamber of the cylinder, respectively, the rotary plate being set to bring fluid communication of the passage of the rotary plate, upon rotation thereof, with either of the pair of the passageways.

5,542,134
CONTROL DEVICE FOR FOLDING AND EXPANDING A BASE PORTION OF A PLAYPEN

Kun Wang, No. 51, Lane 31, Sec. 2, Changping Rd., Taichung, Taiwan

Filed Mar. 14, 1995, Ser. No. 403,668
Int. Cl.[6] A47D *7/00*
U.S. Cl. 5—99.1 **2 Claims**

1. A device for folding and expanding a base portion of a playpen, said playpen comprising four vertical stands and a base portion mounted between said four vertical stands, four foot portions each fixedly mounted on a bottom end of a corresponding one of said four vertical stands, four drive posts each having a first end which extends to a corresponding one of said four foot portions and having a bore vertically defined therethrough, each having a second end pivotally connected to said base portion, and a flexible casing enclosed around a peripheral portion defined by said four vertical stands and having an underside engaged with said base portion, said device comprising:
four block members each fixedly mounted on an upperside of said base portion and each pivotally engaged with the second end of a corresponding one of said four drive posts;
two transmission assemblies each mounted between two of said four drive posts and located opposite to each other, each of said two transmission assemblies comprising:
a bracket member mounted in a mediate portion of said transmission assembly; and
a pair of linking rods each having a first end pivotally engaged with a corresponding one of said foot portions and each having a second end pivotally engaged with said bracket member; and
four fastener members each mounted on the first end of a corresponding one of said two linking rods of each of said two transmission assemblies and each pivotally engaged with the first end of a corresponding one of said four drive posts, said four fastener members each having a recess laterally defined therein for receiving the first end of an associated linking rod and the first end of an associated drive post therein, and each having two aligning holes vertically defined therein and aligning with said bore of said corresponding drive post, found pivot axles each extending through said two aligning holes of an associated fastener member and said bore of an associated drive post such that the first end of each of said four drive posts is pivotally engaged with an associated fastener member at an associated pivot axle.

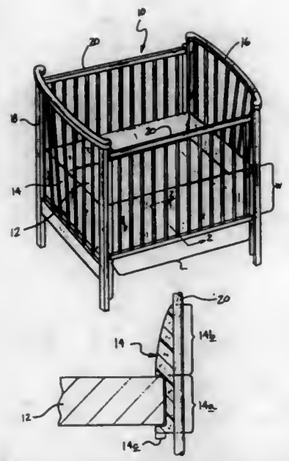


5,542,135
SELF–RETAINING BUMPER PAD

Aaron Ozrovitz, Southfield, and Rosario Badalamenti, Sterling Heights, both of Mich., assignors to Safe Surroundings, Inc., Southfield, Mich.

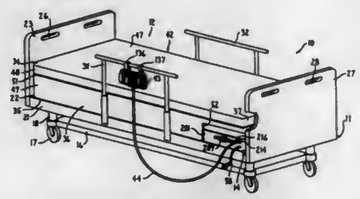
Filed May 15, 1995, Ser. No. 441,065
Int. Cl.[6] A47D *7/00*
U.S. Cl. 5—424 **10 Claims**

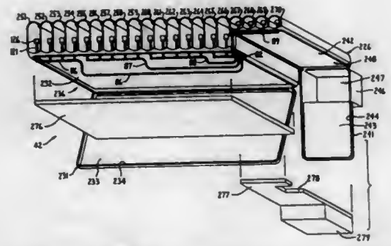
1. A self-retaining bumper pad for a bed, said pad comprising:
an elongated body of a soft, flexible material having a length dimension which is greater than a width dimension thereof; said body comprising:
a retention portion configured to fit between a side wall of a bed and an edge of a mattress disposed in said bed, said retention portion including a notch which extends along the length thereof and is configured to engage an edge of the mattress, and a bottom lip which is coextensive with at least a portion of the length of the notch; and



a shield portion which extends transversely from said retention portion, said shield portion being disposed so as to overlie a portion of said side wall above said mattress, when the retention portion is disposed between said mattress and side wall.

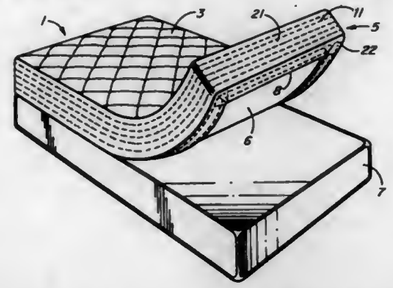
5,542,136
PORTABLE MATTRESS FOR TREATING DECUBITUS ULCERS
James G. Tappel, Hickory Corners, Mich., assignor to Stryker Corporation, Kalamazoo, Mich.
Filed Aug. 5, 1994, Ser. No. 286,755
Int. Cl.[6] A61G 7/04
U.S. Cl. 5—710 **20 Claims**





1. A portable patient support system comprising: a mattress unit having therein inflatable bladder means and having operational and collapsed states in which said bladder means is respectively inflated and deflated, wherein said mattress has an exterior surface which includes an upwardly facing top surface portion in said operational state, has at one end a foot section, has in said foot section a portion of said bladder means and has means defining in said foot section below said portion of said bladder means a recess which opens through said exterior surface of said mattress unit; a control unit having a size and shape permitting it to be removably received in its entirety within said recess; and means operatively coupling said control unit to said bladder means within said mattress unit to facilitate control by said control unit of a pressure within said bladder means.

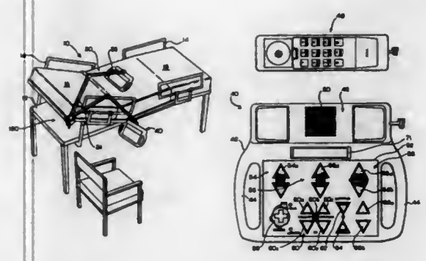
5,542,137
FRICTION FITTED CONTOUR SKIRT FOR MATTRESS PADS AND COVERS
Paul C. Byfield, Vancouver, Canada, assignor to Western Fibres Limited, Vancover, Canada
Filed Mar. 28, 1994, Ser. No. 219,500
Int. Cl.[6] A47C 31/00;21/02
U.S. Cl. 5—500 **5 Claims**



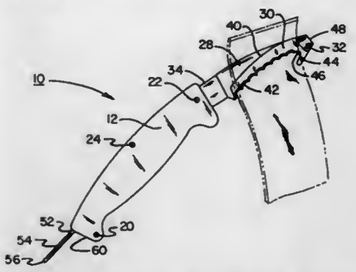
1. A mattress pad or cover for a mattress, said mattress having an upper surface and perpendicular sides, said mattress pad or cover comprising:
a) a top portion sized to cover said upper surface of said mattress, said top portion having a peripheral edge;
b) a continuous fabric skirt depending downwardly from said top portion, said fabric skirt having a lower edge defining an opening adapted for placement of said mattress pad or cover over said mattress, said fabric skirt having an inner surface;
c) a layer of washable polymeric foam attached to said inner surface of said fabric skirt by stitching, said stitching comprising spaced stitch lines generally parallel to said peripheral edge; and,
d) means for holding said washable polymeric foam against said perpendicular sides of said mattress when said mattress pad or cover is placed over said mattress.

5,542,138
BEDSIDE CONTROL UNIT FOR A HOSPITAL BED
Terry N. Williams, 4106 Wake Forest Rd. Suite 3, and George R. Parrish, 815-12 Marlowe Rd., both of Raleigh, N.C. 27609
Filed Feb. 6, 1995, Ser. No. 383,997
Int. Cl.[6] A47C 21/00; A61G 7/06
U.S. Cl. 5—658 **40 Claims**

15. A bedside control unit for a hospital bed that is operable from positions both within and without said bed comprising:
a) base member for attaching to a frame of said hospital bed and including rotatable member;
b) a support structure secured at one end to said rotatable member and movable between a first position and a second position;
c) a control module mounted to another end of said support structure and having one or more manually operable controls; and
d) a limit switch for disabling specified functions of said control module when said support structure is rotated to said second position.

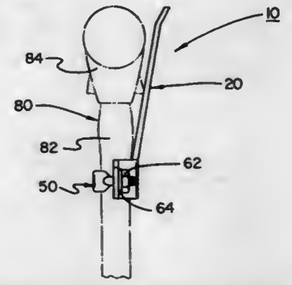


5,542,139
MULTI-PURPOSE TOOL FOR CUTTING, PRYING AND PUNCHING IN THE EVENT OF AN EMERGENCY SITUATION
Gregory E. Boivin, 253 Flanders Rd., #3, Niantic, Conn. 06357
Filed Dec. 20, 1994, Ser. No. 360,169
Int. Cl.[6] B26B 11/00
U.S. Cl. 7—118 **1 Claim**



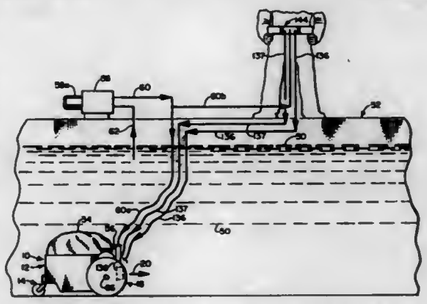
1. A multi-purpose tool for cutting, prying and punching in the event of emergency situations comprising, in combination:
a handle with a first end and a second end, the first end having a blade aperture therethrough, the second end having a punch aperture therethrough, the handle having a plurality of matingly coupled handle components, the handle components having coupling apertures extending through the handle components in axial alignment for coupling the handle components together during operation and use;
a first part formed as a blade at the first end of the handle extending through the blade aperture and having a cutting end and a support end, the support end having an aperture aligned with one aperture of the handle components, the blade having one elongated blunt edge and one elongated serrated edge for cutting seat belts and the like, the serrated edge having an inboard end and an outboard end with a hook formed at the outboard end, the hook having an interior curved surface sharpened for cutting and the hook also having at the outboard end a flat blunt surface for prying;
a second part formed as a punch at the second end of the handle and extending through the punch aperture and having an outboard pointed end and an inboard end, the punch being reciprocally secured with respect to the handle with its inboard end interior of the handle and with its outboard end extending exterior of the handle;
a trigger located within the handle adjacent to the inboard end of the punch and reciprocable within the handle, the trigger having an inboard end and an outboard end in contact with the inboard end of the punch, the trigger also including a rod extending inboardly from the inboard end of the trigger;
a hammer reciprocally mounted within the handle adjacent to the rod and an adjustment bolt adjacent to the first end of the handle;
a first spring urging the trigger toward the second end;
a second spring urging the hammer toward the second end; and
a plurality of fasteners extending through the coupling apertures of the handle components to couple together the handle components.

5,542,140
SCRAPER ATTACHMENT FOR A HAMMER
Laroy R. Ellinwood, R.R.1 Box 46, Damariscotta, Me. 04543
Filed Sep. 30, 1994, Ser. No. 316,223
Int. Cl.[6] B25D 1/04
U.S. Cl. 7—146 **1 Claim**



1. A combination scraper and hammer comprising:
a hammer having a hammer head and a handle, the hammer head and handle having a contiguous longitudinal axis, the hammer head having an upper planar surface;
a scraper body having a first sharpened end and a second end, the second end of the scraper body being formed integrally with the hammer head, the scraper body being outwardly angled relative to the longitudinal axis of the hammer head and handle of the hammer, the scraper body having an elongated generally planar trapezoidal shape with the first sharpened end being longer than the second end, an angle portion including an intermediate bend being formed adjacent the first sharpened end at an obtuse angle relative to the scraper body for providing maximum scraping efficiency, the angle portion having an upper planar surface positioned essentially parallel to and in alignment with the upper planar surface of the hammer head.

5,542,141
WATER POWERED APPARATUS FOR CLEANING AQUATIC BODIES
Alva Z. Albright, 1927 Albert St., Alexandria, La. 71301
Filed Apr. 10, 1995, Ser. No. 419,137
Int. Cl.[6] E04H 4/16
U.S. Cl. 15—1.7 **29 Claims**



4. A water powered apparatus for cleaning aquatic bodies comprising:

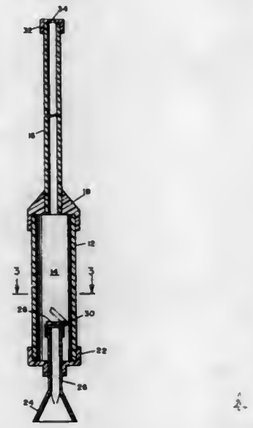
a. a rigid frame,
b. bin means connected to said rigid frame for collecting and holding debris removed from said aquatic body,
c. wheel means connected to said rigid frame for supporting and moving said apparatus along the bottom of said aquatic body, at least two of said wheel means being drive wheel means,
d. motor means for driving said drive wheel means, said motor means being driven by water under pressure, said motor means comprising two turbine means for rotating said wheel means, said turbine means being connected to said rigid frame, said turbine means having a rotatable turbine wheel for forcing said wheel means to rotate, said turbine wheel having turbine blades thereon, said turbine wheel being forced to rotate by water under pressure impinging thereon, said turbine means including two of said turbine wheels, each of said turbine wheels driving one of two drive wheels, each of said two turbine wheels having a water hose adjacent thereto connected to said turbine means for supplying water under pressure to each of said turbine wheels, each of said two turbine means has rotatable jet means connected thereto for spraying water onto said turbine wheels to cause said turbine wheels to turn and to control the direction in which said turbine wheels turn, and
e. suction tube means connected to said rigid frame for inducting water from said aquatic body into said bin means.

5,542,142

POND CLEANING DEVICE

Wayne C. Young, 1101 Camino Del Mar, Unit B,, Del Mar, Calif. 92014

Filed May 26, 1995, Ser. No. 452,301
Int. Cl.[6] E04H *4/16*
U.S. Cl. 15—1.7 **8 Claims**



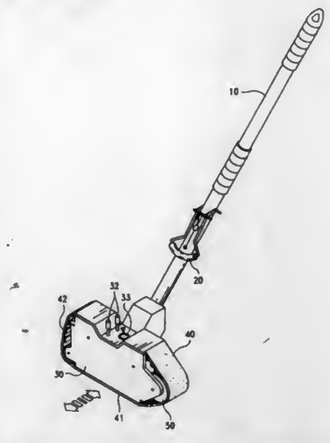
1. A pond cleaning device for removing debris from a body of water, comprising:
an elongated tubular member having an internal collection chamber, a lower end, and an upper end;
an inlet nozzle at the lower end of the tubular member and connected to said collection chamber;
the inlet nozzle having a one-way valve for permitting flow of liquid through the nozzle into the chamber and preventing flow of liquid out of the chamber via the nozzle;
the internal collection chamber having an upper end, a lower end wall through which said inlet nozzle projects, and only one outlet opening, said outlet opening being located at the upper end of the collection chamber and being connected to the upper end of the elongated tubular member; and the lower end wall of said chamber surrounding said inlet nozzle being imperforate;
the upper end having an opening which may be opened or closed to release or trap air in the suction chamber, and comprising a drain outlet for permitting flow of liquid and debris out of the chamber when the device is in an inverted orientation, the upper end outlet comprising the only outlet for liquid out of said collection chamber.

5,542,143

CIRCULARLY CLEANING SWAB STRUCTURE

Lin Jem-Yuan, No. 8, 13 Lin, San Wan Tsun, San Wan Hsiang, Miao Li Hsien, Taiwan

Filed Dec. 27, 1994, Ser. No. 364,815
Int. Cl.[6] A47L *13/144*
U.S. Cl. 15—119.1 **6 Claims**



1. A circularly cleaning swab structure comprising:
a substantially rectangular casing having an upper cover disposed on an upper opening of said casing to define a closed interior water sink for containing a cleaning liquid, a rotary wheel disposed with engaging teeth on its outer periphery being disposed on an outer lateral side of said casing and an upper roller together with a lower roller being disposed on another outer lateral side of said casing opposite to said rotary wheel, on two lateral walls of said water sink being respectively disposed two guide boards which extend from said lateral walls, a first roller and a second roller being respectively disposed on upper sections of said guide boards, said upper cover having a compressing roller and a squeezing roller located under said upper cover, said squeezing roller being just above said first roller;
a grip stem a lower end of which is connected with said casing, a handle being disposed on said grip stem and connected with a pull cord which extends through an interior of said grip stem to connect with said rotary wheel for rotatably driving the same;
an annular water-absorbing member disposed with engaging teeth on its inner periphery for engaging with corresponding engaging teeth of said rotary wheel, said water-absorbing member being disposed around said rotary wheel, said upper and lower rollers disposed on the outer lateral side of said casing and said rollers disposed on said guide boards, whereby a portion of said water-absorbing member is compressed and squeezed by said squeezing roller, said first roller, said second roller, and compressing roller of said upper cover and soaked in the cleaning liquid contained in said water sink of said casing and whereby when said handle is pivoted upward, said rotary wheel is pulled and rotated to make said water-absorbing member circulate around said casing in one direction.

5,542,144

SILICONE PAINT BRUSH ARTIST'S TOOL

Ladd B. Forsline, 201 S. Kemp St., Lyons, Pa. 19536

Filed Apr. 19, 1995, Ser. No. 424,804
Int. Cl.[6] B05C *17/00*
U.S. Cl. 15—245.1 **24 Claims**



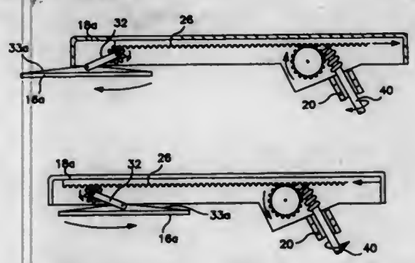
1. A device for application and manipulation of paint on a substrate, comprising:
a handle having a distal end and a proximal end;
a rigid ferrule attached to the distal end of the handle and projecting from the distal end of the handle to define a cavity adjacent the distal end of the handle, the cavity having an interior surface;
a tip, formed of resilient silicone, the tip having a paint contacting portion with a nonporous surface and a ferrule connecting portion; and
means for expanding the ferrule connecting portion of the tip into locking contact within the interior surface of the cavity of the rigid ferrule.

5,542,145

WINDSHIELD WIPER SYSTEM HAVING A WIPER BLADE CAPABLE OF RETRACTION FOR HIDDEN PARK

Harry C. Buchanan, Jr., Spring Valley, and Peter S. Zhou, Dayton, both of Ohio, assignors to ITT Automotive Electrical Systems, Inc., Auburn Hills, Mich.

Filed May 17, 1995, Ser. No. 442,696
Int. Cl.[6] B60S *1/32;1/36*
U.S. Cl. 15—250.16 **7 Claims**



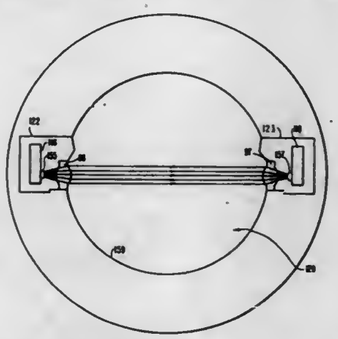
1. A windshield wiper system comprising:
a wiper post extending perpendicular to a plane;
an elongated wiper arm having a first end mounted to said wiper post for oscillatory movement and a second free end;
a rack and pinion unit including:
(a) a rack slidably mounted within said wiper arm for:
(i) linear movement in a first linear direction, and
(ii) linear movement in a second linear direction opposite to the first linear direction,
(b) a pinion engaging said rack, rotatably mounted to said wiper arm proximate to said second end of said wiper arm, and having an axis of rotation parallel to said plane for:
(i) rotating in a first rotational direction upon linear movement of said rack in the first linear direction, and
(ii) rotating in a second rotational direction opposite to the first rotational direction upon linear movement of said rack in the second linear direction;
wiper blade assembly;
an elongated link attached at a first end to said wiper blade assembly and fixed at a second end to said pinion for:
(a) swinging movement in a first swinging direction upon rotation of said pinion in the first rotational direction to extend said blade assembly longitudinally along said arm away from said first end; and
(b) swinging movement in a second swinging direction opposite to the first swinging direction upon rotation of said pinion in the second rotational direction to retract said blade assembly longitudinally along said arm toward said first end;
drive means for imparting oscillatory movement to said wiper arm; and
means extending between and connected to said drive means and said rack for imparting linear movement to said rack in the first and second linear directions.

5,542,146

ELECTRONIC VACUUM CLEANER CONTROL SYSTEM

Peter Hoekstra, Bristol, Tenn.; Timothy W. Jackson, Bristol, Va.; George C. Moyher, Jr., Bluff City, Tenn., and Odero Conci, Pascoe Vale, Australia, assignors to Electrolux Corporation, Marietta, Ga., and Newtronics Pty, Ltd., North Melbourne, Australia

Division of Ser. No. 241,578, May 12, 1994. This application May 31, 1995, Ser. No. 455,983
Int. Cl.[6] A47L *9/28*
U.S. Cl. 15—319 **18 Claims**



1. A vacuum cleaner comprising:
a canister having a portion that defines an intake port;
a hose connected to the intake port for providing air to the intake port;
a suction motor contained within the canister for drawing air through the hose and through the intake port;
a handle separate from the canister and having a portion defining an air passageway that is connected to the hose;
an optical dust sensor located in the handle for detecting dust particles as they are drawn past the optical dust sensor into the

hose, the optical dust sensor generating corresponding dust sensor signals whenever a dust particle is detected; and

a control unit for counting a predetermined fixed number of the dust sensor signals and determining with what frequency the dust particles are detected, the control unit selecting, based on the frequency, a particular one of a finite plurality of discrete motor power settings at which the suction motor is to be powered, wherein:

the control unit has an internal timer for measuring an initial time when an initial dust particle is detected;

the control unit subsequently counts each detected dust particle up to a predetermined fixed number at which point the control unit uses the internal timer to measure a final time; and

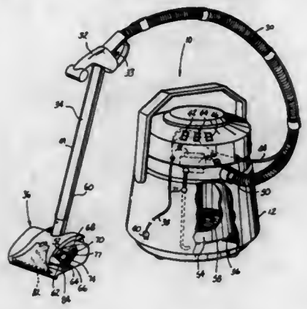
the control unit selects the motor power setting based on a calculation of average time elapsed between successive detected dust particles using the initial and final times and the predetermined fixed number.

5,542,147

SPRAY SUCTION AND AGITATOR CONTROL AND DEEP CLEANING MACHINE

David J. Merten, Grand Rapids, Mich., assignor to Bissell Inc., Grand Rapids, Mich.

Filed May 2, 1995, Ser. No. 432,676
Int. Cl.[6] A47L *11/34*
U.S. Cl. 15—321 **9 Claims**



1. A combined vacuum cleaner and deep cleaner comprising:

a housing having a vacuum chamber and a solution chamber;

a vacuum motor mounted to the housing for driving a suction device for drawing suction in the vacuum chamber;

a pump mounted to the housing and connected to the solution chamber for pumping solution from the solution chamber to a pump outlet;

a pump motor drivingly connected to the pump;

a cleaning head comprising:

a spray nozzle for spraying a cleaning solution onto a carpet;

an agitator for agitating a carpet;

an agitator motor in the cleaning head and connected to the agitator for driving the agitator;

at least one suction nozzle for drawing dirty liquid and/or dirty air from a surface beneath the cleaning head;

a hose connection between the vacuum chamber and the at least one suction nozzle in the cleaning head;

a tubing connection between the pump output and the spray nozzle;

an electrical power source connected to the vacuum motor, the pump motor and the agitator motor;

the improvement which comprises:

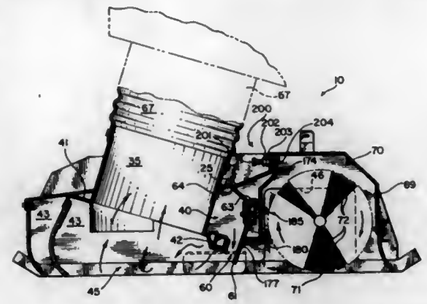
a switch mounted on said housing between the electrical power source and each of the vacuum motor, the pump motor and the agitator motor for independent control of each of said vacuum motor, the pump motor and the agitator motor.

5,542,148

BROOM ASSISTED PICK-UP HEAD

Gary B. Young, Waco, Tex., assignor to Tymco, Inc., Waco, Tex.

Division of Ser. No. 378,930, Jan. 26, 1995, which is a continuation of Ser. No. 725,108, Jul. 3, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 480,711
Int. Cl.[6] E01H *1/08*
U.S. Cl. 15—346 **15 Claims**



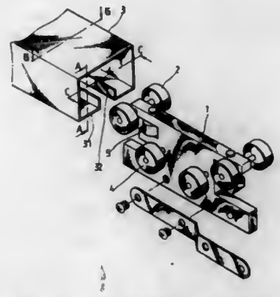
1. A pick-up head adapted for movement along a predetermined path of travel for removing debris therealong comprising housing means for defining an air chamber defined generally between opposite side walls along which air is adapted to flow, means for defining an elongated orifice extending generally between said side walls through which pressurized air is introduced into said air chamber, said elongated orifice being defined in part by an elongated wall extending generally between said opposite side walls, said elongated wall having a generally neutral longitudinal axis, and means for deflecting said elongated wall generally about its neutral longitudinal axis to vary the size of said elongated orifice.

5,542,149

CARRIAGE AND RAIL ASSEMBLY FOR A CURTAIN

Ching-Jung Yu, 5th Fl., No. 6, Lane 9, Long-Bin Rd., San-Chung, Taiwan

Filed Jun. 21, 1994, Ser. No. 262,880
Int. Cl.[6] A47H *5/00*; E05D *15/06*
U.S. Cl. 16—87.4 R **5 Claims**



1. In a carriage and rail assembly for movably securing a curtain, wherein the assembly includes a rail having a pair of inwardly extending lateral rails with top and bottom surfaces and terminating in a pair of spaced upwardly extending inner edges, and the carriage includes a main body having a portion thereof disposed between the inner edges and a plurality of top rollers at opposite ends of the main body in rolling engagement with the top surfaces of the lateral rails for permitting the carriage to be moved back and forth along the rail, the improvement comprising the carriage further including:

a) a plurality of first rollers positioned below the lateral rails for rolling engagement with the bottom surfaces to limit the vertical movement of the carriage, and the axes of rotation of the first rollers being parallel to the axes of rotation of the top rollers; and

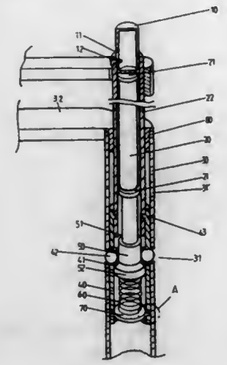
b) a plurality of second rollers at opposite ends of the main body, the second rollers being positioned for rolling engagement with the inner edges of the lateral rails to limit the horizontal movement of the carriage, the diameter of each second roller being greater than the width of the main body portion between the inner edges, and the axes of rotation of the second rollers being orthogonal to the axes of rotation of the first rollers.

5,542,150

SIMPLE PUSH BUTTON TYPE LINK CONTROL STRUCTURE

A-Shih Tu, No. 61, Industry District, 32 Rd., Taichung, Taiwan

Filed Aug. 30, 1994, Ser. No. 297,768
Int. Cl.[6] A47B *95/02*
U.S. Cl. 016—115 **1 Claim**



1. A push button pull rod control structure for a trunk comprising: a push button, a pull rod, a push rod, an outer rod, a sleeve, a control body, and a spring wherein said push button has a hollow body with an extension groove engaged by a pin extending from a top end of the pull rod to connect the push button to the pull rod so that the push button may slide up and down without being removed from the pull rod;

said outer rod adapted to be attached to the trunk, and having a plurality of location holes located along a length thereof;

said sleeve being slidably positioned within said outer rod and having "L" shaped retaining grooves on a bottom portion, a post extending from an upper side thereof for connecting the sleeve to the pull rod, and a through hole having a groove seat thereon;

said control body slidably positioned within said sleeve and having a flange formed on a bottom portion thereof, and a recessed upper portion;

said push rod slidably positioned within said pull rod and having thrust plates on opposite ends thereof in contact with the push button and the control body, respectively;

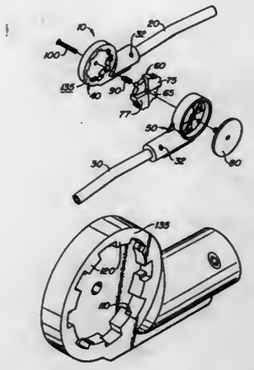
at least one locating ball in the groove seat of said sleeve; said spring positioned between a seal positioned in said L-shaped retaining grooves and a lower end of said control body, said spring acting on the control body to bias the control body into contact with the thrust plate of the push rod whereby the flange of the control body urges the at least one locating ball into a first location hole and whereby movement of the push button against the spring bias aligns the recessed portion of the control body with the at least one locating ball enabling the retraction of the at least one locating ball from said first location hole, thereby enabling movement of the push button, pull rod, push roll, control body at least one locating ball and spring relative to the outer rod such that the at least one locating ball is moved from the first location hole to another location hole.

5,542,151

ROTATABLE BENDING JOINT FOR COLLAPSIBLE PLAYPEN

Sandra K. Stranski; Daniel P. Sumser, both of North Canton, and Mark A. Sedlack, Cuyahoga Falls, all of Ohio, assignors to Century Products Company, Macedonia, Ohio

Filed May 1, 1995, Ser. No. 432,256
Int. Cl.[6] A47D *7/00*; E05D *11/10*
U.S. Cl. 16—326 **8 Claims**



1. A rotatable hinge comprising:

a first circular portion having a recessed portion forming a recessed sprocket portion with sprocket teeth pointing radially inwardly;

a gear having a plurality of gear teeth on its periphery, said recessed portion sufficiently deep to substantially receive said gear, said gear received by said recessed sprocket portion, and said gear teeth interspaced with said sprocket teeth, said gear having on one side a protrusion;

a second circular portion having a recess, said recess receiving said gear protrusion;

said gear interposed between said first and second circular portions and preventing relative movement between said first and second circular portions when said protrusion is received by said recess;

wherein said sprocket teeth have on one side thereof a ledge portion extending radially upon which said gear rests;

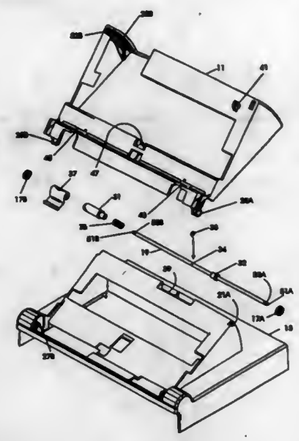
wherein to allow said first and second circular portions of said hinge to rotate with respect to one another and unlock said ring, said gear is displaced from said ledge portion and displaced axially within said recessed sprocket portion, to allow said gear protrusion to disengage from said recess of said second circular portion.

5,542,152

SHAFT ASSEMBLY FOR A TILT ADJUSTMENT MECHANISM

Dennis Crompton, Apex; Richard H. Harris, Raleigh; Herbert G. Leonard, Lousiburg; George Hufford, III, Clayton, and Jeff D. Thomas, Raleigh, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 8, 1995, Ser. No. 436,953
Int. Cl.[6] E05D 7/00;11/10; E05C 17/64
U.S. Cl. 16—354 20 Claims



8. A shaft assembly for use in a tilt adjustment mechanism comprising:

a cylindrical shaft having an end clip and a notch, said notch having a c-clip seated therein;

a bushing on said shaft between said c-clip and said end clip having a wrap spring disposed between said bushing and said end clip, said wrap spring permitting the shaft to turn freely in a rotational direction and mechanically locking said shaft and said bushing when said shaft is turned in an opposite rotational direction; and

a spring clip having a sleeve for receiving said bushing, said sleeve permitting said bushing to rotate in said sleeve when a frictional resistance between said bushing and said sleeve is overcome when said shaft and said bushing are turned in the opposite rotational direction.

5,542,153

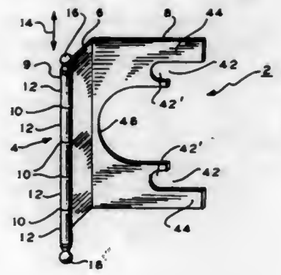
SIMULATED BUTT HINGE CONSTRUCTION

Scott D. Ramsby, Frenchtown Post Office, 16 Trenton Ave., Frenchtown, N.J. 08825-9998, and Alan B. Miller, Stockton Post Office, 2 Bridge St., Stockton, N.J. 08559-9998

Continuation-in-part of Ser. No. 345,732, Dec. 20, 1994, abandoned. This application Jul. 20, 1995, Ser. No. 504,641
Int. Cl.[6] E05D 5/06
U.S. Cl. 16—389 19 Claims

1. A simulated butt hinge construction for attachment to a first support comprising:

a plate member arranged to be attached to said first support; and an artificial butt hinge secured to the plate member for providing a simulated appearance of a butt hinge to said first support.

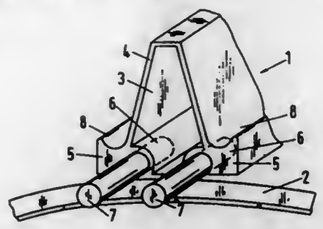


5,542,154

CONNECTION BETWEEN A REVOLVING FLAT CAR AND A DRIVE BELT

Robert Demuth, Nurensdorf; Jurg Faas, Dinhard, and Paul Cahannes, Embrach, all of, Switzerland, assignors to Maschinenfabrik Rieter AG, Winterhur, Switzerland

Filed Jun. 2, 1994, Ser. No. 253,255
Claims priority, application Switzerland, Jun. 3, 1993, 01 650/93; Aug. 26, 1993, 02 488/93
Int. Cl.[6] D01G 15/24
U.S. Cl. 19—114 27 Claims



1. A connection between a flat rod of a revolving flat card and a flexible drive belt for flat rods, wherein a flexible connecting element is formed as a snap-on connection integrally with the drive belt or with a part of the flat rod, and is received directly in a part of the flat rod or in the belt.

5,542,155

SPREAD DIAMETER LOCKING MECHANISM FOR A SPRING BIASED HOSE CLIP

Akira Kimura; Mineo Muto; Kanemitsu Asano; Susumu Nakano, and Koji Nakahama, all of Aichi-ken, Japan, assignors to Togo Seisakusho Corp., Aichi-ken, Japan

Division of Ser. No. 44,774, Apr. 12, 1993, Pat. No. 5,414,905. This application Mar. 1, 1995, Ser. No. 398,423
Claims priority, application Japan, Apr. 13, 1992, 4-31345; Apr. 20, 1992, 4-38658; May 15, 1992, 4-39122; Dec. 16, 1992, 4-91682; Mar. 12, 1993, 5-16925
Int. Cl.[6] B65D 63/10
U.S. Cl. 24—20 R 5 Claims

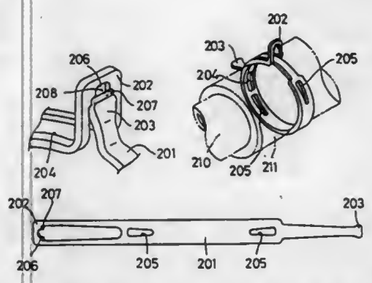
1. A hose clip comprising:

a) a clip body comprising a leaf spring in the form of an annular band, the clip body having a main portion and two ends, said main portion having a slit therein;

b) the ends of the clip body being bent relative to said main portion about lines extending across said main portion, respectively, so as to serve as grip strips, respectively;

c) one of the grip strips having two legs defining a space therebetween contiguous to said slit, and a bridge portion extending between the two legs at a distal end of said one of the grip strips, the other of the grip strips tapering from a distal end thereof in a direction toward the clip body so as to have a widest portion at its distal end, said one of the grip strips having a receiving face and defining a recess configured to receive said distal end of the other of the grip strips to thereby hold the clip body in a spread-diameter state, said receiving face delimiting the bottom of said recess and being inclined in such a direction relative to the direction in which said legs extend from the main portion of the clip body that the depth of said recess increases in a direction along said one of the grip strips toward the distal end thereof; and

said receiving face having two portions formed across said space from one another in said legs, respectively, such that a respective portion of said recess is formed in each of said legs, and opposite sides of the widest portion of the other of said grip strips being engageable with said two portions of the receiving face, respectively, as lying flush thereagainst to place the hose clip in said spread-diameter state.

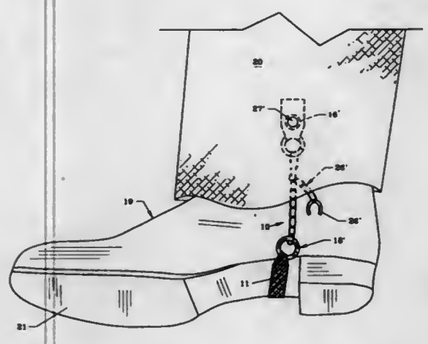


5,542,156

TROUSER LEG RETAINING DEVICE

Larry W. Oglesby, Rte. 2, Box 217A, Whiteville, N.C. 28472

Filed Sep. 1, 1994, Ser. No. 299,440
Int. Cl.[6] A41F 17/04
U.S. Cl. 24—72.1 11 Claims



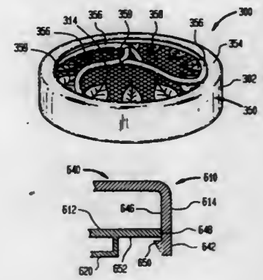
1. A restraining device for a trouser leg comprising: a central elastic strap, a pair of link chains, one each of said link chains affixed at each end of said elastic strap, a pair of elastic end segments, one each of said elastic end segments attached to each of said link chains and a pair of means for fastening said restraining device to said trouser leg, one each of said fastening means attached to one each of said elastic end segments.

5,542,157

DECORATIVE MULTI-PART BUTTON ASSEMBLIES AND USE THEREOF

Michael Herman, Huntington, N.Y., assignor to Herman Pearl Button Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 129,433, Sep. 30, 1993, Pat. No. 5,414,910, and a continuation-in-part of Ser. No. 44,263, Apr. 7, 1993, Pat. No. 5,315,739, which is a continuation-in-part of Ser. No. 843,457, Feb. 28, 1992, Pat. No. 5,255,417, which is a continuation-in-part of Ser. No. 737,066, Jul. 29, 1991, abandoned, and a continuation-in-part of Ser. No. 805,322, Dec. 10, 1991, abandoned. This application May 26, 1994, Ser. No. 249,447
Int. Cl.[6] A44B 1/04
U.S. Cl. 24—113 MP 18 Claims



1. A button assembly comprising:

(a) a button base having

(i) top and bottom surfaces joined by a smooth peripheral side wall, which side wall is in a plane substantially perpendicular to the bottom surface, and

(ii) a fabric covering the top surface, the peripheral side wall and at least a portion of the bottom surface, and

(iii) means for attaching the button assembly to an article; and

(b) a cap comprising a hollow, flexible cup-shaped member having a top face and a surrounding wall around the periphery of the top face, which surrounding wall, together with the top face defines a hollow center capable of receiving the button base, the surrounding wall having an inner surrounding wall surface around its inner periphery; at least one protrusion extending from the inner surrounding wall surface; each of said button base, cap and protrusion being comprised of such materials and the surrounding wall of the cap being formed to be resilient, so that the cap can snap over the button base thereby providing a means of engaging and locking said button base and cap by snap together engagement of the protrusion with the bottom surface of the button base in the absence of applied heat to removably or non-removably secure the button base and the cap together into a button assembly.

5,542,158

GROMMET FASTENER ASSEMBLY FOR AUTOMOBILES

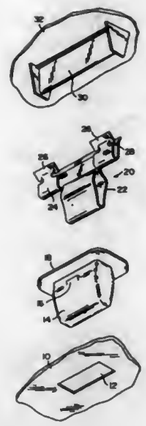
Randall J. Gronau, Mt. Clemens, and Robert Osterland, East China, both of Mich., assignors to Emhart Inc., Newark, Del.

Filed Sep. 12, 1994, Ser. No. 304,447
Int. Cl.[6] A44B 17/00
U.S. Cl. 24—295 6 Claims

1. A fastener assembly for securing an interior panel associated with upholstering material to a body panel of a vehicle comprising,

a pliable retention member extending from said interior panel toward said body panel,

a grommet formed of a non-porous flexible material and having a flange for mounting on the topside of the rim of an aperture in said exterior body panel to thereby form a sealed enclosure



having generally the same peripheral dimension in a plane coplanar with the plane of said aperture,

said grommet having exterior tab means for engaging the underside of said exterior panel to thereby hold said grommet in place with respect to said aperture, and

said pliable retention member including a portion extending behind said panel and beyond the rim of said aperture, said portion bearing against the side walls of said flexible grommet and causing said grommet to expand beyond the peripheral dimension of said aperture when said retention member is inserted into the interior of said grommet below the plane of said flange and said aperture, thereby causing said grommet to increase its hold in a seal tight manner against the rim of said aperture in said exterior body panel.

5,542,159

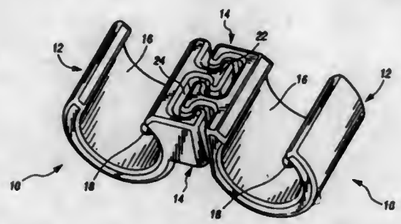
COMBINED CHAIR GLIDE AND COUPLER

Craig H. Schultz, and Ogden R. Olson, both of Muscatine, Iowa, assignors to Hon Industries Inc., Muscatine, Iowa

Filed Jun. 28, 1994, Ser. No. 267,444

Int. Cl.[6] A44B *21/00*

U.S. Cl. 24—341 **9 Claims**



1. A combined chair glide and coupler member comprising:

an attachment portion configured for attachment of said chair glide and coupler member to a horizontal portion of a tubular base member of a chair with a surface of said attachment portion providing a floor glide for said base member; and

a coupling portion extending laterally from said attachment portion and including a male projecting element juxtaposed next to a female recess element;

said male and female coupling elements being dimensioned and configured to mate with corresponding female and male coupling elements, respectively, of a second like chair glide and coupler member and said coupler elements being juxtaposed next to each other along an axis disposed generally parallel to said tubular base member when said chair glide and coupler is attached thereto, wherein said respective coupling elements are mated by relative movement of two said chair glide and coupler members in a direction generally normal to the plane of a floor on which said base member of said chair is supported.

5,542,160

ATTACHMENT ELEMENT FOR THE ATTACHMENT OF STRAPS, BELTS OR LOOP ON EDGES OF FLAT PIECES OF MATERIAL

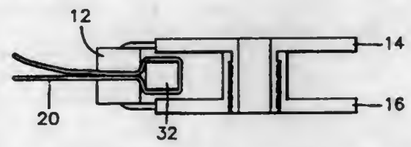
Johannes Arndt, Wuppertal, Germany, assignor to Frank Innovation GmbH, Mettmann, Germany

Filed Feb. 18, 1994, Ser. No. 198,586

Claims priority, application Germany, Feb. 19, 1993, 9302461 U; May 25, 1993, 9307904 U

Int. Cl.[6] A44B *21/00*

U.S. Cl. 24—543 **8 Claims**



1. An attachment element for the attachment of a strap on an edge of a flat piece of material, said attachment element comprising:

a body having a middle part and two lateral parts linked in a movable manner on opposite sides of said middle part,

said middle part including means for attaching a strap to said body and having at least a slot-like recess through which opposite ends of said strap extend,

said means for attaching includes an element extending laterally from said middle part and being bendable to lie spaced from and parallel to said middle part and between said lateral parts for cooperation with said strap to clench said strap as said strap is pulled through said slot-like recess.

5,542,161

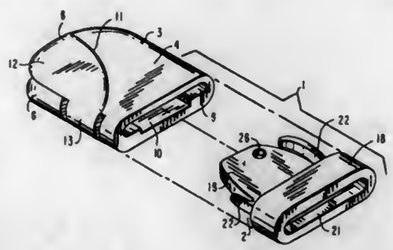
BUCKLE WHICH IS RELEASABLE BY DEPRESSION OF A HINGED MEMBER

Joseph Anscher, Muttontown, N.Y., assignor to National Molding Corp., Farmingdale, N.Y.

Filed May 11, 1994, Ser. No. 241,382

Int. Cl.[6] A44B *11/76*

U.S. Cl. 24—614 **17 Claims**



1. A buckle comprising:

a socket member having an obverse face and a pair of sides disposed along a longitudinal direction of the buckle, wherein the obverse face and the sides define a socket therebetween, the socket member having an open end;

a flap belonging to the socket member, the flap being resiliently flexible and pivotable about a point of attachment of the flap to the socket member and pivotable about a line which is parallel to the longitudinal direction of the buckle, and the flap being depressible to a location in which the flap projects inside the socket;

a stop member projecting from an inner surface of the obverse face toward the interior of the socket; and

a plug member having a base portion and a resilient tongue projecting from the base portion in the longitudinal direction, the tongue defining an opening therein, wherein the socket member is adapted to slidably receive the tongue, along the longitudinal direction, through the open end of the socket member, so as to couple the socket member and the plug member, and wherein the stop member is adapted to engage the opening defined in the tongue for locking the plug member to the socket member when the plug member is coupled to the socket member, and wherein the plug member may be unlocked from the socket member by depressing the flap toward the interior of the socket to force the resilient tongue away from the stop member and disengage the resilient tongue from the stop member thereby permitting decoupling of the plug member and the socket member.

5,542,162

BUCKLE FOR SAFETY BELTS

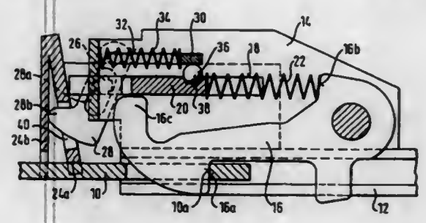
Joachim Biller, Lorch, Germany, assignor to TRW Repa GmbH, Alfdorf, Germany

Filed Apr. 25, 1995, Ser. No. 428,467

Claims priority, application Germany, May 6, 1994, 44 16 138.7

Int. Cl.[6] A44B *11/26*

U.S. Cl. 24—641 **6 Claims**



1. A buckle for a safety belt, comprising a frame, a latch pivotally mounted in said frame and movable between a latching position and a release position, a catch member slidingly mounted in said frame and movable between a blocking position and a retracted position, a release button slidingly guided on said frame and engaging said catch member, and a locking body selectively engaging said catch member to hold the catch member in the blocking position, said latch member being blocked in the latching position by said catch member when said catch member is in the blocking position, said release button, when depressed, disengaging said locking body from said catch member and thereafter moving said catch member to the retracted position thereby enabling the latch member to move to the release position.

5,542,163

ELECTRICALLY-CONDUCTING ADHESION-PROMOTER

On K. Chang, 1031 Belvedere La., San Jose, Calif. 95129

Continuation of Ser. No. 49,196, Apr. 19, 1993, abandoned. This application Aug. 3, 1994, Ser. No. 285,753

Int. Cl.[6] H01H *4/04*

U.S. Cl. 29—2 **21 Claims**

1. A method for enhancing the adhesion of an electrode paste to a surface of a metal foil which method comprises: (1) applying a layer of an electrically-conducting adhesion-promoter comprising a carbon powder and an adhesion-promoting polymer onto at least one surface of the metal foil by means of an electrostatic flux sufficient to attract the electrically-conducting adhesion-promoter to the surface of the metal foil, wherein said adhesion-promoting polymer is selected from the group consisting of polyester, styrene/acrylate polymer, polyethylene, styrene/butadiene copolymer, ethylene/vinyl acetate copolymer, and polyisobutylene, (2) thereafter, applying the electrode paste onto the layer of electrically-conducting adhesive-promoter, and then (3) curing the electrode paste.

5,542,164

METHOD FOR FORMING A BARB ON A TIP OF A FISHHOOK

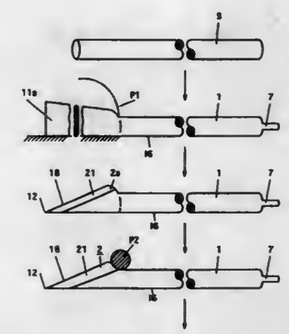
Shigekatsu Fujii; Naohiro Asada, and Tomio Kubo, all of Nishiwaki, Japan, assignors to Gamakatsu Co., Ltd., Nishiwaki, Japan

Division of Ser. No. 301,959, Sep. 7, 1994. This application Jun. 6, 1995, Ser. No. 470,056

Claims priority, application Japan, Aug. 9, 1993, 5-248704; Jun. 10, 1994, 6-152850; Jul. 11, 1994, 6-182988; Aug. 29, 1994, 6-228850

Int. Cl.[6] B21F *45/12*

U.S. Cl. 29—9 **3 Claims**



3. A method of producing a fishhook comprising the steps of:

pressing a tip portion of a fishhook body to form a thin flat portion;

cutting at least either upper lateral sides or lower lateral sides of the tip portion to form a sharp hook tip and a barb on an upper surface of the tip portion and to form flat or concave lateral cut faces with a sharp edge along a ridge at a juncture of the lateral cut faces;

chipping a part of the barb on a side opposite to the hook tip to form a rear face of the barb; and

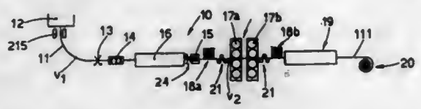
bending the fishhook body such that the barb faces toward an interior of a J-shaped shank portion.

5,542,165

LINE TO PRODUCE STRIP AND/OR SHEET

Giovanni Coassin, Pordenone; Bruno Di Giusto, Udine; Fausto Drigani, Zugliano, and Pietro Morasca, Fresonara, all of, Italy, assignors to Danieli & C. Officine Meccaniche SpA, Buttrio, Italy

Filed May 4, 1994, Ser. No. 238,057
Claims priority, application Italy, May 17, 1993, UD93A0086; Oct. 29, 1993, UD93A0215
Int. Cl.[6] B21B *1/46;13/22*
U.S. Cl. 29—33 C 25 Claims



1. Line to produce at least one of strip and sheet starting from at least one plant for the continuous casting of thin or medium slabs, the continuous casting plant comprising in sequence a continuous casting machine, at least one assembly for shearing to size, a temperature restoration system, a rolling train, and means to accelerate the speed of feed of the slabs included downstream of the assembly for shearing to size, in which line the temperature-restoration system comprises an induction furnace with at least one working frequency to heat the surface and edges of the slabs, the induction furnace being followed by a low-speed descaling means and by a tunnel furnace, an emergency shears and high-speed descaling means being included between the tunnel furnace and the rolling train.

5,542,166

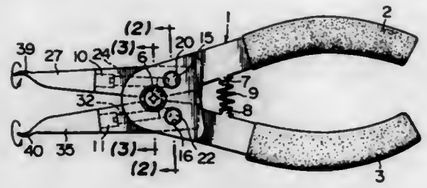
Patent Not Issued For This Number

5,542,167

DEVICE FOR ATTACHING/DETACHING SHAFT SNAP RING AND HOLE SNAP RING

Takayuki Nakamoto, Tokyo, Japan, assignor to Iwata Denko Co., Ltd., Tokyo, Japan

Filed Feb. 21, 1995, Ser. No. 391,030
Claims priority, application Japan, Oct. 14, 1994, 6-249293
Int. Cl.[6] B23P *19/04*
U.S. Cl. 29—229 5 Claims



1. A device for attaching/detaching a shaft snap ring and a hole snap ring, comprising:

a pair of right and left grasp levers;

a supporting shaft for rotatably supporting overlapped support portions of leading side portions of said grasp levers;

a spring crossing between said grasp levers for biasing root side portions of said grasp levers in a state being opened;

a pair of right and left operating levers, wherein root side portions thereof are interposed between said support portions of grasp levers, and intermediate portions of said root side portions are rotatably supported by said supporting shaft in such a manner as to be coaxial with said supporting shaft;

a right movable pin movably held in a pin hole of said right operating lever, which is capable of being engaged with either of left engaging holes of said support portions of said grasp levers;

a left movable pin movably held in a pin hole of said left operating lever, which is capable of being engaged with left engaging holes of said support portions of said grasp levers;

right and left rotational shafts rotatably contained in guide holes of said right and left operating levers, each of which has at its leading edge a portion to be connected, and has at its base end a gear portion meshing with a gear portion of each of said right and left movable pins in said pin hole; and

a pair of right and left leading portions rotatably and removably inserted in said guide holes of said right and left operating levers, each of which has at its base end a connecting portion removably connected to said portion to be connected of said rotational shaft, and has at its leading edge a locking projection;

wherein said right and left leading portions are connected to said right and left movable pins in such a manner that when said locking projections are both directed inward, said right movable pin is moved in said pin hole of said right operating lever and is engaged with said pin hole of said right operating lever and said right engaging hole of said left grasp lever while said left movable pin is moved in said pin hole of said left operating lever and is engaged with said pin hole of said left operating lever and said left engaging hole of said right grasp lever; and

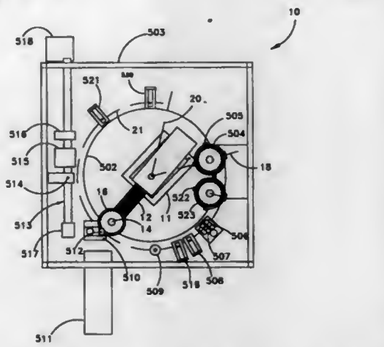
wherein when said locking projections are both directed outward, said right movable pin is moved in said pin hole of said right operating lever and is engaged with said pin hole of said right operating lever and said right engaging hole of said right grasp lever while said left movable pin is moved in said pin hole of said left operating lever and is engaged with said pin hole of said left operating lever and said left engaging hole of said left grasp lever.

5,542,168

METHOD FOR PROCESSING AND ASSEMBLY OF SMALL PARTS UTILIZING A ROBOT

Norman D. Best, 63 Glenflow Ct., Glendale, Calif. 91206

Division of Ser. No. 189,118, Jan. 26, 1994, Pat. No. 5,509,191.
This application Dec. 19, 1994, Ser. No. 358,392
Int. Cl.[6] B23Q *17/00*
U.S. Cl. 29—407.04 19 Claims



1. A method for performing processing operations on work-pieces utilizing a robot including a head movable in the X, Y, and Z directions and a wrist joint rotatable in the horizontal plane, the method comprising the steps of:

a. providing a rotatable pallet which has a plurality of nests for retaining said work-pieces;

b. mounting a pallet-gripping end effector on said robot head;

c. grasping said rotatable pallet with said end effector;

d. moving said rotatable pallet by said robot into position adjacent to a processing work-station in a working envelope of said robot such that a selected work-piece in said rotatable pallet is presented to the work-station;

e. performing a work-station task on said selected work-piece;

f. indexing said pallet to present another work-piece to said work-station by rotating said wrist joint of said robot;

g. performing said work-station task on said another work-piece; and

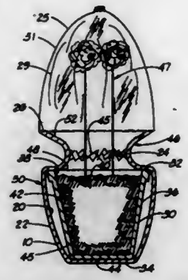
h. repeating steps (f) and (g) sequentially until all said work-pieces in said pallet have been worked on at said work-station.

5,542,169

COVERING FOR FLOWER POT AND FLORAL GROUPING

Donald E. Weder, Highland, Ill., assignor to The Family Trust U/T/A, and Southpac Trust International, Inc., both of Oklahoma City, Okla.

Continuation-in-part of Ser. No. 926,098, Aug. 5, 1992, and a continuation-in-part of Ser. No. 940,930, Sep. 4, 1992, Pat. No. 5,361,482, and a continuation-in-part of Ser. No. 1,001, Jan. 6, 1993, Pat. No. 5,307,606, and a continuation-in-part of Ser. No. 968,798, Oct. 30, 1992, Pat. No. 5,369,934, which is a continuation of Ser. No. 865,563, Apr. 9, 1992, Pat. No. 5,245,814, which is a continuation of Ser. No. 649,379, Jan. 31, 1991, Pat. No. 5,111,638, which is a continuation of Ser. No. 249,761, Sep. 26, 1988, abandoned, said Ser. No. 37,067is a continuation-in-part of Ser. No. 819,311, Jan. 9, 1992, abandoned, which is a continuation of Ser. No. 765,416, Sep. 26, 1991, Pat. No. 5,185,599, which is a continuation of Ser. No. 530,491, May 29, 1990, abandoned, which is a continuation of Ser. No. 315,169, Feb. 24, 1993, abandoned. This application Mar. 25, 1993, Ser. No. 37,067
Int. Cl.[6] B21D *35/00*
U.S. Cl. 29—469.5 31 Claims



4. A method for forming a decorative covering and a protective covering comprising:

providing the sheet of material having an upper surface, a lower surface and an outer peripheral edge, a connecting bonding material being disposed on the sheet of material, a sheet extension being connected to the sheet of material and the sheet extension extending a distance outwardly from the outer peripheral edge of the sheet of material;

providing a flower pot having an upper end, a lower end, an outer peripheral surface and an opening extending through the upper end providing access to a retaining space with the flower pot having an inner peripheral surface encompassing a substantial portion of the retaining space and the flower pot having a bottom formed near the lower end of the flower pot, the flower pot having a floral grouping disposed in the retaining space and extending a distance upwardly beyond the upper end of the flower pot;

forming the sheet of material about the flower pot to a position wherein the sheet of material extends about substantially the entire outer peripheral surface of the flower pot to form the decorative covering with a portion of the sheet of material near the outer peripheral edge thereof extending a distance above the upper end of the flower pot with the portion of the sheet of material having the connecting bonding material disposed thereon being disposed above the upper end of the flower pot and forming the sheet extension about the floral grouping to a position wherein the sheet extension covers a substantial portion of the floral grouping to provide the protective covering;

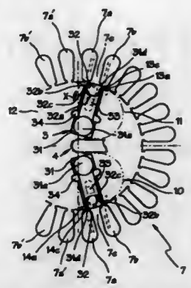
crimping the portion of the sheet of material having the connecting bonding material thereon to form a crimped portion in the sheet of material at a position above the upper end of the flower pot for cooperating to hold the sheet of material in the form of the decorative covering extending about the flower pot with the crimped portion extending a distance radially inwardly toward a central portion of the flower pot forming a ridge portion.

5,542,170

APPARATUS FOR INSERTING INSULATION SHEETS INTO SLOTS OF A STATOR CORE

Masatoshi Hirano, Kanagawa, Japan, assignor to Odawara Engineering Co., Ltd., Japan

Filed Dec. 16, 1994, Ser. No. 357,659
Int. Cl.[6] H02K *15/10*
U.S. Cl. 29—734 9 Claims



1. An apparatus for inserting a pair of connecting portions of an insulation sheet into slots formed in a stator core of an electric rotary device, the insulation sheet having a one-piece construction including a pair of body portions interconnected by the connecting portions, each of the connecting portions having two sheet strips separated by a slit, the apparatus comprising:

a pair of grippers which grip the insulation sheet by the slits;

a deforming element which deforms the insulation sheet such that the insulation sheet is deformed into a shape which conforms to the inside diameter of the stator core;

a positioning device which moves the insulation sheet in a direction parallel to an axis of the stator to a position inside the stator core; and

an inserter which slidably engages each gripper and inserts the strips of each connecting portion into slots in the stator core.

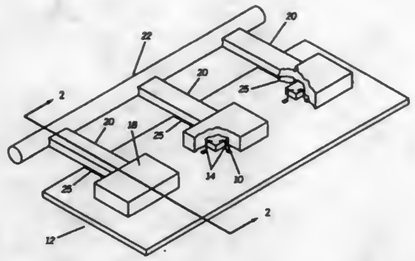
5,542,171

METHOD OF SELECTIVELY RELEASING PLASTIC MOLDING MATERIAL FROM A SURFACE

Frank J. Juskey; Anthony B. Suppelsa, both of Coral Springs, and Fadia Nounou, Plantation, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 4, 1991, Ser. No. 771,663
Int. Cl.[6] H01K-*3/10;* B29C *45/14*
U.S. Cl. 29—840 7 Claims

1. A method of forming a transfer molded chip carrier, comprising:



electrically and mechanically attaching a semiconductor device to a substrate;
selectively contaminating at least a portion of the substrate in order to reduce adhesion between said portion of the substrate and a molding compound subsequently attached to the substrate;
encapsulating the semiconductor device by molding a plastic molding compound onto the device and the substrate; and
breaking away the plastic molding compound that is molded over said selectively contaminated portion of the substrate.

5,542,172

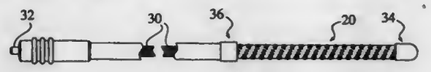
Patent Not Issued For This Number

5,542,173

METHOD OF MAKING FLEXIBLE DEFIBRILLATION ELECTRODE

Craig E. Mar, Fremont; Benjamin D. Pless, Menlo Park, and M. Elizabeth Bush, Fremont, all of Calif., assignors to Ventritex, Inc., Sunnyvale, Calif.

Division of Ser. No. 126,619, Sep. 24, 1993, Pat. No. 5,439,485. This application Feb. 15, 1995, Ser. No. 388,766
Int. Cl.[6] H01R *43/00*
U.S. Cl. 29—825 **22 Claims**



1. A method of manufacturing a body implantable lead for use with a pulse generator, comprising the steps of:
providing a tubular core;
helically winding at least one wire to form at least one electrode coil;
winding said at least one electrode coil about said tubular core; and
applying an elastomeric matrix material onto said tubular core and said electrode coils.

5,542,174

METHOD AND APPARATUS FOR FORMING SOLDER BALLS AND SOLDER COLUMNS

George W. Chiu, Palo Alto, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Sep. 15, 1994, Ser. No. 307,893
Int. Cl.[6] H05K *3/34*
U.S. Cl. 29—840 **37 Claims**

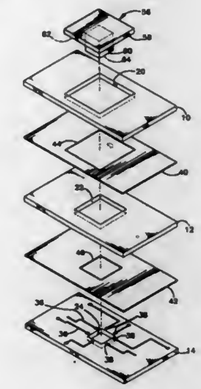
1. A method of forming a solder ball on a package, said method comprising the steps of:
a) positioning a solid solder member having at least one planar surface over an electrical contact pad having a second planar surface wherein said at least one planar surface is substantially parallel to said second planar surface;
b) heating said solid solder member to a temperature that is above the melting temperature of said solid solder member such that said solid solder member becomes substantially spherical and is wetted onto said electrical contact pad.

5,542,175

METHOD OF LAMINATING AND CIRCUITIZING SUBSTRATES HAVING OPENINGS THEREIN

Ashwinkumar C. Bhatt; Thomas P. Duffy, both of Endicott; Gerry A. Hackett, Apalachin, and Jeffrey McKeveny, Endicott, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1994, Ser. No. 359,491
Int. Cl.[6] H05K *3/10*
U.S. Cl. 29—846 **10 Claims**



1. A method of circuitizing a substrate having at least one opening therein extending from a circuit-receiving surface thereof, comprising the steps of,
forming an opening to have a stepped shaped configuration including an exposed surface within said opening extending transversely into said opening,
providing a relatively rigid plug member shaped to be removably fit within said opening and having a support surface thereon,
securing said plug member in said opening with said support surface thereof substantially coplanar with said circuit-receiving surface of said substrate,
covering at least a portion of said circuit-receiving surface and said support surface with a sheet of dry film photoresist to seal around said one opening with said plug member supporting said sheet of photoresist in the region of said one opening,
photolithographically exposing and developing said dry film resist material in a predetermined pattern,

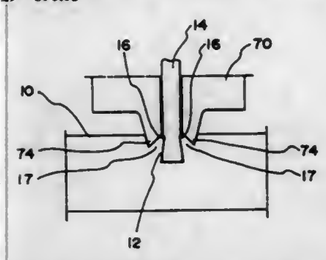
circuitizing said circuit-receiving surface using surface with electrical circuitry, and
thereafter stripping any remaining photoresist.

5,542,176

RADIATION PLATE AND METHOD OF PRODUCING THE SAME

Hideaki Serizawa, 3-12, Ookubo 4-chome, Kisarazu-shi, Chiba-ken; Masayoshi Hayami, Tokyo, and Kunimoto Yokozuka, Gunma-ken, all of, Japan, assignors to Hideaki Serizawa, Chiba-Ken, Japan

Division of Ser. No. 195,995, Feb. 14, 1994, abandoned. This application Jan. 30, 1995, Ser. No. 380,369
Int. Cl.[6] F28F *7/00;* **B23P** *11/00*
U.S. Cl. 29—890.03 **1 Claim**



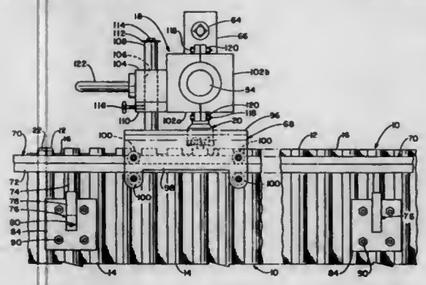
1. A method of manufacturing a radiation plate comprising forming a fin whereby a belt-like fin material is transferred by a pair of feed rollers, whereby a side edge of said fin material is deformed and expanded by a pair of groove forming rollers, and said fin material is cut at a desirable length by a cutter means, forming a base groove for the fin at a certain pitch on a base surface, and engaging the fin whereby the fin is held by a slit formed by a pair of plate-like pressure members, a side edge of the fin is pushed into the base groove by shifting a lift member, an outer portion of the base groove is deformed by a tapered pressure blade formed at a tip of a pair of the pressure members, and a part of the fin is engaged on the base groove.

5,542,177

BOILER TUBE BANK REPAIR

Mark W. Hillestad, 220 Hatch Rd., Wadsworth, Ohio 44281

Continuation-in-part of Ser. No. 154,751, Nov. 17, 1993, Pat. No. 5,356,248. This application Jul. 15, 1994, Ser. No. 275,585
Int. Cl.[6] B23P *15/26;* **B23C** *3/00;* **B23B** *35/00*
U.S. Cl. 29—890.031 **30 Claims**



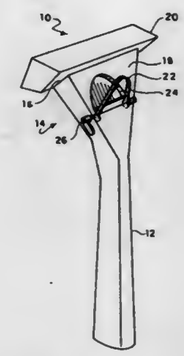
1. A motor-driven tool for removing membrane material from between tube ends of a tube wall, comprising:
a motor operatively connected to an output shaft and a rotary milling head mounted to said output shaft;
said rotary cutting head including a cylindrical body, said rotary milling head further including a pilot rod adapted to be inserted into a tube end of the tube wall to position and stabilize said milling head during milling of the membrane material, and an annular recess radially located between said pilot rod and said cylindrical body,
said rotary milling head having a plurality of cutting blades disposed circumferentially around the rotational axis thereof; said cutting blades each including a cutting edge collectively defining an annular cutting sweep having an inner radius which is about equal to the outer radius of a tube of the tube wall and an outer radius which is about equal to the sum of the outer radius of said tube wall plus from about 50 to 100 percent of the width of the membrane material between adjacent tubes of said tube wall; and
one or more cutting blades disposed within said recess for bevelling said tube end.

5,542,178

RAZOR FOR SHAVING CURVED AREAS OF THE BODY

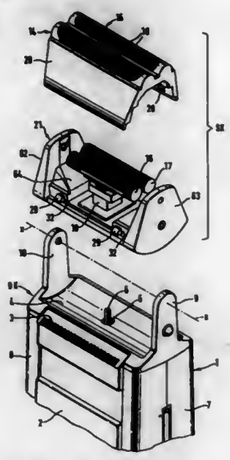
Zeke S. Harkleroad, P.O. Box 127, Barnhart, Tex. 76930

Filed Oct. 27, 1995, Ser. No. 549,222
Int. Cl.[6] B26B *21/40*
U.S. Cl. 30—34.1 **8 Claims**



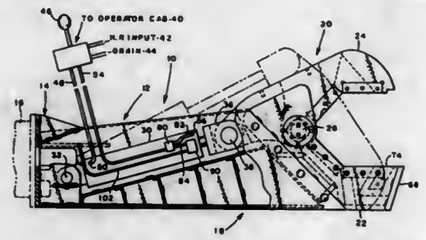
1. A razor for shaving highly curved body surfaces, said razor comprising:
a handle including a head portion having a face and a back;
a primary blade assembly attached to the face of said handle;
a channel formed in the back of said handle;
a row of detent notches formed in said channel;
an adjustment slide retained in said channel, said adjustment slide being slidable within said channel and being selectively engageable with said row of detent notches for locking said adjustment slide in a selected location;
a flexible, resilient, substantially rectangular blade having,
a sharp edge,
a first end secured in fixed position in said channel,
a second end secured to said adjustment slide;
whereby movement of said adjustment slide toward said first end of said blade causes said flexible blade to assume an arched position.

5,542,179
DRY SHAVING APPARATUS WITH OUTER CUTTER FRAME LOCKING MEANS
Kurt Beutel, Flörsheim, Germany, assignor to Braun Aktiengesellschaft, Kronberg, Germany
Filed Mar. 16, 1995, Ser. No. 404,914
Claims priority, application Germany, Mar. 26, 1994, 44 10 543.6
Int. Cl.[6] B26B *19/38*
U.S. Cl. 030—043.92 19 Claims



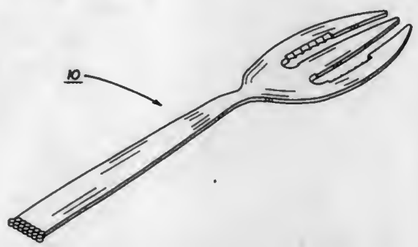
1. A dry shaving apparatus comprising:
a housing,
a housing portion having two latch elements and a spring,
a frame carrying an outer cutter two coupling elements which engage the latch elements, and
a control member controlling the latch elements, the control member being slidably moveable in a direction parallel to an axis x—x against the pressure of the spring, with the latch elements being movable in the housing portion in a direction transverse to the axis x—x and being displaceable by the control member in opposition to the pressure of the spring acting on the latch elements.

5,542,180
HEAVY DUTY SHEAR WITH ANTI-JAM FEATURE
Ron R. Karani, Chagrin Falls, Ohio, assignor to NPK Construction Equipment, Inc., Walton Hills, Ohio
Filed Feb. 3, 1994, Ser. No. 191,194
Int. Cl.[6] B23D *17/00*
U.S. Cl. 30—134 12 Claims



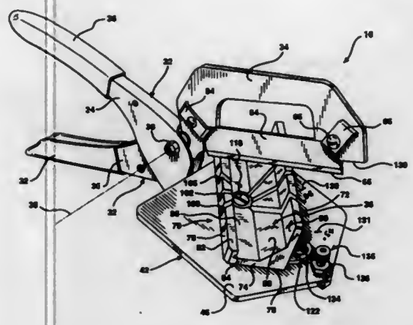
1. A heavy duty shear for attachment to a boom comprising:
a first jaw element;
a second jaw element;
pivot means connecting said first jaw element to said second jaw element;
a hydraulic cylinder which moves said first jaw element in a close direction toward said second jaw element and in an open direction away from said second jaw element, said hydraulic cylinder having an open input, a close input, a piston having a piston area within said cylinder and a rod having a rod cross sectional area interconnecting said piston and said first jaw element, said open input admitting hydraulic fluid to said cylinder on the side of said piston proximate to said rod, said close input admitting hydraulic fluid to said cylinder on the side of said piston remote from said rod;
a pressure sensing valve receiving high pressure hydraulic fluid at an input and supplying said high pressure fluid to a sensing valve first output connected to said cylinder open input when the pressure at said sensing valve first output is below a selected pressure value and supplying high pressure fluid to a sensing valve second output when the pressure at said sensing valve first output is above or equal to said selected pressure value;
a pressure intensifier receiving high pressure fluid from said sensing valve second output and providing hydraulic fluid at a pressure increased above said high pressure to said cylinder on the side of said piston proximate to said rod.

5,542,181
INTERIOR CUTTING EDGE FORK UTENSIL
Caroline J. Gaylord, 1600 Cobblestone Ct., Chesterton, Ind. 46304
Filed Jul. 31, 1995, Ser. No. 509,496
Int. Cl.[6] A47J *43/28*
U.S. Cl. 30—148 3 Claims



1. An interior cutting edge fork utensil comprising:
an elongated handle for being grasped and manipulated by an individual, the handle having a center tine, first lateral tine and a second lateral tine, each tine projecting from a first end of the handle, the center tine being oriented so as to extend substantially collinearly form the handle, the first lateral tine extending from the handle along a first lateral side of the center tine, the second lateral tine extending from the handle along a second lateral side of the center tine, the first and second lateral tines being spaced from the center tine so as to define slots directed therebetween;
a first lateral cutting edge extending along an interior edge of the first lateral tine;
a second lateral cutting edge extending along an interior edge of the second lateral tine, the first lateral cutting edge and the second lateral cutting edge each face the center tine; and
a first U-shaped cutting edge extending between the interior edge of the first lateral tine and a first interior edge of the center tine, and a second U-shaped cutting edge extending between the interior edge of the second lateral tine and a second interior edge of the center tine.

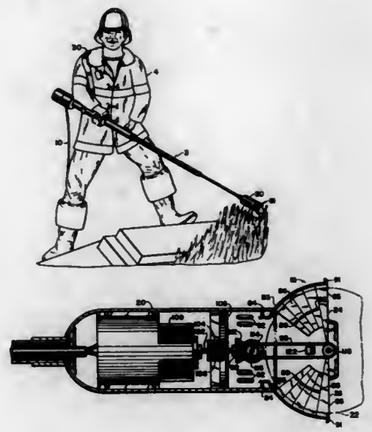
5,542,182
COVE MITERING TOOL
Leo Martinez, 21722 Pioneer Blvd., Hawaiian Gardens, Calif. 90716
Filed May 18, 1995, Ser. No. 444,199
Int. Cl.[6] B26B *17/00*
U.S. Cl. 30—179 20 Claims



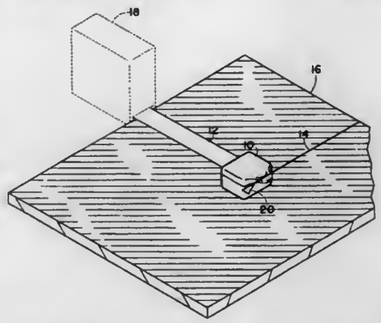
1. A linoleum cove strip cutting tool comprising: first and second levers both having handle ends and opposite ends and which are crossed with each other between their extremities, a lever fulcrum connector joining said levers to each other where they cross and defining a lever fulcrum axis, handles on said handle ends of both of said levers, a cutting blade located on said opposite end of said second lever and movable in a path lying in a cutting plane that is perpendicular to said fulcrum axis, an anvil located on said opposite end of said first lever and defining a flat upper surface lying in a plane perpendicular to said cutting plane, a jig disposed atop said flat upper surface of said anvil and defining a cove strip cradle extending parallel to said flat upper surface of said anvil, said jig defining a plurality of slots thereacross that are oriented perpendicular to said flat upper surface of said anvil and which extend into said cove strip cradle and which lie in separate planes that all intersect each other at a common jig axis that is perpendicular to said flat upper surface of said anvil, said jig axis also residing within said cutting plane, and a jig mounting post joining said jig to said anvil for rotation relative thereto about said jig axis.

5,542,183
FIREFIGHTER'S CEILING CUTTING TOOL
Phillip Allison, 283 Marbledale Rd., Tuckahoe, N.Y. 10707
Filed Dec. 23, 1994, Ser. No. 362,772
Int. Cl.[6] B26B *7/00*
U.S. Cl. 30—276 6 Claims

1. A firefighters' tool for cleanly and safely cutting through ceiling and wall panels comprising a base shaft within which telescoping extendable tubular sections including an outermost tubular section may be retracted, said base shaft carrying a power cord reel having control wires extending therein to a control handle mounted on the exterior of said base shaft, a retractable power cord extending through a central core of said extendable tubular sections to a motor mounted at the distal end of said outermost telescoping tubular section, said motor being encased within a waterproof enclosure with a drive shaft of said motor turning concentrically with respect to the axes of said extendable tubular sections and said base shaft, gearing means connecting said motor to a transverse shaft to rotate a circular cutting blade on an axis perpendicular to the central axis of said tubular sections and wherein the rotational axis of said blade is coincidental with the central axis of said tubular sections.



5,542,184
TAPE MEASURE KNIFE ATTACHMENT FOR CUTTING DRYWALL
Jay T. Beard, 413 E. Poplar Ave., San Mateo, Calif. 94401
Filed Sep. 18, 1995, Ser. No. 529,874
Int. Cl.[6] G01B *3/10*
U.S. Cl. 30—293 21 Claims



1. A device for cutting drywall, wherein the device is adapted for use with a flexible measuring tape, in which the cutting device comprises:
a) a knife blade having predetermined dimensions and having a cutting end;
b) a first body having (1) a first longitudinal axis, (2) a first forward end, (3) a first rearward end opposing the first forward end, (4) a first side, (5) a second side opposing the first side, (6) a first surface substantially parallel to the first longitudinal axis wherein the first surface has a measuring tape positioning structure adapted for receiving a first end section of the measuring tape, in which the positioning structure extends from the first forward end, (7) a second surface opposing the first surface wherein the second surface has a first region defining a first slot retaining the knife blade such that the cutting end of the knife blade extends a predetermined length from the second surface, in which the first slot is positioned proximate the first rearward end;
c) a second body attached to the first body wherein the second body has (1) a second forward end proximate the first forward end, (2) a second rearward end proximate the first rearward end, (3) a third side proximate the first side, (4) a fourth side proximate the second side, (5) a third surface contacting the

first surface and (6) a fourth surface opposing the third surface wherein the fourth surface has a handle protrusion; and

d) an attaching means for attaching the first body to the second body.

5,542,185

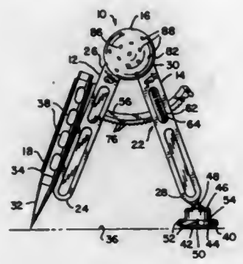
DEVICE FOR DESCRIBING ARCS

James C. Boda, Merrimac, Wis., assignor to Fiskars Inc., Madison, Wis.

Filed Apr. 15, 1994, Ser. No. 228,248

Int. Cl.[6] G01B *3/16*

U.S. Cl. 33—27.02 **21 Claims**



1. A device for describing arcs on a surface, the device comprising:

a pair of legs pivotably connected at one end by a pivot joint, each leg having a free end opposite the pivot joint;

a rack affixed to one leg of the pair of legs and oriented to extend through an opening on the opposite leg, the rack having a plurality of teeth along at least one edge;

a wheel having an outer periphery, the outer periphery rotatably disposed within the opening, the wheel including threads which cooperate with the plurality of teeth to move the rack and change the position of the legs with respect to each other when the wheel is rotated;

an instrument holder attached to one of the legs, the instrument holder being configured to hold an instrument for describing arcs; and

a shoe rotatably connected to the free end of the leg opposite the leg bearing the instrument holder, wherein the leg connected to the shoe can be rotated in the shoe to move the instrument in an arc about the shoe.

5,542,186

CLEAR VIEW PEEP SIGHT FOR ARCHERY BOW

Charles A. Saunders, Columbus, Nebr., assignor to Saunders Archery Co., Columbus, Nebr.

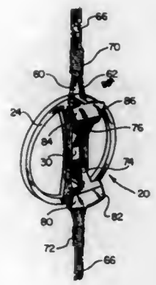
Filed Dec. 1, 1994, Ser. No. 347,682

Int. Cl.[6] F41G *1/467*

U.S. Cl. 33—265 **8 Claims**

1. A peepsight for mounting on a bowstring of an archery bow, said peepsight comprising ring means for supporting frame means, said frame means extending across and being circumscribed by said ring means for delineating a centrally disposed peepsight orifice, said ring means and said frame means demarking enlarged, broader target area viewing zones to either side of and above and below an actual target viewing zone framed by said peep sight orifice,

a pair of block-like bowstring guide means supported on said frame means at longitudinally spaced upper and lower areal end zones of said frame means for physically separating, and for frictionally engaging divided and tensioned strands of a bowstring trained about and traversing said guide means.



5,542,187

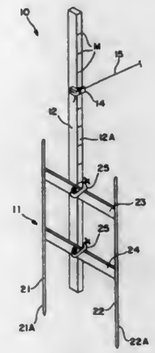
ALIGNMENT ASSEMBLY AND METHOD

William H. Oakley, P.O. Box 335, Sharon, S.C. 29742

Filed Mar. 20, 1995, Ser. No. 407,137

Int. Cl.[6] G01C *15/10;* **E04G** *21/18*

U.S. Cl. 33—404 **9 Claims**



1. An alignment assembly for being located adjacent to one end of a structure to be erected, and cooperating with a like assembly located adjacent to an opposite end of the structure for vertically aligning a surface of the structure as it is being erected, said alignment assembly comprising:

(a) a base consisting of first and second laterally spaced-apart legs including respective integrally-formed spiked end portions for being driven downwardly into a supporting surface a sufficient depth to mount the base in a stable condition during use in the absence of separate anchoring components, and web means vertically spaced apart from the supporting surface for interconnecting the first and second legs and maintaining the legs in spaced-apart relation to each other;

(b) an upright for being removably attached to said web means, and extending vertically upwardly between the first and second legs of said base; and

(c) a guide line for being secured to said upright, and extending laterally from the first alignment assembly to the second alignment assembly, said guide line being moveable vertically along said upright to maintain the surface of the structure in vertical alignment as the structure is being erected.

5,542,188

MEASURING APPARATUS FOR CHECKING THE DIMENSIONS OF CYLINDRICAL WORKPIECES

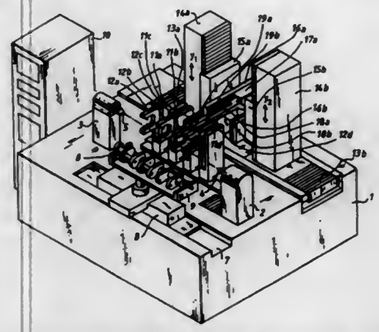
Friedrich Ertl, Ettlingen, and Hans-Ulrich Bertz, Kuppenheim, both of, Germany, assignors to Zeiss Messgerätebau GmbH, Ettlingen, Germany

Filed Jun. 7, 1995, Ser. No. 479,761

Claims priority, application Germany, Jun. 9, 1994, 44 20 137.0

Int. Cl.[6] G01B *7/12;7/28*

U.S. Cl. 33—605 **16 Claims**



1. A measuring apparatus for checking dimensions of a cylindrical workpiece defining a longitudinal axis and having centric and eccentric sections such as a crankshaft or a camshaft, the measuring apparatus comprising:

a workpiece holder for holding and rotating the workpiece thereby causing each of said eccentric sections to execute an eccentric movement;

first measuring devices for measuring the centric sections of said workpiece;

second measuring devices for measuring the eccentric sections of said workpiece;

each of said second measuring devices including a set of measuring sensors for measuring a corresponding one of said eccentric sections and for emitting signals indicative of the measurements;

a plurality of drive means for driving corresponding ones of said second measuring devices perpendicularly to said longitudinal axis; and,

control means adapted to control each one of said second measuring devices on a desired path in correspondence to the eccentricity of the particular eccentric section to be measured when said workpiece is rotated thereby permitting the set of sensors of said one measuring device to measure the eccentric section or to control each one of said second measuring devices to track the eccentric movement of a corresponding one of said eccentric sections in correspondence to said signals when said workpiece is rotated.

5,542,189

TIMING CHAIN ADJUSTING DEVICE

Keith Luton, P.O. Box 1207, DeFuniak Springs, Fla. 32433

Filed May 26, 1994, Ser. No. 249,469

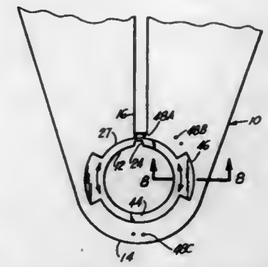
Int. Cl.[6] G01D *21/00*

U.S. Cl. 33—600 **7 Claims**

1. A timing chain adjusting device comprising:

(a) an elongated planar plate of rigid or semi-rigid material, said plate being of lesser lateral extent at its first end portion than at the other or second end portion;

(b) a first circular opening within said plate and adjacent said first end portion of said plate, said circular opening being configured with a keyway notch provided at the perimeter thereof;



(c) a second elongated narrow opening within said plate having a longitudinal axis oriented to pass through the center of said first circular opening, said second elongated opening extending generally longitudinally from a first position near to said notch provided at the perimeter of said first circular opening to a second position approaching said second end portion of said plate, said keyway notch of said first opening being located in said perimeter of said first opening in alignment with said longitudinal axis of said second opening; and,

(d) a rotatable ring secured about the circumference of said first circular opening, said rotatable ring having a keyway notch at its perimeter for alignment with said keyway notch in said first circular opening.

5,542,190

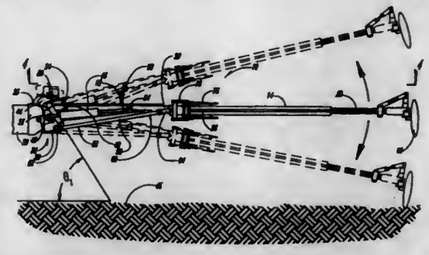
BIFOLD FIELD MARKER

Stephen L. Wahls, Lexington, Nebr., assignor to Orthman Manufacturing, Inc., Lexington, Nebr.

Continuation-in-part of Ser. No. 149,637, Nov. 9, 1993, Pat. No. 5,408,756. This application Jan. 30, 1995, Ser. No. 379,904

Int. Cl.[6] A01B *69/02;73/02*

U.S. Cl. 33—624 **12 Claims**



1. A bifold field marker for a farm implement having a toolbar, said marker comprising:

a mounting bracket attached to the tool bar of the farm implement;

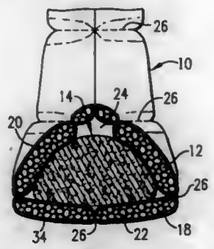
a main pivot shaft connected to the mounting bracket offset approximately 30 to 60 degrees;

an arm having a first section and a second section, the first section being coupled to the main pivot shaft and supported for pivotal movement about the main pivot shaft between a first extended position wherein the first section and second section are substantially co-linear and a second transport position wherein the first section and the second section are folded adjacent each other, the second section being connected to the first section and supported for pivotal movement about a secondary shaft between the first extended position and the second transport position;

ground marking means attached to the second section for marking a path in the ground when the marker is in the first extended position; and

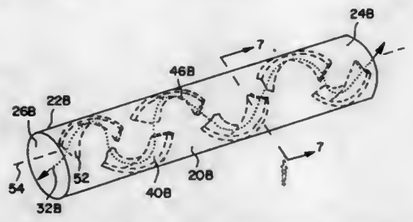
hydraulic power means for moving the arm between the first extended position and the second transport position.

5,542,191
FOOTWEAR DRYING INSERT
Elizabeth J. Shouse, and Ronald W. Shouse, both of Overland Park, Kans., assignors to Shouse Financial Corporation, Kansas City, Mo.
Filed Oct. 25, 1995, Ser. No. 548,280
Int. Cl.[6] F26B *25/00*
U.S. Cl. 34—104 9 Claims



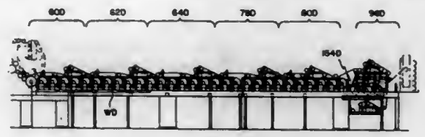
6. A footwear drying insert comprising:
an elongated foot-shaped body defining opposing toe and heel ends and a longitudinal axis extending between the ends, the body including a shank extending upward from the heel end in a direction generally transverse to the longitudinal axis, and tubular inner and outer layers of material that are secured together to define an intermediate space between the layers and an interior space within the inner tubular layer;
a plurality of baffles formed between and connecting the inner and outer layers of the body together, the baffles extending in a direction generally parallel to the longitudinal axis between the toe and heel ends of the body to divide the intermediate space into compartments;
two desiccant compositions enveloped within the compartments, one of the compositions including a relatively high desiccant volume percentage and being enveloped in the compartments extending between the toe and heel ends, and the other of the compositions including a relatively low desiccant volume percentage and being enveloped in the compartments of the shank; and
a support means provided in the interior space for providing outward support of the body during use drying footwear, the support means being compressible to allow the insert to be deformed for insertion into and removal from the footwear.

5,542,192
VACUUM ROLL APPARATUS
Rajendra D. Deshpande, South Beloit, Ill.; William R. McGraw, Beloit, Wis., and Jeffrey H. Pulkowski, Roscoe, Ill., assignors to Beloit Technologies, Inc., Wilmington, Del.
Filed Sep. 10, 1993, Ser. No. 119,927
Int. Cl.[6] F26B *11/02*
U.S. Cl. 34—115 2 Claims



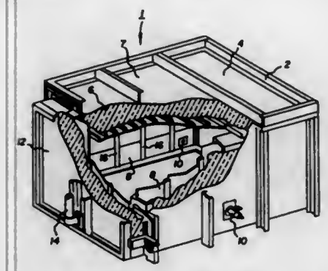
1. A vacuum roll apparatus for transferring a web supported on a dryer felt from a first to a second drying cylinder of a dryer section said apparatus comprising:
a rotatable perforate shell having a first and a second end, said shell defining a cavity extending from said first to said second end of said shell, the arrangement being such that the dryer felt extends from the first dryer around said perforate shell to said second dryer, the web extending contiguously with the dryer felt disposed between said shell and the web:
fin means rigidly secured to said shell and disposed within said cavity such that when said shell is being rotated, said fin means generates a flow of air through said perforate shell towards said cavity for drawing the web into close conformity with the dryer felt during movement thereof over the vacuum roll apparatus so that the web is restrained against cross-machine directional shrinkage;
said fin means including:
a first fin rigidly secured to said shell along the length thereof between said first and second end of said shell, said first fin being curved with a radius of curvature which is less than the radius of curvature of said shell, said first fin having a proximal and a distal end, said proximal end being secured to said shell, said distal end being disposed within said cavity; and
a second fin rigidly secured to said shell along the length thereof between said first and second end of said shell, said second fin being secured diametrically opposite to said first fin, said second fin being curved in an opposite direction to said first fin and with a radius of curvature which is less than the radius of curvature of said shell, said second fin having a proximal and a distal end, said proximal end being secured to said shell diametrically opposite to said proximal end of said first fin, said distal end being disposed within said cavity such that when said shell is rotated, said fins interact with one another within said cavity for generating said flow of air through said perforate shell towards said cavity.

5,542,193
DRYER GROUP FOR CURL CONTROL
Duke N. Sims, Roscoe, Ill., and Gregory L. Wedel, Beloit, Wis., assignors to Beloit Technologies, Inc., Wilmington, Del.
Continuation-in-part of Ser. No. 95,135, Jul. 21, 1993, Pat. No. 5,283,960, which is a continuation of Ser. No. 873,420, Apr. 24, 1992, Pat. No. 5,269,074. This application Feb. 7, 1994, Ser. No. 192,685
Int. Cl.[6] F26B *11/02*
U.S. Cl. 34—117 48 Claims



44. A drying apparatus for drying a web of paper, said apparatus comprising:
a plurality of drying groups capable of drying the web to a dryness of at least about 70%;
each of said drying groups including:
a plurality of dryers disposed in a single tier configuration;
a plurality of vacuum transfer rolls, each vacuum roll being disposed between adjacent dryers of said plurality of dryers;
a dryer felt extending alternately around each dryer and each vacuum roll, the arrangement being such that each of said dryers is top felted so that broke removal is facilitated, each of said drying groups being arranged in succession;
a further drying group only disposed downstream relative to said plurality of drying groups such that the web extends between said plurality of drying groups and said further drying
said further drying group including: group;
an upper tier of dryers;
an upper plurality of rolls disposed between adjacent dryers of said upper tier;
an upper felt extending alternately around each dryer of said upper tier and each roll of said upper plurality of rolls;
a lower tier of dryers;
a lower plurality of rolls disposed between adjacent dryers of said lower tier; and
a lower felt extending alternately around each dryer of said lower tier and each roll of said lower rolls, the arrangement being such that the web extends in open draw between each dryer of said upper and lower tiers so that any tendency of the web to curl is controlled during movement of the web through said further drying group.

5,542,194
SILICON CARBIDE BODY FOR RADIATING FAR-INFRARED RADIATION, DRYING APPARATUS INCLUDING THE BODY, AND FIRING APPARATUS INCLUDING THE BODY
Shigeru Hanzawa, Kagamihara, and Tsuneo Komiyama, Toki, both of, Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan
Filed Jan. 26, 1994, Ser. No. 188,323
Claims priority, application Japan, Feb. 2, 1993, 5-015708; Dec. 27, 1993, 5-329415
Int. Cl.[6] F26B *3/34*
U.S. Cl. 34—266 5 Claims



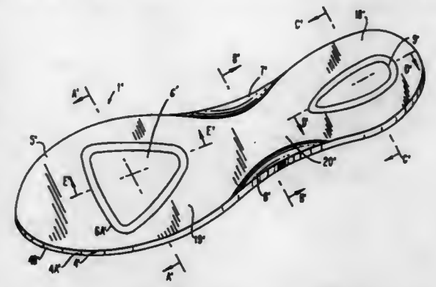
4. A firing apparatus comprising a housing and a liner composed of a body for radiating far-infrared radiation, said body being comprised of a ceramic containing SiC and having a surface roughness Ra of 0.5 μm or more.

5,542,195
SHOE CONSTRUCTION WITH INTERNAL CUSHIONING RIBS
Raymond V. Sessa, Grand Rapids, Mich., assignor to Wolverine World Wide, Inc., Rockford, Mich.
Continuation of Ser. No. 191,024, Feb. 2, 1994, abandoned. This application Dec. 11, 1995, Ser. No. 570,357
Int. Cl.[6] A43B *13/38*
U.S. Cl. 36—28 11 Claims



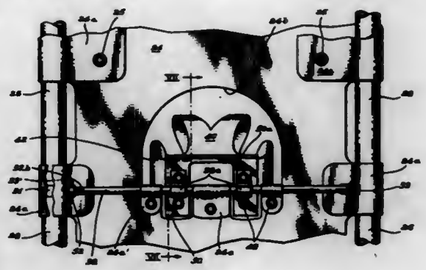
1. A sole assembly for a shoe, said sole assembly comprising:
an outsole defining an upwardly opening recess having sole and heel portions; and
an insert within said recess and including a plurality of downwardly extending ribs engaging said outsole, each of said ribs being uniform in height across the width of said insert and each having a rounded triangular cross section, said ribs within said heel portion of said recess being inclined from the vertical forwardly toward said sole portion, said ribs within said sole portion of said recess being inclined from the vertical rearwardly toward said heel portion.

5,542,196
INSOLE
Scott Kantro, New York, N.Y., assignor to Donna Karan Shoe Company, New York, N.Y.
Continuation of Ser. No. 228,131, Apr. 15, 1994, abandoned. This application Jun. 2, 1995, Ser. No. 459,536
Int. Cl.[6] A43B *13/38*
U.S. Cl. 36—44 11 Claims



1. An innersole for underlying a human foot, said human foot having a forefoot, a rearfoot, a centroid region, a calcaneal region, and a metatarsal arch, said innersole comprising:
a) a first layer having a first hardness and a shape corresponding to the full plantar sole of the human foot, and a lowermost portion of the first layer lying in a first plane
b) a second layer having a second hardness, said second layer for underlying the periphery of the forefoot, the periphery of the rearfoot, and the centroid region of the foot and said second layer having means defining a first opening for underlying the calcaneal region and means defining a second opening for underlying the metatarsal arch, and a uppermost portion of the second layer lying in a second plane
wherein the second hardness is greater than the first hardness and, the second layer is positioned beneath and is distinct from the first layer and the first and second planes being directly adjacent.

5,542,197
SNOWSHOE WITH ADJUSTABLE DECKING TENSION
Maurice Vincent, 410, rue Thomas Martin village, Huron (Québec), Canada
Filed Jun. 5, 1995, Ser. No. 462,943
Int. Cl.[6] A43B *5/04;5/16*
U.S. Cl. 36—122 7 Claims



1. A snowshoe comprising:

(a) a semi-rigid, open, main frame, defining a main inner open area;
(b) a flexible sheet decking, extending over said open frame main inner open area, and defining a peripheral edge section;
(c) means for attaching the peripheral edge section of said sheet decking to said main frame; and
(d) means for adjustably varying the tensioning of said flexible sheet decking; whereby said sheet decking is adapted to receive and support a wearer's foot;

wherein said tension adjusting means includes an elongated telescopic member, extending through said main open area and connected at opposite ends to said main frame, wherein said telescopic member adjustably deforms the shape of said flexible sheet decking whereby variations in tensioning thereof follows;

wherein said open frame consists of a tubular member, disposed in an ovoidal closed loop fashion; and said adjustment means includes:

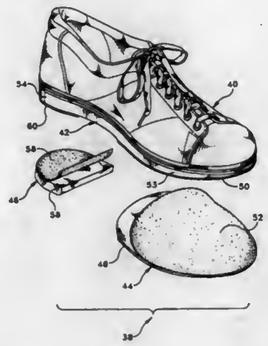
a rigid elongated cross-bar member, extending transversely of said main open area at an intermediate section of said main frame;

means for mounting each end portion of the cross-bar member to transversely opposite sections of said frame tubular member; and

telescopic means for varying the length of said cross-bar member

wherein said frame tubular member includes two generally U-shaped half-sections, and a pair of first and second tubular connector members releasably interconnecting the outer ends of each pair of coxially registering legs of said two half-sections of the frame tubular member; said mounting means including a radial cavity in said first connector member, being fully engaged by a first end portion of said cross-bar member, and a radial channel in said second connector member, being at least partially engaged by a second end portion of said cross-bar member.

5,542,198
BOWLING SHOE CONSTRUCTION WITH REMOVABLE SLIDE PAD AND HEEL
Leo H. Famolare, Kennebunkport, Me., assignor to Dexter Shoe Company, Dexter, Me.
Continuation-in-part of Ser. No. 203,906, Feb. 23, 1994. This application Dec. 21, 1994, Ser. No. 360,459
Int. Cl.[6] A43B *5/00;* A43C *13/00*
U.S. Cl. 36—130.0 **3 Claims**



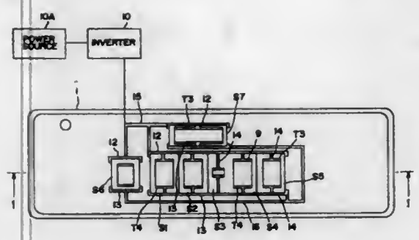
1. A bowling shoe kit comprising:
a shoe upper;
a shoe sole mounted to the shoe upper, said shoe sole having a tread surface and a slide area on said tread surface extending longitudinally from a toe end of said shoe sole rearwardly to an arch portion thereof and extending laterally across an entire width of said tread surface, said shoe sole further including a wedge which angles upwardly and forwardly from said tread surface toward said shoe upper;
a plurality of slide pads each having a peripheral margin substantially equal to a peripheral margin of said slide area of said tread surface, each of said plurality of slide pads being fabricated from a material having a different coefficient of friction;
means for removably securing a selected slide pad to said slide area of said tread surface wherein said selected slide pad substantially covers said slide area, and whereby said plurality of slide pads are readily interchangeable to vary the coefficient of friction of the slide area of the tread surface according to bowling lane conditions;
a plurality of heels, each being fabricated from a material having a different coefficient of friction; and
means for removably securing a selected heel to a heel portion of said tread surface of said shoe sole, whereby said plurality of heels are readily interchangeable to vary the coefficient of friction of the heel portion of the tread surface according to bowling lane conditions, said interchangeable slide pads and said interchangeable heels cooperating to provide a tread surface having a variable coefficient of friction between the slide area and the heel portion.

5,542,199
GARMENT PRESSING APPARATUS WITH GARMENT END ROTATOR
Mark S. Dreisbach, Lopez; Russell J. Miller, Milan, and John Dehler, New Albany, all of Pa., assignors to Hoffman/New Yorker, Inc., Dushore, Pa.
Filed Jul. 19, 1995, Ser. No. 504,759
Int. Cl.[6] D06F *71/29;71/40*
U.S. Cl. 38—12 **19 Claims**

1. Apparatus for pressing a clothes garment having first and second opposite ends comprising a buck around which the first end of the garment is turned as it is pressed, a rotator mechanism comprising clamp means for clamping the second end of the garment and drive means for rotating said clamp means and second end of the garment as said first end of the garment is turned on the buck.

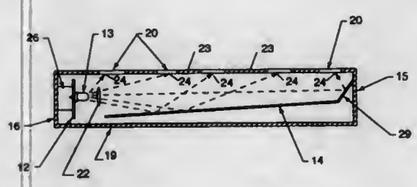
5,542,200
NUMBER PLATE INCLUDING LUMINOUS CHARACTERS
Masaaki Matsuoka, Tokyo, Japan, assignor to World Auto Plate, Ltd., Tokyo, Japan
Filed Jun. 30, 1994, Ser. No. 268,334
Claims priority, application Japan, Aug. 23, 1993, 5-050130
Int. Cl.[6] G09F *13/02*
U.S. Cl. 40—204 **7 Claims**

1. A number plate including luminous characters, comprising:
a front plate having a plurality of character portions punched therefrom to serve as a number-plate,



a plurality of characters each molded of a transparent or translucent synthetic resin, said characters being fitted into said character portions,
a plurality of separate electroluminescent plates disposed on the rear surface side of said front plate in a number corresponding to a number of said plurality of characters, said plurality of electroluminescent plates for illuminating said character portions with a light generated thereby,
a DC/AC inverter disposed on the bottom side of a case of said number plate, said DC/AC inverter being electrically connected to said electroluminescent plates and a power source for a vehicle via two electrodes,
a plurality of base boards each secured to an electroluminescent plate and having the substantially same area as that of each character portion, and
a support portion for supporting said base boards by fitting the latter thereto, said support portion serving as two electrodes for said electroluminescent plate and electrically connected to the latter.

5,542,201
INDIRECTLY ILLUMINATED SIGN
Daniel J. Grondal, Bethel, and Robert M. Johnstone, Fairfield, both of Conn., assignors to Prolume, Inc., Fairfield, Conn.
Continuation of Ser. No. 102,285, Aug. 5, 1993, Pat. No. 5,428,912. This application Jun. 7, 1995, Ser. No. 483,257
Int. Cl.[6] G09F *13/04*
U.S. Cl. 40—570 **23 Claims**



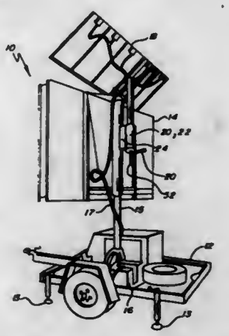
1. A sign assembly, comprising:
a housing including a plurality of sides defining an enclosure, and a display located on a side of the housing, the display including indicia defined by at least one translucent portion to permit the passage of light therethrough for viewing the indicia;
a circuit board mounted on a wall of the housing adjoining the side of the display, the circuit board being oriented generally perpendicular to the display;
a plurality of light emitting diodes mounted on the circuit board for illuminating the enclosure; and
a reflective surface located within the enclosure for reflecting light transmitted by the diodes through the at least one translucent portion of the display.

5,542,202
CHANGEABLE LETTERS FOR SIGNS
Joseph G. Brugger, Palmetto, Fla., assignor to Gemini, Inc., Cannon Falls, Minn.
Continuation of Ser. No. 75,817, Jan. 11, 1993, abandoned. This application May 31, 1995, Ser. No. 456,281
Int. Cl.[6] G09F *13/04;7/10*
U.S. Cl. 40—576 **9 Claims**



1. A changeable letter for signs comprising:
a) a translucent planar plate presenting a front side and a back side;
b) a first layer of a material having a substantially opaque color applied to a viewing surface at the front side and configured to define boundaries of a first indicia; and
c) a second layer of a material configured to define boundaries of a second indicia and of a contrasting color to the first layer applied directly over said said first layer and wherein at least one boundary of said second indicia is smaller than an outer boundary of said first indicia, such that said first and second layers define an intelligible character bordered by a contrasting color and readable at the front side in daylight and backlit conditions.

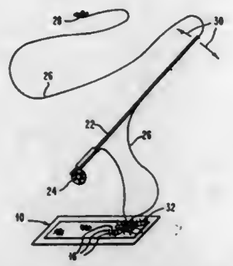
5,542,203
MOBILE SIGN WITH SOLAR PANEL
Eugene H. Luoma, Duluth, and James L. Blesener, White Bear Lake, both of Minn., assignors to ADDCO Manufacturing, Inc., St. Paul, Minn.
Filed Aug. 5, 1994, Ser. No. 286,675
Int. Cl.[6] G09F *13/00*
U.S. Cl. 40—610 **12 Claims**



1. A mobile sign with solar panel for directing messages to vehicular traffic on a highway, comprising:
a wheeled vehicle for carrying the sign,
an electrically powered sign panel and controls thereof said electrically powered sign panel and controls are mounted on

said wheeled vehicle, for displaying messages and changing the displayed messages,
a chargeable battery on the wheeled vehicle for powering said sign panel and connected to said sign panel,
an electricity generating solar panel connected to said battery for charging said battery,
means for mounting said solar panel on said wheeled vehicle, and
means for tilting and rotating said solar panel relative to said wheeled vehicle for orienting said solar panel to directly face the sun, said sign panel being rotatable relative to said wheeled vehicle, said means for tilting and rotating said solar panel operating independently of the rotation of said sign panel.

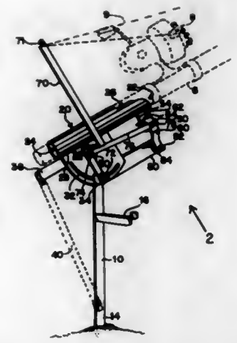
5,542,204
FLY-FISHING LINE HOLDING DEVICE
William H. Heaney, 468 Cambridge Rd., Ridgewood, N.J. 07450
Filed Sep. 13, 1994, Ser. No. 305,155
Int. Cl.[6] A01K *97/00*
U.S. Cl. 43—4 **8 Claims**



1. A mat device for at least partly immobilizing a fly line on a surface of the mat device, in combination with the fly line, comprising:
a substrate;
a plurality of horizontally spaced, upstanding flexible prongs, extending upwardly from the substrate so that, fly line deposited randomly onto the substrate and among the plurality of prongs is at least partly immobilized against lateral movement across the substrate due to wind, the fly line being easily removed from among the prongs; and
a fly line deposited randomly onto the substrate and among the prongs.

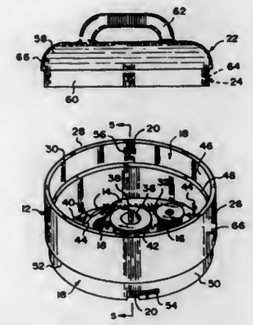
5,542,205
AUTOMATIC HOOK SETTING FISHING POLE HOLDER
Lester Updike, 3730 N. Linder, Meridian, Id. 83642
Filed Nov. 14, 1994, Ser. No. 339,594
Int. Cl.[6] A01K *97/12*
U.S. Cl. 43—15 **11 Claims**

1. An automatic hook setting fishing rod holder comprising:
(a) a vertical support member having upper and lower ends;
(b) a holder arm member pivotally attached to the vertical support member, and having a forward end;
(c) spring means interconnected between the vertical support member and the holder arm member for urging the forward end of the holder arm member upward;
(d) latching means, including a roller nut attached to the holder arm member and a pawl formed of a plate extending generally normal from a latch arm pivotally connected to a support arm fixedly attached to the vertical support member, for restraining upward motion of the forward portion of the holder arm member until the roller nut is disengaged from the pawl, and



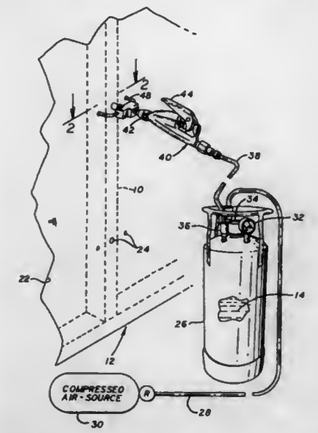
latch adjustment means for varying the force necessary to disengage the roller nut from the pawl;
(e) trigger means pivotally attached to the vertical support member for disengaging the roller nut from the pawl.

5,542,206
LURE AND TACKLE STACKING CONTAINER
Albert Lisch, 160 Kaluamoo St., Kailua, Hi. 96734
Filed Oct. 11, 1994, Ser. No. 320,699
Int. Cl.[6] A01K *97/06*; **B65D** *6/00*
U.S. Cl. 43—54.1 **8 Claims**



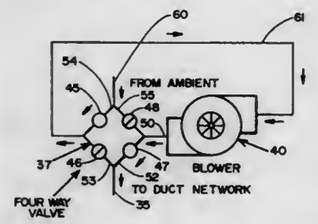
1. A lure and tackle stacking container comprising:
a) a plurality of independent trays, in which each said tray can hold lures and tackle therein, wherein each said tray includes a cylindrical side wall having an open top with an annular rim thereabout, a disc-shaped bottom wall, an upstanding central barrel formed on said bottom wall, in which said barrel has a finger hole therethrough, and an annular top flange formed on said barrel, so that a person can insert a finger into said finger hole and grip said flange to lift and carry said tray, wherein said bottom wall is perforated to allow water drainage therethrough, said tray further including a foam rubber sleeve to fit over said barrel and under said flange, so that hooks on the lures can be inserted into said sleeve for safety reasons;
b) means in each said tray, for stacking said trays one upon the other;
c) means in each said tray for interlocking and unlocking said trays when said trays are stacked one upon the other;
d) a cover to fit upon said uppermost tray; and
e) means in said cover for interlocking and unlocking said cover to said uppermost tray.

5,542,207
PROCESS FOR CONTROLLING INSECT INFESTATIONS IN A STRUCTURE
Wayne F. Morris, Sr., Leona Valley, Calif., assignor to Home Saving Termite Control, Inc., Leona Valley, Calif.
Filed Nov. 23, 1994, Ser. No. 343,845
Int. Cl.[6] A01M *1/20*
U.S. Cl. 43—132.1 **25 Claims**



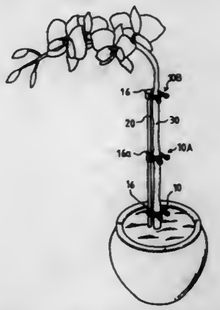
1. A process for controlling insect infestations in a structure, comprising the steps of:
identifying an infested wood member of the structure;
impregnating the infested wood member with a borate solution; and
injecting an amorphous silica gel dust into structural voids adjacent to the exterior of the structure.

5,542,208
MOBILE UNIT FOR TREATING SOIL
William M. Benson, 3537 Pebble Beach Dr., Martinez, Ga. 30907
Continuation-in-part of Ser. No. 177,441, Jan. 5, 1994, Pat. No. 5,433,759. This application Oct. 7, 1994, Ser. No. 319,122
Int. Cl.[6] A01G *25/06*
U.S. Cl. 47—1.01 **9 Claims**



1. Apparatus for treating the soil of a sportsfield or grass site that includes
a duct network buried beneath the soil of a site in a gravel bed, ducts in said network having perforations therein that are in fluid flow communication with said gravel bed,
a mobile unit that includes a blower means for supplying air to the duct network at a pressure and volume such that the air is distributed uniformly throughout the bed and is forced upwardly through the soil into the ambient surrounding the site,
means for coupling and decoupling the blower to the duct network, and
a flow reversing means for reversing the flow of air through said duct network that includes a four-way valve mounted upon the mobile unit for selectively connecting the duct network to either a discharge port on said blower or a suction port on said blower whereby air can be either pushed upwardly through the soil or drawn downwardly through the soil.

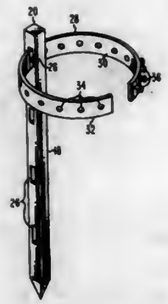
5,542,209
STALK SUPPORT FOR FLOWERS
Shyong-Shyy Sheu, Suite 1, 11F. No. 95-8 Chang Ping Rd. Sec. 1, Taichung, Taiwan
Filed Jan. 4, 1994, Ser. No. 177,276
Int. Cl.[6] A01G *17/06*
U.S. Cl. 47—44 **5 Claims**



1. A stalk support for flowers comprising an integrally formed clamp adapted for attaching a flower to a rod member, said clamp comprising a roughly R-shaped body formed of resilient material and having a closed loop clasp portion formed by a pair of arms having adjacent ends, one of said arms including a cylindrical sleeve portion adapted to receive said rod member in a longitudinally displaceable manner adjacent it's respective end, and the other of said arms being resiliently displaceable relative to said first arm to receive the peduncle or stem of a plant, said clamp further including a pair of legs extending from said closed loop at spaced locations roughly opposite said adjacent ends whereby squeezing said legs will cause the ends of said arms to move resiliently apart to receive and hold said peduncle.

5,542,210
APPARATUS FOR SUPPORTING PLANTLIFE GROWING IN A GROUND AREA
Martin Hupfl, 334 Gordon Rd., Robinsville, N.J. 08691
Filed Jul. 3, 1995, Ser. No. 497,734
Int. Cl.[6] A01G *17/06*
U.S. Cl. 47—47 **20 Claims**

1. An apparatus for supporting plantlife growing in a ground area comprising:
A. a stake means including an insertion end secured extending into a ground area adjacent to a plantlife to position said stake means extending upwardly out of a ground area thereadjacent, said stake means defining at least one slot means extending generally laterally therethrough;
B. a supporting strap means including a flat surface area being adapted to abut adjacent plantlife for supporting thereof, said supporting strap means further defining a plurality of aperture means extending therethrough, said supporting strap means extending through said slot means defined in said stake means for securing of plantlife with respect thereto, said supporting strap means further including a plurality of stud means extending outwardly therefrom, at least one of said stud



means being detachably engageable extending through at least one of said aperture means to affix said supporting strap means into a circular loop shape in surrounding supporting engagement with respect to adjacent plantlife for supporting thereof and extending through one of said slot means defined in said stake means; and

C. a tubular locking means extending around said supporting strap means and being slidably movable therealong, said tubular locking means being movable to a locking position in surrounding engagement with respect to said stud means in engagement with one of said aperture means to facilitate detachably securement therebetween.

20. An apparatus for supporting plantlife growing in a ground area comprising:

A. a stake means including a top means and an insertion end thereon spatially disposed with respect to one another, said stake means being approximately four to six feet in length, said stake means being made of hard-recycled plastic, said insertion end including an insertion point means secured extending into a ground area adjacent to a plantlife to position said stake means extending upwardly out of a ground area thereadjacent, said stake means defining a slot means extending generally laterally therethrough, said slot means including at least three and less than five slot members defined therein;

B. a supporting strap means including a first flat surface area being adapted to abut adjacent plantlife for supporting thereof, said supporting strap means further including a second flat surface area oppositely positioned thereon from said first flat surface, said first flat surface area of said supporting strap means being oriented perpendicularly with respect to the ground area to minimize damaging of plantlife abutting thereagainst for support, said supporting strap means being made of hard recycled plastic, said supporting strap means further defining a plurality of aperture means extending therethrough, said supporting strap means extending through said slot means defined in said stake means for securing of plantlife with respect thereto, said supporting strap means further including a plurality of stud means thereon and extending outwardly therefrom, at least one of said stud means being detachably engageable extending through at least one of said aperture means to affix said supporting strap means into a circular loop shape in surrounding supporting engagement with respect to adjacent plantlife for supporting thereof and extending through one of said slot means defined in said stake means, each of said stud means include an enlarged head thereon to facilitate detachable securement of each of said stud means with respect to said aperture means.; and

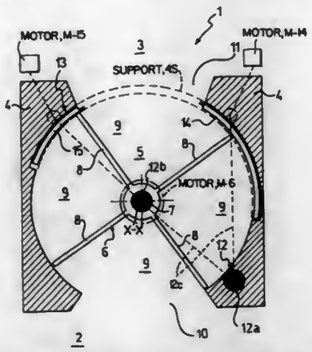
C. a tubular locking means made of hard recycled plastic and extending around said supporting strap means and being slidably movable therealong, said tubular locking means being movable to a locking position in surrounding engagement with respect to said stud means in engagement with one of said aperture means to facilitate detachably securement therebetween, said tubular locking means also being movable to a plantlife engaging position surrounding said supporting strap means in the area thereof in abutment with respect to the supported plantlife to further minimize damaging thereof.

5,542,211

REVOLVING SECURITY DOOR FOR BANKS AND THE LIKE

Attilio Colombo, Busto Arsizio, Italy, assignor to Tonali S.P.A., Desio, Italy

Continuation of Ser. No. 153,145, Nov. 15, 1993, abandoned. This application Jun. 12, 1995, Ser. No. 489,235
Claims priority, application Italy, Nov. 26, 1992, MI92A2702
Int. Cl.[6] E05D *15/02*
U.S. Cl. 49—42 **10 Claims**



1. A revolving security door for the controlled passage of persons from a non-protected environment to a protected environment including a cylindrical chamber formed inside a structure, a turnstile rotatable within the chamber in a predetermined sense of rotation and having sectors each for accommodating a person, the structure being formed with an entry aperture for entry into the chamber from the non-protected environment and an exit aperture for exit from the chamber to the protected environment, a sensor associated with the structure in the correspondence with the entry aperture for emitting an alarm signal when an unwelcome person has entered a first sector of said sectors within the chambers, and an emergency door associated with the exit aperture and activated to close by the said alarm signal, characterized in that the emergency door includes a first panel and a second panel located in their open positions respectively upstream and downstream of the exit aperture relative to the sense of rotation of the turnstile, and the apparatus further comprises means to move said panels to be joined and to continue to block said exit aperture, means to hold the panels joined and to rotate them together in the opposite sense of rotation from that of the turnstile until the turnstile first sector is rotated past the exit aperture, and means for opening the emergency door by returning both panels to their open positions and thus unblocking the exit aperture.

5,542,212

LOCKING TERMINAL FOR FULL TILT DOUBLE-HUNG WINDOWS

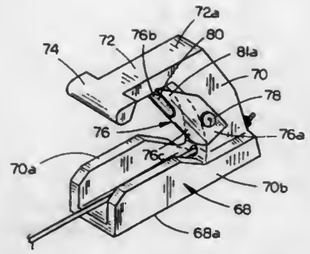
Steven E. Erickson, and Stanley D. Peterson, both of Lincoln, Nebr., assignors to Outlook Window Partnership L.P., Lincoln, Nebr.

Filed Jan. 14, 1995, Ser. No. 422,434
Int. Cl.[6] E05D *15/22*
U.S. Cl. 49—181 **7 Claims**

1. A locking terminal for receiving a cam pivot in full tilt, double-hung and single-hung windows, comprising:

an elongated slide member having a base portion and a pair of opposing, upwardly extending side walls, said slide member having forward and rearward ends and a channel extending from the forward end to the rearward end;

a back projecting upwardly from the rearward end of the slide member and having forward and rearward faces and opposing side walls;



an arm affixed to an upper end of the back and projecting forwardly therefrom generally parallel to base portion of the slide member, said arm having an upper surface extending generally parallel to the base portion of the slide member;

a locking member pivotally mounted on the back for movement between an engaged position and a sliding position;

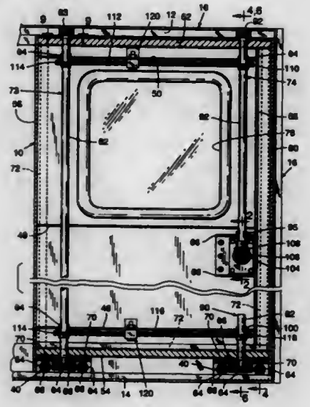
said locking member having a tooth which projects upwardly beyond said arm upper surface when the locking member is in the engaged position, and projects below the arm upper surface when in the sliding position.

5,542,213

SLIDING MARINE CLOSURE

Arvie E. Freeman, Ophir, Oreg., assignor to Freeman Marine Equipment, Inc., Gold Beach, Oreg.

Filed Oct. 27, 1994, Ser. No. 330,253
Int. Cl.[6] E05D *15/10*
U.S. Cl. 49—221 **21 Claims**



1. A closure assembly for a closure opening defined by a closure frame, comprising:

(a) a first, elongate, linear guideway comprising one side of the closure frame;

(b) a second, elongate, linear guideway parallel to the first guideway and comprising an opposite side of the closure frame;

(c) a bearing assembly movably engaged with the first guideway for longitudinal movement therealong, the first guideway restraining the bearing assembly against substantial lateral movement relative to the first guideway;

(d) a closure mounted on the bearing assembly for longitudinal movement therewith and for lateral movement relative to the bearing assembly;

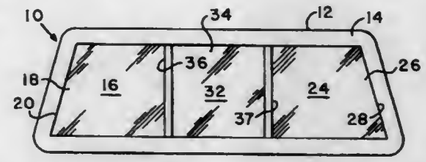
(e) a cam shaft including a cam portion rotatably engaging the closure as a cam follower, and a shaft end portion journaled in the bearing assembly such that axial rotation of the shaft in the bearing assembly causes the cam portion to move the closure on the bearing assembly laterally relative to the first and second guideways into sealing engagement with the closure frame.

5,542,214

FLUSH-CLOSING MULTI-PANE WINDOW ASSEMBLY FOR MOTOR VEHICLES

Dennis J. Buening, Waterford, Mich., assignor to Excel Industries, Inc., Elkhart, Ind.

Filed Jan. 6, 1995, Ser. No. 369,345
Int. Cl.[6] E06B *1/00*
U.S. Cl. 49—380 **13 Claims**



1. A flush-closing multi-pane window assembly for a motor vehicle having a body enclosing a passenger compartment, the window assembly comprising, in combination:

frame means for mounting in a window recess in the vehicle body, comprising a structurally self-supporting, full-circumference, molded plastic, unitary frame member;

at least one fixed-position pane mounted to the unitary frame member, having an inside surface facing into the passenger compartment, an outside surface and a perimeter edge surface;

at least one sliding pane having an inside surface facing into the passenger compartment, an outside surface and a perimeter edge surface, mounted to the frame means for sliding between

a closed position in a first plane in which its outside surface is substantially flush with the outside surface of the fixed-position pane, and

an open position in an offset second plane substantially parallel to the first plane, substantially overlapping the fixed-position pane; and

guide means for guiding the sliding pane as it moves in a path of travel between its open and closed positions, the guide means comprising kick-out means to forcibly guide the sliding pane from the first plane toward the second plane substantially simultaneously with initial lateral movement of the sliding pane from its closed position toward its open position.

5,542,215

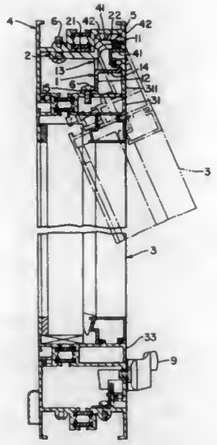
SASH SUPPORTING STRUCTURE OF HINGED SWINGING WINDOW

Yuichi Kubo, Kurobe, Japan, assignor to YKK Architectural Products Inc., Tokyo, Japan

Filed Dec. 19, 1994, Ser. No. 358,914
Claims priority, application Japan, Dec. 20, 1993, 5-319712
Int. Cl.[6] E05D *7/00*
U.S. Cl. 49—397 **5 Claims**

1. A sash supporting structure for pivotally supporting a sash within a window frame of a hinged swinging window, the sash having a horizontal frame member corresponding in position to a horizontal frame member of the window frame, said sash supporting structure comprising:

(a) sash bar hinge attached to the horizontal frame member of the sash and including a pivot shaft, and a vertical face plate extending from said pivot shaft toward the sash and having a cutout opening;



(b) means defining a support groove extending in the horizontal frame member of the window frame and pivotally receiving therein said pivot shaft of said sash bar hinge, said support groove having a width dimensioned such that said sash bar hinge can be inserted in said support groove from an inner periphery side of the window frame; and

(c) a sash dislocation stop member attached to the horizontal frame member of the window frame and extending through said cutout opening in said sash bar hinge to prevent the sash bar hinge from displacing in a horizontal direction in a plane of the window frame, said sash dislocation stop member, at least during pivotal movement of the sash bar hinge, being engageable with a portion of said sash bar hinge at an open side of said support groove to prevent said sash bar hinge from dislocating from the horizontal frame member of the window frame.

5,542,216

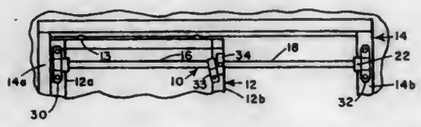
SLIDING DOOR CLOSING DEVICE

Thomas H. Mohler, 2596 Patricia Dr., Santa Clara, Calif. 95051

Filed Mar. 7, 1995, Ser. No. 399,875

Int. Cl.[6] E05D *15/06*

U.S. Cl. 49—404 **16 Claims**



1. An elongated device for closing a sliding door having vertical front and rear walls, said sliding door being adapted for mounting in a door frame, comprising in combination:

a) an outer tube and an inner tube slidable therein and disposed in a coaxial telescopic relation therewith;

b) a unitary coil compression spring located within said inner tube and extending throughout the length of said device with ends of said spring being secured to end portions of said device;

c) a pair of end cap members mounted on outer end portions of each of said tubes, said cap members having a central aperture therein;

d) a restraining string extending throughout the length of said device, the ends of said string passing through said apertures and affixed to outer portions of said cap members;

e) a front bracket for securing said outer end of said outer tube to front wall of said sliding door and a rear bracket affixed to rear portion of said door frame for securing the outer end of said inner tube to said door frame; and

f) a clamping means mounted on the rear wall of said sliding door for locking said inner tube whenever said sliding door door is open.

5,542,217

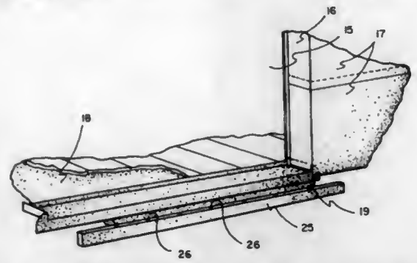
MOLDED ONE-PIECE ENTRY DOOR FLASHING PAN

William V. Larivee, Jr., 1715 Creek St., Kill Devil Hills, N.C. 27948

Filed Sep. 13, 1994, Ser. No. 304,853

Int. Cl.[6] E06B *1/70*

U.S. Cl. 49—471 **10 Claims**



1. Flashing for installation underneath entry doors comprising: a water impervious, flat, generally rectangular bay portion for installation in a rough entry door opening of a building structure underneath an entry door; an interior lip upwardly projecting at approximately 90 degrees integrally formed along one edge of said bay portion; side lips upwardly projecting at approximately 90 degrees integrally formed along opposite edges of said bay portion and on opposite ends of said interior lip; an exterior lip downwardly projecting at approximately 90 degrees integrally formed along the edge of said bay portion opposite said upwardly projecting interior lip and between said side lips, said exterior lip including lip end portions being integrally formed therewith and extending outwardly from each end thereof, said lip end portions also being integrally formed with an exterior edge of said lips in perpendicular relation thereto, whereby a waterproof entry door flashing is provided that extends underneath and completely surrounds a bottom surface of an entry door assembly preventing windblown water which penetrates through said entry door assembly from contacting the interior floor of said building structure.

5,542,218

STRUCTURAL SUPPORT FRAME FOR CERAMIC TILE CORNER SEATS AND SERVICE TRAYS

Wade D. Rompel, San Francisco, Calif., assignor to Innovis Corporation, Novato, Calif.

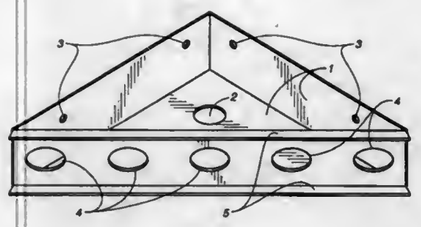
Filed Jun. 8, 1994, Ser. No. 255,972

Int. Cl.[6] A47K *3/16*

U.S. Cl. 52—34 **7 Claims**

1. A structural support frame for ceramic tile corner seats and service trays comprising in combination:

a base unit (1) having a plurality of interface walls for abutting with structural walls, said interface walls each engaged to and extending perpendicular from a horizontal floor member in a first horizontal plane, and a frontal wall engaged to and extending perpendicularly from said horizontal floor member with opposite terminal ends of said frontal wall each engaged to a terminal end of one of said interface walls, whereby said interface walls, said frontal wall and said horizontal floor member form an internal cavity for receiving a supply of mortar;



a first flange (5) extending about a first longitudinal front edge of said frontal wall for gravitational support of uncured mortar and to form a uniform edge for application of finish tile;

mortar penetration holes (4) within said frontal wall to provide for monolithic adhesion of mortar applied about the mortar supporting flange and said front wall; and

mounting holes (3) within said interface walls to receive fastening means for securely fastening the base unit to said structural walls extending substantially perpendicular to said horizontal floor of the base unit and parallel to said interface walls.

5,542,219

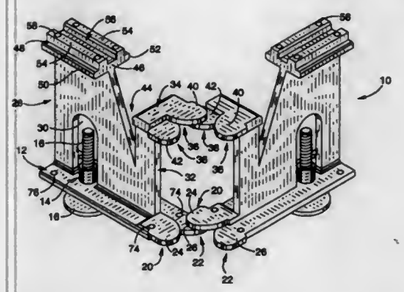
WALL PANEL INTERLOCK LEVELING DEVICE

Gary R. Dias, Folsom, Calif., assignor to California Prison Industry Authority, Folsom, Calif.

Filed Jan. 25, 1994, Ser. No. 187,402

Int. Cl.[6] E04B *2/82;* **E04H** *1/00;* **F16B** *1/00*

U.S. Cl. 52—126.4 **6 Claims**



1. An interlocking apparatus for leveling wall panels, comprising:

(a) a first leveling tab assembly, said first leveling tab assembly including a first upper tab and a first lower tab, each said tab having a top face and a bottom face, each said face lying in a plane, said plane of said bottom face of said first upper tab being adjacent to said plane of said top face of said first lower tab;

(b) a second leveling tab assembly, said second leveling tab assembly including a second upper tab and a second lower tab, each said tab having a top face and a bottom face, each said face lying in a plane, said plane of said bottom face of said second upper tab being adjacent to said plane of said top face of said second lower tab;

(c) a base platform, said first leveling tab assembly coupled to said base platform; and

(d) a support structure, said support structure coupled to and extending from said base platform, said second leveling tab assembly coupled to said support structure, said support structure including means for coupling said support structure to a wall panel.

5,542,220

HYDROSTATIC ANTI-VIBRATION SYSTEM AND ADJUSTING METHOD THEREFOR

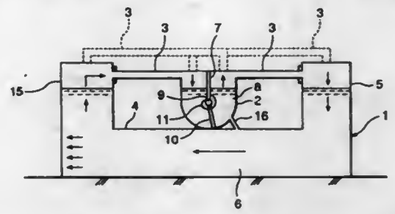
Mitsuhiro Yoshimura; Kazunobu Fujita, both of Nagasaki, and Akira Teramura, Tokyo, all of, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, and Obayashi Corporation, Osaka, both of, Japan

Filed Aug. 30, 1994, Ser. No. 297,886

Claims priority, application Japan, Nov. 30, 1993, 5-300500; Nov. 30, 1993, 5-300501; Nov. 30, 1993, 5-300502; Jan. 11, 1994, 6-001351; Jan. 25, 1994, 6-006214

Int. Cl.[6] F04H *9/02*

U.S. Cl. 52—167.1 **15 Claims**



1. A hydrostatic anti-vibration system comprising:

a main tank to be provided on a construction to be suppressed from vibrating and having a main tank body of substantially flat rectangular configuration, and hollow vertical extensions extended upwardly from peripheral edge portions of said main tank body and filled with a working liquid to a predetermined level with upper air chambers maintained thereabove;

ducts communicating with said upper air chambers of said hollow vertical extensions;

intermediate tank portions connected to respective pairs of said ducts and containing a vibration suppressing liquid;

a pivotal plate disposed in each said intermediate tank portion and separating an interior space thereof into a pair of chambers connected to respective said ducts, said pivotal plate pivoting in response to flow pressure of said vibration suppressing liquid;

a damper providing a resistance against displacement of said pivotal plate; and

an external mechanism associated with said damper for adjusting damping characteristics thereof and thereby adjusting the natural frequency of said anti-vibration system in relation to the natural frequency of the construction.

5,542,221

DUAL STIFFNESS FLOORING

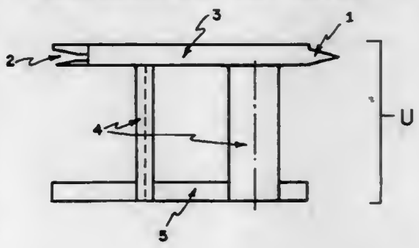
Donald A. Streit; Joe Casalena, and Tim Ovaert, all of State College, Pa., assignors to The Penn State Research Foundation, University Park, Pa.

Filed May 4, 1994, Ser. No. 237,751

Int. Cl.[6] E04F *15/22*

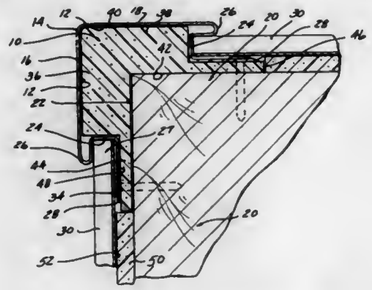
U.S. Cl. 52—403.1 **10 Claims**

1. An impact-absorbing flooring system comprising:



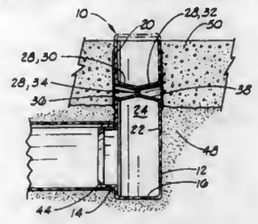
(a) an upper surface plate means; and
(b) a lower surface plate means; and
(c) a plurality of support means extending essentially perpendicularly between and connecting said upper surface plate means and said lower surface plate means, wherein said support means is any structure with essentially two different area moments of inertia and arranged in such a manner that these moments of inertia and associated bending stiffnesses are decoupled so that lateral stability is effected by one area moment of inertia and buckling load is controlled by the other.

5,542,222
CORNER POST SUPPORT MEMBER
Richard C. Wilson, West Bloomfield, Mich., and Patrick M. Culpepper, Dover, Ohio, assignors to Abco, Inc., Beach City, Ohio
Filed Dec. 14, 1994, Ser. No. 355,471
Int. Cl.[6] E04B 1/00
U.S. Cl. 52—287.1 2 Claims



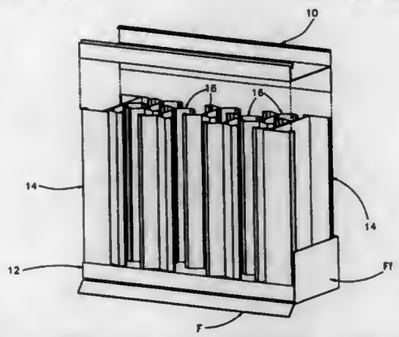
1. A corner post made from thin sheet material for enclosing a corner of an external wall of a building, the corner post adapted to be spaced from the external wall to define a longitudinally extending hollow space thereinbetween, a siding panel for covering the external wall of the building and engageable within a longitudinally extending pocket formed in the corner post, said corner post further comprising:
a lip and a corner post flange, wherein said lip and corner post flange define the pocket; and
a single elongated support member having first and second longitudinally extending portions with an externally facing contour complimentary to the corner post, the first portion lying in a first longitudinally extending plane and angularly disposed with respect to the second portion lying in a second longitudinally extending plane, such that the support member can fit within the hollow space between the corner post and the external wall, the support member fabricated from a polystyrene foam material having insulating qualities, first and second support member flanges extending longitudinally and radially outward in the first and second planes from the first and second extending portions, respectively of the support member for engagement with the external wall of the building, wherein the corner post flange is flush against at least one of the support member flanges and the at least one support member flange extends beyond the corner post flange, the support member substantially filling the hollow space between the corner post and the external wall of the building along the entire longitudinal length of the corner.

5,542,223
AIR DUCT BOOT
John P. Inda, Shawnee, and Joseph J. Inda, Tecumseh, Okla., assignors to General Plastics, Inc., Shawnee, Okla.
Filed Aug. 20, 1993, Ser. No. 109,433
Int. Cl.[6] E04B 1/70
U.S. Cl. 52—302.1 23 Claims



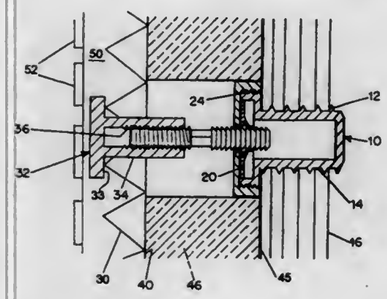
17. A system for conveying air from a source to a point of discharge, said system comprising:
a bed of sand;
a concrete slab overlying the sand and having a level, horizontal upper surface;
a cylindrical, horizontally extending duct having an open end and overlain by the concrete in said slab; and
a synthetic air duct boot connected to the open end of said duct and having a lower end portion in said sand and an upper portion in said slab, said air duct boot comprising:
a hollow housing having a closed lower end buried in the sand and having a closed upper end above the upper surface of said concrete slab and further having a pair of opposite walls extending between said upper and lower ends;
an internal support extending between said walls for providing support therefor as said concrete is poured to form said slab, said internal support comprising a pair of conical sections, each of said conical sections extending inwardly from corresponding opposite walls; and
a cylindrical tubular neck extending horizontally outwardly from said housing at a location below said support member, said tubular neck projecting into the open end of said duct to convey air from the interior of the duct to the interior of the housing.

5,542,224
LOUVER
Robert W. Olsen, Washington, N.J., assignor to Construction Specialties, Inc., Cranford, N.J.
Filed Dec. 19, 1994, Ser. No. 359,051
Int. Cl.[6] E06B 7/08
U.S. Cl. 52—473 30 Claims



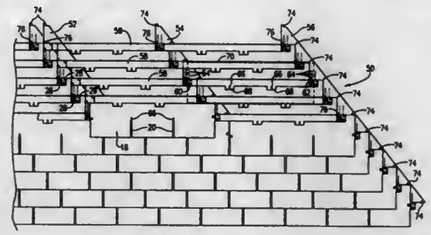
1. A louver comprising a rectangular frame having a header, a sill, and jambs joining opposite ends of the sill and header, the frame defining a volume open at parallel front and rear planes for passage of air through the louver, a multiplicity of laterally spaced-apart front blades extending between and joined to the sill and header, each front blade being of substantially uniform cross-section throughout its length and including a web extending vertically between the sill and header and oriented generally perpendicular to the front and rear planes, a pair of front flanges extending in opposite directions generally laterally from a front part of the web and a pair of rear flanges extending in opposite directions generally laterally from a rear part of the web, a multiplicity of rear blades extending between and joined to the sill and header, each rear blade being laterally spaced apart from and located laterally between an adjacent pair of the front blades, and each rear blade being of substantially uniform cross-section throughout its length and having a pair of flanges extending laterally from a substantially vertical juncture, the front blades and rear blades being arranged in staggered relation with respect to the front and rear planes such that the flanges of the rear blades are located between the front and rear flanges of the front blades and the front flanges of each front blade are closer to the front plane than the flanges of each rear blade, and the front and rear blades being positioned with respect to each other laterally such that each flange of each rear blade partially overlaps a front flange of an adjacent front blade.

5,542,225
ANCHORING SYSTEM FOR INSTALLING EXTERIOR MATERIALS TO A BUILDING STRUCTURE
Shozo Endo, 7-23-10 Shakujii-Dai, Tokyo, Japan; Youichi Endo, 20 Weil Pl., Cresskill, N.J., and Shuji Endo, 7-23-10 Shakujii-Dai, Tokyo, Japan
Filed Oct. 11, 1994, Ser. No. 321,130
Int. Cl.[6] E04B 1/41
U.S. Cl. 52—511 12 Claims



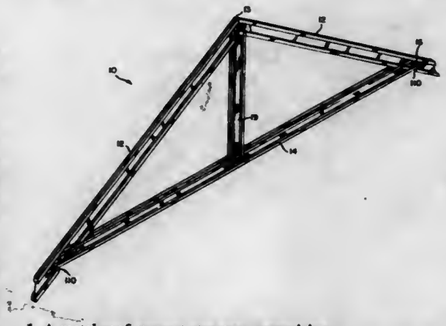
1. An anchoring system for installing exterior material including lath and mortar to a building structure, said structure having a hole defined therein for mounting the material, comprising:
a separator rod having two ends;
an anchoring device for mounting into the hole of the structure, said anchoring device having a receiving aperture dimensioned to receive one end of the separator rod, said anchoring device further comprising ratchet means for allowing one end of the separator rod to advance into the receiving aperture and for inhibiting movement of the separator rod out of the receiving aperture; and
a nut joint adapted to be attached to the material to be attached to the structure, said nut joint having means for receiving and holding the other end of the separator rod, said nut joint having an extending flange for supporting and holding lath to the exterior of the building and for providing means for supporting mortar after said nut joint, said separator rod and said anchoring device are connected to hold the lath to the exterior of the building structure.

5,542,226
ROOFER'S GRID APPARATUS
Joseph G. Markovich, 9902 E. 80th Ter., Raytown, Mo. 64138
Continuation-in-part of Ser. No. 252,457, Jun. 1, 1994. This application Oct. 13, 1994, Ser. No. 322,581
Int. Cl.[6] E04D 1/34
U.S. Cl. 52—548 3 Claims



1. A roofer's grid apparatus adapted for use in retaining shingles on a roof, wherein the shingles are of a predetermined length, the apparatus comprising:
a plurality of mounting strips of support material;
a plurality of horizontal connecting strips of support material securing the mounting strips together in a configuration in which the mounting strips are parallel to and spaced from one another, the connecting strips being raised relative to the mounting strips by a distance sufficient to receive a shingle beneath the connecting strip; and
a plurality of shingle retaining means provided on the mounting strips for retaining shingles on the apparatus in horizontal courses each overlapping the course beneath,
each shingle retaining means including a pair of raised ears connected to the mounting strips and being spaced horizontally from one another by a predetermined distance, and a plurality of spurs protruding from the strips and adapted to penetrate the shingle when the shingle is positioned between the ears and pressed against the roof, the ears and spurs of each shingle retaining means being arranged in an array, wherein the arrays are arranged in staggered rows and the arrays of any given row are offset from the arrays in adjoining rows.

5,542,227
STRUCTURAL METAL ROOF SYSTEM
Clifford G. Frayne, 36 Laurelwyck Dr., Waretown, N.J. 08758
Filed May 30, 1995, Ser. No. 453,372
Int. Cl.[6] E04B 1/32
U.S. Cl. 52—639 9 Claims



1. A metal roof support structure comprising:
a pair of rafter beams, each comprised of two complimentary rafter members, each of-said rafter members having a central web and a pair of flanges formed on each edge of said web,

said web having a plurality of apertures positioned therethrough, alignable with said apertures in said complimentary rafter member, said rafter members positioned and secured in web to web relationship to form said rafter beam, said rafter beams having a first end angularly cut through said web and said flanges and through one of said apertures in said web so as to form an apex of said roof support, said degree of angularity in said cut, dependent upon the desired pitch of said roof;

a ceiling beam comprised of two complimentary ceiling members, each having a central web and pair of flanges formed on each edge of said web, said web having a plurality of apertures positioned along its length, alignable with said apertures in said complimentary ceiling member, each of said ceiling members having angular end cuts conforming to the pitch of said roof, each of said ceiling members having an angular channel cut in said web and a portion of said flange, internal of said angular end cuts defining a tip end of said ceiling member comprised of a portion of said web and said flanges including one of said apertures in said web of said ceiling member, said tip end of said ceiling members snap fit and interlocked over said rafter beam from opposing sides and alignable with one of said apertures in said web of said rafter beam;

an apex support comprised of two chevron members having a web portion and a pair of flanges formed on each edge of said web, said web angularly cut to conform to said apex formed by said rafter beams, said chevron dimensioned to snap fit into said adjoining webs of said rafter beams from opposing sides, said chevrons having an aperture in said web alignable with said aperture formed at said apex by said rafter beams;

internal supports interconnecting with said rafter beams and said ceiling beams, said internal supports having a web portion and a flange formed along one edge of said web, said web having an aperture therethrough adjacent the ends of said web;

a means for securing said rafter beam to said ceiling beam and said rafter beam to said rafter beam and said internal supports to said ceiling beam and said rafter beams, comprising a plug having a diameter equal to said apertures in said web of said ceiling beam and said rafter beam, said plug having at least one threaded end for receipt of a threaded fastener;

a securing means positionable along said web of said ceiling beam and along said web of said rafter beams to maintain said ceiling members and said rafter members comprising said ceiling beam and said rafter beams in said web to web relationship.

5,542,228

TIEING DEVICE MADE OF WIRE FOR CONNECTING REINFORCING RODS FOR CONCRETE CONSTRUCTIONS

Peter Hagens, Støvring, Denmark, assignor to Hagens Fiedre K/S, Stovring, Denmark

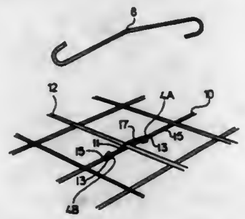
Filed Mar. 11, 1993, Ser. No. 29,595

Claims priority, application Denmark, Mar. 11, 1992, 326/92; Sep. 14, 1992, 1128/92

Int. Cl.[6] E04C *5/16;* **E04G** *21/12*

U.S. Cl. 52—712 **9 Claims**

1. A tieing device made of wire for use in connection of



reinforcing rods for concrete construction comprising:

two straight portions and an elbow disposed in a single plane with the two straight portions being connected at the elbow with the two straight portions and the elbow forming an obtuse angle and each straight portion having a remote end spaced from the elbow; and

two hook-shaped ends respectively disposed at the remote ends of the two straight portions and projecting out of the plane, said hook shaped ends facing oppositely each other.

5,542,229

CONCRETE POLE AND METHOD OF REINFORCING SAME

Makoto Saito, and Yoshinori Tanaka, both of Saitama-ken, Japan, assignors to Tonen Corporation, Japan

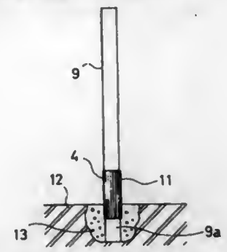
Filed May 11, 1994, Ser. No. 241,062

Claims priority, application Japan, May 14, 1993, 5-136603

Int. Cl.[6] E04C *3/34*

U.S. Cl. 52—721.5 **11 Claims**

1. A concrete pole comprising: reinforced concrete of a substan-



tially cylindrical shape having reinforcing bars, part of the outer circumference of said concrete pole being reinforced by a reinforcing layer of a fiber-reinforced composite material composed of reinforcing fibers and a thermosetting resin impregnated in the reinforcing fibers; said reinforcing layer covering a depth of at least 30 cm and a height of at least 100 cm relative to the ground level upon placing said concrete pole in the ground; reinforcing fibers of said reinforcing layer being oriented in the axial direction of said reinforced concrete pole; and the total cross-sectional area (S_R) and modulus of elasticity (E_R) of the reinforcing fiber of said reinforcing layer satisfying the following relational formula relative to the total cross-sectional area (S_S) and modulus of elasticity (E_S) of the reinforcing bar in the axial direction of said reinforced concrete:

$$0.06<E_R \cdot S_R / E_S \cdot S_S<3.0.$$

5,542,230

CONNECTING RODS

Rainer Schütze, Brunswick, Germany, assignor to Deutsche Forschungsanstalt f. Luft-und Raumfahrt e.V., Cologne, Germany

Filed Mar. 25, 1994, Ser. No. 218,064

Claims priority, application Germany, Apr. 2, 1993, 43 10 825.3

Int. Cl.[6] E04C *3/29*

U.S. Cl. 52—726.1 **11 Claims**



1. A rod comprising a core of foam material and a tubular wall made from carbon fiber composite material, said tubular wall

including at least one layer of axially parallel unidirectional fibers, said tubular wall further including a fabric hose lying above said at least one layer, said fabric hose having fibers crossing at an angle to an axis of the rod, said rod being provided at each end thereof with a respective connection fitting for the introduction of an axial force, wherein each of said connection fittings is provided with coaxial internal thread and an external annular shoulder, said unidirectional fibers lying end-on against said annular shoulder, said rod further comprising an actively controllable pressure-producing element operable for acting in an axial direction of the rod, said pressure-producing element being positioned between the respective ends of the rod, wherein a respective thrust washer is provided at each end of the pressure-producing element, each of said thrust washers having an inner face and an outer face, said pressure producing element resting at each end against an inner face of a respective one of said thrust washers, said tubular wall of said rod being divided between its ends to define intermediate end faces, said intermediate end faces resting against said outer faces of said thrust washers, said rod still further comprising a sleeve disposed over the exterior of the tubular wall, said sleeve extending over said pressure-producing element and said intermediate end faces, said sleeve being glued to said rod and being constructed for the take-up of tensions.

5,542,231

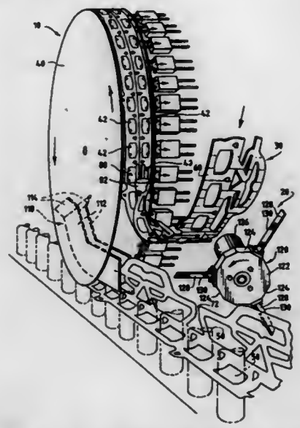
APPARATUS FOR ADAPTING CARRIER STOCK-APPLYING MACHINE TO APPLY CARRIER STOCK HAVING CONTAINER-ENGAGING AND HANDLE PORTIONS.

Robert E. Ungar, DesPlaines, and Stanley R. Krogman, Bartlett, both of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Filed Aug. 23, 1995, Ser. No. 518,202

Int. Cl.[6] B65B *27/04;61/14*

U.S. Cl. 53—48.4 **12 Claims**



1. In a machine of a type employing a wheel assembly to draw a carrier stock onto rows of containers, an apparatus for adapting the machine so that the machine can apply a carrier stock of a type made from a resilient polymeric material, extending for an indefinite length, and comprising a series of carriers, each having two container-engaging portions and a handle portion joined to the container-engaging portions at a longitudinally extending junction of the carrier stock, the carrier stock being provided to the machine in a flattened condition, in which both of the container-engaging portions of each carrier extend laterally to the same side of the longitudinally extending junction of the carrier stock and in which the handle portion of each carrier extends laterally to the opposite side of the longitudinally extending junction, the apparatus comprising means for reconfiguring the carrier stock from the flattened condition into a reconfigured condition, in which each of the container-engaging portions of each carrier extends laterally to a different side of the longitudinally extending junction and in which the handle portion of said carrier projects from the longitudinally extending junction generally at a right angle to the container-engaging portions of said carrier.

5,542,232

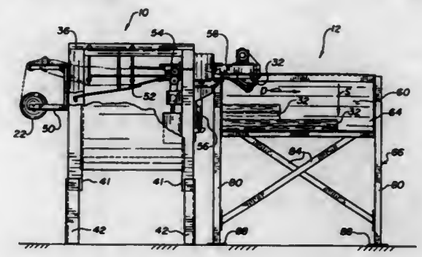
TRANSITIONAL SLIDE FOR USE WITH A CUSHION-CREATING MACHINE

Edwin P. Beierlorzer, Bellevue, Wash., assignor to Ranpak Corp., Concord Township, Ohio

Filed Nov. 19, 1993, Ser. No. 155,115

Int. Cl.[6] B65B *63/04*

U.S. Cl. 53—117 **9 Claims**



1. A cushion producing system comprising a cushion-creating machine and a slide positioned adjacent to the machine;

the cushion-creating machine including a frame and cushion-creating assemblies which are mounted to the frame and which create cushioning products;

the machine's frame including an exit through which the cushioning products are discharged in a predetermined discharge direction;

the slide including a smooth sloped surface with a top portion positioned proximate to the machine's exit so that the discharged cushioning products will be deposited thereon;

the smooth sloped surface having a pitch angle which is sufficient to insure that cushioning products placed on the top portion of the surface will slide in a predetermined slide direction; and

the smooth sloped surface being oriented relative to the machine in such a manner that the horizontal component of the slide direction is substantially perpendicular to the horizontal component of the discharge direction wherein the slide includes a tray, which incorporates the smooth sloped surface, wherein the tray includes a bottom wall and a set of side walls which surround the bottom wall and which extend perpendicularly upward therefrom to provide a stop for the discharged cushion products and wherein an upper surface of the bottom wall forms the smooth sloped surface.

5,542,233

PACKAGING INSTALLATION FOR RECEPTACLES EACH HAVING A BASE PRESENTING AT LEAST ONE LONG SIDE AND AT LEAST ONE SHORT SIDE

André Graffin, La Chapelle Du Bois, France, assignor to SERAC, La Ferte Bernard, France

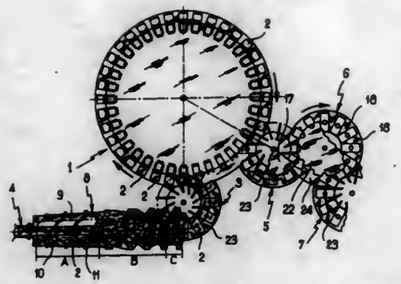
Filed Nov. 28, 1994, Ser. No. 348,966

Claims priority, application France, Dec. 2, 1993, 9314454

Int. Cl.[6] B65B *1/00*

U.S. Cl. 53—282 **2 Claims**

1. A packaging installation including a rotary platform on which receptacles each having a base presenting one long side and at least



one short side are disposed with the long side extending radially, and at least one rotary transfer member radially adjacent to said rotary platform for feeding to or receiving receptacles from said platform and cooperating with a stationary support plate on which the receptacles move according to a substantially curvilinear direction while keeping the long side in a substantially radial direction with respect to a rotating portion of said rotary transfer member said transfer member further including flaps mounted on said rotating portion for rotation about pivot axes and means for changing an orientation of said flaps with respect to said rotating portion so that said flaps bear against the receptacles and maintain said receptacles with the long side extending in a substantially radial direction when they are on the transfer member, and to pivot away from said receptacles with respect to said rotary portion immediately prior to loading onto the rotary transfer member or unloading therefrom for avoiding interference of the flaps with adjacent receptacles on said rotary platform during loading or unloading and pivot toward said receptacles during said loading and unloading operations.

5,542,234

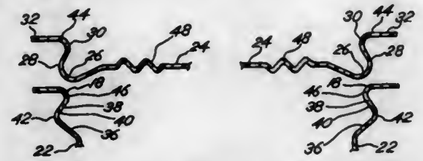
IMPROVED METHOD OF PROVIDING RESEALABLE CONTAINERS AND MATCHING LOCKABLE LIDS

Ihor Wyslotsky, Rolling Meadows, Ill., and Frank C. Mello, Zeeland, Mich., assignors to Sara Lee Corporation, Chicago, Ill.

Continuation of Ser. No. 73,279, Jun. 4, 1993, abandoned, which is a continuation of Ser. No. 859,678, Mar. 30, 1992, abandoned, which is a continuation of Ser. No. 711,162, Jun. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 526,453, Jul. 23, 1990, abandoned, which is a continuation of Ser. No. 443,606, Nov. 30, 1989, abandoned, which is a continuation-in-part of Ser. No. 239,517, Sep. 1, 1988, abandoned. This application Apr. 21, 1994, Ser. No. 232,428

Int. Cl.[6] B65B *1/24;7/28;31/02;47/00*

U.S. Cl. 53—433 **18 Claims**



1. The improved method of packaging a non-fluid food product comprising the steps of:

forming a container having a recloseable lockable container lip portion extending substantially circumferentially around the entirety of the circumference of said recloseable lockable container lip portion, and a sealing flange exterior thereto from a first continuous web of polymeric material;

placing the non-fluid food product within the container only;

separately forming a lid from a second continuous web of polymeric material, said lid having a corresponding recloseably lockable lid lip portion extending substantially circumferentially around the entirety of the circumference of said recloseably lockable lid lip portion, said lid lip portion recloseably lockable with the corresponding recloseably lockable container lip portion and having a sealing flange disposed exterior to said recloseably lockable lid lip portion;

placing said second continuous web carrying said lid in registry with said first continuous web carrying said container containing the non-fluid food product;

locking the respective corresponding recloseable lockable container lip portion of the container with the recloseably lockable lid lip portion of the lid said lockable portions extending and recloseably locking substantially continuously around the circumference of the lid of the package; and

sealing together said respective sealing flanges of said container and lid.

5,542,235

METHOD AND APPARATUS FOR MANUFACTURING A BLISTER CARDBOARD PACK

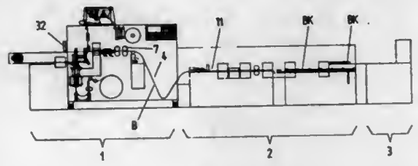
Horst Konstandin, Karlsbad, Germany, assignor to PVT Plepenbrock Verpackungstechnik GmbH, Osnabruck, Germany

Filed Mar. 2, 1994, Ser. No. 204,966

Claims priority, application Germany, May 3, 1993, 43 06 996.7

Int. Cl.[6] B65B *47/00*

U.S. Cl. 53—454 **25 Claims**



1. A method for manufacturing a blister cardboard pack having a blister pack and a cardboard inlay comprising the following steps:

a) providing an endless blister pack tape with blisters and having products sealed in the blisters;

b) providing a cardboard inlay having openings for the blisters of the endless blister pack tape, the cardboard inlay being substantially the length of a blister cardboard pack to be manufactured in a direction of conveyance at a unification station;

c) incrementally feeding the blister pack tape to a unification station in steps, each step having substantially the length of the blister cardboard pack to be manufactured;

d) placing the cardboard inlay on the blister pack tape, whereby the openings of the cardboard inlay surround the blisters of the blister pack tape;

e) joining the blister pack tape to the cardboard inlay to make a blister cardboard pack tape;

f) further incrementing the blister cardboard pack tape in steps, each step having substantially the length of the blister cardboard pack to be manufactured:

g) separating the blister cardboard pack tape into individual sections each having the length of a blister cardboard pack to be manufactured:

h) providing the blister pack tape with the blisters facing downwards; and

i) turning the blister pack tape 180° about an axis located substantially parallel to the direction of conveyance of the blister pack tape so that the blisters face upwards, prior to being joined to the cardboard inlay.

5,542,236

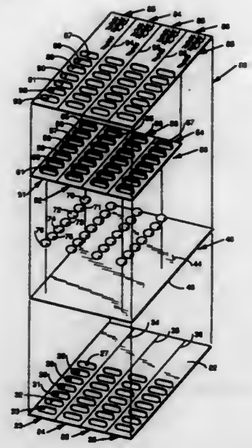
METHOD OF DISPENSING UNIT DOSES OF MEDICATIONS AND ASSOCIATED PRODUCTS

Irwin Miller, 4111 Mischire St., Houston, Tex. 77025

Filed May 9, 1994, Ser. No. 240,022

Int. Cl.[6] B65B *5/08;5/10*

U.S. Cl. 53—467 **9 Claims**



1. A method of dispensing unit doses of medications comprising:

providing a card including a blister pack having a plurality of medication receiving recesses, each of said recesses containing a unit dose of medication, said recesses being arranged in a plurality of rows with said rows having weakened lines therebetween;

separating a row of said unit doses of medication from said card by means of said weakened lines;

placing said separated row in a carrier, whereby said unit doses of medications in said separated row are available for dispensing to a patient;

employing a plurality of carriers for said patient, each carrier bearing information relating to the time of day when said unit dose of medication in said carrier is to be taken;

providing a plurality of cards for said patient, each containing a unit dose of a different type of medication;

separating a row of said unit doses of medication from each of said cards; and

placing said rows in said carriers corresponding to said time of day when each said unit dose of medication in said carrier is to be taken.

5,542,237

RECYCLE SHIPPING ASSEMBLY

Michael J. Grey, Richboro, Pa.; Wayne Williams, Boxford, and William H. Shaw, Manchester, both of Mass., assignors to ReSource America, Inc., Southampton, Pa.

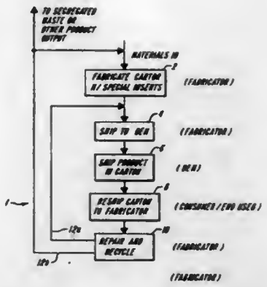
Continuation of Ser. No. 71,234, Jun. 2, 1993, Pat. No. 5,456,061, which is a continuation of Ser. No. 775,694, Oct. 10, 1991, Pat. No. 5,247,747, which is a continuation-in-part of Ser. No. 690,082, Apr. 23, 1991, Pat. No. 5,131,212, which is a continuation-in-part of Ser. No. 427,812, Oct. 26, 1989, abandoned. This application Jun. 5, 1995, Ser. No. 461,045

Int. Cl.[6] B65B *23/00;61/02;* **B65D** *73/02;85/42*

U.S. Cl. 53—472 **12 Claims**

1. A process for recycling a shipping container, comprising:

(a) sending to a customer, by a product provider, a shipping container having a product packaged therein, said shipping container having a useful lifetime;



(b) providing said customer with directions for returning said shipping container to a refurbisher;

(c) after removal of said product, returning said shipping container to said refurbisher pursuant to said directions;

(d) inspecting said shipping container;

(e) refurbishing said shipping container if said shipping container is refurbishable and recycling said shipping container if said shipping container is to be replaced; and

(f) repeating steps (a), (b), (c), (d) and (e) during said useful lifetime of said shipping container.

5,542,238

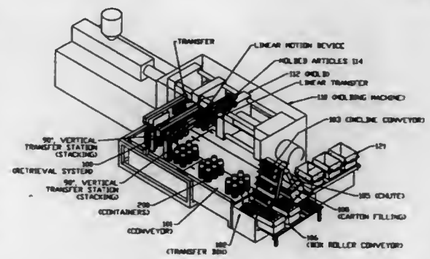
APPARATUS AND METHOD FOR LOADING HORIZONTAL STACKS OF CONTAINERS INTO A CARTON

Darrell B. Johnson, and George E. Frey, Fort Collins, Colo., assignors to CBW Automation, Inc., Fort Collins, Colo.

Filed Jun. 6, 1995, Ser. No. 473,002

Int. Cl.[6] B65B *5/06;35/50;39/02*

U.S. Cl. 53—475 **3 Claims**



2. A method for loading a horizontal stack of containers into a carton, the method comprising:

providing a feed chute assembly for receiving and releasably retaining a single horizontal stack of containers, the feed chute assembly including front and rear downwardly and inwardly projecting fixed guides and a pair of pivoting side guides controllably arranged for motion between an inward retracted position and an outward extended position, the feed chute assembly further comprising container release means for contollably releasing the horizontal stack of containers retained therein;

providing a carton indexing table positioned beneath the feed chute assembly for holding the carton in place for loading, the carton indexing table being operative for rotation to a predetermined angle above a horizontal position and for horizontal and vertical translation;

placing a plastic liner inside the carton;

placing the carton on the carton indexing table;

rotating the carton indexing table to a predetermined angle of tilt;

translating the carton indexing table horizontally and upwardly such that the chute is in position to drop a row of stacked containers retained therein into a desired position within the carton; and

actuating the side guides from the retracted position to the extended position against the plastic liner to thereby remove any air trapped between the plastic liner and the carton; and

releasing the horizontal stack of containers retained with the chute to permit them to drop, guided by the front and rear fixed guides and the extended side guides, into the carton.

5,542,239

METHOD FOR WELDING A PACKING BAND OF THERMOPLASTIC RESIN AND A WELDED BAND RESULTING THEREFROM

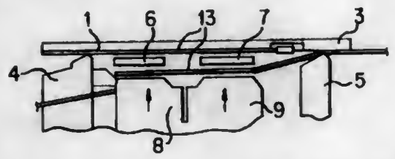
Noboru Fujii, Osaka; Kenji Kawabata, Mattou; Masaaki Hashi, Ishikawa-ken; Junji Niikura, Ishikawa-ken, and Tomotoshi Ouya, Ishikawa-ken, all of, Japan, assignors to Sekisui Jushi Kabushiki Kaisha, Osaka, Japan

Filed Apr. 1, 1993, Ser. No. 41,174

Claims priority, application Japan, Apr. 3, 1992, 4-112070

Int. Cl.[6] B65B *13/02;51/10*

U.S. Cl. 53—477 **7 Claims**



1. A method for welding a packing band of stretched thermoplastic resin having a flat cross section which comprises the steps of:

overlapping a first part and second part of the band in a lengthwise direction thereof,

heating a plurality of opposing separate portions of said first and second parts along said lengthwise direction where said first and second parts are overlapped to form at least one pair of corresponding melted portions on both said first and second parts, each said pair of melted portions respectively separated in said lengthwise direction by a non-melted portion, and

pressing said opposing melted portions together to weld said opposing melted portions together by solid welds with said non-welded portion respectively existing between each said pair of said welded portions in said lengthwise direction,

wherein said welded portions extend across a width of said band, and said non-welded portion has a length in said lengthwise direction of said band at least equal to a thickness of said band and less than or equal to twice said width of said band.

5,542,240

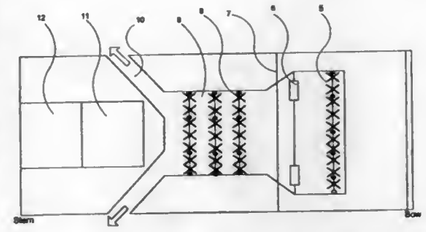
WATER CRAFT FOR REDUCING AQUATIC PLANT INFESTATION

Trent G. Snider, and Danny G. Snider, both of P.O. Box 310, Gulf Hammock, Fla. 32639

Filed May 12, 1995, Ser. No. 439,736

Int. Cl.[6] A01D *44/00*

U.S. Cl. 56—8 **10 Claims**



5. A water craft for removing aquatic plants comprising:

at least one hull having an intake port at the bow end of the boat whereby aquatic plant laden water enters the boat;

an exhaust port whereby water and mulched aquatic plants are discharged;

at least one array of cutting blades, rotatably disposed between said intake and said exhaust ports for mulching solid matter in the water passing from said intake port to said exhaust port; wherein there is positioned immediately aft of the intake port a primary array of cutting blades to reduce the size and break up clumps of biomass of large plants entering the boat via the intake port;

wherein water and plant matter passing through said primary cutting blade array is brought into contact with one to several additional arrays of cutting blades disposed in a mulching chamber so as to thoroughly chop or mulch the biomass initially cut by the primary cutting blade array.

5,542,241

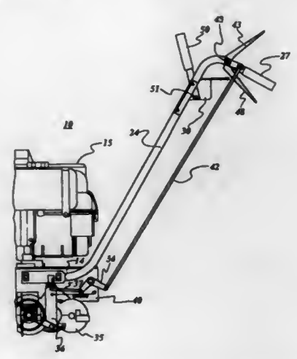
CONTROL FOR LAWN MOWERS AND THE LIKE AND OTHER WHEELED WALK BEHIND POWERED APPARATUS

Bruce S. Lydy, West Bend; Michael A. Keitel, Ssheboygan, and Jay K. Wissmueller, Port Washington, all of Wis., assignors to Garden Way Incoporated, Troy, N.Y.

Filed Sep. 27, 1993, Ser. No. 128,982

Int. Cl.[6] A01D *34/68;69/08*

U.S. Cl. 56—11.3 **5 Claims**



1. A control system for walk behind lawn, garden and drive way apparatus such as lawn mowers, snow blowers and the like comprising:

a frame, a drive motor supported on said frame for actuation of a grass cutting blade, snow blower blade or the like;

an operator moveable control member for connecting the blade to the motor drive for blade rotation, said moveable control having a disengageable interlock to disengage the drive to the blade;

a plurality of wheels supporting said frame for rotation by said motor through a power drive train;

a selectively releasable brake for precluding wheel rotation forming a part of said power drive train and including means biasing said brake to the engaged position;

a pair of handles extending upwardly and rearwardly from said frame and terminating in hand grips;

a first lever pivotally mounted adjacent one of said hand grips; said first lever being connected to said releasable brake whereby grasping said one grip by the user serves to pivot said lever to overcome the bias force to release said brake; and

means interconnecting the connection for said releasable brake and the disengageable interlock whereby releasing said pivotally mounted lever to automatically apply the brake actuates the interlock to disconnect the drive to said blade.

5,542,242

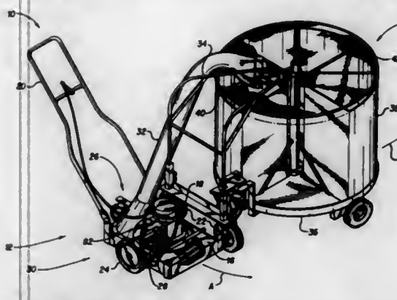
CLIPPINGS RECEPTACLE WITH ORBITING LAWN MOWER

Philip Poulos, 6 Thorley St., Carrollton, Va. 23314

Filed May 23, 1995, Ser. No. 445,450

Int. Cl.[6] A01D *34/70*

U.S. Cl. 56—13.5 **20 Claims**



1. A grass cutting device comprising:

a powered, self-propelled mower having a motor, a cutter operably connected to said motor, and wheels supporting said mower, one said wheel being a driven wheel drivingly connected to said motor;

a cart having wheels including driven wheels, and a receptacle for receiving clippings cut by said cutter and transported by said cutter to said receptacle;

a chute for conducting clippings cut by said cutter to said receptacle;

a connecting arm connecting said mower to said cart; and

a drive shaft mounted on said cart and rotated by said mower and connected to said driven wheels of said cart, whereby operation of said mower drives said cutter and propels both said mower and said cart.

5,542,243

LAWN TRACTOR HAVING A BLOWER UNIT AND A GRASS CLIPPINGS TRANSPORT DUCT

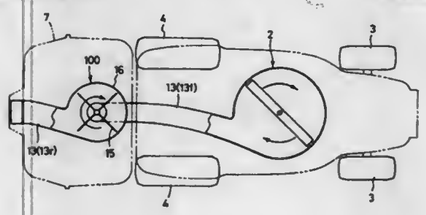
Mikio Yuki; Kazuaki Kurohara; Akio Matsui, and Katsuhiko Uemura, all of Sakai, Japan, assignors to Kubota Corporation, Osaka, Japan

Filed Sep. 29, 1994, Ser. No. 305,951

Claims priority, application Japan, Dec. 9, 1993, 5-308796

Int. Cl.[6] A01D *34/70*

U.S. Cl. 56—13.3 **12 Claims**



1. A lawn tractor having an engine, comprising: front wheels and rear wheels;

a frame extending longitudinally and including a rear extension reaching a rear wheel region;

a mower unit supported by said frame and having a vertical mower input shaft for receiving power from an output shaft of said engine;

a grass catcher supported by said rear extension;

a blower unit disposed between said rear wheels in a transverse direction of said body frame, supported by said rear extension and having a vertical blower input shaft for receiving power from an output shaft of said engine, wherein said blower input shaft extends parallel to said mower input shaft; and

duct means for transporting grass clippings cut by said mower unit into said grass catcher, said duct means including a first duct extending between said mower unit and said blower unit, and a second duct extending between said blower unit and said grass catcher;

wherein said mower input shaft extends parallel to said blower input shaft and;

said output shaft of said engine, said mower input shaft and said blower input shaft are arranged inwardly of said rear wheels in a transverse direction of the tractor and substantially linearly in a longitudinal direction of said tractor; and

said output shaft of said engine, said mower input shaft and said blower input shaft are interconnected through a transmission means including a plurality of belts and pulleys.

5,542,244

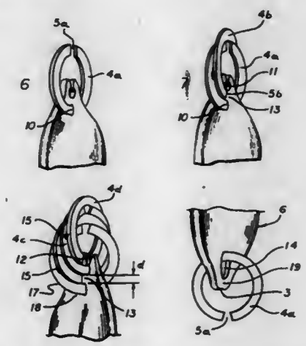
METHOD OF MAKING A ROPE CHAIN WITH A JEWELRY COMPONENT

Meang Chia, and Cheo Chia, both of Chain & Charm Manufacturers, 412 W. 6th St., Suite. #1104, Los Angeles, Calif. 90014

Continuation of Ser. No. 899,742, Jun. 17, 1992, Pat. No. 5,301,498. This application Apr. 7, 1994, Ser. No. 224,669

Int. Cl.[6] B21L *11/00*

U.S. Cl. 59—35.1 **1 Claim**



1. A method of making jewelry comprising the steps of:

making a component for coupling with annular links of a jewelry rope chain, said component comprising a unitary body, said body having an end with an aperture formed near said end;

inserting a first annular link having a gap therein into said aperture, said gap thereafter being oriented away from said body;

positioning a second annular link having a gap therein by threading its gap through said first annular link so its gap rests adjacent to said component between said aperture and said end;

positioning a third annular link having a gap therein by first threading its gap through said second annular link and said

first annular link and then through said first aperture and rotating said third annular link until its gap is oriented away from said body; and

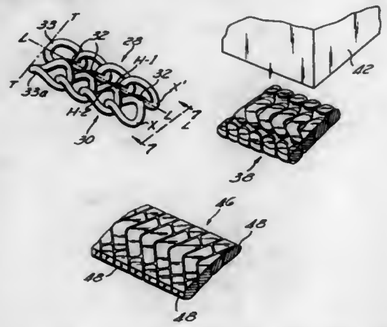
positioning a fourth annular link having a gap therein by threading its gap through said third annular link, said second annular link and said first annular link so that its gap is oriented toward said body.

5,542,245

COMPRESSED JEWELRY CHAIN AND METHOD OF MAKING SAME

Giulio Lunardon, Pove del Grappa, Italy, assignor to Oro-America, Inc., Burbank, Calif.

Filed Feb. 17, 1995, Ser. No. 390,527
Int. Cl.[6] B21L *3/00;13/00;17/00*
U.S. Cl. 59—35.1 **14 Claims**



1. A process for making non-apertured jewelry chain, comprising precious or non-precious metal, from multiple chains of intertwined open links, which comprises the steps of:

(a) aligning the said open links of each of said multiple chains in side by side abutting relationship;

(b) bonding the said multiple chains together in said side-by-side relationship, said bonded chain having a longitudinal axis;

(c) compressing the said bonded multiple chain, along its longitudinal axis, to close the gaps within said open links of said multiple chain, and form a non-apertured compressed chain;

(d) hammering said non-apertured compressed chain to form a rigid flattened chain; and

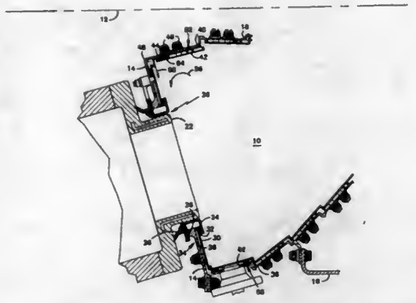
(e) flexibilizing said rigid flattened chain, to form said non-apertured jewelry chain.

5,542,246

BULKHEAD COOLING FAIRING

Thomas E. Johnson, Manchester, and Craig G. Thompson, South Windsor, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 15, 1994, Ser. No. 356,603
Int. Cl.[6] F02C *3/14*
U.S. Cl. 60—39.36 **3 Claims**



1. In a gas turbine engine annular combustor:

said combustor formed of an inner shell, an outer shell and an annular bulkhead joining said inner and outer shells at the upstream end;

a plurality of fuel nozzle openings in said bulkhead;

a plurality of circumferentially arranged float wall liner panels secured to said inner and outer shells at the upstream end thereof;

a plurality of cooling air openings through said shells behind each of said float wall liner panels form impinging panel cooling air against said panels and directing a portion of said panel cooling air upstream toward said bulkhead;

a plurality of bulkhead liner sections sealed to said bulkhead to all edges of each of said liner sections except the edges adjacent said inner and outer shell;

a bulkhead cooling air supply;

a plurality of cooling air openings through said bulkhead behind said bulkhead liner sections for impinging bulkhead cooling air against said liner sections and directing said bulkhead cooling air radially towards said shells; and

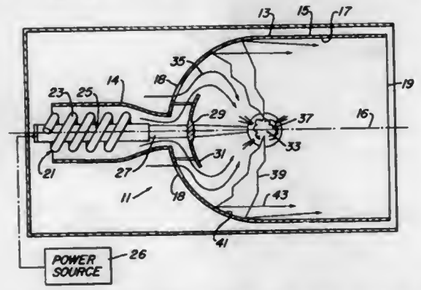
a fairing extending radially from said shells adjacent said bulkhead liner for directing cooling air radially across said bulkhead liner surface from said bulkhead cooling air supply.

5,542,247

APPARATUS POWERED USING LASER SUPPLIED ENERGY

Boyd B. Bushman, Lewisville, Tex., assignor to Lockheed Corporation, Fort Worth, Tex.

Filed Jun. 24, 1994, Ser. No. 265,385
Int. Cl.[6] F02K *7/00*
U.S. Cl. 60—203.1 **7 Claims**



1. An apparatus for converting energy into thrust, and directing the thrust to move an object, the apparatus comprising:

an energy source;

a laser for receiving energy from the energy source and emitting laser light in response thereto;

a chamber having air disposed therein;

a lens for receiving the laser light and directing the laser light toward a focal point within the chamber;

wherein directing the laser light toward the focal point within the chamber excites molecules of the air disposed within the chamber at the focal point to disassociate;

wherein disassociation of the molecules directly provides pressure waves which directly provide the thrust for powering the object to move;

a mounting bracket extending rearward at a forward end of the chamber, into the chamber; and

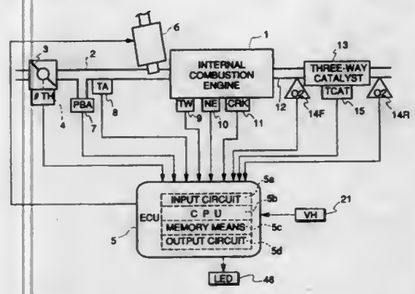
wherein the lens is mounted to the mounting bracket, within the chamber, spaced apart from the forward end.

5,542,248

AIR-FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Yoichi Iwata; Yoshiharu Ave, both of Wako, and Takayoshi Nakayama, Tochigi-ken, all of, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 10, 1994, Ser. No. 338,768
Claims priority, application Japan, Nov. 11, 1993, 5-305889
Int. Cl.[6] F01N *3/20*
U.S. Cl. 60—276 **8 Claims**



1. An air-fuel ratio control system for controlling an air-fuel ratio of a mixture supplied to an internal combustion engine having an exhaust passage, comprising:

a catalytic converter arranged in said exhaust passage for purifying noxious components contained in exhaust gases from said engine;

an upstream exhaust gas component concentration sensor arranged in said exhaust passage at a location upstream of said catalytic converter for detecting concentration of a component contained in said exhaust gases;

a downstream exhaust gas component concentration sensor arranged in said exhaust passage at a location downstream of said catalytic converter for detecting concentration of said component contained in said exhaust gases;

control parameter-setting means for setting a value of a control parameter for use in controlling the air-fuel ratio of said mixture, based on an output from said downstream exhaust gas component concentration sensor;

feedback control means for carrying out feedback control of the air-fuel ratio of said mixture, based on the value of said control parameter set by said control parameter-setting means and an output from said upstream exhaust gas component concentration sensor;

inversion period-detecting means for detecting an inversion period with which said output from said upstream exhaust gas component concentration sensor is inverted from one side to another side or from said another side to said one side with respect to a predetermined level during said feedback control of the air-fuel ratio by said feed back control means;

first determining means for determining whether or not one of said output from said downstream exhaust gas component concentration sensor and the value of said control parameter set by said control parameter-setting means falls within a predetermined range;

second determining means for determining whether or not said inversion period detected by said inversion period-detecting means falls within a predetermined time period; and

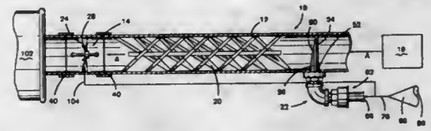
deterioration-determining means for determining deterioration of said upstream exhaust gas component concentration sensor, based on results of determinations by said first determining means and said second determining means.

5,542,249

EXHAUST APPARATUS

Edward H. Heath, Madison, Conn., assignor to Madison Combustion Associates, Madison, Conn.

Filed Oct. 22, 1993, Ser. No. 141,408
Int. Cl.[6] F02B *37/00*
U.S. Cl. 60—293 **18 Claims**



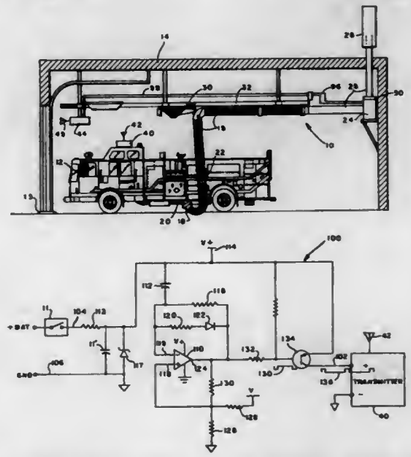
1. An exhaust apparatus for a combustion engine having a combustion chamber and an exhaust pipe for conveying exhaust gas in an exhaust stream from the combustion chamber, the exhaust apparatus comprising: fan means disposed downstream of the combustion chamber within the exhaust pipe and driven by the exhaust stream; and static mixing means for imparting a swirling flow to the exhaust stream, the static mixing means being positioned upstream of the fan means, whereby swirling flow of the exhaust stream facilitates drive of the fan means.

5,542,250

METHOD AND APPARATUS FOR ACTUATING A DIRECT SOURCE EXHAUST GAS CAPTURE SYSTEM

Gordon M. Ball, 1037 Cornwell Ave., Baldwin Harbor, N.Y. 11510, and Lawrence M. Sears, 45006 Mather La., Hunting Valley, Ohio 44022

Filed Oct. 5, 1994, Ser. No. 318,219
Int. Cl.[6] F02B *35/00;* **F24F** *7/00*
U.S. Cl. 60—315 **43 Claims**



1. A direct source exhaust gas capture system for capturing and exhausting exhaust fumes from a vehicle tailpipe of a vehicle having an engine, comprising an exhaust duct for capturing exhaust fumes from the vehicle tailpipe, an exhaust fan connected to said duct for exhausting fumes from the vehicle tailpipe through said duct, means for energizing said exhaust fan, receiver means connected to said means for energizing said exhaust fan, said receiver means being adapted to receive a first signal to actuate said means for energizing said exhaust fan to energize said exhaust fan to exhaust fumes from the vehicle tailpipe, and transmitter means connectable to the vehicle, said transmitter means being energized upon starting of the vehicle to transmit said first signal to said receiver means and thereby energize said exhaust fan.

5,542,251
CONTROL AND REGULATION DEVICE FOR A VEHICLE TRAVEL DRIVE

Karl-Heinz Leibing, Gerstetten-Dettingen; Kai-Uwe Hansen, Biberach, and Reinhard Vonnoe, Wissenhorn, all of, Germany, assignors to Brueninghaus Hyodromatik GmbH, Elchingen, Germany

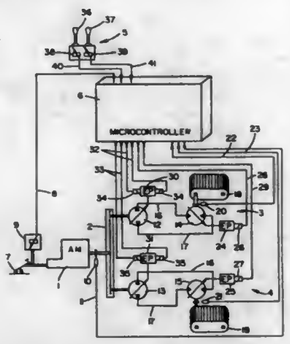
PCT No. PCT/EP93/01821, § 371 Date Dec. 5, 1994, § 102(e) Date Dec. 5, 1994, PCT Pub. No. WO94/02346, PCT Pub. Date Feb. 3, 1994

PCT Filed Jul. 12, 1993, Ser. No. 343,516

Claims priority, application Germany, Jul. 23, 1992, 42 24 359.9

Int. Cl.[6] F16D *31/02*

U.S. Cl. 60—426 **14 Claims**



1. A control and regulation device for a vehicle travel drive, which comprises two hydrostatic transmissions (**3**, **4**), drivable in parallel by at least on drive motor (**1**), each transmission comprising at least a hydraulic pump (**12**, **13**) and a hydraulic motor (**14**, **15**) and having an adjustable transmission ratio, which are drivingly connected with a right or left wheel or track arrangement (**18**, **19**) of the vehicle, and each transmission having at least one adjustment device (**30**, **24**; **31**, **25**) controlled by control signals (v_l, v_r) for adjusting the transmission ratio, and a control section, which comprises a desired-value setting means (**5**) and a signal processing means (**42**, **43**), wherein the desired-value setting means sets desired-values of the transmission ratio of each of the hydrostatic transmissions, employing respective adjustable control levers (**36**, **37**), and for generating corresponding desired-value signals (s_l, s_r), and the signal processing means processes the desired-Value signals to form output control signals, characterised by,

the signal processing means (**42**, **43**) executes signal processing steps of:

forming a min./max.-window from the desired-value signals (s_l, s_r) in accordance with the relations

$$min.=minimum\ (s_l,s_r)$$

$$max.=maximum\ (s_l,s_r)$$

wherein in each case the lower value of the desired-value signal (s_l or s_r) represents the minimum value of the min./max.-window, and the higher value of the desired-value signal (s_l or s_r) represents the maximum value of the min./max.window, and

determining control signals (v_l, v_r) to be outputted in accordance with the equations

$$v_l=v_m+(s_l-s_r)$$

$$v_r=v_m+(s_r-s_l),$$

if a mean value $v_m=(v_l+v_r)/2$, corresponding to a speed of travel relative to the longitudinal axis of the vehicle, of the determined control signals (v_l,v_r) lies within the min./max. window, or correcting the determined control signals (v_l+v_r) of the preceding determining step, for deriving corrected control signals (v_l,v_r) to be outputted in accordance with the equations

$$v_m<min.:v_l=v_l+(min.-v_m)$$

$$v_r=v_r+(min.-v_m)$$

$$v_m=min.$$

and

$$v_m>max.:v_l=v_l-(v_m-max.)$$

$$v_r=v_r-(v_m-max.)$$

$$v_m=max.$$

if the mean value (v_m) of the determined control signals (v_r) lies outside the min./max. window.

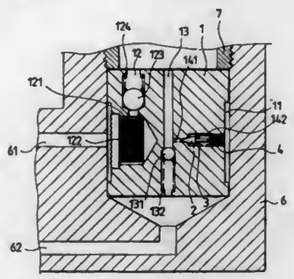
5,542,252
SAFETY VALVE STRUCTURE FOR HYDRAULIC JACKS

Michael Hung, 9-16, Nan Kan Hsia, Nan Kan, Lu Chu Hsiang, Tao Yuan County, Taiwan

Filed May 9, 1995, Ser. No. 437,589

Int. Cl.[6] F16D *31/02;* **B66F** *3/24*

U.S. Cl. 60—477 **4 Claims**



1. A valve for a hydraulic jack comprising:

a cylindrical valve body having an annular exterior wall having therein an annular recess;

a fluid inlet port formed in said recess;

a first port formed in an upper surface of said valve body;

a first passage, which is L-shaped, extending through said valve body from said first port to said fluid inlet port, wherein a longer leg of said L-shaped first passage includes a larger width portion extending from said upper surface of said valve body and a smaller width portion extending downwardly from said larger width portion;

a ball and spring provided in said larger portion of said fluid inlet passage, said spring engaging a radial wall portion projecting inwardly from an inner peripheral surface of said first passage, wherein said ball is positioned between an upper end of said smaller width portion and said spring;

a second port formed in said upper surface of said valve body;

a port formed in a bottom surface of said valve body;

a second passage extending through said valve body from said second port to said bottom surface port, wherein said second passage includes a larger width portion extending upwardly from said bottom surface port and a smaller width portion extending from said larger width portion to said second port;

a ball and spring provided in said larger width portion of said second passage, said spring engaging a radial wall portion projecting inwardly from an inner peripheral surface of said second passage, wherein said ball is positioned between a lower end of said smaller width portion of said second passage and said spring;

a safety fluid discharge port in said recess;

a port formed in a sidewall of said second passage at said smaller width portion;

a third passage extending through said valve body from said safety fluid discharge port to said port formed in said inner sidewall of said second passage, wherein said third passage includes a smaller width portion extending from said sidewall port and a larger width portion extending from said safety fluid discharge port;

a member, provided in said larger diameter portion, having an axial hole therethrough;

a push pin in said larger width portion of said third passage, said push pin having a cone shaped portion including an apex which extends into said smaller width portion and a rod extending from said cone shaped portion through said member to guide linear movement of said push pin;

a spring interposed between said push pin cone shaped portion and said member, said spring biasing said cone portion into engagement with an end of said smaller width portion of said third passage.

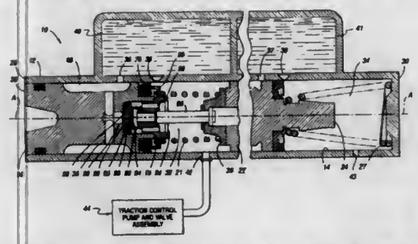
5,542,253
VEHICULAR BRAKING SYSTEM HAVING A LOW-RESTRICTION MASTER CYLINDER CHECK VALVE

Blaise J. Ganzel, Ann Arbor, Mich., assignor to Kelsey-Hayes Company, Livonia, Mich.

Filed Feb. 21, 1995, Ser. No. 391,218

Int. Cl.[6] B60T *11/20*

U.S. Cl. 60—562 **18 Claims**



1. A traction control low-restriction check valve for use in a compensating port master cylinder including an elongate housing having a main bore within which a primary piston, having a leading end and a trailing end, is slidably disposed, and within which a secondary piston is also slidably disposed, the primary and secondary pistons each being translatable between an unstroked and a stroked position, the housing having an open end and a closed end, a pressure chamber being defined between the following members selected from the group consisting of one of said pistons and the end of the housing, and between the primary piston and the secondary piston, the housing defining therein a primary inlet passage and a primary compensating port, both connectable to a brake fluid reservoir, and a traction control outlet passage connectable to a traction control pump, the primary piston defining therein a peripheral annular recess in continuous communication with the primary inlet passage, an axial recess defined in the leading end of the primary piston, and a passageway communicating between the annular recess and the axial recess, the primary compensating port communicating with the pressure chamber only when the primary piston is in its unstroked position, the check valve comprising:

a poppet valve axially translatable within the axial recess;

a resilient poppet valve seal supported by the poppet valve, at least a portion of the resilient seal extending from the poppet valve toward the passageway; and

resilient biasing means disposed within the axial recess to resiliently bias the poppet valve toward the passageway, the poppet valve seal isolating the passageway from the axial recess but allowing brake fluid to be drawn by the traction control pump from the brake fluid reservoir against the bias of the resilient biasing means when the primary piston is in its unstroked position and not translated toward the closed end of the housing to increase pressure in the pressure chamber.

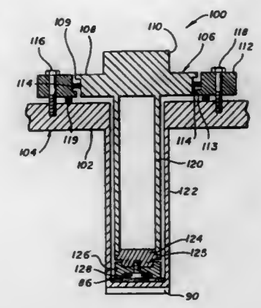
5,542,254
CRYOGENIC COOLER

Gerald R. Pruitt, San Pedro, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 48,040, Apr. 15, 1993, abandoned. This application Aug. 5, 1994, Ser. No. 286,859

Int. Cl.[6] F25B *9/00;19/00;* **F25D** *19/00*

U.S. Cl. 62—06 **14 Claims**



1. A cryogenic cooler comprising:

a flange and an elongated pressure vessel extending therefrom, said pressure vessel being connected to said flange at a proximal end thereof, and said cryogenic cooler mounted to cool a surface in the proximity of the distal end of said pressure vessel; and

a coupler having proximal and distal coupler ends,

said coupler being mounted for movement relative to the distal end of said pressure vessel between a first higher temperature position in which said proximal coupler end is in contact with the distal end of said pressure vessel and a second lower temperature position in which said proximal coupler end is spaced from the distal end of said pressure vessel to define a vibration isolation gap between the distal end of the coupler and the distal end of said pressure vessel.

5,542,255
HIGH TEMPERATURE RESISTANT THERMAL INSULATION FOR CRYOGENIC TANKS

Duane Preston, New Prague, and Thomas K. Drube, Lakeville, both of Minn., assignors to Minnesota Valley Engineering, Inc., New Prague, Minn.

Filed May 4, 1994, Ser. No. 238,238

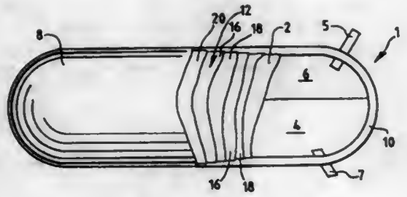
Int. Cl.[6] F17C *1/00*

U.S. Cl. 62—45.1 **8 Claims**

1. A heat resistant thermal insulation for use in cryogenic tanks, comprising:

a) at least one layer of high performance thermal insulation;

b) at least one layer of high temperature insulation surrounding the high performance thermal insulation for preventing thermal degradation of the latter to temperatures of up to approximately 2300 degrees Fahrenheit.



5,542,256

SAMPLE HOLDING DEVICE

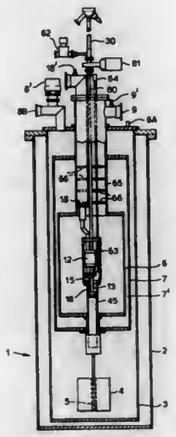
Graham J. Batey, and Eric P. Whitehurst, both of Oxford, United Kingdom, assignors to Oxford Instruments (UK) Limited, Witney, United Kingdom

Filed Mar. 24, 1995, Ser. No. 410,289

Claims priority, application United Kingdom, Mar. 30, 1994, 9406348

Int. Cl.[6] F25B *19/00*

U.S. Cl. 62—610 13 Claims



1. A sample holding device for a dilution refrigerator having a still, a mixing chamber, and a heat exchanger connected between the still and mixing chamber whereby coolant flows from the still to the mixing chamber and from the mixing chamber to the still through respective first and second adjacent paths in the heat exchanger and wherein the mixing chamber has a tubular portion, the sample holding device comprising a tube for insertion in the tubular portion of the mixing chamber and having means for holding a sample within the tubular portion, said tube having an aperture adjacent said sample holding means communicating between the interior of said tube and the interior of the tubular portion when said device is positioned in the dilution refrigerator and another aperture positioned to communicate between the interior of said tube and the second path in the heat exchanger.

5,542,257

CRYOGENIC PUMP WITH AN ESSENTIALLY CUP-SHAPED HOUSING

Monika Mattern-Klosson, Roesrath; Hans-Juergen Mundinger, Bruehl; Hans-Ulrich Haefner, Cologne, and Uwe Timm, Frankfurt, all of, Germany, assignors to Leybold Aktiengesellschaft, Hanau, Germany

PCT No. PCT/EP92/00869, § 371 Date Jul. 25, 1994, § 102(e) Date Jul. 25, 1994, PCT Pub. No. WO93/15318, PCT Pub. Date Aug. 5, 1993

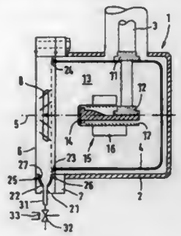
PCT Filed Apr. 18, 1992, Ser. No. 256,796

Claims priority, application Germany, Jan. 23, 1992, 42 01 755.6

Int. Cl.[6] B01D *8/00*

U.S. Cl. 62—55.5 19 Claims

1. A cryogenic pump intended to be horizontally attached and



comprising:

an essentially cup-shaped housing,

an essentially cup-shaped radiation screen concentrically disposed in the housing and having an inlet opening provided with a baffle supported by the radiation screen,

a two-stage cold head extending into the housing and the radiation screen, the first stage of said cold head being connected with the radiation screen in a thermally well conducting manner and the second stage of which cold head being connected in a thermally well conducting manner with pump surfaces for the condensation of argon, nitrogen, oxygen, etc., as well as with pump surfaces for the adsorption of lighter gases (hydrogen, helium, etc.),

a collecting chamber for condensate developing during regeneration of the pump is provided underneath the pump surfaces of the second stage of the cold head,

wherein the collecting chamber is constituted by an element selected from the group consisting of:

(a) the cup-shaped radiation screen in that its diameter increases in the direction toward the bottom in such a way that the collecting chamber for liquid condensate is located in the bottom region of the cup-shaped radiation screen, and the inlet opening of an outlet pipe, which is used for the removal of the gasses deposited on the pump surfaces during the regeneration of the pump surfaces, being located in the region of the collecting chamber,

(b) the cup-shaped radiation screen so that the cup-shaped radiation screen is a part of the collecting chamber, the rim of the radiation chamber forming a collecting chamber and being provided with an essentially sickle-shaped cover plate, and the inlet opening of an outlet pipe, which is used for the removal of the gasses deposited on the pump surfaces during the regeneration of the pump surfaces, being located in the region of the collecting chamber, and

(c) formed by providing the pump with an inlet flange and a recess in the inside of the flange, which recess forms the collecting chamber.

5,542,258

METHOD FOR CONTROLLING A DEW PREVENTION HEATER FOR A REFRIGERATOR

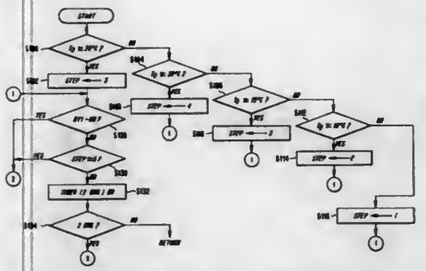
Jae E. Shim, Kunpo, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Feb. 9, 1995, Ser. No. 386,099

Claims priority, application Rep. of Korea, Mar. 31, 1994, 94-6761

Int. Cl.[6] F25D *21/04*

U.S. Cl. 62—80 14 Claims



1. A method for controlling a dew prevention heater of a refrigerator which includes a housing forming at least one food storage compartment, a mechanism for carrying out a refrigeration cycle, two doors mounted on said housing for closing said at least one compartment, each door being hinged at one of its edges and including a free edge arranged opposite a free edge of the other door when both doors are closed, a partition member mounted to said housing and arranged to extend across a gap formed between said free edges when the doors are closed, to resist heat loss, said dew prevention heater disposed on said partition member for preventing the formation of dew thereon, said method comprising the steps of:

A) measuring an outer temperature at an exterior of said housing, and

B) intermittently operating the dew prevention heater at a frequency dependent upon the magnitude of the measured outer temperature.

5,542,259

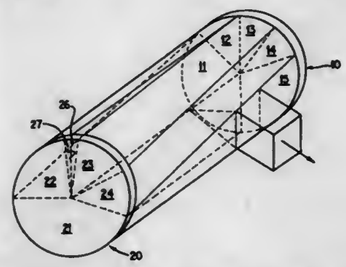
OPEN CYCLE DESICCANT COOLING PROCESS

William M. Worek, Downers Grove, and Weixiang Zheng, Darien, both of Ill., assignors to Gas Research Institute, Chicago, Ill.

Division of Ser. No. 275,497, Jul. 15, 1994. This application Oct. 23, 1995, Ser. No. 553,777

Int. Cl.[6] F25D *17/06*

U.S. Cl. 62—94 11 Claims



1. In a process for open cycle desiccant cooling of the type wherein a process stream passes sequentially through a process stream arcuate segment of a rotating desiccant wheel, a process stream arcuate segment of an oppositely rotating heat wheel and an evaporative cooler to the cooled space and a countercurrent regeneration stream passes sequentially through an evaporative cooler, a regeneration stream arcuate segment of said heat wheel and a regeneration stream arcuate segment of said desiccant wheel, the improvement comprising; dividing said process stream after passing through said desiccant wheel into a plurality of different temperature arcuate process stream segments, corresponding said arcuate process stream segments having a different arcuate area at the outlet face of said desiccant wheel and the inlet face of said heat wheel to provide a temperature profile for improved effectiveness of said heat wheel.

5,542,260

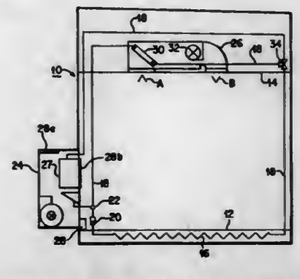
NIGHT-STORAGE UNDERFLOOR COOLING SYSTEMS

Richard C. Bourne, 2379 Isle Royale La., and David A. Springer, 207 Cortez Ave., both of Davis, Calif. 95616

Filed Aug. 31, 1994, Ser. No. 298,660

Int. Cl.[6] F25D *23/00*

U.S. Cl. 62—171 35 Claims



1. A cooling system for cooling an interior of a building structure, the building structure having a massive floor and a roof, the system comprising:

tubing containing water, the tubing located in heat exchange relationship with the massive floor of the structure, the tubing having a first end and a second end;

cooling means for cooling the water, the cooling means connected to the tubing;

a pump connected between the first end of the tubing and the cooling means for pumping and circulating the water through the cooling system;

a conduit between the cooling means and the second end of the tubing to return cooled water to the tubing to cool the massive floor; and

a controller for selectively activating the pump and the cooling means in response to time of day and temperature conditions to cool the water and store cooled water in the tubing to thereby vary an amount of heat removed from the massive floor.

5,542,261

REFRIGERANT EVAPORATOR OVER-PRESSURE RELIEF SYSTEM INCLUDING A FLUID CONTAINMENT VESSEL

Luther D. Albertson, 3834 Carver St., New Albany, Ind. 47150; Walter R. Key, 6362 Minlo Dr., Indianapolis, Ind. 46227, and Mark B. Key, 526A Paradise Way West, Greenwood, Ind. 46143

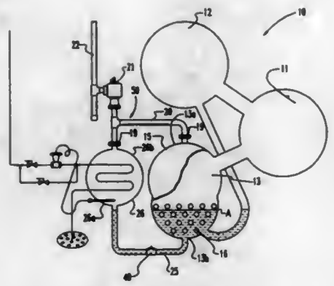
Filed Apr. 17, 1995, Ser. No. 423,282

Int. Cl.[6] F25B *41/00*

U.S. Cl. 62—174 28 Claims

1. A fluid containment system for minimizing or preventing the loss of refrigerant fluid, comprising:

a mechanical refrigeration system incorporating refrigerant fluid;



an evaporator within said refrigeration system, said evaporator for receiving said fluid therein; and

an over pressure containment vessel in fluid communication with said evaporator, said vessel for receiving fluid from said evaporator to reduce the pressure in said evaporator and the receipt of fluid from said evaporator being controlled by a pressure differential between said evaporator and said vessel during normal operation of said mechanical refrigerant systems.

5,542,262

APPARATUS FOR CONTROLLING KIMCHI STORAGE TEMPERATURE IN REFRIGERATOR

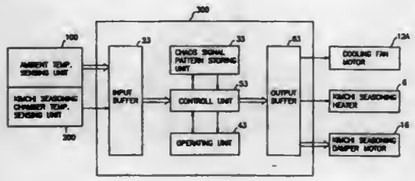
Chan Y. Park, Kyungsangnam-Do, Rep. of Korea, assignor to Goldstar Co., Ltd.

Filed Feb. 23, 1995, Ser. No. 393,552

Claims priority, application Rep. of Korea, Feb. 23, 1994, 3214/1994

Int. Cl.[6] F25B *29/00;* **F25D** *17/04*

U.S. Cl. 62—229 **1 Claim**



1. An apparatus for controlling a kimchi storage temperature in a refrigerator, comprising:

chaos signal pattern storing means for storing a chaos signal pattern corresponding to an atmospheric temperature variation pattern; and

a microprocessor for fetching a chaos signal value previously stored in the chaos signal pattern storing means and comparing a sensing signal value indicative of a temperature of a kimchi seasoning chamber equipped in the refrigerator with the fetched chaos signal value, and controlling the kimchi seasoning chamber temperature on the basis of the result of the comparison.

5,542,263

WINDOW MOUNTED AIR CONDITIONER

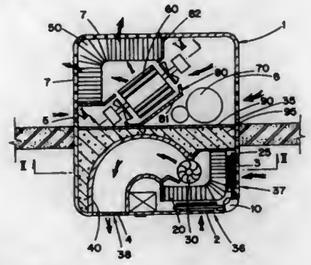
Heung S. Choi; Ju Y. Jeong, and Jae A. Kim, Suwon, all of, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Aug. 24, 1994, Ser. No. 293,947

Claims priority, application Rep. of Korea, Aug. 26, 1993, UM93-16677; Dec. 17, 1993, UM93-28341; Dec. 17, 1993, UM93-28342; Dec. 17, 1993, UM-28349

Int. Cl.[6] F25D *23/12*

U.S. Cl. 62—262 **4 Claims**



1. A window air conditioner, comprising:

a housing having indoor and outdoor portions separated by a partition;

a compressor, an outdoor fan, and a condenser disposed in said outdoor portion; said indoor portion including a front panel and a pair of side panels connected to opposite ends of said front panel, side intake ports formed in one of said side panels, and front intake panels formed in said front panel adjacent an end thereof intersecting said one side panel, said indoor portion further comprising a discharge port arranged remote from said front and side intake ports;

an evaporator disposed in said indoor portion and comprising first and second sections arranged in a general L-shape, said first section arranged across said front intake ports; and said second section arranged across said side intake ports; and

an indoor fan arranged within said indoor portion at a location downstream of said front and side intake ports and rotatable about a vertical axis for drawing air inwardly through said front and side intake ports and then through said first and second evaporator sections and then directing such air toward said discharge port;

said outdoor portion including a rear panel and a pair of side panels connected to said rear panel, air intake ports being formed in both side panels of said outdoor portion, air discharge ports being formed in said rear panel and in one of said side panels of said outdoor portion, said condenser including first and second sections arranged in a general L-shape, said first section of said condenser extending across said discharge port of said rear panel, and said second section of said condenser extending across said discharge port of said one side panel of said outdoor portion, said outdoor fan arranged in said outdoor portion for effecting an air circulation to said condenser from said intake ports of said rear panel and said one side panel.

5,542,264

WATER RESERVOIR FOR A REFRIGERATOR

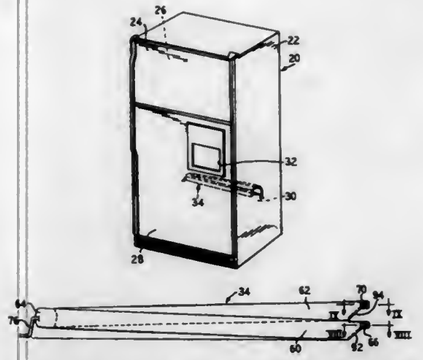
Gregory G. Hortin, Center Township; Michael H. Fisher, Princeton; Joseph L. Coleman, and Scott D. Adams, both of Evansville, Ind., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Continuation of Ser. No. 162,568, Dec. 6, 1993, abandoned. This application Jul. 11, 1995, Ser. No. 500,638

Int. Cl.[6] F25D *23/12*

U.S. Cl. 62—338 **14 Claims**

1. A refrigerator comprising:



a cabinet with at least one open faced compartment being sealed by a refrigerator door,

the compartment comprising vertically extending opposing sidewalls, a vertically extending back wall and a bottom wall,

the bottom wall comprising a horizontally orientated floor portion extending from the open face of the compartment toward the back wall, an upwardly angled portion extending from the floor portion toward the back wall, and a horizontally extending shelf portion extending from the angled portion to the back wall,

a drawer provided in the refrigerator and being defined in part by a bottom wall and a rear wall generally conforming and corresponding to the shape of the floor portion and the angled portion of the bottom wall of the refrigerator when the drawer is in a closed position, and the rear wall being of greater length than the angled portion so that the rear wall extends beyond the angled portion,

a pocket defined by the shelf portion, back wall and the rear wall, and

a water reservoir comprising an elongated tubular member having a laterally spaced first and second legs connected by a bight portion, one of the legs being angled upwardly to form a positive acute angle relative to a horizontal plane passing through the bight portion, and the other of the legs being angled downwardly to form a negative acute angle relative to the horizontal plane, and each leg having a terminal end opposite the bight portion with an inlet provided on the terminal end of the downwardly angled leg and an outlet provided on the terminal end of the upwardly angled leg, wherein the angular and lateral separation of the legs is such that the water reservoir is dimensioned to fit within the pocket.

5,542,265

EXTERNAL REFRIGERATOR-MOUNTED LIQUID DISPENSER

Michael D. Rutland, 1016 D Cabrillo Park Dr., Santa Ana, Calif. 92701

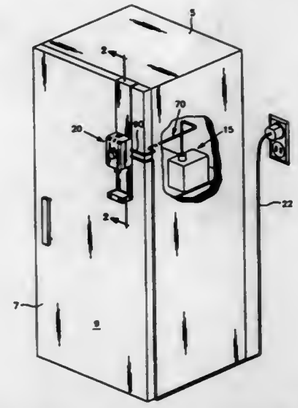
Filed Jun. 30, 1995, Ser. No. 497,289

Int. Cl.[6] B67D *5/62*

U.S. Cl. 62—389 **8 Claims**

1. A chilled liquid dispensing apparatus for use with a refrigerator and a drinking glass, the apparatus comprising:

A dispensing assembly including a hollow housing adapted for mounting to an exterior surface of the refrigerator, the housing enclosing a liquid pumping means, a downwardly disposed dispensing tube and a pumping means actuation means; and a suction line, the suction line including a nipple means and a flexible suction hose means, the apparatus further including a trough positioned below the dispensing tube and spaced apart therefrom, positioned for collecting liquid drips from the dispensing tube, the suction line terminating within at least one liquid storage bottle within the refrigerator, the actuation means positioned for engagement with the drinking glass when said glass is under the dispensing tube to energize the pumping means for pumping a liquid from the storage bottle to the glass.



5,542,266

REFRIGERATION SYSTEM WITH COMPRESSOR USING REFRIGERATION OIL INSOLUBLE IN REFRIGERANT

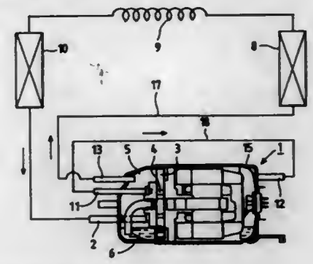
Etsuro Suzuki; Hideki Kawai, both of Fujisawa, and Hiroki Awashima, Sagamihara, all of, Japan, assignors to Matsushita Refrigeration Company, Osaka, Japan

Filed Sep. 20, 1994, Ser. No. 309,297

Claims priority, application Japan, Oct. 20, 1993, 5-262152; Nov. 5, 1993, 5-276623

Int. Cl.[6] F25B *43/02*

U.S. Cl. 62—469 **9 Claims**



1. Refrigeration apparatus, comprising:

(a) a refrigerant line through which a refrigerant flows;

(b) a refrigerant compressor including

a housing defining therein an enclosed chamber storing a refrigeration oil insoluble in the refrigerant,

a suction port formed in said housing for introducing therethrough the refrigerant in said refrigerating line into said refrigerant compressor,

a cylinder disposed within said housing, having a compression chamber communicating with said suction port, for compressing the refrigerant introduced from said suction port,

a first discharge port formed in said housing for discharging therethrough the refrigerant compressed in the compression chamber, said housing, said first discharge port being fluidly insulated from the enclosed chamber,

a gas return port formed in said housing for introducing therethrough the refrigerant discharged from said first discharge port into the enclosed chamber; and

a second discharge port, provided in said housing at a given interval away from said gas return port, through which the refrigerant in the enclosed chamber is discharged into said refrigerating line; and

(c) an oil separation passage extending outside said housing of said refrigerant compressor, establishing fluid communication between said first discharge port and said gas return port for separating the refrigeration oil contained in the refrigerant entering from the suction port of the refrigerant compressor.

5,542,267

ABSORPTION HEATING AND COOLING DEVICE

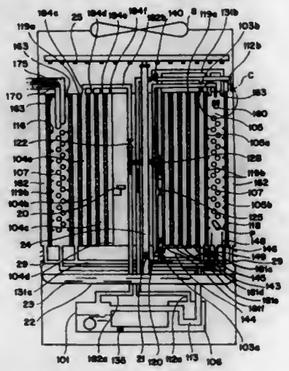
Seung-Gap Lee, Suwon; Sung-Ho Gil, Gwacheon, and Suk-Hyun Eun, Seoul, all of, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Division of Ser. No. 144,537, Nov. 2, 1993, Pat. No. 5,421,173. This application Mar. 31, 1995, Ser. No. 414,389

Claims priority, application Rep. of Korea, Nov. 3, 1992, 1992-20548; Apr. 16, 1993, 1993-6407; May 14, 1993, 1993-8289

Int. Cl.[6] F25B *15/00*

U.S. Cl. 62—485 **9 Claims**



1. An absorption cooling apparatus comprising:

generating means for receiving a dilute solution and separating said dilute solution into a high temperature, high pressure refrigerant gas and a refrigerant absorbing liquid;

a plurality of condensers for condensing high temperature, high pressure refrigerant gas into refrigerant condensate;

a plurality of branch pipes for receiving high temperature, high pressure refrigerant gas from said generating means and delivering said high temperature, high pressure refrigerant gas to said condensers;

a precooler arranged to receive refrigerant absorbing liquid from said generating means, and for reducing the temperature of said refrigerant absorbing liquid;

an absorber arranged to receive refrigerant condensate from said condensers, and refrigerant absorbing liquid from said precooler, said absorber including:

a first distributor for distributing refrigerant condensate downwardly through a central portion of said absorber, and

a second distributor for distributing refrigerant absorbing liquid downwardly along an outer portion of said absorber to absorb evaporated refrigerant and form therewith a dilute solution;

conduit means extending through said absorber for conducting a heat exchange fluid which is cooled as it passes through said absorber; and

heat transfer fins arranged between one of said condensers and said absorber.

5,542,268

HAND KNITTING APPARATUS AND METHOD

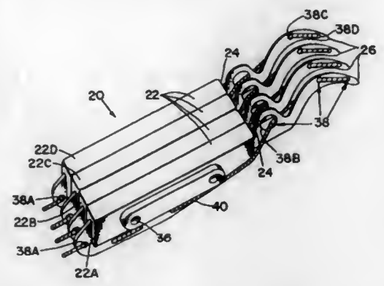
Walter Palange, Gaeta, Italy, assignor to Walter Palange, Inc., Naples, Fla.

Filed Sep. 9, 1994, Ser. No. 303,997

Claims priority, application Italy, Sep. 9, 1993, LT93A0008

Int. Cl.[6] D04B *3/00;35/00*

U.S. Cl. 66—1 R **30 Claims**



1. A manual knitting assembly for use with a knitting apparatus for producing patterned knitted fabric, said knitting assembly comprising a needle assembly having:

a handle portion with a distal edge; and

a plurality of needles attached to said handle portion and arranged in a spaced, selectively determined order adjacent said distal edge, each needle terminating in a needle tip that extends from said distal edge, and at least one of said needle tips having predetermined and distinct operational and nonoperational attached positions, whereby the order of said needles may be effectively reconfigured by selectively positioning said needle tips in desired operational or nonoperational positions.

5,542,269

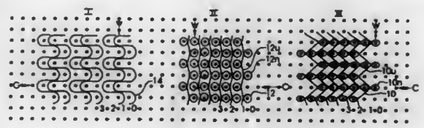
WARP KNITTED FABRIC WITH RIBBED SATIN-LIKE BACK

David T. Richards, Greensboro, N.C., assignor to Guilford Mills, Inc., Greensboro, N.C.

Filed Mar. 1, 1995, Ser. No. 397,431

Int. Cl.[6] D04B *21/18;21/14*

U.S. Cl. 66—195 **13 Claims**



1. A textile fabric of a warp knitted construction comprising a plurality of yarns interknitted with one another in stitches arranged in longitudinally extending fabric wales and transversely extending fabric courses, characterized by the technical back of said fabric having both a satin-like surface and a walewise ribbed effect, said yarns comprising a set of yarns warp knitted in coursewise spaced stitches with extended underlaps therebetween at the technical back of said fabric forming a satin-like surface effect and a set of elastic yarns inlaid with the stitches of the satin-effect yarns at the technical face of the fabric, said elastic yarns being spaced coursewise from one another to create the appearance of walewise ribs in the satin-effect surface of the technical back along the coursewise spacings between the elastic yarns.

5,542,270

GUIDE BAR ARRANGMENT FOR WARP KNITTING MACHINE HAVING BENDING TRANDUCERS

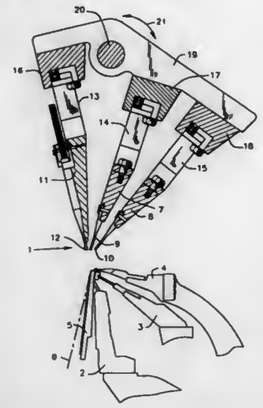
Kresimir Mista, Heusenstamm, and Hans-Jurgen Hohne, Hainburg, both of, Germany, assignors to Karl Mayer Textilmachinenfabrik GmbH, Obertshausen, Germany

Filed Oct. 2, 1995, Ser. No. 538,410

Claims priority, application Germany, Oct. 5, 1994, 44 35 562.9

Int. Cl.[6] D04B *27/26;27/24;27/32;3/02*

U.S. Cl. 66—207 **24 Claims**



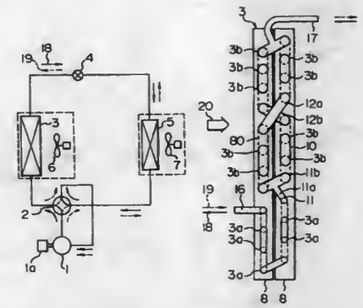
1. A guide bar arrangement for a warp knitting machine having a swinging shaft and comprising:

a guide bar;

a displacing arrangement for axially displacing said guide bar; and

a holding means having an intermediating compensating arrangement for supporting said guide bar, said holding means being axially fixed and attached to the swinging shaft, said compensating arrangement and said displacement arrangement including:

a plurality of bending transducers, each having one end attached to the holding means and another end attached to the guide bar, said bending transducers being deflectable under the influence of an electrical control signal.



at least part of said group of first refrigerant passages of each of said interior and exterior heat exchangers is located at the windward side;

heat transfer tubes of said group of first refrigerant passages of each of said interior and exterior heat exchangers are smaller in flow-passage cross-sectional area than those of the corresponding group of second refrigerant passages; and

a ratio of the number of heat transfer tubes of said group of first refrigerant passages of said exterior heat exchanger to a total number of heat transfer tubes of said exterior heat exchanger is higher than a ratio of the number of heat transfer tubes of said group of first refrigerant passages of said interior heat exchanger to a total number of heat transfer tubes of said interior heat exchanger.

5,542,271

AIR-CONDITIONER EMPLOYING NON-AZEOTROPE REFRIGERANT

Mituo Kudoh; Toshihiko Fukushima; Masaaki Itoh, all of Tsuchiura; Mari Uchida, Ibaraki-ken; Hiroaki Matsushima, Ryugasaki; Hiroshi Kogure, Sano, and Syoji Takaku, Tochigi-ken, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 17, 1994, Ser. No. 323,937

Claims priority, application Japan, Oct. 18, 1993, 5-259677

Int. Cl.[6] F25B *1/00*

U.S. Cl. 62—502 **7 Claims**

1. An air-conditioner of a heat pump type comprising a refrigeration cycle comprising an interior heat exchanger, an exterior heat exchanger, a compressor, a four-way valve, and an expansion mechanism, wherein a non-azeotrope refrigerant composed of not less than two kinds of refrigerants is used as working medium;

wherein a refrigerant path in each of said interior and exterior heat exchangers is divided into a group of first refrigerant passages located at a region where a proportion of liquid-phase refrigerant is large and a group of second refrigerant passages located at a region where the proportion of the liquid-phase refrigerant is small;

5,542,272

NUMERICAL COMBINATION LOCK WITH TURNING KNOB, CAM PLATE, AND DROP LEVER

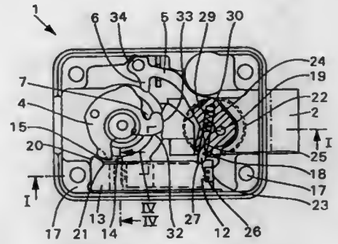
Albert Heinemann, Ehrenkirchen, Germany, assignor to Theodor Kromer GmbH & Co. KG Spezialfabrik Fur Sicherheitsschlosser, Umkirch, Germany

Filed Jul. 7, 1994, Ser. No. 271,929

Claims priority, application Germany, Jul. 14, 1993, 43 23 493.3

Int. Cl.[6] E05B *49/00;37/08*

U.S. Cl. 70—278 **13 Claims**



1. A numerical combination lock (1) comprising a rotatable turning knob (3), a cam plate (4) having a drop opening (7) therein, and a drop lever (5) that is hinged to a locking bolt (2) and has a hook-like projection (6) such that, with a correct selection of an opening combination of the lock (1), the hook-like projection (6) engages with the drop opening (7) of the cam plate (4), and upon turning of the cam plate (4) pulls the locking bolt (2) to an open position, said turning knob (3) further having means for setting of individual values of the opening combination at different angles of rotation of the knob, said knob also being axially displaceable in order to operate an electric switch (11) assigned to each setting value, whereby individual setting values can be sent electrically by means of switches (11) assigned to them to a memory containing

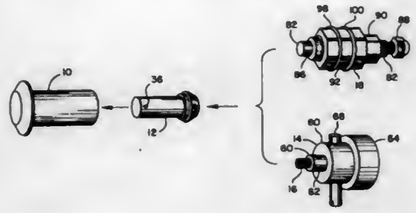
the opening combination, an electric motor (12), controlled by said memory and arranged in a sliding bar (13) which has an original locked position, a coupling member (14) carried on the sliding bar (13) and movable into a region of a first working surface (15) of a first cam of the cam plate (4) upon correct selection of the opening combination, whereby turning of the cam plate (4) operates the sliding bar (13), which acts upon a lever arm (18) of the drop lever (5) and swivels the drop lever into a position for engaging the drop opening (7), positions of the first working surface (15) and the drop opening (7) being matched to each other in such a way that displacement of the sliding bar (13) and swiveling of the drop lever (5) are completed at approximately the same time, the sliding bar (13) having a projection (20) which faces the cam plate (4) such that, when the cam plate (4) is turned back in order to close the locking bolt (2), the projection (20) is contacted by a second working surface (21) of the cam plate (4), whereby the sliding bar (13) is forced to move back to its original position as a result of turning of the cam plate (4) when the lock (1) is being closed.

5,542,273

POSITIVE ACTING BARREL LOCK

James W. Bednarz, 1025 W. Crosby, Slaton, Tex. 79364

Filed Nov. 23, 1994, Ser. No. 344,747
Int. Cl.[6] F05B *67/36*
U.S. Cl. 70—34 13 Claims



1. A barrel lock adapted to engage a retainer having an annular edge defining an opening, said barrel lock comprising:

a plug having an exterior adapted to fit into said opening of said retainer, said plug having an interior defining a longitudinal threaded hole and a radial bore, said longitudinal threaded hole being open to an open end of said plug and said radial bore being by an opposite end of said plug and alignable with said annular edge of said retainer, said open end defining an interior bore in substantially co-linear alignment with said longitudinal threaded hole of said plug;

a ball situated within said radial bore and free to protrude radially outward beyond said exterior of said plug;

a pin having external threads engaging said longitudinal threaded bole of said plug, said pin having a driving end and a driven end, said driving end being adapted to positively engage said ball, said driven end being recessed within said plug;

a key adapted to reach into said plug and engage said driven end of said pin, whereby revolution of said key turns said pin selectively in and out of said longitudinal threaded hole of said plug to move said ball along said radial bore to selectively push said ball radially outward beyond said exterior of said plug and allow said ball to retract within said exterior of said plug;

a stop disposed within said interior bore of said open end; and

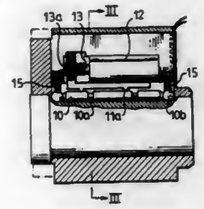
an anti-rotation coupling engaging said stop to limit the relative rotation of said anti-rotation coupling and said plug, said anti-rotation coupling having said key pass therethrough.

5,542,274

CYLINDER LOCK

Bo M. Thordmark, Hedemora, and Lars Walldén, Eskilstuna, both of, Sweden, assignors to ASSA AB, Eskilstuna, Sweden

PCT No. PCT/SE93/00261, § 371 Date Sep. 21, 1994, § 102(e) Date Sep. 21, 1994, PCT Pub. No. WO93/19267, PCT Pub. Date Sep. 30, 1993
PCT Filed Mar. 26, 1993, Ser. No. 307,805
Claims priority, application Sweden, Mar. 26, 1992, 9200943
Int. Cl.[6] E05B *27/00;47/06*
U.S. Cl. 70—495 9 Claims



1. A cylinder lock comprising a cylinder plug (3) which is mounted for rotation around an axially extending axis in a lock cylinder (2) and which includes one or more lock elements, the lock elements including at least one of a row of pins, tumblers and a side bar (7) which are activated directly or indirectly by means of a key (4), the cylinder plug (3) and lock cylinder (2) defining a boundary surface therebetween, and further comprising a latching element (10) which is mounted in the lock cylinder (2) and which in an active position prevents turning of the plug (3) and in a release position permits the plug to be turned, the latching element being urged radially by spring means (15) towards its latching position and coacts with an electrically activated blocking element (11), wherein in one position the blocking element (11) permits the latching element (10) to move radially to its release position, and in another position blocks the latching element in its locking position, wherein the latching element (10) has an axial length which is substantially greater than its thickness or diameter, further wherein the latching element extends axially in parallel with the axially extending axis of the cylinder plug (3) and in a region of the boundary surface between the lock cylinder (2) and the cylinder plug (3), engages in an axially extending groove (3c) or recess in the plug, and moves radially outwardly to its release position, when the blocking element (11), which is mounted in the lock cylinder and has a part with an axial extension extending in a direction parallel to the axially extending axis of the cylinder plug (3), is in its release position and the plug is turned by the key.

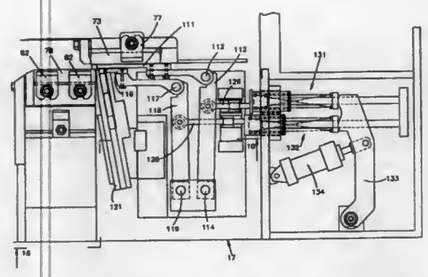
5,542,275

FLAT DIE THREAD ROLLER

Gregory A. Smith; Dale E. Foltz; Robert E. Wisebaker, all of Tiffin, and Robert E. Loy, Bucyrus, all of Ohio, assignors to The National Machinery Company, Tiffin, Ohio

Division of Ser. No. 210,513, Mar. 18, 1994, Pat. No. 5,417,096, which is a division of Ser. No. 34,131, Mar. 22, 1993, Pat. No. 5,345,800, which is a division of Ser. No. 868,330, Apr. 14, 1992, Pat. No. 5,230,235, which is a division of Ser. No. 652,778, Feb. 8, 1991, Pat. No. 5,131,250. This application Feb. 21, 1995, Ser. No. 390,992
Int. Cl.[6] B21H *3/06*
U.S. Cl. 72—90 1 Claim

1. A thread rolling machine comprising a frame, a slide reciprocable on said frame through repeated cycles, each including a working stroke and a return stroke, a reciprocating thread rolling die on said slide, a stationary thread rolling die on said frame, a workpiece guide assembly operating to guide workpieces to said dies, a pusher for inserting workpieces into said dies at the beginning of each working stroke, a separator for separating single workpieces in said guide assembly and for positioning said single



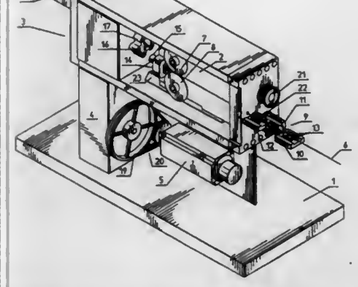
workpieces at said pusher, a power drive operating said slide, pusher, and separator in timed relationship, resilient means to cause operation of said separator and pusher by said power drive, and a power mechanism operable to release said resilient means during changes of said dies.

5,542,276

METHOD AND AN APPARATUS FOR EJECTING AN ELONGATE BLANK FROM A DIE

Ove Nielsen, Skanderborg, and Jesper Frandsen, Horsens, both of, Denmark, assignors to Enkotec A/S, Skanderborg, Denmark

PCT No. PCT/DK93/00081, § 371 Date Oct. 27, 1994, § 102(e) Date Oct. 27, 1993, PCT Pub. No. WO93/17812, PCT Pub. Date Sep. 16, 1993
PCT Filed Mar. 3, 1993, Ser. No. 295,688
Claims priority, application Denmark, Mar. 3, 1992, 0282/92
Int. Cl.[6] B21D *45/00;45/02*
U.S. Cl. 72—344 6 Claims



1. A method in which an elongate blank is disposed in a bore extending through a die, said blank having opposite ends with a formed head at one of said ends, said method comprising ejecting said blank from said bore and determining if said preformed head conforms to a pre-determined geometrical condition thereof, including the steps of:

positioning a control means adjacent to said die in facing relation to said head of said elongate blank,

locating said control means at a predetermined distance from said die and said formed head,

engaging a first ejector rod against the end of the elongate blank opposite said formed head, said first injector rod having a length substantially less than that of the bore in the die,

displacing said first injector rod in said bore to displace said elongate blank in said bore and displace said formed head from said die towards said control means by an amount substantially equal to the length of said first injector rod,

sensing, by said control means, the formed head of the blank upon displacement of the blank by said first ejector rod to determine whether said formed head conforms to the predetermined geometrical condition thereof, and

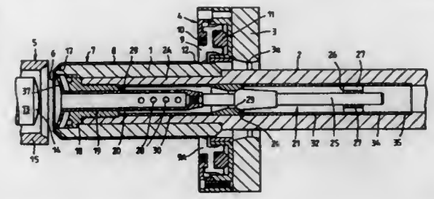
ejecting said elongate blank entirely from said die by a second ejector rod having a length substantially equal to the length of said bore in the die.

5,542,277

APPARATUS FOR STRIPPING A DRAWN ARTICLE FROM A PUNCH

Paul R. Dunwoody, Oxfordshire, United Kingdom, assignor to Carnaudmetalbox PLC, England

PCT No. PCT/GB93/01348, § 371 Date Jan. 10, 1995, § 102(e) Date Jan. 10, 1995, PCT Pub. No. WO94/02266, PCT Pub. Date Feb. 3, 1994
PCT Filed Jun. 28, 1993, Ser. No. 367,214
Claims priority, application United Kingdom, Jul. 21, 1992, 9215433
Int. Cl.[6] B21D *45/00;45/06*
U.S. Cl. 72—345 17 Claims



1. A press comprising at least one die, a hollow punch and a hollow ram defining a hollow punch and ram assembly movable through the die, a bottom forming tool having a convex surface portion axially aligned with the punch, a valve seat in the hollow punch and ram assembly and a valve member which has a valve body engageable with the valve seat, a stem extending through the valve seat through a bearing, a pad at a free end of the stem near an end of the punch so that as the punch approaches the convex surface portion of the bottom forming tool, the pad is pushed to lift the valve body off the valve seat to permit compressed air to pass from the hollow punch, said bearing supports the valve member adjacent the pad at the stem free end, said valve seat being located remote from the bearing to define a cavity located at least between the valve seat and the bearing, and said cavity including an annular space surrounding the valve stem within the hollow ram whereby as the punch approaches the bottom forming tool cooperation of the convex surface portion of the bottom forming tool and the pad lifts the valve body off the valve seat to permit compressed air to fill the cavity with a prechosen volume of compressed air, and as the punch is retracted from the bottom forming tool and the can starts to strip, the valve body closes on the valve seat but stripping of a can body from the punch continues under the effect of expansion of air from the cavity.

5,542,278

METHOD OF RADIAL FORGING

Tjurin V. Aleksandrovich, Trofimov Str. 9/117, 112321 Moscow; Kuroles V. Ivanovich, Planernaya Str. 12/1/255, 123481 Moscow, both of, Russian Federation; Lazorkin V. Andreyevich, Zadneprovskaya Str. 16a/100, 330096 Zaporozhye, Ukraine, and Volodin A. Mikhaylovich, Engels Str. 41/8/18, 390010 Kurgan Ryazan, Russian Federation

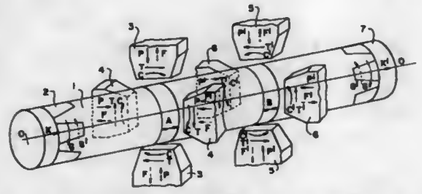
PCT No. PCT/RU93/00125, § 371 Date Jun. 16, 1994, § 102(e) Date Jun. 16, 1994, PCT Pub. No. WO93/24255, PCT Pub. Date Dec. 9, 1993

PCT Filed Jun. 2, 1993, Ser. No. 244,926

Claims priority, application Russian Federation, Jun. 4, 1992, 5045888/27

Int. Cl.[6] B21J *5/06*

U.S. Cl. 72—371 **9 Claims**



1. A method of radial forging blanks including the steps of:
a) affixing a blank in a chuck head of a manipulator;
b) simultaneously swaging said blank by at least two pairs of oppositely mounted forging tools, said pairs aligned adjacent one another along the longitudinal axis of the blank and said pairs applying normal swaging forces and shearing forces at first and second portions of the blank, respectively, said shearing forces being opposite to one another in direction; and
c) moving said blank along its longitudinal axis.

5,542,279

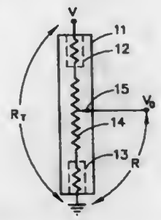
METHOD OF INCORPORATING WIDE TOLERANCE SET POINT POTENTIOMETERS INTO DEVICES WITH FIXED ORIENTATION SETPOINT INDICATOR SCALES

John L. Erdman, Eden Prairie, and Marcus D. Stoner, Minnetonka, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 30, 1994, Ser. No. 316,584

Int. Cl.[6] G01D *18/00;* **G01R** *35/00*

U.S. Cl. 73—1 R **9 Claims**



1. A method of incorporating potentiometers having substantially linear resistance characteristics within a range of wiper positions, the resistance characteristics other than linearity being subject to unit-to-unit variations, into devices of the type in which the set point for a controlled parameter is determined by the position of the wiper on the resistance element of a potentiometer, and in which a movable element coupled to a wiper positioning member cooperates with a fixed-position element to indicate the set point, one of the movable and fixed-position elements being a scale, a further requirement being that a first predetermined indicium of the fixed-position element occupies substantially the same desired location on the device, from device-to-device, the method comprising the steps of:
determining a first wiper position at which the parameter is controlled to a first set point corresponding to the first predetermined indicium on the scale;
coupling the wiper positioning member to the potentiometer so that a movable element associated with the wiper positioning member is in a desired positional relationship with stationary parts of the device when the wiper is positioned to control the parameter to the set point corresponding to a first predetermined indicium on the scale; and
marking the scale so that the first predetermined indicium thereon is at the desired location.

5,542,280

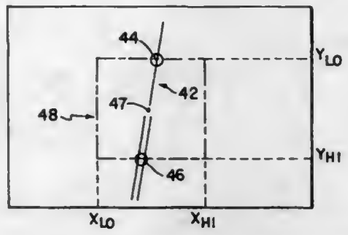
AUTOMATED GAUGE, ASSESSMENT SYSTEM AND METHOD

Paul A. Markow; Theodore M. Cummings, both of Huntsville, Ala.; William D. DeBardelaben, South St. Paul, Minn.; John H. McElreath, Huntsville, and William Nolle, Hazel Green, both of Ala., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Jan. 9, 1995, Ser. No. 370,087

Int. Cl.[6] G01D *5/30;9/42;* **G01P** *1/11;21/02*

U.S. Cl. 73—1 R **34 Claims**



1. A gauge assessment apparatus for use with a gauge having a needle that deflects in response to an input control signal, comprising:
means for generating a predetermined gauge input signal;
means for recording a needle deflection of the gauge in response to the predetermined input signal;
means for analyzing the needle deflection to determine locations of a head portion of the gauge needle and a needle portion remote from said head portion to thereby determine the actual needle deflection; and
means for comparing the actual needle deflection with an expected needle deflection corresponding to the predetermined gauge input signal to thereby assess the accuracy of the gauge.

5,542,281

METHOD FOR TESTING THE ABRASION PROPERTY AND MEASURING FRICTION COEFFICIENT OF CIRCUMFERENTIAL SURFACE OF CYLINDRICAL OBJECT AND APPARATUS FOR THE SAME

Kwang-Ryeol Lee, and Kwang-Yong Eun, both of Seoul, Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea

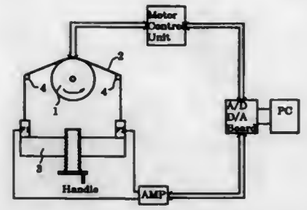
Filed May 1, 1995, Ser. No. 432,067

Claims priority, application Rep. of Korea, May 3, 1994, 94-9687

Int. Cl.[6] G01N *3/56*

U.S. Cl. 73—9 **8 Claims**

5. An apparatus for testing an abrasion property and evaluating friction coefficient for a cylindrical specimen around of which



circumferential surface a relative specimen of flexible material is wrapped, comprising a mounting section, for mounting cylindrical specimen and relative specimen, said mounting section including a means for rotating the cylindrical specimen, a first and a second tension meter for measuring tensions of both ends of the relative specimen, and a tension meter support for support the first and the second tension meter, whereby the friction coefficient between the circumferential surface of cylindrical specimen and the relative specimen is evaluated by using the differences in tension values of the first and the second tension meters of the mounting section when the cylindrical specimen is rotated.

5,542,282

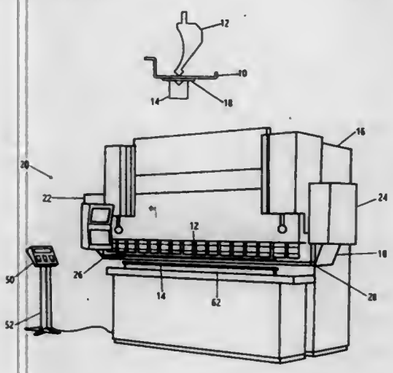
MARKLESS PRESS BRAKE MATERIAL PROTECTOR

James S. Muldner, Penn Valley, Calif., assignor to Inner Act, Inc., Morgan Hill, Calif.

Filed Mar. 9, 1994, Ser. No. 208,974

Int. Cl.[6] B21D *5/02*

U.S. Cl. 72—389.3 **20 Claims**



2. In combination:
a piece of sheet metal forming equipment having a punch and a die,
a sheet of protective material,
means for holding said sheet of protective material interposed between said punch and said die,
and means for incrementally advancing said sheet of protective material with respect to said at least one of said punch or said die.

5,542,283

BENDING MACHINE

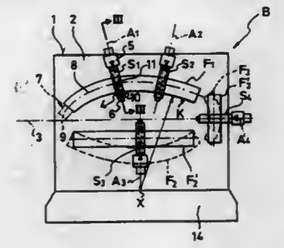
Friedhelm Post, Hornberg 20, 79737 Herrischried, Germany

Filed Nov. 24, 1993, Ser. No. 158,622

Claims priority, application Germany, Dec. 3, 1992, 42 40 725.7

Int. Cl.[6] B21J *9/18;13/04;* **B21D** *7/00*

U.S. Cl. 72—446 **20 Claims**



1. A bending machine for selectively forming an elongated workpiece, said machine comprising:
a body having a face across which the workpiece is positioned along a longitudinally extending material feed axis, the material feed axis defining two opposed sides therealong;
a first guide member secured to said body face along a first side of the material feed axis, said guide member having a curvilinear profile and said first guide member being shaped to define a center of curvature located on a second side of the material feed axis, the second side being opposite the first side of the material feed axis; and
at least one tool mounting carriage for carrying a workpiece forming tool, said at least one tool mounting carriage being mounted to said first guide member and being selectively positionable along the length of said first guide member.

5,542,284

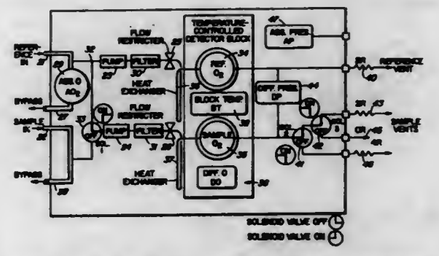
METHOD AND INSTRUMENT FOR MEASURING DIFFERENTIAL OXYGEN CONCENTRATION BETWEEN TWO FLOWING GAS STREAMS

David B. Layzell; Stephen Hunt, and Adrian N. Dowling, all of Kingston, Canada, assignors to Queen's University at Kingston, Kingston, Canada

Filed Oct. 18, 1994, Ser. No. 324,645

Int. Cl.[6] G01N *27/04*

U.S. Cl. 73—23.2 **15 Claims**



1. An apparatus for measuring differential oxygen concentrations in two flowing gas streams comprising:
means to control pressure and flow rate of said gas streams;
means within said temperature-controlled housing means to generate signals representative of pressure and oxygen concentration differentials between said gas streams, comprising first and second oxygen sensors, connected in parallel with each other with opposite polarity, and wherein said first sensor is

connected in series with a fixed resistance and said second sensor is connected in series with at least a selected portion of said fixed resistance, such that, at a selected oxygen concentration in both said sensors, the voltage drop across the fixed resistance is zero;

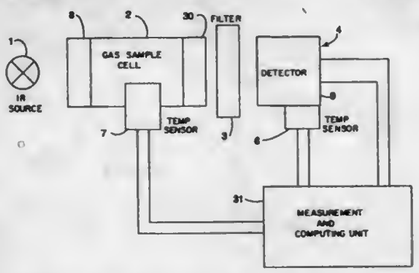
and computer means to monitor said pressure, flow rate and temperature and said signals representative of said differential pressure and oxygen concentration so as to measure and record differential oxygen concentration in said gas streams.

5,542,285

METHOD AND APPARATUS FOR TRANSIENT TEMPERATURE COMPENSATION IN GAS ANALYZER EQUIPMENT

Timo Meriläinen; Börje Rantala, both of Helsinki, and Kurt Weckström, Espoo, all of, Finland, assignors to Instrumentarium Corp., Finland

Filed Nov. 1, 1994, Ser. No. 332,692
Claims priority, application Finland, Nov. 3, 1993, 934871
Int. Cl.[6] G01N *21/17*; G01J *5/12*
U.S. Cl. 73—23.21 **30 Claims**



1. A method for compensating gas analyzer equipment for transient errors caused by temperature changes, said method comprising the steps of:

transmitting electromagnetic radiation through a sample containing a gas to be analyzed;

detecting the intensity of the radiation exiting the gas sample by means of a thermal detector having a radiation detecting sensor element and a reference sensor element, said thermal detector generating an output signal indicative of a property of the gas in the sample, changes in the temperature of the thermal detector introducing errors in the output signal;

obtaining a temperature measurement indicative of the temperature of the reference sensor element;

determining, from the temperature measurement, the rate of change of temperature of the reference sensor element as a function of time and providing a compensating signal indicative of same; and

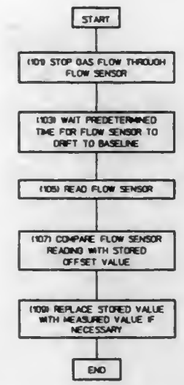
applying the compensating signal to the output signal of the thermal detector to provide a temperature compensated output signal indicative of the property of the gas in the sample.

5,542,286

METHOD AND APPARATUS FOR CORRECTING FLOW AND PRESSURE SENSOR DRIFT IN A GAS CHROMATOGRAPH

Tak K. Wang, Havertown, and Robert C. Henderson, Avondale, both of Pa., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 23, 1995, Ser. No. 376,718
Int. Cl.[6] G01N *30/38*
U.S. Cl. 73—23.22 **4 Claims**



1. In a gas chromatograph having at least a processor and a sample/carrier gas input section with at least a first valve controllable by and coupled to the processor and a first flow sensor, a method for correcting the drift of the flow sensor comprising the steps of:

setting the at least first valve so no carrier gas/sample flows through the flow sensor;

reading the flow registered by the flow sensor using the processor;

comparing the flow measured by the flow sensor with a reference value stored in the processor;

using the reference value in the processor if the flow registered by the flow sensor does not exceed the reference value by a first predetermined amount; and

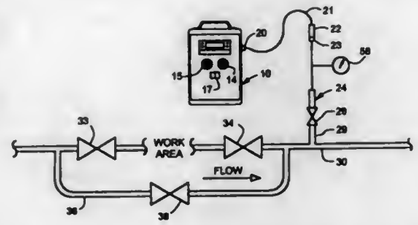
replacing the reference value with the flow registered by the flow sensor if the flow registered by the flow sensor does exceed the reference value by the first predetermined amount.

5,542,287

PORTABLE GAS PRESSURE MONITOR WITH INDEPENDENTLY ADJUSTABLE HIGH AND LOW SET POINTS

Robert D. Powers, Shorewood, Ill., assignor to Northern Illinois Gas Company, Aurora, Ill.

Filed Oct. 17, 1994, Ser. No. 323,633
Int. Cl.[6] G01M *3/28*
U.S. Cl. 73—40.5 R **1 Claim**



1. Portable apparatus for monitoring the pressure of a gas in a distribution line downstream of a work area, comprising:

a pressure sensor adapted to be coupled to a tap in said distribution line located downstream of the work area for generating an electrical pressure signal representative of the pressure of said gas in said distribution line at said tap location;

a first manually adjustable reference circuit for generating a first reference signal representative of an upper set point of a desired safe operating range of pressure for said gas;

a first comparator circuit receiving said electrical pressure signal and first reference signal for generating a first output alarm signal when said electrical pressure signal exceeds said first reference signal;

a second reference circuit manually adjustable independent of said first reference circuit for generating a second-reference signal representative of a lower set point of said desired safe operating range of pressure for said gas whereby the high and low set points of an acceptable operating range for the gas pressure monitor may be independently adjusted by the operator;

a second comparator circuit receiving said electrical pressure signal and said second reference signal for generating a second output alarm signal when said electrical pressure signal is lower than said second reference signal;

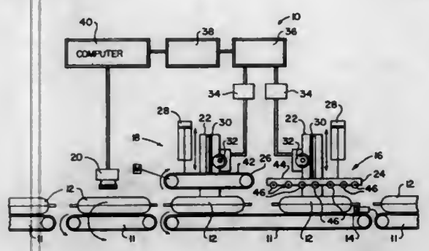
an audible alarm means responsive to either one of said first and second output alarm signals for generating an audible alert sound, and including a high pressure alarm connected in circuit with said first comparator circuit, and a low pressure alarm connected in circuit with said second comparator circuit, and characterized in that said first and second alarms generate readily discernable and distinctive audible signals, wherein an operator may be immediately alerted by the audible signal as to whether the pressure being monitored is higher than the desired operating range or lower than the desired operating range by the audible signal generated by the monitor circuit.

5,542,288

TESTING OF PACKAGES

Christopher Fenlon, Bristol, England, assignor to Ishida-Nonparell Limited, Bristol, England

PCT No. PCT/GB93/00268, § 371 Date Nov. 23, 1994, § 102(e) Date Nov. 23, 1994, PCT Pub. No. WO93/17317, PCT Pub. Date Sep. 2, 1993
PCT Filed Feb. 9, 1993, Ser. No. 295,648
Claims priority, application United Kingdom, Feb. 26, 1992, 9204137
Int. Cl.[6] G01M *3/36*
U.S. Cl. 73—49.3 **7 Claims**



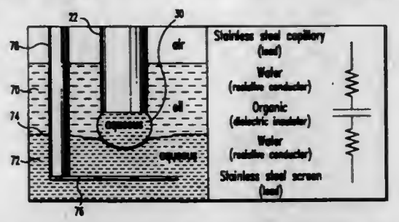
1. Package testing apparatus having a test station and conveying means for conveying packages along a path extending through the test station, the test station comprising at least one load means, means for effecting relative reciprocation of the load means towards and away from the path to apply a load to a package being conveyed along the path and to detect the effect of the load on the package wherein the load means has a package-contacting surface portion that is displaceable in the conveying direction so that a load can be applied to a package while it is being conveyed; and wherein the package-contacting surface portion is not independently driven and comprises an array of free-running rollers adapted to be displaced by contact with packages being conveyed along the path.

5,542,289

APPARATUS AND METHOD FOR THE STUDY OF LIQUID-LIQUID INTERFACIAL RHEOLOGY

Kevin O. Hool, and Robert C. Saunders, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 13, 1994, Ser. No. 354,577
Int. Cl.[6] G01N *13/02*; G01R *27/22*; B01D *15/08*
U.S. Cl. 73—64.52 **29 Claims**



11. A method of measuring electrical impendance of a two fluid interface, which is related to or determines interfacial rheological properties of the fluid interface, comprising the steps of:

(a) forming the inteface between a first layer of a first fluid and a second layer of a second fluid, wherein the first and second fluids are substantially immiscible;

(b) forming a drop of the second fluid within the first layer such that a portion of the first fluid remains disposed between the drop and the second layer;

(c) placing a first electrode in contact with the drop;

(d) placing a second electrode in contact with the second layer;

(e) applying voltage between the first and second electrodes, whereby the electrical equivalent of a capacitor is formed by the drop, the first layer, and the second layer;

(f) moving the interface toward the drop a first predetermined amount;

(g) measuring the electrical impendance between the first and second electrodes; and

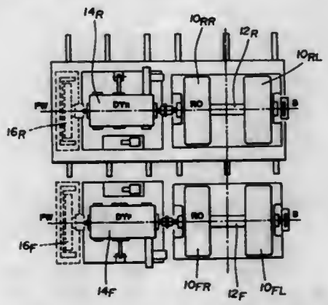
(h) moving the interface away from the drop a second predetermined amount.

5,542,290

CONTROL SYSTEM FOR CHASSIS DYNAMOMETER FOR SIMULATING ROAD TEST OF AUTOMOTIVE VEHICLE

Yorikatsu Suzuki, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Meidensha, Japan

Division of Ser. No. 720,010, Jun. 24, 1991, Pat. No. 5,375,461. This application Oct. 4, 1994, Ser. No. 317,769
Int. Cl.[6] G01L *3/26*
U.S. Cl. 73—117 **5 Claims**



1. A control device for chassis dynamometer for in place testing of a four-wheel drive vehicle, said chassis dynamometer including

a front axle roller operatively associated with a first dynamometer and a rear axle roller operatively connected with a second dynamometer, said first and second dynamometers being mechanically unconnected, said control device comprising:

means for detecting and converting peripheral speeds of each of said front and rear axle rollers individually;

means for computing an average speed of said front and rear rollers;

running resistance setting means outputting a steady state running resistance speed of said vehicle based on said average speed signal;

mechanical power loss setting means outputting respective front and rear mechanical power loss signals indicative of mechanical power loss present in a mechanical system operatively associated with and including a corresponding one of said front and rear rollers and/or vehicle wheels and/or flywheel associated therewith;

acceleration calculating means determining an average acceleration speed in accordance with differentiation of said average speed signal via an inertia command inclusive of electric and front and rear mechanical inertia of said chassis dynamometer;

acceleration resistance processing means outputting an electrical inertial resistance command controlled according to said average acceleration speed and inertia setting device;

first adding means continuously adding said running resistance command and said electrical inertial resistance command;

braking force ratio calculating means active to divide an output power represented by said signal output from said first adder according to a ratio obtained from multiplying a set stationary ratio and factor set as and average acceleration speed and outputting respective braking force commands to each of said front and rear axle rollers, said braking force command values calculated in accordance with operation of proportional setting means;

first comparing means calculating a difference in peripheral speeds of said front and rear axle rollers;

second comparing means calculating a speed difference deviation, based on a speed difference command signal generated by speed difference setting means and said peripheral speed difference calculated by said first comparing means, said second comparing means outputting a signal indicative of said speed difference deviation;

a servo amplifier outputting braking force commands for establishing a speed difference between said front and rear axle rollers in accordance with said speed difference command signal, by increasing the value of a braking force command to said front axle in a first mode, or reducing the value of a braking force signal to said rear axle roller in a second mode;

second adding means outputting a front axle roller braking command based on said front axle braking force command, output from said braking force calculating means, and said speed difference ratio command signal;

third adding means outputting a rear axle roller braking command based on said rear axle braking force command, output from said braking force ratio calculating means, and said speed difference ratio command signal;

said first dynamometer active to control an operational state of said front axle roller in conformance with a sum value of said front axle braking force command and said front mechanical power loss signal;

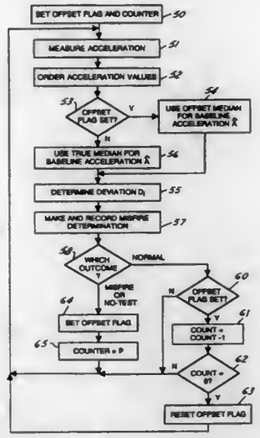
said second dynamometer active to control an operational state of said rear axle roller in conformance with a sum value of said rear axle braking force command and said rear mechanical power loss signal.

5,542,291

MISFIRE DETECTION IN AN INTERNAL COMBUSTION ENGINE USING MODIFIED MEDIAN AVERAGING

John V. James, Walled Lake, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 4, 1995, Ser. No. 511,426
Int. Cl.[6] G01M *15/00;* **F02P** *5/15*
U.S. Cl. 73—117.3 **9 Claims**



1. A method for determining gross engine acceleration of an N-cylinder internal combustion engine during a time interval including a plurality of cylinder events, said method comprising the steps of:

measuring crankshaft acceleration corresponding to each of a plurality of consecutive cylinder events during operation of said engine;

selecting a cylinder event corresponding to an instant for which gross engine acceleration is to be determined; and

assigning said gross engine acceleration a value substantially equal to an offset median acceleration over a series of said cylinder events including said selected cylinder event, said series having a true median value, said offset median acceleration corresponding to a crankshaft acceleration measurement having a next greater value than said true median value.

5,542,292

METHOD AND DEVICE FOR MONITORING A SECONDARY-AIR SYSTEM OF A MOTOR VEHICLE

Erich Schneider, Kirchheim; Rainer Bone, Oberriexingen; Martin Klenk, Backnang; Jörg Lange, Eberdingen, and Dieter-Andreas Dambach, Stuttgart, all of, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

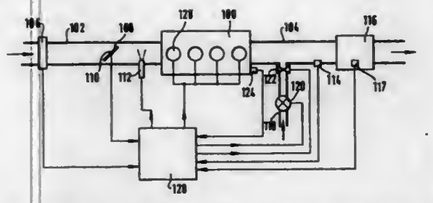
Filed Dec. 14, 1994, Ser. No. 355,789
Claims priority, application Germany, Dec. 21, 1993, 43 43 639.0
Int. Cl.[6] F01N *3/22*
U.S. Cl. 73—118.1 **12 Claims**

1. A method of monitoring a secondary-air system of a motor vehicle, comprising the steps of:

determining a secondary-air stream signal as a function of:

an intake-air stream signal, the intake-air stream being one of an air-volume stream and an air-mass stream drawn in by an internal combustion engine,

a calculated ratio signal determined by a calculated ratio of a rate of the intake-air stream to a fuel feed rate, and



an air/fuel ratio signal determined by a sensor situated downstream of a place of introduction of a secondary-air line into an exhaust-gas channel;

judging a functioning of the secondary-air system as a function of the secondary-air stream signal;

disconnecting a lambda control during controlled operation; and

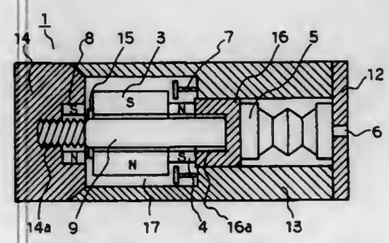
checking an operability of the secondary-air system when the lambda control is disconnected during controlled operation.

5,542,293

PRESSURE DETECTING APPARATUS FOR DETECTING VEHICLE TIRE AIR PRESSURE

Hiroshi Tsuda, Obu; Atsushi Iwase; Ken Nomura, both of Okazaki, and Kazuma Matsui, Toyohashi, all of, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 20, 1994, Ser. No. 277,763
Claims priority, application Japan, Jul. 22, 1993, 5-181277
Int. Cl.[6] B60C *23/02;23/00;* **H01H** *35/24*
U.S. Cl. 73—146.5 **16 Claims**



1. A pressure detecting apparatus comprising:

pressure responsive means arranged to be movable in response to a pressure applied thereto;

setting magnet means having its magnetic poles;

reversing magnet means having its magnetic poles positioned in opposite relation to said setting magnet means and being spaced apart from said setting magnet means;

rotor magnet means supported rotatably relative to said setting magnet means and said reversing magnet means, said rotor magnet means being attracted by said setting magnet means so that position of its magnetic poles is kept in a first position when said pressure responsive means moves in a first direction, and said rotor magnet means being repelled by said reversing magnet means to rotate so that position of its magnetic poles is reversed to a second position opposite to said first position when said pressure responsive means moves in a second direction opposite to said first direction;

magnetism detecting means for detecting and producing a signal indicative of a change in position of said magnetic poles of said rotor magnet means;

cylindrical housing means encasing therein said pressure responsive means, said setting magnet means, said reversing magnet means and said rotor magnet means; and

shaft means arranged coaxially within said housing means and supporting thereon said rotor magnet means rotatably;

wherein said rotor magnet means is shaped in a cylindrical form coaxial with said shaft means, said setting magnet means is shaped in a cylindrical form and positioned coaxially with said shaft means, and said reversing magnet means is fixed to said housing means;

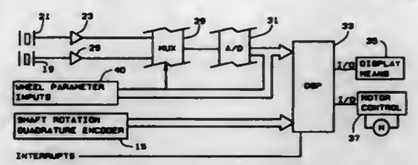
wherein said setting magnet means is fixed to said pressure responsive means to be movable therewith.

5,542,294

WHEEL BALANCER QUICK CALIBRATION CHECK

Michael W. Douglas, St. Peters, Mo., assignor to Hunter Engineering Company, Bridgeton, Mo.

Continuation of Ser. No. 77,428, Jun. 15, 1993, abandoned.
This application Jan. 13, 1995, Ser. No. 372,894
Int. Cl.[6] G01M *1/16*
U.S. Cl. 73—462 **16 Claims**



1. A vehicle wheel balancer including a shaft assembly on which a wheel/tire assembly is removably mounted, imbalance determining means operatively connected to the shaft assembly for determining the imbalance of said wheel/tire assembly, means in communication with said imbalance determining means for checking whether the calibration of the balancer is within predetermined limits, and a display, in operative communication with said imbalance determining means and said calibration checking means, on which results of a calibration check are shown;

said balancer automatically being placed in a calibration check mode each time the balancer is turned on to check the calibration of said balancer during a first spin;

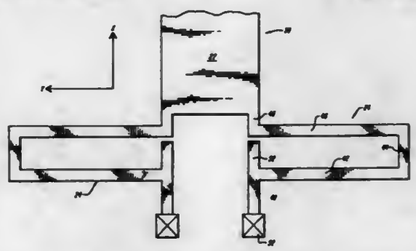
said balancer including means for cancelling said calibration check mode, said cancelling means including means for inputting vehicle wheel parameters, said balancer calibration check means including means for identifying a change in default parameters.

5,542,295

APPARATUS TO MINIMIZE STICTION IN MICROMACHINED STRUCTURES

Roger T. Howe, Lafayette, Calif.; H. Jerome Barber, Winchendon, and Michael Judy, North Andover, both of Mass., assignors to Analog Devices, Inc.

Filed Dec. 1, 1994, Ser. No. 348,377
Int. Cl.[6] G01P *15/08*
U.S. Cl. 73—514.18 **20 Claims**



1. A micromachined electro-mechanical structure comprising:

an anchor connected to a substrate;

a first structure suspended above the substrate, having a first structure edge;

a second structure suspended above the substrate, having a second structure edge at a first distance along an axis parallel to the substrate from the first structure edge; and

a suspension suspended above the substrate, having a first end connected to the anchor and a second end connected to the first structure, so that the first structure is movable along the axis, the suspension further having a first bumper segment having a first segment edge, a second bumper segment having a second segment edge, and a bumper integral with the first segment edge, at a second distance along the axis from the second segment edge,

wherein upon movement of the first structure a first amount in a first direction along the axis the bumper contacts the seconds segment edge and the first structure edge does not contact the second structure edge.

5,542,296

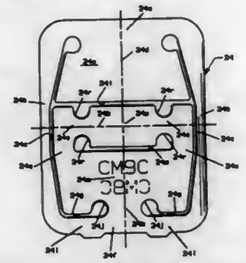
COMPACT CAPACITIVE ACCELERATION SENSOR

Eric P. Reidemeister, 10 Alcott Clr., Taunton, Mass. 02780; Larry K. Johnson, 21 Brandon St., North Attleboro, Mass. 02760; Raymond E. Mandeville, 9 Jason's Grant Dr., Cumberland, R.I. 02864; Douglas B. Strott, 17 Collins St., Attleboro, Mass. 02703, and Robert O. Southworth, 192 W. Forest Ave., Pawtucket, R.I. 02860

Filed Jan. 3, 1995, Ser. No. 367,655

Int. Cl.[6] G01P *15/125*

U.S. Cl. 73—514.32 **17 Claims**



1. An acceleration condition responsive sensor comprising a substrate having a top surface, an electrically conductive detect plate mounted on the top surface of the substrate, an electrically conductive blade member having horizontal and vertical axes, first and second ends and opposite sides and having an attachment portion which is located generally at a center of mass of the blade member, an attachment means for attaching said blade means to said substrate, a source plate portion at said first end and integral resilient beam means for supporting and positioning said source plate portion extending between the attachment portion and the source plate portion, the resilient beam means including a pair of elongated beam members formed by a respective slot adjacent the opposite sides of the blade member and extending in the direction of the vertical axis essentially from the first end to the second end of the blade member, the beam members connected at the first end of the blade member to the source plate portion, the source plate portion extending back in a direction toward the attachment portion from the connection with the beam members, the respective slots having a portion extending parallel to the horizontal axis along the second end of the blade member toward the middle of the second end forming a pair of torsion arms connected to the respective elongated beam members at the second end of the blade member, the respective slots having a terminus closely spaced from one another to form a central pivot, the attachment portion being mounted on the substrate with the source plate portion overlying the detect plate in selected spaced relation, circuit paths disposed on the substrate electrically connected to the detect plate and the electrically conductive blade member to form a capacitor, the source plate portion being movable relative to the detect plate in response to an acceleration force to provide an electrical signal.

5,542,297

ACCELERATION SENSOR

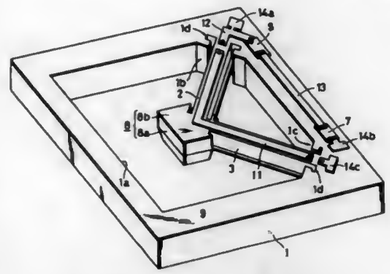
Jun Mizuno; Kay Nottmeyer, both of Higashi-Matsuyama, and Mitsuteru Kimura, Shichigahama-Machi, all of, Japan, assignors to Zexel Corporation, Tokyo, Japan

Filed May 26, 1995, Ser. No. 451,163

Claims priority, application Japan, Jun. 1, 1994, 6-140698

Int. Cl.[6] G01P *15/00*

U.S. Cl. 73—514.36 **14 Claims**



1. An acceleration sensor comprising:

a support frame defining a central opening;

a vibration detecting device including at least one piezo-resistance device formed of boron-added silicon;

a compensating device, operatively connected to said vibration detector device, mounted on said support frame and including a piezo-resistance device formed of boron-added silicon;

a cantilever supporting said detecting device, said cantilever including a first beam and a second beam, said first and second beams each being concave in cross section and having a support end connected to said support frame and a vibratile end extending into said central opening, wherein said support ends are spaced wider apart than said vibratile ends; and

a weight connected to said vibratile ends of said first and second beams.

5,542,298

METHOD FOR DETERMINING PHYSICAL STAGE PARAMETERS OF A MEDIUM AND AN APPARATUS FOR CARRYING OUT SAME

Armen P. Sarvazian, mikroraion "AB", 9,kv.36, Puschino na Oke, Serukhovsky raion, Moskovskaya oblast; Vladimir N. Belonenko, 10, kv. 6, poselok Razvilka, Leninsky raion, Moskovskaya oblast, and Tigran V. Chalikian, prospekt Azatunian, 1, kv.28, Erevan, Armenia, all of, Russian Federation

Continuation of Ser. No. 852,250, Jun. 2, 1992, abandoned.

This application May 5, 1995, Ser. No. 435,531

Claims priority, application Russian Federation, Aug. 24, 1990, 4861972; May 30, 1991, 4937760

Int. Cl.[6] G01N *29/02*

U.S. Cl. 73—597 **117 Claims**

1. An apparatus for determining properties of a fluid medium at different concentrations of components comprising:

a first casing having first and second ends and a side wall,

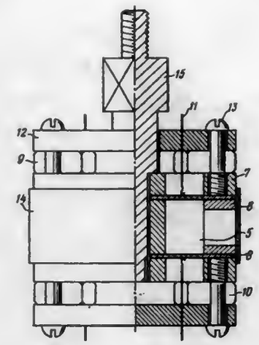
a first opening in said first casing in coaxial alignment therewith,

a first piezoelectric plate arranged on said first end of said first casing perpendicular to a longitudinal axis thereof and rigidly secured to said first end along a perimeter thereof,

a second piezoelectric plate arranged on said second end of said first casing perpendicular to said longitudinal axis thereof and rigidly secured to said second end along the perimeter thereof,

a measuring chamber formed by said side wall of said first casing and said first and second piezoelectric plates,

at least one opening in said side wall for admitting a fluid medium under study into said measuring chamber,



a first electrode arranged on said first piezoelectric plate on a side of said measuring chamber and making contact with the whole surface of said first piezoelectric plate,

a second electrode arranged on said first piezoelectric plate on a side opposite to said first electrode in coaxial alignment with said measuring chamber, the contour of said second electrode being coincidental with the contour of a cross section of said measuring chamber,

a third electrode arranged on said second piezoelectric plate on a side of said measuring chamber and making contact with the whole surface of said second piezoelectric plate,

a fourth electrode arranged on said second piezoelectric plate on a side opposite to said third electrode in coaxial alignment with said measuring chamber, the contour of said fourth electrode being coincidental with the contour of a cross section of said measuring chamber,

a group of additional casings each having an axis coincidental with the axis of said first casing, and having a first end making contact with said second piezoelectric plate, and, each having a second end and a side wall,

a second opening in each of said group of additional casings in coaxial alignment therewith,

a plurality of additional piezoelectric plates, the number of said plurality of additional piezoelectric plates being equal to the number of said additional casings, each of said plurality of additional piezoelectric plates being in contact with said second end of a corresponding one of said additional casings and rigidly secured thereto along the perimeter thereof,

a group of measuring chambers formed by respective side walls of the said additional casings and respective ones of said additional piezoelectric plates which are common to each two of said additional casings,

an opening in each said side wall of each of said group of additional casings for admitting a fluid medium under study into each of said group of measuring chambers,

a first plurality of electrodes, the number thereof being equal to the number of said additional casings, each of said first plurality of electrodes being arranged on a corresponding one of said additional piezoelectric plates on the side of a corresponding one of said group of measuring chambers thereof and making contact with the whole surface of said corresponding one of said additional piezoelectric plates thereof,

a second plurality of electrodes respectively arranged on said additional piezoelectric plates on the sides thereof opposite to a corresponding one of said electrodes of the first plurality of electrodes, the contours thereof being coincidental with the contours of respective cross sections of said group of measuring chambers;

means connected with said first piezoelectric plate and said plurality of additional piezoelectric plates for generating oscillations in a reference medium contained in said measuring chamber and said group of measuring chambers; and

means connected with said second piezoelectric plate for measuring oscillations in said reference medium contained in said measuring chamber and for determining properties of a fluid medium under study.

5,542,299

INERTIA SWITCHING DEVICE

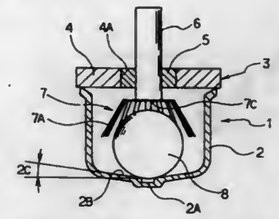
Harunori Kato, Mie-ken; Yasukazu Mizutani, Nagoya; Shigekazu Shibata, Nagoya; Katsuhiro Kimura, Nagoya; Hideki Koseki, Aichi-ken; Mitsuhiro Urano, Toyota, and Masayuki Watanabe, Nagoya, all of, Japan, assignors to Ubukata Industries, Nagoya, Japan

Filed Sep. 16, 1993, Ser. No. 121,522

Claims priority, application Japan, Sep. 16, 1992, 4-272387; Oct. 29, 1992, 4-316363; Jan. 20, 1993, 5-026308

Int. Cl.[6] G01P *15/135*

U.S. Cl. 73—654 **25 Claims**



1. An acceleration responsive device which includes a seismo-sensitive element comprising:

a) a housing formed from an electrically conductive material and having a bottom and an open end, the housing having an inclined face formed on the bottom thereof to gently rise concentrically outwardly substantially from the center of the bottom thereof;

b) a header fixed to the housing to close the open end thereof and having a through-aperture in which an electrically conductive terminal pin is fixed in an insulated relation with the header;

c) a contact member formed from an electrically conductive material and fixed to an end of the terminal pin located inside the housing, the contact member having a plurality of feather portions including respective contact portions disposed concentrically with the terminal pin, the feather portions having a predetermined elasticity; and

d) an inertia ball enclosed in the housing to be located substantially at the center in the housing in a normal attitude thereof in a stationary state, the inertia ball moving when subjected to oscillation, so that the inertia ball slides on the feather portions of the contact member except for distal ends of the feather portions such that the inertia ball electrically conducts between the contact member and the housing and such that the feather portions are elastically deformed, thereby receiving a force causing the same to be pushed against the bottom of the housing.

5,542,300

LOW COST, CENTER-MOUNTED CAPACITIVE PRESSURE SENSOR

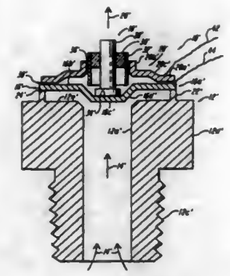
Shih-Ying Lee, Lincoln, Mass., assignor to Setra Systems, Inc., Acton, Mass.

Filed Jan. 24, 1994, Ser. No. 186,003

Int. Cl.[6] H01G *1/00*

U.S. Cl. 73—724 **23 Claims**

1. A sensor for a variable capacitance type transducer that transforms the pressure of a fluid into a corresponding capacitance value, comprising:



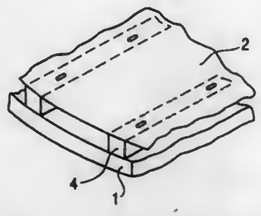
a pressure fitting with a passage extending axially to direct the fluid from a first end to a second end,
a diaphragm secured at its peripheral edges to said fitting at said second end in a first joint,
an assembly comprising a first metallic post secured at one of its ends to the center of said diaphragm, a metallic collar in a spaced relationship with and at least in part lying radially outside of said post, and an inorganic dielectric spacing ring secured between said post and said collar,
means for securing said post to the center of said diaphragm at a second butt joint,
an electrode, and
an adherent filler that secures said electrode to said collar without said filler contacting said diaphragm to establish a generally parallel spaced relationship between said electrode and said diaphragm to form a variable capacitor whereby changes in the electrode-to-diaphragm gap produced by a flexure of said diaphragm in response to the fluid pressure spacing provide a capacitive measure of the fluid pressure.

5,542,301

ELECTROMAGNETIC FLOWMETERS AND METHOD OF PRODUCING ELECTROMAGNETIC FLOWMETERS WITH SLITS TO REDUCE EDDY CURRENTS

Ichiro Wada, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 990,072, Dec. 14, 1992, abandoned. This application May 15, 1995, Ser. No. 440,653
Claims priority, application Japan, Dec. 20, 1991, 3-338245
Int. Cl.[6] G01F *1/58*
U.S. Cl. 73—861.11 **22 Claims**



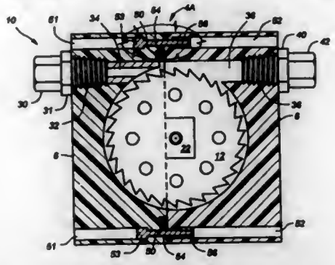
1. An apparatus for electromagnetically measuring fluid-flow comprising:
a magnetic core;
an outer casing protecting said magnetic core; and
means for fixing said magnetic core to said outer casing;
wherein said magnetic core contains a plurality of slits, at least one of said plurality of slits extending around the entire inner circumference of said magnetic core.

5,542,302

TURBINE WHEEL FLOW MEASURING TRANSDUCER

Robert D. McMillan, and Robert M. McMillan, both of Georgetown, Tex., assignors to McMillan Company, Georgetown, Tex.

Filed Jan. 24, 1995, Ser. No. 377,148
Int. Cl.[6] H01B *1/00*
U.S. Cl. 73—861.87 **21 Claims**



1. An apparatus for measuring low flow rates of corrosive fluids at low pressure drops, comprising:
a housing comprising housing body halves, said housing having a chamber formed between inner surfaces of said housing body halves;
a disk formed of corrosion resistant material with a plurality of holes formed through the disk;
mounting means for rotatably mounting the disk in said housing chamber for movement in response to flow of corrosive fluids therethrough;
each of said housing bodies halves having a socket formed therein on an outer surface external to said chamber;
a thinned section of said housing separating the sockets from the chamber;
a light source mounted in said socket in one of said bousing body halves for emitting light;
a light detector mounted in said socket in the other of said housing body halves aligned with said light source to sense light;
said housing body halves being formed of a corrosion resistant synthetic resin translucent to light from said light source so that light passes from said source through one thinned housing section, through said chamber, through said holes in the disk and through the other thinned housing section to said light detector, without encountering any other elements of the apparatus, to sense fluid flow through the apparatus.

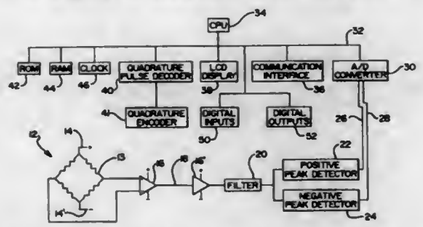
5,542,303

DUAL-PEAK TORQUE MEASURING APPARATUS

A. Erich Neuffer, 5462 Territorial Rd., Grand Blanc, Mich. 48439

Filed May 12, 1994, Ser. No. 241,643
Int. Cl.[6] B25B *23/00*
U.S. Cl. 73—862.23 **10 Claims**

1. An apparatus for measuring the torque being applied to a



fastener at a joint regardless of the direction of fastening, the apparatus comprising:

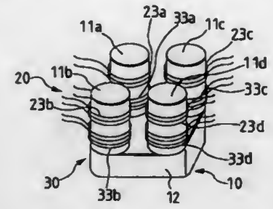
(a) a transducer to provide an analog signal corresponding to the amount of torque being applied to a fastener;
(b) an analog dual peak detector circuit in electrical communication with the transducer which receives the analog signal from the transducer to determine the maximum torque being applied to a fasteoer regardless of the direction of the fastening;
(c) a converter in electrical communication with the analog dual peak detector circuit to change the signal from analog to digital;
(d) means for storing peak values; and
(e) means for displaying peak values.

5,542,304

MAGNETOSTRICTIVE TORQUE SENSOR, MAGNETOSTRICTIVE TORQUE MEASURING APPARATUS, AND CONDITION-MONITORING APPARATUS FOR A CUTTING TOOL USING THE SAME

Ichiro Sasada, Fukuoka, and Akihiko Morikawa, Kyoto, both of, Japan, assignors to OMRON Corporation, Kyoto, Japan

Filed Oct. 31, 1994, Ser. No. 332,522
Claims priority, application Japan, Oct. 29, 1993, 5-292402; Mar. 7, 1994, 6-064634
Int. Cl.[6] G02L *3/02*
U.S. Cl. 73—862.333 **14 Claims**



1. A magnetostrictive torque sensor comprising:
a core;
an exciting coil including four exciting windings which are supported by the core and are arranged at apices of an imaginary square, two adjacent ones of the four exciting windings and the other two adjacent exciting windings being wound in opposite directions; and
a detecting coil supported by the core and including four detecting windings which generally coextend with respective exciting windings,
wherein the torque sensor is disposed adjacent to a rotary body whose torque is to be measured such that adjacent two of the four exciting windings are arranged either parallel or perpendicularly to an axial direction of the rotary body.

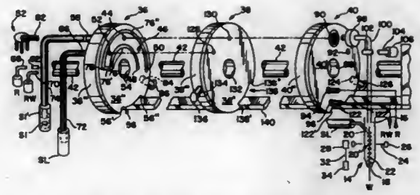
5,542,305

LIQUID METERING AND TRANSFER VALVE ASSEMBLY PARTICULARLY FOR FLOW CYTOMETER

John D. Hollinger, Miami, Fla., assignor to Coulter Corporation, Miami, Fla.

Division of Ser. No. 4,812, Jan. 15, 1993, Pat. No. 5,437,200. This application Jul. 28, 1995, Ser. No. 508,596
Int. Cl.[6] G01N *1/00*
U.S. Cl. 73—863.73 **28 Claims**

1. A metering and transfer valve assembly for delivering selectively and/or alternately a liquid sample suspension to an exterior located testing station and comprising first and second valve disc elements arranged coaxially sealingly frictionally engaged in sandwiching relationship with a third valve disc element, first and second through passageway means formed in said first valve disc element, third and fourth through passageway means formed in said second valve disc element and fifth and sixth through passageway means formed in said third valve disc element, said first, second and third valve disc elements being independently relatively rotatable between defined limits and means on each of said valve disc elements defining said rotation limits, said first through passageway means defining a first sample inlet and said second passageway means defining an inert fluid entry passage, said third passageway means defining a liquid measuring chamber of precise interior volume and said fourth passageway means defining a first passive flow passage, said fifth passageway means defining a delivery passage and said sixth passageway means defining a second passive flow passage, means for selectively rotating said valve disc elements to define a first flow path including said sample inlet passage, one of said measuring chamber and said first passive flow passage and one of said delivery passage and said second passive flow passage, and a second flow path including said inert fluid entry passage, one of said measuring chamber and said first inert flow passage and one of said delivery passage and second passive flow passage, said delivery passage arranged to delivery a precise volume aliquot from one of said flow paths to the other of said flow paths and said inert liquid being introduced thereafter to said other of said flow paths to drive said aliquot volume to the exterior testing station.

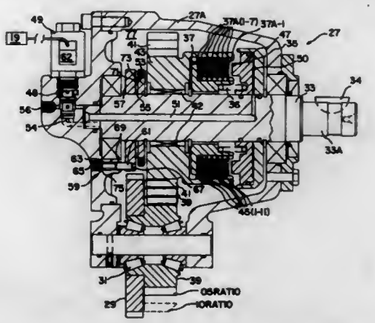


5,542,306

DRAG BRAKE FOR TRUCK MOUNTED, CLUTCH OPERATED POWER TAKEOFF DEVICE

Rickey J. Fernandez, Broken Arrow, Okla., assignor to Muncie Power Products, Inc., Muncie, Ind.

Filed Feb. 16, 1995, Ser. No. 389,775
Int. Cl.[6] F16H *37/00;* **F16D** *67/04*
U.S. Cl. 74—15.86 **26 Claims**



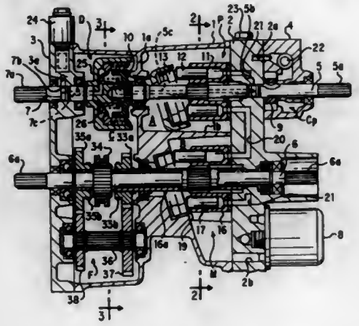
7. In combination with a power takeoff device, a drag brake mechanism for preventing unwanted rotation of a rotatable output shaft in said power takeoff device designed to be connected to the transmission of a vehicle for performing auxiliary work associated with said vehicle, said drag brake mechanism comprising a brake plate means adapted to be attached to said output shaft, a pressure plate and a means for biasing said pressure plate into engagement with said brake plate thereby to create a continuous and constant anti-rotational drag force on said rotatable output shaft.

5,542,307

HYDROSTATIC TRANSMISSION

Toshiyuki Hasegawa, and Masaru Iida, both of Amagasaki, Japan, assignors to Kanzaki Kokyukoki Mfg. Co., Ltd., Amagasaki, Japan

Filed Aug. 10, 1994, Ser. No. 288,348
Claims priority, application Japan, Aug. 10, 1993, 5-198172
Int. Cl.[6] F16H *47/02*
U.S. Cl. 74—15.63 19 Claims



1. A hydrostatic transmission, comprising:
a housing;
an input shaft supported by and projecting outwardly from said housing;
a hydraulic pump disposed in said housing and driven by said input shaft;
a first output shaft supported by and projecting outwardly from said housing;
a hydraulic motor disposed in said housing, hydraulically connected to said hydraulic pump, and connected with said first output shaft;
a second output shaft supported by and projecting outwardly from said housing;
a clutch means operable to selectively connect and disconnect said input shaft and said second output shaft; and
a braking device disposed in said housing which brakes said second output shaft when said clutch means is disengaged, and which releases a braking action to said second output shaft when said clutch means is engaged.

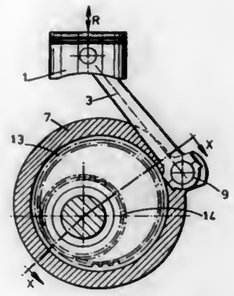
5,542,308

CRANK MECHANISM AND MACHINES, ESPECIALLY ENGINES, USING SAME

Colin J. Miller, 2 Hazel Close, Penwortham, Preston, England

PCT No. PCT/GB93/00430, § 371 Date Aug. 30, 1994, § 102(e) Date Aug. 30, 1994, PCT Pub. No. WO93/18319, PCT Pub. Date Sep. 16, 1993
PCT Filed Mar. 2, 1993, Ser. No. 295,836
Claims priority, application United Kingdom, Mar. 7, 1992, 9205037
Int. Cl.[6] F16H *21/30*; F02B *41/04*
U.S. Cl. 74—44 18 Claims

1. A machine comprising: a stator; a rotary shaft having an eccentric journal and an axis of rotation; a rotor carried by the eccentric journal of the rotary shaft such that rotary motion is transferred between the rotor and the rotary shaft, the rotor being connected to the stator for communicating a driving force therebetween; a crank pin carried by the rotor, the crank pin having an eccentric motion profile relative to the axis of the rotary shaft when the rotor is driven by the connection between the rotor and stator; a reciprocating piston; and a connecting rod having one end and an other end, the piston being carried on the one end and the other end being concentrically journaled on the crank pin such that motion is communicated between the piston and the rotary shaft.

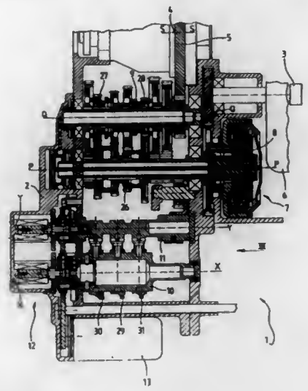


5,542,309

GEARBOX

Urs Wenger; Hans R. Jenni, both of Langenthal, and Andreas Wüthrich, Niederscherli, all of, Switzerland, assignors to SMH Management Services AG, Biel, Switzerland

Filed Nov. 3, 1994, Ser. No. 335,364
Claims priority, application France, Nov. 18, 1993, 93 13768
Int. Cl.[6] F16H *63/00*
U.S. Cl. 74—337.5 11 Claims



1. Gearbox comprising:
a primary shaft (**8**) intended to be coupled to a power supply (**3**, **6**);
a secondary shaft (**9**) intended to be coupled to a power outlet (**4**, **5**);
a plurality of sets of gearwheels mounted on said primary (**8**) and secondary (**9**) shafts, said sets of gearwheels being able to be selectively meshed to establish a plurality of transmission ratios between said supply (**3**, **6**) and said outlet (**4**, **5**);
said sets of gearwheels comprising a plurality of switching gearwheels (**26**, **27**, **28**) for said ratios, these gearwheels being mounted so as to move axially on said shafts (**8**, **9**) to enable said ratios to be established;
selection means (**10** to **13**; **29**, **30**, **31**; **35**, **36**, **37**; **42**, **43**, **44**) coupled to said switching gearwheels (**26**, **27**, **28**) to cause them to make the appropriate axial movements according to the desired transmission ratio;
said selection means (**10**, **12**, **13**) comprising a ratio selector shaft (**10**) rotationally mounted so as to be able to have at least as many selection positions as there are possible transmission ratios, said selector shaft (**10**) being therefore provided with cam forming means (**35**, **36**, **37**) coupled to said switching gearwheels (**26**, **27**, **28**) through the intermediary of counter-cam forming means (**42**, **43**, **44**);

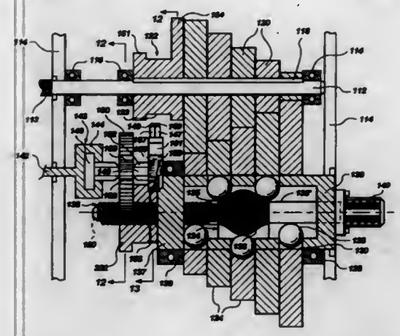
said gearbox being characterised in that it also comprises decoupling means (**11**, **12**, **13**; **57**, **57**, **58**) for selectively disabling the coupling between each cam forming means (**35**, **36**, **37**) and each counter-cam forming means (**42**, **43**, **44**) associated with it, in order to enable the free rotation of said selector shaft (**10**) towards any ratio selection position, whatever the previously selected transmission ratio.

5,542,310

CONTINUOUS-TORQUE VARIABLE-SPEED MECHANICAL GEAR TRANSMISSION

Gary D. Lee, Woodland Hills, Utah, assignor to The Anchored Corporation, Woodland Hills, Utah

Continuation-in-part of Ser. No. 66,663, May 25, 1993. This application Mar. 31, 1994, Ser. No. 220,501
Int. Cl.[6] F16H *3/083*
U.S. Cl. 74—372 20 Claims



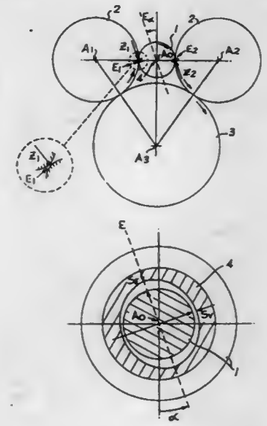
1. A transmission apparatus for changing the speed of a driven member relative to the speed of a driving member while providing continuous torque to the driven member, said apparatus comprising:
a plurality of reducing gears;
driving means for causing said reducing gears to move in response to movement of said driving member;
a plurality of annular cam gears each in continuous driving engagement with a corresponding one of said reducing gears, each of said cam gears having an inner cam surface with at least one segment having a peak section and a valley section;
a hollow drum mounted for rotation about an axis and having a plurality of apertures extending radially from an inner drum surface to an outer drum surface, at least one of said apertures corresponding to each of said cam gars, and said cam gears being mounted for rotation about said outer drum surface such that said inner cam surface is in alignment with said at least one corresponding aperture and said outer drum surface is engaged by said at least one peak section;
a plurality of detents, one corresponding to each of said drum apertures and each arranged for reciprocating movement within its corresponding drum aperture;
a cam member mounted within said drum for reciprocal axial movement in opposite axial directions along said drum axis, said cam member comprising an outer cam surface extending longitudinally and having a central portion extending radially for respectively engaging said detents to hold an engaged detent in a first position at which it engages the valley section of the corresponding cam gear, end portions on either side of said central portion for allowing the engaged detent to move into a second position out of engagement with the inner cam surface of the corresponding cam gear and intermediate portions on either side of said central portion for causing the engaged detent to reciprocate between said first and second positions in response to axial movement of said cam member; and,
actuating means for selectively moving said cam member in each of said axial directions relative to said drum so as to cause the engaged detent to engage the valley section of its corresponding cam gear such that a driving connection is made between said driving member and said driven member through said engaged cam gear, the inner cam surface of said cam gears and the outer cam surface of said cam member being contoured relative to each other and the axial movement of said cam member being timed such that said axial movement may commence only when the peak section of said engaged cam gear is substantially in a predetermined position relative to the valley section of an adjacent cam gear to be engaged by its corresponding detent, and said axial movement may cease only when said engaged cam gear is disengaged from its corresponding detent and the valley section of said adjacent cam gear is substantially engaged by its corresponding detent.

5,542,311

TOOTHED-WHEEL GEAR WITH PARALLEL SHAFTS

Thomas Deeg, Seuzach, Switzerland, assignor to Maag Getriebe AG, Switzerland

Filed Aug. 1, 1994, Ser. No. 283,521
Claims priority, application European Pat. Off., Jul. 30, 1993, 93112220.4
Int. Cl.[6] F16H *57/00*
U.S. Cl. 74—410 5 Claims



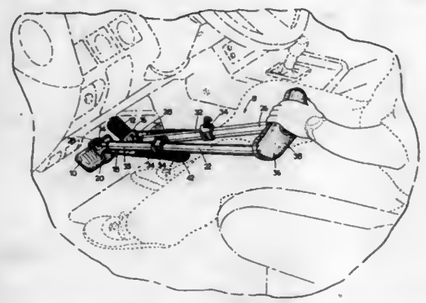
1. A toothed-wheel gear with parallel shafts and load branching, comprising a driving shaft, guide bearings and a driving wheel meshing with intermediate wheels of two intermediate shafts which drive a power wheel, wherein said driving wheel is arranged and guided between said intermediate wheels in such a manner that the driving wheel with its shaft can self-shift in a plane including the shaft axis and inclined by an angle α with respect to a plane containing the axis of the driving wheel and the power wheel to such an extent that the balance of the forces and thereby the balance of the load is reestablished, and wherein the guide bearings of the driving wheel have a greater play in the direction of said inclined plane than in a direction of a plane extending vertically with respect to said inclined plane.

5,542,312

HAND CONTROL FOR VEHICLES

Bryan T. Peters, 1116 Elkins Dr., Auburn, Ala. 36830

Filed Dec. 2, 1994, Ser. No. 352,846
Int. Cl.[6] B60K *41/20*; G05G *1/14*
U.S. Cl. 74—481 8 Claims



1. A control apparatus for manually operating existing brake and accelerator pedals of a vehicle comprising:

an elongated handgrip adapted to be disposed transversely between the thighs of an operator seated in a vehicle and having rear and front faces;

a brake control assembly including a shaft having a rear end attached to said handgrip and a forward end supporting brake pedal attachment means, said handgrip provided with an aperture therethrough;

said brake pedal attachment means including a flexible brake attachment strap adapted to surround a brake pedal and being further provided with a free end defining a hand engageable section;

an accelerator control assembly including a shaft having a rear end slidably disposed through said handgrip aperture and a forward end supporting accelerator pedal attachment means, said accelerator shaft rear end terminating in a hand engageable surface projecting beyond said handgrip rear face;

said accelerator pedal attachment means including a flexible accelerator attachment strap adapted to surround an accelerator pedal and provided with a free end defining a hand engageable section;

a first releasable fastener component on said hand engageable section of said brake and accelerator attachment straps;

a second releasable fastener component on said shafts of said brake and accelerator control assemblies, and mating with said first releasable fastener components, said hand engageable sections of said brake and accelerator attachment straps are readily attached to and released from said shafts to retain said straps substantially continuous with said shafts with said hand engageable sections accessible to an operator while seated in a vehicle; and

said attachment strap free ends extendible a substantial portion of the distance between said control assembly shaft forward and rear ends to allow a vehicle operator to install said pedal attachment means to respective brake and accelerator pedals by grasping said strap free end hand engageable sections while remaining seated in a vehicle; whereby

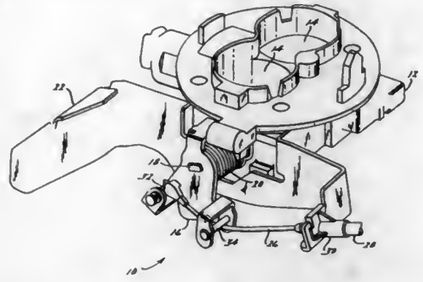
brake and accelerator pedals of a vehicle may be manipulated with an operator grasping said handgrip between the thighs with either hand and applying the vehicle's brakes by pressing forward upon said handgrip, the vehicle's accelerator being actuated by an operator applying forward pressure upon said hand engageable surface on said accelerator shaft rear end.

5,542,313

DUAL RADIUS GEOMETRY ACCELERATOR CONTROL SYSTEM

James P. McCarthy, Fenton, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.

Filed Apr. 1, 1994, Ser. No. 221,601
Int. Cl.[6] G05G *1/14*
U.S. Cl. 74—513 3 Claims



1. An accelerator control system in a motor vehicle for controlling the opening of at least one throttle valve opened by the rotation of a shaft in response to the travel of an accelerator cable past a cable point, comprising:

control means, operably connected to said shaft to open said throttle valve and biased to maintain said throttle valve in a normally-closed position, said control means being rotatably fixed to said accelerator cable at a pull point that is spaced apart from said shaft at a first location on said control means, said first location being laterally opposite said cable point relative to said shaft when said throttle valve is in said normally-closed position; and

guide means, fixed to said control means between said shaft and said cable point, for guiding said accelerator cable such that in a first range of pedal travel, said accelerator cable contacts said guide means at an engagement point to define a first draw line between said engagement point and said cable point, a first moment arm being defined from said throttle valve shaft to said first draw line, said first moment arm decreasing to minimum length as said accelerator cable is pulled past said cable point to open said throttle valve;

whereby in a second range of increasing accelerator pedal travel, a second draw line is defined between said pull point and said cable point, a second moment arm being defined from said throttle valve shaft to said second draw line, said second moment arm initially increasing in length and then decreasing in length as said accelerator cable is pulled continuously past said cable point to cause said pull point to travel to a second location between said shaft axis and said cable point.

5,542,314

COMPUTER SUPPORTS

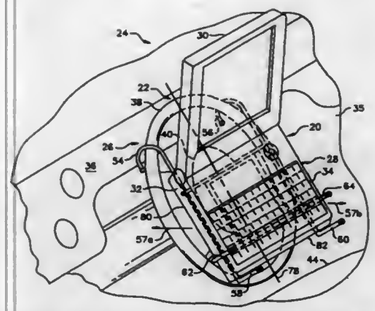
Dan E. Sullivan, Snohomish, and Peter B. Hetterle, Kirkland, both of Wash., assignors to M.K. Manufacturing Incorporated, Kirkland, Wash.

Filed Aug. 20, 1993, Ser. No. 110,304
Int. Cl.[6] H03K *7/18*; B60R *11/02*
U.S. Cl. 74—552 7 Claims

1. The combination of:

a vehicular steering wheel with an annular rim, a portable computer comprising a data processing unit, and a skeletal frame which is free of movable parts for supporting said computer in substantially overlying relationship with said steering wheel, said computer supporting frame resting on said steering wheel and comprising:

first and second, elongated, side rails;



first and second, spaced apart crosspieces maintaining said side rails in parallel, spaced apart relationship, said crosspieces cooperating with said rails to provide a rigid, unitary structure;

support means at corresponding first ends of each of said side rails for engaging circumferentially spaced peripheral portions of the steering wheel to enable removably affixing said frame to said steering wheel with the frame in an inclined orientation relative to a vertical plane and resting on respective opposed, circumferentially spaced peripheral portions of the steering wheel;

computer supporting rests extending outwardly relative to a plane defined by said steering wheel and adjacent corresponding second ends of said side rails, the data processing unit of said portable computer having a back side resting on said side rails and a lower edge seated on said computer supporting rests; and

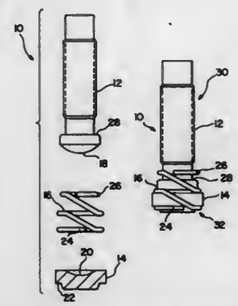
lateral restraints at first and second, laterally spaced ends of one of said crosspieces which are engageable by the portable computer data processing unit to limit side-to-side movement of the portable computer when it is positioned on the frame.

5,542,315

ELEPHANT'S FOOT ADJUSTING SCREW ASSEMBLY FOR INTERNAL COMBUSTION ENGINE

John T. Carroll, III; Joseph C. Bentz, and David P. Genter, all of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind., and Toshiba Corp., Tokyo, Japan

Filed Jun. 21, 1994, Ser. No. 263,232
Int. Cl.[6] F01L *1/16*
U.S. Cl. 74—586 12 Claims



1. A sliding wear and friction-resistant adjusting screw assembly designed to transmit motion along an arcuate path to the reciprocal motion required for actuation of an internal combustion engine actuating member, said adjusting screw assembly comprising:

(a) screw element means for transmitting arcuate motion to said engine actuating member, wherein said screw element means is made of metal and includes an arcuate contact face, an axial body portion with a constant axial diameter, and a terminal foot portion with an annular ledge section having a larger diameter than said axial body portion between said axial body portion and said arcuate contact face;

(b) pad element means for contacting said engine actuating member, wherein said pad element means is made of a structural ceramic and includes in one surface socket means configured for receiving said screw element means arcuate contact face and on an opposed surface planar contact means for forming an interface with said engine actuating means, and said pad element means has a larger diameter portion containing said socket means and a smaller diameter portion including said planar contact face with an annular shoulder therebetween; and

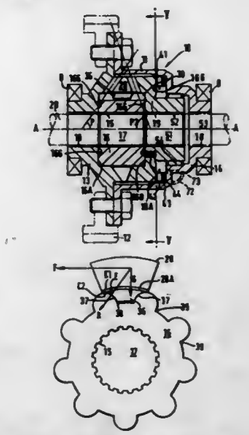
(c) retainer element means for securely but loosely holding said pad element means to said screw element means to allow arcuate movement of said screw element means relative to said pad element means, wherein said retainer element means has a substantially helical configuration, wherein one end of said retainer element means engages said screw element means annular ledge section and the other end of said retainer element means engages said pad element means annular shoulder so that said arcuate contact face is held in said socket means.

5,542,316

CAM TYPE GEARLESS INTERAXLE DIFFERENTIAL MECHANISM

John Spooner; Alastair J. Young, both of Kenilworth, and John P. Chippendale, Knowle, all of, Great Britain, assignors to Automotive Products, plc, Leamington Spa, England

PCT No. PCT/GB93/02298, § 371 Date Jul. 6, 1994, § 102(e) Date Jul. 6, 1994, PCT Pub. No. WO94/11653, PCT Pub. Date May 26, 1994
PCT Filed Nov. 8, 1993, Ser. No. 256,284
Claims priority, application United Kingdom, Nov. 7, 1992, 9223406
Int. Cl.[6] F16H *35/04;57/04*
U.S. Cl. 74—650 18 Claims



1. A differential mechanism (**10**) comprising two output cam members (**22,23**) rotatable about an axis (A) each said member having a single annular cam surface thereon of undulating form comprising pairs of mutually inclined surfaces (**24,25**: **26,27**) and a plurality of cam followers (**28**) having end surfaces (**29,30**: **32,33**) engaging the cam surfaces of the output cam members, the arrangement being such that relative contra rotation of said output cam members (**22,23**) causes the cam followers (**28**) to slide

axially, and an input element (16) engaging the followers which are slidably supported by the input element and moving the followers circumferentially relative to the output cam members, characterised in that the input element (16) engaged with a radially inner portion (36) of each cam follower to move the follower circumferentially relative to the cam output members (22,23), and the cam surfaces (24,25: 26,27) face inwardly (P,P2) towards the axis of rotation (A).

5,542,317

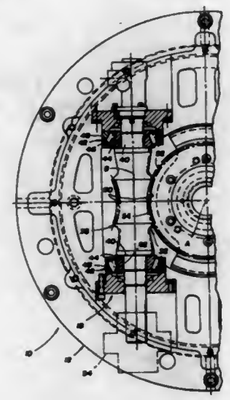
ROTARY INDEX TABLE ASSEMBLY

Thomas J. Carter, Shelby Township, Macomb County; Arthur C. Mason, and John H. Nolan, both of Harrison Township, Macomb County, all of Mich., assignors to Utica Enterprises, Inc., Shelby Township, Mich.

Continuation of Ser. No. 78,544, Jun. 16, 1993. This application Mar. 27, 1995, Ser. No. 410,929

Int. Cl.[6] B23B *29/24*

U.S. Cl. 74—813 L **8 Claims**



1. A rotary index table assembly comprising: a base; a rotary index table having a central rotational axis and an outer periphery; a rotary drive including a double enveloping worm gear set; a polygonal drive coupling driven by the double enveloping worm gear set and having a plurality of drive lobes that rotate the index table on the base for indexing rotation about the rotational axis; stationary supports that support the periphery of the table to prevent movement thereof during machining of a workpiece supported by the table; an annular positioning mechanism including a base mounted crown gear, a table mounted crown gear and a movable crown gear that is disengaged from the base mounted crown gear and the table mounted crown gear to permit the indexing rotation of the table and that is thereafter movable into engagement with the base mounted crown gear and the table mounted crown gear to locate the table with respect to the base after each indexing rotation; and an air bearing that supports the table on the base during the indexing rotation and the positioning of the table by the annular positioning mechanism after indexing rotation to provide more accurate table positioning by removing weight of the table from the supports.

5,542,318

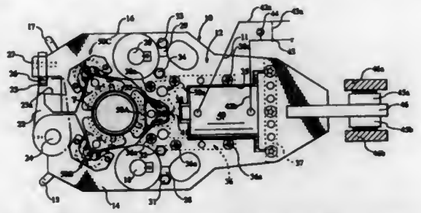
BI-DIRECTIONAL GRIPPING APPARATUS

William E. Wesch, Jr., Humble, Tex., assignor to John F. Booth

Filed Apr. 28, 1994, Ser. No. 234,063

Int. Cl.[6] B25B *13/50*

U.S. Cl. 81—57.33 **9 Claims**



1. A method of applying or holding a torsional force in either a clockwise or a counter-clockwise direction about an axis of an elongated member comprising the steps of:

positioning a force link having first and second cylindrical bosses adjacent a nest member having first and second spaced cylindrical bearing surfaces;

pivotally securing opposite ends of a tension carrying strap such that one end of said strap is pivotally secured to said nest member and such that a second end of said strap is pivotally secured to said force link between said cylindrical bosses;

pivotally securing a jaw having a gripping surface to said force link;

urging said gripping face on said jaw into frictional engagement with the surface of the elongated member; and

applying force for moving said elongated member relative to said jaw such that frictional force is transferred through said jaw for rotating said force link whereby said first cylindrical boss is moved into engagement with said first bearing surface if the force is in a clockwise direction and said second cylindrical boss is moved into engagement with said second bearing surface if the force is in a counter-clockwise direction.

5,542,319

ADJUSTABLE RACHET-STYLE SELF-TIGHTENING WRENCH

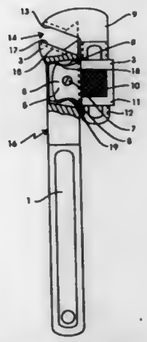
Chen Wei, 74 Pipashan Zheng Jie, Chongquing City, Sichuan Province, China

Filed Apr. 17, 1995, Ser. No. 423,545

Claims priority, application China, Apr. 15, 1994, 94209322.4

Int. Cl.[6] B25B *13/30*

U.S. Cl. 81—105 **1 Claim**



1. An adjustable ratchet-style self-tightening wrench which comprises:

a) a handle having a first end and a second end and a recess located near the second end of the handle, the second end of the handle including a jaw portion having a working surface;

b) a traveler carriage block having an adjusting nut therein for receiving a traveler carriage, the carriage block further having a pivot lug extending therefrom and including upper and lower concave surfaces, the pivot lug being sized and shaped to fit in the handle recess;

c) a moveable jaw member with a first end and a second end, having a working surface at one end of the jaw member and a traveler carriage segment at the other end of the jaw member, the traveler carriage segment including threads being in threaded engagement with the traveler carriage block nut;

d) a pivot pin pivotably attaching the pivot lug within the handle recess; and

e) a pair of leaf springs being located within the handle recess between the handle and the concave surfaces of the pivot lug, the springs being configured to bias the pivot lug in a neutral position centered between it's range of pivotal movement.

5,542,320

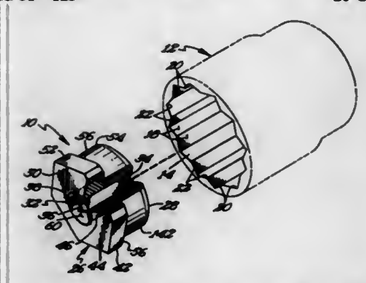
MAGNETIC KEEPER ACCESSORY FOR WRENCH SOCKETS

Richard A. Vasichek, Brocket; Robert J. Vasichek, Michigan; Dean S. Somerville, Rural Binford, and Mitchel D. Trostad, Aneta, all of N. Dak., assignors to Vasichek Enterprises LLC, Brocket, N. Dak.

Continuation-in-part of Ser. No. 34,012, Jan. 25, 1995, Pat. No. Des. 369,075. This application Jun. 28, 1995, Ser. No. 496,025

Int. Cl.[6] B25B *13/06*

U.S. Cl. 81—125 **20 Claims**



1. Accessory for use in a wrench socket without need for modifying the wrench socket, with the wrench socket being of a conventional design including a well having an inner periphery formed by multiple sides intersecting at outer corners and including a handle mounting end, with the well slideably receiving a fastener, with the accessory preventing the fastener from sliding from the well to hold the fastener captive in the well while the socket is being moved to the fastening location, comprising, in combination: a nonmagnetic disk having planar, parallel, opposed, first and second faces, and a periphery having at least portions of a size at least equal to the inner periphery of the well; a generally cylindrical magnet having planar, parallel, opposed, first and second faces and a periphery smaller than the inner periphery of the well, with the magnet creating a magnetic field, with the second face of the magnet being spaced from the second face of the disk and the periphery of the magnet being spaced from the periphery of the disk with an annular portion of the second face of the disk extending beyond the periphery of the magnet; and a layer of a thinness allowing the magnetic field of the magnet to pass through the layer and attract and hold the fastener, with the layer secured to the annular portion of the second face of the disk, with the layer extending over the second face of the magnet for securing the magnet to the disk, with the disk snuggly fitting within the inner periphery of the well with the magnet positioned on the opposite side of the first face of the disk than the handle mounting end of the socket with the disk magnetically insulating the magnet from the socket and with the magnet positioned generally concentrically within the inner periphery of the well creating an air space between the inner periphery of the well and the periphery of the magnet for magnetically insulating the magnet from the socket.

5,542,321

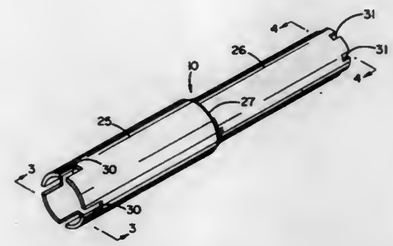
BASIN WRENCH FOR PLASTIC NUTS

Albert F. Fuca, 4416 Clovercrest La., Rockford, Ill. 61109

Filed Feb. 17, 1995, Ser. No. 390,059

Int. Cl.[6] B25B *13/00*

U.S. Cl. 81—125.1 **3 Claims**



1. A double-ended sleeve-type basin wrench for tightening and loosening plastic nuts on elongated threaded shanks of plumbing fixtures, said wrench comprising an elongated tubular sleeve of circular cross-section and having a first end portion with an inside diameter of about 1½ inches, four equally and angularly spaced notches formed through the first end portion of said sleeve and opening out of the end of said first end portion, said sleeve having a second end portion with an inside diameter of about 1⅛ inches, and six equally and angularly spaced notches formed through the second end portion of said sleeve and opening out of the end of said second end portion, a continuous internal bore from end to end of the sleeve and having a minimum internal diameter no smaller than the second end portion, and the external surface of the tubular sleeve serving as the sole means for turning the wrench by hand to tighten or loosen said plastic nuts, said first end portion of said sleeve being formed by a first length of tubular pipe having an inside diameter of approximately 1½ inches, said second end portion of said sleeve being formed by a second length of tubular pipe having an inside diameter of approximately 1⅛ inches, said pipes having end portions welded to one another without obstructing the continuity of the internal bore.

5,542,322

COMPACT FOLDING WRENCH

Robert L. Knox, Shiloh, and John C. Reddy, Columbus, both of Ga., assignors to J. H. Williams Company, Columbus, Ga.

Continuation of Ser. No. 112,625, Aug. 27, 1993, abandoned. This application Jan. 23, 1995, Ser. No. 376,302

Int. Cl.[6] B25B *23/16*

U.S. Cl. 81—177.6 **40 Claims**

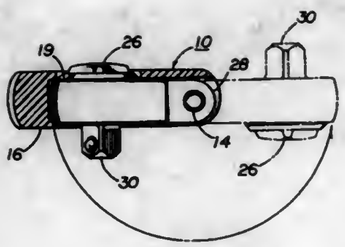
1. A tool for applying torque to a workpiece, comprising:

(a) a head for engaging the workpiece;

(b) a pivot;

(c) a handle connected to the head by the pivot and rotatable between an open position extending radially away from the head and a folded position substantially surrounding the head; and

(d) a stop rigidly coupled to the handle for supporting the head.

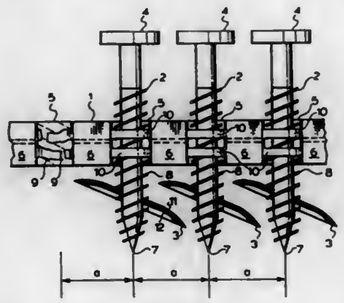


5,542,323

SCREW STRIP WITH OVERLAPPING WASHERS, AND METHOD AND APPARATUS FOR INSTALLATION

G. Lyle Habermehl, 7528 Hickory Hill Ct., Whites Creek, Tenn. 37189, and Paul T. Scherer, Lexington, Ky., assignors to G. Lyle Habermehl, Whites Creek, Tenn.

Filed Apr. 28, 1994, Ser. No. 234,333
Int. Cl.[6] B25B *23/04*; B65D *85/24*
U.S. Cl. 81—434 18 Claims



1. A holding strip for holding a plurality of threaded fasteners each carrying a washer in a row, the strip comprising:

uniformly spaced parallel sleeves interconnected by lands with one of the fasteners coaxially received in each sleeve, the strip having a forward end and a rearward end,

each fastener having a head at an upper end, a tip at a lower end and a threaded shank extending from below the head to the tip,

each fastener received in each sleeve with each fastener head extending from an upper end of the sleeve and each fastener tip extending from a lower other end of the sleeve,

a circular washer with a central opening therethrough engaged about the shank of each fastener between the sleeve receiving that fastener and the tip of that fastener the diameter of each washer at any points about an outermost periphery of the washer being greater than the distance between axial centers of adjacent of the sleeves, wherein with the exception of the forwardmost washer of the strip, each washer overlaps with a forwardly adjacent washer,

each washer disposed at an acute angle to a longitudinal axis of the fastener shank such that each washer is spaced from the shanks of adjacent fasteners,

the sleeve threadably engaging the threaded shank,

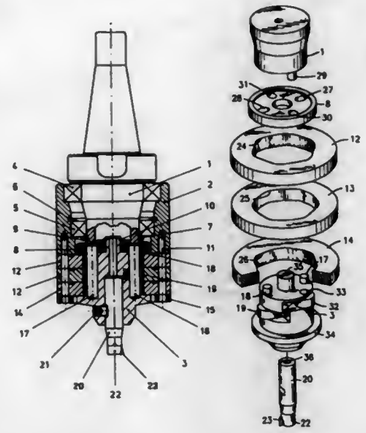
the sleeve having a reduced strength portion between the lands such that a fastener, on being threaded tip first into a workpiece, is automatically separated from its sleeve carrying the washer while simultaneously maintaining the length of the strip substantially intact and while guiding the fastener by threaded engagement of the fastener in its respective sleeve.

5,542,324

FORM DRILLING OR TURNING DEVICE

Gerd Hormannsdorfer, Kastanienick, GA, Burgdorf, Germany

Continuation-in-part of Ser. No. 970,282, Jan. 13, 1993, abandoned. This application Dec. 29, 1994, Ser. No. 368,406
Claims priority, application Germany, Dec. 11, 1990, 40 39 489.1
Int. Cl.[6] B23B *41/04*
U.S. Cl. 82—1.3 10 Claims



1. A form drilling device for drilling a contoured form, said device consisting of:

a drive shaft;

a fixed housing; and

a tool holder for holding a tool having at least one cutting edge;

said drive shaft and tool holder being mounted rotatably in said housing and connected to one another such that during operation a rotational force component is transmitted from the drive shaft onto the tool holder,

said tool holder mounted so as to be capable of being deflected in a radial plane, this deflection being controllable for the purpose of contour production by means of control elements assigned to the housing and the tool holder,

said control elements consisting of at least two cam disks firmly connected to said housing, one of which is a lead cam, said disks arranged one above the other and mounted with rotation of orientation with respect to one another by an angular amount in the direction of rotation,

said control elements further comprising rolling members which roll on said at least two cam disks, the rolling members being operatively associated with the tool holder, there being at least three contact points present between the rolling members said at least two and cam disks,

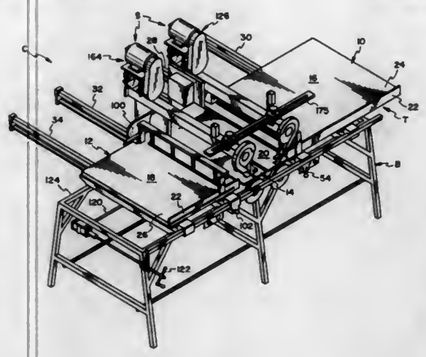
wherein a control contour of the lead cam is derived by (i) adding a fixed distance to the contour of the drilled form to be produced, said distance being added in a direction radially outward from a center of the contour of the drilled form to be produced, to obtain a distorted contours having an outer surface, and (ii) projecting outwardly from the distorted contour produced in step (i) a distance equal to one half of the diameter of the rolling member which is to be in contact with said cam, said distance being added in a direction perpendicular to the outer surface of the distorted contour produced in step (i).

5,542,325

SHEET CUTTING APPARATUS

William W. Bane, III, 1608 N. Franklin St., Wilmington, Del. 19806

Filed Aug. 30, 1994, Ser. No. 297,846
Int. Cl.[6] B27B *3/04*
U.S. Cl. 83—415 16 Claims



1. A cutting device for cutting sheet material comprising:

a) a base support;

b) an elongated work table disposed on said base support for supporting the sheet material to be cut;

c) said work table including first and second end portions and a center portion;

d) said center portion rigidly secured to said base support and positioned between said first and second end portions;

e) a first saw operably associated with said center portion and said base support;

f) said first and second end portions movable relative to said center portion such that the sheet material disposed on said work table is movable relative to said first saw to permit cutting of the sheet material;

g) a guide positioned along said first and second end portions for positioning the sheet material relative to said work table;

h) a clamp mounted to said first end portion of said work table for holding down the sheet material on said work table, said clamp having engaged and disengaged positions relative to the sheet material;

i) an actuator operably associated with said clamp for moving said clamp between said engaged and disengaged positions;

j) a stop mounted to said second end portion of said work table for engaging the sheet material at a predetermined location;

k) said stop rotatable to a position closely overlying said work table and retractable therefrom; and

l) said second end portion movable along a second direction relative to said center portion for permitting the adjustment of the location of said stop relative to said center portion.

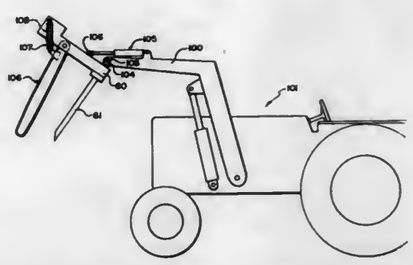
5,542,326

BALE CUTTING DEVICE

Benjamin J. Borgford, P.O. Box 459, Arborg, Manitoba, Canada

Filed Jan. 11, 1995, Ser. No. 371,374
Int. Cl.[6] B23D *57/02*
U.S. Cl. 83—795 5 Claims

1. An apparatus for cutting a cylindrical bale of a forage material, comprising a tractor having a pair of front lift arms, a bale fork assembly including a mounting frame, means attaching the mounting frame to the lift arms of the tractor for upward and downward movement relative to the tractor from a loading position adjacent the ground to a raised position above the loading position for discharge of a bale after cutting, a pair of bale forks extending forwardly from the mounting frame adjacent a bottom portion thereof for engaging under a bale in the loading position such that the bale when loaded is sitting on the forks, an upstanding support structure positioned generally between the bale forks and extending upwardly therefrom, a cutting chain assembly including a continuous chain, means for driving the chain continuously along its length, pivot mounting means mounting the cutting chain assembly on the upstanding support assembly at a position above and between the bale forks for pivotal movement of the cutting chain assembly in a vertical cutting plane parallel to the bale forks about a pivot axis at right angles to the cutting plane and actuation means for moving the cutting chain assembly in the vertical cutting plane between the forks from a first position above to the forks to a second position depending downwardly between the forks so as to effect cutting of the bale sitting on the forks.

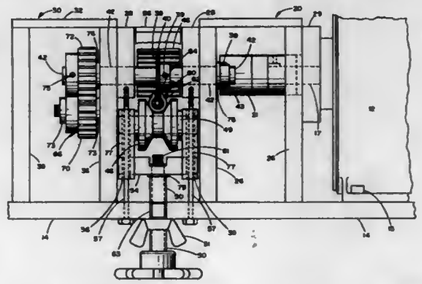


5,542,327

WIRE STRIPPING APPARATUS

Roger Schultz, 510 Alfred St., Elgin, Ill. 60120

Filed Jan. 18, 1994, Ser. No. 183,023
Int. Cl.[6] H02G *1/12*
U.S. Cl. 83—861 16 Claims



1. An apparatus for stripping the insulation off of a cable, said apparatus comprising:

a supporting structure having two spaced, parallel planar side members and a planar base member, said spaced side members perpendicularly mounted to said base member such that said base member and said spaced side members form a three-sided enclosure;

a cutting member comprising a circular blade mounted in fixed relation on a cutter wheel shaft, said cutter wheel shaft rotatably mounted in said side members in perpendicular relation thereto and within said three sided enclosure such that said cutter wheel shaft has an axis of rotation perpendicular to the spaced parallel side members, said circular blade having a sharpened outer edge thereon,

a positioning wheel rotatably mounted on a positioning wheel shaft, said positioning wheel shaft mounted to said supporting structure in said side members within said three sided enclosure such that said positioning wheel has an axis of rotation perpendicular to the spaced parallel side members, said positioning wheel positioned such that said positioning wheel is

adjacent said circular blade and said positioning wheel shaft is parallel to the cutter wheel shaft, said positioning wheel shaft and cutter wheel shaft located in a first plane,

a cable drive wheel mounted in a fixed relation on a drive wheel shaft, said drive wheel shaft rotatably mounted in the side members and parallel to the cutter wheel shaft and the positioning wheel shaft in a second plane and having an axis of rotation perpendicular to the spaced, parallel side members, said second plane parallel to said first plane,

means for compressing said cable against the cable drive wheel, said cable compressing means comprising a roller wheel rotatably mounted on a roller wheel shaft, said roller wheel shaft mounted in said side members and within said three sided enclosure such that said roller wheel shaft is in said second plane and is parallel to the drive wheel shaft and such that said roller wheel is adjacent the drive wheel;

means for rotating the drive wheel, said drive wheel rotating means connected to the supporting structure and said drive wheel shaft and rotating said drive wheel in said second plane, and

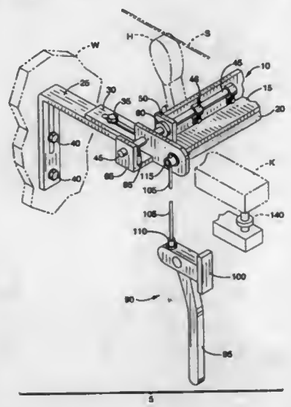
a means for rotating the circular blade against the insulation of the cable such that the insulation is split from the cable, said circular blade rotating means comprising a first gear mounted to said cutter wheel shaft, said first gear mating with a second gear, said second gear rotatably mounted to one of said side members, said second gear mating with a third gear, said third gear mounted on the drive wheel shaft such that as the means for rotating the drive wheel is operated the third gear turns the second gear which turns the first gear and the cutter wheel shaft, thereby rotating the cable drive wheel and the circular blade.

5,542,328

PIANO HAMMER RAIL STOP ASSEMBLY

Robert L. Pimentel, 5325 Elk Horn Blvd., Ste. 250, Sacramento, Calif. 95842

Filed Mar. 7, 1995, Ser. No. 399,737
Int. Cl.[6] G10C *3/00*
U.S. Cl. 84—220 **19 Claims**



15. For use with a piano having key activated hammers, each hammer striking a selected string upon activation by the associated key, a rail stop assembly, comprising:

a) rotational hammer stopping means for preventing a plurality of the hammers from striking the selected strings, wherein said rotational hammer stopping means comprises:

1) a rail stop, wherein said rail stop comprises:

A) an elongated rail having a lower surface and

B) a shock absorbing pad for cushioning the impact of the hammer affixed to said rail lower surface;

2) a brace bracket for securing the assembly to an interior wall of the piano; and

3) pivot means for connecting in a rotational joining said rail stop to said rail bracket, wherein said pivot means comprises:

A) a pivot rod having first and second ends with said first end secured to said rail stop and said second end extending away from said rail stop;

B) a rail bracket adjustably mounted to said brace bracket; and

C) means for rotationally coupling said pivot rod second end to said rail bracket; and

b) activating means for moving said rotational hammer stopping means between a first position for blocking the hammers and a second position for allowing the hammers to strike the selected strings, wherein said activating means comprises:

1) lever means for applying a torsional force to said rotational hammer stopping means, thereby causing rotation of said rotational hammer stopping means;

2) actuating means for directing operation of said lever means; and

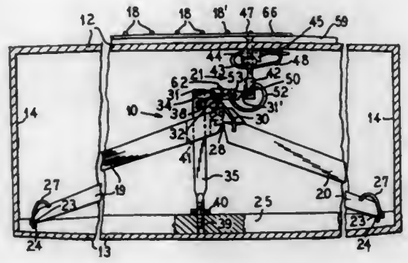
3) linkage means for coupling said actuating means to said lever means.

5,542,329

DEVICE FOR IMPROVING SOUND IN GUITARS AND SIMILAR STRINGED INSTRUMENTS

Shin H. Chen, 6140 N. Lincoln, Rm. 116, Chicago, Ill. 60659

PCT No. PCT/US90/05056, § 371 Date Jul. 6, 1992, § 102(e) Date Jul. 6, 1992, PCT Pub. No. WO92/04711, PCT Pub. Date Mar. 19, 1992
PCT Filed Sep. 6, 1990, Ser. No. 910,104
Int. Cl.[6] G10D *3/00;1/08*
U.S. Cl. 84—291 **2 Claims**



1. In combination:

A stringed musical instrument having a sound box;

said sound box having a top board, a bottom plate and a sidewall structure; said sidewall structure having a first edge and a second edge;

wherein said first edge attached to said top plate and said second edge attached to said bottom plate defining a chamber;

an energy diverting means removably mounted within said chamber of said soundbox and comprising segments joined in a wishbone shape;

A first of said segments removably connected to said top plate adjacent said first edge and a second of said segments removably connected to said bottom plate adjacent said second edge;

said instrument further comprising a bridge mounted to said top board outside said chamber and having a treble string supporting section;

A tone enhancing pin screw attached to said treble string supporting section of said bridge and extending within said chamber;

A switching means for selectively connecting said energy diverting driving means and said tone enhancing pin screw having an engaged and a disengaged positioned;

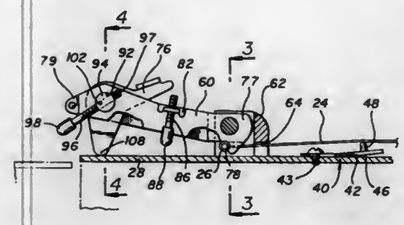
whereby in the engaged position the switching means channels sound wave energy from the treble string position to said energy diverting driving means; said energy diverting driving means said bottom plate adjacent said second edge with the channelled sound energy for enhanced sound.

5,542,330

MULTI-TUNER BRIDGE FOR STRINGED MUSICAL INSTRUMENTS

David J. Borisoff, 22119 Victory Blvd., Canoga Park, Calif. 91405

Continuation of Ser. No. 820,280, Jan. 14, 1992, abandoned. This application Dec. 22, 1993, Ser. No. 173,139
Int. Cl.[6] G10D *3/04;3/14*
U.S. Cl. 84—298 **7 Claims**



1. A bridge device for a stringed musical instrument having a plurality of strings and a mounting surface, comprising:

a plurality of armatures pivotally secured to said mounting surface of said instrument and respectively engaging one of said strings; and

a plurality of lever arms having a handle portion and a nose portion;

pivoting means for pivotally securing said lever arms to respective ones of said armatures; and

said nose portions including positioning means for contacting said surface at a plurality of contact positions rotatably secured to said pivoting means;

said handle portions including manipulating means for individually manipulating said handle portions to a plurality of positions corresponding respectively to said contact positions

wherein a plurality of tensions may be applied to a respectively engaged one of said strings by rotating said handle portion of a respective one of said lever arms to one of said predetermined contact positions.

5,542,331

SOUND-PRODUCING REED FOR WIND INSTRUMENTS

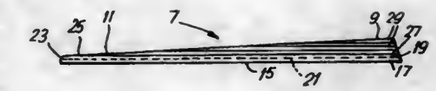
Harry Hartmann, Alte Weinsteige 67, D-70180 Stuttgart, and Dieter Hahn, Augustenstr. 120, D-70197 Stuttgart, both of, Germany

PCT No. PCT/EP93/00996, § 371 Date Nov. 4, 1994, § 102(e) Date Nov. 4, 1994, PCT Pub. No. WO93/22761, PCT Pub. Date Nov. 11, 1993
PCT Filed Apr. 24, 1993, Ser. No. 331,612
Claims priority, application Germany, May 4, 1992, 42 14 336.5
Int. Cl.[6] G10D *9/02*
U.S. Cl. 84—383 A **23 Claims**

1. A sound-producing reed for wind instruments, comprising:

a first layer made of a plastic material; and

at least one damping layer having a plurality of unidirectional fiber strands extending approximately in a longitudinal direction of the reed and formed of different materials having different damping characteristics.

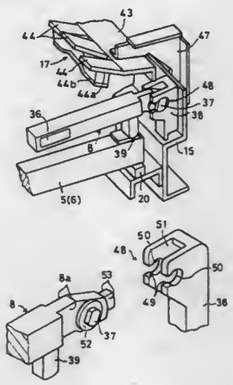


5,542,332

KEYBOARD APPARATUS FOR ELECTRONIC MUSICAL INSTRUMENT

Yutaka Tamai; Yoshiaki Shimoda, and Kazuhiro Tsukamoto, all of Hamamatsu, Japan, assignors to Kabushiki Kaisha Kawai Gakki Seisa Kusho, Hamamatsu, Japan

Division of Ser. No. 20,307, Feb. 19, 1993, Pat. No. 5,406,875. This application Dec. 6, 1994, Ser. No. 353,989
Claims priority, application Japan, Mar. 10, 1992, 11862; Mar. 10, 1992, 11863; Mar. 10, 1992, 11864; Mar. 10, 1992, 11865; Mar. 10, 1992, 11866; Mar. 10, 1992, 11868
Int. Cl.[6] G10C *3/12*
U.S. Cl. 84—435 **2 Claims**



1. A keyboard apparatus for an electronic musical instrument comprising:

a metallic keyboard chassis;

a balance rail provided on said keyboard chassis;

a plurality of pins provided on said balance rail, said respective pins and said balance rail constituting first fulcrums for swingably supporting white keys and black keys;

a hammer provided in a rear of each of said white keys and each of said black keys so as to be swingable by swinging of said respective white keys and black keys via a second fulcrum;

wherein said second fulcrum comprises: oval cross-sectional shafts extending outwardly from side surfaces of one of said hammer and a bearing member, said side surfaces extending perpendicularly to a direction of swinging movement of said hammer and a pair of said bearing recesses for pivotally receiving said shafts, each bearing recess being formed in the other of said hammer and said bearing member, each of said bearing recesses having a guide slot for guiding each of said shafts from outside into said bearing recess for assembling;

wherein a split groove is provided in said other of said hammer and said bearing member for receiving said one of said hammer and said bearing member;

first abutment surfaces are provided so as to project in an axial direction of said shafts from said side surfaces of said one of said hammer and said bearing member around said shafts, said first abutment surfaces being in sliding contact with said split groove;

second abutment surfaces are provided by reducing the width between said side surfaces; and

lateral vibration preventing surfaces are provided inside said split groove in close proximidity to said second abutment surfaces.

5,542,333

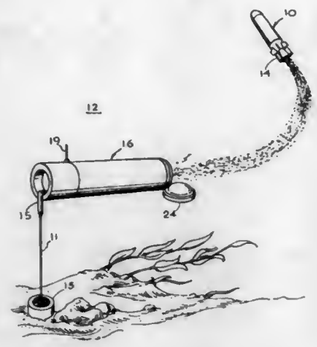
UNDERSEA VEHICLE EJECTION FROM CAPSULES

Allen C. Hagelberg, Diamond Bar, and Clark E. Allardt, Claremont, both of Calif., assignors to Hughes Missile Systems Company, Los Angeles, Calif.

Filed Aug. 15, 1983, Ser. No. 523,477

Int. Cl.[6] F41F *3/10*; B65D *53/00*

U.S. Cl. 89—1.81 **20 Claims**



1. Apparatus for undersea launch of a vehicle comprising:

a vehicle enclosing housing having a cavity therein adapted to support the vehicle in a launch attitude and means defining an opening at one end to permit passage of the vehicle into and out of the housing;

means for retaining the vehicle enclosing housing at a selected depth in a body of water;

removable closure means for mating with the housing at the opening to prevent penetration of water into the housing cavity when the housing is submerged; and

rocket propulsion means for pressurizing the cavity, upon ignition, to a pressure level sufficient to overcome ambient hydrostatic pressure, forcibly open the closure means and permit rocket thrust to launch the vehicle through said opening into the surrounding water.

5,542,334

MISSILE LAUNCH SAFETY ENHANCEMENT APPARATUS

Michael L. Wells, Newhall, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 15, 1994, Ser. No. 339,861

Int. Cl.[6] F42C *15/40*

U.S. Cl. 89—1.812 **16 Claims**

1. A missile launch safety enhancement apparatus for a missile launcher, comprising:

means for producing a prefire signal;

means for comparing said prefire signal to a reference signal level; and

means for interrupting a missile firing sequence if said prefire signal is not below said reference signal level by a predetermined amount.

5,542,335

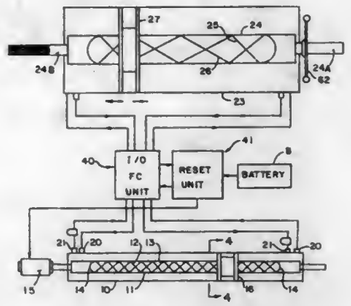
HYDRAULIC ASSIST PROPULSION APPARATUS FOR VEHICLE DRIVE

Richard G. Goodyear, 912 S. Depot Street, Bonifay, Fla. 32425-2910

Filed Nov. 14, 1994, Ser. No. 337,970

Int. Cl.[6] F01B *13/00*; F04B *17/00*

U.S. Cl. 91—61 **12 Claims**



1. Hydraulic propulsion apparatus for a shaft drive comprising:

a) an electrically operated hydraulic fluid pumping device in a first cylinder having a rotary shaft in said first cylinder carrying a non-rotatable first means for exerting a linear directed pressure flow from a body of hydraulic fluid in said cylinder;

b) a second cylinder spaced from and independent of said first cylinder carrying a second rotary shaft having a non-rotative power output hydraulic fluid driven device;

c) conduit means interconnecting said first and second cylinders in a closed loop flow of hydraulic fluid propelled from said first cylinder by said non-rotative first means into said second cylinder for converting said non-rotative fluid driven device into operating said second rotative shaft to produce torque output from said second cylinder; and

d) electric motor means connected to said electrically operated hydraulic fluid pumping means for driving said rotary shaft in said first cylinder for exerting a linear directed pressure flow into said hydraulic driven device.

5,542,336

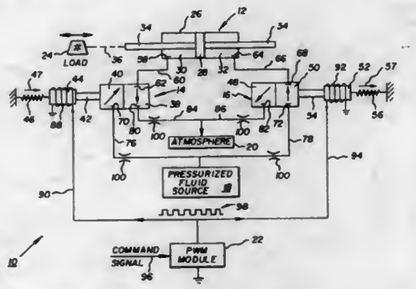
POSITIONING APPARATUS AND METHOD UTILIZING PWM CONTROL OF A DOUBLE-ACTING HYDRAULIC CYLINDER

Robert F. Larkin, Pittsfield, Mass., assignor to Martin Marietta Corporation, King of Prussia, Pa.

Filed Apr. 17, 1995, Ser. No. 423,069

Int. Cl.[6] F01B *1/00*; F15B *15/17*

U.S. Cl. 91—166 **9 Claims**



1. A positioning apparatus comprising:

a fluid actuator including a cylinder and a piston disposed in the cylinder to define first and second chambers;

a first fluid valve having a quiescent valve position connecting the first chamber to a source of fluid pressure and an actuated valve position venting the first chamber;

a second fluid valve having a quiescent valve position venting the second chamber and an actuated valve position connecting the second chamber to the source of fluid pressure;

a module, connected to the first and second fluid valves and responsive to input commands, for periodically and simultaneously activating the first and second fluid valves to their respective actuated valve positions for time periods effective to create differential fluid pressures in the first and second chambers, thereby producing relative motion of the piston and the cylinder; and

means for translating the relative motion into positioning movements of a load.

5,542,337

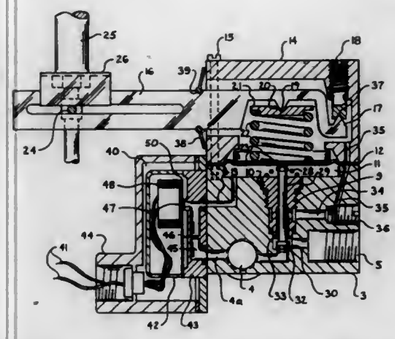
ELECTRO-PNEUMATIC VALVE POSITIONING DEVICE

Hans D. Baumann, 32 Pine St., Rye, N.H. 03870

Filed Dec. 29, 1994, Ser. No. 365,788

Int. Cl.[6] F15B *13/16*

U.S. Cl. 91—358 R **3 Claims**



1. An electro-pneumatic valve positioning device comprising

a) a lower housing having an inlet port, at least one outlet port, one signal port, an upper terminating portion, and a supply passage connecting to said inlet port;

b) a valve element adjustably arranged within said lower housing capable of selectively passing fluid between said inlet and said outlet ports;

c) a signal chamber located at the upper portion of said lower housing, said chamber communicating with said signal port and being closed off by a flexible diaphragm;

d) an upper housing suitably fastened to said lower housing and clamping said diaphragm therebetween;

e) lever means, a portion of which is tiltingly arranged within said upper housing and having two directionally opposed pivot points, one pivot point located at the outer extremity of said lever means, while the; second pivot point is located along the central axis of said housing;

f) at least one compression spring, a spring button located on top of said spring and capable of interacting with said second pivot point, said spring capable of exerting a force upon said diaphragm when compressed by a downward exertion of said second pivot;

g) an adjustable fulcrum point within said upper housing having a surface suitable to engage said first pivot point, and whereby an up or downward adjustment of said fulcrum point will result in a similar up or downward displacement of the second pivot point resulting in a change in the compressive force of said spring upon said diaphragm whenever the lever portion located exterior of said housing is in a fixed position;

h) a pivot pin slidingly engaged within the portion of said lever means located exterior of said housing capable of following the motion of valve stems whereby said lever means may be tilted around said first pivot point and exert a deflection proportional to said valve stem motion upon said compression spring by means of said second pivot and whereby said spring deflection in turn causes a proportional force change upon said diaphragm sufficient to balance a force created by a pressure piped to said signal port and affecting the underside of said diaphragm and whereby any imbalance between said spring force and the force of said pressure acting on the diaphragm causes a movement of said valve element which in turn is capable of varying the fluid pressure level between the inlet and outlet ports of said lower housing to affect the position of said valve stems and thereby changing the position of said lever means until the above mentioned forces are in equilibrium.

i) an electrical current to pneumatic pressure converter having at least one magnet, or any other suitable means to convert a current into mechanical force, a flapper, and a nozzle, is suitably mounted to the side of said lower housing in such a manner that it can modulate air pressure received through said supply passage from the inlet port of the lower housing and following the commands of an electronic current signal and feed such modulated air pressure back into said signal chamber via said signal port.

5,542,338

ROTARY SLIDE VALVE FOR POWER-ASSISTED STEERING SYSTEMS OF MOTOR VEHICLES

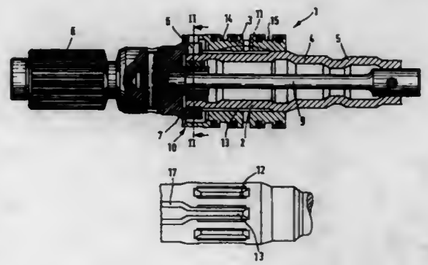
Arthur Rupp, Hüttlingen, Germany, assignor to ZF Friedrichshafen AG, Friedrichshafen, Germany

Filed Dec. 16, 1994, Ser. No. 356,175

Claims priority, application Germany, Jun. 19, 1992, 42 19 978.6

Int. Cl.[6] F15B *9/10*; F17D *3/00*

U.S. Cl. 91—375 R **7 Claims**



1. Rotary slide valve for power-assisted steering systems of motor vehicles, having a rotary slide which is connected non-rotatably to a valve input member, and having a control sleeve which is connected non-rotatably to a valve output member,

the valve input member and the rotary slide being connected to the valve output member by a backlash coupling which has a rotation angle,

the rotary slide being disposed with rotary motion coaxially in the control sleeve and the rotary slide and control sleeve being rotatable relative to one another to the limit of the rotation angle of the backlash coupling, the control sleeve having internal longitudinal control grooves and the rotary slide having external longitudinal control grooves which are partially delimited in their axial length and partially open towards at least one end and which cooperate with one another to direct a pressure medium to and from two working chambers of a servomotor, and

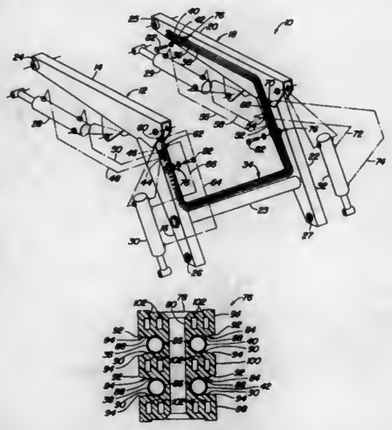
the backlash coupling being formed by a driving profile of the valve output member and by recesses at the free end of the rotary slide into which recesses the driving profile engages, characterized in that the recesses of the backlash coupling on the rotary slide together with the longitudinal control grooves are manufactured by a non-cutting process.

5,542,339

TUBE CLAMP FOR BUNDLING A SET OF TUBES FOR SHIPMENT AND FOR MOUNTING THEM TO A LOADER BOOM

Edward T. Kaczmarczyk; Daniel R. Fuzzen, both of Welland; Paul G. Aucoin, Waterford, and Lyle V. Norris, Vanessa, all of, Canada, assignors to Deere & Company, Moline, Ill.

Filed Apr. 26, 1995, Ser. No. 427,924
Int. Cl.[6] F15B *11/00;* **F16L** *3/00*
U.S. Cl. 91—508 **14 Claims**



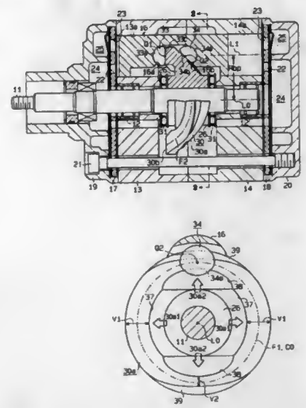
1. A tube clamp for holding at least two rigid tubes in spaced relationship relative to one another comprising: a clamp body constructed entirely of a hard elastic material; a mounting hole located along an axis extending through the clamp body; at least two tube receptacles being provided in said clamp body in an orientation opening transversely outwardly relative to said axis; each tube receptacle including, relative to said axis, an inwardmost cylindrical portion extending crosswise to said axis, having a cross-section extending in excess of 180° about said axis, and being sized and shaped for snugly receiving a given tube and an entryway leading to said inwardmost portion defined by a pair of entryway surfaces spaced apart by a distance less than a diameter of said given tube; and said body being of a construction permitting said pair of entryway surfaces to be resiliently separated one from another so as to permit said given tube to be forced therebetween and into said inwardmost cylindrical portion of said tube receptacle, whereby, once said given tube is in place in said cylindrical portion, said entryway surfaces return to original positions clamping said given tube in place without the use of additional structure of any sort.

5,542,340

WAVE CAM TYPE COMPRESSOR

Kazuo Murakami; Toshiro Fujii; Kazuaki Iwama, and Katsuya Ohyama, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Oct. 4, 1995, Ser. No. 539,128
Claims priority, application Japan, Oct. 5, 1994, 6-241586
Int. Cl.[6] F01B *3/00*
U.S. Cl. 92—71 **38 Claims**



1. A compressor having a wave cam supported on a drive shaft for an integral rotation and a piston disposed in a cylinder bore, said wave cam having a cam surface coupled to the piston by way of a shoe which is movable relative to said cam surface to reciprocally drive said piston between a top dead center and a bottom dead center of a piston stroke in the cylinder bore, wherein fluid is supplied to the cylinder bore based on a movement of the piston to the bottom dead center from the top dead center, and wherein said fluid is compressed in the cylinder bore based on the movement of the piston to the top dead center from the bottom dead center, said compressor comprising:

said cam surface having a first portion which includes a point corresponding to the top dead center of the piston stroke and a second portion which includes a point corresponding to the bottom dead center of the piston stroke; and

said second portion having a width narrower than a width of the first portion in a plan view along an axial direction with respect to the wave cam.

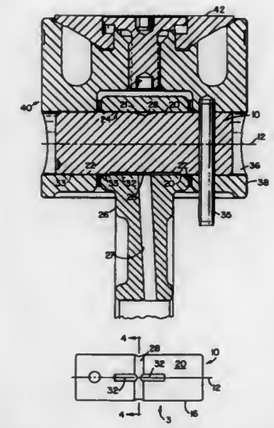
5,542,341

WRIST PIN CONSTRUCTION

David T. Monk; Pantelis Hatzikazakis, both of Bristol, Tenn., and Kevin N. Mumpower, Bristol, Va., assignors to Bristol Compressors, Inc., Bristol, Va.

Filed Aug. 24, 1994, Ser. No. 295,372
Int. Cl.[6] F16J *1/14*
U.S. Cl. 92—187 **5 Claims**

1. A wrist pin for use with a piston of a refrigeration compressor unit, wherein the wrist pin is to be mounted on a piston and non-rotatively affixed thereto, said pin comprising an elongated structure having a longitudinal axis, a round cross-section and a uniform diameter over substantially its entire length to provide a peripheral journal surface adapted to be mounted within and juxtaposed with the bearing surface of a wrist pin bore of a connecting rod for rocking motion within said bore, oil transport groove means in said journal surface circumscribing the same within a longitudinally central region thereof, a generally longitudinally extending recess in said journal surface extending across said groove means and to either side thereof within said region, said region of said journal surface being dimensioned to lie totally within said wrist pin bore of said connecting rod, said recess laterally encompassing an arc angle of from about 6° to about 30°.

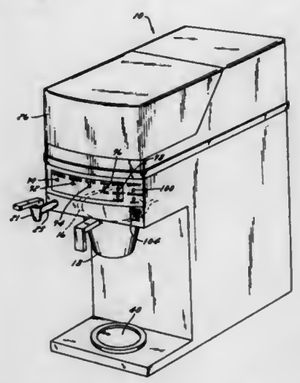


5,542,342

COFFEE GRINDER AND BREWER APPARATUS WITH BASKET SENSING AND GRIND ONLY FEATURE

Robert C. McNeill, Jeffersonville, Ind., and Douglass Nance, Louisville, Ky., assignors to Grindmaster Corporation, Louisville, Ky.

Filed Aug. 8, 1995, Ser. No. 512,305
Int. Cl.[6] A47J *31/42*
U.S. Cl. 99—280 **18 Claims**



1. An apparatus having a coffee bean grinding system having a cycle for the grinding of coffee beans and brewing of ground coffee,

said apparatus including

a grinder for grinding coffee beans and distributing the ground coffee into a brew basket held by retaining arms adjacent a passageway communicating with said grinder,

a grinder motor for driving the grinder,

a brewing system for the distribution of hot water to the brew basket, and

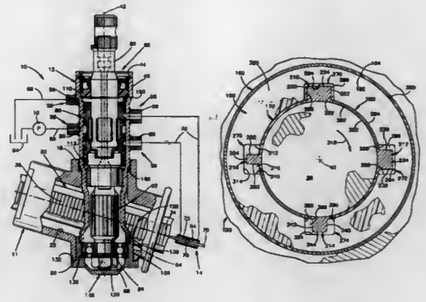
a control circuit for selectively initiating grinding and brewing cycles, said control circuit including a grind-only switch which when closed the grinding cycle is initiated and the brewing cycle remains in an off state thereby ground coffee is distributed to said brew basket without the distribution of hot water.

5,542,343

POWER STEERING ASSEMBLY WITH DAMPING RING

Jon W. Martin, Los Alamitos, Calif., assignor to TRW Inc., Lyndhurst, Ohio

Filed Sep. 26, 1995, Ser. No. 534,077
Int. Cl.[6] F15B *9/10;* **B62D** *5/06*
U.S. Cl. 91—375 R **15 Claims**



1. A hydraulic power steering apparatus comprising:

a rotatable input member;

a rotatable output member;

a housing supporting said input member and said output member for rotation relative to each other about an axis;

a hydraulic valve comprising a valve core and a valve sleeve;

said valve core being supported in said housing for rotation with said input member relative to said output member and to said valve sleeve;

said valve sleeve being supported in said housing for rotation with said output member relative to said input member and to said valve core;

said valve having a centered condition in which said valve core and said valve sleeve are in a predetermined first relative position;

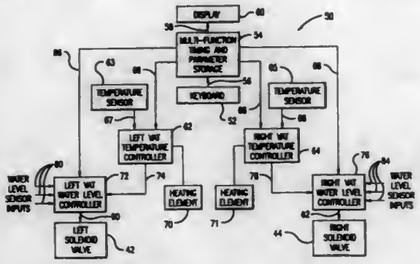
said apparatus further comprising noise attenuating means for attenuating noise caused by vibrations of said valve core relative to said valve sleeve, said noise attenuating means comprising a damping ring assembly extending circumferentially between said valve core and said valve sleeve;

said damping ring assembly comprising first and second tubular members which are spaced apart radially from each other and which define between them an annulus, each one of said first and second tubular members being connected for rotation with a respective one of said valve core and said valve sleeve;

said damping ring assembly further comprising a damping member disposed in said annulus and connected between said first and second tubular members for damping relative movement between said first and second tubular members; and

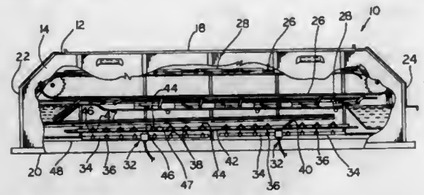
said damping ring assembly further comprising means for sequentially increasing the rate of change of the amount of damping provided by said damping member in response to increased movement of said valve from the centered condition.

5,542,344
SOUS VIDE RETHERMALIZER
Bernard G. Koether, Tequesta, Fla., and Paul D. Scott, Farmington, Conn., assignors to Technology Licensing Corporation, Tequesta, Fla.
Filed Mar. 30, 1993, Ser. No. 39,615
Int. Cl.[6] A47J 27/62;27/00
U.S. Cl. 99—330 17 Claims



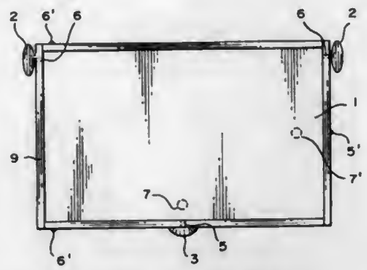
1. A sous vide rethermalizer comprising:
a housing containing at least one vat for holding water;
means for selecting a vat function of said at least one vat from a selection of vat functions designed to heat sealed containers of pre-cooked food for serving;
a processing unit connected to said selecting means, wherein said processing unit selects a set point temperature associated with the selected vat function;
a temperature controller connected to said processing unit, wherein said temperature controller controls the temperature of said water in said at least one vat in accordance with said set point temperature; and
data input means for entering data corresponding to food sever identification and customer location information.

5,542,345
DEFLECTOR FOR AN AUTOMATIC FOOD COOKING MACHINE
Todd Gongwer, Wakarusa, Ind., assignor to Nelgro Mfg. Corp., Wakarusa, Ind.
Filed Jun. 15, 1995, Ser. No. 490,621
Int. Cl.[6] A47J 37/00;37/04
U.S. Cl. 99—345 12 Claims



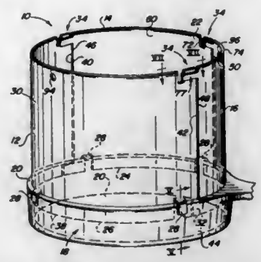
1. An automatic cooking machine including:
a frame;
a housing supported on said frame, said housing having a pair of spaced side walls, an interconnecting top wall and bottom wall, and a pair of end walls;
heating means disposed in said housing for elevating the temperature therein to allow cooking of food products; and
conveyor means disposed in said housing above said heating means for holding and transporting food products to be cooked by the heating means, said food products producing drippings during cooking;
said heating means including a plurality of substantially parallel gas burner conduits disposed below said conveyor means, each of said gas burner conduits including a plurality of gas outlet ports, the improvement comprising:
shield means disposed substantially parallel to said gas burner conduits and over said outlet ports and between said outlet ports and said conveyor means for deflecting drippings falling from said food products away from said outlet ports and for directing convective heat to said food products, said shield means further being sufficiently close to said outlet ports to heat said shield means for directing radiant heat to said food products.

5,542,346
CRUMB COLLECTION TRAY
Steve Shenk, 81 Fairmount Rd., Califon, N.J. 07830
Filed Nov. 30, 1994, Ser. No. 351,069
Int. Cl.[6] A47J 37/08
U.S. Cl. 99—400 5 Claims



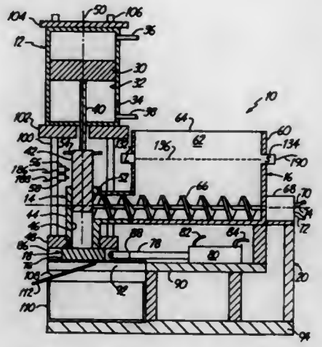
1. A universal external crumb collector for a toaster comprising:
a rectangular base with raised side edges, wheel mounting means near at least two adjacent corners of the base for attachment of wheels to aid in the mobility of said base, foot mounting means on the underside of said base for the attachment of at least one foot to aid in the stability of the base, handle mounting means along the side closest to said foot mounting means for attachment of at least one handle, and wherein said toaster contains a trap door which is removed prior to use with said base.

5,542,347
FRY PAN COOKING SHIELD AND METHOD
William G. Joseph, 3512 Fairway La., Orlando, Fla. 32804
Filed Mar. 20, 1995, Ser. No. 407,873
Int. Cl.[6] A23L 1/00; A47J 37/10
U.S. Cl. 099—422 24 Claims



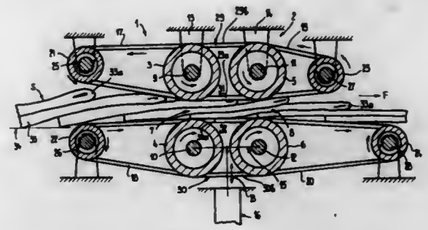
1. A frying pan shield comprising:
a shield segment set having walls formed substantially about a pan perimeter portion within a pan side wall inside surface, each segment wall extending generally perpendicular to a pan bottom surface portion, wherein each shield segment wall receives splattering grease from food cooking on the bottom surface and permits the grease to flow along its walls onto the bottom surface, each shield segment further having generally vertical side edges proximate a corresponding shield side edge for enclosing the pan bottom surface within the shield side walls, each shield segment further having lower and upper side edges, the lower edges closely fitting within the pan perimeter portion, the upper edges forming a top opening; and
means for removably connecting shield segments, the connecting means holding one side edge along an adjacent side edge.

5,542,348
PROCESS FOR COMPACTING METAL SHAVINGS
Ervin J. Bendzick, R. R. No. 1, Box 307A, New Prague, Minn. 56071
Division of Ser. No. 74,946, Jun. 10, 1993, Pat. No. 5,391,069.
This application Jan. 17, 1995, Ser. No. 373,027
Int. Cl.[6] B30B 9/04;11/02
U.S. Cl. 100—37 4 Claims



1. A process for compacting fluid-laden incompressible metal chips and shavings comprising:
introducing the metal chips and shavings to a compaction chamber having
an enclosing wall having a first end adjacent which metal pellets are formed from the metal chips and shavings,
a piston closing a second end of the chamber opposite the first end, and
a barrier adjacent the first end of the chamber movable between a first position blocking the first end to prevent metal pellets in the chamber from being discharged and a second position permitting metal pellets to be discharged, the barrier being so disposed and arranged with respect to the enclosing wall of the chamber to permit fluid to be expelled from the chamber between the barrier and the enclosing wall when the barrier is in its first position;
operating the barrier to its first position;
operating the piston at low pressure to move to a first position in which the piston permits metal chips and shavings to enter the chamber between the piston and the first end;
operating the piston at low pressure to move to a second position to impart a first compacting pressure on metal chips and shavings in the chamber, the first compacting pressure being of such magnitude as to expel fluid from the metal chips and shavings and from the chamber and to form a loosely compacted pellet from the metal chips and shavings in the chamber, the loosely compacted pellet having substantial interstices therein;
operating the piston at high pressure to move to a third position to impart a second compacting pressure on the loosely compacted pellet in the chamber, the second compacting pressure being greater than the first compacting pressure and being of such magnitude as to expel fluid from the loosely compacted pellet and from the chamber to form a compact metal pellet from the loosely compacted pellet substantially devoid of fluid and interstices; and
operating the barrier to its second position to discharge the compact metal pellet from the chamber.

5,542,349
PRESSING APPARATUS FOR FOLDED PRINTING PRODUCTS SUCH AS NEWSPAPERS, PERIODICALS AND PARTS THEREOF
Reinhard Gösslinghoff, Wetzikon, Switzerland, assignor to Ferag AG, Hinwil, Switzerland
Filed Nov. 16, 1994, Ser. No. 340,590
Claims priority, application Switzerland, Nov. 19, 1993, 3461/93-2
Int. Cl.[6] B30B 3/04
U.S. Cl. 100—161 14 Claims



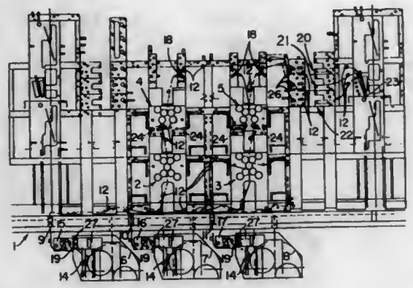
1. Apparatus for pressing folded printing products (33) which are fed in an imbricated formation (S) with the leading fold edges (33*a*) extending at right angles to the conveying direction (F), comprising
a first pair (1) of rotatably mounted pressing rollers (3, 4), which define between them a passage nip (7) for the printing products (33) and including a first pressing roller (3) and a second pressing roller (4), means fixedly mounting said first pressing roller (3), and means mounting said second pressing roller (4) so as to permit it to be forced transversely to the conveying direction (F) of the printing products (33) against the action of an elastic restoring force (16) and away from the first pressing roller (3),
a second pair (2) of pressing rollers (5, 6), mounted downstream of said first pair of pressing rollers and which likewise define between them a passage nip (8) for the printing products (33) and including a first pressing roller (5) and a second pressing roller (6), means fixedly mounting said first pressing roller (5), and means mounting said second pressing roller (6) so as to permit it to be forced transversely to the conveying direction (F) of the printing products (33) against the action of an elastic restoring force (16) and away from the first pressing roller (5),
drive means (17–24, 36–48) for driving all of the pressing rollers (3, 4, 5, 6) individually, said drive means comprising at least one endless drive element (17, 18, 19, 20) of elastically extensible material, which is passed over each of said pressing rollers and a drive roller (21, 22, 23, 24), and
wherein the first, fixedly mounted pressing rollers (3, 5) of both pairs of pressing rollers (1, 2) are arranged on that side of the imbricated formation (S) on which the fold edges (33*a*) of the printing products (33) lie freely.

5,542,350

DRAW-IN DEVICE AND PROCESS FOR FEEDING WEBS OF MATERIAL INTO A PRINTING MACHINE

Klaus Theilacker, Friedberg, and Rainer Burger, Augsburg, both of, Germany, assignors to MAN Roland Druckmaschinen AG, Offenbach, Germany

Filed May 31, 1994, Ser. No. 251,517
Claims priority, application Germany, Jun. 2, 1993, 43 18 299.2
Int. Cl.[6] B41F *13/54*
U.S. Cl. 101—228 17 Claims



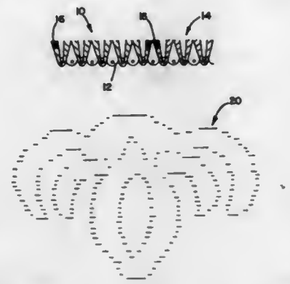
1. A draw-in device for drawing a plurality of webs of printing stock along different feed paths of different length formed by guides and switches lying outside a roller area from reel changers and draw mechanisms into printing units of a printing machine, comprising: draw-in elements of finite length; and, adjusting means for adjusting the feed paths so that the draw-in elements can draw in the printing stock webs on respective feed paths so that leading ends of all the webs arrive simultaneously at the end of their respective feed path.

5,542,351

METHOD FOR PRINTING DESIGNS ON PILE FABRICS

Leslie D. Roth, 70 Primrose, Laguna Hills, Calif. 92656

Filed Sep. 28, 1994, Ser. No. 314,366
Int. Cl.[6] B41M *1/12*
U.S. Cl. 101—483 16 Claims



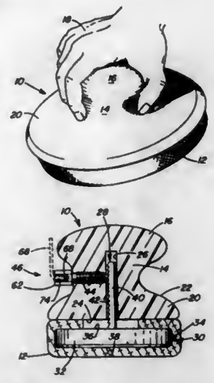
1. A method for printing on a fabric having a base and pile, comprising the steps of:
washing the fabric to remove any finish thereon;
translating a design including at least a curved portion into parallel line images formed on a printing surface, wherein the parallel line images are oriented on the printing surface in a manner parallel to the pile of the fabric to allow ink to be placed inside and on top of the pile of the fabric; and
imprinting ink on the fabric using the printing surface.

5,542,352

METHOD AND APPARATUS FOR CLEANING STATIONARY AND MOVING PRINTING PRESS COMPONENTS

Daniel S. Blackman, Lancaster; Richard D. Warner, Clinton; Lloyd P. DeJidas, and Gary A. Jones, both of Pittsburgh, all of Pa., assignors to Graphic Arts Technical Foundation, Pittsburgh, Pa.

Filed Oct. 28, 1994, Ser. No. 331,117
Int. Cl.[6] B41M *1/00*
U.S. Cl. 101—483 16 Claims



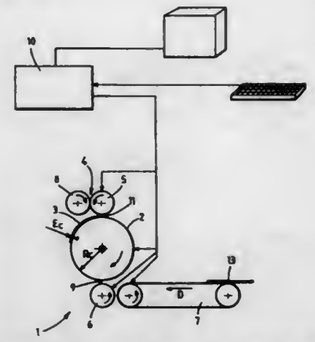
1. Handheld apparatus for supporting fabric material comprising,
a body portion having at one end a handle and at an opposite end an enlarged bearing surface for engaging fabric material,
a retainer member positioned oppositely of said bearing surface and having a peripheral surface for supporting the fabric material wrapped around said supporting surface,
a bar immovably secured to and extending outwardly from said retainer member,
an internal recess extending through said bearing surface into said body portion to receive said bar for nonrotational longitudinal movement of said retainer member toward and away from said bearing surface,
locking means extending through said handle into engagement with said bar for restraining movement of said bar out of said recess,
said locking means movable into and out of engagement with said bar to permit intermittent advance of said bar into said recess while preventing movement of said bar out of said recess to position said retainer member with a layer of the fabric material wrapped around said peripheral surface into clamping engagement with said body portion bearing surface to secure the fabric material to said body portion,
said locking means including said bar having a plurality of ratchet teeth extending in series the length of said bar,
a passageway extending through said body portion perpendicular to said recess and intersecting said recess,
an actuator retained for nonrotational longitudinal movement in said passageway,
said actuator having a pawl at one end portion engageable with said bar ratchet teeth to position said retainer a preselected distance from said bearing surface,
biasing means acting on said pawl in said passageway to normally maintain said pawl in engagement with said bar ratchet teeth to allow said bar to advance freely to selected positions in said body portion while locking said bar against unintended movement out of said body portion,
means connected to an opposite end portion of said actuator for releasing said locking means from engagement with said bar to allow extension of said bar from said recess, and
said means for releasing extending from said housing for movement into and out of position maintaining said pawl in contact with said bar ratchet teeth so that when said pawl is removed from contact with said bar ratchet teeth said body portion moves freely out of said recess to permit extension of said bar for removal of the fabric material from clamping engagement with said body portion.

5,542,353

PROCESS AND INSTALLATION FOR SHEET-BY-SHEET PRINTING

Jean-Pierre Cuir; Gérard Cuir, both of Villeneuve D'Ascq, and Raymond Barsamian, Neuville Saint Vaast, all of, France, assignors to Cuir (S.A.), France

Filed Dec. 15, 1994, Ser. No. 356,876
Claims priority, application France, Jan. 3, 1994, 94 0093
Int. Cl.[6] B41F *13/00;3/58*
U.S. Cl. 101—492 8 Claims



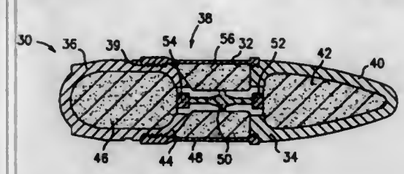
1. A sheet-by-sheet printing process comprising the steps of printing a sheet when said sheet is passing in a nip zone between a printing cylinder, which includes a rubber element on its periphery, and an impression cylinder; supplying ink to said printing cylinder by an ink supply cylinder; adjusting and maintaining the ratios of the peripheral linear speeds of the ink supply cylinder and the impression cylinder with respect to the peripheral linear speed of the rubber element of the printing cylinder at values in the range of 1.004 to 1.05 so as to reduce the deformations of printing dots.

5,542,354

SEGMENTING WARHEAD PROJECTILE

John W. Sigler, La Mirada, Calif., assignor to Olin Corporation, Downey, Calif.

Filed Jul. 20, 1995, Ser. No. 492,460
Int. Cl.[6] F42B *12/20*
U.S. Cl. 102—478 16 Claims



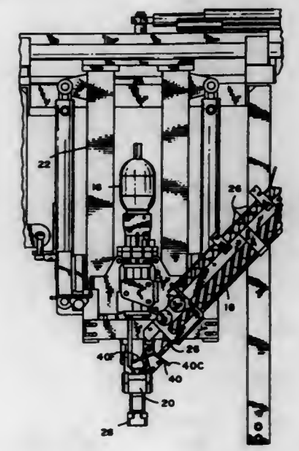
1. An explosive warhead, comprising:
a cylindrical body having a fore section integral with an aft section with a mid-section disposed therebetween;
said fore section having a frangible first housing containing a first explosive and a first interface with said mid-section, said first interface filled with a first delay mix;
said aft section having a frangible second housing and containing a second explosive and having a second interface with said mid-section, said second interface filled with a second delay mix;
said mid-section having a frangible third housing and containing a third explosive; and
a fuse disposed within said frangible third housing to initiate detonation of said third explosive wherein said first interface and said second interface are both of a length effective to contain a quantity of first and second respective delay mixes that is effective to delay detonation of said respective first and second explosives for from 50 milliseconds to 200 milliseconds after detonation of said third explosive, thereby generating relatively spherical fragmentation patterns that overlap.

5,542,355

TIE PLATE TRACK FASTENER FEEDER

Harry Madison, Memphis, Tenn., and Charles R. Schultz, Welcome, Minn., assignors to Harsco Corporation, Wormleysburg, Pa.

Filed Sep. 16, 1994, Ser. No. 306,921
Int. Cl.[6] E01B *29/26*
U.S. Cl. 104—17.1 20 Claims



16. A rail tie plate track fastener feeder comprising:
a tie plate track fastener storage area operable to hold a plurality of tie plate track fasteners therein;
a releaser operable to release one tie plate track fastener at a time from the tie plate track fastener storage area;
a holder positioned and operable to receive tie plate track fasteners, one at a time, released by the releaser, the holder providing the first secure positioning of a tie plate track fastener after its release by the releaser; and
a holder actuator operably connected to the holder for moving the holder between an upper tie plate track fastener receiving position and a lower spiking position whereat a spiking head may begin inserting a tie plate track fastener into a tie plate and tie; and
wherein the holder is operable to maintain an initial tie plate track fastener orientation from when a tie plate track fastener assumes a secure positioning relative to the holder through when the holder moves to its spiking position; and wherein the holder includes a holder portion in which a tie plate track fastener sits and wherein a tie plate track fastener is stationary relative to the holder portion as the holder moves between its upper tie plate track fastener receiving position and its lower spiking position.

5,542,356

TRACK-GUIDED TRANSPORT VEHICLE

Withold Richert, Am Hackeberg 34, 41836 Hückelhoven; Andreas Gründl, Haseneystrasse 20, 81377 München, and Bernhard Hoffmann, Jakob-Tresch-Strasse 9, 82319 Starnberg, all of, Germany

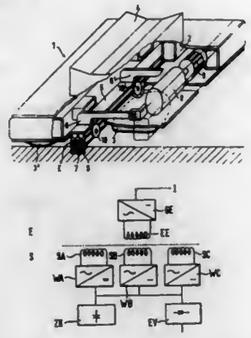
PCT No. PCT/EP92/01805, § 371 Date Oct. 19, 1994, § 102(e) Date Oct. 19, 1994, PCT Pub. No. WO93/02889, PCT Pub. Date Feb. 18, 1993

PCT Filed Aug. 7, 1992, Ser. No. 190,095

Claims priority, application Germany, Aug. 9, 1991, 41 26 453.3

Int. Cl.[6] B61L *1/00*

U.S. Cl. 104—289 **7 Claims**



5. A guided transport vehicle system comprising:

a) a vehicle assembly;

b) air cushion means for supporting loads on said vehicle assembly;

c) electrically driven compressor means for generating compressed air for said air cushion means;

d) a synchronous electric linear drive, said drive including a first long stator disposed along a path of travel of the vehicle assembly, said first long stator having stator windings powered by alternating current to generate a traveling field for driving the vehicle assembly along said path of travel;

e) at least one exciter means having an exciter winding powered by direct current to provide an electrical energy supply which is inductively transferred to the vehicle assembly via said stator windings;

f) means for superimposing a high frequency alternating current on the alternating current which powers said stator windings, so as to generate a propulsion force for the vehicle assembly;

g) means on said exciter means for transferring energy induced at said exciter winding by the high frequency alternating current to said compressor means to operate the latter; and

h) switching means for changing the path of travel of said vehicle assembly, said switching means comprising a second long stator having a first portion which is substantially parallel with said first long stator, and a second portion which diverges away from said first long stator; and auxiliary exciter means mounted on said vehicle assembly, said auxiliary exciter means being operable, when energized, to provide a transverse force which aligns said exciter means with said first portion of said second long stator.

5,542,357

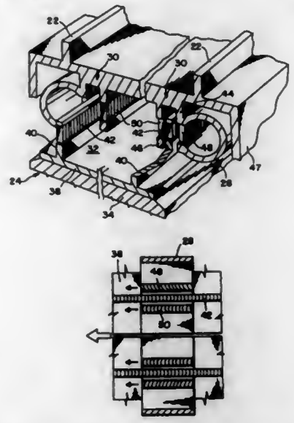
LINEAR TURBINE PROPULSION SYSTEM

Heinz A. Gerhardt, Redondo Beach, Calif., assignor to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Mar. 18, 1994, Ser. No. 210,858

Int. Cl.[6] B61C *5/00*

U.S. Cl. 105—64.2 **18 Claims**



1. Propulsion apparatus for a longitudinally guided and laterally restrained vehicle, comprising:

gas producer means mounted on said vehicle for discharging a propulsive fluid stream;

longitudinally extending linear turbine means for receiving said propulsive fluid stream from said gas producer means and for directing said propulsive fluid stream so as to propel said vehicle; and,

an outer housing extending outwardly and downwardly from sides of said vehicle and extending substantially along an entire length of said vehicle, said outer housing defining a plenum beneath said vehicle for receiving said propulsive fluid stream from said linear turbine means, said plenum defining a gascushion of said received propulsive fluid stream for support of said vehicle substantially along said entire length.

5,542,358

ULTRA-LIGHT HIGH MOISTURE RETENTION TILE MORTAR

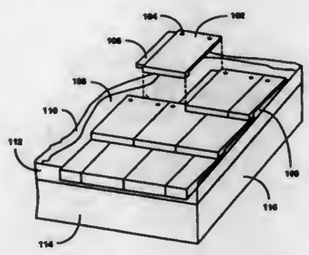
Charles S. Breslauer, 300 NE. 25th St., Boca Raton, Fla. 33431

Continuation of Ser. No. 209,942, Mar. 11, 1994, abandoned. This application Apr. 3, 1995, Ser. No. 415,247

Int. Cl.[6] C04B *14/18;14/20*

U.S. Cl. 106—698 **4 Claims**

1. A high water retention lightweight mortar for use with clay and concrete tiles, comprising:



a sandless aggregate, at least a portion of the aggregate comprised of expanded vermiculite, the aggregate having a dry density less than **16** pounds per cubic foot; mortar cement;

the sandless aggregate having a water retaining capability such that when water is mixed with the mortar, the ratio of the weight of the water to the weight of the mortar is approximately 5:4; and

the aggregate and masonry cement, when mixed to form the mortar, having a dry density between 30 and 35 pounds per cubic foot and having a maximum uplift strength in total pounds per tile greater than 65 pounds.

5,542,359

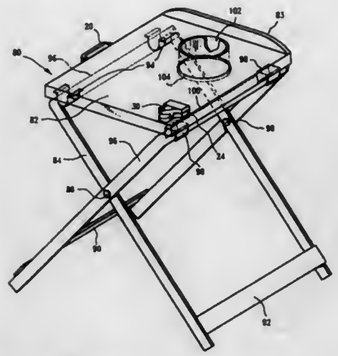
COLLAPSIBLE FISH CLEANING TABLE

Donald J. Polries, 793 Second St. South, Carrington, N. Dak. 58421

Filed Feb. 6, 1995, Ser. No. 384,405

Int. Cl.[6] A47B *13/16*

U.S. Cl. 108—26 **4 Claims**



1. A portable and collapsible fish cleaning table comprising,

a tabletop member having a horizontal upwardly facing work surface,

a fish clamp connected to the table and having a jaw located proximate to the work surface for clamping a fish in place on the work surface to stabilize the fish when the fish is being cleaned,

table leg means collapsibly connected to the tabletop for being shifted in position from an erect position to a collapsed position to reduce the space occupied by the table for facilitating compact storage thereof,

retaining means operatively associated with the leg means for releasably holding the leg means in the erect position to support the tabletop member above the ground or other surface during use,

the leg means includes a first leg assembly pivotally connected to the tabletop and a second leg assembly having a center portion that is releasably connected to the tabletop,

pivot means connected between said first and second leg assemblies for enabling the leg assemblies to be pivoted to an aligned position for collapsing the table when said center portion is removed from the tabletop,

the table has a waste collection means as a part of the table comprising an opening in the tabletop member through which waste can be dumped into a receptacle beneath the opening in the tabletop,

the tabletop has a connecting means to facilitate fastening the receptacle to the tabletop beneath the opening therein so that the waste dumped through the opening drops into the receptacle connected to the table,

the opening has a section of rigid pipe mounted therein and the connecting means comprises a laterally projecting, circumferentially extending rim on the pipe below the tabletop to enable the receptacle to be connected to the table.

5,542,360

PILOT'S FLIGHT DESK

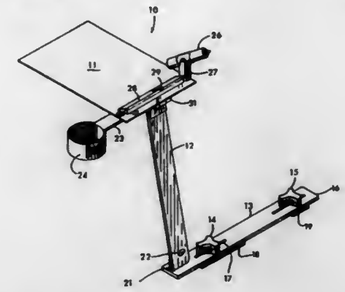
James Fleming, 140 Sherry La., Kalispell, Mont. 59901

Continuation of Ser. No. 250,561, Sep. 29, 1988, abandoned. This application Jun. 12, 1992, Ser. No. 913,769

The portion of the term of this patent subsequent to Sep. 29, 2018, has been disclaimed.

Int. Cl.[6] A47B *23/04*

U.S. Cl. 108—44 **9 Claims**



7. A workstation for vehicles, comprising:

a mounting bracket to connect an adjustable workstation to a vehicle, the mounting bracket allowing the workstation to be readily installed into and removed from an operator's compartment of the vehicle;

an upstanding support arm having a length connected to the mounting bracket;

a planar working surface coupled to the upstanding support arm;

a first pivot interconnecting the support arm and the planar working surface;

a second pivot being non-parallel to the first pivot, the second pivot interconnecting the support arm and the mounting bracket, the second pivot allowing the upstanding support arm to be articulated to a position adjacent the mounting bracket so that the length of the upstanding support arm runs along the side of the mounting bracket in a side-by-side parallel relationship;

the first and second pivots allow the upstanding support arm, the mounting bracket, and the planar working surface of the workstation to nest together in a parallel relationship to facilitate transportation of the workstation.

5,542,361

METHOD FOR ADJUSTING THE SUPPLY OF A REACTION GAS TO BE FED INTO A SMELTING FURNACE, AND A MULTIPURPOSE BURNER DESIGNED FOR REALIZING THE SAME

Launo L. Lilja, and Valto J. Mäkitalo, both of Pori, Finland, assignors to Outokumpu Research Oy, Pori, Finland

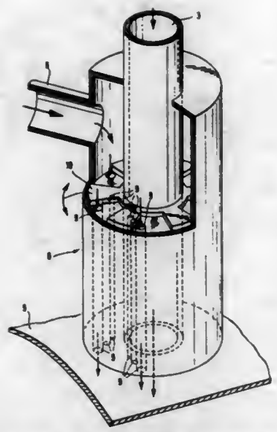
Division of Ser. No. 68,745, May 28, 1993, Pat. No. 5,370,369. This application Sep. 23, 1994, Ser. No. 311,112

Claims priority, application Finland, Jun. 1, 1992, 922531

Int. Cl.[6] F23D *1/00;* **F23C** *1/10;* **F23K** *3/02*

U.S. Cl. 110—341 **6 Claims**

1. A method for feeding varying volumes of a reaction gas through a concentrate burner and discharging the reaction gas into a reaction shaft of a flash smelting furnace while feeding pulverous material to the furnace through a distribution channel located in the



middle of the burner, comprising feeding the reaction gas into the reaction shaft through a plurality of tubular channels arranged around the distribution channel to provide a total cross-sectional area for the flow of reaction gas, discharging the gas from the tubular channels as several separate gas jets, and adjusting discharge velocity of the separate gas jets by adjusting the total cross-sectional area for the flow of reaction gas by selectively closing channels of said plurality of tubular channels to accommodate variations of the volume of reaction gas fed to the reaction shaft of the furnace.

5,542,362

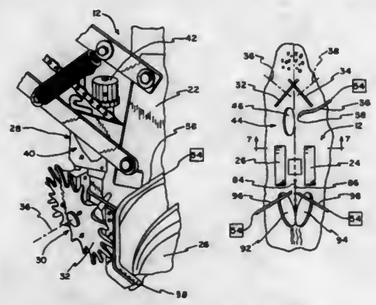
APPARUTUS FOR CONTINUOUSLY PLANTING SEED AND APPLYING A SOIL ADDITIVE

James H. Bassett, Sycamore, Ill., assignor to Dawn Equipment Company, Sycamore, Ill.

Continuation-in-part of Ser. No. 926,046, Aug. 5, 1992, abandoned. This application Oct. 25, 1993, Ser. No. 143,075

Int. Cl.[6] A01C *23/00*

U.S. Cl. 111—120 **6 Claims**



1. An agricultural planter comprising

a frame adapted to be towed by a tractor;

first and second laterally spaced gauge wheels on the frame for supporting the frame at a predetermined operating height relative to subjacent soil on which the gauge wheels bear;

residue-relocating means mounted on the frame in front of the gauge wheels for resituating residue laterally away from a seed line extending between the gauge wheels;

a soil-parting device mounted on the frame behind the toothed wheels and adjacent the gauge wheels for parting subjacent soil to form a seed slot in the soil along the seed line;

a seed-depositing device mounted on the frame for depositing seed in the seed slot;

a soil-closing device mounted on the frame behind the seed-depositing device and the gauge wheels for closing the seed slot to cover the seeds deposited therein; and

a fertilizer knife mounted on the frame behind the seed-depositing device and the gauge wheels, and in front of the soil-closing device, for cutting a fertilizer slot in the soil and depositing fertilizer in the slot, said fertilizer slot being laterally spaced away from said seed slot.

5,542,363

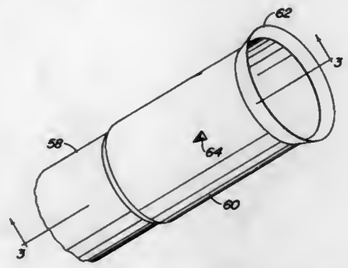
SELF LOCKING SEED TUBE

Rolando P. Gamino, East Moline, Ill., assignor to Deere & Company, Moline, Ill.

Filed Oct. 17, 1994, Ser. No. 324,042

Int. Cl.[6] A01L *7/00;* **F16L** *13/14*

U.S. Cl. 111—170 **4 Claims**



1. An agricultural seeding machine having a furrow opener for forming a planting furrow, the seeding machine comprising:

a seed tube having a normal portion and an enlarged portion, both the normal portion and the enlarged portion are cylindrical with the normal portion having a smaller inner diameter than the enlarged portion, the normal portion of the seed tube directs seed downwardly into a planting furrow, the enlarged portion of the seed tube having a funnel shaped opening and a necked down portion adjacent to the normal portion, the enlarged portion between the funnel shaped opening and the necked down portion is provided with inwardly projecting tangs, the tangs are triangular each having an apex that is pointed towards the normal portion; and

a seed supply tube mounted in the enlarged portion of the seed tube, the seed supply tube is cylindrical having an outside diameter that is slightly smaller than the inside diameter of the enlarged portion, the necked down portion forming a stop for the seed supply tube, the seed supply tube is trapped in the enlarged portion by the inwardly projecting tangs, the seed supply tube supplying metered seed to the seed tube.

5,542,364

SEED METERING DEVICE

William W. Romans, 1121 NW. Parkridge Dr., Ankeny, Iowa 50021

Continuation of Ser. No. 51,174, Apr. 22, 1993, Pat. No. 5,392,707. This application Feb. 1, 1995, Ser. No. 382,367

Int. Cl.[6] A01C *7/04*

U.S. Cl. 111—185 **1 Claim**

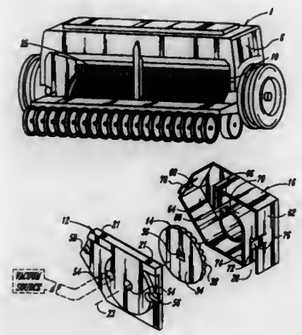
1. A planting implement for row crops comprising:

a frame;

a seed bin on the frame;

ground working tools mounted to the frame;

a seed tube in communication with at least one ground working tool;



a drive shaft extending across at least a portion of the frame; and

a plurality of seed meters mounted on the frame, said seed meters comprised of a manifold having a vacuum groove; a housing coupled to said manifold, said housing and said manifold defining a seed collection area and a seed release area, said housing being comprised of a front wall substantially parallel to said manifold and a side wall extending substantially perpendicularly from said front wall and generally contacting said manifold, said side wall containing a first aperture for seed intake and a second aperture for seed release, said housing further comprising a radial wall extending perpendicularly from said front wall located between said seed collection area and said seed release area; a seed disk supported for rotation between said housing and said manifold, said seed disk having a first side with a seed conveying element, and having a conducting means for transmitting vacuum between said seed conveying element and said vacuum groove while said seed conveying element is in said seed collection area; said seed disk further comprised of an opening to receive the drive shaft so that said seed conveying element travels rotatively between said seed collection area and said release area.

5,542,365

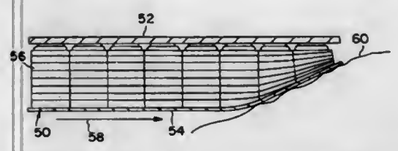
SHIP HAVING A CRUSHABLE, ENERGY ABSORBING HULL ASSEMBLY

Peter L. Jurisich, 1541--19th St., Manhattan Beach, Calif. 90267-1063, and Theodore A. Achtarides, Elmwood Plantation E1, 6805 Veterans Blvd., Metairie, La. 70003

Filed Dec. 22, 1994, Ser. No. 362,211

Int. Cl.[6] B63B *3/14*

U.S. Cl. 114—65 R **2 Claims**



1. In a ship having a hull assembly of an inner hull, an outer hull spaced apart from the inner hull, and a ship structurally active arrangement joining the inner hull and the outer hull together, the improvement comprising:

a plurality of non-ship structurally active, energy absorbing multi-cap cylinders, each extending between and having opposite ends coupled to the inner hull and the outer hull and comprising a stack of generally rounded, hollow caps, each of the caps having an upper portion of given diameter and a lower portion of diameter greater than the given diameter of the upper portion, the upper portion of each cap nesting within the lower portion of an immediately above cap except for a top cap at an upper end of the multi-cap cylinder.

5,542,366

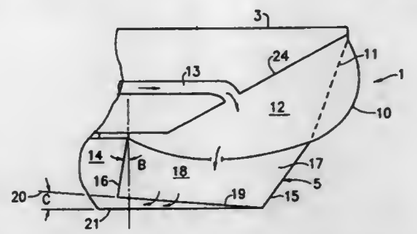
AIR CUSHION VEHICLE WITH HIGH STABILITY SKIRT SYSTEM

James C. Bell, New Orleans, La., assignor to Textron Inc., Providence, R.I.

Filed Apr. 7, 1995, Ser. No. 418,494

Int. Cl.[6] B63B *1/34;* **B60V** *1/16*

U.S. Cl. 114—67 A **7 Claims**



1. In an amphibious vehicle having a hull consisting of a bow, a stern, and sides and being supported above a surface by an air cushion, a skirt system for supporting and containing the air cushion comprising:

a flexible bag, inflated by a pressurized fluid, surrounding the periphery of the bottom of the hull and extending downward therefrom;

a seal system depending downward from the inflated bag, said seal system comprising a bow seal, a stern seal and a pair of side seals, wherein the bow seal comprises a series of flexible sleeves fixed to and depending downward from the inflated bag at the bow of the hull, each of said sleeves having a rearward facing wall, a forward facing wall, and side walls, said walls cooperating to form an interior cell communicating with the flexible bag to receive pressurized fluid therefrom to cause said sleeve to inflate, said cell having an opening at its lower end, said opening being in a plane extending at an upward inclined angle from the plane of the supporting surface toward the air cushion thereby exposing said opening to the air cushion, the rearward facing wall of said sleeve facing the air cushion being slanted rearward from top to bottom at an angle to the vertical.

5,542,367

PORTABLE BOAT DOCKING DEVICE AND METHOD FOR USING THE SAME

Eugene W. DuBois, III, Wellesley; Ronald L. Doria, Watertown, and Robert J. Butler, Andover, all of Mass., assignors to Incon Marine, Inc., Hudson, N.H.

Filed Feb. 17, 1995, Ser. No. 390,752

Int. Cl.[6] B63B *21/04*

U.S. Cl. 114—218 **14 Claims**

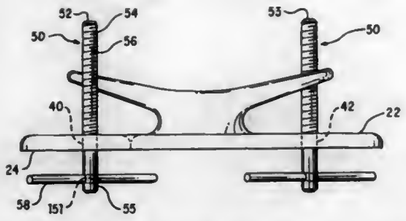
1. A boat docking device comprising;

a base plate for engaging an upper side of a plank dock, the base plate having a top surface, a bottom surface and a border;

the base plate having two spatially opposed openings situated adjacent to the border, the openings extending from the top surface to the bottom surface;

a cleat for receiving a line from a boat, the cleat being positioned between the openings on the top surface of the base plate;

two bolts for securing the base plate to the upper side of the plank dock, each bolt having a receiving end portion and a stop end portion, the receiving end portion extending



upwardly through the openings, the stop end portion including a bar extending therethrough, the bar projecting in two directions is perpendicular relative to the bolt; and

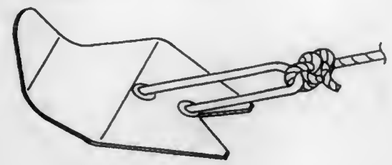
two nuts, each of which is circumferentially disposed about the receiving end portion for mutually engaging one bolt.

5,542,368

LIGHTWEIGHT ANCHOR WITH TAIL FIN

Kenji Yoshioka, 122-4. Higashihun, Tsunomine-chò, Anan-shi Tokushima, Japan

Filed Aug. 1, 1994, Ser. No. 283,355
Int. Cl.[6] B63B *21/32*
U.S. Cl. 114—301 **4 Claims**



1. A lightweight anchor comprising:

a tail fin having an unpointed end part: and a border part that abuts a fluke part of said anchor; said tail fin and said fluke part being substantially one piece; said tail fin being bent downward at said border part relative to the fluke part and then upward around a middle part between said end part and said border part; the width of said tail fin being the greatest at said border part and gradually lessening toward said end part,

a plow-shaped single fluke; the width of said fluke lessening toward its end and wherein a notch is provided, and

a shank of a bar being bent into a U-shape and immovably welded to an upper surface of said fluke part.

5,542,369

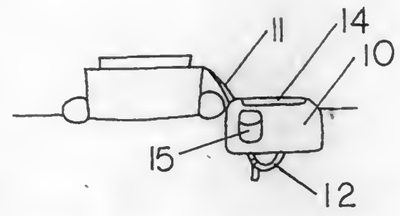
KAYAK SAFETY BUOYANCY STIRRUP

Robert T. Ingram, 231 Gordon Dr., Penetanguishene, Ontario, Canada

Filed Sep. 28, 1994, Ser. No. 313,821
Int. Cl.[6] B63B *35/71*
U.S. Cl. 114—347 **1 Claim**

1. A kayak and a safety buoyancy stirrup for use on the kayak for enabling a user of the kayak to return to the kayak from the water in which the kayak is located without re-capsizing the kayak, said kayak having a rear deck, a cockpit and sides, said kayak and safety buoyancy stirrup comprising:

an inflatable buoyancy bag, said bag having an air-tight closure mechanism, said closure mechanism allowing for stowage within said bag of lightweight, bulky items, said bag having sufficient buoyancy such that when it is deployed in the water said bag will support a user of the kayak so as to enable the user of the kayak to enter the kayak from the water without capsizing the kayak;



a safety buoyancy stirrup, said stirrup being adjustable and being attached directly to said bag such that when said bag is deployed in the water said stirrup depends downwardly from said bag, said stirrup being of sufficient size to receive a foot of a user of the kayak such that the user can use said stirrup and said bag for support and for entry into the cockpit of the kayak;

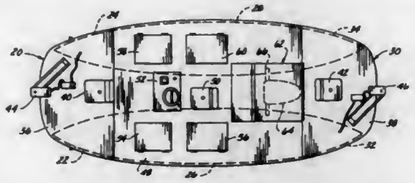
and a plurality of flexible means of attachment for securing said bag to the rear deck of the kayak within reach of a user of the kayak seated in the cockpit of the kayak, said flexible means of attachment enabling a user of the kayak to deploy said bag from the rear deck of the kayak to either side of the kayak such that the bag is floating in the water with said stirrup depending downwardly into the water enabling a user of the kayak to place a foot into said stirrup and enter the kayak without capsizing the kayak.

5,542,370

PORTABLE FISHING DECK AND BOAT WITH FISHING DECK

Morris D. Castleberry, 528 Longview Rd., Ozark, Mo. 65721

Division of Ser. No. 966,016, Oct. 23, 1992, abandoned. This application Sep. 22, 1994, Ser. No. 310,861
Int. Cl.[6] B63B *7/04*
U.S. Cl. 114—352 **2 Claims**



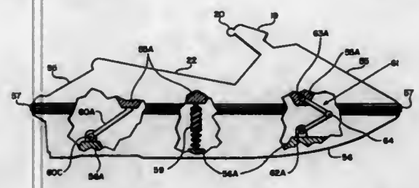
1. A kit for adding a fishing deck to a single hulled boat, said fishing deck having a hull, said fishing deck hull being twin-hulled and having a side formed at an angle to substantially match and line up with either the fore or aft of said boat, and being adapted for mounting to the aft of said boat, said fishing deck hull further comprising a cutout extending substantially vertically therethrough at said side to provide sufficient space for direct mounting of a motor to the aft of said boat, a bottom formed at an angle to substantially match and line up with the bottom of said boat, said fishing deck including a chair mounted thereon, and means for mounting a trolling motor thereto.

5,542,371

WATERCRAFT SEAT SUSPENSION

John A. Harvey, Sebastian, Fla.; Benoit Renaud; Claude Gagnon, both of Magog, Canada; Pierre Rondeau, Bromont, Canada, and Denys Lapointe, Mount Shefford, Canada, assignors to Bombardier Inc., Montreal, Canada

Filed Apr. 29, 1994, Ser. No. 235,635
Claims priority, application Canada, May 4, 1993, 2095515; Feb. 24, 1994, 2116321
Int. Cl.[6] B63B *17/00*
U.S. Cl. 114—363 **18 Claims**



1. A watercraft with a suspended upper deck body comprising:

an integrally molded upper deck body;

an integrally molded lower hull body;

a flexible collapsible waterproof membrane connecting said hull to said upper deck body;

said membrane being fixedly attached to the peripheral upper edges of said hull and the lower peripheral edges of said upper deck body;

said upper deck body including a bow deck, side decks, a steering console, an operator's seat, a rear deck and a pair of rear footwells, all of which are integrally molded to one another in fixed relation;

said upper deck body being supported in suspended relationship to said hull by at least one resilient spring and damping means and at least one support arm means; and

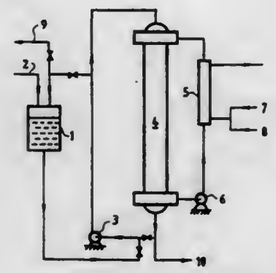
wherein in operation said resilient spring and damping means is adapted to absorb shock while said support arm means is adapted to resist lateral and torsional movement of said upper deck body in relation to said hull.

5,542,372

PROCESS FOR PURIFICATION OF DMT BY FILM CRYSTALLIZATION

Xujiang Sun; Junmin Zhang; Tongshun Wang; Jun Zhang; Hong Su, and Hongxia Xia, all of Tianjin, China, assignors to Tianjin Petro-Chemical Corporation, P.R., China

Filed Nov. 10, 1994, Ser. No. 337,086
Int. Cl.[6] C30B *29/54*
U.S. Cl. 117—68 **5 Claims**



1. A process for purification of DMT including the following steps:

(1) pumping a melting raw DMT feed into a film crystallizer, reducing the temperature down to 120°–136° C. to form DMT crystalline film on the walls of the crystallizing pipes of the film crystallizer,

(2) heating the crystallizing pipes and collecting melt when the temperature of crystalline film is up to 140°–145° C. as purified DMT;

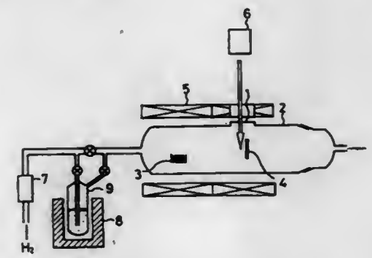
and the film crystallizer having a vertical parallel pipe structure, with it upper portion as a feeding chamber, bottom portion as a discharging chamber and the middle portion as a crystallization section; crystallizing pipes being evenly arranged inner the shell body of the section, feeding and discharging chambers being connected through the crystallizing pipes and inlet and outlet openings for heat carrier being located on the shell.

5,542,373

METHOD OF MANUFACTURING GAS SINGLE CRYSTALS

Junichi Nishizawa, 6-16, Komegafukuro 1-chome, and Yoshihiro Kokubun, 2-39, Umedamachi, both of Sendai, Miyagi-ken, Japan, assignors to Research Development Corporation of Japan, Tokyo; Junichi Nishizawa, and Yoshihiro Kokubun, both of Miyagi-ken, all of, Japan

Continuation of Ser. No. 181,530, Jan. 12, 1994, abandoned, which is a continuation of Ser. No. 35,563, Mar. 22, 1993, abandoned, which is a continuation of Ser. No. 901,990, Jul. 21, 1992, abandoned, which is a continuation of Ser. No. 677,368, Mar. 26, 1991, abandoned, which is a continuation of Ser. No. 451,365, Dec. 15, 1989, abandoned, which is a continuation of Ser. No. 754,843, Jul. 12, 1985, abandoned. This application Apr. 21, 1995, Ser. No. 427,655
Claims priority, application Japan, Jul. 16, 1984, 59-146006
Int. Cl.[6] C30B *29/42;25/02*
U.S. Cl. 117—103 **5 Claims**



1. A method of manufacturing GaAs single crystal on a GaAs substrate by epitaxial growth, comprising the steps of:

(1) selecting a source of Ga from the group consisting of Ga, GaAs, and mixtures thereof;

(2) disposing a substrate having a GaAs substrate surface in a processing chamber having a port;

(3) disposing said source of Ga in said processing chamber and between said substrate and said port;

(4) supplying a raw gas containing H_2 and $AsCl_3$ from outside of said processing chamber through said port and into said processing chamber, wherein said raw gas reacts with said source of Ga to produce a process gas and said process gas is transported to said GaAs substrate surface;

(5) irradiating said process gas in the vicinity of said GaAs substrate surface with coherent monochromatic light having a wavelength of 248 nm, to thereby form an excited processing gas from said processing gas; and

(6) maintaining said GaAs substrate at a growth temperature in the range of 480 to 600 degrees centigrade, wherein said excited processing gas interacts with said GaAs substrate surface to grow an epitaxial single crystal GaAs film on said GaAs substrate surface; and

maintaining said source of Ga at a Ga source temperature between fifty degrees centigrade above said growth temperature and one hundred and twenty degrees centigrade above said growth temperature.

5,542,374

ANIMAL LITTER OF CLAY AND WESTERN RED CEDAR

Whitfield M. Palmer, Jr., Ocala, Fla., assignor to MFM Industries, Inc., Ocala, Fla.

Filed Nov. 1, 1994, Ser. No. 332,900
Int. Cl.[6] A01K *1/015*
U.S. Cl. 119—173 9 Claims

7. A nontoxic, nonallergenic, nonaromatic, natural, deodorant, absorbent animal litter material comprising:

particles of Western Red Cedar for absorbing moisture, for enhancing clumping properties, and for deodorizing material deposited thereinto; and

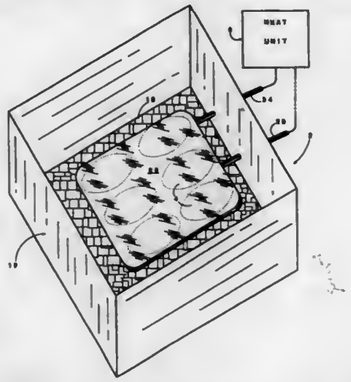
particles of Fuller's earth crystalline clay for absorbing moisture and for coating solid material deposited thereinto.

5,542,375

EGG INCUBATION SYSTEM AND METHOD

Howard J. Voren, 1538 E Rd., Loxahatchee, Fla. 33470

Filed Mar. 27, 1995, Ser. No. 410,691
Int. Cl.[6] A01K *31/00*
U.S. Cl. 119—312 8 Claims



1. An improved system for the incubation of bird eggs which comprises:

an incubation unit,

a system heat exchange liquid,

a heating means to warm said system heat exchange liquid,

a pump means, and

a conduit means to circulate said warmed system heat exchange liquid via said pump means between said incubation unit and said heating means,

said incubation unit including,

a housing for containing an array of bird eggs,

a bed of particulate material contained within said housing which is adapted to support said array of bird eggs covering a given area of said bed,

a flexible bladder having a liquid holding interior and a relatively flat bottom portion of larger area than said given area adapted to be laid over and resting upon said array of bird eggs and

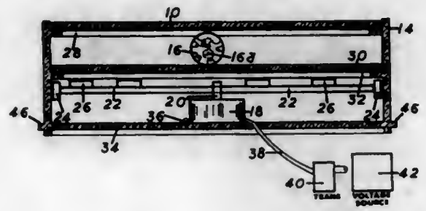
inlet and outlet tubes communicating with said liquid holding interior and connected to said conduit means whereby said warmed system heat exchange liquid may be circulated from said heating through said liquid holding interior to supply heat through said flat bottom portion to said bird eggs to incubate them.

5,542,376

ANIMAL ENTERTAINMENT AND EXERCISE STIMULATOR

Steven D. Udelle, and Laura L. Udelle, both of 26414 Barranquilla Ave., Punta Gorda, Fla. 33983

Filed Jan. 23, 1995, Ser. No. 376,770
Int. Cl.[6] A01K *29/00*
U.S. Cl. 119—707 21 Claims



1. An animal entertainment arena device comprising:

a) a circular housing forming a vertical sidewall having a lower edge and an upper edge;

b) said lower edge comprising a base and having a lower horizontal surface supported by said vertical sidewall;

c) said upper edge of said vertical sidewall having a horizontal ledge orthogonal to said upper edge, said ledge supporting an upper horizontal surface employing at least one elongated access opening, whereby an animal may place its paw and foreleg therethrough; and

d) said vertical sidewall further supporting a center horizontal surface midway between said lower horizontal surface and said upper horizontal surface; and

e) said center horizontal surface employing a freely movable object thereon comprising a hollow ball containing a loose permanent magnet confined therein; and

f) a shaft disposed below said center horizontal surface; and

g) means for rotating said shaft disposed below said center horizontal surface of said housing; and

h) means for producing a magnetic field coupled to said shaft and disposed below said center horizontal surface, wherein rotation of said shaft causes said means for producing a magnetic field to rotate within said housing, the magnetic field produced thereby influencing said freely movable object to continuously move about upon said center horizontal surface.

5,542,377

PORTABLE SINK TABLE FOR DENTAL PROPHYS AND PROCEDURES

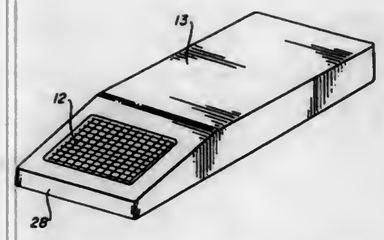
Roderique S. Gemill, 8684 Bride Path Ct., Davie, Fla. 33328, and Joseph R. Tarulli, 6325 Eaton St., Hollywood, Fla. 33024

Continuation of Ser. No. 970,688, Nov. 4, 1992, abandoned.
This application Nov. 3, 1994, Ser. No. 333,746
Int. Cl.[6] A61D *3/00*
U.S. Cl. 119—753 10 Claims

1. A portable sink table to be used for dental surgical or other procedures on an animal by a veterinarian comprising:

a main body structure having a top surface configuration including a solid portion and a grated portion,

said top surface having side members and extending downward therefrom such that said body structure comprises a hollow member,



said solid portion having a length greater than the length of said grated portion,

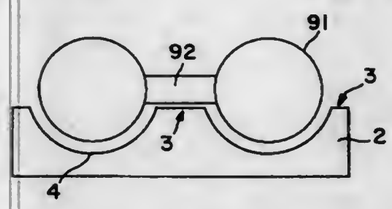
said grated portion being adapted to fit thereon the head of the animal being treated while the solid portion is adapted to support thereon the body of the animal being treated, said portable sink table being proportioned to be removably placed on a veterinarian's examination table whereby the portable sink table may be used for dental, surgical or other veterinarian procedures and thereafter be removed and placed aside during periods of non use, at least said grated portion of said top surface substantially lying in an inclined plane which is inclined in a downward direction from an end of said solid portion towards said grated portion relative to a horizontal defined by the veterinarian's examination table.

5,542,378

WATERWALL TUBE BLOCK DESIGN

Stephen M. Kubiak, Shrewsbury, Mass., and Tatsuo Nishida, Chiba, Japan, assignors to Saint-Gobain/Norton Industrial Ceramics Corp., Worcester, Mass.

Filed Jun. 2, 1994, Ser. No. 252,707
Int. Cl.[6] F22B *37/20*
U.S. Cl. 122—235.12 11 Claims



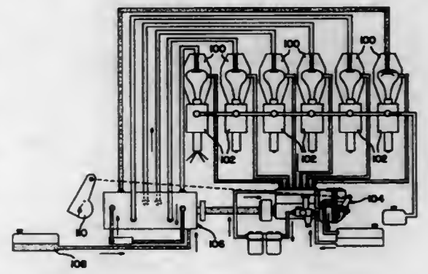
1. A water heat transfer system comprising a tube block and an assembly, comprising a plurality of parallel tubes connected therebetween by at least one membrane, wherein the tube block comprises: a) a base section, and b) a plurality of parallel, spaced ridges extending outward from the base section, the surface of at least one of the ridges defining a surface for receiving the membrane, the membrane being secured to the surface of the ridge, the ridges being spaced to define parallel channels therebetween, the extension of at least one of spaced ridges being such that the parallel tubes are free of contact from the channels, whereby large concentrations of stress between the parallel tubes and the channels are eliminated.

5,542,379

EMULSION FUEL FEEDING APPARATUS AND METHOD

Alfred Kessler, Duerrenaesch, Switzerland, assignor to HDC AG, Moenchaltorf, Switzerland

PCT No. PCT/EP92/00140, § 371 Date Dec. 1, 1994, § 102(e) Date Dec. 1, 1994, PCT Pub. No. WO93/10347, PCT Pub. Date May 27, 1993
PCT Filed Jan. 23, 1992, Ser. No. 211,871
Claims priority, application Germany, Nov. 12, 1991, 41 37 179.8
Int. Cl.[6] F02B *47/02*
U.S. Cl. 123—25 C 6 Claims



1. An oil-water emulsion formation apparatus comprising:

a rotationally symmetric inlet chamber;

an oil inlet passage opening into said inlet chamber in a tangential direction;

a water jet nozzle disposed at one of the ends of said inlet chamber in an axial direction, subjected to electric opening/closing control, for jetting water into said inlet chamber;

a pump chamber formed at the other end of said inlet chamber in the axial direction;

a pump impeller having a radial shape, fitted coaxially with the axis of said inlet chamber inside said pump chamber and being surrounded by a cylindrical wall surface of said pump chamber along the outer periphery of said pump impeller, said pump impeller being driven for rotation by a driving source;

a notch portion formed in said wall surface of the said pump chamber;

an emulsion outlet opening in a direction parallel to the axis of rotation of said pump impeller in the proximity of the end portion of said notch portion at the downstream side in the rotating direction of said pump impeller; and

a terminal wall for intercepting the emulsion flow flowing inside said notch portion in the rotating direction of said pump impeller.

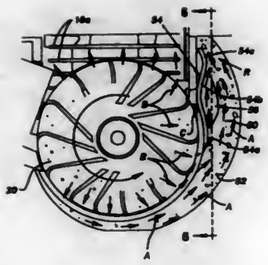
5,542,380

INTEGRATED DYNAMIC AIR CLEANER

J. Keith Chatten, Shreveport, La., assignor to WCI Outdoor Products, Inc., Cleveland, Ohio

Filed Mar. 28, 1995, Ser. No. 412,149
Int. Cl.[6] F01P *1/02*
U.S. Cl. 123—41.7 23 Claims

1. A portable power tool comprising a chassis, an engine secured to said chassis, and a fan connected to said engine and rotatably driven by said engine about an axis, said chassis including a base wall radially spaced from said fan, a curved outer wall radially surrounding at least a portion of said fan, and a deflector wall, said base wall and said outer wall cooperating to define a portion of a fan volute in which air, and particles entrained therein, are propelled by said fan, said base wall having a carburetor air inlet port formed therein, said deflector wall projecting from said base wall on a side of said air inlet port opposite said outer wall and between said fan and said air inlet port, said deflector wall cooperating with said outer wall to define an air passageway, said air passageway



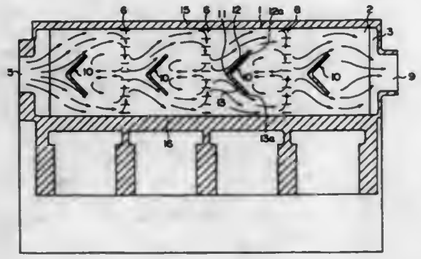
being relatively smaller at a location, in a direction of air flow within said fan volute, downstream from said air inlet port.

5,542,381

CYLINDER BLOCK FOR LIQUID-COOLED ENGINE

Yasushi Noda; Tsuyoshi Masuda, and Yutaka Matayoshi, all of Yokosuka, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 2, 1995, Ser. No. 382,788
Claims priority, application Japan, Feb. 7, 1994, 6-013664
Int. Cl.[6] F02B *75/18*
U.S. Cl. 123—41.74 7 Claims



1. A liquid-cooled engine cylinder block comprising:

a plurality of cylinders arranged in series, said cylinders being formed by cylinder walls wherein adjacent cylinder walls are joined together, and

a water jacket formed by a water jacket wall covering the outer circumference of said cylinder walls such that a passage for cooling liquid is formed by said water jacket wall and said cylinder walls in a direction perpendicular to the axes of said cylinders,

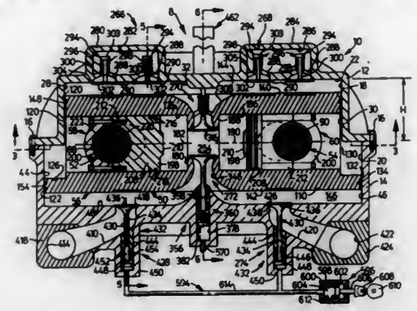
wherein said cylinder block further comprises a guide rib provided adjacent to said outer circumference of said cylinder walls and inside said passage so as to vertically separate a flow of said cooling liquid, said guide rib comprising two guide members extending in respective upward and downward directions from the upstream ends of said guide members which are located in a substantially central position in the vertical width of said passage.

5,542,382

DUAL COMPRESSION AND DUAL EXPANSION INTERNAL COMBUSTION ENGINE AND METHOD THEREFOR

John M. Clarke, Chillicothe, Ill., assignor to Caterpillar Inc., Peoria, Ill.

PCT No. PCT/US91/02224, § 371 Date Apr. 1, 1991, § 102(e) Date Apr. 1, 1991
PCT Filed Apr. 1, 1991, Ser. No. 119,106
Int. Cl.[6] F01L *1/24*
U.S. Cl. 123—51 AA 12 Claims



1. A valve operating mechanism (**356**) for an engine (**8**) having a housing (**10**) defining an operating chamber (**22**), and a piston assembly (**56**) including a body (**110**) reciprocally disposed in the operating chamber (**22**), comprising:

the body (**110**) of the piston assembly (**56**) defining a first port (**344**) and a valve seating surface (**352**) thereabout;

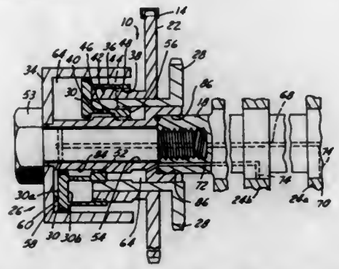
the valve operating mechanism (**356**) includes a valve (**358**) including a valve sealing face (**370**), valve support means (**360**) for reciprocally supporting the valve (**358**) on the housing (**10**) for movement with the piston assembly (**52**) and valve actuating means (**560**) for controllably displacing the valve sealing face (**370**) away from the valve seating surface (**352**) during a preselected range of movement of the piston assembly (**56**) in the operating chamber (**22**).

5,542,383

DUAL OUTPUT CAMSHAFT PHASE CONTROLLER

James R. Clarke, and Roy E. Diehl, both of Northville, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 4, 1995, Ser. No. 434,233
Int. Cl.[6] F01L *1/344*
U.S. Cl. 123—90.17 7 Claims



1. A camshaft phase controller for an internal combustion engine having a crankshaft and poppet valves actuated by separate intake and exhaust camshafts driven by the crankshaft, with said phase controller comprising:

an input member driven by the crankshaft;

a drive hub adapted to be fixed to a first camshaft;

an output member mounted to said drive hub so as to permit relative rotation between the output member, the input member, and the drive hub, with said output member being adapted to drive a second camshaft;

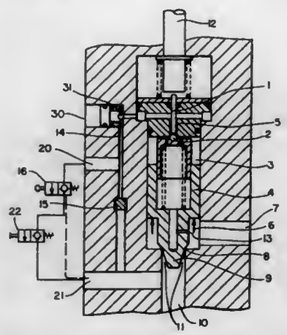
an actuator interposed between said input member, said drive hub, and said output member, for controllably changing the rotational position of said drive hub with respect to said input member and the rotational position of said output member with respect to said drive hub, with said drive hub comprising a generally annular housing adapted to receive portions of said input member, said first camshaft, and said output member and with said actuator comprising a piston slidably housed within said generally annular housing, with said piston having an outer cylinder with internal splines formed therein, and an inner cylinder having internal and external splines formed therein, with said splines on said outer cylinder being operatively engaged with mating splines formed on said input member, and with said internal splines on said inner cylinder being operatively engaged with mating splines formed on a portion of the generally annular housing which is adapted for non-rotatable engagement with a first camshaft, and with said external splines on said inner cylinder being operatively engaged with mating splines formed on said output member, such that sliding motion of said piston with respect to the housing causes relative rotation between the input member, the annular housing and the output member.

5,542,384

HYDRAULIC ENGINE STARTING EQUIPMENT

Jack P. Rosenmann, Strathavon, and Alfred Buschberger, Midrand, both of, South Africa, assignors to Fluid Precision (Proprietary) Limited, Rivonia, South Africa

Filed Mar. 24, 1994, Ser. No. 217,628
Claims priority, application South Africa, Mar. 26, 1993, 93/2141
Int. Cl.[6] F02N *17/00*
U.S. Cl. 123—179.31 20 Claims



1. Hydraulic equipmeut for starting an engine comprising a source of hydraulic fluid under pressure connected to an engine starter motor through a valve assembly, wherein said valve assembly comprises:

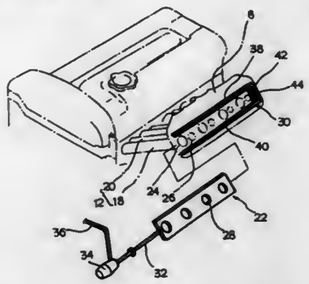
a soft start valve, including a poppet valve having a tapered stem extending through the opening and a pilot valve for controlling movement of said poppet valve to permit a gradual increase of flow through said poppet valve as it opens and a pilot valve for controlling the movement of said poppet valve.

5,542,385

INTAKE MANIFOLD FOR AN INTERNAL COMBUSTION ENGINE

Yoonsuk Kim, Kyungki-do, Rep. of Korea, assignor to Hyundai Motor Company, Rep. of Korea

Filed Jun. 22, 1995, Ser. No. 493,698
Claims priority, application Rep. of Korea, Jun. 23, 1994, 94-14447
Int. Cl.[6] F01L *15/02*; F02M *35/10*
U.S. Cl. 123—184.52 12 Claims



1. An intake manifold system for an internal combustion engine comprising:

a surge tank for temporarily storing the air;

an intake manifold for connecting said surge tank with combustion chambers of cylinders, said intake manifold having a plurality of high speed tubes for taking in the air from said surge tank and a plurality of medium/low speed tubes for taking in the air from said surge tank, the internal diameter of said high speed tubes being greater than that of said medium/low speed tubes, each of said cylinders being connected with one high speed tube and one medium/low speed tube;

an intake manifold valve for selectively opening and closing the inlet openings of said high speed and medium/low speed tubes of said intake manifold;

a valve guide attached to the inside surface of said surge tank for guiding said intake manifold valve; and

a drive means for driving said manifold valve device according to an engine running speed, whereby the air flows via said high speed tubes into said combustion chambers at a high engine running speed more rapidly than at a medium/low engine running speed.

5,542,386

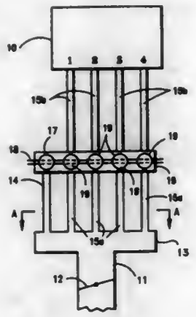
INTAKE SYSTEM FOR MULTIPLE CYLINDER COMBUSTION ENGINES

Jan Karlsson, Västra Frölunda, and Jan Dahlgren, Göteborg, both of, Sweden, assignors to AB Volvo, Goteborg, Sweden

Filed Jul. 6, 1994, Ser. No. 268,567
Claims priority, application Sweden, Jul. 8, 1993, 9302368
Int. Cl.[6] F02B *27/02*
U.S. Cl. 123—184.57 4 Claims

1. Intake system for internal combustion engines with multiple cylinders comprising: a first distribution chamber, one separate inlet pipe for each engine cylinder, which inlet pipes extend between the first distribution chamber and inlet valves of the corresponding cylinders, and at least a second distribution chamber, which is connectable to each one of the inlet pipes between said first chamber and the inlet valve via one passage each, which passages can be opened by means of an operable throttle valve, said second distribution chamber is connected to the first distribution chamber via at least one resonance pipe, the inlet of which to the second distribution chamber is openable by means of an additional throttle valve wherein the at least one resonance pipe has the same acoustic length as the acoustic length of the inlet pipes.

170-651 O.G.-96-5: QL3

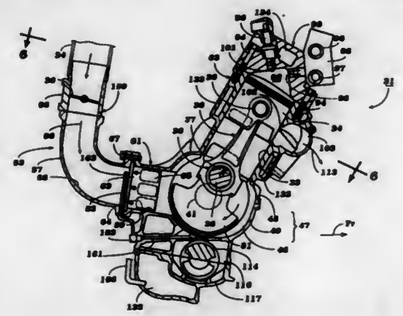


5,542,387

COMPONENT LAYOUT FOR ENGINE

Akihiko Okubo, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Aug. 9, 1994, Ser. No. 287,906
Int. Cl.[6] F02B 75/06
U.S. Cl. 123—192.2 25 Claims



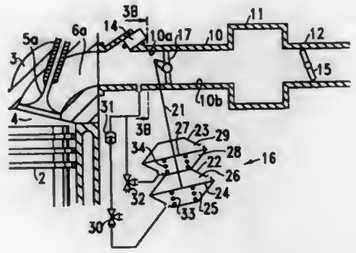
1. A motor vehicle having a body assembly defining an engine compartment at the forward end thereof, a pair of front wheels suspended from said body assembly at the front thereof, a pair of rear wheels suspended from said body assembly at the rear end thereof, a multi-cylinder, in-line, two-cycle crankcase compression, internal combustion engine supported with a crankshaft rotatable about an axis extending transversely across said engine compartment and within said engine compartment, a balancer shaft driven by said engine crankshaft and rotatable about a balancer shaft axis parallel to and beneath said crankshaft axis, said engine having a plurality of exhaust ports on the side of said engine to the front of said engine compartment, an exhaust manifold for collecting exhaust gases from said exhaust ports, and an exhaust system including an exhaust pipe extending from said exhaust manifold beneath said engine and said balancer shaft rearwardly of said body assembly for discharge of the exhaust gases from said engine to the atmosphere.

5,542,388

AIR-FLOW CONTROL DEVICE FOR ENGINE

Hiroki Ichinose, Fujinomiya; Shinji Sadakane, Susono; Keiso Takeda, Mishima, and Susumu Kojima, Susono, all of, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Aug. 15, 1995, Ser. No. 515,439
Claims priority, application Japan, Aug. 17, 1994, 6-193121; Apr. 20, 1995, 7-095562
Int. Cl.[6] F02D 9/02
U.S. Cl. 123—336 31 Claims



1. An air-flow control device for an engine having an intake passage and a fuel injector arranged in the intake passage for injecting fuel into the intake passage, the device comprising:

an air-flow control valve arranged in the intake passage on the upstream of the fuel injector, the air-flow control valve being closed during an engine starting operation, and being open after the engine starting operation is finished;

first and second vacuum sources;

a driving apparatus for driving the air-flow control valve, the apparatus comprising:

first and second vacuum chambers;

a first vacuum control valve for selectively connecting the first vacuum chamber to either the first vacuum source or the atmosphere to introduce the negative pressure or the atmospheric pressure into the first vacuum chamber; and

a second vacuum control valve for selectively connecting the second vacuum chamber to either the second vacuum source or the atmosphere to introduce the negative pressure or the atmospheric pressure into the second vacuum chamber, the apparatus driving the air-flow control valve so that a degree of opening thereof becomes larger as the negative pressure in the first and the second vacuum chamber becomes larger; and

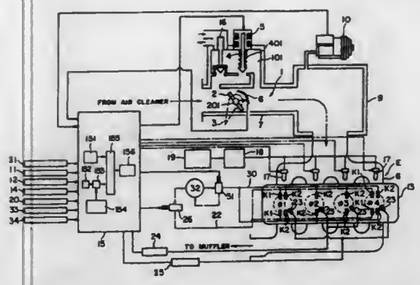
control means for controlling the apparatus so that each of the first and the second vacuum control valves introduces the atmospheric pressure into the corresponding vacuum chamber to thereby ensure that the air-flow control valve is closed during an engine starting operation, and that the first and the second vacuum control valves control the negative pressures in the corresponding vacuum chamber to thereby keep the air-flow control valve open and to thereby control a degree of opening of the air-flow control valve after the engine starting operation is finished.

5,542,389

CONTROL SYSTEM FOR MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

Katsuhiko Miyamoto, and Kazumasa Iida, both of Tokyo, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP93/01386, § 371 Date Jun. 20, 1994, § 102(e) Date Jun. 20, 1994, PCT Pub. No. WO94/08134, PCT Pub. Date Apr. 14, 1994
PCT Filed Sep. 29, 1993, Ser. No. 244,291
Claims priority, application Japan, Sep. 29, 1992, 4-259753; Oct. 28, 1992, 4-290271; Oct. 28, 1992, 4-290272
Int. Cl.[6] F02M 3/00
U.S. Cl. 123—339.1 8 Claims



1. A control system for a multi-cylinder internal combustion engine (E) in which switching between full cylinder operation with all cylinders in operation and part cylinder operation with some of the cylinders kept out of operation is performed at least in the course of idling, the internal combustion engine having an associated engine speed sensor and engine load sensor, comprising:

a microcomputer receiving an engine speed signal from the engine speed sensor and an engine load signal from the engine load sensor.

wherein said microcomputer is programmed to perform the steps of:

calculating a basic ignition timing on the basis of load on and an engine speed of said internal combustion engine (E);

calculating a difference between a smoothed engine speed, which has been obtained by smoothing engine speeds of said internal combustion engine, and the engine speed of said internal combustion engine;

calculating an ignition timing correction amount corresponding to the difference and a correction gain at least in the course of the idling;

performing ignition timing correction control by changing the correction gain to a value different from that for the full cylinder operation upon at least one of the switching between the full cylinder operation and the part cylinder operation and the part time operation;

calculating a target ignition timing on the basis of the basic ignition timing and the ignition timing correction amount; and providing an output driving signal;

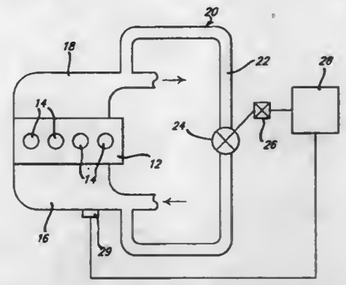
wherein the control system further comprises means for driving the ignition of the respective cylinders in the internal combustion engine, wherein said output driving signal from said microcomputer is provided to said ignition driving means to drive the ignition of the respective cylinders at said target ignition timing.

5,542,390

METHOD OF ALTITUDE COMPENSATION OF EXHAUST GAS RECIRCULATION IN AN INTAKE MANIFOLD FOR AN INTERNAL COMBUSTION ENGINE

Peter G. Hartman, W. Bloomfield; Keith L. Jones, Woodhaven; Thomas A. Larson, Bloomfield Hills, and Gregory T. Weber, Commerce, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Jan. 30, 1995, Ser. No. 380,165
Int. Cl.[6] F02D 41/04; F02M 25/07; F02P 5/15
U.S. Cl. 123—412 11 Claims



1. A method of altitude compensation of exhaust gas recirculation in an intake manifold for an internal combustion engine, said method comprising the steps of:

sensing manifold absolute pressure (MAP) from a MAP sensor;

calculating vacuum at sea level based on the sensed MAP;

calculating vacuum at present altitude of the engine based on the sensed MAP;

determining whether the calculated vacuum at sea level is equal to the calculated vacuum at present altitude;

correcting an estimate of the exhaust gas recirculation in the intake manifold if the calculated vacuum at sea level does not equal the calculated vacuum at present altitude; and

adjusting spark advance and fuel pulsewidth for fuel transferring components of the engine based on the corrected estimate of the exhaust gas recirculation.

5,542,391

Patent Not Issued For This Number

5,542,392

COMPRESSED NATURAL GAS FUEL INJECTION CONTROL SYSTEM WITH IMPROVED MECHANISM FOR COMPENSATING FOR PRESSURE, TEMPERATURE AND SUPPLY VOLTAGE VARIATIONS

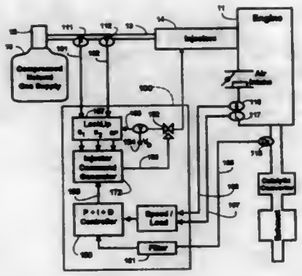
Bela P. Povinger, Gross Ile, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 172,782, Dec. 27, 1993, Pat. No. 5,474,054. This application Jul. 5, 1995, Ser. No. 498,307
Int. Cl.[6] F02D 41/34
U.S. Cl. 123—480 5 Claims

1. Apparatus for controlling the flow of a compressed gaseous fuel under pressure from a fuel supply to the intake port of an internal combustion engine, said apparatus comprising, in combination,

at least one fuel injector coupled to said fuel supply for injecting measured amounts of fuel into said engine at said intake port in response to a command signal whose duration is indicative of the amount of fuel to be injected, and

an electronic fuel control unit comprising:



memory means for storing a plurality of predetermined slope values, each of said slope values being indicative of the rate at which the amount of fuel delivered to said engine by said injector varies for a given change in said duration of said command signal at a predetermined fuel temperature and fuel pressure,

means responsive to the temperature and the pressure of said fuel for selecting a particular one of said slope values, and

second processing means jointly responsive to a variation in said desired fuel rate value from a prior rate value to a new rate value and to said particular one of said slope values for varying the duration of said command signal to achieve the fuel delivery rate indicated by said new rate value.

5,542,393

FUEL INJECTION AMOUNT CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

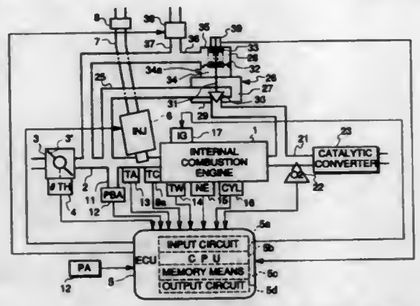
Akira Katoh; Hiroshi Kitagawa; Shunichi Tsuzuki; Jun Takahashi; Sachito Fujimoto, and Toshiaki Hirota, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 2, 1994, Ser. No. 334,338

Claims priority, application Japan, Nov. 2, 1993, 5-297470

Int. Cl.[6] F02D *41/00*

U.S. Cl. 123—491 **14 Claims**



1. In a fuel injection amount control system for an internal combustion engine having an intake passage having a wall surface, at least one combustion chamber, and fuel injection means for injecting fuel into said intake passage, including:

desired fuel amount-calculating means for calculating a desired amount of fuel to be supplied to each of said at least one combustion chamber in response to operating conditions of said engine;

parameter-calculating means for calculating values of parameters indicative of fuel adherence characteristics of an interior of said intake passage in response to operating conditions of said engine;

fuel amount-calculating means for calculating a first amount of fuel which is directly drawn into said each of said at least one combustion chamber from an amount of fuel injected by said fuel injection means, and a second amount of fuel which is carried off said wall surface of said intake passage due to evaporation and into said each of said at least one combustion chamber, from fuel adhering to said wall surface of said intake passage, based upon said values of said parameters indicative of said fuel adherence characteristics; and

fuel injection amount-calculating means for calculating an injection amount of fuel to be injected by said fuel injection means, by correcting said desired fuel amount, based upon said first and second amounts of fuel,

the improvement comprising:

operating condition-detecting means for detecting whether said engine is in a predetermined operating condition in which convergence of said fuel injection amount calculated by said fuel injection amount-calculating means to said desired fuel amount can be unstable; and

parameter-correcting means for correcting a value of at least one of said parameters indicative of said fuel adherence characteristics in a manner such that said fuel injection amount stably converges to said desired fuel amount, when said engine is in said predetermined operating condition.

5,542,394

VEHICLE ENGINE REFUELING DETECTION APPARATUS AND METHOD AND FUEL SUPPLY APPARATUS AND METHOD

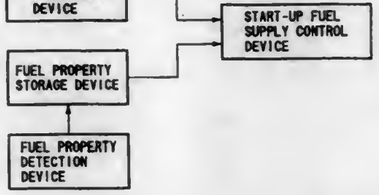
Naoki Tomisawa, Atsugi, Japan, assignor to Unisia Jecs Corporation, Atsugi, Japan

Filed Apr. 13, 1995, Ser. No. 422,508

Claims priority, application Japan, Apr. 15, 1994, 6-077342

Int. Cl.[6] F02D *45/00*

U.S. Cl. 123—491 **21 Claims**



5. An apparatus for supplying fuel to a vehicle engine from a fuel tank said apparatus comprising;

refueling detection means for detecting the presence or absence of refueling of said fuel tank,

fuel property detection means for indirectly detecting a fuel property based on engine operating conditions,

fuel property storage means for storing and holding a fuel property detected by said fuel property detection means while the engine is stopped, and

start-up fuel supply control means for supplying to the engine a quantity of fuel corresponding to the fuel property stored in said fuel property storage means, when detected by said refueling detection means that refueling has not been carried out while the engine is stopped, and for supplying to the engine a quantity of fuel corresponding to a previously set reference fuel property when detected by said refueling detection means that refueling has been carried out while the engine is stopped.

5,542,395

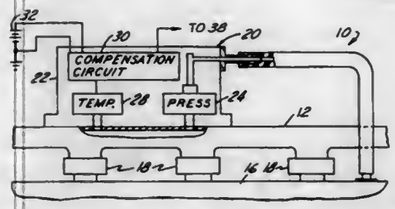
TEMPERATURE-COMPENSATED ENGINE FUEL DELIVERY

Charles H. Tuckey, Cass City, and Kirk D. Doane, Bay City, both of Mich., assignors to Walbro Corporation, Cass City, Mich.

Filed Nov. 15, 1993, Ser. No. 151,992

Int. Cl.[6] F02M *37/04*

U.S. Cl. 123—497 **12 Claims**



1. A fuel delivery system for an internal combustion engine that comprises:

a fuel supply with a fuel pump responsive to application of electrical power for supplying fuel under pressure,

fuel delivery means at the engine,

a non-return fuel line between said pump and said fuel delivery means, and

means for applying electrical power to said pump comprising:

a fuel pressure sensor for providing an electrical pressure signal as a function of fuel pump outlet pressure,

circuit means responsive to said electrical pressure signal for applying electrical power to said pump, and

a temperature sensor responsive to fuel temperature and operatively coupled to said circuit means for automatically varying power applied to said pump to maintain a preselected constant fuel pressure characteristic at the engine when temperature at said temperature sensor is below a preselected threshold temperature, and to increase pump output pressure as a preselected function of temperature at said temperature sensor when said temperature exceeds said preselected threshold temperature.

5,542,396

METHOD FOR VENTILATING A FUEL SYSTEM FOR AN INTERNAL COMBUSTION

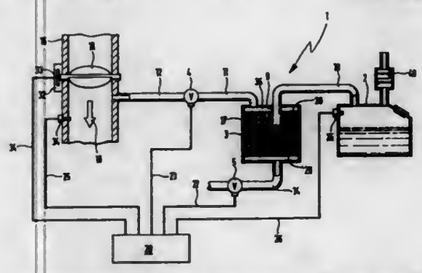
Rudolf Moz, Moeglingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 29, 1995, Ser. No. 412,800

Claims priority, application Germany, Apr. 9, 1994, 44 12 275.6

Int. Cl.[6] F02M *25/08*

U.S. Cl. 123—520 **6 Claims**



1. A method for ventilating a fuel system for an internal combustion engine, in which fuel vapors from a fuel tank can be introduced into an intake pipe of the internal combustion engine via an adsorption filter and a regeneration valve which assumes an open position or a closed position, the adsorption filter being connected to the atmosphere by a shut-off valve in a ventilation conduit, said shut-off valve assuming an open position or a closed position, which comprises moving the regeneration valve (4) into an open position and moving the shut-off valve (5) into a closed position to introduce the fuel vapors into the intake pipe (15) in a region of an upper partial load and/or in a region of a full load on the internal combustion engine.

5,542,397

LEAK TEST SYSTEM FOR VAPORIZED FUEL TREATMENT MECHANISM

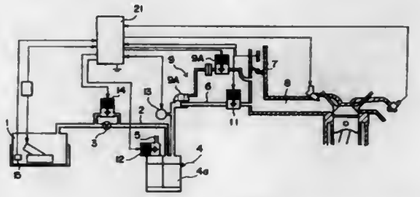
Toshio Takahata, Aikou-gun; Shinsuke Nakazawa, Yokohama; Atsushi Iochi, Yokohama; Hiroshi Kuriki, Yokohama, and Kenichi Gotoh, Zama, all of, Japan, assignors to Nissan Motor Co., Ltd., Kanagawa, Japan

Filed May 4, 1995, Ser. No. 434,713

Claims priority, application Japan, May 9, 1994, 6-095332; May 9, 1994, 6-095334; May 9, 1994, 6-095335; May 9, 1994, 6-095343

Int. Cl.[6] F02M *25/08*

U.S. Cl. 123—520 **31 Claims**



1. A leak test system for a vaporized fuel treatment mechanism comprising:

a fuel tank for supplying fuel to an engine mounted in an automobile,

an intake pipe for aspirating air for combustion in said engine,

a throttle provided in said intake pipe for regulating an amount of said air,

a canister for adsorbing vaporized fuel,

a first passage for leading vaporized fuel from said fuel tank to said canister,

a first valve for opening and closing said first passage,

a second passage connecting said canister with said intake pipe downstream of said throttle,

a second valve for opening and closing said second passage,

a third valve for introducing fresh air into said canister,

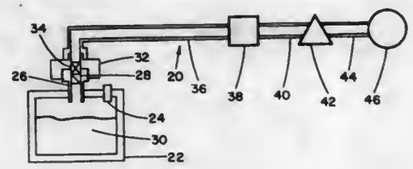
means for detecting pressure in a first flowpath section from said first valve to said second valve via said canister,

first determining means for determining whether or not an engine running condition satisfies a predetermined positive pressure test condition,

first operating means for closing said second and third valves while opening said first valve, and

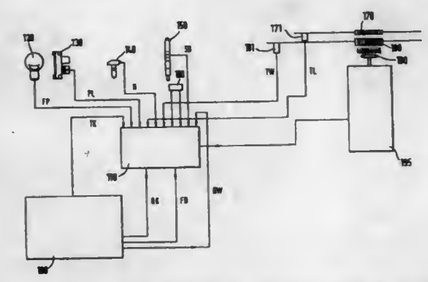
second determining means for determining a presence or absence of a leak based on a variation of the pressure according to an operation of said first operating means.

5,542,398
LPG FUEL TANK, AND FUEL SUPPLY SYSTEM, FOR ENGINES
Robert V. Marcon, 3471 Sinnicks Ave., Niagara Falls, Ontario, Canada
Filed Apr. 26, 1995, Ser. No. 429,068
Int. Cl.[6] F02M *21/02*
U.S. Cl. 123—527 **20 Claims**



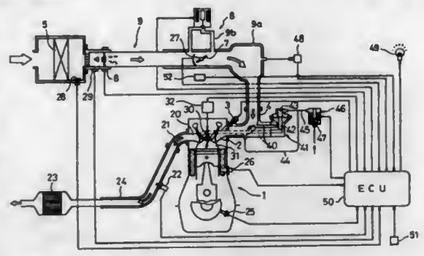
1. A fuel supply system means, for use in an internal combustion spark ignition engine, connected to at least one fuel tank means wherein said fuel tank means further comprises a primary pressure relief valve means, and a fuel shut-off valve means, and is further provided with a liquified propane base fuel having a gaseous head, and which, when connected in gaseous flow communication to said fuel supply system means, serves as the fuel tank means, and a fuel vaporizer means for said internal combustion engine, and wherein said fuel supply system means operates on a gaseous propane based fuel, and further comprises, in combination, a fuelling receptor means wherein said fuelling receptor means when connected to said fuel tank means is in gaseous flow communication with said gaseous head of said fuel tank means, a fuel lock means, a pressure regulator means, and a fuel-air mixer means connected together, in series and in gaseous flow communication, by at least one fuel conduit means.

5,542,399
METHOD CONTROLLING AN INTERNAL COMBUSTION ENGINE
Uwe Altmann, Schwieberdingen, and Hermann Grieshaber, Aichtal, both of, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Nov. 16, 1994, Ser. No. 340,690
Claims priority, application Germany, Dec. 23, 1993, 43 44 138.6
Int. Cl.[6] F02B *29/04*
U.S. Cl. 123—563 **10 Claims**



1. A method for controlling an internal combustion engine having a supercharger and a drive device for controlling a fan for cooling supercharger air, comprising the steps of:
predetermining a desired value of a temperature of the supercharger air as a function of at least one operating parameter of the internal combustion engine;
determining a load value as a function of the at least one operating parameter of the internal combustion engine; and
dynamically controlling the drive device as a function of the load value and the desired value.

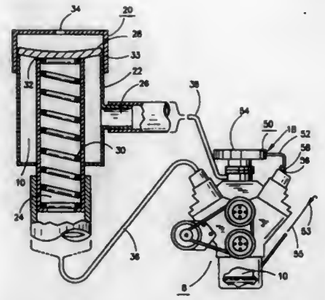
5,542,400
APPARATUS AND METHOD FOR DETERMINING A FAILURE OF AN EGR APPARATUS
Takuya Matsumoto; Toru Hashimoto; Mitsuhiro Miyake; Hitoshi Kamura, all of Kyoto, all of, Japan, and Yasuhisa Yoshida, Newport Beach, Calif., assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 13, 1995, Ser. No. 490,010
Claims priority, application Japan, Sep. 30, 1994, 6-237426
Int. Cl.[6] F02M *25/07*; **G01M** *15/00*
U.S. Cl. 123—571 **20 Claims**



1. An apparatus for determining a failure of an exhaust gas recirculation apparatus having an EGR passage extending between an exhaust system and an intake system of an internal combustion engine mounted on a vehicle, and an EGR valve, disposed in said EGR passage and arranged to be opened and closed, for controlling an amount of exhaust gas recirculating from said exhaust system to said intake system via said EGR passage, said apparatus for determining a failure being provided with failure determining means for executing failure diagnosis of at least one of said EGR valve and said EGR passage while opening/closing said EGR valve, comprising:
operation state detecting means for detecting an operation state of at least one of said vehicle and said internal combustion engine; and
failure diagnosis prohibiting means for determining whether a predetermined failure diagnosis prohibiting condition is fulfilled on the basis of the operation stated detected by said operation state detecting means, and for prohibiting the execution of said failure diagnosis executed by said failure determining means for a predetermined period of time from a time when said predetermined failure diagnosis prohibiting condition is fulfilled.

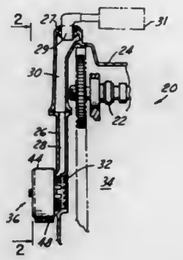
5,542,401
INTERNAL COMBUSTION ENGINE CRANKCASE VACUUM METHOD AND APPARATUS
Emil J. Newarski, Chandler, Ariz., assignor to En-Ovation Technology, Inc., Chandler, Ariz.
Filed Nov. 9, 1994, Ser. No. 336,463
Int. Cl.[6] F02M *25/06*
U.S. Cl. 123—572 **7 Claims**

1. A method for reducing crankcase and tailpipe emissions from an internal combustion engine having a crankcase and a combustion air intake comprising:
drawing combustion gases from the crankcase through a vacuum regulator and injecting the gases into the air intake to maintain



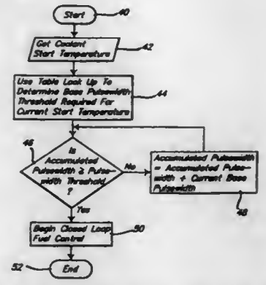
the crankcase at a predetermined partial vacuum, said predetermined partial vacuum having no more than 1.25 inches Hg of variation from a nominal value, said nominal value being between 1–7 inches Hg, irrespective of engine operating conditions; and
substantially sealing at least the major openings in the engine to limit the amount of crankcase gases that must be withdrawn through the vacuum regulator and injected into the air intake to maintain said partial vacuum.

5,542,402
POSITIVE CRANKCASE VENTILATION SYSTEM WITH A CENTRIFUGAL OIL SEPARATOR
George C. Lee, Novi, and Fred P. Kunz, Grosse Ile, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Apr. 5, 1995, Ser. No. 417,352
Int. Cl.[6] F02B *25/06*
U.S. Cl. 123—573 **12 Claims**



12. A positive crankcase ventilation system in an internal combustion engine having an air induction system and a crankcase containing engine blowby gas during engine operation, the system comprising:
an engine front cover mounted to the engine and including a mounting hole, exposed to the crankcase, a front cover arm surrounding the hole, and an air flow passage having one end exposed to the hole;
a rotatable member including a first fan portion having centrifugal fan blades with openings therebetween for receiving blowby gas from the crankcase, a second fan portion adjacent to and rotatable with the first fan portion and including booster fan blades with openings therebetween for receiving the gas from the first fan portion, mounting means for mounting the rotatable member to the arm of the engine front cover with the first fan portion exposed to the crankcase, and a plurality of air seal grooves located on the first fan portion between the first fan portion and the mounting hole of the engine front cover whereby rotation of the first portion will cause a flow of gas along the grooves into the crankcase;
means for rotationally mounting the rotational member in the hole of the front cover; and
a driving mechanism for causing the rotational member to rotate during engine operation.

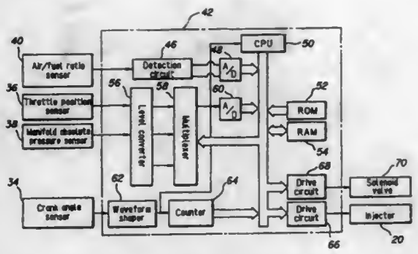
5,542,403
METHOD OF DETERMINING START OF CLOSED-LOOP FUEL CONTROL FOR AN INTERNAL COMBUSTION ENGINE
Mark S. Borland, Birmingham, and Bruce H. Teague, Grosse Pointe Park, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Nov. 18, 1994, Ser. No. 342,297
Int. Cl.[6] F02D *41/14*
U.S. Cl. 123—686 **10 Claims**



1. A method of determining start of closed-loop fuel control for an internal combustion engine having a plurality of fuel transferring components, at least one exhaust passageway, and at least one oxygen sensor disposed within the exhaust passageway, the method comprising the steps of:
determining a base fuel pulsewidth threshold;
ascertaining whether a current accumulated base fuel pulsewidth is greater than or equal to the base fuel pulsewidth threshold;
updating the current accumulated base fuel pulsewidth with a value of a previous accumulated base fuel pulsewidth plus a current base fuel pulsewidth if the current accumulated base fuel pulsewidth is not greater than or equal to the base fuel pulsewidth threshold; and
beginning a closed loop fuel control of the plurality of fuel transferring components if the current accumulated base fuel pulsewidth is greater than or equal to the base fuel pulsewidth threshold.

5,542,404
TROUBLE DETECTION SYSTEM FOR INTERNAL COMBUSTION ENGINE
Yusuke Hasegawa; Yoichi Nishimura; Isao Komoriya, and Shushuke Akazaki, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 3, 1995, Ser. No. 383,373
Claims priority, application Japan, Feb. 4, 1994, 6-033200
Int. Cl.[6] F02D *41/00*
U.S. Cl. 123—690 **6 Claims**

1. A system for detecting a malfunction occurring in an internal combustion engine, comprising:
air/fuel detecting means for detecting an exhaust air/fuel ratio at a confluence point of an exhaust system of said engine;
a fuel injector installed in said engine for injecting fuel into individual cylinders of said engine that is connected to fuel pressure system including a fuel pump; and



a control unit functioning to provide

(a) an air/fuel ratio determination computation for determining exhaust air/fuel ratios in said individual cylinders of said engine;

(b) a first feedback factor determination computation for establishing a confluence point air/fuel ratio feedback factor KLAF in response to a detected error between said exhaust confluence point air/fuel ratio and a predetermined air/fuel ratio;

(c) a second feedback factor determination computation for establishing cylinder-by-cylinder air/fuel ratio feedback factors #nKLAF for said individual cylinders at least in response to a variance between computed exhaust air/fuel ratios of said individual cylinders;

(d) a feedback control means for computing a fuel injection quantity to be supplied to said individual cylinders such that said detected error between said exhaust confluence point air/fuel ratio and said air/fuel ratio decreases;

(e) a discrimination computation for determining whether at least one of said cylinder-by-cylinder air/fuel ratio feedback factors #nKLAF is within a predetermined range;

(f) a malfunction determination computation which assumes that, when at least one of said cylinder-by-cylinder air/fuel ratio feedback factors #nKLAF is determined to be outside of said predetermined range, a malfunction has occurred in a part of said engine installed with said fuel injector which would affect said air/fuel ratio in one of said cylinders; and

(g) a countermeasure means for taking at least one of warning and countermeasure in response to said assumption of said malfunction determination computation.

5,542,405
MEMBRANE CARBURETOR
Reinhard Gerhardy, Korb, Germany, assignor to Andreas Stihl, Waiblingen, Germany
Filed Mar. 20, 1995, Ser. No. 406,413
Claims priority, application Germany, Apr. 2, 1994, 44 11 634.9
Int. Cl.[6] F02D *41/00*
U.S. Cl. 123—702 **14 Claims**

1. A membrane carburetor for an internal combustion engine in a portable handheld work apparatus including a motor-driven chain saw, cutoff machine and brushcutter, the membrane carburetor comprising:

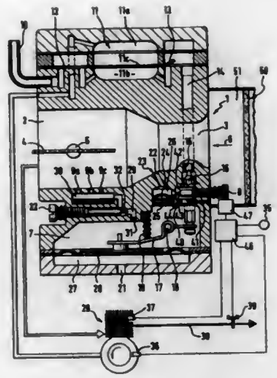
a carburetor housing defining an air-intake channel communicating with the engine and through which a stream of air flowing in an intake flow direction is drawn by suction when the engine is operating;

a throttle flap pivotally mounted in said air-intake channel;

said carburetor housing further defining an interior space;

a control membrane mounted in said interior space so as to define a control chamber therein bounded by the said membrane;

fuel supply means for supplying fuel to said control chamber;



a main nozzle opening into said air-intake channel upstream of said throttle flap when viewed in said intake flow direction for metering fuel into said channel;

fuel channel means for conducting a fuel-mass flow from said control chamber to said main nozzle opening;

fixed fuel throttle means for limiting said fuel-mass flow flowing to said main nozzle opening;

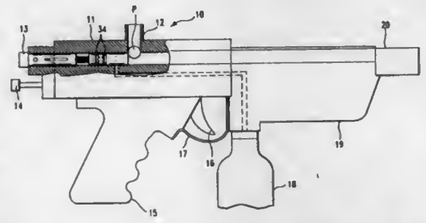
an air-supply channel for conducting air into said fuel channel means;

a control valve mounted in said housing for adjustably throttling the air supplied via said air-supply channel;

actuating means for actuating said control valve; and,

control means for controlling said actuating means to adjust said control valve in dependence upon at least one of a plurality of operating variables of said engine.

5,542,406
RETRACTABLE BOLT ASSEMBLY FOR COMPRESSED GAS POWERED GUN
Michael A. Oneto, 95 Rte. 9 N., Lot 20, Rhinebeck, N.Y. 12572
Filed Aug. 22, 1994, Ser. No. 294,071
Int. Cl.[6] F41B *11/06*
U.S. Cl. 124—73 **9 Claims**



2. In a compressed gas powered gun for firing fragile projectiles from the breech of the gun that includes a projectile supply magazine for feeding projectiles to the breech of the gun and a bolt assembly that rides within the main body of the gun for driving a projectile from the breech to the barrel for firing, the invention comprising an improved bolt assembly that prevents breakage of the projectile when the projectile gets hung up in the breach due to misalignment with the barrel, said bolt assembly including:

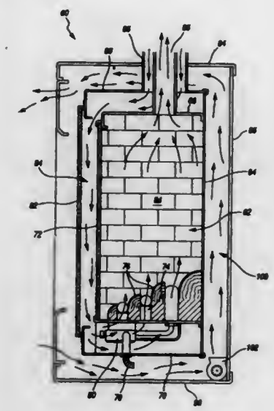
a front section having a forward end for contact with the projectile upon forward movement of the bolt assembly;

a back section adapted for securement to a cocking mechanism of the gun;

a rod extending from the front section and slidable within the back section; and,

a spring positioned between the front section and back section about the rod whereby the front section will retract when coming in contact with a projectile hung up in the breech of the gun.

5,542,407
FIREPLACE ASSEMBLY
Eric Hawkinson, Mt. Pleasant, Iowa, assignor to Hon Industries Inc., Muscatine, Iowa
Filed Jul. 1, 1994, Ser. No. 268,796
Int. Cl.[6] F24C *3/00*
U.S. Cl. 126—77 **3 Claims**



1. A fireplace assembly comprising:

a combustion chamber having a forwardly facing optically transparent wall;

a second optically transparent wall spaced from said combustion chamber wall defining an air passageway;

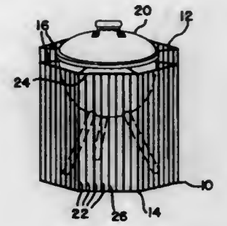
an intake air vent disposed above said combustion chamber in communication with said air passageway; and

an exhaust air vent disposed internal to said intake air vent and being in communication with said combustion chamber;

said air passageway being in communication with a bottom of said combustion chamber;

wherein intake air is drawn downwardly from said intake air vent through said passageway thereby exchanging heat from said optically transparent walls to said intake air and said intake air flows into the bottom of said combustion chamber combining with fuel in said combustion chamber to form combustion byproducts which are exhausted from said combustion chamber through said exhaust air vent.

5,542,408
GUARD FOR A COOKING DEVICE
David P. Kasik, 15921 Cottage Grove Ave., South Holland, Ill. 60473
Filed Mar. 20, 1995, Ser. No. 408,929
Int. Cl.[6] F24C *15/36*
U.S. Cl. 126—201 **9 Claims**



1. A transportable apparatus for preventing contact with heated areas of a movable cooking device situated on a surface, said apparatus not interfering with cooking, and, said apparatus comprising;

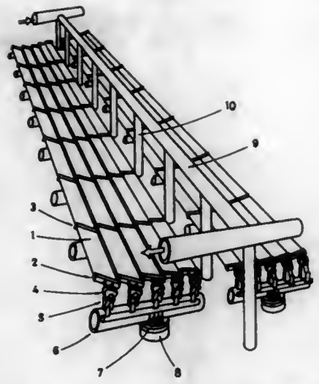
(a) a three-dimensional frame; said frame having an upper perimeter and a lower perimeter; said upper perimeter and said lower perimeter each being spaced from the cooking device by a predetermined distance; and said lower perimeter being substantially contiguous to said surface;

(b) a plurality of couplers; each coupler of said plurality of couplers engaging said cooking device and engaging said upper perimeter; and

(c) a plurality of connectors; each connector of said plurality of connectors having a first end and a second end, said first end being fixedly attached to said upper perimeter and said second end fixedly attached to said lower perimeter.

5,542,409
SOLAR CONCENTRATOR SYSTEM
Eduardo A. Sampayo, 11859 E. 209th St., Lakewood, Calif. 90715
Filed Jan. 6, 1995, Ser. No. 369,370
Int. Cl.[6] F24J *2/38*
U.S. Cl. 126—606 **5 Claims**

1. A solar concentrator system, comprising a plurality of long metal foils with a reflective surface, each of said metal foils being longitudinally tensioned from both free ends by a pair of end moving frames with tensioning means, said metal foil being supported by a plurality of uniformly spaced intermediate moving frames; each of said end moving frames with tensioning means having a support frame with a respective driving crank, secured to a common bushing, said bushing being mounted on a horizontal shaft, said shaft being secured to a respective support pedestal, a plurality of said pedestals being secured to a common support beam, forming an end support structure, transverse to the longitudinal direction of said metal foils, having a central base plate with anchor means for securing said support structure to a foundation pylon; and each of said intermediate moving frames with a respective driving crank being secured to a common bushing, said bushing being mounted on a horizontal shaft, said shaft being secured to a respective support pedestal, a plurality of said pedestals being secured to a common support beam, forming an intermediate support structure, transverse to the longitudinal direction

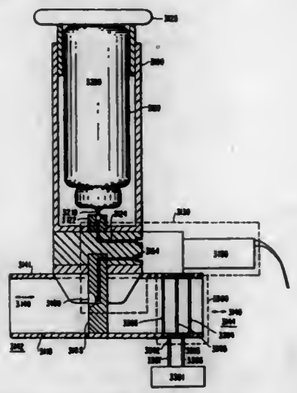


of said metal foils, having sliding means for sliding said support structure in the longitudinal direction of said metal foils; each of said end and intermediate support structures having driving means for driving said moving frames, thus forming a plurality of individual support and driving units.

5,542,410
DELIVERY OF AEROSOL MEDICATIONS FOR INSPIRATION

David E. Goodman, Brookline, and Reid M. Rubsamen, Boston, both of Mass., assignors to Aradigm Corporation, Hayward, Calif.

Continuation of Ser. No. 664,758, Mar. 5, 1991, Pat. No. 5,404,871. This application Dec. 9, 1994, Ser. No. 353,162
Int. Cl.[6] A61M *11/00*
U.S. Cl. 128—200.14 **5 Claims**

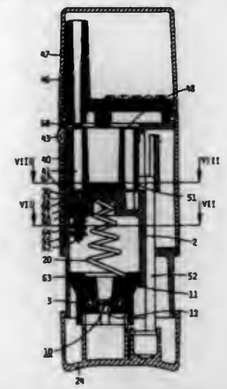


1. A battery powered, portable, hand-held device for delivering an aerosolized medication to a patient for inspiration, comprising:
- a tube forming a flow path from an open end to a mouth end;
- a reservoir of a selected medication having an identification code thereon;
- a means for determining the medication in the reservoir based on the identification code;
- a nozzle for releasing and aerosolizing medication from the reservoir to the open end of the tube;
- a flow transducer for measuring the patient's breath flow through the tube;
- a microprocessor for calculating a medication delivery point based on information from the flow transducer;
- an actuating mechanism which initiates release of medication through the nozzle and into the tube upon receipt of a signal sent after the microprocessor has determined that the patient's breath flow is at the delivery point; and
- a motion detector for determining when the reservoir has been agitated.

5,542,411
MANUALLY OPERATED DISPENSER FOR DISPENSING A PREDETERMINED AMOUNT OF POWDERED SUBSTANCE

Jørn Rex, Roskilde, Denmark, assignor to Novo Nordisk A/S, Bagsvaerd, Denmark

Continuation of Ser. No. 53,502, Apr. 27, 1993, abandoned, which is a continuation of Ser. No. 602,255, Nov. 6, 1990, abandoned. This application Jun. 28, 1994, Ser. No. 267,325
Claims priority, application Denmark, Nov. 1, 1989, 5445/89
Int. Cl.[6] A61M *15/00;16/10*
U.S. Cl. 128—203.15 **14 Claims**

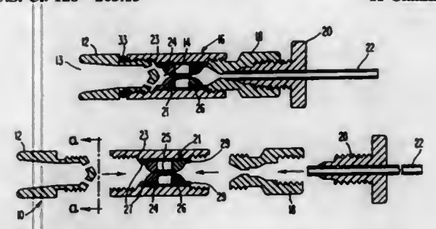


1. A manually operated dispenser for dispensing a predetermined amount of a powdered substance, said dispenser comprising:
- a) a pressure cylinder;
- b) a spring-loaded hollow piston axially displaceable in said cylinder;
- c) a one-way valve for intake of air into the cylinder;
- d) a passage having an inlet end and an outlet end;
- e) a dispensing pipe having an inlet end and an outlet end, the inlet end of the dispensing pipe being positioned opposite the outlet end of the passage;
- f) a magazine comprising a number of chambers extending through said magazine, each chamber containing a predetermined amount of powdered substance and having an inlet and an outlet covered by penetrable membranes;
- g) means for successively moving said magazine into a position in which one of said chambers is located with its inlet in proximity to the outlet end of said passage;
- h) a first penetrating means at the inlet end of the dispensing pipe for penetrating said membrane;
- i) a second penetrating means axially displaceable at the outlet end of the passage for penetrating said membrane;
- j) valve means connecting the interior of the cylinder to the inlet end of said passage; and
- k) means for displacing the second penetrating means axially towards the magazine and means for opening the valve means when the hollow piston is pressed to an inner position in the cylinder to provide a superatmospheric pressure in said cylinder.

5,542,412
POWDER DISPENSER

Theodore J. Century, 702 W. Carpenter La., Philadelphia, Pa. 19119

Division of Ser. No. 401,079, Mar. 8, 1995, Pat. No. 5,513,630. This application Nov. 1, 1995, Ser. No. 551,512
Int. Cl.[6] A61M *15/00*
U.S. Cl. 128—203.15 **11 Claims**

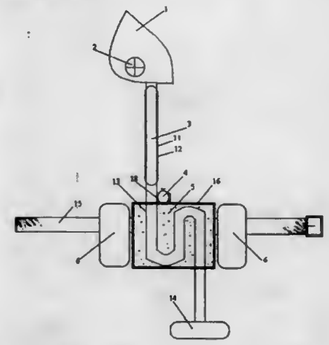


1. A flow regulating valve for permitting passage of matter in a first direction of said valve and for preventing passage of matter in a second direction of said valve opposite of said first direction, said flow regulating valve comprising:
- a generally elongated first body member defining first and second ends and having an outer surface and an inner surface, with said inner surface being substantially tapered proximate said first end in a direction inwardly toward the second end;
- a pair of substantially parallel lips extending from said second end of said first body member, said lips including outer and inner surfaces and a passage extending between said inner surfaces of said lips and through both said second end and tapered inner surface of said first body member; and
- a second generally elongated body member defining first and second ends and having an outer surface and an inner surface, with said inner surface of said second body member being substantially tapered proximate said first end in a direction inwardly towards the second end, wherein said lips are connected to said second end of said second body member, with said passage extending through both said second end and said tapered inner surface of said second body member.

5,542,413
PERSONAL COOLING APPARATUS

Stephen T. Horn, R.R. 2, Box 4800, White Stone, Va. 22578

Filed Mar. 10, 1995, Ser. No. 401,861
Int. Cl.[6] A62B *7/02*
U.S. Cl. 128—204.15 **7 Claims**

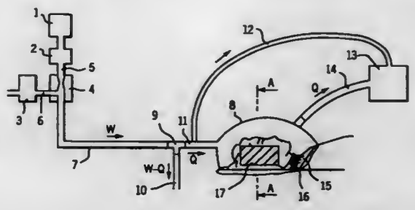


1. A breathing apparatus for delivering cooled breathing air to a patient comprising:
- a source of respirable gas;
- an insulated housing defining a volume, said housing having upper, lower and lateral surfaces, said lower surface having an inlet and said upper surface having an outlet, said inlet being in fluid communication with said source of respirable gas;
- a ribbed copper tube inside said housing connecting said inlet to said outlet, said ribbed copper tube being surrounded by a heat absorbent material substantially filling said volume;
- a valve connected to the outlet external to said housing, said valve being selectively in communication with said outlet and the ambient;
- a conduit having a first end connected downstream of said valve and having a second end connected to a breathing mask;
- a first and a second cold pack located at each of said lateral surfaces of said insulated housing externally thereof, said cold packs covering the kidney region of a wearer when the breathing apparatus is donned.

5,542,414
GAS SUPPLYING HEAD ENCLOSURE WITH EXPANDABLE PRESSURE INDICATOR

Pekka Meriläinen, Helsinki, Finland, assignor to Instrumentarium Corp., Finland

Filed Aug. 31, 1993, Ser. No. 114,673
Claims priority, application Finland, Sep. 3, 1992, 923953
Int. Cl.[6] A61M *16/00;* **A62B** *18/10;* **F16K** *31/02;* **A61G** *10/00*
U.S. Cl. 128—204.22 **12 Claims**



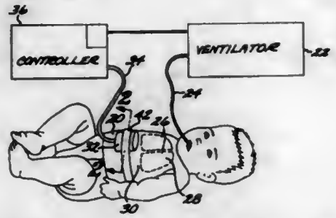
1. An apparatus providing gas from a gas source to a patient for respiration by the patient comprising:
- a supply conduit (7) connectable to the gas source;
- a gas collector unit (8) having an interior for receiving the head of the patient and in which the patient respires gas contained in the interior of the gas collector unit, said gas collector unit separating the interior of said unit from the ambient atmosphere for the apparatus, said gas collector unit having an inlet connected to said supply conduit;
- discharge conduit means (14) coupled to said gas collector unit for discharging gas expired by the patient; and
- pressure difference indicating means (17) for indicating a pressure difference between the pressure in the interior of said gas collector unit and the pressure of the ambient atmosphere, said pressure difference indicating means being coupled to said gas collector unit and having an element subjected to the pressure in the interior of said gas collector unit and to the ambient atmosphere pressure, said element undergoing a change in physical dimension responsive to a difference in the interior and ambient atmosphere pressures, said element being directly observable so that the dimensional condition of said element comprises the indication of the pressure difference,
- said pressure difference indicating means (17) comprising at least one flexible wall member formed to have a pair of opposing walls with a hermetically sealed space therebetween, one of said walls having an opening which is in fluid communication with a port in said gas collection unit.

5,542,415

APPARATUS AND PROCESS FOR CONTROLLING THE VENTILATION OF THE LUNGS OF A PATIENT

Michael P. Brody, LaMesa, Calif., assignor to Infrasonics, Inc., San Diego, Calif.

Filed May 7, 1991, Ser. No. 696,582
Int. Cl.[6] A61M *16/00;* A62B *7/00;* F16K *31/02*
U.S. Cl. 128—204.23 15 Claims



1. Apparatus for controlling the ventilation of a patient by a ventilator, comprising:

means for determining the movement of a patient's diaphragm, said means including a sensor adapted for contacting to the external portion of the abdomen of the patient that produces a signal responsive to the movement of the diaphragm of the patient;

means for determining the rate of change of the sensor signal with time; and

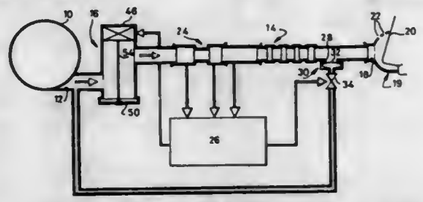
means for controlling a ventilator based upon the rate of change of the sensor signal with time.

5,542,416

APPARATUS FOR ASSISTING VENTILATION INCLUDING REDUCED EXHALATION PRESSURE MODE

Philippe Chalvignac, Noisy Sur Ecole, France, assignor to Societe d'Applications Industrielles Medicales Et Electroniques (SAIME), Savigny Le Temple, France

Filed Jan. 10, 1995, Ser. No. 370,636
Claims priority, application France, Jan. 12, 1994, 94 00246
Int. Cl.[6] A61M *16/00;16/20*
U.S. Cl. 128—204.23 16 Claims



1. An apparatus for assisting with the ventilation of a patient breathing in successive cycles, each of the cycles including an inhalation phase and an exhalation phase, said apparatus being of the type including an inhalation assistance mode, triggered by the patient during the beginning of the inhalation phase, which causes said apparatus to deliver to the patient a flowrate of gas under a pressure equal to a given reference value, said apparatus comprising:

a source of pressurized gas, said source including an outlet orifice which delivers a flowrate of pressurized gas;

a face mask for placing over the upper airways of a patient, whereby said face mask enables the patient to receive said flowrate of pressurized gas delivered from said outlet orifice of said source; and

a transmission circuit for coupling said source to said said face mask, said transmission circuit including:

a main inhalation conduit coupled between said outlet orifice of said source of pressurized gas and said face mask;

a discharge orifice;

a secondary exhalation conduit for communicating with said face mask, said secondary exhalation conduit being coupled between said main inhalation conduit and said discharge orifice;

a flow regulating valve interposed in said main inhalation conduit, said flow regulating valve including means for maintaining a residual flowrate of gas substantially equal to a pressure of 1 mbar in said main inhalation conduit during the exhalation phase of each of the breathing cycles of the patient;

an exhalation valve interposed in said secondary exhalation conduit; and

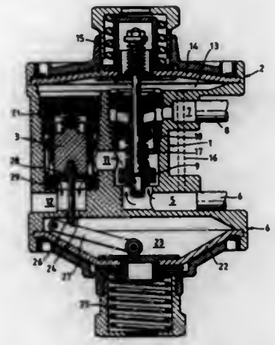
an operating circuit coupled to said flow regulating valve and said exhalation valve, said circuit operating said flow regulating valve based on the flowrate and pressure of said gas in said main inhalation conduit as measured downstream past said flow regulating valve in order to determine the beginning the inhalation phase of each of the breathing cycles of the patient, and said circuit causing said exhalation valve to open during the exhalation phase of each of the breathing cycles of the patient.

5,542,417

PRESSURE REGULATING UNIT FOR SUPPLYING A PRESSURIZED FLUID FROM ALTERNATIVE SUPPLY LINES

Nils T. Ottestad, Tonsberg, Norway, assignor to Ottestad Breathing Systems AS, Husoysund, Norway

PCT No. PCT/NO92/00136, § 371 Date Apr. 26, 1994, § 102(e) Date Apr. 26, 1994, PCT Pub. No. WO93/04737, PCT Pub. Date Mar. 18, 1993
PCT Filed Aug. 28, 1992, Ser. No. 199,160
Claims priority, application Norway, Aug. 29, 1991, 913393
Int. Cl.[6] A61M *16/20*
U.S. Cl. 128—205.24 5 Claims



1. A pressure regulating unit for supplying a pressurized fluid, such as breathing gas, to a user from one of a preferential supply line and an alternative supply line, said pressure regulating unit comprising:

switching means for controlling fluid supply from one of the preferential supply line and the alternative supply line to a common outlet, said switching means comprising valve means connecting one of the preferential supply line and the alternative supply to said common outlet in dependence on a pressure in the preferential supply line, and

a pressure regulator controlling fluid flow to said common outlet so as to maintain stable fluid pressure at said common outlet at a desired pressure level,

said switching means further comprising a first chamber connected to the preferential supply line by a channel, and a spring-actuated first sensing diaphragm sensing the pressure in the preferential supply line and being operatively connected to and driving said valve means, said valve means comprising first and second valves connecting the preferential supply line to an outlet chamber, said first and second valves keeping the alternative supply line shut off as long as the pressure in the preferential line is above said desired pressure level and thus always giving priority to fluid flow through the preferential supply line, said first and second valves also connecting the alternative supply line to said outlet chamber and keeping the preferential supply line shut off when the pressure therein drops below said desired pressure level,

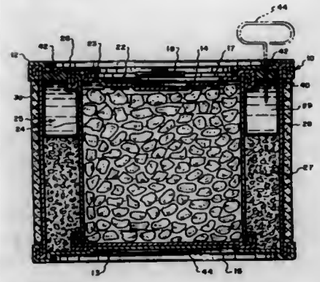
said pressure regulator comprising a second chamber connected to said common outlet by a passage, said pressure regulator further comprising a spring-actuated second sensing diaphragm sensing fluid pressure at said common outlet and being operatively connected to a regulator element controlling the fluid flow from said outlet chamber to said common outlet so that the fluid pressure at the common outlet is maintained at said desired pressure level.

5,542,418

ACID-BASE FUELS FOR SELF HEATING FOOD CONTAINERS

Dean B. James, Saratoga, Calif., assignor to Hotcan International, Ltd., Santa Barbara, Calif.

Filed Jan. 30, 1995, Ser. No. 380,238
Int. Cl.[6] F24J *1/00*
U.S. Cl. 126—263.06 10 Claims



1. A self-heating, food container comprising in combination:

a first closed container for receiving the food to be heated;

a second container surrounding the first container forming an annular chamber divided by a water impermeable film into an upper compartment and a lower compartment; and

a body of fuel consisting essentially of a mixture of particles of a solid anhydrous base that exothermically reacts with water and particles of a solid anhydrous acid that exothermically reacts with said base to produce a non-toxic, non-hazardous salt, received in the lower compartment; and

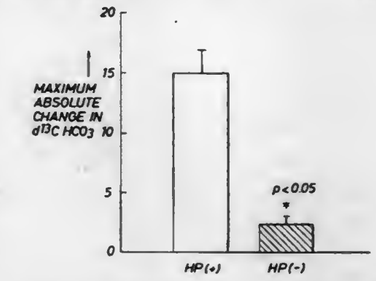
a body of water received in the upper compartment, whereby on rupture of said film, the base exothermically reacts with the water and the acid to produce said salt.

5,542,419

NONINVASIVE METHOD TO DETECT GASTRIC HELICOBACTER PYLORI

Rex Moulton-Barrett, Irvine, Calif., and Robert Michener, Boston, Mass., assignors to Boston University, Boston, Mass.

Filed Feb. 28, 1994, Ser. No. 202,969
Int. Cl.[6] A61B *5/08*
U.S. Cl. 128—630 6 Claims



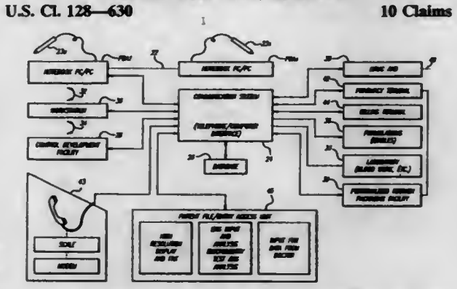
1. A method for diagnosing in a subject an infection of bacteria, wherein said bacteria are characterized by the ability to convert at least one organic carbon source to at least one absorbable dissolved inorganic carbon compound, said method comprising administering to said subject at least one labeled organic carbon source, collecting at least one sample of a body fluid from said subject, where said body fluid is selected from the group consisting of whole blood, serum, plasma, urine, sweat, saliva, lacrimal fluid. and mucuous fluid. liberating CO_2 gas from said at least one sample, and analyzing said CO_2 gas for at least one labeled species to diagnose an infection of bacteria.

5,542,420

PERSONALIZED METHOD AND SYSTEM FOR STORAGE, COMMUNICATION, ANALYSIS, AND PROCESSING OF HEALTH-RELATED DATA

Arnold J. Goldman, 55 Bar Kochbar St., Jerusalem 97890, and David L. Greenberg, 13 Even Shmuel St., Jerusalem 91230, both of, Israel

Filed Apr. 29, 1994, Ser. No. 237,012
Claims priority, application Israel, Apr. 30, 1993, 105563
Int. Cl.[6] G06F *15/00;* A61B *5/00*
U.S. Cl. 128—630 10 Claims



1. A health care system for specifying a personalized and comprehensive prescription of edibles to individual subjects, comprising:

an edible-needs storage means containing health and edible generic needs data relating to said individual subjects, and adapted to receive conditions and characteristics data for said individual subjects;

a plurality of input terminals coupled to said edible-needs storage means for providing said conditions and characteristics data for said individual subjects;

a health computer coupled to any one or more of said plurality of input terminals to receive said conditions and characteristics data for said individual subjects and to identify for each of said individual subjects data indicative of extreme conditions or serious characteristics, said health computer prioritizing said data indicative of extreme conditions or serious characteristics for correlation with said health and edible generic needs data stored in said edible-needs storage means for each of said individual subjects to provide a personalized and comprehensive prescription of edibles.

5,542,421

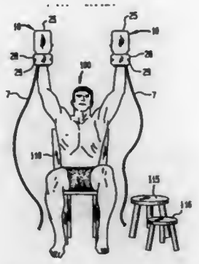
METHOD AND APPARATUS FOR CARDIOVASCULAR DIAGNOSIS

Frank H. Erdman, Newtown Square, Pa., assignor to Frederick Erdman Associaton, Havertown, Pa.

Continuation-in-part of Ser. No. 922,780, Jul. 31, 1992, Pat. No. 5,365,924. This application Aug. 30, 1994, Ser. No. 297,899

Int. Cl.[6] A61B *5/00*

U.S. Cl. 128—633 **40 Claims**



1. A method of determining cardiovascular conditions comprising the steps of:

removably attaching a sensor to a surface of each of a pair of extremities of a patient for measuring a physical parameter indicative of cardiovascular conditions;

measuring said parameter substantially simultaneously on both extremities while both extremities are in a raised, steady-state condition;

measuring said parameter substantially simultaneously on both extremities while both extremities are in a lowered, steady-state condition;

comparing the measurements obtained in the raised, steady-state condition with the measurements obtained in the lowered, steady-state condition to determine cardiovascular conditions; and

recording the result of said comparing step.

5,542,422

SYSTEM AND METHOD FOR DETECTING CATARACTOGENESIS USING QUASI-ELASTIC LIGHT SCATTERING

Douglas L. Hayden, Cambridge, Mass., assignor to Oculon Corporation, Cambridge, Mass.

Filed Oct. 25, 1994, Ser. No. 328,901

Int. Cl.[6] A61B *3/10*

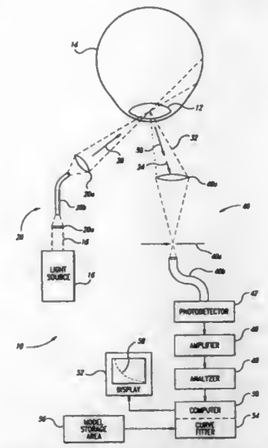
U.S. Cl. 128—633 **18 Claims**

1. A system for in vivo inspection of ocular tissue, the system comprising:

a light source producing a light;

an optical system to deliver said light to a selected portion of the ocular tissue;

a collection optical system to collect light scattered by said selected portion of the ocular tissue;



a light detector responsive to said collection optical system to generate signals corresponding to said collected scattered light;

an analyzer coupled to said light detector and constructed to analyze said signals, said analyzer generating a plurality of data points corresponding to the relative intensity of light scattered by scattering elements within said selected portion of the ocular tissue; and

a curve fitter to fit said plurality of data points to a predetermined model representative of a light scattering process within the ocular tissue, said predetermined model having the following functional form:

$$C_N(\tau)=F^2\{(1-A_s)^2e^{-\alpha\tau\sigma_f}+A_s^2(1+C_1^2\tau+C_2^2\tau^2)\}^2$$

where F is amplitude to baseline ratio, τ is a time delay variable; τ_f is inversely proportional to the diffusivity of fast scatterers, and A_s, C_1, and C_2 are coefficients that represent the cumulative effect of light scattered from slowly diffusing scatterers, immobile scatterers, and elements that give rise to nonexponential characteristics within the ocular tissue.

5,542,423

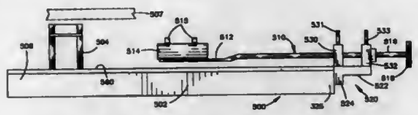
INDEXING ASSEMBLY FOR JOINT IMAGING

Peter M. Bonutti, Effingham, Ill., assignor to Apogee Medical Products, Inc., Effingham, Ill.

Continuation-in-part of Ser. No. 802,358, Dec. 4, 1991, Pat. No. 5,349,956, and a continuation-in-part of Ser. No. 950,600, Sep. 24, 1992, Pat. No. 5,343,580. This application May 3, 1994, Ser. No. 237,598

Int. Cl.[6] A61B *6/00*

U.S. Cl. 128—653.1 **44 Claims**



1. A method of imaging a joint region where a portion of a longitudinally extending limb of a patient is connected with a trunk of the patient, said method comprising the steps of moving at least the joint region of the patient where the limb of the patient is connected with the trunk of the patient into a chamber of an imaging unit, changing the orientation of at least a portion of the joint region of the patient where the limb of the patient is connected with the trunk of the patient while the joint region of the patient is in the imaging unit, said step of changing the orientation of at least a portion of the joint region of the patient includes rotating the limb of the patient connected with the joint region about a longitudinal axis of the limb which extends through the joint region, and imaging the joint region of the patient where the limb of the patient is connected with the trunk of the patient prior to and after performance of said step of rotating the limb about an axis of the limb.

5,542,424

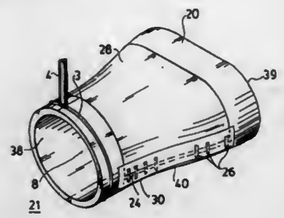
RESONATOR FOR MAGNETIC RESONANCE IMAGING

Joseph P. Hornak, West Henrietta, and Scott D. Szeglowski, Lake View, both of N.Y., assignors to Rochester Institute of Technology, Rochester, N.Y.

Continuation-in-part of Ser. No. 36,899, Mar. 25, 1993, abandoned. This application Aug. 9, 1994, Ser. No. 287,946

Int. Cl.[6] A61B *5/055*

U.S. Cl. 128—653.5 **13 Claims**



1. An MRI system fixedly tuned resonator for producing a uniform RF field in an axially asymmetric mass of tissue disposed within said resonator, said resonator comprising an elongated, hollow member having a central axis, said hollow member having a rigid inner insulated surface and an outer conductive surface, said inner insulated surface being unbroken about said axis, said outer conductive surface having a first and a second longitudinal gap extending the length of said hollow member and parallel to the central axis, said hollow member having first and second open ends disposed transverse to the central axis and an imaging region in the hollow member between the ends, each of said ends including a rigid periphery and each end having respective first and second predetermined shapes, wherein said second shape is different from said first shape, and said tissue is received through one of said ends.

5,542,425

APPARATUS AND METHOD FOR PREVENTING CONTACT DAMAGE IN ELECTRICAL EQUIPMENT

John D. Marshall, Redwood City, and Donald R. Mullen, Fremont, both of Calif., assignors to Acuson Corporation, Mountain View, Calif.

Filed Dec. 20, 1994, Ser. No. 362,666

Int. Cl.[6] A61B *8/00;* **H01R** *13/53*

U.S. Cl. 128—660.010 **44 Claims**

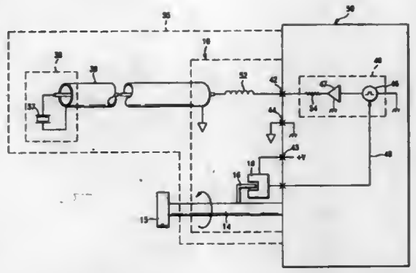
17. An ultrasound system for obtaining diagnostic information from the interior of a body, said ultrasound system comprising a transmitter pulser and:

a probe comprising an ultrasonic transducer for propagating ultrasonic beams into the body and receiving ultrasonic echoes reflected from the body;

an imaging system for displaying information received from the ultrasonic echoes;

a connector for providing an electrical interface between the probe and the imaging system, said connector comprising:

latching means for activating the interface at contacts between the connector and the imaging system, having an engaged mode and a disengaged mode;



sensor means coupled to the latching means, for sensing the mode of the latching means;

means, coupled to the sensor means, for shutting off the transmitter pulser when the latching means is placed in the disengaged mode.

5,542,426

METHOD OF FABRICATING ULTRASONIC PROBE

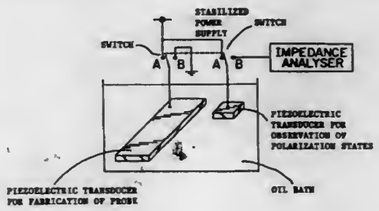
Kazuhiro Watanabe, and Yasushi Hara, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 6, 1994, Ser. No. 254,756

Claims priority, application Japan, Jun. 8, 1993, 5-137681

Int. Cl.[6] A61B *8/00;* **H04R** *17/00*

U.S. Cl. 128—662.03 **7 Claims**



1. A method of fabricating an ultrasonic probe having piezoelectric transducers, comprising the steps of:

preparing a first piezoelectric transducer for fabrication of said ultrasonic probe and a second piezoelectric transducer for observation of polarization states; and

conducting simultaneously a polarization processing for both said first and second piezoelectric transducers while observing polarization states of said second piezoelectric transducer.

5,542,427

DEVICE FOR STERILE PACKAGING OF MEDICAL EQUIPMENT

Dan Åkerfeldt, Uppsala, Sweden, assignor to Radi Medical Systems, Uppsala, Sweden

Continuation of Ser. No. 27,900, Mar. 8, 1993, abandoned, and a continuation of Ser. No. 712,413, Jun. 10, 1991, Pat. No. 5,307,811. This application Jul. 11, 1994, Ser. No. 272,742

Claims priority, application Sweden, Jun. 11, 1990, 9002077; Oct. 12, 1990, 9003271; Aug. 28, 1992, 9202484

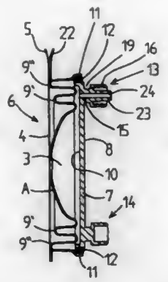
Int. Cl.[6] A61B *5/02*

U.S. Cl. 128—677 **23 Claims**

1. A replaceable air cushion unit for use in conjunction with a femoral compressor comprising:

a) a base plate;

b) an inflatable air cushion having a periphery attached to the base plate, and an inflation opening; and



c). a shielding element covering and sealing the air cushion from ambient surroundings,

wherein the shielding element is flexible and is attached to the periphery of the air cushion, and

wherein the shielding element comprises a primary layer and a secondary layer, the secondary layer being meltable whereby the shielding element is fused to the periphery of the air cushion.

5,542,428

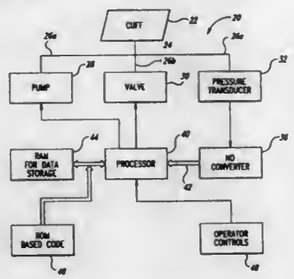
METHOD AND APPARATUS FOR REMOVING ARTIFACT ENCOUNTERED DURING AUTOMATIC BLOOD PRESSURE MEASUREMENTS

Cynthia P. Jayne, Redmond, Wash., assignor to SpaceLabs Medical, Inc., Redmond, Wash.

Filed Mar. 23, 1995, Ser. No. 409,512

Int. Cl.[6] A61B *5/00*

U.S. Cl. 128—681 **11 Claims**



1. A blood pressure monitor, comprising:

a blood pressure cuff;

an air pump in fluid communication with said blood pressure cuff to direct pressurized air into said cuff;

a valve in fluid communication with said blood pressure cuff to selectively vent said cuff to atmosphere;

a pressure transducer in fluid communication with said blood pressure cuff, said pressure transducer generating a signal indicative of a steady state fluid pressure in said blood pressure cuff corresponding to an occlusive pressure exerted by said blood pressure cuff on an artery and a transient fluid pressure in said blood pressure cuff indicative of the amplitude of an oscillometric pulse;

an analog-to-digital converter connected to said pressure transducer for sampling the output of said pressure transducer and generating respective digital samples corresponding to the output of said pressure transducer; and

a processor electrically connected to said air pump, said valve and said analog-to-digital converter, said processor receiving the respective digital samples corresponding to the signal indicative of the steady state fluid pressure in said blood pressure cuff and the amplitude of the oscillometric pulses, said processing device energizing said air pump to inflate said blood pressure cuff, selectively energizing said valve to reduce the steady state fluid pressure in said blood pressure cuff, recording in a table the steady state fluid pressure and the amplitude of a peak of the oscillometric pulses at such pressure, determining all local maxima of the oscillometric peaks in the table, determining the longest sequences of oscillometric peaks adjacent to each of the local maxima, selecting one of the local maxima as a true maximum value based on a comparison of the longest sequences of oscillometric peaks at cuff pressures adjacent to and above and below the cuff pressure at which each of the local maxima occurred; and computing at least one of the diastolic blood pressure, the systolic blood pressure, and the mean blood pressure based on the true maximum value.

5,542,429

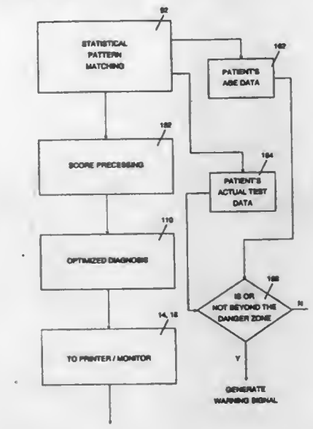
METHOD OF AND ARRANGEMENT FOR OPTIMIZING AND CHECKING HEART DIAGNOSIS

Genquan Feng, 34 Monroe St., Bldg. G, New York, N.Y. 10002

Continuation-in-part of Ser. No. 822,525, Jan. 17, 1992, abandoned, which is a continuation-in-part of Ser. No. 397,695, Oct. 30, 1989, abandoned, and a continuation-in-part of Ser. No. 794,502, Nov. 19, 1991, abandoned, and a continuation-in-part of Ser. No. 9, Jan. 4, 1993, Pat. No. 5,394,884. This application Aug. 3, 1994, Ser. No. 287,798

Int. Cl.[6] A61B *5/04*

U.S. Cl. 128—702 **4 Claims**



1. A method of optimizing the diagnosis of a condition of a patient tested, comprising the steps of:

(a) acquiring electrocardiogram (analog signals) from the patient;

(b) mathematically determining a plurality of functions descriptive of the patient from the signals;

(c) establishing a set of indices for each function, each index having two states, each indicative of the condition of the patient;

(d) recognizing the state of each index for each function;

(e) generating an integrated pattern of the states of the indices from a plurality of the functions;

(f) storing a collection of index patterns, each containing a multitude of patterns of the states of indices for a multitude of patients whose condition is known;

(g) matching the generated integrated pattern against the stored collection of index patterns to obtain a plurality of raw scores;

(h) inputting the critical diagnostic factors, which effect the diagnosis of heart diseases, into the device;

(i) establishing a set of weights for each of the critical diagnostic factors which effect the diagnosis of heart diseases, according to the importance of such factors;

(j) weighting the raw scores to obtain weighted scores;

(k) inputting doctors' opinion about the diagnosis of the patient; and

(l) presenting an optimized diagnosis based on the weighted scores and doctors' opinion.

5,542,430

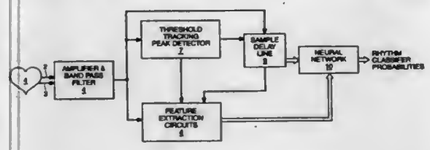
APPARATUS AND METHOD FOR DISCRIMINATING BETWEEN CARDIAC RHYTHMS ON THE BASIS OF THEIR MORPHOLOGY USING A NEURAL NETWORK

Steven Farrugia, Bexley; Hansen Yee, Wollstonecraft, and Peter Nickolls, Vaucluse, all of, Australia, assignors to Telectronics Pacing Systems, Inc., Englewood, Colo.

Filed Sep. 16, 1994, Ser. No. 306,993

Int. Cl.[6] A61B *5/046*

U.S. Cl. 128—705 **6 Claims**



1. A device for monitoring and classifying cardiac rhythms of a patient's heart, comprising:

means for coupling to at least one of an atrium and a ventricle of the heart, for sensing respective ones of an atrial and a ventricular thereof as waveforms which are characteristic of respective cardiac rhythms;

feature extraction means coupled to said coupling means and responsive to the sensed waveforms, for extracting from said waveforms features relating to the timing of events and the morphology of the waveforms;

neural network means coupled to said feature extraction means for classifying said morphological features, said neural network means further including

first means for discriminating between features relating to rhythms of normal origin and rhythms of pathological origin, and

second means for discriminating between features relating to different kinds of tachycardia of pathological origin

said first and second discriminating means generating output signals classifying cardiac rhythms into physiological and pathological categories;

wherein said neural network means includes means for setting a time interval;

wherein said feature extraction means includes a threshold tracking peak detector means to provide at least one fiducial point in each sensed waveform, said fiducial point being one of a maximum positive and minimum negative peak within said time of the threshold being exceeded by the waveform;

wherein said feature extraction means integrates the waveform about its fiducial point for a predetermined period of time before and after said point.

5,542,431

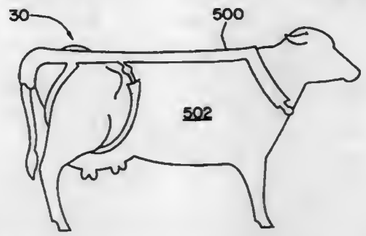
HEAT DETECTION FOR ANIMALS INCLUDING COWS

Timothy W. Starzl, Boulder; Marguerita Cattell, Loveland; Richard T. Mihran, and Loretta M. Zapp, both of Boulder, all of Colo., assignors to DDX Incorporated, Boulder, Colo.

Continuation-in-part of Ser. No. 85,123, Jun. 30, 1993, abandoned. This application Dec. 30, 1993, Ser. No. 176,133

Int. Cl.[6] A61B *10/00*

U.S. Cl. 128—738 **56 Claims**



1. An apparatus for use in making a determination related to the occurrence of estrus in a subject animal, comprising:

first means for sending heat mount data obtained as a result of a subject animal heat mount, said first means being provided with the subject animal and transmitting as a signal said heat mount data including duration data indicative of the amount of time of said heat mount of the subject animal;

second means communicating with said first means for receiving said heat mount data, said second means including a receiver to which said signal is inputted and controller means for obtaining said heat mount data from said signal, said second means also including a buffer memory for storing said heat mount data;

third means, communicating with said second means and including processing means and dedicated software, for making a determination related to the occurrence of estrus in the subject animal, wherein said third means receives said duration data including from said buffer memory and also receives time data indicating when said heat mount occurred, said processing means using said time data and said duration data indicative of the amount of time of said heat mount in determining whether a predetermined number of heat mounts occurred in a predetermined time interval, said processing means being different from said controller means and said processing means being usable for executing non-dedicated software, different from said dedicated software, when said non-dedicated software is provided with said processing means.

5,542,432

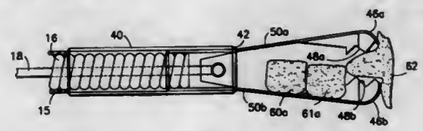
ENDOSCOPIC MULTIPLE SAMPLE BIOPTOME

Charles R. Slater, Fort Lauderdale; Matthew A. Palmer, Miami; Jurgen A. Kortenbach, Miami Springs; Michael S. McBrayer, and Saul Gottlieb, both of Miami, all of Fla., assignors to Symbiosis Corporation, Miami, Fla.

Continuation-in-part of Ser. No. 837,046, Feb. 18, 1992. This application Feb. 1, 1994, Ser. No. 189,937

Int. Cl.[6] A61B *10/00*

U.S. Cl. 128—751 **36 Claims**



1. An endoscopic bioptome, comprising:

a) a hollow outer member having a proximal and a distal end;

b) an inner control member having a proximal and a distal end and extending through said hollow outer member;

c) a cylinder coupled to said distal end of one of said hollow outer member and said inner control member;

d) a jaw assembly including a base member and pair of resilient arms extending distally from said base member, each of said resilient arms terminating in a jaw cup said base member being coupled to said distal end of the other of said hollow outer member and said inner control member; and

e) actuation means coupled to said proximal end of said hollow outer member and to said proximal end of said inner control member for axially displacing one of said hollow outer member and said inner control member relative to the other of said hollow outer member and said inner control member, thereby-said cylinder extends around said pair of resilient arms, closes said jaws, thereby effecting a cutting action.

5,542,433

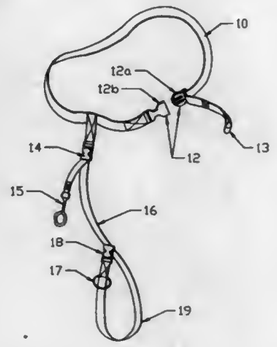
LEG TO WAIST PRISONER RESTRAINT

Brian Sanpe, P.O. Box 473341, Aurora, Colo. 80017

Filed Oct. 25, 1994, Ser. No. 328,854

Int. Cl.[6] A61F *5/37*; E05B *75/00*

U.S. Cl. 128—869 **1 Claim**



1. A portable soft restraint device for immobilizing a combative prisoner in the field by securing the prisoner's legs to the prisoner's waist, behind the prisoner's back, said restraint comprising an integrated set of at least two straps, said straps comprising:

(a) an ankle belt of flexible material having a sufficient length to surround both ankles of the prisoner, said ankle belt having a one-way buckle secured thereto to allow said ankle belt to be adjusted in one direction;

(b) a waist belt of flexible material having sufficient length to surround the waist of the prisoner, said waist belt having two ends which can be secured together with a quick, release adjustable buckle;

(c) a leg strap;

said ankle belt is attached to said waist belt by said leg strap and a one-way adjustable buckle which is attached to the side of said waist belt.

5,542,434

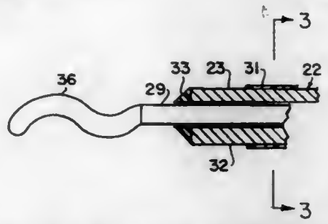
GUIDE WIRE WITH DEFLECTABLE TIP AND METHOD

Mir A. Imran, Palo Alto; Deepak R. Gandhi, San Jose; Henry Bourang, Turlock; Dignah B. Quiachon, Palo Alto, and Andrew Y. Chow, Sunnyvale, all of Calif., assignors to Intellwire Inc., Sunnyvale, Calif.

Filed Oct. 28, 1994, Ser. No. 331,216

Int. Cl.[6] A61B *5/00*

U.S. Cl. 128—772 **20 Claims**



1. A guide wire for use in a medical procedure in negotiating a tortuous vessel in a patient and for use with a power supply having a manual control comprising a flexible elongate tubular member having proximal and distal extremities and having a bore extending from the proximal extremity to the distal extremity, a core wire extending through the bore of the flexible elongate tubular member, a coil assembly mounted on the distal extremity of the flexible elongate member and having a distal extremity, a rounded tip carried by the distal extremity of the coil assembly, an actuator member having at least a portion thereof disposed in the coil assembly and having proximal and distal extremities, means securing the proximal extremity of the actuator member to the distal extremity of the flexible elongate tubular member, means securing the distal extremity of the actuator member to the rounded tip, said actuator member having at least a portion thereof formed of a shape memory material and incorporating a shape memory therein and capable of assuming austenitic and martensitic states, heating means disposed in the vicinity of said portion of the actuator member for heating said portion to cause it to assume the predetermined shape memory and electrical conductive means connected to said heating means and extending to the proximal extremity of the flexible elongate tubular member and being adapted to be connected to said power supply to supply energy to the heating means, said electrical means including at least one conductor exterior of the core wire and extending to the proximal extremity of the flexible elongate tubular member, said guide wire having a bendable distal extremity capable of assuming a first floppy condition when the shape memory material is in the austenitic state and a second stiffer condition and assuming the shape memory when the shape memory material is in the martensitic phase so that by operation of the manual control the distal extremity of the guide wire can be caused to repeatedly assume said first and second conditions to and in negotiating the distal extremity of the guide wire through the tortuous vessel.

5,542,435

DISPOSABLE SURGICAL SHIELD

Kenneth W. Kelly; Anthony W. Malone, both of, Portsmouth, and Jeffrey S. Humble, Lucasville, all of Ohio, assignors to Teays Quality Molding, Inc., Lucasville, Ohio

Filed Feb. 27, 1995, Ser. No. 395,148

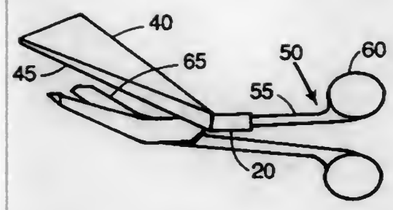
Int. Cl.[6] A61F *5/37*; A61B *17/32*

U.S. Cl. 128—846 **11 Claims**

1. A disposable shield adapted to be releasably attached to an arm of a surgical scissor provided with two blades and comprising:

means for releasably attaching the disposable shield only to an arm of said surgical scissor;

a shield portion extending over said two blades of said surgical scissor when said blades are performing a cutting operation; and



said shield portion being substantially triangular in shape and of a size to cover said blades from an extended to a closed position, whereby the user of said scissors is shielded from any fluids released from the subject matter being cut by said blades.

5,542,436

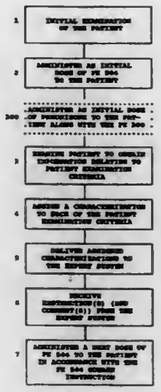
SYSTEM FOR USE IN TREATING A PATIENT WITH FK 506 TO PREVENT AND ADVERSE IMMUNE RESPONSE

John P. McMichael, 2465 Dogwood Dr., Wexford, Pa. 15090

Division of Ser. No. 934,208, Aug. 21, 1992, Pat. No. 5,365,948. This application Jun. 3, 1994, Ser. No. 253,661

Int. Cl.[6] A61B *17/00*

U.S. Cl. 128—897 **18 Claims**



1. An expert system for providing treatment information pertaining to a patient receiving FK 506 to prevent an adverse immune response by partially suppressing the patient's immune system without unduly suppressing the ability of the immune system to combat infection, the system comprising:

(a) an input means;

(b) an output means;

(c) a storage means having a knowledge base comprising rules including one of a plurality of treatment instructions in response to at least one of various combinations of a plurality of characterizations which can be assigned to a plurality of patient examination criteria; and

an expert computer program including a first routine for prompting, through the output means, a user to enter, through the input means, the characterizations assigned to the patient examination criteria; a second routine for selecting the treatment instruction by locating a rule which covers the characterizations assigned to the patient examination criteria; and a third routine for communicating to the output means the treatment instruction; and

(d) a processor.

5,542,437

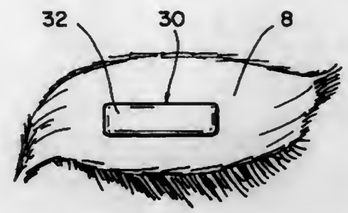
EYELID WEIGHTING SYSTEM

John M. Blackmore, 620 East View Way, Redwood City, Calif. 94062, and Richard P. Jobe, 26985 Orchard Hill Ln., Los Altos Hills, Calif. 54022

Filed Jul. 6, 1994, Ser. No. 271,092

Int. Cl.[6] A61B *19/00*

U.S. Cl. 128—899 **5 Claims**



1. A method of improving the closure of an eyelid comprising the steps of:

selecting a weight body having an outer surface and a concave inner surface having a radius of curvature substantially conforming to the curvature of the eyeball, and

attaching said weight body to the exterior of said eyelid with an adhesive substance and leaving said weight body attached thereto for treatment of a medical condition with said weight body facilitating closure of said eyelid during said treatment of said medical condition.

5,542,438

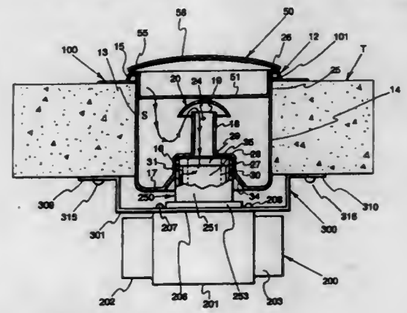
SMOKELESS ASHTRAY SYSTEM

Terry Adams, Coconut Creek; Neil J. Ambrosio, Sunrise; William E. Bratton, Boca Raton, all of Fla.; William M. Forsythe, Fountain Valley, Calif.; Bruce E. Hatton, San Diego, Calif.; Larry L. Kinder, Sunnyvale, Calif., and William A. Swat, Delray Beach, Fla., assignors to Progressive Games, Inc., Fort Lauderdale, Fla.

Continuation-in-part of Ser. No. 208,467, Mar. 9, 1994, which is a continuation-in-part of Ser. No. 37,895, Mar. 26, 1993, Pat. No. 5,361,784. This application Apr. 21, 1994, Ser. No. 230,645

Int. Cl.[6] B01D *50/00*

U.S. Cl. 131—238 **20 Claims**



1. A smokeless asbtray system, comprising:

at least one ashtray;

an upstanding chimney in said ashtray;

a recess in a bottom surface of said ashtray in fluid communication with said chimney;

a flue member removeably inserted in said recess and in fluid communication with said chimney; and

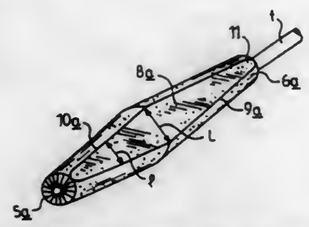
a vacuum manifold connecting said flue member to a filter and vacuum source for suctioning smoke out of said ashtray through said flue member.

5,542,439

BRUSH FOR APPLYING A COSMETIC PRODUCT

Jean-Louis Gueret, Paris, France, assignor to L'Oreal, Paris, France

Filed Dec. 30, 1994, Ser. No. 366,721
Claims priority, application France, Jan. 14, 1994, 94 00360
Int. Cl.[6] A45D *40/26;* A46B *11/00;* B43K *5/04*
U.S. Cl. 132—218 17 Claims



1. A brush for applying cosmetic product, the brush comprising:
an elongate core formed by winding two branches of a metal wire into a helix; and
bristles embedded radially in said elongate core and clamped between the twisted branches of the helix, the brush comprising at least one face bounded by ridges;
wherein:
a diameter of a section of the brush passes to at least one extremum between two ends of the brush; and
the ridges of the face are not straight, a width of the face varying from one end of the brush to the other and passing through at least one extremum between said ends.

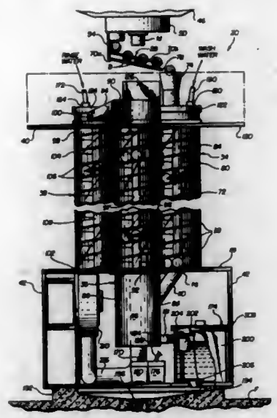
5,542,440

APPARATUS AND METHOD FOR WASHING BALLS

Ralph Weimer, Wheaton, and Duane R. Acker, Mundelein, both of Ill., assignors to Discovery Zone, Inc, Chicago, Ill.

Division of Ser. No. 184,513, Jan. 21, 1994, which is a continuation-in-part of Ser. No. 827,773, Jan. 29, 1992, Pat. No. 5,353,822. This application Jun. 7, 1995, Ser. No. 472,086
Int. Cl.[6] B08B *3/02*
U.S. Cl. 134—65 5 Claims

1. An apparatus for washing balls in a fluid, comprising:
(a) a first substantially vertical elongated cylindrical housing having a first ball inlet near its upper end, a first ball outlet near its lower end, and a first screw conveyor disposed within said housing to allow the balls to travel from said first ball inlet to said first ball outlet;
(b) a second substantially vertical elongated cylindrical housing having a second ball inlet near its lower end, a second ball outlet near its upper end, and a second screw conveyor disposed within said housing to convey the balls from said second ball inlet to said second ball outlet;
(c) means for transferring balls and fluid from said first ball outlet to said second ball inlet;
(d) a third substantially vertical elongated cylindrical housing suitable for receiving the fluid and having a third ball inlet near its upper end, and a third ball outlet near its lower end and a third screw conveyor coaxially disposed within said third housing to allow balls to travel from said third ball inlet to said third ball outlet;
(e) means for transferring balls from said second ball outlet to said third ball inlet;



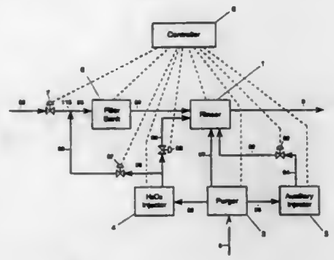
(f) a pan suitable for collecting fluid and having a drain adapted for connection to an external drain pipe;
(g) a fluid supply having a nozzle connected to at least one of said first and second elongated housings, drain means for receiving fluid accumulating in said second housing, and a fluid tank coupled to said nozzles and said drain; and
(h) wherein said first, second and third cylindrical housings are positioned over said pan so that fluid escaping from said cylindrical housings is collected in said pan.

5,542,441

APPARATUS FOR DELIVERING ULTRA-LOW PARTICLE COUNTS IN SEMICONDUCTOR MANUFACTURING

Raj Mohindra, Los Altos Hills; Abhay K. Bhushan, Palo Alto; Rajiv Bhushan, Palo Alto, and Suraj Puri, Los Altos, all of Calif., assignors to YieldUP International, Mountain View, Calif.

Filed Aug. 3, 1994, Ser. No. 285,316
Int. Cl.[6] B08B *3/04*
U.S. Cl. 134—95.2 30 Claims



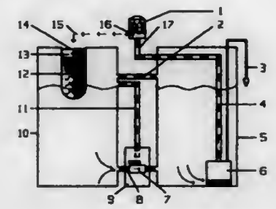
1. An ultra-pure wafer rinsing system, comprising:
a filter bank having a fluid input and a fluid output, said filter bank comprising a negatively charged filter operably coupled in series with a positively charged filter, said negatively charged filter and said positively charged filter being contained in a housing; and
a rinser comprising an inner housing and an outer housing, said inner housing being connected to said fluid output and said outer housing being connected to a drain, said fluid output being located within 2 feet of said rinser.

5,542,442

USED OIL FILTER CLEANING SYSTEM

Gary W. Gorman, Sr., 4800 Nebo Dr., La Mesa, Calif., assignor to Gary W. Gorman, Sr., San Diego, Calif.

Filed Aug. 12, 1993, Ser. No. 58,135
Int. Cl.[6] B08B *3/00;7/00;9/00*
U.S. Cl. 134—104.4 7 Claims



1. An apparatus for cleaning oil filters containing waste oil comprising;
a water supply tank having a top end and a bottom end, said water supply tank having an amount of water therein that has a top water surface;
an oil filter attachment pipe having a top end and a bottom end, means on said top end for detachably securing the bottom end of an oil filter;
means for supplying pressurized water from said water supply tank to the bottom end of said oil filter attachment pipe;
a water and used oil receiving tank having a top end and a bottom end; said water and used oil receiving tank having an amount of water therein that has a top oil surface;
means for receiving and filtering the used oil and water that has been flushed out of a used oil filter and depositing it in said water and used oil receiving tank whereby the used oil floats on the top surface of the water therein;
a water level equalization pipe having front end and a rear end, said front end being connected to the water in said water supply tank and said rear end being connected to the water in said water and oil receiving tank; and
means for skimming the used oil off the top surface of the water in said water and used oil receiving tank.

5,542,443

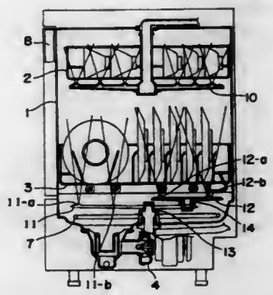
DISHWASHER

Masaki Yura, Ibaraki; Yukio Hirai, Takarazuka, and Hiroi Oya, Sanda, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Division of Ser. No. 105,692, Aug. 13, 1993, Pat. No. 5,477,847. This application Jun. 6, 1995, Ser. No. 471,177
Claims priority, application Japan, Feb. 9, 1993, 5-21009
Int. Cl.[6] B08B *3/02*
U.S. Cl. 134—176 3 Claims

1. A dishwasher which comprises a cleaning tank; a pump for pressurizing and circulating cleaning water through the cleaning tank; and a plurality of cleaning nozzles communicating with each other, said cleaning nozzles including a first arm nozzle communicating with a discharge opening of the pump and supported so as to rotate substantially horizontally about a rotational axis, and a second arm nozzle having an axis of rotation eccentric to the rotational axis of the first arm nozzle and supported so as to rotate on one end of the first arm nozzle, the other end of said first arm nozzle having a plurality of first jet openings, said second arm nozzle having a plurality of second jet openings, water issuing through said first and second jet openings under pressure from said pump causing first and second reaction forces to be exerted at said one and said other ends of the first arm nozzle, respectively and said cleaning nozzles satisfying the following relation

$$L_1 \cdot F1 = L_2 \cdot F2$$



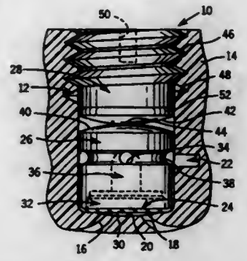
wherein F1 is the vertical component of said first reaction force, L_1 is the horizontal distance between said rotational axis of the first arm nozzle and a location where the vertical component of said first reaction force acts on said one end of the first arm nozzle, F2 is the vertical component of said second reaction force, and L_2 is the horizontal distance between said rotational axis of the second arm nozzle and a location where the vertical component of said second reaction force acts on said other end of the first arm nozzle, whereby moments exerted by said reaction forces on said first arm nozzle about the rotational axis thereof are balanced.

5,542,444

VALVE AND METHOD OF USING

Alan J. Alcock, Mundelein, Ill., assignor to Abbott Laboratories, Abbott Park, Ill.

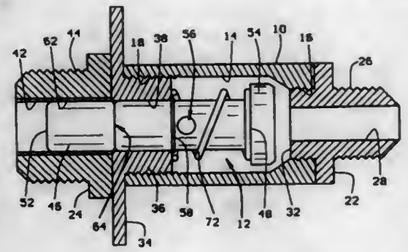
Continuation-in-part of Ser. No. 334,902, Nov. 7, 1994. This application Mar. 9, 1995, Ser. No. 401,582
Int. Cl.[6] F16K *31/126*
U.S. Cl. 137—1 2 Claims



2. A valve disposable within an aperture in a body having a conduit for conveying operative pressure to the valve, the valve determining fluid flow between a first fluid conveying conduit and a second fluid conveying conduit in the body, the valve comprising:
(a) a diaphragm operatively and removably positioned in the body with respect to the first fluid conveying conduit and the second fluid conveying conduit and movable responsive to the operative pressure between a first position where no fluid communicates between the first fluid conveying conduit and the second fluid conveying conduit in the body and a second position where fluid communicates between the first fluid conveying conduit and the second fluid conveying conduit in the body;
(b) a second element operatively and removably engagable with the diaphragm for maintaining operative position of the diaphragm with respect to the first fluid conveying conduit and the second fluid conveying conduit in the body, the second element including a bore for conveying operative pressure from the conduit in the body to the diaphragm;

(c) a third element operatively and removably engagable with the second element for maintaining engagement between the diaphragm and the second element; and
(d) a seal disposed on the third element.

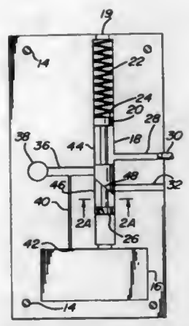
5,542,445
TEMPERATURE AND IMPACT SENSITIVE SAFETY VALVE
George R. Adams, 1227 Hndson Hills Dr., Ferguson, Mo. 63135
Filed Apr. 20, 1995, Ser. No. 425,994
Int. Cl.[6] F16K *31/64*
U.S. Cl. 137—68.12 **20 Claims**



1. A safety valve which automatically stops fluid flow through the valve, the valve comprising:
a valve housing having a hollow interior and having opposite first and second ends, the first end having a first bore extending therethrough communicating with the housing interior and the second end having a second bore extending therethrough communicating with the housing interior;
a frangible tube extending between one of the first and second bores of the respective first and second ends and the housing interior, the tube having a valve stop at one end contained in the housing interior and the frangible tube being held in the one of the first and second bores by a heat-sensitive material that releases its hold on the frangible tube in response to the valve being subjected to a minimum temperature; and
means for biasing the valve stop toward one of the first and second bores to close the one of the first and second bores and stop a flow of fluid therethrough in response to the frangible tube being broken.

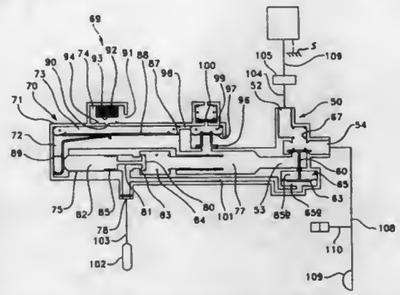
5,542,446
SCUBA BUOYANCY CONTROL VALVE
Richard H. Rose, 2925 Spear Ave., Ardsley, Pa. 19038
Filed Aug. 8, 1995, Ser. No. 512,545
Int. Cl.[6] F16K *17/36*
U.S. Cl. 137—81.2 **8 Claims**

1. A buoyancy control valve assembly for automatically controlling air flow from a scuba diver's pressurized air tank to a buoyancy compensator to maintain neutral buoyancy at any depth, said valve assembly comprising;
a valve body, an air chamber within said valve body, a bore in said valve body, said bore communicating at one end with said air chamber and at the opposite end with an opening in said valve body, a piston slidably disposed in said bore, the position of said piston being determined by the air pressure from the chamber acting on one end of the piston and water pressure acting on the opposite end of the pistons, an air inlet port communicating with said bore and connectable with a source of pressurized air, a vent port communicating with said bore at a point spaced from air port and communicating with an opening in said valve body, a compensator port communicating with said bore at one end and connectable to a buoyancy compensator at its other end, said piston in a neutral



position blocking said compensator port from communication with either said air inlet port or said vent port, said piston including passage means permitting communication of said compensator port with said air inlet port when the water pressure on said piston moves the piston against the air pressure force from the neutral position toward the air chamber, passage means in said piston permitting communication of said compensator port with said vent port when the air pressure force moves the piston from the neutral position away from the air chamber, and bleed means for gradually changing the pressure in said air chamber when said piston has been moved from its neutral position in order to permit return of the piston to its neutral position.

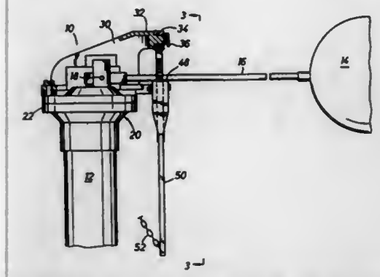
5,542,447
AIRCREW BREATHING SYSTEMS
James C. Foote, Halstock, and Derrick J. Pupiett, Sherborne, both of, United Kingdom, assignors to Normalair-Garrett Limited, Somerset, England
Filed Jan. 13, 1995, Ser. No. 372,123
Claims priority, application United Kingdom, Jan. 18, 1994, 9400906; Mar. 20, 1994, 9403956
Int. Cl.[6] F16K *11/044*
U.S. Cl. 137—113 **8 Claims**



1. A breathing gas supply assembly including a two way check valve comprising a body, a first inlet for receiving a flow of normal breathing gas, a second inlet for receiving a flow of emergency oxygen, an outlet for delivering a gas flow from the body, first passage means communicating the first inlet with the outlet, second passage means communicating the second inlet with the outlet, a valve member mounted internally of the body so as to be moveable between a first position in which it closes communication between the second inlet and the outlet and a second position in which it closes communication between the first inlet and the outlet, and resilient means biasing the valve member towards the first position, a first hose having one end connected with the first inlet and an

opposite end adapted for connection to a main breathing regulator, a second hose having one end connected with the second inlet and an opposite end adapted for connection to an emergency breathing regulator, and a third hose having one end connected to the outlet and an opposite end adapted for connection to a breathing mask.

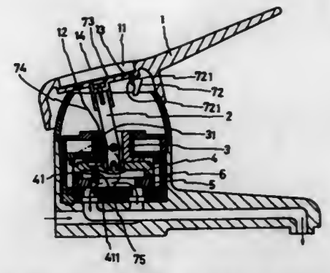
5,542,448
LATCH ATTACHMENT PREVENTING CHRONIC LEAKAGE
Raymond J. Campbell, 22207 Wetherburn, Kata, Tex. 77449; Al Nall, Jr., 13403 Brodbridge Ln., Houston, Tex. 77082, and R. Terry Oates, P.O. Box 87, Trinity, Tex. 35862
Filed Jul. 29, 1994, Ser. No. 282,876
Int. Cl.[6] F16K *31/24;31/26;33/00*
U.S. Cl. 137—410 **18 Claims**



1. An apparatus for controlling a valve connected to a water fill pipe of a water closet device, comprising:
(a) a mounting collar provided with a mounting surface enabling said collar to be attached to said valve, a bracket extending from said mounting collar,
(b) a hanging member hanging from the bracket and being supported by said collar, wherein the hanging member is free to pivot and thereby rotate;
(c) a pivot connection connecting the hanging member to said bracket;
(d) a shoulder being disposed on said hanging member;
(e) a control arm extending from the valve for controlling said valve between a valve closed position and a valve open position by a float member in said water closet device, wherein said control arm is selectively supported on said shoulder; and
(f) a release member cooperative with and extending from the hanging member and being responsive to an external control to release said control arm so that said hanging member freely rotates about said bracket so that the float in the water closet is able to rise and fall in response to water level changes in said water closet wherein the release member selectively supports the control arm on said shoulder in the valve closed position to prevent water discharge.

5,542,449
SINGLE-OUTLET HOT/COLD WATER FAUCET WITH A WATER TEMPERATURE DISPLAY DEVICE
Chien-Ta Huang, No. 36, Cherz Road, Hsin Tien City, Taipei Hsien, Taiwan
Filed Jul. 13, 1994, Ser. No. 274,647
Int. Cl.[6] F16K *37/00;* **H01H** *35/00*
U.S. Cl. 137—551 **2 Claims**

1. A single-outlet hot/cold water faucet comprised of a mixing chamber, a water outlet, a handle, a revolving shaft turned by said handle to regulate the temperature of water in said mixing chamber, a connecting plate, a control lever connected between said connecting plate and said handle, a valve with a rubber seal ring



fastened to said connecting plate and lifted or lowered by said handle to open or close said water outlet, and a temperature detection and display device to detect and show the temperature of water in said mixing chamber, wherein said handle comprises a top chamber covered with a transparent cap, a switch hole and a wire hole respectively communicated with said top chamber at the bottom; said connecting plate comprises a bottom extension rod extended into said mixing chamber and a through hole through said bottom extension rod; said revolving shaft comprises a through hole communicated between the through hole of said connecting plate and said wire hole of said handle; said temperature detection and display device comprises a battery and a switch mounted within said switch hole, said switch being switched on when said handle is lifted to open said water outlet or switched off when said handle is pressed to close said water outlet, a liquid crystal display mounted within said top chamber and connected to said battery through said switch and having a temperature detecting wire with a probe at the end inserted through said wire hole and the through holes on said revolving shaft and said connecting plate to detect the temperature of water in said mixing chamber.

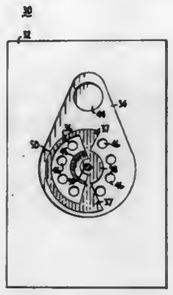
5,542,450
APPARATUS FOR METERING FLUIDS
Stanley C. King, Cumming; Richard C. Knop, Marietta; John E. Green, Whitesburg, Ga.; Thomas R. Gyde, Dawsonville, and L. W. Silzle, Marietta, all of Ga., assignors to The Lubrizol Corporation, Wickliffe, Ohio
Filed Jun. 10, 1994, Ser. No. 257,992
Int. Cl.[6] F16K *49/00*
U.S. Cl. 137—614.2 **18 Claims**



1. An apparatus for metering fluids which comprises: a solid block having within the block a first fluid inlet; a filter assembly; a first fluid outlet; a first channel connecting the first fluid inlet to the filter assembly, and further connecting the filter assembly to the first fluid outlet; a second fluid inlet; a check valve assembly; a second fluid outlet; a second channel connecting the second fluid inlet to the check valve assembly, and further connecting the check

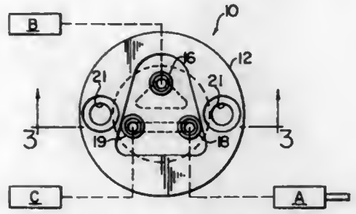
valve assembly to the second fluid outlet; and a fluid meter connected between the first fluid outlet and the second fluid inlet.

5,542,451
WATER DISTRIBUTION DEVICE
Joseph E. Foster, 64 N. 12th St., Harrisburg, Pa. 17103
Continuation-in-part of Ser. No. 950,400, Sep. 23, 1992, Pat. No. 5,366,618. This application Nov. 10, 1994, Ser. No. 338,641
Int. Cl.[6] F16K *11/02*
U.S. Cl. 137—625.11 **11 Claims**



1. A fluid distribution valve, comprising:
a distributor body having an open chamber within said distributor body, said chamber having a volume;
an input pipe stem providing a passageway through said distributor body to said open chamber;
an output pipe stem providing a passageway through said distributor body to said open chamber;
a plurality of secondary nozzles arranged in at least one circle, said secondary nozzles providing a plurality of passageways through said distributor body to said open chamber;
a rotor disposed in said chamber, said rotor having a peripheral boundary extending around a portion of 360°, the rotor being hollow within said boundary thereby defining a secondary chamber, said rotor having a contact section for movably sealing a wall of the chamber at the secondary nozzles, the secondary chamber connecting with at least two of said plurality of secondary nozzles, said secondary chamber having a volume of at least one-fourth of the volume of said open chamber;
pump means comprising at least one pump for forcing fluid into said input pipe stem, said fluid forced into the input pipe stem exiting the distributor body through at least two of the secondary nozzles connected with one of the open chamber or secondary chamber, and for drawing water out of the distributor body through said output pipe stem, said water drawn out of the distributor body first entering the distributor body through secondary nozzles connected with the other of said open chamber or secondary chamber;
a motor operable to move said rotor, wherein various ones of said plurality of secondary nozzles are brought into connection with said secondary chamber as others of said secondary nozzles become isolated from said secondary chamber, said secondary nozzles cyclically connecting with and becoming isolated from said secondary chamber as a function of rotor motion.

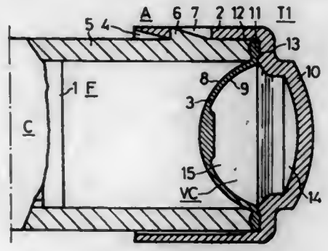
5,542,452
VALVE ASSEMBLY
Edward L. Carver, Jr., Oxford, and Steven Skiptunas, Naugatuck, both of Conn., assignors to CDC Technologies, Inc., Oxford, Conn.
Filed Feb. 7, 1995, Ser. No. 385,145
Int. Cl.[6] F16K *11/00*
U.S. Cl. 137—625.48 **15 Claims**



1. A valve assembly exhibiting substantially zero dead volume, comprising:
a port head defining a valve seat, a first port on a first side of the valve seat for introducing fluid through the valve assembly, a second port on a second side of the valve seat, which is the substantially opposite side of the valve seat relative to the first side, and a third port on the second side of the valve seat and in fluid communication with the second port;
a valve member moveable between an open position spaced away from the valve seat permitting the passage of fluid across the valve seat between the first port and the second and third ports, and a closed position in engagement with the valve seat preventing the passage of fluid across the valve seat between the first port and the second and third ports, and permitting the passage of fluid between the second and third ports; and
means for moving fluid between the first port and second port with the valve member in the open position, and for moving fluid between the second port and third port with the valve member in the closed position.

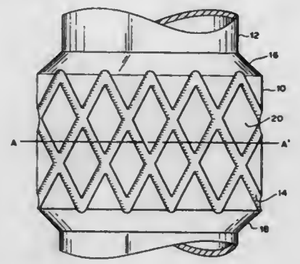
5,542,453
PRESSURIZED HYDRAULIC PISTON-CYLINDER DEVICE WITH INTERNAL VOLUME VARIATION COMPENSATION
Carlos Gabas, Barcelona, Spain, assignor to Fico Cables, S.A., Barcelona, Spain
PCT No. PCT/ES93/00075, § 371 Date Jun. 23, 1994, § 102(e) Date Jun. 23, 1994, PCT Pub. No. WO94/08152, PCT Pub. Date Apr. 14, 1994
PCT Filed Sep. 15, 1993, Ser. No. 244,009
Claims priority, application Spain, Oct. 2, 1992, 9201948
Int. Cl.[6] F16D *13/75*
U.S. Cl. 138—30 **8 Claims**

1. A pressurized hydraulic piston-cylinder device, with internal



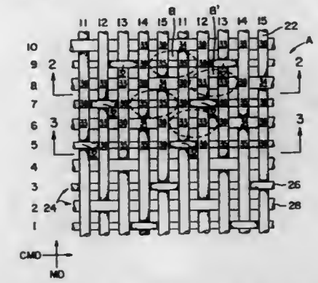
volume variation compensation, said piston-cylinder device comprising a hydraulic pressure cylinder having a functional end; a piston movable in said hydraulic pressure cylinder; a cap closing said functional end of said hydraulic pressure cylinder and a liquid contained in said hydraulic pressure cylinder between said cap and said movable piston, wherein said cap includes a substantially cylindrical hollow body member having an open end dimensioned so that said hollow body member snugly fits over said functional end of said pressurized hydraulic cylinder and an end wall at another end of said hollow body member opposite from said open end; connecting means for firmly connecting said hollow body member to said hydraulic pressure cylinder; and a resilient compensating diaphragm having an outer surface facing said hydraulic pressure cylinder and an inner surface facing said end wall of said hollow body member, wherein said outer surface of the diaphragm facing said cylinder is convex while said inner surface of said diaphragm facing said hollow body member is concave in an initial state established on coupling the cylinder with the cap including the diaphragm, said resilient compensating diaphragm and said end wall of said hollow body member bound a compensating chamber having a variable volume depending on a pressure of said liquid contained in said hydraulic pressure cylinder and acting on said outer surface of said resilient compensating diaphragm,
wherein said resilient compensating diaphragm has a peripheral edge and is provided with an axis of revolution and a retaining extension coaxial with said axis of revolution at said peripheral edge and said end wall of said hollow body member has an inner surface provided with a U-shaped coaxial slot dimensioned to snugly receive said retaining extension of said resilient compensating diaphragm, so that said retaining extension is compressedly held and seals a connection between said hydraulic pressure cylinder and said hollow body member.

5,542,454
FREE FLOW LOW ENERGY PIPE PROTECTOR
Douglas W. Carlson, and Stephen P. Simons, both of Houston, Tex., assignors to Hydrill Company, Houston, Tex.
Filed Apr. 8, 1994, Ser. No. 224,753
Int. Cl.[6] F16L *57/00*
U.S. Cl. 138—110 **7 Claims**



1. A pipe protector comprising:
a tubular rubber member for installing on a joint of drill pipe for rotation therewith within a well casing;
a pattern formed in the outside surface of the tubular rubber member of integral raised surfaces of rubber surrounded by a plurality of pairs of communicating channels in the outer surface of the rubber member through which drilling fluid can bypass the protector;
the pairs of communicating channels starting at equally spaced points around the lower edge of the outside surface and extending upwardly at the same angle from the plane of the longitudinal axis of the protector along divergent paths so that the channels intersect and leave a pattern of diamond-shaped raised surfaces to engage the wall of the casing while drilling fluid flows past the protector through the channels; and
said pattern being bilaterally asymmetrical when comparing the pattern on the approximate top half of the pipe protector to the pattern of the approximate bottom half.

5,542,455
PAPERMAKING FABRIC HAVING DIAGONAL ROWS OF POCKETS SEPARATED BY DIAGONAL ROWS OF STRIPS HAVING A CO-PLANAR SURFACE
Volker Ostermayer, Greenville, and Scott Quigley, Simpsonville, both of S.C., assignors to Wangner Systems Corp., Greenville, S.C.
Continuation-in-part of Ser. No. 283,533, Aug. 1, 1994, Pat. No. 5,456,293. This application Feb. 13, 1995, Ser. No. 387,436
Int. Cl.[6] D03D *15/00*
U.S. Cl. 139—383 A **20 Claims**



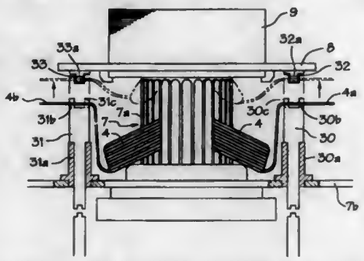
1. A woven fabric for use on papermaking machines having a support surface and a running surface, said fabric having MD (machine direction) synthetic filaments arranged in generally parallel relationship, a first group of CMD (cross-machine direction) synthetic filaments and a second group of CMD synthetic filaments arranged in parallel relationship and transversely of said MD filaments, wherein:
said support surface comprises rows of pockets diagonally arranged in spaced fashion along the length of the fabric, and diagonal strips defined over said support surface between adjacent diagonal rows of said pockets;
said MD filaments being woven with said first and second groups of CMD filaments to form a first set of MD cross-overs extending along a first plane over said support surface, a second set of MD cross-overs extending along a second plane over said support surface, said second plane being spaced below said first plane, and a third set of MD cross-overs extending along a third plane over said support surface, said third plane being spaced below said second plane;
said first group of CMD filaments being woven with said MD filaments to form a first set of CMD cross-overs which extend along said first plane over said support surface;
said second group of CMD filaments being woven with said MD filaments to form a second set of CMD cross-overs which extend along said second plane over said support surface;
said cross-overs of said first set of MD cross-overs being ground to define ground planar support surfaces cross-overs which extend along said second plane;
said first set of CMD cross-overs being ground to define planar support surfaces which extend along said second plane;
cross-overs of said second set of CMD cross-overs along with certain of said cross-overs of said first set of MD cross-overs define said pockets in said first rows along the length of said fabric, and cross-overs of said first set of CMD cross-overs along with cross-overs of said first and second set of MD cross-overs form said support surface strips along the length of said fabric providing said support surface with expanded contact area for supporting paper forming fibers.

5,542,456

COIL WIRE HANDLING APPARATUS

Masaaki Nishimura, Hadano; Masatoshi Hirano, Odawara, and Mitsuhiro Harada, Hadano, all of, Japan, assignors to Odawara Engineering Co., Ltd., Kanagawa, Japan

Filed Jul. 26, 1994, Ser. No. 280,602
Int. Cl.[6] H02K *15/06*
U.S. Cl. 140—92.1 **19 Claims**



1. An apparatus for handling and terminating wound coils during coil winding and insertion of the coil into a stator comprising:
a rotating flier;
a winding form about which the flier winds the coils by consecutive turns;
an inserter tool onto which the wound coils are stripped;
a pair of first lead wire holders on the inserter tool, one of said holders for holding the leading end and one of said holders for holding the trailing end of the lead wire forming the wound coils;
a first lead wire transfer means which grasps the wire on said form and transfers the wire to one of the first lead wire holders;
a second pair of lead wire holders on the stator or on a pallet supporting the stator at positions corresponding to those of the first pair of lead wire holders, one of the second lead wire holders for holding the leading end and one of the second lead wire holders for holding the trailing end of the lead wire forming the wound coils; and
a second lead wire transfer means which transfers the lead wire held by the first pair of lead wire holders to the second pair of lead wire holders.

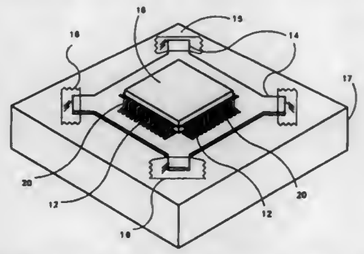
5,542,457

FINE PITCH ELECTRONIC COMPONENT LEAD STRAIGHTENING METHOD AND APPRATUS

Thomas C. Gordon, 12044 Rue Des Amis, San Diego, Calif. 92131, and Douglas Farlow, 11873 Calle Parral, San Diego, Calif. 92128

Filed Jan. 10, 1995, Ser. No. 370,632
Int. Cl.[6] B21F *1/02*
U.S. Cl. 140—147 **7 Claims**

1. A kit for use in correcting the position of out-of-position leads



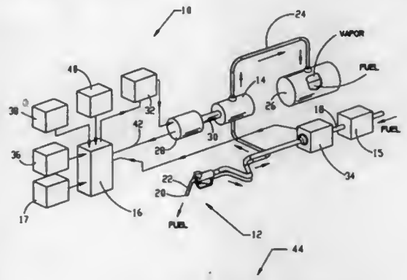
of fine pitch surface-mount electronic components, which comprises:
a template having a linear pattern of individual closed recesses precisely matching the proper position of individual leads of the sort having a distal end lying generally parallel to said component on a predetermined fine pitch surface mount electronic component;
a surface plate having a flat surface for observing coplanarity of said leads and for supporting said template;
means for lifting and moving said component without contacting said leads; and
at least one means for adjusting the position of out-of-tolerance leads.

5,542,458

VAPOR RECOVERY SYSTEM FOR A FUEL DELIVERY SYSTEM

Edward A. Payne, Greensboro, and Hal C. Hartsell, Jr., Kernersville, both of N.C., assignors to Gilbarco Inc., Greensboro, N.C.

Filed Aug. 22, 1994, Ser. No. 294,108
Int. Cl.[6] B67D *5/32*
U.S. Cl. 141—7 **37 Claims**



Indexed by Volume Dispensed

Indexed by Ambient Temperature					
	S (V1,T1)	S (V2,T1)	S (V3,T1)	-----	S (Va,T1)
	S (V1,T2)	S (V2,T2)	S (V3,T2)	-----	S (Va,T2)
	S (V1,T3)	S (V2,T3)	S (V3,T3)	-----	S (Va,T3)
	⋮	⋮	⋮		⋮
	S (V1,Tn)	S (V2,Tn)	S (V3,Tn)	-----	S (Va,Tn)

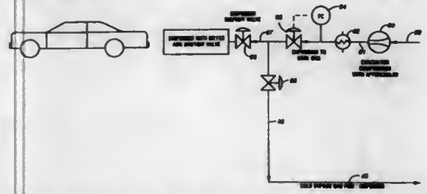
1. A method of controlling vapor recovery in a fuel delivery and vapor recovery system, comprising:
a) pumping fuel from a fuel supply to a fuel nozzle, wherein vapor is released at the fuel nozzle as fuel is pumped;
b) recovering the released vapor with a vapor pump under the control of a processor and directing the vapor to a vapor reservoir;
c) adjusting the speed of the vapor pump to control the vapor recovery rate in response to a vapor pump control signal sent from the processor to the vapor pump;
d) generating the vapor pump control signal by solving a vapor control function having a dependent sub-function, and wherein the dependent subfunction is dependent on an independent variable affecting the volume of vapor released at the fuel nozzle;
e) generating an independent variable signal representing the value of the independent variable;
f) selecting a sub-function solution corresponding to the value of the independent variable by looking-up a sub-function solution in a look-up table;
g) processing the selected sub-function solution to produce the pump control signal used to control the vapor pump and the vapor recovery rate; and
h) updating the look-up table based upon the value of the independent variable between successive fueling operations.

5,542,459

PROCESS AND APPARATUS FOR COMPLETE FAST FILLING WITH DEHYDRATED COMPRESSED NATURAL GAS

Billy F. Price; H. Joseph Thywissen, both of Houston, and Nash Campisse, Pearland, all of Tex., assignors to Price Compressor Company Inc., Houston, Tex.

Continuation-in-part of Ser. No. 94,495, Jul. 19, 1993, Pat. No. 5,370,159. This application May 6, 1994, Ser. No. 238,928
Int. Cl.[6] B65B *31/00;* **B67C** *3/00*
U.S. Cl. 141—18 **25 Claims**



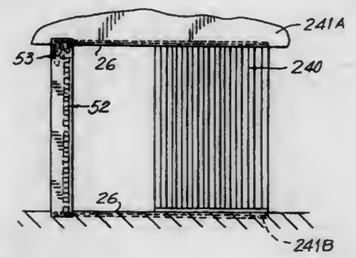
20. An apparatus for cooling natural gas to allow complete fueling of a fuel receiving tank with compressed natural gas, the apparatus comprising:
(a) a compressed natural gas storage tank;
(b) first means, in fluid communication with the storage tank, for compressing gas from a source of natural gas in its gas phase into the storage tank;
(c) second means for withdrawing a portion of gas from the storage tank and compressing the portion to a pressure above a predetermined gas pressure of the storage tank;
(d) a cooler means, in fluid communication with the second means, for cooling the compressed portion of gas; and
(e) a pressure reducing means, in fluid communication with the cooler means, for reducing pressure on the cooled compressed portion of gas for further cooling the gas to substantially fill a fuel tank with the gas.

5,542,460

SELF-CLOSING FIRE DOOR

James McKeon, Brooklyn, N.Y., assignor to McKeon Rolling Steel Door Company, Inc., Brooklyn, N.Y.

Division of Ser. No. 992,441, Dec. 17, 1992, Pat. No. 5,355,927. This application Aug. 30, 1994, Ser. No. 298,430
Int. Cl.[6] E05F *15/20*
U.S. Cl. 160—7 **15 Claims**



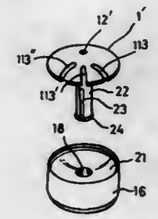
1. A door comprising:
an accordion-like member comprising two confrontingly disposed articulated walls formed of a flexible reticulated material;
a guide positioned on at least one side of said accordion-like member for guiding said accordion-like member for movement between a first or opened position and a second or closed position;
regulating means for regulating the speed of movement of said accordion-like member comprising a speed reduction means for reducing a rotational speed, an input shaft connected to said speed reduction means, an output shaft connected to said speed reduction means, said speed reduction means for reducing the rotational speed of said output shaft relative to said input shaft, wherein said regulating means is operable in a first direction toward the closed position and a second direction toward the opened position;
a self-closing mechanism operatively connected to said output shaft and said accordion-like member for moving said accordion-like member to its closed position, said self-closing mechanism incorporating movable means for storing energy as said accordion-like member is moved to its opened position, the stored energy acting through said movable means for urging said accordion-like member to its closed position;
a brake for preventing rotation of said output shaft thereby blocking movement of said self-closing mechanism; and
releasing means for releasing said brake to free said output shaft for rotation thereby freeing said movable means for releasing the stored energy for urging the door to its closed position.

5,542,461

SAFETY TASSEL FOR PULL CORDS

Chung-Chen Huang, Taipei, Taiwan, assignor to Teh Yor Industrial Co., Ltd., Taipei, Taiwan

Filed Sep. 8, 1994, Ser. No. 302,306
Int. Cl.[6] E06B *9/38*
U.S. Cl. 160—178.1 **10 Claims**



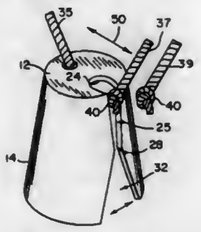
1. A safety tassel for pull cords, comprising:
a cap and a seat, said seat has a central bore with an annular lower groove at a lower end thereof and a middle groove at an intermediate portion thereof, said seat further has a concave top surface, and
said cap has a dome-like configuration provided at a bottom surface thereof with a central insert having a longitudinal slit extending through an end flange,
said cap includes at least two engaging means in a top portion thereof, said engaging means receiving said pull cords, a free end of each of said cords is passed through one of said engaging means and a knot is tied in a terminal end of each of said cords, said knot restricting said cords from being withdrawn from said engaging means, and
said cap and said seat are assembled by inserting said central insert into said bore so that said end flange is fitted into said lower groove and said cap closely covers said seat.

5,542,462

CORD RELEASE DEVICE

John A. Elsenheimer, Freeport; David K. Bried, Loves Park; Jeffrey L. Sands; Donald Wildes, both of Freeport, all of Ill., and J. Patrick Nugent, Greensboro, N.C., assignors to Newell Operating Company, Freeport, Ill.

Filed Sep. 30, 1994, Ser. No. 315,972
Int. Cl.[6] E06B 9/38
U.S. Cl. 160—178 17 Claims



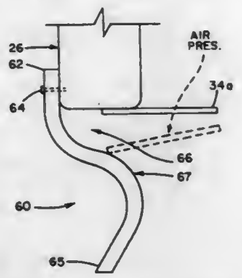
1. A cord release device for holding two or more cords and for releasing at least one of the cords, comprising:
a hollow skirt-shaped body having an interior cavity, an elongated outer surface an open bottom and a top, the body being configured to receive and at least partially conceal ends of the cords within said cavity;
a first opening in the top for receiving a first of the cords; and
a second opening extending through the top and along the outer surface of the body for receiving a second cord and for permitting the release of the second cord, said first and second openings providing access to said cavity.

5,542,463

ROLL-UP STRIP CURTAIN BARRIER APPARATUS

Cary Pinkalla, Fox Point, Wis., and Garrett Goins, Dubuque Iowa, assignors to Rite-Hite Corporation, Milwaukee, Wis.

Continuation-in-part of Ser. No. 130,590, Oct. 1, 1993, Pat. No. 5,450,890. This application Jul. 15, 1994, Ser. No. 275,767
Int. Cl.[6] E06B 9/56
U.S. Cl. 160—273.1 51 Claims



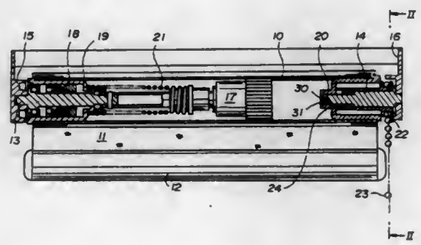
1. A barrier apparatus for sealing and creating a barrier across a door opening defined by opposing sides and a top side, the apparatus comprising:
a support roller rotatably mounted about the top side of the door opening,
a flexible curtain member attached to the support roller and adapted to be rolled about the support roller in response rotation of the roller between a sealing position wherein the curtain member forms an air-blocking seal across the door opening and an open position wherein the curtain member is rolled about the support roller so as to present an unobstructed door opening, the curtain member having a plurality of unattached strip panels defined by top, bottom and opposing sides which span the door opening in adjacent relationship to each other to form the air-blocking seal across the door opening and which permit personnel and material to pass therethrough, and
means for sealing the sides of the curtain member when the curtain member is forced away from the sides of the door opening.

5,542,464

ROLLER BLIND WITH SCREEN ROLLED UP BY A SPRING AND ROLLER DOWN BY HAND

Nobuhiro Shiina, Tokyo, Japan, assignor to Toso Company, Limited, Tokyo, Japan

PCT No. PCT/JP93/01713, § 371 Date Sep. 26, 1994, § 102(e) Date Sep. 26, 1994, PCT Pub. No. WO94/12757, PCT Pub. Date Sep. 6, 1994
PCT Filed Nov. 24, 1993, Ser. No. 256,270
Claims priority, application Japan, Nov. 30, 1992, 4-082200 U; Apr. 20, 1993, 5-092799
Int. Cl.[6] E06B 9/56
U.S. Cl. 160—296 6 Claims



1. A roller blind comprising:
a tube having a first end portion and a second end portion;
a screen located on said tube and adapted to be rolled up on said tube;
a fixed shaft for rotatably supporting said first end portion of said tube;
a clutch brake interposed between said tube and said fixed shaft for selectively rotating said tube;
a wind-up spring interposed between said tube and said fixed shaft for rotating said tube in a first direction in which said screen is rolled up on said tube;
a reduction gearing mechanism having a first portion fixed to said fixed shaft and a second portion connected to said tube for reducing the speed at which said screen is rolled up by said wind-up spring;
a rotary shaft fitted in said second end portion of said tube for rotation therewith and projecting partly therefrom;
a pulley drivingly engaged with said rotary shaft; and
a pulling member drivingly hung from said pulley.

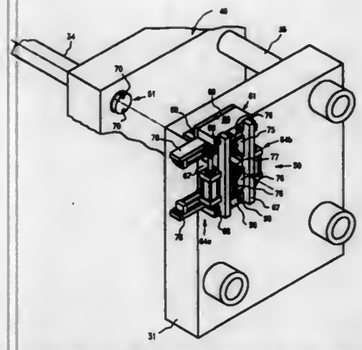
5,542,465

DIE SPACE ACCESS SYSTEM FOR TIE-BAR STYLE DIE-CASTING MACHINES

Robert T. Wolniak, State Highway 64 West, Rte. 2, Box 221, Cornell, Wis. 54732

Filed Nov. 10, 1994, Ser. No. 337,762
Int. Cl.[6] B22D 11/12;17/04
U.S. Cl. 164—341 14 Claims

1. A die casting machine, comprising:
(a) a shot platen, a movable platen, a die space disposed between said shot and movable platens, an adjustable rear platen, and three fixed position tie bars coupled to the platens;



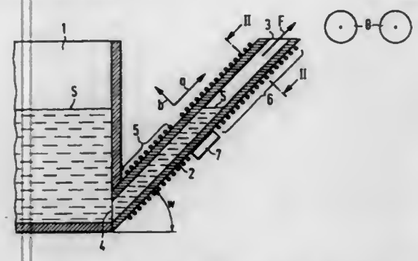
(b) at least one tie bar slidably mounted through said platens, said slidable tie bar having a connection end, said slidable tie bar being horizontally extendable during a casting procedure and horizontally retractable to provide an access window to the die space;
(c) means to releasably clamp said connection end in a fixed location, said means to clamp being attached to one platen of the tie bar machine; and
(d) means to move said slidable tie bar.

5,542,466

METHOD AND DEVICE FOR THE CASTING OF MOLTEN MATERIAL TO NEARLY FINAL INTENDED DIMENSIONS BY COMMENCING SOLIDIFICATION OF MOLTEN MATERIAL IN A CASTING NOZZLE PASSAGE WHILE MOVING THE SOLIDIFYING MATERIAL THROUGH THE PASSAGE BY ULTRASONIC VIBRATIONS

Raimund Brückner, Niedernhausen, and Rüdiger Grau, Großkrotzenburg, both of, Germany, assignors to Didier-Werke AG, Wiesbaden, Germany

Filed Mar. 28, 1995, Ser. No. 412,191
Claims priority, application Germany, Mar. 28, 1994, 44 10 511.8
Int. Cl.[6] B22D 11/04
U.S. Cl. 164—478 19 Claims



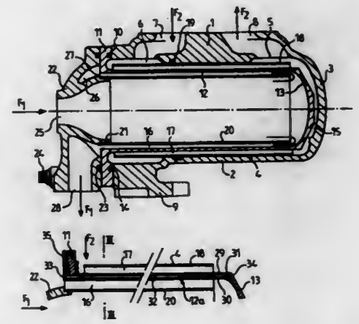
1. A method of casting molten material into a strip-shaped product of substantially intended final dimensions, said method comprising:
supplying molten material into the interior of a vessel having connected thereto a casting nozzle formed of refractory ceramic material and having therethrough a passage extending from an inlet opening connected directly to said interior of said vessel to an outlet opening, with said nozzle being oriented relative to said vessel such that said outlet opening is positioned at a location that is higher than said inlet opening, whereby molten material passes from said vessel interior directly through said inlet opening and into said passage until an upper level of molten material in said passage is the same as an upper level of molten material in said vessel interior and is below said outlet opening;
commencing solidification of said molten material in said passage, thereby forming therein solidifying material; and
moving said solidifying material through said passage in a direction toward said outlet opening, during which said material further solidifies, and discharging the thus further solidified material from said outlet opening, by imparting to said nozzle and thereby to said material ultrasonic vibrations including at least one vibration component in said direction.

5,542,467

SAFETY ANNULAR HEAT EXCHANGER FOR INCOMPATIBLE FLUIDS

Pierre Carpentier, Soisy Sous Montmorency, France, assignor to Societe D'Etudes et de Constructions Aero-Navales, Gennevilliers, France

Filed Mar. 11, 1994, Ser. No. 212,570
Claims priority, application France, Jul. 6, 1993, 93 08254; European Pat. Off., Sep. 7, 1993, 93402169
Int. Cl.[6] F28F 11/00; F28D 7/12
U.S. Cl. 165—70 5 Claims



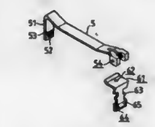
1. An annular heat exchanger for preventing the mixing of incompatible fluids comprising:
a hollow body having one end closed by a bottom and the other end defining a bearing surface;
a sealed bottle positioned within said body having one end closed by a bottom and the other end comprising a flange for cooperating with said bearing surface, said sealed bottle having at least one annular wall, said wall having two sides and an annular fluid passage formed therein, said sealed bottle being rigidly and sealingly connected to said hollow body, while providing at least one leak circuit;
said leak circuit comprising a vent channel in said flange of said bottle for communicating with said annular fluid passage;
heat dissipators being provided on each of said two sides of said wall, said bottle separating a first and a second fluid respectively circulating on either side of said at least one wall of said bottle between an input channel and an output channel of said hollow body for one of said first and second fluids and between an input duct and an output duct for the other of said first and second fluids;
said dissipators being adapted to transmit heat between said first and second fluids through said at least one wall of said bottle; and
said at least one wall of said bottle interiorly supporting said heat dissipators with said heat dissipators surrounding an inner sleeve for guiding one of said first and second fluids between said at least one wall and said inner sleeve.

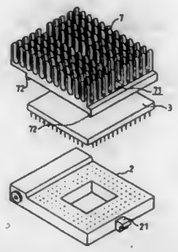
5,542,468

CPU HEAT DISSIPATOR HOOK-UP APPARATUS

Chuen-Sheng Lin, No. 31, Sec. 1, Min Yi Road, Wu Ku Hsiang, Taipei Hsien, Taiwan

Filed Jun. 28, 1995, Ser. No. 495,393
Int. Cl.[6] F28F *7/00*; H05K *7/20*
U.S. Cl. 165—80.3 **2 Claims**





1. A CPU dissipator hook-up apparatus comprising:
(a) a metal pressing board including two ends, the two ends including a first end and a second end,
the ends stretching upward from the pressing board at an elastic tilt angle thereto,
the first end including a first tilted portion and the second end including a second tilted portion,
the first end including a downwardly-bent portion having a first opening,
the second end including two pivot first holes; and
(b) a metal hook-up board having two sides and including pins on either of the sides for respectively engaging the two pivot first holes of the pressing board,
a flat surface having a second hole thereon, and
a second opening in a bottom of the hook-up board having a downwardly-extending plate.

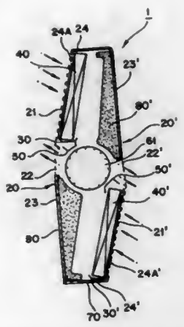
5,542,469

INDOOR UNIT OF AIR CONDITIONER

Dong-Wug Kim, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Aug. 24, 1994, Ser. No. 293,951
Claims priority, application Rep. of Korea, Aug. 25, 1993, 93-16564
Int. Cl.[6] F28F *13/12*
U.S. Cl. 165—122 **3 Claims**

1. An indoor air conditioner unit for cooling separate first and second spaces, comprising:
a housing including front and rear panels disposed on opposite sides of said housing, said front panel forming a first air inlet port and a first air outlet port for cooling said first space, said rear panel forming a second air inlet port and a second air outlet port for cooling said second space;
first and second spaced apart evaporators disposed in said housing and arranged to cool air sucked in through said first and second air inlet ports, respectively; and
a fan member disposed in said housing and positioned to physically separate said first inlet and outlet ports from said second inlet and outlet ports, said fan member arranged to suck-in air through both of said first and second inlet ports and discharge air through both of said first and second outlet ports, said fan member comprising a rotor rotatable about an axis extending substantially parallel to said front and rear panels, wherein an imaginary plane containing said axis and extending through respective midpoints of said first and second outlet ports, divides said unit substantially in half.

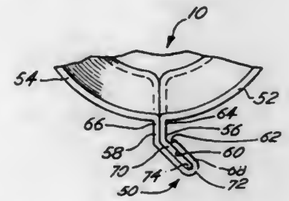


5,542,470

CRIMPED JOINT DESIGN FOR CLAMSHELL HEAT EXCHANGER

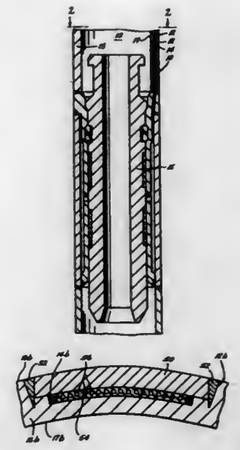
Lance J. Evens, Carrollton, Tex., assignor to Lennox Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 682,000, Apr. 8, 1991, abandoned. This application Jun. 29, 1993, Ser. No. 85,134
Int. Cl.[6] F28F *3/12*
U.S. Cl. 165—170 **11 Claims**



1. In a gas furnace clamshell heat exchanger in which hot products of combustion are formed by burning fuel and air, said heat exchanger having first and second sheet metal heat exchanger side plates defining a passageway for the hot products of combustion and for radiation therefrom, and having said side plates joined at their respective edges by a plate edge sealing means for providing a seal thereat, the improvement comprising:
a flange portion disposed from said first plate and a flange portion disposed from said second plate, said first plate flange portion having an inner edge and said second plate flange portion having an inner edge the inner edge of the first plate flange portion being aligned with the inner edge of the second plate flange portion, said first plate flange portion having an exterior contacting surface and said second plate flange portion having an interior contacting surface, said second plate flange portion further disposed around and contacting said first plate flange portion to define a channel for disposition of said first plate flange portion therein to allow expansion and contraction of said first and second plates while maintaining the seal between said first and second plates; said exterior contacting surface of said first plate flange portion disposed in intimate contact with said interior contacting surface of said second plate flange portion throughout substantially the entirety of said exterior contacting surface and said interior

contacting surface to seal against the escape of hot products of combustion from said passageway;
said second plate flange portion having a terminal portion, said first and second plate flange portions bent laterally at an acute angle of bending in the direction of said terminal portion of said second plate flange to secure maintenance of said seal between said first and second plate flange portions said acute angle of bending being defined with respect to the surface of the first and second plate flange portions;
said first and second plate flange portions having base portions disposed adjacent their respective side plates, said respective side plates mutually abutting said respective first and second plate flange portions and said flange first and second base portions disposed in mutually and substantially parallel array at said respective base portions thereof.

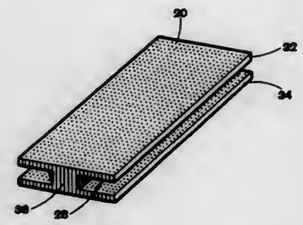


5,542,471

HEAT TRANSFER ELEMENT HAVING THE THERMALLY CONDUCTIVE FIBERS

Richard C. Dickinson, Arlington Heights, Ill., assignor to Loral Vought System Corporation, Dallas, Tex.

Filed Nov. 16, 1993, Ser. No. 152,536
Int. Cl.[6] F28F *7/00*
U.S. Cl. 165—170 **26 Claims**



1. A heat transfer element comprising:
a plate having a first side and a second side and being comprised of fibers extending longitudinally from said first side to said second side, said fibers having a greater longitudinal thermal conductivity than radial thermal conductivity, said plate having a channel extending through said plate in a direction generally perpendicular to said fibers.

5,542,472

METAL COILED TUBING WITH SIGNAL TRANSMITTING PASSAGEWAY

Ronald E. Pringle; Winfield M. Sides, III; David N. Folsom, all of Houston, and Cecil G. McGavern, III, Humble, all of Tex., assignors to Camco International, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 300,761, Sep. 8, 1994, which is a continuation-in-part of Ser. No. 142,637, Oct. 25, 1993, abandoned. This application Feb. 27, 1995, Ser. No. 402,679
Int. Cl.[6] E21B *23/00*
U.S. Cl. 166—65.1 **16 Claims**

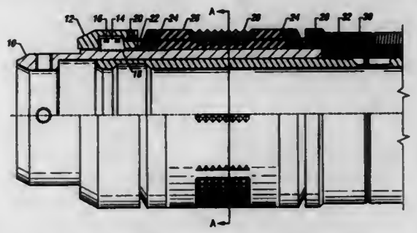
1. A combination of a coiled tubing and a signal transmitting passageway for transmitting and/or receiving signals to well tools positioned in the coiled tubing comprising,
a flexible coiled tubing having an outer diameter, an inner diameter, and a bore therethrough and adapted to support at least one signal actuated well tool therein, and
said coiled tubing having at least one signal transmitting passageway positioned in the coiled tubing between the inner diameter and the outer diameter.

5,542,473

SIMPLIFIED SEALING AND ANCHORING DEVICE FOR A WELL TOOL

Ronald E. Pringle, 12030 White Cap La., Houston, Tex. 77072

Filed Jun. 1, 1995, Ser. No. 459,222
Int. Cl.[6] E21B *23/00*
U.S. Cl. 166—120 **11 Claims**



1. An annular sealing and anchoring element for connection to a downhole tool, comprising:
a cylindrical resilient sealing element; and
at least one anchoring device embedded in an exterior longitudinal surface of said resilient sealing element, and adapted to be moved outwardly into engagement with a well tubular upon compression of the sealing element.

5,542,474

FOAM MIXTURE FOR CARBON DIOXIDE DRIVE OIL RECOVERY METHOD

Nizar F. Djabbarah, Richardson; Ralph V. Garling, Irving, both of Tex.; David T. Hand, and Jennifer Macfadyen, both of Bakersfield, Calif., assignors to Mobil Oil Corporation, Fairfax, Va.

Division of Ser. No. 438,584, May 10, 1995, Pat. No. 5,513,705. This application Dec. 4, 1995, Ser. No. 566,636
Int. Cl.[6] E21B *43/22*
U.S. Cl. 166—263 **22 Claims**

1. A method for recovering oil from a subterranean, oil-containing formation penetrated by at least one injection well and at least one spaced-apart production well, said wells being in fluid communication with a substantial portion of the formation, comprising:

(a) injecting carbon dioxide into the formation via the injection well and producing fluids including oil from the formation via the production well for a predetermined period of time, thereby forming a carbon dioxide-swept zone in the formation;

(b) thereafter injecting a mixture of carbon dioxide and an aqueous surfactant-polypeptide solution into the formation via the injection well, said aqueous surfactant-polypeptide solution capable of forming a stable foam in the carbon dioxide-swept zone at formation conditions of temperature and pressure thereby significantly decreasing the permeability of that zone and diverting the carbon dioxide, into other portions of the formation; and

(c) continuing to inject said mixture of carbon dioxide and aqueous surfactant-polypeptide solution and recovering fluids including oil from the formation via the production well.

5,542,475

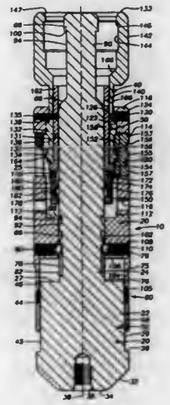
BLANKING PLUG ASSEMBLY

Edwin C. Turner, and Danny K. Wolff, both of Houston, Tex., assignors to Cooper Cameron Corporation, Houston, Tex.

Filed Dec. 1, 1994, Ser. No. 348,053

Int. Cl.[6] E21B *23/06*

U.S. Cl. 166—387 **10 Claims**



1. A method of plugging the bore of a tubular member comprising the steps of:

inserting a blanking plug assembly into the bore of the tubular member;

passing a sealing assembly on the blanking plug assembly into a seal bore in the bore of the tubular member without establishing a sealing engagement with the seal bore;

supporting the blanking plug assembly on a support shoulder on the tubular member;

jarring down on a first member of the blanking plug assembly to shift a plurality of dog members on the blanking plug assembly into latch grooves in the tubular member;

lifting the blanking plug assembly off of the support shoulder;

latching the dog members into the latch grooves;

locking the dog members in the latch grooves;

jarring up on a mandrel on the blanking plug assembly to move the mandrel to an upper position;

energizing the sealing assembly into sealing engagement with the seal bore; and

latching the mandrel in the upper position.

5,542,476

APPARATUS FOR DRILLING AND MAINTENANCE OF HOLES IN A GOLF COURSE

Finn H. Hansen, Sct. Mogensgade 23C, DK-8800 Viborg, Denmark

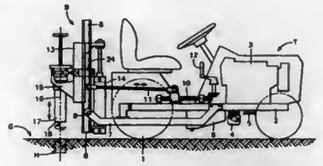
PCT No. PCT/DK93/00178, § 371 Date Nov. 23, 1994, § 102(e) Date Nov. 23, 1994, PCT Pub. No. WO93/24708, PCT Pub. Date Dec. 9, 1993

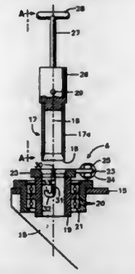
PCT Filed May 25, 1993, Ser. No. 343,502

Claims priority, application Denmark, May 25, 1992, 0677/92

Int. Cl.[6] A01B *45/02*

U.S. Cl. 172—22 **5 Claims**





1. Apparatus for drilling and maintaining holes in greens on golf courses where new holes are regularly cut and used (old) holes plugged, which apparatus is constructed as a mini-tractor with a drilling unit suspended in a hoist arrangement on the tractor for movement between a raised transport position and a lower cutting position, and with the drilling unit having a hollow auger to be driven by the tractor via a power take-off of the tractor, characterized in that

the drilling unit has a driven drill spindle in the form of a hollow shaft in which the hollow auger is inserted,

the hollow auger is inserted in the hollow shaft from above and is provided with an upward facing handle and

between the hollow auger and the hollow shaft there is a bayonet anti-turn locking device arranged in such a way that the hollow auger can be released and removed from the hollow shaft by hand.

5,542,477

FRONT LIFTING DEVICE FOR AGRICULTURAL TRACTOR OR THE LIKE

Hubert DeFrancq, 6, rue du Moulin, 51140, Loncbery-sur-Vesle, France

PCT No. PCT/FR93/00228, § 371 Date Sep. 7, 1994, § 102(e) Date Sep. 7, 1994, PCT Pub. No. WO93/17542, PCT Pub. Date Sep. 16, 1993

PCT Filed Mar. 9, 1993, Ser. No. 295,862

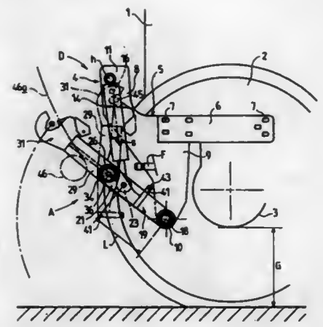
Claims priority, application France, Mar. 12, 1992, 92 02952

Int. Cl.[6] A01B *59/06*

U.S. Cl. 172—439 **14 Claims**

1. Front lifting device, for an agricultural implement of the type having a chassis and a front, for hitching a tool to the front of the implement to be raised or lowered, comprising:

a framework for attachment to the chassis and having a bottom having a transverse axis and lower securing means articulated



about said transverse axis, said lower securing means extending forwardly relative to the front of the implement and having ends for attachment of a first and a second attachment point of a tool;

said framework having a top to which is attached a middle upper securing means for connection with a third attachment point of the tool,

hydraulic lifting means operable between said framework and said lower securing means to effect raising and lowering movements,

said lower securing means including a primary lower structure having a rear part articulated on a transverse spindle coextending with said transverse axis and carried on said framework, said primary lower structure having a forward part including two lateral extensions each having a transverse bearing, a forearm associated with each lateral extension, an articulation spindle carried in each said bearing, each forearm having a forward and rear end and, intermediate said forward and rear ends, being articulated on a said respective articulation spindle carried in a said respective transverse bearing such that said rear end extends beyond said articulation spindle;

each said hydraulic lifting means being joined to said primary lower structure and to said framework, said rear ends of said forearms bearing against a limit stop provided on said primary lower structure so as to be engaged with said limit stop during lifting of said primary lower structure and raising of a load while, when free of a load, each said forearm is movable independently of the other forearm about said articulation spindle to a folded, storage position, for locking on said framework and to prevent said primary lower structure and said forearms from rotating relative to said primary lower structure.

5,542,478

COMBINATION SLOPER AND TAILGRADER ATTACHMENT FOR VEHICLES

Ashley Heiple, Alum Bank, Pa., assignor to Rockland, Inc., Bedford, Pa.

Filed Aug. 1, 1994, Ser. No. 283,938

Int. Cl.[6] E02F *3/76*

U.S. Cl. 172—782 **51 Claims**

1. An attachment for a vehicle comprising:

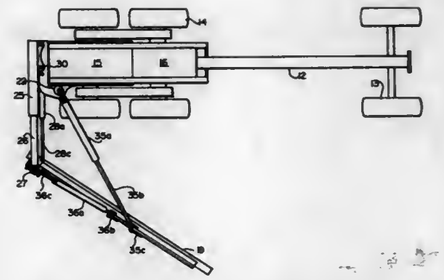
a support frame mountable on said vehicle;

a swing frame pivotally mounted on said support frame about an axis disposed laterally of a longitudinal centerline of said vehicle when said support frame is mounted on said vehicle;

means for angularly displacing said swing frame relative to said support frame;

a moldboard universally mounted on said swing frame;

means operatively interconnecting said support frame and said moldboard for angularly displacing said moldboard relative to said swing frame about a first axis; and



means operatively interconnecting said swing frame and said moldboard for angularly displacing said moldboard relative to said swing frame about a second axis.

5,542,479

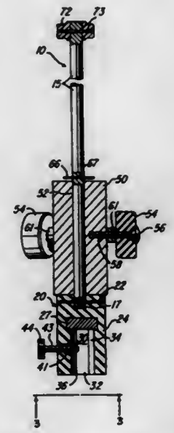
HAND OPERATED IMPACT TOOL

Thomas H. Stachler, and Edward C. Hass, both of P.O. Box 26129, Dayton, Ohio 45426

Filed Jun. 22, 1994, Ser. No. 263,454

Int. Cl.[6] B25D *1/04*

U.S. Cl. 173—90 **16 Claims**



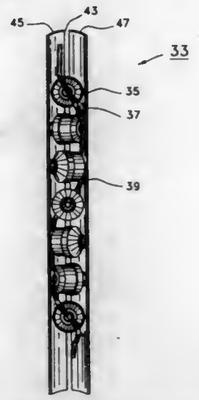
1. A hand operated impact tool adapted for driving an article such as a stake or rod into the ground, said tool comprising an elongated guide rod having an upper end portion and a lower end portion, a coupler secured to said lower end portion and including a body of electrical insulating material, means defining an axially extending cavity within said coupler for receiving an upper end portion of the article, said means defining said cavity including a hard impact surface at an upper inner end of said cavity and adapted to engage an upper end of the article, an annular weight forming a hammer and supported by said guide rod for axial movement between an upper retracted position and a lower impacting position imparting a downward impacting force against said coupler, and said body of electrical insulating material forming an insulator between said guide rod and the article within said cavity.

5,542,480

PERFORATING GUN WITH RETRIEVABLE MOUNTING STRIPS

Harrold D. Owen, Fort Worth, and David S. Wesson, Waxahachie, both of Tex., assignors to Owen Oil Tools, Inc., Fort Worth, Tex.

Filed Dec. 8, 1994, Ser. No. 372,393
Int. Cl.[6] E21B *43/116;43/119*
U.S. Cl. 175—4.51 **19 Claims**



1. A perforating gun for carrying at least one explosive capsule to perforate a well, comprising:

an elongated carrier to be positioned in said well, the carrier being divided longitudinally into at least two strips with opposing edges connected by at least one bridge, each strip having an edge opposite the bridge and a size and a strength to be retrievable from the well after detonation of said explosive;

at least one opening in one of said strips to serve as a mount for the explosive, the opening being located in said strip a selected distance from the bridge and from the edge of said strip opposite the bridge;

the cross sectional area of the bridge being selected to assure shattering of the bridge upon detonation and separation of the carrier into at least said two strips for retrieval from the well bore; and

the cross sectional area of said strip between said opening and said edge being selected to assure retrieval of the strip from the well after detonation of the explosive capsule.

5,542,481

DRIVE POINT LOCKING METHOD AND APPARATUS

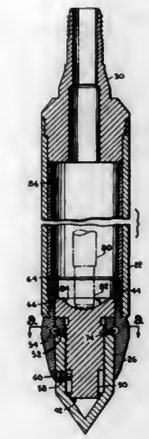
Gregory H. Scott, Salina, Kans., assignor to Kejr Engineering, Inc., Salina, Kans.

Filed Apr. 10, 1995, Ser. No. 419,128
Int. Cl.[6] E21B *49/02*
U.S. Cl. 175—23 **25 Claims**

1. An apparatus for releasably locking a drive point at the leading end of an elongated tube including a cutting shoe having an inwardly opening recess in the sidewall of the shoe, said apparatus comprising:

a member carried by the drive point for movement therewith, said member being movable between an extended position with a portion of the member extending into the recess to lock the point to the tube, and a retracted position with the member clearing the recess and sidewall to permit relative movement between the point and the tube;

manually operable structure carried by the drive point and operably coupled with the member for moving the member between its extended and retracted positions; and



wherein said point has an elongated threaded bore, said structure including a bolt threadably engaged in the bore for longitudinal movement in the bore responsive to manual rotation of the bolt, and means carried by the bolt and engageable with the member to cause the latter to move between said extended and retracted positions in response to said longitudinal movement of the bolt.

5,542,482

ARTICULATED DIRECTIONAL DRILLING MOTOR ASSEMBLY

Alan M. Eddison, Aberdeen, United Kingdom, assignor to Schlumberger Technology Corporation, Sugar Land, Tex.

Continuation-in-part of Ser. No. 332,682, Nov. 1, 1994, Pat. No. 5,520,256. This application Jan. 23, 1995, Ser. No. 376,497
Int. Cl.[6] E21B *7/06*
U.S. Cl. 175—61 **19 Claims**



1. A directional drilling assembly for causing a drill bit to drill a curved borehole, said borehole having a high side and a low side, said assembly comprising:

mud motor means for rotating a drive shaft which is coupled to said drill bit, said mud motor means comprising a housing with a bend angle formed therein;

upper stabilizer means mounted on said motor means; and

lower stabilizer means mounted on said drive shaft for rotation therewith; and

wherein said upper stabilizer means comprises outwardly extending means adapted to engage the low side of the borehole and normally retracted means adapted to be extended into engagement with the high side of the borehole during drilling to force said outwardly extending means against the low side of the borehole.

18. A method of drilling a curved borehole, said borehole having a high side and a low side, said method comprising the steps of:

providing mud motor means coupled to a drive shaft means, said drive shaft means having upper and lower ends;

said mud motor means comprising a housing having upper and lower sections forming a bend angle therebetween;

mounting a drill bit on said lower end of said drive shaft means;

mounting stabilizer means on said drive shaft means for rotation therewith;

rotating said drill bit in response to flow of drilling fluid through said mud motor means; and

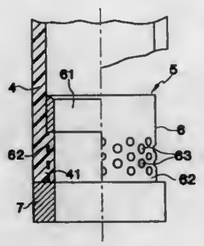
forcing said upper section Of said housing toward the low side of said borehole by applying the pressure of said drilling fluid to a radially movable piston on said upper housing section and shifting said piston into engagement with the high side of said borehole.

5,542,483

METHOD FOR OVERBURDEN DRILLING, CASING SHOE AND CASING TUBE FOR THE METHOD, AND COUPLING ELEMENT FOR THE CASING TUBES

Knut O. Edman, Höglidsvägen 30, S-135 50 Tyrcsö , Sweden

PCT No. PCT/SE93/00158, § 371 Date Nov. 28, 1994, § 102(e) Date Nov. 28, 1994, PCT Pub. No. WO93/17215, PCT Pub. Date Sep. 2, 1993
PCT Filed Feb. 25, 1993, Ser. No. 290,772
Claims priority, application Sweden, Feb. 25, 1992, 9200563
Int. Cl.[6] E21B *17/08*
U.S. Cl. 175—257 **9 Claims**



1. A method for overburden drilling with simultaneous loading of casing tubes with a percussive drill hammer to influence a casing shoe connected with a lower end of one of the casing tubes, the method comprising the steps of:

using plastic material for the casing tubes; and

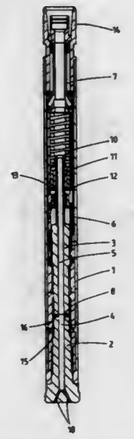
providing metal perforated with holes for the casing shoe, the holes being filled with the plastic material.

5,542,484

LIQUID RECIPROCATING PISTON HAMMER DRILLING ARRANGEMENT WITHOUT CAVITATION

Malcolm B. McInnes, Angle Vale, Australia, assignor to SDS PTY, Ltd., Melrose Park, Australia

PCT No. PCT/AU93/00217, § 371 Date Dec. 27, 1994, § 102(e) Date Dec. 27, 1994, PCT Pub. No. WO93/23651, PCT Pub. Date Nov. 25, 1993
PCT Filed May 12, 1993, Ser. No. 335,878
Claims priority, application Australia, May 15, 1992, PL2482
Int. Cl.[6] E21B *7/04;4/14*
U.S. Cl. 175—296 **14 Claims**



1. A drilling arrangement having a reciprocating piston hammer adapted to hammer against a drill bit of a type using a liquid for driving said reciprocating piston hammer, with respective impacting surfaces between said hammer and said drill bit, said drill bit having a channel following a circular path which is coaxial with the central axis of said drill bit, said hammer having a protuberance extending from said impacting surface of said hammer, the protuberance following a circular path which is coaxial with the central axis of the drill bit and of a width and positioned such that the protuberance will be fully within the channel in the drill bit when the respective impacting surfaces are at their relative impacting positions.

5,542,485

EARTH-BORING BIT WITH IMPROVED CUTTING STRUCTURE

Rudolf C. O. Pessier, Houston; Danny E. Scott, Montgomery; Robert E. Grimes, Cypress, and Matthew R. Isbell, Houston, all of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Continuation-in-part of Ser. No. 293,228, Aug. 18, 1994, which is a continuation of Ser. No. 89,318, Jul. 8, 1993, Pat. No. 5,351,768. This application Jan. 17, 1995, Ser. No. 373,149
Int. Cl.[6] E21B *10/16*
U.S. Cl. 175—371 **36 Claims**

1. An earth-boring bit comprising:

a bit body;

at least one cantilevered bearing shaft depending from the bit body;

a cutter mounted for rotation on the bearing shaft, the cutter including a gage surface and a heel surface;

at least one chisel-shaped cutting element secured to the gage surface, the cutting element having a pair of surfaces converging to define a circumferential crest, the cutting element being tilted toward the heel surface such that a line drawn through



the cutting element and crest defines an acute angle of between 15 and 75 degrees with the gage surface of the cutter.

5,542,486

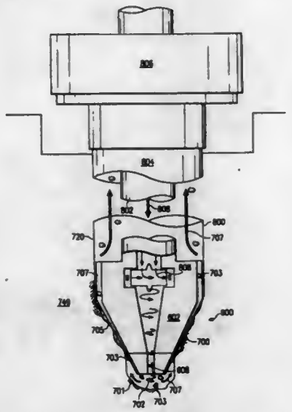
METHOD OF AND APPARATUS FOR SINGLE PLENUM JET CUTTING

Harry B. Curlett, Dallas, Tex., assignor to CCORE Technology & Licensing Limited, Dallas, Tex.

Continuation-in-part of Ser. No. 38,944, Mar. 29, 1993, Pat. No. 5,291,957, which is a continuation of Ser. No. 577,501, Sep. 4, 1990, Pat. No. 5,199,512. This application Mar. 4, 1994, Ser. No. 206,481

Int. Cl.[6] E21B *7/18*

U.S. Cl. 175—424 **13 Claims**



1. An improved cutting tool for the erosion of a surface, said tool being of a type wherein a liquid jet is discharged from said tool to create an eroded region, said improvement comprising:

a tapered tool body having at least one discharge nozzle disposed therein;

a plurality of mechanical cutting elements secured about said tapered tool body;

said discharge nozzle being formed on the distal end of said tool for initial engagement with said surface;

a chamber formed in said tool body and disposed in flow communication with said nozzle;

means for discharging said liquid from said chamber and through said nozzle against said surface for the erosion thereof; and

means for rotating said tool during discharge of said liquid jet.

5,542,487

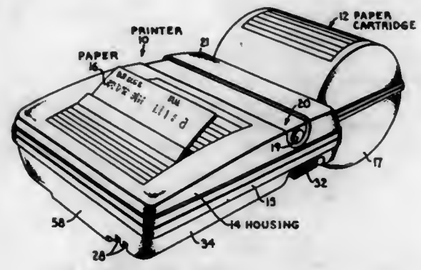
PORTABLE COMPACT MULTI-FUNCTION PRINTER WITH CARTRIDGE PAPER SUPPLY

Darald R. Schultz, Cedar Rapids, and Richard A. Sherman, Toddville, both of Iowa, assignors to Norand Corporation, Cedar Rapids, Iowa

Continuation of Ser. No. 86,340, Jul. 1, 1993. This application Feb. 22, 1995, Ser. No. 392,275

Int. Cl.[6] H04L *15/34*; G06F *17/00;15/12*; G06K *7/10*

U.S. Cl. 178—4.1 A **4 Claims**



1. A data system comprising:

a portable printer unit including means for printing a document with a unit of check information readable by check routing equipment to satisfy a check writing transaction, means for releasably receiving a paper cartridge of a type of cartridge selected from roll paper and sheet paper cartridges, and cartridge identification means for receiving information as to the type of cartridge received by the portable printer unit;

a paper cartridge inserted into and releasably received by the portable printer unit, the paper cartridge including a cartridge identifying means containing information as to the type of cartridge inserted into and releasably received by the portable printer unit for providing such cartridge identifying information to the cartridge identification means upon receipt of the cartridge by the portable printer unit;

a data collection terminal;

means for communicatively coupling the portable printer unit to the data collection terminal such that data messages are communicatable between the portable printer unit and the data collection terminal, the data messages including printing control codes, printable information and cartridge identifying information; and

means, disposed at the data collection terminal and at the portable printer unit, for scrambling data messages including the unit of check information readable by check routing equipment to be communicated from the data collection terminal to the portable printer unit at the data collection terminal and for descrambling data messages including the unit of check information readable by check routing equipment communicated from the data collection terminal to the portable printer unit at the portable printer unit.

5,542,488

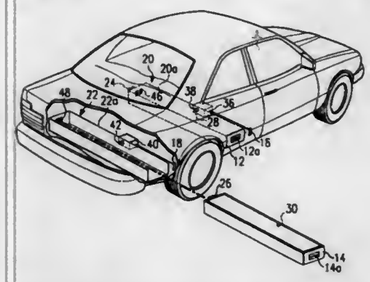
ELECTRIC VEHICLE HAVING MULTIPLE REPLACEMENT BATTERIES

Dale B. Nixon, 3519 Brookline La., Farmers Branch, Tex. 75234

Continuation of Ser. No. 45,523, Apr. 8, 1993, Pat. No. 5,373,910. This application Dec. 19, 1994, Ser. No. 358,814

Int. Cl.[6] B60K *1/04*

U.S. Cl. 180—65.1 **16 Claims**



1. A battery system for a vehicle having an electric drive motor, comprising:

a first battery compartment within said vehicle,

a second battery compartment within said vehicle, said second battery compartment having a similar size and configuration to said first battery compartment,

a first battery connector proximate said first battery compartment,

a second battery connector proximate said second battery compartment,

a first battery located in said first battery compartment and having terminals thereof releasably connected to said first battery connector,

a second battery located in said second battery compartment and having terminals thereof releasably connected to said second battery connector, said second battery having a size and configuration similar to said first battery,

a switch electrically coupled to said first and second battery connectors and to said electric drive motor,

a first opening in a panel of said vehicle adjacent said first battery compartment,

a second opening in a panel of said vehicle adjacent said second battery compartment,

a first battery release handle proximate said first opening and accessible from exterior of said vehicle for unlocking said first battery from said vehicle, and

a second battery release handle proximate said second opening and accessible from exterior of said vehicle for unlocking said second battery from said vehicle.

5,542,489

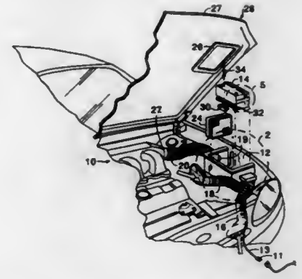
BATTERY THERMAL CHAMBER

Johnny H. Allison, Plymouth; Kathleen M. Hammer, W. Bloomfield, and David P. Kaminski, Warren, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 31, 1995, Ser. No. 455,882

Int. Cl.[6] B60R *16/04*

U.S. Cl. 180—68.5 **9 Claims**



5. Apparatus for managing the temperature of a vehicle battery which is positioned in an engine compartment of a vehicle comprising:

a thermal chamber comprising, a floor and three walls and being mounted to a fender of said vehicle whereby said fender forms a fourth wall of said thermal chamber, said walls being combined to form an enclosure for holding said vehicle battery, said thermal chamber having a first opening through which air travels into said thermal chamber, and a second opening positioned substantially opposite to said first opening, through which air travels out of said thermal chamber, the thermal chamber further including a flange at a top end of said walls;

a gasket shaped substantially similar to said flange and mounted on a vehicle hood in a position to fit onto said flange when said hood is in a closed position;

a first transport mechanism having a first end which receives ambient air and a second end;

a second transport mechanism having a first end which receives exhaust gas produced by an engine, and a second end;

a third transport mechanism having a first end connected to said second end of said first transport mechanism and said second end of said second transport mechanism, and a second end connected to said inlet opening;

a damper which is positioned within said third transport mechanism and which has a first position to allow air from said first transport mechanism to enter said third transport mechanism and a second position to allow air from said second transport mechanism to enter said third transport mechanism;

an outlet transport mechanism having a first end connected to said outlet opening and a second end connected to an engine intake manifold; and

a filter positioned within said thermal chamber for filtering air entering said outlet transport mechanism.

5,542,490

OPTO-SENSOR STEERING SYSTEM FOR FORKLIFT TRUCK

Paul A. Kemshall, Hants, and Alan R. Sewell, Basingstoke, both of, England, assignors to Crown Equipment Corporation, Inc., New Bremen, Ohio

Filed Mar. 22, 1994, Ser. No. 216,496

Claims priority, application Great Britain, Mar. 22, 1993, 9305872

Int. Cl.[6] B62D *5/07*

U.S. Cl. 180—422 **17 Claims**

1. A steering system for a forklift truck comprising:

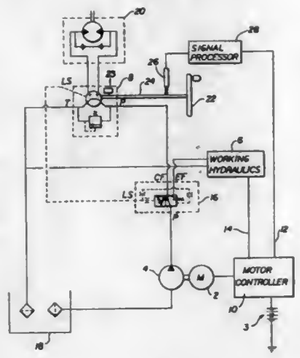
a steering circuit;

an orbital steer unit having means for generating a dynamic load sensing signal;

means for maintaining a continuous idle flow of fluid through said orbital steer unit and said signal generating means;

a detector for detecting a steering demand, said detector including an optical sensor; and

means for increasing said flow of fluid in response to said steering demand,



wherein said maintaining means includes a load-sensing priority valve connecting said pump to said steer unit, said valve being controlled by said signal generating means; and said means for maintaining an idle flow maintains said idle flow of said fluid even when no steering demand is detected.

5,542,491

SCUTTLE STRUCTURE FOR A MOTOR VEHICLE HAVING A DRIVE UNIT ARRANGED AT THE FRONT

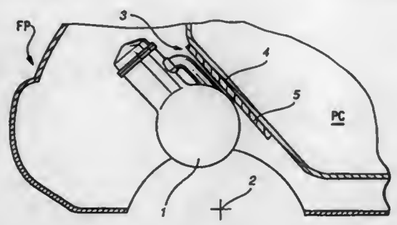
Werner Heiss, Sindelfingen; Martin Weller, Fictenberg, and Konrad Eipper, Ammerbuch, all of, Germany, assignors to Mercedes Benz-AG, Stuttgart, Germany

Filed Jan. 5, 1995, Ser. No. 367,476

Claims priority, application Germany, Jan. 5, 1994, 44 00 132.0

Int. Cl.[6] B60K *5/00*

U.S. Cl. 180—232 **18 Claims**



1. Scuttle structure for a motor vehicle having a drive unit arranged at the front of said motor vehicle, said scuttle structure comprising a scuttle, and a slide-down aid for the drive unit, said drive unit being displaced to the rear in the event of a substantially head-on collision, wherein said slide-down aid is arranged and configured to receive a portion of the drive unit which is displaced to the rear and which drive unit portion contacts the slide-down aid to create a shearing stress, and wherein said slide-down aid is releasably fastened to the scuttle such that at least part of the slide-down aid slides down on the scuttle in response to said shearing stress.

5,542,492

DEVICE FOR DRIVING, GUIDING AND STEERING A VEHICLE WHEEL

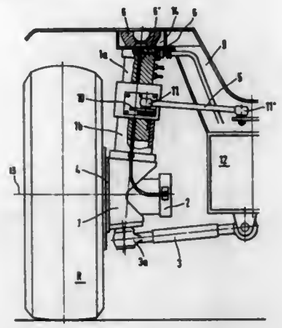
Ernst Kasper, Munderkingen, Germany, assignor to EC Engineering+Consulting Spezialmaschinen GmbH, Ulm-Donautal, Germany

Filed Apr. 12, 1994, Ser. No. 226,482

Claims priority, application Germany, Apr. 15, 1993, 9305633 U

Int. Cl.[6] B60K *7/00;* **B60G** *3/20*

U.S. Cl. 180—253 **5 Claims**



1. A vehicle wheel mounted on a vehicle frame, in combination with an apparatus for driving and steering the vehicle wheel, the combination comprising:

a vehicle frame having an upper section and a lower section;

a wheel movably mounted on the vehicle frame, the wheel including a hub and being rotatable about a rotary axis;

an axle carrier disposed in substantial alignment with the rotary axis of the wheel;

a link-guided shock-absorbing cylinder including an inner tube and an outer tube, the inner tube being partially disposed within the outer tube, and a hydraulic fluid passage extending through the inner and outer tubes, wherein the inner tube has an upper end secured to the upper section of the vehicle frame so as to be movable in a multi-directional manner with respect to the vehicle frame by an elastic bearing, the bearing being secured to a transverse bar at the upper section of the vehicle frame, and wherein the outer tube has a lower end secured to the axle carrier;

a shift transmission received in the axle carrier;

a hydraulic motor fluidly connected to the hydraulic fluid passage extending through the link-guided shock-absorbing cylinder, the hydraulic motor received in the axle carrier; and

wherein the shift transmission and the hydraulic motor are disposed in an area adjacent to the hub of the wheel, and wherein the lower section of the vehicle frame is disposed substantially coextensive with the rotary axis of the wheel.

5,542,493

HALL EFFECT SENSOR ASSEMBLY

Scott B. Jacobson, Kindred, and Kenneth A. Brandt, Fargo, both of N. Dak., assignors to Clark Equipment Company, Woodcliff Lake, N.J.

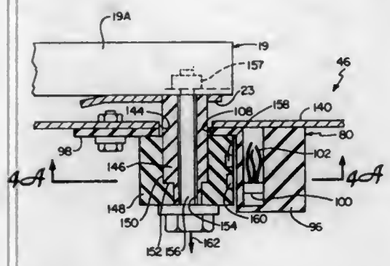
Filed Feb. 22, 1994, Ser. No. 199,827

Int. Cl.[6] B60K *28/04*

U.S. Cl. 180—272 **9 Claims**

1. An apparatus for controlling operation of a skid steer loader having a frame, a seat supported by the frame, wheels supporting the frame, a drive mechanism for driving the wheels, a lift arm structure manipulated by power actuators, and a power circuit for controlling the power actuators, the apparatus comprising:

a seat bar coupled to the frame for movement relative to the seat;



a first Hall effect sensor assembly, coupled to the seat bar, for sensing position of the seat bar and providing a seat bar sensor signal indicative of the position of the seat bar;

a second Hall effect sensor assembly, coupled to the seat, for sensing seat position and providing an occupancy signal indicative of the seat position;

a controller, coupled to the first Hall effect sensor assembly and the second Hall effect sensor assembly, for receiving the seat bar sensor signal and the occupancy signal and providing a traction output signal, a power output signal, and a display output signal, based on the seat bar sensor signal and the occupancy signal;

traction lock means, coupled to the drive mechanism and the controller to receive the traction output signal, for locking the drive mechanism to preclude the drive mechanism from driving the wheels based on the traction output signal;

power lock means, coupled to the power circuit and the controller to receive the power output signal, for locking out operation of the power actuators based on the power output signal; and

display means, coupled to the controller, for displaying indicia indicative of an operational state based on the display output signal.

5,542,494

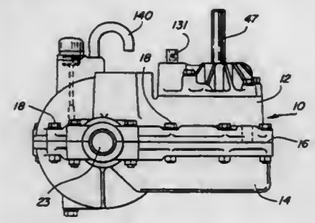
HYDROSTATIC TRANSMISSION AND AXLE ASSEMBLY

Joseph E. Louis, and Alan W. Johnson, both of Ames, Iowa, assignors to Sauer Inc., Ames, Iowa

Continuation of Ser. No. 706,279, May 28, 1991, Pat. No. 5,505,279, which is a continuation of Ser. No. 482,656, Feb. 21, 1990, which is a continuation of Ser. No. 319,164, Mar. 3, 1989, Pat. No. 4,903,545. This application Dec. 13, 1994, Ser. No. 354,525

Int. Cl.[6] F16H *57/02*

U.S. Cl. 180—305 **1 Claim**



1. An axle driving apparatus comprising;

a housing;

a hydrostatic transmission in said housing;

axle shafts extending from said housing;

said housing being defined by at least two separable elements of said axle assembly, wherein at least two of said elements are elements separable at a horizontal parting plane;

differential gearing means within said housing,

said hydrostatic transmission includes cylinder blocks having their axes of rotation generally normal to each other, and further includes a center section separate from and completely within said housing and engaging each of said cylinder blocks.

5,542,495

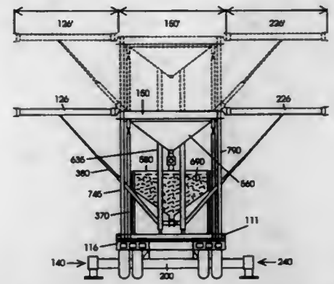
BRIDGE CLEANER AND PAINT/DEBRIS HOLDER APPARATUS

Hardev S. Aulakh, 9905 Georgetown Pike, Great Falls, Va. 22066

Filed Oct. 24, 1994, Ser. No. 328,047

Int. Cl.[6] E04G *1/18*

U.S. Cl. 182—63 **9 Claims**



1. A raisable rectangular vehicle for supporting workers and equipment when servicing understructures comprising:

a rectangular vehicle body with wheels, the vehicle body selected from one of:

a trailer, a truck, and a van;

an elongated floor attached to the vehicle body;

an elongated roof parallel to and located above the elongated floor to create an open space, the roof capable of supporting the weight of workers and equipment, the elongated roof having a grate surface with openings for allowing debris to pass therethrough;

a vertical jacking means for vertically raising the roof to a second position substantially parallel to the floor;

elongated side walls parallel to one another and located about the periphery of the vehicle body for substantially closing off opposite sides of the open space, each side wall having a top end and a bottom end, and at least one side wall capable of supporting the weight of workers and equipment;

an angled jacking means for raising the bottom end of at least one side wall to the same height as the top end of the one side wall;

a first container located beneath the grate surface for receiving the debris from above the grate surface; and

a screw-auger within the vehicle body for passing the debris from the first container to a second container within the vehicle body, wherein the elongated roof and the elongated side walls are raisable within a short time for servicing an understructure.

5,542,496

ROBOTIC CENTERING DEVICE

Carroll R. St. Denis, Suite 14 - 114 Kildare Avenue E., Winnipeg, Manitoba, Canada

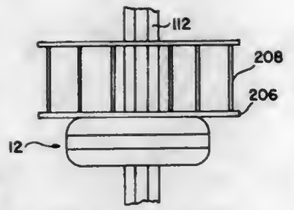
Filed Dec. 15, 1994, Ser. No. 338,879

Int. Cl.[6] B66B *9/02*

U.S. Cl. 182—133 **20 Claims**

1. A robotic centering device to engage peripheral surfaces comprising

base means



at least three peripheral surface engaging drive means operatively associated with said base means

separate positioning means to position each said surface engaging drive means in engagement with said surface

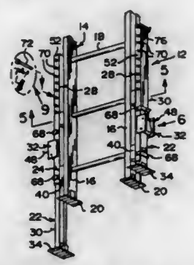
pressure sensing means operatively associated with at least one of said surface engaging drive means

control means for said positioning means,

said control means actuating said separate positioning means toward said surface when said pressure sensing means indicates a pressure less than a predetermined value,

said control means actuating said separate positioning means away from said surface when said pressure sensing means indicates a pressure greater than said predetermined value.

5,542,497
LADDER LEVEL ADJUSTING ATTACHMENT
Witold S. Macyszyn, P.O. Box 612, Hackettstown, N.J. 07840
Filed Nov. 14, 1994, Ser. No. 338,700
Int. Cl.[6] E06C *7/00*
U.S. Cl. 182—201 **3 Claims**



1. A ladder level adjusting attachment for a ladder of the type having a pair of generally parallel side rails, a plurality of hollow rungs interconnecting the side rails and a pair of shoes, each located on a bottom end of each side rail, said attachment comprising:

a) two independent, identical and height adjustable support assemblies, wherein each said support assembly comprises:

i) an outer channel member;

ii) an inner channel member to ride within said outer channel member;

iii) means on said outer channel member for locking said inner channel member in an adjusted position within said outer channel member; and

iv) a shoe on a bottom end of said inner channel member; and

b) means for installing both of said support assemblies against the side rails of the ladder, so that each said support assembly can be height adjusted independently to allow the ladder to stand in a level and stationary position, with respect to all uneven floor and ground base conditions, wherein said installing means comprises:

i) each said outer channel member having two spaced apart holes through a back wall thereof;

ii) four spacers, with each said spacer having an aperture therethrough, whereby two of said spacers are each adapted to be placed in alignment between one side rail at one hollow rung and one said hole in said back wall of one said outer channel member;

iii) two elongated bolts, whereby each said bolt is adapted to be inserted through one said hole in each said back wall of each said outer channel, said aperture in said two spacers on opposite side rails and one hollow rung; and

iv) two nuts, whereby each said nut is threaded onto one end of each said elongated bolt to retain said two outer channel members in a stationary position against the two side rails,

wherein each said locking means is a cam self-locking mechanism and comprises:

i) a pair of plates, each said plate affixed to and extending from one side wall of said outer channel member, so that said plates are directly opposite from each other;

ii) a shaft extending through said plates;

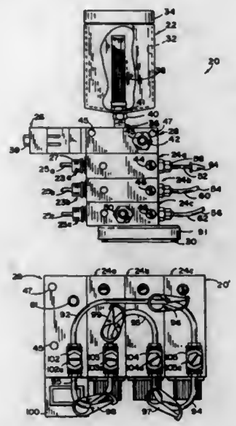
iii) a cam cylinder having a knurled surface and eccentrically carried on said shaft between said plates, so that the knurled surface can engage with a front wall of said inner channel member;

iv) a lever affixed to the knurled surface of said cam cylinder, so that said lever will extend longitudinally between said plates;

v) a spring on said shaft to normally bias said lever outwardly away from the front wall of said inner channel member, so that when said lever is depressed towards the front wall, said cam cylinder will disengage from the front wall of said inner channel member, allowing said inner channel member to slide in said outer channel member for adjustment; and

vi) a connecting rod extending between said plates over said lever, to prevent said lever from accidentally pulling out therefrom and to add rigidity thereto.

5,542,498
PULSE ACTION MIST LUBRICATION SYSTEM
Wallace G. Boelkins, Grand Rapids, Mich., assignor to Uni-Mist, Inc., Grand Rapids, Mich.
Continuation of Ser. No. 1,590, Jan. 7, 1993, abandoned, which is a continuation of Ser. No. 636,502, Dec. 31, 1990, Pat. No. 5,205,378. This application Jul. 1, 1994, Ser. No. 269,636
Int. Cl.[6] F16N *7/32*
U.S. Cl. 184—7.4 **25 Claims**



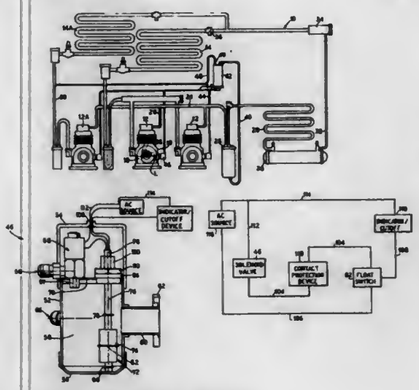
1. A repetitive, pulsatory, fluid-actuated apparatus for dispensing a succession of metered quantities of liquid in response to a control signal, comprising:

means for producing repetitive impulses of compressed gas, pulse-responsive liquid-metering means, and means for applying said impulses of gas to said liquid-metering means such that said repetitive impulses control actuation of said liquid-metering means to cause metered displacement of discrete undispersed quantities of said liquid by said liquid-metering means on a recurring basis corresponding to the repetitions of said impulses;

means defining a chamber and an internal fluid outlet in communication with said chamber and coupled to receive said discrete quantities of undispersed liquid repetitively metered and displaced by said liquid-metering means and arranged to emit said quantities of liquid to within said chamber, said fluid outlet further comprising means for optionally mounting a first outlet tube arranged to directly receive at least some of said quantities of liquid and carry such quantities of liquid beyond said chamber in substantially the same discrete and undispersed form as metered and displaced by said liquid-metering means;

means for optionally mounting a second outlet tube in communication with said chamber and for pneumatically displacing liquid from said chamber and dispersing such liquid into a plurality of minute droplets received by said second outlet tube, and for transmitting pneumatic pressure through said second tube to pneumatically propel such liquid droplets therethrough and provide pneumatic force at a remote point for dispensing of said droplets as a dispersion.

5,542,499
ELECTROMECHANICAL OIL LEVEL REGULATOR
Gary W. Westermeyer, Bluffs, Ill., assignor to AC&R Components, Inc., Chatham, Ill.
Filed Jan. 11, 1995, Ser. No. 371,279
Int. Cl.[6] F01M *11/12*
U.S. Cl. 184—103.2 **19 Claims**



1. A liquid level regulator comprising:

a chamber to contain liquid;

a float which is buoyant relative to said liquid;

a solenoid valve controlling an inlet flow of said liquid into the chamber;

a switch activatable by said float to actuate said solenoid valve at a first predetermined fluid level;

a generally vertical tube on which said float is slidable;

a crossplate within said chamber; and

a compression fitting mounted in said crossplate, said compression fitting adjustably retaining said tube to allow said switch to be adjustably positioned within said chamber.

17. An oil level regulator comprising:

a body with a hollow interior for receiving oil;

an inlet into said interior of said body;

an outlet from said interior of said body;

a vertical tube positioned in said interior;

a float carried on said vertical tube within said interior to be acted upon by oil within said interior so as to cause said float to change vertical position in response to an oil level within said interior;

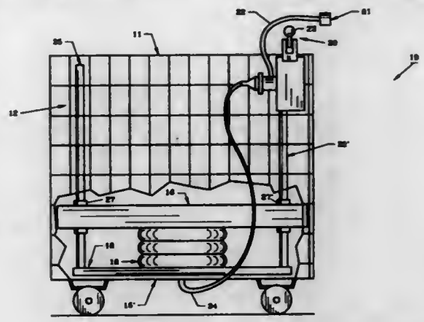
a switch positioned within said tube and actuated by movement of said float to a predetermined level;

an adjustment mechanism for said tube to provide vertical adjustability to said predetermined level;

a solenoid valve controlled by said switch and associated with said inlet to admit oil to said interior when said switch is actuated; and

a crossplate in said interior to which said adjustment mechanism is removably mounted.

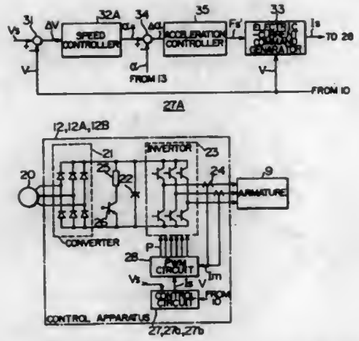
5,542,500
WORKCAR INSERT
David L. Emrey, 1206-L Whilden Pl., Greensboro, N.C. 27408
Filed Jul. 1, 1994, Ser. No. 269,523
Int. Cl.[6] B66B *9/04*
U.S. Cl. 187—273 **7 Claims**



1. A pneumatically elevatable workcart container insert comprising: a horizontal rectangular bottom frame having four sides, an elevatable platform, a first and a second stabilizing vertical rod, said first stabilizing vertical rod attached to the midpoint of a side of said horizontal rectangular frame, said second stabilizing vertical rod attached to the midpoint of the side of said horizontal rectangular frame opposite said first stabilizing vertical rod, said elevatable platform slidably affixed to said first vertical rod and said opposing second vertical rod for movement therealong with said elevatable platform positioned above said horizontal rectangular frame, a pneumatic bellows, said pneumatic bellows mounted on said frame and attached to said elevatable platform wherein said elevatable platform is elevated by inflating said pneumatic bellows.

5,542,501
APPARATUS FOR CONTROLLING AN ELEVATOR TO REDUCE VIBRATIONS CREATED IN A LINEAR DRIVE MOTOR
Hiroyuki Ikejima, and Masanori Yasue, both of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation-in-part of Ser. No. 988,848, Dec. 10, 1992, abandoned. This application Nov. 17, 1994, Ser. No. 344,631
Claims priority, application Japan, Dec. 10, 1991, 3-326160
Int. Cl.[6] B66B *1/34*
U.S. Cl. 187—292 **11 Claims**

1. An apparatus for controlling an elevator which drives an elevation member including a car by a linear induction motor, comprising:



conductor plates of said linear induction motor which are disposed in a direction in which said elevation member is moved;

armatures of said linear induction motor which are disposed on said elevation member while facing said conductor plates;

an inverter for supplying alternating power to said armatures;

a speed sensor for detecting the moving speed of said elevation member;

an acceleration sensor for detecting the moving acceleration of said elevation member; and

a control circuit for controlling said inverter in accordance with a speed command to be issued to said elevation member, said moving speed supplied from said speed sensor and said moving acceleration supplied from said acceleration sensor, wherein

said control circuit includes

a speed controller for generating an acceleration command to be issued to said elevation member in accordance with a speed deviation between a speed command to be issued to said elevation member and said moving speed,

an acceleration controller for generating a corrected propulsion command to be issued to said elevation member in accordance with an acceleration deviation between an acceleration command and said moving acceleration;

electric power command generating means for generating an electric power command to be issued to said inverter in accordance with said corrected propulsion command and said moving speed, and

said moving acceleration is feedback-controlled by said control circuit, and the acceleration controller includes a cut-off frequency sufficiently high to compensate for changes of propulsion and propulsion ripples.

5,542,502

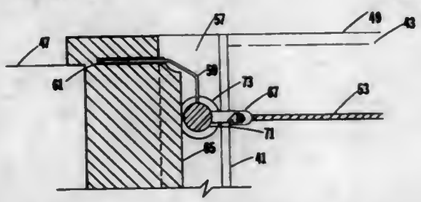
HOIST DRIVEN RESCUE MAT FOR SWIMMING POOL

Reginald K. Scriven, 7122 Canary Dr., Fayetteville, N.C. 28314

Filed May 2, 1995, Ser. No. 432,681

Int. Cl.[6] B66B *7/00*

U.S. Cl. 187—414 **3 Claims**



1. A mat device for rescuing an individual from a swimming pool, comprising:

a horizontally disposed framework defined by an elongated border with a netted interior and circular looped holes disposed on the ends of the narrow side of said framework;

a plurality of hooked connectors for reception in each of said looped holes of said border of said framework;

a plurality of dual component wheels consisting of a smaller stationary wheel and a larger rotating wheel wherein each said connector is attached perpendicularly to each said stationary wheel;

a plurality of cables attachable to the topmost portion of each said stationary wheel;

a plurality of recessed tracks, disposed perpendicular to said narrow end of said framework, wherein said component wheels move vertically in said track, and disposed generally near the top of said recessed track is a conduit in which said cable extends.

5,542,503

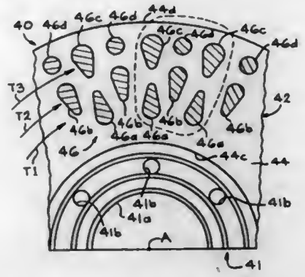
ROTOR FOR DISC BRAKE ASSEMBLY

Michael E. Dunn, Canton, and Don Varnelis, Belleville, both of Mich., assignors to Kelsey-Hayes Company, Romulus, Mich.

Filed Jun. 6, 1995, Ser. No. 479,903

Int. Cl.[6] F16D *55/02*

U.S. Cl. 188—18 A **37 Claims**



1. A brake rotor adapted for use in a disc brake assembly comprising:

first and second friction plates defining an axis of rotation; and

a plurality of posts extending between said first and second friction plates, said plurality of posts including a first post and a second post which are radially aligned with one another and are formed symmetrically relative to a first bisecting radius extending from said axis of rotation, said plurality of post further including a third post and a fourth post which are radially aligned with one another and are formed symmetrically relative to a second bisecting radius extending from said axis of rotation, said first and second bisecting radii extending at an angle relative to one another, said third post radially overlapping portions of said first post and said second post.

5,542,504

EXTERNAL CONCENTRIC AIRCRAFT BRAKE PISTON ADJUSTER

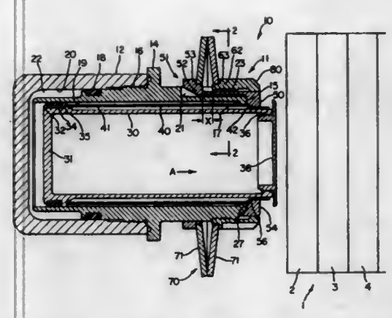
Fred W. Berwanger, South Bend, Ind., assignor to AlliedSignal Inc., Morristown, N.J.

Filed Aug. 5, 1994, Ser. No. 286,300

Int. Cl.[6] F16D *65/54*

U.S. Cl. 188—71.8 **21 Claims**

1. A brake piston adjuster assembly, comprising a brake piston slidable within a bore of a housing and extending to an open end of the bore, a deformable member located about the piston and displaceable therewith, a collar member located externally of said bore and adjacent the open end, the collar member separate from the piston and extending axially from a first end to a second



radially inwardly extending end which engages the deformable member located about the piston, nut means located adjacent the collar member and connected with the housing so that the collar member is movable relative thereto, the nut means having a first end located adjacent the first end of said collar member, and resilient means disposed between said first ends of the collar member and nut means to bias the collar member toward the first end of said piston, so that movement of the piston and deformable member through the open end of the bore causes said collar member to move therewith and operate said resilient means until the first ends of the collar member and nut means engage whereupon the collar member deforms the deformable member as the piston moves outwardly of said bore.

5,542,505

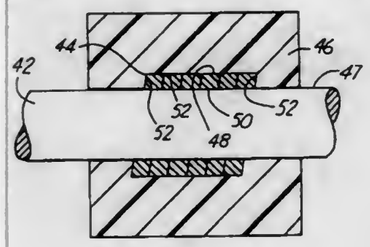
TORQUE LIMITING DEVICE WITH RESTRAINING MECHANISM

Mark Kempf, Inver Grove Heights, and Phil Billings, Shoreview, both of Minn., assignors to Vadnais Technologies Corporation, St. Paul, Minn.

Filed May 26, 1995, Ser. No. 452,062

Int. Cl.[6] F16D *63/00*

U.S. Cl. 188—77 W **9 Claims**



1. A torque limiting device comprising:

a shaft having a longitudinal axis;

a wrap extending around the shaft such that the wrap is frictionally engaged with the shaft, the wrap having an inner and an outer surface; and

restraining means engaging the outer surface of the wrap at all stages of operation of the torque limiting device to prevent the wrap from rotating relative to the retraining means as the shaft is rotated about its axis.

5,542,506

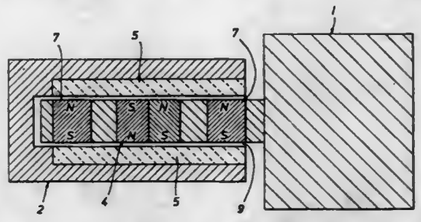
MAGNET-SUPERCONDUCTOR SYSTEMS FOR CONTROLLING AND INFLUENCING RELATIVE MOTION

Chase K. McMichael; Ki-Bui Ma, both of Houston, and Wei-Kan Chu, Pearland, all of Tex., assignors to University of Houston-University Park, Houston, Tex.

Filed Dec. 3, 1991, Ser. No. 802,090

Int. Cl.[6] F16F *9/36*

U.S. Cl. 188—267 **4 Claims**



1. An apparatus for damping relative motion between a first and second member that are in proximity to each other, the apparatus comprising:

a magnet affixed to the first member having a magnetic field profile; and

a superconductor which is affixed to the to the second member and that has been field cooled in the presence of a magnetic field having a checkerboard pattern, pinning the magnetic flux profile within the superconductor;

wherein the magnet and the superconductor are oriented such that as the first and second members move relative to each other, the magnetic field profile of the magnet will move through the pinned magnetic flux profile, and the magnetic field profile of the magnet and the pinned magnetic flux profile are such that as the magnetic field profile of the magnet moves through the pinned magnetic flux profile, the relative motion of the first and second members is damped.

5,542,507

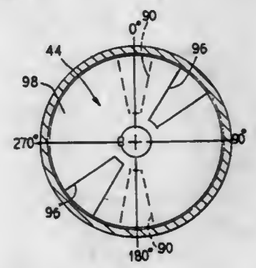
POSITION DEPENDENT VARIABLE OUTPUT TORQUE VISCOUS DAMPER

Mark Warchocki, Sanborn, and Walter P. Pukalo, Cheektowaga, both of N.Y., assignors to Vibratech, Inc., Buffalo, N.Y.

Filed Nov. 22, 1994, Ser. No. 343,114

Int. Cl.[6] A63B *21/00*; F16D *57/02*

U.S. Cl. 188—290 **20 Claims**



1. A rotary viscous damper, comprising:

a first member and a second member, said first member arranged to continuously rotate about an axis of rotation with respect to said second member, and said first and second members arranged having a first gap therebetween for filling with viscous fluid;

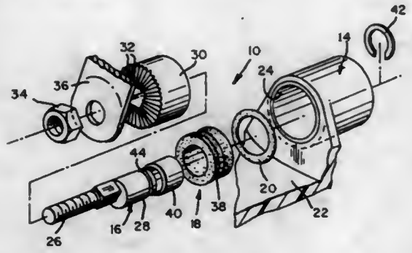
wherein said first member provides at least one first indentation on a first side thereof facing said first gap and said second member also has at least one second indentation facing said first gap and said first side of said first member said first and second indentations alignable at a rotary position of said first and second members.

5,542,508

FLUID FREE DAMPER

Donald L. Van Erden, Wildwood, and Jan Toczycki, Chicago, both of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Filed Jun. 26, 1995, Ser. No. 494,682
Int. Cl.[6] F16D *57/00*
U.S. Cl. 188—290 **20 Claims**



1. A fluid free damper, comprising:

first and second members operably positioned proximate to each other one of said first and second members comprising an inelastic spindle member;

means mounting one of said first and second members for eccentric rotatable movement with respect to the other one of said first and second members; and

substantially solid engagement means positioned between said first and second members so as to be deformably compressed between said first and second members and thereby generate a resistive damping force between said first and second members upon said eccentric rotatable movement of said one of said first and second members with respect to said other one of said first and second members.

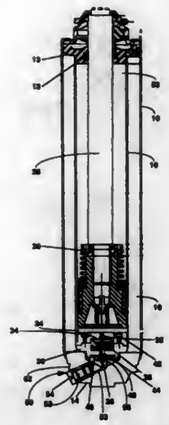
5,542,509

SHOCK ABSORBER HAVING EXTERNALLY ADJUSTABLE COMPRESSION

Stephen H. Bell, Guelph, Canada, assignor to Gabriel Ride Control Products, Inc., Brentwood, Tenn., and Polaris Industries, LP, Roseau, Minn.

Continuation of Ser. No. 459,299, Jun. 2, 1995, abandoned, which is a continuation-in-part of Ser. No. 210,586, Mar. 18, 1994, abandoned, which is a continuation of Ser. No. 212,010, Mar. 11, 1994, abandoned. This application Oct. 23, 1995, Ser. No. 546,625
Int. Cl.[6] F16F *9/34*
U.S. Cl. 188—322.14 **3 Claims**

1. In a shock absorber including: an inner tubular member that defines a cylindrical chamber having a central longitudinal axis; an outer tubular member that is coaxial with the inner tubular member; a piston that is slidably mounted within the cylindrical chamber parallel to the central longitudinal axis of the cylindrical chamber; a piston rod that extends from one side of the piston outwardly from one end of the tubular member and that has a longitudinal axis which is coaxial with the axis of the cylindrical chamber; means on the one end of said tubular member for closing the one end of said tubular member and for slidably sealingly engaging the piston rod; a hydraulic fluid filled rebound chamber and a hydraulic fluid filled compression chamber, defined within



said cylindrical chamber on the piston rod side of the piston and on the opposite side of the piston, respectively; a hydraulic fluid reservoir defined by the inner tubular member and the outer tubular member; means for permitting the flow of hydraulic fluid between the reservoir and the compression chamber and between compression and rebound chambers to accommodate the flow of hydraulic fluid resulting from piston and piston rod displacement within the tubular member, the improvement comprising:

(A) a compression head subassembly which is adapted to be brought to and assembled onto the other end of the inner tubular member as a completely self contained subassembly and which includes: a replenishing valve and a centrally disposed, spring biased compression valve, which valves are in fluid communication with the reservoir and the compression chamber; a first counterbore having a first end, a second end, and a central longitudinal axis generally parallel to the central longitudinal axis of the cylindrical chamber, with the first end of the first counterbore being adjacent to the compression valve, and with the second end of the first counterbore being open to the exterior of the compression head sub-assembly; a movable spring seat that is disposed in the first counterbore, that is adapted to be moved, in the first counterbore and parallel to the central longitudinal axis of the first counterbore, toward and away from the first end of the first counterbore, and that includes a member which, in part, protrudes out of the second end of the first counterbore; means for limiting the movement of the spring seat toward the first end of the first counterbore; a coil compression spring disposed within the first counterbore, with one end of the spring being connected with the compression valve and with the other end of the spring being connected with the spring seat; means for limiting the movement of the spring seat away from the first end of the first counterbore and for preventing removal of the spring and spring seat from the second end of the first counterbore; and a first surface that includes, in part, the second end of the counterbore and that has a preselected configuration; and

(B) an end cap subassembly which is adapted to be brought to and assembled onto the other end of the outer tubular member as a completely self contained subassembly after the compression head assembly has been assembled onto the other end of the inner tubular member and which includes: a second counterbore having a first end and a second end, with the first end of the second counterbore being open to the exterior of the end cap subassembly; a threaded screw having a first end and a second end, with the screw being threadingly received within the second counterbore, with the first end of the screw having a head thereon and being adjacent to the first end of the second counterbore, and with the second end of the screw having means adapted to protrude out of the second end of the second counterbore for engaging the protruding part of the

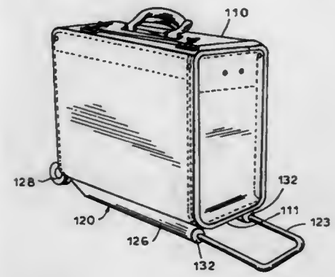
spring seat member; a first surface that includes, in part, the second end of the second counterbore and that has a configuration substantially matching the configuration of the first surface of the compression head subassembly so that when the end cap subassembly is brought to and assembled onto the other end of the outer tubular member, the first surfaces of the compression head and end cap subassemblies are in substantial surface-to-surface contact, the second ends of the first and second counterbores are adjacent to each other such that the second end of the screw is adapted to engage the protruding part of the spring seat and such that selective rotation of the screw, relative to the second counterbore, will move the spring seat selectively toward or away from the one end of the first counterbore.

5,542,510

ROLLING CATALOG CASE WITH PULL-OUT HANDLE

Richard J. Rekuc, Pattenburg, and James O'Shea, Annadale, both of N.J., assignors to Royalox International, Inc., Phillipsburg, N.J.

Continuation of Ser. No. 133,976, Oct. 8, 1993, Pat. No. 5,435,423. This application May 4, 1995, Ser. No. 434,734
The portion of the term of this patent subsequent to Oct. 8, 2013, has been disclaimed.
Int. Cl.[6] A45C *5/14;13/28*
U.S. Cl. 190—18 A **4 Claims**



1. An article of luggage comprising:

a case having a bottom, a top and walls connecting the bottom with the top;

at least one pair of wheels mounted on said case at said bottom; and

a handle assembly affixed to said bottom of said case and comprising:

guide means forming a pair of transversely spaced mutually parallel molded channels affixed along said bottom of said case and open at one end, said guide means forming feet on said case and on which said case can rest on the ground,

a stirrup-shaped handle having respective shanks of lengths corresponding substantially to lengths of said channels and received in said channels, and a cross-bar connecting said shanks externally of said channels, said shanks emerging from said channels at said one ends thereof and having free ends in said channels, said free ends being provided with respective formations, said channels being provided with means for guiding said shanks between retracted positions of the shanks wherein said shanks are substantially fully received in said channels and said free ends of said shanks are located at locations distal from said one ends of said channels and extended positions of the shanks wherein said free ends of said shanks are located at locations close to said one ends of said channels, and

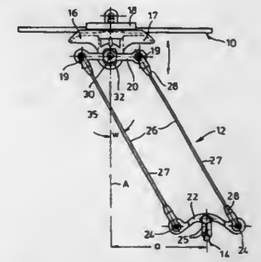
retaining means formed with respective deformable portions in walls of said channels at said locations and releasably receiving said formations on said free ends of said shanks to lock said handle releasably in a fully retracted and in a fully extended position only at said locations.

5,542,511

APPARATUS FOR SUSPENDING AT LEAST ONE CURRENT-CARRYING CONTACT WIRE FOR CURRENT COLLECTORS OF OVERHEAD LINE BUSES OR TRAMS

Daniel Steiner, Fischbach; Willy Brassel, Dottikon, and Karl Hagmann, Zürich, all of, Switzerland, assignors to Kummler + Matter AG Fahrleitungstechnik, Zurich, Switzerland

Filed Feb. 17, 1993, Ser. No. 18,898
Claims priority, application Germany, Oct. 15, 1992, 42 34 755.6
Int. Cl.[6] B60M *1/225*
U.S. Cl. 191—41 **22 Claims**



10. An apparatus for supporting at least one current-carrying contact wire from a support cable wherein the contact wire contacts the current collectors of an electrical vehicle comprises:

clamping means secured to the support cable for suspending a gripping member for supporting the at least one current-carrying contact wire, said clamping means having a clamping cover and a support shoe each formed of an electrical insulating material and means for securing the support cable between the clamping cover and the support shoe, said support shoe having receiving means for pivotally receiving support means for carrying the gripping member, said receiving means comprises a connection eye for receiving insert means for pivotally securing the support means to the support shoe, and

wherein the support shoe is a suspension harness which is rotatable about at least one axis.

5,542,512

SELECTOR DEVICE FOR AN AUTOMATIC TRANSMISSION SYSTEM PROVIDED WITH LOCKING MEANS

Kazutaka Maehara, Saitama-ken, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

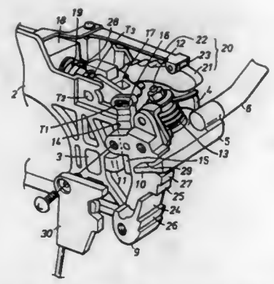
Filed Feb. 27, 1995, Ser. No. 394,853
Claims priority, application Japan, Mar. 7, 1994, 6-064674
Int. Cl.[6] B60K *20/02*
U.S. Cl. 192—4 A **7 Claims**

1. A selector device for an automatic transmission system, comprising:

a base bracket;

a rotatable member mounted on said base bracket so as to be rotatable around a first pivot shaft;

a fork member mounted on said rotatable member so as to be tiltable around a second pivot shaft extending substantially perpendicularly to said first pivot shaft, and provided with a first end which is bifurcated on a plane substantially perpendicular to said second pivot shaft into a first engagement claw



and a second engagement claw defining a gap therebetween, and a second end to which a base end of a selector lever is fixedly secured;

a checker cam securely attached to said base bracket and extending along a path of movement of said gap between said engagement claws defined as said rotatable member rotates around said first pivot shaft, said checker cam being provided with a cam surface opposing said first engagement claw and extending along a path of movement of said first engagement claw defined as said rotatable member rotates around said first pivot shaft, said cam surface including a recess corresponding to a park range position of said selector lever and a raised part provided adjacent to said recess;

a slide member which can be selectively placed in an engagement position located between said second engagement claw and a part of said checker cam opposing said second engagement claw, and a release position not interfering with a movement of said second engagement claw resulting from said tilting movement of said fork member around said second pivot shaft;

an actuator for selectively moving said slide member between said engagement position and said release position; and

spring means for normally urging said first engagement claw toward said cam surface of said checker cam;

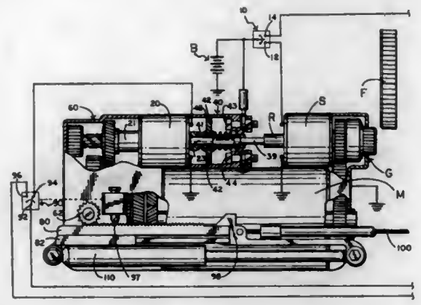
said recess and said gap between said first and second engagement claws being so dimensioned that said first engagement claw is received in said recess when said selector lever is shifted to said park range position, and that said first engagement claw is prevented from going over said raised part when said slide member is in said engagement position and said selector lever is attempted to be moved out of said park range position by tilting said selector lever against a spring force of said spring means, and said first engagement claw is allowed to be moved over said raised part when said slide member is in said release position and said selector lever is attempted to be moved out of said park range position by tilting said selector lever against a spring force of said spring means.

5,542,513

PARKING BRAKE SYSTEM

Daniel Reyes, 11530 Griffing Blvd. #11, North Miami, Fla. 33161

Filed Mar. 7, 1994, Ser. No. 207,366
Int. Cl.[6] F16D *67/02*
U.S. Cl. 192—9 **13 Claims**



1. An automatic parking brake system for a vehicle with wheels and an electric power source that includes a electric starter motor contactor means having first and second contacts and a contact element for closing the circuit between said first and second contacts and said first contact being connected to said electric power source and said second contact being connected to said starter motor, first solenoid means for actuating said contactor means that in turn is activated by a first switch that is connected to said electric power source and said vehicle further including first gear means for meshed engagement with a flywheel in said vehicle to transmit the rotational movement from said starter motor to said flywheel and said vehicle including wheel brake means on at least one of the vehicle's wheels, and said parking brake system comprising:

A second solenoid means for actuating said contactor means thereby connecting said electric power source to said electric starter motor upon activation of said second solenoid means;

B second switch means for selectively activating said second solenoid means;

C second gear means for meshed engagement with said electric starter motor; and

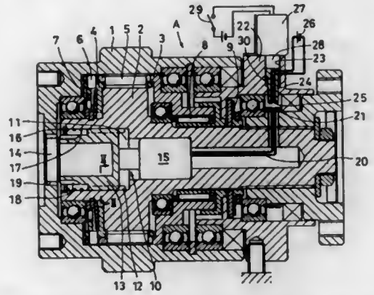
D means for meshed engagement with said second gear means and for using the rotational movement of said second gear means to activate said wheel brake means.

5,542,514

ROTATIONAL TRANSMISSION DEVICE

Kenichiro Itoh, Iwata-gun, and Kenro Adachi, Iwata, both of, Japan, assignors to NTN Corporation, Osaka, Japan

Filed Jun. 3, 1994, Ser. No. 253,560
Claims priority, application Japan, Jun. 10, 1993, 5-138237; Jun. 10, 1993, 5-138299
Int. Cl.[6] F16D *47/04*
U.S. Cl. 192—40 **7 Claims**



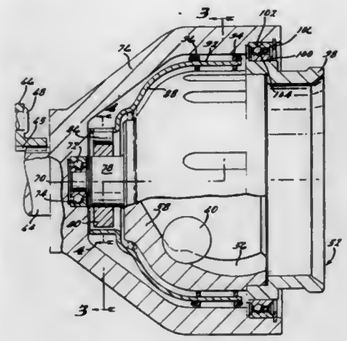
1. A rotation transmission device comprising a driving member and a driven member rotatably mounted one around the other, a plurality of engaging elements disposed between said driving member and said driven member and adapted to engage said driving member and said driven member to couple them together when they rotate in either direction, a first retainer and a second retainer mounted between said driving member and said driven member for keeping said engaging elements circumferentially spaced apart by a predetermined distance from one another, said first retainer and said driving member being coupled together so as to be rotatable relative to each other with a play left therebetween, said second retainer having a bent portion radially extending and being coupled to said driving member through said bent portion so that said second retainer and said driving member will rotate relative to each other when a predetermined torque is applied to said second retainer, said first retainer and said second retainer being formed with a plurality of pockets to receive said engaging elements, a turning effort imparting means provided between said first retainer and said second retainer for imparting to said first retainer a turning effort in one direction, a rotation resistance imparting means for applying a force resisting the rotation of said first retainer in said one direction, said first retainer having an extension portion, a one-way clutch provided between said first retainer and said rotation resistance imparting means at said extension portion for turning on and off the coupling therebetween, said rotation resistance produced by said rotation resistance imparting means being set to be larger than the turning effort produced by said turning effort imparting means, and a coupling means for selectively coupling and disconnecting said driven member to and from said driving member.

5,542,515

DEVICE FOR CONTROLLING A PART-TIME DRIVE AXLE FOR A MOTOR VEHICLE

John A. Richardson, Windsor, Canada, and Dean L. Nicopolis, Northville, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 8, 1994, Ser. No. 225,106
Int. Cl.[6] F16D *41/064*
U.S. Cl. 192—44 **12 Claims**



1. A mechanism for transmitting power, comprising:

a first member supported for rotation about an axis, defining pairs of inclined surfaces spaced mutually angularly about said axis, having clutch surfaces spaced angularly about said axis, a trigger roller contacting each clutch surface, spring means urging each trigger roller to move in a first direction on the corresponding clutch surface and to resist said movement in a second direction opposite the first direction;

a second member supported for rotation about said axis, defining a surface surrounding the inclined surfaces;

a roller retainer adapted to rotate about said axis responsive to rotation of one of the first and second members with respect to the other of said first and second members;

first and second mutually spaced trunnion rings surrounding the inclined surfaces and moveable angularly about said axis with the roller retained;

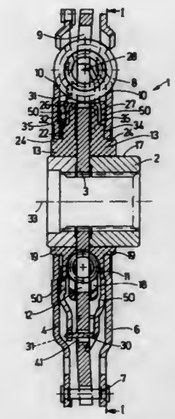
drive rollers located for contact with the inclined surfaces and located between the first and second trunnion rings, supported rotatably on the trunnion rings, rotation of one of the first and second members relative to the other of said first and second members causing the drive rollers to ascend a corresponding inclined surfaces, thereby to engage driveably the drive rollers with the surface of the second member and an inclined surface of the first member.

5,542,516

FRICTION CLUTCH FOR A TRANSMISSION OF A MOTOR VEHICLE AND A CLUTCH PLATE FOR A FRICTION CLUTCH

Erwin Wack, Niederwerrn, Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Germany

Filed Oct. 13, 1994, Ser. No. 322,591
Claims priority, application Germany, Oct. 15, 1993, 43 35 211.1
Int. Cl.[6] F16D *13/64;3/14*
U.S. Cl. 192—70.17 **20 Claims**



11. A clutch plate for a friction clutch, said clutch plate defining an axis of rotation and an axial direction parallel to said axis of rotation, and said clutch plate comprising:

a hub, said hub comprising means for engaging shaft means of a transmission;

a hub disc disposed concentrically about said hub and extending radially away from said hub, said hub disc having a first side and a second side;

a first cover plate disposed adjacent said first side of said hub;

a second cover plate disposed adjacent said second side of said hub;

at least one of said first and second cover plates comprising at least one friction lining;

said first and second cover plates being relatively rotatable about said hub with respect to said hub disc;

biasing means for torsionally damping relative rotational movement between said hub disc and said first and second cover plates;

at least one friction disc disposed about said hub between said hub disc and one of said first and second cover plates, said at least one friction disc defining a main surface substantially transverse to said axis of rotation;

said at least one friction disc comprising at least one portion for engaging with said biasing means;

said at least one portion for engaging comprising means for engaging with and receiving a biasing force of said biasing means;

said means for engaging comprising first and second planar members, said first and second planar members being disposed substantially parallel to one another and substantially transverse to said main plane, with said first planar member disposed towards said biasing member, and with at least a portion of said first planar member disposed spaced apart from said second planar member; and

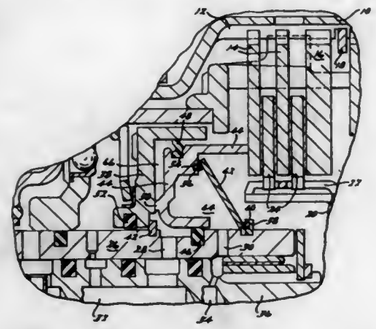
said at least a portion of said first planar member being elastically deformable towards said second planar member by means of the biasing force to absorb at least a portion of the biasing force.

5,542,517

BALANCE DAM RETURN SPRING FOR FRICTION ELEMENT OF AN AUTOMATIC TRANSMISSION

Nancy A. Peruski, Monroe, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 5, 1994, Ser. No. 349,295
Int. Cl.[6] F16D *25/0638*
U.S. Cl. 192—85 AA **7 Claims**



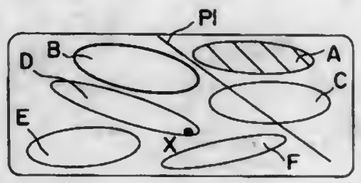
1. A friction element for engaging and disengaging a drive connection, comprising:
- a first member having a first set of friction discs drivably connected thereto;
- a second member having a second set of friction discs drivably connected thereto, each disc of the second set located between a disc of the first set;
- a cylinder;
- a pressure plate for limiting displacement of the first and second sets of friction discs;
- a piston located in the cylinder, supported for displacement toward and away from the friction disc sets, producing a drive connection between the first and second sets of friction discs and the first and second members;
- a spring having a first surface fixed against displacement, said spring resiliently resisting displacement of the piston, the spring and piston defining a chamber therebetween; and
- means for hydraulically sealing the chamber against passage of hydraulic fluid.

5,542,518

METHOD OF IDENTIFYING THE DENOMINATIONS OF PIECES OF PAPER

Kazuo Kurosawa; Kazuto Matsuo, and Akira Minoguchi, all of Kouza-gun, Japan, assignors to Toyo Communication Equipment Co., Ltd., Kangawa, Japan

Filed May 24, 1995, Ser. No. 449,765
Claims priority, application Japan, May 25, 1994, 6-134930
Int. Cl.[6] G06K *9/00;* **G07D** *7/00*
U.S. Cl. 194—206 **1 Claim**



1. A method of identifying the denominations of pieces of paper comprising the steps of:

obtaining the distribution of image data for each of N denominations to be identified;

defining a separating hyperplane for each of all combinations of two denominations taken from the N denominations which divides a space so that distribution ranges of the image data of the two denominations are completely separated into different regions and storing the data defining the separating hyperplanes as template data in memory means;

selecting two denominations from the N denominations and retrieving the template data corresponding to the combination of denominations from said memory means when the image data of a piece of paper of an unknown denomination is read in with means for reading patterns;

determining which one of the regions divided by said separating hyperplane, said image data of said piece of paper is in;

discarding the denomination in the region in which said image data of the piece of paper is not present;

repeating the same procedures by selecting two denominations from remaining candidate denominations to reduce the number of the candidate denominations until only one denomination is left; and

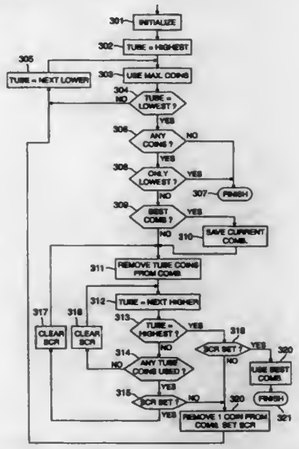
determining that the denomination remaining to the last is the denomination of said piece of paper.

5,542,519

METHOD AND APPARATUS FOR CONTROLLING THE DISPENSING OF MONEY

John A. Weston, Reading, and Anthony D. Johnson, Wokingham, both of, United Kingdom, assignors to Mars Incorporated, McLean, Va.

PCT No. PCT/GB93/01623, § 371 Date Jan. 27, 1995, § 102(e) Date Jan. 27, 1995, PCT Pub. No. WO94/03875, PCT Pub. Date Feb. 17, 1994
PCT Filed Jul. 30, 1993, Ser. No. 374,654
Claims priority, application United Kingdom, Jul. 30, 1992, 9216205
Int. Cl.[6] G07D *1/06*
U.S. Cl. 194—217 **25 Claims**



20. A method of controlling the dispensing of money in the form of units having a plurality of denominations, the method comprising:
- (i) determining a dispensing amount representing a desired amount to be dispensed;
- (ii) determining different combinations of monetary units which in total equal the dispensing amount;
- (iii) comparing said different combinations; and
- (iv) selecting one of said combinations for use when dispensing;

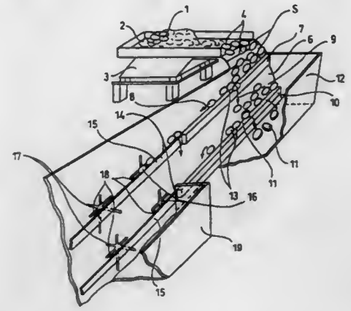
wherein one combination is formed by giving priority to units in order of denomination, with the highest denomination having the highest priority, and a further combination is formed using the same priority except that the number of units of one denomination, which is higher than the lowest denomination, is equal to one less than that determined according to priority.

5,542,520

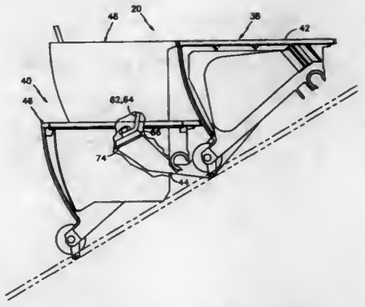
COIN TESTING APPARATUS

Weinfried Beisel, Wilnsdorf; Hans-Michael Schwarz, Karlsbad, and Bodo Morgenstern, Marburg-Wehrshausen, all of, Germany, assignors to Grabener Pressensysteme GMBH & CO KG, Netphen; Hans-Michael Schwarz, Karlsbad, and Bodo Morgenstern, Marburg-WehrsHausen, all of, Germany

Filed Jun. 14, 1994, Ser. No. 259,426
Claims priority, application Germany, Jun. 18, 1993, 43 20 123.7
Int. Cl.[6] G07D *5/02*
U.S. Cl. 194—335 **26 Claims**



1. A testing apparatus for substantially round discs comprising a guide (**15, 23, 41**) that supports the discs at their circumference and on at least one of their sides for movement past at least a gauge (**16**) for determining diameter and roundness by determining a plurality of radii of the disk comprising two rows (**24, 25**) of light-sensitive elements on a surface or along the gauge, said elements being arranged on one side of a major plane of the discs and essentially parallel to the plane in such a way that at least one of the rows (**24, 25**) essentially runs along the guide (**23**); a light source (**20**) arranged on an opposite side of the plane of the discs and that casts light (**21**) onto the light-sensitive elements (**24, 25**); and an evaluation unit (**29**) that processes signals generated by the light-sensitive elements (**24, 25**).



means for selectively raising said middle section, thereby maintaining said top of said middle section in the same plane as the top of said higher step;

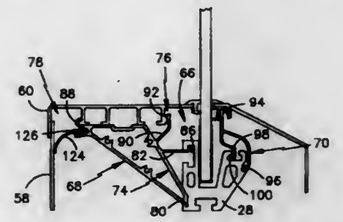
wherein said support arm extends out from beneath said higher step and continues under said lower step to support passenger loads on said middle section when raised.

5,542,522

BALUSTRADE ASSEMBLY AND METHOD FOR ASSEMBLING A BALUSTRADE ASSEMBLY

Willy Adrian, Obernkirchen; Frank Bäthge, Hanover; Peter Borchers, Alfeld; Kurt Pietsch, Minden; Knuth Wallbaum, Wunstrof, and Gerald Wente, Pohle, all of, Germany, assignors to Otis Elevator Company, Farmington, Conn.

Filed Apr. 26, 1993, Ser. No. 52,880
Int. Cl.[6] B65G *15/00*
U.S. Cl. 198—337 **20 Claims**



1. A balustrade assembly having a balustrade panel for supporting a handrail, comprising:
- a shaped panel holder, having a cross-sectional profile that extends in a lengthwise direction;
- an inner profile;
- an outer decking; and
- means for clipping said inner profile and said outer decking to said panel holder;
- wherein said means for clipping attaches said inner profile and said outer decking to said panel holder in a constant aligned position, relative to said panel holder and to each other, independent of the balustrade panel, at any position along said length of said panel holder, thereby eliminating the need to adjust the position of said inner profile and said outer decking.

5,542,521

STEP PLATFORM FOR AN ESCALATOR

Helmut J. W. Meyer, Bueckeburg; Hermann W. Ahls, Obernkirchen OT Vehlen; Klaus Blaseck, Burgdorf-Ehlershausen, and Udo Schmitting, Schwafoerden, all of, Germany, assignors to Otis Elevator Company, Farmington, Conn.

Filed Oct. 5, 1994, Ser. No. 318,305
Int. Cl.[6] B66B *29/08*
U.S. Cl. 198—324 **15 Claims**

1. A step platform for an escalator having a first landing, a second landing, and an inclined section therebetween, comprising:
- a higher step, having a top and a support arm;
- a lower step, comprising
  - a main body;
  - a raisable middle section, having a top; and

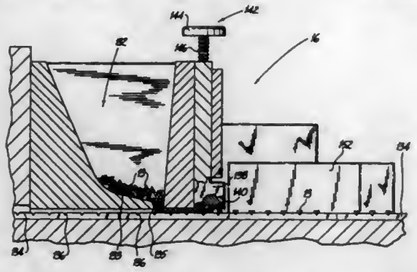
VOL 1189 SS 1 AG 6 1996 UMI

5,542,523

NEEDLE TRANSPORTING APPARATUS

Richard Abbate, Wallingford, and Richard Parente, Milford, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 131,908, Oct. 5, 1993, abandoned, which is a division of Ser. No. 959,151, Oct. 9, 1992, Pat. No. 5,282,715. This application Jan. 13, 1995, Ser. No. 372,706
Int. Cl.[6] B65G *47/24*
U.S. Cl. 198—384 16 Claims



1. A system for processing a plurality of elongated workpieces each having a polygonal cross-sectional configuration, said system comprising:

a movable track having a plurality of spaced apart workpiece receiving grooves each having a cross-sectional configuration which complements the cross-sectional configuration of each of said workpieces, said grooves provided to receive said workpieces in a predetermined fashion;

a contacting element positioned above said movable track to contact and urge workpieces which remain unseated on said track into unoccupied grooves;

stationary aligning means having a fixed position with respect to said movable track for sequentially aligning the workpieces in a longitudinal side-by-side arrangement on the track such that a first end portion of each of the workpieces is presented in a desired orientation; and

holding means separate from said aligning means and having first and second jaw members movable between a first open position and a second closed position for simultaneously receiving and subsequently grasping at least said first end portion of a plurality of said workpieces prior to removal of said plurality of workpieces from said track.

5,542,524

SEPARATOR/FEEDER FOR HEADED FASTENERS

K. Sakoda, Toyohashi, Japan, assignor to Emhart Inc., Newark, Del.

Filed Sep. 16, 1994, Ser. No. 307,955
Claims priority, application Japan, Sep. 16, 1993, 5-050304 U
Int. Cl.[6] B65G *47/24*
U.S. Cl. 198—409 3 Claims

1. A separator/feeder housing for headed fasteners, comprising

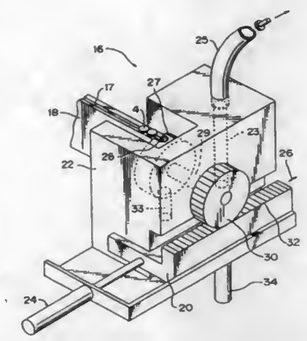
a chute supported in said housing for receiving a plurality of said headed fasteners with their shanks in line in a groove in said chute and their heads being above said groove,

an outlet for said chute,

a shuttle reciprocatingly supported in said housing having a storage cavity therein for receiving one of said fasteners,

drive means connected to said housing for reciprocating said shuttle between a first position in said housing in which said storage cavity of said shuttle receives said one fastener from said chute and a second position in which said storage cavity is positioned at a discharge port,

a discharge tube connected to said discharge port for conveying said headed fasteners with their shanks being in a foremost position,



a rotatable disc supported in said housing and connected to said drive means, said disc having a pocket formed on the periphery thereof for receiving said one fastener in a first orientation from said outlet of said chute and thereby depositing said one fastener in a second orientation opposite to said first orientation in said storage cavity of said shuttle when said shuttle is in said first position, and

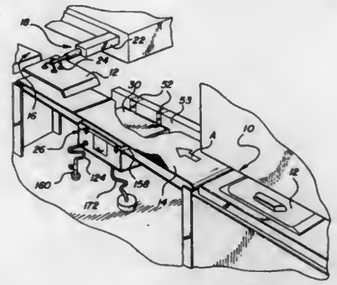
said discharge port being directed to the top of said housing.

5,542,525

DYNAMIC BELT CLEANING UNIT AND METHOD OF CLEANING BELTS

Leroy A. Kornely, Janesville, Wis., assignor to Chrysler Corporation, Auburn Hills, Mich.

Filed Jul. 10, 1995, Ser. No. 499,845
Int. Cl.[6] B65G *45/00*
U.S. Cl. 198—495 11 Claims



1. A cleaning unit for removing dirt from moving conveyor belts adapted to move articles supported thereon comprising an upper frame, a main body releasably secured to said frame having a floor and a peripheral wall extending upward therefrom to define a cleaning cavity,

said upper frame and said peripheral wall of said main body cooperating to provide a belt entrance and a belt exit spaced from one another,

a cleaning fluid director operatively mounted in said cavity for directing washing fluid onto portions of said belt extending between said belt entrance and said belt exit,

said floor and said peripheral wall cooperating to define a container for confining any dirt washed from said belt after the washing fluid has been directed onto said belt by said fluid director,

said container having a fluid drain for evacuating belt washing fluid and said dirt washed from said belt,

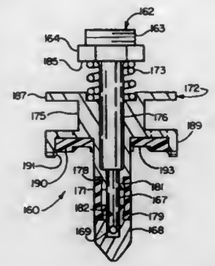
a cleaning module adapted to be supported in said cavity, an opening in said peripheral wall of said main body to provide access to said cleaning module, a face plate associated with said main body for closing said opening operatively secured to said cleaning module, track means disposed in said cavity movably mounting said cleaning module thereon, a wiper blade mounted on said module for contacting and wiping the outer side of said belt.

5,542,526

CHUCK ASSEMBLY AND METHOD FOR PROCESSING AN OPEN-ENDED ARTICLE

Winston A. Wurgler, Strongsville, Ohio, assignor to Feco Engineered Systems, Inc., Cleveland, Ohio

Division of Ser. No. 184,264, Jan. 21, 1994, Pat. No. 5,419,427. This application May 26, 1995, Ser. No. 451,990
Int. Cl.[6] B65G *47/90;* B66C *1/54*
U.S. Cl. 198—803.7 18 Claims



1. A chuck for holding a hollow article having a neck opening, comprising

a support member having an axis, the support member having a mounting end, a nose end, and an intermediate portion interconnecting the mounting and nose ends;

a flexible gripping sleeve surrounding the intermediate portion of the support member;

an operator member slidably disposed on the support member for relative axial movement, the operator member and nose end having axially opposed surfaces respectively for engaging opposite axial ends of the gripping sleeve; and

a biasing device interconnected between the operator member and the support member that applies a biasing force against the operator member to cause the opposed surfaces to move towards one another to cause the gripping sleeve to bellow out for engaging an interior surface of the hollow article.

5,542,527

FLEXIBLE JOINTING DEVICE FOR CONVEYOR BELT

Horst Jakob, Deaux, France, assignor to ASER, Saint-Chamond, France

PCT No. PCT/FR94/00741, § 371 Date Feb. 8, 1995, § 102(e) Date Feb. 8, 1995, PCT Pub. No. WO95/00774, PCT Pub. Date Jan. 5, 1995
PCT Filed Jun. 20, 1994, Ser. No. 379,678
Claims priority, application France, Jun. 21, 1993, 93 07454
Int. Cl.[6] B65G *15/34*
U.S. Cl. 198—844.2 14 Claims

1. A joining device for a conveyor belt, said device having linking elements each having an internal surface defining a hollow part, said linking elements being aligned on the external edge of two half joining devices, each joining device of said joining devices being solidly linked to a respective end of the conveyor belt, said linking elements being arranged to receive a linking stem which is passed transversely and alternatively through a linking element of said linking elements belonging to one of said half joining devices, then through a linking element of said linking elements belonging to another of said half joining devices, and so on, the half joining devices being brought close to each other in order to overlap the linking elements on each said joining device, said joining device being formed from a flexible and elastic material comprising an internal frame or reinforcement designed for surrounding over approximately 180° of the hollow part of the linking elements used as a passage for the linking stems at a distance from the surface of the linking elements or flush with said surface, said joining device having flexible fastening arms in which the reinforcement extends,

wherein the flexibility and the elasticity of the internal frame or reinforcement is in the same range as those of said material.

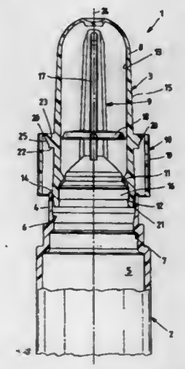


5,542,528

BOTTLE FOR PRESERVING IN A SEPARATED CONDITION SUBSTANCES TO BE MIXED TOGETHER BEFORE DISPENSING

Antonio Lanfranconi; Giorgio Munari, both of Milan; Adelelmo Zappettini, Garbagnate Milanese, and Roberto Rizzo, Rho, all of, Italy, assignors to INGE S.p.A., Milan, Italy

Filed Jul. 5, 1994, Ser. No. 266,851
Claims priority, application Italy, Jul. 5, 1993, MI93A1452
Int. Cl.[6] B65D *51/28*
U.S. Cl. 206—221 7 Claims



1. A bottle for preserving in a separated condition substances to be mixed together before dispensing, comprising:

a container having a mouth having an inner surface,

a closure element applicable to said mouth of said container,

said closure element comprising a capsule of deformable material having a concavity, an inner surface and an outer surface and a separator element which closes said concavity of said capsule by means of a stopper portion arranged to engage said inner surface of said capsule,

said outer surface of said capsule and said inner surface of said mouth of said container being mutually engageable and carrying mutual locking means which comprise at least one outer projection arranged to cooperate with at least one undercut and which are activated by radial expansion determined by the insertion of said stopper portion into said capsule.

5,542,529

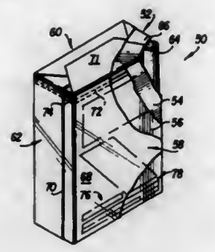
HIGH BARRIER PACKAGES FOR SMOKING ARTICLES AND OTHER PRODUCTS

Carl C. Hein, III, Winston-Salem; Matthew S. Koschak, Pfafftown; Mark S. Powell, Winston-Salem; Peter P. Shearer, Bethania, and Milly M. L. Wong, Winston-Salem, all of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Continuation of Ser. No. 956,571, Oct. 5, 1992, abandoned, which is a continuation of Ser. No. 525,373, May 17, 1990, abandoned, which is a continuation-in-part of Ser. No. 513,520, Apr. 23, 1990, abandoned. This application Dec. 23, 1994, Ser. No. 363,487

Int. Cl.[6] A24F *15/00*

U.S. Cl. 206—245 **20 Claims**



1. A barrier package for smoking articles comprising:

an inner wrap containing a plurality of smoking articles; and

an overwrap film formed separately from the inner wrap and overwrapped separately about the inner wrap to form the outermost wrap of the package, said overwrap film comprising a polymeric film having a vacuum deposited metal layer on one side thereof, said overwrap film being sealed to form said barrier package, said overwrap film having inner and outer surfaces and being sealed by a heat sealable layer applied to the inner and outer surfaces of said overwrap film.

5,542,530

SUSPENDED ADJUSTABLE SHELVING FOR GARMENT BAG

Robert C. Freelander, Portland, Oreg., assignor to Richard's Homewares, Inc., Portland, Oreg.

Filed May 3, 1995, Ser. No. 433,607

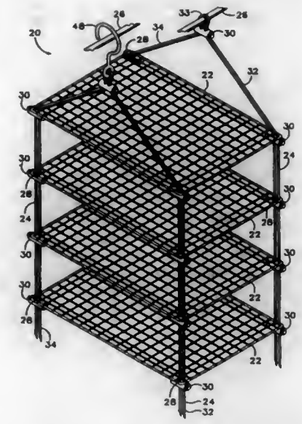
Int. Cl.[6] B65D *85/18;* **A47B** *57/00;* **A47F** *5/10*

U.S. Cl. 206—292 **19 Claims**

1. An adjustable shelving apparatus suspended from a crossmember, said adjustable shelving apparatus comprising:

(a) a plurality of shelves having at least four apertures;

(b) at least four vertical suspenders suspended from said crossmember, each suspender passing through respective apertures of said plurality of shelves, each suspender comprising a pair of ropes; and



(c) a plurality of sets of adjustable shelf fasteners, each set including at least four adjustable shelf fasteners, one set for each shelf of said plurality of shelves, each fastener in a set releasably attached to a respective suspender of said at least four vertical suspenders to support a respective shelf at a desired location along said suspenders.

5,542,531

HOLDER FOR COMPACT DISC HAVING CARRIER PART

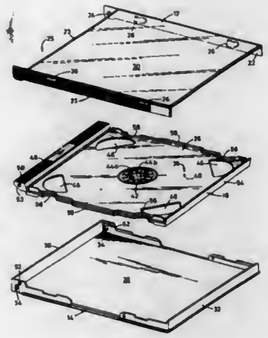
Choi K. Yeung, Hong Kong, Hong Kong, assignor to Encore Holdings Limited, Nassua, Bahamas

Continuation of Ser. No. 936,227, Aug. 26, 1992, abandoned. This application Dec. 17, 1993, Ser. No. 169,720

Claims priority, application United Kingdom, Nov. 12, 1991, 9123974

Int. Cl.[6] B65D *85/57*

U.S. Cl. 206—308.1 **12 Claims**



1. A case for holding two compact discs, the case comprising:

a front cover part having side walls extending therefrom,

a rear cover part having side walls extending therefrom,

a carrier part having opposite faces each having retaining means for retaining a disc,

a first pivot including a projection and an opening formed in one of said side walls of said front cover part and said rear cover part for pivotally coupling together the front and rear cover parts along one edge of the case for pivotal movement between an open and closed position, and

a second pivot including a projection and an opening formed in one of said carrier part and said side wall of said rear cover part, said second pivot being disposed adjacent to and offset relative to the first pivot for mounting the carrier part between the cover parts at the said one edge of the case for pivotal movement between the front and rear cover parts and independent of the pivotal movement of the front and rear cover parts to present the carrier part opposite faces,

said case when closed having approximately the same thickness as a case for holding a single compact disc.

12. A case for holding two compact discs, the case comprising:

a front cover part having side walls extending therefrom;

a rear cover part having side walls extending therefrom;

a carrier part having opposite faces each having retaining means for retaining a disc;

a first pivot including a projection and an opening formed in one of said side walls of said front cover part and said rear cover part for pivotally coupling together the front and rear cover parts along one edge of the case for pivotal movement between an open and closed position; and

a second pivot including a projection and an opening formed in one of said carrier part and said side wall of said rear cover part, said second pivot being disposed adjacent to and offset relative to the first pivot for mounting the carrier part between the cover parts at the said one edge of the case for pivotal movement between the front and rear cover parts and independent of the pivotal movement of the front and rear cover parts to present the carrier part opposite faces;

said carrier having a step portion formed on an end having said second pivot, said step portion being of a predetermined dimension for being received within a thickness of said side wall of said rear cover part when said carrier is pivoted relative thereto;

said case when closed having approximately the same thickness as a case for holding a single compact disc.

5,542,532

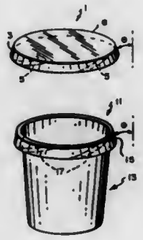
COMPACT DISC HOLDER

David C. Mitchell, 109 Allan Rd., West Barnstable, Mass. 02668

Filed Oct. 27, 1995, Ser. No. 549,460

Int. Cl.[6] B65D *85/57*

U.S. Cl. 206—308.1 **16 Claims**



1. A container comprising:

a circular lid having a lid sidewall tapered at an angle θ_1 from a vertical where θ_1 is about 12°–18°;

the lid sidewall having at least two non-overlapping lid threads disposed therein;

a container body having a circular opening of a dimension substantially the same as a dimension of the circular lid and a container sidewall tapered at an angle θ_2 substantially the same as θ_1;

the container sidewall having at least two non-overlapping container threads disposed thereon;

wherein the lid threads and the container threads are of substantially a same pitch and quantity so that the lid can be screwed down onto the container body.

5,542,533

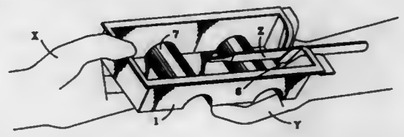
SURGICAL SCALPEL CRADLE

Joseph H. Vargas, III, 3 Albert Cree Dr., Rutland, Vt. 05701

Filed May 30, 1995, Ser. No. 452,523

Int. Cl.[6] B65D *83/10*

U.S. Cl. 206—363 **2 Claims**



1. A surgical scalpel cradle comprising:

a. a recessed tray unit with a floor medially planar and anteriorly planar at and about an anterior end of said floor and posteriorly planar at and about a posterior end of said floor, with an outwardly inclined anterior sidewall joined at its base to the whole of said anterior end of said floor and joined at a first lateral edge to an anterior edge of an outwardly inclined first lateral sidewall also wholly joined to a first lateral end of said floor with said anterior sidewall also joined at a second lateral edge to an anterior edge of an outwardly inclined second lateral sidewall also wholly joined to a second lateral end of said floor and an outwardly inclined posterior sidewall joined to the said posterior end of said floor and joined to a posterior edge of said first lateral sidewall and joined to a posterior edge of said second lateral sidewall;

b. said first lateral sidewall outwardly being inclined with an angle of inclination with respect to said medially planar portion of said floor and said anteriorly planar portion of said floor at and about said floor's said anterior end and said posteriorly planar portion of said floor at and about said floor's said posterior end and having an absolute numerical value equal to the absolute numerical value of the said outwardly inclined posterior sidewall's angle of inclination;

c. said second lateral sidewall outwardly inclined with an angle of inclination with respect to said medially planar portion of said floor and said anteriorly planar portion of said floor at and about said floor's said anterior end and said posterior planar portion of said floor at and about said floor's said posterior end and having an absolute numerical value equal to the absolute numerical value of the said outwardly inclined posterior sidewall's angle of inclination;

d. said anterior sidewall outwardly inclined with an angle of inclination with respect to said medially planar portion of said floor and said anteriorly planar portion of said floor at and about said floor's said anterior end and said posteriorly planar portion of said floor at and about said floor's said posterior end and having an absolute numerical value equal to the absolute numerical value of the said outwardly inclined posterior sidewall's angle of inclination;

e. a first convex rounded elevation in the surface of said floor everywhere located closer to said floor's anterior end than to said floor's said posterior end and extending from and out of the surface of said first lateral sidewall to and into the surface of said second lateral sidewall;

f. a second convex rounded elevation in the surface of said floor everywhere located closer to said floor's said posterior end than to said floor's said anterior end and extending from and out of the surface of said first lateral sidewall to and into the surface of said second lateral sidewall;

g. said floor's long antero-posterior central axis having length in excess of the length of a surgical scalpel;

h. the distance between said first convex rounded elevation and said second convex rounded elevation being less than the length of a surgical scalpel;

i. said anterior sidewall having cut into it a notch amenable to receipt of a handle of a surgical scalpel resting on the bottom side of said handle with the lowest portion of said notch constituting the locus of a continuum of first points all running straight front to back with all of said first points each equidistant from said first lateral sidewall and said second lateral sidewall;

j. a hollow rectilinear cap affixed posteriorly to the top edge of said posterior sidewall, affixed laterally to the top edge of said first lateral sidewall and to the top edge of said second lateral sidewall, the anterior portion of which said cap is affixed to a right top edge of said anterior sidewall and to a left top edge of said anterior sidewall and which said anterior portion is continuously one piece of material that symmetrically curves bilaterally inward and downward from each of said anterior portion's ends to form a shape in the form of a letter Y with the two arms of said shape in the form of a letter Y being equally convex in curvature and terminating each in the leg of said shape in the form of a letter Y, the long vertical central axis of said leg of said shape in the form of a letter Y being equidistant from said first lateral sidewall and from second lateral sidewall with the lowest point of said leg being the lowest point of said anterior portion;

k. said leg of said shape in the form a letter Y having a vertical slit cut into it along the lie of said leg's long vertical central axis down to a point just above the lowest point of said leg with said slit being coplanar with all of said first points and all of said second points;

l. said anterior portion of said rectilinear cap being compressibly elastic within the vicinity of and throughout the whole of said leg of said shape in the form of a letter Y.

5,542,534

PACKAGING SYSTEM FOR RECEIVING A FILM WEB WOUND UP IN ROLL FORM ONTO A WINDING SLEEVE

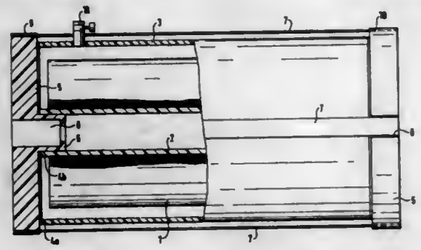
Peter Dinter, Hallgarten, and Klaus J. Gleffe, Taunusstein, both of, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Nov. 13, 1995, Ser. No. 557,711

Claims priority, application Germany, Dec. 15, 1994, 44 44 749.3; Oct. 9, 1995, 195 37 547.5

Int. Cl.[6] B65D *21/02;85/672*

U.S. Cl. 206—407 **19 Claims**



1. A packaging system for receiving a film web woundup in roll form onto a winding sleeve, comprising:

a film web wound up on a winding sleeve;

tensioning elements;

at least two end walls which are spaced apart opposite one another and have central plug-on protuberances which fit into said winding sleeve, the length of which predetermines the spacing between said at least two end walls, and which are held together with the winding sleeve by said tensioning elements;

a protective sleeve which encloses said film roll on said winding sleeve, wherein the protective sleeve is substantially the same length as the winding sleeve and said protective sleeve and said winding sleeve project beyond end sides of said film roll; and

sealing elements arranged between (i) end edges of said protective sleeve and of said winding sleeve and (ii) opposite inner sides of said at least two end walls.

5,542,535

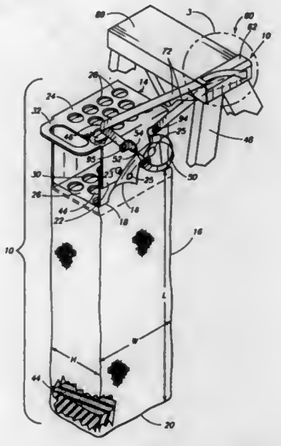
FLUORESCENT LAMP CARRIER AND FLUORESCENT LAMP DISPOSAL APPARATUS

John Dalton, Spokane, Wash., assignor to Square Peg Enterprises, Inc., Spokane, Wash.

Filed Aug. 9, 1995, Ser. No. 512,883

Int. Cl.[6] B65D *85/42*

U.S. Cl. 206—419 **19 Claims**



1. A carrier assembly for transporting and supporting linear fluorescent lamps, the carrier assembly comprising:

a container including a flexible bag having open and closed ends, the bag having a length between the open and closed ends, and the bag defining a volume; and the container including a tube support, the tube support including first and second parallel spaced apart surfaces, the first and second surfaces being perpendicular to the length of the bag, the first surface having an array of lamp receiving apertures therethrough, the second surface having an array of lamp receiving apertures therethrough which are aligned with the apertures through the first surface, the tube support being attached to the open end of the flexible bag to support and arrange a plurality of fluorescent lamps in spaced apart relation wherein portions of respective lamps extend into the volume in the bag.

5,542,536

WRAP-AROUND CARRIER WITH BAR CODE BLOCKING END PANEL

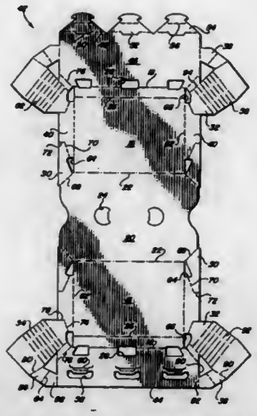
Robert L. Sutherland, Kennesaw, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.

Filed May 11, 1995, Ser. No. 439,465

Int. Cl.[6] B65D *71/12*

U.S. Cl. 206—427 **13 Claims**

1. A package comprised of a wrap-around carrier containing two rows of adjacent articles, comprising:



opposite side panels connected to top and bottom panels, the bottom panel being comprised of a first bottom panel flap connected to a second bottom panel flap, each bottom panel flap and each side panel having opposite end edges;

a first end panel flap connected to each of the end edges of the first bottom panel flap and a second end panel flap connected to each of the end edges of the second bottom panel flap;

a lower corner restraint panel connected to each end edge of the first and second bottom panel flaps and contacting adjacent articles in the package, the end panel flaps being connected to the lower corner restraint panels; and

first and second means for locking the end panel flaps in place, the first locking means being connected to the bottom panel flaps and the second locking means being connected to the side panels, each of the first and second locking means engaging an adjacent end article in the package.

10. A blank for forming a wrap-around carrier for packaging two rows of adjacent articles, comprising:

a sheet including a centrally located top panel section;

opposite side panel sections connected to the top panel section by fold lines;

a bottom panel flap connected to each of the side panel sections by a fold line;

the side panel sections and the bottom panel flaps having opposite end edges;

an end panel flap connected to each of the end edges of the bottom panel flaps;

a lower corner restraint panel connected to each end edge of the bottom panel flaps for contacting adjacent articles in a carrier formed from the blank, the end panel flaps being integral with the lower corner restraint panels; and

first and second means for locking the end panel flaps in place in a carrier formed from the blank, the first locking means being connected to the bottom panel flaps and the second locking means being connected to the side panels, each of the first and second locking means engaging an adjacent end article in such a carrier.

5,542,537

PACKAGING OF RECTANGULAR ARTICLES

Colin Ford, Atlanta, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.

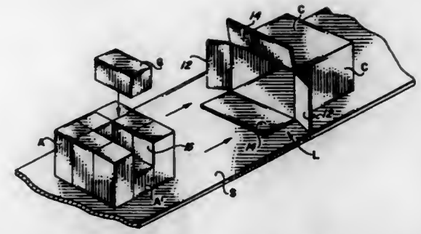
Filed Jul. 12, 1995, Ser. No. 501,441

Int. Cl.[6] B65D *25/10*

U.S. Cl. 206—431 **11 Claims**

1. A package, comprising:

a plurality of first articles, each having a top, bottom and sides, contained in a rectilinear multipack carton, each first article being of substantially the same shape and size and being rectangular in transverse cross-section;



each of the first articles except one being arranged with its bottom in contact with a common panel of the multipack carton;

said one first article being arranged at right angles to the other first articles, with a side in contact with said common panel;

the first articles abutting adjacent first articles; and

a second article different from the first articles supported on said one first article.

5,542,538

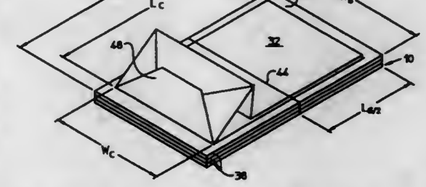
SYSTEM FOR USE IN RECYCLING OF WASTE MATERIAL

Theodore A. Lutz, 2398 Rochester Rd., Sewickley, Pa. 15143

Continuation-in-part of Ser. No. 486,501, Feb. 28, 1990, abandoned. This application Mar. 9, 1992, Ser. No. 847,631

Int. Cl.[6] B65D *33/12*

U.S. Cl. 206—442 **14 Claims**



1. A baled article for supplying wood fiber used to produce recycled newsprint, said baled article consisting of:

waste newsprint in bags functioning as recycling containers for the waste newsprint therein;

said bags consisting of bleached paper having primarily long grain soft wood fibers to replenish sub-standard paper fibers extracted and lost during recycling of the waste newsprint; and

means for binding said newsprint and bags to form a baled article.

5,542,539

CONTAINER FOR QUICK RELEASE PACKAGES FOR SURGICAL INSTRUMENTS

Timothy J. Early, Hamilton, Ohio, assignor to Ethicon Endo-Surgery, Inc., Cincinnati, Ohio

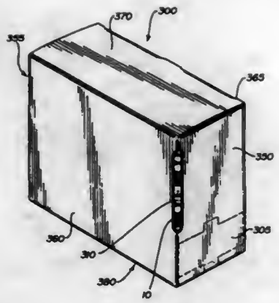
Division of Ser. No. 416,936, Apr. 4, 1995, Pat. No. 5,485,917. This application Jun. 6, 1995, Ser. No. 468,286

Int. Cl.[6] B65D *5/72;73/00*

U.S. Cl. 206—499 **1 Claim**

1. A dispenser for a plurality of thermoformed blister packages comprising:

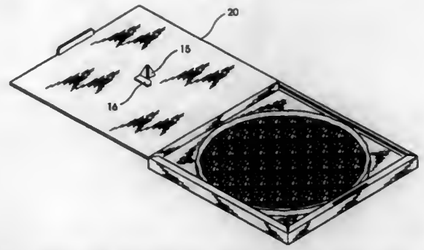
a container comprising opposed front and back panels connected by a pair of opposed side, panels;



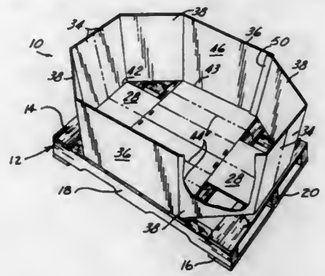
a top panel;
a bottom panel
a dispensing opening in the bottom of the front panel; and,
a vent opening in at least one side;
wherein the dispenser contains a plurality of interlocking, thermoformed blister packages comprising:
a cover; and,
a tray, wherein the tray comprises: a member having a top, a bottom and a center:
a flange extending outwardly from the tray;
a plurality of cavities in said tray for receiving a surgical instrument wherein each said cavity has a top opening wherein at least one of the cavities has at least one undercut extending from the tray adjacent to the top of the at least one cavity for retaining at least a portion of a said instrument within the cavity, each undercut partially extending into the top opening of the cavity thereby forming a gap; and,
means for quickly releasing a said instrument from the tray without touching the instrument wherein the means for quickly releasing the instrument from the tray comprises two finger pads extending from the bottom of the tray and spaced sufficiently apart to open up the gap sufficient to release the instrument when the pads are pressed while holding the outwardly extending flange,
wherein the bottom of the tray beneath one cavity in said tray extends downwardly to form an interlocking projection thereby dividing the bottom of the tray into an interlocking projection and an interlocking bottom section, wherein said projection is offset from the center of the tray such that the interlocking projection and interlocking bottom section of one package can interlock with the interlocking projection and interlocking bottom section of another package.
wherein the packages are stacked within the container in a tray bottom-to-bottom configuration such that the interlocking projections and bottoms of each package are adjacent to and interlock with each other.

5,542,540
BOX LID SUPPORT
Edward R. Knapp, 1723 St. Phillip Rd., Evansville, Ind. 47712; Edward R. Knapp, II, 4524 Cynthiana Rd., Evansville, Ind. 47720, and Miranda A. Knapp, 1723 St. Phillip Rd., Evansville, Ind. 47712
Filed May 27, 1993, Ser. No. 68,432
Int. Cl.[6] B65D *85/00*
U.S. Cl. 206—525 **11 Claims**

1. In a box lid having a lower surface, a lid support comprising:
a planar mounting portion contacting and attached to the lower surface of the lid;
a support post having a proximal end hingedly connected to the mounting portion and having a distal end which is located a distance from the mounting portion, and wherein the support post has an initial position that is coplanar with the mounting portion and has a lid supporting position that is folded downward from the lower surface of the lid into a self-sustaining configuration abutting and projecting downward from the lower surface to maintain the distal end of the support post away from the lid; and,
wherein the support post includes two generally triangular portions, one triangular portion having a first base edge hingedly connected to the mounting portion and having a first side edge, the other triangular portion having a second side edge common with the first side edge, the other triangular portion being foldable at the second side edge to an acute angle with the one triangular portion, the other triangular portion having a second base edge abuttingly engageable with the lower surface of the lid to establish and maintain a locked position wherein the one triangular portion is generally perpendicular to the lower surface of the lid.

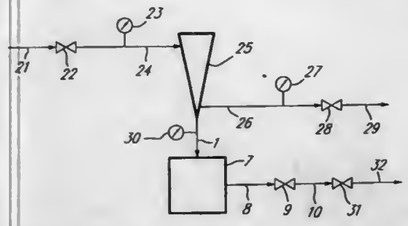


5,542,541
MULTI-SIDED COLLAPSIBLE CONTAINER
Glenn M. Smith, Burton, Mich., assignor to Four M Manufacturing Group of CPC, Inc., Flint, Mich.
Filed Aug. 31, 1994, Ser. No. 299,215
Int. Cl.[6] B65D *90/16;19/06*
U.S. Cl. 206—600 **10 Claims**



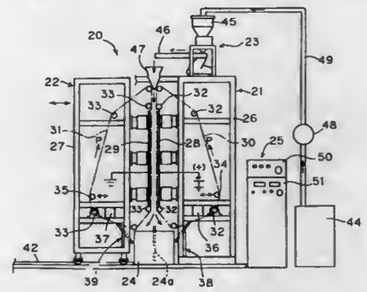
1. A collapsible container in combination with a pallet, the container comprising:
an octagonal container movable between a collapsed position and a use position, said container formed from two opposed side panels each having a floor panel integrally and foldably connected thereto, two opposed end panels each having a bottom flap integrally and foldably connected thereto, and four corner panels respectively joining said side panels to a respective end panel;
a first lateral fold line separating each said end panel from each said bottom flap, enabling each said bottom flap to selectively pivot between a use position adjacent said pallet in generally perpendicular alignment with each said floor panel and a storage position contiguous with a respective one of said end panels;
each said bottom flap adapted to bridge a distance between its respective end panel and said floor panels in said use position;
a first transverse fold line bisecting each said end panel and its respective bottom flap enabling movement of each said end panel and its respective bottom flap from said storage position to said use position when said respective bottom flap bridges such distance between its respective end panel and said floor panel to oppose movement of said end panels toward said storage position;
a plurality of second transverse fold lines juxtaposed between each said end panels and said side panels, and said side panels and said corner panels enabling formation of the octagonal configuration of said container as said container moves from its storage position to its use position;
a plurality of second lateral fold lines juxtaposed between said side panels and its respective floor panel enabling said floor panels to be oriented adjacent said pallet and affixed thereto when said container is in said use position, said second lateral fold lines being folded to move said container to said storage position; and
said floor panels each containing a plurality of third lateral fold lines, said plurality of third lateral fold lines, in combination with said first transverse fold lines, said second transverse fold lines, said first lateral fold lines and said second lateral fold lines, enabling collapsing movement of said container between said use position and said storage position.

5,542,542
SYSTEM FOR DETECTING CONTAMINANTS
John D. Hoffmann, Burnaby; Robert W. Gooding, Vancouver; Norman Roberts, Burnaby, and Robert S. Hart, Salmon Arm, all of, Canada, assignors to Pulp and Paper Research Institute of Canada, Pointe Claire, Canada
Filed Dec. 7, 1994, Ser. No. 351,639
Int. Cl.[6] B03B *7/00;* **D21C** *7/14*
U.S. Cl. 209—17 **13 Claims**



1. A process for determining the content of oversize contaminant particles of an aqueous cellulosic pulp comprising:
a) withdrawing a sample stream of aqueous cellulosic pulp from a mass of said pulp;
b) separating a contaminant fraction of contaminant particles from a pulp fibre fraction, of said pulp,
c) screening oversize contaminants in said contaminant fraction on a screen, while preventing blockage of the screen with pulp fibers and oversize contaminants of the contaminant fraction and maintaining said contaminants in a zone adjacent said screen, said screen having apertures of a size such as to be a barrier to passage of the oversize contaminants while permitting passage of an aqueous vehicle and residual pulp fibres of said contaminant fraction,
d) recovering the oversize contaminants substantially free of pulp fibres from said zone,
e) measuring the recovered oversized contaminants, and
f) determining the contaminant content of said pulp from the measurement of e) in conjunction with operating parameters of steps a), b) and c).

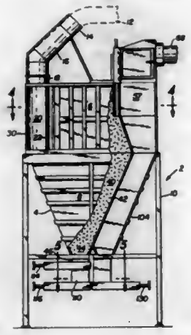
5,542,543
ELECTROSTATIC SEPARATION AND CLASSIFICATION APPARATUS
Jun Yasukuni, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Japan
Filed Oct. 7, 1994, Ser. No. 319,931
Claims priority, application Japan, Oct. 20, 1993, 5-285626
Int. Cl.[6] B03C *7/00*
U.S. Cl. 209—127.1 **10 Claims**



1. An apparatus for separating and classifying powders and/or particles by using different fall positions depending upon difference in polarity of said powders and/or particles which are charged, said apparatus comprising:
a pair of spaced electrodes for producing an electrostatic field therebetween;
a pair of insulative endless belts covering respective opposite surfaces of said electrodes, said belts being opposed to each other and fed in circulation; and
a pair of deposit scratching members remote from a position in which the electrostatic field produced between said electrodes works and contacting outer surfaces of said endless belts throughout their width, respectively;
a pair of support frames, each of said support frames carrying one of said pair of electrodes, one of said pair of endless belts, and one of said pair of scratching members, one of said support frames being a movable frame adapted for movement toward and away from the other said support frame.

5,542,544
APPARATUS AND METHOD FOR SEPARATING LOW DENSITY SOLIDS FROM AN AIRFLOW
Cliff Merkle, Wheat Ridge; John Burns, Westminster; Gordon Laib, Littleton; Jim Willis, Englewood; Scotty Mitchel, Golden, and Dennis Erickson, Arvada, all of Colo., assignors to Coors Brewing Company, Golden, Colo.
Filed Oct. 24, 1994, Ser. No. 328,048
Int. Cl.[6] B07B *7/00*
U.S. Cl. 209—139.1 **19 Claims**

1. Apparatus for separating low density solids from an airflow comprising:
a housing having an entrance opening;
a first conduit in said housing connected to said entrance opening for receiving a first airflow containing low density solids;
said housing having a separating chamber formed therein for separating a substantial portion of said low density solids;
a second conduit mounted in said housing and having an entrance opening facing said separating chamber;
a third conduit mounted in said housing and having an entrance opening facing said separating chamber;
blower means for inducing said first air flow, a second air flow in said separating chamber and a third air flow alternately in said second or third conduit;
a first gate mounted on said second conduit for sliding movement relative to said entrance opening thereof to open or close said entrance opening to said separating chamber;



a second gate mounted on said third conduit for sliding movement relative to said entrance opening thereof to open or close said entrance opening to said separating chamber; and

first collection means in said separating chamber for collecting said substantial portion of said low density solids.

5,542,545

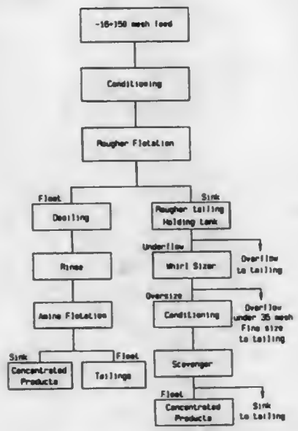
PROCESS FOR PHOSPHATE BENEFICATION

Ying X. Yu, Lakeland, Fla., assignor to Ying Xue Yu, Lakeland, Fla.

Filed Apr. 12, 1994, Ser. No. 226,601

Int. Cl.[6] B03D *1/02; 1/004*

U.S. Cl. 209—166 **11 Claims**



1. A process for the beneficiation of phosphate ore which comprises slurrying the ore in an aqueous medium, classifying the slurried ore to provide particles of flotation size, conditioning the slurry at a pH of about 7 to about 11.5 with an effective amount of a mixed anionic collector comprising

a) fatty acids having C9 to C22;

b) anionic surfactants comprising a fatty acid sulfonate, an alkyl alcohol ether sulfate, and an alkyl alcohol sulfate and optionally a n-substituted-n-mixed alkyoxy propylmaleimic acid derivative;

c) fuel oil; and floating the phosphate values in the froth fraction by froth flotation.

5,542,546

PROCESS AND APPARATUS FOR NON-AGITATED FLOTATION OF SUBSTANCES WITH A LOW DEGREE OF HYDROPHOBY AND/OR LOW STABILITY IN THE FOAM STRUCTURE, IN PARTICULAR OF SALT MIXTURES

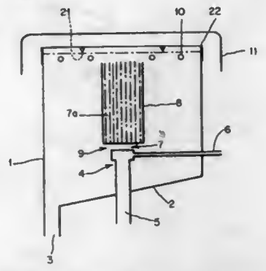
Jost Gotte, Philippsthal; Harald Schnez, Petersberg, and Arno Singewald, Kassel, all of, Germany, assignors to Kali und Salz GmbH, Kassel, Germany

Filed May 4, 1995, Ser. No. 434,765

Claims priority, application Germany, May 7, 1994, 44 16 261.8

Int. Cl.[6] B03D *1/24*

U.S. Cl. 209—164.000 **13 Claims**



1. Process for the agitatorless flotation of substances with a low degree of hydrophobing and/or low stability in a foam composite from substance mixtures, said substance mixture comprising a suspension of a plurality of salt components, said process comprises gassing a conditioned feed slurry of said suspension of a plurality of salt components with a gassing device, and separation of the gassed conditioned feed slurry into a foam product and a residue product, wherein the gassed conditioned feed slurry enters into a separation chamber in a vertical free jet, wherein at the beginning of the free jet, carrier liquid or slurry with a lower solids content than the feed slurry is coaxially admitted at the outer peripbery of the vertical free jet of feed slurry to form a combined free jet of said feed slurry enveloped by said carrier liquid or additional slurry is formed.

5,542,547

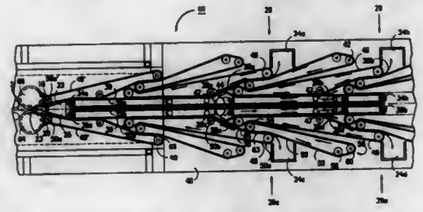
DOCUMENT SORTING SECTION HAVING A PLURALITY OF PRIMARY SORTING PATHS

Mario Ricciardi, Glenview, Ill., assignor to Bell & Howell Phillipsburg Company, Durham, N.C.

Continuation of Ser. No. 935,779, Aug. 28, 1992, abandoned. This application Jun. 27, 1994, Ser. No. 265,707

Int. Cl.[6] B07C *5/02;* **B65H** *39/10*

U.S. Cl. 209—539 **9 Claims**



1. A sorting apparatus with improved capabilities for sorting documents which cannot be bent as readily as letter-sized documents and which have been received from a main transport path comprising:

a first conveying path for selectively conveying a portion of said documents from said transport path to first sorting station means disposed on one side of said first conveying path, said first sorting station means comprising a plurality of sorting paths disposed along the length of said first conveying path;

a second conveying path for selectively conveying the remaining portion of said documents from said transport path to second sorting station means disposed on one side of said second conveying path, said second sorting station means being substantially directly opposed to said first sorting station means and comprising a plurality of sorting paths disposed along the length of said second conveying path;

said first and second conveying paths extending along said sorting apparatus and extending between said first and second sorting station means;

each of said first and second conveying paths including first and second belt means, respectively, extending along the length of each of said conveying paths, said sorting station means including diverter elements spatially disposed along the length of said belt means to selectively deform said belt means at a predetermined location for diverting documents from said first and second conveying paths into one of said first and second sorting station means; and,

a single initial diverting means disposed ahead of said first and second conveying paths for selectively diverting documents into either said first conveying path or said second conveying path from said main transport path.

5,542,548

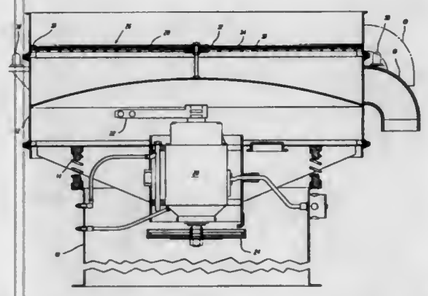
FINE MESH SCREENING

Nagabhusan Senapati, Worthington, Ohio, assignor to Sweco, Incorporated, Florence, Ky.

Continuation of Ser. No. 94,850, Jul. 20, 1993, Pat. No. 5,398,816. This application Mar. 20, 1995, Ser. No. 407,587

Int. Cl.[6] B07B *1/42*

U.S. Cl. 209—365.1 **1 Claim**



1. A screening system comprising

a resiliently mounted frame;

a low frequency vibratory drive coupled to the frame;

a screen extending across the frame, the screen including a screen frame;

a plurality of high frequency drives mounted rigidly to the periphery of the screen, to vibrate the screen above about 10,000 Hz, the high frequency drives being rigidly mounted to the screen frame;

a resilient mounting between the screen and the screen frame; and

brackets, each of the high frequency drives being rigidly fixed to one of the brackets, respectively, the brackets being rigidly fixed to the screen frame to rigidly mount the high frequency drives to the periphery of the screen.

5,542,549

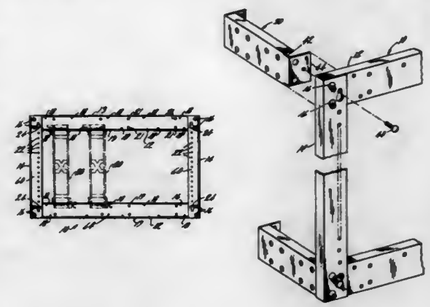
CROSS CONNECT FRAME FOR COMMUNICATION CONNECTOR BLOCKS AND OTHER DEVICES

John A. Siemon, Woodbury, and Christopher H. Cox, Tolland, both of Conn., assignors to The Siemon Company, Watertown, Conn.

Filed Nov. 22, 1994, Ser. No. 343,242

Int. Cl.[6] A47F *5/00*

U.S. Cl. 211—26 **15 Claims**



1. A frame for mounting terminal blocks and brackets comprising:

first and second spaced, parallel members, each having a U-shape and each having opposed ends;

third and fourth spaced, parallel members, each having an L-shape, said first, second, third and fourth member defining a rectangle with said third member being transversely attached to said first and second members and fourth member being transversely attached to said first and second members;

said third and fourth members each having a flat front surface and a lip extending from said front surface at about 90 degrees;

said first and second members each having a flat front surface, said surface having opposed edges and lip depending from each of said opposed edges at about 90 degrees;

said lips of said first and second members having a height equal to the lips of the third and fourth members minus the material thickness and each of said lips of said third and fourth members being flush against the respective ends of said first and second members to define each corner of the frame; and

mounting holes through said first, second, third and fourth members.

5,542,550

STORAGE RACK FOR HOLDING ARTICLES IN A CANTILEVER FASHION

Dionisis Kakavoulis-Perera, 2018 Senate St., St. Louis, Mo. 63118, and Chris Minichiello, St. Louis, Mo., assignors to Dionisis Kakavoulis-Perera, St. Louis, Mo.

Filed Jul. 20, 1994, Ser. No. 278,188

Int. Cl.[6] A47G *29/00*

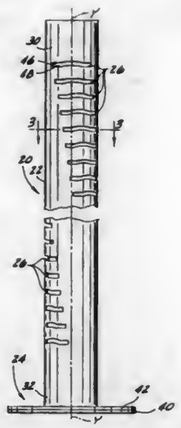
U.S. Cl. 211—40 **13 Claims**

1. A storage rack for articles having substantially identical thicknesses, said rack comprising

a body having opposite ends, the body being adapted to stand erect on one of said ends,

at least one generally horizontal slot formed in the body for receiving at least one edge of one of said articles so that the rack releasably holds said article generally horizontally, said slot having opposing first and second edges,

and an article receiving space defined by spaced, parallel first and second boundary planes, the first edge of the slot having a portion lying in said first boundary plane and a remainder spaced away from said article receiving space, the second



edge of the slot having a portion lying in said second boundary plane and a remainder spaced away from said article receiving space,

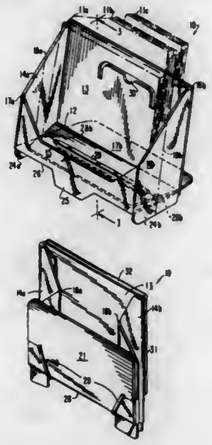
wherein the distance between opposing points of the first and second edges being everywhere greater than the distance of opposing points lying in respective boundary planes for easy initial insertion of the edge of said article in said slot, the arrangement being such that the opposing first and second edges of said slot releasably hold said article in said article receiving space by gripping said article with the portions of the opposing edges lying in said boundary planes.

5,542,551

DISPLAY STAND WITH REINFORCED BOTTOM SHELF

Jerrold A. Smith, Plainview, N.Y., assignor to Arrow Art Finishers, Inc., New York, N.Y.

Filed Nov. 15, 1994, Ser. No. 339,951
Int. Cl.[6] A47F *5/00*
U.S. Cl. 211—50 **15 Claims**



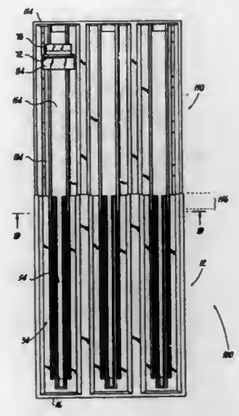
1. An erectable display stand, comprising:
a) a generally planar back panel;
b) a generally planar shelf for supporting objects;
c) at least one generally planar supporting wall;
d) means for connecting said shelf and said at least one supporting wall to said back panel for movement relative thereto between collapsed positions thereof in which they extend in substantial parallelism with one another and with said back panel in close proximity of the latter, and an erected position in which said shelf and said at least one supporting wall extend substantially normal to said back panel and parallel to each other in large-area surface-to-surface contact with one another for said supporting wall to support said shelf from below when the stand is in use; and
e) means for urging said shelf and said at least one supporting wall toward said erected positions thereof.

5,542,552

ADJUSTABLE DISPLAY AND DISPENSER RACK

Gerald Yablans, Port Washington, and Anthony Chan, Bethpage, both of N.Y., assignors to P.O.P. Displays, Inc., Woodside, N.Y.

Filed Apr. 4, 1994, Ser. No. 222,605
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—59.3 **12 Claims**



1. A rack having selectively variable capacity for displaying and dispensing of items, said rack including a front end, a back end, and at least one rack display and dispensing channel, a first product dispensing tray at said front end, and a second product dispensing tray behind said first tray, said first and said second trays each having at least one tray display and dispensing channel, said rack further comprising:

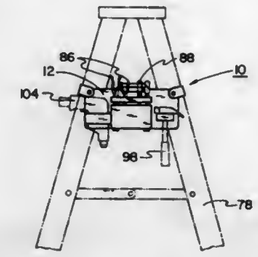
telescoping interfitting means, comprising said first and second trays, for joining and aligning said first and second trays in a plurality of telescoping positions to vary the display and dispensing capacity of said rack, said tray display and dispensing channels of said first and second trays being in alignment to form said at least one rack display and dispensing channel, a first pair of spaced parallel tracks in and along said at least one aligned channel of one of said trays, said first pair of tracks being in said one aligned channel and extending upward to a predetermined height, parallel slots alongside each of said tracks of said one of said trays, a second pair of spaced parallel tracks in and along said at least one aligned channel of the other of said trays, said second pair of tracks extending through said parallel slots of said one of said trays and upward to said predetermined height.

5,542,553

LADDER CADDY

William E. Penniman, 1052 McKinney Ave., Havre, Mont. 59501

Filed Dec. 14, 1994, Ser. No. 355,618
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—70.6 **7 Claims**



1. A ladder caddy for supporting tools of workmen in a convenient position on a ladder comprising, in combination:

a housing formed with a generally rectangular vertical interior side wall having long parallel horizontal upper and lower edges and short vertical end edges interconnected therebetween, a generally rectangular vertical exterior side wall offset from and positioned in parallel with the interior side wall and with the exterior side wall having long parallel horizontal upper and lower edges and short vertical end edges interconnected therebetween and with the end edges of the exterior wall being shorter than the end edges of the interior wall, a pair of generally rectangular vertical end walls each having parallel horizontal upper and lower edges and parallel vertical end edges interconnected therebetween, each end wall having one end edge coupled with a separate end edge of the exterior side wall such that the lower edges of the interior side wall, exterior side wall, and end walls are positioned in a first common plane and the upper edges of the end walls and exterior side wall are positioned in a second parallel common plane located above the first common plane and beneath the upper edge of the interior side wall, each end wall having its other end edge coupled to the interior side wall, a generally rectangular horizontal lower wall positioned in the first common plane and having long parallel horizontal interior and exterior edges and short parallel horizontal end edges and with the end edges thereof coupled with the lower edges of the end walls, the exterior edge thereof coupled with the lower edge of the exterior side wall, and the interior edge thereof coupled with the lower edge of the interior side wall to form a container with a box-shaped hollow interior portion, a generally rectangular vertical dividing wall having parallel horizontal upper and lower edges and parallel vertical interior and exterior edges interconnected therebetween with the dividing wall disposed within the container with the exterior edge thereof coupled to the exterior side wall, the interior edge thereof coupled to the interior side wall, the lower edge thereof coupled to the lower wall, and the upper edge thereof positioned within the second common plane, the dividing wall thereby creating two equally-sized bins within the container for holding tools, and an upstanding central region extended from the upper edge of the interior wall and having an oblong recess formed therethrough to create a carrying handle;

a pair of C-shaped brackets, each bracket having an exterior wall pivotally coupled to the interior side wall adjacent to one of its end edges, each bracket further having an interiorly extending region adapted to be secured to a separate leg of a ladder;

a horizontally extending first plate secured to and extended outwards from a central extent of the interior side wall above the container and having a plurality of circular apertures therethrough for receiving screwdrivers and a plurality of elongated slots therethrough for receiving pliers and cutters;

a horizontally extending second plate secured to and extended outwards from the interior side wall and having an elongated recess formed thereon with an aperture extending centrally therethrough to create a hammer holder for receiving a hammer;

an L-shaped wall having long upper and lower L-shaped edges and short vertical end edges with one end edge coupled to the end edge of the interior side wall and the other end edge coupled to the end wall to create a drill pocket located on a side of the container opposite the hammer holder for receiving a drill;

a pair of spaced parallel feet extending downwardly from the lower wall of the container for allowing the ladder caddy to be set on a recipient surface; and

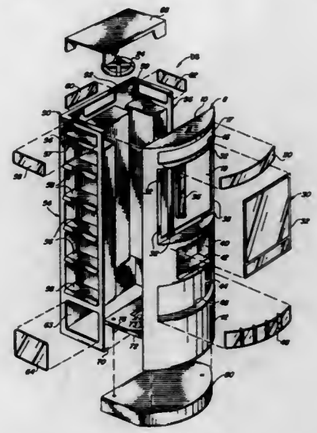
wherein the ladder caddy is fabricated of a high-impact resistant plastic material.

5,542,554

DISPLAY STAND

Michael Resnick, 9830 Huber La., Niles, Ill. 60714

Filed Mar. 20, 1995, Ser. No. 407,278
Int. Cl.[6] A47B *43/00*
U.S. Cl. 211—186 **20 Claims**



1. A kiosk style display stand for holding and displaying articles, said cabinet comprising:

(a) a horizontally disposed base;
(b) pair of generally hollow, molded plastic, front and rear units secured to each other and mounted on said base;
(c) said rear unit being generally U-shaped in horizontal cross-section, having a rear section flanked by a pair of integral side sections, and including:
at least one recessed, article holding compartment in each of said rear and side sections;
(ii) a recessed, first lighting compartment having positioned therein means for illuminating one or more sign panels;
(iii) light permeable sign panels removably attached to said rear and side sections adjacent said lighting compartment;
(d) said front unit being generally semi-cylindrical in horizontal cross-section, having a flat rear wall and an integral curved front wall, and including:
(i) at least one recessed, article holding compartment;
(ii) a second recessed, lighting compartment having positioned therein means for illuminating a light permeable sign panel;
(iii) a third recessed, lighting compartment in said rear wall in communication with said rear unit first lighting compartment;

(iv) light permeable sign panels removably attached to said front wall adjacent each of said front unit lighting compartments.

5,542,555

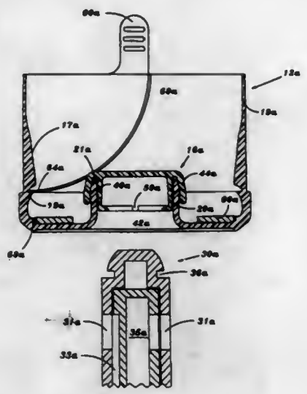
VALVED BOTTLE CAP

Walter E. Hidding, 367A Woodrock Rd.; Douglas J. Hidding, 801 E. Lake Shore Dr., both of Barrington, Ill. 60010, and Robert D. Hidding, 925 Harper Dr., Algonquin, Ill. 60102

Continuation of Ser. No. 955,004, Oct. 1, 1992, Pat. No. 5,392,939. This application Dec. 27, 1994, Ser. No. 325,005

Int. Cl.[6] B65D *51/18*

U.S. Cl. 215—265 **5 Claims**



1. A cap for use in a dispensing system, said cap comprising a main outer cap and an inner cap, said main outer cap having a skirt and a central tube, said tube being shaped to sealing engage a probe of said dispensing system, said inner cap being engageable with said probe so as to move into and out of sealing engagement with said tube, said skirt and said central tube being connected by an annular base, said tube having one end attached to said base and a free end opposite said one end, said free end having an outer surface, said inner cap having an inner sleeve and an outer sleeve, said outer sleeve being shaped to form a seal on an outer surface of said tube, said sleeves being joined at one end by an inner cap base, said sleeves defining a cylindrical recess, said free end of said tube shaped to fit snugly into said recess and form a seal preventing fluid from flowing through said tube.

5,542,556

PLASTIC CLOSURE WITH STRUCTURAL THREAD FORMATION

Hidehiko Ohmi; Tateo Kubo, and Tomoya Igarashi, all of Hiratsuka, Japan, assignors to Japan Crown Cork Co., Ltd., Tokyo, Japan

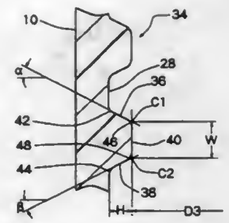
Filed Mar. 21, 1995, Ser. No. 407,607

Claims priority, application Japan, May 17, 1994, 6-103026

Int. Cl.[6] B65D *41/04*

U.S. Cl. 215—329 **5 Claims**

1. A plastic container closure having a top panel wall and a cylindrical skirt wall extending downwardly from the top panel wall, the skirt wall having an internal thread formed on its inner peripheral surface, wherein a cross-sectional shape of the internal thread is defined by an upper side edge extending radially inwardly in an axially downwardly inclined manner, a lower side edge extending radially inwardly in an axially upwardly inclined manner, a flat front edge extending substantially vertically, a concave



arc smoothly connecting the inner peripheral surface of the skirt wall to the upper side edge, a concave arc smoothly connecting the inner peripheral surface of the skirt wall to the lower side edge, a convex arc smoothly connecting the upper side edge to the front edge, and a convex arc smoothly connecting the lower side edge to the front edge, wherein a width of a front end surface of the internal thread, defined by the distance between the intersection of an extension of the upper side edge and an extension of the front edge and the intersection of an extension of the lower side edge and the extension of the front edge, is 0.9 to 1.3 mm, and a height of the internal thread, defined by a distance between the inner peripheral surface of the skirt wall and the front edge, is 0.7 to 0.8 mm.

5,542,557

CONTAINER CLOSURE WTH LINER AND METHOD OF PRODUCING THE SAME

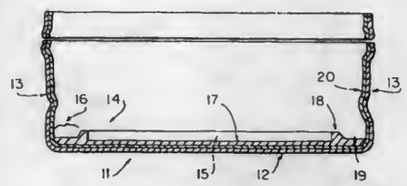
Masayasu Koyama, Zushi; Yasuhiro Oda, Yokohama; Hiroaki Kikuchi, Hiratsuka, and Muneki Yamada, Fujisawa, all of, Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Division of Ser. No. 879,351, May 7, 1992, Pat. No. 5,381,914. This application Aug. 9, 1994, Ser. No. 288,201

Claims priority, application Japan, May 9, 1991, 3-104536

Int. Cl.[6] B65D *53/04*

U.S. Cl. 215—347 **4 Claims**



1. A container closure with a liner comprising a container closure shell and a liner of resin applied to an inner surface of said shell, wherein the liner of resin comprises (i) an upper layer portion which forms a panel, (ii) a lower layer portion which is interposed between said upper layer portion and the shell to join them together and (iii) an outer peripheral portion which forms a hermetically sealing portion, said upper layer portion (i) comprises a resin composition (A) containing additives selected from the group consisting of an oxygen absorbing agent, a drying agent, a deodorant, an antibacterial agent and a thermal color agent, and said lower layer portion (ii) and said outer peripheral portion (iii) are integrally formed and comprise a thermoplastic resin (B) with a cushioning property and elasticity and being free of said additives, said liner being formed by press-molding a molten mass of resin (B) and placing the panel of resin composition (A) onto the molten mass in the container closure shell.

5,542,558

METHOD FOR MANUFACTURING MICRO-MECHANICAL COMPONENTS USING SELECTIVE ANODIZATION OF SILICON

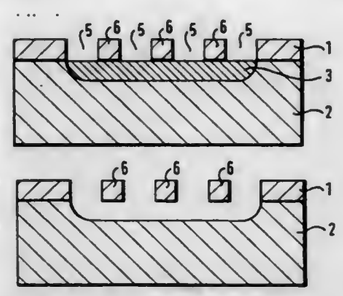
Gerhard Benz, Boeblingen; Jiri Marek; Martin Willmann, both of Reutlingen; Frank Bantien, Ditzingen; Horst Muenzel, Reutlingen; Franz Laermer, Stuttgart; Michael Offenberg, Tuebingen, and Andrea Schilp, Schwaebisch Gm ünd, all of, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Sep. 19, 1994, Ser. No. 308,245

Claims priority, application Germany, Sep. 18, 1993, 43 31 789.7

Int. Cl.[6] H01L *21/306*

U.S. Cl. 216—2 **5 Claims**



1. A method for manufacturing a micro-mechanical component from a multilayer substrate having an upper layer, a lower silicon layer, and an additional silicon layer arranged between the upper layer and the lower silicon layer, comprising the steps of:

a) producing a structure in the upper layer, the structure being formed at least partially of silicon of a first doping, the additional silicon layer having a higher doping than the structure; and

b) undercutting the additional silicon layer adjacent to the structure, wherein the step of undercutting includes the sub-step of anodizing the additional silicon layer, and wherein the upper layer has an n-doping and the lower silicon layer has a p-doping.

5,542,559

PLASMA TREATMENT APPARATUS

Satoru Kawakami, Sagamihara; Tsuyoshi Suzuki, Kawasaki; Junichi Arami, Tokyo-To, and Yoichi Deguchi, Machida, all of, Japan, assignors to Tokyo Electron Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 14, 1994, Ser. No. 195,282

Claims priority, application Japan, Feb. 16, 1993, 5-049993; Feb. 20, 1993, 5-055089

Int. Cl.[6] C23F *1/02;* **C23C** *16/00;14/34*

U.S. Cl. 216—67 **16 Claims**

1. A plasma treatment apparatus comprising:

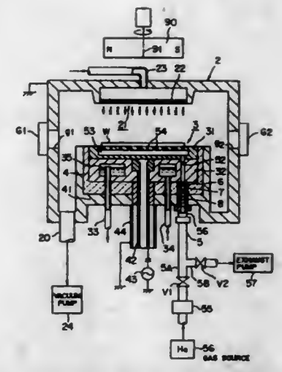
means constituting a vacuum treatment chamber;

an upper electrode and a lower electrode located within said vacuum treatment chamber so as to be spaced apart from each other;

means for supplying and exhausting a treatment gas into and from said vacuum treatment chamber;

a chuck provided on said lower electrode for holding an object to be treated;

high-frequency electric power supply means for supplying a high-frequency electric power between said upper and lower electrodes to generate in the treatment gas a plasma for treating said object being held by said chuck;



electrically conducting means associated with said lower electrode by way of electrically insulating means, said electrically conducting means having a potential different from that of said lower electrode;

backside gas supply means including a gas supply conduit for supplying a heat transfer backside gas, through said electrically conducting means and said electrically insulating means, to a backside of said object to be treated being held by said chuck on said lower electrode; and

flowpath means made of an electrically insulating material and fitted in said gas supply conduit, said flowpath means having a multiplicity of flowpath holes which are formed in electrically insulating material of said flowpath means.

5,542,560

PROTECTIVE AND WARMING BONNET FOR FOOD

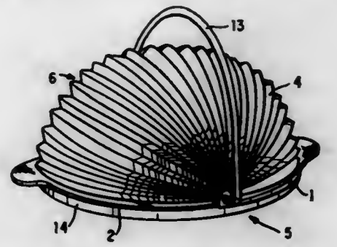
Peter Gerster, Kohlplatzweg 16, CH-4310 Rheinfelden, and Kurt Zimmerli, Dorfstrasse, CH-8532 Warth, both of, Switzerland

Filed Aug. 26, 1994, Ser. No. 296,966

Claims priority, application Switzerland, Aug. 27, 1993, 02556/93

Int. Cl.[6] B65D *51/06;25/32;* **F24C** *15/20*

U.S. Cl. 220—252 **13 Claims**



1. A protective and warming bonnet comprising: two curved braces (1,2) connected at their ends by hinges (5,6) and pivotal from 0° to a maximum of 180° in relation to one another, a folding bellows (4) disposed between the two curved braces (1,2) whereby, when the curved braces (1,2) are pivoted apart, a dome is formed, the curved braces (1,2) comprising punched metal sheets having a cross-sectional profile that is L-shaped and having a flat surface with an upward-bent section (22) in the region of the hinges (5,6) such that the upward-bent section (22) forms an approximately 45° angle with the flat surface of the curved brace (1,2), and in the polar region, a handle (20), the L-profiles of the curved braces (1,2) in the polar region forming a slot-shaped opening (24), and

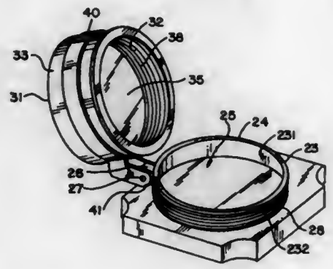
wherein the folding bellows (4) is exchangeable and reusable, said folding bellows (4) fixedly secured to a cardboard strip (21) having two end portions, the two end portions positioned below the upward-bent sections (22) of one of the curved braces (1,2), and a bracket (23) projecting from the polar region of the cardboard strip (21) positioned in the slot-shaped opening (24) of the curved brace (1,2).

5,542,561

COMPACT OR CONTAINER WITH ATTACHED CAP AND OPTIONAL AIRTIGHT CLOSURE

John J. Slink, Greenwich, Conn., and Anna Mecca, Ridgefield, N.J., assignors to Jerhel Plastics, Inc., Bayonne, N.J.

Filed Oct. 17, 1994, Ser. No. 323,757
Int. Cl.[6] B65D *41/04*; A45D *33/00*
U.S. Cl. 220—291 11 Claims



1. A container with an attached closure system comprising:

a. a base assembly comprising:

a jar having a jar top surface;

a continuous wall projecting upward from the jar top surface, the wall having a wall outer surface and a wall unattached end;

cap receiving means for threadably receiving a cap, the cap receiving means being disposed on the wall outer surface; and

collar holding means being disposed on the jar top surface;

b. a cap having a cap inner surface and a cap outer surface, the cap comprising:

cap engaging means for threadably engaging the cap receiving means, the cap engaging means being disposed on the cap inner surface; and

collar confinement means being disposed on the cap outer surface; and

c. a collar being pivotally confinable around the cap by the collar confinement means, the collar having a first closed end surrounding the cap, the collar further having two arms extending from the first closed end towards an open second end, each one of the arms terminating at the open second end and having an ear extending downwardly and at a right angle from each said arm adjacent said second end, each arm having an opening generally parallel to and aligned with the collar holding means, the collar having an axial length greater than its thickness;

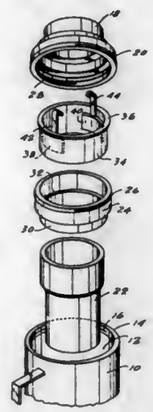
such that when the cap engaging means and the cap receiving means are disengaged and the cap is separated from the base assembly, the cap is pivotally attached to the base assembly by the collar.

5,542,562

MAGNETIZED FLUID VESSEL

Ben Oratz, 79 Albertson Ave., Albertson, N.Y. 11507

Filed Dec. 27, 1994, Ser. No. 364,806
Int. Cl.[6] B65D *81/24*
U.S. Cl. 220—410 5 Claims



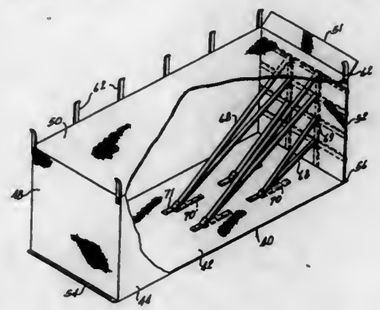
1. A fluid containing vessel comprising a non-metallic cup with an exterior wall, first and second magnetic means each having a portion with a negative magnetic polarity and means for mounting said magnetic means proximate said exterior cup wall with said negative polarity portions facing each other and the fluid situated between said magnetic means, a metallic collar encircling said magnetic means and a non-metallic enclosure adapted to receive said cup and said magnetic means mounted thereon.

5,542,563

MODIFIED FLEXIBLE INSERT FOR A GENERALLY RECTANGULAR CONTAINER

Carlos J. D. Matias, Av. Paulista 1499, cj 1101/3, Sao Paulo 01311-928, Brazil

Continuation-in-part of Ser. No. 83,445, Jun. 28, 1993, Pat. No. 5,421,476, which is a continuation-in-part of Ser. No. 911,722, Jul. 10, 1992, Pat. No. 5,222,621, which is a continuation-in-part of Ser. No. 729,735, Jul. 15, 1991, Pat. No. 5,137,170. This application Jun. 6, 1995, Ser. No. 467,103
Int. Cl.[6] B65D *88/00*
U.S. Cl. 220—470 18 Claims



1. A flexible insert for installation within a container of generally rectangular configuration having a generally planar floor wall, a pair of generally planar side walls, a generally planar front end wall, and a generally planar closeable rear door wall extending upwardly from said floor wall, said insert comprising:

insert portions constructed and arranged to fit within said container and to be unfolded into a floor portion facing said floor wall and constructed and arranged to be supported on said floor wall, a pair of side wall portions facing said side walls and extending within said side walls, a front end portion facing said front end wall and extending within said front end wall and a rear end door portion facing said rear door wall and extending upwardly from said floor portion within said rear door wall,

said insert being constructed and arranged to receive means to secure at least one of said insert portions to a facing container wall to prevent relative movement therebetween,

insert suspension means comprising suspension means elements carried by said insert and cooperating suspension means elements carried by said container,

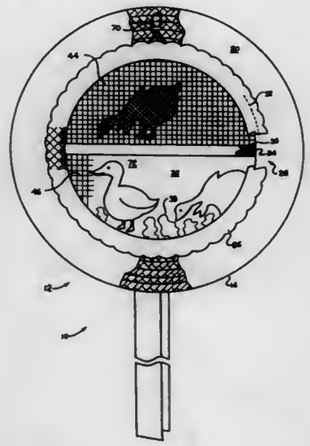
said suspension mean elements carried by said insert including a plurality of obliquely extending reinforcing straps, each having a first end secured to said rear end door portion and a second end secured to at least one of said walls of said container that faces one of said other portions of said insert, said obliquely extending straps being constructed and arranged to be taut to support said rear end door portion against bulging outward when said insert is loaded with a cargo of granular material or a liquid stored in said insert.

5,542,564

POTPOURRI ASSEMBLY

Eriene Wright, 7291 American, Detroit, Mich. 48210

Filed Jun. 22, 1994, Ser. No. 264,070
Int. Cl.[6] A42B *1/24*
U.S. Cl. 220—480 13 Claims



1. A potpourri assembly comprising:

a hat having a substantial brim and a crown, said brim having a front and a rear, and said crown being substantially dome-like and having a substantially circular opening at said rear of said brim, said circular opening having a perimeter,

attachment means,

a circular fabric covering having an outer edge, said circular fabric covering secured to said perimeter of said circular opening by said attachment means, said circular fabric covering, covering said circular opening,

means defining an insertion opening, said insertion opening located within said circular fabric covering,

a circumferential piece of fabric, said circumferential piece of fabric secured atop said outer edge of said circular fabric covering, and

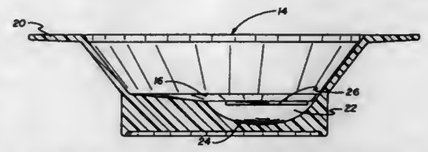
a loop, said loop secured to said rear of said brim.

5,542,565

SOUP PLATE

Miguel A. Hidalgo-Lopez, 40 River Rd. #4G, New York, N.Y. 10044

Filed Jul. 3, 1995, Ser. No. 497,869
Int. Cl.[6] A47G *19/02*; B65D *8/12*
U.S. Cl. 220—574.1 2 Claims



1. A soup plate for providing a soup plate that does not need to be tipped in order to retrieve any remaining soup from its bottom with a soup plate comprising, in combination:

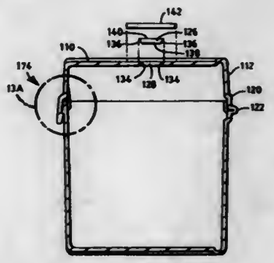
a plate having an open circular top end, a closed circular lower end, an intermediate side wall therebetween, the plate further having an interior surface, and an exterior surface, the intermediate side wall sloping inwardly from the open circular top towards the closed circular lower end, the open circular top having a rim integral with an outer periphery thereof, the interior surface of the closed circular lower end sloping slightly downwardly towards a front portion thereof, the front portion of the closed circular lower end having an oval reservoir formed therein, the oval reservoir assuming about one-third the surface area of the interior surface of the closed circular lower end, the oval reservoir having a concave lower surface, the oval reservoir having two flat projections extending inwardly from opposing ends thereof.

5,542,566

REUSABLE DISPENSER AND A PLURALITY OF DISPOSABLE CHILD MITT WIPES CONTAINED THEREIN

Frank S. Glaug, Appleton; Christopher P. Olson; Kathleen I. Ratliff, both of Neenah; Donald A. Sheldon, Appleton; Valerie V. Finch, Neenah, all of Wis., and L. Warren Collier, IV, Roswell, Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

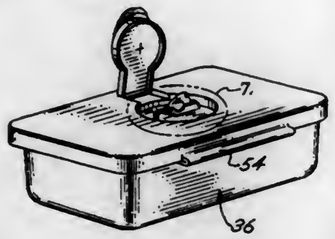
Filed Nov. 23, 1994, Ser. No. 344,264
Int. Cl.[6] A47K *10/24*
U.S. Cl. 221—48 28 Claims



1. A dispenser and a plurality of mitt wipes contained in said dispenser, comprising:

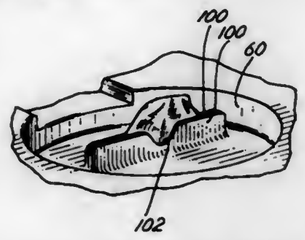
a tub body comprising a continuous side wall and a bottom wall forming a tub interior and a tub opening, said continuous side wall including a peripheral rim portion,
a plurality of mitt wipes contained in said tub interior,
each said mitt wipe comprising a mitt body including an interior space and a mitt opening adapted for inserting a hand therethrough and into said interior space,
an access flap member at said mitt opening and extending outwardly beyond said mitt opening,
a reinforcing cuff member at said mitt opening and being bonded to said mitt body,
a lid member hingedly joined to said tub body, said lid member being movable between a closed position wherein said tub opening is closed and an open position wherein said tub opening is open for the dispensing of said mitt wipes, said lid member including a peripheral edge portion,
a sealing means between said peripheral rim portion and said peripheral edge portion for sealing said lid member against said continuous side wall in said closed position, and
a positive latching means for latching said lid member to said tub body in said closed position.

5,542,567
MOIST TISSUE PACKAGE CONSTRUCTION AND TISSUE
Robert P. Julius, Greenwich, Conn., assignor to Nice-Pak Products, Inc., Orangeburg, N.Y.
Filed Aug. 31, 1994, Ser. No. 298,603
Int. Cl.[6] B65H *1/00*
U.S. Cl. 221—63 **50 Claims**



1. In combination, a moist tissue sheet and an associated dispenser for the moist tissue sheet comprising:
(a) a continuous elongated sheet of tissue having a longitudinal direction, a free outer end, generally parallel spaced sides, said sheet folded in a zig-zag, overlaid pattern to define a stack, said sheet having connected sections defined by spaced, tear perforations extending from side to side, each of said tear perforations having a pattern defined by a series of spaced slits through the tissue; and
(b) a tissue dispensing container sufficiently sealed to prevent escape of moisture and having a separable top with a slit therethrough, said top having an outer shape generally congruent with the stack of folded tissue, said slit positioned generally midway between the sides of the sheet in the container, said slit positioned in a counterbore recess defined in the top of the container, said slit extending in the range of about ten (10) to seventy-five (75) percent of the width of the side to side dimension of the stack of folded tissue, said slit having slit sides defining a through passage for the free end of tissue, said sides spaced apart greater than the thickness of the tissue whereby the moist tissue sheet may be pulled through the slit while being frictionally restrained by the slit, sufficiently to permit tearing of the sheet along a line of spaced perforations as the sheet is prevented from freely sliding in the slit in either direction, said tissue being manually moveable through the slit.

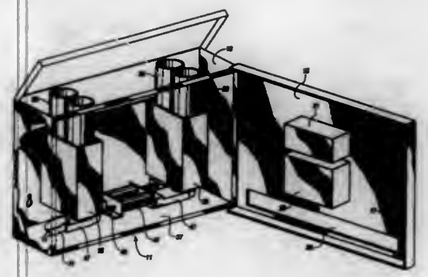
5,542,568
MOIST TISSUE PACKAGE CONSTRUCTION AND TISSUE
Robert P. Julius, Greenwich, Conn., assignor to Nice-Pak Products, Inc., Orangeburg, N.Y.
Filed Oct. 26, 1994, Ser. No. 327,424
Int. Cl.[6] B65H *1/00*
U.S. Cl. 221—63 **1 Claim**



1. In combination, a moist tissue sheet and an associated dispenser for the moist tissue sheet comprising:
(a) a continuous elongated sheet of tissue having a longitudinal direction, a free outer end, generally parallel spaced sides, said sheet folded in a zig-zag, overlaid pattern to define a stack, said sheet having connected sections defined by spaced, tear perforations extending from side to side, each of said tear perforations having a pattern defined by a series of spaced slits through the tissue: and
(b) a tissue dispensing container sufficiently sealed to prevent escape of moisture and having a separable top with a slit therethrough, said top having an outer shape generally congruent with the stack of folded tissue, said slit positioned generally midway between the sides of the sheet in the container, said slit positioned in a counterbore recess defined in the top of the container, said slit extending in the range of about ten (10) to seventy-five (75) percent of the width of the side to side dimension of the stack of folded tissue, said slit having slit sides defining a through passage for the free end of tissue, said sides spaced apart greater than the thickness of the tissue whereby the moist tissue sheet may be, pulled through the slit while being frictionally restrained by the slit, sufficiently to permit tearing of the sheet along a line of spaced perforations as the sheet is prevented from freely sliding in the slit in either direction, said tissue being manually moveable through the slit, wherein the slit includes a lip member along at least a portion of at least one edge whereby the tissue frictionally engages the lip to assist in control of the force required for pulling the tissue through the slit and also prevents unassisted movement of the tissue through the slit and wherein at least one lip member is crenelated to effect frictional engagement with a tissue.

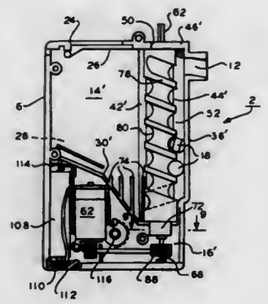
5,542,569
CONDIMENT VENDING MACHINE
Marty R. Millar, Frisco, Tex., assignor to Simplyfry Inc., Dallas, Tex.
Filed Jul. 20, 1994, Ser. No. 277,831
Int. Cl.[6] B65G *59/00*
U.S. Cl. 221—116 **15 Claims**

15. A condiment vending machine, comprising:
a support platform;
a tube, having a lower end, for holding a vertical stack of condiment packages, wherein the first condiment package rests upon the support platform;
a receiver for holding the tube above the support platform in a position wherein the lower end of the tube is located above the top of the first condiment package and below the top of the second condiment package, and wherein the receiver has a lower end and an inward projection for cooperation with a slot



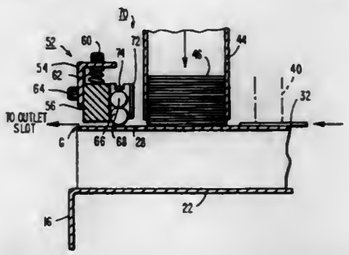
on the lower end of the tube to allow the tube to be positioned at either a higher position, in which the lower end of the tube rests upon the projection, and a lower position, in which the projection extends into the slot in the tube;
a push block for pushing the first condiment package out from under the stack of condiment packages; and
means for pushing the push block under the tube, and for pulling the push block out from below the tube to allow the stack of condiment packages to fall to a position wherein the second package rests upon the support platform.

5,542,570
TOY DISPENSER WITH FEED MEANS
John R. Nottingham, Hunting Valley; John W. Spirk, Jr., Gates Mills; Patrick W. Brown, Strongsville, and Jerzy Perkitny, Bay Village, all of Ohio, assignors to Cap Toys, Inc., Bedford Heights, Ohio
Filed Feb. 13, 1995, Ser. No. 388,154
Int. Cl.[6] B65H *3/00*
U.S. Cl. 221—192 **28 Claims**



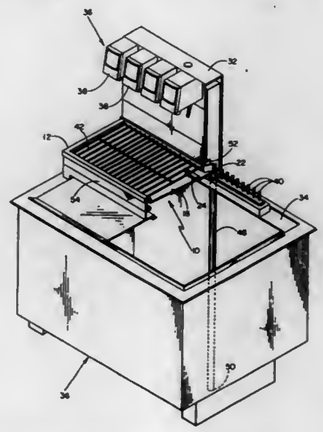
14. A toy candy dispenser comprising:
a housing having a compartment for storing candy pieces;
a dispensing port;
means for isolating the stored pieces from the port;
a first channel in communication with the compartment at a channel entrance and with the port at a channel exit, the first channel for aligning the pieces during displacement to the port;
said housing including means forming a second channel at the bottom of said compartment for receiving and aligning said pieces serially in said compartment in response to the force of gravity and for feeding said serially aligned pieces to said entrance; and
displacement means for displacing the aligned pieces at the entrance to the first channel from the second channel to the port along the first channel.

5,542,571
DISPENSING/VENDING MACHINE AND METHOD WITH DOUBLE DISPENSING PROTECTION
Jeffrey A. Belka, San Diego, Calif., assignor to Lottery Enterprises, Inc., San Diego, Calif.
Filed Aug. 8, 1994, Ser. No. 288,274
Int. Cl.[6] B65G *59/00*
U.S. Cl. 221—268 **16 Claims**



10. A device in or for a dispenser of relatively flat, thin objects and having a flat base surface, a thrusting device for thrusting the bottom object from a stack along said base surface to dispense said object, an adjustable barrier bar, a mounting support member for mounting said bar at a variable height above said base surface, at least one height adjustment screw in threaded engagement with and extending from said bar and through a hole in said support member, said screw being free to move longitudinally through said hole, and a compression spring between said support member and said bar and encircling said screw, and including locking means for locking said bar in a fixed position relative to said support member.

5,542,572
BEVERAGE DISPENSER REMOVABLE DRIPTRAY
Harlan R. Davis, Mason City, Iowa, assignor to IMI Cornelius Inc., Anoka, Minn.
Filed Mar. 8, 1995, Ser. No. 401,056
Int. Cl.[6] B67D *1/16*
U.S. Cl. 222—108 **10 Claims**



1. A beverage dispenser, comprising:
a drain tray having a bottom surface inclined towards a drain hole in the drain tray and having a drain hole extension extending generally vertically and downward from the hole,

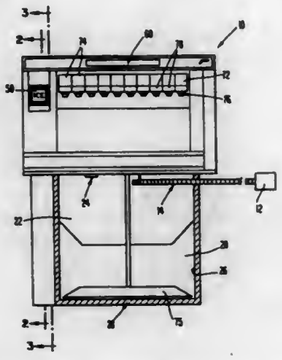
a lower housing portion having a drain tray receiving portion in which the drain tray can be placed and generally retained,

a rigid drain tube secured to the lower housing portion, the drain tube having a first end sized to slidingly receive the drain hole extension therein and positioned to so receive the drain hole extension when the drain tray is retained in the drain tray receiving portion so that the drain tray can be removed from the drain tray receiving portion and the drain hole extension removed from the drain tube first end by generally vertical upward lifting of the drain tray and so that the drain tray can be placed into the drain tray receiving portion and the drain hole extension inserted into the drain tube first end by generally vertical downward movement of the drain tray.

5,542,573
UNDER-COUNTER ICE STORAGE APPARATUS FOR DISPENSING ICE-DUAL SIDED

James Frantz, Nazareth, Pa., assignor to Follett Corporation, Easton, Pa.

Filed Jun. 10, 1994, Ser. No. 257,881
Int. Cl.[6] B67D *5/56*
U.S. Cl. 222—129.1 **6 Claims**



1. An under-counter ice storage apparatus for dispensing ice from above the counter comprising:

a. receptacle means for storing a quantity of particulate ice;

b. an ice elevating means, in communication with said receptacle means, for receiving a quantity of said particulate ice retained in said receptacle means and moving said particulate ice from a first point spaced above the lower-most point of said receptacle means generally upwardly to at least one higher outlet in said ice elevating means;

c. a first ice dispensing means for delivering particulate ice from said at least one higher outlet of said ice elevating means to a first ice delivery chute upon actuation of a first selectively actuable switching means associated therewith;

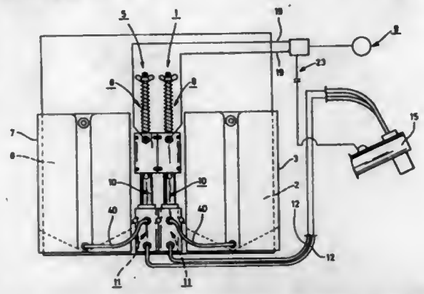
d. a second ice dispensing means for delivering particulate ice from said at least one higher outlet of said ice elevating means to a second ice delivery chute upon actuation of a second selectively actuable switching means; and

e. wherein said first and said second ice dispensing means and their respectively associated said first and said second switching means are located facing generally back-to-back on opposite sides of said ice-elevating means, and further, comprising means facilitating simultaneous and independent dispensing of ice from both sides of said apparatus.

5,542,574
AIR DRIVEN CONDIMENT DISPENSER

Leif E. Stern, S-234 33, Lomma, Sweden

Filed Jul. 5, 1994, Ser. No. 270,932
Claims priority, application Sweden, Jul. 8, 1993, 9302366
Int. Cl.[6] B67D *5/52*
U.S. Cl. 222—137 **25 Claims**

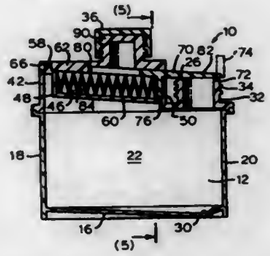


1. Portioning arrangement for portioning out liquid foodstuffs to at least one item of food, whereby a drive arrangement (8) exhibits at least one pressure-medium-driven drive piston (17), whereby a dispensing unit (38) comprises at least one portioning chamber (11) wherein a dispensing device (10) is insertable, whereby said drive piston (17) is arranged to impart to said dispensing device (10) portioning strokes (P) for portioning out the foodstuff from said portioning chamber (11) and via at least one portioning tube (12) and a portioning nozzle (15) to the food (4), whereby said dispensing device (10) is intended to be subjected to a return motion (R) after the portioning stroke (P) in order to generate such a negative pressure in said portioning chamber (11) that the foodstuff is drawn into said portioning chamber (11) from at least one container and whereby said portioning nozzle (15) is provided on an operating lever (27) which can be held in the hand for directing said portioning nozzle (15) towards the food (4) to be provided with the foodstuff, characterized in that said dispensing device (10) is releasable from said drive piston (17) of said drive arrangement (8) and removable from said portioning chamber (11) of said dispensing unit (38) for separate cleaning of said dispensing device (10) and said portioning chamber (11).

5,542,575
LIQUID REAGENT CONTAINER HAVING A PRIMARY AND SECONDARY CLOSURE MECHANISM

William A. Stark, and Ernest H. Pfadenhauer, both of Costa Mesa, Calif., assignors to Dade Interantional Inc., Deerfield, Ill.

Filed Jul. 9, 1993, Ser. No. 89,132
Int. Cl.[6] B65D *47/26*
U.S. Cl. 220—256 **18 Claims**



1. A fluent material container for use in an automated dispensing system, said container comprising:

a sealingly covered chamber for containing a fluent material, said chamber provided with a generally horizontally disposed opening at its top, said opening being provided with an externally threaded neck defining a projecting peripheral lip;

a manually operable internally threaded screw cap disposed upon said neck for releasably sealing said opening;

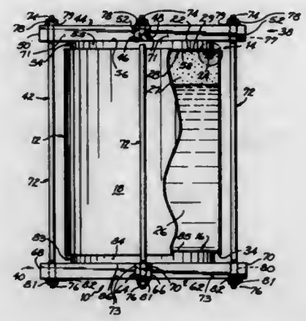
manually operable secondary closing means for releasably sealing said opening subsequent to the removal of said screw cap and adapted to mechanically interface with said automated dispensing system; and

means for biasing said secondary closing means to a normally closed position covering said opening and sealingly engaging said projecting peripheral lip.

5,542,576
APPARATUS FOR SEALING FRICTION RESEALABLE CONTAINERS DURING AIR TRANSPORT

Elton D. Arment, 3970 Brown Farm Dr., Hamilton, Ohio 45013

Continuation of Ser. No. 878,547, May 5, 1992, abandoned. This application Dec. 23, 1993, Ser. No. 173,270
Int. Cl.[6] B65D *45/02*
U.S. Cl. 220—328 **14 Claims**



1. A kit including components for maintaining at least one sealed container in a sealed condition during air transport, the at least one container being of the type having a top, a bottom, an opening in the top bordered by a first sealing convolution and a resealable container lid for covering the opening in the at least one container, the container lid having a second sealing convolution for frictionally cooperating with the first sealing convolution to seal the at least one container, elastomeric gasket being disposed and compressed between the first sealing convolution in the at least one container and the second sealing convolution in the container lid, said kit comprising the combination of:

an elastomeric o-ring gasket for disposition and compression between the first sealing convolution in the at least one container and the second sealing convolution in the container lid;

a top brace member;

a compression block for disposition between said top brace member and the container lid when said apparatus is applied to a container, and engaging only the container lid when said at least one container is in the sealed condition;

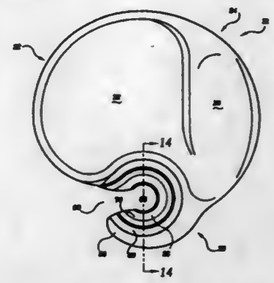
a bottom brace member; and

at least one clamp operably connected to said top and bottom brace members for clamping and moving said brace members toward each other when the at least one container is disposed therebetween, for forcing the compression block and any container lid thereunder toward the at least one container to compress the gasket between the first and second sealing convolutions and thereby sealing said at least one container, and for holding said at least one container in the sealed condition during air transport thereof.

5,542,577
PLATE ASSEMBLY GRIPPING MEMBER

Peter W. Friedrich, 409 Fourth St., Apt. 1, Hoboken, N.J. 07030

Division of Ser. No. 898,016, Jun. 12, 1992, Pat. No. 5,361,932. This application Aug. 9, 1994, Ser. No. 287,960
Int. Cl.[6] B65D *23/10*
U.S. Cl. 220—759 **14 Claims**



1. A grip member for holding a plate in a hand comprising:

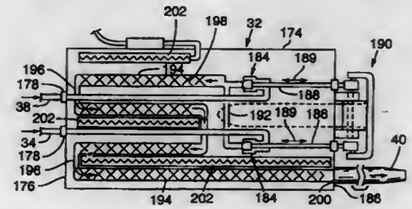
an upwardly tilted flange extending from the plate;

an extending bulge extending from the underside of the plate and cooperating with the upwardly tilted flange contoured for allowing the hand along a substantially circumferential arc of the plate to cradle the plate securely in the palm of the hand while stabilizing the plate with the thumb of the hand communicating with the upwardly tilted flange, wherein said grip member is separable from the plate.

5,542,578
DISPENSING GUN FOR RATIO SENSITIVE TWO-PART MATERIAL

Joseph M. Buckles, Portland, Oreg., assignor to Viking Industries, Inc., Portland, Oreg.

Continuation of Ser. No. 911,973, Jul. 10, 1992, abandoned, which is a division of Ser. No. 572,161, Aug. 23, 1990, Pat. No. 5,133,483. This application Apr. 9, 1993, Ser. No. 46,398
Int. Cl.[6] B67D *5/00*
U.S. Cl. 222—145.6 **5 Claims**



1. A dispensing gun for mixing and dispensing two fluid components comprising;

conduits for delivering to the gun two fluid component;

a housing having a forward end and a rearward end, the rearward end connected to the conduits;

mixer means for mixing the two components within an elongated mixing chamber inside the housing, through which chamber the two components mix together and move through the housing;

a dispensing port formed in the forward end of the housing for dispensing through the port the two mixed components;

wherein the mixing chamber comprises a connected series of mixing chamber sections, a majority of the length of the mixing chamber being located near the rearward end of the housing;

an elongated heater mounted within the housing and located to extend alongside the mixing chamber for heating the mixed components; and

valves mounted in the housing for controlling flow of the two components through the housing, the valves being located forward of the majority of the length of the mixing chamber sections of the gun.

5,542,579

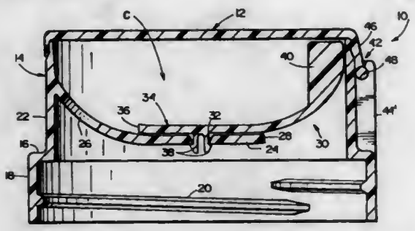
DISPENSING CAP WITH INTERNAL MEASURING CHAMBER AND SELECTIVELY USEABLE SIFTER

Edward S. Robbins, III, 2802 E. Avalon Ave., Muscle Shoals, Ala. 35661

Continuation-in-part of Ser. No. 220,530, Mar. 31, 1994, Pat. No. 5,487,494, which is a continuation-in-part of Ser. No. 288,896, Aug. 10, 1994, Pat. No. 5,509,582, which is a continuation of Ser. No. 47,086, Apr. 16, 1993, abandoned, which is a continuation-in-part of Ser. No. 237,336, May 3, 1994, Pat. No. 5,465,871, which is a continuation of Ser. No. 979,042, Nov. 19, 1992, abandoned. This application Nov. 30, 1994, Ser. No. 352,104

Int. Cl.[6] B67D *5/38*

U.S. Cl. 222—158 **15 Claims**



1. A measuring/dispensing cap adapted for attachment to an open, upper end of a container, the cap comprising:

a lid and a peripheral skirt extending downwardly from said lid, said lid pivotally secured to said skirt; a sifter panel integral with said skirt and separating said skirt into upper and lower sections, the upper section including a measuring chamber and the lower section including means for attaching said cap to the open upper end of the container; and wherein at least said lid is provided with volume indicators; said sifter panel formed to provide a flow opening on one side of a horizontal centerline extending across said cap, said flow opening defined in part by a first edge extending parallel to and spaced from said horizontal centerline; and a rotatable weir dam panel overlying said sifter panel, said weir dam panel having a second edge which is alignable with said first edge to enable substantially free flow of container contents through said flow opening.

5,542,580

TUBE CONTAINER

Yoshiharu Hatakeyama, Tokyo; Hiroki Fukuoka, Misato, and Kenzo Teshima, Chiba, all of, Japan, assignors to Yoshida Industry Co., Ltd., Tokyo, Japan

Filed Jun. 1, 1995, Ser. No. 457,819

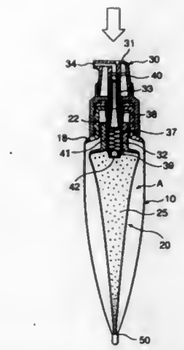
Claims priority, application Japan, Jun. 28, 1994, 6-146023

Int. Cl.[6] B67D *5/06*

U.S. Cl. 222—183 **9 Claims**

6. A tube container, comprising:

a tube body including an inner sleeve formed of elastic material for containing fluidized substance therein and an outer sleeve enclosing said inner sleeve to define a space therebetween, said inner and outer sleeves being sealed at one ends thereof to form a bottom portion of said tube body; and



a dispenser assembly for discharging the fluidized substance out of said inner sleeve, said dispenser assembly being fixed to another end of said outer sleeve, said dispenser assembly including a hollow cylinder inserted into said inner sleeve at another end thereof, wherein said hollow cylinder is slidably engaged with said inner sleeve.

5,542,581

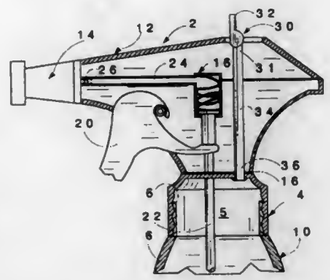
DUAL SERVICE SPRAYER

Barbara M. Habora, 2025 9th Pl., Vero Beach, Fla. 32960, and Rebecca V. Hall, 1901 45th Ave., Vero Beach, Fla. 32966

Filed Nov. 25, 1994, Ser. No. 344,846

Int. Cl.[6] G01F *11/06*

U.S. Cl. 222—331 **5 Claims**



1. In a trigger actuated, pump spray device including a threaded cap for screw attachment to the threaded outlet of a container holding liquid for application by said device, a housing supporting a spray head and connected to said threaded cap, pump means including an actuation trigger mounted in said housing, and an elongated conduit means depending from said pump means through said threaded cap to convey said liquid from said container to said pump means for delivery to said spray head, the improvement that renders said spray device capable of dual liquid dispensing service which comprises:

spout means mounted to said housing through which said liquid is dispensed and

a tubular conduit extending internally of said housing communicating said spout means with said threaded cap for flow of liquid from said container to said spout means along a path internally of said threaded cap whereby said liquid is dispensed from said container through said spout means.

5,542,582

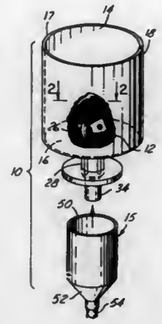
DISPENSING SYSTEM FOR PARTICULATE MATERIAL

Robert M. Ligon, 5630 E. Rockridge, Phoenix, Ariz. 85018, and Thomas B. Carter, 2114 E. Evans Dr., Phoenix, Ariz. 85022

Filed Jul. 22, 1994, Ser. No. 278,879

Int. Cl.[6] G01F *11/06*

U.S. Cl. 222—342 **9 Claims**



1. A dispensing system for particulate material comprising:

a primary receptacle for receiving material, said primary receptacle having an opposed top and bottom and a surrounding wall;

a guide fixed to the bottom defining a supporting aperture passing through the bottom and an associated upright axis, the guide having a wedge shaped supporting portion extending above the bottom surface and into the primary receptacle and having a guide portion having at least one guide slot passing therethrough and disposed below the bottom;

a tube slidably disposed within the supporting aperture of the guide and defining a feed passage therethrough;

travel limit means for restricting axial translation of said tube relative to the guide between first and second positions; and

a valve member mounted inside the primary receptacle and having two opposed bristle bearing members fixed to the supporting portion with the bristle tips of the opposed bristle bearing members contacting with the tube in the first position and a substantial number of the tips being separated with the tube in the second position.

5,542,583

DUAL CHAMBER VACUUM STORAGE AND DISPENSER FOR COFFEE BEANS

Samuel R. Boyer, Golden; Michael Sitz, Thornton, and Paul Svaldi, Golden, all of Colo., assignors to Brother'Gourmet Coffee, Inc., Boca Raton, Fla.

Filed Mar. 1, 1994, Ser. No. 204,477

Int. Cl.[6] B65D *47/18*

U.S. Cl. 222—425 **18 Claims**

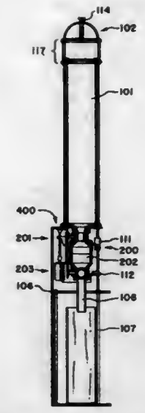
1. A system for storing and dispensing flowable food product into an external environment at atmospheric pressure comprising:

means including a first chamber for storing the flowable food product;

air-tight seals coupled to the first chamber to isolate the first chamber from the external environment; and

means including a second chamber for removing a quantity of the flowable food product from the means for storing while maintaining the means for storing substantially isolated from the external environment, wherein said second chamber is positioned beneath the means for storing and the means for removing further comprises:

a first valve positioned between the means for storing and the second chamber, the first valve sized to allow the coffee beans to pass from the means for storing to the second chamber, wherein the first valve serves as one of the air tight seals to selectively isolate the second chamber from the means for storing; and



a second valve positioned beneath the second chamber, the second valve sized to allow the coffee beans to pass from the second chamber to the external environment, wherein the second valve is air tight to selectively isolate the second chamber from the external environment.

5,542,584

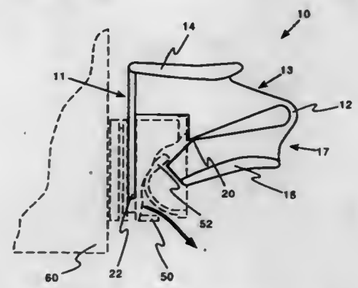
BOXED LIQUID VALVE OPERATOR

Ronald C. Konar, 7280 S. Highland Dr., Littleton, Colo. 80120

Continuation-in-part of Ser. No. 345,319, Nov. 28, 1994, abandoned. This application Oct. 10, 1995, Ser. No. 540,475

Int. Cl.[6] B65D *47/20*

U.S. Cl. 222—505 **7 Claims**



1. A valve operator to aid in dispensing fluids from bag-in-the-box containers having a nozzle and spigot valve comprising:

(a) a support means for mounting on said valve operator over said container nozzle,

(b) a upper surface member means for positioning a finger or thumb attached to said support means for mounting, and extending outwardly over top of said nozzle,

(c) said upper surface means outward portion located frontly of said nozzle connects to a surface means for providing pivoting motion and,

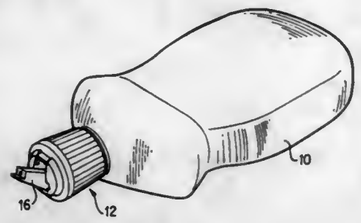
(d) a lower surface means for positioning a finger or thumb position attached to said surface means for providing a pivoting motion, extending inwardly inside said nozzle to under said spigot valve whereby a compressive force between said finger or thumb located over said upper surface member and said finger or thumb located under said lower surface opens said spigot valve.

5,542,585

DISPENSING CLOSURE WITH PIVOTABLY MOUNTED SPOUT AND MEANS FOR LIMITING TRAVEL THEREOF

Ray Peters, Woodlands, England; Woodrow S. Wilson, Johnston, and Donald LaVange, Cumberland, both of R.I., assignors to Polytop Corporation, Slatersville, R.I.

Filed Aug. 31, 1994, Ser. No. 298,263
Int. Cl.[6] B67D *3/00*
U.S. Cl. 222—531 **2 Claims**



1. A dispensing closure comprising;

a) a cap including an upper surface and a depending skirt adapted to be secured to a dispenser,

b) said upper surface including walls defining a cavity therein, and a bore defined through said cap to establish communication between the interior of the dispenser and said cavity,

c) a spout with an enlarged base and an elongated body,

d) a passage extending through said spout and terminating at the free end of said body,

e) mounting means defined between said cylindrical base of said spout and said walls defining said cavity to permit said spout to be received within said cavity for pivotal movement therein,

f) stop means defined on said spout and within said cavity to positively limit the travel of said spout toward to a vertical orientation,

g) said stop means limiting the pivotal movement of said spout to a position wherein the enlarged base of said spout eclipses a portion of said bore to reduce communication between said bore and said passage in said spout,

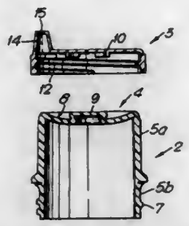
h) the invention being characterized by an enlarged scoop formed at the inlet end of said spout, said scoop compensating for the eclipsing of a portion of said bore by said enlarged base of said spout.

5,542,586

DETERGENT DISPENSER

Colin Stockwell, Benoni, South Africa, assignor to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Oct. 14, 1994, Ser. No. 323,318
Int. Cl.[6] B67D *5/06*
U.S. Cl. 222—538 **5 Claims**



1. A detergent dispenser comprising:

i) a first part in the form of a closure which has a closed top and which normally serves to seal a detergent container, and

ii) a second part in the form of a cap having an aperture for dispensing detergent

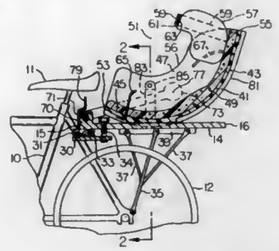
wherein the closure and the cap have complementary formations to enable the cap releasably to be joined to the closed top of the closure.

5,542,587

INFANT CARRIER INSTALLABLE ON A BICYCLE

Jayne I. Broz, and Gordon A. Broz, both of 49 Orchard St., Merrimac, Mass. 01860

Filed Oct. 17, 1994, Ser. No. 323,742
Int. Cl.[6] B62J *7/04*
U.S. Cl. 224—415 **5 Claims**



1. A protective infant carrier system, comprising:

a platform;

means for mounting said platform in a horizontal position directly above the rear wheel of a bicycle;

a carrier body having a cradle configuration releasably supported on said platform so that the carrier body can be removed from the platform with an infant positioned in the carrier body;

said carrier body comprising a rear wall, lower wall and two side walls;

said rear wall and said lower wall being a continuous arcuate wall structure centered on a point located above the lower wall, whereby the infant is required to assume a slumped semi-prone position in the carrier body;

said lower wall having a front edge, and said rear wall having an upper edge;

said side walls extending from the front edge of the lower wall to the upper edge of said rear wall;

said side walls having upwardly facing edges spaced substantial distances from said arcuate wall structure, whereby said side walls provide a protective enclosure for the arms of the infant;

a helmet adapted to be worn by an infant while positioned in the carrier body;

means for releasably retaining said helmet against said rear wall of the carrier body at a point proximate to said upper edge, whereby the infant's head is prevented from movement away from said rear wall;

safety belt means for holding the infant in a slumped semi-prone position in the carrier body;

said helmet retaining means comprising a flexible strap having one end thereof anchored to one of the carrier body side walls at a point proximate to the upper edge of said rear wall;

said flexible strap having a free end adapted to lie against the other side wall of said carrier body;

means for releasably attaching said free end of the strap to said other side wall of the carrier body; and

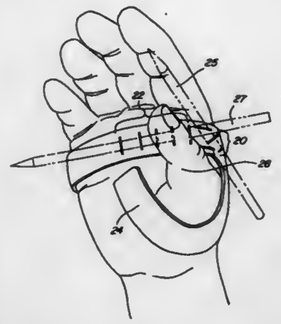
said strap being adapted to extend across the helmet so that the helmet is positioned between the strap and the rear wall of the carrier body.

5,542,588

ADJUSTABLE PEN HOLDER

John P. C. Sison, 6351 San Roberto Cir., Buena Park, Calif. 90620

Filed Mar. 3, 1995, Ser. No. 398,454
Int. Cl.[6] B43L *15/00*; A45F *5/00*
U.S. Cl. 224—218 **20 Claims**



19. A writing implement holder for holding a writing implement having a writing tip, the writing implement bolder adapted to be secured about a user's hand such that it does not contact the user's fingers except for the user's thumb, the writing implement bolder comprising:

wrapping means for loosely wrapping around a user's hand without interfering with any fingers of the user's hand, the wrapping means comprising a backside portion extending around a backside of the user's hand above the user's fingers, a palm portion extending across a palm of the user above the user's fingers, and a thumb-forefinger portion extending between a thumb of the user and a forefinger of the user above the user's forefinger;

retaining means extending from the wrapping means, said retaining means adapted to engage the user's thumb for retaining the wrapping means around the user's hand above the user's fingers; and

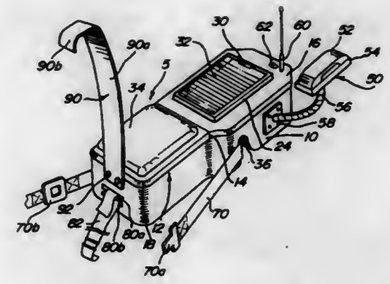
securing means for securing a writing implement to the wrapping means between the thumb-forefinger portion and the backside portion such that the writing tip of the writing implement is movably held between the user's forefinger and the user's thumb and the user may write with the writing tip.

5,542,589

DESK STRUCTURE FOR VEHICLES

Carl B. McKee, 29971 Homedale, New Hudson, Mich. 48165

Continuation-in-part of Ser. No. 941,537, Sep. 8, 1992, abandoned. This application Sep. 9, 1994, Ser. No. 303,951
Int. Cl.[6] B60R *7/00*
U.S. Cl. 224—275 **20 Claims**



1. A desk structure for use inside and outside a vehicle and adapted to be removably positioned upon a vehicle seat for use inside the vehicle, said desk structure comprising:

a generally hollow tub-like body having an exterior surface, an open upper side, a front wall having an aperture formed therein, a generally planar bottom wall adapted to rest on a generally horizontal surface of a vehicle seat and an interior compartment for housing a telephone transceiver means;

a generally plate-like top attached to said body and covering said open side, said top having an exterior surface and means for providing access to said interior compartment for installing and removing the telephone transceiver means;

a means for mounting a telephone handset cradle on said exterior surface of one of said body and said top for releasably retaining a telephone handset;

an electrical conduit means mounted in said body for connecting the telephone transceiver means housed in said compartment to a source of electrical power remote from said body, said electrical conduit means having one end extending through said aperture and being connected to a plug for detachably connecting said electrical conduit means to a source of power external to said body and an opposite end for connection to the telephone transceiver means; and

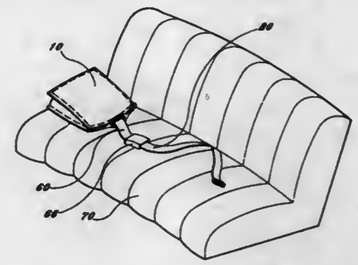
a restraint means attached to said body and adapted to releasably engage at least one of a portion of the vehicle seat and a vehicle seat belt to limit horizontal and vertical movement of said desk structure when said desk structure is positioned upon the generally horizontal surface of the vehicle seat.

5,542,590

THEFT RESISTANT POUCH FOR USE IN A MOTOR VEHICLE

Shirley L. Pfitzenmaier, 252 SW. 23rd St., Fort Lauderdale, Fla. 33315

Filed Oct. 14, 1994, Ser. No. 324,102
Int. Cl.[6] B60R *7/00*
U.S. Cl. 224—275 **2 Claims**



1. A theft deterring articles pouch for safely storing articles in an automobile comprising:

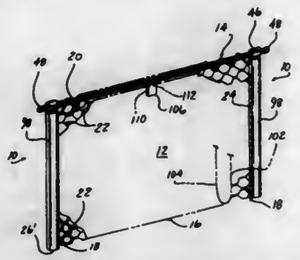
a pouch body defining an interior storage space, said pouch body also defining an opening for access to said storage space;

means for reinforcing said pouch opening, said means for reinforcing including first and second rigid members;

means for securing said pouch opening in a closed state, said means for securing including a closure strap and a corresponding strap receiving aperture defined by one of said first or second rigid members;

means for connecting said pouch to an automobile seat including a male seat-belt connector portion attached to an end of said closure strap for mating engagement with a corresponding connector portion fixedly secured to said automobile.

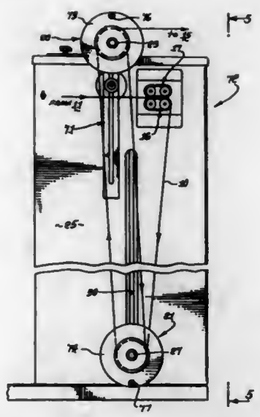
5,542,591
SIDE BRACKET FOR NETTING AND PROCESS FOR ASSEMBLING THE NETTING THERETO
Donal Moore, Birmingham, and Colin D. Pringle, Utica, both of Mich., assignors to Tecsyn, Inc., Canada
Filed Sep. 15, 1994, Ser. No. 306,643
Int. Cl.[6] B60R 7/00;7/10;9/00;11/00
U.S. Cl. 224—545 32 Claims



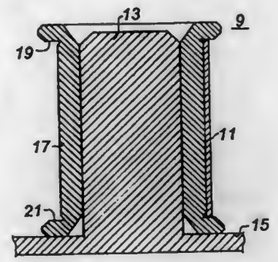
1. A side bracket for netting having a top, a bottom, two opposed sides, a plurality of net loops extending along the netting top, bottom and sides, and an elastic cord threaded through at least one of the top and bottom net loops and having opposed end portions extending from the netting sides, the bracket comprising:
- a base having two opposed ends and adapted to be located adjacent at least one of the netting sides, wherein the base is integrally molded from a polypropylene material;
- a net loop receiving member disposed between the two ends;
- a housing for holding one of the portions of the elastic cord, the cord housing being integrally molded from a polypropylene material;
- means for attaching the cord housing to one of the ends of the base; and
- means for attaching one of the end portions of the elastic cord to a desired surface.

5,542,592
CABLE AND WIRE PRE-FEED APPARATUS
Jack L. Hoffa, Brea, and Lloyd A. Talley, Valinda, both of Calif., assignors to Eubanks Engineering Company, Monrovia, Calif.
Continuation of Ser. No. 16,296, Feb. 11, 1993, Pat. No. 5,366,131, which is a continuation-in-part of Ser. No. 792,634, Nov. 15, 1991, abandoned. This application Nov. 18, 1994, Ser. No. 344,587
Int. Cl.[6] B65H 59/38;51/30
U.S. Cl. 226—118 15 Claims

1. In a wire feeding system, for use with apparatus that processes the wire in conjunction with intermittent advancement of the wire, said feeding system operating to de-reel the wire from a reel and to supply the de-reeled wire to said apparatus, said system comprising in combination:
- a) a first endless element and a second endless element, and means mounting said elements so that the second element is movable relatively toward and away from the first element,
- b) first means for urging one of said elements relatively away from the other of said elements,
- c) wire drive means to positively advance the wire to travel to said apparatus,
- d) and second means for controlling the speed of said drive means in response to sensing the position of said second element,
- e) there being means positioning said wire drive means to feed wire to the second element, and whereby wire successively passes between and entrains said elements, in passing from said reel to said apparatus, and whereby the wire is maintained taut as said second element moves toward and away from said first element,
- f) said first endless element being a first group of at least two pulleys, and said second endless element being a second group of at least two pulleys.

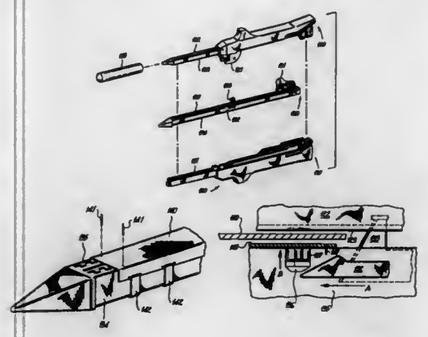


5,542,593
TAPE GUIDES FOR MAGNETIC TAPE EQUIPMENT
Leif Skaar; Kenneth Sheppard; Donald Stanley; Hossein A. Zeinali, and Ali Khorsandian, all of San Diego, Calif., assignors to Verbatim Corporation, Charlotte, N.C.
Continuation of Ser. No. 18,731, Feb. 17, 1993, abandoned. This application May 10, 1994, Ser. No. 240,533
Int. Cl.[6] B65H 23/04;57/04; G03B 1/48; G11B 15/60
U.S. Cl. 226—196 12 Claims



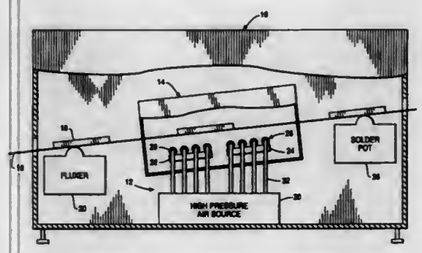
9. A tape guide for operation with magnetic tape, the tape guide comprising:
- a tape contacting surface disposed intermediate first and second spaced shoulders for registering lateral position of the magnetic tape on the tape contacting surface as magnetic tape slides over said tape contacting surface, said tape contacting surface consisting of a homogeneous metal alloy including copper in the range from about 45.5% to about 48.5% and nickel in the range from about 9% to about 11% and lead in the range from about 1.5% to about 2.5% and zinc in the range from about 42.5% to about 35.5%.

5,542,594
SURGICAL STAPLING APPARATUS WITH BIOCOMPATIBLE SURGICAL FABRIC
Wanda L. McKean, Stamford; Matthew Hain, New Haven, and Ilya S. Koyfman, Orange, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Filed Oct. 6, 1993, Ser. No. 132,601
Int. Cl.[6] A61B 17/072
U.S. Cl. 227—178.1 13 Claims



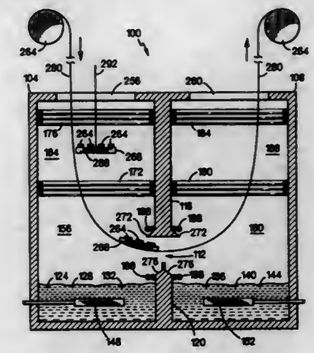
1. A surgical apparatus for driving surgical fasteners into body tissue comprising:
- first jaw structure for housing a plurality of surgical fasteners;
- second jaw structure disposed in juxtaposed alignment with said first jaw structure and configured and dimensioned for effecting closure of said plurality of fasteners; and,
- at least one tubular biocompatible surgical fabric releasably attached to either of said first and second jaw structures by a plurality of pins and/or clips.

5,542,595
HOT AIR CIRCULATION APPARATUS AND METHOD FOR WAVE SOLDERING MACHINES
David E. Gibson, Roswell, Ga., assignor to NCR Corporation, Dayton, Ohio
Continuation of Ser. No. 137,550, Oct. 19, 1993, Pat. No. 5,379,943. This application Dec. 15, 1994, Ser. No. 356,810
Int. Cl.[6] B23K 1/20; H05K 3/34
U.S. Cl. 228—207 3 Claims



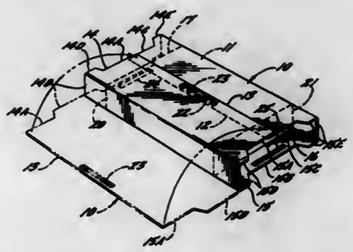
1. A method for removing moisture from a water-based flux on a printed circuit board moving through a wave soldering machine comprising the steps of:
- providing a pressurized air source for producing pressurized air;
- heating the pressurized air; and
- directing the heated and pressurized air at the water-based flux.

5,542,596
VAPOR PHASE SOLDERING MACHINE HAVING A TERTIARY COOLING VAPOR
Joseph J. Cimbak, West Hartland, Conn., assignor to United Technologies Corp., Windsor Locks, Conn.
Filed Dec. 20, 1994, Ser. No. 359,431
Int. Cl.[6] B23K 1/015
U.S. Cl. 228—234.2 20 Claims



19. Apparatus for heating an article, comprising:
- a. a vessel adapted to contain a mixture of a primary liquid with a subsidiary liquid, the primary liquid having a boiling point that equals a desired temperature of the article to be heated to, the subsidiary liquid having a boiling point at or below ambient temperature; and
- b. heating means for boiling the mixture to produce a primary vapor from the primary liquid and to produce a subsidiary vapor from the subsidiary liquid, the subsidiary vapor being disposed within the vessel on top of the primary vapor.

5,542,597
PRECUT WRAPPING PAPER FOR WRAPPING PACKAGES
Barbara A. Richards, Matthews, N.C., assignor to Gordon R. Richards, Matthews, N.C.
Continuation of Ser. No. 170,039, Dec. 20, 1993, Pat. No. 5,414,976, which is a continuation-in-part of Ser. No. 801,497, Oct. 6, 1992, abandoned. This application Apr. 19, 1995, Ser. No. 425,140
Int. Cl.[6] B65D 65/10;65/14
U.S. Cl. 229—116.5 4 Claims



1. A sheet of wrapping paper characterized by being adapted to wrap an item of a selected size without the removal of any portion of the sheet and without any substantial excess material, said sheet comprising a generally rectangular sheet of paper pre-cut to a predetermined size having a widthwise dimension sufficient to wrap around an item with opposite side edge portions of said sheet overlapping for a relatively short distance and a lengthwise dimen-

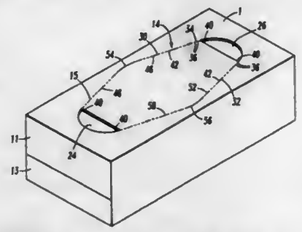
sion sufficient to provide end portions of said sheet extending beyond opposite ends of the item being wrapped by predetermined distances, opposite end portions of said sheet having terminal end edges, each of which includes a first pair of spaced apart inner edge segments perpendicular to said side edges, a second pair of spaced apart outer edge segments spaced outwardly from said first inner edge segments and a third inner edge segment between said outer edge segments, said spaced apart inner edge segments being aligned widthwise of said sheet and with corresponding opposite inner edge segments lengthwise of said sheet and said second pair of spaced apart outer edge segments being aligned widthwise of said sheet and with corresponding opposite outer edge segments lengthwise of said sheet, said second pair of end edge segments being adapted to be disposed at the corners of the item being wrapped and to extend outwardly therefrom and being further adapted to be folded inwardly between the remaining end portion of said sheet to form gusset folds and when so folded to have the outer edges thereof contiguous with said first and third inner edge segments, and strips of adhesive secured to one surface of said sheet adjacent opposite end edges of said sheet and adjacent at least one of said opposite side edges thereof to secure said sheet of paper about an item when said sheet is wrapped therearound.

5,542,598

CARTON HAVING A PERFORATED ACCESS OPENING

James L. Capo, Middletown, Ohio, assignor to James River Corporation of Virginia, Richmond, Va.

Filed May 1, 1995, Ser. No. 431,768
Int. Cl.[6] B65D *5/72*
U.S. Cl. 229—242 **23 Claims**



1. A carton for dispensing articles comprising:
a top panel;
a bottom panel;
a plurality of side panels extending upwardly from said bottom panel to said top panel; and
an access opening formed in one of said panels and defined by at least one line of weakness; said line of weakness including a plurality of through cut lines and a plurality of perforated line sections, each perforated line section including at least two perforated lines with each section being positioned substantially collinear with said through cut lines;
wherein the perforated lines formed adjacent each end of said at least one through cut line extend in substantially the same direction as said at least one through cut line.

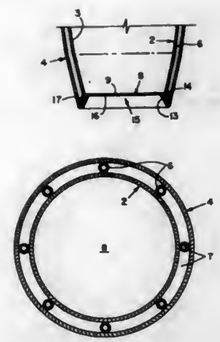
5,542,599

BIODEGRADABLE THERMALLY INSULATED BEVERAGE CUP

Ronald E. Sobol, 5015 W. Sahara, Apt. 125-162, Las Vegas, Nev. 89102

Filed Aug. 7, 1995, Ser. No. 511,746
Int. Cl.[6] B65D *5/56;3/22*
U.S. Cl. 229—403 **11 Claims**

1. A thermally insulated beverage cup comfortable to handle and being composed essentially of biodegradable paper elements, said cup comprising:



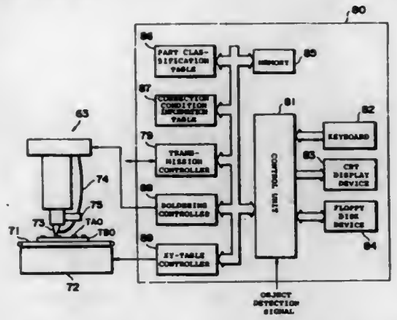
an inner side wall element having upper and lower margins defining the upper rim and bottom margin, respectively, of said cup;
a continuously circumscribing spacer means element composed of dimpled paperboard and being adhesively secured to the exterior of said inner side wall element, at least a portion of the dimples of said spacer means element defining a plurality of thermally insulative spaces between said inner side wall element and said spacer means; and
a fluid tight bottom closure of said inner side wall element.

5,542,600

AUTOMATIC SOLDERING APPARATUS, APPARATUS AND METHOD FOR TEACHING SAME, SOLDERING INSPECTION APPARATUS AND METHOD, AND APPARATUS AND METHOD FOR AUTOMATICALLY CORRECTING SOLDERING

Shigeki Kobayashi, and Norihito Yamamoto, both of Kyoto, Japan, assignors to Omron Corporation, Kyoto, Japan

PCT No. PCT/JP92/01448, § 371 Date Apr. 26, 1994, § 102(e) Date Apr. 26, 1994, PCT Pub. No. WO93/09654, PCT Pub. Date May 13, 1993
PCT Filed Nov. 9, 1992, Ser. No. 232,022
Claims priority, application Japan, Nov. 7, 1991, 3-321286; Nov. 11, 1991, 3-323680; Nov. 19, 1991, 3-331170
Int. Cl.[6] B23K *1/19*
U.S. Cl. 228—102 **46 Claims**



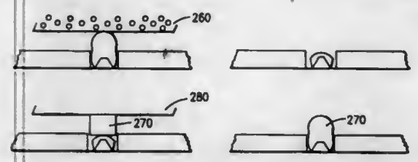
2. A method of providing information to an automatic soldering apparatus, comprising the steps of:
storing soldering condition information in first memory means for each classification of parts;
storing identification codes of parts, which are to be mounted on a board in second memory means for each board;
entering an identification code of a board; and
with regard to a board whose identification code has been entered, reading identification codes for all parts that are to be mounted on the board from said second memory means, reading soldering condition information of classifications to which the read parts belong from said first memory means, and storing the read part identification codes and the read soldering condition information in correlated form in a soldering-condition data table.

5,542,601

REWORK PROCESS FOR SEMICONDUCTOR CHIPS MOUNTED IN A FLIP CHIP CONFIGURATION ON AN ORGANIC SUBSTRATE

Kenneth M. Fallon, Vestal; Miguel A. Jimarez, Newark Valley, and Joseph E. Zdimal, Binghamton, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 24, 1995, Ser. No. 394,684
Int. Cl.[6] H05K *3/34*
U.S. Cl. 228—119 **10 Claims**



1. A rework process for a defective semiconductor chip attached via a plurality of solder regions to contact pads on an organic substrate, where each of said plurality includes a first solder region, having a first, relatively high melting temperature, in physical contact with a contact pad of said chip, and a second solder region, having a second, relatively low melting temperature, in physical contact with a contact pad of said organic substrate, comprising the steps of:
heating each of said plurality of solder regions to at least said second melting temperature;
removing said defective chip, including at least the first solder region of each of said plurality of solder regions, from said organic substrate;
removing substantially all of said plurality of solder regions remaining on said contact pads of said organic substrate;
applying a preselected amount of solder, having said second melting temperature, to each of said contact pads of said organic substrate;
bringing a plurality of solder regions, attached to contact pads of a functional semiconductor chip and having said first melting temperature, into contact with the solder applied to said contact pads of said organic substrate; and
heating said solder applied to said contact pads of said organic substrate to said second melting temperature.

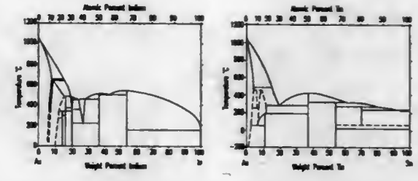
5,542,602

STABILIZATION OF CONDUCTIVE ADHESIVE BY METALLURGICAL BONDING

Michael A. Gaynes, Vestal; Kostas Papathomas; Giana M. Phelan, both of Endicott, and Charles G. Woychik, Vestal, all of N.Y., assignors to International Business Machines Corporation, Amonk, N.Y.

Filed Dec. 30, 1994, Ser. No. 366,582
Int. Cl.[6] B23K *20/00*
U.S. Cl. 228—175 **9 Claims**

1. A method for forming a metallurgical bond between two metal surfaces including the steps of
placing a metal coating on at least one of the surfaces, wherein one of said surfaces is a surface of a conductive particle,



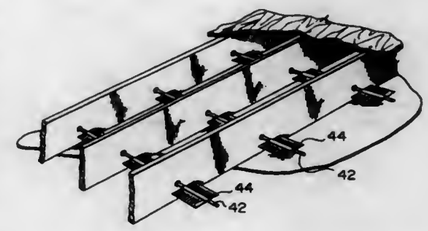
applying a compressional force to the metal surfaces against each other, wherein said compressional force is applied by a cured adhesive matrix containing at least one conductive particle, and
alloying the metal coating with both of the two metal surfaces at a temperature at or below 237° C.

5,542,603

HYDRONIC HEATING SYSTEM

Jim Macduff, 1284 Montrose Ave, Victoria, British Columbia, Canada

Filed Sep. 29, 1994, Ser. No. 314,902
Int. Cl.[6] F24D *3/16*
U.S. Cl. 237—69 **13 Claims**



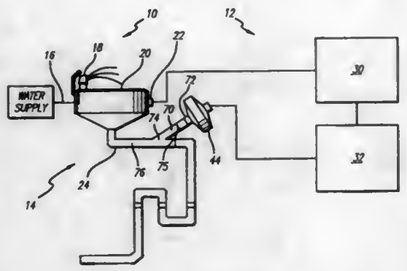
6. A hydronic heating system for heating a confined space having a floor supported by structural members, the heating system being adapted for connection with a boiler that supplies heated fluid for distribution through the system, comprising:
at least one endless loop of conduit for circulating the heated fluid, the conduit being suspended under the floor to be heated so that the conduit does not directly contact any part of an underside of the floor and an air space is provided between the conduit and the underside of the floor;
a plurality of heat radiating fins attached to the conduit for promoting a transfer of heat from the fluid circulated through the conduit to air surrounding the conduit in the air space, the heat radiating fins having a conduit gripping part and a heat radiating part, the conduit gripping part being adapted to securely engage the conduit in a close contact that promotes a transfer of heat from the conduit to the fin and the heat radiating part being louvered to promote a transfer of heat from the fin to the air in the air space;
whereby fluid heated by the boiler is circulated through the conduit without treatment to reduce the temperature of the fluid before circulation and the floor is evenly heated without hot spots substantially only by heat convected from the heat radiating fins by convection currents created in the air in the air space.

5,542,604

DRINKING FOUNTAIN WITH SOUND EFFECTS

Bran Ferren, East Hampton, N.Y., assignor to The Walt Disney Company, Burbank, Calif.

Filed Dec. 7, 1994, Ser. No. 350,799
Int. Cl.[6] E03B *9/04*
U.S. Cl. 239—29 **20 Claims**



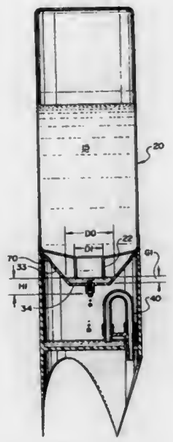
1. A fixture that is supplied with a pressurized fluid, the fixture comprising:
a spout for delivering the pressurized fluid;
a human actuatable valve for controlling the delivery of pressurized fluid from the spout;
a drain pipe for receiving fluid drawn from the spout; and
an audio system including a speaker wherein the speaker is mounted to the drain pipe in such a manner as to direct sound waves into the drain pipe.

5,542,605

AUTOMATIC LIQUID DISPENSER

Daniel N. Campau, Grand Rapids, Mich., assignor to Flow-Rite Controls, Ltd., Grand Rapids, Mich.

Filed Apr. 7, 1994, Ser. No. 231,742
Int. Cl.[6] A01G *27/00*
U.S. Cl. 239—44 **23 Claims**



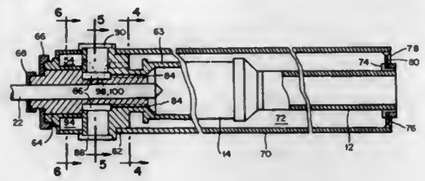
1. A portable automatic liquid dispensing apparatus for the intermittent dispensing of a controlled volume of liquid, comprising:
a container adapted to hold a dispensable liquid, thereby defining a liquid level within the container;
a static flow regulator in fluid communication with the container, the flow regulator being configured to permit a controlled, relatively constant rate of flow of the liquid out of the container which is independent of the liquid level within the container; and
a timing and dispensing assembly in fluid communication with the flow regulator, the timing and dispensing assembly having a chamber and a siphon tube with an inlet opening and a liquid dispensing port, and being adapted to receive the liquid from the flow regulator and to periodically dispense the liquid from the chamber when a predetermined constant volume of the liquid has accumulated, the inlet opening being in fluid communication with the chamber and the siphon tube permitting intermittent draining of the liquid within the chamber through the liquid dispensing port when the liquid within the chamber has reached a predetermined level.

5,542,606

GAS DETONATION SPRAYING APPARATUS

Ernest Kadyrov, Madison, Wis., and Valery Kadyrov, Kiev, Ukraine, assignors to Demeton USA, Inc., Garden City Park, N.Y.

Filed Jun. 17, 1994, Ser. No. 261,398
Int. Cl.[6] B05B *1/24*
U.S. Cl. 239—81 **18 Claims**



1. A gas detonation spraying apparatus comprising:
a) a main barrel having a proximal end;
b) a combustion chamber having an annular part, a first cylindrical part with a plurality of peripheral passages, said passages being sized and dimensioned to dampen a gas detonation wave and minimize backfiring of the same during operation of said apparatus, and a second cylindrical part which is coupled to said proximal end of said main barrel, said annular part and said second cylindrical part being fluidly coupled to each other by said peripheral passages;
c) a gas distributor having an oxygen inlet, a fuel gas inlet, and an outlet, said outlet being fluidly coupled to said annular part of said combustion chamber;
d) an ignition device located within said combustion chamber in communication with said annular part of said combustion chamber; and
e) a powder feeding conduit having an outlet disposed within said second cylindrical part.

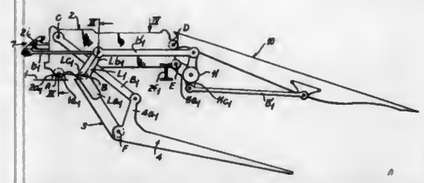
5,542,607

SUPERSONIC NOZZLE, IN PARTICULAR FOR A TURBOJET ENGINE

Géard E. A. Jourdain, Saintry sur Seine, and Marcel R. Soligny, Chevilly-Larue, both of, France, assignors to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation S.N.E.C.M.A., Paris Cedex, France

Filed Nov. 24, 1982, Ser. No. 448,528
Claims priority, application France, Nov. 24, 1981, 81 21980
Int. Cl.[6] F02K *1/12*
U.S. Cl. 239—265.41 **22 Claims**

1. In a turbojet engine having an outlet duct with an annular downstream edge and a central longitudinal axis, an improved supersonic nozzle assembly comprising:



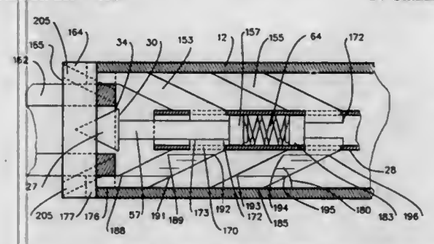
a) a plurality of actuating cylinder means disposed about the periphery of the outlet duct adjacent its downstream edge;
b) first attachment means attaching the actuating cylinder means to the outlet duct, the attachment means lying in a common plane;
c) a plurality of convergent flaps disposed in an annular array about the central longitudinal axis adjacent to the downstream edge of the outlet duct, the convergent flaps having upstream and downstream edges;
d) a plurality of divergent flaps disposed in an annular array about the central longitudinal axis, the divergent flaps having an upstream edge pivotally attached to a downstream edge of a corresponding convergent flap;
e) a plurality of transverse members extending in a circumferential direction about the central longitudinal axis and interconnecting the actuating cylinder means so as to form a rigid structure that is coaxial with the downstream edge of the outlet duct;
f) a plurality of slaving connecting links each having a first end pivotally attached to an actuating cylinder means and a second end pivotally attached to a corresponding divergent flap; and
g) second attachment means pivotally attaching the upstream edge of the convergent flaps to the actuating cylinder means such that, as the actuating cylinder moves between different actuating positions, the positions of the convergent and divergent flaps are adjusted.

5,542,608

ASPIRATING NOZZLES

Joseph B. Kaylor, Manassas, Va., assignor to Valkyrie Scientific Proprietary, L.C., Reston, Va.

Continuation-in-part of Ser. No. 037,647, Mar. 26, 1993, Pat. No. 5,330,105. This application Jul. 13, 1994, Ser. No. 274,274
Int. Cl.[6] B05B *1/34;7/00*
U.S. Cl. 239—400 **14 Claims**



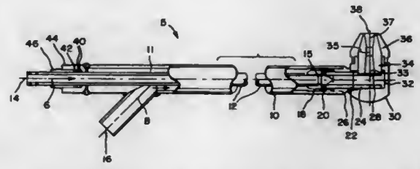
1. In a nozzle having a stream shaping means positioned within a cylindrical nozzle body along the longitudinal axis thereof, said nozzle body having an outer and an inner nozzle wall, said nozzle having an upstream end and a downstream end, and having a plurality of vanes extending between the stream shaping means and the inner nozzle wall to hold the stream shaping means fixed relative to the nozzle body, each of said vanes having a first end and a second end, the improvement comprising:
arranging all of said vanes in a forward-raked attitude wherein the first end of each of said vanes is positioned at the inner nozzle wall, and the other end of each of said vanes is fixed to said stream shaping means, each of said vanes positioned so that said first vane end is located upstream of said other vane end, all of said vanes arranged to act upon a fluid passing through the nozzle to impart a rotation to said fluid, whereby said fluid is discharged from the downstream nozzle end as a rotating columnar stream.

5,542,609

EXTENDED WEAR LIFE LOW PRESSURE DROP RIGHT ANGLE SINGLE EXIT ORIFICE DUAL-FLUID ATOMIZER WITH REPLACEABLE WEAR MATERIALS

Robert B. Myers, Norton; Ralph T. Bailey, Uniontown; David R. Burley, Akron; Steve Feeney, Norton; Barbara J. Gray, Canal Fulton, and Dennis W. Johnson, Barberton, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Jul. 6, 1994, Ser. No. 271,336
Int. Cl.[6] B05B *7/04;1/00*
U.S. Cl. 239—427 **14 Claims**



1. A dual-fluid low pressure loss and reduced deposition atomizer for discharging a jet of a first compressible fluid and a second fluid containing solids comprising:
a nozzle head having a secondary mix chamber therein for receiving and mixing an initially mixed mixture of the first fluid and the second fluid from a primary mix chamber, the head having a single orifice therein communicating with and adjacent to the secondary mix chamber for discharging the jet, the single orifice and the secondary mix chamber forming an approximate right angle therebetween;
first fluid supply means connected to the nozzle head for supplying the first fluid to the nozzle head;
second fluid supply means connected to the nozzle head for supplying the second fluid to the nozzle head; and
means for resisting wear in the primary and secondary mix chambers.

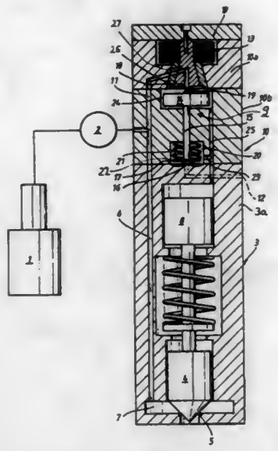
5,542,610

FUEL INJECTION NOZZLE WITH INTEGRAL SOLENOID VALVE

Ulrich Augustin, Kernen, Germany, assignor to Mercedes-Benz AG, Stuttgart, Germany

Filed Oct. 19, 1994, Ser. No. 325,063
Claims priority, application Germany, Oct. 22, 1993, 43 36 108.0
Int. Cl.[6] F02M *51/02*
U.S. Cl. 239—533.8 **4 Claims**

1. A fuel injection nozzle with integral solenoid valve for internal-combustion engines, comprising an injection nozzle body having a pressure space with a fuel injection nozzle opening and a nozzle needle movably disposed in said nozzle body and being spring-biased so as to normally close said fuel injection nozzle opening with one axial end thereof, and a multi-part solenoid valve housing including a first housing part receiving an annular magnetic coil and a second housing part disposed between said first housing part and said fuel nozzle body and having disposed therein a disc-shaped magnetic armature with an armature shaft movably supported so as to guide said magnetic armature, said armature shaft having seating faces formed at its opposite axial ends, said nozzle body and said first and second housing parts having planar



end faces in engagement with one another, and said upper housing part including a pressurized fuel supply passage in communication with a fuel supply passage extending to said pressure space and having a passage opening with a seal seat disposed in said planar surface in axial alignment with said armature shaft and said nozzle body having a pressure relief channel with an opening with a seal seat arranged in the planar surface of said nozzle body and also in axial alignment with said armature shaft, said armature shaft being spring-biased to one end position so as to be normally seated on said fuel injection nozzle body for closing said pressure relief channel while the pressurized fuel passage in said upper housing part is open for supplying pressurized fuel through a passage section extending through said second housing part to the backside of said injection nozzle, and said armature shaft being movable by energization of said coil to its opposite end position for closing said high-pressure fuel supply passage in said upper housing part and opening said pressure relief channel so as to provide for communication between said passage section in said second housing part and said pressure relief channel thereby causing a collapse of the pressure at the other axial end of said fuel injection nozzle needle permitting the opening of said nozzle needle by the fuel under pressure in said pressure space for discharging fuel from said pressure space through said nozzle opening.

5,542,611

METHOD AND APPARATUS FOR FLUID COMPRESSION OF INJECTION MOLDED PLASTIC MATERIAL

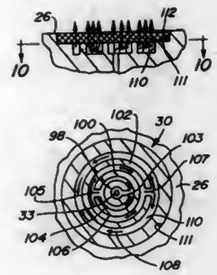
James W. Hendry, Brooksville, Fla., assignor to ICP Systems, Inc., Center Line, Mich.

Continuation of Ser. No. 262,342, Jun. 20, 1994, Pat. No. 5,439,365, which is a continuation of Ser. No. 83,382, Jun. 28, 1993, abandoned, which is a continuation of Ser. No. 855,236, Mar. 23, 1992, abandoned. This application Aug. 7, 1995, Ser. No. 511,952

Int. Cl.[6] B05B *1/14*

U.S. Cl. 239—553.5 **7 Claims**

1. A gas distribution jet for substantially uniformly distributing gas supplied thereto, said jet comprising a wall having a first surface, a recess extending below said surface to form a recessed base and a cylindrical wall, a plurality of generally C-shaped wall sections disposed in concentric relation and extending upwardly from said base to form a plurality of concentric gas passages, the ends of each "C" forming a gap with the gap formed in successive



of the C-shaped walls being angularly offset and forming radial gas passages, and an inlet for introducing gas into one of the gas passages.

5,542,612

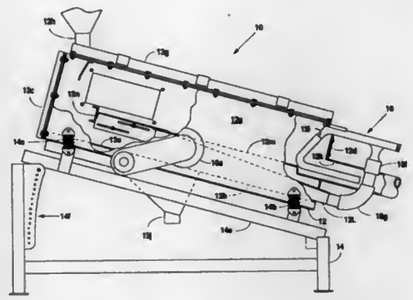
APPARATUS FOR DEHULLING GRASS SEED

Victor A. Beisel, Fargo, Okla., assignor to Pogue Seed Co., Inc., Kenedy, Tex.

Filed May 19, 1994, Ser. No. 245,972

Int. Cl.[6] B02C *9/04;23/12;23/40*

U.S. Cl. 241—5 **13 Claims**



1. The method of dehulling seeds comprising the steps of:

providing a momentum separation chamber;

producing a laminar flow of pressurized air into the inlet of a venturi first nozzle mounted in a chamber wall and having a substantially horizontal axis;

injecting a mixture of empty hulls, seeds, and hulls containing seeds transversely into said laminar air flow, thereby creating a turbulent air flow and subjecting hulls containing seeds to frictional engagement with other hulls to remove hulls from their respective seeds; and

directing a portion of the air flow discharged from said first venturi nozzle into a second nozzle having a substantially horizontal outlet and a downwardly directed coanda surface communicating with a pipe traversing the chamber wall, thereby diverting a substantial portion of the air flow discharged from the outlet of said venturi first nozzle and permitting the horizontal discharge of the empty hulls, seeds and remaining hulls with seed into said momentum separation chamber.

5,542,613

PROCESS FOR IMPACT CRUSHING OF SOLID PARTICLES

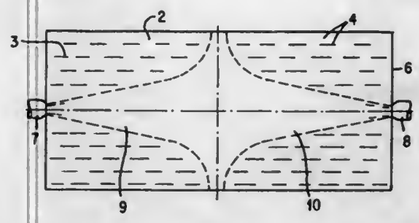
Roland Nied, Raiffeisen-Strasse 10, 86486 Bonstetten, Germany

Continuation-in-part of Ser. No. 164,104, Dec. 9, 1993, abandoned. This application Mar. 24, 1995, Ser. No. 410,533

Claims priority, application Germany, Dec. 10, 1992, 42 41 549.7

Int. Cl.[6] B02C *19/06*

U.S. Cl. 241—5 **5 Claims**



1. A process for impact crushing of solid particles in a suspension stored in a container so that the particles are disintegrated into a plurality of smaller particles, comprising

introducing a portion of said suspension into an acceleration nozzle at a first energy level;

introducing an acceleration fluid into said acceleration nozzle at a second energy level higher than said first energy level for accelerating the suspension to form a high energy fluid jet comprising said suspension and said acceleration fluid; and

directing said fluid jet into said container for causing said particles in said fluid jet to collide with particles stored in said container for crushing said particles.

5,542,614

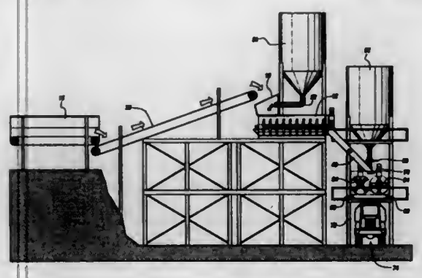
PROCESSING OF WASTE MATERIAL

Irfan A. Toor, Plano, Tex., assignor to Itex Environmental Services, Inc., Addison, Tex.

Filed Feb. 8, 1994, Ser. No. 193,449

Int. Cl.[6] B02C *18/40;23/18*

U.S. Cl. 241—21 **6 Claims**



1. A method for processing waste material comprising the steps of:

receiving said waste material in a vibrating screen box;

vibrating said vibrating screen box to separate lumps of said waste material that are larger than a predetermined size thereby removing lumps of said waste material of a size greater than said predetermined size from said waste material;

discharging said waste material of a size less than said predetermined size into a homogenizer;

receiving said waste material into said homogenizer;

homogenizing said waste material in said homogenizer;

dropping said waste material into a mixer after homogenizing, said mixer located below said homogenizer;

accumulating a batch of waste material in said mixer;

weighing said batch of waste material to determine an amount of additive to be added to said waste material;

mixing said waste material with said additive in said mixer to form a mixture; and

dropping said mixture from said mixer to a processing terminus located below said mixer.

5,542,615

PULVERIZING APPRATUS

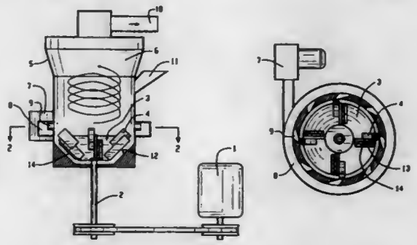
Liangzhong Yu, and Zigiang Wang, both of Wuhan, China, assignors to Wuhan University of Technology, Wuhan, China

Filed May 3, 1993, Ser. No. 56,990

Claims priority, application China, May 3, 1992, 92209032.7

Int. Cl.[6] B02C *13/14;23/24*

U.S. Cl. 241—57 **21 Claims**



1. A pulverizing apparatus comprising:

a grinding chamber having a material inlet and a bottom;

a conical plate with more than one radial blades on its inner surface, rotatably supported in said grinding chamber and connecting therewith with a space between the conical plate and the bottom;

a material outlet arranged on said chamber and connecting therewith above said conical plate;

an air-blower communicating with said chamber through an air duct wherein said air duct includes an air vent located above the conical plate so as to produce a vortex of air within said chamber;

more than one grooves are formed along the generating line on the conical plate and a strike-off board is arranged to fix in each groove, which stretches into the space between the conical plate and the bottom of the grinding chamber.

5,542,616

GRAIN-DE-ACIDIZING PROCESS MILL

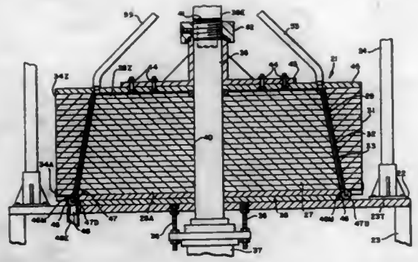
Virgil L. Archer, Sanger, Tex., assignor to Natural Pac Company, Hamburg, Ark.

Filed Jun. 20, 1994, Ser. No. 262,606

Int. Cl.[6] B02C *7/13;7/14;7/18;11/08*

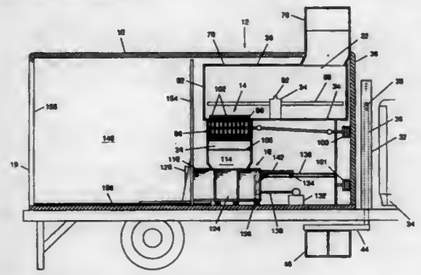
U.S. Cl. 241—62 **14 Claims**

1. A grain de-acidizing process mill comprising: grain storage and feed means; grain transverse movement means; grain fast heating means for heating the grain berry outer portion; high velocity relatively cold air stream delivery means: means for passing heated grain berries into said high velocity relatively cold air stream to temperature shock the heated grain outer portion and thereby cause a sudden contraction of grain berry outer portion layers causing then to crack and loosen from the grain core; rubbing action mill means for separating grain berry outer layers from the berry along with other portions to be removed; grain movement means for moving the grain from the high velocity relatively cold air stream to said rubbing action mill means; and a grain output guide track with flexible scrubber baffles therein



sliding mill processed grain therein to final output means to mill processed grain berry storage means.

5,542,617
MOBILE PAPER SHREDDER
David E. Rajewski, Box 22, Gadsby, Alberta, Canada
Filed Aug. 25, 1994, Ser. No. 295,034
Int. Cl.[6] B02C *9/04;13/00*
U.S. Cl. 241—101.761 **23 Claims**

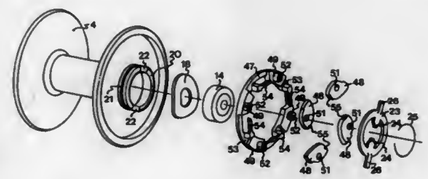


1. A paper shredding apparatus, comprising:
a paper feeder having an inlet and an outlet;
a paper shredder connected to receive paper from the outlet of the paper feeder, the paper shredder including an opening bounded at least on one side by impact surfaces, and a shredded paper outlet;
an unloader mounted to receive shredded paper from the shredded paper outlet of the paper shredder, the unloader including (1) a bin formed of a base, first and second sidewalls spaced from each other and separated by the base, a reciprocating end wall disposed between the first and second sidewalls, and a discharge chute opposed to the reciprocating end wall; and (2) a motor operatively connected to the reciprocating end wall such that reciprocation of the end wall compacts shredded paper within the bin and forces it out of the discharge chute.

5,542,618
ROLLER PRESS
Knud T. Andersen, Copenhagen, Denmark, assignor to F. L. Smidth & Co. A/S, Denmark
PCT No. PCT/EP92/00141, § 371 Date Mar. 23, 1993, § 102(e) Date Mar. 23, 1993, PCT Pub. No. WO92/13639, PCT Pub. Date Aug. 20, 1992
PCT Filed Jan. 23, 1992, Ser. No. 30,220
Claims priority, application United Kingdom, Feb. 7, 1991, 9102623
Int. Cl.[6] B02C *4/32*
U.S. Cl. 241—227 **4 Claims**

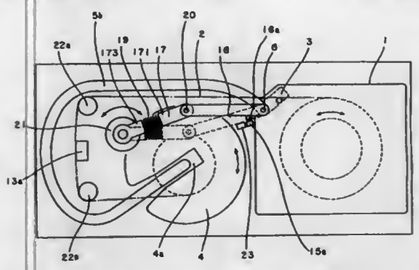
1. A roller press comprising two rollers, said rollers having a variable width nip between them, said rollers further being driven in opposite rotational directions by two reduction gear units each mounted on a separate shaft for a respective one of the rollers, said gear units including torque reaction means for causing torque-generated forces on the gear units to act substantially perpendicularly to the plane containing the roller axes, while permitting mutual reciprocal movement of the rollers in the plane, said torque reaction means comprising two pairs of arms, each pair being rigidly connected to a respective one of the gear units, and each arm of one pair being coupled with a respective one of the arms of the other pair.

5,542,619
FISHING REEL OF THE MULTIPLIER TYPE
Jarding Karlsson, Mörrum, Sweden, assignor to ABU AB, Svängsta, Sweden
Filed Dec. 1, 1994, Ser. No. 352,166
Int. Cl.[6] A01K *89/0155*
U.S. Cl. 242—289 **8 Claims**



1. A fishing reel of the multiplier type comprising
a frame,
a line spool rotatably mounted in the frame,
a brake ring coaxial with the line spool and connected to the frame, and
friction brake means connected to the line spool, said brake means acting in cooperation with the brake ring for braking spool rotation,
said brake means comprising a carrier ring which is rotatable together with the line spool, is coaxial therewith and has at least one bearing pin parallel to the axis of rotation of the line spool and pivotally supporting a brake element for cooperation with the brake ring,
said brake element comprising a lever element having a first lever arm and a second lever arm and being freely pivotable within a narrow pivoting range about said bearing pin between a braking position, in which said brake element engages the brake ring with said first lever arm, and an off-position, in which it is disengaged from the brake ring, said brake element being so dimensioned as to be maintained in said off-position during acceleration of the line spool and, hence, of the carrier ring while rotating in an unwinding direction, and in said braking position during deceleration of the line spool and, hence, of the carrier ring while rotating in the unwinding direction.

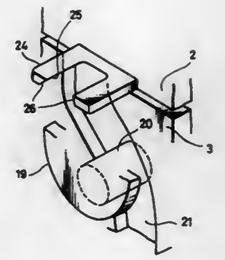
5,542,620
TAPE THREADING APPARATUS USED IN A TAPE UNIT
Masaru Ohshita, Yokohama-shi, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Continuation of Ser. No. 173,156, Dec. 22, 1993, abandoned, which is a continuation of Ser. No. 728,626, Jul. 11, 1991, abandoned. This application Jun. 5, 1995, Ser. No. 462,562
Claims priority, application Japan, Jul. 18, 1990, 2-191017
Int. Cl.[6] G11B *15/00*
U.S. Cl. 242—332.4 **17 Claims**



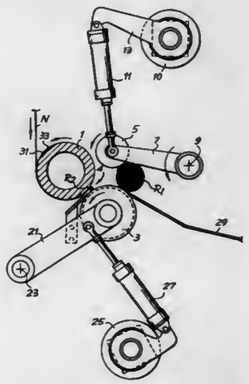
1. A tape threading apparatus in a tape unit including a tape running path and a machine reel, for pulling a leader-block having a leader-block opening and attached at an end of a tape, out from a tape cartridge mounted on the tape unit, passing the tape through and drawing out the tape from the tape running path and inserting the leader-block back into the tape cartridge, said tape threading apparatus comprising:
a pin for engaging the leader-block opening;
guidance means for guiding said pin between the tape cartridge and the machine reel; and
a threading arm for carrying the leader-block, said threading arm having a first end connected to a rotational pivot and a second end provided with said pin, said threading arm including:
a linkage of at least three arms and an elastic member, first and second ones of said at least three arms being rotatably coupled, said elastic member coupled between said second one of said at least three arms and a third one of said at least three arms so that said threading arm expands and contracts lengthwise, said first one of said at least three arms having a first portion connected to said pin and a second portion connected to said second one of said at least three arms such that said first one of said at least three arms is inclined in a first direction with respect to said second one of said at least three arms when the leader-block is being inserted in the tape cartridge, and said first one of said at least three arms is inclined in a second direction opposite the first direction with respect to said second one of said at least three arms after the leader-block has been inserted in the tape cartridge, the total length of said threading arm is set such that, when the threading arm is extended straight, the distance between the rotational pivot and said pin is longer than the distance between the rotational pivot and the leader-block opening when the leader-block is inserted in the tape cartridge.

5,542,621
TAPE CASSETTE
Osamu Taguchi, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Dec. 9, 1994, Ser. No. 354,841
Claims priority, application Japan, Dec. 15, 1993, 5-315524
Int. Cl.[6] G11B *23/087*
U.S. Cl. 242—347.1 **7 Claims**

1. A tape cassette having a lid attached to its front surface portion so as to become openable and closable, said lid being composed of a front lid and a back lid and in which cam bosses provided on respective side portions of said back lid are guided along cam grooves formed on a cassette housing of said tape cassette to thereby open and close said lid, said tape cassette comprising:
a retaining member formed on said cassette housing in the vicinity of an upper end portion of said cam groove, wherein when said back lid is opened, said cam boss is brought in contact with said retaining member at a position in which an upper portion of said cam boss is projected from at least a lower surface of said retarding member, thereby preventing said cam boss from being disengaged from said cam groove, and wherein said retaining member has a tapered surface on which said retaining member is brought in contact with said cam boss.



5,542,622
METHOD AND MACHINE FOR PRODUCING LOGS OF WEB MATERIAL AND TEARING THE WEB UPON COMPLETION OF THE WINDING OF EACH LOG
Guglielmo Biagiotti, Capannori, Italy, assignor to Fabio Perini S.p.A., Lucca, Italy
Filed Feb. 9, 1994, Ser. No. 193,949
Claims priority, application Italy, Feb. 15, 1993, FI93A0023
Int. Cl.[6] B65H *35/10*
U.S. Cl. 242—521 **14 Claims**



9. A method of producing logs of web material, including the steps of:
providing a first winding roller having an axis;
feeding said web material around said first winding roller and forming a log with said web;
upon completion of a log, severing the web material when the log is completed with a pre-determined quantity of web material wound thereon;
and, after severance of the web material, winding the incoming web to form a new log;

providing on said winding roller a surface portion and an adjoining surface, said surface portion having a coefficient of friction lower than that of the adjoining surface located upstream with respect to the web feeding direction, said surface portion extending approximately parallel to the axis of the roller;

upon completion of a log, pinching the web material against said winding roller at said surface portion having a lower coefficient of friction, whereby causing the web material to slide along said surface portion and to tear the web between the pinch point and the finished log.

5,542,623

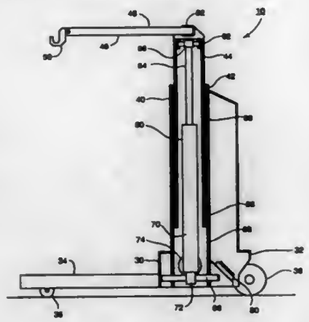
METHOD AND APPARATUS FOR INSTALLING A MEDIA SUPPLY CASSETTE IN AN IMAGESETTER

Donald J. Garand, Chelmsford, and Lawrence S. Blake, Peabody, both of Mass., assignors to Bayer Corporation, Wilmington, Mass.

Filed Sep. 21, 1994, Ser. No. 309,812

Int. Cl.[6] B65H *19/12*

U.S. Cl. 242—559.4 **8 Claims**



4. A media supply installing and imaging apparatus comprising:

an imagesetter having at least two docking locations for holding a web-type media supply in the form of a roll of image recording media, a media support surface for supporting media drawn from a roll of media in one of the docking locations, and an image scanning apparatus for scanning an image onto the media on the media support surface; and

assist means for assisting an operator with installation and removal of the media supply to and from said at least two docking locations in said imagesetter without requiring manual lifting of the media supply by the operator, said assist means having moving means for moving said assist means relative to said imagesetter independently in a horizontal direction and independently in a vertical direction.

5,542,624

LIGHTNING STRIKE PROTECTION

Henry R. Smith, Knightwick, England, assignor to HR Smith (Technical Developments) Ltd., Herefordshire, England

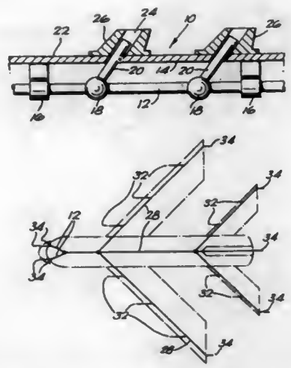
Filed Jnn. 1, 1994, Ser. No. 252,080

Claims priority, application United Kingdom, Jun. 3, 1993, 9311422

Int. Cl.[6] B64D *45/02*

U.S. Cl. 244—1 A **15 Claims**

1. A lightning strike protection system for an aircraft or a part thereof, which system comprises at least one elongate electrical conductor mounted so as to extend adjacent to but spaced from an inner surface of a wall of said one aircraft or said part, said conductor having one or more extensions running therefrom and passing through said wall to a position adjacent the outer surface of said wall, wherein that part of the or each extension on the outer surface of said wall is located within the material of a static discharger.



5,542,625

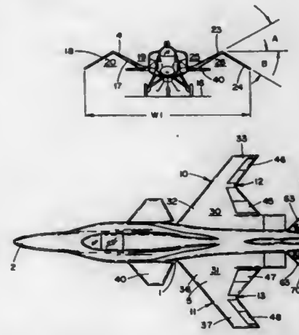
GULL WING AIRCRAFT

Walter R. Burhans, Jr., Miller Place, N.Y.; Nathan Kirchbaum, Blacksburg, Va., and Richard F. Nastasi, Commack, N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Mar. 26, 1993, Ser. No. 37,333

Int. Cl.[6] B64C *3/16;5/04*

U.S. Cl. 244—45 R **9 Claims**



1. A vehicle having a fuselage with a forward end and a spaced opposite aft end, said vehicle lacking a vertical stabilizer, said vehicle comprising:

a. a wing on said fuselage, wherein said wing comprises a pair of wing sections extending from opposite sides of said fuselage at an angle with a horizontal plane;

b. a gull tail on said fuselage at the aft end of said fuselage, said tail having leading and trailing edges, and wherein said tail comprises a pair of tail sections extending from opposite sides of said fuselage at an angle with a horizontal plane;

c. each of said wing sections and said tail sections being bent intermediate its length to form an inboard part and an outboard part in the shape of a substantial "V" and an inverted substantial "V", both of said inboard parts being bent in substantially the same direction at substantially the same angle and both of said outboard parts being bent in substantially the same direction at substantially the same angle; and

d. control means mounted on said tail at the trailing edges thereof for controlling pitch, yaw and roll.

5,542,626

MULTI-DECK PASSENGER AIRCRAFT HAVING IMPACT ENERGY ABSORBING STRUCTURES

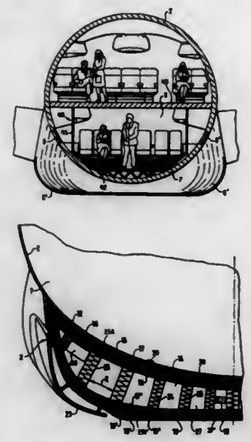
Guenter Beuck; Hans-Juergen Mueller, and Ralf Schliwa, all of Bremen, Germany, assignors to Deutsche Aerospace Airbus GmbH, Hamburg, Germany

Filed Apr. 25, 1994, Ser. No. 232,387

Claims priority, application Germany, Apr. 26, 1993, 43 13 592.7

Int. Cl.[6] B64D *45/04;* **B64C** *35/02;1/10*

U.S. Cl. 244—107 **34 Claims**



1. A multi-deck high-capacity passenger aircraft comprising a fuselage (2) with an upper fuselage portion and a lower fuselage belly (7), a passenger deck comprising a deck floor arranged in said fuselage belly without a hold space below said deck floor and having at least one of a passenger cabin compartment (9) and a passenger service facility arranged on said passenger deck, said aircraft further comprising an energy absorbing structural unit (5) arranged outside of and attached to said fuselage belly (7) at least in an area substantially vertically below said at least one passenger cabin compartment and passenger service facility arranged on said passenger deck.

5,542,627

QUICK RELEASE COUPLING APPARATUS AND METHOD FOR A HELMET MOUNTED NIGHT VISION GOGGLE ARRANGEMENT

David A. Crenshaw, Roanoke; Roy H. Holmes, Salem, and Albert M. Baril, Roanoke, all of Va., assignors to ITT Corporation, New York, N.Y.

Filed Feb. 17, 1994, Ser. No. 197,857

Int. Cl.[6] B64D *25/02;* **A42B** *3/22;* **F41H** *1/04*

U.S. Cl. 244—121 **19 Claims**

1. A quick release coupling apparatus for coupling a night vision goggle assembly to a pilot's head, comprising:

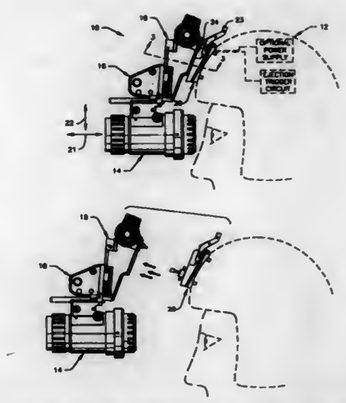
a helmet mount having a locking element extending therefrom;

a support member for supporting the night vision goggle assembly, said support member defining an enclosure therein into which said locking element may pass;

engagement means disposed in said enclosure for engaging said locking element, wherein said engagement means includes a collet having a first engagement surface and a second engagement surface that are biased against said locking element by a flexible wire wound around said collet, thereby selectively preventing said locking element from exiting said enclosure;

a non-explosive repelling means for repelling said helmet mount away from said support member, thereby biasing said locking element out of said enclosure; and

an electrically triggered release means for selectively breaking said flexible wire, thereby releasing said engagement means and enabling said repelling means to separate said helmet mount from said support member.



5,542,628

ESCAPE DEVICE FOR AIRCRAFT

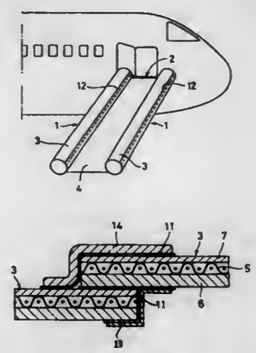
Akira Nishimura, and Hideki Kashihara, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Mar. 9, 1994, Ser. No. 207,673

Claims priority, application Japan, Mar. 10, 1993, 5-049322; Mar. 10, 1993, 5-049333; Mar. 10, 1993, 5-049371

Int. Cl.[6] B64D *1/08*

U.S. Cl. 244—137.2 **3 Claims**



1. An escape device for an aircraft, said device comprising: a pair of cylindrical gas bags disposed parallel to each other, a member in the form of a sheet defining a sliding surface and disposed between and joined to said pair of cylindrical gas bags, said gas bags being inflatable to form a slide, and each of said gas bags being of a material comprising a substrate covered with a

thermosetting elastomer containing a flame retardant which makes the gas bags self-extinguishing, and each of said gas bags having a joint portion at which ends of said material forming each gas bag are joined, and a protective member capable of reflecting radiant heat and covering the joint portion at the outer surface of each of said cylindrical gas bags, said protective member comprising a reflecting layer containing metallic powder, and a non-dense layer having evenly dispersed fine pores.

5,542,629

ESCAPE DEVICE FOR AIRCRAFT

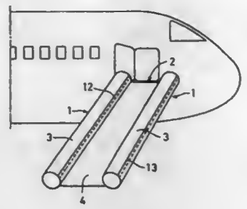
Hideki Kashihara; Akira Nishimura, and Toshihiko Takiguchi, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed May 31, 1994, Ser. No. 251,111

Claims priority, application Japan, Jul. 9, 1993, 5-170264; Jul. 9, 1993, 5-170355

Int. Cl.[6] B64D *1/08*

U.S. Cl. 244—137.2 **11 Claims**





1. An escape device for aircraft, comprising:

a pair of gas bags, wherein each one of said gas bags comprises a sheet member bonded into a cylindrical shape, and wherein said gas bags are arranged parallel to each other;

a slide sheet member defining a slide surface, said slide sheet member being located between and bonded to said pair of gas bags;

wherein each one of said of sheet members of said gas bags and said slide sheet member comprises a rubber coated fabric, said rubber coated fabric comprising a flexible substrate and elastomer covering layers on respective sides of said substrate; and

wherein at least one of said covering layers comprises a flame-retardant comprising needle-like crystals having an aspect ratio≧4 and having a crystal grain length≦100 μm.

5,542,630

CONTROL OF FLUID FLOW

Anthony M. Savill, Cambridge, England, assignor to Rolls-Royce plc, London, England

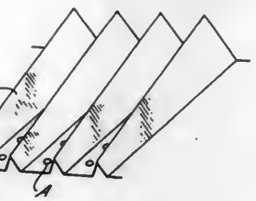
PCT No. PCT/GB93/00405, § 371 Date Sep. 19, 1994, § 102(e) Date Sep. 19, 1994, PCT Pub. No. WO93/19980, PCT Pub. Date Oct. 14, 1993

PCT Filed Feb. 26, 1993, Ser. No. 302,882

Claims priority, application United Kingdom, Mar. 31, 1992, 9206999

Int. Cl.[6] B64C *21/00;21/06*

U.S. Cl. 244—200 **19 Claims**



1. A fluid dynamic wall surface having a series of elongate projections on said surface, said projections being arranged side-by-side and extending lengthwise substantially in the direction of fluid flow relative to said surface for modification of a boundary layer of said fluid flow on said surface, said projections being located on said surface with a wall spacing between adjacent projections of from zero to two times the base widths of the projections on said surface, said suction means being located in said wall Spacing between at least some pairs of projections.

5,542,631

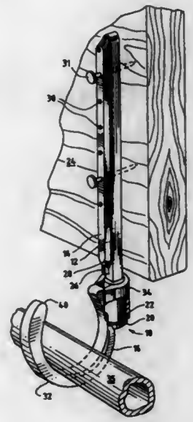
ADJUSTABLE PIPE HANGER

James F. Bruno, 650 Greentree, Ada, Mich. 49301

Filed Aug. 1, 1994, Ser. No. 283,799

Int. Cl.[6] F16L *3/00*

U.S. Cl. 248—58 **13 Claims**



1. An adjustable pipe hanger for suspending a pipe from a support structure comprising:

an elongate stem for mounting to the support structure and defining an axis, said stem having at least one hole extending therethrough in a transverse direction so that the stem can be nailed to the support surface;

stop means disposed at one end of the stem;

a flexible hook rotatable about a portion of the stem and comprising a curved portion adapted to receive the pipe and a means for attachment to the stem;

said attachment means having a central bore configured to accommodate the stem in sliding fashion; and

means for locking the hook about the stem at the desired angle when the hook is resting on the stop means.

5,542,632

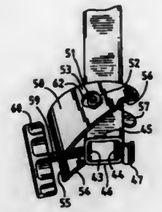
MOUNTING ASSEMBLY FOR RADIANT HEATER

Norris R. Long, Wichita, Kans., assignor to The Coleman Company, Wichita, Kans.

Filed Mar. 28, 1995, Ser. No. 412,419

Int. Cl.[6] A47B *96/06*

U.S. Cl. 248—205.1 **13 Claims**



1. A mounting assembly adapted for mounting a heater on an LPG tank which includes a top, an outlet valve mounted on the top, and a collar which extends around at least a portion of the outlet valve, the mounting assembly comprising an elongated rigid support member having an upper end for supporting a heater and a lower end, first hook means on the lower end of the support member for engaging an edge of a collar on an LPG tank, a generally U-shaped clamp pivotably mounted on the support member adjacent the lower end thereof, the clamp including a pair of legs which straddle the support member and a cross portion which connects the legs, the legs including second hook means for engaging an edge of a collar on an LPG tank, and means for pivoting the clamp relative to the support member for moving the second hook means toward the first book means.

5,542,633

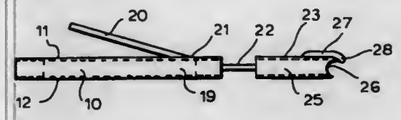
MERCHANDISE RETENTION DEVICE FOR RETROFIT INSTALLATION ON DISPLAY HOOKS

Thomas O. Nagel, Blairstown, N.J., assignor to Trion Industries, Inc., Wilkes-Barre, Pa.

Filed Aug. 4, 1995, Ser. No. 511,356

Int. Cl.[6] A47B *96/06*

U.S. Cl. 248—214 **8 Claims**



1. A merchandise retention device adapted for retrofit mounting on a wire loop hook, where the loop hook comprises elongated, spaced-apart, parallel side elements formed of wire and integ-rally joined at forward ends thereof by a generally U-shaped outer wire portion, which comprises

(a) a generally flat body member having a length less than the length of the wire side elements of the loop hook,

(b) said body member having spaced-apart side edges formed over at least a portion thereof with opposed, outwardly facing grooves,

(c) said body member having a width such that, when said body member is positioned between spaced-apart side elements of a loop hook, said side elements are partially received in said opposed grooves, whereby said body member is adapted to be lockingly held in said loop hook,

(d) a merchandise retention tongue having one end anchored in said body member and projecting upwardly and rearwardly therefrom to a position for blocking the movement of carded merchandise, supported on said loop hook rearwardly of said tongue, past said tongue in a forward direction,

(e) said tongue being resiliently depressably toward said body member to enable carded merchandise to be placed on said loop hook and to be controllably removed therefrom.

5,542,634

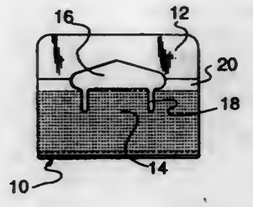
ADHESIVE HANG TAB

Carl Pomerantz, 4589 7th Street, Laval, Quebec, Canada

Continuation-in-part of Ser. No. 172,763, Dec. 27, 1993, abandoned. This application Jul. 3, 1995, Ser. No. 497,781

Int. Cl.[6] H04N *5/232*

U.S. Cl. 248—214 **8 Claims**



1. Adhesive hang tab for hanging an object to a support, said hanging tab having two opposite surfaces, a lower portion of one of those two surfaces having a pressure-sensitive coating extending upwardly on predetermined height of a full height of the hang tab adapted for attachment to said object, a non-coated upper portion of said tab having a central aperture adapted for secure hanging of said object onto said support, said hang tab comprising:

at least two channels extending downwardly from said non-coated portion into said coated portion;

upper ends of said channels being extended directly into said central aperture;

lower portions of said channels having means for preventing further propagation or tearing of said hang tab caused by force of gravity created by the object attached to said tab, and

wherein when in use said upper non-coated portion is oriented in vertical plane and remains substantially undeformed.

5,542,635

FILE CONTAINER ASSEMBLY INCLUDING BRACKETS FOR WALL OR CART MOUNTING

Keith Smith, Memphis, Tenn.; Kenneth M. Smith, Olive Branch, Miss., and Scott D. Smith, Memphis, Tenn., assignors to Leeco Industries, Inc., Olive Branch, Miss.

Filed Sep. 28, 1994, Ser. No. 313,939

Int. Cl.[6] A47B *96/06*

U.S. Cl. 248—221.12 **12 Claims**



1. A filing container assembly comprising a file container, a cart and a pair of brackets for supporting said file container on the cart, each bracket further comprising:

a) a plate;

b) means for mounting said plate to the cart;

c) a pair of posts mounted to one surface of said plate in a spaced apart relationship supporting said file container thereon;

d) a pair of slots located along one edge of said plate and in a spaced apart relationship; and

wherein said cart having opposing supports with ribs, said cart further having U-shaped legs, said U-shaped legs including said ribs therein, and said ribs receiving a respective one of said slots for mounting said file container to said cart.

5,542,636

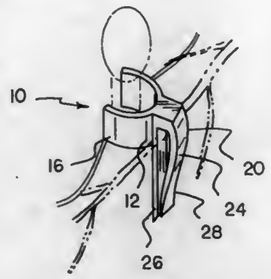
CLIPS FOR SUPPORTING MINIATURE CHRISTMAS LIGHTS AT ANY OF A PLURALITY OF LOCATIONS

John P. Mann, and Barbara A. Mann, both of 24 Tracey St., Spring City, Pa. 19475

Filed Nov. 23, 1994, Ser. No. 344,017

Int. Cl.[6] A47B *96/06*

U.S. Cl. 248—229.26 **1 Claim**



1. New and improved clip for supporting miniature Christmas lights at any of a plurality of locations comprising in combination:

a one-piece clip fabricated of a plastic material with limited resilience;

a light supporting component formed in a generally C-shaped configuration about a vertical axis of rotation, the supporting component being greater than 180 degrees and less than 190 degrees the light supporting component having a central exterior surface, and an upper edge;

a second component formed integrally with the light supporting component, the second component adapted to be secured to a recipient surface to maintain the light supporting component and the miniature Christmas lights in a vertical orientation; and

the second component including a clip with a first, straight and flat vertically disposed leg adjacent to the central exterior surface of the light supporting component, the second component having a straight horizontal leg with an upper face, the upper face is at an elevational orientation with the upper edge of the light supporting member such that the upper edge of the light supporting component and the upper face of the horizontal leg are planar with respect to one another, this configuration functioning to support a miniature Christmas light at an elevation above the second component, the second component also having a leg attached to an end of said horizontal leg opposite the light supporting component and extending downwardly and inwardly then outwardly in a generally smooth and curved configuration for being secured over a vertical recipient surface or a Christmas tree branch with the resilience of the legs adapted to provide a bolding force to the branch or vertical recipient surface.

5,542,637

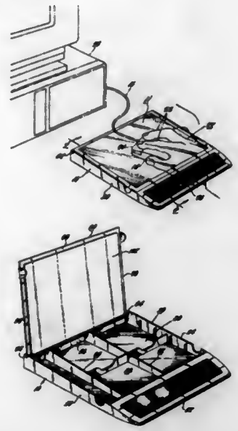
MOUSE PAD WITH STORAGE COMPARTMENT

Michael J. Schriner, Santa Fe, Calif., assignor to Hunt Holdings, Inc., Wilmington, Del.

Filed Sep. 29, 1994, Ser. No. 315,137

Int. Cl.[6] A47B *91/00*

U.S. Cl. 248—346.01 **8 Claims**



1. A hand-rest pad for supporting a computer mouse, said pad having a substantially flat, horizontal top surface portion for supporting the mouse and a sloped portion extending upwardly from the front of said pad to merge with said flat top surface portion, said pad being hollow to define an article storage compartment therein, and said top portion comprising an upwardly-pivotable lid for said storage compartment, providing access to said compartment.

5,542,638

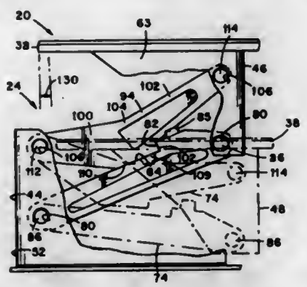
BASE ASSEMBLY FOR USE WITH A SUSPENSION SYSTEM OF A VEHICLE SEAT

Rodney F. Smith, Seymour, Tenn., assignor to National Seating Company, Vonore, Tenn.

Filed Jun. 14, 1994, Ser. No. 259,475

Int. Cl.[6] F16M *13/00*

U.S. Cl. 248—421 **20 Claims**



1. A base assembly for a suspension system of a vehicle seat including:

lower support means securable in a stationary relationship with a vehicle body;

upper support means arranged generally above the lower support means for supporting a user seated upon the vehicle seat;

an arm assembly including a cooperating pair of elongated arms which are each pivotally connected at its opposite ends to a corresponding one of the upper and lower support means so that the upper support means can be shifted generally upwardly and downwardly with respect to the lower support means; and

the cooperating arms including portions which are substantially vertically aligned with one another as the upper support means is shifted upwardly and downwardly as aforesaid, and the vertically-aligned portions include relatively broad surfaces which move into abutting relationship with one another when the upper support means is shifted upwardly relative to the lower support means by a prescribed amount to thereby limit the upward movement of the upper support means relative to the lower support means, and wherein the relatively broad surfaces include elongated flat surfaces which extend for an appreciable distance along length of each arm so that upon movement of the relatively broad surfaces into abutting relationship with one another, the broad surfaces engage one another over an appreciable distance along the length of each arm.

5,542,639

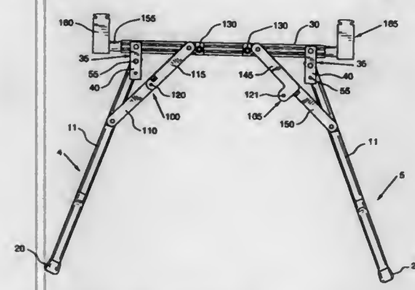
FLAT FOLDING SUPPORT

Barry D. Wixey, Pittsburgh; Ronald E. Young, Cheswick; Charles J. Baird, Pittsburgh, and Jeffrey L. Haffely, Gibsonia, all of Pa., assignors to Delta International Machinery Corp., Pittsburgh, Pa.

Filed Jun. 8, 1994, Ser. No. 255,419

Int. Cl.[6] F16M *11/32*

U.S. Cl. 248—439 **14 Claims**



1. A collapsible stand, comprising:

an object supporting portion having opposed ends and including an object-supporting surface for supporting an object;

first and second leg members;

a first pivotal connecting member for pivotally connecting said first leg member to an end of said object supporting portion to thereby define a first pivot axis, said first leg member pivotable about said first pivot axis between a folded position wherein said first leg member is substantially parallel with and adjacent to said object-supporting surface, and an unfolded position wherein said first leg member extends outwardly from said object-supporting portion;

a second pivotal connecting member for pivotally connecting said second leg member to said another end of said object-supporting portion to thereby define a second pivot axis, said second leg member pivotable about said second pivot axis between a folded position wherein said second leg member is substantially parallel with and adjacent to said first leg member when said first leg member is in its said folded position, and an unfolded position wherein said second leg member extends outwardly from said object-supporting portion, said second pivot axis disposed at a greater distance from said object-supporting surface than said first pivot axis, said first leg member disposed intermediate said object-supporting surface and said second leg member when said leg members are in their said folded positions; and

at least first and second diagonal support members for maintaining said leg members in their said unfolded positions, said first diagonal support member connected at a first end to said first leg member and at a second end to said object-supporting portion, said second diagonal support member connected at a first end to said second leg member and at a second end to said object-supporting portion, said diagonal support members comprising first and second articulating members and being configured so as to collapse when said leg members are pivoted from their said folded position to their said unfolded position;

said first and second articulating members of said second diagonal support member being connected at a pivot axis offset from longitudinal axes of either of said articulating members to thereby provide an area between said first and second articulating members of said second diagonal support member when said second leg member is in its said folded position, said first leg member being disposed within said area when said leg members are in their said folded positions.

5,542,640

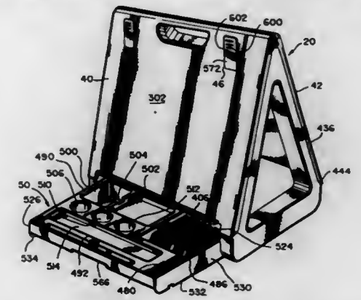
EASEL

Richard A. Tarozzi, Gales Ferry, Conn., assignor to Binney & Smith, Inc., Del.

Continuation of Ser. No. 926,167, Aug. 5, 1992, Pat. No. 5,393,030. This application Feb. 22, 1995, Ser. No. 393,937

Int. Cl.[6] A47B *97/04*

U.S. Cl. 248—460 **49 Claims**



1. A children's table top easel for providing support for drawing media comprising:

a first support member;

a second support member;

at least one panel supported by the first and second support members, the panel having a drawing surface oriented upwardly at an angle to the horizontal; and,

a supply tray movably and slidably engaging the first and second support members to permit the supply tray to move from a first position to a second position to facilitate access to the supply tray.

5,542,641

WALL HANGER, MOUNTING KIT, AND METHOD

Charles A. Donovan, 4509 Clarksdale Ct., Orlando, Fla. 32812

Filed Apr. 13, 1994, Ser. No. 226,968

Int. Cl.[6] A47G *1/16*

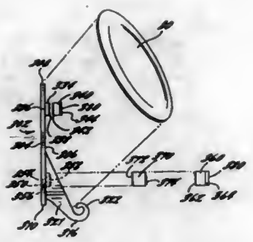
U.S. Cl. 248—493 **7 Claims**

1. A wall hanger for minimizing damage to a wall comprising:

a base having:

a generally planar first side for interfacing with a wall;

a second side opposed to the first side;



a top and a bottom edge;

a plurality of narrow bores extending from the second side to the first side, positioned generally along the top edge of the base, and angling away from the top edge, wherein each bore is sufficiently narrow and sufficiently long to permit a straight pin to pass therethrough and penetrate a wall when the first side is placed against the wall;

a support member for supporting an object, the support member having a first end affixed to and protruding from the second side of the base and positioned generally along the bottom edge thereof, the support member further having a second end having means for cradling an object; and

an adjustable-thickness spacer affixed to the second side of the base between the bottom edge and the top edge for biasing the object at variable distances from the base;

wherein the bores are situated sufficiently close to the top edge that a portion of the base between the bores and the bottom edge is sufficient to provide resistance against a moment caused by suspending an object from the support means.

5,542,642

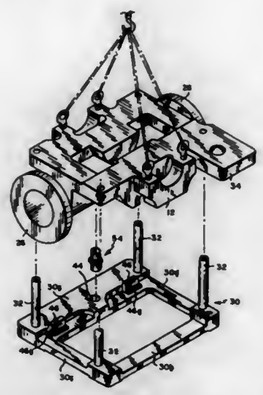
TURBINE SUPPORT STRUCTURE

Robert L. Rivard, West Boylston, Mass., assignor to Tuthill Corporation, Millbury, Mass.

Filed Feb. 24, 1995, Ser. No. 393,728

Int. Cl.[6] F16M *13/00*

U.S. Cl. 248—676 **12 Claims**



1. A support structure for a steam turbine having an output shaft driven for rotation about a horizontal axis, said support structure comprising:

a base;

a plurality of posts protruding upwardly in cantilever fashion from said base on opposite sides of a vertical plane containing said horizontal axis, said turbine being vertically supported exclusively by said posts at a location overlying said base;

first means for connecting said turbine to said base for pivotal movement about a vertical axis; and

second means for opposing pivotal movement of said turbine about said vertical axis.

5,542,643

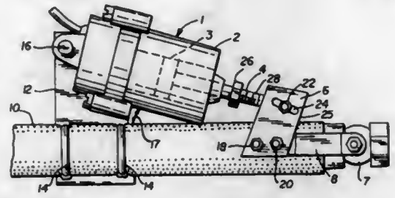
PNEUMATIC BALL VALVE OPERATOR

Newton Breth, 1030 Adams Cir., #114, Boulder, Colo. 80303

Filed May 2, 1994, Ser. No. 236,412

Int. Cl.[6] F16K *31/12*

U.S. Cl. 251—62 **3 Claims**



1. A ball valve operator for a ball valve mounted in a pipe and having a control handle with a first position corresponding to the valves normal position and a second position corresponding to the valve's actuated position, comprising:

a pneumatic cylinder mountable on the pipe;

a piston drivable by said cylinder through a piston stroke and including a piston stem having a proximal end and a distal end;

an adaptor plate having fastening means for attachment of said plate to said valve handle at an attachment point;

fastening means rotatably affixed to said piston for attaching said piston to said plate; and

adjusting means for varying the spatial relationship of the attachment point to said stroke so that said operator may first be mounted to the pipe and said spatial relationship may subsequently be adjusted so that said handle, when acted upon by said piston stem, moves from its first position to a position which is selected to provide desired flow through said valve without reaching said second position prior to said piston reaching the end of its said stroke.

5,542,644

PLUG-VALVE HAVING A PLUG ASSEMBLY WITH RETRACTIBLE SEALS THAT CAN BE REMOVED WITHOUT LEAKAGE

Gordon M. Smith, Brookshire, Tex., assignor to Johnston Pump/General Valve, Inc., Brookshire, Tex.

Filed Jun. 5, 1995, Ser. No. 460,969

Int. Cl.[6] F16K *5/14*

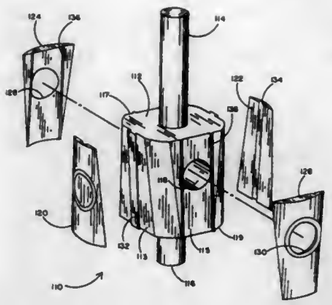
U.S. Cl. 251—163 **12 Claims**

1. A plug assembly for a retractable seal-reseating element non-lubricated double block and bleed plug valve; the valve having an inlet and an outlet integral to a valve body and an operator for selectively orienting the plug within the valve body to either align a waterway with the inlet and outlet to open the valve or align the waterway substantially perpendicular to the inlet and outlet to close the valve; the assembly comprising:

a tapered, faceted, cylindrical plug having said waterway therethrough;

a pair of shut-off slips positioned on said plug for relative axial movement therebetween, the plug surfaces adjacent said shut-off slips being tapered for radially retracting said shut-off slips as said plug is moved axially in a first direction relative to said inlet and outlet;

a pair of thru-bore slips positioned on said plug adjacent said waterway for relative axial movement therebetween, the plug



surfaces adjacent said thru-bore slips being tapered for radially retracting said thru-bore slips as said plug is moved axially in a second direction relative to said inlet and outlet;

said thru-bore slips each having a thru-bore aperture to permit flow through said waterway without leakage around said plug when said waterway is aligned with said inlet and outlet; and

a trunnion attached to said operator for rotating and translating said plug, said shut-off slips and said thru-bore slips within said valve body.

5,542,645

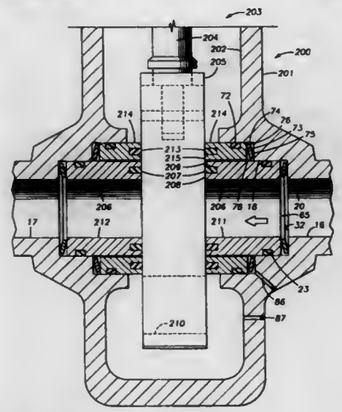
DUAL SEAL VALVE

John Beson, 10938 Leaning Ash, Houston, Tex. 77079

Continuation-in-part of Ser. No. 889,792, May 28, 1992, Pat. No. 5,338,003, and a continuation-in-part of Ser. No. 758,018, Sep. 12, 1991, abandoned, which is a continuation-in-part of Ser. No. 504,512, Apr. 4, 1990, abandoned, which is a continuation-in-part of Ser. No. 493,045, Mar. 12, 1990, abandoned, which is a continuation of Ser. No. 343,474, Apr. 26, 1989, abandoned, which is a continuation of Ser. No. 189,574, May 3, 1988, abandoned, which is a continuation of Ser. No. 49,231, May 13, 1987, abandoned, which is a continuation of Ser. No. 659,614, Oct. 11, 1984, abandoned, which is a continuation-in-part of Ser. No. 551,589, Nov. 14, 1983, Pat. No. 4,566,671, said Ser. No. 889,792is a continuation-in-part of Ser. No. 798,448, Nov. 26, 1991, Pat. No. 5,320,327, which is a continuation of Ser. No. 685,219, Apr. 12, 1991, abandoned, which is a continuation of Ser. No. 493,045, Mar. 12, 1990, abandoned. This application Jul. 26, 1994, Ser. No. 280,473

Int. Cl.[6] F16K *3/16*

U.S. Cl. 251—172 **14 Claims**



1. A valve, comprising:

a valve body having a valve chamber therein and a pair of valve body flow passages extending therethrough at opposite sides of said valve chamber, said flow passages having inner ends; and

a member within said valve chamber and alternatively movable within said valve body flow passages between a position in which said valve is closed and a position in which said valve is open, said member having a member flow passage therethrough which is aligned with the valve body flow passages when said member is in said open position and an imperforate portion which is aligned with said valve body flow passages when said member is in said closed position;

said valve body including a first recess and a second adjacent recess, forming a first stepped recess around one of said inner ends of said valve body flow passages, said recesses having an outer diameter wall and an end wall, one of said set of recesses being of larger diameter than the other of said set of recesses;

a primary seal seat member, having a primary seal seat member flow passage and said primary seal seat member slidably disposed in said corresponding smaller diameter recess around said inner end of said corresponding valve flow passage, said primary seal seat member flow passage being in register with said corresponding valve body flow passage and having a first seal for sealingly engaging said smaller diameter recess outer diameter wall and a second seal for sealingly engaging said member, said first and second seals each having a mean diameter, said second seal having said mean diameter smaller than said mean diameter of said first seal;

a secondary seal seat member, slidably disposed around said primary seal seat member, said secondary seal seat member having one end extending along the side of said member, said secondary seal seat member being disposed in said larger diameter recess around said inner end of said corresponding valve flow passage, and having a third seal for sealingly engaging said larger diameter recess wall and a fourth seal for sealingly engaging said member, said third and fourth seals each having a mean diameter, and said fourth seal having said mean diameter smaller than said mean diameter of said third seal;

a first spring and a second spring for said first stepped recess, said first spring biasing between said smaller diameter recess end wall and said primary seal seat member and said second spring biasing between said larger diameter recess end wall and said secondary seal seat member, whereby said primary seal seat member and said secondary seal seat member bear against said member.

5,542,646

HYDRAULICALLY OPERATED FORCING TOOL

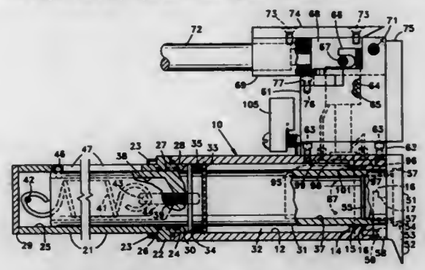
Peter Bunyan, 234 Old Towne Rd., Spartanburg, S.C. 29301

Filed Nov. 28, 1994, Ser. No. 345,574

Int. Cl.[6] B66F *3/24*

U.S. Cl. 254—93 R **13 Claims**

1. A hydraulically operated forcing tool, comprising



a housing having therein an axial bore,

a forcing rod having a diameter less than the diameter of said bore in said housing, and having thereon intermediate its ends an enlarged diameter piston head having an outer diameter approximately equal to the diameter of said bore,

means mounting said rod and said piston head in said bore for limited axial reciprocation between a retracted position in which one end of said rod is positioned adjacent one end of said housings, and an advanced position in which said one end of said rod extends out of said one end of said housing and is spaced from said one end thereof,

said piston head having an outer peripheral surface slidably and sealingly engaged with the wall defining said bore in said housing and operatively separating said bore into a first chamber surrounding said rod between said piston head and said one end of said housing, and a second chamber surrounding said rod between said piston head and the opposite end of said housing,

a supply of fluid in one of said chambers,

pump means on said housing operable to draw fluid from said one chamber and to pump said fluid into the other of said chambers, thereby to force said piston head and said rod toward one of said advanced and retracted positions, respectively,

resilient means mounted on said housing externally of said bore in said housing, and disposed in communication with the fluid in said one chamber,

said resilient means being operative independently of said pump means to exert pressure on said fluid in said one chamber,

said resilient means comprising at least one member removably attached to said housing and having therein at least one reservoir chamber communicating at one end thereof with the fluid in said one chamber, and

a spring-loaded piston mounted for limited sliding movement in said reservoir chamber between opposite ends thereof and operative to maintain pressure on fluid entering said reservoir chamber from said one chamber.

5,542,647
TWO-SPEED JACK
Larry C. Huetsch, 7124 Sentinel Rd., Rockford, Ill. 61107
Filed Mar. 20, 1995, Ser. No. 406,585
Int. Cl.[6] B60S *9/02*
U.S. Cl. 254—420 **19 Claims**



1. In a jack of the type including an outer leg, an inner leg telescopically slidable in the outer leg and having screw follower means on an upper end and ground engaging means at a lower end, a screw having an upper shank and a threaded shaft engaging the screw follower means for extending the inner leg when the screw is rotated in a first direction and for retracting the inner leg when the screw is rotated in a second direction, an improved two-speed screw drive mechanism comprising:

(a) a base fixed to an upper end of the outer leg;

(b) means mounting the shank of the screw on the base for axial rotation of the screw and for limited endwise movement of the screw relative to the base between preselected upper and lower positions; the screw and the inner leg being arranged to move downwardly relative to the outer leg to the lower position when the ground engaging means is out of ground engagement and inner leg being operative to move the screw toward said upper position when the ground engaging means engages the ground;

(c) rotary drive means mounted for rotation relative to the base;

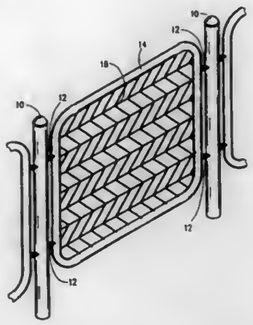
(d) transmission means responsive to rotation of the rotary drive means in one direction and:

(i) operative when the screw is in said lower position for driving the screw in said first direction at a first number of revolutions for each revolution of the rotary drive means; and

(ii) operative when the screw is in said upper position for driving the screw in said first direction at a lower number of revolutions for each revolution of the rotary drive means;

(e) and means for rotating rotary drive means.

5,542,648
WIRE FENCING
Moshe H. Cohen, Givatayim, Israel, assignor to Yehuda Welded Mesh. Ltd., Israel
Filed Mar. 24, 1994, Ser. No. 217,253
Claims priority, application Israel, Mar. 28, 1993, 105187
Int. Cl.[6] E04H *17/02;* **F16S** *3/08;* **B21F** *29/00*
U.S. Cl. 256—45 **10 Claims**



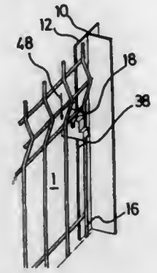
1. Wire fencing comprising:

a first multiplicity of wires lying in a first plane and extending in generally uniformly mutually spaced relationship and a second multiplicity of wires lying in a second plane adjacent to said first plane and extending in generally uniformly mutually spaced relationship in touching relationship with said first multiplicity of wires at a third multiplicity of intersection locations, said first and said second multiplicities of wires being fixedly joined to each other at said third multiplicity of intersection locations, said first multiplicity of wires extending generally along mutually parallel first axes which are not perpendicular to second axes along which said second multiplicity of wires generally extend at a first group of the intersection locations;

wherein said first multiplicity of wires extend generally along mutually parallel first axes which are perpendicular to second axes along which said second multiplicity of wires generally extend at a second group of said intersection locations; and

wherein said first and second groups are arranged in strips which extend along the fencing from side to side, thereby creating a perceived three-dimensional zig-zag effect.

5,542,649
FENCE WITH MESH PANELS
Marnix Allegaert, Zwevegem, and Steven Wostyn, Otegem, both of, Belgium, assignors to N.V. Bekaert S.A., Zwevegem, Belgium
Filed Oct. 6, 1994, Ser. No. 319,106
Claims priority, application Belgium, Oct. 21, 1993, 9301121
Int. Cl.[6] E04H *17/10*
U.S. Cl. 256—54 **16 Claims**



9. Fencing section comprising:

a rod panel having at least one portion defined by an edge rod extending in one direction and a plurality of side rods extending at an angle from the edge rod;

a fencing post having a first plate-shaped vane, which has a first side adapted for resting against the edge rod and a second side opposite the first side, the vane having a plurality of spaced apart openings;

at least two attachment devices for attaching the rod panel to the fencing post, each attachment device including a frontal part having a face adapted for resting against the vane second side and a side part connected to the frontal part, the side part having a portion extending from the frontal part past the vane first side upon attachment thereof to the fencing post,

wherein the side part of each said attachment device has a first side and a second side opposite the first side, and a groove for engaging one of the side rods, wherein the groove of one of the attachment devices is located in the first side of the side part end the groove of the other one of the devices is located on the second side of the side part,

wherein sachet it attachment device has a protruding stud extending from the face of the frontal part for receipt without substantial play in one of the vane openings,

wherein at least one of the attachment devices is configured to be connected to the vane without the panel and wherein one of the attachment devices is configured to be connected to the vane along with the panel.

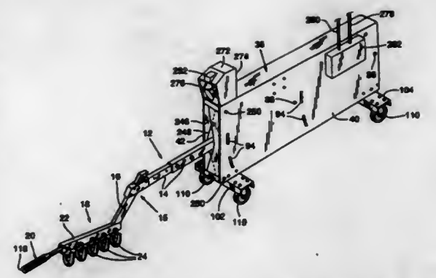
5,542,650
APPARATUS FOR AUTOMATICALLY CLEANING SMELT SPOUTS OF A CHEMICAL RECOVERY FURNACE
Clayton J. Abel, Beaverton; Greg Watson, Portland; Daniel R. Higgins, Tigard, and Robert B. Hill, Beaverton, all of Oreg., assignors to Anthony-Ross Company, Beaverton, Oreg.
Filed Feb. 10, 1995, Ser. No. 386,942
Int. Cl.[6] C21B *9/10*
U.S. Cl. 266—135 **36 Claims**

1. Apparatus for automatically cleaning a smelt spout of a chemical recovery furnace, said apparatus comprising:

a cleaning head insertable into said smelt spout for movement there along to dislodge obstructions therefrom;

an elongated beam for carrying said cleaning head at a forward end thereof; and

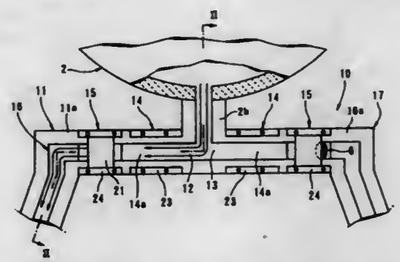
a support base for said beam located remotely along said beam from said cleaning head, said base supporting said beam and cleaning head;



said support base including means for longitudinally translating said beam in a path for moving said cleaning head toward said smelt spout and along a length of said smelt spout and for then retracting said cleaning head to a position rearwardly above said smelt spout,

wherein said means for longitudinally translating said beam includes a camming track positioned on said support base, said beam including follower means engageable with said camming track, and an actuating means for selectively applying force to said beam in a direction longitudinal of said beam.

5,542,651
MELT DISCHARGING LAUNDER AND METALLURGICAL FURNACE INSTALLATION USING SAME
Hisao Kanazumi, and Akiyoshi Yamashiro, both of Kagawa-gun, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan
Continuation of Ser. No. 291,489, Aug. 17, 1994, abandoned.
This application May 31, 1995, Ser. No. 455,665
Claims priority, application Japan, Sep. 8, 1993, 5-223733
Int. Cl.[6] B22D *43/00*
U.S. Cl. 266—231 **9 Claims**



1. A launder for discharging melt from a metallurgical furnace, comprising:

a launder body having one end connected to said metallurgical furnace, said launder body defining a fluid passageway for allowing the melt, flowing from said metallurgical furnace into said one end, to flow therethrough in a direction away from said metallurgical furnace;

wherein said launder body includes a threshold portion having a substantially horizontal threshold portion bottom which is positioned to determine a melt level in said metallurgical furnace above which the melt in the furnace begins to flow into the launder body, said launder body further including a closing portion having a substantially horizontal closing portion bottom for receiving a closing material thereon to close the fluid passageway of said launder body, said closing portion being arranged at a position displaced downstream in a direction of a melt flow with respect to said threshold portion,

and said closing portion bottom being lower than said threshold portion bottom such that a stepped portion connects said threshold portion bottom and said closing portion bottom;

said melt discharging launder further comprising a solid castable as the closing material positioned on said closing portion bottom.

5,542,652

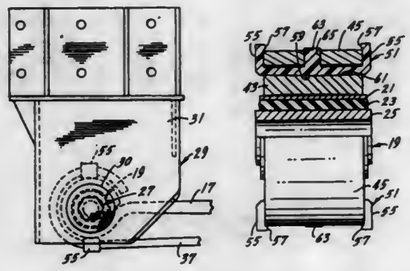
ANTI-FRICTION PAD FOR A BUSHED PIVOT POINT CONNECTION OF A MAIN LEAF SPRING AND A SECONDARY LEAF SPRING

John W. Stuart, Springfield, Mo., assignor to Reyco Industries, Inc., Springfield, Mo.

Filed Feb. 22, 1995, Ser. No. 392,047

Int. Cl.[6] B60G *11/02*

U.S. Cl. 267—49 **10 Claims**



1. An anti-friction pad adapted to be fitted in a pivot eye of a bushed pivot connection of a main leaf spring and a secondary leaf spring mounted between the walls of a hanger bracket,

said anti-friction pad including an elongated main body portion having oppositely located faces and having a length which is greater than its width with said main body portion adapted to be fitted in said pivot eye so that its length extends transversely of said pivot eye,

said main body portion adapted to be fitted between said main leaf spring and said secondary leaf spring with one of said faces engaging said main leaf spring and the other of said faces engaging said secondary leaf spring,

side walls formed integrally with said main body portion and upstanding from said main leaf spring engaging face with said side walls located at opposite ends of said main body portion,

each of said side walls having oppositely located faces,

one of said side wall faces adapted to be fitted in engagement with said secondary leaf spring and the other of said side wall faces adapted to be fitted to engage one of said hanger bracket walls upon lateral movement of said bushed pivot connection.

5,542,653

PORTABLE MODULAR FRAMING TABLE APPARATUS

Maurice E. Maloney, P.O. Box 389, Saco, Mass. 04072

Filed Feb. 4, 1993, Ser. No. 192,112

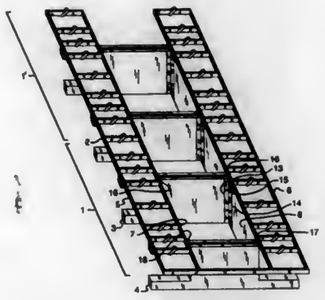
Int. Cl.[6] B30B *3/02*

U.S. Cl. 269—37 **11 Claims**

1. A modular, portable framing table apparatus for facilitating the construction of wood framed structures, said apparatus comprising at least one subassembly, said subassembly comprising;

a pair of parallel, longitudinally extending, and transversely, adjustably separated, rectangular shaped bench modules having upper and lower planar surfaces, a plurality of wood framing member location and retention means positioned in defined relationships with respect to each other,

at least two leg modules to support said bench modules when said apparatus is assembled,



and at least two divider modules comprising attachment/alignment means for precisely joining said divider modules to said leg modules in such a fashion that the assembled apparatus is both rigid and square,

said apparatus being further capable of rapid assembly and disassembly and all of said modules being of a size and shape so as to facilitate their transportation to a remote job-site in the bed of a standard pickup track or like vehicle.

5,542,654

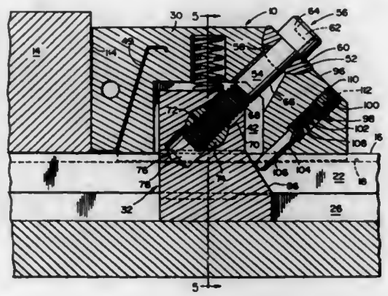
SELF-LOCKING RAILVICE GUIDED ALONG A T-SLOT

Lars Johanson, 72 Hillsdale Rd., Cedar Grove, N.J. 07009

Filed Nov. 28, 1994, Ser. No. 348,971

Int. Cl.[6] B23Q *3/02*

U.S. Cl. 269—137 **18 Claims**



1. A clamping system for a workpiece, said clamping system comprising:

a work support having a work surface,

an inverted T-shaped slot extending into said work support from said work surface,

at least one railvice including a jaw element for engaging the workpiece and holding the workpiece in position and a locking member slidably mounted in said slot,

rotation means extending through said jaw element and engaging said locking member for locking and releasing said locking member in said slot, and

bias means for biasing said locking member in a locked or released position in said slot depending upon rotation of said rotation means in either direction,

said bias means tilting said locking member in one direction of rotation of said rotation means and moving said locking member downwardly in an opposite direction of rotation of said rotation means.

5,542,655

SHEET FINISHER WITH STAPLE MODE SELECT SWITCH

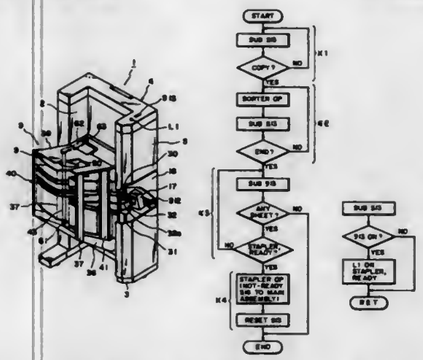
Koichi Murakami, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 111,393, Aug. 25, 1993, which is a continuation of Ser. No. 760,973, Sep. 17, 1991, abandoned. This application Apr. 3, 1995, Ser. No. 415,578

Claims priority, application Japan, Sep. 17, 1990, 2-246466

Int. Cl.[6] B42C *1/12*

U.S. Cl. 270—58.09 **24 Claims**



1. A sheet post-processing apparatus separate from and connectable to a sheet discharging portion of an image forming apparatus without operativity in a binding mode in which discharged sheets are bound, having an automatic document feeder and generating a completion signal indicative of a completion of feeding of a set of originals, said sheet post-processing apparatus comprising:

means for stacking sheets discharged from said image forming apparatus;

binding means for binding a set of sheets stacked on said stacking means;

operation control means for automatically operating said binding means after a last sheet is discharged to said stacking means, when both said completion signal and a binding instruction signal have been generated; and

manually operable binding mode selecting means for supplying said binding instruction signal to said operation control means, said binding instruction signal placing said operation control means in a ready state, waiting for generation of said completion signal.

5,542,656

APPARATUS FOR INDIVIDUALLY SEPARATING STACKED PRINTED PRODUCTS

Hans-Ulrich Stauber, Grult, Switzerland, assignor to Ferag AG, Switzerland

Continuation of Ser. No. 243,752, May 16, 1994, abandoned. This application Aug. 8, 1995, Ser. No. 512,561

Claims priority, application Switzerland, May 21, 1993, 01 542/93

Int. Cl.[6] B65H *5/08*

U.S. Cl. 271—11 **14 Claims**

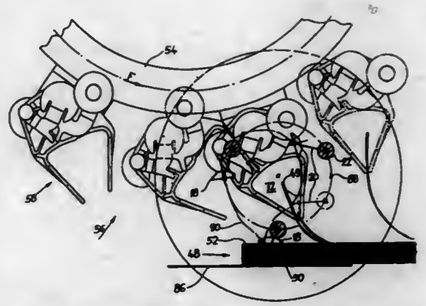
1. An apparatus for individually separating stacked printed products, the apparatus comprising:

a rotor including a rotary drive for driving the rotor;

a plurality of controllable suction heads which circulate in a plane perpendicular to the stack, the suction heads being mounted in the rotor and individually moveable;

a drive superposed on the rotary drive for individually moving suction heads;

a takeover region having a takeover point wherein the suction heads suck against the outer-most product and separate it from the stack to transfer it to a transporting-away device at a transporting-away point;



a swivel arm, for each one of the suction heads, which anchors the suction head to the rotor, the swivel arm being substantially rigidly connected at one end on the suction head and having another end;

the drive comprising a follow-up control which guides the other end of the swivel arm, the follow-up control having a follow-up roller engaging a control cam including a track which is stationary and closed in itself; and

the control cam configured such that the swivel arm runs into the takeover point in pushing operation and leaves the takeover point in pulling operation and such that starting from the takeover point, the swivel arm is driven in a swiveling manner forward in the direction of rotation and is held swiveled in pulling operation from the takeover point to the transporting-away point of the transporting-away device.

5,542,657

GRIPPER APPARATUS FOR SHEET-FED PRINTING MACHINES

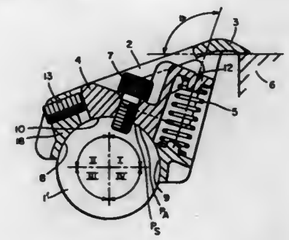
Klemens Kemmerer, Seligenstadt; Harald Bayer, Rodgau, and Valentin Gensheimer, Muhlheim, all of, Germany, assignors to MAN Roland Druckmaschinen AG, Germany

Filed Jul. 7, 1994, Ser. No. 271,478

Claims priority, application Germany, Jul. 1, 1993, 43 21 850.4

Int. Cl.[6] B65H *29/06*

U.S. Cl. 271—82 **9 Claims**



1. A gripper apparatus for gripping a sheet of paper in a sheet-fed printing machine which includes a cylinder having an axis-parallel recess in the periphery thereof, a cylindrical gripper shaft disposed for rotation within said recess about an axis parallel to said axis-parallel recess, and a gripper pad located on the circumference of said cylinder at the edge of said recess on which the leading edge of a paper sheet is disposed, said gripper apparatus comprising, in combination,

a gripper finger including a pair of arcuately shaped base surfaces conforming to and disposed in circumferentially spaced-apart relation less than 180 degrees from each other on said

gripper shaft and having a gripper finger tip structure protruding substantially radially from said gripper shaft, said base surfaces defining a substantial circumferential open space therebetween,

sheet engagement means disposed on said radially protruding tip structure of said finger for securing one of said sheets of paper on said gripper pad of said cylinder,

a gripper holder having an arcuately shaped fastening surface secured to said shaft and disposed in said circumferential open space between said base surfaces of said finger and conforming to and disposed on said gripper shaft, said gripper holder including biasing spring means connected to said finger for opposing a force on said finger when said gripper tip engages said gripper pad,

releasable alignment connection means disposed above the effective line of said spring means forming a releasable positive connection directly between said gripper finger and said gripper holder thereby precluding skewed alignment between said finger and said holder relative to said shaft axis after said gripper finger tip engagement means returns to a non-engaged position from said engaged position with said gripper pad,

and adjusting means for opposing the force of said biasing spring means when said gripper finger tip engaging means is not engaged with said gripper pad, said adjusting means, spring means, and sheet engagement means are arranged such that a change in force exerted on said gripper finger is minimal during a transition of said gripper finger in a open state and closed.

5,542,658

SUCTION HEAD FOR A FEEDER OF A SHEET-FED ROTARY PRINTING PRESS

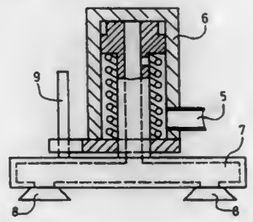
Arno Wirz, Bammental; Peter Sobotta, and Jochen Renner, both of Heidelberg, all of, Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Continuation-in-part of Ser. No. 890,544, May 28, 1992, abandoned, which is a division of Ser. No. 616,877, Nov. 21, 1990, Pat. No. 5,137,267. This application Feb. 21, 1995, Ser. No. 390,988

Claims priority, application Germany, Nov. 21, 1989, 39 38 556.6

Int. Cl.[6] B65H *3/08*

U.S. Cl. 271—107 **7 Claims**



1. A suction head for a feeder of a sheet-fed rotary printing press for feeding sheets of small format through the press in a given direction, comprising only one double sucker formed of two juxtaposed suction nozzles connected by a transverse tube and being disposed transversely to the feeding direction of the sheets, said only one double sucker being exchangeably secured at a center location of the printing press, said suction nozzles of said only one double sucker being movable downwardly under suction-air influence and, after suction openings thereof are closed by a sheet suction-gripped by said suction nozzles, said suction nozzles being movable upwardly to an upper end position under vacuum.

5,542,659

MULTI-WAY SLIDE-TYPE SHUTOFF VALVE FOR SUCTION AIR OF SUCTION-TYPE GRIPPERS ON A SHEET-TRANSFER DRU

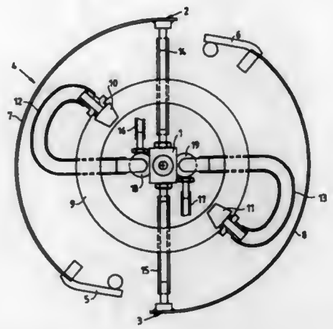
Rudi Haupenthal, Epfenbach, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed May 10, 1994, Ser. No. 240,929

Claims priority, application Germany, May 10, 1993, 43 15 527.8; May 10, 1993, 43 15 541.3; May 10, 1993, 43 15 548.0

Int. Cl.[6] B65H *3/08*

U.S. Cl. 271—108 **8 Claims**



1. Multi-way slide-type shutoff valve for suction air of suction-type grippers on a sheet-transfer drum, including a plurality of closing parts, linearly slidable in a housing for optionally closing air-inlet openings connected to intake ducts of the suction-type grippers, and for closing air-outlet openings connected to a suction-air source through the intermediary of a rotary valve, the closing parts having a cylindrical shape, at least some thereof being arranged adjacent one another and in coaxial alignment, and an operating device for displacing the closing parts, comprising springs having spring constants coordinated with one another and being disposed at least between the adjacent coaxial closing parts, at least an outer one of said closing parts being connected to the operating device.

5,542,660

HAND HELD SPHERICAL GAMING DEVICE

Giuseppe Di Clone, Via Andreotto Saracini 24, 00121 Roma, Italy

Filed Feb. 10, 1994, Ser. No. 194,698

Claims priority, application Italy, Feb. 10, 1993, RM930024 U

Int. Cl.[6] A63B *43/00*

U.S. Cl. 273—58 R **8 Claims**

1. A hand-held spherical gaming device comprising

a spherical ball (1),

said ball (1) having a cylindrical opening extending from the exterior to the center of the sphere,

a central removable spherical core (8),

a spherical cavity for housing said central removable spherical core (8),

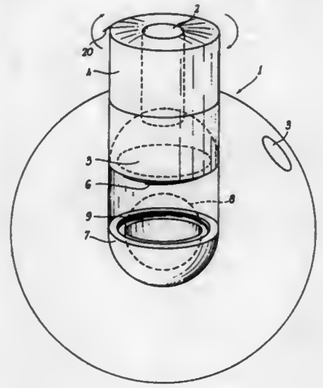
said spherical cavity comprising a first and a second hemispherical hollows joined together,

said first hemispherical hollow having an inner base having a cylindrical portion,

said second hemispherical hollow being integral with the ball (1) and forming the base of said cylindrical opening,

a cylindrical body inserted in said cylindrical opening and having a first finger receiving hollow therein,

said ball having a second finger receiving hollow (3).



5,542,661

TETHERED BALL APPARATUS

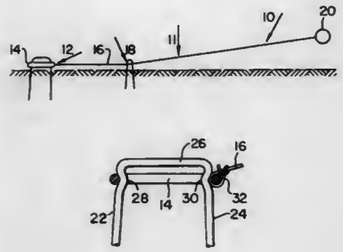
David C. Gregan, Table View, South Africa, assignor to OMNICO (PTY) Ltd, Claremont, South Africa

Filed Jul. 11, 1994, Ser. No. 273,224

Claims priority, application United Kingdom, Sep. 8, 1993, 9318648

Int. Cl.[6] A63B *69/40*

U.S. Cl. 273—26 E **4 Claims**



1. A ball apparatus, which includes

a) an anchoring member adapted to be anchored to a supporting surface, the anchoring member being in the form of peg having at least one leg for penetrating into a supporting surface;

b) a ring;

c) a holding formation en the anchoring member for holding said ring in position on said anchoring member and for enabling disengagement of said ring from the anchoring member responsive to the anchoring member being loosened from a supporting surface;

d) a guide member adapted to be held on a supporting surface in spaced relation to the anchoring member, the guide member being in the form of a peg having at least one leg for penetrating into a supporting surface;

e) a cord guide formation associated with the guide member;

f) a ball; and

g) a cord made of resilient material, said cord being attached at one end to the ring and passing through the cord guide formation of the guide member and being attached at its opposite end to the ball.

5,542,662

SPORTS BALL AND PRODUCTION METHOD THEREOF

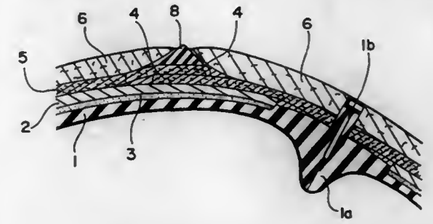
Keiji Kouzai, and Junichi Tanaka, both of Koshigaya, Japan, assignors to Tachikara Co., Ltd., Taito-ku, Japan

Filed Dec. 14, 1994, Ser. No. 355,707

Claims priority, application Japan, Dec. 28, 1993, 5-354205

Int. Cl.[6] A63B *41/08*

U.S. Cl. 273—58 BA **12 Claims**



1. A sports ball comprising:

a hollow spherical shaped inflatable tube;

a rubber pouch around said inflatable tube forming a covering layer;

an inorganic lubricant between said tube and said covering layer;

a reinforced layer adhered on the outer surface of the covering layer with a solution of an adhesive agent wherein the covering layer is of a material which does not permit the solution of the adhesive agent to pass through the covering layer, and

an outer layer on the outer surface of said reinforced layer.

5,542,663

THREAD WOUND GOLF BALL

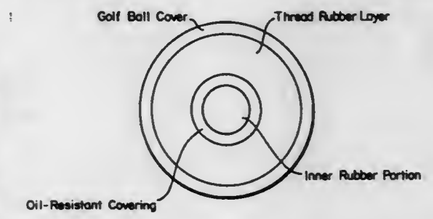
Akira Kato, Kobe, and Yoshikazu Yabuki, Akashi, both of, Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo-ken, Japan

Filed Jul. 26, 1994, Ser. No. 280,820

Claims priority, application Japan, Jul. 30, 1993, 5-189906

Int. Cl.[6] A63B *37/06;37/12*

U.S. Cl. 473—363 **8 Claims**



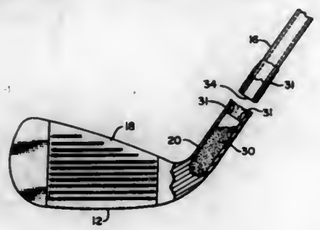
1. A thread wound golf ball comprising a solid center, a thread rubber layer provided on the outside of the solid center and a cover for covering the thread rubber layer, wherein said center has a strain of 0.5 to 5 mm when 500 g weight is loaded on the solid center and is composed of an inner rubber portion and an oil-resistant substance covering the inner rubber portion, and said inner rubber portion has a crosslinked rubber structure, formed from a rubber composition comprising 100 parts by weight of a base rubber and 30 to 500 parts by weight of an oily substance, whereby bleeding of the oily substance is prevented.

170–651 O.G.–96–8: QL3

5,542,664
DUAL ADHESIVE ASSEMBLY SYSTEM FOR GOLF CLUBS

Steve Mahaffey, Hampden, and Rene Rivest, South Hadley, both of Mass., assignors to Lisco, Inc., Tampa, Fla.

Filed Jan. 13, 1995, Ser. No. 372,657
Int. Cl.[6] A63B *53/02*
U.S. Cl. 473—305 **15 Claims**

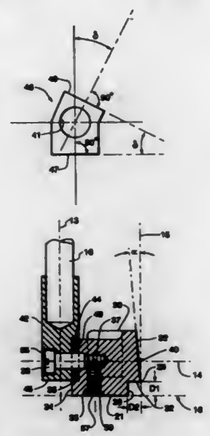


1. A golf club comprising:
a head,
a hosel formed on the head, the hosel having wall means defining a bore containing a weighting material carried in a first adhesive, and
a shaft adhered in the hosel bore with a second adhesive, the second adhesive having a greater viscosity than the first adhesive prior to curing in order that the second adhesive substantially prevents leaking of the first adhesive out of the bore between the wall means and the shaft as a result of the shaft being placed in the bore.

5,542,665
ADJUSTABLE GOLF PUTTER

Reynold J. Levocz, 868 Penns Way, West Chester, Pa. 19382, and Joseph W. Szewc, 2971 Belgrade St., Philadelphia, Pa. 19134

Filed Jun. 16, 1995, Ser. No. 491,320
Int. Cl.[6] A63B *53/06;53/16*
U.S. Cl. 473—313 **12 Claims**

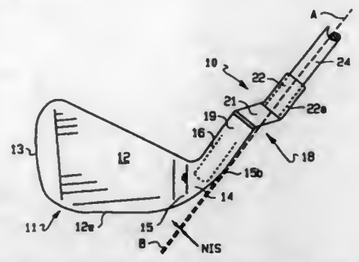


1. A golf putter for striking a golf ball, said golf putter comprising:
an elongated shaft having a distal end and a proximate end;
a putter head having with reference to a front vertical planar reference surface and a bottom horizontal planar reference surface: a top, a sole, a heel, a toe, a rear surface, a strike axis, and a striking face;
an adaptor at the proximate end of the shaft;
a mount on the rear surface of the putter head; and
at least one reversible key cooperable with the adaptor and the mount to position the elongated shaft at a predetermined desired fixed angle γ relative to the head whereby by reversing the key, said angle is on either side of a vertical line perpendicular to the strike axis; and
a fastener securing the adaptor and key to the mount.

5,542,666
INSERTABLE HOSEL EXTENSION FOR VARYING OFFSET AND INSET OF GOLF CLUBS

Arthur C. P. Chou, Oceanside, Calif., assignor to Acushnet Company, Fairhaven, Mass.

Filed Jan. 13, 1995, Ser. No. 372,401
Int. Cl.[6] A63B *53/02*
U.S. Cl. 473—314 **9 Claims**



1. In a non-putter golf club having a head with a ball striking surface with a leading edge, the head having a heel, a lower hosel portion and a hosel recess in the lower hosel portion along a first axis, and a shaft with a second axis, the improvement comprising:
a transitional hosel portion positionable in the hosel recess and including;
a first attachment means for insertion in the hosel recess along said first axis;
a second attachment means for insertion with the shaft along the second axis; and
an angled neck section positioned between the first and second attachment means of the transitional hosel portion to permit said first and second axes to be selectively positioned in varying alignment among i) said axes, ii) the leading edge of the transitional hosel, iii) the heel and iv) the leading edge of the ball striking surface.

5,542,667
MARTIAL ARTS TRAINING DEVICE

Jarett R. Lezdey; Darren B. Lezdey, both of 701 Haddon Ave., Collingswood, N.J. 08108, and Joseph G. Schneeweiss, 2551 Forest Run Ct., Clearwater, Fla. 34621

Filed May 8, 1995, Ser. No. 436,128
Int. Cl.[6] A63B *69/00*
U.S. Cl. 273—84 R **8 Claims**



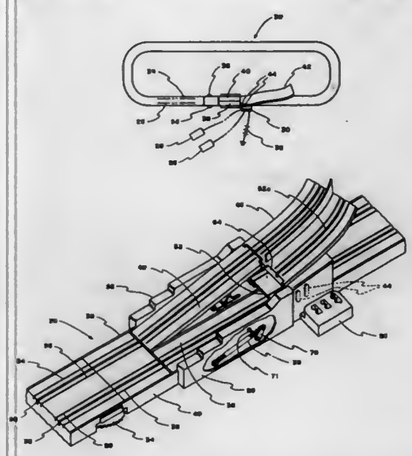
1. A martial arts training device for a person practicing defensive movements comprising:

A. an elongated cylindrical member which is at least three feet long;
B. a first cushion member at one end of said cylindrical member which is a strike member to be avoided by said person;
C. a second cushion member over said cylindrical member adjacent said first cushion member for practicing hand and foot strikes by said person; and
D. a slidable grip means mounted on said cylindrical member between said cushion members and the other end for movement of the cylindrical member forward and back.

5,542,668
GAME USING SLOT TRACK RACEWAY

Joseph Casale, and Salvatore Mucaro, both of Burlington, Conn., assignors to Empire of Carolina, Tarboro, N.C.

Filed Jan. 27, 1995, Ser. No. 390,649
Int. Cl.[6] A63F *9/14;* **A63H** *18/16*
U.S. Cl. 463—59 **8 Claims**

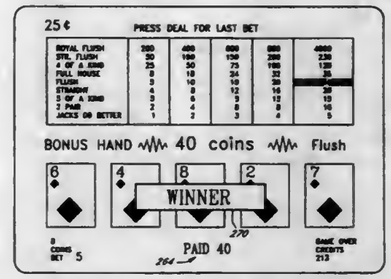


1. A slot track raceway comprising a raceway for at least two cars, at least two side-by-side slots on said raceway for enabling at least two cars to race around said raceway, lap counter means individually associated with each of said slots and positioned so that each of said lap counters is responsive to a passing car in one of said slots, said lap counter means being set to establish the length of a race, said lap counter means counting down to zero in response to said cars passing a given location on said raceway, a separately hinged track section for each slot on said raceway, means for normally bolding said hinged track sections in a position such that the cars continue to travel around said raceway after passing over the hinged track sections, an escape ramp associated with each slot on said raceway and positioned so that said escape ramps are accessible to said cars only when said hinged track sections are activated, means responsive to the first lap counter reaching a zero count for causing said hinged track section of the slot track raceway associated with that zeroed lap counter to divert the car racing in that slot onto said escape ramp, and means for locking the other hinged track section into said normal position so that the car in said other slot continues around said raceway.

5,542,669
METHOD AND APPARATUS FOR RANDOMLY INCREASING THE PAYBACK IN A VIDEO GAMING APPARATUS

Daniel P. Charron, and Daniel F. Yeates, both of Las Vegas, Nev., assignors to Universal Distributing of Nevada, Inc., Las Vegas, Nev.

Filed Sep. 23, 1994, Ser. No. 311,404
Int. Cl.[6] A63F *9/00*
U.S. Cl. 463—13 **8 Claims**



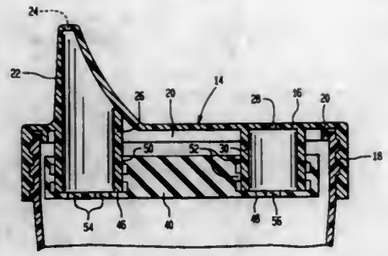
1. An apparatus that plays an interactive game of chance with a player in response to a monetary wager and commands from the player, said apparatus providing the player with monetary output when said interactive game is concluded if the player has obtained one of a predetermined number of levels of winning results, said monetary output varying in accordance with said levels and with an amount of said monetary wager, said apparatus comprising:
a processor which generates said interactive game of chance and which receives commands from the player indicative of said monetary wager and indicative of a playing decision, said processor generating a random play of said game of chance to produce a random outcome, said random outcome being one of said predetermined number of levels of winning results or of a plurality of non-winning results, said outcome compared to a table of monetary outputs to provide the player with a monetary output determined by said randomly selected outcome and said monetary wager; and
a bonus routine within said processor that randomly selects a level of winning results as a bonus level, said bonus routine increasing said monetary output for said one level if said bonus level and said random outcome of a current game match.

5,542,670
FLOW CONTROL ELEMENT AND COVERED DRINKING CUP

Emanuel P. Morano, Totowa, N.J., assignor to Playtex Products, Inc., Westport, Conn.

Filed Jul. 17, 1995, Ser. No. 503,142
Int. Cl.[6] A47G *19/22*
U.S. Cl. 220—714 **21 Claims**

1. A drinking cup comprising:
a cup-shaped container having a removable leakproof cover, the cover comprising a top wall having at one side an upwardly extending drinking spout and spaced therefrom a vent, the top wall being formed on its underside with a pair of spaced elements, one of the pair of spaced elements communicating with and extending downward from under the spout and the other of the pair of elements communicating with and extending downward from the vent; and
a flow control element comprising a flat piece of flexible elastomeric material having a pair of spaced cavities on one side, each of said pair of cavities having a floor at the bottom thereof, each of said pair of cavities receiving the lower ends of the elements in frictional engagement sufficient to support



said flow control element with said floors in sealed relation to the respective elements, each of said floors having a passage therethrough which is normally closed but opens upon occurrence of a pressure differential on opposite sides of said floor.

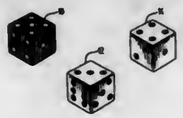
5,542,671

METHOD FOR PLAYING GAME OF DICE

Walter M. Stewart, 8700 N. La Cholla Blvd., Tucson, Ariz. 85741

Filed Mar. 2, 1994, Ser. No. 221,921
Int. Cl.[6] A63F *9/04*
U.S. Cl. 273—146 **8 Claims**

ROLL	TWO WHITE DICE ROLLS WHICH ALLOWS THE BETTER TO WIN	NUMBER OF COMBINATIONS TO WIN	TWO WHITE DICE ROLLS WHICH ALLOWS THE CASINO TO WIN	NUMBER OF COMBINATIONS TO WIN
1	3,5,7,9,11	16	2,4,6,8,10,12	16
2	4,6,8,10,12	17	2,3,5,7,9,11	19
3	5,7,9,11	16	2,3,4,6,8,10,12	20
4	6,8,10,12	14	2,3,4,5,7,9,11	22
5	7,9,11	12	2,3,4,5,6,8,10,12	24
6	8,10,12	6	2,3,4,5,6,7,9,11	27
	TOTAL WINNING COMBINATIONS	96	TOTAL WINNING COMBINATIONS	136



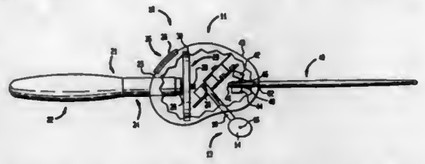
1. A process for playing a game of chance comprising the steps of:
providing three dice where one of the dice is differentiated from the other two;
providing a shooter;
having the shooter roll the three dice;
reading the number of spots on the said one differentiated die;
determining whether the number of spots on said one differentiated die is odd or even;
reading the number of spots on said other two dice;
determining whether the total number of spots on said other two dice is odd or even;
deciding, according to a predetermined array, that a better wins only when the total number of spots on said other two dice is greater than the number of spots on said one differentiated die and that both the total number of spots on said other two dice and the number of spots on said one differentiated die are either all odd or all even.

5,542,672

FISHING ROD AND REEL ELECTRONIC GAME CONTROLLER

Chris Meredith, NPP #42, 57 Old South Rd., Nantucket, Mass. 02554

Filed Mar. 17, 1995, Ser. No. 406,064
Int. Cl.[6] A63F *9/22*; **A01K** *97/00*
U.S. Cl. 463—37 **19 Claims**



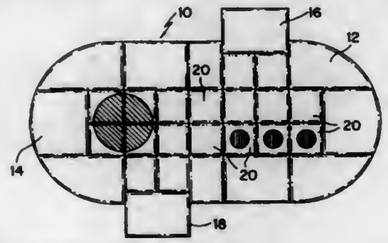
1. An electronic controller apparatus for controlling fishing simulation electronic games, comprising:
a housing formed with an interior space, the housing comprising:
a gyroscope disposed at the interior space of the housing for exerting force on the housing;
an electric motor connected to the gyroscope for powering the gyroscope;
a crank extending from the housing;
a brake operatively associated with the crank for applying variable resistance to the crank;
a magnet disposed at the interior space of the housing;
a microprocessor disposed at the interior space of the housing, the microprocessor connected to the electric motor, the brake and the magnet from which information is transmitted to the microprocessor;
a handle extending from a first side of the housing, the handle comprising:
a support member for supporting the electric motor,
a grip portion; and
a shaft comprising:
a first end mounted to a second side of the housing opposite to the first side of the housing, the first end of the shaft comprising:
a metal plate disposed on the first end of the shaft,
pivot means for pivotally connecting the first end of the shaft at the interior space of the housing,
a second end opposite to the first end of the shaft and extending from the housing,
wherein the magnet is selectively-energized to coact with the metal plate on the first end of the shaft to move the shaft about the pivot means.

5,542,673

INTERSECTING MANIPULABLE PUZZLE

Ferdinand Lammertink, Hengelo, Netherlands, assignor to Binary Arts Corporation, Alexandria, Va.

Filed Dec. 30, 1994, Ser. No. 366,878
Int. Cl.[6] A63F *9/08*
U.S. Cl. 273—153 S **22 Claims**



1. A manipulable puzzle, comprising:

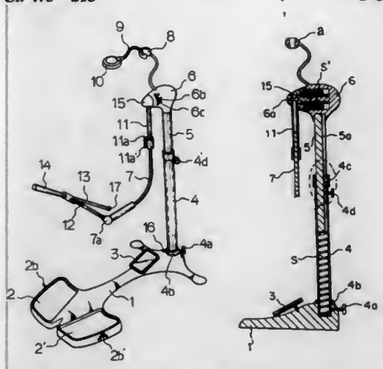
a base with first, second and third channels, said first channel extending in a first direction and said second and third channels being parallel, spaced apart and disposed essentially orthogonally to said first channel;
a rocker switch having two engaging ends pivotally mounted with respect to said base;
a first slider member associated with said first channel and adapted to translate in said first direction;
second and third slider members respectively translatably secured within said second and third channels, said second and third members being respectively disposed at each engaging end of said rocker switch so that translation in a selected direction of one of said second or third slider members in said second or third channels respectively causes the other of said second or third slider members to translate in its respective channel in the opposite direction; and
a plurality of independently movable pieces interlockingly mounted on said first, second and third slider members where selected translation of said slider members causes selected ones of said movable pieces to move relative to each other and the slider members.

5,542,674

GOLF SWING CORRECTING AND EXERCISING APPARATUS

Jin-Man Kim, 276-7, Bora-Ri, Giheung-Eup, Yongin-Kun, Gyunggi-Do, Rep. of Korea

Filed Mar. 14, 1995, Ser. No. 403,944
Claims priority, application Rep. of Korea, Dec. 21, 1994, 94-35540
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—218 **1 Claim**



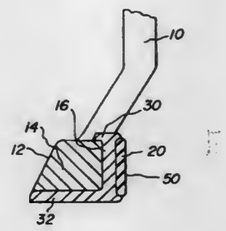
1. A golf swing correcting health apparatus comprising:
treads **2** and **2'** mounted on a supporting pad **1**; inner hinges **2***a* and **2***a'* and height adjusting hinge bars **2***b* and **2***b'* for adjusting the height of said treads **2** and **2'** stepwise;
a posture correcting mirror **3** installed at the leading end of said supporting pad **1**;
a supporting rod **4** connected to the leading end of said supporting pad **1**, said supporting rod **4** being adjusted by means of a butterfly bolt;
a rubber packing **4***b* disposed at the lower end of said supporting rod **4** and with a swing angle adjusting scale formed thereon;
a compression spring S installed within the lower end portion of said supporting rod **4**;
an elongate projection **4***c* formed on the upper portion of said supporting rod **4**;
a guide rail **5***a* of a lifting rod **5** coupled with said elongate projection **4***c*;
an adjusting bolt **4***d* installed on the outside of said supporting rod **4** for adjusting the height of the apparatus;
a force adjusting housing **6** connected to a swing bar **7** and also connected to said lifting rod **5**;
a shaft **6***a* rivetted to one end of a winding spring S' within the housing **6**, the other end of said winding spring S' being connected to a bendable pin **6***b* so as to be disposed within a 3-stage adjusting groove **6***c*;
a swing bar support **8** connected through a bent rod to the top of said housing **6**;
a head-up preventing cap **10** connected through a flexible tube **9** to a side of said swing bar support **8**;
a swing bar supporting rod **11** connected to the end of said internal shaft **6***a* of said housing **6** so as to install said swing bar **7**;
butterfly bolts **11***a* and **11***a'* installed at the leading end of said swing bar supporting rod **11** so as to adjust said swing bar **7**;
a golf club connecting rod **12** connected through a joint **7***a* to the leading end of said swing bar **7**;
a golf club **13** hinge-coupled with said connecting rod **12**;
a magnet M installed on a grip **14** within said golf club **13**; and
a hitting rod **13***a* gripped by the magnetic force of said magnet M.

5,542,675

ADAPTOR FOR GOLF PUTTER AND GOLF FITTED THEREWITH

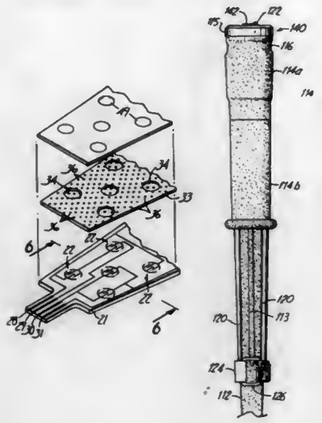
Gino Micciche; Giovanni Martorana, and Sergio Martorana, all of Jamestown, N.Y., assignors to Italgom U.S.A., Jamestown, N.Y.

Filed Jan. 18, 1995, Ser. No. 374,306
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—329 **19 Claims**



5. A golf putter comprising a shaft and a putter head having a top surface, a bottom surface and a striking surface, said putter head having an adaptor attached thereto to provide an elastomeric striking surface on said putter head, said adaptor including an attachment layer which includes a central portion adapted to cover at least a substantial portion of the striking surface of said putter head, an upper lip portion adapted to engage the top surface of said putter head and a lower lip portion adapted to engage the bottom surface of said putter head, said attachment layer being provided with an elastomeric insert inserted in the central portion of said attachment layer such that it covers a sufficient portion of the striking surface of said putter head to allow the striking of a golf ball exclusively with said elastomeric insert of the striking surface.

5,542,676
BIOSENSOR FEEDBACK DEVICE FOR SPORTING IMPLEMENTS
Maynard A. Howe, Jr., and Jeffrey M. Eliason, both of St. Paul, Minn., assignors to Soundadvice for Sports, Inc., St. Paul, Minn.
Continuation-in-part of Ser. No. 16,873, Feb. 11, 1993, abandoned. This application May 18, 1994, Ser. No. 245,746
Int. Cl.[6] A63B *69/36;* **G08B** *21/00*
U.S. Cl. 473—202 **18 Claims**

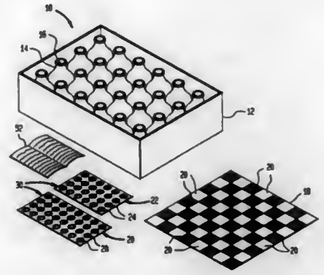


17. A biosensor feedback device for use in detecting a grip pressure of a hand against a handle of a sporting implement, comprising:
electronic pressure detection means for detecting and signalling hand pressure on the sporting implement handle exceeding a predetermined level, the pressure detection means including a housing mountable to an end of the sporting implement handle, and one or more portions of sensor substrate being generally conformable to the handle and including pressure sensor means for sensing grip pressure; and
attachment means for securing the sensor substrate to the handle of the sporting implement, the attachment means including a collar removably mountable to the housing of the electronic pressure detection means and an elongated, stretchable tubular sheath secured to collar, the sheath being made from an elastically distensible latex rubber of a thickness of about 0.01 inch to about 0.1 inch.

5,542,677
GOLF BALL COVER COMPOSITIONS
Michael J. Sullivan, Chicopee, Mass., and Robert A. Weiss, Storrs, Conn., assignors to Lisco, Inc., Tampa, Fla.
Filed Dec. 20, 1994, Ser. No. 359,620
Int. Cl.[6] A63B *37/12*
U.S. Cl. 473—385 **2 Claims**

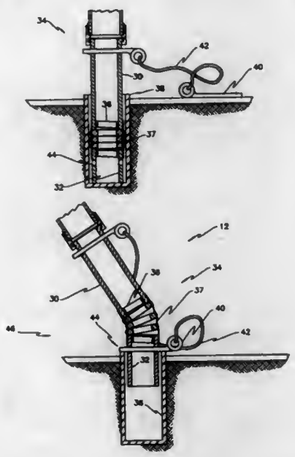
1. A golf ball having a core and a cover wherein said cover comprises:
(a) about 30 to 90 parts by weight of a copolymer of an olefin and about 16% to about 25% by weight of an alpha, beta unsaturated carboxylic acid partially neutralized with a metal cation, and (b) about 10 to 70 parts by weight of an ethylene/alkyl acrylate copolymer having up to about 30% by weight of an alkyl acrylate.

5,542,678
CHESS AND CHECKERS GAME PIECES HAVING SELECTABLE INDICIA
Marie J. Woodbridge, 248 N. Adam St., Lockport, N.Y. 14094
Filed Jan. 26, 1995, Ser. No. 378,836
Int. Cl.[6] A63F *3/00*
U.S. Cl. 273—260 **13 Claims**



1. A promotional board game apparatus sold as a kit comprising:
a case;
a plurality of juice bottles locatable in said case;
a plurality of juice bottle caps each locatable individually on top of said plurality of juice bottles;
a board having a plurality of playing squares thereon; and,
a plurality of adhesive backed indicia means for selective attachment to said plurality of caps respectively,
wherein attachment of said adhesive backed indicia means to said cap converts said cap into a playing piece suitable for playing a board game on said board.

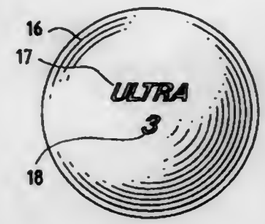
5,542,679
GROUND MOUNTED APPLIANCE WITH LEG JOINT
Frank J. Caso, 11 Victor Ave., Eatontown, N.J. 07724
Filed Jun. 7, 1995, Ser. No. 474,676
Int. Cl.[6] A63B *69/00;* **A47B** *13/02*
U.S. Cl. 273—413 **10 Claims**



1. An outdoors appliance having:
a leg including an upper section, a lower section, and a flexible joint located between and joining said upper section and said lower section of said leg; and

a sleeve for being driven into the ground and partially laterally surrounding said upper section of said leg, and fully laterally surrounding said joint and said lower section of said leg when said leg is inserted into said sleeve, wherein
when said leg is fully inserted into said sleeve said leg is substantially rigid and when said leg is partially lifted from said sleeve so as to expose said flexible joint portion, said leg is resiliently bendable.

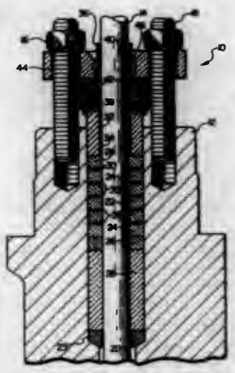
5,542,680
GOLF BALL WITH CLEAR COVER
James R. Proudfit, Humboldt, and Ralph Peterson, Jackson, both of Tenn., assignors to Wilson Sporting Goods Co., Chicago, Ill.
Filed Jan. 17, 1996, Ser. No. 369,675
Int. Cl.[6] A63B *37/12*
U.S. Cl. 473—378 **11 Claims**



1. A golf ball comprising:
a core having visible indicia printed thereon, and
a substantially clear and transparent cover over the core, the core and indicia being clearly visible through the cover, the cover comprising a blend of two ionomers having two different metal cations, each of the ionomers having substantially the same percentage acid content.

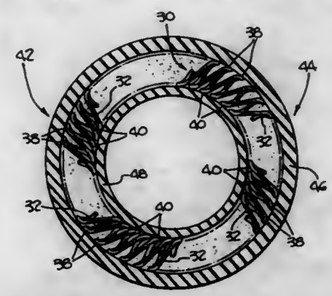
5,542,681
GRAPHITE PACKING
Wilbur D. Hutchens; Virgil W. Pepper, and Frank E. Jensen, all of Marshalltown, Iowa, assignors to Fisher Controls International, Inc., Clayton, Mo.
Continuation of Ser. No. 207,775, Mar. 8, 1994, abandoned, which is a division of Ser. No. 991,086, Dec. 15, 1992, Pat. No. 5,299,812, which is a continuation of Ser. No. 791,431, Nov. 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 632,097, Dec. 21, 1990, abandoned. This application Jan. 5, 1996, Ser. No. 583,270
Int. Cl.[6] F16J *15/00*
U.S. Cl. 277—106 **6 Claims**

1. A packing system for reliably sealing and lubricating an operating member operably movable in a housing containing fluid comprising:
a packing box within said housing;
packing follower mounting means for supporting said operating member in said packing box;
a packing assembly including a packing ring mounted around said operating member in said packing box for providing a fluid seal around the operating member to restrict fluid leakage from said packing box and for providing a lubricant for said operably movable operating member;
said packing ring formed of a plurality of spacially separated sheets of flexible graphite sheet material each flexible graphite sheet laminated with a respective intermediate sheet of PTFE sheet material to provide a laminated ring of alternating sheets of flexible graphite sheet material and PTFE sheet material disposed transverse to said operating member,



said laminated ring having a central aperture with an inner diameter adapted to surround said operating member and having an outer ring diameter;
each of said sheets of flexible graphite sheet material having oppositely disposed graphite ring surfaces extending radially outwardly from said central aperture inner diameter to said outer ring diameter for sealing fluids around said operating member; and
at least one sheet of PTFE sheet material extending radially outwardly from said central aperture inner diameter to said outer ring diameter and in laminated engagement with the full extent of the oppositely disposed graphite ring surfaces of two consecutive sheets of flexible graphite and thereby preventing surface contact between the opposing graphite ring surfaces of the two consecutive sheets of flexible graphite; and
adjustable loading means loading said packing assembly for enabling said PTFE to partially extrude and flow radially under loading for lubricating said operating member and aiding in sealing fluids around said operating member.

5,542,682
SLANT COIL SPRING AND SEAL
Clifford W. Goldstein, Boulder, and Timothy F. Miller, Thornton, both of Colo., assignors to American Variseal, Broomfield, Colo.
Filed Mar. 27, 1995, Ser. No. 410,717
Int. Cl.[6] F16J *9/06*
U.S. Cl. 277—164 **24 Claims**



1. A coil spring comprising a number of coils connected to one another in series and defining a spring centerline, each coil in the series having a front portion and a rear portion, the front portion of the coils including a first front section disposed at a first predetermined angle greater than zero relative to a plane perpendicular to the spring centerline and a second front section disposed at a second predetermined angle greater than zero relative to the plane,

the second predetermined angle being substantially greater than the first predetermined angle, the rear portion of the coils including a first rear section disposed at a third predetermined angle relative to the plane and a second rear section disposed at a fourth predetermined angle relative to the plane, the fourth predetermined angle being substantially greater than the third predetermined angle.

5,542,683

CYLINDER HEAD GASKET WITH FOLDED U-SHAPED STOPPER

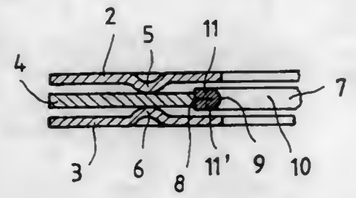
Jörg Papendorf, Odenthal-Glöbusch, and Franz-Josef Wagner, Leverkusen, both of, Germany, assignors to Goetze Payen GmbH, Herdorf, Germany

Filed Jul. 11, 1995, Ser. No. 500,625

Claims priority, application Germany, Jul. 27, 1994, 44 26 508.5

Int. Cl.[6] F16J *15/08*

U.S. Cl. 277—180 **3 Claims**



1. A cylinder head gasket comprising

(a) first and second opposite sheet metal cover plates;

(b) a combustion chamber opening being formed by aligned apertures in said cover plates;

(c) first and second beads provided in said first and second cover plates, respectively; each bead having a convex side; the convex sides of said first and second beads being oriented toward one another; said first and second beads being in an orthogonal alignment with one another and surrounding said combustion chamber opening;

(d) a spacer plate positioned between said first and second cover plates and being contacted by the convex side of said first and second beads; said spacer plate having an aperture being in general alignment with the apertures in the cover plates and being defined by an edge face of said spacer plate; and

(e) a separate annular insert positioned in said aperture of said spacer plate; said annular insert being folded to form a circumferential base part and superposed, contacting circumferential leg portions interconnected by said base part and oriented radially outwardly and terminating, at outer ends thereof, at said edge face of said spacer plate.

5,542,684

CANTILEVER SPRING SEALS FOR GAS ISOLATORS

Anton F. Squirrell, Mellingen, Switzerland, assignor to WES Technology Inc., Santa Ana, Calif.

PCT No. PCT/GB93/00170, § 371 Date Sep. 1, 1994, § 102(e) Date Sep. 1, 1994, PCT Pub. No. WO93/15342, PCT Pub. Date Aug. 5, 1993

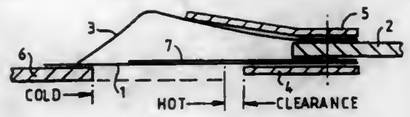
PCT Filed Jan. 27, 1993, Ser. No. 256,811

Claims priority, application United Kingdom, Jan. 28, 1992, 92017623

Int. Cl.[6] F16K *11/14*

U.S. Cl. 277—236 **7 Claims**

1. A seal for a gas isolator, comprising a cantilever leaf spring to be attached to an isolator component selected from a fixed frame or a movable member of the isolator, a bias spring acting on the cantilever leaf spring, a clamping/support bar disposed below the



seal for clamping and supporting the seal, at least one additional damping element which is clamped between the cantilever leaf spring and said isolator component, and a bias spring clamping bar to clamp the bias spring, said bias spring clamping bar being located on the opposite side of said isolator component from the clamping/support bar, and the clamping/support bar being of a width not greater than the width of the bias spring clamping bar.

5,542,685

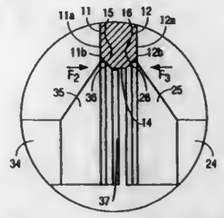
MEMORY DISK CLAMP AND METHOD

Ronald Allen, San Jose; Peter S. Bae, Sunnyvale; Robert Tierney, Fremont, and Kenneth D. Fukui, San Jose, all of Calif., assignors to Komag, Inc.

Filed May 6, 1994, Ser. No. 239,171

Int. Cl.[6] B23B *31/40*

U.S. Cl. 279—2.02 **21 Claims**



1. A memory disk clamp for a memory disk having planar sides for receiving magnetic media on both sides of the disc, a central disk aperture, said disk aperture being bounded by a cylindrical peripheral edge and chamfered edges extending between each of said planar sides and said peripheral edge, said clamp comprising:

a first clamp portion having a first peripheral outer edge including a chamfered portion sized to contact in face-to-face contact over a majority of a first one of the chamfered edges of the disk aperture;

a second clamp portion having a second peripheral outer edge including a chamfered portion sized to contact in face-to-face contact over a majority of a second one of the chamfered edges of the disc aperture;

means for mounting the chamfered portion of the first clamp portion against a first one of the chamfered edges of the disk aperture; and

means for moving and clamping the chamfered portion of the second clamp portion against a second one of the chamfered edges of the disc aperture such that the disc is clamped by forces exerted by said clamp portions essentially acting transversely to a plane of the clamped disk.

5,542,686

CHUCK JAW MANUFACTURE

Jose O. Revuelta, 2038 City View Ave., Los Angeles, Calif. 90033

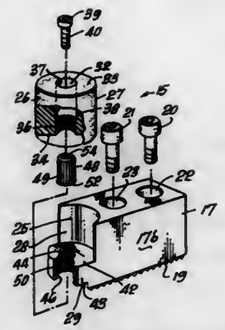
Filed Jul. 15, 1994, Ser. No. 275,682

Int. Cl.[6] B23B *31/16*

U.S. Cl. 279—153 **9 Claims**

1. A jaw assembly comprising

a splined sleeve insert mounted in a body formation forming a splined bore in a base of a jaw body for a chuck, the splined



sleeve insert and splined bore mating with each other, the jaw body including a cut-out portion above the base for receiving a slug, the bottom of the splined bore having a chamfer, said insert including a flared-out portion at one end mating with the chamfer, the splined insert extending above the base and including a threaded internal bore, and

a slug mounted in the cut-out portion and on said base and having a body formation forming a bore, the slug's bore including a splined portion and an unsplined portion that forms a shoulder to the splined portion,

said splined portion mounted to the splined sleeve insert.

5. A slug comprising

a cylindrical member having a body formation forming a bore extending between a top and a bottom of the member,

said bore including

a splined portion in the bore's body formation adjacent the bottom of the member, and

an unsplined portion in the bore's body formation above the splined portion thereby forming a contiguous shoulder extending radially outwardly of said splined portion to the unsplined portion.

5,542,687

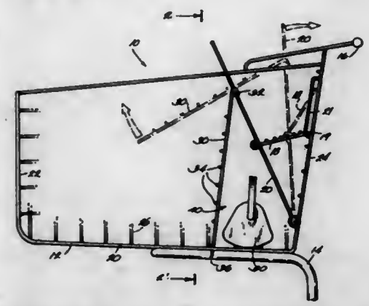
SHOPPING CART WITH PURSE SECURITY ENCLOSURE

Marian R. Harris, N2504 Cleghorn Rd., Waupaca, Wis. 54981

Filed Nov. 20, 1995, Ser. No. 560,896

Int. Cl.[6] B62B *3/02*

U.S. Cl. 280—33.993 **5 Claims**



1. In a shopping cart formed from a rigid gridwork and having a forwardly pivoting infant seat support mechanism at a rearward end thereof, said seat support mechanism being located in a merchandise carrying compartment that has a bottom surface, opposed side walls and front and back walls, said seat support mechanism including a seat support frame pivotally connected at a lower end to said merchandise carrying compartment, and said shopping cart being provided with wheels and a handle for movement thereof, the improvement which comprises

a panel having top and bottom ends and side edges,

said panel being slidably and pivotally attached at its top end to said seat support frame and positioned forwardly thereof;

the bottom end of said panel having a plurality of projections adapted to extend downwardly through openings in said bottom surface of said merchandise compartment;

whereby said panel can be moved to a closed position, when the top end of said seat support frame is in a forwardly pivoted position to form an enclosure between said panel and said seat support frame by sliding the same downwardly so that said projections extend through said bottom surface and can be pivoted to an open position when the top end thereof is moved slidably upward along said seat support frame.

5,542,688

TWO-PART IGNITER FOR GAS GENERATING COMPOSITIONS

Robert S. Scheffee, Lorton, Va., assignor to Atlantic Research Corporation, Vienna, Va.

Filed Oct. 27, 1992, Ser. No. 966,928

Int. Cl.[6] C06D *5/00;* **C06C** *9/00;* **B60R** *21/28*

U.S. Cl. 280—741 **11 Claims**



1. A two-part igniter comprising a mixture of:

an ignition material having an auto-ignition temperature T_{ig}; and

a consolidated mass of a component which provides the two-part igniter with an auto-ignition temperature, T_{ig} such that T_{ig} is less than T'_{ig}, said ignition material and said consolidated mass of the component which provides the two-part igniter with the auto-ignition temperature of T_{ig} being in direct contact with one another; wherein, the consolidated mass component has a minimum weight of about 25 mg and contains an oxidizer comprising an alkali metal chlorate alone or in combination with an alkali metal perchlorate, and a fuel component comprising a polysaccharide or a high melting hydroxycarboxylic acid derivative.

8. In an inflator for an inflation device which includes an igniter, the improvement wherein said igniter is a two-part igniter comprising a mixture of:

an ignition material having an auto-ignition temperature, T_{ig}; and

a consolidated mass of a component which provides the two-part igniter with an auto-ignition temperature, T_{ig} such that T_{ig} is less than T'_{ig}, said ignition material and said consolidated mass of the component which provides the two-part igniter with the auto-ignition temperature of T_{ig} being in direct contact with one another; wherein, the consolidated mass component has a minimum weight of about 25 mg and contains an oxidizer comprising an alkali metal chlorate alone or in combination with an alkali metal perchlorate, and a fuel

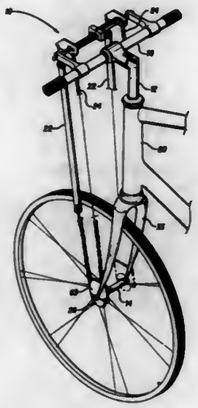
component comprising a polysaccharide or a high melting hydroxycarboxylic acid derivative.

5,542,689

BICYCLE FRONT WHEEL DRIVE

Wayne C. Chalfant, 10680 Springcreek Rd., Piqua, Ohio 45356

Filed Feb. 10, 1995, Ser. No. 386,946
Int. Cl.[6] B62M *1/14*
U.S. Cl. 280—242.1 **16 Claims**



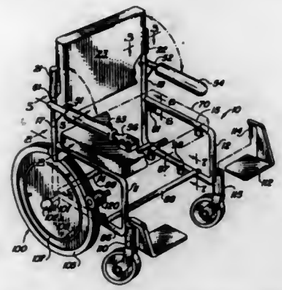
1. A front wheel drive system for a bicycle having a front wheel, fork, frame, and rear wheel, comprising:
- a hub rotatably attached to the fork of the bicycle including a first and second freewheel and an axle;
- a stem attached to a steerer tube of the fork and rotatably attached to the frame of the bicycle and including an inner shaft and an outer sleeve;
- said outer sleeve being rotatably attached to said inner shaft of said stem, and including a first end and an outer wall;
- a handlebar attached to a clamp integral with said first end of said outer sleeve;
- a chain positioning and support mechanism attached to said handlebar;
- a first and second chain attached to said chain positioning and support mechanism;
- said chain positioning and support mechanism including:
  - positioning means to position each of said first and second chains at a predetermined distance from said stem;
  - a first and second rail support attached to said handlebar;
  - a rail attached to said first and second rail supports; and
  - a first and second chain support attached to said rail, each of said first and second chain supports having a front and a rear end;
- wherein said first and second chains are attached respectively to said chain positioning and support mechanism at said rear end of said first and second chain supports;
- a first and second spring attached to said chain positioning and support mechanism, said first and second springs being attached respectively to said chain positioning and support mechanism at said front end of said first and second chain supports; and
- said first and second chains engaging said first and second freewheels and attaching respectively to said first and second springs, respectively;
- whereby when said handle bar is rotated said first chain is lifted causing said first chain to rotate said first freewheel which rotates said hub and the front wheel of the bicycle, while said second spring is contracted drawing said second chain around said second freewheel which spins in a direction opposite said hub rotation and maintains the tension of said second chain on said freewheel.

5,542,690

WHEELCHAIR FOR CONTROLLED ENVIRONMENTS

Michael N. Kozicki, Tempe, Ariz., assignor to Forth Research, Inc., Scottsdale, Ariz.

Continuation of Ser. No. 41,269, Apr. 9, 1995, abandoned.
This application Dec. 16, 1994, Ser. No. 357,989
Int. Cl.[6] B62M *1/14*
U.S. Cl. 280—304.1 **19 Claims**



1. A wheelchair for controlled environments, said wheelchair comprising:
- a first sideframe;
- a second sideframe;
- a pair of braces pivotally attached to said sideframes, wherein the sideframes and the braces form a parallelogram and wherein said sideframes can move past each other;
- a platform releasably interconnecting said first sideframe and said second sideframe for preventing the sideframes from moving relative to each other when said platform is connected to said sideframes
- wherein the first sideframe, the second sideframe, and the pair of braces each have a conformal coating on the outer surfaces thereof for reducing particle retention or particle generation in said controlled environment.

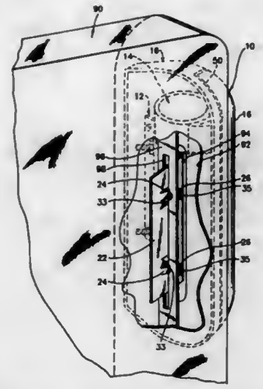
5,542,691

EXTERIOR SEAT BACK MOUNTED SIDE IMPACT AIRBAG MODULE ASSEMBLY

George C. Marjanski, Riverdale; Kevin E. Hauppa, Ogden; David J. Green, Brigham City; Davin G. Saderholm, Salt Lake City, and Brent R. Beesley, Layton, all of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Sep. 7, 1995, Ser. No. 524,874
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—728.2 **17 Claims**

1. A side impact airbag module assembly adapted to mount on an automobile seat having an access opening and a receiving means in an internal structural member of the seat, the side impact airbag module assembly comprising:
- an airbag cushion and inflator assembly having an airbag cushion and an inflator connected together so that inflation gas from the inflator will inflate the airbag cushion;
- at least one mounting projection for extending through the access opening in the seat and into the receiving means of the internal structural member, the mounting projection connected to the airbag cushion and inflator assembly; and
- at least one self fastener located on the mounting projection for securing the projection within the receiving means; said mounting projection and said internal structure member cooperable together to establish a means to exteriorly mount said airbag module assembly on the automobile seat.

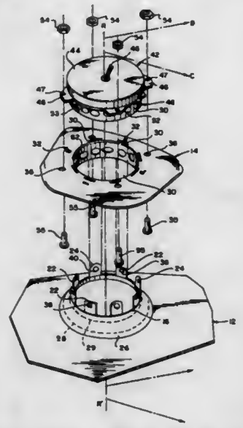


5,542,692

INFLATABLE CUSHION ASSEMBLY AND SYSTEM

Brian Shaklik, Bountiful, and Davin G. Saderholm, Salt Lake City, both of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Oct. 18, 1994, Ser. No. 324,562
Int. Cl.[6] B60R *21/20;21/26*
U.S. Cl. 280—728.2 **38 Claims**



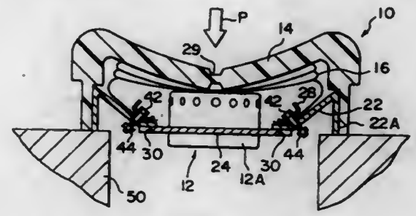
1. An inflatable cushion assembly for use in an inflatable restraint system comprising:
- a) an inflatable cushion including (i) a gas inlet opening for receiving a gas from an inflator to inflate the cushion, and (ii) a plurality of retention flaps extending from the periphery of the gas inlet opening of said cushion, at least a portion of said retention flaps each including an opening therethrough;
- b) a housing for containing the cushion interiorly thereof, said housing including an inlet opening communicating with the gas inlet opening of the cushion to permit passage of the gas from the inflator therethrough; and
- c) means for attaching the cushion to the housing, including (i) a plurality of cushion retention flap openings, disposed in the housing about its inlet opening, for receiving a corresponding number of the retention flaps therethrough, and (ii) means for securing the retention flaps to the housing, said securing means including a plurality of tabs extending exteriorly from the housing proximate to the respective cushion retention openings, each said tab being engaged with a corresponding said opening in a portion of the retention flaps after the insertion of the flaps through their corresponding cushion retention openings.

5,542,693

AIR BAG APPARATUS AND METHOD OF REMOVING AN INFLATOR

Teruhiko Kolde, Aichi-ken, Japan, assignor to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Aichi-ken, Japan

Filed Feb. 24, 1995, Ser. No. 393,476
Claims priority, application Japan, Mar. 15, 1994, 6-044007
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—728.2 **15 Claims**



1. An air bag apparatus comprising:
- an inflator provided so as to enable a bag body to inflate including a connecting member;
- a supporting member which supports said inflator;
- a plurality of bolts inserted through the connecting member of said inflator and said supporting member;
- a plurality of insertion portions which are provided in said connecting member and through which said plurality of bolts are inserted, said plurality of insertion portions causing said inflator to be released from a state of being fixed to said supporting member when said plurality of bolts move in a direction perpendicular to a direction in which said plurality of bolts are inserted through said plurality of insertion portions; and
- a stress concentrating portion which is provided at said supporting member and which is formed so as to easily deform in response to force exteriorly applied to said supporting member.

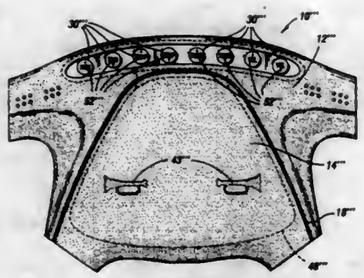
5,542,694

THERMOPLASTIC AIR BAG COVER HAVING A UNITARY MULTIFUNCTIONAL DOMED SWITCHING MODULE

David J. Davis, 6771 Serenity, Troy, Mich. 48098, assignor to Larry J. Winget, Leonard, Mich.

Filed May 26, 1995, Ser. No. 451,452
Int. Cl.[6] B60R *21/20*
U.S. Cl. 280—728.3 **10 Claims**

1. A relatively flexible thermoplastic air bag cover comprising:
- a front panel adapted to overlie an undeployed air bag, the front panel having a front outer surface and a rear inner surface and being separable along a predetermined tear pattern upon deployment of the air bag, the front panel having a window extending completely therethrough between the front outer surface and the rear inner surface;
- a unitary switching module adapted to be electrically coupled to a set of electrical accessories of a motor vehicle, and including a base plate, a plurality of switches mounted on the base plate and a front plate secured to the base plate and having a



plurality of raised domes molded in the front plate to form a plurality of hollow compartments for the respective plurality of switches, the raised domes defining a first set of switch activating means aligned with and extending through the window above the front outer surface of the front panel in a switch activation area of the front panel; and

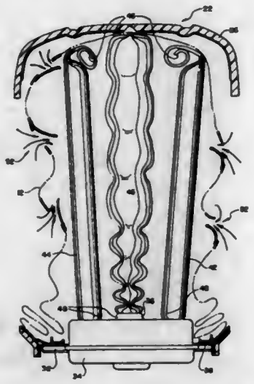
a first back plate secured to the rear inner surface of the front panel in containing relationship to the unitary switching module and forming a first hollow compartment for the unitary switching module in the switch activation area wherein each switch is activated by depression of its respective raised dome on the front plate of the unitary switching module.

5,542,695

AIR BAG DEPLOYMENT SYSTEM

Ralph W. Hanson, Spooner, Wis., assignor to R. Stresau Laboratory, Inc., Spooner, Wis.

Filed Dec. 28, 1993, Ser. No. 174,130
Int. Cl.[6] B60R *21/24*
U.S. Cl. 280—729 **6 Claims**



1. A safety system for use in a vehicle comprising:

an inflatable bag having an interior and valve means for the passage of ambient air into and out of the bag; and

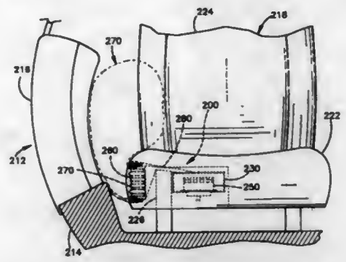
expanding means for expanding the bag, said expanding means in the interior of the bag and operably coupled to a gas source, said expanding means comprising at least two separate non-coplanar generally tubular inflatable members having a first end connected directly to the gas source and a free end, said members having a pre-extended configuration and an extended configuration, said pre-extended configuration being compact, having a smaller volume than the extended configuration, said members in said extended configuration wben said inflatable bag is expanded and being elongated and generally cylindrical, the expanded bag being spaced from the first end of the members and contacting said members adjacent to the free ends.

5,542,696

SEAT MOUNTED AIR BAG MODULE

Charles E. Steffens, Jr., Washington, and Louis R. Brown, Oxford, both of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Jul. 24, 1995, Ser. No. 506,314
Int. Cl.[6] B60R *21/22*
U.S. Cl. 280—730.2 **17 Claims**



1. A vehicle occupant safety apparatus comprising:

a seat in which the vehicle occupant sits;

an inflatable vehicle occupant restraint mounted in said seat, said inflatable restraint having a deflated condition stored in said seat and having an inflated, occupant protecting condition extending out of said seat;

an inflator mounted in said seat at a location spaced apart from said inflatable restraint, said inflator being actuatable to direct inflation fluid under pressure into said inflatable restraint to inflate said inflatable restraint; and

wall means for defining in said seat an inflation fluid passage extending between said inflator and said inflatable restraint for directing inflation fluid from said inflator to said inflatable restraint upon actuation of said inflator;

said wall means having a first condition when said inflator is not actuated in which said inflation fluid passage has a first effective cross-sectional flow area;

said wall means being expandable, upon actuation of said inflator, from the first condition to a second condition in which said inflation fluid passage has a second effective cross-sectional flow area which is greater than said first effective cross-sectional flow area, said seat including a seat frame member extending through said inflation fluid passage.

5,542,697

TRIGGER MECHANISM FOR BELT PRETENSIONER

Artur Föhl, Schorndorf, Germany, assignor to TRW Repa GmbH, Alfdorf, Germany

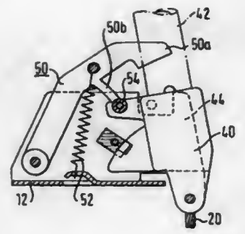
Division of Ser. No. 929,175, Aug. 11, 1992, Pat. No. 5,405,180. This application Nov. 23, 1994, Ser. No. 344,378
Claims priority, application European Pat. Off., Aug. 16, 1994, 91113775
Int. Cl.[6] B60R *22/46*
U.S. Cl. 280—806 **10 Claims**

1. A trigger mechanism for belt pretensioners in safety belt restraining systems for vehicles, comprising:

a base fixedly connected to a belt retractor housing;

a movably mounted sensor mass movable out of a rest position in response to vehicle deceleration exceeding a predetermined threshold and being further movable into at least two trigger positions which are situated on either side of said rest position, a first one of said trigger positions being associated with a head-on collision and a second one with a collision in which the vehicle is rammed from behind, said sensor mass being formed by a movable assembly which includes a pyrotechnical piston/cylinder drive having an impact igniter and a carrier block which is mounted pivotally on said base; and

a striker lever pivotally mounted on said base and having an anvil which is biased by spring loading toward said impact igniter, said striker lever comprising a support arm with a free end which bears on a holding surface on said carrier block, said support arm being movable off of said holding surface in first and second directions in response to said sensor mass moving to said first and second trigger positions, respectively.

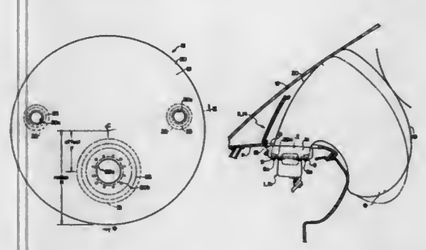


5,542,698

CIRCULAR AIR BAG MOUNTED TO AN INSTRUMENT PANEL

Rie Ichino, Nagoya; Michiyasu Ito, Kasugai; Yuji Kuriyama, Seki, and Kouji Shiraki, Motosu-gun, all of, Japan, assignors to Toyoda Gosei Co., Ltd., Japan

Filed Apr. 6, 1995, Ser. No. 417,772
Claims priority, application Japan, Apr. 26, 1994, 6-087044
Int. Cl.[6] B60R *21/22*
U.S. Cl. 280—732 **6 Claims**



1. An air bag system for a vehicle comprising:

(a) a casing having an opening arranged in an instrument panel below an inclined windshield;

(b) an air bag having a gas inlet port and accommodated in a folded shape within said casing while being held along a peripheral edge of said gas inlet port by said casing, so that said air bag may protrude, upon inflation by gases coming from said inlet port, from the opening of said casing and contact said windshield, said air bag being formed from two circular base cloths each having peripheral edges which are sewn together, said gas inlet port being offset backward with respect to said vehicle from the center of one of said base cloths;

(c) an inflator arranged in said casing for feeding inflation gases to said gas inlet port of said air bag; and

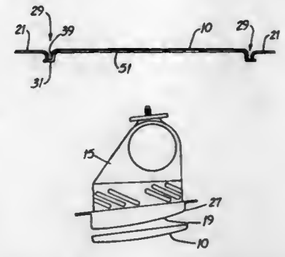
(d) a cover covering the opening of said casing and adapted to be opened by inflation of said air bag.

5,542,699

METHOD AND ARTICLE FOR PROTECTING A MOTOR VEHICLE COMPONENT

George W. Verdick, 522 Delavan Dr., Delavan, Wis. 53115

Filed Oct. 31, 1995, Ser. No. 550,824
Int. Cl.[6] B60R *21/22;21/16;* **B65D** *65/02*
U.S. Cl. 280—732 **16 Claims**



5. In combination, (a) an instrument panel frame having a motor vehicle air bag module supported thereon, and (b) a cover protecting such module, such cover being removable from the module without impairing the module and wherein the module includes:

an abutment portion, a surface exposed when the cover is removed, and an edge between the surface and the abutment portion,

and wherein the cover includes:

a body portion protectively overlaying the surface; and

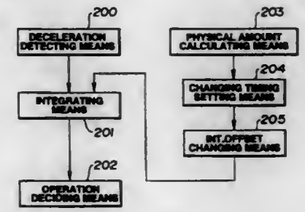
a lip extending from the body portion and overlapping the edge.

5,542,700

CONTROL SYSTEM FOR OCCUPANT RESTRAINT SYSTEM

Jun Shibata, Okegawa; Hiroaki Obayashi, Isehara; Makoto Kimura, Sagamihara; Shuzo Fukuzumi, Zama; Hironori Yoshikawa, Isehara; Atsushi Hitotsumatsu, Zama; Yukio Hashimoto, Sagamihara; Toshimi Yamanoi, Isehara, and Seiji Takaya, Zama, all of, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Division of Ser. No. 178,171, Jan. 6, 1994, Pat. No. 5,407,228. This application Jan. 6, 1995, Ser. No. 369,445
Claims priority, application Japan, Jan. 25, 1993, 5-10278
Int. Cl.[6] B60R *21/32*
U.S. Cl. 280—735 **2 Claims**



1. A control system for an occupant restraint system mounted on a vehicle, comprising:

means for detecting a deceleration of the vehicle;

means for integrating a value obtained by subtracting a predetermined integration offset from the deceleration, to obtain an integrated value;

means for making a decision to operate the occupant restraint system, when the integrated value exceeds a predetermined threshold level;

means for calculating a physical amount representative of a deceleration condition of the vehicle;

means for setting a changing timing at which the integration offset is changed, in accordance with the physical amount; and

means for changing the integration offset at the changing timing.

5,542,701

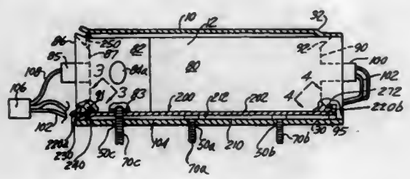
WIRE TRACK WITH INTEGRAL SEALING MECHANISM AND INFLATOR

Robert B. Rion, Redford, Mich., assignor to AlliedSignal Inc., Morristown, N.J.

Continuation of Ser. No. 236,929, May 2, 1994, abandoned, which is a continuation-in-part of Ser. No. 966,763, Oct. 26, 1992, Pat. No. 5,308,108. This application Mar. 22, 1995, Ser. No. 411,352

Int. Cl.[6] B60R *21/32*

U.S. Cl. 280—735 **5 Claims**



1. An apparatus comprising:

a cylindrically shaped gas generator (**12**), a manifold (**10**) for holding the gas generator (**12**), and a wire track/seal assembly (**200**) for protecting wires emanating from one side of the gas generator and for feeding such wires to the other side of the gas generator, the gas generator including inflation ports (**84***a*, *b*) through which inflation gas exits to inflate an air bag and a first and second notch (**90**, **93**) in ends or lips (**86**, **92**);

the manifold comprising: a one piece hollow extruded structure comprising:

a cylindrical middle portion (**16**) and first (**32**) and second (**34**) ends, the middle portion having a diameter section slightly larger than the diameter of the gas generator, the first end being narrowed to provide an interference fit with a mating portion of the gas generator upon insertion of the gas generator;

the middle portion further comprising two oppositely positioned outwardly flared portions (**18***a*, *b*), the flared portions in cooperation with walls of the gas generator, defining gas receiving portions (**22***a*, *b*) to receive inflation gas from the gas generator, the flared portions each including at least an exit port (**44***a–d*, **46***a–d*) to direct inflation gas out of the manifold; the structure additionally includes on a lower portion thereof, an axially directly outwardly extending protrusion (**30**) into which is received the wire track/seal assembly (**200**), the assembly (**200**) including a wire track (**202**) and a flexible rod shaped member (**250**) of integral construction that is bendable generally into a circle to provide a seal between the gas generator and the manifold, the wire track (**202**) having end pieces (**220***a*, *b*) fitted to the notches of the gas generator and means for receiving and holding wires (**102**) extending from the gas generator.

5,542,702

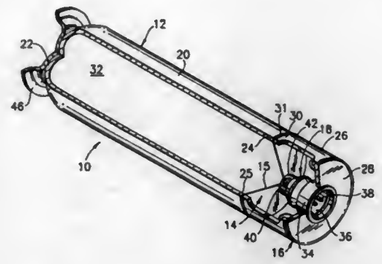
PRESSURIZED GAS INFLATOR FOR VEHICLE OCCUPANT PROTECTION SYSTEMS

David J. Green, Brigham City; S. Mark Bunker; Walter A. Moore, both Ogden; L. John Pierotti, Huntsville; J. Kirk Storey, Farmington, and Brent K. Olson, Clearfield, all of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Mar. 27, 1995, Ser. No. 410,771

Int. Cl.[6] B60R *21/26*

U.S. Cl. 280—737 **39 Claims**



1. A pressurized gas inflator comprising:

A) a bottle having an outlet opening;

B) a diaphragm sealingly secured across the outlet to form a chamber containing only pressurized gas;

C) a cup-shaped diffuser having a sidewall with an open end, and an end wall opposite the open end, the open end of the diffuser secured to the bottle surrounding the outlet opening, the sidewall of the diffuser defining a plurality of outlet ports, and the diffuser providing a flow path from the outlet opening covered by the diaphragm to the outlet ports; and

D) an electro-explosive initiator mounted to the end wall of the diffuser and including an explosive material contained within the electro-explosive initiator, the explosive material positioned within the diffuser spaced apart from the diaphragm and not blocking the flow path from the outlet opening to the diffuser ports, for rupturing the diaphragm upon operation thereof to release the pressurized gas for delivery through the diffuser outlet ports.

5,542,703

AIR BAG HAVING PANELS WITH DIFFERENT PERMEABILITIES

Alonzo W. Beasley, Easley, S.C., assignor to JPS Automotive Products Corporation, Greenville, S.C.

Division of Ser. No. 259,869, Jun. 15, 1994. This application Apr. 24, 1995, Ser. No. 428,902

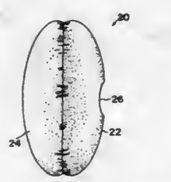
Int. Cl.[6] B60R *21/16;21/28*

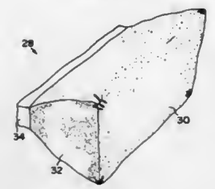
U.S. Cl. 280—739 **12 Claims**

1. A vehicle air bag for use with an on-board inflator mechanism, said vehicle air bag comprising:

a first panel of calendered uncoated fabric having a permeability of less than approximately 2 CFM at a pressure drop of 0.5 inches of water; and

at least one second panel of calendered uncoated fabric of a same yarn and weave type as said first panel operatively associated with said first panel, said at least one second panel having a permeability of greater than approximately 2 CFM at a pressure drop of 0.5 inches of water, at least one of said panels being constructed of a fabric having been processed to a controlled higher permeability subsequent to calendering.





5,542,704

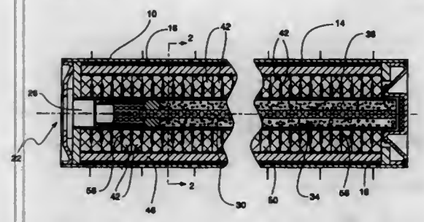
AUTOMOTIVE INFLATABLE SAFETY SYSTEM PROPELLANT WITH COMPLEXING AGENT

Brian Hamilton, Littleton, Colo., and Robert Renz, Mesa, Ariz., assignors to Oea, Inc., Aurora, Colo.

Filed Sep. 20, 1994, Ser. No. 309,027

Int. Cl.[6] B60R *21/28*

U.S. Cl. 280—741 **31 Claims**



1. An inflator assembly for an inflatable safety system comprising:

(a) a gas generator housing having at least one gas outlet;

(b) a pyrotechnic propellant composition disposed inside said gas generator housing, said propellant composition comprising a compound containing hydrazine, wherein said compound containing hydrazine comprises a metal complex of hydrazine; and

(c) a propellant ignition assembly.

5,542,705

DUAL COMPENSATING STABILIZER

Eric G. Parker, Elgin, Ill., and Donald P. Hardy, Fort wayne, Ind., assignors to Illinois Tool Works Inc., Glenview, Ill.

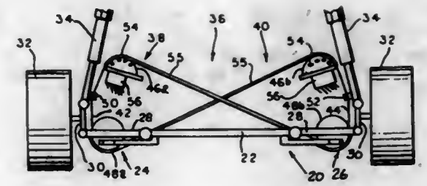
Filed Oct. 14, 1993, Ser. No. 136,336

Int. Cl.[6] B62D *9/02*

U.S. Cl. 280—772 **8 Claims**

1. A stabilizing system for use with a vehicle primary suspension system having at least two oppositely positioned control arm assemblies, said stabilizing system controlling side-to-side weight transfer of the vehicle said stabilizing system comprising:

first and second means for tensionably linking said first and second control arm assemblies for tensionably transferring a force imposed on one of said control arm assemblies to the other of said control arm assemblies for controlling side-to-side weight transfer to stabilize the vehicle;



said first and second linking means including first and second elongated flexible members operatively connectable with and extending between said first and second control arm assemblies; and

first and second means for guiding said elongated flexible members connectable with each of said first and second control arm assemblies, each of said elongated flexible members alternately weaved over and under said first and second guide means.

5,542,706

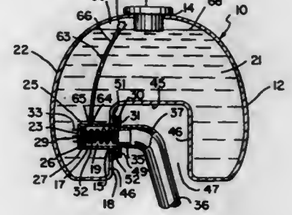
MOTOR VEHICLE FUEL SYSTEM

Kris D. Kubly, New Glarus, Wis., assignor to Safety Engineering Associates, Inc., Madison, Wis.

Filed Jan. 11, 1995, Ser. No. 371,162

Int. Cl.[6] B60K *15/01;15/03;* **B65D** *90/32*

U.S. Cl. 280—833 **22 Claims**



1. A fuel system for motor vehicles having fuel system components exposed to a rider and to an engine of the motor vehicle, comprising:

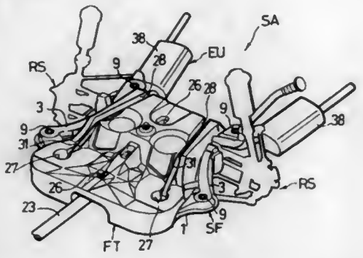
(a) a fuel tank having a fueling port and a separate relief port spaced entirely away from the fueling port;

(b) a cap for closing and sealing the fueling port;

(c) a pressure relief valve mounted to the fuel tank for closing and opening the relief port, the pressure relief valve normally closing the relief port but rapidly opening the relief port to allow fuel to flow from the tank through the relief port when pressure within the tank suddenly exceeds a predetermined super-atmospheric level due to a collision; and

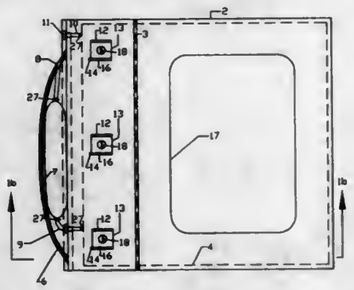
(d) a conduit directing fuel from the relief port away from the fuel tank when the relief valve is open to a position away from a rider of the vehicle, away from a forward upper portion of the vehicle, and away from the engine of the vehicle.

5,542,707
SUBFRAME ASSEMBLY FOR VEHICLE
Takahiro Kamei; Shinji Hinosawa; Tokuji Takahashi; Yoshiji Terada; Takeaki Nakajima, and Yoshiyasu Sakata, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 24, 1995, Ser. No. 506,319
Claims priority, application Japan, Jul. 25, 1994, 6-172242; Aug. 4, 1994, 6-183747
Int. Cl.[6] B60P *3/22*
U.S. Cl. 280—834 **17 Claims**



1. A subframe assembly for a vehicle, comprising:
a subframe mountable at a rear portion of a vehicle body frame through a plurality of support portions, a fuel tank, left and right rear suspensions disposed on left and right opposite sides of said fuel tank, and an exhaust unit including a silencer, said fuel tank, said left and right rear suspensions and said exhaust unit being supported on said subframe; and
a front portion of said fuel tank is supported to overhang forwardly from a front end of said subframe, and said silencer is disposed and supported to overhang rearwardly from a rear end of said subframe.

5,542,708
PAPER, LEAF AND LAMINATE BINDER
Indru J. Primlani, 2616 NE. 19th St., Renton, Wash. 98056
Filed May 24, 1994, Ser. No. 248,424
Int. Cl.[6] B42D *1/00*
U.S. Cl. 281—21.1 **8 Claims**



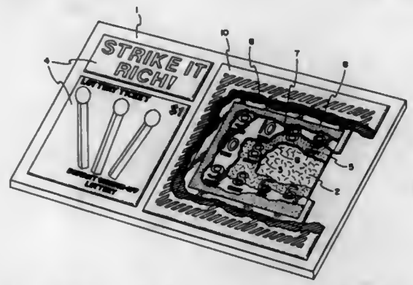
1. An adjustable binder comprising
a "U"-shaped bracket comprising a long leg and a short leg separated by a back member,
an internal binding plate,
an expandable bellows between the long leg and the internal binding plate,
an air pump pneumatically connected to the bellows for pumping air into and expanding the bellows such the internal binding plate is moved by the bellows toward the short leg for positioning the binding plate a selective distance from the short leg and for binding leaves such as paper sheets therebetween,
a valve between the air pump and the bellows to pneumatically open and close the bellows for retaining air in or releasing air from the bellows.

5,542,709
COLLECTIBLE CARDS AND DISPLAYS FOR SAME
Donald P. Evans, P.O. Box 447, Pleasant Hill, Ohio 45359
Filed Aug. 1, 1994, Ser. No. 283,352
Int. Cl.[6] B42D *15/00*
U.S. Cl. 283—61 **12 Claims**



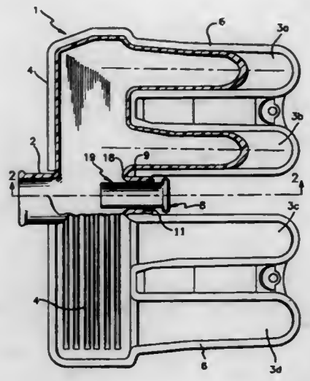
1. An article for display of collectible information or cards bearing such information, said article comprising
a body including a front panel and a back panel connected together to define a space therebetween,
said panels having a top, a bottom, and sides all of corresponding dimensions and defining the perimeter of said body;
said front panel having an aperture for viewing of a depiction on said back panel or through which a depiction on a separate card can be viewed when fitted into said space;
edge portions of said panels around the perimeter of said body being separable to define attachment slots which will receive therebetween at least a portion of one edge of a panel of a like article for linking the articles to each other;
whereby such articles can be linked together into an assembly, and such assembly supported as a common display.

5,542,710
RECYCLABLE INSTANT SCRATCH OFF LOTTERY TICKET
Stanford B. Silverschotz, Livingston; Louis Bua, Jr., Plainsboro; David M. Polunas, S. Bound Brook, and Stephen E. Martin, Jamesburg, all of N.J., assignors to Webcraft Technologies, Inc., North Brunswick, N.J.
Filed Sep. 24, 1993, Ser. No. 126,199
Int. Cl.[6] A63F *3/06*
U.S. Cl. 283—94 **20 Claims**



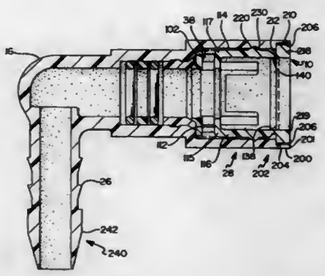
1. An instant scratch-off lottery ticket with improved security, comprising:
a) a substrate including a cardboard with an opaque, clay-coated surface;
b) an ink layer disposed on said substrate, said ink layer defining lottery data;
c) a scratch-off material layer disposed over said ink layer; and
d) a substantially elemental-metal-free ink-receptive layer disposed between said ink layer and said substrate, said substantially elemental-metal-free ink-receptive layer comprising an ink-jet receptive layer containing particles of calcium carbonate and being compounded and selected for preventing migration of ink from said ink layer through said substrate when said substrate has been contacted with a solvent.

5,542,711
DEVICE FOR FITTING A HOT ELEMENT TO A HOLLOW BODY MADE OF THERMOPLASTIC INCLUDING AT LEAST ONE COLD FLUID INLET, AND HOLLOW BODY INCLUDING SUCH A DEVICE
Jean-Paul Vaudry, Ammerschwihr, France, assignor to Orbey Plastiques and Industries, Velizy, France
Filed Jan. 3, 1995, Ser. No. 362,566
Claims priority, application France, Jnl. 1, 1992, 92 08104
Int. Cl.[6] F16L *47/00;* **F02M** *25/07*
U.S. Cl. 285—41 **11 Claims**



1. The combination of a hollow body (**1**) including at least one cold fluid inlet pipe (**2**) and at least one fluid outlet pipe (**3***a*, **3***b*, **3***c*, **3***d*) and a hot element (**8**), said hollow body (**1**) being made of a thermoplastic which cannot withstand the temperature of the hot element (**8**), an inlet adapter (**9**) which surrounds said hot element (**8**), said inlet adapter (**9**) beinq fixed to the hollow body (**1**) and emerging from said body about an opening (**19**), said inlet adapter beinq also produced from a thermoplastic, retaining means (**10**, **28**) for keeping the hot element (**8**) inside the inlet adapter (**9**), out of contact with the inlet adapter (**9**), sealing means (**11**) located between the outer peripheral surface (**12**) of the hot element (**8**) and the inner peripheral surface (**13**) of the adapter (**9**) , and means for cooling the space (**14**) lying between the adapter (**9**) and the hot element (**8**), wherein the adapter (**9**) is separated from said at least one cold fluid inlet pipe (**2**), wherein the space (**14**) lying between the outer peripheral surface (**12**) of the hot element (**8**) and the inner peripheral surface (**13**) of the adapter (**9**) is a space with a blind end, and wherein the device further includes means for sending some of the cold fluid which has entered the hollow body (**1**) by said at least one cold fluid inlet pipe (**2**) into the space with a blind end (**14**), through the opening (**19**) from inside the hollow body (**1**), and wherein the space (**14**) has a predetermined dimension such that said some of the cold fluid cools the pipe (**8**) and the retaining means (**10**, (**28**).

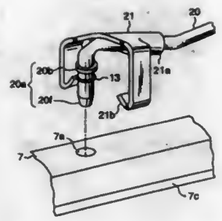
5,542,712
QUICK CONNECTOR HOUSING WITH ELONGATED BARB DESIGN
Gary Klinger, Warren, Mich., and Siegfried K. Baier, Reichshof-Ma, Germany, assignors to ITT Corporation
Continuation-in-part of Ser. No. 126,347, Sep. 24, 1993, Pat. No. 5,456,500, which is a continuation-in-part of Ser. No. 809,826, Dec. 18, 1991, Pat. No. 5,297,818. This application Jul. 29, 1994, Ser. No. 282,859
Int. Cl.[6] F16L *35/00;33/207*
U.S. Cl. 285—93 **6 Claims**



1. A connector housing for use with a quick connector assembly, comprising:
a generally cylindrical plastic housing body having a first end that is adapted to receive a male member and a second end adapted to be coupled with tubing;
said second end having an elongated barb at a terminal portion on an outer surface of said second end;
said elongated barb having a ramped surface beginning at a preselected point on said terminal portion and ending adjacent a generally cylindrical land, said land extending away from said ramped surface to a first engaging surface on said second housing end, said first engaging surface being adapted to bear against a portion of an inner surface on the tubing;
wherein said second end further comprises a plurality of longitudinally spaced barbs disposed between said first engaging surface and said housing first end and wherein said housing body first end further comprises a retainer disposed within said housing for releasably coupling the male member with said housing, said retainer having a retainer surface adapted to abuttingly engage a portion of the male member to thereby maintain a coupling between the male member and said housing, said engaging surface being defined at a first point on said second end and wherein a distance between said first point and said terminal portion is at least greater than a longitudinal distance between said housing opening and said retaining surface on said retainer.

5,542,713
HOSE COUPLING DEVICE
Takeshi Miyazaki; Takumi Narita, and Hidekazu Miyazaki, all of Inazawa, Japan, assignors to Toyoda Gosei Co., LTD., Aichi-ken, Japan
Filed Jul. 26, 1993, Ser. No. 96,262
Claims priority, application Japan, Jul. 28, 1992, 4-201555; Jul. 28, 1992, 4-201556
Int. Cl.[6] F16L *3/04*
U.S. Cl. 285—158 **12 Claims**

1. A pipe coupling device comprising:
a pipe providing an extension of a hose, a mating part having a pipe connecting hole and edge portions extending therealong and on opposite sides thereof, said pipe having a sleeve portion formed at one end thereof for insertion in said pipe connecting hole, an end connected to said hose and a bend provided therein at an angle relative to an axis of the pipe



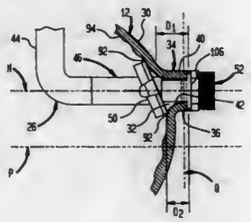
adjacent to said sleeve portion, a mounting clip attached to said pipe at a point spaced from said bend toward said hose, wherein said mounting clip includes an attachment portion at least partially surrounding and extending axially along a periphery of said pipe and a pair of leg portions depending therefrom, with pawls at respective ends thereof for engagement with said edge portions said mating part.

5,542,714

ADAPTER FOR COUPLING A PAIR OF PIPE ELEMENTS

Robert Messinger, Avenel, and Thomas F. Pinelli, Saddle Brook, both of N.J., assignors to H-Tech, Inc., Wilmington, Del.

Filed Apr. 28, 1995, Ser. No. 430,431
Int. Cl.[6] F16L *3/04*
U.S. Cl. 285—158 **23 Claims**



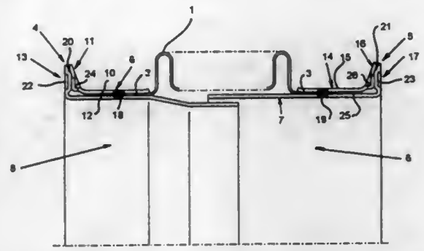
1. An adapter for coupling a pair of pipe elements to form a conduit passing through an aperture in a curved wall, said aperture having an axis an outer surface, and an annular sealing surface associated with said aperture proximate a first side of said wall and seal means for sealingly engaging said annular sealing surface and conduit, a first of said pair of pipe elements having an annular sealing flange associated therewith, said sealing flange abutting said outer surface and sealing against said sealing means, a second of said pair of pipe elements located on a second, concave side of said wall, the distance between said outer surface and said concave side of said wall varying in the axial direction of said aperture, comprising connecting means for connecting said pair of pipe elements, said connecting means disposed on said concave side of said wall; a support flange, and means for pivotably mounting said support flange on said connecting means for supporting said conduit at an orientation parallel to said aperture axis such that said sealing flange can abut against said outer surface, said support flange pivoting to conform to the interior curvature of said wall and said varying distance between said outer surface and said concave side when said sealing flange is brought into outer engagement with said outer surface, said sealing flange and said support flange clamping said outer surface and said concave side of said wall therebetween in response to tightening said connecting means.

5,542,715

METAL EXPANSION JOINT AND VIBRATION ABSORBER APPARATUS FOR PIPE SYSTEMS

Silvano Mantoan, Au, and Werner Petermann, Emmenbrücke, both of, Switzerland, assignors to BOA AG, Rothenburg, Switzerland

Filed May 17, 1995, Ser. No. 442,689
Int. Cl.[6] F16L *51/02*
U.S. Cl. 285—226 **6 Claims**



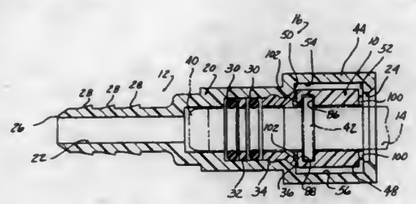
1. A metal expansion joint and vibration absorber apparatus, including
at least one metal bellows element with a first neck extending axially from one end and a second neck extending from the other end of said bellows element;
a first and a second flange structure;
said first protection sleeve element comprising a cylindrically shaped portion and a further continuous and substantially radially upturned annular end portion;
a second protection sleeve element which includes a pipe stub element located inside of and extending coaxially to said metal bellows element, in which a portion of said first protection sleeve element is received,
said expansion joint and vibration absorber apparatus comprising
a first envelope part having a cylindrically shaped portion and a thereto continuous and substantially radially upturned annular end portion; and
said upturned annular end portion of said first envelope part abuts the upturned annular end portion of said first protection sleeve element, whereby said two end portions form said first flange structure;
and said neck of said metal-bellows is sandwiched between and mounted to the cylindrically shaped portions of the first envelope part and the first protection sleeve element.

5,542,716

QUICK CONNECTOR WITH SNAP-ON RETAINER

George Szabo, Ortonville, and Andrew G. McGuire, St. Clair, both of Mich., assignors to ITT Corporation, New York, N.Y.

Filed Nov. 4, 1994, Ser. No. 334,754
Int. Cl.[6] F16L *37/14*
U.S. Cl. 285—305 **8 Claims**



1. A quick connector comprising:
mating male and female components;

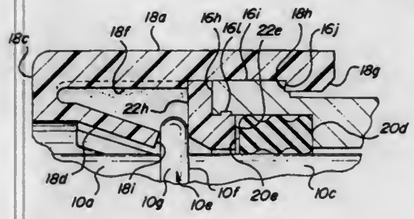
the female component including a housing having an axially extending bore terminating at an open end of the housing for receiving the male component therein;
a transverse extending bore formed in the housing in communication with the axially extending bore;
the male component having a radially enlarged flange spaced from one end;
retainer means, slidable through the transverse bore in the housing only when the male component is fully coupled to the female component, for releasably locking the male and female components together;
the retainer means including:
a body having an end wall and first and second spaced legs extending from the end wall and terminating in outer ends;
the first and second legs defining an aperture therebetween extending from an open end at the outer ends of the first and second legs and an end at the end wall; and
radial flange receiving means, formed on the body, for receiving the radial flange on the male component only when the male component is fully coupled in the female component and for permitting sliding movement of the first and second legs over the male component as the body is urged through the transverse bore in the female component; and
means for releasably locking the body in a partially inserted position in the transverse bore in the housing with the outer ends of the first and second legs clear of the axially extending bore in the housing to enable insertion of the male component into the female component.

5,542,717

QUICK CONNECT COUPLING

Perry J. Rea, Bloomfield Hills; Michael R. Miller, Rochester Hills; Dennis G. Kinder, Clarkston; Christopher J. Kargula, Sterling Heights, and William E. Stevens, Ypsilanti, all of Mich., assignors to Form Rite, Corporation, Auburn Hills, Mich.

Continuation-in-part of Ser. No. 176,243, Jan. 3, 1994, Pat. No. 5,462,313. This application Jun. 7, 1995, Ser. No. 471,906
Int. Cl.[6] F16L *39/00*
U.S. Cl. 285—319 **20 Claims**



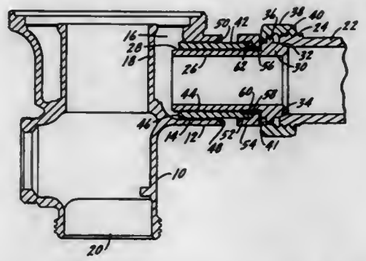
1. A quick connect coupling comprising:
a tubular male connector member including a front end pilot portion and an external annular bead defined at the rear end of the pilot portion;
a first female connector member defining a capture bore sized to receive the pilot portion, a seal counterbore positioned forwardly of the capture bore, and a forward annular edge proximate the forward boundary of the seal bore;
a second female connector member secured to the first female connector member and including an annular main body portion extending forwardly from the forward annular edge of the first female connector member and a plurality of circumferentially spaced resilient finger portions extending rearwardly and radially inwardly from the front end of the main body portion and latchingly coacting at their free rearward ends with the rear annular face of the bead in response to insertion of the pilot portion into the front end of the first female member and into the capture bore;
an annular elastomeric seal positioned in the seal counterbore; and
an annular seal retainer positioned within the second female connector member and against the forward annular edge of the first female connector member, including a portion positioned proximate the seal to retain the seal in the seal counterbore, and defining a forward annular face for seating coaction with the forward annular face of the bead with the members in coupled relation.

5,542,718

ADJUSTABLE TAIL GROUND JOINT

Jerry P. Gronwick, Park Ridge, and Leonard A. Koniewicz, Chicago, both of Ill., assignors to Sloan Valve Company, Franklin Park, Ill.

Filed Mar. 6, 1995, Ser. No. 399,196
Int. Cl.[6] F03C *1/00;* **F16L** *27/00;19/00*
U.S. Cl. 285—357 **5 Claims**



1. An adjustable plumbing conduit for connecting the inlet of a flush valve body and the outlet of a control valve, the flush valve body inlet being threaded on the interior thereof and the control valve outlet being threaded on the exterior thereof, said adjustable plumbing conduit including:
an adjustable tail having an exterior thread on a portion thereof, and a tapered nose formed and adapted to be in contact with an interior mating surface on the control valve outlet, an outward projection on said adjustable tail adjacent said tapered nose,
a coupling nut threaded onto the exterior of the control valve inlet and having an inward shoulder which coacts with the adjustable tail projection to attach the adjustable tail to the control valve outlet,
a sleeve having interior and exterior threads thereon, with the interior threads attaching the sleeve onto the exterior of the adjustable tail and the exterior threads attaching the sleeve into the flush valve threaded inlet, and
means for fixing the relative positions of said sleeve and said adjustable tail.

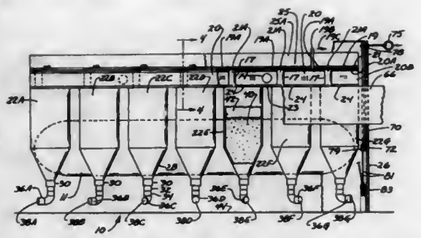
5,542,719

STATIONARY STANDBY SAND SPREADING UNIT FOR ROADWAYS

Harvey L. Nordin, R.R. 3, Box 351, Devils Lake, N. Dak. 58301

Filed Jul. 8, 1994, Ser. No. 272,222
Int. Cl.[6] B61C *15/10;* **B60B** *39/00*
U.S. Cl. 291—3 **14 Claims**

1. A stationary distributor of discrete particles for providing such particles for use on slippery road surfaces comprising:
a frame for stationarily supporting the distributor relative to a fixed surface adjacent a roadway subjected to periodic slippery conditions;
an air storage tank mounted on the frame;
a plurality of hoppers mounted on the frame adjacent to said tank;



a quantity of discrete particles in each of the hoppers, to at least partially fill the hoppers;

an air pressure inlet connected to each hopper for receiving air pressure from the tank and exerting pressure on the particles in the hopper; and

an outlet from each of the hoppers including a particle discharge nozzle for directing particles onto and across a road surface adjacent to which the tank and hoppers are mounted.

5,542,720

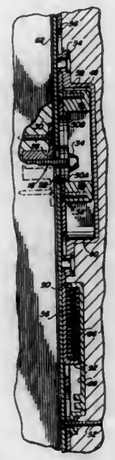
MULTIPOINT LOCK ASSEMBLY FOR A SLIDING DOOR

Paul D. Fleming, Glendale, Calif., assignor to W&F Manufacturing, Inc., Glendale, Calif.

Filed Jun. 26, 1995, Ser. No. 494,806

Int. Cl.[6] E05C *9/00*

U.S. Cl. 292—32 **16 Claims**



1. A door lock assembly for use in locking a sliding door, said lock assembly comprising;

a plurality of latch cartridges for mounting along a free side edge of a sliding door, each of said latch cartridges defining a vertically extending keyhole latch port with a wider first portion and a narrower second portion;

means for movably supporting said latch cartridges at vertically spaced positions along the door free side edge for vertical movement between a latched position and an unlatched position;

spring means for urging said latch cartridges normally toward said latched position;

trigger means for releasibly retaining said latch cartridges in said unlatched position;

a plurality of latch pins for mounting onto a door jamb adjacent the door free side edge, each of said latch pins including a narrow shank projecting from the door jamb and terminating in a wider head, said latch pins being mounted on the door jamb at vertically spaced positions for reception of said latch pin heads respectively through the wider first portions of said latch ports when the door is closed with said latch cartridges in the unlatched position, at least one of said latch pins thereupon engaging said trigger means to release said latch cartridges for spring-loaded movement to the latched position with said latch pin heads disposed behind the narrower second portions of said latch ports to prevent door opening; and

actuator means for displacing said latch cartridges from the latched position to the unlatched position to align said latch pins with the wider first portions of said latch ports and permit door opening, said trigger means being cocked upon movement of said latch cartridges to the unlatched position to releasibly retain said latch cartridges in the unlatched position.

5,542,721

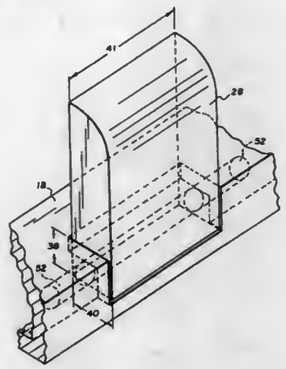
VENTILATION STOP FOR A SLIDING WINDOW OR DOOR

Gregory B. Allen, Rochester, N.Y., assignor to Pace Window & Door Corp., Victor, N.Y.

Filed Feb. 10, 1995, Ser. No. 386,564

Int. Cl.[6] E05C *3/02*

U.S. Cl. 292—194 **18 Claims**



1. A stop for governing the path of movement of a movable first element, comprising:

a) a second element in proximity to said first element, which second element can be motionless while said first element is moved past said second element, said second element having a recess in proximity to said path of said movement;

b) a tab rotatably disposed in and protruding from said recess and having a bore therethrough in a direction parallel to said path of said movement of said first element, which tab is rotatable about said bore to a first position in said path of said movement of said movable first element and to a second position out of said path of said movement of said movable first element; and

c) a hinge pin disposed in said bore and extending within said second element beyond said recess to retain said tab in said recess and to permit said tab to be rotated between said first and second positions, said hinge pin being crimped to form a leaf spring for biasing said tab to either of said first and second positions.

5,542,722

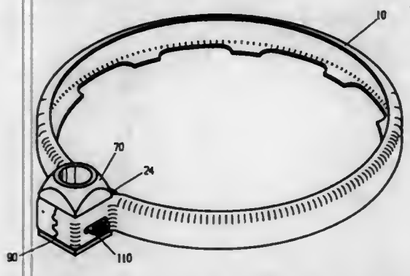
TAMPER RESISTANT METER LOCKING RING

Norman B. DeWalch, 6850 Wynnwood, Houston, Tex. 77008

Continuation-in-part of Ser. No. 53,582, Apr. 27, 1993, abandoned. This application Sep. 23, 1994, Ser. No. 312,015

Int. Cl.[6] B65D *45/32*

U.S. Cl. 292—256.6 **11 Claims**



1. A locking ring for detachably interconnecting two axially aligned, radially extending circular flanges including an annular portion having a radial split, and two end protrusions extending generally radially outward from said annular portion on either side of said radial split, wherein:

(a) said annular portion has a central axis, a front side defined by the furthest extent of said annular portion along said axis in one direction, and a rear side defined by the furthest extent of said annular portion generally along said axis in the opposite direction;

(b) the first of said end protrusions includes a front housing portion located generally at said front side of said annular portion, said front housing portion having an inner portion located on the surface of said front housing portion closest to said rear side of said annular portion;

(c) the second of said end protrusions includes a rear housing portion located generally at said rear side of said annular portion, said rear housing portion having an inner portion located on the surface of said rear housing closest to said front side of said annular portion;

(d) said end protrusions are movable together;

(e) said front housing portion and said rear housing portion overlap each other when said end protrusions are moved together, such that:

(i) said rear housing portion at least partially shields said inner portion of said front housing portion;

(ii) said front housing portion at least partially shields said inner portion of said rear housing portion; and

(f) said end protrusions are lockable by locking means when moved together.

5,542,723

PORTABLE PRIVACY LOCK

Kenneth R. Scharf, 414 S. Craig St., Suite 207, Pittsburgh, Pa. 15213

Filed Sep. 25, 1995, Ser. No. 533,655

Int. Cl.[6] E05C *19/18*

U.S. Cl. 292—289 **20 Claims**

1. A portable privacy lock for use in securing a door that swings on hinges from an open position to a closed position in which the edge of the door opposite its hinged side is adjacent to a closure surface with a clearance gap therebetween, which lock comprises:

(a) a flexible webbing having a first end and a second end, which webbing is provided with a plurality of holes between said first and second ends;

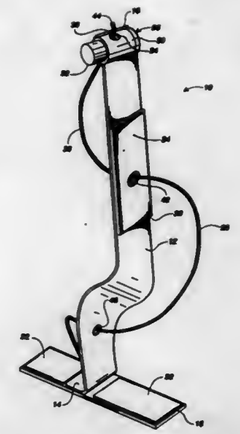
(b) a first securing plate that is attached to the first end of the webbing;

(c) a second securing plate that is attached to the webbing at an intermediate position between the first and second ends thereof, said second plate being provided with a hole that is aligned with one of the holes in the webbing;

(d) a latch that is adapted to receive a drawstring and to releasably engage it from motion with respect thereto;

(e) a drawstring, one end of which is attached to the first plate or to the first end of the webbing, said drawstring being threaded through the holes in the webbing and the second plate to engagement with the latch;

whereby the first plate may be inserted through the clearance gap between the door and its adjacent closure surface and the latch disengaged from the drawstring so that said drawstring may be pulled to fold the webbing so that the second plate is moved into position across the clearance gap and on the opposite side thereof from the first plate so as to secure the door from motion with respect to the adjacent closure surface, whereupon the latch may be engaged to hold the drawstring so as to maintain the plates in position with respect to each other.



5,542,724

SEALING SYSTEM, SECURITY SEAL AND INJECTION MOULDING SYSTEM FOR MANUFACTURING A SEALING SYSTEM

Eduardo D. C. Netto, Rio de Janeiro, Brazil, assignor to ELC Produtos de Seguranca Industria E Comercio LTDA, Rio de Janeiro, Brazil

PCT No. PCT/BR93/00010, § 371 Date Sep. 29, 1994, § 102(e) Date Sep. 29, 1994, PCT Pub. No. WO93/19995, PCT Pub. Date Oct. 14, 1993

PCT Filed Mar. 30, 1993, Ser. No. 307,831

Claims priority, application Brazil, Mar. 31, 1992, 9201127

Int. Cl.[6] B65D *27/30*

U.S. Cl. 292—317 **8 Claims**

1. Sealing system for a security seal, comprising:

(a) a first part defining a cavity having a top entry end and a closed bottom opposite said top entry end, said first part including:

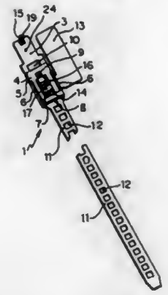
a first entry opening in said top entry end;

a second entry opening in said top entry end;

said cavity being closed with the exception of said first and second entry openings;

said top entry end having a wall portion which lies between and separates said first entry opening from said second entry opening, said wall portion having an outer surface and an inner surface, said inner surface being within said cavity and facing said closed bottom;

each of said entry openings having one edge which is at said wall portion and a remote edge which is opposite to said one edge and is spaced from said wall portion;



a tooth integral with said inner surface of said wall portion, said tooth being directed towards said closed bottom;

said closed bottom extending from the remote edge of said first entry opening to the remote edge of the second entry opening, said closed bottom extending under said tooth; and

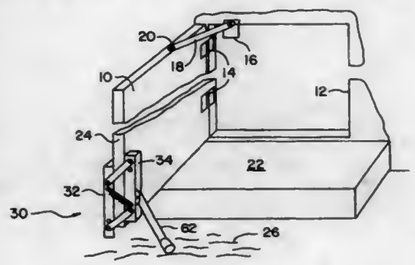
(b) a second part carrying a locking pin cooperable with said first part, said second part being movable from an unlocked position to a locking position where it covers said second entry opening and said locking pin penetrates said first entry opening and is lockingly engaged by said tooth.

5,542,725

PORTABLE DOOR STOP

Chester N. Ballew, New Albany, Ind., assignor to E2 Enterprises, Inc., Jeffersonville, Ind.

Filed Dec. 30, 1994, Ser. No. 366,896
Int. Cl.[6] E05C *17/54*
U.S. Cl. 292—339 **13 Claims**



1. A portable door stop comprising:

first and second elements having opposed surfaces for abutting the opposite faces of a door,

means for variably linking said first and second elements to abut opposite faces of doors of different thicknesses and to maintain the abutting opposed surfaces of said first and second elements substantially parallel to one another,

means for yieldably biasing said first and second elements toward a minimum door thickness position whereby the door engaging elements may be used on doors of different thickness, and

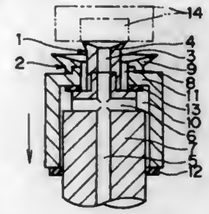
a floor engaging leg mounted on one of said elements to prevent movement of said door.

5,542,726

VACUUM FIXING DEVICE FOR PARTS

Kazushige Ozawa, Shizuoka, Japan, assignor to Tenryu Technics Co., Ltd., Shizuoka, Japan

Continuation of Ser. No. 183,502, Jan. 18, 1994, abandoned.
This application Dec. 28, 1995, Ser. No. 581,310
Claims priority, application Japan, Jan. 18, 1993, 5-005569
Int. Cl.[6] B66C *1/02*
U.S. Cl. 294—64.1 **2 Claims**



1. A vacuum fixing device for sucking and fixing electronic parts in vacuum or in a reduced pressure state, said device being used in an interlocking relation to a chip mounter for mounting said parts onto a printed circuit board and said device comprising:

a small pad portion, which comprises:

a small pad;

a suction path formed in said small pad in the axial direction thereof; and

a fixed shaft fixed to said small pad and formed therein with a suction path communicated with the suction path of said small pad and with a plurality of air paths opened in the diametrical direction thereof;

a large pad portion, which comprises:

a large pad;

a suction path formed in said large pad in the axial direction thereof, said suction path having an inner diameter larger than an outer diameter of said small pad; and

a movable shaft fixed to the large pad and formed therein with a suction path communicated with the suction path of said large pad and also communicated with the air paths of said fixed shaft of said small pad portion; and

a plurality of seal members provided at a sliding portion and/or a contacting portion between the outer peripheral portion of said small pad portion and the inner peripheral portion of said large pad portion,

wherein:

said small pad portion and said large pad portion are arranged to be slidable in the vertical direction so that said small pad portion is switched over to said large pad portion or vice versa;

said small pad portion and said large pad portion are formed different in diameter from each other and provided on the same axis;

said movable shaft is slid downwardly so that suction is performed through the suction path of said small pad and the suction path of said fixed shaft, in the case of suction by the small pad;

said movable shaft is slid upwardly so that suction is performed through the suction path of said large pad, the suction path of said movable shaft, and the air paths and the suction path of said fixed shaft, and further through the suction path of said small pad and the suction path of said fixed shaft, in the case of suction by the large pad;

one of said seal members is interposed between the outer peripheral portion of said fixed shaft of the small pad portion and the end portion of said movable shaft of the large pad;

another seal member is interposed between portions, which are brought into contact with each other, of the outer peripheral portion of said fixed shaft and the suction path of said movable shaft when switch over to said small pad is performed, one of said seal members is provided in the middle of the suction path of the large pad portion so as to shut off said suction path when the large pad portion is slid downwardly to suck the electronic parts by the small pad portion; and

said small pad portion and said large pad portion are arranged to suck and fix the electronic parts at same vertical position, so that large electronic parts are sucked by both said small pad and said large pad through both suction paths of said small and large pad portions.

5,542,727

Patent Not Issued For This Number

5,542,728

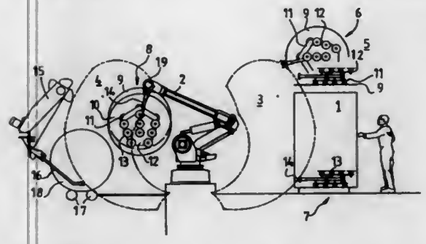
Patent Not Issued For This Number

5,542,729

TWO SIDED CLAMP FOR MANIPULATING HEADS OF PAPER ROLLS

Aimo Ohtonen, Kerava, Finland, assignor to Valmet Corporation, Helsinki, Finland

Filed Jan. 14, 1994, Ser. No. 182,715
Claims priority, application Finland, Feb. 9, 1993, 930546
Int. Cl.[6] B25J *15/06;* **B65G** *47/91*
U.S. Cl. 294—87.1 **4 Claims**



1. A clamp for releasibly grasping paper roll heads during a transfer of the heads from a stack of heads to ends of a paper roll, said clamp comprising:

a body structure; and

first and second grasping means asymmetrically fixed to said body structure and capable of releasibly grasping a first and second of the heads on diametrically opposite sides of said body structure in predetermined asymmetrical positions such that center axes of the first and second heads are spaced relative to one another.

5,542,730

FIRE HOSE CARRIER

John Riesselmann, 25218-83rd Pl., Salem, Wis. 53168

Filed Jul. 25, 1994, Ser. No. 279,553
Int. Cl.[6] B05B *15/06;* **B65D** *63/18*
U.S. Cl. 294—157 **11 Claims**

1. The combination of a hose-carrier and hose, wherein the hose-carrier is adapted to be readily attachable/detachable to the hose to facilitate moving and handling the hose when the hose is filled with water and is under pressure, comprising:

a single length of hose;

flexible strap means encircling the circumference of the single length of hose;

a plurality of hose-engaging pad members secured to the strap means;

means for removably securing said strap means around the hose; and

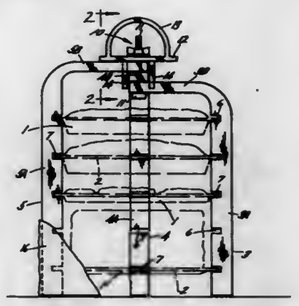
flexible-band handle means secured to the flexible strap means.

5,542,731

CARRIER FOR STACKED PLATES

Joan F. Wills, 07681 Highway 126, Florence, Oreg. 97439

Filed May 25, 1995, Ser. No. 450,419
Int. Cl.[6] A47G *19/08*
U.S. Cl. 294—161 **3 Claims**



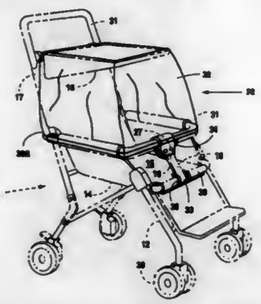
1. A carrier for stacked plates comprising,

leg members of angular configuration having upright and horizontal segments, multiple plate receiving openings defined by each of said upright segments, said horizontal segments having overlapped portions,

pivot means passing through said overlapped portions of said horizontal segments, and

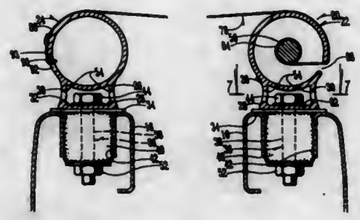
a combination handle and retainer for said leg members including a bail and having downward extensions normally disposed in contact with said horizontal leg segments to confine same against rotational movement about said pivot means to retain the leg members in an operable spaced apart relationship.

5,542,732
COMBINED SUPPLEMENTAL SHADING AND CARRIER APPARATUS FOR A CANOPIED STROLLER
Beverly E. Pollman, 8422 Brixton St., San Antonio, Tex. 78250
Filed Oct. 26, 1994, Ser. No. 329,298
Int. Cl.[6] B60J 9/00
U.S. Cl. 296—77.1 11 Claims



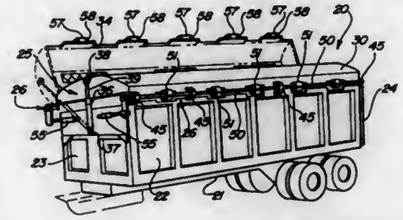
1. A shade for a stroller, said stroller having a frame for supporting a child in a carrier section, an overhanging canopy member, and a child restraint member attached to said frame, said shade comprising:
a first flexible fabric body section having an inner surface and an outer surface and a first end and a second end;
a first means for releasably attaching said body section at said second end to said child restraint member, said first releasable attachment means affixed to said inner surface of said body section;
a fabric shading panel attached at said first end of said body section and along an upper length of said body section, said panel having a means for releasably attaching said panel to said child restraint means,
wherein said inner surface at said first end of said body section is adapted to overlay said canopy and said inner surface at said second end of said body section is adapted to underlay said carrier section when said first releasable attachment means and said second releasable attachment means are attached to said child restraint member.

5,542,733
TRUCK TARP ASSEMBLY
Damon B. Kintz, Rural Ronte 3, Lime Spring, Iowa
Filed Oct. 18, 1994, Ser. No. 324,925
Int. Cl.[6] B60P 7/04
U.S. Cl. 296—98 23 Claims



1. A tarp device for a truck having a bed with opposite first and second side walls and a bottom wall for holding cargo, the device comprising:
a first hollow tubular rail rigidly mounted on the first side wall of the truck bed, with an elongated slot extending along the rail;
a second rail mounted on the second side wall of the truck bed;
a shaft rotatably mounted within the first rail;
a tarp having opposite first and second sides, the tarp extending through the slot in the first rail and having the first side secured to the shaft and the second side releasably securable to the second rail;
the shaft being rotatable in a first direction to roll the tarp onto the shaft for enclosed-storage within the first rail, and the shaft being rotatable in an opposite second direction to unroll the tarp from the shaft such that the tarp is extensible over the bed to cover cargo in the truck bed with the second side of the tarp being securable to the second rail; and
the second side of the tarp having a rigid hook for rententively engaging a lip on the second rail.

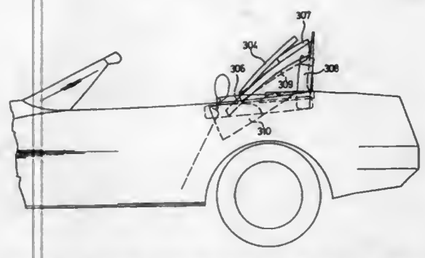
5,542,734
COVER ASSEMBLY FOR COAL CARRYING VEHICLES
Darvin Burchett, and Allen L. Hubbard, both of Prestonburg, Ky., assignors to Truck Covers, Inc., Indiantown, Fla.
Filed Feb. 4, 1994, Ser. No. 192,406
Int. Cl.[6] B60P 7/02
U.S. Cl. 296—100 10 Claims



1. A hinged cover for an open-top body having a body bottom wall, side walls, and front and rear-end walls, the uppermost portions of the said walls forming a body top perimeter, said cover including, in combination:
a) a cover means having a lower perimeter portion cooperating with said body top perimeter portion to cover said body;
b) a lifting means for lifting said cover means when desired said lifting means including a pair of first fluid pressure actuated cylinders, each pivotally connected at one of its ends to said body and at its other end to said cover means;
c) engagable hinge means for selectively connecting one side or the other side of said cover means to one or the other of said side walls of said body to cause said cover to open to the right or to the left with respect to said body when said lifting means are activated; and
d) activating means for said lifting means.

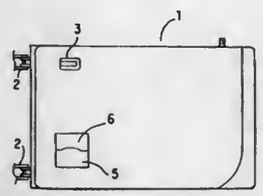
5,542,735
LENGTHWISE MOVABLE VEHICLE ROOF
Arpad Fürst, Germering; Martin Danzl, München; Johann Mayer, Petershausen, and Stefan Miklosi, München, all of, Germany, assignors to Webasto Karosseriesysteme GmbH, Germany
Filed Aug. 5, 1994, Ser. No. 286,468
Claims priority, application Germany, Aug. 5, 1993, 43 26 255.4
Int. Cl.[6] B60J 7/08
U.S. Cl. 296—107 7 Claims

1. In a vehicle having a roof with at least one roof cover part that can be opened during driving in a sunroof mode by being moved into at least one open position, in a lengthwise direction of the vehicle and relative to roof parts lying laterally and to the rear with respect to said at least one roof cover part, a rear roof part of which is attached to lateral roof parts and the rear and lateral roof parts being fixed at least in said sunroof mode, and which can be opened



to provide a convertible roof opening by moving of all of the roof parts and the at least one roof cover part into a storage space in a rear part of the vehicle, the improvement wherein the rear roof part is mounted in a pivotable manner relative to lateral columns on which it is supported; wherein lateral columns on which the rear roof part is supported are movable in the lengthwise direction of the vehicle on approximately horizontal guideways fixed on a body of the vehicle and are mounted in a manner enabling a forward and downward swinging of the columns and rear roof part into the storage space.

5,542,736
AUXIALIARY OPENING-CLOSING MECHANISM FOR AN AUTOMOBILE DOOR
Takashi Kondo, 104-2 Tsubakikouge, Tsuyama-shi, Okayama-ken, Japan
Filed Dec. 22, 1994, Ser. No. 362,146
Claims priority, application Japan, Jun. 17, 1994, 6-159562
Int. Cl.[6] B60J 1/20
U.S. Cl. 296—152 3 Claims

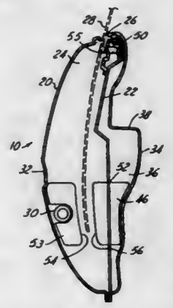


1. An auxiliary opening-closing mechanism for an automobile door, comprising:
a concave portion for receiving at least a part of a foot of a user, said concave portion being formed at a lower portion of the door; and
a stopper attached to the door for covering a part of the concave portion and having a short belt shape with one end fixed to the door, and a free end opposite to said one end, said stopper being engageable with an upper portion of the foot received in the concave portion so that movement of the door is controlled by the foot and a shoe can be easily inserted into the concave portion from a side of the free end.

5,542,737
AIR DEFLECTOR FOR THE REAR OF A VEHICLE
William R. Madden, R.R. 3, Hepworth, Ontario, Canada
Filed Nov. 2, 1994, Ser. No. 332,799
Int. Cl.[6] B62D 35/00
U.S. Cl. 296—180.1 6 Claims

1. A wind deflection device for the rear of a vehicle with a generally vertical rear wall, to prevent the build-up of snow, ice, dirt or the like on said wall, said device comprising:
a broad forwardly-opening scoop positioned at the upper rear of the vehicle, exposed to the airstream created when the vehicle is moving, to collect air from said airstream;
a rigid duct portion extending downwardly along the vertical rear wall of the vehicle and communicating with said scoop and receiving air therefrom;
a first air outlet from a bottom section of said duct portion for directing air downwardly out of said duct portion; and
a second air outlet from a top section of said duct portion for directing air from said scoop downwardly along an exterior vertical surface of said duct portion.

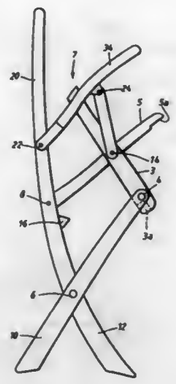
5,542,738
ENERGY ABSORBING VEHICLE DOOR WITH GUARD BEAM LOAD DISTRIBUTOR
Lee A. Walker, Shelby Township; Srinivasan Sundararajan, Belleville; Geoffrey D. Fletcher, Detroit, and Daniel J. Dillman, Belleville, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Dec. 23, 1994, Ser. No. 363,079
Int. Cl.[6] B60J 5/04
U.S. Cl. 296—189 1 Claim



1. In an automotive vehicle occupant compartment bounded on one side by a vehicle door and having an occupant seating area therein, an improved energy absorbing vehicle door comprising:
an outer panel;
an inner panel joined to the outer panel and defining a space therebetween;
a guard beam mounted longitudinally in the space;
a trim panel mounted on an occupant compartment side of the inner panel and having a plurality of energy absorbing foam blocks attached thereto generally laterally adjacent the guard beam; and
at least one foam load distributor block attached to an inner-panel-facing side of the guard beam between the guard beam and the energy absorbing foam blocks for distributing a load imparted to the guard beam evenly across the energy absorbing foam blocks so as to preserve the energy absorbing foam

blocks in a substantially undeformed state prior to occupant contact with the door during a side impact type collision, the at least one foam load distributor block having a crush strength greater than the crush strength of the energy absorbing foam blocks.

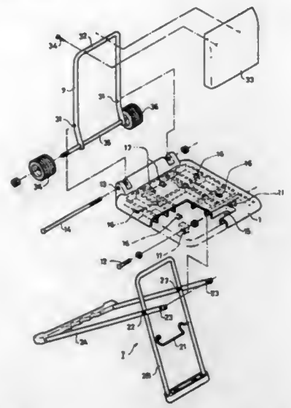
5,542,739
FOLDING FURNITURE
Ake Hultman, Bohusgatan 24, S-411 39, Göteborg, Sweden
Filed Mar. 21, 1995, Ser. No. 407,759
Int. Cl.[6] A47C *4/00*
U.S. Cl. 297—56 **5 Claims**



1. A foldable chair having a generally upright backrest and a generally horizontal supporting surface pivotably connected to a pair of underlying support leg means for supporting said chair on a floor surface, said backrest integrally joined to one of said underlying support leg means, said supporting surface connected to said first support leg means at a first pivot pin and to said second support leg means at a second pivot pin, said first and second pivot pins generally lying on a common horizontal plane,

said supporting surface defined by a first rigid section and a second rigid section, each of said rigid sections having a respective front and back edge, said first rigid section having a generally U-shaped configuration that forms an outer frame of said chair, said U-shaped configuration formed by a first and a second arm interconnected together by a cross member, said first and second arms each having a free end, wherein said second rigid section is received within said U-shape of said first rigid section and is generally coextensive therewith, said second rigid section having a front lip defining said front edge of said second section, said first and second sections pivotably connected to each other at a third pivot pin which is generally midpoint between said front and back edge of said first rigid section and between said first and second pivot pins, said third pivot pin generally lying on said common horizontal plane, said front edge of said second rigid section being supported on said cross member when said chair is in a folded-out position and said back edge of said first rigid section being supported at said free ends of said first and second arms by a cross brace when in said folded-out position, said cross brace interconnecting said second support leg means, wherein operation of said chair between a folded position and said folded-out position obviates the use of a sliding hinge, a sliding pivot or a hook.

5,542,740
CHAIR AND HAND TRUCK
Chien I. Chang, No. 38, Bao-Chung 3rd. St., Hou-Hu, Chia-Yi City, Taiwan
Filed Mar. 13, 1995, Ser. No. 403,195
Int. Cl.[6] A47C *13/00*
U.S. Cl. 297—129 **3 Claims**



1. A convertible device for use as a chair and a hand truck comprising:

a seat having a front, a back, a bottom surface and a top surface,

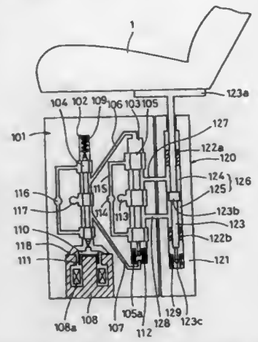
a back frame connected to the back of the seat for pivotal movement between an open upright position perpendicular to the seat when the device is used as a chair and a hand truck and a folded position against the top of the seat for storage, the back frame having a top end provided with a backrest located above the seat when the back frame is in the open position and a bottom end provided with wheels located below the seat when the back frame is in the open position, and

a cross frame comprising a relatively long U-shaped frame with upper and lower ends and a shorter rectangular frame, with upper and lower ends, said frames being pivotally interconnected at a location intermediate the upper and lower ends of each frame, the seat having hangers on said bottom surface located towards the front of the seat, the upper end of the U-shaped frame being pivotally attached to said hangers, the seat having supporters on said bottom surface at the back of the seat for retaining the upper end of the rectangular frame when the device is used as a chair with said frames located in a cruciform configuration and the lower ends of the frames forming feet for the chair,

wherein, for converting the chair into a hand truck, the upper end of the rectangular frame is removable from said supporters, said frames are pivotal into a coplanar configuration, and in said coplanar configuration are swingable about said hangers toward the front of the seat and against the bottom surface of the seat, so that the lower end of the U-shaped frame forms a handle for the hand truck,

the seat further having a hole adjacent the front of the seat and the rectangular frame having a hook fitting around the front of the seat and engaging in said hole when said frames are positioned against the bottom surface of the seat and the device is used as a hand truck.

5,542,741
APPARATUS FOR VIBRATING SEATS
Masahiro Fukuoka, Aichi, Japan, assignor to Fukuoka Kagaku Ltd., Nishikamo-gun, Japan
Division of Ser. No. 194,356, Feb. 10, 1994, which is a continuation-in-part of Ser. No. 987,481, Dec. 4, 1992, Pat. No. 5,348,370. This application Dec. 19, 1994, Ser. No. 358,251
Int. Cl.[6] A47C *7/62*
U.S. Cl. 297—217.3 **2 Claims**



1. An apparatus for vibrating a seat comprising a driver's seat, means for vibrating said driver's seat and means for controlling vibration of said means for vibrating the driver's seat,

wherein said means for vibrating said driver's seat comprises a rod having one end sliding-freely in a cylinder chamber and the other end projected outward from said cylinder chamber and connected to said driver's seat, a piston connected to said one end of said rod and sliding-freely in said cylinder chamber, means for supplying pressure fluid to said cylinder chamber, a channel control valve for supplying and discharging said pressure fluid to said chamber of said cylinder and means for controlling said valve for repeatedly freely sliding said piston,

wherein said means for supplying pressure fluid to said cylinder chamber includes a vibration generator having a coil.

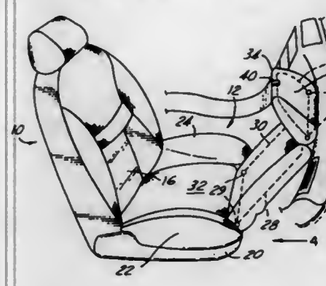
5,542,742
INTEGRATED INFANT SEAT FOR VEHICLES
Lynda K. Fulgenzi, Dearborn Heights; Roger P. Daniel, Dearborn; Heather M. Loftus, Clawson, and Jeffrey L. Goins, New Haven, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Mar. 23, 1994, Ser. No. 216,707
Int. Cl.[6] A47C *15/00*
U.S. Cl. 297—237 **16 Claims**

1. An infant seating apparatus for use in a passenger compartment of a motor vehicle including an instrument panel having an airbag disposed therein, and a primary seat including a primary seat back and a primary seat cushion, said infant seating apparatus comprising:

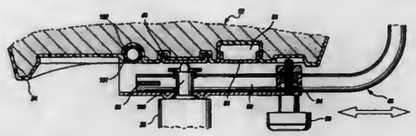
an infant seat cushion disposed under said primary seat cushion;

an infant seat back formed by pivoting said primary seat cushion to an open position, said infant seat back extending substantially upright from said infant seat cushion and terminating at a first end; and

a guide formed from a lumbar support section of said primary seat back when in said open position, said guide extending from said first end of said infant seat back substantially perpendicular thereto, projecting toward said primary seat back and over said infant seat cushion, said guide being adapted to direct inflation of said airbag above said infant seating apparatus.



5,542,743
TASK CHAIR
Ogden R. Olson, Muscatine, and Loren M. Simmons, Wabello, both of Iowa, assignors to Hon Industries Inc., Muscatine, Iowa
Filed Jan. 20, 1995, Ser. No. 375,645
Int. Cl.[6] B60N *2/22*
U.S. Cl. 297—353 **11 Claims**



11. A chair comprising:

a seat assembly including a molded support member, the support member having a generally planar portion disposed centrally thereof;

a control bracket secured to the planar portion of the support member, said control bracket having a generally C-shaped cross section with outwardly extending flanges;

a transverse recess formed in the planar portion above the control bracket;

a cross brace disposed in the recess with ends extending outwardly of the control bracket;

a pair of arm support assemblies each connected to one end of the cross brace;

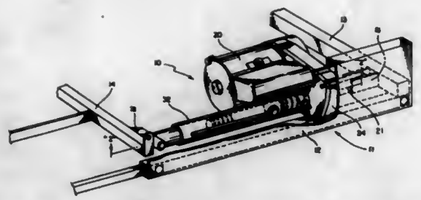
a back support assembly including a pair of parallel spaced tubular members, said tubular members being insertable between the control bracket and the support member; and

a clamp bar for clamping the tubular members to the control bracket;

wherein the tubular members telescope into the control bracket and are configured to be clamped to the control bracket in a plurality of positions relative to the support member.

5,542,744
NON-ADJUSTABLE LINEAR DRIVE FOR ARTICULATED FURNITURE
Leeland M. Bathrick, Crystal Lake, Ill., assignor to C.E.B. Enterprises, Inc., Mundelein, Ill.
Filed Feb. 23, 1994, Ser. No. 200,729
Int. Cl.[6] A47C *1/024*
U.S. Cl. 297—362.11 **6 Claims**

1. A liner drive for an articulated furniture piece such as articulated chairs and beds, comprising: a housing, a rotary motor in the housing having an output shaft, gearing in the housing connected to be driven by the output shaft, a rotary screw projecting from the housing and driven by the gearing, a linearly reciprocable drive member connected to be driven by the rotary screw, first tube



means axially fixed with respect to the housing and surrounding a portion of the screw, second tube means telescopically engaging the first tube means and axially fixed to the drive member, means for releasably attaching the second tube means to a load, control means for the motor including means for causing rotation of the motor in opposite directions and means for limiting rotation of the motor in both directions to a predetermined number of revolutions so the linearly reciprocable drive member has a predetermined retracted position and a predetermined extended position, and means for preventing inadvertent reorientation in the retracted and extended positions of the linearly reciprocable drive member from preset positions including means to rotationally lock the first tube means with respect to the second tube means in all positions of the drive member.

5,542,745

VEHICLE SEAT APPARATUS INCLUDING A ROTATABLE SEAT BACK

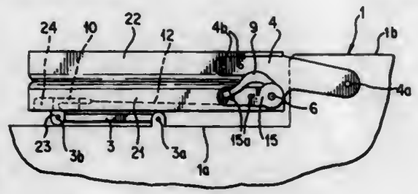
Nobuhiko Takeda, Obu, and Yasuhiro Kojima, Chiryu, both of, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Division of Ser. No. 330,527, Oct. 28, 1994. This application Jun. 7, 1995, Ser. No. 480,054

Claims priority, application Japan, Oct. 28, 1993, 5-271037; Nov. 24, 1993, 5-293195

Int. Cl.[6] B60N 2/02

U.S. Cl. 297—378.12 **1 Claim**



1. A seat apparatus for a vehicle, comprising:
a first bracket having an upper end and a lower end for pivoting to a floor of the vehicle;
a second bracket, located behind the first bracket when the seat apparatus is placed in the vehicle, the second bracket having an upper end and a lower end for pivoting to the floor of the vehicle;
a seat-cushion having a front end pivotally connected to the upper end of the first bracket and a rear end connected to the upper end of the second bracket so as to be movable relative thereto;
a seat-back having a lower end connected fixedly to the upper end of the second bracket, the seat-back forming a reclining angle relative to the seat-cushion;
a locking mechanism having a locking condition in which the reclining angle is held and an unlocking position in which the seat-back is rotatable relative to the seat-cushion, the locking mechanism including a striker for securing to a stationary part of the vehicle and a latch provided in the seat-back so that the latch engages and disengages the striker; and
operating means for establishing the unlocking position of the locking mechanism in concurrence with a rotation of the seat-back toward the seat-cushion in a vehicle frontward direction movement, the operating means including a handle having a vehicle frontward direction movement and a wire disposed in the seat-cushion and the seat-back between the handle and the latch.

5,542,746

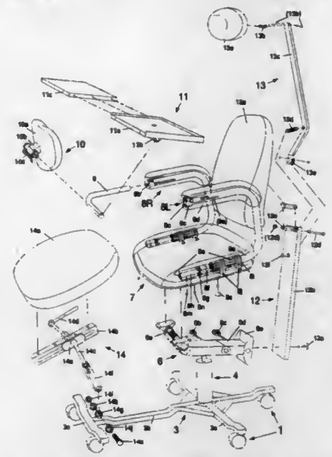
VARIABLE POSTURE COMPONENT SYSTEM SEATING DEVICE

L. Walter Bujaryn, P.O. Box 5244, Vail, Colo. 81658-5244

Filed Mar. 17, 1994, Ser. No. 210,178

Int. Cl.[6] A47C 7/50

U.S. Cl. 297—423.12 **19 Claims**



14. A multi-task configurable, continuously variable posture seating device, the seating device comprising:
a base comprising:
a cross member;
a main member that is longer than the cross member the cross member being rigidly attached to the main member in a position such that the main member substantially bisects the cross member and forms a cross having three arms of substantially the same length and a fourth arm that is longer than the rest of the arms, the fourth arm further comprising a section of reduced elevation, so that at least part of the portion of the fourth arm that extends beyond the three arms of substantially the same length will have an overall height that is lower than the height of the three arms of substantially the same length; and
a short member that is shorter than said cross member and is attached to the fourth arm at a position that permits the fourth arm to substantially bisect the short member;
a height adjustable support means mounted on said base;
a seat portion;
at least one armrest, the armrest having means for accepting a task accessory;
means for pivotally attaching said armrest to said seat portion, said means for pivotally attaching said armrest comprises a shaft having a threaded portion and a portion for attachment to said armrest;
a main member having a hole therein for accepting the threaded portion of the shaft, the main member being fixedly attached to said seat portion; and
means for engaging the threaded portion of the shaft and fixing the relative position between the shaft and the main member;
a backrest;
means for tiltably supporting said seat portion on said height adjustable support means;

means for tiltably supporting said backrest on said height adjustable support means so that independent movement of said seat portion relative to said backrest is provided, and so that the relationship between said seat portion and said backrest may be continuously and independently varied; and
a removable support means for supporting a user's knees and calves, said removable support means being removably attached to said base, so that independent movement of said seat portion allows alternating use of said removeable support means and said backrest.

5,542,747

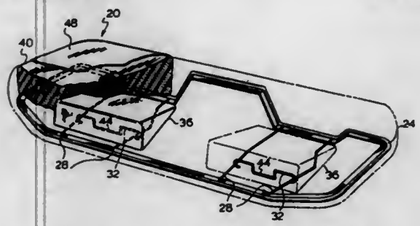
SEAT HAVING A FRAME ELEMENT OF HIGH-DENSITY, RIGID FOAM

Charles R. Burchi, Milford, Mich., assignor to Woodbridge Foam Corporation, Mississauga, Canada

Division of Ser. No. 23,118, Feb. 26, 1993, Pat. No. 5,400,490. This application Jan. 9, 1995, Ser. No. 370,256

Int. Cl.[6] A47C 7/02

U.S. Cl. 297—452.55 **30 Claims**



24. An automobile vehicle passenger seat comprising:
a frame element molded from relatively high density, rigid polyurethane foam having an indentation force deflection at 25% deflection of from about 500 pounds to about 4,000 pounds when measured pursuant to ASTM 3574-B_1;
vehicle anchorage means connected to the frame element, said vehicle anchorage means including an anchor portion to engage a portion of the automobile vehicle and an attachment portion embedded in said frame element, said vehicle anchorage means and said frame element for anchoring said seat to the automotive vehicle; and
a seat body comprising a resilient polyurethane foam fixed with respect to the frame element.

5,542,748

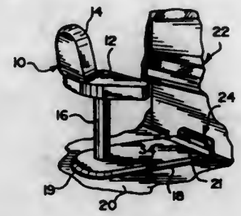
QUICK RELEASE ANCHORING SYSTEM FOR A SEAT ASSEMBLY

Peter Barile, Morristown, Tenn., assignor to Shelby Williams Industries, Inc., Morristown, Tenn.

Filed Aug. 8, 1995, Ser. No. 512,553

Int. Cl.[6] A47C 15/00

U.S. Cl. 297—463.1 **10 Claims**



1. In a quick release anchoring device for a seat assembly vertically oriented on a horizontally planar rectilinear support base having a forward end, a quick release connector assembly for releasably connecting the support base in a desired position relative to a fixed station supported on a planar floor surface, comprising:
a. bracket means connected to said station in proximity to said floor surface, said bracket having a first wall adjacent the fixed station, a second wall extending forwardly from said first wall and providing a clearance channel therebetween;
b. said second wall having an opening therethrough to provide an entrance into said channel, said entrance being defined by a pair of connected passageways into the channel of different vertical dimensions and different lateral dimensions;
c. connecting means integrally formed on the forward end of said support base for mating engagement in the channel through said opening in the bracket means, said connecting means including a pair of lug formations of predetermined length spaced above the horizontal plane of the support base and which enables the lug formations to be inserted into the channel through only one of the passageways and thereafter to be prevented from being withdrawn from the channel through the second passageway;
wherein the lug formations are connected to the forward end of the support base by first segment angled upwardly from the horizontal plane of the support base and a second foreshortened segment oriented in a plane parallel to the horizontal plane of the support base, said lug formations being arranged adjacent said foreshortened segment and in the same plane thereof.

5,542,749

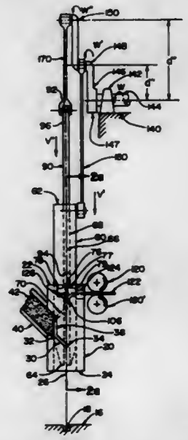
METHOD AND APPARATUS FOR GATHERING AND FORMING A TUFT OF BRUSH BRISTLES

Mike Toth, St. Charles, Ill., assignor to Carlson Tool & Machine Co., Geneva, Ill.

Filed Jan. 11, 1995, Ser. No. 371,351

Int. Cl.[6] A46D 1/08

U.S. Cl. 300—4 **7 Claims**



1. An apparatus for gathering a plurality of brush bristles into a bundle, the apparatus comprising:
(a) a housing comprising:
(i) a first end, a second end, and a longitudinal axis extending generally from said first end to said second end;
(ii) a bore formed in the interior of said housing and extending generally along said housing longitudinal axis;
(iii) a slot formed in the exterior of said housing, said slot in communication with said housing exterior and having a proximal end and a distal end, said slot extending generally

diagonally toward said housing second end into said housing interior such that said housing slot communicates with said housing bore; and

(b) a centerpiece slidably received within said housing bore, said centerpiece comprising:

(i) a first end, a second end, and a longitudinal axis extending generally from said first end to said second end; and

(ii) a slot formed in the exterior of said centerpiece, said centerpiece slot in communication with said centerpiece exterior and having a proximal end and a distal end that intersects said centerpiece longitudinal axis, said centerpiece slot extending generally diagonally away from said centerpiece second end toward said centerpiece longitudinal axis;

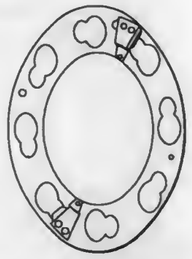
whereby displacing said centerpiece within said housing bore from said housing first end toward said housing second end gathers a plurality of brush bristles disposed at said housing slot proximal end into a bristle bundle within a convergence of said housing slot and said centerpiece slot and transports said bristle bundle within said convergence along said slots toward said centerpiece longitudinal axis.

5,542,750

WHEEL COVER ASSEMBLY RETAINER RING

David J. FitzGerald, San Leandro, Calif., assignor to Wheelmasters, Inc., Reno, Nev.

Filed May 26, 1994, Ser. No. 249,543
Int. Cl.[6] B60B *7/14*
U.S. Cl. 301—37.37 **14 Claims**



1. A retainer ring for attaching wheel cover assemblies to vehicle wheel rims which mount on lug bolts and are held in place by lug nuts comprising

a generally flat ring disk formed for engaging alternatively either the chamfered sides of lug nuts or the free ends of lug bolts of a multiplicity of wheel bolt patterns,

cam locks for holding said ring disk in engagement with said lug bolts or nuts, and

means for securing a wheel cover assembly to said ring disk.

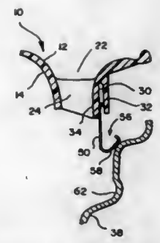
5,542,751

GRIP RING WHEEL COVER RETENTION SYSTEM

Martin E. Russell, Hendersonville, Tenn., assignor to Del-Met Corporation, Hendersonville, Tenn.

Filed Jun. 1, 1994, Ser. No. 252,087
Int. Cl.[6] B60B *7/12*
U.S. Cl. 301—37.32 **15 Claims**

1. A molded plastic wheel cover for a motor vehicle wheel having a wheel rim, the wheel cover including an outer face, an inner face and a grip ring retention system for attachment to the vehicle wheel, the retention system comprising a one piece unitary metal grip ring, the grip ring including a band having a longitudinal edge and a plurality of spaced legs projecting from the longitudinal edge, the wheel cover having an annular channel on the inner face, the annular channel defining a cylindrical plane, means for nonremovably seating the grip ring in the channel, each leg including a first portion extending from the longitudinal edge of the band to a maximum axial length and a second portion comprising articulated cantilever latch means, the latch means being spaced from the cylindrical plane and including a first radially outwardly curved portion extending from the maximum axial length of each leg, the latch means including an engagement leaf extending from the first radially outwardly curved portion radially outwardly and axially inwardly toward the inner face of the wheel cover, a second curved portion comprising a latch seat extending from the engagement leaf and a retraction leaf extending radially inwardly and axially inwardly from the latch seat, the leg and the latch means being of substantially uniform thickness throughout, the latch means being configured for nonscratch engagement with the wheel rim of the vehicle wheel, the wheel rim having a hollow annular draw bead step, the leg being dimensioned for snap fit engagement of the latch seat in the draw bead step when the wheel cover is mounted to the wheel, the band and the first portion of each leg lying within the cylindrical plane when the latch means is not stressed and the wheel cover is not mounted to the wheel.

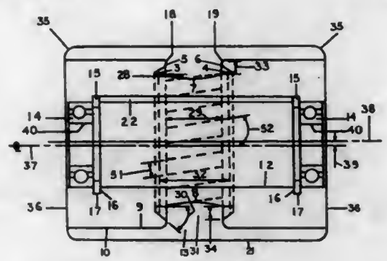


5,542,752

WHEEL PRODUCT COMPRISED OF A NEW WHEEL TREAD LOCK AND A NEW WHEEL TREAD MATERIAL

Lawrence D. Quaglia, 917 Quincy Ave., Bronx, N.Y. 10465

Filed Mar. 5, 1993, Ser. No. 27,081
Int. Cl.[6] B60B *5/02*
U.S. Cl. 301—64.7 **15 Claims**



1. An improved wheel assembly including:

a wheel hub provided with bearing means adjacent either end thereof;

an oil passage in an inner portion of said wheel hub extending between said bearing means;

an offset continuous locking circular groove having a maximum and a minimum inner depth around said wheel hub;

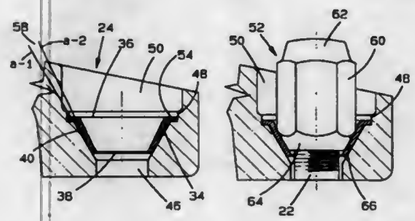
said offset continuous locking circular groove with minimum inner depth located on outer periphery and being in the same radius plane as said oil passage from the centerline axis of rotation of said wheel hub and said maximum continuous locking circular groove depth located on outer periphery on the opposite side of said wheel hub from said oil passage to balance the wheel hub weight around said wheel hub centerline axis of rotation.

5,542,753

WHEEL OPENING INSERTS AND LUG NUT ASSEMBLIES THEREOF FOR MOUNTING NON-FERROUS VEHICLE WHEELS

Mark J. Plumer, 980 Amalfi Dr., Pacific Palisades, Calif. 90272

Filed Jan. 27, 1994, Ser. No. 187,203
Int. Cl.[6] B60B *3/16*
U.S. Cl. 301—65 **40 Claims**



1. A steel insert for use in stud-receiving openings of non-ferrous metal vehicle wheels and which openings each have a circularly shaped portion at an outer end thereof and a diametrically enlarged shoulder-forming wall surrounding the opening, said insert comprising:

(a) a continuous circularly shaped body section adapted for fitted disposition in the circularly shaped portion of a stud-receiving opening of a non-ferrous vehicle wheel;

b) said body section terminating in a circular upper opening distal to the vehicle wheel and having an arcuate dish-shaped upwardly opening lug nut receiving cavity and a lower circular opening proximate to the wheel without any skirt connected thereto and sized to allow a vehicle wheel stud to extend therethrough;

c) said upper opening and the lug nut receiving cavity being sized to accommodate a lug nut to be secured to a stud extending through the opening and allowing the lug nut to bear against an interior surface of said lug nut receiving cavity of said body section;

d) a circular ring flange at the upper opening extending around the upper opening and radially outwardly from an exterior surface of said body section to engage the diametrically enlarged shoulder-forming wall surrounding the lug nut receiving cavity and aid in retentively holding the insert in the stud-receiving opening; and

e) said ring flange having an outer end wall lying in a plane generally parallel to an axial centerline passing through the body section and the upper and lower openings thereof, said end wall being engagable with said shoulder-forming wall in such manner that the circular ring flange constitutes the only effective locking means for locking the insert in the stud-receiving opening and where any skirt which may be present does not provide any significant locking action.

5,542,754

BRAKE SYSTEM IN ELECTRIC VEHICLE

Aoki Yasushi; Fujiya Ryosuke, and Nakamura Iwao, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

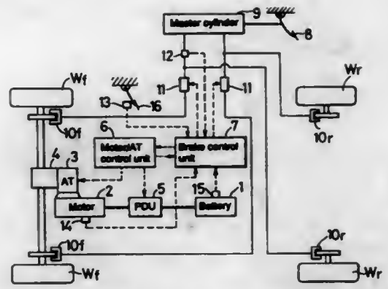
Filed Mar. 17, 1995, Ser. No. 407,302
Claims priority, application Japan, Mar. 17, 1994, 6-046665
Int. Cl.[6] B60L *7/26*
U.S. Cl. 303—3 **2 Claims**

1. A braking system in an electric vehicle comprising:

a motor for driving said electric vehicle, said motor using a battery as an energy source;

an automatic transmission interposed between the motor and driven wheels;

a gear-shifting control means for controlling gear shifting of the automatic transmission; and



a regenerative braking control means for controlling regenerative braking of the driven wheels by said motor through said automatic transmission based on a braking operation of the braking system; wherein

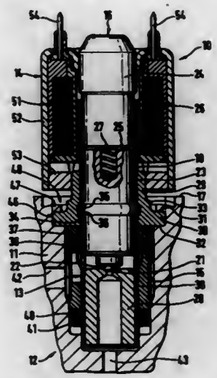
said gear-shifting control means having means responsive to said regenerative braking control means for prohibiting the gear shifting of said automatic transmission during said regenerative braking based on said braking operation.

5,542,755

ELECTROMAGNETICALLY ACTUATABLE VALVE FOR A HYDRAULIC BRAKE SYSTEM

Helmut Stalb, Schwieberdingen, and Michael Friedow, Tamm, both of, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 2, 1994, Ser. No. 333,182
Claims priority, application Germany, Nov. 3, 1993, 43 37 435.2
Int. Cl.[6] B60T *8/36;* **F16K** *31/06*
U.S. Cl. 303—119.2 **6 Claims**



1. An electromagnetically actuatable valve, for a slip-controlled hydraulic brake system of a motor vehicle, having a guide sleeve, a magnet core and a valve seat which are secured within the guide sleeve, an armature and a closing element which are movable inside the guide sleeve relative to the magnet core and to the valve seat, an electrical coil and a soft magnetic housing fitted over said electrical coil, both of which are disposed outside the guide sleeve, a bush (**29**, **29***a*, **29***b*) includes a securing flange (**30**, **30***a*, **30***b*), said bush is made of a magnetic flux guiding material and has an opening (**34**, **34***b*) through which the guide sleeve extends thereby surrounding the guide sleeve with one end extending into an area surrounded by a portion of said soft magnetic housing (**52**) of the electrical coil (**51**), the guide sleeve (**19**) has a radially outward-oriented encompassing bead (**36**), which is received substantially

form-lockingly inside a recess (35, 35*b*) that is concentrically associated with the opening (34, 34*b*) of the bush and that has a larger diameter than the opening (34, 34*b*).

5,542,756

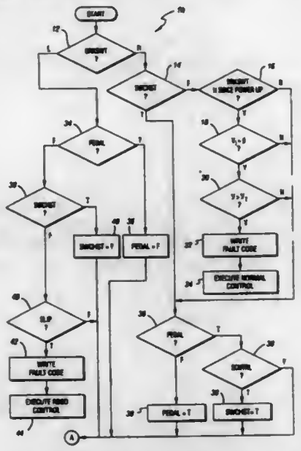
REDUCED BRAKE SWITCH DEPENDENCE CONTROL METHOD AND SYSTEM FOR VEHICLE ANTI-LOCK BRAKE SYSTEM

Mark Luckevich; Brian C. Tuck; Darryl C. Weber, all of Ann Arbor, Mich., and James H. DeVore, Clarksville, Tenn., assignors to Kelsey–Hayes Company, Livonia, Mich.

Continuation-in-part of Ser. No. 101,200, Jul. 30, 1993, abandoned. This application Feb. 6, 1995, Ser. No. 383,982

Int. Cl.[6] B60T *8/88*

U.S. Cl. 303—122.11 **6 Claims**



1. A control method for a vehicle anti-lock brake system, ABS, the vehicle having at least two wheels and a brake switch, the method comprising:

monitoring the brake switch for generation of a brake input signal;

determining that the brake switch is inoperative in the absence of a change in state of the brake input signal;

comparing a wheel velocity to a first slip threshold when the brake switch is operative;

activating the ABS when the wheel velocity falls below the first slip threshold and the brake switch is operative;

comparing a wheel velocity to a second slip threshold when the brake switch is inoperative, the second slip threshold being less than the first slip threshold; and

activating the ABS when the wheel velocity falls below the second slip threshold and the brake switch is inoperative.

5,542,757

FRONT PANEL ASSEMBLY OF A DISKDRIVE CASE

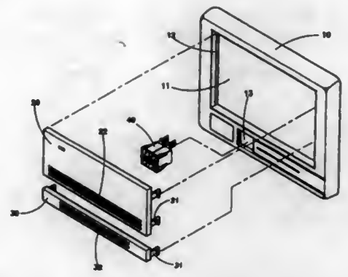
Chia-Chi Chang, No. 3, Min-Ho Lane, Min Sheng Li, Yuan-Lin Town, Chang-Hua Hsien, Taiwan

Filed Oct. 19, 1995, Ser. No. 545,307

Int. Cl.[6] A47B *81/00;* **H05K** *5/00;7/20*

U.S. Cl. 312—223.2 **1 Claim**

1. A front panel assembly for diskdrive cases, comprising a panel frame having a rectangular panel board slot, a control button slot, and two vertical retaining grooves disposed in said rectangular panel board slot at two opposite sides, two rectangular panel boards and a rectangular partition board respectively mounted in said panel board slot, each rectangular panel board having at least one pair of hooks at two opposite ends respectively hooked on said vertical retaining grooves and a plurality of air vents for dissipation of heat, said partition board being connected between said panel boards and having one pair of hooks at two opposite ends respectively hooked on said vertical retaining grooves and a plurality of air vents for dissipation of heat, and at least one diskdrive control button respectively mounted in said control button slot for controlling the operation of a respective diskdrive.



5,542,758

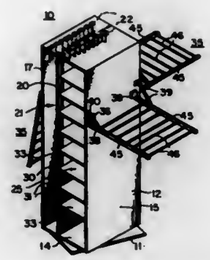
ROTATABLE WARDROBE

Eliezer Brown, 800 Timber La., Dresher, Pa. 19025

Filed Nov. 7, 1994, Ser. No. 335,072

Int. Cl.[6] A47B *46/00;49/00;97/00*

U.S. Cl. 312—249.2 **2 Claims**



1. A wardrobe for storing clothing and other items which comprises:

a base plate;

a bearing assembly mounted to said plate;

a cabinet mounted to said bearing assembly extending above said plate and rotatable therearound;

said cabinet having an open front, a bottom plate, right and left side panels, a rear panel and a top panel;

rack means hingedly secured to said side and rear panels;

folding hinge means attached to said side and rear panels and to said rack means to permit said racks to be selectively held in a horizontal position or rotated down to a storage position;

a vertically extending divider panel between said right and left side panels and extending to said rear panel to form first and second storage spaces;

belt and tie retaining means in said first storage space;

at least two pairs of channel strips mounted to said left side panel and to said divider panel;

a plurality of openings in said channel strips;

a plurality of clips selectively positionable in said openings; and

a plurality of shelves supported by said clips to carry shoes and boots.

5,542,759

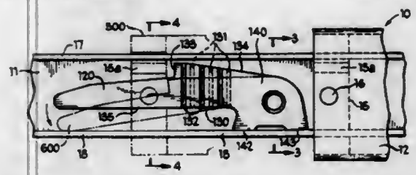
SHOCK ABSORBING DISCONNECT LATCH FOR DRAWER SLIDES

Bert Krivec, Brookfield, Wis., assignor to Snap-on Technologies, Inc., Crystal Lake, Ill.

Filed Apr. 27, 1995, Ser. No. 429,671

Int. Cl.[6] A47B *88/00*

U.S. Cl. 312—334.44 **27 Claims**



20. A disconnect latch including a unitarily formed elongated body having a longitudinal first axis, said body including opposite end portions and a main body portion joining said end portions,

said main body portion defining a wall having opposite side surfaces spaced apart by a thickness and having a height, with the height and the thickness respectively extending along second and third axes substantially perpendicular to each other and to said first axis, with said thickness being substantially less than said height,

a stop surface on said main body portion extending above and facing one of said end portions,

and a plurality of axially spaced grooves formed in at least one of said side surfaces, each of said grooves having a depth substantially less than the thickness of said wall,

whereby said grooves cooperatively expand and compress during a first condition to facilitate non-pivotal flexing of said disconnect latch along the second axis and whereby said grooves cooperatively compress during a second condition to dissipate an external impact force on said stop surface.

5,542,760

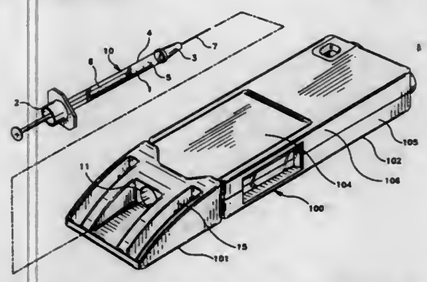
SYRINGE FILLER FOR MIXING INSULINS

Lawrence H. Chanoch, Mahwah, and John B. Wilson, Wanaque, both of N.J., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Filed Sep. 26, 1995, Ser. No. 534,152

Int. Cl.[6] B01F *15/04;* **A61M** *37/00*

U.S. Cl. 366—160.4 **8 Claims**



1. A mixing device for filling a syringe having a cannula with a mixture of medication, said mixing device comprising:

a housing;

a pair of disposable medication-containing cartridges in said housing, each cartridge having a pierceably sealed distal end, an open proximal end and a plunger in sliding fluid tight engagement within said cartridge;

a pair of dispensing mechanisms in said housing having opposed proximal and distal ends with each dispensing mechanism corresponding to one of said pair of disposable medication-containing cartridges for dispensing the medication contained therein;

means rotatably mounted to said housing for positioning a cannula of a syringe to be filled with a mixture of medication for insertion into one of said pair of disposable medication-containing cartridges containing a first medication and then the other of said pair of disposable medication-containing cartridges containing a second medication; and

each of said dispensing mechanisms further comprising:

a lead screw having a distal end projecting beyond said distal end of said dispensing mechanism for selective engagement with said plunger and a plurality of threads extending between said proximal end and said distal end of said lead screw;

dose setting means for defining specified distances of travel for said lead screw corresponding to selected doses of medication to be dispensed; and

driver means for moving said lead screw distally into said respective disposable medication-containing cartridge said distance specified by said dose setting means to dispense the selected dose of medication from said medication-containing cartridge through said cannula into said syringe.

5,542,761

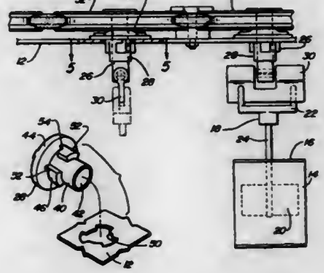
AUTOMATIC PAINT STIRRING EQUIPMENT WITH IMPROVED BUSHING

John T. Dedoes, Brighton, Mich., assignor to Dedoes Industries, Inc., Walled Lake, Mich.

Filed Sep. 20, 1995, Ser. No. 530,952

Int. Cl.[6] B01F *7/20*

U.S. Cl. 366—198 **7 Claims**



1. Automatic paint stirring equipment comprising

a rack adapted to removably receive and support a plurality of paint cans, each paint can having a cover and a paint stiffing assembly mounted to the cover, said paint stirring assembly having a paddle positioned within the paint can and a driven member positioned above the cover and mechanically connected to the paddle by a shaft,

a plurality of drive assemblies, each drive assembly having a drive shaft,

means for rotatably mounting each drive assembly to said rack,

a drive member secured to one end of said drive shaft, said drive member being mechanically drivingly connected to the driven member of the paint stirring assembly of one paint can positioned in the rack,

a plurality of drive pulleys, one drive pulley being secured to the other end of each drive shaft,

a motor,

means for drivingly connecting said motor to said drive pulleys so that actuation of said motor rotatably drives said drive pulleys,

wherein said rotatable mounting means comprises a bushing having a throughbore adapted to receive said drive shaft, said

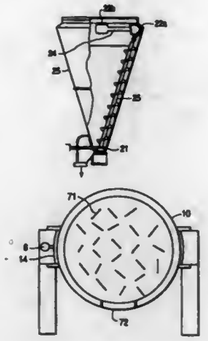
bushing having a flange at one end and a bayonet coupling at its other end, said bayonet coupling being insertable through a bayonet opening in said rack so that, upon rotation of said bushing to a locked position, a portion of said rack is sandwiched between said flange and said bayonet coupling.

5,542,762

AGITATOR POWERED BY ELECTRIC MOTOR HAVING A SPHERICAL ROTOR

Teruo Nakanishi; Yohei Ando, and Kiyokatsu Sakakibara, all of Komaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 922,836, Jul. 31, 1992, Pat. No. 5,413,010.
This application Dec. 15, 1994, Ser. No. 357,023
Claims priority, application Japan, Jul. 31, 1991, 3-60422; Aug. 29, 1991, 3-218567; Aug. 30, 1991, 3-220001; Nov. 13, 1991, 3-297251
Int. Cl.[6] B01F 7/24;9/00;13/08
U.S. Cl. 366—228 3 Claims



1. An agitator comprising: a container having an inverted conical shape; an agitating screw disposed along the inner side surface of said container, said screw having a top end located at the top of said container and a bottom end located at the bottom of said container; an arm pivotably mounted to said container at a point along the central longitudinal axis thereof and connected to said top end of said screw such that said screw can be revolved along the inner side surface of said container; and an electric motor disposed at the bottom of said container, said electric motor including a rotor having a spherical Outer surface and to which rotor the bottom end of said screw is connected, a plurality of permanent magnets arrayed along a series of intersecting lines and embedded in the outer surface of said rotor, all adjacent magnetic poles of all of said permanent magnets having polarities opposite to one another, a support having a spherical surface confronting the spherical outer surface of said rotor which allows the rotor to rotate relative to the support, said support including a stator having an inner surface confronting said rotor, and a plurality of electromagnets disposed on the inner surface of said stator.

5,542,763

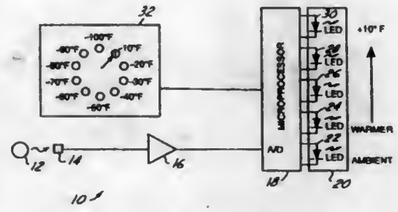
Patent Not Issued For This Number

5,542,764

THERMAL DIFFERENCE DETECTOR SYSTEM

Dennis J. Callewaert, Troy, Mich., assignor to Test Projects, Inc., Sterling Heights, Mich.

Filed Feb. 9, 1994, Ser. No. 194,048
Int. Cl.[6] G01J 5/02; G01K 1/02;17/00
U.S. Cl. 374—121 7 Claims



1. A thermal difference detector comprising:
an infrared sensor for detecting thermal radiation from a heat source and for producing a signal corresponding to a temperature associated with the detected radiation, an analog amount of said signal being proportional to said temperature;
amplifying and filtering means connected to said sensor for amplifying and filtering said signal provided by said sensor;
a processing means connected to said amplifying and filtering means for sampling and digitizing an instantaneous value of said analog amount and for first comparing said digitized value to a previously stored value;
said processing means further includes a means for successively sampling a plurality of said instantaneous values and for further comparing each subsequent value against a preceding one, to thereby substantially continuously evaluate a measure of increasing heat associated with said detected radiation;
an indicator means coupled with said processing means for displaying a result of said first comparison, whereby said temperature associated with said detected thermal radiation is known relative to said stored value; said indicator means including a set of light emitting diodes controlled by said sampling means, for consecutively displaying results of said further comparison;
a sensitivity control means coupled to said processing means for adjusting the sensitivity of said processing means; and a temperature range switch connected to said processing means, said switch having a plurality of temperature settings in equal increments whereby when the temperature of the heat source rises a predetermined increment, the switch changes to the next setting.

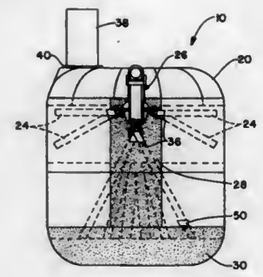
5,542,765

CONTAINER FOR CARRYING FLOWABLE MATERIALS AND RELATED METHOD

Charles S. Smith, Cedartown, and Hancel R. Wright, Rockmart, both of Ga., assignors to Engineered Fabrics Corporation, Rockmart, Ga.

Filed Apr. 25, 1994, Ser. No. 232,769
Int. Cl.[6] B65D 33/14
U.S. Cl. 383—17 10 Claims

1. A collapsible container having an interior for carrying flowable materials comprising:
a flexible bag made from a plurality of layers of rubber-coated fabric;
means to distribute the weight of the flowable materials within the container, said means to distribute being disposed outside the interior of the container between said layers of rubber-coated fabric forming the container; and
at least one lift assembly, separate from said means to distribute, including means to attach said means to distribute to said lift assembly.

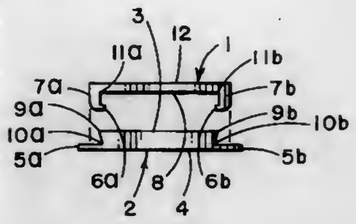


5,542,766

WATERPROOF CLOSURE SEAL FOR BAGS, CLOTHING AND OTHER USES

Richard J. Cadwallader, 6237 Yorktown Dr., Orlando, Fla. 32807

Continuation of Ser. No. 228,264, Apr. 15, 1994, abandoned.
This application Oct. 18, 1995, Ser. No. 544,607
Int. Cl.[6] B65D 33/25
U.S. Cl. 383—63 12 Claims



1. An elongated closure seal having two components comprising:
an elongated male component having a generally planar base, said base having two sides with flanges extending from each side of the base and an insert attached to and extending a predetermined length outward from the base, said insert having a planar top surface and two sides, the top surface being wider at an outermost extension then at the base so as to form an indentation along the bottom of each side of the insert; and
an elongated female component having a generally planar base and two legs, each extending perpendicularly from an inner surface of the base to form a cavity between said legs, said cavity being of sufficient size to hold the insert on the male component, each of said legs further having a sharp hook at an outer most extension on a side facing the cavity, said horizontal inwardly-facing hooks fitting into the indentation along the bottom of each side of the insert on the male component when sufficient inward pressure is exerted on the bases of the male component and female component to mate the components.

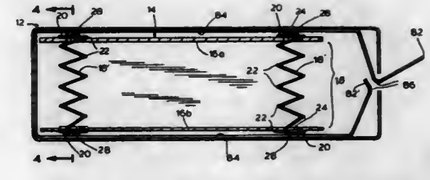
5,542,767

BAG STUFFER

Maurice Hedaya, and Ezra Hedaya, both of Brooklyn, N.Y., assignors to Barclay Brown, Brooklyn, N.Y.

Filed May 24, 1994, Ser. No. 248,503
Int. Cl.[6] B65D 30/00
U.S. Cl. 383—127 13 Claims

1. In a bag stuffer for an expandable bag, said bag stuffer comprising:



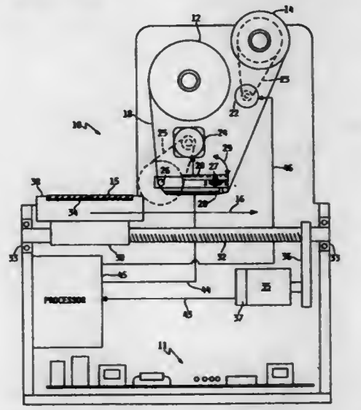
(A) insert means movable from a collapsed orientation for enabling compact storage of an expandable bag containing said insert means to an expanded orientation for providing a commercial display of an expandable bag containing said insert means;
(B) biasing means for biasing said insert means to said expand orientation; and
(C) releasable restraining means, disposed about said insert means and adapted to be disposed at least partially within an expandable bag containing said insert means, for restraining movement of said insert means from said collapsed orientation to said expanded orientation;
the improvement wherein said insert means includes first, second and third substantially rigid, substantially planar elements disposed in series parallel to one another, and said biasing means includes a first biasing element substantially disposed intermediate said first and second planar elements and acting to separate the same and a second biasing element substantially disposed intermediate said second and third planar elements and acting to separate the same; said second planar element being formed of a one-piece planar layer, said one-piece planar layer being directly secured to two different biasing elements.

5,542,768

APPARATUS FOR PRINTING ON PLASTIC DISK

David J. Rother, Hastings; John S. Lee, Coon Rapids; Terence J. Schmidt, St. Paul; Donald Hollerich, Edina; Robert L. Skubic, Chanhassen, and Eric Laveen, Eagan, all of Minn., assignors to Rimage Corporation, Minneapolis, Minn.

Filed Feb. 3, 1995, Ser. No. 382,922
Int. Cl.[6] B41J 25/312
U.S. Cl. 400—120.16 37 Claims



1. An apparatus for printing information on a surface with uniform printhead pressure, comprising:
a) a printer frame having a movable carriage mounted thereon, said carriage having means for supporting a printing surface, and said carriage being movable over a linear path of travel;

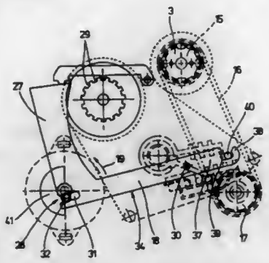
b) a printhead pivotally mounted over said carriage path of travel, said printhead having a line array of print pixels;
c) means for controllably pivoting said printhead, whereby the upward and downward force on said line array of print pixels may be selectively applied;
d) means for moving said carriage over said linear path of travel, including means for detecting the position of said carriage; and
e) means for utilizing the position detected by said means for detecting to create a force component based on said detected position, and including means for determining the length of the line array of print pixels which is applied to the printing surface for each position of said carriage, and means for transmitting said force component to said means for controllably pivoting, the downward force applied to said line array of pixels being determined by said carriage position and the length of the line array of print pixels applied to said printing surface.

5,542,769

PRINTER SUCH AS A PRINTER FOR PRINTING SELF-ADHESIVE LABELS HAVING A RIBBON DRIVE

Peter Schneider, Neckargemünd, and Dirk Umbach, Hattingen, both of, Germany, assignors to Esselte Meto International GmbH, Heppenheim, Germany

Filed Sep. 23, 1994, Ser. No. 311,506
Claims priority, application Germany, Sep. 24, 1993, 43 32 562.9
Int. Cl.[6] B41J *33/36*
U.S. Cl. 400—225 **18 Claims**



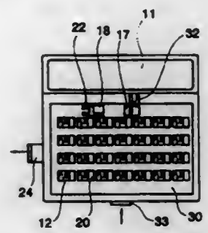
1. A printer for printing labels on a label material by transferring a printing substance from a printing ribbon to the label material, said printer comprising:
control means for controlling operation of said printer;
means for storing label material to be printed upon;
means for storing printing ribbon, the printing ribbon comprising a printing substance thereon;
print means for printing on the label material, said print means comprising at least one printing element, and said at least one printing element comprising means for transferring the printing substance from the printing ribbon to the label material;
means for feeding printing ribbon and label material to an area adjacent said at least one printing element;
means for actuating said at least one printing element to transfer printing substance from said printing ribbon to the label material to print on the label material adjacent said at least one printing element;
said means for feeding comprising means for conjunctively feeding printing ribbon and label material through the area adjacent said at least one printing element during at least first periods of operation of said printer;
means for inhibiting transport of said printing ribbon by said means for conjunctively feeding during transport of said label material by said means for conjunctively feeding during at least second periods of operation of said printer;
said means for inhibiting transport comprising means for stopping transport of said printing ribbon during transport of said label means during at least said second periods of operation to hold said printing ribbon stationary during at least said second periods of operation;
said means for storing printing ribbon comprising spool means having the printing ribbon wrapped therearound, said spool means being rotatable about an axis of rotation in said means for storing to unwrap printing ribbon from said spool means;
said means for stopping transport of said printing ribbon comprising means for inhibiting rotation of said spool means to prevent said ribbon means from being unwrapped from said spool means;
said spool means comprising first spool means for supplying printing ribbon;
said means for inhibiting rotation of said first spool means comprising:
a toothed gear;
means for non-rotationally connecting said toothed gear with said first spool means for united rotation of said toothed gear with said first spool means; and
member means for engaging said toothed gear to inhibit rotation of said toothed gear and inhibit rotation of said first spool means; and
said control means comprising means for controlling operation of said member means for engaging and disengaging said member means from said toothed gear.

5,542,770

MULTIFUNCTIONAL MICROPOCESSOR INPUT DEVICE

Meng H. Lin, 4F, No. 23, Lane 306, Fu Teh 1st Road, Hsi Chih, Taipei Hsien, Taiwan

Filed Feb. 22, 1994, Ser. No. 199,822
Int. Cl.[6] B41J *5/08*
U.S. Cl. 400—477 **5 Claims**



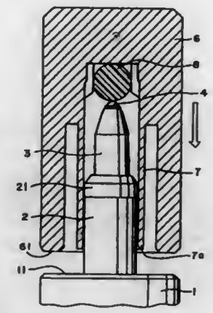
1. A multifunctional microprocessor device comprising:
a mainframe comprising a display screen, a recessed face panel having a first through hole, a set of keys mounted on said face panel, an electronic circuit having a first contact SW1 and a second contact SW2, and character codes made on said face panel around each key;
an open cover frame covered on said face panel of said mainframe;
a first slide plate retained to said face panel of said mainframe by said open cover frame and movable between a first limit position and a second lower limit position to alternatively show the character codes on said face panel, said first slide plate being made of an opaque plate, comprising a series of transversely aligned windows for showing said character codes alternatively and through which said keys project respectively, a first forked contact metal spring inserted into said first through hole and movable to alternatively contact said first contact SW1 and said second contact SW2; and
wherein when said first slide plate is moved to said first limit position, said first forked contact metal spring contacts said first contact SW1 causing the multifunctional microprocessor device to switch to the function modes corresponding to the character codes shown through said series of transversely aligned windows of said first slide plate; when said first slide plate is moved to said second limit position, said first forked contact metal spring contacts said second contact SW2 causing the multifunctional microprocessor device to switch to the function modes corresponding to the character codes shown through said series of transversely aligned windows of said first slide plate.

5,542,771

APPLICATOR HAVING CAP WHICH PRESSURIZES AND SEALS INNER SPACE

Yasuhiro Masumoto, Tokyo, Japan, assignor to Sailor Pen Co., Ltd., Tokyo, Japan

Filed Oct. 3, 1994, Ser. No. 317,231
Int. Cl.[6] B43K *9/00;7/00*
U.S. Cl. 401—213 **5 Claims**



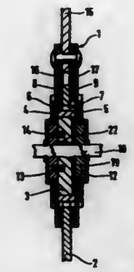
1. An applicator comprising:
a fluid tank for holding a highly viscous film-forming fluid to be applied;
a neck coupled to said fluid tank, said neck having a tip at a front end portion thereof;
an application member retained in a front end portion of said tip such that said application member is partly exposed for applying said highly viscous film-forming fluid to a surface;
a spring in said neck, said spring being arranged to resiliently urge said application member to abut against a caulked front edge of said tip;
a cap for engaging said neck, said cap having a closed end, an open end and an inner barrel which has an inner circumference which intimately contacts an outer circumference of said neck so as to seal against said neck to increase air pressure inside said inner barrel when said cap is engaged on said neck; and
a curved, elastically deformable valve-opening member bearing against said closed end of said cap, said curved, elastically deformable valve opening member being arranged to abut against said application member when said cap is being engaged with said neck so as to retract said application member from the caulked front edge of said tip, against the urging force of said spring, to form a clearance between said application member and said caulked front edge of said tip through which pressurized air in said inner barrel of said cap flows from said inner barrel to an interior of said fluid tank to increase the internal pressure of said fluid tank, and said curved, elastically deformable valve opening member being further arranged to deform when said cap is fully engaged with said neck so as to close said clearance between said application member and said caulked front edge of said tip and to maintain the increased internal pressure of said fluid tank.

5,542,772

ARTICULATED JOINT FITTING FOR AUTOMOTIVE VEHICLE SEAT

Gerhard Reuber, Drolshagen; Hans G. Meune, Bergneustadt, and Gavriel Shafry, Meinerzhagen, all of, Germany, assignors to Alfred Teves GmbH & Co oHG, Bergneustadt, Germany

Continuation of Ser. No. 915,690, Jul. 21, 1992, abandoned. This application Jul. 20, 1994, Ser. No. 277,777
Claims priority, application Germany, Nov. 22, 1990, 40 37 057.7
Int. Cl.[6] F16C *11/00*
U.S. Cl. 403—97 **23 Claims**



1. An articulated joint fitting for automotive vehicle seats comprising:
first and second joint parts rotatable relative to each other, the first joint part having an internal toothing and the second joint part having an external toothing, both the internal toothing and the external toothing engaging each other, the external toothing having a smaller number of teeth and a smaller crown circle diameter than the internal toothing, at least one of the internal toothing and the external toothing defined by first and second toothing portions in the articulated joint fitting and the other of the internal toothing and the external toothing in engagement with both the first and second toothing portions, wherein said second joint part includes a first gear wheel having external toothing extending across a predetermined width of said first gear wheel, such that part of said predetermined width of external toothing of said first gear wheel engages non-rotatably with a corresponding toothed aperture formed in said second joint part and another part of said predetermined width of external toothing of said first gear wheel engages rotatably with said first joint part;
a driving shaft supporting the first joint part; and
an eccentric supporting the second joint part.

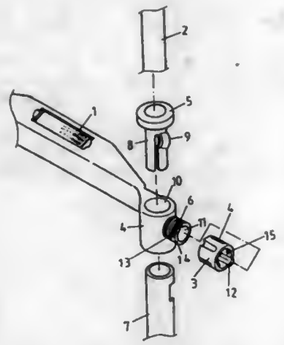
5,542,773

SECURE SCREW BUSH TYPE DRAG-LINK MOVABLE POSITIONING STRUCTURE

A-Shih Tu, P.O. Box 96-173, Taipei, Taiwan

Filed Feb. 24, 1994, Ser. No. 201,017
Int. Cl.[6] F16B *7/10*
U.S. Cl. 403—109 **5 Claims**

1. A secure screw knob drag link movable positioning structure comprising:
a mounting coupling having an internal bore therethrough, a first end and a second end with an outer annular surface, said coupling further having a radial bore therethrough which is in communication with said internal bore;
a first hollow tubular member extending coaxially with said coupling internal bore in a first direction from said first end;
an insert located in said coupling bore and comprised of:
an elongate shaft having first and second ends and a midportion and having an internal axial bore therethrough, said shaft further having an axially extending notch therein



extending from said first end thereof and terminating in said shaft midportion, said notch producing an axially extending spring portion, and

an annular flange mounted at said second end of said shaft and having a size such that said flange engages said coupling annular surface and prevents further axial movement of said insert inside said coupling, at least a part of said spring portion being located in registration with said coupling radial bore;

a second hollow tubular member telescopingly, slidably movable in said coupling, said insert and said first tubular member;

a radially extending threaded hub rigidly mounted on said coupling over said radial bore, said hub having a bore therethrough in alignment with said coupling radial bore and having a terminal outer portion, said outer portion comprised of a locking block defined by a retaining slot extending in the radial direction with respect to said hub bore and a notch in said locking block which extends from said slot in the axial direction with respect to said hub bore to the end of said hub bore; and

a knob mountable on said hub and having a wall, an end portion, an internal threaded bore, a tab mounted on said knob wall and extending radially into said knob bore for engaging with said threaded hub, and a pin mounted at one end thereof inside said knob bore to said knob end portion such that when said knob is screwed on said hub, said pin can engage said spring portion and in turn can force said spring portion to lockingly engage said second tubular member, and such that when said knob is unscrewed on said hub said tab engages said locking block which prevents said knob from being unscrewed further.

5,542,774

ORTHOTIC JOINT

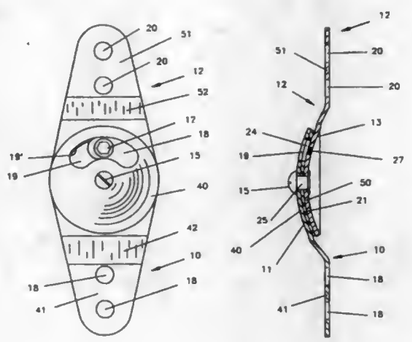
David J. Hoy, 1270 Rosedale Dr., Mansfield, Ohio 44906

Filed Dec. 8, 1994, Ser. No. 352,556

Int. Cl.[6] A61F *5/00*

U.S. Cl. 403—116 **26 Claims**

1. An orthotic joint comprising a first member, a second member, a pivot means, a plurality of interchangeable cam followers, one of said plurality of interchangeable cam followers removably mounted to said second member, a first slot in said first member, said one of said interchangeable cam followers protruding into said first slot, said second member rotatable with respect to said first member between a first position and a second position about said pivot means, and, said first and said second positions being adjustable by interchanging said one of said interchangeable cam followers with another of said interchangeable cam followers.



5,542,775

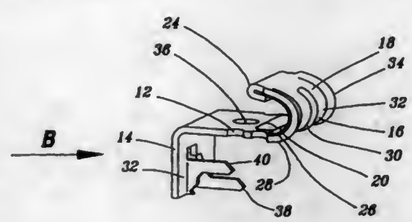
SQUEAKLESS FUNITURE SPRING ANCHOR CLIP AND METHOD OF MAKING SAME

Wayne Bechtoldt, Glenview; Tom Frazier, Wilmette; Matt Graszer, Palatine, and Dave Room, Skokie, all of Ill., assignors to The Stanley Works, New Britain, Conn.

Filed Nov. 1, 1994, Ser. No. 331,592

Int. Cl.[6] A47C *23/00;* **B21D** *5/00*

U.S. Cl. 403—188 **11 Claims**



1. An anchor clip for securing an end of an upholstery spring to a rail of the framework of an article of furniture, comprising:

a base portion adapted to overlie and to be completely supported on a surface of a rail of an article of furniture;

a rail-engaging leg portion integrally formed on a first end of the base portion, said leg portion having integral anchoring means adapted to be embedded in the rail for securing the anchor clip on the rail;

a reversed curved portion integrally joined to a second end of the base portion for receiving an upholstery spring and being adapted to be wrapped thereover, said reversed curved portion being supported by fixation of the clip on a surface of said rail, the reversed curved portion facing said rail and having a free end with an edge;

at least one embossed ridge extending out of said base portion along a junction line between said base portion and said reversed curved portion; and

a liner attached to said curved portion between said free edge and said embossed ridge, wherein said free edge is folded downwardly and over unto itself in order to engage and prevent said liner from displacing out of said clip at said free end.

5,542,776

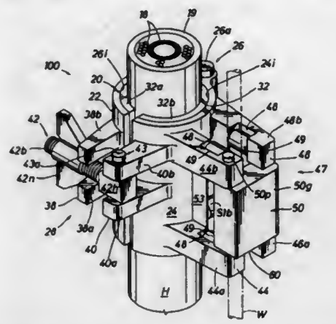
HOSE-TO WIRELINE CONNECTOR

Graeme E. Reynolds, 2053 Western Village, Houston, Tex. 77043

Filed Jun. 14, 1994, Ser. No. 259,956

Int. Cl.[6] F16B *7/04*

U.S. Cl. 403—389 **8 Claims**



1. A connector device adapted to freely secure a hydraulic hose bundle to a guide wire extending between a subsea structure at the sea floor and the water surface, the connector device comprising:

a generally cylindrical clamping body having an axial passage through said clamping body for grippingly receiving the hydraulic hose bundle;

a closure means mounted with said clamping body for freely securing said clamping body to the guide wire, said closure means comprising:

a first yoke extending laterally from said clamping body;

a second yoke extending laterally from said clamping body;

a gate member pivotally mounted to one of said yokes; and

means for releasably securing said gate member to the other of said yokes,

wherein a passageway is formed between said clamping body, said gate member, and said first and second yokes, and the guide wire is allowed to freely travel through the passageway; and

a plurality of rollers mounted to said closure means, wherein one or more said rollers are adapted to freely rotate when contacted by the guide wire during relative movement between the connector device and the guide wire.

5,542,777

FASTENER FOR COMPOSITE STRUCTURES

Martin E. Johnson, Baltimore, Md., assignor to Martin Marietta Corporation, Bethesda, Md.

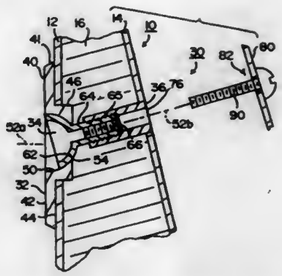
Filed Jul. 12, 1994, Ser. No. 274,063

Int. Cl.[6] F16B *43/02*

U.S. Cl. 403—389 **17 Claims**

1. A fastener for fastening to a composite panel including a nonparallel first and second face sheets and a reinforcing core lying therebetween, said panel also including an aperture extending through said first and second face sheets and said core, said aperture comprising an axis extending perpendicular to said second face sheet, said fastener comprising:

a socket, said socket including a flange with a first surface, and with a second surface for bearing against said first face sheet in a region around said aperture, said socket further including a body thicker than said flange and including a first surface coplanar with said first surface of said flange, said body also defining a through aperture lying about a socket axis and having a first diameter, and a cavity in the shape of a portion of a sphere having a second diameter larger than said first diameter, and centered about said socket axis, said spherical cavity extending from said first surface to said through aperture, said cavity having a first depth, as measured along said socket axis from said circular through aperture to said first surface;



a swivel, said swivel including a knob portion rigidly coupled to a post portion, with both said knob portion and said post portion centered about a swivel axis, said knob portion of said swivel including a portion of a ball having said second diameter, said portion of said ball having a dimension, measured along said swivel axis, which is less than said first depth, said post portion of said swivel being in the shape of a circular cylinder threaded on the exterior, said post portion of said swivel extending through said through aperture of said socket, with said knob portion of said swivel being contained within said cavity;

a spacer in the form of a circular cylinder defining a spacer axis and first and second ends, and a bore, at least a portion of said bore adjacent said first end being threaded to match said threaded exterior of said post portion of said swivel, said threaded portion of said bore of said spacer being threaded onto said post, whereby said fastener may extend through said aperture with said flange adjacent to, and flush with, said first sheet, one of said post and said spacer further including additional fastening means at locations on said one of said post and said spacer which are nearest said second face sheet for having a device fastened thereto.

5,542,778

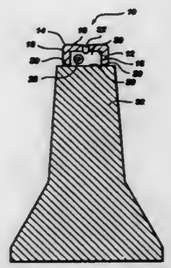
C-CHANNEL DEVICE FOR MEDIAN BARRIERS AND METHOD FOR PROTECTING ELECTRICAL WIRES ALONG MEDIAN BARRIERS

Richard Mallon, Reno, Nev., assignor to Carsonite International Corporation, Early Branch, S.C.

Filed Jan. 9, 1995, Ser. No. 369,928

Int. Cl.[6] E01F *13/00*

U.S. Cl. 404—6 **9 Claims**



6. A combination glarefoil and housing assembly for protecting electrical streetlight wires along a median barrier of a divided roadway and for reducing headlight glare, said assembly comprising:

an elongate composite channel having a C-shaped cross section so as to define an interior channel and an opposing, substantially planer exterior support surface;

means for attaching the channel to a top surface of a median barrier along a divided roadway such that the interior channel faces and extends along the top of the median barrier to thereby define an elongate enclosure for housing electrical streetlight wires therein, such that the exterior support surface comprises a flat top surface of the channel, wherein the interior channel has a height sufficient to enable electrical streetlight cable to reside within the elongate enclosure between the barrier and the support surface of the channel;

a plurality of glarefoil assemblies adapted to reduce headlight glare from oncoming traffic along the divided roadway, each glarefoil assembly being secured upon the support surface of the channel and extending outwardly therefrom without extending into the elongate enclosure to thereby avoid interfering contact between the safety devices and the electrical streetlight cable when the channel member is attached to the median barrier.

8. A method for protecting electrical streetlight wires along a median barrier of a divided roadway and for reducing headlight glare, said method comprising:

(a) attaching elongate composite channel means having a C-shaped cross section including first and second opposing side walls to a top surface of a median barrier along a divided roadway such that the side walls are seated against said top surface of the barrier, wherein said channel means defines an interior channel facing and extending along the top of the median barrier and an opposing, substantially planer top support surface, and positioning the channel means such that the interior channel encloses streetlight wires extending along the top of the median barrier;

(b) securing a plurality of glarefoil assemblies to the top support surface of the channel means without causing said glarefoil assemblies to extend into the elongate enclosure to thereby avoid interfering contact between the safety devices and the electrical streetlight wires when the channel member is attached to the median barrier, said glarefoil assemblies being adapted to reduce headlight glare from oncoming traffic along the divided roadway.

5,542,779

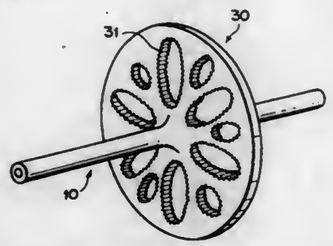
WAVE-DAMPING UNDERWATER TRUSS STRUCTURE

Taisaburo Ono, 351-1 Ninomiya, Ninomiya-machi, Naka-gun, Kanagawa-ken, Japan

Filed Mar. 29, 1994, Ser. No. 219,370

Int. Cl.[6] E02B *3/06*

U.S. Cl. 405—33 **5 Claims**



1. A wave-damping underwater truss structure comprising:

diagonal shaft members;

ball members provided at the vertex of the truss-shaped structure for joining together said diagonal shaft members in the form of a truss; and

one or more brims formed on at least some of said diagonal shaft members, wherein the improvement further comprises a plurality of openings formed in said brim, each of said openings having a rim with a rough or uneven surface which includes a number of angularities.

5,542,780

UNDERGROUND CHAMBER

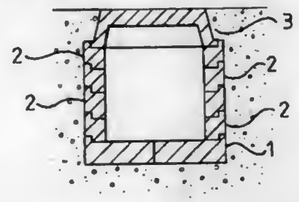
Mokhtar Kourgli, 27 Stoneham Park, Petersfield, Hampshire, GU32 3BT, England

Filed Jan. 10, 1994, Ser. No. 179,534

Claims priority, application United Kingdom, Jan. 13, 1993, 9300530

Int. Cl.[6] E02D *29/12*

U.S. Cl. 405—55 **33 Claims**



1. A method of forming a chamber for underground installation, comprising the steps of:

forming extruded or blow-molded lengths of plastic material;

cutting and forming joints between said lengths to form square or rectangular chamber sections; and

forming a stack of said sections;

wherein the chamber thereby formed exhibits high compressive and tensile strengths, and further is capable of withstanding both static and dynamic loading.

5,542,781

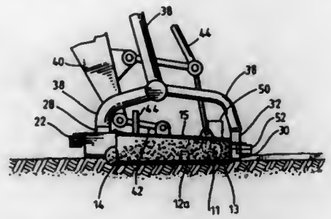
METHOD AND APPARATUS FOR REMOVING CONTAMINATED SURFACE SOIL

Charles R. Yemington; John H. Skaggs, and William R. Bath, all of Houston, Tex., assignors to Sonsub, Inc., Houston, Tex.

Filed Apr. 11, 1994, Ser. No. 226,284

Int. Cl.[6] B09B *1/00*

U.S. Cl. 405—128 **16 Claims**



1. A method for removing contaminated soil in an area, the method comprising the steps of:

surveying the area to develop a map of the contamination level of the soil at predetermined positions;

displaying the map of contaminant levels to an operator of a removal apparatus;

controlling the removal apparatus responsive to commands provided by said operator to remove portions of the contaminated soil based on the displayed map of contaminant levels;

providing the position of the removal apparatus on the displayed map of contaminant levels as the removal apparatus is removing portions of the contaminated soil;

determining the contaminant level of the remaining soil while the removal apparatus is removing the portions of the contaminated soil; and

updating the displayed map of the contaminant level based on the determined contaminant level of the remaining soil.

5,542,782

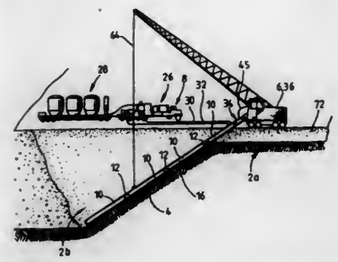
METHOD AND APPARATUS FOR IN SITU INSTALLATION OF UNDERGROUND CONTAINMENT BARRIERS UNDER CONTAMINATED LANDS

Ernest E. Carter, Jr.; Roberto E. Frulla, both of Sugarland; Paul J. Pettit, Spring; Frank L. Sanford, Houston, and R. Kent Saugier, Katy, all of Tex., assignors to Halliburton NUS Environmental Corp., Houston, Tex.

Continuation-in-part of Ser. No. 719,863, Jun. 24, 1991, abandoned, and a continuation-in-part of Ser. No. 720,120, Jun. 24, 1991, abandoned, and a continuation-in-part of Ser. No. 774,015, Oct. 7, 1991, abandoned. This application Feb. 23, 1993, Ser. No. 21,124

Int. Cl.[6] E02D *5/20*

U.S. Cl. 405—129 **25 Claims**



1. An apparatus for constructing a containment barrier for a site disposed in soil, comprising:

means for cutting a continuous elongate trench through the soil under the site;

means for reciprocating said cutting means transversely to the direction of the cut to facilitate cutting of the soil;

means for displacing said cutting means so that the elongate trench is extended transversely to itself across a continuum along and under the site; and

means for placing a barrier material in the transversely extended elongate trench.

5,542,783

TLP AND DETACHABLE DERRICK VESSEL

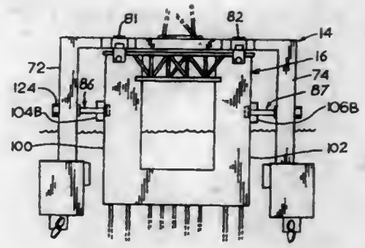
Jack Pollack, Calabasas Hills, Calif., assignor to Imodco, Inc., Calabasas Hills, Calif.

Filed Dec. 14, 1994, Ser. No. 355,609

Int. Cl.[6] E02B *17/00*; **B63B** *35/44*

U.S. Cl. 405—223.1 **8 Claims**

1. An offshore production system comprising a TLP which includes a platform that has first and second opposite sides and that is constructed to float near the sea surface and which has a platform deck, wherein said platform has a plurality of tendon holders constructed to hold tendons that extend down to the sea floor to anchor the platform and a plurality of riser holders constructed to hold risers that extend down to the sea floor to carry fluid, and which also includes a service vessel which has first and second opposite sides and which has a vessel deck and a derrick on said vessel deck wherein said vessel is constructed to move to a position astride said platform wherein said vessel deck and said derrick thereon lie over said platform deck with a portion of said first side of said vessel lying beyond said first side of said platform



and a portion of said second side of said vessel lying beyond said second side of said platform, characterized by:

a plurality of fastener assemblies coupled to said platform and said vessel, said fastener assemblies being constructed to fix said first sides of said platform and said vessel together and to fix said second sides of said platform and said vessel together: said platform and said vessel being sufficiently rigidly fixed at each of their sides against relative vertical movement that said vessel and said platform move vertically together in waves.

5,542,784

METHOD AND MEANS FOR DRIVING PIPES INTO THE GROUND AND CARTRIDGE USED THEREFOR AND FOR SUBSEQUENT PIPE BLASTING

Sture S. Gårdenberg, Järfälla, Sweden, assignor to Atlas Copco Berema Aktiebolag, Nacka, Sweden

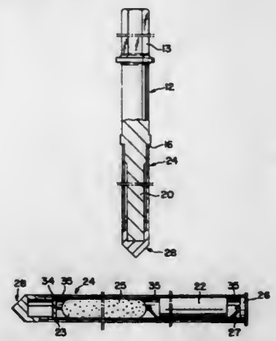
PCT No. PCT/SE92/00412, § 371 Date Dec. 10, 1993, § 102(e) Date Dec. 10, 1993, PCT Pub. No. WO92/22727, PCT Pub. Date Dec. 23, 1992

PCT Filed Jun. 12, 1993, Ser. No. 162,121

Claims priority, application Sweden, Jun. 12, 1991, 9101802

Int. Cl.[6] E02D *7/02*

U.S. Cl. 405—232 **15 Claims**



1. A method of driving a tube in the ground with the aid of a driving rod (**20**) whose length corresponds to the intended penetration depth of the tube (**24**), the steps of said method comprising placing the tube (**24**) around the driving rod (**20**), maintaining in impact contact with the forward end of the driving rod (**20**), a generally conical metallic sacrificial tip (**28**), whose base cross section (**30**) contains the outer contour of the tube (**24**) and provided with an anvil surface (**33**) which extends over the major part of the base cross-section (at **30**), driving the driving rod (**20**), the tube (**24**) and the sacrificial tip (**28**) into the ground to the intended penetration depth, and withdrawing the driving rod (**20**) from the sacrificial tip and out of the ground-entrenched tube, characterized by using in said driving operation a non-metallic

plastic tube (24) and a solid sacrificial tip (28) closing one end of the tube (24) with the sacrificial tip (28) so that the anvil surface (33) forms the bottom of the unit (24, 28) formed by the thus united sacrificial tip and tube, manually fitting the tube (24) onto the driving rod (20) into holding engagement (at 17) therewith by fitting the tube around a guide (17) on said driving rod and against an axial stop (16) provided thereon so as to hold the anvil surface (33) of the unit (24, 28) against the front end (21) of the driving rod (20) in an impact position, for the purpose of driving the unit (24, 28) into the ground, manually applying the driving rod (20) with the unit (24, 28) thereon against the point at which driving is to be performed, and hammering the driving rod (20) down to a predetermined penetration depth by a hand held hammer machine.

8. A tube driving device for driving a non-metallic plastic tube into the ground, said tube driving device comprising a driving rod (20) whose length corresponds to the intended depth of penetration of a tube (24), wherein the tube (24) is placed around the driving rod (20), and further comprising a generally conical sacrificial tip (28) which extends from a forward end of the tube (24) and which has a base cross-section (at 30) which includes the outer contour of the tube (24) and is for driving into the ground together with said tube (24), the sacrificial tip (28) forming a metallic anvil means having an impact-receiving anvil surface (33) which extends over the major part of the base cross-section (at 30), characterized in that the driving rod (20) forms the forward end of a machine driven breaker tool (12) which has a rear insert end (13) adapted for insertion into a hand-held percussive machine (36) and for receiving impacts from said machine, and a forward impact delivering end (21), in that the tube to be driven into the ground is held on the solid sacrificial tip (28) to form a unit therewith, wherein the anvil surface (33) forms the bottom of the unit (24, 28), and in that prior to driving the tube into the ground, the unit (24, 28) is adapted to be fitted manually onto the driving rod (20), said driving rod (20) being provided forwardly of the insert end (13) with guide means (17) and an axial stop (16) for tube (24) which function to retain the unit (24, 28), wherein the tube (24) is adapted to engage (at 17) the driving rod (20) so as to hold the anvil surface (33) against the impact delivering end (21) of the driving rod (20), and wherein the driving rod (20) with the unit (24, 28) thereon is adapted to be manually applied against the point where driving is to be performed so that the driving rod can be hammered down to a predetermined depth by said percussive machine (36).

5,542,785

REBAR CAGE WHEEL SPACER CENTRALIZER SYSTEM FOR DRILLED SHAFTS

George T. Cloud, Lithia Springs, Ga., assignor to Lowtech Corporation, Inc., Lawrenceville, Ga.

Filed Sep. 28, 1993, Ser. No. 127,802
Int. Cl.[6] E02D *5/30*
U.S. Cl. 405—239 **1 Claim**

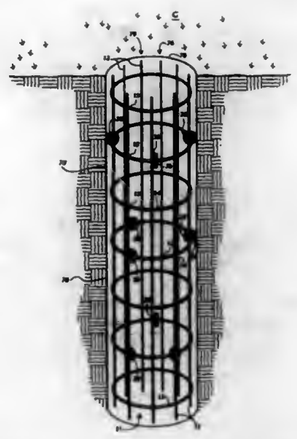
1. A method of installing an elongated reinforcing cage for a concrete pier in an excavation, with the rebar cage comprising elongated bars arranged substantially parallel to one another and in a cylindrical array, and rebar ties extending laterally about said bars and connected to said bars, said method including the steps of:

aligning the rebar cage with the excavation;

moving the cage telescopically into the excavation;

as the cage is aligned with the excavation, assembling duplicate wheel halves together with recesses in the diametrical webs of the wheel halves forming a central opening that extends about the rebar ties of the cage and with locking means along the webs, and in response to urging the wheel halves together locking the diametrical webs together with the locking means about the ties and between the rods to form wheel spacer assemblies on the rebar ties with each wheel spacer assembly protruding laterally from the cage;

as the cage is moved telescopically intc the excavation, engaging some of the wheels against the surface of the excavation to maintain the cage away from contact with the surface of the excavation; and



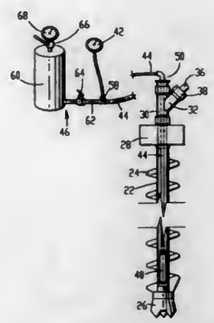
pouring concrete in the excavation about the cage and wheel spacer assemblies.

5,542,786

APPARATUS FOR MONITORING GROUT PRESSURE DURING CONSTRUCTION OF AUGER PRESSURE GROUTED PILING

Kenneth J. Blum, Parkville, Mo., assignor to Berkel & Company Contractors, Inc., Bonner Springs, Kans.

Filed Mar. 27, 1995, Ser. No. 410,866
Int. Cl.[6] E02D *5/36;* **G01F** *23/40*
U.S. Cl. 405—240 **1 Claim**



1. An apparatus for constructing an auger pressure grouted piling, comprising:

a frame supported on the ground adjacent a position at which an auger cast piling is to be formed;

a hollow auger presenting a lower end adapted to penetrate the ground and an upper end opposing the lower end;

a support means for supporting the auger on the frame for relative rotational and vertical movement, the support means including a driving means for rotating and lowering the auger into the ground to form a bore, and for lifting the auger relative to the frame once the bore is complete;

a grout supply means for supplying grout to the upper end of the auger during lifting of the auger, the grout flowing through the auger and from the lower end into the bore;

a pressure sensing means positioned entirely within the auger adjacent the lower end for sensing the pressure exerted by the grout in the lower end of the auger, said pressure sensing means comprising a compressible fluid-filled pressure sensing bulb;

a pressure indicating means proximal to said frame for indicating the pressure sensed by the sensing means;

a pressure transmitting means extending between the sensing means and the pressure indicating means for transmitting the pressure sensed by the sensing means to the indicator means, said pressure transmitting means including a high pressure fluid transmission line reinforced against expansion, the line extending from the upper end of and through the length of said auger and being in fluid communication with said bulb and said pressure indicating means for transmitting fluid pressure between the bulb and the indicating means,

said fluid transmission line including a first line section connected to the sensing bulb, a second line section connected to the pressure indicating means, and a swivel coupling positioned between the first and second line sections for permitting relative rotation therebetween so that the first line section and sensing bulb can rotate together with the hollow auger,

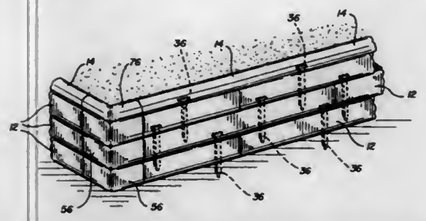
said high pressure fluid transmission line being capable of withstanding significantly higher pressures than said sensing bulb such that the pressure indicated by said indicating means is the ambient pressure of the grout adjacent the lower end of said auger.

5,542,787

EXTRUDED LANDSCAPE TIMBER MODULES

Alexander Charlanow, 175 Davenport Rd., Big Flats, N.Y. 14814

Filed Apr. 20, 1995, Ser. No. 425,918
Int. Cl.[6] E02D *29/00;5/00;* **E04G** *7/00*
U.S. Cl. 405—258 **8 Claims**



1. A system for constructing a landscaping structure comprising:

a) a first set of at least two elongated timber modules each having first and second opposing surfaces which lie in first and second substantially parallel planes, respectively, and a first and second longitudinal axis extending centrally along said first and second surfaces, respectively;

b) a second set of at least two elongated timber modules each having first and second opposing surfaces which lie in first and second substantially parallel planes, respectively, and a first and second longitudinal axis extending centrally along said first and second surfaces, respectively, said first and second longitudinal axes of said first set of at least two elongated timber modules extending in intersecting relation to said first and second longitudinal axes of said second set of at least two elongated timber modules;

c) means for snap-fitting said first surface of one of said first and second sets of at least two timber modules to said second surface of another of said first and second sets of at least two timber modules, respectively, whereby said at least two timber modules of each of said first and second sets are vertically stacked upon one another, respectively;

d) at least first and second corner modules adaptively formed to interconnect said first and second sets of at least two elongated timber modules, said first and second corner modules each having first and second linear portions angularly disposed to one another, said first and second linear portions each including a longitudinal axis extending therealong, whereby when said first and second corner modules are connected between said first and second sets of at least two timber modules, said longitudinal axis of said first linear portion is parallel to said first and second longitudinal axes of said first set of at least two elongated timber modules, and said longitudinal axis of said second linear portion is parallel to said first and second longitudinal axes of said second set of at least two elongated timber modules; and

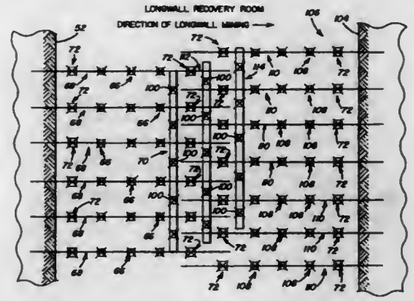
e) means for connecting said first linear portions of said at least two corner modules to said first set of said at least two elongated timber modules, respectively, and for connecting said second linear portions of said at least two corner modules to said second set of said at least two elongated timber modules, respectively.

5,542,788

METHOD AND APPARATUS FOR MONITORING MINE ROOF SUPPORT SYSTEMS

John C. Stankus, Canonsburg, Pa., and Song Guo, Morgantown, W. Va., assignors to Jennmar Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 151,791, Nov. 12, 1993, Pat. No. 5,425,601. This application May 2, 1995, Ser. No. 432,896
Int. Cl.[6] E21D *21/00*
U.S. Cl. 405—288 **4 Claims**



1. Apparatus for measuring the effectiveness of roof support devices installed in an excavated area beneath underground rock strata comprising,

a primary system of roof bolt assemblies installed in the rock strata above the roof in accordance with a preselected roof bolt pattern extending between opposed sidewalls of the excavated area,

a secondary system of roof truss assemblies extending between the opposed sidewalls, each of said roof truss assemblies positioned in spaced parallel relation a preselected distance apart and in a selected position with respect to said roof bolt assemblies,

anchor means extending upwardly at an angle through said roof into the rock strata above the opposed sidewalls for securing said roof truss assemblies to the rock strata to place said roof truss assembly in tension and support the rock strata above the roof,

a plurality of spaced apart longitudinally extending channel members positioned between and parallel to the opposed sidewalls,

a plurality of longitudinally extending channel members anchored to the roof in parallel relation between the opposed sidewalls to supplement the roof support provided by the combination of said primary system of roof bolt assemblies and said secondary system of roof truss assemblies, and

instrumentation means installed in the rock strata surrounding the excavated area and connected to said primary system of roof bolt assemblies and said secondary system of roof truss

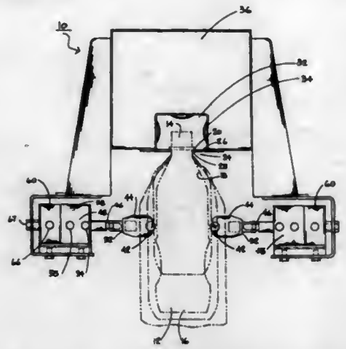
assemblies for measuring the forces exerted by the rock strata on said primary and secondary systems to determine the operability of said systems to support the rock strata.

5,542,789

MULTI POSITION BOTTLE GUIDE ASSEMBLY

Stephen H. Aidlin, 1521 Eastbrook Dr., Sarasota, Fla. 34231; Samuel S. Aidlin, 5079 Village Garden, Sarasota, Fla. 34234, and Larry Kincaid, 2635 Hyde Park St., Sarasota, Fla. 34239

Filed Feb. 22, 1994, Ser. No. 200,020
Int. Cl.[6] B65G 51/02
U.S. Cl. 406—88 2 Claims



1. A multi-position bottle guide assembly for bottles suspended by a neck ring and conveyed by pneumatic power comprising:

a pair of elongated guide rails positioned along the path of travel of a bottle being pneumatically conveyed while supported by a neck ring, the rails adapted to be in proximity to the sides of the bottle on opposite sides of its path of travel to preclude lateral movement;

a plurality of support means attached to at least one of the rails;

a plurality of first rods, each first rod having coupling means at a first end thereof for attaching the first rod to one of the support means and having a first piston at a second end thereof;

a first block for each first rod having a first bore of a diameter essentially that of the diameter of the first piston and extending through the first block with its axis in alignment with the axis of the first rod;

a pair of axially spaced first pneumatic ports extending through the first block in a direction perpendicular to the first bore and radially with respect to the first rod and on opposite sides of the first piston such that one of the first ports is closer to the at least one rail than the other first port, whereby when pressurized air is introduced through the first port which is closer to the at least one rail, the first piston moves the at least one rail outwardly with respect to the path of travel of the bottle to accommodate larger bottles and, when pressurized air is introduced into the first port which is farther from the at least one rail, the first piston moves the at least one rail inwardly with respect to the path of travel of the bottle to accommodate smaller bottles;

a plurality of second rods, each second rod having a fixed first end and a second piston at its second end;

a second block coupled to each first block on the side thereof remote from the at least one rail and having a second bore of a diameter essentially that of the diameter of the second piston and extending through the second block with its axis in alignment with the axis of the second rod; and

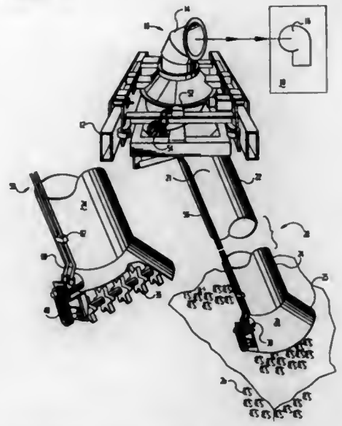
a pair of axially spaced second pneumatic ports extending through each second block, at least one in a direction perpendicular to the second bore and radially with respect to the second piston and on opposite sides of the second piston such that one of the second ports is closer to the at least one rail than the other second port, whereby, when pressurized air is fed in through the second port which is farther from the at least one rail, the second block moves away from the fixed first end of the second rod, thereby moving the at least one rail inwardly with respect to the path of travel of the bottle to accommodate smaller bottles and when pressurized air is introduced into the second port which is closer to the at least one rail, the second block moves toward the fixed first end of the second rod, thereby moving the at least one rail outwardly with respect to the path of travel of the bottle to accommodate larger bottles.

5,542,790

MODULE DISPERSER

Howard E. Stuller; Stephen E. Stuller, and Timothy A. Compton, all of Lubbock, Tex., assignors to Industrial Business Consultants, Inc, Lubbock, Tex.

Filed Feb. 23, 1995, Ser. No. 392,521
Int. Cl.[6] B65G 53/14
U.S. Cl. 406—116 2 Claims



1. The structure of a suction pipe for sucking packed seed cotton into a cotton gin, including,

a) overhead structure having a suction head above

b) a mass of packed seed cotton,

c) the suction pipe having an upper end and a lower end,

d) the upper end of the pipe structurally movably depending from the suction head,

e) the upper end pneumatically connected through the suction head to an inlet of a fan,

f) a source of hydraulic fluid under pressure on the suction head, and

g) a mouth on the lower end of the pipe;

wherein the improvement comprises:

h) a horizontal prong shaft having an axis journalled to the pipe at the mouth,

i) a hydraulic motor attached to the pipe,

j) the motor drivingly connected to the prong shaft,

k) prongs mounted on the prong shaft,

l) the prongs extending below the mouth,

m) a motor shaft on said motor,

n) a drive wheel on the motor shaft,

o) said motor connected to the pipe with the motor shaft parallel to the prong shaft and the motor between the drive wheel and the pipe,

p) the motor drivingly connected to the prong shaft by the drive wheel,

q) a hose reel connected to the suction head,

r) said hose reel is connected to the source,

s) two hydraulic hoses connecting the motor to the hose reel,

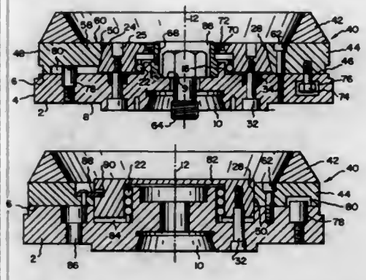
t) the hoses are reeled upon the hose reel and extend to the motor.

5,542,791

FRONT-LOADING ROTARY RING CUTTER

Robert J. Ball, and Martin J. Lakey, both of Devon, England, assignors to The Gleason Works, Rochester, N.Y.

Filed Dec. 22, 1994, Ser. No. 362,696
Int. Cl.[6] B23C 5/06
U.S. Cl. 407—21 13 Claims



1. A cutter ring for mounting on a cutter head and centering disc of a rotary ring cutter, said cutter ring comprising at least one stock removing surface integral with a circular base portion, said base portion having a base surface, an outside surface, and a tapered inside ring surface, said tapered inside ring surface of said cutter ring being positionable against and complementary with a tapered outer edge surface of said centering disc whereby said cutter ring is centered on said cutter head thereby enabling said cutter ring to rotate true about an axis of rotation,

the improvement comprising:

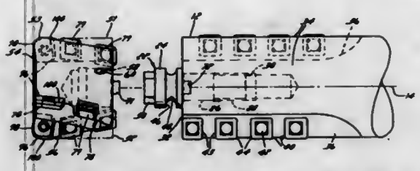
said cutter ring base portion extends radially inward from said at least one stock removing surface to said tapered inside ring surface, the inward extending base portion including a top surface opposite said base surface, said cutter ring including a plurality of spaced holes extending from said top surface through said inwardly extending base portion for passage of attachment means to secure said cutter ring to said cutter head.

5,542,792

CUTTING DEVICE WITH REMOVABLE NOSEPIECE

Douglas A. Krueger, Wauwatosa, and Sebastian Ebenhoch, Sussex, both of Wis., assignors to Waukesha Cutting Tools, Inc., Waukesha, Wis.

Filed Dec. 21, 1993, Ser. No. 171,646
Int. Cl.[6] B23C 5/22
U.S. Cl. 407—35 9 Claims



1. A nosepiece assembly configured to receive a plurality of cutter elements, the nosepiece assembly being designed for attachment to a cutter body having a mounting end that includes an abutment surface and is rotatable about a central longitudinal axis, the nosepiece assembly comprising:

a retainer configured to be attached to the mounting end, the retainer having at least a retainer portion extending from the mounting end, the retainer portion having a force wall disposed generally transverse to the central longitudinal axis;

a nosepiece having a first surface configured for engagement with the abutment surface, a second surface axially opposite the first surface, and an exterior circumferential surface extending between the first and second surfaces, the nosepiece including a cavity disposed through the first surface and configured to receive the retainer portion;

at least one bore extending intermediate the exterior circumferential surface and the cavity, the at least one bore being oriented slightly offset from the force wall when the nosepiece is placed over the retainer portion;

at least one lock pin configured for insertion into the bore to engage the force wall, wherein as the at least one lock pin is inserted farther into its corresponding bore the nosepiece is forced more tightly against the abutment surface;

wherein the retainer includes a bolt having a threaded region which can be threadably engaged with a threaded mounting bore extending into the cutter body through the abutment surface;

wherein the retainer portion is a head of the bolt, the head including an annular groove configured to include the force wall; and

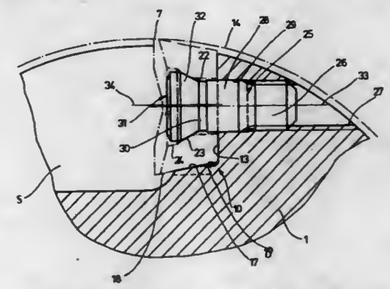
wherein the at least one bore has a threaded region and the at least one lock pin has a corresponding threaded portion, the at least one lock pin further including a tapered region which acts against the force wall to move the nosepiece into tighter engagement with the abutment surface as the lock pin is progressively turned into the at least one bore.

5,542,793

ROTARY CUTTING TOOL WITH AXIALLY PRECISION POSITIONED END CUTTING INSERTS

Siegfried Deiss, Gomaringen, and Willy Schlotterer, Nehren, both of, Germany, assignors to Walter AG, Tübingen, Germany

Filed Jul. 25, 1994, Ser. No. 280,007
Claims priority, application Germany, Aug. 3, 1993, 43 25 999.5
Int. Cl.[6] B23C 5/00
U.S. Cl. 407—35 10 Claims



1. Rotary cutting tool with a plurality of spirally arranged cutting inserts (6) and at least one axially precision positioned end cutting insert (6a) having

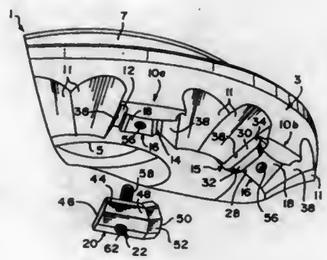
a tool body (1) formed as a body of rotation, and further formed with a plurality of insert reception seats (10) for respective cutting inserts (6, 6a),

at least one of said cutting inserts (6, 6a) being formed with an, in cross section, circular through-bore (22, 23), said reception seats receiving and supporting the at least one cutting insert on the respective seat with respect to radial direction and axial

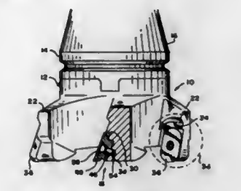
direction, said through-bore defining an end portion or opening edge remote from said seat;
a threaded bore (**27**) formed in said body, intersecting said respective reception seat (**10**);
a clamping screw (**25**) having an, in cross section, circular clamping head (**31**) passing through the bore of the insert and threaded into the threaded bore (**27**) of the body, said clamping head releasably clamping the respective insert against the respective insert reception seat (**10**),
comprising
means for accurately positioning said at least one insert on the respective reception seat (**10**), and supporting said at least one insert, in operation, with respect to forces acting on the at least one cutting insert (**6**, **6***a*) in said directions, said means including
a single precision abutment (**17**) formed on the body at a side of the reception seat (**10**) for positioning and supporting the insert in one of said directions; and
an interengaging fit formed between said screw (**25**) and said threaded bore (**27**) in the body (**1**), respectively, for supporting the insert in other directions than said one direction;
wherein said clamping screw (**25**) is an accurately machined screw having a precisely diametrically dimensioned shank portion (**28**), and said threaded bore (**27**) is formed with a precisely dimensioned reception portion (**29**) in fitting engagement with said precisely diametrically dimensioned shank portion (**28**) of the clamping screw (**25**);
wherein said clamping head (**31**) of the clamping screw has a diameter which is greater than the smallest diameter of the through-bore (**22**, **23**) in the at least one insert (**6**, **6***a*), and has a threaded portion remote from said clamping head fitting into said threaded bore (**27**) in the tool body (**1**); and
wherein the axis (**33**) of the precisely dimensioned portion (**29**) of the threaded bore (**27**) in the tool body (**1**) is offset with respect to the axis (**34**) of the through-bore (**22**, **23**) of the at least one insert (**6**, **6***a*) in the direction of said single precision abutment (**17**) by a small dimension,
whereby, upon tightening of the clamping screw (**25**), said at least one cutting insert (**6**, **6***a*) is supported and positioned by engagement against said single abutment (**17**) with respect to forces acting in said one direction, and, by said clamping screw (**25**), with respect to forces acting in directions other than said one direction, by force engagement of the clamping head (**31**) of the clamping screw against the end portion or opening edge (**23**) of the through-bore (**22**) in the at least one cutting insert (**6**, **6***a*) essentially throughout the entire circumference of said end portion, and the clamping head, respectively, and by axial stress on the clamping screw (**25**).

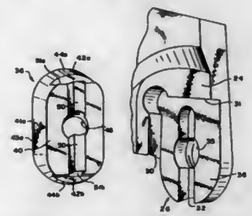
5,542,794
MULTI-HANDED MILLING CUTTER HAVING INDEXABLE WEDGES AND INSERTS
William E. Smith, Wilson; Scott W. Vogel, Fuquay-Varina, and Robert L. Shomaker, Raleigh, all of N.C., assignors to Kennametal Inc., Latrobe, Pa.
Filed Nov. 9, 1994, Ser. No. 336,640
Int. Cl.[6] B23C *5/22*
U.S. Cl. 407—35 **17 Claims**

1. A milling cutter for cutting a workpiece in both right and left handed rotary directions, comprising:
a rotatable cutter body having at least one pair of adjacent insert seats, including a first seat for receiving an insert in a right-handed cutting orientation and a second seat for receiving an insert in a left-handed cutting orientation;
an indexable wedge for clamping an insert in either said first or second seat of said pair of insert seats, said wedge having a first end for wedgingly engaging an insert in either said first or second seat of said pair, and a second end for wedgingly engaging an opposing surface of said other seat, and
means for detachably mounting said wedge to said cutter body in a clamping position with respect to an insert received in either said first or second seat of said pair.



5,542,795
PLUNGE AND FACE MILLING CUTTER WITH UNIVERSAL INSERT SEATS
Robert N. Mitchell, Raleigh, N.C., assignor to Kennametal Inc., Latrobe, Pa.
Filed Jan. 30, 1995, Ser. No. 380,480
Int. Cl.[6] B23C *5/08*
U.S. Cl. 407—35 **18 Claims**

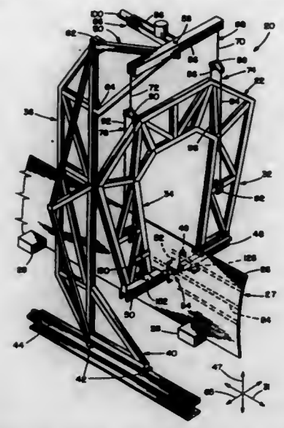




1. A milling cutter for cutting a workpiece with cutting inserts having different shapes, comprising:
a plurality of cutting inserts, each of which includes front and back faces, at least two opposing side walls that define opposing, substantially linear cutting edges at an intersection between said side walls and said front face, and at least two opposing transverse cutting edges joining said side cutting edges;
a cutter body having a plurality of recessed insert seats for securably receiving said inserts, wherein each seat includes a bottom wall for engaging said back face of one of said inserts, a side shoulder for securably engaging one of said side walls of said inserts, and a top shoulder spaced apart from said transverse cutting edges of said inserts for allowing said insert seat to receive inserts having transverse edges of different shapes, and
support means for preventing relative movement between said cutting inserts and said seats along said side and transverse insert cutting edges and said side and top shoulders of said seat, said support means including first and second elongated projecting elements integrally formed on either the back face of the cutting insert or the bottom wall of the insert seat, and first and second recesses formed on the other of said back face or bottom wall for receiving said first and second projecting elements for preventing relative movement along said transverse and side cutting edge of said inserts, respectively, and

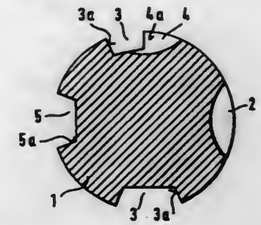
means for securing said inserts in said seats.

5,542,796
ROBOTIC DRILL CLAMP
James M. Bratten, Smyrna, and Stephen F. Howard, Mt. Juliet, both of Tenn., assignors to Avco Corporation
Division of Ser. No. 107,208, Aug. 16, 1993, Pat. No. 5,404,641. This application Dec. 5, 1994, Ser. No. 350,419
Int. Cl.[6] B23B *39/08;39/14;* **B23Q** *1/08*
U.S. Cl. 408—13 **29 Claims**



1. Apparatus for drilling transversely through contiguous plate members comprising:
a horseshoe shaped yoke positioned in a laterally extending upright plane straddling first and second plate members to be drilled, the first and second plate members being held against one another in a jig means in a desired mutual orientation and positioned in a longitudinally extending substantially upright plane, said yoke having first and second depending legs and a transverse bight integral with said legs, said first leg being adjacent the first plate member and said second leg being adjacent the second plate member;
a frame selectively movable along the length of said jig means;
flexible support means for supporting said yoke means on said frame for substantially universal movement relative to the first and second plate members;
hole finding means on said first leg selectively engageable with a pilot hole provided in the first plate member;
first clamp means on said first leg selectively engageable with the first plate member;
second clamp means on said second leg selectively engageable with the second plate member;
drill means on said second leg axially aligned with said hole finding means;
sensor means on said second leg engageable with the second plate member for determining the orientation of said drill means relative to the second plate member;
attitude drive means on said frame responsive to said sensor means for adjusting the position of said yoke relative to the first and second plate members;
said first and second clamp means being operable to simultaneously press together said first and second plate members upon engagement of the pilot hole by said hole finding means and in response to a determination by said sensor that the axis of said drill means is perpendicular to the second plate member; and
said drill means operable upon engagement of said first clamp means with the first plate member and of said second clamp means with the second plate member for drilling through the first and second plate members fastener receiving bores which are axially aligned with the pilot bore;
whereby the formation of burrs at the interface between the first and second plate members is avoided.

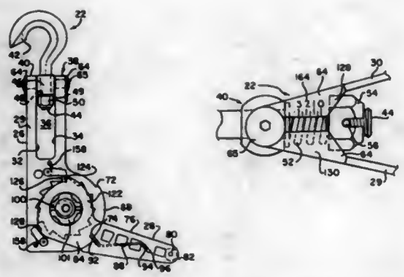
5,542,797
TOOL BIT AND CHUCK FOR MANUALLY OPERATED TOOLS
Josef Obermeier, Peiting, Germany, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein
Filed Dec. 8, 1994, Ser. No. 351,911
Claims priority, application Germany, Dec. 9, 1993, 43 41 971 .2
Int. Cl.[6] B23B *51/02;31/22*
U.S. Cl. 408—226 **10 Claims**



1. Tool bit for insertion into a tool bit chuck in a manually operated tool used for at least one of chiseling and percussion drilling, said tool bit comprising an axially extending chucking shank (**1**, **6**, **11**) with an axially extending outside surface and a first end for insertion into the tool bit chuck, said shank (**1**, **6**, **11**) having at least two axially extending rotary entrainment grooves (**3**, **8**, **13**) in the outside surface thereof and open at the first end thereof, each of said rotary entrainment grooves (**3**, **8**, **13**) having at least one axially extending entrainment-side flank (**3***a*, **8***a*, **13***a*) located diametrically opposite the other, at least one first locking groove (**2**, **7**, **12**) located in the outside surface between said rotary entrainment grooves (**3**, **8**, **13**), wherein the improvement comprises that at least one of said rotary entrainment grooves (**3**, **8**, **13**) extends axially through at least an axially extending part of a second locking groove (**4**, **9**, **14**) with said second locking groove forming an end face extending transversely of the axial direction and facing away from the first end of said chucking shank (**1**, **6**, **11**), and at least one additional axially extending groove (**5**, **10**, **15**) formed in the outside surface and being open at the first end of said chucking shank (**1**, **6**, **11**) and locaied opposite said first locking groove (**2**, **7**, **12**) and between said rotary entrainment grooves (**3**, **8**, **13**).

5,542,798
RESTRAINING AND TENSIONING APPARATUS FOR A CARGO TIE-DOWN BELT
Blaine K. Rawdon, Rancho Palos Verdes, and Myles A. Rohrlick, Oceanside, both of Calif., assignors to McDonnell Douglas Corporation, Huntington Beach, Calif.
Filed Oct. 13, 1994, Ser. No. 322,701
Int. Cl.[6] B25B *25/00*
U.S. Cl. 410—100 **6 Claims**

1. Apparatus for adjusting the length of a belt between a fixed member and cargo, comprising:
a chassis;
hook means rotatably and swingably mounted to the chassis for releasable interconnection externally of the said apparatus, said hook means being secured to the chassis via means enabling rotation of the hook about two generally orthogonal axes; said enabling means including a rotor body having a



transverse opening, the hook means including a shaft that extends through the rotor body opening, a coil spring received on a part of the shaft extending from the rotor body, and a nut threaded on the end of the shaft;

spindle means rotatably mounted to said chassis for receiving the belt wound thereon;

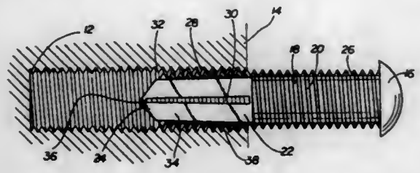
ratchet gear means unitarily secured to said spindle means for rotation therewith, said gear means having a set of teeth on a peripheral surface and including two spaced apart ratchet gears each with said teeth thereon;

tensioning lever means rotatably mounted onto said spindle means for providing selective rotative motion in first and second directions;

tensioning pawl means mounted to the tensioning lever means having driving tab means engageable with the ratchet teeth for rotating the ratchet gears when the tensioning lever means is rotated in a first direction; and

locking pawl means having a surface continuously contacting the ratchet teeth for preventing ratchet gear means rotation in a second direction opposite to said first direction, said locking pawl means including a first pair of spaced apart locking pawls mounted on a first shaft, a second pair of spaced apart locking pawls mounted on a second shaft, and individual spring means for engaging each locking pawl and urging the said locking pawls into contact with the ratchet gears.

5,542,799
MACHINE SCREW
James E. Culpen, Justin, Tex., assignor to Agora Enterprises, L.L.P., Dallas, Tex.
Filed Dec. 2, 1994, Ser. No. 348,582
Int. Cl.[6] F16B *39/02*
U.S. Cl. 411—271 **4 Claims**



1. A machine screw for attachment to a threaded hole, said machine screw comprising:

a head adapted to being rotated;

a cylindrical shaft connected to the head and having a proximal portion and a distal portion, the proximal shaft portion being adjacent to the head;

the distal shaft portion including an elongated slot therein;

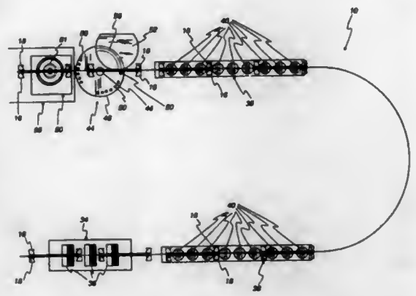
at least a portion of the proximal shaft portion adjacent to the distal shaft portion including threads on the surface thereof;

the distal shaft portion including a plurality of thread segments on the surface thereof; and

a compressible bridge integral with a distal end of the distal shaft portion thereby defining a distal end of the slot and

the shaft portion of the machine screw has an undeformed first position wherein the outside diameter of the threads define a cylinder having parallel sides and a deformed second position whereby the compressible bridge portion is deformed by compression and the outside diameter of the threads of the distal shaft portion has a reduced diameter adapted to be smaller than an inside diameter of the threaded hole for longitudinal sliding insertion therein.

5,542,800
METHOD AND SYSTEM FOR BINDING A PACK OF SIGNATURES
Don E. Detterman, Willard, and Robert W. Erwin, Bucyrus, both of Ohio, assignors to R. R. Donnelley & Sons Company, Chicago, Ill.
Filed Apr. 3, 1995, Ser. No. 415,294
Int. Cl.[6] B42C *9/00*
U.S. Cl. 412—8 **14 Claims**



1. A method of binding a pack of signatures, at least some of said signatures including a plurality of interleaved sheets and each of said signatures having a closed side, said method comprising the steps of:

clamping the pack of signatures with said closed sides of said signatures lowermost and generally coplanar with one another along a spine of the pack;

sawing the spine of the pack to expose the interleaved sheets of the signatures;

slashing the spine of the pack with a multiplicity of cuts lateral to the length of the spine of the pack;

applying a preparatory adhesive to the sawed spine of the pack to create an initial bond of the interleaved sheets of the signatures;

curing said preparatory adhesive until said preparatory adhesive is substantially free of surface moisture;

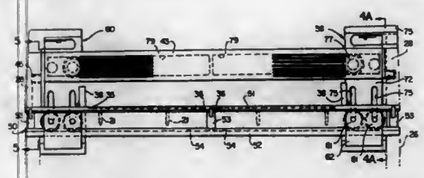
after curing said preparatory adhesive, forming a multiplicity of closely spaced, wide open notches in the spine of the pack;

after forming said notches, applying a spine coat of adhesive to the spine of the pack;

after forming said notches, applying a side coat of adhesive to lower marginal portions of opposing faces of the pack to close edges of said notches; and

curing said spine coat of adhesive and said side coat of adhesive until said spine coat of adhesive and said side coat of adhesive are substantially set.

5,542,801
MANUAL BINDING APPARATUS FOR FLEXIBLE BOOKBINDING STRIPS
Mariam Vahabi-Nejad, Chicago, and Daniel A. Rice, Buffalo Grove, both of Ill., assignors to VeloBind, Inc., Northbrook, Ill.
Filed Jun. 27, 1994, Ser. No. 266,952
Int. Cl.[6] B42D *9/00*
U.S. Cl. 412—43 **25 Claims**



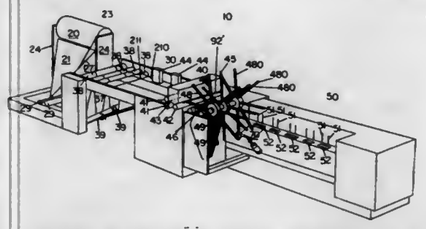
1. A binding machine for binding a male strip having flexible studs and a female strip having grooves formed therein to a stack of sheets with said studs passing through said sheets and said female member and the excess length of said studs extending beyond said female member being retained in said grooves, said machine comprising:

a frame having a recess shaped to receive said female strip, a substantially linear track extending in a direction substantially parallel to said recess, and a platen for supporting said sheets;

a compression member on said frame for compressing said male strip and said female strip toward one another with said sheets positioned between said strips; and

at least one carriage assembly mounted to said frame and said compression member for movement along said linear track in a direction parallel to said recess, said carriage assembly engaging said compression member for applying a compressive force thereto and said carriage assembly having stud-bending means shaped and positioned to engage said excess length of said studs and bend said excess length into said grooves when said carriage assembly is moved relative to said compression member and said frame.

5,542,802
WICKET STACKING GUIDE
Daniel W. Woodman, Jr., Beverly, Mass.; Vance St. Hilaire, Kingston Springs, Tenn., and Guilherme A. Silva, Gloucester, Mass., assignors to Battenfeld Gloucester Engineering Co., Inc., Gloucester, Mass.
Filed Oct. 20, 1994, Ser. No. 326,543
Int. Cl.[6] B65G *61/00*
U.S. Cl. 414—27 **10 Claims**



1. A movable bag stacking and abutment apparatus for use in a bag making machine equipped with a sealing and severing station, a rotary transfer device having arms for carrying bags and a wicket conveyer stacking station comprising:

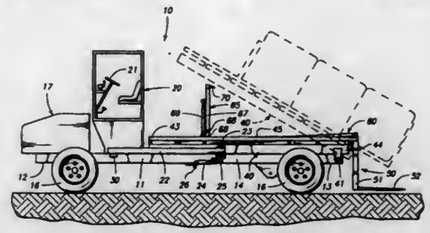
a) a bag supporting surface mounted adjacent to said wicket conveyer stacking station, said bag supporting surface vertically movable between a raised bag receiving position and a lowered bag stack indexing position,

b) means for moving said bag supporting surface between said raised receiving position and said lowered bag stack indexing position,

c) a downstream elongated stack former projecting from the end of said bag supporting surface away from said sealing and severing station, and

d) stacking surface control means associated with said bag maker and said wicket conveyer stacking station for moving said bag supporting surface from said bag receiving position to said bag stack indexing position and back again in accordance with the bag making machine and the wicket conveyer stacking station.

5,542,803
BALE PICKER AND STACKER
Leland W. Driggs, 2547 Burma Rd., Eureka, Mont. 59917
Filed May 5, 1995, Ser. No. 435,831
Int. Cl.[6] B65G *67/00*
U.S. Cl. 414—111 **28 Claims**



1. A bale picker and stacker, comprising:

a wheel supported primary frame including a front end and a rearward end;

a lifting bed including a top bale receiving surface mounted to the primary frame for movement between a substantially horizontal position and a substantially vertical position;

a lift drive mounted between the lifting bed and primary frame for selectively moving the lifting bed between the substantially horizontal and vertical positions;

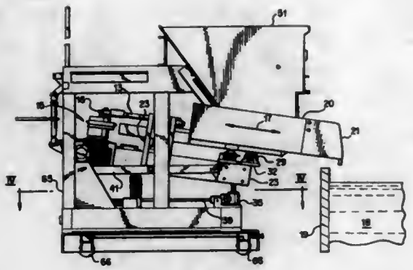
a bale pick-up movably mounted to the lifting bed, the bale pick-up having a leg section and an outwardly projecting platform section mounted to the lifting bed and moveable on the lifting bed between (a) a first position wherein the platform section is substantially parallel to and offset from the top bale receiving surface of the lifting bed and disposed toward the rear end of the primary frame, (b) a second position wherein the platform section is substantially perpendicular to the top bale receiving surface of the lifting bed, and (c) a third position wherein the platform section is substantially perpendicular to the top bale receiving surface of the lifting bed and disposed toward the front end of the primary frame from the second position; and

a bale pick-up driver mounted between the bale pick-up and lifting bed and operable to move the bale pick-up between the first and third positions.

5,542,804
MODULAR SOLIDS CHARGER
Frank P. Merkle, Hanover; Larry L. Horn, Galena; Barry R. James, Apple River, and William L. Merkle, Elizabeth, all of Ill., assignors to Merkle Engineers, Inc., Galena, Ill.
Filed Aug. 25, 1994, Ser. No. 295,946
Int. Cl.[6] C03B *3/00*
U.S. Cl. 414—165 **16 Claims**

1. A modular solids charger for feeding granular solid material to a reactor comprising:

a chassis;



a charger plate support frame vertically and angularly adjustable with respect to the horizontal secured to said chassis;

a removable reciprocable charger plate reciprocably secured to said charger plate support frame;

a removable solids supply chute disposed above said reciprocable charger plate for feeding solids to said reciprocable charger plate; and

means for adjusting the width of said charger plate support frame whereby said charger plate support frame is adaptable to accommodate a range of reciprocable charger plate widths.

5,542,805

DEVICE FOR MOVING PLATE-SHAPED ARTICLES

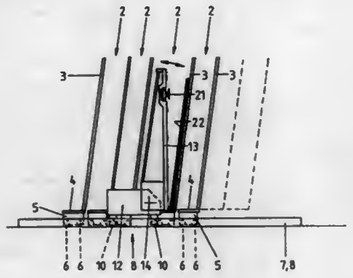
Peter Lisec, Bahnhofstrasse 34, A-3363 Amstetten-Hausmening, Austria

Filed Feb. 1, 1995, Ser. No. 382,187

Claims priority, application Austria, Mar. 28, 1994, 663/94

Int. Cl.[6] B65G *1/18*

U.S. Cl. 414—280 **5 Claims**



1. In combination with an upright frame (3), a device for moving plate-shaped articles (22) to and from a position in which said articles rest on their edges approximately vertically in said frame (3), said device comprising a tilting table (8) which is located next to said frame (3), said tilting table (8) including a support wall (13), said support wall being vertically swingable about a horizontal axis (14), an elongated horizontal beam (19) on said support wall (13), said beam (19) being horizontally movable lengthwise of itself on and relative to said support wall (13) to and from a position in which said beam extends across said frame (3), vacuum suction boxes (21) on said beam (19), and means to move said vacuum suction boxes (21) perpendicularly to the plane of said support wall (13), whereby the device can add or remove a single said plate-shaped article to or from the frame by pivoting the plate-shaped article toward or away from adjacent plate-shaped articles for addition to or removal from said adjacent plate-shaped articles.

5,542,806

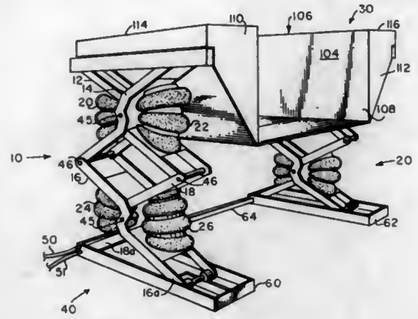
FLUID ACTUATED LIFTING AND TILTING DEVICE

Lei Kang, Fairfield, Ohio, assignor to The Champion Company, Springfield, Ohio

Filed Mar. 31, 1995, Ser. No. 414,197

Int. Cl.[6] B66F *3/35*

U.S. Cl. 414—422 **7 Claims**



1. A pneumatically powered device having a first side and a second side for use in lifting and tilting objects comprising in combination:

a first lifting means on the first side of the device, the first lifting means having an upper portion, a lower portion, and an intermediate extent therebetween;

a second lifting means on the second side of the device, the second lifting means having an upper portion, a lower portion, and an intermediate extent therebetween;

a series of bellows-type lifting motors operatively secured to each of the lifting means, said series of bellows-type lifting motors functioning to selectively raise and lower the first and second lifting means;

a container having a forward portion and a rearward portion, the container being mounted on the first and second lifting means;

a bellows-type pivoting motor operatively secured to the container and to the upper portion of the first lifting means, the bellows-type pivoting motor functioning to pivot the container relative to the first lifting means;

wherein said first lifting means on the first side of the device comprises an upper set of scissor mechanisms on the first side of the device, said upper set of scissor mechanisms on the first side of the device having an upper portion and a lower portion and an intermediate extent therebetween;

a lower set of scissor mechanisms on the first side of the device, said lower set of scissor mechanisms having an upper portion and a lower portion and an intermediate extent therebetween, said lower portion of said upper set of scissor mechanisms being pivotally secured to said upper portion of said lower set of scissor mechanisms;

wherein said second lifting means comprises an upper set of scissor mechanisms on the second side of the device, said upper set of scissor mechanisms having an upper portion and a lower portion and an intermediate extent therebetween; and

a lower set of scissor mechanisms on the second side of the device, said lower set of scissor mechanisms having an upper portion and a lower portion and an intermediate extent therebetween, said lower portion of said upper set of scissor mechanisms being pivotally secured to said upper portion of said lower set of scissor mechanisms;

a fluid circuit providing fluid communication between all of the bellows type lifting motors, the fluid circuit functioning such that when pressurized fluid is delivered therein the bellows type lifting motors expand and raise the container;

a second fluid circuit in communication with the bellows type pivoting motors, the second fluid circuit functioning such that when pressurized fluid is delivered therein the container is pivoted relative to the scissor mechanisms;

wherein each of said scissor mechanisms comprises in combination a first linkage having a first leg and a second leg and a substantially perpendicular intermediate portion therebetween; and

a second linkage having a first leg and a second leg and a substantially perpendicular intermediate portion therebetween, wherein said substantially perpendicular intermediate portion of said first linkage is pivotally connected to said substantially perpendicular intermediate portion of said second linkage.

5,542,807

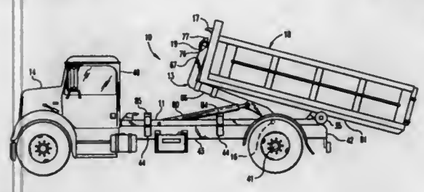
VEHICLE MOUNTED, VARIABLE LENGTH HOOK HOIST

Kent Kruzick, Winamac, Ind., assignor to Galbreath Incorporated, Winamac, Ind.

Filed May 3, 1994, Ser. No. 237,459

Int. Cl.[6] B60P *1/64*

U.S. Cl. 414—491 **16 Claims**



1. A truck and hook hoist combination for picking up and manipulating a container having a grasping ring, comprising:

a vehicle having a frame with a rear,

a hook hoist having an overall length and including a hoist frame with a rear, a roller frame having a rear and being rigidly connected to and at the rear of said hoist frame, and a jib assembly having inboard and outboard ends and being pivotally connected about an axis to said hoist frame, said roller frame including at least one roller rotatably mounted to the rear of said roller frame and wherein said roller frame is configured for variable slidable longitudinal extension relative to the rear of said hoist frame prior to said roller frame being rigidly connected to said hoist frame to enable variation of the overall length of said hook hoist assembled from one hoist frame and one roller frame, and wherein said jib assembly includes a hook at its outboard end, said hook defining a base with a front and a rear, a post extending up from the front of said base and a main arcuate hook body extending up from the rear of said base, wherein the base, post and hook body together define a saddle sized to engage with and receive a container grasping ring therein and to transmit both forward and rearward movement of said hook to a container substantially entirely through contact in the saddle between said hook and the grasping ring;

first power means for pivoting said jib assembly about its axis; and,

at least two hoist connecting bracket assemblies each including a lower bracket fixed to said vehicle frame and a mating upper bracket fixed to said hoist frame, and wherein said mating upper and lower brackets are connected together and each upper bracket includes a container seat configured to support a portion of a container thereon.

5,542,808

APPARATUS ON A VEHICLE TO PICK UP A LOAD

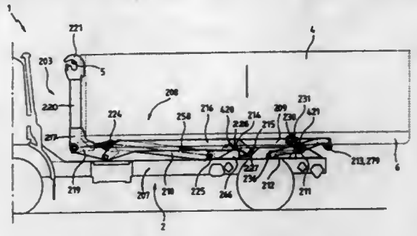
Alain Chiron, St Romain Le Puy, and Albert Heritier, Veauche, both of, France, assignors to Marrel, France

Filed Apr. 20, 1994, Ser. No. 230,321

Claims priority, application France, Apr. 20, 1993, 93 04633

Int. Cl.[6] B60P *1/64*

U.S. Cl. 414—498 **23 Claims**



1. Apparatus for enabling a vehicle having a chassis to pick up or put down on a ground surface a load having a front face, a lower face, a lifting eye located on said front face and two longitudinal rails, each said rail being situated respectively on a right-hand and a left-hand side of said lower face of said load, said apparatus comprising:

a frame fixed on said chassis of said vehicle;

a tilting manipulating structure having a first end and a second end mounted with respect to said frame, said tilting manipulating structure comprising:

a hook located at said first end of said tilting manipulating structure for communicating with said lifting eye of said load;

a first articulating member connected to said tilting manipulating structure and disposed proximate said chassis of said vehicle and defining a first tilting axis for said hook; and

a second articulating member connected to said tilting manipulating structure and defining a second tilting axis for said hook, said tilting manipulating structure defining a pick up or set down position in which said hook is behind said vehicle at a height at which said hook can engage with, or be released from, said lifting eye of said load positioned on said ground surface, and a transport position in which said tilting manipulating structure has at said first end a substantially vertical portion; and

a tilting jack having a first end connected to said tilting manipulating structure and a second end connected to said vehicle for tilting said tilting manipulating structure between said pick up or set down position and a position for starting or finishing tilting, said tilting jack having a first transverse jack axis on said tilting manipulating structure and a second transverse jack axis fixedly mounted on said vehicle, said tilting manipulating structure contacting said frame to define a position for changing from said first articulating member to said second articulating member such that said hook pivots about said first tilting axis between said position for starting or finishing tilting and said position for changing, and about said second tilting axis between said position for changing and said pick up or set down position;

wherein said tilting jack is articulated on said tilting manipulating structure about said first transverse jack axis which, in said position for starting or finishing tilting, is located in front of and above said second transverse jack axis about which said tilting jack is articulated and when said tilting manipulating structure is located in said pick up or set down position said first transverse jack axis is located above and behind said second transverse jack axis.

5,542,809

SELF-DRIVEN LIFTUP CONVEYOR, VEHICULAR LIFTUP CONVEYOR, TRUCK FREIGET LOADER/UNLOADER, AND TRUCK FREIGHT LOADING SYSTEM

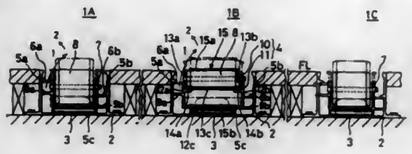
Katsuo Kita, Settsu; Yasushi Nagamune, Taki-gun, and Yasuyuki Nakadegawa, Tokyo, all of, Japan, assignors to Ashimori Kogyo Kabushiki Kaisha, Osaka, and Nippon Light Metal Company, Limited, Tokyo, both of, Japan

Filed Feb. 9, 1995, Ser. No. 338,537

Claims priority, application Japan, Apr. 7, 1993, 5-106131; Dec. 14, 1993, 5-342943

Int. Cl.[6] B60P *1/36;1/52*

U.S. Cl. 414—528 10 Claims



1. A self-driven liftup conveyor comprising:

a channel having a bottom plate and first and second opposing side plates;

a main roller tray having a plurality of rollers rotatably disposed therein;

a sub-roller tray accommodated in said channel, said sub-roller tray having a bottom plate and first and second opposing side plates, said sub-roller tray further comprising shelves which run along an inner surface of each of said sub-roller tray side plates, said shelves being at a same elevation for retaining said main roller tray on said sub-roller tray, said main roller tray being removable from said sub-roller tray;

an endless belt trained over said rollers, said endless belt having a return side which runs between said sub-roller tray and said main roller tray;

drive means for reciprocating said endless belt; and

lift means interposed between said sub-roller tray and said channel for moving said main roller tray and said sub roller tray together with said endless belt trained over said rollers vertically with respect to a freight stacking face.

5,542,810

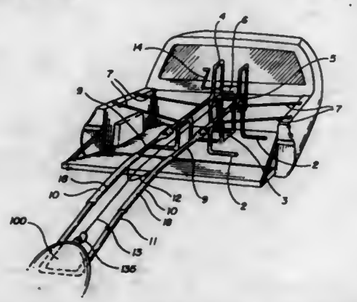
EASILY REMOVABLE DUAL PURPOSE APPARATUS FOR SAFELY TRANSPORTING PERSONAL WATERCRAFT IN TRUNK BED

H. Cameron Florus, 4563 Irquois Ave., Lakewood, Calif. 90713

Continuation of Ser. No. 251,775, May 31, 1994, abandoned. This application Apr. 11, 1995, Ser. No. 420,322

Int. Cl.[6] B65G *67/02*

U.S. Cl. 414—538 4 Claims



1. An apparatus for transporting personal watercraft in truck beds or across hard surfaces comprising:

(a) a base means for supporting said personal watercraft, said base means comprising a plurality of main supporting members having vertical portions and longitudinally extending horizontal portions located at a top of said vertical portions, at least one transversely extending horizontal rotationally stabilizing member fixed to a bottom of said main supporting members, and two longitudinally extending personal watercraft supporting members attached to said longitudinally extending horizontal portions of said main supporting members;

(b) a plurality of vertical members attached to a top of said vertical portions of said main supporting members at one end of said longitudinally extending personal watercraft supporting member, at least two of which are separated by a distance less than a width of said personal watercraft, have a length greater than a draft of said personal watercraft, and which from a barrier for horizontal translation of said personal watercraft;

(c) means for attaching casters at the bottom of said vertical portions of said main supporting members;

(d) a winch attached to said main supporting members;

(e) a set of rigid rail means for slidably loading and unloading said personal watercraft, said rigid rail means attached to said longitudinally extending personal watercraft supporting members; and

(f) means for attaching flexible lateral, longitudinal, and vertical stabilizers to said longitudinally extending personal watercraft supporting members.

5,542,811

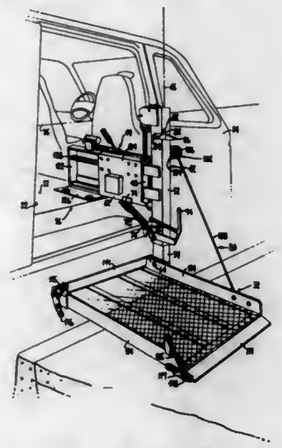
WHEELCHAIR LIFT WITH LATERALLY DISPLACEABLE SUPPORT POST FOR VERTICLE AND ROTATIONAL DISPLACEMENT

Roger Vartanian, P.O. Box 636, Broadheadsville, Pa. 18322

Filed Jan. 4, 1995, Ser. No. 368,416

Int. Cl.[6] B60P *1/44*

U.S. Cl. 414—541 18 Claims



1. A wheelchair lift for mounting in a doorway of a vehicle, comprising:

a platform for supporting a wheelchair;

a vertical drive mechanism attached to the platform and having powered means for raising and lowering the wheelchair relative to the doorway;

a base member attachable to the vehicle inside the doorway;

a carriage movably carried on the base member, the vertical drive mechanism being coupled to the carriage on a vertical pivot axis;

a linear drive means coupled between the carriage and the base member, the linear drive means being operable to move the vertical pivot axis through the doorway, whereupon the platform can be raised, lowered and rotated on the vertical pivot axis, for access to the platform over a range of rotational positions of the platform;

an additional linear drive means, coupled between the carriage and one of the vertical drive means and the platform, for controllable hinging Of the platform on said vertical pivot axis; and,

a manually disengageable spring latch coupled between the additional linear drive means and the platform, the spring latch when disengaged permitting manual pivoting of the platform on the vertical pivot axis by decoupling of the additional linear drive means.

5,542,812

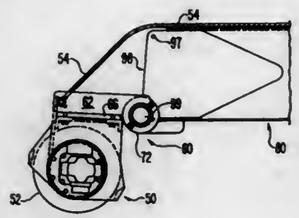
CRANE HAVING SWING AWAY HOIST MOUNT

John L. Grove, Greencastle, and Gerald E. Lute, Mercersburg, both of Pa., assignors to JLG Industries, Inc., McConnellsburg, Pa.

Division of Ser. No. 915,644, Jul. 21, 1992, Pat. No. 5,402,898. This application Oct. 21, 1994, Ser. No. 326,920

Int. Cl.[6] B66C *23/06*

U.S. Cl. 414—543 4 Claims



1. A crane comprising:

a boom having a longitudinal axis;

a hoist having a rotatable cable drum for reeling out cable to and retrieving cable from said boom;

a mounting assembly fixedly attached to said hoist and rotatably mounted to an end of said boom;

said mounting assembly and said hoist being rotatably movable from a first, working position in which said hoist is positioned adjacent said end of said boom so that said drum can rotate to pay out or retrieve cable, to a second, stored position in which said hoist is rotated away from said end of said boom and said boom axis, thereby to provide relatively unobstructed access to the interior of the boom for maintenance and repair, and

means for releasably retaining said hoist and said mounting assembly in said first working position.

5,542,813

APPARATUS FOR MANUFACTURING ARMATURES

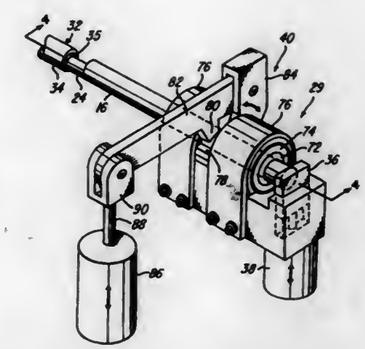
John M. Beakes, Fairborn, and E. Wayne Zicht, Huber Heights, both of Ohio, assignors to Globe Products Inc., Huber Heights, Ohio

Division of Ser. No. 267,285, Jun. 28, 1994, Pat. No. 5,500,993, which is a continuation of Ser. No. 234,136, Apr. 28, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 473,090

Int. Cl.[6] B25J *11/00*

U.S. Cl. 414—780 3 Claims

1. Apparatus for rotationally orienting an armature shaft having a cam body extending from one end thereof before said shaft is inserted into a shaft-receiving transfer block of an armature lamination and shaft assembly machine so that said cam body has a



desired angular orientation relative to the axis of rotation of said armature shaft, said apparatus comprising:

a powered ram movable along a predetermined axis, said ram having a nosepiece provided with a socket having a size and shape to slidably receive the cam body and located relative to said predetermined axis in the same rotational orientation as said desired orientation of said cam body relative to said axis of rotation of said armature shaft;

a movable abutment in confronting alignment with said ram;

an armature shaft support that supports said armature shaft so that its axis of rotation is aligned with said predetermined axis;

said ram being actuatable so that said nosepiece presses on said one end of said armature shaft and the opposite end thereof is extended into engagement with said abutment; and

a shaft rotation mechanism that rotates said shaft while it is pressed between said nosepiece and said abutment in order to align said cam body with said socket while maintaining pressure on the ends of said armature shaft.

5,542,814

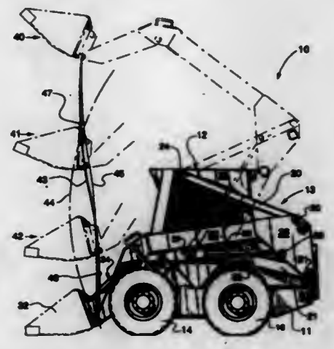
METHOD OF LIFTING A SKID STEER LOADER BUCKET

Dale A. Ashcroft, New Holland, and Robert R. Todd, Leola, both of Pa., assignors to New Holland North America, Inc., New Holland, Pa.

Filed Nov. 22, 1994, Ser. No. 344,783

Int. Cl.[6] B66C *23/00*

U.S. Cl. 414—786 7 Claims



1. In a skid steer loader comprising

a main frame,

ground support wheels extending from said main frame,

a cab mounted on said main frame, said cab including side walls extending upwardly from said main frame to define an operators control area therebetween,

a boom structure comprising a pair of arms and a linkage assembly for operatively coupling said pair of arms to load bearing means on said main frame,

each of said arms including a front portion having a front end extending beyond said cab,

material handling means supported on said front portions, and

power means operatively associated with said boom structure for raising and lowering in concert each of said pair of arms through a generally vertical path for moving said front end of said boom arms and said material handling means along a lift path,

the method of moving said material handling means along its lift path including the steps of

initially moving said material handling means from a known position in a substantially vertical direction to an intermediate position in said lift path that is rearward of said known position,

subsequently moving said material handling means from said intermediate position along a slightly forwardly inclined direction to a second intermediate position that is forward of said known position, and

finally moving said material handling means from said second intermediate position in a substantially vertical direction to complete its lift path at a final position that is rearward of said intermediate position, whereby the lift path of said material handling means from said known position to its final position is generally S-shaped in configuration.

5,542,815

METHOD OF USING A COUPLING SYSTEM FOR MOTORIZED VEHICLES

James E. Roeling, 1924 Thomas St., Beloit, Wis. 53511

Division of Ser. No. 79,460, Jun. 18, 1993, Pat. No. 5,387,070.
This application Jan. 9, 1995, Ser. No. 370,308
Int. Cl.[6] B60P *7/06;1/28*
U.S. Cl. 414—786 **18 Claims**



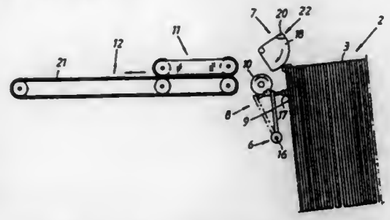
12. A method for stopping and immobilizing a moving snowmobile carrying an eyelet affixed to a forward ski section of a snowmobile ski with a coupling device firmly anchored upon a trailer bed of a snowmobile trailer, and coupling device comprising a forward ski section receiving housing equipped with a ski stop defining a coupling zone for positionally stopping the eyelet at a coupling position, a releasable coupling means for coupling with the eyelet at the coupling position and a releasing means for maintaining the coupling means in an uncoupling position and mechanically releasing the coupling means upon an impacting of the ski against the ski stop, said method comprising driving the eyelet into the coupling zone and the impacting of the ski against the ski stop so as to cause the releasing means to release the releasable coupling means and thereby couple the coupling means with the eyelet at the coupling position.

5,542,816

METHOD APPARATUS FOR REORIENTING BLANKS WHILE FEEDING INDIVIDUAL BLANKS FROM A STACK IN AN ERECTING MACHINE

Kay Wallin, Halmstad, Sweden, assignor to Sprinter System AB, Sweden

PCT No. PCT/SE93/00889, § 371 Date Apr. 26, 1995, § 102(e) Date Apr. 26, 1995, PCT Pub. No. WO94/10074, PCT Pub. Date May 11, 1994
PCT Filed Oct. 27, 1993, Ser. No. 424,305
Claims priority, application Sweden, Oct. 27, 1992, 9203156
Int. Cl.[6] B65G *59/08*
U.S. Cl. 414—798.9 **6 Claims**



1. Method of conveying packaging blanks from a stack of blanks (3) placed in at least one magazine (2), said magazine being provided with an exit end having an upper portion, said blanks including a foremost blank and being picked one at a time from the magazine (2) and conveyed further to a form chamber (4) in an erecting machine (1), where said blanks are formed into packaging containers with the aid of a plunger (5), whereby the foremost blank (3) of said stack of blanks (3) on edge and one against the other in the magazine (2) is gripped at its upper portion (9) with the aid of vacuum by at least one suction cup device (8), and after being swung outwards is brought into engagement with a bolster roller (10) having a rotational speed, which is situated in association with said upper portion (7) of the exit end of the magazine (2) and immediately in front of an advancing roller set (11) having an advancing speed, the blank (3) in this position being pressed against the bolster roller (10) by at least one segment device (18), which is caused to swing down onto the blank (3) to cause said blank to swing outward, said segment device swinging with the same rotational speed as the bolster roller (10) with the blank pressed between them, characterized in that, during the outward swing of the upper portion (9) of the blank (3), the suction cup device (8) brings it into direct contact against said bolster roller (10), situated immediately in front of the magazine (2) and mainly in a level with and in direct association with the advancing roller set (11) and in which position the segment device (18) from above presses the blank (3) against the bolster roller (10), such that the blank (3) is advanced forward and flexed over the bolster roller (10) from the substantially vertical attitude of said blank in the magazine (2) to a substantially horizontal attitude during the advance into the roller set (11) in further advancing the blank (3) to the form chamber (4) in the erecting machine (1); said segment device (18) having a rear portion (20), which resiliently presses against the blank (3) such as to permit an increase in the speed of the blank (3) when it is advanced by the advancing roller set (11), simultaneously as said portion (20) moves resiliently to release the blank (3).

5,542,817

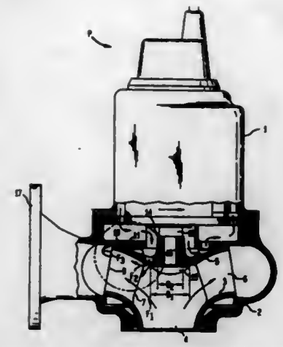
IMPELLER FOR A ROTARY PUMP

Bengt-Ake Brandt, Sundbyberg, Sweden, assignor to ITT Flygt AB, Solna, Sweden

Filed May 23, 1994, Ser. No. 247,796
Int. Cl.[6] F04D *1/00*
U.S. Cl. 415—58.2 **3 Claims**

1. An impeller kit, for a rotary pump, comprising:

a vaned impeller; wherein



said impeller has (a) a cover disc, and (b) a hub having a drive shaft-receiving bore formed therein;

said disc has a balancing hole formed therein, for admitting fluid therethrough; and

means for fastening said hub to a drive shaft via said bore; and wherein

said hub fastening means comprises means for positively deflecting said fluid, as passes through said hole, in a given direction; and

said hub fastening means comprises a machine screw;

said hub has a given, greatest diameter; and

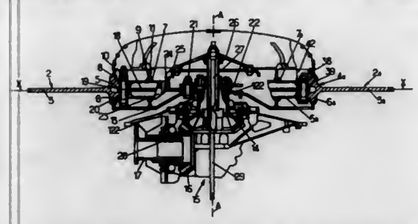
said machine screw has a head with a diameter greater than said given diameter.

5,542,818

DUCTED ANTI-TORQUE ROTOR WITH FLOATING BLADES

Jérome M. Monvaillier, Aix-en-Provence, and Jacques J. Polveda, Aubagne, both of, France, assignors to Eurocopter France, Marignane Cedex, France

Filed Sep. 1, 1994, Ser. No. 298,317
Claims priority, application France, May 4, 1994, 94 05482
Int. Cl.[6] B64C *27/48*
U.S. Cl. 416—134 A **12 Claims**



1. A variable-pitch multi-blade rotor, for a helicopter ducted anti-torque device, comprising:

a rotor shaft, mounted so that it rotates about an axis of the rotor,

a hub, rotationally secured to the rotor shaft,

blades, each of which is connected to the hub by a footing part comprising at least one flexible arm which can be twisted about the longitudinal pitch change axis of the blade, and which is partially housed in a blade root cuff, the cuff exhibiting two coaxial bearing surfaces spaced apart along the axis of the blade via which each arm is mounted so that it swivels about the axis of the blade in two bearings of the hub as well as a pitch lever, which is off-centered with respect to the axis of the blade, and

a spider for collective control of the pitch of the blades which is rotationally driven with the hub and can be given a translational movement along the axis of the rotor by means of a control rod, the spider exhibiting, for each blade, a pitch control tab extending substantially along the axis of the rotor and articulated to the pitch lever of the corresponding blade by means of a wrist pin with ball joint, so that any axial displacement of the spider with respect to the hub gives rise, via the action of the tab on the pitch lever, to a rotation of the blade about its pitch axis,

wherein the ball joint is carried by one of the two elements which are the lever and the tab and is engaged in an oblong opening in a ring carried by the other of the two elements with clearance along each of the major and minor axes of the oblong opening, the clearance along the minor axis substantially parallel to the axis of the rotor being less than the clearance along the major axis perpendicular to the minor axis and transverse to the axis of the blade, and each bearing surface of the cuff is mounted in the corresponding bearing of the hub with a clearance allowing the ball joint to bear against the internal lateral face of the oblong opening on the side of the ends of the minor axis but such that the ball joint cannot come to bear against the internal lateral face of the oblong opening on the side of the ends of the major axis.

5,542,819

CEILING FAN SAFETY TETHER

John C. Bucher, Coral Springs, and Shih Tza Wu, Lighthouse Point, both of Fla., assignors to Chien Luen Industries Company, Ltd., Inc., Ft. Lauderdale, Fla.

Filed Feb. 14, 1995, Ser. No. 388,610
Int. Cl.[6] F04D *29/34*
U.S. Cl. 416—146 R **10 Claims**

1. A ceiling fan safety tether for a ceiling fan having a fan motor housing, a fan blade bracket coupled to the fan motor housing, and a fan blade coupled to said fan blade bracket, the ceiling fan safety tether comprising in combination:

a body portion having a first end and a second end, said body portion being of flexible material and, elongated in shape;

a first anchoring means for anchoring said first end of said body portion to the fan motor housing, said first anchoring means being coupled to said first end of said body portion; and

a second anchoring means for anchoring said second end of said body portion to the fan blade, said second anchoring means being coupled to said second end of said body portion.

said first anchoring means including a spherical bead coupled to said first end of said body portion, and the fan blade bracket including a mounting portion having a groove positioned thereon, said groove being smaller in dimension than said spherical bead, whereby said groove receives said first end of

said body portion and said spherical bead forcibly engages said groove when said mounting portion is coupled to said fan motor housing,

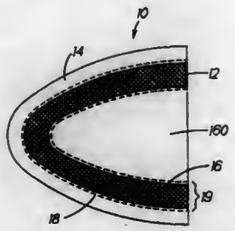
whereby the fan blade is retained in close proximity to fan motor housing in the event a break in the fan blade bracket occurs thereby preventing the fan blade from becoming a flying projectile.

5,542,820

ENGINEERED CERAMIC COMPONENTS FOR THE LEADING EDGE OF A HELICOPTER ROTOR BLADE

Harry E. Eaton, Woodstock; John E. Holowczak, South Windsor, and William C. Reinfelder, Woodbridge, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 23, 1994, Ser. No. 363,498
Int. Cl.[6] F04D *29/18*
U.S. Cl. 416—224 **23 Claims**



1. An engineered ceramic component for a rotor blade, comprising:

a strain isolator member having an outer mold line surface;

a first adhesive bond layer for bonding said strain isolator member in combination with the rotor blade infrastructure;

an aerodynamic ceramic member having an outer mold line surface that defines the aerodynamic configuration of the respective leading edge of the rotor blade and an inner mold line surface that is complimentary to the outer mold line surface of said strain isolator member, said aerodynamic ceramic member being fabricated from an engineered ceramic material having a hardness greater than 1200 kg/mm^2 and an average flexural strength equal to or greater than 40 ksi; and

a second adhesive bond layer for bonding said aerodynamic ceramic member in combination with said strain isolator member;

said strain isolator member being fabricated from a material having a low shear modulus and a large shear strain allowable wherein said strain isolator member is operative to provide maximal strain attenuation between said aerodynamic ceramic member and the rotor blade infrastructure.

5,542,821

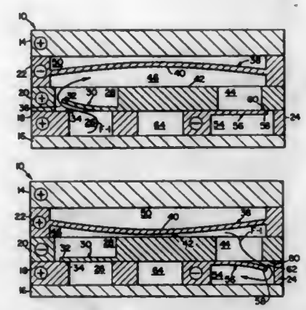
PLATE-TYPE DIAPHRAGM PUMP AND METHOD OF USE

Jeffrey S. Dugan, Asheville, N.C., assignor to BASF Corporation, Mount Olive, N.J.

Filed Jun. 28, 1995, Ser. No. 496,173
Int. Cl.[6] F04B *43/04*
U.S. Cl. 417—53 **40 Claims**

1. A plate-type diaphragm pump, comprising:

an inlet valve-member containing: a first inlet plate structure containing a first valve-seat and an integral first section of an inlet channel; and a second inlet plate structure containing an integral second section of the inlet channel and a flexible inlet element disposed between said sections of said inlet channel, said inlet element having a free end disposed to move off of



and onto the first valve-seat to respectively allow and prevent fluid flow through said inlet channel;

an outlet valve-member containing: a first outlet plate structure containing a second valve-seat and an integral first section of an outlet channel; and a second outlet plate structure containing an integral second section of the outlet channel and a flexible outlet element disposed between said sections of said outlet channel, said outlet element having a free end disposed to move off of and onto the second valve-seat to respectively allow and prevent fluid flow through said outlet channel; and

a diaphragm member having a deflectable portion disposed for movement toward and away from a diaphragm-seat situated in a fluid chamber disposed between the diaphragm member and the inlet and outlet channels;

wherein said first inlet plate structure, said second inlet plate structure, said first outlet plate structure and said second outlet plate structure are each in the form of a plate or a plate section.

5,542,822

LIQUID RING PUMP AND SEPARATOR CONTAINER ASSEMBLY

Manfred Stretz, Erlangen; Günter Holzheimer, Baiersdorf, and Hans-Rene Neubauer, Weisendorf, all of, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed May 17, 1995, Ser. No. 442,732
Claims priority, application Germany, May 19, 1994, 44 17 607.4
Int. Cl.[6] F04C *19/00;* **F04B** *39/16*
U.S. Cl. 417—68 **14 Claims**

1. A pump assembly, comprising:

(a) a separating container made in the shape of an upright U with a horizontal part, a first vertical part, a second vertical part, an outlet opening, and an inlet opening, said inlet opening mounted on said horizontal part;

(b) a drive motor with cooling means;

(c) a liquid ring pump with a center shaft, an intake stub, and an output stub, said outlet stub connected to said inlet opening;

(d) a pump unit comprising said drive motor coupled to said liquid ring pump, said pump unit mounted on said horizontal part of said separating container with said center shaft above at least part of said separating container.

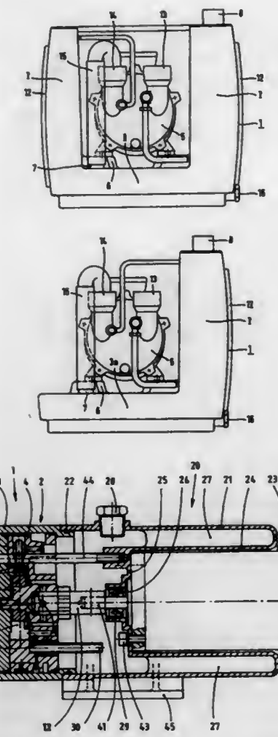
5,542,823

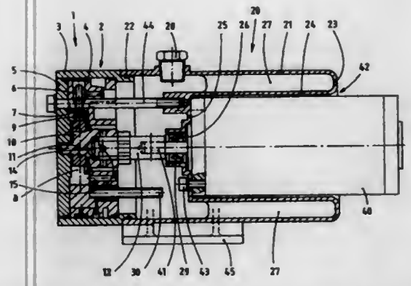
RESERVOIR BODY FOR A RADIAL PLUNGER PUMP

Leendert W. C. de Jong, Oldenzaal; Arjan P. van Heiningen, Haaksbergen, and Willem H. Masseling, Oldenzaal, all of, Netherlands, assignors to Applied Power Inc., Butler, Wis.

Filed Jun. 14, 1995, Ser. No. 490,182
Int. Cl.[6] F04B *27/04*
U.S. Cl. 417—273 **12 Claims**

1. Pump assembly, comprising a radial plunger pump for hydraulic fluid, having a pump housing with radial cylinders





formed therein, in each of which cylinders a plunger is reciprocable by means of an eccentric rotor, an electric motor with a rotary output shaft which is connected for driving purposes to the rotor of the radial plunger pump, and a reservoir body for forming a reservoir for hydraulic fluid, the radial plunger pump, the electric motor and the reservoir body being interconnected to form a unit, wherein the reservoir body and the electric motor are fitted at the same side of the pump housing, the reservoir body is adjacent to the pump housing at one side and at the opposite side has a recess, and the electric motor projects into the recess of the reservoir body.

5,542,824

REFRIGERANT COMPRESSOR HAVING INTERCONNECTED MUFFLER SECTION

Sung-Tae Lee, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

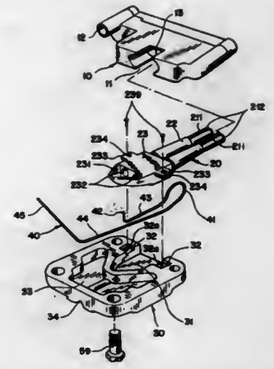
Filed Apr. 28, 1995, Ser. No. 430,226
Claims priority, application Rep. of Korea, Apr. 29, 1994, 94-9295
Int. Cl.[6] F04B *39/00*
U.S. Cl. 417—312 **5 Claims**

1. A compressor comprising:

a body;

compression means having a cylinder block for being disposed in the body of the compressor in order to compress sucked-in refrigerant of low pressure and low temperature to a high pressure and high temperature, and a piston disposed within the cylinder block for reciprocating movement;

an electric motor including a rotor and a stator connected by a crank shaft and a connecting rod to a piston disposed in the cylinder block of the compression means for displacing the piston in linear reciprocating movements;



a valve plate formed with a discharge hole and a suction hole so that the refrigerant compressed to high temperature and high pressure in the cylinder block can be discharged, and so that the low temperature and low pressure refrigerant in the cylinder block can be sucked-in;

a cylinder head fixed to the valve plate with a gasket disposed therebetween, said cylinder head formed at an inner surface thereof with a discharge chamber and a receptible groove;

a base muffler mounted in the receptible groove of the cylinder head to thereby interdict the transfer of the heat radiated from the electric motor; and

a suction muffler for attenuating noises generated by a flow of low pressure and low temperature refrigerant sucked thereinto;

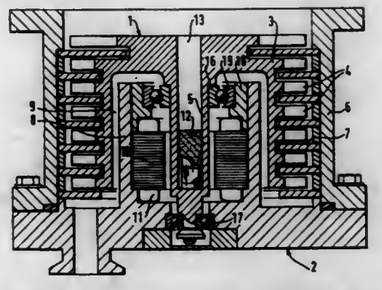
the base muffler including a suction tube insertable into a recess of the suction muffler for connecting the suction muffler to the base muffler, the suction tube including a longitudinal slit formed therein to render the suction tube elastic for easier insertion into said recess, and the suction tube being tapered to limit the distance to which the suction tube can be inserted into the recess.

5,542,825

TURBOMOLECULAR VACUUM PUMP

Denis Perrillat-Amede, Annecy; Didier Pierrejean, Villaz, and Francois Reverdy, Annecy, all of, France, assignors to Alcatel CIT, Paris, France

Filed Aug. 18, 1995, Ser. No. 516,939
Claims priority, application France, Aug. 19, 1994, 94 10147
Int. Cl.[6] F04D *19/04*
U.S. Cl. 417—423.4 **2 Claims**



1. A turbomolecular pump comprising a stator and a rotor and a drive motor having a rotor portion and a stator portion, said rotor comprising a central shaft and a bell-shaped active portion, said stator comprising an outer portion and an inner portion that pen-

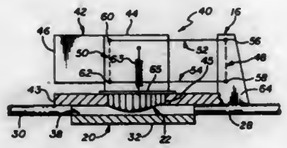
etrates into the cavity of said bell-shaped active portion, and that supports the stator portion of the drive motor, the shaft of said rotor supporting the rotor portion of said drive motor, wherein said central shaft and the bell-shaped active portion of the rotor are made in one piece, without any assembly being necessary, and of a non-magnetic material, said shaft being provided with a central bore which receives the rotor portion of said drive motor, which portion is constituted by a cylindrical permanent magnet.

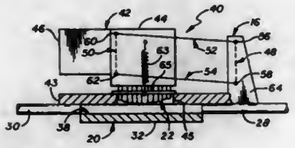
5,542,826

FLUID DELIVERY SYSTEM WITH MOUNTING LINKAGE

Eric A. Warner, Vista, Calif., assignor to IVAC Corporation, San Diego, Calif.

Filed Sep. 12, 1994, Ser. No. 304,729
Int. Cl.[6] F04B *43/12*
U.S. Cl. 417—474 **23 Claims**





1. A system for delivering fluid to a patient, comprising:
a fluid conduit through which fluid is delivered to the patient;
a pumping mechanism having a plurality of movable pumping devices guided by at least one guide device to control the direction of movement of the pumping devices and a drive means rigidly mounted to the guide device and operative on the pumping devices to move the pumping devices in the guide device through a predetermined range of motion;
a rigid base mounted so as to position the fluid conduit between itself and the pumping mechanism; and
a mounting linkage connected to the pumping mechanism to mount the pumping mechanism in a predetermined orientation relative to the rigid base and in relation to the fluid conduit so that the pumping devices move into and out of contact with the fluid conduit to move fluid through the conduit, the linkage configured to allow movement of the pumping mechanism relative to the rigid base, but to constrain such movement to the predetermined orientation.

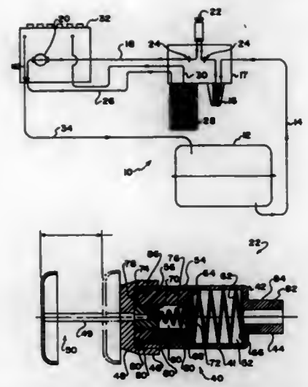
5,542,827

MULTIPLE NESTED PISTONS HAND PRIMING PUMP WITH SPRING BIASING

Bruce B. Dombek, Roselle, and Theodore F. Boone, Tinley Park, both of Ill., assignors to Navistar International Transportation Corp., Chicago, Ill.

Filed Feb. 8, 1995, Ser. No. 385,507
Int. Cl.[6] F04B *19/00*
U.S. Cl. 417—486 **12 Claims**

1. A multiple piston hand priming pump comprising:
a hollow cylindrical housing having an inlet/outlet opening at one end thereof leading to a pumping chamber defined within the housing, the end of said housing opposite said one end being closed;



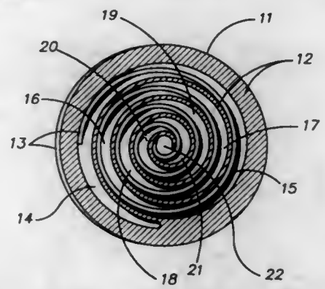
a first piston slidably disposed within said pumping chamber for axial movement therein, said first piston having an axial bore;
a first return spring disposed between said housing and said first piston, aid first return spring biassing said first piston toward said closed end of said housing;
a second piston slidably disposed within said axial bore of said first piston and forming a lost motion connection therewith at a first end of said axial bore closer to said inlet/outlet opening; and
a second return spring disposed between said first piston and said second piston, said second return spring biassing said second piston toward said closed end of said housing, said first spring being stronger than said second spring;
a manual actuator for both pistons, said actuator slidably mounted in and extending axially through said closed end of the housing and having an end thereinside in engagement with said second piston.

5,542,828

LIGHT-GAS-ISOLATION, OIL-FREE, SCROLL VACCUM-PUMP SYSTEM

Charles A. Grenci, 205 Brown Dr., Montrose, Colo. 81401, and R. Dallas Clayton, 501 Alvarado Dr. NE., Albuquerque, N.M. 87108

Division of Ser. No. 341,690, Nov. 17, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 467,586
Int. Cl.[6] F04C *18/04*
U.S. Cl. 418—1 **3 Claims**



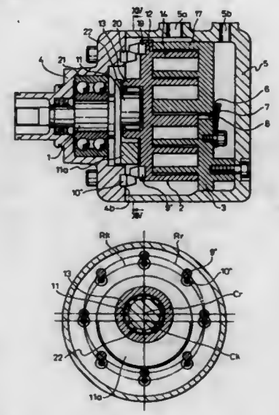
1. A method of isolating ambient, light gases from entering into a vacuum system that is being evacuated to a high vacuum by means of a high-vacuum pumping means, by using an oil-free, scroll vacuum-pump comprising a first, scroll-component having a first involute, spiral-wall section, and a second scroll-component having a second involute, spiral-wall section; at least one of said first and second scroll-components being mounted for relative orbital movement with respect to the other, and said first and second involute, spiral-wall sections being interleaved to a predetermined tolerance of contacting, mating surface-portions thereof, and continuously forming pockets between said contacting, mating surface-portions as said components experience relative orbital motion, said method comprising:
(a) coupling the oil-free, scroll vacuum-pump to the vacuum system as a roughing pump, so that the outlet of the oil-free, scroll vacuum-pump is at ambient;
(b) preventing the back-flow of light gases from ambient to the inlet of the oil-free, scroll vacuum-pump;
(c) said step (b) comprising operatively forming during operation of the oil-free, scroll vacuum-pump as great a number of pockets in the oil-free, scroll vacuum-pump, whereby, the greater the number of pockets formed for each orbital cycle of the oil-free, scroll vacuum-pump, the more effective the oil free, scroll vacuum-pump is in preventing back-flow of light gases from its outlet to its inlet;
said step (c) comprising operating said oil-free, scroll vacuum-pump faster than approximately 1800 orbital cycles per minute.

5,542,829

SCROLL COMPRESSOR

Mitsuo Inagaki; Mikio Matsuda, both of Okazaki; Hiroshi Ogawa, Nukata-gun; Shigeru Hisanaga, Kariya, and Yasuhiro Oki, Okazaki, all of, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan, and Nippon Soken, Inc., Nishio, Japan

Filed Oct. 21, 1994, Ser. No. 327,666
Claims priority, application Japan, Oct. 21, 1993, 5-263678; Sep. 22, 1994, 6-227967
Int. Cl.[6] F01C *1/04*
U.S. Cl. 418—55.3 **19 Claims**



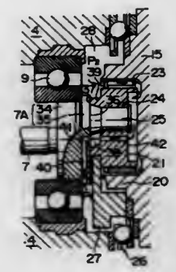
1. A scroll compressor comprising:
a casing;
a drive shaft rotatably supported on the casing;
a fixed scroll member arranged in and fixed to the casing;
a movable scroll member movably arranged in the casing;
said scroll members having scroll portions which are arranged in a side-by-side relationship in a radial direction so that radially spaced chambers are created;
a crank member which is connected to the drive shaft at a location spaced from an axis of the drive shaft;
the movable scroll member being connected rotatably to the crank member, so as to obtain an orbital movement of the movable scroll member about an axis of the drive shaft, so that said radially spaced chambers move radially inwardly, while volumes of the chambers are reduced;
inlet means for introducing a medium to be compressed into a radially outwardmost one of the chambers;
outlet means for discharging the medium as compressed from a radially innermost one of the chambers;
a plurality of circumferentially spaced first pins mounted on the movable scroll member, so that the first pins extend axially away from the scroll portion; and
a plurality of circumferentially spaced second pins mounted on the casing, so that the second pins extend axially toward the movable scroll member;
dimensions of the first and second pins with respect to the radius of the orbital movement of the movable scroll member being such that the first and second pins are capable of being in side by side contact with each other, while the first pins are rotated about the respective second pins during the orbital movement of the movable scroll member, each of the first pins being unrestricted in movement in a direction radially away from an associated one of the second pins;
an arrangement of the first and second pins on the movable scroll member and the casing, respectively, is such that there exists, at every angular position of the movable scroll member, at least one pair of the first and second pins, which generates a force in a direction opposite to a direction of self-rotation of the movable scroll member, thereby preventing the movable scroll member from rotating about its own axis.

5,542,830

BEARING LUBRICATION FOR SCROLL-TYPE COMPRESSOR

Tsuneo Yuzaki, Aichi-ken, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 14, 1995, Ser. No. 502,825
Claims priority, application Japan, Aug. 9, 1994, 6-206082
Int. Cl.[6] F01C *1/04*
U.S. Cl. 418—55.6 **4 Claims**



1. A scroll-type compressor in which a fixed scroll and an orbiting scroll, each having a spiral wrap erected on the inner surface of an end plate, are engaged with each other, a drive bush is rotatably fitted, via a rotating bearing, into a boss provided in a protruding manner at the central portion on the outer surface of said end plate of said orbiting scroll, a rotation shaft having an inner end surface and an outer peripheral surface, and an eccentric pin protruding from the inner end surface of a rotation shaft is fitted into an eccentric hole formed in said drive bush, comprising:
a flange protruding from said drive bush is sealingly slid on the inner end surface of said rotation shaft to form an enclosed space on said drive bush, said rotation shaft is formed with a through hole one end of which is open to the inner end surface of said rotation shaft and the other end of which is open to the outer peripheral surface of said rotation shaft, and a horizontal hole passing through said drive bush in the axial direction and communicating with said enclosed space is formed in said

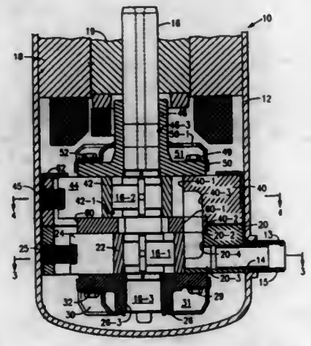
drive bush so that a gas passage is formed so as to pass through said rotating bearing, said horizontal hole in said drive bush, said enclosed space and said other end of said through hole formed in said rotation shaft.

5,542,831

TWIN CYLINDER ROTARY COMPRESSOR

Tommaso F. Scarfone, Bayonne, N.J., assignor to Carrier Corporation, Syracuse, N.Y.

Filed May 4, 1995, Ser. No. 434,630
Int. Cl.[6] F04C *18/356;23/00*
U.S. Cl. 418—60 **7 Claims**



1. A twin cylinder rotary compressor means including:
a first and a second cylinder each having a first and a second end with a precision recess formed in said first end of said first and second cylinders;
a bore in each of said first and second cylinders extending from the corresponding precision recess to the corresponding second end;
bearing means facing said second end of said first and second cylinders;
a precision plate means located in and having a thickness exceeding the combined depths of said precision recesses in said first and second cylinders so as to precisely locate said bores in said first and second cylinders with respect to each other;
a first piston located in and axially coextensive with said bore in said first cylinder;
a second piston located in and axially coextensive with said bore in said second cylinder.

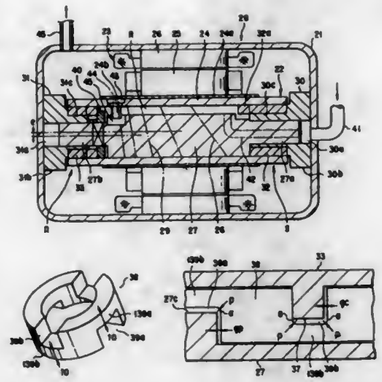
5,542,832

ROTARY FLUID COMPRESSOR HAVING AN OLDHAM MECHANISM

Yoshinori Sone, Yokohama; Takayoshi Fujiwara, Tokyo; Takashi Honjo, Kawasaki; Takuya Hirayama, Fujisawa, and Hiroyasu Yoshizawa, Oomiya, all of, Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Filed Sep. 15, 1994, Ser. No. 305,944
Claims priority, application Japan, Mar. 31, 1994, 6-063762
Int. Cl.[6] F04C *18/00;29/00;* **F16D** *3/04*
U.S. Cl. 418—152 **13 Claims**

1. A fluid compressor comprising:
rotary drive means;
a cylinder coupled to said rotary drive means and having two ends and an inner circumferential surface;
two bearings supporting the ends of said cylinder;
a piston inserted in said cylinder set in rolling contact with the inner circumference of said surface of said cylinder, located



eccentric to said cylinder and having an outer circumferential surface, two ends, and having a helical groove formed in the outer circumferential surface and having a pitch gradually decreasing toward one end of the piston;
a helical blade tightly fitted in said cylinder and loosely fitted in said helical groove such that a portion of each turn of the helical blade protrudes from said helical groove while a diametrically opposite portion of the turn retracts into said helical groove;
a plurality of helical compression chambers defined by said helical blade, the inner circumferential surface of said cylinder and the outer circumferential surface of said piston, each having a cross section gradually decreasing toward said one end of said piston, and designed to compress a gas as the gas is forced toward said end of said piston; and
a transmitting mechanism connecting said cylinder and said piston, for transmitting a rotational force from said cylinder to said piston, thereby to rotate said piston, said transmitting mechanism being an Oldham mechanism which comprises:
a key section integral with said piston;
an Oldham ring made of silicon nitride ceramic and having a first group of key grooves in which said key section is slidably fitted, and a second group of key grooves which extend at right angles to the key grooves of the first group; and
an Oldham ring receiver having a key section slidably fitted in the grooves of the second group and coupled to said Oldham ring, wherein the key grooves of the first and second groups have such depths that the walls of the key grooves oppose in part.

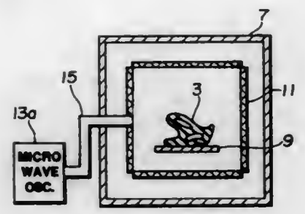
5,542,833

APPARATUS FOR CONTINUOUSLY VULCANIZING RUBBER PRODUCT

Shozo Watanabe, Chiba-ken, and Kibatsu Shinohara, Kanagawa-ken, both of, Japan, assignors to Kinugawa Rubber Industrial Co., Ltd., Chiba-ken, Japan

Continuation of Ser. No. 588,599, Sep. 26, 1990, abandoned.
This application Sep. 14, 1994, Ser. No. 306,006
Claims priority, application Japan, Sep. 27, 1989, 1-251649
Int. Cl.[6] B28B *5/00*
U.S. Cl. 425—71 **3 Claims**

1. An apparatus for continuously vulcanizing a rubber molding comprising:
a) a primary heating bath having a microwave heating apparatus associated therewith, said primary bath being located at a position near to an outlet of an extruder and being constructed so that the rubber molding is introduced into said heating bath from the extruder, the temperature of the rubber molding being elevated in said primary heating bath using said micro-



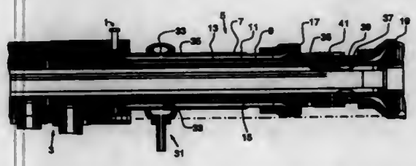
wave heating apparatus at a predetermined gradient of temperature so as to reach a vulcanization temperature;
b) a secondary bath having a plurality of microwave oscillators arranged in line in a lengthwise direction of the secondary bath, said secondary bath being located at a position subsequent to the primary heating bath and being constructed so that the rubber molding after passing through said primary bath passes through said secondary bath and both the inner and outer temperatures of the rubber molding being equally held at a predetermined vulcanization temperature as said rubber molding moves through said secondary bath; and
said rubber molding being transported from the secondary bath to further processing, wherein said secondary bath includes a plurality of temperature sensors located along the lengthwise direction of the secondary bath, said sensors being constructed so as to detect the temperatures on respective portions of the rubber molding introduced in the secondary bath and to output temperature signals indicative thereof,
wherein said apparatus further includes means for controlling the predetermined vulcanization temperature through the microwave oscillators according to the values of the temperature signals outputted by the temperature sensors in an on-and-off mode so that both the inner and outer temperatures of the rubber molding are equally held at the predetermined vulcanization temperature,
which further includes an external heating source associated with the secondary bath, said external heating source being used together with the microwave oscillators to hold said rubber molding temperatures,
and wherein the secondary bath includes an inner side adjacent the rubber molding, and the apparatus further includes a radiator which absorbs microwave energy derived from the microwave oscillators and energy from said external heating source and radiates infra-red rays according to the absorbed energies toward the rubber molding, the radiator being arranged on the inner side of the secondary bath.

5,542,834

SKINNED DOUBLE WALL PIPE AND APPARATUS FOR MAKING SAME

Manfred A. A. Lupke, 10 McLeary Ct., Concord, Canada

Filed Nov. 10, 1994, Ser. No. 337,031
Int. Cl.[6] B29C *47/06;47/22;47/26*
U.S. Cl. 425—133.1 **4 Claims**



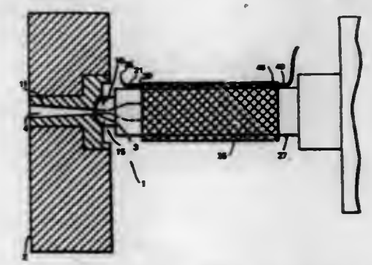
1. An extrusion die for making skinned double wall pipe having an inner and an outer pipe wall,
said die having an elongated tubular body into which flowing plastic is injected,
said tubular body being formed with first and second plastic flow channels, the first flow channel guiding the flowing plastic to a first extrusion orifice in said die for making the outer pipe wall and the second flow channel guiding the flowing plastic to a second extrusion orifice for making the inner pipe wall,
said die also including an injection opening into at least one of said plastic flow channels and through which further plastic is injected to form a skin on the pipe, said injection opening having an adjustable gap to my thickness of the skin and said tubular body including a wall portion which is movable longitudinally of said tubular body to adjust said gap.

5,542,835

LEAK DETECTOR FOR AN INJECTION MOULDING MACHINE

Gerard P. Kennedy, and John P. M. Donnelly, both of Dublin, Ireland, assignors to Teetotum Limited, Dublin, Ireland

PCT No. PCT/IE93/00010, § 371 Date Nov. 7, 1994, § 102(e) Date Nov. 7, 1994, PCT Pub. No. WO93/18384, PCT Pub. Date Sep. 16, 1993
PCT Filed Mar. 5, 1993, Ser. No. 295,806
Claims priority, application Ireland, Mar. 6, 1992, 928731
Int. Cl.[6] B29C *45/17;* **G01M** *3/26;3/04*
U.S. Cl. 425—136 **37 Claims**



1. A plastics injection moulding machine including an injection nozzle and a sprue bush, and having a leak detector for leaks of molten plastics comprising
a conduit for supplying a flow of fluid to a conduit outlet located adjacent to the nozzle and the sprue bush,
a source of fluid in communication with the conduit outlet,
means capable of sensing changes in fluid pressure inside the conduit caused by the presence of leaked material blocking the conduit outlet and of producing an electronic output signal, and
electronic indicating means responsive to the electronic output signal and capable of instantaneously indicating a leak condition.

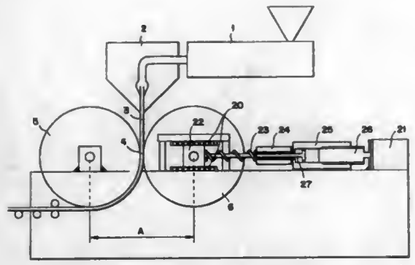
5,542,836

DEVICE FOR EXTRUDING AND SMOOTHING PLASTIC FILMS

Heinz Gross, Ringstrasse 137, D-64380 Rossdorf, and Michael Meier-Kaiser, Pfungstadt, both of, Germany, assignors to Heinz Gross, Rossdorf, Germany

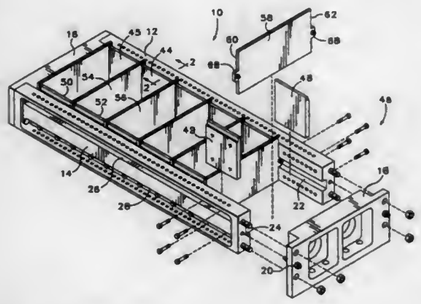
PCT No. PCT/DE93/00540, § 371 Date Feb. 2, 1995, § 102(e) Date Feb. 2, 1995, PCT Pub. No. WO94/00285, PCT Pub. Date Jan. 6, 1994
PCT Filed Jun. 23, 1993, Ser. No. 356,344
Claims priority, application Germany, Jun. 25, 1992, 42 20 839.4
Int. Cl.[6] B29C *59/04*
U.S. Cl. 425—141 **8 Claims**

1. Apparatus for the extrusion and smoothing of plastic film, comprising:



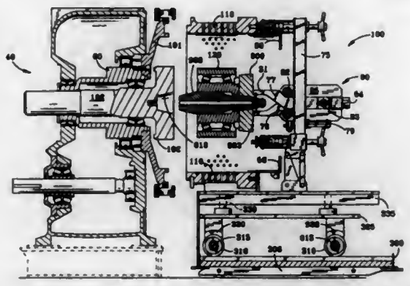
A) an extruder for extruding thermoplastic material,
B) a film die connected to said extruder for receiving the thermoplastic material extruded therefrom and forming that material int a molten web of substantially uniform thickness,
C) a smoothing roll mechanism comprising at least one pair of smoothing rolls forming therebetween an intermediate slit through which the web passes, said smoothing rolls being mounted for rotation about respective parallel axes, at least one of said smoothing rolls being rotatably mounted by anti-friction means and being movable relative to the other of said smoothing rolls in a direction substantially parallel to an imaginary line interconnecting said axes and extending substantially perpendicular to said axes, for varying the size of said slit in a direction perpendicular to said axes, and
D) a biasing mechanism biasing said at least one smoothing roll toward the other smoothing roll and being yieldable sufficiently to enable the size of the slit to be continuously determined by the thickness of the web.

5,542,837
MOLD BOX ASSEMBLY WITH PARTITION PLATES
Llewellyn L. Johnston, Vancouver, Wash., assignor to Columbia Machine, Inc., Vancouver, Wash.
Filed Jan. 13, 1995, Ser. No. 373,936
Int. Cl.[6] B28B *7/24*
U.S. Cl. 425—183 **19 Claims**



1. A mold box comprising:
a first end plate;
a second end plate opposite said first end plate and being substantially parallel therewith;
at least one partition plate extending from one end plate to the other and having first and second opposing ends which substantially abut an inner side of the end plates;
a slot formed on the inner side of said first end plate and extending substantially along the length thereof;
a tab extending from one end of said partition plate, said tab being received in said slot;
locking means extending laterally from said tab, said partition plate being slidable substantially along the entire length of said slot;
a first plate mounted on said first end plate over said slot adjacent one side of said partition plate; and
a second plate mounted on said first end plate over said slot adjacent the other side of said partition plate, said first and second plates constraining movement of said partition plate relative to said slot, wherein said locking means is disposed intermediate said first end plate and said first and second plates.

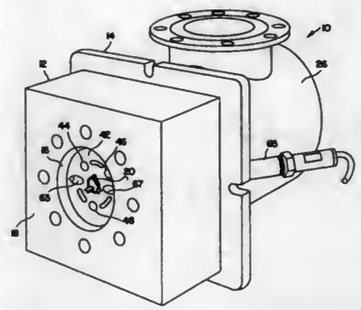
5,542,838
SYSTEM PROVIDING RAPID DIE CHANGE CAPABILITY TO A PELLET MILL
Donald M. Wilhelm, Novoto; Verne A. Hubalek, San Rafael; S. Andrew Smith, San Francisco, and Robert Immergluck, Fairfield, all of Calif., assignors to California Pellet Mill Company, San Francisco, Calif.
Continuation of Ser. No. 884,686, May 18, 1992, abandoned. This application Oct. 19, 1994, Ser. No. 326,150
Int. Cl.[6] B30B *11/20;15/02;* **B66F** *9/18*
U.S. Cl. 425—186 **11 Claims**



1. An apparatus for positively gripping a pellet mill die and rollers for removing and installing said die and rollers in a pellet mill comprising:
a fixture spider having a plurality of rigidly mounted arms projecting outwardly a sufficient distance to provide registration with a plurality of attachment sites on an annular axial circular face of said die;
means, distally disposed on said arms, for positively attaching said fixture spider to said attachment sites on said annular axial circular face of said die; and
means, attached to said fixture spider, for positively gripping rollers.

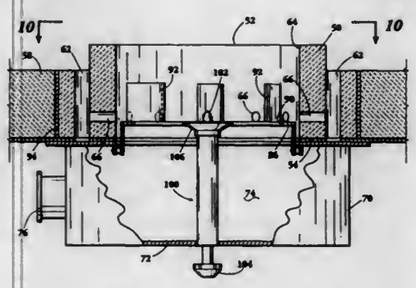
5,542,839
TEMPERATURE CONTROLLED LOW EMISSIONS BURNER
John T. Kelly, Los Gatos, Calif., assignor to Gas Research Institute, Chicago, Ill.
Filed Jan. 31, 1994, Ser. No. 189,426
Int. Cl.[6] F23D *14/84*
U.S. Cl. 431—10 **21 Claims**

1. A burner for use in industrial processes to combust fuel and air in a combustion chamber with optimal control of fuel/air mixing and reduced NO_x emissions, the burner comprising:
a burner body adapted for mounting into the combustion chamber;
primary fuel jet means disposed in the burner body for directing a primary fuel jet from the burner body in a primary fuel path along a longitudinal axis into the combustion chamber for combustion into a flame to produce heat and combustion



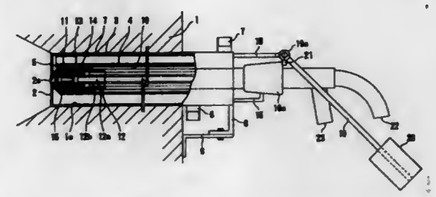
products, the primary fuel jet having a base substantially adjacent the burner body, the primary fuel jet extending therefrom into the combustion chamber;
inner air jet means disposed in the burner body at a first distance from the longitudinal axis for directing one or more first air flows for mixing with the primary fuel jet;
outer air jet means disposed in the burner body at a second distance from the longitudinal axis for directing a plurality of secondary air flows into the combustion chamber at positions disposed substantially circumferentially about the primary fuel jet for entraining a first portion of the combustion products from within the chamber for mixing said entrained combustion products with fuel from the primary fuel jet and air from the inner air jet means, prior to combustion of same, for lowering the flame temperature and reducing NO_x emissions;
secondary fuel jet means disposed in the burner body for directing a secondary fuel flow along a secondary fuel path which is divergent relative to said longitudinal axis; and
additional air jet means disposed in the burner body for directing a third air flow along a merging path which deflects said secondary fuel flow into the base of the primary fuel jet for establishing a local combustion zone to promote ignition of the primary fuel jet into flame.

5,542,840
BURNER FOR COMBUSTING GAS AND/OR LIQUID FUEL WITH LOW NO_x PRODUCTION
David J. Surbey; James L. Smith, both of Tulsa; Richard C. Allen, Catoosa, and Alan D. Witwer, Tulsa, all of Okla., assignors to Zeeco Inc., Tulsa, Okla.
Continuation-in-part of Ser. No. 187,172, Jan. 26, 1994, Pat. No. 5,458,481. This application Oct. 4, 1995, Ser. No. 538,621
Int. Cl.[6] F23M *3/00*
U.S. Cl. 431—116 **17 Claims**



1. A burner for combusting fuel and air comprising:
a burner block having an inlet end and an outlet end and a central opening therethrough between the ends, the burner block outlet end being in communication with an enclosure to be heated by burning fuel, and the burner block having a plurality of spaced apart recirculation gas passageways communicating with said burner block inlet, the recirculation gas passageways being at least generally paralleled to and spaced from said central opening and having an injection passageway communicating each recirculation gas passageway with said central opening, recycled gas being drawn from said burner block outlet end and recycled back into said central opening through said recirculation gas passageways and said injection passageways;
a toroidal flame director ring positioned within said central opening in said block;
means for injecting fuel into said burner block central opening; and
means to move primary combustion air into said burner block central opening at said inlet end, recycled gas being mixed with primary combustion air and fuel in said central opening, the recycled gas serving to cool a flame produced at said burner block outlet end, said toroidal flame director ring serving to cause a Venturi effect to increase the flow of recycled gas.

5,542,841
BURNER APPARATUS FOR USE IN A GLASS FURNACE
Takashi Nakashima, and Masanobu Kodera, both of Shinnanyo, Japan, assignors to KYC, Inc., Shinnanyo, Japan
Filed Oct. 3, 1994, Ser. No. 317,583
Int. Cl.[6] F23D *11/36*
U.S. Cl. 431—160 **8 Claims**



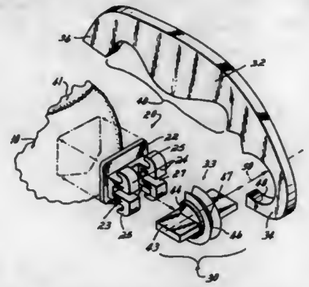
1. A burner apparatus for use in a glass furnace, the burner apparatus comprising:
a water cooled wall located in an opening of a burner tile, said water cooled wall having a front surface facing an interior of the glass furnace and a backside surface;
cooling water supply means for supplying cooling water to said backside surface of said water cooled wall; and
an opening formed in said water cooled wall;
wherein a forward end portion of a fuel injection nozzle provided on a forward end of a burner extends into said opening formed in said water cooled wall so as to be fitted in said opening formed in said water cooled wall;
said burner apparatus further comprising pressing means for pressing a rear-side of said burner forward to fit said forward end portion of said fuel injection nozzle in said opening formed in said water cooled wall.

5,542,842

BRACKET PLACEMENT JIG ASSEMBLY AND METHOD OF PLACING ORTHODONTIC BRACKETS ON TEETH THEREWITH

Craig A. Andreiko, Alta Loma, and Mark A. Payne, Whittier, both of Calif., assignors to Ormco Corporation, Glendora, Calif.

Continuation-in-part of Ser. No. 973,965, Nov. 9, 1992. This application Jun. 5, 1995, Ser. No. 462,657
Int. Cl.[6] A61C *3/00*
U.S. Cl. 433—3 14 Claims



1. A jig for positioning an orthodontic bracket on the crown of a tooth of a patient wherein the crown has a shape that is characteristic of the that of a crown of a specific tooth of the patient, the jig comprising:

a tooth engaging part having a pivot end and a tooth-engaging surface thereon spaced from the pivot end, the surface conforming in shape to at least an extended portion of the shape of the crown, the extended portion including a contour conforming in at least two dimensions to the portion of the shape of the crown of the tooth; and

an axial part having a pivot axis thereon pivotally connected to the pivot end of the tooth engaging part, the pivot axis being oriented in a horizontal mesial-distal direction when the tooth engaging surface is in intimate conforming engagement with the crown of the tooth;

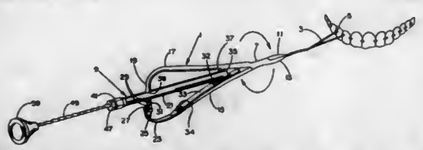
the axial part having a bracket engaging surface thereon spaced from the pivot axis a distance equal to the distance from the pivot end of the tooth engaging part to the bracket when the tooth engaging surface is in intimate mating engagement with the crown of the tooth and the bracket is located at a unique position and orientation on a tooth.

5,542,843

ROTATABLY DRIVEN AUTOCLAVABLE LIGATION INSTRUMENT

Michael T. Price, 3870 Lake Haughey Rd., Maple Plain, Minn. 55359

Filed Mar. 22, 1995, Ser. No. 408,213
Int. Cl.[6] A61C *3/00*; B21F *7/00*
U.S. Cl. 433—4 27 Claims



1. An autoclavable ligation instrument for use in dental or medical applications, comprising:

a. a ligature gripping means having a pair of opposed jaws movable between open and closed positions for clamping the ligature, and a handle member connected to each of said jaws for moving said jaws between said open and closed positions;

b. a releasable locking means connected to said ligature gripping means for releasably locking said opposing jaws in said closed position;

c. drive mechanism connected to said ligature gripping means for imparting rotational movement to at least said jaws of said gripping means upon activation thereof; and

d. said drive mechanism and said gripping means being constructed throughout of an autoclavable material; and

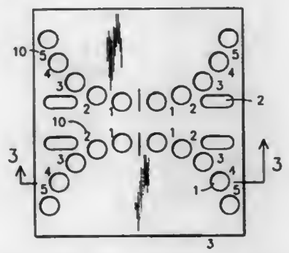
e. said drive mechanism including a tubular member fixedly connected to said ligature gripping means with a readily disassemblable end cap, and a drive shaft extending through said end cap and into said tubular member, said end cap being monolithically formed and constituting a drive follower which engages said drive shaft in driven relation.

5,542,844

DISPOSABLE ORTHODONTIC BRACKET PAD

Gerard A. Perret, Jr., 15205-3 Plantation Oaks Dr., Tampa, Fla. 33647

Filed Oct. 13, 1994, Ser. No. 322,946
Int. Cl.[6] A61C *7/16*
U.S. Cl. 433—9 15 Claims



1. A disposable orthodontic bracket pad comprising:

a top sheet having an upper surface and a lower surface, at least the upper surface of which is liquid impermeable, said top sheet provided with a plurality of openings defining bracket staging areas and provided with an area for mixing orthodontic bonding materials; and

a bottom sheet having an upper surface and a lower surface and having a pressure-sensitive adhesive material disposed only on the upper surface thereof, said bottom sheet being adhered to said top sheet via said pressure sensitive adhesive material such that said adhesive material of said bottom sheet is exposed through said openings in said top sheet to form adhesive areas for staging brackets.

5,542,845

DENTAL SYRINGE SAFETY SHEATH WITH MODIFIED DUCKBILL VALVE

Thomas E. Jenkins, Riverside, Calif., assignor to A.C. Hoffman Engineering, Inc., Riverside, Calif.

Filed Aug. 11, 1994, Ser. No. 289,303
Int. Cl.[6] A61C *1/16*
U.S. Cl. 433—116 12 Claims

1. A dental syringe safety sheath adapted for use with a dental syringe having a nozzle, comprising:

a generally tubular resilient body member having a nozzle engaging portion and a tapered discharge portion, said nozzle engaging portion being configured to substantially fit over and cover the nozzle of a dental syringe having a discharge orifice, said tapered discharge portion adapted to extend downstream from said discharge orifice;

said tapered discharge portion defining a tapered external surface and an interior fluid passageway having an inlet adapted



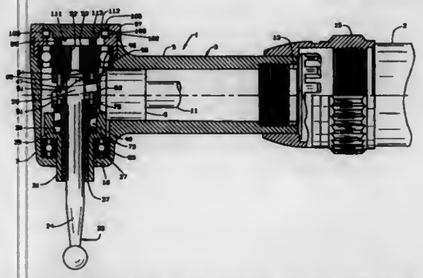
to be adjacent said discharge orifice and an outlet downstream therefrom, said fluid passageway progressively narrowing in cross-section between said inlet and said outlet to form a substantially wedge-shaped cavity terminating in a slit disposed between a pair of opposing sealing lips having lip margins at the ends thereof, said sealing lips having a cross-section between said lip margins which is substantially wider than the corresponding cross-section of said lips at said lip margins to increase the closing bias of said lips.

5,542,846

DENTAL TOOL CHUCK

Michael J. Quinn, Grover, and George E. Richmond, St. Louis, both of Mo., assignors to Young Dental Manufacturing, Co., Inc., Earth City, Mo.

Filed Sep. 30, 1994, Ser. No. 315,963
Int. Cl.[6] A61C *1/14*
U.S. Cl. 433—127 38 Claims



1. A medical/dental device for rotatably driving a dental tool, the device including an arm and a head formed at an end of said arm; said arm delivering a drive member to said head; said head defining a chamber in communication with said arm, a driven member in said head chamber to be driven by said drive member, said head having a tool receiving end and a top end, said dental tool being removably receivable in said driven member and extending out said tool receiving end, a chuck, rotatably fixed to said driven member, which releasably holds said dental tool in said device; said chuck including:

a hollow bur tube received in said head chamber, said bur tube being operatively connected to said driven member, said bur tube being sized to slidably receive a shaft of said dental tool;

at least one tilt plate received internally of said bur tube and having an opening therein through which said dental tool extends, said opening being defined by a surface having at least one edge, said tilt plate being pivotally moveable between a first, unlocked, position in which said edge is spaced slightly from said dental tool so that said tool may be freely moved axially relative to said tilt plate, and a second, locked, position in which said edge contacts said tool to prevent movement of said tool relative to said tilt plate; and

a tilt plate pusher operable to move said tilt plate between its locked and unlocked positions;

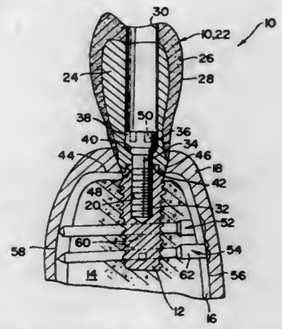
wherein at least one of said tilt plate pusher and said bur tube includes at least one radial opening therein; said tilt plate having a radially extending finger which is at least partly received in said at least one radial opening, said finger defining a pivot point about which said tilt plate axially pivots in said chuck.

5,542,847

METHOD, APPARATUS AND DEVICE FOR DENTAL PROSTHESIS IMPLANTATION

Joseph Y. Margulies, 12 Long Pond Rd., Armonk, N.Y. 10504, assignor to Joseph Y. Margulies, Armonk, and Avraham Kadar, Bedford, both of N.Y.

Filed Sep. 9, 1994, Ser. No. 303,438
Int. Cl.[6] A61C *8/00*
U.S. Cl. 433—173 28 Claims



1. A method for installation in the jaw bone of a patient of a dental prosthesis including an implant, comprising the steps:

(a) providing an opening in the gum at the intended site of implantation;

(b) forming a socket to receive said implant in the jaw bone at the opened site;

(c) inserting said implant in said socket;

(d) positioning at least one support plate on at least one of a buccal side and lingual side of said jaw bone;

(e) passing at least one screw through said at least one support plate, said at least one support plate being retained against said jaw bone by said screw, and at least partially through said jaw bone and implant, said screw holding said implant in said jaw bone socket.

5,542,848

Patent Not Issued For This Number

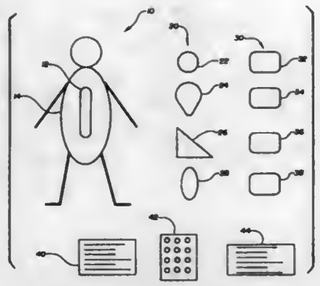
5,542,849

SYSTEM FOR SELF-TYPING OF INDIVIDUAL ESSENCES

Milo R. Douglass, P.O. Box 1210, Kapaa, Hi. 96746

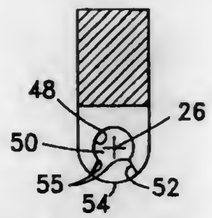
Filed Jan. 18, 1995, Ser. No. 374,465
Int. Cl.[6] G09B *1/00*
U.S. Cl. 434—236 26 Claims

1. A method for self-typing of an inherent characteristic archetype that is an essence of an individual comprising the steps of:



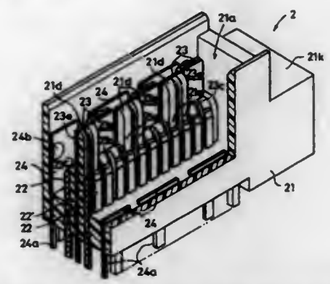
(a) providing the individual with at least four sensory stimuli, each sensory stimuli having a relation with only one of at least four characteristic archetypes, the relation between each sensory stimuli and its characteristic archetype being unknown to the individual;
(b) having the individual observe at least one perception in response to a sensory reaction for each of the at least four sensory stimuli; and
(c) based upon the perceptions of step (b), selecting one of the at least four sensory stimuli as the inherent characteristic archetype that represents the essence of the individual.

5,542,850
PIVOTAL ELECTRICAL CONNECTOR
Robert H. Frantz, Newville, Pa., assignor to The Whitaker Corporation, Wilmington, Del.
Filed Jun. 30, 1994, Ser. No. 268,756
Int. Cl.[6] H01R *39/00*
U.S. Cl. 439—31 **15 Claims**



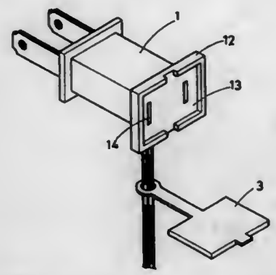
1. A first electrical connector arranged to matingly engage a second electrical connector, said first connector comprising:
an insulating housing including a base portion having a plurality of cavities therein;
a longitudinal axis spaced from said base portion;
a plurality of contacts each having first and second contact faces for mating engagement with a respective contact of said second connector, one said contact in each said cavity extending from said base portion outwardly and arranged so that said contact faces are substantially perpendicular to and intersected by said axis;
a hinge portion having a hinge pivot coaxial with said axis and arranged so that when said first connector is in mated engagement with said second connector, said first connector is pivotable with respect to said second connector about said axis through a specific angle while continuously maintaining said mated engagement,
wherein said hinge portion comprises two opposing flanges extending from said base portion of said housing on either side of said plurality of contacts, each flange including an opening having a bottom surface formed in a side thereof that is facing the other flange so that said two openings and their bottom surfaces are mutually opposed and arranged to receive hinge pins of a mating connector, said two bottom surfaces limiting relative lateral play of said hinge pins with respect to said housing of said plug connector.

5,542,851
ELECTRICAL CONNECTOR WITH IMPROVED GROUNDING
Koji Chikano, Tokyo, Japan, assignor to Kel Corporation, Tokyo, Japan
Filed Sep. 26, 1994, Ser. No. 311,939
Claims priority, application Japan, Sep. 24, 1993, 5-261953
Int. Cl.[6] H01R *13/658*
U.S. Cl. 439—108 **7 Claims**



1. An electrical connector assembly comprising first and second, intermatable connector members including first and second insulating housings, respectively, with first and second mating and lead faces, respectively; first and second rows of terminals retained in each housing and first, second and third rows of ground plate portions retained in each housing with the second row of ground plate portions located in the respective housings between first and third rows of the ground plate portions which are located adjacent opposite sides of the respective housings, all rows in each housing extending in spaced apart, side by side relation with the first row of terminals extending between the first and second rows of ground plate portions and the second row of terminals extending between the second and third rows of ground plate portions, respectively, so that terminals of the first row of terminals and the terminals of the second row of terminals are electrically shielded from each other by ground plate portions of the second row of ground plate portions and so that terminals of the first and second rows are electrically shielded from outside by ground plate portions of the first row of ground plate portions and by ground plate portions of the third row of ground plate portions, respectively,
the ground plate portions of the second row of ground plate portions of the first connector member having respective resilient contact portions, successive ones of which are staggered so that alternate resilient contact portions are laterally offset from each other on respective opposite lateral sides of a center line of the row thereof;
the ground plate portions of the second row of ground plate portions of said second connector member being substantially coplanar and having contact faces;
the first housing being formed with a row of ground plate contact portion receiving cavities opening to the mating face; and,
the second housing being formed with a row of ground plate portion supporting members having respective leading free ends projecting towards the mating face and formed with supporting surface portions and guiding surface portions facing in opposite lateral directions, successive ones of the leading free ends being staggered so that alternate leading free ends are laterally offset from each other on respective opposite lateral sides of a center line of the row of ground plate portions with successive supporting surface portions engaging opposite faces of successive ground plate portions of the second row of ground plate portions of the second connector member so that successive contact surfaces thereof are exposed in opposite lateral directions, so that, during movement of the connectors into mating engagement, the leading free ends of the ground plate portion supporting members enter respective contact portion receiving cavities both supporting the respective contact surface of the ground plate portions of the second row of ground plate portions in electrically connecting engagement with the respective resilient contact portions therein with resilient deflection thereof, and guiding the connector members together accurately so that corresponding terminals of the first and second connector members are interconnected.

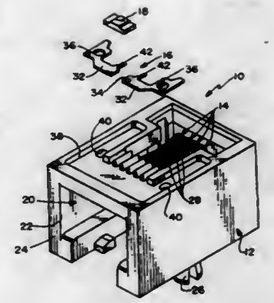
5,542,852
SAFETY PROTECTION AC MAINS POWER SOCKET
Yu-Yuan Hsueh, 3rd Floor, No. 6, Lane 60, Ton Sen Road, Hsinchu, Taiwan
Filed Jul. 29, 1994, Ser. No. 282,472
Int. Cl.[6] H01R *13/44*
U.S. Cl. 439—135 **3 Claims**



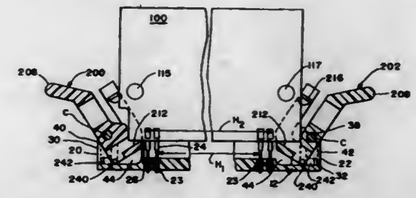
1. An electrical plug retention device for retaining the mated coupling of electrical plug and socket mechanisms having interfacing surfaces comprising:
(a) a rim member adapted to be coupled to said socket mechanism, said rim member having an inner wall portion for substantially bounding said interfacing surface of said socket mechanism, said inner wall portion being adapted to peripherally bound at least a substantial portion of said interfacing surface and project from said interfacing surface in a direction substantially normal thereto, said inner wall portion peripherally defining a recess for retaining said plug mechanism in said mated coupling;
(b) a cover plate removably coupled to said rim member for covering said recess defined by said inner wall portion, said cover plate having a substantially planar contour.

5,542,853
SHUNTED ELECTRICAL CONNECTOR
Christophe Bouchan, Longjumeau, France, assignor to Molex Incorporated, Lisle, Ill.
Filed Sep. 27, 1994, Ser. No. 313,473
Claims priority, application European Pat. Off., Oct. 31, 1993, 93 117 373.6
Int. Cl.[6] H01R *29/00*
U.S. Cl. 439—188 **10 Claims**

1. In a modular jack type electrical connector which includes a dielectric housing means defining a plug-receiving cavity open at one end of the housing means, a plurality of terminals mounted on the housing means with contact portions extending within the cavity, and a shunt bridging at least a pair of the terminals, wherein said shunt comprises a two-part component, and a passive electrical component is coupled in series between the two parts of the shunt.



5,542,854
EDGE CARD CONNECTOR WITH ALIGNMENT MEANS
David C. Bowen, Downers Grove, Ill., assignor to Molex Incorporated, Lisle, Ill.
Filed Jan. 17, 1995, Ser. No. 373,816
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—157 **20 Claims**



1. An edge card connector for providing an electrical connection between a primary circuit member and a printed circuit card, the printed circuit card having a lower edge which extends between two opposing ends of said circuit card and which is insertable into and removable from the connector, said circuit card having a plurality of electrical contact pads disposed on at least one side thereof adjacent the circuit card lower edge, said connector comprising:
an elongated dielectric housing having an elongated card slot disposed therein and extending between two opposing end portions of said housing, the housing card slot having a predetermined longitudinal axis and being adapted to receive said card lower edge therein in an electrically operative relationship, said housing including a pair of opposing sidewalls extending generally parallel to the connector housing axis;
a plurality of contact terminals disposed in said housing, each contact terminal having a portion positioned in said card slot for slidingly engaging said circuit card upon insertion thereof into said housing card slot, said contact terminals contacting said circuit card pads at a contact area which lies within said housing card slot when said circuit card is inserted into said housing card slot;
at least one latch/eject member positioned at one end of said connector housing and pivotally mounted to said connector housing, said latch/eject member being movable between first and second operative positions, whereby in said first operative position said circuit card is positioned within said housing card slot, and whereby in said second operative position at least a portion of said circuit card is ejected from said housing card slot, said latch/eject member further having means for

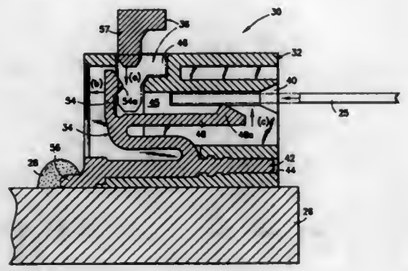
aligning said circuit card lower edge with said housing card slot such that said circuit card pads are properly aligned with said housing contact terminals regardless of the position of said latch/eject member, said latch/eject member further including means for ejecting said circuit card upon movement of said latch/eject member to said second operative position, including an eject arm spaced apart from said circuit card alignment means, the eject arm being adapted to engage said lower edge of said circuit card when said circuit card is inserted into said housing card slot, said circuit card alignment means including an alignment surface formed on said latch/eject member and opposing an end edge of said circuit card, the alignment surface pivoting in an arc when said latch/eject member is moved between said first and second operative positions, said alignment surface abutting said end edge of said circuit card for at least a portion of said arc during insertion of said circuit card into said housing card slot.

5,542,855

ZERO INSERTION FORCE CONNECTOR

Kiyoshi Asai, Tokyo, Japan, assignor to SMK Corporation, Tokyo, Japan, and Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 8, 1994, Ser. No. 272,251
Claims priority, application Japan, Sep. 9, 1993, 5-053904 U
Int. Cl.[6] H01R *13/00*
U.S. Cl. 439—260 **12 Claims**



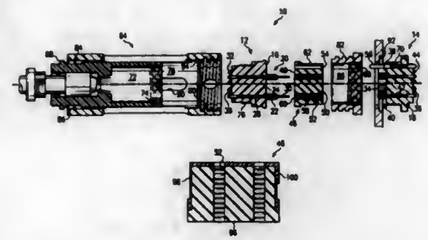
1. A connector, comprising:
a housing;
a first insertion aperture on a side of said housing;
means for receiving an element having at least one contact thereon into said first insertion aperture;
a second insertion aperture on a different side of said housing;
means for receiving a pressure plate into said second insertion aperture;
at least one sigmoid contact member within and attached to said housing;
said at least one contact being aligned with said at least a sigmoid contact member when said element is inserted in said first insertion aperture;
means, responsive to inserting said pressure plate into said second insertion aperture, for urging said at least one sigmoid contact member into mechanical and electrical connection with said at least one contacts;
said at least one sigmoid contact member includes a supporting piece; a resilient connecting piece curvedly attached to said supporting piece at a first connecting area; a tongue piece curvedly attached to said connecting piece at a second connecting area; a contact engagement piece longitudinally attached to said supporting piece at said first connecting area; and a finger piece perpendicularly attached to said tongue piece at said second connecting area.

5,542,856

FIELD REPAIRABLE ELECTRICAL CONNECTOR

Richard G. Wood, Magnolia, Tex., assignor to Tescorp Seismic Products, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 226,009, Apr. 11, 1994, Pat. No. 5,470,248. This application Feb. 16, 1995, Ser. No. 389,253
Int. Cl.[6] H01R *13/52*
U.S. Cl. 439—281 **9 Claims**



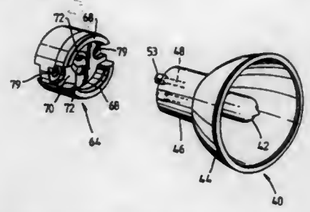
1. An electrical connector, comprising:
a male member having a body formed of a rigid, electrically nonconductive, thermoplastic material and a plurality of electrically conductive pins arranged in a predetermined pattern in said body, said body having a first face surface, a second face surface, and a plurality of sheaths extending outwardly from said first face surface, and each of said electrically conductive pins having a first portion completely encapsulated within the body and a respective one of said sheaths of said male member, a second portion extending outwardly from an outer end of the sheath respectively imbedding the first portion of said pins, and a third portion extending outwardly from the second face surface of the body of said male member, each of said third portions being connectable to an electrical wire conductor;
a female member having a body formed of a rigid, electrically nonconductive, thermoplastic material and a plurality of electrically conductive sockets arranged in said predetermined pattern in the body of said female member and adapted to receive the second portion of a respective one of the pins of said male member and maintain said respective pin in electrically conductive contact with the socket, said body of the female member having a first face surface, a second face surface, and a plurality of sheaths extending outwardly from said first face surface, and each of said electrically conductive sockets having a first portion completely encapsulated within the body and a respective one of the sheaths of said female member and a second portion extending outwardly from the second face surface of the body of said female member, said second portion of each of the sockets being connectable to an electrical wire conductor; and,
an elastomeric coupling member comprising a body portion formed of a resiliently compressible, nonconductive material having a predetermined hardness and an external casing formed of a flexible nonconductive material having a hardness greater than that of the body portion, said casing being disposed about the periphery of the body portion and forming a unitary structure therewith, a first face surface abutable with the first face surface of said male member, a second face surface abutable with the first face surface of said female member, and a plurality of internally disposed passageways extending between said first and second face surfaces of the coupling member, said passageways being arranged in said predetermined pattern and having an internal wall shape adapted to receive and completely surround each of the sheaths of said male and said female members.

5,542,857

LAMPS AND LAMP HOLDERS IN DISPLAY LIGHTING

Roger A. Hume; Richard A. Felstead, both of Melton Mowbray; Douglas G. L. Lee, Buckhurst Hill; Lawrence C. Barling, Stevenage, and Anthony J. Barrell, Hoddesdon, all of, Great Britain, assignors to General Electric Company, Schenectady, N.Y.

PCT No. PCT/GB91/01422, § 371 Date Dec. 6, 1993, § 102(e) Date Dec. 6, 1993, PCT Pub. No. WO92/14967, PCT Pub. Date Sep. 3, 1992
PCT Filed Aug. 22, 1991, Ser. No. 107,735
Claims priority, application United Kingdom, Feb. 21, 1991, 9103623
Int. Cl.[6] H01R *16/625*
U.S. Cl. 439—337 **10 Claims**



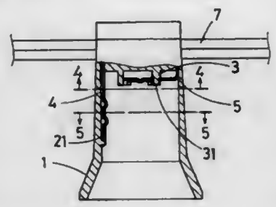
1. A lamp assembly comprising a lamp (**40**) having a plurality of terminal pins (**48**) projecting from a base (**49**), and a lamp holder (**64**) having terminal contacts (**76**) for engaging the pins (**48**), wherein the lamp (**40**) is first located in the lamp holder (**64**) by inserting the pins (**48**) into respective openings (**72**) in an insulating base (**70**) of the lamp holder, and the lamp (**40**) is then rotated relative to the lamp holder (**64**) to bring an enlarged end portion (**53**) of each pin (**48**) into contact with a respective terminal contact (**76**) of the lamp holder, characterized in that said openings (**72**) in the insulating base (**70**) comprise slots, the width of each slot varying along its length whereby the enlarged end portion of each pin (**48**) is inserted through a wide portion of the respective slot (**72**) and is then rotated into contact with the respective terminal contact (**76**) beneath a narrow portion of the slot, each terminal contact (**76**) comprising a metal strip arranged tangentially to the narrow portion of the slot (**72**), said metal strip being substantially flat and wherein said metal strip is restrained against movement at both ends thereof.

5,542,858

CHRISTMAS LIGHT BULB SOCKET

Nan W. Liao, 18, Tzu Yu Rd., Hsinchu, Taiwan

Filed Aug. 8, 1994, Ser. No. 287,367
Int. Cl.[6] H01R *13/54*
U.S. Cl. 439—419 **1 Claim**



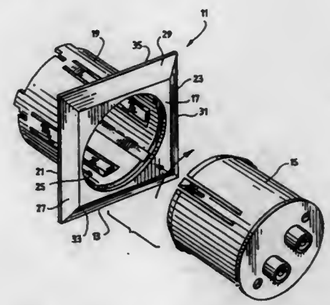
1. An improved Christmas light bulb socket for coupling with a pair of wires, comprising:
an outer housing having a longitudinally extended cylindrical wall, said outer housing having an open first end for receiving a light bulb in an interior space defined by said cylindrical wall and a rear end wall of said outer housing, said rear end wall having an outer surface defining a second end of said outer housing, said cylindrical wall having a pair of longitudinally directed insertion slots formed on opposing sides thereof and a respective pair of openings formed in opposing interior sides of said cylindrical wall providing open communication between said pair of insertion slots and said interior space, said outer housing having a conically shaped insertion pin extending longitudinally into said interior space from said rear end wall, said conically shaped insertion pin having a lateral hooked segment formed adjacent a distal end thereof;
a first conductor strip having a pointed first end for piercing a respective one of the pair of wires, said first conductor strip having a second end insertable into a first of said pair of insertion slots for interlocking engagement with a respective one of said pair of openings and contact with one contact of a light bulb;
a second conductor strip having a pointed first end for piercing a respective one of the pair of wires and a through bore formed centrally therein, said second conductor strip having a second end insertable into a second of said pair of insertion slots for passage into said interior space through a respective one of said pair of openings and transverse displacement of said second end for securement to said rear end wall by engagement of said conically shaped insertion pin with said through bore, said second end of said second conductor strip being lockingly engaged with said conically shaped insertion pin by said lateral hooked segment; and,
an upper cover coupled to said second end of said outer housing for securing the pair of wires therebetween.

5,542,859

QUICK MOUNT ELECTRICAL WALL SOCKET

Wendell Ison, Columbus; Douglas Wright, Clermont; Scott Ireland, Noblesville; Geoffrey Hicks, Carmel, and Bradley J. Hyde, Greenfield, all of Ind., assignors to Woods Industries, Inc., Carmel, Ind.

Filed Nov. 16, 1994, Ser. No. 340,846
Int. Cl.[6] H01R *13/74*
U.S. Cl. 439—536 **27 Claims**



1. A wall mountable electrical socket for securement in an opening formed in a plasterboard wall, the wall having a front surface and a rear surface, comprising:
a one-piece wall supporting unit for securement into a fixed position relative to a plasterboard wall, said supporting unit comprising:
(i) a plug support insertable through an opening formed in the wall to a preset distance, said plug support having a moveable piercing member carrying at least one tine, said tine being aligned with the plane of the wall when said plug support is inserted to said preset distance, said piercing member being moveable outwardly to force said tine into piercing engagement with the wall; and
(ii) a wall plate integrally molded to said plug support, said wall plate defining an aperture for alignment with the opening of

said wall when said plug support is inserted through the opening to said preset distance, said wall plate having a rear surface for contact with the front surface of the wall when said plug support is inserted into the opening to said preset distance; and

a one-piece connector module for retaining an electrical connector, said module insertable into said aperture and the opening to a predetermined distance distal of said rear surface of said plate, said module mating with said plug support during insertion movement into the opening and thus forcing said tine into piercing engagement with an inner periphery of the wall opening.

5,542,860

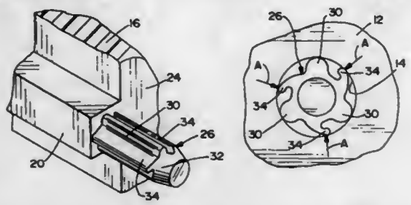
ELECTRICAL CONNECTOR WITH MOUNTING POST

Michael A. Bandura, Ottawa, and Kirk B. Pelcza, Naperville, both of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Mar. 15, 1995, Ser. No. 403,981

Int. Cl.[6] H01R *13/60*

U.S. Cl. 439—567 **10 Claims**



1. In an electrical connector adapted for surface mounting on a substrate such as a printed circuit board having a mounting bole of a given diameter, the connector including

a dielectric housing having a board-mounting face, and

an elongated mounting post projecting from said board-mounting face for insertion into the mounting hole in the substrate,

wherein the improvement comprises:

said elongated mounting post including a plurality of longitudinally extending, circumferentially spaced, generally rigid ribs defining a circle having a diameter approximately the same as said given diameter of the mounting hole, and

a plurality of flexible, longitudinally extending ribs located alternatingly between said generally rigid ribs and defining a circle having a diameter at least slightly greater than said given diameter of the mounting hole.

5,542,861

COAXIAL CONNECTOR

John W. Anhalt, Orange, and Wayne A. Zahlit, Mission Viejo, both of Calif., assignors to ITT Corporation, New York, N.Y.

PCT No. PCT/US91/08673, § 371 Date Dec. 16, 1991, § 102(e) Date Dec. 16, 1991, PCT Pub. No. WO93/10578, PCT Pub. Date May 27, 1993

PCT Filed Nov. 21, 1991, Ser. No. 778,949

Int. Cl.[6] H01R *9/07*

U.S. Cl. 439—578 **5 Claims**

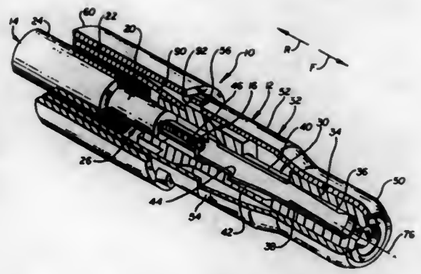
1. A coaxial connector which terminates to a coaxial cable of the type that includes an inner conductor, an inner insulation around said inner conductor, an outer conductor in the form of a braiding that surrounds said inner insulation, and an insulative jacket around said braiding, comprising:

an inner contact connected to said inner conductor;

an outer contact surrounding said inner contact;

an insulator lying between said inner and outer contacts;

an inner ferrule crimped to said jacket, with said jacket trimmed to expose said braiding and with said braiding wrapped backward around said inner ferrule;



said outer contact having a rearward portion lying about a portion of said braiding which is wrapped backward around said inner ferrule;

an outer ferrule which is crimped around said outer contact rearward portion to hold said outer contact rearward portion crimped around said braiding, with said outer ferrule lying about said inner ferrule but with said inner ferrule crimped independently of crimping of said outer ferrule.

5,542,862

WATERCRAFT WITH PIVOT CONTROL

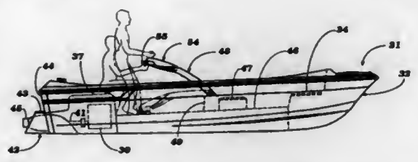
Noboru Kobayashi, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Continuation of Ser. No. 122,249, Sep. 16, 1993, abandoned. This application Dec. 6, 1994, Ser. No. 349,981

Claims priority, application Japan, Sep. 16, 1992, 4-246510; Mar. 17, 1993, 5-57401

Int. Cl.[6] B63H *11/00*

U.S. Cl. 440—38 **22 Claims**



1. A watercraft and control comprised of a hull defining a rider's area comprising a deck bounded on all sides by a wall upstanding from said deck so that said deck is disposed substantially below the upper portion of said hull, a seat disposed above said deck in said rider's area with the cushion disposed substantially below said upper portion of said hull, a propulsion unit for powering said watercraft, a control mast supported for pivotal movement about a fixed horizontal axis between a lowered position and a raised position, and at least one unit control carried by said control mast remotely from said fixed horizontal axis for controlling said propulsion unit, the distance between said unit control and said fixed horizontal axis being less than the distance between said seat and said fixed horizontal axis so that said propulsion unit control is positioned so that an operator may operate said watercraft either from a seated position in said rider's area or a standing position on said deck in said rider's area and so that said control mast may be lowered to a position below the upper portion of said hull without interference with said seat, even if an operator is seated thereon.

5,542,863

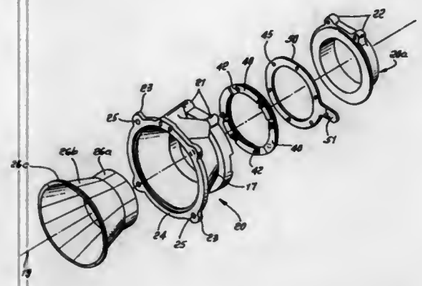
WATER VEHICLE JET PUMP FLOW CONTROL APPARATUS

Frank J. Brian, 3701 Ahern, Baldwin Park, Calif. 91706, and Gary M. Burrow, 6811 Salt Lake Ave., Bell, Calif. 90201

Filed Apr. 6, 1994, Ser. No. 225,451

Int. Cl.[6] B63H *11/10*

U.S. Cl. 440—47 **10 Claims**



1. In jet pump liquid flow control apparatus the combination comprising:

a) an annular body and a liquid flow passage extending rearwardly through the body, the passage defining a longitudinal axis,

b) an annular series of flow controlling elements spaced about said axis with successive of said elements having primary portions extending in edge adjacent relation whereby the elements define a flow controlling section of said passage,

c) and control means extending about said axis for controllably urging said primary portions of said elements toward said axis thereby to control the cross sectional area of said passage section,

d) said elements formed as plates which flare forwardly, successive of said primary portions having beveled surface overlap with sliding interengagement as the primary portions are displaced toward said axis in response to said urging, said beveled surface overlap increasing on all of said primary portions as they are displaced toward said axis.

5,542,864

STEERING CYLINDER FOR OUTBOARD ENGINES

D. Scott Peebles, Bradenton, Fla., assignor to IMO Industries, Inc., Sarasota, Fla.

Filed Aug. 10, 1994, Ser. No. 288,561

Int. Cl.[6] B63H *20/12*

U.S. Cl. 440—61 **15 Claims**

1. In combination, a valving device and a pump, tank and hydraulic cylinder remote from the valving device and coupled thereto by hydraulic lines, the cylinder comprising:

a housing having first and second end faces formed thereon;

an elongate chamber in the housing;

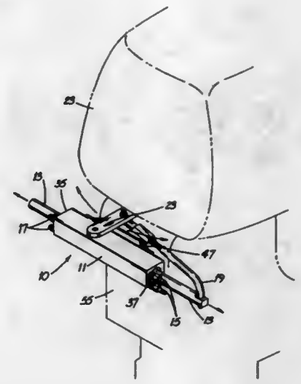
a piston movably disposed in the chamber and dividing the chamber into first and second portions;

a separate rod attached to the piston and protruding through each end face;

first and second fluid passages formed in the cylinder housing, each passage being in fluid communication with a separate portion of the chamber, and wherein:

the cylinder housing has a flow fitting attached thereto, such flow fitting being in flow communication with the valving device, the first passage and the first portion;

the cylinder housing has a bleed fitting attached thereto, such bleed fitting being in flow communication with the second passage and the second portion.



5,542,865

TRIPLE-MATERIAL FIN WITH COMPOSITE BLADE

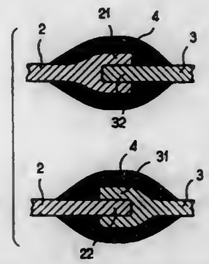
Marc Alvarez De Toledo, Marseille, France, assignor to Alba Conseil, Marseille, France

Filed May 18, 1994, Ser. No. 245,691

Claims priority, application France, May 25, 1993, 9306211

Int. Cl.[6] A63B *31/08*

U.S. Cl. 441—64 **19 Claims**



1. A swimming fin comprising a shoe prolonged by a blade, wherein the blade is constituted by the assembly of at least one flexible blade element and at least one stiffening blade element which are arranged edge to edge and rendered integral by the overmolding of an appropriate bonding material over the adjacent edges, wherein the blade elements are assembled by their longitudinal edges, which are oriented substantially in the direction of the length of the fin, wherein the bonding material consisting of a material separate from the flexible blade element and the stiffening blade element to provide a triple-material swimming fin.

5,542,866

FIELD EMISSION DISPLAY PROVIDED WITH REPAIR CAPABILITY OF DEFECTS

Chun-hui Tsai, Hsinchu, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Dec. 27, 1994, Ser. No. 363,872

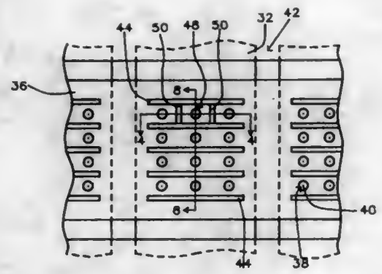
Int. Cl.[6] H01J *1/30;9/42;9/50*

U.S. Cl. 445—2 **12 Claims**

6. A method of forming a flat panel display having a repair capability, comprising the steps of:

providing a dielectric base substrate;

forming parallel, spaced conductors, acting as cathode columns for said display, over said substrate;



forming a dielectric layer over said cathode columns and said substrate;

forming second parallel, spaced conductors, acting as gate lines for said display, over said dielectric layer, and perpendicular to said cathode columns, the intersections of said cathode columns and gate lines being pixels of said display;

forming slots in said gate lines, contiguously between said openings and parallel to direction of said gate lines, whereby said slots provide said repair capability;

forming a plurality of openings in said gate lines and said dielectric layer, at each of said pixels; and

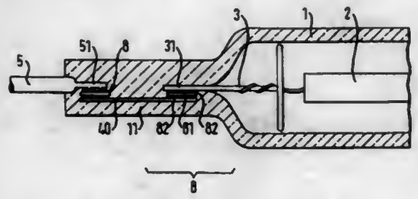
forming in each of said openings a field emission microtip connected to and extending up from said cathode columns.

5,542,867

PROCESS FOR CONNECTION OF A MOLYBDENUM FOIL TO A MOLYBDENUM LEAD PORTION AND METHOD OF PRODUCING A HERMETICALLY ENCLOSED PART OF A LAMP USING THE PROCESS

Nobuyuki Hishinuma; Kenichi Hirose, and Tatsushi Igarashi, all of Himeji, Japan, assignors to Ushiodenki Kabushiki Kaisha, Japan

Filed Dec. 7, 1994, Ser. No. 351,656
Claims priority, application Japan, Dec. 8, 1993, 5-340272
Int. Cl.[6] H01J *9/32;9/18*
U.S. Cl. 445—32 **6 Claims**



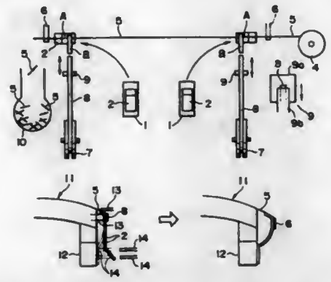
1. Process for connecting a molybdenum foil to a molybdenum lead portion, comprising the steps of: disposing a carbon-molybdenum binder part between the molybdenum foil and the molybdenum lead portion and then resistance welding the molybdenum foil to the molybdenum lead portion at said binder part.

5,542,868

METHOD AND APPARATUS FOR STRETCHING A DAMPER WIRE

Sadao Kozuka, Aichi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 3, 1995, Ser. No. 398,321
Claims priority, application Japan, Mar. 16, 1994, 6-071499
Int. Cl.[6] H01J *9/16*
U.S. Cl. 445—37 **5 Claims**



1. A method of attaching a damper wire to a cathode ray tube, comprising the steps of:

positioning a pair of damper springs so as to be spaced at a predetermined interval;

clamping a damper wire wound around a damper reel with a wire clamper, said wire clamper being movable between at least said damper springs;

drawing said damper wire with said wire clamper so as to position said damper wire between said damper springs;

fixing said damper wire at a predetermined position with respect to each of said damper springs;

drawing a pair of ribbons from a pair of ribbon reels with a pair of ribbon clampers;

positioning each of said ribbons with respect to each of said damper springs so as to position said damper wire therebetween;

welding each of said ribbons to said damper springs at a first position thereof while bolding said damper wire between each of said ribbons and each of said damper springs;

cutting each of said ribbons at a predetermined length;

cutting said damper wire projecting from said damper springs by clamping and drawing said damper wire with said wire clamper;

moving said damper springs so as to be perpendicular to a frame of an aperture grill of said cathode ray tube, said frame including two upstanding portions; and

welding each of said damper springs at a second position thereof to each upstanding portion of said frame to provide said damper wire stretched between said damper springs on the aperture grill.

5,542,869

BUBBLE BLOWING APPARATUS

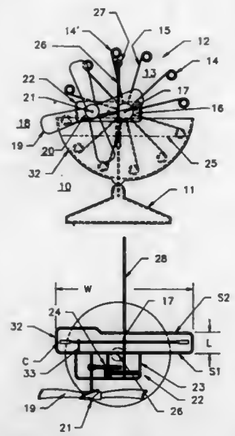
Frank L. Petty, 3821 A Prescott Rd., Modesto, Calif. 95356

Filed Dec. 30, 1994, Ser. No. 366,453
Int. Cl.[6] A63H *33/28*
U.S. Cl. 446—016 **5 Claims**

1. An bubble blowing apparatus suitable for generating a multitude of bubbles comprising:

a. a wand assembly containing a plurality of wands having arms of predetermined length having an opening at a first end of each of said arms and a second end affixed in radial fashion to a hub and first axle causing such wand assembly to generate a circle of a predetermined diameter;

b. an air-flow-driven, fan assembly comprised of a plurality of fan blades of substantially the same predetermined length radially affixed to a hub and a second axle; and



c. means for mechanically interconnecting the fan assembly to the wand assembly so that when air flow occurs across said fan blades causing it to rotate about the second axle, the wand assembly is caused to rotate about the first axle at a predetermined rate;

d. an open-topped reservoir is provided for containing a bubble-making liquid which reservoir is physically affixed to and located below the first axle of said wand assembly so that each of said openings at the first end of each of said arms is below the open-top of said reservoir at some time during rotation about the first axle wherein the open top of said reservoir is generally rectangular with first and second long sides thereof having generally the same elevation and said sides being of a predetermined length which length is greater than the predetermined diameter of said circle generated by the wand assembly;

e. the wand assembly being positioned with respect to the fan assembly such that when each wand opening prior to its point of highest elevation is behind the area being swept by the fan blades;

f. the fan assembly and the means for mechanically interconnecting the fan assembly to the wand assembly being affixed to and outside of the first long side of the reservoir wherein the distance between the first axle of the wand assembly and the second axle in the fan assembly is less than one-half the predetermined diameter of said circle generated by the wand assembly and the wands rotate such that they emerge from the top of the first long side of the reservoir behind the area being swept by the fan assembly whereby the opening of each wand is no longer behind the area being swept by the fan assembly when the wand opening is at a point of highest elevation.

5,542,870

FOLDING BOX DIORAMA TOY

Curtis D. Westersund, #255-801 6 St SW., Calgary, Alberta, Canada

Filed Jul. 7, 1994, Ser. No. 272,703
Int. Cl.[6] A63H *33/00*
U.S. Cl. 446—75 **10 Claims**

1. An unfolding and folding dioramic box assembly comprising:

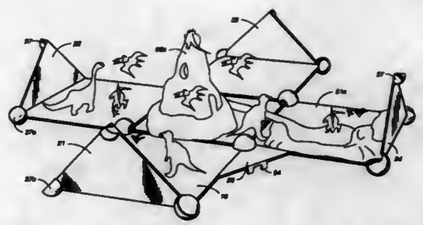
an essentially flat first base panel for displaying a central scenic structure internally in a box assembly folded mode;

a series of essentially flat side panels for displaying scenic structure extending internally in a box assembly folded mode and outwardly in a box unfolded mode, said side panels being pivotable with respect to said base panel;

wherein each of said side panels includes an integral perpendicular member of triangular configuration fixedly extending from a top edge of each of said side panels in an unfolded mode, each of said perpendicular members having side edges which abut adjacent side edges of an adjacent perpendicular member in a box assembly folded mode to form a closed box top;

wherein said base panel and said side panels are pivotable about hinge members at facing peripheral edges thereof; and

including a ridged tab extending from an apex of one of said triangular members and a detented slot extending from the apex of each of the other triangular members and wherein in the box top closing condition, the ridged tab is automatically inserted into said detented slots to temporarily bold the triangular members together in the box top closed condition.

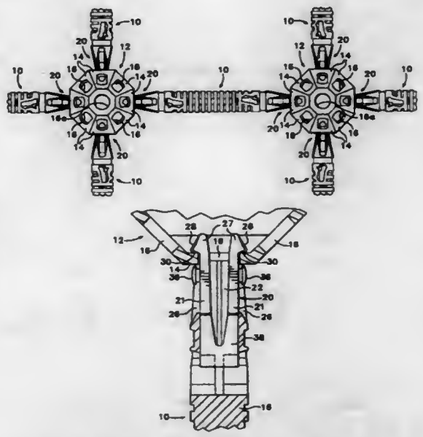


5,542,871

ROD FOR CONSTRUCTION SYSTEM

Richard Gabriel, Portland, Oreg., assignor to Matrix Toys, Ltd., Portland, Oreg.

Filed Jun. 10, 1995, Ser. No. 500,314
Int. Cl.[6] A63H *33/04*
U.S. Cl. 446—126 **9 Claims**



1. A rod for interconnecting multiple joint elements having elongate joint openings defined therein, said rod comprising:

(a) an elongate strut having a cavity located in each extremity thereof;

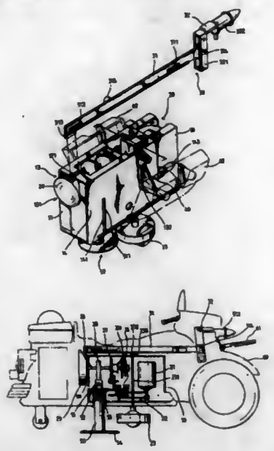
(b) clips that slidably fit within said cavities, each clip including opposed, spaced-apart fingers that are deflectable inwardly toward one another;

(c) said fingers having outwardly facing catches located at the extremities thereof; and

(d) each said clip being movable in said strut between an open position where said clip is substantially entirely located within its respective cavity, and a closed position where said clip extends partially into a joint opening and the joint element is

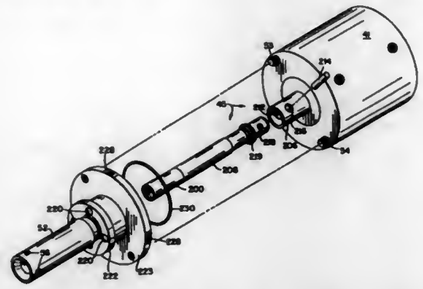
clamped between the end of the strut and said catches so that said clip is attached to the joint element.

5,542,872
TRANSMISSION MECHANISM OF A TOY MOTORCYCLE
Tsai W. Ho, 8FL., NO. 113, Yu Jen Rd., Taipei, Taiwan
Filed Jan. 26, 1995, Ser. No. 378,341
Int. Cl.[6] A63H *17/21*
U.S. Cl. 446—440 **9 Claims**



1. A transmission mechanism of a toy motorcycle, comprising:
a transmission case, a transmission mechanism, a forward pushing unit, a laterally pushing unit, a lifting unit, a front hood pivotally disposed on a front side of a main body, and two lateral hoods pivotally disposed on two lateral sides of the main body, wherein;
the transmission case is mounted on a chassis of the main body;
the transmission mechanism is disposed in the transmission case and a power unit is connected with a transmission gear set to drive a driving wheel and a driving wheel shaft set, the driving wheel shaft set including a transmission shaft on which a laterally pushing wheel, a driving main gear, a lifting unit pressing cam, and a stepped cam disposed on an outer side of a rear end of the transmission case are mounted in sequence, a transmission main gear being connected with the transmission gear set for inputting power, the laterally pushing wheel being used to laterally drive the laterally pushing unit, the lifting unit pressing cam being used to press and control the lifting unit;
the forward pushing unit is composed of a forward pushing leading member and a forward extending member, the forward pushing leading member being longitudinally disposed above the transmission case, the rear end thereof being pushed by the stepped cam to slide back and forth, whereby when extending forward, the front hood is pushed and pivoted forward and outward;
the laterally pushing unit includes at least one laterally pushing member passing through a slot of the transmission case, the laterally pushing member being pushed by the laterally pushing wheel to extend laterally and outward so as to laterally and outward push and pivot the lateral hoods;
the lifting unit has a pressed support for bearing an intermittent rotary pressing of the pressing cam, a pushing lifting post being concentrically linked therewith, a bottom end of the pushing lifting post being formed with a plane tray, the pushing lifting post passing through a through hole of the case to extend outward under the chassis, whereby when pressed, the pushing lifting post extends downward to lift up the main body and when the pressing force is removed, the main body descends.

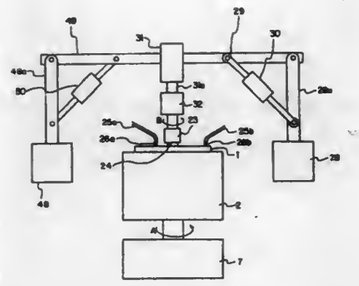
5,542,873
NOVEL MEDIA VALVE
James D. Shank, Jr., Vestal, N.Y., assignor to Church & Dwight Co., Inc., Princeton, N.J.
Continuation-in-part of Ser. No. 161,530, Dec. 6, 1993, Pat. No. 5,421,767, which is a continuation-in-part of Ser. No. 229,011, Apr. 18, 1994, Pat. No. 5,401,205. This application Feb. 7, 1995, Ser. No. 385,173
Int. Cl.[6] B24C *3/00*
U.S. Cl. 451—75 **21 Claims**

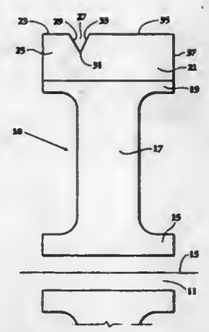


1. In a media control valve for metering and dispensing particulate abrasive media from a supply pot to a compressed air stream which comprises a valve body having a media passage for receiving the abrasive media from the supply pot and for directing the abrasive into an air flow tube below said media passage, said valve body including a bore separate from said media passage and disposed between said supply pot and said air tube and communicating with said media passage an orifice disposed in said media passage, a valve stem slidable within said bore, at least a portion of said valve stem capable of being disposed between said media passage and said orifice to prevent flow of media through said orifice, activating means to move said valve stem within said bore, the improvement comprising: self-alignment means which allows said valve stem to self-align within said bore as said valve stem slidably passes therethrough.

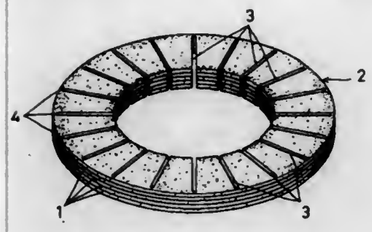
5,542,874
WAFER POLISHING APPARATUS
Shinichi Chikaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Sep. 16, 1994, Ser. No. 306,974
Claims priority, application Japan, Sep. 20, 1993, 5-232890
Int. Cl.[6] B24B *7/00*
U.S. Cl. 451—158 **4 Claims**

1. A wafer polishing apparatus comprising:
a wafer chuck for holding a wafer with a surface to be polished thereof being directed upward;
first drive means for rotating said wafer chuck;
polishing solution supply means for supplying a polishing solution to the wafer held by said wafer chuck;
a polishing head which is smaller in diameter than the wafer;
a polishing pad which is smaller in diameter than the wafer, said polished pad being attached to said polishing head;
second drive means for rotating said polishing head; reciprocating means for reciprocally moving said polishing head on said surface to be polished; and
pressing means for pressing said polishing pad against a wafer held by said wafer chuck by way of said polishing head.





5,542,875
ABRASIVE WHEEL
Hirokazu Ichiguchi, 1984-37, Nakatomigaoka 2-chome, Nara-shi, Nara, Japan
Filed Feb. 18, 1994, Ser. No. 198,776
Claims priority, application Japan, Feb. 9, 1993, 5-005527 U; Oct. 29, 1993, 5-058597 U
Int. Cl.[6] B24D *13/14*
U.S. Cl. 451—533 **15 Claims**

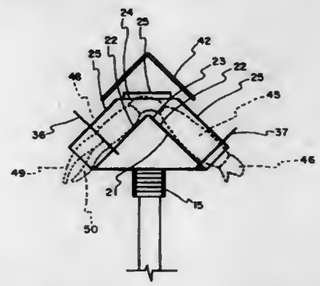


1. An abrasive wheel comprising:
an abrasive member having a plurality of ring-shaped sheets of abrasive-coated cloth paper which are laminated and bonded together;
a wheel substrate bonded to one side of said abrasive member;
wherein said abrasive member is formed with a plurality of cuts extending radially; and
wherein each of said cuts extends outwardly from an inner edge of said abrasive member and terminates short of an outer edge of said abrasive member.

5,542,876
V-PROFILE GRINDING WHEEL
Edgar L. Field, Jr., Muskogee, Okla., assignor to Coburn Optical Industries, Inc., Tulsa, Okla.
Filed Aug. 19, 1994, Ser. No. 293,227
Int. Cl.[6] B23F *21/03;21/23;* **B24B** *5/00;7/16*
U.S. Cl. 451—540 **2 Claims**

2. A grinding wheel comprising a rigid circular body having a V-shaped groove circumferentially thereabout defining a forward V surface and a rear V surface meeting at a nadir of said groove, a forward flat surface tapering outwardly in relation to an axis of rotation of said wheel from a forward edge of said forward V surface toward a forward face of said wheel and a rear flat surface tapering outwardly in relation to said axis of rotation of said wheel from a rear edge of said rear V surface toward a rear face of said wheel, said forward V surface being of first grinding aggressiveness, said rear V surface being of second grinding aggressiveness greater than said first grinding aggressiveness, said forward flat surface being of third grinding aggressiveness substantially greater than said second grinding aggressiveness and said rear flat surface being of fourth grinding aggressiveness equal to or greater than said third grinding aggressiveness.

5,542,877
METHOD AND APPARATUS FOR EXTRACTING MEAT FROM CRAB CLAWS
George E. Taylor, P. O. Box 50, Stonewall, N.C. 28583
Filed May 9, 1994, Ser. No. 239,881
Int. Cl.[6] A22C *29/00*
U.S. Cl. 452—7 **8 Claims**



1. An apparatus for removing meat from graded crab claws having pincers with jaw ends and attached claw arms with body joint ends comprising: means for cutting the jaw ends of said crab claw pincers and the body joint ends of the attached claw arms; means for placing said crab claws in a vibrating crab meat extracting means with the cut pincer and crab arm ends disposed in a generally downwardly direction; said crab claws placing means including at least one pad having a plurality if paired openings extending outwardly and downwardly from each other at an angle that will allow the crab arms and pinchers of the crab claws to be inserted thereinto; and means for vibrating said claws to remove the meat therefrom whereby an improved crab claw meat extractor is provided.

5,542,878

METHOD AND APPARATUS FOR SEPARATING MEAT FROM A BONE OF AN ANIMAL CARCASS

Thomas F. Sheedy, Kilmallock, and Martin J. Finucane, Kilrush, both of, Ireland, assignors to Concept International Limited, Dublin, Ireland

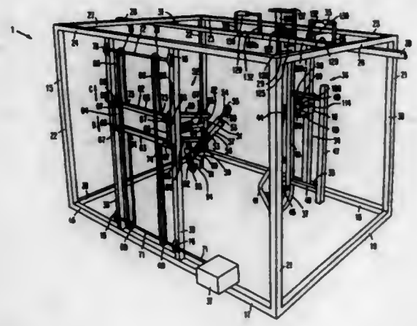
PCT No. PCT/IE93/00051, § 371 Date Mar. 23, 1995, § 102(e) Date Mar. 23, 1995, PCT Pub. No. WO94/06302, PCT Pub. Date Mar. 31, 1994

PCT Filed Sep. 23, 1993, Ser. No. 406,867

Claims priority, application Ireland, Sep. 23, 1992, S922680

Int. Cl.[6] A22C *17/04*

U.S. Cl. 452—135 12 Claims



1. Apparatus for separating meat (2) from ribs (3) of at least a portion of an animal carcass (4), the apparatus (1) comprising:

a main support means (15),

a clamp means (37) mounted on the main support means (15) for holding and supporting the portion of the animal carcass (4),

a carrier means (50) mounted on the main support means (15),

a carcass engaging disc (54) for engaging the carcass portion (4) for urging the meat (2) from the ribs (3), the carcass engaging disc (54) being rotatably mounted about a rotational axis (55,95) on the carrier means (37), and defining a peripheral cutting edge (56) for rupturing a membrane (8) which retains the meat (2) to the ribs (3),

at least one of the carrier means (50) and the clamp means (37) being moveable relative to the other of the carrier means (50) and the clamp means (37) for urging the carcass engaging disc (54) into engagement with the carcass portion (4) for rupturing the membrane (8), and for urging the meat (2) from the ribs (3),

a first drive means (57) being provided for moving the moveable one of the carrier means (50) and the clamp means (37), for engaging the carcass engaging disc (54) with the carcass portion (4), and

a second drive means (85) being provided for moving the carrier means (50) relative to the main support means (15) for in turn urging the carcass engaging disc (54) along respective paths of movement along the respective ribs (3) for progressively rupturing the membrane (8) along the ribs (3) and for progressively urging the meat (2) from the ribs (3) as the carcass engaging disc (54) is being urged into the carcass portion (4).

5,542,879

METHOD AND APPARATUS FOR DETACHING THE MEAT FROM THE BONES OF THE EXTREMITIES OF ANIMALS

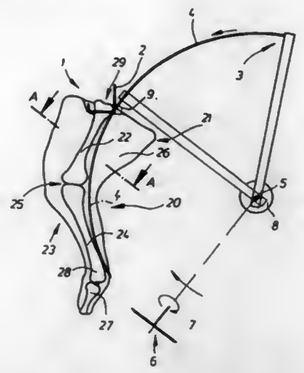
Helmut Kunig, Bad Schwartau, and Marek Szymanski, Kleinmeinsdorf, both of, Germany, assignors to Nordischer Maschinenbau Rud. Baader GmbH + Co KG, Lubeck, Germany

Filed May 25, 1995, Ser. No. 450,980

Claims priority, application Germany, May 26, 1994, 44 18 366.6

Int. Cl.[6] A22C *17/04*

U.S. Cl. 452—135 23 Claims



1. A method for pre-processing extremities of slaughtered animals, particularly poultry legs, prior to removing meat therefrom, said extremity defining a distal and a proximal end, having a bone structure and being surrounded by a layer of meat, the method including the steps of

a) holding said extremity by at least one of said distal and proximal ends such that said extremity lies essentially in a predetermined plane,

b) detaching said meat layer from said bone structure in at least in an area on a predetermined side of said bone structure in said plane and

c) cutting open said meat layer with a cut which runs essentially perpendicular to said plane and along said predetermined side of said bone structure.

5,542,880

COIN HANDLING SYSTEM WITH SHUNTING MECHANISM

Joseph J. Geib, Mt. Prospect; William J. Jones, Kenilworth; Douglas U. Mennie, Barrington, and Donald E. Raterman, Deerfield, all of Ill., assignors to Cummins-Allison Corp., Mt. Prospect, Ill.

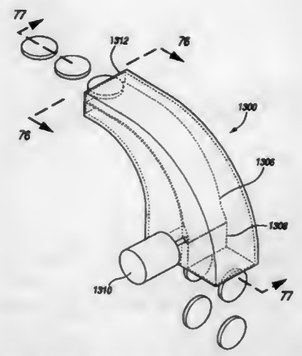
Continuation-in-part of Ser. No. 149,660, Nov. 9, 1993, which is a continuation-in-part of Ser. No. 115,319, Sep. 1, 1993, Pat. No. 5,429,550, which is a continuation-in-part of Ser. No. 951,731, Sep. 25, 1992, Pat. No. 5,299,977, which is a continuation-in-part of Ser. No. 904,161, Aug. 21, 1992, Pat. No. 5,277,651, which is a continuation of Ser. No. 524,134, May 14, 1990, Pat. No. 5,141,443. This application Feb. 24, 1994, Ser. No. 201,350

Int. Cl.[6] G07D *3/14*

U.S. Cl. 453—10 25 Claims

21. A coin sorter for sorting coins of at least one coin denomination from an invalid item not of said at least one coin denomination, the coin sorter comprising:

a rotatable disc having a resilient surface for receiving said coins and imparting rotational movement to said coins;



a stationary sorting head having a contoured surface spaced slightly away from and generally parallel to said resilient surface of said rotatable disc, said stationary sorting head configured and arranged for sorting and discharging said coins of said at least one coin denomination through respective coin denomination exit paths around the periphery of said stationary sorting head and into associated stationary coin-collecting containers; and

a coin discrimination sensor, located between one of the coin denomination exit paths and its associated stationary coin-collecting container, for sensing an invalid item before the invalid item reaches the stationary coin-collecting container associated with said one of the coin denomination exit paths.

5,542,881

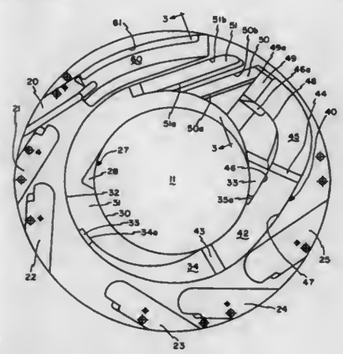
COIN SORTING MECHANISM HAVING DUAL RECYCLE CHANNELS

Joseph J. Geib, Mount Prospect, Ill., assignor to Cummins-Allison Corp., Mt. Prospect, Ill.

Filed Apr. 28, 1995, Ser. No. 430,411

Int. Cl.[6] G07D *3/06*

U.S. Cl. 453—10 4 Claims



1. A disc-type coin sorter, comprising:

a rotatable disc having a resilient top surface,

a stationary sorting head having an outer periphery a lower surface, and an upper surface, said sorting head forming a queuing region which includes an entry area and an outer wall for aligning the outer edges of the coins at a desired common radius, and a plurality of exit channels for receiving the queued coins and guiding coins of different diameters to different exit stations along the outer periphery of the sorting head, the lower surface of said sorting head being positioned parallel to the upper surface of said disc and spaced slightly therefrom, to press coins of all denominations downwardly into said resilient top surface at predetermined sections of said sorting head, and

first and second recycle channels within said queuing region for recirculating coins whose outer edges are located inwardly of said desired common radius, said recycle channels being located directly adjacent, and substantially parallel to, each other, both of said recycle channels having radially outer ends and extending inwardly from approximately the same desired common radius, at the end of said outer wall, so that any coins spaced inwardly of said outer wall and not captured by the first recycle channel are captured by the second recycle channel.

5,542,882

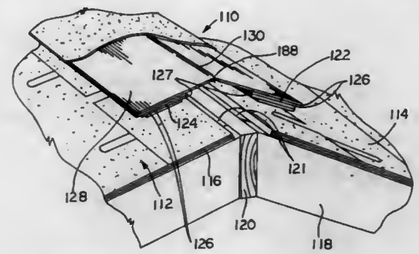
ROOF VENTILATING CAP

Gary L. Sells, Mishawaka, Ind., assignor to Cor-A-Vent, Inc., Mishawaka, Ind.

Continuation-in-part of Ser. No. 333,438, Nov. 2, 1994, Pat. No. 5,439,417. This application Jul. 12, 1995, Ser. No. 501,584

Int. Cl.[6] F24F *7/02*

U.S. Cl. 454—365 10 Claims



1. A ventilating cap for the ridge of a roof, said roof having opposed upwardly tapering portions tapering upwardly toward said ridge, said roof having a longitudinal opening therein extending along said ridge, said ventilating cap comprising a pair of elongated vent parts extending along said upwardly tapering portions on opposite sides of said ridge, each of said vent parts including multiple plies of material defining passages communicating said opening with ambient atmosphere, each of said vent parts further including a bottom ply engaging said roof and an upper ply, said upper ply including a connecting portion extending across and along said ridge to interconnect said vent parts, and a groove in said connecting portion and extending along said ridge, said groove having edge portions extending longitudinally along both of the edges of said groove, and a longitudinally extending rib within said groove between the edge portions thereof, said upper ply being folded along said groove to extend over said ridge.

5,542,883

STRAW SPREADING SYSTEM

Izaak P. J. Cruson, Regina, Canada, assignor to Dutch Industries Ltd., Regina, Canada

Filed Jun. 2, 1995, Ser. No. 458,248

Int. Cl.[6] A01F *29/02*

U.S. Cl. 460—112 22 Claims

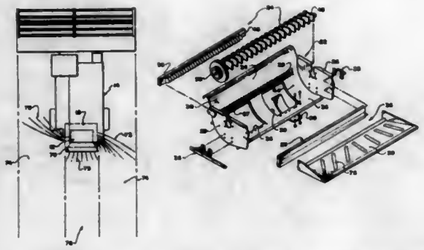
1. A harvester-thresher for moving over the ground and harvesting agricultural crops comprising:

threshing means for separating straw and chaff from said crops;

outlet means for the straw and chaff arranged at a rearward end of the harvester-thresher;

a straw and chaff spreader arranged beneath said straw and chaff outlet means;

and a chopper having



chopping means for receiving straw from the outlet means for chopping the straw into smaller pieces;

a chopper housing fixed to the harvester-thresher adjacent the outlet means for directing the straw material to the chopping means, the chopper housing being located between the outlet means and the straw and chaff spreader;

a least one first outlet in the chopper housing for communication of a first portion of the chopped straw to the spreader; and

a second outlet in the chopper housing arranged for the communication of a second portion of the chopped straw beyond the spreader to the ground.

5,542,884

MECHANICAL OVERLOAD PROTECTION DEVICE FOR MACHINES, PARTICULARLY JAW CRUSHERS

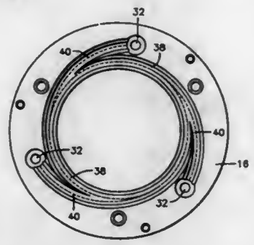
Bruno Götz, Oedheim, Germany, assignor to Paul Bohringer, Oedheim, Germany

Filed Sep. 9, 1994, Ser. No. 303,359

Claims priority, application Germany, Sep. 9, 1993, 9313633 U

Int. Cl.[6] F16H *35/10*; B02C *25/00*

U.S. Cl. 464—36 **12 Claims**



1. A mechanical overload protection device for an operating machine driven by a drive motor having, included in a drive train thereof, an overload protection means which acts in response to a mechanical overload to uncouple the machine from the drive motor wherein the overload protection means comprises:

a first coupling part and a second coupling part, said coupling parts having mutually facing surfaces, said surfaces provided with depressions for accommodating a plurality of coupling bodies,

a guide means which connects with said depressions and comprises a circular guide groove having a guideway which is circular, arcuate or spiral and which opens tangentially out from said circular guide groove and terminates in said depressions;

a plurality of coupling bodies which, when in a coupled condition, provide a force-interlock between said first and second coupling parts, wherein said coupling bodies are held in said respective depressions, said depressions being circular grooves having a diameter which is greater than a diameter of the said circular guide groove; and

a biasing means supplying a threshold force of said force-interlock between said coupling parts, such that when said threshold force is exceeded the coupling bodies are in a disengaged condition whereby said coupling bodies move into said guide groove thereby releasing said force-interlock between said coupling parts so that said coupling parts are rotatable relative to each other.

5,542,885

CONSTANT VELOCITY UNIVERSAL BALL JOINT WITH CAGE SECURING ELEMENTS

Werner Krude, Neunkirchen-Wolperath, and Peter Harz, Hennef, both of, Germany, assignors to GKN Automotive AG, Lohmar, Germany

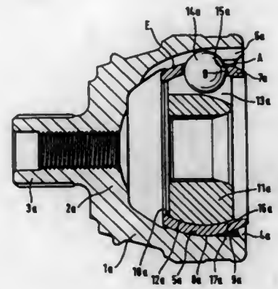
PCT No. PCT/EP93/00253, § 371 Date Oct. 4, 1993, § 102(e) Date Dec. 3, 1993, PCT Pub. No. WO93/16296, PCT Pub. Date Aug. 19, 1993

PCT Filed Feb. 4, 1993, Ser. No. 129,140

Claims priority, application Germany, Feb. 5, 1992, 42 03 195.8

Int. Cl.[6] F16D *3/224*

U.S. Cl. 464—145 **19 Claims**



1. A constant velocity universal ball joint comprising an outer joint part with substantially longitudinally extending circumferentially distributed ball tracks;

an inner joint part with substantially longitudinally extending circumferentially distributed ball tracks, the outer and inner joint part tracks being arranged in pairs radially opposite one another and jointly receiving a torque transmitting ball;

a cage which receives the balls in circumferentially distributed windows which holds them in a common plane and which, upon articulation of the axes of the outer and inner joint parts, guides the balls on to the angle-bisecting plane, the outer joint part being produced with surfaces between the individual ball tracks, which, if viewed in the axial direction, constitute undercut-free inner surfaces;

at least three securing elements for the cage being inserted into the outer joint part between two neighboring ball tracks, respectively, being connected to the outer joint part and forming cage contact and cage guiding faces which counter-act an axial movement of the cage out of the outer joint part, the balls being able to move between the securing elements;

said securing elements are formed by wedges, independent of one another, which are axially inserted into an annular gap between the outer joint part and an outer face of the cage, which are fixed to the outer joint part at a desired position and which, with a set axial play, hold the cage in the outer joint part by means of contact points.

5,542,886

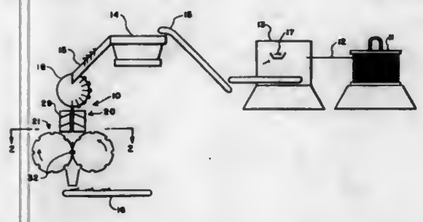
PROCESS AND APPARATUS FOR THE PRODUCTION OF STAR PROFILE NAILS

George R. Scott, Midlothian; Edwin L. Cutright, Powhatan; Martin W. Heidorn, Chester, and William L. Kelly, Midlothian, all of Va., assignors to Jewett Automation, Inc., Richmond, Va.

Filed Jul. 25, 1994, Ser. No. 280,179

Int. Cl.[6] B21G *3/30*

U.S. Cl. 470—34 **10 Claims**



1. A process for producing multi-vaned nails comprising:

a) continuously advancing iron wire of uniform circular cross section to a first operation where the wire is severed into equal successive lengths having upstream and downstream extremities, and a head portion is formed at one of said extremities and a point formed at the opposite extremity, thereby producing a nail having a shank portion of circular cross section,

b) forwarding said nails to a second operation which orients said nails, and places them in abutting disposition suspended from their heads on an advancing mechanism,

c) receiving onto an indexing mechanism nails from said advancing mechanism, whereby said nails are individually separated in a uniformly oriented disposition,

d) feeding said oriented nails sequentially downwardly in head first disposition,

e) receiving said downwardly directed nails into the entering nip of interengaged forming rolls having uniformly spaced notches which interact to secure the head of each nail, and further having regions between said notches which form the shank portion into a multi-vaned profile, whereby the heads of the nails enter said notches, and

f) discharging said formed nails at the exiting nip of said forming rolls.

5,542,887

AUTOMATIC TRANSMISSION CONTROL APPARATUS

Kazumasa Tsukamoto, Toyota; Masahiro Hayabuchi; Masaaki Nishida, both of Anjo; Yoshihisa Yamamoto, Nishio; Muneo Kusafuka, Anjo; Kazuhiro Mikami, Kariya; Hiroshi Tsutsui, Nishio, and Akihito Iwata, Hekinan, all of, Japan, assignors to Aisin Aw Co., Ltd., Japan

Filed Apr. 25, 1995, Ser. No. 428,968

Claims priority, application Japan, Apr. 25, 1994, 6-086904

Int. Cl.[6] F16H *61/20*

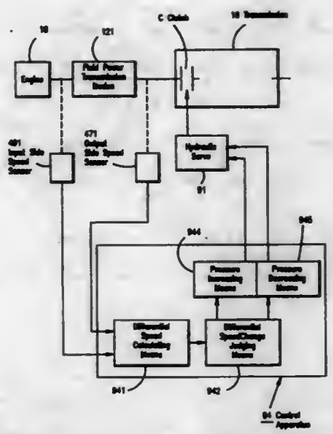
U.S. Cl. 475—63 **14 Claims**

1. An automatic transmission control system for controlling a transmission gearbox in a drivetrain including an engine and a fluid power transmission device transmitting the rotation of the engine to the transmission gearbox, to create a neutral control state when a forward travel range is selected and the vehicle is at a standstill with the engine idling, said control system comprising:

a clutch within the transmission gearbox which is engaged when a forward travel range is selected;

a hydraulic servo for engaging the clutch responsive to oil pressure;

an input side speed sensor for detecting input side speed of the fluid power transmission device;



an output side speed sensor for detecting output side speed of the fluid power transmission device; and

a control device for controlling the oil pressure to the hydraulic servo, said control device comprising:

differential speed calculating means for calculating a differential speed as the difference between the detected input side speed and the detected output side speed of the fluid power transmission device;

differential speed change judging means for repeatedly judging, at intervals of a set time, whether or not the differential speed calculated by the differential speed calculating means has changed;

pressure increasing means for increasing the oil pressure to the hydraulic servo by a predetermined amount of pressure when the differential speed has not changed; and

pressure reducing means for reducing the oil pressure to the hydraulic servo by a set pressure when the differential speed has changed.

5,542,888

AUTOMATIC TRANSMISSION CONTROL SYSTEM WITH VARIABLE PRESSURE DISCHARGE

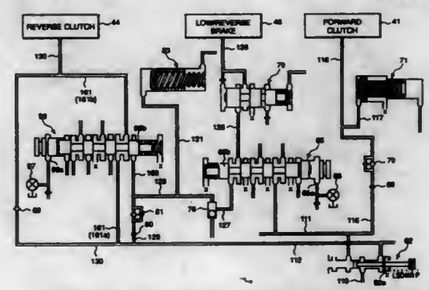
Hiroshi Takada, and Hiroshi Funatsu, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima-ken, Japan

Filed May 31, 1994, Ser. No. 251,859

Claims priority, application Japan, May 31, 1993, 5-154167

Int. Cl.[6] F16H *61/26*

U.S. Cl. 475—134 **16 Claims**



1. An automatic transmission control system for selectively locking and unlocking a plurality of frictional coupling elements provided within an automatic transmission with hydraulic pressure

so as to place the automatic transmission into any desired combination of gears, said automatic transmission control system comprising:

range shift means for manually shifting said automatic transmission into a plurality of ranges including a reverse range, a neutral range and a forward range, said range shift means discharging hydraulic pressure from a specific one of said frictional coupling elements to unlock said specific one of said frictional coupling elements during a reverse related shift to said forward range from said reverse range or vice versa; and

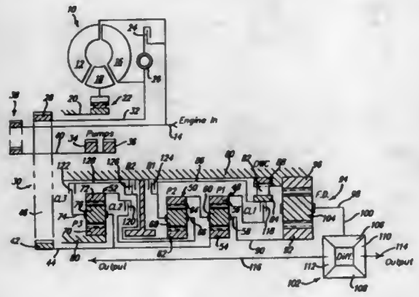
pressure discharge rate regulating means for regulating a discharge rate of said hydraulic pressure so that said discharge rate is larger for said reverse related shift than for a shift from one of said reverse range and said forward range to said neutral range.

5,542,889

MULTIPLE-SPEED AUTOMATIC TRANSMISSION FOR A MOTOR VEHICLE

Stanley L. Pierce, Northville, and Richard D. Moan, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 27, 1994, Ser. No. 363,853
Int. Cl.[6] F16H *3/62*
U.S. Cl. 475—275 **5 Claims**



1. A multiple speed ratio automatic transmission, comprising:

an input shaft;

an output shaft;

first, second, and third gear units, each gear unit having a sun gear, ring gear, planet pinions meshing with the sun gear and ring gear, and carrier rotatably supporting the planet pinions;

the sun gear of the first gear unit, carrier of the third gear unit and input shaft drivably connected mutually; the carrier of the first gear unit, ring gear of the second gear unit and output shaft drivably connected mutually; the carrier of the second gear unit and ring gear of the third gear unit drivably connected mutually;

an overrunning brake for holding the carrier of the second gear unit against rotation in one rotary direction and permitting rotation in the opposite direction;

a first clutch for releasably connecting the ring gear of the first gear unit and carrier of the second gear unit;

a second clutch for releasably connecting the carrier of the third gear unit and sun gear of the second gear unit;

a first brake for releasably holding the carrier of the second gear unit against rotation;

a second brake for releasably holding the sun gear of the second gear unit against rotation; and

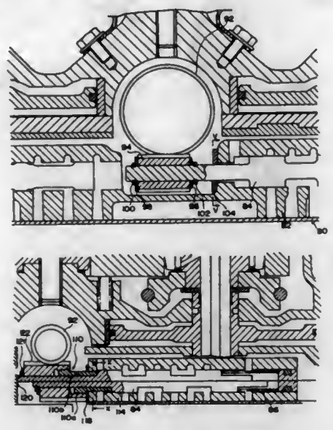
a third brake for releasably holding the sun gear of the third gear unit against rotation.

5,542,890

TOROIDAL STEPLESS TRANSMISSION

Masaki Nakano, and Toshikazu Oshidari, both of Kanagawa, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 19, 1994, Ser. No. 358,951
Claims priority, application Japan, Dec. 24, 1993, 5-347924
Int. Cl.[6] F16H *15/38*
U.S. Cl. 476—10 **4 Claims**



1. A toroidal stepless transmission mechanism for a vehicle, comprising an input shaft rotated by a vehicle drive system, an input disk fixed on said input shaft, means for changing over the rotation direction of said input shaft, an output disk supported such that it is free to rotate on said input shaft adjacent to said input disk, the rotation direction of said output disk corresponding to forward or backward drive of the vehicle, a toroidal groove having a circular cross-section formed on surfaces of these disks surrounding said input shaft, a disk-shaped power roller gripped within said toroidal groove, an actuator for modifying an inclination angle of said power roller, separate control means for controlling said actuator for forward drive and backward drive of the vehicle, a spool which displaces in an axial direction between a forward drive position and a backward drive position for changing over said control means, and means for displacing said spool between said positions in accordance with the rotation direction of said output disk, characterized in that said displacing means comprises:

a transfer shaft which rotates in synchronism with said output disk,

a drive gear fixed on said transfer shaft,

a driven gear which rotates due to engaging with said drive gear and to which a sliding frictional force in the axial direction is also transmitted due to said engaging, and

means for supporting said driven gear on said spool such that an axial displacement of said driven gear is restricted while its rotation is allowed.

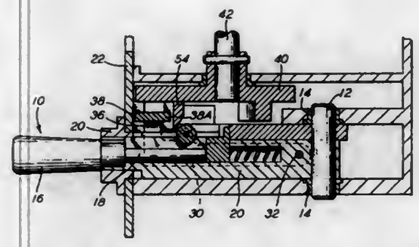
5,542,891

APPARATUS FOR INTERLOCKING REVERSER HANDLE ON A CONTROL STAND OF A RAILWAY LOCOMOTIVE

Paul J. Kettle, Jr., Pittsburgh; Ralph Santoro, Jr., New Kensington, and Vincent Ferri, Pittsburgh, all of Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Nov. 16, 1994, Ser. No. 340,538
Int. Cl.[6] B60K *41/28*
U.S. Cl. 477—96 **18 Claims**

1. Apparatus for interlocking independent control handles for throttle action, dynamic brake action and reverser action, within a



control stand for a railway locomotive to permit controlled removal of a reverser control handle comprising:

a first lever handle for controlling throttle action secured to a first rotatable axle;

a second lever handle for controlling dynamic brake action secured to a second rotatable axle;

a reverser lever handle for controlling reverser action securable to a rotatable reverser axle, said reverser axle being pivotal to three positions, a central neutral position and forward and reverse positions at either end;

a first cam disk mounted to said first axle for rotation therewith, and a second cam disk mounted to said second axle for rotation therewith, said first and second cam disks adapted to interlock with each other such that neither one of said first or second axles can be rotated unless the other axle is in an "off" position;

a pivotal lock member having an engaging means thereon adapted to pivotally lock said reverser lever handle in place when said reverser lever handle is secured to said reverser axle, said pivotal lock member also having a follower means;

a first arcuate groove member secured to a structural member of said control stand and adapted to continuously engage said follower means of said pivotal lock member throughout rotation thereof with rotation of said reverser axle, said first arcuate groove member adapted to permit said pivotal lock member to be pivoted when said reverser axle is in the "neutral" position to allow removal of said reverser lever handle from said reverser axle; and

a second arcuate groove member secured to one of said first or second cam disks, and adapted to continuously engage said follower means of said pivotal lock member throughout rotation thereof with rotation of said reverser axle, said second arcuate groove member adapted to permit said pivotal lock member to be pivoted when said first and second axles are in an "off" position to allow removal of said reverser lever handle from said reverser axle.

5,542,892

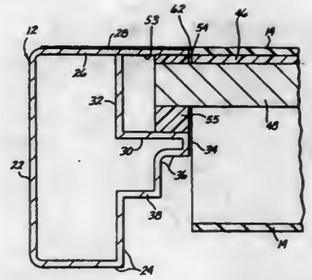
SUPPORTING CHASSIS FOR A TREADMILL

Kirk A. Buhler, Corona, Calif., assignor to Unisen, Inc., Tustin, Calif.

Filed Aug. 15, 1994, Ser. No. 290,149
Int. Cl.[6] A63B *22/02*
U.S. Cl. 482—54 **14 Claims**

1. An improvement in a treadmill exercise device having a chassis and a continuous belt supported within said chassis, said belt in turn being supported by an underlying deck, said improvement comprising;

a shock absorber disposed in said chassis beneath said deck, said shock absorber for supporting said deck and thus said belt so that impulsive foot falls on said belt are cushioned, and wherein said deck is unsecured to said chassis and free floating on said shock absorber.

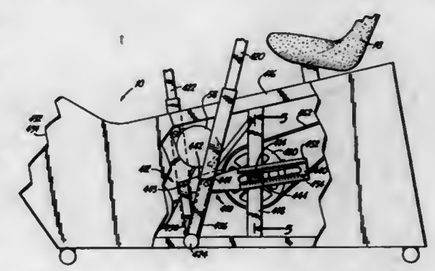


5,542,893

EXERCISE MACHINE WHICH CONVERTS RECIPROCATING MOTION TO UNIDIRECTIONAL ROTATIONAL MOTION

Paul S. Petersen, Minnetonka, Minn., and James F. Ster, Jr., Citrus Heights, Calif., assignors to Bioform Engineering, Inc., Ross, Calif.

Continuation of Ser. No. 491,670, Mar. 8, 1990, abandoned.
This application Feb. 16, 1994, Ser. No. 198,081
Int. Cl.[6] A63B *69/06;22/12*
U.S. Cl. 482—72 **12 Claims**



1. An apparatus for converting reciprocating motion to single direction rotational motion, the apparatus comprising:

a frame;

a shaft set for rotation in the frame;

a first reciprocable arm pivotally mounted to the frame;

a first one way clutch mounted on the shaft;

a second one way clutch mounted on the shaft;

a first rack in working relation with the first reciprocable arm and engaging the first one way clutch for driving the shaft when moved in a primary direction at a rate of speed sufficiently fast to overtake the shaft;

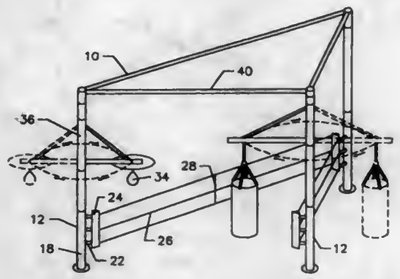
a second rack in working relation with the first reciprocable arm, with the second rack engaging the second one way clutch for driving the shaft when moved in a reciprocal direction at a rate of speed sufficiently fast to overtake the shaft;

a first yoke, the first yoke mounted to and extending from the first reciprocable arm to the shaft and the first and second racks mounted to the first yoke;

where one of the first and second one way clutches freewheels during transmission of power to the shaft by the other of the first and second one way clutches; and

means for counterbalancing separating force generated between the power transmitting clutch and the one of the first and second racks engaging the power transmitting clutch, the first rack and the second rack being located on opposing outer sides of the first yoke.

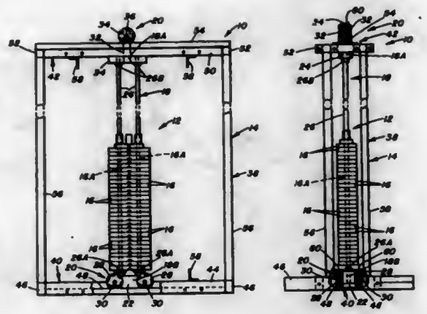
5,542,894
FLEXIBLE ATHLETIC TRAINING PERIMETER SYSTEM
Dicky R. Jordan, 224 Dee Dee St., Longview, Tex. 75602
Filed Mar. 29, 1995, Ser. No. 413,122
Int. Cl.[6] A63B *71/02*
U.S. Cl. 482—83 4 Claims



1. An athletic training perimeter system comprising:
a plurality of corner posts, said corner posts having first and second coupling eye pairs of coupling eyes, each said coupling eye of each said coupling eye pair being positioned at substantially the same longitudinal position on said corner post and being relatively positioned on the exterior surface of said corner posts at 90° angles about a longitudinal axis of each said corner posts, said first coupling eye pair being positioned at a first longitudinal corner post position and said second coupling eye pair being positioned at a second longitudinal corner post position;
a plurality of fence sections having first and second fence section ends respectively defined by first and second fence posts oriented in a parallel relative relationship, intervening said first and second fence posts in perpendicular arrangement with said fence posts and fixedly connected at respective first and second rod ends to said first and second fence posts is a plurality of metallic rods, said fence posts of said fence sections having fixedly attached thereto, in an orientation substantially opposite the attachment site of said metallic rods, first and second coupling pins, a portion of said coupling pins being sized and shaped for telescopic engagement with said coupling eyes, and said coupling pins being positioned on said fence posts for simultaneous mating with said coupling eyes on one said corner post.

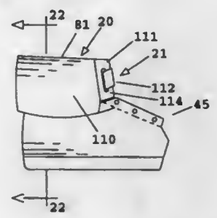
5,542,895
MOVABLE WEIGHT STACK DEVICE AND SUPPORT FRAME FOR MULTI-STATION WEIGHT-TRAINING MACHINE
Kenneth G. Colbo, Jr., 929 SW. Higgins, #6, Missoula, Mont. 59803
Filed Apr. 10, 1995, Ser. No. 419,411
Int. Cl.[6] A63B *21/062*
U.S. Cl. 482—98 19 Claims

1. A movable weight stack device for a multi-station weight-training machine, said device comprising:
(a) a plurality of weights in stack form;
(b) an upright support structure mounting said weights for undergoing vertical movement between upper and lower ends of said upright support structure, said upright support structure including
(i) a lower base,
(ii) an upper base, and
(iii) a pair of parallel vertical support rods connected at lower and upper ends respectively to said lower and upper bases, said support rods receiving said plurality of weights in said stack form and guiding movement of said weights between said lower and upper bases; and



(c) movable means for mounting said upright support structure and said weights therewith to undergo lateral movement between different workout stations of a multi-station weight-training machine, said movable means including a pair of generally parallel vertical support members attached to a pair of opposite sides of said upper base at a middle location therealong, said support members extending above said upper base.

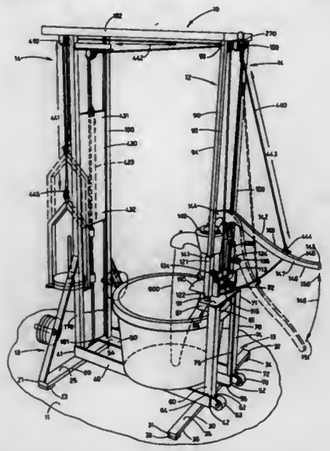
5,542,896
LIMB ENCIRCLING EXERCISE WEIGHT WITH MOUNTING STRUCTURES
Husein O. Qaiesi, 16043 Springfield, Markham, Ill. 60426, and Michael A. Groves, 2144 W. Arthur, Apt. 2, Chicago, Ill. 60645
Filed Apr. 3, 1995, Ser. No. 415,653
Int. Cl.[6] A63B *21/065*
U.S. Cl. 482—105 5 Claims



1. An exercise weight, attachable to a collar portion of an athletic shoe, comprising:
(a) a weight unit comprising:
(a) a cover having a first end portion and a second end portion;
(b) high-density material, contained within the cover;
(c) a first: strip of a first sex of VELCRO, arrayed lengthwise on the cover;
(d) a second strip of a second sex of VELCRO, arrayed lengthwise on the cover in a position that is adjacent and parallel to the first strip of VELCRO; and
(e) adjustable restraint means for attaching the two end portions of the cover, thereby holding the weight unit against an ankle of a user; and
(b) convertible band means, having a first side and a second side, for attaching a weight unit to the top of an athletic shoe comprising:
(a) an adhesive strip, on the first side of the convertible band means, for attaching the convertible band to the collar portion of an athletic shoe;
(b) a third strip of VELCRO on the second side of the convertible band;

(c) a fourth strip of VELCRO on the second side of the convertible band, the third and fourth VELCRO strips having opposite sexes and having a parallel relationship; and
(d) a fold line in the convertible VELCRO attachment means, whereby the third strip of VELCRO may be moved from a lower position engaging the fourth strip of loop VELCRO to an upper position wherein the third and fourth strips of VELCRO on the convertible band may engage the first and second strips of VELCRO of the weight unit.

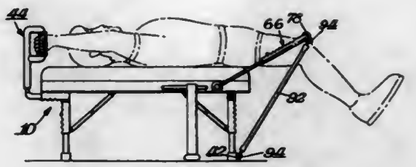
5,542,897
EXERCISE PUMP DEVICE
Timothy L. Hall, 3209 Sherman Rd., Oconto, Wis. 54154
Filed Jan. 17, 1995, Ser. No. 373,963
Int. Cl.[6] A63B *21/00*
U.S. Cl. 482—111 19 Claims



19. An exercise device for providing purposeful activity to a patient undergoing occupational therapy, the exercise assembly comprising:
a reservoir enclosing a source of fluid;
a pump having a handle, and wherein the handle is movable from a fluid withdrawing position to a fluid exhausting position thereby defining a path of travel; and
a work-adjusting mechanism mechanism disposed in force transmitting relation relative to the handle, and wherein the work adjusting mechanism selectively applies resistance to the handle as it moves along the path of travel from the respective first and second positions.

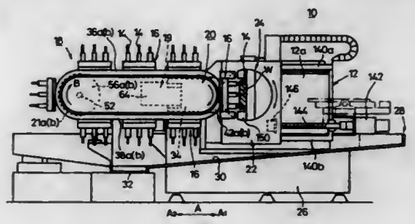
5,542,898
MULTIFUNCTION EXERCISE AND AEROBIC BENCH
William T. Wilkinson, Severnside Farm, 300 Kyle Rd., Crownsville, Md. 21032-0572
Filed Nov. 12, 1993, Ser. No. 150,821
Int. Cl.[6] A63B *21/00*
U.S. Cl. 482—142 19 Claims

1. A multifunction exercise and aerobic bench comprising an elongated support member of a length to support a substantial portion of a user's body, said support member having a first end and a second end for supporting a user, at least one leg at each of said first end and said second end extending below said support member for elevating said support member, a handle assembly including two spaced handles each of which is disposed at opposite



sides of said support member, said handle assembly being secured to said support member at said first end, said handles being selectively movable from a position directly above said support member to a position outwardly of said support member, said at least one leg at said second end being movably mounted to selectively dispose said second end at a lower elevation than said first end to selectively incline said support member, a belt mounted to said support member near said second end but inwardly thereof, a bar at said second end of said support member, said bar being spaced from and parallel to said second end of said support member, said bar having a length of generally the same dimension as the width of said second end of said support member, a leg assembly connected to said bar, said leg assembly having a first end and a second end, said first end of said leg assembly being rigidly connected to said bar, said second end of said leg assembly being pivotally connected to said support member to permit said bar to rotate over an arc from below said support member to above said support member, each of said handles including a vertical member having a hand gripping portion to permit the User to grid said handles with the user's hands while simultaneously engaging said bar with the user's legs to facilitate the pivoting of said bar by a leg lifting action while the user's body is maintained on said support member by the gripping of said handles, and each of said handles being selectively movable to a use position when said vertical member extends above said support member and to a non-use position to facilitate the storage of said bench during periods of non-use.

5,542,899
MULTISPINDLE-HEAD MACHINE TOOL
Ichiho Yamada; Tomoyoshi Miyagi; Shoji Nezuka; Satoru Ichihashi, and Hiroshi Isozaki, Sayama, all of, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 7, 1994, Ser. No. 350,629
Claims priority, application Japan, Dec. 8, 1993, 5-308076; Dec. 8, 1993, 5-308085; Dec. 8, 1993, 5-308094; Oct. 24, 1994, 6-258359; Oct. 24, 1994, 6-258360
Int. Cl.[6] B23Q *3/157*
U.S. Cl. 483—32 12 Claims



1. A multispindle-head machine tool comprising:
a column;
a plurality of multispindle heads each having a plurality of tools and an engaging member;
an annular feed passageway supporting said multispindle heads for circulatory movement therealong, said annular feed passageway having a pair of upper and lower fixed guide members supported on said column, and a movable guide member

movable back and forth horizontally for interconnecting ends of said upper and lower fixed guide members near a machining position;

a rotary actuator;

feed means disposed around said annular feed passageway and movable to circulate along said annular feed passageway by said rotary actuator for moving said multispindle heads along said annular feed passageway;

an actuator unit mounted on said column in association with said movable guide member for positioning one of said multispindle heads which is held on said movable guide member in said machining position, and rotating the tools of said one of the multispindle heads; and

a jig table mounted on a side of said column and horizontally movable back and forth, said jig table having an attachment jig for supporting a workpiece to be machined by the tools of said one of the multispindle heads.

5,542,900

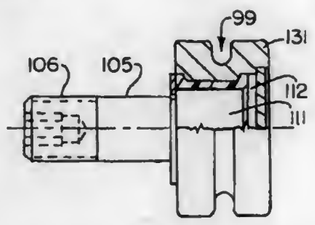
IDLER ROLLER AND METHOD OF MAKING

Thomas F. Burke, Strongsville, Ohio, assignor to Jason Incorporated, Cleveland, Ohio

Division of Ser. No. 303,422, Sep. 9, 1994, Pat. No. 5,493,777. This application Jun. 2, 1995, Ser. No. 458,341

Int. Cl.[6] B23P *15/00*

U.S. Cl. 492—16 **9 Claims**



1. An idler roller assembly comprising a pintle having a bearing surface, a composite idler roller mounted on said pintle, said composite idler roller comprising an annular tread of wear resistant material having an annular interior opening, a molded-on internal sleeve of bearing material sealed and interfitting with said annular tread in said annular interior opening to form a unitary composite roller, said bearing material having a smooth internal bearing surface directly supporting said roller for rotation on said bearing surface of said pintle.

5,542,901

VACUUM ARRANGEMENT ON COMBINER

Charles G. Atwell, Mechanicsville; Joseph F. Budjinski, II, Quinton, and Jack R. Shook, Doswell, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

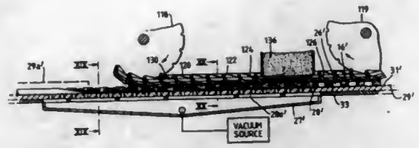
Continuation-in-part of Ser. No. 34,085, Mar. 22, 1993, Pat. No. 5,322,495, which is a continuation of Ser. No. 874,542, Apr. 27, 1992, Pat. No. 5,221,247. This application Mar. 22, 1994, Ser. No. 216,114

Int. Cl.[6] A24D *3/02*; **A24C** *5/47*

U.S. Cl. 493—47 **12 Claims**

5. An apparatus for manufacturing a continuous filter rod, to provide cigarette filters containing a particulate material, said apparatus comprising:

means for moving a wrapping material together with a plurality of spaced apart filter plugs along a path, each adjacent pair of filter plugs defining a receiving space therebetween, said moving means including an air permeable garniture tape;



means for delivering a particulate material to each of said receiving spaces, said delivering means at a first location along said path;

means for wrapping said wrapping material about said spaced apart filter plugs and said material received in said receiving spaces, said wrapping means at a second location downstream of said first location, said air permeable garniture tape extending through said first path portion to at least said second location; and

means for communicating a vacuum through said air permeable garniture tape and said wrapping material throughout a path portion from said first location to said second location so that delivery of said particulate material in said receiving spaces is facilitated and said delivered particulate material is retained by application of vacuum as the delivered particulate material is moved from said first location to said second location.

5,542,902

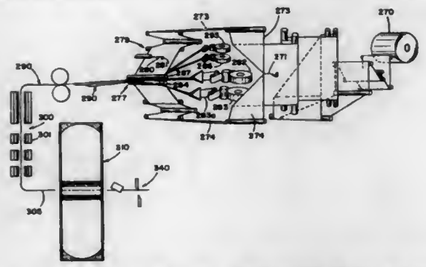
VENTED POUCH ARRANGEMENT AND METHOD

Cecil Richison, Hudson, Wis., and Gary M. Bell, Crystal, Minn., assignors to Kapak Corporation, St. Louis Park, Minn.

Continuation of Ser. No. 350,727, Dec. 7, 1994, which is a continuation of Ser. No. 89,286, Jul. 8, 1993, abandoned, which is a division of Ser. No. 906,686, Jun. 30, 1992, Pat. No. 5,254,073, which is a continuation of Ser. No. 742,401, Aug. 8, 1991, Pat. No. 5,147,272, which is a division of Ser. No. 516,111, Apr. 27, 1990, Pat. No. 5,059,036. This application May 9, 1995, Ser. No. 436,178

Int. Cl.[6] B31B *37/18;37/84;* **B65D** *33/01*

U.S. Cl. 493—195 **13 Claims**



1. A method of preparing pouch arrangements having: first and second opposed panel sections; a bottom edge; a base gusset member; a rib and trough closure arrangement; and, a gas filter oriented in one of the panel sections; said method including the steps of:

(a) providing a continuous full web of panel section material;

(b) splitting the full web into first and second continuous half webs of panel section material;

(c) forming a continuous feed of pouch-blank by:

(i) directing the first and second continuous half webs into juxtaposed orientation with one another to form the continuous feed of pouch blank with: front and back faces; and, first and second, opposite, longitudinal side edges;

(ii) orienting a first continuous base gusset between the first and second half webs along the first longitudinal side edge;

(iii) orienting a second continuous base gusset between the first and second half webs along the second longitudinal side edge;

(iv) orienting first and second continuous strips of rib and trough closure arrangement:

(A) aligned substantially parallel to one another and substantially parallel to the first and second longitudinal side edges; and

(B) positioned between the first and second half webs and also between the first and second continuous base gussets;

(d) sealing the continuous feed of pouch blank to form a plurality of sections therein comprising pouch arrangements joined to one another with:

(i) a top end of each pouch arrangement joined to a top end of another pouch arrangement along a center line of the continuous feed, the center line being oriented between and substantially parallel to the first and second rib and trough closure arrangements;

(ii) a side edge of each pouch arrangement joined to a side edge of a next pouch arrangement; and,

(e) cutting the pouch blank into individual ones of the pouch arrangements;

(f) said method being further characterized by steps of:

(i) punching a plurality of pores in the first continuous half web such that pouch arrangements therefrom will each have a pore positioned spaced from the rib and trough closure arrangement therein and toward the bottom edge thereof;

(ii) orienting gas valve arrangements over selected ones of said plurality of pores.

5,542,903

CENTRIFUGAL LIQUID SEPARATING MACHINE USING DECELERATION VANES

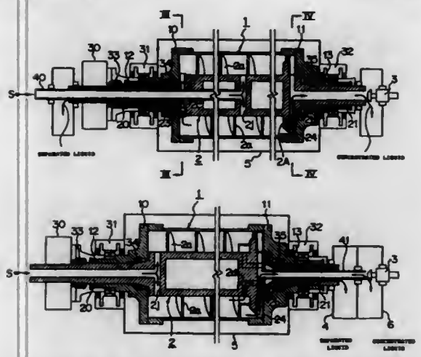
Katsunori Nishida; Keiichiro Miyano, both of Tokyo; Masaki Iwase, Chiba-Ken, and Eiji Ichinose, Kanagawa-Ken, all of, Japan, assignors to Tsukishima Kikai Co., Ltd., Tokyo, Japan

Filed Dec. 17, 1993, Ser. No. 168,353

Claims priority, application Japan, Dec. 18, 1992, 4-338467; Dec. 14, 1993, 5-313721

Int. Cl.[6] B04B *1/20;11/02*

U.S. Cl. 494—053 **13 Claims**



1. A centrifugal concentrating machine for separating liquid fed to a space between a rotary bowl and a screw conveyor into concentrated liquid and separated liquid by a centrifugal force and for discharging said liquids outside said machine via independent discharge passages, said screw conveyor having an axis and being coaxially disposed within the rotary bowl and further having a pair of supporting shafts, each of said shafts being aligned with said screw conveyor axis, the rotary bowl and the screw conveyor being rotated in the same direction at different high speeds, characterized in that both said supporting shafts of said screw conveyor are hollow, a first discharge passage for the concentrated liquid being formed in the one of the supporting shafts, a second discharge passage for the separated liquid being formed between the other of the supporting shafts and a feed tube coaxially disposed within the other of the supporting shafts, said feed tube being integral with a hub of the screw conveyor and in communication with said space, each of the first and second discharge passages being in communication with said space via first and second radial discharge passages extending radially of said screw conveyor axis, said first and second radial discharge passages formed in said screw conveyor; and wherein each of said first and second radial discharge passages forms an annular space constituting at least an inlet passage through which a respective said liquid flows wherein at least one of said first and second radial discharge passages is divided into sectors by a plurality of deceleration vanes which are arranged in a radial direction with respect to said screw conveyor axis and are secured to one of the screw conveyor and the rotary bowl so that mutual spacings between adjacent sectors becomes wider in an outer radial direction.

5,542,904

HANDGRIP FOR AN ELECTRO-OPTICAL DIAGNOSTIC APPARATUS SET

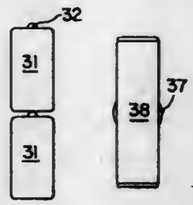
Helmut Heine; Otto H. Schmidt, both of Herrsching, and Arno Zirnheld, Gilching, all of, Germany, assignors to Heine Optotechnik GmbH & Co. KG, Herrsching, Germany

Filed Aug. 22, 1994, Ser. No. 293,298

Claims priority, application Germany, Aug. 30, 1993, 9313009 U

Int. Cl.[6] A61B *1/26;* **F21L** *7/00*

U.S. Cl. 600—197 **5 Claims**



1. A handgrip adaption set for an electro-optical apparatus set comprising:

a tubularly-shaped battery housing for receiving any, energy source selected from a predetermined plurality of energy sources with different configurations for energizing a light source, said housing having a first housing attachment element at a first end thereof and a second housing attachment element at an opposite, second, end thereof;

a set of interchangeable, releasably-attachable, end covers, each for being mounted to the first housing attachment element at the first end of the battery housing, said set of interchangeable releasably-attachable end covers including:

at least a first end cover comprising a solid first end cap and a first contact spring attached at an inner side of the first end cap for making contact with a first energy source when it is in said battery housing and said first end cover is mounted at said first end of said battery housing;

at least a second end cover comprising a second end cap with an opening therein and a second contact spring attached at an inner side of the second cap for making contact with a second energy source when it is in said battery housing and said second end cover is mounted at said first end of said battery housing;

at least a third end cover comprising a third end cap and a third contact spring for making contact with a third energy source when it is in said battery housing and said third end cover is mounted at said first end of said battery housing, said third energy source being substantially smaller than at

least one of said other energy sources, wherein, said third end cover includes a third-cover adapting piece, including a charging electronic circuit for charging said third energy source, mounted between the third end cap and the third contact spring;

at least a fourth end cover comprising a fourth end cap, a fourth-cover adapting piece including a charging electronic circuit mounted on said fourth end cap, and a fourth contact spring supported by said fourth-cover adapting piece for making contact with a fourth energy source when it is mounted in said battery housing and said fourth end cover is mounted at said first end of said battery housing, said fourth energy source being substantially shorter than said third energy source, wherein said fourth end cover further includes an auxiliary fourth-cover adapting piece, with a smaller diameter than the diameter of the fourth-cover adapting piece, disposed between the fourth-cover adapting piece and the fourth contact spring to bridge an empty space between the fourth-cover adapting piece and the fourth energy source;

at least a fifth end cover comprising a fifth end cap with a two-pole plug thereon serving to provide a coupling for connection to a normal main electrical supply, a fifth contact spring and a fifth-cover adapting piece, including a charging electronic circuit, disposed between the fifth contact spring and the fifth end cap; and

at least a sixth end cover comprising a sixth end cap with a two-pole plug serving to provide a coupling for connection to a normal main electrical supply, a sixth-cover adapting piece including a charging electronic circuit, a sixth contact spring, and an auxiliary sixth-cover adapting piece having a smaller diameter than the diameter of the sixth-cover adapting piece serving to bridge an empty space between the sixth-cover adapting piece and a sixth energy source when it is mounted in the battery housing and being disposed between the sixth contact spring and the sixth-cover adapting piece;

at least one releasably-attachable coupling piece for being mounted to the second housing attachment element at said opposite, second end of said battery housing for mounting a scope instrument head to said opposite, second, end of the battery housing;

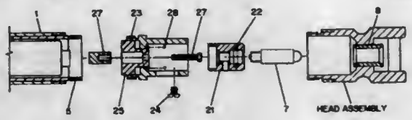
wherein each end cover of said set of releasably-attachable end covers has a cover attachment element, adapted to mate with the said first housing attachment element.

5,542,905

SWITCH MECHANISM FOR USE IN A LARYNGOSCOPE HANDLE

Joseph Nussenbaum, New York, N.Y., assignor to Propper Manufacturing Co., Inc., Long Island City, N.Y.

Filed Jan. 5, 1995, Ser. No. 369,176
Int. Cl.[6] A61B *1/26*
U.S. Cl. 600—191 **5 Claims**



1. A laryngoscope handle comprising:

(a) a tubular base portion,

(b) a first electrical contact disposed within and at a first end of the tubular base portion for making contact with a battery placed within said base portion;

(c) a head assembly attached to the tubular base portion at a second end thereof remote from said first end, said head assembly being disposed at a head-end of the handle and comprising:

(1) means for affixing a laryngoscope blade to the handle and permitting movement of the blade between a storage position which is substantially parallel to the handle and a working position which is substantially perpendicular to the handle; and

(2) a lamp having a base terminal and a side terminal, said lamp being held in a position whereby the lamp is aligned with an optical fiber in the laryngoscope blade when the blade is in the working position; and

(d) a switch assembly disposed within said handle, said switch assembly acting to establish an electrical circuit between the lamp and a battery placed in the base portion when the laryngoscope blade is moved into the working position, wherein the switch assembly comprises:

(1) a first sleeve in which the lamp is mounted, said first sleeve providing electrical contact between the side terminal of the lamp and the tubular base portion and leaving the base terminal of the lamp exposed, and said first sleeve being axially slidable within the handle;

(2) a spring operative to press the first sleeve towards the head-end of the handle;

(3) an electrically insulating barrel mounted within the handle between the first sleeve and the first end of the base portion, said electrically insulating barrel having an axial channel therethrough, said axial channel having a bottom region of greater cross section at a bottom end directed toward the first end of the tubular base portion and a top region of smaller cross section at a top end directed toward the head-end of the handle;

(4) an electrically conductive sliding terminal, said sliding terminal being slidably disposed within the bottom region of the axial channel in the electrically conductive barrel; and

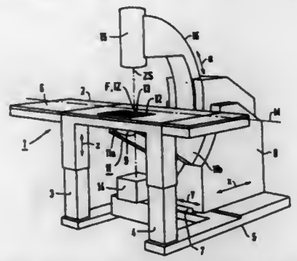
(5) an electrically conductive plunger affixed to the sliding terminal and slidably disposed within the top region of the axial channel in the insulating barrel such that the sliding terminal and the plunger slide as a unit within the channel.

5,542,906

ACOUSTIC THERAPY APPARATUS FOR TREATMENT WITH FOCUSED WAVES

Klaus Herrmann, Nuernberg, and Guenther Krauss, Erlangen, both of, Germany, assignors to Siemens Aktiensellschaft, Munich, Germany

Continuation of Ser. No. 194,521, Feb. 10, 1994, abandoned. This application May 5, 1995, Ser. No. 435,843
Claims priority, application Germany, Mar. 2, 1993, 43 06 459.0
Int. Cl.[6] A61B *17/22*
U.S. Cl. 601—2 **17 Claims**



1. A therapy apparatus for treating a region in a subject with focused acoustic waves comprising:

acoustic waves source means for generating acoustic waves focused to a focus, said acoustic waves source means having an x-ray transparent region;

x-ray locating means for locating a region to be treated in a subject by irradiating said subject from first and second irradiation directions with an x-ray locating beam having a central ray, said central ray assuming a first ray direction for said first irradiation direction and a second ray direction for said second irradiation direction, said first and second ray directions being in a common plane; and

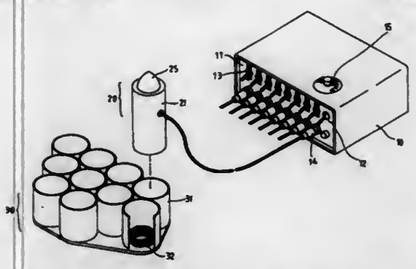
positioning means for adjusting said subject and said focus relative to each other for bringing said region to be treated and said focus into coincidence, said positioning means including adjustment means for moving said region to be treated and said focus relative to each other in a first adjustment direction which intersects said plane, and for moving said region to be treated and said focus relative to each other in a second adjustment direction and in a third adjustment direction for producing relative movements between said region to be treated and said focus in each of said second and third adjustment directions for producing a resultant relative motion between said region to be treated and said focus, for said first irradiation direction, which proceeds parallel to the second ray direction for said second irradiation direction for causing said x-ray locating beam to pass through said x-ray transparent region of said acoustic wave source means in said first irradiation direction and to pass by said acoustic waves source means in said second irradiation direction.

5,542,907

MASSAGE APPARATUS WITH MULTIPLE VIBRATOR UNITS

Lai Chou, 172, Alley 99, Lane 10, Section 2 Changping Road, Peitun, Taichung 406, Taiwan

Filed Aug. 30, 1994, Ser. No. 298,412
Int. Cl.[6] A61H *1/00*
U.S. Cl. 601—46 **3 Claims**



1. Massage apparatus with multiple vibrator units, comprising:

a converter and power supplier wherein a plurality of connectors are arranged adjacent each other to correspond with a plurality of nearby switches;

a plurality of vibrator units wherein each unit further comprises an outer sleeve, a massage head of bullet head type with an embedded coil, an inner motor coupled to an eccentric wheel, a cylindrical cover and a lower cylindrical seat;

a base of hive type wherein a base plate is integrated with a plurality of adjacent upright cylinders each having a respective spring seating in the lower part thereof;

connecting means electrically connecting said plurality of vibrator units to the plurality of connectors of said converter; and

means in said converter and power supplier for supplying direct current to said plurality of vibrators through said plurality of respective switches

wherein said plurality of vibrator units can be either detachably received in said base by resting on said plurality of springs respectively in said plurality of cylinders with the respective massage heads extending outwardly for massaging a specific area or held independently by hand for massaging a single point.

5,542,908

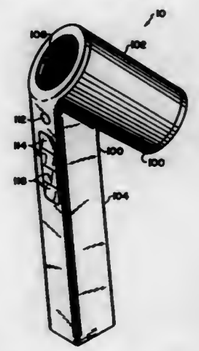
Patent Not Issued For This Number

5,542,909

WATER JET APPLIANCE

Gregory T. Camp, 205 E. 69th St., Apt. 5A, New York, N.Y. 10021

Continuation-in-part of Ser. No. 896,110, Jun. 12, 1992, abandoned. This application Mar. 28, 1994, Ser. No. 219,046
Int. Cl.[6] A61H *9/00*
U.S. Cl. 601—160 **5 Claims**



1. Hand-held, self-contained, self-powered, submersible, portable water jet apparatus comprising, in combination:

(a) an electric battery;

(b) an electric motor, electrically connected to and powered by said battery;

(c) a water pump mechanically connected to and powered by said motor and having an inlet port adapted to draw in surrounding water and an outlet port; said battery, motor and pump being of such capacity as to eject a water stream from said outlet port sufficient for substantial body massage; and

(d) a completely submersible housing containing and completely enclosing said battery, motor and pump, said housing including a head portion having openings for said inlet port and outlet port and containing said motor and pump, said housing with its contents, having an external physical size and shape as well as a weight that enable said apparatus to be conveniently hand-held when in use and manipulated and transported by a person, said housing further having an elongate handle portion with two ends, said head portion being rigidly, immovably attached to one end of said handle portion, the other end of said handle portion being unattached to said head portion and extending outward in a direction away from said head portion, said handle portion having a shape which permits it to be conveniently gripped and held by at least one hand of a user so that said housing may be oriented in any desired manner;

wherein during use the inlet port of the apparatus is completely submerged and the outlet port is directed toward the user's body;

whereby the apparatus may be completely submerged in water and held in the hand to direct a water stream on any desired part of the body.

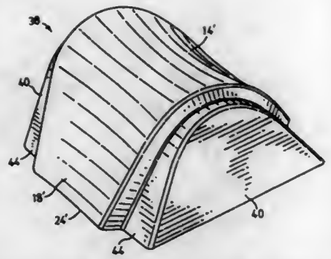
5,542,910

NECK SUPPORT

Tiura Oliver, 50 Etta Wylie Rd. Apt. 503, Etobicoke, Ontario, Canada

Filed Jan. 13, 1995, Ser. No. 372,430
Int. Cl.[6] A61F *5/00*; A47G *9/00*
U.S. Cl. 602—18 **2 Claims**

1. A neck support for supporting the head and neck of a person lying on their back on a supporting surface, said neck support comprising:



a support member having an upper surface which, when the neck support is located on the supporting surface below the head and neck of a person lying on their back thereon, extends upwardly and rearwardly from the supporting surface to engage the back of the person's head and neck to position the head and neck at an angle to the horizontal in the range of from about 40° to about 50°, said upwardly and rearwardly extending surface being transversely inwardly curved to receive the back of the person's neck,

said support member being of relatively hard rigid material and having a front portion which, when the support member is placed on the supporting surface, provides said upper surface and extends upwardly and rearwardly from the supporting surface at an angle in the range of from about 40° to about 50°, the support member then curving over at the top and extending downwardly to provide a rear end portion engaging the supporting surface at an acute angle thereto,

said support member having bottom edges engaging the support surface and shaped to enable the person to rock the neck support transversely by to and fro transverse rolling movement of the head and neck, the support member having substantially straight transversely-extending front and rear lower edges which engage the supporting surface and curve corners at the transversely opposite ends thereof to enable said transverse rocking to be effected, and

the upwardly and rearwardly extending portion of the support member having a lower part with an inverted substantially trapezoidal shape which provides said front lower edge with a length which is substantially shorter than the rear lower edge and facilitates said transverse rocking.

5,542,911

ORTHOPEDIC BRACE HAVING A SYSTEM OF ALTERNATELY INFLATABLE OR DEFLATABLE PNEUMATIC PADS FOR ADJUSTABLE FITTING OF THE BRACE TO THE BODY

Keith L. Cassford, San Diego; Richard E. Glidersleeve, Escondido, and Charles A. Bastyr, San Diego, all of Calif., assignors to Smith & Nephew Donjoy Inc., Carlsbad, Calif.

Continuation of Ser. No. 104,184, Aug. 10, 1993, Pat. No. 5,415,625, which is a continuation-in-part of Ser. No. 907,160, Jul. 1, 1992, Pat. No. 5,316,517. This application Mar. 8, 1995, Ser. No. 399,085

Int. Cl.[6] A61F *5/00*

U.S. Cl. 602—26 **5 Claims**

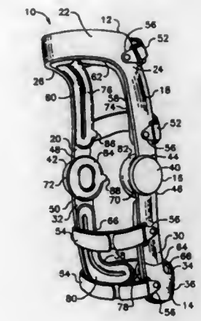
1. A knee brace positionable on a leg comprising:

an upper leg cuff having an upper inside face positionable adjacent to the upper leg;

a lower leg cuff having a lower inside face positionable adjacent to the lower leg;

a hinge rotatably connecting said upper leg cuff and said lower leg cuff, wherein said hinge has an intermediate inside face positionable adjacent to the knee joint; and

a pad positioned on said intermediate inside face having a fluid-retaining bladder and a selectively sealable valve penetrating said bladder enabling injection of fluid into or withdrawal of fluid from said bladder, wherein said pad has a loop



pathway defining an interior opening, said pathway having a size adaptable to circumscribe a knee condyle and said opening having a size adaptable to receive the knee condyle.

5,542,912

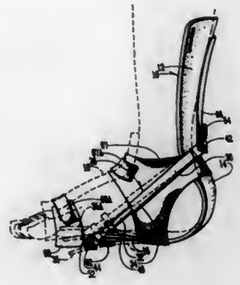
FOOT SPLINT

Clarence E. Hess, Safety Harbor, Fla., assignor to Restorative Care of America Incorporated, Clearwater, Fla.

Filed Jan. 9, 1995, Ser. No. 370,188

Int. Cl.[6] A61F *5/00*

U.S. Cl. 602—27 **14 Claims**



5. A foot splint, comprising,

a splint having a back portion, a heel portion and a foot portion,

said foot portion being joined to said back portion by said heel portion, and normally being positioned at a substantial right angle with respect to said leg portion,

said splint being of resilient material to permit said foot portion to be forcibly deflected at said heel portion to create an obtuse angle with respect to said leg portion,

said back portion being adapted to engage the rearward portion of the calf of a patient's leg,

a frame secured to said back portion above said heel portion and extending forwardly and downwardly to a point of connection with said foot portion, so as to form downwardly extending diagonal arms between said back portion and said foot portion;

said arms comprising first and second pairs of arms,

said pairs of arms comprising a first arm element threadably extending into a second arm element so that the threadable engagement of said first and second arm elements determine the effective length of each pair of arms;

said first arm element having a rotation element fixed thereto to permit manual rotation of said first arm element in either direction.

5,542,913

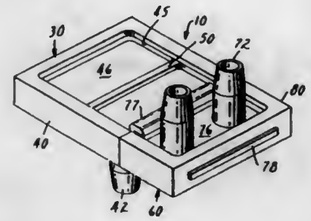
IN-LINE QUICK CONNECT APPARATUS FOR MEDICAL FLUID CIRCULATING SYSTEMS

Erin J. Lindsay, Manchester, Mich., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 77,344, Jun. 19, 1993, Pat. No. 5,399,156, which is a continuation-in-part of Ser. No. 493,491, Jun. 15, 1929, abandoned, which is a continuation-in-part of Ser. No. 493,286, Mar. 14, 1990, Pat. No. 5,149,318. This application Sep. 30, 1994, Ser. No. 316,245

Int. Cl.[6] B01D *19/00*

U.S. Cl. 604—4 **16 Claims**



1. An in-line quick connect apparatus for changeovers in medical fluid lines, said apparatus comprising:

a first assembly comprising:

a first connector having a connector opening and first connector means for mounting tubing in fluid communication with the connector opening;

a seal slidably mounted on said first connector, said seal being movable between a first position wherein said connector opening is sealed by said seal and a second position wherein said connector opening is not sealed by said seal; and,

first track means on said first connector for guiding movement of said seal along the first track means between the first and second positions; and

a second assembly comprising:

a seal tray removably attachable to said first connector;

a slide connector slidably mounted on said seal tray, said slide connector having a slide opening and second connector means for mounting tubing in fluid communication with the slide opening; and

second track means on said seal tray for guiding movement of said slide connector, said second track means being in alignment with said first track means on said first connector when said seal tray is attached to said first connector, said slide connector being movable along the second track means and first track means between:

a first position in which the slide connector is held by the second track means and said slide opening is sealed against said seal tray; and

a second position in which the slide connector is held by the first track means and said slide opening is in fluid communication with said connector opening of the first connector;

said connector opening of the first connector and said slide opening of the slide connector remaining sealed during movement of said slide connector and said seal between their respective first and second positions.

5,542,914

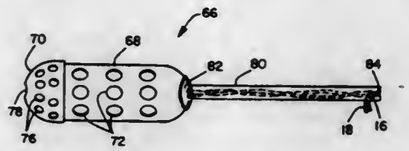
ENCAPSULATED TAMPON WITH AN APPLICATOR

Thomas P. Van Iten, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of Ser. No. 192,283, Feb. 2, 1994, abandoned, which is a continuation of Ser. No. 16,626, Feb. 12, 1993, abandoned. This application Dec. 27, 1994, Ser. No. 364,838

Int. Cl.[6] A61F *13/20;13/15*

U.S. Cl. 604—11 **8 Claims**



1. An encapsulated catamenial tampon with an applicator, said combination consisting of:

a) an absorbent;

b) a withdrawal string attached to said absorbent and having an opposite end with a knot formed therein;

c) a dissolvable capsule enclosing said absorbent and providing means for inserting said absorbent into a body cavity, said capsule having a cylindrically-shaped base member and a semi-spherically-shaped cap member, said base member housing at least a portion of said absorbent and having first and second ends, said first end being completely open and said second end having an opening formed therein through which said withdrawal string passes, said cap member slightly overlapping said base member to enclose said absorbent, and both said base member and said cap member having a plurality of openings formed therethrough which decrease the surface area of said capsule to allow said capsule to dissolve quickly; and

d) a single elongated applicator tube having a cup-shaped flange formed on one end which contacts said second end of said base member, said applicator tube being sized relative to a length of said withdrawal string and having an opposite end with a notch formed therein for retention of said withdrawal string when said knot is positioned adjacent to an exterior surface of said tube, said applicator tube being held snug against said capsule to facilitate positioning of said capsule in the body cavity.

8. An encapsulated catamenial tampon with an applicator, said combination consisting of:

a) an absorbent;

b) a withdrawal string attached to said absorbent and having an opposite end with a knot formed therein;

c) a dissolvable capsule enclosing said absorbent and providing means for inserting said absorbent into a body cavity, said capsule having a cylindrically-shaped base member and a lipstick-shaped cap member, said base member housing at least a portion of said absorbent and having first and second ends, said first end being completely open and said second end having an opening formed therein through which said withdrawal string passes, said cap member slightly overlapping said base member to enclose said absorbent, and both said base and cap members having a plurality of openings formed therethrough which decrease the surface area of said capsule to allow said capsule to dissolve quickly; and

d) a single elongated applicator tube having a cup-shaped flange formed on one end which contacts said second end of said base member, said applicator tube being sized relative to a length of said withdrawal string and having an opposite end with a notch formed therein for retention of said withdrawal string when said knot is positioned adjacent to an exterior

surface of said tube, said applicator tube being held snug against said capsule to facilitate positioning of said capsule in the body cavity.

5,542,915

THERMAL MAPPING CATHETER WITH ULTRASOUND PROBE

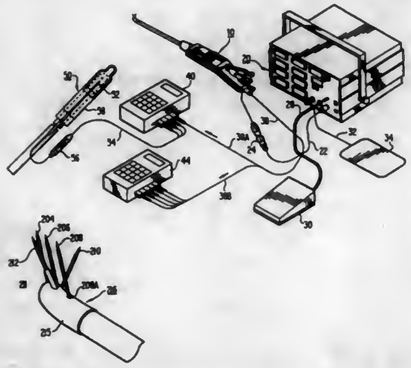
Stuart D. Edwards, Los Altos; Ronald G. Lax, Grassvalley; Ingemar H. Lundquist, Pebble Beach; Hugh R. Sharkey, Redwood City, and James A. Baker, Palo Alto, all of Calif., assignors to Vidamed, Inc., Menlo Park, Calif.

Continuation-in-part of Ser. No. 929,638, Aug. 12, 1992, abandoned, and a continuation-in-part of Ser. No. 12,370, Feb. 2, 1993, Pat. No. 5,370,675, and a continuation-in-part of Ser. No. 62,364, May 13, 1993, Pat. No. 5,435,805, and a continuation-in-part of Ser. No. 61,072, May 14, 1993, Pat. No. 5,385,544, and a continuation-in-part of Ser. No. 61,647, May 13, 1993, Pat. No. 5,421,819. This application Jan. 12, 1994, Ser. No. 180,511

Int. Cl.[6] A61B *17/39*

U.S. Cl. 604—22 **18 Claims**

1. A system for applying ablation power to a body organ comprising: a catheter having a plurality of stylet ports toward the distal end thereof, a first set of stylets for delivering ablation power to target tissue, a second set of stylets for measuring the temperature of the target tissue, an ultrasound probe insertable into the body independently of the catheter for providing information relating to the position of the first and second sets of stylets when situated adjacent to the desired body organ, and a set of temperature sensors carried by the ultrasound probe for monitoring the temperature of body tissue adjacent to the ultrasound probe.



5,542,916

DUAL-CHANNEL RF POWER DELIVERY SYSTEM

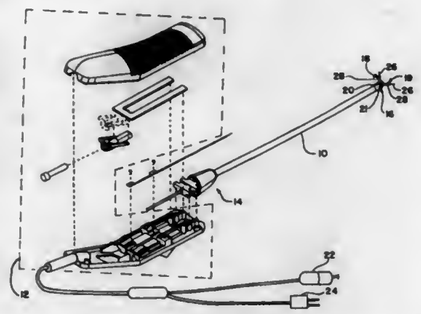
Chaya Hirsch, Palo Alto, Calif.; Robert Hale, Plymouth, England, and Bruno Strul, Palo Alto, Calif., assignors to Vidamed, Inc., Menlo Park, Calif.

Continuation-in-part of Ser. No. 929,638, Aug. 12, 1992, abandoned, and a continuation-in-part of Ser. No. 12,370, Feb. 2, 1993, Pat. No. 5,370,675, and a continuation-in-part of Ser. No. 61,072, May 14, 1993, Pat. No. 5,385,544, and a continuation-in-part of Ser. No. 216,315, Mar. 23, 1994, Pat. No. 5,484,400. This application Sep. 28, 1994, Ser. No. 314,190

Int. Cl.[6] A61B *17/20*

U.S. Cl. 604—22 **8 Claims**

1. Apparatus for the treatment by radio frequency ablation of a target volume of tissue of a prostate in a human male having a bladder with a base and a penis with a urethra therein formed by a urethral wall extending into the base of the bladder along a longitudinal axis with the tissue of the prostate surrounding the urethra near the base of the bladder comprising an indifferent electrode adapted to be placed in contact with the human male, an elongate probe member having proximal and distal extremities and being sized so that It can be introduced into the urethra and having a length so that when the distal extremity of the elongate probe member is disposed in the vicinity of the prostate, the proximal extremity extends out of the urethra, a control handle coupled to the proximal extremity of the elongate probe member, first and second stylers carried by the elongate probe member and being movable through the urethral wall into the target volume of tissue in the prostate, each of the stylers having an electrode and an insulating sleeve surrounding the electrode, radio frequency power supply means having first and second output channels of radio frequency energy, means coupling the first output channel to the electrode of the first styler and coupling the second output channel to the electrode of the second stylet, additional means coupling the indifferent electrode to the radio frequency power supply means, said radio frequency power supply means including control means for supplying radio frequency power simultaneously to the electrodes of the first and second stylets so that simultaneous ablation occurs in the target volume of the tissue in the prostate so that the lesion volume is approximately doubled over that which would be created by a single electrode for the same amount of time or conversely for the same lesion volume, the time required is reduced by approximately one-half.



5,542,917

ULTRASOUND DELIVERY CATHETERS INCORPORATING IMPROVED DISTAL TIP CONSTRUCTION

Henry Nita, Mission Viejo, and Timothy Mills, Belvedere Tiburon, both of Calif., assignors to Baxter International, Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 127,985, Sep. 28, 1993, Pat. No. 5,405,318, which is a division of Ser. No. 878,795, May 5, 1992, Pat. No. 5,267,954, which is a continuation-in-part of Ser. No. 640,190, Jan. 11, 1991, Pat. No. 5,304,115, and Ser. No. 787,292, Nov. 4, 1991. This application Oct. 18, 1994, Ser. No. 324,450

Int. Cl.[6] A61B *17/20*

U.S. Cl. 604—22 **65 Claims**

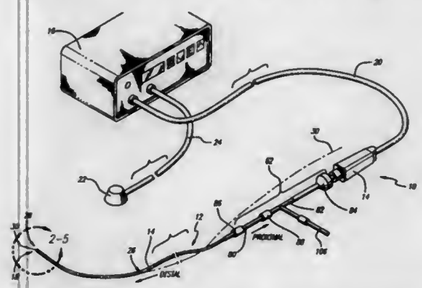
1. An ultrasound catheter for delivering ultrasonic energy from an extracorporeally positioned ultrasound generating apparatus, to a treatment location within a mammalian body, said catheter comprising:

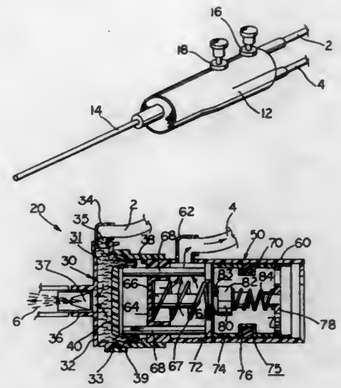
a tubular catheter body having a proximal end, a distal end and a lumen extending longitudinally therethrough, said lumen having an inner luminal surface;

a distal head member at least partially inserted into the distal end of said catheter lumen, the portion of said distal head member which inserts into the distal end of said catheter lumen having an outer surface which abuts against the inner luminal surface of the catheter body;

an ultrasound transmission member extending longitudinally through said catheter body, said ultrasound transmission member having a distal end in contact with said distal head member and a proximal end which is connectable to said extracorporeally positioned ultrasound generating apparatus; and

a pressure exerting member mounted around the distal end of the catheter body to exert inward compressive force against the distal end of the catheter body and the portion of the distal head member received therewithin to retain said proximal portion of the distal head member within the lumen of said catheter body.





a probe extending from said body,

a fluid pump carded by said body and connected to said fluid source and said vacuum source, and

valve means carded by said housing and connected between said fluid pump and said vacuum source for selectively communicating negative pressure from said vacuum source to one of said fluid pump and said probe, wherein with said vacuum source connected to said fluid pump, said fluid pump operates to pump the irrigating fluid from said fluid source through said probe to said surgical site, and wherein with said vacuum source connected to said probe said vacuum source aspirates material from said site through said probe to aspirate said surgical site,

said fluid pump includes a housing having a fluid chamber for receiving fluid from said fluid source, a diaphragm part disposed within said fluid chamber for reciprocal movement therein, and a pneumatic cylinder connected to said vacuum source for reciprocating said diaphragm part within said fluid chamber to draw fluid into said fluid chamber from said fluid source and to expel fluid from said fluid chamber.

5,542,918

VACUUM DRIVEN FLUID PUMP FOR AN ASPIRATION/IRRIGATION INSTRUMENT

Robert W. Atkinson, Dover, Ohio, assignor to Zimmer, Inc., Warsaw, Ind.

Filed Jan. 6, 1995, Ser. No. 369,232

Int. Cl.[6] A61M *3/00;* **F04B** *17/00*

U.S. Cl. 604—27 **5 Claims**

1. A hand held lavage instrument for use with an irrigation fluid source and a vacuum source for directing an irrigating fluid from said fluid source and an aspirating suction from said vacuum source to a surgical site, said instrument comprising:

a body,

5,542,919

PERITONEAL DIALYSIS DEVICE

Wolfgang Simon, Schweinfurt; Günther Pototzky, Schonungen; Rolf Groos, Friedrichsdorf, and Günter Schmidt, Haltern, all of, Germany, assignors to Fresenius AG, Bad Homburg, Germany

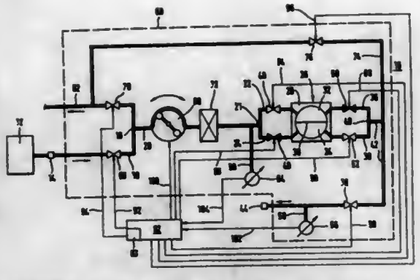
Filed Jun. 5, 1995, Ser. No. 464,303

Claims priority, application Germany, Jun. 6, 1994, 44 21 126.0

Int. Cl.[6] A61M *1/00*

U.S. Cl. 604—29 **12 Claims**

1. Peritoneal dialysis device (**10**, **106**) comprising (a) a balancing arrangement with two chambers (**32**, **34**), which can be switched into a filling or emptying phase by a valve arrangement (**46–52**), (b) a peritoneal dialysis fluid source (**12**), which is connected to the balancing arrangement through an introduction line (**16**, **20**, **22**, **24**), (c) a catheter line (**42**) that starts from the balancing arrangement and can be connected to a peritoneal catheter, (d) a discharge line (**22**, **24**, **20**, **62**) starting from the balancing arrangement, (e) a pump arrangement (**60**, **108**, **110**) for transporting fresh or used peritoneal dialysis fluid, (f) a control unit (**82**) for controlling the valve arrangement (**46–52**) and the pump arrangement (**60**, **108**, **110**), (g) a single balancing chamber (**26**), which is separated through a movable liquid-impermeable membrane (**30**) into the two balancing chamber halves (**32**, **34**), the balancing chamber halves (**32**, **34**) being connected alternately through the valve arrangement (**46–52**) either with the source for ..



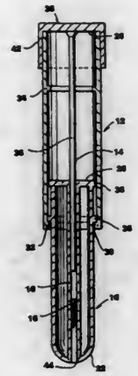
the peritoneal dialysis fluid (12) in the introduction operation or to the discharge line in the removal operation, and, on the other hand, to catheter line (42) in the flow connection, (h) a first pressure sensor (56) arranged in the catheter line (42), wherein upon the pressure-dependent signal of this sensor, the control unit (82) inactivates the pump when a predetermined pressure valve is reached, and wherein a device is provided for determining the complete filling of the balancing chamber, upon the signal of which the control unit (82) switches the valve arrangement cyclically.

5,542,920

NEEDLE-LESS PARENTERAL INTRODUCTION DEVICE

Roland Cherif Cheikh, Issy Les Moulineaux, France, assignor to Delab, Paris, France

Filed Sep. 12, 1994, Ser. No. 304,274
Int. Cl.[6] A61M *31/00*
U.S. Cl. 604—57 13 Claims



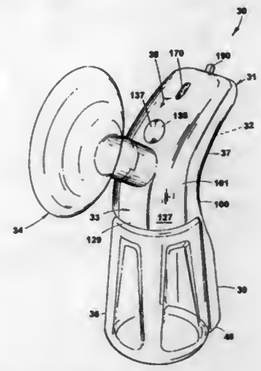
1. A needle-less device capable of parenteral administration of a medicament through the skin without penetration of the skin by said device, said device comprising a barrel member and a plunger, said barrel member having first and second ends and a bore having an inside diameter for receipt of said medicament in solid form, said bore extending from said first end to said second end of said barrel, plunger comprising an elongated rod having an outside diameter, said outside diameter being substantially the same as the inside diameter of said bore, said rod being inserted into the bore at the said second end of said barrel, said plunger being capable of movement in said bore to push said medicament out said first end of the barrel member, through the skin of a patient when said barrel member is pressed against the skin of the patient and when the medicament is of sufficient structural strength to penetrate the skin of the patient, and said first end of the barrel member having a nosecone shape which precludes penetration of the skin by said barrel member.

5,542,921

ELECTRIC BREAST PUMP

Brenda J. Meyers; Donald W. Herritz; Jean L. Johansen, all of Reedsburg, Wis.; William B. Hudson, Jr., Fremont, Mich.; Randall P. Bell, River Forest, Ill.; Gary F. Prokop, Wheaton, Ill.; James F. Caruso, Chicago, Ill., and James I. Allen, Lake Villa, Ill., assignors to Gerber Products Company, Fremont, Mich.

Filed Nov. 4, 1994, Ser. No. 334,812
Int. Cl.[6] A61M *1/06*
U.S. Cl. 604—74 43 Claims



1. A breast pump comprising:
a housing;
a suction unit operably mounted to said housing, one of said housing and said suction unit defining a suction inlet;
an adapter including a tubular protrusion configured to engage said suction inlet and further including a funnel-supporting section for supporting a funnel to engage a mother's breast and a bottle-engaging section for holding a bottle to collect milk extracted from the mother's breast; and
a pair of spaced "O" rings engaging said tubular protrusion and said suction inlet for creating a substantially air tight and stable seal between said tubular protrusion and said suction inlet and also creating friction to retain said adapter to said housing, said housing defining a hand grip and further defining a shroud located generally below said hand grip for partially protecting a bottle attached to said bottle-engaging section.

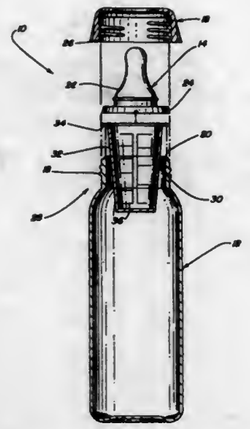
5,542,922

SYSTEM AND METHOD FOR DISPENSING LIQUID MEDICAMENTS TO INFANTS

Grace C. Petterson, Rancho Palos Verdes; Steven B. Dunn, Beverly Hills, and Tor Petterson, Rancho Palos Verdes, all of Calif., assignors to Munchkin, Inc., Van Nuys, Calif.

Filed Nov. 4, 1994, Ser. No. 334,590
Int. Cl.[6] A61J *7/00*
U.S. Cl. 604—77 6 Claims

1. A system for dispensing liquid medicine to an infant, comprising:
a baby bottle, said baby bottle having a threaded neck portion at an upper end thereof, said the threaded neck portion having a rim that defines an opening therein;
a resilient nipple member;
a ring member holding said nipple member tightly against said rim during feedings, said ring member having threads defined in an interior portion thereof that mate with said threaded neck portion, whereby said ring member is screwed onto said bottle; and
a medicine cup, said medicine cup comprising a fluid impervious concave cup-like portion that is fitted within said threaded



neck portion of said baby bottle so as to communicate with said nipple member but not the rest of said baby bottle, said medicine cup further comprising flange means for supporting said medicine cup on said rim of said baby bottle, said flange means being sized so as not to interfere with said ring member during screwing and unscrewing of said ring member onto said baby bottle, said cup-like portion being constructed so as to be impervious to fluid transfer therethrough so that medicine will not leak from said medicine cup into said baby bottle, whereby medicine may be dispensed to an infant by filling the medicine cup with medicine, setting the medicine cup into the threaded neck portion of the baby bottle, and screwing the ring member, together with the nipple member, onto the threaded neck portion so as to seal said nipple member into communication with said medicine cup and out of communication with the rest of said baby bottle.

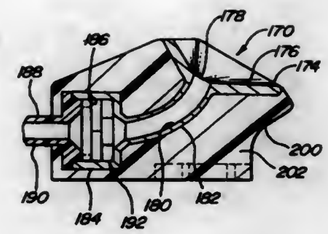
5,542,923

IMPLANTABLE ACCESS DEVICES

William D. Ensminger, and Robert F. Gavin, both of Ann Arbor, Mich., assignors to Michigan TransTech Corporation, Ann Arbor, Mich.

Continuation of Ser. No. 407,483, Mar. 15, 1995, Pat. No. 5,476,451, which is a continuation of Ser. No. 259,053, Jun. 13, 1994, Pat. No. 5,417,656, which is a continuation of Ser. No. 148,394, Nov. 8, 1993, Pat. No. 5,350,360, which is a division of Ser. No. 940,619, Sep. 4, 1992, Pat. No. 5,281,199, which is a continuation-in-part of Ser. No. 818,626, Jan. 10, 1992, Pat. No. 5,226,879, which is a continuation-in-part of Ser. No. 654,661, Feb. 15, 1991, Pat. No. 5,180,365, which is a continuation-in-part of Ser. No. 539,793, Jul. 18, 1990, Pat. No. 5,053,013, which is a continuation-in-part of Ser. No. 487,541, Mar. 1, 1990, Pat. No. 5,057,084. This application Jun. 6, 1995, Ser. No. 470,772
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—93 13 Claims

1. An implantable access port to permit the introduction of an external filament such as an external catheter, needle, guide wire or optical fiber within a patient comprising:
an entrance funnel defining an entrance orifice which decreases in cross-sectional area to a focus area, said entrance orifice having a hard surface for enabling a sharp access instrument such as a metal needle or trocar to be guided upon contact with said entrance orifice to said focus area,
a passageway extending from said focus area and defining an exit orifice,
valve means within said passageway, said valve normally resisting the passage of fluids through said valve yet opening to permit passage of said external filament inserted through said housing passageway and into said valve inlet, and
said port formed of at least two materials, a first of said materials forming said entrance orifice and being impenetrable by said external filament, a second of said material being non-metallic and defining at least some portion of said port.



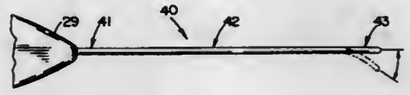
5,542,924

METHOD OF FORMING A CATHETER HAVING A MULTIPLE DUROMETER

Phillip J. Snoke, Atlanta; David S. Rowley; David G. Lincoln, both of Smyrna, and Kirk W. Charles, Austell, all of Ga., assignors to Catheter Imaging Systems, Atlanta, Ga.

Division of Ser. No. 970,490, Nov. 2, 1992, Pat. No. 5,399,164. This application Jan. 13, 1995, Ser. No. 372,641
Int. Cl.[6] A61M *37/00*
U.S. Cl. 604—95 6 Claims

1. A method of forming a catheter having a multiple durometer



hardness for easily inserting into a vessel or cavity of the human body, comprising the steps of:
welding together elongate coaxial tube portions formed of a polymeric material and having substantially the same outer circumference and variable flexibility with respect to each other to thereby integrally form a one-piece elongate tube.

5,542,925

DILATATION CATHETER WITH OBLONG PERFUSION PORTS

Jean C. Orth, San Jose, Calif., assignor to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Continuation of Ser. No. 148,000, Nov. 5, 1993, abandoned. This application Feb. 13, 1995, Ser. No. 387,977
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—102 13 Claims



1. A perfusion type intravascular catheter assembly including a catheter with an inner lumen extending therein and a guidewire having a predetermined diameter slidably disposed within the lumen of the catheter, comprising:
a) an elongated catheter shaft having proximal and distal ends, a guidewire port in the distal end with the inner lumen which slidably receives the guidewire having a predetermined diameter and which extends at least within a distal section of the

catheter shaft and is in fluid communication with the guidewire port in the distal end of the catheter shaft;

b) expandable means on the distal section of the catheter shaft spaced from the distal end of the shaft which occludes the patient's artery when expanded; and

c) a plurality of oblong perfusion ports having a major and a minor axis in a wall portion of the distal shaft section proximal to the expanding means which are in fluid communication with the guidewire receiving inner lumen and wherein the minor axis is smaller than the predetermined diameter of the guidewire and the major axis is greater than the predetermined diameter of the guidewire.

5,542,926

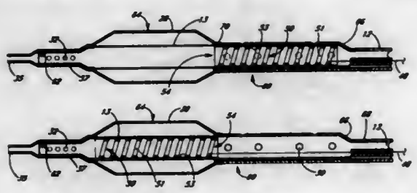
LOW PROFILE PERFUSION CATHETER

Michael Crocker, Mission Viejo, Calif., assignor to Cardiovascular Dynamics, Inc., Irvine, Calif.

Continuation of Ser. No. 84,820, Jun. 30, 1993, Pat. No. 5,344,402. This application Mar. 8, 1994, Ser. No. 208,617

Int. Cl.[6] A61M *29/00*

U.S. Cl. 604—102 **9 Claims**



1. A catheter comprising:

an elongate, flexible tubular body;

a drug permeable delivery balloon on the tubular body in fluid communication with a first inflation lumen extending through the tubular body, said delivery balloon enlargeable from a first reduced outer diameter to a second, enlarged outer diameter;

a perfusion conduit extending through said delivery balloon, at least a portion of said perfusion conduit expandable from a first reduced diameter to a second enlarged diameter;

at least one influent port proximal to said balloon, said influent port extending through the wall of the tubular body and communicating with said perfusion conduit;

at least one effluent port distal to said balloon, said effluent port extending through the wall of the tubular body and communicating with said perfusion conduit; and

a support located within said perfusion conduit for reversibly maintaining the perfusion conduit in the second, enlarged diameter;

wherein said support is axially movable from a first, proximal position to a second, distal position, thereby expanding the perfusion conduit from the first, reduced diameter to the second, enlarged diameter.

5,542,927

SELF RETRACTING SYRINGE NEEDLE APPARATUS AND METHODS

Gale H. Thorne, Bountiful, and David L. Thorne, Kaysville, both of Utah, assignors to Specialized Health Products, Inc., Bountiful, Utah

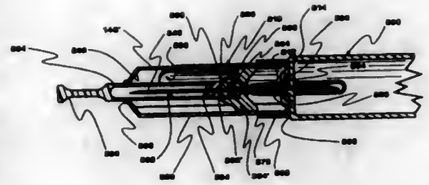
Continuation-in-part of Ser. No. 370,728, Jan. 10, 1995, Pat. No. 5,480,385. This application Jun. 7, 1995, Ser. No. 484,533

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—110 **39 Claims**

1. A medical syringe system comprising:

a medical syringe comprising a male luer fitting and an associated luer lock fitting used for fluid connections:



a retractable needle assembly comprising a luer lock fitting which releasibly connects to the associated luer lock fitting, said retractable needle assembly further comprising:

a housing comprising an elongated cylindrical body of sufficient length to contain a medical needle retracted therein, said housing comprising an exit and reentry end, wherethrough the medical needle with an associated cover travels for use outwardly therefrom and retracts inwardly for automatic, safe enclosure of the needle after use, and a connector end whereat connection is made to the male luer fitting;

the needle cover at least partially disposed in the housing during transport and before the medical needle is used in a medical procedure, the needle cover and the housing cooperatively comprising a frangibly separable protective barrier at the exit and reentry end, said cover comprising a releasible connection to a medical needle subassembly whereby the needle subassembly is extended outwardly from the housing when the needle cover is pulled therefrom;

the medical needle subassembly comprising the medical needle and at least one latching hub;

a force storing unit which selectively stores retractive force to retract the medical needle into the housing when the cover and needle are extended outwardly from the housing and which reactively contracts to provide needle retractive force, said force storing unit comprising:

a connection to said at least one hub;

a hollow elastic tube comprising a mating section of a female luer fitting which receives the male luer fitting and contracts to form a seal between the male and female luer parts, when the elastic tube is stretched, by outward extension of the needle and cover, a pathway through the hollow elastic tube for fluid flow while the needle is extended and a rest state to which the tube returns after the medical procedure has been completed;

said housing further comprising a catch and a release for said at least one latching hub.

5,542,928

METHOD AND DEVICE FOR THERMAL ABLATION HAVING IMPROVED HEAT TRANSFER

Michael A. Evans, Palo Alto; Colin J. Nichols, Fremont; Laura Kemp, Saratoga; William R. Dubrul, Redwood city, and Robert S. Behl, Palo Alto, all of Calif., assignors to Inner-Dyne, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 073,639, Jun. 7, 1993, Pat. No. 5,433,708, which is a continuation of Ser. No. 702,796, May 17, 1991, abandoned. This application Jun. 27, 1994, Ser. No. 266,837

Int. Cl.[6] A61F *7/00*; A61B *17/36*

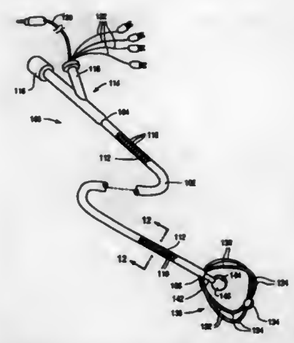
U.S. Cl. 604—113 **79 Claims**

1. A fluid mixing and heating catheter, said catheter comprising:

an elongate member having a proximal end, a distal end, and a lumen extending therebetween;

a heating element disposed within at least a portion of the length of the lumen so that fluid flowing through the lumen will contact the heating element;

a fluid connector at the proximal end of the elongate member which connects the lumen to an external fluid source; and



a power connector at the proximal end of the elongate member which connects the heating element to an external power source.

5,542,929

SUCTION DEVICE FOR MEDICAL USE

Walter Laabs, Oestringer Str. 64, 2948 Grafschaft-Schortens, and Appel Hans-Günter, Auenweg 2, 2948 Accum 1., both of, Germany

Continuation of Ser. No. 73,617, Jun. 8, 1993, abandoned, which is a continuation of Ser. No. 645,887, Jan. 25, 1991, abandoned. This application Nov. 15, 1994, Ser. No. 341,034

Claims priority, application Germany, Jan. 27, 1990, 40 02 373.7

Int. Cl.[6] A61M *1/00*

U.S. Cl. 604—119 **3 Claims**



1. A suction device for medical use, comprising:

an aspirator comprising a tube having a circumference and provided with at least one side opening, said aspirator having an open suction end at one end of said tube through which matter may enter and a hose end for attachment to a suction device; and

a foil covering said side opening, said foil having a slit therein having a thickness such that said foil is openable in response to a pressure differential thereacross, said open suction end being free of any obstruction and said at least one side opening being spaced along said tube a distance from said open suction end and said hose end.

5,542,930

CATHETER ASSEMBLY

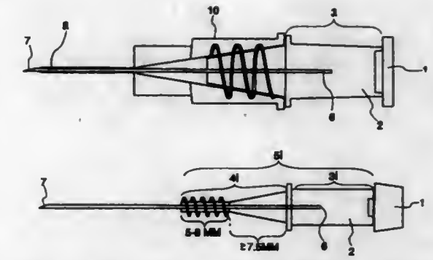
Israel Schur, 10 Amsterdam Ave., Apt. 309, New York, N.Y. 10023

Continuation-in-part of Ser. No. 369,751, Jan. 1, 1995, abandoned. This application Sep. 19, 1995, Ser. No. 531,207

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—164 **27 Claims**

1. A catheter assembly comprising (1) a needle component having a needle end, (2) a catheter component mounted on the needle component in a manner that permits relative axial movement between the needle component and the catheter component,



and (3) a rotatable screw means for controlling the relative axial movement between the needle component and the catheter component;

wherein the catheter component is mounted on the needle component in a manner to permit rotational movement between the needle component and the catheter component and the screw means controls the relative axial movement by the rotational movement between the needle component and the catheter component;

wherein the screw means comprises a threaded-male member on the needle component and a corresponding threaded-female member on the catheter component; and

wherein the needle component has a smooth, tapered conical surface proximal to the threaded-male member and the threaded-male member is closest to the needle end of the needle component and the catheter component has a corresponding smooth, tapered bore to receive the smooth, tapered conical surface of the needle component.

5,542,931

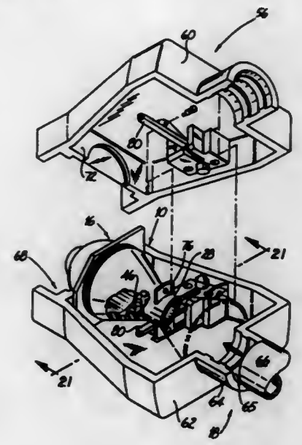
VALVE ASSEMBLY FOR INTRODUCING INSTRUMENTS INTO BODY CAVITIES

Roy D. Gravener, Fairfield; Alex Iannaruberto, Waterbury, both of Conn., and Michael Ciccolella, Lake Carmel, N.Y., assignors to United States Surgical Corporation, Norwalk, Conn.

Division of Ser. No. 167,230, Dec. 14, 1993, Pat. No. 5,360,417, which is a continuation of Ser. No. 874,291, Apr. 24, 1992, abandoned. This application Jun. 30, 1994, Ser. No. 268,706

Int. Cl.[6] A61M *5/178*

U.S. Cl. 604—167 **20 Claims**



1. In a cannula subassembly which includes a cannula housing, a cannula mounted to said cannula housing, and a valve body mounted within said cannula housing, said valve body defining an opening for receipt of a surgical instrument, the improvement comprising:

a plurality of projecting members monolithically formed on and projecting from said valve body surrounding said opening.

5,542,932

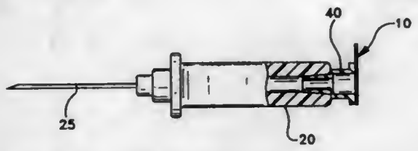
BLOODLESS FLASHBACK VENT

Charles W. Daugherty, 3243 E. Little Cottonwood La., Sandy, Utah 84092

Filed Jul. 20, 1995, Ser. No. 504,480

Int. Cl.[6] A61M *5/178*

U.S. Cl. 604—168 **12 Claims**



7. An introducer needle assembly, comprising:

a hollow needle having a proximal end and a sharp distal end;

a flashback chamber in fluid communication with the hollow needle and having an opening therein;

a flashback plug affixed to the opening in the flashback chamber, the flashback plug further defining an interior portion in fluid communication with the flashback chamber and an opening therein; and

a thin film vent affixed over the opening in the flashback plug without extending into the interior portion of the flashback plug, the vent defining a plurality of holes therein.

5,542,933

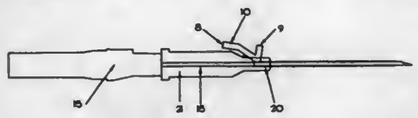
CATHETER VALVE

Ronald Marks, 1124 Townsley Ave., Bakersfield, Calif. 93304

Division of Ser. No. 898,035, Jun. 15, 1992, abandoned. This application Feb. 8, 1993, Ser. No. 14,774

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—188 **1 Claim**



1. A blood vessel entry device comprising a catheter with a proximal end having a hub thereon, a distal end which enters a blood vessel, and a bore through which blood flows and which may receive a needle, and

a valve attached to said catheter hub for controlling blood flow through said catheter

said valve being in a block shape with a head at one end and a stem at an opposite end wherein said valve may be closed by said stem being raised manually be a user grasping said stem which action lowers said head into said catheter bore blocking blood flow through said catheter bore,

wherein said valve may be opened by said stem being lowered manually by a user grasping said stem which action raises said head, allowing blood flow through said catheter bore

wherein said valve may also be opened by a needle passing through said catheter bore, said needle coming into contact with said lowered head and raising said head, allowing blood flow through said catheter.

5,542,934

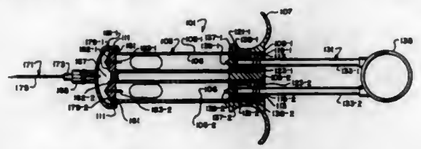
MULTIPLE CARPULE HYPODERMIC SYRINGE

Richard M. Silver, 33 Holly La., Ashland, Mass. 01721

Filed Jun. 2, 1995, Ser. No. 458,565

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—191 **6 Claims**



1. A large volume delivery hypodermic syringe for simultaneously dispensing liquid from a plurality of liquid-containing carpules into a patient, comprising:

a body including a plurality of elongated, parallel chambers, each adapted to removably receive therein a carpule;

an externally-threaded disk covering one end of all of said chambers;

an internally-threaded cap received on the external threads of said disk, to define a fluid chamber for receiving fluid from carpules in said parallel chambers;

a like plurality of fluid passageways passing through said disk and aligned with said chambers, for transporting fluid from said carpules into said fluid chamber;

a hypodermic needle-receiving member coupled to said cap for holding a hypodermic needle;

a fluid channel passing through said cap and into said needle-receiving member to transport fluid from said fluid chamber into a hypodermic needle held in said needle-receiving member; and

means for simultaneously discharging liquid from carpules in said parallel chambers, through said passageways, said fluid chamber and said fluid channel, to provide the liquid into the hypodermic needle for delivery into a patient.

5,542,935

THERAPEUTIC DELIVERY SYSTEMS RELATED APPLICATIONS

Evan C. Unger; Thomas A. Fritz; Terry Matsunaga; VaradaRajan Ramaswami; David Yellowhair, and Guanli Wu, all of Tucson, Ariz., assignors to ImaR Pharmaceutical Corp., Tucson, Ariz.

Continuation-in-part of Ser. No. 159,687, Nov. 29, 1993, and Ser. No. 159,674, Nov. 29, 1993, abandoned, which is a continuation-in-part of Ser. No. 76,250, Jun. 11, 1993, which is a continuation-in-part of Ser. No. 716,899, Jun. 18, 1991, abandoned, and Ser. No. 717,084, Jun. 18, 1991, Pat. No. 5,228,446, which is a continuation-in-part of Ser. No. 569,828, Aug. 20, 1990, Pat. No. 5,088,499, which is a continuation-in-part of Ser. No. 455,707, Dec. 22, 1989, abandoned, said Ser. No. 159,687is a continuation-in-part of Ser. No. 76,250, said Ser. No. 716,899is a continuation-in-part of Ser. No. 569,828. This application Nov. 30, 1993, Ser. No. 160,232

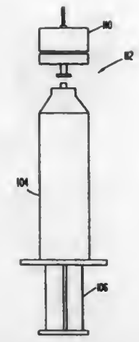
Int. Cl.[6] A61M *5/00; A61B 8/00;* **A61K** *9/127*

U.S. Cl. 604—190 **36 Claims**

35. An apparatus for making therapeutic containing gas-filled liposomes, comprising:

a) means for instilling a gaseous precursor into an aqueous solution comprising a lipid and a therapeutic compound, thereby forming a foam containing gaseous precursor-filled liposomes;

b) means for sizing said liposomes, said sizing means including a syringe having (i) a barrel portion, said barrel portion of said syringe forming a vessel in which said liposomes are formed, (ii) a needle portion, (iii) a filter disposed between said barrel and said needle, and (iv) a plunger for extruding said liposomes through said filter, whereby said liposomes are sized as they are injected into a patient;



c) means for introducing said gaseous precursor into said barrel portion of said syringe; and

d) means for introducing said aqueous solution into said barrel portion of said syringe.

5,542,936

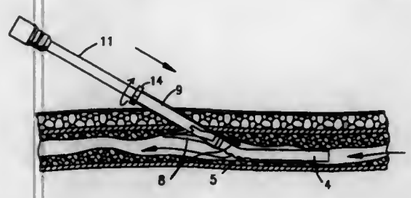
SHEATH FOR INTRODUCING CATHETER

Dean M. Razi, 4810 W. Gandy Blvd., Tampa, Fla. 33611

Filed Mar. 20, 1995, Ser. No. 406,587

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—264 **6 Claims**



1. An introducer sheath for introducing a catheter into a bodily passageway, the introducer sheath being tubular and having an open proximal end, an open distal end, and defining a lumen through which a catheter can be passed,

said introducer sheath being provided with at least one fenestration wherein when said distal end of said tubular introducer sheath is inserted into a bodily passageway through a surgical opening the distal end is oriented coaxial with the bodily passageway, the proximal end is oriented coaxial with the surgical opening, and said introducer sheath describes an arc in the area in which it transitions from the orientation of the axis of insertion to the orientation of the axis of the bodily passageway, wherein said at least one fenestration is located at the outer radius of curvature of the introducer sheath at said arc,

and wherein said introducer sheath is further comprised of an anchor tube having an inner diameter dimensioned for sliding over said introducer sheath, said anchor tube having a proximal end and a distal end and fixed at said distal end to said introducer sheath proximally to said fenestration, a segment of said anchor tube provided with at least two longitudinal slits for separating said anchor tube into at least two strips of material, such that urging of said slidable end towards said fixed end causes said strips of material to bulge outwardly.

5,542,937

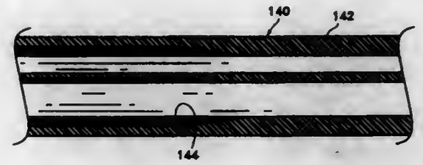
MULTILUMEN EXTRUDED CATHETER

Hiram Chee, San Carlos; Mark Glowacki, San Jose, and Laurent Schaller, Los Altos, all of Calif., assignors to Target Therapeutics, Inc., Fremont, Calif.

Filed Jun. 24, 1994, Ser. No. 265,708

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—280 **22 Claims**



1. A multilumen catheter shaft having a distal end, a proximal end, and a longitudinal axis extending between said distal end and proximal end, said shaft having at least two discrete lumens sharing a common wall between said distal and proximal ends, at least one of said discrete lumens being defined by multiple circumferential layers, at least two of said circumferential layers comprising different polymers, and where the shaft along the longitudinal axis is divided into at least two sectors between those ends having transition regions between said sectors, each said sector having a flexibility normal to the longitudinal axis different from an adjacent sector, where said shaft has been continuously extruded between said distal to said proximal end.

5,542,938

MAGNETIC GUIDEWIRE COUPLING FOR CATHETER EXCHANGE

Ernesto Avellanet, Miami Lakes, and Ernesto Hernandez, Miami, both of Fla., assignors to Cordis Corporation, Miami Lakes, Fla.

Continuation of Ser. No. 133,324, Oct. 8, 1993, abandoned, which is a division of Ser. No. 920,864, Jul. 28, 1992, Pat. No. 5,269,759. This application May 12, 1995, Ser. No. 440,115

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—280 **9 Claims**



1. For use in catheter exchange in the vascular system of a patient in which a catheter is advanced over a guidewire member and thereafter the catheter is withdrawn over the guidewire member while the guidewire member is retained in position in the vascular system of the patient, the improvement comprising:

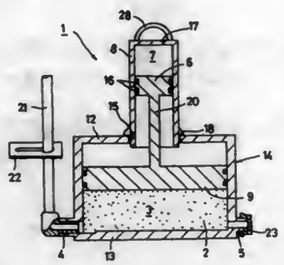
a flexible guidewire member formed of metal wire and having a proximal end which remains outside of the patent's body and a distal end for introduction into the vascular system of the patient, the flexible guidewire having a magnetically-attractable element along the length of the guidewire member in a location that is spaced a substantial distance from said distal end so that the magnetically-attractable element is adapted to remain outside of the patient's body.

5,542,939

FLUID ASPIRATION-COLLECTION APPARATUS

Hisashi Onodera, Kyoto, and Junichi Yamanaka, Osaka, both of, Japan, assignors to Daiken Iki Co., Ltd., Japan

Filed Oct. 21, 1994, Ser. No. 327,403
Claims priority, application Japan, Oct. 26, 1993, 5-267445
Int. Cl.[6] A61M *1/00*
U.S. Cl. 604—319 19 Claims



1. A fluid aspiration-collection apparatus comprising:
a case having a liquid inlet and a liquid outlet and provided with a hole in a top wall thereof;
a moving plate vertically movably disposed within the case so as to form a liquid suction chamber between the moving plate and a bottom wall of the case;
a cylinder having an upper end provided with an upper wall and an open lower end, the cylinder being vertically movably inserted into the hole from above the top wall of the case in such a manner that the opened lower end thereof is positioned in the case;
a piston airtightly and movably inserted in the cylinder and having a sectional area smaller than a projected area of the moving plate in the moving direction thereof;
a connecting rod vertically extending to connect the piston cooperatively to the moving plate;
holding means for maintaining the cylinder at a lifted position to which the cylinder is forcibly drawn upward to form a vacuum chamber between the piston and the top surface of the cylinder: and
closable means for communicating said cylinder with the atmosphere.

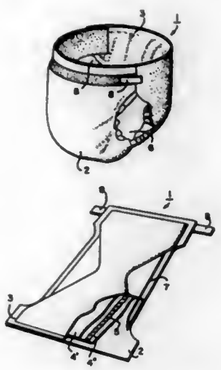
5,542,940

BIODEGRADABLE DISPOSABLE DIAPER

Johannes C. Jonker, Kadoelermeer 53, 3068 KE Rotterdam, Netherlands

Filed May 10, 1994, Ser. No. 241,147
Claims priority, application Netherlands, May 10, 1993, 9300789
Int. Cl.[6] A61F *13/15;13/20*
U.S. Cl. 604—367 37 Claims

1. A disposable diaper comprising means for providing a liquid permeable bodyside inner liner of a substantially cellulosic material of wet-strong long fibers having a wet tensile strength, diagonally, greater than 1N/15 mm, means for providing a substantially liquid impermeable outer layer of a substantially cellulosic material of wet-strong long fibers, having a wet tensile strength, diagonally, greater than 1.5N/15 mm, and a liquid-absorbent batt sandwiched between said inner liner and said outer layer, wherein said cellulosic material comprises said long fibers, having a length from 10 cm in their natural state and coming from at least one plant chosen from the group consisting of abaca, hemp, kenaf, sisal and jute, and wherein the inner liner has a surface weight of about 13 g/m^2 to about 23 g/m^2.

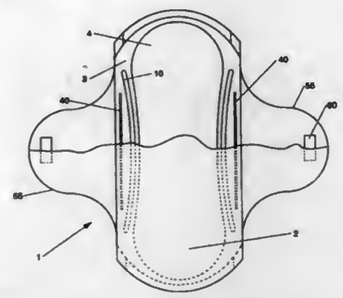


5,542,941

ABSORBENT ARTICLE HAVING ELASTICIZED SIDE FLAPS

Yasuko Morita, Kobe, Japan, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 208,102, Mar. 8, 1994, abandoned, which is a continuation of Ser. No. 984,071, Nov. 30, 1992, abandoned. This application May 12, 1995, Ser. No. 439,907
Claims priority, application Japan, Nov. 29, 1991, 3-98947 U
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—385.1 22 Claims



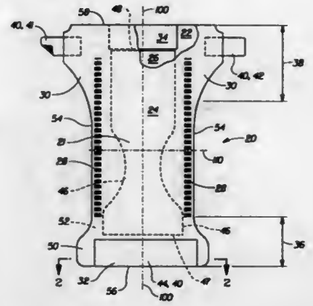
1. A sanitary napkin for placement in a user's panty, the sanitary napkin comprising:
a main body portion comprising:
a liquid permeable topsheet;
a liquid impermeable backsheet joined with said topsheet;
an absorbent pad for absorbing liquids positioned between said topsheet and said backsheet, said absorbent pad having a pair of side edges; and
an elasticized side flap extending laterally outwardly from and along each said side edge of said absorbent pad, each said side flap comprising a member having a base end and a distal end extending laterally outwardly from said base end and an elastic material affixed along a portion of the length of said member laterally outboard of said base end; and
a pair of wings attached to said main body portion and configured to be positioned over the edge of the user's panty.

5,542,942

ABSORBENT ARTICLE WITH IMPROVED ELASTICIZED WAISTBAND

Mark J. Kline, Cincinnati; Donald C. Roe, West Chester; Dean J. Daniels; James E. Zorb, both of Cincinnati, and Jerry L. Dragoo, Fairfield, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 22, 1994, Ser. No. 310,599
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—385.2 9 Claims



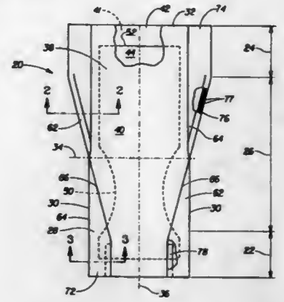
1. An absorbent article to be fitted to a wearer, the absorbent article comprising:
(a) a containment assembly comprising a topsheet and a liquid impervious backsheet joined with said topsheet, said containment assembly having a longitudinal centerline, a longitudinal direction which is the direction parallel to said longitudinal centerline, a lateral centerline, a lateral direction which is the direction parallel to said lateral centerline, a first waist region, a first waist feature positioned in said first waist region and being elastically extensible in said lateral direction, said first waist feature comprising a first lateral extensible portion having a first width taken in the lateral direction and a second laterally extensible portion disposed longitudinally inboard of said first laterally extensible portion, said second portion having a second width taken in said lateral direction which is less than said first width, a second waist region longitudinally opposed to said first waist region, a first end edge, a second end edge, an inner surface, an outer surface and a pair of longitudinal edges;
(b) a fastening system comprising:
(i) a pair of engaging components disposed in said second waist region; and
(ii) a continuous landing component disposed on said outer surface of the absorbent article in said first waist region coincident with said first waist feature, said landing component being engageable with said engaging components; said landing component being elastically extensible in at least said lateral direction and at least a portion of said landing component being intermediate said engaging components when said engaging components are engaged with said landing component such that said first waist feature and said landing component are activated when the absorbent article is fitted to said wearer; and
(c) a pair of elastically extensible side panels disposed in said second waist region, one of said side panels extending laterally outwardly from each of said longitudinal edges of said containment assembly, said side panels being elastically extensible in at least said lateral direction.

5,542,943

ABSORBENT ARTICLE HAVING INFLECTED BARRIER CUFFS AND METHOD FOR MAKING THE SAME

David M. Sageser, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 299,032, Aug. 31, 1994, Pat. No. 5,454,803, which is a continuation of Ser. No. 178,983, Jan. 7, 1994, abandoned. This application Nov. 9, 1994, Ser. No. 336,601
Int. Cl.[6] A61F *13/15;13/20*
U.S. Cl. 604—385.2 12 Claims



1. A disposable absorbent article having a front waist region, a rear waist region, a crotch region between said front waist region and said rear waist region, a pair of longitudinal edges, a lateral centerline and a longitudinal centerline, the absorbent article comprising:
a chassis comprising a liquid pervious topsheet; a liquid impervious backsheet joined with said topsheet; an absorbent core interposed between said topsheet and said backsheet, said absorbent core having a pair of opposed side edges, a pair of longitudinally extending side panels, each of said side panels including a front ear flap section located in said front waist region; a barrier cuff section having a first end edge located longitudinally inboard of said front ear flap section; a second end edge located in said rear waist region; a proximal edge disposed adjacent one of said side edges of said absorbent core and a distal edge spaced apart from said proximal edge;
spacing means joined along said distal edge of each said barrier cuff section; and
closing means for securing at least a portion of said barrier cuff section juxtaposed said first end edge to the absorbent article inboard of said proximal edge;
said distal edges being unsecured to any underlying structure of the absorbent article in said front waist region and said rear waist region such that said distal edges form said longitudinal edges in said front waist region and said rear waist region; and
said distal edge of said barrier cuff section being secured laterally inboard of said proximal edge in said crotch region such that said second end edges of said side panels located in said rear waist region are inverted relative to said first end edges to form an inflected barrier cuff that stands up in said crotch region when the absorbent article is fitted to a wearer.

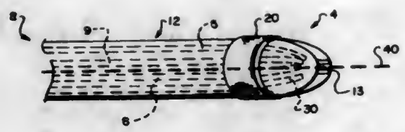
5,542,944

SURGICAL DEVICE AND METHOD

Krishan M. Bhatta, 60 High St., Skowhegan, Me. 04976

Continuation of Ser. No. 49,136, Apr. 19, 1993, abandoned. This application Sep. 23, 1994, Ser. No. 311,728
Int. Cl.[6] A61B *17/36;1/00*
U.S. Cl. 606—33 15 Claims

14. A surgical instrument, and comprising:
a. an elongate casing having a proximal and distal end;



b. means for delivering a fluid to target tissue, said fluid delivery means being carried within said casing and terminating adjacent the distal end of said casing;

c. means for delivering a coherent beam of electromagnetic radiation to said fluid whereby to heat said target tissue, said delivery means being carried within said casing and terminating adjacent said distal end thereof; and

d. a stationary cutting blade affixed to the outer surface of said casing adjacent to and spaced rearwardly from said distal end for aiding in removal of said target tissue, said blade being adapted to be energized so as to provide an electrocautery element.

5,542,945

ELECTRO-SURGICAL RADIO-FREQUENCY INSTRUMENT

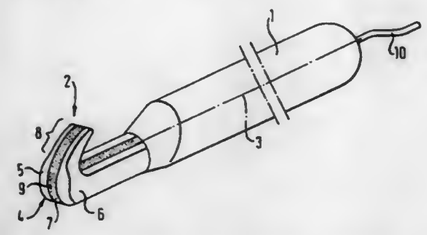
Gernod Fritzsch, Tuttlingen, Germany, assignor to Delma elektro-u. medizinische Apparatebau Gesellschaft mbH, Tuttlingen, Germany

Filed Sep. 12, 1994, Ser. No. 304,075

Claims priority, application Germany, Oct. 5, 1993, 43 33 983.2

Int. Cl.[6] A61B *17/36*

U.S. Cl. 606—48 **19 Claims**



1. A bipolar electro-surgical radio-frequency instrument for the coagulating and/or cutting of tissuse comprising: a shaft; a work tip attached to the shaft including a flat elongated insulating layer having first and second parallel plane surfaces of equal size and shape, and first and second electrodes of equal size and mirror-symmetrical shape each having a plane surface which is parallel with and of the same size as the first and second plane surfaces, respectively, of the flat insulating layer, and being attached thereto so that a transition from the plane surfaces of the electrodes to the first and second surfaces of the insulating layer is smooth and continuous, the insulating layer and the first and second electrodes forming a unit which is shaped to form a hook having an axis of curvature which is substantially perpendicular to the first and second plane surfaces of the insulating layer; and means for connecting the electrodes to a radio frequency voltage.

5,542,946

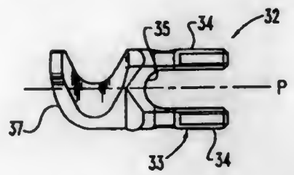
HOOK FOR AN OCCIPITO-CERVICAL ROD OR PLATE OF AN OCCIPITO-CERVICAL OSTEOSYNTHESIS INSTRUMENTATION

Carlo Logroscino, Rome, Italy, and Michel Goube, Hardelot, France, assignors to Sofamor S.N.C., Rang Du Fliers, France

Filed May 27, 1994, Ser. No. 250,580

Int. Cl.[6] A61B *17/70*

U.S. Cl. 606—61 **4 Claims**



1. Hook for an occipito-cervical rod or plate of an occipito-cervical osteosynthesis instrumentation, said hook comprising a generally U-shaped body with opposite side branches having a laminar portion defined by a strip suitably profiled and adapted to penetrate a foramen opening at the base of the occiput, said body being adapted to receive an osteosynthesis rod or plate and having a median plane of symmetry extending between said side branches, said strip being inclined relative to either side of said median plane of symmetry so as to adapt itself to the anatomy of the edge of the occiput in the region of the foramen.

5,542,947

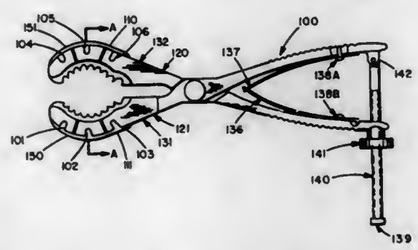
SLOTTED PATELLA RESECTION GUIDE AND STYLUS

Patrick J. Treacy, Towaco, N.J., assignor to Huwmedica Inc., New York, N.Y.

Filed May 12, 1995, Ser. No. 440,290

Int. Cl.[6] A61B *17/56*

U.S. Cl. 606—88 **18 Claims**



1. Apparatus for guiding a saw used to perform resection of a bone, comprising:

(a) means for gripping said bone, including first and second arms pivotally mounted together at a first pivot axis, wherein each of said arms has a handle portion at one end and a jaw member at the other end whereby pivoting of said handle portions towards one another causes said jaw members to pivot toward one another about said pivot axis and into engagement with the periphery of said bone;

(b) guide means, formed integrally within said jaw members and defining a plane of resection, for receiving and guiding a saw blade; and

(c) means for setting resection depth which includes at least two calibrated and marked steps integrally formed in said means for gripping said bone, whereby a stylus can be removably inserted into a selected one of the at least two steps to set the resection depth.

5,542,948

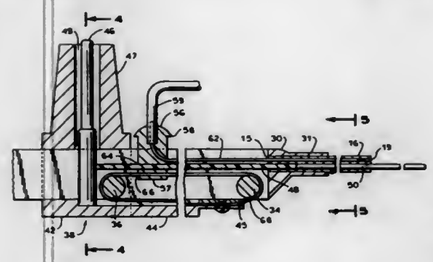
SURGICAL COMBINATION INJECT AND SNARE APPARATUS

George W. Weaver, East Earl, Pa.; Harold Jacob, Lawrence, N.Y., and Damond C. Heisinger, New Holland, Pa., assignors to Arrow Precision Products, Inc., Pa.

Filed May 24, 1994, Ser. No. 248,504

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—113 **8 Claims**



1. An apparatus comprising:

a first instrument including an injection needle;

a second instrument including a snare;

sheathing means for sheathing said first and second instruments, said sheathing means having a proximal end and a distal end; and

actuator means for simultaneously extending said first instrument relative to said distal end of said sheathing means in a first direction and retracting said second instrument in a second direction relative to said distal end of said sheathing means, and for simultaneously extending said second instrument relative to said distal end of said sheathing means in said first direction and retracting said first instrument in said second direction relative to said distal end of said sheathing means.

5,542,949

MULTIFUNCTIONAL CLIP APPLIER INSTRUMENT

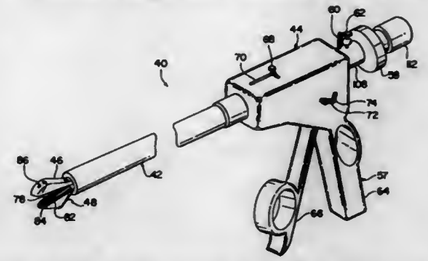
InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Continuation-in-part of Ser. No. 45,769, Apr. 14, 1993, abandoned, and Ser. No. 951,275, Sep. 28, 1992, Pat. No. 5,445,167, which is a division of Ser. No. 719,281, Sep. 18, 1991, Pat. No. 5,366,459, which is a continuation-in-part of Ser. No. 515,641, Apr. 2, 1990, Pat. No. 5,171,250, which is a continuation of Ser. No. 49,526, May 14, 1987, abandoned, said Ser. No. 45,769is a continuation-in-part of Ser. No. 719,281, Sep. 18, 1991, Pat. No. 5,366,459, which is a division of Ser. No. 450,301, Dec. 15, 1989, Pat. No. 5,100,418, which is a continuation-in-part of Ser. No. 49,504, May 14, 1987, abandoned. This application Sep. 16, 1993, Ser. No. 121,589

Int. Cl.[6] A61B *17/04*

U.S. Cl. 606—143 **35 Claims**

1. A multifunctional clip applier instrument for use in endoscopic surgical procedures performed in an anatomical cavity comprising:



an elongate body having a proximal end for positioning at a location external to the anatomical cavity and a distal end for positioning within the anatomical cavity,

said distal end comprising a pair of forceps jaws having opposed inner surfaces defining a tissue-engaging space therebetween,

a plurality of surgical clips disposed within said elongate body,

said clips each having opposed legs movable from an open spaced condition to a closed condition adjacent each other to engage tissue therebetween,

said jaws having a clip receiving position defining a space between said opposed inner surfaces corresponding to the size and shape of said clip legs in said open spaced condition,

an advancing mechanism carried by said elongate body and including a pusher member movable distally to advance a distalmost surgical clip into said space between said opposed inner surfaces,

said elongate body comprising means for selectively compressing said forceps jaws toward one another both prior to and subsequent to advancement of a clip into said space between said opposed inner surfaces.

UMI
1189
1996
AG
6

5,542,950

ALKYL POLYGLYCOSIDES IN TEXTILE SCOUR/BLEACH PROCESSING

Howard Cole; Kristina W. Erler, both of Charlotte, N.C.; Kenneth L. Smith, Fort Mill, S.C., and Brian C. Francois, Charlotte, N.C., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Continuation-in-part of Ser. No. 337,589, Nov. 10, 1994. This application Sep. 12, 1995, Ser. No. 526,912

Int. Cl.[6] D06L *3/00;* C11D *1/722;3/08*

U.S. Cl. 8—107 11 Claims

1. A surfactant composition for use in bleaching and scouring textile materials while controlling foam generation, said composition comprising:

(a) from about 6% to about 94% by weight of an alkyl polyglycoside having the general formula I

$$RO(Z)_a \quad (I)$$

wherein R is a monovalent organic radical having from about 8 to about 16 carbon atoms; Z is a saccharide residue having 5 or 6 carbon atoms; and a is a number having a value from about 1 to about 6,

(b) from about 94% to about 6% by weight of a chlorine-capped ethoxylated isodecyl alcohol, and

(c) the remainder water, all weights being based on the weight of the composition.

5,542,951

USE OF COPOLYMERS BASED ON VINYL MONOMERS AND CARBOXYLIC ACID AMIDES AS A DETERGENT ADDITIVE

Werner Antwerpen, Schwalbach; Hermann Schindler, Hofheim, and Gerd Reinhardt, Kelkheim, all of, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Feb. 10, 1994, Ser. No. 195,861

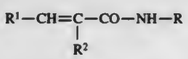
Claims priority, application Germany, Feb. 12, 1993, 43 04 313.5

Int. Cl.[6] B08B *3/08;* C11D *3/32;3/37;17/06*

U.S. Cl. 8—137 14 Claims

1. A method for preventing reabsorption, by a textile, of detached dyestuffs or dyestuff degradation products which are detached from a dyed material or degraded from dyes in a dyed material in an aqueous wash liquor for said textile containing a wash-active component selected from the group consisting of an anionic surfactant, a nonionic surfacting, a zwitterionic surfactant, and mixtures thereof, said method comprising the step of:

adding to the wash liquor a copolymer comprising 75–95% by weight of the total amount of monomer of at least one vinyl monomer which is free from carboxyl and amide groups, 5–20% by weight of at least one carboxylic acid amide of the formula (I)



in which

R is a hydrogen atom or a methylol radical,

R^1 is a hydrogen atom or a C_1–C_3-alkyl radical and

R^2 is a hydrogen atom or a methyl radical, and optionally not more than 5% by weight of a copolymerizable unsaturated carboxylic acid.

5,542,952

DYE COMPOSITION CONTAINING SULPHUR-CONTAINING P-PHENYLENEDIAMINES AND CORRESPONDING DYEING PROCESSES, NOVEL SULPHUR-CONTAINING P-PHENYLENEDIAMINES AND PROCESS FOR THE PREPARATION THEREOF

Alain Genet, Aulnay-sous-Bois, and Alain Lagrance, Coupvry, both of, France, assignors to L'Oreal, Paris, France

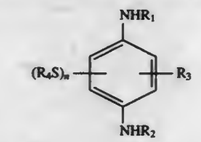
Filed Nov. 30, 1994, Ser. No. 352,058

Claims priority, application France, Dec. 1, 1993, 93 14398

Int. Cl.[6] A61K *7/13*

U.S. Cl. 8—410 13 Claims

1. Dye composition for keratin fibers which contains, in a medium which is suitable for dyeing, at least one compound of formula (I) in amounts which are effective for dyeing:



(I)

in which:

R_1 and R_2, which may be identical or different, represent a hydrogen atom, a C_1–C_4 alkyl radical, a C_1–C_4 hydroxyalkyl radical, a C_2–C_4 polyhydroxyalkyl radical, a C_1–C_4 acetylaminoalkyl radical or a C_1–C_4 aminoalkyl radical;

R_3 represents a hydrogen or a C_1–C_4 alkyl radical;

R_4 represents a C_1–C_4 alkyl radical, a C_1–C_4 hydroxyalkyl radical, a C_2–C_4 polyhydroxyalkyl radical, a C_1–C_4 aminoalkyl radical or a C_1–C_4 dialkylaminoalkyl radical which is optionally quaternized;

n is equal to 1 or 2; and

when n=2, the groups —SR_4 are in a meta position relative to each other and R_3=H; and when n=1 and R_3 is other than hydrogen, R_3 is then in the position para to the —SR_4 group;

and the addition salts of said compounds with an acid, and at least one coupling agent.

5,542,953

NEW 5-HALOGEN-2,4-BIS (ALKYLAMINO)-1-ALKYLBENZENES AND HAIR DYE COMPOSITIONS CONTAINING SAME

Wolfgang R. Balzer; Thomas Clausen, both of Alsbach; Anke Frank, Frankfurt, and Alexa Weinges, Heidelberg, all of, Germany, assignors to Wella AG, Darmstadt, Germany

PCT No. PCT/EP93/00011, § 371 Date Oct. 22, 1993, § 102(e) Date Oct. 22, 1993, PCT Pub. No. WO93/16677, PCT Pub. Date Sep. 2, 1993

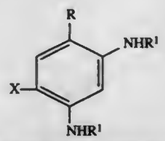
PCT Filed Jan. 7, 1993, Ser. No. 142,492

Claims priority, application Germany, Feb. 29, 1992, 42 06 416.3

Int. Cl.[6] A61K *7/13;* C07C *211/51;211/52*

U.S. Cl. 8—416 14 Claims

10. 5-Halogen-2,4-bis(alkylamino)-1-alkylbenzene compound of the formula



(I)

wherein R is a straight-chain or branched C_1- to C_4-alkyl group, X is selected from the group consisting of chlorine and fluorine, and R^1 is selected from the group consisting of straight-chain C_1- to C_4-alkyl groups, branched C_1- to C_4-alkyl groups, straight-chain C_2- to C_4-hydroxyalkyl groups and branched C_2- to C_4-hydroxyalkyl groups.

5,542,954

PRODUCTION OF AMINATED COTTON FIBERS

Andreas Schrell, Frankfurt, and Werner H. Russ, Flörsheim, both of, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Jan. 24, 1995, Ser. No. 377,438

Claims priority, application Germany, Jan. 26, 1994, 44 02 210.7

Int. Cl.[6] D06M *13/35;* **D06P** *3/66*

U.S. Cl. 8—532 **14 Claims**

1. A process for the production of aminated cotton fibers, which comprises the steps of:

subjecting raw cotton or a mixture of raw cotton and polyester to a modification conducted simultaneously with scouring or kiering, wherein

the modification comprises the addition of a saturated aliphatic compound of 3 to 15 carbon atoms which contains at least one primary, secondary, tertiary, or quaternary amino group and at least one hydrolyzable ester group and in which the saturated radical or radicals are straight-chain, branched or cyclic, or branched and cyclic and are optionally interrupted by one or more hetero groups and which are optionally substituted by one or more hydroxyl groups.

5,542,955

DYEING MODIFIED VISCOSE FIBERS WITH ACID OR DIRECT DYES

Andreas Schrell, and Andreas von der Eltz, both of Frankfurt, Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Sep. 29, 1995, Ser. No. 538,503

Claims priority, application Germany, Oct. 4, 1994, 44 35 385.5

Int. Cl.[6] D06P *3/62;1/39;* **C08F** *251/02*

U.S. Cl. 8—561 **14 Claims**

1. A process for dyeing regenerated cellulose fibers, which comprises adding from 1 to 20% by weight based on the cellulose content of the dope of an amine-substituted cellulose derivative which is an addition polymer of ethylenically unsaturated amines with cellulose to a viscose dope or to an alkali cellulose and spinning fibers by the viscose spinning process, or adding said cellulose derivative to a cellulose solution and spinning fibers from the solution, subsequently processing fibers into a woven or knitted fabric and dyeing the fabric with a direct or acid dye without adding electrolyte salt.

5,542,956

PROCESS FOR DYEING OR PRINTING HYDROXYL GROUP CONTAINING FIBER MATERIALS

David McMullan, Allschwil; Rudolf Schaulin, Riehen, and Urs Lauk, Zurich, all of, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Continuation of Ser. No. 231,966, Apr. 22, 1994, abandoned, which is a continuation of Ser. No. 991,671, Dec. 16, 1992, abandoned. This application Sep. 27, 1994, Ser. No. 313,665

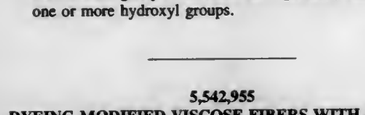
Claims priority, application Switzerland, Dec. 20, 1991, 3814/91

Int. Cl.[6] D06P *3/62;1/02*

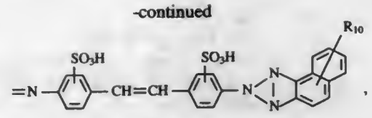
U.S. Cl. 8—641 **11 Claims**

1. A process for dyeing or printing a cellulosic fibre material, which comprises applying to said fibre material at least one yellow or orange dyeing dye of formula

(3)



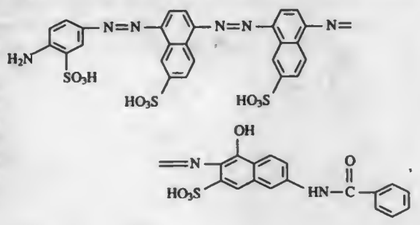
-continued



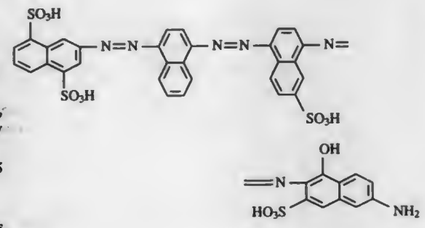
wherein R_9 and R_{10} are hydrogen, C_1–C_4alkyl, C_1–C_4alkoxy, C_2–C_4 alkanoylamino, halogen or sulfo;

together with at least one of the blue dyeing dyes of formulae

(8)

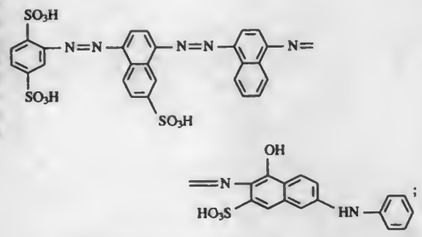


(9)



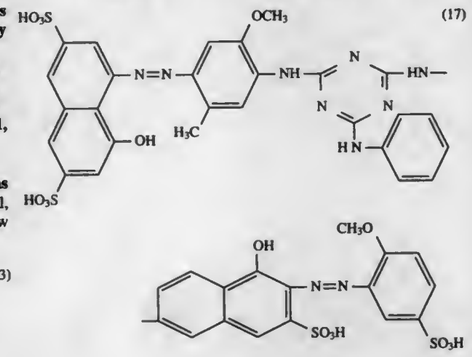
and

(11a)



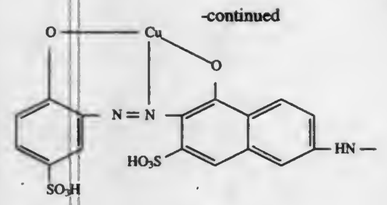
and together with at least one of the red dyeing dyes of formulae

(17)

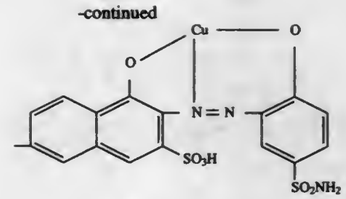


-continued

(18)

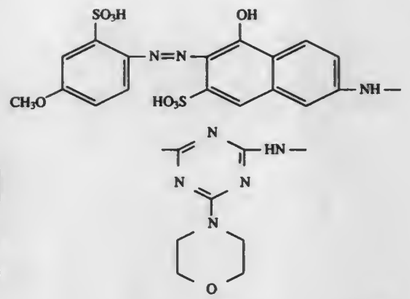


-continued

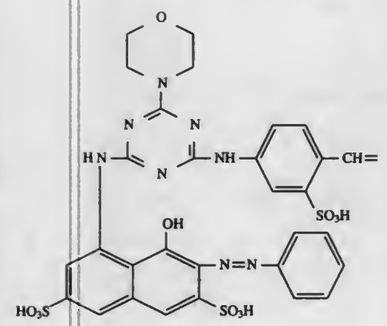


and

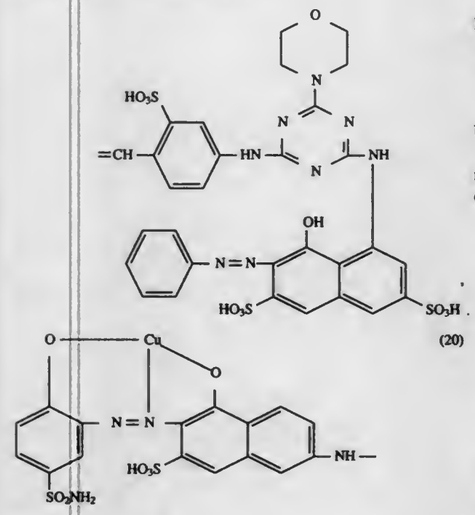
(21)



(19)



(20)



5,542,957

RECOVERY OF PLATINUM GROUP METALS AND RHENIUM FROM MATERIALS USING HALOGEN REAGENTS

Kenneth N. Han, and Xinghui Meng, both of Rapid City, S. Dak., assignors to South Dakota School of Mines and Technology, Rapid City, S. Dak.

Filed Jan. 27, 1995, Ser. No. 379,809

Int. Cl.[6] C22B *3/46*

U.S. Cl. 75—732 **16 Claims**

1. A process for the extraction of precious metals from precious-metal bearing materials by a leaching process comprising the steps of:

I. charging to a reaction zone a charge comprising:

A. precious-metal bearing materials;

B. water;

C. elemental halogen or halogen salts;

D. sulfuric acid and one of ammonia or an ammonium salt; to form a charge in said reaction zone; and

II. heating the charge in said reaction zone to a temperature of about 50° C. to about 300° C. under oxidizing conditions at a pressure of from about 30 psig to about 1300 psig for a time sufficient to leach the precious metals from the precious-metal bearing materials thereby producing a slurry containing a precious-metal-ion-solution; and

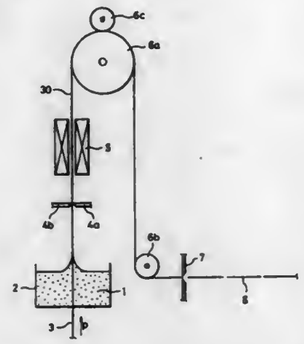
III. separating the precious-metal-ion solution from the slurry; and

IV. recovering the precious metals from the precious-metal-ion-solution using one of electrowinning, cementation, solvent extraction, precipitation and adsorption.

5,542,958
METHOD FOR MANUFACTURING A HYDROGEN ABSORBING ALLOY ELECTRODE

Jun Furukawa, Iwaki, Japan, assignor to Furukawa Denchi Kabushiki Kaisha, Kanagawa, Japan

Filed Sep. 28, 1994, Ser. No. 314,328
Claims priority, application Japan, Oct. 13, 1993, 5-255739
Int. Cl.[6] H01M *6/00*
U.S. Cl. 29—623.1 **20 Claims**



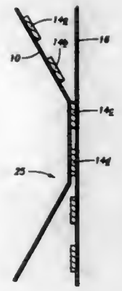
1. A method for manufacturing a hydrogen absorbing alloy electrode, comprising the steps of:
(a) causing a punched metal sheet, having a plurality of apertures arranged in a staggered fashion, to run in a slurry of hydrogen absorbing alloy powder, to thereby cause the slurry to adhere to the punched metal sheet, and fill the apertures therein;
(b) drying the punched metal sheet on which the slurry has been adhered, to thereby obtain an electrode sheet;
(c) cutting the electrode sheet into electrode sheet fragments, each electrode sheet fragment having a first axis and a second axis perpendicular to the first axis, and each electrode sheet fragment having filled aperture-formed portions and aperture-non-formed portions therein;
(d) rolling an electrode sheet fragment in a rolling direction parallel to the first axis of the electrode sheet fragment, the electrode sheet fragment having an aperture array arrangement such that any given line running along the electrode sheet fragment parallel to the second axis of the electrode sheet fragment will intersect filled aperture-formed portions thereof; and
(e) coiling the thus rolled electrode sheet fragment in a coiling direction which is the same as the rolling direction.

5,542,959
METHOD OF FORMING BUTTON-TYPE BATTERY LITHIUM ELECTRODES

Mark E. Tuttle, Boise, Id., assignor to Micron Communications, Inc., Boise, Id.

Division of Ser. No. 271,012, Jul. 6, 1994, Pat. No. 5,480,462, which is a continuation-in-part of Ser. No. 205,611, Mar. 2, 1994, Pat. No. 5,432,027, Ser. No. 205,957, Mar. 2, 1994, and Ser. No. 206,051, Mar. 2, 1994, Pat. No. 5,486,431. This application Oct. 6, 1995, Ser. No. 538,985
Int. Cl.[6] H01M *4/08*
U.S. Cl. 29—623.3 **1 Claim**

1. A method of forming a plurality of button-type lithium electrodes comprising the following steps:
providing a release liner sheet having elemental lithium adhered thereto, the adhered elemental lithium being in the form of a series of discrete patterns having a size and shape of the lithium electrodes being formed;

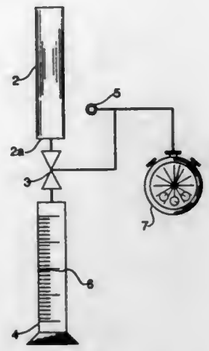


providing an electrically conductive sheet having an exposed surface, the exposed surface being divisible into a plurality of areas;
laminating the release liner sheet with the electrically conductive sheet to adhere the series of discrete elemental lithium patterns onto the respective sheet areas;
pulling the release liner sheet from the electrically conductive sheet and discrete lithium patterns, leaving the discrete lithium patterns adhering to the electrically conductive sheet; and
cutting and forming a plurality of discrete battery terminal housing members from the areas of the electrically conductive sheet, with each of the discrete battery terminal housings bearing one of the discrete lithium patterns.

5,542,960
EFFICIENT DIESEL FUEL ANTIFOAMS OF LOW SILICON CONTENT

Wojciech Grabowski, Gland, Switzerland, assignor to OSi Specialties, Inc., Danbury, Conn.

Continuation of Ser. No. 86,009, Jun. 30, 1993, abandoned. This application Jul. 7, 1994, Ser. No. 283,291
Claims priority, application Switzerland, Jun. 30, 1993, 08/086009
Int. Cl.[6] C10L *1/28*
U.S. Cl. 44—320 **20 Claims**



1. A diesel fuel defoaming agent comprising a polymer of the formula $MD_xD^*_yD^{**}_zM$ where M is $O_{0.5}Si(CH_3)_3$, D is a $OSi(CH_3)_2$, D* is $OSi(CH_3)R$, R is a polyether, D** is $OSi(CH_3)R'$, R' is a phenol derivative, x+y+z is 35–350, x/(y+z) is 3 to 6 and y/z is 0.25 to 9.0.

5,542,961
DIELECTRIC CURING

Gwo S. Swei, East Amherst, N.Y.; Nicolas Avril, Merignac, France, and Jony Wijaya, Amherst, N.Y., assignors to Norton Company, Worcester, Mass.

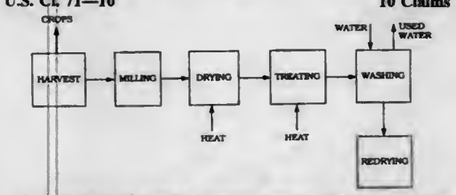
Filed Mar. 28, 1995, Ser. No. 412,485
Int. Cl.[6] B24D *3/34*
U.S. Cl. 51—295 **10 Claims**

1. A process for the production of a coated abrasive comprising a backing material and abrasive grits secured to the backing material using one or more coatings of a thermosettable binder resin formulation in which at least one of the binder resin coatings is at least partly cured by means of dielectric heating.

5,542,962
TREATING BIOMASS MATERIAL

Robert C. A. W. Ollerenshaw, Knutsford, and Maurice A. Roe, Bowden, both of, United Kingdom, assignors to Fi-Pro Limited, Cheshire, United Kingdom

PCT No. PCT/GB92/00974, § 371 Date Mar. 29, 1994, § 102(e) Date Mar. 29, 1994, PCT Pub. No. WO92/21735, PCT Pub. Date Dec. 10, 1992
PCT Filed May 29, 1992, Ser. No. 157,095
Claims priority, application United Kingdom, Jun. 1, 1991, 9111838
Int. Cl.[6] C05F *5/00*
U.S. Cl. 71—10 **10 Claims**

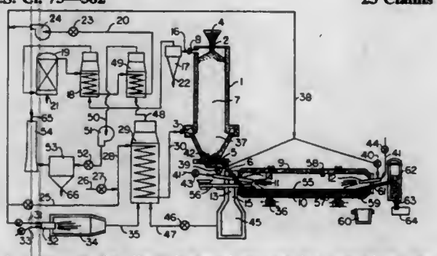


1. A method of treating biomass material selected from the group consisting of vegetable matter and organic waste for producing a peat substitute for use in plant transplanting, soil conditioning, mulching and the like, the method comprising heating the biomass material without wetting, and substantially at ambient pressure, to a treatment temperature of 200° C. up to about 250° C. for 0.5 up to 10 minutes to allow the material to undergo partial pyrolysis only, and subsequently wetting and partially redrying the material to leave a moisture content of at least 50%, whereby salts and residual sugars in the biomass are removed from the material.

5,542,963
DIRECT IRON AND STEELMAKING

William L. Sherwood, 7249 Cypress Street, Vancouver, British Columbia, Canada

Filed Sep. 21, 1994, Ser. No. 308,540
Int. Cl.[6] C21B *13/08*
U.S. Cl. 75—382 **23 Claims**

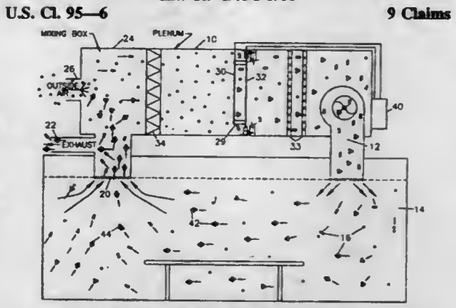


1. A process for direct iron and steelmaking comprising the following steps, in combination:
a) maintaining a gas-solid reaction zone within a reduction reactor adapted for heating and reduction of a charge of iron oxide materials to obtain metallic iron, by contact with hot process gases containing H_2 and CO;
b) maintaining a gas-solid-liquid reaction zone within a rotary furnace adapted for melting within a partially fused bath by heat transferred from the rotating furnace walls in contact with said bath during furnace rotation;
c) feeding iron oxide materials into said reduction reactor;
d) transferring said solid metallic iron from said gas-solid reaction zone into said gas-solid-liquid reaction zone substantially without cooling or exposure to the outside atmosphere of said iron;
e) supplying heat by introducing fuel and oxidant for combustion to form hot gaseous combustion products comprising CO_2 and H_2O within said rotary furnace from which heat is transferred to said walls and said bath, thereby melting said solid metallic iron to form liquid metallic iron in said gas-solid-liquid reaction zone;
f) exhausting top gas containing H_2O and CO_2 as well as unreacted H_2 and CO from said gas-solid reaction zone;
g) removing a major portion of the H_2O contained in said top gas;
h) mixing a major portion of said dewatered top gas together with reducing gases to form an enriched gas mixture;
i) exhausting said gaseous combustion products of said fuel and oxidant in step (e) from said rotary furnace and transferring sensible heat contained therein to comprise sensible heat of said enriched gas mixture from step (h);
j) supplying additional heat to said enriched gas mixture sufficient to sustain said heating and reduction of iron oxide materials to yield hot solid metallic iron;
k) recycling said enriched gas mixture into said reduction reactor; and
l) discharging of said liquid metallic iron and slag from said gas-solid-liquid reaction zone.

5,542,964
METHOD OF AIR PURIFICATION

Arnold C. Kroeger; Curt J. Lawnicki, and Arthur E. McIvor, all of Tampa, Fla., assignors to CRS Industries, Inc., Tampa, Fla.

Continuation of Ser. No. 375,424, Jan. 18, 1995, abandoned, which is a division of Ser. No. 22,908, Feb. 26, 1993, Pat. No. 5,401,299. This application Jun. 6, 1995, Ser. No. 471,773
Int. Cl.[6] B03C *3/68*
U.S. Cl. 95—6 **9 Claims**



1. A method of purifying air, comprising:
flowing air through a conductive assembly to subject the air to be purified to a complex electrical field having a predetermined magnitude and frequency;
applying a high frequency AC voltage in the kilohertz range to the conductive assembly;
dividing the voltage in the conductive assembly to a predetermined fraction;
generating control voltage corresponding to the divided voltage; and

varying the voltage applied to the conductive assembly in accordance with the control voltage for maintaining a constant predetermined frequency of the electrical field.

5,542,965

PROCESS AND INSTALLATION FOR REMOVING SOLVENT VAPOR FROM EXHAUST AIR

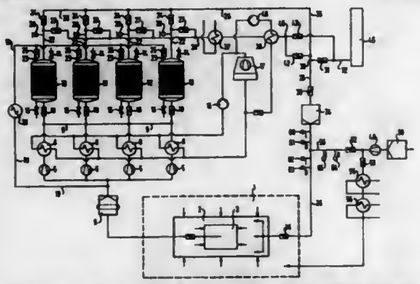
Werner Straubinger, Nürnberg; Günter Pecher, Sugenheim, and Richard Kohlmann, Burgtann, all of, Germany, assignors to U.E. Sebald Druck und Verlag GmbH, Nurberg, Germany

Filed Nov. 17, 1994, Ser. No. 341,077

Claims priority, application Germany, Nov. 18, 1993, 43 39 422.1; Mar. 21, 1994, 44 09 622.4

Int. Cl.[6] B01D *53/04*

U.S. Cl. 95—14 **22 Claims**



1. A process for removing solvent vapor from exhaust air which is sucked out of a working space, wherein the air is cleaned by being passed through at least two activated carbon adsorbers which are in mutually parallel relationship and each of which runs through operating cycles which each comprise a charging period in which the adsorber works in a charging mode in which the exhaust air flows through the adsorber and the adsorber adsorbs the solvent vapor contained in the exhaust air and a regeneration period in which the adsorber is separated from the flow of exhaust air and water vapor flows through the adsorber to desorb and flush out the previously adsorbed solvent; wherein the operating cycles of the at least two adsorbers are displaced relative to each other in respect of time in such a way that at least one of the adsorbers is always working in the charging mode, thereby to achieve a continuous adsorption procedure; wherein the regeneration period of each operating cycle includes a concluding drying phase in which, instead of water vapor, exhaust air from the working space flows through the respective adsorber, the exhaust air after leaving said adsorber being fed to a different adsorber which is working in the charging mode; and wherein each charging period includes an initial phase and a subsequent main phase, which are determined by virtue of the fact that the air flow issuing from an adsorber which is in the initial phase of a charging period is fed to a separate treatment while the air flow issuing from an adsorber which is in the main phase of a charging period is returned directly into the working space.

5,542,966

HELIUM RECOVERY

Joseph S. D'Amico, Linthicum; Herbert E. Reinhold, III, Annapolis, both of Md., and Kent S. Knaebel, Plain City, Ohio, assignors to Nitrotec Corporation, New York, N.Y.

Filed Oct. 21, 1994, Ser. No. 326,917

Int. Cl.[6] B01D *53/047*

U.S. Cl. 95—101 **20 Claims**

1. A method for the separation of helium from an input gas stream containing helium and other gases by selectively adsorbing said other gases comprising feeding said input gas stream at a pressure to an input to a first stage of a first stage and a second stage of pressure swing adsorption, each stage containing a plurality of interconnected adsorbent beds containing at least one adsorbent, the first stage of pressure swing adsorption concentrating the helium in said gas stream to greater than about 75 percent helium by volume and in said second stage of pressure swing adsorption concentrating said gas stream to greater than about 95 percent helium by volume, feeding a depressurization gas from a depressurization of an adsorbent bed in said first stage to an adsorbent bed of said first stage through which the flow of input gas has ceased and recovering a recycle feed gas therefrom, and flowing said recycle feed gas to an adsorbent bed of said first stage that is to be fed said input gas to at least partially repressurize said adsorbent bed.

5,542,967

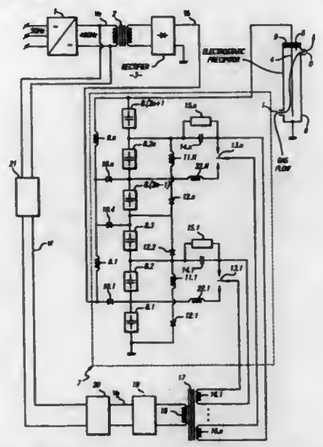
HIGH VOLTAGE ELECTRICAL APPARATUS FOR REMOVING ECOLOGICALLY NOXIOUS SUBSTANCES FROM GASES

Lazar Z. Ponizovsky, App. 21, 9/11 Tovarishtchesky Per.; Aleksander Z. Ponizovsky, App. 319, 39, Ostrovityanov Str.; Viktor A. Potapov, App. 48, 50, Leningradsky Prosp., and Adolf P. Shvedchikov, App. 52, 180, Prospekt Mira, all of Moscow, Russian Federation

Filed Oct. 6, 1994, Ser. No. 319,379

Int. Cl.[6] B03C *3/66*

U.S. Cl. 96—82 **7 Claims**



1. Electrical apparatus for removing noxious substances from a stream of fluid comprising:

an electrical precipitator including a reaction chamber through which a stream of fluid passes, and a corona-producing electrode extending into said reaction chamber;

a power supply including a rectifier for producing a rectified voltage output in response to an alternating current line voltage input;

a multi-stage Fitch generator connected to said power supply and including an odd number of capacitive power storage units to be charged to a predetermined constant direct current voltage by the rectified voltage output of said power supply;

said Fitch generator further including a trigger circuit connected to said power storage units for causing said power storage units to produce a pulsating voltage superimposed on said constant charged direct current voltage; and

circuit means connected to said power storage units for introducing said pulsating voltage superimposed on said constant direct current charged voltage to said corona-producing electrode.

5,542,968

ENTHALPHY WHEEL

William A. Belding, Danville, Calif.; Scott Janke, Baton Rouge; William D. Holeman, Baton Rouge, and Marc P. F. Deimas, Baton Rouge, La., assignors to LaRoche Industries, Inc., Baton Rouge, La.

Filed Jan. 24, 1995, Ser. No. 377,462

Int. Cl.[6] B01D *53/04*

U.S. Cl. 96—125 **42 Claims**

1. A gas permeable, sensible and latent heat exchange media having a multiplicity of passageways therethrough through which an air stream can flow, the sensible and latent heat exchange media comprising:

(a) a fibrous support material; and

(b) desiccant material and fire retardant contained in said fibrous support material, said desiccant material selected from the group consisting of silica gels, activated aluminas and molecular sieves, said fibrous support material and said fire retardant capable of adsorbing sensible heat from a warm air stream and releasing absorbed sensible heat into a cool air stream as said warm and cool air streams flow through said sensible and latent heat exchange media, said desiccant material capable of adsorbing moisture from a humid air stream flowing through said sensible and latent heat exchange media and capable of releasing adsorbed moisture into a dry air stream flowing said passageways of said sensible and latent heat exchange media.

5,542,969

RECORDING LIQUID

Takashi Hirasa, Yokohama, Japan; Hiroshi Takimoto, Yokohama, Japan, and Nobutake Mise, Kitakyushu, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Sep. 26, 1995, Ser. No. 534,017

Claims priority, application Japan, Sep. 27, 1994, 6-231745

Int. Cl.[6] C09D *11/02*

U.S. Cl. 106—20 C **21 Claims**

1. A recording liquid containing carbon black dispersed in an aqueous medium, wherein the volume ratio of carbon black having a particle size of at least 0.2 μm to the total carbon black is at least 50% by volume, and the volume ratio of carbon black having a particle size of at least 0.6 μm to the total carbon black is at most 20% by volume.

5,542,970

MONOAZO COMPOUND AND RECORDING LIQUID CONTAINING THE SAME

Konoe Miura; Hiroshi Takimoto; Tokuya Ohta, and Masatsune Kobayashi, all of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, and Mitsubishi Chemical Corporation, both of Tokyo, Japan

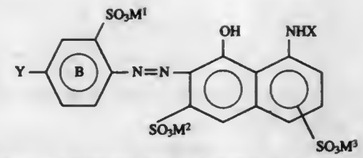
Continuation of Ser. No. 90,641, Jul. 13, 1993, abandoned, which is a continuation of Ser. No. 667,373, Mar. 12, 1991, abandoned, which is a continuation of Ser. No. 302,991, Jan. 30, 1989, abandoned, which is a continuation of Ser. No. 213,483, Jun. 30, 1988, abandoned, which is a continuation of Ser. No. 862,157, May 12, 1986, abandoned, which is a continuation of Ser. No. 542,977, Oct. 18, 1983, abandoned. This application Jun. 6, 1995, Ser. No. 465,714

Claims priority, application Japan, Oct. 27, 1982, 57-188776

Int. Cl.[6] C09D *11/02*

U.S. Cl. 106—20 D **10 Claims**

1. An ink-jet recording liquid comprising an image forming coloring matter component and a liquid medium comprising water and a water-miscible organic solvent for dissolving or dispersing the coloring matter, said recording liquid being characterized by containing as said coloring matter a desalted monoazo compound of the formula



(A)

wherein Y is hydrogen, methyl or methoxy; X is p-toluenesulfonyl; and M^1, M^2, and M^3 are selected from the group consisting of alkali metal atom, ammonium cation, and amine salt cation.

5,542,971

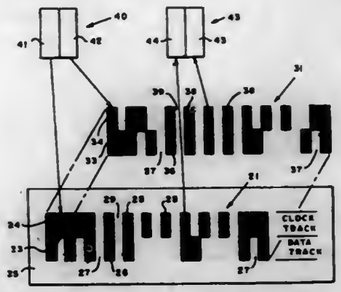
BAR CODES USING LUMINESCENT INVISIBLE INKS

Judith D. Auslander, Westport, and William Berson, Weston, both of Conn., assignors to Pitney Bowes, Stamford, Conn.

Filed Dec. 1, 1994, Ser. No. 347,740

Int. Cl.[6] C09D *11/02*

U.S. Cl. 106—21 A **8 Claims**



1. An aqueous ink composition comprising an upper level ink that is invisible to the human eye which is in contact with a lower layer ink that is affixed to an object wherein said upper level ink has the general formula:

BM(III)—DPA

where;

B is an alkali metal ion selected from the group consisting of sodium, lithium or potassium;

M(III) is a lanthanide; and

DPA is dipicolinic acid providing that the ratio M(III) to DPA is between 1:5 and 1:14 and to the aqueous solution of BM(III) to DPA is added a humectant so that the emission of the upper level ink will be between 400 to 1800 nm when the upper level ink is exposed to radiation between 250 and 350 nm.

5,542,972

REACTIVE DYES FOR INKJET PRINTING

Andreas von der Eltz, Frankfurt, and Werner H. Russ, Flörsheim, both of, Germany, assignors to Haecket AG, Germany

Filed May 18, 1995, Ser. No. 444,016

Claims priority, application Germany, May 20, 1994, 44 17 718.6

Int. Cl.[6] C09D *11/02*

U.S. Cl. 106—22 H **6 Claims**

1. An aqueous ink formulation consisting essentially of

a) one or more reactive dyes of the formula (I)

F—(G—E—A—NMCN)$_n$ (I)

where

F is the radical of a monoazo, disazo or polyazo dye, of a heavy metal complex of said azo dyes, or of an anthraquinone, phthalocyanine, formazan, azomethine, dioxazine, phenazine, stilbene, triphenyimethane, xanthene, thioxanthene, nitroaryl, naphthoquinone, pyrenequinone or perylenetetracarbimide dye,

G is a chemical bond, $-NR^1-$ where R^1 is hydrogen or C_1–C_4-alkyl, or a C_1–C_8-alkylene radical which is optionally interrupted by one or two groups of the formulae —O—, —NH— and —NH—C_6H_4— or a combination thereof,

A is a chemical bond or a bivalent radical of the formula $-CH_2-CH_2-$, $-CH(CH_3)CH_2-$, $-CH_2CH(CH_3)-$, $-CH_2-CHX-$, $CHX-CH_2-$, $-CH(CH_3)-CHX-$ or $-CHX-CH(CH_3)-$, where X is in each case Cl or Br, and

E is a chemical bond or the bivalent radical $-SO_2-$ or —CO—,

or where G, E and A together are one or more heterocyclic reactive groups Z of the class of the pyrimidines, triazines, quinoxalines, phthalazines, quinazolines, pyridazines, benzimidazoles, benzoxazoles or benzothiazoles which each contain 1 or 2 NMCN radicals,

M is a hydrogen atom, an alkali or alkaline earth metal or an ammonium group, and

n is from 1 to 4,

b) an alkaline agent, and

c) optionally further customary additives.

5,542,973

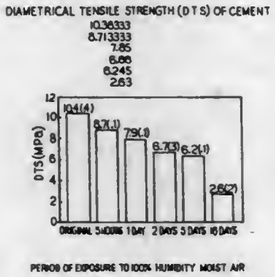
CALCIUM PHOSPHATE HYDROXYAPATITE PRECURSOR AND METHODS FOR MAKING AND USING THE SAME

Laurence C. Chow, Potomac, and Shozo Takagi, Gaithersburg, both of Md., assignors to The American Dental Association Health Foundation, Chicago, Ill.

Division of Ser. No. 30,709, Mar. 12, 1993. This application Dec. 9, 1994, Ser. No. 353,075

Int. Cl.[6] C09K *3/00*

U.S. Cl. 106—35 **4 Claims**



1. A kit of calcium phosphate-containing cement precursor materials comprising (1) tetracalcium phosphate prepared from a mixture of one or more sources of calcium, phosphorous and oxygen which has a calcium to phosphorous ratio of less than 2 and (2) at least one other sparingly soluble calcium phosphate compound.

3. A kit of calcium phosphate-containing cement precursor materials comprising (1) tetracalcium phosphate prepared and maintained under substantially anhydrous conditions prior to and during its storage in the kit, and (2) at least one other sparingly soluble calcium phosphate compound.

5,542,974

SHAPED MASTICATING AGENTS CONTAINING PARAFFIN

Hartmuth Buding, Titz, Germany, assignor to Bayer AG, Leverkusen, Germany

Filed Jul. 31, 1995, Ser. No. 509,492

Claims priority, application Germany, Aug. 11, 1994, 44 28 457.8

Int. Cl.[6] C08C *4/00;* **C08J** *3/18;* **C08K** *9/08;5/36*

U.S. Cl. 106—270 **2 Claims**

1. Shaped, non-dusting, non-sticking, free-flowing masticating agents characterised by a content of 10 to 70 parts by weight of 2,2'-dibenzoamidodiphenyl disulphide (DBD), a content of 50 to 15 parts by weight of inactive fillers, optionally a content of 0.01 to 5 parts by weight of activators and a content of 40 to 15 parts by weight of paraffins having a solidification point in the range from 50° to 85° C., a needle penetration of 8 to 25 in 1/10 mm, a viscosity of 2 to 10 mm^2/s and a residual oil content originating from the petrochemical petroleum refining process of less than 3 parts by weight, relative to the native paraffin used, wherein the sum of the parts by weight used in relation to DBD, inactive filler, activators and paraffins should always be 100 parts by weight.

5,542,975

β-CRYSTAL FORM OF 4,4'-DIAMINO-3,3'-DIBROMO-1,1'-DIANTHRAQUINONYL

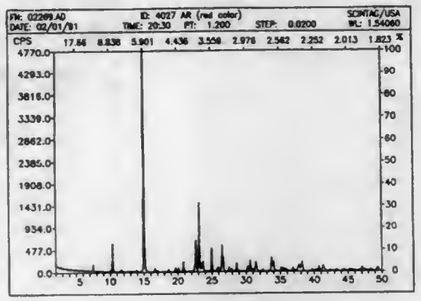
Peter Bitterli, Reinach, Switzerland, assignor to Clariant Finance (BVI) Limited, Tortola, Virgin Islands (Br.)

Filed Jun. 21, 1995, Ser. No. 493,080

Claims priority, application Germany, Jun. 23, 1994, 44 22 052.9

Int. Cl.[6] C09B *1/22;* **C07C** *225/34;50/18*

U.S. Cl. 106—493 **4 Claims**



1. A β-crystal form of 4,4'-diamino-3,3'-dibromo-1,1'-dianthraquinonyl having the X-ray fingerprint depicted in FIG. 1.

5,542,976

REFRACTORY IMITATION FIREPLACE OBJECTS

Ed Martin, 301-1920 Alberni Street, Vancouver, British Columbia, Canada; Claude Simard, 28-3981 198th Street, Langley, British Columbia, Canada, and Brad Thompson, Burnaby, Canada, assignors to Ed Martin, and Claude Simard, both of British Columbia, Canada

Filed May 24, 1995, Ser. No. 448,882

Int. Cl.[6] C04B *7/32;14/46;14/18;14/20*

U.S. Cl. 106—675 **8 Claims**

1. A blend for producing refractory materials that glow when exposed to a flame in a gas fireplace, the materials comprising: between 30% and 50% by weight amorphous siliceous mineral silicate; between 1% and 5% by weight of fibre; and between 40% and 60% by weight of high temperature cement.

5,542,977

COMPOSITION FOR SOIL SURFACE STABILIZATION

Donald R. Hanst, 7911 Windy Acre, Houston, Tex. 77040

Continuation-in-part of Ser. No. 141,487, Oct. 22, 1993, Pat. No. 5,401,312. This application Feb. 10, 1995, Ser. No. 386,928

Int. Cl.[6] C04B *28/22*

U.S. Cl. 106—706 **9 Claims**

1. A slurry composition for stabilizing soil, comprising:

(a) lime;

(b) fly ash; and

(c) water, in which the slurry composition has a solids content in excess of 35% by weight and the amount of fly ash is approximately three times the amount of lime by weight, the slurry composition capable of being held in suspension without setting of the fly ash for a period substantially in excess of 10 minutes.

5,542,978

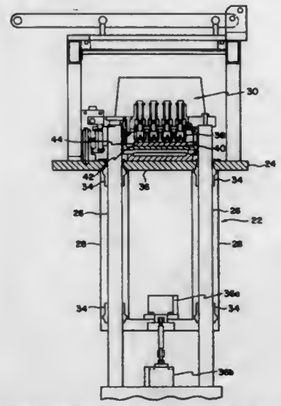
APPARATUS FOR APPLYING A SURFACTANT TO MOLD SURFACES

Ture Kindt-Larsen, Holte, Denmark, and Stephen R. Beaton, Neptune Beach, Ill., assignors to Johnson & Johnson Vision Products, Inc., Jacksonville, Fla.

Filed Jun. 10, 1994, Ser. No. 258,263

Int. Cl.[6] B05C *1/00*

U.S. Cl. 118—256 **14 Claims**



1. An apparatus for applying a surfactant to a first surface of a first mold part of a multi-part mold having the first mold part engageable with a cooperative second mold part for the molding of polymer articles, wherein the surfactant assists in the release of the first and second mold parts and enables removal of excess polymer molding material adherent to the first surface; said apparatus comprising:

a) a support means mounting the first mold part, the support means being movable;

b) applicator means comprising a surfactant applicator, the surfactant applicator being arranged in spaced apart relationship with the support means and the first mold part, said surfactant applicator being positionable in vertical alignment with said first mold part;

c) a pad member disposed adjacent said applicator means containing the surfactant;

d) first actuating means disposed in communication with said applicator means for imparting a displacement to the applicator means to cause the surfactant applicator to contact said pad member and assume a quantity of the surfactant therefrom; and

e) second actuating means in communication with said applicator means bringing the applicator means into contact with the first surface to an extent such that the surfactant applicator makes contact with the first surface of said first mold part so as to impart a coating of said surfactant thereto.

5,542,979

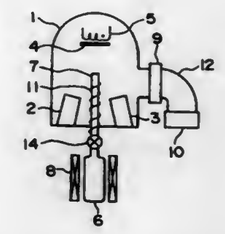
APPARATUS FOR PRODUCING THIN FILM

Akira Matsuno, and Takashi Nire, both of Hiratsuka, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Division of Ser. No. 10,765, Jan. 29, 1993, Pat. No. 5,466,494. This application May 9, 1995, Ser. No. 437,871

Int. Cl.[6] C23C *14/00*

U.S. Cl. 118—719 **11 Claims**



1. Apparatus for producing a thin film on a surface of a substrate, said apparatus comprising:

a vacuum deposition vessel containing a substrate holder, for holding said substrate with said surface being exposed, and at least one source adapted to contain first deposition material,

means for generating vapors of said first deposition material in said vacuum deposition vessel by heating first deposition material contained in said at least one source under first controlled conditions,

an external vessel positioned outside said vacuum deposition vessel and adapted to contain second deposition material,

means for generating vapors of said second deposition material in said external vessel by heating second deposition material in said external vessel under second controlled conditions, said second controlled conditions being different from said first controlled conditions,

a vapor inlet tube connecting said external vessel to said vacuum deposition vessel and extending inwardly into said vacuum deposition vessel so as to position an outlet of said vapor inlet tube in a region near to said substrate holder so as to thereby generate an atmosphere of vapors of said second deposition material from said external vessel adjacent to and at least substantially localized around said surface of said substrate,

an inlet valve positioned in said vapor inlet tube at a location between said external vessel and said vacuum deposition vessel for controlling the flow of vapors of said second deposition material through said vapor inlet tube into said vacuum deposition vessel,

a heater for heating said vapor inlet tube along a substantial portion of its length between said inlet valve and said outlet, so as to keep in a vapor state the vapors of said second deposition material passing through said vapor inlet tube, and

means for discharging air from the vacuum deposition vessel and from the external vessel to provide vacuum conditions within said vacuum deposition vessel and said external vessel.

5,542,980

Patent Not Issued For This Number

5,542,981

PROCESS FOR REMOVING MINERAL DEPOSITS FROM LAGOON RECYCLE LINES

Clel E. Lee, Sr., 1182 Farm Quarter Rd., Mt. Pleasant, S.C. 29465

Filed Jun. 22, 1994, Ser. No. 263,532
Int. Cl.[6] C23G *1/02;* B08B *3/08*
U.S. Cl. 134—3 1 Claim

1. A process of cleaning mineral deposits from a livestock production facility using lagoon recycle lines comprising the following steps:

supplying a line cleaner concentrate comprising 30–70% by dry weight of oxalic acid; 15–35% by dry weight of sodium chloride; 0–10% by dry weight sulfamic acid; and, 0–25% by dry weight of a sodium salt of sulfonated oleic acid;

dissolving said concentrate in water, thereby forming a cleaning mixture;

introducing said cleaning mixture into a recycle line;

soaking a pump in communication with said recycle lines in said cleaning mixture;

soaking said recycle lines and said pumps until the mineral deposits are dissolved;

draining said recycle lines of said cleaning mixture and said dissolved mineral deposits into a flush tank;

discharging said cleaning mixture and said dissolved mineral deposits from said flush tank to a finishing floor;

dissolving additional mineral deposits associated with said finishing floor by contact with said discharged cleaning mixture;

draining said cleaning mixture from said finishing floor; and,

flushing said finishing floor with additional water.

5,542,982

METHOD OF REMOVING COATING FILMS

Masahiro Terada; Hirosuke Kamae, both of Kanagawa; Motoyasu Yusawa, Ciba; Kazuyuki Watanabe, Chiba, and Mitsuo Saito, Chiba, all of, Japan, assignors to Nissan Motor Co., Ltd., Kanagawa, and Mitsui Petrochemical Industries, Ltd., Tokyo, both of, Japan

Continuation of Ser. No. 123,120, Sep. 20, 1993, abandoned. This application Feb. 1, 1995, Ser. No. 383,675
Claims priority, application Japan, Sep. 25, 1992, 4-256457
Int. Cl.[6] B08B *3/08;3/10;7/00*
U.S. Cl. 134—5 10 Claims

1. A method for removing a cured coating film of a thermosetting resin composition from surfaces of polyolefin resin substrates, comprising the steps of:

treating crushed particulates of polyolefin resin substrates having a particle size in a range of from 0.5 to 20 mm, in an aqueous alkali solution having a concentration of 0.2 to 4.0% by weight at a temperature of 110° C. or higher, but lower than a melting point of said substrates to obtain treated resin substrate particulates;

contacting the treated resin substrate particulates with each other, thereby removing said cured coating film from said particulates by shearing force in a screw feeder polishing machine or in a polishing machine equipped with a high-speed vessel stirrer; and

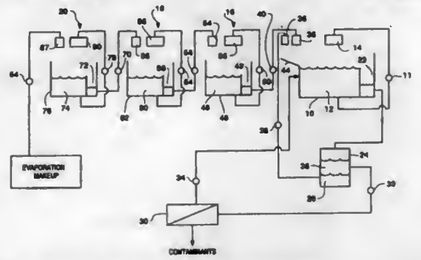
recycling resulting treated particulates which have had said cured coating film removed for reuse as polyolefin resin.

5,542,983

PROCESS FOR CLEANING METAL SURFACES WITH PHYSICAL EMULSION OF TERPENE AND WATER

C. Richard Hamilton, Arvada, and Ross M. Gustafson, Golden, both of Colo., assignors to Biochem Systems, Wichita, Kans.

Continuation-in-part of Ser. No. 849,424, Dec. 6, 1991, Pat. No. 5,248,343. This application Jun. 10, 1992, Ser. No. 896,686
Int. Cl.[6] B08B *7/04;3/08;* C11D *7/50;* B01D *61/14*
U.S. Cl. 134—10 20 Claims



1. A process for finishing articles, comprising:

a) contacting an article comprising a material selected from the group consisting of metal, ceramic, fiberglass, plastic and wood, said article having contaminants thereon with a physical emulsion of a terpene finishing agent and water, said physical emulsion having no effective amount of surfactants or emulsifiers capable of preventing the separation of an aqueous phase from an immiscible or oil-containing phase, to remove said contaminants from said articles and from a mixture of said physical emulsion and contaminants;

b) then allowing said water in said mixture to separate from said finishing agent and said contaminants; and

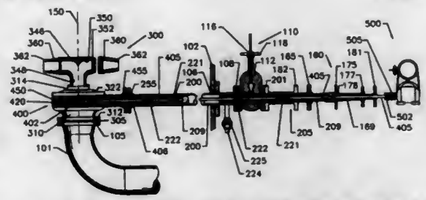
c) using said water which has separated from said finishing agent and contaminants to rinse said article.

5,542,984

METHOD FOR DISPERSION OF SLUDGE AND FOR PREPARING A CIRCULATOR FOR DISPERSING SLUDGE

Richard W. Krajicek, Houston, Tex., assignor to Serv-Tech, Inc., Houston, Tex.

Division of Ser. No. 261,438, Jun. 17, 1994, Pat. No. 5,460,331. This application May 10, 1995, Ser. No. 438,758
Int. Cl.[6] B08B *3/02;9/073*
U.S. Cl. 134—22.1 3 Claims



1. A method for redispersing hydrocarbon sludge deposited in a crude oil storage tank having a side and an opening in the side covered by a valve, a crude oil circulator disposed within said tank and having a least one rotatable nozzle and a gear member attached to a hollow rotor supporting the nozzle and rotatably mounted in said circulator, an elongated tube connected to the circulator and extending through the opening in the side of said tank and having a drive shaft and a worm gear driven by said drive shaft and positioned in said tank and in engagement with the gear member, the method comprising the steps of:

(a) circulating the crude oil from the tank to a pump and then through the nozzle at a selected flow rate;

(b) simultaneously rotating the worm gear, the gear member, the hollow rotor and the nozzle at a controllable rate independent of the selected flow rate;

(c) repeating steps (a) and (b) until the worm gear fails, and then;

(d) pulling the shaft driven worm gear through the tube to a point just past the valve;

(e) closing the valve;

(f) removing the shaft driven worm gear from the tube;

(g) repairing the worm gear or other elements of the drive shaft operatively connected to the worm gear;

(h) inserting the worm gear into the tube until it approaches the closed valve;

(i) opening the valve;

(j) inserting the worm gear further into the tube until it engages the gear member attached to the hollow rotor; and

(k) repeating step (c).

5,542,985

METHOD OF RECYCLING A WASTE RECORDING MEMBER

Junji Machida, Toyonaka; Masazumi Yoshida, Amagasaki, and Susumu Tanaka, Aiti-ken, all of, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 208,372, Mar. 10, 1994, abandoned. This application Jan. 20, 1995, Ser. No. 375,731
Claims priority, application Japan, Mar. 10, 1993, 5-049033
Int. Cl.[6] B08B *3/04;3/08;7/00*
U.S. Cl. 134—38 9 Claims

1. A method for cleaning paper comprising the steps of:

applying an emulsion formed cleaning solution which comprises a water component, an organic solvent dissolving a resin component, and a surface active agent to form a solution into the emulsion, to a paper having an image which is formed by toner particles including the resin component;

widening a distance between fibers in the paper by the water component of the cleaning solution; and

dissolving the resin component of the toner by the organic solvent of the cleaning solution for dissolving the resin component.

5,542,986

PAINT STRIPPERS PROCESS

John Ditaso, Orange, Calif., assignor to Elf Atochem North America, Inc., Philadelphia, Pa.

Continuation of Ser. No. 282,117, Jul. 28, 1994, abandoned, which is a division of Ser. No. 92,046, Jul. 15, 1993, abandoned, which is a continuation-in-part of Ser. No. 32,824, Mar. 17, 1993, abandoned, which is a continuation of Ser. No. 777,865, Oct. 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 647,860, Jan. 30, 1991, abandoned. This application Apr. 28, 1995, Ser. No. 430,591
Int. Cl.[6] C09D *9/00*
U.S. Cl. 134—38 17 Claims

1. A method of stripping paint which comprises applying to said paint a formulation containing (a) from about 25 to about 88 parts by weight, based on the weight of the formulation, of a solvent system comprising an ester having the formula HC(O)OR, where R is selected from the group consisting of benzyl and methylbenzyl, and (b) from about 5 to about 75 parts by weight of water.

5,542,987

METHOD FOR CLEANING THE SURFACES OF A MOTOR VEHICLE

Shimon Gatt; Yechezkel Barenholz; Herve Bercovier, all of Jerusalem, and Zvi Eldar, Haifa, all of, Israel, assignors to Yissum Research Development Company of the Hebrew University of Jerusalem, Jerusalem, Israel

Continuation-in-part of Ser. No. 13,846, Feb. 5, 1993, Pat. No. 5,376,183, which is a continuation-in-part of Ser. No. 653,319, Feb. 11, 1991, Pat. No. 5,401,413. This application Dec. 27, 1994, Ser. No. 364,586
Int. Cl.[6] B08B *7/00*
U.S. Cl. 134—39 8 Claims

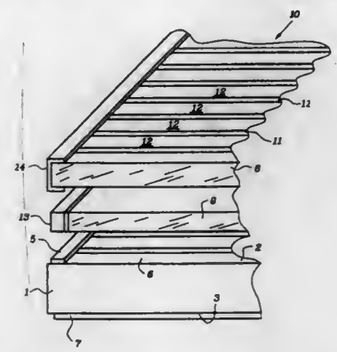
1. A method for cleaning the surfaces of a motor vehicle which is contaminated with wastes containing organic or lipophilic deposits, comprising applying unilamellar liposomes thereto, which unilamellar liposomes modify the physical properties of said wastes to increase the polarity and wettability thereof.

5,542,988

PHOTOCELL, ITS METHOD OF MANUFACTURE, AND A SOLAR PANEL COMPRISING SUCH CELLS

Klaus P. M. Bogus, HD Voorschoten, Netherlands, assignor to Agence Spatiale Europeene, Paris Cedex, France

PCT No. PCT/FR94/00163, § 371 Date Oct. 17, 1994, § 102(e) Date Oct. 17, 1994, PCT Pub. No. WO94/19831, PCT Pub. Date Sep. 1, 1994
PCT Filed Feb. 15, 1994, Ser. No. 325,451
Claims priority, application France, Feb. 17, 1993, 93 101761
Int. Cl.[6] H01L *31/42;31/04*
U.S. Cl. 136—244 8 Claims



1. A photocell comprising;

a photovoltaic body having a first main face carrying a first electrode for collecting current, and a second main face opposite its first main face and carrying a second electrode for collecting current; and

a protective glass sheet bonded to said photovoltaic body;

the photocell including;

a grid of conductive elements for drawing off electrostatic charge and superposed over the elements of the first electrode, the grid being made of a substantially transparent material deposited on the outside face of the protective glass sheet and, means for interconnecting the first electrode and the grid for drawing off electrostatic charge comprising a channel section electrical conductor bar extending substantially along the entire length of the edge of the protective glass sheet and overlying a busbar of the first electrode.

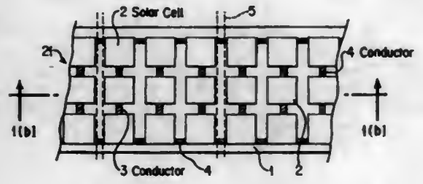
6. A solar panel, in particular for use in space, comprising a plurality of photocells according to claim 1, connected in series and/or in parallel.

5,542,989

SOLAR BATTERY ROOFING FOR A SOLAR HOUSE

Yukimi Ichikawa, Kanagawa, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Jan. 20, 1995, Ser. No. 376,219
Claims priority, application Japan, Jan. 28, 1994, 6-007973
Int. Cl.[6] E04D *13/18*; H01L *31/05;31/048*
U.S. Cl. 136—251 8 Claims



7. A solar battery roofing for a solar house, said roofing having a plurality of crosspieces arranged parallel to each other for fixing the solar battery roofing to the solar house, said roofing comprising:

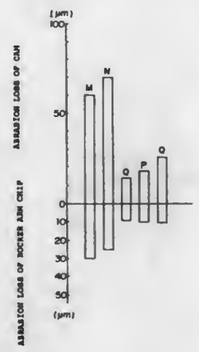
a solar battery formed of a plurality of solar cell rows arranged parallel to each other, each solar cell row having a plurality of solar cells connected in electrical series, said solar cell rows situated parallel to each other being electrically connected together in parallel and being arranged parallel to said crosspieces to substantially equally throughout the row receive shade by the crosspieces.

5,542,990

CAMSHAFT

Yoshikatsu Nakamura; Osamu Kawamura; Teruo Takahashi, and Shinichi Yamamoto, all of Tochigi-ken, Japan, assignors to Nippon Piston Ring Co., Ltd., Japan

Filed Jun. 6, 1994, Ser. No. 254,367
Claims priority, application Japan, Jun. 8, 1993, 5-137876; Feb. 28, 1994, 6-054443
Int. Cl.[6] C22C *38/60;38/00*
U.S. Cl. 148—319 5 Claims



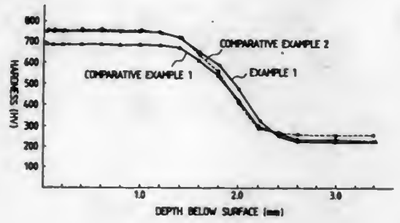
1. A camshaft including at least one cam lobe portion having a sliding surface, said camshaft comprising cast iron including at least one element in a total amount of 0.0001 to 0.1 wt. % from the group consisting of Bi, Te, Se, As, Sb and Sn, and chilled carbide along said sliding surface, said chilled carbide having an average grain diameter not greater than 15 μm.

5,542,991

RAIL FOR A LINEAR MOTION GUIDE BEARING

Tomoki Muraoka; Tsutomu Abe, both of Kanagawa; Kazuhiro Kobayashi, and Kenichi Hosoda, both of Hyogo, all of, Japan, assignors to NSK Ltd., Tokyo, and Sanyo Special Steel Co., Ltd., Hyogo, both of, Japan

Filed May 31, 1994, Ser. No. 251,267
Claims priority, application Japan, May 31, 1993, 5-129762
Int. Cl.[6] C22C *38/32*
U.S. Cl. 148—330 1 Claim



1. A rail for a linear motion guide bearing, the rail being fabricated into a required shape with a track surface, by using steel which is cold-drawn and induction-hardened, said steel comprising:

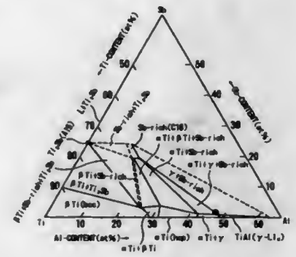
carbon in a range of from 0.56 to 1.0% by weight;
silicon in a range of 0.05 to 0.15% by weight;
manganese in a range of from 0.20 to 0.40% by weight;
chromium in a range of from 0.30 to 0.70% by weight; and
boron in a range of from 0.0005 to 0.0035% by weight,
the rail comprising a hardened surface layer having a hardness of a range from 700 to 800 in Vickers hardness (H_v) in a surface portion of the rail from the track surface to substantially 1.4 mm in depth.

5,542,992

TIA1 BASE ALLOY HAVING HIGH STRENGTH PERFORMANCE AT HIGH TEMPERATURE

Kenki Hashimoto; Minoru Nobuki; Morihiko Nakamura, and Haruo Doi, all of Tokyo, Japan, assignors to National Research Institute For Metals, Tokyo, Japan

Filed Mar. 2, 1995, Ser. No. 398,174
Claims priority, application Japan, May 2, 1994, 6-054807
Int. Cl.[6] C22C *14/00*
U.S. Cl. 148—421 3 Claims



1. A TiAl base alloy consisting essentially of 46 to 54 mol % Ti, 46 to 52 mol % Al, 0.1 to 1 mol % Sb, and 0 to 3 mol % of at least one element selected from the group consisting of Hf and Zr as an additive, said alloy having a three-phase microstructure where a γ phase, an α_2 phase and an Sb-rich phase coexist.

5,542,993

LOW MELTING NICKEL-PALLADIUM-SILICON BRAZING ALLOY

Anatol Rabinkin, Morris Plains, N.J., assignor to AlliedSignal Inc., Morristown, N.J.

Division of Ser. No. 707,206, May 23, 1991, Pat. No. 5,424,140, which is a continuation of Ser. No. 419,067, Oct. 10, 1989, abandoned. This application Apr. 5, 1995, Ser. No. 417,283
Int. Cl.[6] B23K *35/24*
U.S. Cl. 148—528 4 Claims

1. A process for brazing stainless steel, comprising the steps of:

a) providing juxtaposing stainless steel parts to define a joint to be brazed;

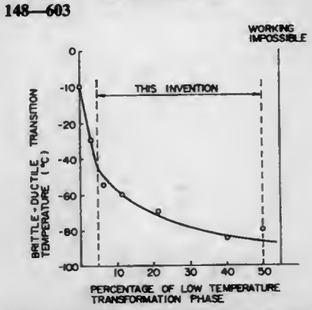
b) brazing said parts utilizing a homogeneous, ductile foil formed from an alloy having a composition consisting essentially of $Ni_aSi_bPd_{(a-b)}$, where the subscripts "a" and "b" are in atomic percent and wherein the ratio of Ni to Pd is between about ½ and 1/16 and "b" is between about 15 and about 20, said foil having a thickness of at least about 150 μm.

5,542,994

METHOD FOR MANUFACTURING A HIGH-FORMABLE, HIGH-STRENGTH COLD-ROLLED STEEL SHEET EXCELLENT IN RESISTANCE TO SECONDARY WORKING EMBRITTLEMENT

Kazuhiro Seto; Kaneharu Okuda; Kei Sakata; Toshiyuki Kato, and Takashi Ono, all of, Chiba, Japan, assignors to Kawasaki Steel Corporation, Japan

Filed Dec. 23, 1994, Ser. No. 363,365
Claims priority, application Japan, Dec. 24, 1993, 5-328666
Int. Cl.[6] C21D *8/02*
U.S. Cl. 148—603 2 Claims



1. In a method of producing a highly-formable, high-strength cold-rolled steel sheet from a steel slab having the composition:

about 0.0005 to about 0.005 wt % of C;
about 0.2 to about 1.5 wt % of Si;
about 0.5 to about 2.5 wt % of Mn;
about 0.05 to about 0.15 wt % of P;
about 0.02 wt % or less of S;
about 0.1 wt % or less of sol.Al;
about 0.005 wt % or less of N;
one or both of about 0.005 to about 0.2 wt % of Ti and about 0.005 to about 0.2 wt % of Nb;
B in the amount within the approximate range of:

$$0.001\ A \leq B\ (wt\ \%) \leq 0.003\ A$$

wherein A is a parameter determined approximately by the following expression with reference to the relation:

$$A = P\ (wt\ \%) + 0.2\ Mn\ (wt\ \%) + 0.8\ Si\ (wt\ \%) - 0.2;$$

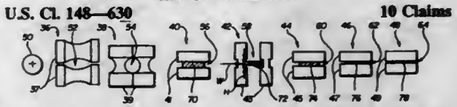
and the balance Fe with incidental impurities;
the steps which comprise:
hot rolling said steel slab into a steel sheet to be finished at a temperature of between about Ar_3 transformation temperature and about Ar_3 transformation temperature 100 C°;
coiling of said steel sheet;
cold rolling of said steel sheet;
continuous annealing of said steel sheet at a temperature between about Ac_1 transformation temperature +5 C° and about Ac_1 transformation temperature +50 C°, and not lower than about 860 C°; and
controlling low temperature transformation phase in said steel sheet within the volume percentage range of about 5 to about 50% to strengthen and reduce secondary working embrittlement in said steel sheet.

5,542,995

METHOD OF MAKING STEEL STRAPPING AND STRIP AND STRAPPING AND STRIP

Robert Reilly, 985 Pine Tree La., Winnetka, Ill. 60093

Continuation of Ser. No. 839,125, Feb. 19, 1992, abandoned. This application Dec. 16, 1993, Ser. No. 168,512
Int. Cl.[6] C21D *7/00*
U.S. Cl. 148—630 10 Claims



1. A method of making steel strapping or strip from a steel piece having a thickness and a width, the strapping or strip having a finished thickness, length and width, the method comprising the steps of:

providing a steel piece having a thickness greater than the thickness of the finished strapping or strip;
heating the steel piece to an elevated temperature greater than the upper critical temperature for the steel to form a heated steel piece;
hot rolling the heated steel piece to reduce the thickness of the heated steel piece to form a hot rolled steel piece while preventing expansion of the width of the hot rolled steel piece beyond the finished width of the steel strapping or strip, wherein the hot rolling step comprises at least seven stands and the roll pass designs of the at least seven stands includes in the following order, ovalization, precision rounding, rectangle forming, edge rolling and three thickness reducing roll pass designs; and then
quenching the hot rolled steel piece from a temperature selected from the group consisting of temperatures above the upper critical temperature for the steel and temperatures between the lower critical temperature and the upper critical temperature for the steel to form strapping or strip.

5,542,996

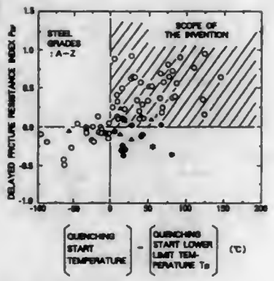
METHOD FOR MANUFACTURING AN ULTRA-HIGH STRENGTH COLD-ROLLED STEEL SHEET WITH DESIRABLE DELAYED FRACTURE RESISTANCE

Yasunobu Nagataki; Seishi Tsuyama; Yoshihiro Hosoya; Tomoyoshi Okita; Shuzi Kanetoh, and Yasuyuki Takada, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan

PCT No. PCT/JP94/00038, § 371 Date Mar. 4, 1994, § 102(e) Date Mar. 4, 1994, PCT Pub. No. WO94/16115, PCT Pub. Date Jul. 21, 1994
PCT Filed Jan. 13, 1994, Ser. No. 199,254
Claims priority, application Japan, Jan. 14, 1993, 5-020781
Int. Cl.[6] C22C *38/06;38/58*; C21D *9/46*
U.S. Cl. 148—652 4 Claims

1. A method for manufacturing an ultra-high-strength cold-rolled steel sheet excellent in delayed fracture resistance, which comprises the steps of:

preparing a material consisting essentially of:



carbon (C): from 0.1 to 0.25 wt. %,
silicon (Si): up to 1 wt. %,
manganese (Mn) : from 1 to 2.5 wt. %,
phosphorus (P): up to 0.020 wt. %,
sulfur (S): up to 0.005 wt. %,
soluble aluminum (Sol.Al): from 0.01 to 0.05 wt. %,
nitrogen (N): from 0.0010 to 0.0050 wt. %,
optionally at least one element selected from the group consisting of Nb Ti and V, in an effective amount for forming carbon nitrides to achieve a finer structure of steel;
optionally at least one element selected from the group consisting of Cu, Ni, B, Cr and Mo, in an effective amount for increasing the hardenability of steel; and
the balance being iron (Fe) and incidental impurities; then
subjecting said material to a high rolling, a pickling and a cold rolling to prepare a cold-rolled steel sheet; then
subjecting said cold-rolled steel sheet thus prepared to a continuous heat treatment which comprises the steps of:
soaking said cold-rolled steel sheet at a temperature within a range of from Ac_3 to 900° C. for a period of time within a range of from 30 seconds to 15 minutes, then quenching the thus soaked cold-rolled steel sheet at a quenching rate of at least 40° C./second from a temperature of at least a lower limit temperature (T_Q) for starting quenching as expressed by the following formula to a temperature of up to 100° C.:

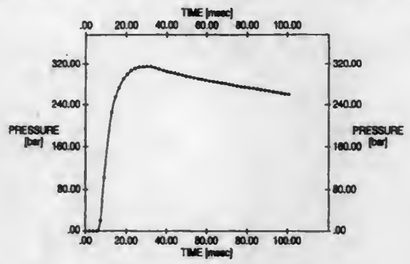
$$T_Q\ (°C.) = 600 + 800 \times C + (20 \times Si + 12 \times Mo + 13 \times Cr) - (30 \times Mn + 8 \times Cu + 7 \times Ni + 5000 \times B),$$

wherein C, Si, Mo, Cr, Mn, Cu, Ni and B are respectively weight percents for carbon, silicon, molybdenum, chromium, manganese, copper, nickel and boron,
and then, tempering the thus soaked and quenched cold-rolled steel sheet at a temperature within a range of from 100° to 300° C. for a period of time within a range of from 1 to 15 minutes.

5,542,997
GAS-GENERATING MIXTURE
Siegfried Zeuner, München; Joachim Sans, Putzbrunn; Uwe Dilling, Holzkirchen, and Karl-Heinz Rödig, Aschau/Inn, all of, Germany, assignors to Temic Bayern-Chemie Airbag GmbH, Aschau, Germany
Continuation of Ser. No. 959,158, Oct. 9, 1992, abandoned. This application May 19, 1994, Ser. No. 246,551
Claims priority, application Germany, Oct. 11, 1991, 41 33 655.0; Jun. 5, 1992, 42 18 531.9
Int. Cl.[6] C06B *35/00*
U.S. Cl. 149—35 **6 Claims**

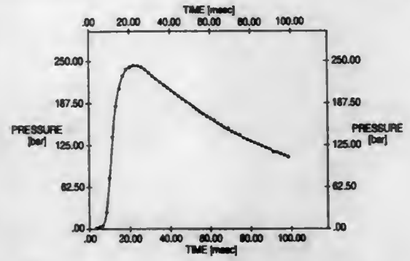
1. Gas-generator mixture for inflating air bags for protecting passengers in motor vehicles, the mixture consisting essentially of:
58–65 wt. % of an alkali or alkaline earth azide,
10–35 wt. % of iron oxide having a specific surface greater than 5 m^2/g and a mean particle size less than 3 microns, and
5–23 wt. % of an accelerator for increasing the rate of burnoff, formed of a metal nitrate and fumed silica, the fumed silica having a specific surface of at least 50 m^2/g,
wherein the ratio of metal nitrate to the silica ranges from 4:1 to 1:4, the silica content of the mixture is at least 4 wt. %, 50 wt. % of the particles of the mixture have a size of less than 10 microns, and the mixture leads to a minimum output of very fine dust particles at a relatively low combustion temperature, and has a burnoff rate of more than 40 mm/sec as well as satisfactory ignitability.

5,542,998
GAS-GENERATING MIXTURE
Klaus M. Bucerius, and Helmut Schmid, both of Karlsruhe, Germany, assignors to Fraunhofer Gesellschaft zur Forderung der Angewandten Forschung e.V., Munich, Germany
Filed Oct. 17, 1995, Ser. No. 373,019
Claims priority, application Germany, Jan. 18, 1994, 44 01 213.6
Int. Cl.[6] C06B *31/00*
U.S. Cl. 149—45 **20 Claims**



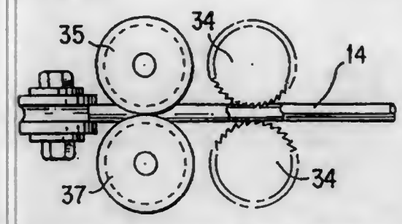
1. A gas generating mixture comprising a fuel, an oxidizer, a catalyst and a coolant, wherein the oxidizer is $Cu(NO_3)_2{\cdot}3Cu(OH)_2$ and the catalyst a metal oxide.

5,542,999
GAS-GENERATING MIXTURE
Klaus M. Bucerius, and Helmut Schmid, both of Karlsruhe, Germany, assignors to Fraunhofer Gesellschaft zur Forderung der angewandten Forschung e.V., Munich, Germany
Filed Jan. 17, 1995, Ser. No. 373,023
Claims priority, application Germany, Jan. 18, 1994, 44 01 214.4
Int. Cl.[6] C06B *31/00*
U.S. Cl. 149—45 **14 Claims**



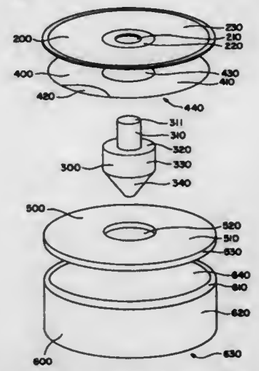
1. A gas-generating mixture comprising a fuel, an oxidizer, a catalyst and a coolant, wherein the oxidizer is $Cu(NO_3)_2{\cdot}3Cu(OH)_2$ and the catalyst comprises a metal or a metal alloy on a carrier.

5,543,000
METHOD OF FORMING RADIATING COAXIAL CABLE
Roger M. Lique, Jackson, Miss., assignor to Trilogy Communications, Inc.,, Pearl, Miss.
Division of Ser. No. 965,148, Oct. 22, 1992, Pat. No. 5,339,058. This application Aug. 15, 1994, Ser. No. 290,302
Int. Cl.[6] H01B *13/20;13/24;* B32B *1/10;31/18*
U.S. Cl. 156—52 **17 Claims**



1. A method of forming a radiating coaxial cable comprising the steps of:
providing a central conductor;
forming a plurality of coaxial dielectric air chambers by attaching a plurality of insulting spaced spacers to said central conductor;
forming a radiation sheath concentrically disposed over said spacers;
forming at least a pair of continuous slots or gaps along the length of said radiation sheath;
forming an outer insulating sleeve over said radiating sheath to cover said radiation sheath and said slots or gaps.

5,543,001
METHOD FOR THE PLACEMENT OF SELF-ADHESIVE LABELS ON COMPACT DISKS
Joseph Castillo, Hamden; Frederick M. Johnson, Higganum; John M. Heath, Jr., Hamden; Gregory R. Veilleux, Wallingford, and William J. Dufault, West Haven, all of Conn., assignors to Micropatent, East Haven, Conn.
Continuation-in-part of Ser. No. 287,153, Aug. 8, 1994, abandoned. This application Mar. 24, 1995, Ser. No. 410,239
Int. Cl.[6] B32B *31/04;* G11B *7/00*
U.S. Cl. 156—60 **6 Claims**



1. A method for the placement of labels onto compact disks comprising the following steps:
a) providing a base having a surface, a positioning hole and a hollow space beneath the surface;
b) placing a label having a hole onto the surface such that the hole of the label overlaps the positioning hole;
c) providing a disk locating device having an extension adapted for insertion in a compact disk on one side and a tapered member on another side and a stop between the sides;
d) placing the compact disk onto the disk locating device extension limited by the stop; and
e) pressing the compact disk against the self-adhesive label by inserting the tapered member through the hole area of the label and the positioning hole of the surface, and into the hollow space of the base, thereby contacting the compact disk and the label.

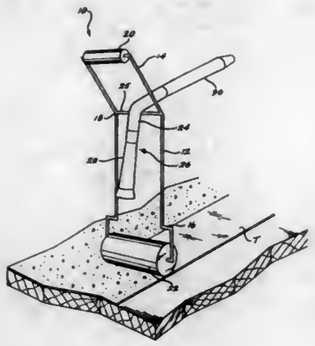
5,543,002
METHOD OF MANUFACTURE OF HOLLOW FIBER FILTER CARTRIDGE WITH POROUS RING
Paul D. Brinda, Robbinsdale, Minn., assignor to Minntech Corporation, Minneapolis, Minn.
Division of Ser. No. 885,149, May 18, 1992. This application Aug. 26, 1994, Ser. No. 296,728
Int. Cl.[6] B01D *61/02*
U.S. Cl. 156—77 **5 Claims**



1. A method of sealingly coupling an annular porous collar to a casing for encasing a bundle of hollow fibers comprising:
(a) providing an annular porous collar having a first and second outer peripheral edges, said annular porous collar including pores having a pore size distribution from about 5 μmm to 500 μm;
(b) providing a casing having first and second longitudinal ends, said casing defining a central chamber, said chamber having first and second ends wherein said longitudinal ends of said casing each include an inner, lateral, annular lip proximal to each of said ends; and
(c) coupling said first outer peripheral edge of said annular porous collar to at least one of said inner, lateral, annular lips of said casing; wherein said casing, said annular porous collar and a potting plug of a fluid impermeable material are sealingly joined by penetration of said fluid impermeable material through said pores of said annular porous collar.

5,543,003
TORCH-ON ROOFING DEGRANULATOR SYSTEM
Leo Regnier, 6685-194th St., Surrey BC, Canada
Filed Apr. 26, 1994, Ser. No. 233,635
Claims priority, application Canada, Apr. 21, 1994, 2121887
Int. Cl.[6] B32B *31/26*
U.S. Cl. 156—82 **7 Claims**

6. A method of degranulating a marginal strip of a roof-applied undersheet of torch-on roofing having an exposed upper granular surface to smooth the marginal strip for a lap joint with a successively applied oversheet of torch-on roofing, which method comprises securing a heat source to an intermediate portion of a manually movable elongated frame of a degranulator having a rotatable embedment roller at one end of the frame and a handle at



the opposite end of the frame, and directing heat from the heat source toward the marginal strip and the roller while manually manipulating the roller by use of the handle to press the roller along the marginal strip so as to smooth the marginal strip by application of heat from the heat source and pressure from the roller, without otherwise engaging the marginal strip of the sheet of torch-on roofing with the degranulator.

5,543,004

STITCHBONDED ARTICLES AND METHOD OF MAKING SAME

Miroslav Tochacek, Woodbury; Donald M. Courteau, Maplewood, and Vinu Patel, Oakdale, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 31,718, Feb. 4, 1993, Pat. No. 5,310,590. This application Mar. 2, 1994, Ser. No. 204,480

Int. Cl.[6] B32B *7/08;31/26*

U.S. Cl. 156—93 **11 Claims**



1. A method of making a scrubbing article having first and second major surfaces, the method comprising:

(a) stitching together a sheet of an absorbent material and a sheet of a thermoplastic material with a stitching yam at a stitch density and stitch gauge, said thermoplastic material having a melting temperature less than the melting temperature of said absorbent material, said stitching yarn comprising a first component and a second component, said first component having a melting temperature less than the melting temperature of said second component;

(b) heating the product of step (a)to a temperature sufficient to melt said first component and said thermoplastic material but insufficient to melt said absorbent material and said second component; and

(c) forming a scouring surface on at least one of the major surfaces of the article by cooling the product of step (b) to reharden said first component and said thermoplastic material, said scouring surface comprising a plurality of hardened nodules bonded to said absorbent material and to said stitching yarn.

5,543,005

METHOD AND MACHINE FOR PRODUCING A REINFORCEMENT FOR A COMPOSITE COMPONENT

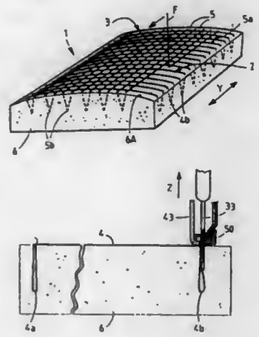
Francois Monget, Merignac, and Georges Cahuzac, Le Bouscat, both of, France, assignors to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Apr. 13, 1995, Ser. No. 421,562

Claims priority, application France, Apr. 18, 1994, 94 04581

Int. Cl.[6] B65H *81/00;* **D05B** *93/00*

U.S. Cl. 156—93 **10 Claims**



1. A method for producing a reinforcement for a composite component formed by said reinforcement embedded in a cured matrix, said reinforcement including superposed plies of thread, according to which method:

at least one of said plies is produced by laying down straight portions of thread, forming part of a continuous thread, on a support, pulling tight each portion of thread between two points for positionally fixing ends of said portion, at least one of the plies thus consisting of portions of thread extending at least substantially in a parallel fashion with respect to each other, and the portions of thread of said at least one ply extending in a direction which is either parallel or crossed with respect to the direction of the portions of thread of any other ply in the reinforcement; and

all the superposed plies are consolidated by stitching, without knotting, a continuous thread passing through said plies,

wherein:

said straight portions of thread (**4**, **5**) are laid down by means of a needle (**33**), with respect to which the continuous thread (**F**), partly formed by each of said portions, can slide, said needle being capable of moving relative to a support (**6**), pulling tight the straight portion of thread (**4**, **5**) above the support, to an extent equal to a length of said straight portion of thread; and

said straight portions of thread (**4**, **5**) are fixed by stitching, without knotting, at least one of the ends (**4***a*, **4***b*; **5***a*, **5***b*) of each of said portions of thread into said support (**6**) using said needle (**33**).

5,543,006

CONTINUOUS STRUCTURE FORMING METHOD

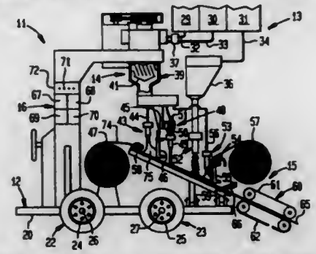
LeRoy Payne, 3300 Nicholas La., Molt, Mont. 59057

Continuation-in-part of Ser. No. 239,540, May 9, 1994, which is a continuation-in-part of Ser. No. 870,927, Apr. 20, 1992, Pat. No. 5,330,603, which is a continuation-in-part of Ser. No. 753,344, Aug. 30, 1991, Pat. No. 5,145,282, which is a continuation-in-part of Ser. No. 521,442, May 10, 1990, Pat. No. 5,049,006, which is a continuation-in-part of Ser. No. 417,501, Oct. 5, 1989, Pat. No. 4,955,760, which is a continuation-in-part of Ser. No. 235,205, Aug. 23, 1988, Pat. No. 4,872,784. This application Nov. 25, 1994, Ser. No. 345,565

Int. Cl.[6] B32B *5/02;5/30*

U.S. Cl. 156—177 **15 Claims**

1. A method of forming a continuous structure including the steps of flowing a first liquid reactive resin forming material over a base surface, forming a first thin substantially uniform layer of said first resin forming material, gelling said first layer, flowing a second liquid resin forming material through an orifice under pressure, forming a liquid stream of said second resin forming material, gelling said liquid stream to form a continuous filament with structural integrity as it advances toward said first gelled layer, contacting said filament with said first layer, distributing said filament over said first layer in a preselected pattern thereby forming a porous non-woven filament blanket, distributing a particulate solid material substantially uniformly over said filament blanket, flowing a third liquid resin forming material over said blanket, forming a second thin substantially uniform layer of said third liquid resin forming material, gelling said second layer, compressing the resulting freshly formed structure, positioning said compressed structure in a final configuration while said structure is flexible and adhesive and thereafter completing curing thereof.



5,543,007

FILTER ELEMENT MANUFACTURING METHOD

Takanari Takagaki, Nagoya, and Yasuo Nagai, Kariya, both of, Japan, assignors to Nippondenso Co. Ltd., Kariya, Japan

Division of Ser. No. 77,525, Jun. 16, 1993, Pat. No. 5,435,870. This application Apr. 6, 1995, Ser. No. 417,762

Claims priority, application Japan, Jun. 17, 1992, 4-184505; Feb. 25, 1993, 5-049984

Int. Cl.[6] B31C *1/00*

U.S. Cl. 156—189 **4 Claims**

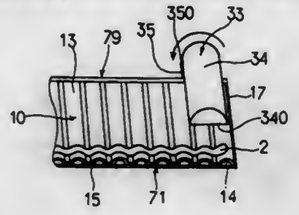
1. A manufacturing method for manufacturing a filter element by rolling a roll filter paper having a latitudinally oriented filter part for filtering, one end of said filter part being open and the other end being sealed, said manufacturing method comprising the steps of:

gripping only the side of said roll filter paper corresponding to said closed end of said filter part with a rolling claw near the roll-start end;

applying a sealant in a narrow longitudinal strip along the side of said roll filter paper corresponding to said open end of said filter part, starting near said roll-start end;

rolling up said roll filter paper using said rolling claw; and

after rolling up said roll filter paper, removing said rolling claw.



5,543,008

METHOD OF MANUFACTURE OF A PROTECTIVE COATING ON AN ELECTRONIC ASSEMBLY

Arthur Hidber, Esslingen, and Eduard Ryser, Uster, both of, Switzerland, assignors to Cerberus AG, Switzerland

Filed Jun. 30, 1993, Ser. No. 85,642

Claims priority, application Switzerland, Jun. 30, 1992, 2044/92

Int. Cl.[6] B32B *31/20;31/04*

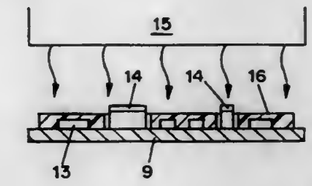
U.S. Cl. 156—229 **11 Claims**

1. A method for producing a protective coating on at least a portion of a surface of an electronic circuit-board assembly, comprising:

shaping to a desired shape an electrically insulating membrane of a material comprising a thermoplastic material and a wax additive for improved flow characteristics at thermoplastic flow temperatures, the wax additive being included in the membrane material in an amount of at least 10 weight percent;

placing the shaped electrically insulating membrane on the circuit-board assembly; and

adhering the placed electrically insulating membrane to the circuit-board assembly, comprising heating.



5,543,009

METHOD OF MANUFACTURING A SIDEWALL ACTUATOR ARRAY FOR AN INK JET PRINTHEAD

Donald J. Hayes, Plano, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 149,717, Nov. 9, 1993, Pat. No. 5,433,809, which is a continuation of Ser. No. 746,836, Aug. 16, 1991, abandoned. This application Jun. 14, 1994, Ser. No. 259,518

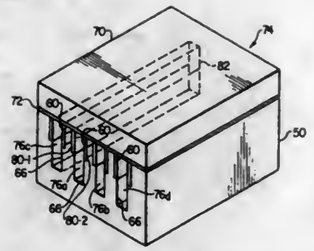
Int. Cl.[6] B32B *31/18;* **B41J** *2/02*

U.S. Cl. 156—268 **7 Claims**

1. A method of manufacturing a sidewall actuator array for an ink jet printhead, comprising the steps of:

providing a lower body portion having top and bottom side surfaces thereof and formed of an active piezoelectric material poled in a first direction generally orthogonal to said top and bottom side surfaces;

forming a series of generally parallel, longitudinally extending grooves which extend into said lower body portion a specified distance from said top side surface, said grooves defined by



first interior side surfaces of said lower body portion exposed during said forming step;

depositing a layer of conductive material on said first interior side surfaces of said lower body portion;

deepening said grooves formed in said lower body portion to expose second interior side surfaces of said lower body portion;

providing an upper body portion having top and bottom side surfaces thereof and formed of an inactive piezoelectric material; and

insulatively mounting said bottom side surface of said inactive upper body portion to said top side surface of said active lower body portion to form said sidewall actuator array.

5,543,010

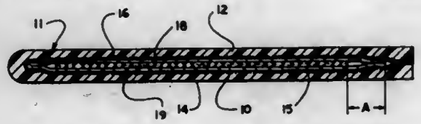
DOCUMENT PROTECTING APPARATUS

Leigh L. Keng, 1091 Cobb Pkwy., SE, Marietta, Ga. 30062

Division of Ser. No. 55,300, May 3, 1993, Pat. No. 5,362,540. This application Sep. 2, 1994, Ser. No. 300,312

Int. Cl.[6] B29C *6/00*

U.S. Cl. 156—285 **3 Claims**



1. A method for temporarily laminating a document comprising the steps of placing transparent shield means on both sides of said document with said shield means extending slightly beyond said document, and subsequently sealing said transparent shield means with said document therein within a laminating device, said step of sealing said shield means within a laminating device including the steps of placing said shield means with said document therein between adhesive covered sheets of a laminating device, and urging said adhesive covered sheets together so that the adhesive will contact said shield means while said shield means protects said document from the adhesive.

5,543,011

PROCESS FOR MANUFACTURING PANELS FOR PROTECTIVE GARMENTS

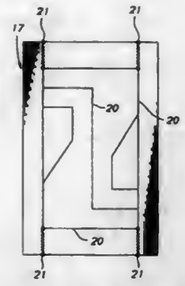
Raymond Smith, Ronkonkoma, N.Y., assignor to Lakeland Industries, Inc.

Division of Ser. No. 316,816, Oct. 3, 1994, Pat. No. 5,429,707, which is a continuation-in-part of Ser. No. 935,839, Aug. 27, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 477,915

Int. Cl.[6] B32B *31/18;31/20*

U.S. Cl. 156—308.4 **5 Claims**

1. A method of forming a pair of web panels having leg, arm and side portions for use in manufacturing protective garments, said method comprising the steps of:



providing a pair of platens each of which is provided with a heating means forming a pattern, said pattern configured to form first and second adjacent panels, each panel having a leg portion and an arm portion with the leg portion of the first panel being adjacent to the arm portion of the second panel and the arm portion of the first panel being adjacent to the leg portion of the second panel;

providing a pair of polymeric sheets between said platens;

placing said platens in the closed position such that said heating means on each platen are in a side-by-side position; and

heating one of said heating means to a temperature higher than the temperature of said other heating means for a period of time to cause said polymeric sheets to flow and create a seam.

5,543,012

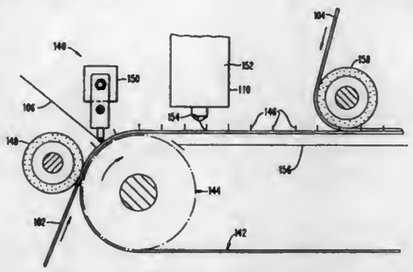
APPARATUS FOR MAKING A STRETCHABLE BAND-TYPE TRANSDUCER PARTICULARLY SUITED FOR USE WITH RESPIRATION MONITORING APPARATUS

Herman L. Watson, and Chu Pak, both of Miami, Fla., assignors to Non-Invasive Monitoring Systems, Inc., Miami Beach, Fla.

Division of Ser. No. 912,218, Jul. 10, 1992, abandoned, which is a continuation of Ser. No. 824,752, Jan. 17, 1992, abandoned, which is a continuation of Ser. No. 517,438, May 1, 1990, abandoned, which is a continuation of Ser. No. 316,996, Feb. 28, 1989, abandoned, which is a continuation of Ser. No. 932,724, Nov. 19, 1986, Pat. No. 4,807,640. This application Mar. 24, 1995, Ser. No. 410,570

Int. Cl.[6] A61B *5/08*

U.S. Cl. 156—440 **6 Claims**



1. An apparatus for making a disposable band incorporating an electrical conductor disposable about a three-dimensional object for expansion and contraction therewith, comprising:

an endless belt;

a plurality of guide pins disposed on the endless belt so as to project from a surface thereof;

a first feed means for feeding a first strip of elastic material onto the surface of the endless belt from which the plurality of guide pins project;

a first pressing means for pressing the first strip of elastic material onto the surface of the endless belt from which the plurality of guide pins project so that the guide pins protrude through the first strip of elastic material;

a conductor applicator means for disposing the electrical conductor onto the first strip of elastic material after the first strip has been pressed onto the surface of the endless belt in accordance with a pattern defined by the guide pins;

a second feed means for feeding a second strip of elastic material onto the endless belt so as to sandwich the electrical conductor between the first and second strips of elastic material; and

a second pressing means for pressing the second strip of elastic material onto the first strip of elastic material with the conductor between the two strips of elastic material so that the guide pins protrude through the second strip of elastic material.

5,543,013

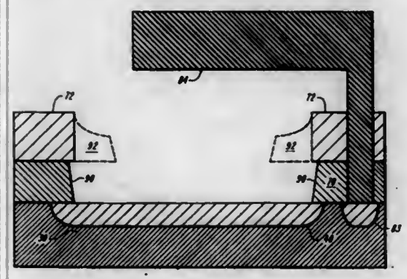
METHOD OF FORMING A MICROSTRUCTURE WITH BARE SILICON GROUND PLANE

Robert W. K. Tsang, Bedford; Jeffrey A. Farash, Holbrook, and Richard S. Payne, Andover, all of Mass., assignors to Analog Devices, Inc., Woburn, Mass.

Filed Dec. 1, 1994, Ser. No. 348,374

Int. Cl.[6] H01L *21/00*

U.S. Cl. 156—643.1 **18 Claims**



1. A method for fabricating an electro-mechanical structure having a suspended microstructure comprising the steps of:

providing a substrate;

diffusing a conductive region into a first portion of the substrate;

forming a first dielectric layer over the substrate;

depositing a second dielectric layer, different from the first dielectric layer, over the first dielectric layer;

removing a portion of the second dielectric layer from a ringed first area above the first portion of the substrate, the ringed first area having an outer edge and an inner edge;

removing substantially all of the second dielectric layer from a second area having a perimeter between the outer edge and the inner edge;

depositing a spacer layer over the second dielectric and the second area;

depositing a conductive layer over the spacer layer, from which the suspended microstructure will be formed;

forming the suspended microstructure in the conductive layer substantially over a region within the outer edge; and

removing the spacer layer.

5,543,014

PROCESS FOR PREPARING WATER SOLUBLE POLYALUMINOSILICATES

John D. Rushmere, Wilmington, Del., and Robert H. Moffett, Landenberg, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 347,232, Nov. 23, 1994, Pat. No. 5,470,435, which is a division of Ser. No. 212,744, Mar. 14, 1994, Pat. No. 5,482,693. This application Aug. 16, 1995, Ser. No. 515,789

Int. Cl.[6] D21H *21/10*

U.S. Cl. 162—181.6 **3 Claims**

1. A process for making paper comprising the steps of

(a) adding to an aqueous paper furnish containing pulp, anionic polymer and optionally inorganic filler 0.01–1% by weight, based on the dry weight of the furnish, of a water soluble polyparticulate polyaluminosilicate microgel having a mole ratio of alumina:silica of between 1:10 and 1:1500 prepared by a process comprising the steps of

(i) acidifying an aqueous solution of an alkali metal silicate containing 0.1–6% by weight of SiO_2 to a pH of 2–10.5 by adding an aqueous acidic solution containing sufficient aluminum salt to provide said mole ratios; and

(ii) diluting the product of step (i) with water prior to gelation to a SiO_2 content of ≦2% by weight; and at least approximately 0.001% by weight based on the dry weight of the furnish of a water soluble cationic polymer; and

(b) forming and drying the product of step (a).

5,543,015

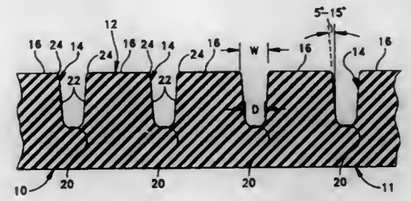
GROOVE CONFIGURATION FOR A PRESS BELT IN AN EXTENDED NIP PRESS

Olli A. Jermo, Tampere, Finland, assignor to Tamfelt Corp., Tampere, Finland

Filed Oct. 18, 1994, Ser. No. 324,742

Int. Cl.[6] D21F *3/02*

U.S. Cl. 162—358.4 **6 Claims**

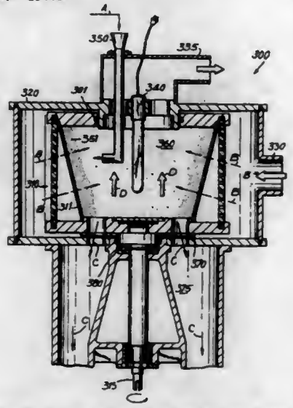


1. An endless elastomeric press belt in an extended nip press including a press shoe, said press belt transporting a sheet of material through the extended nip press, said press belt including an outer surface which is received in engagement with the sheet of material to be pressed, and further including an opposing inner surface, said press belt further including a plurality of upwardly opening longitudinal grooves formed in the outer surface thereof for carrying a liquid away from said sheet of material, each of said grooves comprising an arcuate bottom wall, and two opposing planar sidewalls which diverge upwardly from opposite ends of the arcuate bottom wall and merge with the outer surface of the belt at upper edges of the side walls, said upper edges being radiuses to provide a smooth transition between said side walls and said outer surface.

5,543,016
PHOTOCONVERSION OF STEROIDS IN MICROREACTORS

James R. Fehlner, Salem Township, Pa., and Dow Firnberg, Creskill, N.J., assignors to Inrad, Northvale, N.J.

Continuation-in-part of Ser. No. 728,880, Jul. 12, 1991, Pat. No. 5,374,405, and a continuation-in-part of Ser. No. 864,814, Mar. 31, 1992, Pat. No. 5,474,681. This application May 18, 1992, Ser. No. 884,447
Int. Cl.[6] C07B *61/00*
U.S. Cl. 204—157.6 **27 Claims**



1. A method of conducting a chemical reaction of steroidal reactant compounds to yield a selected reaction product, comprising:

providing a catalyst formed with a plurality of microreactors having a reaction space selectively sized for favoring the production of the selected product, with an average diameter of less than about 30 Å;

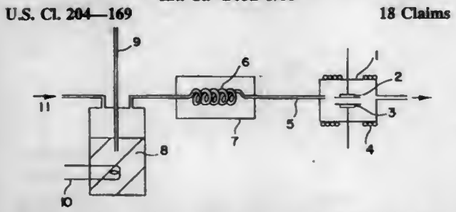
introducing at least one steroidal reactant compound within the reaction space; and

irradiating the reactant compound within the reaction space with radiation of a selected wavelength to photoconvert the reactant to a selected reaction product.

5,543,017
ATMOSPHERIC PRESSURE GLOW DISCHARGE PLASMA TREATMENT METHOD

Hiroshi Uchiyama, Hirakata; Masuhiro Kogoma, Wako, and Satiko Okazaki, Tokyo, all of, Japan, assignors to E.C. Chemical Co., Ltd., Osaka; Satiko Okazaki, Tokyo, and Masuhiro Kogoma, Wako, all of, Japan

Continuation of Ser. No. 171,636, Dec. 22, 1993, abandoned. This application Apr. 24, 1995, Ser. No. 427,687
Claims priority, application Japan, Dec. 24, 1992, 4-344250
Int. Cl.[6] B05D *3/06*
U.S. Cl. 204—169 **18 Claims**

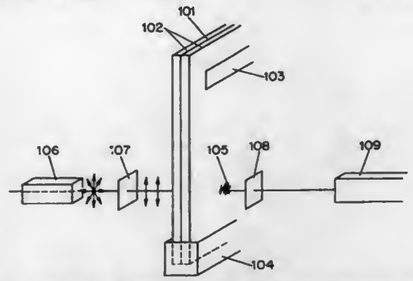


1. A plasma surface treatment by atmospheric pressure glow discharge comprising introducing a gaseous mixture comprising argon, a mixture of argon and helium, or a mixture of argon and hydrogen, mixed with about 18% to saturation of water vapor or water vapor and a ketone at room temperature or a specified temperature, into a plasma reactor having a dielectric-coated electrode comprising a solid dielectric disposed on the surface of at least one of opposing electrodes, and applying a high-frequency voltage under atmospheric pressure to generate atmospheric pressure glow discharge and excite a plasma, and surface treating plastics or fibers disposed between the electrodes in the plasma reactor.

5,543,018
METHOD AND APPARATUS FOR AUTOMATED ELECTROPHORESIS USING LIGHT POLARIZATION DETECTOR

John K. Stevens, and Alexandre M. Ismailov, both of Toronto, Canada, assignors to Visible Genetics Inc., Toronto, Canada

Filed Feb. 13, 1995, Ser. No. 387,272
Int. Cl.[6] G01N *27/26;27/447*
U.S. Cl. 204—461 **43 Claims**



1. A method for separating and detecting the presence of optically active molecules within a detection zone located within a separation matrix comprising the steps of:

(a) loading at least one sample containing optically active molecules onto a separation matrix having a detection zone located within the separation matrix;

(b) applying a motive force to the loaded sample to cause the loaded sample to migrate through the separation matrix and to separate the loaded sample into a plurality of subgroups of optically active molecules;

(c) directing an incident beam of polarized radiation to the detection zone within the separation matrix;

(d) processing an exiting beam of radiation which has passed through the detection zone within the separation matrix with an optical component which discriminates between radiation having the same polarization as the incident beam and radiation having a different polarization from the incident beam; and

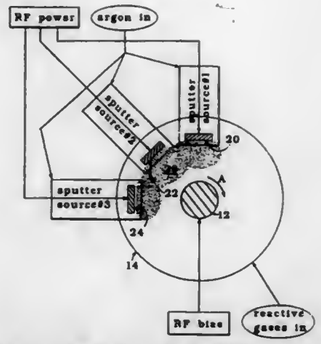
(e) measuring the intensity of the processed exiting beam, wherein a difference between the intensity of the filtered exiting beam and a standard intensity obtained for the separation matrix in the absence of sample is indicative of the presence of an optically active molecule in the detection zone.

5,543,019
METHOD OF COATING MEDICAL DEVICES AND DEVICE COATED THEREBY

Dosuk D. Lee, Brookline, and William T. Conner, Somerville, both of Mass., assignors to Etex Corporation, Cambridge, Mass.

Continuation of Ser. No. 52,150, Apr. 23, 1993, abandoned. This application Feb. 6, 1995, Ser. No. 384,621
Int. Cl.[6] C23C *14/46*
U.S. Cl. 204—192.15 **33 Claims**

1. A plasma sputtering method of depositing a coating on a medical device comprising the steps of:



a) placing the medical device in a chamber;

b) introducing a noble gas into the chamber;

c) providing a target comprising calcium and phosphorous in the chamber, spaced from the device;

d) introducing a reactive gas into the chamber; and

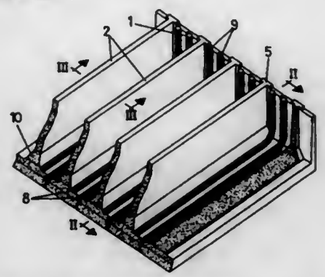
e) applying power to the target so that the noble gas forms a plasma in the vicinity of the target, causing ions in the plasma to eject material from the target, a portion of which material is deposited onto the device to create a coating comprising hydroxyapatite.

23. A medical device having a coating deposited by the process of claim 1.

5,543,020
CLEANING SYSTEM FOR ELECTROLYTIC TANKS

Francisco J. Sitges Menendez, Madrid; Fernando Sitges Menendez, Salinas; Francisco Alvarez Tamargo, Luanco, and Ives Lefevre, Salinas, all of, Spain, assignors to Asturiana De Zinc, S.A., Spain

Filed Jun. 17, 1994, Ser. No. 261,640
Claims priority, application Spain, Aug. 10, 1993, 9301778
Int. Cl.[6] C25B *15/00*
U.S. Cl. 204—233 **1 Claim**



1. An electrolysis installation comprising

(a) a tank for electrolysis including cells, each cell having a rectangular layout, with a length, a width shorter than the length, and a depth, a closed bottom and side walls, and an open top having an upper edge, each cell being provided along the upper edge of its longer walls with electrical outlets for the electrodes as well as insulating supports for the electrodes, the tank comprising at least one conduit with perforated walls in each cell, which conduit runs over the bottom of the cell, along its length, and ascends alongside the shorter walls to reach a level for liquid within the tank, the cell being provided below with surfaces which are inclined towards at least one perforated conduit, the conduit having sufficient cross-sectional area to act as a guide for insertion of a suction head and pipe for sludge extraction; and

(b) a suction head and pipe for sludge extraction adapted to be inserted into said conduit.

5,543,021
NEGATIVE ELECTRODE BASED ON PRE-LITHIATED CARBONACEOUS MATERIAL FOR A RECHARGEABLE ELECTROCHEMICAL LITHIUM GENERATOR

Rachid Yazami, Saint-Nazaire-Les-Eymes, and Michel Moreau, Clichy, both of, France, assignors to Le Carbone Lorraine, Courbevoie, France

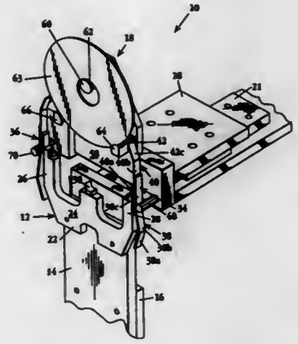
Filed Aug. 8, 1995, Ser. No. 512,621
Claims priority, application France, Sep. 1, 1994, 94 10675
Int. Cl.[6] C25B *11/12*
U.S. Cl. 204—294 **9 Claims**

1. An electrode based on carbonaceous material for rechargeable electrochemical lithium generators, comprising a carbonaceous material and a binder, wherein said carbonaceous material is a pitch coke with a mosaic texture pre-lithiated.

5,543,022
DISC-HANDLING APPARATUS

Hoang Nguyen, and Bruce M. Harper, both of San Jose, Calif., assignors to HMT Technology Corporation, Fremont, Calif.

Filed Jan. 17, 1995, Ser. No. 372,990
Int. Cl.[6] C23C *14/50*; B65H *1/00*
U.S. Cl. 204—298.15 **19 Claims**



1. Disc-handling apparatus for use in supporting a disc during deposition of sputtered material on the disc at a deposition station, and for transporting the disc into and out of such station, comprising

a disc holder for supporting the disc in a selected deposition plane during material deposition, said holder having a pedestal and attached thereto (i) a support defining a support edge adapted to contact a first point on an outer disc rim, and (ii) a pair of arms defining confronting gripping edges adapted to contact second and third points on opposite edge regions of the disc's outer rim,

said arms being relatively movable toward and away from a gripping condition at which the arms' confronting gripping edges are effective to contact, and apply radially inward forces on, opposite outer edge regions of the disc, with the arms in a biased condition,

a disc transport carriage having means for supporting a disc on the carriage,

means mounting said carriage for relative movement with respect to said holder in one direction toward and away from a disc-transfer site,

means mounting said holder for relative movement with respect to said carriage in another direction toward and away from a resting position, and

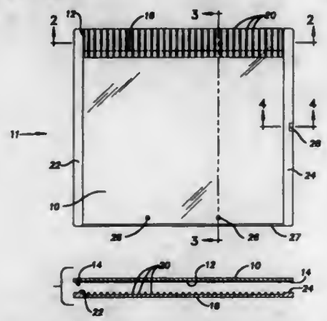
on said carriage means for moving said arms toward their gripping condition, as the holder is moved toward said disc-transfer site, away from its resting position, such that the gripping edges of the holder arms are brought into contact with, then biased against said opposite edge regions of the disc, as the holder's support edge makes contact with a lower edge region of the disc, to capture the disc in a positively gripped condition, with further movement of the holder away from its resting position being effective to disengage the disc from disc said supporting means.

5,543,023

GEL ELECTROPHORESIS CASSETTE

Petru P. Lugojan, Akron, Ohio, assignor to Biotech Holdings, Inc., Hudson, Ohio

Filed Oct. 4, 1995, Ser. No. 539,235
Int. Cl.[6] G01N *27/26;27/447*
U.S. Cl. 204—618 **10 Claims**



1. A cassette for conducting gel electrophoresis comprising a first plate, a second plate, and an electrophoresis gel layer between said first plate and said second plate, said second plate being plastic and being spaced apart from said first plate by spacer means, said second plate having lane dividers molded integrally therewith, said lane dividers being biased against said first plate and in releasable sealing engagement therewith, said releasable sealing engagement being provided by a means selected from the group consisting of (1) a film carrier coated on each side with a pressure sensitive adhesive and (2) ultrasonic welding, said lane dividers extending at least partially into said gel layer, said gel layer, lane dividers, and first and second plates defining wells suitable for receiving samples for gel electrophoresis separation.

5,543,024

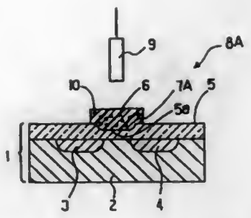
GLUCOSE SENSITIVE FET SENSOR AND METHOD OF MAKING SAME

Yoshio Hanazato; Mamiko Nakako; Satoru Shiono, and Kenichi Inatomi, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 162,590, Mar. 1, 1988, abandoned. This application Sep. 25, 1990, Ser. No. 587,660
Claims priority, application Japan, Mar. 3, 1987, 62-46660; Sep. 10, 1987, 62-225042
Int. Cl.[6] G01N *27/327*
U.S. Cl. 204—403 **11 Claims**

1. A glucose sensitive FET sensor, comprising:

a substrate;



a source electrode formed in said substrate;

a drain electrode formed in said substrate;

a hydrogen ion sensitive film formed on said substrate to cover said source electrode and said drain electrode; and

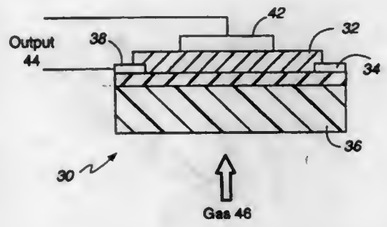
a thin enzyme immobilized membrane formed on said hydrogen ion sensitive film and containing glucose oxidase and gluconolactonase.

5,543,025

SOLID STATE OXYGEN SENSOR

Fernando H. Garzon, Sante Fe; Brandon W. Chung, Los Alamos; Ian D. Raistrick, Los Alamos, and Eric L. Brosha, Los Alamos, all of N.M., assignors to The Regents of the University of California, Office of Technology Transfer, Almeda, Calif.

Filed Jan. 30, 1995, Ser. No. 381,609
Int. Cl.[6] G01N *27/26*
U.S. Cl. 204—425 **14 Claims**



1. A solid-state sensor for determining the concentration of oxygen in a gas, said sensor comprising:

a solid oxide electrolyte substrate defining at least one surface;

a mixed conductor film selected from the group consisting of lanthanum-containing perovskite and zirconia-containing fluorite disposed on said surface of said substrate for limiting the rate of oxygen diffusion to said solid oxide electrolyte substrate and contacting said solid oxide electrolyte substrate to form a dense diffusion barrier; and

electrodes contacting said solid oxide electrolyte substrate and said mixed conductor film for applying a voltage and transporting a current therebetween.

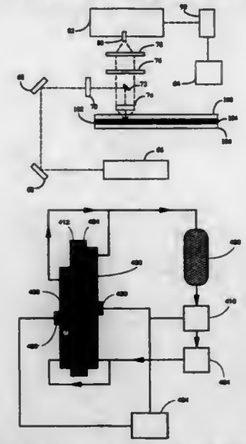
5,543,026

REAL-TIME SCANNING FLOURESCENCE ELECTROPHORESIS APPARATUS FOR THE ANALYSIS OF POLYNUCLEOTIDE FRAGMENTS

Louis B. Hoff, Belmont; Eric W. Lachenmeier, La Honda; Yefim M. Raysberg, Fremont, and Eric S. Nordman, Palo Alto, all of Calif., assignors to The Perkin-Elmer Corporation, Foster City, Calif.

Filed Feb. 7, 1994, Ser. No. 192,485
Int. Cl.[6] C02F *1/40;11/00;* **C25B** *9/00;11/00*
U.S. Cl. 204—612 **14 Claims**

1. An improved real-time scanning fluorescence electrophoresis



apparatus for the electrophoretic analysis of fluorescently-labeled polynucleotide fragments comprising:

an electrophoresis chamber including a front gel plate for containing an electrophoresis separation medium and defining a plurality of electrophoresis lanes;

a laser light source for creating a beam of laser light;

a bending mirror for directing the laser light into the electrophoresis chamber at right angles to the front gel plate;

a spectral-array fluorescence detector for detecting emission light from said fluorescently-labeled polynucleotide fragments including simultaneous detection of multiple fluorescent labels:

a translatable stage for mounting the spectral-array fluorescence detector and the bending mirror thereon for translating the bending mirror and the spectral-array fluorescence detector with respect to the electrophoresis chamber for scanning the beam of laser light and the spectral-array fluorescence detector across the electrophoresis chamber in a direction parallel to the front gel plate and normal to the direction of migration of the polynucleotide fragments; and

a temperature control means to control the temperature of the electrophoretic separation medium during electrophoresis.

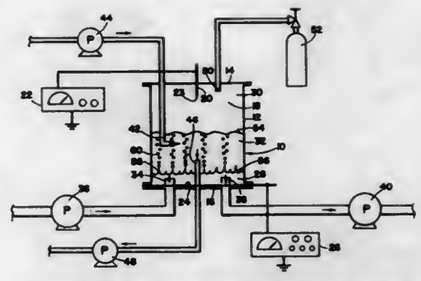
5,543,027

APPARATUS FOR ELECTROSTATIC LIQUID/LIQUID CONTACTOR

Masabu Yamaguchi, Kobe, and Masaaki Kanno, Nishinomiya, both of, Japan, assignors to National Tank Company, Houston, Tex.

Division of Ser. No. 24,737, Mar. 1, 1993, Pat. No. 5,411,651. This application Jul. 26, 1994, Ser. No. 278,015
Int. Cl.[6] B01D *17/06;* **C02F** *1/48*
U.S. Cl. 204—660 **6 Claims**

1. An electrostatic liquid/liquid contactor for contacting first and second liquid phases, the first liquid phase having entrained components therein, comprising:



a vessel having an interior lower portion adapted to contain said first liquid phase, an intermediate portion above the lower portion adapted to contain said second liquid phase, the liquid phases being separated by a liquid/liquid interface, and an upper portion above the intermediate portion, the vessel having a first inlet and a first outlet communicating with the lower portion, a second inlet and a second outlet communicating with the intermediate portion and a third inlet communicating with the upper portion;

a first electrode in the form of a rod positioned at least substantially vertically within said vessel upper portion;

a second electrode in the form of a plate in a plane at least substantially perpendicular to said rod positioned within said vessel lower portion; and

means for providing a high voltage potential between said first and second electrodes to establish an electrostatic field within said vessel and thereby an electrical potential across said interface between said liquid phases contained within said intermediate and lower portions of said vessel to augment the separation of said entrained components from said first liquid phase.

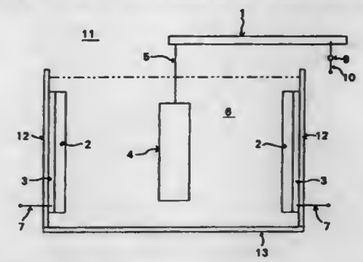
5,543,028

ELECTROFORMING SEMI-STEP CAROUSEL, AND PROCESS FOR USING THE SAME

William G. Herbert, Williamson; Patricia Bischoping, Webster; Robert P. Altavela, Farmington; Lawrence Kotowicz, Rochester; Peter J. Schmitt, Ontario, all of N.Y.; Ronald E. Jansen, Palm City, Fla.; John H. Leanos, Canandaigua, N.Y., and Henry G. Grey, Las Vegas, Nev., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 23, 1994, Ser. No. 347,110
Int. Cl.[6] C25D *1/00*
U.S. Cl. 205—70 **26 Claims**

20. A process for electrodepositing metal or metal alloy upon a



mandrel, comprising:

positioning a mandrel in a first region of substantially uniform current density in an electrolytic cell comprising a first electrode, a second electrode spaced opposite from said first electrode, a first shield adjacent to and covering a portion of said first electrode, and a second shield adjacent to said

second electrode and opposite from said first shield, thereby defining said first region of substantially uniform current density;

activating current to said electrolytic cell; and

electrodepositing a metal or metal alloy onto a surface of said mandrel;

wherein a channel defined by the first electrode and the second electrode has a width ranging in size from about four times to about twelve times a cross-sectional length of the mandrel.

5,543,029

PROPERTIES OF THE SURFACE OF A TITANIUM ALLOY ENGINE VALVE

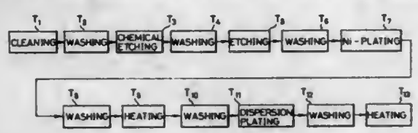
Takeji Kenmoku, Fujisawa; Shinichi Umino, Yugawara-cho; Eiji Hirai; Kazuyoshi Kurosawa, both of Atsugi, and Yoshio Matsumura, Hiratsuka, all of, Japan, assignors to Fuji Oozx Inc., Japan

Continuation of Ser. No. 235,549, Apr. 29, 1994, abandoned. This application Nov. 30, 1995, Ser. No. 564,930

Int. Cl.[6] C25D *15/00*

U.S. Cl. 205—109 **3 Claims**

1. A method of improving properties of the surface of an internal



combustion engine valve made from a titanium alloy, which comprises the steps of:

(a) forming a surface undercoat layer of nickel on a surface of the engine valve;

(b) heating the resulting nickel undercoated valve in vacuum or in an atmosphere of inert gas, at a temperature of between 450° C. to 660° C., for one to four hours;

(c) forming further a three component coat layer comprising nickel, phosphorus and ceramic particles selected from the group consisting of silicon carbide, silicon nitride, boron nitride, and the combination thereof, on the surface of the nickel undercoat layer; and

(d) heating the resulting coat layer formed on the nickel undercoat layer, at a temperature of between 400° C. to 550° C., for one to four hours, to make the ceramic particles uniformly and homogeneously dispersed in said coat layer.

5,543,030

METHOD FOR PRODUCING ELECTROLYZED WATER

Yoshimi Shiramizu; Masaharu Nakamori; Hidemitsu Aoki; Hirofumi Seo, and Haruto Hamano, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Mar. 24, 1995, Ser. No. 410,309

Claims priority, application Japan, Mar. 25, 1994, 6-056107

Int. Cl.[6] C25B *1/00*

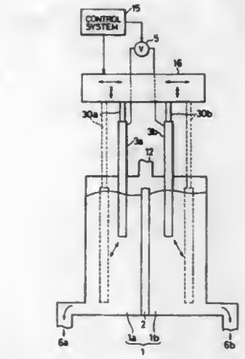
U.S. Cl. 205—464 **7 Claims**

1. A method for producing electrolyzed water, comprising the steps of:

dissolving an electrolyte into pure water, to produce electrolyte-containing water,

decomposing said electrolyte-containing water by action of an electric current emanating from a pair of electrodes and passing through said electrolyte-containing water, wherein an electric field strength of said electric current is varied by varying a distance between said pair of electrodes, and

wherein said distance between said pair of electrodes is varied such that electrolyzed water is produced having an anion concentration greater than that of said pure water prior to dissolution therein of said electrolyte.



5,543,031

METHOD FOR RECOVERING INDIUM BY ELECTROWINNING AND APPARATUS THEREFOR

Hidenori Okamoto, and Kazuaki Takebayashi, both of Ibaraki-ken, Japan, assignors to Nippon Mining & Metals Co., Ltd., Tokyo, Japan

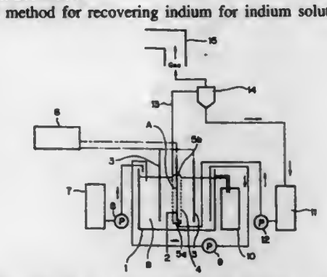
Filed Feb. 10, 1995, Ser. No. 386,567

Claims priority, application Japan, Aug. 19, 1994, 6-195677

Int. Cl.[6] C25C *1/00*

U.S. Cl. 205—564 **10 Claims**

1. A method for recovering indium for indium solution which



has been purified by a channel purification method, comprising:

using sulfuric acid solution as an anolyte for an anode compartment equipped with an insoluble anode,

using an indium-containing hydrochloric acid solution as a catholyte for a cathode compartment,

separating said cathode compartment and said anode compartment with a cation exchange membrane; and

conducting an electrowinning step to recover indium from said indium-containing hydrochloric acid solution.

5,543,032

ELECTROETCHING METHOD AND APPARATUS

Madhav Datta, Yorktown Heights, and Ravindra Shenoy, Peekskill, both of N.Y., assignors to IBM Corporation, Armonk, N.Y.

Division of Ser. No. 346,996, Nov. 30, 1994, Pat. No. 5,486,282. This application Jun. 2, 1995, Ser. No. 459,760

Int. Cl.[6] C25F *3/14;7/00*

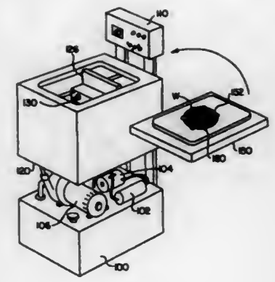
U.S. Cl. 205—670 **8 Claims**

7. A method of electroetching metallic depositions on a substrate surface, comprising the steps of:

a) drawing an aqueous salt solution electrolyte from a chamber containing an electrolyte;

b) creating a linear jet of electrolyte;

c) directing the linear jet of electrolyte to the substrate surface;



d) moving the linear jet of electrolyte across the substrate surface; and

e) filtering electrolyte drawn from the chamber separately from step a).

5,543,033

Patent Not Issued For This Number

5,543,034

METHOD OF ENHANCING THE GROWTH OF AQUATIC ORGANISMS, AND STRUCTURES CREATED THEREBY

Wolf H. Hilbertz, Earlscliff, Ceannchor Road, Bally, Co. Dublin, Ireland, and Thomas J. Goreau, 324 N. Bedford Rd., Chappaqua, N.Y. 10514

Continuation-in-part of Ser. No. 374,993, Jan. 19, 1995, abandoned. This application Aug. 28, 1995, Ser. No. 519,897

Int. Cl.[6] C02F *1/461*

U.S. Cl. 205—688 **13 Claims**

1. A method of enhancing growth of aquatic organisms in an aqueous mineral-containing electrolyte which comprises:

(a) installing a cathode and an anode in the electrolyte,

(b) applying a steady, pulsed or intermittent direct electric current across the cathode and the anode to effect electrolysis,

(c) providing accreted mineral material on the cathode,

(d) recruiting aquatic organisms on or in the vicinity of the cathode, and

(e) creating by electrolysis conditions of higher alkalinity in the electrolyte in the vicinity of the cathode than in the electrolyte remote from the cathode to cause growth of the aquatic organisms in the conditions in the vicinity of the cathode, the placement of the anode being done in such a way as to minimize the effects of hydrochloric acid produced at the anode.

5,543,035

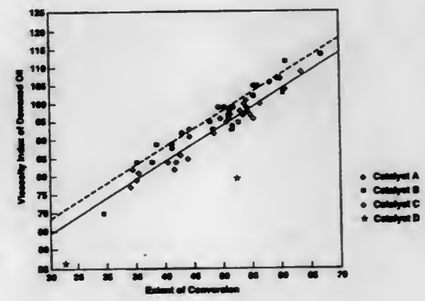
PROCESS FOR PRODUCING A HIGH QUALITY LUBRICATING OIL USING A VI SELECTIVE CATALYST

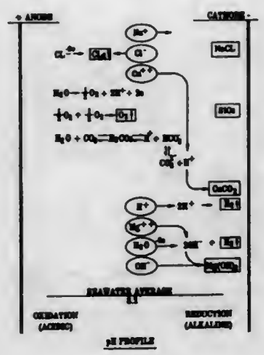
James N. Ziemer, Hercules, Calif., assignor to Chevron U.S.A. Inc., San Francisco, Calif.

Filed Aug. 1, 1994, Ser. No. 284,933

Int. Cl.[6] C10G *47/20*

U.S. Cl. 208—111 **19 Claims**





1. A process for producing a lubricating oil base stock which comprises contacting under hydrocracking conditions a hydrocarbonaceous feed, having a normal boiling range in the range of about 225° C. to 650° C., with a catalyst comprising a zeolite, wherein the catalyst contains less than 8% zeolite, a hydrogenation component and from about 30 to about 90 percent by weight of a silica alumina matrix material having a silica/alumina mole ratio in the range of between about 10/90 and 90/10, the catalyst having a pore volume in the range of between about 0.25 and about 0.60 cm^3/g, with a mean pore diameter between about 40 Å, and about 100 Å, with at least about 5% of the pore volume being in pores having a diameter of greater than about 200 Å, wherein the hydrocracking conditions are sufficient to produce a lubricating oil base stock having a viscosity index higher than that of the feed.

5,543,036

PROCESS FOR HYDROTREATING

Clarence D. Chang, Princeton; Scott Han, Lawrenceville, both of N.J.; Daniel J. Martenak, Dublin, Pa.; Jose G. Santiesteban, Yardley, Pa., and Dennis E. Walsh, Richboro, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 95,884, Jul. 22, 1993. This application Dec. 16, 1993, Ser. No. 167,108

Int. Cl.[6] C10G *17/00;17/095;45/04*

U.S. Cl. 208—189 20 Claims

1. A process for hydrotreating a hydrocarbon feedstock comprising contacting said hydrocarbon feedstock under hydrotreating conditions with hydrogen in the presence of a catalyst comprising a hydrogenation/dehydrogenation catalytic component and an acidic solid catalytic component comprising a Group IVB metal oxide modified with an oxyanion of a Group VIB metal, wherein said Group IVB metal oxide consists essentially of a hydrated zirconia.

5,543,037

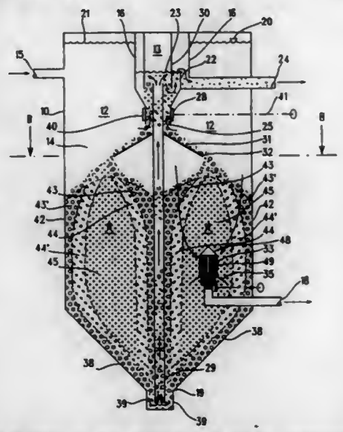
DYNAMIC FILTRATION FILTER APPARATUS WITH LEVEL CONTROL AND DEFLECTOR PLATE

C. J. Hering, Jr., 2920 NW. 67th Ct., Fort Lauderdale, Fla. 33309

Continuation of Ser. No. 128,125, Sep. 29, 1993, Pat. No. 5,462,654. This application May 24, 1995, Ser. No. 449,227

Int. Cl.[6] B01D *24/28;24/48*

U.S. Cl. 210—104 6 Claims



1. In an improved filter apparatus for filtering contaminants from a liquid introduced into said filter apparatus and extracting said liquid from said filter apparatus as a filtrate wherein said filter apparatus includes a vessel having a first chamber for receiving said liquid from an input means and first level control means for maintaining said liquid in said first chamber at a first predetermined level, said vessel containing a mass of granular filter material defined by a first granular filter material having a first granular texture, a second granular filter material having a second granular texture and a third granular filter material having a third granular texture, said first chamber supporting a first filter media defined by a first portion of said mass of granular filter material, said first filter media being in continuous movement defining a dynamic filter bed, and a filtrate recovery chamber, including a filtrate draw-off means, positioned within said dynamic filter bed, said filtrate draw-off means defined by a connecting conductor for conducting filtrate from said filtrate recovery chamber to outside said vessel, a second chamber for continuously receiving a second filter media defined by a second portion of said mass of granular filter material, said second filter media drawn from said dynamic filter bed along with a first portion of said liquid from said first chamber, said second chamber including a second level control means for maintaining said first portion of said liquid in said second chamber at a second predetermined level, a lift pipe means connecting said second chamber to a bottom region of said first chamber for continuously conducting said second filter media and said first portion of said liquid from said bottom region of said first chamber to said second chamber and for depositing said first portion of said liquid and said second media in said second chamber, a return opening between said first chamber and said second chamber for permitting a second portion of said liquid to flow from said first chamber into said second chamber and for continuously returning said second filter media to said first chamber for replenishing said dynamic filter bed, wherein the improvement comprises:

a conical deflector plate having an apparent apex positioned below and approximating a mid-point of a diameter of said return opening positioned at about a midpoint on a radius of a cross section of said dynamic filter bed, said conical deflector plate intercepting said second filter media returning to said first chamber from said second chamber and for directing said second filter media to a predetermined drop zone on said dynamic filter bed for generating a filter bed defined by a first discrete, vertically oriented circular layer of said first texture granular filter material interposed between a second discrete, vertically oriented circular layer and a third discrete, vertically oriented circular layer said second discrete layer and said third discrete layer each being ofsaid second texture granular filter material, said second discrete layer interposed between said first discrete layer and a fourth discrete, vertically oriented circular layer of said third texture granular filter material and said third discrete layer interposed between said first discrete layer and a fifth discrete, vertically oriented circular layer of said third texture granular filter material; and

said filtrate recovery chamber positioned in said first discrete, vertically oriented circular layer of first texture granular filter material, and substantially surrounded by said first texture granular filter material.

5,543,038

DISTRIBUTING AND REGULATING UNIT

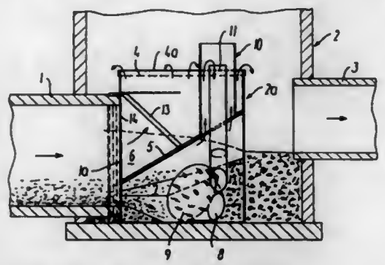
Jorgen M. Johannessen, 6 Aspevej, Stroby Egede, DK-4600 Koge, Denmark

Filed Jun. 7, 1995, Ser. No. 448,559

Claims priority, application Denmark, Jan. 11, 1993, 0023/93

Int. Cl.[6] E03F *5/14*

U.S. Cl. 210—417 12 Claims



1. A distribution and control unit comprising:

a chamber including an inlet (1*a*) and at least two subchambers including a lowermost subchamber and an uppermost subchamber;

at least one substantially impervious partition wall (5) disposed within the chamber for separating the subchambers one from another;

the partition wall including a partition wall edge disposed at the inlet for dividing a flow of water from the inlet into at least two layers at different respective levels;

a lowermost one of the levels communicating with the lowermost subchamber (7);

an uppermost one of the levels communicating with the uppermost subchamber (6);

the uppermost subchamber including an overfall edge (4*a*); and

the lowermost subchamber including an underflow (8).

5,543,039

REACTOR FOR PURIFICATION OF WATER

Hallvard Odegaard, Saupstad, Norway, assignor to Kaldnes Miljoteknologi A/S, Tonsberg, Norway

Division of Ser. No. 927,628, Aug. 28, 1992. This application Dec. 2, 1994, Ser. No. 353,242

Claims priority, application Norway, Jan. 23, 1990, 900316; Jul. 16, 1990, 903174

Int. Cl.[6] C02F *3/10*

U.S. Cl. 210—150 2 Claims



1. A reactor suitable for aerobic, anoxic or anaerobic water purification comprising an inlet and outlet means and having disposed therewithin carriers that are maintained in suspension and that permit growth of a biofilm thereon, the carriers in said reactor being 30 to 70% of the volume of said reactor, wherein said carriers are particulate plastic elements in the form of pieces of an extruding tube and have

a) separating walls in the longitudinal direction of said tube inside the circumference thereof, and fins on the outside of said tube in the longitudinal direction,

b) a total surface area that is at lest 2 times as large as an outer surface area of a smooth element having the same dimensions, and

c) a density in the range 0.90 to 1.20 kg/dm^3.

5,543,040

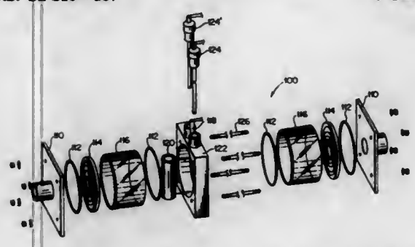
APPARATUS FOR PURIFICATION OF WATER-BASED FLUIDS IN CLOSED-LOOP FLOW SYSTEMS

Robert D. Fite, Jr.; John S. Hasenko, both of Harbor Springs, and Edwin H. Colburn, Middleville, all of Mich., assignors to FI-Tek Purification Systems, Inc., Petoskey, Mich.

Filed Dec. 12, 1994, Ser. No. 354,249

Int. Cl.[6] C02F *1/50*

U.S. Cl. 210—167 8 Claims



1. In a closed-loop water and water-based fluid purification system, a bypass unit for ionization of trace amounts of copper and silver into a fluid flow, comprising:

a) substantially rigid, hermetically sealed flow cell (100) having input and output ends (110), with turbulent screens (114) adjacent respective ends, said screens having interconnection with aligned see-through housings (116) which space the screens from an ionization station;

b) at least one housing bracket (122) for the ionization station and an anodic copper/silver ionization electrode (120) within the housing bracket of the station, said anodic electrode having a proportion of copper which is in excess of a proportion of silver;

c) stainless steel cathodic ionization electrodes (124–124') disposed immediately adjacent said anodic ionization electrode (120) and within the housing bracket of the ionization station;

d) solid state power and control enabling circuits connected to respective cathodic electrodes (124–124') wherein current flowing through the electrodes (124–124') is shut off at timed intervals, to cause these electrodes to clean and reverse the effect of electrolysis action at all electrodes.

5,543,041

SUPPLY SYSTEM OF PETROLEUM HEAVY OIL CONTAINING MAGNETIC FINE PARTICLES

Hajime Okazaki, Yokohama; Manabu Kazato, Fujisawa; Masaoki Ouchi, Tokyo; Haruki Nagano, and Masaru Ushio, both of Yokohama, all of, Japan, assignors to Nippon Oil Company, Ltd., and Nippon Petroleum Refining Company, Ltd., both of Tokyo, Japan

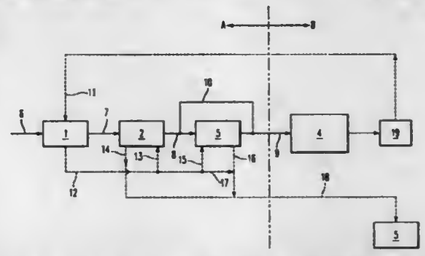
PCT No. PCT/JP93/01634, § 371 Date Jul. 6, 1994, § 102(e) Date Jul. 6, 1994, PCT Pub. No. WO94/11463, PCT Pub. Date May 26, 1994

PCT Filed Nov. 10, 1993, Ser. No. 256,142

Claims priority, application Japan, Nov. 12, 1992, 4-302379; Aug. 13, 1993, 5-201635

Int. Cl.[6] C01G *31/09;32/02*

U.S. Cl. 210—181 4 Claims



1. A pre-treating apparatus provided in a feeding line of a petroleum heavy oil to be fed into a hydrogenation apparatus including at least a hydrogenation section and a fractionation tower, the pre-treating apparatus comprising:

a heater for heating the petroleum heavy oil to a desired temperature;

a continuous back-washing filter for filtering the heated oil so as to remove solid materials, said filter being capable of removing fine particles having particle diameters of 25 μm or more; and

a high-gradient magnetic separator filled inside with ferromagnetic metal pieces each having a major axis of 0.5–5 mm, a curvature height of 0.3–0.5 mm and a bulk specific gravity of 3–4, wherein the filtered oil is passed through the high-gradient magnetic separator at a linear velocity of 0.5–10 cm/sec to adhere magnetic fine particles in the filtered oil to the metal pieces filled in the separator and remove said magnetic fine particles from the filtered oil, and the magnetic fine particles removed oil is fed into the hydrogenation apparatus;

said pre-treating apparatus further comprising:

means for feeding a washing oil into the high-gradient magnetic separator, and passing the oil through the magnetic separator

in the form of an up-flow at a linear velocity of 1– 10 cm/sec to remove the magnetic fine particles adhering to the ferromagnetic metal pieces.

5,543,042

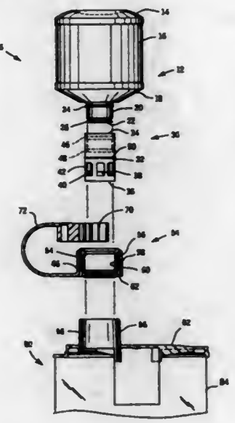
WASTE AGENT RESERVOIR FOR SUCTION DRAINAGE SYSTEM

Finbarr J. Flan, Sligo; Pascal J. Maher, Donegal, and Christian Shaw, Kilkenny, all of, Ireland, assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Mar. 30, 1995, Ser. No. 413,569

Int. Cl.[6] C02F *1/68*

U.S. Cl. 210—198.1 **7 Claims**



1. A reservoir system for treating waste collected using an associated suction system in a disposable receptacle having a chamber and a lid with a pour spout, comprising:

a closed container with an open mouth for storing a waste-treating agent;

a cylindrical diffuser cap having an open end portion and a substantially closed end portion, the closed end portion having a plurality of radial apertures, and the open end portion telescopically mating over the open mouth of the agent container;

a double-walled sleeve having an inner wall and a generally concentric outer wall for attaching the combined diffuser cap and agent container to the cover spout of the receptacle lid, the inside surface of the inner wall sealingly covering the radial apertures in the diffuser cap when the cap is in a first position relative to the sleeve, the outside surface of the inner wall and the outer wall sealingly engaging the spout of the receptacle lid so that the diffuser cap is axially slidable to a second position in the double-walled sleeve wherein the radial apertures are beyond the inside surface of the inner wall of the sleeve so that a passageway for the waste-treating agent is open from the agent container to the receptacle chamber.

5,543,043

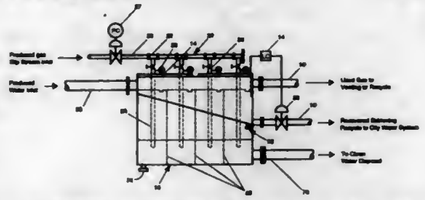
CLARIFICATION OF PRODUCED WATER IN THE OIL AND GAS INDUSTRY

Jan B. Bates, Lafayette, La., and Steven F. Sciamanna, Moraga, Calif., assignors to Chevron U.S.A. Inc., San Francisco, Calif.

Continuation-in-part of Ser. No. 46,473, Apr. 13, 1993, abandoned, which is a continuation of Ser. No. 908,690, Jul. 1, 1992, abandoned. This application Oct. 11, 1994, Ser. No. 321,196

Int. Cl.[6] B01D *17/035*

U.S. Cl. 210—221.2 **2 Claims**



1. An apparatus for removing oil from produced water, comprising:

(a) a flotation chamber having a first end, a second end, a bottom, a top, and sides, the interior of said chamber being segmented into a plurality of cells by essentially vertical baffles, there being a space between the top of said baffles and the top of said chamber, said baffles further having openings to permit fluid communication between adjacent cells;

(b) a produced water inlet disposed within said first end;

(c) a clean water outlet disposed within a lower portion of said second end;

(d) a gas outlet disposed within the top;

(e) an overflow compartment in fluid communication with the space between said top of said chamber and the tops of said baffles and having an oil outlet disposed therein;

(f) a produced gas injection means for injecting gas into the lower portion of said cells, said gas injection means comprises porous sparger tubes through which said gas is injected, said sparger tubes having a mean pore diameter of approximately two microns; and

(g) a control means which regulates the level of accumulated oil in said compartment, said control means connected to means for discharging the accumulated oil when said accumulated oil reaches a predetermined height.

5,543,044

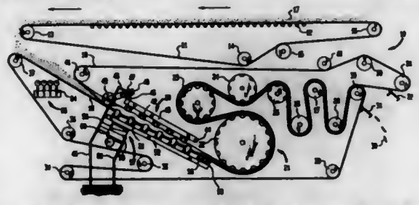
APPARATUS FOR PREPARING A MATERIAL FOR HIGH PRESSURE DELIQUIFICATION

James A. Louden, Chester; Brian F. Hawkins, Hillsborough, and Wayne D. Hann, Sr. deceased, late of Pattenburg, all of N.J., assignors to Komline- Sanderson Engineering Corp., Peapack, N.J.

Continuation of Ser. No. 174,037, Dec. 28, 1993, Pat. No. 5,456,832. This application May 26, 1995, Ser. No. 453,074

Int. Cl.[6] B01D *33/04*

U.S. Cl. 210—386 **13 Claims**



1. A belt filter press for deliquifying a material, said belt filter press comprising:

a. a lower belt having a first path of travel and an upper belt having a second path of travel, said lower and upper belts traveling together and converging towards one another in a wedge zone through which a material is progressively compressed between said lower and upper belts, the angle of convergence between the lower and upper belts defining a wedge angle which corresponds to the degree of pressure exerted on the material in the wedge zone;

b. a lower belt support for supporting said lower belt in said wedge zone and an upper belt support for supporting said upper belt in said wedge zone; and

c. a belt support moving device for moving at least one of said belt supports while said lower and upper belts are moving in said respective first and second paths of travel in order to adjust the wedge angle in the wedge zone without stopping the movement of the material in the wedge zone, said lower belt support including lower belt support members extending cross-wise below and in contact with said lower belt, said upper belt support including upper belt support members extending cross-wise on top of said upper belt, said lower and upper belt support members being alternately and oppositely arranged in at least a portion of said wedge zone so that the upper and lower belts and the material therebetween are threaded through said respective support members in a shear-inducing serpentine manner, resulting in the material between said belts being massaged in addition to being compressed in the wedge zone.

5,543,045

CHARGE MOSAIC MEMBRANE AND PRODUCTION PROCESS THEREOF

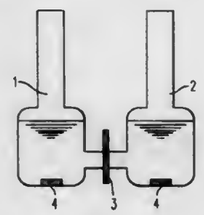
Takashi Fukutomi, Tokyo; Minoru Takizawa, Ibaraki-ken, and Michiel Nakamura, Souka, all of, Japan, assignors to Dainichiseika Color & Chemicals Mfg. Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 36,682, Mar. 25, 1993, abandoned. This application Mar. 7, 1994, Ser. No. 206,256

Claims priority, application Japan, Sep. 25, 1992, 4-279248; Mar. 11, 1993, 5-076435

Int. Cl.[6] B01D *69/02*

U.S. Cl. 210—490 **8 Claims**



3. A charge mosaic membrane formed of a cationic polymer and an anionic polymer wherein at least one of the cationic and anionic polymers is in the form of spheres having a diameter of 0.01 to 10 μm, prepared by a process comprising:

preparing dispersions of spheres of the cationic and anionic polymers, respectively;

mixing the dispersions together;

casting the resultant mixture into a film;

filling interstices between the spheres with a monomer adapted to form one of the cationic and anionic polymers; and

polymerizing the monomer.

5,543,046

INORGANIC MEMBRANE FOR MICROFILTRATION, AND A PROCESS FOR PRODUCTION OF SUCH AN INORGANIC MEMBRANE

Cornelis J. M. Van Rijn, Gerard Doustraat 10, NL-1072 VP Amsterdam, Netherlands

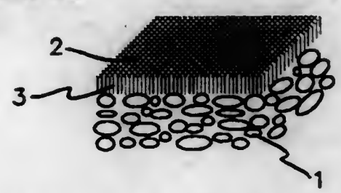
PCT No. PCT/EP93/01280, § 371 Date Jan. 17, 1995, § 102(e) Date Jan. 17, 1995, PCT Pub. No. WO93/23154, PCT Pub. Date Nov. 25, 1993

PCT Filed May 19, 1993, Ser. No. 341,592

Claims priority, application Netherlands, May 21, 1992, 9200902

Int. Cl.[6] B01D *71/04*

U.S. Cl. 210—490 **8 Claims**



1. Inorganic membrane for microfiltration, comprising an inorganic macroporous support having a mean pore size in the range of 0.25 μm–25 μm, and an inorganic membrane layer deposited and connected rigidly to a flattened surface of the macroporous support by a deposition method, said pores of the membrane layer comprising perforations shaped as shallow channels square to the membrane layer, and being formed with a diameter in the range of 0.05–5 μm by etching, said channels having a length at least smaller than ten times the diameter of the channels.

5,543,047

FILTER WITH OVER-LAID PLEATS IN INTIMATE CONTACT

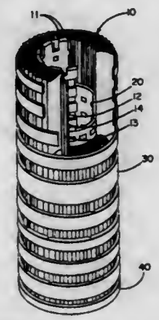
Richard C. Stoyell, Moravia; Kenneth M. Williamson, Jamesville; Scott D. Hopkins, Dryden; Stephen A. Geibel, Cortland, and Terry L. Wolff, Marathon, all of N.Y., assignors to Pall Corporation, East Hills, N.Y.

Continuation-in-part of Ser. No. 972,839, Nov. 6, 1992, abandoned. This application Dec. 21, 1993, Ser. No. 170,934

Claims priority, application WIPO, Nov. 8, 1993, PCT/US93/10697

Int. Cl.[6] B01D *27/06*

U.S. Cl. 210—493.2 **105 Claims**



1. A filter comprising:

a cylindrical filter element having a longitudinal axis, first and second end surfaces, and a plurality of longitudinal pleats, each of the pleats having a pair of legs, each of the legs having a first and a second surface, the pleats being in a laid-over state in which the first surface of one leg of one pleat is in intimate contact with the first surface of an adjoin-

ing leg of said one pleat and the second surface of said one leg is in intimate contact with the second surface of an adjoining leg of an adjacent pleat over substantially the entire height of each leg and over a continuous region extending for at least approximately 50% of the axial length of the filter element; and

a first impervious end cap connected to the first end surface of the filter element.

5,543,048

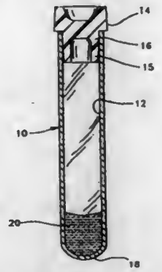
BLOOD COLLECTION ASSEMBLY WITH BLOOD COMPATIBLE, SHEAR SENSITIVE GELS

Erwin A. Vogler, Newhill; Thomas A. Shepard, Apex, and Jane C. Graper, Durham, all of N.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Division of Ser. No. 231,544, Apr. 22, 1994. This application May 17, 1995, Ser. No. 443,233

Int. Cl.[6] B01D *17/00;21/26*

U.S. Cl. 210—513 **1 Claim**



1. A blood collection assembly comprising a blood collection container having an open end, a closed end, a stopper for closing said open end and a gel formulation in said container comprising a block copolymer of polydimethyl siloxane/polyethylene oxide copolymer, a gelling agent of dibenzylidene sorbitol and a liquid vehicle of water or alcohol.

5,543,049

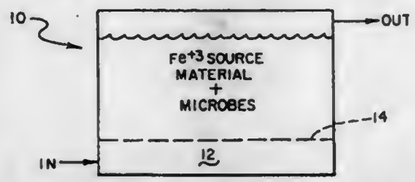
MICROBIAL MEDIATED WATER TREATMENT

Delman R. Hogen, 7813 Madison St., Spring Lake Park, Minn. 55432, and James R. Robin, Excelsior, Minn., assignors to Delman R. Hogen, Spring Lake Park, Minn.

Continuation-in-part of Ser. No. 650,059, Feb. 4, 1991, abandoned. This application Dec. 15, 1994, Ser. No. 356,879

Int. Cl.[6] C02F *3/34*

U.S. Cl. 210—601 **5 Claims**



1. The method of generating soluble Fe^{+2} comprising the steps:

providing a source of Fe^{+3}, a quantity of at least one microbe capable of converting Fe^{+3} to Fe^{+2}, which is selected from ATCC 55339, and an aqueous solution of nutrient in a container;

allowing the conversion of Fe^{+3} to Fe^{+2} to occur, forming soluble Fe^{+2} in water; and

thereafter removing the soluble Fe^{+2} and water from the container, and using the soluble Fe^{+2} in a process for treating water.

5,543,050

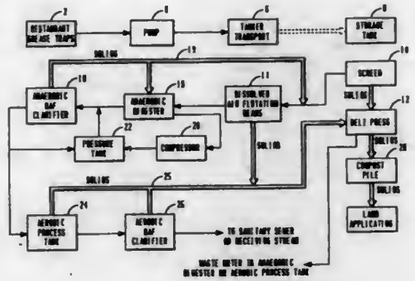
GREASE TRAP WASTEWATER TREATMENT PROCESS

Mel Roshanravan, Coppell, Tex., assignor to Darling-Delaware Company, Inc., Irving, Tex.

Division of Ser. No. 970,858, Nov. 3, 1992, Pat. No. 5,433,846. This application Feb. 1, 1995, Ser. No. 382,179

Int. Cl.[6] C02F *3/30*

U.S. Cl. 210—605 **7 Claims**



1. A method for treating grease-trap wastewater to produce clarified water, comprising the steps of:

removing solid-waste matter from the grease-trap wastewater;

dewatering the solid-waste matter removed from the wastewater; clarifying water removed from the solid-waste matter; and

discharging the clarified water into a receiving system.

5,543,051

BIOLOGICAL PHOSPHORUS REMOVAL FROM WASTE WATER

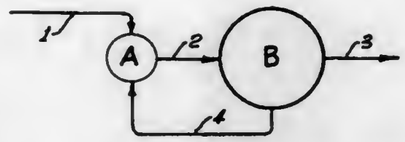
Scott Harris, Belrose, Australia, assignor to The Minister for Public Works and Services for and on Behalf of the State of New South Wales, Sydney, Australia

Filed Jun. 19, 1995, Ser. No. 433,330

Claims priority, application Australia, Nov. 6, 1992, PL5724

Int. Cl.[6] C02F *3/30;3/34*

U.S. Cl. 210—605 **8 Claims**



1. A method for waste water treatment including nitrogen and phosphorus removal comprising the steps of:

(a) combining waste water with activated sludge comprising a concentration of phosphorus accumulating bacteria together with other microorganisms in a first container under anaerobic conditions;

(b) transferring the products of step (a) to a second container;

(c) aerating the contents of the second container;

(d) allowing the contents of the second container to settle and separate into an effluent layer and an activated sludge layer;

(e) decanting at least some of the treated effluent;

(f) recycling at least a proportion of the activated sludge from the second container to provide the sludge of step (a); and

(g) wasting at least part of the phosphorus enriched activated sludge from the second container.

5,543,052

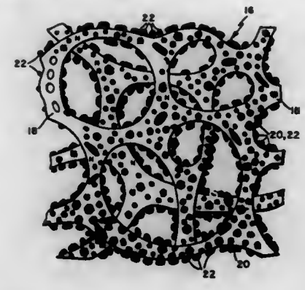
PROCESS FOR REMOVAL OF ORGANIC POLLUTANTS FROM WASTE WATER

Francis S. Lupton, Evanston; William G. Sheridan, Glen Ellyn, and Marion R. Surgi, Evanston, all of Ill., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Continuation of Ser. No. 144,158, Oct. 26, 1993, abandoned, which is a continuation of Ser. No. 741,857, Aug. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 335,610, Apr. 10, 1989, Pat. No. 4,983,299, which is a continuation-in-part of Ser. No. 225,610, Jul. 28, 1988, Pat. No. 4,888,752. This application Mar. 9, 1995, Ser. No. 401,322

Int. Cl.[6] C02F *3/10*

U.S. Cl. 210—616 **23 Claims**



1. A process for purification of organic pollutants from waste water which comprises: passing an aqueous influent stream containing one or more organic materials through a reactor in the presence of a gas comprising an effective amount of oxygen, said reactor containing a biologically active biomass comprising a plurality of biologically active particles consisting essentially of a hydrophobic polyurethane substrate in particulate form and an effective amount of one or more aerobic microorganisms capable of metabolizing at least one of said organic materials in said influent stream to provide an effluent stream in which the concentration of at least one of said materials is less than the concentration of said material in said influent stream, wherein said microorganisms are on, in or on and in said substrate.

5,543,053

Patent Not Issued For This Number

5,543,054

METHOD AND APPARATUS FOR COVALENT IMMOBILIZATION OF CHARGE- CONJUGATED CARBOHYDRATE MOLECULES

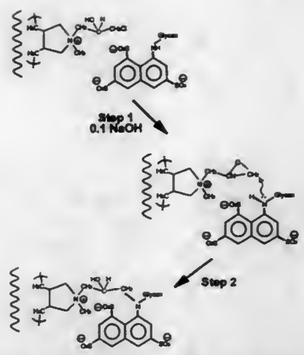
John Charkoudian, Carlisle; Malcolm Pluskal, Acton; David Wang, Lexington, and Charles Phoebe, Uxbridge, all of Mass., assignors to Millipore Corporation, Bedford, Mass.

Filed Nov. 24, 1993, Ser. No. 157,805

Int. Cl.[6] B01D *61/38;* **C07H** *1/06;* **G01N** *27/26*

U.S. Cl. 210—638 **31 Claims**

1. A method for covalent immobilization of a charged carbohydrate conjugate with an oppositely charged surface, comprising the steps of:



(a) coating a microporous pelymeric base membrane with a cationic polyamido-polyamine epichlorohydrin polymer having fixed charges thereon;

(b) cross-linking said cationic polymer onto said polymeric base membrane by using less than a stoichiometric amount of base relative to the original epichlorohydrin content of said cationic polymer such that a composite membrane is formed which has sufficient epichlorohydrin and epoxide moieties remaining on the surface of said composite membrane for covalent immobilization of an oppositely-charged carbohydrate conjugate;

(c) adsorbing said charged carbohydrate conjugate to said composite membrane in proximity to said epichlorohydrin and epoxide moieties bound to said composite membrane and being capable of reacting with said charged carbohydrate conjugate; and

(d) activating said bound moieties sufficiently for covalent attachment to said adsorbed charged carbohydrate conjugate.

5,543,055

PURIFICATIONS OF FLOURINATED DIMETHYL ETHERS

Gerald J. O'Neill , Arlington, Mass., and Robert J. Bulka, Merrimack, N.H., assignors to Hampshire Chemical Corp., Lexington, Mass.

Filed Jun. 6, 1995, Ser. No. 466,096

Int. Cl.[6] B01D *15/00*

U.S. Cl. 210—638 **8 Claims**

1. A process for the purification of bis(difluoromethyl)ether from impurities comprising difluoromethyl methyl ether and chlorofluoromethane, comprising causing said bis(difluoromethyl)ether and said impurities to contact molecular sieves ranging in pore size from about 3 to about 10 Å, and recovering the resulting purified bis(difluoromethyl)ether.

5,543,056

METHOD OF DRINKING WATER TREATMENT WITH NATURAL CATIONIC POLYMERS

Susan E. Murcott, Marblehead, and Donald R. F. Harleman, Cambridge, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

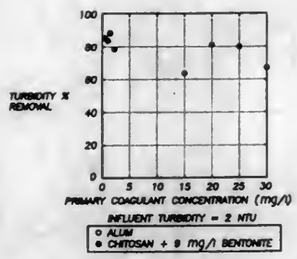
Filed Jun. 29, 1994, Ser. No. 268,266

Int. Cl.[6] C02F *1/56*

U.S. Cl. 210—705 **9 Claims**

1. A method of treating drinking water containing suspended matter, comprising:

adding a primary coagulant and coagulant aid to drinking water to form a mixture, the primary coagulant added in an amount effective to form a floc including said suspended matter in the drinking water and comprising a natural, cationic polymer



selected from the group consisting of chitosan and cationic starch, the coagulant aid comprising an effective amount of a clay mineral, wherein the weight ratio of coagulant:coagulant aid is between about 1:5 to about 1:20; and

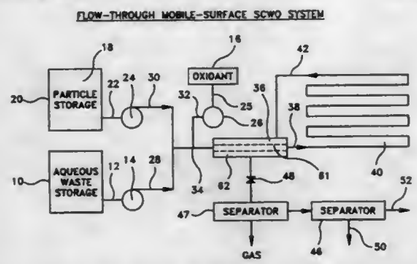
separating the flocculated suspended matter from the drinking water.

5,543,057

SUPERCRITICAL WATER OXIDATION OF ORGANICS USING A MOBILE SURFACE

Philip Whiting, Milton, and Anthony H. Milton, Oakville, both of, Canada, assignors to Abitibi-Price, Inc., Mississauga, Canada

Filed Mar. 13, 1995, Ser. No. 402,621
Int. Cl.[6] C02F *1/72;11/08*
U.S. Cl. 210—721 **11 Claims**



1. A method for oxidizing an aqueous stream containing organic compounds and one or more inorganic salts or salt precursors insoluble under the reaction conditions comprising oxidizing the organic compounds in a reactor under supercritical conditions for the aqueous stream in the presence of an oxidant and mobile particles which provide a surface to which inorganic salts insoluble under the supercritical reaction conditions can adhere.

5,543,058

PROCESS FOR REMOVING PROTEINACEOUS MATERIALS, FAT AND OILS FROM FOOD PROCESSING WASTEWATER AND RECOVERING SAME

Jack C. Miller, 1937 Bramblewood Trail, Pfafftown, N.C. 27040

Division of Ser. No. 308,202, Sep. 19, 1994, Pat. No. 5,413,720, which is a continuation of Ser. No. 955,355, Oct. 1, 1992, abandoned, which is a division of Ser. No. 629,134, Dec. 18, 1990, Pat. No. 5,174,903, which is a continuation-in-part of Ser. No. 564,424, Aug. 7, 1990, abandoned. This application Apr. 11, 1995, Ser. No. 419,805
Int. Cl.[6] C02F *1/56*
U.S. Cl. 210—725 **16 Claims**

1. A process for removing proteinaceous materials, fats and oils from food processing wastewater which comprises:

(a) acidifying the wastewater;

(b) admixing said wastewater with an amount of a compound containing halogen ions effective to coagulate said proteinaceous materials, fats and oils in said wastewater, and admixing said wastewater with an amount of a polymer compound selected from the group consisting of natural polymers, synthetic polymers and mixtures thereof effective to flocculate said proteinaceous materials, fats and oils in said wastewater,

(c) reacting the admixture for a time sufficient to coagulate and flocculate the proteinaceous materials and fats; and

(d) separating the reacted admixture from the wastewater.

16. A process for removing proteinaceous materials and fats, and oil from food processing wastewater comprising;

(a) acidifying the wastewater to a pH below the isoelectric point of the proteinaceous materials;

(b) admixing with the wastewater from about 5 to about 100 parts per million of wastewater of a compound containing a chlorine ion and from about 1 to about 50 parts per million of a compound selected from the group consisting of natural polymers, synthetic polymers and mixtures thereof to form a mixture with the proteinaceous material;

(c) reacting the admixture for a time sufficient to flocculate and coagulate said proteinaceous materials, fats and oils; and

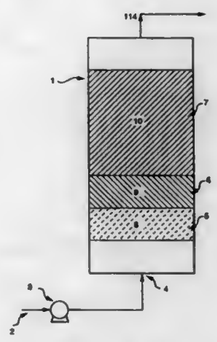
(d) separating the reacted admixture from the wastewater.

5,543,059

ENHANCED REACTIVE METAL WALL FOR DEHALOGENATION OF HYDROCARBONS

Paul E. Howson, Latham; Patricia D. Mackenzie, Clifton Park, and David P. Horney, Mayfield, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 31, 1995, Ser. No. 414,832
Int. Cl.[6] C02F *1/70*
U.S. Cl. 210—757 **5 Claims**



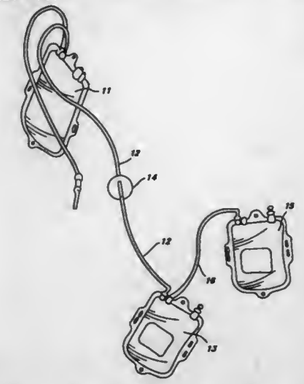
1. A method comprising passing an aqueous solution contaminated with halogenated hydrocarbons through a tiered iron wall or column comprising at least three zones of graduated sizes of iron particles where a first zone consists essentially of a reactive sink with first zone iron particles of a size about 5–30 millimeters that entrap precipitates formed from a reaction between said aqueous solution and said first zone iron particle, where a second zone is adjacent to the first zone and third zone, and consists essentially of second zone iron particles of a size about 1–5 millimeters that filter residual precipitates from zone one, and where a third zone is adjacent to the second zone and consists essentially of third zone iron particles of a size about 0.1–1 millimeters that dehalogenate substantially all of the halogenated hydrocarbons, thereby removing contaminants from the aqueous solution.

5,543,060

METHOD FOR PROCESSING BLOOD FOR HUMAN TRANSFUSION

David B. Pall; Thomas C. Gsell, both of Glen Cove, and Brian T. Muellers, Rockville Centre, all of N.Y., assignors to Pall Corporation, East Hills, N.Y.

Continuation of Ser. No. 231,914, Apr. 25, 1994, Pat. No. 5,445,736, which is a continuation of Ser. No. 933,309, Aug. 21, 1992, Pat. No. 5,316,674, which is a continuation of Ser. No. 609,574, Nov. 6, 1990, Pat. No. 5,152,905, which is a continuation-in-part of Ser. No. 405,977, Sep. 12, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 467,322
Int. Cl.[6] B01D *37/00;21/26;39/02*
U.S. Cl. 210—767 **22 Claims**



1. A method for treating a blood product comprising:

centrifuging a blood product to form a supernatant layer and a sediment layer, wherein the sediment layer includes red blood cells;

separating the supernatant layer from the sediment layer by passing the supernatant layer through a filter comprising a porous medium having a critical wetting surface tension (CWST) of about 70 to about 115 dynes/cm until the filter is blocked.

5,543,061

REFORMING PROCESS AND APPARATUS

Paul T. Baskis, 723 Galaxy St., Rantoul, Ill. 61866

Continuation-in-part of Ser. No. 110,290, Aug. 20, 1993, Pat. No. 5,360,553, which is a continuation-in-part of Ser. No. 946,939, Sep. 17, 1992, Pat. No. 5,269,947. This application Oct. 31, 1994, Ser. No. 332,346
Int. Cl.[6] B01D *35/18*
U.S. Cl. 210—774 **14 Claims**

1. A process for converting a process material into other useful products, comprising the steps of:

a) mixing the process material with a process liquid to create a flowable slurry,

b) pumping said slurry to a container while preheating said slurry,

c) further reducing the pressure on said slurry in said container while further heating said slurry to separate vapor by-products from solids in said slurry,

d) collecting said vapor by-products, and

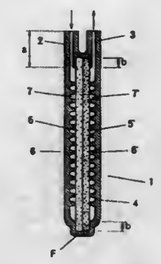
e) collecting said separated solids.

5,543,062

LEUKOCYTE-REMOVING FILTER DEVICE AND SYSTEM AND METHOD OF USING THEREOF

Takao Nishimura, Oita, Japan, assignor to Asahi Medical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 132,894, Oct. 7, 1993, abandoned. This application Nov. 15, 1995, Ser. No. 559,726
Claims priority, application Japan, Oct. 7, 1992, 4-291950
Int. Cl.[6] B01D *21/26;36/00;37/00*
U.S. Cl. 210—782 **16 Claims**



14. A method for removing leukocytes from blood, which comprises the steps of:

(1) providing a leukocyte-removing filter device comprising:

(a) a flat casing comprising opposite flat main walls fluid-tightly connected by a side wall structure to define an internal space of said casing, each main wall vertically extending and having a width and a height, said side wall structure having a width defined by a distance between said opposite flat main walls, wherein said casing has a top and a bottom portion which are shaped apart vertically of said casing, and wherein the width or height of each main wall, whichever is shorter, is at least two times the width of the side wall structure,

said top portion having an inlet for blood and an outlet for leukocyte-removed blood, and

said top portion vertically extending from a top end of said casing over a length one-third or less the entire vertical length of the casing as measured from the top end of the casing, and

(b) a filter medium comprising at least one filter material sheet extending within said internal space of the casing along said flat main walls to partition said internal space into an inlet-side chamber communicating with said inlet and an outlet-side chamber communicating with said outlet, said outlet-side chamber not discontinuously varying in horizontal cross-sectional area more than 10% over the entire inner space of the outlet-side chamber from its inner bottom portion to its inner uppermost portion;

(2) allowing blood to flow into the inlet of said filter device and pass through said filter medium contained in said filter device to thereby remove leukocytes from the blood, and discharging leukocyte-removed blood from the outlet of said filter device.

5,543,063

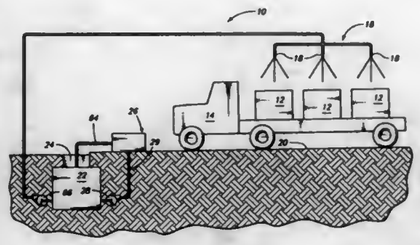
METHOD FOR RECOVERING PRODUCE WASH TREATMENT EFFLUENT

Jogn P. Walker, Spokane, and Steven Hausmann, Selah, both of Wash., assignors to Inland Aqua-Tech Equipment Systems, Inc., Spokane, Wash.

Filed Feb. 15, 1995, Ser. No. 389,150

Int. Cl.[6] B01D *21/26;37/00*

U.S. Cl. 210—788 **17 Claims**



1. A method of treating fungible produce at a wash station, comprising the steps of:

washing the produce by spraying the produce with liquid containing a chemical treating agent;

collecting the effluent from the washing in a storage tank, the spraying effluent containing the chemical treating agent;

pumping the washing effluent from the storage tank to a secondary tank, and screening the effluent in the secondary tank by passing the effluent through a screen in the secondary tank;

pumping the screened effluent from the secondary tank to a self-cleaning, self-backwashing filter having an inlet and a main outlet, the self-cleaning, self-backwashing filter having a sensor for sensing the pressure differential between its inlet and outlet, the self-cleaning, self-backwashing filter automatically going into a back wash function when the pressure differential exceeds a predetermined value, the self-cleaning, self-backwashing filter having a back wash outlet, separate from its main outlet, through which back washed solids are expelled, and the self-cleaning, self-backwashing filter using fluid travelling from its inlet to its main outlet for the backwashing, a majority of the chemical treating agent entering the inlet of the self-cleaning, self-backwashing filter being discharged through the main outlet of the self-cleaning, self-backwashing filter;

conducting the back wash by gravity to a plurality of bag filters which collect particulate and discharge the filtered back wash into the secondary tank, the bag filters providing a higher degree of filtration than the self-backwashing filter, a majority of the chemical treating agent in the back wash passing through the bag filters;

conducting liquid from the lower outlet of the self-backwashing filter to the storage tank; and

conducting liquid from the storage tank to the wash nozzle so that the chemical treating agent contained in the liquid is sprayed onto produce, whereby quantities of chemical treating agent contained in the effluent from the washing may be reused and need not be dumped.

5. A method according to claim 1 wherein the chemical treating agent comprises a pesticide.

5,543,064

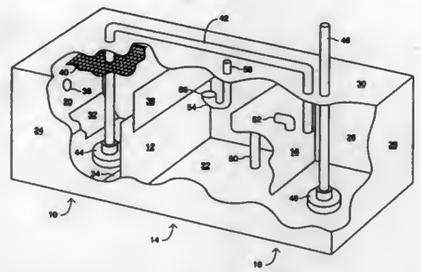
SEWAGE LIFT STATION

William C. Batten, Asheboro, N.C., assignor to Clearline Systems, Inc., Asheboro, N.C.

Filed Sep. 7, 1994, Ser. No. 301,978

Int. Cl.[6] C02F *1/40*

U.S. Cl. 210—803 **17 Claims**



1. An underground sewage lift station comprising

(a) a solids separation chamber having a sewage inlet, and a grease discharge outlet;

(b) a grease separation chamber in communication with said grease discharge outlet to receive grease from said solids separation chamber;

(c) a sewage lift chamber;

(d) a water conduit having an inlet end communicating with said grease separation chamber, and an outlet end communicating with said sewage lift chamber;

(e) a grease transfer conveyor having an inlet end communicating with said grease separation chamber and an outlet end communicating with a first, remote, higher destination;

(f) a solids transfer conveyor having an inlet end communicating with said solids separation chamber and an outlet end communicating with said sewage lift chamber; and

(g) a sewage lift conveyor having an inlet end communicating with said sewage lift chamber and an outlet end communicating with a second, remote, higher destination.

5,543,065

SMOKE REDUCTION OF FIBER LUBRICANTS

Elbert H. Mudge, Charlotte, N.C., assignor to Henkel Corporation, Plymouth Meeting, Pa.

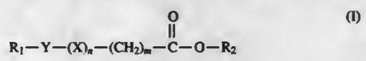
Filed Jun. 7, 1995, Ser. No. 473,152

Int. Cl.[6] D06M *13/10*

U.S. Cl. 252—8.84 **13 Claims**

1. A fiber treating composition consisting of

(A) a lubricant selected from the group consisting of oxa-acids and oxa-acid esters having the general structural formula I



(I)

wherein R_1 is cyclic, straight, or branched chain alkyl, saturated or unsaturated, containing from 1 to 23 carbon atoms, n is a number from 1 to 5, m is a number from 1 to 6, Y is —O— or —S—, X is $—C_2H_4O—$ or $—C_3H_6O—$, or a mixture of $—C_2H_4O—$ and $—C_3H_6O—$, and R_2 is cyclic, straight, or branched chain alkyl, saturated or unsaturated, containing from 1 to 23 carbon atoms, and (B) an effective smoke-reducing amount of at least one antioxidant selected from the group consisting of tris(4-t-butyl-3-hydroxy-2,6-dimethylbenzyl)-s-triazine-2,4,6-(1H,3H,5H)-trione; Ditridecylthiodipropionate; thiodiethylene bis (3,5-di-tert-butyl-4-hydroxy)-hydrocinnamate; tetrakis (methylene (3,5-di-tert-butyl-4-hydroxy-hydrocinnamate)) methane; tri phenyl phosphite; tri phenyl phosphite containing triisopropanolamine, and mixtures thereof.

5,543,066

BIODEGRADABLE FABRIC SOFTENING COMPOSITION

Hans J. Weissen, Kommweg 4, 52372 Kreuzau, and Norbert Porta, Kurfurstenstrasse 20, 52388 Norvenich-Eggerheims, both of, Germany

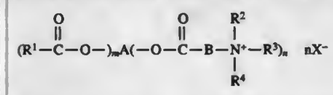
Filed Jul. 29, 1994, Ser. No. 283,102

Claims priority, application European Pat. Off., Aug. 10, 1993, 93202352.6

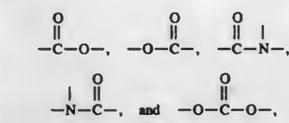
Int. Cl.[6] D06M *13/46*

U.S. Cl. 510—515 **24 Claims**

1. A fabric softening composition which comprises at least one biodegradable quaternary ammonium compound of the formula:



wherein X is an anion, A is an (m+n) valent radical remaining after the removal of (m+n) hydroxy groups from an aliphatic polyol having p hydroxy groups and an atomic ratio of carbon to oxygen in the range of 1.0 to 3.0 and up to 2 groups per hydroxy group selected from ethylene oxide and propylene oxide, m is 0 or an integer from 1 to p-n, n is an integer from 1 to p-m, and p is an integer of at least 2, B is an alkylene group containing 1–4 carbon atoms or an alkylidene group containing 2 to 4 carbon atoms, R^1, R^2, R^3 and R^4 are independently from each other, straight or branched chain C_1–C_{48} alkyl or alkenyl groups, optionally substituted by one or more functional groups which are optionally interrupted by at most 10 ethylene oxide groups, propylene oxide groups, or combinations thereof, or by up to two functional groups selected from



or R^2 and R^3 may form a ring system containing 5 or 6 atoms in the ring, with the proviso that at least one of said R^1, R^2, R^3, or R^4 groups has 22–48 carbon atoms, or at least two of said R^1, R^2, R^3 or R^4 groups has 16–20 carbon atoms, or at least three of said R^1, R^2, R^3 or R^4 groups has 10–14 carbon atoms.

5,543,067

WATERLESS SELF-EMULSIVIABLE BIODEGRADABLE CHEMICAL SOFTENING COMPOSITION USEFUL IN FIBROUS CELLULOSIC MATERIALS

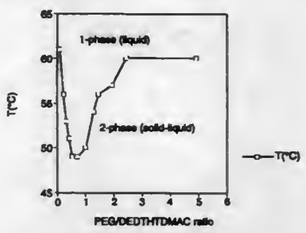
Dean V. Phan, West Chester; Paul D. Trokhan, Hamilton; Robert G. Laughlin, Cincinnati, and Toan Trinh, Maineville, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 72,297, Jun. 3, 1993, which is a continuation-in-part of Ser. No. 4,333, Jan. 14, 1993, and a continuation-in-part of Ser. No. 967,299, Oct. 27, 1992, Pat. No. 5,279,767. This application Nov. 2, 1994, Ser. No. 333,587

The portion of the term of this patent subsequent to Jan. 14, 2003, has been disclaimed.

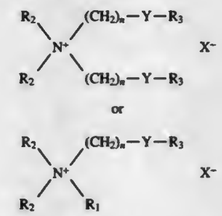
Int. Cl.[6] D21H *21/22*

U.S. Cl. 106—287.25 **30 Claims**



1. A substantially waterless self-emulsifiable biodegradable chemical softening composition for tissue paper webs consisting essentially of a mixture of:

(a) a biodegradable ester-functional quaternary ammonium compound having the formula;



wherein each R_2 substituent is a C_1–C_6 alkyl or hydroxyalkyl group, benzyl group or mixtures thereof; each R_1 substituent is a C_{12}–C_{22} hydrocarbyl group, or substituted hydrocarbyl group or mixtures thereof; each R_3 substituent is a C_{11}–C_{21} hydrocarbyl group, or substituted hydrocarbyl or mixtures thereof; Y is —O—C(O)— or —C(O)—O— or —NH—C(O)— or —C(O)—NH— or mixtures thereof; n is 1 to 4 and X^- is a suitable anion;

and

(b) a polyhydroxy compound selected from the group consisting of glycerol, polyglycerols having a weight average molecular weight from about 150 to about 800 g/mole, and polyoxyethylene glycols and polyoxypropylene glycols having a weight average molecular weight from about 200 to about 4000 g/mole, and mixtures thereof;

wherein the weight ratio of the ester-functional quaternary ammonium compound to the polyhydroxy compound ranges from about 1:0.1 to about 0.1:1, wherein said polyhydroxy compound is mixed with said ester-functional quaternary ammonium compound at a temperature wherein said ester-functional quaternary ammonium compound and said polyhydroxy compound are miscible, and wherein the moisture content of said chemical softening composition is less than about 20% by weight and wherein the biodegradable chemical softening composition is a stable, homogenous, solid or viscous fluid at a temperature of greater than or about 20° C. and wherein the composition is free of wet strength resins.

5,543,068

LUBRICATING OILS FOR FLON COMPRESSORS, COMPOSITIONS ADAPTED FOR FLON COMPRESSORS AND COMPOSED OF MIXTURES OF SAID LUBRICATING OILS AND FLON, AND PROCESS FOR LUBRICATING FLON COMPRESSOR BY USING SAID LUBRICATING OILS

Takashi Kaimai; Hiroki Tawaki, both of Saitama; Sumio Yokoo, and Yoshie Arakawa, both of Kanagawa, all of, Japan, assignors to Japan Energy Corporation, and Nissan Motor Co., Ltd., both of Tokyo, Japan

Continuation-in-part of Ser. No. 449,841, Dec. 4, 1989, and a continuation-in-part of Ser. No. 842,975, Feb. 28, 1992, abandoned. This application Sep. 14, 1992, Ser. No. 944,342

Claims priority, application Japan, Apr. 8, 1988, 63-85346; Apr. 8, 1988, 63-85347; Apr. 8, 1988, 63-85348; Sep. 19, 1991, 3-268208

Int. Cl.[6] C09K *5/04;* **C10M** *105/08*

U.S. Cl. 252—68 **36 Claims**

1. A lubricating oil for flon compressor, containing at least one compound represented by a formula (I):

$$R_1—[—O—(R_2O)_y—(CH_2CH_2O)_z—H]_x \quad (I)$$

in which R_1 denotes a fluorine-substituted hyrocarbon residue derived from a C_{1-8} alcohol having a valence of 1 to 4, R_2 denotes a C_{3-4} branched alkylene group, x denotes an integer of 1–4, and y and z each independently denote a positive number, R_2O units and CH_2CH_2O units are block copolymerized in an order shown in the formula (I), and z/(y+z) is not less than 0.02 but not more then 0.5, wherein the average molecular weight of said compound is not less than 500, said lubricating oil having a kinetic viscosity of 2–30 cSt at 100° C.

3. A lubricating oil for flon compressors, containing a mixture of (a) a compound represented by a formula (I):

$$R_1—[—O—(R_2O)_y—(CH_2CH_2O)_z—H]_x \quad (I)$$

in which R_1 denotes a hydrocarbon residue derived from a C_{1-8} alcohol having a valence of 1 to 4, R_2 denotes a C_{3-4} branched alkylene group, x denotes an integer of 1–4, and y and z each independently denote a positive number, R_2O units and CH_2CH_2O units are block copolymerized in an order shown in the formula (I), and z/(y+z) is not less than 0.02 but not more than 0.3, wherein the average molecular weight of said compound represented by formula (I) is not less than 500, and (b) a compound represented by a formula (II):

$$R_3—[—O—(R_4O)_m—(CH_2CH_2O)_n—R_5] \quad (II)$$

in which R_3 denotes a hydrocarbon residue derived from a C_{1-8} alcohol having one to four hydroxyl groups, R_4 denotes a C_{3-4} branched alkylene group, R_5 denotes a C_{1-8} alkyl group, l denotes an integer of 1–4, m and n independently denote a positive number, R_4O units and CH_2CH_2O are block copolymerized, and n/(m+n) is more than 0 but not more than 0.5.

5,543,069

MAGNETIC PARTICLES FOR MAGNETIC RECORDING MEDIUM AND PROCESS FOR PRODUCING THE SAME

Kazuyuki Hayashi; Minoru Obuugi; Hiroko Morii, and Norio Sugita, all of Hiroshima, Japan, assignors to Toda Kogyo Corporation, Japan

Division of Ser. No. 149,834, Nov. 10, 1993, Pat. No. 5,484,545. This application Jul. 31, 1995, Ser. No. 509,607

Claims priority, application Japan, Nov. 11, 1992, 4-327322

Int. Cl.[6] C04B *35/26*

U.S. Cl. 252—62.58 **13 Claims**

1. A magnetic medium comprising a substrate and a magnetic coating containing magnetic particles which comprise

(a) magnetic particles selected from the group consisting of acicular and lamellar magnetic particles of acicular magnetic iron oxide particles, acicular magnetic iron oxide particles containing a metal other than Fe, acicular magnetic iron oxide particles coated with a Co compound, acicular magnetic metal particles containing iron, fine lamellar Ba ferrite particles, fine lamellar Sr ferrite particles, fine lamellar Ba—Sr ferrite particles and mixtures thereof, and

(b) not less than 0.01 wt %, calculated as Al, SiO_2 or Al and SiO_2, based on said magnetic particles, of ultrafine particles composed of an oxide or hydroxide containing Al, Si or both Al and Si and adhered to the surfaces of said magnetic particles;

wherein said magnetic particles have not less than 0.50 of a molecular-weight-dependent parameter α represented by the formula (I):

$$As=K_1 \cdot M^{\alpha} \quad (I)$$

where M represents a number-average molecular weight of a binder, As represents a saturation adsorption of the binder, and K_1 represents a constant dependent on the binder and a solvent used for measuring As.

5,543,070

MAGNETIC RECORDING POWDER HAVING LOW CURIE TEMPERATURE AND HIGH SATURATION MAGNETIZATION

Kouichi Ishiyama; Kazunori Igarashi; Norikazu Komada; Takuo Takeshita, all of Omiya, and Kiyoyuki Ookubo, Kitamoto, all of, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Dec. 1, 1994, Ser. No. 352,137

Claims priority, application Japan, Mar. 31, 1994, 6-062651

Int. Cl.[6] C04B *35/26*

U.S. Cl. 252—62.59 **25 Claims**

1. A magnetic recording powder of a composite oxide having a hexagonal ferrite crystal structure, consisting essentially of:

a) between 14 and 20 atomic % of at least one strontium oxide and barium oxide;

b) between 15 and 40 atomic % of chromium oxide;

c) between 2 and 15 atomic % of a composition selected from the group consisting of zinc oxide, magnesium oxide and copper oxide;

d) between 2 and 15 atomic % of an oxide selected from the group consisting of titanium oxide, zirconium oxide and tin oxide, substantial remainder being iron oxide and unavoidable impurities, wherein the magnetic recording powder of the composite oxide has a saturation magnetization (σs) of 15 emu/g or higher and a Curie temperature (Tc) of 155° C. or lower.

5,543,071

COMPOSITIONS CONSISTING OF HYDROGENATED FLUOROCARBONS

Giampiero Basile, and Ezio Musso, both of Alessandria, Italy, assignors to Ausimont S.P.A., Milan, Italy

Continuation of Ser. No. 222,647, Apr. 4, 1994, abandoned. This application Aug. 28, 1995, Ser. No. 523,306

Claims priority, application Italy, Apr. 5, 1994, MI93A0658

Int. Cl.[6] C09K *5/04*

U.S. Cl. 252—67 **12 Claims**

1. A refrigerant composition consisting essentially of:

(a) chlorodifluoromethane in an amount from 38% to 53% by weight of the composition;

(b) a compound selected from the group consisting of 1-chloro-1,2,2,2,-tetrafluoroethane, 1-chloro- 1,1,,2,2-tetrafluoroethane, and mixtures thereof, the compound being present in an amount from 34% to 56% by weight of the composition;

(c) a butane selected from the group consisting of n-butane, isobutane, and mixtures thereof, the butane being present in an amount from 2% to 13.5% by weight of the composition;

the composition having the property that it shows an increase in its boiling point at atmospheric pressure of less than 10° C. with respect to its initial boiling point when all the composition is evaporated; the composition further having an Ozone Depletion Potentiality lower than 0.03;

wherein the composition is a drop-in replacement for dichlorodifluoromethane for use in a refrigeration circuit designed for use with dichlorodifluoromethane.

5,543,072

SYNTHETIC DETERGENT BARS AND METHOD OF MAKING THE SAME

Dennis L. Fost, Ridgewood; Joseph A. Komor, Ramsey, both of N.J., and Mario Novakovic, Kew Garden Hills, N.Y., assignors to Mona Industries, Inc., Paterson, N.J.

Continuation of Ser. No. 956,291, Oct. 5, 1992. This application Oct. 31, 1994, Ser. No. 332,457

Int. Cl.[6] C11D *9/32;1/28*

U.S. Cl. 510—151 **15 Claims**

1. A skin cleaning toilet bar composition consisting essentially of:

a) water soluble acyl esters of isethionic acid salts in an amount of from about 15 to about 35 percent by weight;

b) at least one monoalkyl sulfosuccinate in an amount of from about 10 to about 30 percent by weight with the proviso that the weight ratio of acyl esters of isethionic acid salts to sulfosuccinate is between 0.5:1 and 2:1;

c) free fatty acid in an amount of from about 25 to about 40 percent by weight;

d) at least two percent up to 10 percent by weight of an organic hydrophilic agent selected from the group consisting of polyalkoxylate derivatives of compounds having at least one active hydrogen up to 6 active hydrogens and mixtures of the same;

e) a modified hydrolyzed starch organic binder in an amount of from about five to about 20 percent by weight; and

f) water in an amount from about two to about 10 percent by weight, wherein said toilet bar composition contains at least 25 percent up to about 65 percent by weight of synthetic surface active agent components.

5,543,073

MICROEMULSION CLEANING COMPOSITION

Steven T. Adamy, Somerville, and Barbara J. Thomas, Princeton, both of N.J., assignors to Colgate-Palmolive Company, Piscataway, N.J.

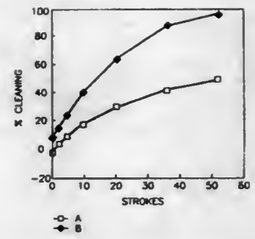
Continuation-in-part of Ser. No. 48,538, Apr. 14, 1993, abandoned. This application Feb. 7, 1994, Ser. No. 192,994

Int. Cl.[6] C11D *17/00;3/43;3/50*

U.S. Cl. 510—417 **14 Claims**

1. A microemulsion cleaning composition having superior solubilizing power and cleaning performance and low concentration of active ingredients which comprises on a weight basis of the entire composition:

(a) from about 3 to about 20% of an anionic organic surface active agent which is selected from the group consisting of C_8-C_{18} alkyl sulfate salts and alkyl ether polyethenoxy sulfate salts;



(b) from 0 to about 40% of a nonionic surface active agent;

(c) from 0 to about 5% of an inorganic electrolyte;

(d) from about 1 to about 15% of a cosurfactant having the structure $RO(X)_nH$ where R is an alkyl radical having 6 carbon atoms, X is an ethoxy, propoxy or isopropoxy monovalent radical, wherein n is about 1 to about 4;

(e) 0.4% to 10% of a perfume; and

(f) the balance being water.

5,543,074

PERSONAL WASHING COMPOSITIONS

Jonathon D. Hague, Merseyside, and Andrew M. Murray, Cheshire, both of, Great Britain, assignors to Chesebrough-Pond's USA Co., Div. of Conopco, Inc., Greenwich, Conn.

Filed Feb. 16, 1995, Ser. No. 389,384

Claims priority, application United Kingdom, Feb. 18, 1994, 9403156; Jul. 15, 1994, 9414332

Int. Cl.[6] C11D *3/37;9/36*

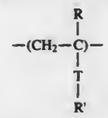
U.S. Cl. 510—122 **7 Claims**

1. An aqueous personal washing composition comprising:

a) 2 to 40% by weight of a surface active agent selected from the group consisting of anionic, nonionic, zwitterionic and cationic surfactants, soap and mixtures thereof;

b) a non-volatile insoluble benefit agent dispersed in the composition present in an effective amount to condition hair or skin, the benefit agent being selected from the group consisting of silicone oils and hydrocarbons; and

c) from 0.001 to 1% by weight of a deposition polymer which is a cationic copolymer wherein the charge density of the copolymer is in the range 0.0001 to 0.005 equivalents/gram, the average molecular weight of the copolymer is more than 2×10^6 daltons and the cationic polymer is a copolymer of acrylamide and a cationic monomer having the formula:



where: T is —O—or



R is H or CH_3 and R^1 is $—NH—(CH_2)_n—N^+(CH_3)_3X^-$ or $—O—(CH_2)_n—N^+(CH_3)_3X^-$ in which n is an integer from 1 to 4 and x is selected from Cl, Br, I and CH_3SO_3.

5,543,075

LIQUID CRYSTALLINE MATERIAL

Owain L. Parri, Poole; Emma J. Brown, Weymouth; David Coates, Wimborne, and Mark J. Goulding, Poole, all of, Great Britain, assignors to Merck Patent Gesellschaft Mit Beschraankter Haftung, Darmstadt, Germany

PCT No. PCT/EP93/02539, § 371 Date Jun. 1, 1994, § 102(e) Date Jun. 1, 1994, PCT Pub. No. WO94/08268, PCT Pub. Date Apr. 14, 1994

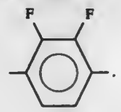
PCT Filed Sep. 20, 1993, Ser. No. 244,518

Claims priority, application United Kingdom, Oct. 2, 1992, 9220750

Int. Cl.[6] C09K *19/152;* **G02F** *1/13*

U.S. Cl. 252—299.01 **19 Claims**

1. A liquid crystalline material in the form of an anisotropic gel consisting of a polymerized monotropic or enantiotropic liquid crystalline material and a low-molecular weight liquid crystalline material, wherein the polymerized material a) forms a permanently oriented network in the low-molecular weight liquid crystalline material b), which the low-molecular weight liquid crystalline material b) is a liquid crystalline medium which exhibits a dielectric anisotropy $\Delta\varepsilon \leq -0.5$ and comprises at least two components wherein at least one component is a mesogenic compound comprising a structure element of formula 1



t

5,543,076

USE OF THE CHIRAL GROUP (1S, 4R)-1,4-DIHYDROXY-2-CYCLOPENTENYL IN THE PREPARATION OF POLAR, LIQUID-CRYSTALLINE COMPOUNDS

Karl Siemensmeyer, Frankenthal; Carsten Tschierske, Halle/Saale; Fritz Theil, Berlin, and Detley Joachimi, Halle/Saale, all of, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation of Ser. No. 41,407, Mar. 31, 1993, abandoned. This application Sep. 16, 1994, Ser. No. 307,105

Claims priority, application Germany, Apr. 8, 1992, 42 11 692.9

Int. Cl.[6] C09K *19/34;19/32;19/12;* **C07C** *69/74*

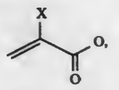
U.S. Cl. 252—299.61 **3 Claims**

1. A liquid-crystalline compound having the structure:

P—A—B—C I

where

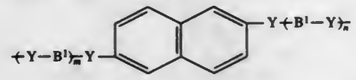
P is OH or



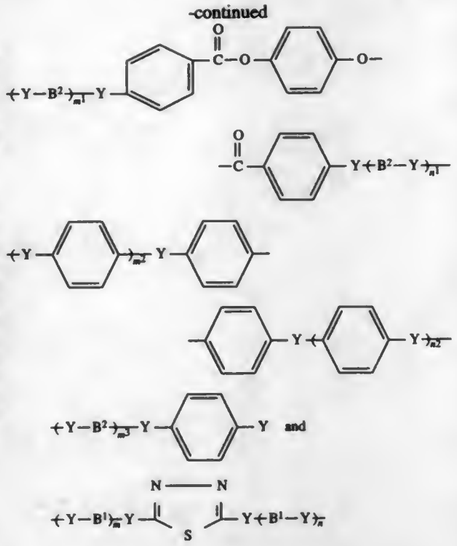
where X is methyl, Cl, Br, CN or H,

A is an alkylene group $-(CH_2)_n-$ where n=2 to 20, wherein each third $-CH_2-$ group is optionally replaced by —O— (oxygen), —S— (sulfur) or —NH—;

B is a moiety made up of at least two aromatic rings linked to one another in a linear or substantially linear manner selected from the group consisting of



-continued



where

B^1 are identical or different p-phenylene or biphen-4,4'-ylene;

B^2 are identical or different p-phenylene, biphen-4,4'-ylene, naphth-2,6-ylene, 1,3,4-thiadiazolene or pyrimidylene,

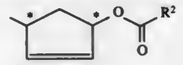
Y are identical or different and are —O—, —COO—, —OCO— or a chemical bond, or alternatively $-CH_2-O-$, —O—, $-O-CH_2-$, —COS— or —SCO—,

m and n are 0, 1 or 2, but m and n cannot simultaneously be 0,

m^1 and n^1, independently of one another, are 0, 1 or 2,

m^2 and n^2, independently of one another are 0 or 1 and m^3 is 1 or 2,

C is an optically active, polar, chiral moiety having the structure



where

R^2 is a linear or branched C_1–C_{12}-alkyl radical which is unsubstituted or substituted by F, Cl, Br, CN, or OH.

5,543,077

NEMATIC LIQUID-CRYSTAL COMPOSITION

Bernhard Reiger, Yokohama; Hiroki Yoshitake; Atsushi Sawada, both of Atsugi, al of, Japan; Herbert Plach, Darmstadt, and Georg Weber, Erzhausen, both of, Germany, assignors to Merck Patent Gesellschaft MIT Beschrankter Haftung, Darmstadt, Germany

Division of Ser. No. 842,142, Mar. 23, 1992, Pat. No. 5,409,637. This application Jan. 6, 1995, Ser. No. 369,483

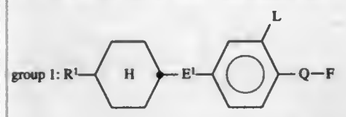
Claims priority, application European Pat. Off., Feb. 20, 1991, 91102609

Int. Cl.[6] C09K *19/30;19/20*

U.S. Cl. 252—299.63 **10 Claims**

1. A nematic liquid-crystal composition comprising:

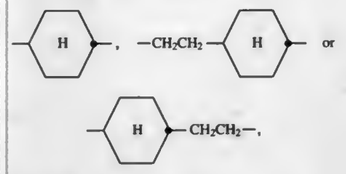
8 to 70% by weight of one or more compounds from group 1:



wherein

R^1 is a straight-chain alkyl group of 2 to 5 carbon atoms,

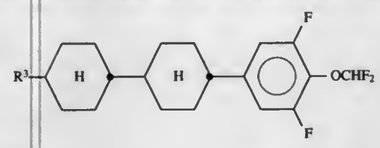
E^1 is



L is H or F, and

Q is OCF_2, OCFH, OCFCl or a single bond;

said composition contains at least one compound of formula 3f



3f

wherein

R^3 is a straight-chain alkyl group of 2 to 5 carbon atoms.

5,543,078

FERROELECTRIC LIQUID CRYSTALS FOR NONLINEAR OPTICS APPLICATIONS

David M. Walba, Boulder, Colo.; Maria B. Ros, Zaragoza, Spain; James A. Rego, Boulder, Colo., and Teresa Sierra, Zaragoza, Spain, assignors to University Research Corporation, Boulder, Colo.

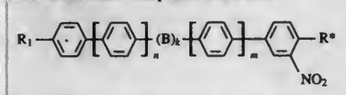
PCT No. PCT/US92/03427, § 371 Date Nov. 19, 1993, § 102(e) Date Nov. 19, 1993, PCT Pub. No. WO92/20058, PCT Pub. Date Nov. 12, 1992

Continuation of Ser. No. 690,633, Apr. 11, 1991, abandoned. This PCT application Apr. 24, 1992, Ser. No. 137,093

Int. Cl.[6] C09K *19/12;19/52;* **F21V** *9/00;* **C07C** *229/00*

U.S. Cl. 252—299.65 **42 Claims**

1. A chiral nonracemic compound of formula:



where n and m are 0 or 1, with the proviso that one of n or m is 1;

k is 1 and B is COO or OOC;

R_1 is $-OR_a$, $-COOR_b$ or R', where:

R_a is a straight-chain or branched alkyl or monoalkene group having from 2 to 16 carbon atoms; R_b is a straight-chain or branched alkyl or monoalkene group having from 2 to 15 carbon atoms; and R' is a straight-chain or branched alkyl or monoalkene group having 1 to 20 carbon atoms where one or more of the non-neighboring carbon atoms in R', except any unsaturated carbon atoms, may be replaced with O, S or a $Si(CH_3)_2$ group; and

R* is a chiral nonracemic tail group selected from the group consisting of $-O-C^*H(CH_3)R_c$, $-O-C^*H(CH_3)COOR_a$ and $-O-CH_3C^*HF-C^*HF-R_c$ in which the * indicates an asymmetric carbon enriched in one stereoconfiguration which for $-O-CH_2C^*HF-C^*HF-R_c$ is either the (S,S) or (R,R) stereoconfiguration where:

Rhd cis a straight-chain or branched alkyl or monoalkene group having 2 to 15 carbon atoms; Ru is a straight-chain or branched alkyl or monoalkene group having 2 to 13 carbon atoms and R_c is a straight-chain or branched alkyl or monoalkene group having 2 to 11 carbon atoms wherein in R_d or R_c one or more non-neighboring carbon atoms, except any unsaturated carbon atoms, may be substituted with an O, S, or $Si(CH_3)_2$ group.

5,543,079

POLYMERIC FLUORESCENT SUBSTANCE AND ORGANIC ELECTROLUMINESCENCE DEVICES USING THE SAME

Toshihiro Ohnshi; Takanobu Noguchi, and Shuji Doi, all of Tsukuba, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 274,798, Jul. 14, 1994. This application Jun. 7, 1995, Ser. No. 490,609

Claims priority, application Japan, Jul. 21, 1993, 05-180247; Sep. 24, 1993, 05-237851

Int. Cl.[6] C09K *11/02*

U.S. Cl. 252—301.35 **4 Claims**

1. A polymeric fluorescent substance which is soluble in solvents, has a number-average molecular weight of 10^3 to 10^7 and contains, as main constituents, three different repeating units A, B and C selected from the repeating units represented by the following formula (1), wherein the ratios of the respective repeating units in the polymeric substance are such that when the repeating unit constituting the polymer having the longest optical absorption edge wavelength is expressed by A, the repeating unit constituting the polymer having the next longest optical absorption edge wavelength is expressed by B and the repeating unit constituting the polymer having the shortest optical absorption edge wavelength is expressed by C, A is contained in an amount of 2–60 mol %, B in an amount of 5–60 mol % and C in an amount of 20–50 mol % based on the total number of the three different repeating units:

—Ar—CH═CH— (1)

wherein Ar is a arylene group having 6 to 20 carbon atoms, a beterocyclic compound group having 4 to 20 carbon atoms or a divalent group represented by the following formula (2), and at least one of the repeating units A, B and C has at least one substituent group selected from alkyl, alkoxy and alkylthio groups having 2 to 22 carbon atoms, aryl and aryloxy groups having 6 to 60 carbon atoms and heterocyclic compound groups having 4 to 60 carbon atoms:

$$—Ar_1—X_1—R—X_2—Ar_2— \quad (2)$$

wherein Ar_1 and Ar_2 are respectively a arylene group having 6 to 20 carbon atoms or a heterocyclic compound group having 4 to 20 carbon atoms and optionally contains at least one substituent of at least one species of group selected from alkyl, alkoxy and alkylthio groups having 2 to 22 carbon atoms, aryl and aryloxy groups having 6 to 60 carbon atoms and heterocyclic compound groups having 4 to 60 carbon atoms; R is a hydrocarbon or heterocyclic compound group having 1 to 22 carbon atoms; and X_1 and X_2 represent independently —O—, —S—, —COO— or —OCO—.

5,543,080

METHOD OF FORMING AN X-RAY IMAGE USING PHOTOSTIMULABLE PHOSPHOR

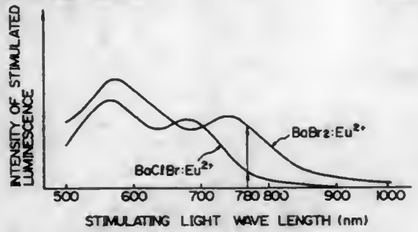
Nobuhiro Iwase, Atsugi; Hiroshi Kano, Sagamihara; Shinji Tadaki, Atsugi; Masami Hasegawa, and Nagaaki Koshino, both of Yokohama, all of, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 98,722, Jul. 29, 1993, abandoned, which is a division of Ser. No. 54,343, Apr. 7, 1993, abandoned, which is a continuation of Ser. No. 585,625, Sep. 20, 1990, abandoned. This application Jan. 25, 1995, Ser. No. 378,319

Claims priority, application Japan, Sep. 20, 1989, 1-241801

Int. Cl.[6] C09K *11/61*

U.S. Cl. 252—301.4 H 4 Claims



1. A method of forming an X-ray image comprising:

providing an X-ray image transforming sheet which comprises a stimulable phosphor on a substrate, said stimulable phosphor exhibiting photostimulated luminescence when excited by visible or infrared light, said phosphor being represented by the formula:

$$BaBr_2:bEu^{2+}\ ,$$

wherein 0<b>0.2;

exposing said transforming sheet to X-rays passed through an object to thereby cause said X-rays to be absorbed by said phosphor;

stimulating the exposed transforming sheet with electromagnetic waves having a wave length of 500 to 1000 nm to release the energy stored in the phosphor as a photostimulated luminescent light; and

detecting the released photostimulated luminescent light to obtain an image of the object.

5,543,081

LUBRICANT ADDITIVE

Noboru Ishida; Mitsuaki Ishimaru, and Mineo Kagaya, all of Yokohama, Japan, assignors to Nippon Oil Co., Ltd., Japan

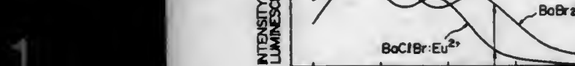
Filed Oct. 16, 1992, Ser. No. 962,305

Claims priority, application Japan, Oct. 18, 1991, 3-298014

Int. Cl.[6] C10M *139/00*

U.S. Cl. 508—194 10 Claims

1. A lubricating oil composition comprising a mineral base oil, a synthetic base oil or a mixture thereof, and a modified aminoamide compound resulting from the reaction of an aminoamide compound with boric acid, said aminoamide compound being added in an amount of 1–30 percent by weight based on the total weight of said oil composition, wherein said aminoamide compound is represented by the formula



where X is a hydrogen atom or an acyl group derived from a fatty acid of 6–30 carbon atoms; R is an alkylene group of 2–3 carbon atoms; R'C=O is an acyl group derived from a fatty acid of 6–30 carbon atoms; l+m is an integer of from 2 to 11; and wherein said aminoamide compound has at least one acyl group.

5,543,082

SILICONE FOAM CONTROL COMPOSITIONS

James B. McGee, Sanford; Lenin J. Petroff, Bay City; Doris J. Brecht, Sumner; William J. Ollinger, deceased, late of Sanford, Mich., and by John M. Ollinger, legal representative, St. Louis, Mo., assignors to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 479,022, Feb. 12, 1990, Pat. No. 5,380,464, which is a continuation-in-part of Ser. No. 393,620, Aug. 14, 1989, abandoned, which is a continuation-in-part of Ser. No. 192,042, May 9, 1988, abandoned. This application Sep. 13, 1993, Ser. No. 119,762

Int. Cl.[6] B01D *19/04*

U.S. Cl. 252—321 38 Claims

1. A composition prepared by mixing at room temperature:

(I) a reaction product prepared by reacting at a temperature of 50° C. to 300° C.:

(i) 100 parts by weight of at least one polyorganosiloxane selected from the group consisting of

(A) a polyorganosiloxane having a viscosity of about 20 to 100,000 cS at 25° C. and being expressed by the general formula $R^1_aSiO_{(4-a)/2}$ in which R^1 is a monovalent hydrocarbon or halogenated hydrocarbon group having 1 to 10 carbon atoms and a has an average value of 1.9 to 2.2 and

(B) a polyorganosiloxane having a viscosity of 200 to about 100 million cS at 25° C. expressed by the general formula $R^2_b(R^3O)_cSiO_{(4-b-c)/2}$ in which R^2 is a monovalent hydrocarbon or halogenated hydrocarbon group having 1 to 10 carbon atoms, R^3 is hydrogen or a monovalent hydrocarbon group having 1 to 10 carbon atoms, b has an average value of 1.9 to 2.2 and c has a sufficiently large value to give at least one —OR^3 group in each molecule, at least one such —OR^3 group being present at the end of the molecular chain;

(ii) 0.5 to 20 parts by weight of at least one silicon compound selected from the group consisting of

(a) an organosilicon compound of the general formula $R^4_dSiX_{4-d}$ in which R^4 is a monovalent hydrocarbon group having 1 to 5 carbon atoms, X is selected from the group consisting of hydroxyl and a hydrolyzable group and d has an average value of one or less,

(b) a partially hydrolyzed condensate of said compound (a),

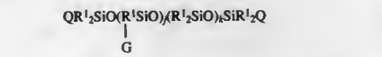
(c) a siloxane resin consisting essentially of $(CH_3)_3SiO_{1/2}$ units and $SiO_{4/2}$ units wherein the ratio of $(CH_3)_3SiO_{1/2}$ units to $SiO_{4/2}$ units is 0.4:1 to 1.2:1, and

(d) a condensate of said compound (c) with said compound (a) or (b);

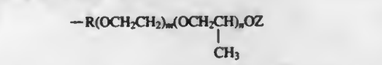
(iii) greater than zero to 30 parts by weight of at least one finely divided filler; and

(iv) a catalytic amount of an equilibration catalyst for promoting the reaction of components (i) to (iii), said catalyst being selected from the group consisting of alkali metal hydroxides, alkali metal silanolates, alkali metal alkoxides, quaternary ammonium hydroxides, and quaternary ammonium silanolates;

(II) from about 20 to 200 parts by weight for each 100 parts by weight of said reaction product (I) of a silicone-glycol copolymer having the average general formula

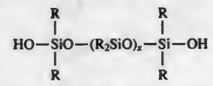


wherein R^1 has been previously defined, Q is R^1 or G, j has a value of 1 to 25, k has a value of 0 to 200, and G is a polyoxyalkylene group having the average structure



in which R is a divalent hydrocarbon group having 2 to 20 carbon atoms, m has a value of about 7 to 24, n has a value of 0 to about 24 and Z is selected from the group consisting of hydrogen, an alkyl radical having 1 to 6 carbon atoms and an acyl group having 2 to 6 carbon atoms; and

from 10 to 100 parts by weight for each 100 parts by weight of said reaction product (I) of a hydroxyl-endblocked polydiorganosiloxane polymer having the formula:



wherein R is a monovalent hydrocarbon radical or monovalent halohydrocarbon radical free of aliphatic unsaturation having from 1 to 20 carbon atoms and x has a value from 5 to 100.

5,543,083

FATTY AMINE DERIVATIVES OF BUTYLATED HYDROXY TOLUENE FOR THE PROTECTION OF SURFACES FROM PHYSICAL AND CHEMICAL DEGRADATION

Mark R. Sivik, Fairfield, and John C. Severns, West Chester, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

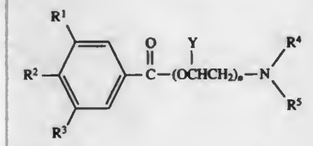
Filed Jul. 26, 1994, Ser. No. 280,685

Int. Cl.[6] C09K *15/00*

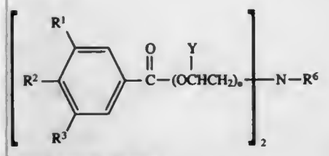
U.S. Cl. 252—403 11 Claims

1. An antioxidant compound, to reduce the degradation or discolomtion of surfaces from sunlight, selected from the group consisting of:

(I)



(II)



and mixtures thereof wherein

each R^1 is selected from the group consisting of hydroxy, methoxy, ethoxy, propoxy, butoxy, methyl, ethyl, propyl, straight or branched chained butyl groups, and straight or branched chained amyl groups;

each R^2 is a hydroxy group;

each R^3 is selected from the group consisting of hydroxy, methoxy, ethoxy, propoxy, butoxy, methyl, ethyl, propyl, straight or branched chained butyl groups, and straight or branched chained amyl groups;

each R^4 is selected from the group consisting of a saturated or unsaturated C_1–C_{22} alkyl, aryl, or cyclic alkyl group, and hydrogen;

each R^5 is n saturated or unsaturated C_1–C_{22} alkyl, aryl, or cyclic alkyl group;

each R^6 is a saturated or unsaturated C_1–C_{22}, alkyl, aryl, or cyclic alkyl group;

n is from 1 to 50;

Y is a hydrogen or a methyl group; and

wherein the amino group of the compounds of Formulas I to II, optionally, quaternized with $R^{10}X$ when R^{10} is a hydrogen, a C_1–C_6 alkyl group, a C_1–C_6 hydroxyl alkyl group, benzyl group; and X is an anion from a strong acid.

11. A composition for decreasing the physical or chemical degradation of surfaces, comprising:

(A) an effective amount for decreasing the physical or chemical degradation of surfaces, of the antioxidant compound of claim 1; and

(B) from about 25% to about 95%, by weight of the composition, of a carrier material.

5,543,084

ELECTROCOATING COMPOSITIONS

Patrick J. Kinlen, Fenton, and Robert E. W. Jansson, Chesterfield, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 393,128, Feb. 21, 1995. This application Jun. 6, 1995, Ser. No. 469,483

Int. Cl.[6] H01B *1/12*

U.S. Cl. 252—500 5 Claims

1. A composition for forming a cathodically electrodepositable coating comprising water and a cathodically electrodepositable mixture of a cationic intrinsically insulative polymer (IIP) and an organic acid salt of an intrinsically conductive polymer (ICP).

5,543,085

THICKENED NAIL POLISH REMOVER

Philip E. Miner, Newtown, Conn., assignor to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Filed Mar. 24, 1995, Ser. No. 410,173

Int. Cl.[6] A61K *7/047;* C11D *1/62;3/37;3/43*

U.S. Cl. 510—118 3 Claims

1. A polish-lacquer removing composition comprising:

(i) from about 50 to about 85% by weight of a volatile solvent having 2 to 10 carbon atoms and exhibiting a vapor pressure of more than 0.1 mm at 20° C.;

(ii) a thickening agent present in an effective amount to provide the composition with a viscosity ranging between 250 and 10,000 mPa -sec measured at 10 sec^{-1} on a Haake CV 20 Rheometer; and

(iii) 2-ethylhexyl alkyl ammonium methosulfate present in an effective amount to raise conductivity of the composition to above 80 μmhos.

5,543,086

SQUARYLIUM DYESTUFFS AND COMPOSTIONS CONTAINING SAME

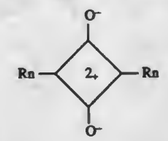
Robert C. Bertelson, Dayton, Ohio, and Robert A. Sallavanti, Dalton, Pa., assignors to Gentex Corporation, Carbondale, Pa.

Continuation-in-part of Ser. No. 84,486, Aug. 12, 1987, abandoned. This application Nov. 30, 1989, Ser. No. 443,605

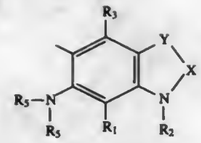
Int. Cl.[6] C09B *7/02;* G02B *5/22;* F21V *9/00;9/04*

U.S. Cl. 252—582 44 Claims

1. A composition of matter comprising a squarylium dyestuff compound soluble in an organic solvent and having the formula



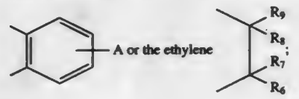
where each Rn is



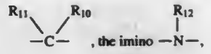
in which R_1 and R_3 are hydrogen, alkyl, alkoxy or halogen; R_2 and R_{12} are alkyl or aryl; R_4 is hydrogen or alkyl; R_5 is alkyl or



R being hydrogen or alkyl or aryl; X is the ortho-phenylene



Y is the methylene



, the imino



—O—, —S— or —Se—; A is hydrogen, alkyl, hydroxy, alkoxy, amino, monoalkylamino or dialkylamino; and R_6 through R_{11} are hydrogen, alkyl or aryl; provided that R_1 and R_3 may further be alkylene or alkylenoxy, that R_2 and R_4 through R_{12} may further be alkylene or methylidyne, that R_4 and R_5 and R may further be alkylene, that one or more pairs of said further R and R_1 through R_{12} each have a common bond and form a ring of five or six members, that R_9 and R_{10} or R_9 and R_{12} may also constitute a direct bond, and that if X is said ethylene then Y may also be a direct bond.

35. A composition as in claim 1 in which said compound is incorporated in an organic plastic material capable of transmitting visible light.

5,543,087

MULTI-FUNCTION FLUID TREATMENT SYSTEM AND METHOD FOR USING THE SAME

Sun Y. Lee, Arvada; Edward R. Lappin, Golden, and Joseph A. Shaffer, Lakewood, all of Colo., assignors to Coors Brewing Company, Golden, Colo.

Continuation-in-part of Ser. No. 168,954, Dec. 17, 1993, Pat. No. 5,387,339. This application Feb. 3, 1995, Ser. No. 383,248

Int. Cl.[6] B01F *3/04*

U.S. Cl. 261—87 **12 Claims**

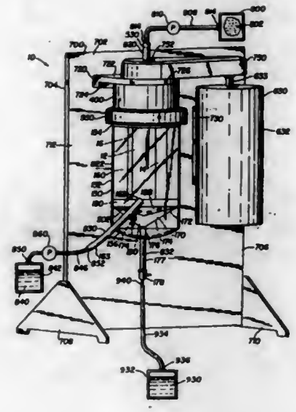
1. A method for fluid treatment comprising the steps of: providing a fluid treatment system comprising:

a fluid containment chamber;

a plurality of elongate cartridge units positioned within said fluid containment chamber, each of said cartridge units comprising a longitudinal axis, an upper end, a lower end, a tubular side wall portion comprised of a porous, gas-permeable material, and an interior region therein surrounded by said side wall portion, each of said cartridge units being rotatable around said longitudinal axis thereof; and

drive means operatively connected to all of said cartridge units for simultaneously rotating each of said cartridge units around said longitudinal axis thereof;

placing a fluid within said fluid containment chamber so that said fluid is in contact with and around all of said cartridge units in said fluid containment chamber;



introducing a supply of at least one gas into said interior region of each of said cartridge units within said fluid containment chamber; and

simultaneously rotating each of said cartridge units around said longitudinal axis thereof using said drive means during said introducing of said supply of said gas into said interior region of each of said cartridge units, said gas diffusing through said side wall portion of each of said cartridge units during said rotating thereof in order to rapidly and efficiently disperse said gas into and through said fluid within said fluid containment chamber to produce a liquid product having said gas dissolved therein, whereby said rotating of each of said cartridge units also prevents any extraneous solid matter within said fluid from adhering to said side wall portion of each of said cartridge units to ensure passage of said gas therethrough.

5,543,088

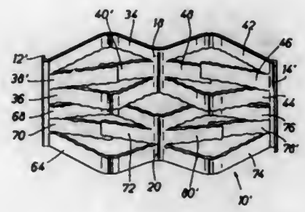
RANDOM PACKING

John P. Halbirt, Spring, Tex., assignor to Jaeger Products, Inc., Houston, Tex.

Filed Dec. 29, 1994, Ser. No. 365,939

Int. Cl.[6] B01F *3/04*

U.S. Cl. 261—94 **20 Claims**



1. A packing element for use in exchange apparatus wherein a plurality of such packing elements may be disposed and within which first and second fluids may interact, said packing element comprising a generally planar sheet of material forming a plurality of strips with each strip attached at both of its ends, and further comprising at least one strip being generally straight and other strips being generally bowed.

5,543,089

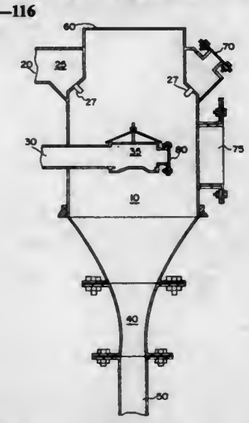
DEVICE FOR AERATION OF POLLUTED WATER

Antonio C. Pichardo, Calle de la Amargura No. 15, Lomas de la Herradura C.P. 52785 Huixquilvcan, Mexico

Continuation of Ser. No. 10,144, Jan. 28, 1993. This application Oct. 11, 1994, Ser. No. 320,567

Int. Cl.[6] C02F *7/00*

U.S. Cl. 261—116 **6 Claims**



1. An aeration device, comprising:

a tubular section defining a primary chamber, said tubular section having an open upper end forming an orifice for the admission of ambient air from the surrounding atmosphere, said tubular section having a lower peripheral edge;

means defining a principal distribution chamber for receiving a majority of a liquid to be aerated and that surrounds an exterior circumferential surface of a top portion of said tubular section, wherein said principal distribution chamber is positioned below the upper end of said tubular section;

one or more spray nozzles at peripheral locations about said principal distribution chamber for producing atomized sprays of liquid from said principal distribution chamber to the primary chamber at a location below said orifice;

a secondary distribution chamber positioned within said primary chamber and below the primary distribution chamber and connected to an opening into said primary chamber for receiving a lesser quantity of liquid to be aerated than is received by said peripheral chamber;

at least one high-speed nozzle for delivering accelerated sprays of liquid from said secondary distribution chamber to said primary chamber, said spray nozzles and said high-speed nozzles producing different volumes and velocities of liquid to form a homogeneous mix of air and liquid with entrapped air in a variety of sizes in the primary chamber;

a tapering section having an upper peripheral edge and a lower peripheral edge, wherein the upper peripheral edge of said tapering section is positioned below and sealingly connected to the lower peripheral edge of said tubular section, and wherein a diameter of the upper peripheral edge of said tapering section is larger than a diameter of the lower peripheral edge of said tapering section;

a venturi section including an upper peripheral edge and a lower peripheral edge, wherein the upper peripheral edge of said venturi section is positioned below and sealingly connected to the lower peripheral edge of the tapering section for accelerating the mix of air and liquid therefrom with the entrapped air and for creating a suction at the orifice for drawing air into said primary chamber;

a single drain pipe having an upper peripheral edge that is sealingly connected to the lower peripheral edge of said venturi section, said drain pipe having a lower open end, wherein said drain pipe constitutes the sole outlet of said device such that all of the liquid and air entering said device exits said device through said drain pipe.

5,543,090

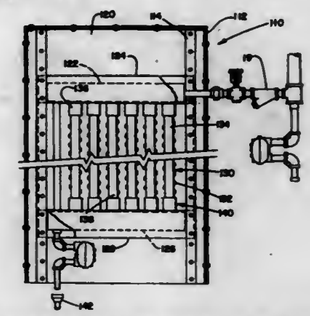
RAPID ABSORPTION STEAM HUMIDIFYING SYSTEM

Bernard W. Morton, Minnetonka; Kirk A. Nelson, Minneapolis, and Ricky D. Balmer, Chanhassen, all of Minn., assignors to Dri Steem Humidifier Company, Eden Prairie, Minn.

Continuation of Ser. No. 361,951, Dec. 22, 1994, abandoned, which is a continuation of Ser. No. 163,309, Dec. 8, 1993, Pat. No. 5,376,312, which is a continuation-in-part of Ser. No. 905,916, Jun. 29, 1992, Pat. No. 5,277,849, which is a continuation-in-part of Ser. No. 687,327, Apr. 18, 1991, Pat. No. 5,126,080. This application Sep. 11, 1995, Ser. No. 526,575

Int. Cl.[6] B01F *3/04*

U.S. Cl. 261—118 **4 Claims**



1. An apparatus for introducing steam to an airstream in an HVAC humidification system in a manner that will minimize leakage of condensate into the airstream, comprising:

a supply header that is adapted to be connected to a source of steam;

a plurality of steam dispersion tubes positioned downstream of said supply header for receiving steam from said supply header, each of said steam dispersion tubes having a first end that is communicated with said supply header, a second end, and steam escape means for permitting steam, but not condensate, to escape from said tube into an adjacent airstream;

a return header connected to said second ends of said steam dispersion tubes for collecting steam from said steam dispersion tubes as well as condensate that forms in said steam dispersion tubes, wherein condensate in said steam dispersion tube that is prevented from escaping into the airstream by said steam escape means will instead drain into said supply header or said return header, and further will tend to be pushed into said return header by steam flow within said dispersion tubes, said return header, supply header and dispersion tubes being structurally tied together in a prefabricated unit that can be installed in an HVAC system in a convenient, modular fashion; and

drain means for draining condensate from a lower end of said supply header and from a lower end of said return header.

5,543,091

FOAM PROCESS OF RESTORING DEPRESSIONS IN CARPET

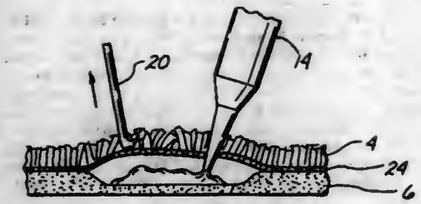
Jeffery R. Conley, 37 Via Brida, Rancho Santa Margarita, Calif. 92688

Filed Aug. 18, 1994, Ser. No. 292,431

Int. Cl.[6] B32B *35/00*

U.S. Cl. 264—36 **2 Claims**

1. A method of restoring depressions in an installed foam padding backing adjacent to an installed carpet, said method comprising introducing plastic liquid foam between the installed carpet and the padding in the area of the depression, wherein said foam expands to fill the area between the carpet and the depression in the foam padding thereby providing a level foam padding backing and said foam bonds to the foam padding thereby holding itself in place.

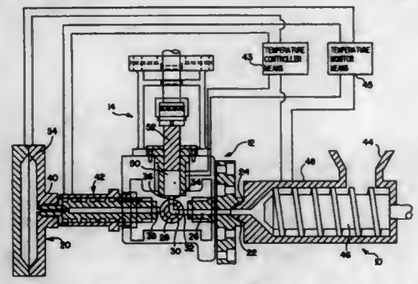


5,543,092

METHOD FOR EXERTING STRESS TENSOR TO MOLDING MATERIAL

Jean-Pierre Ibar, New Canaan, Conn., assignor to Solomat Partners, L.P., Stamford, Conn.

Continuation of Ser. No. 138,673, Oct. 18, 1993, abandoned.
This application Jun. 7, 1995, Ser. No. 472,611
Int. Cl.[6] B29C *45/76;45/18*
U.S. Cl. 264—40.1 **6 Claims**



1. A process for molding and modifying the properties of a molten, moldable material in an apparatus which comprises a mold defining a mold cavity and having an inlet through which molten, moldable material can pass into or through the mold cavity, at least one feeder for preparing a supply of a molten, moldable material wherein said feeder has an outlet through which molten, moldable material can pass and a means for expelling a molten, moldable material through the feeder's outlet, at least one accumulator spaced from said feeder and said mold wherein said accumulator has an inlet conduit through which molten, moldable material can pass from said feeder outlet to said accumulator, and an outlet conduit through which molten, moldable material can pass from said accumulator to said mold inlet, said accumulator also includes a means for expelling a molten, moldable material through the accumulator's outlet and a means for exerting a shear stress, compressive force or stress tensor on any molten, moldable material contained therein, a manifold interposed between said mold, feeder and accumulator, said manifold having flow channels therethrough which are in fluid communication with said mold inlet, feeder outlet, accumulator inlet, and accumulator outlet, a flow control means positioned within the manifold, said flow control means being designed to prevent the flow of molten, moldable material from the accumulator back into the feeder, and a means for controlling and monitoring the temperature of any molten, moldable material contained within the mold, said process comprising:

(a) preparing a molten, moldable material in said feeder,

(b) passing a predetermined amount of the molten, moldable material from said feeder outlet to said accumulator inlet through the said manifold to at least partially fill the accumulator,

(c) exerting a shear stress, compressive force or stress tensor on the molten, moldable material in accordance with a predetermined program while said molten, moldable material is contained within said accumulator,

(d) passing a predetermined amount of the molten, moldable material from said accumulator outlet to said mold inlet through the manifold flow channels to at least partially fill said mold cavity,

(e) controlling the temperature of the molten, moldable material contained within said mold cavity in accordance with a predetermined program while the shear stress, compressive force or stress tensor is being exerted thereon,

(f) solidifying the molten, moldable material contained within said mold cavity to form a molded product, and

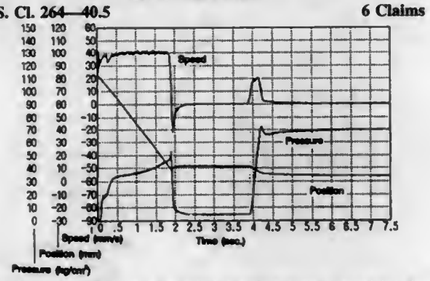
(g) removing the molded product from said mold cavity.

5,543,093

INJECTION MOLDING METHOD AND APPARATUS

Nobuyuki Nakamura; Masaaki Minamimura; Fumio Shiozawa, and Yoshitoshi Yamagiwa, all of Nagano-ken, Japan, assignors to Nissei Plastic Industrial Co., Ltd., Japan

Continuation of Ser. No. 33,028, Mar. 18, 1993, abandoned.
This application Feb. 17, 1995, Ser. No. 396,341
Claims priority, application Japan, Mar. 19, 1992, 4-092449
Int. Cl.[6] B29C *45/77*
U.S. Cl. 264—40.5 **6 Claims**



1. A method of injection-molding a molten resin, comprising the steps of:

injecting said molten resin into a cavity of an injection-molding die from an upstream side to a downstream side while controlling an injection speed and an injection pressure of said molten resin;

releasing the injection pressure of said molten resin in said cavity by setting the pressure of said molten resin to a reference value below a retaining value pressure when said cavity is filled with said molten resin;

maintaining the pressure of said molten resin at said reference value for a predetermined time;

allowing a downstream portion of said molten resin to solidify during said predetermined time, while said molten resin on said upstream side remains flowable;

increasing the pressure of said molten resin to said retaining value; and

allowing said molten resin on said upstream side to harden at said retaining value pressure.

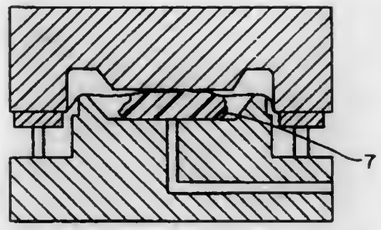
5,543,094

METHOD OF FORMING A MULTILAYER MOLDED ARTICLE

Takahisa Hara, Kawanishi; Masahito Matsumoto, Osaka; Nobuhiro Usui, Osaka, and Shigeyoshi Matubara, Osaka, all of, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 969,439, Oct. 30, 1992, abandoned.
This application Feb. 27, 1995, Ser. No. 395,190
Claims priority, application Japan, Oct. 31, 1991, 3-286298
Int. Cl.[6] B29C *44/14;45/14;70/48*
U.S. Cl. 264—46.4 **10 Claims**

1. A method for producing a multilayer molded article comprising steps of:



placing a skin material between unclosed upper and lower molds;

supplying a mass of a molten thermoplastic resin; and

closing the molds to integrate the skin material and the thermoplastic resin, wherein the skin material is made of a fabric which is lined with a nonwoven fabric having a weight of at least 50 g/m^2 and an elongation at break of 20% to 80%.

5,543,095

PROCESS FOR PRODUCING SHAPED BODIES HAVING THERMALLY INSULATING PROPERTIES

Hans Katzer; Günter Kratel, both of Durach, and Beate Biller, Kempten, all of, Germany, assignors to Wacker-Chemie GMBH, München, Germany

Filed Jul. 14, 1995, Ser. No. 274,898
Claims priority, application Germany, Jul. 15, 1993, 43 23 778.9
Int. Cl.[6] B29C *43/02*
U.S. Cl. 264—063 **11 Claims**

1. A process for producing shaped bodies having thermally insulating properties and based on foamed alkali metal silicate particles comprising silicon dioxide (SiO_2) and alkali metal oxide (M_2O) (M is an alkali metal) in a molar ratio of from 2 to 4.5 (SiO_2:M_2O), comprising:

(a) mixing 100 parts by weight of the foamed alkali metal silicate particles with an aqueous solution of monoaluminum phosphate ($Al(H_2PO_4)_3$) in such a way that the molar ratio of Si:Al in the mixture ranges from 1 to 60;

(b) placing the mixture in a preselected mold and compacting the mixture thereby reducing its volume to from 20% to 80% to give a shaped body;

(c) heating the shaped body to a temperature of from 100° C. to 500° C. until chemical reaction bonding between the alkali metal silicate particles and the monoaluminum phosphate has taken place.

5,543,096

METHOD FOR PRODUCING ACTIVATED CARBON BODIES HAVING SILICONE RESIN BINDER

Shy-Hsien Wu, Horseheads, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Sep. 12, 1994, Ser. No. 304,533
Int. Cl.[6] C04B *35/64*
U.S. Cl. 264—63 **18 Claims**

1. A method for making an activated carbon body, the method comprising:

a) forming a wet mixture comprising in percent by weight based on activated carbon,

about 2% to 10% organic binder selected from the group consisting of cellulose ethers, cellulose ether derivatives, and combinations thereof,

0 to about 4% of polyvinyl alcohol,

about 5% to 40% bentonite clay,

about 10% to 50% silicone resin,

vehicle having a boiling point of at least about 100° C.,

and the balance of the mixture being activated carbon particles;

b) forming said mixture into a green body;

c) drying the green body; and

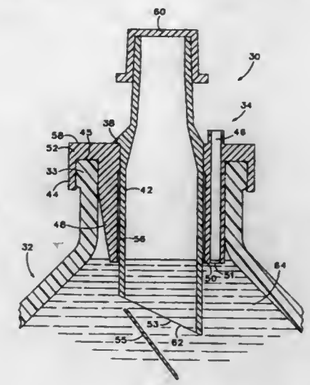
d) heat-treating the dried body to form the activated carbon body.

5,543,097

METHODS FOR PREPARING POLYACRYLAMIDE GELS FOR ELECTROPHORETIC ANALYSIS

Ta-Yun Fang, 13755 NW. Burton St., Portland, Oreg. 97229

Filed Mar. 9, 1994, Ser. No. 209,632
Int. Cl.[6] G01N *27/26;* **B29C** *39/02*
U.S. Cl. 264—102 **15 Claims**



1. A method for producing a polyacrylamide gel sample for use in electrophoretic analysis, comprising

providing a container comprising a bottle including a first storage compartment for storing an acrylamide solution, and a cap assembly located atop said bottle including a second storage compartment for storing chemical materials for producing a polyacrylamide gel;

introducing the acrylamide solution into the first storage compartment and the chemical materials into the second storage compartment;

storing the chemical materials in said second storage compartment and said acrylamide solution in the first storage compartment for subsequently producing said acrylamide gel solution in situ within the confines of said container;

subsequently opening said second storage compartment and introducing said chemical materials contained therein into said bottle;

intermixing said chemical materials and said acrylamide solution in said bottle thereby producing said acrylamide gel solution;

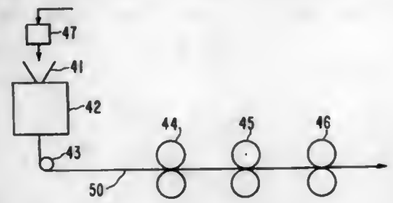
providing means defining a leak-proof formation chamber for casting polyacrylamide gel samples from said acrylamide gel solution, said leak-proof formation chamber comprising a pair of plates each having a pair of major surfaces and a easily-alignable spacer member, said plates being positioned so that a major surface of each plate is adjacent to the other with the spacer member located between said plates thereby defining said formation chamber for casting polyacrylamide gel samples; introducing said acrylamide gel solution into said formation chamber; and

forming said polyacrylamide gel sample in said formation chamber in an intact condition for use in electrophoretic analysis.

5,543,098
IONTOPHORETIC DELIVERY DEVICE AND METHOD OF MAKING SAME

Robert M. Myers, Stanford, and Felix A. Landrau, San Jose, both of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Continuation of Ser. No. 667,714, Mar. 11, 1991, abandoned. This application Feb. 17, 1994, Ser. No. 197,665
Int. Cl.[6] C04B *35/00*
U.S. Cl. 264—104 **19 Claims**



1. A method of making an electrode assembly for an electrically powered iontophoretic delivery device, comprising:

homogeneously blending a mixture of about 5 to 50 vol % of a conductive filler, from about 1 to 50 vol % of a therapeutic agent to be iontophoretically delivered in order to obtain a therapeutic effect and the remainder a polymeric matrix; and forming the agent-containing blended mixture into a sheet having a predetermined thickness, wherein the filler forms an electrically conductive network through the entire thickness of the matrix.

5,543,099
PROCESS TO MANUFACTURE MICRONIZED NIFEDIPINE GRANULES FOR SUSTAINED RELEASE MEDICAMENTS

Guohua Zhang, Parsippany, and Prasad Pinnamaraju, Edison, both of N.J., assignors to Hallmark Pharmaceutical, Inc., Somerset, N.J.

Filed Sep. 29, 1994, Ser. No. 314,727
Int. Cl.[6] B29B *9/16*
U.S. Cl. 264—115 **21 Claims**

1. A process to manufacture sustained release tablets containing nifedipine comprising the steps of:

wet granulating at nifedipine in the presence of at least one inactive substance to form a first portion of granules;

micronization of said first portion of granules to form micro-granules;

separately granulating at least one inactive substance to form a second portion of inactive granules separate from said first portion of granules;

combining said micro-granules and said second portion of inactive granules to form a mixture; and

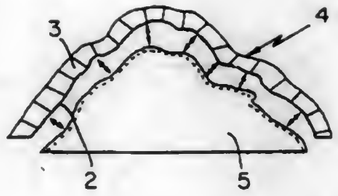
compressing said mixture to form tablets.

5,543,100
METHOD FOR MAKING ARTIFICAL ROCKS, IN PARTICULAR LARGE-SCALE ROCK IMITATIONS

Gorden Klüh, Schweinfurt, and Sven Precht, Oberwerrn, both of, Germany, assignors to FA. Feisdekor Kluh und Precht, Dittenbrunn, Germany

Continuation of Ser. No. 983,439, Dec. 2, 1992, Pat. No. 5,443,774. This application Mar. 14, 1996, Ser. No. 403,462
Int. Cl.[6] B29C *33/40;33/56;41/20*
U.S. Cl. 264—130 **6 Claims**

1. Method for manufacturing artificial rocks comprising the steps of:



(a) making a malleable-plastic reproduction negative from a natural-rock object,

(b) removing the reproduction from the natural-rock object and moving the reproduction into a work position after hardening of said reproduction for use as a work mold,

(c) adding a parting compound and a hardening plastic into the work mold and coating the work mold with synthetic resin to make a positive in the form of a hardened hollow artificial rock blank,

(d) removing the hardened artificial-rock blank from the work mold and depositing a coat of synthetic resin onto the hardened artificial-rock blank, and

(e) creating an artificial rock surface by depositing and embedding fine-grain natural send onto and into the still moist coat of synthetic resin to imitate the color and structure of natural rocks, and thereupon drying and hardening the coat of synthetic resin with the incorporated natural sand.

5,543,101
PROCESS OF MAKING CELLULOSE FIBRES

Hartmut Riif, Vöcklabruck; Markus Eibl, Lambach, and Raimnnd Jurkovic, Lenzing, all of, Austria, assignors to Lenzing Aktiengeselischaft, Austria

PCT No. PCT/AT94/00087, § 371 Date Jan. 4, 1995, § 102(e) Date Jan. 4, 1995, PCT Pub. No. WO95/02082, PCT Pub. Date Jan. 19, 1995
PCT Filed Jul. 8, 1994, Ser. No. 367,260
Claims priority, application Austria, Jul. 8, 1993, 1348/93
Int. Cl.[6] D01F *2/02*
U.S. Cl. 264—187 **7 Claims**

1. A process for the production of cellulose fibres comprising the steps of:

extruding a solution of cellulose in a tertiary amine-oxide through spinning holes of a spinneret to form cellulose filaments;

conducting the extruded cellulose filaments across an air gap of greater than 30 mm; and

introducing the cellulose filaments into a precipitate bath, wherein the process is carried out in a way that the mathematical expression

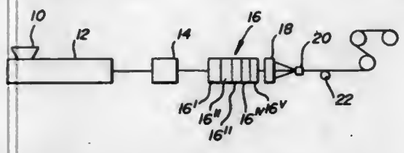
$$51.4+0.033\times D+1937\times M^2-7.18\times T-0.094\times L-2.50\times F+0.045\times F^2$$

does not exceed the number 10, whereby D is the spinning hole diameter in μm, M is the dope output per hole in g/min, T is the titer of the individual filament in dtex, L is the length of the air gap in mm and F is the humidity of the air in the air gap in units of grams of water/kg of air, wherein said cellulose fibres are formed.

5,543,102
MELT EXTRUSION PROCESS

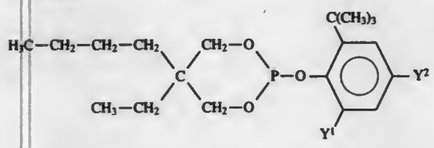
James A. Mabood, Morgantown, W. Va., assignor to General Electric Company, Pittsfield, Mass.

Continuation-in-part of Ser. No. 307,545, Sep. 16, 1994, Pat. No. 5,424,348, which is a continuation of Ser. No. 96,530, Jul. 22, 1993, abandoned. This application Dec. 21, 1994, Ser. No. 361,259
Int. Cl.[6] D01F *1/02*
U.S. Cl. 264—211 **12 Claims**



1. An extrusion process for making plastic articles, said process comprising:

a) forming a polyolefin composition comprising a polyolefin resin, and a thermal stabilizing amount of a phosphite of the formula:



wherein Y^1 is an alkyl and Y^2 is selected from tert-butyl and sec-butyl,

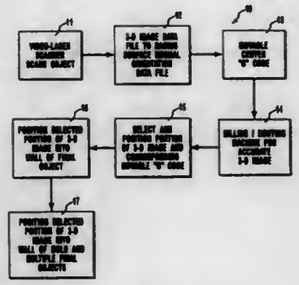
b) melt extruding said composition through a filtration system to produce a filtered polyolefin melt stream,

c) passing said melt stream through a die to make the plastic article.

5,543,103
PROCESS OF SURFACE SHAPING

S. David Hogan, 1882 SW. Temple, No. 150B, Salt Lake City, Utah 84115, and David A. Parker, 168 N. Moor La., Orem, Utah 84057

Filed May 31, 1994, Ser. No. 251,097
Int. Cl.[6] B23Q *33/00*
U.S. Cl. 264—219 **13 Claims**



1. A process of surface shaping that incorporates at least a portion of an accurately formed three-dimensional image as an integral component of a wall surface of an object, comprising the steps of

(a) forming an accurately depicted three-dimensional image of a first object using a method of moving center points with radii extending therefrom within a sphere enclosing said first object and operation of shaping tools to shape normal to said radii;

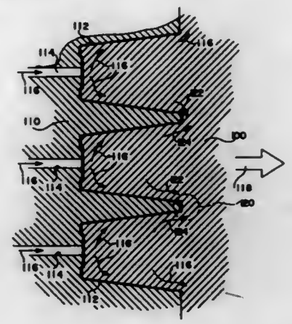
(b) selecting a portion of said accurately depicted three-dimensional image to become an integral component of a second object wall; and

(c) forming said selected portion of said accurately depicted three-dimensional image into an object wall of said second object, as an integral part of said wall.

5,543,104
METHOD FOR MOLDING A MULTI-PACK CONTAINER ASSEMBLY

James T. Stratford, Basye, Va.; Alan H. Schoonveld, and David A. Weaver, both of Iowa Falls, Iowa, assignors to Berry Iowa Corporation, Iowa Falls, Iowa

Division of Ser. No. 135,255, Oct. 12, 1993, Pat. No. 5,409,127. This application Dec. 16, 1994, Ser. No. 357,665
Int. Cl.[6] B29C *33/42;45/18*
U.S. Cl. 264—328.8 **27 Claims**



1. A method of injection-molding a multi-pack container assembly having at least four containers that are joined together by a cross or plus shaped frangible web, the method comprising the steps of

providing at least two mold members at least one of which is a male mold member and at least one of which is female mold member,

positioning the at least one male mold member in the at least one female mold member to define between the said at least one male and female mold members at least four container cavities with a cross or plus shaped frangible web cavity extending between the container cavities,

injecting a plastics material into the container cavities so that flow paths of the plastics material fill the container cavities and meet from different directions to fill the cross or plus shaped frangible web so as to mold the plastics material into a unitary element defining the at least four containers and the cross or plus shaped frangible web in the cavity, and

removing the unitary element defining the at least four containers and the cross or plus shaped frangible web from the cavities between the male and female mold members after the injecting step.

5,543,105

PRESSURE DIECASTING OR INJECTION MOLDING MACHINE

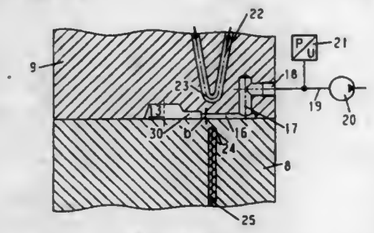
Friedrich Stummer, Fellbach, and Rolf Frey, Winterbach, both of, Germany, assignors to Maschinenfabrik Mueller-Weingarten AG, Weingarten, Germany

Filed Sep. 30, 1994, Ser. No. 315,346

Claims priority, application Germany, Oct. 16, 1993, 43 35 365.7

Int. Cl.[6] B29C *45/76;45/02*

U.S. Cl. 264—407 18 Claims



Section II-II

1. A method of detecting a melt front of melt in an injection molding machine which includes a mold comprised of a fixed mold half and a movable mold half cooperating with the fixed mold half for defining a mold cavity of the mold and a gate channel leading to the mold cavity, the method comprising the steps of:

actuating an injection piston operatively associated with the mold cavity for pressing a melt via the gate channel upward into the mold cavity; and

detecting a melt front of the melt rising upstream of the mold cavity in a conveying direction of the melt at a predetermined detection height by utilizing a sensor device which comprises walls defining a measurement gap disposed at the detection height and extending transversely to the conveying direction of the melt, the step of detecting including the steps of:

effecting at least a partial penetration of the measurement gap by a fraction of the melt from the melt front when the melt front rises toward the mold cavity; and

generating a measurement signal in response to a presence of the fraction of the melt in the measurement gap without directly contacting the melt for controlling predetermined parameters of the machine.

5,543,106

METHOD OF POLARIZING PIEZOELECTRIC CERAMIC SUBSTRATE

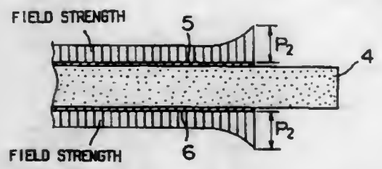
Mikio Nakashima, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Dec. 28, 1994, Ser. No. 364,963

Claims priority, application Japan, Dec. 29, 1993, 5-352503

Int. Cl.[6] B28B *11/00*

U.S. Cl. 264—430 8 Claims



1. A method of polarizing a piezoelectric ceramic substrate for forming a plurality of polarized portions therein, said method comprising the steps of:

providing a plurality of first polarization electrodes on a front major surface of said piezoelectric ceramic substrate at positions corresponding to said polarized portions and providing a first connecting electrode on said front major surface of said piezoelectric ceramic substrate for connecting said first polarization electrodes;

providing a plurality of second polarization electrodes on a back major surface of said piezoelectric ceramic substrate at positions opposing to said first polarization electrodes and providing a second connecting electrode on said back major surface of said piezoelectric ceramic substrate at positions not opposing said first connecting electrode for connecting said second polarization electrodes; and

applying a voltage across said first polarization electrodes and said second polarization electrodes for polarizing said piezoelectric ceramic substrate.

5,543,107

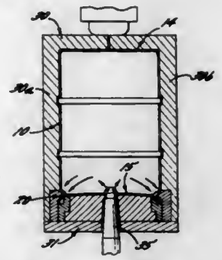
BLOW MOLDING A CLOSED PLASTIC DRUM INCLUDING TWO SPEED COMPRESSION MOLDING OF AN INTEGRAL HANDLING RING

John H. Malik, Naperville, Ill.; John J. Mikula, Kennesaw, Ga., and Robert A. Julien, Naperville, Ill., assignors to Sonoco Products Company, Hartsville, S.C.

Division of Ser. No. 312710, Sep. 27, 1994. This application Mar. 9, 1995, Ser. No. 401,466

Int. Cl.[6] B29C *49/18;49/30;49/56*

U.S. Cl. 264—529 13 Claims



1. Method of molding a closed one-piece plastic drum having an integral handling ring at a head end thereof and comprising the steps of:

providing a blow mold having an interior surface of the desired dimensions and shape of the drum to be molded which includes a cylindrical body portion and a head portion including a top on one end of the body portion and connected thereto by a transition area, and having an articulating mold section to form by compression a solid handling ring integrally extending axially and radially outward from the transition area of the drum;

providing a heated plastic parison in the mold;

performing a first blowing operation of the parison, while the mold articulating head section is in open position a predetermined axial distance from a closed position, under predetermined pressure to completely expand the parison into the shape of the inside surface of the mold and to completely fill the open articulating section and form an open handling ring;

performing a second blowing operation under predetermined pressure, less than the predetermined pressure of the first blowing operation, to stabilize the expanded parison inside the mold;

closing the mold articulating section, during the second blowing operation, in first and second sequences for predetermined different distances at predetermined different speeds while compressing the blow-molded open handling ring into a solid handling ring integral with the drum and forming with extruded plastic an inside curved surface on the transition area of the drum with at least one radius so that no acute angles are formed between inside surfaces of the top, transition area and body portion; and

performing a third blowing operation after the mold articulating section is completely closed at a predetermined pressure higher than the predetermined pressures of the first and second blowing operations for a sufficient time to allow cooling of the molded plastic drum.

5,543,108

METHOD OF MAKING MICROSTRUCTURED BODIES OF PLASTIC MATERIAL

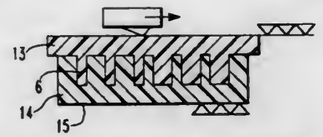
Walter Bacher, Stutensee; Hans Biedermann, Bruchsal; Heinz Dingreiter, Forst, and Helmut Kalb, Eggenstein, all of, Germany, assignors to ForschungszentrumKarlsruhe GmbH, Karlsruhe, and Bürkert GmbH, Tugelfingen, both of, Germany

Filed Jun. 9, 1994, Ser. No. 257,643

Claims priority, application Germany, Jul. 11, 1992, 42 22 856.5; WIPO, Jun. 21, 1993, PCT/EP93/01571

Int. Cl.[6] B32B *31/00*

U.S. Cl. 264—553 8 Claims



1. A method of making microstructure bodies of plastic material comprising the steps of:

a) providing a base body having a first side representing a first reference plane and a second side which is microstructured such that plastic material microstructures project from a structure base of said base body, which structure base extends parallel to said reference plane;

b) coating said base body at said second side thereof with a marker layer;

c) placing a layer of a second material onto said marker layer on said second side of said base body such that said second material layer has an exposed surface;

d) machining the exposed surface of said second material layer overlaying the base body to provide a second reference plane parallel to said first reference plane;

e) machining said first side of said base body parallel to said second reference plane to remove a portion of said base body at least up to said structure base; and

f) removing said second material selectively with respect to said plastic material by dissolving said marker layer and said second material layer to thereby form microstructure bodies of plastic material.

5,543,109

HEAT RESISTANT HIGH CHROMIUM AUSTENITIC ALLOY EXCELLENT IN STRENGTH AT ELEVATED TEMPERATURES

Hiroyuki Semba, and Yoshiatsu Sawaragi, both of Nishinomiya, Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

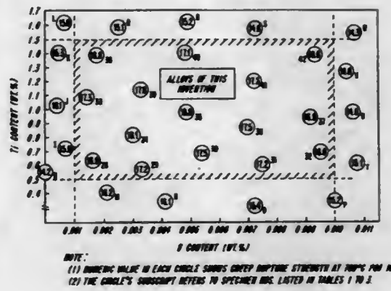
Filed Jan. 31, 1995, Ser. No. 381,419

Claims priority, application Japan, Jan. 31, 1994, 6-009366

Int. Cl.[6] C22C *19/00*

U.S. Cl. 420—446 7 Claims

1. A heat resistant high chromium austenitic alloy excellent in high temperature strength consisting essentially of, in weight percent, from more than 0.02% to 0.10% C, not more than 1.0% Si, not more than 2.0% Mn, 28 to 38% Cr, 35 to 60% Ni, from more than 0.5% to 1.5% Ti, not more than 0.05% N, 0.01 to 0.3% Al, 0.001 to 0.01% B, 0 to 0.1% Zr, 0 to 1.0% Nb, one or both of 0.5 to 3.0% Mo and 1.0 to 6.0% W, and 0.001 to 0.05% Ca, and the balance being Fe and incidental impurities.



5,543,110

TALL OIL DEODORIZATION PROCESS

Fredricke S. Starr, Johns Island; Joseph M. Wong, Mt. Pleasant, both of S.C., and Norman L. Kennedy, Lakeland, Fla., assignors to Westvaco Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 239,744, May 9, 1994, abandoned, which is a continuation-in-part of Ser. No. 31,826, Mar. 16, 1993, abandoned. This application Jan. 26, 1995, Ser. No. 378,474

Int. Cl.[6] A61L *9/015*

U.S. Cl. 422—5 19 Claims

1. A process for deodorizing a tall oil comprising the step of treating the tall oil with a volatile alkaline solution under conditions of a stem sparge.

5,543,111

METHOD AND APPARATUS FOR RENDERING MEDICAL MATERIALS SAFE

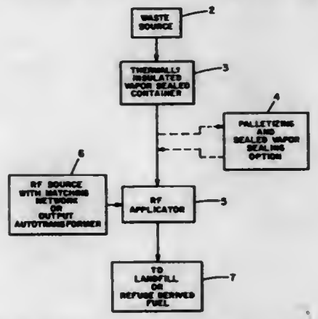
Jack E. Bridges, Park Ridge; Gaggilam C. Sresty, Burbank; Jeffrey S. Held, Chicago; James W. Sharp, Arlington Heights, and Thomas J. Bajzek, Woodale, all of Ill., assignors to IIT Research Institute, Chicago, Ill.

Continuation of Ser. No. 193,724, Feb. 9, 1994, abandoned, which is a continuation of Ser. No. 77,046, Jun. 15, 1993, abandoned, which is a continuation of Ser. No. 549,576, Jul. 6, 1990, abandoned. This application Aug. 12, 1994, Ser. No. 290,002

Int. Cl.[6] A61L *2/08*

U.S. Cl. 422—22 10 Claims

1. A method of disinfecting and processing dielectrically heterogeneous bulk medical waste to inactivate pathogens, comprising the steps of:



comminuting the dielectrically heterogeneous medical waste into comminuted dielectrically heterogeneous medical waste particles having a predetermined size;

placing the comminuted dielectrically heterogeneous medical waste particles in a bulk dielectric processing container;

conveying the bulk dielectric processing container with the comminuted dielectrically heterogeneous medical waste particles therein through an Opening and into a treatment region of a treatment chamber; and

applying within the treatment region a transverse mode radio-frequency electric field from a pair of parallel plates, the transverse mode radio frequency electric field having a frequency in the range of about 3 megahertz to about 80 megahertz, the transverse mode radio frequency electric field heating the comminuted dielectrically heterogeneous medical waste particles to a temperature of 85° C. to 125° C., the transverse mode radio-frequency electric field substantially penetrating the comminuted dielectrically heterogeneous bulk medical waste particles and exhibiting a square of the electric field strength that varies by no more than a factor of two in the treatment region to produce disinfected comminuted dielectrically heterogeneous medical waste particles without substantially producing ionized gas.

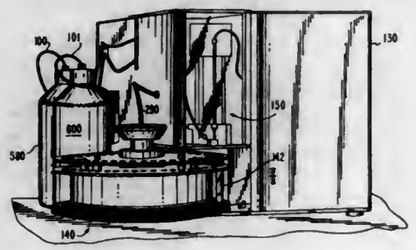
5,543,112

APPARATUS AND METHODS FOR CARRYING OUT ELECTROCHEMILUMINESCENCE TEST MEASUREMENTS

Ali Ghead, Bethesda; Jonathan K. Leland, Silver Spring, both of Md.; Glenn D. Zoski, Vienna; Jack E. Goodman, Arlington, both of Va., and John T. Grosser, Derry, N.H., assignors to IGEN, Inc., Gaithersberg, Md.

Division of Ser. No. 61,676, May 14, 1993, Pat. No. 5,466,416.
This application Jun. 5, 1995, Ser. No. 462,822
Int. Cl.[6] G01N *21/76*
U.S. Cl. 422—52 **9 Claims**

1. An apparatus for use in carrying out electrochemiluminescence test measurements, comprising:



a rotatable support member having a plurality of locations thereon for each supporting a corresponding one of a plurality of fluid containers at least some of which contain electrochemiluminescent fluid samples;

an electrochemiluminescence testing means for measuring electrochemiluminescence of said fluid sample;

a motor system operatively coupled with the rotatable support member to rotate the same to position each of the plurality of fluid containers at a predetermined sampling position in a predetermined sequence; and

a fluid sampling system coupled with the electrochemiluminescence testing means for successively transferring electrochemiluminescent test samples from the plurality of fluid containers to the testing means as each is transported to the predetermined sampling position;

the rotatable support member including a first drive member having an outer peripheral surface;

the motor system having a second drive member coupled with the outer peripheral surface of the first drive member to drive the first drive member for rotating the rotatable support member.

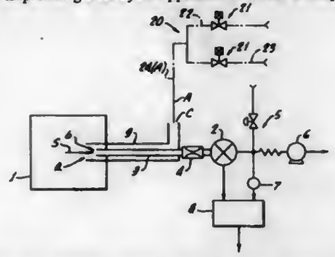
5,543,113

GAS ANALYZING APPARATUS

Hideki Koike, Chikuzenda-machi, and Kenji Takeda, Kyoto, both of, Japan, assignors to Horiba, Ltd., Japan

Continuation of Ser. No. 33,088, Mar. 16, 1993, abandoned.
This application Sep. 27, 1994, Ser. No. 313,558
Claims priority, application Japan, Mar. 21, 1992, 4-023885
U; Mar. 21, 1992, 4-023886 U
Int. Cl.[6] G01N *7/00;30/02*
U.S. Cl. 422—83 **10 Claims**

1. An improved gas analyzer apparatus in which a sample gas is



introduced in a laminar condition into a pressure-sensitive analysis cell of the gas analyzer, the gas analyzer apparatus comprising:,

a pressure-sensitive analysis cell;

a gas-introducing pipe conveying a sample gas to said analysis cell in a laminar condition, said gas-introducing pipe including an exhaust gas inlet port; and

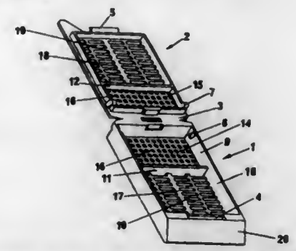
a supply pipe supplying said analyzer cell with a calibration gas, said supply pipe including a calibration gas outlet port projecting beyond said exhaust gas inlet port in a direction opposite said analysis cell and around said exhaust gas inlet port such that said gas-introducing pipe and said supply pipe form a double pipe, said exhaust gas inlet port being positioned at a depth within said supply pipe relative to said calibration gas outlet port.

5,543,114

UNITARY BIOLOGICAL SPECIMEN PROCESSING APPARATUS

Peter P. Dudek, Jonstrupvej 269E, Vaerloese, Denmark

Filed Jan. 27, 1995, Ser. No. 378,827
Claims priority, application Denmark, Jan. 31, 1994, 133/94
Int. Cl.[6] B65D *51/22*
U.S. Cl. 422—102 **3 Claims**



1. A unitary biological specimen processing apparatus with a bottom and a lid for use in processing multiple tissues of different sizes of biological or medical specimens for microscopy, whereby the plate part of the lid and the plate part of the bottom in the apparatus are perforated and in the form of strainers, and the apparatus in its closed condition is divided by one or more opposing chamber walls on said bottom and lid providing at least two mutually separated chambers formed by mating of said opposing chamber walls; wherein the strainer perforations in one of the mutually separated chambers is a different dimension to the strainer perforations in the other mutually separated chamber and the strainer perforations in the plate part of the lid and the plate part of the bottom in each chamber are of the same dimension.

5,543,115

SPECIMEN HANDLING DEVICE

Fuminari Karakawa, Kurume, Japan, assignor to Mizuho USA, Inc., San Diego, Calif.

Filed Jul. 17, 1995, Ser. No. 502,883
Int. Cl.[6] B01L *11/00;* **G01N** *33/72*
U.S. Cl. 422—102 **11 Claims**



1. A specimen handling device comprising:

a sample storage means, a sample collection means, a filter means, a sealable cap and an applicator means;

said sample storage means having a length longer than said sample collection means having one opening containing a sealing means upon which attaches said sealable cap;

said sample collection means comprising an elongated shaft with a grooved sample collection means at one end and a cap end attached to said sealable cap;

said grooved sample collection means containing a plurality of grooves extending parallel to and along the length of said elongated shaft;

said sealable cap comprising a hollow interior through which sample flows from said sample storage means to said applicator means;

said filter means contained entirely within said sealable cap through which liquid passes to flow from said sample storage means to said applicator means;

said applicator means comprising a removable applicator tip with a hollow core where displacement of said applicator tip creates an opening on the top of said sealable cap.

5,543,116

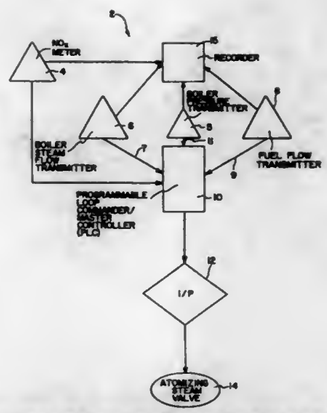
METHOD FOR REDUCING NO_X USING ATOMIZING STEAM INJECTION CONTROL

Gary S. Bernstein, Wadsworth, and Thomas K. Milo, Akron, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Jul. 15, 1994, Ser. No. 275,870
Int. Cl.[6] B01D *53/56*
U.S. Cl. 422—111 **7 Claims**

1. An apparatus for controlling NO_x, comprising:

means for establishing a control curve for a combustion source indicating NO_x levels based oh atomizing steam injection flow rates, firing rates, and fuel flow rates provided to at least one burner of the combustion source;



means for measuring combustion source firing rate and establishing a signal indicative thereof;

means for measuring atomizing steam injection flow rate to each burner and establishing a signal indicative thereof;

means for measuring fuel flow rate to each burner and establishing a signal indicative thereof;

means for measuring NO_x level at the combustion source flue gas outlet and establishing a signal indicative thereof;

means for determining a NO_x level for the combustion source based on the fuel flow rate signal, atomizing steam injection flow rate signal, the measured NO_x level signal, and the combustion source firing rate signal; and

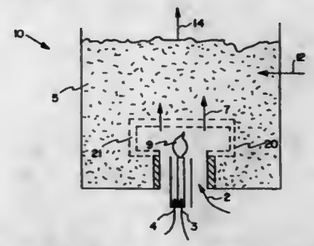
means for adding atomized steam to each burner in communication with and responsive to said determining means to lower the NO_x level according to the control curve.

5,543,117

SYSTEM AND METHOD FOR HEATING AND GASIFICATION OF RESIDUAL WASTE LIQUOR

John B. Kitto, Jr., North Canton, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Division of Ser. No. 202,330, Feb. 28, 1994, Pat. No. 5,455,011.
This application Apr. 11, 1995, Ser. No. 419,869
Int. Cl.[6] B01J *19/00;8/24*
U.S. Cl. 422—145 **8 Claims**



1. A system for gasifying a residual waste liquor, the system comprising:

a fluid bed of material for gasifying a residual waste liquor;

a source of residual waste liquor with means for providing the residual waste liquor to the fluid bed;

at least one injector for producing steam and a combustion product mixture for providing a fluidizing medium to said fluid bed, each of the at least one injectors having a housing located within the fluid bed, the housing having an interior

and at least one hole, each of the at least one injectors having means for providing air and means for providing fuel to the interior of the housing, each of the at least one injectors having burning means for burning the air and the fuel within the interior of the housing for producing the combustion product, each of the at least one injectors further having means for supplying steam to the interior of the housing for mixing with the combustion product within the interior of the housing to form the steam and combustion product mixture which exits the housing through the at last one hole for heating and fluidizing the fluid bed.

5,543,118

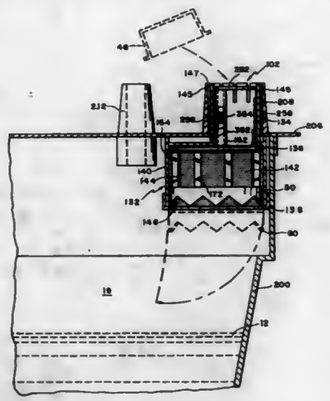
WASTE TREATMENT MATERIAL DISPENSING CANISTER

Jack W. Kaufman, 357 Frankel Blvd., Merrick, N.Y. 11566

Continuation-in-part of Ser. No. 507,966, Apr. 11, 1990, abandoned, which is a continuation-in-part of Ser. No. 215,370, Jul. 5, 1988, abandoned, which is a continuation-in-part of Ser. No. 105,875, Oct. 7, 1987, abandoned. This application Sep. 15, 1994, Ser. No. 306,363

Int. Cl.[6] A61L *2/18;* **A61M** *1/00*

U.S. Cl. 422—292 **8 Claims**



1. A closed body waste fluids collection container for use in the disposal of waste fluids drained from a body cavity of a patient, said container having inlet and outlet ports disposed thereon, comprising:

(a) a collecting compartment for collecting body waste fluids drained from a patient;

(b) a composition disposed on said container, said composition for treating body waste fluids;

(c) a frangible separation interposed between said composition and said collecting compartment, said frangible separation retaining said composition; and,

(d) an actuator for penetrating said frangible separation, said composition discharging into said collecting compartment upon actuation of said actuator.

5,543,119

CASSETTE FOR TREATING MEDICAL INSTRUMENTS

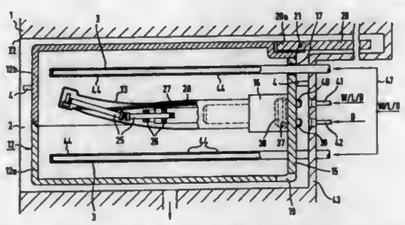
Ralf Sutter, Weinheim; Lutz Beerstecher, Bensheim; David Hruza, Bad Waldsee; Raimund Stetter-Alle, Ulm, and Karl Trackl, Langenau, all of, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jul. 13, 1994, Ser. No. 274,333

Claims priority, application Germany, Jul. 15, 1993, 93 10 601.7 U; European Pat. Off., Apr. 26, 1994, 94106518

Int. Cl.[6] A61L *2/00;9/00*

U.S. Cl. 422—299 **14 Claims**



1. In a cassette having an interior for receiving medical instruments including dental instruments for purposes of hygienic treatment, said cassette being placeable in a pressure-tight closable chamber of a treatment apparatus wherein the interior of the cassette is subjected to a treatment process, the improvements comprising the cassette having at least one adapter for holding at least one instrument, said adapter comprising line channels for delivering treatment agents into the interior of the instrument and means enabling a direct spraying of all external surfaces of each instrument with treatment agents from a plurality of nozzles or nozzle arms arranged around each instrument.

5,543,120

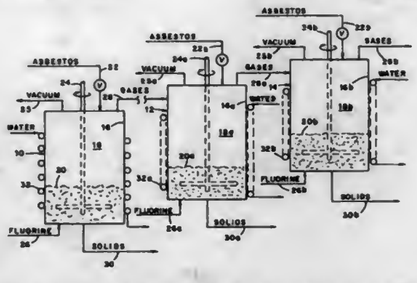
METHOD FOR CONVERTING ASBESTOS TO NON-CARCINOGENIC COMPOUNDS

Thomas W. Selby, Kingston, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 21, 1994, Ser. No. 278,487

Int. Cl.[6] C01F *5/28*

U.S. Cl. 423—167.1 **18 Claims**



1. A method for transforming asbestos comprising a silicate mineral in a crystalline fibrous form from a carcinogenic and hazardous material to non-carcinogenic, relatively nonhazardous, and non-crystalline compounds, comprising the step of contacting a mass of fibrous asbestos comprising a silicate mineral with a reactant consisting of a sufficient volume of fluorine gas for effecting an exothermic reaction with the silicate mineral in said asbestos that is adequate for fluorinating silicate mineral in said asbestos for converting the silicate mineral to a gaseous silicon-containing compound consisting of SiF_4 and to non-silicon-containing gaseous and solid compounds.

5,543,121

GETTER MATERIALS FOR THE VACUUM INSULATION OF LIQUID HYDROGEN STORAGE VESSELS OR TRANSPORT LINES

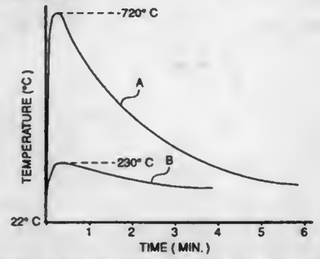
Claudio Boffito; Fabrizio Doni, and Bruno Ferrario, all of Milan, Italy, assignors to SAES Getters S.p.A., Italy

Continuation of Ser. No. 459,194, Dec. 29, 1989, abandoned. This application Apr. 5, 1994, Ser. No. 223,134

Claims priority, application Italy, Jan. 24, 1989, 19157/89

Int. Cl.[6] C01B *3/00*

U.S. Cl. 423—210 **2 Claims**



1. A method of sorbing a mixture of gases, with mixture includes hydrogen and oxygen gases, at low pressures, comprising the step of contacting said mixture of gases, including said hydrogen and oxygen gases, with a getter material which does not increase its temperature to the ignition temperature of the hydrogen-oxygen mixture of gases when gettering hydrogen; the getter material comprising an alloy of the formula: $Zr_1V_1Fe_1$.

5,543,122

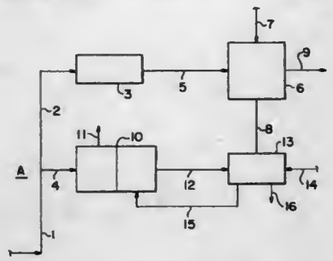
PROCESS FOR THE REMOVAL OF H_2S FROM NON-CONDENSIBLE GAS STREAMS AND FROM STEAM

Charles A. Hammond, Lake Jackson; Shelby P. Oostwouder, Houston, and Robert A. Lanning, The Woodlands, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 9, 1994, Ser. No. 336,439

Int. Cl.[6] B01D *53/52*

U.S. Cl. 423—220 **20 Claims**



1. A process for removing H_2S from a non-condensible gas stream containing H_2S and other non-condensible gases comprising dividing or partitioning said non-condensible gas stream into a first H_2S-containing stream containing the bulk of the H_2S in said gas stream and a second H_2S-containing gas stream containing a minor portion of the H_2S in the non-condensible gas stream; oxidizing the H_2S in the first H_2S-containing stream in a thermal oxidation zone to produce a gaseous stream comprising SO_2, and removing the SO_2 from the gaseous stream by contacting said gaseous stream with an alkaline solution under conditions to produce a purified gas stream and a scrubbing zone solution containing bisulfite and/or sulfite ions; while simultaneously contacting the second H_2S-containing gas stream with an aqueous solution of ferric chelate in an aqueous liquid oxidation zone under conditions to convert H_2S in said second H_2S-containing gas stream to sulfur in said solution, producing a purified residual gas stream, and removing sulfur from said aqueous liquid oxidation zone; and combining scrubbing zone solution containing bisulfite and/or sulfite ions with sulfur from the aqueous liquid oxidation zone in a blending zone under conditions to react sulfur and sulfite and/or bisulfite ions to produce a solution containing thiosulfate ion and residual bisulfite and/or sulfite ions.

5,543,123

LOW PRESSURE FORMATION IF A UREA HYDROLYSATE FOR NITROGEN OXIDES REDUCTION

John E. Hofmann, Naperville, Ill.; Thure Von Harpe, Meerbusch, Germany; Daniel V. Diep, Aurora, and M. Linda Lin, Naperville, both of Ill., assignors to Nalco Fuel Tech, Naperville, Ill.

Continuation-in-part of Ser. No. 132,575, Oct. 6, 1993, abandoned, and a continuation-in-part of Ser. No. 820,907, Feb. 26, 1992, Pat. No. 5,399,325, and a continuation-in-part of Ser. No. 970,479, Nov. 2, 1992, abandoned, and a continuation-in-part of Ser. No. 54,104, Apr. 26, 1993, abandoned, which is a division of Ser. No. 561,154, Aug. 1, 1990, Pat. No. 5,240,688. This application Apr. 13, 1994, Ser. No. 226,993

Int. Cl.[6] C01B *21/00*

U.S. Cl. 423—235 **13 Claims**

1. A process for the reduction of nitrogen oxides in a combustion effluent, the process comprising introducing an aqueous solution which comprises urea and a water soluble hydrolysis agent in an amount effective to reduce or eliminate the need for pressure during hydrolysis which comprises an alkali metal oxide, an alkali metal hydroxide, calcium formate, magnesium formate, or mixtures thereof, into the effluent at an effluent temperature at the point of introduction of at least about 1300° F. under conditions effective to reduce the nitrogen oxides concentration therein.

5,543,124

PROCESS FOR REDUCING NITROGEN OXIDES

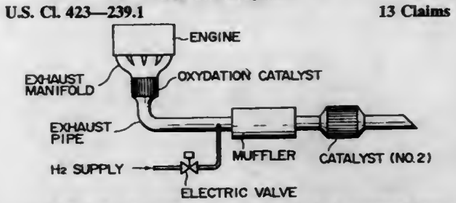
Koji Yokota; Masayuki Fukui, and Toshiyuki Tanaka, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken, Japan

Filed Oct. 20, 1994, Ser. No. 326,219

Claims priority, application Japan, Jun. 30, 1994, 6-173219

Int. Cl.[6] B01J *8/02*

U.S. Cl. 423—239.1 **13 Claims**



1. A process for reducing nitrogen oxides in exhaust gases including excess oxygen, the amount of which is larger than a stoichiometric amount of oxygen required to oxidize components to be oxidized in said exhaust gases, comprising the steps of:

i) bringing said exhaust gases into contact with a catalyst for reducing nitrogen oxides; and

ii) reducing said nitrogen oxides by intermittently introducing a reducing agent for reducing nitrogen oxides to said reducing catalyst,

wherein

said reducing catalyst comprises a porous carrier of at least one material selected from the group consisting of silica, zeolite and alumina, and platinum loaded thereon,

said reducing agent is selected from the group consisting of hydrogen (H_2) and carbon monoxide (CO), and

said reducing agent is intermittently introduced in a manner to satisfy the following equation:

$$[NO_x]<[H_2]+[CO],$$

wherein $[H_2]$, [CO] and $[NO_x]$ are molar concentrations in said exhaust gases of hydrogen, carbon monoxide and nitrogen oxides, respectively.

5,543,125

METHOD OF PURIFYING NON-CONTAINING EXHAUST GASES USING IRON CONTAINING MORDENITE

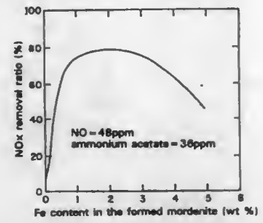
Hiroshi Uchida, Yokohama; Iruru Takahashi, Kunitachi; Kenichi Yamaseki, Mitaka, and Shigeo Satokawa, Tokyo, all of, Japan, assignors to Tokyo Gas Co., Ltd., Tokyo, Japan

Filed Feb. 15, 1995, Ser. No. 388,689

Claims priority, application Japan, Feb. 15, 1994, 6-042000; Jul. 27, 1994, 6-194799; Oct. 14, 1994, 6-276009; Dec. 9, 1994, 6-331559

Int. Cl.[6] B01J *8/00*

U.S. Cl. 423—239.2 10 Claims



1. A process for reducing NO_x contained in an exhaust gas comprising contacting a NO_x-containing exhaust gas with a mordenite catalyst containing Fe in an amount of 0.3–4.7 wt. % in the framework of the mordenite in the presence of an ammonium acetate reducing agent at a treatment temperature of 300° C. or higher thereby reducing said NO_x.

5,543,127

DILUTE SOLUTION OF A HYDRIDE IN LIQUID NITROGEN

Pierre Karinthi, Jouy En Josas, and Bernard Jamonet, Bourg de Peage, both of, France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des procedes Georges Claude, Paris Cedex, France

Filed Mar. 3, 1994, Ser. No. 205,307

Claims priority, application France, Mar. 10, 1993, 93 02760

Int. Cl.[6] C01B *6/00;6/10;25/00;33/04*

U.S. Cl. 423—294 6 Claims

1. A solution of hydride in liquid nitrogen, said hydride being in gaseous phase at atmospheric pressure and ambient temperature, and being selected from the group consisting of phosphine, arisine, germane, diborane, silane and disilane.

5,543,128

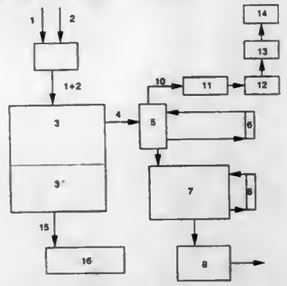
REGENERATION METHOD FOR PROCESS WASTE CONTAINING SULFUR AND PHOSPHORUS

Heikki Tuovinen; Jorma Saari, both of Ulvila; Antti Roine, Vanha-Ulvila; Hannu Holma, Jarvenpaa, and Matti Kalliokoski, Porvoo, all of, Finland, assignors to Neste Oy, Espoo, Finland

Filed Apr. 12, 1994, Ser. No. 213,422

Int. Cl.[6] C01B *25/14*

U.S. Cl. 423—303 10 Claims



1. A method for treating a process waste containing sulfur, phosphorus, potassium and oxygen to obtain phosphorus pentasulfide, comprising:

adding sulfur to said process waste to produce a mixture,

evaporating said mixture under a partial vacuum of 0.01–0.2 atm and at a temperature of 500°–700° C. and condensing the vapor to obtain a condensate containing phosphorus pentasulfide.

5,543,129

NON-CRYOGENIC METHOD AND APPARATUS FOR PRODUCING PURE NITROGEN

Sudhir R. Brahmbhatt, Glencoe, Mo., assignor to MG Industries, Malvern, Pa.

Filed Nov. 17, 1994, Ser. No. 341,505

Int. Cl.[6] C01B *21/00;* B01J *8/00*

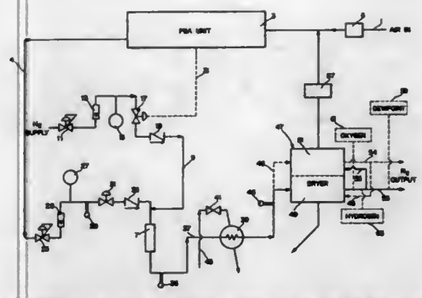
U.S. Cl. 423—351 18 Claims

7. Non-cryogenic apparatus for producing ultra-pure nitrogen from a stream of air containing nitrogen and oxygen, the apparatus comprising:

a) means for removing most of the oxygen from said stream of air to provide a process stream containing mostly nitrogen,

b) means for reacting the process stream with hydrogen, wherein the hydrogen combines with oxygen in the process stream to form water, the reacting means having an output,

c) means for cooling the process stream, the cooling means being connected to the output of the reacting means, the cooling means having an output,



d) means for drying the process stream, the drying means being connected to the output of the cooling means, and means for withdrawing ultra-pure nitrogen from the drying means, the drying means being operable without a source of heat, and without receiving heat from the reacting-means,

wherein the drying means includes an active section and a regenerating section, and wherein the apparatus includes means for directing ultra-pure nitrogen into the regenerating section and back to the removing means.

16. A non-cryogenic method of making ultra-pure nitrogen, the method comprising the steps of:

a) converting a stream of ambient air, in a converting means, into a process stream containing mainly nitrogen with most of the balance oxygen,

b) reacting the process stream with hydrogen, wherein the hydrogen combines with oxygen in the process stream to form water,

c) cooling the process stream following the reacting step,

d) drying the process stream, following the cooling step, in a dryer having an active section and a regenerating section, the active section of the dryer having an output from which pure, dry nitrogen is withdrawn, the drying step being performed without heating the process stream and without using heat produced in the reacting step, and

e) recycling a portion of the pure dry nitrogen withdrawn from the output of the dryer, without heating the dry nitrogen, through the regenerating section of the dryer and back to the converting means.

5,543,130

METAL CERAMIC COMPOSITE STRUCTURE

Nobuo Tsuno, Kasugai, and Tomoyuki Fujii, Nagoya; both of, Japan, assignors to NGK Insulators, Ltd., Japan

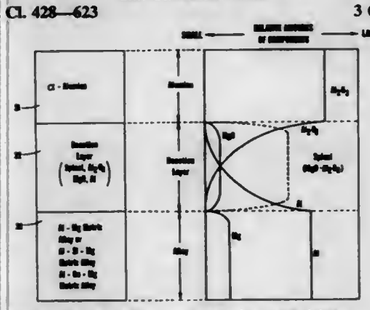
Continuation of Ser. No. 5,365, Jan. 19, 1993, abandoned.

This application Feb. 13, 1995, Ser. No. 387,390

Claims priority, application Japan, Jan. 24, 1992, 4-011162; Jan. 12, 1993, 5-003558

Int. Cl.[6] B23K *31/00*

U.S. Cl. 428—623 3 Claims



1. A multi-layer metal-ceramic material, comprising:

an alumina layer;

a metallic layer comprising three sub-layers including an aluminum core layer and first and second opposed surface layers, at least said first opposed surface layer comprising an Al—Si—Mg matrix alloy, wherein said alumina layer and said metallic layer are stacked together to form a bonding interface between said first opposed surface layer and said alumina layer; and

a reaction layer present along said bonding interface between said alumina layer and said first opposed surface layer of said metallic layer, said reaction layer being formed by pressing said alumina layer and said metallic layer together and heating said alumina and metallic layers at a temperature not greater than the solidus of said Al—Si—Mg alloy, wherein said reaction layer consists essentially of $MgAl_2O_4$ spinel and MgO, or said reaction layer consists essentially of $MgAl_2O_4$ spinel, MgO and at least one material from the group consisting of Al_2O_3, Al and O.

5,543,131

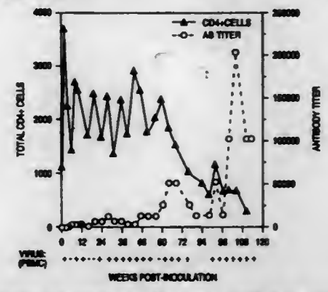
HIV-2 STRAINS CAPABLE OF INFECTING HUMANS AND NON-HUMAN PRIMATES, AND INFECTED NON-HUMAN PRIMATES WITH IMMUNE SYSTEM DISEASE

Jay A. Levy, San Francisco, Calif., assignor to The Regents Of The University Of California, Oakland, Calif.

Filed Aug. 5, 1994, Ser. No. 286,479

Int. Cl.[6] A61K *49/00*

U.S. Cl. 424—9.2 3 Claims



1. A method for testing the efficacy of a drug in the treatment of infection with HIV, comprising:

administering the drug to a baboon infected with HIV-2_{UC2}, wherein HIV-2_{UC2} is also capable of infecting a human and further wherein the infected baboon exhibits symptoms of an immune system disease associated with HIV infection in humans, which symptoms are persistent and pathogenic; and

observing the baboon to determine if the drug prevents or decreases the presentation of symptoms associated with infection with HIV-2_{UC2};

wherein the baboon is of a subspecies selected from the group consisting of Papio cynocephalus hamadrayas, and Papio cynocephalus anubis/cynocephalus hamadrayas.

5,543,132

X-RAY CONTRAST COMPOSITIONS CONTAINING A BARIUM SALT AND A CELLULOSE DERIVATIVE

Edward J. Bo[illegible]er, Northumberland, England; Robert W. Lee, Gilbertsville, Pa.; John L. Toner, Downingtown, Pa., and Carl R. Illig, Phoenixville, Pa., assignors to Sterling Winthrop Inc., New York, N.Y.

Filed Apr. 14, 1994, Ser. No. 227,422

Int. Cl.[6] A61K *49/04*

U.S. Cl. 424—9.411 16 Claims

1. An x-ray contrast composition for oral or retrograde examination of the gastrointestinal tract comprising:

(a) from about 5 to 95% w/v of a barium salt;

(b) from 0.1 to 10% w/v of a cellulose derivative comprising microcrystalline cellulose
(c) from 0.1 to 55% w/v of an oily vehicle;
(d) from 0.1 to 20% w/v of a surfactant selected from the group consisting of nonionic, anionic, cationic and zwitterionic surfactants;
(e) from 0.001 to 15% w/v of a viscosity modifying excipient; and
(f) water to make 100% by volume.

5,543,133
PROCESS OF PREPARING X-RAY CONTRAST COMPOSITIONS CONTAINING NANOPARTICLES
Jon R. Swanson, Macungie; H. William Bosch, Bryn Mawr; Kathleen J. Illig, Phoenixville; Donna M. Marcera, Collegeville, and Ronald L. Mueller, Downingtown, all of Pa., assignors to NanoSystems L.L.C., Collegeville, Pa.
Filed Feb. 14, 1995, Ser. No. 388,099
Int. Cl.[6] A61K *49/00;49/04*
U.S. Cl. 424—9.45 22 Claims

1. A process for preparing particles consisting essentially of 99.9–1% by weight of a non-radioactive crystalline organic x-ray contrast agent having a solubility in water of less than 10 mg/ml, said x-ray contrast agent having a surface modifier adsorbed on the surface thereof in an amount of 0.1–90% by weight and sufficient to maintain an average particle size of less than about 400 nm, said process comprises the steps of:
preparing a premix of said x-ray contrast agent and said surface modifier by mixing them; and
subjecting said premix to mechanical means to reduce the particle size thereof to less than 400 nm by the action of said mechanical means which produces shear, impact, cavitation and attrition.

5,543,134

Patent Not Issued For This Number

5,543,135
WATER–IN–OIL EMULSIONS
Gerd H. Dahms, Velbert, Germany, assignor to Tioxide Specialties Limited, London, United Kingdom
Filed Mar. 1, 1993, Ser. No. 24,310
Claims priority, application United Kingdom, Feb. 29, 1992, 9204388
Int. Cl.[6] A61K *7/42*
U.S. Cl. 424—059 25 Claims

1. A process for preparing a water-in-oil emulsion comprising the steps of:
forming a dispersion in an oil of particles of a metallic oxide having an average particle size of less than 0.2 micron, said mixing oxide is an oxide of an element selected from the group consisting of titanium, zinc and iron; and
b) mixing said dispersion with one or more emulsifiers and an aqueous phase to form the water-in-oil emulsion wherein the total amount of emulsifiers present in the emulsion is less than 5 percent by weight, the particles of metallic oxide comprise from 0.5 percent to 30 percent by weight of the emulsion, an oil phase comprises from 10 percent to 60 percent by weight of the emulsion and the aqueous phase comprises at least 40 percent by weight of the emulsion.

5,543,136
SUNSCREEN EMULSIONS
Duane L. Aldous, Orem, Utah, assignor to NuSkin International, Inc., Provo, Utah
Filed Jun. 16, 1994, Ser. No. 260,568
Int. Cl.[6] A61K *7/42*
U.S. Cl. 424—59 17 Claims

1. A water-in-oil emulsion comprising zinc oxide, present in an amount from about 0.1 to about 25% by weight of the water-in-oil emulsion, and an agent selected from the group consisting of tridecyl neopentanoate, C_{12-15} alkyl benzoate, octyl neopentanoate and mixtures thereof in the emulsion's oil phase, titanium dioxide in the emulsion's water phase, said titanium dioxide present in an amount from about 0.1 to about 25% by weight of the water-in-oil emulsion, a sunblocking agent, and oil phase emulsion components.

5,543,137
METHOD OF PROTECTING AGAINST SUNBURN
George R. Repper, and Helen Z. Repper, both of 2903 Dadmun Ct., Fairfax, Va. 22031
Continuation-in-part of Ser. No. 308,444, Sep. 19, 1994. This application Nov. 4, 1994, Ser. No. 334,229
Int. Cl.[6] A61K *7/40;7/42*
U.S. Cl. 424—59 20 Claims

1. A method of protecting a body against sunburn, comprising:
(a) providing a chemical sunscreen composition which fluoresces at a visible first wavelength upon being illuminated with light of a second wavelength different from said first wavelength;
(b) applying said chemical sunscreen composition to external portions of a body;
(c) illuminating the body with light of said second wavelength so as to cause said sunscreen to fluoresce at said first wavelength;
(d) viewing the body while said body is under illumination of said light of said second wavelength so as to identify any non-fluorescing, missed external body portions of said body, to which said sunscreen was not applied in steps (b); and
(e) further applying said sunscreen to the missed body portions.

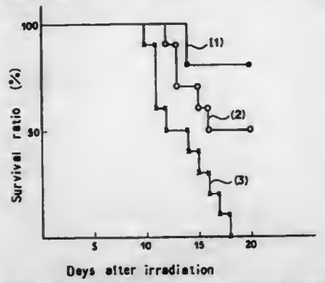
5,543,138
METHODS OF DIAGNOSING AND TREATING PREECLAMPSIA
James C. Keith, Andover, Mass., assignor to Genetics Institute, Inc., Cambridge, Mass., and Virginia Polytechnic Institute and State Univ., Blacksburg, Va.
Filed Mar. 10, 1994, Ser. No. 212,446
Int. Cl.[6] A61K *45/05*
U.S. Cl. 424—85.1 3 Claims

1. A method for diagnosing increased risk of gestational hypertension or preeclampsia in a patient, said method comprising measuring the serum level of M-CSF of the patient during pregnancy, and comparing it to the serum level of M-CSF in women with normal pregnancies.

5,543,139
5.5 KD TNF DEGRADATION PRODUCT
John P. Fruehauf, 18828 Teton Clr., Fountain Valley, Calif. 92708
Continuation of Ser. No. 902,309, Jun. 22, 1992, abandoned. This application Jun. 13, 1994, Ser. No. 259,137
Int. Cl.[6] A61K *38/19;* C07K *2/00;14/00*
U.S. Cl. 424—85.1 2 Claims

1. A substantially purified and isolated 5.5 kD degradation product of TNF or multimers of TNF, said product being obtained by hydrophobic interaction chromatography of TNF-conditioned media from TNF-sensitive cells.

5,543,140
METHOD AND USE OF IL-1α
Satoru Nakai; Mayumi Kaneta; Yoshikazu Kikumoto, all of Tokushima-ken; Yeong-Man Hong, Naruto; Kazuyoshi Kawai, Tokushima-ken; Setsuko Takegata, Tokushima; Kiyoshi Ishii, Tokushima; Yasuo Yanagihara, Tokushima, and Yoshikatsu Hirai, Tokushima-ken, all of, Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan
Division of Ser. No. 643,292, Jan. 22, 1991, Pat. No. 5,371,204, which is a division of Ser. No. 23,373, Mar. 9, 1987, Pat. No. 5,008,374. This application Jun. 1, 1994, Ser. No. 252,229
Claims priority, application Japan, Mar. 14, 1986, 61-57885; Jun. 3, 1986, 61-129759; Jun. 25, 1986, 61-148393; Jul. 8, 1986, 61-160250; Aug. 27, 1986, 61-200323
Int. Cl.[6] A61K *38/20*
U.S. Cl. 424—85.2 4 Claims

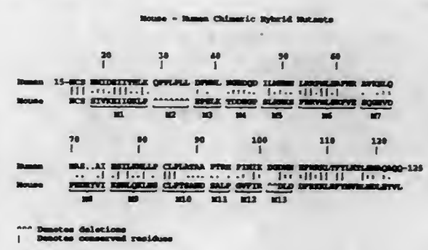


1. A method for stimulating immunity comprising administering, to a subject in need of immunity stimulation, a pharmaceutically effective amount of a polypeptide having the amino acid sequence of IL-1α represented by formula (A) which is modified in that at least one of Asn at the 36 position and Cys at the 141 position is deficient or replaced by another amino acid:

(A)
Ser—Ala—Pro—Phe—Ser—Phe—Leu—Ser—Asn—Val—
Lys—Tyr—Asn—Phe—Met—Arg—Ile—Ile—Lys—Tyr—
Glu—Phe—Ile—Leu—Asn—Asp—Ala—Leu—Asn—Gln—
Ser—Ile—Ile—Arg—Ala—Asn—Asp—Gln—Tyr—Leu—
Thr—Ala—Ala—Ala—Leu—His—Asn—Leu—Asp—Glu—
Ala—Val—Lys—Phe—Asp—Met—Gly—Ala—Tyr—Lys—
Ser—Ser—Lys—Asp—Asp—Ala—Lys—Ile—Thr—Val—
Ile—Leu—Arg—Ile—Ser—Lys—Thr—Gln—Leu—Tyr—
Val—Thr—Ala—Gln—Asp—Glu—Asp—Gln—Pro—Val—
Leu—Leu—Lys—Glu—Met—Pro—Glu—Ile—Pro—Lys—
Thr—Ile—Thr—Gly—Ser—Glu—Thr—Asn—Leu—Leu—
Phe—Phe—Trp—Glu—Thr—His—Gly—Thr—Lys—Asn—
Tyr—Phe—Thr—Ser—Val—Ala—His—Pro—Asn—Leu—
Phe—Ile—Ala—Thr—Lys—Gln—Asp—Tyr—Trp—Val—

-continued
Cys—Leu—Ala—Gly—Gly—Pro—Pro—Ser—Ile—Thr—
Asp—Phe—Gln—Ile—Leu—Glu—Asn—Gln—Ala.

5,543,141
THERAPEUTIC METHODS USING INTERLEUKIN-3 (IL-3) HUMAN/MURINE HYBRID POLYPEPTIDES
Sarah R. Braford-Goldberg, St. Louis; Alan M. Easton, Maryland Heights; Barbara K. Klein, St. Louis; John P. McKearn, Pacific, and Peter O. Olins, Glencoe, all of Mo., assignors to G.D. Searle & Co., Skokie, Ill.
Continuation of Ser. No. 81,539, Jun. 21, 1993. This application Jun. 6, 1995, Ser. No. 466,647
Int. Cl.[6] A61K *38/20*
U.S. Cl. 424—85.2 1 Claim



1. A method of stimulating the production of hematopoietic cells which comprises administering a therapeutically effective amount of a polypeptide selected from the group consisting of:
a polypeptide having the amino acid sequence shown in SEQ ID NO: 64;
a polypeptide having the amino acid sequence shown in SEQ ID NO: 66:
a polypeptide having the amino acid sequence shown in SEQ ID NO: 67:
a polypeptide having the amino acid sequence shown in SEQ ID NO: 68; and
a polypeptide having the amino acid sequence shown in SEQ ID NO: 75
to a patient in need of such treatment.

5,543,142
METHOD FOR NATURALLY REGULATING PLANT GROWTH USING *ACTINOMYCES VISCOSUS*
William M. Kowalski, Houston, Tex., assignor to Natural Industries, Inc., Houston, Tex.
Filed Apr. 6, 1994, Ser. No. 223,988
Int. Cl.[6] A01N *63/00;* C12N *1/12;1/20*
U.S. Cl. 424—93.4 2 Claims

1. A method for retarding plant growth by *Actinomyces viscosus* GA (ATCC#55624) comprising the steps of:
(a) adjusting the pH of a plant soil medium containing plants to a range of about 6 to about 8; and
(b) applying a growth retarding effective amount of *Actinomyces viscosus* GA (ATCC#55264) to said plants.

5,543,143
METHOD FOR ACTIVATING MACROPHAGES/ MONOCYTES
Steven G. Reed, Bellevue, Wash., assignor to Corixa Corporation, Seattle, Wash.
Continuation-in-part of Ser. No. 96,100, Jul. 23, 1993, abandoned, which is a continuation-in-part of Ser. No. 847,441, Mar. 6, 1992, abandoned. This application Sep. 6, 1994, Ser. No. 301,216
Int. Cl.[6] A61K *39/385;39/395;39/40;39/42*
U.S. Cl. 424—130.1 9 Claims

1. A method of treating a mammal afflicted with an infectious disease caused by a macrophage pathogen selected from the group consisting of bacteria, yeast, fungi, viruses, protozoa and combinations thereof, comprising administering an effective amount of a TGF-β antagonist to activate macrophages for destruction of the macrophage pathogen, as determined by observing phagocytic destruction of the macrophage pathogen by macrophages, wherein the TGF-β antagonist is administered in a pharmaceutically acceptable carrier.

5,543,144
TREATING HYPERSENSITIVITIES WITH ANTI-IGE MONOCLONAL ANTIBODIES WHICH BIND TO IGE-EXPRESSING B CELLS BUT NO BASOPHILS
Tse W. Chang, Houston, Tex., assignor to Tanox Biosystems, Inc., Houston, Tex.
Continuation-in-part of Ser. No. 357,483, May 26, 1989, Pat. No. 5,420,251, which is a continuation-in-part of Ser. No. 291,068, Dec. 28, 1988, abandoned, which is a continuation-in-part of Ser. No. 226,421, Jul. 29, 1988, Pat. No. 5,422,258, which is a continuation-in-part of Ser. No. 140,036, Dec. 31, 1987, abandoned. This application Jan. 21, 1993, Ser. No. 7,180
Int. Cl.[6] A61K *39/395;* C07K *16/42*
U.S. Cl. 424—133.1 6 Claims

1. A method of reducing circulating IgE in a mammal comprising administering to the mammal a monoclonal antibody having a human IgG1 or IgG3 constant region that binds to secreted IgE and to membrane-bound IgE on IgE-expressing B cells but not to IgE bound to basophils to an amount effective to reduce circulating IgE.

5,543,145
PHARMACEUTICAL COMPOSITION AND METHOD FOR THE SUPPRESSION OF FACTOR VIII INHIBITOR PRODUCTION
Jean-Marie Saint-Remy, Grez-Doiceau; Philippe Lebrun, Namur; Serge Lebeque; Pierre L. Masson, both of Brussels, all of, Belgium, and Henry S. Kingdon, Pasadena, Calif., assignors to Baxter International, Inc., Chicago, Ill., and International Institute of Cellular and Molecular Pathology, Brussels, Belgium
Continuation of Ser. No. 844,928, Mar. 4, 1992, abandoned, which is a continuation of Ser. No. 255,350, Oct. 11, 1988, abandoned, which is a continuation-in-part of Ser. No. 38,985, Apr. 16, 1987, abandoned, which is a continuation-in-part of Ser. No. 651,073, Sep. 17, 1984, Pat. No. 4,740,371. This application Jul. 21, 1994, Ser. No. 278,974
Int. Cl.[6] A61K *39/395*
U.S. Cl. 424—133.1 26 Claims

1. A pharmaceutical composition suitable for administration to human beings for suppressing factor VIII inhibitor production in the treatment of hemophilia, said composition consisting essentially of:

an immune complex comprising factor VIII antigen component and factor VIII inhibitor component, said factor VIII inhibitor component being at least partly human, and said components being present in a ratio such that said inhibitor component neutralizes said antigen component; and a pharmacologically acceptable carrier or diluent.

5,543,146
DIETARY SUPPLEMENT FOR ALLEVIATING THE SYMPTOMS ASSOCIATED WITH ENLARGEMENT OF THE PROSTATE GLAND
Carlos Perez, Coral Gables, Fla., assignor to Prostahelp, Inc., Coral Gables, Fla.
Continuation-in-part of Ser. No. 375,608, Jan. 20, 1995, abandoned. This application Sep. 12, 1995, Ser. No. 526,992
Int. Cl.[6] A61K *35/78;9/20;33/32*
U.S. Cl. 424—195.1 3 Claims

1. A dietary supplement for alleviating the symptoms associated with enlargement of the prostate gland, comprising the following ingredients:

pumpkin seeds in an amount of between 12.50 to 25% by weight of the composition;

extract of *Serenoa repens* in an amount of between 1.875 to 18.75% by weight of the composition;

Pygeum africanum in an amount of between 6.25 to 12.5% by weight of the composition;

zinc glycinate in an amount of between 3.125 to 6.25% by weight of the composition; and

excipients, wherein the amount of ingredients in the dietary supplement totals 100%.

5,543,147
CRYSTALLINE MODIFICATION OF 2, 4-DIOXO-6-METHLY-1,2,3,4-TETRAHYDROPYRIMIDINE, A METHOD FOR THE PREPARATION THEREOF AND A MEDICINAL PREPARATION BASED ON IT
Nikolai B. Leonidov, ulitsa Zatonnaya, 12, Korpus 1, kv.158, Russian Federation, and Nikolai G. Selezenev, Ryazan, Russian Federation, assignors to Nikolai B. Leonidov, Korpus 1, Russian Federation
PCT No. PCT/RU93/00018, § 371 Date Nov. 17, 1994, § 102(e) Date Nov. 17, 1994, PCT Pub. No. WO94/17046, PCT Pub. Date Aug. 4, 1994
PCT Filed Jan. 20, 1993, Ser. No. 307,654
Int. Cl.[6] A61L *15/16*
U.S. Cl. 424—400 14 Claims

1. A crystalline modification of 2,4-dioxo-6-methyl-1,2,3,4-tetrahydropyrimidine characterized by the following interplane spacings d and relative intensity of reflexes I:

d, Å	I
9.668	9
6.592	100
4.838	36
3.843	5
3.625	7
3.431	20
3.248	48
2.916	8
2.799	9
2.479	4
2.429	7
2.405	6
2.292	8
2.043	4
1.699	3

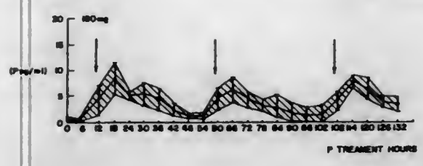
5,543,148
STICK DELIVERY SYSTEM FOR TOPICAL APPLICATION OF A TREATMENT AGENT
Herbert Lapidus, Ridgefield, Conn., assignor to Combe, Incorporated, White Plains, N.Y.
Filed Jul. 12, 1994, Ser. No. 274,098
Int. Cl.[6] A61K *7/00;7/15;9/00;31/00*
U.S. Cl. 424—401 16 Claims

1. A stick delivery system for the topical application of a treatment agent, the stick delivery system comprising about 70% to about 80% by weight of a solvent which comprises a dihydric alcohol, polyhydric alcohol or mixtures thereof; about 5% to about 12% by weight of a gelling agent which comprises an alkali metal stearate, an alkali metal palmitate or mixtures thereof; an antipruritic which comprises menthol present at a level of about 0.5% to about 1.1% by weight; about 1% to about 10% by weight of a treatment agent selected from the group consisting of an anesthetic, an antihistamine, an anti-inflammatory agent, an antifungal agent, or mixtures thereof; and about 5% to about 23.5% water.

5,543,149
TREATMENT FOR INSECT BITES
Stan M. Rubin, 77 Fifth Ave., Troy, N.Y. 12180
Filed Mar. 1, 1995, Ser. No. 396,551
Int. Cl.[6] A61K *9/06*
U.S. Cl. 424—405 11 Claims

1. A method for reducing the itch associated with black fly and mosquito bites comprising applying an itch-reducing amount of an enzyme chosen from the group consisting of papain, pancreatin and subtilisin in a pharmaceutical carrier to the surface of a patient's skin proximate to said mosquito or black fly bite.

5,543,150
METHOD OF PROGESTERONE DELIVERY AND AFFECT THEREOF
William J. Bologna, New York, N.Y., and Howard L. Levine, Oceanside, N.Y., assignors to Columbia Laboratories, Inc., Coconut grove, Fla.
Filed Sep. 15, 1993, Ser. No. 122,371
Int. Cl.[6] A61F *6/06;13/02;6/16;* A61K *47/30*
U.S. Cl. 424—430 23 Claims



1. A method of delivering progesterone to women comprising delivery of progesterone via a drug delivery system inserted into the vagina in an amount sufficient to cause secretory transformation of the endometrium while maintaining serum levels of progesterone below 6.0 ng/ml for a continuous period of at least forty-eight hours.

5,543,151
MEDICAL PRESSURE-SENSITIVE ADHESIVE AND MEDICAL BANDAGE FORMED USING THE SAME
Fumiya Shirai; Masayoshi Kuniya; Chiemi Mikura; Tomoko Matsushita; Hitoshi Akemi, and Toshiyuki Yamamoto, all of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan
Filed May 4, 1994, Ser. No. 237,990
Claims priority, application Japan, May 11, 1993, 5-133994
Int. Cl.[6] A61F *13/00*
U.S. Cl. 424—448 7 Claims

1. A medical pressure-sensitive adhesive consisting essentially of 100 parts by weight of an acrylic polymer and from 30 to 100 parts by weight of a liquid or pasty component which is in a liquid state or a pasty state at room temperature and is compatible with the acrylic polymer; wherein the liquid or pasty component comprises at least one ester selected from the group consisting of an ester of a monobasic acid or a polybasic acid each having from 8 to 18 carbon atoms and a branched alcohol having from 14 to 18 carbon atoms and an ester of an unsaturated fatty acid or a branched acid each having from 14 to 18 carbon atoms and a tetrahydric, trihydric or dihydric alcohol, and from 40 to 80% by weight of the acrylic polymer is insolubilized by crosslinking.

5,543,152
SPHINGOSOMES FOR ENHANCED DRUG DELIVERY
Murray S. Webb, Vancouver; Marcel B. Bally, Bowen Island, and Lawrence Mayer, North Vancouver, all of, Canada, assignors to Inex Pharmaceuticals Corporation, Vancouver, Canada
Filed Jun. 20, 1994, Ser. No. 263,603
Int. Cl.[6] A61K *9/127;31/44*
U.S. Cl. 424—450 15 Claims

1. A liposomal composition for delivery of a therapeutic compound to a mammalian host which comprises a liposome having one or more membranes which comprise sphingomyelin and cholesterol, a liposomal interior having an acidic pH which is less than that of the liposomal exterior, and a lipophilic therapeutic compound contained in said liposome for delivery to the host.

5,543,153
ANTACID
William C. Walton, Fulwell, England, assignor to Sterling Winthrop Inc., Pittsburgh, Pa.
Continuation of Ser. No. 936,688, Aug. 27, 1992, Pat. No. 5,330,760. This application Mar. 1, 1994, Ser. No. 204,574
Int. Cl.[6] A61K *9/20*
U.S. Cl. 424—466 6 Claims

1. A solid effervescent antacid formulation comprising, as the primary ingredients, from about 35 to about 53 percent by weight of the primary ingredients of calcium carbonate and from about 0 to about 14 percent by weight of the primary ingredients of magnesium carbonate as the antacid component; from about 3.5 to about 7 percent by weight of the primary ingredients of a bicarbonate salt and from about 3.5 to about 7 percent by weight of the primary ingredients of malic acid as the effervescent component; and from about 21 to about 53 percent by weight of the primary ingredients of a bulking agent.

5,543,154

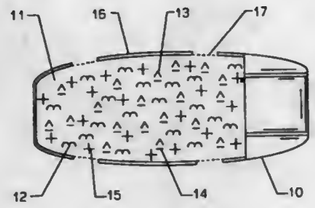
CONTROLLED RELEASE NIFEDIPINE DELIVERY DEVICE

Gerald S. Rork, and James D. Pipkin, both of Lawrence, Kans., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 118,836, Sep. 8, 1993, Pat. No. 5,366,738, which is a continuation of Ser. No. 902,188, Jul. 29, 1992, abandoned, which is a continuation-in-part of Ser. No. 815,304, Dec. 27, 1991, abandoned. This application Oct. 21, 1994, Ser. No. 327,083

Int. Cl.[6] A61K *9/24*

U.S. Cl. 424—473 **16 Claims**



1. A drug delivery device for the controlled in situ production and release of nifedipine, consisting essentially of:

(a) a compressed core prepared from a admixture comprising:

(i) a therapeutically effective amount of nifidipine; and

(ii) a polymer which upon hydration forms gelatinous microscopic particles, the polymer selected from the group consisting of sodium polyacrylate and carboxypolymethylenes prepared from acrylic acid cross-linked with allylethers of sucrose or pentaerythritol and the pharmaceutically acceptable salts thereof;

(b) a water insoluble, water impermeable polymeric coating comprising a polymer and a plasticizer, which surrounds and adheres to the core, the polymer being selected from the group consisting of polyvinyl chloride, cellulose acetate, cellulose acetate butyrate or ethylcellulose, or combinations of these polymers, the plasticizer being selected from the group consisting of diethylphthalate, dibutylsebacate or triethylcitrate, the coating having apertures, exposing between about 1% and about 75% of the core surface wherein the release rate of drug from the device is a function of the number and size of the apertures.

5,543,155

NOVEL DIFFUSION-OSMOTIC CONTROLLED DRUG-RELEASE PHARMACEUTICAL COMPOSITION AND PROCESS FOR PREPARING SAME

Pál Fekete; Mária Király née Ignácz; Gábor Sipos; Zsuzsanna Jámbor née Hoffmann; György Újfalussy; Magdolna Góra née Hernyes; Imre Klebovich; Sándor Drabant; Attila Mándi; Gizella Kiss née Szabó; Erzsébet Bárczay, and Mária Krisztián, all of Budapest, Hungary, assignors to Egis Gyogyszergyar Rt., Budapest, Hungary

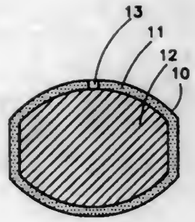
Filed Dec. 5, 1994, Ser. No. 341,209

Claims priority, application Hungary, Dec. 9, 1993, P9303504

Int. Cl.[6] A61K *9/24;9/32*

U.S. Cl. 424—473 **51 Claims**

1. A diffusion-osmotic controlled drug-release pharmaceutical composition comprising a tablet core containing a therapeutically active agent and a hydrophilic polymer, wherein said tablet core is coated with a polymeric film-coat, and said film-coat contains at least one bore in said film-coat in contact with said tablet core, said film-coat comprising an ammonium methacrylate copolymer and said hydrophilic polymer comprising hydroxypropyl methylcellulose, said film-coat being present in an amount of 3 to 25 mg/cm^2 in relation to the surface of said tablet core.



5,543,156

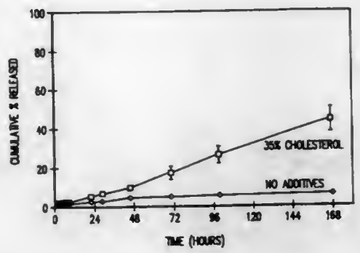
BIOERODIBLE DEVICES AND COMPOSITIONS FOR DIFFUSIONAL RELEASE OF AGENTS

Wouter E. Roorda, Newark; Fred P. Ehnow, San Carlos; Estela Basso, Santa Clara; Karly S. Wang, Newark, and Sharon M. Fujita, Berkeley, all of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Continuation of Ser. No. 984,388, Dec. 1, 1992, abandoned, which is a continuation of Ser. No. 709,862, Jun. 14, 1991, abandoned, which is a continuation-in-part of Ser. No. 641,222, Jan. 9, 1991, abandoned. This application Jan. 21, 1994, Ser. No. 184,770

Int. Cl.[6] A61K *9/10;9/14;9/22;9/70*

U.S. Cl. 424—484 **29 Claims**



1. A device for delivering a pharmaceutically active agent to an animal at a controlled rate over a prolonged period of time, wherein the device comprises:

(a) a body, shaped, sized and adapted for delivering a pharmaceutically active agent to the animal, the body comprises:

(i) 29–86 wt % of bioerodible polymer, a copolymer of bioerodible polymers, or a mixture of bioerodible polymers, and

(ii) 14–71 wt % of a hydrophobic compound, the hydrophobic compound being selected from the group consisting of stearates, phosphates, β-carotene, zeazanthin, cholesterol and 5,6-cholestene; and

(b) a therapeutically effective amount of the agent to be delivered; wherein the body is characterized by the delivery rate of the agent to be delivered from the matrix being greater when the body comprises (i) and (ii) than when the body comprises (i).

5,543,157

SOLID CONSUMER PRODUCT COMPOSITIONS CONTAINING SMALL PARTICLE CLYCLODEXTRIN COMPLEXES

Toan Trinh, Maineville, and John M. Gardlik, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 268,157, Jun. 29, 1994, which is a continuation of Ser. No. 707,266, May 24, 1991, abandoned, which is a continuation of Ser. No. 486,757, Mar. 6, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 477,338

Int. Cl.[6] A61K *9/62*

U.S. Cl. 424—493 **7 Claims**

1. Pharmaceutical composition comprising an effective amount of active/cyclodextrin inclusion complex with pharmaceutical agent selected from the group consisting of: ibuprofen; acetylsalicylic acid; salts of acetylsalicylic acid; acetamidophen; apomorphine; butylated hydroxytoluene; chlorthalidone; cholecalciferol; dexamethasone; dicumarol; digoxin; diphenylhydantoin; estradiol; estriol; ethinylestradiol-3-methyl ether; ethisterone; furosemide; hydroflumethiazide; indomethacin; iproniazid phosphate; 17-methyltestosterone; nitroglycerin; norethindrone; oubain; oxprenolol; progesterone; retinal; trans-retinoic acid: salts of trans-retinoic acid: retinol; spironolactone; sulpiride; testosterone; theophylline; aryclovir; cloridine HCl; and mixtures thereof, said complex being prepared by the kneading method and having a particle size of less than about 5 microns which provides for fast release of said pharmaceutical agent.

5,543,158

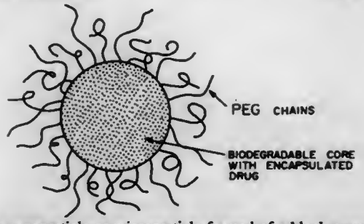
BIODEGRADABLE INJECTABLE NANOPARTICLES

Ruxandra Gref, Nancy, France; Yoshiharu Minamitake, Brookline, and Robert S. Langer, Newton, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jul. 23, 1993, Ser. No. 96,370

Int. Cl.[6] A61K *9/50;9/16;9/48;9/58*

U.S. Cl. 424—501 **20 Claims**



1. A nonoparticle or microparticle formed of a block copolymer consisting essentially of poly(alkylene glycol) and a biodegradable polymer selected from the group consisting of polyanhydride, polyhydroxybutyric acid, polyorthoesters, polysiloxanes, polycaprolactone, and copolymers prepared from the monomers of these polymers, wherein the biodegradable moieties of the copolymer are in the core of the resulting particle, and the poly(alkylene glycol) moieties are on the surface of the resulting particle in an amount effective to decrease uptake of the nanoparticle or microparticle by the reticuloendothelial system.

5,543,159

FLASH-PROOF RIM MOLD AND METHOD OF MAKING

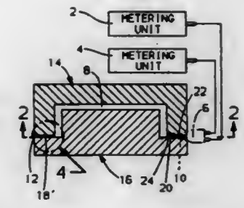
Joerg Iltgen, Ajax, Canada, assignor to General Motors of Canada Limited, Oshawa, Canada

Filed Sep. 15, 1994, Ser. No. 306,296

Int. Cl.[6] B29C *45/17*

U.S. Cl. 425—543 **12 Claims**

1. In a metal, reaction-injection-molding mold comprising first and second mating segments which, in a mold-closed position, define a cavity therebetween for receiving a liquid mixture of reactants and said first and second segments each have complimentary shaped faces which mate one with the other at a parting line having an edge exposed to said cavity, the improvement comprising an interlayer of thermosetting resin between said faces contiguous said edge and filling any gaps between said faces at said:edge so as to prevent intrusion of said parting line by said reactants and the coincident formation of flash on articles formed in said cavity, wherein said resin (a) adheres firmly to one of said faces, (b) is readily separable from the other of said faces and (c) is cured in situ between said faces when said mold is in said mold-closed position so as to provide an exposed surface thereon in the mold-open position which conforms to the topography of said other of said faces.



5,543,160

TOTAL CHEWING GUM MANUFACTURE USING HIGH EFFICIENCY CONTINUOUS MIXING

Joo H. Song, Northbrook; Christafor E. Sundstrom, Glen Ellyn; David W. Record, River Forest; Donald J. Townsend, Chicago; Kevin B. Broderick, Berwyn, and Philip G. Schnell, Downers Grove, all of Ill., assignors to Wm. Wrigley Jr. Company, Chicago, Ill.

Continuation-in-part of Ser. No. 305,363, Sep. 13, 1994, abandoned. This application Dec. 22, 1994, Ser. No. 362,254

Int. Cl.[6] A23G *3/30*

U.S. Cl. 426—3 **36 Claims**

1. A method of continuously manufacturing chewing gum without separate manufacture of a chewing gum base, comprising the steps of:

a) adding at least three individual gum base ingredients including an elastomer, elastomer solvent and filler into a high efficiency continuous mixer, using at least two separate feed ports in the mixer for said addition, and mixing the elastomer, elastomer solvent and filler together in the continuous mixer;

b) adding at least one further gum base ingredient selected from the group consisting of fats, oils, waxes and combinations thereof into at least a third separate feed port in the continuous mixer, and mixing said further ingredient with the elastomer, elastomer solvent and filler in the continuous mixer; and

c) adding at least one sweetener and at least one flavor into at least a fourth separate feed port in the continuous mixer, and mixing said sweetener and flavor with the gum base ingredients in the continuous mixer to form a chewing gum product;

d) wherein steps a)–c) are performed using the same high efficiency continuous mixer.

5,543,161

NOVEL YEAST STRAIN

Robert J. Evans, Bridport, United Kingdom, assignor to Burns Philp & Company Limited, Sydney, Australia

Continuation of Ser. No. 208,577, Mar. 11, 1994. This application Jan. 26, 1995, Ser. No. 378,594

Claims priority, application Australia, Mar. 12, 1993, PL7754

Int. Cl.[6] C12N *1/18;* A21D *8/04;10/00*

U.S. Cl. 426—62 3 Claims

1. A biologically pure culture of a baker's yeast strain *Saccharomyces cerevisiae* having all the identifying characteristics of *Saccharomyces cerevisiae* YTTS.

5,543,162

POLYMERIC CAPSULES, METHOD OF MAKING THE SAME, AND FOODSTUFFS CONTAINING THE SAME

Maritta Timonen, Helsinki, Finland, and Chokyun Rha, Boston, Mass., assignors to Alko Group Ltd., Helsinki, Finland

Division of Ser. No. 825,035, Jan. 24, 1992, abandoned, and a continuation-in-part of Ser. No. 743,152, Aug. 9, 1991, Pat. No. 5,366,755, Ser. No. 730,029, Jul. 12, 1991, abandoned, Ser. No. 567,045, Aug. 10, 1990, abandoned, Ser. No. 565,346, Aug. 10, 1990, abandoned, Ser. No. 464,291, Jan. 12, 1990, abandoned, Ser. No. 370,629, Jun. 23, 1989, abandoned, and Ser. No. 309,387, Feb. 10, 1989, abandoned. This application Nov. 23, 1994, Ser. No. 344,107

Int. Cl.[6] A23L *1/00*

U.S. Cl. 426—89 32 Claims

1. An insoluble polymeric capsule comprising at least two polymeric components, wherein one of said components is a hydrophilic colloid, and another of said components comprises an enzymatically degraded product of a cellulose derivative, the degraded product consisting essentially of a mixture of oligomers, a majority of said oligomers having a degree of polymerization between about 5 and about 50.

5,543,163

METHOD FOR ENHANCING THE FLAVOR AND SHELF LIFE OF FOOD PRODUCTS

Billy M. Groves, Pine Bluff, Ark., assignor to Gajun, L.C., Pine Bluff, Ark.

Continuation of Ser. No. 228,029, Apr. 15, 1994, abandoned. This application Aug. 7, 1995, Ser. No. 511,632

Int. Cl.[6] A23L *1/31;1/314*

U.S. Cl. 426—231 20 Claims

1. A method for extracting off-flavor components from animal products, comprising:

perforating the membranes of animal products;

loading the animal products into a vacuum tumbler;

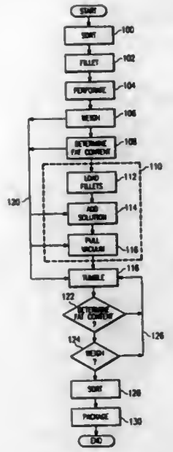
filling the tumbler to a predetermined level with a hypotonic saline solution, the hypotonic saline solution comprising water and sodium chloride in an amount no more than 0.9 percent of the weight of the water, the hypotonic saline solution being operable to enhance osmosis into the cellular structure of the animal products;

withdrawing air from the tumbler to create a partial vacuum;

rotating the tumbler for a predetermined time to expose the animal products to the hypotonic saline solution and the partial vacuum under conditions sufficient to extract off-flavor components from the animal products and to increase osmotic absorption of the solution into the membranes of the animal products;

removing the animal products from the tumbler after the predetermined time; and then

packaging the animal products.



5,543,164

WATER-INSOLUBLE PROTEIN-BASED EDIBLE BARRIER COATINGS AND FILMS

John Krochta, Davis, and Tara McHugh, Albany, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Jun. 17, 1994, Ser. No. 261,472

Int. Cl.[6] A23B *4/10;7/16;9/14;* A21D *15/08*

U.S. Cl. 426—302 37 Claims

1. A method for preparing a protein-based water-insoluble coating for a food item, comprising:

(i) treating an aqueous solution of a protein, said protein being substantially free of any sugars and present in an amount of from 5 to 20% by weight, to effect disulfide formation in said protein solution thereby forming a denatured protein solution; and

(ii) applying said denatured protein solution to a food item and drying to form a coating for said food item.

5,543,165

PROCESS OF MAKING A SOLUBLE TEA PRODUCT WITH CHAMPAGNE-LIKE PROPERTIES

Julie B. Hill, 135 Green Valley Dr., Greenville, S.C. 29609

Filed Jun. 6, 1995, Ser. No. 467,187

Int. Cl.[6] A23F *3/00*

U.S. Cl. 426—435 1 Claim

1. A process for producing a tea product having champagne-like properties, comprising:

boiling a predetermined amount of distilled water;

adding sugar to the boiling water to dissolve same;

adding tea to the distilled water and steeping same;

permitting said steeped tea to cool to ambient room temperature;

adding harvested tea to said distilled water having sugar and tea therein;

adding Manchurian Mushroom with the dark side down on top of said distilled water having sugar and tea therein;

covering said distilled water having sugar and tea therein;

placing the covered distilled water having sugar and tea therein in a dark location with an ambient temperature of 70°–90° Fahrenheit for seven to ten days until a pH of about 3.0 is reached;

straining liquid from said container to provide said tea product having champagne-like properties.

5,543,166

COOKING METHOD AND APPLIANCE

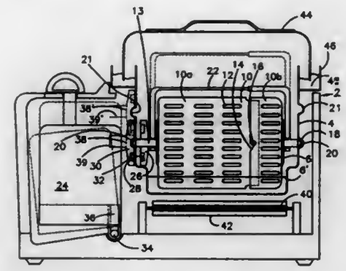
Ruben Masel, Ramat Hasharon, and George Valdshtein, Ganei Tikva, both of, Israel, assignors to M V Research & Development, Ramat Hasharon, Israel

Filed May 20, 1994, Ser. No. 247,109

Claims priority, application Israel, Aug. 20, 1993, 106752

Int. Cl.[6] A23C *3/00*

U.S. Cl. 426—523 7 Claims



1. A method of cooking food articles, comprising:

introducing the food articles into a drum having openings smaller than the food articles;

immersing the bottom of said drum, with the food articles therein, in a quantity of a hot cooking liquid;

rotating the drum such that the food articles tumble into and out of the cooking liquid to cause the food articles to be cooked without absorbing significant quantities of the cooking liquid; and

during the rotation of the drum while cooking the food articles, scooping up a quantity of the liquid from the bottom of the cooking compartment, conveying it to the top of the cooking compartment, and splashing it over the food articles in the drum.

5,543,167

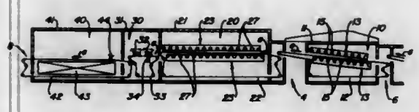
COOKED RICE FREEZING METHOD AND APPARATUS

Hirofumi Onodera, Nara-ken, Japan, assignor to Fujitetsumo Co., Ltd., Japan

Filed Jan. 5, 1995, Ser. No. 369,012

Int. Cl.[6] A23L *3/00;* F25D *25/00*

U.S. Cl. 426—524 19 Claims



1. A method for freezing cooked rice comprising the following steps:

rapidly freezing the surfaces of the grains of the cooked rice to create surface-frozen rice with layers of ice about the grains of rice while maintaining the cores of said grains of rice in a substantially unfrozen state;

breaking up the surface-frozen rice into separate grains of surface-frozen rice; and

cooling the separated grains of surface-frozen rice to freeze the cores of the grains of rice so said grains of rice become completely frozen.

5,543,168

PROCESS FOR PRODUCING FRESH THREE-LAYERED NOODLES

Masahiro Yamasaki, Shiga; Koichiro Houssi, Osaka; Hiromi Shirahase; Nobuyuki Akamatsu, both of Shiga; Michiyuki Tabuchi, Kyoto; Toshinari Hirata, and Yoshifumi Miyazaki, both of Shiga, all of, Japan, assignors to Nissin Shokuhin Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP93/00364, § 371 Date Dec. 1, 1994, § 102(e) Date Dec. 1, 1994, PCT Pub. No. WO94/15485, PCT Pub. Date Jul. 21, 1994

PCT Filed Mar. 25, 1993, Ser. No. 302,830

Claims priority, application Japan, Jan. 14, 1993, 5-004954

Int. Cl.[6] A23L *1/0532;* A23B *4/12*

U.S. Cl. 426—557 22 Claims

1. A process for producing fresh three-layered noodles, comprising the steps of:

(1) preparing an outer-layer dough by kneading grain flour with water;

(2) preparing an inner layer dough having a pH of from neutral to alkaline by adding to grain flour (a) an alkaline agent and (b) an alginic acid compound selected from the group consisting of an alginic acid, an alginic acid salt, and mixtures thereof, and kneading said dough with water;

(3) preparing dough sheets from each of said inner-layer dough and said outer-layer dough through rolling of said inner-layer dough and said outer-layer dough, and rolling the dough sheets so obtained to make a layered dough sheet having an outer-layer/inner-layer/outer-layer structure;

(4) preparing noodle strands by cutting the layered dough sheet having the outer-layer/inner-layer/outer-layer structure, and subjecting the noodle strands to gelatinization; and

(5) treating the gelatinized noodle strands with an acid solution to acidify the noodle strands.

5,543,169

PROTEIN CONTAINING FOODS HAVING STABILITY TO HEAT TREATMENT

Ladislas Colarow, Savigny; Ernesto Dalan, Bionay, and Andrej Kusy, Froideville, all of, Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Filed May 12, 1994, Ser. No. 241,472

Claims priority, application European Pat. Off., Jun. 11, 1993, 93109362

Int. Cl.[6] A23J *7/00*

U.S. Cl. 426—662 20 Claims

1. A food product comprising a protein-containing food substance having incorporated therein an additive lysolecithin/polymer composition of lysolecithin and a polymer selected from the group consisting of pectin, a food-quality gum and mixtures thereof so that the food substance protein has increased stability to heat-treatment.

5,543,170

DESORPTION MASS SPECTROMETRIC CONTROL OF ALLOY COMPOSITION DURING MOLECULAR BEAM EPITAXY

Keith R. Evans, Jamestown, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

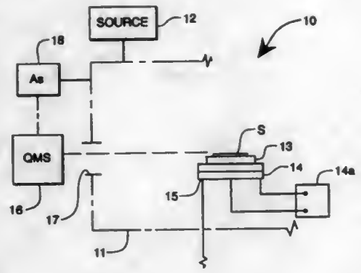
Continuation of Ser. No. 133,375, Aug. 26, 1993, abandoned. This application Jan. 19, 1995, Ser. No. 376,131

Int. Cl.[6] B05D *1/12*

U.S. Cl. 427—8 12 Claims

1. A method for vacuum deposition of a group III-V ternary alloy, comprising the steps of:

(a) providing sources of three elements selected from group III and group V, said sources comprising at least one group III element and at least one group V element;



(b) continuously generating from said sources incident fluxes of known intensities of said group III and group V elements for vacuum depositing a group III-V ternary alloy layer onto a substrate, and generating a desorbed flux of a said group III element from said substrate;

(c) continuously monitoring the intensifies of said incident fluxes and the intensity of the desorbed flux of a said group III element;

(d) comparing the intensities of said incident flux and said desorbed flux of said group III element and determining the amount of said group III element incorporated into said layer from the difference between the intensifies of said incident flux and said desorbed flux of said group III element; and

(e) adjusting the intensity of the incident flux of a said group V element until said difference between the intensities of said incident flux and said desorbed flux of said group III element equals a value corresponding to the composition of said group III element in said group III-V ternary alloy.

5,543,171

PROCESS OF MANUFACTURING A COATED ARTICLE

A. Andrew Shores, 212 Carroll Canal, Venice, Calif. 90291

Continuation-in-part of Ser. No. 990,709, Dec. 14, 1992, Pat. No. 5,356,706. This application Sep. 23, 1993, Ser. No. 125,258

Int. Cl.[6] B05D *3/12;5/10*

U.S. Cl. 427—177 **29 Claims**

1. A process for manufacturing a roll of linerless pressure sensitive adhesive tape comprising the steps of:

i. providing an isocyanate terminated prepolymer comprising the reaction product of a composition comprising in admixture:

A. an oligomer having at least 25 weight per cent polydimethylsiloxane block content and 2–3 isocyanate reactive groups bonded to said polydimethylsiloxane blocks through intermediate divalent organic groups, said isocyanate reactive groups are selected from the group consisting of hydroxyl, thiol, primary amino and secondary amino,

B. an aromatic or aliphatic polyisocyanate, and

C. an organic monomer C having 1 or 2 anionic or potential anionic group and 2 isocyanate reactive groups selected from the group consisting of —OH, —SH, —NH_2, and —NH—Alkyl,

ii. solubilizing and chain extending said prepolymer in water with a tertiary amine and primary or secondary polyamine dissolved in water to form a solution of polyelectrolyte that has at least 10 weight per cent polydimethylsiloxane content and carboxyl content sufficient to solubilize the polyelectrolyte,

iii. coating one side of a tape backing with a dilute solution of said polyelectrolyte in water, and removing the water, and

iv. coating the backing with a pressure sensitive adhesive, and winding the adhesive tape on itself in a convolution to form a roll.

5,543,172

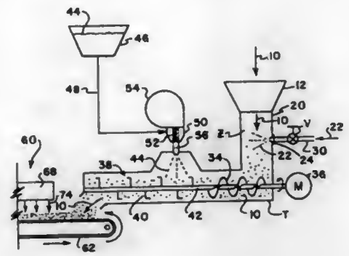
FALL ZONE COVERING FOR PLAYGROUND

John Jakubisin, Arlington, and James K. Alfieri, Garland, both of Tex., assignors to King Associates Inc., Delano, Minn.

Filed Mar. 18, 1994, Ser. No. 210,886

Int. Cl.[6] B05D *7/00*

U.S. Cl. 427—212 **1 Claim**



1. A method for producing unconsolidated fall zone covering material comprising the steps:

permitting rubber fragments to fall by gravity flow through a drop zone;

coating the rubber fragments with a liquid coating material which forms a resilient film upon drying by spraying the liquid coating composition onto the fragments as they fall through the drop zone;

heating the coated rubber fragments to a temperature sufficient to cause the rubber fragments to become tacky; and,

intermingling the resinous component of the coating material with the tacky rubber fragments.

5,543,173

SURFACE TREATING ALUMINUM TRIHYDRATE POWDERS WITH PREHYDROLIZED SILANE

William E. Horn, Jr., Gibsonia; Willy M. Balaba, Monroeville, both of Pa., and Anthony A. Parker, Toledo, Ohio, assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 134,777, Oct. 12, 1993, Pat. No. 5,348,760. This application Sep. 19, 1994, Ser. No. 308,263

Int. Cl.[6] B05D *7/00;3/02;* **B32B** *18/00;* **C08K** *9/06*

U.S. Cl. 427—212 **19 Claims**

1. A method of reducing the agglomeration of inorganic powdered materials, the method comprising:

(a) providing an inorganic powdered material;

(b) coating said inorganic powdered material with a solution of an polysiloxanol oligomer of a trialkoxysiloxane having the structure

$$R''_{4-y}Si(OR')_y$$

wherein R' represents a C_1–C_4 alkyl group; R" represents an organic functional group; Y is an integer between 1 and 4, and, wherein said oligomer has chains having a number average distribution with a number average degree of polymerization X_n in the range above 2 but below the gel point; and

(c) drying said inorganic powdered material.

5,543,174

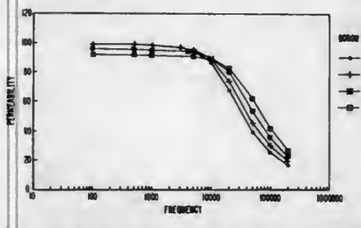
THERMOPLASTIC COATED MAGNETIC POWDER COMPOSITIONS AND METHODS OF MAKING SAME

Howard G. Rutz, Newtown, Pa.; Christopher Oliver, Burlington, and Brooks Quin, Marlton, both of N.J., assignors to Hoeganaes Corporation, Riverton, N.J.

Continuation of Ser. No. 187,404, Jan. 25, 1994, abandoned, which is a continuation of Ser. No. 945,166, Sep. 15, 1992, Pat. No. 5,306,524, which is a division of Ser. No. 701,776, May 17, 1991, Pat. No. 5,198,137, which is a continuation-in-part of Ser. No. 365,186, Jun. 12, 1989, Pat. No. 5,063,011. This application Dec. 15, 1994, Ser. No. 356,138

Int. Cl.[6] B05D *7/00*

U.S. Cl. 427—213 **15 Claims**



1. A method of making a core compact comprising the steps of:

(a) providing uncoated iron-based particles;

(b) providing a coating solution of thermoplastic material in a solvent;

(c) fluidizing the iron-based particles in a stream of air;

(d) contacting the fluidized iron-based particles with the coating solution in a sufficient quantity so as to coat said iron particles with the thermoplastic material in an amount of from at least 0.2 to 2% by weight thermoplastic material; and

(e) compression molding the thermoplastic coated iron particles in a die heated to a temperature above the glass transition temperature of the thermoplastic material.

5,543,175

METHOD FOR FORMING A SCALE PREVENTIVE COATING FILM ON INNER WALL SURFACES OF A POLYMERIZATION VESSEL

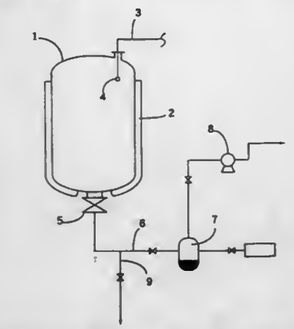
Toshihiko Nakano; Tadashi Amano, and Yoshitaka Okuno, all of Kamisu-machi, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Oct. 27, 1994, Ser. No. 330,386

Claims priority, application Japan, Oct. 28, 1993, 5-292601

Int. Cl.[6] B05D *7/22;1/02*

U.S. Cl. 427—236 **3 Claims**



1. A method for forming a scale preventive coating on inner wall surfaces of a polymerization vessel, comprising spraying a coating liquid containing a scale preventive agent from an upper portion in the polymerization vessel which has been previously closed, while performing suction of gas in the vessel to the outside from a bottom portion of the closed polymerization vessel to thereby discharge excessive coating liquid to the outside, and while heating the polymerization vessel using a water jacket provided on an outer wall of the polymerization vessel so as to perform drying of the scale preventive coating liquid applied on said inner wall surfaces, said polymerization vessel having an internal volume of not less than 80 m^3.

5,543,176

CVD OF AL_2O_3 LAYERS ON CUTTING INSERTS

Christopher G. Chatfield, Tumba; Jan N. Lindström, Hägersten; Mats E. K. Sjöstrand, Kista, and Ingrid K. M. Collin, Enskede, all of, Sweden, assignors to Sandvik AB, Sandviken, Sweden

Division of Ser. No. 717,079, Jun. 18, 1991, abandoned, which is a continuation of Ser. No. 539,567, Jun. 15, 1990, Pat. No. 5,071,696. This application Sep. 30, 1993, Ser. No. 128,741

Claims priority, application Sweden, Jun. 16, 1989, 8902179

Int. Cl.[6] C23C *16/00;* **B32B** *9/00*

U.S. Cl. 427—255.3 **19 Claims**

1. A method of coating a body adapted for a cutting insert having at least one layer of a carbide, carbonitride, oxynitride, oxycarbide, oxycarbonitride or nitride of one metal selected from the groups IVB, VB, or VIB of the Periodic Table, the method comprising subjecting the body to chemical vapor deposition and coating the body with an epitaxial kappa-Al_2O_3 layer by the hydrolysis reaction of $AlCl_3$, H_2 and CO_2, the hydrolysis reaction being carried out while maintaining the content of water vapor in the as phase during nucleation of Al_2O_3 at less than 5 ppm.

5,543,177

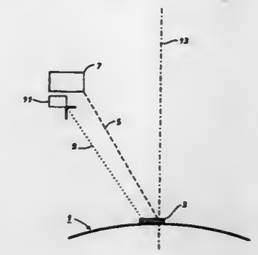
MARKING MATERIALS CONTAINING RETROREFLECTING FILLERS

Jan D. Morrison; Edward F. Grabowski, both of Webster; Virginia E. Dotschkal, Newark; Anita P. Lynch, Webster, and Jerome E. May, Pittsford, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 971,742, Nov. 5, 1992, Pat. No. 5,397,673. This application Dec. 6, 1993, Ser. No. 161,619

Int. Cl.[6] B25D *5/00*

U.S. Cl. 427—288 **35 Claims**



27. An imaging process which comprises applying a liquid to a substrate in imagewise fashion, followed by applying retroreflective filler particles to the liquid image, wherein the liquid is curable to a solid and the process comprises applying a curable liquid to a first substrate in an image pattern, optionally transferring the curable liquid image to a second substrate, subsequently contacting

the curable liquid image with retroreflective filler particles so that the retroreflective filler particles adhere to the curable liquid image, optionally transferring the curable liquid and the retroreflective filler particles in image pattern to a third substrate, and curing the curable liquid in the image pattern to a solid.

5,543,178

GROUT FINISHING METHOD WITH KIT

Harry W. Smith, 517 Enderby Rd., Chuluota, Fla. 32766

Filed May 26, 1995, Ser. No. 452,026

Int. Cl.[6] B05D *3/12*

U.S. Cl. 427—299 **15 Claims**

1. A method for applying grout-treatment material to grout bordering tile that is held in place with the grout on a pre-existing tiled surface comprising:

A. conditioning the tiled surface by

preparing a design aqueous solution by mixing a desired volume of water and a volume of a design acid that is about three-to-fifteen percent of the desired volume of the water,

applying the design aqueous solution to the grout sufficiently to wet the grout and the tile when the grout and tile are dry and free of extraneous material and dirt except for possible stains,

allowing the design aqueous solution to soak into the grout;

B. applying the grout-treatment material by

shaking or otherwise mixing a can of design grout-treatment material for application onto the grout,

applying the design grout-treatment material onto the grout with a tile brush in preferably up to one-foot strokes that may cause the paint brush to deposit the design grout-treatment material onto incidental portions of the tile grout also,

allowing the design grout-treatment material to dry on the grout and on the incidental portions of the tile without wiping, brushing or otherwise disturbing for about twenty minutes; and

C. cleaning up by

sweeping the tiled surface with a broom.

5,543,179

HEAD CLEANING DEVICE

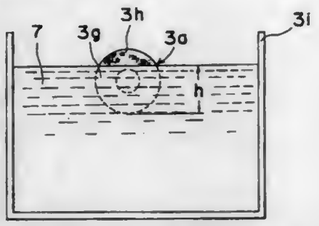
Norimoto Nouchi, Katano; Masaya Sakaguchi, Neyagawa; Hiroshi Yoda, Hirakata, and Yoshiaki Mizoh, Neyagawa, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 76,571, Jun. 14, 1993, Pat. No. 5,453,893. This application Jun. 7, 1995, Ser. No. 478,345

Claims priority, application Japan, Jun. 15, 1992, 4-154645; Dec. 22, 1992, 4-341915

Int. Cl.[6] B05D *3/16*

U.S. Cl. 427—346 **2 Claims**



1. A method for manufacturing first and second cleaning members included in cleaning roller means used for cleaning a magnetic head, said method comprising the steps of:

immersing said cleaning roller means in a solution containing said abrasive particles and polymer resin by a selected depth horizontally such that the axis of said cleaning roller means is located parallel to the surface of said solution;

rotating said cleaning roller means along with said axis thereof by a selected angle; and

raising up said cleaning roller means from said solution such that said first and second cleaning members are formed in the immersed and non-immersed portions of said cleaning roller means, respectively.

5,543,180

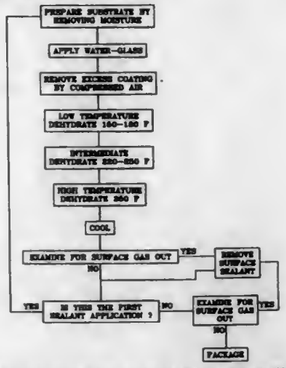
MOISTURE RESISTANT CERAMIC IGNITER FOR A BURNER

David R. Salzmann, Chambersburg, and James C. Purington, Tannersville, both of Pa., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Continuation-in-part of Ser. No. 289,951, Jun. 30, 1994, abandoned, which is a division of Ser. No. 68,465, May 27, 1993, Pat. No. 5,378,956. This application May 8, 1995, Ser. No. 436,685

Int. Cl.[6] B05D *3/02*

U.S. Cl. 427—397.7 **7 Claims**



1. A method for producing an inorganic, nonmetallic coating on a porous, ceramic substrate, said coating being substantially impermeable to moisture penetration, comprising:

a. providing a porous, moisture-bearing ceramic substrate;

b. removing moisture from said substrate;

c. applying a first liquid coating of water-glass to said substrate, said water-glass being partly absorbed by said substrate and partly unabsorbed by said substrate;

d. removing at least a portion of said liquid water-glass not absorbed by said substrate; and

e. curing said liquid water-glass by dehydration to provide a first substantially contiguous coating of only silicate on said substrate.

5,543,181

PROCESS AND DEVICE FOR DEFINED IMPREGNATION OF HONEYCOMB STRUCTURES WITH PARALLEL FLOW CHANNELS

Edmund Fehn; Felix Schmidt, both of Rheinfelden, and Joerg Plessow, Bad Homburg, all of, Germany, assignors to Degussa Aktiengeselischaft, Frankfurt am Main, Germany

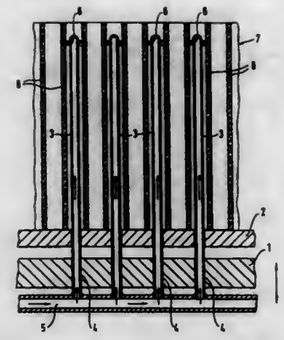
Filed Dec. 13, 1994, Ser. No. 357,212

Claims priority, application Germany, Dec. 16, 1993, 43 42 914.9

Int. Cl.[6] B05D *7/00*

U.S. Cl. 427—421 **12 Claims**

1. A process for the impregnation of a coated honeycomb structure with an impregnating solution in order to achieve a profile of deposited catalytically active components, wherein the



honeycomb structure has two cross-sectional surfaces and a plurality of flow channels parallel to the axis of flow which channels are arranged in a grid over the cross-section of the honeycomb structure, said coated honeycomb being previously coated with a layer of finely divided metal oxides, comprising inserting a plurality of hollow injector needles into a plurality of said flow channels and spraying the impregnating solution containing the catalytically active components into the flow channels of the coated honeycomb in sufficient amount to achieve the profile.

5,543,182

SELF-ACCELERATING AND REPLENISHING NON-FORMALDEHYDE IMMERSION COATING METHOD

Nayan E. Joshi, East Brunswick; John E. McCaskie, Whitehouse Station, both of N.J., and Michael T. Boyle, Holland, Pa., assignors to Atotech USA, Inc., Somerset, N.J.

Continuation of Ser. No. 121,455, Sep. 19, 1993, abandoned, which is a continuation-in-part of Ser. No. 34,485, Mar. 18, 1993, abandoned. This application Feb. 16, 1995, Ser. No. 389,565

Int. Cl.[6] B05D *1/18*

U.S. Cl. 427—443.1 **75 Claims**

1. A process for applying a metal coating to a nonconductive substrate comprising:

a. contacting said substrate with an activator comprising a noble metal/Group IVA metal sol to obtain a treated substrate;

b. contacting said treated substrate with a self accelerating and replenishing immersion metal composition having a pH above about 11 to about pH 13 comprising a solution of;

(i) a Cu(II), Ag, Au(III), or Ni soluble metal salt or mixtures thereof,

(ii) a Group IA metal hydroxide,

(iii) a complexing agent comprising an organic material having a cumulative formation constant log K of from about 0.73 to about 21.95 for an ion of the metal of said metal salt, to obtain a coated substrate.

5,543,183

CHROMIUM SURFACE TREATMENT OF NICKEL-BASED SUBSTRATES

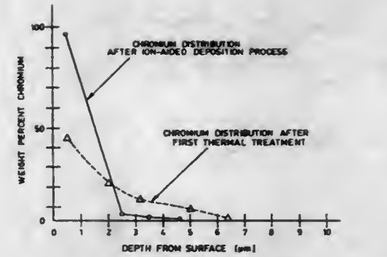
Holger H. Streckert, San Diego, and Paul W. Trester, Encinitas, both of Calif., assignors to General Atomics, San Diego, Calif.

Filed Feb. 17, 1995, Ser. No. 390,777

Int. Cl.[6] B05D *3/06*

U.S. Cl. 427—529 **17 Claims**

1. A method for applying a chromium surface treatment onto a nickel-based substrate to improve the corrosion resistance of said nickel-based substrate while retaining thermal conductivity, the method comprising the steps of:



(a) ion plating said nickel-based substrate with chromium atoms using a physical vapor deposition process;

(b) thermally treating said chromium-plated nickel-based substrate in an inert environment to interdiffuse chromium and nickel atoms of said chromium-plated nickel-based substrate; and

(c) thermally treating said interdiffused chromium-plated nickel-based substrate in an oxygen-containing environment to create a layer of chromium oxide.

5,543,184

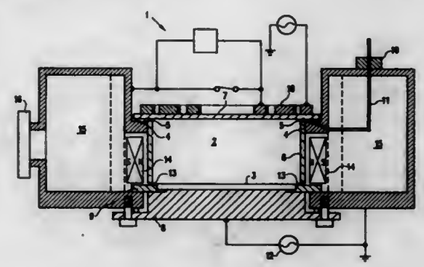
METHOD OF REDUCING PARTICULATES IN A PLASMA TOOL THROUGH STEADY STATE FLOWS

Michael S. Barnes, San Francisco, Calif.; Dennis K. Coultas, Hopewell Junction, N.Y.; John C. Forster, San Francisco, Calif.; John H. Keller, Newburgh, N.Y., and Thomas Wicker, Vallejo, Calif., assignors to International Business Machines Corporation, Armonk, N.Y., and Lam Research Corporation, Freemont, Calif.

Division of Ser. No. 178,386, Dec. 23, 1993. This application May 25, 1995, Ser. No. 450,120

Int. Cl.[6] H05H *1/02*

U.S. Cl. 427—571 **9 Claims**



1. A method of plasma processing an object, the method including steps of:

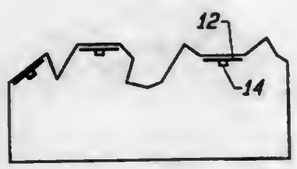
exposing an object to a plasma discharge;

generating a plasma flow adjacent the object;

entraining particulates with said plasma flow to a pumping aperture; and

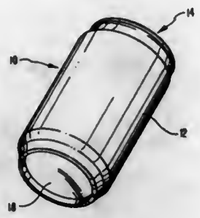
pumping a medium past said aperture for entraining the particulates through and away from said aperture such that said plasma discharge and said particulates flow from a first location through said aperture to a second location.

5,543,185
ARTIFICIAL ROCK CLIMBING STRUCTURE AND METHOD OF MAKING
Daniel Christensen, Cupertino, Calif., assignor to Arete Climbing Systems, Inc., Fremont, Calif.
Filed Apr. 12, 1994, Ser. No. 226,800
Int. Cl.[6] B29C *67/20*; B44F *9/04*
U.S. Cl. 428—15 9 Claims



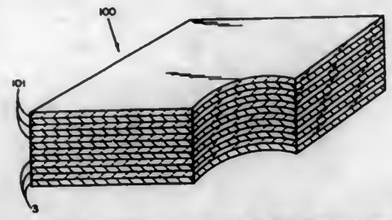
1. An artificial rock climbing structure comprising:
a support frame;
at least one block of polystyrene foam permanently attached to said support frame, said polystyrene foam having a surface opposite said support frame irregularly shaped to resemble a rock surface, said block having a sufficient size to support a person's weight; and
a hard coating on said irregularly shaped surface, said hard coating resembling a rock surface.

5,543,186
SEALABLE LIQUID-TIGHT, THIN-WALLED CONTAINERS MADE FROM HYDRAULICALLY SETTABLE MATERIALS
Per J. Andersen, and Simon K. Hodson, both of Santa Barbara, Calif., assignors to E. Khashoggi Industries, Santa Barbara, Calif.
Continuation-in-part of Ser. No. 19,151, Feb. 17, 1993, Pat. No. 5,453,310, and Ser. No. 95,662, Jul. 21, 1993, Pat. No. 5,385,764. This application Aug. 10, 1993, Ser. No. 105,851
Int. Cl.[6] B32B *13/00*; C04B *14/00*
U.S. Cl. 428—34.4 232 Claims



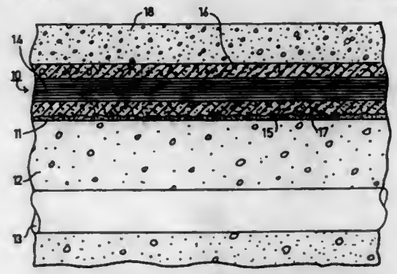
1. An article of manufacture comprising:
a sealable container having a liquid-tight barrier, at least a substantial portion of said sealable container being formed from a substantially hardened hydraulically settable matrix formed from a hydraulically settable mixture comprising a hydraulically settable binder, water, fibers, and a rheology-modifying agent, the hydraulically settable matrix having a thickness less than about 3 mm and being characterized in that it may be bent, folded or rolled to significantly mechanically deform the substantially hardened matrix without substantial rupture of the hydraulically settable matrix.

5,543,187
AMORPHOUS METAL - CERAMIC COMPOSITE MATERIAL
Joseph P. Errico, 150 Douglas Rd., Far Hills, N.J. 07931, and Steven J. Hultquist, 5000-303 Beaverbrook Rd., Raleigh, N.C. 27612
Filed Oct. 11, 1994, Ser. No. 320,512
Int. Cl.[6] B28B *21/00*
U.S. Cl. 428—34.6 29 Claims



1. A composite material comprising a multi-layered structure having a plurality of discrete layers including at least two separated layers of amorphous metal and at least one continuous layer of a ceramic material between a pair of said separated amorphous metal layers.

5,543,188
FLEXIBLE PROTECTIVE MEMBRANE PARTICULARLY USEFUL FOR WATERPROOFING AND PROTECTING REINFORCED CONCRETE BODIES AND METAL PIPES
Moshe Te'eni, 53A Ir Shemesh Street, 69 086 Tel Aviv, Israel
PCT No. PCT/US93/07930, § 371 Date Mar. 9, 1995, § 102(e) Date Mar. 9, 1995, PCT Pub. No. WO94/04349, PCT Pub. Date Mar. 3, 1994
PCT Filed Aug. 24, 1993, Ser. No. 397,125
Claims priority, application Israel, Aug. 25, 1992, 102932
Int. Cl.[6] B32B *13/00*
U.S. Cl. 428—36.2 26 Claims

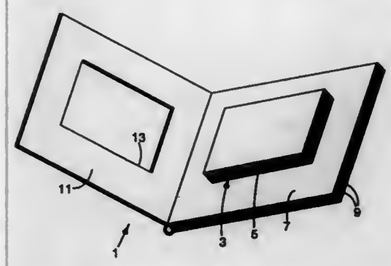


1. A flexible, protective and waterproofing membrane for application onto a body to conform to a surface of the body and to be bonded thereto, comprising:
a flexible polymeric sheet for providing protection against the penetration of water and having on each of its opposite faces an open-textured surface defining interconnected internal voids open to the atmosphere;
said open-textured surface on each face of the polymeric sheet being impregnated with a dry cementitious material bonded to the respective surface;
said dry cementitious material including a water-hardenable cement which is substantially in a non-hydrated condition, wherein the membrane is capable of being applied to assume the contour of a body and upon wetting said membrane by a cementitious water slurry including non-hydrated cement for applying between the membrane and the body, the membrane becomes bonded to said body by hydration of the non-hydrated cement in said membrane together with the non-hydrated cement in said slurry.

5,543,189
RESIN COMPOSITIONS, PRODUCTION PROCESS THEREOF, AND PRODUCTS USING THE RESIN COMPOSITIONS
Yasushi Nakakura, Tokyo; Hideki Tanaka, Kudamatu; Akira Sano; Akio Mogi, both of Chiba-ken; Matsuhiro Miyamoto, and Kazunari Suzuki, both of Sakura, all of, Japan, assignors to Tokuyama Corporation, Yamaguchi-ken, and Fujikura, Ltd., Tokyo, both of, Japan
Division of Ser. No. 117,701, Sep. 8, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 471,232
Claims priority, application Japan, Sep. 8, 1992, 4-264162; Sep. 10, 1992, 4-242331
Int. Cl.[6] B32B *1/08*
U.S. Cl. 428—36.8 8 Claims

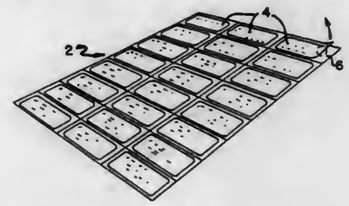
1. An optical fiber feeding pipe comprising a resin composition formed on at least an inner wall thereof, said resin composition having excellent surface lubricity, mechanical strength and abrasion resistance, and being useful in mechanical parts where good libricity is required, consisting essentially of a mixture of:
100 parts by weight of an ethylene-base resin comprising at least 2 wt. % of linear low-density polyethylene; and
0.1–30 parts by weight of an organopolysiloxane having a weight average molecular weight of at least 300,000.

5,543,190
ALBUM CONTAINING PADS OF TWO-SIDE COATED REPOSITIONABLE TAPES
Dee L. Johnson, Woodbury; Kenneth F. Knoll, Hastings, and John R. David, Stillwater, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jun. 16, 1994, Ser. No. 260,691
Int. Cl.[6] B42F *5/00*; G09F *1/10*
U.S. Cl. 428—40.1 25 Claims



1. An album comprising more than two pages free of pressure-sensitive adhesive, said album having a stack of sheets attached to said album, at least two of said sheets being removable from said stack and having repositionable pressure sensitive adhesive on both sides of said sheets which are removable, wherein said repositionable adhesive is the same adhesive on both sides of said sheets which are removable, there are no release liners between said removable sheets.

5,543,191
DURABLE SHEETS FOR PRINTING
Peter J. Dronzek, Jr., 6 Poe Rd., Thornwood, N.Y. 10594; Roger H. Sedran, Franklin Lakes, N.J., and Brian K. Burke, Sydney, Australia, assignors to Peter J. Dronzek, Jr., Thornwood, N.Y.
Continuation of Ser. No. 774,415, Oct. 10, 1991, Pat. No. 5,418,026. This application Feb. 6, 1995, Ser. No. 383,883
Int. Cl.[6] G09F *3/00*; B42D *15/00*
U.S. Cl. 428—41.5 21 Claims



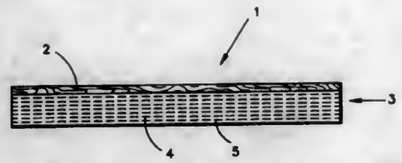
1. A durable sheet for printing, the sheet including at least three layers comprised of:
layer A, which consists essentially of at least one base layer consisting of a paper, a synthetic paper or a coated film;
layer B, which consists essentially of at least one print receiving layer consisting of a paper, a synthetic paper or a coated film, wherein layer B is adhered to the top face of layer A; and
layer C, which consists essentially of at least one backing layer consisting of a paper, a synthetic paper or a coated film, wherein layer C is adhered to the bottom face of layer A; and wherein
layer B and the backing C have the same or substantially the same thermal elongation or contraction characteristics; and
wherein the top surface of layer A comprises a release agent, the bottom surface of layer B comprises a pressure sensitive adhesive and layer C is permanently adhered to layer A.

5,543,192
PRINTABLE RELEASE
Adele C. Shipston, Williamsville, and David K. Rice, II, Tonawanda, both of N.Y., assignors to Moore Business Forms, Inc., Grand Island, N.Y.
Division of Ser. No. 189,632, Feb. 1, 1994, Pat. No. 5,478,880. This application Jun. 7, 1995, Ser. No. 488,358
Int. Cl.[6] C08L *27/06*; B32B *7/06*
U.S. Cl. 428—40.6 6 Claims

1. An article comprising a substrate and a release layer coated onto at least a portion of one side of the substrate, said release layer comprising a mixture of:
(a) a major amount of ethylene vinyl chloride copolymer; and
(b) a minor amount of a polyethylene emulsion.

5,543,193
WOOD COVERING, PARTICULARLY WOOD FLOOR COVERING
Gunter Tesch, Ave. Jean-Marie Musy 15, CH-1700 Fribourg, Switzerland
PCT No. PCT/EP93/01316, § 371 Date Jan. 25, 1994, § 102(e) Date Jan. 25, 1994, PCT Pub. No. WO93/24295, PCT Pub. Date Dec. 9, 1993
PCT Filed May 25, 1993, Ser. No. 185,864
Claims priority, application Germany, May 26, 1992, 42 17 438.4; Oct. 21, 1992, 42 35 530.3; Jan. 19, 1993, 43 01 262.0
Int. Cl.[6] B32B *1/04*
U.S. Cl. 428—285 29 Claims

1. A wood covering including an upper layer formed by a wood layer (2) and a support (3,6) permanently bonded to the upper layer



(2), said support comprising pieces of thermoplastic synthetic foil (5) compressed and at least partially bonded to one another by pressure and heat.

5,543,194

PRESSURIZABLE ENVELOPE AND METHOD

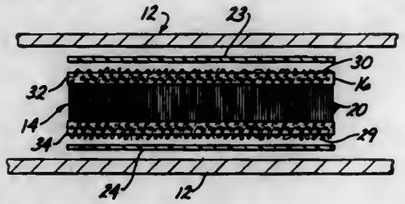
Marion F. Rudy, Northridge, Calif., assignor to Robert C. Bogert, Marina Del Ray, Calif.

Division of Ser. No. 297,910, Jan. 19, 1989, abandoned, which is a continuation-in-part of Ser. No. 147,131, Feb. 5, 1988, Pat. No. 4,906,502. This application Apr. 3, 1991, Ser. No. 680,248

The portion of the term of this patent subsequent to Mar. 6, 2007, has been disclaimed.

Int. Cl.[6] B32B *1/04;* **A43B** *13/20*

U.S. Cl. 428—69 **49 Claims**



1. An internally pressurizable envelope having spaced inner and outer surfaces comprising:
first and second fabric layers positioned in said envelope such that one surface of each fabric layer is facing an inner surface of said envelope,
said envelope being of elastomeric material,
each of said fabric surfaces being bonded to the facing inner surface of said envelope,
said fabric layers including a yarn material which is texturized or flannelized or bulked to increase the bonding to the facing layer of said envelope,
flexible means between said fabric layers for restraining the movement of said fabric layers away from one another beyond a predetermined distance, and
a gas in the interior of said envelope to pressurize the same.

2. An internally pressurizable envelope having spaced inner and outer surfaces for use in footwear wherein said envelope is exposed to relatively high localized and cyclic loads comprising:
a fabric material having first and second fabric layers positioned in said envelope such that each surface thereof is facing an inner surface of said envelope,
said envelope being of elastomeric material and including at least a portion which forms a sealed seam,
each of said fabric surfaces being bonded to the facing inner surface of said envelope,
flexible means between said fabric layers for restraining the movement of said fabric layers away from one another beyond a predetermined distance,
said flexible means including a plurality of fibrous strands extending between said fabric layers and being joined thereto,
said sealed seam being essentially free of fibrous material of said fabric layers and said fibrous strands, and
a gas in the interior of said envelope to pressurize the same whereby said fibrous strands are placed in tension to maintain the opposed surfaces of said envelope in planar configuration and said gas operating as the medium which absorbs compressive loads on said envelope.

3. An internally pressurized envelope comprising:
a hermetically sealed envelope defining at least one pressurized chamber, said envelope being composed of elastomeric material which in conjunction with other portions of the structure, is substantially impervious to large molecule size gases and slightly permeable to oxygen;
a compressible fabric structure within said chamber,
the fabric of said compressible fabric structure including a yarn material which is texturized or flannelized or bulked,
said compressible fabric structure being substantially coextensive with said chamber and comprising a first fabric layer, a second fabric layer normally spaced from said first layer,
flexible means which are also compressible positioned between said layers and forming a part of said fabric for restraining said fabric layers from separating more than a predetermined distance;
means for forming a substantially continuous bond between said outer covering and said first and second fabric layers;
said fabric layers being at least partially imbedded within said outer covering to reduce diffusion through such covering,
said envelope including at least one seamed portion,
said seamed portion being free of fibrous material of said compressible fabric structure, and
a large molecule sized non-polar gas in said chamber, said envelope being pressurized to pressure of a least two pounds per square inch whereby substantially all of the resistance of said envelope to compression is provided by the gas pressure within said chamber.

5,543,195

FLOCKED WOVEN FABRIC WITH FLATTENED FLOCK FIBERS

William J. Squires, 26 E. Hunting Ridge Rd., Stamford, Conn. 06903, and William Th. Squires, 26 E. Hunting Ridge Rd., Stamford, Conn. 06903

Continuation-in-part of Ser. No. 180,865, Jan. 12, 1994, abandoned. This application May 11, 1994, Ser. No. 241,607

Int. Cl.[6] B05D *1/14;1/16;5/00;* **B32D** *33/06*

U.S. Cl. 428—90 **24 Claims**

PRINT	6
FLOCK	5
ADHESIVE	4
SUBSTRATE	2
FILM	8

1. A fabric, comprising:
a woven substrate, flock fibers, an adhesive adhering said flock fibers to a face of said substrate, said fibers being thermally set into a flattened and laid down condition as a result of being flattened directionally from an erect condition, and a breathable waterproof film laminated onto another face of said substrate such that said substrate is between said film and said adhesive.

5,543,196

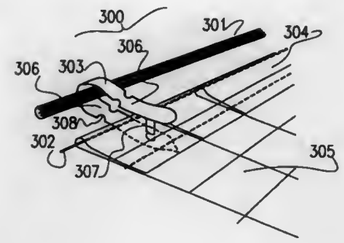
SELVEDGE REINFORCEMENT

Michael D. Robinson, School Rd., Waimauku, Auckland, New Zealand, and Barry J. Causton, 2180 Brickell Ave., Miami, Fla. 33129

Filed Jul. 26, 1994, Ser. No. 279,882

Int. Cl.[6] B32B *3/06*

U.S. Cl. 428—99 **4 Claims**



1. A porous textile panel of knitted, woven, or extruded material suitable for use in shielding farm plants or animals from adverse weather, comprising a sheet having one or more selvedged edges which receive and hold elongate reinforcing material, said reinforcing material distributing tensions which arise within said panel at discrete spaced apart points at which said panel is attached to a support structure along a length of the panel and including within its edges elongated reinforcing material comprising a hem cable made of a pliable multifilament wire braid inside a soft plastic sheath.

5,543,197

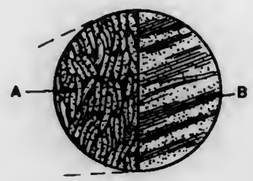
PARALLEL RANDOMLY STACKED, STRANDED, LAMINATED BAMBOO BOARDS AND BEAMS

Jay Plaehn, 1765 Garnet Ave., San Diego, Calif. 92109

Filed Feb. 18, 1994, Ser. No. 198,553

Int. Cl.[6] B32B *5/12;21/14*

U.S. Cl. 428—106 **10 Claims**



1. A bamboo beam comprising, in combination:
a plurality of bamboo segments, each of said bamboo segments having a length, width and a longitudinal axis, said longitudinal axes of said segments being generally parallel to one another, said segments having a random horizontal and vertical orientation about the length and width of each of said segments, respectively, said segments also having a random rotational orientation with regard to said longitudinal axis of each said segments, and said segments compressed and bonded together to form a single integral structure.

5,543,198

NOISE ATTENUATION PANEL

Robert S. Wilson, Belfast, Northern Ireland, assignor to Short Brothers PLC, Belfast, United Kingdom

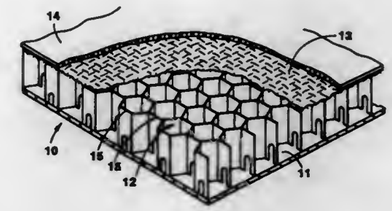
PCT No. PCT/GB89/00841, § 371 Date May 21, 1990, § 102(e) Date May 21, 1990, PCT Pub. No. WO90/00968, PCT Pub. Date Feb. 8, 1990

PCT Filed Jul. 24, 1989, Ser. No. 498,845

Claims priority, application United Kingdom, Jul. 25, 1988, 88/17669

Int. Cl.[6] B32B *3/12*

U.S. Cl. 428—116 **15 Claims**



1. A noise attenuation panel comprising a backing component part, a facing component part and a cellular component part having a multiplicity of open-ended juxtaposed cells, the backing component part extending across the ends of the cells of the cellular component part at the rear thereof and the facing component part extending across the ends of the cells of the cellular component part at the front thereof, wherein the facing component part comprises an outer facing sheet of a porous permeable powder sintered thermoplastics material.

5,543,199

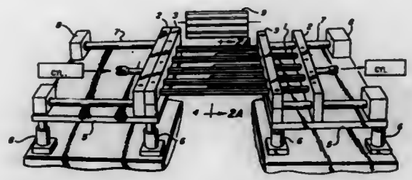
CONTINUOUS PROCESS FOR THE PREPARATION OF UNITARY THERMOPLASTIC HONEYCOMB CONTAINING AREAS WITH DIFFERENT PHYSICAL PROPERTIES

Barry M. Fell, Hummelstown, Pa., assignor to Hexcell Corporation, Pleasanton, Calif.

Division of Ser. No. 620,958, Dec. 3, 1990, Pat. No. 5,217,556. This application Feb. 25, 1993, Ser. No. 22,569

Int. Cl.[6] B32B *3/12*

U.S. Cl. 428—116 **9 Claims**



1. A unitary thermoplastic honeycomb structure having at least one area possessing different physical properties than the remainder of the honeycomb, wherein said at least one area possessing different physical properties comprises at least one half-cell height in which a primary thermoplastic web and at least one secondary thermoplastic web of the same or different material as each other are bonded together in a node to node and antinode to antinode relationship.

5,543,200

ABRASION-RESISTANT ARTICLE COATED WITH A COATING COMPOSITIONS BASED ON FLUORINATED MONOHYDRIC ALCOHOL

I. Glen Hargis, Tallmadge; Russell A. Livigni, Akron; Earl G. Melby, Uniontown, and Francis J. Vitus, Tallmadge, all of Ohio, assignors to GenCorp Inc., Fairlawn, Ohio

Filed Dec. 19, 1994, Ser. No. 359,136
Int. Cl.[6] B32B *3/04;27/40*
U.S. Cl. 428—122 11 Claims

1. A laminate comprising a cured coating composition on a substrate, said coating composition being the reaction product of a reaction mixture comprising;

(a) a fluorinated monohydric alcohol other than fluorinated poly-(oxetane), wherein at least 20 percent of the total hydrogen and halogen atoms of said fluorinated monohydric alcohol are fluorine atoms,

(b) a nonfluorinated polyol, wherein said nonfluorinated polyol is a polyether, a polyester, or a hydrogenated polydiene polyol or a combination thereof; and

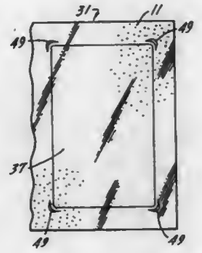
(c) a polyisocyanate of the formula $R(NCO)_n$ where n is an integer from 2 to 5 and R has from 4 to 100 carbon atoms and R is not a polyether or a polyester, wherein the ratio of isocyanate groups to hydroxyl groups in said reaction mixture is from 1:1 to 50:1.

5,543,201

METHOD AND APPARATUS FOR PRECISELY POSITIONING AND ATTACHING A PROTECTIVE FILM LAYER TO A FACE OF A CARD

Herbert M. Drower, Wilmette, Ill., assignor to Transilwrap Company, Inc., Chicago, Ill.

Filed Sep. 29, 1994, Ser. No. 315,248
Int. Cl.[6] D06N *7/04;* B32B *23/02*
U.S. Cl. 428—142 3 Claims



1. A carrier strip for applying a protective film sheet to a face of a prelaminated plastic card, said carrier strip including:

an elongated strip of paper,

an elongated protective film sheet adhered to said sheet of paper by an adhesive,

at least one panel die cut in said protective film sheet,

said die cut panel being similar in shape to but slightly smaller in length and width than said face of said prelaminated plastic card,

a ridge embossed in said carrier strip around the periphery of at least a portion of said die cut panel,

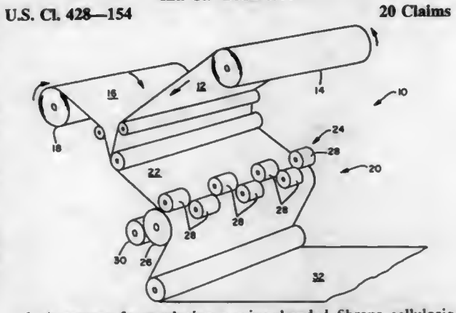
said ridge encompassing an area having a length and width slightly greater than the corresponding length and width of said plastic card to enable said ridge to surround and position said panel of said protective film in registry with said face of said prelaminated plastic card.

5,543,202

PROCESS FOR PRODUCING A CRIMP-BONDED FIBROUS CELLULOSIC LAMINATE

Harry E. Clark, Cumming, Ga.; Cynthia W. Henderson, Neenah; Robert C. Marcinek, Appleton, both of Wis.; Frances W. Mayfield, Marietta, Ga.; Thad W. Perkins, and Jorg F. Voss, both of Roswell, Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Mar. 14, 1994, Ser. No. 212,537
Int. Cl.[6] B32B *3/10*
U.S. Cl. 428—154 20 Claims



1. A process for producing a crimp-bonded fibrous cellulosic laminate comprising the steps of:

passing at least two superposed plies of a fibrous cellulosic material through a crimp roll arrangement including a rotating crimp element and a rotating anvil element, the crimp element having protruding members configured in a discontinuous pattern aligned on an axis that is parallel to the cross-machine direction providing a substantially continuous uniform area of localized surface contact between the rotating elements across the width of the plies;

applying a pressure load against the rotating elements sufficient to establish bonding contact between the fibrous cellulosic material plies; and

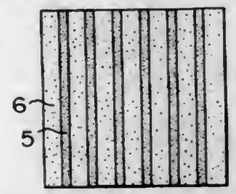
forming crimp bonds between the fibrous cellulosic material plies so they are joined by autohesive bonding to yield a laminate.

5,543,203

MAGNETIC RECORDING MEDIUM HAVING A PROTECTIVE LAYER WHICH INCLUDES HIGH AND LOW SURFACE ENERGY REGIONS AND A LUBRICANT

Hiroshi Tani, Kanagawa-ken; Heigo Ishihara, Tokyo, and Hiroyuki Matsumoto, Ebina, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 4, 1994, Ser. No. 285,835
Claims priority, application Japan, Aug. 6, 1993, 5-196165
Int. Cl.[6] G11B *5/72*
U.S. Cl. 428—156 13 Claims



1. A magnetic recording medium including at least a magnetic film for storing data, a protective film and a lubricant film sequentially formed on a substrate, wherein said protective film includes regions each having a different surface energy on the protective film, and including a region having a higher surface energy than an adjacent region, and said lubricant film including a polar group

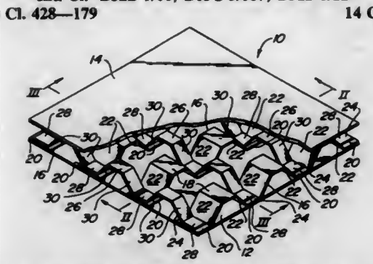
which exhibits adhesion to said region having higher surface energy formed on the protective film having the regions.

5,543,204

BI-DIRECTIONALLY CORRUGATED SANDWICH CONSTRUCTION

Hemen Ray, Perkasie, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 5, 1995, Ser. No. 368,949
Int. Cl.[6] B32B *1/00;* B05C *3/107;* B31F *1/22*
U.S. Cl. 428—179 14 Claims



1. A bi-directionally corrugated sandwich construction, comprising:

first and second face sheets positioned essentially parallel to and spaced apart from each other;

a first plurality of corrugated strips fixed between said first and second face sheets, the corrugated strips of said first plurality having planar peaks and troughs positioned at regular intervals, and being positioned parallel to and spaced apart from each other with the peaks and the troughs being in phase with each other such that parallel rows of troughs are formed perpendicular to said first plurality of corrugated strips; and

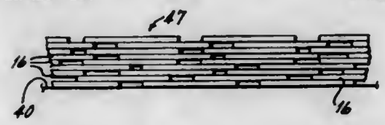
a second plurality of corrugated strips fixed between said first and second face sheets, the corrugated strips of said second plurality having planar peaks and troughs positioned at regular intervals, and being positioned parallel to each other with the peaks and troughs being in phase with each other, said second plurality of corrugated strips being positioned perpendicular to said first plurality of corrugated strips, the corrugated strips of said second plurality being positioned in the rows of troughs formed by said first plurality of corrugated strips.

5,543,205

COMPOSITE ARTICLE MADE FROM USED OR SURPLUS CORRUGATED BOXES OR SHEETS

Henry L. Liebel, Newport, Ky., assignor to Corrcycle, Inc., Roswell, Ga.

Continuation-in-part of Ser. No. 994,205, Dec. 21, 1992, Pat. No. 5,366,790, which is a continuation-in-part of Ser. No. 715,442, Jun. 14, 1991, abandoned. This application Jan. 26, 1994, Ser. No. 187,306
Int. Cl.[6] B32B *3/28;* B65D *19/00*
U.S. Cl. 428—184 8 Claims



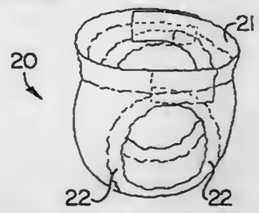
1. A composite article useful as a material of construction comprising a plurality of substantially aligned, individual pieces of corrugated cardboard cut from scrap corrugated boxes or sheets, said pieces being disposed and adhered with respect to one another such that they lie in a shingle-shaped configuration, a configuration of unconnected pieces being adjoined by a piece deposited on top thereof and spanning unconnected pieces, or a combination thereof and forming multiple, generally planar layers comprised of said individual corrugated cardboard pieces having a length only a fraction of the full length of the article, said article having opposed generally planar faces, and paper sheets adhered to said opposed generally planar faces.

5,543,206

NONWOVEN COMPOSITE FABRICS

Jared A. Austin, and David D. Newkirk, both of Greer, S.C., assignors to Fiberweb North America, Inc., Simpsonville, S.C.

Filed Nov. 23, 1994, Ser. No. 344,732
Int. Cl.[6] A61F *13/64;* B32B *5/04;27/02;33/00*
U.S. Cl. 428—198 20 Claims



1. A composite nonwoven fabric comprising a nonelastic layer of fibers formed from a blend of 50 to 98 percent polyethylene and 2 to 50 percent polypropylene, said nonelastic layer including a plurality of intermittent bonds bonding the fibers together to form a coherent web, and an extensible web layer laminated to said nonelastic layer of fibers, said composite nonwoven fabric existing in an untensioned, non-elongated state.

5,543,207

WALL COVERINGS

John E. Heighington, Halifax; Daphne Butters, Sheffield, and Stephen J. Claxton, Harlow, all of, United Kingdom, assignors to Synthomer Limited, United Kingdom

Continuation of Ser. No. 188,038, Jan. 26, 1994, abandoned. This application Nov. 18, 1994, Ser. No. 342,206
Int. Cl.[6] B32B *5/16;23/08*
U.S. Cl. 428—207 9 Claims

1. A wall covering comprising a wallpaper base paper coated directly with a composition comprising a copolymer of a conjugated diene and a copolymerisable unsaturated ester in admixture with a filler and/or a pigment.

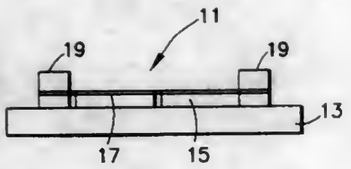
5,543,208

RESISTIVE FILM

Peter Hasler, Mauren, Liechtenstein, assignor to RMT Reinhardt Microtech AG, Wang, Switzerland

Filed Jan. 12, 1995, Ser. No. 372,076
Claims priority, application Switzerland, Jan. 13, 1994, 00 099/94
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—210 4 Claims

1. A resistive film, containing the elements nickel (Ni), chromium (Cr), aluminum (Al), copper (Cu) and silicon (Si), wherein the copper content is 1 to 5.5 weight-% and the silicon content is 0.5 to 1.6 weight-%, respectively in relation to aluminum, and the ratio of Ni: Cr: AlSiCu is within a range which is defined by a hexagon ABCDEF, the corner points of which are provided by the



following compositions in weight-%:

A	58 Ni	40 Cr	2 AlSiCu
B	52 Ni	33 Cr	15 AlSiCu
C	32 Ni	33 Cr	35 AlSiCu
D	13 Ni	52 Cr	35 AlSiCu
E	13 Ni	75 Cr	12 AlSiCu
F	18 Ni	80 Cr	2 AlSiCu

as shown in FIG. 1.

5,543,209

SURFACE COATING FOR PROSTHESIS SYSTEM CONTAINING HA/TCP COMPOSITION

Bruno Duquet, Lille; Guy Daculsi, Vigneux De Bretagne, and Joël Delecrin, Nantes, all of, France, assignors to Zimmer, Inc., Warsaw, Ind.

Continuation of Ser. No. 226,095, Apr. 11, 1994, abandoned, which is a continuation of Ser. No. 26,917, Mar. 5, 1993, abandoned. This application Sep. 22, 1995, Ser. No. 532,906
Claims priority, application France, Mar. 6, 1992, 92 02702
Int. Cl.[6] B32B *7/02;9/04*
U.S. Cl. 428—212 **13 Claims**

1. A phospho-calcium coating for a prosthetic implant comprising at least a first resorbable layer and at least a second resorbable layer, said first layer being more resorbable than the second layer by a factor of at least three, wherein the first layer overlies the side of the second layer opposite to the side closer to the implant, and wherein the second layer is formed from hydroxyapatite and the first layer is formed from a two-phase hydroxyapatite tricalcium phosphate material.

5,543,210

DIAMOND COATED BODY

Gregor Kullander, Älvsjö ; Ingrid Reineck, Huddinge, and Helène Brandrup-Wognsen, Ingarö, all of, Sweden, assignors to Sandvik AB, Sandviken, Sweden

Filed Jun. 24, 1994, Ser. No. 264,937
Claims priority, application Sweden, Jul. 9, 1993, 9302405
Int. Cl.[6] B24D *11/00*
U.S. Cl. 428—217 **16 Claims**



1. A body coated with at least one diamond layer and atop said diamond layer, at least one layer of chromium carbide, chromium nitride or chromium carbonitride, wherein the chromium carbide, chromium nitride or chromium carbonitride layer is a outermost layer having an exposed surface.

5,543,211

ASPHALT FIBERS

Kevin P. Gallagher, Pataskala; Doan R. Vermilion, Newark, and Frederick H. Ponn, Granville, all of Ohio, assignors to Owens Corning Fiberglas Technology, Inc., Summit, Ill.

Filed Dec. 22, 1994, Ser. No. 362,341
Int. Cl.[6] D03D *3/00*
U.S. Cl. 428—224 **30 Claims**

1. Asphalt fibers having diameters less than about 250 Ht, the asphalt having a softening point within the range of from about 180° to about 350° F., where the asphalt has an asphaltene content within the range of 0 to 35 percent by weight of the asphalt material and is modified with one or more thermoplastic or thermoset organic modifiers, the modifiers being present in an amount within the range of from about 2 to about 30 percent by weight of the asphalt material.

5,543,212

PREPREGS COMPRISING A REINFORCING FIBER LAYER, A KNITTED FABRIC OF THERMOPLASTIC FIBERS AND A MATRIX RESIN

Hiroki Oosedo, Ehime-ken, and Nobuyuki Odagiri, Matsuyama, both of, Japan, assignors to Toray Industries, Inc., Japan

Filed Nov. 14, 1994, Ser. No. 339,599
Claims priority, application Japan, Dec. 2, 1993, 5-302953
Int. Cl.[6] D03D *3/00;* **B32B** *5/02;7/00*
U.S. Cl. 428—229 **8 Claims**

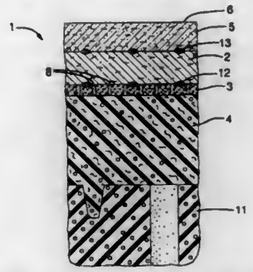
1. A prepreg having opposing surfaces and an overall thickness, comprising long reinforcing fibers of at least 5 cm in length, matrix resin and a knitted fabric made from thermoplastic resin fibers, with the knitted fabric distributed near either or both of the opposing surfaces such that more than 90% of the knitted fabric is no more than 30% of the overall thickness of the prepreg from an opposing surface.

5,543,213

MOTOR VEHICLE SEAT CUSHION

Manfred Duvenkamp, Treburr, Germany, assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 8, 1994, Ser. No. 207,511
Claims priority, application Germany, May 8, 1993, 93 06 999.5 U
Int. Cl.[6] A47C *7/02;* **B32B** *5/04;7/08;7/14*
U.S. Cl. 428—230 **10 Claims**



1. An automotive vehicle seat cushion comprising a resilient support layer, the resilient support layer being covered by an exterior seat cover fabric, the seat cushion having between the support layer and the exterior seat cover fabric an upholstery buffer laminate, the upholstery buffer laminate comprising:

at least upper and lower buffer layer sections bonded to each other, in which the upper buffer layer section is a pressure-elastic fiber fleece and the lower buffer layer section is a moisture-permeable material which supports the upper buffer layer section, and the lower buffer layer section material is less elastic than the upper buffer section material, said upper buffer layer section is bonded directly to the exterior seat cover fabric.

5,543,214

THERMO-ADHESIVE CROSS-LINKABLE TEXTILE PRODUCT

Pierre Groshens, Peronne, and Christian Paire, Roisel, both of, France, assignors to Laniere De Picarde, Peronne, France

Continuation-in-part of Ser. No. 883,293, May 14, 1992, abandoned, which is a continuation-in-part of Ser. No. 731,366, Jul. 16, 1991, abandoned, which is a continuation of Ser. No. 531,047, Apr. 23, 1990, abandoned. This application Oct. 22, 1993, Ser. No. 139,799
Claims priority, application France, Jan. 8, 1988, 88 00144
Int. Cl.[6] C09J *7/02*
U.S. Cl. 428—261 **6 Claims**

1. A fusible interlining comprising a backing fabric and a thermo-adhesive layer deposited in discontinuous fashion on one side of said backing fabric, wherein said thermo-adhesive layer consists essentially of:

a polymer base that is thermo-plastic at a first temperature range and thermo-setting at a second temperature range, said first temperature range being beneath the critical temperature at which said polymer base becomes thermo-setting, and said second temperature range being above the temperature at which said polymer base becomes thermo-setting, so that said thermo-adhesive layer is cross-linkable by application of heat alone without requiring a separate cross-linking agent; and

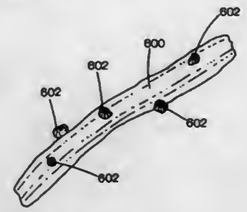
said adhesive layer is a polymer selected from the group consisting of urethane acrylate.

5,543,215

POLYMERIC BINDERS FOR BINDING PARTICLES TO FIBERS

Michael R. Hansen, Seattle, and Richard H. Young, Sr., Renton, both of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed Aug. 17, 1992, Ser. No. 931,059
Int. Cl.[6] B32B *5/16*
U.S. Cl. 428—283 **61 Claims**



1. A fibrous product comprising:

fibrous material comprising fibers having a hydrogen bonding functionality;

superabsorbent particles having a hydrogen bonding or a coordinate covalent bonding functionality; and

a polymeric binder selected from the group consisting of poly-(caprolactone) diol, polyamides and polyamines, wherein the polymeric binder has on each repeating unit of the polymeric binder a functional group capable of forming a hydrogen bond or a coordinate covalent bond with the particles, or a hydrogen bond with the fibers, and wherein the binder has formed hydrogen bonds with the fibers and hydrogen bonds or coordinate covalent bonds with the particles, whereby a substantial portion of the particles are adhered to the fibers in particulate form by the binder to the fibrous material by non-covalent bonds.

5,543,216

ACRYLIC COMPOSITE FIBER

Yozo Shiomi, and Mituru Wakitani, both of Okayama-ken, Japan, assignors to Japan Exlan Company Limited, Osaka, Japan

Filed Jan. 19, 1995, Ser. No. 374,853
Claims priority, application Japan, Jan. 27, 1994, 6-026036
Int. Cl.[6] D02G *3/00*
U.S. Cl. 428—373 **1 Claim**

1. In an acrylic composite fiber consisting of a higher heat shrinkable acrylonitrile copolymer fiber component made of acrylonitrile and comonomer copolymerizable therewith and a lower heat shrinkable acrylonitrile copolymer fiber component made of acrylonitrile and same or different comonomer copolymerizable therewith, said higher heat shrinkable fiber component and lower heat shrinkable fiber component being bonded together in a side by side relationship in the axial direction of the fiber, and the amount of the comonomer in the higher heat shrinkable fiber component being larger by from 1 to 10% by weight than the amount of the comonomer in the lower heat shrinkable fiber component, the improvement wherein the amount of sulfonate groups in said composite fiber is from 0.2 to 1.0% by weight, the amount of sulfonate groups in the higher heat shrinkable fiber component is larger by from 0.2 to 1.0% by weight than the amount of sulfonate groups in the lower heat shrinkable fiber component, and the amount of sulfonate groups in the higher heat shrinkable fiber component is varied from AmaX to Amin and back to Amax over a periodic cycle of from 50 to 600 mm along the axial direction of the fiber, while satisfying the ranges defined by the following formulae (1) and (2):

$$1.2 \leqq (Amax/Amin) \leqq 3 \quad (1)$$

wherein Amax and Amin respectively represent the maximum value and the minimum value of the amount in % by weight of sulfonate groups, over said periodic cycle in the axial direction of the fiber, in the higher heat shrinkable fiber component;

$$0.24 \leqq (A-B) \times (Amax/Amin) \leqq 2.5 \quad (2)$$

wherein A and B respectively represent the amount in % by weight of sulfonate groups on average, in the axial direction of the fiber, in the higher and lower heat shrinkable fiber components.

5,543,217

AMORPHOUS COPOLYMERS OF TETRAFLUOROETHYLENE AND HEXAFLUOROPROPYLENE

Richard A. Morgan, Vienna, W. Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 6, 1995, Ser. No. 384,042
Int. Cl.[6] C08F *214/26;214/28;214/18;* **B32B** *27/28*
U.S. Cl. 428—375 **17 Claims**

1. An uniform amorphous copolymer comprising copolymerized units of tetrafluoroethylene and hexafluoropropylene containing up to 29 mol % of hexafluoropropylene units, wherein said hexafluoropropylene units are uniformly distributed in the copolymer and wherein less than 10% of said hexafluoropropylene units are present in the form of diads or triads.

5,543,218

BIOABSORBABLE COPOLYMER AND COATING COMPOSITION CONTAINING SAME

Steven L. Bennett, Milford, and Mark S. Roby, Madison, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 75,995, Jun. 11, 1993, abandoned. This application May 15, 1995, Ser. No. 440,855

Int. Cl.[6] A61B *19/00;* D06M *15/00*

U.S. Cl. 428—375 12 Claims

1. A surgical suture coated with a coating composition comprising a branched or star shaped bioabsorbable copolymer obtained by polymerizing a major amount of ε-caprolactone and a minor amount of at least one other copolymerizable monomer in the presence of polyhydric alcohol having 3 or more hydroxy groups as initiator, said suture exhibiting a mean force for achieving knot run down which is less than that exhibited by a suture coated with a coating composition which is obtained in the same manner but with a dihydric alcohol as initiator.

5,543,219

ENCAPSULATED MAGNETIC PARTICLES PIGMENTS AND CARBON BLACK, COMPOSITIONS AND METHODS RELATED THERETO

Hamdy A. Elwakil, Hoffman Estates, Ill., assignor to A.B. Dick Company, Niles, Ill.

Continuation of Ser. No. 334,808, Nov. 4, 1994, abandoned, which is a continuation of Ser. No. 909,977, Jul. 7, 1992, abandoned, which is a continuation-in-part of Ser. No. 879,936, May 8, 1992, abandoned. This application May 23, 1995, Ser. No. 447,683

Int. Cl.[6] B32B *5/16;* C09D *11/00;* C04B *35/04*

U.S. Cl. 428—402.24 7 Claims

1. A printing ink composition comprising a printing ink vehicle and from about 1 to 99 percent, based on the total weight of the ink, of coated magnetic particles, said particles having a particle diameter from about 0.1 to 100 microns and having a solid coating on the surface of the particles, said coating comprising an ionomer, said ink being free of volatile organic solvents.

5,543,220

Patent Not Issued For This Number

5,543,221

MAGNETIC RECORDING MEDIUM

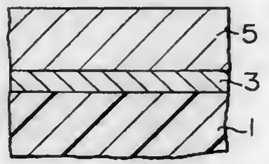
Osamu Kitakami, Toride; Hideo Fujiwara, Ibaraki-ken, and Yoichi Ogawa, Noda, all of, Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Continuation of Ser. No. 771,539, Oct. 7, 1991, abandoned, which is a continuation of Ser. No. 246,731, Sep. 20, 1988, abandoned. This application May 17, 1993, Ser. No. 62,327

Claims priority, application Japan, Sep. 21, 1987, 62-236883; Sep. 21, 1987, 62-236884; Mar. 11, 1988, 63-57918

Int. Cl.[6] G11B *5/66;* B32B *5/16*

U.S. Cl. 428—332 12 Claims



1. A magnetic recording medium for use in recording and reproducing signals by a ring-head magnetic head comprising a non-magnetic substrate, a soft magnetic layer formed on the substrate, and a perpendicular magneto-anisotropic recording layer laminated on the soft magnetic layer, said magneto-anisotropic recording layer having a thickness of 500 Å to 3000 Å and comprises a Co—Cr alloy with a Cr content of 15 to 25 atomic %, said soft magnetic layer being made of material such that a saturation magnetization of said soft magnetic layer will be higher than that of said recording layer, the thickness of said soft magnetic layer being in the range of from 50 to 500 Å, said soft magnetic layer being selected from a film having a hcp structure of Ni—Fe permalloy film having a <111> plane orientation and including a Ti-sublayer having an hcp structure, a Co film and a Co—M alloy film having a C-axis, wherein M represents an element selected from at least one member of the group consisting of Cr, Ge, Mo, Os, Pt, Re, Ru, Sb, Si, Ta, V, W, and Zn, and wherein the <111> plane of or the C-axis of the permalloy film is oriented in a direction vertical to the film surface.

5,543,222

METALLIZED POLYIMIDE FILM CONTAINING A HYDROCARBYL TIN COMPOUND

James R. Edman, Circleville, Ohio, and Donald J. Coulman, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 29, 1994, Ser. No. 236,793

Int. Cl.[6] B32B *15/08*

U.S. Cl. 428—335 13 Claims

1. A metallized polyimide film comprising:

(a) a polyimide film base layer containing a hydrocarbyl tin compound in oxidation states (II) or (IV), wherein the concentration of tin in said polyimide film ranges from 0.05 to 0.50% by weight;

(b) a vacuum deposited metal layer having thickness of from 500 to 5000 Angstroms on at least one side of said polyimide film base layer; and

(c) an electroplated metal layer having a thickness of from 10 to 70 micrometers applied onto said vacuum deposited metal layer, wherein said polyimide base layer is directly bonded to said vacuum deposited metal layer without the use of an adhesive.

5,543,223

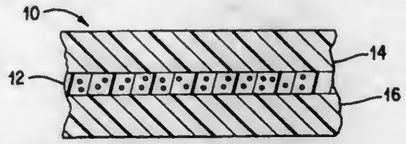
MOISTURE BARRIER FILM

Gautam P. Shah, Simpsonville, S.C., assignor to W. R. Grace & Co.-Conn., Duncan, S.C.

Division of Ser. No. 116,798, Sep. 10, 1993, Pat. No. 5,482,771, which is a continuation-in-part of Ser. No. 947,244, Sep. 18, 1992, abandoned. This application Dec. 16, 1994, Ser. No. 358,121

Int. Cl.[6] B32B *7/12;27/08;* B29D *7/24*

U.S. Cl. 428—349 8 Claims



1. A thermoplastic multi-layer film comprising:

(a) a core layer comprising a blend of propylene polymer or copolymer, and a hydrocarbon resin; and

(b) two outer layers comprising a polymeric material selected from the group consisting of:

i) ethylene alpha olefin copolymer,

ii) polybutene, and

iii) blends thereof.

5,543,224

HIGH MOLECULAR ELECTRET FILM

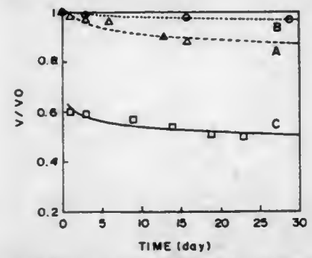
Toshihisa Sakai, and Masanori Kawasumi, both of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Apr. 10, 1995, Ser. No. 419,553

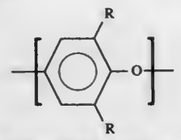
Claims priority, application Japan, Apr. 11, 1994, 6-072235

Int. Cl.[6] B32B *27/00*

U.S. Cl. 428—409 15 Claims



1. An electret film formed on an electrically conductive substrate which film comprises a blend of a poly(2,6-dialkyl-1,4-phenylene oxide) consisting of recurring units represented by the following general formula (1),



(1)

in which R is an alkyl group having 1 to 4 carbon atoms, and a styrene resin,

wherein said blend contains said poly(2,6-dialkyl-1,4-phenylene oxide) and said styrene resin at a weight ratio of from 9:1 to 5:5, and

said electret film has a surface charge density of 10^{-10} to 10^{-8} C/cm^2.

5,543,225

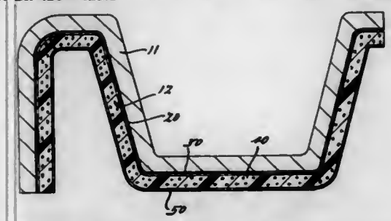
MULTILAYER FIBER REINFORCED POLYMERIC SHAPED ARTICLE

Brett K. Mueller, Savannah, and Larry W. Higgins, Adamsville, both of Tenn., assignors to Aqua Glass Corporation, Adamsville, Tenn.

Filed May 22, 1992, Ser. No. 887,998

Int. Cl.[6] B32B 27/00; B29D 22/00

U.S. Cl. 428—423.1 55 Claims



1. A multilayer polymeric article comprising:

top layer comprised of thermoset polyester having a top side and a bottom side;

supporting layer comprised of fiber reinforced polyurethane foam having a top side and bottom side disposed on said bottom side of said top layer;

intermediate layer comprised of polyurethane foam having a top side and a bottom side disposed on at least a portion of said bottom side of said supporting layer; and

bottom layer comprised of fiber reinforced polyurethane foam disposed at least on said bottom side of said intermediate layer.

5,543,226

MAGNETIC RECORDING MEDIA

Michael Bobrich, Boehl-Iggelheim; August Lehner, Roedersheim-Gronau; Hermann Roller, Ludwigshafen; Rudolf Suettinger, Heidelberg; Ria Kress, Ludwigshafen; Norbert Schneider, Altrip; Werner Lenz, Bad Durkheim; Peter Engelhardt, Hessisch Oldendorf; Peter Rudolf, Maxdorf; Gregor Brodt, Heppenheim; Werner Balz, Limburgerhof, and Albert Kohl, Laumersheim, all of, Germany, assignors to BASF Magnetics GmbH, Mannheim, Germany

Filed Dec. 18, 1992, Ser. No. 992,742

Claims priority, application Germany, Dec. 18, 1991, 41 41 838.7; Dec. 18, 1991, 41 41 839.5

Int. Cl.[6] G11B *5/66;* B32B *27/00*

U.S. Cl. 428—423.1 4 Claims

1. A magnetic recording medium consisting of a nonmagnetic substrate and at least one magnetic layer formed thereon wherein said magnetic layer comprises a magnetic material dispersed in a binder mixture of a polyurethaneurea(meth)acrylate and at least one polyurethane selected from the group consisting of polyurethane elastomers and OH-containing polyureaurethanes, wherein the polyurethaneurea(meth)acrylate is obtained by reacting a poly-(meth)acrylate having up to 2 terminal OH groups per mol and a weight average molecular weight of from 200 to 50,000 with a mixture of aliphatic polyisocyanates having an average functionality of from 3.0 to 6 NCO groups per mol and obtained from:

from 0.1 to 10% by weight of a diisocyanate

from 20 to 80% by weight of a triisocyanate and

from 20 to 60% by weight of an isocyanate having a functionality of from 4 to 10,

with the proviso that from 1.2 to 3.0 NCO groups react per OH group and the remaining NCO groups are converted with ammonia into urea groups.

5,543,227

SOLUBLE SALT-FREE CONTAMINANT-FREE PIGMENTED MIRROR COATINGS

Zephuren J. Hughes, Alvarado, and Ole G. Torgussen, Carrollton, both of Tex., assignors to Sureguard, Inc., Grand Prairie, Tex.

Division of Ser. No. 902,206, Jun. 22, 1992, Pat. No. 5,314,532, which is a continuation-in-part of Ser. No. 754,898, Sep. 4, 1991, abandoned. This application May 23, 1994, Ser. No. 247,427

Int. Cl.[6] B32B *15/08;17/10;* G02B *5/08*

U.S. Cl. 428—425.8 12 Claims

1. An article of manufacture comprising a glass substrate having a metal layer thereon, and a protective coating over said metal layer, said protective coating comprising the combination of:

(a) an organic resin polymer selected from the group consisting of alkyd resins, acrylic resins, acrylic modified alkyd resins, polyurethane oils, vinyl halide polymers, vinyl halide copolymers, non-oil based urethane resin, and phenol-formaldehyde resins contained in aqueous or non-aqueous medium; and

(b) an anti-corrosion amount of a substantially water soluble salt-free antioxidant scavenger pigment comprising a cyanamide compound of a metal, said cyanamide compound of a metal containing no more than about 0.5% by weight of said soluble salts and wherein said metal is selected from the group consisting of zinc, nickel, cobalt, lead and mixtures thereof.

5,543,228

MOLDED RELIEF HOLOGRAM

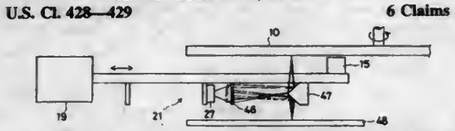
Yukio Taniguchi; Tsuyoshi Hotta; Yuko Kuwabara; Hideaki Morita, and Toshikazu Segawa, all of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

Filed Nov. 10, 1993, Ser. No. 149,951

Claims priority, application Japan, Nov. 10, 1992, 4-300012; Nov. 10, 1992, 4-300013; Apr. 20, 1993, 5-092658; Apr. 20, 1993, 5-092659

Int. Cl.[6] B32B *17/06;* C08F *7/00*

U.S. Cl. 428—429 6 Claims



1. A molded article including a glass substrate and a molded form on said glass substrate, said molded form being made from an ionizing radiation curing resin composition, containing (1) an ionizing radiation curing compound, wherein said ionizing radiation curing compound comprises N-vinyl-2-pyrrolidone, tetrahydrofurfuryl acrylate, or tetrahydrofurfuryl methacrylate, and (2) an oligomer having a glass transition temperature of not lower than 40° C.; said molded form being a roller hologram comprising grooves where the depth of the grooves is in the range of 0.7 μm to 1.0 μm and further a layer of a silane coupling agent between the layer of said ionizing radiation curing resin composition and said glass substrate.

5,543,229

METHOD OF MAKING A HEAT TREATED COATED GLASS

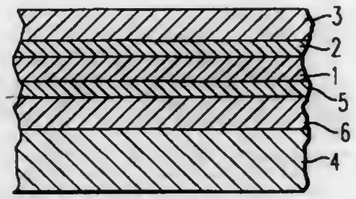
Hisashi Ohsaki; Hiroyasu Kojima, and Koichi Suzuki, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Oct. 28, 1992, Ser. No. 967,438

Claims priority, application Japan, Oct. 30, 1991, 3-311723

Int. Cl.[6] C03C *17/34*

U.S. Cl. 428—432 8 Claims



1. A coated glass, comprising:

a) a glass substrate which has been subjected to heat treatment; and

b) a multi-layer coating applied to said glass substrate prior to said heat treatment, said coating comprising:

b)1) a solar control or electroconductive layer formed onto the surface of said glass substrate, wherein said solar control layer comprises a metal selected from the group consisting of stainless steel, titanium, chromium, zirconium, tantalum, hafnium, silver and aluminum; and

b)2) a first protective coating layer formed on said solar control or electroconductive coating layer, said protective coating layer comprising one or more of:

b)2)i) a nitride selected from the group consisting of a silicon nitride, a siliconitride, a boron nitride, and a boronitride;

b)2)ii) a composite nitride of silicon or boron or both and at least one selected from the group consisting of carbon, aluminum, zirconium and tin; and

b)2)iii) a partially oxidized coating of b)2)i) or b)2)ii) or both, and

wherein said protective coating is transparent in a region of visible light.

5,543,230

LAMINATED GLASS CONSTRUCTION HAVING AN INTERMEDIATE LAYER OF A FIRE-PROOFING GEL

Wulf von Bonin, Odenthal; Ulrich von Gizycki, deceased, late of Leverkusen; Roland Leroux, Elsheim; Thomas M. Karschti, Budenheim, and Jürgen Thürk, Schornsheim, all of, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, and Schott Glaswerke, Mainz, both of, Germany

Division of Ser. No. 932,123, Jul. 31, 1992, Pat. No. 5,425,901, which is a continuation-in-part of Ser. No. 730,360, Jul. 15, 1991, Pat. No. 5,182,049. This application Mar. 1, 1995, Ser. No. 397,697

Claims priority, application Germany, Jul. 21, 1990, 40 23 310.3; Aug. 13, 1991, 41 26 702.8

Int. Cl.[6] B32B *17/06;* B27N *9/00;* C09K *21/12*

U.S. Cl. 428—432 1 Claim

1. A laminated glass construction having as an intermediate layer a fireproofing gel based on an amine salt of an acid aluminum phosphate, which comprises an aluminum component, a phosphorus component, an amine component in proportions such that, at 5° to 30° C. for more than 24 hours, they form a mixture which is capable of flow and which changes into a transparent gel within less than 24 hours on heating at temperatures above 45° C. wherein said phosphorus component is present in an amount of 2 to 4 moles per mol of aluminum component.

5,543,231

RADIATION-CURABLE SILICONE RELEASE COMPOSITIONS

William E. Kidon, Chadon; Michael D. Hilston, and Thanh Nguyen, both of Painesville, all of Ohio, assignors to Avery Dennison Corporation, Pasadena, Calif.

Continuation of Ser. No. 284,252, Aug. 2, 1994, abandoned, which is a continuation of Ser. No. 67,734, May 26, 1993, abandoned. This application Nov. 7, 1995, Ser. No. 554,870

Int. Cl.[6] B32B *9/04;* C08F *2/48;* C08L *83/07*

U.S. Cl. 428—447 18 Claims

1. A radiation-curable silicone release composition for paper and polymeric films comprising

(A) from about 2% to about 7% by weight of an organopolysiloxane containing acryloxy groups, methacryloxy groups, or mixtures thereof;

(B) from about 93% to about 98% by weight of a mixture of at least one acrylated or methacrylated organic polyhydroxy compound and at least one acrylated or methacrylated polyamino compound; and

(C) from 0% to about 5% by weight of a photoinitiator.

5,543,232

(METH) ACRYLATED AROMATIC POLYESTER FLOOR COVERING WEAR LAYER

Wendell A. Ehrhart, Red Lion, and Songvit Setthachayanon, Elizabethtown, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Continuation of Ser. No. 223,760, Apr. 6, 1994, abandoned. This application Apr. 6, 1995, Ser. No. 418,873

Int. Cl.[6] C08L *67/07*

U.S. Cl. 428—482 8 Claims

1. A floor covering comprising a wear layer, the wear layer including a resin composition comprising a (meth)acrylated polyester, the polyester being the reaction product of a diol and an aromatic tricarboxylic acid or anhydride, the diol being in excess of the aromatic tricarboxylic acid or anhydride on an equivalent basis, the reaction product of the diol and the acid or anhydride being (meth)acrylated.

5,543,233

LAMINATE OF ETHYLENE-ALKYL ACRYLATE COPOLYMER AND POLYPROPYLENE

Jerry G. Latiolais, Groves; J. Paul Gathright, Orange; Nicholas R. Galante, Orange; M. Stephen Galland, Orange; J. Diores Gallet, Orange; Lewis R. Compton, Orange; George L. Baker, Bridge City, all of Tex., and James H. Wang, Appleton, Wis., assignors to Chevron Chemical Company, San Ramon, Calif.

Continuation of Ser. No. 223,180, Apr. 26, 1994, which is a continuation-in-part of Ser. No. 764,861, Sep. 24, 1991, abandoned. This application Jun. 5, 1995, Ser. No. 461,232

Int. Cl.[6] B32B *27/06;27/32*

U.S. Cl. 428—516 4 Claims

1. A laminate comprising:

A) a first film comprising a copolymer of ethylene and alkyl acrylate polymerized by feeding different ratios of ethylene to alkyl acrylate comonomer in at least two reaction zones of a multi-zone autoclave reactor;

B) a second film comprising polypropylene;

wherein said second film is coextruded with and is contiguous to said first film, and the adhesive strength between said first film and said second film is at least about twice the adhesive strength of a reference composition which comprises a first film comprising said polypropylene and a coextruded contiguous second film comprising a reference copolymer of ethylene and alkyl acrylate, wherein said reference copolymer has the same amount and type of alkyl acrylate and ethylene, and wherein said reference copolymer is made in a multi-zone autoclave reactor where the ratio of alkyl acrylate to ethylene in a reaction zone is about equal to the overall ethylene to alkyl acrylate ratio fed to the multi-zone autoclave reactor.

5,543,234

MOLDED WOOD COMPOSITES HAVING NON-BLISTERING PROFILE WITH UNIFORM PAINTABILITY AND NESTING

Steven K. Lynch, St. Charles; Mark A. Ruggie, Lombard, both of Ill.; William E. Rinker, New Albany, Pa.; David G. Izard, Wasconda, and William J. Young, Crystal Lake, both of Ill., assignors to Masonite Corporation, Chicago, Ill.

Filed Jun. 20, 1994, Ser. No. 262,472

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—537.1 43 Claims



1. A method of manufacturing a consolidated, man-made molded wood article having a molded surface portion containing at least about 80% by weight cellulosic material and sufficient binder to adhere the cellulosic material together into a structurally sound article comprising:

disposing a composite layer of said cellulosic material and said binder in a contoured mold cavity;

compressing the composite layer, in the mold cavity, to subject the composite layer to sufficient heat and pressure in the mold cavity to contour upper and lower major surfaces of the composite layer to correspond in shape to the contours of the mold cavity and to bind the composite layer together into a consolidated, man-made molded wood article;

molding said molded wood article in said mold cavity to include a planar wall having an upper surface adjacent to a molded depression, said depression including an inclined wall having a contoured upper surface integral with an upper surface of said planar wall, said inclined wall extending downwardly from said planar wall, toward a bottom of the depression, to a lower end of the inclined upper wall surface, said inclined wall having an angle of inclination in the range of about 25° to about 38°, and wherein a plurality of said molded wood composite articles can nest, one above another for transport, without damage to said articles.

5,543,235

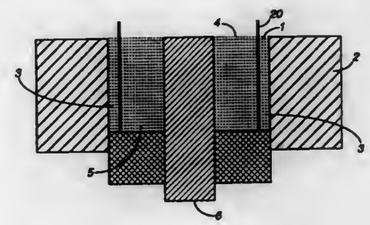
MULTIPLE GRADE CEMENTED CARBIDE ARTICLES AND A METHOD OF MAKING THE SAME

Prakash K. Mirchandani, Allison Park; Robert E. Thomas, Beaver Falls, and Mark Cippel, Ford City, all of Pa., assignors to SinterMet, Kittanning, Pa.

Filed Apr. 26, 1994, Ser. No. 233,388

Int. Cl.[6] B22F *3/12;7/06*

U.S. Cl. 428—547 6 Claims



1. A multigrade cemented carbide article produced by the method comprising the steps of:

a. partitioning a die into at least a first portion and a second portion, using a removable partition means;

b. filling the first portion of the die with a first metallurgical powder, the first metallurgical powder comprising a blend of a carbide compound of an element selected from the group consisting of group IVB, group VB and group VIB elements and a binder comprising a metal selected from the group consisting of Co, Ni and Fe;

c. filling the second portion of the die with a second metallurgical powder, the second metallurgical powder comprising a blend of a carbide compound of an element selected from the group consisting of group IVB, group VB and group VIB elements and a binder comprising a metal selected from the group consisting of Co, Ni and Fe; selecting the second metallurgical powder to be of a different grade from the first metallurgical powder in that at least one of a composition of the second metallurgical powder and a grain size of the second metallurgical powder is different from the first metallurgical powder;

d. removing the partition means so that the first metallurgical powder and the second metallurgical powder come into contact with each other;

e. compressing the first metallurgical powder and the second metallurgical powder as a single compact to a desired shape; and

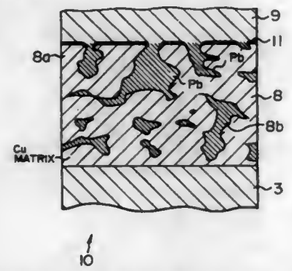
f. sintering the resultant single compacted shape at an appropriate temperature to produce a multigrade, composite cemented carbide article, the multigrade, composite cemented carbide article comprising a first cemented carbide portion, corresponding to the first portion of the die, and a second cemented carbide portion of a different grade from the first cemented carbide portion, and corresponding to the second portion of the die.

5,543,236

MULTI-LAYERED SLIDE BEARING MATERIAL

Tadashi Tanaka; Masaaki Sakamoto; Koichi Yamamoto, and Koji Kitagawa, all of Nagoya, Japan, assignors to Daido Metal Company, Ltd., Nagoya, Japan

Filed Nov. 29, 1994, Ser. No. 350,012
Claims priority, application Japan, Dec. 27, 1993, 5-332189
Int. Cl.[6] B32B *15/01*
U.S. Cl. 428—614 8 Claims



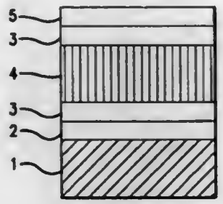
5. A material for a multi-layered slide bearing comprising:
a steel plate optionally plated with Cu,
a lining layer of copper-lead-system or lead-bronze-system bearing alloy on the steel plate, said lining layer having a surface of bearing alloy matrix with Pb-phase islands therein, said Pb-phase islands containing at least one of In and Sn,
a lead alloy overlay containing zinc on said surface of said lining layer, and
a diffusion-formed copper-zinc alloy layer of thickness 0.5 to 10 μm between said bearing alloy matrix and said lead alloy overlay, with said Pb-phase islands in said surface being in direct contact with said lead alloy overlay without said copper-zinc alloy layer being interposed therebetween.

5,543,237

INORGANIC THIN FILM ELECTROLUMINESCENT DEVICE HAVING AN EMISSION LAYER

Masao Watanabe, Minamiashigara, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Sep. 9, 1993, Ser. No. 118,394
Claims priority, application Japan, Sep. 14, 1992, 4-269082
Int. Cl.[6] H05B *33/14*
U.S. Cl. 428—691 19 Claims



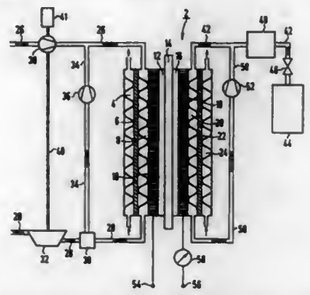
1. An inorganic thin film electroluminescent device comprising:
a light emission layer, a pair of electrodes, and a pair of insulating layers, wherein at least one of the electrodes is optically transparent, each one of the pair of insulating layers is formed on an opposite side of the light emission layer, and the pair of insulating layers and the light emission layer are positioned between the pair of electrodes, the light emission layer comprising from 10 to 95 wt % of a fluoride of an alkaline earth metal and, correspondingly, from 90 to 5 wt % of at least one member selected from the group consisting of rare earth element metals and compounds thereof.

5,543,238

FUEL CELL AND METHOD FOR MOISTENING THE ELECTROLYTE OF THE FUEL CELL

Karl Strasser, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Feb. 3, 1995, Ser. No. 383,721
Int. Cl.[6] H01M *8/04*
U.S. Cl. 429—17 12 Claims



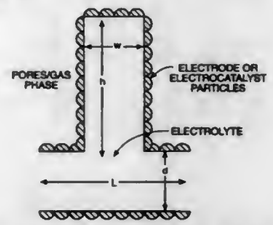
3. A low-temperature, moistened-electrolyte fuel cell assembly, comprising:
a fuel cell having an anode on an anode side and a cathode on a cathode side;
an exhaust-gas line connected to said cathode side of said fuel cell for carrying exhaust gas;
a recirculation line connected to said exhaust-gas line for recirculating at least a part of the exhaust gas occurring on said cathode side into said cathode of said fuel cell; and
an adjusting element being associated with said recirculation line for recirculating a part of the exhaust gas being adjustable in proportion to a power output of said fuel cell.

5,543,239

ELECTRODE DESIGN FOR SOLID STATE DEVICES, FUEL CELLS AND SENSORS

Anil V. Virkar; Kuan-Zong Fung, both of Salt Lake City, and Cameron W. Tanner, Springville, all of Utah, assignors to Electric Power Research Institute, Palo Alto, Calif.

Filed Apr. 19, 1995, Ser. No. 424,174
Int. Cl.[6] H01M *8/10*
U.S. Cl. 429—33 20 Claims



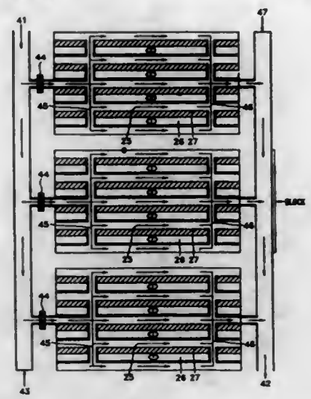
1. An improved electrode electrolyte structure having an enhanced three phase boundary (TPB) length for use as a fuel cell, a catalyst or a sensor,
wherein said structure comprises:
A. a substrate layer consisting of a dense electrolyte material;
B. a porous surface layer of said dense electrolyte material over the dense electrolyte substrate layer;
C. an electrocatalyst material on and within the porous surface layer of electrolyte, wherein the electrocatalyst material is continuous on the surface of the porous electrolyte, creating enhanced TPBs with gas present, and
D. said structure is integrally connected or attached to a porous anode.

5,543,240

FUEL CELL STACK

Seo-Jae Lee; Il-gon Kim, and Jong-wook Lee, all of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., LTD., Kyungki-Do, Rep. of Korea

Filed Aug. 17, 1995, Ser. No. 516,194
Claims priority, application Rep. of Korea, Aug. 17, 1994, 94-20291
Int. Cl.[6] H01M *8/04*
U.S. Cl. 429—38 18 Claims



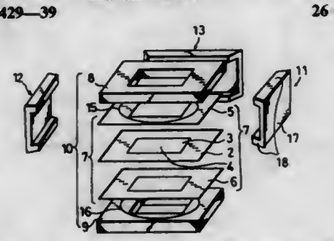
1. A fuel cell stack comprising:
1) a plurality of fuel cell blocks, wherein each of said plurality of fuel cell blocks comprises:
a) a plurality of fuel cell units, wherein each of said plurality of fuel cell units comprises an anode, a cathode, and a matrix containing an electrolyte;
b) a first internal manifold comprising a first input and a plurality of first outputs, wherein said plurality of first outputs are respectively connected to said plurality of fuel cell units.
2) a first external manifold comprising a plurality of first branches, wherein each of said first branches is respectively connected to said first input of said first internal manifold in each of said plurality of fuel cell blocks.

5,543,241

FUEL CELL

Masato Nishioka; Akira Hamada; Eiji Tateyama; Nobuyoshi Nishizawa, all of Osaka, and Masaru Tsutsumi, Hyogo, all of, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Jul. 18, 1994, Ser. No. 276,667
Claims priority, application Japan, Jul. 16, 1993, 5-176934
Int. Cl.[6] H01M *2/14*
U.S. Cl. 429—39 26 Claims



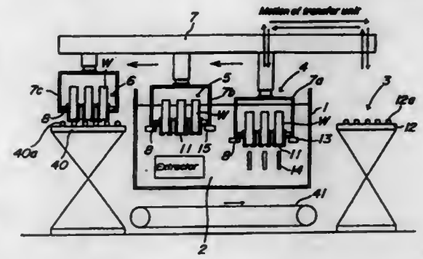
1. A cell structure for use in a fuel cell, said cell structure comprising:
an anode;
a cathode;
an electrolyte plate interposed between the anode and the cathode;
a pair of insulating keep-plates sandwiching the anode, the cathode and the electrolyte plate in a direction in which the anode, the cathode and the electrolyte plate are layered, each of the insulating keep-plates being provided with an opening for supplying an anode gas or a cathode gas to the anode or the cathode, respectively, from a face surface of the cell structure;
at least one anode terminal electrode electrically connected to said anode, said anode terminal electrode being disposed along an edge of the cell structure; and
at least one cathode terminal electrode electrically connected to said cathode, the cathode terminal electrode being disposed along another edge of the cell structure.

5,543,242

APPARATUS FOR DISPOSING OF SODIUM SULFUR CELLS

Tomonori Tsuchimoto, Hashima-Gun; Katsuichi Iwata, Ichinomiya City, and Yoshihiko Kurashima, Nagoya City, all of, Japan, assignors to NGK Insulators, Ltd., Japan

Filed Mar. 7, 1994, Ser. No. 206,609
Claims priority, application Japan, Mar. 24, 1993, 5-065122; Nov. 19, 1993, 5-290560
Int. Cl.[6] H01M *6/50;10/42;* C21C *7/10;* B23P *21/00*
U.S. Cl. 429—049 3 Claims



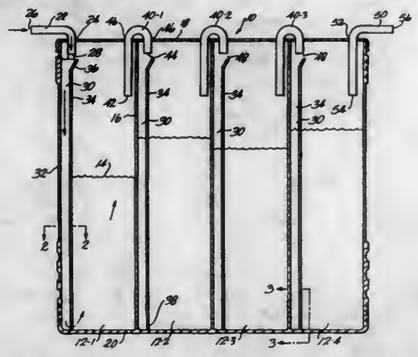
1. An apparatus for dismantling a plurality of sodium sulfur cells each including an inner tube, the sodium-sulfur cells being cross-cut to form an opening, said apparatus comprising:
a work-setting pipe unit including a plurality of holding pipes into which the sodium sulfur cells are to be set, respectively, such that the opening of each of the sodium sulfur cells is downwardly directed, each of said holding pipes having, in a bottom portion, a through hole having a diameter slightly greater than the diameter of the outer periphery of the inner tube of each of the sodium sulfur cells;
a work-setting station in which the sodium sulfur cells are set into the work-setting pipe unit;
a heating oil vessel filled with a heating oil and adapted to receive flow of sodium from the sodium sulfur cells by heating;
a sodium-extracting station for holding said work-setting pipe unit inside said heating oil vessel;
an inner tube-extracting station arranged inside said heating oil vessel and provided with plural sets of chuck pawls, said plural sets of chuck pawls being adapted to be inserted into the inner tubes of the sodium sulfur cells through the openings of the sodium sulfur cells and said through holes of the holding pipes and to extract the inner tubes from the sodium sulfur cells through the openings and said through holes;
an unloading station where the sodium sulfur cells from which the sodium and the inner tubes are removed are extracted from the work-setting pipe unit; and
a transferring unit for transferring said work-setting pipe unit among said stations.

5,543,243

BATTERY ELECTROLYTE CIRCULATION SYSTEM

William B. Brecht, Seal Beach, Calif., assignor to Trojan Battery Company, Santa Fe Springs, Calif.

PCT No. PCT/US93/11698, § 371 Date Aug. 23, 1994, § 102(e) Date Aug. 23, 1994, PCT Pub. No. WO95/15586, PCT Pub. Date Jun. 8, 1995
PCT Filed Dec. 1, 1993, Ser. No. 290,742
Int. Cl.[6] H01M 2/38;2/36
U.S. Cl. 429—51 31 Claims



1. A flooded electrolyte secondary storage battery which comprises:
- a plurality of cells having coplanar tops and coplanar bottoms;
- an electrolyte transport channel extending substantially vertically in each cell from an upper end proximate the cell top to a lower end proximate the cell bottom;
- a gas and liquid inlet port into a top portion of a first one of the cells for discharging liquid introduced thereinto no an upper end of the transport channel in that cell;
- fluid carry-over passages connecting the first cell, a last one of the cells and all remaining cells of the plurality, each carry-over passage having an inlet end at a selected level in the cell in which the inlet is located and an outlet end in a different cell at a location selected for discharging liquid flowing through the outlet end to the transport channel in that different cell, each carry-over passage being independent of each other one and communicating between only two cells; and
- a gas and liquid outlet port to the exterior of the battery from the top portion of the last cell, the outlet port having an entry opening at a selected level in the last cell, the selected level in each cell being at or below the upper end of the transport channel for that cell.

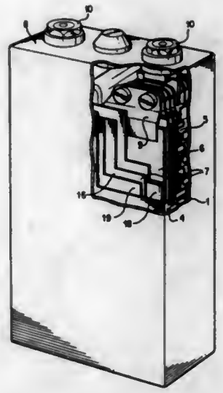
5,543,244

ELECTROCHEMICAL STORAGE DEVICE

Rainer Klink, Kernen im Remstal, and Johann German, Weinstadt, both of, Germany, assignors to Deutsche Automobilgesellschaft mbH, Germany

Filed Dec. 6, 1993, Ser. No. 162,503
Claims priority, application Germany, Dec. 5, 1992, 42 41 037.1
Int. Cl.[6] H01M 10/34
U.S. Cl. 429—57 10 Claims

1. Electrochemical storage device comprising:
- a metallic, gas-tight storage device housing;
- an electrode stack formed from a plurality of electrode plates stacked on one another accommodated in the storage device housing;
- a box-like stack insulation between the storage device housing and the electrode stack, made from an electrically insulating material and surrounding the electrode stack at the sides of the electrode stack which would bear directly against the housing interior;



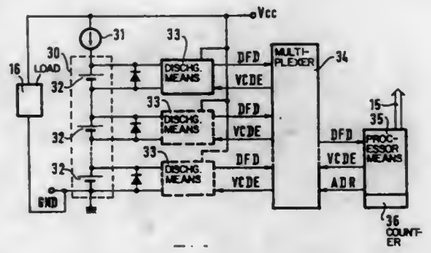
- a plurality of protuberances arranged in portions of said stack insulation, adjacent peripheral sides of said electrode stack formed by peripheral edges of said electrode plates, hereinafter referred to as gas outlet sides, which protuberances project toward, contact and extend across said peripheral edges of said electrode plates; and
- gas conduits formed by free spaces between said protuberances in the stack insulation, said free spaces being in fluid communication with said gas outlet sides of said electrode stack.

5,543,245

SYSTEM AND METHOD FOR MONITORING BATTERY AGING

Xavier Andrieu, Bretigny Sur Orge; Michel Rocher, Perros Guirec; Philippe Guillaume, Lannion, and Philippe Poignant, Palaiseau, all of, France, assignors to Alcatel Converters, Paris, France

Filed Feb. 25, 1994, Ser. No. 202,264
Claims priority, application France, Mar. 15, 1993, 93 02949
Int. Cl.[6] H01M 10/48
U.S. Cl. 429—90 32 Claims



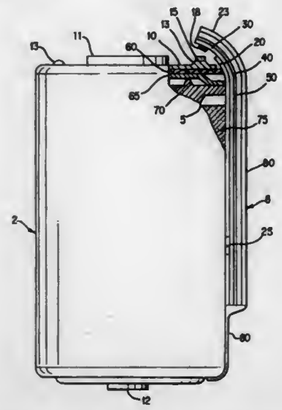
1. A system for monitoring aging of a battery which comprises a plurality of cells connected in series and able to be fully discharged, said system comprising:
- discharger means for discharging a previously-charged one of said plurality of cells at a time, to an end of discharge value;
- measuring means for measuring a respective quantity of electricity supplied by said previously-charged one of said plurality of cells during discharging thereof; and
- processor means for processing said respective quantity of electricity to detect excessive aging of said battery.

5,543,246

BATTERY TESTER ADHESIVE SYSTEM

Jack Treger, Milton, Mass., assignor to Duracell Inc., Bethel, Conn.

Continuation-in-part of Ser. No. 116,383, Sep. 2, 1993, abandoned. This application Feb. 16, 1995, Ser. No. 389,363
Int. Cl.[6] H01M 10/48
U.S. Cl. 429—90 13 Claims



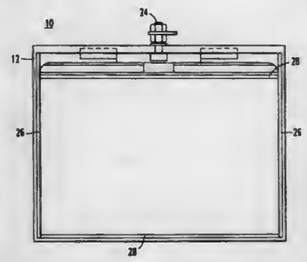
1. In combination, an alkaline electrochemical cell having negative and positive terminals; a cell condition indicator comprising a multilayered structure including an electrically resistive layer; an electrically conductive adhesive contacting and permanently electrically connecting a portion of said electrically resistive layer of said cell indicator to a portion of one of said terminals; said conductive adhesive having a resistivity of less than 2.0×10^{-4} ohm-m; and wherein the portion of said cell terminal which the conductive adhesive contacts comprises tin.

5,543,247

HIGH TEMPERATURE CELL ELECTRICAL INSULATION

Christopher J. Pulley, Shaker Hts., Ohio; Steven J. Specht, Valdosta, Ga., and Geoffrey Barlow, South Russell, Ohio, assignors to Northrop Grumman Corporation, Linthicum, Md.

Continuation-in-part of Ser. No. 234,070, Apr. 28, 1994, Pat. No. 5,476,734. This application Oct. 17, 1994, Ser. No. 323,650
Int. Cl.[6] H01M 2/14
U.S. Cl. 429—129 10 Claims



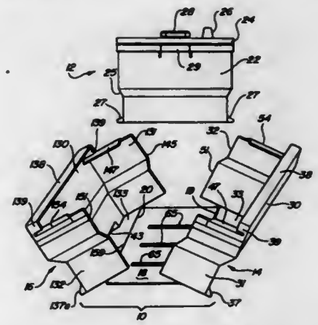
1. An insulator for use in a battery, the battery being of the type formed of a monopolar cell having a first electrode in contact with the case of said cell and a second electrode not in contact with said case, and containing an electrolyte having a melting point lower than an operating temperature of the battery, the insulator comprising:
- a plate formed from a higher melting point salt provided adjacent the edges of said second electrode but not affixed to said second electrode, said plate insulating said second electrode from said case, the salt having a melting point that is greater than the operating temperature of the battery.

5,543,248

THERMAL STABILIZATION SHIELD FOR STORAGE BATTERIES

Thomas J. Dougherty, Waukesha; Mark S. Inkmann, Wauwatosa; Debra L. Smith, West Allis, and Michael T. Reber, Grafton, all of Wis., assignors to Globe-Union Inc., Milwaukee, Wis.

Filed Feb. 17, 1995, Ser. No. 390,682
Int. Cl.[6] H01M 2/00
U.S. Cl. 429—163 20 Claims



1. A battery shield adapted for installation on a storage battery for thermally insulating the battery from heat, the battery including a container having a plurality of sidewalls and a bottom and being open at its upper end, and a cover adapted to be mounted on said container for closing the upper end of said container, said battery shield comprising:
- a first section including at least a front panel, a first side panel and a second side panel;
- a second section including at least a rear panel, a third side panel and a fourth side panel;
- and connecting means including hinge means connecting said first section to said second section, thereby permitting said first and second sections to be pivoted about said hinge means between an open position for said battery shield, which allows said battery to be placed into said battery shield, and a closed position for said battery shield in which said battery shield encloses said battery on all four sides and on the bottom,
- each of said panels including an upper portion having an inner surface and a lower portion, said inner surfaces of said panel upper portions being spaced from said sidewalls of said battery container over a substantial portion of the extent of said container sidewalls when said battery shield is installed on said battery, defining a cavity between said sidewalls of the container and said upper inner surfaces of the battery shield

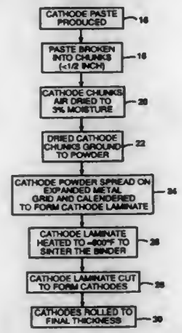
that extends around the upper portion of said battery container, and said lower portions of said panels being tapered inwardly relative to said upper portions of said panels to engage said lower sidewall portions of said battery container when said battery shield is installed on said battery.

5,543,249

AQUEOUS BLENDED ELECTRODE MATERIAL FOR USE IN ELECTROCHEMICAL CELLS AND METHOD OF MANUFACTURE

Esther S. Takeuchi, East Amherst, and Michael F. Pyszczek, LeRoy, both of N.Y., assignors to Wilson Greatbatch Ltd., Clarence, N.Y.

Filed Mar. 1, 1995, Ser. No. 396,665
Int. Cl.[6] H01M *4/62*; B22F *3/00*
U.S. Cl. 429—217 **35 Claims**



20. An electrode component for use in an electrochemical cell, the electrode component comprising an electrode active material blended with water, a binder material and a polyglycol surfactant characterized in that the polyglycol surfactant reduces the surface tension of the water to wet the electrode active material and to wet the binder material, wherein the blend is subjectable to a mixing means that serves to provide a paste comprising the electrode active material and wherein a homogeneous electrode active admixture provided from the electrode active paste having had the surfactant and water removed therefrom is subjectable to a forming means to provide the electrode component having a desired shape.

5,543,250

ELECTRODE FOR STORAGE BATTERY AND METHOD FOR PRODUCING THE SAME

Nobuyuki Yanagihara, Hirakata; Hiroshi Kawano, Ibaraki; Takayuki Hayashi, Kadoma, and Masato Tsuji, Kyoto, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 27, 1994, Ser. No. 327,838
Claims priority, application Japan, Oct. 29, 1993, 5-271906
Int. Cl.[6] H01M *4/70*
U.S. Cl. 429—241 **17 Claims**

1. An electrode for an alkaline storage battery, comprising:
a metal substrate of alkali-resistant metal having two opposite faces; and
a coated layer including an active material and provided on at least one face of said metal substrate;
said metal substrate being a metal sheet having a plurality of holes punched therethrough so as to have ragged-edge punching burrs extending from at least one face of said metal sheet, along the periphery of each punched hole;
the thickness of said metal sheet including said punching burrs is at least twice as large as the thickness of said metal sheet excluding said punching burrs, said thickness of said metal sheet excluding said punching burrs being in the range of from 25 μm to 100 μm.

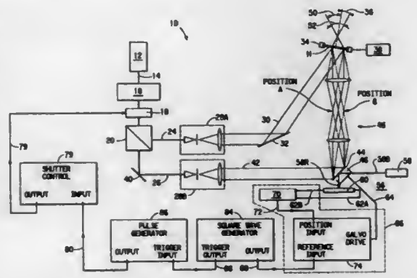


5,543,251

METHOD OF RECORDING PLURAL HOLOGRAPHIC IMAGES INTO A HOLOGRAPHIC RECORDING MATERIAL BY TEMPORAL INTERLEAVING

Bradley K. Taylor, West Chester, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 29, 1990, Ser. No. 546,179
Int. Cl.[6] G03H *1/26;1/28;1/32*
U.S. Cl. 430—1 **88 Claims**



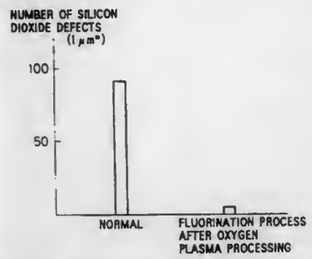
1. A method of recording a predetermined number N of holographic images into a holographic recording material, each holographic image comprising the interference pattern produced by the coherent addition of at least one object beam and at least one reference beam, wherein the object and reference beams have a unique angular and spatial relationship with each other, the method comprising the steps of:
(a) constructing each one of a first set of holographic images into a predetermined defined region of the holographic recording material, each holographic image being constructed for a predetermined first imaging time with a predetermined first time gap being defined between each of the images; and
(b) thereafter, constructing each one of a subsequent set of holographic images into the predetermined defined region of the holographic recording material, each holographic image in the subsequent set being constructed for a predetermined corresponding second imaging time with a predetermined second time gap being defined between each of the images, the first and subsequent sets of holographic images having at least one member in common.

5,543,252

METHOD FOR MANUFACTURING EXPOSURE MASK AND THE EXPOSURE MASK

Tsuyoshi Shibata; Koji Hashimoto; Katsuhiko Heida, all of Kanagawa; Kenji Kawano, Tokyo; Shinichi Ito, and Keiji Horioka, both of Kanagawa-ken , all of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 853,436, Mar. 18, 1992, Pat. No. 5,468,576. This application Apr. 15, 1994, Ser. No. 228,504
Claims priority, application Japan, Mar. 29, 1991, 3-067268
Int. Cl.[6] G03F *9/00*
U.S. Cl. 430—5 **55 Claims**



1. A method of manufacturing an exposure mask comprising the steps of:
(a) forming a temporary film on a first of two opposite surfaces of a transparent substrate, said temporary film being made from a material on which silicon dioxide does not deposit by selective deposition;
(b) forming an additional temporary film on the other of the two opposite surfaces of said transparent substrate, said additional temporary film being made from a material on which silicon dioxide does not deposit by selective deposition;
(c) patterning the temporary film formed on the first surface of the transparent substrate in order to provide pattern openings in the temporary film;
(d) after steps (a) and (c), immersing said transparent substrate in a solution in which silicon dioxide is dissolved;
(e) then, initiating selective deposition of silicon dioxide on said first surface of said transparent substrate in said solution for depositing silicon dioxide within the pattern openings over the transparent substrate except for the portions of the two opposite surfaces coated with said temporary films;
(f) finally, removing said temporary films to thereby leave a phase shifter formed from the deposition of silicon dioxide on the first surface of said transparent substrate; and
wherein steps (d) and (e) are carried out under the condition where light of 560 nanometers or less, which is capable of exposing said temporary film, is blocked.

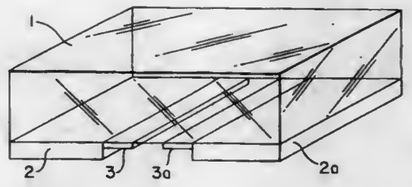
5,543,253

PHOTOMASK FOR T-GATE FORMATION AND PROCESS FOR FABRICATING THE SAME

Byung-Sun Park, Yusong-ku; Yong-Ho Oh, Joong-ku; Sang-Soo Choi, and Hyung-Joun Yoo, both of Yusong-ku, all of, Rep. of Korea, assignors to Electronics & Telecommunications Research Inst., Daejeon, Rep. of Korea

Filed Dec. 16, 1994, Ser. No. 357,017
Claims priority, application Rep. of Korea, Aug. 8, 1994, 94-19493
Int. Cl.[6] G03F *9/00*
U.S. Cl. 439—5 **3 Claims**

1. A photomask for forming a T-shaped gate structure on a FET using a negative photoresist comprising:
a transparent quartz plate;
two opaque layer patterns, each pattern being positioned on said quartz plate to a predetermined distance from the edges of said quartz plate in its inward direction, for completely blocking an incident beam to define a head portion of said T-shaped gate structure; and
two half-tone layer patterns, each pattern being positioned on said quartz plate to a predetermined distance from the edges of said two opaque layer patterns in its inward direction, for passing an incident beam with a lower transmittance than that of said transparent quartz plate to define a foot portion of said T-shaped gate structure.

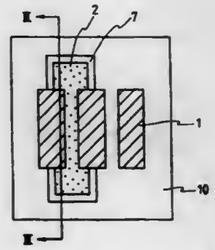


5,543,254

PHASE SHIFT MASK AND METHOD FOR FABRICATING THE SAME

Young S. Kim, and Young M. Ham, both of Kyoungki-do, Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Rep. of Korea

Filed Jan. 19, 1995, Ser. No. 375,523
Claims priority, application Rep. of Korea, Jan. 19, 1994, 94-967
Int. Cl.[6] G03F *9/00*
U.S. Cl. 430—5 **4 Claims**



1. A phase shift mask comprising:
a transparent substrate;
a plurality of uniformly spaced photoshield film patterns formed on the transparent substrate;
a phase shift film pattern formed on portions of adjacent photoshield film patterns and on the transparent substrate including a portion of the transparent substrate between the adjacent photoshield film patterns; and
grooves etched in portions of the transparent substrate where edges of the phase shift film pattern are disposed directly on the transparent substrate.

5,543,255

HALF-TONE TYPE PHASE SHIFT MASK AND METHOD FOR FABRICATION THEREOF

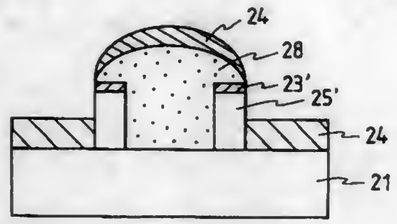
Young M. Ham, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyoungki-Do, Rep. of Korea

Filed Feb. 2, 1995, Ser. No. 382,759

Claims priority, application Rep. of Korea, Feb. 3, 1994, 94-1942

Int. Cl.[6] G03F *9/00*

U.S. Cl. 430—5 **6 Claims**



1. A half-tone phase shift mask, comprising:

a transparent substrate;

a phase shift pattern formed on a first portion of said transparent substrate;

a half-tone light-penetrating pattern formed on said phase shift pattern, said phase shift and half-tone light-penetrating patterns having a window formed therein so that a second portion of said transparent substrate is exposed; and

an optically opaque pattern covering a third portion of said transparent substrate so that an incident light penetrates only through said window and said phase shift and half-tone light-penetrating patterns.

5,543,256

METHOD FOR EXPOSING A PATTERN PLATE HAVING AN ALIGNMENT PATTERN AND A PATTERN PLATE EXPOSED BY SAID METHOD

Toshiki Shinoda; Tetsuo Takezawa, and Shigeru Noguchi, all of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

Filed Jul. 17, 1992, Ser. No. 915,939

Claims priority, application Japan, Jul. 18, 1991, 3-177871

Int. Cl.[6] G03F *9/00*

U.S. Cl. 430—22 **8 Claims**

1. A method for exposing a pattern plate for providing a device pattern and an alignment pattern, wherein the alignment pattern is exposed before exposing the device pattern, and the alignment pattern is overlap-exposed again after the device pattern has been exposed.

5,543,257

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER, PROCESS CARTRIDGE INCLUDING SAME AND ELECTROPHOTOGRAPHIC APPARATUS

Koichi Suzuki; Hideyuki Takai; Hajime Miyazaki, all of Yokohama; Satomi Sugiyama, and Mitsuhiro Kunieda, both of Kawasaki, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 22, 1994, Ser. No. 345,707

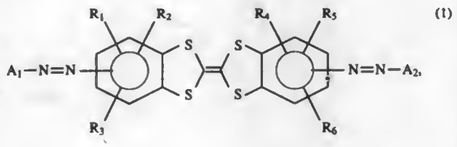
Claims priority, application Japan, Nov. 22, 1993, 5-314055

Int. Cl.[6] G03G *5/06*

U.S. Cl. 430—58 **23 Claims**

1. An electrophotographic photosensitive member, comprising: an electroconductive support and a photosensitive layer disposed on the electroconductive support, wherein the photosensitive layer comprises a disazo pigment represented by the formula (1) below or a disazo pigment represented by the formula (2) below:

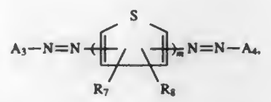
Formula (1):



(1)

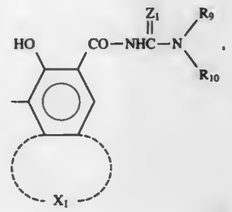
wherein R_1 to R_6 independently denote hydrogen atom, halogen atom, alkyl group, alkoxy group or aryl group; and A_1 and A_2 independently denote a coupler residue having phenolic hydroxyl group, or

Formula (2):



(2)

wherein R_7 and R_8 independently denote hydrogen atom, halogen atom, alkyl group, alkoxy group or aryl group; A_3 and A_4 independently denote a coupler residue having phenolic hydroxyl group, and at least one of A_3 and A_4 is represented by the following formula (3):



(3)

wherein X_1 denotes a residual group for forming polycyclic aromatic ring or polycyclic heterocycle by condensation reaction with benzene ring; R_9 and R_{10} independently denote hydrogen atom, alkyl group, aryl group, aralkyl group or heterocyclic group, and R_9 and R_{10} can be connected with each other to form cyclic amino group; Z_1 denotes oxygen atom or sulfur atom; and m is a positive integer.

5,543,258

ORIGINAL FORME FOR ELECTROPHOTOGRAHIC PLANOGRAPHY

Shigeyuki Dan; Takao Nakayama; Hiroshi Nishizawa, and Hidefumi Sera, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 22, 1994, Ser. No. 263,738

Claims priority, application Japan, Jun. 22, 1993, 5-150381

Int. Cl.[6] G03G *5/08*

U.S. Cl. 430—87 **3 Claims**

1. An original forme for electrophotographic planography comprising a paper support having thereon a photoconductive layer

comprising a photoconductive material including at least zinc oxide and a resin binder, the exposure percentage of said zinc oxide on a surface of said photoconductive layer being in the range of from 2.1 to 5%, wherein said exposure percentage is determined by the following equation using zinc photoelectron spectra of X-ray photoelectron spectroscopy:

$$\text{Exposing percentage of zinc oxide in \%} = \frac{\text{Zinc photoelectron spectral intensity of photoconductive layer surface}}{\text{Zinc photoelectron spectral intensity of pure zinc oxide powder}} \times 100$$

5,543,259

DEVELOPER COMPOSITIONS

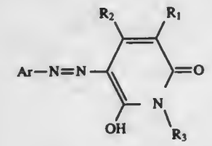
William M. Schwarz, Webster, and Timothy J. Fuller, West Henrietta, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 166,374, Dec. 13, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 466,541

Int. Cl.[6] G03G *9/09*

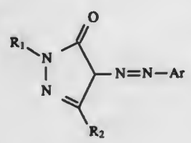
U.S. Cl. 430—106 **18 Claims**

1. A toner composition for the development of electrostatic latent images comprising particles comprising a mixture of a resin and a colorant selected from the group consisting of: (a) dimeric compounds containing one moiety of Formula I



I

wherein R_1 is an electron withdrawing group, R_2 is selected from the group consisting of hydrogen, alkyl, substituted alkyl, aryl, substituted aryl, arylalkyl, and substituted arylalkyl, R_3 is selected from the group consisting of hydrogen, alkyl, substituted alkyl, aryl, substituted aryl, arylalkyl, and substituted arylalkyl, and Ar is selected from the group consisting of aryl, substituted aryl, arylalkyl, and substituted arylalkyl, wherein the substituents on the substituted alkyl, substituted aryl, and substituted arylalkyl groups are selected from the group consisting of silyl groups, halide atoms, nitro groups, amine groups, hydroxy groups, alkoxy groups, ether groups, aldehyde groups, ketone groups, amide groups, ester groups, and carboxylic acid groups; and one moiety of Formula II



II

wherein R_1 is selected from the group consisting of hydrogen, alkyl, substituted alkyl, aryl, substituted aryl, arylalkyl, and substituted arylalkyl, R_2 is selected from the group consisting of hydrogen, alkyl, substituted alkyl, aryl, substituted aryl, arylalkyl, and substituted arylalkyl, and Ar is selected from the group consisting of aryl, substituted aryl, arylalkyl, and substituted arylalkyl, wherein the substituents on the substituted alkyl, substituted aryl, and substituted arylalkyl groups are selected from the group consisting of silyl groups, halide atoms, nitro groups, amine groups, hydroxy groups, alkoxy groups, ether groups, aldehyde groups, ketone groups, ester groups, and carboxylic acid groups; (b) trimeric compounds containing three moieties of Formula I; (c) trimeric compounds containing two moieties of Formula I and one moiety of Formula II; (d) trimeric compounds containing one moiety of Formula I and two moieties of Formula II; and (e) mixtures thereof.

5,543,260

DIAZO HEAT-SENSITIVE RECORDING MATERIAL

Keiichi Tateishi; Sadao Ishige, and Hiroshi Kamikawa, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

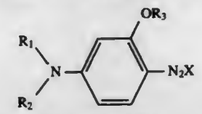
Filed Nov. 8, 1994, Ser. No. 337,470

Claims priority, application Japan, Nov. 8, 1993, 5-278608

Int. Cl.[6] G03F *7/021*; G03C *1/58*

U.S. Cl. 430—138 **6 Claims**

1. A diazo heat-sensitive recording material comprising a support having provided thereon a recording layer containing a diazo compound, a coupler, and an organic base, in which said diazo compound is a compound represented by formula (I):



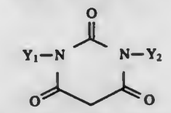
(I)

wherein R_1 represents $—C(Z_1)(Z_2)—CH_2—A$, $—CH_2—C(Z_1)(Z_2)—A$ or $—\{C(Z_1)(Z_2)\}_m—A$,

wherein Z_1 represents a substituted or unsubstituted alkyl group, a substituted or unsubstituted aralkyl group or a substituted or unsubstituted aryl group; Z_2 represents a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aralkyl group or a substituted or unsubstituted aryl group; A represents a halogen atom, an acyl group, a cyano group, or a group containing at least one oxygen, nitrogen, phosphorus or sulfur atom through which A is bonded to $—CH_2—$ or Z_2; and m represents an integer of 1 to 5;

R_2 and R_3, which may be the same or different, each represents a substituted or unsubstituted alkyl group, a substituted or unsubstituted aralkyl group or a substituted or unsubstituted aryl group; R_1 and R_2 may be connected together via A to form a ring; and X represents an acid anion,

and said coupler is a compound having at least 20 carbon atoms in total, represented by formula (II):



(II)

wherein Y_1 and Y_2, which may be the same or different, each represents a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aralkyl group, or a substituted or unsubstituted aryl group.

5,543,261

STORAGE STABILITY OF A DIAZO-BASED IMAGING ELEMENT FOR MAKING A PRINTING PLATE

Joan Vermeersch, Deinze; Guido Hauquier, Nijlen, and Dirk Kokkekenberg, St. Niklaas, all of, Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Jun. 29, 1994, Ser. No. 267,508

Claims priority, application European Pat. Off., Jul. 2, 1993, 93201934

Int. Cl.[6] G03F *7/11;7/016;7/021*

U.S. Cl. 430—159 **4 Claims**

1. An imaging element comprising on a hydrophilic support a light sensitive layer containing a diazo resin or a diazonium salt characterized in that said light sensitive layer contains pullulan wherein said hydrophilic support comprises a hydrophilic layer containing a hydrophilic (co)polymer or (co)polymer mixture and having been hardened with a hydrolyzed tetraalkyl orthosilicate.

5,543,262

BENZANTHRONE POLYMERIZATION GATE IN PHOTOPOLYMERIZABLE COMPOSITIONS

Maria T. Sypek; John R. Delude, both of Belchertown, and Paul A. Perron, Springfield, all of Mass., assignors to International Paper Company, Purchase, N.Y.

Filed Feb. 24, 1995, Ser. No. 393,969

Int. Cl.[6] G03F *7/016;7/09;7/30*

U.S. Cl. 430—162 **20 Claims**

1. A light sensitive composition which is capable of photopolymerization upon exposure to sufficient actinic radiation which comprises:

(a) at least one photopolymerizable compound having at least two olefinically unsaturated double bonds, which photopolymerizable compound is present in an amount sufficient to photopolymerize in the presence of a free radical generating component which is capable of photoinitiation upon exposure to sufficient actinic radiation; and

(b) at least one free radical generating component which is capable of photoinitiation, in an amount sufficient to effect photopolymerization of the photopolymerizable compound upon exposure to sufficient actinic radiation; and

(c) benzanthrone in an amount sufficient to substantially prevent photopolymerization of the photopolymerizable compound when the light sensitive composition is exposed to actinic radiation below a threshold amount but to permit photopolymerization of the photopolymerizable compound when the light sensitive composition is exposed to actinic radiation above a threshold amount; and

(d) at least one light sensitive diazonium compound.

13. A photosensitive element which comprises a substrate and a light sensitive composition on the substrate, which light sensitive composition comprises a light sensitive composition which is capable of photopolymerization upon exposure to sufficient actinic radiation which comprises:

(a) at least one photopolymerizable compound having at least two olefinically unsaturated double bonds, which photopolymerizable compound is present in an amount sufficient to photopolymerize in the presence of a free radical generating component which is capable of photoinitiation upon exposure to sufficient actinic radiation; and

(b) at least one free radical generating component which is capable of photoinitiation, in an amount sufficient to effect photopolymerization of the photopolymerizable compound upon exposure to sufficient actinic radiation; and

(c) benzanthrone in an amount sufficient to substantially prevent photopolymerization of the photopolymerizable compound when the light sensitive composition is exposed to actinic radiation below a threshold amount but to permit photopolymerization of the photopolymerizable compound when the light sensitive composition is exposed to actinic radiation above a threshold amount; and

(d) at least one light sensitive diazonium compound.

14. The photosensitive element of claim 13 wherein the substrate comprises a component selected from the group consisting of aluminum alloys, silicon and polymeric film bases.

18. A method of producing an imaged article which comprises

A) preparing a photosensitive element by forming a light sensitive composition on a substrate, which light sensitive composition comprises:

(a) at least one photopolymerizable compound having at least two olefinically unsaturated double bonds, which photopolymerizable compound is present in an amount sufficient to photopolymerize in the presence of a free radical generating component which is capable of photoinitiation upon exposure to sufficient actinic radiation; and

(b) at least one free radical generating component which is capable of photoinitiation, in an amount sufficient to effect photopolymerization of the photopolymerizable compound upon exposure to sufficient actinic radiation; and

(c) benzanthrone in an amount sufficient to substantially prevent photopolymerization of the photopolymerizable compound when the light sensitive composition is exposed to actinic radiation below a threshold amount but to permit photopolymerization of the photopolymerizable compound when the light sensitive composition is exposed to actinic radiation above a threshold amount; and

(d) at least one light sensitive diazonium compound; and

B) imagewise exposing the photosensitive element to ultraviolet radiation to thereby produce imagewise exposed and unexposed non-image areas; and

C) developing the photosensitive element by removing the unexposed non-image areas with a liquid developer.

5,543,263

PHOTORESIST HAVING A LOW LEVEL OF METAL IONS

M. Dalil Rahman, Warwick, and Dana L. Durham, East Greenwich, both of R.I., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Continuation of Ser. No. 904,229, Jun. 25, 1992, abandoned, which is a continuation-in-part of Ser. No. 847,454, Mar. 6, 1992, abandoned. This application Jun. 17, 1994, Ser. No. 261,646

Int. Cl.[6] G03C *5/18*

U.S. Cl. 430—168 **3 Claims**

1. A method for producing a photoresist having a very low level of metal ions comprising:

a) washing an acidic exchange resin with water, washing said ion exchange resin with a mineral acid solution and thereby reducing the level of sodium and iron ions in the ion exchange resin to less than 100 ppb each;

b) formulating a photoresist composition solution by providing an admixture of: 1) a photosensitive component in an amount sufficient to photosensitize the photoresist composition, 2) a film forming resin and 3) a suitable photoresist solvent;

c) treating the acidic ion exchange resin with a solvent which is the same as or compatible with the photoresist solvent to remove substantially all of the water;

d) passing the photoresist composition solution through said ion exchange resin and thereby reducing the sodium and iron ion level of said solution to less than 20 ppb each.

5,543,264

CO-FACTOR ACTIVATED RECOMBINANT ADENOVIRUS PROTEINASES

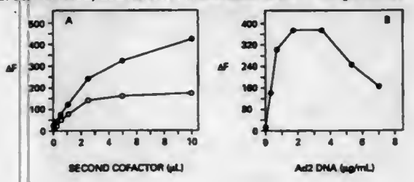
Carl W. Anderson, Stony Brook, and Walter F. Mangel, Shoreham, both of N.Y., assignors to Associated Universities, Inc., Washington, D.C.

Continuation-in-part of Ser. No. 851,217, Mar. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 545,585, Jun. 29, 1990, abandoned. This application Nov. 19, 1993, Ser. No. 155,171

Int. Cl.[6] C12N *9/50;15/57;15/34;15/70*

U.S. Cl. 435—219 **19 Claims**

1. An isolated, activatable recombinant adenovirus proteinase.



5,543,265

PHOTORESIST SOLUTION CAPABLE OF BEING APPLIED AS AN AEROSOL CONTAINING 3 TO 12 PERCENT BY WEIGHT SOLVENT

Mario Garza, Sunnyvale, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Division of Ser. No. 189,574, Jan. 31, 1994, which is a division of Ser. No. 907,757, Jun. 29, 1992, Pat. No. 5,330,883. This application Jun. 5, 1995, Ser. No. 461,120

Int. Cl.[6] G03F *7/004*

U.S. Cl. 430—270.1 **4 Claims**

1. A viscous photoresist coating solution capable of being applied as an aerosol to form a layer on a semiconductor wafer during photolithographic processing of said semiconductor wafer, comprising:

a photoresist coating solution of from 3% to 12% by weight solvent, and from 88% to 97% by weight solids, by total weight of said photoresist coating composition.

5,543,266

ACTIVE ENERGY RAY-CURING RESIN COMPOSITION

Hironaichi Noguchi, Atsugi; Tadayoshi Inamoto, Machida, and Megumi Munakata, Atsugi, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 219,870, Mar. 29, 1994, abandoned, which is a continuation of Ser. No. 924,570, Aug. 5, 1992, abandoned, which is a continuation of Ser. No. 537,145, Jun. 12, 1990, abandoned, which is a continuation of Ser. No. 246,932, Sep. 19, 1988, abandoned, which is a continuation of Ser. No. 876,080, Jun. 19, 1986, abandoned. This application Mar. 13, 1995, Ser. No. 415,168

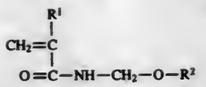
Claims priority, application Japan, Jun. 26, 1985, 60-138036; Jul. 2, 1985, 60-144000

Int. Cl.[6] G03C *1/725*

U.S. Cl. 430—280.1 **5 Claims**

1. An active energy ray-curing resin composition comprising:

(i) a graft copolymerized polymer comprising a trunk chain composed mainly of structural units derived from at least one monomer selected from the group consisting of C_{1-4} alkyl methacrylates, acrylonitrile and styrene, having graft chains composed mainly of structural units derived from at least one monomer selected from the group consisting of (A) hydroxyl containing acrylic monomers, (B) amino or alkylamino containing acrylic monomers, (C) carboxyl containing acrylic or vinyl monomers, (D) N-vinylpyrrolidone or its derivatives, (E) vinylpyridine or its derivatives and (F) acrylamide derivatives represented by the following general formula I:



(I)

wherein R^1 is hydrogen or an alkyl or hydroxyalkyl group having 1 to 3 carbon atoms, and R^2 is hydrogen or an alkyl or acyl group having 1 to 4 carbon atoms which may have hydroxyl group, added to said trunk chain;

(ii) an epoxy resin selected from the group consisting of a bisphenol A epoxy resin, a cresol-novolac epoxy resin, an alicyclic epoxy resin and mixtures thereof; and

(iii) a polymerization initiator capable of generating a Lewis acid by irradiation of an active energy ray comprising an aromatic halonium salt compound or an aromatic onium salt compound having photosensitivity containing an element belonging to Group VIA or Group VA of the Periodic Table.

5,543,267

PHOTO-INDUCED OPTICALLY ANISOTROPIC AMORPHOUS FILM MATERIALS FROM SIDE GROUP POLYMERS

Joachim Stumpe, Berlin, Germany; Valery Shibaev, Moscow, Russian Federation; Sergei Kostromin, Moscow, Russian Federation; Sergei Ivanov, Moscow, Russian Federation; Thomas Fischer, Berlin, Germany; Lutz Läsker, Berlin, Germany; Ralf Ruhmann, Berlin, Germany, and Uwe Claussen, Leverkusen, Germany, assignors to Agfa-Gevaert AG, Germany

Filed Mar. 21, 1994, Ser. No. 210,425

Claims priority, application Germany, Mar. 30, 1993, 43 10 368.5; Nov. 23, 1993, 43 39 862.6

Int. Cl.[6] C08F *220/34*

U.S. Cl. 430—290 **13 Claims**

1. An amorphous film material made from a side group polymer with a backbone and side groups branching off the backbone, which polymer has the following structural features (1) to (3):

(1) the side group polymer contains at least one photoinducibly configuration-changing side group;

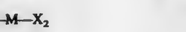
(2) the side group polymer contains at least one permanently conformationally anisotropic side group with anisotropy of molecular polarisability which differs from (1);

(3) the side group polymer contains at least two different flexible spacer groups of differing length between the backbone and the side groups (1) and (2);

wherein the amorphous film material in the glassy state of the side group polymers is optically isotropic, transparent, non-scattering and amorphous before irradiation and, after irradiation, is transparent and durably birefringment and dichroic due to a reversible, photoinduced alignment of the side groups (1) and (2) in the glassy state and said backbone is a poly(meth)acrylate, a polysiloxane, a poly-α-oxirane, a polyether,a polyamide, a polyurethane, a polyester or a polycarbonate, the side group (1), including the flexible spacer group (3), corresponds to the formula (I) and the side group (2), including the flexible spacer group (3), corresponds to the formula (II):



(I)



(II)

in which

S_1 and S_2 mean a spacer group,

Q_1 and Q_2 mean —O—, —CO—O—, —O—CO—, —CO—NR_1—, —NR_1—CO— or —NR_1—,

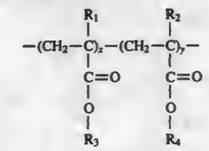
P means a photoinducibly configuration-changing group,

M means a permanently conformationally anisotropic group differing from P,

X_1 and X_2 mean a terminal substituent and

R_1 means hydrogen or C_1–C_4 alkyl.

13. Side group polymers of the formula

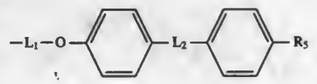


(III)

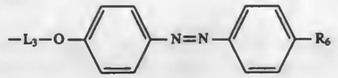
in which

R_1 and R_2 mutually independently mean H or CH_3,

R_3 means



R_4 means



L_1 and L_3 mutually independently mean an alkylene group with 2 to 14 C atoms optionally interrupted with 1 to 3 oxygen atoms,

L_2 means a direct bond, —CO—NH—, —NH—CO—, —CO—O— or —O—CO—,

R_5 and R_6 mutually independent mean a H, CN, C_1–C_5 alkyl, C_1–C_6 alkoxy, di-C_1–C_4-alkylamino, halogen or nitro and

x and y mean a number from 0.1 to 0.9,

wherein x+y=1 and

the monomer units are randomly distributed in the side group polymer.

5,543,268

DEVELOPER SOLUTION FOR ACTINIC RAY-SENSITIVE RESIST

Hatsuyuki Tanaka, Chigasaki; Mitsuru Sato, Zama; Toshimasa Nakayama, Hiratsuka, and Hiroshi Komano, Kanagawa-ken, all of, Japan, assignors to Tokyo Ohka Kogyo Co., Ltd., Kanagawa-ken, Japan

Continuation of Ser. No. 882,854, May 14, 1992, abandoned. This application Apr. 22, 1994, Ser. No. 231,877

Int. Cl.[6] G03F *7/32*

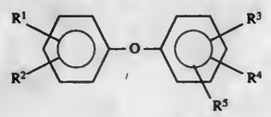
U.S. Cl. 430—331 **9 Claims**

1. A developer solution for an actinic ray -sensitive resist layer which comprises:

(a) water or a liquid mixture mainly composed of water as a solvent;

(b) a nitrogen-containing organic basic compound dissolved in said solvent in a concentration of from 1 to 5% by weight; and

(c) an anionic surface active agent which is a diphenyl ether compound represented by the general formula:



in which R^1 is an alkyl or alkoxy group having 5 to 18 carbon atoms, R^2 is a hydrogen atom or an alkyl or alkoxy group having 5 to 18 carbon atoms, R^3 is an N-substituted ammonium sulfonate group of the general formula:

each R^6 being, independent from the others, a methyl, ethyl, hydroxymethyl or 2-hydroxyethyl group and R^4 and R^5 are each a hydrogen atom or an N-substituted ammonium sulfonate group of the general formula $SO_3NR^6_4$, R^6 having the same meaning as defined above, dissolved in the solvent in a concentration in the range from 0.05 to 5% by weight.

5,543,269

IMAGE WRITING ON CERAMICS

Dilip K. Chatterjee; Syamal K. Ghosh, both of Rochester; Wayne K. Shaffer, Penfield, and Alan P. Vankerkhove, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 4, 1995, Ser. No. 417,318

Int. Cl.[6] G03C *5/00;5/16*

U.S. Cl. 430—346 **5 Claims**

1. A method of imaging a ceramic surface comprising:

providing a ceramic having a surface, having an image due to a color difference, the ceramic consisting essentially of zirconia and a dopant selected from the group consisting of rare earth oxides and oxides of calcium, magnesium, yttrium and scandium wherein the ceramic has a molar ratio of dopant to zirconia of from about. 0.5:99.5 to about 25:75, the ceramic having an essentially tetragonal crystal grain; and

focusing a laser beam having a diameter of 5 μm or greater on the surface for a time sufficient to change the color difference of the surface by reducing the doped zirconium oxide to produce an image.

5,543,270

MOLDED ARTICLE FOR PHOTOGRAPHIC PHOTOSENSITIVE MATERIAL, MOLDING METHOD AND PACKAGE

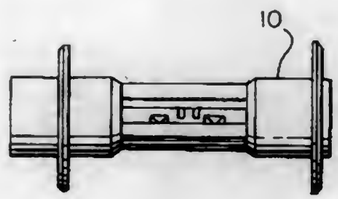
Mutsuo Akao, and Osamu Suzuki, both of, Minami-Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 28, 1994, Ser. No. 233,978

Claims priority, application Japan, Apr. 28, 1993, 5-103063

Int. Cl.[6] G03C *3/00;* **C08L** *51/04;53/00*

U.S. Cl. 430—347 **30 Claims**



1. An injection molded article for a photographic photosensitive material formed of a resin composition comprising (a) 50 wt. % or more of a rubber-containing aromatic monovinyl resin having a melt flow index of 3 to 40 g/10 minutes, a bending elastic modulus of 20,000 kg/cm^2 or more, an Izod impact strength of 2.0 Kg.cm/cm, a weight average molecular weight/number average molecular weight ratio of 1.3 to 8, and a Vicat softening point of 85° C. or more, and containing 1 to 12 wt. % of a rubber material, (b) 0.1 to 10 wt. % of a light-shielding material, and (c) 0.01 to 20 wt. % of at least one of a lubricant and an antistatic agent.

5,543,271

OPTICAL RECORDING AND REPRODUCTION APPARATUS

Hiroaki Miwa, Fujisawa; Ryoichi Sudo, Yokosuka; Tetsuo Tajima, Fujisawa, and Eiji Koyama, Tsuchiura, all of, Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Maxell, Ltd., Osaka, both of, Japan

Continuation of Ser. No. 53,483, Apr. 29, 1993, Pat. No. 5,401,610, which is a division of Ser. No. 855,511, Mar. 20, 1992, Pat. No. 5,244,775. This application Jan. 20, 1995, Ser. No. 375,730

Claims priority, application Japan, Mar. 20, 1991, 3-056460

Int. Cl.[6] G11B *7/24*

U.S. Cl. 430—347 **26 Claims**

1. An optical recording and reproduction apparatus having an optical disc and an optical head, said optical disc having a cross-sectional structure comprising a pair of transparent substrates each having at least one layer of a recording film formed on a surface of information patterns thereof and the pair being bonded and laminated with an adhesive, wherein said optical disc is characterized by having an instantaneous axial acceleration <2 G measured at room temperature, a skew angle <5 mrad measured at room temperature and a skew angle <5 mrad measured at room temperature after being left for one hour as heated to 80° C.

5,543,272

PHOTOGRAPHIC COMPOSITION HAVING FIXING CAPACITY AND A METHOD FOR PROCESSING USING THE SAME

Tetsuro Kojima; Masaru Yoshikawa, and Yoshihiro Fujita, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 10, 1994, Ser. No. 194,509

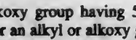
Claims priority, application Japan, Feb. 17, 1993, 5-028104

Int. Cl.[6] G03C *5/38*

U.S. Cl. 430—455 **16 Claims**

1. A silver halide photographic fixing composition, which comprises water and at least one compound represented by the following formula (I):

formula (I):



wherein R represents an aliphatic group, an aromatic group, or a heterocyclic group, and M represents a hydrogen atom or a cationic group,

wherein the compound of formula (I) is contained in the composition in a concentration of from 1×10^{-3} mol/l to 5 mol/l.

5,543,273

RADIATION-SENSITIVE PHOTOGRAPHIC PLATES AND IMPROVED METHOD FOR MANUFACTURE THEREOF

Thomas M. Smith, Spencerport, and Arlene L. Meyer, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 24, 1995, Ser. No. 394,115

Int. Cl.[6] G03C *1/74;1/76;1/795*

U.S. Cl. 430—495.1 **25 Claims**

1. A radiation-sensitive photographic plate; said plate comprising a rigid transparent plate support having in order on one side thereof:

(1) an adhesive layer comprising a remoistenable adhesive;

(2) a flexible photographic film support; and

(3) a radiation-sensitive silver halide emulsion layer; said adhesive layer being characterized by having sufficient transparency to permit its incorporation in said radiation-sensitive photographic plate without significant deterioration of the optical properties thereof and sufficient adhesive characteristics to be firmly bonded to said rigid transparent plate support by the steps of moistening, laminating and drying.

5,543,274

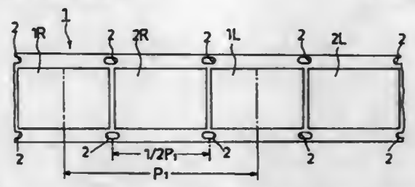
PHOTOGRAPHIC FILM

Minoru Inaba, No. 1116, Oaza Samukawa, Oyama-shi, Tochigi-ken, Japan

Filed Dec. 14, 1994, Ser. No. 355,595

Int. Cl.[6] G03C *1/765*

U.S. Cl. 430—496 **16 Claims**



1. A photographic film for use in a stereoscopic camera comprising:

a plurality of paired exposure surfaces, each of said plurality of paired exposure surfaces having a first pitch and capable of forming a stereoscopic image;

the photographic film having a plurality of elongated perforations oppositely positioned along both longitudinal sides thereof, the plurality of elongated perforations being elongated in a direction in which the photographic film is fed, the plurality of elongated perforations having a second pitch, and each exposure surface of said plurality of paired exposure surfaces being centered between opposing pairs of the plurality of elongated perforations, whereby the photographic film can be cut in a line between the opposing pairs of the plurality of elongated perforations forming individual frames for mounting in a stereoscopic mount.

5,543,275

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Toshiyuki Makuta, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

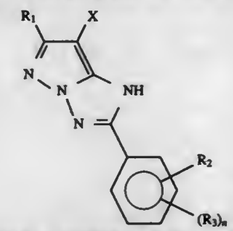
Filed May 10, 1995, Ser. No. 438,540

Claims priority, application Japan, May 10, 1994, 6-119670

Int. Cl.[6] G03C *1/46*

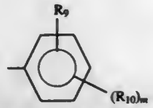
U.S. Cl. 430—503 **15 Claims**

1. A silver halide color photographic material comprising a support having thereon at least one yellow coloring light-sensitive silver halide emulsion layer, at least one magenta coloring light-sensitive silver halide emulsion layer, and at least one cyan coloring light-sensitive silver halide emulsion layer, wherein the magenta coloring light-sensitive silver halide emulsion layer contains at least one dye-forming coupler represented by the following formula (M-I), at least one high boiling point organic solvent having a dielectric constant of 6.0 or less and a refractive index of 1.50 or less, and at least one benzotriazole ultraviolet absorber:



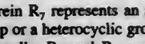
(M-I)

wherein R_1 represents a group represented by the following formula (Q-1), (Q-2) or (Q-3); R_2 and R_3 each represents a substituent; n represents an integer of from 0 to 4, and when n is 2 or more, the plurality of R_3 are the same or different; and X represents a hydrogen atom or a group capable of being eliminated upon coupling reaction with an oxidized product of a developing agent,

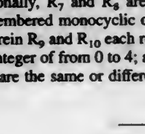


(Q-1)

wherein R_4 represents an alkyl group, a cycloalkyl group, an aryl group or a heterocyclic group; and R_5 and R_6 each represents a substituent; and, optionally, at least two of any of R_4, R_5 and R_6 are bonded to each other to form a 5- to 7-membered monocyclic or condensed ring;



(Q-2)



(Q-3)

wherein R_7 represents an alkyl group, a cycloalkyl group, an aryl group or a heterocyclic group; and R_8 represents a substituent; and, optionally, R_7 and R_8 are bonded to each other to form a 5- to 7-membered monocyclic or condensed ring;
wherein R_9 and R_{10} each represents a substituent; and m represents an integer of from 0 to 4; and when m is 2 or more, the plurality of R_{10} are the same or different.

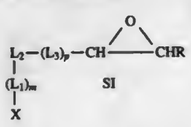
5,543,276

COLOR PHOTOGRAPHIC ELEMENT CONTAINING NEW EPOXY SCAVENGERS FOR RESIDUAL MAGENTA COUPLER

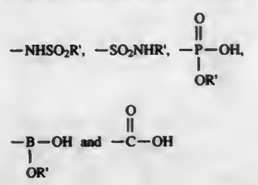
Krishnan Chari, Rochester; Wendell F. Smith, Jr.; Paul P. Spara, both of Fairport, and Sundaram Krishnamurthy, Penfield, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 8, 1994, Ser. No. 255,512
Int. Cl.[6] G03C *7/392;1/34*
U.S. Cl. 430—505 **5 Claims**

1. A photographic element comprising a support having coated thereon:
(a) a photosensitive first layer comprising
(i) a silver halide emulsion and
(ii) a magenta coupler dispersed therein; and
(b) a second layer comprising an epoxy compound having the structural formula:



wherein:
R is H, alkyl, substituted alkyl, aryl, or substituted aryl;
L_1 is a divalent alkyl, substituted alkyl, aryl, or substituted aryl linking group;
L_2 is a divalent linking group selected from O, CO, S, SO_2, PO_2, C(O)O, NHCO or $NHSO_2$;
L_3 is a divalent alkyl or substituted alkyl linking group;
m is 0 or 1;
p is 0 or 1; and
X is selected from the group consisting of



wherein:
R' is H, alkyl, substituted alkyl, aryl or substituted aryl,
or, if L_2 comprises an ionizable group, X is alkyl, substituted alkyl, aryl or substituted aryl.

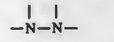
5,543,277

PHOTOGRAPHIC ELEMENTS CONTAINING SCAVENGERS FOR OXIDIZED DEVELOPING AGENT

Stephen P. Singer, Spencerport, and John W. Harder, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 233,196, Apr. 26, 1994, abandoned. This application Mar. 1, 1995, Ser. No. 397,029
Int. Cl.[6] G03C *1/46*
U.S. Cl. 430—505 **22 Claims**

1. A photographic element comprising a support bearing at least one silver halide emulsion layer having associated therewith a hydrazide compound that functions as a scavenger for oxidized developing agent; said hydrazide compound:
(a) comprising at least one polyhydroxy aromatic nucleus or a precursor thereof; said precursor having an aromatic nucleus substituted with labile groups which form hydroxyl groups upon processing of said photographic element;
(b) comprising at least one moiety containing an



group wherein said moiety is bonded to a ring carbon atom of said polyhydroxy aromatic nucleus or precursor thereof through an oxy, thio, sulfinyl, that when said moiety is bonded to said ring carbon atom through a carbonyl group then said polyhydroxy aromatic nucleus comprises at least three hydroxyl groups; and
(c) having sufficient bulk that it is substantially non-diffusible in said photographic element.

5,543,278

INFRARED SENSITIVE SILVER HALIDE PHOTOGRAPHIC ELEMENTS

Marco Bucci, Genova; Ivano Delprato, Montenotte, and Giorgio Spazzapan, Savona, all of, Italy, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 18, 1991, Ser. No. 643,461
Claims priority, application Italy, Feb. 1, 1990, 19235/90
Int. Cl.[6] G03C *1/28;1/34;7/392*
U.S. Cl. 430—506 **2 Claims**

1. A sliver halide photographic element comprising a support and at least two sliver halide emulsion layers spectrally sensitized to the infrared portion of the electromagnetic spectrum, characterized in that at least one of said infrared sensitized emulsion layers is associated with a 1-aryl-5-mercaptotetrazole compound substituted in the aryl group by at lest one electron-attracting group, said element having on at least one side of said support at least three silver halide emulsion layers, each of said silver halide emulsion layers being associated with a different color photographic coupler, each emulsion layer being sensitized to a different region of the electromagnetic spectrum and at least two emulsion layers being sensitized to radiation within the infrared region of the electromagnetic spectrum, characterized in that at least one of said infrared sensitized emulsion layers is associated with the 1-aryl-5-mercaptotetrazole compound substituted in the aryl group by at least one electron-attracting group, wherein said aryl group is a phenyl group bearing a flurorinated alkyl group electron-attracting substituent.

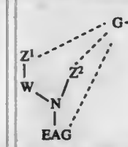
5,543,279

SILVER HALIDE LIGHT-SENSITIVE MATERIAL

Naoto Matsuda, and Makoto Yamada, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 14, 1994, Ser. No. 227,381
Claims priority, application Japan, Apr. 14, 1993, 5-109830; Mar. 16, 1994, 6-70202
Int. Cl.[6] G03C *8/22;7/305*
U.S. Cl. 430—559 **5 Claims**

1. A silver halide light-sensitive material containing a compound represented by formula (I):



(I)

wherein EAG represents a group receiving an electron from a reducing substance; W represents an oxygen atom, a sulfur atom, or $—NR^1—$, in which R^1 represents an alkyl group or an aryl group; Z^1 and Z^2 each represents a single bond or a substituent other than a hydrogen atom, and Z^1 and Z^2 may be combined with each other to form a ring; p represents an integer of 1 or more; n represents an integer of 1 or 2; m represents an integer of 2 or more; G represents a group that is combined with any one of Z^1, Z^2 or EAG and which combination is cleaved after EAG receives an electron; X represents an alkyl group, an aryl group or a group obtained by removing m hydrogen atoms from a heterocyclic group; L represents a group combining X with D; D represents a dye or a dye precursor; m ($L—(D)_p$) may be the same or different; when n is 2, n ($X—(L—(D)_p)_m$) may be the same or different; when p is 2 or more, p D may be the same or different; and in the formula, a solid line represents a bond and a broken line may represent a bond, provided that at least one broken line is a bond.

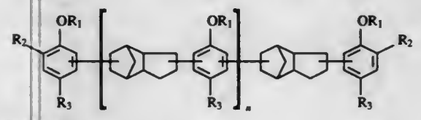
5,543,280

COLOUR PHOTOGRAPHIC RECORDING MATERIAL

Beate Weber, Leichlingen; Jörg Hagemann, Cologne; Günter Helling, Odenthal, and Markus Geiger, Langenfeld, all of, Germany, assignors to AGFA-Gevaert AG, Germany

Filed Nov. 13, 1995, Ser. No. 557,734
Claims priority, application Germany, Nov. 24, 1994, 44 41 847.7
Int. Cl.[6] G03C *7/392*
U.S. Cl. 430—503 **9 Claims**

1. A color photographic material which comprises on a support at least one blue sensitive silver halide emulsion layer containing at least one yellow coupler, at least one green sensitive silver halide emulsion layer containing at least one magenta coupler, at least one red sensitive silver halide emulsion layer containing at least one cyan coupler, wherein at least one blue sensitive layer containing a yellow coupler contains a compound of the formula (I)



(I)

in which
R_1 means $—(X)_m—R_4$,
m means 0 or 1,
X means —CO—, —CO—NR_5— or —CO—O—,
R_4 means H, alkyl, aryl or alkenyl,
R_2 means H or alkyl,
R_3 means H or alkyl,
R_5 means H, alkyl, cycloalkyl or aryl,
n means 1 to 20,
providing that m is 1 in at least 10% of the R_1 groups.

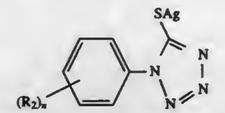
5,543,281

MERCAPTOTETRAZOLE TRANSITION METAL SALTS FOR CONTROL OF CYAN STAIN

Walter H. Isaac, Penfield, and Eric W. Wollman, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 17, 1995, Ser. No. 390,464
Int. Cl.[6] G03C *1/775;7/392*
U.S. Cl. 430—551 **8 Claims**

1. A photographic element comprising a color photographic paper wherein said paper comprises at least one layer comprising dye-forming coupler, a transition metallic salt of the general formula:



AS-Ig

wherein R_2 is selected from alkyl, aryl, alkylcarbonamido and arylcarbonamido, and n=0–2, silver chloride grains that comprise less than 2 mole percent iodide, and a thiosulfonate salt



AF-II

wherein R_a is selected from alkyl, aryl, heteroaryl, and arylalkyl substituents or R_a may comprise part of a polymeric backbone wherein the thiosulfonate moiety is repeated, and M_a is a monovalent metal or tetraalkylammonium cation.

5,543,282

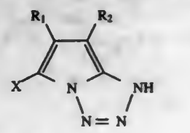
SILVER HALIDE COLOR PHOTOGRAPHIC PHOTOSENSITIVE MATERIALS COMPRISING HETEROCYCLIC CYAN COUPLERS

Keiji Mihayashi, and Yasuhiro Shimada, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

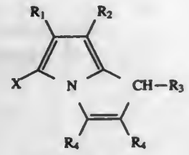
Continuation of Ser. No. 77,768, Jun. 18, 1993, abandoned. This application Apr. 6, 1995, Ser. No. 418,168
Claims priority, application Japan, Jun. 19, 1992, 4-184717
Int. Cl.[6] G03C *7/32;1/035*
U.S. Cl. 430—558 **11 Claims**

1. A silver halide color photographic photosensitive material comprising a support having thereon (1) at least one photosensitive silver halide emulsion layer comprising silver halide monodisperse tabular grains in which silver halide grains of an aspect ratio of at least 2 account for at least 50% of the total number of silver halide grains in the layer, in which the variation coefficient of the grain diameters of the silver halide grains in the emulsion layer is not more than 0.25, in which at least 50% of the total number of the silver halide grains in the emulsion layer is comprised of hexagonal tabular grains which have two parallel planes as external surfaces and of which the ratio of the length of the

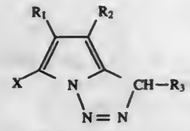
longest side to the length of the shortest side is not more than 2, in which at least 50% of the total number of silver halide grains in the silver halide emulsion contain ten or more dislocation lines per grain, and in which the silver halide emulsion is comprised of silver halide grains for which the relative standard deviation of the silver iodide content between individual silver halide grains is not more than 30%, and (2) a cyan coupler represented by formula (Va), (VIa) or (IXa) incorporated into at least one of said silver halide emulsion layer and a hydrophilic colloidal non-photosensitive layer adjacent thereto:



(Va)



(VIa)



(IXa)

wherein R_1, R_2 and R_3 each represents an electron withdrawing group of which the Hammett substituent group constant σ_p value is 0.20 or above; the sum of the σ_p values of R_1 and R_2 is 0.65 or above; R_4 represents a hydrogen atom or a substituent group selected from the group consisting of a halogen atom, an aliphatic hydrocarbon group, an alicyclic hydrocarbon group, an aryl group, a heterocyclic group, an alkoxy group, an aryloxy group, a heterocyclic oxy group, an alkylthio group, an arylthio group, a heterocyclic thio group, an acyloxy group, a carbamoyloxy group, a silyloxy group, an alkyl sulfonyloxy group, an aryl sulfonyloxy group, a heterocyclic sulfonyloxy group, an acylamino group, an alkylamino group, an arylamino group, a ureido group, a sulfamoylamino group, an alkenyloxy group, a formyl group, an aliphatic acyl group, an aromatic acyl group, a heterocyclic acyl group, an alkylsulfonyl group, an arylsulfonyl group, a heterocyclic sulfonyl group, an alkylsulfinyl group, an arylsulfinyl group, a heterocyclic sulfinyl group, an alkyloxycarbonyl group, an aryloxycarbonyl group, a heterocyclic oxycarbonyl group, an alkyloxycarbonylamino group, an aryloxycarbonylamino group, a heterocyclic oxycarbonylamino group, an alkyl sulfonamido group, an aryl sulfonamido group, a heterocyclic sulfonamido group, a carbamoyl group, a sulfamoyl group, a phosphonyl group, a sulfamoylamino group, an imido group a hydroxy group, a cyano group, a —COOM group, an $—SO_3M$ group; a nitro group, and an unsubstituted amino group; where M represents a hydrogen atom, an alkali metal atom or NH_4; and where the alkyl moieties, the aryl moieties, and the heterocyclic moieties present in the above groups may be further substituted with a substituent group as indicated herein for R_4; when there are two R_4 groups, they may be the same or different; X represents a hydrogen atom or a group which can be eliminated by a coupling reaction with the oxidized form of a primary aromatic amine color developing agent; R_1, R_2, R_3, R_4 or X may be a divalent group and may form a bis compound or may be joined to oligomer or polymer chains to form oligomers, homopolymers or copolymers.

5,543,283

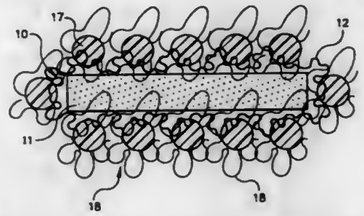
ATTACHMENT OF GELATIN-GRAFTED PLYMER PARTICLES TO PRE-PRECIPITATED SILVER HALIDE GRAINS

Mark A. Whitson; John D. Lewis, both of Webster; Tienteh Chen, Penfield; Thomas J. Dannhauser, Pittsford, and Pranab Bagchi, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 122,191, Sep. 14, 1993, Pat. No. 5,399,480. This application Nov. 30, 1994, Ser. No. 346,727

Int. Cl.[6] G03C *1/005*

U.S. Cl. 430—569 **12 Claims**



1. A method of preparing a photographic silver halide emulsion composition comprising:

(i) mixing in an aqueous medium

(a) silver halide-gelatin particles comprising silver halide grains, each surrounded by a layer of adsorbed peptizing gelatin in which the peptizing gelatin has an isoelectric pH of P_1; and

(b) gelatin-grafted-polymer particles in which the grafted gelatin has an isoelectric pH of P_2 which is different than P_1; and

(ii) adjusting the pH of the aqueous medium to a value that is between P_1 and P_2, whereby gelatin-grafted-polymer particles are attached to the silver halide gelatin particles.

5,543,284

PREPARATION METHOD OF REGULAR SILVER HALIDE LIGHT-SENSITIVE EMULSIONS COMPRISING SILVER HALIDE CRYSTALS RICH IN CHLORIDE AND MATERIAL COMPRISING SAID EMULSIONS

Ann Verbeeck, Begijnendijk, Belgium, assignor to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Apr. 6, 1995, Ser. No. 417,953

Claims priority, application European Pat. Off., May 9, 1994, 94201283

Int. Cl.[6] G03C *1/015*

U.S. Cl. 430—569 **11 Claims**

1. Method of preparing a photographic light-sensitive silver halide emulsion, containing regular silver halide crystals rich in chloride comprising the following steps:

precipitating silver halide crystals rich in chloride by means of a double-jet or triple-jet technique in colloidal silica having a particle size from 0.003 μm to 0.30 μm as a protective colloid in the absence of any polymeric compound(s) capable of forming hydrogen bridges with colloidal silica, but always in the presence of an onium compound, wherein a ratio by weight of said colloidal silica to said onium compound(s) is obtained between 3 and 75;

controlling nucleation and growth steps by means of variable flow rate(s) of aqueous solutions of silver nitrate and chloride containing salts, and/or by means of constant pAg-values during said steps in order to determine the number of nuclei obtained during nucleation quantitatively and to avoid renucleation growth, and wherein throughout about the nucleation and growth steps the total amount of monovalent ions of electrolyte present during both steps is less than 1.0 molar;

desalting reaction medium and redispersing silver halide formed, chemically ripening silver halide crystals rich in chloride and adjusting ratio by weight of the colloidal silica sol to amount of silver halide, expressed as equivalent amount of silver nitrate to a value of at least 0.03 throughout precipitation by addition of said silica sol.

5,543,285

Patent Not Issued For This Number

5,543,286

DRY PROCESS SILVER SALT PHOTOSENSITIVE MATERIAL AND IMAGE FORMING METHOD MAKING USE OF THE DRY PROCESS SILVER SALT PHOTOSENSITIVE MATERIAL

Kazunori Ueno, Inagi; Tetsuro Fukui, Yokohama; Motokazu Kobayashi, Kawasaki; Takehiko Ooi, Sagamihara; Kenji Kagami, Atsugi; Masao Suzuki, Tokyo, and Katsuya Nishino, Hiratsuka, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

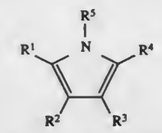
Filed Nov. 10, 1994, Ser. No. 338,770

Claims priority, application Japan, Nov. 12, 1993, 5-283600

Int. Cl.[6] G03C *1/498*

U.S. Cl. 430—619 **8 Claims**

1. A dry process silver salt photosensitive material comprising: a support and provided thereon a photosensitive layer containing at least a photosensitive silver halide or photosensitive silver halide forming component, an organic silver salt and a pyrrole compound, wherein said pyrrole compound is a compound represented by the following formula (I)



wherein R^1, R^2, R^3, and R^4 are each a substituted or unsubstituted aryl group, a substituted or unsubstituted alkyl group, an aralkyl group, an acyl group, an ester group, a nitro group, a nitrile group or a hydrogen atom; R^5 is a substituted or unsubstituted aryl group, a substituted or unsubstituted alkyl group, an aralkyl group, an acyl group, an ester group or a hydrogen atom; and R^1, R^2, R^3, R^4 and R^5 may be the same or different from one another.

5,543,287

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Takeo Arai, Hino, Japan, assignor to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 80,054, Jun. 22, 1993, abandoned, which is a continuation of Ser. No. 757,266, Sep. 10, 1991, abandoned. This application Jan. 13, 1995, Ser. No. 372,827

Claims priority, application Japan, Sep. 14, 1990, 2-244558; Sep. 20, 1990, 2-251420

Int. Cl.[6] G03C *1/047*

U.S. Cl. 430—628 **14 Claims**

1. A method for processing a silver halide photographic material comprising;

performing a face-to-face contact exposure of said photographic material to an original by means of a light source, and

developing said photographic material,

wherein said silver halide photographic material comprises a support and a silver halide emulsion layer comprising gelatin and a gelatin modified latex in an amount of 70% to 200% by weight of gelatin present in said emulsion layer, said gelatin modified latex being produced by polymerization of a latex in the presence of gelatin.

5,543,288

SURFACE-ACTIVE COMPOUND AND A SILVER HALIDE PHOTOGRAPHIC MATERIAL CONTAINING THE SAME

Tomokazu Yasuda; Yukio Karino, and Masatoshi Nakanishi, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

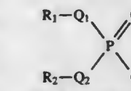
Filed Aug. 10, 1994, Ser. No. 288,609

Claims priority, application Japan, Aug. 18, 1993, 5-204325

Int. Cl.[6] G03C *1/38*

U.S. Cl. 430—631 **13 Claims**

1. A silver halide photographic material, which comprises a light-sensitive silver halide and a compound represented by the following formula (I):



formula (I)

wherein R_1 represents an aliphatic group, an alicyclic compound group, an aromatic group, or a heterocyclic ring; R_2 represents an aliphatic group, an alicyclic compound group, an aromatic group, e. heterocyclic ring, or a group represented by —L—Z; Q_1, Q_2, and Q_3 each represent a single bond, an oxygen atom, a sulfur atom, or a group represented by $—N(R_3)—$, in which R_3 represents a hydrogen atom or a group represented by R_2; L represents a divalent linking group; and Z represents an ionic group.

5,543,289

METHODS AND MATERIALS FOR IMPROVED HIGH GRADIENT MAGNETIC SEPARATION OF BIOLOGICAL MATERIALS

Stefan Miltenyi, Moltzfeld 60a, D-51429 Bergisch Gladbach 1, Germany

Continuation of Ser. No. 20,019, Feb. 17, 1993, Pat. No. 5,411,863, which is a continuation of Ser. No. 291,177, Dec. 28, 1988, abandoned. This application May 31, 1994, Ser. No. 252,102

Int. Cl.[6] C12N *5/06*

U.S. Cl. 435—2 **3 Claims**

1. A composition of superparamagnetic colloidal particles, wherein said particles (a) have an organic coating, (b) are conjugated to a specific binding partner, (c) have a lower size limit of 0.04 μm and an upper size limit of 0.1 μm, and (d) when exposed to a magnetic field have magnetizations such that the value of the magnetization in the composition varies less than 10%.

5,543,290

Patent Not Issued For This Number

5,543,291

METHOD OF DETECTING CARCINOMA

Khandan Keyomarsi, and Arthur B. Pardee, both of Brookline, Mass., assignors to Dana Farber Cancer Institute, Boston, Mass.

Filed Jan. 29, 1993, Ser. No. 11,187

Int. Cl.[6] G01N *33/574*; C12Q *1/68*

U.S. Cl. 435—6 **39 Claims**

1. A method of screening for the presence of carcinoma in a tissue sample from a human individual, comprising the steps of:

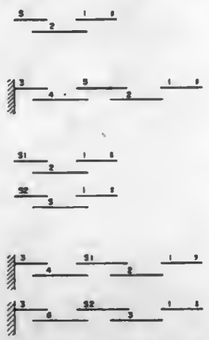
a) obtaining a tissue sample from an individual suspected of having cancer, thereby obtaining a test sample;
b) assessing the expression of cyclin E in the cells of the test sample; and
c) comparing the cyclin E expression of the test sample with the cyclin E expression of a control sample,
wherein the presence of aberrant expression of cyclin E in the test sample as compared with expression in the control sample is indicative of the presence of carcinoma.

5,543,292

PROCESS FOR THE MEASUREMENT OF NUCLEIC ACIDS

Kyoko Imai; Kazumichi Imai, both of Katsuta, and Yasushi Nomura, Mito, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 14, 1993, Ser. No. 76,165
Claims priority, application Japan, Jun. 16, 1992, 4-156442
Int. Cl.[6] C12Q *1/68*
U.S. Cl. 435—6 **13 Claims**



1. A process for detecting the existence of at least two target polynucleotide sequences of oligonucleotide analytes in a nucleic acid sample, comprising the steps of;
(a) mixing said nucleic acid sample with a labeled first common polynucleotide, and a second polynucleotide as a probe which is hybridizable with a first target polynucleotide sequence of oligonucleotide and with the labeled first common polynucleotide, to detect the existence of the first target polynucleotide sequence of oligonucleotide; and
(b) mixing said nucleic acid sample with the labeled first common polynucleotide used in step (a) for detecting said first target polynucleotide sequence of oligonucleotide, and a third polynucleotide as a probe which is hybridizable with a second target polynucleotide sequence of oligonucleotide and with the labeled first common polynucleotide, to detect the existence of the second target polynucleotide sequence of oligonucleotide.

5,543,293

DNA LIGANDS OF THROMBIN

Larry Gold, and Diane Tasset, both of Boulder, Colo., assignors to NeXstar Pharmaceuticals, Inc., Boulder, Colo.

Continuation-in-part of Ser. No. 973,333, Nov. 6, 1992, Pat. No. 5,476,766, which is a continuation-in-part of Ser. No. 714,131, Jun. 10, 1991, Pat. No. 5,475,096, and a continuation-in-part of Ser. No. 536,428, Jun. 11, 1990, abandoned. This application Mar. 28, 1994, Ser. No. 219,012
Int. Cl.[6] C07H *21/04*; C12P *19/34*; C12Q *1/68*
U.S. Cl. 435—6 **8 Claims**

1. A method for identifying nucleic acid ligands to thrombin comprising:
(a) preparing a candidate mixture of DNA nucleic acids;
(b) contacting the candidate mixture with thrombin, wherein nucleic acid ligands having an increased affinity to thrombin may be partitioned from the remainder of the candidate mixture;
c) partitioning between members of said candidate mixture on the basis of affinity to thrombin; and
d) amplifying partitioned members of the candidate mixture with a relatively higher affinity for thrombin compared to the candidate mixture as a whole, to yield a mixture of nucleic acids enriched for sequences with a higher affinity to thrombin, whereby nucleic acid ligands of thrombin may be identified.

5,543,294

POLYMERASE CHAIN REACTION/RESTRICTION FRAGMENT LENGTH POLYMORPHISM METHOD FOR THE DETECTION AND TYPING OF MYOBACTERIA

Saul J. Silverstein, Irvington; Octavian Lungu, New York, and Thomas C. Wright, Jr., Irvington, all of N.Y., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Continuation of Ser. No. 916,940, Jul. 20, 1992, abandoned, which is a continuation-in-part of Ser. No. 733,109, Jul. 19, 1991, abandoned. This application Jun. 8, 1994, Ser. No. 255,561
Int. Cl.[6] C12Q *1/68*; C07H *21/04*
U.S. Cl. 435—6 **6 Claims**

1. A method for detecting the presence of mycobacteria in a clinical sample which comprises:
(a) obtaining a clinical sample containing nucleic acid molecules;
(b) amplifying the nucleic acid molecules in the sample by Polymerase Chain Reaction (PCR) with an amplification primers GAGGAATCACTTCGCAATGG (SEQ ID NO: 14) and ATGTAGCCCTTGTCGAACCG (SEQ ID NO:15);
(c) treating the resulting amplified nucleic acid molecules with a restriction endonuclease selected from the group consisting of Hae III and BamHI to produce nucleic acid restriction fragments; and
(d) analyzing the nucleic acid restriction fragments so produced using Restriction Fragment Length Polymorphism (RFLP) analysis so as to detect the presence of mycobacterium in the clinical sample.

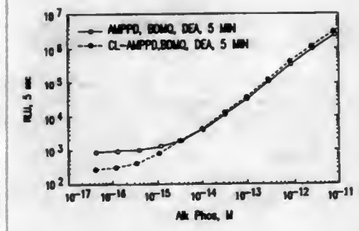
5,543,295

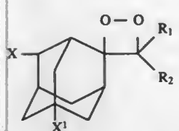
CHEMILUMINESCENT 3—(SUBSTITUTED ADAMANT—2'—YLIDENE) 1,2—DIOXETANES

Irena Y. Bronstein, Newton; Brooks Edwards, Cambridge, and Rouh-Rong Juo, Alston, all of Mass., assignors to Tropix, Inc., Bedford, Mass.

Division of Ser. No. 806,928, Dec. 12, 1991, Pat. No. 5,330,900, which is a division of Ser. No. 574,786, Aug. 30, 1990, Pat. No. 5,112,960, which is a continuation-in-part of Ser. No. 559,152, Jul. 25, 1990, abandoned, which is a division of Ser. No. 367,772, Jul. 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 140,197, Dec. 31, 1987, abandoned. This application Apr. 25, 1994, Ser. No. 233,085
Int. Cl.[6] C12Q *1/68*
U.S. Cl. 435—6 **38 Claims**

1. An assay method for the detection of the presence of an enzyme in an aqueous sample, comprising adding to said sample a dioxetane of formula I





(I)

wherein R_1 is $O(CH_2)_nCH_3$, wherein n=0–2, R_2 is phenyl or naphthyl substituted with a moiety OZ, wherein Z is an enzyme cleavable group selected from the group consisting of a phosphate, galactoside, acetate, 1-phospho-2,3-diacylglyceride, 1-thio-D-glucoside, adenosine triphosphate, adenosine diphosphate, adenosine monophosphate, adenosine, α-D-glucoside, β-D-glucoside, α-D-mannoside, β-D-mannoside, β-fructofuranoside, β-D-glucosiduranate, p-toluenesulfonyl-L-arginine ester, and p-toluenesulfonyl-L-arginine amide, wherein X and X^1 each represent, individually, hydrogen, a hydroxyl group, a halo substituent, a hydroxy (lower) alkyl group, a halo (lower) alkyl group, a phenyl group, a halophenyl group, an alkoxy phenyl group, a hydroxy alkoxy group, a cyano group or an amide group with at least one of X and X^1 being other than hydrogen,
detecting any light emitted from said sample after addition of said dioxetane, wherein the emission of light therefrom is indicative of the presence of an enzyme cleaving said Z group from said dioxetane, and the amount of light emitted can be correlated to the amount of said enzyme present.

5,543,296

DETECTION OF CARCINOMA METASTASES BY NUCLEIC ACID AMPLIFICATION

Robert E. Sobol, LaJolla; Mark R. Green, San Diego, and Ernest S. Kawasaki, Richmond, all of Calif., assignors to Hoffman-La Roche Inc., Nutley, N.J., and Regents of the University of California, Oakland, Calif.

Continuation of Ser. No. 96,110, Jul. 22, 1993, abandoned, which is a continuation of Ser. No. 720,961, Jun. 26, 1991, abandoned. This application Dec. 16, 1994, Ser. No. 357,565
Int. Cl.[6] C12Q *1/68*; C12P *19/34*; C07H *12/04*; C12N *15/00*
U.S. Cl. 435—6 **5 Claims**

1. A method for detecting metastasis of a prostate carcinoma, wherein said method comprises:
(a) treating a sample of non-prostate body tissue or fluid under conditions for amplifying a target mRNA sequence, wherein said target mRNA sequence is a region of the gene encoding prostate specific antigen (PSA), and wherein said target mRNA sequence is not normally expressed in said non-prostate tissue or fluid; and
(b) determining if amplification of said target mRNA sequence has occurred, which indicates metastasis of a prostate carcinoma.

5,543,297

HUMAN CYCLOOXYGENASE-2 CDNA AND ASSAYS FOR EVALUATING CYCLOOXYGENASE-2 ACTIVITY

Wanda A. Cromlish, Montreal; Brian P. Kennedy, Kirkland; Gary O'Neill, Dollard Des Ormeaux; Philip J. Vickers, Pierrefonds; Elizabeth Wong, Montreal, and Joseph A. Mancini, St. Leonard, all of, Canada, assignors to Merck Frosst Canada, Inc., Kirkland, Canada

Continuation-in-part of Ser. No. 994,760, Dec. 22, 1992, abandoned. This application May 6, 1993, Ser. No. 64,271
Int. Cl.[6] C12Q *1/26*; C07H *21/04*; C12N *09/02*; *5/06*
U.S. Cl. 435—25 **21 Claims**

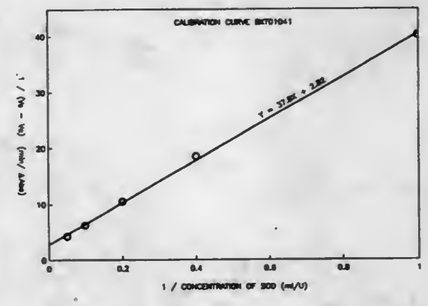
1. An assay for determining the cyclooxygenase-2 activity of a sample comprising the steps of:
(a) adding
(1) a human osteosarcoma cell preparation,
(2) a sample, said sample comprising a putative cyclooxygenase-2 inhibitor, and
(3) arachidonic acid; and
(b) determining the amount of prostaglandin E_2 produced in step (a).

5,543,298

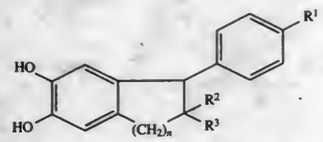
METHOD FOR ASSAYING THE SOD ACTIVITY BY USING A SELF-OXIDIZABLE COMPOUND NECESSARY FOR ITS IMPLEMENTATION, SELF-OXIDIZABLE COMPOUNDS AND PREPARATION THEREOF

Jinzhu Xu, Ivry sur Seine; Jean-Claude Yadan, Paris; Marc Moutet, Bagneux, and Jean R. Chaudiere, Saint Maur des Fosses, all of, France, assignors to Oxis International S.A., Bonneuil-Sur-Marne, France

PCT No. PCT/FR92/01093, § 371 Date Jun. 6, 1994, § 102(e) Date Jun. 6, 1994, PCT Pub. No. WO93/11258, PCT Pub. Date Jun. 10, 1993
PCT Filed Nov. 25, 1992, Ser. No. 244,866
Claims priority, application France, Nov. 29, 1991, 91 14781; Feb. 24, 1992, 92 02082
Int. Cl.[6] C12Q *1/26*; *1/00*; G01N *33/48*; C07H *1/00*
U.S. Cl. 435—25 **18 Claims**



1. A process for the assay of superoxide dismutase (SOD) activity in a liquid medium, which uses activation of a reagent by SOD activity comprising the steps of:
1) adding a compound of general formula I



(I)

in which:

either:

n=1 or 2,

R^1=—OR^4 or —NR^5R^6,

R^2=hydrogen, —OR^4, C_{1-6} alkyl, —CH_2 or —CH_2—CH_2—, to form a ring by linking with the phenyl substituent, in the meta position in relation to R^1; and

R^3=hydrogen, C_{1-6} alkyl or —OR^4; with the proviso that R^2 is different from —OR^4,

where

R^4=hydrogen or C_{1-6} alkyl;

R^5=hydrogen, C_{1-6} alkyl, —CH_2COOH, —$C_6H_5SO_3H$; and

R^6=hydrogen, C_{1-6} alkyl or —CH_2COOH;

or:

n=1,

R^1=—OR^4; R^4 being defined as above,

R^2=—CH_2—O—, to form a ring by linkage of the oxygen atom with the phenyl substituent, in the meta position in relation to R^1, and

R^3=hydrogen or —OR^4; R^4 being defined as above, to the medium; and

2) spectrophotometric measurement of the autoxidation rate of said compound of general formula I in the absence and presence of the sample to be assayed.

5,543,299

EXTENDER CONTAINING POLYMER COMPOSITIONS AND USES THEREOF

Eric Diebold, Fishers; Myron Rapkin, Indianapolis; Abol Azhar, Fishers, all of Ind., and Arthur Usmani, Kuwait, Kuwait, assignors to Boehringer Mannheim Corporation, Indianapolis, Ind.

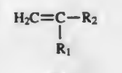
Continuation of Ser. No. 52,485, Apr. 23, 1993, abandoned. This application Jan. 5, 1995, Ser. No. 368,810

Int. Cl.[6] C12Q *1/28;1/54;1/00;1/32*

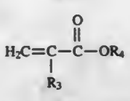
U.S. Cl. 435—28 **22 Claims**

1. The composition of matter comprising:

(i) an aqueous polymer emulsion wherein said polymer is formed of at least one monomer selected from the group consisting of



and



wherein R_1, R_3 and R_4, are the same or different, and are hydrogen or unsubstituted or substituted C_1–C_6 alkyl, and R_2 is a substituted or unsubstituted aromatic moiety;

(ii) a reagent system for determination of an analyte; and

(iii) an amount of an extender sufficient to reduce tackiness of said emulsion.

5,543,300

METHOD AND COMPOSITION FOR DETERMINING THE IMMUNOLOGICAL ACTIVITY OF BIOACTIVE SUBSTANCES

Anna Inglot, and Zofia Blach-Olszewska, both of Wroclaw, Poland, assignors to Torf Establishment, Liechtenstein

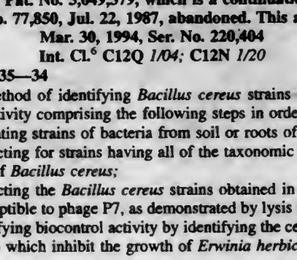
PCT No. PCT/EP92/02228, § 371 Date Apr. 26, 1994, § 102(e) Date Apr. 26, 1994, PCT Pub. No. WO93/08470, PCT Pub. Date Apr. 29, 1993

PCT Filed Sep. 28, 1992, Ser. No. 211,909

Claims priority, application European Pat. Off., Oct. 26, 1991, 91118269

Int. Cl.[6] C12Q *1/02;* **C07K** *14/52;14/525;* **A61K** *35/78*

U.S. Cl. 435—29 **23 Claims**



1. A method for determining the immunological activity of a cytokine inducing substance which is a peat extract or a fraction thereof, comprising treating a reagent selected from the group consisting of:

a) a human peripheral blood leukocyte (PBL) culture from a non-mitogenic nutrient medium suitable for tissue culture and obtained from a donor not hyporeactive to production of a cytokine, and

b) a suspension of 5–8 week old BALB/c mice resident peritoneal cells (RPC) which have not been immunologically stimulated and do not exhibit spontaneous production of a cytokine at a level which interferes with determination of other production of said cytokine,

with a solution of a substance which is a peat extract or fraction thereof to induce the production of said cytokine and then determining the presence of said cytokine.

5,543,301

METHOD OF IDENTIFYING *BACILLUS CREUS* HAVING BIOCONTROL ACTIVITY

Jo Handelsman, Madison, Wis.; Larry Halverson, Berkeley, Calif.; Eric V. Stabb; Benjamin Lethbridge, and Laura Silo, all of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation of Ser. No. 878,800, May 5, 1992, abandoned, which is a continuation-in-part of Ser. No. 758,644, Sep. 12, 1991, abandoned, which is a division of Ser. No. 194,399, May 16, 1988, Pat. No. 5,049,379, which is a continuation-in-part of Ser. No. 77,850, Jul. 22, 1987, abandoned. This application Mar. 30, 1994, Ser. No. 220,404

Int. Cl.[6] C12Q *1/04;* **C12N** *1/20*

U.S. Cl. 435—34 **3 Claims**

1. A method of identifying *Bacillus cereus* strains having biocontrol activity comprising the following steps in order:

(a) isolating strains of bacteria from soil or roots of legumes;

(b) selecting for strains having all of the taxonomic characteristics of *Bacillus cereus;*

(c) selecting the *Bacillus cereus* strains obtained in (b) that are susceptible to phage P7, as demonstrated by lysis thereof; and

(d) verifying biocontrol activity by identifying the cells obtained in (c) which inhibit the growth of *Erwinia herbicola.*

5,543,302

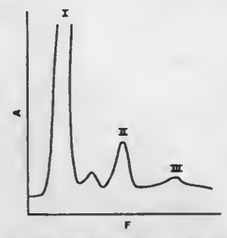
PROTEASES OF ALTERED STABILITY TO AUTOLYTIC DEGRADATION

George Boguslawski, South Bend; Josephine Grosch, Elkhart; John W. Shultz, Elkhart, and Sethuraman Subramanian, Elkhart, all of Ind., assignors to Solvay Enzymes, Inc., Elkhart, Ind.

Continuation of Ser. No. 843,363, Mar. 19, 1992, abandoned, which is a continuation of Ser. No. 199,532, May 27, 1988, abandoned. This application Nov. 30, 1993, Ser. No. 159,211

Int. Cl.[6] C12P *21/00;* **C07K** *13/00;* **C12N** *9/00*

U.S. Cl. 435—69.1 **7 Claims**



1. A method of increasing autolytic stability of an alkaline protease, comprising the steps of:

a. identifying an autolytic cleavage site by:

i. preparing an aqueous solution of an alkaline protease;

ii. rapidly inactivating the protease by the addition of trichloroacetic acid to prevent progressive degradation of peptide fragments produced by autolysis;

iii. separating the peptide fragments;

iv. resuspending the fragments in formic acid solution; and

v. identifying terminal amino acids of the separated fragments;

b. cloning a DNA fragment including a gene or segment thereof capable of encoding the portion of the protease containing the identified autolytic cleavage site; and

c. mutating the cloned DNA fragment capable of encoding for the autolytic cleavage site, or amino acids in the vicinity of the autolytic cleavage site, by site directed mutagenesis;

whereby an alkaline protease having an increased autolytic stability relative to an non-modified alkaline protease is provided.

5,543,303

RECOMBINANT MYELOMONOCYTIC DIFFERENTIATION ANTIGEN CD14

Sanna M. Goyert, 10 Waterside Plz. #36F, New York, N.Y. 10010

Continuation of Ser. No. 916,806, Jul. 22, 1992, abandoned, which is a continuation of Ser. No. 787,763, Nov. 6, 1991, abandoned, which is a continuation of Ser. No. 536,163, Jun. 8, 1990, abandoned, which is a continuation of Ser. No. 276,794, Nov. 28, 1988, abandoned. This application Dec. 13, 1993, Ser. No. 165,583

Int. Cl.[6] C12N *15/12;15/85;15/74;5/06*

U.S. Cl. 435—69.1 **12 Claims**

1. A non-naturally occurring recombinant DNA molecule comprising a first DNA sequence selected from the group consisting of

(a) a cDNA sequence encoding mature human CD14, as set forth in FIG. 3, or the genomic DNA sequence encoding mature human CD14, as set forth in FIG. 2;

(b) a DNA sequence which specifically hybridizes to the non-coding strand of (a) above and which codes on expression for a polypeptide specifically recognized by an antibody which also specifically recognizes human CD14; and

(c) a DNA sequence which encodes the same polypeptide as is encoded by a DNA sequence of (a) or (b) above;

said molecule further comprising one or more vector DNA sequences rendering the molecule capable of replication in a host cell, said molecule further comprising one or more control sequences operably linked to said first DNA sequence, whereby said first DNA sequence can be expressed in a host cell in which said control sequences are functional and at least one of said control sequences is one which, in nature, is not operably linked to said first DNA sequence.

5,543,304

43 KD PROTEIN VACCINE AND METHOD FOR THE PRODUCTION THEREOF

Martha H. Mulks, Williamston; Brad J. Thacker, Bath, and Maria W. T. Cruz, East Lansing, all of Mich., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.

Division of Ser. No. 920,869, Jul. 28, 1992. This application Apr. 14, 1994, Ser. No. 227,259

Int. Cl.[6] C12N *15/31;* **C12P** *21/00;21/06*

U.S. Cl. 435—69.3 **10 Claims**

1. A method for producing a 43 Kd protein useful for production of antibodies in swine against *Actinobacillus pleuropneumoniae* (APP) infection derivable from an outer membrane derived protein of the APP having a molecular size of about 43 Kd as measured in SDS PAGE and soluble in 1% sodium lauryl sarcosinate (SLS) and for producing subunits of the outer membrane protein providing immunity from infection by APP in the swine, wherein the protein is free of other proteins and antigens and of the APP as intact cells which comprises:

(a) providing DNA encoding a fusion protein which includes the 43 Kd protein and a non-toxic protein in a vector which expresses the protein in a living cell, wherein the 43 Kd protein is produced by the DNA contained in λWC18 deposited as ATCC 75248;

(b) producing the fusion protein from the cell in an expression medium,

(c) isolating the fusion protein by binding using affinity chromatography using the nontoxic protein for the binding; and

(d) separating the 43 Kd protein from the fusion protein.

5,543,305

METHODS OF EXTRACTING DEOXYRIBONUCLEIC ACIDS WITHOUT USING A PROTEOLYTIC ENZYME

Thomas J. Cummins, Penfield, and Tobias D. Ekeze, Brockport, both of N.Y., assignors to Johnson & Johnson Clinical Diagnostics, Inc., Rochester, N.Y.

Continuation of Ser. No. 10,249, Jan. 28, 1993, abandoned, which is a division of Ser. No. 423,071, Oct. 18, 1989, Pat. No. 5,231,015. This application Jun. 6, 1995, Ser. No. 471,806

Int. Cl.[6] C12P *19/34;* **C12Q** *1/68;* **C07H** *21/00*

U.S. Cl. 435—91.1 **15 Claims**

1. A method for the rapid extraction of a targeted deoxyribonucleic acid from cells or virions, said method consisting essentially of:

(A) mixing an animal or human sample of whole blood or a component thereof containing cells or virions containing one or more deoxyribonucleic acids with a lysing composition to extract said deoxyribonucleoic acids from said cells or virions, said lysing composition comprising,

(1) an organic buffer which maintains said composition at a pH of from about 4 to about 10,

(2) a catalytic amount of a free metal ion cofactor for DNA polymerase activity,

(3) a stabilizing material which is water-soluble or water-dispersible high molecular weight binder material selected from the group consisting of gelatin, a gelatin derivative, cellulose, a cellulose derivative, polyvinyl alcohol, and polyethylene glycol,

(4) at least one compatible nonionic surfactant present in an amount sufficient to release said deoxyribonucleic acids from said cells or virions,

provided a proteclytic enzyme is not deliberately added to said lysing composition,

(B) heating the resulting mixture at from 80° to 120° C. for from about five to about firteen minutes, and
(C) recovering said nucleic acids from said heated mixture.

5,543,306

PROCESS FOR THE ISOLATION AND CHARACTERISATION OF A GENE ENZYME SYSTEM FOR INACTIVATION OF THE HERBICIDE PHENMEDIPHAM AND TRANSFER OF THE GENE INTO PLANTS

Hans-Dieter Pohlenz; Werner Boldol, and Wolfgang Streber, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Germany

Division of Ser. No. 615,448, Nov. 19, 1990, Pat. No. 5,347,076, which is a continuation-in-part of Ser. No. 358,871, May 18, 1989, abandoned. This application Feb. 14, 1994, Ser. No. 196,361

Claims priority, application Germany, May 19, 1988, 38 17 384.0

Int. Cl.[6] C12N *15/82;15/31;15/55;15/67*

U.S. Cl. 435—91.41 **5 Claims**

2. A method for the reconstitution of the N-terminal portion of the open reading frame of a carbamate hydrolase gene upstream (5') of the PpuMI restriction site, wherein said method comprises the step of:

ligating oligonucleotides to said carbamate hydrolase gene, wherein the oligonucleotides comprise:

Nucleotide I (SEQ ID NO: 8):

5'-CTAGAGATCT CAACAATGGT TACCAGACCG ATCGC-CCACA CCACCGCTGG G-3' and

Nucleotide I (SEQ ID NO: 9): 5'-GTCCCCAGCG GTGGT-GTGGG CGATCGGTCT GGTAACCATT GTTGAGATC-3'.

3. A purified and isolate carbamate hydrolase gene capable of inactivating phenmedipham.

5,543,307

METHOD OF MULTIPLYING A VECTOR IN *E. COLI* HOST

Hideo Ikeda, 3-15-13, Nishikoiwa, Edogawa-ku, Tokyo; Toshiyuki Ukita, Yachiyo, and Hatsushi Shimizu, Tsukuba, all of, Japan, assignors to Hideo Ikeda, Tokyo, Japan

Filed Sep. 16, 1994, Ser. No. 306,911

Claims priority, application Japan, Mar. 16, 1994, 6-045903

Int. Cl.[6] C12N *15/68;15/20;15/03;1/20*

U.S. Cl. 435—172.3 **1 Claim**

1. A method of retaining or multiplying vector DNA stably in an *Escherichia coli* host comprising a step of culturing said host in which non-homologous recombination is suppressed by having both recA and recJ mutations, and which contains said vector DNA.

5,543,308

ISOLATED DNA ENCODING THE FSEI RESTRICTION ENDONUCLEASE AND RELATED METHODS FOR PRODUCING THE SAME

Richard D. Morgan, Middleton, Mass., assignor to New England Biolabs, Inc., Beverly, Mass.

Filed Oct. 18, 1994, Ser. No. 325,509

Int. Cl.[6] C12N *9/22;15/55;15/70*

U.S. Cl. 435—172.3 **8 Claims**

1. Isolated DNA coding for FseI restriction endonuclease, wherein the isolated DNA is obtainable from the plasmid pRMF-seR2.

5,543,309

CARRIER CONTAINING ENZYMES FOR TREATING SEWAGE SLUDGE

Ernie Pischel, P.O. Box 174, Belfair, Wash. 98528

Filed Nov. 28, 1994, Ser. No. 345,847

Int. Cl.[6] C12N *11/02;11/12;* **C12M** *1/40;* **B09B** *3/00*

U.S. Cl. 435—177 **2 Claims**

1. A cylindrical core for a roll of toilet tissue containing one or more enzymes for commingling with components of sewage in an aqueous medium to degrade sewage comprising:

a. said core being in the form of a tube prepared from at least two cylindrical layers made from cellulose and bonded together with water soluble bonding agent;
b. one of said layers being an outside layer and another of said layers being an inside layer;
c. said one or more enzymes being contained by at least one of said bonding agent, a coating on at least one of said layers or a strip on at least one of said layers; and
d. said tube containing a plurality of sets of circumferential perforations that enable, after removing toilet tissue from said core, readily breaking said core into a plurality of small pieces that can be flushed down the bowl of a toilet into a sewage system where the pieces disintegrate and release said one or more enzymes to degrade sewage.

5,543,310

IMMOBILIZED PHOSPHORYLASE

Shigeto Kayane; Takashi Kawai, both of Wakayama; Masaru Sakata, Wakayama-ken; Takashi Imamura; Masanobu Tanigaki, both of Wakayama, and Tomihiro Kurosaki, Osaka-fu, all of, Japan, assignors to Kao Corporation, Tokyo, Japan

Continuation of Ser. No. 742,532, Aug. 8, 1991, abandoned, which is a continuation of Ser. No. 235,522, Aug. 24, 1988, abandoned. This application Aug. 31, 1993, Ser. No. 113,743

Claims priority, application Japan, Sep. 2, 1987, 62-219674

Int. Cl.[6] C12N *11/08;9/10*

U.S. Cl. 435—180 **5 Claims**

1. An immobilized phosphorylase, prepared by contacting a solution of unrefined potato juice containing phosphorylase enzyme with an anion-exchange resin which is a synthetic crosslinked styrene polymer having trimethylammonium anion exchange groups.

5,543,311

LABELED CARBAMAZEPINE HAPTEN ANALOGUES FOR COMPETITIVE ENZYME IMMUNOASSAYS

Barbara A. Brummond, Rochester; Mohan S. Saini, and Ignazio S. Ponticello, both of Pittsford, all of N.Y., assignors to Johnson & Johnson Clinical Diagnostics, Inc., Rochester, N.Y.

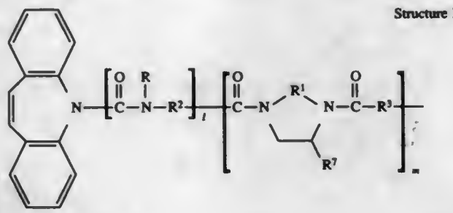
Filed Aug. 7, 1992, Ser. No. 926,203

Int. Cl.[6] C12N *9/96*

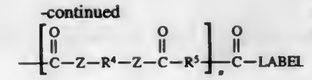
U.S. Cl. 435—188 **7 Claims**

1. A labeled carbamazepine analogue conforming to the structure (I):

Structure I



-continued



R represents hydrogen or lower alkyl of 1 to 6 carbon atoms

R^1 is alkylene of 1 to 3 carbon atoms sufficient to form a heterocyclic group selected from 1,4-piperazinylene; 2,5-dimethyl-1,4-piperazinylene; 1,3-imidazolidinylene, and 1,4-hexahydrodiazepinylene;

R^2, R^3, R^4, and R^5 each independently represent alkylene groups of 2 to 10 carbon atoms, or phenylene;

R^7 is hydrogen or methyl;

each Z independently represents —O—, —S—, or —NR— wherein R represents hydrogen or lower alkyl of 1 to 6 carbon atoms:

LABEL is an enzyme;

l is 0, 1 or 2;

m is 1 or 2;

n is 0, 1, or 2; and

(i) provided that the bracketed components l, m and n of structure I can appear therein in any order, and

(ii) only one R^2, R^3, R^4, or R^5 group can be phenylene.

5,543,312

PASTUERELLA HAEMOLYTICA GLYCOPROTEASE GENE AND THE PURIFIED ENZYME

Alan Mellors; Reggie Y. C. Lo, both of Guelph, and Khalid M. Abdullah, Kitchener, all of, Canada, assignors to University of Guelph, Ontario, Canada

PCT No. PCT/CA92/00019, § 371 Date Aug. 12, 1993, § 102(e) Date Aug. 12, 1993, PCT Pub. No. WO92/13078, PCT Pub. Date Aug. 6, 1992

PCT Filed Jan. 15, 1992, Ser. No. 87,797

Claims priority, application United Kingdom, Jan. 15, 1991, 9100825

Int. Cl.[6] C12N *1/21;9/52;15/57;* **C12P** *21/00*

U.S. Cl. 435—220 **10 Claims**

1. A purified DNA molecule comprising a DNA sequence encoding a glycoprotease having the amino acid sequence shown in SEQ ID NO: 2.

5,543,313

PROCESS FOR THE SEPARATION AND RECOVERY OF ASPERGILLUS NIGER ACID PROTEASE AND GLUCOAMYLASE

Phillip J. Brumm, Rockford, Ill., assignor to Enzyme Bio-Systems Ltd., Beloit, Wis.

Filed Jun. 27, 1994, Ser. No. 265,857

Int. Cl.[6] C12N *9/62;9/34;1/14*

U.S. Cl. 435—225 **10 Claims**

1. A process for separating *Aspergillus niger* acid protease from an aqueous mixture of glucoamylase and acid protease and recovering purified acid protease and purified glucoamylase, consisting essentially of the sequential steps of:

(a) contacting the aqueous mixture with an anion exchange medium wherein the medium is selected from the group consisting of an anion exchange resin and an anion exchange cellulose and has a nitrogenous functionality which is positively charged over a pH range from about 3 to 7, to absorb the acid protease while at most minimally absorbing the glucoamylase;
(b) recovering the purified glucoamylase from the eluant from the anion exchange medium; and
(c) treating the anion exchange medium with a salt or acid solution to desorb and recover the purified acid protease.

5,543,314

Patent Not Issued For This Number

5,543,315

METHOD FOR STABILIZING MEASUREMENT VALUES BY HIGH SPEED LIQUID CHROMATOGRAPHY

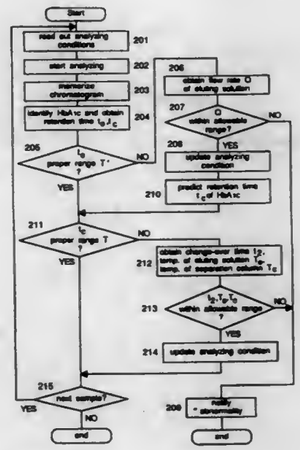
Koji Sugiyama, and Hiroshi Yamamoto, both of Kyoto, Japan, assignors to Kyoto Daiichi Kagaku Co., Ltd., Kyoto-fu, Japan

Continuation-in-part of Ser. No. 82,740, Jun. 8, 1993, abandoned. This application Apr. 28, 1994, Ser. No. 233,956

Claims priority, application Japan, Jun. 30, 1992, 4-172604

Int. Cl.[6] G01N *30/02*

U.S. Cl. 436—161 **4 Claims**



1. A method for stabilizing measurement values by high-speed

liquid chromatography in which a measurement blood sample is transported to a separation column together with one of two eluting solutions and the quantity of each hemoglobin component of said measurement blood sample eluted from said separation column is measured, said stabilizing method comprising the following steps of:

determining a first relationship of variations in retention times of each eluted hemoglobin component with respect to variations in flow rates of the eluting solutions and a second relationship of variations in retention times of each eluted hemoglobin component with respect to variations in at least any one of change-over time of eluting solutions, temperature of the eluting solutions or temperature of the separation column;

measuring the retention time (t_0) of the last eluted, hemoglobin A_0 component of the measurement blood sample;

wherein in the case of a departure of said retention time (t_0) from a predetermined reference range, obtaining a predicted flow rate (Q) of eluting solutions in accordance with said first relationship so that said retention time (t_0) will fall within the reference range;

obtaining a predicted retention time (t_c) of any one of the first eluted hemoglobin components, Hb A_{1a}, A_{1b}, F or A_{1c}, in said measurement blood sample, under the predicted flow rate (Q) of eluting solutions in accordance with said first relationship;

wherein in the case of a departure of said predicted retention time (t_0) from a predetermined reference range, obtaining at least any one of predicted change-over time (t_2) of eluting solutions or a predicted temperature (T_e) of eluting solutions or a predicted temperature (T_c) of the separation column in accordance with said second relationship so that said predicted retention time (t_c) will fall within the reference range; and

updating the flow rate of eluting solutions and at least any one of the change-over time of eluting solutions, the temperature of eluting solutions or the temperature of the separation column, as analyzing parameters for subsequent analysis by using said obtained predicted values (Q, and t_2, or T_e or T_c).

5,543,316

INJECTABLE CULTURE MEDIUM FOR MAINTAINING VIABILITY OF MYOBLAST CELLS

Agatha Zawadzka, Charlestown; Wen-Ghih Tsang, Lexington, and Robert H. Brown, Needham, all of Mass., assignors to Dalcrin, Inc., Charlestown, and The General Hospital Corporation, Boston, both of Mass.

Filed Apr. 20, 1994, Ser. No. 230,334

Int. Cl.[6] C12N *5/08*

U.S. Cl. 435—240.2 **38 Claims**

1. An injectable composition comprising: (i) myoblasts and (ii) an injectable grade medium for maintaining said myoblasts, said injectable grade medium comprising:

(a) a sugar;

(b) a serum albumin;

(c) a phosphate salt;

(d) iron;

(e) at least one salt of a Group I element;

(f) at least one salt of a Group II element;

(g) at least one amino acid; and

(h) at least one vitamin, wherein components (a) through (h) are present in said medium in amounts which provide an osmolality of said medium of from about 320 mOsm/kg to about 550 mOsm/kg, said composition being essentially free of growth factors.

5,543,317

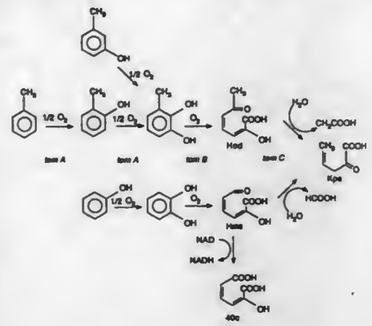
MICROBIAL DEGRADATION OF TRICHLOROETHYLENE DICHLOROETHYLENES AND AROMATIC POLLUTANTS

Malcolm S. Shields, 1504 El Rito Dr., Gulf Breeze, Fla. 32561, and Stephen C. Francesconi, 4486 Whisper Dr., Pensacola, Fla. 32504

Continuation-in-part of Ser. No. 167,457, Dec. 15, 1993, abandoned, which is a continuation of Ser. No. 694,718, May 2, 1991, abandoned. This application Oct. 6, 1994, Ser. No. 319,387

Int. Cl.[6] C12N *1/21;1/14;5/10;15/53*

U.S. Cl. 435—240.2 **3 Claims**



3. A microorganism which has the property of being constitutive for the degradation of hazardous chemicals selected from the group consisting of chloroaliphatic and aromatic chemicals wherein said microorganism is a host cell transformed with a gene which encodes a polypeptide having an amino acid sequence selected from the group consisting of SEQ ID NO. 2, SEQ ID NO. 3, SEQ ID NO. 4, SEQ ID NO. 5, SEQ ID NO. 6, and SEQ ID NO. 7.

5,543,318

METHOD OF ISOLATION, CULTURE AND PROLIFERATION OF HUMAN ATRIAL MYOCYTES

David A. Smith, 3244 Belle Ct., Royal Oak, Mich. 48073, and Laurace E. Townsend, 868 Whittier, Grosse Pointe Park, Mich. 48230

Continuation of Ser. No. 236,689, Apr. 29, 1994, abandoned, which is a continuation of Ser. No. 742,613, Aug. 8, 1991, abandoned, which is a continuation-in-part of Ser. No. 713,949, Jun. 12, 1991, abandoned. This application Sep. 21, 1995, Ser. No. 531,793

Int. Cl.[6] C12N *5/00*

U.S. Cl. 435—240.2 **23 Claims**

1. A method of reproducing human atrial mycocardiocytes in culture comprising the steps of:

providing a sample of human tissue comprising adult atrail cells;

growing at least a portion of the cells in the samples in culture medium to obtain a cell culture;

selecting for myocardinocytes in the culture; and

maintaining the selected myocardiocytes in culture for a time sufficient and under culture conditions which allow for cell division of the myocardiocytes.

5,543,319

RECOMBINATION-PROFICIENT AVIAN/MAMMALIAN MICROCELL HYBRIDS

R. E. Keith Fournier, Mercer Island; Mark T. Groudine, Seattle; Ellen S. Dieken, Issaquah, and Elliot M. Epner, Seattle, all of Wash., assignors to Fred Hutchinson Cancer Research Center, Seattle, Wash.

Filed Mar. 31, 1995, Ser. No. 415,354

Int. Cl.[6] C12N *5/12;5/26;15/08*

U.S. Cl. 435—240.26 **1 Claim**

1. An immortalized avian pre B cell line containing a mammalian chromosome, wherein said mammalian chromosome is stably maintained by a selectable marker.

5,543,320

ANTIBODIES TO INTERLEUKEN-7 RECEPTORS

Linda S. Park, and Raymond G. Goodwin, both of Seattle, Wash., assignors to Immunex Corporation, Seattle, Wash.

Division of Ser. No. 907,366, Jul. 1, 1992, Pat. No. 5,264,416, which is a division of Ser. No. 493,588, May 21, 1990, Pat. No. 5,194,375, which is a continuation-in-part of Ser. No. 421,201, Oct. 13, 1989, abandoned, which is a continuation-in-part of Ser. No. 366,910, Jun. 15, 1989, abandoned. This application Jun. 25, 1993, Ser. No. 83,243

Int. Cl.[6] C12N *5/12;* C07K *16/28;* C12P *21/08*

U.S. Cl. 435—240.27 **6 Claims**

1. An antibody that selectively binds an interleukin-7 receptor, wherein said interleukin-7 receptor comprises an amino acid sequence selected from the group consisting of amino acids 1 to 439 of FIGS. 2A–2C, amino acids 1 to 242 of FIGS. 3A–3B, and amino acids 1 to 439 of FIGS. 4A–4C.

5,543,321

COLORED PLANT CULTURE MEDIA

Assaf Z. Guri, Cherry Hill, N.J., assignor to Plant Cell Technology, Inc., Cherry Hill, N.J.

Filed Oct. 26, 1994, Ser. No. 329,598

Int. Cl.[6] C12N *5/02*

U.S. Cl. 435—240.4 **14 Claims**

1. A sterilized culture medium for the germination of a plant seed, comprising a dye in a concentration which imparts a visible color to the culture medium and which permits seed germination wherein the dye is selected from the group consisting of FD&C Yellow No. 5, FD&C Blue No. 1, FD&C Red No. 3, and mixtures thereof and wherein concentration of the dye is about 5 μl to about 10 μl of a 2.5% (w/v) dye stock solution per 1 liter of medium.

5,543,322

DNA CODING FOR ALKALINE PROTEASE

Kazuaki Kitano, Sakai; Shigeru Morita, Higashiosaka; Masato Kuriyama, Osaka, and Kazutaka Maejima, Kawanishi, all of, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 887,284, May 22, 1992, abandoned. This application Aug. 12, 1994, Ser. No. 289,653

Claims priority, application Japan, May 21, 1991, 3-117360

Int. Cl.[6] C12N *15/31;15/63;15/74;15/70*

U.S. Cl. 435—252.3 **9 Claims**

1. An isolated and purified DNA fragment comprising a nucleotide sequence coding for a promoter region comprising the nucleotide sequence of nucleotides 1 to 541 of SEQ ID No: 1.

5,543,323

PLASMODIUM MEROZOITE RHOPTRIES ANTIGENIC POLYPEPTIDES

Robert G. Ridley, and John G. Scaife, both of Edinburgh, Great Britain, assignors to Hoffman-La Roche Inc., Nutley, N.J.

Division of Ser. No. 86,416, Jul. 1, 1993, abandoned, which is a continuation of Ser. No. 992,988, Dec. 18, 1992, abandoned, which is a continuation of Ser. No. 489,312, Mar. 5, 1990, abandoned. This application Nov. 16, 1994, Ser. No. 340,514

Claims priority, application England, Mar. 14, 1989, 8905857; Aug. 22, 1989, 8919064

Int. Cl.[6] C12N *15/30;1/21;1/13;5/10*

U.S. Cl. 435—252.3 **6 Claims**

1. An isolated DNA sequence encoding a *Plasmodium falciparum* antigen associated with the rhoptry organelles of the merozoite form of the malaria parasite, wherein said antigen has a molecular weight of about 80,000 Daltons and comprises the amino acid sequence

MS F Y L G S L V I I F H V L F R N V A D G I N V N G D N N Y
G K T I I N N D F N F D D Y N Y W T P I N K K E F L N S Y E D
E F S S E S F L E N K S S V D D G N I N L T D T S T S N K S S
K K G H G R S R V R S A S A A A I L E E D D S K D D M E F K A
S P S V V K T S T P S G T Q T S G L K S S S P S S T K S S S P
S N V K S A S P H G E S N S S E E S T T K S S K R S A S V A G
I V G A D E E A P P A P K N T L T P L E E L Y P T N V N L F N
Y K Y S L N N M E E N I N I L K N E G D L V A Q K E E F E Y D
E N M E K A K Q D K K K A L E K I G K Q S D E E P F M F S E N
K F L E N Q V K E R N V A G S F S R F F S K L N P F K K D E V
I E K T E V S K K T F S G I G F N L T D K E A K V L G V G A T
Y Q E Y P E T M L Y N C P N N S N L F D T I E S L Q G R I I D
I K K R E S M I S T T F E Q Q K E C L K N M G V L D L E L N D
T Q C K F G T C I G S F G E H H L R L Y E F E N D L F K F H P
N I D Y L T L A D G Y K L Q K N H I Y E L S H V N F C L L N P
K T L E E F L K K K E I K D L M G G D D L I K Y K E N F D N F
M S I S I T C H I E S L I Y D D I E A S Q D I A A V L K I A K
S K L H V I T S G L S Y K A R K L V Y K I Y S E I Q K N P D E
L Y E K L T W I Y D N I Y M I K R Y Y T A Y A L E G V C S Y L
E H D K S Q M Y T E L H I Y N K I V D S V R Y Y S S C F K N V
I V Y N A I I S G I H E K I K H F L K L V P R H N F L L D Y H
F N S I F E K E I K P A K K Y S T S H I Y F D P T V A S Y A Y
Y N L D R R T M V T I I N D Y F E A K K K E L T V I V S R M K
T D M L S L Q N E E S K I P N D K S A N S K L A T R L M K K F
K A E I R D F F K E M R I Q Y A K L I N I R Y R S H L K K N Y
F A F K R L D.

5,543,324

MICROBIALLY MEDIATED DEGRADATION OF NITROGEN-CONTAINING PHENOL COMPOUNDS

Janardhanan S. Rajan, and Fateme S. Sariaslani, both of Newark, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 6,092, Jan. 15, 1993, abandoned.
This application Feb. 28, 1995, Ser. No. 396,442
Int. Cl.[6] C12N *1/20;1/12*
U.S. Cl. 435—252.4 2 Claims

1. A consortium of microorganisms identified as ATCC 55381 and comprising the bacterial genera Arthrobacter, Aurobacterium, and Pseudomonas, said consortium being isolated from waste treatment sludge and being capable of completely degrading picric acid.

5,543,325

TWO-STEP METHOD OF HYPO-OSMOTIC SHOCK FOR REDUCING VIABILITY OF BACTERIA

Athina Chatzopoulou, Athens, Greece; Roger J. Miles, Woking, and Gerasimos Anagnostopoulos, Twickenham, both of, United Kingdom, assignors to The Minister of Agriculture Fisheries and Food in her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, United Kingdom

PCT No. PCT/GB92/01257, § 371 Date Jun. 29, 1994, § 102(e) Date Jun. 29, 1994, PCT Pub. No. WO93/00822, PCT Pub. Date Jan. 21, 1993
PCT Filed Jul. 10, 1992, Ser. No. 178,260
Claims priority, application United Kingdom, Jul. 10, 1991, 9114994
Int. Cl.[6] A61K *38/43;* C12P *1/00;* C12N *1/06;1/20*
U.S. Cl. 435—259 24 Claims

1. A method for reducing the viability of bacterial cells comprising subjecting said cells to hypo-osmotic shock by (1) exposing said cells to a first solution having a water activity (a_w) of 0.997 or less and thereafter (2) exposing the cells to a solution having a higher a_w than that of said first solution.

5,543,326

BIOSENSOR INCLUDING CHEMICALLY MODIFIED ENZYMES

Adam Heller, 5317 Valburn Cir., Austin, Tex. 78731; Ioanis Katakis, 1200 Mearns Meadow #208, Austin, Tex. 78758, and Ling Ye, 3904 Coventry La., #2B, Mishawaka, Ind. 46543

Filed Mar. 4, 1994, Ser. No. 207,035
Int. Cl.[6] C12M *1/40;1/34*
U.S. Cl. 435—287.9 15 Claims

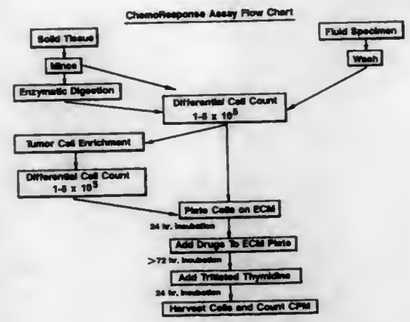
1. A biosensor comprising:
an electrode having a surface;
a polyionic polymer; and
a modified enzyme formed by increasing the number of amine groups covalently bound to a glycosylated redox enzyme such that the pI of the modified redox enzyme is increased by at least 2 pH units with respect to the glycosylated redox enzyme;
wherein the modified redox enzyme and the polyionic polymer are adsorbed or crosslinked on the surface of the electrode.

5,543,327

APPARATUS FOR CONDUCTING THE CYTOTOXICITY ASSAYS ON TUMOR CELLS

Yu P. Yen-Maguire, Bellevue; Tom Cox, Redmond, and Fred Lewis, Bonney Lake, all of Wash., assignors to Dade International Inc., Deerfield, Ill.

Continuation of Ser. No. 16,932, Feb. 12, 1993, abandoned, which is a division of Ser. No. 884,604, May 15, 1992, Pat. No. 5,242,806, which is a continuation of Ser. No. 520,311, May 7, 1990, abandoned. This application Jul. 22, 1994, Ser. No. 279,311
Int. Cl.[6] C12M *1/34;* C12Q *1/18;1/20*
U.S. Cl. 435—287.9 11 Claims



1. A kit to assay biopsied tumor cells for sensitivity to chemotherapeutic agents comprising:
(a) a multi-compartment vessel for receiving said biopsied tumor cells and containing a predetermined amount of at least one chemotherapeutic agent;
(b) a sufficient amount of growth medium to support the growth of said tumor cells in said multi-compartment vessel wherein the growth medium is formulated with calcium supplemented with growth factors, hormones and low serum to selectively enhance the growth and proliferation of said tumor cells; and
(c) an indicator of cell proliferation or cell viability.

5,543,328

ADENOVIRUSES HAVING MODIFIED FIBER PROTEINS

Alan McClelland, Gaithersburg, and Susan C. Stevenson, Frederick, both of Md., assignors to Genetic Therapy, Inc., Gaithersburg, Md.

Filed Aug. 13, 1993, Ser. No. 106,078
Int. Cl.[6] C12N *15/86;15/62;15/34;* A61K *48/00*
U.S. Cl. 435—320.1 35 Claims

1. An adenovirus wherein at least a portion of the adenovirus fiber protein is removed and replaced with a ligand which is specific for a receptor located on a desired cell type.

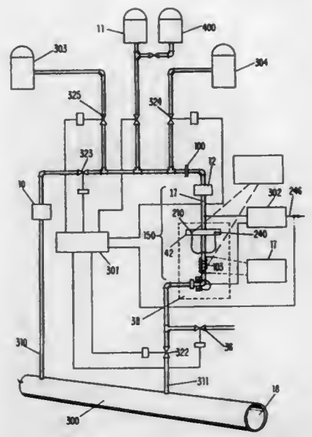
5,543,329

SENSOR FOR ANTIGEN-ANTIBODY REACTIONS

Glenn W. Bedell, Las Cruces, N.M., assignor to Intelligent Monitoring Systems and Advanced Global Technologies, Las Cruces, N.M.

Filed Nov. 3, 1992, Ser. No. 970,682
Int. Cl.[6] G01N *33/569;33/58;33/60*
U.S. Cl. 435—7.32 23 Claims

1. A sensor for detecting an analyte comprising:
a first sensor affixed to a reaction chamber for detection of interference from non-analyte substances:
said first sensor producing a first sensor output;



a second sensor also affixed to said reaction chamber at a predetermined location downstream from said first sensor for detection of analyte and interference and producing a second sensor output;
means for zeroing said second sensor output from said first sensor output to negate the interference; and
means for detecting a differential signal representative of a presence of a concentration of a selected analyte.

5,543,330

METHOD FOR DIAGNOSING MYOFIBROGRANULOMA (MFG) IN WALLEYE

Harry L. Holloway, Jr., Grand Forks, and Craig A. Shoemaker, Stanley, both of N. Dak., assignors to Center for Innovation & Business Development Foundation, Grand Forks, N. Dak.

Filed Sep. 22, 1995, Ser. No. 532,091
Int. Cl.[6] G01N *33/20;33/12*
U.S. Cl. 436—79 12 Claims

7. An improved method for detecting myofibrogranuloma (MFG) in walleye comprising:
measuring the serum calcium level in a walleye;
measuring the serum creatinine level in the walleye;
evaluating the serum calcium level and serum creatinine level in conjunction with the mean serum calcium and creatinine levels from MFG-positive walleye and healthy walleye using discriminant analysis.

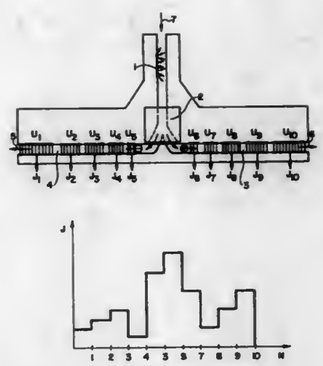
5,543,331

METHOD OF DETECTION OF ALIEN MATTER CONTENTS IN GASES

Pertti Puumalainen, Savonlinna, Finland, assignor to Fabretti Holdings Limited, Gibraltar, Finland

Continuation of Ser. No. 39,112, Apr. 9, 1993, abandoned.
This application Nov. 16, 1994, Ser. No. 342,007
Claims priority, application Finland, Oct. 11, 1990, 904997
Int. Cl.[6] G01N *21/71*
U.S. Cl. 436—153 5 Claims

1. A method of determining alien matter content in a gas using a device having a separation section and analyzing channels, the method including:
ionizing the gas and the alien matter contained therein,
separating the ions into positive and negative ions in the separation section,
directing positive ions to one analyzing channel and negative ions to another analyzing channel,



using gaseous capillary transport force to move the ions generally along a center portion of a respective channel,
using electric fields of different strengths to deflect the ions in their respective channels toward an electrode disposed at the end of each channel,
measuring positive and negative ion currents,
developing a current spectrum based on said ion currents on the basis of which different alien matter is recognized, and
determining concentrations of the alien matter by using corresponding spectra obtained with standard samples of different alien matter.

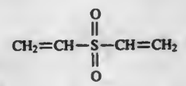
5,543,332

WATER-SOLUBLE, POLYMER-BASED REAGENTS AND CONJUGATES COMPRISING MOIETIES DERIVED FROM DIVINYL SULFONE

Allan O. F. Lihme, Birkerød, Denmark, and Thomas Boenisch, Goleta, Calif., assignors to Immunodex K/S, Glostrup, Denmark

Filed Nov. 8, 1991, Ser. No. 789,757
Claims priority, application Denmark, Jul. 4, 1991, 1309/91
Int. Cl.[6] G01N *33/536*
U.S. Cl. 436—528 15 Claims

1. A water-soluble reagent comprising a water-soluble polymeric carrier molecule having attached thereto more than one connecting moiety of the formula

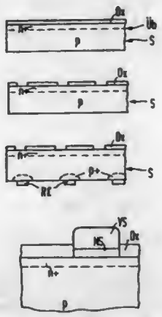


wherein
(1) the connecting moiety is derived from divinyl sulfone,
(2) each connecting moiety is attached to a reactive functional group on the polymeric molecule via a covalent linkage formed between one of the two vinyl groups of the connecting moiety and the reactive functional group on the polymeric molecule,
(3) the content of free reactive terminal vinyl groups is in the range of from about 50 to about 5,000 μmoles of vinyl groups per gram of polymeric carrier,
(4) the reagent is capable of reaction with a molecular species having a functional group which is reactive towards the terminal vinyl group of the more than one connecting moiety, and
(5) the molecular species is selected from the group consisting of labelling species, marking species, and targeting species.

5,543,333
METHOD FOR MANUFACTURING A SOLAR CELL HAVING COMBINED METALLIZATION

Konstantin Holdermann, Offingen, Germany, assignor to Siemens Solar GmbH, Munich, Germany

Filed Sep. 30, 1994, Ser. No. 315,430
Claims priority, application Germany, Sep. 30, 1993, 43 33 406.7
Int. Cl.[6] H01L *31/18*
U.S. Cl. 437—4 **12 Claims**



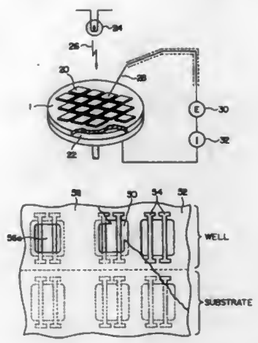
1. Method for manufacturing a solar cell having a silicon substrate selected from a group consisting of monocrystalline and polycrystalline silicon, said substrate having a front side and a backside, said method comprising the steps of:
forming a pn-junction in said front side of said silicon substrate;
forming a passivation layer on said front side of said silicon substrate;
forming a backside contact by printing and sintering an electrically conductive paste on said backside in an inert gas atmosphere;
performing a photo-induced, currentless deposition of a nickel layer as an adhesion layer and diffusion barrier layer directly over an area of said silicon substrate surface that is uncovered in openings within said passivation layer in conformity with a desired metallization structure to form a grid electrode wherein said openings in said passivation layer are photolithographically defined and produced by wet chemical etching; and
performing photo-induced, a currentless reinforcement of said nickel layer with at least one further metal layer selected from a group consisting of silver and copper, wherein the backside contact serves as a sacrificial anode and enters partially into solution during the metal depositioo on the front side.

5,543,334
METHOD OF SCREENING SEMICONDUCTOR DEVICE

Ichiro Yoshii, Kawasaki; Hiroyuki Kamijoh, Sagamihara; Yoshio Ozawa; Kikuo Yamabe, both of Yokohama; Kazuhiko Hashimoto, Meguro-Ku, all of, Japan; Katsuya Okumura, Poughkeepsie, N.Y., and Kaoru Hama, Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Dec. 15, 1994, Ser. No. 356,419
Claims priority, application Japan, Dec. 15, 1993, 5-315336
Int. Cl.[6] H01L *21/66*
U.S. Cl. 437—8 **15 Claims**

9. A method of screening a semiconductor device by testing gate oxide film of a group of transistors formed on a same chip area at the same time in process of manufacturing an integrated circuit including a plurality of MOS transistors having gate electrodes formed on the gate oxide film, which comprises the steps of:
preparing a silicon wafer having gate electrodes formed on the gate oxide film;
depositing a conductive layer on the silicon wafer;
forming a wiring layer by patterning the conductive layer so that the gate electrodes of a group of the transistors can be formed



and further these formed gate electrodes can be electrically connected to each other;
irradiating the chip area to be tested with light having intensity enough to generate a quantity of carriers in a depletion layer formed between a well and a substrate of the silicon wafer;
applying a test voltage between the wiring layer and the substrate of the silicon wafer during irradiation of the light;
measuring current flowing through the wiring layer and the gate oxide film while performing the irradiating step and applying the test voltage step; and
detecting an abnormality of the gate oxide film on the basis of the measured current value.

5,543,335
ADVANCED POWER DEVICE PROCESS FOR LOW DROP

Nathan Zommer, Los Altos, Calif., assignor to IXYS Corporation, San Jose, Calif.

Filed May 5, 1993, Ser. No. 57,293
Int. Cl.[6] H01L *21/306;21/22;21/38*
U.S. Cl. 437—10 **40 Claims**

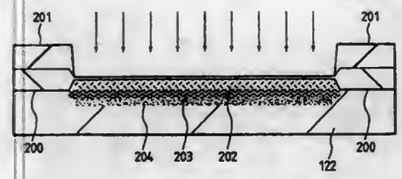
1. A method for fabricating a semiconductor device, the method comprising the steps of:
depositing a polymer passivation layer over a semiconductor wafer;
subsequent to the step of depositing a polymer passivation layer, introducing impurities into a backside of the semiconductor wafer, the backside of the semiconductor wafer being on the opposite side of the semiconductor wafer from the polymer passivation layer; and
diffusing the impurities into the semiconductor wafer.

5,543,336
REMOVING DAMAGE CAUSED BY PLASMA ETCHING AND HIGH ENERGY IMPLANTATION USING HYDROGEN

Hiromichi Enami, Tachikawa; Kiyomi Katsuyama, and Masanori Katsuyama, both of Hamura, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 25, 1994, Ser. No. 348,108
Claims priority, application Japan, Nov. 30, 1993, 5-300397
Int. Cl.[6] H01L *21/266*
U.S. Cl. 437—24 **17 Claims**

1. A process for manufacturing semiconductor integrated circuits, comprising:
(a) a first step of performing a first processing that involves creating crystal defects in a first single crystal surface region of the main surface of an integrated circuit wafer in a first vacuum processing chamber;

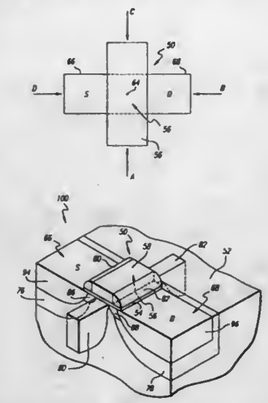


(b) a first hydrogen introducing step of introducing hydrogen into the first single crystal surface region of the main surface of the integrated circuit wafer during or after the first processing without causing additional damage thereto;
(c) a first hydrogen eliminating step of eliminating, after steps (a) and (b), the hydrogen introduced in the first hydrogen introducing step from the first single crystal surface region thereof at low temperature to prevent doped impurities from diffusing undesirably, thereby eliminating the crystal defects introduced in step (a);
(d) a second step of performing a second processing that involves creating crystal defects in a second single crystal region of the main surface of the integrated circuit wafer in the first or second vacuum processing chamber, after step (c);
(e) a second hydrogen introducing step of introducing hydrogen into the second single crystal surface region of the main surface of the integrated circuit wafer, during or after the second processing substantially without causing additional damage thereto; and
(f) a second hydrogen eliminating step of eliminating, after steps (d) and (e), the hydrogen introduced in the second hydrogen introducing step from the second single crystal surface region at low temperature to prevent doped impurities from diffusing undesirably, thereby eliminating the crystal defects introduced in step (d).

5,543,337
METHOD FOR FABRICATING FIELD EFFECT TRANSISTOR STRUCTURE USING SYMMETRICAL HIGH TILT ANGLE PUNCHTHROUGH IMPLANTS

Stanley Yeh, Fremont; Sungki O, Milpitas, and Partha Sundararajan, Newark, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Jun. 15, 1994, Ser. No. 260,079
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—35 **11 Claims**

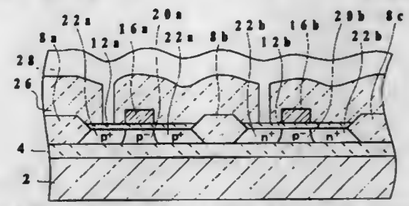


1. A method of fabricating a semiconductor device structure, comprising the steps of:
(a) forming four electric field containment regions in a semiconductor substrate which comprises silicon by implanting phosphorous ions into the substrate at an energy of approximately 120 Kev and to a dose of approximately 5×10^{12} ions/cm^2 along four axes that are angularly oriented about a normal to a surface of the substrate in four orthogonal directions respectively, and are angularly displaced from said normal by an angle of approximately 45° such that said axes substantially intersect said normal at a point below said surface; and
(b) forming a semiconductor device in the substrate substantially entirely above said containment regions such that the device is substantially centered about said normal and has a current flow direction that coincides with one of said four orthogonal directions;
in which one of said four orthogonal directions is substantially a 23° twist angle direction relative to a crystallographic orientation of the substrate.

5,543,338
METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE USING A SEMICONDUCTOR-ON-INSULATOR SUBSTRATE

Noriyuki Shimoji, Kyoto, Japan, assignor to Rohm Co., Ltd, Kyoto, Japan

Continuation of Ser. No. 254,668, Jun. 6, 1994, abandoned, which is a continuation of Ser. No. 57,672, May 5, 1993, abandoned. This application May 15, 1995, Ser. No. 441,305
Claims priority, application Japan, Jul. 8, 1992, 4-181208
Int. Cl.[6] H01L *21/335*
U.S. Cl. 437—41 **6 Claims**



4. A method of manufacturing a semiconductor device employing a SOI substrate, the SOI substrate including a substrate and an insulation layer disposed on the substrate, said method comprising the steps of:
a) providing a semiconductor layer on the insulation layer, the semiconductor laying having a first region in which a first circuit element is to be formed and a second region in which a second circuit element is to be formed;
b) forming a first gate electrode over a first portion of the first region of the semiconductor layer and a second gate electrode over a first portion of the second region of the semiconductor layer;
c) masking the second region of the semiconductor layer and the second gate electrode disposed thereon leaving unmasked the first region of the semiconductor layer and the first gate electrode disposed thereon;
d) directing a beam of a first conductivity type at the unmasked first region of the semiconductor layer and the first gate electrode disposed thereon such that the beam of the first conductivity type passes through the first gate electrode to implant a first dopant in the first portion of the first region of the semiconductor layer under the first gate electrode and such that the beam of the first conductivity type passes through a second portion first region of the semiconductor layer which does not underlie the first gate electrode and reaches the insulation layer under the first region of the semiconductor layer so that no first dopant is implanted in the second portion of the first region of the semiconductor layer;
e) directing a beam of a second conductivity type at the unmasked first region of the semiconductor layer and the first gate electrode disposed thereon after the step of directing the

beam of the first conductivity type such that the beam of the second conductivity type enters the second portion of the first region of the semiconductor layer which does not underlie the first gate electrode to implant a second dopant in the second portion of the first region of the semiconductor layer and such that the first gate electrode prevents the beam of the second conductivity type from entering the first portion of the first region of the semiconductor layer under the first gate electrode so that no second dopant is implanted in the first portion of the first region of the semiconductor layer, thereby forming the first circuit element;

f) removing the mask from the second region of the semiconductor layer and the second gate electrode disposed thereon and masking the first region of the semiconductor layer and the first gate electrode disposed thereon, leaving unmasked the second region of the semiconductor layer and the second gate electrode disposed thereon;

g) directing a beam of a third conductivity type at the unmasked second region of the semiconductor layer and the second gate electrode disposed thereon such that the beam of the third conductivity type passes through the second gate electrode to implant a third dopant in the first portion of the second region of the semiconductor layer under the second gate electrode and such that the beam of the third conductivity type passes through a second portion second region of the semiconductor layer which does not underlie the second gate electrode and reaches the insulation layer under the second region of the semiconductor layer so that no third dopant is implanted in the second portion of the second region of the semiconductor layer; and

h) directing a beam of a fourth conductivity type at the unmasked second region of the semiconductor layer and the second gate electrode disposed thereon after the step of directing the beam of the third conductivity type such that the beam of the fourth conductivity type enters the second portion of the second region of the semiconductor layer which does not underlie the second gate electrode to implant a fourth dopant in the second portion of the second region of the semiconductor layer and such that the second gate electrode prevents the beam of the fourth conductivity type from entering the first portion of the second region of the semiconductor layer under the second gate electrode so that no fourth dopant is implanted in the first portion of the second region of the semiconductor layer, thereby forming the second circuit element.

5,543,339

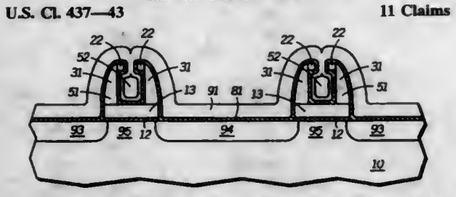
PROCESS FOR FORMING AN ELECTRICALLY PROGRAMMABLE READ-ONLY MEMORY CELL

Scott S. Roth, and Howard C. Kirsch, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 29, 1994, Ser. No. 296,908

Int. Cl.[6] H01L *21/8247*

U.S. Cl. 437—43 **11 Claims**



1. A process for forming an electrically programmable read-only memory cell comprising the steps of:

forming a floating gate over a semiconductor substrate, wherein:

the floating gate has a first member, a second member, and a third member that define a cavity; and

the cavity overlies the first member, underlies the second member, and lies adjacent to the third member;

forming an intergate dielectric layer adjacent to the floating gate and within the cavity; and

forming a control gate adjacent to the intergate dielectric layer, wherein a portion of the control gate lies within the cavity.

5,543,340

METHOD FOR MANUFACTURING OFFSET POLYSILICON THIN-FILM TRANSISTOR

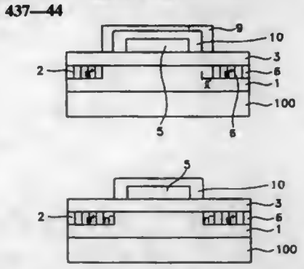
Joo-hyung Lee, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 27, 1994, Ser. No. 363,201

Claims priority, application Rep. of Korea, Dec. 28, 1993, 93-30232

Int. Cl.[6] H01L *21/336*

U.S. Cl. 437—44 **8 Claims**



1. A method of manufacturing an offset polysilicon thin-film transistor having a silicide covered polysilicon gate disposed between source and drain regions formed in an active semiconductor layer, comprising the steps of:

forming a polysilicon gate having a first thickness over the active semiconductor layer;

covering the polysilicon gate with a metal layer having a second thickness;

forming the source and drain regions on opposite sides of the metal covered polysilicon gate by implanting a high concentration of ions in the active layer using the metal covered polysilicon gate as a mask;

after forming the source and drain region, heating the metal covered polysilicon gate to form a silicide layer having a third thickness by reaction of the polysilicon gate and the metal layer;

removing a residual portion of the metal layer having a fourth thickness to expose offset regions having a width equal to the fourth thickness; and,

implanting a low concentration of ions in the offset regions.

5,543,341

Patent Not Issued For This Number

5,543,342

METHOD OF ION IMPLANTATION

Takao Mukai, and Nobuyuki Yoshioka, both of Hyogo-ken, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

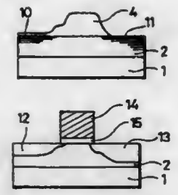
Continuation of Ser. No. 186,490, Jan. 26, 1994, abandoned, which is a continuation of Ser. No. 846,722, Feb. 24, 1992, abandoned, which is a continuation of Ser. No. 500,171, Mar. 28, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 466,029

Claims priority, application Japan, Mar. 29, 1989, 1-79208; Mar. 6, 1990, 2-54516

Int. Cl.[6] H01L *21/336;21/266*

U.S. Cl. 437—44 **23 Claims**

1. A method of implanting impurity ions to form an impurity profile having varied depths in a wafer having a major surface, a



desired impurity profile on the surface having at least three or continuous separate thicknesses obtained by a single ion implantation, comprising the steps of:

forming on the major surface of said wafer an ion beam absorber pattern having a desired thickness relative to said impurity profile with a material having at least a single layer whose absorbency of ions changes depending upon the thickness thereof, said desired thickness varying along the length of said ion beam absorber pattern,

directing said ion beam through said ion beam absorber pattern onto the major surface of said wafer to form source/drain regions,

removing said ion beam absorber pattern at least in regions having a thickness greater than zero and in which ions have been implanted, and after the step of removing,

forming a gate electrode between said source/drain regions on said major surface with a gate insulation film therebetween.

5,543,343

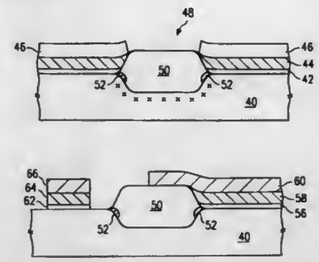
METHOD FABRICATING AN INTEGRATED CIRCUIT

Frank R. Bryant, Denton, and Robert L. Hodges, Euless, both of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Dec. 22, 1993, Ser. No. 172,636

Int. Cl.[6] H01L *21/70;27/00*

U.S. Cl. 437—51 **28 Claims**



1. A method of forming a semiconductor integrated circuit; comprising the steps of:

forming a gate oxide layer over a silicon substrate;

forming a first polysilicon layer over the gate oxide;

forming a first nitride layer over the first polysilicon layer;

patterning and etching the first nitride and first polysilicon layers to form an opening therethrough exposing a portion of the gate oxide layer;

growing a field oxide region in the opening and in a portion of the silicon substrate in the opening to a thickness wherein a central portion of the upper surface of the field oxide region is substantially planar with an upper surface of the first polysilicon layer;

removing the first nitride layer; and

patterning and etching the first polysilicon layer and gate oxide layer to form a gate electrode and interconnect wherein the gate electrode and interconnect's upper surface remains substantially planar with the central portion of the upper surface of the field oxide region.

5,543,344

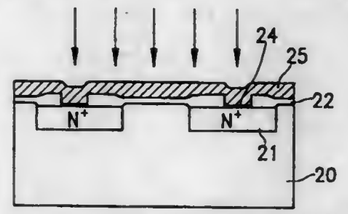
METHOD OF MAKING PROGRAMMABLE READ-ONLY MEMORY

Chen-Chung Hsu, Taichung, and Gary Hong, Hsinchu, both of, Taiwan, assignors to United Microelectronics Corp., Hsinchu, Taiwan

Filed Oct. 5, 1994, Ser. No. 318,474

Int. Cl.[6] H01L *21/8246*

U.S. Cl. 437—52 **8 Claims**



1. A method of fabricating programmable read-only memory on a semiconductor substrate, comprising the steps of:

implanting impurities into said semiconductor substrate to form a plurality of bit-lines of a first conductivity type spaced apart along a first direction by unimplanted portions of said semiconductor substrate;

forming a dielectric layer overlying said semiconductor substrate, said dielectric layer having a thickness over said bit-lines larger than a thickness over said unimplanted portions of said semiconductor substrate.;

forming a plurality of vias in said dielectric layer at predetermined positions above said plurality of bit-lines;

forming a control layer within said plurality of vias; and forming a plurality of word-lines of a second conductivity type overlying said control layer and said dielectric layer within said plurality of vias, said word-lines being spaced apart along a second direction substantially orthogonal to said first direction, and wherein each region where one said plurality of bit-lines and one of said plurality of word-lines crosses with said control layer being disposed there between define a memory cell of said programmable read-only memory.

5,543,345

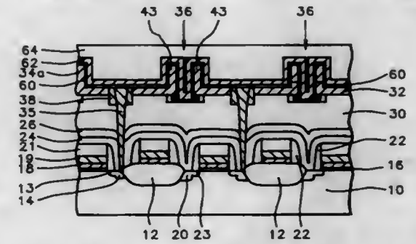
METHOD FOR FABRICATING CROWN CAPACITORS FOR A DRAM CELL

Ing-Ruey Liaw, and Meng-Jaw Cherng, both of Hsinchu, Taiwan, assignors to Vanguard International Semiconductor Corp., Hsin-Chu, Taiwan

Filed Dec. 27, 1995, Ser. No. 579,167

Int. Cl.[6] H01L *21/70;27/00*

U.S. Cl. 437—52 **22 Claims**



1. A method of fabricating a crown capacitor for semiconductor memory devices, said memory devices having a field effect transistor including a source, a drain, and a gate element, and a first insulation layer over said field effect transistor, which comprises the steps of:

forming a base conductive layer over said first insulation layer;

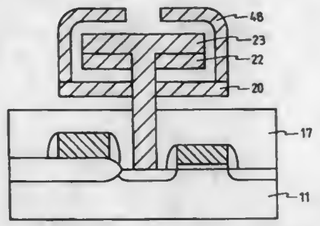
forming a contact hole through said base conductive layer and said first insulating layer over source regions that exposes said source;
forming a first conductive layer over said base conductive layer and filling said contact hole thereby forming an electrical connection to said source;
forming a first photoresist mask for defining areas for a plurality of spatially separated individual cell units on said first conductive layer;
etching portions of said first conductive layer through said first photoresist mask forming an groove in said first conductive layer between adjacent cells units, said groove having vertical sidewalls and having a depth less than
a thickness of said first conductive layer;
removing said first photoresist mask;
forming first spacers on said sidewalls of said groove;
anisotropically etching said base conductive layer and said first conductive layer using said spacers as an etch mask, thereby forming a plurality of electrodes having upright extending portions, said anisotropic etching exposing said first insulation layer in an area under said groove but leaving a thickness of said base conductive layer in the areas of said individual cell units and isotropically etching said exposed first insulating layer under said groove using said plurality of said electrodes as an etch mask;
removing said spacers;
forming a conformal dielectric layer covering at least said electrodes, said base conductive layer, and said first insulation layer; and
forming a top plate electrode over said conformal dielectric layer thereby forming a crown capacitor.

5,543,346

METHOD OF FABRICATING A DYNAMIC RANDOM ACCESS MEMORY STACKED CAPACITOR

Dong Y. Keum; Cheol S. Park, and Eui K. Ryou, all of Ichon-kun, Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Kyoungki-do, Rep. of Korea

Filed Aug. 30, 1994, Ser. No. 297,759
Claims priority, application Rep. of Korea, Aug. 31, 1993, 93-17121
Int. Cl.[6] H01L *21/70;27/00*
U.S. Cl. 437—52 **4 Claims**



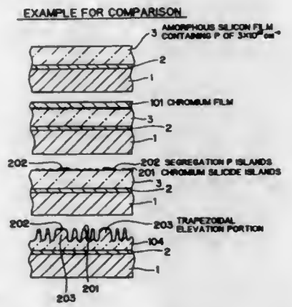
1. A method for fabricating dynamic random access memory capacitor, comprising the steps of:
forming a planarizing layer over a semiconductor substrate including a field oxide film, a gate oxide film, gates, and bit lines;
forming a first insulating film layer over the planarizing layer;
forming a first conduction layer over the first insulating film layer;
forming a second insulating film layer over the first conduction layer;
sequentially removing portions of the layers from the second insulating film layer to the planarizing layer such that an active region of the semiconductor substrate to be in contact with the capacitor is exposed, thereby forming a contact hole;
forming a second conduction layer over an entire exposed upper surface of the resulting structure after forming said contact hole to cover an upper surface of second insulating film and fill the contact hole;
forming a third insulating film layer over the second conduction layer;
forming a fourth insulating film layer over the third insulating film, the fourth insulating film being made of a different material from that of the third insulating film;
forming a fifth insulating film over the fourth insulating film, the fifth insulating film being made of a different material from that of the fourth insulating film;
sequentially removing the layers from the fifth insulating film to the second insulating film except for their portions to constitute a part of the capacitor, thereby forming stacked patterns consisting of fifth insulating film, fourth insulating film, third insulating film, second conduction layer, second insulating film and contact hole;
forming a sixth insulating film over said stacked patterns, the sixth insulating film being made of a different material from that of the fifth insulating film;
etching the sixth insulating film at its entire upper surface, thereby forming insulating spacers on side walls of the second insulating film, second conduction layer and third insulating film;
partially removing the fourth insulating film except for its portion disposed above the contact hole, thereby forming a gap between the third and fifth insulating film after forming said insulating spacers;
coating a conduction material over an entire exposed surface of the resulting structure after forming said gap, thereby forming a third conduction layer covering an upper surface of the first conduction layer and filling the gap;
etching the third conduction layer at its entire upper surface such that the third conduction layer remains at its portion disposed in the gap and on the insulating spacers; and
removing an exposed portion of the first conduction layer using the stacked patterns as a mask, thereby isolating said capacitor.

5,543,347

METHOD OF FORMING SILICON FILM HAVING JAGGED SURFACE

Hideo Kawano; Keiji Shiotani; Masao Mikami; Tatsuya Suzuki, and Seiichi Shishiguchi, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 363,941
Claims priority, application Japan, Dec. 27, 1993, 5-331479; Sep. 20, 1994, 6-263032
Int. Cl.[6] H01L *21/70;27/00*
U.S. Cl. 437—60 **27 Claims**



1. A method of forming a silicon film having a jagged surface, comprising the steps of:
forming a silicide layer on a silicon film surface;

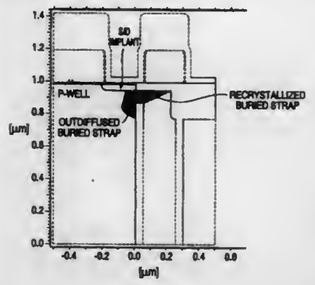
removing the silicide layer by etching such that a plurality of silicide islands of the silicide layer remains on the silicon film surface; and
dry-etching the silicon film surface by using the silicide islands on the silicon film surface as a selective mask.

5,543,348

CONTROLLED RECRYSTALLIZATION OF BURIED STRAP IN A SEMICONDUCTOR MEMORY DEVICE

Erwin Hammerl; Jack A. Mandelman, both of Stormville; Herbert L. Ho, Washingtonville; Junichi Shiozawa, and Reinhard J. Stengl, both of Wappingers Falls, all of N.Y., assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan; Siemens Aktiengesellschaft, Munich, Germany, and International Business Machines Corp., Armonk, N.Y.

Filed Mar. 29, 1995, Ser. No. 412,442
Int. Cl.[6] H01L *21/8242*
U.S. Cl. 437—60 **15 Claims**



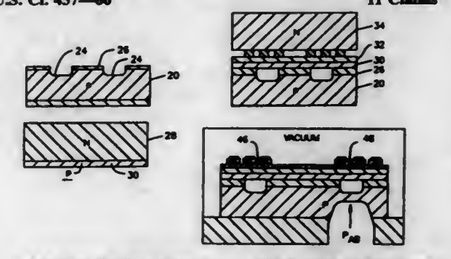
1. A method of forming a coupled capacitor and transistor, the method comprising the steps of:
forming a trench in a semiconductor substrate;
forming an impurity-doped first conductive region by filling said trench with an impurity-doped first conductive material;
etching back said impurity-doped first conductive region to a first level within said trench;
forming an insulating layer on a sidewall of the portion of said trench opened by the etching back of said impurity-doped first conductive region;
forming a second conductive region by filling the remainder of said trench with a second conductive material;
etching back said insulating layer and said second conductive region to a second level within said trench;
forming an undoped amorphous silicon layer in the portion of said trench opened by the etching back of said insulating layer and said second conductive region;
etching back said undoped amorphous silicon layer to a third level within said trench;
recrystallizing said amorphous silicon layer;
outdiffusing impurities from said impurity-doped first conductive region to said semiconductor substrate through said recrystallized silicon layer; and
forming a source/drain region of said transistor adjacent to an intersection of said trench and the surface of said semiconductor substrate, said outdiffused impurities and said recrystallized silicon layer constituting a buried strap for electrically connecting said first and second conductive layers in said trench to said source/drain region.

5,543,349

METHOD FOR FABRICATING A BEAM PRESSURE SENSOR EMPLOYING DIELECTRICALLY ISOLATED RESONANT BEAMS

Anthony D. Kurtz, Teaneck, and Alexander A. Ned, Bloomingdale, both of N.J., assignors to Kulite Semiconductor Products, Inc., Leonia, N.J.

Division of Ser. No. 292,406, Aug. 18, 1994, Pat. No. 5,473,944. This application May 23, 1995, Ser. No. 448,034
Int. Cl.[6] H01L *21/3205*
U.S. Cl. 437—60 **11 Claims**



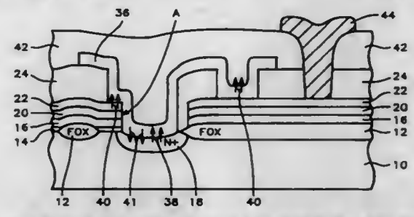
1. A method for fabricating a resonating beam transducer comprising the steps of:
etching at least one cavity into a first surface of a first wafer of semiconducting material having a first conductivity;
depositing a first layer of dielectric material onto said first surface of said first wafer;
forming a first layer of semiconducting material of said first conductivity on a surface of a second wafer of semiconducting material having a second conductivity opposite to said first conductivity;
bonding said first and second wafers together so that said layer of semiconducting material is positioned directly over said at least one cavity to form a resonating beam;
forming a plurality of resistor elements on said resonating beam; and
selectively etching a second surface opposite to said first surface of said first wafer to provide at least one diaphragm underlying said resonating beam.

5,543,350

SRAM RESISTOR TAB DOPING BY PLUG IMPLANT FROM BURIED CONTACT

Keh-Fei C. Chi, Singapore; Seah K. Suan, and Ling H. Yow, both of Singapore Science Park, all of, Singapore, assignors to Chartered Semiconductor Manufacturing Pte Ltd, Singapore, Singapore

Filed Sep. 29, 1995, Ser. No. 536,857
Int. Cl.[6] H01L *21/70;27/00*
U.S. Cl. 437—60 **42 Claims**



33. A method of forming a resistive load element in a fabrication of an integrated circuit comprising:
providing a pattern of gate electrodes and interconnection lines wherein said gate electrodes and interconnection lines comprise a tungsten silicide layer formed between a first doped polysilicon layer and a second undoped polysilicon layer over a semiconductor substrate;

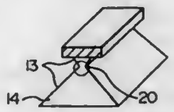
implanting first ions into said semiconductor substrate to form source and drain regions;
depositing an interpoly oxide layer overlying a surface of said semiconductor substrate;
etching away said interpoly oxide where it is not covered by a mask to provide an opening to said drain region within said semiconductor substrate and exposing a portion of one of said gate electrodes wherein a spacer comprising interpoly oxide is left on a sidewall of said exposed portion of one of said gate electrodes within said opening to said drain region;
overetching said interpoly oxide layer to remove said interpoly oxide spacer whereby a top portion of said drain region within said semiconductor substrate and a portion of said first ions are etched away;
implanting second ions into said etched drain region and said exposed portion of one of said gate electrodes;
depositing a third layer of undoped polysilicon over a surface of said interpoly oxide and within said opening to said drain region and patterning said third undoped polysilicon layer wherein said third undoped polysilicon layer forms said resistive load element and wherein during subsequent processing said second ions implanted into said drain region and said exposed portion of one of, said gate electrodes diffuse into said third layer of undoped polysilicon and diffuse into said semiconductor substrate underlying said drain region to increase a junction depth of said drain region; and
doping said third undoped polysilicon layer to define a resistor value completing said formation of said resistive load element in the fabrication of said integrated circuit.

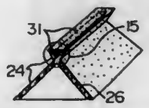
5,543,351

METHOD OF PRODUCING ELECTRICALLY INSULATED SILICON STRUCTURE

Yoshihiko Hirai, Osaka; Kiyoshi Morimoto; Yasuaki Terui, both of Neyagawa; Masaaki Niwa, Hirakata; Juro Yasui, Toyonaka; Kenji Okada, Suita; Masaharu Udagawa, Tokyo, and Koichiro Yuki, Neyagawa, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 030,556, Mar. 12, 1993, Pat. No. 5,405,454. This application Oct. 31, 1994, Ser. No. 331,733
Claims priority, application Japan, Mar. 19, 1992, 04-062854
Int. Cl.[6] H01L *21/76*
U.S. Cl. 437—063 **16 Claims**





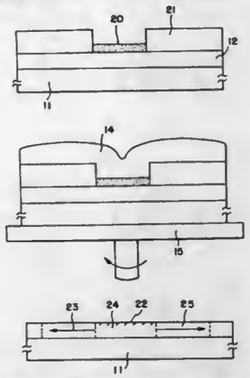
1. A method for producing a quantum portion of a silicon substrate insulated electrically from an outside of the silicon substrate, said method comprising:
etching the silicon substrate to form at least two surfaces of the silicon substrate extending substantially along respective crystal faces of (111) crystal orientation of the silicon substrate, said at least two surfaces having a first flatness and a first linearity; and
oxidizing a portion of the silicon substrate from the surfaces to form an electrically insulating layer, to form the quantum portion under the electrically insulating layer so that the electrically insulating layer insulates electrically the quantum portion of the silicon substrate from the outside of the silicon substrate and to form a boundary between the quantum portion and the electrically insulating layer, the boundary having a second flatness and a second linearity, at least one of the second flatness and the second linearity being superior to the first flatness or the first linearity.

5,543,352

METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE USING A CATALYST

Hisashi Ohtani; Akiharu Miyanaga; Hongyong Zhang; Naoaki Yamaguchi, and Atsunori Suzuki, all of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Osaka, Japan

Filed Nov. 16, 1994, Ser. No. 341,935
Claims priority, application Japan, Dec. 1, 1993, 5-329761
Int. Cl.[6] H01L *21/20*
U.S. Cl. 437—101 **20 Claims**



1. A method for manufacturing a semiconductor device comprising the steps of:
disposing a catalyst element for promoting a crystallization of silicon or a compound containing said catalyst element in contact with an amorphous silicon film;
crystallizing said amorphous silicon film with said catalyst element or said compound kept in contact with said silicon film; and then
improving a crystallinity of said silicon film by irradiating a laser light or an intense light to said silicon film.

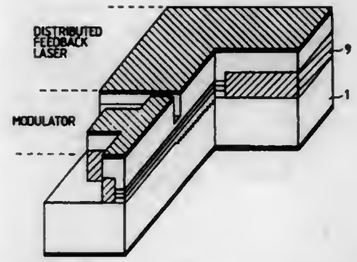
5,543,353

METHOD OF MANUFACTURING A SEMICONDUCTOR PHOTONIC INTEGRATED CIRCUIT

Makoto Suzuki; Masahiro Aoki; Makoto Takahashi, all of Kokubunji, and Tsuyoshi Taniwatari, Hachioji, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 29, 1994, Ser. No. 282,587
Claims priority, application Japan, Aug. 4, 1993, 5-193491
Int. Cl.[6] H01L *21/20*
U.S. Cl. 437—127 **6 Claims**

1. A method of manufacturing a semiconductor photonic integrated circuit comprising a first and a second photonic device connected optically one another on a single semiconductor substrate and formed by a selective-area growth process, said selective-area growth process comprising the step of growing compound semiconductor layers constituting said first and said second photonic device, said first photonic device being formed in a particular area on said semiconductor substrate using a set of insulating film masks with an open space width therebetween, said open space width ranging from 1.0 to 0.125 times the vapor diffusion length of a group III species, the masks being arranged in parallel with an optical axis of said first photonic device, a width of each of the masks being in perpendicular relation to said optical



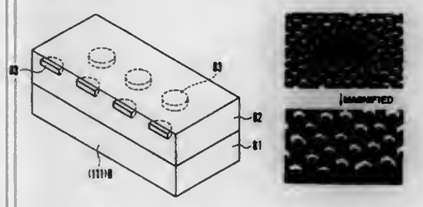
axis and ranging from 16 to 800 μm, said second photonic device being formed without the use of said insulating film masks.

5,543,354

METHOD OF FABRICATING A QUANTUM DOT STRUCTURE ON A (N11) SUBSTRATE

Nötzel Richard, Sapporo; Temmyo Jiro, Kanagawa; Tamamura Toshiaki, Kanagawa; Sugo Mitsuru, Kanagawa; Kuramochi Eiichi, Kanagawa, and Nishiya Teruhiko, Kanagawa, all of, Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Nov. 30, 1994, Ser. No. 347,778
Claims priority, application Japan, Nov. 25, 1993, 5-317544; Dec. 22, 1993, 5-345583; Sep. 16, 1994, 6-221455
Int. Cl.[6] H01L *21/20*
U.S. Cl. 437—129 **4 Claims**



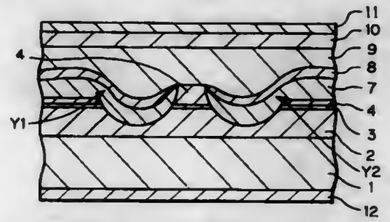
1. A method of fabricating a semiconductor structure, comprising:
the first step of forming a first semiconductor barrier layer on a substrate having an (n11)B surface (n= 2, 3, 4, 5, 6, or 7) as a major surface and comprising a III–V compound semiconductor by using vapor phase crystal growth;
the second step of forming a strained quantum well film with lattice mismatch on said semiconductor barrier layer by vapor phase crystal growth;
the third step of interrupting the growth of said strained quantum well film for a time after the second step to facilitate the transfer of said strained quantum well film layer to island regions, thereby forming a carrier confinement layer having an island structure consisting of a plurality of islands with a relatively large film thickness on said strained quantum well film; and
the fourth step of forming a second semiconductor barrier layer on said carrier confinement layer by vapor phase crystal growth.

5,543,355

METHOD FOR MANUFACTURING SEMICONDUCTOR LASER DEVICE HAVING CURRENT BLOCKING LAYERS

Mitsuyoshi Ookubo, Shiga, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 17, 1995, Ser. No. 422,853
Claims priority, application Japan, Apr. 18, 1994, 6-78270
Int. Cl.[6] H01L *21/20*
U.S. Cl. 437—129 **10 Claims**



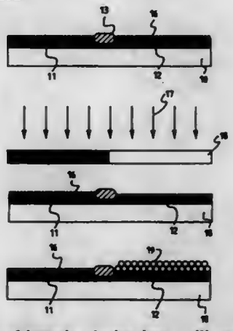
1. A method for manufacturing a semiconductor laser device, comprising the steps of:
forming striped grooves in a compound semiconductor means on both sides of a light emission area thereof;
etching said compound semiconductor means on both outer sides of said striped gooves, so that said compound semiconductor means is lower at the both outer sides of said striped grooves than at said light emission area; and
forming current blocking layers buried on said compound semiconductor means on the both sides of said light emission area after said compound semiconductor means is etched.

5,543,356

METHOD OF IMPURITY DOPING INTO SEMICONDUCTOR

Eiichi Murakami, Tokorozawa, and Shin'ichiro Kimura, Kunitachi, both of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 9, 1994, Ser. No. 338,137
Claims priority, application Japan, Nov. 10, 1993, 5-281074; Apr. 20, 1994, 6-081208
Int. Cl.[6] H01L *21/223*
U.S. Cl. 437—152 **17 Claims**



5. A method of impurity doping into a silicon semiconductor, which comprises irradiating energy rays to a region of a silicon surface covered with impurity atoms of a first conduction type, said impurity atoms of the first conduction type not being hydrogen, to remove the impurity atoms of the first conduction type thereby forming a silicon surface region exposed in a patterned configuration, and selectively adsorbing impurities of a second conduction type to the silicon surface region using the region covered with the impurity atoms of the first conduction type as a

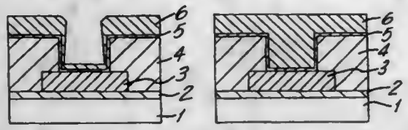
mask, thereby conducting impurity doping of the first and the second conduction types in a self-aligned fashion.

5,543,357

PROCESS OF MANUFACTURING A SEMICONDUCTOR DEVICE BY FILLING A VIA HOLE IN AN INTERLAYERED FILM OF THE DEVICE WITH WIRING METAL

Yoshiaki Yamada; Nobukazu Ito; Kuniko Miyakawa, and Michiko Yamanaka, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 8, 1994, Ser. No. 351,679
Claims priority, application Japan, Dec. 8, 1993, 5-308244
Int. Cl.[6] H01L *21/28*
U.S. Cl. 437—192 **5 Claims**



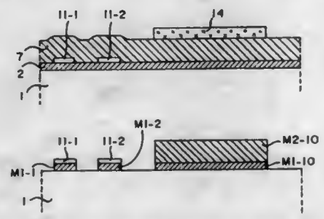
1. A process for manufacturing a semiconductor device, comprising the steps of forming a titanium film on a via hole and an interlayered insulating film through which the via hole extending to a semiconductor element or a lower wire is formed; forming an aluminum film or an aluminum alloy film at a temperature of 200° C. or lower by a sputtering process; and heating a substrate to melt the aluminum film or the aluminum alloy film, thereby filling the via hole therewith, the thickness of the titanium film being 10% or less of the thickness of the aluminum film or the aluminum alloy film and being 25 nm or less, wherein at least the step of forming the aluminum film or the aluminum alloy film and the step of heating the substrate to melt the aluminum film or the aluminum alloy film, thereby filling the via hole therewith are carried out in same vacuum atmosphere in a chamber; and wherein a step of performing a reverse sputter etching of the titanium film with argon in the same vacuum atmosphere as in the step of forming the aluminum film or the aluminum alloy film is interposed between the step of forming the titanium film and the step of forming the aluminum film or the aluminum alloy film.

5,543,358

METHOD FOR FORMING THIN AND THICK METAL LAYERS

Jean Jimenez, Voiron, France, assignor to SGS-Thomson Microelectronics S.A., Saint-Genis, France

Filed Nov. 28, 1994, Ser. No. 345,519
Claims priority, application France, Dec. 3, 1993, 93 14744
Int. Cl.[6] H01L *21/28*
U.S. Cl. 437—195 **27 Claims**



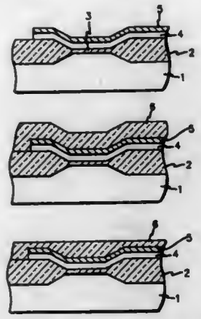
19. A method for fabricating a semiconductor chip, the method comprising the steps of:
depositing a first metal layer on a substrate;
masking the first metal layer with a masking layer to define a first metal region;
depositing a second metal layer over the masking layer and the first metal layer;
coating the second metal layer with a resist layer to define a second metal region; and
etching the first metal layer and the second metal layer to form the first metal region and the second metal region that is thicker than the first metal region, the second metal layer having a second width and the first metal layer having a first width in the second metal region, the second width substantially conforming to the first width.

5,543,359

METHOD OF FORMING A TITANIUM SILICIDE FILM INVOLVED IN A SEMICONDUCTOR DEVICE

Tadahiko Horiuchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 22, 1994, Ser. No. 361,532
Claims priority, application Japan, Dec. 22, 1993, 5-323578
Int. Cl.[6] H01C *21/44*
U.S. Cl. 437—195 **31 Claims**



1. A method of forming a silicate glass film including phosphorus on a titanium silicide film comprising the steps of:
forming a silicate glass film including phosphorus on a titanium silicide film; and
subjecting said silicate glass film to a heat treatment at a temperature in the range from 650° C. to 950° C. for a time in the range from 20 to 70 seconds to cause a fineness reaction of said silicate glass film and suppress a cobesion reaction of said titanium silicide film.

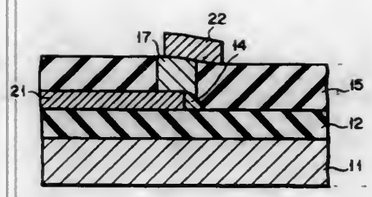
5,543,360

METHOD OF MAKING A SEMICONDUCTOR DEVICE WITH SIDEWALL ETCH STOPPER AND WIDE THROUGH-HOLE HAVING MULTILAYERED WIRING STRUCTURE

Fumitomo Matsuoka, Kawasaki, and Naoki Ikeda, Yokohama, both of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 231,974, Apr. 20, 1994, Pat. No. 5,462,893, which is a continuation of Ser. No. 939,425, Sep. 4, 1992, abandoned, which is a continuation of Ser. No. 661,605, Feb. 28, 1991, abandoned. This application Jun. 5, 1995, Ser. No. 464,126
Claims priority, application Japan, Mar. 2, 1990, 2-49500; Feb. 20, 1991, 3-112658
Int. Cl.[6] H01L *21/44*
U.S. Cl. 437—195 **2 Claims**

1. A method of manufacturing a semiconductor device having a multilayered wiring structure on a semiconductor substrate, comprising the steps of:
forming a first insulating layer on said semiconductor substrate;



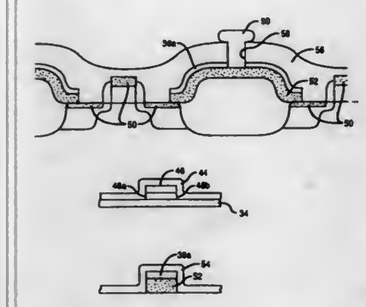
forming a wiring layer having a selected wiring width and a selected shape on said first insulating layer;
forming a protection layer on a side wall of said wiring layer;
forming a second insulating layer on the entire surface;
forming an opening in said second insulating layer having a width equal to or larger than said wiring width of said wiring layer and reaching a surface of said wiring layer by etching, said protection layer serving as a stopper to prevent said first insulating layer from being etched when a formation position of said opening deviates from said wiring layer; and
forming a conductive layer connected to said wiring layer.

5,543,361

PROCESS FOR FORMING TITANIUM SILICIDE LOCAL INTERCONNECT

Steven S. Lee; Kenneth P. Fuchs, and Gayle W. Miller, all of Colorado Springs, Colo., assignors to AT&T Global Information Solutions Company, Dayton, Ohio; Hyundai Electronic America, Milpitas, Calif., and Symbios Logic Inc., Fort Collins, Colo.

Continuation of Ser. No. 522,775, May 14, 1990, Pat. No. 5,443,996. This application Dec. 8, 1994, Ser. No. 351,843
Int. Cl.[6] H01L *21/44*
U.S. Cl. 437—200 **27 Claims**



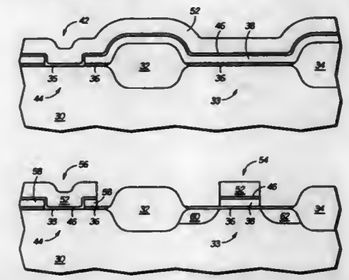
27. In the manufacture of an electronic integrated circuit, a process for forming a local interconnect between contact points comprising the following steps:
forming a strip of silicon upon a metal, which strip includes a top and substantially vertical sidewalls and extends between the contact points;
applying a barrier metal to protect both the silicon strip, including the top and substantially vertical sidewalls, and the metal from ambient gases;
heating the silicon strip, the metal, and the barrier metal so that the silicon, the barrier metal and the metal form a silicide for use in said local interconnect.

5,543,362

PROCESS FOR FABRICATING REFRACTORY-METAL SILICIDE LAYERS IN A SEMICONDUCTOR DEVICE

Wei E. Wu, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 28, 1995, Ser. No. 413,037
Int. Cl.[6] H01L *21/28*
U.S. Cl. 437—200 **8 Claims**



1. A process for fabricating a semiconductor device comprising the steps of:
providing a semiconductor substrate having an active region therein and a gate dielectric layer overlying the active region;
forming a first polycrystalline silicon layer overlying the gate dielectric layer;
etching the first polycrystalline silicon layer and the gate dielectric layer to define a patterned layer;
forming a diffusion barrier layer overlying the patterned layer;
forming a second polycrystalline silicon layer overlying the diffusion barrier layer; and
converting the second polycrystalline silicon layer to a refractory-metal silicide layer,
wherein the diffusion barrier layer prevents formation of refractory-metal silicide in the first polycrystalline silicon layer.

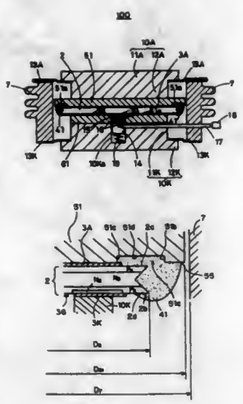
5,543,363

PROCESS FOR ADHESIVELY ATTACHING A SEMICONDUCTOR DEVICE TO AN ELECTRODE PLATE

Futoshi Tokunoh, and Katsumi Satoh, both of Fukuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

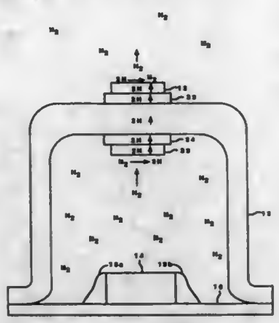
Division of Ser. No. 47,436, Apr. 15, 1993, Pat. No. 5,371,386. This application Aug. 16, 1994, Ser. No. 291,753
Claims priority, application Japan, Apr. 28, 1992, 4-110179; Sep. 7, 1992, 4-238315
Int. Cl.[6] H01L *21/58;21/52*
U.S. Cl. 437—208 **3 Claims**

1. A method of assembling a semiconductor device which comprises a semiconductor element having first and second surfaces, a first electrode provided on said semiconductor element, a second electrode provided on said second surface of said semiconductor element, a first electrode plate having first and second surfaces, a second electrode plate having first and second surfaces, a first external electrode, a second external electrode, and a casing having an opposite pair of opening portions, wherein said first electrode plate is formed such that the outer peripheral portion of said first electrode plate projects outwardly beyond said semiconductor element, and wherein a stepped portion is provided in said first surface of said first electrode plate along the outer peripheral edge of said semiconductor element such that a line, which is projected along the outer peripheral edge of said semiconductor element on said first surface of said first electrode plate, is located on said stepped portion, said method comprising the steps of:
(a) preparing said casing;
(b) fixing said semiconductor element to said first electrode plate, said step (b) including the steps of:



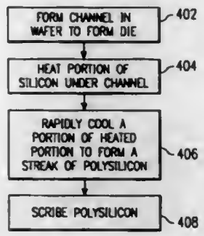
(b-1) placing said first electrode plate to upwardly direct said first surface thereof having said stepped portion, and placing said semiconductor element on said first surface of said first electrode plate,
(b-2) supplying an adhesive holding member to said stepped portion and to said outer peripheral portion of said semiconductor element, and
(b-3) heating said semiconductor element, said first electrode plate, and said adhesive holding member to thereby solidify said adhesive holding member;
(c) storing said second external electrode, said second electrode plate, said first electrode plate to which said semiconductor element is fixed, and said first external electrode; and
(d) fixing said first and second external electrodes to end portions of respective opening portions of said casing.

5,543,364
HYDROGEN OUT VENTING ELECTRONIC PACKAGE
Gary W. Stupian, Hermosa Beach, and Martin S. Leung, Redondo Beach, both of Calif., assignors to The Aerospace Corporation, El Segundo, Calif.
Division of Ser. No. 324,070, Oct. 14, 1994. This application Dec. 20, 1994, Ser. No. 359,970
Int. Cl.[6] H01L *21/60*
U.S. Cl. 437—210 **10 Claims**



1. A method of forming a package out venting molecular hydrogen from an interior cavity of said package to the exterior space of said package, said package having at least two portions, said method comprising the steps of,
bonding an electronic device using a bonding material to a package interior surface of said package,
disposing a hydrogen catalyst on one of said at least two portions of said package, said catalyst for dissociating molecular hydrogen trapped within said cavity into atomic hydrogen at a catalyst interior surface of the said catalyst exposed to said cavity of said package, for diffusing said atomic hydrogen through said hydrogen catalyst, and for recombining the diffused atomic hydrogen at a catalyst exterior surface of said hydrogen catalyst for out venting said molecular hydrogen into said exterior space, and
sealing said at least two portions together for encapsulating said electronic device within said package.

5,543,365
WAFER SCRIBE TECHNIQUE USING LASER BY FORMING POLYSILICON
Kendall S. Wills, Farmers Branch; Paul A. Rodriguez, Lewisville, and Melvin Brewer, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Dec. 2, 1994, Ser. No. 347,988
Int. Cl.[6] H01L *21/302*
U.S. Cl. 437—226 **12 Claims**



1. A method for preventing cracks as a result of a scribing operation, comprising the steps of:
forming a channel in a wafer to provide descrite die;
heating a first portion of said wafer under the channel
cooling a second portion of said first portion to form a polysilicon structure that eliminates the uniform structures of said wafer of silicon within the second portion;
scribing said second portion in order to separate said die.

5,543,366
LOW TEMPERATURE GLASS PASTE WITH IMPROVED THERMAL STRESS PROPERTIES
Raymond L. Dietz, Georgetown, and David M. Peck, Danvers, both of Mass., assignors to Quantum Materials, Inc., San Diego, Calif.
Continuation-in-part of Ser. No. 962,924, Oct. 19, 1992, Pat. No. 5,334,558. This application Jun. 27, 1994, Ser. No. 265,919
Int. Cl.[6] C03C *3/12*
U.S. Cl. 501—41 **28 Claims**



1. An essentially resin free paste consisting essentially of by weight:
greater than about 67% to about 76% of conductive metallic particles selected from the group consisting of Ag, Au, Al, Cu, Ni, Pd, Zn, Sn and Pt;

about 10 to less than about 19% of a glass composition which consists essentially of, by weight on an oxide basis;
about 40–65% Ag_2O
about 15–35% V_2O_5
about 0–20% TeO_2
about 0–30% of at least one of a group consisting of PbO_2 and Pb_3O_4;
about 10–15% of an organic solvent; and
a resin percentage of less than 0.1% of said paste.

5,543,367
PYROLYTIC CONVERSION OF PAINT SLUDGE TO USEFUL MATERIALS
Chaitanya K. Narula, Ann Arbor; Byung R. Kim, West Bloomfield, and Irving T. Salmeen, Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Jul. 28, 1995, Ser. No. 508,875
Int. Cl.[6] C04B *35/00;35/468*
U.S. Cl. 501—87 **7 Claims**



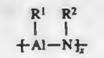
1. A process for decomposing dried paint sludge to recover the organic and inorganic components of the paint sludge as gaseous, liquid, and composite materials, which process comprises the steps of:
drying the paint sludge at a temperature below about 200" C. for a time sufficient to remove water and organic solvents present in the paint sludge;
pyrolizing the dried paint sludge in an inert atmosphere comprising nitrogen or argon at an elevated temperature of up to about 600° C. for a time sufficient to form gaseous and liquid decomposition materials and a solid residue;
collecting the gaseous and liquid decomposition materials; and
subjecting the solid residue to further pyrolysis in an atmosphere selected from the group consisting of nitrogen, argon and ammonia at a temperature of between about 900° C. and 1300° C. for a time sufficient to sinter the solid residue to form an inorganic composite material comprising barium titanate and titanium compounds.

5,543,368
GRAPHITE-LOADED SILICON CARBIDE
Lloyd G. Talbert, Alexander, and Steven M. Brazil, Benton, both of Ark., assignors to Alumina Ceramics Co. (ACI), Benton, Ark.
Division of Ser. No. 259,916, Jun. 10, 1994, Pat. No. 5,486,496. This application Jun. 2, 1995, Ser. No. 458,914
Int. Cl.[6] C04B *35/577*
U.S. Cl. 501—90 **14 Claims**

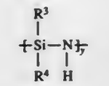
1. A raw batch for producing a sintered ceramic body, comprising:
(a) at least about 5 parts by weight graphite agglomerates, wherein at least about 50 percent of said graphite agglomerates have a size of at least about 100 micrometers; and
(b) at least about 80 parts by weight silicon carbide.

5,543,369
POLYMER PRECURSOR FOR SILICON CARBIDE/ALUMINUM NITRIDE CERAMICS
James A. Jensen, 544 Cabot Dr., Hickory Hill, Del. 19707
Division of Ser. No. 836,676, Feb. 13, 1992, Pat. No. 5,229,468. This application Jan. 15, 1993, Ser. No. 4,045
Int. Cl.[6] C04B *35/52*
U.S. Cl. 501—92 **22 Claims**

1. A process for preparing an AlN/SiC-containing ceramic comprising (1) supplying energy in a form selected from the group consisting of heat, UV light, and electron beam radiation to generate free radicals at sites of organounsaturation within a composition comprising a block copolymer comprising a multiplicity of blocks of units having the formula



and a multiplicity of blocks of units having the formula



wherein x>1 and y>1; the blocks x and y are bonded through Si—N—Al linkages; R^1 and R^2 are the same or different and are selected from the group consisting of hydrogen, substituted or unsubstituted 1–12 carbon alkyl, 3–12 carbon cycloalkyl, 2–12 carbon alkenyl, 3–12 carbon cycloalkenyl and aryl groups; R^3 and R^4 are the same or different and are selected from the group consisting of hydrogen, substituted or unsubstituted 1–6 carbon alkyl, 3–6 carbon cycloalkyl, 3–6 carbon cycloalkenyl, 2–6 carbon alkenyl, 2–6 carbon alkynyl and aryl groups, provided that R^1, R^2, R^3 and R^4 are not all hydrogen, and at least one of R^1, R^2, R^3 and R^4 is an organounsaturated group, to produce a crosslinked block copolymer, and (2) pyrolyzing the crosslinked block copolymer of step (1) in a nonoxidizing atmosphere.

5,543,370
COMPOSITE MATERIALS BASED ON BORON CARBIDE, TITANIUM DIBORIDE AND ELEMENTAL CARBON AND PROCESSES FOR THE PREPARATION OF SAME
Lorenz Sigl, Lechaschau, Austria; Hubert Thaler, Kempten, and Karl-Alexander Schwetz, Sulzberg, both of, Germany, assignors to Elektroschmelzwerk Kempten GmbH, München, Germany
Filed May 24, 1994, Ser. No. 248,388
Claims priority, application Germany, Jun. 11, 1993, 43 19 460.5
Int. Cl.[6] C04B *35/52*
U.S. Cl. 501—92 **12 Claims**

1. A composite material comprising

boron carbide and titanium diboride in a volume ratio B_4C/TiB_2 of from 90:10 to 10:90 parts by volume; and

a proportion of elemental carbon of greater than 5.0% by weight up to a maximum of 50% by weight based on the boron carbide content.

5,543,371

SLIDE MEMBER AND METHOD OF MANUFACTURING THE SAME

Tetsuya Katayama; Kaoru Murabe; Osamu Komura; Chihiro Kawai; Akira Yamakawa; Kenji Matsunuma; Norio Yasuoka; Matsuo Higuchi, and Masaya Miyake, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

PCT No. PCT/JP93/00385, § 371 Date Nov. 30, 1993, § 102(e) Date Nov. 30, 1993, PCT Pub. No. WO93/20025, PCT Pub. Date Oct. 14, 1993

PCT Filed Mar. 29, 1993, Ser. No. 150,189

Claims priority, application Japan, Mar. 31, 1992, 4-077651; Apr. 9, 1992, 4-089049

Int. Cl.[6] C04B *35/587*

U.S. Cl. 501—97 **8 Claims**

1. A slide member comprising a sliding surface including ceramics and having a surface roughness of not more than 1.0 μm in center line average roughness Ra, wherein said ceramics includes an Si_3N_4 phase in a silicon nitride sintered body that contains crystal grains in a linear density of at least 35 per 30 μm in length with a boundary phase volume ratio of not more than 15 volume %, and contains pores of not more than 20 μm in maximum diameter, the content of said pores being not more than 3%.

5,543,372

STABLE HIGH SOLIDS SLURRIES OF STRUCTURED CLAY MATERIALS AND PROCESS FOR THE MANUFACTURE THEREOF

Joseph C. S. Shi, Bartow; William H. Blue, Wrightsville, and Jeffrey C. Bruns, Sandersville, all of Ga., assignors to Thiele Kaolin Company, Sandersville, Ga.

Continuation of Ser. No. 41,959, Apr. 2, 1993, abandoned. This application May 12, 1995, Ser. No. 439,495

Int. Cl.[6] C04B *14/04;33/04*

U.S. Cl. 501—145 **32 Claims**

1. A process for manufacturing a stable high solids slurry of a structured clay material, wherein the process comprises the sequential steps of:

A. in a first stage, mixing structured clay particles with water under conditions which promote particle to liquid contact but which minimize particle to particle interaction, wherein a substantially homogeneous high solids slurry is produced;

B. in a second stage, mixing the substantially homogeneous high solids slurry under conditions which are different from the first stage mixing conditions and which promote interaction between the structured clay particles, wherein a high solids structured clay slurry product having improved rheological properties and a scattering coefficient of at least 0.8 is produced.

5,543,373

METALLOCENE COMPOUND

Andreas Winter, Glashütten; Frank Küber, Oberursel; Michael Aulbach, Hofheim; Bernd Bachmann, Eppstein; Robert Klein, Frankfurt am Main; Klaus Kühlein, Kelkheim; Walter Spaleck, Liederbach, and Christian Kohlpaintner, Kelkheim, all of, Germany, assignors to Hoechst AG, Germany

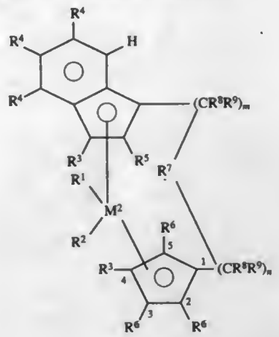
Filed Dec. 21, 1994, Ser. No. 360,608

Claims priority, application Germany, Dec. 27, 1993, 43 44 688.4

Int. Cl.[6] B01J *31/00;37/00;* **C07F** *17/00*

U.S. Cl. 502—103 **18 Claims**

1. A metallocene compound of the formula I



where

M^2 is a metal of the group IVb, Vb or VIb of the Periodic Table,

R^1 and R^2 are identical or different and are a hydrogen atom, a C_1–C_{10}-alkyl group, a C_1–C_{10}-alkoxy group, a C_6–C_{10}-aryl group, a C_6–C_{10}-aryloxy group, a C_2–C_{10}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_7–C_{40}-alkylaryl group, a C_8–C_{40}-arylalkenyl group or a halogen atom,

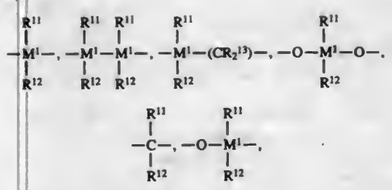
R^3 are identical or different and are a hydrogen atom, a halogen atom, a C_1– C_{10}-alkyl group which can be halogenated, a C_6–C_{10}-aryl group, a C_2–C_{10}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_7–C_{40}-alkyloxy group, a C_8–C_{40}-arylalkenyl group, a $—NR_2^{10}$, $—OR^{10}$, $—SR^{10}$, $—OSiR_3^{10}$, $—SiR_3^{10}$ or $—PR_2^{10}$ radical, where R^{10} is a halogen atom, a C_1–C_{10}-alkyl group or a C_6–C_{10}-aryl group,

R^4 are identical or different and are a hydrogen atom, a halogen atom, a C_1–C_{20}-alkyl group, a C_1–C_{20}-fluoroalkyl group, a C_6–C_{30}-aryl group, a C_6–C_{30}-fluoroaryl group, a C_1–C_{20}-alkoxy group, a C_2–C_{20}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_8–C_{40}-arylalkenyl group, a C_7–C_{40}-alkylaryl group, a $—NR_2^{10}$, $—OR^{10}$, $—SR^{10}$, $—OSiR_3^{10}$, $—SiR_3^{10}$ or $—PR_2^{10}$ radical, where R^{10} is a halogen atom, a C_1–C_{10}-alkyl group or a C_6–C_{10}-aryl group, or two or more radicals R^4 together with the atoms connecting them form a ring system,

$R^5$is a hydrogen atom, a halogen atom, a C_1–C_{10}-alkyl group which can be halogenated, a C_6–C_{10}-aryl group, a C_2–C_{10}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_7–C_{40}-alkyloxy group, a C_8–C_{40}-arylalkenyl group, a $—NR_2^{10}$, $—OR^{10}$, $—SR^{10}$, $—OSiR_3^{10}$, $—SiR_3^{10}$ or $—PR_2$ radical, where R^{10} is a halogen atom, a C_1–C_{10}-alkyl group or a C_6–C_{10}-aryl group,

R^6 are identical or different and are a hydrogen atom, a halogen atom, a C_1–C_{20}-alkyl group which can be halogenated, a C_6–C_{30}-aryl group, a C_2–C_{10}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_7–C_{40}-alkyloxy group, a C_8–C_{40}-arylalkenyl group, a $—NR_2^{10}$, $—OR^{10}$, $—SR^{10}$, $—OSiR_3^{10}$, $—SiR_3^{10}$ or $—PR_2^{10}$ radical, where R^{10} is a halogen atom, a C_1–C_{10}-alkyl group or a C_6–C_{10}-aryl group,

R^7 is



$=BR^{11}$, $=AlR^{11}$, $—Ge—$, $—Sn—$, $—O—$, $—S—$, $=SO$, $=SO_2$, $=NR^{11}$, $=CO$, $=PR^{11}$ or $=P(O)R^{11}$,

where R^{11}, R^{12} and R^{13} are identical or different and are a hydrogen atom, a halogen atom, a C_1–C_{20}-alkyl group, a C_1–C_{20}-fluoroalkyl group, a C_6–C_{30}-aryl group, a C_6–C_{30}-fluoroaryl group, a C_1–C_{20}-alkoxy group, a C_2–C_{20}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_8–C_{40}-arylalkenyl group, a C_7–C_{40}-alkylaryl group, or R^{11} and R^{12} or R^{11} and R^{13} in each case together with the atoms connecting them form a ring,

M^1 is silicon, germanium or tin,

R^8 and R^9 are identical or different and are a hydrogen atom, a halogen atom, a C_1–C_{20}-alkyl group, a C_1–C_{20}-fluoroalkyl group, a C_6–C_{30}-aryl group, a C_6–C_{30}-fluoroaryl group, a C_1–C_{20}-alkoxy group, a C_2–C_{20}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_8–C_{40}-arylalkenyl group, a C_7–C_{40}-alkylaryl group, or R^8 and R^9 together with the atoms connecting them form a ring,

m and n are identical or different and are zero, 1 or 2, where m plus n is zero, 1 or 2, wherein at least one of the radicals R^4 and R^5 is not hydrogen.

5,543,374

ISOMERIZATION CATALYST AND USE THEREOF IN ALKANE/CYCLOALKANE ISOMERIZATION

An-hsiang Wu, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 15, 1994, Ser. No. 340,497

Int. Cl.[6] C08F *4/64;4/635*

U.S. Cl. 502—107 **22 Claims**

1. A method of preparing a solid platinum- and chlorine-containing composition comprising:

(a) impregnating alumina with at least one platinum compound;

(b) heating the impregnated alumina obtained in step (a) at a temperature of about 300°–650° C. for a time period of at least 5 minutes;

(c) heating the calcined material obtained in step (b) with a reducing gas at a temperature of at least about 100° C. for a time period of at least about 5 minutes; and

(d) treating the material obtained in step (c) with gaseous aluminum chloride and gaseous titanium tetrachloride at a temperature of about 400°–700° C. for a time period of at least about 10 minutes, wherein the molar ratio of $AlCl_3$ to $TiCl_4$ is in the range of about 5:1 to about 15:1.

5,543,375

OLEFIN PRODUCTION

Mark E. Lashier; Jeffrey W. Freeman, and Ronald D. Knudsen, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 18, 1994, Ser. No. 198,331

Int. Cl.[6] B01J *31/02;31/34*

U.S. Cl. 502—117 **10 Claims**

1. A process to stabilize an olefin production catalyst system comprising wherein said catalyst system comprises a chromium compound, a pyrrole-containing compound and a metal alkyl, wherein said process comprises the steps of:

reacting the three catalyst system components in the presence of an unsaturated hydrocarbon; and

contacting and stabilizing said catalyst system with a mononuclear aromatic compound selected from the group consisting of toluene, benzene, xylene, mesitylene, hexamethylbenzene, n-butylbenzene, and mixtures thereof;

wherein said catalyst system and mononuclear aromatic compound are contacted prior to contacting the catalyst system with a reactant at a temperature within a range of about −50° to about 70° C., for a time of less than 1 hour, and under a dry, inert atmosphere.

5,543,376

PROCESS FOR PRODUCING POLYOLEFINS

Joseph J. Bergmeister, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 202,413, Feb. 25, 1994, abandoned. This application Apr. 13, 1995, Ser. No. 421,096

Int. Cl.[6] C08F *4/24*

U.S. Cl. 502—117 **14 Claims**

1. A dual site catalyst composition comprising:

a) a chromium oxide catalyst system comprising chromium oxide supported on an inorganic oxide support prepared from an inorganic oxide support impregnated with a chromium compound and activated in the presence of oxygen and reduced in the presence of a reducing agent; and

b) a chromocene compound.

5,543,377

OLEFIN POLYMERIZATION CATALYSTS AND METHODS OF OLEFIN POLYMERIZATION

Toshiyuki Tsutsui, and Ken Yoshitsugu, both of Waki-cho, Japan, assignors to Mitsui Petrochemical Industries Co., Ltd., Tokyo, Japan

Division of Ser. No. 287,799, Aug. 9, 1994. This application Jun. 1, 1995, Ser. No. 456,805

Claims priority, application Japan, Aug. 10, 1993, 5-198609; Aug. 10, 1993, 5-198610

Int. Cl.[6] C08F *4/649;10/00*

U.S. Cl. 502—125 **10 Claims**

1. An olefin polymerization catalyst comprising

(A) a transition metal compound of the group IVB of the periodic table containing a ligand having a cyclopentadienyl skeleton,

(B) an aluminoxane, and

(C) at least one kind of carbonyl-containing compound selected from ketoalcohol and β-diketone,

wherein, the component (B) is used in an amount of 10–5000 in terms of atomic ratio (Al/transition metal) of aluminum (Al) contained in the component (B) to transition metal contained in the component (A),

the component (C) is used in an amount, based on 1 mole of aluminum contained in the component (B), of 0.01–0.25 mole, and

the catalyst is prepared by a process comprising first contacting the components (B) and (C), and thereafter mixing the component (A) with the already contacted (B)–(C) mixture.

VOL 1189 NO 1 AUG 6 1996 UMI

5,543,378
CARBON NANOSTRUCTURES ENCAPSULATING PALLADIUM

Ying Wang, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 135,245, Oct. 13, 1993, abandoned.
This application Feb. 24, 1995, Ser. No. 393,964
Int. Cl.[6] A61K *33/24;33/44;* C01B *31/00;* B01J *21/18*
U.S. Cl. 502—174 10 Claims

5. A composition comprising a carbon nanotube having an internal cavity with a palladium crystallite encapsulated therein.

5,543,379
HYDROGENATION CATALYST, AND A METHOD FOR ITS PREPARATION AND USE, IN PARTICULAR FOR HYDROGENATION AND/OR HYDROGENOLYSIS OF CARBOHYDRATES AND POLYHYDRIC ALCOHOLS

Giuseppe Gubitosa, Novara, and Bruno Casale, Cameri, both of, Italy, assignors to Montecatini Technologie S.r.l., Italy

Division of Ser. No. 11,189, Jan. 29, 1993, Pat. No. 5,326,912.
This application Apr. 1, 1994, Ser. No. 221,810
Claims priority, application Italy, Jan. 31, 1992, TO92A0080
Int. Cl.[6] B01J *23/46;23/72*
U.S. Cl. 502—184 4 Claims

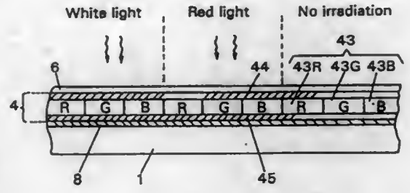
1. A method for preparing a catalyst for hydrogenolysis reactions of higher polyhydric alcohols, said method comprising the steps of:
(a) preparing an aqueous solution comprising a compound of ruthenium and a second metal compound selected from the group consisting of palladium, platinum and rhodium compounds;
(b) contacting the aqueous solution with an aqueous suspension of an activated carbon, and regulating the pH by adding an alkaline agent until a value of between 4.5 and 8 is obtained;
(c) heating to a temperature of 60° to 100° C. for a time sufficient to cause the formation of a solid comprising compounds of the metals deposited on the activated carbon;
(d) separating the solid;
(e) suspending the solid obtained from the separation in an alkaline solution and hydrogenating the suspension thus obtained with gaseous hydrogen at a temperature of between 60° and 100° C. for a time sufficient to give rise to an intermediate catalyst comprising the metals in their metallic state deposited on the activated carbon;
(f) adding to the suspension an aqueous solution comprising copper at a temperature lower than 50° C. and maintaining the suspension at this temperature, under agitation, for a time sufficient to give rise to depositing of the copper on the intermediate catalyst, thereby forming the catalyst; and
(g) recovering the catalyst, the concentration of the metals in the aqueous solution of step (a) and the copper solution of step (f) being such that the catalyst comprises:
(i) 0.5 to 5 weight % ruthenium;
(ii) 1 to 10 weight % of a metal selected from the group consisting of palladium, platinum and rhodium; and
(iii) 0.5 to 2.5 weight % copper, the weight % of copper being lower than the weight % of the metal in (ii).

5,543,380
Patent Not Issued For This Number

5,543,381
REWRITABLE RECORDING MEDIUM AND A METHOD OF RECORDING IN THE SAME

Yoshio Kishimoto, and Masaaki Suzuki, both of Hirakata, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 936,413, Aug. 27, 1992, Pat. No. 5,364,829. This application Apr. 4, 1994, Ser. No. 222,778
Claims priority, application Japan, Aug. 30, 1991, 3-219536; Aug. 30, 1991, 3-219537
Int. Cl.[6] B41M *5/34;5/40*
U.S. Cl. 503—201 14 Claims



1. A rewritable recording medium comprising an optical absorption layer and an optically selective absorption layer sequentially stacked on a substrate,
wherein the optically selective absorption layer includes a plurality of colored segments, the colored segments being able to transmit light corresponding to its color, and a reversible thermosensitive recording matrix in contact with the colored segments, the reversible thermosensitive recording matrix being formed so as to cover the colored segments and so as to come in contact with the optical absorption layer, and changing in light transmittance in a reversible manner by application of heat.

5,543,382
HEAT-SENSITIVE RECORDING PAPER

Kazuo Watanabe, Itami; Masatoshi Okuda, Ibaraki; Shigeo Aoyama, Toyonaka, and Yoshimasa Tanaka, Nichinan, all of, Japan, assignors to New OJI Paper Co., Ltd., Tokyo-to, Japan

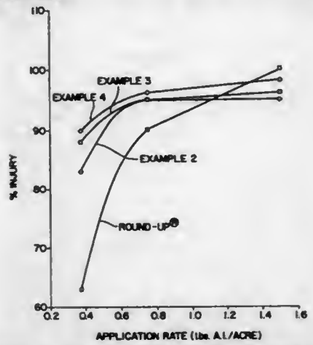
Filed Dec. 20, 1994, Ser. No. 359,646
Claims priority, application Japan, Dec. 27, 1993, 5-331211; Sep. 19, 1994, 6-223191
Int. Cl.[6] B41M *5/30;5/40*
U.S. Cl. 503—224 21 Claims

1. A heat-sensitive recording paper comprising:
(a) a support made of glassine paper having an opacity of up to 75% as determined according to JIS P 8138,
(b) a resin layer formed on one side or both sides of the support, and
(c) a heat-sensitive recording layer containing a leuco dye and a color developing material which develops a color on contact with the leuco dye,
the resin layer being formed by coating one side or both sides of the support with an organic solvent coating composition prepared by dissolving a resin in an organic solvent, followed by drying, and
the heat-sensitive recording layer being formed on the resin layer or on the side of the support not having the resin layer thereon.

5,543,383
HERBICIDAL COMPOSITIONS COMPRISING SOLUTIONS OF GLYPHOSATE AND POLYUREA AND/OR POLYURETHANE

Brian A. Parker, Nashua, N.H., and Longin V. Holejko, Arlington, Mass., assignors to Hampshire Chemical Corp., Lexington, Mass.

Filed Dec. 30, 1994, Ser. No. 368,204
Int. Cl.[6] A01N *25/02;25/30;57/04*
U.S. Cl. 504—116 17 Claims



1. A herbicidal composition, comprising a solution of a herbicidally effective amount of a member selected from the group consisting of N-phosphonomethylglycine, a herbicidally active derivative of N-phosphonomethylglycine, and mixtures of N-phosphonomethylglycine and a herbicidally active derivative of N-phosphonomethylglycine; an effective amount of an activating surfactant; and a hydrophilic polymer selected from the group consisting of polyurea-urethane, polyurea and polyurethane.

5,543,384
METHOD OF MAKING PESTICIDE STICKER-EXTENDER

Joseph T. Brennan, Blytheville, Ark., assignor to Terra International, Inc., Sioux City, Iowa

Division of Ser. No. 234,418, Apr. 28, 1994. This application May 11, 1995, Ser. No. 439,173
Int. Cl.[6] A01N *25/24*
U.S. Cl. 504—116 11 Claims

1. A method of making a sticker-extender for a pesticide which comprises the steps of mixing a first mixture and a second mixture together, the said first mixture comprising maleic anhydride, an acid and turpentine and the said second mixture comprising a butanol, MEA, DEA, TEA and Mono Isopropyl amine said first mixture being prepared by adding the acid to the anhydride and thereafter adding the turpentine, said first mixture comprising more than 50% of the total mixture.

5,543,385
WATER-DISPERSIBLE GLUFOSINATE GRANULES

Hans Röchling, Bad Soden am Taunus; Jean Kocur, Hofheim am Taunus, and Konrad Albrecht, Kelkheim/Taunus, of all, Germany, assignors to Hoechst Aktiengesellschaft, Germany

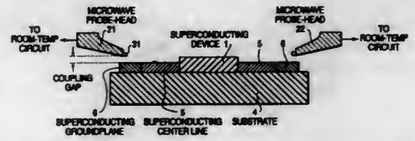
Division of Ser. No. 884,701, May 18, 1992, Pat. No. 5,364,832, which is a continuation of Ser. No. 565,666, Aug. 10, 1990, abandoned. This application Jun. 28, 1994, Ser. No. 266,986
Claims priority, application Germany, Aug. 14, 1989, 39 26 800.4
Int. Cl.[6] A01N *25/30;57/04;25/12*
U.S. Cl. 504—127 9 Claims

1. Water-dispersible granules comprising
a) 10 to 90% by weight of D, L or L-glufosinate-ammonium or mixtures of these compounds with diuron, linuron, monolinuron, aminotriazole, imazapyr, oxyfluorofen, simazine, diuron and simazine, or with the sulfonylureas Hoe 75032, DPX T 6376, DPX L 5300 or DPX M 6316,
b) 10 to 90% by weight of at least one solid wetting agent selected from the group consisting of alkanesulfonates, alkylnaphthalenesulfonates, (C_{14}–C_{19})-olefinsulfonates, alkyl polyglycol ether sulfonates, alkyl diglycol ether sulfates, alkylsulfosuccinic monoesters, fatty acid isethionates and fatty acid N-methyltaurides, or a mixture of at least one of the above solid wetting agents, and an ammonium salt, and
c) 0 to 50% by weight of customary formulation agents.

5,543,386
JOINT DEVICE INCLUDING SUPERCONDUCTIVE PROBE-HEADS FOR CAPACITIVE MICROWAVE COUPLING

Alp T. Findikoglu, College Park, Md., and Takao Nakamura, Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan, and University of Maryland, College Park, Md.

Filed Feb. 28, 1994, Ser. No. 202,569
Int. Cl.[6] H01B *12/06;* H01P *5/00*
U.S. Cl. 505—210 14 Claims



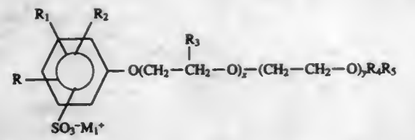
1. A joint device structure for capacitive microwave coupling of a superconducting device arranged on a substrate with room temperature circuitry, comprising:
a superconducting wave guide comprised of a respective oxide superconductor arranged on said substrate at one side of the superconducting device, the superconducting wave guide being used for launching a microwave into the superconducting device;
a pair of superconducting groundplanes comprised of a respective oxide superconductor arranged on said substrate at mutually opposite sides of an end of the superconducting wave guide with a respective spacing between the pair of superconducting groundplanes and the end of the superconducting wave guide; and
a microwave probe-head, connected to the room temperature circuitry, arranged a distance above the superconducting wave guide corresponding to a coupling gap, said microwave probe-head including probing pins corresponding to the superconducting wave guide and the pair of superconducting groundplanes.

5,543,387
SURFACTANT ADDITIVE FOR OILFIELD ACIDIZING

Anita R. Mokadam; Charles E. Strubelt; Dennis A. Williams, and Kenneth M. Webber, all of Houston, Tex., assignors to Nalco/Exxon Enery Chemicals, L.P, Sugarland, and Exxon Production Research Co., Houston, both of Tex.

Filed Feb. 13, 1995, Ser. No. 387,592
Int. Cl.[6] E21B *43/22;* C07C *149/30;143/46*
U.S. Cl. 507—135 17 Claims

1. In a method of acidizing a subterranean oil-bearing formation wherein an aqueous acid solution is injected into the formation, the improvement wherein the aqueous acid solution contains an effective amount of a surfactant to reduce sludge or emulsion formation resulting from the acid solution contacting formation oil, said surfactant having the following formula:



where R is a linear or branched alkyl group having from 3 to 40 carbon atoms;

R_1, R_2, and R_3 are independently H or C_{1-3} alkyl groups;

R_4 is a branched or linear C_{2-4} alkyl group;

R_5 is $—SO_3^-M_2^+$ or —OH;

x ranges from 0 to 10;

y ranges from 0 to 50;

M_1^+ and M_2^+ are independently a cation selected from ammonia, amines, ethanolamines, and a metal mono or di cation.

5,543,388

INTENSIFIED CORROSION INHIBITOR AND METHOD OF USE

Dennis A. Williams; Lee A. McDougall, both of Houston, and James R. Looney, Brady, all of Tex., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Filed Aug. 5, 1993, Ser. No. 103,064

Int. Cl.[6] F21B *43/27*

U.S. Cl. 507—269 **12 Claims**

1. A corrosion inhibitor formulation for use in aqueous acid solutions comprising:

(a) a nonaqueous solvent;

(b) from 10 to 50 wt % of an organic corrosion inhibitor dissolved in said solvent, said corrosion inhibitor being selected from the group consisting of acetylenic alcohol, quaternary ammonium compounds, and cinnamaldehyde; and

(c) from 0.5 to 10 wt % of iodine dissolved in the solvent.

5,543,389

COVALENT POLAR LIPID-PEPTIDE CONJUGATES FOR USE IN SALVES

Milton B. Yatvin, Portland, Oreg., and Michael H B Stowell, Pasadena, Calif., assignors to State of Oregon, Acting by and Through the Oregon State Board of Higher Education on Behalf of the Oregon Health Sciences University, a non profit organization, Portland, Oreg.

Continuation-in-part of Ser. No. 911,209, Jul. 9, 1992, Pat. No. 5,256,641, which is a continuation-in-part of Ser. No. 607,982, Nov. 1, 1990, Pat. No. 5,149,794. This application Oct. 26, 1993, Ser. No. 142,771

Int. Cl.[6] A61K *31/00;31/685*

U.S. Cl. 514—2 **36 Claims**

1. A composition of matter comprising an antiproliferative drug, a polar lipid carrier, two linker functional groups and a spacer, wherein the spacer has a first end and a second end and wherein the polar lipid is attached to the first end of the spacer through a first linker functional group and the antiproliferative drug is attached to the second end of the spacer through a second linker functional group.

5,543,390

COVALENT MICROPARTICLE-DRUG CONJUGATES FOR BIOLOGICAL TARGETING

Milton B. Yatvin, Portland, Oreg., assignor to State of Oregon, Acting by and Through the Oregon State Board of Higher Education, Acting for and on Behalf of the Oregon Health Sciences University, Portland, Oreg.

Continuation-in-part of Ser. No. 142,771, Oct. 26, 1993, which is a continuation-in-part of Ser. No. 911,209, Jul. 9, 1992, Pat. No. 5,256,641, which is a continuation-in-part of Ser. No. 607,982, Nov. 1, 1990, Pat. No. 5,149,794. This application May 19, 1994, Ser. No. 246,941

Int. Cl.[6] A01N *37/18*

U.S. Cl. 514—2 **15 Claims**

1. A composition of matter comprising a biologically-active compound that is an antimicrobial drug, a microparticle, and a cleavable linker moiety comprising two linker functional groups, wherein the cleavable linker moiety has a first end and a second end and wherein the microparticle is attached to the first end of the linker moiety through a first linker functional group and the biologically-active compound is attached to the second end of the linker moiety through a second linker functional group, and wherein the cleavable linker moiety is specifically cleaved inside a phagocytic mammalian cell infected with a microorganism.

5,543,391

COVALENT MICROPARTICLE-DRUG CONJUGATES FOR BIOLOGICAL TARGETING

Milton B. Yatvin, Portland, Oreg.; Michael H. B. Stowell, Pasadena, Calif.; Vincent S. Gallicchio, Lexington, Ky., and Michael J. Meredith, Lake Oswego, Oreg., assignors to State of Oregon, Acting by and Through the Oregon State Board of Higher Education, Acting for and on Behalf of the Oregon Health Sciences University, Portalnd, Oreg.

Division of Ser. No. 246,941, May 19, 1994, which is a continuation-in-part of Ser. No. 142,771, Oct. 26, 1993, which is a continuation-in-part of Ser. No. 911,209, Jul. 9, 1992, Pat. No. 5,256,641, which is a continuation-in-part of Ser. No. 607,982, Nov. 1, 1990, Pat. No. 5,149,794. This application May 16, 1995, Ser. No. 441,770

Int. Cl.[6] A01N *37/18;57/26*

U.S. Cl. 514—2 **19 Claims**

1. A composition of matter comprising a biologically-active compound that is an antimicrobial drug, a porous microparticle, and an organic coating material, wherein the biologically-active compound is impregnated within the porous microparticle, and said microparticle is coated with the organic coating moiety, and wherein the organic coating material comprises a compound that is specifically degraded inside a phagocytic mammalian cell infected with a microorganism to allow release of the biologically-active compound within the infected cell.

5,543,392

DIGESTIVE TRACT CELL ACTIVATING AGENT OF EGF AND LACTOFERRIN

Mamoru Tomita; Seiichi Shimamura, both of Kanagawa; Yasuo Fukuwatari, Kawasaki, and Ichizo Shinoda, Kanagawa, all of, Japan, assignors to Morinaga Milk Industry Co., Ltd., Tokyo, Japan

PCT No. PCT/JP93/00235, § 371 Date Apr. 3, 1995, § 102(e) Date Apr. 3, 1995, PCT Pub. No. WO94/03203, PCT Pub. Date Feb. 17, 1994

PCT Filed Feb. 25, 1993, Ser. No. 374,785

Claims priority, application Japan, Jul. 29, 1992, 4-202724

Int. Cl.[6] A61K *38/40;38/18;38/14*

U.S. Cl. 514—8 **9 Claims**

1. A digestive tract cells activating agent which contains an epidermal growth factor and a hydrolysate of lactoferrin.

5,543,393

CYCLOSPORIN CONTAINING POWDER COMPOSITION

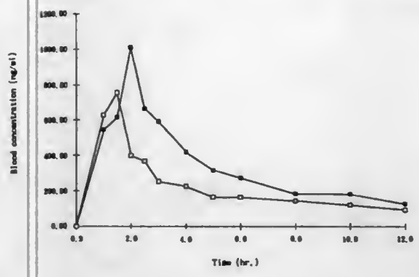
Jung W. Kim, Seoul; Hee J. Shin; Joon K. Park, both of Kyeonggi-do, and Kyeong B. Min, Seoul, all of, Rep. of Korea, assignors to Chong Kun Dang Corp., Seoul, Rep. of Korea

Filed Nov. 23, 1994, Ser. No. 347,137

Claims priority, application Rep. of Korea, Feb. 25, 1994, 94-3490

Int. Cl.[6] A61K *9/14;38/13;47/04*

U.S. Cl. 514—11 **12 Claims**



1. A cyclosporin-containing powder composition which comprises

(1) cyclosporin,

(2) a non-ionic hydrophilic surfactant and

(3) a porous water-insoluble carrier selected from the group consisting of micronized silicon dioxide and alkylated micronized silicon dioxide.

5,543,394

BONE MORPHOGENETIC PROTEIN 5(BMP-5) COMPOSITIONS

John M. Wozney, Hudson; Vicki A. Rosen, Brookline, and Elizabeth A. Wang, Carlisle, all of Mass., assignors to Genetics Institute, Inc., Cambridge, Mass.

Continuation of Ser. No. 995,565, Dec. 22, 1992, abandoned, which is a continuation of Ser. No. 588,227, Sep. 26, 1990, abandoned, which is a continuation-in-part of Ser. No. 437,409, Nov. 15, 1989, abandoned, Ser. No. 370,547, Jun. 23, 1989, Pat. No. 5,106,748, Ser. No. 347,559, May 4, 1989, abandoned, and Ser. No. 329,610, Mar. 28, 1989, abandoned, which is a continuation-in-part of Ser. No. 179,100, Apr. 8, 1988, Pat. No. 5,013,649, Ser. No. 179,101, Apr. 8, 1988, abandoned, and Ser. No. 179,197, Apr. 8, 1988, abandoned, said Ser. No. 179,100Ser. No. 179,101, and Ser. No. 179,197, , each is a continuation-in-part of Ser. No. 28,285, Mar. 20, 1987, abandoned, and Ser. No. 31,346, Mar. 26, 1987, Pat. No. 4,877,864, said Ser. No. 28,285and Ser. No. 31,346, , each is a continuation-in-part of Ser. No. 943,332, Dec. 17, 1986, abandoned, and Ser. No. 880,776, Jul. 1, 1986, abandoned. This application Sep. 7, 1993, Ser. No. 116,425

Int. Cl.[6] C07K *14/51;* A61K *38/18;9/18*

U.S. Cl. 514—12 **20 Claims**

1. A composition comprising an isolated and purified protein having the amino acid sequence from amino acid #317 (Ala) to amino acid #454 (His) as shown in Table III said protein further characterized by the ability to induce the formation of cartilage and bone.

3. A composition comprising an isolated and purified protein produced by the steps of

(a) culturing a cell transformed with a vector comprising the DNA sequence of Table III from nucleotide #1665 to #2060; and

(b) recovering from the resulting culture medium said protein having the amino acid sequence from amino acid #323 (Asn) to amino acid #454 (His) as shown in Table III said protein further characterized by the ability to induce the formation of cartilage and bone.

5,543,395

Patent Not Issued For This Number

5,543,396

PROLINE PHOSPHONATE DERIVATIVES

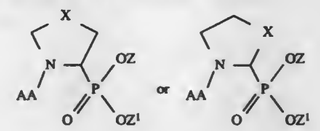
James C. Powers, Atlanta, Ga.; Bogdan Boduszek, Wroclaw, Poland, and Jozef Oleksyszyn, Arlington, Mass., assignors to Georgia Tech Research Corp., Atlanta, Ga.

Filed Apr. 28, 1994, Ser. No. 234,181

Int. Cl.[6] A61K *38/00;31/67;* A01N *57/00;* C07F *5/02*

U.S. Cl. 514—19 **13 Claims**

1. A compound having the following structures:



or a pharmaceutically acceptable salt thereof, wherein

Z and Z^1 are the same or different and are selected from the group consisting of C_{1-6} perfluoralkyl, phenyl, phenyl substituted with J, phenyl disubstituted with J, phenyl trisubstituted with J, and pentafluorophenyl;

J is selected from the group consisting of halogen C_{1-6} alkyl, C_{1-6} perfluoroalkyl, C_{1-6} alkoxy, NO_2, CN, OH, CO_2H, amino C_{1-6} alkylamino, C_{2-12} dialkylamino, C_{1-6} acyl, and C_{1-6} alkoxy—CO—, and C_{1-6} alkyl—S—;

X is selected from the group consisting of

(a) a single bond,

(b) $—CH_2—$,

(c) $—CH_2CH_2—$,

(d) $—CH_2CH_2CH_2—$,

(e) $—CH_2CH_2CH_2CH_2—$,

(f) —Y—

(g) $—CH_2—Y—$,

(h) $—Y—CH_2—$, and

(i) —H, H—,

wherein Y is O or S; and

AA is attached through the carboxylic end and is selected from the group consisting of

(a) the structure $NH_2—CHR—CO—$

where R is selected from the group consisting of C_{1-6} alkyl and C_{1-6} fluorinated alkyl,

(b) a side chain blocked or unblocked alpha amino acid residue with the L, D or DL configuration at the α-carbon atom selected from the group consisting of alanine, valine,

leucine, isoleucine, proline, methionine, methionine sulfoxide, phenylalanine, tryptophan, serine, threonine, cysteine, asparagine, glutamine, aspartic acid, glutamic acid, lysine, arginine, histidine, phenylglycine, norleucine, norvaline, alpha-aminobutyric acid, citrulline, hydroxyproline, ornithine, homoarginine, O-methylserine, O-ethylserine, S-methylcysteine, S-ethylcysteine, S-benzylcysteine, [NH_2—$CH(CH_2CHEt_2)$—$COOH$]NH_2—$CH(CH_2CHEt_2)$—CO—, alpha-aminoheptanoic acid, [NH_2—$CH(CH_2$-1-napthyl)—$COOH$, NH_2—$CH(CH_2$-2-napthyl)—$COOH$, NH_2—$CH(CH_2$-cyclohexyl)—$COOH$, NH_2—$CH(CH_2$-cyclopentyl)—$COOH$, NH_2—$CH(CH_2$-cyclobutyl) —$COOH$, NH_2—$CH(CH_2$-cyclopropyl)—$COOH$,]NH_2—$CH(CH_2$-1-napthyl)—CO—, NH_2—$CH(CH_2$-2-napthyl)—CO—, NH_2—$CH(CH_2$-cyclohexyl)—CO—, NH_2—$CH(CH_2$-cyclopentyl)—CO—, NH_2—$CH(CH_2$-cyclobutyl)—CO—, NH_2—$CH(CH_2$-cyclopropyl)—CO—5,5,5-trifluoroleucine, and hexafluoroleucine,

(c) an amino acid residue selected from the group consisting of beta-alanine, glycine, epsilon-aminocaproic acid, and sarcosine, and

(d) $C_6H_5CH_2OCO$—.

5,543,397

NEW N-ACYL DIPEPTIDES AND THEIR USE

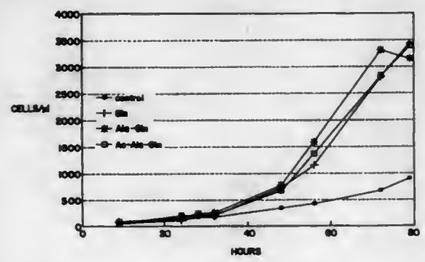
Karlheinz Drauz, Freigericht; Günter Knaup, Bruchköbel, and Ulrich Groeger, Aschaffenburg, all of, Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 727,903, Jul. 10, 1991, abandoned. This application Jun. 7, 1994, Ser. No. 255,888

Claims priority, application Germany, Jul. 12, 1990, 40 22 267.5

Int. Cl.[6] C07C *103/52*

U.S. Cl. 514—19 **3 Claims**



1. A composition suitable for use as a glutamine source in a culture medium, comprising an N-acyl dipeptide of the formula:

$$R^2—NH—CHR^1—CO—AS \qquad (I)$$

in which AS stands for the residue obtained by removing a hydrogen from the nitrogen atom of an amino acid selected from the group consisting of valine, leucine, isoleucine, tryosine, tryptophan, glutamine and cysteine, when R^1 signifies the side chain of a natural amino acid and R^2 a formyl- or acetyl group or an acyl group of an aliphatic mono- or dicarboxylic acid containing 3 to 6 carbon atoms, and their physiologically compatible carboxylic-acid salts as a source for said amino acid.

5,543,398

PARA-C_5 ALKYL-SUBSTITUTED ETHOXYCYCLOHEXANES, ORGANOLEPTIC USES THEREOF AND PROCESSES FOR PREPARING SAME

Michael G. Monteleone, Hazlet; Richard A. Weiss, Pine Brook; Marc D. Evans, South Orange, and Marie R. Hanna, Keyport, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Aug. 31, 1995, Ser. No. 522,122

Int. Cl.[6] A61K *7/46*

U.S. Cl. 512—23 **13 Claims**

1. At least one para-C_5 alkyl-substituted ethoxycyclohexane defined according to the structure:



wherein R_1, R_2 and R_3 represent the same or different methyl or hydrogen; and wherein R_4 represents hydrogen, methyl or ethyl with the proviso that the sum of the number of carbon atoms in R_1, R_2, R_3 and R_4 is 2.

6. A perfumed article comprising a perfumed article base and intimately admixed therewith an aroma imparting, augmenting or enhancing quantity of at least one compound defined according to claim 1.

5,543,399

CYSTIC FIBROSIS TRANSMEMBRANE CONDUCTANCE REGULATOR (CFTR) PROTEIN

John R. Riordan, Toronto; Christine E. Bear, North York; Mohabir Ramjeesingh, Mississauga, and Canhui Li, Toronto, all of, Canada, assignors to HSC Research & Development Limited Partnership, Canada

Continuation-in-part of Ser. No. 123,864, Sep. 20, 1993, which is a continuation of Ser. No. 401,609, Aug. 31, 1989, abandoned, which is a continuation-in-part of Ser. No. 399,945, Aug. 24, 1989, abandoned, which is a continuation-in-part of Ser. No. 396,894, Aug. 22, 1989, abandoned. This application Oct. 13, 1994, Ser. No. 298,935

Claims priority, application Canada, Feb. 20, 1992, 2061579

Int. Cl.[6] A61K *38/17;9/127;* **C07K** *1/36;14/435*

U.S. Cl. 514—21 **15 Claims**



1. A substantially homogeneous protein having cystic fibrosis transmembrane conductance regulator activity and characterised by migration as a single band on both one- and two-dimensional gel electrophoresis.

5,543,400

ERYTHROMYCIN COMPOUNDS

Constantin Agouridas, Nogent Sur Marne; Alain Bonnefoy, Les Lilas; Jean-François Chantot, Gressy en France; Alexis Denis, and Odile Le Martret, both of Paris, all of, France, assignors to Roussel Uclaf, France

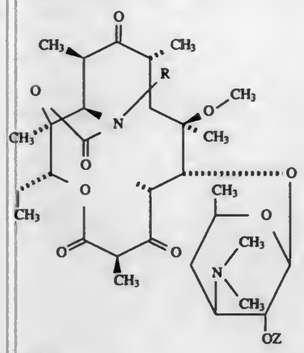
Filed Nov. 1, 1993, Ser. No. 146,695

Claims priority, application France, Nov. 5, 1992, 92 13321

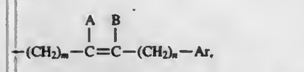
Int. Cl.[6] A61K *31/70;* **C07H** *17/08*

U.S. Cl. 514—29 **22 Claims**

1. A compound of the formula



wherein R is



m and n are individually integers from 0 to 6, A and B are individually a member selected from the group consisting of hydrogen, halogen and alkyl of 1 to 8 carbon atoms, the double bond geometry being E or Z or E+Z or A and B form a third bond between the carbon atoms to which they are attached, Ar is selected from the group consisting of a) phenyl and naphthyl optionally substituted with a member of the group consisting of —CF_3, phenyl, free carboxy, alkoxycarbonyl, carboxy salified with a non-toxic, pharmaceutically acceptable base, amidified carboxy, —OH, halogen, —NO_2, —CN, alkyl, alkenyl, alkynyl, alkoxy, alkenyloxy, alkynyloxy, alkylthio, alkenylthio and alkynylthio of up to 12 carbon atoms, N-alkyl, N-alkenyl and N-alkynyl of up to 12 carbon atoms, cycloalkyl of 3 to 12 carbon atoms and



all aliphatic groups optionally substituted with at least one halogen, R_1 and R_2 are individually selected from the group consisting of hydrogen, alkyl of 1 to 12 carbon atoms, phenyl, naphthyl, phenoxy, naphthyloxy, phenylthio, naphthylthio, thienyl, furyl, pyrrolyl, thiazolyl, pyridyl, pyrimidinyl, pyridazinyl, pyrazinyl, indolyl, benzofuryl, benythienyl and quinolinyl, all optionally substituted as above and b) heterocyclic aryl selected from the group consisting of thienyl, furyl, pyrrolyl, thiazolyl, pyridyl, pyrimidinyl, pyridazinyl, pyrazinyl, indolyl, benzofuryl, benythienyl and quinolinyl, Z is hydrogen or acyl of an organic carboxylic acid of 1 to 18 carbon atoms, or its non-toxic, pharmaceutically acceptable acid addition salt.

13. A method of combatting bacterial infections in warm-blooded animals comprising administering to said warm-blooded animals an antibiotically effective amount of a compound of claim 1.

5,543,401

UDPG AS A RESCUE AGENT IN CANCER THERAPY AFTER THE ADMINISTRATION OF ANTIPYRIMIDINE OR RELATED ANTI-TUMOR AGENTS WITH OR WITHOUT BAU

Robert L. Stolfi, Harrison, N.Y., assignor to Boehringer Mannheim Italia SpA, Monza, Italy

Division of Ser. No. 178,360, Jan. 6, 1994, which is a continuation of Ser. No. 599,927, Oct. 19, 1990, abandoned. This application Dec. 9, 1994, Ser. No. 354,861

Int. Cl.[6] A61K *31/70;31/695;31/505*

U.S. Cl. 514—50 **24 Claims**

1. A method of rescuing tumor-bearing patients to whom an anti-tumor effective amount of a pyrimidine inhibitor has been administered, which comprises:

administering to the tumor bearing patient, after the administration of the anti-tumor pyrimidine inhibitor, a rescue effective amount of UDPG.

5,543,402

[3-(C_{16}-C_{18})-ALKANESULPHINYL AND SULPHONYL-2-METHOXY-METHYLPROPYL]-(2-TRIMETHYLAMMONIOETHYL) PHOSPHATES, PROCESSES FOR THE PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Elmar Bosies, Weinheim; Dieter Herrmann, Heidelberg, and Wulf Pahlke, Bensheim, all of, Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

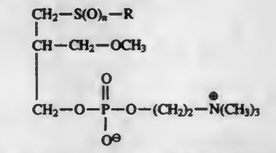
Continuation of Ser. No. 925,407, Aug. 10, 1992, abandoned, which is a continuation of Ser. No. 758,518, Sep. 6, 1991, abandoned, which is a continuation of Ser. No. 486,658, Mar. 1, 1990, abandoned. This application Jul. 23, 1993, Ser. No. 95,478

Claims priority, application Germany, Mar. 4, 1989, 39 06 952.4

Int. Cl.[6] A61K *31/66;* **C07F** *9/10*

U.S. Cl. 514—114 **12 Claims**

1. A compound of the formula



(I)

in which n is 1 or 2 and R is a straight-chained, saturated alkyl group containing 16 to 18 carbon atoms, steroisomers thereof, and pharmacologically acceptable salts thereof.

5,543,403

SULFATED GLYCOSAMINOGLYCANOID DERIVATIVES OF THE HEPARIN AND HEPARAN SULFATE TYPE

Maurice Petitou, Paris, France, and Constant A. A. Van Boeckel, LX Oss, Netherlands, assignors to AKZO Nobel NV, Arnhem, Netherlands, and Sanofi S.A., Paris, France

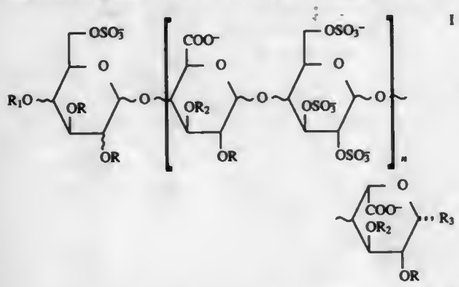
Division of Ser. No. 919,684, Jul. 27, 1992, Pat. No. 5,378,829, which is a continuation-in-part of Ser. No. 795,595, Nov. 21, 1991, abandoned, which is a continuation-in-part of Ser. No. 690,035, Apr. 23, 1991, abandoned. This application Oct. 19, 1994, Ser. No. 325,841

Claims priority, application European Pat. Off., Aug. 23, 1990, 90201006

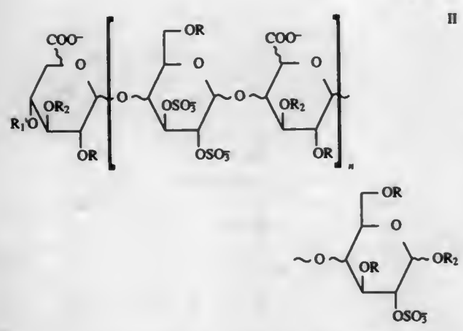
Int. Cl.[6] A61K *31/715;31/725;* **C08B** *37/10;* **C07H** *5/10*

U.S. Cl. 514—54 **3 Claims**

1. A method of treatment of patients in need of a medicament having antithrombotic activity or inhibiting smooth muscle cell proliferation, comprising administering therapeutically sufficient amounts of a sulfated compound derived from a glycosaminoglycan comprising a saccharide unit having the formula I or II

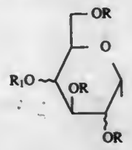


I



II

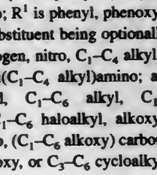
in which the twitched lines denote an α or β bond, each of the groups R are independently selected from the group consisting of alkyl and sulfate; n is 1 or 2; R_1 is selected from the group consisting of alkyl, aryl and aralkyl, and R_1**40** has the same meaning as R, or is aryl, aralkyl or



wherein R and R_1 have the previously given meanings;

R_2 is alkyl;

R_3 is alkoxy or



wherein the twitched line, R and R_2 have the previously given meanings, and the charged moieties are compensated by counterions.

5,543,404

PESTICIDAL PHENYLHYDRAZINEPHOSPHATES

Mark A. Dekeyser, Waterloo, Canada, and Paul T. McDonald, Middlebury, Conn., assignors to Uniroyal Chemical Company, Inc, Middlebury, Conn., and Uniroyal Chemical Ltd/Ltee, Elmira, Canada

Filed Jul. 5, 1995, Ser. No. 498,556

Int. Cl.[6] A01N *57/30;* **C07C** *245/02;243/10*

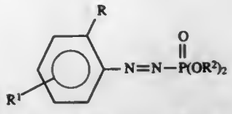
U.S. Cl. 514—118 **20 Claims**

1. A compound of the formula:



(I)

or



(II)

wherein R is C_1–C_4 alkoxy, C_1–C_4 alkyl, hydrogen, halogen, or C_1–C_4 alkylthio; R^1 is phenyl, phenoxy, or benzyl, the phenyl ring of each substituent being optionally substituted with one or more of halogen, nitro, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkyl or di(C_1–C_4 alkyl)amino; and R^2 is branched or straight-chained, C_1–C_6 alkyl, C_1–C_6 alkoxy, C_3–C_6 cycloalkoxy, C_1–C_6 haloalkyl, alkoxyalkyl, C_1–C_6 alkenyl, C_1–C_6 alkylthio, (C_1–C_6 alkoxy) carbonyl, C_1–C_6 alkylamino, C_1–C_6 haloalkoxy, or C_3–C_6 cycloalkyl.

5,543,405

COMPOSITION AND METHOD FOR WEIGHT REDUCTION AND LONG TERM MANAGEMENT OF OBESITY

Wendy J. Keown, 8939 N. Camden Dr., Elk Grove, Calif. 95624; Betty J. Ford, and Sandra L. Stoddard, both of 1250 Howe Ave., Sacramento, Calif. 95825

Continuation of Ser. No. 142,496, Oct. 22, 1993, abandoned. This application Oct. 20, 1994, Ser. No. 326,750

Int. Cl.[6] A61K *31/555;31/62;31/605;31/60*

U.S. Cl. 514—188 **14 Claims**

1. A weight reduction composition, comprising from 25 to 75 mg. of ephedrine; and

from 100 to 200 mcg. of a cation or chelate of chromium.

5,543,406

INHIBITORS OF 5-ALPHA-TESTOSTERONE REDUCTASE

Robert C. Andrews, Durham; Cynthia M. Cribbs, Raleigh; Stephen V. Frye, Durham; Curt D. Haffner, Cary, and Patrick R. Maloney, Durham, all of N.C., assignors to Glaxo Wellcome, Inc., Research Triangle Park, N.C.

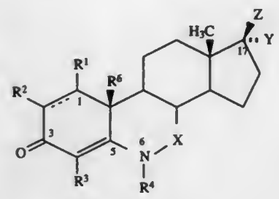
PCT No. PCT/US92/11109, § 371 Date Aug. 15, 1994, § 102(e) Date Aug. 15, 1994, PCT Pub. No. WO/9313124, PCT Pub. Date Jul. 8, 1993

Continuation-in-part of Ser. No. 31,381, Dec. 11, 1992, abandoned, which is a continuation-in-part of Ser. No. 930,101, Aug. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 905,262, Jun. 26, 1992, abandoned, which is a continuation-in-part of Ser. No. 812,257, Dec. 20, 1991, abandoned. This PCT application Dec. 18, 1992, Ser. No. 244,875

Int. Cl.[6] A61K *31/40;31/435;31/55*

U.S. Cl. 514—213 **12 Claims**

1. A pharmaceutical formulation comprising a compound of formula (1):



(I)

wherein

R^1 and R^2 are,

i) independently hydrogen or lower alkyl and the bond between the carbons bearing R^1 and R^2 is a single or a double bond, or

ii) taken together are a —CH_2— group to form a cyclopropane ring, and the bond between the carbons bearing R^1 and R^2 is a single bond;

R^3 is hydrogen, -Alk^1-H optionally substituted with one or more halogen atoms, lower cycloalkyl, lower cycloalkyl-lower alkyl, halogen,

-$(Alk^1)_n$-CO_2H,

-$(Alk^1)_n$-CO_2R^7, -$(Alk^1)_n$-Ar^1, -$(Alk^1)_n$-$CONR^8R^9$,

-$(Alk^1)_n$-NR^8R^9,

-$(Alk^1)_n$-$S(O)_rR^7$, -$(Alk^1)_n$-CN, -(Alk^1)-OH or

-$(Alk^1)_n$-OR^7; wherein

Alk^1 is lower alkylene, lower alkenylene or lower alkynylene;

n is 0 or 1;

r is 0, 1 or 2;

R^7 is -Alk^1-H, -$(Alk^1)_n$-Ar^1 or lower cycloalkyl;

R^8 and R^9 are independently hydrogen, -Alk^1-H or lower cycloalkyl;

Ar^1 is an aromatic group of 6 to 14 carbons;

R^4 is hydrogen, -Alk^1-H, lower cycloalkyl, lower cycloalkyl-lower alkyl, -$(Alk^1)_n$-$S(O)_rR^7$, -$(Alk^1)_n$-phthalimidyl, -(Alk^1)-CO_2H, -(Alk^1)-CO_2R^7, -$(Alk^1)_n$-Ar^1, -$(Alk^1)_n$-$CONR^8R^9$, -$(Alk^1)_n$-NR^8R^9, -$(Alk^1)_n$-OH or -$(Alk^1)_n$-OR^7;

X is,



wherein

R^{10}, R^{11}, R^{12} and R^{13} are independently hydrogen or lower alkyl, p and q are independently either 0 or 1;

Y is hydrogen;

Z is -$(Alk^2)_n$-COR^5, -$(Alk^2)_n$-CO_2R^5, -$(Alk^2)_n$-CO-thiopyridinyl or -$(Alk^2)_n$-$CONR^{14}R^{15}$, wherein

Alk^2 is (C_{1-2}) alkylene, (C_{2-12}) alkenylene or (C_{2-12}) alkynylene;

R^5 is hydrogen, -Alk^1-H, lower cycloalkyl or adamantyl;

R^{14} and R^{15} are,

a) independently, hydrogen, -Alk^2-H, lower cycloalkyl, lower alkoxy, adamantyl, -Ar^1, benzyl, diphenylmethyl, triphenylmethyl or -$(Alk^1)_n$-norbornyl; or

b) carbon atoms taken together with the linking nitrogen to form a 4 to 8 atom heterocyclic group,



optionally substituted with one or more lower alkyl groups, wherein Het represents —O—, —CH_2—, —S(O)$_r$—, —NH— or -N(-Alk^1-H);

R^6 is hydrogen or methyl;

or a pharmaceutically acceptable salt thereof; in a pharmaceutically acceptable carrier therefor.

5,543,407

PREPARATION AND APPLICATION OF SCOPOLAMINE AND CHLORPROMAZINE AS A DRUG-WITHDRAWAL AGENT

Yang Guodong, Ningbo, China, assignor to Ningbo Institute of Microcirculation and Henbane, ZheJiang Province, China

Filed Aug. 26, 1993, Ser. No. 112,417

Claims priority, application China, Sep. 30, 1992, 92111274.2

Int. Cl.[6] A61K *31/54;31/40;31/44*

U.S. Cl. 514—226.2 **17 Claims**

1. A drug-withdrawal agent, comprising effective therapeutic amounts of scopolamine hydrobromide at about 0.5–4.5 mg/ml and chlorpromazine hydrochloride at about 6.25–37.5 mg/ml for treatment of opiate withdrawal.

5,543,408

CRYSTALLINE ANHYDROUS MYCOPHENOLATE MOFETIL AND INTRAVENOUS FORMULATION THEREOF

Roger C. Fu, Saratoga; De-Mei Leung, Los Altos; Jeffrey S. Fleitman, Sunnyvale, all of Calif.; Michele C. Rizzolio, Durham, N.C., and Andrew R. Miksztal, Menlo Park, Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 121,841, Sep. 15, 1993, abandoned. This application Dec. 5, 1994, Ser. No. 349,236

Int. Cl.[6] A61K *31/535;* **C07D** *413/12*

U.S. Cl. 514—233.5 **12 Claims**

1. A crystalline anhydrous salt consisting essentially of mycophenolate mofetil complexed with an anion selected from the group consisting of chloride, sulfate, phosphate and acetate.

5,543,409

INDANE DERIVATIVES FOR TREATING ENDOTOXIN SHOCK AND/OR NEPHRITIS

Akihiko Ishida, Urawa; Koichi Homma, Tokyo-to; Michihisa Yato, Urawa; Shinsuke Nishiyama, and Fumikazu Okumura, both of Ohmiya, all of, Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

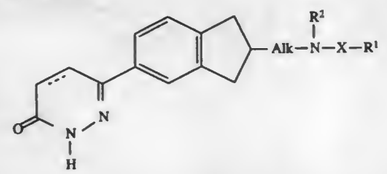
Division of Ser. No. 365,289, Dec. 28, 1994. This application May 23, 1995, Ser. No. 445,202

Claims priority, application Japan, Dec. 28, 1993, 5-333967

Int. Cl.[6] A61K *31/50*

U.S. Cl. 514—247 19 Claims

1. A method for prophylaxis or treating endotoxin shock and/or nephritis in a patient in need thereof, which comprises administering to said patient a therapeutically effective amount of a compound of the formula:



(I)

wherein R^1 represents a substituted or unsubstituted aryl group, a lower alkyl group, a cycloalkyl group, a halogeno-lower alkyl group, a lower alkenyl group, a phenyl-substituted lower alkenyl group, a substituted or unsubstituted monocyclic or bicyclic aromatic heterocyclic group having a nitrogen atom, oxygen atom or sulfur atom as a hetero atom, a lower alkyl group which is substituted by a substituted or unsubstituted monocyclic or bicyclic aromatic heterocyclic group having a nitrogen atom, oxygen atom or sulfur atom as a hetero atom, a substituted or unsubstituted lower alkoxy group, phenoxy group, a lower alkylamino group, a lower alkenylamino group, phenylamino group or a lower alkenyloxy group; R^2 represents a hydrogen atom or a lower alkyl group; X represents a carbonyl group or a thiocarbonyl group; Alk represents a single bonding arm or a lower alkylene group; and the dotted line represents presence or absence of a double bond, or a pharmaceutically acceptable salt thereof.

5,543,410

PHARMACOLOGICAL USE OF PHTHALOYLHYDRAZIDE DERIVATIVES; COMBINATION AND APPLICATION THEREOF

Leonid Minin, and Slava Saizev, both of Geneve, Switzerland, assignors to L.I.M.A.D. Limited, Douglas, Isle of Man

Continuation of Ser. No. 198,888, Feb. 18, 1994, abandoned. This application Oct. 23, 1995, Ser. No. 551,886

Claims priority, application Switzerland, Feb. 19, 1993, 530/93

Int. Cl.[6] A61K *31/50*

U.S. Cl. 514—248 10 Claims

1. A method for treating disorders selected from the group consisting of ulcerative colitis, Crohn's disease, diffuse sclerosis, diarrhea, proctitis, hemorrhoids, anal fissures, dyspepsia, intestinal infection and proctosigmoiditis, in mammals comprising the steps of:

initially parenterally administering a dosage of a drug being 5-aminophthaloylhydrazide or a pharmaceutically acceptable salt of the drug or a mixture of the drug and the salt, at a dosage of 5 to 50 mg/kg according to kg of body weight, and at an initial low frequency of administration; and

thereafter parenterally administering the drug, salt or mixture of the drug and salt, at the dosage and at a higher frequency of administration.

5,543,411

HYDROXYLATED METABOLITES AND DERIVATIVES OF DOXAZOSIN AS ANTI-ATHEROSCLEROSIS AGENTS

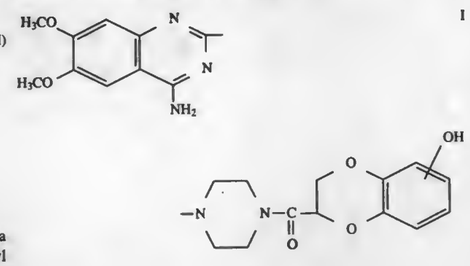
Archie C. Swindell, Groton, and Samuel S. Wong, Newtown, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 116,431, Sep. 3, 1993, abandoned, which is a continuation of Ser. No. 861,714, Apr. 1, 1992, abandoned. This application May 8, 1995, Ser. No. 436,787

Int. Cl.[6] A61K *31/495;31/50*

U.S. Cl. 514—254 6 Claims

1. A method of suppressing lipid deposition or fibrosis in the development of atherosclerotic lesions, or of reducing atherosclerotic lesions in a mammal having atherosclerosis, comprising administering to said mammal an atherosclerotic lesion reducing or fibrosis suppressing or lipid deposition suppressing effective amount of a compound having the formula



I

or a pharmaceutically acceptable acid addition salt thereof.

5,543,412

HEPATITIS TREATMENT WITH CARBOSTYRIL COMPOUNDS

Satoru Nakai; Koutoku Aihara, both of Tokushima-ken; Hitomi Mori, Tokushima; Michiaki Tominaga, Tokushima-ken; Masakazu Adachi, Takasaki; Hiroyuki Ichikawa, Tokushima; Seiji Akamatsu, Naruto, and Fumio Saito, Takasaki, all of, Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

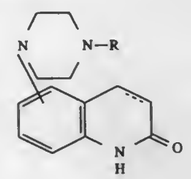
Division of Ser. No. 989,028, Apr. 30, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 469,893

Claims priority, application Japan, Jul. 3, 1991, 3-162587; Feb. 20, 1992, 4-33469; Mar. 3, 1992, 4-45178; Mar. 25, 1992, 4-100585

Int. Cl.[6] A61K *31/495*

U.S. Cl. 514—255 1 Claim

1. A method for treatment of hepatitis which comprises administering to a host afflicted with hepatitis an anti-hepatitis effective amount of at least one carbostyril derivative represented by general formula (1) or a salt thereof



wherein R is a benzoyl group which may optionally be substituted with a lower alkoxy group on the phenyl ring and the carbon-carbon bond in the 3 and 4 positions of the carbostyril skeleton is a single or a double bond.

5,543,413

HETEROCYCLIC THIOAMIDES AND RELATED ANALOGS AS ANTIVIRAL AGENTS WITH A UNIQUE MODE OF ACTION

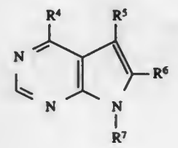
Leroy B. Townsend; John C. Drach, both of Ann Arbor, Mich., and Thomas E. Renau, Dana Point, Calif., assignors to Regents of the University of Michigan, Ann Arbor, Mich.

Continuation of Ser. No. 201,695, Feb. 25, 1994, abandoned. This application Dec. 15, 1994, Ser. No. 357,762

Int. Cl.[6] C07D *487/04;* A61K *31/52*

U.S. Cl. 514—258 31 Claims

1. A compound of the following formula:



wherein

R^4 is $-NH_2$ or $-NHCH_3$;

R^5 is $-CN$, $-CSNH_2$ or $-CSeNH_2$;

R^6 is $-H$ or $-NH_2$; and

R^7 is selected from the group consisting of

$-CH_2OCH_2CH_3$;

$-CH_2O(CH_2)_2OCH_3$;

$-CH_2OCH_2C_6H_5$;

$-CH_2C_6H_5$;

$-CH_2C_6H_4$-4-CH_3;

$-CH_2C_6H_4$-3-CH_3;

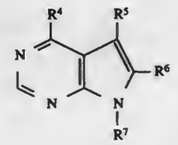
$-CH_2C_6H_4$-2-CH_3;

$-CH_2C_6H_4$-4-$C(CH_3)_3$; and

$-CH_2C_6H_4$-4-OCH_3;

with the proviso that if R^5 is $-CN$ and R^6 is $-H$ then R^4 is $-NH_2$ and R^7 is $-CH_2C_6H_4$-2-CH_3; and pharmaceutically acceptable salts thereof.

30. A method for treating an HCMV or HSV-1 viral infection in an animal patient comprising administering a therapeutically effective amount of one or more compounds of the following formula:



wherein

R^4 is $-NH_2$ or $-NHCH_3$;

R^5 is $-CN$, $-CSNH_2$, or $-CSeNH_2$;

R^6 is $-H$ or $-NH_2$; and

R^7 is selected from the group consisting of

$-CH_2OCH_2CH_3$;

$-CH_2O(CH_2)_2OCH_3$;

$-CH_2OCH_2C_6H_5$;

$-CH_2C_6H_5$;

$-CH_2C_6H_4$-4-CH_3;

$-CH_2C_6H_4$-3-CH_3;

$-CH_2C_6H_4$-2-CH_3;

$-CH_2C_6H_4$-4-$C(CH_3)_3$; and

$-CH_2C_6H_4$-4-OCH_3;

with the proviso that if R^5 is $-CN$ and R^6 is $-H$ then R^4 is $-NH_2$ and R^7 is $-CH_2C_6H_4$-2-CH_3.

5,543,414

ACHIRAL AMINO ACID ACYL ESTERS OF GANCICLOVIR AND ITS DERIVATIVES

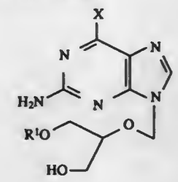
John J. Nestor, Cupertino; Scott W. Womble, Fremont, and Hans Maag, Menlo Park, all of Calif., assignors to Syntex (USA) Inc., Palo Alto, Calif.

Filed Jul. 28, 1994, Ser. No. 282,142

Int. Cl.[6] A61K *31/52;* C07D *473/32;473/18*

U.S. Cl. 514—262 25 Claims

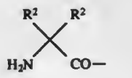
1. A compound of the formula



wherein:

X is hydrogen, chloro, amino or hydroxy; and

R^1 has the formula

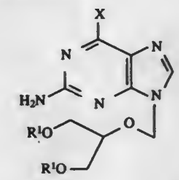


wherein:

each R^2 is alkyl with 2 to 6 carbon atoms, cycloalkyl with 3 to 5 carbon atoms, or benzyl; or the two R^2 group linked together form a polymethylene group with 3 to 9 carbon atoms;

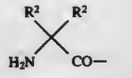
or a pharmaceutically acceptable salt thereof.

2. A compound of the formula



wherein:

R^1 has the formula



wherein:

each R^2 is alkyl with 2 to 6 carbon atoms, cycloalkyl with 3 to 5 carbon atoms, or benzyl; or the two R^2 group linked together form a polymethylene group with 3 to 9 carbon atoms;

or a salt thereof.

5,543,415

ANTIDEPRESSANTS

Fumio Suzuki, Mishima; Junichi Shimada, Sunto-gun; Akio Ishii, Sunto-gun; Joji Nakamura, Sunto-gun; Shunji Ichikawa, Tagata-gun; Shigeto Kitamura, Machida, and Nobuaki Koike, Sunto-gun, all of, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

PCT No. PCT/JP93/00931, § 371 Date Feb. 25, 1994, § 102(e) Date Feb. 25, 1994, PCT Pub. No. WO94/01114, PCT Pub. Date Jan. 20, 1994

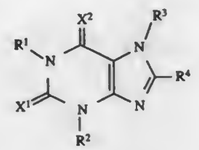
PCT Filed Jul. 7, 1993, Ser. No. 199,142

Claims priority, application Japan, Jul. 8, 1992, 4-181025

Int. Cl.[6] A61K *31/52;31/505*

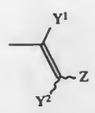
U.S. Cl. 514—263 **2 Claims**

1. A method of treating depression which comprises administering to a patient suffering from depression an effective amount of a xanthine derivative of the following Formula (I):

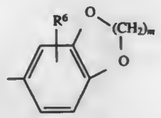


(I)

in which R^1, R^2 and R^3 independently represent hydrogen, lower alkyl, lower alkenyl or lower alkynyl; R^4 represents cycloalkyl, $-(CH_2)_n-R^5$ (in which R^5 represents substituted or unsubstituted aryl or a substituted or unsubstituted heterocyclic group; and n is an integer of 0 to 4), or



(in which Y^1 and Y^2 independently represent hydrogen, halogen or lower alkyl; and Z represents substituted or unsubstituted aryl,



(in which R^6 represents hydrogen, hydroxy, lower alkyl, lower alkoxy, halogen, nitro or amino; and m represents an integer of 1 to 3), or a substituted or unsubstituted heterocyclic group); and X^1 and X^2 independently represent O or S.

5,543,416

CYANOISOXAZOLES

Peter Münster, Neulussheim; Klaus Ditrich, Gönnheim; Gerhard Hamprecht, Weinheim; Matthias Gerber, Limburgerhof; Karl-Otto Westphalen, Speyer; Helmut Walter, Obrigheim, and Rudolf Karl, Mutterstadt, all of, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

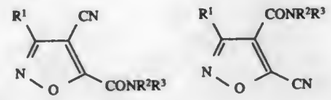
Filed Feb. 22, 1995, Ser. No. 392,330

Claims priority, application Germany, Feb. 25, 1994, 44 06 209.5

Int. Cl.[6] A01N *43/72;* **C07D** *261/06*

U.S. Cl. 504—271 **3 Claims**

1. A cyanoisoxazole of the formula Ia or Ib



Ia

Ib

where

R^1 is

hydrogen;

C_1–C_6-alkyl optionally substituted by one to five halogen atoms and/or one cyano radical and/or up to two of the following radicals: C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio, C_3–C_6-cycloalkyl, optionally substituted by one to three halogen or C_1–C_4-alkyl radicals or phenyl optionally additionally substituted by one to three of the following radicals: cyano, halogen, nitro, C_1–C_6-alkyl, C_1–C_6-haloalkyl, C_1–C_6-alkoxy, C_{1-C6}-haloalkoxy, C_1–C_6-alkylthio, C_1–C_6-haloalkylthio;

C_3–C_8-cycloalkyl otionally substituted one to three times by C_1–C_4-alkyl and/or halogen;

phenyl optionally substituted by one to three of the following radicals: cyano, nitro, halogen, C_1–C_6-alkyl, C_1–C_6-baloalkyl, C_1–C_6-alkoxy, C_1–C_6-haloalkoxy, C_1–C_6-alkylthio, C_1–C_6-haloalkylthio;

R^2 is

hydrogen;

C_1–C_6-alkyl optionally substituted by one to three of the following substituents: hydroxyl, halogen, C_1–C_4-alkoxy and/or C_1–C_4-alkylthio;

C_3–C_8-cycloalkyl optionally substituted one to three times by halogen, C_1–C_4-alkyl and/or C_1–C_4-haloalkyl;

R^3 is

a C_1–C_4-alkoxy group;

a C_1–C_6-alkyl group optionally substituted by one to three of the following radicals: halogen, cyano, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio, C_3–C_8-cycloalkyl or phenyl optionally substituted by one to three of the following radicals: halogen, cyano, nitro, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio and/or C_1–C_4-haloalkylthio;

a C_3–C_6-cycloalkyl group optionally substituted one to three times by halogen or C_1–C_4-alkyl;

A C_3–C_8-cycloalkyl group optionally substituted by one to three of the following radicals: halogen, nitro, cyano, C_1–C_6-alkyl, C_1–C_6-haloalkyl, C_1–C_4-alkoxy and/or C_1–C_4-haloalkoxy;

a C_3–C_6-alkenyl or C_3–C_6-alkynyl group each of which is optionally substituted one to three times by halogen and/or once by phenyl optionally substituted by one to three of the following groups: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio, halogen, cyano or nitro;

the phenyl group optionally substituted by one to three of the following radicals: cyano, nitro, halogen, C_1–C_6-alkyl, C_1–C_6-haloalkyl, C_1–C_6-alkoxy, C_1–C_6-haloalkoxy, C_1–C_6-alkylthio and/or C_1–C_6-haloalkylthio.

5,543,417

COMBINATION METHOD OF TREATING ACNE USING 4-AZA-5α-CHOLESTAN-ONES AND 4-AZA-5α-ANDROSTAN-ONES AS SELECTIVE 5α-REDUCTASE INHIBITORS WITH ANTI-BACTERIAL, KERATOLYTIC, OR ANTI-INFLAMMATORY AGENTS

Joanne Waldstreicher, Scotch Plains, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 21, 1994, Ser. No. 327,078

Int. Cl.[6] A01N *43/42*

U.S. Cl. 514—284 **31 Claims**

1. A method of treating acne comprising the step of administering to a person in need thereof a therapeutically effective amount of a 5α-reductase inhibitor and at least one member selected from the group consisting of an antibacterial agent, a keratolytic agent and an anti-inflammatory agent.

5,543,418

INNOVATIVE TECHNIQUE FOR IMMUNOSUPPRESION INVOLVING ADMINISTRATION OF RAPAMYCIN LOADED FORMED BLOOD ELEMENTS

Jay J. Armstrong, Bensalem, Pa., and Surendra N. Sehgal, Princeton, N.J., assignors to American Home Products Corporation, Madison, N.J.

Division of Ser. No. 998,065, Dec. 22, 1992, Pat. No. 5,482,945. This application Apr. 18, 1995, Ser. No. 423,133

Int. Cl.[6] A61K *31/44*

U.S. Cl. 514—291 **1 Claim**

1. A method for inducing suppression of the immune responses of immunoinflammatory diseases which consists of intravenous or intraarterial administration of a therapeutically effective amount of rapamycin-loaded formed blood elements suspended in blood plasma or a physiological substitute thereof wherein the immunoinflammatory disease is psoriasis.

5,543,419

QUINUCLIDINE ESTERS PROCESS AND INTERMEDIATE FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Peter E. Cross, Canterbury, and Alan Stobie, Deal, both of, United Kingdom, assignors to Pfizer Inc, New York, N.Y.

PCT No. PCT/EP92/02067, § 371 Date Jul. 5, 1994, § 102(e) Date Jul. 5, 1994, PCT Pub. No. WO93/06098, PCT Pub. Date Apr. 1, 1993

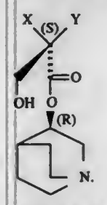
PCT Filed Sep. 3, 1992, Ser. No. 204,260

Claims priority, application United Kingdom, Sep. 14, 1991, 9119705

Int. Cl.[6] A61K *31/435;* **C07D** *453/62*

U.S. Cl. 514—305 **11 Claims**

1. A compound of formula (I):



(IA)

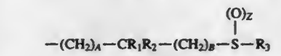
or a pharmaceutically acceptable salt thereof,

wherein X is either

(a) a phenyl group optionally substituted by 1 or 2 substituents each independently selected from halo, CF_3, C_1–C_4 alkyl, C_1–C_4 alkoxy and hydroxy, or

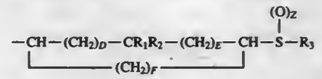
(b) A thienyl group;

and Y is either (a) a group of formula (Ya)



(Ya)

where A and B are independently 0, 1 or 2 or (b) a group of formula (Yb)



(Yb)

where D and E are independently 0 or 1, F is 0, 1, 2 or 3 and D+E+F=1, 2 or 3;

Z is 0, 1 or 2,

R_1 and R_2 are independently H or C_1–C_4 alkyl, or R_1 and R_2 are joined together to form, with the carbon atom to which they are attached, a 3- or 6-membered saturated or unsaturated carbocyclic ring, and R_3 is a C_1–C_4 alkyl group, a C_3–C_6 cycloalkyl group or a phenyl or benzyl group optionally substituted by up to 3 substituents each independently selected from halo, CF_3, C_1–C_4 alkyl, C_1–C_4 alkoxy and hydroxy.

5,543,420

QUINOLINE-3-ACETIC ACID DERIVATIVE, PROCESS FOR PRODUCTION THEREOF AND USE THEREOF

Tomoji Aotsuka, Hamura; Toshiyuki Nishio, Kawasaki; Hiroshi Hosono, Ibaraki; Yoshiyuki Nakamura, Shizuoka; Tetsuo Matsui, Tsukuba, and Hiromichi Ishikawa, Kobe, all of, Japan, assignors to The Green Cross Corporation, and Senju Pharmaceutical Co., Ltd., both of Osaka, Japan

PCT No. PCT/JP94/00007, § 371 Date Nov. 10, 1994, § 102(e) Date Nov. 10, 1994, PCT Pub. No. WO94/15934, PCT Pub. Date Jul. 21, 1994

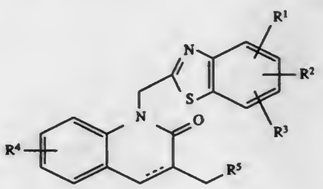
PCT Filed Jan. 6, 1994, Ser. No. 295,876

Claims priority, application Japan, Jan. 6, 1993, 5-15899

Int. Cl.[6] C07D *417/06;215/227;* **A61K** *31/47;31/425*

U.S. Cl. 514—312 **13 Claims**

1. A quinoline-3-acetic acid derivative of the formula (I)



(I)

wherein R^1, R^2 and R^3 are the same or different and each is a

hydrogen atom or a halogen atom, R^4 is a hydrogen atom, a halogen atom or a substituted or unsubstituted lower alkyl, R^5 is carboxyl alkoxycarbonyl or aryloxycarbonyl, benzyloxycarbonyl and the broken line means an optional presence of a double bond, or a pharmaceutically acceptable salt thereof.

5,543,421

METHOD OF TREATMENT OF PERIPHERAL NEUROPATHIES AND CENTRAL NEURODEGENERATIVE DISEASES

Jésus Benavides, Chatenay Malabry; Badia Ferzaz, Antony; Pascal George, Saint Arnoult en Yveline, and Bernard Scatton, Villebon sur Yvette, all of, France, assignors to Synthelabo, Le Plessis Robinson, France

Filed Oct. 24, 1994, Ser. No. 327,595

Claims priority, application France, Jul. 29, 1994, 94 09410

Int. Cl.[6] A61K *31/445*

U.S. Cl. 514—317 **2 Claims**

1. A method of treating peripheral neuropathies and central neurodegenerative diseases in a patient in need thereof which comprises administering to said patient a therapeutically effective amount of ifenprodil or an enantiomer thereof.

5,543,422

HETEROCYCLIC AMINES

Ian G. C. Coutts, Arnold, and Pamela J. Cummins, Clifton, both of, England, assignors to British Technology Group Limited, London, England

Filed Mar. 23, 1995, Ser. No. 403,859

Claims priority, application United Kingdom, Oct. 2, 1992, 9220735

Int. Cl.[6] A61K *31/435;31/395*

U.S. Cl. 514—319 **29 Claims**

1. A pharmaceutical composition which comprises as an active ingredient a heterocyclic amine of the formula

Ar-X-A-NR 1R^2

wherein Ar is a bicyclic or tricyclic aromatic group which is unsubstituted or which bears one or more substituents selected from halo, nitro and cyano groups and alkyl and alkoxy groups each of up to 4 carbon atoms;

wherein X is a direct link or is —O—, —S—, —SO— or —SO_2— or has the formula — C(R^3)═CH— wherein R^3 is hydrogen or alkyl of up to 4 carbon atoms;

wherein A is straight or branched alkylene or alkenylene of 3 to 8 carbon atoms which may be interrupted by —O—, —S— or —NH—;

and wherein NR^1R^2 is a cyclic amino group;

provided that when Ar is naphthyl or naphthyl substituted by halo, alkoxy or alkyl, X is —O— and A is $(CH_2)_{3-8}$, R^1R^2 of the cyclic amine group does not form an alkylene group; and when Ar is phenoxazin-10-yl, X is a direct link and A is —$(CH_2)_3$— or —$(CH_2)_4$—, —NR^1R^2 is not pyrrolidino, piperidino, morpholino or N-(β-hydroxyethyl)piperazino; or a pharmaceutically acceptable acid addition salt thereof, in association with a pharmaceutically acceptable diluent or carrier.

5,543,423

AMINO ACID DERIVATIVES WITH IMPROVED MULTI-DRUG RESISTANCE ACTIVITY

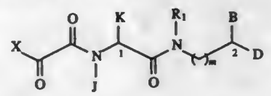
Robert E. Zelle, Stow, and Matthew W. Harding, Acton, both of Mass., assignors to Vertex Pharmaceuticals, Incorporated, Cambridge, Mass.

Continuation-in-part of Ser. No. 340,830, Nov. 16, 1994. This application Jan. 23, 1995, Ser. No. 377,285

Int. Cl.[6] A61K *31/44;* **C07D** *211/32;213/46*

U.S. Cl. 514—332 **17 Claims**

1. A compound of formula (I):



(I)

wherein:

R_1, B and D are independently:

hydrogen, Ar, (C1–C6)-straight or branched alkyl, (C2–C6)-straight or branched alkenyl or alkynyl, (C5–C7)-cycloalkyl substituted (C1–C6)-straight or branched alkyl, (C5–C7)-cycloalkyl substituted (C3–C6)-straight or branched alkenyl or alkynyl, (C5–C7)-cycloalkenyl substituted (C1–C6)-straight or branched alkyl, (C5–C7)-cycloalkenyl substituted (C3–C6)-straight or branched alkenyl or alkynyl, Ar-substituted (C1–C6)-straight or branched alkyl, Ar-substituted (C3–C6)-straight or branched alkenyl or alkynyl; provided that R_1 is not hydrogen;

wherein any one of the CH_2 groups of said alkyl chains is optionally replaced by a heteroatom selected from the group consisting of O, S, SO, SO_2, and NR; wherein R is selected from the group consisting of hydrogen, (C1–C4)-straight or branched alkyl, (C3–C4)-straight or branched alkenyl or alkynyl, and (C1–C4) bridging alkyl wherein a bridge is formed between the nitrogen and a carbon atom of said heteroatom-containing chain to form a ring, and wherein said ring is optionally fused to an Ar group;

J is selected from the group consisting of (C1–C6)-straight or branched alkyl, (C3–C6)-straight or branched alkenyl, Ar-substituted (C1–C6)-straight or branched alkyl, and Ar-substituted (C3–C6)-straight or branched alkenyl or alkynyl;

K is selected from the group consisting of (C1–C6)-straight or branched alkyl, Ar-substituted (C1–C6)-straight or branched alkyl, Ar-substituted (C2–C6)-straight or branched alkenyl or alkynyl, and cyclohexylmethyl;

X is selected from the group consisting of Ar, —OR_2, and —NR_3R_4;

wherein R_2 has the same definition as R_1; and R_3 and R_4 independently have the same definitions as B and D; or R_3 and R_4 are taken together to form a 5–7 membered heterocyclic aliphatic or aromatic ring;

wherein Ar is a carbocyclic aromatic group selected from the group consisting of phenyl, 1-naphthyl, 2-naphthyl, indenyl, azulenyl, fluorenyl, and anthracenyl; or a heterocyclic aromatic group selected from the group consisting of 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, pyrrolyl, oxazolyl, thiazolyl, imidazolyl, pyraxolyl, 2-pyrazolinyl, pyrazolidinyl, isoxazolyl, isotriazolyl, 1,2,3-oxadiazolyl, 1,2,3-triazolyl, 1,3,4-thiadiazolyl, pyridazinyl, pyrimidinyl, pyrazinyl, 1,3,5-triazinyl, 1,3,5-trithianyl, indolizinyl, indolyl, isoindolyl, 3H-indolyl, indolinyl, benzo[b]furanyl, benzo[b]thiophenyl, 1H-indazolyl, benzimidazolyl, benzthiazolyl, purinyl, 4H-quinolizinyl, quinolinyl, 1,2,3,4-tetrahydroquinolinyl, isoquinolinyl, 1,2,3,4-tetrahydroisoquinolinyl, cinnolinyl, phthalazinyl, quinazolinyl, quinoxalinyl, 1,8-naphthyridinyl, pteridinyl, carbazolyl, acridinyl, phenazinyl, phenothiazinyl, and phenoxazinyl;

wherein Ar is optionally substituted with one or more substituents which are independently selected from the group consisting of hydrogen, halogen, hydroxyl, nitro, —SO_3H, trifluoromethyl, trifluoromethoxy, (C1–C6)-straight or branched alkyl, (C2–C6)-straight or branched alkenyl, O-[(C1–C6)-straight or branched alkyl], O-[(C3–C4)-straight or branched alkenyl], O—benzyl, O—phenyl, 1,2-methylenedioxy, —NR_4R_5, carboxyl, N-(C1–C5-straight or branched alkyl or C3–C5-straight or branched alkenyl) carboxamides, N,N-di-(C1–C5-straight or branched alkyl or C3–C5-straight or branched alkenyl) carboxamides, morpholinyl, piperidinyl, O—M, CH_2—$(CH_2)_q$—M, O—$(CH_2)_q$—M, $(CH_2)_q$—O—M, and CH═CH—M;

wherein R_5 and R_6 are independently selected from the group consisting of hydrogen, (C1–C6)-straight or branched alkyl, (C3–C6)-straight or branched alkenyl or alkynyl and benzyl;

wherein M is selected from the group consisting of 4-methoxyphenyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, pyrazyl, quinolyl, 3,5-dimethylisoxazoyl, 2-methylthiazoyl, thiazoyl, 2-thienyl, 3-thienyl and pyrimidyl; and

q is 0–2; and m is 0 or 1.

5,543,424

SMOKING SUBSTITUTE

Thommy Carlsson, Helsingborg, and Sven B. Andersson, Ödåkra, both of, Sweden, assignors to Pharmacia AB, Sweden

Division of Ser. No. 335,175, Nov. 7, 1994, which is a continuation of Ser. No. 862,533, Jun. 19, 1992, abandoned. This application Oct. 19, 1995, Ser. No. 545,479

Claims priority, application Sweden, Dec. 21, 1989, 8904295

Int. Cl.[6] A61K *31/465;9/20*

U.S. Cl. 514—343 **12 Claims**

1. A method of diminishing the desire of a subject to smoke, which method comprises administering to a subject a composition comprising an inclusion complex of nicotine and a cyclized polysaccharide.

5,543,425

METHOD OF INHIBITING PLATELET AGGREGATION USING PHENYL AMIDINE THIO DERIVATIVES

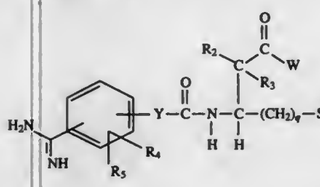
Steven P. Adams, Andover, Mass.; Richard J. Lindmark, St. Louis, Mo.; Masateru Miyano, Salem, S.C., and Joseph G. Rico, Manchester, Mo., assignors to G. D. Searle & Co., Chicago, Ill.

Continuation of Ser. No. 17,203, Feb. 12, 1993, Pat. No. 5,409,939. This application Oct. 28, 1994, Ser. No. 330,486

Int. Cl.[6] A01N *43/40;* **A61K** *31/44*

U.S. Cl. 514—357 **2 Claims**

1. A method of treating a mammal to inhibit platelet aggregation comprising administering a therapeutically effective dose of a compound of the formula



or a pharmaceutically acceptable salt thereof, wherein

R_1 is alkyl having 1 to 6 carbon atoms; phenyl; substituted phenyl wherein each substituent can be selected from the group consisting of alkyl having 1 to 6 carbon atoms, halo, alkoxy having 1 to 6 carbon atoms, carboxyl, trifluoromethyl, hydroxy and nitro; or a heteroaromatic ring having 5 or 6 ring carbon atoms wherein one of the ring carbon atoms is replaced by a hetero atom selected from nitrogen, oxygen and sulfur;

R2 and R_3 are each independently hydrido or alkyl having 1 to 6 carbon atoms;

R_4 and R_5 are each independently hydrido, alkyl having 1 to 6 carbon atoms, alkoxy having 1 to 6 carbon atoms or halo;

Y is alkyl having 1 to 6 carbon atoms, alkenyl having 2 to 4 carbon atoms or alkynyl having 2 to 4 carbon atoms;

W is OR wherein R is hydrido or alkyl having 1 to 6 carbon atoms;

q is an integer from 1 to 4;

u is 0, 1, or 2; and

x is an integer from 0 to 3

to a mammal in need of such treatment.

5,543,426

USE OF CERTAIN 3,7-DISUBSTITUTED INDOLE COMPOUNDS FOR TREATING DEPRESSION OR COGNITIVE DISORDERS

Arnold K. Dixon, Wabern, and Rudolf K. A. Giger, Muttenz, both of, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

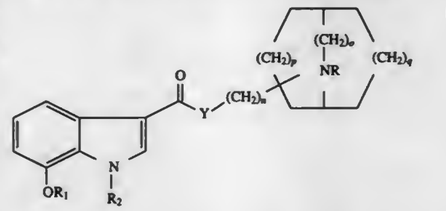
Continuation of Ser. No. 163,224, Dec. 7, 1993, abandoned, which is a division of Ser. No. 809,815, Dec. 18, 1991, Pat. No. 5,272,154. This application Apr. 21, 1995, Ser. No. 426,558

Claims priority, application United Kingdom, Dec. 18, 1990, 9027424; Dec. 18, 1990, 9027425; Jun. 24, 1991, 9113596

Int. Cl.[6] A61K *31/40*

U.S. Cl. 514—410 **4 Claims**

1. A method of treating depression or a cognitive disorder comprising administering to a subject in need of such treatment a therapeutically effective amount of a compound of formula I



I

wherein R_1 is (C_{1-4})alkyl;

R_2 is hydrogen, (C_{1-7})alkyl, (C_{3-6})alkenyl, (C_{3-10})alkynyl, (C_{3-7})cycloalkyl, (C_{3-7})cycloalkyl-(C_{1-4}) alkyl, phenyl, phenyl(C_{1-3})alkyl, alkyl(C_{1-6})carbonyl, alkoxy(C_{1-6})carbonyl, carbamoyl, sufamoyl, or mono- or di-(C_{1-6})alkyl substituted carbamoyl or sulfamoyl;

Y is O or NR_3, where R_3 is hydrogen or (C_{1-6})alkyl;

n is 0, 1 or 2;

R_4 is hydrogen, (C_{1-7})alkyl, (C_{3-6})cycloalkyl, phenyl-(C_{1-4}) alkyl, or phenyl(C_{1-4})alkyl mono- or di-substituted by halo, (C_{1-4})alkyl or (C_{1-4})alkoxy; and

o is 0, p is 1 and q is 0, or

o is 1, p is 0 and q is 0,

in free base or pharmaceutically acceptable salt or complex form.

5,543,427

CARBAMOYLOXYLABDANES

Raymond W. Kosley, Jr., Bridgewater; Robert J. Cherill, Somerset, both of N.J., and Gerard O'Malley, Newton, Pa., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

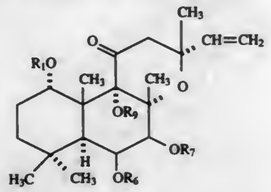
Division of Ser. No. 37,148, Mar. 25, 1993, Pat. No. 5,374,650, which is a continuation of Ser. No. 443,526, Nov. 29, 1989, abandoned, which is a division of Ser. No. 137,998, Dec. 28, 1987, Pat. No. 4,920,146, which is a continuation-in-part of Ser. No. 947,070, Dec. 29, 1986, abandoned. This application Aug. 24, 1994, Ser. No. 295,130

The portion of the term of this patent subsequent to Mar. 3, 2008, has been disclaimed.

Int. Cl.[6] C07D *239/20;* A61K *31/36*

U.S. Cl. 514—422 **7 Claims**

1. A compound of the formula



wherein:

(a) R_1 is hydrogen or a group of the formula



wherein R_2 and R_3 are independently hydrogen or loweralkyl of 1 to 6 carbon atoms and r is 0; and R_2 and R_3 taken together with the nitrogen atom to which they are attached form a group of the formula



wherein X is a group of the CHR_4 wherein R_4 is hydrogen, loweralkyl of 1 to 6 carbon atoms or a group of the formula OR_5 wherein R_5 is hydrogen, loweralkyl of 1 to 6 carbon atoms or a group of the formula



wherein R_{10} is loweralkyl and N is 0;

(b) R_9 is hydrogen;

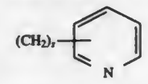
(c) R_6 and R_7 independently are hydrogen, a group of the formula



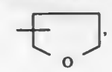
wherein R_{20} is hydrogen or loweralkyl of 1 to 6 carbon atoms, or a group of the formula



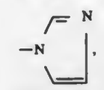
wherein R_{13} is hydrogen, loweralkyl of 2 to 6 carbon atoms, hydroxyloweralkyl of 1 to 6 carbon atoms, loweralkoxyloweralkyl having 1 to 6 carbon atoms in the alkoxy group and 2 to 6 carbon atoms in the alkyl group; or a group of the formula $HOCH_2CH(OH)CH_2$; R_{14} is hydrogen, hydroxyl, loweralkoxy of 1 to 6 carbon atoms, loweralkyl of 1 to 6 carbon atoms, hydroxyloweralkyl of 2 to 6 carbon atoms, loweralkoxyloweralkyl of 1 to 6 carbon atoms in the alkoxy group and 2 to 6 carbon atoms in the alkyl group, loweralkanoyl of 2 to 6 carbon atoms, loweralkanoyloweralkyl of 2 to 6 carbon atoms in the alkanoyl group and 1 to 6 carbon atoms in the alkyl group, a group of the formula



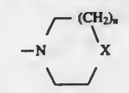
wherein s is 1 or 2, a group of the formula



a group of the formula



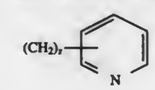
a group of the formula $HOCH_2CH(OH)CH_2$, a group of the formula $(CH_2)_tNR_{21}R_{22}$ wherein R_{21} and R_{22} are independently loweralkyl of 1 to 6 carbon atoms and t is 0, or 2 to 6, R_{21} and R_{22} taken together with the nitrogen atoms to which they are attached form a group of the formula



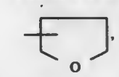
wherein X and n are as above, a group of the formula OR_{23} wherein R_{23} is hydrogen, loweralkyl of 1 to 6 carbon atoms, a group of the formula $(CH_2)_{t'}NR_{21}R_{22}$ wherein t' is 2 to 6, R_{21} and R_{22} are as above, a group of the formula



wherein R_{24} is hydrogen, loweralkyl of 1 to 6 carbon atoms, lowercycloalkyl of 3 to 6 carbon atoms, loweralkenyl of 2 to 6 carbon atoms, haloloweralkenyl of 2 to 6 carbon atoms, loweralkanoylloweralkyl of 2 to 6 carbon atoms in the alkanoyl group and 1 to 6 carbon atoms in the alkyl group, loweralkoxyloweralkyl of 1 to 6 carbon atoms in each group, loweralkoxycarbonylloweralkyl of 1 to 6 carbon atoms in each group, loweralkylamino of 1 to 6 carbon atoms, lowerdialkylamino of 2 to 6 carbon atoms, a group of the formula



wherein s is as above, a group of the formula



a group of the formula $(CH_2)_{t'}NR_{21}R_{22}$ wherein R_{21}, R_{22} and t' are as above, a group of the formula

wherein X and n are as above, a group of the formula $(CH_2)_nN(R_{25})COR_{26}$, wherein u is 1, 2 or 3 and R_{25} and R_{26} are independently hydrogen or loweralkyl of 1 to 6 carbon atoms, a group of the formula



wherein R_{27} and R_{28} are loweralkyl of 1 to 6 carbon atoms, with the provisos:

(d) that R_1, R_6 and R_7 are not simultaneously hydrogen;

(e) that when R_1 and R_6 are hydrogen, R_7 is not



(f) that R_6 and R_7 are not simultaneously



and

(g) that when R_1 and R_6 are hydrogen, R_{13} and R_{14} are not simultaneously loweralkyl of 1 to 6 carbon atoms.

5,543,428

METHOD FOR TREATING RESISTANT TUMORS

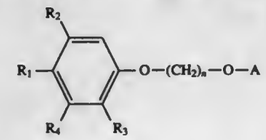
Jason S. Sawyer, Indianapolis; Stephen M. Spaethe, and James J. Starling, both of Carmel, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 31, 1994, Ser. No. 298,644

Int. Cl.[6] A61K *31/35*

U.S. Cl. 514—456 **12 Claims**

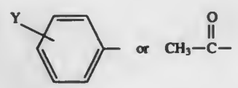
1. A method of reversing multidrug resistance in a multidrug resistance tumor comprising administering a multidrug resistance reversing amount of a compound having the formula



I

wherein

R_1 is



Y is hydrogen or halo;

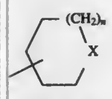
R_2 is hydrogen, —OH, or —OCH_3;

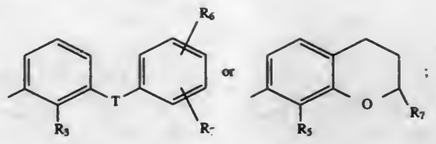
R_3 is C_1–C_6 alkyl;

R_4 is hydrogen, —OH, or —OCH_3;

n is 3, 4, or 5;

and A is





where

R_5 is hydrogen, C_1–C_6 alkyl, C_2–C_5 alkenyl, C_2–C_5 alkynyl, benzyl, or phenyl;

R_6 is hydrogen or halo;

R_7 is —COOH or 5-tetrazolyl;

T is a bond, —CH_2—, —O—, —C(=O)—, or —$S(O)_q$—; and

q is 0, 1, or 2;

provided when one of R_2 and R_4 is —OH or —OCH_3, the other of R_2 and R_4 must be hydrogen,

or a pharmaceutically acceptable base addition salt or solvate thereof.

5,543,429

ANTIFUNGAL AGENTS

Gerald F. Bills, Clark; James E. Curotto, Morgan; Sarah J. Dreikorn, Scotch Plains; Rosalind G. Jenkins, Somerset; Jerrold M. Liesch, Princeton Junction; Sandra A. Morris; John R. Thompson, both of Scotch Plains; Deborah L. Zink, Manalapan, all of N.J.; Richard K. Jansson, Doylestown, Pa.; Angela Basilio, Madrid; Teresa Diez, Madrid; Fernando Peiaez, Madrid, and Francisca Vicente, Madrid, all of, Spain, assignors to Merck & Co., Inc., Rahway, N.J.

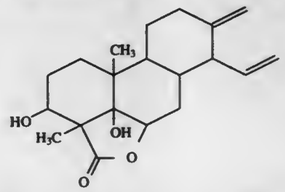
Filed Mar. 9, 1995, Ser. No. 401,385

Int. Cl.[6] A61K *31/34*

U.S. Cl. 514—468 **14 Claims**

1. A substantially pure compound having the structure:

(I)



5,543,430

METHOD AND FORMULATION OF STIMULATING NITRIC OXIDE SYNTHESIS

W. H. Kaesemeyer, 2433 McDowell St., August, Ga. 30904

Filed Oct. 5, 1994, Ser. No. 321,051

Int. Cl.[6] A61K *31/195*

U.S. Cl. 514—565 **22 Claims**

1. A method of treating a disease condition in a subject by vasodilation or vasorelaxation comprising:

selecting a subject;

mixing L-arginine and a venous dilator, said venous dilator being different than L-arginine;

administering to said subject a formulation comprising said mixture;

obtaining periodic indicators of vasorelaxations for the subject; and;

continuing administration of the formulation until a desirable state of vasorelaxtion is obtained.

5,543,431
ANTI-FUNGAL AGENTS

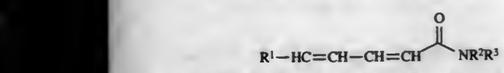
Evon A. Bolessa, Edison; Robert E. Schwartz, Scotch Plains; Gerald F. Bills, Clark; Robert A. Giacobbe, Lavalette, all of N.J.; Fernando Pelaez Perez, Madrid, Spain; Angeles C. Arroyo, Madrid, Spain; Teresa D. Matas, Madrid, Spain; Isabel M. Fernandez, Madrid, Spain; Francisca V. Perez, Madrid, Spain; Suzanne M. Mandala, Scotch Plains, N.J.; Deborah L. Zink, Manalapan, N.J.; Rosemary Thornton, Cranford, N.J.; John R. Thompson, Scotch Plains, N.J., and James E. Curotto, Morgan, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 326,986, Oct. 21, 1994. This application May 24, 1995, Ser. No. 449,622

Int. Cl.[6] C07C *233/09;233/20;* **A61K** *31/695;31/16*

U.S. Cl. 514—627 **9 Claims**

1. A compound represented by the formula:



I

or a pharmaceutically acceptable salt or solvate thereof, wherein:

R^1 represents a C_5 to C_{15} straight or branched chain alkyl group;

one of R^2 and R^3 represents H and the other is a straight or branched C_3 to C_6 alkyl group substituted with 2–4 hydroxyl or -OP groups, wherein P represents a hydroxyl protecting group.

5,543,432
APPLICATION OF TRACE ELEMENTS TO ANIMALS

Colin M. Harvey, 44 Raymond Terrace, Birkenhead, Auckland, New Zealand

Filed Nov. 4, 1994, Ser. No. 334,223

Claims priority, application New Zealand, Nov. 8, 1993, 250163; May 31, 1994, 260638

Int. Cl.[6] A61K *31/16;31/135;31/13;31/11*

U.S. Cl. 514—630 **9 Claims**

1. A pour-on formulation containing a therapeutically effective amount of a trace element in a pharmaceutically acceptable carrier, wherein the formulation is a non-aqueous formulation containing one or more oxides of selenium or copper or cobalt dissolved in a solvent chosen from the group consisting of ethanol, monopropylene glycol and butyl dioxitol.

5,543,433
AZINE-SUBSTITUTED PHENYLACETIC ACID DERIVATIVES AND FUNGICIDES CONTAINING THESE

Reinhard Doetzer, Weinheim; Hubert Sauter; Herbert Bayer, both of Mannheim; Franz Roehl, Schifferstadt; Gisela Lorenz, Neustadt; Eberhard Ammermann, Heppenheim, and Horst Wingert, Mannheim, all of, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

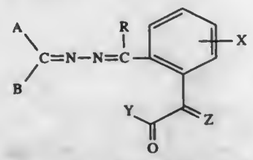
Filed Jun. 3, 1994, Ser. No. 254,052

Claims priority, application Germany, Jun. 3, 1993, 43 18 397.2

Int. Cl.[6] C07C *251/24;235/34;* **A01N** *33/26;31/04*

U.S. Cl. 514—638 **15 Claims**

1. A compound of the formula



I

where the substituents have the following meanings:

X is hydrogen, cyano, nitro, trifluoromethyl, halogen, C_1-C_6-alkyl or C_1-C_6-alkoxy;

Y is amino, methylamino or dimethylamino;

Z is $CHCH_3$, $CHOCH_3$ or $NOCH_3$;

R is hydrogen or C_1-C_6-alkyl;

A is hydrogen, C_1-C_6-alkyl, C_1-C_6-haloalkyl or C_3-C_7-cycloalkyl;

B is unsubstituted or substituted C_1-C_6-alkyl, C_2-C_6-alkenyl, C_2-C_6-alkynyl, C_3-C_7-cycloalkyl, C_5-C_7-cycloalkenyl,

an unsubstituted or substituted, saturated or partially unsaturated heterocyclyl,

unsubstituted or substituted aryl, which may be fused,

unsubstituted or substituted 5- or 6-membered heteroaryl, which may be benzo- or hetero-fused,

unsubstituted or substituted aryl-C_1-C_6-alkyl or heteroaryl-C_1-C_6-alkyl, or

C(=O)W;

where

W is hydrogen,

unsubstituted or substituted C_1-C_6-alkyl,

C_1-C_6-alkoxy, C_1-C_6-alkylthio, C_1-C_6-alkylamino or di-C_1-C_6-alkylamino,

unsubstituted or substituted aryl, heteroaryl, aryloxy, arylthio, arylamino, aryl-N-(C_1-C_6-alkyl)amino, heteroaryloxy, heteroarylthio, heteroarylamino or heteroaryl-N-(C_1-C_6-alkyl)amino;

or

A and B, together with the C atom whose substituents they are, are an unsubstituted or substituted, saturated or unsaturated 3- to 7-membered isocyclic ring or 5- to 7-membered heterocyclic ring, which may be fused and which may also be quinonoid.

5,543,434
NASAL ADMINISTRATION OF KETAMINE TO MANAGE PAIN

Stuart L. Weg, 498 Island Way, Franklin Lakes, N.J. 070417

Filed Feb. 25, 1994, Ser. No. 201,756

Int. Cl.[6] A61K *31/135*

U.S. Cl. 514—647 **21 Claims**

1. A method for self-treating pain in a subject comprising self-administering nasally on an outpatient basis a dose of ketamine of approximately 0.01 to approximately 1 mg/kg of body weight, which is effective to alleviate pain but below a dose that induces dysphoria by a subject suffering from pain.

5,543,435
USING LIMONEN-10-OL TO KILL BACTERIA, YEAST, AND FUNGI

Doyle E. Chastain, 137 Birch St., Titusville, Fla. 32780; W. Eugene Sanders, Jr., and Christine C. Sanders, both of Omaha, Nebr., assignors to Doyle E. Chastain, Titusville, Fla.

Filed Apr. 7, 1994, Ser. No. 224,302

Int. Cl.[6] A01N *31/00;* **A61K** *31/045*

U.S. Cl. 514—729 **4 Claims**

1. A method of killing bacteria, fungi or yeast comprising treating bacteria, fungi or yeast in their habitat with lethal concentrations of limonen-10-ol.

5,543,436
CARBAZOLE DERIVATIVES AND THEIR USE IN COSMETICS

Michel Hocquaux, Paris, and Michel Philippe, Antony, both of, France, assignors to L'Oreal , Paris, France

PCT No. PCT/FR94/00549, § 371 Date Jan. 10, 1995, § 102(e) Date Jan. 10, 1995, PCT Pub. No. WO94/26711, PCT Pub. Date Nov. 24, 1994

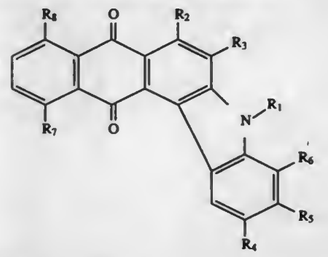
PCT Filed May 10, 1994, Ser. No. 367,151

Claims priority, application France, May 10, 1993, 93 05588

Int. Cl.[6] C07D *209/80;* **A61K** *7/00*

U.S. Cl. 424—61 **22 Claims**

1. A compound corresponding to the formula:



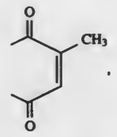
in which,

R_1 represents a hydrogen atom, a benzyl radical, or a C_1–C_{16} alkyl radical which may or may not be branched and may or may not be saturated;

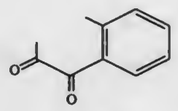
R_2 and R_3 denote, independently of each other, a carbethoxy, acetyl, nitrile or



radical, or a hydrogen atom, or R_2 and R_3 are selected from the group consisting of

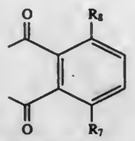


(a)



(b)

and



(c)

R_4 represents a hydrogen atom, a methoxy, nitrile or nitro radical or a chlorine atom;

R_5, R_7 and R_8 represent, independently of each other, a hydrogen atom or a methoxy radical;

R_6 represents a hydrogen atom or a methyl radical; with the provisos that if R_2 and R_3 form the ring system (c), at least one of R_1, R_4, R_5, R_6, R_7 and R_8 does not denote a hydrogen atom and R_2 and R_3 are not simultaneously a hydrogen atom.

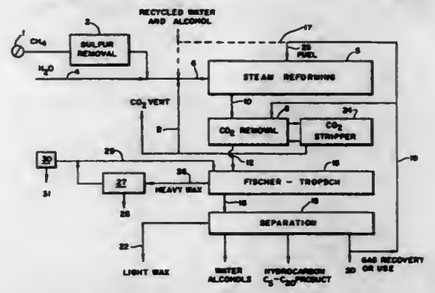
5,543,437
PROCESS FOR THE PRODUCTION OF HYDROCARBONS

Charles B. Benham, Arvada; Mark S. Bohn, Golden, and Dennis L. Yakobson, Westminster, all of Colo., assignors to Rentech, Inc., Denver, Colo.

Division of Ser. No. 307,014, Sep. 16, 1994, abandoned, which is a continuation-in-part of Ser. No. 140,479, Nov. 18, 1993, which is a division of Ser. No. 867,456, Apr. 13, 1992, Pat. No. 5,324,335, which is a continuation-in-part of Ser. No. 806,267, Dec. 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 528,499, May 25, 1990, abandoned, which is a continuation of Ser. No. 861,535, May 8, 1986, abandoned. This application Jun. 6, 1995, Ser. No. 470,496

Int. Cl.[6] C07C *27/00*

(I) U.S. Cl. 518—700 **3 Claims**



1. In a method of producing higher molecular weight hydrocarbons from hydrogen and carbon monoxide by the use of a Fischer-Tropsch synthesis reactor utilizing a promoted iron-based catalyst in a slurry reaction comprising the steps of:

converting carbonaceous material in the presence of carbon dioxide and water into hydrogen and carbon monoxide in the ratio of from about 0.5 to about 2.5 parts of hydrogen to one part of carbon monoxide by volume;

removing carbon dioxide from the hydrogen and carbon monoxide produced by the step of converting;

reacting the hydrogen and carbon monoxide in the said ratios in a Fischer-Tropsch synthesis reaction vessel in the presence of a hydrocarbon slurry containing a catalyst consisting essentially of a promoted iron catalyst at a sufficient temperature, pressure and space velocity to promote the formation of predominately hydrocarbons having more than five carbon atoms, said hydrocarbon slurry containing from between about 5% by weight to about 20% by weight of said promoted iron catalyst;

separately recovering gaseous and liquid hydrocarbon products produced by said Fischer-Tropsch reaction; and

recycling at least a portion of the carbon dioxide in the recovered gaseous products back to the first converting step; the improvement comprising producing said hydrocarbon products continuously at preselected varying rates dependent on a varying amount of continuously available synthetic gas.

5,543,438
PLASTIC FOAM MATERIAL COMPOSED OF A POLYOLEFIN BASED RESIN COMPOSITION AND METHOD FOR MAKING SAME

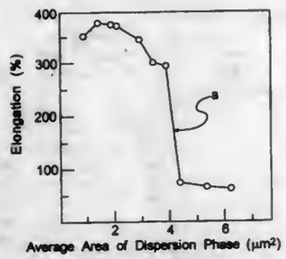
Kouichi Shibayama, Osaka; Masao Suzuki, Shiga-Ken; Masao Ogasa, Osaka, and Kenji Iuchi, Kobe, all of, Japan, assignors to Sekisui Chemical Co., Ltd., Osaka, Japan

Filed Sep. 30, 1994, Ser. No. 316,566

Int. Cl.[6] C08L *47/00*

U.S. Cl. 521—140 **54 Claims**

1. A plastic foam material composed of an polyolefin based resin composition comprising, in weight percent:



from about 40 to about 95 weight percent of polypropylene based resins;

said polypropylene based resin includes a molecular weight of from about 2.5×10^5 to about 6.0×10^5s;

from about 5 to about 60 weight percent of polyethylene based resins;

said plastic foam material further including from about 20 to about 65 weight percent of a cross linked portion; and

said cross linked portion includes from about 55 to about 95 weight percent of a cross linked polypropylene and from about 5 to about 45 weight percent of cross linked polyethylene.

5,543,439

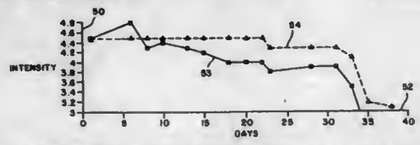
EXTRUDED FRAGRANCE-CONTAINING POLYVINYL ALCOHOL AND USE THEREOF

Keith J. McDermott, Bound Brook; John M. Teffenhart, Edison; Shmuel D. Shefer, East Brunswick; David A. Greene, Wanamassa; Leslie C. Smith, Jamesburg, and Charles E. J. Beck, Summit, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 253,243, Jun. 2, 1994. This application Feb. 24, 1995, Ser. No. 394,614

Int. Cl.[6] A61L *9/01;* **E03D** *9/02*

U.S. Cl. 523—102 **8 Claims**



1. A water-soluble or water-soluble composition of matter in the solid phase capable of emission of fragrance at a substantially constant intensity for a period of at least about 20 days consisting of:

(a) extruded polyvinyl alcohol or partially hydrolyzed polyvinyl acetate with the maximum mole ratio of acetyl moiety:hydroxyl moiety being about 3:1 having a number average molecular weight of from about 15,000 up to about 68,000 containing from about 2 up to about 13% by weight of polar plasticizer;

(b) from about 1 up to about 20% by weight of compatible fragrance admixed with the polyvinyl alcohol or partially hydrolyzed polyvinyl acetate;

(c) from 0 up to about 20% by weight of foaming agent admixed with the polyvinyl alcohol or partially hydrolyzed polyvinyl acetate;

(d) from 0 up to about 20% by weight of hydrophobic silica admixed with the polyvinyl alcohol or partially hydrolyzed polyvinyl acetate;

(e) from 0 up to about 20% by weight of at least one surfactant other than said foaming agent of (c);

(f) from 0 up to about 5% by weight of water soluble dye; and

(g) from 0 up to about 4% by weight of foam booster

with the proviso that if the content of said compatible fragrance is from 10% up to 20% by weight, then the composition contains hydrophobic silica with the hydrophobic silica:fragrance weight ratio being from about 1:1 up to about 1:2.

5,543,440

PROCESS FOR PRODUCING POWDERED CARBOXYL-CONTAINING POLYMER

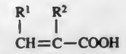
Kazuhide Hayama; Yukio Saitoh; Yasuo Kitani, and Katsuhiko Yamada, all of Mie, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Jan. 26, 1995, Ser. No. 378,715

Int. Cl.[6] C08F *20/06*

U.S. Cl. 523—103 **7 Claims**

1. A process for producing carboxyl-containing polymer particles having a molecular weight of 5,000 to 2,000,000 comprising mixing a solution of a water-insoluble carboxyl-containing polymer derived from one or more carboxyl-containing unsaturated monomers and other unsaturated monomers in a hydrophilic organic solvent and an aqueous solution of a dispersant comprising a neutralized copolymer of the following monomers (1) and (2): (1) a carboxyl-containing unsaturated monomer represented by formula (I):



(I)

wherein R^1 represents a hydrogen atom or a methyl group; and R^2 represents a hydrogen atom, a methyl group or —CH_2COOH, and (2) a (meth)acrylic ester, to precipitate said water-insoluble polymer.

5,543,441

IMPLANTS COATED WITH COLLAGEN-POLYMER CONJUGATES

Woonza Rhee, Palo Alto; Donald G. Wallace, Menlo Park, both of Calif.; Alan S. Michaels, Boston, Mass.; Ramon A. Burns, Jr., Fremont, Calif.; Louis Fries, Los Altos, Calif.; Frank DeLustro, Belmont, Calif., and Hanne Bentz, Newark, Calif., assignors to Collagen Corporation, Palo Alto, Calif.

Division of Ser. No. 292,415, Aug. 18, 1994, which is a division of Ser. No. 177,578, Jan. 5, 1994, Pat. No. 5,376,375, which is a division of Ser. No. 110,577, Aug. 23, 1993, Pat. No. 5,306,500, which is a division of Ser. No. 930,142, Aug. 14, 1992, Pat. No. 5,264,214, which is a division of Ser. No. 433,441, Nov. 14, 1989, Pat. No. 5,162,430, which is a continuation-in-part of Ser. No. 274,071, Nov. 21, 1988, abandoned. This application Apr. 24, 1995, Ser. No. 427,576

Int. Cl.[6] A61K *9/22*

U.S. Cl. 523—105 **9 Claims**

1. An implant exhibiting reduced immunogenicity and tissue irritation in an animal host, comprising:

a solid implant, coated with a composition comprising collagen crosslinked with a synthetic hydrophilic polymer.

5,543,442

OCULAR LENS MATERIAL

Haruyuki Hiratani; Kazuhiko Nakata, both of Nagoya; Shoji Ichinohe, Gumna-ken; Toshio Yamazaki, Gunma-ken, and Hideto Kato, Gunma-ken, all of, Japan, assignors to Menicon Co., Ltd., Nagoya, Japan, and Shin-Etsu Chemical Co., Ltd., Tokyo-to, Japan

Filed Jul. 12, 1994, Ser. No. 274,293

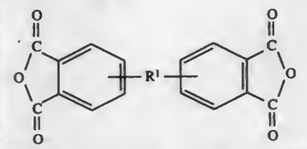
Claims priority, application Japan, Jul. 13, 1993, 5-173308; Sep. 2, 1993, 5-218560; Apr. 1, 1994, 6-065054

Int. Cl.[6] H01H *9/00*

U.S. Cl. 523—107 **4 Claims**

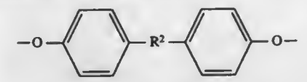
1. A transparent ocular lens material comprising a condensation polymer prepared by the condensation polymerization of

(A) an aromatic tetracarboxylic acid dianhydride represented by the general formula (I):



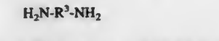
(I)

wherein R^1 is , -CO-, $-CH_2-$, $-C(CH_3)_2-$, $-C(CF_3)_2-$ or a group represented by the general formula:



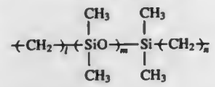
in which R^2 is $-C(CH_3)_2-$ or $-C(CF_3)_2-$ and

(B) a diamino compound selected from (a) a silicon-containing diamine represented by the general formula (II):

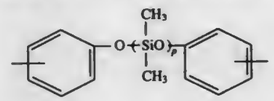


(II)

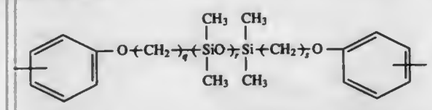
wherein R^3 is a group represented by the general formula:



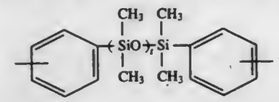
in which l is an integer of 1 to 3, m is an integer of 1 to 15 and n is an integer of 1 to 3, a group represented by the general formula:



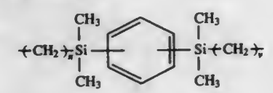
in which p is an integer of 1 to 10, a group represented by the general formula:



in which q is an integer of 1 to 3, r is an integer of 1 to 10 and s is an integer of 1 to 3, a group represented by the general formula:

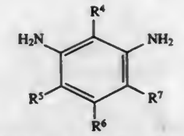


in which t is an integer of 1 to 10, or a group represented by the general formula:



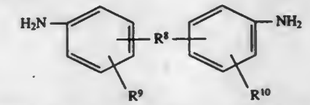
in which u is an integer of 1 to 3 and v is an integer of 1 to 3;

(b) a diamino-substituted benzene represented by the general formula (III):



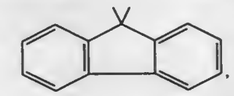
(III)

wherein R^4, R^5, R^6 and R^7 are the same or different and each is hydrogen atom or an alkyl group having 1 to 5 carbon atoms and (c) a diamino-substituted diphenyl represented by the general formula (IV):



(IV)

wherein R^8 is $-C(CH_3)_2-$, $-C(CF_3)_2-$, -O-, a group represented by the formula:



in which R^{11} is $-SO_2-$, $-C(CH_3)_2-$ or $-C(CF_3)_2-$, or a direct and R^9 and R^{10} are the same or different and each is an alkyl group having 1 to 3 carbon atoms, a fluoroalkyl group having 1 to 3 carbon atoms, hydrogen atom, hydroxyl group or carboxyl group.

5,543,443

DENTURE STABILIZING COMPOSITIONS

Jayanth Rajaiah, Loveland, Ohio; Abel Saud, Milford, Conn.; Bruce J. MacKay, Cincinnati, Ohio, and Dennis R. Grubbs, Atizapan, Mexico, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 825,885, Jan. 27, 1992, abandoned. This application Aug. 3, 1992, Ser. No. 904,782

Int. Cl.[6] A61K *6/093;* **C08L** *33/00;83/00*

U.S. Cl. 523—120 **16 Claims**

1. A denture adhesive composition which adheres to dentures and oral tissue comprising a mixture of:

(a) from about 8% to 90% of a hydrophilic powder selected from the group consisting of mixed partial salts of alkyl vinyl ether maleic anhydride copolymers (AVE/MA), sodium carboxymethylcellulose (CMC), polyethylene glycol (PEG), sodium alginate, hydroxyethylcellulose (HEC), chitosan, acid form of alkyl vinyl ether maleic anhydride copolymer, carbopol polymers, polyvinyl alcohol, polyamines, polyquarternary compounds, and mixtures thereof; and

(b) from about 10% to 92% of a part silicone RTV liquid that cures to form a peelable solid upon mixing the 2 parts.

5,543,444

RED PHOSPHORUS FLAME RETARDANT AND NONFLAMMABLE RESINOUS COMPOSITION

Tsuyoshi Kobayashi; Ichiro Sakon; Shigeo Nakashima; Sachiko Numa, and Yoshikazu Inao, all of Toyama, Japan, assignors to Rinkaguku Kogyo Co., Ltd., Toyama, Japan

Filed Aug. 9, 1994, Ser. No. 287,937

Claims priority, application Japan, Aug. 12, 1993, 5-220671

Int. Cl.[6] C08K *3/32;3/20;* **B32B** *9/04*

U.S. Cl. 523—205 **17 Claims**

1. A fine red phosphorus flame retardant, comprising a fine red phosphorus powder subjected to a surface modification treatment comprising coating said spherical red phosphorus particles and/or

agglomerates thereof with an inorganic compound selected from the metal oxides or hydroxides of the Groups II to IVA or Groups II to IVB of the Periodic Table and/or a thermosetting resin, said fine red phosphorus powder consisting of spherical red phosphorus particles and/or agglomerates thereof directly obtained by thermal conversion of white phosphorus in the presence of a dispersant selected from the group consisting of a surfactant, an inorganic ammonium salt and an organic compound containing an amino group, wherein said spherical red phosphorus particles have an average particle size of 10 μm or smaller and at least 80% by weight of said spherical red phosphorus particles have particle sizes of 20 μm or smaller, and said fine flame retardant has an average particle size of 15 μm or smaller and at least 80% by weight of said fine flame retardant has a particle size of 35 μm or smaller.

5,543,445

AQUEOUS COATING COMPOSITION

Eric Nield, Royston, and Peter D. Palasz, Taplow, both of, United Kingdom, assignors to Imperial Chemical Industries PLC, London, England

Filed Dec. 21, 1994, Ser. No. 360,925

Claims priority, application United Kingdom, Dec. 21, 1993, 9326032

Int. Cl.[6] C08K *3/20;* **C08L** *63/02*

U.S. Cl. 523—406 **11 Claims**

1. A coating composition which comprises a dispersion in an aqueous medium of a dispersed vinyl polymer which is stabilised in dispersion by a stabiliser which is an epoxy resin which has at least two hydrolysable silane groups and at least one protonated or quaternised amine group.

5,543,446

WATER-SOLUBLE ACRYLAMIDE/ACRYLIC ACID POLYMERS AND THEIR USE AS DRY STRENGTH ADDITIVES FOR PAPER

William Rodriguez, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Nov. 23, 1994, Ser. No. 344,831

Int. Cl.[6] C08L *3/04*

U.S. Cl. 524—52 **56 Claims**

1. A water-soluble terpolymer which is the product of the polymerization reaction of monomers consisting essentially of: (a) acrylamide or methacrylamide, (b) an ethylenically unsaturated, aliphatic carboxylic acid or a salt thereof, and (c) a water-soluble polyvinyl monomer, wherein (c) comprises less than 0.07 mole % based on total monomers; wherein a 1% solution of the terpolymer is capable of passing through a 200 mesh screen substantially without retention of polymer solids, and the terpolymer has a reduced specific viscosity of about 3.0 deciliters/g or less.

5,543,447

STABILIZATION OF RED AMORPHOUS PHOSPHORUS BY ORDERED POLYMERIC STRUCTURES FOR THE MANUFACTURE OF NON-EMISSIVE FIRE RETARDANT PLASTICS

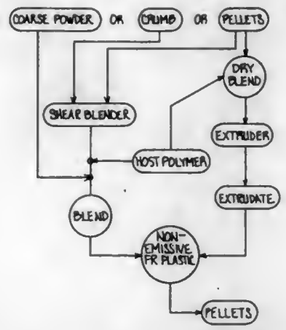
Michael A. Miller; Scott F. Timmons, and Darren E. Barlow, all of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed Sep. 28, 1994, Ser. No. 314,340

Int. Cl.[6] C08K *3/02*

U.S. Cl. 524—80 **29 Claims**

1. A flame retardant composition comprising:



a host polymer having substantially uniformly distributed therethrough a non-miscible liquid crystal polymer and red amorphous phosphorus, said liquid crystal polymer being present in a concentration sufficient to encapsulate a majority of said red amorphous phosphorus such that said majority of red amorphous phosphorus does not contact said host polymer;

said liquid crystal polymer selected from the group consisting of copolymers of (a) 6-hydroxy-2-naphthalenecarboxylic acid and 4-hydroxybenzoic acid, (b) 1,4-benzenedicarboxylic acid, aminophenol wherein the NH_2 and OH substitution is not specified and 6-hydroxy-2-naphthalenecarboxylic acid, (c) 1,4-benzenedicarboxylic acid, [1,1'biphenyl]-4,4'-diol and 4-hydroxybenzoic acid, and (d) 1,4-benzenedicarboxylic acid, 4-hydroxybenzoic acid, and 1,3-benzenediol.

5,543,448

POLYCARBONATE POLYESTER BLENDS MODIFIED WITH POLY(PHENYLENE ETHER)

Michael K. Laughner, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 151,226, Nov. 12, 1993, abandoned, which is a division of Ser. No. 850,335, Mar. 10, 1992, Pat. No. 5,262,476. This application Jan. 26, 1995, Ser. No. 378,900

Int. Cl.[6] C08L *69/00;67/02*

U.S. Cl. 524—109 **27 Claims**

1. An improved composition of matter of the type which comprises, in admixture,

(a) a blend of polycarbonate and polyester;

(b) poly(phenylene ether); and

(c) a block or hydrogenated block copolymer prepared from a vinyl aromatic compound and a diene,

wherein the poly(phenylene ether) is present in the composition in an amount of about 0.2 to 5 weight percent of the composition.

5,543,449

STABILIZED FLEXIBLE PVC

Rolf Drewes, Lindenfels; Markus Kolb, Plankstadt; Karl J. Kuhn, Lautertal; Hans-Jürgen Sander, Lorsch, and Wolfgang Wehner, Ober-Ramstadt, all of, Germany, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed Apr. 10, 1995, Ser. No. 419,310

Claims priority, application Switzerland, Apr. 15, 1994, 1140/94

Int. Cl.[6] C08K *5/15;3/16;* **C08L** *63/02;63/06*

U.S. Cl. 524—114 **16 Claims**

1. A composition comprising

(a) flexible polyvinyl chloride (PVC),

(b) perchloric acid or a perchlorate and

(c) a terminal epoxide compound.

5,543,450

NONFLAMMABLE SILICONE RUBBER COMPOSITIONS

Kenichi Takita, and Masaharu Takahashi, both of Gunma-ken, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Sep. 26, 1995, Ser. No. 534,167

Claims priority, application Japan, Sep. 27, 1994, 6-257389

Int. Cl.[6] C08K *5/23*

U.S. Cl. 524—190 **16 Claims**

1. A nonflammable silicone rubber composition comprising:

(1) 100 parts by weight of organopolysiloxanes of the average compositional formula

$$R_mSiO_{(4-m)/2}$$

wherein R is a hydroxyl group, or an optionally substituted monovalent hydrocarbon group; and the subscript m is a positive number from 1.98 to 2.02,

(2) 5 to 500 parts by weight based on (1), of a finely powdered silica filler,

(3) 3 to 200 ppm of platinum or a platinum compound, calculated as platinum based on (1),

(4) 2, 2'-azobis(2-methyl butyronitrile) at a molar ratio —N=N—/Pt in (3) of 2 to 200, and

(5) a metal or metal compound which is at least one of:

(A) 10 to 20,000 ppm of cerium based on (1) or a cerium compound having the equivalent amount of cerium,

(B) 1 to 20 parts by weight of iron oxide based on (1), or

(C) 1 to 20 parts by weight of titanium oxide based on (1).

5,543,451

POLYOLEFINS/ALKENYLLACTAMIDE COMPOSITION

Bing-Lin Chen, Germantown, and James A. Barker, Memphis, both of Tenn., assignors to Witco Corporation, Greenwich, Conn.

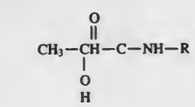
Continuation of Ser. No. 5,585, Jan. 19, 1993, abandoned, which is a division of Ser. No. 791,562, Nov. 19, 1991, Pat. No. 5,206,273. This application Jun. 22, 1995, Ser. No. 493,490

The portion of the term of this patent subsequent to Apr. 27, 2010, has been disclaimed.

Int. Cl.[6] C08J *3/28;* **C08K** *5/20*

U.S. Cl. 524—224 **5 Claims**

1. A composition of matter comprising a polyolefin and 0.05 to 0.3 weight percent based on the weight of the polyolefin of at least one lactamide having the structural formula:



wherein R is alkenyl having from about 12 to about 22 carbon atoms.

5,543,452

FLAME-RESISTANT POLYAMIDE RESIN COMPOSITIONS AND FLAME RETARDANTS THEREFORE

Junichi Nakahashi, and Itaru Natori, both of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 139,103, Oct. 21, 1993, abandoned, which is a continuation-in-part of Ser. No. 854,780, Mar. 23, 1992, abandoned, which is a continuation of Ser. No. 323,797, Mar. 15, 1989, abandoned. This application Apr. 20, 1995, Ser. No. 425,451

Claims priority, application Japan, Mar. 15, 1988, 63-59270; Jul. 27, 1988, 63-187825; Jul. 27, 1988, 63-187826

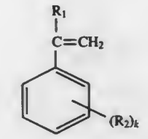
Int. Cl.[6] C08L *77/00*

U.S. Cl. 524—430 **13 Claims**

1. A flame-resistant polyamide resin composition consisting of:

(A) a polyamide,

(B) a flame retardant consisting of a modified brominated polymer having from 0.1 to 20 mole % of acid anhydride groups, based on the total moles of flame retardant (B), and a bromine content of from 50 to 80 wt. %, based on the total weight of flame retardant (B), said modified brominated polymer being a brominated copolymer of an unsaturated compound and an unsaturated compound having acid anhydride groups, wherein said unsaturated compound is represented by the formula (1):



wherein R_1 and R_2, which may be the same or different, each represents a hydrogen atom or an alkyl group having 1 to 3 carbon atoms, and k represents an integer of 5;

(C) a flame retardant consisting of an unmodified brominated polystyrene, in which the bromine content is from 50 to 80 wt. %, based on the total weight of flame retardant (C), and

(D) an antimony compound,

said composition satisfying the following conditions:

$$a+b+c=100$$

$$0.5 \leqq b \leqq 35$$

$$0 \leqq c \leqq 34.5$$

$$5 \leqq b+c \leqq 35$$

$$0.1 \leqq \alpha \leqq 20$$

$$14 \leqq ((b)(0.01x))+((c)(0.01y)) \leqq 20$$

wherein a, b and c represent the amounts in weight % of components (A), (B) and (C), respectively, x and y represent the bromine contents in weight % of component (B) based on the total weight of flame retardant (B) and of component (C) based on the total weight of flame retardant (C), respectively, and α represents the total amount in mole % of the acid anhydride groups of component (B).

5,543,453

COMPOSITION FOR FIXING WATER-COLOR INK, COVER FILM FOR THERMAL TRANSFER IMAGE USING COMPOSITION FOR FIXING WATER-COLOR INK, AND THERMAL TRANSFER IMAGE RECORDED MEDIUM

Kengo Ito; Motohiro Mizumachi; Yoshio Fujiwara, and Satoru Shinohara, all of Miyagi, Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 290,718, Aug. 12, 1994, Pat. No. 5,462,910. This application Jun. 6, 1995, Ser. No. 469,674

Claims priority, application Japan, Dec. 14, 1992, 4-333027; Apr. 27, 1993, 5-125445

Int. Cl.[6] C08K *3/34;* **C04B** *14/04;* **G03G** *11/00*

U.S. Cl. 524—445 **8 Claims**



1. A composition for fixing water color ink comprising an inorganic ion exchanger and a binder, said inorganic ion exchanger being a mixture of an anion ion exchanger and a cation ion exchanger.

5,543,454

REINFORCED POLYPROPYLENE RESIN COMPOSITION

Hikoichi Kamakura, Matsudo; Kiyoshi Tsutsui, Osaka; Tomohiko Akagawa, Osaka; Ikunori Sakai, Osaka; Shigeji Ichikawa, and Katsunori Arai, both of Omiya, all of, Japan, assignors to Ube Industries, Ltd., Yamaguchi, and Kansei Corp., Saitama, both of, Japan

Filed Aug. 4, 1994, Ser. No. 285,627

Claims priority, application Japan, Aug. 10, 1993, 5-198300

Int. Cl.[6] C08K *3/34;* **C08L** *53/02*

U.S. Cl. 524—451 **9 Claims**

1. A reinforced polypropylene resin composition comprising the following components (A), (B) and (C) in amounts of 67 to 82% by weight 6 to 10% by weight and 12 to 21% by weight, respectively, wherein:

Component (A) is:

Crystalline ethylene-propylene block copolymer having an ethylene content of 2 to 4% by weight, a molecular distribution of polypropylene component ($Q=M_w/M_n$) of at least 7, isotacticity of polypropylene component of at least 98%, an intrinsic viscosity (decalin, 135° C.) of room temperature p-xylene soluble content of more than 7 dl/g, a melt flow rate (MFR) of 3 to 15 g/10 minutes, and the product of flexural modulus at room temperature and Izod impact strength at room temperature of at least 120000;

Component (B) is:

At least one elastomer selected from the group of consisting of (a) hydrogenated block copolymer rubbers each comprising block (I) composed of an aromatic vinyl compound copolymer and block (II) composed of a conjugated diene copolymer, and having a bonding structure of I-II or $I-(II-I)_n$ (wherein n=1 or 2), wherein block (I) is contained in an amount of 10 to 40% by weight of the copolymer and is hydrogenated in an amount of 10 mol % or less, and block (II) is contained in an amount of 60 to 90% by weight of the copolymer and is hydrogenated in an amount of at least 90 mol %; and (b) ethylene-α-olefin copolymer-rubbers each containing 30 to 95% by weight of ethylene; and

Component (C) is:

talc having an average particle size of 3–5 μm, which is measured by a laser diffraction method, a BET specific surface area of 5 to 113 m^2/g, and a top cut size of less than 20 μm.

5,543,455

WATERBORNE CONTACT ADHESIVE

Pankaj Shah, Crystal Lake, Ill., assignor to Morton International, Inc., Chicago, Ill.

Filed Mar. 15, 1995, Ser. No. 404,670

Int. Cl.[6] C08K *3/18*

U.S. Cl. 524—521 **7 Claims**

1. A contact adhesive composition which is an aqueous emulsion comprising

A) between about 50 and about 80 weight percent (based on A) plus B) solids) of an emulsified acrylic polymer, said acrylic polymer having an acid number of between about 5 and about 50, and an N-methylol acrylamide content of between about 0.5 and about 5 wt % based on monomer solids of said acrylic polymer A),

B) between about 20 and about 50 weight percent (based on A) plus B) solids) of a latex of an elastomer, and

C) anionic surfactant in amount sufficient to stabilize an aqueous dispersion of A) and B).

5,543,456

PROCESS FOR PREPARING AN AQUEOUS RESIN DISPERSION AND AN AQUEOUS RESIN DISPERSION OBTAINED BY THE PROCESS

Jiro Iriguchi, Kakogawa; Tomoyuki Kuwamoto; Junichi Chosa, both of Takatsuki, and Tatsuhito Matsuda, Kobe, all of, Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

Filed Sep. 23, 1994, Ser. No. 311,341

Claims priority, application Japan, Sep. 27, 1993, 5-240085; Nov. 8, 1993, 5-278222; Nov. 29, 1993, 5-297860; Apr. 14, 1994, 6-076010; May 10, 1994, 6-096586; May 31, 1994, 6-118226; Jun. 23, 1994, 6-141593; Jul. 25, 1994, 6-172248

Int. Cl.[6] C08L *61/02*

U.S. Cl. 524—542 **11 Claims**

1. An aqueous resin dispersion obtained by a process comprising dissolving (meth) acrolein and a vinyl monomer in an organic solvent, copolymerizing said vinyl monomer and said (meth) acrolein to obtain a copolymer solution, dispersing the obtained copolymer solution in an aqueous medium and removing an unreacted (meth) acrolein, wherein a content of the unreacted (meth) acrolein in the dispersion is 0.1 weight percent or below based on a solid content of said aqueous resin dispersion and wherein the content of the (meth) acrolein in said copolymer based on a total amount of (meth) acrolein and a vinyl monomer is in the range of from 10 weight % to 80 weight %.

5,543,457

ADDITIVE FOR THE PREVENTION OF NITROSAMINE FORMATION IN SILICONE ARTICLES

Larry N. Lewis, Scotia, and Edward M. Jeram, Burnt Hills, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Dec. 7, 1994, Ser. No. 350,935

Int. Cl.[6] C08K *5/13;* **B29D** *22/00*

U.S. Cl. 524—736 **11 Claims**

I. An article, which is substantially transparent and is formed into a baby bottle nipple, comprises a nitrosamine-free composition comprising an effective nitrosamine formation inhibiting amount of a hindered phenol and a curable silicone elastomer which have been admixed together, cured and post-baked.

5,543,458

PROCESS FOR MAKING GRAFT BLOCK COPOLYMERS BY GROWING ANIONIC POLYMER CHAINS FROM FUNCTIONALIZED POLYOLEFIN BACKBONES

Ronald J. Hoxmeier; Robert C. Job; Bridget A. Spence, and Donn A. DuBois, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 31, 1995, Ser. No. 381,242

Int. Cl.[6] C08F *8/42;255/00*

U.S. Cl. 525—271 **12 Claims**

1. A process for producing graft block copolymers which comprises:

(a) copolymerizing an α-olefin with an a 1-alkenyl monomer containing a functional group from which an anionically polymerized polymer is grown to produce a graft block copolymer,

(b) metallating the functional groups on the copolymer by reaction with a metal alkyl or metal aryl compound in the presence of a metallation activator, and

(c) reacting the metallated copolymer with at least one anionically polymerizable monomer to form a graft block copolymer having a saturated olefinic backbone with pendant anionic polymer side chains.

5,543,459

GRAFT POLYMERS OF NATURAL SUBSTANCES CONTAINING SACCHARIDE STRUCTURES OR DERIVATIVES THEREOF AND ETHYLENICALLY UNSATURATED COMPOUNDS AND THEIR USE

Heinrich Hartmann, Limburgerhof; Walter Denzinger, Speyer; Michael Kroener, Mannheim; Claudia Nilz, Dannstadt-Schauernheim; Friedrich Linhart, Heidelberg, and Andreas Stange, Mannheim, all of, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Division of Ser. No. 229,636, Apr. 19, 1994, which is a continuation of Ser. No. 914,926, Jul. 17, 1992, Pat. No. 5,334,287. This application Mar. 9, 1995, Ser. No. 401,617

Claims priority, application Germany, Aug. 22, 1991, 41 27 733.3

Int. Cl.[6] C08F *251/00;* **D21H** *21/06;21/10*

U.S. Cl. 525—54.3 **8 Claims**

1. A process for the production of paper, board, or cardboard which comprises the step of:

adding to paper stock before sheet formation, 0.1 to 10% by weight, based on dry fiber, of a graft polymer prepared by free radical polymerization of monomers selected from the group consisting of (A) and (B), wherein

(A) N-vinylcarboxamides of the formula

$$CH_2=CH-N(R^2)-C(=O)-R^1 \quad (I)$$

wherein R^1 and R^2 are each H or C_1–C_6-alkyl; are polymerized in the presence of

(B) a compound selected from the group consisting of monosaccharides, oligosaccharides, polysaccharides, oxidatively, hydrolytically or enzymatically degraded polysaccharides, oxidized hydrolytically degraded or oxidized enzymatically degraded polysaccharides, chemically modified mono-, oligo-, or polysaccharides and mixtures thereof;

in a monomer weight ratio (A):(B) of from 95:5 to 20:80.

5,543,460

GRAFT COPOLYMER PARTICLES THEIR PRODUCTION AND COMPOSITIONS COMPRISING THEM

Naoki Yamamoto; Akira Yanagase, both of Otake; Tadashi Iwasaki, Kawasaki, and Masakazu Itoh, Otake, all of, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 133,084, Oct. 6, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 465,130

Claims priority, application Japan, Feb. 6, 1992, 4-021333; Mar. 10, 1992, 4-051705; Mar. 10, 1992, 4-051706; Mar. 13, 1992, 4-055508; Sep. 21, 1992, 4-251610; Sep. 25, 1992, 4-256365; Sep. 29, 1992, 4-259801; Sep. 30, 1992, 4-261324

Int. Cl.[6] C08G *77/04*

U.S. Cl. 525—64 **7 Claims**

1. Graft copolymer particles obtained by graft-polymerizing one or more kinds of vinyl monomer onto a compound rubber comprising a polyorganosiloxane component and an alkyl (meth)acrylate rubber component, which graft copolymer particle has a number average particle size of 0.01 to 0.07 μm, the volume of particles larger than 0.10 μm being 2.3% to 20% of the whole particle volume.

5,543,461

ENVIRONMENTAL STRESS CRACK RESISTANCE OF HIPS

Brenda C. Nke-Aka, Winchendon, and Richard Delaney, Lunenburg, both of Mass., assignors to Novacor Chemicals (International) SA, Fribourg, Switzerland

Filed Mar. 9, 1994, Ser. No. 209,062

Int. Cl.[6] C08L *51/04;55/02*

U.S. Cl. 525—74 **18 Claims**

1. A rubber modified graft thermoplastic composition comprising:

(a) from 99 to 96 weight % of a rubber modified thermoplastic comprising:

(i) from 4 to 15 weight % of a substrate polymer which is a co- or homo-polymer selected from the group consisting of C_{4-6} conjugated diolefins; and

(ii) from 96 to 85 weight % of a superstrate polymer at least a portion of which has been grafted to said substrate polymer, said superstrate polymer comprising a co- or homopolymer of one or more monomers selected from the group consisting of: C_{8-12} vinyl aromatic monomers which are unsubstituted or substituted by a C_{1-4} alkyl radical; C_{1-8} alkyl and hydroxy alkyl esters of C_{3-6} ethylenically unsaturated carboxylic acids; acrylonitrile; methacrylonitrile; and maleic anhydride;

wherein in said rubber modified thermoplastic said substrate polymer is distributed throughout a matrix of said superstrate polymer in particles having a number average particle size from 6 to 12 microns; and

(b) from 1 to 4 weight % of polybutene having a number average molecular weight from 900 to 2000.

5,543,462

IMPACT RESISTANT POLYSTYRENE

Akihiko Okada, and Nobuyuki Sato, both of Ichihara, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

PCT No. PCT/JP94/00332, § 371 Date Nov. 2, 1994, § 102(e) Date Nov. 2, 1994, PCT Pub. No. WO94/20571, PCT Pub. Date Sep. 15, 1994

PCT Filed Mar. 2, 1994, Ser. No. 325,345

Claims priority, application Japan, Mar. 3, 1993, 5-042586

Int. Cl.[6] C08L *25/10;83/04;81/04;75/04*

U.S. Cl. 525—74 **10 Claims**

1. An impact resistant polystyrene composition which comprises 100 paths by weight of an (A) styrenic polymer having syndiotactic configuration and 1 to 100 parts by weight of a (B) rubbery elastomer modified by a modifier having a polar group.

5,543,463

MAT THERMOPLASTIC RESIN COMPOSITION AND LAMINATE THEREFROM, MATTING AGENT THEREFORE, AND METHOD FOR MATTING THERMOPLASTIC RESIN

Yukio Kitaike; Hiroki Hatakeyama; Suehiro Tayama, all of Otake, and Kazuhiko Nakagawa, Toyohashi, all of, Japan, assignors to Mitsubishi Rayon Company Ltd., Tokyo, Japan

Filed May 27, 1994, Ser. No. 250,614

Claims priority, application Japan, May 28, 1993, 5-127069; Oct. 7, 1993, 5-251969; Jan. 10, 1994, 6-000992; Jan. 14, 1994, 6-002632

Int. Cl.[6] C08L *33/12;29/02;51/04*

U.S. Cl. 525—79 12 Claims

1. A thermoplastic resin composition having an excellent mat property comprising a blend of 100 parts by weight of an acrylic resin (A) with 0.1 to 40 parts by weight of a copolymer (B) prepared by polymerizing a monomer mixture (B-1) comprising 0.5 to 80% by weight of an acrylic acid hydroxyalkyl ester or methacrylic acid hydroxyalkyl ester having an alkyl group of 1 to 8 carbon atoms (b-1) or both, 10 to 99% by weight of a methacrylic acid alkyl ester having an alkyl group of 1 to 13 carbon atoms (b-2), 0 to 79% by weight of an acrylic acid alkyl ester having an alkyl group of 1 to 8 carbon atoms (b-3), 0 to 70% by weight of a vinyl aromatic monomer (b-4), and 0 to 20% by weight of another monoethylenically unsaturated monomer (b-5) and 0 to 5 parts by weight, per 100 parts by weight of a monomer mixture (B-1), of a copolymerizable cross-linking monomer having 2 or more double bonds in its molecule (B-2),

and wherein the acrylic resin (A) is an acrylic or methacrylic copolymer having a multi-layered structure (C), comprising:

a polymer of the innermost layer (C-a) prepared from 80 to 100% by weight of an acrylic acid alkyl ester having an alkyl group of 1 to 8 carbon atoms or methacrylic acid alkyl ester having an alkyl group of 1 to 4 carbon atoms (c-a1) or both, 0 to 20% by weight of another copolymerizable monomer having a double bond (c-a2), 0 to 10% by weight of a polyfunctional monomer (c-a3), and 0.1 to 5 parts by weight, per 100 parts by weight of the total amount of the (c-a1) to (c-a3), of a graft-linking agent,

a cross-linked elastic polymer (C-b) prepared from 80 to 100% by weight of an acrylic acid alkyl ester having an alkyl group of 1 to 8 carbon atoms (c-b1), 0 to 20% by weight of another copolymerizable monomer having a double bond (c-b2), 0 to 10% by weight of a polyfunctional monomer (c-b3), and 0.1 to 5 parts by weight, per 100 parts by weight of the total amount of the (c-b1) to (c-b3), of a graft-linking agent, and

a polymer of the outermost layer (C-c) prepared from 51 to 100% by weight of a methacrylic acid alkyl ester having an alkyl group of 1 to 4 carbon atoms (c-c1), and 0 to 49% by weight of another copolymerizable monomer having a double bond (c-c2), and having a glass transition temperature of higher than 60° C.,

as basic polymer structures, and

at least one polymer of an intermediate layer (C-d) positioned between the elastic polymer (C-b) and the outermost layer (C-c) and prepared from 10 to 90% by weight of an acrylic acid alkyl ester having an alkyl group of 1 to 8 carbon atoms (c-d1), 10 to 90% by weight of a methacrylic acid alkyl ester having an alkyl group of 1 to 4 carbon atoms (c-d2), 0 to 20% by weight of a copolymerizable monomer having a double bond (c-d3), 0 to 10% by weight of a polyfunctional monomer (c-d4), and 0.1 to 5 parts by weight, per 100 parts by weight of the total amount of the (c-d1) to (c-d4), of a graft-linking agent,

the amount of the acrylic acid alkyl ester and the polymers being decreased from the cross-linked elastic polymer (C-b) toward the polymer of the outermost layer (C-c), and

having a gel content of at least 50% by weight and a content of the residual metal of less than 500 ppm.

5,543,464

EPOXY FUNCTIONAL ACRYLIC POWDER COATINGS

Owen H. Decker, West Reading, and Charles P. Tarnoski, Sinking Spring, both of Pa., assignors to Morton International, Inc., Chicago, Ill.

Continuation of Ser. No. 318,417, Oct. 5, 1994, abandoned, which is a continuation-in-part of Ser. No. 253,880, Jun. 3, 1994, abandoned. This application Dec. 8, 1995, Ser. No. 569,379

Int. Cl.[6] C08F *8/00;* C08L *67/02*

U.S. Cl. 525—176 10 Claims

1. A composition comprising

A) an epoxy-functional acrylate polymer having an epoxy equivalent weight of between about 200 and about 650,

B) between about 5 and about 50 phr of a semi-crystalline polyester having poly-carboxylic acid functionality, a melt onset temperature of between about 45° C. and about 120° C., and a crystallinity of between about 20 J/gm. and about 300 J/gm. and

C) between about 5 and about 40 phr of a crystalline curative having poly-carboxylic acid functionality;

the total carboxylic acid functionality of B) and C) being between about 0.8 and about 1.2 times the epoxy functionality of the acrylic resin.

5,543,465

PROCESS FOR THE PRODUCTION OF HYDROPHILIC MEMBRANES

Carl-Martin Bell; Manfred Pirner, both of Hechingen; Reinbold Buck, Allerhausen, and Hermann J. Gohl, Bisingen, all of, Germany, assignors to Gambro Dialysatoren GmbH & Co., Germany

Continuation-in-part of Ser. No. 215,325, Mar. 18, 1994, abandoned. This application Dec. 30, 1994, Ser. No. 367,458

Claims priority, application Germany, Mar. 19, 1993, 43 08 807.4

Int. Cl.[6] B01D *71/44;71/56;71/68*

U.S. Cl. 525—182 41 Claims

1. A process for the production of a hydrophilic membrane comprising forming said membrane from at least one hydrophobic polymer and a hydrophilic polymer comprising polyvinylpyrrolidone, and immobilizing said polyvinylpyrrolidone by treating said membrane with an aqueous peroxodisulphate-containing solution, which solution is kept substantially free of oxygen during the immobilizing reaction by continuously degassing said solution.

5,543,466

EXTENDED FLEX LIFE CORE AND OVERLAY COMPOSITIONS AND LAMINATES THEREOF

Donald E. Norman, Newcomerstown, Ohio, assignor to Empire Plastics, Inc., Vestal, N.Y.

Division of Ser. No. 375,443, Jan. 19, 1995. This application Jun. 5, 1995, Ser. No. 464,200

Int. Cl.[6] C08L *27/06*

U.S. Cl. 525—190 14 Claims

1. A polymeric sheet having improved receptivity to ink, dyes, and combinations thereof, comprising a blend of a polyvinyl chloride or a copolymer thereof containing up to 30 percent by weight of another halogen-containing repeat unit, from about 50 to about 200 parts by weight per 100 parts by weight of said polyvinyl chloride or said halogen copolymer thereof of a copolymer derived from vinyl chloride and vinyl ester monomers, from about 10 to about 80 parts by weight per 100 parts by weight of said polyvinyl chloride polymer or said halogen copolymer thereof of at least one acrylic resin polymer or copolymer or combinations thereof, and from about 5 to about 50 parts by weight per 100 parts by weight of said polyvinyl chloride polymer or said halogen copolymer thereof of a low melting point copolymer derived from ethylene monomers, vinyl ester monomers wherein the ester portion has from 2 to 6 carbon atoms, and carbon monoxide monomers.

5,543,467

GOLF BALL

Akihiko Hamada, Kakogawa; Yoshikazu Yubuki, Akashi, and Akira Kato, Kobe, all of, Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo-ken, Japan

Filed Jun. 29, 1994, Ser. No. 267,518

Claims priority, application Japan, Jul. 2, 1993, 5-190736

Int. Cl.[6] C08L *33/02;23/26;* A63B *37/12*

U.S. Cl. 525—287 4 Claims

1. A golf ball having a core and a cover covering the core, a base material of said cover comprising a heated mixture of 30 to 85% by weight of an ionomer resin, 10 to 69.8% by weight of a maleic anhydride-modified olefin copolymer, and 0.2 to 5% by weight of a glycidyl group-containing olefin copolymer, said ionomer resin comprising a copolymer of an olefin and an unsaturated carboxylic acid partially neutralized with a metal ion.

5,543,468

VULCANIZABLE, FLUORINE-CONTAINING ELASTOMER COMPOSITION

Yuichi Yamamoto, Takahagi, and Haruyoshi Tatsu, Hitachi, both of, Japan, assignors to Nippon Mektron, Limited, Tokyo, Japan

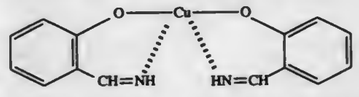
Filed Apr. 5, 1995, Ser. No. 416,669

Claims priority, application Japan, Apr. 11, 1994, 6-096916

Int. Cl.[6] C08F *8/00*

U.S. Cl. 525—245 7 Claims

1. A vulcanizable, fluorine-containing elastomer composition, which comprises a fluorine-containing elastomer containing at least one of iodine and bromine in the molecule, salicylaldoimino copper complex having the following formula:



as a cross-linking agent, and a polyfunctional unsaturated compound as a cross-linking aid.

5,543,469

VISCOSITY MODIFIER POLYMERS

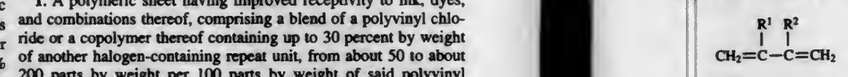
Mark J. Struglinski, Bridgewater; Gary W. Ver Strate, Atlantic Highlands, and Lewis J. Fetters, Annandale, all of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 226,750, Apr. 12, 1994, abandoned, which is a division of Ser. No. 668,653, Mar. 13, 1991, Pat. No. 5,310,490. This application Jan. 20, 1995, Ser. No. 376,728

Int. Cl.[6] C08F *297/02;8/04;* C10M *143/12*

U.S. Cl. 525—314 17 Claims

1. A block copolymer comprising monomeric units derived from butadiene and at least one conjugated diene comonomer represented by the formula



wherein R^1 is a C_1 to about C_8 alkyl radical and R^2 is hydrogen or C_1 to about C_8 alkyl radical, the copolymer being hydrogenated and comprising (i) at least 10 percent by weight of at least one crystallizable segment comprised of methylene units in sequences sufficiently long to impart crystallinity to said segment and having an average methylene content corresponding to a 1,4-polybutadiene content of at least about 20 mole percent, and (ii) more than one low crystallinity segment comprised of methylene units and substituted methylene units and having an average 1,4-polybutadiene content less than about 20 mole percent.

5,543,470

VULCANIZED RUBBER FOR HEAT RESISTANT VIBRATION-ISOLATOR

Hiroki Nakata, Osaka; Mitsuhiko Sato, Chiba, and Masashi Aoshima, Osaka, all of, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 7, 1994, Ser. No. 351,595

Claims priority, application Japan, Dec. 8, 1993, 5-308031; Sep. 20, 1994, 6-224796

Int. Cl.[6] C08F *210/16*

U.S. Cl. 525—331.7 18 Claims

1. A vulcanized rubber obtained by vulcanizing with an organic peroxide a composition comprising:

(A) 110–175 parts by weight of an oil-extended copolymer comprising 100 parts by weight of an ethylene-α-olefin-non-cojugated diene copolymer rubber with intrinsic viscosity [η] of 3 dl/g or more and 10–75 parts by weight of an extender oil;

(B) 5–20 parts by weight of a liquid diene polymer with melt viscosity of 100–3000 poise at 25° C., per 100 parts by weight of an ethylene-α -olefin-non-cojugated diene copolymer rubber; and

(C) 10–80 parts by weight of a reinforcing filler, per 100 parts by weight of an ethylene-α-olefin-non-cojugated diene copolymer rubber.

5,543,471

NON-OXIDIZING POLYMERIC MEDICAL IMPLANT

Deh-Chuan Sun, Rockaway, and Casper F. Stark, Pompton Lakes, both of N.J., assignors to Howmedica Inc., New York, N.Y.

Division of Ser. No. 70,874, Jun. 1, 1993, Pat. No. 5,414,049. This application Mar. 15, 1995, Ser. No. 404,663

Int. Cl.[6] C08F *110/02;8/00*

U.S. Cl. 525—333.7 8 Claims

1. A medical implant made of an olefinic material having a molecular weight of 400,000 to 10,000,000 comprising polymeric chains having a free radical concentration of less than 1×10^{17}/g achieved by irradiating said material and thereafter by heating said material to a temperature of between about 25° C. and about 140° C. for at least about four hours in an atmosphere having no more than 1% oxygen prior to the oxidation of said free radicals.

5,543,472

CONCURRENT EPOXIDATION AND CATALYST RESIDUE EXTRACTION

Craig A. Stevens; Bhaskar P. Rao; Cary A. Veith, all of Houston, and James R. Erickson, Katy, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed May 16, 1995, Ser. No. 442,520

Int. Cl.[6] C08F *8/08*

U.S. Cl. 525—387 3 Claims

1. A process for the concurrent epoxidation of, and catalyst residue extraction from, anionically polymerized diene-containing polymers which have been hydrogenated using a Group VIII metal catalyst, said process comprising:

(a) introducing a catalyst residue-containing diene-containing polymer cement into a reactor,

(b) heating the polymer cement to a temperature of 25° to 65° C.,

(c) contacting the polymer cement with a caustic solution,

(d) contacting the polymer cement with a peracid solution,

(e) mixing the polymer, and acid at 25° to 65° C. for ½ to 3 hours,

(f) optionally adding sufficient caustic solution to neutralize excess acid while continuing the mixing,
(g) adding sufficient water such that the aqueous/organic phase weight ratio is from 0.2:1 to 1:1 while continuing the mixing,
(h) allowing the phases to settle for 5 to 90 minutes,
(i) removing the aqueous phase from the reactor,
(j) optionally repeating steps (g), (h), and (i) until the catalyst residue contents are less than 10 ppm, and
(k) removing the polymer cement from the reactor and removing the solvent to recover the epoxidized polymer.

5,543,473

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER, AND ELECTROPHOTOGRAPHIC APPARATUS, DEVICE UNIT, AND FACSIMILE MACHINE EMPLOYING THE SAME

Naoki Fuei, Kawaguchi, and Takashi Tanaka, Kawasaki, both of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 858,030, Mar. 26, 1992, abandoned. This application Apr. 22, 1994, Ser. No. 232,466
Claims priority, application Japan, Mar. 28, 1991, 3-087254
Int. Cl.[6] C08L *75/04;59/00*
U.S. Cl. 525—399 **8 Claims**

1. An electrophotographic photosensitive member comprising a photosensitive drum having an aluminum support, an instantaneous adhesive, and a drum flange or a drum gear bonded to said aluminum support with said instantaneous adhesive, said drum flange or the drum gear containing from 10 to 25 weight percent of a thermoplastic polyurethane resin based on total resin weight and a polyacetal resin.

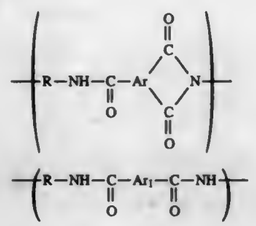
5,543,474

RESIN COMPOSITION

Takao Kawaki; Akikazu Amagai; Toshiaki Yamada; Hidefumi Harada; Hajime Ban; Yuji Takeda, all of Tsukuba, and Koji Yamamoto, Hiratsuka, all of, Japan, assignors to Mitsubishi Gas Company, Inc., Tokyo, Japan

PCT No. PCT/JP94/00232, § 371 Date Oct. 17, 1994, § 102(e) Date Oct. 17, 1994, PCT Pub. No. WO94/19410, PCT Pub. Date Sep. 1, 1994
PCT Filed Feb. 16, 1994, Ser. No. 318,833
Claims priority, application Japan, Feb. 17, 1993, 5-028090; Feb. 17, 1993, 5-028091; Feb. 17, 1993, 5-028092; Apr. 23, 1993, 5-098119; Apr. 23, 1993, 5-098120; Apr. 23, 1993, 5-098121; Jul. 12, 1993, 5-171606
Int. Cl.[6] C08L *59/02;67/02*
U.S. Cl. 525—440 **10 Claims**

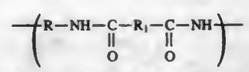
1. A resin composition which comprises:
(A) an aromatic copolyamideimide containing 5 to 95 mol % of a recurring unit represented by the formula (1) and 5 to 95 mol % of at least one member selected from the group consisting of a recurring unit represented by the formula (2) and a recurring unit represented by the formula (3), provided that the total amount of these three recurring units is 100 mol %,



(1)

(2)

-continued



(3)

wherein Ar in the formula (1) denotes a trivalent aromatic group containing at least one 6-membered carbon ring, Ar_1 in the formula (2) denotes a divalent aromatic group containing at least one 6-membered carbon ring, R_1 in the formula (3) denotes a divalent aliphatic group, and R in the formulas (1), (2) and (3) denotes a divalent aromatic or aliphatic group, and
(B) a polyester resin incapable of forming an anisotropic molten phase, the weight ratio of the aromatic copolyamideimide (A) and the polyester resin (B) ((A)/(B)) being 95/5 to 5/95, and the aromatic copolyamideimide (A) being prepared by conducting a polymerization reaction of an aromatic tricarboxylic acid anhydride and at least one member selected from the group consisting of an aromatic dicarboxylic acid and an aliphatic dicarboxylic acid with a diisocyanate compound in plural steps such that in a first step the polymerization reaction is conducted in a temperature range of 50° to 110° C. to terminate formation of an amide group and in a subsequent step the polymerization reaction is conducted in a temperature range of higher than 110° C. but not higher than 200° C. to form an imide group.

5,543,475

COMPOUNDS WITH LIQUID CRYSTALLINE PROPERTIES AND COATING BINDERS BASED THEREON

Frank N. Jones, Ann Arbor, Mich.; Cong Du, Shanghai, China; Ganghui Teng, Fargo, N. Dak.; Adel F. Dimian, Hudson, Wis., and Daozhang Wang, Shanghai, China, assignors to North Dakota State University, Fargo, N. Dak.

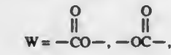
PCT No. PCT/US92/02155, § 371 Date Sep. 13, 1993, § 102(e) Date Sep. 13, 1993, PCT Pub. No. WO92/16588, PCT Pub. Date Oct. 1, 1992
Continuation-in-part of Ser. No. 672,537, Mar. 20, 1991, abandoned. This PCT application Mar. 18, 1992, Ser. No. 117,146
Int. Cl.[6] C08L *67/02*
U.S. Cl. 525—444 **37 Claims**

1. A method of providing a polymeric vehicle which is a dispersion with a viscosity which increases when the temperature of the polymeric vehicle is increased above about 25° C., the polymeric vehicle comprising oligomers having a number average molecular weight not greater than about 10,000, the method comprising dispersing with the oligomers at least one oligoester adduct having a number average molecular weight not greater than about 10,000 and selected from the group consisting of an amine salt of an oligoester of a general formula I, a mono-oxirane adduct of the oligoester of the general formula I, an amine salt of a carboxylated hydroxyl terminated oligoester of the general formula I, a mono-oxirane adduct of the carboxylated hydroxyl terminated oligoester of the general formula I and mixtures thereof to provide the polymeric vehicle, wherein the general formula I is

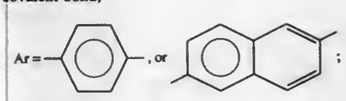
HO-V-Al'-(W-Ar-X-Al-Y)$_{\overline{m}}$-Ar'-Z-OH

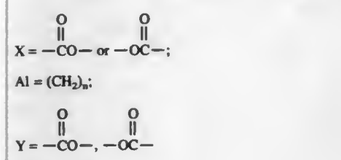
wherein

or a covalent bond;
Al'=$(CH_2)_m$ or a covalent bond;

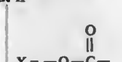


or a covalent bond;

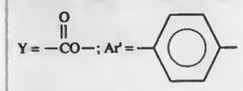




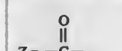
or a covalent bond,
but if



and if V=bond, and if Al'→bond,
and if W=bond and if Z=bond, then



or a covalent bond; and



or a covalent bond
wherein $\overline{m}$=1 to 20, but when V=bond,
Al'=bond, W=bond and Z=bond, $\overline{m}$>2 n=2 to 20, and
the polymeric vehicle comprising the oligoester adduct in an amount effective for the increase in the viscosity.

5,543,476

COMPOUNDS WITH LIQUID CRYSTALLINE PROPERTIES AND COATING BINDERS BASED THEREON

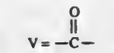
Frank N. Jones, Ann Arbor, Mich.; Cong Du, Shanghai, China; Ganghui Teng, Fargo, N. Dak.; Adel F. Dimian, Hudson, Wis., and Daozhang Wang, Shanghai, China, assignors to North Dakota State University, Fargo, N. Dak.

Division of Ser. No. 117,146, Sep. 13, 1993, which is a continuation-in-part of Ser. No. 672,537, Mar. 20, 1991, abandoned. This application Jun. 5, 1995, Ser. No. 461,415
Int. Cl.[6] C08L *67/02*
U.S. Cl. 525—444 **36 Claims**

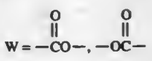
1. A method for increasing the shear thinning of a polymeric vehicle substantially free of polymers having a number average molecular weight of more than about 10,000 at about 25° C., the method comprising:
dispersing with an oligomer having a number average molecular weight of not greater than about 10,000 at least one oligoester adduct having a number average molecular weight not greater than about 10,000 and selected from the group consisting of an amine salt of an oligoester of a general formula I, a mono oxirane adduct of the oligoester of the general formula I, an amine salt of a carboxylated hydroxyl terminated oligoester of the general formula I, a mono-oxirane adduct of the carboxylated hydroxyl terminated oligoester of the general formula I and mixtures thereof to provide a modified polymeric vehicle, wherein the general formula I is

HO—V—Al'—(W—Ar—X—Al—Y)$_{\overline{m}}$—Ar'—Z—OH

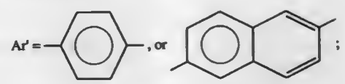
wherein

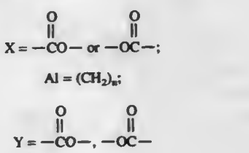


or a covalent bond;
Al'=$(CH_2)_n$ or a covalent bond;

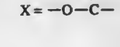


or a covalent bond;

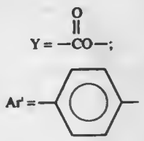




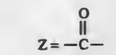
or a covalent bond,
but if



and if V=bond, and if Al'=bond,
and if W=bond and if Z=bond, then



or a covalent bond; and



or a covalent bond
wherein m=1 to 20, but when V=bond,
Al'=bond, W=bond and Z=bond, $\overline{m}\geq 2$
n=2 to 20, and
the modified polymeric vehicle comprising the oligoester adduct in an amount effective for the increase of shear thinning of the polymeric vehicle, the polymeric vehicle being effective for providing a coating binder having a pencil hardness of at least about 3H and a reverse impact resistance of at least 60-inch pounds at a coating binder thickness of about 1 mil.

5,543,477

COPOLYMERS OF ETHYLENE AND ALKYL ACRYLATE WITH IMPROVED MELT-POINT TEMPERATURES

Jerry G. Latiolais, Groves; Nicholas R. Galante, Orange; J. Paul Gathright, Orange, and James H. Wang, Orange, all of Tex., assignors to Chevron Chemical Company, San Ramon, Calif.

Continuation-in-part of Ser. No. 764,861, Sep. 24, 1991, abandoned. This application Sep. 21, 1992, Ser. No. 947,870

Int. Cl.[6] C08F *10/02;20/12*

U.S. Cl. 526—65 **17 Claims**

1. A process for the preparation of ethylene-alkyl acrylate copolymers comprising:

A. feeding overall an amount by weight, A, of alkyl acrylate an amount by weight, E, of ethylene to a multi-zoned polymerization reactor;

B. introducing an effective amount of an initiator and at least a portion, E_1, of the total amount of ethylene into a first reaction zone of the reactor;

C. concurrently introducing a portion, A_1, of alkyl acrylate to said first reaction zone such that (1) greater than about 55 percent of the overall amount of alkyl acrylate is introduced into said first reaction zone, (2) the amount A_1, of alkyl acrylate fed to said first reaction zone is greater than the total amount of alkyl acrylate fed to all subsequent reaction zones, and (3) the ratio of A_1 to E_1 in said first reaction zone is greater than the ratio of A to E for the reactor overall; and

D. feeding additional initiator, ethylene and optionally alkyl acrylate to a subsequent reaction zone or zones;

wherein the alkyl acrylate content of the final copolymer is greater than ten weight percent based on the total weight of the copolymer.

5,543,478

METHOD FOR OPERATING REACTOR FOR POLYMERIZING OLEFINS

Masahiro Niwa; Yuji Sugano; Ken-ichi Uenishi, all of Yokohama; Hideto Kitada; Yoshihisa Yamaguchi, both of Kawasaki; Eiko Kobayashi, Yokosuka; Kunimichi Kubo, and Akira Sano, both of Tokyo, all of, Japan, assignors to Nippon Petrochemicals Company, Limited, Tokyo, Japan

Filed Dec. 28, 1993, Ser. No. 174,269

Claims priority, application Japan, Dec. 29, 1992, 4-360307; Dec. 30, 1992, 4-360001; Dec. 30, 1992, 4-360004

Int. Cl.[6] C08F *2/38*

U.S. Cl. 526—82 **10 Claims**

1. In a method for operating a fluidized bed reaction system for polymerizing olefins which comprises the steps of feeding:

a catalyst comprising titanium and/or vanadium; and magnesium,

an organoaluminum compound, and

olefins into said fluidized bed reaction system, polymerizing or copolymerizing said olefins at steady state under a vapor phase condition, stopping the reaction of said polymerization or copolymerization and restarting said reaction, the improvement in the operation of said restarting of the fluidized bed reaction system comprising the steps of:

(a) stopping the polymerization or copolymerization of olefins by discontinuing the addition of catalyst and the feed of olefin with or without feeding a deactivator,

(b) purging the fluidized bed reaction system with an inert gas,

(c) restarting the polymerization or copolymerization of olefins by:

(i) feeding an organoaluminum compound into said fluidized bed reaction system without discharging the previously formed polymer particles from the fluidized bed reaction system,

wherein when the deactivator is not used, the quantity of organoaluminum compound to be fed is such an amount corresponding to 0.2 to 10 aluminum atoms in said organoaluminum compound relative to 1 aluminum atom in the organoaluminum compound remaining in the fluidized bed reaction system before the stopping of polymerization or copolymerization,

and when a gaseous deactivator is used, the quantity of organoaluminum compound to be fed is such an amount corresponding to 1 or more aluminum atoms relative to 1 aluminum atom remaining in the fluidized bed reaction system at the stopping of the polymerization or copolymerization,

(ii) then feeding olefins and hydrogen as a molecular weight modifier with the circulation of nitrogen, thereby gradually raising the pressure of the fluidized bed reaction system, and

(iii) then supplying the catalyst into the fluidized bed reaction system.

5,543,479

PROCESS FOR THE PRODUCTION OF POLYISOOLEFINS

Wolfgang Baade, Odenthal; Roland Heinrich, Leverkusen; Gerhard Langstein, Kürten; Thomas Mulder, Köln, all of, Germany, and Judit Puskas, Ontario, Canada, assignors to Bayer AG, Leverkusen, Germany

Filed Jul. 27, 1995, Ser. No. 508,237

Claims priority, application Germany, Aug. 8, 1994, 44 28 024.6

Int. Cl.[6] C08F *4/14;4/16;10/10*

U.S. Cl. 526—88 **5 Claims**

1. Process for the production of polyisoolefins, comprising the following steps:

combining isoolefins having 4 to 16 carbon atoms, and optionally conjugated diolefins having 4 to 6 carbon atoms and/or cationically polymerizable, mono- or polyunsaturated, organic compounds having 4 to 16 carbon atoms, with carbon dioxide, linear, branched and/or cyclic C_4–C_8 alkanes and catalysts at temperatures of −70° C. to +20° C. and pressures of 1 to 70 bar, to form a reaction mixture wherein the weight ratio of carbon dioxide to alkanes is 10:90 to 90:10;

mixing said reaction mixture to form an organic phase that is dispersed in said carbon dioxide so that the organic phase has an average particle size of <200 μm;

polymerizing said isoolefins having 4 to 16 carbon atoms, optionally with said conjugated diolefins having 4 to 6 carbon atoms and/or said cationically polymerizable, mono- or polyunsaturated, organic compounds having 4 to 16 carbon atoms, at said temperatures and pressures to form said polyisoolefins.

5,543,480

POLYMERIZATION PROCESS USING DIENE CONTAINING CATALYSTS

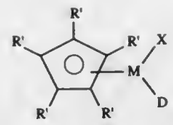
Jasson T. Patton; David D. Devore; Franis J. Timmers; Jorge Soto; Gregory F. Schmidt, and David R. Wilson, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 28, 1994, Ser. No. 267,991

Int. Cl.[6] C08F *4/64*

U.S. Cl. 526—126 **14 Claims**

1. An addition polymerization process for preparing syndiotactic polymers comprising contacting one or more monovinylidene aromatic monomers selected from the group consisting of styrene and C_{1-4} alkyl substituted styrenes with a addition polymerization catalyst corresponding to the formula:



wherein:

M is titanium in the +2 formal oxidation state;

R' in each occurrence is independently selected from the group consisting of hydrogen, alkyl, aryl, aralkyl, silyl, germyl, cyano, halo and combinations thereof said R' having up to 20 non-hydrogen atoms, or adjacent R' groups (when R' is not hydrogen, cyano or halo) together form hydrocarbylene group connected to adjacent positions of the cyclopentadienyl ring;

D is a neutral, η^4-bonded, C_{5-30} diene group; and

X is chloride, allyl, methyl substituted allyl, pentadienyl and C_{1-6} hydrocarbyl substituted pentadienyl.

5,543,481

PROCESS FOR PRODUCING A STYRENIC POLYMER

Mizutomo Takeuchi, and Norio Tomotsu, both of, Ichihara, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 213, Jan. 4, 1993, Pat. No. 5,461,128. This application May 12, 1995, Ser. No. 440,135

Claims priority, application Japan, Jan. 8, 1992, 4-001231

Int. Cl.[6] C08F *4/649;12/08*

U.S. Cl. 526—126 **9 Claims**

1. A process for producing a styrenic polymer having a high degree of syndiotactic configuration, comprising polymerizing at least one monomer selected from the group consisting of styrene, alkylstyrenes, alkoxystyrenes, halogenated styrenes and vinylbenzoate esters in the presence of a catalyst comprising:

(A) a titanium compound having formula (I)

$$TiR^1XYZ \quad (I)$$

wherein R^1 is a cyclopentadienyl group, a substituted cyclopentadienyl group, an indenyl group, a substituted indenyl group, a fluorenyl group or a substituted fluorenyl group; and X, Y and Z, independently of one another, are each a hydrogen atom, an alkyl group having 1 to 12 carbon atoms, an alkoxy group having 1 to 12 carbon atoms, a thioalkoxy group having 1 to 20 carbon atoms, an aryl group having 6 to 20 carbon atoms, an aryloxy group having 6 to 20 carbon atoms, a thioaryloxy group having 6 to 20 carbon atoms, an arylalkyl group having 7 to 20 carbon atoms or a halogen atom, or said titanium compound has the formula (II)

$$Ti(R^2)_2R^3R^4 \quad (II)$$

wherein each R^2 is identical and is a cyclopentadienyl group, a substituted cyclopentadienyl group, an indenyl group, a substituted indenyl group, a fluorenyl group or a substituted fluorenyl group, R^3 and R^4 are each a hydrogen atom, an alkyl group having 1 to 20 carbon atoms, an alkoxy group having 1 to 20 carbon atoms, a thioalkoxy group having 1 to 20 carbon atoms, an aryl group having 6 to 20 carbon atoms, an aryloxy group having 6 to 20 carbon atoms, a thioaryloxy group having 6 to 20 carbon atoms, an arylalkyl group having 7 to 20 carbon atoms, a halogen atom or an amino group; and R^2 may be crosslinked by an alkylidene group having 1 to 5 carbon atoms, an alkylsilyl group having 1 to 20 carbon atoms and 1 to 5 silicon atoms or a germanium-containing hydrocarbon group having 1 to 20 carbon atoms and 1 to 5 germanium ions; and

(B) an ionic compound comprising a non-coordinate anion and a cation having the formula (V)

$$M^2R^8R^9R^{10} \quad (V)$$

wherein M^2 is a carbonium cation, and R^8, R^9 and R^{10}, which may be the same or different, are each a hydrogen atom, an alkyl group having 1 to 20 carbon atoms, an aryl group having 6 to 20 carbon atoms, an alkoxy group having 1 to 20 carbon atoms or a thioalkoxy group having 1 to 20 carbon atoms, wherein said catalyst is free of an alkylating agent.

5,543,482

COMPOSITION FOR HIGH REFRACTIVE INDEX LENS COMPRISING COPOLYMER OF VINYLBENZYLTHIO COMPOUND AND A MONOMER COPOLYMERIZABLE THEREWITH

Masanori Shimuta, Tokyo; Toru Takahashi, Handa; Hisato Abe; Kenichi Takahashi, both of Kashiwa; Akira Kurata, Mitsukaido, and Osamu Aoki, Matsudo, all of, Japan, assignors to Mitsubishi Gas Chemical Co., Inc., Tokyo, Japan

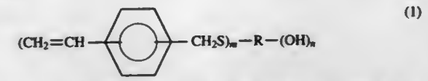
Continuation-in-part of Ser. No. 151,040, Nov. 12, 1993, abandoned. This application Mar. 13, 1995, Ser. No. 403,101

Claims priority, application Japan, Nov. 12, 1992, 4-302514

Int. Cl.[6] C08F *228/04*

U.S. Cl. 526—289 **24 Claims**

1. A composition for high refractive index lens, comprising a vinylbenzylthio compound represented by the following general formula (1)



(I)

in which m is an integer of 2–3, n is an integer of 1 and R is a hydrocarbon group of 3–6 carbon atoms or a hydrocarbon group of 3–6 carbon atoms containing a bivalent sulfur atom, a monomer copolymerizable with said vinylbenzylthio compound selected from the group consisting of vinyl aromatic compounds, (meth-)acrylic acid esters, thio(meth)acrylic acid esters and allyl compounds, and radical polymerization initiator.

5,543,483

HYDROXY-FUNCTIONAL ALLYL TERPOLYMERS

Shao-Hua Guo, West Goshen, Pa., assignor to ARCO Chemical Technology, L.P., Greenville, Del.

Continuation-in-part of Ser. No. 309,699, Sep. 21, 1994, Pat. No. 5,480,954. This application May 15, 1995, Ser. No. 440,865

Int. Cl.[6] C08F *218/08*

U.S. Cl. 526—330 **7 Claims**

1. A terpolymer which comprises recurring units of:

(a) an allyl ester of the formula $CH_2{=}CR'{-}CH_2{-}O{-}CO{-}R$ in which R is hydrogen or a saturated linear, branched, or cyclic C_1–C_{30} alkyl, aryl, or aralkyl group, and R' is selected from the group consisting of hydrogen and C_1–C_5 alkyl;

(b) an allylic alcohol of the formula $CH_2{=}CR'{-}CH_2{-}OH$ in which R' is selected from the group consisting of hydrogen and C_1–C_5 alkyl; and

(c) a vinyl monomer selected from the group consisting of vinyl aromatic monomers, vinyl halides, vinyl ethers, acrylonitrile, methyacrylonitrile, acrylamide, methacrylamide, acrylates, methacrylates, and vinyl esters;

wherein the terpolymer has an average hydroxyl functionality within the range of about 2 to about 10, and a number average molecular weigth within the range of about 300 to about 15,000.

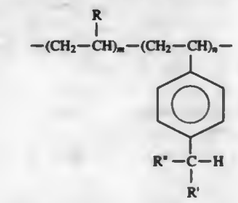
5,543,484

α-OLEFIN/PARA-ALKYLSTYRENE COPOLYMERS

T. C. Chung, and H. L. Lu, both of State College, Pa., assignors to The Penn State Research Foundation, University Park, Pa.

Filed Nov. 18, 1994, Ser. No. 341,778
Int. Cl.[6] C08F *212/08*
U.S. Cl. 526—347.1 **5 Claims**

1. Copolymers having been prepared in the presence of a metallocene catalyst and having a substantially homogeneous compositional distribution represented by the formula:



wherein R is hydrogen or C_1 to C_{10} linear or branched alkyl, and R' and R" are, independently, hydrogen or C_1 to C_5 primary or secondary alkyl; wherein the alpha α-olefin mole % (m) is between about 5 and 99.9, wherein the sum of m and n (mole % p-alkylstyrene) is 100; and wherein the copolymers have a number average molecular weight (Mn) of at least about 1,000 and a ratio of weight average molecular weight (Mw) to number average molecular weight of less than about 4.

5,543,485

PROCESS FOR THE PRODUCTION OF PRECERAMIC POLYBOROSILAZANES AND CERAMIC MATERIAL DERIVED THEREFORM

Hans-Peter Baldus, Leverkusen, Germany, assignor to Bayer AG, Leverkusen, Germany

Filed Dec. 12, 1994, Ser. No. 353,625
Claims priority, application Germany, Dec. 23, 1993, 43 44 161.0; Feb. 8, 1994, 44 03 839.9
Int. Cl.[6] C08G *77/56*
U.S. Cl. 528—5 **9 Claims**

1. Process for the production of oligo- or polyborosilazane compounds wherein a mixture of: (1) $Cl_3Si—NH—BCl_2$; and (2) one or more molecular silane compounds of the formula $ClSi(R_1,R_2,R_3)$, where R_1,R_2 and R_3 mutually independently mean Cl, H, C_1–C_6 alkyl, phenyl, vinyl, alkylamino or alkylsilyl is subjected to ammonolysis.

5,543,486

EPOXY-RESIN COMPOSITION CONTAINING TITANIUM AND/OR ZIRCONIUM ALKOXIDE AND LATENT HARDENER

Abe Chikara; Junji Ohashi, and Kiyomiki Hirai, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Jan. 6, 1995, Ser. No. 369,651
Claims priority, application Japan, Jan. 7, 1994, 6-000419
Int. Cl.[6] C08G *59/68;59/18*
U.S. Cl. 528—92 **6 Claims**

1. An epoxy-resin composition comprising, as essential components, (1) an epoxy resin having two or more epoxy groups in one molecule, (2) a solid-dispersing, latent hardener which is a reaction product of an amine or urea compound with an epoxy compound, said reaction product being insoluble in epoxy resins at room temperature while being soluble in epoxy resins under heat, and (3) titanium and/or zirconium metal alkoxide(s), said composition having improved storage stability as compared to a composition not containing said titanium and/or zirconium metal alkoxide(s).

5,543,487

HYDROXYMETHYLATED RESORCINOL COUPLING AGENT AND METHOD FOR BONDING WOOD

Charles B. Vick, Sun Prarie, Wis.; Klaus H. Richter, Wetzikon, Switzerland, and Brian H. River, Madison, Wis., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 186,182, Jan. 19, 1994, abandoned. This application Nov. 22, 1994, Ser. No. 343,386
Int. Cl.[6] C08G *8/04*
U.S. Cl. 528—158 **8 Claims**

1. A method of enhancing the adhesion of an adhesive to a lignocellulosic material, comprising the steps of:
(a) preparing an aqueous alkaline solution of resorcinol and at least one compound selected from the group of formaldehyde and paraformaldehyde;
(b) allowing the solution to react in situ for a period of time sufficient to allow hydroxymethylated resorcinol derivative dimers, trimers and oligomers thereof to form, wherein the period of time is between 4–6 hours;
(c) priming the surface of a lignocellulosic material with the reacting mixture of step (b);
(d) allowing the primed surface to dry; and
(e) applying an adhesive to the primed surface.

5,543,488

WATER-DISPERSIBLE ADHESIVE COMPOSITION AND PROCESS

Richard A. Miller; Scott E. George; Theron E. Parsons, III, and Mark A. Montgomery, all of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Continuation-in-part of Ser. No. 175,330, Dec. 29, 1993, abandoned. This application Jul. 29, 1964, Ser. No. 283,011
Int. Cl.[6] C08G *63/68*
U.S. Cl. 528—277 **14 Claims**

1. A water-dispersible adhesive composition according to the present invention comprising a branched water-dispersible polyester composition made of the moieties of reaction products;
(I) at least one difunctional dicarboxylic acid which is not a sulfomonomer;
(II) about 2 to 15 mol percent, based on the total of all acid, hydroxyl and amino equivalence, of residues of at least one difunctional sulfomonomer containing at least one sulfonate group bonded to an aromatic ring wherein the functional groups are hydroxyl, carboxyl, or amino;
(III) at least one diol or a mixture of a diol and a diamine comprising:
(A) about 0.1 to 85 mol percent, based on the total mol percent of diol moieties or diol and diamine moieties, of a diol or diamine having the formula $H(—OCH_2CH_2—)_nOH$ and $HRN(-(CH_2CH_2O-))_nNHR$ wherein n is 2 to about 20 and R is hydrogen or C_1–C_6 alkyl provided that the mol percent of such moieties is inversely proportional to the value of n;
(B) about 0.1 to about 15 mol percent, based on the total mol percent of diol moieties or diol and diamine moieties, of moieties of a poly(ethylene glycol) having the formula $H(—OCH_2CH_2—)_nOH$ wherein n is 2 to about 500, provided that the mol percent of such moieties is inversely proportional to the value of n; and
(C) 0 to no greater than about 99 mol percent of the diol component or diol and diamine mixture being selected from the group consisting of a glycol and a mixture of glycol and diamine having two —NRH groups, the glycol containing two $—C(R^1)_2—OH$ groups wherein R^1 in the reactant is a hydrogen atom, an alkyl of 1 to 5 carbon atoms, or an aryl group of 6 to 10 carbon atoms;

(IV) 0 to about 40 mol % of a difunctional monomer reactant selected from the group consisting of hydroxycarboxylic acids having one $—C(R—)_2—OH$ group, aminocarboxylic acids having one —NRH group, aminoalkanols having one $—C(R—)_2OH$ group and one —NRH group and mixtures of said difunctional reactants wherein R in the reactant is hydrogen or an alkyl group of 1 to 6 carbon atoms; and
(V) about 0.1 to 40 mol % of a multifunctional reactant containing at least three functional groups selected from the group consisting of hydroxyl, carboxyl, amino, and mixtures thereof;
the polymer containing substantially equal mol proportions of acid equivalents (100 mol %) and diol or diol and diamine equivalents (100 mol %) wherein at least 20 weight percent of the groups linking the moieties of the monomeric units are ester linkages and wherein the inherent viscosity is at least 0.2 dL/g measured in a 60/40 parts by weight solution of phenol/tetrachloroethane at 25° C. and at a concentration of about 0.25 g of polymer in 100 ml of the solvent, the glass transition temperature T_g is no greater than 20° C., and the ring and ball softening point (RBSP) is at least 70° C.

5,543,489

NON-EXUDING THERMOPLASTIC ELASTOMERS

Patrick Alex, 2, Villa des Prommiers, Pecqueuse, France; Yves Aubert, 8, Clos Epervier, Menneval, and Alain Frey, Les Mollands, Saint Leger de Rotes, both of, France

Filed Apr. 19, 1994, Ser. No. 233,602
Claims priority, application France, Apr. 21, 1993, 93 04678
Int. Cl.[6] C08G *63/42*
U.S. Cl. 528—288 **10 Claims**

1. A thermoplastic elastomer comprising a polyamide-polyether block copolymer, said elastomer being substantially free of exudable impurities as evidenced by said elastomer having the property that less than 3.5% by weight of the matter of said elastomer is extractable by ethanol.

5,543,490

PROCESS FOR THE PREPARATION OF POLYSUCCINIMIDE, POLYASPARTIC ACID AND SALTS THEREOF, AND THE USE OF THESE COMPOUNDS

Torsten Groth, Reinbek; Winfried Joentgen, Köln; Hans W. Linden, Odenthal; Nikolaus Müller, Monheim; Heinz-Joachim Rother, Krefeld; Paul Wagner, Düsseldorf, and Martin Kugler, Leichlingen, all of, Germany, assignors to Bayer AG, Leverkusen, Germany

Filed Dec. 17, 1993, Ser. No. 168,847
Claims priority, application Germany, Dec. 24, 1992, 42 44 031.9
Int. Cl.[6] C08G *69/00*
U.S. Cl. 528—328 **18 Claims**

1. Process for the preparation of polysuccinimide, polyaspartic acid and salts thereof from maleamic acid, wherein maleic anhydride and ammonia are reacted, optionally in the presence of a solvent, to give maleamic acid, the maleamic acid is subjected to continuous thermal polymerization at from 100° C. to 350° C. in a reactor at a residence time of from 0.5 to 30 minutes, and the resultant polysuccinimide is, if desired, converted into polyaspartic acid or a salt thereof by hydrolysis.

5,543,491

COPOLYMERS OF POLYSUCCINIMIDE AND POLYCARBOXYLIC ACIDS

Louis L. Wood, Rockville, and Gary J. Calton, Elkridge, both of Md., assignors to Bayer AG, Leverkusen, Germany

Division of Ser. No. 994,922, Dec. 22, 1992, Pat. No. 5,408,028. This application Apr. 13, 1995, Ser. No. 421,624
Int. Cl.[6] C08G *69/00*
U.S. Cl. 528—328 **2 Claims**

1. A copolymer of polysuccinimide and a polycarboxylic acid.

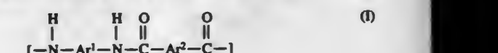
5,543,492

HYDROLYSIS-RESISTANT ARAMIDS

Robert S. Irwin, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

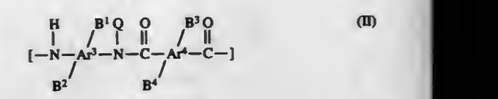
Filed Mar. 6, 1995, Ser. No. 399,330
Int. Cl.[6] C08G *69/26;69/32*
U.S. Cl. 528—335 **22 Claims**

1. An aramid comprising repeat units of the formula



(I)

and



(II)

wherein
each Ar^1, Ar^2, Ar^3 and Ar^4 is independently an arylene having 6 to 12 carbon atoms;
repeat unit (II) is about 2 to about 8 mole percent of said aramid and repeat unit (I) is about 98 to about 92 mole percent of said aramid;
each B^1, B^2, B^3, and B^4 is independently H, an n-alkoxy group containing 6 to 18 carbon atoms, or an n-alkyl group containing 6 to 18 carbon atoms; and
Q is H or an n-alkyl group containing 6 to 18 carbon atoms;
provided that, in accordance with the formula for repeat unit (II), at least one of B^1, B^2, B^3, B^4 and Q is n-alkoxy or n-alkyl; and that no more than two of B^1,B^2, B^3, B^4 and Q are selected from the group consisting of n-alkyl and n-alkoxy.

5,543,493

METHOD FOR TREATING A POLYIMIDE SURFACE

Chan-eon Park; Hwang-kyu Yun, both of Kyungsangbuk-do; Sung-min Sim, Suwon, and Wan-gyun Choi, Kyungki-do, all of, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jul. 26, 1994, Ser. No. 280,769
Claims priority, application Rep. of Korea, Apr. 11, 1994, 19947536
Int. Cl.[6] B05D *3/10*
U.S. Cl. 528—353 **20 Claims**

1. A method for treating a surface of a polyimide, comprising the steps of:
amine-treating said polyimide surface by immersing said polyimide surface in an amine solution which includes an amine selected from the group consisting of aliphatic amine, aromatic amine and siloxane amine, and a solvent; and
drying said amine-treated polyimide surface.

VOL 1189 1 AUG 6 1996 UMI

5,543,494

PROCESS FOR THE PRODUCTION OF POLY(LACTIC ACID)

Gabriele Perego, Ivrea; Catia Bastioli, Novara, both of, Italy; Karolina Grzebieniak, Ksawerow, and Antoni Niekraszewicz, Lodz, both of, Poland, assignors to Ministero Dell'Univerita' E Della Ricerca Scientifica E Tecnologica, Italy

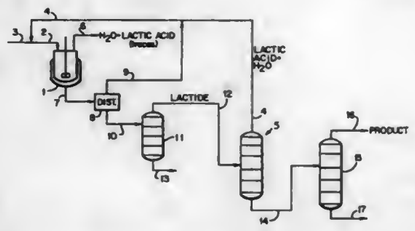
PCT No. PCT/EP93/02033, § 371 Date Jan. 27, 1995, § 102(e) Date Jan. 27, 1995, PCT Pub. No. WO94/03522, PCT Pub. Date Feb. 17, 1994

PCT Filed Jul. 29, 1993, Ser. No. 374,733

Claims priority, application Italy, Aug. 4, 1992, TO92A000676

Int. Cl.[6] C08G *63/08;* C08F *6/00*

U.S. Cl. 528—354 9 Claims



1. A process for the production of poly(lactic acid) with a viscosity average molecular weight of at least 25,000 by the polycondensation of the lactic acid free monomer, said process comprising carrying out the polycondensation in the presence of from 0.005 to 0.5% by weight, with respect to free monomer supplied, of an iron catalyst to produce said poly(lactic acid) with viscosity average molecular weight higher than 25,000 and distilling off and collecting lactide formed during said polycondensation.

5,543,495

PROCESS FOR INCREASING THE MOLECULAR WEIGHT OF POLYAMIDES AND OTHER CONDENSATION POLYMERS

Colin Anolick, Wilmington; Gregory D. Cramer, Seaford; Ramdas Dujari, Seaford, all of Del.; Win-Chung Lee, Salisbury, Md.; Sundar M. Rao, Seaford, and Robert C. Wheland, Wilmington, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 8, 1994, Ser. No. 207,733

Int. Cl.[6] C08G *69/46;69/48*

U.S. Cl. 528—481 41 Claims

1. A process for increasing the molecular weight of polyamide or polyester polymers, said process performed in a pressurized vessel where the polymer is in melt form, which process comprises the successive steps of:

(a) injecting and mixing steam or an inert gas, as a stripping agent, into the polymer melt, under elevated pressure, so as to result in a polymer condensation reaction, with the concurrent production of evaporated gases;

(b) reducing the pressure of the polymer melt so that the partial pressure of the product of the polymer condensation reaction is reduced and removing the resulting evaporated gases through a vent port; and

(c) after removing the evaporated gases, holding the polymer melt at reaction temperature for a sufficient time to allow the reaction to proceed to a desired increased number average molecular weight.

5,543,496

CYCLIC BRADYKININ ANTAGONIST PEPTIDES

Donald J. Kyle, Abingdon, and Sarvajit Chakravarty, Baltimore, both of Md., assignors to Scios Nova Inc., Mountain View, Calif.

Continuation of Ser. No. 18,604, Feb. 17, 1993, abandoned. This application Jul. 25, 1994, Ser. No. 279,763

Int. Cl.[6] C07K *7/18;7/52;* A61K *38/12*

U.S. Cl. 530—314 1 Claim

1. A cyclic peptide which has an affinity for the bradykinin receptor having the formula:

H—DArg—Arg—Cys—Pro—Gly—Cys—Ser—

—DHype(trans thiophenyl)—Oic—Arg—OH.

5,543,497

GENES ENCODING AND METHOD OF EXPRESSING A NOVEL ENZYME: PHTHALYL AMIDASE

Stephen W. Queener, Indianapolis, and Joseph M. Zock, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 275,490, Jul. 15, 1994, Pat. No. 5,451,522. This application May 22, 1995, Ser. No. 446,382

Int. Cl.[6] C12N *9/80;15/74*

U.S. Cl. 530—324 4 Claims

1. A DNA compound that comprises an isolated nucleotide sequence which is SEQ ID NO: 7.

5,543,498

PEPTIDES TO OVERCOME INHIBITION OF NERVE GROWTH

Mark C. Fishman, Newton Centre, Mass.; Michihiro Igarashi, Saitama, Japan, and Stephen M. Strittmatter, Clinton, Conn., assignors to The General Hospital Corporation, Boston, Mass.

Continuation of Ser. No. 166,350, Dec. 14, 1993, abandoned, which is a continuation-in-part of Ser. No. 162,480, Dec. 7, 1993, abandoned. This application Apr. 5, 1995, Ser. No. 417,279

Int. Cl.[6] A61K *38/00;38/04;* C07K *7/06*

U.S. Cl. 530—328 4 Claims

1. A decapeptide having the formula:

Met—Leu—X—X—Met—Arg—Arg—Thr.—Lys—Gln

wherein X—X is Tyr—Tyr [SEQ ID NO: 3] or Met—Met [SEQ ID NO: 2].

5,543,499

DNA SEQUENCE ENCODING A POLYPEPTIDE WITH ANTI-TUMOR PROPERTIES

Gary Brewer, Winston-Salem, N.C., assignor to Wake Forest University, Winston-Salem, N.C.

Filed Oct. 29, 1993, Ser. No. 146,421

Int. Cl.[6] C07K *1/00;16/00;* C12P *21/08*

U.S. Cl. 530—350 4 Claims

1. A purified and isolated AUF1 polypeptide capable of limiting the expression of a proto-oncogene, wherein the amino acid sequence is coded for by a DNA sequence set out in SEQ ID NO:4.

5,543,500

Patent Not Issued For This Number

5,543,501

RI T-DNA PROMOTERS

Jerry L. Slightom, Kalamazoo, Mich., and David A. Tepfer, Paris, France, assignors to Mycogen Plant Science, Inc., San Diego, Calif.

Division of Ser. No. 336,346, Nov. 8, 1994, Pat. No. 5,466,792, which is a division of Ser. No. 8,216, Jan. 25, 1993, Pat. No. 5,366,887, which is a division of Ser. No. 725,368, Apr. 22, 1985, Pat. No. 5,182,200. This application Jun. 2, 1995, Ser. No. 459,569

Int. Cl.[6] C07K *1/00;* C12N *1/20;* A01H *1/04*

U.S. Cl. 530—350 19 Claims

1. A substantially purified polypeptide encoded by any of the nucleic acid molecules of an isolated nucleic acid molecule having a nucleic acid sequence chosen from the group consisting of:

ORF 1 (Sequence ID No. 1),
ORF 2 (Sequence ID No. 2),
ORF 3 (Sequence ID No. 3),
ORF 4 (Sequence ID No. 4),
ORF 5 (Sequence ID No. 5),
ORF 6 (Sequence ID No. 6),
ORF 7 (Sequence ID No. 7),
ORF 8 (Sequence ID No. 8),
ORF 9 (Sequence ID No. 9),
ORF 10 (Sequence ID No. 10),
ORF 11 (Sequence ID No. 11),
ORF 12 (Sequence ID No. 12),
ORF 13 (Sequence ID No. 13),
ORF 14 (Sequence ID No. 14),
ORF 15 (Sequence ID No. 15),
ORF 16 (Sequence ID No. 16),
ORF 17 (Sequence ID No. 17), and
ORF 18 (Sequence ID No. 18).

5,543,502

PROCESS FOR PRODUCING A COAGULATION ACTIVE COMPLEX OF FACTOR VIII FRAGMENTS

Ole Nordfang, Hillerod, and Mirella E. Rasmussen, Copenhagen, both of, Denmark, assignors to Novo Nordisk A/S, Novo Alle, Denmark

Continuation of Ser. No. 92,658, Jul. 14, 1993, abandoned, which is a continuation of Ser. No. 956,445, Oct. 2, 1992, abandoned, which is a continuation of Ser. No. 835,100, Feb. 11, 1992, abandoned, which is a continuation of Ser. No. 162,323, Feb. 23, 1988, abandoned, which is a continuation-in-part of Ser. No. 932,923, Nov. 19, 1986, abandoned. This application Feb. 3, 1995, Ser. No. 383,541

Claims priority, application Denmark, Jun. 24, 1986, 2957/86

Int. Cl.[6] A61K *35/14;* G07K *1/107;14/755;* C12P *21/04*

U.S. Cl. 530—383 5 Claims

1. A process for producing a coagulation active complex comprising mixing a N-terminal isolated heavy chain fragment of Factor VIII having a molecular weight of 92 to 210 kD in which said heavy chain is treated with a substance having reactivity with a compound containing the group —SH or —S—S, a C-terminal isolated light chain fragment of Factor VIII having a molecular weight of 80 to 70 kD, and a complex promoting agent selected from the group consisting of at least one divalent metal ion, a component of the prothrombin complex, von Willebrand Factor, and a substance having reactivity to a component containing the group —SH or —S—S in a reaction medium.

5,543,503

ANTIBODIES TO HUMAN IL-8 TYPE A RECEPTOR

Anan Chuntharapai, Colma; James Lee, So. San Francisco; Caroline Hebert, San Francisco, and K. Jin Kim, Los Altos, all of Calif., assignors to Genentech Inc., South San Francisco, Calif.

Continuation-in-part of Ser. No. 810,782, Dec. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 677,211, Mar. 29, 1991, abandoned. This application Jun. 11, 1993, Ser. No. 76,093

Int. Cl.[6] A61K *35/14;39/395;* C07K *14/54*

U.S. Cl. 530—388.22 3 Claims

1. An antibody that is capable of inhibiting the binding of IL-8 to the IL-8 type A receptor polypeptide of SEQ ID NO. 2.

5,543,504

POLYMERIZABLE YELLOW DYES AND THEIR USE IN OPHTHALMIC LENSES

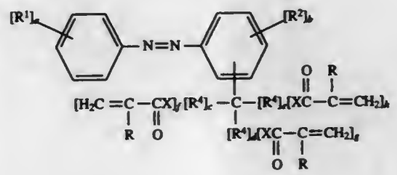
David L. Jinkerson, Fort Worth, Tex., assignor to Alcon Laboratories, Inc., Fort Worth, Tex.

Division of Ser. No. 138,663, Oct. 18, 1993. This application May 22, 1995, Ser. No. 445,799

Int. Cl.[6] C07C *245/00*

U.S. Cl. 534—856 2 Claims

1. A polymerizable yellow dye of the formula



wherein R=H or CH_3;

R^1=H, C_1 to C_{20} alkyl, OCH_3, OC_2H_5, OC_3H_7, or OC_4H_9;

a and b independently=the integer 1 or 2;

R^2=R^1, OH, NH_2, NHR^5, $N(R^5)_2$, SH, SR^5, OR^5, $OSi(R^5)_3$, $Si(R^5)_3$;

R^4=an acyclic organic spacing group of up to 10 atoms consisting of C, H, Si, O, N, P, S, Cl, Br or F, alone or in any combination;

X=O, NH or NR^5;

R^5=C_1 to C_{10} alkyl;

d, e, g, and h independently=an integer from 0 to 4; and

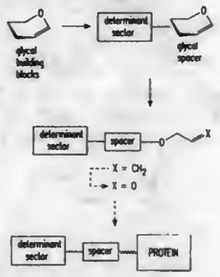
c and f independently=an integer from 1 to 4.

5,543,505

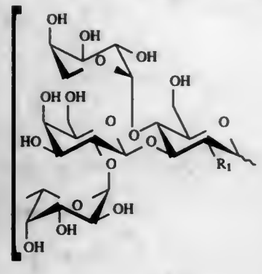
SYNTHETIC COMPOUNDS WHICH BIND TO H. PYLORI, AND USES THEREOF

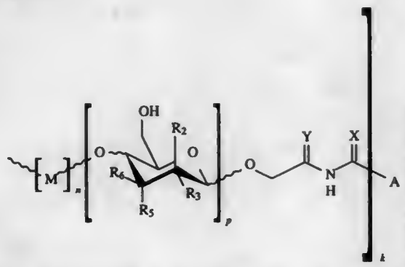
Samuel J. Danishefsky, New Haven, Conn., and John T. Randolph, New York, N.Y., assignors to Sloan-Kettering Institute for Cancer Research, New York, N.Y.

Filed Mar. 15, 1993, Ser. No. 213,053
Int. Cl.[6] C07H *15/00;15/06;17/00;* **C07K** *1/00*
U.S. Cl. 536—17.2 **8 Claims**



1. A compound having the structure:

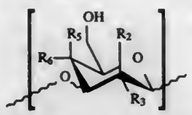




wherein A is selected from the group consisting of (i) an amino acid bearing an ω-amino group or an ω-(C═O)— group, (ii) an amino acid residue of a peptide, which residue bears an ω-amino group or an ω-(C═O)— group, and (iii) an amino acid residue of a protein, which residue bears an ω-amino group or an ω-(C═O)— group;

wherein R_1 is H, OH, NH_2 or NHR_4, where R_4 is SO_2Ph, a linear or branched chain alkyl or acyl group, or an aryl group;

wherein M has the structure:



wherein n is an integer from 0 to 18, and where n is greater than 1, each M is independently the same or different;

wherein p is either 0 or 1;

wherein R_2, R_3, R_5 and R_6 are independently the same or different and are H or OH, with the proviso that R_2 and R_3 are not both OH, and R_5 and R_6 are not both OH;

wherein each wavy line between a carbon atom and an oxygen atom denotes an R or S configuration at the carbon atom;

wherein X and Y are independently the same or different and are H_2 or O; and

wherein k is an integer greater than or equal to 1, with the proviso that when A is an amino acid bearing an ω-amino group or an ω-(C═O)— group, k is equal to 1.

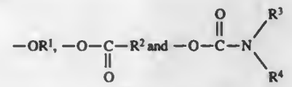
5,543,506

POLYSACCHARIDE DERIVATIVE AND SEPARATING AGENT

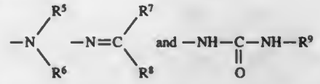
Yoshio Okamoto, Aichi, Japan, assignor to Daicel Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 877,178, Jun. 25, 1992, abandoned. This application Jul. 15, 1994, Ser. No. 275,820
Int. Cl.[6] C08B *3/16;11/00;15/00;37/00*
U.S. Cl. 536—18.7 **10 Claims**

1. In a process for resolving a racemic modification into optical isomers, the improvement comprising contacting said racemic modification with a separating agent comprising a polysaccharide derivative, said polysaccharide derivative comprising a polysaccharide produced in a process in which hydroxyl or amino groups are replaced by different substituents at either the 2- or 3-position and 6-position, said substituents being selected from the group consisting of



when hydroxyl groups are replaced and selected from the group consisting of



when amino groups are replaced, R^1 representing an alkyl group, a substituted alkyl group, an aromatic group, a substituted aromatic group or an aralkyl group; R^2, R^3, R^4, R^7, R^8 and R^9 each representing hydrogen, an alkyl group, a substituted alkyl group, an aromatic group, a substituted aromatic group or an aralkyl group; and R^5 and R^6 each representing hydrogen, an alkyl group, a substituted alkyl group, an aromatic group, a substituted aromatic group, an aralkyl group or an acyl group, with the proviso that R^5 and R^6 are not simultaneously hydrogen.

5,543,507

COVALENTLY CROSS-LINKED OLIGONUCLEOTIDES

Phillip D. Cook; Muthiah Manoharan, and Thomas Bruice, all of Carlsbad, Calif., assignors to ISIS Pharmaceuticals, Inc., Carlsbad, Calif.

Continuation-in-part of Ser. No. 846,376, Mar. 5, 1992, abandoned. This application Mar. 2, 1994, Ser. No. 205,507
Int. Cl.[6] C07H *21/00;21/02;21/04*
U.S. Cl. 536—23.1 **77 Claims**

1. A cross-linked nucleic acid comprising:

a first nucleotide located on a first oligonucleotide strand;

a first bond means located on a sugar moiety of said first nucleotide;

a second nucleotide located on a second oligonucleotide strand;

a second bond means located on a sugar moiety of said second nucleotide; and

a covalent cross-linkage between said first and said second bond means, provided that at least one of the first and second bond means is located at a non-terminal nucleotide and further provided that said cross-linkage:

is not between the 3' carbon of a sugar moiety of said first nucleotide and the 5' carbon of a sugar moiety of said second nucleotide;

is not between the 3' carbon of a sugar moiety of said second nucleotide and the 5' carbon of a sugar moiety of said first nucleotide; and

does not include a nucleosidic base.

5,543,508

RIBOZYMES

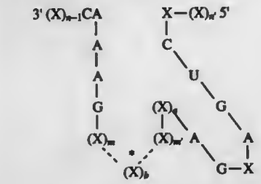
James P. Haseloff, O'Connor; Wayne L. Gerlach, Hughes; Philip A. Jennings, West Chatswood, and Fiona H. Cameron, Forestville, all of, Australia, assignors to Gene Shears Pty. Limited, Neutral Bay, Australia

Continuation of Ser. No. 967,693, Oct. 27, 1992, Pat. No. 5,494,814, which is a continuation of Ser. No. 926,148, Aug. 5, 1992, Pat. No. 5,234,678, which is a continuation of Ser. No. 536,625, Aug. 14, 1990, abandoned. This application Feb. 8, 1994, Ser. No. 195,072

Claims priority, application Australia, Dec. 15, 1987, PI5911/87; Aug. 19, 1988, PI8950/88; Sep. 9, 1988, PJ0353/88; Nov. 4, 1988, PJ1304/88; Nov. 7, 1988, PJ1333/88

Int. Cl.[6] C12N *15/11;15/70;15/74;15/79*
U.S. Cl. 536—23.2 **7 Claims**

1. A compound having the formula:



wherein each X represents a ribonucleotide which may be the same or different;

wherein each of $(X)_{n-1}$ and $(X)_{n'}$ represents an oligoribonucleotide having a predetermined sequence which is capable of hybridizing with an RNA target sequence to be cleaved, and (b) does not naturally occur covalently bound to the sequences C—A—A—A—G—C— and X—C—U—G—A—, respectively, such RNA target sequence not being present within the compound;

wherein each of n−1 and n' represents an integer which defines the number of ribonucleotides in the oligoribonucleotide with the proviso that the sum of n+n' is greater than 14;

wherein each * represents base pairing between the nucleotides located on either side thereof;

wherein each solid line represents a chemical linkage providing covalent bonds between the ribonucleotides located on either side thereof;

wherein a represents an integer which defines a number of ribonucleotides with the proviso that a may be 0 or 1 and if 0, the A located 5' of $(X)_a$ is bonded to the G located 3' of $(X)_a$;

wherein each of m and m' represents an integer which is greater than or equal to 4;

wherein each of the dashed lines independently represents either a chemical linkage providing covalent bonds between the ribonucleotides located on either side thereof or the absence of any such chemical linkage; and

wherein $(X)_b$ represents an oligoribonucleotide which may be present or absent with the proviso that b represents an integer which is greater than or equal to 4 if $(X)_b$ is present.

5,543,509

METHOD FOR QUANTIFYING LAMININ AND β-ACTIN MESSENGER RNA

Paul E. Klotman, Chevy Chase; Leslie A. Bruggeman, Bethesda, both of Md., and Satoshi Horikoshi, Tokyo, Japan, assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Aug. 14, 1992, Ser. No. 929,204
Int. Cl.[6] C07H *21/02;21/04*
U.S. Cl. 536—24.33 **7 Claims**

1. An isolated and purified plasmid designated pSH4.

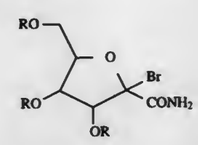
5,543,510

PROCESS AND INTERMEDIATES FOR THE PREPARATION OF (+)-HYDANTOCIDIN AND ANALOGS THEREOF

Philip M. Harrington, Cranbury, N.J., and Michael E. Jung, Los Angeles, Calif., assignors to American Cyanamid Company, Madison, N.J.

Division of Ser. No. 140,580, Oct. 21, 1993, Pat. No. 5,354,868. This application Jun. 20, 1994, Ser. No. 262,411
Int. Cl.[6] C07H *15/02*
U.S. Cl. 536—53 **3 Claims**

1. An intermediate compound of formula IV



IV

wherein R is a protecting group, the optical isomers thereof and the diastereomers thereof.

5,543,511

PROCESS FOR THE PREPARATION OF LEVEL-OFF DP CELLULOSE

Manfred J. Bergfeld, Erlenbach-Mechenhard, and Jürgen Seifert, Grosswallstadt, both of, Germany, assignors to Akzo Nobel N.V., Netherlands

Filed Dec. 12, 1994, Ser. No. 354,788

Claims priority, application Germany, Dec. 13, 1993, 43 42 442.2

Int. Cl.[6] C08B *15/08*
U.S. Cl. 536—56 **13 Claims**

1. A process for the preparation of level-off DP cellulose, comprising partially hydrolyzing semi-crystalline cellulose only where said semi-crystalline cellulose is amorphous, said partial hydrolysis comprising:

combining said semi-crystalline cellulose with water to form a reaction liquor;

adjusting and maintaining said reaction liquor at a reaction temperature of 100° to 200° C.;

170-651 O.G.-96-16: QL3

adding to said reaction liquor at least one gas selected from the group consisting of carbon dioxide and oxygen, in an amount sufficient to adjust and maintain said reaction liquor at a total gas pressure of 0.1 to 60 bar, as measured at 20° C.; and

partially hydrolyzing said semi-crystalline cellulose in said reaction liquor until the levelling-off degree of polymerization is reached, thereby yielding level-off DP cellulose.

5,543,512

METHOD FOR PREPARING SACCHARIDE MONOMERS COMPRISING AT LEAST ONE POLYMERIZABLE CARBONYL-OXYVINYL GROUP

Julio Mentech; Isabelle Betremieux, and Bruno Legger, all of Villeurbanne, France, assignors to Beghin-Say, Thumeries, France

Continuation of Ser. No. 838,737, Mar. 13, 1992, abandoned. This application Jan. 26, 1995, Ser. No. 378,707

Claims priority, application France, Jul. 16, 1990, 90 09015

Int. Cl.[6] C07H *13/02;1/00*

U.S. Cl. 536—115 **32 Claims**

1. A process for preparing monomers including at least one polymerizable acrylate or methacrylate group and having a controlled degree of substitution, comprising reacting in one single, direct and controlled stage, a saccharide selected from the group consisting of monosaccharides, disaccharides and trisaccharides, in an aqueous medium with an esterifying reagent containing a polymerizable group derived from an acrylic-type compound in the presence of a mineral base such that pH of the reaction medium is maintained at a value within a range of 7 to 11 during reaction; and recovering the monomers.

5,543,513

TREHALOSE DESICCANT PRODUCT AND DEHYDRATION THEREWITH

Takahiko Mandai; Takashi Shibuya; Toshiyuki Sugimoto, and Toshio Miyake, all of Okayama, Japan, assignors to Kabushiki Kaisha Hayashibara, and Seibutsu Kagaku Kenkyujo, both of Okayama, Japan

Continuation of Ser. No. 159,600, Dec. 1, 1993, abandoned. This application Feb. 23, 1995, Ser. No. 393,245

Int. Cl.[6] C07H *3/06*

U.S. Cl. 536—123.13 **4 Claims**

1. In a desiccant comprising a saccharide as an the dessicant ingredient and an inert diluent, the improvement wherein said saccharide is selected from the group consisting of anhydrous crystalline trehalose, anhydrous amorphous trehalose and mixtures thereof, which anhydrous trehalose has substantially no reducing activity and which is converted into hydrous crystalline trehalose upon absorbing moisture, and wherein said anhydrous crystalline trehalose is obtained by:

providing a syrupy aqueous solution of trehalose with a moisture content lower than 10 w/w %;

maintaining said syrupy aqueous solution of trehalose at a temperature in the range of 50°–160° C. in the presence of a seed crystal in order to crystallize anhydrous crystalline trehalose; and

recovering the resultant anhydrous crystalline trehalose; and

said anhydrous amorphous trehalose is obtained by drying a syrupy aqueous solution of trehalose or a hydrous crystalline trehalose, and recovering the resultant anhydrous amorphous trehalose.

5,543,514

WATER-SOLUBLE SAPPHYRINS

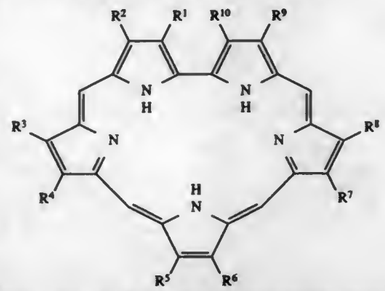
Jonathan L. Sessler, and Vladimir Král, both of Austin, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation-in-part of Ser. No. 964,607, Oct. 21, 1992, Pat. No. 5,457,195, which is a continuation-in-part of Ser. No. 454,298, Dec. 21, 1989, Pat. No. 5,159,065. This application Apr. 6, 1995, Ser. No. 417,940

Int. Cl.[6] C07D *487/22;* **C07H** *9/00*

U.S. Cl. 540—472 **20 Claims**

1. A water-soluble sapphyrin having structure II:



II

wherein each of R^1–R^{10} are independently hydrogen, alkyl, alkene, alkyne, halide, alkylhalide, hydroxyalkyl, hydroxyalkylamido, glycol, polyglycol, thiol, thioalkyl, aminoalkyl, carboxyalkyl, carboxyamidealkyl, oxyalkyl, alkoxyalkyl, aryloxyalkyl, oxyhydroxyalkyl, alkyloxycarbonyl, aryloxycarbonyl, aldehyde, ether, ketone, carboxylic acid, phosphate, phosphonate, sulfate, phosphate substituted alkyl, phosphonate substituted alkyl, or sulfate substituted alkyl, such that the total number of carbon atoms in each substituent R is less than or equal to 100;

wherein at least one of R^1–R^{10} is of the formula $(CH_2)_n$—A—$(CH_2)_m$—B, where

A is alkyl having from 1–4 carbon atoms, oxy, sulfide, amide, carbonyl, alkenyl, alkynyl, alkylhalide, hydroxyalkyl, glycol, polyglycol, alkylthiol, substituted alkyl, phosphate, phosphonate, sulfate, phosphate substituted alkyl, phosphonate substituted alkyl, sulfate substituted alkyl, carboxy, carboxyamide, ester, thiol-substituted carboxyamide, or derivatized carboxyamide;

B is hydroxy, hydroxyalkyl, oxyalkyl, carboxy, carboxyalkyl, glycol, polyglycol, thiol, aminoalkyl, phosphate, phosphonate, sulfate, phosphate substituted alkyl, phosphonate substituted alkyl, sulfate substituted alkyl, substituted hydroxyalkyl, saccharide, saccharide derivative, or polysaccharide; and

n and m are independently an integer from 0 to 4.

5,543,515

PREPARATION OF TERTIARY AMINE OXIDES

Ulrich Koehler, Mannheim; Hardo Siegel, Speyer, and Guenther Seybold, Neuhofen, all of, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation of Ser. No. 983,228, Nov. 30, 1992, abandoned. This application Aug. 3, 1994, Ser. No. 285,756

Claims priority, application Germany, Dec. 6, 1991, 41 40 259.6

Int. Cl.[6] C07C *209/00;* **C07D** *223/02;295/24*

U.S. Cl. 540—604 **18 Claims**

1. In a process for producing tertiary amine oxides by reacting a tertiary amine with hydrogen peroxide, the improvement which comprises, adding to a solution containing tertiary amines, primary amines and secondary amines a scavenger for primary and secondary amines in an amount sufficient to reduce the content of primary and secondary amines to less than 0.05% by weight, and thereafter reacting the tertiary amines with hydrogen peroxide to form tertiary amine oxides having a drastically reduced nitrosamine content.

5,543,516

PROCESS FOR PREPARATION OF BENZOXAZINE COMPOUNDS IN SOLVENTLESS SYSTEMS

Hatsuo Ishida, Shaker Heights, Ohio, assignor to Edison Polymer Innovation Corporation, Brecksville, Ohio

Filed May 18, 1994, Ser. No. 245,478

Int. Cl.[6] C07D *265/14;265/16*

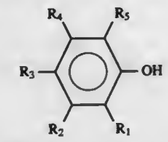
U.S. Cl. 544—69 **5 Claims**

1. A method for preparing a benzoxazine compound comprising:

preparing a reaction mixture containing reactants including a phenolic compound, a primary amine, and an aldehyde, said reaction mixture containing no solvents for said reactants other than for the solvency which said reactants may have for each other;

bringing said reactants to a temperature at which the reactants combine chemically and maintaining them at that temperature to form said benzoxazine compound,

said phenolic compound including one or more phenolic groups, said groups having the general formula:



in which R_2 through R_4 are members selected from the group consisting of aliphatics, branched aliphatics, aromatics, halogens or amines, and in which R_1 and R_5 are selected from the group consisting of aliphatics, branched aliphatics, aromatics, halogens, hydrogen or amines provided that at least one of R_1 and/or R_5 must be hydrogen.

5,543,517

SUBSTITUTED BICYCLIC PHOSPHORAMIDES AND DERIVATIVES THEREOF

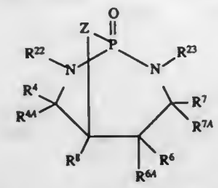
Joanne M. Smallheer, Landenberg, Pa., assignor to The DuPont Merck Pharmaceutical Company, Wilmington, Del.

Filed Jan. 13, 1994, Ser. No. 181,117

Int. Cl.[6] C07D *413/14;* **A61K** *31/33*

U.S. Cl. 544—151 **4 Claims**

1. A compound of formula (Ia):



or pharmaceutically acceptable salt or prodrug form thereof wherein:

Z is O;

each of R^4 and R^7 is independently:

hydrogen, —O(R^{13}), —S(R^{13}), —C(=O)O(R^{13}), C_1-C_8 alkyl substituted with 0–3 R^{11}, C_2-C_8 alkenyl substituted with 0–3 R^{11}, C_2-C_8 alkynyl substituted with 0–3 R^{11}, a C_3-C_{14} carbocyclic ring system substituted with 0–3 R^{11} or 0–3 R^{12}, or a 5- to 10-membered heterocyclic ring system containing 1 to 4 heteroatoms independently selected from oxygen, nitrogen or sulfur, the heterocyclic ring system being substituted with 0–2 R^{12};

each of R^{4A} and R^{7A} is independently:

hydrogen, —O(R^{13}), —S(R^{13}), —C(=O)O(R^{13}), C_1-C_4 alkyl unsubstituted or substituted with halogen or C_1-C_2 alkoxy, or phenylmethyl unsubstituted or substituted with halogen or C_1-C_2 alkoxy;

each of R^6 and R^{6A} is independently:

hydrogen, halogen, —N(R^{20})$_2$, —S(R^{20}), —O(R^{21}) or C_1-C_6 alkyl substituted with 0–3 R^{11};

R^6 and R^{6A} can alternatively join to form =O, =S or a ketal ring;

R^8 is: hydrogen, C_1-C_3 alkyl or C_1-C_3 perfluoroalkyl;

R^8 can alternatively join with any of R^6 or R^{6A} to form —OCH_2SCH_2O—, —OS(=O)O—, —OC(=O)O—, —OCH_2)—, —OC(=S)O—, —OC(=O)C(=O)O—, —$OC(CH_3)_2O$—, —OC((CH_2)$_3NH_2$) (CH_3)O—, —$OC(OCH_3)$ ($CH_2CH_2CH_3$)O—, —OS(=O)$_2$O—, —NHC(=O)NH—, —OC(=O)NH— , —NHC(=O)O—, —$NHCH_2O$—, —OCH_2NH—, —NHC(=S)O—, —OC(=S)NH—, —OS(=O)NH—, —NHS(=O)O—, —NHC(=O)C(=O)O—, —OC(=O)C(=O)NH—, —NHC(=O)C(=O)NH—, —$NHC(CH_3)_2O$—, —$OC(CH_3)_2NH$— or any group that, when administered to a mammalian subject as part of a compound of formula (I), cleaves to form a compound having two free hydroxyl groups, or two free amino groups, or one free hydroxyl and one free amino group;

each R^{11} is independently:

hydrogen, keto, halogen, phenylmethyl, phenethyl, methylenedioxy, ethylenedioxy, hydroxamic acid, hydrazide, boronic acid, sulfonamide, azido, formyl, phenoxy, phenylmethoxy, nitro, cyano, —CH_2N(R^{13}) (R^{14}), —N(R^{13}) (R^{14}), —OCH_2C(=O)OH, —C(=O)O(R^{13}), —OC(=O) (R^{13}), —O(R^{13}), C_2-C_6 alkoxyalkyl, —S(=O)$_m$(R^{13}), —NHC(=NH)NH(R^{13}), —C(=NH)NH(R^{13}), —C(=O)N(R^{13}) (R^{14}), —N(R^{14})C(=O) (R^{13}), =N—O(R^{14}), —N(R^{14})C(=O)O(R^{14}), —OC(=O)N(R^{13}) (R^{14}), —N(R^{13})C(=O)N(R^{13}) (R^{14}), —C(R^{14})=N—O(R^{14}), —N(R^{14})S(=O)$_2$N(R^{13}) (R^{14}), —N(R^{14})S(=O)$_2$ (R^{13}), —S(=O)$_2$N(R^{13}) (R^{14}), C_1-C_4 alkyl, C_2-C_4 alkenyl, C_3-C_{10} cycloalkyl, C_3-C_6 cycloalkylmethyl, C_7-C_{10} arylalkyl, C_3-C_6 cycloalkoxy, C_1-C_4 alkyl substituted with —N(R^{13}) (R^{14}), C_1-C_4 hydroxyalkyl, C_1-C_4 haloalkyl, C_1-C_4 haloalkoxy, C_1-C_4 alkoxycarbonyl, C_1-C_4 alkylcarbonyloxy, C_1-C_4 alkylcarbonyl, C_1-C_4 alkylcarbonylamino, 2-(1-morpholino)ethoxy, —(C_1-C_3 alkyl)aryl substituted with 0–2 R^{12},

a C_3-C_{14} carbocyclic residue substituted with 0–3 R^{12}, or

a 5- to 10-membered heterocyclic ring system containing 1 to 4 heteroatoms independently selected from oxygen, nitrogen or sulfur, the heterocyclic ring system being substituted with 0–3 R^{12};

m is: 0, 1 or 2;

each R^{11A} is independently:

H, keto, halogen, cyano, —CH_2NH_2, —NH_2, —CO_2H, —OC(=O)(C_1-C_3 alkyl), —OH, C_2-C_6 alkoxyalkyl, —C(=O)NH_2, —OC(=O)NH_2, —NHC(=O)NH_2, —S(=O)$_2NH_2$, C_1-C_4 alkyl, C_2-C_4 alkenyl, C_3-C_{10} cycloalkyl, C_3-C_6 cycloalkylmethyl, benzyl, phenethyl, phenoxy, benzyloxy, nitro, C_7-C_{10} arylalkyl, hydroxamic acid, hydrazide, boronic acid, C_3-C_6 cycloalkoxy, C_1-C_4 alkyl substituted with—NH_2, C_1-C_4 hydroxyalkyl, methylenedioxy, ethylenedioxy, C_1-C_4 haloalkyl, C_1-C_4 haloalkoxy, C_1-C_4 alkoxycarbonyl, C_1-C_4 alkylcarbonyloxy, C_1-C_4 alkylcarbonyl, C_1-C_4 alkylcarbonylamino, —OCH_2C(=O)OH, 2-(1-morpholino)ethoxy, azido, aryl(C_1-C_3 alkyl), a C_3-C_{14} carbocyclic residue, or a 5- to 10-membered heterocyclic ring system containing 1 to 4 heteroatoms independently selected from oxygen, nitrogen or sulfur;

each R^{12} when a substituent on carbon, is independently:
phenyl, phenylmethyl, phenethyl, phenoxy, phenylmethoxy, halogen, hydroxy, nitro, cyano, C_1-C_4 alkyl, C_3-C_6 cycloalkyl, C_3-C_6 cycloalkylmethyl, C_7-C_{10} arylalkyl, C_1-C_4 alkoxy, —C(=O)OH, hydroxamic acid, hydrazide, boronic acid, sulfonamide, formyl, C_3-C_6 cycloalkoxy, —O(R^{13}), C_1-C_4 alkyl substituted with —N(R^{13}) (R^{14}), —N(R^{13}) (R^{14}), C_2-C_6 alkoxyalkyl, C_1-C_4 hydroxyalkyl, methylenedioxy, ethylenedioxy, C_1-C_4 haloalkyl, C_1-C_4 haloalkoxy, C_1-C_4 alkoxycarbonyl, C_1-C_4 alkylcarbonyloxy, C_1-C_4 alkylcarbonyl, C_1-C_4 alkylcarbonylamino, —S(=O)$_m$(R^{13}), —S(=O)$_2$N(R^{13}) (R^{14}), —NHS(=O)$_2$(R^{14}), —OCH$_2$C(=O)OH, 2-(1-morpholino)ethoxy, —C(R^{14})=N—O(R^{14}),
a 5- to 10-membered heterocyclic ring containing from 1 to 4 heteroatoms independently selected from oxygen, nitrogen or sulfur, the heterocyclic ring system being substituted with 0–3 R^{15},
a 3- or 4-carbon chain attached to an adjacent carbon on the ring to which it is appended to form a fused 5- or 6-membered ring, the 5- or 6-membered ring being optionally substituted on any of the aliphatic carbons with halogen, C_1-C_4 alkyl, C_1-C_4 alkoxy, hydroxy, —N (R^{13}) (R^{14}), or
when R^{12} is attached to a saturated carbon atom, R^{12} may be =O or =S;
each R^{12}, when a substituent on nitrogen, is independently:
phenyl, phenylmethyl, phenethyl, hydroxy, C_1-C_4 hydroxyalkyl, C_1-C_4 alkoxy, C_1-C_4 alkyl, C_3-C_6 cycloalkyl, C_3-C_6 cycloalkylmethyl, —CH$_2$N(R^{13}) (R^{14}), —N(R13) (R^{14}), C2-C$_6$ alkoxyalkyl, C_1-C_4 haloalkyl, C_1-C_4 alkoxycarbonyl, —C(=O) OH, C_1-C_4 alkylcarbonyloxy, C_1-C_4 alkylcarbonyl or —C(R^{14})=N—O(R^{14});
each R^{13} is independently:
hydrogen, phenyl substituted with 0–3 R^{11A}, phenylmethyl substituted with 0–3 R^{11A}, C_1-C_6 alkyl substituted with 0–3 R^{11A}, C_2-C_4 alkenyl substituted with 0–3 R^{11A}, C_1-C_6 alkylcarbonyl substituted with 0–3 R^{11A}, C_1-C_6 alkoxycarbonyl substituted with 0–3 R^{11A}, C_1-C_6 alkylaminocarbonyl substituted with 0–3 R^{11A}, C_3-C_6 alkoxyalkyl substituted with 0–3 R^{11A}, an amine protecting group when R^{13} is bonded to N, or a hydroxy protecting group when R^{13} is bonded to O;
each R^{14} is independently:
hydrogen, hydroxy, trifluoromethyl, C_1-C_6 alkoxy, C_2-C_6 alkenyl, phenylmethyl, amino,
C_1-C_6 alkyl substituted with 0–3 groups selected from hydroxy, C_1-C_4 alkoxy, halogen, amino,
an amine protecting group when R^{14} is bonded to N, or a hydroxy protecting group when R^{14} is bonded to O;
R^{13} and R^{14} can alternatively join to form: —(CH$_2$)$_4$—, —(CH$_2$)$_5$— , —CH$_2$CH$_2$N(R^{15})CH$_2$CH$_2$— or —CH$_2$CH$_2$OCH$_2$CH$_2$—;
R^{15} is: hydrogen or methyl;
each of R^{20} and R^{21} is independently:
hydrogen, C_1-C_6 alkyl substituted with 0–3 R^{11}, C_3-C_6 alkoxyalkyl substituted with 0–3 R^{11}, C_1-C_6 alkylcarbonyl substituted with 0–3 R^{11}, C_1-C_6 alkoxycarbonyl substituted with 0–3 R^{11}, C_1-C_6 alkylaminocarbonyl substituted with 0–3 R^{11}, benzoyl substituted with 0–3 R^{12}, phenoxycarbonyl substituted with 0–3 R^{12}, phenylaminocarbonyl substituted with 0–3 R^{12}, or any group that, when administered to a mammalian subject as part of a compound of formula (I), cleaves to form a free hydroxyl, free amino or free sulfhydryl;
each of R^{22} and R^{23} is independently:
hydrogen, C_1-C_8 alkyl substituted with 0–3 R^{31}, C_2-C_8 alkenyl substituted with 0–3 R^{31}, C_2-C_8 alkynyl substituted with 0–3 R^{31}, a C_3-C_{14} carbocyclic ring system substituted with 0–5 R^{31} or 0–5 R^{32}, or
a 5- to 10-membered heterocyclic ring system containing 1 to 4 heteroatoms independently selected from oxygen, nitrogen or sulfur, the heterocyclic ring system being substituted with 0–2 R^{32};
each R^{31} is independently:
keto, halogen, cyano, —CH$_2$N(R^{13}) (R^{14}), —N(R^{13}) (R^{14}), —C(=O)O(R^{13}), —C(=O) (R^{11}), —OC(=O) (R^{13}), —O(R^{13}), C_2-C_6 alkoxyalkyl, —S(=O)$_m$(R^{13}), —NHC(=NH)NH(R^{13}), —C(=NH)NH(R^{13}), —C(=O)N(R^{13}) (R^{14}), —N(R^{14})C(=O) (R^{13}), =N—O(R^{14}), —N(R^{14})C(=O)O(R^{14}), —OC(=O)N(R^{13}) (R^{14}), —N(R13)C(=O)N(R^{13}) (R^{14}), —N(R^{14})S(=O)2N(R^{13}) (R^{14}), —N(R^{14})S(=O)$_2$(R^{13}), —S(=O)$_2$N(R^{13}) (R^{14}), C_1-C_4 alkyl, C_2-C_4 alkenyl, C_3-C_{10} cycloalkyl, C_3-C_6 cycloalkylmethyl, phenylmethyl, phenethyl, phenoxy, phenylmethoxy, nitro, C_7-C_{10} arylalkyl, hydroxamic acid, hydrazide, oxime, boronic acid, sulfonamide, formyl, C_3-C_6 cycloalkoxy, C_1-C_4 alkyl substituted with —N (R^{13}) (R^{14}), C_1-C_4 hydroxyalkyl, methylenedioxy, ethylenedioxy, C_1-C_4 haloalkyl, C_1-C_4 haloalkoxy, C_1-C_4 alkoxycarbonyl, C_1-C_4 alkylcarbonyloxy, C_1-C_4 alkylcarbonyl, C_1-C_4 alkylcarbonylamino, —OCH$_2$C(=O)O(R^{13}), 2-(1-morpholino)ethoxy, azido, —C(R^{14})=N—O(R^{14}),
a C_5-C_{14} carbocyclic residue substituted with 0–5 R^{32},
or a 5- to 10-membered heterocyclic ring system containing 1 to 4 heteroatoms independently selected from oxygen, nitrogen or sulfur, the heterocyclic ring system being substituted with 0–2 R^{32};
each R^{32} when a substituent on carbon, is independently:
phenethyl, phenoxy, C_3-C_{10} cycloalkyl, C_3-C_6 cycloalkylmethyl, C_7-C_{10} arylalkyl, hydrazide, oxime, C_2-C_6 alkoxyalkyl, methylenedioxy, ethylenedioxy, C_1-C_4 alkylcarbonyloxy, —NHS(=O)$_2$(R^{14}), phenylmethoxy, halogen, 2-(1-morpholino)ethoxy, —C(=O)O(R^{13}), hydroxamic acid, —C(=O)N(R^{13})N(R^{13}) (R^{14}), cyano, boronic acid, sulfonamide, formyl, C_3—C_6 cycloalkoxy, C_1-C_4 haloalkyl, C_1-C_4 haloalkoxy, C_2-C_4 haloalkenyl, C_2-C_4 haloalkynyl, —N(R^{13}) (R^{14}), —C(R^{14})=N—O(R^{14}), —NO$_2$, —O(R^{13}), —N(R^{40}) (R^{41}), —S(=O)m(R^{13}), —S(=O)$_m$N(R^{13}) (R^{14}), —C(=O)N(R^{13}) (R^{14}), —OC(=O)N(R^{13}) (R^{14}), —C(=O) (R^{11}), —OC(=O) (R^{11}), —OC(=O)O(R^{13}), phenyl, —C(=O)N(R^{13})—(C_1-C_4 alkyl)
N(R^{13}) (R^{14}), —C(=O)N(R^{40}) (R^{41}), —C(=O)—(C_1-C_4 alkyl)—N(R^{13})C(=O)O(R^{13}),
C_1-C_4 alkoxy substituted with 0–4 groups selected from: R^{11}, C_3-C_6 cycloalkyl, —C(=O)O(R^{13}), —C(=O)N(R^{13}) (R^{14}), —N(R^{13}) (R^{14}) or hydroxyl,
C_1-C_4 alkyl substituted with 0–4 groups selected from: R^{11}, =N(R^{14}), =NN(R^{13})C(=O)N(R^{13}) (R^{14}) or —N (R^{13}) (R^{14}),
C_2-C_4 alkenyl substituted with 0–4 R^{11},
C_2-C_4 alkynyl substituted with 0–4 R^{11},
a 5- or 6-membered heterocyclic ring containing from 1 to 4 heteroatoms independently selected from oxygen, nitrogen or sulfur,
a 3- or 4-carbon chain attached to an adjacent carbon on the ring to which it is appended, to form a fused 5- or 6-membered ring, said 5- or 6-membered ring being optionally substituted on the aliphatic carbons with halogen, C_1-C_4 alkyl, C_1-C_4 alkoxy, hydroxyl, —N (R^{13}) (R^{14}), or
when R^{32} is attached to a saturated carbon atom, R^{32} may be =O or =S;
each R^{32} when a substituent on nitrogen, is independently:
phenyl, phenylmethyl, phenethyl, hydroxyl, C_1-C_4 hydroxyalkyl, C_1-C_4 alkoxy, C_1-C_4 alkyl, C_3-C_6 cycloalkyl, C_3-C_6 cycloalkylmethyl, —CH$_2$N(R^{13}) (R^{14}), —N (R^{13}) (R^{14}), C_2-C_6 alkoxyalkyl, C_1-C_4 haloalkyl, C_1-C_4 alkoxycarbonyl, —C(=O) OH, C_1-C_4 alkylcarbonyloxy, C_1-C_4 alkylcarbonyl or —C(R^{14})=N—O(R^{14});
R^{40} is: hydrogen or C_1-C_3 alkyl; and,
R^{41} is: —C(=O)N(R^{13}) (R^{14}), —C(=O)N(R^{13})NH(R^{14}), —C(=O)C(R^{11})$_2$N(R^{13}) (R^{14}), —C(=O)C(R^{11})2N(R^{13})NH(R^{14}), —C(=O)C(R^{11})$_2$N(R^{13})C(=O)O(R^{13}), —C(=O) H, —C(=O) (R^{11}), —C(=O)—(C_1-C_4 alkyl)—N(R^{13}) (R^{14}), —C(=O)—(C_1-C_4 alkyl)—N(R^{13})C(=O)O(R^{13}) or 1–3 amino acids linked together via amide bonds and linked to the N atom via the carboxylate terminus;
provided that:
R^4, R^{4A}, R^7 and R^{7A} are not all hydrogen; when R^4 and R^{4A} are both hydrogen, R^{22} is not hydrogen, and when R^7 and R^{7A} are both hydrogen, R^{23} is not hydrogen.

5,543,518

RED-SHIFTED TRIS-ARYL-S-TRIAZINES AND COMPOSITIONS STABILIZED THEREWITH

Tyler A. Stevenson, Teaneck, N.J.; Ramanathan Ravichandran, Nanuet, N.Y.; Mark S. Holt, West Nyack, N.Y.; Thuy N. Phan, North Tarrytown, N.Y.; Jean-Luc Birbaum, Fribourg, and Vien V. Toan, Lentigny, both of, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Division of Ser. No. 281,381, Jul. 27, 1994. This application Jun. 2, 1995, Ser. No. 463,140
Int. Cl.[6] C07D *251/14*
U.S. Cl. 544—215 **3 Claims**

1. A process for the preparation of a compound of formula I

I

where
R_1 is straight or branched chain alkyl of 4 to 24 carbon atoms, cycloalkyl of 5 to 12 carbon atoms or phenylalkyl of 8 to 15 carbon atoms,
R_2 is hydrogen, and
X and Y are the same or different and are phenyl or phenyl substituted by 1 to 3 lower alkyl or by 1 to 3 chloro groups,
which comprises reacting a compound of formula A

(A)

where R_2, X and Y are as defined above, with a two to ten excess equivalent amount of an alkene of 4 to 24 carbon atoms, a cycloalkene of 5 to 12 carbon atoms or an phenylalkene of 8 to 15 carbon atoms, compared to the amount of the compound of formula A neat in the presence of a catalytic amount of a Friedel-Crafts alkylation catalyst at a temperature of 110° C. to 250° C.

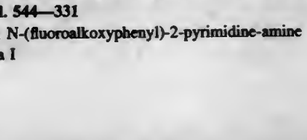
5,543,519

3-ARYL OR 3-HETARYL-β-CARBOLINES, THEIR PRODUCTION AND USE IN PHARMACEUTICAL AGENTS

Andreas Huth; Dieter Seidelmann; Ralph Schmiechen; Herbert Schneider, and Lechoslaw Turski, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

Continuation of Ser. No. 39,127, Apr. 15, 1993, abandoned. This application Oct. 25, 1994, Ser. No. 329,051
Claims priority, application Germany, Jun. 15, 1991, 41 20 109.4
Int. Cl.[6] C07D *471/04;401/12;405/12;409/12*
U.S. Cl. 544—238 **4 Claims**

1. A compound of formula I



I

in which
R^4 means halogen, —CHR^1—R^2, phenyl optionally substituted with halogen, C_{1-4}-alkoxy or amino, hetary containing 5–6 ring atoms and 1–3 sulfur, oxygen and/or nitrogen heteroatoms or OR^5 optionally single to double substituted and
R^1 represents hydrogen or C_{1-4}-alkyl,
R^2 represented hydrogen, C_{1-4}-alkyl, —O—C_{1-4}-alkyl or an optionally substituted phenyl, benzyl or phenoxy radical and
R^5 represents hydrogen, C_{1-6}-alkyl, C_{3-7}-cycloalkyl or an optionally substituted phenyl, benzyl, hetaryl containing 5–6 ring atoms and 1–3 sulfur, oxygen and/or nitrogen heteroatoms or benzocondensed hetaryl radical containing 5–6 ring atoms and 1–3 sulfur, oxygen and/or nitrogen heteroatoms,
R^4 represents hydrogen, C_{1-4}-alkyl or C_{1-4}-alkoxy-C_{1-2}-alkyl and
R^3 represents a monocyclic or bicyclic hetaryl radical containing 5–12 ring atoms and 1–3 sulfur, oxygen and/or nitrogen heteroatoms optionally substituted singly or multiply with C_{1-4}-alkyl, C_{3-7}-cycloalkyl, halogen, C_{1-4}-alkoxy-C_{1-2}-alkyl, phenyl or amino with the provision that R^3 is not substituted or unsubstituted 1,2,4-oxadiazolyl or isoxazolyl, as well as their steroisomers isomers and physicologically compatible acid addition salts.

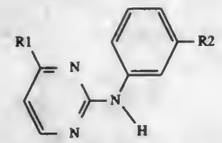
5,543,520

PYRIMIDINE DERIVATIVES

Jürg Zimmermann, Wallbach, Switzerland, assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed Sep. 15, 1994, Ser. No. 306,333
Claims priority, application Switzerland, Oct. 1, 1993, 2966/93; Jul. 18, 1994, 2278/94
Int. Cl.[6] C07D *239/42;401/04;403/04;409/04*
U.S. Cl. 544—331 **7 Claims**

1. A N-(fluoroalkoxyphenyl)-2-pyrimidine-amine derivative of formula I



(I)

wherein R_1 is isoquinolinyl or 1H-pyrrolyl, it being possible for each of these two radicals to be bonded to the pyrimidine moiety via any one of its ring atoms, or R_1 is 2-thienyl or 3-thienyl, and R_2 is fluoro-substituted alkoxy containing up to 2 carbon atoms, or a salt of such a compound containing a salt-forming group.

5,543,521

COMPOUNDS THAT MODULATE ENDOTHELIN ACTIVITY

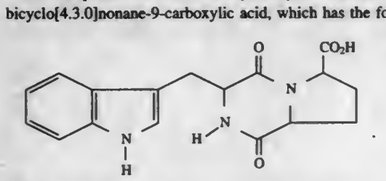
Ming F. Chan, San Diego, and Vitukudi N. Balaji, Encinitas, both of Calif., assignors to Immunopharmaceutics, Inc., San Diego, Calif.

Continuation of Ser. No. 886,387, May 19, 1992, abandoned. This application Jan. 12, 1994, Ser. No. 180,575

Int. Cl.[6] C07D *487/04;207/16;* **A61K** *31/495*

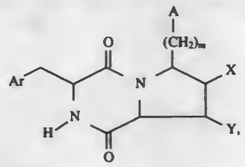
U.S. Cl. 544—349 **6 Claims**

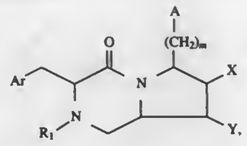
1. A compound that is 3-(3-indolylmethyl)-1,4-diaza- 2,5-dioxo-bicyclo[4.3.0]nonane-9-carboxylic acid, which has the formula:

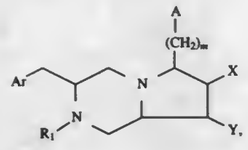


(XII)

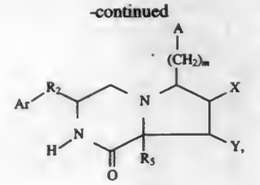
2. A compound selected from the group consisting of

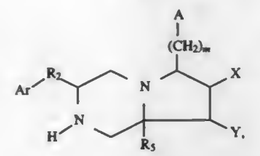


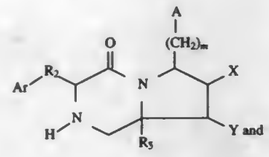


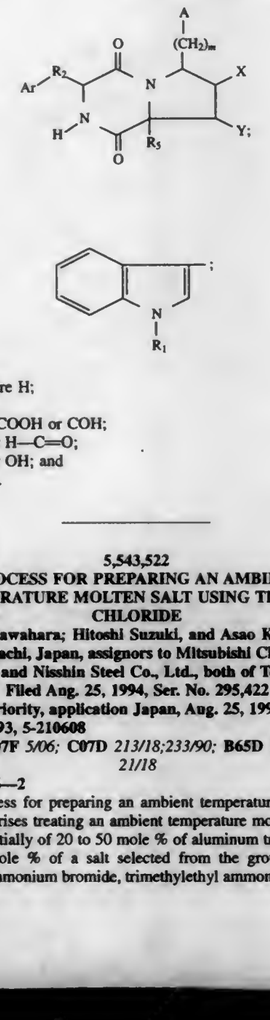


-continued









wherein:

Ar is

X and Y are H;

m is 0;

A is OH, COOH or COH;

R_1 is H or H—C═O;

R_5 is H or OH; and

R_2 is CH_2.

5,543,522

PROCESS FOR PREPARING AN AMBIENT TEMPERATURE MOLTEN SALT USING THIONYL CHLORIDE

Takayuki Kawahara; Hitoshi Suzuki, and Asao Kominato, all of Ami-machi, Japan, assignors to Mitsubishi Chemical Corporation, and Nisshin Steel Co., Ltd., both of Tokyo, Japan

Filed Aug. 25, 1994, Ser. No. 295,422

Claims priority, application Japan, Aug. 25, 1993, 5-210607; Aug. 25, 1993, 5-210608

Int. Cl.[6] C07F *5/06;* **C07D** *213/18;233/90;* **B65D** *85/18;* **C25D** *21/18*

U.S. Cl. 546—2 **4 Claims**

1. A process for preparing an ambient temperature molten salt which comprises treating an ambient temperature molten salt consisting essentially of 20 to 50 mole % of aluminum trichloride and 80 to 50 mole % of a salt selected from the group consisting tetraethyl ammonium bromide, trimethylethyl ammonium chloride, butylpyridinium chloride, 1-ethyl-3-methyl imidazolium chloride, ethyltributyl phosphonium bromide, and a mixture thereof with thionyl chloride.

5,543,523

METHOD AND INTERMEDIATES FOR THE SYNTHESIS OF KORUPENSAMINES

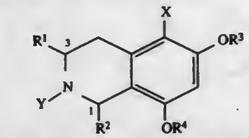
Thomas R. Hoye, St. Paul, Minn., assignor to Regents of the University of Minnesota, Minneapolis, Minn.

Filed Nov. 15, 1994, Ser. No. 339,958

Int. Cl.[6] C07D *217/02*

U.S. Cl. 546—14 **20 Claims**

1. A compound of the formula (I):



(I)

wherein X is Br, Cl or I, Y is H, $(C_1–C_4)$alkyl, benzyl, or CHO, each of R^1 and R^2 is H or CH_3, and each of R^3 and R^4 is H, benzyl, $(C_2–C_5)$acyl or an acid-labile hydroxy protecting group.

5,543,524

CHEMILUMINESCENT ACRIDINIUM SALTS

Phillip G. Mattingly, and Larry G. Bennett, both of Grayslake, Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 368,258, Jan. 3, 1995, Pat. No. 5,468,646, which is a continuation of Ser. No. 371,763, Jun. 23, 1989, abandoned, which is a continuation of Ser. No. 921,979, Oct. 22, 1986, abandoned. This application May 16, 1995, Ser. No. 442,266

Int. Cl.[6] C07D *219/10;* **C09B** *15/00*

U.S. Cl. 546—104 **1 Claim**

1. A method for preparation of a chemiluminescent compound comprising the steps of:

contacting an amine identified by the formula

$$R—X^3—NH_2$$

with a sulfonylhalide identified by the formula

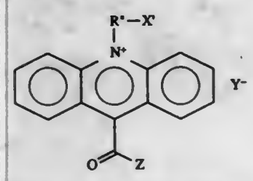
$$W—SO_2—R'—X^2$$

in an inert solvent in the presence of base to form a sulfonamide anion and metal ion identified by the formulas

$$M+\ X^3—R—N^-—SO_2—R'—X^2;$$

and

acylating with an activated 9-acridinecarboxylic acid identified by the formula



wherein R, R' and R* are independently selected from the group consisting of: alkyl, aryl, alkylene, substituted alkyl, substituted alkylene and substituted aryl, alkoxy, aryloxy, halo, amino, protected amino, substituted amino hydroxy, protected hydroxy, oxo, thio, imino, mercapto groups; and alkyl, aryl, alkylene substituted alkyl, substituted alkylene and substituted aryl groups comprising a heteroatom selected from the group consisting of nitrogen, phosphorus, sulfur and oxygen with the proviso that R— X^3, R'—X^2 and R*—X^1 may independently be hydrogen;

wherein X^1, X^2, and X^3 are independently members of the group consisting of hydrogen, carboxy, carboalkoxyl, carboxamido, carboaryloxy, cyano, carboximido, isocyanato, isothiocyanato, sulfo, sulfonyl halide, carbonyl halide, N-carboxysuccinimide and N-maleimide groups;

wherein Y is an appropriate counter ion;

wherein W is selected from the group consisting of chloro and fluoro groups; and

wherein M is selected from the group consisting of Li, Na and K; and

wherein Z is selected from the group consisting of halo, imidazolo, N-hydroxysuccinimidyl and azido groups.

5,543,525

PROCESS FOR PRODUCING PYRROLIDINE DERIVATIVE AND SALT THEREOF

Kohji Kagara, Minoo; Shunsuke Goto, Osaka; Satoshi Yoshii, Nishinomiya; Muncharu Ikushima, Osaka; Yukihisa Baba, Amagasaki, and Haruo Horisi, Nishinomiya, all of, Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

PCT No. PCT/JP93/00886, § 371 Date Dec. 30, 1994, § 102(e) Date Dec. 30, 1994, PCT Pub. No. WO94/01400, PCT Pub. Date Jan. 20, 1994

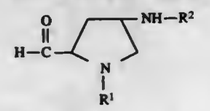
PCT Filed Jun. 29, 1993, Ser. No. 360,679

Claims priority, application Japan, Jul. 2, 1992, 4-175200

Int. Cl.[6] C07D *401/06*

U.S. Cl. 546—279.1 **1 Claim**

1. A process of using a compound of the formula:

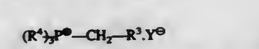


wherein

R^1 is unsaturated 5-or 6-membered heteromonocyclic(lower-)alkyl containing 1 to 4 nitrogen atom(s) and

R^2 is acyl;

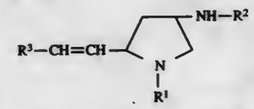
or a salt thereof, which comprises reacting said compound with a compound of the formula:



wherein R^3 is carboxy(lower)alkyl or protected carboxy(lower-)alkyl;

R^4 is aryl; and

$Y^{\ominus}$ is an anion; or a salt thereof, to produce a compound of the formula:



wherein R^1, R^2 and R^3 are each as defined above, or a salt thereof.

VOL. 1189 ISS. 1 AUG 6 1996 UMI

5,543,526

1-AMINO-4-(1H-IMIDAZOLE)- AMINOBUTANEBORONIC ACID DERIVATIVES, THEIR PREPARATION AND USE AS SYNTHETIC INTERMEDIATES

Sergio Mallart, Orsay; Gilbert Lassalle, Clamart; Thomas Andrew Purcell, Montfort l'Amaury, and Jean Claude Muller, Morsang sur Orge, all of, France, assignors to Synthelabo, Le Plessis Robinson, France

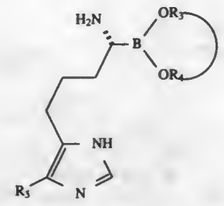
Filed Apr. 11, 1995, Ser. No. 419,923

Claims priority, application France, Apr. 12, 1994, 94.04287

Int. Cl.[6] C07F *5/04;* **C10M** *1/10;1/54*

U.S. Cl. 548—110 **10 Claims**

1. A compound of formula (I)

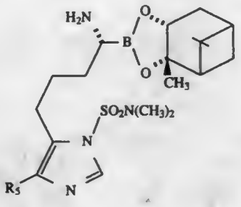


in which

R_3 and R_4 together represent the residue of a dihydroxy compound, and

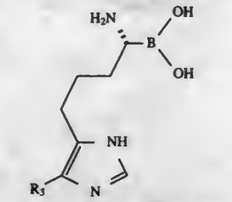
R_5 represents a hydrogen atom or a (C_1–C_4)alkyl group, or a salt thereof.

4. A process for the production of a compound or a salt thereof as defined in claim 1, which process comprises hydrolysing a compound of formula (IX)



(IX)

or a salt thereof, in which R_5 is a hydrogen atom or a (C1-C_4)alkyl group, in order to obtain a compound of formula (X)



(X)

or a salt thereof, in which R_5 is as defined above, which is reacted with a diol to obtain a compound of formula (I) or a salt thereof.

5,543,527

PROCESS FOR PREPARING CHIRAL [[(2-BROMOETHYL)-AMINO]METHYL]-NITRO-1H-IMIDAZOL-1-ETHANOL AND RELATED COMPOUNDS

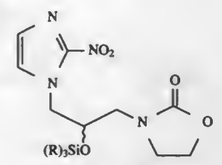
Vladimir G. Beylin; Anthony D. Sercel; Howard D. H. Showalter, all of Ann Arbor, Mich.; Gerald E. Adams, Wheatley; Edward M. Fielden, Blewbury; Matthew A. Naylor, Woking, and Ian J. Stratford, Faringdon, all of, England, assignors to British Technoloyg Group Limited, London, United Kingdom, and Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 359,226, Dec. 19, 1994, Pat. No. 5,481,000, which is a division of Ser. No. 245,718, May 18, 1994, abandoned, which is a division of Ser. No. 102,658, Aug. 5, 1993, Pat. No. 5,342,959, which is a continuation of Ser. No. 923,209, Jul. 31, 1992, abandoned. This application May 18, 1995, Ser. No. 443,548

Int. Cl.[6] C07D *413/02;403/02*

(I) **U.S. Cl. 548—110** **3 Claims**

1. A chiral compound of the formula



wherein R is a lower alkyl group having from 1 to 4 carbon atoms, phenyl, or phenyl substituted with lower alkyl having from 1 to 4 carbon atoms, lower alkoxy having from 1 to 4 carbon atoms, hydroxy, halogen, nitro, amino, or trifluoromethyl, and wherein the compound has the (S)- configuration at the carbon having the



substuent and is substantially free of the (R) isomer.

5,543,528

IMIDAZOLINES

Bernard Ferrari, Les Matelles, and Joëlle Taillades, Montpellier, both of, France, assignors to Sanofi, Paris, France

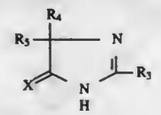
Division of Ser. No. 34,390, Mar. 18, 1993, Pat. No. 5,434,167. This application Apr. 24, 1995, Ser. No. 427,255

Claims priority, application France, Mar. 23, 1992, 92 03470

Int. Cl.[6] C07D *233/96;403/06;409/08;407/06*

U.S. Cl. 548—301.4 **14 Claims**

1. A compound of formula (2)



(2)

in which:

R_3 is a hydrogen, a C_{1-6} alkyl which is unsubstituted or substituted by one or more halogen atoms, a C_{2-6} alkenyl, a C_{3-7} cycloalkyl, a phenyl, a phenylalkyl in which the alkyl is C_1–C_3, or a phenylalkenyl in which the alkenyl is C_2–C_3, said phenyl groups being unsubstituted or monosubstituted or polysubstituted by a halogen atom, a C_{1-4} alkyl, a C_{1-4} halogenoalkyl, a C_{1-4} polyhalogenoalkyl, a hydroxyl or a $_{1-4}$ alkoxy;

R_4 and R_5 are each independently a C_{1-6} alkyl, a C_{3-7} cycloalkyl, a phenyl, or a phenylalkyl in which the alkyl is C_{1-3}, said alkyl, phenyl or phenylalkyl groups being unsubstituted or substituted by one or more halogen atoms or by a group selected from the group consisting of C_{1-4} perfluoroalkyl, hydroxyl and C_{1-4} alkoxy; or

R_4 and R_5 together are a group of formula $(CH_2)_n$ or a group of formula $(CH_2)_p$ -$Y(CH_2)_q$, in which Y is an oxygen atom; a sulfur atom; a carbon atom substituted by a C_{1-4} alkyl group, a phenyl, or a phenylalkyl in which the alkyl is C_1–C_3; or a group N-R_6 in which R_6 is a hydrogen, a C_{1-4} alkyl, a phenylalkyl in which the alkyl is C_1–C_3, a C_{1-4} alkylcarbonyl, a C_{1-4} halogenoalkylcarbonyl, a C_{1-4} polyhalogenoalkylcarbonyl, a benzoyl, an α-aminoacyl or an N-protecting group; or

R_4 and R_5 together with the carbon atom to which they are bonded, form an indane or an adamantane;

p+q=m;

n is an integer between 2 and 11;

m is an integer between 2 and 5;

X is a group N-R_7 or a group C(CN)R_8,

R_7 is a C_{1-4} alkyl or a cyano group;

R_8 is hydrogen, a cyano group, a tetrazolyl group, a tert-butyltetrazolyl group, a phenylsulfonyl group or a group COR_9; and

R_9 is a thienyl, a furyl, a C_{1-4}, alkoxy, a phenoxy, a benzyloxy or a phenyl which is unsubstituted or substituted by a halogen, a C_{1-4} alkyl or a C_{1-4} polyhalogenoalkyl.

5,543,529

1-CARBAMOYL-5-HYDROXYPYRAZOLE COMPOUNDS AND SALTS THEREOF

Koji Wariishi, and Mario Aoki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

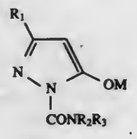
Filed Jan. 26, 1995, Ser. No. 378,403

Claims priority, application Japan, Jan. 27, 1994, 6-007761

Int. Cl.[6] C07D *231/18;231/14*

U.S. Cl. 548—366.7 **16 Claims**

1. A pyrazole compound represented by formula (A)



(A)

wherein R_1 represents an unsubstituted alkyl group, an ester group, a carboxyl group, a substituted or unsubstituted amino group or a substituted or unsubstituted aryl group; R_2 and R_3 each represents a substituted or unsubstituted alkyl group or a substituted or unsubstituted aryl group, and the alkyl groups represented by R_2 and R_3 may bond to each other to form a 5- or 6-membered saturated ring; and M represents a hydrogen atom or a monovalent cation.

5,543,530

4-ARYLISOINDOLE ANALGESICS

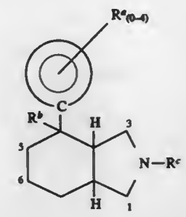
Richard J. Carmosin, Quakertown; John R. Carson, Norristown; Philip Pitis, North Wales, and Robert B. Raffa, Norristown, all of Pa., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Dec. 23, 1993, Ser. No. 173,326

Int. Cl.[6] C07D *401/04;409/04;209/44;* **A61K** *31/44;31/40*

U.S. Cl. 548—452 **16 Claims**

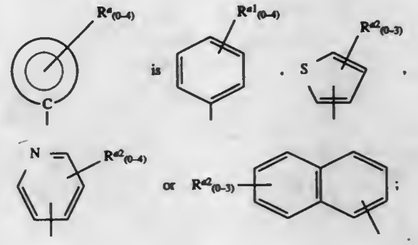
1. A compound having analgesic activity of the formula:



I

including the purified stereoisomers and pharmaceutically acceptable salts thereof,

wherein



is

;

R^{a1} is selected from the group consisting of hydrogen, halogen, C_{1-4}alkyl, substituted C_{1-4}alkyl (wherein the substituent is C_{1-4}alkoxy, hydroxy or perhalo), C_{1-4}alkoxy, substituted C_{1-4}alkoxy (wherein the substituent is perfluoro), C_{1-4}alkylthio, cyano, diC_{1-4}alkylamino, C_{1-4}alkylsulfonyl, C_{1-4}alkylsulfinyl, phenyl, phenylthio and carboxy;

R^{a2} is selected from the group consisting of halogen or C_{1-4}alkyl;

R^b is hydroxy or C_{1-5} alkylcarbonyloxy;

R^c is selected from the group consisting of hydrogen, C_{1-4} alkyl, substituted C_{1-4}alkyl (wherein the substituent is one or two phenyl groups or diC_{1-4}alkylamino), C_{1-4}alkenyl and benzyl.

5,543,531

THIOPHEN COMPOUNDS AND THEIR PREPARATION

Peter Fünfschilling, Allschwil, Switzerland, assignor to Sandoz Ltd., Basle, Switzerland

Continuation of Ser. No. 768,092, Sep. 30, 1991, abandoned, which is a continuation of Ser. No. 575,537, Aug. 28, 1990, abandoned, which is a continuation of Ser. No. 336,356, Feb. 15, 1989, abandoned. This application Apr. 8, 1992, Ser. No. 870,151

Claims priority, application United Kingdom, Jun. 16, 1987, 8714005

Int. Cl.[6] C07D *333/32*

U.S. Cl. 549—62 **2 Claims**

1. A process of preparing 2,4-dimethyl-2,3-dihydrothiophen-3-one of formula Ia/Ib



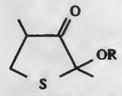
Ia



Ib

comprising

treating a compound of formula III



III

wherein R is H, the aliphatic hydrocarbyl moiety of an alkanol or C_{2-4}alkanoyl, with an alkane carboxylic acid in the presence of an amine.

5,543,532

CATALYST AND METHOD FOR VAPOR PHASE OXIDATION OF ALKANE HYDROCARBONS

Kostantinos Kourtakis, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 31, 1994, Ser. No. 221,292

Int. Cl.[6] C07D *307/34*; **B01J** *27/198*

U.S. Cl. 549—260 **7 Claims**

1. An improved vanadium phosphorus oxygen catalyst for the oxidation of alkane hydrocarbons wherein the improvement comprises the presence of two different promoters A and B in the catalyst, said catalyst comprising a crystalline oxide of formula I through IV

$(V_{1-x-y}A_xB_yO)_2P_2O_7\pm\delta$ I

$(V_{1-x}A_xO)_2P_{2-y}B_yO_7\pm\delta$ II

$(V_{1-y}B_yO)_2P_{2-x}A_xO_7\pm\delta$ III

$(VO)_2P_{2-x-y}A_xB_yO_7\pm\delta$ IV

wherein

A is a cation of Sb and B is a cation of Fe or

A is a cation of Bi and B is a cation of Mo;

δ is 0 to less than 0.5; and

x and y are as follows:

in formula I: $0.7\geqq x>0$ for each A, $0.7\geqq y>0$ for each B, and $0.7\geqq(x+y)>0$;

in formula II: $0.7\geqq x>0$ for each A, and $1.0\geqq y>0$ for each B;

in formula III: $1.0\geqq x>0$ for each A, and $0.7\geqq y>0$ for each B; and

in formula IV: $1.0>x>0$ for each A, $1.0>y>0$ for each B, and $1\geqq(x+y)>0$.

5. An improved process for the oxidation of n-butane to maleic anhydride using a vanadium phosphorus oxygen catalyst wherein the improvement comprises using a catalyst comprising a crystalline oxide of formula I through IV

$(V_{1-x-y}A_xB_yO)_2P_2O_7\pm\delta$ I

$(V_{1-x}A_xO)_2P_{2-y}B_yO_7\pm\delta$ II

$(V_{1-y}B_yO)_2P_{2-x}A_xO_7\pm\delta$ III

$(VO)_2P_{2-x-y}A_xB_yO_7\pm\delta$ IV

wherein

A is a cation of Sb and B is a cation of Fe or

A is a cation of Bi and B is a cation of Mo:

δ is 0 to less than 0.5; and

x and y are as follows:

in formula I: $0.7\geqq x>0$ for each A, $0.7\geqq y>0$ for each B, and $0.7\geqq(x+y)>0$;

in formula II: $0.7\geqq x>0$ for each A, and $1.0\geqq y>0$ for each B;

in formula III: $1.0\geqq x>0$ for each A, and $0.7\geqq y>0$ for each B; and

in formula IV: $1.0>x>0$ for each A, $1.0>y>0$ for each B, and $1\geqq(x+y)>0$.

5,543,533

PHOTOCHROMIC PRODUCTS AND METHOD FOR THEIR PREPARATION

Pietro Allegrini, San Donato Milanese; Nereo Nodari, Mairago; Luciana Crisci, Graffignana, and Vincenzo Malatesta, S. Maurilio, all of, Italy, assignors to Great Lakes Chemical Italia S.r.l., Milan, Italy

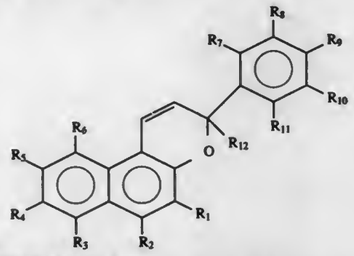
Filed Jun. 2, 1994, Ser. No. 253,055

Claims priority, application Italy, Jun. 9, 1993, MI93A1215

Int. Cl.[6] C07D *311/92;409/00;265/00;405/00*

U.S. Cl. 549—389 **6 Claims**

1. Photochromic products belonging to the group of chromenes, having the following formula (I):



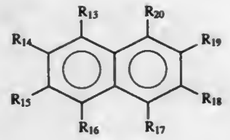
(I)

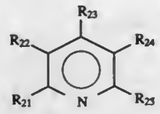
wherein in formula (I):

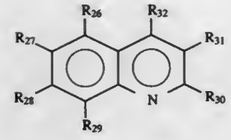
a) the substituents from R_1 to R_6 are each a hydrogen, and the substituents from R_7 to R_{11} each independently represent a hydrogen atom; a linear or branched C_1–C_5 alkyl group, possibly substituted with 1–5 halogen atoms selected from fluorine, chlorine bromine and iodine, hydroxy groups, C_1–C_5 alkoxy groups, C_1–C_5 acyloxy groups, C_1–C_5 alkyl carboxy groups, cyano groups; a C_2–C_5 alkenyl group; a benzyl group; a halogen atom selected from fluorine, chlorine, bromine and iodine; a hydroxy group; a C_1–C_5 alkoxy group; an amino group; a monoalkyl (C_1–C_5) amino group; a di-alkyl (C_1–C_5) amino group; a cyclo-alkyl (C_3–C_{10}) amino group; a piperidino, piperazino or morpholino group; a carboxyl group; a C_1–C_5 carboxyalkyl group; a C_2–C_5 carboxyalkenyl group; an amido carboxy group; a N-alkyl (C_1–C_5) amido carboxy group; a N,N-dialkyl (C_1–C_5) amido carboxy group; a cyano group; a nitro group; a sulphonic group; an alkyl (C_1–C_5) sulphonate group; an aryl sulphonate group; an aryl group selected from phenyl, biphenyl, naphthyl groups; an acyl group of the ketonic alkyl, ketonic aryl or ketonic benzyl type;

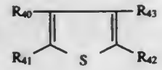
b) R_{12} represents:

an aromatic or heterocyclic group which can be represented by the following formulae (II), (III), (IV), (V), (VI), (VII) and (VIII):

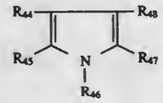




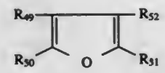




(VI)



(VII)



(VIII)

wherein:

R_{46} represents a hydrogen atom; a C_1–C_5 alkyl group, linear or branched, possibly substituted with 1–5 halogen atoms selected from fluorine, chlorine, bromine and iodine, hydroxy groups, C_1–C_5 alkoxy groups, C_1–C_5 acyloxy groups, C_1–C_5 alkyl carboxy groups, cyano groups; a C_2–C_5 alkenyl group; a benzyl group; an aryl group selected from phenyl, biphenyl, naphthyl groups;

at least one of the substituents from R_{13} to R_{20} from R_{21} to R_{25}, from R_{26} to R_{32}, from R_{33} to R_{39} from R_{40} to R_{43}, from R_{44} to R_{45} or from R_{47} to R_{48} and from R_{49} to R_{52}, represent the link position with the pyran ring the other substituents having the definition described under point (a).

5,543,534

ACETYLENES DISUBSTITUTED WITH A 5 SUBSTITUTED TETRAHYDRONAPHTHYL GROUP AND WITH AN ARYL OR HETEROARYL GROUPS HAVING RETINOID-LIKE BIOLOGICAL ACTIVITY

Vidyasagar Vuligonda, Irvine; Min Teng, Aliso Viejo; Richard L. Beard, Newport Beach; Alan T. Johnson, Rancho Santa Margarita; Yuan Lin, Walnut, and Roshantha A. Chandraratna, Mission Viejo, all of Calif., assignors to Allergan

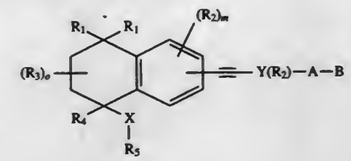
Filed Dec. 29, 1994, Ser. No. 366,172

Int. Cl.[6] C07D *309/10*

(III) **U.S. Cl. 549—421** **23 Claims**

1. A compound of the formula

(IV)



wherein X is S or O;

R_1 is hydrogen or alkyl of 1 to 10 carbons;

R_2 and R_3 are hydrogen, or alkyl of 1 to 6 carbons and the substituted ethynyl group occupies either the 2 or the 3 (V) position of the tetrahydronaphthalene nucleus;

m is an integer having the value of 0–3;

o is an integer having the value 0–4;

R_4 is hydrogen, alkyl of 1 to 10 carbons, alkenyl of 2 to 10 carbons and having 1 to 3 double bonds, alkynyl having 2 to 10 carbons and 1 to 3 triple bonds, carbocyclic aryl selected from the group consisting of phenyl, C_1–C_{10}-alkylphenyl, naphthyl, C_1–C_{10}-alkylnaphthyl, phenyl-C_1–C_{10}alkyl, napthyl-C_1–C_{10}alkyl; CN, or $(CH_2)_pCO_2R_8$ where p is an integer between 0 to 10;

R_5 is $C(R_{15})(R_{16})XR_{17}$;

Y is a phenyl group optionally substituted with one or two R_2 groups;

A is $(CH_2)_n$ where n is 0–5, lower branched chain alkyl having 3–6 carbons, cycloalkyl having 3–6 carbons, alkenyl having 2–6 carbons and 1 or 2 double bonds, alkynyl having 2–6 carbons and 1 or 2 triple bonds, and

B is hydrogen, COOH or a pharmaceutically acceptable salt thereof, $COOR_8$, $CONR_9R_{10}$, $—CH_2OH$, CH_2OR_{11}, CH_2OCOR_{11}, CHO, $CH(OR_{12})_2$, $CHOR_{13}O$, $—COR_7$, $CR_7(OR_{12})_2$, $CR_7OR_{13}O$, or tri-lower alkylsilyl, where R_7 is an alkyl, cycloalkyl or alkenyl group containing 1 to 5 carbons, R_8 is an alkyl group of 1 to 10 carbons, a cycloalkyl group of 5 to 10 carbons or trimethylsilylalkyl where the alkyl group has 1 to 10 carbons, or R_8 is phenyl or lower alkylphenyl, R_9 and R_{10} independently are hydrogen, an alkyl group of 1 to 10 carbons, or a cycloalkyl group of 5–10 carbons, or phenyl or lower alkylphenyl, R_{11} is lower alkyl, phenyl or lower alkylphenyl, R_{12} is lower alkyl, and R_{13} is divalent alkyl radical of 2–5 carbons; and further wherein R_{14} is hydrogen, alkyl of 1 to 10 carbons, alkenyl of 2 to 10 carbons and having 1 to 3 double bond, alkynyl having 2 to 10 carbons and 1 to 3 triple bonds, carbocyclic aryl selected from the group consisting of phenyl, C_1–C_{10}-alkylphenyl, naphthyl, C_1–C_{10}-alkylnaphthyl, phenyl-C_1–C_{10}alkyl, napthyl-C_1–C_{10}alkyl; R_{15} is hydrogen or lower alkyl of 1 to 6 carbons and R_{16} and R_{17} jointly form a ring having a total of 4 to 5 carbons and the X heteroatom.

5,543,535
ORGANOTIN COMPOUNDS USEFUL IN PREPARING BRIDGED STEREORIGID METALLOCENES

Richard Llaowsky, Kamen, Germany, assignor to Witco GmbH, Bergkamen, Germany

Filed Feb. 22, 1995, Ser. No. 392,389
Claims priority, application Germany, Feb. 25, 1994, 44 06 109.9
Int. Cl.[6] C07F 7/22
U.S. Cl. 556—11 **8 Claims**

1. A compound of the general formula

$$Q(CpR_a)(Cp'R'_{a'})(SnX_{k-1}{}^3R_{4-k}{}^6)_2$$

wherein Q is a single-membered or multi-membered bridge



between Cp and Cp', wherein each R^1 and R^2 are identical or different and each is a hydrogen atom, a C_1–C_{10} alkyl group or a C_6–C_{10} aryl group, Z is carbon, silicon or germanium, and b is 1, 2 or 3; $0 \leqq a \leqq 4$ and $0 \leqq a' \leqq 4$;

Cp and Cp' are each a cyclopentadienyl, an indenyl or a fluorenyl radical;

R and R' are the same or different and in each occurrence is an alkyl, alkoxy, phosphine, amino, alkylamino, dialkylamino, alkoxy-alkyl, aryl-alkyl, or aryloxy-alkyl group;

R^6 is a C_2–C_{20}-alkyl radical or a C_6– C_{10}-aryl radical;

k is 1–4; and

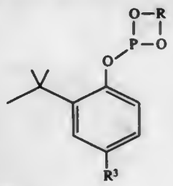
X^3 is a halogen atom.

5,543,536
MONODENTATE PHOSPHITE AND NICKEL CATALYST COMPOSITION FOR MONOOLEFIN HYDROCYANATION

Wilson Tam, Boothwyn, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 26, 1994, Ser. No. 233,194
Int. Cl.[6] C07F 9/02;15/04
U.S. Cl. 556—13 **18 Claims**

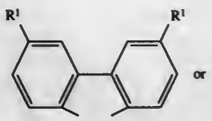
1. A process for hydrocyanation comprising reacting an acylic aliphatic monoolefin, said monoolefin being unconjugated or conjugated to an ester group, with a source of hydrogen cyanide in the presence of a catalyst precursor composition comprising zero-valent nickel and a monodentate phosphite ligand of Formula I,



I

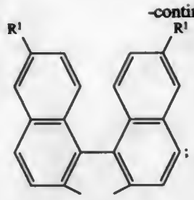
wherein:

R is



or

-continued



;

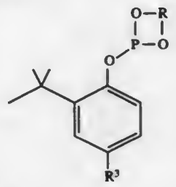
each R^1, independently, is H, C_{1-8} alkyl or OR^2;

R^2, independently, is C_{1-8} alkyl; and

R^3 is H, C_{1-8} alkyl or OR^2;

and wherein said reaction is carried out in the presence of a Lewis acid promoter, to produce a terminal organonitrile.

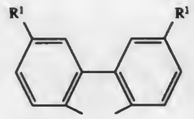
14. A catalyst precursor composition comprising zero-valent nickel or a source thereof, and a monodentate phosphite ligand of Formula I



I

wherein:

R is



each R^1, independently, is H, C_{1-8} alkyl or OR^2;

R^2 is C_{1-8} alkyl;

R^3 is H, C_{1-8} alkyl or OR^2;

and wherein the g atom ratio P:Ni is in the range of about 1:1 to 10:1.

5,543,537
PROCESS FOR PREPARING TRIMETHYLALUMINUM

David C. Eisenberg; Milind M. Pradhan, and Milham S. Howie, all of Baton Rouge, La., assignors to Albemarle Corporation, Richmond, Va.

Filed May 8, 1995, Ser. No. 436,695
Int. Cl.[6] C07F 5/06
U.S. Cl. 556—157 **19 Claims**

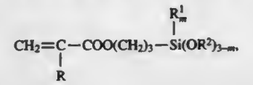
1. A process for making trimethylaluminum, said process comprising the steps of (a) reacting a trialkylaluminum having at least two carbon atoms in its alkyl groups with a methyl halide under conditions to form a product mixture which contains trimethylaluminum and dimethylaluminum halide, and (b) fractionally distilling trimethylaluminum from said product mixture in the presence of trialkylaluminum having at least two carbon atoms in its alkyl groups so as to convert at least a portion of the dimethylaluminum halide to trimethylaluminum.

5,543,538
ACRYLOYLOXYPROPYLALKOXYSILANES, PROCESS FOR THEIR PREPARATION AND USE THEREOF

Margret Haas, Koenigswinter, and Guenther Bernhardt, St. Augustin, both of, Germany, assignors to Huels Aktiengesellschaft, Marl, Germany

Filed Aug. 30, 1995, Ser. No. 521,582
Claims priority, application Germany, Aug. 30, 1994, 44 30 729.2
Int. Cl.[6] C07F 7/08
U.S. Cl. 556—401 **14 Claims**

1. An acryloyloxypropylalkoxysilane composition comprising one or more acryloyloxypropylalkoxysilanes of the formula:



wherein R^1 and R^2 are, independently, identical of different alkyl groups having 1 to 4 carbon atoms, m is an integer from 0 to 2 and R is hydrogen or a methyl group; and

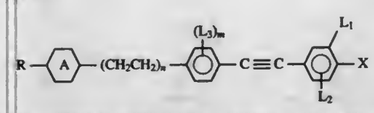
an amount of one or more tertiary amines sufficient to raise the pH of the composition to a value higher than the pH of said acryloyloxypropylalkoxysilanes, and wherein said one or more tertiary amines is selected from the group consisting of tertiary mono-, di-, and triamines containing only alkyl or cycloalkyl substituents.

5,543,539
SILACYCLOHEXANE COMPOUND, A METHOD OF PREPARING IT AND A LIQUID CRYSTAL COMPOSITION CONTAINING IT

Takaaki Shimizu; Takeshi Kinsho; Tsutomu Ogihara; Tatsushi Kaneko; Ryuichi Saito, all of Niigata-Ken, and Hideshi Kurihara, Kawasaki, all of, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Feb. 14, 1995, Ser. No. 388,308
Claims priority, application Japan, Feb. 17, 1994, 6-043181
Int. Cl.[6] C07F 7/08
U.S. Cl. 556—406 **6 Claims**

1. A silacyclohexane compound represented by the following formula (1):



(1)

wherein R denotes a linear-chain alkyl group with a carbon number of 1–10, a mono- or di-fluoroalkyl group with a carbon number of 1–10, a branched-chain alkyl group with a carbon number of 3–8, an alkoxyalkyl group with a carbon number of 2–7, or an alkenyl group with a carbon number of 2–8,



denotes a trans-1-sila-1,4-cyclohexylene or a trans-4-sila-1,4-cyclohexylene group having silicon at positions 1 or 4 with substitutional group(s) of H, F, Cl or CH_3; n denotes 0 or 1; L_1 and L_2 independently denote H,F, Cl, CN or CH_3; L_3 denotes F; m denotes O, 1 or 2; and X denotes H, CN, F, Cl, CF_3, $CClF_2$, $CHFCl$, $OCClF_2$, $OCHFCl$, $OCHF_2OCF_3$, R or OR group.

5,543,540
PROCESS FOR PREPARING TRIMETHYLSILYLOXY FUNCTIONALIZED ALKYLLITHIUM

James A. Schwindeman, Shelby, N.C., assignor to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 279,721, Jul. 25, 1994, Pat. No. 5,403,496. This application Nov. 21, 1994, Ser. No. 341,822
Int. Cl.[6] C07F 7/08;7/18
U.S. Cl. 556—466 **14 Claims**

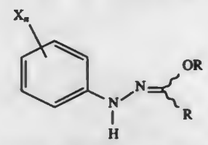
1. A process for producing compounds of the formula $(CH_3)_3SiORLi$, wherein R is selected from alkyl groups containing 2 to 10 carbon atoms and aryl groups containing 6 to 10 carbon atoms, by reacting, first, in an inert atmosphere, a haloalcohol of the formula HORX, wherein R is selected from alkyl groups containing 2 to 10 carbon atoms and aryl groups containing 6 to 10 carbon atoms and X is selected from chlorine or bromine, is reacted with neat hexamethyldisilazane at a temperature between 20° C., and 200° C., after which the resulting product, a trimethylsilyloxyalkylhalide compound, is reacted in a second step, at a temperature between 50° C. and 160° C., in an inert liquid hydrocarbon medium, with powdered lithium metal to produce the $(CH_3)_3SiORLi$ compound.

5,543,541
METHOD OF PREPARING ARYL TRIAZOLINONES WITH TRIALKYL ORTHOACETATES

Jaidev S. Goudar, Plainsboro, N.J., assignor to FMC Corporation, Philadelphia, Pa.

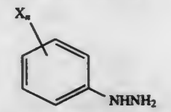
Division of Ser. No. 263,586, Jun. 22, 1994, Pat. No. 5,449,784. This application Apr. 4, 1995, Ser. No. 416,560
Int. Cl.[6] C07C 243/22
U.S. Cl. 558—6 **13 Claims**

1. A process for the preparation of an alkoxyethylidene-substituted aryl hydrazine having the formula



(B)

which comprises reacting an aryl hydrazine of the formula



(A)

with a tri-lower alkyl orthoacetate, $CH_3C(OR)_3$, at ambient temperature, in a lower alkanol solvent whose alkyl groups correspond in chain length to those of the tri-lower alkyl orthoacetate, optionally in the presence of a catalyst, to form the corresponding alkoxyethylidene-substituted aryl hydrazine having the formula (B);

wherein X is independently hydrogen, halogen, lower alkyl, lower alkoxy, nitro, hydroxy, $—NHSO_2R^1$, or $—NR^1SO_2R^1$, $—N(SO_2R^1)_2$, where R^1 is lower alkyl;

R is lower alkyl, and each R is the same; and

n is an integer of from 1–3.

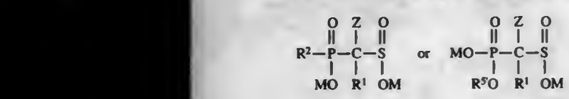
5,543,542

METHODS OF PREPARING α-PHOSPHONOSULFINATE SQUALENE SYNTHETASE INHIBITORS

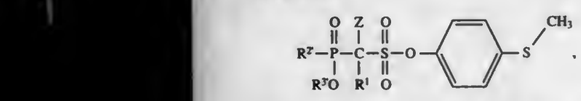
R. Michael Lawrence, 48 W. Crown Ter., Yardley, Pa. 19067; Scott A. Biller, 136 Nancy La., Ewing, N.J. 08638, and Olga M. Fryszman, 63 Riverside Dr., Princeton, N.J. 08540

Division of Ser. No. 295,121, Aug. 24, 1994, Pat. No. 5,447,922. This application May 22, 1995, Ser. No. 445,604
Int. Cl.[6] C07F 9/38;9/40
U.S. Cl. 558—87 9 Claims

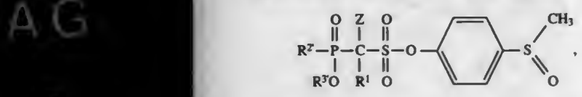
1. A method for preparing a compound having the structure



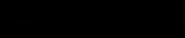
wherein Z is H, halogen, lower allyl or lower alkenyl, R^1 is a lipophilic group containing at least 7 carbons, R^2 is R^{5a} where R^{5a} is alkyl, arylalkyl or aryl, M is H, a metal ion or other pharmaceutically acceptable cation and R^5 is alkyl, arylalkyl, aryl or cycloalkyl, which comprises providing a phosphonosulfonate of the structure



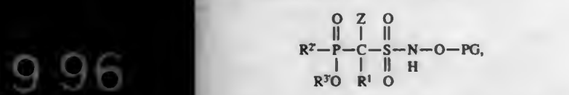
where R^Z is R^{5a} or OR^5, and R^5 is alkyl, arylalkyl, aryl or cycloalkyl, and R^3 is alkyl, arylalkyl, aryl or cycloalkyl, reacting the phosphonosulfonate with an oxidizing agent to form the phosphonosulfonate sulfoxide of the structure



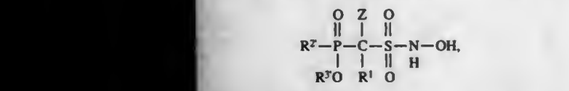
reacting the above phosphonosulfonatesulfoxide with an amine of the structure



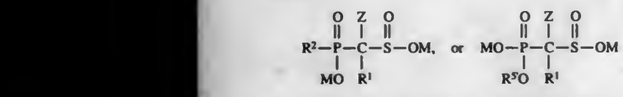
where PG represents a protecting group, to form a protected hydroxamic acid of the structure



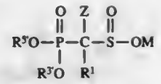
reacting the protected hydroxamic acid with a deprotecting agent to form the hydroxamic acid of the structure



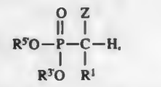
and treating the hydroxamic acid with a silyl bromide or iodide and then with water and/or a base to form the compound of the structure



2. A method for preparing a phosphonosulfinate having the structure

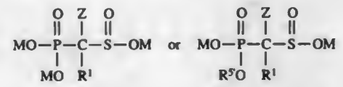


wherein Z is H, halogen, lower alkyl or lower alkenyl, R^1 is a lipophilic group containing at least 7 carbons, R^5 is alkyl, aryl, arylalkyl, or cycloalkyl, and R^3 is alkyl, arylalkyl, aryl or cycloalkyl, and M is H, a metal ion or other pharmaceutically acceptable cation, which comprises providing a compound of the structure

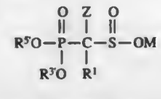


treating the above compound with a base and a sulfinating agent to form the phosphonosulfinate.

3. A method for preparing a phosphonosulfinate having the structure



wherein Z is H, halogen, lower alkyl or lower alkenyl, R^1 is a lipophilic group containing at least 7 carbons, R^5 is alkyl, aryl, arylalkyl or cycloalkyl, M is H, a metal ion or other pharmaceutical acceptable cation, which comprises providing a compound of the structure



wherein R^5 is alkyl, aryl, arylalkyl or cycloalkyl, R^3 is alkyl, arylalkyl, aryl or cycloalkyl, and M is H, a metal ion or other pharmaceutically acceptable cation, and treating the phosphonosulfinate with a silyl bromide or silyl iodide followed by water and/or a strong base to form the phosphonosulfinate.

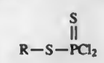
5,543,543

PROCESS FOR PREPARING PHOSPHORODICHLORIDODITHIOATES BY REACTING ALKYL MERCAPTANS WITH PCl_3 $PSCl_3$ AND SULFUR

Vidyanatha A. Prasad; Peter E. Newallis, both of Leawood, Kans., and Emerson L. Foote, Jr., Kansas City, Mo., assignors to Bayer Corporation, Pittsburgh, Pa.

Filed May 17, 1995, Ser. No. 442,623
Int. Cl.[6] C07F 9/20
U.S. Cl. 558—96 9 Claims

1. A process for the preparation of phosphorodichloridodithioates of the general formula



in which

R represents a straight chain or branched alkyl radical with up to 8 carbon atoms which is optionally substituted by alkoxy or alkylthio, a cycloaliphatic radical with 5 or 6 ring members, an aralkyl radical with 6 to 8 carbon atoms,

comprising reacting:

(i) a mercaptan of the general formula R-SH in which R has the above-mentioned meaning;

(ii) phosphorus trichloride;

(iii) thiophosphoryl chloride; and

(iv) sulfur

wherein the reaction is conducted in the presence of a tertiary amine catalyst.

5,543,544

BIS(PENTAERYTHRITOL PHOSPHATE ALCOHOL) HYDROGEN PHOSPHONATE

Jeffrey E. Telschow, Tarrytown, N.Y., assignor to Akzo Nobel N.V., Netherlands

Division of Ser. No. 241,890, May 12, 1994, Pat. No. 5,420,326. This application Feb. 9, 1995, Ser. No. 385,860
Int. Cl.[6] C07F 9/6574
U.S. Cl. 558—119 4 Claims

1. A process for preparing bis(pentaerythritol phosphate alcohol) hydrogen phosphonate which comprises the transesterification of a diphenyl phosphite with pentaerythritol phosphate alcohol.

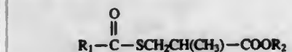
5,543,545

METHOD FOR THE PREPARATON OF α-METHYL-β-ACYLTHIOPROPIONATES

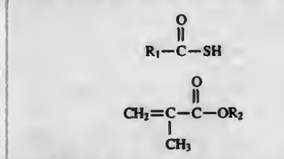
Shia-Shin Wang, and Chih-Hung Chen, both of, Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Taiwan, Taiwan

Continuation of Ser. No. 35,475, Mar. 23, 1993, abandoned. This application Sep. 16, 1994, Ser. No. 307,483
Int. Cl.[6] C07C 327/06;327/16
U.S. Cl. 558—255 12 Claims

1. A method for the preparation of an α-methyl-β-acylthiopropionate of formula I:



wherein R_1 and R_2 are independently selected from C_1–C_6 alkyl, phenyl or substituted phenyl of the formula $C_6H_2R_3R_4R_5$ wherein R_3, R_4 and R_5 are independently selected from hydrogen, lower alkyl, F, Cl, Br, NO_2, CN or R_6O wherein R_6 is lower alkyl, said method comprising reacting a thiocarboxylic acid of formula II with a methacrylate ester of formula (III):



wherein R_1 and R_2 are as defined above, in the presence of an organic solvent or in the presence of a polymerization inhibitor at a reaction temperature ranging between about 40° C. and about 150° C. and at a mole ratio of thiocarboxylic acid to methacrylate ester ranging between about 1:1 and about 1:2;

wherein the rate of methacrylate ester addition is from about 0.3 to about 1.0 mL per minute; and

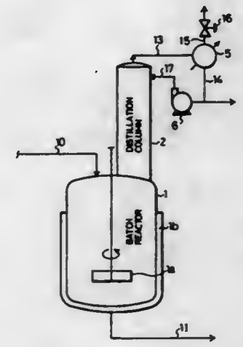
wherein the thiocarboxylic acid is pre-heated to a temperature of from about 40° C. to about 150° C. prior to the addition of the methacrylate ester.

5,543,546

PROCESS FOR PREPARING CARBONATE ESTERS

Hideaki Tsuneki, Tokyo; Yoshiyuki Onda, Saita; Atsui Moriya, Saita, and Hiroshi Yoshida, Saita; all of, Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

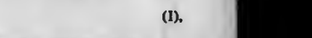
Filed May 18, 1995, Ser. No. 443,753
Claims priority, application Japan, May 31, 1994, 6-119008; May 25, 1994, 6-110972; Jul. 5, 1994, 6-153802
Int. Cl.[6] C07C 68/06
U.S. Cl. 558—270 31 Claims



1. A process for preparing carbonate esters comprising the steps of:

producing a carboxylate represented by formula (3)

wherein R^1 represents an alkyl group, an alicyclic hydrocarbon group or an aryl alkyl group, and R^3 represents an aromatic group with or without a substituent, by performing a transesterification between a raw carboxylate, as a raw material, of formula (1)



wherein each of R^1 and R^2 independently represents an alkyl group, an alicyclic hydrocarbon group or an aryl alkyl group, and an aromatic hydroxy compound of formula (2)

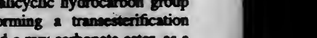


wherein R^3 represents an aromatic group with or without a substituent, in the presence of a catalyst; and

producing a carbonate ester of formula (5)



wherein R^3 represents an aromatic group with or without a substituent, and R^6 represents a substituent selected from the group consisting of R^3, an alkyl group, an alicyclic hydrocarbon group and an aryl alkyl group, by performing a transesterification between said produced carboxylate and a raw carbonate ester, as a raw material, of formula (4)



wherein each of R^4 and R^5 independently represents an alkyl group, an alicyclic hydrocarbon group or an aryl alkyl group, in the presence of a catalyst;

wherein the step of producing said carbonate ester includes collecting a by-produced carboxylate and

wherein said by-produced carboxylate is used as said raw carboxylate.

5,543,547

METHOD OF PRODUCING AROMATIC CARBONATE

Hiroshi Iwane; Hidekazu Miyagi; Satoshi Imada; Shoichi Seo, and Takahiro Yoneyama, all of Inashiki, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Continuation of Ser. No. 160,145, Dec. 2, 1993, abandoned. This application Feb. 3, 1995, Ser. No. 384,258

Claims priority, application Japan, Mar. 8, 1993, 5-046740; Jun. 28, 1993, 5-157216

Int. Cl.[6] C07C *69/96*

U.S. Cl. 558—274 **15 Claims**

1. A method of producing an aromatic carbonate by reacting an aromatic hydroxy compound, carbon monoxide and oxygen, wherein reaction is effected under pressure within the range of 0.1 to 500 Kg/cm^2 at a temperature of 20° to 300° C., in a reaction system in the presence of the following compounds:

(A) at least one member selected from the group consisting of palladium and palladium compounds;

(B) at least one trivalent or tetravalent cerium compound;

(C) at least one member selected from the group consisting of quaternary ammonium salts and quaternary phosphonium salts; and

(D) at least one member selected from the group consisting of quinones and reduction products thereof, the molar ratio of component (A) to the aromatic hydroxy compound being within the range of 10^{-5}:1 to 1:1 and a molar ratio of the component (B) to the component (A) being within the range 10^{-2}:1 to 10^2:1.

5,543,548

PROCESS FOR THE PREPARATION OF DIMETHYL CARBONATE

Heinz Landscheidt, Duisburg; Erich Wolters, Köln; Paul Wagner, Düsseldorf, and Alexander Klausener, Köln, all of, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jul. 11, 1994, Ser. No. 273,548

Claims priority, application Germany, Jul. 15, 1993, 43 23 675.8; Jul. 15, 1993, 43 23 682.0

Int. Cl.[6] C07C *69/96*

U.S. Cl. 558—277 **21 Claims**

1. A process for the continuous preparation of dimethyl carbonate from carbon monoxide and methyl nitrite and for recycling the nitrogen oxide thereby formed for renewed formation of methyl nitrite, wherein

(a) carbon monoxide and methyl nitrite are reacted in the gas phase in the presence of a heterogeneous catalyst comprising a platinum metal, and an inert gas in the temperature range from 50° to 170° C., and in the pressure range from 1 to 5 bar, whereby, as an activator, hydrogen halide, halogen, methyl chloroformate or other substances which contain halogen acting activating under the reaction conditions in a concentration of 0 to 3,000 ppm is added to the gas mixture,

(b) the mixture obtained in (a) is separated into gaseous and liquid reaction products, a part of the gaseous stream of 0 to 7% by weight is removed, the therein contained low-boiling constituents are separated off and directed to a further work-up, the therein contained nitrogen monoxide is converted with oxygen and methanol to yield methyl nitrite, which methyl nitrite is separated off and recycled to the process, and the remaining accumulated inert gases are excluded from the process,

(c) the gaseous products are reacted with methanol, oxygen and with or without freshly added nitrogen oxide or nitrogen oxide equivalents for renewed formation of the methyl nitrite, the gas mixture which contains the newly formed methyl nitrite being led off and recycled again to the preparation of dimethyl carbonate, and water and any other liquid by-products formed also being led off and removed from the circulation, and

(d) the liquid products from (b) are subjected to separation by distillation, in which the entire product mixture is initially subjected to a first distillation, which is carried out under a pressure of 1 to 25 bar, and then either

(e1) the top product from the first distillation is fed to another distillation carried out under normal pressure or reduced pressure, in which a methanol-rich discharge is obtained as the bottom product, which is recycled to the preparation of dimethyl carbonate, and in which a top product is obtained which is recycled again to the first distillation, or

(e2) the top product from the first distillation is fed to a pervaporation or a vapour permeation, which is operated on the retained material side at a temperature of 20° to 150° C. under a pressure of 0.5 to 10 bar and on the permeate side at a temperature of −30° to +30° C. under a pressure of 0.5 to 500 mbar, in which a methanol-rich outflow is obtained as the permeate, which is recycled to the preparation of dimethyl carbonate, and in which a retained material is obtained which is recycled to the first distillation, and

(f) pure dimethyl carbonate is obtained by distillation of the mixture obtained as the bottom running of the first distillation.

5,543,549

PROCESS FOR THE PREPARATION OF A SUBSTITUDED 2.5-DIAMINO-3-HYDROXYHEXANE

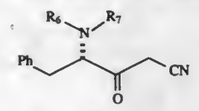
Timothy L. Stuk, Lindenhurst, Ill.; Michael S. Allen, Silver Lake, Wis.; Anthony R. Haight, Mundelein; Howard E. Morton, Gurnee, both of Ill.; Daniel S. Reno, Kenosha, Wis.; Hing L. Sham, Mundelein, Ill.; Thomas J. Sowin, Grayslake, Ill., and Jien-Heh J. Tien, Libertyville, Ill., assignors to Abbott Laboratories, Abbott Laboratories, Ill.

Division of Ser. No. 281502, Jul. 24, 1994, Pat. No. 5,491,253, which is a continuation-in-part of Ser. No. 141795, Oct. 22, 1993, abandoned. This application Apr. 3, 1995, Ser. No. 415,403

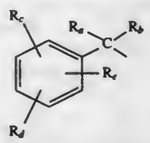
Int. Cl.[6] C07C *255/00;261/00;233/00;* **C07D** *209/04*

U.S. Cl. 558—405 **2 Claims**

1. A substantially pure compound of the formula:

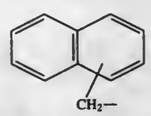


wherein R_6 and R_7 are independently selected from



(i)

wherein R_a and R_b are independently selected from hydrogen, loweralkyl and phenyl and R_c, R_d and R_e are independently selected from hydrogen, loweralkyl, trifluoromethyl, alkoxy, halo and phenyl; and

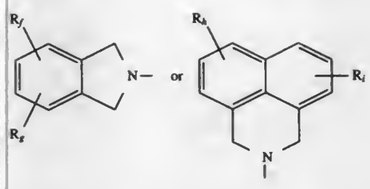


(ii)

wherein the naphthyl ring is unsubstituted or substituted with one, two or three substitutents independently selected from loweralkyl, trifluoromethyl, alkoxy and halo; or

R_6 is as defined above and R_7 is $R_{7a}OC(O)$— wherein R_{7a} is loweralkyl or benzyl; or

R_6 and R_7 taken together with the nitrogen atom to which they are bonded are



wherein R_f, R_g, R_h and R_i are independently selected from hydrogen, loweralkyl, alkoxy, halogen and trifluoromethyl; or an acid addition salt thereof.

5,543,550

PROCESS FOR THE PREPARATION OF 5-FLUOROANTHRANILIC ALKYL ESTERS AND/OR 5-FLUOROANTHRANILIC ACID

Jochen Rapp, Frankfurt; Siegfried Planker, Königstein; Theodor Papenfuhs, Frankfurt, and Günter Barteis, Burgwedel, all of, Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Oct. 6, 1994, Ser. No. 319,306

Claims priority, application Germany, Oct. 8, 1993, 43 34 432.1

Int. Cl.[6] C07C *229/52;69/76;63/04*

U.S. Cl. 560—19 **37 Claims**

1. A process for the preparation of a 5-fluoroanthranilic alkyl ester, 5-fluoroanthranilic acid, or a mixture thereof, which comprises:

dissolving a 3-fluorobenzoic alkyl ester in a medium consisting essentially of essentially solvent-free sulfuric acid and reacting the resulting solution with nitrating acid at from −10° to 30° C., then adding water,

separating off the nitrated reaction product and optionally including the step of hydrolyzing said nitrated reaction product to form the corresponding nitrated fluorobenzoic acid,

reacting said nitrated reaction product or the corresponding nitrated fluorobenzoic acid with hydrogen at from 50° to 120° C. under elevated pressure in the presence of a catalyst comprising a metal of the platinum group and sulfur, and

recovering a 5-fluoroanthranilic alkyl ester or 5-fluoroanthranilic acid or a mixture thereof as the product.

5,543,551

PROCESS FOR THE PREPARATION OF A SUBSTITUTED 2.5-DIAMINO-3-HYDROXYHEXANE

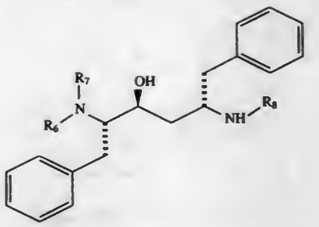
Timothy L. Stuk, Lindenhurst, Ill.; Michael S. Allen, Silver Lake, Wis.; Anthony R. Haight, Mundelein, Ill.; Francis A. Kerdesky, Grayslake, Ill.; Denton C. Langridge, Wildwood, Ill.; M. Robert Leanna, Grayslake, Ill.; Linda M. Lijewski, Milwaukee, Wis.; Laura Melcher, Deerfield, Ill.; Howard E. Morton, Gurnee, Ill.; Daniel W. Norbeck, Crystal Lake, Ill.; Daniel S. Reno, Kenosha, Wis.; Timothy A. Robbins, Gurnee, Ill.; Hing L. Sham, Mundelein, Ill.; Thomas J. Sowin, Grayslake, Ill.; Jien-heh J. Tien, Libertyville, Ill.; Chen Zhao, Gurnee, Ill., and David Scarpetti, Baltimore, Md., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 281,502, Jul. 27, 1994, Pat. No. 5,491,235, which is a continuation-in-part of Ser. No. 141,795, Oct. 22, 1993, abandoned. This application Apr. 10, 1995, Ser. No. 419,301

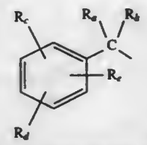
Int. Cl.[6] C07C *261/00;233/00;* **C07D** *209/04*

U.S. Cl. 560—24 **2 Claims**

1. A process for the preparation of a substantially pure compound of the formula:

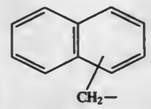


wherein R_6 and R_7 are each hydrogen or R_6 and R_7 are independently selected from



(i)

wherein R_a and R_b are independently selected from hydrogen, loweralkyl and phenyl and R_c, R_d and R_e are independently selected from hydrogen, loweralkyl, trifluoromethyl, alkoxy, halo and phenyl; and

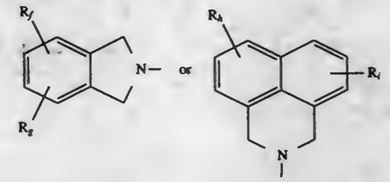


(ii)

wherein the naphthyl ring is unsubstituted or substituted with one, two or three substitutents independently selected from loweralkyl, trifluoromethyl, alkoxy and halo; or

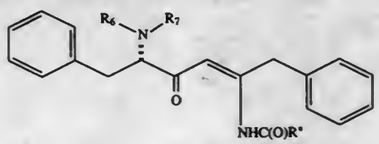
R_6 is as defined above and R_7 is $R_{7a}OC(O)$— wherein R_{7a} is loweralkyl or benzyl; or

R_6 and R_7 taken together with the nitrogen atom to which they are bonded are

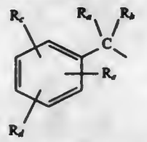


wherein R_f, R_g, R_h and R_i are independently selected from hydrogen, loweralkyl, alkoxy, halogen and trifluoromethyl and R_8 is hydrogen or —C(O)R" wherein R" is loweralkyl, alkoxy, benzyloxy or phenyl wherein the phenyl ring is unsubstituted or substituted with one, two or three substituents independently selected from loweralkyl, trifluoromethyl, alkoxy and halo; or an acid addition salt thereof comprising

(I) reacting a compound of the fomula:

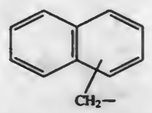


wherein R_6 and R_7 are independently selected from



(i)

wherein R_a and R_b are independently selected from hydrogen, loweralkyl and phenyl and R_c, R_d and R_e are independently selected from hydrogen, loweralkyl, trifluoromethyl, alkoxy, halo and phenyl; and

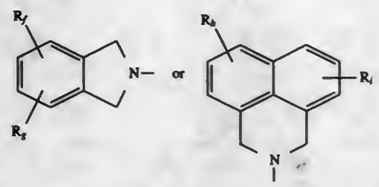


(ii)

wherein the naphthyl ring is unsubstituted or substituted with one, two or three substitutents independently selected from loweralkyl, trifluoromethyl, alkoxy and halo; or

R_6 is as defined above and R_7 is $R_{7a}OC(O)$— wherein R_{7a} is loweralkyl or benzyl; or

R_6 and R_7 taken together with the nitrogen atom to which they are bonded are



wherein R_f, R_g, R_h and R_i are independently selected from hydrogen, loweralkyl, alkoxy, halogen and trifluoromethyl and R_8 is hydrogen or —C(O)R" wherein R" is loweralkyl, alkoxy, benzyloxy or phenyl wherein the phenyl ring is unsubstituted or substituted with one, two or three substituents independently selected from loweralkyl, trifluoromethyl, alkoxy and halo and R" is is phenyl, loweralkyl or alkoxy with a ketone reducing agent, followed by

(II) catalytic hydrogenation of the product of step (I).

5,543,552

PROCESS FOR THE PREPARTATION OF A SUBSTITUTED 2,5-DIAMINO-3-HYDROXYHEXANE

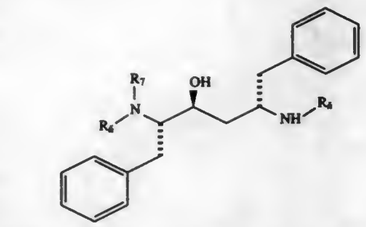
Timothy L. Stuk, Lindenhurst, Ill.; Michael S. Allen, Silver Lake, Wis.; Anthony R. Haight, Mundelein, Ill.; M. Robert Leanna, Grayslake, Ill.; Linda M. Lijewski, Milwaukee, Wis.; Laura Melcher, Deerfield, Ill.; Howard E. Morton, Gurnee, Ill.; Daniel S. Reno, Kenosha, Wis.; Hing L. Sham, Mundelein, Ill., and Thomas J. Sowin, Grayslake, Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 281,502, Jul. 27, 1994, Pat. No. 5,491,253, which is a continuation-in-part of Ser. No. 141,795, Oct. 22, 1993, abandoned. This application Apr. 10, 1995, Ser. No. 419,327

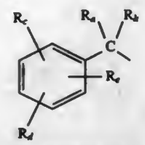
Int. Cl.[6] **C07C** *261/00;233/00;* **C07D** *209/04*

U.S. Cl. 560—24 2 Claims

1. A process for the preparation of a substantially pure compound of the formula:

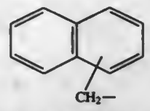


wherein R_6 and R_7 are each hydrogen or R_6 and R_7 are independently selected from



(i)

wherein R_a and R_b are independently selected from hydrogen, loweralkyl and phenyl and R_c, R_d and R_e are independently selected from hydrogen, loweralkyl, trifluoromethyl, alkoxy, halo and phenyl; and

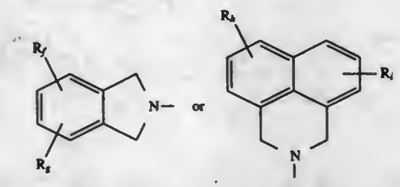


(ii)

wherein the naphthyl ring is unsubstituted or substituted with one, two or three substitutents independently selected from loweralkyl, trifluoromethyl, alkoxy and halo; or

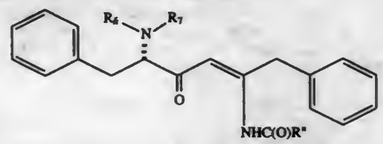
R_6 is as defined above and R_7 is $R_{7a}OC(O)$- wherein R_{7a} is loweralkyl or benzyl; or

R_6 and R_7 taken together with the nitrogen atom to which they are bonded are

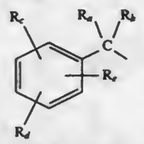


wherein R_f, R_g, R_h and R_i are independently selected from hydrogen, loweralkyl, alkoxy, halogen and trifluoromethyl and R_8 is hydrogen or -C(O)R" wherein R" is loweralkyl, alkoxy, benzyloxy or phenyl wherein the phenyl ring is unsubstituted or substituted with one, two or three substituents independently selected from loweralkyl, trifluoromethyl, alkoxy and halo; or an acid addition salt thereof comprising

(I) reacting a compound of the formula:

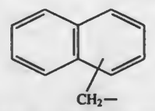


wherein R_6 and R_7 are independently selected from



(i)

wherein R_a and R_b are independently selected from hydrogen, loweralkyl and phenyl and R_c, R_d and R_e are independently selected from hydrogen, loweralkyl, trifluoromethyl, alkoxy, halo and phenyl; and

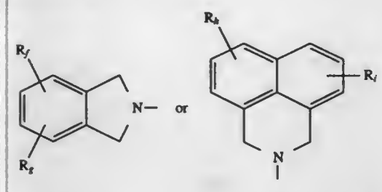


(ii)

wherein the naphthyl ring is unsubstituted or substituted with one, two or three substitutents independently selected from loweralkyl, trifluoromethyl, alkoxy and halo; or

R_6 is as defined above and R_7 is R_{7a} OC(O)- wherein R_{7a} is loweralkyl or benzyl; or

R_6 and R_7 taken together with the nitrogen atom to which they are bonded are

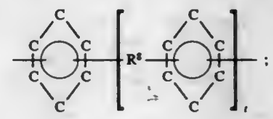


wherein R_f, R_g, R_h and R_i are independently selected from hydrogen, loweralkyl, alkoxy, halogen and trifluoromethyl and R_8 is hydrogen or -C(O)R" wherein R" is loweralkyl, alkoxy, benzyloxy or phenyl wherein the phenyl ring is unsubstituted or substituted with one, two or three substituents independently selected from loweralkyl, trifluoromethyl, alkoxy and halo with a boron-containing reducing agent, followed by

(II) reaction of the product of step (I) with a ketone reducing agent.

---

stituted or unsubstituted bicycloalkyl diradical of 7 to 12 carbons, a substituted or unsubstituted bicycloalkenyl diradical of 7 to 12 carbons, a substituted or unsubstituted alkenyl diradical of 2 to 18 carbons, a substituted or unsubstituted alkynyl diradical of 2 to 18 carbons, a substituted or unsubstituted aralkyl diradical of 7 to 18 carbons, a substituted or unsubstituted naphthyl diradical or a substituted or unsubstituted diradical having the following Formula II:



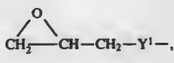
R^3 is a substituted or unsubstituted alkyl diradical of 1to 18 carbons, a substituted or unsubstituted aralkyl diradical of 7 to 18 carbons, a substituted or unsubstituted naphthyl diradical or the substituted or unsubstituted diradical having the Formula II;

R^4 and R^5 are independently a substituted or unsubstituted alkyl radical of 1 to 10 carbons; R^8 is a direct bond, —O—, —S—, —$S(=O)_2$—, —C(=O)—, —C(=O)—O—, —O—C(=O)—, —O—C(=O)—O—, —NH—C(=O)—, —C(=O)—NH—, —NH—C(=O)—NH— or a substituted or unsubstituted alkyl diradical of 1 to 6 carbons;

X is —NH—;

Y^1, Y^2 and Y^3 are independently —O—, —S—, —$S(=O)_2$—, —C(=O)—, —C(=O)—O—, —O—C(=O)—, —O—C(=O)—O—, —NH—C(=O)—, —C(=O)—NH—, —NH—C(=O)—O—, —O—C(=O)—NH—, —NH—C(=O)—NH—, —C(=O)—C(=O)—, —O—C(=O)—C(=O)—O—, —NH—C(=O)—C(=O)—NH—, —NH—C(=O)—C(=O)—O— or —O—C(=O)—C(=O)—NH—;

Z^1 and Z^2 are independently hydroxy, H_2N—, O=C=N—, Cl—C(=O)—, Br—C(=O)—, HO—C(=O)—,



5,543,553

FUNCTIONALIZED PEROXIDES FOR POLYMERIZATION REACTIONS

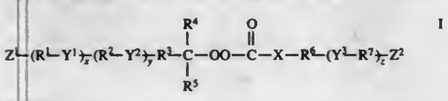
Daryl L. Stein, Bolingbrook, Ill., assignor to Elf Atochem North America, Inc., Philadelphia, Pa.

Division of Ser. No. 214,938, Mar. 17, 1994, Pat. No. 5,466,855, which is a division of Ser. No. 908,576, Jun. 25, 1992, Pat. No. 5,319,130, which is a continuation of Ser. No. 577,977, Sep. 5, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 469,343

Int. Cl.[6] **C07C** *271/18;271/20;409/38*

U.S. Cl. 560—32 3 Claims

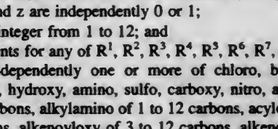
1. A compound having the following Formula I:



I

wherein

R^1, R^2, R^6 and R^7 are independently a substituted or unsubstituted alkyl diradical of 1 to 18 carbons, a substituted or unsubstituted cycloalkyl diradical of 5 to 18 carbons, a substituted or unsubstituted bicycloalkyl diradical of 7 to 12 carbons, a substituted or unsubstituted bicycloalkenyl diradical of 7 to 12 carbons, a substituted or unsubstituted alkenyl diradical of 2 to 18 carbons, a substituted or unsubstituted alkynyl diradical of 2 to 18 carbons, a substituted or unsubstituted aralkyl diradical of 7 to 18 carbons, a substituted or unsubstituted naphthyl diradical or a substituted or unsubstituted diradical having the following Formula II:



R^3 is a substituted or unsubstituted alkyl diradical of 1to 18 carbons, a substituted or unsubstituted aralkyl diradical of 7 to 18 carbons, a substituted or unsubstituted naphthyl diradical or the substituted or unsubstituted diradical having the Formula II;

R^4 and R^5 are independently a substituted or unsubstituted alkyl radical of 1 to 10 carbons; R^8 is a direct bond, —O—, —S—, —$S(=O)_2$—, —C(=O)—, —C(=O)—O—, —O—C(=O)—, —O—C(=O)—O—, —NH—C(=O)—, —C(=O)—NH—, —NH—C(=O)—NH— or a substituted or unsubstituted alkyl diradical of 1 to 6 carbons;

X is —NH—;

Y^1, Y^2 and Y^3 are independently —O—, —S—, —$S(=O)_2$—, —C(=O)—, —C(=O)—O—, —O—C(=O)—, —O—C(=O)—O—, —NH—C(=O)—, —C(=O)—NH—, —NH—C(=O)—O—, —O—C(=O)—NH—, —NH—C(=O)—NH—, —C(=O)—C(=O)—, —O—C(=O)—C(=O)—O—, —NH—C(=O)—C(=O)—NH—, —NH—C(=O)—C(=O)—O— or —O—C(=O)—C(=O)—NH—;

Z^1 and Z^2 are independently hydroxy, H_2N—, O=C=N—, Cl—C(=O)—, Br—C(=O)—, HO—C(=O)—,

HO—$C(R^9)(R^{10})$—$(CH_2)_w$—Y^1—, H_2N—$C(R^9)(R^{10})$—$(CH_2)_w$—Y^1— or R^{11}—O—C(=O)—;

R^9 and R^{10} are independently hydrogen or a substituted or unsubstituted alkyl radical of 1 to 4 carbons;

R^{11} is an alkyl radical of 1–4 carbons, benzyl or phenyl;

t, x, y and z are independently 0 or 1;

w is an integer from 1 to 12; and

substituents for any of R^1, R^2, R^3, R^4, R^5, R^6, R^7, R^8, R^9 or R^{10} are independently one or more of chloro, bromo, fluoro, cyano, hydroxy, amino, sulfo, carboxy, nitro, alkoxy of 1 to 12 carbons, alkylamino of 1 to 12 carbons, acyloxy of 1 to 12 carbons, alkenoyloxy of 3 to 12 carbons, alkenoylamino of 3 to 12 carbons, aroyloxy of 7 to 15 carbons, aroylamino of 7 to 15 carbons, phthalimido, alkoxycarbonyloxy of 2 to 13 carbons, alkoxycarbonylamino of 2 to 13 carbons, alkenyloxycarbonyloxy of 3 to 12 carbons, alkenyloxycarbonylamino of 3 to 12 carbons, aryloxycarbonyloxy of 7 to 15 carbons, alkylaminocarbonyloxy of 2 to 13 carbons, arylaminocarbonyloxy of 7 to 15 carbons, aralkylaminocarbonyloxy of 7 to 16 carbons, alkylsulfonyloxy of 1 to 8 carbons, alkylsulfonylamino of 1 to 8 carbons, arylsulfonylamino of 6 to 11 carbons or epoxyalkoxycarbonyl of 2 to 13 carbons.

5,543,554

PROCESS FOR PREPARING DRY CRYSTALS OF THE METHYL ESTER OF ALPHA-L-ASPARTYL-L-PHENYLALANINE, HAVING IMPROVED SOLUBILITY

Harutoshi Obura, Yokkaichi; Akihiko Yasaki, Kawasaki; Shinichi Kishimoto, Kawasaki, and Masayoshi Naruse, Kawasaki, all of, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Continuation of Ser. No. 91,725, Jul. 15, 1993, abandoned, which is a continuation of Ser. No. 975,970, Nov. 13, 1992, abandoned, which is a continuation of Ser. No. 690,331, Apr. 26, 1991, abandoned, which is a continuation-in-part of Ser. No. 416,837, Oct. 3, 1989, abandoned, and Ser. No. 393,028, Aug. 10, 1989, abandoned, which is a continuation of Ser. No. 243,176, Sep. 8, 1988, abandoned, which is a continuation of Ser. No. 839,819, Mar. 12, 1986, abandoned, which is a continuation of Ser. No. 482,542, Apr. 6, 1983, abandoned. This application Feb. 28, 1995, Ser. No. 396,058

Claims priority, application Japan, Apr. 12, 1982, 57-60671; Oct. 3, 1988, 63-249682

Int. Cl.[6] C07C 227/42

U.S. Cl. 560—41 16 Claims

1. A process for obtaining dry crystals of α-L-aspartyl-L-phenylalanine methyl ester, comprising:

i) exposing wet crystals of α-L-aspartyl-L-phenylalanine methyl ester, having a water content not greater than 50 wt.% based on the weight of the wet crystals and obtained by the crystallization of α-L-aspartyl-L-phenylalanine methyl ester from an unagitated solution of α-L-aspartyl-L-phenylalanine methyl ester, to a flow of air having a temperature of from 80°–200° C.; and

ii) obtaining α-L-aspartyl-L-phenylalanine methyl ester crystals having a water content of about 2.6 wt.% to about 6 wt.% based on the weight of the wet crystals.

5,543,555

SURFACTANTS AND HYDROPHILIC COLLOID COMPOSITIONS AND MATERIALS CONTAINING THEM

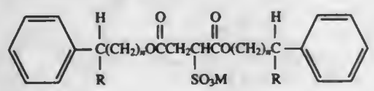
Alan R. Pitt, Sandridge; Julian C. Caesar, Stratford; Danuta Gibson, Garston; Trevor J. Wear, South Harrow; David J. Young, Chorleywood, all of, England, and Scott A. King, Penfield, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 198,729, Feb. 18, 1994. This application Jun. 7, 1995, Ser. No. 478,624

Int. Cl.[6] C07C 309/04; B01F 17/00; G03C 1/38

U.S. Cl. 560—151 10 Claims

1. A compound having the structure



I

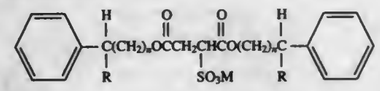
wherein

R is H or methyl provided that when each n=1, each R is methyl;

M is a cation; and,

n is an integer from 1 to 6.

5. A composition comprising a hydrophilic colloid having hydrophobic particles dispersed therein with the aid of a surfactant having the structure



I

wherein

R is H or methyl provided that when each n=1, each R is methyl;

M is a cation; and,

n is an integer from 1 to 6.

5,543,556

ESTERS OF ACYL L-CARNITINES WITH GAMMA-HYDROXYBUTYRIC ACID AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM FOR INHIBITING NEURONAL DEGENERATION AND FOR THE TREATMENT OF COMA

Maria O. Tinti; Domenico Misiti; Claudio Cavazza, all of Rome, and Nazareno Scafetta, Pavona, all of, Italy, assignors to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A., Rome, Italy

Continuation of Ser. No. 984,736, Dec. 2, 1992, abandoned, which is a continuation of Ser. No. 649,046, Feb. 1, 1991, abandoned. This application Oct. 4, 1994, Ser. No. 317,750

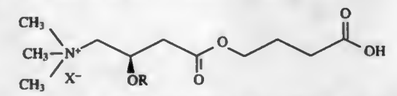
Claims priority, application Italy, Feb. 12, 1990, 47618/90

The portion of the term of this patent subsequent to Sep. 15, 2014, has been disclaimed.

Int. Cl.[6] C07C 229/00

U.S. Cl. 560—170 2 Claims

1. An ester of an acyl L-carnitine of the formula



(I)

wherein X^- is the anion of a pharmacologically acceptable acid and R is acetyl, propionyl, n-butyryl, isobutyryl or isovaleryl.

5,543,557

ACRYLATE MONOMER HAVING A REDUCED PRIMARY IRRITATION INDEX AND A METHOD OF MAKING SAME

Göran Bergvall, Perstorp, Sweden, assignor to Perstorp AB, Perstorp, Sweden

Continuation-in-part of Ser. No. 236,690, Apr. 29, 1994, abandoned, which is a continuation of Ser. No. 958,365, Feb. 25, 1993, abandoned. This application Nov. 29, 1994, Ser. No. 346,385

Claims priority, application Sweden, Jul. 2, 1990, 9002316

Int. Cl.[6] C07C 67/26

U.S. Cl. 560—209 32 Claims

1. A method of making an acrylate monomer comprising the steps of:

(a) reacting a polyol with propylene oxide at a molar ratio of polyol to propylene oxide of 1:0.5 to 1:2.5 and in the presence of an alkali metal hydroxide catalyst in an amount of 0.01–0.5% by weight, calculated as metal on polyol, and optionally a polar solvent, whereby yielding a polyol propoxylate and by-products propylene glycols and propyl ethers;

(b) evaporating said by-products propylene glycols and propyl ethers and said polar solvent, if present, from the product of step (a);

(c) reacting the polyol propoxylate of step (b) with ethylene oxide at a molar ratio of polyol propoxylate to ethylene oxide of 1:2 to 1:10, yielding an ethoxylated polyol propoxylate and by-products monoethylene glycol, diethylene glycol and triethylene glycol, said by-products present in an amount of less than 0.2% by weight and a metal content of less than 2000 ppm, which metal content emanates from the alkali metal hydroxide catalyst of step (a);

(d) acrylating the ethoxylated polyol propoxylate of step (c) by addition of acrylic unsaturation to yield an acrylate monomer having at least one acrylic unsaturation.

5,543,558

METHOD FOR PRODUCING UNSATURATED ORGANICS FROM ORGANIC-CONTAINING FEEDS

Christopher J. Nagel, Wayland, Mass., and Robert D. Bach, Gross Pointe, Mich., assignors to Molten Metal Technology, Inc., Waltham, Mass.

Filed Dec. 23, 1993, Ser. No. 173,362

Int. Cl.[6] C07C 67/30;1/00

U.S. Cl. 560—214 72 Claims

1. A method for producing an alkene compound from an alkane component of an organic feed, comprising the steps of:

a) providing a reactor containing a molten metal bath, said molten metal bath including an elemental metal which can interact with an alkane component of the feed;

b) directing said feed into the molten metal bath at a rate which causes the elemental metal to interact with said alkane component; and

c) establishing and maintaining operating conditions in said reactor to cause said elemental metal to interact with the alkane component, whereby at least one carbon-carbon double bond is formed in the alkane component to produce an alkene compound.

5,543,559

PROCESS FOR THE ENANTIOSELECTIVE HYDROGENATION OF KETOSIOPHORONE DERIVATIVES

Emil A. Broger, Magden; Yvo Crameri, Oberwil; Rudolf Schmid, Ariesheim, and Theodor Siegfried, Riehen, all of, Switzerland, assignors to Hoffman-La Roche Inc., Nutley, N.J.

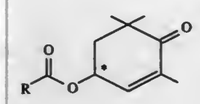
Filed Jun. 8, 1995, Ser. No. 482,210

Claims priority, application Switzerland, Jul. 7, 1994, 2173/94

Int. Cl.[6] C07C 69/02;69/76;69/96;271/34

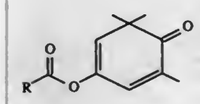
U.S. Cl. 560—231 6 Claims

1. A process for the manufacture of optically active compounds of the formula



I

wherein R signifies lower alkyl, lower alkoxy, phenyl, benzyl or $—NR_2^1$, R^1 signifies lower alkyl, phenyl, benzyl or hydrogen and * signifies an optically active centre, which process comprises asymmetrically hydrogenating an enol derivative of ketoisophorone of the formula



II

Wherein R has the significance given above, in the presence of a cationic rhodium complex of an optically active diphosphine ligand.

5,543,560

HYDROGENOLYTIC REDUCTION OF PEROXIDIC OZONOLYSIS PRODUCTS

Stefan Pollhammer; Josef Scaller, both of Linz, and Willibald Winetzhammer, Steinhaus, all of, Austria, assignors to Chemie Linz Gesellschaft m.b.h., Linz, Austria

Filed Mar. 11, 1994, Ser. No. 208,673

Claims priority, application Austria, Mar. 12, 1993, 484/93

Int. Cl.[6] C07C 67/03;41/00;205/00

U.S. Cl. 560—234 7 Claims

1. A method for the hydrogenolytic reduction of peroxidic ozonolysis products to the corresponding carbonyl compounds in an organic diluting agent which is inert under the reaction conditions in the presence of a catalyst at a hydrogen pressure of 0.01 to 2.0 MPa and at temperatures of −10° to 150° C. comprising employing a monolith catalyst as catalyst.

5,543,561

ACYCLIC AMIDINE GROUP-CONTAINING DIPHOSPHONIC ACID DERIVATIVES, PROCESSES FOR THEIR PREPARATION AND MEDICAMENTS CONTAINING THESE COMPOUNDS

Harald Zilch, Mannheim, and Frieder Bauss, Neuhofen, both of, Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

PCT No. PCT/EP93/01833, § 371 Date Mar. 28, 1995, § 102(e) Date Mar. 28, 1995, PCT Pub. No. WO94/02492, PCT Pub. Date Feb. 3, 1994

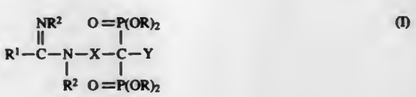
PCT Filed Jul. 13, 1993, Ser. No. 367,325

Claims priority, application Germany, Jul. 21, 1992, 42 23 940.0

Int. Cl.[6] C07F 9/38; A61K 31/66

U.S. Cl. 562—13 12 Claims

1. A compound of the formula



(I)

wherein R^1 is hydrogen, a straight-chained or branched, saturated or unsaturated C_{1-9} alkyl radical which is unsubstituted or substituted by phenyl which in turn is unsubstituted or substituted by C_{1-3} alkyl, C_{1-3} alkoxy or halogen;

each R^2, which may be the same or different, is hydrogen or C_{1-3} alkyl;

R is hydrogen or a straight-chained or branched C_{1-4} alkyl radical;

X is a C_{1-6} alkylene chain which is unsubstituted or substituted at least once by C_{1-3} alkyl, or by 1 or 2 carbon atoms of the alkylene chain being ring atoms of a cyclopentyl or cyclohexyl ring, said alkylene chain being uninterrupted or interrupted by an oxygen atom; and

Y is hydroxyl;

or a pharmacologically acceptable salt thereof.

5,543,562

NON-HYGROSCOPIC MONOAMMONIUM SALTS OF PHOSPHONIC ACIDS OR PHOSPHINIC ACIDS

Fulgencio P. Moreno; Laszlo Litkei; Vilmos Galamb; Imre Gulyas; Janos Repasi; Agota R. Veres; Jozsef Vigh; Istvanne Koczka; Edit Fehervari; Laszlone Roka; Laszlone Pethe, and Jozsef Neu, all of Tiszavasvari, Hungary, assignors to Monsanto Europe S.A./N.V., Brussels, Belgium

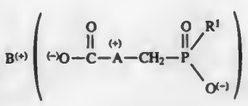
Division of Ser. No. 192,414, Feb. 4, 1994, Pat. No. 5,410,075, which is a division of Ser. No. 869,925, Apr. 16, 1992, Pat. No. 5,324,708. This application Apr. 14, 1995, Ser. No. 422,265

Claims priority, application Hungary, Apr. 16, 1991, 12 48/91; Jul. 19, 1991, 24 27/91; Dec. 27, 1991, 41 15/91

Int. Cl.[6] C07F *9/38;9/30;* A01N *57/02;57/12*

U.S. Cl. 562—17 5 Claims

1. A solid, non-hygroscopic salt of the Formula (I)



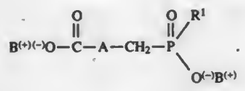
I

wherein

R^1 is hydroxy or alkyl;

A is C_1 to C_4 alkyl-amino or an amino-alkyl group containing a primary or a secondary amino group; and

B is ammonium ion or an alkyl-substituted ammonium ion, which is substantially free of a diammonium salt of the Formula (V):



(V)

5,543,563

ALKYL DERIVATIVES OF TRAZODONE WITH CNS ACTIVITY

Leandro Baiocchi, Rome, Italy, assignor to Istituto Ricerca Francesco Angelini S.p.A., Rome, Italy

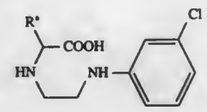
Division of Ser. No. 256,352, Jul. 18, 1994. This application Jun. 1, 1995, Ser. No. 457,490

Claims priority, application Italy, Jan. 17, 1992, MI92A0084

Int. Cl.[6] C07C *229/06*

U.S. Cl. 562—443 1 Claim

1. A compound of the formula (VI)



(VI)

wherein R^a is 1–3 C alkyl.

5,543,564

PROCESS FOR RELEASING ACIDIC ORGANIC COMPOUNDS FROM SALTS THEREOF BY CARBON DIOXIDE

Jürgen Kulpe, Frankfurt; Heinz Strutz, Usingen; Hans-Martin Rüffer, Hofheim, and Siegbert Rittner, Mörfelden-Walldorf, all of, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Jan. 11, 1995, Ser. No. 371,153

Claims priority, application Germany, Jan. 13, 1994, 44 00 751.5

Int. Cl.[6] C07C *63/36;27/34;29/74*

U.S. Cl. 562—467 15 Claims

1. A process for releasing an acidic organic compound from an aqueous solution of its salt which comprises:

a) converting the salt by carbon dioxide to its corresponding free acidic organic compound and metal hydrogen carbonate;

b) removing the acidic organic compound from the reaction mixture by extraction with an essentially water-insoluble organic solvent; and

c) re-extracting the organic phase obtained in said extraction with carbon dioxide containing water.

5,543,565

METHOD FOR FORMING TWO TERMINAL CARBOXYLIC ACID GROUPS FROM AN OZONIDE

Kenneth R. McVay, Hamilton, Ohio, assignor to Henkel Corporation, Plymouth Meeting, Pa.

Filed Jan. 20, 1995, Ser. No. 376,173

Int. Cl.[6] C07C *51/16*

U.S. Cl. 562—523 18 Claims

1. In a process for the formation of two terminal carboxylic acid groups from a mixture comprising an ozonide containing from about 8 to about 30 carbon atoms in the chain containing the ozonide moiety by contacting the mixture comprising at least one of the ozonide or oxidizable ozonide scission products with oxygen at a temperature of from about 50° C. to about 150° C. with an oxygen-containing gas, the improvement which comprises: introducing the oxygen-containing gas into an agitated liquid mixture comprising at least one of the ozonide or the oxidizable ozonide scission products in the form of bubbles with a diameter of less than 100 microns.

5,543,566

PROCESS FOR PREPARING AMINO-POLYCARBOXYLIC ACIDS OR SALTS THEREOF

Kiyobumi Takahashi, Tokyo, and Teturo Nakahama, Hiroshima-ken, both of, Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

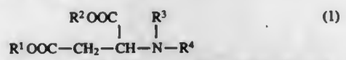
Filed Sep. 15, 1994, Ser. No. 305,293

Claims priority, application Japan, Sep. 17, 1993, 5-253584

Int. Cl.[6] C07C *229/04*

U.S. Cl. 562—571 13 Claims

1. A process for preparing an amino-polycarboxylic acid or a salt thereof represented by general formula (1):



(1)

wherein each of R^1 and R^2 represents a hydrogen atom, an alkali metal or an ammonium group; and each of R^3 and R^4 represents a hydrogen atom or $—CH_2—COOR^1$, provided that R^3 and R^4 do not represent a hydrogen atom simultaneously, which comprises the steps of reacting aspartic acid, prussic acid and formaldehyde, subjecting cyanomethyl aspartic acids produced as intermediates, to a hydrolysis with an alkali to form an amino-polycarboxylic acid salt corresponding to the alkali, and optionally treating the amino-polycarboxylic acid salt with an acid to form the corresponding amino-polycarboxylic acid.

5,543,567

FLUORINATION OF ACETALS, KETALS AND ORTHOESTERS

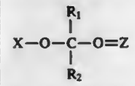
Thomas R. Bierschenk; Timothy J. Juhlke, both of Round Rock; Hajimu Kawa, and Richard J. Lagow, both of Austin, all of Tex., assignors to Exfluor Research Corporation, Round Rock, Tex.

Division of Ser. No. 222,797, Apr. 5, 1994, which is a continuation of Ser. No. 966,681, Oct. 26, 1992, Pat. No. 5,300,683, which is a continuation of Ser. No. 752,703, Aug. 30, 1991, Pat. No. 5,202,480, which is a continuation of Ser. No. 413,785, Sep. 19, 1989, Pat. No. 5,053,536, which is a continuation-in-part of Ser. No. 250,384, Sep. 28, 1988, abandoned. This application Jun. 5, 1995, Ser. No. 464,220

Int. Cl.[6] C07C *59/245;43/30*

U.S. Cl. 562—582 8 Claims

1. A perfluorinated polyether having an average formula:

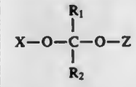


wherein X and Z are the same or different and are selected from the group consisting of $—(CF_2)_rCOF$, $—(CF_2)_rOCF_3$, $—(CF_2)_rCOOH$ and $—C_rF_{2r+1-q}Cl_q$, wherein r is an integer from 1 to 12 and q is an integer from 0 to 25; wherein R_1 and R_2 are the same or different and are selected from the group consisting of —F, —Cl, $—CF_2C_1$, $—CFCl_2$, $—CCl_3$, perfluoroalkyl of one to ten carbon atoms and perfluoroalkoxyalkyl of one to ten carbon atoms and provided that R_1 and R_2 together are not F and that the polyether includes at least one halogen atom other than fluorine.

3. A perfluorinated polyether having an average formula:

wherein X and Z are $—(CF_2)_rOCF_3$ wherein r is an integer from 1 to 12; wherein R_1 and R_2 are the same or different and are selected from the group consisting of —F, —Cl, $—CF_2Cl$, $—CFCl_2$, $—CCl_3$, perfluoroalkyl of one to ten carbon atoms and perfluoroalkoxyalkyl of one to ten carbon atoms provided that R_1 and R_2 together are not F.

5. A perfluorinated polyether having an average formula:



wherein X and Z are $—(CF_2)_rCOOH$ wherein r is an integer from 1 to 12; wherein R_1 and R_2 are the same or different and are selected from the group consisting of —F, —Cl, $—CF_2Cl$, $—CFCl_2$, $—CCl_3$, perfluoroalkyl of one to ten carbon atoms and perfluoroalkoxyalkyl of one to ten carbon atoms provided that R_1 and R_2 together are not F.

5,543,568

PREPARATION OF α, β-UNSATURATED β-OXYCARBOXYLIC ACID CHLORIDES

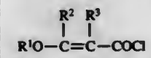
Jochem Henkelmann, Mannheim, and Lutz Tietze, Goettingen, both of, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Sep. 7, 1993, Ser. No. 117,315

Int. Cl.[6] C07C *51/58*

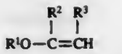
U.S. Cl. 562—861 15 Claims

1. A process for the preparation of α,β-unsaturated β-oxycarboxylic acid chlorides of the formula I



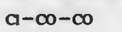
I

where R^1 is a C-organic radical, and R^2 and R^3, independently of one another, are hydrogen or a C-organic radical, which consists essentially of carrying out the addition reaction of an enol derivative of the formula II

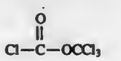


II

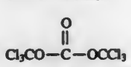
with a compound of the formula IIIa, IIIb or IIIc



IIIa

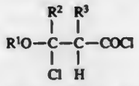


IIIB



IIIc

and converting the resultant acid chloride of the formula IV



IV

into I by elimination of hydrogen chloride (HCl).

5,543,569

BORANE-N,N-DIALKYLANILINE HYDROBORATION AGENTS

Herbert c. Brown, West Lafayette, Ind., assignor to Aldrich Chemical Company, Inc., Milwaukee, Wis.

Filed May 9, 1995, Ser. No. 437,586

Int. Cl.[6] C07F *5/02*

U.S. Cl. 564—8 15 Claims

1. Borane-N,N-dialkylanilines represented by the formula



wherein N is nitrogen, R is isobutyl or isopropyl and R' is straight or branched chain lower alkyl.

5,543,570

INTERMEDIATES FOR PREPARING ENANTIOMERICALLY PURE IMIDAZO[4,5,1-JK][1,4]-BENZODIAZEPIN-2-(1H)-THIONES

Alfons G. M. De Knaep, Turnhout; Luc J. R. Moens, Lille, and Eduard J. C. Vreysen, Mol, all of, Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

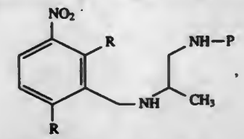
Division of Ser. No. 196,168, Feb. 15, 1994, Pat. No. 5,463,049. This application Mar. 30, 1995, Ser. No. 413,744

Claims priority, application European Pat. Off., Sep. 24, 1991, 91202474

Int. Cl.[6] C07C *311/03*

U.S. Cl. 564—87 2 Claims

1. An enantiomerically pure intermediate of the formula:



(IV)

or an acid addition salt thereof, wherein

R represents halo, and

P represents a sulfonyl group or an acyl group selected from the group consisting of methanesulfonyl, trifluoromethanesulfonyl, benzenesulfonyl, 2- or 4-nitrobenzenesulfonyl, 4-methylbenzenesulfonyl, 2,6-dimethylbenzenesulfonyl, formyl, methylcarbonyl, and tert. butylcarbonyl.

5,543,571
PREPARATION OF OPTICALLY ACTIVE HYDRAZINES AND AMINES

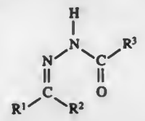
Mark J. Burk, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 96,571, Jul. 30, 1993, Pat. No. 5,426,223, which is a division of Ser. No. 852,592, Mar. 17, 1992, Pat. No. 5,250,731. This application Mar. 7, 1995, Ser. No. 399,794

Int. Cl.[6] C07C *243/14*

U.S. Cl. 564—150 **14 Claims**

1. A process for the asymmetric hydrogenation of N-acylhydrazones comprising reacting with hydrogen a compound of formula 2



(2)

wherein

R^1 and R^2 are not the same and are each $C(R^4)_2[C(R^4)_2]_qD[C(R^4)_2]_pR^4$;

D is O, S, NR^4, or $Si(R^4)_2$;

p and q are each integers, the same of different, from 1 to 8;

R^4 is each independently H; F; aryl; C_1 to C_8 alkyl; C_1 to C_8 fluoroalkyl; C_1 to C_8 perfluoroalkyl; or R^4 together with R^1 or R^2 form a ring; and

R^3 is aryl; aryl substituted with at least one of hydrogen, halogen, alkyl, alkoxy, aryl, aryloxy, nitro or amino; or a linear, branched or cyclic C_1 to C_8 alkyl;

in the presence of a catalyst comprising a complex wherein a transition metal is bonded to both phosphorus atoms of a chiral ligand selected from the group consisting of:

(S)-(−)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl;

(R)-(+)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl;

(2S,4S)-2,4-bis(diphenylphosphino)pentane;

(2R,4R)-2,4-bis(diphenylphosphino)pentane;

(2S,3S)-bis(diphenylphosphino)butane;

(2R,3R)-bis(diphenylphosphino)butane;

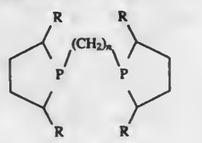
(+)-2,3-O-isopropylidene-2,3-dihydroxy-1,4-bis(diphenylphosphino)butane;

(−)-2,3-O-isopropylidene-2,3-dihydroxy-1,4-bis(diphenylphosphino)butane;

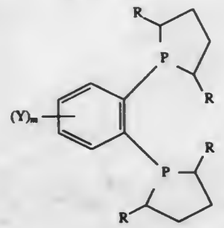
phenyl-4,6-O-(R)-benzylidene-2,3-O-bis(diphenylphosphino)-β-D-glucopyranoside;

phenyl-4,6-O-(S)-benzylidene-2,3-O-bis(diphenylphosphino)-β-D-glucopyranoside;

a chiral ligand of formulae I and II



(I)



(II)

wherein

n is an integer from 1 to 12;

Y is each independently hydrogen, halogen, alkyl, alkoxy, aryl, aryloxy, nitro, dialkylamino, vinyl, substituted vinyl, alkynyl, or sulfonic acid;

m is an integer from 1 to 4;

R is $—C(R^5)_2[C(R^5)_2]_qX[C(R^5)_2]_pR^5$;

X is O, S, NR^6, PR^6, AsR^6, SbR^6, divalent aryl, divalent fused aryl,

R^5 is each independently H; F; aryl; C_1 to C_8 alkyl; C_1 to C_8 fluoroalkyl; or C_1 to C_8 perfluoroalkyl; or together R^5 and R^6 form a ring;

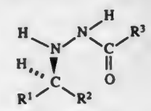
q and p are as defined above;

R^6 is hydrogen; C_1 to C_8 alkyl; C_1 to C_8 fluoroalkyl; C_1 to C_8 perfluoroalkyl; aryl; aryl substituted with at least one of hydrogen, halogen, alkyl, alkoxy, aryl, aryloxy, nitro, amino, vinyl, alkynyl, or sulfonic acid; aralkyl; ring substituted aralkyl substituted with at least one of hydrogen, halogen, alkyl, alkoxy, aryl, aryloxy, nitro, amino, vinyl, alkynyl, or sulfonic acid; or $C(R^5)_2[C(R^5)_2]_qZ[C(R^5)_2]_pR^5$;

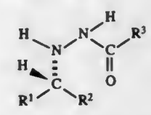
Z is O, S, NR^5, PR^5, AsR^5, or SbR^5;

R^5, p and q are as defined above; and provided that the catalyst is other than ruthenium (2,2'-bis(diphenylphosphino)-1,1'-binaphthyl)dichloride dimer or bis-2-(methylallyl)ruthenium ((2S,5S)-2,5-dimethylphospbolano)benzene;

to yield an optically active mixture of enantiomeric N-acylhydrazines of formula (3A) and (3B)



(3A)



(3B)

wherein

R^1, R^2 and R^3 are as defined above; and wherein the compound of formula (3) exhibits optical activity to the extent of from greater than or equal to about 5% enantiomeric excess to at least about 50% enantiomeric excess.

5,543,572
MONOCARBOXAMIDES OF POLYAMINES

Walter Fischer, Reinach, and Christine Helbling, Birsfelden, both of, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

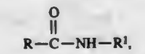
Filed Jan. 24, 1995, Ser. No. 377,719

Claims priority, application Switzerland, Jan. 28, 1994, 268/94

Int. Cl.[6] C07C *233/65*

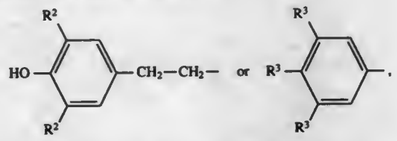
U.S. Cl. 564—179 **5 Claims**

1. A monocarboxamide of formula I



(I)

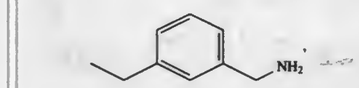
wherein R is a radical of formula

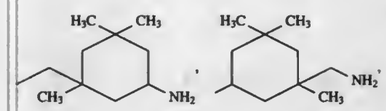


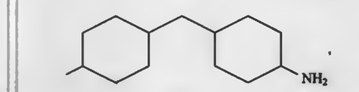
or

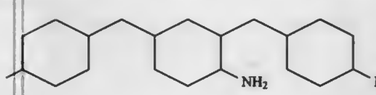
a C_9–C_{19}alkyl, C_9–C_{19}alkenyl or a C_9–C_{19}alkdienyl, wherein each R^2 independently of the other is a hydrogen atom or C_1–C_4alkyl, each R^3 independently of one another is a hydrogen

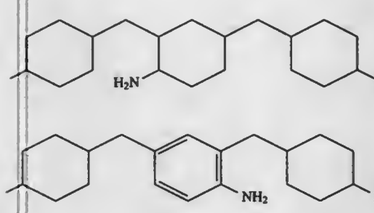
atom or a hydroxyl group, and at least one R^3 is a hydroxyl group, and R^3 is a radical of formula



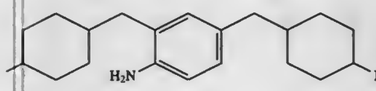








or



5,543,573
HYDRAZINECARBOXYAMIDE DERIVATIVES, A PROCESS FOR PRODUCTION THEREOF AND USES THEREOF

Kazuhiro Takagi; Takashi Ohtani, both of Nishinomiya; Tateki Nishida, Yawata; Hiroshi Hamaguchi, Kyoto; Tetsuyoshi Nishimatsu, and Atsushi Kanaoka, both of Kawachinagano, all of, Japan, assignors to Nihon Nohyaku Co., Ltd., Tokyo, Japan

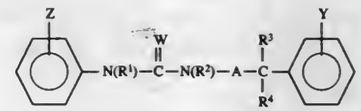
Continuation of Ser. No. 13,197, Jan. 29, 1993, abandoned, which is a continuation of Ser. No. 711,138, Jun. 6, 1991, abandoned. This application Apr. 14, 1994, Ser. No. 227,701

Claims priority, application Japan, Jun. 16, 1990, 2-158414; Jun. 23, 1990, 2-164964

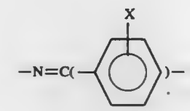
Int. Cl.[6] A01N *9/12*

U.S. Cl. 514—590 **7 Claims**

1. A hydrazinecarboxamide derivative represented by the general formula (I):



wherein R^1 is a hydrogen atom or a C1–3 alkyl group, R^2 is a hydrogen atom or a C1–3 alkyl group, R^3 is a hydrogen atom; a hydroxyl group; a C1–3 alkyl group; a C1–5 alkoxy group; a C1–3 alkylcarbonyloxy group; or an unsubstituted phenylcarbonyloxy group; R^4 is a hydrogen atom or a C1–3 alkyl group, R^3 and R^4 being able to be taken together to represent an oxygen atom, A is



wherein X represents 1 to 5 atoms or groups which may be the same or different and are selected from the group consisting of hydrogen atom; hydroxyl group; halogen atoms; cyano group; C1–4 alkyl groups, C1–3 haloalkyl groups; C1–3 alkoxy groups, C1–3 haloalkoxy groups; C1–3 alkoxy C1–3 alkyl groups; C3–5 alkenyloxy groups; cyclo C3–6 alkylcarbonyloxy groups; C1–3 alkoxycarbonyloxy groups; C1–3 alkoxycarbonyl C1–3 alkyloxy groups; C1–3 alkylcarbonyl C1–3 alkyloxy groups; C1–3 alkylsulfonyloxy groups; phenoxy group; methylenedioxy group; alkenylene groups having 3 to 4 carbon atoms so as to form a polycyclic ring together with the adjacent carbon atom of the phenyl ring; substituted amino groups having as the substituent(s) 1 or 2 C1–3 alkyl groups which may be the same or different; substituted aminocarbonyloxy groups having as the substituent(s) 1 or 2 C1–3 alkyl groups which may be the same or different; Y represents 1 to 5 atoms or groups which may be the same or different and are selected from the group consisting of hydrogen atom; hydroxyl group; halogen atoms; cyano group; nitro group; C1–3 alkyl groups; C1–3 haloalkyl groups; C1–3 alkoxy groups; C1–3 haloalkoxy groups; C3–5 alkenyloxy groups; C1–3 alkylcarbonyloxy groups; C1–3 alkylsulfonyloxy groups; C1–3 haloalkylsulfonyloxy groups; C1–3 alkylthio groups; C1–3 haloalkylthio groups; C1–3 alkylsulfinyl groups; C1–3 haloalkylsulfinyl groups; C1–3 haloalkylsulfonyl groups; C1–3 alkoxycarbonyl groups; unsubstituted amino group; substituted amino groups having 1 or 2 substituents selected from the group consisting of formyl group, C1–3 alkylcarbonyl groups, C1–3 alkylsulfonyl groups, and substituted aminocarbonyl groups having as the substituent(s) one or more C1–3 alkyl groups which may be the same or different; unsubstituted aminocarbonyl group; substituted aminocabonyl groups having as the substituent(s) 1 or 2 C1–3 alkyl groups which may be the same or different; substituted aminosulfonyl groups having as the substituent(s) 1 or 2 C1–3 alkyl groups which may be the same or different; phenyl group; Z represents 1 to 5 atoms or groups which may be the same or different and are selected from the group consisting of halogen atoms; cyano group; nitro group; C1–6 alkyl groups; C1–3 haloalkyl groups; substituted C3–6 cycloalkyl groups having 1 to 5 substituents which may be the same or different and are selected from the group consisting of halogen atoms C1–5 alkoxy groups; C1–3 haloalkoxy groups; C1–3 alkylthio groups; C1– 3 haloalkylthio groups; C1–3 alkylsulfinyl groups; C1–3 haloalkylsulfinyl groups; C1–3 alkylsulfonyl groups; C1–3 haloalkylsulfonyl groups; C1–3 alkylcarbonyl groups; C1–3 alkoxycarbonyl groups; C1–3 alkylcarbonyloxy groups; C1–3 alkylsulfonyloxy groups; C1–3 haloalkylsulfonyloxy groups; unsubstituted phenoxy group; substituted phenoxy groups having 1 to 5 substituents which may be the same or different and

are selected from the group consisting of halogen atoms and C1–3 haloalkyl groups, unsubstituted pyridyloxy group; substituted pyridyloxy groups having as the substituent(s) 1 to 4 atoms or groups which may be the same or different and are selected from the group consisting of halogen atoms, and C1–3 haloalkyl groups, and W is an oxygen atom or a sulfur atom.

5,543,574

Patent Not Issued For This Number

5,543,575

INBRED CORN LINE PHK46

James A. Wright, and Ottis O. Parrish, both of Union City, Tenn., assignors to Pioneer-Hi-Bred International, Inc., Des Moines, Iowa

Continuation of Ser. No. 78,804, Jun. 16, 1993, abandoned, which is a continuation of Ser. No. 542,335, Jun. 20, 1990, abandoned. This application Mar. 16, 1995, Ser. No. 405,564

Int. Cl.[6] A01H *5/00;4/00;1/00;* **C12H** *5/04*

U.S. Cl. 800—200 **10 Claims**

1. Inbred corn seed designated PHK46, having the ATCC Accession No. 97078.

5,543,576

PRODUCTION OF ENZYMES IN SEEDS AND THEIR USE

Albert J. J. Van Ooijen, Voorburg; Krijn Rietveld, Vlaardingen; Andreas Hoekema, Oegstgeest; Jan Pen; Peter C. Sijmons, Amsterdam; Teunis C. Verwoerd, and Wilhemus J. Quax, Voorschoten, all of, Netherlands, assignors to Mogen International, Leiden, and Gist-Brocades, Ma Delft, both of, Netherlands

Continuation-in-part of Ser. No. 756,994, Sep. 11, 1991, abandoned, which is a continuation-in-part of Ser. No. 498,561, Mar. 23, 1990, abandoned. This application Nov. 2, 1993, Ser. No. 146,422

Claims priority, application European Pat. Off., Mar. 25, 1991, 91200688

Int. Cl.[6] A01H *5/10;* **C12N** *15/55;15/82;* **A23B** *4/12*

U.S. Cl. 800—250 **15 Claims**

1. A method to effect the conversion of substrates to products in an enzyme-catalyzed reaction which method comprises adding to a reaction mixture containing said substrates the seeds of a transgenic plant, wherein said plant has been modified to contain an expression system for the production of said enzyme, and wherein the enzyme is heterologous to the seed.

5,543,577

CONSTRUCTION OF MUSIC BOX

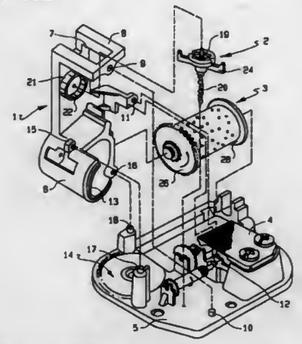
Yunde Zhu, and Guohui Bai, both of Ningbo City, China, assignors to Ningbo Dongfang Music Movements General Factory, Nigbo Citym Zhejiang, China

Filed Mar. 15, 1994, Ser. No. 214,328

Claims priority, application China, Dec. 21, 1993, 93 2 35670.2

Int. Cl.[6] G10F *1/06*

U.S. Cl. 84—95.2 **7 Claims**



1. A music box comprising:
a frame having a circumferential notch and a plurality of bosses;
a spring means for generating a rotational movement, said spring means comprising a spring case; said spring case having an integral circumferential wall including a lower edge, said lower edge being a stepped projection adapted to engage with said notch on said frame;
a music drum rotated by said spring means;
a vibrating member comprising a plurality of keys, said keys capable of being engaged with said music drum;
a speed regulating mechanism having a first end connected to said spring case to form a connection, a second end remote from said first end, a speed regulating support and a speed regulating shaft, said speed regulating support comprising a bearing hole for supporting said speed regulating shaft and a centrifugal damping friction disk, said speed regulating mechanism further comprising a brace trailing perpendicularly to said speed regulating support and being attached at said second end of said speed regulating mechanism, a plurality of connection holes being provided on said connection to fit with said bosses on said frame; and
a gear train means for connecting said music drum to said speed regulating mechanism.

5,543,578

RESIDUAL EXCITED WAVE GUIDE

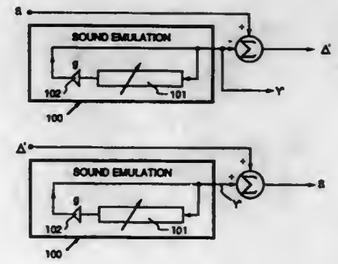
Bryan J. Colvin, Sr., San Jose; Perry R. Cook, Palo Alto, and Daniel Gochnauer, Saratoga, all of Calif., assignors to Mediavision, Inc., Fremont, Calif.

Filed Sep. 2, 1993, Ser. No. 115,958

Int. Cl.[6] G10H *1/057;1/12*

U.S. Cl. 84—622 **16 Claims**

1. A method for synthesizing a desired sound signal comprising the steps of:
using a sound synthesis model to generate an initial sound signal;
generating a recorded residual signal by subtracting said initial sound signal from a desired sound signal;
combining said recorded residual signal with said initial sound signal to generate a final sound signal; and
feeding said recorded residual signal into said sound synthesis model, wherein values of said initial sound signal generated by the sound synthesis model depend on values of the recorded residual signal.



5,543,579

EFFECTOR

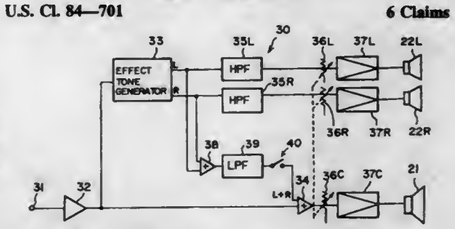
Masazumi Morinaga, and Kousuke Takata, both of Osaka, Japan, assignors to Roland Corporation, Osaka, Japan

Filed Jan. 26, 1995, Ser. No. 378,264

Claims priority, application Japan, Jul. 22, 1994, 6-008919 U

Int. Cl.[6] G10H *1/02*

U.S. Cl. 84—701 **6 Claims**



4. An effector comprising:
an input terminal for receiving a musical tone signal;
an effect tone generating circuit for generating based on the musical tone signal entered through said input terminal effect tone signals for stereophonic reproduction which provide the entered musical tone signal with a predetermined effect;
high-pass filters each for extracting a high register component of an associated one of the effect tone signals for stereophonic reproduction;
low-pass filters each for extracting a low register component of an associated one of the effect tone signals for stereophonic reproduction; and
an adder circuit for adding the low register components of the effect tone signals for stereophonic reproduction extracted by said low-pass filters each other and further adding to those the musical tone signal entered through said input terminal to produce an addition signal.

5,543,580

TONE SYNTHESIZER

Hideyuki Masuda, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

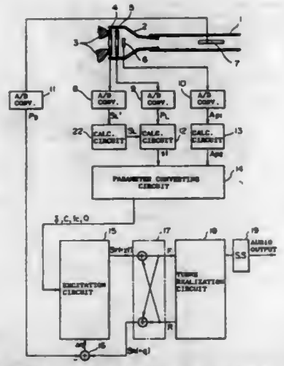
Continuation of Ser. No. 785,421, Oct. 30, 1991, abandoned. This application Dec. 10, 1993, Ser. No. 166,592

Claims priority, application Japan, Oct. 30, 1990, 2-293396; Oct. 30, 1990, 2-293397

Int. Cl.[6] G10H *3/12*

U.S. Cl. 84—723 **19 Claims**

1. A performance information input device for an electronic musical instrument comprising:
a mouthpiece for being in contact with a player's lips;
a contact area sensor provided as part of said mouthpiece so as to come into contact with said lips, said contact area sensor detecting an amount of area of said contact area sensor contacted by said lips; and



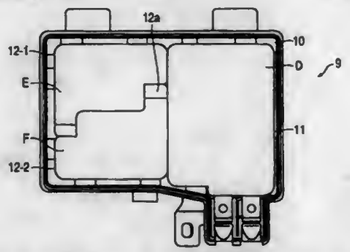
a pressure sensor provided as part of said mouthpiece for detecting an amount of push pressure exerted by said lips on said contact area sensor.

5,543,581

BRANCHING CONNECTION BOX FOR ELECTRICAL CIRCUITS

Kazunori Kurata, and Makoto Kobayashi, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Japan

Filed Nov. 23, 1994, Ser. No. 347,111
Claims priority, application Japan, Nov. 29, 1993, 5-298293
Int. Cl.[6] H02G 3/08
U.S. Cl. 174—52.1 14 Claims



1. An electrical assembly comprising a housing and a plurality of electrical components arranged within the housing, each said electrical component including a block having electrical circuitry and an electrical terminal protruding therefrom, the respective electrical terminals coinciding substantially at the centre of said housing in a stack and being engaged and fastened together directly by a fastener to electrically connect said components.

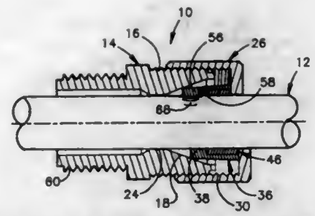
5,543,582

LIQUID TIGHT CORD GRIP

Thomas S. Stark, 7635 NW. 51st Pl., Coral Springs, Fla. 33067; Thomas J. Gretz, 1102 Oakmont Rd., Clarks Summit, Pa. 18411, and Daniel J. O'Neil, R.R.#1, Box 2292, Moscow, Pa. 18444

Filed May 23, 1995, Ser. No. 448,184
Int. Cl.[6] H02G 3/22; F16L 17/02
U.S. Cl. 174—65 SS 7 Claims

1. A cord grip comprising:
a variable volume compression chamber defined by two interfitting parts threaded together and having a cord passage therethrough with one of said interfitting parts having an internal inclined surface and the other of said interfitting parts having a flat compression surface;



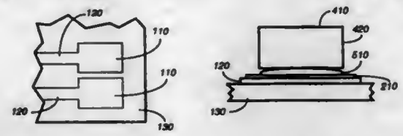
an annular cord gripping member with a passage therethrough disposed within said variable volume chamber with said cord gripping member being molded of a flexible plastic material;
a circular base member at one end of said cord gripping member, said base member having a base extending toward said flat compression surface;
a plurality of fingers integral with said cord gripping member and extending from said circular base in the direction of said internal inclined surface;
a tab at the end of each finger extending radially inwardly to grip a cord;
a shoulder on each tab extending radially inwardly; and
an annular cord sealing member having a forward edge and a rear face with a passage therethrough and disposed within said cord gripping member so that said forward edge rests on said shoulder and said rear face is in contact with said flat compression surface, said cord sealing member being of a flexible elastomeric deformable material that is softer than said cord gripping member, whereby a liquid tight seal is created by tightening said two interfitting members together to decrease the volume of said compression chamber around a cord to cause compression and deformation of said cord sealing member against the cord to create a seal around the cord and to cause said tabs of said cord gripping member to close against and grip the cord.

5,543,583

CONDUCTIVE SOLDER PAD FOR BONDING AN ELECTRONIC DEVICE TO A CERAMIC SUBSTRATE

Robert T. Carson, Lantana; Lisa Reckleben, Boynton Beach, and Arnold W. Hogrefe, Ft. Lauderdale, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 331,465, Oct. 31, 1994. This application Oct. 12, 1995, Ser. No. 542,122
Int. Cl.[6] H05R 1/09
U.S. Cl. 114—257 4 Claims



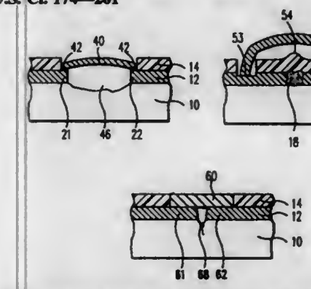
1. A solder pad for mechanically and electrically coupling solder terminals of electronic devices to a non-conductive ceramic substrate, comprising:
a solder pad portion of a conductive runner on the nonconductive ceramic substrate, wherein said conductive runner consists essentially of a conductive ceramic material; and
a solder wettable layer attached to said solder pad portion, said solder wettable layer comprising at least 50% indium by weight.

5,543,584

STRUCTURE FOR REPAIRING ELECTRICAL LINES

Edward F. Handford, Wurtsboro; Joseph M. Harvilchuck, Billings; Mario J. Interrante, New Paltz; Raymond A. Jackson, Wappingers Falls; Raj N. Master, Wappingers Falls; Sudipta K. Ray, Wappingers Falls; William E. Sablinski, Beacon, and Thomas A. Wassick, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 607,969, Oct. 31, 1990, Pat. No. 5,153,408. This application Feb. 28, 1992, Ser. No. 843,684
Int. Cl.[6] H05K 1/11
U.S. Cl. 174—261 24 Claims



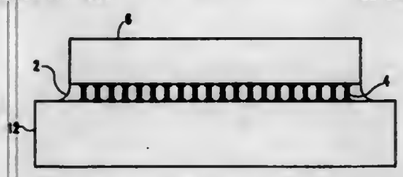
1. A repaired substrate, said repaired substrate comprising having active and/or passive electrical components on at least one surface, and at least one electrically conductive line having at least one electrical discontinuity, and at least a portion of said electrically conductive line having a layer of protective coating over it, wherein said electrical discontinuity prevents electrical communication between a portion of said electrically conductive line, and wherein said electrical communication is restored by securing a pre-existing segment of an electrically conductive material across said electrical discontinuity while at least a portion of said electrically conductive line that is not being secured by said pre-existing segment still has said layer of protective coating over it, and wherein said electrically conductive material includes a coating of an organometallic material, and thereby forming said repaired substrate.

5,543,585

DIRECT CHIP ATTACHMENT (DCA) WITH ELECTRICALLY CONDUCTIVE ADHESIVES

Richard B. Booth, Williamson County, Tex.; Michael A. Gaynes, Vestal; Robert M. Murcko, Broom County, both of N.Y.; Viswanadham Puligandla, Travis County, Tex.; Judith M. Roland; Ravi Saraf, both of Westchester County, N.Y., and Jerzy M. Zalesinski, Critten den County, Vt., assignors to International Buisness Machines Corporation, Armonk, N.Y.

Filed Feb. 2, 1994, Ser. No. 190,507
Int. Cl.[6] H05K 1/18
U.S. Cl. 174—261 21 Claims



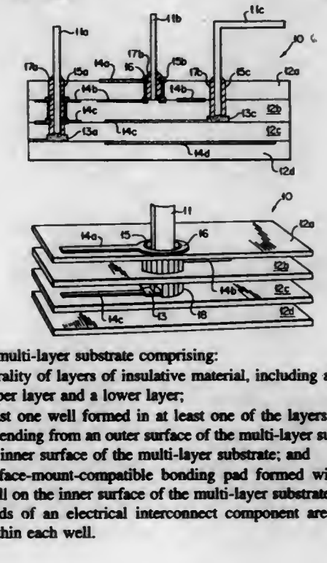
1. An integrated circuit chip with a matrix of conductive interconnections for direct chip attachment, said matrix comprising:
a matrix of thin, electrically conductive metal pads on a major surface of the chip;
a layer of dry thermoplastic adhesive forming a chip attachment surface, said layer including:
bumps of electrically conductive adhesive deposited on each of the metal pads; and
an electrically insulating adhesive filling around the conductive bumps and covering the major surface of the chip betw said een the bumps and extending from the major surface of the chip to said surface for attachment to form a unitary structure around the bumps.

5,543,586

APPARATUS HAVING INNER LAYERS SUPPORTING SURFACE-MOUNT COMPONENTS

Stanford W. Crane, Jr., Boca Raton, and Maria M. Portuondo, Delray Beach, both of Fla., assignors to The Panda Project, Boca Raton, Fla.

Filed Mar. 11, 1994, Ser. No. 208,519
Int. Cl.[6] H05K 1/02
U.S. Cl. 174—262 22 Claims



1. A multi-layer substrate comprising:
a plurality of layers of insulative material, including at least an upper layer and a lower layer;
at least one well formed in at least one of the layers, the well extending from an outer surface of the multi-layer substrate to an inner surface of the multi-layer substrate; and
a surface-mount-compatible bonding pad formed within each well on the inner surface of the multi-layer substrate, wherein leads of an electrical interconnect component are mounted within each well.

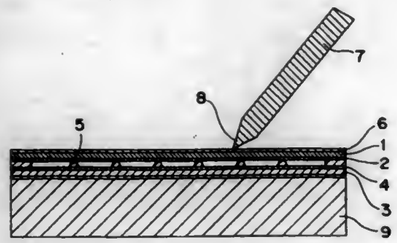
5,543,587

INPUT UNIT

Kenichiro Ikura, and Masakazu Miura, both of Kyoto, Japan, assignors to Nissha Printing Co., Ltd., Kyoto, Japan

Filed Sep. 23, 1992, Ser. No. 948,593
Claims priority, application Japan, Sep. 25, 1991, 3-274747
Int. Cl.[6] G08C 21/00
U.S. Cl. 178—18 7 Claims

1. An input unit comprising:
a transparent touch panel wherein a fixed electrode supporting body having a fixed electrode formed on a first surface thereof and a film having a movable electrode formed on a first surface thereof are arranged so that said movable electrode and said fixed electrode face each other and are spaced apart from one another by spacers; and
an input pen having an input end thereof formed of polyolefin resin for making it difficult to cause damage of said transparent touch panel and abrasion of said input end of said input pen.



5,543,588

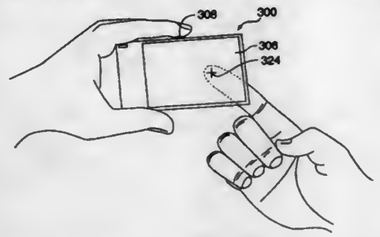
TOUCH PAD DRIVEN HANDHELD COMPUTING DEVICE

Stephen Bisset, Palo Alto; Robert J. Miller, Fremont; Timothy P. Allen, Los Gatos, and Günter Steinbach, Palo Alto, all of Calif., assignors to Synaptics, Incorporated, San Jose, Calif.

Continuation-in-part of Ser. No. 895,934, Jun. 8, 1992, and a continuation-in-part of Ser. No. 115,743, Aug. 31, 1993, Pat. No. 5,374,787. This application Dec. 3, 1993, Ser. No. 161,671

Int. Cl.[6] G08C *21/00;* **G09G** *5/00*

U.S. Cl. 178—18 **4 Claims**



1. A handheld computing device comprising:

an enclosure having first face comprising a front panel and second face comprising a rear panel, said first and second faces opposing each other;

a substantially flat visual display disposed on said first face of said enclosure;

a substantially flat touch-sensor transducer disposed on said second face of said enclosure;

computing means contained in said enclosure and coupled to said visual display and to said touch-sensor transducer, said computing means including means for accepting input information from said touch-sensor transducer and for displaying visual information developed from said input information on said visual display.

5,543,589

TOUCHPAD WITH DUAL SENSOR THAT SIMPLIFIES SCANNING

William A. Buchana, Scotland; Richard A. Eardley; Anthony R. Tizzard, all of Scotland, United Kingdom, and Brian G. Utley, Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

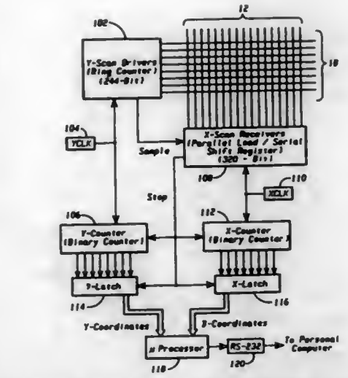
Filed May 23, 1994, Ser. No. 247,730

Int. Cl.[6] G08C *21/00;* **G09G** *3/02*

U.S. Cl. 178—18 **16 Claims**

1. A dual sensor comprising:

(a) a first touchpad sensor having first and second pluralities of conductors associated therewith, and a first touchpad resolution; and



(b) a second touchpad sensor substantially the same size as said first touchpad sensor, having a second touchpad resolution, and positioned proximate to said first touchpad sensor, said second touchpad sensor having third and fourth pluralities of conductors associated therewith;

(1) wherein said first touchpad resolution is different from said second touchpad resolution; and

(2) wherein said first and second touchpad sensors are configured and positioned such that a single touch of a finger, stylus, or the like is detectable by both said first touchpad sensor and said second touchpad sensor, said single touch causing at least one of said first plurality of conductors to coact with at least one of said second plurality of conductors such that the location of the touch can be determined therefrom and further causes at least one of said third plurality of conductors to coact with at least one of said fourth plurality of conductors such that the location of the touch can be determined therefrom.

5,543,590

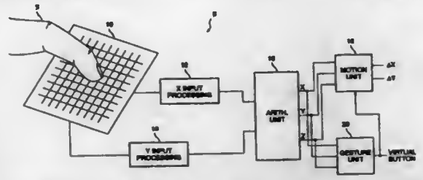
OBJECT POSITION DETECTOR WITH EDGE MOTION FEATURE

David Gillespie, Palo Alto; Timothy P. Allen, Los Gatos; Robert J. Miller, Fremont, and Federico Faggin, Los Altos, all of Calif., assignors to Synaptics, Incorporated, San Jose, Calif.

Continuation-in-part of Ser. No. 300,387, Sep. 2, 1994, which is a continuation-in-part of Ser. No. 115,743, Aug. 31, 1993, Pat. No. 5,374,787, which is a continuation-in-part of Ser. No. 895,934, Jun. 8, 1992, abandoned. This application Sep. 2, 1994, Ser. No. 300,630

Int. Cl.[6] G08C *21/00;* **G09G** *5/00*

U.S. Cl. 178—18 **13 Claims**



1. A method for providing an electrical signal for moving a cursor on a display screen associated with a computer in response to electrical signals representing of the position of an object in a two dimensional sensing plane, including the steps of:

providing a sensing plane including a matrix of conductors arranged as a plurality of spaced apart row conductive lines and column conductive lines, said sensing plane characterized by an inherent capacitance on the various ones of said row conductive lines and column conductive lines, said capacitance varying with the proximity of an object to said row and column conductive lines, said sensing plane including an inner region bounded by an outer region, said outer region extending inward from outer edges of said sensing plane;

sensing the capacitance on at least selected ones of said row and column conductive lines;

generating present-position signals from the sensed capacitance representing the present position of said object in both X and Y directions on said sensing plane;

sensing whether said object is in said outer region of said sensing plane;

generating first relative position X and Y signals representing the difference between X and Y coordinates of said present position of said object and X and Y coordinates of a previous position of said object and sending said first relative position X and Y signals to said computer if said object is not in said outer region of said sensing plane;

generating second relative position X and Y signals representing the difference between said X and Y coordinates of said present position of said object and X and Y coordinates of a fixed position on said sensing plane if said object is in said outer region of said sensing plane, and sending said second relative position X and Y signals to said computer so long as said object is in said outer region of said sensing plane.

5,543,591

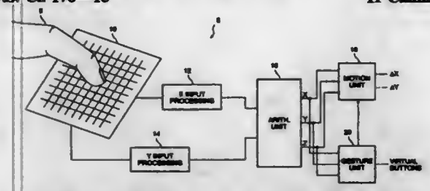
OBJECT POSITION DETECTOR WITH EDGE MOTION FEATURE AND GESTURE RECOGNITION

David Gillespie, Palo Alto; Timothy P. Allen, Los Gatos, and Ralph Wolf, Palo Alto, all of Calif., assignors to Synaptics, Incorporated, San Jose, Calif.

Continuation-in-part of Ser. No. 300,387, Sep. 2, 1994, which is a continuation-in-part of Ser. No. 115,743, Aug. 31, 1993, Pat. No. 5,734,787, which is a continuation-in-part of Ser. No. 895,934, Jun. 8, 1992. This application Oct. 7, 1994, Ser. No. 320,158

Int. Cl.[6] G08C *21/00*

U.S. Cl. 178—18 **11 Claims**



1. A method for recognizing a tap gesture made on a touch-sensor pad in a touch-sensing system providing X and Y position information to a host, including the steps of:

detecting the occurrence of a tap gesture made by a conductive tapping object on the touch-sensor pad;

sending a signal to the host indicating the occurrence of said tap gesture; and

sending X and Y position information to said host to substantially cancel out any unintended lateral motion of said tapping object on said touch-sensor pad during said tap gesture.

5,543,592

MULTIMODE MANIPULATOR

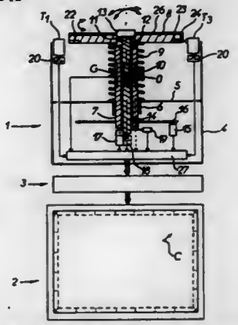
Philippe Gaultier, Le Chesnay; Patrick Vouillon, Yvette, and Frédéric Simon, Elancourt, all of, France, assignors to Sextant Avionique, Meudon La Foret, France

Filed May 26, 1994, Ser. No. 249,922

Claims priority, application France, Jul. 23, 1993, 9309205

Int. Cl.[6] H01H *25/04;* **G01L** *1/22;5/22;* **G09G** *5/02*

U.S. Cl. 200—6 A **9 Claims**



1. A manipulator with multiple operating modes which comprises:

a control member actuated by an operator's finger,

a shaft fixed on said control member and rotatably mounted about a coaxial axis of rotation so as to allow said control member to be rotated about said axis under the effect of a pivoting force exerted by said finger,

hinging means provided in a central part of said shaft so as to enable said shaft and said control member to rock about a center of rotation located on said axis in said central part, under the effect of a rocking force distinct from said pivoting force, exerted by said finger in a rocking position and with a variable intensity,

spring means for exerting on said control member a return motion to a home position once said rocking force ceases,

means for detecting an angular position of said control member about said axis and for generating first data representing said angular position,

means for detecting a rocking position of the control member and for generating second data representing said rocking position and said variable intensity,

selecting means actuated by said finger for selecting a first operating mode, in which at least said first data are taken into account, a second operating mode in which only said second data are taken into account, and a third mode in which said first and said second data are both taken into consideration,

validation means actuated by said finger for validating said first and second data.

5,543,593

ELECTRICAL SWITCH LOCKOUT DEVICE

Mark E. Turek, Wheaton, Ill., assignor to Prinzing Enterprises, Inc., Warrenville, Ill.

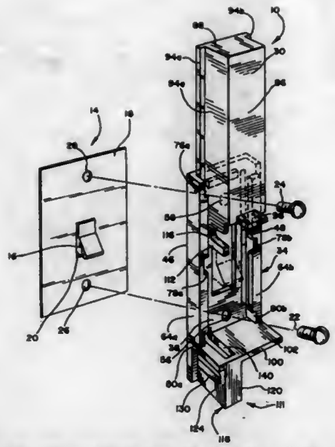
Filed Sep. 7, 1994, Ser. No. 301,697

Int. Cl.[6] H01H *9/28*

U.S. Cl. 200—43.11 **23 Claims**

1. A lockout device for a wall switch of the type having an actuating member and cover plate, comprising:

a mounting plate adapted to be attached to the cover plate of the electrical switch, said mounting plate having a front face, a back face adapted to abut the cover plate, first and second opposing edges, and an aperture extending between the front and back faces and formed to circumscribe the actuation member when the mounting plate is attached to the cover plate;



a blocking plate extending from the front face of said mounting plate;

a cover having an open back and an open bottom, said cover being slidably connected to said mounting plate such that the open back of said cover is positioned adjacent the front face of said mounting plate, said cover being linearly slidable between an open position at which the open bottom is positioned on one side of said actuation member and therefore the actuation member is accessible and a closed position at which the open bottom is positioned on an opposite side of said actuation member and wherein the open bottom of said cover is closed by said blocking plate so that said cover and said blocking plate cooperate to enclose the actuation member and thereby prevents the actuation member from being actuated; and locking means for locking said cover in its closed position.

5,543,594

ELECTRICAL PUSH BUTTON SWITCH WITH BUILT-IN LAMP

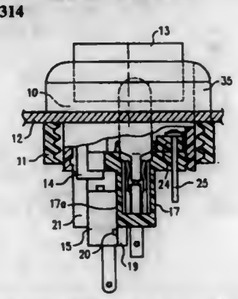
Ricardo Romero-Herrera, Pasaje Garbí 16, 08840 Viladecans (Barcelona), Spain

Filed Jan. 5, 1995, Ser. No. 369,139

Claims priority, application Spain, Jan. 5, 1994, 9400015

Int. Cl.[6] H01H *9/18*

U.S. Cl. 200—314 **11 Claims**



1. An electrical push-button switch with a built-in lamp comprising:

a push-button having a translucent cover;

a housing in which said push-button is seated, at least part of said housing being a substantially tubular body with an externally threaded portion for removably attaching said switch to a control panel with a threaded fastening means;

a pushing member which extends from said push-button and is at least partially mounted in said tubular body for axial displacement therein;

a socket body comprising a disc-shaped base removably linked to an end of said tubular body wherein said socket body includes a lamp holder extending outwardly from said tubular body of said housing and terminating in a grippable nucleus, said nucleus having at least two flaps, each having an end with a stub thereon;

a microswitch attached to said socket body;

means for biasing said pushing member away from said microswitch; and

a leg on a peripheral region of said disc-shaped base of said socket body and spaced from said nucleus wherein said microswitch is braced between an external surface of said nucleus and said leg.

5,543,595

CIRCUIT BREAKER WITH A BLOCKING MECHANISM AND A BLOCKING MECHANISM FOR A CIRCUIT BREAKER

Hans-Jürgen Mader, Koblenz, and Rainer Arenz, Alfter, both of, Germany, assignors to Klöckner-Moeller GmbH, Bonn, Germany

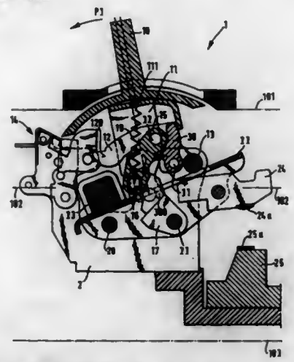
Filed Feb. 1, 1995, Ser. No. 381,774

Claims priority, application Germany, Feb. 2, 1994, 9401785

U

Int. Cl.[6] H01H *23/00*

U.S. Cl. 200—401 **5 Claims**



1. Circuit breaker comprising:

a switch latch and a manual operating handle, the switch latch being moveable by means of the manual operating handle, the manual operating handle being movable between an "on" position and an "off" position for the purpose of switching the circuit breaker on and off;

a supporting lever which is moved along with the switch latch, the supporting lever having a first end and a second end disposed a substantial distance from one another, and two sides facing away from one another;

the first end of the supporting lever being pivotable about a fixed axle and the second end of the supporting lever co-operating with a latch;

a contact carrier having a movable contact member;

a selector shaft connected to the contact carrier;

a stationary contact member disposed opposite the movable contact member;

a toggle system having an upper and a lower toggle connected to one another by means of a toggle axle;

the upper toggle and the lower toggle having a position both when the manual operating handle is in the "off" position and when the movable contact member and the stationary contact member are not welded to one another;

the upper toggle being coupled to the supporting lever and the lower toggle being coupled to the contact carrier;

an actuating spring arranged between the switch latch and the toggle axle for acting upon the toggle system;

reversing levers for preventing the movement of the manual operating handle into the "off" position when the moveable contact member is welded to the stationary contact member;

the reversing levers being rotatably mounted on both sides of the supporting lever, the reversing levers each having a part configured for contacting the upper toggle in an interlocking manner;

the reversing levers being configured for movement along with movement of the switch latch, such that, when the movable contact member is welded to the stationary contact member, the position of the toggle system is reversed substantially upon passing a throw-over point defined between the "off" position of the manual operating handle and the "on" position of the manual operating handle, during movement of the manual operating handle into the "off" position;

the reversing of the position of the toggle system being carried out by means of the reversing levers acting on the upper toggle; and

during movement of the manual operating handle between the throw-over point and the "off" position of the manual operating handle when the movable contact member is welded to the stationary contact member, the switch latch bears upon the selector shaft before the "off" position of the manual operating handle is reached.

5,543,596

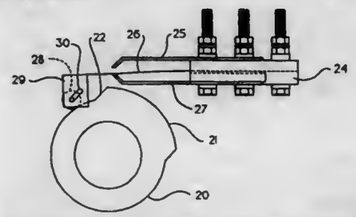
HIGHWAY CROSSING GATE MECHANISM CIRCUIT CONTACT

Richard S. Jones, Swansea; William H. Hodges, Jr., South Congaree, and Paul M. Evans, Columbia, all of S.C., assignors to Union Switch & Signal Inc., Pittsburgh, Pa.

Filed Aug. 16, 1994, Ser. No. 291,094

Int. Cl.[6] H01H *3/42*

U.S. Cl. 200—573 **9 Claims**



1. A rotary switch for use in a highway crossing gate mechanism comprising:

a cam adapted to be attached to such mechanism for rotation about a cam axis of such mechanism and said cam having a radius and a lobed portion of a larger radius;

a first switch contact member positioned adjacent said cam for conducting electrical current;

at least one second switch contact member for conducting current selectively from said first switch contact member;

said first switch contact member having a bracket portion attached generally adjacent said cam and said bracket portion includes at least one slot having opposed ends; and

a roller having an axle and said roller thereby being rotatably attached to said bracket portion of said first switch contact member for engaging said cam wherein said axle of said roller slidably engages edges of said slot such that said axle of said roller can be at a plurality of positions between said ends of said slot depending upon the position of said roller on said cam.

5,543,597

GROUNDING SWITCH GEAR DEVICE

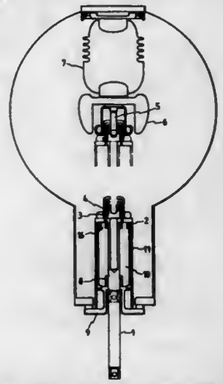
Atsuji Watanabe, Hitachi; Youichi Ohshita, Katsuta; Masatomo Ohno, Hitachi; Masanori Tsukushi, Hitachi, and Shunji Tokuyama, Hitachi, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 12, 1994, Ser. No. 225,979

Claims priority, application Japan, Apr. 20, 1993, 5-092618

Int. Cl.[6] H01H *33/88*

U.S. Cl. 218—60 **16 Claims**



1. A grounding switch gear device including a pair of engageable and disengageable stationary and movable electrodes constituting a circuit breaking unit, a puffer cylinder having a substantially cylindrical flange portion and a shaft portion at the end of which said movable electrode is fixedly secured, and a hollow puffer piston slidably supported along the inner circumferential face of the flange portion of said puffer cylinder, said puffer cylinder and said puffer piston in combination constituting a first puffer chamber, wherein a gas in the first puffer chamber is compressed in association with separation of said movable electrode from said stationary electrode during a separating operation and is blown out between said movable and stationary electrodes,

characterized in that said puffer piston has a cylindrical shape sealed with respect to an external space to permit containment into the flange portion of the puffer cylinder at the circuit breaking position of said circuit breaking unit, and the inner space of said cylindrically-shaped puffer piston is constituted as a second puffer chamber in communication with the first puffer chamber.

5,543,598

SWITCH HAVING A VACUUM INTERRUPTER

Henri Duffour, Evian; Philippe Goerend, St. Genis-Pouilly, both of, France, and Dominique Loutan, Genève, Switzerland, assignors to Secheron S.A., Geneva, Switzerland

Filed Aug. 26, 1994, Ser. No. 295,062

Claims priority, application Switzerland, Aug. 27, 1993, 2557/93

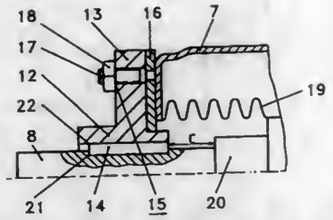
Int. Cl.[6] H01H *33/66*

U.S. Cl. 218—135 **11 Claims**

1. A switch comprising:

a vacuum interrupter arranged between two supply terminals and actuatable by a drive,

a tubularly constructed, evacuated housing with a fixed contact member and a movable contact member, the fixed contact member is supported by a fixed contact carrier on a first one of the two supply terminals, and the movable contact member has a movable contact carrier guided out of the housing in a vacuum-tight fashion by a bellows and is held on a housing axis by a slideway, the movable contact carrier is electrically connected to a second one of the two supply terminals,



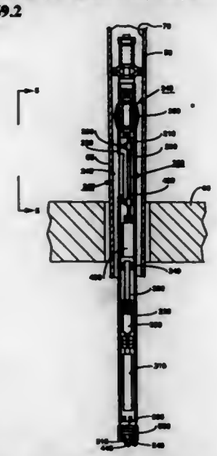
wherein the slideway has a bushing which is detachably mounted on a flange of the housing, and an axially aligned guide groove provided in an inner surface of the bushing and a sliding body of the movable contact carrier has a guide element which is guided in the guide groove and held on the movable contact carrier.

5,543,599

ELECTRON DISCHARGE MACHINING APPARATUS AND METHOD

William G. Cole, Greensburg; Jeffrey E. Hydeman, Murrysville; James M. Gunsallus, Jr., Elizabeth, and Qui Le, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburg, Pa.

Filed Dec. 14, 1994, Ser. No. 355,584
Int. Cl.[6] B23H *1/00;7/26;9/00*
U.S. Cl. 219—69.2 **23 Claims**



1. An electric discharge machining apparatus for precisely machining a wall of a tubular member at a predetermined location thereof, comprising:

(a) electrode means sized to be disposed in the tubular member for generating an electric discharge arc to machine the wall at the predetermined location, said electrode means having a predetermined shape to form a slot in the wall of the tubular member corresponding to the predetermined shape of said electrode means;

(b) rotation means connected to said electrode means for precisely rotating said electrode means into registry with the predetermined location to be machined;

(c) extender means connected to said electrode means for precisely radially extending said electrode means as said electrode means machines the wall of the tubular member; and

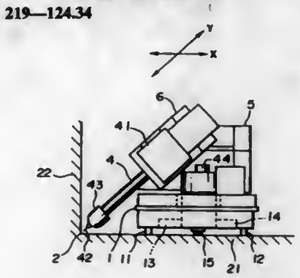
(d) controller means connected to said rotation means and to said extender means for controlling said rotation means and said extender means.

5,543,600

LATTICE WELDING ROBOT AND METHOD FOR THE LATTICE WELDING

Daisuke Ozamoto; Masatoshi Murayama, and Yuji Sugitani, all of Kawasaki, Japan, assignors to NKK Corporation, Kawasaki, Japan

Filed Feb. 23, 1995, Ser. No. 393,378
Claims priority, application Japan, Apr. 12, 1994, 6-073591
Int. Cl.[6] B23K *9/127*
U.S. Cl. 219—124.34 **36 Claims**



1. A lattice welding robot comprising:

a self-driven welding carriage having a pair of driving wheels which can be controlled independently to run and turn said welding carriage;

a welding torch mounted on said carriage for rotating a welding wire at a torch tip end at a high speed;

an X-axis slide mechanism for moving said welding torch in a horizontal direction relative to said carriage;

a Y-axis slide mechanism for moving said welding torch in a torch axis direction to keep a torch height constant;

a detector for detecting a corner portion of a member material to be welded so as to enable a turning operation at the corner portion to be carried out;

axis direction control means for controlling an X-axis direction position and a Y-axis direction position of the welding torch by using an arc sensor;

setting means for setting said welding carriage at a weld start position relative to said material to be welded; and

a rough guidance controller for controlling a travel direction of said welding carriage, said rough guidance controller comprising

an X-axis detector for detecting an X-axis slide position of said welding torch when said welding torch is controlled to be positioned at a center of a welding groove by said arc sensor;

a comparator for comparing said detected X-axis slide position with a preset reference value of said X-axis slide position of said welding torch;

a calculating unit for calculating a differential value of said detected X-axis slide position of said welding torch; and

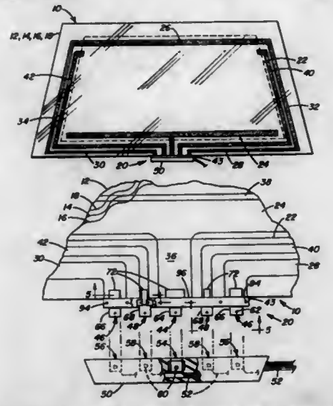
a control unit for controlling an advancing direction of said welding carriage by supplying independently an adding speed signal to said pair of driving wheels derived from the outputs of said comparator and said calculating unit so as to cause said carriage to run substantially parallel with said weld line and to keep a substantially constant distance between said welding carriage and said weld line, whereby said X-axis direction slide position of said welding torch is located at a proper position for welding.

5,543,601

MULTIPLE CONNECTION TERMINAL ASSEMBLY FOR AN ELECTRICALLY HEATED TRANSPARENCY

Bruce A. Bartrug, Lower Burrell; Harry S. Koontz, and John A. Winter, both of Pittsburgh, Pa., assignors to PPG Industries Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 607,947, Nov. 1, 1990, Pat. No. 5,208,444. This application May 3, 1993, Ser. No. 56,979
Int. Cl.[6] H05B *3/10;* **B60L** *1/02*
U.S. Cl. 219—203 **10 Claims**



1. A multiple terminal assembly to electrically interconnect an electrical power source to a plurality of current carrying members extending into a connection area along an edge of a laminated transparency, comprising:

a housing; and

a single row of electroconductive terminals secured within said housing in close proximity to and electrically insulated from each other, wherein said terminals are arranged in a generally planar relationship and each of said terminals includes a generally flat electroconductive strip extending outwardly from one side of said housing along a plane and an electroconductive tab extending outwardly from an opposite side of said housing generally along said plane and further wherein said terminals are spaced apart a fixed predetermined distance so as to align each of said terminals with one of said current carrying members at said connection area of said transparency.

5,543,602

METHOD FOR THE STORAGE AND CONTROLLED SUPPLY OF ELECTRIC ENERGY FOR DISCONTINUOUS LOADS IN STEELWORKS

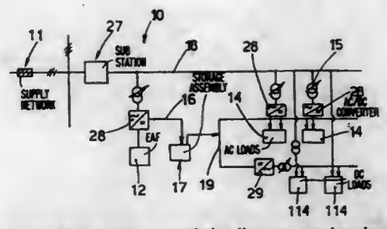
Gianni Gensini, S. Stefano Di Buia, and Giovanni Coassin, Pordenone, both of, Italy, assignors to Danieli & C. Officine Meccaniche SpA, Buttrio, Italy

Filed May 5, 1994, Ser. No. 238,497
Claims priority, application Italy, May 17, 1993, UD93A0085
Int. Cl.[6] H05B *1/02*
U.S. Cl. 219—491 **6 Claims**

1. Method for the storage and controlled supply of electric energy for a plurality of discontinuous loads in a steelworks comprising:

providing at least one main supply line connected to main supply source of electric energy and to the plurality of discontinuous loads;

limiting a level of maximum active power supplied by the main supply source to the steelworks by a sub-station to a level P0 lower than peaks of maximum absorption by the plurality of discontinuous loads;



providing at least one accumulation line connected to the main supply line for supplying electric energy limited in magnitude by the sub-station for storage by at least one storage assembly which is connected to the plurality of discontinuous loads through a secondary supply line; and

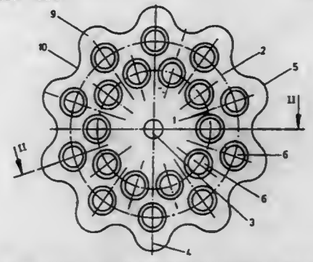
providing stored electric energy from the storage assembly through the secondary supply line to the plurality of discontinuous loads when the plurality of discontinuous loads are drawing electric energy above the level P0.

5,543,603

HEAT CONDUCTOR SUPPORT DISK

Harald Schmädig, Mörfelden-Walldorf, and Hubert Klöck, Stockstadt, both of, Germany, assignors to Kanthal GmbH, Mörfelden-Walldorf, Germany

Filed Apr. 4, 1994, Ser. No. 222,278
Claims priority, application European Pat. Off., Apr. 2, 1993, 93105482
Int. Cl.[6] H05B *3/02*
U.S. Cl. 219—550 **17 Claims**



1. A multi-apertured ceramic disk heat conductor support for use in a heating element for electrically heating industrial furnace installations, comprising:

a ceramic disk having exterior surfaces, an edge, a thickness and an axis of symmetry, a center aperture being provided extending between the exterior surfaces on the axis of symmetry for receiving a supporting element;

the ceramic disk having a plurality of recesses symmetrically distributed around the edge of the disk, the recesses being defined by a plurality of circular segments forming alternating circular valleys and circular peaked regions, there being continuous transitions between the circular segments, thereby forming the edge with a wavy shape;.

the ceramic disk having a plurality of further apertures extending between the exterior surfaces of the disk for receiving heat conductors;

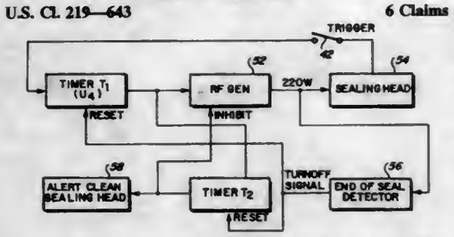
wherein the plurality of further apertures are equidistantly disposed around at least one circle which is coaxial with the center aperture to form a ring of apertures, wherein a distance formed between each respective further aperture and the edge at each respective peaked region is essentially uniform.

5,543,604

RF GENERATOR FOR PLASTIC TUBING SEALERS

Junius E. Taylor, Phoenix, Ariz., assignor to Engineering & Research Associates, Inc., Tucson, Ariz.

Continuation of Ser. No. 785,405, Oct. 31, 1991, Pat. No. 5,349,166. This application Sep. 16, 1994, Ser. No. 306,991
Int. Cl.[6] H05B 6/10
U.S. Cl. 219—643 6 Claims



1. Control apparatus for melting and sealing tubing placed intermediate a pair of electrically conducting jaws movable to compress the tubing therebetween, said apparatus comprising in combination:

a) means for generating a radio frequency signal in response to compression of the tubing by the pair of jaws;

b) means for amplifying the radio frequency signal to a predetermined power level;

c) means for applying the amplified radio frequency signal across the pair of jaws;

d) means for regulating said generating means to selectively apply a predeterminable level of power across the pair of jaws;

e) means for timing and controlling said regulating means in response to the state of melt of the tubing; and

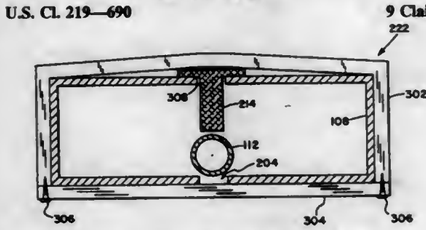
f) means for terminating operation of said timing and controlling means in the presence of a fault.

5,543,605

MICROWAVE FIBER COATING APPARATUS

Harold D. Kimrey, Jr.; William B. Snyder, Jr., both of Knoxville, Tenn., and Richard C. Krutenat, Belmont, Mass., assignors to Avco Corporation, Providence, R.I.

Filed Apr. 13, 1995, Ser. No. 390,836
Int. Cl.[6] H05B 6/70
U.S. Cl. 219—690 9 Claims



1. A method of heating a fiber comprising the steps:

a) providing an apparatus comprising

i) a source of microwave energy, the microwave energy having an electric field associated therewith; and the electric field situated perpendicular to the fiber;

ii) an applicator having walls defining a cavity adapted to have the fiber passed therethrough, the applicator coupled to the source of microwave energy;

iii) means for concentrating a maximum electric field on the fiber, comprising an element projecting into the cavity;

iv) means for tuning the electric filed in a longitudinal direction along the fiber to yield a uniform electric field along the fiber; and

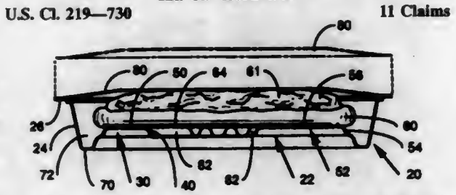
b) pulling the fiber through the cavity in the apparatus at a rate effective to permit the fiber to be heated sufficiently to coat the fiber by means of a chemical vapor deposition reaction.

5,543,606

NON-CIRCULAR OVENABLE FOOD PACKAGE HAVING A BASE WITH DEPENDING LEG MEMBERS AND AT LEAST ONE RAISED PORTION AND ASSOCIATED FOOD PACKAGE

Paul W. Gies, Sewickley Heights, Pa., assignor to Gies & Vermee, L.P., Sewickley Heights, Pa.

Continuation-in-part of Ser. No. 206,564, Mar. 4, 1994, Pat. No. 5,484,984. This application Aug. 3, 1994, Ser. No. 285,249
Int. Cl.[6] H05B 6/80
U.S. Cl. 219—730 11 Claims



1. A package for containing a food product, said package supporting said food product when said food product is placed into a food heating apparatus having a support surface, said package comprising:

a non-circular base;

leg members extending from said base such that an exterior gap is created between a portion of said base and said support surface when said package is placed in said food heating apparatus;

a sidewall extending from said base, said sidewall having a stepped flange including a horizontal portion extending generally perpendicularly to said sidewall and a vertical portion extending generally perpendicularly to said horizontal portion, said vertical portion including a free edge; and

lid means having edge portions secured to said horizontal portion of said stepped flange, at least a portion of said lid means being removable from said package, said removable portion being sized and shaped such that said removable portion can be positioned to rest on said free edge wherein a space is created between said lid means and said food product.

5,543,607

SELF CHECK-OUT SYSTEM AND POS SYSTEM

Kiyoshi Watanabe, Kanagawa-ken; Yasuhiro Abe, Hadano; Masaho Sakamoto, Hadano; Takeshi Saitou, Hadano; Takayoshi Ishii, Hadano; Yukio Akimoto, Hadano; Hironori Kashiki, Zama, and Masao Kato, Hadano, all of, Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Computer Engineering Co, Ltd., Kanagawa-ken, both of, Japan

Continuation-in-part of Ser. No. 197,268, Feb. 16, 1991, abandoned. This application Nov. 14, 1994, Ser. No. 340,380
Claims priority, application Japan, Feb. 18, 1993, 5-029379; Nov. 17, 1993, 5-288325; Nov. 19, 1993, 5-290882
Int. Cl.[6] G06K 15/00
U.S. Cl. 235—383 24 Claims

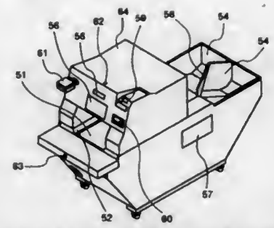
1. A check-out system comprising:

a portion into which a commercial product is casted;

a stocker for stocking the commercial products;

a transport path for transporting the commercial product from said commercial product casted portion to said stocker;

a commercial product identifying unit located between said commercial product casted portion and said stocker for providing an identification result identifying whether or not the commercial product transported from said commercial product casted portion is to be transported up to said stocker;



a commercial product code inputting unit for inputting a commercial product code of the commercial product in said commercial product casted portion;

a commercial product code reading unit for reading out the commercial product code of the commercial product code of the commercial product in said commercial product identifying unit; and

a transport controlling unit for sensing whether a commercial product is put on said transport path before inputting said commercial product code into said commercial product code inputting unit and for starting to move the operation of said transport path,

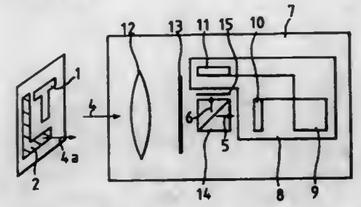
said transport controlling unit having means for selecting a first mode where the commercial product is sensed to be put on said transport path in said commercial product casted portion before inputting a commercial product code in said commercial product code inputting unit to move said transport path and in accordance with the identification result provided by said commercial product identifying unit, the commercial product is selectively transported to either said stocker or said commercial product casted portion, and selecting a second mode where the commercial product code has been first sensed to be input by a user through said commercial product code inputting unit before sensing said commercial product being put on said transport path by said transport controlling unit, and in accordance with a comparison between said commercial product code and the identification result provided by said commercial product identifying unit, the commercial product is selectively transported to either said stocker or said commercial product casted portion.

5,543,608

METHOD AND THE SYSTEM FOR IDENTIFYING A VISUAL OBJECT WITH A POLARIZING MARKER

Erkki Rantalainen, Kaatmäentie, SF-52300 Ristiina, Finland

Continuation of Ser. No. 78,270, Jun. 15, 1993, abandoned. This application Mar. 9, 1995, Ser. No. 402,771
Claims priority, application Finland, Dec. 17, 1990, 906225
Int. Cl.[6] G06K 7/10
U.S. Cl. 235—454 30 Claims



1. A method of locating and identifying an ordinarily visible object which is located at an arbitrary location and attitude, comprising the steps of:

providing a marker having a polarizing surface reflecting a polarizing light without an aid of a polarizing light source, the marker with the polarizing surface being disposed in a vicinity of the ordinarily visible object so that a mutual positioning of the polarizing surface and the ordinarily visible object is known;

observing and analyzing the polarized light reflected from the marker so that an existence, location and attitude of the marker is found;

locating the arbitrary location and attitude of the object in the vicinity of the marker based on said mutual positioning; and

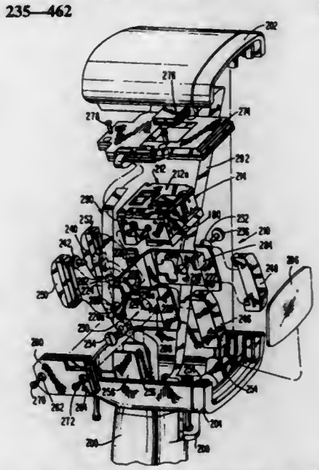
identifying the object.

5,543,609

ARRANGEMENT FOR AND METHOD OF PROVIDING SHOCK PROTECTION AND VIBRATION ISOLATION FOR A SCAN MODULE

Joseph Giordano, Bayville; Frank Gong, Syosset; Richard Rizzo, New York, and Hal Charych, East Setauket, all of N.Y., assignors to Symbol Technologies, Inc., Bohemia, N.Y.

Filed Oct. 28, 1994, Ser. No. 330,687
Int. Cl.[6] G06K 7/10
U.S. Cl. 235—462 22 Claims



1. A mounting arrangement in a system for reading indicia, comprising:

a) a housing having housing parts spaced apart from each other;

b) a frame within the housing between the housing parts, and having frame walls spaced away from the housing parts;

c) a scan module within the frame between the frame walls, and having a support spaced away from the frame walls, and a scan element mounted on the support for oscillating movement with concomitant generation of internal vibrations;

d) means extending between the support and the frame for vibration isolating the scan module from the frame to resist transmission of the vibrations from the scan module to the frame; and

e) means extending between the housing and the frame for shock mounting the frame from the housing to resist transmission of external shocks from the housing to the frame.

5,543,610

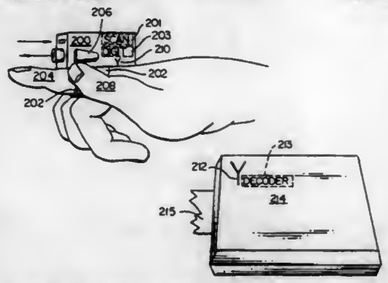
COMPACT BAR CODE SCANNING ARRANGEMENT

Simon Bard, Stony Brook; Askold Strat, Patchogue; Joseph Katz, and Boris Metlitsky, both of Stony Brook, all of N.Y., assignors to Symbol Technologies, Inc., Bohemia, N.Y.

Continuation of Ser. No. 884,734, May 15, 1992, abandoned, which is a continuation-in-part of Ser. No. 868,401, Apr. 14, 1992, Pat. No. 5,280,165, which is a division of Ser. No. 520,464, May 8, 1990, Pat. No. 5,168,149, which is a continuation-in-part of Ser. No. 428,770, Oct. 30, 1989, Pat. No. 5,099,110. This application Apr. 15, 1994, Ser. No. 228,172

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—462 **86 Claims**



1. A bar code scanning system comprising:

a first housing having housed therein a light beam scanning means for generating a light beam and oscillating the light beam to scan a bar code symbol, detection means for receiving reflected light from the symbol to produce and electrical signal and signal processing means for processing the electrical signal to generate therefrom a digitized signal descriptive of the bar code symbol; and

a single support member in the shape of a ring for mounting said housing on a single finger, independent of the other fingers of a user.

5,543,611

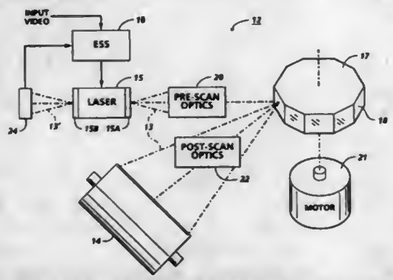
METHOD AND APPARATUS FOR BACK FACET MONITORING OF LASER DIODE POWER OUTPUT

John R. Andrews, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 6, 1995, Ser. No. 384,174

Int. Cl.[6] G01D *15/14;* **G01J** *1/32*

U.S. Cl. 250—205 **3 Claims**



1. Apparatus for monitoring the power outputs of a plurality of laser diodes, comprising: a plurality of laser diodes mounted so as to form a laser diode array, wherein each laser diode includes a front facet for emitting laser light and a back facet for emitting laser light, wherein the laser light emitted from the front facet has an intensity greater than the laser light emitted from the back facet;

an imaging device proximate the back facet; and

a plurality of photosensors for receiving laser light, each photosensor generating an output signal proportional to the intensity of the laser light received;

wherein said imaging device includes a ball lens which focuses the laser light from each laser diode onto a separate photosensor.

5,543,612

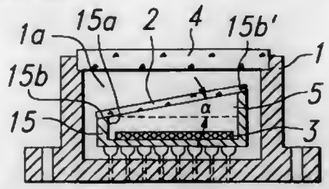
IMAGE PICKUP DEVICE WITH ATTACHED INTERFERENCE STRIPE NOISE PREVENTION MECHANISM

Motonori Kanaya, Omiya; Kenichi Noguchi, Ageo; Yoshiaki Nagaya, Funabashi, and Hisashi Itoh, Ami-machi, all of, Japan, assignors to Texas Instruments Incorporated, Dallas, Tex.; Fuji Photo Optical Co., Ltd., and Hitachi Denshi Kabushiki Kaisha, both of, Japan

Filed May 13, 1994, Ser. No. 242,226

Int. Cl.[6] H01J *40/14*

U.S. Cl. 250—208.1 **9 Claims**



1. An image pickup device for photographing an object with an image sensor by employing coherent light as a light source, said image pickup device comprising:

a socket having a bottom wall and opening upwardly from the bottom wall to provide a recess, at least one pin-receiving opening extending through the bottom wall;

a package assembly mounted in the recess within the socket, said package assembly including

a receptacle having a bottom wall and an upwardly opening end disposed within the recess provided by said socket, said receptacle having at least one electrically conductive pin extending from the bottom wall of the receptacle and received within said at least one pin-receiving opening in the bottom wall of said socket for electrical connection,

an image sensor having a matrix of pixels disposed in the receptacle in abutment with the bottom wall thereof and adapted to receive coherent light,

a lid glass disposed on the receptacle and closing the upwardly opening end thereof,

a filter arranged above and in spaced relationship to said lid glass, said filter being mounted on said socket and closing the recess provided therein, and

said lid glass being arranged in slanted relationship at an acute angle α with respect to said image sensor,

the angle α being selected to be in a range causing interference stripe light components to occur equally on each of said pixels included in said image sensor such that a video signal output from said image sensor produced in response to coherent light being received by said image sensor is compensated with respect to noise caused by the interference stripe light components.

5,543,613

MULTI-DIGIT FLUID FLOW ROLLER METER

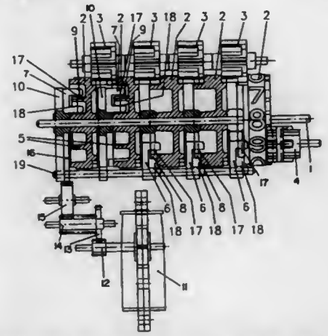
Roland Mettler, Kriens, Switzerland, assignor to GWF Gas & Wassermesserfabrik AG, Lucerne, Switzerland

Filed Jul. 6, 1994, Ser. No. 268,529

Claims priority, application Switzerland, Jul. 11, 1993, 02 059/93

Int. Cl.[6] G01D *5/34*

U.S. Cl. 250—231.15 **14 Claims**



1. A multi-digit roller meter for a volume measuring instrument for one of gas and water or for an electricity meter, having a plurality of adjacent indicator wheels of differing values rotatable on a common axis of rotation in which, every time, of two adjacent differing value indicator wheels, a higher value wheel is turned one tenth of a revolution further, via a shift pinion wheel, by a lower value indicator wheel in the last tenth of its revolution, the multi-digit roller meter including:

a plurality of first devices wherein each first device, rotatable through an angle of less than 360° and located on one of the axis of the indicator wheels and an axis parallel to the axis of the indicator wheels, is arranged between each of two adjacent ones of the plurality of indicator wheels;

each first device, during a rotation relative to the adjacent indicator wheels, gives off two different signals;

a second device, drivingly interconnected with said first devices, said second device causing a sequence of multiple reading steps of said first devices, via angular movements of said first devices; and

the sum of the signals of said multiple reading steps of said first devices representing a certain, specific meter position.

5,543,614

SCANNING PROBE MICROSCOPE CAPABLE OF SUPPRESSING PROBE VIBRATION CAUSED BY FEEDBACK CONTROL

Hirofumi Miyamoto, Niiza; Mitsugu Sakai, Tokyo; Mitsumori Hayashida, Tokyo, and Nobuaki Sakai, Tokyo, all of, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 21, 1994, Ser. No. 327,193

Claims priority, application Japan, Oct. 25, 1993, 5-266131

Int. Cl.[6] G01N *23/00*

U.S. Cl. 250—234 **21 Claims**

1. A scanning probe microscope for obtaining surface data of a sample by scanning a surface of the sample with a probe, at least one of the probe and the sample being movable relative to the other, said scanning probe microscope comprising:

a piezoelectric unit capable of finely moving in a Z direction coinciding with an axis along which the sample and the probe face each other, and in at least one direction normal to the Z direction, said at least one direction normal to the Z direction comprising an X direction;

probe control means for controlling a fine movement amount of said piezoelectric unit along the Z direction by detecting an interaction between the sample and the probe, changing a value of a Z-directional control signal which is applied to said piezoelectric unit in accordance with a magnitude of the detected interaction between said sample and said probe, and feeding the Z-directional control signal back to said piezoelectric unit;

X-directional driving means for applying to said piezoelectric unit an X-directional scan signal for controlling an X-directional fine movement amount of said piezoelectric unit and continuously changing a voltage value of the X-directional scan signal while an X-directional scan line on the surface of the sample is being scanned;

X-directional displacement detection means for detecting a displacement of said piezoelectric unit in the X direction and outputting an X-directional displacement detection signal having a signal value corresponding to the displacement detected;

matching detection means for detecting the X-directional displacement detection signal output by the X-directional displacement detection means and outputting a coincidence detection signal each time the signal value of the X-directional displacement detection signal coincides with one of X-directional displacement target values respectively preset for each X-directional scan line to correspond to X-directional measurement points at which sample surface data is to be acquired; and

surface data acquiring means for acquiring sample surface data by determining the value of the Z-directional control signal applied by said probe control means to said piezoelectric unit each time said matching detection means outputs the coincidence detection signal.

5,543,615

BEAM CHARGE EXCHANGING APPARATUS

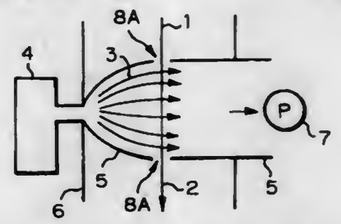
Mutsumi Saitō; Tomoyuki Yahiro, and Masahiro Hatakeyama, all of Kanagawa-ken, Japan, assignors to Ebara Corporation, Tokyo, Japan

Filed Jan. 12, 1995, Ser. No. 371,775

Claims priority, application Japan, Jan. 13, 1994, 6-014861; Apr. 14, 1994, 6-100579

Int. Cl.[6] G21K *1/14;* **H05H** *3/02*

U.S. Cl. 250—251 **22 Claims**



1. A beam charge exchanging apparatus comprising:

a container disposed in a vacuum, said container having an entrance hole through which a particle beam is to be introduced, and an exit hole from which a beam leaves the container; and

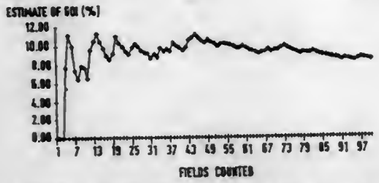
fluid introduction means for introducing fluid into said container as a flow having a molecular velocity M of greater than 1.2, wherein M is Mach value, and in a direction the velocity vector of which is not directed toward the entrance and exit holes of the container but which will intersect a particle beam introduced into the container through said entrance bole, whereby the fluid will collide with the particle beam to exchange charges therewith,

said fluid introduction means comprising a pressurized fluid reservoir, and a divergent nozzle which is connected to and diverges in a direction away from said reservoir.

5,543,616
IDENTIFYING OIL WELL SITES

Peter J. Esdington, East Ryde; Mark Lisk, and Francis W. Krieger, both of North Ryde, all of, Australia, assignors to Commonwealth Scientific Industrial Research Organisation, Australia

Filed Jul. 25, 1995, Ser. No. 506,181
Int. Cl.[6] G01N *33/24*
U.S. Cl. 250—55 **9 Claims**



1. A method of using natural oil inclusions in rock grains to determine the maximum oil saturation that a granular rock sample has had, comprising the steps of:

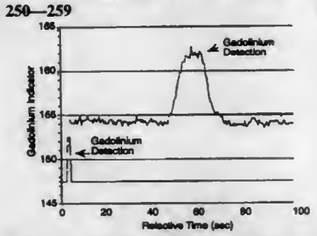
quantitatively determining the total number of grains in the sample and, of those grains, the number that include oil within them, thereby yielding a ratio; and

correlating that ratio against standard rock samples to yield the maximum oil saturation.

5,543,617
METHOD OF MEASURING FLOW VELOCITIES USING TRACER TECHNIQUES

Bradley A. Roscoe; Jeffrey S. Schweitzer, both of Ridgefield, and Kenneth E. Stephenson, Newtown, all of Conn., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Jun. 27, 1994, Ser. No. 266,077
Int. Cl.[6] G01V *5/04*
U.S. Cl. 250—259 **16 Claims**



1. A method of determining dynamic flow characteristics of flowing multi-phase fluid comprising an aqueous phase and a hydrocarbon phase, one of which is continuous and the other of which is dispersed, in an underground hydrocarbon well, the method comprising:

(a) creating a radiation environment around a measurement location in the flowing multi-phase fluid at which radiation is detected;

(b) ejecting a tracer into one phase of the flowing multi-phase fluid upstream of the measurement station which affects detection of the radiation at the measurement location as it passes;

(c) making a time-based measurement of the radiation at the measurement location to include passage of the tracer in said one phase so as to determine the effect of the tracer on the detection of radiation;

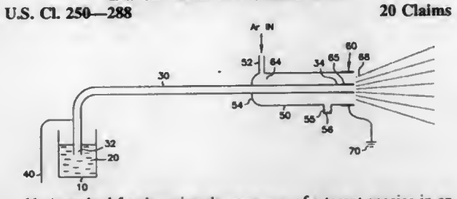
(d) determining the flow velocity of said one phase from the time-based measurement; and

(e) using the flow velocity of said one phase to determine the dynamic flow characteristic.

5,543,618
CAPILLARY ZONE ELECTROPHORESIS-MASS SPECTROMETER INTERFACE

Arthur D'Silva, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Jun. 30, 1994, Ser. No. 268,501
Int. Cl.[6] B01D *59/44;* **H01J** *49/00*
U.S. Cl. 250—288 **20 Claims**



11. A method for detecting the presence of a target species in an eluent during capillary zone electrophoresis comprising the steps of:

(a) providing a capillary tube containing an eluent and having an exit end;

(b) providing a first electrical conducting terminal contacting the exit end of the capillary tube and the eluent therein;

(c) providing a rigid dielectric structure surrounding the exit end of the capillary tube and the first electrical conducting terminal;

(d) providing a second electrical conducting terminal positioned on the rigid dielectric structure;

(e) filling the rigid dielectric structure with an electrically conducting gas such that the gas contacts both the first terminal and the second terminal;

(f) electroosmotically moving a target species through the capillary tube such that it exits the capillary tube at the exit end; and

(g) detecting the presence of the target species.

5,543,619
VACUUM INLET

Stephen J. Mullock, Cambridge, United Kingdom, assignor to Kore Technology Limited, Cambridge, United Kingdom

Filed Nov. 22, 1994, Ser. No. 346,202
Claims priority, application United Kingdom, Nov. 25, 1993, 9324213
Int. Cl.[6] H01J *49/36*
U.S. Cl. 250—288 **27 Claims**

1. A sample inlet apparatus comprising:

a sample source;

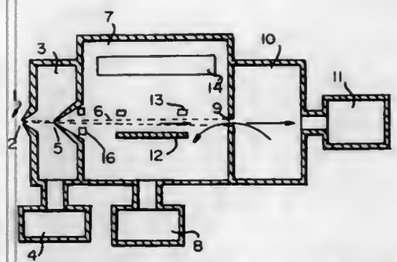
a first inlet means;

a first enclosure, connected to said sample source via said first inlet means;

a second inlet means substantially in alignment with said first inlet means;

an analyser enclosure, connected to said first enclosure via said second inlet means;

a third inlet means substantially in alignment with said first and said second inlet means;



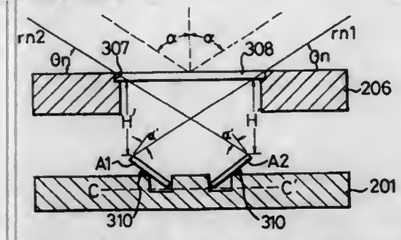
a second enclosure, connected to said analyser enclosure via said third inlet means; and

means for maintaining said first and said second enclosures at a pressure lower than said sample source and higher than that of said analyser enclosure, whereby a molecular beam of sample molecules is generated along an axis defined by the alignment of said first inlet means said second inlet means and said third inlet means.

5,543,620
WIDE-VIEW-ANGLE AND PLANARIZED-PACKING STRUCTURE FOR IR HEAT SENSING ELEMENTS

San-Bao Lin, Chungli; Gwo-Dawn Chang, Taipei Hsien; Jin-Shown Shie; Chein-Hsun Wang, both of Hsinchu; Ping-Kuo Weng, Taoyuan Hsien, and Ming-Der Lin, Hsinchu, all of, Taiwan, assignors to Opto Tech Corporation, Hsinchu, Taiwan

Filed Nov. 30, 1994, Ser. No. 352,067
Int. Cl.[6] G01J *5/02;5/00*
U.S. Cl. 250—338.3 **7 Claims**

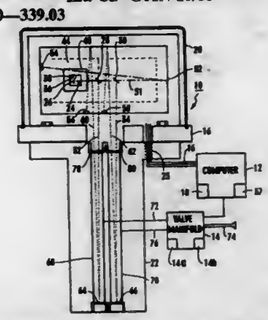


1. A planarized-packing device for pyroelectric IR heat-sensing elements comprising a circuit board on which two pyroelectric heat-sensing elements and associated electronic elements are mounted, and a cover with a window and an IR filtering plate, said circuit board being pre-pressed to form a recess at the portion where said pyroelectric heat-sensing elements are attached so that said pyroelectric heat-sensing elements are bridged across said recess; said recess being such shaped that said pyroelectric heat-sensing elements can be placed inclined in said recess and formed into a suspended structure; the inclined angle of said pyroelectric heat-sensing elements being adjustable as desired.

5,543,621
LASER DIODE SPECTROMETER FOR ANALYZING THE RATIO OF ISOTOPIC SPECIES IN A SUBSTANCE

Todd B. Sauke; Joseph F. Becker, both of San Jose, and Jose De La Torre-Bueno, San Diego, all of Calif., assignors to San Jose State University Foundation, San Jose, and Seti Institute, Mountain View, both of Calif.

Filed May 15, 1995, Ser. No. 440,636
Int. Cl.[6] G01N *21/00*
U.S. Cl. 250—339.03 **18 Claims**



1. A spectrometer for analyzing the ratio of $^{13}C/^{12}C$ in a sample gas, comprising:

a laser diode illuminator for generating a first light beam characterized by a wavelength in the mid-infrared absorption range of $^{12}CO_2$ and a second light beam characterized by a wavelength in an absorption range of $^{13}CO_2$;

a primary thermoelectric cooler in thermal contact with the laser diode illuminator for maintaining a temperature of the illuminator at a predetermined temperature;

a sample chamber in light communication with the first and second light beams, the sample chamber holding the sample gas;

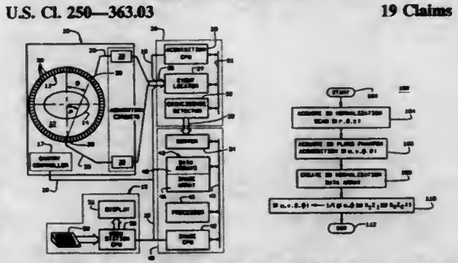
a sample detector in light communication with the sample chamber for detecting light propagating therefrom and generating a sample signal in response thereto; and

a computer electrically connected to the sample detector for receiving the sample signal and determining the ratio of $^{13}C/^{12}C$ in the sample gas in response thereto.

5,543,622
METHOD FOR DETERMINING DATA NORMALIZATION FACTORS FOR IMAGE RECONSTRUCTION

Charles W. Stearns, Milwaukee, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Aug. 15, 1995, Ser. No. 515,461
Int. Cl.[6] G01T *1/166*
U.S. Cl. 250—363.03 **19 Claims**



1. A method for creating a data normalization array for use in normalizing data acquired from a positron emission tomograph scan from a scanner to be used in generating a three-dimensional image, said method comprising the steps of:

acquiring two-dimensional normalization scan $S(r,\phi,z)$ data;

acquiring three-dimensional phantom scan $S(u,v,\phi,\Theta)$ data; and

creating the three-dimensional normalization data array N(u,v,ϕ,Θ) from the two-dimensional normalization scan S(r,ϕ,z) data and the three-dimensional phantom scan S(u,v,ϕ,Θ) data.

15. A processor programmed for creating a data normalization array for use in normalizing data acquired from a positron emission tomograph scan to be used in generating a three-dimensional image, a memory storage being coupled to said processor for storing two-dimensional normalization scan S(r,ϕ,z) data and three-dimensional phantom scan S(u,v,ϕ,Θ) data, said processor programmed to create a three-dimensional normalization data array N(u,v,ϕ,Θ) from the two-dimensional normalization scan S(r,ϕ,z) data and the three-dimensional phantom scan S(u,v,ϕ,Θ) data.

5,543,623

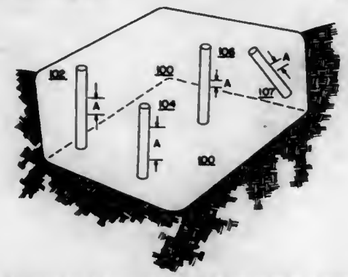
METHOD FOR DETECTING AND MITIGATING UNDERGROUND ORGANIC CONTAMINATION

Lorne G. Everett, Santa Barbara, and David Blakely, Rightwood, both of Calif., assignors to TTI Environmental Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 321,578, Mar. 9, 1989, abandoned, which is a continuation-in-part of Ser. No. 212,496, Jun. 28, 1988, abandoned, which is a continuation-in-part of Ser. No. 820,458, Feb. 17, 1986, Pat. No. 4,754,136. This application Jul. 31, 1991, Ser. No. 739,160

Int. Cl.[6] G01N *23/204*

U.S. Cl. 250—390.04 **6 Claims**



1. A method of determining the biodegradation actions in an underground site comprising:

providing a plurality of spaced-apart boreholes at selected regions of said site;

providing a neutron backscatter gauge in each borehole;

activating said gauge at spaced intervals along the length of each borehole for reading detection of hydrogen material;

correlating the readings in each borehole to biodegradation activity.

5,543,624

GASPHASE ION SOURCE FOR TIME-OF-FLIGHT MASS-SPECTROMETERS WITH HIGH MASS RESOLUTION AND LARGE MASS RANGE

Thorald Bergmann, Buchenweg 9a, 82441 Ohlstadt, Germany, assignor to Thorald Bergmann, and Eva Martina Bergmann, both of Ohlstadt, Germany

Filed Jul. 1, 1994, Ser. No. 269,883

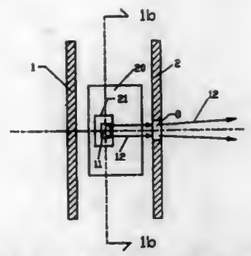
Claims priority, application Germany, Jul. 2, 1993, 43 22 101.7

Int. Cl.[6] H01J *37/08;49/00;* **B01D** *59/44*

U.S. Cl. 250—423 R **9 Claims**

1. A gasphase ion source from within which ions are started on their path into time-of-flight mass-spectrometers,

in which the analyte gas or ion beam (**10**) has a velocity component normal to the direction of acceleration in the ion source,



in which is defined a region of space called extraction volume (**11**), said region containing ions at start-time of mass-analysis, the mass of said ions being determined by measuring their time-of-flight, with

electrodes (**1,2**) for defining an acceleration field, and

electrodes (**20,25**) for generating a transverse electric field, that can be used to change transverse velocity components of charged particles

characterized by a geometrically continuous region of space, in which the accelerating and transverse fields are superposed, said region of space containing the extraction volume (**11**).

5,543,625

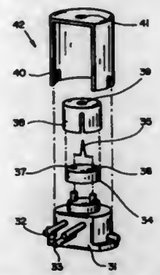
FILAMENT ASSEMBLY FOR MASS SPECTROMETER ION SOURCES

Bruce S. Johnson, Alameda County; Mukul Khosla, Santa Clara County, both of Calif.; John R. Herron, Corvallis, Oreg.; John M. Brandl, and Alan E. Schoen, both of Santa Clara County, Calif., assignors to Finnigan Corporation, San Jose, Calif.

Filed May 20, 1994, Ser. No. 246,792

Int. Cl.[6] H01J *27/00*

U.S. Cl. 250—427 **6 Claims**



1. A filament assembly for projecting an electron beam into an ion source volume to ionize sample molecules or particles in the ion source volume, comprising:

a base formed of insulating material,

spaced filament supports carried by said base,

a hairpin-shaped filament carried by said spaced filament supports, and

a shroud covering said filament and exposing a portion of the filament, and

an electron lens having an electron hole opposite said filament spaced from said filament for accelerating and focusing electrons emitted by said filament through said hole.

5,543,626

Patent Not Issued For This Number

5,543,627

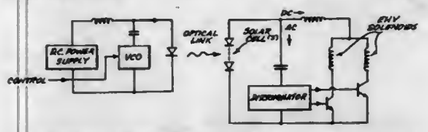
METHOD FOR MAXIMIZING THE SOLAR CELL OPTO-ELECTRONIC CONVERSION EFFICIENCY IN OPTICALLY CONTROLLED HYDRAULIC ACTUATORS

Raymond W. Huggins, Mercer Island, Wash., assignor to The Boeing Company, Del.

Filed Sep. 23, 1994, Ser. No. 311,466

Int. Cl.[6] G02B *27/00*

U.S. Cl. 250—551 **1 Claim**



1. A method of impedance matching a solar cell to servo valve solenoids including the steps of:

frequency modulation detecting a low amplitude frequency modulated signal from the solar cell utilizing a discriminator having a plurality of outputs; and,

then applying output signals from the discriminator to the bases of two transistors respectively coupled in series with the servo valve solenoids.

5,543,628

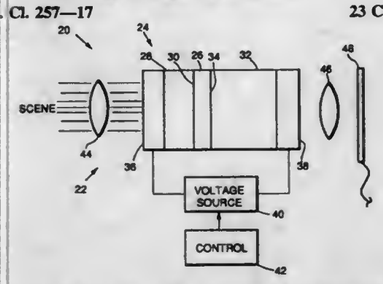
QUANTUM WELL INFRARED FILTER

David H. Chow, Newberry Park, Calif., and Colin G. Whitney, Tucson, Ariz., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 12, 1994, Ser. No. 289,727

Int. Cl.[6] H01L *29/161;29/205*

U.S. Cl. 257—17 **23 Claims**



1. A controllable infrared filter comprising a quantum well filter unit operable to absorb infrared energy at a selected wavelength, the quantum well filter unit having:

a quantum well layer made of an infrared transparent semiconductor material;

a first barrier layer made of a second infrared transparent semiconductor material epitaxially contacting a first side of the quantum well layer and having a first barrier layer thickness;

a second barrier layer made of a third infrared transparent semiconductor material epitaxially contacting a second side of the quantum well layer and having a second barrier layer thickness;

means for controllably introducing charge carriers into the quantum well layer; and

means for directing infrared radiation consecutively through the first barrier layer, the quantum layer, and the second barrier layer.

5,543,629

SUPERLATTICE AVALANCHE PHOTODIODE (APD)

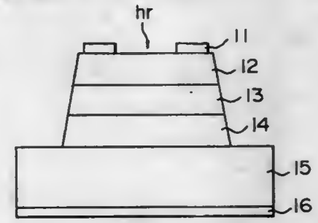
Hitoshi Nakamura, Kanagawa-ken; Shoichi Hanatani, Kodaira; Shigehisa Tanaka, Kunitachi; Tsukuru Ohtoshi, Kokubunji; Koji Ishida, Musashino, and Yausunobu Matsuoka, Hachioji, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 39,681, Mar. 8, 1993, abandoned, which is a continuation of Ser. No. 679,946, Apr. 3, 1991, abandoned. This application Feb. 21, 1995, Ser. No. 391,287

Claims priority, application Japan, Apr. 6, 1990, 2-090321

Int. Cl.[6] H01L *29/15;31/107*

U.S. Cl. 257—21 **24 Claims**



1. A superlattice avalanche photodiode comprising:

a first semiconductor layer having a first conductivity type;

a superlattice multiplication layer disposed on said first semiconductor layer, said superlattice multiplication layer including a plurality of well layers and a plurality of barrier layers being arranged such that individual well layers are alternately disposed with individual barrier layers, a total thickness of said superlattice multiplication layer being 0.7 μm or less, and each of the well layers having a thickness less than 10 nm and each of the barrier layers having a thickness less than 20 nm;

a second semiconductor layer disposed on said superlattice multiplication layer and having a second conductivity type; and

a first electrode disposed on said first semiconductor layer and a second electrode disposed on said second semiconductor layer; and

a light absorption layer disposed between said first semiconductor layer and said superlattice multiplication layer.

5,543,630

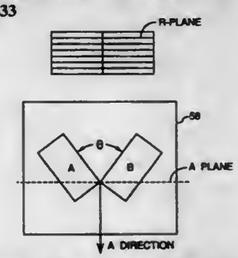
HIGH TC SUPERCONDUCTING DEVICES ON BI-CRYSTAL SUBSTRATES

David F. Bliss, Arlington, and Herbert E. Bates, Ashby, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 31, 1995, Ser. No. 384,818

Int. Cl.[6] H01L *29/06;39/22;* **H01B** *12/00;* **H01F** *6/00*

U.S. Cl. 257—33 **4 Claims**



1. A bi-crystal seed of sapphire, said bi-crystal seed comprising:

a first crystal seed, said first crystal seed being cut to have a crystallographic axis at a predetermined angle from a first side, and

a second crystal seed, said first crystal seed being cut to have a crystallographic axis at a predetermined angle from a first side;

whereby said first and said second crystal seeds are attached during growth together at their first sides wherein the angle between said crystallographic axes is at least 24 degrees and an r-plane is exposed on a face of said seed.

5,543,631

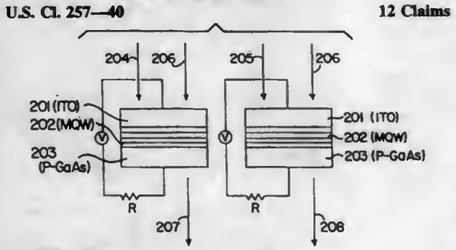
HYBRID ORGANIC-INORGANIC BISTABLE NONLINEAR OPTICAL GATE

Lester Weinberger, Apt. 906, 9039 Sligo Creek Pkwy., Silver Spring, Md. 20901

Continuation-in-part of Ser. No. 78,057, Jun. 17, 1993, Pat. No. 5,376,784. This application Mar. 29, 1994, Ser. No. 219,768

Int. Cl.[6] H01L *35/24;51/100*

U.S. Cl. 257—40 **12 Claims**



1. In a system that produces data:

at least two optical switches, and

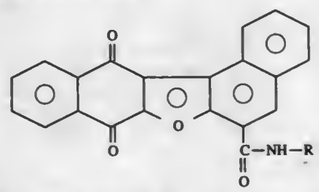
control means for controlling said switches to produce an output that comprises data,

each of said switches having an inorganic semiconductor and an organic quantum well interfacing said inorganic semiconductor,

means for illuminating each switch with signal light,

said control means including, for each switch, means for illuminating the switch with light and for controlling the passage, through the switch, of said signal light that is directed at the switch,

said organic quantum well including a layer that comprises material as shown below:



Where R=a pyridyl ring containing one or more electrons withdrawing atoms or groups.

5,543,632

TEMPERATURE MONITORING PILOT TRANSISTOR

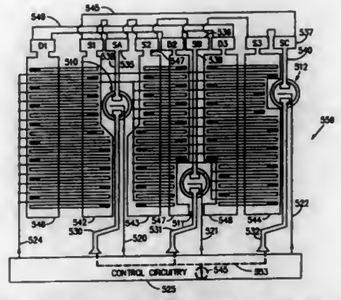
Donald J. Ashley, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 24, 1991, Ser. No. 782,833

Int. Cl.[6] H01L *23/58*

U.S. Cl. 257—48 **3 Claims**

1. A circuit for controllably driving a load, said circuit comprising:



a load transistor for passing load current to said load and having an on-resistance which varies with temperature;

first and second pilot transistors, integrated with said load transistor such that as said load transistor heats-up due to said load current passing through said on-resistance of said load transistor, said first and second pilot transistors heat-up due to heat conduction from said load transistor, each of said first and second pilot transistors having an on-resistance which varies with temperature proportionally or similarly to the on-resistance of said load transistor as said load transistor heats-up due to said load current;

first constant current source means, coupled to said on-resistance of said first pilot transistor, for developing a first reference voltage across said first pilot transistor;

second constant current source means, coupled to said on-resistance of said second pilot transistor, for developing a second reference voltage across said second pilot transistor, said first and second reference voltages being different than each other, a range between said first and second reference voltages corresponding to an acceptable range of said load current;

means for sensing a voltage across said load transistor corresponding to said load current;

comparator means, coupled to receive the sensed voltage and said first and second reference voltages, for comparing the sensed voltage to said first and second reference voltages and outputting signals indicative of the comparisons; and

means, coupled to receive said signals from said comparator means, for maintaining said load current between said acceptable range based on said signals from said comparator means.

5,543,633

PROCESS AND STRUCTURE FOR MEASURING THE PLANARITY DEGREE OF A DIELECTRIC LAYER IN AN INTEGRATED CIRCUIT AND INTEGRATED CIRCUIT INCLUDING MEANS FOR PERFORMING SAID PROCESS

Aldo Losavio, Bergamo; Giuseppe Crisenza, and Giorgio De Santi, both of Milan, all of, Italy, assignors to SGS-Thomson Microelectronics S.r.l., Milan, Italy

Filed Jul. 15, 1993, Ser. No. 92,717

Claims priority, application European Pat. Off., Jul. 15, 1992, 92830382

Int. Cl.[6] H01L *23/58*

U.S. Cl. 257—48 **16 Claims**

1. A process of measuring the degree of planarity of a dielectric layer in an integrated circuit, comprising the steps of:

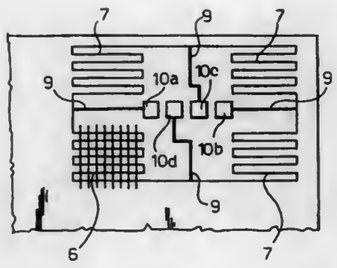
depositing, onto a dielectric layer to be measured for planarity, a predetermined measure path of a conductive film;

depositing, onto a planar surface, a predetermined reference path of said conductive film;

measuring the electric resistance through said reference path;

measuring the electric resistance through said measure path; and

comparing said measured measure path electric resistance with said measured reference path electrical resistance to determine the deviation of said dielectric layer from planarity.



5,543,634

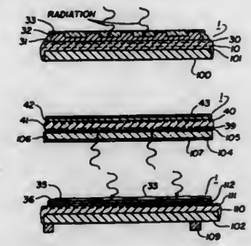
METHOD OF FORMING SEMICONDUCTOR MATERIALS AND BARRIERS

John H. Coleman, Locust Valley, N.Y., assignor to Plasma Physics Corp., Locust Valley, N.Y.

Continuation of Ser. No. 804,619, Dec. 4, 1991, abandoned, which is a continuation of Ser. No. 232,568, Aug. 16, 1988, Pat. No. 5,073,804, which is a continuation of Ser. No. 919,595, Oct. 17, 1986, abandoned, which is a continuation of Ser. No. 733,415, May 13, 1985, abandoned, which is a continuation of Ser. No. 355,202, Mar. 5, 1982, abandoned, which is a division of Ser. No. 88,100, Oct. 24, 1979, Pat. No. 4,328,258, which is a division of Ser. No. 857,690, Dec. 5, 1977, Pat. No. 4,226,897. This application Jun. 2, 1994, Ser. No. 252,797

Int. Cl.[6] H01L *29/04*

U.S. Cl. 257—54 **5 Claims**



1. An enhanced-barrier potential semiconductor device comprising in combination:

a body comprising hydrogenated amorphous silicon;

a barrier layer comprising a glow-discharge-fabricated hydrogenated nitride of silicon and a metal oxide disposed on a surface of said body comprising hydrogenated amorphous silicon; and,

an electrode in contact with a surface portion of said dielectric barrier layer.

5,543,635

THIN FILM TRANSISTOR AND METHOD OF FORMATION

Bich-Yen Nguyen; Thomas F. McNelly; Philip J. Tobin, and James D. Hayden, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 300,770, Sep. 6, 1994. This application May 31, 1995, Ser. No. 455,268

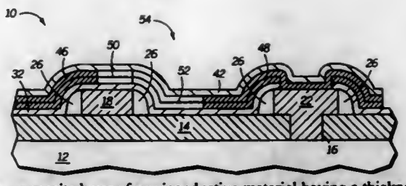
Int. Cl.[6] H01L *29/76;31/036;31/112;29/04*

U.S. Cl. 257—66 **29 Claims**

1. A thin film transistor comprising:

a gate electrode, the gate electrode having a sidewall;

a gate dielectric layer overlying the gate electrode;



a composite layer of semiconductive material having a thickness of less than 100 nanometers overlying the gate dielectric layer, wherein the composite layer of semiconductive material comprises a first layer of semiconductive material underlying a second layer of semiconductive material;

a source region lying within a first portion of the composite layer;

a drain region lying within a second portion of the composite layer;

a channel region lying within a third portion of the composite layer, wherein the channel region overlies the gate electrode and lies in between the source region and the drain region; and

a contact opening extending through a portion of the first layer of semiconductive material, wherein a portion of the second layer of semiconductive material lies within the contact opening.

5,543,636

INSULATED GATE FIELD EFFECT TRANSISTOR

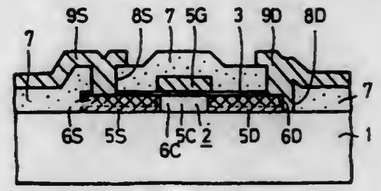
Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Division of Ser. No. 425,455, Apr. 20, 1995, which is a continuation of Ser. No. 214,494, Mar. 18, 1994, abandoned, which is a division of Ser. No. 987,179, Dec. 8, 1992, Pat. No. 5,315,132, which is a division of Ser. No. 885,643, May 19, 1992, abandoned, which is a division of Ser. No. 707,178, May 24, 1991, Pat. No. 5,142,344, which is a continuation of Ser. No. 520,756, May 9, 1990, abandoned, which is a division of Ser. No. 153,477, Feb. 3, 1988, Pat. No. 4,959,700, which is a continuation of Ser. No. 735,697, May 20, 1985, abandoned. This application Jun. 7, 1995, Ser. No. 473,953

Claims priority, application Japan, May 18, 1994, 59-100250; May 18, 1994, 59-100251; May 18, 1994, 59-100252

Int. Cl.[6] H01L *29/04;27/02;29/10;29/78*

U.S. Cl. 257—66 **10 Claims**



8. A thin film transistor comprising:

a non-single crystalline semiconductor layer containing hydrogen or a halogen and having an intrinsic conductivity type, said semiconductor layer being disposed over a substrate including a channel region disposed in the semiconductor layer;

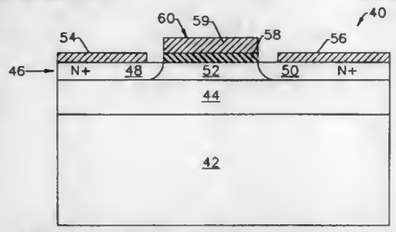
source and drain region forming respective junctions with said channel region where the channel region is disposed between said source and drain regions whereby charge carriers move through said channel region between said source and drain regions in a path substantially parallel to said substrate,

a gate insulating film contacting said channel region and comprising silicon and nitrogen; and

a gate electrode contacting said gate insulating film;

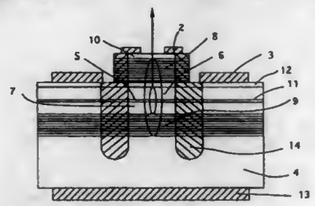
wherein at least a portion of said channel region contains oxygen in an amount of not exceeding 5×10^{18} atoms/cm^3.

5,543,637
SILICON CARBIDE SEMICONDUCTOR DEVICES HAVING BURIED SILICON CARBIDE CONDUCTION BARRIER LAYERS THEREIN
Bantval J. Baliga, Raleigh, N.C., assignor to North Carolina State University, Raleigh, N.C.
Filed Nov. 14, 1994, Ser. No. 337,977
Int. Cl.^{6} H01L *29/10*
U.S. Cl. 257—77 **35 Claims**



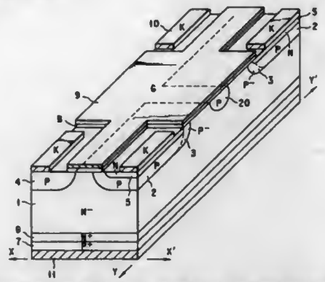
1. A silicon carbide semiconductor device, comprising:
a silicon carbide substrate containing first conductivity type dopants therein and having a first face;
a silicon carbide buried layer in said silicon carbide substrate, said silicon carbide buried layer containing a greater quantity of said first conductivity type dopants therein than second opposite conductivity type dopants and also containing electrically active defects therein which are caused by the presence of electrically inactive ions at interstitial lattice positions, and wherein said electrically inactive ions consist of at least one element species selected from the group consisting of argon, neon, carbon and silicon;
a semiconducting silicon carbide active layer containing first conductivity type dopants therein, between said silicon carbide buried layer and the first face; and
a first electrically conductive contact on the first face for providing charge carriers to said semiconducting silicon carbide active layer.

5,543,638
SEMICONDUCTOR LIGHT EMITTING DEVICE
Hans Nettelbladt, Bromma, and Michael Widman, Kungsängen, both of, Sweden, assignors to Asea Brown Boveri AB, Västerås, Sweden
Filed Jul. 13, 1994, Ser. No. 274,419
Claims priority, application Sweden, Aug. 20, 1993, 9302691
Int. Cl.^{6} H01L *33/00;29/06;31/0328*
U.S. Cl. 257—98 **10 Claims**



1. A device for emitting light comprising:
a light-emitting member arranged in a semiconductor body, where the radiance of the light-emitting member is controllable by an external electrical field applied thereacross; the light-emitting member including a light-emitting active layer for emitting light, from opposite sides thereof and which, in the absence of an external electric has a fundamental wavelength, and reflectors spaced apart by a selected distance on opposite sides of the active layer forming a microcavity with a resonance wavelength which is determined by the distance between the reflectors; and
a light-emitting PN diode arranged in the same semiconductor body as the light-emitting member for producing excitation light when a forward bias is applied thereto in such a way that the excitation light from the PN diode excites the light-emitting member.

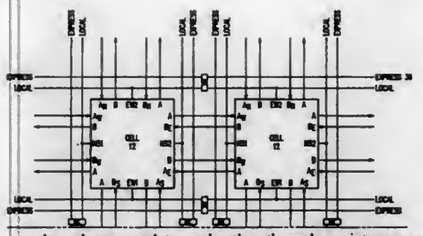
5,543,639
MOS GATE CONTROLLED THYRISTOR
Hidetoshi Nakanishi, Kawasaki; Yasunori Usui, and Shigenori Yakushiji, both of Yokohama, all of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Oct. 8, 1993, Ser. No. 138,434
Claims priority, application Japan, Oct. 8, 1992, 4-270172; Feb. 23, 1993, 5-056396
Int. Cl.^{6} H01L *29/74;31/111*
U.S. Cl. 257—133 **34 Claims**



1. A semiconductor device comprising: a semiconductor substrate of a first conductivity type; a first semiconductor region of a second conductivity type formed on a first major surface of said semiconductor substrate; a second semiconductor region of the first conductivity type formed in said first semiconductor region; a third semiconductor region of the second conductivity type formed on a second major surface of said semiconductor substrate; a fourth semiconductor region of the second conductivity type formed on the first major surface of said semiconductor substrate to surround at least said first semiconductor region; a gate electrode formed on said semiconductor substrate, said first semiconductor region, and said fourth semiconductor region through an insulating film; a first electrode formed to be in contact with said second and fourth semiconductor regions; and a second electrode formed to be in contact with said third semiconductor region.

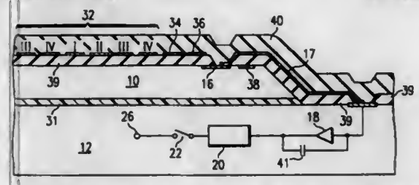
5,543,640
LOGICAL THREE DIMENSIONAL INTERCONNECTIONS BETWEEN INTEGRATED CIRCUIT CHIPS USING A TWO DIMENSIONAL MULTI-CHIP MODULE
James Sutherland, Santa Clara; Timothy L. Garverick, Cupertino; Hem P. Takiar, Fremont, and George F. Reyling, Jr., Saratoga, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.
Continuation of Ser. No. 213,146, Mar. 15, 1994, abandoned. This application Sep. 29, 1995, Ser. No. 536,076
Int. Cl.^{6} H01L *27/10*
U.S. Cl. 257—202 **15 Claims**

1. A three dimensionally extendible semiconductor based system, comprising:
a substrate having bonding pads for mounting a plurality of lower functional capacity elements, the bonding pads serving to electrically connect the lower functional capacity elements



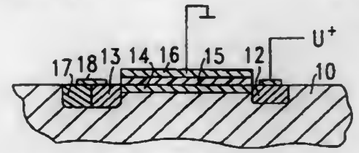
to the substrate and to each other through an interconnect network on or within the substrate, wherein the interconnect network electrically connects a contact point on a first lower functional capacity element to a corresponding contact point on a second lower functional capacity element; and
a plurality of lower functional capacity elements mounted on the substrate to combine said elements into a higher functional capacity element, the lower functional capacity elements including a plurality of logic gates and having a three dimensionally extendible architecture and being adapted to allow mounting and interconnection thereof to the substrate by the inclusion of a plurality of bonding contact points placed on the lower functional capacity elements, the bonding contact points being evenly distributed over the surface of the lower functional capacity elements, whereby a high functional capacity element having a high degree of logic gate utilization and shortened average interconnect distances and propagation delays is produced.

5,543,641
HYBRID SIGNAL CONDITIONING/INFARED IMAGING STRUCTURE
Mark V. Wadsworth, Richardson; Sebastian R. Borrello, and Roland W. Gooch, both of Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Division of Ser. No. 175,876, Dec. 30, 1993, Pat. No. 5,449,908. This application Jun. 7, 1995, Ser. No. 471,897
Int. Cl.^{6} H01L *27/148;29/768*
U.S. Cl. 257—226 **18 Claims**



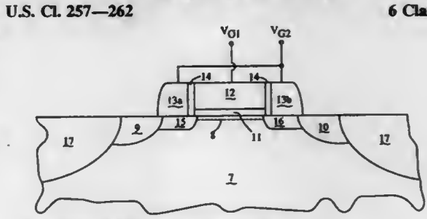
1. A hybrid semiconductor imaging structure, said structure comprising:
a. a first substrate;
b. at least two high speed signal processing channels disposed in said first substrate;
c. a second substrate mounted on said first substrate;
d. at least two infrared-sensitive time delay and integration CCD columns disposed in said second substrate;
e. at least two CCD sense elements disposed in said second substrate and charge coupled to respective CCD columns; and
f. low capacitance hybrid leads connecting said sense elements to respective signal processing channels.

5,543,642
P-CHANNEL TRANSISTOR
Byrne Gerard, Rottenburg, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Continuation of Ser. No. 232,135, Apr. 25, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 476,058
Claims priority, application Germany, Oct. 23, 1991, 4134879.6
Int. Cl.^{6} H01L *23/62*
U.S. Cl. 257—356 **8 Claims**



1. A p-channel transistor comprising:
a drain electrode constructed as a first p-region in an n-well, the n-well being embedded in a third p-region, the drain electrode being coupled to a positive pole of a voltage supply and the third p-region being coupled to one of a ground and a negative pole of the voltage supply;
a source electrode constructed as a second p-region in the n-well, the source electrode being coupled to the n-well via an ohmic contact; and
a gate electrode coupled to a predetermined gate voltage, U_g, wherein $U_g<U^+-|U_{TH}|$, wherein U^+ represents a voltage at the positive pole of the voltage supply and $|U_{TH}|$ represents an absolute value of a p-channel threshold voltage.

5,543,643
COMBINED JFET AND MOS TRANSISTOR DEVICE, CIRCUIT
Ashok K. Kapoor, Palo Alto, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.
Filed Jul. 13, 1995, Ser. No. 502,566
Int. Cl.^{6} H01L *29/80;31/112;29/76*
U.S. Cl. 257—262 **6 Claims**



1. A semiconductor device comprising:
a semiconductor substrate of a first conductivity type;
a source diffusion region of a second conductivity type formed in the semiconductor substrate;
a drain diffusion region of the second conductivity type formed in the semiconductor substrate and laterally separated from the source diffusion region;
a first layer of insulating material formed on the semiconductor substrate, between the source and drain diffusion regions;
a first gate electrode formed on the first layer of insulating material, the first gate electrode having side surfaces;
a layer of insulating material formed on each side surface for electrically isolating the first gate electrode;
a junction field effect transistor (JFET) gate electrode of the first conductivity type deposited on the semiconductor substrate, said JFET gate electrode being immediately contiguous to the insulating layers formed on the side surfaces of the MOS gate electrode and immediately contiguous to the substrate surface; and

first and second lightly doped drain regions formed in the substrate between the source and drain diffusion regions and immediately contiguous with the JFET gate electrode to form JFET gate junctions.

5,543,644

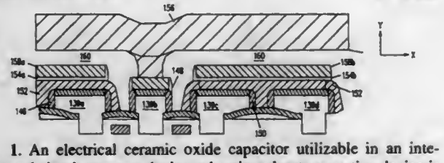
HIGH DENSITY ELECTRICAL CERAMIC OXIDE CAPACITOR

Norman E. Abt, Burlingame; Reza Moazzami, Oakland, both of Calif., and Yoav Nissan-Cohen, Zichren Yaákov, Israel, assignors to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 837,271, Feb. 18, 1992, Pat. No. 5,401,680. This application Mar. 27, 1995, Ser. No. 410,960

Int. Cl.[6] H01L *29/78*

U.S. Cl. 257—295 **8 Claims**



1. An electrical ceramic oxide capacitor utilizable in an integrated circuit memory device, wherein at least one active device is isolated by field oxide regions, said active device having active regions including a first drain, a common source, and a second drain spaced-apart in a semiconductor substrate, a thin gate oxide layer on top of the substrate over the active regions, a first gate above the gate oxide layer and positioned between the first drain and common source, a second gate above the gate oxide layer and positioned between the second drain and the common source, and a dielectric layer covering the device, said capacitor comprising:

a. a plurality of diffusion barriers formed over the dielectric layer including a first and a second diffusion barrier above the first and second gates, respectively, and a third and a fourth diffusion barrier above respective field oxide regions;

b. a plurality of metal plugs formed through the diffusion barriers and the dielectric layer, including a first metal plug for contacting the first drain region, a second metal plug for contacting the second drain region, and a third metal plug for contacting the common source region, each of said metal plugs having a top and sides exposed above the diffusion barriers;

c. a pair of bottom electrodes formed on the top of the first and second metal plugs;

d. a pair of top electrodes formed over each of the bottom electrodes; and

e. a layer of electrical ceramic oxide material between each top and bottom electrode.

5,543,645

FORWARD OVERVOLTAGE PROTECTION CIRCUIT FOR A VERTICAL SEMICONDUCTOR COMPONENT

Jean Barret, Eguilles, and Daniel Quessada, Pourrieres, both of, France, assignors to SGS-Thomson Microelectronics S.A., Pouilly, France

Filed Nov. 23, 1993, Ser. No. 157,362

Claims priority, application France, Nov. 24, 1992, 92 14478

Int. Cl.[6] H01L *29/76;29/94*

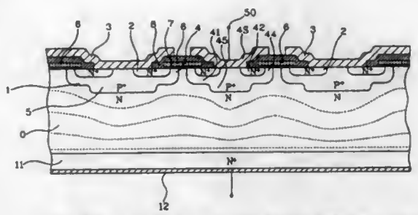
U.S. Cl. 257—328 **5 Claims**

1. A VDMOS or IGBT-type power transistor, comprising:

a plurality of identical active cells formed in an upper surface of a semiconductor substrate doped with a first conductivity type, each active cell including:

a low doped well region of a second conductivity type and having a deeper and more highly doped central portion;

source diffusion regions substantially peripheral to and within the low doped well region and having a highly doped level



of the first conductivity type, the source diffusion regions thereby forming peripheral regions within the low doped well region;

a second electrode contacting an upper surface of the central portion of the low doped well region and the source diffusion regions;

a control electrode disposed on top of an insulating layer which is disposed over the peripheral regions; end

a first main electrode formed on a lower surface of the substrate; and

at least one additional cell manufactured according to the same steps as the active cells and disposed in parallel between the first main electrode and the control electrode, the at least one additional cell having a smaller lateral sized low doped well region than the identical cells such that the at least one additional cell has an avalanche threshold lower than an avalanche threshold of the plurality of identical active cells.

5,543,646

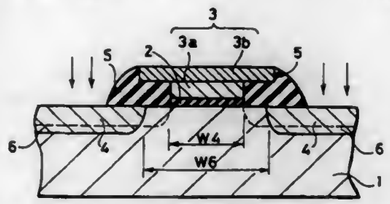
FIELD EFFECT TRANSISTOR WITH A SHAPED GATE ELECTRODE

Shinichi Satoh; Hiroji Ozaki, and Takahisa Eimori, all of Hyogo-ken, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 242,116, Sep. 8, 1988, Pat. No. 5,089,863. This application Nov. 5, 1991, Ser. No. 787,912

Int. Cl.[6] H01L *29/43;29/78*

U.S. Cl. 257—344 **2 Claims**



1. A field effect transistor comprising:

a semiconductor substrate having a main surface and a predetermined impurity concentration of a first conductivity type;

impurity layers of a second conductivity type formed spaced apart at the main surface of the semiconductor substrate, said impurity layers constituting source-drain regions, and a region between said impurity layers defining a first channel region at said main surface; and

a shaped conductive layer formed on said first channel region with an insulating film interposed therebetween at said main surface, said shaped conductive layer having an upper portion and a lower portion, the upper portion being longer than the lower portion, the length of the lower portion adjacent the insulating film being substantially equal to or shorter than the length of said first channel region, and the upper and lower portions being formed of polysilicon, the lower portion of polysilicon of said shaped conductive layer containing a crystal defect which causes the etch rate of the lower portion to be faster as compared with an etch rate of the upper portion under the same etching conditions.

5,543,647

SEMICONDUCTOR DEVICE HAVING A PLURALITY OF IMPURITY LAYERS

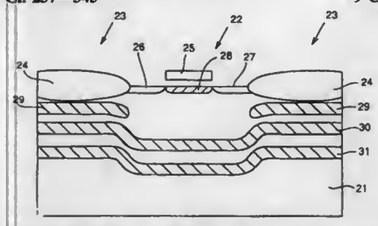
Maiko Kobayashi, and Takashi Kurol, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 10, 1994, Ser. No. 339,200

Claims priority, application Japan, Nov. 16, 1993, 5-286884

Int. Cl.[6] H01L *29/76*

U.S. Cl. 257—345 **9 Claims**



1. A semiconductor device, comprising:

a semiconductor substrate having a main surface classified into an element forming region and an element isolating region;

an isolating insulating film formed in the element isolating region surrounding said element forming region;

a first impurity layer having peak impurity concentration at a position of a first depth from the main surface of said element forming region;

a second impurity layer having peak impurity concentration at a position of a second depth from a lower surface of said isolating insulating film, its extension is in a direction parallel to the substrate surface terminating near a position immediately below a boundary between said element forming region and said element isolating region;

a third impurity layer having peak impurity concentration at a position of a third depth which is deeper than said first depth from the main surface of said element forming region; and

a fourth impurity layer having peak impurity concentration at a position of a fourth depth which is deeper than said third depth from main surface of said element forming region, wherein

said third impurity layer and said fourth impurity layer extend to a region positioned below said second impurity layer,

said third impurity layer has peak impurity concentration at a position of a fifth depth deeper than said second depth from the lower surface of said isolating insulating film, and

said fourth impurity layer has peak impurity concentration at a position of a sixth depth deeper than said fifth depth from the lower surface of said isolating insulating film.

5,543,648

SEMICONDUCTOR MEMBER AND SEMICONDUCTOR DEVICE HAVING A SUBSTRATE WITH A HYDROGENATED SURFACE

Mamoru Miyawaki, Isehara, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

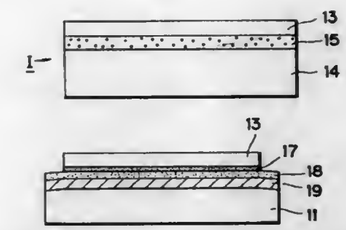
Continuation of Ser. No. 354,443, Dec. 12, 1994, abandoned, which is a continuation of Ser. No. 9,086, Jan. 26, 1993, abandoned. This application Dec. 19, 1995, Ser. No. 574,784

Claims priority, application Japan, Jan. 31, 1992, 4-016745

Int. Cl.[6] H01L *21/08;21/74;21/306*

U.S. Cl. 257—347 **9 Claims**

1. A semiconductor member comprising: a substrate having a hydrogenated surface and a monocrystalline semiconductor layer for forming a functional element on said substrate, wherein the main plane of the monocrystalline semiconductor layer has a center line average surface roughness Ra of not more than 0.4 nm as a surface state characteristic when the main plane is washed with an aqueous ammonia-hydrogen peroxide solution in a ratio of



$NH_4OH:H_2O_2:H_2O$ of 1:1:5 by volume at a washing temperature of 85° C. for a washing time of 10 minutes.

5,543,649

ELECTROSTATIC DISCHARGE PROTECTION DEVICE FOR A SEMICONDUCTOR CIRCUIT

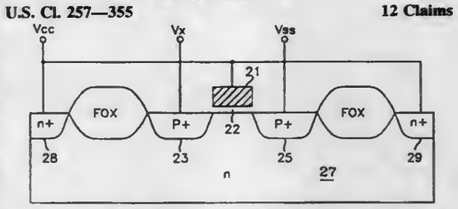
Tae-Han Kim, Suwon-City; Sang-Hoon Lee, and Dae-Je Chin, both of Seoul, all of, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Mar. 1, 1995, Ser. No. 396,142

Claims priority, application Rep. of Korea, Mar. 2, 1994, 3996/1994

Int. Cl.[6] H01L *23/62*

U.S. Cl. 257—355 **12 Claims**



1. A semiconductor device having a first power supply having a first voltage level, a substrate voltage having a substrate voltage level, and a signal voltage having a signal voltage level between said first voltage level and said substrate voltage level, said semiconductor device comprising:

a substrate of a first conductivity type having a bulk region;

a first region diffused in said substrate of a second conductivity type opposite said first conductivity type, said first region connected to said substrate voltage;

a second region of said second conductivity type that is diffused in said substrate and spaced from said first region, said second region connected to said signal voltage;

an insulator which covers said substrate, said first region and said second region; and

a gate electrode disposed over said insulator between said first and second regions, said gate electrode connected to said bulk region of said substrate and said first power supply.

5,543,650

ELECTROSTATIC DISCHARGE PROTECTION CIRCUIT EMPLOYING A MOSFET DEVICE

Wai-Ming W. Au, and Minh H. Tong, both of Essex, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

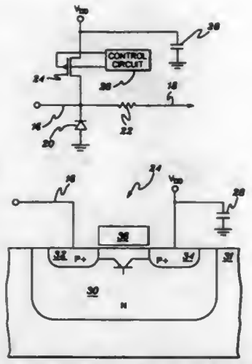
Continuation of Ser. No. 371,626, Jan. 12, 1995, abandoned. This application Jan. 5, 1996, Ser. No. 587,809

Int. Cl.[6] H01L *29/78*

U.S. Cl. 257—355 **19 Claims**

1. An electrostatic discharge protection device for an input of a circuit comprising:

a first P-FET having an n-well body including first and second P+ implants, and a gate, wherein said n-well with said first



and second P+ implants provides a functional lateral PNP bipolar transistor coupled with said first P+ implant as an emitter and said second P+ implant as a collector thereof between said input and a supply node of said circuit; and

active device means for variably controlling a bias voltage at said gate of said first P-FET.

5,543,651

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

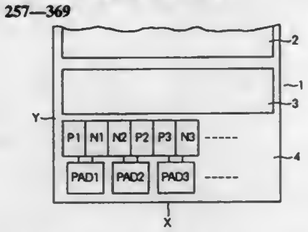
Kazuo Sato, Kyoto, Japan, assignor to Rohm Co. Ltd., Kyoto, Japan

Filed Mar. 28, 1995, Ser. No. 413,219

Claims priority, application Japan, Mar. 29, 1994, 6-058425

Int. Cl.[6] H01L *29/76*

U.S. Cl. 257—369 **4 Claims**



1. A semiconductor integrated circuit device comprising:

a semiconductor chip having a long side and a short side;

a memory cell area occupying a large portion of an area of the semiconductor chip;

an input and output circuit area provided at an end portion of the semiconductor chip along the short side;

a row of a plurality of pads arranged in the input and output circuit area along the short side;

a row of a plurality of P-channel metal oxide semiconductor transistors alternately arranged and a plurality of N-channel metal oxide semiconductor transistors provided on an inside of the pads in the input and output circuit area of the semiconductor chip; and

means for connecting the pads and the P-channel and N-channel metal oxide semiconductor transistors.

5,543,652

SEMICONDUCTOR DEVICE HAVING A TWO-CHANNEL MISFET ARRANGEMENT DEFINED BY I-V CHARACTERISTIC HAVING A NEGATIVE RESISTANCE CURVE AND SRAM CELLS EMPLOYING THE SAME

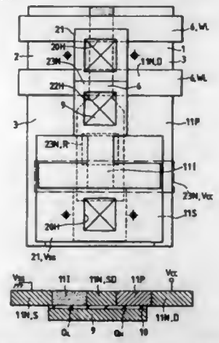
Shuji Ikeda, and Makoto Saeki, both of Koganei, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 29, 1993, Ser. No. 98,893

Claims priority, application Japan, Aug. 10, 1992, 4-212855

Int. Cl.[6] H01L *27/01;29/76;27/11*

U.S. Cl. 257—377 **13 Claims**



1. A static random access memory device comprising a semiconductor substrate; data lines formed over the semiconductor substrate; word lines formed over the semiconductor substrate; semiconductor strips formed of silicon film over the semiconductor substrate; and memory cells each including a resistive element, a transfer MISFET and a negative characteristic MISFET, said resistive element being electrically connected to said negative characteristic MISFET in series, said transfer MISFET having a first gate insulating film, a first gate electrode coupled to one of said word lines, and source and drain regions, and said negative characteristic MISFET having a second gate electrode, wherein:

a channel forming region and source and drain regions of said negative characteristic MISFET are formed in a respective semiconductor strip, said channel forming region of said negative characteristic MISFET being formed between said source region and said drain region thereof and formed over said second gate electrode,

a second gate insulating film of said negative characteristic MISFET is formed between said second gate electrode and said channel forming region thereof,

said channel forming region of said negative characteristic MISFET includes a first region and a second region, said first region having an impurity concentration higher than that of said second region to make a threshold voltage contributed by said first region higher than a threshold voltage contributed by said second region,

one of said source and drain regions of said transfer MISFET is electrically connected to one of said data lines,

the other of said source and drain regions of said transfer MISFET is electrically connected to said drain region and said second gate electrode of said negative characteristic MISFET, and

a first voltage is applied through said resistive element to said drain region of said negative characteristic MISFET and a second voltage which is lower than said first voltage is applied to said source region of said negative characteristic MISFET such that a source-drain path of said negative characteristic MISFET is electrically connected between a terminal at which said second voltage is applied and said drain region of said negative characteristic MISFET, said negative characteristic MISFET having a current-voltage characteristic including a negative resistance curve.

5,543,653

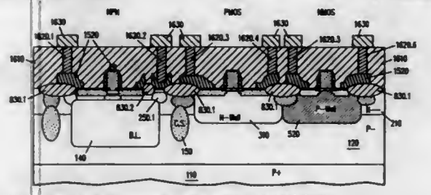
BIPOLAR AND BICMOS STRUCTURES

Michael J. Grubisich, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 203,236, Feb. 28, 1994, Pat. No. 5,455,189. This application Jul. 13, 1994, Ser. No. 275,062

Int. Cl.[6] H01L *27/082;29/76;29/00;27/102*

U.S. Cl. 257—593 **6 Claims**



1. An integrated transistor structure comprising:

an emitter region of a first conductivity type;

a base region of a second conductivity type opposite the first conductivity type, the base region contacting the emitter region;

a first region of the first conductivity type, the first region contacting the base region and underlying and laterally surrounding the base region;

a buried layer of the first conductivity type, the buried layer underlying and contacting the first region, wherein at least a part of the first region has a lower net doping concentration than the buried layer;

a collector region of the first conductivity type, the collector region being located in the first region and overlying the buried layer, and having a higher net doping concentration than the first region;

a guard ring of the first conductivity type, the guard ring laterally surrounding the first region and the collector region, wherein at least a part of the first region contacts the guard ring and has a lower net doping concentration than the guard ring; and

a second region of the second conductivity type, the second region laterally surrounding the guard ring.

5,543,654

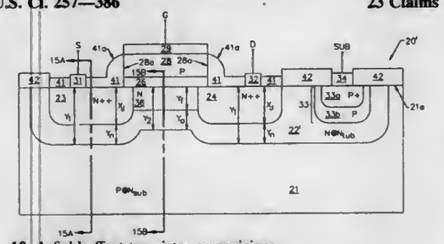
CONTOURED-TUB FERMI-THRESHOLD FIELD EFFECT TRANSISTOR AND METHOD OF FORMING SAME

Michael W. Dennen, Raleigh, N.C., assignor to Thunderbird Technologies, Inc., Research Triangle Park, N.C.

Continuation-in-part of Ser. No. 37,636, Feb. 23, 1993, Pat. No. 5,374,836, which is a continuation-in-part of Ser. No. 977,689, Nov. 18, 1992, Pat. No. 5,369,295, which is a continuation of Ser. No. 826,939, Jan. 28, 1992, Pat. No. 5,194,923. This application Dec. 7, 1994, Ser. No. 351,643

Int. Cl.[6] H01L *29/76*

U.S. Cl. 257—386 **23 Claims**



10. A field effect transistor comprising:

a semiconductor substrate of first conductivity type;

spaced apart source and drain regions of second conductivity type in said semiconductor substrate at a face thereof;

a channel region of said second conductivity type in said semiconductor substrate at said substrate face, between said spaced apart source and drain regions;

a tub region of said second conductivity type in said semiconductor substrate at said substrate face, surrounding said spaced apart source and drain regions and said channel region, wherein said tub region has nonuniform tub depth below said spaced apart source and drain regions relative to below said channel region;

a gate insulating layer on said substrate face between said spaced apart source and drain regions; and

source, drain and gate contacts for contacting said source and drain regions and said gate insulating layer respectively.

5,543,655

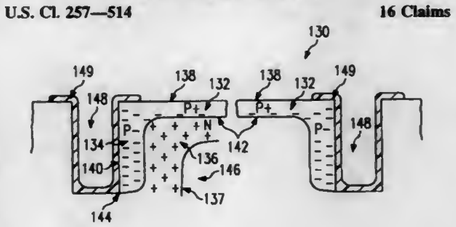
TRANSISTOR STRUCTURE FOR IMPROVED BASE–COLLECTOR JUNCTION CHARACTERISTICS

Viren C. Patel, Belle Mead, N.J., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation of Ser. No. 994,356, Dec. 21, 1992, abandoned. This application Jun. 9, 1994, Ser. No. 350,611

Int. Cl.[6] H01L *29/73;29/861*

U.S. Cl. 257—514 **16 Claims**



9. A PN junction diode structure, comprising:

a first polarity region, having a relatively shallow junction depth, surrounded by a relatively deep but narrow trench having at least two sidewalls, and having a depletion channel as deep as the trench, wherein the first polarity region is comprised of a first type dopant material and the depletion channel is also comprised of the first type dopant material but at a lower concentration than the concentration of the first polarity region;

a second polarity region, wherein the second polarity region is comprised of a second type dopant material, and the first type dopant material and the second type dopant material are opposite dopant types; and

a diode junction connecting the first polarity region and the second polarity region.

5,543,656

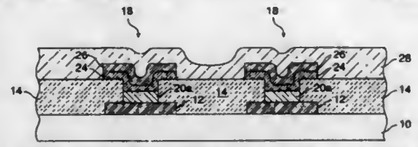
METAL TO METAL ANTIFUSE

Yeouchung Yen, San Jose, and Shih-Oh Chen, Los Altos, both of Calif., assignors to Actel Corporation, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 319,170, Oct. 6, 1994, and Ser. No. 284,054, Aug. 1, 1994, which is a continuation-in-part of Ser. No. 790,366, Nov. 12, 1991, Pat. No. 5,404,029, Ser. No. 947,275, Sep. 18, 1992, Pat. No. 5,387,812, Ser. No. 4,912, Jan. 19, 1993, Pat. No. 5,411,917, Ser. No. 50,744, Apr. 20, 1993, abandoned, Ser. No. 172,132, Dec. 21, 1993, Pat. No. 5,381,035, Ser. No. 197,102, Feb. 15, 1994, abandoned, and Ser. No. 231,634, Apr. 22, 1994, which is a continuation-in-part of Ser. No. 4,912, Jan. 19, 1993, which is a continuation-in-part of Ser. No. 604,779, Oct. 26, 1990, Pat. No. 5,181,096, which is a continuation-in-part of Ser. No. 508,306, Apr. 12, 1990, Pat. No. 5,072,384, said Ser. No. 947,275is a division of Ser. No. 743,261, Aug. 9, 1991, Pat. No. 5,272,101, which is a division of Ser. No. 604,779, said Ser. No. 50,744is a continuation of Ser. No. 749,866, Aug. 26, 1991, abandoned, said Ser. No. 172,132is a continuation-in-part of Ser. No. 950,264, Sep. 23, 1992, abandoned, said Ser. No. 197,102is a continuation of Ser. No. 950,264, said Ser. No. 231,634is a continuation-in-part of Ser. No. 4,912, which is a continuation-in-part of Ser. No. 604,779. This application Oct. 24, 1994, Ser. No. 328,247

Int. Cl.[6] H01L *23/48;29/46;27/02;29/62*

U.S. Cl. 257—530 4 Claims



1. An antifuse structure disposed over an insulating portion of a semiconductor substrate comprising:

a bottom electrode including an upper surface;

an interlayer dielectric layer disposed over said bottom electrode;

an antifuse cell opening in and through said interlayer dielectric layer and exposing said upper surface of said bottom electrode;

a first barrier metal layer disposed entirely within said antifuse cell opening and over and in physical and electrical contact with said bottom electrode, said first barrier metal layer being flat and of uniform thickness;

an antifuse material layer disposed over said interlayer dielectric layer, in said antifuse cell opening and over said first barrier metal layer;

a second barrier metal layer disposed over said antifuse material layer; and

a top electrode disposed over and in electrical and physical contact with said second barrier metal layer.

5,543,657

SINGLE LAYER LEADFRAME DESIGN WITH GROUNDPLANE CAPABILITY

Steven J. Diffenderfer, Deposit, and Hussain N. M. N. Shaukatullah, Endwell, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

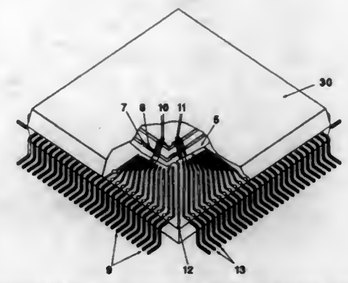
Filed Oct. 7, 1994, Ser. No. 319,525

Int. Cl.[6] H01L *23/495*

U.S. Cl. 257—666 11 Claims

1. An electronic package, comprising:

a leadframe, comprising a single layer of an electrically conducting material, a semiconductor chip support, a common ground portion surrounding said semiconductor chip support and electrically connected thereto, a plurality of signal leads electrically isolated from each other and from said common ground portion, and a plurality of ground leads electrically connected to said common ground portion;



a semiconductor chip including a plurality of signal sites and a plurality of ground sites, said semiconductor chip being mounted on said semiconductor chip support of said leadframe;

a plurality of electrical connections between selected ones of said signal sites to respective ones of said signal leads and between selected ones of said ground sites to respective ones of said ground leads; and

a protective enclosure substantially about said semiconductor device, said semiconductor chip support, said common ground portion of said leadframe, and at least a portion of said signal leads.

5,543,658

METHOD OF MANUFACTURING RESIN-SEALED SEMICONDUCTOR DEVICE, LEAD FRAME USED IN THIS METHOD FOR MOUNTING PLURALITY OF SEMICONDUCTOR ELEMENTS, AND RESIN-SEALED SEMICONDUCTOR DEVICE

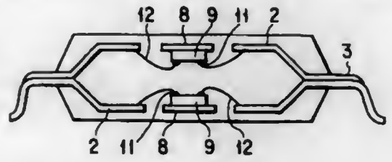
Ryuji Hosokawa, Yokohama, and Satoru Yanagida, Kawasaki, both of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 16, 1994, Ser. No. 213,586

Claims priority, application Japan, Jun. 14, 1993, 5-141790

Int. Cl.[6] H01L *23/495;23/34*

U.S. Cl. 257—676 6 Claims



1. A lead frame comprising:

a lead frame member comprising a first lead frame portion and a second lead frame portion;

said first lead frames portion being arranged along a longitudinal direction of said lead frame member and having a first recess serving as a first bed portion for mounting a semiconductor element, and a first lead group comprising a plurality of inner leads extending in at least one direction around said bed portion and arranged in parallel at substantially equal intervals and a plurality of outer leads respectively connected to said inner leads; and

said second lead frame portion having a second recess serving as a second bed portion for mounting a semiconductor element, and a second lead group comprising a plurality of inner leads and a plurality of outer leads respectively connected to said inner leads, said second lead frame portion being connected to said first lead frame portion through a coupling portion of said lead frame member, and the plurality of inner leads and the plurality of outer leads of said second lead group being alternately arranged between the plurality of inner leads and the plurality of outer leads extending in a same direction in said first lead group when said second bed portion is superposed on said first bed portion of said first lead frame portion so as to oppose each other.

5,543,659

PACKAGE FOR POWER SEMICONDUCTOR DEVICE WITH SNUBBER CIRCUIT

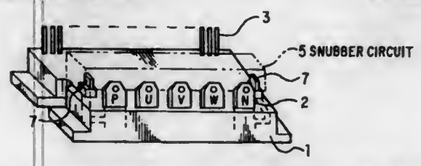
Toru Hosen, Nagano, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Oct. 21, 1994, Ser. No. 327,479

Claims priority, application Japan, Oct. 28, 1993, 5-269356

Int. Cl.[6] H01L *23/48;23/52*

U.S. Cl. 257—692 6 Claims



2. A combination of a power semiconductor device package for a power conversion equipment and a snubber circuit, said power semiconductor device package comprising,

a casing containing power chips therein,

external main circuit terminals for direct-current input and alternating-current output, and pin terminals for connection to an external control circuit, said main circuit terminals and said pin terminals being arranged separately in two rows on an upper surface of the casing, and

connecting terminals for the snubber circuit situated on the upper surface of the casing and directly connected to the snubber circuit, said connecting terminals being connected inside the casing to the main circuit terminals for the direct-current input and having a same electric potential as in the main circuit terminals.

5,543,660

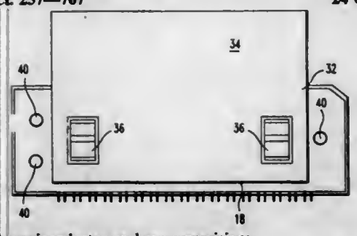
STACKABLE VERTICAL THIN PACKAGE/PLASTIC MOLDED LEAD-ON-CHIP MEMORY

Edward J. Dombroski, Jericho, Vt., assignor to International Business Machines Corp., Armonk, N.Y.

Division of Ser. No. 116,320, Sep. 3, 1993, Pat. No. 5,457,071. This application Sep. 22, 1994, Ser. No. 310,521

Int. Cl.[6] H01L *23/10;23/34*

U.S. Cl. 257—707 24 Claims



1. A semiconductor package comprising;

a semiconductor chip having a first major surface with input and output bonding pads thereon, a second major surface substantially parallel to said first major surface and four minor surfaces substantially perpendicular to said major surfaces and joining said major surfaces,

a lead frame having a plurality of conductors with distal and proximal ends, the proximal ends of the conductors being positioned adjacent said first major surface of said chip,

an insulating layer having a selected thickness positioned between and insulatively bonded to said proximal ends of said conductors and said first major surface,

an electrical connection between each respective one of said proximal ends of said conductors and a respective one of each of said bonding pads on the chip,

an insulating encapsulation disposed on and substantially enclosing said first major surface, said four minor surfaces, the proximal ends of said conductors and partially enclosing a portion of said distal ends of said conductors, a portion of said distal ends being cantilevered from said encapsulation, and

a metallic plate disposed on and in good thermal contact with said second major surface,

said plate having a thickness approximately equal to the sum of the thickness of said proximal ends of said lead frame and said insulating layer.

5,543,661

SEMICONDUCTOR CERAMIC PACKAGE WITH TERMINAL VIAS

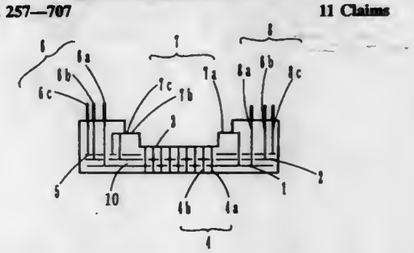
Reiko Sumida, Mine, Japan, assignor to Sumitomo Metal Ceramics Inc., Mine, Japan

Filed May 24, 1995, Ser. No. 448,855

Claims priority, application Japan, May 31, 1994, 6-142355

Int. Cl.[6] H01L *23/10;23/34*

U.S. Cl. 257—707 11 Claims



1. A semiconductor ceramic package comprising:

(a) a plurality of laminated insulator layers each formed from a ceramic, said plurality of laminated insulator layers including internal insulator layers;

(b) a semiconductor chip mounting portion formed on a surface insulator layer;

(c) a power plane formed in at least one of the internal insulator layers;

(d) a ground plane formed in at least one of the internal insulator layers;

(e) a first thermal via formed so as to transmit heat generated by a semiconductor chip mounted on the semiconductor chip mounting portion to a back surface of the package, the first thermal via being connected to the power plane; and

(f) a second thermal via formed so as to transmit the heat generated by the semiconductor chip to the back surface of the package, the second thermal via being connected to the ground plane.

5,543,662

LOW HEAT LOSS AND SECURE CHIP CARRIER FOR CRYOGENIC COOLING

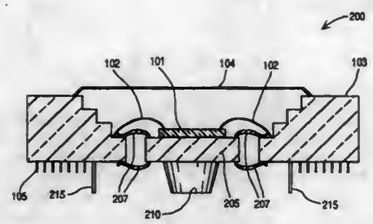
Trevor Burward-Hoy, Cupertino, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Sep. 20, 1994, Ser. No. 309,056

Int. Cl.[6] H01L *23/34;* H05K *7/20*

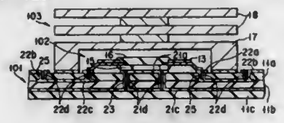
U.S. Cl. 257—716 13 Claims

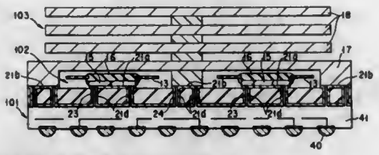
1. An integrated circuit package, the integrated circuit package comprising:



a substrate having a cavity formed therein;
a carrier for holding an integrated circuit within the cavity of the substrate; and
a thermally reactive connector means coupled to the carrier, the thermally reactive connector means for selectively coupling the carrier to the substrate in response to a temperature of the thermally reactive connector.

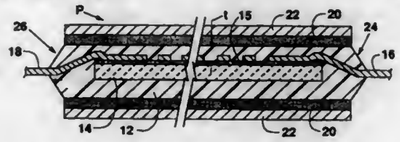
5,543,663
SEMICONDUCTOR DEVICE AND BGA PACKAGE
Chiaki Takubo, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Dec. 23, 1994, Ser. No. 362,978
Claims priority, application Japan, Dec. 27, 1993, 5-332735; Dec. 27, 1993, 5-332736; Nov. 9, 1994, 6-299048
Int. Cl.[6] H01L *23/02;23/12*
U.S. Cl. 257—720 **66 Claims**





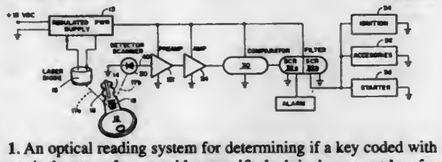
1. A semiconductor device comprising:
an insulating board having upper and lower surfaces;
a first thermal conductive member formed on said upper surface of said insulating board;
a plurality of second thermal conductive members formed around said first thermal conductive member on said upper surface of said insulating board;
a third thermal conductive member formed on said lower surface of said insulating board in a region including at least regions in which said third thermal conductive member overlaps said first and second thermal conductive members;
at least one first through hole formed in said insulating board between said first and third thermal conductive members;
at least one second through hole formed in said insulating board between each of said second thermal conductive members and said third thermal conductive member;
fourth thermal conductive members, formed in the first and second through holes, for connecting said first thermal conductive member to said third thermal conductive member, and each of said second thermal conductive members to said third thermal conductive member;
a semiconductor chip located on said first thermal conductive member; and
a heat sink having support members at positions opposite to said second thermal conductive members and mounted on said second thermal conductive members so as to cover said semiconductor chip.

5,543,664
ULTRA HIGH DENSITY INTEGRATED CIRCUIT PACKAGE
Carmen D. Burns, Austin, Tex., assignor to Staktek Corporation, Austin, Tex.
Division of Ser. No. 113,397, Oct. 8, 1993, Pat. No. 5,420,751, which is a division of Ser. No. 561,417, Aug. 1, 1990, abandoned. This application Jan. 20, 1995, Ser. No. 375,747
Int. Cl.[6] H01L *23/552;23/28;23/02;23/22*
U.S. Cl. 257—787 **11 Claims**



1. A modular integrated circuit package comprising:
a plurality of level-one integrated circuit packages, each comprising:
(a) an integrated circuit element;
(b) a casing surrounding the active surface of said integrated circuit element, said casing having an upper surface, a lower surface and a perimeter wall;
(c) a first metal foil lamination applied over said upper surface of said level-one package with a first high temperature adhesive lamination layer being applied between said upper surface of said casing and said first metal foil lamination;
(d) a second metal foil lamination applied over said lower surface of said level-one package with a second high temperature adhesive lamination layer being applied between said lower surface of said package and said second metal foil lamination; and wherein said level-one integrated circuit package includes a plurality of electrical interconnect leads, wherein said leads substantially overlay, are connected to, and are extending from said integrated circuit element through a portion of said package.

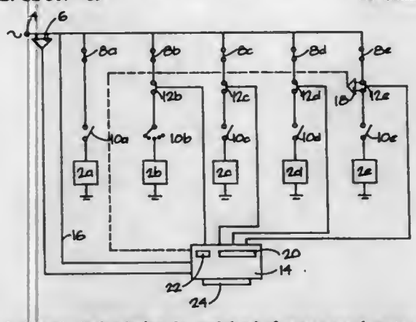
5,543,665
OPTICAL KEY AND LOCK CODE AUTHENTICATION
Vincent Demarco, 3802 Canon St., San Diego, Calif. 92020
Continuation of Ser. No. 980,266, Nov. 23, 1992, abandoned. This application Aug. 11, 1994, Ser. No. 289,442
Int. Cl.[6] E05B *47/00*
U.S. Cl. 307—10.2 **4 Claims**



1. An optical reading system for determining if a key coded with an optical pattern for use with a specific lock is the correct key for operating that specific lock, which comprises:
a code pattern of discrete areas of varying reflectivity carried by a key on an impervious outer key surface, said code pattern being independent of the physical configuration of said key, said code pattern identifying the specific lock which said key is intended to operate;
illumination means for illuminating said code pattern carried by said key;
scanning means for receiving a varying light level pattern reflected from said code pattern;
decoding means positioned remote from said scanning means for determining if the reflected light level pattern reflected by the code pattern on said key corresponds to the preset code for the specific lock; and
means for controlling the operability of the specific lock in response to the code pattern scanned;

whereby when the scanned pattern matches the lock preset pattern said switch will operate and when the scanned pattern does not match the lock preset pattern the switch will not operate.

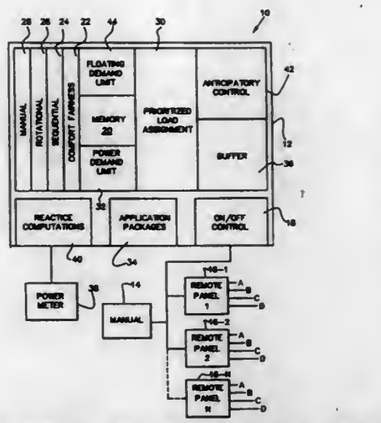
5,543,666
METHOD OF REDUCING THE PEAK LOAD OF ENERGY SUPPLY NETWORK SYSTEMS AND APPARATUS FOR LIMITING THE POWER CONSUMPTION OF A CONSUMER UNIT FED FROM AN ENERGY SUPPLY CONNECTION
Wolfgang Priesemuth, Postkamp 13, 25524 Breitenburg-Nordoe, Germany
Filed Oct. 7, 1994, Ser. No. 319,827
Claims priority, application Germany, Oct. 9, 1993, 43 34 488.7
Int. Cl.[6] H02J *3/14*
U.S. Cl. 307—39 **10 Claims**



1. A method of reducing the peak load of energy supply network systems to which a number of consumer units, each of which has several consumers, are connected, whereby the power consumption of said consumer units can be limited to a predetermined limiting value, said method including the steps of:
if the power consumption of switched-on consumers of a consumer unit exceeds said predetermined limiting value, said consumers are switched off in sequence in conformity with a preselectable coordination program until the power consumption is below said predetermined limiting value; and
utilizing a decrease in the power consumption of said consumers of said consumer unit as a trigger for switching on said consumers in a sequence determined by said preselectable coordination program.

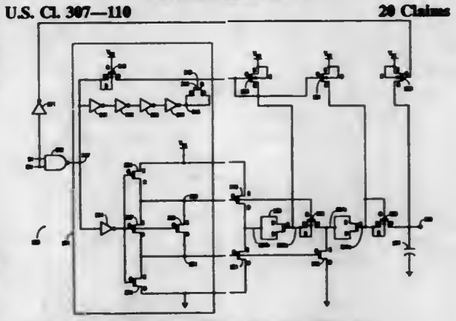
5,543,667
LOAD CONTROL FOR PARTIALLY INCREASING/DECREASING POWER USAGE
Gideon Shavit, Highland Park, and Charles H. Culp, Vernon Hills, both of Ill., assignors to Honeywell Inc., Minneapolis, Minn.
Continuation of Ser. No. 998,189, Dec. 29, 1992, abandoned. This application Nov. 21, 1994, Ser. No. 342,665
Int. Cl.[6] H02J *1/00*
U.S. Cl. 307—39 **9 Claims**

1. A system for adjusting component loads to increase or decrease energy usage of a total load to maintain power consumption below a predetermined level operative at sequential time intervals, wherein each component load is assigned to at least one of multiple types of add/shed or increase/decrease routines, each routine controlling the addition, partial increase, shedding or partial decrease of said components loads, said system comprising:
a power meter connected to measure the power usage of each component load; and



processor means connected to the total load and connected to said power meter, said processor means determining how much and which of the component loads should be increased/decreased or add/shed to maintain power consumption below said predetermined level based on the add/shed or increase/decrease routine assigned to each load, said processor means adding, shedding, increasing and decreasing each load according to its assigned routine, and wherein said processor performs said addition, partial increase, partial decrease, or shedding of said components loads to accommodate said predetermined level at a given time interval.

5,543,668
CHARGE STACKING ON-CHIP HIGH-VOLTAGE GENERATOR AND METHOD
Steven K. Fong, San Jose, Calif., assignor to Catalyst Semiconductor, Inc., Santa Clara County, Calif.
Filed Sep. 16, 1994, Ser. No. 307,998
Int. Cl.[6] H02M *3/18*
U.S. Cl. 307—110 **20 Claims**



1. A charge stacking voltage generator comprising:
a first input terminal for receiving a first supply voltage;
a second input terminal for receiving a second supply voltage;
an output terminal;
a capacitor having a first terminal and a second terminal;
a first switch coupled between said first terminal of said capacitor and said first input terminal, said first switch having a control terminal;
a second switch coupled between said second terminal of said capacitor and said second input terminal, said second switch having a control terminal;

a third switch coupled between said second terminal of said capacitor and said first input terminal, said third switch having a control terminal;

a fourth switch coupled between said first terminal of said capacitor to said output terminal, said fourth switch having a control terminal; and

a switching control circuit coupled to the control terminals of said first, second, third and fourth switches, wherein said switching control circuit provides control signals to the control terminals of the first, second, third and fourth switches, wherein said control signals cause said first and second switches to close and said third and fourth switches to open during a first time period, whereby the first and second supply voltages are applied to the capacitor during the first time period, and wherein said control signals cause said first and second switches to open and said third and fourth switches to close during a second time period.

5,543,669

REMOTE FEED CIRCUIT IN COMMUNICATION SYSTEMS

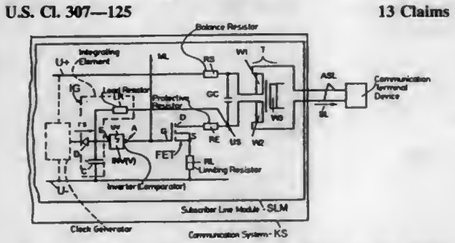
Gottfried Silberhorn, Munich, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Dec. 13, 1994, Ser. No. 354,606

Claims priority, application Germany, Dec. 13, 1993, 43 42 480.5

Int. Cl.[6] H01H *83/20*

U.S. Cl. 307—125 **13 Claims**



1. In a feed circuit in communication systems for the remote feed of communication terminal equipment connected as a load, wherein a dc voltage source can be connected to or disconnected from a subscriber line via a first winding and a second winding of an input transformer connected to the subscriber line by using an electronic switch, said switch having a switch input connected to a negative pole of said dc voltage source and having a switch output connected to said second winding so that said dc voltage source is switchable via a control input thereof, the improvement comprising:

means for generating a proportional voltage from a load-generated loop current, said means for generating connected to the switch;

means for integrating said generated proportional voltage connected to said means for generating, said integrating means having a pre-selected integration time constant; and

a comparator having a prescribed voltage comparison value connected to said means for integrating, said comparator having an output connected to said control input of said electronic switch to control said electronic switch to disconnect said dc voltage source from said subscriber line within said pre-selected integration time constant when said integrated proportional voltage exceeds said prescribed voltage comparison value thereby preventing thermal destruction of said electronic switch.

5,543,670

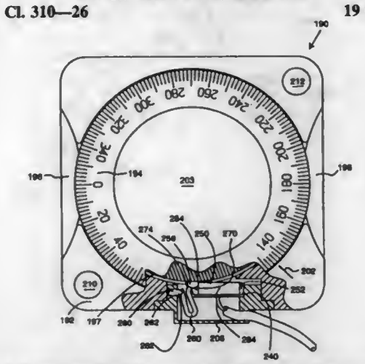
MAGNETOSTRICTIVE ACTUATOR FOR OPTICAL ALIGNMENT SCREWS

Francis S. Luecke, San Jose, Calif., assignor to New Focus, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 191,089, Feb. 3, 1994, Pat. No. 5,394,049, which is a continuation-in-part of Ser. No. 43,263, Apr. 6, 1993, Pat. No. 5,410,206. This application Feb. 27, 1995, Ser. No. 394,451

Int. Cl.[6] H01L *41/12;* **H02N** *2/00*

U.S. Cl. 310—26 **19 Claims**



1. A magnetostrictive actuator for bi-directional movement of a movable stage comprising:

a. a fixed frame element having first and second opposing faces;

b. an elongate magnetostrictive element having a first and second end portions;

c. said first face bearing against said first end portion of said magnetostrictive element;

d. a drive pad affixed to said second end portion;

e. said drive pad having a retention means portion;

f. said drive pad additionally having a drive portion for frictional engagement with said movable stage; and,

g. spring bias means positioned between said second face and said drive pad retention means portion to urge said drive pad against said movable stage and to bias and retain said magnetostrictive actuator in position against said first face.

5,543,671

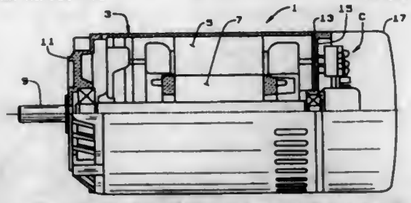
ELECTRIC MOTOR TERMINAL BOARD WITH INTEGRAL SWITCH LOCKING MEANS

Ronald D. Williams, St. Charles, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Jan. 13, 1994, Ser. No. 181,618

Int. Cl.[6] H02K *11/00*

U.S. Cl. 310—71 **21 Claims**



1. A dynamoelectric machine including a shell, a stator positioned in said shell, a rotor mounted in said shell to a rotor shaft, at least one end shield closing an end of said shell, a rotor shaft carrying said rotor and extending radially therefrom, said rotor shaft being mounted for rotation with respect to said stator along said at least one end shield, and a terminal board mounted to said dynamoelectric machine, the improvement which comprises a switch, and means for mounting said switch to said terminal board, said switch including a switch body having a first ear and a second ear, at least one of said first and said second ears defining in an inwardly extending slot, and a fastener positionable in said slot to mount said switch body to said terminal board.

5,543,672

ROTATION DETECTING DEVICE WITH MAGNET BRAKE

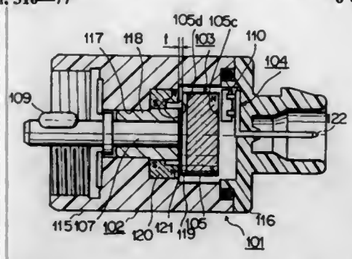
Katsuo Nishitani; Masaki Hirota, and Takeshi Ai, all of Shimada, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Oct. 11, 1990, Ser. No. 596,132

Claims priority, application Japan, Oct. 18, 1989, 1-120920 U; Dec. 5, 1989, 1-140294 U; Mar. 27, 1990, 2-30473 U; Jul. 10, 1990, 2-72653 U

Int. Cl.[6] H02K *49/10;7/12;* **F16F** *15/03;* **G01P** *3/46*

U.S. Cl. 310—77 **6 Claims**



1. A rotation detecting device including a housing, a magnetic induction device provided in said housing, and a magnetized rotor rotatably provided in said housing near said magnetic induction device, said rotor being connected through a coupling to a rotation output source; said rotation detecting device comprising braking means forming a magnetic circuit between one end surface of said rotor and said housing and bringing said rotor into pressure contact with said housing by a magnetic attraction force to be generated in said magnetic circuit.

5,543,673

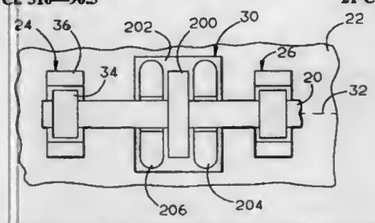
HIGH PERFORMANCE MAGNETIC BEARING

Shin Katsumata; Martha Fisher-Votava, and David Halsey, all of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Jul. 27, 1993, Ser. No. 98,117

Int. Cl.[6] H02K *7/09*

U.S. Cl. 310—90.5 **21 Claims**



1. A magnetic bearing system for supporting a shaft, comprising:

a magnetic material carried by the shaft;

a stator element positioned proximately to said magnetic material;

sensing means for sensing a sensed position of said shaft relative to said stator element; and

control means operatively coupled between said sensing means and said stator for providing a set of first and second current signals to said stator for supporting said shaft, and for maintaining a desired position of said shaft relative to said stator, with said first current signals being of relatively lower frequency than said second current signals;

said stator element including:

a plurality of first electromagnets for providing primary load bearing support and positioning of said shaft relative to said stator in response to said first current signals; and

a plurality of second electromagnets for providing high frequency response positioning of said shaft relative to said stator in response to said second current signals.

5,543,674

DYNAMOELECTRIC MACHINE COMPOSED OF SECTORS HAVING TRANSVERSE FLUXES

Gerard Koehler, Ville d'Avray, France, assignor to Radio Energie, Marcoussis Cedex, France

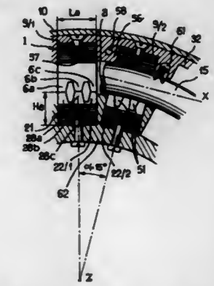
PCT No. PCT/FR91/00518, § 371 Date Jun. 29, 1993, § 102(e) Date Jun. 29, 1993, PCT Pub. No. WO92/00628, PCT Pub. Date Jan. 9, 1992

PCT Filed Jun. 28, 1991, Ser. No. 962,182

Claims priority, application France, Jul. 2, 1990, 90 08340

Int. Cl.[6] H02K *19/00*

U.S. Cl. 310—164 **21 Claims**



1. Variable-reluctance rotating dynamoelectric machine comprising a plurality of structures (A, B, C . . .) juxtaposed coaxially with an axis of rotation (Z), each structure being made up of a stator magnetic circuit (**1**) and a rotor magnetic circuit (**21**) which are concentric with each other, the stator magnetic circuit (**1**) being constituted by an assembly of stator angular sectors arranged in a circle about the axis of rotation (Z) and having, as seen in a direction tangential to the axis of rotation (Z), a U-shaped profile having two arms (**2**, **3**), an entire series of arms of the stator angular sectors being provided at free ends of each set of arms (**2**, **3**) with a row of stator teeth (**5***a*, **5***b*, **5***c* . . . /**6***a*, **6***b*, **6***c* . . .) located opposite to another row of teeth (**27***a*, **27***b*, **27***c* . . . /**28***a*, **28***b*, **28***c* , , ,) forming part of the rotor magnetic circuit (**21**) so as to constitute two rows of airgaps (**5***a*–**27***a*, **5***b*–**27***b* . . . /**6***a*–**28***a*, **6***b*–**28***b* . . .) of annular shape, a stator winding (**15**) of toroidal shape which is concentric with the axis of rotation (Z) being housed within U-shaped profiles, wherein the stator angular sectors are independent arches (**9**) each constituted by a stack of strips of magnetic sheet (T) bent to different radii about bending axes, a direction (X) of which is transverse to the axis of rotation (Z), the stator teeth (**5**, **6**) having cylindrical airgap surfaces constituted by a portion of the sheets (T) and, in the teeth (**5**, **6**), the sheets (T) extend in planes substantially perpendicular to the axis of rotation (Z).

5,543,675

BRUSH LEAF MEANS

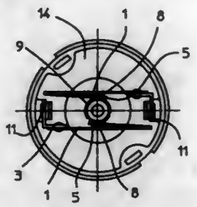
Jean-Pierre Steiner, Villers-Le-Lac, France, assignor to Johnson Electric S.A, Switzerland

Filed Nov. 24, 1993, Ser. No. 158,111

Claims priority, application United Kingdom, Nov. 25, 1992, 9224715

Int. Cl.[6] H02K *13/00*; H01R *39/18;39/36;39/08*

U.S. Cl. 310—248 5 Claims



1. A brush leaf for an electrodynamic machine of the type including a commutator, the brush leaf comprising:

a first resiliently flexible conductive section which has a first end fixed in a non-pivotal manner to a brush leaf support and a second end, said first section extending across said commutator such that said first end is located on one side of said commutator and said second end is located on another side of said commutator; and

a plurality of additional resiliently and independently flexible conductive sections each of which have respective proximal and distal ends and a contact portion, said proximal end of each said additional section being attached to said second end of said first section and said distal end of each said additional section extending away from said proximal end and across said commutator such that said additional section is in sliding contact with said commutator and said distal end is located on the same side of said commutator as said first end of said first section, said contact portion of each said additional resiliently flexible conductive section being disposed facing away from said first resiliently flexible conductive section, the distance each of said plurality of additional sections extends from its proximal end to a point at which it is in sliding contact with said commutator being less than the distance said first section extends from its first to its second end.

5,543,676

ROTATING ELECTRICAL MACHINE WITH MAGNETIC INSERTS

Michael T. York, Whitmore Lake, and Richard K. Harris, Walled Lake, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 16, 1995, Ser. No. 405,102

Int. Cl.[6] H02K *1/22*

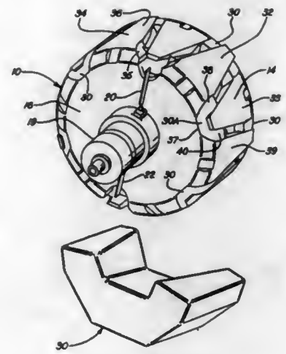
U.S. Cl. 310—263 14 Claims

1. A rotor for an electrical machine, said rotor comprising:

a first pole piece having a body defining an axis of rotation, and a plurality of pole fingers each having an axially-extending portion terminating in an end;

a second pole piece further having a body defining an axis of rotation coincident with the axis of said first pole piece, and a plurality of pole fingers each having an axially-extending portion terminating in an end, the pole fingers of said first pole piece intermeshed with the pole fingers of said second pole piece; and

a plurality of magnets, each extending under a said end of a said finger of a said pole piece and in contact with said finger, said magnets each having at least one surface facing radially outward from said rotor.



5,543,677

SLIPRING-LESS CLAW-POLE GENERATOR

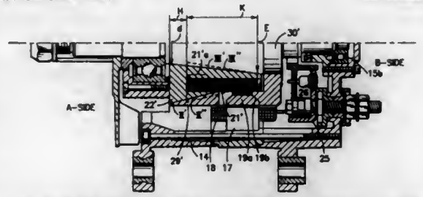
Bernhard Fakler, Esslingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Continuation of Ser. No. 119,600, Sep. 10, 1993, abandoned, which is a continuation of Ser. No. 728,302, Jul. 5, 1991, abandoned, which is a continuation of Ser. No. 495,356, Mar. 16, 1990, abandoned. This application Sep. 19, 1994, Ser. No. 308,615

Claims priority, application Germany, May 27, 1989, 39 17 343.7

Int. Cl.[6] H02K *1/22*

U.S. Cl. 310—263 12 Claims



1. A slipring-less three-phase alternator for mobile vehicular application, said alternator defining a drive side (A) and a remote side (B),

said alternator defining a longitudinal axis of rotation and having

a stator assembly (**17**) with a three-phase stator winding (**18**),

a rotor shaft (**16**) oriented along the longitudinal axis of said alternator,

a magnetic coupling rotor (**19**) formed as a generally cup-shaped claw pole rotor having

a remote side flux guide element (**30**) formed with a bottom plate (**20**), which is secured to the rotor shaft to couple the rotor (**19**) to the shaft (**16**) for rotation with the rotor shaft (**16**) to form, with the shaft, a magnetic flux carrying rotating system,

claw poles (**19***a*) axially projecting from the remote side flux guide element (**30**),

a drive side flux guide element (**29**),

further claw poles (**19***b*) axially projecting from the drive side flux guide element (**29**),

a stationary field winding (**21**),

a stationary field winding carrier (**22**) forming an inner pole on which said stationary field winding is located,

said field winding carrier (**22**) extending inwardly within said cup-shaped rotor (**19**),

three air gaps between said rotating system (**16**, **19**), said stator assembly (**17**) and said field winding carrier (**22**), respectively,

wherein a first or working air gap (I) is located between said stator assembly (**17**) and radially outer surfaces of said claw poles (**19***a*, **19***b*) of said claw-pole rotor (**19**) of said rotating system;

a second or outer air gap (II) is located between said stationary field winding carrier (**22**) and opposite, radially inner surfaces of said claw-pole rotor (**19**); and

a third or inner air gap (III) is located between said stationary field winding carrier (**22**) and said rotating, magnetic flux carrying system,

said second or outer air gap (II) being positioned radially inwardly of the first, or working air gap (I) and radially outwardly of the third, or inner air gap (III),

wherein both said field winding carrier (**22**) and said flux guide elements (**29**, **30**) are shaped and configured such that

the second or outer air gap (II', II", IIa', IIb', IIc') extends in an oblique direction with respect to the longitudinal axis of the alternator and has a cross-sectional shape selected from the group consisting of a conical shape, and a stair step shape, and

the third, or inner air gap (III', III") extends in an oblique direction with respect to the longitudinal axis of the alternator and has a cross-sectional shape selected from the group consisting of a conical shape, and a stair-step shape; and

wherein said second or outer air gap and third, or inner air gap are located at least in part over and in radial alignment with the field winding (**21**) on the field winding carrier (**22**) and extend axially beyond the field winding (**21**) at a side thereof adjacent to the drive side of the alternator;

wherein at least the third or inner air gap (III', III") extends magnetically actively to an end portion of the field winding (**21**, **21'**) closest to said remote side; and

wherein both the second or outer air gap, and the third or inner air gap are defined by complementarily shaped portions extending in said oblique direction of radially inner surfaces of said claw-pole rotor, said radially outer surfaces of said magnetic flux carrying system, add the field winding carrier (**22**).

5,543,678

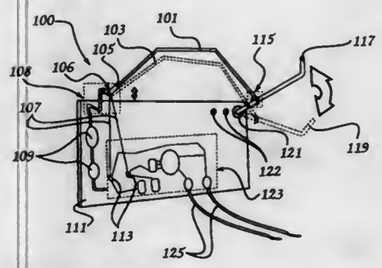
FLAT MOTORS

Dane A. Holberg, 402 Fallingstar, Irvine, Calif. 92714

Filed May 11, 1993, Ser. No. 60,415

Int. Cl.[6] H02N *7/00*

U.S. Cl. 310—307 11 Claims



1. A flat motor comprising:

a substrate;

a cantilevered lever arm mounted, by a first end, on the substrate; and

a shape-memory transducer acting on the cantilevered lever arm wherein movement of the transducer deflects the cantilevered lever arm.

5,543,679

PIEZOELECTRIC-ELEMENT DRIVE APPARATUS

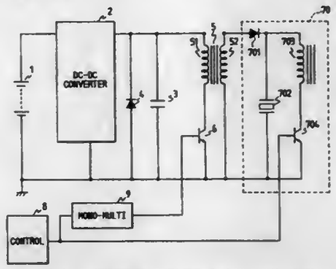
Seiji Morino, Okazaki; Eiji Hashimoto, and Terutoshi Tomoda, both of Susono, all of, Japan, assignors to Nippondenso Co., Ltd., Kariya, and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Aug. 30, 1994, Ser. No. 298,553

Claims priority, application Japan, Aug. 31, 1993, 5-216149

Int. Cl.[6] H01L *41/08*

U.S. Cl. 310—316 6 Claims



1. A piezoelectric-element drive apparatus comprising:

a direct-current power supply;

an energy storing capacitor connected in parallel with the direct-current power supply;

an energy-transfer switching element which becomes on when energy is transferred from the energy storing capacitor;

a piezoelectric element connected in parallel with the energy storing capacitor, and receiving energy and expanding when the energy-transfer switching element becomes on;

a discharging coil connected in parallel with the piezoelectric element;

a discharging switching element for discharging the piezoelectric element via the energy recovery transformer;

a coupling transformer provided between the energy storing capacitor and the piezoelectric element;

wherein a capacitor "Cs" of the energy storing capacitor, a minimum value "Cpmin" of a capacitance of the piezoelectric element which occurs in a predetermined temperature range, and a ratio "1:n" between the number of turns of a primary winding and the number of turns of a secondary winding of the coupling transformer have a predetermined relation given as:

$$Cs/n^2 \leqq Cpmin$$

5,543,680

FIELD EMISSION TYPE CATHODE STRUCTURE FOR CATHODE-RAY TUBE

Yoshinori Tomihari, Tokyo, Japan, assignor to NEC Corporation, Minato-ku, Japan

Filed Oct. 20, 1994, Ser. No. 325,170

Claims priority, application Japan, Oct. 20, 1993, 5-262452

Int. Cl.[6] H01J *19/24*

U.S. Cl. 313—336 5 Claims

1. A field emission type cathode structure for a CRT, comprising:

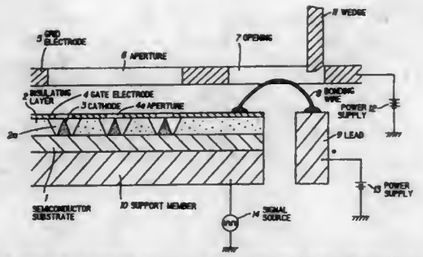
a substrate being conductive at least on a top plane thereof;

at least one micropoint for emitting electrons, said at least one micropoint being provided on said top plane of said substrate;

a gate electrode for applying an electric field at said at least one micropoint to induce emission of said electrons from said at least one micropoint;

an insulating layer for insulating said gate electrode from said at least one micropoint;

a grid electrode having at least one aperture through which a beam of said electrons flows, said grid electrode being applied with a grid voltage to control flow of said beam; and



at least one bonding wire for connecting said gate electrode to a lead connected to a power supply for said gate voltage;

wherein said grid electrode has at least one opening at a position corresponding to a position of said at least one bonding wire.

5,543,681

IN-LINE TYPE ELECTRON GUNS FOR COLOR PICTURE TUBE

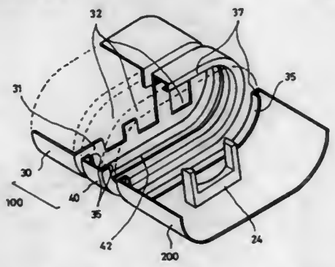
Sang H. Jo, Kyungsanbook-Do, Rep. of Korea, assignor to Goldstar Co., Ltd., Rep. of Korea

Filed Sep. 28, 1994, Ser. No. 314,203

Claims priority, application Rep. of Korea, Sep. 28, 1993, 19986/1993

Int. Cl.[6] H01J *27/50*

U.S. Cl. 313—414 **4 Claims**



1. An in-line type electron gun for a color picture tube, comprising:

means for producing three electron beams;

a pair of control grids, that is, G_1 and G_2 electrodes for controlling and accelerating said three electron beams;

a pair of anodes, that is, G_3 and G_4 electrodes for forming a main focusing lens, said main focusing lens focusing said three electron beams on a fluorescent screen,

said G_3 electrode comprising:

a first focusing electrode having an elliptical electrode envelope, said envelope having at its front end a control electrode plane provided with at least three rectangular openings, the vertical size of each said rectangular opening being larger than the horizontal size; and

a hollow second focusing electrode comprising an electrode envelope defining a common opening and having opposed rims at opposed ends thereof and placed in front of said first focusing electrode with a predetermined interval therebetween, wherein said first focusing electrode has applied thereto a static focus voltage of about 20–30% of a voltage applied to said G_4 electrode and said second focusing electrode has applied thereto a dynamic focus voltage higher than said static focus voltage of the first focusing electrode by 0 to 500 volts, said dynamic focus voltage varying over time; and

said G_4 electrode being placed in front of said second focusing electrode with a predetermined interval therebetween and comprising:

an elliptical electrode envelope common to the three electron beams; and

an electrode body for electrostatic control of the three electron beams, said electrode body being recessed in said electrode envelope of the G_4 electrode.

5,543,682

CATHODE ASSEMBLY INCORPORATING A BLACK LAYER FORMED FROM PARTICLES HAVING A SPECIFIED AVERAGE PARTICLE SIZE

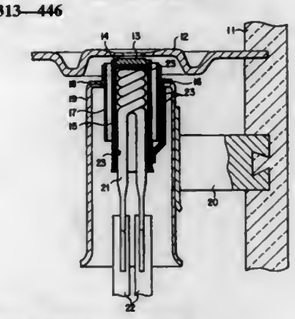
Akihito Hara; Toshiharu Higuchi; Toru Yakabe, all of Yokohama; Shigeo Kanda, Sagamihara, and Eiji Yamamoto, Yokohama, all of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 17, 1994, Ser. No. 214,280

Claims priority, application Japan, Mar. 17, 1993, 5-057280; Jun. 17, 1993, 5-145980; Dec. 8, 1993, 5-306937; Dec. 8, 1993, 5-306938

Int. Cl.[6] H01J *29/02*

U.S. Cl. 313—446 **3 Claims**



1. A cathode assembly comprising:

a cathode sleeve having an inner surface;

an electron emitting portion, arranged on an end portion of said cathode sleeve, for emitting electrons;

a heater, arranged inside said cathode sleeve, for heating said electron emitting portion; and

a black coating formed on the inner surface of said cathode sleeve,

wherein said black coating on the inner surface of said cathode sleeve is a sintered layer formed by mixing tungsten having an average particle diameter in a range of 0.5 μm (inclusive) to 2 μm (inclusive) with alumina having an average particle diameter in a range of 0.1 μm (inclusive) to 1 μm (exclusive) at a weight ratio of the tungsten to the alumina in a range of (90:10) to (65:35).

5,543,683

FACEPLATE FOR FIELD EMISSION DISPLAY INCLUDING WALL GRIPPER STRUCTURES

Duane A. Haven, and Chungdee Pong, both of Cupertino, Calif., assignors to Silicon Video Corporation, Cupertino, Calif.

Filed Nov. 21, 1994, Ser. No. 343,803

Int. Cl.[6] H01J *29/18*

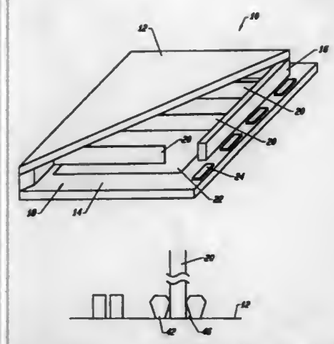
U.S. Cl. 313—461 **25 Claims**

13. A faceplate of a field emission display, comprising:

a substrate defining a faceplate interior side, including a faceplate fiducial that optically aligns to a corresponding backplate fiducial;

a plurality of phosphor pixels disposed on the faceplate interior side;

a black matrix grid formed of a plurality of column and row guard bands on the faceplate interior side; and



a wall receiver formed in a column or row guard band, the wall receiver adapted to receive a spacer wall and positioned relative to the pluralities of phosphor pixels.

5,543,684

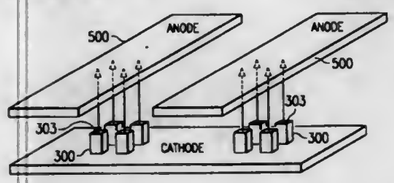
FLAT PANEL DISPLAY BASED ON DIAMOND THIN FILMS

Nalin Kumar, Austin, and Chenggang Xie, Cedar Park, both of Tex., assignors to Microelectronics and Computer Technology Corporation, Austin, Tex.

Continuation of Ser. No. 851,701, Mar. 16, 1992, abandoned. This application Jun. 20, 1994, Ser. No. 343,262

Int. Cl.[6] H01J *1/30*

U.S. Cl. 313—495 **28 Claims**



15. A field emission cathode assembly, comprising:

a plurality of spaced apart field emission cathodes adjacent a substrate, each of said field emission cathodes comprising:

an electrically resistive pillar spaced from said substrate by a layer of metal, said resistive pillar having a substantially flat surface spaced from and substantially parallel to said substrate and at least one entirely exposed sidewall extending from said layer of metal to said substantially flat surface of said pillar; and

a layer of cathode material disposed adjacent said surface of said resistive pillar and having a substantially flat exposed surface spaced from and substantially parallel to said substrate; and

an anode spaced from said layer of cathode material of each said cathode by a gap, a width of each said gap defined by a height of a corresponding said pillar, a resistance of each said pillar proportionate to said height of said pillar such that a potential across each said gap is substantially the same.

5,543,685

FLOURESCENT DISPLAY DEVICE HAVING A PROTECTIVE FILM INTERPOSED BETWEEN COLOR FILTERS AND ANODE ELECTRODES

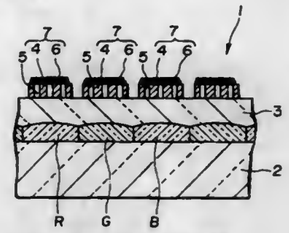
Yoshinari Okamoto; Yoshihisa Tsuruoka; Haruhisa Hirakawa, and Eiji Sato, all of Mobara, Japan, assignors to Futaba Denshi Kogyo K.K., Mobara, Japan

Filed Jul. 12, 1994, Ser. No. 273,937

Claims priority, application Japan, Jul. 12, 1993, 5-171710

Int. Cl.[6] H01J *29/18*

U.S. Cl. 313—496 **1 Claim**



1. A fluorescent display device comprising:

an envelope of which a part is constituted by an insulating light-permeable anode substrate;

filters formed on an inner surface of said anode substrate;

an insulating light-permeable protective film arranged on said filters;

light-permeable anode conductors provided on said protective film; and

phosphor layers formed on said anode conductors and adapted to emit light due to excitation, which light is observed through said anode conductors, protective film, filters and anode substrate.

5,543,686

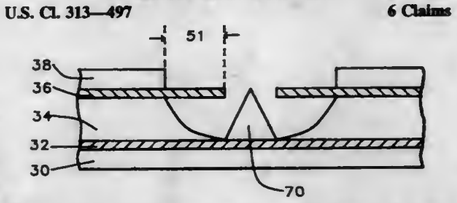
ELECTROSTATIC FOCUSSING MEANS FOR FIELD EMISSION DISPLAYS

Jammy Chin-Ming Huang, Taipei, and Chun-Hui Tsai, Hsin Chu, both of, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Division of Ser. No. 162,954, Dec. 8, 1993, Pat. No. 5,461,009. This application Aug. 24, 1995, Ser. No. 519,068

Int. Cl.[6] H01J *19/74;29/18*

U.S. Cl. 313—497 **6 Claims**



1. A microtip structure for a field emission display on a substrate, comprising:

a first conductive layer on said substrate that acts as a cathode;

a second conductive layer with a narrow circular opening that acts as a gate;

a first dielectric layer that separates said cathode and said gate;

a field emission microtip formed on said cathode that extends up from said cathode and into said opening;

a second dielectric layer, over said gate, with a circular opening that is larger than and concentric with said narrow circular opening in said gate; and

a means to provide a brief, charging voltage to said gate, followed by a longer operational voltage, wherein the amplitude of said operational voltage is lower than the amplitude of

said charging voltage, whereby said charging voltage and said circular opening improves the uniformity said field emission display.

5,543,687

HYDROGEN-GAS DISCHARGE LAMP

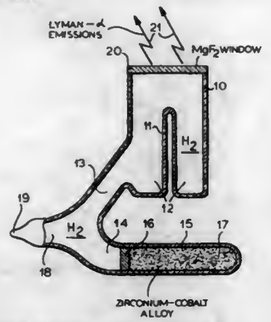
Thomas Woyke, Aachen, and Tilman Schober, Inden, both of, Germany, assignors to Forschungszentrum Julich GmbH, Julich, Germany

Filed Dec. 12, 1994, Ser. No. 354,497

Claims priority, application Germany, Dec. 16, 1993, 43 42 941.6

Int. Cl.[6] H01J *17/24;17/20;17/16;* **H05B** *41/16*

U.S. Cl. 313—556 **7 Claims**



1. A hydrogen discharge lamp, comprising:

a glass lamp enclosure formed with a radiation emitting window;

means on said enclosure receiving a body of a zirconium-cobalt alloy forming in part a hydride constituting a reservoir of at least one element selected from the group which consists of hydrogen and deuterium for controlled liberation thereof from said reservoir, said zirconium-cobalt alloy simultaneously forming in part a getter for elements interfering with spectral purity of a hydrogen discharge emission from the lamp; and

means for effecting an electrical discharge in the hydrogen or deuterium liberated into said enclosure for emitting light through said window.

5,543,688

PLASMA GENERATION APPARATUS WITH INTERLEAVED ELECTRODES AND CORRESPONDING METHOD

Katsumi Morita, Matsudo, Japan, assignor to Applied Materials Inc., Santa Clara, Calif.

Filed Aug. 26, 1994, Ser. No. 296,968

Int. Cl.[6] H01J *7/24*

U.S. Cl. 315—111.21 **11 Claims**

1. Plasma generation apparatus, comprising:

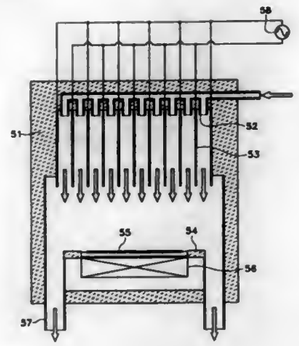
a vacuum chamber including a substrate support for supporting a substrate to be processed within said chamber;

a plurality of electrode plates disposed in the chamber;

a high-frequency power supply connected between a first group of the electrode plates and a second group of the electrode plates interleaved with respect to the first group; and

a gas inlet located in the chamber to flow gas between electrode plates of the first group and electrode plates of the second group and thereafter toward said substrate support;

whereby a plasma is formed and maintained in the chamber in the region of the electrode plates, which region is spaced away from said substrate being processed in the chamber.



5,543,689

HIGH FREQUENCY POWER SOURCE HAVING CORRECTED POWER OUTPUT

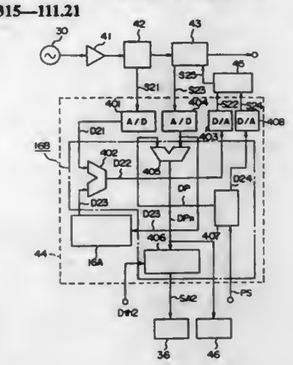
Ryusuke Ohta, and Yoshihiro Sekizawa, both of Aizuwakamatsu, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 7, 1994, Ser. No. 301,817

Claims priority, application Japan, Dec. 27, 1993, 5-330663

Int. Cl.[6] H05H *1/24;* **H03H** *7/38*

U.S. Cl. 315—111.21 **14 Claims**



5. A high frequency power source comprising:

an amplifier for amplifying a high frequency signal to supply a high frequency power to a load;

a detector for detecting an output voltage waveform from said amplifier;

a computing circuit for computing a mean value and a standard deviation of said voltage waveform derived from said detector; and

generating means for generating an alarm if said mean value and said standard deviation of said voltage waveform computed by said computing circuit exceeds a threshold set value.

5,543,690

HIGH VOLTAGE IGNITION CIRCUIT FOR A DISCHARGE LAMP

Erhard Bernicke; Klaus Rohr, both of Berlin, and Karl Elbisch, Zeuthen, all of, Germany, assignors to Prolux Maschinenbau GmbH, Berlin, Germany

PCT No. PCT/DE92/00514, § 371 Date Feb. 18, 1994, § 102(e) Date Feb. 18, 1994, PCT Pub. No. WO93/00784, PCT Pub. Date Jan. 7, 1993

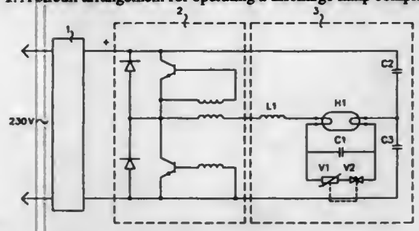
PCT Filed Jun. 19, 1992, Ser. No. 196,087

Claims priority, application Germany, Jun. 21, 1991, 41 21 009.3

Int. Cl.[6] H05B *37/00*

U.S. Cl. 315—224 **10 Claims**

1. A circuit arrangement for operating a discharge lamp comprising:



a source of high frequency electrical pulses;

an inductor element connected in series with the lamp;

means for coupling the source to the series connection of the inductor element and the lamp to energize the lamp;

a capacitor element connected in parallel with the lamp;

a bi-directional breakdown device;

a PTC resistor connected in series with the breakdown device;

means for connecting the PTC resistor and the breakdown device in parallel with one of the elements; and

a thermal coupling between the PTC resistor and the breakdown device to heat the PTC resistor with the heat loss from the breakdown device.

5,543,691

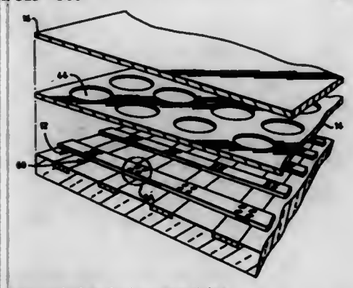
FIELD EMISSION DISPLAY WITH FOCUS GRID AND METHOD OF OPERATING SAME

Alan Palevsky, Wayland, and Peter F. Koufopoulos, Millis, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed May 11, 1995, Ser. No. 439,391

Int. Cl.[6] H01J *29/70;29/72*

U.S. Cl. 315—366 **19 Claims**



1. A field emission device comprising:

a cathode having an array of pixels, each pixel having a plurality of field emitters and corresponding gate electrodes to emit electrons;

an anode distally disposed with respect to the cathode; and

a focus grid disposed between the anode and the cathode, the focus grid having an array of apertures, each aperture disposed coaxial with a corresponding pixel of the cathode to focus electrons from the plurality of field emitters of the pixel of the cathode toward the anode.

5,543,692

METHOD AND APPARATUS FOR CONTROLLING AN ELECTRIC MOTOR FOR MOVING A MEMBER

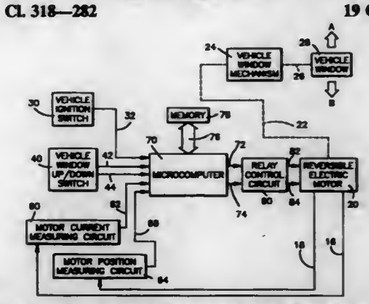
David M. Howie, Northville, and Abbas M. Youssef, Farmington Hills, both of Mich., assignors to TRW Inc., Lyndhurst, Ohio

Filed May 31, 1994, Ser. No. 251,754

Claims priority, application France, May 28, 1994, 9406475

Int. Cl.[6] H02P *1/00*

U.S. Cl. 318—282 **19 Claims**



1. An apparatus for controlling operation of an electric motor for moving a member between a first limit position and a second limit position, said apparatus comprising:

means for determining the rate of change of current flow to the motor during each movement of the member toward the second limit position;

means for storing a threshold rate of change of current flow value which is a function of a plurality of determinations made of the rate of change of current flow to the motor during movements of the member toward the second limit position;

means for modifying said stored threshold rate of change of current flow value on each movement of the member toward the second limit position to make said stored threshold rate of change of current flow value a function of the determinations made of the rate of change of current flow to the motor which are most current in time; and

means for reversing the motor and moving the member toward the first limit position in response to a determined rate of change of current flow to the motor exceeding said stored threshold rate of change of current flow value during movement of the member toward the second limit position.

5,543,693

METHOD FOR THE CONTROL OF THE OPENING AND CLOSING PROCESS OF ELECTRICALLY-DRIVEN DEVICE

Reiner Jasca, Dorsten, and Reinhold Spieker, Werdohl, both of, Germany, assignors to Leopold Kostal GmbH & Co. KG, Ludenscheid, Germany

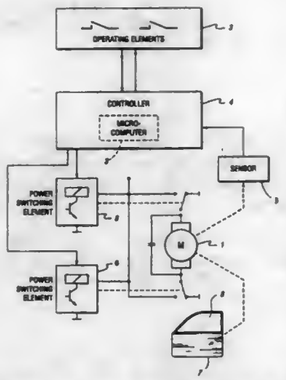
Filed May 31, 1994, Ser. No. 251,898

Claims priority, application Germany, Jun. 1, 1993, 43 18 128.7

Int. Cl.[6] H02P *3/00*

U.S. Cl. 318—283 **6 Claims**

1. A method for controlling the opening and closing processes of a device, the device being driven by an electric motor operable in two rotational directions the motor being capable of influence directly by means of electric operating elements or indirectly by means of a sensor apparatus which determines a plurality of parameters associated with the device including displacement



direction, displacement position and displacement speed, via control electronics containing a microprocessor with a counting facility, the method comprising:

generating a sensor signal (S) having positive edges corresponding to rotational motion of the motor;

measuring a time period (Tp) of the sensor signal (S);

calculating a switch-off period (Ta) using the time period (Tp) of the sensor signal (S);

establishing a reverse point (tr) indicative of a change in rotational direction of the electric motor (1) using the switch-off period (Ta) as a threshold value therefor;

calculating a time period (Tu) starting from reverse point (tr);

calculating a time period (Tu1) starting from reverse point (tr);

measuring a time period (Tp+1) of the sensor signal (S);

comparing the switch-off period (Ta) in synchronization with the time period (Tp+1) of the sensor signal (S);

reversing the rotational direction of the motor when the time period (Tp+1) of the sensor signal (S) exceeds the switch-off period (Ta);

adjusting the counting facility in a first direction in response to a positive edge appearing in the sensor signal (S) before the passing of the time period (Tu); and

adjusting the counting facility in a second direction in response to a positive edge appearing in sensor signal (S) after the passing of the time period (Tu1).

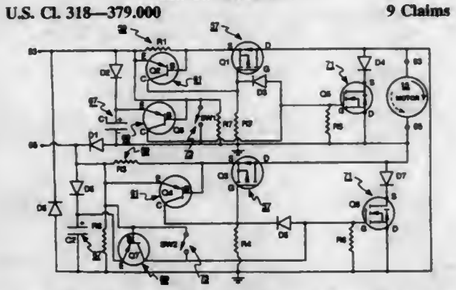
5,543,694

CONTROL CIRCUIT FOR FEEDBACK, MOTOR-OPERATED VALVE

Bill Tice, Carlsbad, Calif., assignor to ETI Systems, Carlsbad, Calif.

Division of Ser. No. 177,062, Jan. 3, 1994, Pat. No. 5,461,290.
This application Mar. 16, 1995, Ser. No. 405,089
Int. Cl.[6] H02P *3/12*

U.S. Cl. 318—379.000 **9 Claims**



1. A control circuit for limiting the current flow to an electric motor, to reduce current spikes at motor start up, and for instantaneously braking rotation of the motor upon termination of power from a direct voltage source comprising:

a) voltage-regulated, current-passing means for passing current from the direct voltage source to the motor, said means having a default configuration such as to permit full current flow thereacross when the voltage is initially applied;

b) voltage drop means interposed the voltage source and said voltage-regulated, current-passing means responsive to the current flow to the motor;

c) variable-voltage output means responsive to the voltage drop developed in said voltage drop means for providing a subsequently changing voltage for input to said current-passing means for limiting the current flow therethrough following initial application of the voltage;

d) means for storing a potential during circuit operation including a normally-open, voltage-actuated first switch means for isolating said stored potential from the rest of said circuit during motor operation;

e) a normally-open, voltage-actuated second switch means interconnected said first switch means, the motor, and ground during application of power to the motor; and,

f) whereupon terminating the voltage to said motor causes said first switch means to close and release said stored potential simultaneously to said current passing means to deactivate said current-passing means and to said second switch means to ground the motor terminals to immediately drain all forward and reverse EMF to ground and stop rotation of the motor.

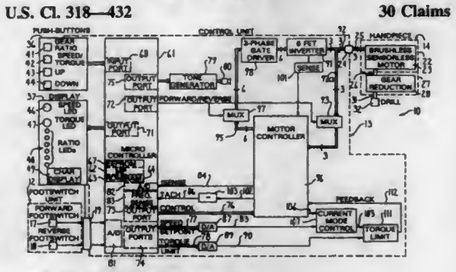
5,543,695

MEDICAL INSTRUMENT WITH PROGRAMMABLE TORQUE CONTROL

Jerry A. Culp, Oshtemo Township, and Kevin J. Schemansky, Portage, both of Mich., assignors to Stryker Corporation, Kalamazoo, Mich.

Continuation of Ser. No. 167,737, Dec. 15, 1993, abandoned.
This application Jan. 5, 1995, Ser. No. 369,170
Int. Cl.[6] H02P *7/00*

U.S. Cl. 318—432 **30 Claims**



1. A medical instrument including:

a tool;

a brushless motor coupled to said tool for driving said tool through a selective repetitive path of movement at a selected speed, said motor being actuated in response to an application of a pulse width modulated signal thereto and developing a torque in response to the movement of said tool; and

a control unit connected to said motor for applying said pulse width modulated signal thereto, said control unit including:

a driver for generating a variable frequency pulse width modulated signal for application to said motor, said driver frequency modulating said pulse width modulated signal in response to a driver control signal applied to said driver wherein, said pulse width modulated signal has a current that varies with said torque developed by said motor;

a speed sensor connected to said motor for monitoring said speed of said motor and producing a motor speed signal representative of said motor speed;

a current sensor connected to said driver for producing a current signal representative of said torque developed by said motor;

a speed controller connected to said speed sensor for receiving said speed signal, said speed controller being configured to compare said speed signal to a speed setpoint signal representative of a selected motor speed and to produce a speed error signal based on said comparison;

a torque controller connected to said speed controller for receiving said speed error signal, said torque controller being configured to compare said speed error signal to a torque limit signal representative of a selected maximum torque and to produce a selectively adjusted speed error signal in response to said comparison; and

a driver controller connected to said current sensor for receiving said current signal, to said torque controller for receiving said adjusted speed error signal and to said driver, said driver controller being configured to compare said current signal with said adjusted speed error signal, to produce said driver control signal based on said comparison and to transmit said driver control signal to said driver.

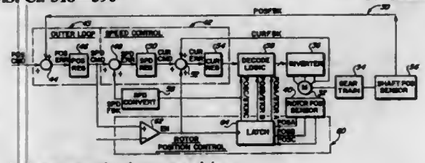
5,543,696

POSITION CONTROL FOR HYBRID SERVOMECHANISMS

Colin E. Huggett, and John L. Cleek, both of Torrance, Calif., assignors to AlliedSignal Inc., Morristown, N.J.

Filed Dec. 10, 1992, Ser. No. 988,635
Int. Cl.[6] G05B *11/18*

U.S. Cl. 318—590 **17 Claims**



1. A servomechanism comprising:

an electric motor having a rotor and a stator,

commutating means for commutating current in said stator's windings which includes rotor position sensor means for generating signals indicating the position of said rotor with respect to said stator windings

speed control means for controlling the amount of current in said windings;

rotor position control means for commanding said commutating means to generate a stationary stator Magnetomotive Force (mmf) vector when motor speed is less than a threshold value said rotor position control means includes an indicating means for indicating when motor speed is less than said threshold value; and

vector position means, responsive to said indicating means, for passing said rotor position signals from said rotor position sensor means to said commutating means when motor speed is greater than said threshold value, and for supplying a single set of rotor position signals to said commutating means when motor speed is less than said threshold value.

5,543,697

CIRCUIT AND METHOD FOR CONTROLLING THE SPEED OF A MOTOR

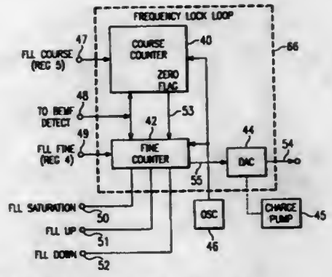
Francesco Carobolante, Portola Valley, and Curtis Robinson, Sunnyvale, both of Calif., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Oct. 27, 1994, Ser. No. 330,316
Int. Cl.[6] G05B *11/18*

U.S. Cl. 318—594 **19 Claims**

1.

a) loading a coarse counter with a course count;



b) loading a fine counter with a fine count;

c) counting down the course counter starting when a position indicator signal is detected;

d) counting down with the fine counter starting when the course counter has counted down to zero;

e) driving a coil of a motor with a current proportional to a count of the fine counter when the position indicator signal is detected;

f) repeating steps a–e to maintain the speed of the motor.

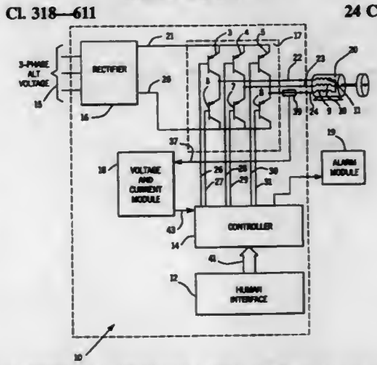
5,543,698

METHOD AND APPARATUS USED WITH AC MOTOR FOR DETECTING UNBALANCE

Jinghan Tao, Shorewood, and John Merrison, Wauwatosa, both of Wis., assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Sep. 27, 1994, Ser. No. 313,487
Int. Cl.[6] G05B *5/01*

U.S. Cl. 318—611 **24 Claims**



1. A method to be used with a motor controller for detecting a mechanically unbalanced load, the motor operating at a number of different frequencies including various operating frequencies wherein the operating frequencies are relatively high frequencies, the method comprising the steps of:

(a) prior to increasing the motor speed to any high operating frequency, increasing the motor speed to a test frequency that is substantially less than the operating frequency;

(b) maintaining the motor speed substantially equal to the test frequency during a test period;

(c) determining whether or not the motor load is mechanically balanced or unbalanced during the test period including the steps of;

(i) continuously determining a phase angle between a stator winding voltage and a stator winding current to produce a phase angle spectrum in the form of a phase angle signal:

(ii) determining a period of a mechanical cycle of the motor:

(iii) determining a difference between the maximum and minimum of the phase angle signal during the mechanical cycle to produce a stability signal: and

(iv) comparing the stability signal to an acceptable stability value:

(v) if the stability signal is greater than the acceptable stability value, producing a signal indicating that the load is unbalanced;

(d) if the stability signal is less than the acceptable stability value, stepping the motor speed up to the operating frequency; and

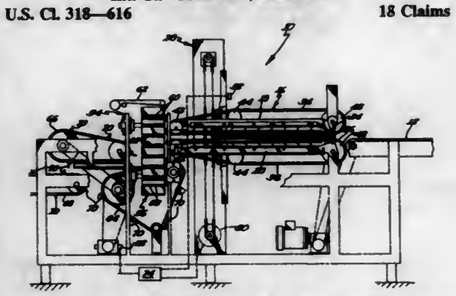
(e) if the stability signal is greater than the acceptable stability value, producing an alarm signal indicating that the load is unbalanced.

5,543,699

RANDOM INFEED TIMING DEVICE AND METHODS

Richard J. Schoeneck, Garfield, Minn., assignor to Douglas Machine Limited Liability Company, Alexandria, Minn.

Filed May 27, 1994, Ser. No. 250,013
Int. Cl.[6] G05B *5/01*; B65G *47/31*
U.S. Cl. 318—616 **18 Claims**



1. Device for timing randomly infed product comprising, in combination: a discharge unit having evenly spaced flights moving in a first direction at a rate; a diverting conveyor having an infeed end and an outfeed end, with the infeed end receiving the randomly infed product, with the outfeed end being movable in the first direction; and means for moving the outfeed end of the diverting conveyor to be synchronized with one of the flights of the discharge unit dependent upon the presence of product in the diverting conveyor.

5,543,700

DRIVER CIRCUIT AND A DRIVING METHOD FOR A VARIABLE-RELUCTANCE MOTOR

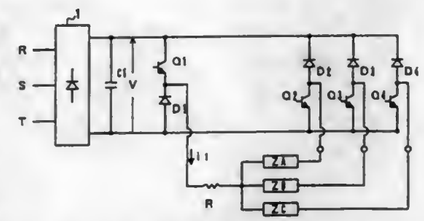
Tetsuro Sakano, and Kohei Arimoto, both of Minamitsuru-gun, Japan, assignors to Fanuc Ltd., Yamanashi, Japan

PCT No. PCT/JP93/01404, § 371 Date Jun. 6, 1994, § 102(e) Date Jun. 6, 1994, PCT Pub. No. WO94/08391, PCT Pub. Date Apr. 14, 1994
PCT Filed Sep. 30, 1993, Ser. No. 244,651
Claims priority, application Japan, Oct. 7, 1992, 4-291937
Int. Cl.[6] H02D *1/46*
U.S. Cl. 318—701 **3 Claims**

1. A driver circuit for a variable-reluctance motor having individual exciting coils for respective phases, said driver circuit comprising:

a rectifier circuit having positive and negative terminals;

a common series circuit for delivering a main voltage from said rectifier circuit to the individual coils of the motor, said common series circuit including a common switching device for pulse width modulation operation and a first diode, one end of said common switching device being connected to the positive terminal of said rectifier circuit, and a cathode and an anode of said first diode being connected to the other end of said common switching device and the negative terminal of said rectifier circuit, respectively;



a series circuit including switching devices for alternately exciting the coils for the individual phases, and second diodes, respective first ends of said switching devices of said series circuit being connected to the negative terminal of said rectifier circuit, the respective other ends being connected to respective anodes of said second diodes, and each of respective cathodes of said second diodes being connected to the positive terminal of said rectifier circuit;

the junction of the switching device of the series circuit for each phase and the corresponding second diode being connected to one end of the corresponding exciting coil of the motor;

a current detector to detect a current value of a total current equal to the sum of currents flowing through the individual coils of the motor and connected at one end to the junction of the common switching device and said first diode of said common series circuit and at the other end to the respective other ends of said exciting coils; and

a control circuit to receive the current value transmitted from said current detector, a command current value, a value of the main voltage delivered from said rectifier circuit, and a detected value of the rotor electrical angle of the reluctance motor, said control circuit computing a duty ratio of a pulse width modulation signal for switching said common switching device of said common series circuit, and outputting a signal for controlling the switching operation of the corresponding switching device in the series circuit for each said phase.

5,543,701

ELECTRICAL STORAGE CELL POLARIZATION CONTROLLER

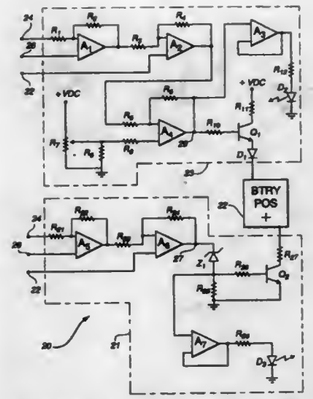
Chiu F. Leung, East Hanover, and Thomas D. O'Sullivan, Summit, both of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed Nov. 9, 1993, Ser. No. 149,251
Int. Cl.[6] H02J *7/00*
U.S. Cl. 320—4 **10 Claims**

1. A method of extending the useful life of an electrical storage cell which comprises biasing the polarization potential of the positive cell electrode, when compared to a reference electrode in contact with the electrolyte of said cell and having a similar chemical composition as that of said positive electrode, toward the range of about 40 to 80 millivolts characterized in that said polarization potential biasing is effected by draining from said positive electrode an amount of current up to about 50 milliamps per kiloamp-hour of battery rating in generally direct proportion to polarization potentials above about 60 millivolts.

5. Apparatus for extending the useful life of an electrical storage battery cell in circuit with a source of float charge voltage which comprises a reference electrode in contact with the electrolyte of said cell and having a similar chemical composition as that of the positive electrode of said cell, and controller means for biasing the polarization of said positive electrode with respect to said reference electrode toward the range of about 40 to 80 millivolts characterized in that said controller means comprises:

a) means for comparing the polarization potential of said positive electrode with that of said reference electrode; and



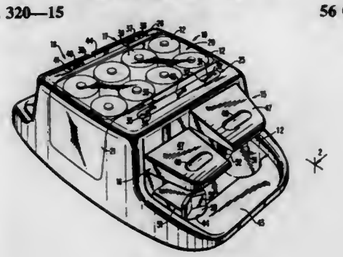
b) means responsive to the magnitude of said potential for draining from said positive electrode an amount of current up to about 50 milliamps per kiloamp-hour of battery rating in generally direct proportion to polarizations above about 60 millivolts.

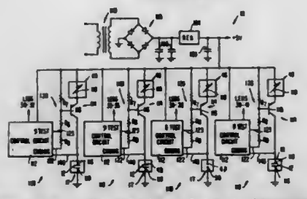
5,543,702

ALKALINE BATTERY CHARGING METHOD AND BATTERY CHARGER

John D. Pfeiffer, Quebec, Canada, assignor to JDP Innovations, Inc., Quebec, Canada

Filed Feb. 8, 1993, Ser. No. 14,580
Int. Cl.[6] H01M *10/44*
U.S. Cl. 320—15 **56 Claims**





28. A battery charger for charging at least one battery which may be any of a plurality of different sizes, particularly but not exclusively for charging alkaline batteries, comprising:

at least one circuit coupled to a power source;

a holder associated with each said circuit for holding therein a single battery of any of said sizes, each said holder including contacts for electrically connecting to a battery held therein, each said circuit supplying current to the battery held in the associated holder through the contacts thereof;

controlling means for monitoring a battery voltage available at terminals of each battery held in a respective holder, and in response thereto, controlling the charging of a respective battery in a respective holder, each said circuit being responsive to said controlling means to supply charging current to a respective battery and terminate supply of charging current to a respective battery;

each said holder including a movable element whose position is determined by the physical size of a battery held in the holder, each said movable element being coupled to a respective circuit so as to cause the respective circuit to automatically supply a predetermined charging current to a respective battery which is different for batteries of at least two different sizes in response to the position of the movable element.

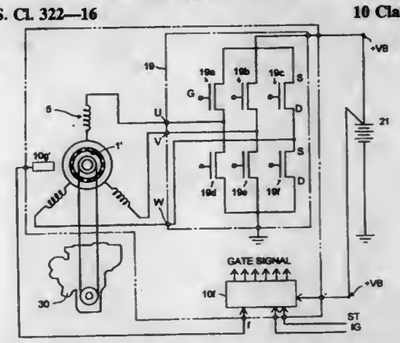
30. The battery charger of claim 28 wherein said contacts of each holder comprise a contact carried by the respective movable element.

5,543,703

GENERATOR MOTOR FOR VEHICLES

Shin Kusase; Kenzo Mitani, both of Obu; Atsushi Umeda, Anjo; Norihito Tokura, Okazaki, and Hirohide Sato, Toyokawa, all of, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 23, 1994, Ser. No. 362,408
Claims priority, application Japan, Dec. 24, 1993, 5-326597
Int. Cl.[6] H02P *6/00*; *9/04*
U.S. Cl. 322—16 **10 Claims**



1. A generator motor installed on a vehicle and performing generator operation and motor operation, said generator motor comprising:

a rotor having a rotating shaft and magnetic poles rotating with said rotating shaft which is driven by a crankshaft of an engine mounted on said vehicle, said rotating shaft being held to a housing;

an armature having a core firmly mounted to said housing and coils of plural phases, said coils being wound on said core;

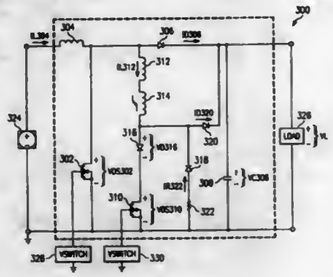
an AC-DC converter means having plural MISFETs and connected between said coils of said armature and a storage battery, said AC-DC converter means acting to convert an AC output developed by said coils into a DC output used for charging said battery when said MISFETs are in a generator operation mode and to convert a DC output from said battery into an AC output for producing a rotating magnetic field when said MISFETs are in a motor operation mode, said rotating magnetic field producing a certain phase difference with said rotating magnetic poles, each of said MISFETs being made of silicon carbide (SIC) which is a chemical compound of silicon (Si) and carbon (C) and has a lower resistivity than silicon; and

a switching means for switching mode of operation of said MISFETs between said generator operation mode and said motor operation mode.

5,543,704
PULSE WIDTH MODULATED DC-TO-DC BOOST CONVERTER

Hans C. Thorén, Stockholm, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Jun. 8, 1994, Ser. No. 255,380
Int. Cl.[6] G05F *1/613*
U.S. Cl. 323—222 **16 Claims**

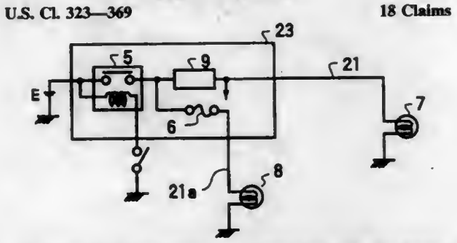


1. A boost converter circuit comprising:
a first inductive means for receiving forward current supplied to an input terminal of said circuit;
a first electronic switch coupled to said first inductive means, said first electronic switch having a parasitic intrinsic capacitance and being cyclically switched between a conducting state in which forward current flows from said first inductive means through said switch, and a non-conducting state in which forward current flows from said first inductive means to an output terminal of said circuit;
a first capacitive means coupled to said output terminal for providing an output voltage, said capacitive means being charged when said first electronic switch is in the non-conducting state;
a first rectifying means coupled between said first inductive means and said first capacitive means, said first rectifying means passing forward current to said first capacitive means when said first electronic switch is in the non-conducting state, and blocking the flow of reverse current from said capacitive means when said switch is in the conducting state; and
means for discharging the parasitic intrinsic capacitance of said first electronic switch comprising:
a second inductive means coupled between said first inductive means and said first rectifying means;
a second electronic switch coupled to said second inductive means, said second electronic switch being cyclically switched to a conducting state when said first electronic switch is in the non-conducting state for causing forward current to be diverted from said first rectifying means to said second inductive means, said parasitic capacitance being discharged by current flowing from said first electronic switch to said second inductive means;
a second rectifying means coupled between said second inductive means and said second electronic switch;
a third rectifying means coupled to said second inductive means and said first rectifying means; and
a fourth rectifying means coupled to said second and third rectifying means said fourth rectifying means for directing current from ground to said second inductive means to compensate for the decrease in the reverse recovery current from said second rectifying means when said second electronic switch is turned off.

5,543,705
VOLTAGE REGULATING CIRCUIT AND PTC ELEMENT FOR AUTOMOTIVE VEHICLES

Kouichi Uezono; Yasuhiro Hara, and Tsuyoshi Nakamura, all of Shizuoka-ken, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Jun. 2, 1994, Ser. No. 253,066
Claims priority, application Japan, Jun. 3, 1993, 5-029777 U; Nov. 16, 1993, 5-286849
Int. Cl.[6] H02H *5/04*
U.S. Cl. 323—369 **18 Claims**

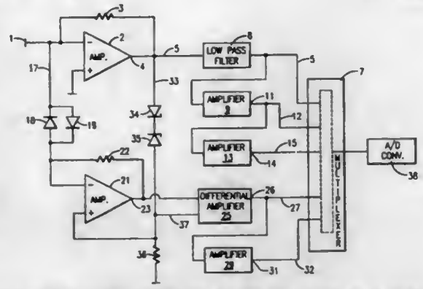


1. A voltage regulating circuit for automotive vehicles having a supply voltage, comprising:
a load connected with said supply voltage; and
a positive temperature coefficient element connected in series between said supply voltage and said load, for regulating voltage applied from said supply voltage to said load by a voltage drop across said positive temperature coefficient element, wherein said positive temperature coefficient element includes an adjustable resistance.

5,543,706
CIRCUIT AND METHOD FOR MEASURING CURRENT IN A CIRCUIT

Norbert Rolff, Horrem, Netherlands, assignor to Leybold Aktiengesellschaft, Germany

PCT No. PCT/EP92/02363, § 371 Date Jun. 1, 1994, § 102(e) Date Jun. 1, 1994, PCT Pub. No. WO93/11607, PCT Pub. Date Jun. 10, 1993
PCT Filed Oct. 14, 1992, Ser. No. 244,521
Claims priority, application Germany, May 12, 1991, 41 40 112.3
Int. Cl.[6] G01R *19/165*
U.S. Cl. 324—115 **21 Claims**



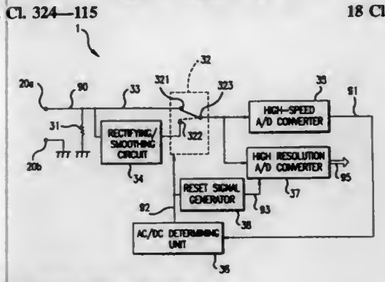
1. An electronic circuit for measuring current in a working circuit, said electronic circuit comprising:
a first operational amplifier having a positive input, a negative input, and an output connected to at least one in-line amplifier forming a first current path;
a second operational amplifier having a positive input, a negative input, and an output connected to a differential amplifier forming a second current path;

an input terminal connected to the negative inputs of each of the operational amplifiers, said input terminal being connectable to the working circuit to receive an input signal therefrom; and
variable conductance means connected in series between said input terminal and said negative input of said second operational amplifier.

5,543,707
DIGITAL TESTER

Gen Yoneyama, and Eiji Tsukahara, both of Nagano-ken, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Division of Ser. No. 128,716, Sep. 30, 1993. This application May 10, 1995, Ser. No. 438,274
Claims priority, application Japan, Sep. 30, 1992, 4-261295; Dec. 28, 1992, 4-348264; Dec. 28, 1992, 4-348265
Int. Cl.[6] G01R *15/08*
U.S. Cl. 324—115 **18 Claims**



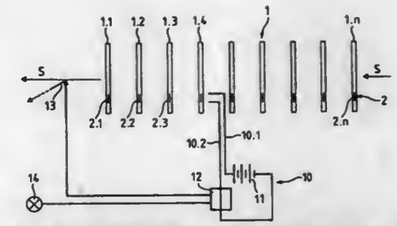
14. A digital tester comprising:
an input terminal;
a first circuit path extending between said input terminal and a DC terminal;
a second circuit path extending between said input terminal and an AC terminal, and including a rectifying/smoothing circuit;
a switch having a switch input selectively engageable with said AC terminal and said DC terminal, and a switch output;
a sequential comparison type analogue-to-digital converter, coupled to said switch output, which converts an input signal received by said input terminal into a digital AC/DC determination signal;
an AC/DC determining unit, coupled to said sequential comparison type analogue-to-digital converter, which receives and compares said AC/DC determination signal with a DC determination range defined by positive and negative thresholds, said AC/DC determining unit determining said input signal to be AC when said AC/DC determination signal exceeds both the positive and the negative thresholds during a comparison period, said AC/DC determining unit outputting a determining signal to said switch based on whether the input signal is determined to be AC;
said switch selectively engaging one of said AC terminal and said DC terminal in response to said determining signal.

5,543,708
METHOD AND APPARATUS FOR CONTROLLING CONTINUOUSLY CONVEYED PRINTED PRODUCTS

Hans-Ulrich Stauber, Grüt, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Dec. 20, 1994, Ser. No. 360,046
Claims priority, application Switzerland, Feb. 9, 1994, 00375/94
Int. Cl.[6] G01R *19/00*; B65H *7/06*
U.S. Cl. 324—133 **24 Claims**

1. A method for controlling a conveyance of printed products including the steps of:

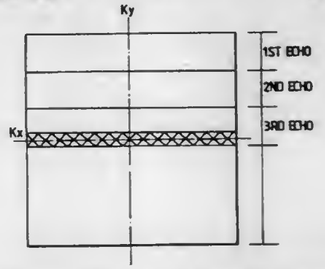


conveying the printed products continuously and in successive manner in a conveying direction into a region adjacent a circuit when the circuit is open, the circuit including at least two conductor parts and a voltage source;
scanning the printed products by simultaneously bringing the at least two conductor parts into contact with a metallic contact portion of one of the printed products and at least one support for supporting the printed products thereby closing the circuit for allowing electric current to flow in the circuit;
monitoring an actual time behavior of the electric current flowing in the circuit; and
generating a control signal in response to a divergence of the actual time behavior of the electric current from a desired time behavior of the electric current.

5,543,709
MAGNETIC RESONANCE IMAGING METHOD AND APPARATUS FOR GENERATING A PLURALITY OF SINGLE SPIN ECHOES

Koji Kajiyama, Kamagaya, Japan, assignor to Hitachi Medical Corporation, Tokyo, Japan

Continuation of Ser. No. 67,624, May 28, 1993, Pat. No. 5,357,200. This application Jul. 13, 1994, Ser. No. 274,281
Claims priority, application Japan, May 29, 1992, 4-138540
The portion of the term of this patent subsequent to Oct. 18, 2011, has been disclaimed.
Int. Cl.[6] G01R *33/48*
U.S. Cl. 324—309 **10 Claims**



1. A magnetic resonance imaging method, the combination comprising the steps of:
(1) generating a static magnetic field in which an object is placed;
(2) exciting the object by applying an exciting pulse and repeatedly inverting nuclear spins thereof by applying a train of inverting pulses so as to generate a single spin echo corresponding to each inverting pulse and provide a plurality of spin echoes;
(3) differently phase-encoding the plurality of spin echoes and reading out the plurality of spin echoes phase-encoded thus so that the plurality of spin echoes read out thus produce a first raw image data set covering a substantial half of a raw image data space in a phase-encoding direction thereof and are assigned to a plurality of corresponding regions in the substantial half partitioned in the phase-encoding direction, respectively;

(4) estimating a second raw image data set covering the remaining substantial half of the raw image data space in the phase-encoding direction thereof on the basis of the first raw image data set; and

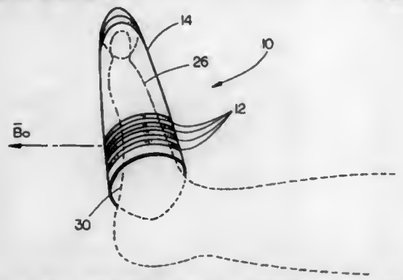
(5) producing an image of the object corresponding to the raw image data space on the basis of the first and second raw image data sets.

5,543,710

NMR CONFORMAL SOLENOIDAL COIL

Randall W. Jones, Elkhorn, Nebr., assignor to Board of Regents of Univ. of NE, Lincoln, Nebr.

Filed Feb. 22, 1994, Ser. No. 199,051
Int. Cl.[6] G01V *03/00;03/14;* **A61B** *05/055*
U.S. Cl. 324—318 **5 Claims**



2. A NMR conformal solenoidal coil operable to detect an RF field in MRI, comprising:

a plurality of generally circular NMR conductors, uniformly spaced apart and parallel to one another and attached to a hollow generally cylindrical housing;

said conductors being electrically connected in parallel and in solenoidal fashion, and oriented with the geometric centers of the circular shape lying along the longitudinal axis of the housing;

said conductors being arranged in parallel planes oriented non-orthogonal relative to the longitudinal axis of the housing;

said housing having first and second ends, the first end having a generally circular cross-section and the second end having a generally elliptical cross-section, the housing gradually changing in cross-section between the ends; and

said conductors including means for electrically connecting the conductors to MRI equipment.

5,543,711

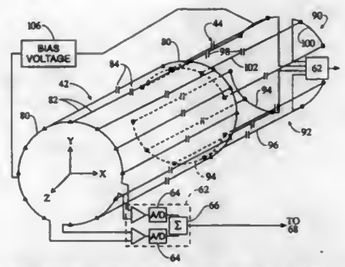
MULTIPLE QUADRATURE VOLUME COILS FOR MAGNETIC RESONANCE IMAGING

Ravi Srinivasan, Richmond Hts.; Robert A. Elek, Chardon, and Haiying Liu, Euclid, all of Ohio, assignors to Picker International, Inc., Highland Heights, Ohio

Filed Nov. 22, 1994, Ser. No. 343,635
Int. Cl.[6] G01V *3/00*
U.S. Cl. 324—318 **23 Claims**

1. In a magnetic resonance apparatus which includes a magnet for generating a temporally constant, uniform magnetic field through an examination region, a radio frequency coil which performs at least one of (1) transmitting radio frequency signals into the examination region to induce and manipulate magnetic resonance of dipoles disposed in the examination region, and (2) for receiving radio frequency signals from the dipoles disposed in the examination region, and a processor for processing the received magnetic resonance signals, the improvement comprising:

the radio frequency coil including a first quadrature volume radio frequency coil and a second quadrature volume radio frequency coil disposed only partially overlapping and electrically isolated from each other such that a radio frequency current distribution in one of the quadrature volume coils is independent of a radio frequency current distribution in the other quadrature volume coil such that the first and second quadrature volume radio frequency coils maintain preferred mode orientations.

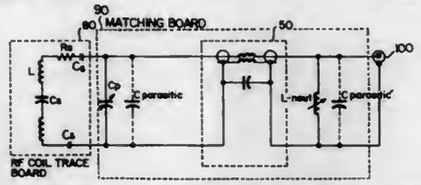


5,543,712

PARASITIC COMPENSATING MATCHING CIRCUIT INTEGRAL WITH GROUND BREAKER FOR MRI RF COILS

Mitsuaki Arakawa, Hillsborough; Ernesto Zepeda, Daly City, and William K. M. Lu, San Francisco, all of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Dec. 22, 1994, Ser. No. 361,530
Int. Cl.[6] G01V *3/00*
U.S. Cl. 324—318 **9 Claims**



1. An RF coil system for magnetic resonance imaging, comprising:

a conductive coil having an inductance and a series capacitor connected in series with the conductive coil; and

an RF coil matching circuit comprising:

a variable parallel capacitor connected in parallel with the series connection of the conductive coil and the series capacitor,

a ground breaker connected in series with the variable parallel capacitor, and

a variable parallel inductor, connected in parallel with the series connection of the variable parallel capacitor and the ground breaker.

5,543,713

GROUND BREAKER FOR MULTIPLE CONTROL LINES

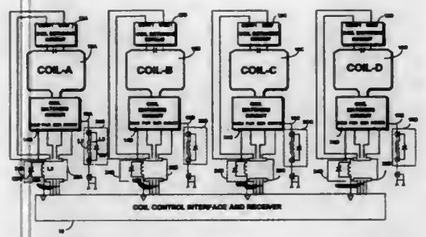
Mitsuaki Arakawa, Hillsborough, Calif.; Takashi Minemura, Otawara, Japan, and Stephen Krasnor, Berkeley, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Dec. 1, 1994, Ser. No. 352,187
Int. Cl.[6] G01V *3/00*
U.S. Cl. 324—322 **14 Claims**

1. A RF system, comprising:

a RF coil;

coil matching circuitry in electrical communication with the RF coil;



a controller;

a control line in electrical communication with the coil matching circuitry and the controller, the control line carrying a signal controlling the RF coil;

conductive shielding adjacent at least a portion of the control line, the conductive shielding having a coiled portion; and

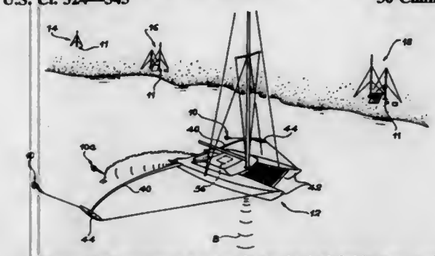
a reactive load electrically connected to the coiled portion.

5,543,714

THREE DIMENSIONAL MAGNETIC MAPPING PROCESS AND APPARATUS WITH DATA FILTERING USING AN INVERSE COMPUTATION

Roland Blanpain, Entre Deux Guiers, and Bruno Flament, Grenoble, both of, France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed Dec. 6, 1993, Ser. No. 161,472
Claims priority, application France, Dec. 14, 1992, 92 15042
Int. Cl.[6] G01V *3/08*
U.S. Cl. 324—345 **30 Claims**



1. Process for producing a map of a geological field at any point of an area to be mapped, comprising the steps of:

moving two or more magnetic field sensors over the area to be mapped in accordance with predetermined trajectories;

measuring an earth magnetic field of the area to be mapped with the two or more sensors and obtaining earth magnetic field measurements;

preprocessing data including the earth magnetic field measurements and positions of the two or more sensors over time, the preprocessing including

low-pass filtering of the data,

preprocessing of the data yielding preprocessed earth magnetic field measurement data;

obtaining a gradient map from a group of gradients, the group of gradients being determined from a difference between two preprocessed earth magnetic field measurement data corresponding to earth magnetic field measurements obtained by two different ones of the two or more sensors at the same time;

breaking down the obtained gradient map into a local field gradient map of an anomaly field of the area to be mapped, and a regional field gradient map;

choosing a magnetization distribution model of subsoil of the area to be mapped and calculating magnetization distribution and determining, with the magnetization distribution, at least one of the anomaly field and gradients of the anomaly field, in the form of at least one of a field and gradients of the field;

determining a regional field based on the regional field gradient map; and

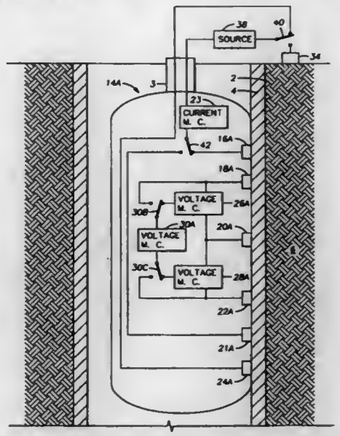
determining a geological field map by addition of the field corresponding to the anomaly field and the regional field.

5,543,715

METHOD AND APPARATUS FOR MEASURING FORMATION RESISTIVITY THROUGH CASING USING SINGLE-CONDUCTOR ELECTRICAL LOGGING CABLE

Benson Singer; Hans M. Maurer; Kurt M. Strack, all of Houston, and Otto N. Fanini, Stafford, all of Tex., assignors to Western Atlas International, Inc., Houston, Tex.

Filed Sep. 14, 1995, Ser. No. 528,358
Int. Cl.[6] G01V *3/24*
U.S. Cl. 324—368 **12 Claims**



1. An apparatus for measuring resistivity of an earth formation penetrated by a wellbore, said wellbore having a conductive casing inserted therein, said apparatus comprising:

an elongated sonde adapted to traverse the interior of said casing;

a plurality of electrodes disposed on said sonde at axially spaced apart locations, said electrodes adapted to be placed in electrical contact with said casing;

voltage measuring circuits, each of said circuits connected between a pair of said electrodes, each one of said pairs corresponding to a different non-overlapping axial interval along said sonde;

a voltage difference measuring circuit interconnected to two of said voltage measuring circuits, said voltage difference measuring circuit adapted to measure a second difference in voltage measured between said two of said voltage measuring circuits;

a source of electrical current selectively connectable between a first one and a second one of said electrodes, said first and second electrodes unconnected to said voltage measuring circuits and axially positioned to include said pairs of electrodes therebetween for measuring a resistance of said casing between said pairs of electrodes, said source selectively connectable between another two of said electrodes, said another two of said electrodes unconnected to said voltage measuring circuits and axially positioned to exclude said pairs of electrodes therebetween for measuring a characteristic impedance of said casing and said earth formation, said source selectively connectable between said first electrode and a surface return electrode disposed at the earth's surface for measuring current leakage into said formation;

a current measuring circuit for measuring current output of said source to enable determination of resistance related to voltages measured by said voltage measuring circuits; and

means for recording measurements made by said voltage measuring circuits, said voltage difference measuring circuit and said current measuring circuit.

5,543,716

SPARKPLUG VOLTAGE PROBE FOR USE WITH AN INTERNAL COMBUSTION ENGINE BY CLAMPING SPARKPLUG CABLES WITH AN INSULATION BASE

Shigeru Miyata; Yoshitaka Yamada; Hideji Yoshida; Yoshihiro Matsubara, and Yasuo Ito, all of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

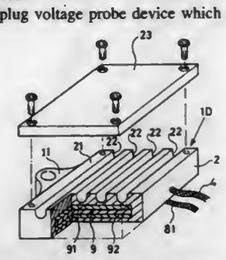
Division of Ser. No. 982,822, Nov. 30, 1992, Pat. No. 5,426,370. This application Jun. 20, 1994, Ser. No. 262,654

Claims priority, application Japan, Nov. 28, 1991, 3-314783; Nov. 29, 1991, 3-316685; May 11, 1992, 4-117683; Nov. 13, 1992, 4-303859

Int. Cl.[6] F02P *17/00;* **G01R** *13/42;1/06*

U.S. Cl. 324—402 **4 Claims**

1. In a sparkplug voltage probe device which detects a voltage



applied to each of spark plugs installed in an internal combustion engine by way of sparkplug cables so as to analyze a burning condition in the internal engine on the basis of the voltage applied to each of the spark plugs;

the sparkplug voltage probe device comprising:

an insulator base having an anchor block attached to the internal combustion engine, an upper surface of the insulator base having a plurality of grooves in which the sparkplug cables are placed, a lid placed on said insulator base to secure each of said spark plug cables;

an electrode layer embedded in the insulator base along the grooves to form a static capacity between the electrode layer and the sparkplug cables when the voltage is applied across the sparkplugs;

an electrical shield layer embedded in the insulator base in the proximity of the electrode layer and located at a side remote from the sparkplug cables so as to electrically shield the electrode layer, the electrical shield layer being connected to the internal combustion engine by way of a ground wire; and

a lead wire provided to electrically connect the electrode layer to a microcomputer so as to analyze the burning condition based on the static capacity between the electrode layer and the sparkplug cables.

5,543,717

INTEGRABLE CONDUCTIVITY MEASURING DEVICE

Norbert Kordas, Essen, Germany, assignor to Fraunhofer-Gesellschaft zur Forderung der Angewandten Forshung e.v., Munich, Germany

PCT No. PCT/DE92/00242, § 371 Date Sep. 21, 1993, § 102(e) Date Sep. 21, 1993, PCT Pub. No. WO92/18856, PCT Pub. Date Oct. 29, 1992

PCT Filed Mar. 23, 1992, Ser. No. 119,243

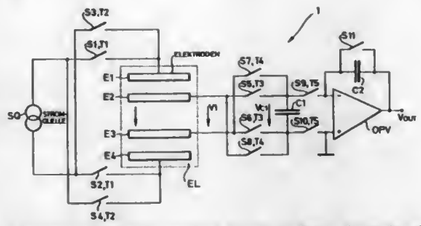
Claims priority, application Germany, Apr. 20, 1991, 41 13 033.2

Int. Cl.[6] G01N *27/06*

U.S. Cl. 324—444 **9 Claims**

1. A conductivity measuring device for measuring the electric conductivity of liquids, said conductivity measuring device comprising:

a current source connectable to two current electrodes arranged for feeding a current with a rectangular waveform into the liquid, wherein said current does not contain any net DC component and



a measuring circuit connected to two voltage electrodes for determining the voltage drop between the voltage electrodes which is dependent on the electric conductivity of the investigated liquid, wherein the measuring circuit is a switched capacitor circuit having a measuring capacitor, a feedback circuit with a feedback capacitor and feedback discharge switch arranged in a feedback branch thereof, and a switch mechanism connecting the measuring capacitor, in time-dependency with the current having the rectangular waveform, in one switching condition to the voltage electrodes and in another switching condition to the inputs of the feedback circuit.

5,543,718

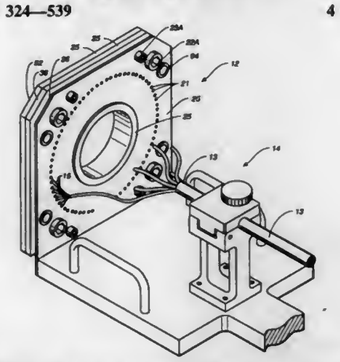
CABLE TESTING DEVICE

James M. Normile, Hayward; Jared M. McGowan, Boulder Creek, and Andrew King, Tracy, all of Calif., assignors to DCM Industries, Inc., Union City, Calif.

Filed Apr. 8, 1994, Ser. No. 225,128

Int. Cl.[6] H01H *31/02*

U.S. Cl. 324—539 **4 Claims**



1. A device for testing a plurality of insulated wires contained within a length of cable, comprising:

a console comprising wire testing means,

a first test fixture, a second test fixture, and means to put said first test fixture and said second test fixture in circuit with said testing means, said first test fixture and said second test fixture each comprising:

a first mating surface,

a plurality of axially movable and biased pins extending through said first mating surface in a predetermined array,

a first orienting configuration having a fixed spacial relationship with the axes of said pins,

a first terminal fixture and a second terminal fixture, each comprising:

a second mating surface,

a plurality of wire-receiving channels passing through said second terminal fixture and opening in said second mating surface, the openings in said second mating surface being in said predetermined array,

wire-holding means associated with each wire-receiving channel,

a second orienting configuration shaped to coact with said first orienting configuration to hold each test fixture in a unique orientation with a terminal fixture, said unique orientation positioning specific pins in specific channels when said second mating surface of said terminal fixture is juxtaposed with said second mating surface of said test fixture.

5,543,719

BARRIER LEAK DETECTION USING ELECTOKINETIC ION TRANSPORT

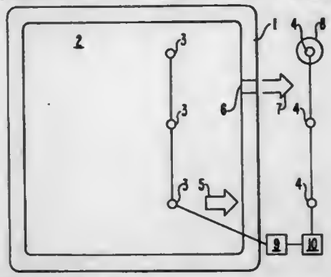
Henry L. Lomasney, New Orleans, La., assignor to Ionex Corporation, New Orleans, La.

Filed Jul. 29, 1994, Ser. No. 282,268

Int. Cl.[6] G01N *27/00;27/20*

U.S. Cl. 324—557 **10 Claims**

1. A process for determining the integrity of a geophysical



barrier comprising the steps of:

A) providing an electrode pair positioned on opposite sides of said barrier, wherein at least one electrode of said electrode pair comprises an ion exchange zone for controlling the pH at said electrode;

B) establishing an electropotential across said electrode pair, and

C) measuring the resultant current caused by said electropotential,

wherein the magnitude of said current is inversely proportional to the integrity of said barrier.

5,543,720

DEVICE FOR GAUGING THE LEVEL OF A FLUID

Kurt O. Edvardsson, Linkoping, Sweden, assignor to SAAB Marine Electronics AB, Goteborg, Sweden

PCT No. PCT/SE92/00486, § 371 Date Mar. 2, 1994, § 102(e) Date Mar. 2, 1994, PCT Pub. No. W093/01474, PCT Pub. Date Jan. 21, 1993

PCT Filed Jun. 26, 1992, Ser. No. 170,305

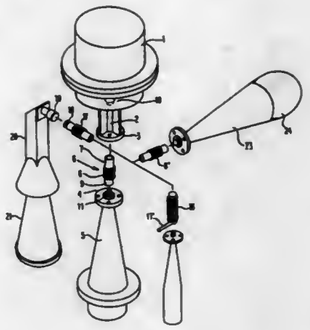
Claims priority, application Sweden, Jul. 4, 1991, 9102087

Int. Cl.[6] G01F *23/28;* **G01R** *27/04*

U.S. Cl. 324—643 **7 Claims**

1. A device for determining the level of a fluid contained in a container, that is, a flowing or granulate material, comprising a transmitter for transmitting a polarizable microwave signal through a first waveguide section, a receiver for receiving a reflected microwave signal, an electronic unit, arranged to determine the reflex position of the reflected microwave signal, and an antenna means with a second waveguide section, the first waveguide section being preferably circular in cross section,

characterized in that, the transmitter and receiver are arranged respectively to transmit and receive microwave signals in different waveguide modes which are mutually orthogonal, that is, mutually independent, and further characterized by an interchangeable third waveguide section inserted between the first and second waveguide sections, provided with means for acting upon said microwave signal through polarization and/or damping, for optimal adaption of the device to different containers and antennae.



5,543,721

METHOD AND DEVICE FOR EXTENDING THE DYNAMIC RANGE IN MEASUREMENTS C ARRIED OUT WITH A DIRECTIONAL COUPLER

Mika Knuuti, Oulu, Finland, assignor to Nokia Telecommunications OY, Espoo, Finland

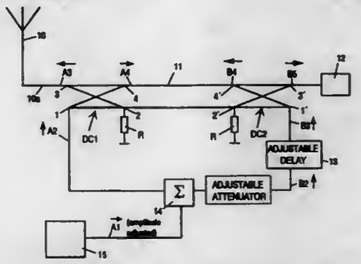
PCT No. PCT/FI92/00200, § 371 Date Jun. 9, 1994, § 102(e) Date Jun. 9, 1994, PCT Pub. No. WO93/01503, PCT Pub. Date Jan. 21, 1993

PCT Filed Jun. 26, 1992, Ser. No. 170,292

Claims priority, application Finland, Jul. 1, 1991, 913195

Int. Cl.[6] G01R *27/04*

U.S. Cl. 324—647 **6 Claims**



1. A method for extending the dynamic range in measurements carried out with a directional coupler, comprising:

(a) supplying a signal in a first direction towards an object which is under analysis, through a first port of a measuring directional coupler, whereupon part of said signal leaks as a leak signal through a second port of said measuring coupler, in a second direction to a measuring line, towards a measuring device;

(b) measuring a returning signal returning from said object, using said measuring device; and

(c) while conducting steps (a) and (b), eliminating a spurious signal comparable to said leak signal propagating in said second direction towards said measuring device, by supplying through a second directional coupler, to said measuring line, a phased compensation signal propagating in said second direction towards said measuring device with substantially the same amplitude as, but substantially opposite in phase to, said spurious signal.

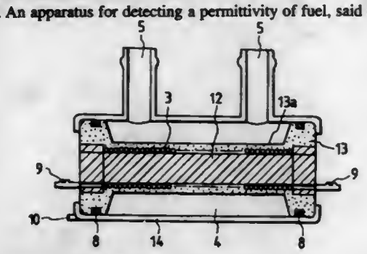
5,543,722

CHANNEL FORMING FUEL PERMITTIVITY SENSOR WITH AUTOMATIC TEMPERATURE COMPENSATION

Hiroyoshi Suzuki; Akira Okada, and Takahiro Moronaga, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 935,210, Aug. 26, 1992, abandoned. This application Jul. 25, 1994, Ser. No. 279,550
Claims priority, application Japan, Aug. 28, 1991, 3-216825; Aug. 28, 1991, 3-216840; Sep. 12, 1991, 3-232863
Int. Cl.[6] G01R 27/26; G01N 27/22
U.S. Cl. 324—675 1 Claim

1. An apparatus for detecting a permittivity of fuel, said apparatus comprising:



a single-layer winding coil means provided with a thin insulating layer having high-permittivity, said thin insulating layer being in contact with the fuel;

metal electrode means separated from said single-layer winding coil means by a predetermined distance, said metal electrode means defining a fuel channel with said single-layer winding coil means; and

means for detecting the permittivity of the fuel flowing through said fuel channel based on an electrostatic capacity between said single-layer winding coil means and said metal electrode means,

wherein said single-layer winding coil means is coaxially arranged with respect to said metal electrode means, and

wherein said detecting means detects said electrostatic capacity between said single-layer winding coil means and said metal electrode means, said electrostatic capacity corresponding to said permittivity of the fuel, and wherein temperature characteristics of permittivity of said thin insulating layer compensate for variations of said electrostatic capacity due to temperature characteristics of the permittivity of the fuel.

5,543,723

APPARATUS FOR ELECTRO-OPTIC SAMPLING MEASURING OF ELECTRICAL SIGNALS IN INTEGRATED CIRCUITS WITH IMPROVED PROBE POSITIONING ACCURACY

Mitsuru Shinagawa, and Tadao Nagatsuma, both of Kanagawa, Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Division of Ser. No. 852,661, Mar. 17, 1992, Pat. No. 5,274,325. This application Sep. 24, 1993, Ser. No. 103,198
Claims priority, application Japan, Mar. 18, 1991, 3-52439
Int. Cl.[6] G01R 29/12
U.S. Cl. 324—752 16 Claims

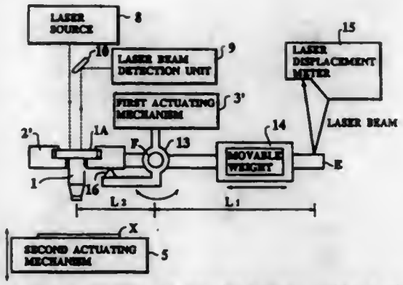
1. An apparatus for electro-optic sampling measurement of electrical signals in an integrated circuit, comprising:

an electro-optic probe including an electro-optic material;

actuator means for moving the electro-optic probe and the integrated circuit relative to each other;

laser source means for providing incident laser beams to the electro-optic probe;

laser beam detection means for measuring a change of beam intensity of a laser beam injected into the electro-optic probe from the laser source means and reflected from the electro-optic probe when the electro-optic probe is placed inside an electric field produced by the integrated circuit;



contact detection means for detecting a contact position at which the electro-optic probe makes a contact with the integrated circuit; and

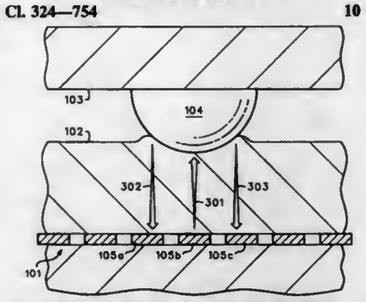
means for reducing damage on the electro-optic probe and the integrated circuit due to a shock caused as the electro-optic probe makes contact with the integrated circuit.

5,543,724

METHOD AND APPARATUS FOR LOCATING CONDUCTIVE FEATURES AND TESTING SEMICONDUCTOR DEVICES

Gary L. Christopher, Fox River Grove, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 3, 1994, Ser. No. 317,094
Int. Cl.[6] G01R 1/04
U.S. Cl. 324—754 10 Claims



1. A semiconductor device test system comprising:

a test terminal array comprising a plurality of test terminals which are stationary relative to the test terminal array;

an anisotropically conductive material overlying the test terminal array;

a device under test pressed against the anisotropically conductive material, the device under test including a device terminal array comprising a plurality of device terminals; and

a switch matrix switching a test signal from one of the plurality of test terminals to another, the semiconductor device test system locating a particular one of the plurality of device terminals when the test signal is channeled to the particular one of the plurality of device terminals without requiring alignment of the device under test to the test terminal array.

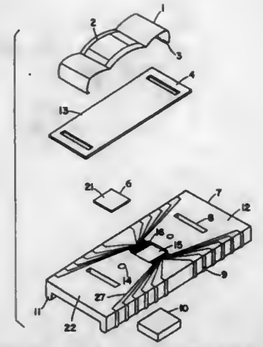
5,543,725

REUSABLE CARRIER FOR BURN-IN/TESTING ON NON PACKAGED DIE

Samuel S. S. Lim, and Siew K. Tan, both of Singapore, Singapore, assignors to Sunright Limited, Singapore

Filed Aug. 25, 1993, Ser. No. 111,706
Int. Cl.[6] G01R 31/02
U.S. Cl. 324—755 13 Claims

1. A reusable carrier for mounting a non-packaged die for burn-in and testing comprising



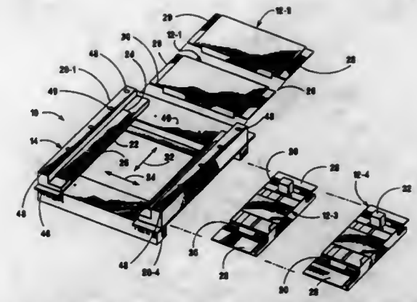
a molded plastic base having a configuration and an outer perimeter conforming to a desired integrated circuit package design for a standard industrial package design, said base including means for receiving and positioning on the molded plastic base a non-packaged die having bond pads, said base also including integrally formed pin terminals positioned on the outer perimeter to mate with the pin terminals of an intended integrated circuit design,

an thin layer electrically conductive material coated on the integrally formed pin terminals of the base to form an outer pin circuitry for enabling electrical contact of the integrally formed pin terminals with existing test equipment,

molded plastic means extending from the outer perimeter circuitry to the die receiving means, and including thin layer electrically conductive material coated on the molded plastic means for enabling electrical connection between the outer perimeter circuitry and bond pads of a received non-package die,

a cover removably mounted on the molded base for holding the non-package die and imparting desired pressure for maintaining connection between the bond pads of the non-packaged die and the circuitry extending along the base to the outer perimeter circuitry, and

means for detachably holding the cover to the molded base, wherein said cover, plastic molded base and said cover holding means form a carrier having a shape and dimension substantially conforming to the intended integrated circuit package design so as to allow use with existing test equipment.



a third rail structure extending along a second side of said circuit board receiving opening, fastened to said support structure to extend therefrom in said second direction;

a fourth rail structure extending parallel to said third rail structure, fastened to said support structure to extend therefrom in said second direction, wherein said first, second, third and fourth rail structures are fastened together to form a frame around a central opening, with said support structure extending within said central opening;

a first gantry structure including a first bearing structure movable along said first rail structure in engagement with said first rail structure and a second bearing structure movable along said second rail structure in engagement with said second rail structure, wherein said first gantry structure extends between said first and second bearing structures, across said circuit board receiving opening, adjacently disposed from said circuit board receiving opening in said first direction;

a second gantry structure including a third bearing structure movable along said third rail structure in engagement with said third rail structure and a fourth bearing structure movable along said fourth rail structure in engagement with said fourth rail structure, wherein said second gantry structure extends between said third and fourth bearings structures, across said circuit board receiving opening, adjacently disposed from said circuit board receiving opening in said second direction;

gantry drive means for moving said first and second gantry structures; and

a probe mounted on each said first and second gantry structure to move toward and away from said circuit board held within said circuit board holding means.

5,543,726

OPEN FRAME GANTRY PROBING SYSTEM

James E. Boyette, Jr., Delray Beach; Jiann-Chang Lo, Lantana, and Michael Servedlo, Boca Raton, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 3, 1994, Ser. No. 176,810
Int. Cl.[6] G01R 31/02
U.S. Cl. 324—758 20 Claims

1. Apparatus moving probing devices along opposite sides of a circuit board under test, said apparatus comprising:

a support structure with a circuit board receiving opening;

circuit board holding means for holding said circuit board within said circuit board receiving opening with a first side of said circuit board exposed in a first direction and with a second side of said circuit board, opposite said first side, exposed in a second direction;

a first rail structure extending along a first side of said of said circuit board receiving opening, fastened to said support structure to extend therefrom in said first direction;

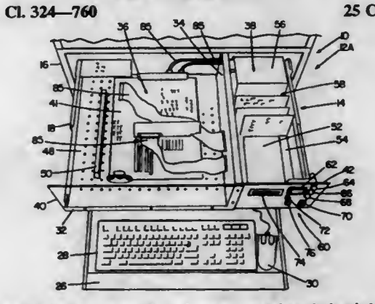
a second rail structure extending along a side of said circuit board receiving opening opposite said first side thereof, said second rail structure extending parallel to said first rail structure, fastened to said support structure to extend therefrom in said first direction;

5,543,727

RUN-IN TEST SYSTEM FOR PC CIRCUIT BOARD

Bradley B. Bushard, Chaska; Philip G. Dion, Columbia Heights, and Joseph V. Heinz, Eden Prairie, all of Minn., assignors to BellSouth Corporation, Atlanta, Ga.

Filed Apr. 5, 1994, Ser. No. 222,859
Int. Cl.[6] G01R 31/02
U.S. Cl. 324—760 25 Claims



1. A run-in test system for microprocessor-based circuit boards, including:

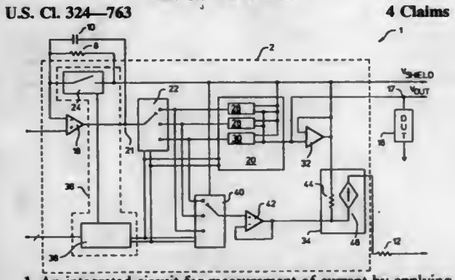
a test chamber for removably receiving a microprocessor-based circuit board unit under test (UUT);
a heating system for heating a UUT in the test chamber;
a cooling system for cooling a UUT in the test chamber;
a display;
memory for storing software, including:
UUT-executable self-diagnostic software; and
UUT-executable communication/diagnostic branch control software, including:
low temperature diagnostic phase software for generating low temperature control commands and causing a UUT to execute the self-diagnostic software at a relatively low temperature during a relatively low temperature diagnostic phase; and
high temperature diagnostic phase software for generating high temperature control commands and causing a UUT to execute the self-diagnostic software at a relatively high temperature during a relatively high temperature diagnostic phase; and
a control system adapted for interconnection to the UUT and coupled to the heating system, cooling system and display, including:
run-in test initiating means for causing the UUT to initiate the execution of the self-diagnostic software and the communication/diagnostic branch control software;
cooling system control means for causing the cooling system to cool the UUTs to a first temperature in response to the low temperature control commands;
heating system control means for causing the heating system to heat the UUTs to a second temperature greater than the first temperature in response to the high temperature control commands;
diagnostic software monitoring means for monitoring the UUT execution of the self-diagnostic software during the diagnostic phases; and
display control means for causing the display to provide an indication of a run-in test failure if the UUT fails to successfully complete the execution of the self-diagnostic software during the diagnostic phases.

5,543,728

LOW LEAKAGE DIODE SWITCHES FOR A TESTER CIRCUIT FOR INTEGRATED CIRCUITS

James W. Grace, 13355 La Cresta Dr., Los Altos Hills, Calif. 94022, and David M. DiPietro, 1423 Woodgrove Sq., San Jose, Calif. 95117

Filed Jun. 15, 1993, Ser. No. 77,186
Int. Cl.[6] G01R *13/00*
U.S. Cl. 324—763 **4 Claims**



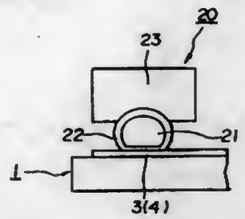
1. An integrated circuit for measurement of current by applying a test voltage resulting in an unknown current in a pin of a device under test upon receiving one of two logic states, the integrated circuit comprising:
a driver, connected to the applied test voltage, having a driver output;
a pass-through switch, connecting to the driver output;
a low leakage diode switch having switch diodes, connected to the the pass-through switch, having a switch output between the switch diodes, receiving the logic states such that the low leakage diode switch closes after receiving the first logic states and the low leakage diode switch opens after receiving the second logic states and the switch diodes are reverse biased to result in a known diode leakage current;
a measurement resistor connected to the switch output, having a scaling factor, receiving a guard signal; and
mirroring means, connected to the measurement resistor, receiving the guard signal, for producing a mirror current proportional to the unknown current by the scaling factor, such that the unknown current is determined from the mirror current and the scaling factor;
wherein the guard signal limits the reverse biasing of the switch diodes.

5,543,729

TESTING APPARATUS AND CONNECTOR FOR LIQUID CRYSTAL DISPLAY SUBSTRATES

Francois J. Henley, Los Gatos, Calif., assignor to Photon Dynamics, Inc., Milpitas, Calif.

Filed Sep. 10, 1991, Ser. No. 758,884
Int. Cl.[6] G01R *19/00*
U.S. Cl. 324—770 **19 Claims**



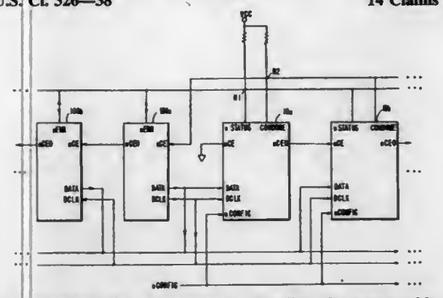
17. An apparatus for detecting defects in a liquid crystal display substrate, the liquid crystal display substrate having a circuit side including a plurality of pixel electrodes, a plurality of corresponding source lines, and a plurality of corresponding gate lines, the apparatus comprising:
an electro-optical element having optical properties that change when an electric field is impressed thereon, said electro-optical element including a front surface and a back surface, said front surface disposed facing the circuit side of the liquid crystal display substrate with a very small gap therebetween;
a power source for impressing a voltage between said electro-optical element and each of the plurality of pixel electrodes on the liquid crystal display substrate;
a light source for irradiating said back surface of said electro-optical element;
a light detector for receiving reflected light from said back surface of said electro-optical element; and
a contact coupled to said power source and removably couplable to the liquid crystal display substrate, for electrically coupling said power source to each of the plurality of pixel electrodes through the plurality of corresponding source lines, said contact comprising:
a bar-shaped elastic member removably couplable to the circuit side of the liquid crystal display substrate;
a flexible electrode disposed on said bar-shaped elastic member, electrically coupled to said power source and removably electrically couplable to the plurality of corresponding source lines; and
a support member coupled to said bar-shaped elastic member and to said flexible electrode, for removably coupling said bar-shaped elastic member to the circuit side of the liquid crystal display substrate, and for removably electrically coupling said flexible electrode to the plurality of corresponding source lines.

5,543,730

TECHNIQUES FOR PROGRAMMING PROGRAMMABLE LOGIC ARRAY DEVICES

Richard G. Cliff, Milpitas; Srinivas T. Reddy, Santa Clara; Kerry Veenstra, San Jose; Andreas Papaliolios, Sunnyvale; Chiakang Sung, Milpitas; Richard S. Terrill, Santa Clara; Rina Raman, Fremont, and Robert R. N. Bielby, Pleasonton, all of Calif., assignors to Altera Corporation, San Jose, Calif.

Filed May 17, 1995, Ser. No. 442,801
Int. Cl.[6] H03K *19/177*
U.S. Cl. 326—38 **14 Claims**



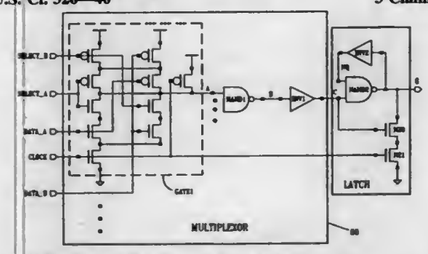
1. Apparatus for programming a plurality of programmable, integrated circuit, logic array devices arranged in an ordered sequence comprising:
a source of serial programming data synchronized with a programming clock signal which is also provided by said source, said source being external to all of said logic array devices;
a data bus for applying said serial programming data to all of said logic array devices in parallel;
a clock bus for applying said clock signal to all of said logic array devices in parallel; and
a chip enable connection from each of said logic array devices to the next of said logic array devices in said ordered sequence, each of said logic array devices applying a chip enable signal to the chip enable connection to the next of said logic array devices only after said logic array device applying said chip enable signal has been fully programmed by said serial programming data, and each of said logic array devices being enabled for programming by said serial programming data by receipt of said chip enable signal from the preceding logic array device in said ordered sequence.

5,543,731

DYNAMIC AND PRESET STATIC MULTIPLEXER IN FRONT OF LATCH CIRCUIT FOR USE IN STATIC CIRCUITS

Leon J. Sigal, Monsey, and James D. Warnock, Mohegan Lake, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 31, 1995, Ser. No. 414,412
Int. Cl.[6] H03K *19/00*
U.S. Cl. 326—40 **5 Claims**



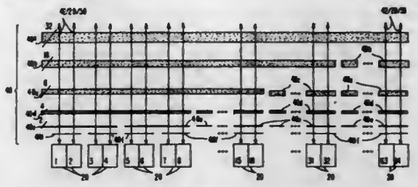
1. A static digital logic circuit, comprising:
a preset static multiplexer having a plurality of static input data lines and one or more select lines for selecting data from one of the input lines as multiplexer output data;
latching means for latching output data from the multiplexer.

5,543,732

PROGRAMMABLE LOGIC ARRAY DEVICES WITH INTERCONNECT LINES OF VARIOUS LENGTHS

Cameron McClintock, Mountain View; William Leong, San Francisco; Richard G. Cliff, Milpitas, and Bahram Ahanin, Cupertino, all of Calif., assignors to Altera Corporation, San Jose, Calif.

Filed May 17, 1995, Ser. No. 442,832
Int. Cl.[6] H03R *19/173*
U.S. Cl. 326—41 **26 Claims**



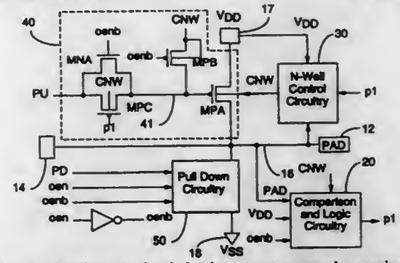
1. A programmable logic array device comprising:
a plurality of regions of programmable logic, each of said regions producing an output signal which is a programmable function of a plurality of input signals applied to that region;
a plurality of conductors adjacent to each of said regions for selectively conveying signals between said regions, said conductors adjacent to each of said regions being grouped into at least three groups, the conductors in each group extending substantially continuously to an associated number of other regions, said number of other regions being different for each of said three groups, each of said groups having an associated number of said conductors, said number of said conductors in each of said groups increasing as the number of other regions to which the conductors in that group extend increases; and
connectors for programmably selectively connecting conductors adjacent to each of said regions to said input and output signals of said region.

5,543,733

HIGH VOLTAGE TOLERANT CMOS INPUT/OUTPUT CIRCUIT

Derwin W. Mattos, San Jose; Ralph P. Heron, Morgan Hill, and Donald Lee, San Jose, all of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Jun. 26, 1995, Ser. No. 494,756
Int. Cl.[6] H03K *19/0175;19/094*
U.S. Cl. 326—81 **6 Claims**



1. An input/output circuit having a power supply terminal, a ground terminal and an output enable terminal, for communicating an internal output signal to an external output terminal and for

communicating an external input signal to an internal input terminal, said input/output circuit comprising:

a conductor coupled to said external terminal and to said internal terminal;

a pull-up circuit coupled to said power supply terminal and to said conductor and including a PMOS transistor having an N-well, said pull-up circuit configured to selectively pull-up said output signal;

a pull-down circuit coupled to said ground terminal and to said conductor and configured to selectively pull,down said output signal;

a comparison and logic control circuit coupled to said power supply terminal and to said conductor and configured to compare a supply voltage level to said input signal and configured to generate an affirmative logic signal when said input signal is greater than said supply voltage level and to generate a negative logic signal when said input signal is less than a supply voltage level; and

an N -well control circuit coupled to said power supply terminal, to said conductor and to said pull-up circuit, responsive to said logic signal, and configured to output a control N-well signal to control said PMOS transistor N-well;

wherein:

said pull-up circuit is further coupled to said output enable terminal and is responsive to an output enable signal such that when said output enable signal is affirmative, said pull-up circuit is enabled and is responsive to an internal output signal;

said pull-down circuit is further coupled to said output enable terminal and is responsive to said output enable signal such that when said output enable signal is affirmative, said pull-down circuit is enabled and is responsive to said internal output signal;

said comparison and logic control circuit is further coupled to said output enable terminal and is responsive to said output enable signal such that when said output enable signal is affirmative, said comparison and logic control circuit is disabled; and

said N-well control circuit is further coupled to said output enable terminal and is responsive to said output enable signal such that when said output enable signal is affirmative, said control N-well signal is set to supply voltage level.

5,543,734

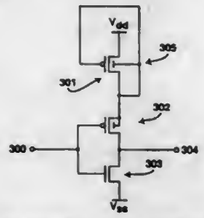
VOLTAGE SUPPLY ISOLATION BUFFER

Andrew M. Volk, Loomis; Sajjad A. Zaidi, Folsom, and Eric B. Selvin, San Jose, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Aug. 30, 1994, Ser. No. 298,144

Int. Cl.[6] H03K *19/0175;19/094*

U.S. Cl. 326—83 **16 Claims**



1. A buffer for an integrated circuit comprising:

an input node;

an output node;

a first p-channel transistor having a source and a drain disposed in a well, and a gate, said source being coupled to a first supply potential, and said well being coupled to said drain;

a second p-channel transistor having a source and a drain disposed in a well, and a gate, said source and said well of said second p-channel transistor being coupled to said drain of said first p-channel transistor, said drain of said second p-channel transistor being coupled to said output node of said buffer; and

a n-channel transistor having a drain coupled to said output node, a source coupled to a second supply potential, and a gate coupled to said input node and to said gate of said second p-channel transistor.

5,543,735

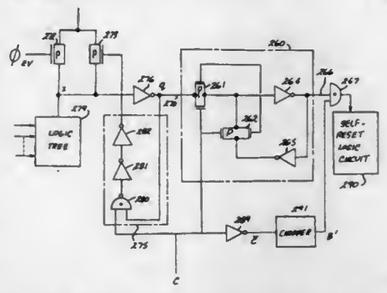
METHOD OF CONTROLLING SIGNAL TRANSFER BETWEEN SELF-RESETTING LOGIC CIRCUITS

Tin-chee Lo, Fishkill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 292,673, Aug. 18, 1994, Pat. No. 5,488,319. This application Jun. 2, 1995, Ser. No. 458,371

Int. Cl.[6] H03K *19/096*

U.S. Cl. 326—93 **2 Claims**



1. A method of controlling transfer of signals from a first self-resetting logic circuit to a second self-resetting logic circuit requiring a pulsed input, the method comprising the steps of:

transferring an output signal from the first logic circuit to a latch and registering the output signal in the latch under control of a clock pulse having a leading edge and a trailing edge and generating a latch output signal;

resetting the first logic circuit a predetermined period of time after the clock pulse leading edge;

in response to the trailing edge of the clock pulse, generating a latch output control pulse; and

transferring the latch output signal to the second logic circuit on a pulsed basis in response to the latch output control pulse.

5,543,736

GATE ARRAY ARCHITECTURE AND LAYOUT FOR DEEP SPACE APPLICATIONS

Harry N. Gardner; Charles R. Gregory, and Douglas W. Garvie, all of Colorado Springs, Colo., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 10, 1993, Ser. No. 165,236

Int. Cl.[6] H01L *25/00;* **H03K** *19/00*

U.S. Cl. 326—101 **5 Claims**

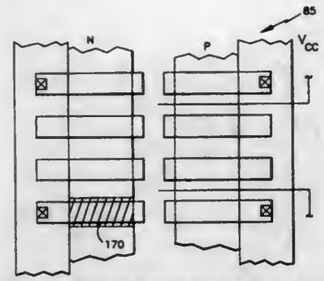
1. A method of increasing the immunity of an integrated circuit gate array to deep space interference from electromagnetic radiation, photon energy, and charged particles, said gate array comprising:

a semiconductor substrate;

an N diffusion region and a P diffusion region, said N and said P diffusion regions being formed within said substrate and substantially spaced apart to avoid latchup, and said N and P diffusion regions both comprise a plurality of drain-source region pairs;

a first and a second logical component;

a first and a second isolation transistor for isolating said first logical component from said second logical component, said



first and second isolation transistors each being coupled with a biasing bus, said biasing bus of said first isolation transistor being adjacent to said N diffusion region and adapted to be electrically coupled to an electrical ground, said biasing bus of said second isolation transistor being adjacent to said P diffusion region and adapted to be electrically coupled to a power supply, each isolation transistor comprising:

a gate, a source, and a drain, said gate comprising a strip of conductive material having a first and second end, said strip positioned directly superjacent an insulating region of said plurality of insulating regions positioned between each of said drain-source region pairs; and

an electrical contact for electrically coupling said biasing bus with said gate, said electrical contact is positioned at said first end of said strip, said method comprising the steps of:

selecting one of said first and second isolation transistors; and

decoupling said gate of said one of said first and second isolation transistors from said biasing bus of said one of said first and second isolation transistors.

5,543,737

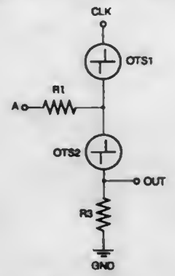
LOGICAL OPERATION CIRCUIT EMPLOYING TWO-TERMINAL CHALCOGENIDE SWITCHES

Stanford R. Ovshinsky, Bloomfield Hills, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed Feb. 10, 1995, Ser. No. 386,902

Int. Cl.[6] H03K *19/00*

U.S. Cl. 326—104 **18 Claims**



1. A logic operational circuit comprising:

at least one logic gate wherein each logic gate comprises:

a pair of two-terminal chalcogenide switches in series; and

at least one resistor connected at one end to a point between said pair of two-terminal chalcogenide switches.

5,543,738

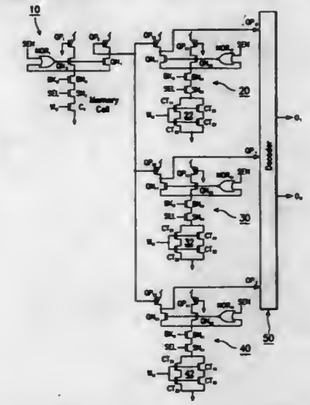
MULTI-STAGE SENSE AMPLIFIER FOR READ-ONLY MEMORY HAVING CURRENT COMPARATORS

Fong-Chun Lee; Chien-Chih Fu, and Nan-Chueh Wang, all of Hsinchu Hsien, Taiwan, assignors to United Microelectronics Corp., Hsinchu, Taiwan

Filed Dec. 27, 1994, Ser. No. 364,651

Int. Cl.[6] G01R *19/00;* **H03K** *5/153*

U.S. Cl. 327—51 **6 Claims**



1. A multi-stage sense amplifier for read-only memory having a memory array consisting of a plurality of memory cell units, said multi-stage sense amplifier comprising:

a sense amplifier for sensing the current flowing through a transistor of said memory cell units of said read-only memory, said memory cell unit transistor being programmed with one of four memory cell unit current capacity characteristics;

three current comparators coupled to said sense amplifier, each of said comparators having a current comparing unit for comparing a sensed current flowing through said memory cell unit transistor a current flowing through each of said comparators;

wherein an output of each of said three comparators is provides for identifying whether or not the current flowing through said memory cell unit transistor is larger than said currents flowing through said comparators, and each of said outputs of each of said comparators representing multibit data stored in each of said memory cell units of said read-only memory;

wherein said three current comparators each includes a current comparing unit having comparison unit transistors selected from four possible transistor characteristics, said four possible transistor characteristics having four predefined current capacity characteristics that are respectively and virtually equal to said four memory cell unit current capacity characteristics; and wherein each of said three current comparing units includes four types of comparison unit transistors, with every two of said four comparison unit transistors connected in series, and the two pairs of series comparison unit transistors connected in parallel, said every two comparison unit transistors connected in series having the same physical dimensions providing the same predefined current capacity characteristics, while the comparison unit transistors not in the same series connection having different physical dimensions providing different predefined current capacity characteristics.

VOL. 1189 NO. 1 AUG 6 1996 UMI

5,543,739
CONTROL, REDUCTION AND EQUALIZATION OF DELAYS IN A DRIVER STAGE

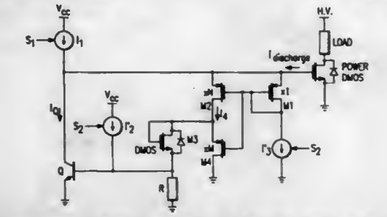
Gregorio Bontempo, Barcellona Pozzo di Gotto; Patrizia Milazzo, Messina, and Angelo Alzati, Bollate, all of, Italy, assignors to SGS-Thomson Microelectronics, S.r.l., Agrate Brianza, and Consorzio Per La Ricerca Sulla Microelettronica Nel Mezzogiorno, Catania, both of, Italy

Filed Mar. 31, 1994, Ser. No. 220,845

Claims priority, application European Pat. Off., Apr. 9, 1993, 93830158

Int. Cl.[6] H03K *17/04;17/687*

U.S. Cl. 327—108 **30 Claims**



1. A control circuit, coupled to a driving node of a power transistor, for switching a load toward ground through said power transistor, comprising:

a first current generator, coupled to said driving node and controlled by a first switching signal producing a current for charging said driving node of the power transistor during a turn-on process;

a second current generator, controlled by a second switching signal which is complementary to said first switching signal, producing a current for discharging the driving node of the power transistor during a turn-off process; and

a third current generator, coupled to said driving node, controlled by a third switching signal, and producing an additional current for discharging said driving node only during a first phase of said turn-off process, until the power transistor has reached a near saturation condition;

a capacitance discharge current amplifier connected between the driving node of the power transistor and said ground and driven by the sum of said discharge current, produced by said second current generator controlled by said second switching signal, and of said additional current that is produced through an output branch of a current mirror, connected between the driving node of the power transistor and said ground and driven by said third current generator, which is controlled by a replica of said second switching signal; and

circuitry connected to said capacitance discharge current amplifier and said third current generator, for interrupting said additional driving current of said capacitance discharge current amplifier when the voltage on the driving node of the power transistor drops to a value close to that of saturation of the power transistor; wherein said circuitry for interrupting said additional driving current comprises a diode-configured transistor connected to said output branch of said current mirror.

5,543,740
INTEGRATED HALF-BRIDGE DRIVER CIRCUIT

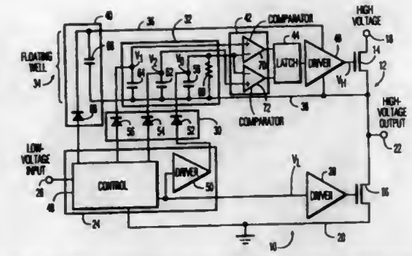
Stephen L. Wong, Scarsdale, N.Y., assignor to Philips Electronics North America Corporation, New York, N.Y.

Filed Apr. 10, 1995, Ser. No. 419,490

Int. Cl.[6] H03B *1/00*

U.S. Cl. 327—108 **7 Claims**

1. An integrated half-bridge driver circuit for driving a half-bridge output stage having high-side and low-side power transistors coupled together at a high-voltage output terminal, which comprises:



a low-voltage control circuit having a low-voltage input terminal and a control output coupled to a control terminal of said low-side power transistor;

a floating well in said integrated half-bridge driver circuit and comprising a timing circuit for controlling the activation of said high-side power transistor, a floating ground node of said floating well being coupled to said high-voltage output terminal; and

a high-voltage interface circuit for coupling said control output of said low-voltage control circuit to said timing circuit.

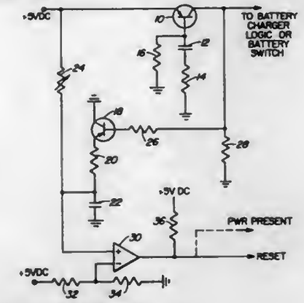
5,543,741
RESET CIRCUIT FOR GENERATING RESET PULSE OVER AN INTERVAL OF REDUCED VOLTAGE SUPPLY

Valentin Purits, Heuvelton, N.Y., assignor to Mitel Corporation, Canada

Filed Dec. 30, 1994, Ser. No. 366,671

Int. Cl.[6] H03L *7/00*

U.S. Cl. 327—143 **14 Claims**



1. A reset circuit comprising:

(a) first means for providing a reset pulse,

(b) second means connected to the first means for enabling said first means to stag said reset pulse,

(c) third means connected to the second means for detecting a voltage drop of an initial supply voltage below a threshold and for enabling said second means in response to said detection,

(d) means for extending a length of the reset pulse until a time of restoration of a full initial supply voltage

(e) said third means comprising a first transistor in series with a first resistor between a source of said initial supply voltage and ground,

(f) means connected to the first transistor for charging a capacitor through the first transistor from said voltage supply,

(g) means connected to the first transistor for causing the first transistor to conduct in response to a on the first capacitor,

(h) means connected to the first transistor and to the second means for inhibiting said second mean, and

(i) means connected to the first transistor and to the second means for inhibiting conduction of the first transistor and for

enabling said second means as a result thereof upon said supply voltage dropping below the voltage of the charge on the capacitor.

5,543,742
PHASE SHIFTING CIRCUIT

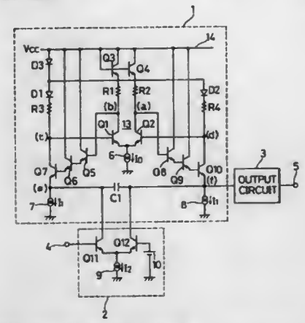
Isoshi Takeda, and Yoshikazu Shimada, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Sep. 15, 1994, Ser. No. 305,877

Claims priority, application Japan, Sep. 16, 1993, 5-229749

Int. Cl.[6] H03K *3/00;* **H03B** *5/12*

U.S. Cl. 327—232 **6 Claims**



1. A phase shifting circuit comprising:

an oscillation circuit which makes an oscillation by charging or discharging a capacitor said oscillation circuit generating at both ends of the capacitor an oscillation signal having a constant level period and a saw tooth wave period alternately;

an output circuit, connected to said oscillation circuit, which generates a voltage of a predetermined level during the saw tooth wave period of the oscillation signal; and

a pair of differential transistors having their output electrodes connected to the both ends of the capacitor, respectively,

wherein in order that a phase shift in accordance with a frequency of an input signal occurs in an output of the output circuit, a value of a current flowing through the capacitor is changed in the middle of the saw tooth wave period by activating or disabling the pair of differential transistors by the input signal, wherein said oscillation circuit includes first and second transistors which are alternately activated, and first and second constant current sources of a current I_1 which are connected to the first and second transistors, respectively, and wherein the first transistor and the first constant current source are connected to a first end of the capacitor, and the second transistor and the second constant current source are connected to a second end of the capacitor, and wherein when the first transistor is ON and the second transistor is OFF, the current I_1 flows from the first transistor through the capacitor to the second constant current source, and when the first transistor is OFF and the second transistor is ON, the current I_1 flows from the second transistor through the capacitor to the first constant current source.

5,543,743
ADJUSTABLE REFERENCE SIGNAL DELAY DEVICE AND METHOD

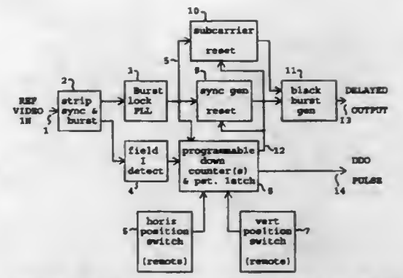
J. Carl Cooper, 15288 Via Pinto, Monte Sereno, Calif. 95030

Filed Jun. 5, 1995, Ser. No. 461,093

Int. Cl.[6] H03H *11/26*

U.S. Cl. 327—263 **18 Claims**

1. A method of providing a delayed reference in response to a received reference which includes at least a first period determined



by a positive followed by a negative transition and a second period determined by a negative followed by a positive transitions including the steps of:

receiving said reference,

identifying the occurrence of a first event in said received reference,

starting a delay period in response to said occurrence of said first event,

generating a second event at the end of said delay period,

generating a delayed version of said received reference in response to said second event wherein said first and said second periods are delayed in response to said second event.

5,543,744
DRIVER/RECEIVER CIRCUIT FOR REDUCING TRANSMISSION DELAY

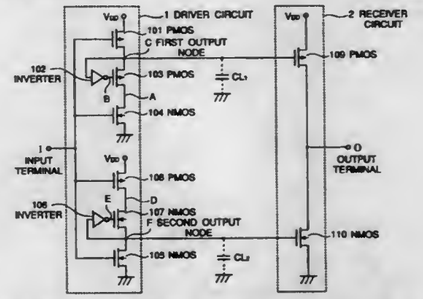
Koichiro Okumura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 28, 1994, Ser. No. 365,450

Claims priority, application Japan, Dec. 28, 1993, 5-337164

Int. Cl.[6] H03L *5/00*

U.S. Cl. 327—333 **3 Claims**



1. A driver/receiver circuit comprising:

a driver circuit having a power supply terminal, a ground terminal, an input terminal and first and second output nodes, the driver circuit for outputting, as the result of a logical operation for an input signal on said input terminal, on said first output node, a first output signal which changes between a power supply potential supplied to said power supply terminal and a first potential, and, on said second output node, a second output signal which is in a same phase as that of said first output signal and which changes between a second potential and a ground potential; and

a receiver circuit including a first electric circuit having at least a P-channel MOSFET connected between said power supply terminal and an output terminal and having its gate electrically connected to said first output node, and a second electric circuit having at least an N-channel MOSFET connected between said ground terminal and said output terminal and having its gate electrically connected to said second output

node, said second electric circuit having a configuration substantially similar to that of said first electric circuit,

wherein said driver circuit includes:

a first P-channel MOSFET having its source connected to said power supply terminal, its gate connected to said input terminal, and its drain connected to said first output node;

a first inverter circuit having its input connected to said first output node;

a first voltage limiting MOSFET of a P-channel type having its source connected to said first output node and its gate connected to an output of said first inverter circuit;

a first N-channel MOSFET having its drain connected to a drain of said first voltage limiting MOSFET, its gate connected to said input terminal, and its source connected to said around terminal;

a second N-channel MOSFET having its source connected to said ground terminal, its gate connected to said input terminal, and its drain connected to said second output node;

a second inverter having its input connected to said second output node;

a second voltage limiting MOSFET of an N-channel type having its source connected to said second output node and its gate connected to an output of said inverter circuit; and

a second P-channel MOSFET having its drain connected to a drain of said second voltage limiting MOSFET, its gate connected to said input terminal and its source connected to said power supply terminal.

5,543,745

VOLTAGE CONTROLLED CURRENT SOURCE AND BIAS GENERATION CIRCUIT USING SUCH CURRENT SOURCE

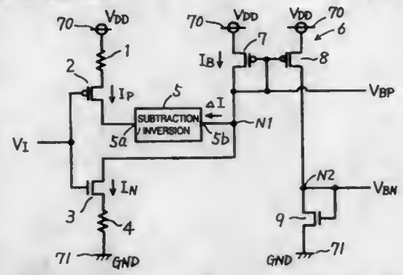
Hiromi Notani, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 28, 1995, Ser. No. 430,675

Claims priority, application Japan, Jun. 3, 1994, 6-122521

Int. Cl.[6] G05F *1/10*

U.S. Cl. 327—538 **8 Claims**



1. A voltage controlled current source for outputting a current depending upon a control voltage, comprising:

a first input transistor of a first conductivity type, having a first electrode coupled to a first power supply potential, a control electrode for receiving said control voltage, and a second electrode for providing a first current depending upon the control voltage;

a second input transistor of a second conductivity type, having a first electrode coupled to a second power supply potential, a control electrode for receiving said control voltage, and a second electrode for providing a second current depending upon the control voltage; and

an operation circuit coupled to the second electrodes of said first and second input transistors, said circuit including,

a constant current source for passing a prescribed current,

circuitry for subtracting the first current provided by said first input transistor from said prescribed current and adding the second current provided by said second input transistor to the result of said subtraction, and

an output node for outputting an output current resulting from said addition.

5,543,746

PROGRAMMABLE CMOS CURRENT SOURCE HAVING POSITIVE TEMPERATURE COEFFICIENT

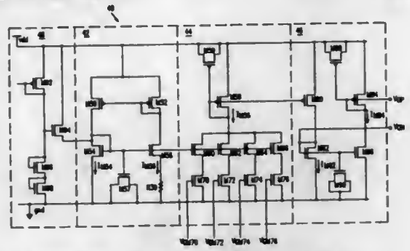
James R. Kuo, Cupertino, Calif., assignor to National Semiconductor Corp., Santa Clara, Calif.

Continuation of Ser. No. 73,939, Jun. 8, 1993, abandoned.

This application Aug. 22, 1995, Ser. No. 524,116

Int. Cl.[6] G05F *1/10;* **G06G** *7/12;* **H03B** *1/00*

U.S. Cl. 327—543 **17 Claims**



1. A temperature compensation circuit, comprising:

a first field-effect transistor (FET) having a source, a drain, a gate, and a current conducting channel inducible between its source and its drain;

a second FET having a source, a drain, a gate, and a current conducting channel inducible between its source and its drain, the current conducting channel of the second FET being larger than the current conducting channel of the first FET, the second FET having its gate coupled to the gate of the first FET;

a resistor having first and second terminals, the first terminal of the resistor being connected to a first node that is common with the source of the first FET and the second terminal of the resistor being connected to a second node that is common with the source of the second FET; and

current generating circuitry for generating a first current in the current conducting channel of the first FET and a second current in the current conducting channel of the second FET and for maintaining the first current to be substantially equal to the second current.

5,543,747

BIPOLAR INTEGRATED DEVICE HAVING PARASITIC CURRENT DETECTOR

Junji Hayakawa, Okazaki, and Hiroyuki Ban, Hazu, both of, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 27, 1994, Ser. No. 363,778

Claims priority, application Japan, Dec. 27, 1993, 5-350420

Int. Cl.[6] H01L *25/00*

U.S. Cl. 327—565 **15 Claims**

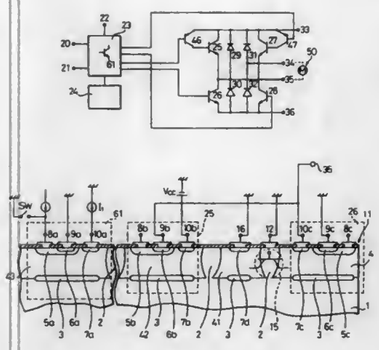
1. A bipolar semiconductor integrated circuit formed on an integrated circuit chip comprising:

an output circuit portion having output-stage transistors;

a control circuit portion having control transistors, for controlling the output circuit portion, at least one of said control transistors being formed in an elongated shape having a short side and a long side; and

a PN-junction isolation region formed on said integrated circuit chip such that said output-stage transistors are isolated from said control transistors by said isolation region;

said at least one control transistor formed in an elongated shape being arranged on said integrated circuit chip such that said short side is oriented toward said output-stage transistors.



5,543,748

FLIP-FLOP CIRCUIT WITH RESONANT TUNNELING DIODE

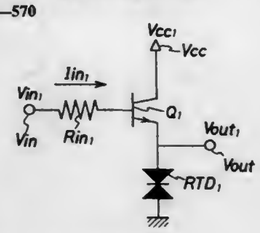
Yuji Ando, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 30, 1995, Ser. No. 413,766

Claims priority, application Japan, Mar. 30, 1994, 6-060450

Int. Cl.[6] H01J *19/82*

U.S. Cl. 327—570 **6 Claims**



1. A flip-flop circuit, comprising:

a bipolar transistor having a collector terminal connected to a voltage source and a base terminal connected to an input terminal of said flip-flop circuit by way of a resistor; and

a resonant-tunneling diode having a pair of terminals one of which is grounded and the other of which is connected to an emitter terminal of said bipolar transistor with a junction therebetween connected to an output terminal of said flip-flop circuit;

said bipolar transistor being set such that, when the value of a current flowing into said base terminal of said bipolar transistor has a high level, the value of a current flowing through said collector terminal of said bipolar transistor is higher than a peak current value of said resonant-tunneling diode, and when the value of the current flowing into said base terminal of said bipolar transistor has a low level, the value of the current flowing through said collector terminal of said bipolar transistor is lower than a valley current value of said resonant-tunneling diode.

5,543,749

RESONANT TUNNELING TRANSISTOR

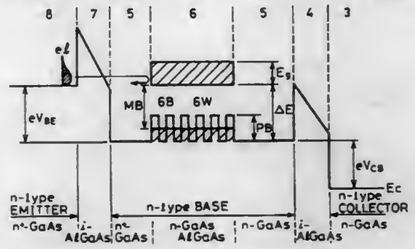
Yuji Awano, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 985,243, Dec. 2, 1992, abandoned, which is a continuation of Ser. No. 690,396, Apr. 25, 1991, abandoned, which is a continuation of Ser. No. 416,004, Oct. 2, 1989, abandoned, which is a continuation of Ser. No. 323,244, Mar. 13, 1989, abandoned, which is a continuation of Ser. No. 25,652, Mar. 13, 1987, abandoned. This application Dec. 27, 1994, Ser. No. 363,989

Claims priority, application Japan, Mar. 13, 1986, 61-53725

Int. Cl.[6] H01L *29/737;29/15*

U.S. Cl. 327—570 **8 Claims**



1. A semiconductor device comprising:

an unipolar transistor comprising:

a collector layer;

a base layer formed above said collector layer and including two low resistance layers maintained at the same potential;

a collector side barrier layer provided between said collector layer and said base layer;

an emitter layer formed above said base layer;

an emitter side barrier layer provided between said base layer and said emitter layer and on a first one of said two low resistance layers and having a thickness for tunneling carriers from said emitter layer;

a base electrode contacting one of said two low resistance layers; and

superlattice means included in said base layer and formed between said two low resistance layers, said superlattice means comprising:

a plurality of thin barrier layers having substantially the same thickness; and

a plurality of thin well layers, having substantially the same thickness, for forming a mini-band and a mini-bandgap provided within said mini-band, said mini-band and said mini-bandgap being placed above a bottom of a conduction band Ec of said plurality of thin barrier layers of said super-lattice means; and

bias means for applying a voltage between said emitter and base layers such that said injected carriers flow through said emitter side barrier layer and move through said mini-band.

5,543,750

BOOTSTRAP CIRCUIT

Young N. Oh, Kyoungki-Do, Rep. of Korea, assignor to Hyundai Electronics Industries Co. Ltd., Kyoungkyo-do, Rep. of Korea

Filed Nov. 29, 1994, Ser. No. 348,192

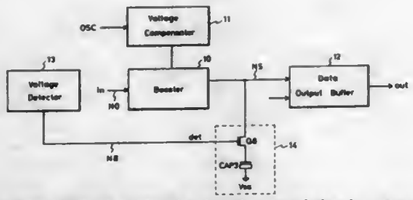
Claims priority, application Rep. of Korea, Dec. 1, 1993, 93-26087

Int. Cl.[6] H03K *4/58*

U.S. Cl. 327—589 **4 Claims**

1. An improved bootstrap circuit comprising:

boosting means for boosting a binary signal and outputting the booster binary signal through its output terminal;



voltage detection means for detecting a variation in a supply voltage from a supply voltage source;

an active load for adjusting an output load amount of said boosting means under control of said voltage detection means, comprising voltage storing means connected to said output terminal of said boosting means, for storing a voltage therefrom to compensate a power thereon; and

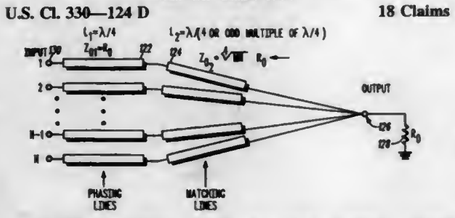
control switching means connected between said boosting means and said voltage storage means, and controlled by said voltage detection means for selectively providing voltage from said storing means to said output terminal of said boosting means in response to an output signal from said voltage detecting means.

5,543,751

POWER COMBINER FOR USE IN A RADIO FREQUENCY SYSTEM AND A METHOD OF CONSTRUCTING A POWER COMBINER

Robert B. Stedman, Hoffman Estates, and John E. Matz, Hanover Park, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 21, 1995, Ser. No. 505,092
Int. Cl.[6] H03F *3/68*
U.S. Cl. 330—124 D **18 Claims**



1. A power combiner for use in a radio frequency system comprising:

a plurality of phasing transmission lines supporting a set of amplifiers coupled thereto, said set having a selectable number of amplifiers between a minimum and a maximum; and

a plurality of matching transmission lines, each of the matching transmission lines having a first and second end, said first end coupled to one of the phasing lines and said second end coupled to a common node and each matching transmission line having a substantially equivalent characteristic impedance determined according to a function of the minimum and the maximum selectable number of amplifiers in said set of amplifiers.

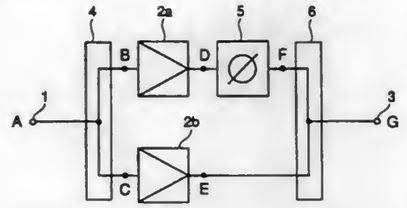
5,543,752

MICROWAVE AMPLIFIER CIRCUIT HAVING REDUCED HARMONIC DISTORTION

Yoshihiro Tsukahara, Itmai, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 4, 1995, Ser. No. 433,753
Claims priority, application Japan, Jul. 26, 1994, 6-174194
Int. Cl.[6] H03F *3/68;1/26*
U.S. Cl. 330—124 R **6 Claims**

1. A microwave amplifier circuit comprising:



an input terminal for receiving an input signal and an output terminal;

a divider having an input and first and second outputs, the input being connected to the input terminal, the divider dividing the input signal into first and second divided signals and outputting the first and second divided signals to the first and second outputs, respectively;

first and second microwave amplifiers, each of the first and second microwave amplifiers having an input and an output, the inputs of the first and second microwave amplifiers being respectively connected to the first and second outputs of the divider;

a 90° phase shifter having an input and an output, the input of the 90° phase shifter being connected to the output of the first microwave amplifier; and

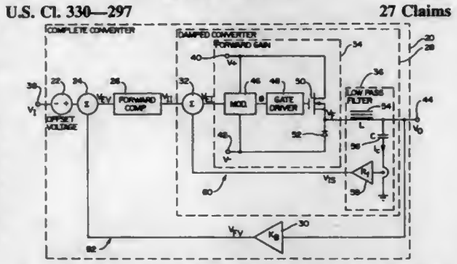
a combiner having first and second inputs and an output, the first input of the combiner being connected to the output of the 90° phase shifter, the second input of the combiner being connected to the output of the second microwave amplifier, and the output of the combiner being connected to the output terminal, the combiner combining signals output by the 90° phase shifter and by the second microwave amplifier.

5,543,753

AUDIO FREQUENCY POWER AMPLIFIERS WITH ACTIVELY DAMPED FILTER

Robert C. Williamson, Everett, Wash., assignor to Carver Corporation, Lynnwood, Wash.

Filed Jun. 22, 1994, Ser. No. 263,462
Int. Cl.[6] H02J *1/02*
U.S. Cl. 330—297 **27 Claims**



1. An amplifier system for generating an output signal based on an input signal comprising:

linear amplification means for amplifying an input signal to obtain an amplified output signal, the linear amplification means having at least one supply terminal;

first amplification means for generating a first supply signal and applying the first supply signal to the at least one supply terminal of the linear amplification means, where the first amplification means comprises

first control means for generating a first control signal based on the input signal,

first switch means for generating a first pulsed power signal based on the first control signal, and

first filter means for filtering the first pulsed power signal to obtain the first supply signal, the first filter means comprising a first filter inductor and a first filter capacitor; and

first active damping means for damping perturbations in the first filter means; wherein

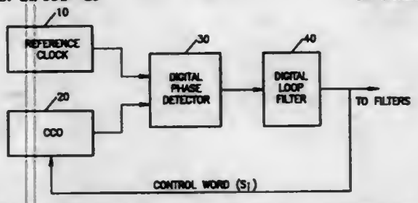
the first active damping means damps perturbations in the first filter means based on a current through the first filter capacitor.

5,543,754

CAPACITOR AND RESISTOR CONTROLLED OSCILLATOR TIMING LOCK LOOP FOR PRECISION TIME CONSTANTS

Keith K. Onodera, Berkeley, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Oct. 11, 1994, Ser. No. 321,242
Int. Cl.[6] H03L *7/099*
U.S. Cl. 331—25 **32 Claims**



8. A system for generating control words corresponding to RC time constants, comprising:

a controlled oscillator having a first oscillation frequency;

a reference oscillator having a second oscillation frequency;

comparing means for comparing the first and second oscillation frequencies and producing an output signal which is indicative of the difference between the first and second frequencies;

filtering means for converting the output signal into control words, wherein the control words are provided to the controlled oscillator so that the first oscillation frequency can be varied as needed; and

means for outputting the control words.

5,543,755

INDICTIVE COMPONENT WITH ZIG ZAG PARTS AND AN OPENING IN THE EXTERIOR MOLD

Yasushi Kumeji, Kadoma; Seiichi Nishimura, Hirakata; Yoshinobu Nakajima, Katano, and Makoto Itou, Toyooka, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 135,291, Oct. 12, 1993, Pat. No. 5,446,428.
This application Apr. 28, 1995, Ser. No. 430,849
Claims priority, application Japan, Oct. 12, 1992, 4-272699; Mar. 26, 1993, 5-67833; Jun. 30, 1993, 5-162131
Int. Cl.[6] H03H *7/01*
U.S. Cl. 333—185 **10 Claims**

1. An electronic component comprising:

an inductive element including a pair of zigzag parts,

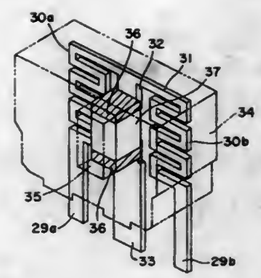
a pair of first terminals, one of said terminals connected to a first side of a first zigzag part of the pair of zigzag parts, and the other of said terminals connected to a first side of a second zigzag part of the pair of zigzag parts,

a connection connected to a second side of the pair of zigzag parts,

an electrode coupled to the connection,

a second terminal provided on an extended portion of said electrode, and

an exterior mold including an opening which exposes portions of said electrode and said second terminal.

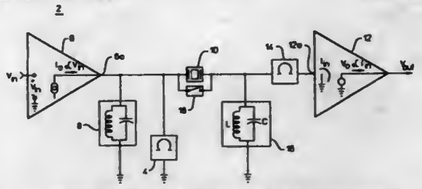


5,543,756

COMBINED CRYSTAL AND LC FILTER

Thomas H. Anderson, Rohnert Park, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 12, 1995, Ser. No. 442,715
Int. Cl.[6] H03H *9/00*
U.S. Cl. 333—186 **13 Claims**



1. An intermediate frequency bandpass filter, comprising:

a high output impedance amplifier having a high impedance output;

a first resistive network,connecting between the high impedance output and ground;

a first parallel resonator connecting between the high impedance output and ground;

a series resonator, connecting to the high impedance output, having a resonator terminal;

a second resistive network having a first and a second end, the first end connecting to the resonator terminal;

a low input impedance amplifier, connecting to the second end, having a low impedance input; and

a switch network connecting between the high impedance output and the first end of the second resistive network.

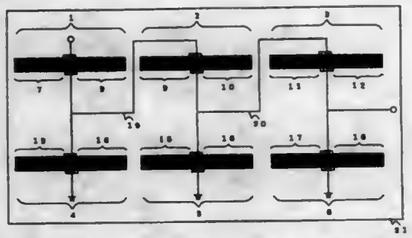
5,543,757

SURFACE ACOUSTIC WAVE FILTER INCLUDING ALTERNATE OPEN AND SHORTED REFLECTOR GRATING

Yasumi Kobayashi; Kuniyuki Matsui; Yasuhiro Hirao; Kousuke Takeuchi; Hiroshi Kayaki; Yusuke Takahashi; Toshiharu Tanaka; Isao Kiyose, all of Osaka-fu, and Kenichi Shibata, Wakayama-ken, all of, Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Sep. 6, 1994, Ser. No. 301,100
Claims priority, application Japan, Sep. 6, 1993, 5-220955; Sep. 9, 1993, 5-224655; Oct. 6, 1993, 5-250332
Int. Cl.[6] H03H *9/64*
U.S. Cl. 333—195 **2 Claims**

1. A surface acoustic wave filter being constructed by connecting in series one or more filter functional units each comprising a first surface acoustic wave resonator having input and output terminals connected in series with a signal line and a second surface acoustic wave resonator having input and output terminals one of which is connected to said signal line and the other of which is grounded, and wherein



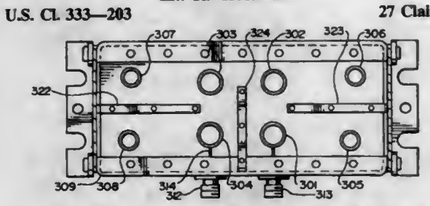
said first surface acoustic wave resonator is constituted by one interdigital transducer and a pair of electrically open strip type grating reflectors with the interdigital transducer interposed therebetween, and said second surface acoustic wave resonator is constituted by one interdigital transducer and a pair of electrically short strip type grating reflectors with the interdigital transducer interposed therebetween.

5,543,758

ASYMMETRIC DUAL-BAND COMBINE FILTER

Chia-Sam Wey, Reno, Nev., assignor to Allen Telecom Group, Inc., Solon, Ohio

Filed Oct. 7, 1994, Ser. No. 319,523
Int. Cl.[6] H01P *1/20*
U.S. Cl. 333—203 **27 Claims**



1. An RF filter having an input and an output with a forward signal path therebetween, and exhibiting a predetermined frequency response, the filter comprising:

a plurality of pole resonators disposed along the forward signal path; and

a plurality of zero resonators outside the forward signal path, wherein each zero resonator is coupled to a corresponding one of the plurality of pole resonators such that the filter frequency response exhibits a bandpass characteristic over a first predetermined range of frequencies, with a notch characteristic over a second predetermined range of frequencies.

5,543,759

AUDIO AMPLIFICATION CIRCUITS

Richard J. Comeau, II, Cape Girardeau, and Richard Fay, Jackson, both of Mo., assignors to Digital Lab Studios, LLC, and Horizon Music, Inc., both of Cape Girardeau, Mo.

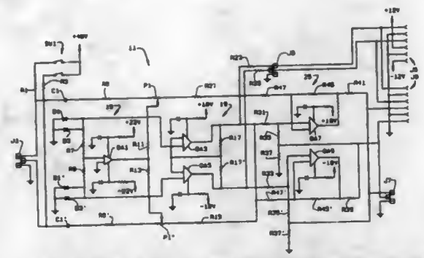
Filed Apr. 7, 1995, Ser. No. 418,366
Int. Cl.[6] H03G *3/10;* **H03F** *3/68*
U.S. Cl. 330—282 **30 Claims**

12. An audio amplification circuit comprising:

a ganged pair of potentiometers, each potentiometer of the pair having an input terminal for connection to an audio input signal from an audio device, an output terminal, and a wiper terminal;

a preamplifier stage having an input connected to the wiper terminals of both potentiometers, said preamplifier stage also having an output; and

an amplification stage having a matched pair of operational amplifiers with each operational amplifier having an input connected to the output of the preamplifier stage, each operational amplifier having a feedback loop which includes the resistance of at least one of the potentiometers between the output terminal and the wiper terminal of said potentiometer.

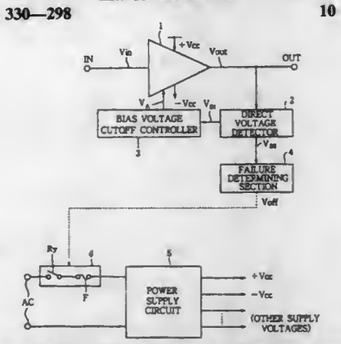


5,543,760

PROTECTION CIRCUIT FOR A POWER AMPLIFIER

Jun Honda, and Kunihiro Miyata, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 3, 1994, Ser. No. 205,397
Claims priority, application Japan, Mar. 5, 1993, 5-070846
Int. Cl.[6] H03F *1/52*
U.S. Cl. 330—298 **10 Claims**



8. A method for protecting a power amplifier comprising:

monitoring output voltage of the power amplifier;

producing a detecting signal when a direct current voltage is detected in the output voltage;

rendering an output stage of the power amplifier a cutoff stage in response to the detecting signal;

producing an abnormality signal in response to the detecting signal; and

cutting off a power supply of the power amplifier in response to the abnormality signal.

5,543,761

PREPACKAGED CRYSTAL OSCILLATOR CALIBRATION AND CONFIGURATION INTERFACE

Kevin M. Klughart, Addison, Tex., assignor to Dallas Semiconductor Corp, Dallas, Tex.

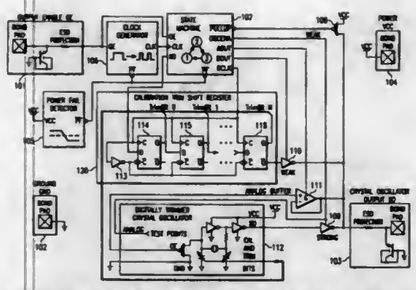
Filed Aug. 24, 1995, Ser. No. 518,938
Int. Cl.[6] H03B *5/04;5/36;* **H03L** *1/02*
U.S. Cl. 331—44 **37 Claims**

8. A device for calibrating and configuring a prepackaged crystal oscillator, comprising:

means for storing calibration and configuration information of a digitally trimmed crystal oscillator;

means for assessing varying conditions of the crystal oscillator;

means for accessing specific calibration and configuration information from said storing means corresponding to a specific assessed condition of the crystal oscillator; and



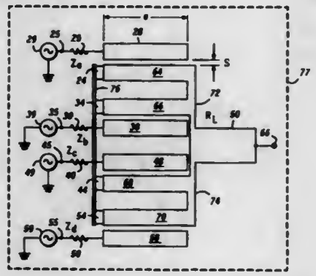
means for performing calibration and configuration on the crystal oscillator using said specific calibration and configuration information.

5,543,762

N-WAY IMPEDANCE TRANSFORMING POWER DIVIDER/COMBINER

Bernard E. Sigmon, Gilbert, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 17, 1995, Ser. No. 373,180
Int. Cl.[6] H01P *5/12*
U.S. Cl. 333—128 **15 Claims**



1. A N-way impedance transforming power divider for dividing signal power into N signal power outputs (where N is an integer number greater than or equal to two) comprising:

a first transmission line having a first end and a second end, wherein the first end comprises a first terminal and the second end comprises N transmission line fingers terminating in N transmission line finger ends;

N transmission lines having N first ends and N second ends, wherein the N transmission lines are positioned in close proximity to the N transmission line fingers in one-to-one correspondences; and

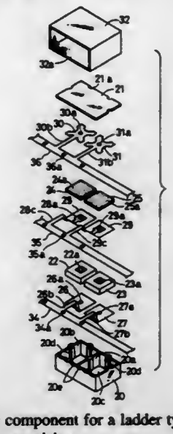
N impedances, wherein the N second ends of the N transmission lines are coupled through the N impedances to N terminals, and the signal power provided to the first terminal is divided into the N signal power outputs at the N terminals.

5,543,763

PIEZOELECTRIC COMPONENT FOR LADDER TYPE FILTER AND METHOD OF MANUFACTURING THEREOF

Yuusei Oyama, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Continuation of Ser. No. 116,380, Sep. 3, 1993, abandoned.
This application Jan. 9, 1995, Ser. No. 370,541
Claims priority, application Japan, Sep. 7, 1992, 4-265442
Int. Cl.[6] H03H *9/00*
U.S. Cl. 333—189 **11 Claims**



1. A piezoelectric component for a ladder type filter, said piezoelectric component comprising:

a case having a plurality of side walls, a bottom wall and an opening disposed opposite to said bottom wall at an upper portion of said case, said case having at least one partition for dividing its interior into a plurality of spaces arranged side by side, said case having a plurality of grooves located on an upper surface of one of said side walls such that the grooves extend in a direction substantially parallel to said bottom wall;

a plurality of first terminal plates which are each located in one of said spaces and on said bottom wall of said case, each of said first terminal plates having a lead portion engaged with one of said grooves and extending outwardly along a plane that is substantially parallel to said bottom wall;

a plurality of first ceramic resonators which are each located in one of said spaces and on said first terminal plates, each of said first ceramic resonators having electrodes on both major surfaces thereof;

a plurality of second terminal plates which are each located in one of said spaces and on said first ceramic resonators, each of said second terminal plates having a lead portion engaged with one of said grooves and extending outwardly along a plane that is substantially parallel to said bottom wall;

a plurality of second ceramic resonators which are each located in one of said spaces and on said second terminal plates, each of said second ceramic resonators having electrodes on both major surfaces thereof;

a plurality of third terminal plates which are each located in one of said spaces and on said second ceramic resonators, each of said third terminal plates having a lead portion engaged with one of said grooves and extending outwardly along a plane that is substantially parallel to said bottom wall; and

a cover closing said opening of said case and being located so as to press said third terminal plates toward said bottom wall of said case and to hold said lead portions of said first terminal plates, said second terminal plates and said third terminal plates in said grooves; wherein

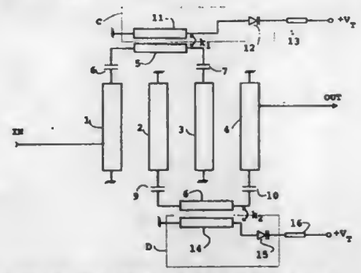
said first terminal plates, said first ceramic resonators, said second terminal plates, said second ceramic resonators and said third terminal plates are in pressure contact with each other to form a plurality of single-section circuits.

5,543,764

FILTER HAVING AN ELECTROMAGNETICALLY TUNABLE TRANSMISSION ZERO

Aimo Turunen, and Heli Jantunen, both of Oulu, Finland, assignors to LK-Products Oy, Kempele, Finland

Filed Feb. 28, 1994, Ser. No. 202,902
Claims priority, application Finland, Mar. 3, 1993, 930943
Int. Cl.[6] H01P *1/201*
U.S. Cl. 333—202 **13 Claims**



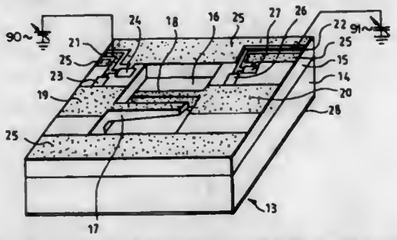
1. A filter having a transfer function and comprising:
at least a first resonator and a second resonator;
a transmission zero means coupled between the first and second resonators to provide a transmission zero at a frequency in the transfer function of the filter; and
control means electromagnetically coupled to the transmission zero means for changing and selecting the frequency of the transmission zero.

5,543,765

INTEGRATED ELECTRONIC ELEMENTS WITH VARIABLE ELECTRICAL CHARACERISTICS, ESPECIALLY FOR MICROWAVE FREQUENCIES

Gérard Cachier, Burns S/Yvette, France, assignor to Thomson - C S F, Paris, France

Filed Apr. 20, 1994, Ser. No. 230,239
Claims priority, application France, Apr. 20, 1993, 93 04628
Int. Cl.[6] H01P *5/04;1/18*
U.S. Cl. 333—246 **20 Claims**



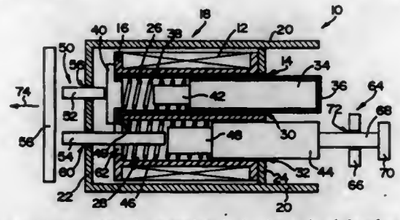
8. A microwave circuit disposed on a substrate having several insulating and conductive layers, wherein one of the insulating layers has metallizations defining microwave circuits, at least one cavity is disposed in one of the layers, comprising:
at least one moving element defined by a portion of one of said layers, said moving element comprising an electrically conductive material or an insulator material that is at least partially covered with electrically conductive material disposed in said at least one cavity, and is interconnected with said microwave circuit, and
an electrical device operatively coupled to said moving element for the actuation of the moving element.

5,543,766

OPERATING DEVICE FOR A CIRCUIT BREAKER

Dante Bagalini, Johannesburg, South Africa, assignor to Circuit Breaker Industries Limited, Elandsfontein, South Africa

Filed Dec. 12, 1994, Ser. No. 353,895
Claims priority, application South Africa, Jan. 17, 1994, 94/0315
Int. Cl.[6] H01H *9/00*
U.S. Cl. 335—177 **17 Claims**



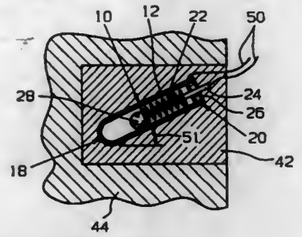
1. An electro-magnetic operating device for a circuit breaker, the device including:
a coil which defines a cavity;
a pair of elements slidably arranged within the cavity, a first element being operable to cause a time delay tripping of the circuit breaker and a second element being operable to cause a substantially instantaneous tripping of the circuit breaker;
a first pole piece associated with the first element for effecting the time delay tripping of the circuit breaker;
a linkage carried by the second element for linking the second element to a moving contact carrier of the circuit breaker for effecting the substantially instantaneous tripping of the circuit breaker; and
a magnetic path defining means arranged about at least a part of the coil, the magnetic path defining means defining a second pole piece which is aligned with the first pole piece, with the first element being displaceable towards the first pole piece in a damped manner and the first pole piece being displaceable towards the second pole piece to effect the time delay tripping of the circuit breaker and the first pole piece and the second element being displaceable towards the second pole piece to effect the substantially instantaneous tripping of the circuit breaker.

5,543,767

ELECTRICAL SWITCH

George H. Elenbaas, 25526 N. Shore Dr., Elkhart, Ind. 46514

Filed Feb. 2, 1995, Ser. No. 382,961
Int. Cl.[6] H01H *9/00*
U.S. Cl. 335—205 **26 Claims**



1. An electrical switch comprising:
an elongate electrically conductive housing having a first open end and a second closed end;
a flexible electrically-conductive spring extending longitudinally in said housing toward but short of said housing second end;
means at said housing first end for supporting said spring away from said housing and preventing electrical contact therebetween; and,

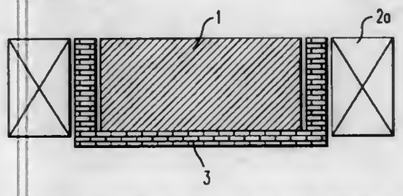
a spherical electrically-conductive ball in said housing between said spring and said housing second end, said ball being selectively rolling in said housing and selectively coming in contact with said spring and said housing and creating an electrical path from said housing through said ball and to said spring.

5,543,768

COMPOSITE OF HIGH-TEMPERATURE SUPERCONDUCTIVE BULK FORM WITH COIL MAGNET

Masato Murakami; Hiroshi Takaichi; Shoji Tanaka, and Naomichi Sakai, all of Tokyo, Japan, assignors to International Superconductivity Technology Center, Tokyo, Japan

Filed Oct. 7, 1994, Ser. No. 319,569
Claims priority, application Japan, Oct. 13, 1993, 5-280126
Int. Cl.[6] H01F *1/00*
U.S. Cl. 335—216 **5 Claims**



1. A variable magnetic field strength composite magnet, comprising:
a core of R-Ba-Cu-O bulk superconductor, where R is at least one rare-earth element, said superconductor being made by a melt process; and
an electrically conductive coil driven by an external power source enclosing said core;
wherein the magnetic field of the magnet is controlled by passing a current through the coil while the superconductor is cooled to below a critical temperature to establish a magnetic field in said superconductor and passing a current produced by said external power source of opposite polarity through the coil to reduce the magnetic field.

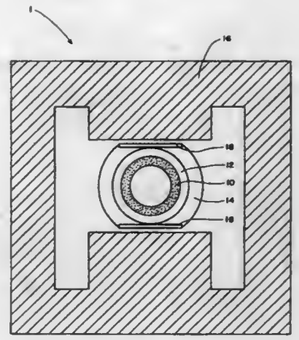
5,543,769

FAST SUPERCONDUCTING MAGNETIC FIELD SWITCH

Yehuda Goren, Mountain View, Calif., and Narayan K. Mahale, The Woodlands, Tex., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Jan. 11, 1995, Ser. No. 371,503
Int. Cl.[6] H01J *31/00*
U.S. Cl. 335—216 **25 Claims**

16. A superconducting magnet switch, comprising:
a tube;
a film of superconducting material which coats said tube;
a primary magnet external to said tube having a magnetic field strength less than a critical field strength associated with said film of superconducting material;
an electromagnet external to said tube which when energized produces a secondary magnetic field which interacts with said magnetic field of said primary magnet; and
a cooling system to cool said tube and said superconducting film to temperatures where said film exhibits superconducting properties.

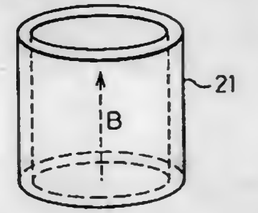


5,543,770

APPARATUS FOR GENERATING UNIFORM AND PARALLEL MAGNETIC FIELD, THE INTENSITY OF WHICH IS VARIABLE

Tsutomu Sasaki, and Ikuo Itoh, both of Kawasaki, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 118,240, Sep. 9, 1993. This application Aug. 9, 1995, Ser. No. 513,033
Claims priority, application Japan, Sep. 11, 1992, 4-267798
Int. Cl.[6] H01F *5/00;1/00;6/00*
U.S. Cl. 335—299 **15 Claims**



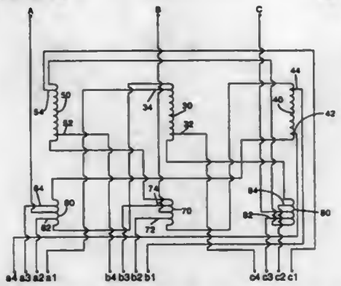
1. A device for producing a uniform, parallel, and intensity-variable magnetic field, said device comprising: a cylinder including a type II superconductor having a cylindrical shape and a slit extending from one axial end of the cylindrical superconductor to the other end thereof; magnetic field producing means for producing a magnetic field of an intensity greater than that of a lower critical magnetic field of said type II superconductor; said magnetic field producing means having a magnetic axis parallel to the longitudinal axis of said cylinder; said uniform, parallel, and intensity-variable magnetic field being produced inside said cylinder and in the axial direction of said cylinder; the thickness of said cylindrical superconductor in the radial direction thereof being greater than a thickness which allows, for a maximum value of a magnetic field on a surface of said cylinder, the magnetic field produced by said magnetic field producing means to penetrate half-way into the superconductor in said radial direction; said superconductor having a thickness more than four times as large as the distance the magnetic field penetrates the cylinder; and said cylinder having a radius more than a hundred times as large as said distance.

5,543,771

PHASE SHIFTING TRANSFORMER OR AUTOTRANSFORMER

Michael I. Levin, 33 Bayhampton Court, North York, Ontario, Canada

Filed Mar. 3, 1995, Ser. No. 398,502
Int. Cl.[6] H01F *33/00*
U.S. Cl. 336—10 **20 Claims**



1. A phase shifting transformer output winding or autotransformer winding for a three phase electrical distribution system, comprising

three auxiliary coils each alternately connected in series to three main coils at coil connections, and

a plurality of outputs for each of the three phases,

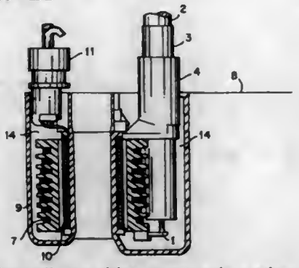
wherein all outputs are connected to the main and auxiliary coils at positions offset from the coil connections.

5,543,772

HIGH VOLTAGE CONNECTION TO IGNITION COILS

Claus Ruppmann, deceased, Farmington Hills, Mich.; Andreas Ehrmann, Schorndorf, Germany, and Alexander Bareiss, North Charleston, S.C., assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE91/00710, § 371 Date Dec. 23, 1993, § 102(e) Date Dec. 23, 1993, PCT Pub. No. WO92/07370, PCT Pub. Date Apr. 30, 1992
PCT Filed Sep. 6, 1991, Ser. No. 988,968
Claims priority, application Germany, Oct. 11, 1990, 40 32 280.7
Int. Cl.[6] H01F *27/04*
U.S. Cl. 336—192 **4 Claims**



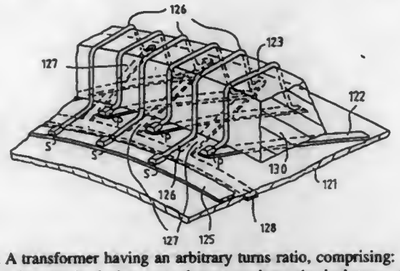
1. Ignition coil comprising a cast resin portion; a primary winding embedded in said cast resin portion; a secondary winding embedded in said cast resin portion; at least one contact part electrically connected to an end portion of an ignition cable and to a high-voltage end of the secondary winding; a retaining part (4) having a throughgoing aperture for receiving said ignition cable (2), said retaining part (4) protruding from said cast resin portion (14); a shrink hose (3) acting as a sealing means surrounding said end portion of said ignition cable (2) concentrically, extending through said aperture of said retaining part (4) and beyond said retaining part (4); and a shrink sleeve (6) acting as additional sealing means concentric with said end portion of said ignition cable (2) and connected at least in one end region with said end portion of said ignition cable and with said retaining part (4) at least in another end region so as to seal against moisture.

5,543,773

TRANSFORMERS AND COUPLED INDUCTORS WITH OPTIMUM INTERLEAVING OF WINDINGS

Peter D. Evans, Birmingham, and William J. B. Heffernan, Cheltenham, both of, England, assignors to Electrotech Instruments Limited, Reading, United Kingdom

PCT No. PCT/GB91/01505, § 371 Date May 7, 1993, § 102(e) Date May 7, 1993, PCT Pub. No. WO92/04723, PCT Pub. Date Mar. 19, 1992
PCT Filed Sep. 4, 1991, Ser. No. 64,038
Claims priority, application United Kingdom, Sep. 7, 1990, 9019571
Int. Cl.[6] H01F *27/28;5/00*
U.S. Cl. 336—183 **21 Claims**



1. A transformer having an arbitrary turns ratio, comprising:

a primary physical turn and a secondary physical turn, the primary and secondary physical turns are not bifilar and are interleaved on the same winding layer; and

a transformer core having portions, the primary and secondary physical turns being distributed over the portions of the transformer core with each portion containing turns from all the windings of the transformer, the primary and secondary physical turns on the same winding layer being substantially the same distance from the transformer core;

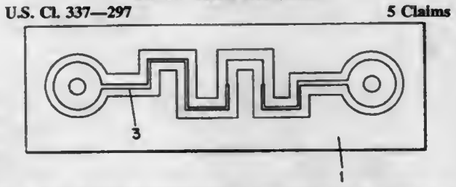
such that, in each portion of the transformer core, in use, mmf driving leakage flux is minimized.

5,543,774

METHOD AND A DEVICE FOR PROTECTING A PRINTED CIRCUIT BOARD AGAINST OVERCURRENTS

C. Stefan L. Löf, Spånga, Sweden, assignor to Telefonaktiebolaget Ericsson, Stockholm, Sweden

Filed May 27, 1994, Ser. No. 249,987
Claims priority, application Sweden, May 28, 1993, 9301825
Int. Cl.[6] H01H *85/04;69/02*
U.S. Cl. 337—297 **5 Claims**



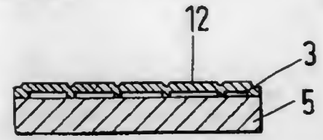
1. A method for manufacturing a printed board fuse to protect a printed board against overcurrents, comprising the step of depositing a heat dissipating metal layer having a substantially uniform thickness on a first area of the printed board and forming at least one fuse conductor in at least one second area of the printed board upon which the heat dissipating metal layer is not deposited, the fuse conductor and the heat dissipating metal layer each having a predetermined geometry and thickness selected to provide known resistance and interruption characteristics to the fuse conductor, and the first area substantially surrounding the at least one second area.

5,543,775

THIN-FILM MEASUREMENT RESISTOR AND PROCESS FOR PRODUCING SAME

Ralf Huck, Hanau, Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Filed Mar. 3, 1994, Ser. No. 205,201
Int. Cl.[6] H01C *1/012*
U.S. Cl. 338—306 **10 Claims**



6. A thin-film resistive element for use in a sensing device, comprising:

a thin dielectric substrate of glass having disposed thereon a bonding agent layer of Al_2O_3;

a metal film disposed on said bonding agent layer and having a thickness, said bonding agent layer having a thickness of less than 5% of the metal film thickness; and

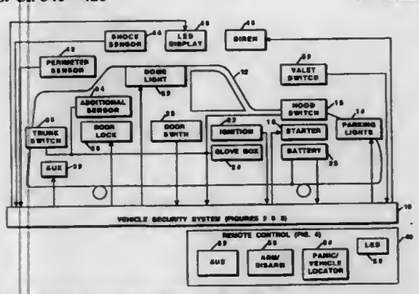
a protective coating disposed on said metal film by application of a first oxide layer, washing of a surface of the oxide layer, and application of a second oxide layer to the washed surface, said protective coating having a thickness at least equal to the thickness of the metal film.

5,543,776

VEHICLE SECURITY SYSTEM

Lauren L. L'Esperance, Arlington; Craig R. Autio, Orange, both of Mass.; E. Thomas Mariner, North Babylon, N.Y., and Norval D. Stapelfeld, Brookline, N.H., assignors to Whistler Corporation, Chelmsford, Mass.

Filed Oct. 19, 1993, Ser. No. 139,188
Int. Cl.[6] B60R *25/10*
U.S. Cl. 340—426 **23 Claims**



1. A vehicle security system comprising:

a plurality of sensors, each one corresponding to a condition of a vehicle on which said system is installed and providing a sensor output signal indicative of said vehicle condition;

a controller operable in an armed mode of operation in which each said plurality of sensor output signals are monitored for an intrusion indicating condition and a disarmed mode of operation in which each of said sensor outputs are not monitored for said intrusion indicating condition, said controller having a plurality of programmable features, each one having a corresponding plurality of selections associated therewith, said controller being responsive to a sequencing signal for sequencing through said plurality of programmable features and a selection signal for choosing one of said plurality of selections;

a display providing a different indication corresponding to each of said plurality of selections of each of said plurality of programmable features; and

a remote control operable for communication with said controller and having a control for selecting said armed mode of operation and said disarmed mode of operation,

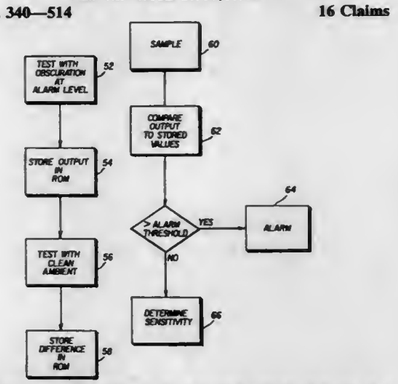
wherein said control also generates said selection signal.

5,543,777

SMOKE DETECTOR WITH INDIVIDUAL SENSITIVITY CALIBRATION AND MONITORING

Burton W. Vane, Fairport, and David B. Lederer, Sodus Point, both of N.Y., assignors to Detection Systems, Inc., Fairport, N.Y.

Filed Jul. 12, 1993, Ser. No. 89,540
Int. Cl.[6] G08B *29/00;17/10*
U.S. Cl. 340—514 **16 Claims**



1. A process for calibrating an individual smoke detector in a separate housing, said smoke detector having an alarm circuit including a source and a sensor of illumination disposed so said sensor does not directly view said source, said process comprising:

testing the circuit under an alarm condition to determine a first output characteristic of said alarm condition;

testing the circuit under a clean-ambient condition to determine a second output characteristic of said clean-ambient condition;

storing in said individual detector representations from which said first and second outputs can be approximated by said individual detector throughout operation of said detector.

5,543,778

SECURITY SYSTEM

Peter J. Stouffer, Clarkston, Mich., assignor to Code-Alarm, Inc., Madison Heights, Mich.

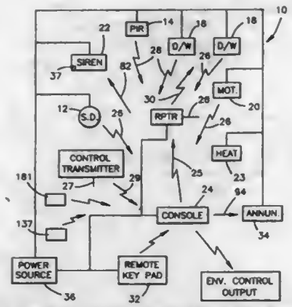
Filed Apr. 19, 1993, Ser. No. 49,464
Int. Cl.[6] G08B *1/08;* **B60R** *25/10*
U.S. Cl. 340—539 **1 Claim**

1. A home security system comprising:

a plurality of alarm elements;

a central console including a microprocessor in wireless communication with said plurality of alarm elements and effective to receive a signal from said alarm elements;

an automobile including an alarm system in wireless communication with said central console's microprocessor and effec-



tive to activate certain of said plurality of alarm elements when said automobile's alarm system is in close proximity to said home security system and when the automobile is started;

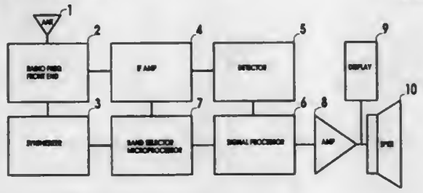
said microprocessor being connected to a tri-state analog to digital convertor, said tri-state analog to digital convertor including a plurality of resistors whose resistance values cooperatively determined an accuracy of analog to digital conversion with respect to the received signal transmitted from said alarm elements.

5,543,779

EMI SOURCE DETECTOR

Marc S. Aspesi, 39 Daffodil Dr., Farmingdale, N.Y. 11735, and Steven T. Nakata, 60 Farm River Rd., Short Beach, Conn. 06405

Filed Mar. 9, 1995, Ser. No. 401,118
Int. Cl.[6] G08B *1/08*
U.S. Cl. 340—539 **2 Claims**



1. An EMI detector comprising:

a) a radio receiver having an antenna for receiving an RF signal, said receiver having a band coverage from about 40 KHz to about 918 MHz, said radio receiver further comprising means for swept tuning of said receiver from about 40 KHz to about 916 MHz, wherein the improvement comprises:

b) a first alarm switchable between an on state and an off state, said first alarm switching to said on state in response to said antenna receiving an RF signal which exceeds about 20 μv/m from 400 KHz to 88 MHz, about 30 μv/m from 88+ MHz to 216 MHz, and about 40 μv/m from 216+ MHz to 918 MHz; and

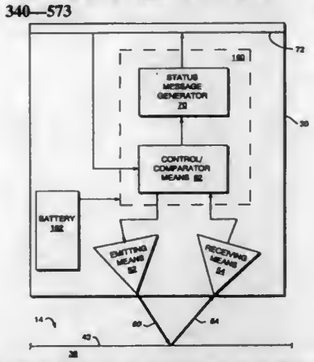
c) a second alarm switchable between an on state and an off state, said second alarm switching to said on state in response to said antenna receiving an RF signal which exceeds about 1 mv/m.

5,543,780

MONITORING TAG WITH REMOVAL DETECTION

John M. McAuley, Concord, and Joseph Field, Hudson, both of N.H., assignors to Secure Care Products, Inc., Boscawen, N.H.

Filed Jun. 16, 1995, Ser. No. 491,449
Int. Cl.[6] G08B *13/187;29/04*
U.S. Cl. 340—573 **22 Claims**



1. A tag for being secured near a surface of an object and for use in determining whether said object is within an area monitored by a monitoring system, and comprising, in combination:

a. optical means for sensing when said tag is near said surface of said object, said optical sensing means including means for emitting optical signals to said surface and for receiving reflected optical signals back therefrom; and

b. means for periodically transmitting status messages to said monitoring system, said status messages permitting said monitoring system to determine whether said tag is being held near said object and whether said tag is within said area.

5,543,781

METHOD AND APPARATUS FOR USER SELECTABLE QUICK DATA ACCESS IN A SELECTIVE CALL RECEIVER

Charles J. Ganucheau, Jr., Boynton Beach, Fla.; Dean P. Vanden Heuvel, Chandler, Ariz.; Craig Halley; Kyung T. Mun, both of Mesa, Ariz., and Patrick L. Dumstorff, Bancroft, Iowa, assignors to Motorola, Inc., Schaumburg

Continuation of Ser. No. 880,806, May 8, 1992, abandoned. This application Apr. 11, 1994, Ser. No. 226,100
Int. Cl.[6] G08B *5/22;* **H04Q** *7/00*
U.S. Cl. 340—825.44 **6 Claims**

1. A selective call receiver having a memory for storing a plurality of databases each having a plurality of screens of information included therein, the selective call receiver comprising:

memory selection means coupled to the memory for flagging one of the plurality of screens responsive to a first user input;

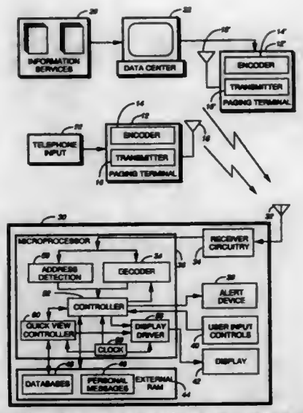
receiving means coupled to the memory for receiving a selective call message subsequent to the flagging of the one of the plurality of screens, wherein the selective call message updates the information included in the flagged one of the plurality of screens;

display means for displaying the information included in the flagged one of plurality of screens;

mode selection means coupled to the memory and the display means for receiving a second user input indicative of one of first, second, and third display modes;

display activation means coupled to the display means for activating the display means to display information included in the plurality of screens in response to manual actuations of the display activation means by the user;

control means coupled to the memory and the display means for displaying, when the first display mode has been previously selected, the information included within the flagged one of



the plurality of screens responsive to successive activations of the display activation means by the user to navigate through the one of the plurality of databases that includes the flagged one of the plurality of screens, and for displaying, when the second display mode has been previously selected the information included within the flagged one of the plurality of screens automatically and without user intervention, and for

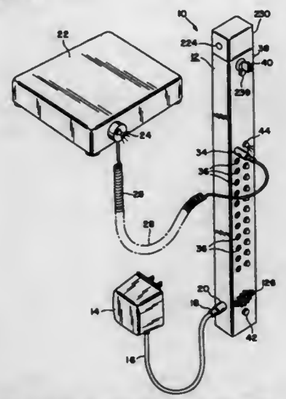
automatically displaying, when the third display mode has been previously selected, an icon representative of the flagged one of the plurality of screens such that the user can display the flagged one of the plurality of screens by activation of the display activation means to select the icon rather than by navigation through the database.

5,543,782

SECURITY DEVICE FOR MERCHANDISE AND THE LIKE

Arthur H. Rothbaum, Northport, and Richard S. Goldblatt, Kings Park, both of N.Y., assignors to Protex International Corp., Bohemia, N.Y.

Filed Nov. 16, 1993, Ser. No. 152,520
Int. Cl.[6] G08B *13/14*
U.S. Cl. 340—568 **14 Claims**



1. A security device for merchandise, comprising:

sensor means for attachment to merchandise, and two-wire connector means for electrically connecting said sensor means to an alarm circuit;

said alarm circuit having means for sending current via said two-wire connector means to said sensor means and back to said alarm circuit to display a secure mode signal,

said alarm circuit further having means for sending current to an alarm means to sound an alarm and display an alarm mode signal,

wherein said alarm circuit comprises switch means for switching said alarm circuit to an alarm mode when at least one of the following conditions occurs;

said two-wire connector means is cut or detached from at least one of a housing having said alarm circuit therein or from said sensor means; or

said sensor means is detached from said merchandise; and a jack means on said housing, and

plug means on said two-wire connector means said jack means and said plug means forming a means for electrically connecting said alarm circuit to said two-wire connector means,

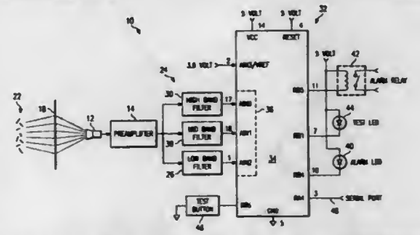
wherein said jack means comprises switch means moveable upon insertion or removal of said plug means from said jack means by moving from a first secure state to an interim alarm state and then to a second secure state, whereby current is prevented from flowing to generate said secure mode signal during said interim alarm state when said plug means is inserted or removed from said jack means.

5,543,783

GLASS BREAK DETECTOR AND A METHOD THEREFOR

Frank B. Clark, and Kenneth T. Lewis, both of Longview, Tex., assignors to Caddx-Caddi Controls, Inc., Gladewater, Tex.

Filed May 20, 1994, Ser. No. 246,584
Int. Cl.[6] G08B *13/00*
U.S. Cl. 340—550 **27 Claims**



1. A method of detecting breaking glass, comprising the steps of:

a) detecting the occurrence of acoustic waves characteristic of breaking glass and providing an output signal;

b) feeding the output signal to a plurality of parallel filters;

c) converting the outputs of the plurality of parallel filters to digital format;

d) determining the peak amplitude value of the output for each of the plurality of parallel filters over a first predetermined time period;

e) determining the average value of the output for each of the plurality of parallel filters over the first predetermined time period;

f) generating a pretrip condition signal for each of the parallel filters when the respective peak amplitude values of the filters exceeds their respective average values during the first predetermined time period by an amount which is predetermined for each filter;

g) generating a trip condition signal for each of the filters when the corresponding pretrip signals are generated for each of a sequential number of the first time periods, the sequential number of first time periods being predetermined for each of the filters; and

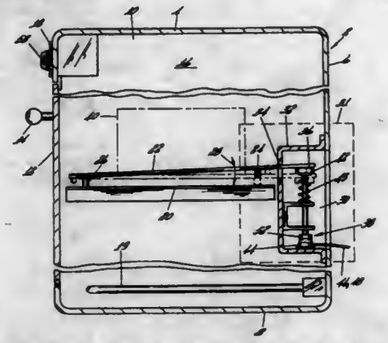
h) generating an alarm signal indicative of breaking glass when the trip condition signals for all of the filters have been generated within a second predetermined time period.

5,543,784

OVEN OCCUPANCY WARNING APPARATUS

Donna M. Mendenhall, 212 W. Agnes Ave., Santa Maria, Calif. 93454

Filed Nov. 30, 1993, Ser. No. 159,318
Int. Cl.[6] G08B 13/14
U.S. Cl. 340—568 15 Claims



1. Apparatus to sense the presence of an object within an oven and to provide a warning of such presence to a user of the oven, comprising:

an oven having lateral, rear, top and bottom walls forming an internal heating chamber for containing and heating foods, heating means for heating said chamber, a rack having a main portion on which food is placed, and support means for supporting said rack on the lateral walls of the chamber so that the main portion is in a substantially horizontal food supporting position elevated above said bottom wall;

pivot means attached to the rack for contacting said support means and allowing said main portion of the rack to rock slightly about a horizontal axis in response to the presence of an object resting on the main portion;

alarm activation means operably associated with the rack and adapted to be activated when the rack rocks on said pivot means in response to the presence of an object on the rack; and

alarm means activated by said activation means to provide a signal to the user of said oven of the presence of an object on the rack,

one of said walls providing a recess therein opening into the chamber,

said rack having an activating portion projecting into the recess,

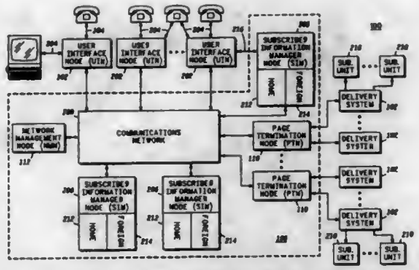
said activation means including a mechanically operated electric switch means adjacent to the rack such that when the rack is rocked in response to the presence of an object thereon, said activating portion of the rack moves in the recess in operable relationship with the switch means and causes the switch means to complete an electric circuit which activates said alarm means.

5,543,785

DISTRIBUTED MULTI-OUTLET PAGING

Gregory B. Vatt, Mesa, Ariz.; David M. Baum, McLean, Va., and Steven J. Goldberg, Coral Springs, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 42,435, Apr. 5, 1993, abandoned.
This application Mar. 14, 1995, Ser. No. 403,542
Int. Cl.[6] H04Q 7/08; H04B 7/00; G08B 5/22
U.S. Cl. 345—825.44 23 Claims



1. A user interface node adapted for operating in accordance with a distributed, multi-outlet paging system, said user interface node comprising:

a user interface for receiving from a caller, an initiation communication having an identification (ID) value and a termination address, said ID value that identifies one paging distribution network of a plurality of independent paging distribution networks, said termination address including a subscriber ID identifying at least one of a plurality of subscribers to whom a page is to be sent;

a communications network interface for communicating with a communication network; and

a processor coupled to said communication network interface, said processor adapted for requesting, through said communication network, a subscriber profile from a subscriber information manager node of said one paging distribution network, said subscriber profile specifying a list of activated independent paging delivery systems to deliver a page,

said user interface adapted for collecting a page message from said caller,

said communications network interface adapted receiving from said subscriber information manager node, said subscriber profile,

said processor adapted for identifying a page termination node associated with said activated independent paging delivery systems, and

said communications network interface adapted for sending, through said communication network, said page including said page message to said page termination node, said page termination node formatting said page message for delivery through each of said activated independent paging delivery systems, and sending said formatted page to each of said activated independent paging delivery systems for potential receipt by said subscriber.

5,543,786

KEYBOARD SCANNING CIRCUIT

Chyi-Chang Wu, Hsinchu, Taiwan, assignor to United Microelectronics Corp., Hsinchu, Taiwan

Filed Oct. 18, 1994, Ser. No. 324,803
Int. Cl.[6] H03K 17/94
U.S. Cl. 341—22 5 Claims

1. A keyboard scanning circuit for detecting pressed keys and additional functions on a keyboard, comprising:

signal generators for generating driving clocks and a signal SKIP after a key is pressed;

at least one row I/O port connected to said keys on said keyboard;

at least one column I/O port connected to said keys on said keyboard;

a key scanning circuit for scanning said pressed keys which can be disabled by said signal SKIP;

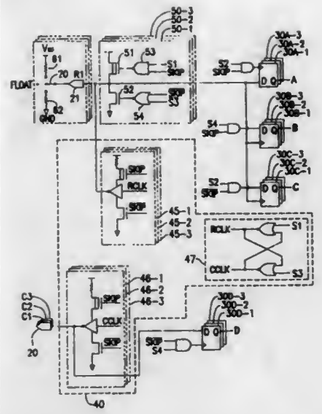
at least one external resistor connected to a source voltage;

at least one external resistor connected to a ground;

at least one switch capable of being set to connect said at least one row I/O port with one of said resistors or a float point which represent said functions;

at least one external resistor detecting circuit for connecting said at least one row I/O port to said source voltage or said ground at different clocks when said signal SKIP is at a high level; and

a plurality of memory devices for storing statuses of said at least one row I/O port and said at least one column I/O port.

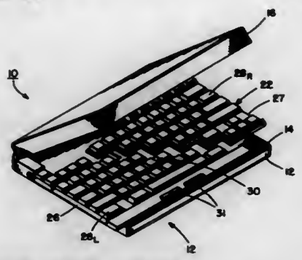


5,543,787

KEYBOARD WITH TRANSLATING SECTIONS

John P. Karidis, Ossining; Michael P. Goldowsky, Valhalla, and Gerard McVicker, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 23, 1994, Ser. No. 216,984
Int. Cl.[6] H03K 17/94
U.S. Cl. 341—20 58 Claims



1. A keyboard assembly comprising:

at least a first keyboard section and a second keyboard section, at least one of said keyboard sections being movable with respect to another of said keyboard sections; and

moving means for moving said at least one keyboard section with respect to said another keyboard section solely by translation, in a plane containing said keyboard sections, from a stowing position to an operational position; wherein said keyboard sections each have a single side configured to mate with a corresponding side of another of said keyboard sections and are configured so as to mate, at least partially, along the sides configured to mate in both said stowing position and said operational position.

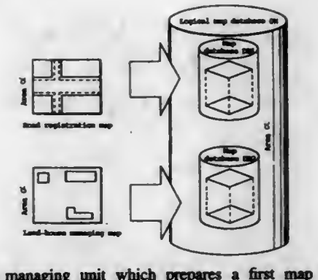
5,543,788

MAP MANAGEMENT SYSTEM IN GEOGRAPHIC INFORMATION MANAGEMENT SYSTEM

Maki Mikuni, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 987,267, Mar. 8, 1993, abandoned.
This application Nov. 7, 1994, Ser. No. 337,191
Claims priority, application Japan, Jul. 12, 1991, 3-172566
Int. Cl.[6] G08G 1/123
U.S. Cl. 340—990 2 Claims

1. A map management system for a region having first and second attributes, the map management system comprising:



a map managing unit which prepares a first map database corresponding to the first attribute and containing data representing a map of the first attribute, and a second map database corresponding to the second attribute and containing data representing a map of the second attribute, the first and second map databases having respectively corresponding access rights, the map managing unit managing the data contained in the first and second map databases and allowing access to the data in accordance with the corresponding access right of the first and second map databases; and

a map processor which accesses the first and second map databases through the map managing unit, retrieves the data contained in the first and second map databases, and displays the retrieved data on a display device, the data contained in the first and second map databases being separately retrievable by the map processor so that the data contained in the first map database can be retrieved without retrieving the data contained in the second map database and so that the data contained in the second map database can be retrieved without retrieving the data contained in the first map database,

wherein the first and second map databases each have one of a first corresponding access right which allows data contained in the corresponding map database to be displayed, and a second corresponding access right which allows data contained in the corresponding map database to be displayed and corrected, the map managing unit determining whether data contained in a respective one of the first and second map databases is displayable or displayable and correctable in accordance with the corresponding first or second access right of said one of the first and second map databases.

5,543,789

COMPUTERIZED NAVIGATION SYSTEM

David A. Behr, Roselle, and Randall B. Jones, Downers Grove, both of Ill., assignors to Shields Enterprises, Inc., Chicago, Ill.

Filed Jun. 24, 1994, Ser. No. 265,894
Int. Cl.[6] G08G 1/123
U.S. Cl. 340—995 56 Claims

1. A method of providing route guidance information from a central base unit to a mobile unit in response to a request from the mobile unit, the method comprising the steps of:

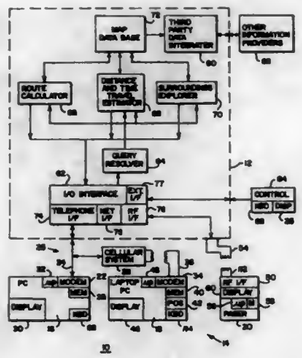
formatting a query at the mobile unit, the query including the request;

communicating the query directly from the mobile unit to the base unit;

calculating the route guidance information at the base unit in response to the query;

formatting a response to the query at the base unit, the response including the route guidance information and: information indicative of a graphical representation of an intersection to be traversed, said representation including vectors defining streets and respective angles with respect to the intersection; and street sign information located at said intersection; and

communicating the response from the base unit to the mobile unit, said communicating comprising a display.

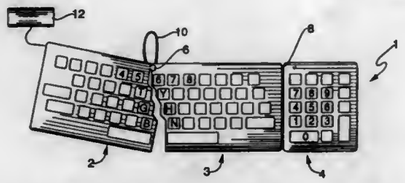


5,543,790

KEYBOARD

Mark Goldstein, Darling Point, Australia, assignor to Goldstein Technology PTY Limited, New South Wales, Australia

Continuation of Ser. No. 478, Jan. 5, 1993, Pat. No. 5,424,728.
This application May 3, 1995, Ser. No. 434,109
Claims priority, application Australia, Jul. 10, 1990, PK1123; WIPO, Jul. 8, 1991, PCT/AU91/00301
Int. Cl.[6] H03K 17/94
U.S. Cl. 341—22 13 Claims



1. A keyboard for use on a horizontal surface, comprising:
a first keyboard segment including alphabetic keys located thereon;
a second keyboard segment including alphabetic keys located thereon; and
a ball-and-socket joint inter-coupling the first keyboard segment with the second keyboard segment, the ball-and-socket joint attached to a top right corner of the first keyboard segment and a top left corner of the second keyboard segment and adapted to allow pivoting of the first keyboard segment and the second keyboard segment in both horizontal and vertical direction;
wherein, when the keyboard segments are adjusted to a non-coplanar configuration, the keyboard is maintained fixed in said non-coplanar configuration by the horizontal surface in cooperation with the ball-and-socket joint.

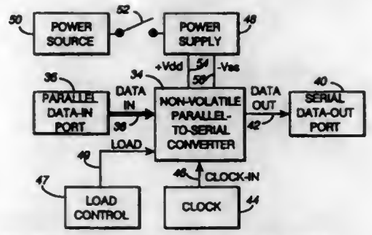
5,543,791

NON-VOLATILE PARALLEL-TO-SERIAL CONVERTER SYSTEM UTILIZING THIN-FILM FLOATING-GATE, AMORPHOUS TRANSISTORS

Salvatore R. Riggio, Jr., Boca Raton, Fla., assignor to International Business Machines, Armonk, N.Y.

Filed Jun. 16, 1994, Ser. No. 260,658
Int. Cl.[6] H03M 9/00
U.S. Cl. 341—101 8 Claims

1. An electrically operated parallel-to-serial converter system adapted to receive power from a power source, said parallel-to-serial converter system comprising:



a data source for supplying parallel data bit signals;
a parallel-to-serial converter connected to said data source for receiving data therefrom;
a data sink connected to said parallel-to-serial converter for receiving serial data therefrom;
a selectively operated power supply adapted to be connected to the power source, for supplying power to said parallel-to-serial converter when said power supply is turned on;
said converter having a plurality of cells, each of said cells comprising first and second stages, each stage comprising
a thin-film amorphous floating-gate transistor (FGT) including a control gate, a drain, a source, a channel extending between said drain and said source, an insulator between said control gate and said channel, and a floating gate embedded in said insulator, said channel being conductive when a voltage signal of a first polarity is applied between said control gate and said source and non-conductive when a voltage signal of a polarity opposite to said first polarity is applied between said control gate and said source,
a data-in line,
a data-out line, and
a first analog switch (AS) comprising a thin-film amorphous transistor having a gate for turning said analog switch on and off in response to switching signals applied thereto, and a drain and a source connected between said data-in line and said control gate of said FGT for coupling a data bit signal on said data-in line to said control gate when said AS is turned on to thereby capacitively charge said floating gate to represent such data bit;
each cell having the data-out line of its first stage coupled to the data-in line of its second stage;
means connecting said cells in series with each data-out line from the second stage of a previous cell being connected to the data-in line of the first stage of the next cell whereby said first timing pulse shifts data bits between the cells;
a switching pulse generator connected to said first AS of each first stage of cell, for supplying a first switching pulse to said first ASs of all of said first stages to write data bits into said first stages and a second switching pulse to said first ASs of all of said second stages to transfer the data bits in each of said first stages into each of said second stages; and
said FGTs of said parallel-to-serial converter cells being operative to non-volatilely store data bits when said power supply ceases to supply power to said parallel-to-serial converter.

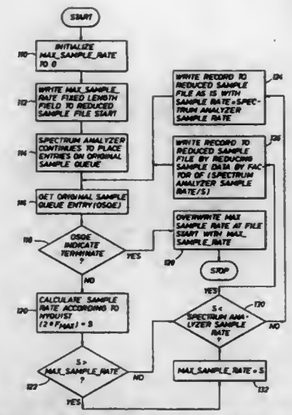
5,543,792

METHOD AND APPARATUS TO ENHANCE THE EFFICIENCY OF STORING DIGITIZED ANALOG SIGNALS

William J. Johnson, Flower Mound; Guillermo Vegatoro, Grapevine, and Larry M. Lachman, Irving, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 4, 1994, Ser. No. 317,949
Int. Cl.[6] H03M 1/12
U.S. Cl. 341—123 7 Claims

4. A system for converting an analog signal to digital form comprising:



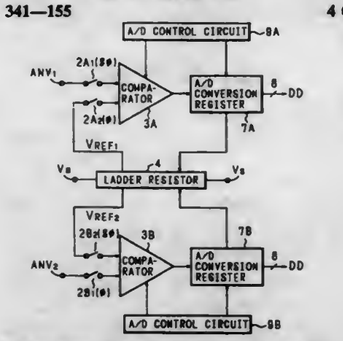
a. sampler having a predetermined sampling rate for taking samples of an analog signal;
b. buffer memory for temporarily storing the samples from step a. in digital form;
c. FIFO queue for receiving the samples in digital form from step b., the FIFO queue storing the samples as original sample queue entries, each of the original sample queue entries comprising a plurality of data bits;
d. means for determining a highest frequency component for each of the original sample queue entries;
e. means for calculating a Nyquist rate responsive to the highest frequency component for each of the original sample queue entries;
f. means for reducing the number of data bits in each of the original sample queue entries based upon the frequency determined in step d. and the Nyquist calculated in step e. to produce a reduced sample file record; and
g. means for storing the reduced sample file record.

5,543,793

ANALOG/DIGITAL CONVERSION SYSTEM

Nobuyuki Saiki, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 10, 1994, Ser. No. 257,847
Claims priority, application Japan, Jun. 29, 1993, 5-158698
Int. Cl.[6] H03M 1/12
U.S. Cl. 341—155 4 Claims



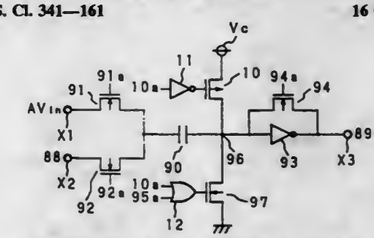
1. An analog/digital conversion system comprising:
a first comparator for sequentially comparing a first analog voltage to be converted and a plurality of reference voltages;
a first register for storing digital data resulting from comparison by said first comparator;
a first control circuit for controlling start of comparison operation by said first comparator and output of said digital data from said first register;
a second comparator for sequentially comparing a second analog voltage to be converted and a plurality of reference voltages;
a second register for storing digital data resulting from comparison by said second comparator;
a single second control circuit for controlling start of comparison operation by said second comparator and output of said single digital data from said second register;
a ladder resistor for generating said reference voltages and applying said reference voltages to said first and second comparators; and
means for applying outputs of said ladder resistor to one of said first and second comparators during a period when said analog voltage is applied to the other of said first and second comparators.

5,543,794

SUCCESSIVE APPROXIMATION ANALOG-TO-DIGITAL CONVERTER USING CMOS INVERTER WITH PULL-UP AND/OR PULL-DOWN SWITCHES

Teruaki Kanzaki, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 28, 1994, Ser. No. 203,055
Claims priority, application Japan, Mar. 5, 1993, 5-045135
Int. Cl.[6] H03M 1/38
U.S. Cl. 341—161 16 Claims



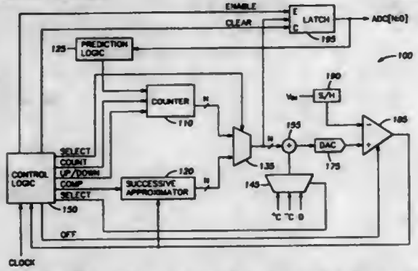
1. An analog/digital converting apparatus for comparing sequentially an analog input voltage with different analog reference voltages, storing the results of comparison as converted digital data having bits from higher order bits in a successive approximation register, and outputting the data stored in said successive approximation register, comprising:
a first node and a second node;
a sampling capacity connected to said first and second nodes, for selectively receiving said analog reference voltage and said analog input voltage;
an inverter connected to said second node and in series to said sampling capacity, for outputting said comparison result to said successive approximation register in accordance with the amount of change in potential at said second node;
a pull up switching device and a pull down switching device connected to said second node; and
a control circuit for controlling said switching devices, so that said pull up switching device and pull down switching device become conductive only during the converting cycle of the most significant bit.

5,543,795

HYBRID ANALOG-TO-DIGITAL CONVERTOR FOR LOW POWER APPLICATIONS, SUCH AS USE IN AN IMPLANTABLE MEDICAL DEVICE

Kenneth W. Fernald, Lake Jackson, Tex., assignor to Intermedics, Inc., Angleton, Tex.

Filed Jun. 2, 1995, Ser. No. 460,139
Int. Cl.[6] H03M *1/40*
U.S. Cl. 341—163 **37 Claims**



1. An analog-to-digital converter in an implantable device for periodically converting an electrogram signal into a digital code value to permit storage in a memory device, comprising:

prediction logic for predicting a value for the digital code and producing a prediction output signal;

a digital counter receiving said prediction output signal, said digital counter being capable of generating a digital code output signal;

successive approximation logic capable of determining digital code conversions on a bit-by-bit basis, and producing a digital code output signal;

a digital-to-analog converter;

a control multiplexer connected to said digital counter and to said successive approximation logic for selectively coupling the digital code output signal from either said digital counter or said successive approximation logic to said digital-to-analog converter, said digital-to-analog converter converting said digital code output signal into an analog signal;

a comparator which compares said analog signal with said electrogram signal, and produces an output signal indicative of which signal has a greater magnitude; and

control logic electrically coupled to said control multiplexer and to said comparator, said control logic receiving said comparator output signal, and based upon said comparator output signal, transmitting a signal to said control multiplexer to control the selection of the digital code output signal from either said digital counter or said successive approximation logic.

5,543,796

BROADBAND MICROWAVE ABSORBER

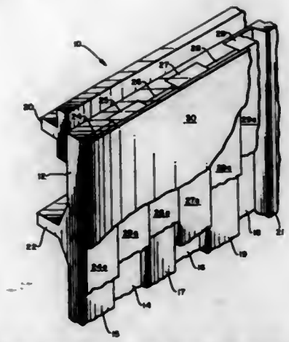
Gerald F. Thomas, Arlington, and James A. Hoffner, Mansfield, both of Tex., assignors to Loral Vought Systems Corporation, Grand Prairie, Tex.

Filed Sep. 13, 1982, Ser. No. 417,604
Int. Cl.[6] H01L *17/00*
U.S. Cl. 342—4 **8 Claims**

1. A broadband absorber for absorbing a broad spectrum of incident microwave radiation, comprising:

a first plurality of stripes of inductive absorbing material having magnetic particles dispersed throughout an organic binder, the width, thickness, and composition of the strips being selected such that each strip absorbs a specific region of the microwave spectrum;

a substrate electrically conductive to microwave radiation, the substrate having a plurality of grooves and ridges in a repeating pattern, the grooves being of varying depths and comprising means for supporting said first plurality of strips of inductive absorbing material; and



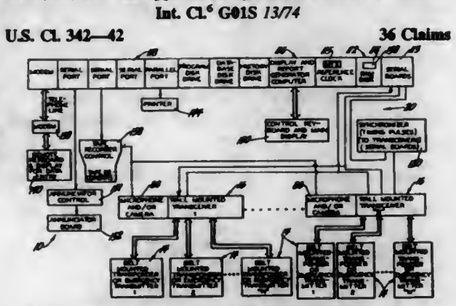
a second plurality of strips of inductive absorbing material, the strips of the second plurality of strips extending along the substrate ridges, parallel with and between the strip of said first plurality of strips, said ridges comprises means for supporting said second plurality of strips of inductive absorbing material.

5,543,797

SUPERVISED PERSONNEL MONITORING SYSTEM

Peter A. Hochstein, Troy; Jeffrey Tenenbaum, West Bloomfield, and Thomas G. Xydis, Ann Arbor, all of Mich., assignors to Audio Alert, Inc., Farmington Hills, Mich.

Continuation-in-part of Ser. No. 938,423, Aug. 31, 1992, Pat. No. 5,311,185. This application Apr. 28, 1994, Ser. No. 234,477
Int. Cl.[6] G01S *13/74*
U.S. Cl. 342—42 **36 Claims**



1. A communication system, said system comprising:

a plurality of transponder means (14) for transmitting a data signal at a first predefined time and receiving a command signal containing information and a sync signal;

transceiver means (16) for receiving said data signal and for producing an information signal indicative of said transponder means (14) transmitting said data signal at a second predefined time;

central controller means (20) for receiving said information signal at a third predefined time and for identifying said transponder means (14) and location of said transceiver means (16) based; and

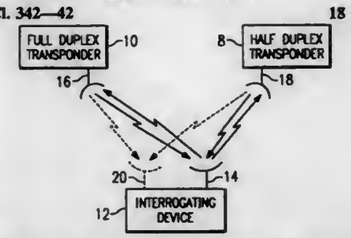
said head controller means (20) including synchronizing means (120) for producing a synchronization signal and for selectively transmitting said synchronization signal to said transceivers (16) for synchronization thereof said predefined times.

5,543,798

METHOD OF PROVIDING A SYNCHRONIZED DATA STREAM SUITABLE FOR USE IN A COMBINED FDX AND HDX RF-ID SYSTEM

Josef H. Schuermann, Oberhummel, Germany, assignor to Texas Instruments Deutschland GmbH, Germany

Filed May 12, 1994, Ser. No. 241,831
Claims priority, application European Pat. Off., May 19, 1993, 93108209
Int. Cl.[6] G01S *13/74*
U.S. Cl. 342—42 **18 Claims**



1. A method of providing synchronization of a transmitted data message from an FDX (full duplex) transponder to an interrogation device, said data message including a synchronization section followed by a data section stored in said transponder device for transmitting to said interrogation device in full duplex mode, said method comprising the steps of:

transmitting an interrogation command from said interrogation device;

receiving said interrogation command at said transponder device;

generating said data message by said transponder in response to said interrogating command, said generating step comprising the steps of:

allocating the synchronization section of said data message a period of time at least equivalent to N sequential bits each of which have a duration τ and where N is four or more,

generating n sequential bits, wherein n is smaller than N and each of the n sequential bits has a duration T such that $T=\tau N/n$, and such that the ratio N/n is greater than 1 and less than 1.5;

allocating a predetermined number of bits having a duration τ in accordance with a selected transmission protocol as the data section of said message;

transmitting said data message from said transponder to said interrogation device, said data section of said data message being transmitted subsequent to said synchronization section; and

receiving said data message at said interrogation device and identifying said synchronization section to determine the beginning of said data section.

5,543,799

SWEPT RANGE GATE RADAR SYSTEM FOR DETECTION OF NEARBY OBJECTS

Charles E. Heger, Saratoga, Calif., assignor to Zircon Corporation, Campbell, Calif.

Filed Sep. 2, 1994, Ser. No. 300,279
Int. Cl.[6] G01S *13/18*
U.S. Cl. 342—85 **15 Claims**

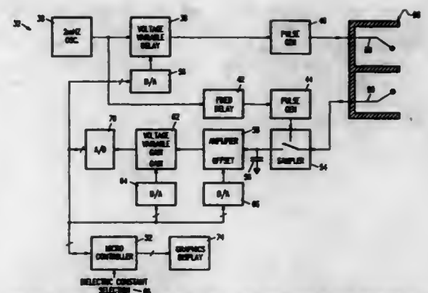
14. A range swept ultra-wideband radar system adapted for sensing a nearby target, comprising:

a signal transmitter;

a receiver located for receiving the signals emitted by the transmitter after being reflected from the target;

a variable delay for sweeping a selected one of the emitted and received signals;

means for stepping the variable delay in predetermined increments;



means for determining at each increment a received amount of a random, reflected energy background signal which is clutter not from the target;

means for storing the determined amount of the background signal for each increment; and

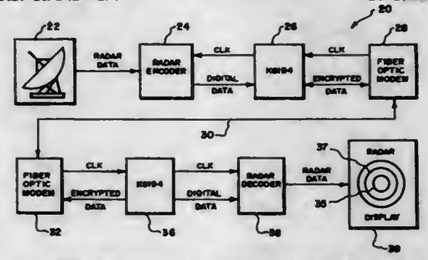
means for subsequently correcting a received signal at a particular variable delay by the stored amount.

5,543,800

RADAR DECODER

George T. Mills, and Albert T. Gabaldon, Jr., both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 6, 1995, Ser. No. 552,455
Int. Cl.[6] G01S *7/04;7/295*
U.S. Cl. 342—197 **20 Claims**



1. A radar data decoder for decoding a serial differential data stream received from an encryption unit, said encryption unit generating a differential clock signal, said radar data decoder comprising:

differential line receiving means connected to said encryption unit for receiving said serial differential data stream and said differential clock signal from said encryption unit, said different line receiving means converting said serial differential data stream to a serial digital data stream and said differential into a digital clock signal;

frame sync detecting means connected to said differential line receiving means for receiving said serial digital data stream, said frame sync detecting means generating a frame sync pulse whenever said frame sync detecting means detects a frame sync word encoded in said serial digital data stream;

said frame sync detecting means decoding said serial digital data stream to provide digital synchro data encoded in said digital data stream whenever said frame sync detecting means detects a frame sync word encoded in said serial digital data stream;

latching means connected to said frame sync detecting means for receiving said digital synchro data encoded in said digital data steam, said latching means, responsive to said frame sync pulse, latching therein said digital synchro data;

counting means connected to said differential line receiving means for receiving said digital clock signal, said counting

means, responsive to said digital clock signal, generating a random binary number pattern;

first multiplexing means connected to said counting means for receiving said random binary number pattern and said frame sync detecting means for receiving said serial digital data stream;

control signal generating means connected to said frame sync detecting means for receiving said frame sync pulse and said differential line receiver for receiving said digital clock signal, said control signal generating means, responsive to said frame sync pulse and said digital clock signal, generating at least four control signals;

said first multiplexing means being connected to said control signal generating means to receive a first of said four control signals, said first multiplexing means passing therethrough said random binary number pattern whenever said first of said four control signals is at one logic state and said multiplexing means passing therethrough digital radar video data encoded within said serial digital data stream whenever said first of said four control signals is at another logic state;

converting means connected to said latching means and said control signal generating means for receiving a second of said four control signals and a third of said four control signals from said control signal generating circuit, said second and third of said four control signals effecting a transfer of said digital synchro data from said latch circuit to digital to synchro converter, said digital to synchro converter converting said digital synchro to analog synchro signals;

modulation means connected to said first multiplexing means for receiving said random binary number pattern and said digital radar video data from said first multiplexing means, said modulating means converting said digital radar video data into a reconstructed analog radar video signal;

second multiplexing means connected to said modulation means and said control signal generating means for receiving a fourth of said four control signals, said second multiplexing means passing therethrough said reconstructed analog radar video signal whenever said fourth of said four control signals is at an active logic state; and

marker signal generating means connected to said frame sync detecting means for receiving said frame sync pulse, said marker signal generating means, responsive to said frame sync pulse, generating a first range marker pulse signal, a second range marker pulse signal and a trigger pulse signal.

5,543,801

DIGITALLY CONTROLLED BEAM FORMER FOR A SPACECRAFT

Roger J. Shawyer, Hants, England, assignor to Matra Marconi Space UK Limited, United Kingdom

Filed Jun. 27, 1994, Ser. No. 265,912

Claims priority, application United Kingdom, Sep. 3, 1993, 9318285

Int. Cl.[6] H04B 7/185

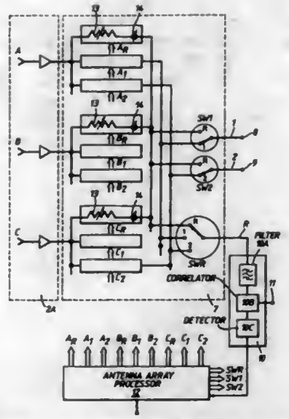
U.S. Cl. 342—354 **9 Claims**

1. A digitally controlled beam former for a spacecraft having a multi-element antenna array and a control processor having N-outputs for each element of the antenna array, the beam former comprising:

N-paths for each element of the antenna array, each of the N-paths being connected to a separate one of the outputs of the control processor for controlling weightings applied to amplitude and phase signals of a respective N-path;

N-beam former channels, each one of which is connected to a separate one of the N-paths for each element of the antenna array, a nominal beam associated with each of the N-paths having a first beam position corresponding to a respective region on earth; and

calibration means for periodically calibrating each of the N-paths of each element of the spacecraft's antenna array using a reference beam having a second beam position corresponding to a specific region on earth, the calibration means



being adapted to measure any offset of the second beam position from said specific region using an uplink at said specific region, the measured offset being used by the control processor to compensate for phase drift in the N-paths for each element of the antenna array.

5,543,802

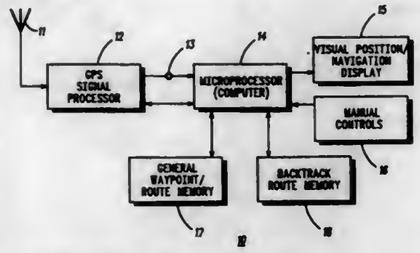
POSITION/NAVIGATION DEVICE AND METHOD

Jean-Marc Villevieille, Palatine, and Tom Tischhauser, Hawthorn Woods, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 1, 1993, Ser. No. 24,596

Int. Cl.[6] G01S 5/02;5/04; G01C 21/00

U.S. Cl. 342—357 **18 Claims**



1. A position/navigation device comprising;

waypoint means for sequentially designating and storing a continuous ordered sequence of a plurality of n determined positions defining of said locations coordinate position/navigation device as said device is sequentially located in each of said positions, said sequence of positions stored as a continuous ordered sequence of n waypoints;

route and route reversal means for selecting said stored sequence of n waypoints, as a group without designating individual waypoints, to form a route indicative of prior position movement of said position/navigation device and for creating a reverse route by reversing the order of said n stored waypoints; and

navigation means for providing navigation information for following said reverse route to each of said n waypoints.

5,543,803

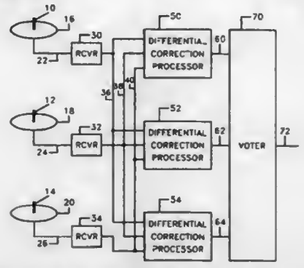
FAIL SAFE RECEIVER SYSTEM

Steven E. Serfling, Maple Grove, and Rodney L. Stangeland, Plymouth, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 23, 1994, Ser. No. 294,668

Int. Cl.[6] G01S 5/02

U.S. Cl. 342—357 **6 Claims**



1. The method of determining a correct value for signals from a plurality of receivers each of which produces an output indicative of values received from a remote transmitter but which may contain errors due to multipath propagation comprising the steps of:

A. positioning the receivers at spaced apart locations so that any multipath propagations effect the receivers differently; and

B. processing the outputs of the receivers together to determine if there is an error due to multipath propagation and to produce a resultant output indicative of the correct value.

5,543,804

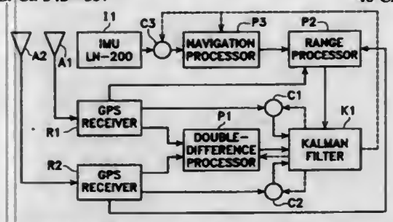
NAVAGATION APPARATUS WITH IMPROVED ATTITUDE DETERMINATION

Allan J. Brockstein, Chatsworth, and David Y. Hsu, Agoura, both of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Sep. 13, 1994, Ser. No. 305,400

Int. Cl.[6] H04B 7/185; G01S 5/02

U.S. Cl. 342—357 **46 Claims**



1. An apparatus for use with a plurality of GPS earth satellites in estimating one or more states of a platform, the platform having a reference point that represents the position of the platform and at least two receiving points corresponding to the locations of antennas for receiving satellite signals, the apparatus comprising:

a processor for computing estimates of the errors in the platform states from inputs comprising (1) one or more measured phase double-differences obtained from signals transmitted by a plurality of satellites, (2) the estimated position of the reference point, (3) the estimated positions of the receiving points relative to the reference point, and (4) the positions of the satellites, a phase double-difference being defined as the difference in phase differences for signals received from two satellites, a phase difference being the difference in carrier phase of a satellite signal received at two receiving points on the platform.

5,543,805

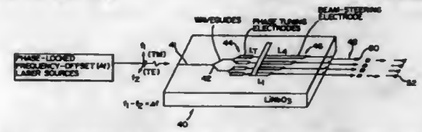
PHASED ARRAY BEAM CONTROLLER USING INTEGRATED ELECTRO-OPTIC CIRCUITS

Suwat Thaniyavarn, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Oct. 13, 1994, Ser. No. 322,897

Int. Cl.[6] H01Q 3/22

U.S. Cl. 342—368 **9 Claims**



1. An apparatus for controlling a phased array antenna which includes a plurality of antenna elements, comprising:

an electro-optic substrate;

a plurality of waveguides formed in said substrate, each of said waveguides being capable of simultaneously propagating light signals with orthogonal polarizations;

an input waveguide for inputting into each one of said plurality of waveguides a pair of co-propagating polarized light signals having orthogonal polarizations and offset frequencies;

a plurality of electrodes on said substrate configured to phase shift the signals traveling through each of said plurality of waveguides by a different amount in response to a common applied voltage, thereby creating phase shifted polarized signals; and

means for combining the phase shifted polarized signals within each one of said plurality of waveguides and propagating said combined signal to one of said plurality of antenna elements.

5,543,806

ADAPTIVE ANTENNA ARRAYS FOR HF RADIO BEAMFORMING COMMUNICATIONS

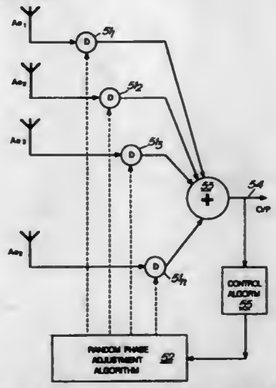
Robert Wilkinson, Portsmouth, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Nov. 30, 1989, Ser. No. 451,718

Claims priority, application United Kingdom, Dec. 5, 1988, 8828306

Int. Cl.[6] H01Q 3/22

U.S. Cl. 342—368 **24 Claims**



1. A communications equipment including an adaptive transmitter beamforming equipment for connection to an array of antennas in a high frequency communications system comprising:

a) a high frequency transmitter having an input for receiving a test signal to be transmitted and an output arrangement for providing a plurality of identical signals for transmission;

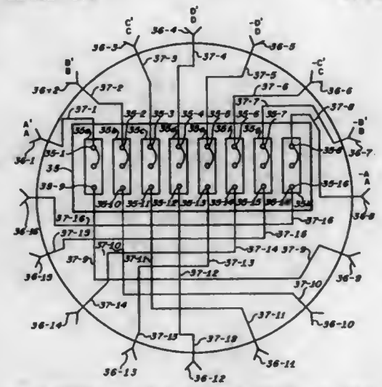
b) means to independently adjust the phase of each output signal;
c) means for connecting the phase-adjusted signals to respective antennas in the array;
d) means to initialise the phases to zero;
e) means to randomly set the phase of each output signal within predetermined limits of the initialised phases;
f) means to repeat step d) a number (N) of times;
g) remote receiver means to determine which one of the random phase sets (N) produces the maximum received signal and to produce a coded signal representative of that one number;
h) means to transmit the coded signal to the high frequency transmitter;
i) means to decode the number signal and to initialise the phases to the phase set producing the maximum signal at the remote receiver;
j) means to set a lower predetermined limit for the phase adjustments; and
k) means to repeat steps e) to j) to successively improve the focus of the transmitter beam towards the receiver.

5,543,807

ELECTRONIC COMMUTATION SWITCH FOR CYLINDRICAL ARRAY ANTENNAS

John J. Stangel, Mahopac, N.Y., assignor to Loral Corporation, New York, N.Y.

Continuation of Ser. No. 981,461, Nov. 25, 1992, abandoned. This application Nov. 14, 1994, Ser. No. 337,907
Int. Cl.[6] H01Q *3/02;3/12*
U.S. Cl. 342—374 **20 Claims**



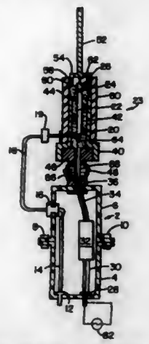
1. A commutation switch having a plurality of input ports coupled respectively in selectable sequences to an equal plurality of output ports comprising:
at least two transfer switches each having a multiplicity of input ports and a multiplicity of output ports equal to said multiplicity of input ports, said multiplicity of input ports of said at least two transfer switches in combination being said plurality of input ports and said multiplicity of output ports of said at least two transfer switches in combination being said plurality of output ports, said at least two transfer switches constructed and arranged to provide selectable pairings of input port and output port along signal propagating paths, said input ports and said output ports arranged such that each input port is positioned between two output ports so that input and output ports alternate;
each of said at least two transfer switches including a plurality of unidirectional current conducting devices having conducting and nonconducting states, each shunted across said signal propagating paths a distance of one quarter wavelength of a predetermined propagating signal from an input port and one quarter of said wavelength from an output port.

5,543,808

DUAL BAND EHF, VHF VEHICULAR WHIP ANTENNA

Bernard E. Felgenbaum, Neptune, and Francis G. Loso, Keyport, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 24, 1995, Ser. No. 449,192
Int. Cl.[6] H01Q *21/00;1/32*
U.S. Cl. 343—727 **4 Claims**



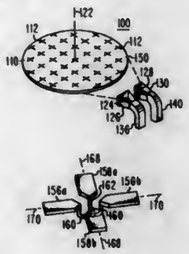
1. A dual-band whip antenna comprising:
a EHF waveguide;
means for coupling EHF signals to one end of said EHF waveguide;
means for radiating EHF signals from the other end of said EHF waveguide, wherein said means for radiating EHF signals includes at least one slot;
a half dipole conductively connected to said other end of said EHF waveguide;
means for providing a shield around all of said waveguide except the means for radiating EHF signals;
a VHF matching network having an input and an output;
means for coupling VHF to said input; and
means for coupling said output to said one end of said waveguide and to said means for providing a shield at a point remote from said other end of said waveguide;
whereby said means for providing a shield acts as a half dipole.

5,543,809

REFLECTARRAY ANTENNA FOR COMMUNICATION SATELLITE FREQUENCY RE-USE APPLICATIONS

Charles E. Profera, Jr., Cherry Hill, N.J., assignor to Martin Marietta Corp., East Windsor, N.J.

Filed Mar. 9, 1992, Ser. No. 848,055
Int. Cl.[6] H01Q *1/28;3/46;19/17;21/24*
U.S. Cl. 343—753 **20 Claims**



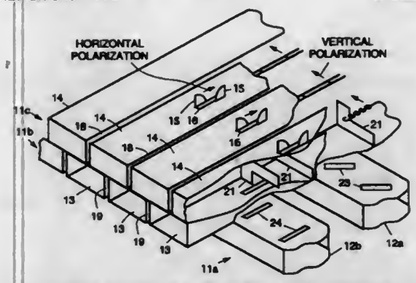
17. An antenna, comprising:
a first plurality of first reradiators of electromagnetic energy, each of said first reradiators being sensitive to a first polarization, the dimensions of each of said first reradiators being selected to provide a particular phase shift to reradiated energy of said first polarization at a predetermined frequency;
a second plurality, which may be equal to said first plurality, of second reradiators of electromagnetic energy, each of said second reradiators being sensitive to a second polarization orthogonal to said first polarization, the dimensions of each of said second reradiators being selected to provide a particular phase shift to reradiated energy of said second polarization at said predetermined frequency;
arraying means, for arraying said first plurality of first reradiators in an array direction, on an array surface, to form a first array, with said first reradiators oriented to respond to said first polarization, the dimensions of each one of said first reradiators in said first array being selected, in dependence upon the location of said one of said first reradiators in said first array, so that said first array reradiates diverging energy received from a first focal point to produce a collimated beam of energy, and reradiates a received beam of collimated energy to produce a beam of energy converging toward said first focal point,
and for arraying said second plurality of second reradiators in said array direction, on said array surface, to form a second array, with said second reradiators oriented to respond to said second polarization, the dimensions of each one of said second reradiators in said second array being selected, in dependence upon the location of said one of said second reradiators in said second array, so that said second array reradiates diverging energy received from a second focal point, different from said first focal point, to produce a collimated beam of energy, and reradiates a received beam of collimated energy to produce a bum of energy converging toward said second focal point;
first feed antenna means located at said first focal point for transducing signals of said first polarization; and
second feed antenna means located at said second focal point for transducing signals of said second polarization.

5,543,810

COMMON APERTURE DUAL POLARIZATION ARRAY FED BY RECTANGULAR WAVEGUIDES

Pyong K. Park, Agoura Hills, Calif., assignor to Hughes Missile Systems Company, Los Angeles, Calif.

Filed Jun. 6, 1995, Ser. No. 470,528
Int. Cl.[6] H01Q *13/12*
U.S. Cl. 343—771 **2 Claims**



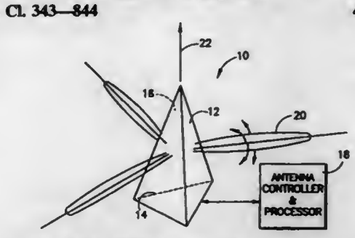
1. A common aperture dual polarization array comprising:
a horizontal polarization standing wave array comprising a first plurality of radiating waveguides laterally disposed adjacent to each other in a first layer that are separated by a first plurality of gaps, and wherein each waveguide comprises a plurality of radiating flared dipoles disposed adjacent to a respective plurality of longitudinal radiating shunt slots;
a vertical polarization standing wave array that comprises a second plurality of radiating waveguides laterally disposed adjacent to each other in a second layer that are separated by a second plurality of gaps, and wherein the second plurality of radiating waveguides are laterally offset from the first plurality of radiating waveguides, and wherein each of the second plurality of radiating waveguides comprises a plurality of longitudinal shunt slots disposed in respective ones of the second gaps between adjacent radiating waveguides of the horizontal polarization array, and an offset resonant iris centered on each respective longitudinal shunt slot that is oriented orthogonal thereto; and
a feed waveguide array comprising a first feed waveguide comprising a plurality of tilted series/series coupling slots for coupling horizontal polarization to the first plurality of radiating waveguides of the horizontal polarization standing wave array, and a second feed waveguide comprising a plurality of shunt slots comprising iris loaded transverse series/shunt coupling slots for coupling vertical polarization to the second plurality of radiating waveguides of the vertical polarization standing wave array.

5,543,811

TRIANGULAR PYRAMID PHASED ARRAY ANTENNA

Frank Chethik, Palo Alto, Calif., assignor to Loral Aerospace Corp., New York, N.Y.

Filed Feb. 7, 1995, Ser. No. 384,789
Int. Cl.[6] H01Q *21/00*
U.S. Cl. 343—844 **4 Claims**



1. A phased array antenna comprising:
three triangular shaped antenna faces meeting at a common vertex, each antenna face including an array of antenna elements, said three antenna faces juxtaposed to form a triangular pyramid, said triangular pyramid having a height h and at least one base leg of length B, h and B exhibiting ratio which provides a triangular pyramid shape for said antenna that assures a first antenna aperture at a minimum beam elevation angle that is larger than a second antenna aperture when said beam elevation angle is at zenith, said first aperture and said second aperture exhibiting a ratio of areas that is at least equal to a ratio of additional losses experienced by a beam at said minimum beam elevation angle to additional losses experienced by a beam at a zenith elevation angle, additional losses being the sum of losses resulting from at least rain, path length and atmospheric attenuation.

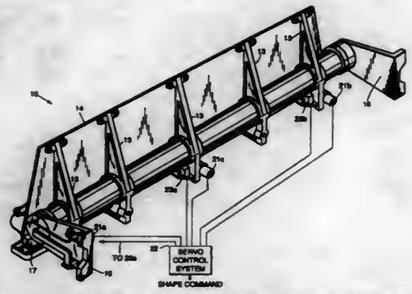
5,543,812

ACTIVE DEFLECTION COMPENSATOR

John G. Blanche, IV, Fullerton, and Felix T. Sasso, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 30, 1994, Ser. No. 268,892
Int. Cl.[6] H01Q *1/22*
U.S. Cl. 343—894 **4 Claims**

1. An active deflection compensator for use with an antenna system comprising an antenna array and a linear scanner ridge, said linear scanner ridge having a first end and a second end and a center thereof, that projects into a waveguide cavity that is coupled to the antenna array, said active deflection compensator comprising:
a first linear actuator coupled to said first end of said linear scanner ridge;



a second linear actuator coupled to said second end of said linear scanner ridge;

a third linear actuator coupled to said center of said linear scanner ridge;

a first transducer coupled to said first end of said linear scanner ridge adjacent the first linear actuator for providing signals indicative of linear and angular displacement of the linear scanner ridge;

a second transducer coupled to said second end of said linear scanner ridge adjacent the second actuator for providing signals indicative of linear and angular displacement of the linear scanner ridge;

a third transducer coupled to the linear scanner ridge adjacent the third linear actuator for providing signals indicative of amount of bending of the linear scanner ridge; and

a servo control system coupled to the linear actuators and to the transducers for executing a control algorithm that processes signals indicative of the location, angular displacement and deflection of the linear scanner ridge and for providing correction signals to the first and second actuators to maintain the linear scanner ridge parallel to the waveguide cavity and to provide signals to the third actuator to dynamically correct for deflection of the linear scanner ridge to keep it relatively straight.

5,543,813

SYSTEM FOR DETERMINING AND REGISTERING LOCATION OF MOBILE TERMINAL FOR COMMUNICATION SYSTEM WITH NON-GEOSYNCHRONOUS SATELLITES

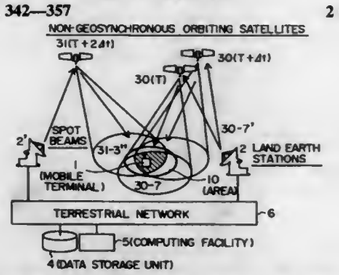
Noriyuki Araki, Ohmiya; Hideyuki Shinonaga, Hanno, and Yasuhiko Itoh, Tokyo, all of, Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 29, 1994, Ser. No. 282,309

Claims priority, application Japan, Aug. 12, 1993, 5-219284; Aug. 12, 1993, 5-219285

Int. Cl.[6] G01S *5/02*

U.S. Cl. 342—357 **2 Claims**



1. A system for determining and registering the location of a mobile terminal for a communication system with non-geosynchronous satellites wherein:

a plurality of non-geosynchronous satellites are disposed and a plurality of land earth stations are disposed on the earth;

each of said satellites irradiates a spot beam to its satellite coverage area on the earth where mobile terminals can communicate with the satellite, or each of said satellites irradiates a spot beam to each of a plurality of smaller areas into which said satellite coverage areas is divided, through which spot beams said satellite can communicate with said mobile terminals in said satellite coverage area;

identification information given to each of said spot beams is transmitted through each of said spot beams;

said mobile terminal, when registering its location, receives said spot beam identification information at a plurality of moments in time, said mobile terminal transmits, via said satellite, at a plurality of sets of information including received spot beam identification information and information on reception time of each spot beam identification information; and

an overlapped area of a plurality of spot beam coverage areas at the time when each of said spot beam identification information is received at said mobile terminal, is used as the location information of said mobile terminal.

5,543,814

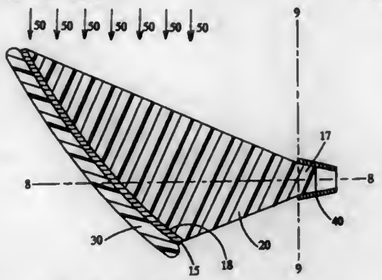
DIELECTRIC-SUPPORTED ANTENNA

James R. Jenness, Jr., 1653 Dogwood Circle, State College, Pa. 16803

Filed Mar. 10, 1995, Ser. No. 401,882

Int. Cl.[6] H01Q *19/12;19/14*

U.S. Cl. 343—840 **2 Claims**



1. An antenna structure comprising:

a body composed of a rigid dielectric material having a dielectric constant approximately equal to that of air, having

a surface shaped as a portion of a surface of revolution, having the form of an antenna reflector

and

a protrusion having a surface shaped as a portion of the inner surface of a horn for transmitting or receiving microwave or millimeter wave electromagnetic radiation, the axis of said protrusion being co-planar with and perpendicular to the axis of said surface of revolution,

a layer of electrically conducting material in contact with said portion of said surface of revolution of said body, shaped by said surface to the form of an antenna reflector,

and

a born associated with an electromagnetic wave transmitting device or an electromagnetic wave receiving device mating with said protrusion of said body,

said body having form and dimensions to place said layer of electrically conducting material at a position relative to said horn such that the assembly can function as an antenna reflector system for transmitting or receiving microwave or millimeter wave electromagnetic radiation.

5,543,815

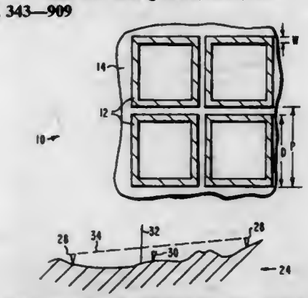
SHIELDING SCREEN FOR INTEGRATION OF MULTIPLE ANTENNAS

Te-Kao Wu, Rancho Palos Verdes; William W. Milroy, Playa del Rey, and Steven W. Drost, Sherman Oaks, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 144,625, Nov. 1, 1993, abandoned, which is a continuation of Ser. No. 943,997, Sep. 11, 1992, abandoned, which is a continuation of Ser. No. 621,181, Nov. 30, 1990, abandoned. This application Apr. 7, 1995, Ser. No. 419,972

Int. Cl.[6] H10Q *15/14;19/17;21/28*

U.S. Cl. 343—909 **28 Claims**



6. A radio signal shielding screen for use in an integrated antenna system that includes first, second and third antennas and an angle of incidence of signals emitted from each of said antennas onto the shielding screen, said shielding screen comprising:

a frequency selective surface disposed between the first and second antennas that is comprised of a symmetrical array of open center conductor elements and that is disposed orthogonal to a line extending between the first and second antennas, for reflecting signals transmitted by each of the respective first and second antennas to prevent their respective signals from impinging on the other of the first and second antennas, and for transmitting signals provided by the third antenna.

5,543,816

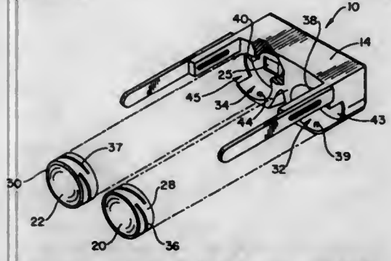
HEAD MOUNTED DISPLAY SYSTEM WITH ASPHERIC OPTICS

Gregory L. Heacock, Camas, Wash., assignor to Virtual Vision, Redmond, Wash.

Continuation-in-part of Ser. No. 133,521, Oct. 7, 1993. This application Nov. 19, 1993, Ser. No. 155,429

Int. Cl.[6] G09G *3/02*

U.S. Cl. 345—8 **38 Claims**



1. A binocular head mounted display system comprising:

a support to mount the display system on a user's head;

a right-eye aspheric lens mounted on said support so as to be positioned in front of a user's right eye and at a convergence angle with respect to said user's right eye to direct said eye inward;

a right-eye display for depicting video information mounted on said support at a distance from said right-eye lens with the face of said display generally parallel to said right-eye lens such that the user views an image of the video from the right-eye display through the right-eye lens with the user's right eye directed inward by said convergence angle, said right-eye aspheric lens providing an enlarged image of the video information from said right-eye display with minimal distortions therein;

a left-eye aspheric lens mounted on said support so as to be positioned in front of a user's left eye and at a convergence angle with respect to said user's left eye to direct said eye inward; and

a left-eye display for depicting video information mounted on said support at a distance from said left-eye lens with the face of said display generally parallel to said left-eye lens such that the user views an image of the video from the left-eye display through the left-eye lens with the user's left eye directed inward by said convergence angle, said left-eye aspheric lens providing an enlarged image of the video from said left-eye display with minimal distortions therein.

5,543,817

DATA PROCESSING SYSTEM AND APPARATUS

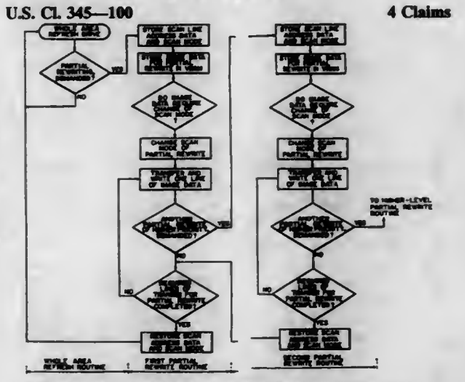
Hiroshi Inoue, Yokohama; Atsushi Mizutome, Fujisawa, and Aiko Enomoto, Zama, both of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 11,241, Jan. 29, 1993, Pat. No. 5,359,344, which is a division of Ser. No. 410,731, Sep. 2, 1989, abandoned. This application Jun. 29, 1994, Ser. No. 267,366

Claims priority, application Japan, Sep. 29, 1988, 63-246089; Sep. 30, 1988, 63-246307; Sep. 30, 1988, 63-246308; Oct. 6, 1988, 63-252992; Oct. 11, 1988, 63-256324; Oct. 12, 1988, 63-258185

Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—100 **4 Claims**



1. A data processing system, comprising:

display means comprising scanning lines and data lines and provided with a driver having scanning line drive means for driving the scanning lines and data line drive means for driving the data lines; and

control means for controlling said driver so that said display means is driven in a first writing scanning mode and in a second writing scanning mode wherein the scanning lines are selected in a different order from that in the first writing scanning mode, wherein

the scanning lines are selected two or more lines apart in the first writing scanning mode, and the scanning lines are selected sequentially line by line in the second writing scanning mode.

5,543,818

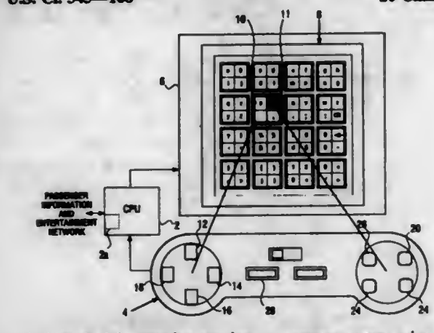
METHOD AND APPARATUS FOR ENTERING TEXT USING AN INPUT DEVICE HAVING A SMALL NUMBER OF KEYS

Ed Scott, Anaheim Hills, Calif., assignor to Sony Corporation, Tokyo, Japan, and Sony Trans Com Inc., Park Ridge, N.J.

Continuation of Ser. No. 242,129, May 13, 1994, abandoned. This application Jun. 1, 1995, Ser. No. 457,807

Int. Cl.[6] G09G *3/02*

U.S. Cl. 345—168 **20 Claims**



1. A method for entering text into a computer system using an input device having keys, including the steps of:

(a) displaying on a display device a character selection menu which includes simultaneously displayed groups of character representations, each of said groups including representations of B characters, where B is a positive integer not less than two and where the characters within each group are arranged in a pattern;

(b) highlighting a selected one of the groups in response to actuation of a first set of the keys; and

(c) selecting a character representation within the selected one of the groups in response to actuation of one of a second set of the keys, where said second set of the keys consists of B of the keys and where said second set of the keys is separate from the display device and is arranged in a pattern corresponding to the pattern of the characters within each group.

5,543,819

HIGH RESOLUTION DISPLAY SYSTEM AND METHOD OF USING SAME

Randall S. Farwell, San Diego; Robert W. Shaw, Escondido, and Roger N. Marshall, Solana Beach, all of Calif., assignors to Proxima Corporation, San Diego, Calif.

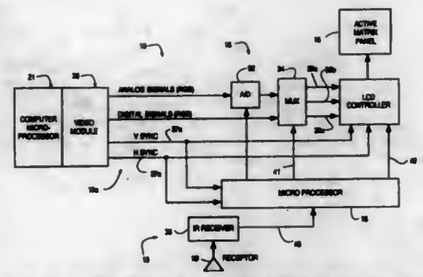
Continuation of Ser. No. 845,288, Mar. 3, 1992, abandoned, which is a continuation-in-part of Ser. No. 690,531, Apr. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 616,178, Nov. 19, 1990, Pat. No. 5,276,436, which is a continuation-in-part of Ser. No. 586,506, Sep. 21, 1990, Pat. No. 5,181,902, which is a continuation-in-part of Ser. No. 546,238, Jun. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 506,429, Apr. 9, 1990, abandoned, which is a continuation-in-part of Ser. No. 472,668, Jan. 30, 1990, abandoned, which is a continuation-in-part of Ser. No. 222,144, Jul. 21, 1988, abandoned. This application Nov. 19, 1993, Ser. No. 155,480

Int. Cl.[6] G09G *5/02*

U.S. Cl. 345—150 **29 Claims**

1. A display control arrangement, comprising:

means responsive to a series of input intensity level signals indicative of individual ones of a large number of different incoming intensity levels for determining an individual unique one of another large number of a series of different M by N pixel matrix arrays of gray scale intensity level patterns corresponding to a given incoming intensity level;



each one of said patterns having two different desired gray scale intensity levels to help facilitate a blending gradation of color shading levels between pixel images of the same primary color but being generated in response to slightly different incoming intensity levels, each one of the two different gray scale intensity levels being less than its corresponding incoming intensity level, said two different gray scale intensity levels differing by at least one gray scale intensity level;

means for determining an individual one of said two different desired gray scale intensity levels for a selected pixel element in a determined pattern; and

means responsive to the determined desired gray scale intensity level of said two different gray scale intensity levels for said selected pixel element for causing the selected pixel element to be activated selectively to facilitate pixel image perception at the determined desired gray scale intensity level;

whereby said patterns of two different gray scale intensity levels for any single incoming intensity level signal cause adjacent pixel images of the same primary color but having somewhat different gray scale intensity levels to blend in a subtle gradation of intensity levels.

5,543,820

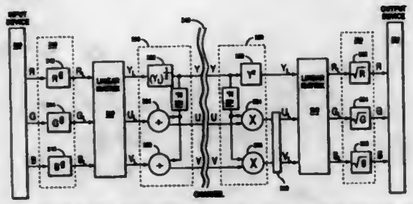
METHOD AND APPARATUS FOR LINEAR COLOR PROCESSING

Albert D. Edgar, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 925,712, Aug. 4, 1992, abandoned. This application Mar. 13, 1995, Ser. No. 403,111

Int. Cl.[6] G09G *5/04*

U.S. Cl. 345—153 **26 Claims**



1. A method for processing multiple color signals representing an image comprising the steps of:

a) obtaining multiple linear red, green and blue color signals representing said image;

b) processing said multiple linear color signals to obtain a linear luminance signal and at least two linear chrominance signals; and

c) converting said linear luminance signal and said at least two linear chrominance signals to a nonlinear luminance signal and to at least two non-linear chrominance signals, said step of converting including:

i) gamma correcting said linear luminance signal to said nonlinear luminance signal; and

ii) dividing said at least two linear chrominance signals by said in order to obtain two-linear luminance signal nonlinear luminance signal.

5,543,821

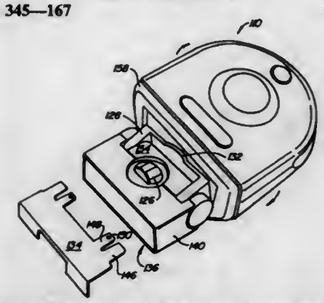
TRACK BALL MOUNTED ON KEYBOARD

Carlos Marchis; David N. McVicar, both of Fremont, and Robert L. Lathrop, San Jose, all of Calif., assignors to Logitech, Inc., Fremont, Calif.

Continuation of Ser. No. 859,271, Mar. 25, 1992, abandoned, which is a continuation-in-part of Ser. No. 681,210, Apr. 5, 1991, abandoned. This application Jul. 20, 1994, Ser. No. 277,696

Int. Cl.[6] G09G *5/08*

U.S. Cl. 345—167 **4 Claims**



4. A track ball mechanism for attaching to a computer, comprising:

a track ball housing having an opening with a track ball extending therethrough;

clamping means for attaching to said computer;

rotating means, coupling said track ball housing to said clamping means, for allowing rotation of said track ball housing relative to said clamping means, said rotating means providing for rotation in two directions, said rotating means comprising:

a first member rotatably coupled to said clamping means to allow rotation in a first direction relative to said clamping means,

a second member, rotatably coupled between said first member and said track ball housing, to allow rotation of said track ball housing relative to said clamping means in a second direction orthogonal to said first direction,

wherein said clamping means includes a cylindrical member opposite said computer and said second member comprises a yoke having a central hub assembly rotatably attached to said track ball housing,

said first member comprises at least one stub extending from said yoke opposite said hub assembly for rotatably coupling to said cylindrical member; and

a first O-ring compressed between said central hub and said track ball housing and a second O-ring compressed between said stub and said cylindrical member, said O-rings providing a continuous tension which can be overcome by a force applied by a user's hand.

5,543,822

METHOD FOR INCREASING THE VIDEO THROUGHPUT IN COMPUTER SYSTEMS

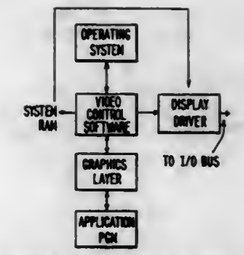
Michael L. Spilo, and Jonathan Daub, both of New York, N.Y., assignors to Helix Software Company, Inc., Long Island City, N.Y.

Filed May 28, 1993, Ser. No. 69,139

Int. Cl.[6] G09G *1/02*

U.S. Cl. 345—189 **3 Claims**

1. A method for increasing the performance of a video subsystem having an existing display driver and video RAM in a graphical environment computer system by using standard system RAM as a buffer, comprising the steps of:



A) determining an optimal Bitmap configuration for video screen data;

B) substituting a driver configured for the optimal Bitmap configuration for the existing display driver;

C) causing the substituted driver to allocate main CPU memory for use as the storage site for the determined optimal Bitmap;

D) accepting normal drawing calls from the operating system and reporting to the operating system that the video environment is as dictated by the optimal Bitmap;

E) modifying the optimal Bitmap in accordance with standard instructions received from the operating system so that the bitmap maintains an accurate representation of the display;

F) making repeated determinations at least periodic intervals as to what part of the optimal Bitmap has changed; and

G) making corresponding changes to the video display by utilizing the modified bitmap;

wherein the step of determining the optimal Bitmap configuration comprises the steps of:

a) determining the number of CPU cycles required to modify one pixel in a RAM-based bitmap configured in two or more configurations chosen from the following:

i) n arrays of pixels packed 1 per bit, where 2n colors are displayed on a video screen;

ii) one array of packed n-bit pixel data, fully packed into data word format;

iii) one array of data elements, in which full color capability of pixels is arranged on a pixel-by-pixel basis;

iv) one array of pixel data packed 1 pixel per bit, with consecutive data locations containing adjacent plane information;

v) two arrays comprising a first array comprising at least 1 single color array to temporarily hold single color modifications and a second array chosen from array formats i through iv, said second array being updatable from said first array;

b) determining the number of CPU cycles required to modify consecutive multiple pixels in each of said chosen configurations;

c) determining the number of CPU cycles required to compute the offset into the array of a starting point for multiple and single pixel modification operations;

d) calculating a weighting value from the results of steps a, b and c;

e) determining corresponding values for said chosen configurations when direct access to video memory update routine is performed and comparing said corresponding values to said weighting values; and

f) identifying as the optimal configuration the one of said chosen configurations having the greatest proportional increase over the value determined in step e.

5,543,823
DATA STORING METHOD OF A ROW BUFFER IN ON-SCREEN DISPLAY AND CONTROL CIRCUIT THEREOF

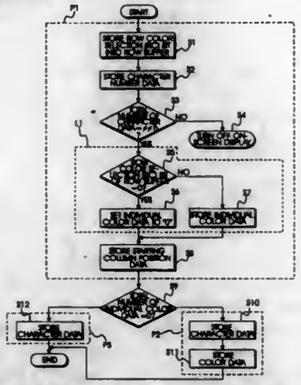
Motohiro Kurisu, Seoi, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Dec. 12, 1991, Ser. No. 805,957

Claims priority, application Rep. of Korea, Dec. 13, 1990, 20456

Int. Cl.[6] G09G 5/00

U.S. Cl. 345—196 **33 Claims**



1. A method of storing character and color data into a row buffer to be displayed on an on-screen display, comprising:

a control data storing process for storing a row color selection bit, character number data, individual color data, and starting and ending column position data;

a step of discriminating whether every bit of said individual color data is set to a first logic state by said control data storing process;

a character and color data storing process for storing said character date and color data when every bit of said individual color data is set to said first logic state; and

a character data storing process for storing only said character data when every bit of said color data is not set to said first logic state.

5,543,824
APPARATUS FOR SELECTING FRAME BUFFERS FOR DISPLAY IN A DOUBLE BUFFERED DISPLAY SYSTEM

Curtis Priem, Fremont; Chris Malachowsky, Santa Clara; Bruce McIntyre, Cupertino, and Guy Moffat, Palo Alto, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 353,792, Dec. 8, 1994, abandoned, which is a continuation of Ser. No. 999,198, Dec. 23, 1992, abandoned, which is a continuation of Ser. No. 716,001, Jun. 17, 1991, abandoned. This application Aug. 28, 1995, Ser. No. 520,301

Int. Cl.[6] G09G 1/02

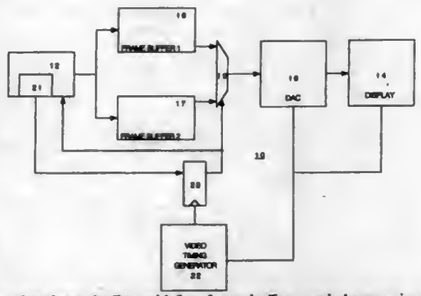
U.S. Cl. 345—201 **4 Claims**

1. A double buffered output display system for displaying a plurality of frames of data, said double buffered output display system comprising:

a rendering engine for rendering said plurality of frames of data;

an output display for display of said plurality of frames of data;

a video timing generator, said video timing generator generating at least one timing signal, said timing signal having a vertical retrace period after complete scanning of a first display frame and before scanning of a next display frame, said video timing generator asserting an enabling signal during said vertical retrace period;



a first frame buffer, said first frame buffer coupled to receive a first frame of data from said rendering engine, said rendering engine writing said first frame of data when said output display is not displaying said first frame of data in said first frame buffer;

a second frame buffer, said second frame buffer coupled to receive a second frame of data from said rendering engine, said rendering engine writing said secood frame of data when said output display is not displaying said second frame of data in said second frame buffer;

a multiplexor coupled to said first frame buffer and said second frame buffer for furnishing an output frame, said multiplexor furnishing said output frame by selecting from said first frame buffer or second frame buffer;

converter means coupled to said multiplexor and said output display, said converter means receiving said output frame from said multiplexor, said converter means converting said output frame from said multiplexor into a display signal for display on said output display;

input register means coupled to-said rendering engine for receiving and storing a frame completed signal from said rendering engine indicating that the multiplexor is to select a different frame buffer for generating said output frame; and

output register means coupled to said input register means and coupled to said video timing generator to receive said enabling signal, said output register means generating an output signal when said enabling signal from said video timing generator is asserted after said frame completed signal has been received from said input register means, said output signal coupled to said multiplexor and said rendering engine such that said output signal switches said multiplexor and said output signal informs said rendering engine when said multiplexor has been switched;

such that said multiplexor switches between said first frame buffer and said second frame buffer only during said vertical retrace period of said timing signal and informs said rendering engine when a switch occurs.

5,543,825
HIGH EFFICIENCY MULTISPOT FACET TRACKED RASTER OUTPUT SCANNING SYSTEM

Tibor Fisli, Los Altos Hills; Jean-Michel Guerin, Glendale; Patrick Y. Maeda, Redondo Beach, all of Calif., and Donald J. Quant, Port Byron, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 17, 1993, Ser. No. 154,881

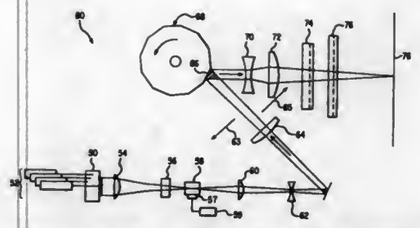
Int. Cl.[6] B41J 2/47

U.S. Cl. 346—141 **2 Claims**

1. An apparatus for high efficiency raster output scanning in a facet tracking architecture, the apparatus comprising

a rotating mirror polygon having trackable facets;

a plurality of laser diodes each configured to emit a laser beam directed toward trackable facets of the rotating mirror polygon;



a plurality of dedicated drivers, with each laser diode coupled to at least one dedicated driver to modulate intensity of the laser beam; and

a single-channel acoustic-optic cell positioned between trackable facets of the rotating mirrored polygon and the plurality of laser diodes, the single-channel acoustic-optic cell being controlled to deflect the laser beams as required to maintain facet tracking of trackable facets of the rotating mirror polygon.

5,543,826
INK JET APPARATUS AND METHOD FOR RECOVERY THEREOF

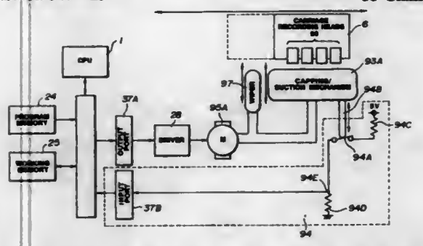
Akira Kuronuma, Kawasaki; Yuji Akiyama, Yokohama; Takayuki Murata, Kawasaki; Hiroshi Fukui, Yokosuka, and Shinichi Omo, Yokohama, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 52,530, Apr. 29, 1993, abandoned. This application Aug. 15, 1995, Ser. No. 515,470

Claims priority, application Japan, May 11, 1992, 4-117293

Int. Cl.[6] B41J 2/165

U.S. Cl. 347—23 **35 Claims**



1. An ink jet apparatus for use with an ink jet head having a discharge surface with a discharge opening for discharging ink therethrough in response to discharge signals, the apparatus comprising:

a cap member for capping said discharge opening;

a wiper member for wiping said discharge surface;

suction means for applying suction to said discharge opening through said cap member to draw ink from said discharge opening; and

control means for carrying out a recovery operation if said cap member is not capping said discharge opening when the ink jet apparatus is turned on, the recovery operation including first wiping said discharge surface with said wiper member, next capping said discharge opening with said cap member, next applying suction to draw ink from said discharge opening using said suction means, and thereafter discharging ink through said discharge opening using discharge signals.

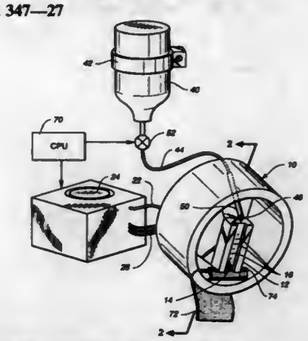
5,543,827
INK JET PRINT HEAD NOZZLE CLEANING COINCIDING WITH NOZZLE VIBRATION

Roger C. VanSteenkiste, and David G. VanSteenkiste, both of Gilbert, Ariz., assignors to Fas-Co Coders, Inc., Chandler, Ariz.

Filed Apr. 11, 1994, Ser. No. 225,551

Int. Cl.[6] B41J 2/165

U.S. Cl. 347—27 **7 Claims**



1. Apparatus comprising, in combination:

an ink jet nozzle for directing ink toward an object to apply inked indicia to said object, said ink jet nozzle including a nozzle plate having a nozzle plate outer surface and a plurality of ink jet exit openings at said nozzle plate outer surface defined by said ink jet nozzle;

ink supply means for supplying ink to said ink jet nozzle and selectively expressing ink through said ink jet exit openings;

solvent applicator means for periodically applying liquid solvent to said nozzle plate outer surface at said ink jet nozzle openings to clean said ink jet nozzle openings, said solvent applicator means including a container having an interior for containing solvent, a solvent supply line extending from said container interior and having a distal end defining a solvent supply line dispensing opening located adjacent to said nozzle plate outer surface and said ink jet exit openings, and flow control means for controlling the flow of solvent from said container to said nozzle plate outer surface and said ink jet exit openings through said solvent supply line;

container mounting means mounting said container at a location elevated relative to said ink jet exit openings whereby solvent flows through said solvent supply line to said solvent supply line dispensing opening under the influence of gravity, said flow control means including a valve for selectively establishing communication between said container interior and said solvent supply line dispensing opening; and

solvent supply line mounting means for mounting said distal end relative to said ink jet nozzle with said solvent supply line dispensing opening closely adjacent to said nozzle plate outer surface and at a location elevated relative to said ink jet exit openings whereby solvent dispensed from said solvent supply line dispensing opening will engage and flow along said nozzle plate outer surface to said ink jet exit openings, and said ink supply means including at least one piezoelectric crystal in operative association with said ink jet nozzle to express ink through said ink jet nozzle when said at least one piezoelectric crystal is electrically energized and crystal energizing means for selectively electrically energizing said at least one piezoelectric crystal to a level of energization lower than that required to express ink through said ink jet nozzle to vibrate said at least one piezoelectric crystal at a lower rate and vibrate said nozzle plate to promote downward flow of said solvent along said nozzle plate outer surface to said ink jet exit openings.

5,543,828

RECORDING APPARATUS HAVING A PRINT HEAD DRIVE APPARATUS WITH AN IC DRIVE CIRCUIT EMPLOYING SHIFT REGISTERS FOR HANDLING DRIVE DATA IN SEQUENTIAL FASHION AND A METHOD FOR DRIVING THE PRINT HEAD

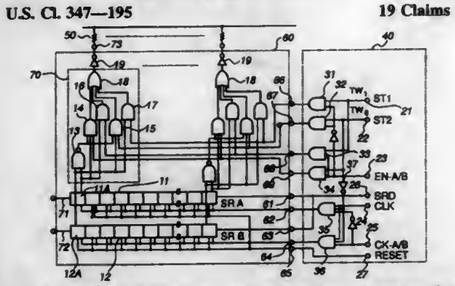
Masahiro Minowa, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Jul. 21, 1994, Ser. No. 278,587

Claims priority, application Japan, Jul. 12, 1993, 6-160198; Jul. 21, 1993, 5-180389

Int. Cl.[6] B41J 2/36;2/375

U.S. Cl. 347—195 19 Claims



1. A recording apparatus having a print bead drive apparatus for printing by driving a plurality of N thermal elements, and comprising:

at least two shift registers having N single bit resisters corresponding to N thermal elements for serially receiving drive data as input and for transferring said data in parallel as output, said single bit registers of said shift registers connected to drive a corresponding thermal element of said plurality of N thermal elements,

means to input serial drive data selectively to either of said shift registers,

first gate means for selectively providing the output of drive data from either of said shift registers to said thermal elements,

first activating timing means for setting the duration of time of the output of said first gate means,

second gate means for comparing N-bit data of respective 1-N single bit registers of said at least the two shift registers corresponding to the same 1-N thermal elements,

third gate means for deciding whether to output the result of said second gate means to said thermal elements according to the each bit of the drive data,

second activating timing means for setting the duration of time of the output of said third gate means,

and output selection means for selecting which output of said at least two shift registers should be provided to drive said thermal elements of drive data, the improvement comprising:

said input means to one of said at least two shift registers to store current print data for a next print cycle and said input means to the other of said at least two shift registers to store past print data from an immediately previous print cycle,

said second gate means comparing the current print data to the past print data for respective of said 1-N single bit registers of said at least the two shift registers,

said input means to the other of said at least two shift registers having stored past print data, provided to receive new drive data and redesignated as the store for current print data, said one of said at least two shift registers thereafter redesignated as the store of past print data,

said second gate means comparing the new drive data to the past print data for respective of said 1-N single bit registers of said at least the two shift registers,

the selection of the time output of said first and third gate means based upon said gate comparison of current print data with past print data through sequential shifting of said at least two shift registers for setting the activation time of the thermal elements.

5,543,829

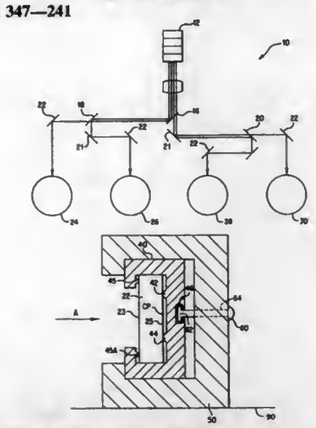
METHOD AND APPARATUS FOR ADJUSTING THE CURVATURE OF A FOLDING MIRROR IN A RASTER SCANNING SYSTEM

Tibor Fisli, Los Altos Hills, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 19, 1994, Ser. No. 325,017

Int. Cl.[6] B41J 2/47

U.S. Cl. 347—241 18 Claims



1. A raster scanning system comprising:

an image receiving device for receiving a light beam;

a scanning device for scanning said light beam across said image receiving device; and

a mirror located in a path of said light beam between said scanning device and said image receiving device, a curvature of the mirror being adjustably controlled to eliminate bow of the light beam on the image receiving device, the curvature of the mirror being adjusted to receive a bowed light beam and reflect the light beam with the bow removed.

5,543,830

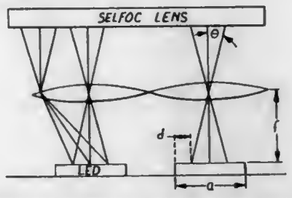
APPARATUS WITH LIGHT EMITTING ELEMENT, MICROLENS AND GRADIENT INDEX LENS CHARACTERISTICS FOR IMAGING CONTINUOUS TONE IMAGES

Michael C. Lea, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 596,861, Oct. 12, 1990, abandoned. This application Dec. 3, 1993, Ser. No. 161,973

Int. Cl.[6] B41J 2/435;2/45

U.S. Cl. 347—241 5 Claims



1. An apparatus for imaging continuous tone images on a photosensitive medium, said continuous tone images having a plurality of image pixels, each of said image pixels having a dimension, said photosensitive imaging medium being capable of developing a transmission density in imaged areas that varies non-linearly with an exposure energy received by said imaged areas and having a spatial resolution finer than said dimension of said plurality of image pixels, said apparatus comprising:

a linear array of evenly spaced apart light emitting diodes;

a linear array of microlenses, each of said microlenses having a focus with a focal length, each of said microlenses abutting another of said microlenses, and each of said microlenses being associated with one of said light emitting diodes, said one of said light emitting diodes being positioned at said focus of one of said plurality of microlenses; and

a gradient index lens array operatively coupled to said linear array of microlenses and arranged such that each of said microlenses acts as an effective exposure image pixel source for said gradient index lens array,

wherein each of said light emitting diodes has a width, said gradient index lens array has an acceptance angle, and said light emitting diodes and said microlenses are arranged such that the expression:

$$a/2-f \tan \theta$$

in which:

f is said focal length of each of said microlenses,

θ is said acceptance angle of said gradient index lens array, and

a is said width of one of said light emitting diodes, greater than zero.

5,543,831

ENDOSCOPE SYSTEM HAVING REDUCED NOISE EMISSION/PERMEATION

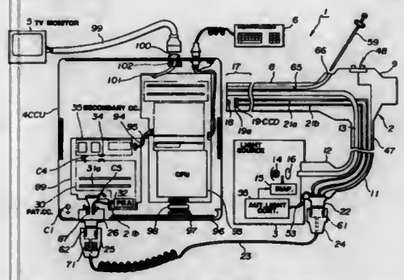
Kiyoshi Tsuji, Musashino; Akinobu Uchikubo, Hachioji; Kenji Kimura, Tachikawa; Masahito Goto, Hachioji, and Tsutomu Hirai, Sagamihara, all of, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 642,749, Jan. 18, 1991, abandoned. This application Mar. 2, 1993, Ser. No. 26,203

Claims priority, application Japan, Nov. 20, 1990, 2-315106

Int. Cl.[6] H04N 7/18; A61B 1/00

U.S. Cl. 348—65 5 Claims



1. An electronic endoscope system comprising:

an electronic endoscope including: an intubation unit intubatable into a body cavity; an image forming optical system, provided at a tip of said intubation unit, for forming an optical image; a solid-state imaging element for photoelectrically converting the optical image based on said image forming optical system; an illumination light from the tip of said intubation unit; and a first connector portion, having one end connected to said solid-state imaging element, through which a plurality of signal lines are inserted;

a patient circuit drive signal generating means for applying a drive signal to said solid-state imaging element through a second connector portion to which said first connector portion is detachably connected; and an amplifier circuit for amplifying at least an image signal outputted from said solid-state imaging element upon applying the drive signal;

a secondary circuit including a video signal processing circuit, having its ground conductive to the earth, for generating a standard video signal from the image signal transmitted via said amplifier circuit;

an isolation means for isolating said patient circuit from said secondary circuit;

a monitor means for displaying the standard video signal; and

a noise reducing means, provided in at least one of said electronic endoscope, said patient circuit and said secondary circuit for reducing radiation/permeation of noises, wherein at least one of said first connector portion and said second connector portion includes at least one shield gasket member formed of flexible and deformable conductive material and molded in a spring-like configuration for decreasing a contact resistance to a metal frame body of said second connector portion.

5,543,832

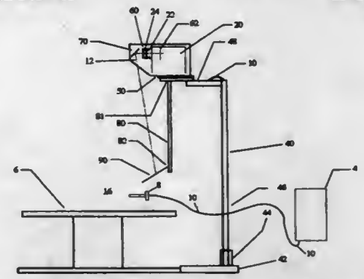
VIDEO DISPLAY SYSTEM FOR PROJECTING AN IMAGE ON TO A TILTED SCREEN ADJACENT A SURGICAL FIELD

Michael G. Oravecz, Rochester; Roger J. Greenwald, Holley; Daniel E. McGarry, North Chili, and Jude S. Sauer, Pittsford, all of N.Y., assignors to Laser Surge, Inc., Rochester, N.Y.

Filed Mar. 29, 1994, Ser. No. 219,492

Int. Cl.[6] H04N 7/18; A61B 1/00

U.S. Cl. 348—65 13 Claims



1. A video display system for projecting an image of an endoscopic surgical field upon a screen in a sterile environment adjacent the surgical field so that an operator may simultaneously view the projected image surgical field and operate in the surgical field, comprising:

(a) an image gathering system for gathering the image of the surgical field;

(b) an image transmission line connected to the image gathering system;

(c) a video projector connected to the image transmission line for projecting the image along an optical path;

(d) a projection lens disposed in the optical path so that the projected image passes through the projection lens, the projection lens having an optical axis tilted with respect to the optical path for tilting the projected image to dispose a focal plane non perpendicular to the optical path; and

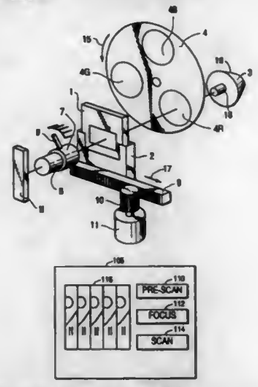
(e) a viewing screen intersecting the optical path on an image side of the projection lens, wherein a normal to the viewing screen is nonparallel to the optical path intersecting the viewing screen so that the focal plane and a conjugate display plane defined by the viewing screen cooperate so that the tilted image displayed on the viewing screen has a substantially uniform focus across the viewing screen.

5,543,833

SCANNER FOCUSSING METHOD AND APPARATUS CONCURRENTLY DISPLAYING MULTIPLE PARTIAL SCANS WITH DIFFERENT FOCUS SETTINGS

Kenji Toyoda, Chagaski, and Kazushi Minagawa, Yokahama, both of, Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 201,454, Feb. 24, 1994, abandoned. This application Apr. 4, 1995, Ser. No. 416,476
Claims priority, application Japan, Feb. 24, 1993, 5-033803
Int. Cl.[6] H04N 5/253;9/47
U.S. Cl. 348—110 29 Claims



1. An image input apparatus comprising:
an image-forming optical system which forms an image of an original source;
an image pickup unit which senses the image formed by said image-forming optical system;
an adjustment mechanism which adjusts the focus of said image-forming optical system, the adjustment mechanism being settable to different focus positions;
a display device, interfaced to said image pickup unit, which displays the image sensed by said image pickup unit; and
a control device which causes a specified number of images of approximately a same partial area of the original source to be formed by the image-forming optical system and sensed by the image pickup unit, the adjustment mechanism being set at a different respective focus position during each image formed of the partial area, and which causes each image formed of the partial area to be simultaneously displayed on said display device.

5,543,834

Patent Not Issued For This Number

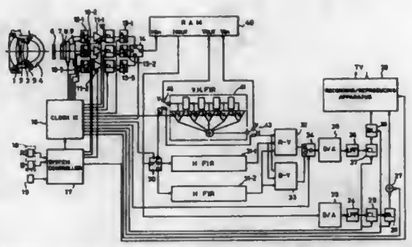
5,543,835

ELECTRONIC CAMERA FEATURING SINGLE IMAGE PROCESSING

Toshihiko Mumura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 22,754, Feb. 19, 1993, abandoned, which is a continuation of Ser. No. 893,889, Jun. 4, 1992, abandoned, which is a continuation of Ser. No. 688,274, Apr. 22, 1991, abandoned. This application Dec. 12, 1994, Ser. No. 354,774
Claims priority, application Japan, Apr. 23, 1990, 2-108162
Int. Cl.[6] H04N 5/225;5/235; G06F 17/10
U.S. Cl. 348—207 28 Claims

1. An electronic camera comprising:



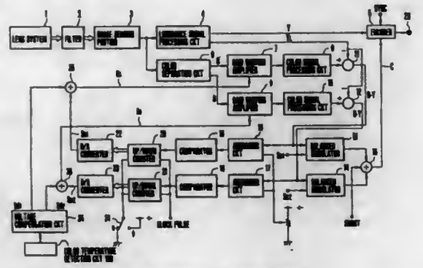
memory means for storing a video signal representative of at least a single image, said memory means allowing read-out operations of the video signal selectively in one of a horizontal direction and a vertical direction;
a filter, having variable frequency characteristics, that can be controlled to have different variable frequency characteristics for data read out from said memory means both in a vertical direction and in a horizontal direction, for filtering an output video signal of said memory means; and
control means for changing the variable frequency characteristics of said filter in accordance with whether the signal is read out from said memory means in a horizontal direction or a vertical direction, so that said filter has first frequency characteristics when the signal is read out in a horizontal direction and said filter has different frequency characteristics when the signal is read out in a vertical direction.

5,543,836

WHITE BALANCE USING COMBINED FEEDBACK AND EXTERNAL COLOR INFORMATION FOR CONTROL

Teruo Hieda; Masao Suzuki, and Hitoshi Narita, both of Kanagawa-ken, Japan, assignors to Cannon Kabushiki Kaisha, P.C., Tokyo, Japan

Continuation of Ser. No. 242,149, Apr. 14, 1994, abandoned, which is a continuation of Ser. No. 98,217, Jul. 28, 1993, abandoned, which is a continuation of Ser. No. 799,718, Nov. 26, 1991, abandoned, which is a continuation of Ser. No. 503,144, Mar. 30, 1990, abandoned, which is a division of Ser. No. 311,434, Feb. 16, 1989, Pat. No. 4,931,856, which is a continuation of Ser. No. 175,670, Mar. 21, 1988, abandoned, which is a continuation of Ser. No. 80,253, Jul. 27, 1987, abandoned, which is a continuation of Ser. No. 686,712, Dec. 27, 1984, abandoned. This application Dec. 20, 1994, Ser. No. 360,183
Claims priority, application Japan, Dec. 28, 1983, 58-245909
Int. Cl.[6] H04N 9/73;9/07
U.S. Cl. 348—223 8 Claims



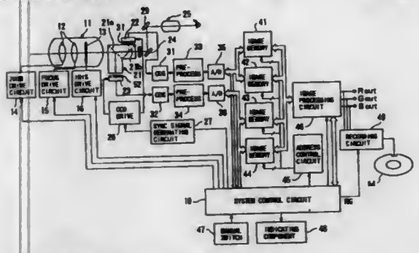
1. An image sensing apparatus, comprising:
a) color image sensing means;
b) first means for forming a first signal to control a white balance of said color image sensing means on the basis of an output of the color image sensing means;
c) color temperature detecting means for forming a second signal corresponding to a color temperature of an object; and
d) control means for controlling the white balance of said color image sensing means by mixing the first signal and the second signal.

5,543,837

DUAL-TYPE IMAGING DEVICE HAVING MULTIPLE LIGHT SENSITIVE ELEMENTS

Harumi Aoki; Nobuhiro Tani, and Keiji Sawanobori, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 115,142, Sep. 2, 1993, Pat. No. 5,418,564. This application Jan. 17, 1995, Ser. No. 373,771
Claims priority, application Japan, Sep. 4, 1992, 4-262810; Sep. 16, 1992, 4-272343; Sep. 16, 1992, 4-272344
Int. Cl.[6] H04N 9/09;5/238
U.S. Cl. 348—264 15 Claims



1. A photometry device, comprising:
a first imaging device;
a second imaging device;
first means for sensing a luminance signal from said first imaging device;
second means for sensing a luminance signal from said second imaging device, independent from said first sensing means; and
photometry measurement means for carrying out a photometry measurement based on said luminance signal sensed by said first sensing means and said luminance signal sensed by said second sensing means.

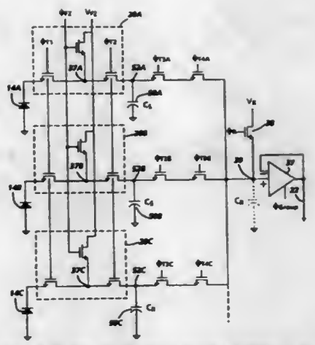
5,543,838

SIGNAL MULTIPLEXING SYSTEM FOR AN IMAGE SENSOR ARRAY

Paul A. Hosier, Rochester, and Jagdish C. Tandon, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 113,928, Aug. 31, 1993, abandoned. This application Dec. 19, 1994, Ser. No. 359,354
Int. Cl.[6] H04N 5/335
U.S. Cl. 348—311 5 Claims

1. A sensor array, comprising:
a plurality of sets of photodiodes, each of said sets of photodiodes including a plurality of photodiodes;
a plurality of amplifiers, each of said plurality of amplifiers being operatively connected to one of said sets of photodiodes;
a first transfer circuit associated with each photodiode and having a storage node associated therewith, each storage node being associated exclusively with one photodiode, for transferring a charge from the photodiode to the storage node and injecting a discrete bias charge onto the photodiode;
a common output bus; and
readout means for directly transferring a charge from a storage node to the amplifier associated with the set of photodiodes,



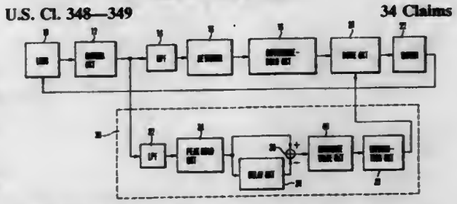
the readout means including a second transfer circuit associated with each storage node, each second transfer circuit being operable independently. of any other second transfer circuit.

5,543,839

FOCUS ADJUSTING DEVICE WHEREIN EFFECTIVE FOCAL LENGTH IS DERIVED BY DETECTING LOW FREQUENCY CHANGES IN IMAGE SIGNALS

Hirofumi Suda; Masamichi Toyama; Akihiro Fujiwara, all of Kanagawa-ken; Kunihiko Yamada, Tokyo, and Katsuji Yoshimura, Kanagawa-ken, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 961,220, Oct. 15, 1992, abandoned, which is a continuation of Ser. No. 650,977, Feb. 1, 1991, abandoned, which is a continuation of Ser. No. 496,134, Mar. 19, 1990, abandoned, which is a continuation of Ser. No. 154,795, Feb. 11, 1988, abandoned. This application Apr. 8, 1994, Ser. No. 225,249
Claims priority, application Japan, Feb. 17, 1987, 62-34347
Int. Cl.[6] H04N 5/232
U.S. Cl. 348—349 34 Claims



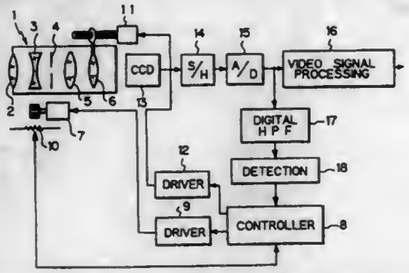
1. A focal length information detecting device comprising:
(A) image pickup means for converting an image of an object to be photographed formed on an image pickup plane thereof by a photographic optical system to an image signal; and
(B) detecting means for detecting a predetermined signal component of said image signal corresponding to a focal length of said photographic optical system on the basis of the change of a component of prescribed low-frequency range in said image signal, said component of prescribed low-frequency range being in such a frequency band as not to change depending on in-focus or defocus, but to vary according to a variation of the focal length of said photographic optical system.

5,543,840

METHOD AND APPARATUS FOR FLANGE BACK ADJUSTMENT OF CAMERA INNER FOCUS LENS ASSEMBLY

Katsuaki Hirota, Kanagawa, Japan, assignor to Sony Corporation, Japan

Filed Mar. 9, 1993, Ser. No. 28,121
Claims priority, application Japan, Mar. 30, 1992, 4-103645
Int. Cl.[6] H04N 5/232
U.S. Cl. 348—345 9 Claims



1. A lens position adjusting method for flange back adjustment of an inner focus lens assembly, comprising the steps of:

moving a variator through a first predetermined distance to a position near a selected one of a telephoto end and a wide end;

detecting a focal position by moving a focus lens after said variator is moved near to the selected one of said telephoto end and said wide end until focus is achieved and the focus lens reaches a focal position;

computing a distance said focus lens moves before reaching the focal position; and

determining the position of the selected one of said telephoto end and said wide end and storing the determined position as the selected one of said telephoto end and wide end in the event that the distance the focus lens moves through to reach the focal position is less than a predetermined value.

5,543,841

SIDE GRIP FOR A VIDEO CAMERA

Shion Kanamori, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

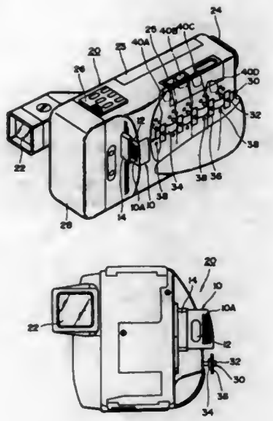
Continuation of Ser. No. 931,343, Aug. 18, 1992. This application Apr. 18, 1994, Ser. No. 229,132
Claims priority, application Japan, Aug. 19, 1991, 3-206816
Int. Cl.[6] H04N 5/225
U.S. Cl. 348—375 12 Claims

1. A video camera, comprising:

a video camera main body having a storage cavity provided in a side portion of said video camera main body;

a rotary member movably coupled to the side portion of said video camera main body, at least a portion of said rotary member being freely movable in and out of said storage cavity; and

a thumb rest disposed in said rotary member, wherein, in a recording mode, said rotary member is stored in said storage cavity and said thumb rest is projecting outward from the side portion of said video camera main body and, when in a storage position, said rotary member is drawn out from said storage cavity and said thumb rest is disposed adjacent to the side portion of said video camera main body.

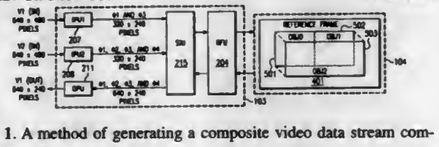


5,543,842

APPARATUS AND METHOD FOR PROVIDING MULTIPLE VIDEO DATA STREAMS FROM A SINGLE SOURCE

Frank Xu, Irving, and Robert M. Nally, Plano, both of Tex., assignors to Cirrus Logic, Inc., Fremont, Calif.

Division of Ser. No. 152,182, Nov. 15, 1993, Pat. No. 5,455,626. This application Jnn. 7, 1995, Ser. No. 474,262
Int. Cl.[6] H04N 7/08
U.S. Cl. 348—387 9 Claims



1. A method of generating a composite video data stream comprising the steps of:

receiving a first data stream composed of a sequence of frames of video data each having an x-dimension of a preselected number of pixels and a y-dimension of a preselected number of pixels;

receiving a second data stream composed of a sequence of frames of video data each having an x-dimension of a preselected number of pixels and a y-dimension of a preselected number of pixels;

downscaling the x and y dimensions of the frames of the first data stream to produce a sequence of first blocks of pixels;

downscaling the x and y dimensions of the frames of the second data stream to produce a sequence of first blocks of pixels;

writing the first blocks into a first object buffer associated with a first memory space during first and third ones of four processing phases;

storing the second blocks of data into a second object buffer associated with a second memory space during first, second, third and fourth ones of the four processing phases;

retrieving a pair of blocks each composed of one of the first and one of the second blocks out of a third object buffer associated with both the first and second memory spaces during ones of the first, second, third and fourth processing phases; and

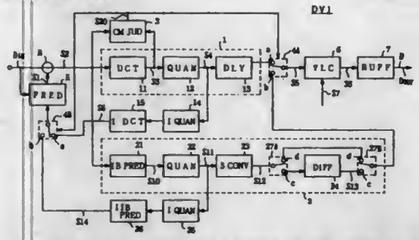
outputting each pair of blocks as a field of the composite video data stream.

5,543,843

MOTION PICTURE ENCODING AND DECODING COMMUNICATION JACK NOSE CLEANING TOOL

Motoki Kato; Yoichi Yagasaki, and Jun Yonemitsu, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP92/00910, § 371 Date Apr. 19, 1993, § 102(e) Date Apr. 19, 1993, PCT Pub. No. WO93/02528, PCT Pub. Date Feb. 4, 1993
PCT Filed Jul. 16, 1992, Ser. No. 984,416
Claims priority, application Japan, Jul. 19, 1991, 3-179836; Jan. 27, 1992, 4-012448
Int. Cl.[6] H04N 7/30
U.S. Cl. 348—400 5 Claims



1. In a method of compressing a motion picture signal divided into a plurality of blocks of digital picture data representing respective pixels, and in which each of said blocks of digital picture data is selectively compressed by a discrete cosine transform (DCT) coding method or by an intra-block predictive coding method which effects non-transform coding (NTC), said intra-block predictive coding method comprising the steps of:

calculating a mean value of said picture data in at least one flat region within each block;

determining a representation value of each said block on the basis of said mean value thereof;

determining differences between said representation value for each block and values of said picture data representing the pixels within said block so as to generate difference values;

quantizing said difference values with a selected quantizing width so as to generate quantization coefficients;

variable length coding said quantization coefficients, said representation value and information representing said quantizing width;

adaptive scanning said quantization coefficients in accordance with a distribution status of said quantization coefficients within each block so as to convert said quantization coefficients into one-dimensional information;

coding information indicating a scanning sequence of said adaptive scanning;

selectively executing a differential processing of said one-dimensional information; and

coding switching information indicating whether or not said differential processing has been executed.

5,543,844

METHOD AND APPARATUS FOR CODING IMAGE DATA

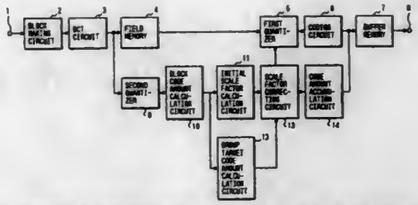
Hideaki Mita, Kobe, and Tatsui Bannai, Osaka, both of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 9, 1993, Ser. No. 150,526
Claims priority, application Japan, Nov. 25, 1992, 4-314826; Apr. 1, 1993, 5-075472
Int. Cl.[6] H04N 7/30
U.S. Cl. 348—405 8 Claims

1. An image data coding apparatus comprising:

means for dividing input image data into a plurality of blocks;

an orthogonal transform device for subjecting the input image data to orthogonal transformation for every block;



a memory for storing output data from the orthogonal transform device and outputting the stored data in a predetermined output order;

a first quantizer for quantizing output data from the memory;

a coding device for coding output data from the first quantizer into variable-length code words;

a code amount accumulation device for accumulating a code amount of output data from the coding device;

a second quantizer for separating the output data from the orthogonal transform device into K different groups according to the predetermined output order in the memory, and for assigning respective ones of M different scale factors to respective ones of said plurality of blocks and quantizing the output data from the orthogonal transform device in the respective blocks in accordance with the respective scale factors, where K and M denote predetermined natural numbers;

a block code amount calculation device for calculating a code amount per block which results from assumptive variable-length coding of output data from the second quantizer;

an initial scale factor calculation device for predicting M code amounts, which result from assumptive coding of one of a frame or a field in accordance with the M different scale factors respectively, from block code amounts represented by output data from the block code amount calculation device, and for determining an initial scale factor designed to make said one of a frame or field into a predetermined code amount;

a group target code amount calculation device for predicting target code amounts in respective ones of said plurality of K different groups, which result from assumptive coding and quantization, from the block code amounts represented by the output data from the block code amount calculation device; and

a scale factor correcting device for correcting the initial scale factor in response to a prediction error between an actual code amount accumulated by the code amount accumulation device and a predicted target code amount from the group target code amount calculation device each time the coding device completes the coding of data of one group, and thereby for correcting the initial scale factor in the first quantizer.

5,543,845

HIGH EFFICIENCY ENCODING APPARATUS

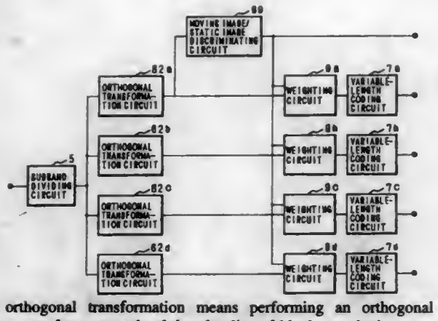
Yoshinori Asamura; Yoshiko Hatano; Ken Onishi, and Takashi Shirochita, all of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 217,961, Mar. 25, 1994, abandoned, which is a division of Ser. No. 846,791, Mar. 5, 1992. This application Apr. 28, 1995, Ser. No. 430,280
Claims priority, application Japan, Mar. 7, 1991, 3-041512; Mar. 8, 1991, 3-043496; Mar. 13, 1991, 3-048015; Jun. 19, 1991, 3-147068
Int. Cl.[6] H04N 7/30
U.S. Cl. 348—407 15 Claims

1. An encoding apparatus for encoding a digital image signal, comprising:

band dividing means for dividing the digital image signal into a plurality of bands;

block structuring means for structuring each of the plurality of bands of the band-divided image signal into a plurality of blocks each having a plurality of pixels;



orthogonal transformation means performing an orthogonal transform on each of the plurality of blocks to obtain transform coefficients;

discriminating means for discriminating each of the plurality of blocks as a moving image block or a static image block;

weighting means for weighting the obtained transform coefficients according to the discrimination performed by said discriminating means; and

encoding means for quantizing the weighted transform coefficients in accordance with a quantization level suitable for each of the plurality of bands and for encoding the quantized and weighted transform coefficients for each of the plurality of blocks, such that said encoding is performed independently for each of the plurality of bands;

wherein each of said plurality of blocks includes a plurality of values arranged in a vertical frequency direction and a horizontal frequency directions;

wherein both the vertical frequency direction and the horizontal frequency direction are divided into lower and higher frequency sub-bands to produce LL_0 HL, LH, and HH sub-bands; and

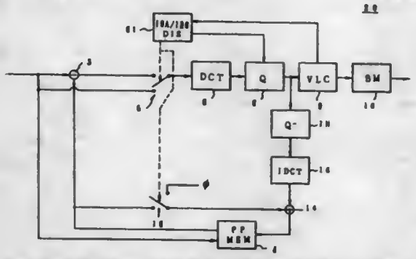
wherein for the LL sub-band, weights assigned by said weighting means increase in the vertical frequency direction, the horizontal frequency direction, and in a diagonal frequency direction, from low horizontal frequencies and low vertical frequencies to high horizontal frequencies and high vertical frequencies.

5,543,846

MOTION PICTURE ENCODING SYSTEM

Yoichi Yagasaki, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 22, 1992, Ser. No. 949,397
Claims priority, application Japan, Sep. 30, 1991, 3-278808
Int. Cl.[6] H04N 7/32
U.S. Cl. 348—415 **2 Claims**



1. A motion picture encoding system for either intra-frame encoding or inter-frame encoding a motion picture which includes a sequence of frames, comprising:

a first encoding means for encoding at least a portion of the motion picture by intra-frame encoding;

a second encoding means for encoding at least a portion of the motion picture by inter-frame encoding, the first encoding means and the second encoding means using quantization step sizes which are selected for each frame;

means for obtaining a first quantity of data from the first encoding means when it encodes a target frame using a quantization step size which was used for a preceding frame and a second quantity of data from the second encoding means when it encodes the target frame using the quantization step size which was used for a preceding frame, and

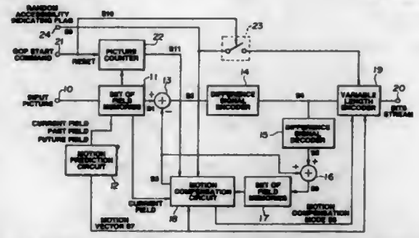
means for selecting the first encoding means if the first quantity of data is less than the second quantity of data and otherwise selecting the second encoding means.

5,543,847

PICTURE CODING AND DECODING METHOD FOR RANDOM ACCESSING

Motoki Kato, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 13, 1993, Ser. No. 165,317
Claims priority, application Japan, Dec. 14, 1992, 4-333142
Int. Cl.[6] H04N 7/32
U.S. Cl. 348—415 **26 Claims**



1. A method for encoding a video signal representing a plurality of frames each formed from first and second fields, said method comprising the steps of:

generating a predicted picture signal of a second field of a respective frame using only a decoded signal of a first field of the respective frame when the first field of the respective frame is an intra-coded field (I-field) and the second field of the respective frame is a predicted-coded field (P-field),

taking a difference between the predicted picture signal and a signal based on the second field of the respective frame for generating a difference signal, and

encoding said difference signal.

5,543,848

METHOD AND APPARATUS FOR FILTERING AND CODING IMAGES BASED ON CHARACTERISTICS OF AN INPUT IMAGE SIGNAL

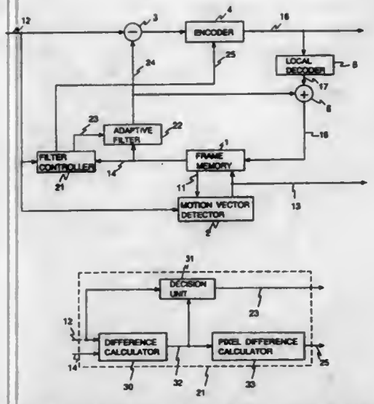
Tokumichi Murakami; Yoshiaki Kato, and Toshiaki Shimada, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 157,638, Nov. 24, 1993. This application Dec. 14, 1994, Ser. No. 355,987
Claims priority, application Japan, Dec. 25, 1992, 4-346552; Feb. 25, 1993, 5-036371; Aug. 23, 1993, 5-207842
Int. Cl.[6] H04N 7/32
U.S. Cl. 348—416 **33 Claims**

1. An interframe coding system for frame-to-frame coding of an input signal, comprising:

a subtractor having inputs to receive the input signal and a predictive signal and an output to provide a predictive error signal corresponding to a difference between the input signal and the predictive signal;

an encoder having an input coupled to the output of the subtractor to receive the predictive error signal, having an output that



provides a coded predictive error signal, and having a control input that receives a coding control signal for controlling a quantization step size of the encoder;

decoding means for producing a decoded signal having an input coupled to the output of the encoder to receive the coded predictive error signal, having an input to receive the predictive signal, and having an output that provides the decoded signal;

a frame memory having an input that receives the decoded signal and having an output that provides the predictive signal;

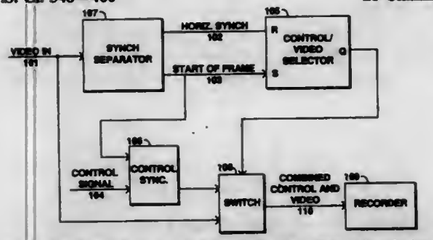
a controller having inputs that receive the input signal and the predictive signal, that calculates a difference between the input signal and the predictive signal and generates the coding control signal based on the difference, and having an output coupled to the control input of the encoder that provides the coding control signal for controlling the encoder.

5,543,849

SYNCHRONIZATION OF PRERECORDED AUDIO/VIDEO SIGNALS WITH MULTI-MEDIA CONTROLLERS

Joseph D. Long, Greensboro, N.C., assignor to Gilbarco Inc., Greensboro, N.C.

Filed Oct. 13, 1992, Ser. No. 959,844
Int. Cl.[6] H04N 7/087
U.S. Cl. 348—460 **28 Claims**



1. An apparatus for encoding multi-media control signals into video program signals in a video program comprising

detector means for detecting predetermined portions of the video program signals and

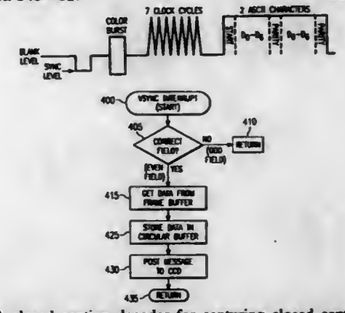
substitution means for substituting the multi-media control signals configured to be used to ascertain when to select the video program into the video program signals in place of the predetermined portions of the video program signals.

5,543,850

SYSTEM AND METHOD FOR DISPLAYING CLOSED CAPTION DATA ON A PC MONITOR

Kyle A. Pratt; Michael A. Yonker, both of Allen, and Frank L. Xu, Irving, all of Tex., assignors to Cirrus Logic, Inc., Fremont, Calif.

Filed Jan. 17, 1995, Ser. No. 373,617
Int. Cl.[6] H04N 7/087
U.S. Cl. 348—617 **22 Claims**



1. A closed caption decoder for capturing closed caption data from a television signal and displaying said closed caption data in a window of user-defined size and location on a screen of a video monitor, said decoder comprising:

a video input port for receiving said television signal;

a video processor coupled to said video input port, said video processor operable to capture at least one line of video data from a frame of said television signal, wherein said closed caption data is stored in said at least one line of video data;

a frame buffer memory coupled to said video processor for storing only a portion of said at least one line of video data; and

a second processor coupled to said video processor and to said frame buffer memory for retrieving said portion of at least one line of video data from said frame buffer memory and translating said closed caption data stored in said at least one line of video data into a first ASCII character and a second ASCII character.

5,543,851

METHOD AND APPARATUS FOR TRANSLATING CLOSED CAPTION DATA

Wen F. Chang, 19724 Elisa Ave, Saratoga, Calif. 95070

Filed Mar. 13, 1995, Ser. No. 403,283
Int. Cl.[6] H04N 7/025;7/087
U.S. Cl. 348—468 **13 Claims**

4. An apparatus for processing a television signal having caption data therein, the apparatus comprising:

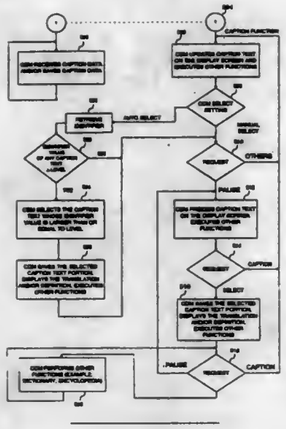
a detector for receiving the television signal;

a decoder having an input coupled to the detector for receiving the television signal, having a first output for providing the television signal to a television, and having a second output for providing caption data;

a display having an input for receiving caption text and having a screen for displaying the caption text;

a memory for storing a dictionary and having an output for providing a portion of the dictionary responsive to a dictionary request; and

a central processing unit having a first input coupled to the output of the decoder for receiving the caption data, having a second input coupled to the output of the memory for receiving said portion of the dictionary, having a first output coupled to the input of the display for providing the caption text and for providing said portion of the dictionary, and having a second output coupled to the memory for providing the dictionary request in response to a user selected command.



5,543,852

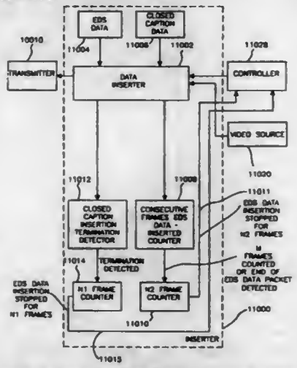
APPARATUS AND METHODS FOR AVOIDING LOSS OF CLOSED CAPTION DATA WHEN USING EXTENDED DATA SERVICES

Henry C. Yuen, Redondo Beach; Daniel S. Kwoh, La Canada; Wing P. Leung, Arcadia, and Tony T. Tam, Hawthorne, all of Calif., assignors to Index Systems, Inc., Virgin Islands (Br.)

Continuation-in-part of Ser. No. 253,153, Jun. 2, 1994. This application Jun. 24, 1994, Ser. No. 265,709

Int. Cl.[6] H04N 7/088

U.S. Cl. 348—478 30 Claims



1. A method for inserting data into a vertical blanking interval line of video frames, the method comprising the steps of:

inserting extended data services (EDS) data into a first vertical blanking interval line in a first field for a plurality of consecutive video frames;

counting a number of consecutive video frames having EDS data inserted into the first vertical blanking interval line;

terminating the insertion of EDS data for a first number of video frames before again inserting EDS data into the first vertical blanking interval line when the counted number of consecutive video frames into which EDS data is inserted into the first vertical blanking interval line equals a second number;

inserting second data into a second vertical blanking interval line in a second field for a plurality of consecutive video frames, the second vertical blanking line being a same line number as a line number for the first vertical blanking line number;

detecting when the insertion of second data into the second vertical blanking interval line terminates;

terminating for a second number of video frames the insertion of EDS data into the first vertical blanking interval line upon detecting the termination of insertion of the second data into the second vertical blanking interval line; and

repeating the steps.

5,543,853

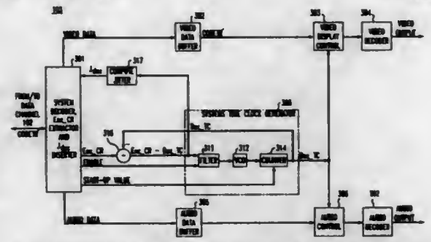
ENCODER/DECODER BUFFER CONTROL FOR VARIABLE BIT-RATE CHANNEL

Barin G. Haskell, Tinton Falls, and Amy R, Reibman, East Windsor, both of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Jan. 19, 1995, Ser. No. 386,992

Int. Cl.[6] H04N 7/12

U.S. Cl. 348—497 1 Claim



1. Apparatus in an encoder unit for encoding an original video signal including frames, wherein each frame contains at least one image representation, and for supplying as an output for transmission, to a variable bit-rate channel, an encoded version of said original video signal including encoded frames containing at least one encoded image representation, the variable bit-rate channel being adapted for supplying said encoded version of said original video signal to a remote decoder unit including at least one decoder buffer for storing the encoded version of the original video signal and at least one video decoder for generating a reconstructed version of the original video signal, the apparatus comprising:

adjustable encoder means responsive to a range indication for encoding each of said frames of said original video signal into a first encoded version in which each frame of said original video signal is represented by a plurality of bits, the actual number of said bits for each frame being within said range, each of said first encoded frames being supplied as an output as a first encoded version of said original video signal;

encoder buffer means for storing said first encoded version of said original video signal and for supplying as an output each frame of said first encoded version of said original video signal;

means responsive to a representation of jitter at the remote decoder and to an actual number of bits within at least one frame of said first encoded version of said original video signal for generating bit-rate requests for a current frame to be supplied to said channel and for generating a set of estimated transmission rates that are expected to be supplied by said channel for a predetermined number of future frames of said encoded version of said original video signal; and

means responsive to said jitter representation and to said actual number of bits within at least one frame of said first encoded version of said original video signal and said set of estimated transmission rates, for developing said range such that overflow or underflow of said encoder buffer means and said at least one decoder buffer is avoided.

5,543,854

VIDEO SIGNAL PROCESSING APPARATUS, VIDEO SIGNAL PROCESSING METHOD, AND VIDEO SIGNAL RECORDING/REPRODUCTION APPARATUS

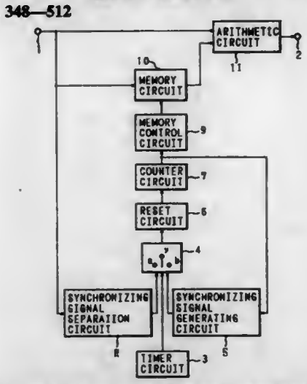
Yasuhiro Morikawa, Amagasaki; Tomonori Ohashi, and Masafumi Kodama, both of Nagaokakyo, all of, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 8, 1994, Ser. No. 355,160

Claims priority, application Japan, Dec. 10, 1993, 5-310464

Int. Cl.[6] H04N 9/475

U.S. Cl. 348—512 30 Claims



1. A video signal processing apparatus, comprising:

synchronizing signal separating means for separating a first synchronizing signal from a current input video signal;

synchronizing signal generating means for generating a second synchronizing signal; and

means for obtaining a delayed input video signal based on the first synchronizing signal until the second synchronizing signal becomes synchronized with the first synchronizing signal, and then on the second synchronizing signal.

5,543,855

IMAGE PROCESSING METHOD AND APPARATUS WITH ERROR DIFFUSION

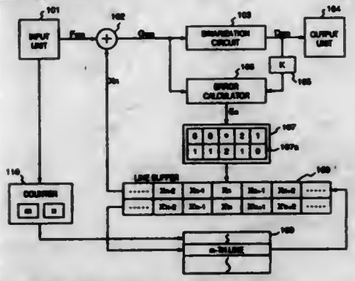
Osamu Yamada, Yokohama; Susumu Sugiura, Atsugi, and Takeshi Makita, Yokohama, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 20, 1994, Ser. No. 246,720

Claims priority, application Japan, May 24, 1993, 5-121210

Int. Cl.[6] H04N 5/14

U.S. Cl. 348—753 18 Claims



1. An image processing apparatus comprising:

input means for inputting image pixel data comprising a plurality of fields;

conversion means for converting the pixel data inputted by said input means to predetermined tone-level data based on (i) the pixel data and (ii) a diffusion error assigned to the pixel data, and for outputting the converted data;

diffusion means for diffusing an error generated in conversion by said conversion means, and for assigning the diffused errors as conversion errors to other pixel data;

storage means for storing conversion errors assigned to pixel data of a first field and other fields, said conversion errors being obtained by said diffusion means; and

generation means for generating a diffusion error for the first field based on (i) the conversion errors obtained by said diffusion means and (ii) the conversion errors stored by said storage means, upon level conversion for the other fields.

5,543,856

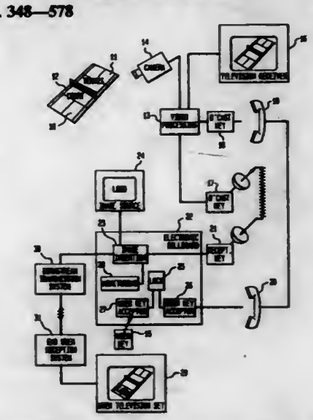
SYSTEM AND METHOD FOR DOWNSTREAM APPLICATION AND CONTROL ELECTRONIC BILLBOARD SYSTEM

Roy J. Rosser, and Brown F. Williams, both of Princeton, N.J., assignors to Princeton Video Image, Inc., Princeton, N.J.

Continuation of Ser. No. 143,938, Oct. 27, 1993, abandoned. This application Aug. 24, 1995, Ser. No. 518,657

Int. Cl.[6] H04N 5/262

U.S. Cl. 348—578 30 Claims



1. A system for authorization and control of an Electronic Billboard system operated at a location remote from a video program origination location comprising:

a user key, presupplied to the Electronic Billboard system;

a broadcast key, supplied to the Electronic Billboard system at or near a time of transmission of a video program to the Electronic Billboard system; and,

means operated in conjunction with the Electronic Billboard system for selectively enabling the Electronic Billboard system to operate on said video program to effect a substitution of a chosen indicia into a preselected portion of image existing in said video program upon said user key and said broadcast key being found to correspond to a predetermined criteria,

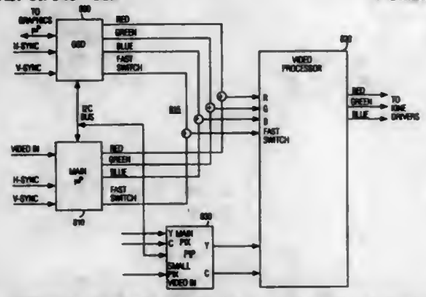
wherein said means for selectively enabling is implemented as a lock which operates to disable operation of the Electronic Billboard system unless said user key and said broadcast key conforming to said predetermined criteria are present.

5,543,857

GRAPHICAL MENU FOR A TELEVISION RECEIVER

Keith R. Wehmeyer, Fishers; Robert J. Logan; Robert H. Miller, both of Indianapolis; Sheila R. Augaitis, and Aaron H. Dinwiddie, both of Fishers, all of Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Continuation of Ser. No. 328,654, Oct. 25, 1994, abandoned.
This application Nov. 30, 1994, Ser. No. 347,786
Int. Cl.[6] H04N *5/262;5/445*
U.S. Cl. 348—589 **4 Claims**



1. Menu generation apparatus for use in a television receiver, comprising:

graphics generation means for generating a graphics signal for display, said graphics signal representing a graphics image;

video processing means for producing a processed video signal at an output; and

picture-in-picture processing means for receiving first and second video signals and for producing a combined video signal comprising a main image portion and a secondary image portion at an output and coupling said combined video signal to said video processing means;

said picture-in-picture processing means deriving a secondary image signal from one of said first and second video signals for use as said secondary image portion;

said video processing means being coupled to said picture-in-picture processing means for receiving said secondary image signal and to said graphics generation means for receiving said graphics signal and producing a combined signal which when displayed comprises a video image completely surrounded by said graphics image;

wherein said graphics image includes graphical representations of functions to be controlled, said functions being selected for control by a user; and

at least one of said functions affects the display of said processed video signal.

5,543,858

METHOD OF AND APPARATUS FOR REDUCING NOISE IN A MOTION DETECTOR SIGNAL

Gerhard Wischermann, Welterstadt, Germany, assignor to U. S. Philips Corporation, New York, N.Y.

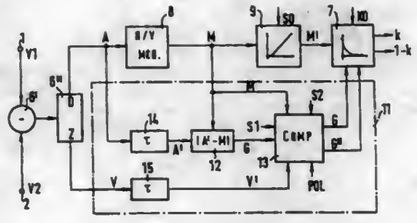
Filed Jun. 3, 1994, Ser. No. 253,522
Claims priority, application Germany, Jun. 11, 1993, 4319342.0
Int. Cl.[6] H04N *5/21*
U.S. Cl. 348—618 **11 Claims**

10. A method of reducing noise in the signal of a motion detector which is adapted to derive a factor (k) for control of a video signal recursive filter, said method comprising:

suppressing a part of said signal below a threshold value,

wherein for stationary video images or video images with relatively little motion, adjusting the factor (k) to a maximum value dependent upon interference pulses in a video input signal, and

adjusting the factor (k) to a minimum value dependent upon interference pulses in a video output signal.

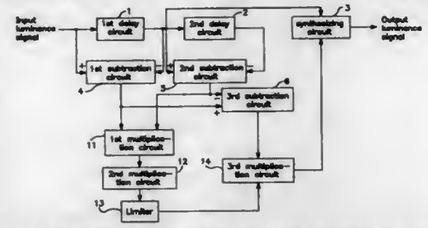


5,543,859

HORIZONTAL CONTOUR EMPHASIZING SIGNAL PROCESSOR

Minoru Miyata, and Shigeru Kawakami, both of Suita, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 6, 1995, Ser. No. 418,247
Claims priority, application Japan, Apr. 15, 1994, 6-077135
Int. Cl.[6] H04N *5/208;9/68*
U.S. Cl. 348—625 **10 Claims**



1. A horizontal contour emphasizing signal processor in which an input luminance signal is converted to a first horizontal contour emphasizing signal, further comprising:

detector means for detecting a period during which a change in the input luminance signal occurs,

signal generator means for generating a generated signal during said period,

multiplication means for multiplying said first horizontal contour emphasizing signal by said generated signal to produce a second horizontal contour emphasizing signal,

delay means for delaying the input luminance signal for a predetermined period, and

synthesizinq means for adding said second horizontal contour emphasizing signal to the input luminance signal delayed by said delay means.

5,543,860

VIDEO SIGNAL PROCESSING CIRCUIT USING ADAPTIVE CONTROL

Hyun-Duk Cho, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

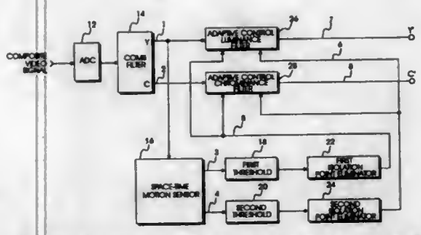
Filed May 15, 1992, Ser. No. 523,575
Claims priority, application Rep. of Korea, May 26, 1989, 1989-7069
Int. Cl.[6] H04N *9/78*
U.S. Cl. 348—666 **13 Claims**

1. An adaptive controlling video signal processing circuit comprising:

analog-to-digital converter means for converting input composite video signals to composite digital signals;

comb filter means for separating a luminance signal and chrominance signals from said composite digital signals;

space-time motion sensor means for receiving said luminance signals to produce a space vertical motion sensing signal and



a space horizontal motion sensing signal respectively as first and second sensing signals;

first threshold means for generating first logic state signals of said first sensing signal;

second threshold means for generating second logic state signals of said second sensing signal;

first and second isolating point eliminators for eliminating isolated points of said first and second logic state signals to provide first and second control signals, respectively;

adaptive control luminance filter means for filtering said luminance signal to pass said luminance signal within first given frequency regions according to said first and second control signals; and

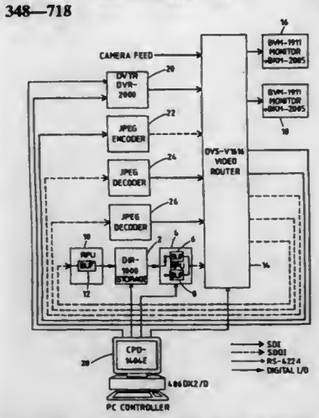
adaptive control chrominance filter means for filtering said chrominance signals to pass said chrominance signals within second given frequency regions according to said first and second control signals.

5,543,861

MULTICHANNEL VIDEO DATA STORAGE INCLUDING BUFFERS FOR READING DATA AT FAST RATES AND SUPPLYING DATA AT SLOWER RATES

Vincent C. Harradine, Chineham; Howard J. Teece, South View; Michael J. Ludgate, Kings Furlong; Rajan Bhandari, Chineham, and Gavin A. Walker, Petersfield, all of, United Kingdom, assignors to Sony Corporation, Tokyo, Japan, and Sony United Kingdom Limited, Weybridge, England

Filed Mar. 9, 1995, Ser. No. 401,280
Claims priority, application United Kingdom, Mar. 18, 1994, 9405319
Int. Cl.[6] H04N *9/64*
U.S. Cl. 348—718 **15 Claims**



1. Apparatus for storing video data, said apparatus comprising:

(i) storage means for storing video data as a plurality of addressable data segments accessible via a single data access channel;

(ii) address generating means for generating addresses of said data segments to be accessed within said storage means;

(iii) a first data channel buffer for exchanging a first plurality of said data segments with said storage means via said single data access channel at a first data rate f_1 with an average first duty ratio dr_1 under control of said address generating means;

(iv) a second data channel buffer for exchanging a second plurality of said data segments with said storage means via said single data access channel at a second data rate f_2 with an average second duty ratio dr_2 under control of said address generating means;

(v) a first data channel video signal converting means for exchanging a first video display signal corresponding to said first plurality of data segments with said first data channel buffer at a third data rate f_3; and

(vi) a second data channel video signal converting means for exchanging a second video display signal corresponding to said second plurality of data segments with said second data channel buffer at a fourth data rate f_4; wherein

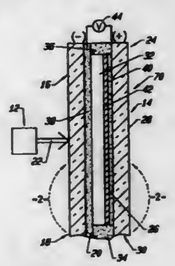
(vii) $(f_1 \times dr_1) \geq f_3$, $(f_2 \times dr_2) \geq f_4$ and $(dr_1 + dr_2) \leq 1$ such that said first data channel buffer and said second data channel buffer can sequentially exchange the first and second pluralities of data segments, respectively, with said storage means via said single data access channel whilst providing continuous data exchange with said first data channel video signal converting means and said second data channel video signal converting means, respectively.

5,543,862

VIDEO DISPLAY AND IMAGE INTENSIFIER SYSTEM

Joseph B. Culkin, Las Vegas, Nev., assignor to Calvest Associates, Inc., Stateline, Nev.

Filed Jan. 23, 1995, Ser. No. 377,282
Int. Cl.[6] H04N *5/66*
U.S. Cl. 348—739 **28 Claims**



1. A video display system comprising:

a. a video image source;

b. an image intensifier including a first optically transparent body, said first optically transparent body including a first side and a second side, the video image source being delivered to said first side of said first optically transparent body;

c. a photocathode layer positioned on said second side of said first optically transparent body;

d. a second optically transparent body, said second optically transparent body including a first side and a second side;

e. a fluorescing layer positioned on said first side of said second optically transparent body;

f. chamber means for forming a vacuum enclosure between said second side of said first optically transparent body and said first side of said second optically transparent body; and

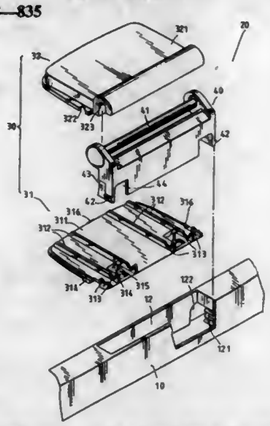
g. a source of electrical power for applying a voltage potential between said photocathode layer as a cathode and said fluorescing layer as an anode, the intensified video image exiting said second side of said second optically transparent body.

5,543,863

EYE PROTECTING MASK OF COMPUTER VIDEO DISPLAY

Jui-Ming Lin, Taichung, Taiwan, assignor to Three Soma Technology Co., Ltd., Taichung, Taiwan

Filed Jan. 20, 1995, Ser. No. 375,702
Int. Cl.[6] H04N *5/72*
U.S. Cl. 348—835 **2 Claims**



1. An eye protecting mask of a video display comprising a frame which is provided therein with an eye protecting means and is further provided at a top edge thereof with an adjustment device fastened pivotally thereto for adjusting the position of said frame;

wherein said frame is provided centrally in a top side thereof with a recessed portion which is in turn provided respectively in two inner side walls thereof with a predetermined number of retaining slots arranged longitudinally and with an opening adjacent to said retaining slots; and

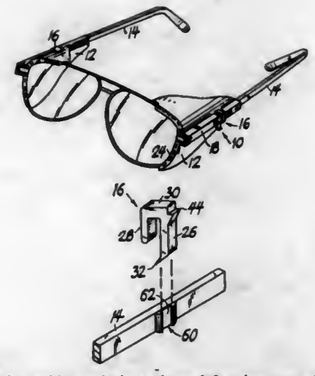
wherein said adjustment device comprises a base and a pivoting member fastened pivotally to a front end of said base such that said pivoting member is capable of swiveling on a pivot thereof upwards and downwards in relation to said base which is mounted in front of a video display, said pivoting member having an inverted U shape and being corresponding in location to said recessed portion of said frame, said pivoting member further having respectively at both ends thereof a retaining portion and a press portion which are corresponding respectively in location to said retaining slots and said opening of said recessed portion of said frame, said pivoting member still further having respectively at both end thereof with a cut adjacent to said retaining portion to facilitate the pressing of said press portion with finger so as to bring about a decrease in distance separating said two retaining portions, thereby enabling said pivoting member to be disposed in said recessed portion of said frame in such a manner that said two retaining portions of said pivoting member are engaged with said retaining slots of said recessed portion.

5,543,864

METHOD AND KIT FOR ATTACHING SIDE SHIELDS TO EYEGLASS TEMPLES

Richard Hirschman, Albertson, N.Y., and Chul W. Shin, Masan, Rep. of Korea, assignors to Hudson Optical Corporation, Bohemia, N.Y.

Continuation of Ser. No. 320,447, Oct. 11, 1994. This application Aug. 10, 1995, Ser. No. 513,603
Int. Cl.[6] G02C *9/00*
U.S. Cl. 351—47 **19 Claims**



1. A method of attaching a side shield to a temple of an eyeglass frame of the type which has a member with a slot formed therein coupled to said temple, said method comprising the steps of:

(a) placing said temple in a channel forming part of said side shield; and thereafter

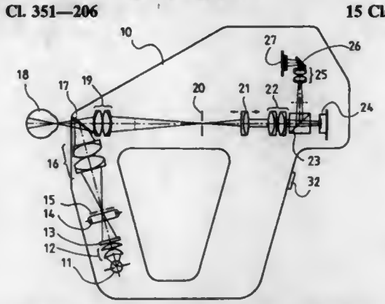
(b) inserting a pin into both an opening formed in said side shield and said slot to create a force fit between said temple, said channel and said pin which attaches said side shield to said temple.

5,543,865

FUNDUS CAMERA WITH PARTIALLY COMMON COAXIAL OBSERVATION AND PHOTOGRAPHING OPTICAL SYSTEMS

Tsuguo Nanjo, Toyohashi, Japan, assignor to Nidek Co., Ltd., Japan

Filed Jan. 17, 1995, Ser. No. 373,020
Claims priority, application Japan, Feb. 2, 1994, 6-031862
Int. Cl.[6] A01B *3/14*
U.S. Cl. 351—206 **15 Claims**



1. A fundus camera comprising an illumination optical system for illuminating a fundus of an examinee's eye, an observation optical system for observing the fundus and a photographing optical system for photographing an image of the fundus, the photographing system sharing partially a common optical path with the observation optical system, the fundus camera comprising:

a beam splitter disposed in the common optical path to dispose coaxially an illuminating optical path of said illumination optical system and said common optical path; and

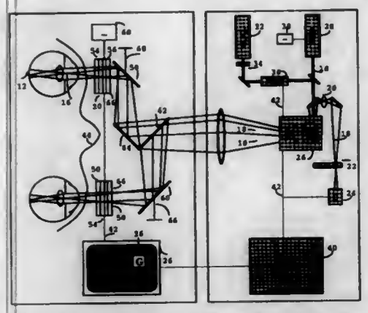
photoelectric imaging elements disposed respectively in said observation optical system and said photographing optical system.

5,543,866

SCANNING LASER OPHTHALMOSCOPE FOR BINOCULAR IMAGING AND FUNCTIONAL TESTING

Frans J. Van de Velde, Boston, Mass., assignor to Jozef F. Van de Velde, Oosterzele, Belgium

Filed Jan. 7, 1994, Ser. No. 178,777
Int. Cl.[6] A61B *3/10*
U.S. Cl. 351—221 **10 Claims**



1. A binocular scanning laser ophthalmoscope comprising of:

A. a scanning laser ophthalomoscope using a combination of two different wavelengths,

B. electro-optical means for projecting a scanning laser raster with graphics onto both retinas simultaneously, using a combination of beamsplitter and flat mirrors; whereby it becomes unnecessary to move said scanning laser ophthalmoscope from one eye to the other over the pupillary distance in order to project said scanning laser raster with graphics onto either or both said retinas,

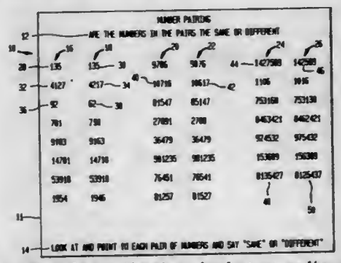
C. electro-optical means for detecting the return light from eighter retina as desired, usign a combination of optical filters incldung neutral density filters, polarizing filters, selective wavelength barrier filters, liquid crystal switches, and refractive lenses; whereby observation of either said retina is possible without the need for movign said scanning laser ophthamoscope from one eye to the other over the pupillary distance.

5,543,867

METHOD AND APPARATUS FOR THE AMELIORATION FOR VISUAL STRESS AND DYSLEXIA

Robin B. Mumford, 47 S. Bay Ave., Unit 2, Highlands, N.J. 07732

Division of Ser. No. 817,099, Jan. 6, 1992, Pat. No. 5,420,653. This application May 25, 1995, Ser. No. 450,102
Int. Cl.[6] A61B *3/00*
U.S. Cl. 351—246 **12 Claims**



1. A method for ameliorating visual stress and/or dyslexia, comprising the steps of:

providing a room lighting environment representative of typical work or reading lighting conditions experienced by an individual to be tested;

providing a first test chart including a plurality of adjacent pairs of multi-digit numbers, with some of said number pairs being the same and others of said number pairs being similar;

positioning an individual at a predetermined observation distance from said first test chart;

instructing said individual to compare each number pair on said first test chart to determine whether they are the same;

recording the accuracy with which said individual compares the number pairs on said first test chart;

recording the time taken by said individual to compare all number pairs on said first test chart; and

comparing the accuracy and time taken by the individual with predetermined standards for accuracy and time;

providing a second test chart possessing a plurality of spaced linear arrays formed by closely spaced substantially identical characters, with the number of characters in each linear array progressing from a small number to a larger number;

positioning said individual at a predetermined distance from said second test chart;

instructing said individual to observe and state whether said characters in said linear arrays appear to be separated or connected, and to count the number of characters in at least one of said linear arrays recording the ability of said individual to perceive said characters as separate and to count said characters;

comparing said individual's results with predetermined standards; and

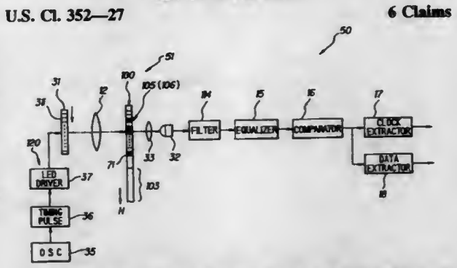
varying said room lighting environment to determine optimal lighting conditions to maximize performance of said individual on at least one of said test charts.

5,543,868

METHOD AND APPARATUS OF REPRODUCING A DIGITAL SIGNAL RECORDED ON A MOVIE FILM

Katsuichi Tachi, Kanagawa, Japan, assignor to Sony Cinema Products Corporation, Culver City, Calif.

Filed May 23, 1994, Ser. No. 247,581
Claims priority, application Japan, May 25, 1993, 5-122645
Int. Cl.[6] G03B *31/02*
U.S. Cl. 352—27 **6 Claims**



1. An apparatus for optically reproducing a digital audio signal formed as a plurality of pits in at least one track on a motion picture film, each of said pits corresponding to a respective digital bit of data, said apparatus comprising:

a linear light source having a plurality of light elements arranged so that light from at least one of said light elements is irradiated on each of said pits;

means for sequentially lighting each of said light elements of said linear light source; and

a single light receiving device located on a side of said motion picture film opposite said linear light source for receiving the light from said linear light source through said motion picture film and for converting the received light into a corresponding electrical signal.

5,543,869

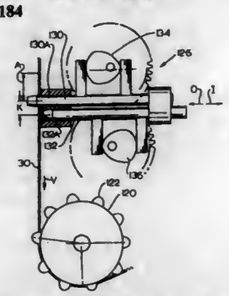
FRAME REGISTRATION

Richard Vetter, 17627 Camino de Yatasto, Pacific Palisades, Calif. 90272

Continuation-in-part of Ser. No. 221,036, Mar. 31, 1994, which is a continuation-in-part of Ser. No. 807,056, Dec. 12, 1991, abandoned. This application Sep. 18, 1995, Ser. No. 529,673

Int. Cl.[6] G03B *1/00*

U.S. Cl. 352—184 **3 Claims**



1. A method for processing a motion picture film by advancing a film strip along a film path in steps through a film gate, wherein said film strip has opposite sides and a row of evenly spaced perforations at each side, wherein said perforations are spaced at a predetermined perf spacing along each row, and wherein said method of advancing said film strip in steps includes operating a film stepping mechanism to position each film strip portion with moderate precision at the film gate and then very precisely positioning each film strip portion at the film gate by projecting at least one registration pin through a perforation in the film strip portion, characterized by:

said step of operating said film stepping mechanism includes operating it to advance said film strip by a plurality of perf spacings plus a fraction of a perf spacing in each step;

said step of very precisely positioning each film portion at said gate includes projecting each of a plurality of sets of registration pins into said sprocket holes in sequence at subsequent steps, including projecting a pin of a first set into one of said perforations at a first location during a first step, and projecting a pin of a second set into one of said perforations at a second location during a second step, where said second location is spaced from said first location along said film path by a location spacing distance that equals a fraction of a perf spacing plus a non-negative integer number of perf spacings, to avoid punching a hole in said film.

5,543,870

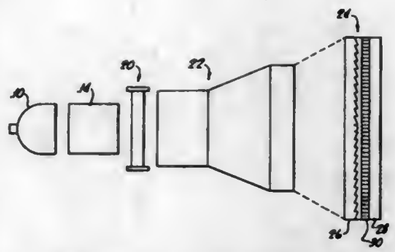
REAR PROJECTION SCREEN WITH HIGH OFF-AXIS SUNLIGHT REJECTION

Randall D. Blanchard, Vista, Calif., assignor to Palomar Technologies Corporation, Carlsbad, Calif.

Continuation of Ser. No. 40,417, Mar. 31, 1993, abandoned. This application Oct. 6, 1994, Ser. No. 319,342

Int. Cl.[6] G03B *21/00*

U.S. Cl. 353—74 **16 Claims**



3. An optical projection system comprising:

a rear projection screen having a screen axis, image forming means for transmitting an image toward a rear face of said screen, light source means for projecting a light beam to said image forming means, collimating means interposed between said screen and said imaging forming means for substantially collimating light transmitted toward said screen, and

blocking means comprising a fiber optic sheet comprised of optical fibers having a low numerical aperture and having an opaque cladding interposed between said collimating means and said rear projection screen for passing light transmitted at a relatively small angle to said screen axis and blocking light transmitted at a relatively larger angle to said screen axis.

5,543,871

CAMERA CAPABLE OF MAGNETICALLY RECORDING PHOTOGRAPH INFORMATION ON A FILM

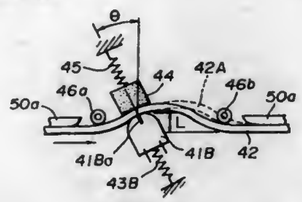
Tokuo Shimizu, Hachioji, Japan, assignor to Olympus Optical Co. Ltd., Tokyo, Japan

Division of Ser. No. 218,894, Mar. 28, 1994. This application Feb. 21, 1995, Ser. No. 391,531

Claims priority, application Japan, Mar. 29, 1993, 5-70137; Apr. 1, 1993, 5-75822

Int. Cl.[6] G03B *17/14*

U.S. Cl. 354—106 **4 Claims**



1. A camera using a film having a magnetic section, comprising:

magnetic head means having a magnetic gap for selectively recording and reproducing information on said magnetic section of the film; and

guiding means for guiding said film along a substantially linear path as the film is fed in a given direction;

said magnetic head means being inclined at a given angle to a line perpendicular to a film sending direction;

striking means for resiliently urging said magnetic head means to engage a surface of said magnetic record section in a gap region provided in said guide means so that a portion of the film in the gap region is urged away from the linear path and assumes a curved path, said head means engaging a concave surface of said film in said gap region;

said striking means including means for orienting the magnetic head means so that a gap in said magnetic head lies a given distance upstream from an apex of the curved portion of film in said gap region to enhance good surface engagement of said magnetic head means and the concave surface of said film, whereby lines extending through said apex of said curved portion of film and said gap form said given angle.

5,543,872

CAMERA EQUIPPED WITH AN INFORMATION RECORDING APPARATUS

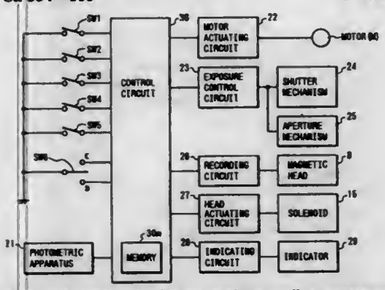
Tetsuro Goto, Funabashi, and Tsutomu Wakabayshi, Yokohama, both of, Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 274,375, Jul. 13, 1994, abandoned, which is a continuation of Ser. No. 159,946, Nov. 29, 1993, abandoned, which is a continuation of Ser. No. 760,125, Sep. 16, 1991, abandoned. This application Sep. 29, 1995, Ser. No. 536,466

Claims priority, application Japan, Sep. 20, 1990, 2-250526

Int. Cl.[6] G03B *17/24*

U.S. Cl. 354—106 **17 Claims**



1. A camera equipped with magnetic recording apparatus for recording information regarding photograph film frames, the recording apparatus including a recording head and using a recording medium that is advanced concurrently with the film, comprising:

a selector which selects either one of a first photographing mode and a second photographing mode;

a memory which stores information to be recorded regarding photograph film frames; and

a controller which controls engagement and disengagement of said recording head with said recording medium and which controls information recording, said controller operating, when said first photographing mode is selected, to cause said recording head to engage said recording medium during a single-frame advancement of said film after a single-frame exposure, for recording single-frame information, and to be disengaged from said recording medium before a next exposure, said controller operating, when said second photographing mode is selected, to cause said recording head to be disengaged from said recording medium and to cause said memory to store plural-frame information during exposure and advancement of a plurality of film frames and then to cause said recording head to engage said recording medium for recording the stored plural-frame information collectively.

5,543,873

INSTANT PRINTER FOR VOLUMETRIC IMAGING OF DATA FROM A SONIC SIGNAL SOURCE APPARATUS

Douglas F. Winnek, 28091 Robinson Canyon Rd., Carmel, Calif. 93923, and Albert M. Summerall, 98-1388 Nola St., Apt. D, Pearl City, Hi. 96782

Continuation-in-part of Ser. No. 736,854, Jul. 29, 1991, Pat. No. 5,337,102. This application Aug. 9, 1994, Ser. No. 288,142

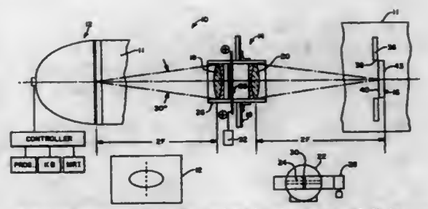
Int. Cl.[6] G03B *35/00*

U.S. Cl. 354—112 **20 Claims**

1. An apparatus for forming three-dimensional images of an object represented by data from sonic signal source comprising:

a housing;

means in the housing for providing a display screen for displaying the sonic data as a two-dimensional image of an object, said means being operable to rotate the image about a selective axis or translate the image relative to a reference with the image being representative of the object analyzed by said sonic source, the image being in the form of light rays emanating from said screen;



lens means for focusing the light rays on a film plane spaced from said display providing means;

a lenticular film at said film plane, said film having a lenticular screen and an emulsion thereon; and

means between the lens means and the lenticular film for causing the light rays to form a series of views of the image applied through the lenticular screen to the film emulsion whereby, when the emulsion is developed, the series of views can be viewed through the lenticular screen.

5,543,874

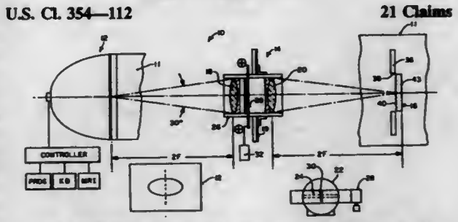
INSTANT PRINTER FOR VOLUMETRIC IMAGING OF DATA FROM ELECTROMAGNETIC RADIATION OUTPUT DEVICE

Douglas F. Winnek, 28091 Robinson Canyon Rd., Carmel, Calif. 93923, assignor to Douglas F. Winnek, Carmel Valley, Calif.

Continuation-in-part of Ser. No. 736,854, Jul. 29, 1991, Pat. No. 5,337,102. This application Jun. 21, 1994, Ser. No. 262,812

Int. Cl.[6] G03B *35/00*

U.S. Cl. 354—112 **21 Claims**



1. An apparatus for forming three-dimensional images of an object represented by data from an electromagnetic radiation source comprising:

a housing;

means in the housing for providing a display screen for displaying the data as a two-dimensional image of an object, said means being operable to rotate the image about a selective axis or translate the image relative to a reference with the image being representative of the object analyzed by said radiation source unit, the image being in the form of light rays emanating from said screen;

lens means for focusing the light rays on a film plane spaced from said display providing means;

a lenticular film at said film plane, said film having a lenticular screen and an emulsion thereon; and

means between the lens means and the lenticular film for causing the light rays to form a series of views of the image applied through the lenticular screen to the film emulsion whereby, when the emulsion is developed, the series of views can be viewed through the lenticular screen.

5,543,875

MULTI-MOTOR CAMERA FOR NORMAL AND TRIMMING PHOTOGRAPHY HAVING VARIABLE FOCAL LENGTH PHOTOGRAPHING LENS AND FINDER AND VARIABLE ILLUMINATING ANGLE FLASH DEVICE

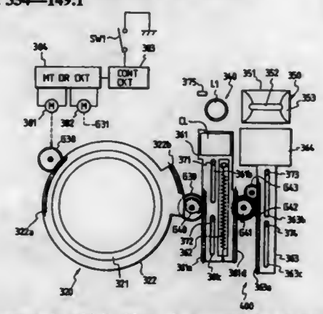
Kiyosada Machida, Urawa; Yoshio Imura, Kawasaki, and Yoshihiro Takeuchi, Tokyo, all of, Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 309,787, Sep. 21, 1994, abandoned, which is a continuation of Ser. No. 847,272, Mar. 10, 1992, abandoned. This application Oct. 6, 1995, Ser. No. 540,155

Claims priority, application Japan, Mar. 14, 1991, 3-074623; Mar. 14, 1991, 3-074624; Mar. 14, 1991, 3-074625; Mar. 14, 1991, 3-074626; Mar. 20, 1991, 3-081807

Int. Cl.[6] G03B *13/10;15/03*

U.S. Cl. 354—149.1 **2 Claims**



1. A camera in which either of a normal photographing mode and a trimming photographing mode is selectable, comprising:

a zoom lens for photographing capable of zooming;

a zoom finder that alters finder magnification in accordance with the zooming of said zoom lens;

a zoom flash device that alters an illuminating angle in accordance with the zooming of said zoom lens;

a conversion lens movable to a position in an optical path of said zoom finder to further alter the finder magnification of said zoom finder;

an illuminating angle altering member movable to a position adjacent to a lighting portion of said zoom flash device to further alter the illuminating angle of said zoom flash device;

a first motor for moving said conversion lens and said illuminating angle altering member;

a second motor for zooming said zoom lens; and

driving means, responsive to switching from one of said photographing modes to the other mode, for moving said conversion lens and said illuminating angle altering member to said positions, respectively, by driving said first motor.

5,543,876

CAMERA

Tatsuya Suzuki, Tokyo; Shunji Matsutani, Akishima; Yukihiko Sugita, Hachioji; Moriya Katagiri, Tachikawa, and Manabu Ikeda, Machida, all of, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 14, 1994, Ser. No. 227,726

Claims priority, application Japan, Apr. 19, 1993, 5-091522; Apr. 28, 1993, 5-102145

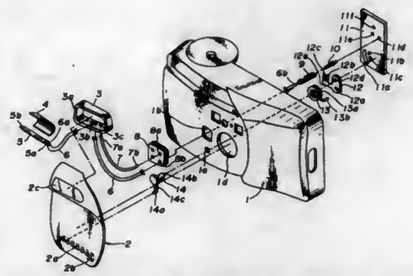
Int. Cl.[6] G03B *15/05;17/02*

U.S. Cl. 354—149.11 **26 Claims**

1. A camera, comprising:

said camera being shielded by at least a front cover member;

a strobe mounted to slide along an exterior of said cover and to reciprocate between a first position at which flashing is enabled and a second non-flashing position separated by a predetermined distance from said first position;



a control means provided in said camera and causing said strobe to emit flashlight at said first position;

a charge storing means provided in said camera for storing charge for use in emitting flashlight; and

means for electrically connecting said strobe with said charge storing means when said strobe moves between said first and second positions, said means for connecting including releasable means positioned between an inward surface of said front cover and said charge storing means and which is easily separated for releasing electrical connection between said strobe and said charge storing means only when said strobe moves to a location beyond said first and second positions.

5,543,877

MEANS FOR CONTROLLING DRIVING OF A DRIVING FORK AND TAKE-UP SPOOL FOR AUTOMATIC FEEDING AND REWINDING OF A FILM IN A CAMERA

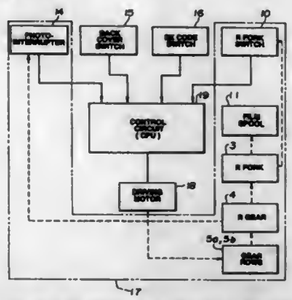
Shinya Takashi, Kodaira, and Nobuyuki Tanaka, Hidaka, both of, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Division of Ser. No. 139,320, Oct. 20, 1993. This application Jun. 20, 1994, Ser. No. 262,853

Claims priority, application Japan, Oct. 23, 1992, 4-286335; Oct. 28, 1992, 4-290523

Int. Cl.[6] G03B *1/18*

U.S. Cl. 354—173.1 **13 Claims**



1. A film feeding mechanism of a camera for sending film rolled around a shaft member in a film magazine from an outlet of said film magazine by rotating said shaft member, comprising:

a) rotation transmitting means being linked with said shaft member for sending film from said magazine by rotating said shaft member;

b) rotation driving means for selectively supplying torque to said rotation transmitting means in an intended and a reverse direction;

c) measuring means for measuring a rotational quantity of said rotation transmitting means;

d) rolling means for rolling the sent film;

e) rolling failure detecting means for detecting that the sent film has failed to be rolled by said rolling means; and

f) control means for controlling rotational quantity of said rotation transmitting means in response to an output by said rolling failure detecting means by rotating said rotation driving means in said reverse direction in response to said output of said rolling failure detecting means and controlling a quantity of rotation in the reverse direction in accordance with an output of said measuring means.

5,543,878

FILM FEED DEVICE WITH FILM VELOCITY DETECTOR AND DECELERATION AND BRAKING CONTROL

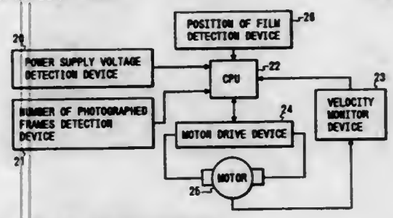
Hiroshi Murakami, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 105,179, Aug. 12, 1993, abandoned. This application Apr. 5, 1995, Ser. No. 417,468

Claims priority, application Japan, Aug. 21, 1992, 4-222327

Int. Cl.[6] G03B *1/12*

U.S. Cl. 354—173.1 **7 Claims**



5. A film feed device comprising:

a motor which feeds a film;

a velocity detection circuit connected to said motor which detects a feed velocity of said film;

a voltage detection circuit which detects a voltage applied to said motor;

a deceleration control circuit, connected to said velocity detection circuit, and controls the deceleration of the film feed by duty-driving said motor;

a reverse drive brake circuit connected to said deceleration control circuit, and brakes said motor by effecting reversal of a direction of electric current passing through said motor to bring said film feed to a stop;

a storage circuit which stores control information regarding deceleration control and reverse drive control, said information varies based on the feed velocity of said film and the voltage applied to said motor; and

a brake control circuit which controls said deceleration control circuit and said reverse drive brake circuit in accordance with the control information corresponding to the feed velocity detected by said velocity detection circuit and to the voltage detected by said voltage detection circuit.

5,543,879

DRIVING APPARATUS

Tadao Takagi, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Oct. 13, 1994, Ser. No. 322,539

Claims priority, application Japan, Oct. 15, 1993, 5-281843

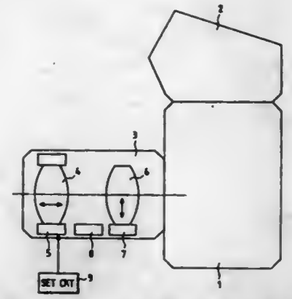
Int. Cl.[6] G03B *5/00;17/00*

U.S. Cl. 354—202 **15 Claims**

15. A camera system comprising:

a camera body;

a photo-taking optical system driven for focusing by an ultrasonic motor;



a vibration correcting optical system inserted in a photo-taking optical path and movable so as to prevent image vibration even if said camera body is vibrated;

an actuator for driving said vibration correcting optical system;

a vibration detecting element for detecting the vibration of said camera system; and

a control circuit for controlling said actuator on the basis of the vibration detected by said vibration detecting element;

wherein the resonance frequency band of said vibration detecting element and the resonance frequency band of said ultrasonic motor are set to discrete bands.

5,543,880

FRICTION MEMBER FOR BRAKE MECHANISM IN CAMERA SHUTTER

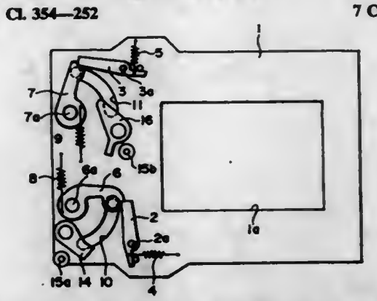
Takashi Matsubara; Masanori Hasuda, both of Yokohama, and Masayuki Kanamuro, Kawasaki, all of, Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Jun. 2, 1995, Ser. No. 458,754

Claims priority, application Japan, Jun. 7, 1994, 6-125203; Feb. 17, 1995, 7-029848

Int. Cl.[6] G03B *9/08*

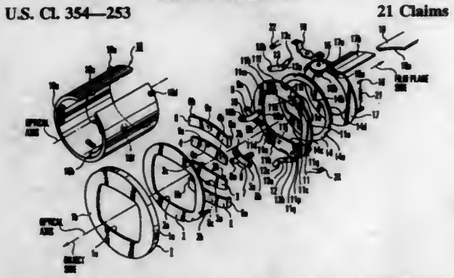
U.S. Cl. 354—252 **7 Claims**



1. A friction member for a brake mechanism in a camera shutter comprised of a layer-laminated body which is formed by laminating a plurality of resin layers each reinforced with carbon fibers aligned one-directionally in such a manner that the directions of said carbon fibers are crossing, for generating a frictional force to brake a member to be braked by coming in contact with said member to be braked, characterized in that:

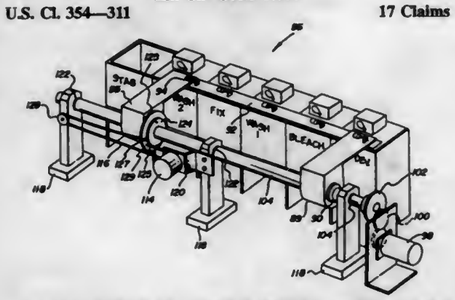
the thickness of said layer-laminated body is 50 μm to 200 μm, and a surface resin layer of said layer-laminated body contains 35 to 75 wt % of the carbon fiber.

5,543,881
LENS BARRIER MECHANISM OF OPTICAL APPARATUS
Kenji Ito, Kanagawa-Ken, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 7, 1994, Ser. No. 255,042
Claims priority, application Japan, Jun. 18, 1993, 05-147462
Int. Cl.[6] G03B *9/26*
U.S. Cl. 354—253 21 Claims



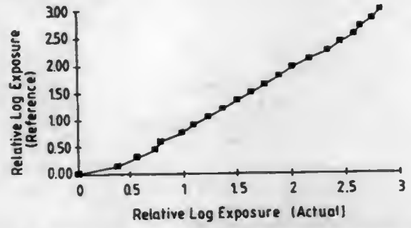
1. An optical apparatus having an aperture about an optical axis thereof and a lens barrier mechanism for opening and closing said aperture, said lens barrier mechanism comprising:
a first barrier member which circumscribes and is rotatable about said optical axis; and
a second barrier member which is shiftable relative to said optical axis.

5,543,882
METHOD AND APPARATUS FOR PROCESSING PHOTOSENSITIVE FILM
Daniel M. Pagano, Henrietta; Richard B. Wheeler, Webster, and Kevin J. Klees, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 27, 1994, Ser. No. 330,271
Int. Cl.[6] G03D *17/00*
U.S. Cl. 354—311 17 Claims



1. An apparatus for processing a filmstrip contained in a film cartridge, said filmstrip having a trailing end secured to the cartridge, said apparatus comprising:
at least one processing tank for holding a processing solution therein;
a holding mechanism for holding and retaining a film cartridge containing a filmstrip;
a film drive mechanism for moving the filmstrip out of or back into the film cartridge while the trailing end of the filmstrip remains attached to the cartridge; and
a transport mechanism for moving said holding mechanism along said apparatus so that said holding mechanism can be located at a work station located adjacent said at least one processing tank, said holding mechanism includes a reel assembly for receiving and holding a portion of the filmstrip as it exits the film cartridge positioned at said work station, said reel assembly capable of being positioned within said at least one processing tank so that the filmstrip will be submerged within a processing solution contained in said at least one processing tank.

5,543,883
CALIBRATION OF SENSITOMETERS
Andrew Green, Harrow, England, assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 11, 1994, Ser. No. 289,049
Claims priority, application United Kingdom, Sep. 1, 1993, 9318077
Int. Cl.[6] G03B *41/00*; G03C *5/00;5/04*; G01N *21/00*
U.S. Cl. 354—298 2 Claims

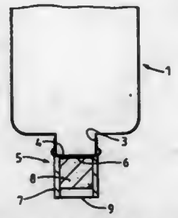


1. A method of cross-referencing a first sensitometer with respect to a second sensitometer, the method comprising the steps of:
a) exposing a first control strip to a step wedge comprising a plurality of density values corresponding to exposure units in the first sensitometer;
b) exposing a second control strip to a step wedge comprising a plurality of density values corresponding to exposure units in the second sensitometer, the first and second control strips being formed of the same photographic material;
c) developing the first and second control strips simultaneously in the same processing apparatus
d) determining characteristics of the photographic material using the known exposure values given to the material on the second control strip and measuring the density values corresponding to these exposure values, the known exposure values and measured density values being used to provide a characteristic curve for the photographic material; and
e) calculating the exposure for each step on the first control strip using measured density values and the characteristics determined from the second control strip;
characterized in that steps d) and e) are carried out using the following equation:

$$E=E_i/(\alpha(\{D_s/(D-D_{base})\}^{-\alpha})-\alpha)^{-\beta}$$

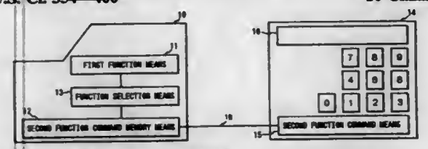
where
E is the exposure,
D is the density at exposure E,
E_i is the exposure at the point of inflexion of the characteristic curve related to the photographic material on which the first and second control strips have been exposed,
D_{base} is the density of the photographic material support,
D_s is the density at saturation, and
α and β are characteristics relating to the photographic material.

5,543,884
PHOTOGRAPHIC PROCESSING CHEMICALS
Anthony Earle, Harrow Weald; John R. Fyson, and Edward C. T. S. Glover, both of London, all of, England, assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 10, 1995, Ser. No. 385,298
Claims priority, application United Kingdom, Feb. 14, 1994, 9402763
Int. Cl.[6] G03D *3/02*
U.S. Cl. 354—324 11 Claims



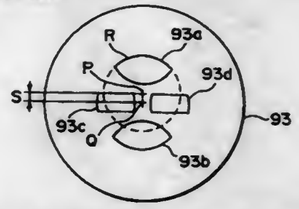
1. A cartridge containing a photographic processing chemical, the cartridge comprising a main body to receive the chemical, the main body having an outlet by way of which the chemical may be introduced into and removed from the main body, the outlet being provided with a closure which defines a space within which a moisture-absorbing material is received, the closure comprising a first and a second penetrable, self-sealing cover, the first and second covers being disposed at opposite ends of the space within which the moisture-absorbing material is received.

5,543,885
CAMERA SYSTEM
Shozo Yamano, Tokyo, and Hidehiro Ogawa, Funabashi, both of, Japan, assignors to Nikon Corporation, Tokyo, Japan
Continuation of Ser. No. 105,188, Aug. 12, 1993, abandoned.
This application Jun. 28, 1994, Ser. No. 266,666
Claims priority, application Japan, Aug. 19, 1992, 4-220267; Aug. 25, 1992, 4-226124
Int. Cl.[6] G03B *13/36*
U.S. Cl. 354—400 10 Claims



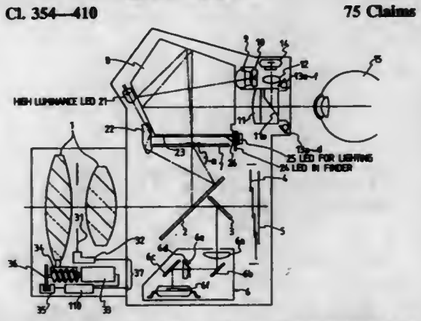
1. A camera system, comprising:
an external unit for supplying a control instruction; and
a camera body, operatively connectable to said external unit, including
a focus detecting unit; and
a processor, coupled to said focus detecting unit, for determining whether the control instruction is received from said external unit and for rendering a first function initially set in said camera body active when no control instruction is received, and rendering a second function active, based on the control instruction, when the control instruction is received, where the first function is an auto-focus priority mode in which release cannot be performed unless said focus detecting unit determines that an in-focus state is obtained, and the second function is a release priority mode in which release is possible regardless of a focus state.

5,543,886
FOCUS STATE DETECTION APPARATUS
Yasuo Suda, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 21, 1995, Ser. No. 391,100
Claims priority, application Japan, May 2, 1991, 3-130616
Int. Cl.[6] G03B *13/36*
U.S. Cl. 354—406 13 Claims



1. A detection apparatus for detecting a state of focus adjustment of an objective lens, comprising:
optical means for forming luminous intensity distributions capable of changing relative positions therebetween in accordance with the focus adjustment state of said objective lens from a light beam which passes through said objective lens;
light regulation means, having at least one pair of apertures, for regulating light passed through said optical means, an outside portion of each of said pairs of apertures being shaped in non-concentric circular arcs, a center of each of said non-concentric circular arcs being arranged to be different from an optical axis of said objective lens; and
light receiving means for detecting a state of said luminous intensity distributions to form signals corresponding to the state of focus adjustment of said objective lens.

5,543,887
DEVICE FOR DETECTING LINE OF SIGHT
Akira Akashi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 27, 1993, Ser. No. 141,613
Claims priority, application Japan, Oct. 29, 1992, 4-291727; Oct. 29, 1992, 4-291728
Int. Cl.[6] G03B *7/00*
U.S. Cl. 354—410 75 Claims



1. A device for detecting a shape of a region of an eyeball, said device comprising:
a) detection means for detecting boundary position information for a boundary between a first region and a second region of the eyeball, said boundary divided into areas that each include plural boundary position information, wherein the boundary between the first and second regions is substantially circular;
b) selection means for selecting at least one area among the plurality of areas of the boundary detected by said detection means based on a predetermined threshold; and

c) calculation means for estimating an external shape of the first region by utilizing the boundary position information for the area of the boundary selected by said selection means.

5,543,888

CONTROL DEVICE FOR PREVENTING RED-EYE EFFECT ON CAMERA

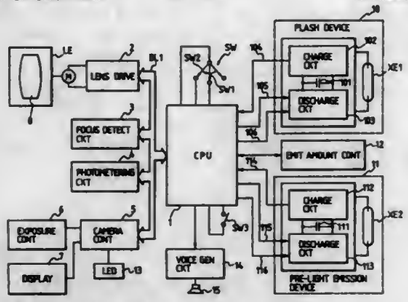
Toshio Sosa, Narashino; Toru Fukuhara, Kanagawa-ken; Toshio Dobashi, Yokohama; Masaharu Hara, Kawasaki, and Norikazu Yokouuma, Tokyo, all of, Japan, assignors to Nikon Corporation, Tokyo, Japan

Division of Ser. No. 71,613, Jun. 4, 1993, which is a continuation of Ser. No. 974,512, Nov. 12, 1992, abandoned, which is a division of Ser. No. 930,466, Aug. 20, 1992, abandoned, which is a continuation of Ser. No. 785,210, Oct. 25, 1991, abandoned, which is a continuation of Ser. No. 632,648, Dec. 26, 1990, abandoned, which is a continuation of Ser. No. 445,996, Dec. 4, 1989, abandoned, which is a continuation-in-part of Ser. No. 323,386, Mar. 14, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 475,839

Claims priority, application Japan, Mar. 25, 1988, 63-72238

Int. Cl.[6] G03B *15/03*

U.S. Cl. 354—415 **5 Claims**



1. A camera comprising:

a flash device which emits illumination light to illuminate an object;

an illumination device which emits illumination light to the object, prior to the emission of said flash device; and

a control device, electrically connected to said illumination device, which controls said illumination device to emit the illumination light with a desired amount thereof so that a light amount thereof on the object is constant despite a distance to the object.

5,543,889

CAMERA WITH POINTING AID

Dale F. McIntyre, Honeoye Falls, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 16, 1994, Ser. No. 242,891

Int. Cl.[6] G03B *13/00*

U.S. Cl. 354—432 **32 Claims**

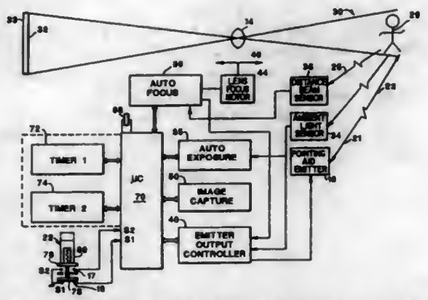
1. A camera comprising:

a camera body;

an objective lens that receives light from a scene and directs it to an objective lens focal plane in the camera body upon operation of an image capture mechanism;

an image capture button that may be operated in an image capture position to effect operation of said image capture mechanism and may be operated in a further position;

a pointing aid emitter that emits a light output beam oriented generally along the optical axis of the objective lens such that the camera may be aimed so that the output beam illuminates an object in the scene upon operation of said image capture button in said further position; and



an emitter controller operable following emission of the output beam for inhibiting the further response of said pointing aid emitter to the operation of said image capture button in said further position for a predetermined inhibit time interval.

5,543,890

PROCESS AND DEVICE FOR ADJUSTING THE DISTANCE BETWEEN A WORKPIECE AND A MASK

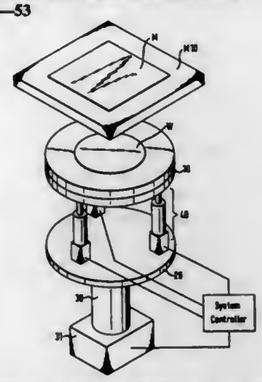
Yoneta Tanaka, Kanagawa, and Shoichi Okada, Kawasaki, both of, Japan, assignors to Ushiodenki Kabushiki Kaisha, Japan

Filed Jul. 8, 1994, Ser. No. 271,950

Claims priority, application Japan, Jul. 8, 1993, 5-192709

Int. Cl.[6] G03B *27/42;27/44;27/04*

U.S. Cl. 355—53 **3 Claims**



1. A process for adjusting distance for purposes of parallel positioning of a wafer spaced at a set distance relative to a mask, comprising the steps of:

a) holding a workpiece on a work-holding fixture spaced at a distance from a mask;

b) operating a moving device for moving one of the work-holding fixture and a mask carrier on which the mask is disposed in a first direction to bring the workpiece into contact with the mask;

c) continuing the operation of the moving device after the workpiece comes into contact with the mask;

d) transmitting a signal to a system controller from each of at least three means for alignment which are arranged on said one of the work-holding fixture and the mask carrier and which essentially begin to move and accept a propulsive force from the moving device beginning at a time at which the workpiece and mask come into contact with one another and essentially can no longer execute any further relative motion therebetween, when a determined amount of displacement of calibration devices of the alignment means has occurred;

e) discontinuing the operation of the moving device, stopping the movement of said one of the work-holding fixture and the mask carrier, when the system controller has received said signal from each of said means for alignment, and maintaining constant a parallel alignment of the workpiece and mask relative to one another determined on the basis of the signals in each of the means for alignment by fixing of the calibration device thereof;

f) moving said one of the work-holding fixture and the mask carrier by the set distance in a second direction, opposite to said first direction, to position the wafer at the set distance relative to the mask.

5,543,891

ELECTROPHOTOGRAPHIC IMAGE FORMING APPARATUS WITH A PROCESS CARTRIDGE MOUNTING FEATURE

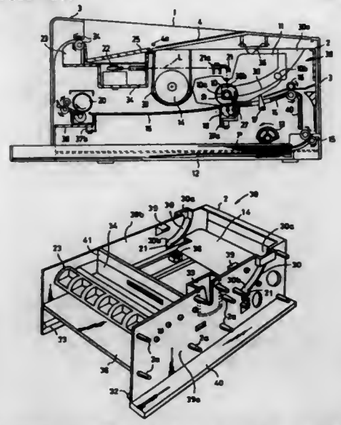
Takeshi Setoriyama, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 50,594, Apr. 22, 1993, abandoned, which is a division of Ser. No. 824,530, Jan. 23, 1992, abandoned. This application Nov. 18, 1994, Ser. No. 345,377

Claims priority, application Japan, Jan. 25, 1991, 3-023846; Mar. 12, 1991, 3-070431

Int. Cl.[6] G03G *21/00*

U.S. Cl. 355—200 **73 Claims**



1. An image forming apparatus, to which a process cartridge is detachably mountable, the process cartridge having an electrophotographic photosensitive member and process means for acting on the electrophotographic photosensitive member, for forming an image on a recording medium, said image forming apparatus comprising:

an integrally-formed frame having an arc-shaped guiding portion for guiding the process cartridge toward a mounted position, said arc-shaped guiding portion extending from an upper end portion to a lower end portion;

drive transmission means for transmitting a driving force to the process cartridge mounted in the mounted position;

optical means for illuminating the electrophotographic photosensitive member of the process cartridge mounted in the mounted position with information light;

transfer means for transferring a toner image formed on the electrophotographic photosensitive member of the process cartridge mounted in the mounted position onto the recording medium; and

conveying means for conveying the recording medium through said frame,

said frame comprising (i) integrally-formed optical holding means for fixedly holding said optical means above the lower end portions of first and second arc-shaped guiding portions, (ii) integrally-formed transfer holding means for fixedly holding said transfer roller below the lower end portions of said first and second arc-shaped guiding portions, (iii) integrally-formed guiding means for guiding the recording medium from a paper supply to said transfer roller, (iv) integrally-formed fixing holding means for fixedly holding fixing means for fixing an image on the recording medium, and (v) integrally-formed discharge guiding means for guiding the recording medium from the fixing means to a discharge tray.

5,543,892

IMAGE FORMING APPARATUS CONNECTED TO AN INFORMATION MANAGEMENT APPARATUS THROUGH A COMMUNICATION LINE

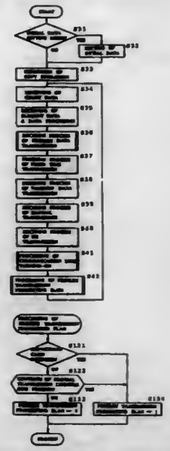
Sumiaki Hirata, Aichi-ken; Ikunori Yamaguchi, and Kazunobu Maekawa, both of Toyokawa, all of, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 16, 1994, Ser. No. 197,259

Claims priority, application Japan, Feb. 16, 1993, 5-048804

Int. Cl.[6] G03G *21/00*

U.S. Cl. 355—205 **11 Claims**



1. An image forming apparatus connected to an information management apparatus through a communication line, said image forming apparatus including:

detecting means for detecting a problem in the image forming apparatus;

sending means for sending data indicating an occurrence of the problem to the information management apparatus when the problem is detected by said detecting means;

setting means for setting a mode in which the image forming apparatus is in a test operation state to repair the problem; and

prohibiting means for prohibiting the data indicating an occurrence of a problem from being sent by said sending means while said mode is set by said setting means.

5,543,893

COPIER APPARATUS AND METHOD WITH IMPROVED JAM RECOVERY

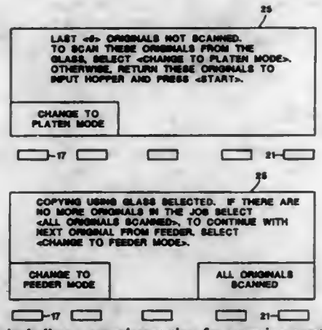
Eric G. Sheldon, Holley; Ronald W. Stephens, Lima, and George R. Vorhauer, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 22, 1994, Ser. No. 343,405

Int. Cl.[6] G03G *21/00*

U.S. Cl. 355—206 **18 Claims**

1. A copier apparatus comprising:



means including a scanning station for scanning a set of document sheets to be copied as a production job, the scanning station including a platen for supporting a document sheet to be scanned in a first mode wherein the document sheet is manually positioned on the platen by an operator and the scanning station including means for scanning document sheets In a second mode wherein the document sheets are automatically fed;

feeder means for automatically feeding serlatim document sheets to the scanning station for scanning document sheets in the second mode;

recording means for copying images of said document sheets;

means for generating a signal in response to a jam condition of a document sheet in said feeder means;

an operator control panel including display means for indicating options for selection by an operator in response to clearance of the jam condition;

control means, responsive to said signal, for interrupting feeding of document sheets by said feeder means and for enabling on said display means in response to clearance of the jam a display representing an option for selecting said first mode for scanning of the document sheet that was jammed;

means for actuating said scanning station for scanning said jammed document sheet in said first mode; and

means for actuating said recording means for producing a copy of said document set as a production job.

5,543,894

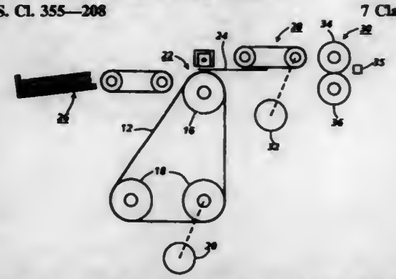
CORRECTION FOR SURFACE VELOCITY MISMATCH IN MULTIPLE SERVO PAPER PATHS

Kevin M. Carolan, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 18, 1994, Ser. No. 276,376

Int. Cl.[6] G03G *21/00*

U.S. Cl. 355—208 **7 Claims**



1. In a reproduction machine comprising a control, a first servo system for driving a photosensitive member and a second servo system for driving a prefuser transport, the photosensitive member transferring an image to a copy sheet at a transfer station, the copy sheet being driven by the second servo system from the transfer station to a fuser station, a method of synchronizing the speed of the photosensitive member with the speed of the prefuser transport comprising the steps of:

storing first data in memory representing a surface velocity of the prefuser transport being greater than the surface velocity of the photosensitive member,

storing second data in memory representing a surface velocity of the prefuser transport being equivalent to the surface velocity of the photosensitive member, the first data in memory being a reference value in the first servo system and the second data in memory being a reference value in the second servo system, and

responsive to the first and second data, synchronizing the speed of the prefuser transport with the speed of the photosensitive member.

5,543,895

METHOD OF ADJUSTING DENSITY DETECTING DEVICE USED FOR IMAGE FORMING APPARATUS

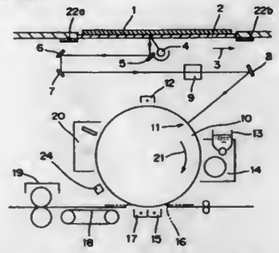
Kenji Katsuhara, Osaka, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan

Filed Aug. 21, 1995, Ser. No. 517,551

Claims priority, application Japan, Sep. 20, 1994, 6-225179

Int. Cl.[6] G03G *15/00*

U.S. Cl. 355—203 **18 Claims**



1. A method of adjusting a density detecting device in an image forming apparatus, the image forming apparatus including a photoreceptor on which an electrostatic latent image is formed, a developing device for developing the electrostatic latent image formed on the photoreceptor into a toner image, and the density detecting device for irradiating light of a predetermined amount onto the photoreceptor to output density data corresponding to the amount of reflected light from the photoreceptor, the method comprising the steps of:

successively irradiating light of amounts in a plurality of steps from a maximum amount to a minimum amount from the density detecting device onto one point of the photoreceptor on which no toner adheres, to acquire a plurality of density data outputted by the density detecting device which correspond to the amounts of light in the respective steps;

selecting one density data on a predetermined basis out of the plurality of acquired density data corresponding to the amounts of light of the plurality of steps;

irradiating light in the amount in the step corresponding to the selected one density data from the density detecting device onto a plurality of points of the photoreceptor, to acquire density data outputted by the density detecting device at the respective points;

finding an average value of the acquired density data corresponding to the plurality of points as average density data;

correcting the plurality of acquired density data corresponding to the amounts of light in the plurality of steps on the basis of the average density data and the selected one density data; and

setting an amount of light to be irradiated onto the photoreceptor from the density detecting device when a density of a toner image formed on the photoreceptor is detected, on the basis of the plurality of the density data corrected.

5,543,896

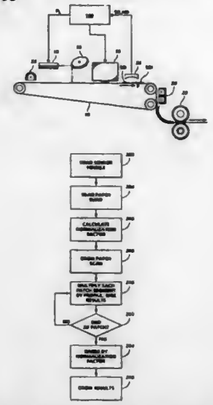
METHOD FOR MEASUREMENT OF TONE REPRODUCTION CURVE USING A SINGLE STRUCTURED PATCH

Lingappa K. Mestha, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 13, 1995, Ser. No. 527,616

Int. Cl.[6] G03G *21/00*

U.S. Cl. 355—208 **14 Claims**



1. In a printing machine having a moving imaging surface, a projecting system for modulating a beam and projecting an image onto the imaging surface, a developer for application of toner to the image projected onto the imaging surface for transfer of the image to a medium, a method of development control comprising the steps of;

storing a reference tone reproduction curve,

providing a single test pattern in the interdocument zone of the imaging surface, the test pattern including background, halftone, and solid area levels,

sensing the test pattern along the background, halftone, and solid area levels of the test pattern in the interdocument zone of the imaging surface

responding to the sensing of the test pattern and the reference tone reproduction curve to adjust the machine operation for print quality correction.

5,543,897

REPRODUCTION APPARATUS HAVING TOUCH SCREEN OPERATOR INTERFACE AND AUXILIARY KEYBOARD

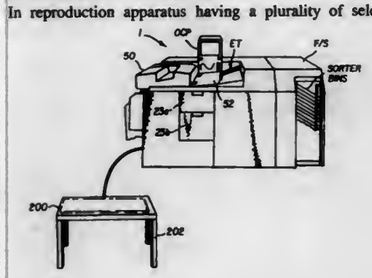
Frederick E. Altrieth, III, Scottsville, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 7, 1995, Ser. No. 400,154

Int. Cl.[6] G03G *15/00*

U.S. Cl. 355—209 **8 Claims**

1. In reproduction apparatus having a plurality of selectable features for carrying out a reproduction run, control apparatus comprising:



an operator control panel permanently mounted on said reproduction apparatus, said control panel having:

a display for displaying selectable features for a reproduction run and for displaying text and graphics,

a plurality of operator selectable hard buttons for providing input to and control of said reproduction apparatus, and

a touchscreen overlaying at least a part of said display, with operator selectable soft buttons and areas overlaying said displayed selectable features for providing operator input to said reproduction apparatus; and

a portable auxiliary keyboard which is operationally coupled to said operator control panel, said auxiliary keyboard having:

a control key, which, when actuated, causes a pointer to be displayed on said display,

a plurality of direction keys for moving said pointer on said display to displayed selectable features overlaid with soft buttons, and

a select key for selecting the displayed feature indicated by said pointer.

5,543,898

PROCESS CARTRIDGE, METHOD FOR ASSEMBLING PROCESS CARTRIDGE AND IMAGE FORMING APPARATUS

Kazuo Shishido, Yokohama; Shinichi Sasaki, Fujisawa; Isao Ikemoto, Kawasaki; Masahiko Yashiro, Yokohama; Toshiyuki Karakama, Tokyo, and Atsushi Numagami, Hadano, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

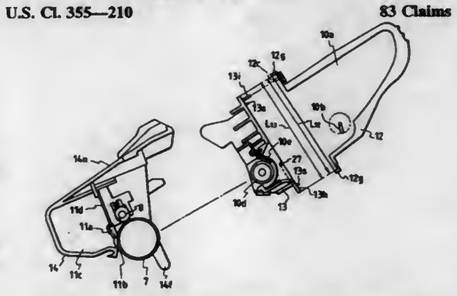
Continuation of Ser. No. 70,703, Jun. 2, 1993, abandoned.

This application Sep. 15, 1994, Ser. No. 306,518

Claims priority, application Japan, Sep. 4, 1992, 4-260613; Oct. 15, 1992, 4-301587

Int. Cl.[6] G03G *15/00*

U.S. Cl. 355—210 **83 Claims**



27. A process cartridge mountable to an image forming apparatus, said process cartridge comprising:

a first frame for containing developer to be used for a developing operation; and

a second frame for supporting developing means for developing a latent image formed on an image bearing member,

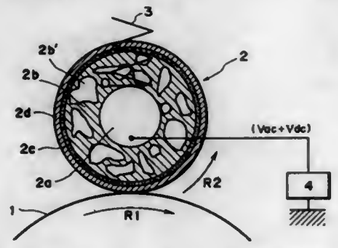
wherein said first and second frames are made of a material having a charging series similar to a charging series of the developer and said first and second frames are made of polystyrene resin, and the developer utilizes a bonding agent made of styrene-acrylic resin.

5,543,899

CHARGING MEMBER HAVING A FOAMED LAYER OF A MATERIAL WITH SPECIFIED DENSITY AND PORE PROPERTIES, CHARGING DEVICE, PROCESS CARTRIDGE AND IMAGE FORMING APPARATUS FEATURING THE CHARGING MEMBER

Satoru Inami, Tokyo; Masaharu Ohkubo, Yokohama, and Junichi Kato, Sagamihara, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 28, 1994, Ser. No. 233,950
Claims priority, application Japan, Apr. 28, 1993, 5-128088; Jul. 6, 1993, 5-192891; Apr. 19, 1994, 6-080411
Int. Cl.[6] G03G *15/02*
U.S. Cl. 355—219 13 Claims



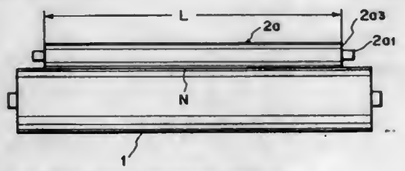
1. A charging member for charging a member to be charged comprising:
a foamed layer;
supporting member, for supporting said foamed layer, and for being supplied with an oscillating voltage;
a resistance layer closer to the member to be charged than said foamed layer;
wherein said foamed layer has a specific gravity not less than 0.1 (g/cm^3) and not more than 0.6 (g/cm^3), and
wherein an average outer diameter of pores in a cross-section of said foamed layer is not less than 50 microns and not more than 1 mm.

5,543,900

IMAGE FORMING APPARATUS WHICH REDUCES TONER FUSION ON AN IMAGE BEARING MEMBER

Youichirou Maebashi; Haruo Fujii; Hiroshi Sasame; Hiroaki Kawakami, all of Yokohama; Tatsuya Kobayashi, Sohka; Tetsuya Kobayashi, Kawasaki; Naoki Enomoto, Yokohama; Akihiko Uchiyama, Yokohama, and Yoshiro Saito, Yokohama, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 12, 1994, Ser. No. 357,602
Claims priority, application Japan, Dec. 10, 1993, 5-341346; Dec. 5, 1994, 6-300958
Int. Cl.[6] G03G *15/02*
U.S. Cl. 355—219 10 Claims



1. An image forming apparatus comprising:
an image bearing member for bearing an image comprised of toner;
a charging member contactable to said image bearing member to charge said image bearing member, said charging member being adapted for receiving a voltage;
wherein the toner has a melt index of not less than 0.5 g/10 min.; and

$P/(v \times L) \leqq 50$ J/m^2

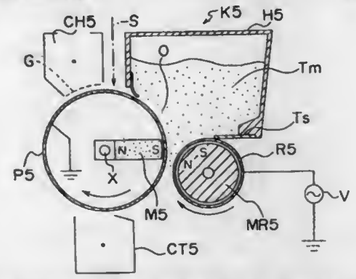
where v is a movement speed of said image bearing member when said image bearing member is charged by said charging member (m/sec), L is an effective charging length of said charging member, measured in a direction perpendicular to a movement direction of said image bearing member (m), and P is an amount of electric power consumed by said charging member (W).

5,543,901

ELECTROPHOTOGRAPHIC DEVELOPING METHOD USING MAGNETIC DEVELOPING MATERIAL AND APPARATUS EMPLOYED THEREFOR

Hajime Yamamoto, Ibaraki, and Hiroshi Terada, Ikoma, both of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 919,905, Jul. 27, 1992, Pat. No. 5,488,465. This application Jun. 7, 1995, Ser. No. 480,079
Claims priority, application Japan, Jul. 26, 1991, 3-187272; Sep. 17, 1991, 3-236061; Dec. 27, 1991, 3-345990; Dec. 27, 1991, 3-346128; Dec. 27, 1991, 3-346132; Feb. 4, 1992, 4-018616
Int. Cl.[6] G03G *13/00*
U.S. Cl. 355—246 9 Claims



9. An electrophotographic apparatus which comprises:
a movable electrostatic latent image holding member enclosing a fixed magnet therein emitting magnetic force to attract magnetic developing material;
a developing material hopper for supplying magnetic developing material onto a total surface of said latent image holding member;
a rotating electrode roller disposed at a position confronting at least part of said fixed magnet, through a predetermined gap with respect to the surface of said latent image holding member, and made of a magnetic material; and
a voltage impressing means for impressing a voltage for removing toner at a non-image portion on said latent image holding member, to said electrode roller.

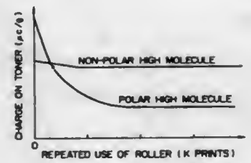
5,543,902

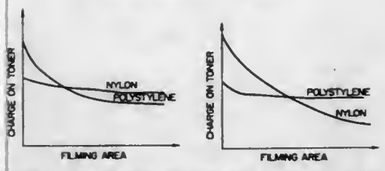
DEVELOPING DEVICE FOR AN IMAGE FORMING APPARATUS

Fuchio Takeda, Tokyo, and Atsushi Ohta, Yokohama, both of, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 168,157, Dec. 17, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 466,834
Claims priority, application Japan, Dec. 18, 1992, 4-355737
Int. Cl.[6] G03G *15/06*
U.S. Cl. 355—259 15 Claims

1. In a developing device for an image forming apparatus and comprising a developer carrier made up of a conductive base and an insulating layer formed on said conductive base for developing an electrostatic latent image formed on an image carrier with a one component type developer having high resistance, said insulating member of said developer carrier is made of a material produced





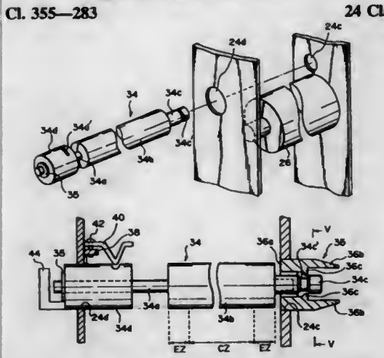
by mixing a non-polar high molecule and a polar high molecule in a suitable ratio and scarcely storing a space charge.

5,543,903

HEAT ROLLER TYPE TONER IMAGE FIXING DEVICE HAVING CLEANING ROLLER

Nobuo Fujita; Hideyuki Nanba; Masato Kawashima; Akihiro Komuro; Susumu Fujishima, and Toshihiro Matsui, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 60,936, May 13, 1993, abandoned. This application Jan. 4, 1995, Ser. No. 368,762
Claims priority, application Japan, May 13, 1992, 4-120402; Sep. 29, 1992, 4-260340
Int. Cl.[6] G03G *15/20;21/00*
U.S. Cl. 355—283 24 Claims



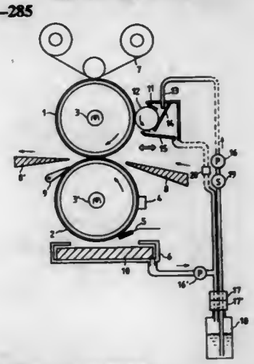
3. A toner image fixing device comprising:
heat roller means rotationally driven in a direction for passing therethrough a recording medium with a toner image to thermally fuse and fix the toner image on the recording medium;
cleaning roller means pressed against said heat roller means for rotation together therewith to clean said heat roller means stained with the fused toner image;
frame means having two slots aligned with and spaced from each other such that both ends of said cleaning roller means are laterally introduced into the aligned holes; and
constraint means for rotatably constraining the ends of said cleaning roller means in said slots of said frame means, said constraint means being movable between a closed position at which the ends of said cleaning roller means are rotatably constrained and an open position at which said cleaning roller means is removable from the slots of said frame means.

5,543,904

FIXATING DEVICE

Motoi Kato; Akihiko Takeuchi, both of Yokohama; Toshihiko Ochiai, Tokyo; toshiaki Miyashiro, Ichikawa; Nobuaki Kabeya, Toride; Takehiko Suzuki, and Takao Kume, both of Yokohama, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 25, 1995, Ser. No. 429,240
Claims priority, application Japan, Apr. 28, 1994, 6-111784
Int. Cl.[6] G03G *15/20*
U.S. Cl. 355—285 6 Claims



1. A fixating device, comprising:
a first rotatable member in contact with an unfixated image borne on a recording medium;
a second rotatable member forming a nip together with said first rotatable member;
a first heater for heating said first rotatable member;
a second heater for heating said second rotatable member; and
power supply controlling means for controlling supply of electric power to said first heater and said second heater, said power supply controlling means being adapted to control the supply of electric power so that when the electric power supplied to said first heater is Wa and the electric power supplied to said second heater is Wb and the ratio when the recording medium is nipped between and conveyed by said first rotatable member and said second rotatable member is Dp=Wa/Wb and the ratio during standby is Ds=Wa/Wb, there may be established Dp>Ds.

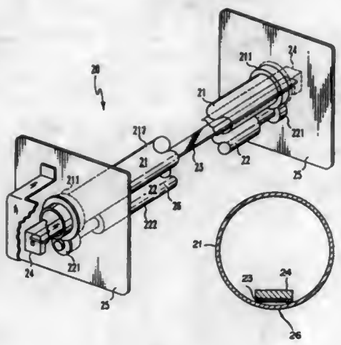
5,543,905

TONER FIXING DEVICE FOR IMAGE FORMING APPARATUS

Katsunari Oda; Akiyoshi Kamisaki; Norimasa Kubota, all of Machida, and Teruo Narikawa, Tokyo, all of, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 964,018, Oct. 20, 1992, abandoned. This application May 11, 1995, Ser. No. 439,461
Claims priority, application Japan, Oct. 22, 1991, 3-302509; Jul. 30, 1992, 4-223358
Int. Cl.[6] G03G *15/20*
U.S. Cl. 355—285 5 Claims

1. A fixing device comprising:
a hollow fixing roller rotatably supported by frames of the fixing device only at its both ends with respect to a direction of its rotational axis;
a heating element for heating the fixing roller;
pressing means for pressing a recording paper to the fixing roller so as to fuse and fix a toner image onto the recording paper; and
supporting means for supporting the heating element inside the fixing roller so that said fixing roller rotates relative to said heating element and the heating element contacts an inner wall of the fixing roller at a position close to where the recording paper pressingly contacts the fixing roller.

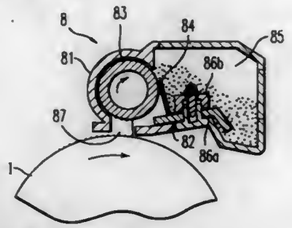


5,543,906

CLEANING APPARATUS DISPOSED ON AN IMAGE FORMING APPARATUS

Shigemi Kanda, Atsugi, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 23, 1994, Ser. No. 264,647
Claims priority, application Japan, Jun. 28, 1993, 5-157476
Int. Cl.[6] G03G 21/00
U.S. Cl. 355—299 9 Claims



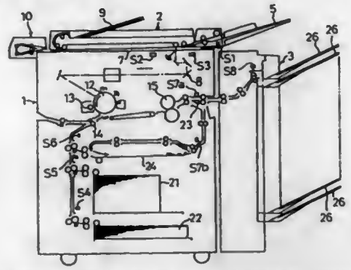
1. A cleaning apparatus comprising:
a cleaning housing having an opening and an accommodating part for accommodating removed toner, the opening of said cleaning housing facing an image bearing member;
a blade which covers part of said opening, said blade having one end which contacts said image bearing member;
a cleaning roller provided in said cleaning housing for collecting toner which is removed by said blade and transporting said toner into said cleaning housing; and
a scraper for removing toner on said cleaning roller, such that the removed toner is accumulated in said accommodating part, the accommodating part being partitioned by said scraper, said scraper being downwardly inclined away from said cleaning roller such that a first end of the scraper contacts said cleaning roller and a second end of the scraper is spaced from the cleaning roller and secured to the housing, wherein a bottom of said accommodating part is disposed below the second end of the scraper;
wherein:
a tight channel is defined between an outer periphery of the cleaning roller and an inner periphery of the housing which surrounds the cleaning roller, such that at least a half of the outer periphery of the cleaning roller is covered by the housing, so that toner removed by the cleaning blade is transferred through the tight channel toward the accommodating part of the housing and prevented from flowing back toward the opening.

5,543,907

COPYING APPARATUS WHICH CAN PROHIBIT THE SORTING PROCESS

Tomokazu Kato, Toyokawa; Kazuhiro Araki; Yoshiaki Takano, both of Toyohashi; Syuzi Maruta, Toyokawa; Keiichi Nomura, Amagasaki; Kentaro Nagatani, Toyohashi; Takashi Noda, and Hiroyuki Kishimoto, both of Toyokawa; all of, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 15, 1992, Ser. No. 945,261
Claims priority, application Japan, Sep. 18, 1991, 3-237641
Int. Cl.[6] G03G 21/00
U.S. Cl. 355—313 32 Claims



1. An apparatus for producing copies of originals, comprising:
sorting means provided with a plurality of paper discharge sections for receiving produced copies, said means being operable in a sorting mode and a non-sorting mode;
identifying means for identifying the number of originals to be copied;
selecting means for selecting one of a plurality of copy modes, said plurality of copy modes including a specific copy mode for copying images of a plurality of originals on one sheet, and another copy mode for copying an image of one original on one side of a sheet;
executing means for executing the copying operation of the copy mode selected by said selecting means;
determining means for determining whether images of all of a plurality of originals to be copied can be produced on one sheet when the specific copy mode is selected by said selecting means; and
prohibiting means for prohibiting execution of said sorting mode in the specific copy mode when said determining means determines that a copy of all of the originals to be produced can be formed on one sheet.

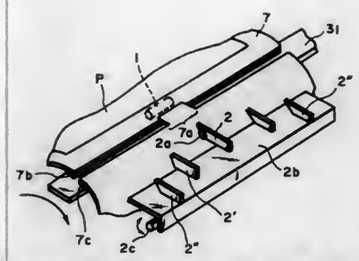
5,543,908

IMAGE FORMING APPARATUS HAVING ENDLESS RECORDING MATERIAL CARRYING MEMBER

Hajime Suzuki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 180,466, Jan. 12, 1994, abandoned, which is a continuation of Ser. No. 833,675, Feb. 11, 1992, abandoned. This application Apr. 10, 1995, Ser. No. 419,744
Claims priority, application Japan, Feb. 12, 1991, 3-018768
Int. Cl.[6] G03G 21/00
U.S. Cl. 355—315 18 Claims

1. An image forming apparatus, comprising:
a movable recording material carrying means having a flexible recording material carrying member, having leading and trailing ends, for carrying a recording material;
image forming means for forming an image on the recording material carried on said recording material carrying member;
separating means for separating the recording material from said recording material carrying member at a separating position, said separating means including a separating member insertable between the recording material and said recording material carrying member, wherein said separating member is movable between a first position for performing a separating action and a second position for not performing the separating action, the second position being more distant from said recording material carrying member than is the first position;
a connecting portion for connecting the leading and trailing ends of said recording material carrying member, disposed at least at such an insertion position that said separating member is inserted between the recording material and said recording material carrying member, said connecting portion covering the leading end of said recording material carrying member, wherein the recording material is supported so as to avoid the connecting portion on said recording material carrying member, and wherein the leading end of the recording material is carried a predetermined distance away from said connecting portion with respect to the movement direction of said recording material carrying member, and wherein when said separating member performs the separating action, said separating member is moved from said second position to said first position before the trailing end of said recording material carrying member reaches the separating position.

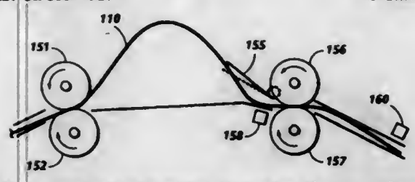


5,543,909

TWO STEP, LARGE LATITUDE, STALLED ROLL REGISTRATION SYSTEM

Lisbeth S. Quesnel, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 3, 1995, Ser. No. 415,798
Int. Cl.[6] G03G 15/00
U.S. Cl. 355—317 8 Claims



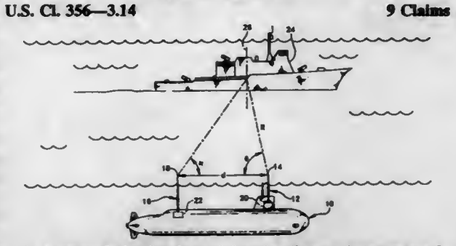
8. A method of synchronizing the position of a copy substrate with an image on a photosensitive member, comprising the steps of:
(a) providing a photosensitive member rotating at a given velocity with a transferable image thereon;
(b) providing a continuously driven preregistration nip and feeding a copy substrate toward said photosensitive member with said preregistration nip;
(c) providing a registration nip downstream of said preregistration nip to receive copy substrates driven thereinto by said preregistration nip;
(d) positioning a first sensor upstream of said registration nip to sense the lead edge of copy substrates driven by said preregistration nip;
(e) positioning a second sensor downstream of said registration nip and upstream of said photosensitive member to sense the lead edge of substrates being driven by said registration nip; and
(f) providing a controller adapted to control the driving and stopping of said registration nip based on signals from said first and second sensors.

5,543,910

PASSIVE SUBMARINE RANGE FINDING DEVICE AND METHOD

C. Roger Wallin, Portsmouth, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 19, 1994, Ser. No. 358,289
Int. Cl.[6] G01C 3/10
U.S. Cl. 356—3.14 9 Claims



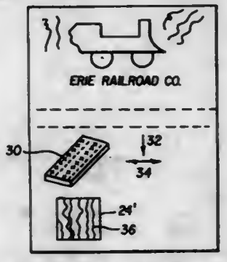
1. A range finder for determining the distance between a submerged submarine and a target above the surface comprising:
a first periscope mounted on said submarine, said first periscope being rotatable and extensible above the surface and having means for determining a first bearing from said first periscope to said target;
a second periscope mounted on said submarine at a preset distance from said first periscope, said periscope being rotatable and extensible above the surface and having means for determining a second bearing from said second periscope to said target, said second periscope being capable of being raised simultaneously with said first periscope; and
a computer receiving said first bearing from said first periscope and said second bearing from said second periscope and using said first and second bearings with said preset distance between said first and second periscopes to calculate the range from said submarine to said target.

5,543,911

METHOD OF CURRENCY OR DOCUMENT VALIDATION BY USE OF AN ANTI-COUNTERFEITING MAGNETIC VIEWING STRIP

Frederick J. Jeffers, Escondido, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 13, 1994, Ser. No. 305,228
Int. Cl.[6] G06K 7/14
U.S. Cl. 356—71 6 Claims



1. A method for validating the authenticity of currency or a document comprising the steps of:

a) adhering a portion of a transparent substrate coated with micro-capsules containing magnetic flakes suspended in a liquid onto an area of said currency or said document, and

b) subjecting said adhered portion to a magnetic field, whereby said magnetic particles in said micro-capsules are oriented into patterns related to the direction of said field, said patterns being optically viewable to determine the authenticity of said currency or document.

5,543,912

REFLECTOMETRY OF AN OPTICAL WAVEGUIDE USING A LOW COHERENCE REFLECTOMETER

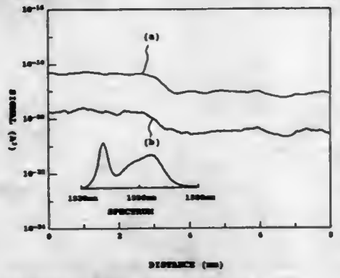
Kazumasa Kada, Mito; Masaharu Horigichi, Naka-gun, and Hiroaki Yamada, Katsuta, all of, Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed May 3, 1994, Ser. No. 237,483

Claims priority, application Japan, May 7, 1993, 5-106381; Mar. 9, 1994, 6-038127

Int. Cl.[6] G01N *21/84;21/88;* H01S *3/02*

U.S. Cl. 356—73.1 **20 Claims**



1. A reflectometry comprising the steps of:

splitting output light from a light source into first light and second light, said light source being a low-coherent light source in which laser oscillation is suppressed, and the center wavelength of said light source being tunable;

generating local oscillator light by propagating said first light by a variable optical path length;

launching the second light into an optical waveguide under test as probe light;

combining said local oscillator light with reflected light from said optical waveguide under test to generate combined light;

obtaining an average value of Rayleigh back-scattered signals from said optical waveguide under test at respective center wavelengths of said light source by measuring the intensity of said combined light while maintaining the variable optical path length at a constant value and varying the center wavelength of said light source; and

obtaining an average Rayleigh back-scattered quantity at each point of said optical waveguide under test by repeating the step of obtaining an average value of Rayleigh back-scattered signals, after changing said variable optical path length.

5,543,913

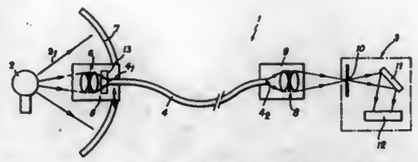
DEVICE FOR MEASURING THE SPATIAL CHARACTERISTICS OF A LIGHT SOURCE

Eric L. Fallet, Dijon, France, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 21, 1994, Ser. No. 342,559

Int. Cl.[6] G01J *1/00*

U.S. Cl. 356—121 **7 Claims**



1. Device for measuring at least the spatial characteristics of a fixed light source (2), by means of a fixed light-processing apparatus (3), characterized in that it includes a deformable light guide (4) intended to receive, at one of its ends (4_1), the light passing through a movable optical system (5) for examining the light source (2) and transmitting the light, at the other one of its ends (4_2), to a fixed optical system (8) for gathering and transmitting the light to the fixed light-processing apparatus (3), the light guide (4) being provided at its one end (4_1) with a mode mixer (13) for avoiding any variation in the transmission of the guide.

5,543,914

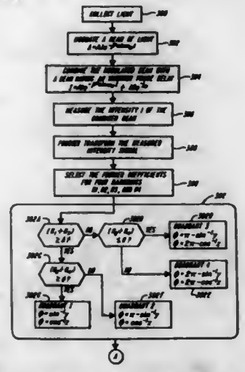
APPARATUS AND METHODS EMPLOYING HARMONIC ANALYSIS FOR MEASURING THE DIFFERENCE IN PHASE BETWEEN TWO COHERENT BEAMS

Philip D. Henshaw, Carlisle, and Steven A. Lis, Needham, both of Mass., assignors to Sparta, Inc., Lexington, Mass.

Continuation-in-part of Ser. No. 181,885, Jan. 14, 1994, Pat. No. 5,404,222. This application Jan. 13, 1995, Ser. No. 372,226

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—345 **24 Claims**



1. A method for determining a phase difference between two coherent beams oscillating at substantially a same frequency, comprising the steps of

modulating a first one of said coherent beams to generate a phase modulated beam signal,

combining said phase modulated beam signal with a second one of said coherent beams to generate a combined beam signal,

measuring an intensity of said combined signal,

determining from said intensity, a set of values representative of a series of at least four harmonic components of said combined beam signal, and

generating as a function of said series of at least four harmonic components, a signal representative of said phase difference between said two coherent beams.

5,543,915

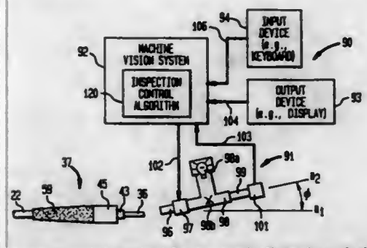
AUTOFOCUSING SYSTEM AND METHOD FOR POSITIONING AN INTERFEROMETRIC FRINGE OVER A TARGET IN AN IMAGE

Andrei Csipkes, Lawrenceville, and John M. Palmquist, Lilburn, both of Ga., assignors to AT&T CORP., Murray Hill, N.J.

Filed Apr. 27, 1995, Ser. No. 429,968

Int. Cl.[6] G01B *9/02;11/00*

U.S. Cl. 356—345 **25 Claims**



1. An autofocusing method for automatically and precisely positioning an interferometric fringe in an image over a target within the image, the image being captured by a combination of an interferometer and a camera, comprising the steps of:

(a) defining a rough focus grid in said image;

(b) focusing said image until said interferometric fringe is shifted into said rough focus grid;

(c) defocusing said image so that said interferometric fringe is shifted away from said rough focus grid;

(d) determining a location of said target in said image;

(e) defining a precision focus grid about said target based upon said location; and

(f) refocusing said interferometric fringe over said target within said precision focus grid.

5,543,916

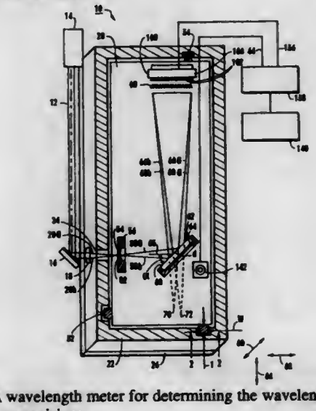
INTERFEROMETER WITH ALIGNMENT ASSEMBLY AND WITH PROCESSOR FOR LINEARIZING FRINGES FOR DETERMINING THE WAVELENGTH OF LASER LIGHT

Alexander A. Kachanov, Moscow, Russian Federation, assignor to Science Solutions, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 147,994, Nov. 4, 1993. This application Mar. 16, 1994, Ser. No. 214,805

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—354 **13 Claims**



1. A wavelength meter for determining the wavelength of a light beam, comprising:

a mounting platform;

a diffraction element mounted on the mounting platform and formed with a diffraction aperture for generating a spherical light beam, wherein at least part of the light beam can be directed through the diffraction aperture;

an interferometer mounted on the mounting platform in light communication with the diffraction aperture for receiving the spherical light beam and generating an interference pattern in response thereto;

a light receiver positioned on the mounting platform to detect the interference pattern; and

an alignment assembly mounted on the mounting platform for facilitating directing the light beam through the diffraction aperture.

5,543,917

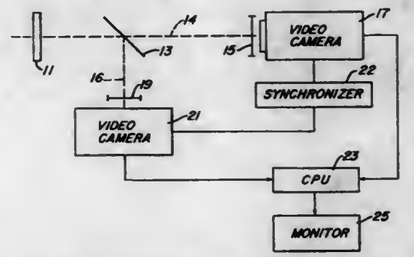
OBJECT DETECTOR

Boyd B. Bushman, Lewisville, Tex., assignor to Lockheed Martin Corporation, Fort Worth, Tex.

Filed Oct. 26, 1994, Ser. No. 329,338

Int. Cl.[6] G01J *4/00*

U.S. Cl. 356—364 **14 Claims**



1. A method for searching for selected man-made objects within shadows, comprising:

(a) polarizing visible light reflected from a field of view at a first angle to create a first image;

(b) digitizing the first image into a first set of pixels, the first set of pixels having values proportional to the light reflected from objects within the field of view when polarized at the first angle;

(c) digitizing visible light reflected from substantially the same field of view, but which has not been polarized at the first angle, into a second set of pixels to create a second image, the second set of pixels having values proportional to the light reflected from substantially the same field of view when not polarized at the first angle; then

(d) determining the difference in values of each of the first and second sets of pixels to determine a polarization contrast for each of the pixels of the first and second sets;

(e) selecting a range for the differences in values that has an upper level which substantially includes polarizing contrasts resulting from specular man-made objects located within shadows and a lower level which substantially excludes any polarizing contrasts resulting from natural background objects;

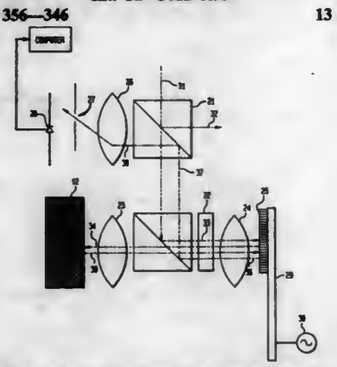
(f) determining if said difference in values are within the selected range; and, if so

(g) displaying only said difference in values which are within the selected range on a monitor.

5,543,918
THROUGH-THE-LENS CONFOCAL HEIGHT MEASUREMENT

David W. Abraham, Ossining, N.Y., and Danny C. Y. Wong, Ringwood, N.J., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 6, 1995, Ser. No. 369,828
Int. Cl.[6] G01B *11/24*
U.S. Cl. 356—346 **13 Claims**

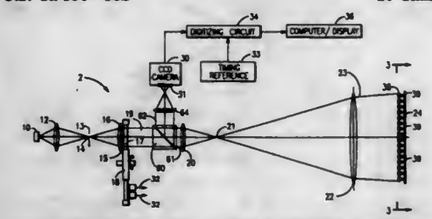


1. An apparatus for measuring a change in height of a surface comprising:
(a) optical means including stationary lenses for converging a light beam, having a beam axis and focus, onto said surface;
(b) means for continuously scanning the focus of said light beam perpendicularly across said surface along said beam axis;
(c) means for measuring intensity of light reflected from said surface during a scan of said focus;
(d) means for determining a maximum of the light intensity;
(e) means for assigning to said maximum of the light intensity a position of said scanning means;
(f) means for monitoring a change in said position of said scanning means assigned to said maximum; and
(g) means for correlating said change in said position of said scanning means to a change in the height of said surface.

5,543,919
APPARATUS AND METHOD FOR PERFORMING HIGH SPATIAL RESOLUTION THIN FILM LAYER THICKNESS METROLOGY

Peter B. Mumola, Huntington, Conn., assignor to Integrated Process Equipment Corp., Phoenix, Ariz.

Continuation of Ser. No. 64,316, May 14, 1993, abandoned. This application Sep. 20, 1994, Ser. No. 309,516
Int. Cl.[6] G01B *11/06*
U.S. Cl. 356—382 **20 Claims**

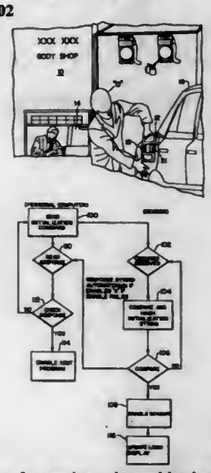


1. An apparatus for performing high resolution thickness metrology on a layer of material formed on a semiconductor wafer, wherein said layer has a front and a rear surface, and wherein said material of said layer has a property that allows radiation to be transmitted therethrough, said apparatus comprising:
(a) a white light source
(b) means for collimating said white light into a collimated beam;
(c) a plurality of narrow band filters for passing different wavelengths;
(d) means for sequentially placing said narrow band filters one at a time into said collimated beam to form a sequence of collimated monochromatic beams;
(e) lenslet array means for focusing said collimated monochromatic beam such that multiple sample points on a full aperture surface area of said front surface of said layer of material are irradiated in sequence with focused monochromatic light of differing wavelengths wherein said focused monochromatic radiation is reflected from said front and rear surfaces of said layer of material in interference fringe patterns at said multiple sample points and collected by said lenslet array and wherein said reflected monochromatic radiation from said multiple sample points has characteristics comprising said interference fringe reflectance patterns that correspond to the thickness of said layer of material;
(f) means for receiving said reflectance pattern from said reflected monochromatic radiation and for detecting said characteristics; and
(g) means for comparing said detected characteristics of said received monochromatic radiation with a set of reference characteristics that correspond to known thicknesses and for providing an output that corresponds to the thickness of said layer of material at said multiple sample points.

5,543,920
SYSTEM AND METHOD FOR SENSING COLOR AND PREVENTING USE OF UNAUTHORIZED COLOR FORMULATION SOFTWARE

John B. Collins, Westport, Conn., and Richard J. Knapp, New Paltz, N.Y., assignors to Kollmorgen Corporation, Waltham, Mass.

Division of Ser. No. 288,576, Aug. 10, 1994. This application Mar. 9, 1995, Ser. No. 401,216
Int. Cl.[6] G01J *3/46*
U.S. Cl. 356—402 **17 Claims**

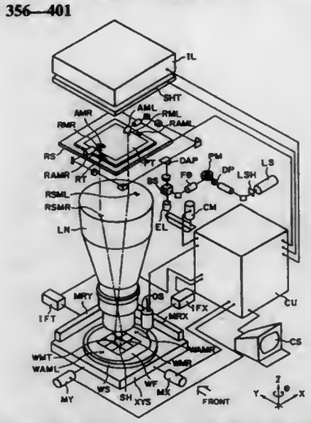


1. An apparatus for sensing color and having a security system for preventing use of unauthorized color formulation software contained at a remote computer, comprising
a sensor body,
color sensing means supported by the body for sensing and storing information about the color of a selected object,
sensor computing means stored in said sensor body for operating the color sensing means, said sensor computing means including firmware, said firmware having a hash code, and a hash function for operating on an initiation string generated from a remote computer,
a communication interface on the sensor body and operatively associated with said sensor computing means and color sensing means, said communication interface allowing connection between said sensor body and a remote computer having color formulations software resident therein, and
wherein said sensor computing means includes means for initiating said communication interface upon receipt of initialization command sent by a remote computer having color formulation software resident therein, and allowing transfer of color data from the sensor to a remote computer connected thereto only when a software initiation string as part of the initialization command is received from said remote computer which when operated on by said hash function produces said hash code stored in said firmware.

5,543,921
ALIGNING METHOD UTILIZING RELIABILITY WEIGHTING COEFFICIENTS

Shigeyuki Uzawa; Akiya Nakai; Masaaki Imaizumi, all of Tokyo; Hiroshi Tanaka; Noburu Takakura, both of Yokohama, and Yoshio Kaneko, Tokyo, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 139,059, Oct. 21, 1993, which is a continuation of Ser. No. 40,081, Mar. 30, 1993, abandoned, which is a continuation of Ser. No. 520,248, May 7, 1990, abandoned. This application Jun. 5, 1995, Ser. No. 465,098
Claims priority, application Japan, May 8, 1989, 1-115684
Int. Cl.[6] G01B *11/00*
U.S. Cl. 356—401 **13 Claims**

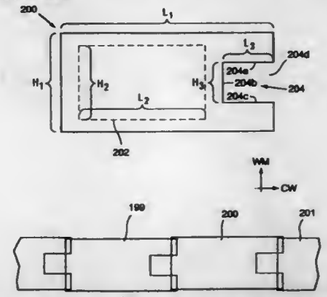


1. An aligning method for sequentially positioning different regions on a workpiece to a predetermined site, said method comprising the steps of:
detecting marks provided on selected regions on the workpiece to obtain corresponding mark signals and then measuring respective positional data related to the positions or positional errors of said selected regions, on the basis of the mark signals;
detecting the reliability of each measured positional data of a corresponding selected region, on the basis of the state of a corresponding mark signal or the state of that measured positional data;
preparing corrected position data related to the disposition of all the regions on the workpiece by using the measured positional data of the selected regions and design positional data of the selected regions, wherein, for preparation of the corrected positional data, each measured position data is weighted in accordance with the detected reliability thereof such that a measured positional data having high reliability is more influential to determine the corrected positional data; and
controlling movement of the workpiece, for sequential positioning of the different regions on the workpiece to the predetermined site, on the basis of the prepared corrected positional data, wherein a plurality of conditional propositions for evaluation of the mark signals or the respective states of the measured positional data of the selected regions, are prepared by use of fuzzy sets, and, on the basis of the result of fuzzy reasoning, the reliability of each measured positional data is detected.

5,543,922
METHOD AND APPARATUS FOR ON-PRESS COLOR MEASUREMENT

Steven Runyan, Los Altos, Calif.; James R. Cox, Richardson, Tex.; Mark R. Blais, Milpitas, and Donald A. Longerbeam, Fremont, both of Calif., assignors to Graphics Microsystems, Inc., Sunnyvale, Calif.

Filed Oct. 19, 1994, Ser. No. 325,052
Int. Cl.[6] G01J *3/50*
U.S. Cl. 356—402 **12 Claims**



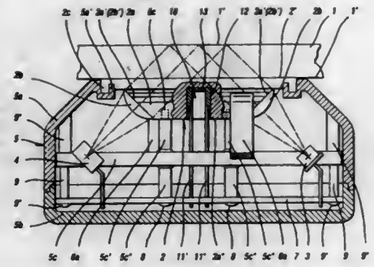
1. In a color measurement system wherein a printed substrate is driven past a measurement head, the printed substrate including a color bar having a plurality of color measurement patches arranged across the printed substrate, each of the color measurement patches having a color reference area centrally located thereon, the improvement comprising, each color measurement patch including a first predefined shape having the color reference area therein and a high contrast feature located proximate to an edge of the first shape.

5,543,923
SENSOR DEVICE

Jürgen Levers, Dortmund; Norbert Bendicks, Hemer; Ralf Boebel, Dortmund; Ludwig Feldmüller, Werdohl, and Berthold Esders, Schalksmühle, all of, Germany, assignors to Leopold Kostal GmbH & Co. KG, Luedenscheid, Germany

Filed Jan. 21, 1993, Ser. No. 7,252
Int. Cl.[6] G01W *1/14*
U.S. Cl. 356—445 **16 Claims**

1. A sensor device for detecting the degree of wetting of a transparent pane by drops of precipitation, comprising:
at least one beam guide element having a front surface affixed to an inner surface of the pane not exposed to the precipitation in an area covered by a motor-driven windscreen wiping device, a rear surface having a central region, and first and second faces, each face disposed substantially between the front and rear surfaces, the first face associated with a beam transmitter and the second face associated with a beam receiver in such a manner that beams emitted by the beam transmitter travel along beam paths in dependence upon the precipitation and are guided to the beam receiver which supplies a signal dependent upon the precipitation;



a heating apparatus for heating the at least one beam guide element; and

a non-metallic coupling medium for transferring heat from the heating apparatus to the at least one beam guide element;

wherein the central region of the rear surface of the at least one beam guide element defines a recess lying outside the beam paths adapted for receiving the heating apparatus and the coupling medium such that the heating apparatus and the coupling medium are entirely less than fully enclosed within the beam guide element and the at least one beam guide element is heated from the central region of the rear surface thereof.

5,543,924

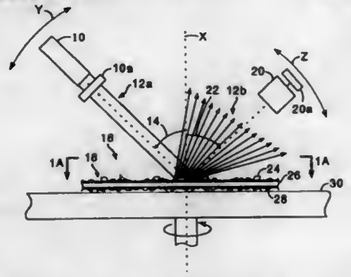
METHOD AND APPARATUS FOR EVALUATING PUMMELED GLASS

Roman Surowiec, Redford, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 5, 1995, Ser. No. 462,325

Int. Cl.[6] G01N *21/47*

U.S. Cl. 356—446 **10 Claims**



1. A method for determining the quality of adhesion between a glass substrate and a vinyl substrate in a laminated glazing comprising

pummeling a sample of the laminated glazing;

rotating the sample;

directing a collimated beam of white light onto the sample at a predetermined angle;

measuring light intensity reflected from the sample; and

correlating the measured light intensity with a standard light intensity corresponding to a known pummel adhesion value.

5,543,925

PLAYBACK APPARATUS WITH SELECTIVE USER PRESET CONTROL OF PICTURE PRESENTATION

Josef M. K. Timmermans, Hasselt, Belgium, assignor to U.S. Philips Corporation, New York, N.Y.

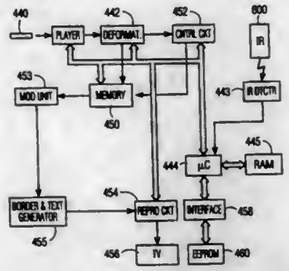
PCT No. PCT/NL91/00169, § 371 Date Jul. 16, 1993, § 102(e) Date Jul. 16, 1993, PCT Pub. No. WO92/05657, PCT Pub. Date Apr. 2, 1992

PCT Filed Sep. 13, 1991, Ser. No. 982,739

Claims priority, application European Pat. Off., Sep. 19, 1990, 90202487; Netherlands, Sep. 27, 1990, 9002110

Int. Cl.[6] H04N *9/79;5/76*

U.S. Cl. 358—310 **15 Claims**



1. A digitized picture playback apparatus for retrieving pictures from a digital data base medium in which digitized pictures and information defining first individual picture representation parameter settings have been stored, said digitized picture playback apparatus comprising:

a read unit for reading the digitized pictures from the digital data base medium;

a picture processing unit for converting the digitized pictures read by the read unit into a picture signal suitable for application to a reproduction apparatus for reproducing a visible representation of the picture signal, wherein the picture processing unit processes the digitized pictures in accordance with picture representation parameter settings supplied to the picture processing unit so as to cause amended presentations of the individual pictures on said reproduction apparatus;

first means for detecting, on said digital data base medium, a data base identification uniquely identifying the digital data base medium present in the digitized picture playback apparatus; and

manually operable entry means for entering second individual picture representation parameter settings,

characterized in that the apparatus further comprises:

means for reading, from the digital data base medium, said information defining said first individual picture representation parameter settings;

means for storing in a memory, together with a data base identification, differences between the respective information defining said first individual picture representation parameter settings stored in the digital data base medium and the second individual picture representation parameter settings entered via said entry means, said differences being information defining said second individual picture representation parameter settings for individual digitized pictures recorded on the digital data base medium identified by said data base identification;

second means for detecting whether, for said data base identification, information defining second individual picture representation parameter settings is stored in the memory; and

user controllable means, responsive to said second means for detecting, for selectively supplying the first or second individual picture representation parameter settings to the picture processing unit as said picture representation parameter settings.

5,543,926

RECORDING AND REPRODUCING APPARATUS

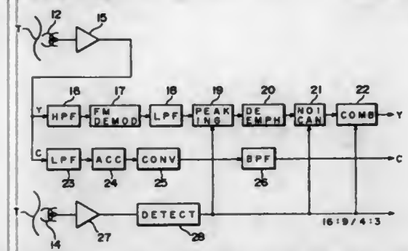
Tadashi Ezaki, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. No. 992,002, Dec. 17, 1992, Pat. No. 5,329,374. This application Jan. 13, 1994, Ser. No. 181,194

Claims priority, application Japan, Dec. 26, 1991, 3-345105

Int. Cl.[6] H04N *5/78*

U.S. Cl. 358—310 **22 Claims**



1. Apparatus for reproducing a first video signal having a first aspect ratio and a second video signal having a second aspect ratio higher than the first aspect ratio, comprising:

reproducing means for reproducing one of said first and second video signals as a reproduced video signal;

means for detecting a brightness signal of the reproduced video signal;

reproducing and detecting means for reproducing and detecting aspect ratio information of the reproduced video signal; and

noise cancelling means for cancelling noise components of the detected brightness signal, said noise cancelling means being capable of changing over the noise cancelling characteristic thereof in accordance with the aspect ratio information from said reproducing and detecting means.

5,543,927

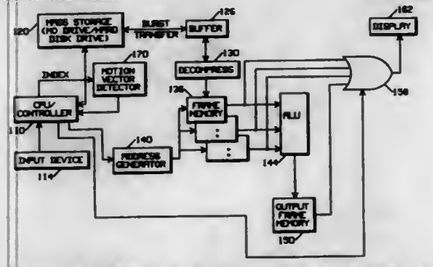
VARIABLE SPEED PLAYBACK OF DIGITAL VIDEO STORED IN A NON-TAPE MEDIA

William S. Herz, Newark, Calif., assignor to Sony Corporation, Tokyo, Japan, and Sony Electronics Inc., Park Ridge, N.J.

Filed Apr. 29, 1993, Ser. No. 54,579

Int. Cl.[6] H04N *9/79;5/78*

U.S. Cl. 358—312 **11 Claims**



1. A method for playback of video data at a speed greater than normal playback speed, comprising the steps of:

generating a sequence of output frames including a mixed frame, said mixed frame created by the step of averaging two consecutive frames of data on a pixel by pixel basis, said averaging including:

separating each pixel of said consecutive frames into Y, C_R, and C_B components;

averaging said Y components;

averaging said C_R components;

averaging said C_B components; and

converting said averaged Y, C_R, and C_B components into a two byte D1 (YC_R or YC_B) word; and

displaying said sequence of output frames.

5,543,928

DIGITAL RECORDING AND/OR REPRODUCING APPARATUS WHICH REARRANGES ERROR CORRECTION BLOCKS REPRESENTING VIDEO SIGNAL AND CORRESPONDING TO DATA BLOCKS OF IMAGE REPRESENTED BY VIDEO SIGNAL

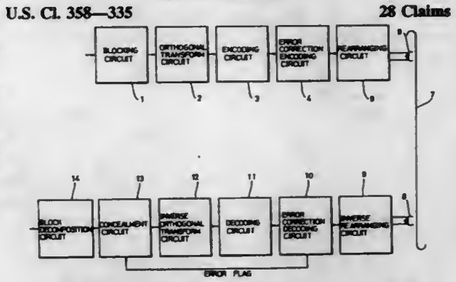
Eiichi Takakura, Chiba, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 17,293, Feb. 12, 1993, abandoned. This application Nov. 4, 1994, Ser. No. 334,103

Claims priority, application Japan, Feb. 14, 1992, 4-027618

Int. Cl.[6] H04N *5/76*

U.S. Cl. 358—335 **28 Claims**



1. A digital reproducing apparatus for digitally reproducing a recorded digital video signal, comprising:

means for detecting, at a changeable speed, error correction blocks recorded on tracks of a recording medium, each of said error correction blocks corresponding to one of a plurality of blocks which constitute an image on a display screen, said display screen being divided horizontally and/or vertically into N rectangular regions, and said error correction blocks being divided into N sets, each of said N sets corresponding to one of said N rectangular regions, and, error correction blocks in each set for each track being consecutively recorded and each pair of consecutively recorded error correction blocks having corresponding blocks of said display screen which are adjacent

means for rearranging said detected error correction blocks into an original order which was established prior to recording;

means for reconstructing fixed length blocks, which were formed at the time of recording, by applying an error correction process to said rearranged error correction blocks and thereby correcting an error generated at the time of reproduction;

means for decoding a digital video signal for each of said reconstructed fixed length blocks; and

means for restoring the arrangement of said digital video signal, which was established at the time of recording, based on said decoded digital video signal for each of said reconstructed fixed length blocks.

5,543,929

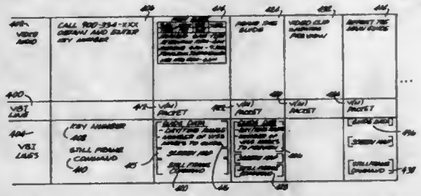
TELEVISION FOR CONTROLLING A VIDEO CASSETTE RECORDER TO ACCESS PROGRAMS ON A VIDEO CASSETTE TAPE

Roy J. Mankovitz, Encino, Calif.; Yee K. Ng, Hong Kong, Hong Kong, and Daniel S. Kwoh, La Canada, Calif., assignors to E. Guide, Inc., Beverly Hills, Calif.

Filed Oct. 20, 1993, Ser. No. 140,211

Int. Cl.[6] H04N 5/76;7/00;11/00

U.S. Cl. 358—335 19 Claims



1. A method for controlling a video cassette recorder from a television to access programs on a video cassette tape, the method comprising the steps of:

broadcasting a television signal for a first length of time, the television signal having an initialization message to instruct a user to enter a key number, broadcasting a second key number in the vertical blanking interval of the television signal, and broadcasting a still frame indication in the vertical blanking interval of the television signal;

broadcasting the television signal for a second length of time, the television signal having a first index mark in the vertical blanking interval near the beginning of the second length and a second index mark in the vertical blanking interval near the end of the second length, a guide to broadcast programs between the first and second index marks, guide data associated with the guide broadcast between the first and second index marks, the guide data including for each program contained in the guide a number of index marks either forward or backward in the broadcast from between the first and second index marks to the program, and broadcasting a still frame command near the second index mark; and

broadcasting the television signal for a third length of time, the television signal having a plurality of programs, each program having a third index mark broadcast in the vertical blanking interval near the beginning of the program and a fourth index mark broadcast in the vertical blanking interval near the end of the program.

5,543,930

VIDEO DATA MANAGEMENT METHOD AND APPARATUS

Hajime Takano, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 17, 1994, Ser. No. 197,828

Claims priority, application Japan, Feb. 18, 1993, 5-028346

Int. Cl.[6] H06N 5/917

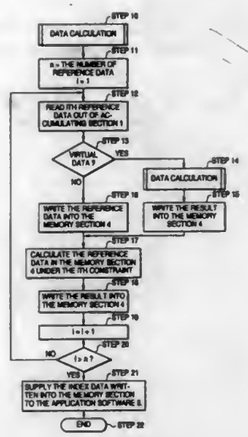
U.S. Cl. 358—335 5 Claims

1. A video data management method, where virtual data having a reference section for indicating the data to be referred to and a constraint section indicating the manner in which the reference data are to be processed are held as video data, comprising:

a first step to read out designated video data;

a second step to obtain index data, when the video data read out are virtual data, by processing said reference data as indicated by said constraint section; and

a third step to supply said index data as video data.



5,543,931

APPARATUS FOR AND METHOD OF REPRODUCING DIGITAL VIDEO SIGNALS AT A VARIED SPEED

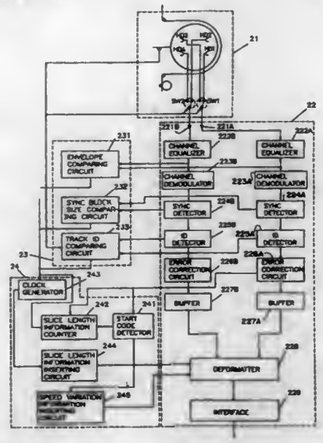
Je H. Lee, and Choon Lee, both of Seoul, Rep. of Korea, assignors to Goldstar Co., Ltd., Seol, Rep. of Korea

Filed May 5, 1994, Ser. No. 238,313

Claims priority, application Rep. of Korea, May 18, 1993, 8497/1993

Int. Cl.[6] H04N 5/765

U.S. Cl. 358—335 9 Claims



1. An apparatus for reproducing digital video signals at a varied speed, comprising:

a digital video signal transmitter for recording the maximum one of coded length information of macroblocks included in each one of slices corresponding to an input digital video signal on each corresponding slice header and transmitting it together with the macroblocks;

a digital video cassette tape recorder for detecting the position of a discontinuous interval of each discontinuous-interval-involving one of the slices transmitted from the transmitter via a transmission channel in a speed-varied reproduction mode, and inserting slice condition information and slice length information generated at the detected discontinuous interval position in each corresponding slice header, thereby formatting the information together with digital video signals for the slice; and

a digital video signal receiver for decoding the digital video signals for each slice reproduced in the digital video cassette tape recorder up to a macroblock just preceding a macroblock involving the discontinuous interval by use of the maximum coded length information, slice condition information and slice length information reproduced in the digital video cassette tape recorder.

5,543,932

DIGITAL VIDEO SIGNAL RECORDING APPARATUS AND DIGITAL VIDEO SIGNAL REPRODUCING APPARATUS

Ching Fang Chang; Naofumi Yanagihara, both of Tokyo; Jun Yonemitsu; Katsumi Tahara, both of Kanagawa; Yoichi Yagasaki, Tokyo, and Teruhiko Suzuki, Chiba, all of, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 24, 1994, Ser. No. 248,176

Claims priority, application Japan, May 31, 1993, 5-152837; Jul. 13, 1993, 5-195533

Int. Cl.[6] H04N 5/926;5/937

U.S. Cl. 358—335 17 Claims

PSP	PRIORITY CLASS	DATA CONTAINED IN PRIORITY CLASS
65	0	SEQUENCE; GOP; ALL DATA OF PICTURE LAYER; DATA OF SLICE LAYER (UNTIL PSP)
66	1	MACRO-BLOCK DATA FROM MB STUFFING TO MB TYPE
67	2	DATA UNTIL FIRST MOTION VECTOR
68	3	REMAINING MOTION VECTOR
0	4	MACRO-BLOCK DATA FROM CBP TO DC COEFFICIENT OR FIRST COEFFICIENT (NON-ZERO) IN ZIGZAG SCANNING SEQUENCE
1	5	FIRST NON-ZERO COEFFICIENT PRECEDED BY DC COEFFICIENT IN ZIGZAG SCANNING SEQUENCE OR FIRST COEFFICIENT
2	6	SECOND NON-ZERO COEFFICIENT PRECEDED BY DC COEFFICIENT IN ZIGZAG SCANNING SEQUENCE OR FIRST COEFFICIENT
j	j+4	J-TH NON-ZERO COEFFICIENT PRECEDED BY DC COEFFICIENT IN ZIGZAG SCANNING SEQUENCE OR FIRST COEFFICIENT

1. A digital video signal recording apparatus for directly recording a compressed transmission image signal on a magnetic tape, the image signal being divided into an in-frame encoded frame and a forward or bi-directional predict encoded frame that are categorized as a high priority packet and a standard priority packet, data of the in-frame encoded frame being contained in the high priority packet, comprising:

surplus record area forming means for causing the transmission rate of the high priority data to be lower than the transmission rate of the conventional compressed digital video signal so as to form a surplus record area; and

recording means for redundantly recording the high priority data in the surplus area formed by said surplus record area forming means.

5,543,933

RESERVE-RECORDING METHOD AND APPARATUS FOR VCR

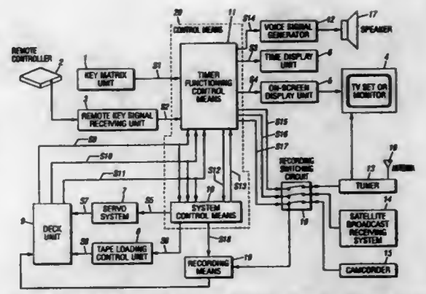
Yong S. Kang, Kyungki; Yong K. Oh, Seoul; Se L Cha, and Chul S. Lee, both of Kyungki-do, all of, Rep. of Korea, assignors to Gold Star C., Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 780,118, Oct. 21, 1991, abandoned. This application Feb. 21, 1995, Ser. No. 391,626

Claims priority, application Rep. of Korea, Oct. 20, 1990, 16778/1990; Oct. 20, 1990, 16782/1990; Dec. 28, 1990, 22165/1990; Dec. 28, 1990, 22314/1990

Int. Cl.[6] H04N 5/76;5/78

U.S. Cl. 358—335 4 Claims



1. A method of reserve-recording a desired program on a videotape in a VCR, said VCR having a plurality of recording speed modes, a voice signal generator, and an on-screen display, and said video tape having a known recordable capacity for each of said recording speed modes, comprising the steps of:

(a) indicating a state of the recordable capacity of said video tape through said voice signal generator and said on-screen display in response to an inputted first key signal designating a reserve-recording program setting mode;

(b) setting reserve-recording information for a recording reservation for the desired program in response to an inputted second key signal, said recording reservation including a start time for recording of the desired program;

(c) setting a reserve-recording mode by determining a source of said desired program in response to an inputted third key signal, said source being one of a plurality of external devices, said external devices including a television tuner and a satellite broadcast receiving system;

(d) comparing said start time for recording of the desired program with a recording start time of each of a group of previously reserved programs having reserve-recording information, and sorting said recording reservation and said previously reserved programs in chronological progression according to said start times to form a new group of reserved programs each having a number, said new group having at least an earliest program such that said earliest program has the lowest number and is recorded first;

(e) automatically displaying said reserve-recording information of said desired programs through the on-screen display at a predetermined time prior to the start time of the recording reservation of the desired program if the VCR is in use and requesting an input from a user to determine whether the recording reservation should be performed;

(f) if an input is received from the user indicating the recording reservation should not be performed, cancelling the recording reservation, and if an input is received from the user indicating the recording reservation should be performed, or if no input is received from the user, determining the reserve-recording mode, forming a recording line between the VCR and the source, and

recording the desired program at the start time of the recording reservation of the desired program.

5,543,934

APPARATUS AND METHOD FOR RESPECTIVELY RECORDING DIGITAL VIDEO AND AUDIO SIGNALS IN BOTH ENDS PORTIONS AND MIDDLE PORTION OF EACH INCLINED TRACK OF MAGNETIC TAPE

Koso Takeuchi, Osaka, and Kunio Suesada, Ikoma, both of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

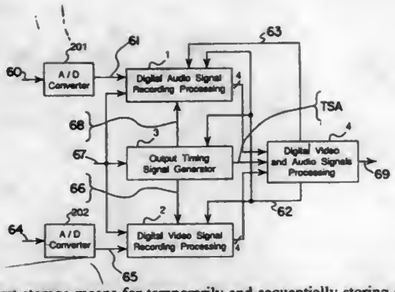
Filed Apr. 25, 1994, Ser. No. 231,846

Claims priority, application Japan, Apr. 26, 1993, 5-099114

Int. Cl.[6] H04N 5/7826

U.S. Cl. 358—341 6 Claims

1. An apparatus for recording inputted digital video and audio signals of one field, which are synchronous with each other, onto a plurality of inclined tracks of a magnetic tape using a plurality sets of helical scan type magnetic heads provided in a rotation head drum at predetermined angle intervals, comprising:



first storage means for temporarily and sequentially storing said inputted digital video signal therein;

second storage means for temporarily and sequentially storing said inputted digital audio signal therein;

read clock generating means for generating a read clock;

first read address generating means for generating a read address of said first storage means based on said read clock generated by said read clock generating means, so that said inputted digital video signal is read out and recorded through said magnetic heads onto both end portions of each of said inclined tracks of said magnetic tape, after starting recording said inputted digital video signal of one field onto an end of said inclined track, and ending recording said inputted digital video signal of one field onto another end of the other inclined track;

second read address generating means for generating a read address of said second storage means based on said read clock generated by said read clock generating means, so that said inputted digital audio signal is read out and recorded through said magnetic heads onto the middle portion of each of said inclined tracks of said magnetic tape; and

recording means for combining said digital video signal and said digital audio signal respectively read out from said first and second storage means and for recording onto said magnetic tape.

5,543,935

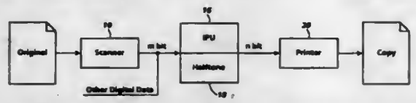
HALFTONING METHOD USING SPACE FILLING CURVES

Steven J. Harrington, Holley, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 18, 1994, Ser. No. 342,064

Int. Cl.[6] H04N *1/41;1/40*

U.S. Cl. 358—429 **10 Claims**



1. A printing system, including a processor preparing documents for printing, said documents including a set of image signals describing optical density with c density levels, while a destination printer is capable of rendering density with d density levels where c and d are integers greater than zero, comprising:

a printer, adapted to print the document;

a source of image signals each image signal representing optical density with one of c levels for a discrete area of the document indexed by pixel position x and scan line position y;

a halftone processor operatively connected to said source of image signals and reducing the number of levels c representing optical density to a number of levels d representing optical density including

a first memory storing an ordered set of threshold values T, indexable by a length along a predetermined space filling curve;

a second memory storing a set of unexpanded space filling curve lengths mod M, where x and y are real numbers, indexed by pixel and scan line position;

a third memory storing a set of expanded space filling curve lengths Mod M, indexed by pixel and scan line position;

a fourth memory storing a set of direction indicators;

direction transformation circuit determining modified x, y coordinates indicated by a direction indicator and corresponding to a change in orientation of a space filling curve, producing a pixel and scan line position indicator to the third memory;

a calculating circuit determining a threshold value T to be applied to a selected image signal x,y by adding the length mod M of the unexpanded portion of curve leading to the section containing the pixel to the indexed, direction-transformed expanded space filling curve length mod M to obtain a length L, number, for the selected image signal x,y, and using said value to index said first memory to retrieve T(x,y), where T(x,y) is the threshold value for a particular x, y position;

a comparator, comparing the image signal at position x,y with threshold value T(x,y) to determine an output signal that is one of d levels representative of the original image signal at position x,y;

an image processor directing signals processed at said halftone processor to said printer to print said halftoned image.

5,543,936

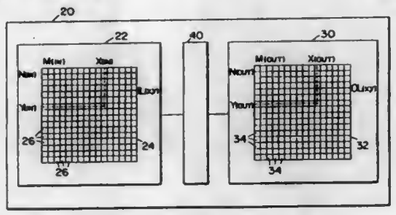
IMAGE ADJUSTMENT SYSTEM FOR TRANSLATING RAW INPUT LEVELS TO ADJUSTED INPUT LEVELS

Robert A. Ulichney, Stow, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Oct. 15, 1992, Ser. No. 961,558

Int. Cl.[6] H04N *1/40*

U.S. Cl. 358—456 **27 Claims**



1. Image adjustment comprising:

means, responsive to a desired contrast and intensity of an output image and to a sense of an output device, for translating a first plurality of raw input levels of an input device to a second, different plurality of adjusted input levels; and

a memory, for storing said second plurality of adjusted input levels.

5,543,937

APPARATUS FOR RECORDING AND PLAYING BACK DIGITAL DATA

Shinji Hamai, Osaka; Akira Iketani, Higashiosaka; Chiyoko Matsumi, Suita; Tatsuro Juri, Osaka; Masazumi Yamada, Moriguchi; Yasunori Kawakami, and Yuuzon Murakami, both of Osaka, all of, Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

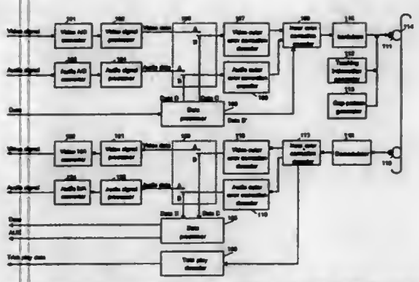
Filed May 2, 1994, Ser. No. 235,956

Claims priority, application Japan, May 14, 1993, 5-112852; Aug. 25, 1993, 5-210169; Oct. 4, 1993, 5-247908; Nov. 17, 1993, 5-287937; Nov. 17, 1993, 5-288030

Int. Cl.[6] H04N *5/783*

U.S. Cl. 358—341 **48 Claims**

1. An apparatus for recording a video signal and an audio signal in a video signal recording area and an audio signal recording area, respectively, on a recording medium, and of playing back said video and audio signals from said recording areas, comprising;



a first data-processing means which, when digital data is entered and to be recorded, processes said digital data to organize first and second blocks;

a recording means for recording said first blocks in said video signal recording area on said recording medium and recording said second blocks in said audio signal recording area on said recording medium;

a playback means which, when said digital data is read out, reads the first blocks from said video signal recording area and reads said second blocks from said audio signal recording area; and

a second data-processing means for constituting main data and auxiliary data from said first and second blocks, and outputting said main data and said auxiliary data.

5,543,938

FACSIMILE APPARATUS AND METHOD FOR TRANSMITTING INFORMATION TO A PLURALITY OF DESTINATIONS

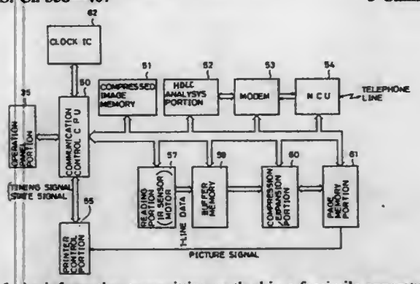
Shigenobu Fukushima, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 985,224, Dec. 2, 1992, abandoned, which is a continuation of Ser. No. 487,770, Mar. 2, 1990, abandoned. This application Aug. 4, 1994, Ser. No. 285,885

Claims priority, application Japan, Mar. 4, 1989, 1-52582

Int. Cl.[6] H04N *1/32*

U.S. Cl. 358—407 **3 Claims**



1. An information transmitting method in a facsimile apparatus, comprising:

a first step of reading out image information of an original to be transmitted;

a second step of accepting an entry for specifying at least one destination to which the image information is to be transmitted;

a third step of storing the read-out information in storage means;

a fourth step of transmitting the stored image information to each of the at least one destination specified by the entry in said second step, said stored image information being retained in said storage means after said transmission to each of said at least one destination is completed;

a fifth step of accepting, after said fourth step has been completed, an operation entry of a manually operated input key for specifying a further destination to which the image information retained in said storage means in said fourth step is to be transmitted, said further destination being different from any of said at least one destination specified by the entry in said second step and being a destination that was not specified prior to the transmission of the stored image information in said fourth step;

a sixth step of transmitting the image information retained in said storage means in said fourth step to the further destination specified by the entry in the fifth step without repeating said first and third steps; and

a seventh step of erasing said image information retained in said storage means in said fourth step in association with an operation for transmitting image information of a subsequent original,

wherein said fifth step can be performed at any time after said fourth step and before said seventh step.

5,543,939

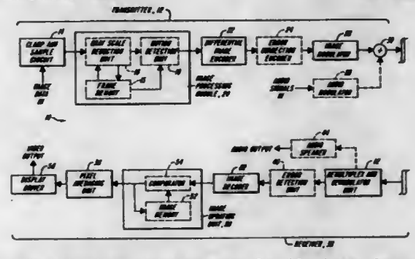
VIDEO TELEPHONE SYSTEMS

Robert L. Harvey, Lexington; Patrick R. Hirschler-Marchand, Concord, both of Mass.; David J. Cipolle, Newton, N.H., and Kinton C. Kumler, Lincoln, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 635,986, Dec. 26, 1990, abandoned, which is a continuation-in-part of Ser. No. 458,282, Dec. 28, 1989, abandoned. This application Sep. 2, 1994, Ser. No. 300,587

Int. Cl.[6] H04N *1/41;1/40;7/12;11/02*

U.S. Cl. 358—426 **43 Claims**



1. In a signal processing apparatus for video image data compression, a system comprising:

dithered thresbold means for applying dithered threshold values to a multiple-level grey-scale image to convert said multiple grey-scale image into a reduced-level grey-scale image, the dithered threshold values varying spatially across an image and temporally across plural images;

storage means for storing a reference reduced grey-scale image derived from image pixel values;

comparison means for comparing a reduced grey-scale image of a current image frame with a reference image from said storage means, and for generating a luminance difference signal representative of the changes in reduced grey-scale pixel values between image frames;

encoding means for encoding said difference signal for transmission through a transmission system;

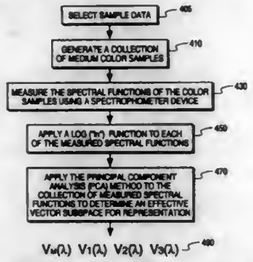
decoding means; and

reconstruction means for generating an expanded grey-scale image from the luminance difference signal having expanded levels from the reduced grey-scale image pixel values with substantially the same number of pixel values as in the reduced grey-scale image by averaging pixel values of respective blocks of pixel values, a different block of pixel values for each expanded pixel value defined by a shifting window over pixel values of the reduced grey-scale image.

5,543,940
METHOD AND APPARATUS FOR CONVERTING COLOR SCANNER SIGNALS INTO COLORIMETRIC VALUES

Doron Sherman, Palo Alto, Calif., assignor to Electronics For Imaging, San Mateo, Calif.

Filed Feb. 2, 1994, Ser. No. 190,871
Int. Cl.[6] G02F *1/1333*
U.S. Cl. 358—518 **30 Claims**



1. A method of converting scanner signals from a scanner scanning an original on a medium into colorimetric signals, said method comprising the steps of:

(a) selecting a medium type representative of said medium of said original;

(b) producing a medium model for said medium type, said medium model having a set of basis spectral functions and parameters, said basis spectral functions determined by said medium type;

(c) producing a scanner model for said scanner;

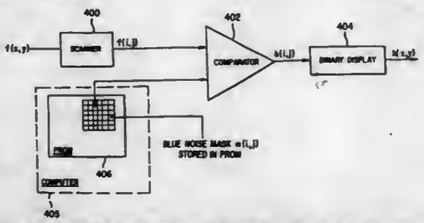
(d) determining said parameters of said medium model from said scanner signals using said scanner model; and

(e) determining a medium spectrum from said parameters using said medium model, said medium spectrum corresponding to said original on said medium and representing a conversion of said scanner signals.

5,543,941
METHOD AND APPARATUS FOR HALFTONE RENDERING OF A GRAY IMAGE USING A BLUE NOISE MASK

Kevin J. Parker, Rochester, N.Y., and Theophano Mitsa, Iowa City, Iowa, assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

Continuation of Ser. No. 801,921, Dec. 3, 1991, Pat. No. 5,341,228, which is a continuation-in-part of Ser. No. 622,056, Dec. 4, 1990, Pat. No. 5,111,310. This application May 31, 1994, Ser. No. 251,140
The portion of the term of this patent subsequent to May 5, 2009, has been disclaimed.
Int. Cl.[6] H04N *1/46*
U.S. Cl. 358—534 **11 Claims**

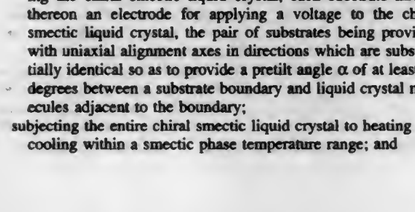


1. A method for the halftoning of color images which comprises the step of utilizing, in turn, a pixel-by-pixel comparison of each of a plurality of color planes of said color image against a mask in which the mask comprises a non-determinate, non-white noise single valued function which is designed to provide visually pleasing dot profiles when thresholded and wherein said step of utilizing said pixel-by-pixel comparison is used to produce a halftoned image.

5,543,942
LCD MICROLENS SUBSTRATE WITH A LENS ARRAY AND A UNIFORM MATERIAL BONDING MEMBER, EACH HAVING A THERMAL RESISTANCE NOT LOWER THAN 150°C

Yoshihiro Mizuguchi, Tenri; Hiroshi Hamada, Nara; Shigeru Aoyama, Kyoto, and Tsukasa Yamashita, Nara, all of, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, and Omron Corporation, Kyoto, both of, Japan

Filed Dec. 15, 1994, Ser. No. 356,553
Claims priority, application Japan, Dec. 16, 1993, 5-317145; Dec. 9, 1994, 6-306650
Int. Cl.[6] G02F *1/1335;1/1333*
U.S. Cl. 359—40 **17 Claims**



1. A microlens substrate comprising:

a first transparent substrate;

an array of converging members for converging incident light, said converging members being made of a material having thermal resistance to high temperatures not lower than 150° C. and being arranged on said first transparent substrate;

a second transparent substrate placed on said converging members; and

a bonding member, made of a uniform material having thermal resistance to high temperatures not lower than 150° C., for bonding said converging members and said second transparent substrate.

5,543,943
CHIRAL SMECTIC DEVICE SUBJECTED TO A SIMULTANEOUS THERMAL AND AC FIELD TREATMENT

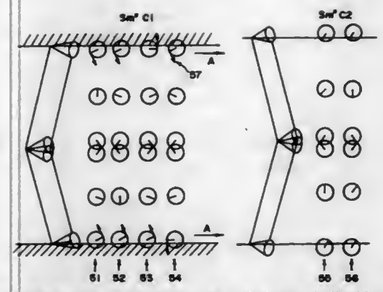
Yukio Hanyu; Akira Tsuboyama, both of Atsugi; Osamu Taniguchi, Chigasaki; Tadashi Mihara, Isehara; Katsutoshi Nakamura, Atsugi, and Sunao Mori, Atsugi, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 7,794, Jan. 22, 1993, abandoned.
This application Nov. 6, 1995, Ser. No. 554,031
Claims priority, application Japan, Jan. 24, 1992, 4-032816; Jan. 30, 1992, 4-040211
Int. Cl.[6] G02F *1/13;1/1343;1/1337*
U.S. Cl. 359—43 **10 Claims**

1. A treatment method for a chiral smectic liquid crystal device, comprising the steps of:

providing a chiral smectic liquid crystal device comprising a chiral smectic liquid crystal and a pair of substrates sandwiching the chiral smectic liquid crystal, each substrate having thereon an electrode for applying a voltage to the chiral smectic liquid crystal, the pair of substrates being provided with uniaxial alignment axes in directions which are substantially identical so as to provide a pretilt angle α of at least 10 degrees between a substrate boundary and liquid crystal molecules adjacent to the boundary;

subjecting the entire chiral smectic liquid crystal to heating and cooling within a smectic phase temperature range; and



applying an AC electric field to the chiral smectic liquid crystal during the heating or cooling.

5,543,944
METHOD OF IMBIBING A COMPONENT INTO A LIQUID CRYSTAL COMPOSITE

Robert H. Reamey, Palo Alto, and Kevin Malloy, Belmont, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Oct. 31, 1994, Ser. No. 333,006
Int. Cl.[6] G02F *1/1333;1/13;* C09K *19/52;19/60*
U.S. Cl. 359—51 **28 Claims**



1. A method of making a liquid crystal composite comprising plural volumes of a liquid crystal material and a component dispersed in a containment medium, comprising the steps of:

(a) forming volumes of the liquid crystal material in said containment medium; and

(b) imbibing the component into the liquid crystal material in the volumes by placing a solution of the component and a liquid crystal material into contact with said containment medium.

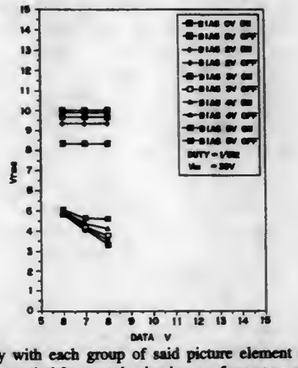
5,543,945
METHOD OF DRIVING AN LCD EMPLOYING COMBINING TWO VOLTAGES WHICH CHANGE POLARITY AT DIFFERENT TIMES IN A FRAME

Yuji Kimura, Yokohama; Eiichi Ohta, Kawasaki; Hitoshi Kondo, Machida; Masaetsu Takahashi, Yokohama; Kenji Kameyama, Sagamihara, and Katsuyuki Yamada, Mishima, all of, Japan, assignors to Rioch Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 834,212, Feb. 12, 1992, abandoned.
This application Jun. 8, 1994, Ser. No. 257,437
Claims priority, application Japan, Feb. 14, 1991, 3-042645; Sep. 2, 1991, 3-248232
Int. Cl.[6] G02F *1/1343;* G09G *3/36*
U.S. Cl. 359—55 **6 Claims**

1. A method of operating an active matrix liquid crystal display device, said display device comprising, a pair of substrates, a liquid crystal layer sandwiched by the pair of said substrates, a plurality of picture element electrodes disposed in groups and disposed on at least one of said substrates, at least one active device disposed on each of said picture element electrodes, said method comprising the steps of:

applying a driving voltage to each of said picture element electrodes, said applied driving voltage being identical in polarity with each group of said picture element electrodes during a period from a selection in a n_{th} frame to a selection in a $(n+1)_{th}$ frame, said each group of picture element electrodes corresponding to one scanning line;



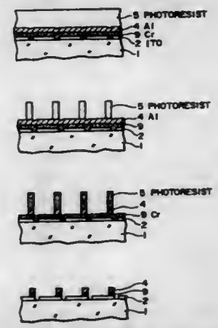
adding a constant voltage being identical in polarity with said driving voltage at all times to said each group of picture element electrodes; and

inverting said polarity of said applied driving voltage on every one of said selections in said frames, said selection for defining a timing for an inversion of said polarity of said applied driving voltage, wherein said timing for said inversion is shifted on every one of said scanning lines.

5,543,946
LIQUID CRYSTAL DEVICE AND DISPLAY APPARATUS WITH MULTILAYER ELECTRODES

Takashi Enomoto, Zama; Toshifumi Yoshioka, Hiratsuka, and Naoya Nishida, Hadano, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 75,348, Jun. 14, 1993, abandoned, which is a continuation of Ser. No. 906,454, Jun. 30, 1992, abandoned, which is a division of Ser. No. 658,501, Feb. 21, 1991, Pat. No. 5,150,233. This application Feb. 9, 1995, Ser. No. 386,177
Claims priority, application Japan, Feb. 26, 1990, 2-042611
Int. Cl.[6] G02F *1/1343;1/13*
U.S. Cl. 359—87 **5 Claims**



1. A process for producing an electrode plate comprising a patterned indium tin oxide film having thereon an aluminum-based metal wiring disposed via a molybdenum alloy layer, comprising the steps of:

(a) forming an indium tin oxide film on a glass substrate and patterning the film into a prescribed pattern according to a photolithographic process;

(b) coating the indium tin oxide film in the prescribed pattern on the glass substrate successively with a first metal film of an alloy of molybdenum with an additive metal selected from the group consisting of Ta, Ti, Si, Cr, V, Nb and W to control the etching speed of said first metal film, and a second metal film of aluminum or an aluminum alloy having a thickness larger than that of said first metal film;

(c) coating the second metal film with a photoresist film, exposing the photoresist film in a prescribed pattern, and developing the photoresist film with an alkaline developer to expose a part of the second metal film; and

(d) etching the exposed part of the second metal film and the first metal film therebelow with a single etchant at substantially equal etching speeds.

5,543,947

METHOD OF DRIVING AN LCD EMPLOYING AN ACTIVE MATRIX WITH SHORT PULSES FOR GRAY SCALE

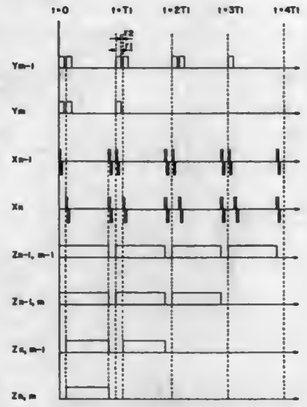
Akira Mase, Aichi; Masaaki Hiroki; Yasuhiko Takemura, both of Kanagawa, and Shunpei Yamazaki, Tokyo, all of, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Division of Ser. No. 885,738, May 19, 1992, abandoned. This application May 10, 1994, Ser. No. 240,499

Claims priority, application Japan, May 21, 1991, 3-145566; Apr. 14, 1992, 4-120142

Int. Cl.[6] G02F *1/133*

U.S. Cl. 359—84 **8 Claims**



1. A method of driving an active matrix type liquid crystal display device having a liquid crystal layer, a plurality of pixel electrodes arranged in the form of matrix, each of which electrodes is provided with a switching element for applying an electric field to said liquid crystal layer, said method comprising the steps of:

scanning said switching elements with scan signals a predetermined number of times within a unit time;

supplying data signals to predetermined ones of said switching elements during said scanning in order to apply an ON electric field thereto in the form of pulses to said liquid crystal layer through associated ones of said pixel electrodes,

wherein the duration of each of said pulses is short enough so that liquid crystal molecules in said liquid crystal layer can not completely follow the applied pulses, and the number of data signals supplied to the switching element in the unit time is a function of the desired tone of an image to be exhibited by said liquid crystal device.

5,543,948

THERMOPLASTIC SATURATED NORBORNENE RESIN PHASE PLATE

Nobukazu Takahashi; Tsutomu Hani; Teiji Kohara, and Tadao Natsuume, all of Kanagawa, Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

PCT No. PCT/JP92/00803, § 371 Date Dec. 20, 1993, § 102(e) Date Dec. 20, 1993, PCT Pub. No. WO93/00598, PCT Pub. Date Jan. 7, 1993

PCT Filed Jun. 24, 1992, Ser. No. 167,949

Claims priority, application Japan, Jun. 25, 1991, 3-178891

Int. Cl.[6] G02F *1/1335;1/1333*

U.S. Cl. 359—73 **9 Claims**

1. A phase plate comprising, as a birefringent layer, a film obtained by uniaxially stretching and orienting a sheet of a thermoplastic saturated norbornene resin at a draw ratio within a range of 1.3–10 times, wherein the thermoplastic saturated norbornene resin has a number average molecular weight ranging from 25,000 to 100,000 and a glass transition temperature of 90° C. or higher, and the sheet is formed from the thermoplastic saturated norbornene resin in accordance with a melt-extrusion process making use of a T-die and has a thickness ranging from 50 to 500 μm.

5,543,949

LCD POLYMER ORIENTING FILM WITH A DIPOLE MOMENT GREATER THAN 20 DEBYE AND IS BOUND TO THE SUBSTRATE SURFACE THROUGH A SURFACE TREATING AGENT

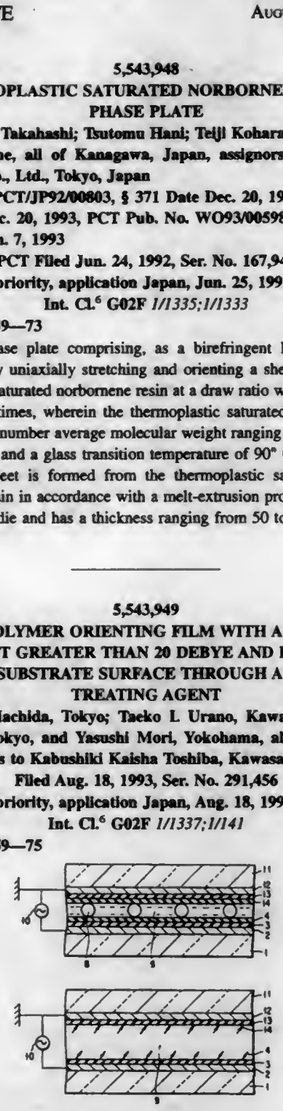
Shigeru Machida, Tokyo; Taeko L Urano, Kawasaki; Kenji Sano, Tokyo, and Yasushi Mori, Yokohama, all of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 18, 1993, Ser. No. 291,456

Claims priority, application Japan, Aug. 18, 1993, 5-203972

Int. Cl.[6] G02F *1/1337;1/141*

U.S. Cl. 359—75 **8 Claims**



1. A liquid crystal device comprising:

two substrates, each substrate having an inner and an outer surface, the substrates positioned opposite and substantially parallel to one another such that the inner surfaces are in closer proximity than the outer surfaces;

a surface treating agent layer, the layer formed by chemically treating the inner surface of each respective substrate;

a liquid crystal orienting film bound to the inner surface of each substrate through the surface treating agent layer, the liquid crystal orienting film of at least one of the two substrates constituted by a polymer, the polymer having a dipole moment of not less than 20 debye; and

a liquid crystal sealed between the substrates, such that when a voltage is applied to the liquid crystal orienting film, alignment of molecules in the liquid crystal orienting film is disturbed.

5,543,950

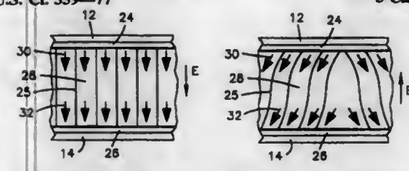
LIQUID CRYSTALLINE ELECTROOPTICAL DEVICE

Oleg D. Lavrentovich, Kent, Ohio, and Vasili G. Nazarenko, Kiev, Ukraine, assignors to Kent State University, Kent, Ohio

Filed May 4, 1995, Ser. No. 434,777

Int. Cl.[6] G02F *1/1337;1/137*

U.S. Cl. 359—77 **8 Claims**



1. An electrooptical light modulating device comprising

a liquid crystalline material disposed between first and second opposing cell wall structures and comprising liquid crystal of positive dielectric anisotropy,

wherein said first cell wall structure is treated with a first aligning material to homeotropically align liquid crystal molecules of the material and said second cell wall structure is treated with a second aligning material that is different from said first aligning material to homeotropically align liquid crystal molecules of the material, whereby said liquid crystal exhibits a unipolar electrooptic effect in the presence of an electric field.

5,543,951

METHOD FOR RECEIVE-SIDE CLOCK SUPPLY FOR VIDEO SIGNALS DIGITALLY TRANSMITTED WITH ATM IN FIBER/COAXIAL SUBSCRIBER LINE NETWORKS

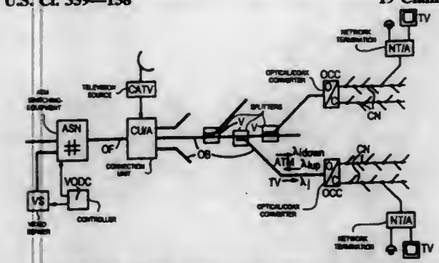
Karl-Heinz Moehrmann, Munich, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Feb. 19, 1995, Ser. No. 386,466

Claims priority, application European Pat. Off., Mar. 15, 1994, 94104201

Int. Cl.[6] H04B *10/00;* H04J *14/08;3/24*

U.S. Cl. 359—158 **19 Claims**



1. A method for a receive-side clock supply for digital signals, comprising the steps of:

transmitting digital signals from at least one digital signal source via a connection unit and via at least one of a light waveguide tree network and/or coaxial line tree network, shared respectively in common by a plurality of subscriber-side network termination units, to the subscriber-side network termination units in the form of ATM signals;

transmitting a signal clock, separate from the ATM digital signals, at least from the connection unit to each of the network termination units connected to the light waveguide tree network and/or coaxial line tree network; receiving the transmitted clock signal and the transmitted ATM signals in each of the network termination units; and time-regenerating, using the received clock signal, the digital signals acquired from received ATM cells in the received ATM signals in the network termination units.

5,543,952

OPTICAL TRANSMISSION SYSTEM

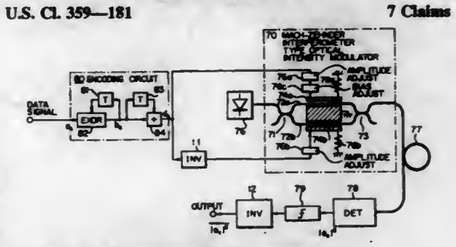
Kazushige Yonenaga; Shigeru Kuwano; Nori Shibata, all of Kanagawa, and Seiji Norimatsu, Tokyo, all of, Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Sep. 11, 1995, Ser. No. 526,277

Claims priority, application Japan, Sep. 12, 1994, 6-217612

Int. Cl.[6] H04B *10/04*

U.S. Cl. 359—181 **7 Claims**



1. An optical transmitter system comprising:

an input terminal receiving a binary data signal,

an encoding circuit coupled with said input terminal for converting a binary data signal to a duobinary signal,

an optical modulation means coupled with an output of said encoding circuit for providing optical intensity modulation to an optical carrier with said duobinary signal so that optical intensity of a modulated light for a center value of said duobinary signal is the minimum and optical intensity of the modulated light for other two values of said duobinary signal is the maximum, and phase of the modulated light for those two values is opposite with each other, and

an output terminal coupled with output of said optical modulation means to provide a modulated optical signal to an optical transmission line.

5,543,953

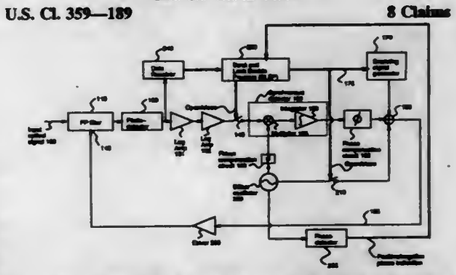
SERVO CONTROL MECHANISM WITH WIDE INPUT DYNAMIC RANGE AND FAST RESPONSE

Kumar N. Sivarajan, Croton-on-Hudson, N.Y., and David G. Steinberg, Rehovot, Ireland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 13, 1994, Ser. No. 305,126

Int. Cl.[6] H04B *10/06*

U.S. Cl. 359—189 **8 Claims**



1. A servo control loop for tuning a center frequency of a tuning device to a first center frequency of a desired signal where said tuning device is tuned by application of an electrical control signal from said loop, said loop comprising:

a dither oscillator for generating a dither signal for varying said control signal applied to said filter so that the center frequency of said tuning device varies over a range of frequencies;

a phase detector for detecting the sign of said dither signal; and

means for closing the loop at a time when the sign of said dither signal is such that said center frequency of the tuning device would move towards without first moving away from,

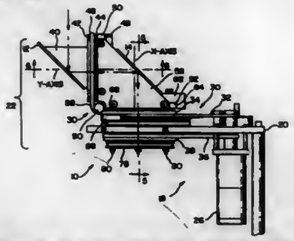
said first center frequency when said loop is closed, whereby said center frequency of said tuning device is set to said desired first frequency.

5,543,954

METHOD AND APPARATUS FOR SELECTIVELY SCANNING FOR OR AIMING A SIGNAL

James E. Nicholson, 10908 156th Ct. NE., Redmond, Wash. 98052

Filed Mar. 1, 1994, Ser. No. 204,551
Int. Cl.[6] G02B *26/08*
U.S. Cl. 359—201 **17 Claims**



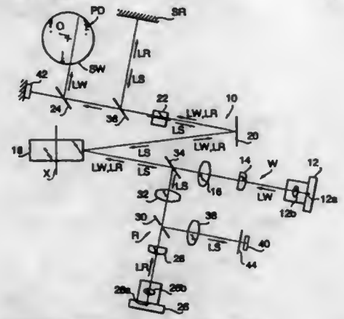
1. An apparatus for transmission of signals between a scanning location and selected scanned locations comprising in combination:
- a first signal diverter located in a plane fixed at a pre-determined angle to a Y-axis, a second signal diverter located in a plane fixed at a pre-determined angle to an X-axis,
- said Y-axis being normal to said X-axis and passing through the plane of said second signal diverter,
- said diverters being constructed and arranged to transmit scanning signals therebetween, and
- means for rotating said first and second signal diverters about their respective Y and X axes and a means for rotating said first signal diverter about said X-axis.

5,543,955

OPTICAL SCANNING SYSTEM

Yoshihiro Yamazaki; Takashi Iizuka, and Toshio Kasai, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Japan

Filed Dec. 21, 1994, Ser. No. 360,947
Claims priority, application Japan, Dec. 29, 1993, 5-074673; Dec. 29, 1993, 5-350355
Int. Cl.[6] G02B *26/08*
U.S. Cl. 359—204 **27 Claims**



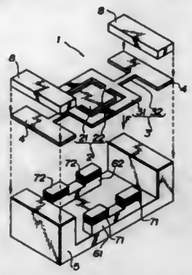
1. An optical scanning system, comprising:
- an image reading scanning system for emitting a first scanning beam of light to read an image of an object;
- an image forming scanning system for emitting a second scanning beam of light to forman image on a light receiving surface;
- a light receiving element,
- wherein each of said first and second scanning beams is incident on said light receiving element when each of said first and second scanning beams is located at an end portion of a scanning area, and
- wherein said first scanning beam and said second scanning beam have different optical characteristics; and
- a circuit for generating a horizontal synchronous signal for said image reading optical system and said image forming optical system, in accordance with light received by said light receiving element.

5,543,956

TORSIONAL VIBRATORS AND LIGHT DEFLECTORS USING THE TORSIONAL VIBRATOR

Wataru Nakagawa; Satoru Sakaue, and Michihiko Tsuruoka, all of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Oct. 6, 1993, Ser. No. 132,291
Claims priority, application Japan, Oct. 8, 1992, 4-270543; Oct. 30, 1992, 4-291839
Int. Cl.[6] G02B *7/182;26/08;* **B06B** *1/02*
U.S. Cl. 359—225 **8 Claims**



1. A torsional vibrator with at least two degrees of freedom, comprising:
- a first vibrator having a plate member and a first torsional spring, said first vibrator having a first resonant frequency;
- a second vibrator having a second resonant frequency lower than the first resonant frequency, and having a responsively acting part connected to said first vibrator, and a second torsional spring, said second torsional spring being coaxial with said first torsional spring; and,
- drive means for rotatingly vibrating said responsively acting part substantially at the first resonant frequency of said first vibrator.

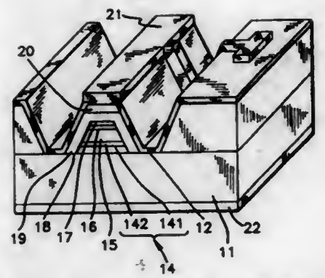
5,543,957

OPTICAL MODULATOR AND METHOD OF PRODUCING THE SAME

Tomoaki Koui, and Shinji Takano, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 14, 1994, Ser. No. 358,622
Claims priority, application Japan, Dec. 20, 1993, 5-319547
Int. Cl.[6] G02F *1/03*
U.S. Cl. 359—245 **8 Claims**

1. An optical modulator having an oxide film formed as a growth inhibiting film on a compound semiconductor substrate of a first conduction type, a heterostructure including a clad layer of the first conduction type, a light absorbing layer and a clad layer of a second conduction type successively formed in an opening of said oxide film, and an embedding structure for covering over the entire double heterostructure, characterized in that



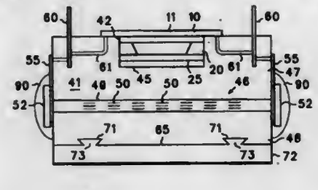
the carrier concentration of said clad layer of the first conduction type exhibits a continuous variation from said semiconductor substrate to said light absorbing layer.

5,543,958

INTEGRATED ELECTRO-OPTIC PACKAGE FOR REFLECTIVE SPATIAL LIGHT MODULATORS

Michael S. Lebby, Apache Junction; George R. Kelly, Gilbert, and Karen E. Jachimowicz, Laveen, all of Ariz., assignors to Motorola, Schaumburg, Ill.

Filed Dec. 21, 1994, Ser. No. 360,504
Int. Cl.[6] G02B *27/32*
U.S. Cl. 359—254 **24 Claims**



40

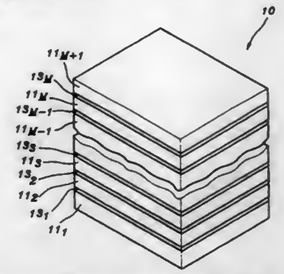
1. An integrated electro-optic package for reflective spatial light modulators comprising:
- an array of reflective spatial light modulator pixels formed on a substrate with each pixel including a control circuit formed in the substrate, each control circuit including control terminals adjacent an outer edge of the substrate, a mirror positioned on the substrate in overlying relationship to the control circuit, and a layer of spatial light modulator material positioned in overlying relationship to the mirror so that light passing through the spatial light modulator material is reflected back through the spatial light modulator material;
- a light polarizing layer positioned in overlying relationship to the array of reflective spatial light modulator pixels;
- an optical waveguide having a light source mounted adjacent an end of the optical waveguide so that light from the light source is directed into the optical waveguide, the optical waveguide further having a plurality of elements spaced therealong for deflecting portions of the light from the light source out of the optical waveguide, and the optical waveguide being mounted in spaced relation from the array of reflective spatial light modulator pixels so that the deflected portions of the light from the light source substantially evenly illuminates the array of reflective spatial light modulator pixels and allows passage of reflected light from the array of reflective spatial light modulator pixels; and
- a diffuser mounted in overlying relationship to the optical waveguide to form an image plane for reflected light from the array of reflective spatial light modulators pixels.

5,543,959

ACTUATOR ARRAY AND METHOD FOR THE MANUFACTURE THEREOF

Yong-Bae Jeon, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Mar. 23, 1994, Ser. No. 216,754
Claims priority, application Rep. of Korea, Mar. 23, 1993; 93-45034
Int. Cl.[6] G02F *1/03*
U.S. Cl. 359—259 **8 Claims**



1. A method for manufacturing an array of M×N electrodisplacive actuators for use in an optical projection system, said method comprising the steps of:
- (a) forming a multilayered ceramic structure having M layers of a first conductive metallization and M+1 layers of an electrodisplacive material, wherein each layer of the first conductive metallization is placed between two layers of the electrodisplacive material;
- (b) slicing said multilayered ceramic structure in a direction normal to said layers of the first conductive metallization, resulting in a composite ceramic wafer having a flat surface, wherein the electrodisplacive material is evenly separated in a horizontal direction by said M layers of the first conductive metallization;
- (c) providing on the entirety of said flat surface of the composite ceramic wafer M+1 regularly spaced horizontally directional trenches, wherein each of the trenches runs parallel to each other, is located at an equidistance from two adjacent layers of the first conductive metallization, is separated from each other by a barrier having a top surface, and has a pair of side surfaces and a bottom surface;
- (d) constructing a composite ceramic body by forming a second conductive metallization on said side and bottom surfaces of each of the trenches; and
- (e) preparing N−1 regularly spaced vertically directional cuts on the composite ceramic body to thereby obtain the array of M×N electrodisplacive actuators.

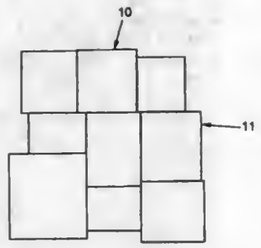
5,543,960

ELECTRO-OPTIC CRYSTAL MOSAICS FOR THE GENERATION OF TERAHERTZ RADIATION

Timothy J. Carrig; Antoinette J. Taylor, both of Los Alamos, N.M., and Kevin R. Stewart, Schenectady, N.Y., assignors to The Regents of the University of California, Oakland, Calif.

Filed May 11, 1995, Ser. No. 439,393
Int. Cl.[6] G02F *1/35*
U.S. Cl. 359—326 **12 Claims**

1. Apparatus for the generation of high energy terahertz radiation comprising:
- laser means effective to produce subpicosecond optical pulses; and
- a mosaic comprising a plurality of planar electro-optic crystals fastened together edge to edge in the form of a grid, each of said plurality of planar electro-optic crystals having its molecular dipole axis aligned with the molecular dipole axes of adjacent of said plurality of planar electro-optic crystals,



said mosaic being in optical communication with said subpicosecond optical pulses;

wherein said plurality of planar electro-optic crystals behave as a single large electro-optic crystal and produce high energy terahertz radiation by way of optical rectification.

5,543,961

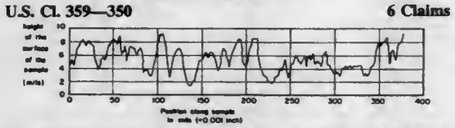
FAR-INFRARED DIFFUSE REFLECTOR

Sheldon M. Smith, Los Gatos, Calif., assignor to The United States of America as represented by the Administator of the National Aeronantics and Space Administration, Washington, D.C.

Filed Jun. 10, 1993, Ser. No. 74,513

Int. Cl.[6] G02B *5/02*

U.S. Cl. 359—350 **6 Claims**



1. A diffuse reflector at infrared and far-infrared wavelengths comprising a substantially flat plate having a greatly roughened surface, said roughened surface comprising a plurality of randomly oriented, randomly spaced, uniformly distributed, irregularly sized facets formed by electric discharge machining, an average height of said facets being at least as large as a longest wavelength to be diffusely reflected without a specular peak, said average height of said facets being between 45 μm and 225 μm.

5,543,962

BINOCULAR STEREOSCOPIC MICROSCOPE

Nobuaki Kitajima, and Kazutoshi Takagi, both of Tokyo, Japan, assignors to Kabushiki Kaisha TOPCON, Tokyo, Japan

Filed Jun. 14, 1993, Ser. No. 76,122

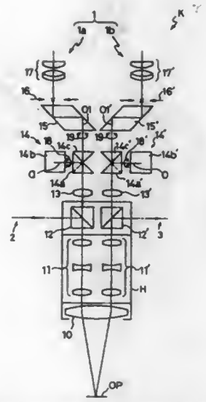
Claims priority, application Japan; Jun. 15, 1992, 4-155419

Int. Cl.[6] G02B *21/00;21/22*

U.S. Cl. 359—384 **7 Claims**

1. A binocular stereoscopic microscope wherein light incident on an objective lens and reflected from an observation area is guided along a pair of optical paths each including an imaging lens, image erecting means for receiving light from said imaging lens and for transmitting an erect image, and eye width adjusting means for receiving light from the image erecting means and for transmitting light to left and right eyepieces, said image erecting means comprising optical elements free to rotate around an optic axis perpendicular to an axis of incidence light on said image erecting means, and said eye width adjusting means being free to rotate around an axis of incidence light on said eye width adjusting means,

characterized in that a reflecting member is provided for performing a plurality of reflections on light which has passed through said imaging lens, and said image erecting means being disposed adjacent to said reflecting member such that a light beam from said reflecting member is incident upon said image erecting means.



5,543,963

VARIABLE MAGNIFICATION LASER IMAGING SYSTEM

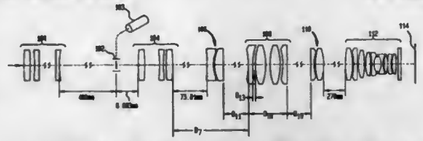
Candace J. Freedenberg, Holly Ridge, N.C.; Frederick A. Herring, Wappingers Falls, and Uldis A. Ziemins, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 923,284, Jul. 31, 1992, Pat. No. 5,448,410.

This application Jun. 1, 1995, Ser. No. 457,550

Int. Cl.[6] G02B *15/14*

U.S. Cl. 359—432 **10 Claims**



1. A process for providing variable magnification image on an image plane comprising, passing a light beam in sequence through a beam shaping lens system, an aperture, a variable field lens system, an objective lens system onto an image plane, and, wherein said process has means for color correction such that various wavelengths of said light beam are focused at the same point, and thereby forming said variable magnification image onto said image plane.

5,543,964

DEPTH IMAGE APPARATUS AND METHOD WITH ANGULARLY CHANGING DISPLAY INFORMATION

Roy Y. Taylor, Scottsville; William A. Doty, Holley; David J. Kroth, N. Chill, and Roland R. Schindler, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 28, 1993, Ser. No. 174,657

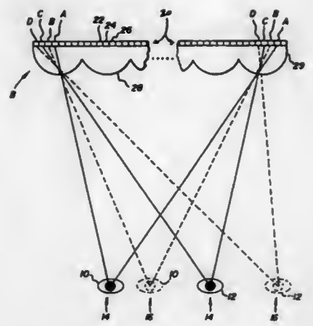
Int. Cl.[6] G02B *27/22*

U.S. Cl. 359—463 **10 Claims**

1. A depth image apparatus, comprising:

a depth image projection mechanism; and

an image substrate including at least two depth images each having a depth content and different scene content unrelated to the depth content and projected to different viewing spaces.



5,543,965

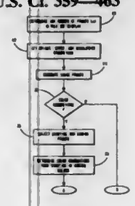
METHOD AND APPARATUS FOR AUTOSTEREOSCOPIC LENTICULAR DISPLAYS UTILIZING RANDOM DOT PATTERNS

Michael S. Bielinski, and Paul G. Herber, both of Arlington, Tex., assignors to NVision Grafix, Inc., Irving, Tex.

Filed May 11, 1994, Ser. No. 240,616

Int. Cl.[6] G02B *27/22*

U.S. Cl. 359—463 **19 Claims**



1. An autostereoscopic display, comprising:

a first layer containing a composite image frame of a plurality of colored random pattern image frames having color gradations between closely related frames and interlaced into a plurality of alternating vertical strips, wherein closely related pairs of the vertical strips form image pairs for generating a stereoscopic image; and

a second layer covering the first layer for focusing vision of a viewer on the closely related pairs of interlaced vertical strips such that the viewer perceives the stereoscopic image.

5,543,966

HYBRID REFRACTIVE/DIFFRACTIVE ACHROMATIC CAMERA LENS

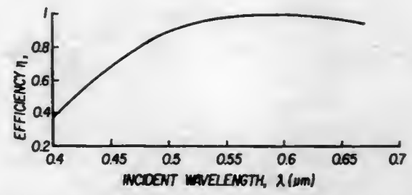
Mark M. Meyers, Hamlin, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 29, 1993, Ser. No. 175,708

Int. Cl.[6] G02B *5/18;27/44*

U.S. Cl. 359—565 **32 Claims**

1. A hybrid refractive and diffractive achromat lens operating in a visible spectral wavelength range at least 200 nm wide, which lens comprises a body of optically transmissive material having an index of refraction at a wavelength approximately in the center of said range of at least 1.45, said body having first and second surfaces on opposite sides thereof, at least one of said surfaces being curved to provide a refractive portion having power but which introduces chromatic aberration in the visible spectral range, said lens having a diffractive portion having a negative v-number and sufficient optical power and provided by a diffractive surface having sufficient zone spacings d and heights h of echelons to substantially achromatize said lens for said chromatic aberration of said refractive portion over the visible spectral range from about 440 nm to about 650 nm.



5,543,967

BOOK SHADE APPARATUS

Nicholas B. Robson, P.O. Box 30297SMB, Grand Cayman Island, Cayman Islands

Filed Nov. 14, 1994, Ser. No. 292,401

Int. Cl.[6] G02B *27/00;23/16*

U.S. Cl. 359—614 **3 Claims**



1. A book shade apparatus comprising means placed on and in contact with two open pages of a book in bright sunlight conditions, for reducing sunlight to and reflected from said two open pages of the book into the eyes of a person reading the book, said light reducing means including a pair of transparent flexible sheets having optical characteristics to reduce the harmful rays of bright sunlight reflected from the open pages of the book and sized to completely cover said two open pages of the book, and further including means between abutting side edges of said pair of flexible sheets for folding said sheets over each other when not in use and out flat side by side when in use, said folding means being a hinge made of light permanently transparent, weather resistant thin loops of thermoplastic material integrally formed between the abutting side edges of said pair of flexible sheets and lined up along the center of said book between oppositely facing pages, and further including means for holding in a stationary manner, each said flexible sheet to each open page of the book, so as to be in a proper position, said holding means including a pair of tabs, each integrally formed on a top edge of each said flexible sheet, and being shaped sufficiently large to hook over the pages and cover of the book.

5,543,968

HELMET MOUNTED DISPLAY SYSTEMS

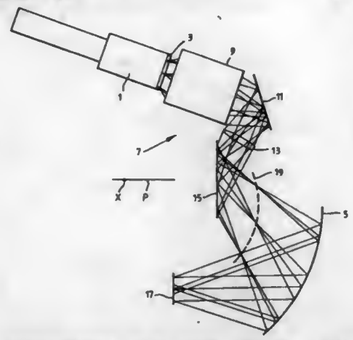
Jonathan P. Freeman, Rochester; Martyn Ingleton, Sheerness, and Christopher B. Staveley, Rainham, all of, England, assignors to GEC-Marconi Limited, United Kingdom

Continuation of Ser. No. 73,738, Jun. 8, 1993. This application Mar. 24, 1995, Ser. No. 410,567

Claims priority, application Brazil, Jun. 26, 1992, 9213603.5

Int. Cl.[6] G02B *27/14*

U.S. Cl. 359—631 14 Claims



1. A helmet mounted display system comprising: a transparent visor; and an optical system including a display source and an optical means for directing rays of light from a display produced by the display source toward a spherical region of the visor to provide by reflection at the visor, at a helmet wearer's eye position, a collimated virtual image of the display on a line of sight of a wearer of the helmet through the visor; said spherical region of the visor being of a shape which is rotationally symmetric about a first axis; and said display source and said optical means being mounted for rotation about said first axis of said rotationally symmetric visor, thereby to allow rotation of said eye position about said first axis.

5,543,969

ZOOM LENS SYSTEM

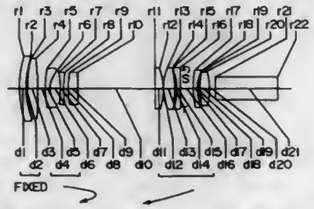
Takayuki Ito, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 28, 1992, Ser. No. 997,559

Claims priority, application Japan, Dec. 25, 1991, 3-361412; Sep. 8, 1992, 4-239125

Int. Cl.[6] G02B *15/14*

U.S. Cl. 359—690 13 Claims



1. A zoom lens system comprising, in order from the object side:
a first positive lens group;
a second negative lens group; and
a third positive lens group; wherein at least said second lens group and said third lens group are movable along an optical axis for changing magnification, said zoom lens system satisfying the following conditions (a)–(d):
(a) 0<fw/f1<0.25
(b) –0.9<fw/f2<–0.4
(c) 0.3<fw/f3<0.8
(d) 0.7<log z3/log z<1.0
where
fw is the overall focal length of said zoom lens system at the wide angle end;
f1 is the focal length of said first lens group,
f2 is the focal length of said second lens group,
f3 is the focal length of said third lens group,
z is the overall change ratio of magnification of said zoom lens system, wherein z=ft/fw,
ft is the overall focal length of said zoom lens system at the telescopic end,
z3 is the change ratio of magnification of said third lens group, wherein z3=m3t/m3w,
m3t is a lateral magnification of said third lens group at the wide angle end,
m3w is a lateral magnification of said third lens group at the telescopic end.

5,543,970

ZOOM LENS SYSTEM

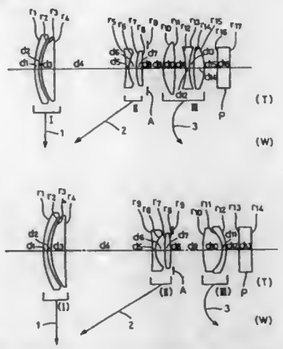
Kazuyoshi Hata, Osaka; Yukio Maekawa, Sakai; Katsuhiro Takamoto, Amagasaki, and Manami Saka, Kyoto, all of, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 53,506, Apr. 27, 1993, abandoned, which is a continuation-in-part of Ser. No. 685,469, Apr. 10, 1991, abandoned. This application Feb. 15, 1994, Ser. No. 197,006

Claims priority, application Japan, Apr. 11, 1990, 2-95464; May 21, 1990, 2-130494; Jul. 26, 1990, 2-199927; Aug. 7, 1990, 2-210012; Mar. 8, 1991, 3-069120

Int. Cl.[6] G02B *15/14;13/18*

U.S. Cl. 359—690 87 Claims



1. A zoom lens system comprising, from the object side to the image side:
a first lens unit of a positive refractive power, said first lens unit including a negative high dispersion lens element and a positive lens element;
a second lens unit of a negative refractive power, said second lens unit consisting of two or three lens elements including a positive high dispersion lens element and a negative lens element, and having at least one aspherical surface; and
a third lens unit of a positive refractive power, said third lens unit consisting of at least three and at most five lens elements including a negative high dispersion lens element and one or two positive lens elements located on the object side of the negative high dispersion lens element, and having at least one aspherical surface;
and wherein high dispersion includes an Abbe number of approximately 30 or lower, and at least said second and third lens units shift on an optical axis of said zoom lens system during the zooming operation, and said zoom lens system fulfills the following condition:

$f_w \cdot \phi_1 > 0.15$

wherein:
f_w represents the shortest focal length of said zoom lens system; and
ϕ_1 represents the power of said first lens unit.

5,543,971

BACKLASH REMOVING DEVICE FOR STOWED LENS BARREL

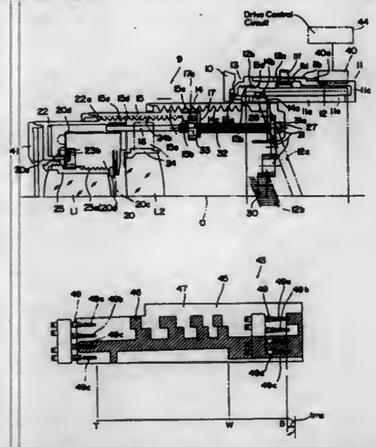
Hiroshi Nomura, and Takamitsu Sasaki, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 6, 1994, Ser. No. 354,069

Claims priority, application Japan, Dec. 6, 1993, 5-65078 U

Int. Cl.[6] G02B *15/14;* G03B *1/18*

U.S. Cl. 359—697 7 Claims



1. A backlash removing device for a lens barrel, comprising:
a plurality of lens groups movable in an optical axis direction;
cylindrical members movable in said optical axis direction by a motor for moving said plurality of lens groups;
motion converting means having a rotation member for converting a rotation of said motor to a movement of said plurality of lens groups through said cylindrical members so as to move said plurality of lens groups between an extended position and a stowed position;
lens position detecting means which directly detects positions of said rotation member for indirectly detecting positions of said plurality of lens groups; and
control means for driving said motor to move said lens groups between said extended position and said stowed position,
wherein said control means changes a rotational direction of said motor from a forward direction to a reverse direction after said lens position detecting means detects that said rotation member reaches said stowed position of said rotation member when said cylindrical members move said lens groups to said stowed position from said extended position, and then stops said motor after a rotational amount of said motor in said reverse direction reaches a predetermined amount.

5,543,972

MIRROR FOR PRODUCING A DEVELOPMENT PICTURE OF THE WALL OF A BOREHOLE IN THE GROUND AND DEVICE THEREFOR

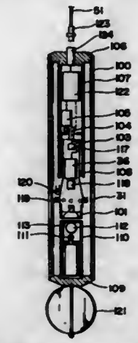
Shunichi Kamewada, Sapporo, Japan, assignor to Raax Co., Ltd., Sapporo, Japan

Filed Jun. 5, 1992, Ser. No. 867,226

Claims priority, application Japan, Oct. 9, 1990, 2-270880; Oct. 25, 1990, 2-287827

Int. Cl.[6] G02B *5/08;* E21B *47/00;49/00;* G01N *21/00*

U.S. Cl. 359—834 6 Claims



1. A compound type cone mirror device for observing a wall of a borehole, comprising:
a cylindrical sonde which moves within said borehole along a depth thereof by means of a grounded support;
a transparent window portion formed over an entire circumference of a portion of a side face of said cylindrical sonde;
a conical mirror face which reflects incident light incoming through said transparent window portion from an entire circumference of said wall of said borehole into an axial direction of said cylindrical sonde;
a transparent truncated cone block, a surface of which is finished by polishing, which closely contacts said conical mirror face; and
a transparent column block, a surface of which is finished by polishing, having a concave portion or a pierced hole of an identical shape as said truncated cone block into which said truncated cone block is inserted, wherein said conical mirror face is a mirror finished face.

5,543,973

MAGNETIC FIELD GENERATING APPARATUS FOR GENERATING BIAS MAGNETIC FIELD IN A MAGNETIC INFORMATION TRANSFER SYSTEM

Masaru Moriyama, Yokosuka, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

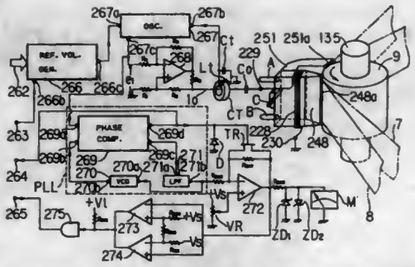
Filed Oct. 6, 1993, Ser. No. 132,647

Claims priority, application Japan, Oct. 6, 1992, 4-292136; Oct. 9, 1992, 4-290823; Jun. 7, 1993, 4-163232

Int. Cl.[6] G11B *5/86*

U.S. Cl. 360—17 3 Claims

1. A magnetic field generating apparatus for generating a biasing magnetic field applied to a master tape and a slave tape which are contacted each other when magnetic information signals recorded on the master tape are transferred to the slave tape, the apparatus comprising:
a rotary cylinder of which a surface is at least made of a magnetic material having a high magnetic permeability;
main magnetic pole means of which a front thereof is disposed to confront the rotary cylinder through a gap defined by a first predetermined distance for projecting the biasing magnetic field toward the rotary cylinder therethrough where said master and slave tapes are interposed between tile rotary cylinder and the main magnetic pole means at said gap;



depressing means for depressing by blowing air the master tape and the slave tape together to the rotary cylinder nearby the gap;

an exciting source for exciting tile main magnetic pole means to generate the biasing magnetic field;

sub-magnetic pole means for passing magnetic flux comprising at least one side-core disposed at one side of the main magnetic pole means, said side-core having a front and rear portions, said front portion extending closely along and closely confronting the rotary cylinder from outside thereof and opposing the front of the main magnetic pole means at a second predetermined distance, said rear portion being connected to a rear of the main magnetic pole means, wherein the second predetermined distance is substantially larger than the first predetermined distance, and a confronting area of the front portion is substantially larger than a confronting area of the main magnetic pole means facing to the rotary cylinder; and

said main magnetic pole means further comprising a core body having a front face extending approximately parallel to a rotation axis of the rotary cylinder and confronting a surface thereof, said magnetic field generating apparatus further comprising tilting means for causing the front face to tilt within a plane including the rotation axis of the rotary cylinder so that an angle of the front face with respect to the surface of the rotary cylinder is changed.

5,543,974

IMAGE QUALITY ADJUSTING DEVICE WHICH DETECTS THE GRADE OF AN ENVELOPE OF AN FM LUMINANCE SIGNAL

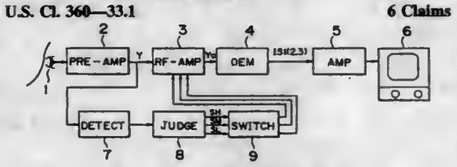
Satoshi Sugita, Saijo, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Continuation of Ser. No. 707,002, May 29, 1991, abandoned. This application Jul. 22, 1993, Ser. No. 95,047

Claims priority, application Japan, May 31, 1990, 2-143141

Int. Cl.[6] H04N *5/78*

U.S. Cl. 360—33.1 **6 Claims**



1. An automatic image quality adjusting device for use in a video signal recording/reproducing apparatus comprising:

a reproducing head for reproducing an FM luminance signal from a magnetic recording medium;

an envelop detecting means for detecting an envelop of said FM luminance signal;

a grade detecting means for detecting a grade of said envelop defined by a change in amplitude of said envelop, for generating a first grade signal when the detected grade is less than at least one predetermined first threshold value, for generating a second grade signal when the detected grade is more than said at least one predetermined first threshold value and less than at least one predetermined second threshold value which is greater than said at least one predetermined first threshold value, and for generating a third grade signal when the detected grade is greater than said at least one predetermined second threshold value; and

a frequency characteristics changing means for changing the frequency characteristics of a processing signal obtained by processing said FM luminance signal in stages between the reproducing head and a display device in accordance with said first, second and third grade signals generated by said grade detecting means;

wherein said frequency characteristics changing means includes means for selecting from among three predetermined frequency characteristic patterns to be applied to said processing signal, said three frequency characteristic patterns being selected in response to said first, second and third grade signals, respectively.

5,543,975

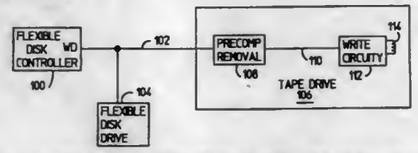
REMOVAL OF PRECOMPENSATION IN A WRITE DATA SIGNAL FROM A FLEXIBLE DISK CONTROLLER

Daniel J. Curran, Fort Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 152,113, Nov. 12, 1993, abandoned. This application Sep. 23, 1994, Ser. No. 311,832

Int. Cl.[6] G11B *5/09*

U.S. Cl. 360—45 **2 Claims**



2. In a data storage system having a Write Data signal that has been precompensated from an ideal write signal, a method for converting the precompensated Write Data signal back into the ideal write signal, the method comprising the following steps:

a. detecting precompensation in the Write Data signal;

b. measuring the amount of the precompensation;

c. removing the measured amount of precompensation from the Write Data signal; and

d. generating a new write signal without the measured amount of precompensation, the new write signal thereby being equivalent to the ideal write signal.

5,543,976

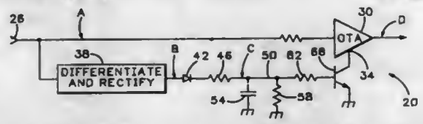
PROVIDING TRANSITIONS OF SLEW RATE DEPENDENT ON PULSE FREQUENCY

Birney D. Dayton, Nevada City, and Thomas B. Crabb, Grass Valley, both of Calif., assignors to Nvision, Inc., Grass Valley, Calif.

Filed Feb. 9, 1995, Ser. No. 386,096

Int. Cl.[6] G11B *5/09*

U.S. Cl. 360—46 **11 Claims**



7. A circuit for processing an input pulse signal that has been read from a longitudinal track of a recording medium being displaced for playback at a variable speed and has been pre-processed so that it contains pulses of which slew rate is substantially independent of pulse frequency, comprising:

an amplifier means for receiving the input pulse signal and generating an output pulse signal having transitions of which slew rate is dependent on a bias signal supplied to the amplifier means,

a means for generating a control signal dependent on average frequency of occurrence of pulses in the input pulse signal, and

a means for supplying the control signal to the amplifier means as said bias signal,

whereby the slew rate of the transitions of the output pulse signal depends on said average frequency.

5,543,977

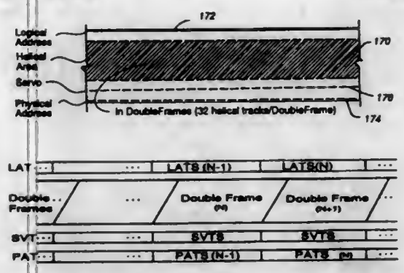
DATA RECORDING SYSTEM HAVING IMPROVED LONGITUDINAL AND HELICAL SEARCH CAPABILITY

Lionel C. Shih, San Jose, and Jerry E. Holter, Freemont, both of Calif., assignors to Ampex Systems Corporation, Redwood City, Calif.

Filed Feb. 28, 1992, Ser. No. 843,740

Int. Cl.[6] G11B *5/09;15/18*

U.S. Cl. 360—48 **22 Claims**



1. A system adapted to selectively record and reproduce digital information data on a magnetic tape currently loaded on said system, said magnetic tape having a recordable volume, said volume having at least one partition in which said information data are recorded, said system being adapted to efficiently search for information data that was previously recorded, said system comprising:

helical means adapted to selectively record and reproduce information data including user data in a said partition, said information data being contained in physical blocks of predetermined size on a helical recording area of said tape, said user data being contained in data blocks of a predetermined size and being organized in files with each file having at least one file section, said helical means being adapted to record data in helical tracks along said tape;

servo means for controlling the movement of said tape in forward and reverse directions, said servo means moving said tape in said forward direction during recording and reproducing, said servo means including means adapted to selectively record and reproduce servo information on a servo control track that extends in the longitudinal direction of said tape;

address means adapted to selectively record and reproduce data on at least one address track that extends in the longitudinal direction of said tape, said data recorded on said address track comprising physical address parameters relating to said tape and logical address parameters relating to the data that is recorded on said helical tracks, said logical address parameters including data specifying the file section number and data block number of each recorded data block and data indicating that one of said physical blocks is at the end of a recording in said partition;

processing means for providing said user data to said helical means for recording thereby on said tape, said processing means being adapted to control said helical means and said servo means to selectively record and reproduce data and to search for recorded information data on said helical recording area;

said logical address parameter data enabling said processing means to initiate a search for previously recorded information data by commanding said servo means to move said tape to the location where said information data is located, said processing means utilizing said file section numbers and data block numbers recorded in said address track to have said servo means move said tape at least in said forward direction to the location where said information data being searched is located.

5,543,978

ADAPTIVE EQUALIZER OF DISK REPRODUCING APPARATUS USING A CONSTANT ANGULAR VELOCITY METHOD

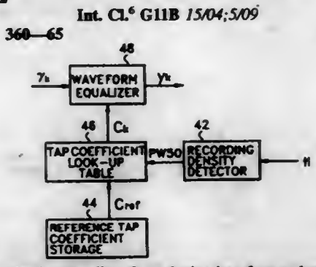
Hyoung-woon Park, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Dec. 29, 1994, Ser. No. 365,945

Claims priority, application Rep. of Korea, Sep. 27, 1994, 94-24352

Int. Cl.[6] G11B *15/04;5/09*

U.S. Cl. 360—65 **4 Claims**



1. An adaptive equalizer for reducing interference between adjacent signals recorded along tracks of a rotatable magnetic recording medium the equalizer comprising:

a recording density detector for calculating a reference recording density of 50 percent of a maximum power channel impulse response from track radius using input track information;

reference tap coefficient storage means for storing a reference tap coefficient determined from the channel impulse response at a lowest recording density position;

a tap coefficient controller for calculating a tap coefficient from the reference recording density and the reference tap coefficient stored in said reference tap coefficient storage means; and

a waveform equalizer receiving a reproduced digital signal from a storage medium for eliminating interference from the reproduced digital signal due to a signal recorded adjacent to the reproduced digital signal using the tap coefficient calculated by said tap coefficient controller and for outputting an interference-free reproduced information signal.

5,543,979

PREAMPLIFIER CIRCUIT ARRANGEMENTS FOR COMMON CURRENT FLOW IN A TRANSDUCER

Richard Davies, Cheshire, United Kingdom, assignor to Plessey Semiconductors Limited, United Kingdom

Filed Sep. 8, 1994, Ser. No. 302,514

Claims priority, application United Kingdom, Sep. 15, 1993, 9319106

Int. Cl.[6] G11B *5/02*

U.S. Cl. 360—67 **4 Claims**

1. A preamplifier circuit arrangement for a magnetic or magnetoresistive transducer or record and replay head, comprising; an emitter-coupled pair of transistors having respective constant current sources in their collector circuits and bias circuit means to

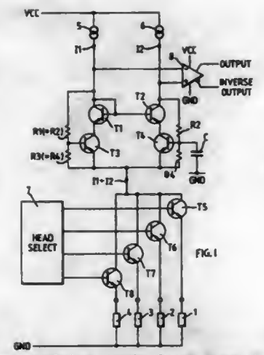


FIG. 1

apply d.c. biases to their respective bases, means to connect said transducer or record and replay head between said emitter-coupled pair of transistors and a point of ground potential, means to connect one of said pair of transistors in common base mode to alternating signal currents flowing in said transducer or record and replay head, and means to derive alternating output signals from the collector circuit of said one of said pair of transistors.

5,543,980

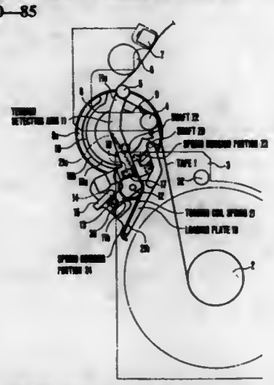
TAPE LOADING DEVICE HAVING AN URGING ELEMENT FOR URGING A TAPE TENSION DETECTING ARM AFTER A PREDETERMINED ROTATION OF A DRIVING MEMBER

Keiichi Fukuzawa, Kanagawa-ken, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 851,735, Mar. 16, 1992, abandoned. This application Jun. 13, 1994, Ser. No. 259,357

Int. Cl.[6] G11B *15/43;15/66*

U.S. Cl. 360—85 **5 Claims**



2. A tape loading device comprising:

(a) a first turning member having a tape guide which is kept in contact with a tape during running of the tape, said first turning member being turnable according to a tension of the tape;

(b) a second turning member for causing said first turning member to turn by a turning operation of said second turning member and loading the tape guide into a predetermined position;

(c) a driving part for turning said second turning member; and

(d) an urging member having two end portions, said urging member being provided on said second turning member with the two end portions supported individually, said second turning member being turned by said driving part to bring one of the two end portions into engagement with an engagement part fixed to said driving part so that said urging member generates an urging force for said first turning member.

5,543,981

CASSETTE HOUSING FOR MAGNETIC RECORDING AND REPRODUCING APPARATUS AND METHOD FOR MANUFACTURING THE SAME

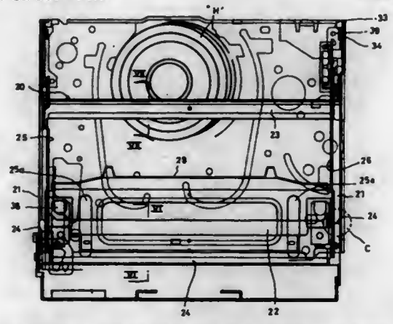
Myung G. Kang, Seoul; Seong S. Kang; Sung H. Choi, both of Kyungki-Do; Mun C. Joung, Seoul; Byoung G. Jang, Kyungki-Do; Kye Y. Ryu, Seoul; Hyo C. Yu, Seoul, and Sang J. Lee, Kyungki-Do, all of, Rep. of Korea, assignors to Goldstar Co., LTD., Seoul, Rep. of Korea

Continuation of Ser. No. 76,149, Jun. 14, 1993, abandoned. This application Feb. 23, 1995, Ser. No. 393,030

Claims priority, application Rep.. of Korea, Jun. 20, 1992, 10783/1992

Int. Cl.[6] G11B *15/00*

U.S. Cl. 360—96.6 **3 Claims**



1. A pivotable cassette housing for a magnetic recording and reproducing apparatus having a fixed base plate having a pair of support members attached to an upper surface thereof, said pivotable cassette housing comprising:

a pivotable bracket formed of a single metal plate and including a pair of side walls and a first and a second connecting member for connecting said side walls with each other, said first connecting member having a stepped shape cross section having a first step portion, a second step portion adjacent to said first step portion, and a third step portion adjacent to said second step portion wherein each of said step portions lie in a separate plane, and said second connecting member having a channel type section with upwardly protruded portions at both edges thereof, a plurality of reinforcing support portions provided at a lower surface of a junction where each side wall is connected with said first and said second connecting members, said junction corresponding to a bent edge of said side wall, each of the reinforcing support portions being a lug protruded from the lower surface of the junction upon forming a recess at an upper surface of the junction;

a pair of axial pins each provided at a rear end of each side wall of said pivotable bracket and connected to said pair of support members of the fixed base plate, whereby the pivotable bracket is pivotable with respect to the fixed base plate; and

a cassette holder mounted in the bracket and adapted to receive a tape cassette therein.

5,543,982

DISK DRIVE APPARATUS HAVING A DEVICE INSIDE THE DISK DRIVE HOUSING FOR ELECTRICALLY CONNECTING A SPIN MOTOR CABLE OUTSIDE THE HOUSING TO A CONNECTOR OUTSIDE THE HOUSING

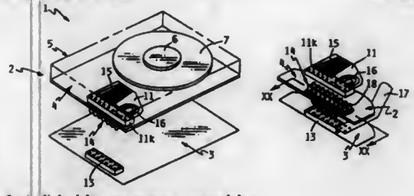
Tatsuo Takagi, Yamato, and Hitoshi Tsujino, Tokyo-to, both of, Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 393,598, Feb. 23, 1995, which is a continuation of Ser. No. 215,876, Mar. 21, 1994, abandoned, which is a continuation of Ser. No. 802,385, Dec. 4, 1991, abandoned. This application Apr. 13, 1995, Ser. No. 421,179

Claims priority, application Japan, Sep. 12, 1991, 3-260498; Sep. 12, 1991, 3-260499; Sep. 12, 1991, 3-260500; Sep. 12, 1991, 3-260501

Int. Cl.[6] G11B *33/12;17/02*

U.S. Cl. 360—97.01 **2 Claims**



1. A disk drive apparatus, comprising:

a hard disk;

a transducer head for communicating information with said hard disk;

an actuator means for positioning said transducer head on said disk;

a housing including a base plate and a cover for enclosing said hard disk and said actuator means therein;

a spin motor mounted on said base plate for rotating said hard disk;

a printed circuit board attached to said housing for controlling the disk drive apparatus, said printed circuit board having a connector;

a first set of pins provided on said base plate to be plugged into said connector for electrically connecting components in the housing to said printed circuit board;

a spin motor cable attached to said base plate outside said housing for electrically connecting to said spin motor at one end of said spin motor cable, said spin motor cable having a plurality of conductors;

a second set of pins provided on said base plate and connected to said spin motor cable at the other end of said spin motor cable outside said housing, wherein said second set of pins does not mate with said connector of said printed circuit board; and

means provided in said housing for connecting said second set of pins to said first set of pins in said housing, wherein each conductor of said spin motor cable is electrically connected to a corresponding connection of said connector through a respective pin of said first set of pins, said means for connecting said first and second sets of pins, and a respective pin of said second set of pins.

5,543,983

SERVO CONTROLLED LUBRICANT THICKNESS FOR NEAR MAGNETIC RECORDING

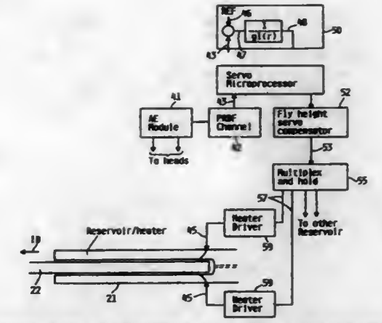
Thomas A. Gregory; James A. Hagan, both of, Rochester, Minn., and Christopher G. Keller, Albany, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 998,701, Dec. 30, 1992, Pat. No. 5,309,301. This application May 2, 1994, Ser. No. 236,437

Int. Cl.[6] G11B *17/32*

U.S. Cl. 360—97.02 **35 Claims**

1. A disk drive assembly wherein a disk assembly and a transducer carrying actuator are surrounded by a housing and a lubricant film is maintained on the recording surfaces of the disk comprising



sensing means for determining the thickness of the lubricant film on the disk recording surface, said sensing means located within the housing; and

control means for closed loop control of the lubricant film thickness responsive to said sensing means.

5,543,984

DISK DRIVE WITH FLUID BEARING, BEARING PLATE AND DISK-MOVING MECHANISM

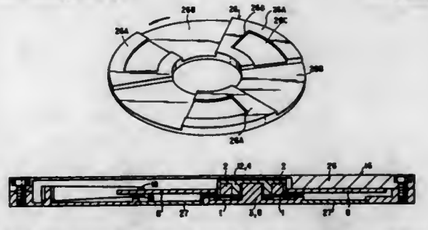
Jun Itoh, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 156,895, Nov. 24, 1993, abandoned. This application Sep. 28, 1995, Ser. No. 535,478

Claims priority, application Japan, Nov. 26, 1992, 4-316705; Nov. 24, 1993, 5-293267

Int. Cl.[6] G11B *17/035;17/32;25/04*

U.S. Cl. 360—99.09 **11 Claims**



4. A disk drive apparatus utilizing dynamic pressure, comprising:

a disk which is an information recording medium;

a recording/reproducing head for recording information on said disk and reproducing information from said disk;

a disk-rotating means supporting said disk and designed to rotate said disk;

a bearing member opposing a substantially planar surface of said disk and spaced apart from the surface of said disk by a predetermined distance while said disk is stationary and said bearing member having a thrust bearing surface; and

a disk-moving mechanism for moving said disk in a direction substantially perpendicular to the surface of said disk to decrease said distance and facilitate generation of dynamic pressure between said disk and said bearing member while said disk is rotating in close proximity to said thrust bearing surface of said bearing member.

5,543,985

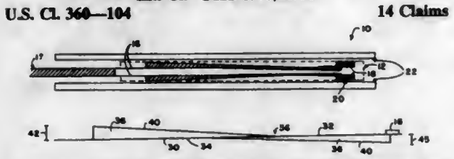
"ACTON" LOAD BEAM FOR A WINCHESTER DISK DRIVE

Craig E. Donnelly, and David R. Grose, both of Westborough, Mass., assignors to Quantum Corporation, Milpitas, Calif.

Continuation of Ser. No. 259,217, Jun. 13, 1994, abandoned. This application Aug. 2, 1995, Ser. No. 510,432

Int. Cl.[6] G11B *5/48;21/16*

U.S. Cl. 360—104 **14 Claims**



1. A suspension load beam for supporting a head adjacent to a disk surface in a rigid disk drive, said load beam comprising:

a generally flat central load beam member having a proximal end for attachment to an actuator arm, the central member having a flexure supporting surface on a first side thereof confronting the disk surface and having an opposing surface on an opposite side thereof, the central load beam member passing coplanarly through a reference plane;

a rail disposed along a side of the central load beam member, a first portion of the rail protruding from the flexure supporting surface toward the disk surface at the proximal end of the central member such that the first portion is positioned between the reference plane and the disk surface and a second portion of the rail protruding from the opposing surface and away from the disk surface at a distal end of the central member such that the second portion is positioned on a side of the reference plane facing away from the disk surface.

5,543,986

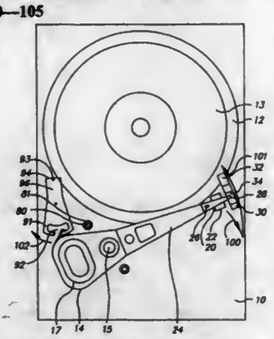
DISK DRIVE WITH SHOCK-RESISTANT ROTARY ACTUATOR

Thomas R. Albrecht, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 212,463, Mar. 14, 1994, Pat. No. 5,448,436. This application May 26, 1995, Ser. No. 452,209

Int. Cl.[6] G11B *5/54;21/22*

U.S. Cl. 360—105 **10 Claims**



1. A data recording disk drive comprising:

a disk having a data region;

a motor connected to the disk for rotating the disk;

a transducer for writing data to or reading data from the data region of the disk;

a carrier supporting the transducer;

a rotary actuator having a pivot and connected to the carrier for moving the carrier generally radially across the disk;

a crash stop for limiting the rotation of the actuator;

a bidirectional inertial rotary actuator lock comprising an arm having a pivot generally parallel to the actuator pivot, the arm having an end for locking the actuator from moving away from the crash stop in the presence of an external force, the arm being maintained at a neutral position in the absence of an external force, and being freely rotatable in a first direction away from its neutral position to enable the arm end to lock the actuator from moving away from the crash stop in the presence of an external force tending to rotate the actuator away from the crash stop, and freely rotatable in a second direction opposite to said first direction and away from its neutral position to enable the arm end to lock the actuator from moving away from the crash stop after it has rebounded from the crash stop in the presence of an external force tending to rotate the actuator into the crash stop; and

means for supporting the motor, rotary actuator and rotary lock.

5,543,987

HEAD CARRIAGE DEVICE HAVING APPLYING FORCE MEANS DISPOSEDWITHIN PILLAR PORTION

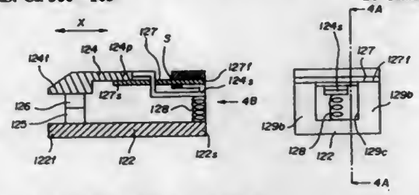
Kenji Matsumoto, Tokyo, Japan, assignor to Teac Corporation, Japan

Continuation of Ser. No. 57,479, May 3, 1993, abandoned. This application Jan. 9, 1995, Ser. No. 370,563

Claims priority, application Japan, May 27, 1992, 4-135261

Int. Cl.[6] G11B *5/54;21/16*

U.S. Cl. 360—105 **16 Claims**



1. A head carriage device comprising:

a carriage having a first head at a first end thereof, said carriage extending approximately in a disc radial direction in which a recording-medium disc is located in an associated disc apparatus, and said carriage having pillar portions at a second end thereof, said pillar portions extending in a direction approximately perpendicular to said disc radial direction;

a head arm having a second head at a first end thereof, both said first head and said second head being used for jointly accessing both sides of the recording-medium disc loaded in said disc apparatus, said head arm having a second end located within a space formed between said pillar portions and an intermediate supported portion away from said second end of said head arm;

a supporting member having a mechanically flexible property, a first end thereof being fixed on a top of said pillar portions and positioned above the second end of the head arm, and a second end thereof being fixed on said supported portion of said head arm, said supporting member flexibly supporting said head arm so that said head arm extends approximately in said disc radial direction and providing a fulcrum about which said head arm is capable of performing a seesaw movement; and

applying force means provided within the space between said pillar portions and between said second end of said carriage and said second end of said head arm, to apply a force on said respective second ends of said carriage and head arm, a direction of said force being such as to move said second end of said head arm apart from said second end of said carriage, thereby causing the first and second heads to close toward each other.

5,543,988

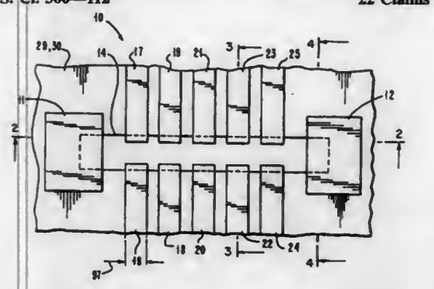
HALL SENSOR WITH HIGH SPATIAL RESOLUTION IN TWO DIRECTIONS CONCURRENTLY

Michael J. Brady, Brewster; Lia Krusin-Elbaum, Dobbs Ferry; William T. Masselink, White Plains; Padmanabhan Santhanam, Croton-on-Hudson, all of N.Y., and Tsuyoshi Tamegai, Tokyo, Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 55,493, Apr. 30, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 479,252

Int. Cl.[6] G11B *5/37;* **H01L** *29/82;* **G01R** *33/06*

U.S. Cl. 360—112 **22 Claims**



1. An apparatus for sensing a magnetic field in two directions concurrently comprising:

a semi-insulating substrate of a first semiconductor material having an upper surface,

first and second spaced apart conductive regions formed in said upper surface of said semi-insulating substrate,

a layer of insulation formed on said upper surface of said semi-insulating substrate,

said layer of insulation having a first opening therein between and above a portion of said first and second spaced apart conductive regions and exposing said upper surface of said semi-insulating substrate between said first and second conductive regions,

a layer of material having an upper and lower surface having a semiconductor region and a semi-insulating region, said lower surface formed on said layer of insulation and in said first opening wherein said layer of material is said semi-insulating region on said layer of insulation and wherein said layer of material is said semiconductor region in and over said first opening,

means for passing an electrical current through said semiconductor region of said layer of material in a direction transverse to an axis extending between said first and second conductive regions,

a first electrode formed on said upper surface of said semiconductor region of said layer of material whereby at times said electrical current passes in said semiconductor region of said layer of material,

the voltage between said first and second conductive regions is proportional to the magnitude of the magnetic field B passing orthogonal to said electrical current and to said axis extending between said first and second conductive regions and the voltage between one of said first and second conductive regions and said first electrode is proportional to the magnitude of the magnetic field B passing orthogonal to said electrical current and to the axis extending between said one of said first and second conductive regions and said first electrode.

5,543,989

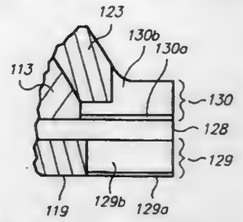
MAGNETIC STORAGE SYSTEM INCLUDING A MAGNETORESISTIVE READ SENSOR WITH SENDUST SHIELD UTILIZING AN OPTIMIZED SENDUST SEED LAYER

John D. Westwood, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 303,276, Sep. 8, 1994, which is a continuation of Ser. No. 4,023, Jan. 15, 1993, abandoned. This application May 26, 1995, Ser. No. 452,202

Int. Cl.[6] G11B *5/127*

U.S. Cl. 360—113 **13 Claims**



1. A magnetic storage system comprising:

a magnetic storage medium having a plurality of data tracks for recording of data;

a magnetic transducer maintained in a closely spaced position relative to said magnetic storage medium during relative motion between said magnetic transducer and said magnetic storage medium, said magnetic transducer including a shielded magnetoresistive sensor comprising:

a first magnetic shield element comprising a seed layer of a first silicon-aluminum-iron (SiAlFe) alloy having a first composition, and a bulk layer of a second SiAlFe alloy having a second composition, said bulk layer formed over said seed layer;

a first layer of an electrically insulating material formed over said first shield element;

a magnetoresistive sensing element of a magnetoresistive material formed over said first insulating layer;

a second layer of an electrically insulating material formed over said magnetoresistive sensing element; and

a second magnetic shield element of a magnetically soft material formed over said second insulating layer;

actuator means coupled to said magnetic transducer for moving said magnetic transducer to selected data tracks on said magnetic storage medium; and

detection means coupled to said shielded magnetoresistive sensor for detecting resistance changes in said magnetoresistive material responsive to magnetic fields representative of data bits recorded in said magnetic storage medium intercepted by said shielded magnetoresistive sensor.

5,543,990

MULTITRACK MAGNETIC HEAD ASSEMBLY FOR SCANNING A MAGNETIC TAPE WITH A PLURALITY OF MAGNETIC HEAD TIPS

Yoshiaki Mizoh, and Hiroshi Yohda, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 86,450, Jul. 6, 1993, Pat. No. 5,426,550, which is a continuation of Ser. No. 712,368, Jun. 10, 1991, abandoned. This application Apr. 7, 1995, Ser. No. 418,724

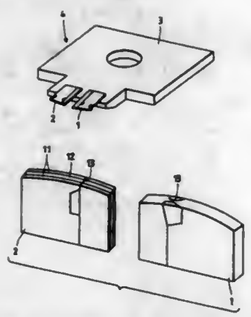
Claims priority, application Japan, Jun. 8, 1990, 2-150950

Int. Cl.[6] G11B *5/255;5/53*

U.S. Cl. 360—122 **4 Claims**

1. A multitrack magnetic head assembly for scanning a magnetic tape comprising:

a head base;



a leading head tip mounted on an edge of the head base for coming into initial sliding contact with the magnetic tape, the leading head tip being made of Mn-Zn ferrite; and

a trailing head tip mounted on the edge of the head base for coming into subsequent sliding contact with the magnetic tape, the trailing head tip being a laminated structure comprising a pair of non-magnetic substrates made of an NiO-TiO_2-MgO ceramic material and a magnetic body which serves as a magnetic path and is sandwiched between the non-magnetic substrates.

5,543,991

TAPE CASSETTE HAVING A REAR COVER COMPOSED OF TWO PIECES OF PLATES ROTATABLY CONNECTED TO EACH OTHER

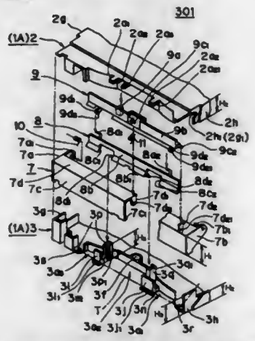
Yasufumi Hashimoto; Katsuta; Hiroyuki Umeda, and Tsunehisa Ohira, both of Sagamihara, all of, Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Continuation-in-part of Ser. No. 195,752, Feb. 10, 1994, Pat. No. 5,453,896, which is a continuation-in-part of Ser. No. 980,978, Nov. 24, 1992, Pat. No. 5,404,261. This application May 10, 1994, Ser. No. 241,132

Claims priority, application Japan, May 20, 1993, 5-141434; May 11, 1993, 5-132982

Int. Cl.[6] G11B *23/02*

U.S. Cl. 360—132 **9 Claims**



1. A tape cassette having a casing for accommodating a pair of reels disposed in the casing for winding a magnetic tape on the pair of reels and threading the magnetic tape along a front of the casing, a front lid disposed in openable/closable manners at the front of the casing for protecting a front face of the magnetic tape and rear cover means disposed at a back side of the front lid for protecting a back face of the magnetic tape, wherein the tape cassette comprises:

plate supporting means provided on an upper side of the front lid;

the rear cover means comprising first cover means having a first plate-like shape for protecting an upper portion of the back face of the magnetic tape and second cover means having a second plate-like shape for protecting a lower portion of the back face of the magnetic tape when the front lid is closed, the first cover means having arm member means and first pin means for rotatably supporting the first cover means on the plate supporting means of the front lid, the second cover means comprising second pin means and guide pin means for operating in cooperation with opening and closing actions of the front lid, the second cover means being suspended from the first cover means by causing the second pin means to engage with the arm member means of the first cover means;

guide groove means provided in the casing for slidably guiding the guide pin means of the second cover means both in a lid opening direction toward which the front lid is opened and a lid closing direction toward which the front lid is closed, by being engaged with the guide pin means of the second cover means;

first biasing means for biasing the front lid in the lid closing direction;

second biasing means for displacing the second cover means in the lid opening direction by biasing the first cover means toward a direction of the upper side of the front lid; and

rear lid restricting means for restricting an opening action of the second cover means biased in the lid opening direction by the second biasing means when the front lid is closed,

wherein the second cover means is suspended from the first cover means so that the first cover means covers the upper back face of the magnetic tape and the second cover means covers the lower back face thereof when the front lid is closed, and the second cover means together with the first cover means are slidably displaced along the guide groove means into a space defined within the front lid without colliding with a wall of the front lid.

5,543,992

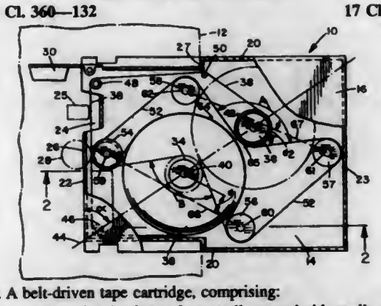
TAPE CARTRIDGE WITH INCREASED STORAGE CAPACITY

Xiaohong Hu, and Rayburn Johnson, both of San Diego, Calif., assignors to Gigatek Memory Systems, Carlsbad, Calif.

Filed Feb. 6, 1995, Ser. No. 384,150

Int. Cl.[6] G11B *15/32;23/02*

U.S. Cl. 360—132 **17 Claims**



1. A belt-driven tape cartridge, comprising:

an outer housing having a front wall, spaced side walls and a rear wall, the front wall having an access opening for receiving a tape read/write head and a drive opening for receiving a driving roller;

first and second tape spools adapted to rotate in the housing, each spool having a center aligned on an alignment axis with the center of the other spool, the spool alignment axis extending at an angle to the front wall of the housing;

a plurality of tape guides for guiding tape between the spools along a tape path extending across the access opening;

a drive roller at said access opening and at least three belt guide rollers rotatably mounted at fixed positions in the housing;

an endless drive belt encircling said drive roller and belt guide rollers in a belt path comprising a first tape contacting portion contacting tape on the first spool, a second tape contacting portion contacting tape on the second spool, a first extended portion extending from said first tape contacting portion around said drive roller and at least one belt guide roller to said second tape contacting portion and a second extended portion extending from said second tape contacting portion around at least two belt guide rollers to said first tape contacting portion, whereby movement of the drive belt in opposite directions will move tape back and forth between the spools and across the access opening; and

the ratio of the length of drive belt between the centers of the tape contacting portions in the first extended portion of the belt path to the length of drive belt between the centers of the tape contacting portions in the second extended portion of the belt path being in the range from 30%:70% up to 70%:30%.

5,543,993

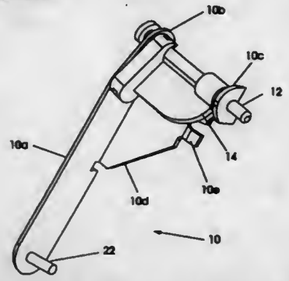
DOOR OPENING MECHANISM FOR MAGNETIC TAPE CARTRIDGE WITH TENSION CONTROL

Armando J. Arguinedo, and Kenneth R. Shelley, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 229,968, Apr. 19, 1994, abandoned. This application May 31, 1995, Ser. No. 454,897

Int. Cl.[6] G11B *15/60;23/02*

U.S. Cl. 360—132 **13 Claims**



1. A mechanism for opening a tape access door at the forward end of a tape cartridge which pivots about an axis perpendicular to a mount plate of the cartridge, the access door being spring biased to a closed position and including a slot which opens along a side wall of the door and has a rearward end that angles open on an outer wall of the door, the door opening mechanism comprising:

an elongate door opener frame;

a pin extending from a forward end of the door opener frame;

means for pivotally mounting a rearward end of the door opener frame to a frame of a loader mechanism adjacent a cartridge insertion slot thereof for rotation about a door opener pivot axis perpendicular to the mount plate of the cartridge so that the pin will slide into the slot in the door of the cartridge and pivot the door open as the cartridge is inserted into the cartridge insertion slot;

an opener bearing pivotable about the door opener pivot axis for engaging a forward end of the mount plate of the cartridge and the door opener frame to provide a fulcrum for pivoting the door opener frame as the cartridge is inserted into the cartridge insertion slot;

a first spring mounted for biasing the door opener frame to a retracted position; and

a second spring compressed between the door opener frame and the opener bearing.

5,543,994

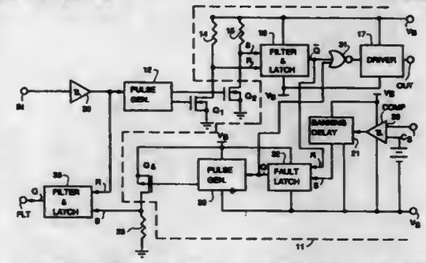
MOSFET DRIVER WITH FAULT REPORTING OUTPUTS

Dana Wilhelm, Temple City, and Talbott M. Houk, Culver City, both of Calif., assignors to International Rectifier Corporation, El Segundo, Calif.

Filed Feb. 27, 1995, Ser. No. 394,702

Int. Cl.[6] H02H *7/12*

U.S. Cl. 361—18 **14 Claims**



1. A high side MOSgated driver circuit which is operable from a low side input circuit and which has a reduced minimum turn off time in response to a fault condition; said driver circuit comprising, in combination:

a control logic signal circuit for receiving an input signal from said low side input circuit and related to the turn on and turn off of a high side power MOSgated device;

a level-shift circuit for level-shifting the signal from said control logic signal control circuit from the low side of said circuit to the high side of said driver circuit;

a first filter and latch circuit in the high side of said circuit and coupled to the high side of said level-shift up circuit;

a first coupling circuit coupling the output of said first filter and latch circuit to an output terminal for turning said high side power MOSgated device on and off in response to said input signal;

a fault current monitoring circuit for monitoring the current in said power MOSgated device and for producing an output signal in the present of a predetermined fault current condition;

a second fault latch circuit connected in the high side of said driver circuit;

a second coupling means for coupling the output of said fault latch circuit to said output terminal for turning off said high side power MOSgated device in response to the production of an output signal by said fault current monitoring circuit.

5,543,995

METHOD AND APPARATUS FOR PROTECTING A POWER TRANSMISSION LINE

Kajuaki Kumagai; Hiroshi Takiguchi, both of Hitachi, and Shigeru Abe, Hitachiota, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 1, 1993, Ser. No. 69,574

Claims priority, application Japan, Jun. 1, 1992, 4-140279

Int. Cl.[6] H02H *3/00*

U.S. Cl. 361—65 **6 Claims**

1. A protective relay device comprising:

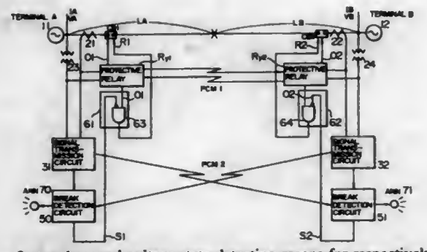
a first circuit breaker;

a second circuit breaker;

a power line normally connected at first and second ends A and B thereof to said first and second circuit breakers, respectively;

a protective relay for detecting occurrence of a fault in said power line and issuing an opening command to said first and second circuit breakers;

a reclosing device for automatically reclosing said first and second circuit breakers at the occurrence of a predetermined condition after issuance of said opening command;



a first and second voltage state detecting means for respectively detecting voltage states A_V and B_V at said first and second ends A and B of said power line, first and second current state detecting means for respectively detecting current states A_I and B_I at said first and second ends A and B of said power line, and first and second phase detection means for respectively detecting a phase difference θ_A between said voltage state A_V and said current state A_I at said end A and a phase difference θ_B between said voltage state B_V and said current state B_I at said end B;

a break detecting means which inputs voltage states A_V and B_V from said first and second voltage state detecting means, said current states A_I and B_I from said first and second current state detecting means, and said phase differences θ_A and θ_B from said first and second phase detecting means, utilizes said voltage state A_V, said current state A_I and said phase difference θ_A to calculate a fault point voltage V_A at a fault point a, utilizes said voltage state B_V, said current state B_I and said phase difference θ_B to calculate a fault point voltage V_B at a fault point b, calculates a differential voltage Δ_V using a formula $\Delta_V = (V_A - V_B)$, and determines that a break fault has occurred if said differential voltage Δ_V is larger than a predetermined value K, wherein said break fault in said power line is detected based on an inequality of said fault point voltages; and

a reclosing prevention means receiving an output of said break detecting means, for preventing an automatic reclosing of said first and second circuit breakers by said reclosing device after detection of a break fault by said break detecting means.

5,543,996

PROTECTIVE CIRCUIT FOR PROTECTING TRANSISTOR FROM THERMAL DESTRUCTION

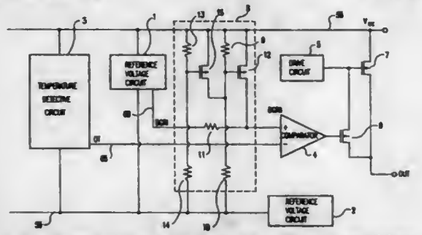
Manabu Nakago, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 363,832

Claims priority, application Japan, Dec. 28, 1993, 5-337167

Int. Cl.[6] H01L *29/00*

U.S. Cl. 361—90 **20 Claims**



1. A protective circuit for protecting a transistor, comprising:

a first voltage generator, connected between a first voltage line and a second voltage line, for generating a first voltage having a level which is stabilized against a change of an operating temperature;

a second voltage generator, connected between said first voltage line and said second voltage line, for generating a second voltage having a level which is changeable in accordance with a change of said operating temperature;

a comparator having first and second inputs;

means for supplying said first and second voltages to said first and second inputs of said comparator, respectively; and

a control circuit coupled between said first voltage line and said second voltage line for forcibly changing a level at one of said first and second inputs of said comparator to a predetermined level when a power voltage between said first and second voltage lines is in a predetermined range,

wherein said predetermined range corresponds to a range in which said second voltage has a substantially nonlinear characteristic.

5,543,997

SYSTEM FOR A WORKING APPARATUS

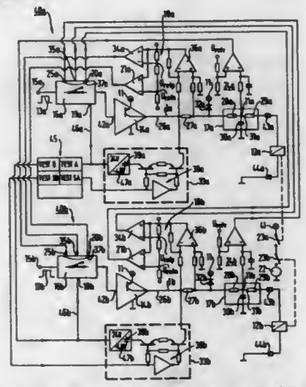
Harald Ruprecht, Waldkirch, Germany, assignor to Erwin Sick GmbH, Optik-Elektronik, Waldkirch/Breisgau, Germany

Filed Dec. 15, 1993, Ser. No. 166,751

Claims priority, application Germany, Dec. 17, 1992, 42 42 792.4

Int. Cl.[6] H02H *3/00*

U.S. Cl. 361—93 **23 Claims**



1. A safety switching arrangement for operating a working apparatus comprising:

first and second actuators for jointly actuating the working apparatus;

a power supply operatively coupled to the first and second actuators for supplying power to the first and second actuators;

first and second main switches coupled in series between the first and second actuators, respectively, and the power supply, the main switches each being movable between open and closed positions;

first and second sensor signal inputs for receiving signals to move the first and second main switches into the open and closed positions;

a controllable auxiliary switch coupled in series between each main switch and the first and second sensor signal inputs, respectively, each auxiliary switch being movable between open and closed positions;

a test generator coupled to each auxiliary switch and having control inputs for providing a test pause at regular intervals wherein the associated auxiliary and main switches are opened during the test pause, the intervals of the test pauses associated with each auxiliary switch being offset from each other; and

a test circuit for determining, during the test pause, whether the main switch associated with the respective auxiliary switch is open, the other auxiliary switch being opened when the main switch associated with said respective auxiliary switch remains closed during the test pause.

5,543,998

TEMPERATURE PROTECTED POWER TRANSISTOR CIRCUIT

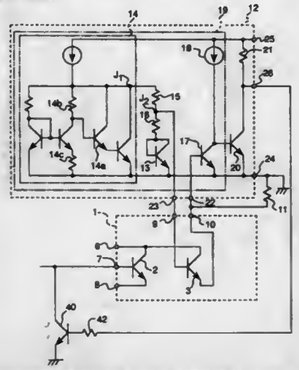
Katsuhiko Higashiyama, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co. Ltd, Kadoma, Japan

Filed May 25, 1994, Ser. No. 249,256

Claims priority, application Japan, May 28, 1993, 5-126895

Int. Cl.[6] H02H *5/04*

U.S. Cl. 361—103 **17 Claims**



1. A temperature protected power transistor circuit comprising:

a power transistor formed in a silicon chip;

a temperature detection transistor formed in said silicon chip in a vicinity of said power transistor for receiving heat emitted from said power transistor and for producing a voltage drop signal proportional to a temperature of said power transistor;

a voltage detector for detecting said voltage drop signal, said voltage detector comprising:

a switching transistor for effecting on and off operations relative to a threshold voltage level which varies with respect to temperature;

a quasi band gap reference circuit for producing a nearly constant voltage, wherein said nearly constant voltage varies slightly with respect to temperature;

a voltage divider connected to said quasi band gap reference circuit, and having a terminal for producing a divided voltage;

a compensation transistor connected to said voltage divider for compensating a threshold voltage level variation in said switching transistor caused by a temperature change, said voltage drop signal being detected between said terminal and said switching transistor, whereby said voltage detector produces a signal from said switching transistor when said voltage drop signal indicates that the heat emitted from said power transistor exceeds a predetermined threshold temperature.

5,543,999

SURGE PROTECTOR FOR COMPUTER EQUIPMENT

Andrew T. Riley, 1050 33rd St. NE., Rio Rancho, N.M. 87124

Continuation of Ser. No. 950,298, Sep. 24, 1992, abandoned. This application Nov. 14, 1994, Ser. No. 338,280

Int. Cl.[6] H02H *3/22*

U.S. Cl. 361—119 **10 Claims**

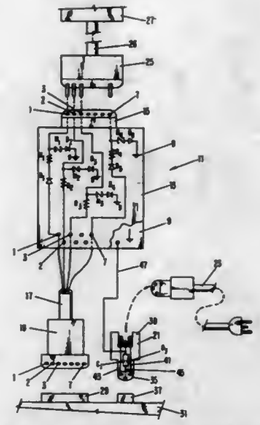
1. An overvoltage protector for electronic equipment comprising:

a) first and second spaced apart connectors;

b) a data transmit line including a first resistor, said data transmit line electrically interconnecting said connectors;

c) a data receive line including a second resistor, said data receive line electrically interconnecting said connectors;

d) a signal ground line including a third resistor, said signal ground line electrically interconnecting said connectors, said signal ground line, said data transmit line and said data receive line being electrically isolated from each other;



e) a protector ground electrically isolated from both of said connectors, said protector ground further electrically isolated from said data transmit line, said data receive line and said signal ground line;

f) means for connecting said data transmit line to said protector ground by a first electrical circuit, said first electrical circuit characteristically including a low resistance only in the presence of an electrical surge on said data transmit line, said first electrical circuit including a first unidirectional means for allowing said surge to form a unidirectional path to said protector ground, said first electrical circuit adapted to characteristically prevent any transient reverse surge from reentering said data transmit line;

g) means for connecting said data receive line to said protector ground by a second electrical circuit, said second electrical circuit characteristically including a low resistance only in the presence of an electrical surge on said data receive line, said second electrical circuit including a second unidirectional means for allowing said surge to form a unidirectional path to said protector ground, said second electrical circuit adapted to characteristically prevent any transient reverse surge from reentering said data receive line; and

h) means for connecting said signal ground line to said protector ground by a third electrical circuit, said third electrical circuit characteristically including a low resistance only in the presence of an electrical surge on said signal ground line, said third electrical circuit including a third unidirectional means for allowing said surge to form a unidirectional path to said protector ground, said third electrical circuit adapted to characteristically prevent any transient reverse surge from reentering said signal ground line.

5,544,000

ELECTRIC CONTROL APPARATUS

Haruhiko Suzuki, Anjo; Yasunari Kato, Toyoake; Kazuomi Ota, and Hiroaki Yamaguchi, both of Anjo, all of, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 64,974, May 21, 1993, abandoned. This application Feb. 6, 1995, Ser. No. 384,796

Claims priority, application Japan, May 22, 1992, 4-131156; Apr. 15, 1993, 5-088743

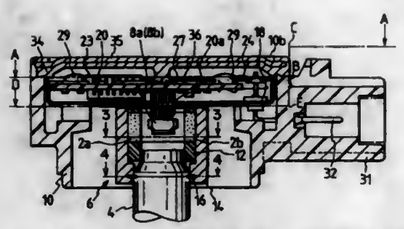
Int. Cl.[6] G01B *7/14*;; **H03K** *17/90*

U.S. Cl. 361—139 **44 Claims**

1. An electric control apparatus comprising:

magnetic flux generating element having opposing portions for generating a given quantity of magnetic flux;

a first magnetic-to-electric transducer element, wherein one of the magnetic flux generating element and the first magnetic-to-electric transducer element is movable relative to the other,



the first magnetic-to-electric transducer element being operative for detecting a magnitude of the magnetic flux which is responsive to relative motion between the magnetic flux generating element and the first magnetic-to-electric transducer element and outputting a first detection signal in response to the relative motion between the magnetic flux generating element and the first magnetic-to-electric transducer element, the first magnetic-to-electric transducer element being located proximate to the magnetic flux generating element so as to detect the magnetic flux;

a second magnetic-to-electric transducer element, wherein one of the magnetic flux generating element and the second magnetic-to-electric transducer element is moveable relative to the other, the second magnetic-to-electric transducer element being operative for detecting the magnitude of a magnetic flux which is responsive to relative motion between the magnetic flux generating element and the second magnetic-to-electric transducer element and outputting a second detection signal in response to the relative motion between the magnetic flux generating element and the second magnetic-to-electric transducer element, the second magnetic-to-electric transducer element being located proximate to the magnetic flux generating element so as to detect the magnetic flux; and

control signal outputting means, operatively connected to the first magnetic-to-electric transducer element and the second magnetic-to-electric transducer element, for comparing the first detection signal output from the first magnetic-to-electric transducer element and the second detection signal output from the second magnetic-to-electric transducer element with each other to detect a difference therebetween, and for outputting a condition normal signal when the detected difference between the first detection signal and the second detection signal agrees with a predetermined relation.

5,544,001

ELECTROSTATIC RELAY

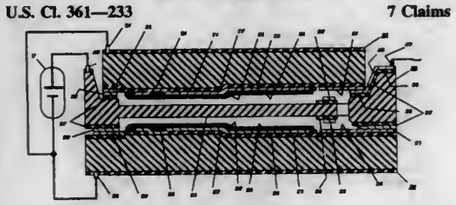
Mitsuo Ichiya, Hirakata; Fumihiro Kasano, Sakai; Hiromi Nishimura, Takatsuki, all of, Japan; Jacques Lewiner, Saint-Cloud, and Dider Perino, Rueil Malmaison, both of, France, assignors to Matsushita Electric Works, Ltd., Osaka, Japan; Jacques Lewiner, Saint-Cloud, and Dider Perino, Rueil Malmaison, both of, France

Filed Jan. 24, 1994, Ser. No. 188,414

Claims priority, application Japan, Jan. 26, 1993, 5-010607

Int. Cl.[6] H01H *57/00*

U.S. Cl. 361—233 **7 Claims**



1. An electrostatic relay comprising:

a fixed base having a fixed electrode with a pair of fixed contacts which are insulated from said fixed electrode;

an actuator frame secured on said fixed base and having an elongate movable electrode with a movable contact insulated from said movable electrode, said movable electrode extending along said fixed electrode and being pivotally supported at one longitudinal end to said actuator frame so that said movable electrode is allowed to pivot between two contacting positions of closing and opening said contacts, said movable contact being formed at the other longitudinal end of said movable electrode; and

a control voltage source connected across said fixed electrode and said movable electrode to generate a potential difference therebetween for developing an electrostatic force by which said movable electrode is attracted toward said fixed electrode to move into one of said two contacting positions,

wherein said movable electrode is cooperative with said fixed electrode to define therebetween a first elongate gap along a first portion of a length of said movable electrode which is narrower toward said one longitudinal end about which said movable electrode is pivotable than a second elongate gap along a second portion of the length of said movable-electrode toward the other longitudinal end of said movable electrode at which said movable contact is carried.

5,544,002

HIGH VOLTAGE CAPACITOR AND MAGNETRON

Shouichi Iwaya; Masahiro Yahagi; Hitoshi Kudou; Shigeru Itou; Isao Fujiwara; Tadashi Ogasawara; Makoto Morita; Teruo Taguchi, and Setuo Sasaki, all of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan

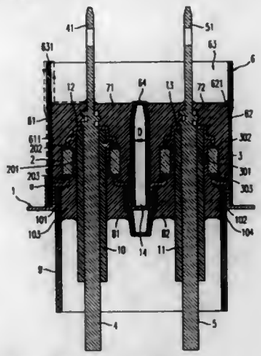
PCT No. PCT/JP92/01077, § 371 Date Feb. 24, 1994, § 102(e) Date Feb. 24, 1994, PCT Pub. No. WO93/04494, PCT Pub. Date Apr. 3, 1993

PCT Filed Aug. 26, 1992, Ser. No. 196,229

Claims priority, application Japan, Aug. 27, 1991, 3-075727; Aug. 29, 1991, 3-077156; Sep. 5, 1991, 3-080035; Sep. 12, 1991, 3-82301; Sep. 24, 1991, 3-85423; Oct. 8, 1991, 3-90580

Int. Cl.[6] H01G *4/35;4/38*

U.S. Cl. 361—302 **7 Claims**



1. A high voltage capacitor comprising:

a grounding member having at least one raised portion;

at least one through-capacitor element having electrodes on its opposite surfaces, and being disposed on said raised portion so that one of said electrodes on one side of said through-capacitor element is bonded to said at least one raised portion;

two conductors each passing through said through-capacitor element, and each being connected independently to the electrode on the other side of said through-capacitor element;

an insulating resin provided around said through-capacitor element; and

an insulating case provided on an outer surface of said insulating resin;

wherein:

said grounding member comprises two said raised portions spaced apart from each other;

two of said through-capacitor elements are provided, each being disposed on one of said two raised portions; and

said insulating case has two hollow cylindrical projections spaced apart from each other, said hollow cylindrical projections having open upper ends joined to each other to form a recessed enclosure in line with and following inner diameter sections of said hollow cylindrical projections, and having open lower ends fitted on outer circumferences of said raised portions, said through-capacitor elements being housed within said inner diameter sections.

5,544,003

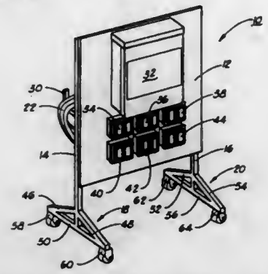
PORTABLE ELECTRICAL DISTRIBUTION PANEL

Joe L. Vanghan, 920 Windermere, Moore, Okla. 73160

Filed Mar. 6, 1995, Ser. No. 398,781

Int. Cl.[6] H02B *1/04*

U.S. Cl. 361—625 **1 Claim**



1. A portable power panel for multiple receptacle electrical distribution from a primary power source, comprising:

an insulative mounting panel;

a support structure having said mounting panel secured thereon;

plural ground-contacting wheel assemblies affixed to said support structure;

a main circuit breaker secured on said mounting panel and receiving input from said primary power source;

a plurality of secondary circuit breakers secured on said mounting panel and connected to receive input power from said main circuit breaker and to provide a plurality of secondary power outputs;

a plurality of power receptacles secured on said mounting panel and energized by respective ones of said secondary power outputs;

a ground connector lead interconnecting all of said main circuit breaker, said plurality of secondary circuit breakers and said plurality of power receptacles; and

a plurality of ground fault indicator circuits connected in parallel between each of said plurality of secondary circuit breakers and said ground connector lead.

5,544,004

PIN-BOARD MATRIX SWITCH

Shuichiro Inagaki, Tokyo; Tadashi Hirono, and Shigefumi Hosokawa, both of Saitama, all of, Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Oct. 11, 1994, Ser. No. 321,129

Claims priority, application Japan, Oct. 14, 1993, 5-280274; Oct. 5, 1994, 6-241264

Int. Cl.[6] H02B *1/056;* **H01H** *63/00;9/00*

U.S. Cl. 361—633 **13 Claims**

1. A pin-board matrix switch comprising:

a matrix board of X- directed and Y- directed conductor patterns arranged in matrix form with cylindrical contacts connected to the X- and Y- conductor patterns at crossing points thereof, and intermediate isolation portions for interrupting conduction between the X- and Y- conductor patterns, the conductor patterns stacked on top of one another in a Z-direction with the X- and Y- conductor patterns alternating, and the cylindrical contacts and the intermediate isolation portions defining crosspoint holes in the matrix board;

at least one twisted conductor pair comprising a lower and an upper conductor pattern in the same direction, each conductor pattern having a cut portion defining first and second divided wiring portions, longitudinal conductors connecting the first divided wiring portion in the upper conductor to the second divided wiring portion in the lower conductor and the second divided wiring portion in the upper conductor to the first divided wiring portion in the lower conductor; and

a connecting pin comprising conductive springs, the connecting pin being selectively inserted into one of the crosspoint holes to electrically connect the X- and Y- conductor patterns.

5,544,005

KEYBOARD STORAGE APPARATUS HAVING A CABLE END MOVED BY MOVEMENT OF A KEYBOARD HOUSING SECTION

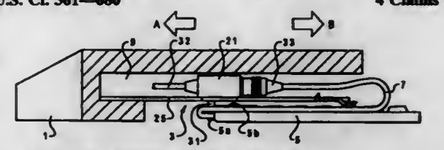
Seita Horikoshi, Zama; Mikio Kurihara, Yokohama; Atsuhisa Naitoh, Ebina, and Kazuhide Yoshihara, Machida, all of, Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 7, 1994, Ser. No. 271,828

Claims priority, application Japan, Jul. 7, 1993, 5-167644

Int. Cl.[6] G06F *1/16;* **H05K** *7/16*

U.S. Cl. 361—680 **4 Claims**



1. A keyboard housing structure comprising:

a keyboard housing section for housing a keyboard body;

a cable housing section for housing a cable having one end connected to the keyboard body, and a second end of the cable being arranged to be movable in the cable housing section along a housing direction and a pull-out direction, said second end of the cable being arranged to be moved in the housing direction within said cable housing section when moving said keyboard housing section in the housing direction;

a cable side connector is provided on said other end of the cable; and

a storing section side connector detachably connected to said cable side connector being housed in said cable housing

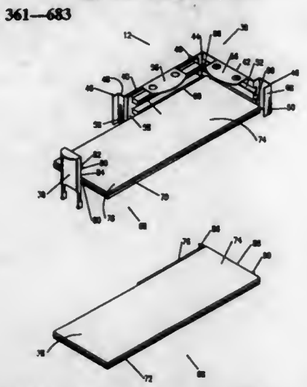
section movable along said housing direction and said pull-out direction, said cable side connector being arranged so as to be latched by a latch means when said storing section side connector is at a predetermined position in said pull-out direction in the cable housing section.

5,544,006

COMPUTER CHASSIS HAVING FLEXIBLE CARD GUIDE FOR EXPANSION CARD INSERTION AND REMOVAL

Timothy M. Radloff, and Erica J. Scholder, both of Austin, Tex., assignors to Dell USA, L.P., Austin, Tex.

Filed Jan. 18, 1995, Ser. No. 374,450
Int. Cl.[6] H05K 7/14;7/16
U.S. Cl. 361—683 27 Claims



21. A personal computer chassis, comprising:

a main chassis having a base wall and front, rear and opposing side walls joined to said base wall and a top open portion;

an expansion card cage removably secured to one of said opposing side walls adjacent said rear wall, said expansion card cage having a framework configured to receive a riser card therein, said riser card having a card edge connector configured to be removably received in a motherboard riser connector to thereby electrically couple said riser card to a motherboard positioned with said main chassis, said riser card further having an expansion card connection socket for removably receiving therein an expansion card to thereby electrically couple said expansion card to said motherboard, said expansion card substantially parallel with a plane of said top open portion;

a card guide structure pivotally mounted to said base wall and biased between an engaged position and a retracted position; and

card guide projections on a surface of said card guide structure having a recess formed between said card guide projections adapted to receive an edge of said expansion card when said card guide structure is in said engaged position, said card guide projections thereby supporting said expansion card as against a force normal to said plane of said expansion card, said card guide structure movable to said retracted position to allow said expansion card to be removed from said computer chassis in a direction normal to said plane of said expansion card and transverse to an orientation of said card guide projections.

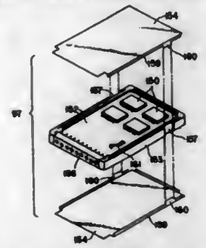
5,544,007

CARD-SHAPED ELECTRONIC DEVICE USED WITH AN ELECTRONIC APPARATUS AND HAVING SHIELD PLATE WITH CONDUCTIVE PORTION ON A LATERAL SIDE

Kanji Inoue, Tokorozawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 118,481, Sep. 8, 1993, Pat. No. 5,316,491, which is a continuation of Ser. No. 900,974, Jun. 18, 1992, abandoned. This application Nov. 29, 1993, Ser. No. 158,966
Claims priority, application Japan, Jul. 19, 1991, 3-56489 U
Int. Cl.[6] G06F 1/16; H05K 7/10
U.S. Cl. 361—684 20 Claims

5. A card-shaped electronic device for use with an electronic



apparatus having an insertion opening, said device comprising:

a rectangular flat box-like main body to be inserted into and taken out of the electronic apparatus in a given insertion direction through the insertion opening, the main body having a circuit board mounted with semiconductors, and a rectangular mold frame fitted to the periphery of the circuit board, the mold frame having upper and lower surfaces, a pair of lateral sides extending in the insertion direction, a front end and a rear end with respect to the insertion direction, and engaging grooves formed on the upper and lower surfaces and extending along peripheral edges of the mold frame;

a pair of shield plates fixed to the mold frame to cover the upper and lower surfaces of the main body, each of the shield plates having peripheral edge portions which are bent to constitute retaining portions, the retaining portions being fitted in the engaging grooves to position the shield plates at predetermined positions on the mold frame, respectively;

means electrically connecting the shield plates to a ground of the circuit board: and

a conductive portion fixed to a lateral side of the mold frame and electrically connected to the shield plates, for electrically connecting the shield plates with the electronic apparatus when the main body is loaded in the electronic apparatus.

5,544,008

COMPUTER EXPANSION MODULE APPARATUS

Roger F. Dimmick; Gary A. Fitterer; Jeff A. Jajowka; William F. Otto; Jerry R. Rasmussen, all of Rochester, and Terry L. Sobotta, Byron, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

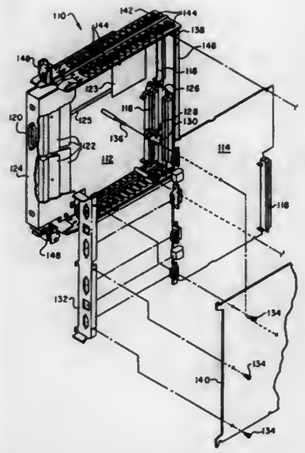
Filed Jun. 30, 1994, Ser. No. 269,266
Int. Cl.[6] G06F 1/16; H05K 7/04;9/00
U.S. Cl. 361—684 11 Claims

1. A computer system expansion module for connection to a computer system main board via an expansion slot, comprising:

a first card having a data processing unit and associated memory coupled together via a high speed internal local bus;

means for connecting a second expansion card to said first card; and

means for externally connecting said expansion module to a lower speed input-output bus of a computer system.

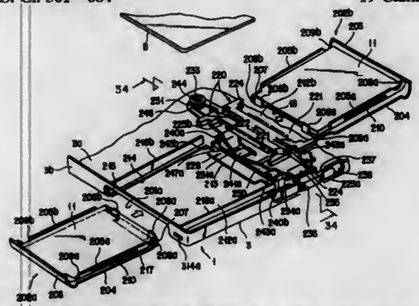


5,544,009

PORTABLE ELECTRONIC APPARATUS HAVING EJECTOR FOR REMOVING CARD-LIKE ELECTRONIC PART FROM PORTABLE ELECTRONIC APPARATUS

Ryo Hosoya, and Takaichi Kobayashi, both of, Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 215,419, Mar. 21, 1994, abandoned, which is a division of Ser. No. 940,641, Sep. 4, 1992, abandoned.
This application Jan. 26, 1995, Ser. No. 378,595
Claims priority, application Japan, Sep. 6, 1991, 3-071836 U; Sep. 6, 1991, 3-226847
Int. Cl.[6] G06F 1/16; H01R 13/62; H05K 7/10
U.S. Cl. 361—684 19 Claims



11. A portable electronic apparatus to which a card-like electronic part is connectable, comprising:

a housing having a side surface in which an inlet is formed, an upper surface on which data inputting means is arranged, and a front surface continuous with said side surface and said upper surface; and

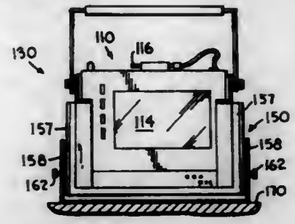
a card storage section, provided below said inputting means within said housing such that said card storage section is continuous with said inlet, for allowing said card-like electronic part to be accessibly inserted into said card storage section through said inlet, said card storage section having an ejector for ejecting said card-like electronic part to the outside of said housing through said inlet, said ejector having an operation lever which is arranged on said front surface of said housing.

5,544,010

PORTABLE ELECTRONIC DEVICE DOCKING SYSTEM

Darald R. Schultz, Cedar Rapids; Arvin D. Danielson, Solon; Alan G. Bunte, Cedar Rapids, and Richard A. Sherman, Toddville, all of Iowa, assignors to Norand Corporation, Cedar Rapids, Iowa

Division of Ser. No. 275,884, Jul. 15, 1994, Pat. No. 5,408,382, which is a continuation of Ser. No. 958,873, Oct. 8, 1992, abandoned, which is a continuation-in-part of Ser. No. 880,452, May 8, 1992, abandoned, which is a continuation-in-part of Ser. No. 818,761, Jan. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 558,895, Jul. 25, 1990, abandoned. This application Apr. 17, 1995, Ser. No. 423,239
Int. Cl.[6] G06F 1/16; H05K 7/10
U.S. Cl. 361—686 6 Claims



1. A docking system comprising:

(a) a first electrical apparatus having opposing first sides and a first electrical connector;

(b) a second electrical apparatus having a pair of extending side panels and a second electrical connector;

(c) a dock having:

(1) a first connecting mechanism for physically and electrically connecting said dock to said first electrical apparatus wherein said first connecting mechanism is releasably and matingly engageable with said first electrical connector,

(2) a second connecting mechanism for physically and electrically connecting said dock to said second electrical apparatus wherein said second connecting mechanism is electrically connected with said first connecting mechanism and is releasably and matingly engageable with said second electrical connector, and

(3) a first guide mechanism for guiding said first connecting mechanism into said mating engagement with said first electrical connector wherein said guide mechanism includes a pair of opposing side pieces adapted to extend along said opposing first sides of said first electrical apparatus, and a second guide mechanism for guiding said second connecting mechanism into mating engagement with said second electrical connector and

(d) wherein said pair of extending side panels are adapted to extend along sides of said dock.

5,544,011

BRACKET AND MODULE ASSEMBLY FOR A PORTABLE PERSONAL COMPUTER

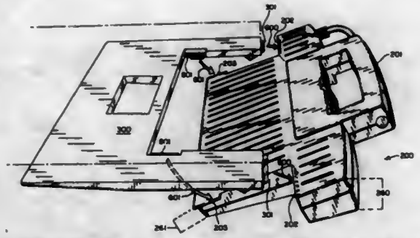
Timothy J. Blaney, Fremont; Ronald A. Smith, and Nicholas F. Talesfore, both of Los Gatos, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Jan. 14, 1994, Ser. No. 182,279
Int. Cl.[6] G06F 1/16; H05K 5/00
U.S. Cl. 361—683 9 Claims

1. A bracket and module assembly for a portable personal computer comprising:

a bracket, said bracket being attachable to a body of a portable personal computer;

a module, said module and said bracket being rotatable about an axis from a first position to a second position with respect to one another, wherein said module comprises:



a transmitter and a receiver for enabling communications between said portable personal computer and a station in a network;

a cable and a connector for coupling said transmitter and said receiver to said portable personal computer; and

a holder for holding said connector when said module is not coupled to said portable personal computer; and

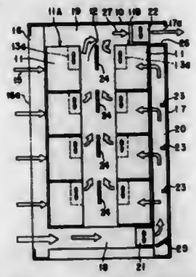
a latch member movably disposed with one of said bracket and said module, said latch member engaging a portion of the other of said bracket and said module when said bracket and said module are rotated from said first position to said second position with respect to one another, such that after said latch member has engaged said portion, said module is in a locked position with respect to at least one direction about said axis.

5,544,012

COOLING SYSTEM FOR COOLING ELECTRONIC APPARATUS

Norihiro Koike, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 28, 1994, Ser. No. 364,987
Claims priority, application Japan, Dec. 28, 1993, 5-351056
Int. Cl.[6] H05K *7/20*
U.S. Cl. 361—695 **25 Claims**



1. A cooling system applied to an electronic apparatus including a box body with a front side, a rear side, a bottom side and a top side, a first electronic device unit housed within the box body on said front side, a second electronic device unit housed within the box body on said rear side, a front cover situated on said front side of the box body, and a rear cover situated on the rear side of the box body, said cooling system cooling said first and second electronic device units, said cooling system comprising:

a suction port, formed in said front cover, for introducing an air stream from the outside of said box body and guiding the air stream to at least said first electronic device unit;

a horizontal duct for introducing an air stream from said suction port and guiding the air stream towards said rear side of the box body, said horizontal duct being provided on said bottom side of the box body, having one end portion communicating with said suction port, and having the other end portion extending to said rear side of the box body;

a vertical duct for introducing the air stream from said horizontal duct and guiding the air stream to said second electronic device unit, said vertical duct being provided on said rear side of the box body, having one end portion communicating with said horizontal duct, and having the other end portion extending to said top side of the box body;

a partition member, provided between said first electronic device unit and said second electronic device unit, for separating the air stream coming out from said first electronic device unit and the air stream coming out from said second electronic device unit; and

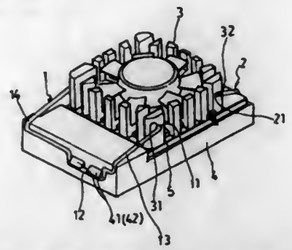
an exhaust port, formed in said rear cover, for taking in the air streams from said first and second electronic device units and exhausting the air streams to the outside of the box body.

5,544,013

CPU RADIATING FLANGE MOUNTING DEVICE

Ming D. Chiou, 3F., No. 4, Alley 11, Lane 327, Sec. 2, Chung Shan Rd., Chung Ho City Taipei, Taiwan

Filed Sep. 13, 1994, Ser. No. 304,896
Int. Cl.[6] H05K *7/20*
U.S. Cl. 361—687 **1 Claim**



1. A CPU radiating flange mounting device comprising a CPU holder to hold a CPU, said CPU holder having a plurality of projecting rods on two opposite sides thereof, a radiating flange mounted on said CPU holder to hold down said CPU, and two hanger means pivotably connected to opposite sides of said radiating flange and detachably hanging on said projecting rods to secure said radiating flange to said CPU holder, wherein

said hanger means are respectively made from a springy wire rod, each having two opposite hooked ends turnably hooked in respective hook holes on said radiating flange, curved rod sections bilaterally disposed in the middle and bridged over one end of said CPU holder, and a hanging rod section spaced between the curved rod sections and respectively hung on said projecting rods of said CPU holder.

5,544,014

IC CARD HAVING A BUILT-IN SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Shiro Atsumi, Tokyo, Japan, assignor to OKI Electric Industry Co., Ltd., Tokyo, Japan

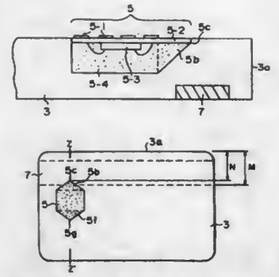
PCT No. PCT/JP93/01055, § 371 Date Apr. 8, 1994, § 102(e) Date Apr. 8, 1994, PCT Pub. No. WO94/04376, PCT Pub. Date Mar. 3, 1994
PCT Filed Jul. 27, 1993, Ser. No. 211,570
Claims priority, application Japan, Aug. 12, 1992, 4-215100
Int. Cl.[6] H05K *1/14*
U.S. Cl. 361—737 **8 Claims**

1. An IC card comprising;

a card substrate defined by a first long side, a first short side which is substantially perpendicular to said first long side, a second long side opposite to said first long side, and a second short side opposite to said first short side, said card substrate having a front surface, and a back surface opposite to said front surface;

a magnetic body having a first end face and a second end face opposite to said first end face, said magnetic body storing information therein and being formed on said front surface of said card substrate, said first end face of said magnetic body being substantially parallel with said first long side of said card substrate, and being spaced from said first long side of said card substrate by a first distance, and said second end face of said magnetic body being spaced from said first long side of said card substrate by a second distance which is longer than said first distance; and

a module formed on said back surface of said card substrate, said module including a substrate having a first side and a second side opposite to said first side of said module substrate, a semiconductor integrated circuit device disposed on said substrate, and a covering material covering said substrate and said semiconductor integrated circuit device, said first side of said module substrate being spaced from said first long side of said card substrate by a third distance which is longer than said first distance and shorter than said second distance.

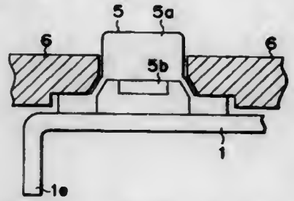


5,544,015

PRINTED CIRCUIT BOARD

Noboru Akami, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Oct. 7, 1993, Ser. No. 132,967
Claims priority, application Japan, Oct. 9, 1992, 4-070544 U
Int. Cl.[6] H05K *1/00*
U.S. Cl. 361—749 **13 Claims**



4. A camera having electronic components, the camera comprising:

a printed circuit board on which the electronic components are mounted and having first and second edges opposite each other;

first and second support members, arranged adjacent to said first edge, for supporting said printed circuit board; and

a depression member to apply a depression force to said printed circuit board between said first and second support members;

wherein said printed circuit is folded at said first edge, forming a first folded portion between said first and second support members.

5,544,016

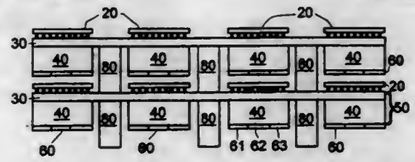
Patent Not Issued For This Number

5,544,017

MULTICHIP MODULE SUBSTRATE

Solomon I. Beilin, San Carlos; William T. Chou, Cupertino; David Kudzuma, San Jose; Michael G. Lee, San Jose; Teruo Murase, San Jose; Michael G. Peters, Santa Clara; James J. Roman, Los Altos; Som S. Swamy, Danville, and Wen-chou V. Wang, Cupertino, all of Calif., assignors to Fujitsu Limited, Japan

Continuation-in-part of Ser. No. 157,332, Nov. 22, 1993, Pat. No. 5,426,563, which is a continuation of Ser. No. 925,962, Aug. 5, 1992, abandoned. This application Jul. 19, 1994, Ser. No. 277,163
Int. Cl.[6] H05K *1/14*
U.S. Cl. 361—790 **14 Claims**



1. A substrate for mounting microelectronic components, comprising:

a generally planar rigid support base having upper and lower major surfaces and an aperture between said upper and lower surfaces,

a thin film structure disposed on one of said major surfaces of said rigid support base such that said thin film structure spans said aperture, the portion of said thin film structure which spans said aperture having exposed upper and lower surfaces,

a plurality of connection points located on the exposed lower surface of said thin film structure, and

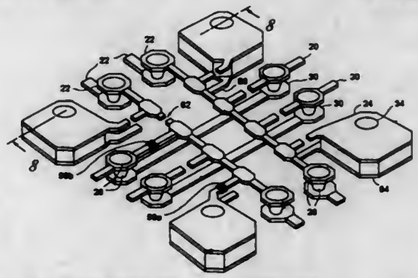
a plurality of vias extending between the upper and lower surfaces of said support base.

5,544,018

ELECTRICAL INTERCONNECT DEVICE WITH CUSTOMIZEABLE SURFACE LAYER AND INTERWOVEN SIGNAL LINES

Scott C. Sommerfeldt, Round Rock; Thomas W. Rudwick, III, Austin, and Robert F. Miracky, Cedar Park, all of Tex., assignors to Microelectronics and Computer Technology Corporation, Austin, Tex.

Filed Apr. 13, 1994, Ser. No. 227,315
Int. Cl.[6] H05K *1/11*
U.S. Cl. 361—792 **29 Claims**



1. An electrical interconnect device comprising:

a plurality of intermittently spaced first pairs of upper signal lines extending parallel to each other across a first plane, said first pairs of upper signal lines are connected at terminal ends thereof to a plurality of intermittently spaced first pairs of lower signal lines extending parallel to each other across a second plane;

a plurality of intermittently spaced second pairs of upper signal lines extending parallel to each other and perpendicular to

said first pairs of upper signal lines across said first plane, said second pairs of upper signal lines are connected at terminal ends thereof to a plurality of intermittently spaced second pairs of lower signal lines extending parallel to each other and perpendicular to said first pairs of lower signal lines across said second plane, wherein said first pairs of upper signal lines and said first pairs of lower signal lines are interwoven a spaced distance with said second pairs of upper signal lines and said second pairs of lower signal lines; and

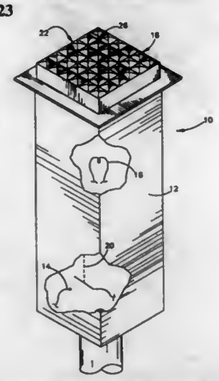
a plurality of bonding pads, each of said plurality of bonding pads is arranged upon said first plane in an area between adjacent said first pairs of upper signal lines and between adjacent said second pairs of upper signal lines, and directly above an area between adjacent said first pairs of lower signal lines and between adjacent said second pairs of lower signal lines.

5,544,019

DISPLAY SYSTEM

Vanacan Tatavoosian, Mission Vejo; Robert P. Heistern, Costa Mesa, and John J. Lombardo, Lake Forest, all of Calif., assignors to Eaton Corporation, Cleveland, Ohio

Filed Feb. 21, 1995, Ser. No. 393,161
Int. Cl.[6] G01D *11/28*
U.S. Cl. 362—23 **21 Claims**



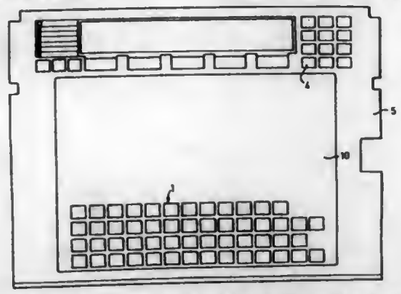
1. A display system comprising a housing, energizeable means disposed in said housing for producing light when said energizeable means is energized, said energizeable means being ineffective to produce light when said energizeable means is de-energized, a panel connected with said housing and formed of a transparent material which is a polymer, said panel having an outer side exposed to ambient light and an inner side which is opposite from said outer side and exposed to light from said energizeable means when said energizeable means is energized, said outer side of said panel being coated with a thin coating of a monomer, and indicia disposed in said housing at a location between said inner side of said panel and said energizeable means, said indicia being observable through said panel when said energizeable means is energized and being obscured when said energizeable means is de-energized, said outer side of said panel including an array of pyramidal projections which project outward away from said inner side of said panel, said array of pyramidal projections extends across said indicia so that light from said energizeable means passes through said array of pyramidal projections to enable said indicia to be observed when said energizeable means is energized, each of said pyramidal projections of said array of pyramidal projections includes a polygonal base and a plurality of flat sides which extend away from said polygonal base and away from said energizeable means to an apex to enable light from said energizeable means to enter at least a plurality of said pyramidal projections through said polygonal base of each pyramidal projection of said plurality of pyramidal projections when said energizeable means is energized.

5,544,020

KEYBOARD HAVING VISIBLE AND INVISIBLE STATES

Peter J. Loeber, Ferring, England; Peter W. Hurst, deceased, late of Littlehampton, Great Britain, and George R. Hurst, legal representative, Pulborough, both of, Great Britain, assignors to Eurotherm Recorders Limited, West Sussex, England

PCT No. PCT/GB91/00794, § 371 Date Nov. 12, 1993, § 102(e) Date Nov. 12, 1993, PCT Pub. No. WO91/18265, PCT Pub. Date Nov. 28, 1991
PCT Filed May 21, 1991, Ser. No. 949,259
Claims priority, application United Kingdom, May 21, 1990, 9011344
Int. Cl.[6] G01D *11/28*; G09F *13/20*
U.S. Cl. 362—29 **18 Claims**



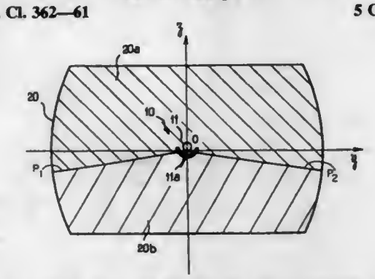
11. A keyboard device comprising a transparent panel, a plurality of transparent circuit elements positioned on said transparent panel defining at least partially a keyboard, at least one radiation-responsive display element spatially positioned on said panel corresponding to at least one of said circuit elements, said display element being normally transparent, and a radiation source for selectively irradiating said at least one display element thereby to render it selectively visible for revealing the position of said at least one circuit element.

5,544,021

MOTOR VEHICLE HEADLIGHT INCLUDING A TWO-FILAMENT LAMP FOR SELECTIVELY GENERATING A MAIN BEAM AND AN ANTI-FOG BEAM

François Lopez, Bondy; Etienne Pauty, Paris, and Norbert Brun, Guermantes, all of, France, assignors to Valeo Vision, Bobigny, France

Filed Jul. 29, 1993, Ser. No. 99,239
Claims priority, application France, Jul. 30, 1992, 92 09456
Int. Cl.[6] B60Q *1/04*
U.S. Cl. 362—61 **5 Claims**



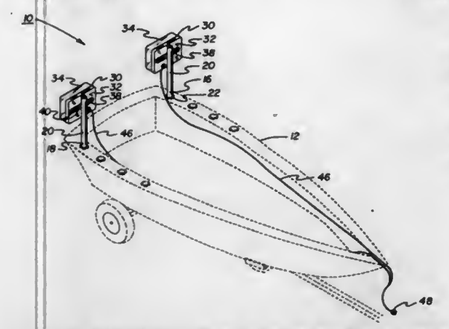
1. A motor vehicle headlight of the type comprising a two-filament lamp in which a first filament is provided with a cup so as to allow light to pass over a given angle substantially greater than 180° and delimited by two half-planes each inclined relative to and to a similar degree beneath an imaginary horizontal line, and in which a second filament has no such cup, the headlight further comprising a closure glass and a non-parabolic reflector suitable for co-operating with the first and second filaments for generating respectively an anti-fog beam and a main beam, wherein the reflector comprises a reflecting surface having a first zone whose extent corresponds at least approximately to said given angle and whose shape is such that it generates, on its own and independently of cup shape, images of the first filament in which all of the points of the images lie below a horizontal cutoff, thereby forming the anti-fog beam, and a second zone that runs continuously into the first zone, said first and second zones cooperating with the second filament to form the main beam.

5,544,022

PORTABLE SET OF BOAT TRAILER LIGHT ASSEMBLIES

Vernon M. Blackard, P.O. Box 945, Zachary, La. 70791

Filed Jun. 20, 1995, Ser. No. 492,456
Int. Cl.[6] B60Q *1/00*
U.S. Cl. 362—61 **1 Claim**



1. A new and improved portable set of boat trailer light assemblies which can be quickly and easily removed or applied with respect to a boat comprising, in combination:

a pair of posts including a first post and a second post of a similar configuration, each post having an upper vertical section extending upwardly and positionable above an aperture adjacent to the rear of a boat, each post having a lower angled section of a cylindrical cross-section extending downwardly from the lower end of the upper vertical section into opposing apertures of the boat, each aperture having a fishing rod holding chamber, each chamber being angled outwardly between five and ten degrees from vertical, the lower angle section forming an angle of between five and ten degrees from the vertical with the angles of the two posts being equal and opposite and bending toward each other whereby placement of the lower angled section within the fishing rod holding chamber leaves the upper vertical section orthogonally related to the boat, the upper section of each post being between ten and twenty-five percent longer than the lower section, each lower section including an axial slot extending upwardly from the lower end thereof to a distance of about ten percent of the length of the lower section of the posts;

an electrical box secured to the upper extent of each post positionable to face rearwardly from the boat, each of the boxes having a generally rectangular rear face coupled to the upper end of the posts, each box having a transparent section in a box-like configuration removably positioned on the outermost surface of the rear portion of the box;

a horizontally disposed bracket attached to the upper extent of the post and removably coupled by bolts to the interior surface of the box; and

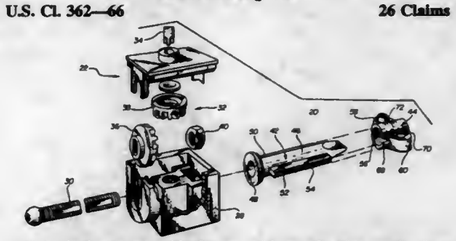
illumination means within each of the boxes with an electrical line extending from each of the electrical boxes and terminating with a common electrical plug coupling the two electrical lines.

5,544,023

HORIZONTAL ZERO INDICATOR ASSEMBLY

Karl R. Schmitt, Rockford, Ill., and David M. Mosnot, Noblesville, Ind., assignors to Textron Inc., Providence, R.I.

Filed Jul. 11, 1994, Ser. No. 273,317
Int. Cl.[6] B60Q *1/04*
U.S. Cl. 362—66 **26 Claims**



1. An indicator assembly for use with an adjusting mechanism, said adjusting mechanism being used to adjust the position of a movable headlamp component, said adjusting mechanism including a housing member having a passage formed therein; an elongated, threaded adjusting screw disposed in said passage of said housing member, said adjusting screw having a first end and second end, said first end operatively associated with a movable headlamp Component; structure for driving said elongated adjusting screw, said driving structure operatively associated with said screw for driving said screw to produce axial displacement of said screw so as to move said movable headlamp component, said indicator assembly comprising:

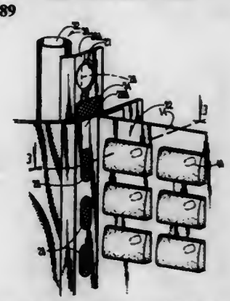
a hollow member connected to said housing member, said hollow member extending around said second end of said adjusting screw and a follower member operatively associated with said hollow member and selectively positionable on an exterior surface of said hollow member and slidable along said exterior surface of said hollow member for providing an indication of a zero position of said adjusting screw.

5,544,024

MEANS AND METHOD FOR ILLUMINATING PARTS OF A VENDING MACHINE

Francis A. Wittern, Jr., Des Moines, and Paul L. Hawkins, Guthrie Center, both of Iowa, assignors to Fawn Engineering Corporation, Des Moines, Iowa

Filed Oct. 3, 1995, Ser. No. 538,397
Int. Cl.[6] F21V *33/00*
U.S. Cl. 362—89 **19 Claims**



1. An illumination apparatus for a vending machine comprising:

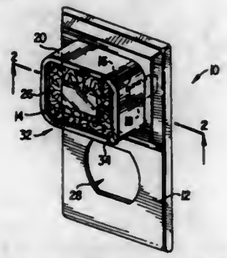
an enclosed housing having an interior and an exterior;

a light source in the interior of the housing;

a portion of the housing comprising a display utilizing the light source to backlight the display;

a window in the housing positioned to allow light from the light source to pass from the interior of the housing and illuminate a portion of the exterior of the housing.

5,544,025
OUTLET COVER PLATE INCORPORATING A NIGHTLIGHT
Perry P. Bohlool, Lake Ridge, Va., and George J. Ricci, Danville, Ky., assignors to Standard Enterprises, Inc., Woodbridge, Va.
Filed Jun. 2, 1994, Ser. No. 253,024
Int. Cl.[6] F21V *33/00*
U.S. Cl. 362—95 **21 Claims**



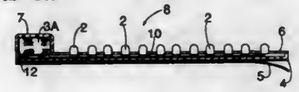
1. A combination cover and nightlight for use with a duplex receptacle, comprising:
a generally planar duplex receptacle cover having a plane surface to be disposed immediately in front of said duplex receptacle;
a light source;
means for housing the light source, comprising a light source area integrally formed with the cover by an extension portion of the cover and which extension portion projects forward of the cover plane to form the housing means;
a pair of male only electrical contacts which extend to the rear of the cover to engage and connect to female contacts in one-half of the duplex receptacle, and being further connected to said light source; and
a faceplate adapted for light transmission therethrough, covering the housing means and being non-removably joined thereto;
wherein the cover blocks external access to at least one-half of the duplex receptacle.

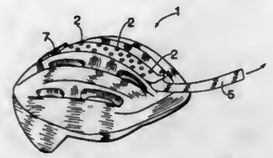
5,544,026
RUNNING LIGHTS FOR IN-LINE ROLLER SKATES
Gary D. Holbrook, 7871 E. Topeka Pl., Yuma, Ariz. 85365
Filed Jun. 2, 1995, Ser. No. 460,278
Int. Cl.[6] F21L *15/08*
U.S. Cl. 362—103 **20 Claims**



1. Running lights for in-line roller skates, comprising:
a generally U-shaped front portion having an attached toe strap, two integral anchor members, and integral means for mounting at least one beadlight;
a central portion; and
a generally U-shaped heel portion having apertures through said heel portion and at least one light connected to said heel portion;
said central portion having dual elastomeric cords connecting said two integral anchor members of said front portion to said apertures of said heel portion.

5,544,027
LED DISPLAY FOR PROTECTIVE HELMET AND HELMET CONTAINING SAME
Anthony Orsano, 529 Marcellus Rd., Williston Park, N.Y. 11596
Filed Mar. 26, 1993, Ser. No. 38,156
Int. Cl.[5] F21L *15/14*
U.S. Cl. 362—105 **8 Claims**

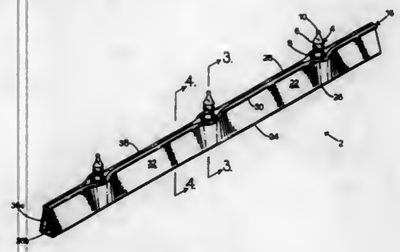


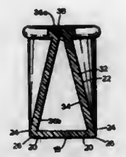


1. A light-emitting-diode display strip affixable to a curved surface of a helmet or the like, the display strip comprising:
(a) an elongated flexible support strip, the flexible support strip being generally conformable to the curved surface;
(b) affixation means for affixing the flexible support strip to the curved surface, the affixation means extending along approximately the entire length of a side of the support strip which defines a backing side of the support strip and being generally conformable to the curved surface for affixing the support strip to the curved surface in a backing-side-to-curved-surface lengthwise-extending, generally curved-surface-conforming relationship;
(c) a plurality of at least three light-emitting diodes mounted at spaced-apart locations along the support strip and visible from a display side of the support strip defined to be opposite to the backing side of the support strip;
(d) LED-lighting timing circuitry mounted on the support strip, the LED-lighting timing circuitry being adapted to provide electrical signals for separately lighting a plurality of at least three light-emitting diodes in a timed sequence;
(e) a power-source connector mounted on the support strip, the power-source connector being connectable to an electric power source; and
(f) interconnection wiring extending along the support strip and connected to the light-emitting diodes, the LED-lighting timing circuity, and the power-source connector so that in operation, with an electric power-source connected to the power-source connector, the at least three light-emitting diodes mounted on the support strip are separately lighted in a timed sequence.

5,544,028
LIGHT SYSTEM WITH LIGHT HOLDER
T. Christopher Carlin, Council Grove, Kans., assignor to A/C Enterprises, Inc., Council Grove, Kans.
Filed Oct. 16, 1995, Ser. No. 543,489
Int. Cl.[6] F21V *21/00*
U.S. Cl. 362—249 **22 Claims**

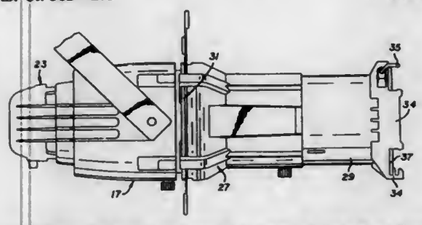
1. A light holder for a light unit including a socket and a bulb mounted in said socket, which includes:
(a) a base with,opposite side edges;





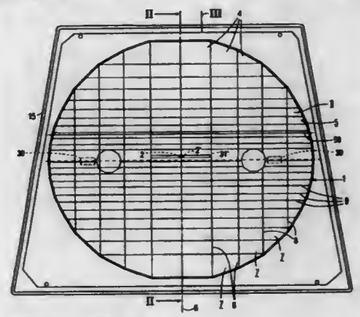
(b) a pair of sidewalls each having a lower edge connected to a respective base side edge and an upper edge; and
(c) a closed cross-sectional configuration with said sidewall upper edges in close proximity to each other and an open configuration with a light socket located between said sidewalls with said sidewall upper edges being positioned in spaced relation.

5,544,029
LIGHTING FIXTURE FOR THEATER, TELEVISION AND ARCHITECTURAL APPLICATIONS
David W. Cunningham, 8442 Hollywood Blvd., Los Angeles, Calif. 90069
Filed Nov. 12, 1993, Ser. No. 151,724
Int. Cl.[6] F21V *7/20*
U.S. Cl. 362—273 **19 Claims**



1. A lighting fixture for imaging a beam of light at a distant location, comprising:
a substantially ellipsoidal reflector having a base at one end and a mouth at the other end and defining a first focal region near the base and a second focal region beyond the mouth, a longitudinal axis thereby being defined;
a rear housing for supporting the reflector;
a lamp having one or more filaments that emit both visible and infrared light;
a support for supporting the lamp adjacent the base of the reflector, with the one or more filaments of the lamp located substantially coincident with the first focal region of the reflector, wherein light emitted by the one or more filaments is reflected by the reflector toward the second focal region of the reflector;
a gate aperture located substantially at the second focal region of the reflector;
a front housing having a longitudinal axis, the front housing being secured to the rear housing with the longitudinal axis of the front housing substantially aligned with the longitudinal axis of the reflector;
a lens formed of an optical-grade plastic material mounted at a selected location within the front housing, for imaging the reflected light passing through the gate aperture at a distant location; and
dichroic means, interposed between the lens and the one or more filaments of the lamp, for removing from the light that reaches the lens a substantial portion of the infrared light emitted by the one or more filaments of the lamp, wherein the visible and infrared light emitted by the one or more filaments of the lamp is of sufficient intensity to overheat and damage the lens, but the dichroic means removes a sufficient portion of the infrared light to prevent such overheating and damage.

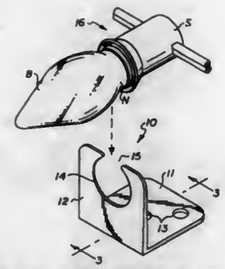
5,544,030
LUMINAIRE
Hendrik Wijbenga, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Sep. 13, 1994, Ser. No. 305,115
Claims priority, application Belgium, Sep. 13, 1993, 09300958; European Pat. Off., Mar. 11, 1994, 94200635
Int. Cl.[6] F21V *7/12*
U.S. Cl. 362—297 **23 Claims**



1. A luminaire comprising:
a concave reflector having an optical axis, an optical center on said axis, a light emission window, and a reflecting surface which surrounds the optical axis, is built up from plane facets, and has a plane of symmetry, said facets being
(i) arranged in rows which each extend to the light emission window, between first planes, and
(ii) bounded by second planes which are substantially parallel to one another and transverse to the first planes,
the first planes being mutually substantially parallel and substantially parallel to the plane of symmetry, and
the second planes being substantially parallel to the optical axis; and
lampholder means for accommodating an electric light source inside the reflector in a plane transverse to the plane of symmetry and in the optical center
the first planes (**8**) are mutually substantially parallel and substantially parallel to the plane of symmetry (**6**), and
the second planes (**9**) are substantially parallel to the optical axis.

5,544,031
BRACKET FOR DECORATIVE LIGHTS
Fred T. Blanton, P.O. Box 8216, Woodlands, Tex. 77387-8216
Filed Nov. 21, 1994, Ser. No. 342,742
Int. Cl.[6] F21V *21/00*
U.S. Cl. 362—396 **14 Claims**

1. A bracket for supporting and displaying a decorative light bulb and socket assembly comprising:
a generally L-shaped bracket formed of resilient material having a flat horizontal base portion and a contiguous vertical face



portion at one end of said base portion extending outwardly perpendicular to said base portion;

said vertical face portion having a tapered vertical cross section of diminishing thickness in the vertical direction to increase flexibility of said face portion at its outwardly extended end and reduce the force required to press and pull the neck portion of the light bulb through said narrow opening during installation and removal;

at least one aperture in said horizontal base portion for receiving fastening means to secure said horizontal base portion to a generally flat surface; and

an aperture in said vertical face portion defined by a circular hole near its outwardly extended end of sufficient diameter to partially encircle a neck portion of a decorative light bulb and an adjoining narrow opening extending outwardly from said circular hole to the exterior of said vertical face portion and having a width smaller than the neck portion of the decorative light bulb; whereby

a decorative light bulb and socket assembly is installed in said bracket as a single unit without disassembly by pressing the neck portion the light bulb adjacent its socket through said narrow opening into said circular hole to become partially encircled thereby, and removed therefrom as a single unit by pulling the neck portion of the light bulb adjacent its socket outwardly through said narrow opening.

5,544,032

SWITCHING POWER SUPPLY

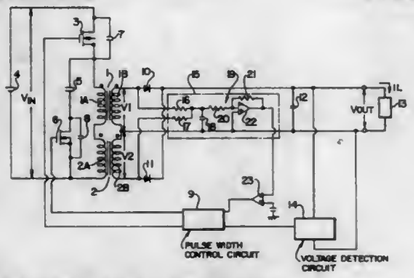
Hiroshi Mimura, Nagaoka, Japan, assignor to Nemic-Lambda Kabushiki Kaisha, Japan

Continuation of Ser. No. 130,262, Oct. 1, 1993, abandoned. This application Apr. 14, 1995, Ser. No. 422,635

Claims priority, application Japan, Oct. 1, 1992, 4-263822

Int. Cl.[6] H02M *3/335*

U.S. Cl. 363—16 **8 Claims**



1. A switching power supply comprising:

at least one transformer having primary and secondary windings isolated from each other;

one or more switching elements for on-off control of D.C. input voltage applied to said primary winding;

said at least one transformer inducing a D.C. output voltage for a load connected to the secondary winding in response to the D.C. input voltage applied to the primary winding, said secondary winding having a winding resistance; and

a detection circuit for sensing current flow in said secondary winding without the need for a separate current-sensing element, said detection circuit connected to one terminal of the secondary winding for detection of a voltage drop which is proportional to the load current and which is caused by the winding resistance of the secondary winding in association with operation of the switching elements, said detection circuit detecting the voltage drop from one terminal of the secondary winding to produce output current detection signals through a filter network non-magnetically coupled therewith for rejection of signals within a switching frequency region from the output voltage induced in the secondary winding.

5,544,033

DEVICES AND METHODS FOR SUPPRESSING OSCILLATIONS IN VOLTAGE CONVERTERS

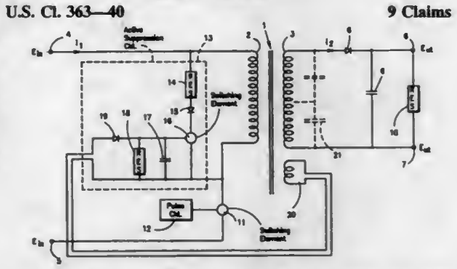
Jan I. Sundström, and Per A. Lindbeck, both of Göteborg, Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed May 2, 1995, Ser. No. 433,631

Claims priority, application Sweden, May 2, 1994, 9401488

Int. Cl.[6] H02M *1/12*

U.S. Cl. 363—40 **9 Claims**



1. A device for suppressing oscillations in a voltage converter having an inductor with an iron/ferrite core, a primary winding, and a secondary winding, wherein an input voltage connected to the primary winding generates an induced voltage in the windings, and an energy-absorbing element for suppressing voltage oscillations occurring in the windings, the device comprising a control circuit for connecting and disconnecting the energy-absorbing element to at least one of the windings of the inductor;

wherein the control circuit comprises a third winding, arranged in connection with the iron/ferrite core, for controlling a state of the control circuit, a state of the third winding being dependent on the induced voltage in the primary and secondary windings;

the control circuit further comprises a switching element that is connected to the energy-absorbing element, operation of the switching element being controlled by the third winding;

whereby when an input voltage is connected to the primary winding during a first time interval, a first current is generated in the primary winding; when the input voltage is disconnected from the primary winding during a second time interval, a second current is generated in the secondary winding; and when the input voltage is kept disconnected from the primary winding during a third time interval, after which the first, second, and third time intervals are repeated periodically, the energy-absorbing element is connected to at least one of the primary and secondary windings during the third time interval.

5,544,034

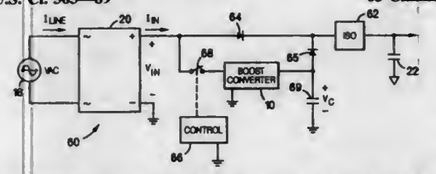
EFFICIENT POWER CONVERSION

Patrizio Vinciarelli, Boston, and Richard E. Beede, Andover, both of Mass., assignors to VLT Corporation, San Antonio, Tex.

Filed Apr. 8, 1994, Ser. No. 224,834

Int. Cl.[6] H02M *5/42;7/537*

U.S. Cl. 363—89 **63 Claims**



1. Apparatus for converting power from a varying voltage source and delivering it to a load, comprising

boost conversion elements for effecting a boost conversion of power originating from the varying voltage source,

additional conversion elements for also effecting conversion of power originating from the varying voltage source, and

circuitry for selectively configuring the conversion elements with respect to delivery of power to the load to achieve greater conversion efficiency than if all of the power delivered to the load were constrained to flow through the additional conversion elements and at least some of the boost conversion elements.

5,544,035

CONVERTER ARRANGEMENT HAVING A LOW-INDUCTANCE COMMUTATION CIRCUIT

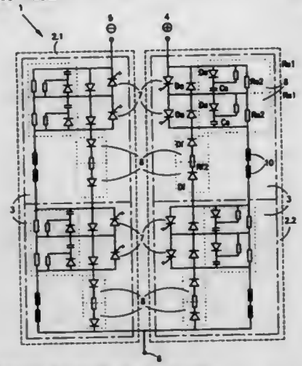
Conrad Beriger, Aarau; Horst Grüning, Wettingen; Herbert Stemmler, Kirchdorf, and Johannes Werninger, Zürich, all of, Switzerland, assignors to ABB Management AG, Baden, Switzerland

Filed Dec. 21, 1994, Ser. No. 360,624

Claims priority, application Germany, Dec. 23, 1993, 43 44 135.1

Int. Cl.[6] H02M *7/5387;7/515*

U.S. Cl. 363—132 **12 Claims**



1. A converter arrangement comprising:

a) at least one phase module of a bridge circuit, said at least one phase module comprising two branch modules which are connected in series and are connected respectively to a positive connection and to a negative connection of a DC intermediate circuit, the common, central connection of the branch modules forming a load connection and the branch modules comprising at least one switch module, which switch modules comprise at least one power semiconductor switch with an associated circuitry network, a freewheel circuit and a current limiter; wherein

b) the branch modules are arranged within said at least one phase module such that a commutation circuit, which is formed by the DC intermediate circuit, the positive connection, the negative connection and the branch modules, comprises a circuit area which is so small that each switch contributes at most **500** nH to a total stray inductance of said at least one phase module.

5,544,036

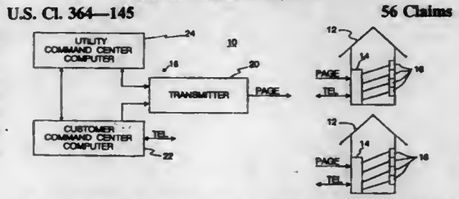
ENERGY MANAGEMENT AND HOME AUTOMATION SYSTEM

Robert J. Brown, Jr., 6688 Serena La., Boca Raton, Fla. 33433; James D. Romanowiz, 2919 Banyan Rd., Boca Raton, Fla. 33432, and Charles W. Staples, 270 NW. 36th St., Boca Raton, Fla. 33431

Filed Mar. 25, 1992, Ser. No. 857,312

Int. Cl.[6] G05B *11/01;23/02*

U.S. Cl. 364—145 **56 Claims**



47. A method for controlling the operation of a plurality of devices in a plurality of different facilities pursuant to programmed commands of an occupant of each facility, said method comprising:

providing a controller in each facility within a defined wide area, each controller having a plurality of individual devices connected thereto;

providing a command center which generates messages to be transmitted to each of said controllers, each message containing a portion defining whether that message is of a first type designated for all controllers or of a second type for designated only an addressed controller;

transmitting on a periodic basis said first type of messages conveying the then occurring time and day;

transmitting said second type of message to an addressed facility in response to a qualified communication from the occupant of that addressed facility; and

storing a schedule in the addressed controller of the communicating occupant's facility in response to said transmitted second type of messages, said schedule defining the occurrence of events for each device connected to the user's controller by time and day.

5,544,037

CONTROL ARRANGEMENT FOR CONSUMER UNITS WHICH ARE ALLOCATED TO GROUPS

Siegfried Luger, Dornbirn, Austria, assignor to Tridonic Bauelemente GmbH, Dornbirn, Austria

Filed Jul. 27, 1994, Ser. No. 281,008

Claims priority, application Germany, Aug. 18, 1993, 43 27 809.4

Int. Cl.[6] H05B *39/04;* **H02J** *13/00*

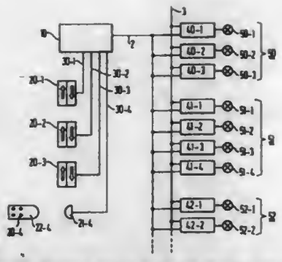
U.S. Cl. 364—146 **20 Claims**

1. Process for controlling consumer units allocated to groups in dependence upon the operation of operating elements provided respectively for the consumer unit groups,

characterised in that,

during a commissioning phase for determining the allocation of the consumer units to the groups,

the consumer units of a first consumer unit group are respectively connected with first control receivers,



a first group address, which indicates the allocation of the first consumer unit group to a first operating element is stored in the first control receivers as a result of an operation of the first operating element,

the consumer units of a second consumer unit group are respectively connected with second control receivers,

a second group address, which indicates the allocation of the second consumer unit group to a second operating element, is stored in the second control receivers as a result of an operation of the second operating element, whilst the first group address stored in the first control receivers is retained, and

in that during an operational phase

operating one of said operating elements and transmitting a group address, which indicates said one operating element, to all said control receivers, and effecting the control of a consumer unit connected to a control receiver in which a stored group address corresponds with the transmitted group address.

5,544,038

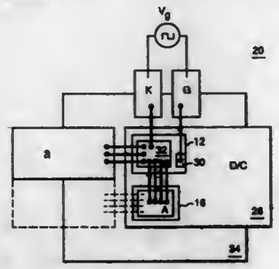
SYNCHRONOUS RECTIFIER PACKAGE FOR HIGH-EFFICIENCY OPERATION

Rayette A. Fisher; William A. Hennessy, and Herman L. N. Wiegman, all of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 21, 1992, Ser. No. 948,051

Int. Cl.[6] H02M *7/21*

U.S. Cl. 363—147 **21 Claims**



1. A synchronous rectifier package, comprising:

at least one transistor configured to operate as a synchronous rectifier, said transistor having a gate, source and drain, said transistor further having an integral body diode having its anode connected to said source and having its cathode connected to said drain;

a Schottky diode coupled in parallel with said body diode, said Schottky diode and said at least one transistor comprising separate and discrete devices, the cathode of said Schottky diode sharing a common lead pad with said drain of said transistor, the anode of said Schottky diode being coupled directly to said source of said transistor;

said package being configured to have minimal parasitic inductances and resistances such that said Schottky diode conducts substantially all the device current that would otherwise flow through said body diode during commutation of said transistor, said package comprising a metallized ceramic structure having multiple parallel wire bond connections.

5,544,039

PROCESS CONTROL SYSTEM

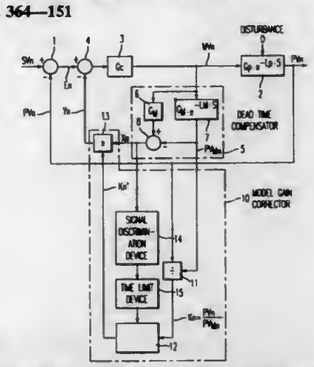
Kazuo Hiroi, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 897,072, Jun. 11, 1992, abandoned. This application Jun. 2, 1994, Ser. No. 253,219

Claims priority, application Japan, Jun. 11, 1991, 3-138817; Jul. 29, 1991, 3-188809

Int. Cl.[6] G05B *13/04*

U.S. Cl. 364—151 **8 Claims**



1. A system for controlling a process system with a process system gain and dead time of which its transfer function includes a gain term element corresponding to the process system gain and a dead time term element corresponding to the dead time, subject to an external disturbance, by adjusting a controlled variable output by the process system to a target value according to a manipulated variable output by a controller performing at least proportional and integral control operations based on a deviation between the controlled variable and the target value, the system comprising:

dead time compensation means, connected to the controller, including:

a system model having a system transfer function approximative to the transfer function of the process system, and

a model unit, connected in parallel with the system model unit, having a model transfer function resulting from eliminating the dead time element from the system transfer function,

wherein the dead time compensation means outputs a compensation signal to compensate the dead time; and

gain adjustment means, connected to the dead time compensation means, including:

a first input for receiving an output signal of the system model unit and a second input for receiving the controlled variable,

a divider dividing the controlled variable by the output of the system model unit to generate a first gain ratio,

a multiplier multiplying the compensation signal output by the dead time compensation means by a final gain ratio based on the first gain ratio, to adjust a gain of the system model unit to the process system gain of the process system according to the variation in the gain of the process system, and

a memory means for storing the first gain ratio, and update means for updating the first gain ratio when the compensation signal output by the dead time compensation means is a zero signal for more than a predetermined time.

5,544,040

SYSTEM FOR MANAGEMENT OF COMMON PURCHASE OPERATIONS FOR GOODS AND SERVICES

Jean-Pierre Gerbaulet, rue des Abondance, Boulogne, France

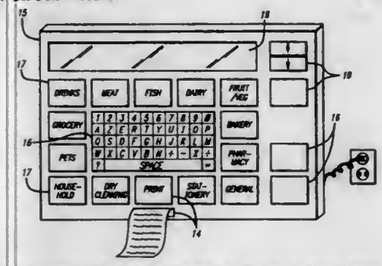
PCT No. PCT/FR92/00778, § 371 Date Jun. 30, 1994, § 102(e) Date Jun. 30, 1994, PCT Pub. No. WO93/03447, PCT Pub. Date Feb. 18, 1993

PCT Filed Aug. 7, 1992, Ser. No. 193,100

Claims priority, application France, Aug. 9, 1991, 91 10168

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—401 R **10 Claims**



1. A computer system for preparing a list of food items to be purchased comprising:

a processor;

a display;

a temporary memory storage means for storing said list of purchases;

a permanent memory storage means for storing a standard list of purchases organized according to various categories of purchases and programmable selection criteria based on rules for a balanced diet;

the processor sorting the list of purchases to be made by categories of purchases; and

a keyboard comprising dedicated keys for directly selecting and displaying one of said category of purchases of said standard list and a key for copying selected items from the permanent storage means for storing the standard list of purchases to the temporary storage means for storing said list of purchases to be made.

5,544,041

TIME-DEPENDENT DATA CONTROL SYSTEM

Yoshihiko Nekomoto, Isehara, Japan, assignor to NCR Corporation, Dayton, Ohio

Continuation of Ser. No. 988,654, Dec. 10, 1992, abandoned. This application Feb. 10, 1995, Ser. No. 387,962

Claims priority, application Japan, Dec. 10, 1991, 3-349796

Int. Cl.[6] G06F *17/60*

U.S. Cl. 364—401 R **15 Claims**

1. A time-dependent retail price display system, comprising:

a central control unit for receiving input updated displayed retail price data and retail price change time data;

a plurality of electronic retail price displays for displaying retail price data and receiving transmissions of updated displayed retail price data and retail price change time data from said central control unit;

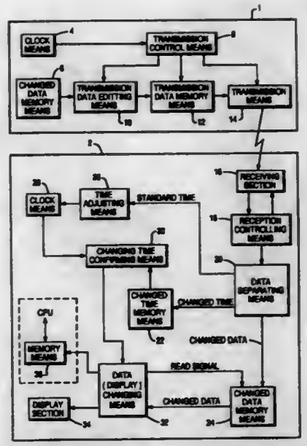
said plurality of electronic retail price displays being adapted to change displayed retail price data at a preset time based on said retail price change time data received from said central control unit;

said central control unit including means for transmitting retail price change time data and updated displayed retail price data to said plurality of electronic retail price displays;

said central control unit including transmission control means for controlling said means for transmitting retail price change time data and updated displayed retail price data;

wherein said transmission control means starts said means for transmitting retail price change time data and updated displayed retail price data at a time no later than said preset time minus a communication time, wherein said communication time is a time required for transmitting retail price change time data and updated displayed retail price data to said plurality of electronic retail price displays; and

said plurality of electronic retail price displays including clock means and means for confirming said retail price change time data transmitted by said central control unit by said clock means and changing said displayed retail price data to said updated displayed retail price data in response to updated displayed retail price data and retail price change time data received from said central control unit.



5,544,042

Patent Not Issued For This Number

5,544,043

CHECK PROCESSING EQUIPMENT

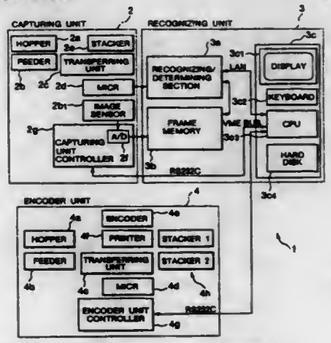
Shoji Miki; Hiroki Tsubota; Masanori Yokota, and Kenta Hori, all of, Himeji, Japan, assignors to Glory Kogyo Kabushiki Kaisha, Hyogo, Japan

Filed Mar. 7, 1995, Ser. No. 399,877

Claims priority, application Japan, Mar. 7, 1994, 6-062053

Int. Cl.[6] G06F *15/00*

U.S. Cl. 364—406 **8 Claims**



1. A check processing equipment comprising:

a document capturing unit which is equipped with a hopper to be loaded with documents such as deposit tickets and checks composing plural transaction units, a feeder which feeds one piece of document at a time, a transferring unit which transfers the fed document to a stacker, a magnetic ink character reading means for capturing magnetic ink characters printed on the document, and an image capturing means which is provided on the transferring unit and which captures and digitizes the document images;

a recognizing unit which is equipped with an amount character recognizing means for recognizing an amount character from the image, a first storage means for storing amounts which have been recognized by said recognizing means, a second storage means for storing the image of the documents which have been captured by said image capturing means, and a recognizing/determining means for determining the type of a document from the attribute of the magnetic ink characters captured through said magnetic ink character reading means and for identifying the amount area of the image data;

a display means for displaying document image data which are stored in said second storage means, in the form of a document image; and

an input means for allowing a numeral change to be made to correct an amount indicated and for entering the type of processing;

whereby a document is fed out by said feeder, magnetic ink characters are read by said magnetic ink character reading means, and the images of the documents are captured by said image capturing means concurrently as said recognizing/determining means displays the images of particular documents on said displaying means for enabling an operator to correct amounts through said input means.

5,544,044

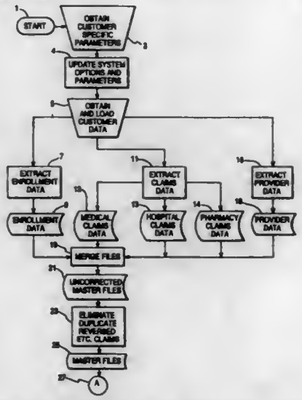
METHOD FOR EVALUATION OF HEALTH CARE QUALITY

Sheila Leatherman, Minneapolis, Minn., assignor to United Healthcare Corporation, Minneapolis, Minn.

Filed Aug. 2, 1991, Ser. No. 739,629

Int. Cl.[6] G06F *159/00*

U.S. Cl. 364—401 **23 Claims**



1. In a medical information system comprising a processing unit, at least one memory unit and means for entering information into said medical information system and for providing commands to said medical information system, a method of analyzing health care claims records for an enrolled population to assess quality of care received by enrollees having a specified health care condition and formulate action recommendations to improve care comprising:

(a) providing to said processing unit of said medical information system health care claims records for a selected enrollee population;

(b) defining in the medical information system at least one health care condition in terms of a specified logical relationship among a plurality of health care events relevant to diagnosis and reported in the health care claims records;

(c) identifying in the health care claims records those enrollees meeting the definition for said at least one health care condition;

(d) defining in the medical information system health care quality criteria for said at least one health care condition in terms of a plurality of health care events reported or reportable in the health care claims records, including at least one intervention based on practice guidelines and related to care for the at least one health care condition;

(e) comparing the health care quality criteria for said at least one health care condition to the health care claims records for at least a portion of those enrollees meeting the definition for said at least one health care condition; and

(f) developing and outputting from said medical information system a health care quality report based on the comparison of step (e) and including action recommendations for improving health care quality.

5,544,045

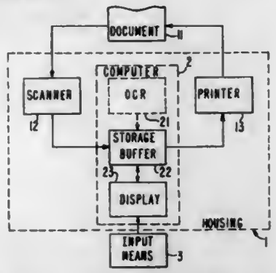
UNIFIED SCANNER COMPUTER PRINTER

Harry Garland, and Roger Melen, both of Los Altos Hills, Calif., assignors to Canon Inc., Tokyo, Japan

Filed Oct. 30, 1991, Ser. No. 784,919

Int. Cl.[6] G06F *17/24*

U.S. Cl. 364—419.03 **14 Claims**



1. A unified scanner computer printer, comprising:

means for optically scanning an entire input paper document into a storage buffer within a computer, thereby creating a scanned document within the storage buffer;

coupled to the storage buffer, means for selectively editing portions of the scanned document; and

coupled to the computer, means for printing the edited portions of the scanned document onto the input paper document;

wherein the editing means comprises an optical character recognizer comprising:

programmed instructions means for recognizing digital representations of the scanned paper document within the storage buffer; and

a look-up table accessible by the programmed instructions means; whereby

the programmed instructions means includes means for comparing the digital representations with cues stored within the look-up table, and means for automatically editing the digital representations using information stored in the look-up table.

5,544,046

NUMERICAL CONTROL UNIT

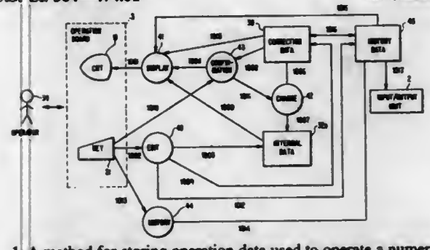
Tomomitsu Niwa, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 9, 1992, Ser. No. 942,282

Claims priority, application Japan, Sep. 17, 1991, 3-074367 U; Mar. 18, 1992, 4-062143

Int. Cl.[6] G05B *19/18;19/408*

U.S. Cl. 364—474.01 **26 Claims**



1. A method for storing operation data used to operate a numerical control unit having a screen display comprising the steps of:

formatting the operation data in an array data format of at least one dimension by formatting the operation data in accordance with a screen number, a row number and a column number, in such a manner that the array data format corresponds to a display format utilized by the numerical control unit to display the data on the screen display; and

storing the data formatted in accordance with the screen number, the row number and the column number in a memory of the numerical control unit in accordance with the array data format.

5,544,047

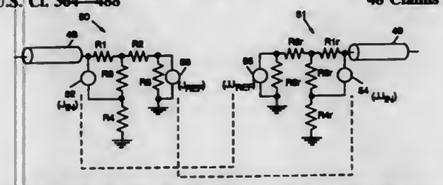
REFLECTIVE WAVE COMPENSATION ON HIGH SPEED PROCESSOR CARDS

William D. Appel, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1993, Ser. No. 175,327

Int. Cl.[6] H04B *15/00*

U.S. Cl. 364—488 **48 Claims**



10. A circuit for distributing pulse signals with sharp rise times from a low impedance signal source to multiple load devices, with reduced distortion of signals presented to said devices attributable transmission line reflections, said circuit comprising:

plural branch conductors emanating from said source in a branching formation beginning at or adjacent to said source, each said branch conductor connecting to at least one said load device, said branch conductors having different lengths and forms; and

a compensating circuit connected to an end of a shortest one of said branch conductors, without altering the length of conductor connecting said source to any load device attached to said shortest branch; said compensating circuit causing signal reflections returning to said load to have a form matching signal reflections returning to said source from longer ones of said branch conductors; and wherein reflections returning from said shortest branch conductor would have a form different from reflections returned by other said branch conductors in the absence of said compensating circuit.

5,544,048

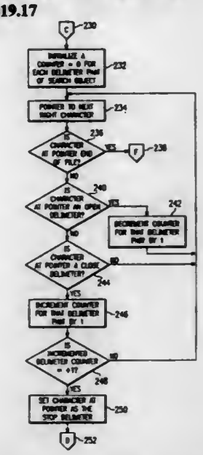
METHOD AND APPARATUS FOR MARKING TEXT BETWEEN PAIRED DELIMITERS

Pamela A. Dugan, Euless, Tex.; Gregory P. Fitzpatrick, Rochester, Minn.; William J. Johnson, Flower Mound, and Marvin L. Williams, Lewisville, both of Tex., assignors to International Business Machines, Armonk, N.Y.

Filed Dec. 17, 1992, Ser. No. 991,932

Int. Cl.[6] G06F *17/30*

U.S. Cl. 364—419.17 **8 Claims**



1. A method, performed in a data processing system, of marking characters of a character string, which string is resident in the data processing system, the method comprising the computer implemented steps of:

positioning a search focus on a character of the string in response to user input, wherein the character of the string at the search focus is the first character;

determining that the first character matches a character of a predefined set of characters;

as a result of finding that the first character matches a character of the predefined set of characters, identifying a character predefined as paired with the matched character of the predefined set of characters;

as a result of the identity of the matched character of the predefined set of characters, determining a search direction;

searching in the search direction for additional occurrences of the matched character found and for occurrences of the paired character found, counting the number of additional occurrences of the matched character found and separately counting the number of occurrences of the paired character found, until a second character is found, said second character being the paired character that causes the number of occurrences of the paired character found to exceed by one the number of additional occurrences of the matched character found; and

marking the characters of the string between the first character and second character.

5,544,049

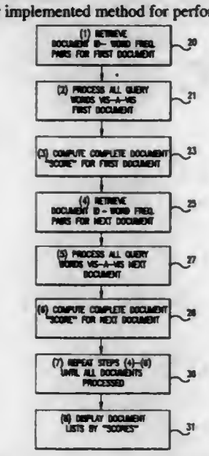
METHOD FOR PERFORMING A SEARCH OF A PLURALITY OF DOCUMENTS FOR SIMILARITY TO A PLURALITY OF QUERY WORDS

Richard D. Henderson, San Jose, and Michael J. Barbarino, Moss Beach, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 240,285, May 9, 1994, abandoned, which is a continuation of Ser. No. 953,166, Sep. 29, 1992, abandoned. This application May 22, 1995, Ser. No. 447,317

Int. Cl.[6] G06F *17/30*

U.S. Cl. 364—419.19 **20 Claims**



1. A computer implemented method for performing a search of a plurality of documents for similarity to a query having multiple terms using an inverted index of the plurality of documents, the method comprising the sequential steps of:

(a) searching the inverted index for each of the query terms and determining a number of occurrences of the query terms in a first document;

(b) calculating a similarity score for the first document based on the number of occurrences of the query terms in the first document;

(c) searching the inverted index for each of the query terms and determining a number of occurrences of the query terms in a subsequent document;

(d) calculating a similarity score for the subsequent document based on the number of occurrences of the query terms in the subsequent document; and

(e) repeating steps (c) and (d) until a similarity score has been calculated for each of the plurality of documents.

5,544,050

SIGN LANGUAGE LEARNING SYSTEM AND METHOD

Masahiro Abe; Hiroshi Sakou, both of Dublin, Ireland; Hirohiko Sagawa, Kokubunji; Akira Ichikawa, Musashino; Kiyoshi Inoue, Tokyo; Kiyoshi Arai, Hachioji; Takanori Shimura, Chiba, and Yuji Toda, Hachioji, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 31, 1993, Ser. No. 114,083

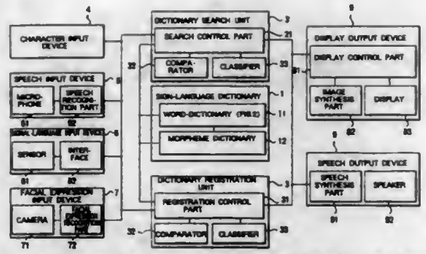
Claims priority, application Japan, Sep. 3, 1992, 4-235627

Int. Cl.[6] G06F *3/14;17/21;17/28*

U.S. Cl. 364—419.13 **13 Claims**

1. In an automated sign-language learning system of the type including means for inputting data, means for storing data, means for processing data, and means for outputting results of the processing, the improvement comprising:

first input means for inputting sign-language data;



memory means for storing sign-language data for each morpheme constituting a minimum unit of sign-language into a first dictionary, and for storing word data of a spoken language and a combined expression of morphemes of the sign-language which correspond to the word data of the spoken language into a second dictionary;

registration means for registering the sign-language data inputted by said first input means into said memory means;

second input means for inputting word data of the spoken language by characters or speech;

search means for comparing the word data of the spoken language inputted by said second input means with the word data of the spoken language preserved in said second dictionary and, if there are word data of the spoken language corresponding to word data inputted by said second input means, reading out pertinent data among the sign-language data for each morpheme stored in said first dictionary on the basis of the combined expression of morphemes of the sign-language in said second dictionary; and

means for synthesizing and outputting a sign-language image from the sign-language data searched by said search means.

5,544,051

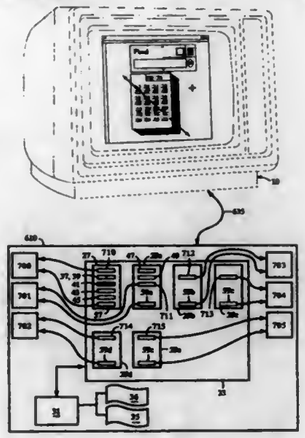
DOCUMENT MANAGEMENT SYSTEM USING MULTIPLE THREADED PROCESSES AND HAVING ASYNCHRONOUS REPOSITORY RESPONSES AND NO BUSY CURSOR

Jeffrey A. Senn, and Peter Lucas, both of Pittsburgh, Pa., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 123,406, Sep. 17, 1993, abandoned. This application Mar. 20, 1995, Ser. No. 406,831

Int. Cl.[6] G06F *17/40*

U.S. Cl. 364—419.19 **20 Claims**



11. A document management system, comprising:

a display screen;

means for displaying a page of a document on said display screen;

an active region displayed on said screen;

means for signalling said document management system using said active region; and

means, responsive to a signal from said means for signalling, for transmitting a request for a next page of said document to a repository, and for receiving said next page of said document, and for displaying said next page of said document on said display screen.

5,544,052

DIGITAL CARTOGRAPHIC SYSTEM FOR GEOGRAPHICAL INFORMATION PROCESSING

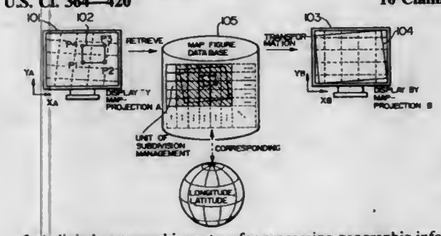
Takehiro Fujita, Kokubunji; Shigeru Kakumoto, Kodaira, and Yasuei Nomoto, Katsuta, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 870,904, Apr. 20, 1992, abandoned. This application Feb. 28, 1995, Ser. No. 396,328

Claims priority, application Japan, Apr. 19, 1991, 3-088109

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—420 **10 Claims**



1. A digital cartographic system for processing geographic information, comprising:

means for storing at least first graphic data obtained by a first map projection in which said graphic data is divided into management region units based on a longitude and latitude coordinate system;

a first table for storing at least values of coordinates of vertexes of each management region unit according to said first map projection and longitude/latitude coordinate values of the vertexes of each of said management region units;

a second table for storing management information concerning said first map projection and various map projections including a second map projection;

input means for selecting said second map projection to be transformed from said various map projections, and for designating a transformation region;

means for obtaining longitude/latitude coordinate values of vertexes of each management region unit included in said transformation region by reference to said first table, and for transforming obtained longitude/latitude coordinate values into coordinate values of the vertexes of said each management region unit according to said second map projection by assuming that values of said longitude and latitude coordinate system of two vertexes of four vertexes of said each management region unit are identical and by performing linear interpolation based on said management information concerning said second map projection stored in said second table;

means for obtaining coordinated transformation equations for each management region unit included in said transformation region from obtained longitude/latitude coordinate values of the vertexes in said each management region unit included said transformation region according to said first map projection that are stored in said first table and said coordinate values of the vertexes of said each management region unit according to said second map projection, and transforming said first graphic data into second graphic data according to said second map projection; and

means for displaying said second graphic data.

5,544,053

SYSTEM AND METHOD FOR THE CONTROL OF SHIFTING OF VEHICLE AUTOMATIC TRANSMISSION

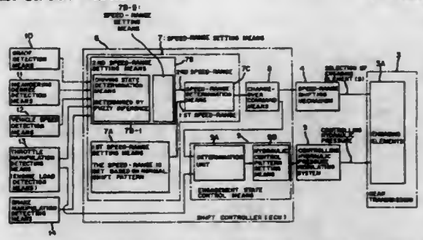
Yasuhiro Nakashima, Kyoto, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 10, 1994, Ser. No. 258,336

Claims priority, application Japan, Jun. 11, 1993, 5-140465

Int. Cl.[6] B60K *41/06;* **F16K** *61/00*

U.S. Cl. 364—424.1 **8 Claims**



1. A shift control system for a vehicle automatic transmission in which desired one of plural speed ranges is achieved by selectively changing over a state of engagement of plural engaging elements, comprising:

an engine load sensor for detecting an opening of a throttle valve or an amount of depression of an accelerator pedal arranged to control an output of an engine connected to said automatic transmission;

detecting means for detecting, based on output of said engine load sensor, a rate of change in the opening of said throttle valve or a rate of change in said amount of depression of said accelerator pedal;

determining means for determining a state of driving of a vehicle by a fuzzy inference;

setting means for setting an optimal speed range from said plural speed ranges on a basis of results of determination by said determining means; and

controlling means for selectively controlling a state of engagement of said plural engaging elements, wherein

said setting means is provided with means for setting as said optimal speed range a speed range lower than a current speed range when said vehicle has been determined to be running on a downhill road by said determining means, and

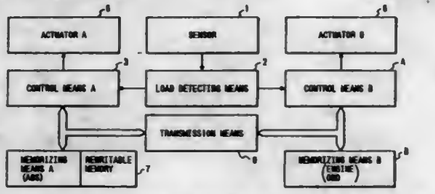
said controlling means is provided with means for reducing a value of an engagement parameter relating to a change-over of said state of engagement of a desired engaging element for achieving said optimal speed range when said vehicle has been determined to be running on said downhill road and also when said detected opening of said throttle valve or said detected amount of depression of said accelerator pedal is not greater than a first predetermined value and said detected rate of change in said opening of said throttle valve or said detected rate of change in said amount of depression of said accelerator pedal is not greater than a second predetermined value.

5,544,054

VEHICLE MULTI-PROCESSOR CONTROL SYSTEM AND METHOD WITH PROCESSING LOAD OPTIMIZATION

Mitsuo Kayano, Hitachi; Toshimichi Minowa, Toukai-mura; Junichi Ishii, Katsuta, and Shigeki Morinaga, Hitachi, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 249,619, May 26, 1994, abandoned.
This application Oct. 31, 1995, Ser. No. 550,876
Claims priority, application Japan, Jun. 22, 1993, 5-150098
Int. Cl.[6] G06F *15/16*
U.S. Cl. 364—424.01 6 Claims



1. An automobile control method for controlling each part of an automobile using a plurality of control units, which are connected by transmission lines with each other, including computers and memories, comprising the step of:

executing at least one of a plurality of control task programs stored in ones of said plurality of control units for controlling each part of the automobile, by at least one other of said plurality of control units having a lower processing load;

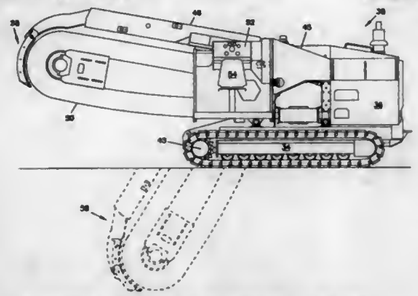
wherein at least one of said plurality of control units having said lower processing load judges its having said lower processing load upon receiving information on running state changes of said antomobile external to said plurality of control units, reads out at least one of said plurality of control task programs stored in other of said plurality of control units, and executes said at least one control task program.

5,544,055

TRACK TRENCHER CONTROL SYSTEM AND PROCESS

Mark R. Cooper, Pella, Iowa, assignor to Vermeer Manufacturing Company, Pella, Iowa

Filed Jul. 29, 1994, Ser. No. 283,274
Int. Cl.[6] B60K *41/00*
U.S. Cl. 364—424.07 45 Claims



1. A system for operating a track trencher, comprising:

means for producing a travel mode signal indicative of one of a plurality of track trencher travel modes;

propulsion control means, operative in one of a plurality of operating modes in response to the travel mode signal, for producing a propel signal associated with one of the plurality of track trencher travel modes;

steering control means, operative in one of a plurality of operating modes in response to the travel mode signal, for producing a steering signal associated with one of the plurality of track trencher travel modes; and

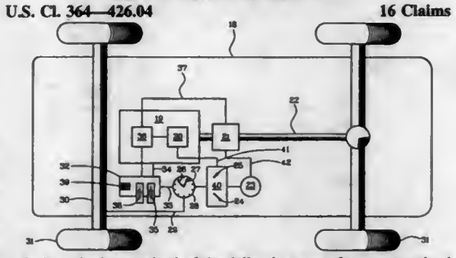
computer control means for controlling propulsion of a left track drive and a right track drive of the track trencher in one of the plurality of track trencher travel modes to effect propulsion and steering changes in response to the propel and steering signals.

5,544,056

COMPUTERIZED CONTROL OF AUTOMOBILE SPEED

Ali A. Seireg, 219 DuRose Terrace, Madison, Wis. 53705, and David B. Dooner, P.O. Box 109, Quincy, Fla. 32351

Filed Jan. 23, 1995, Ser. No. 376,900
Int. Cl.[6] G06F *7/70*; G06G *7/70*
U.S. Cl. 364—426.04 16 Claims



1. A method comprised of the following steps for computerized control and continuous variation of speed of a motor vehicle:

ascertaining the motor-vehicle's existing speed factor;

selecting an intended speed for the motor vehicle on a continuous basis by a driver-operated selector;

determining difference-of the intended speed from the motor-vehicle's existing speed factor;

calculating brake horsepower required of a vehicle engine to implement an optimal speed change and change rate to attain the intended speed of the motor vehicle with at least one predetermined gear ratio of a transmission positioned intermediate the vehicle engine and a vehicle drive shaft;

calculating increase in brake horsepower required of a vehicle engine to implement the optimal speed change and change rate to attain the intended speed from the existing speed factor with at least one predetermined gear ratio of the transmission;

calculating rate of increase in fuel added to the vehicle engine to achieve rotational speed and related brake horsepower of the vehicle engine in order to attain the intended speed from the existing speed factor with optimum efficiency and minimization of exhaust smog of the vehicle engine; and

adding fuel to the vehicle engine at an increased rate calculated to attain the intended speed from the existing speed factor with select efficiency and minimization of exhaust smog of the vehicle engine.

5,544,057

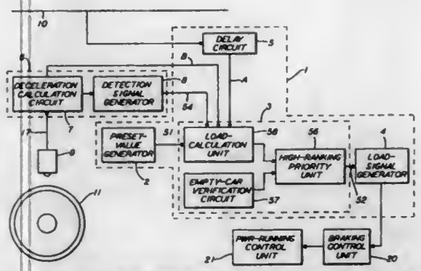
LOAD SETTING DEVICE FOR RAILWAY CARS

Toshiyuki Matsuoka, Shijimi-cho, Japan, assignor to Nabco Ltd., Kobe, Japan

Continuation of Ser. No. 192,925, Feb. 7, 1994, abandoned.
This application Nov. 3, 1995, Ser. No. 552,441
Claims priority, application Japan, Feb. 8, 1993, 5-044639
Int. Cl.[6] B61B *1/00*
U.S. Cl. 364—426.05 12 Claims

1. An improved railway car load-setting device disposed on a railway car for determining an actual load weight being exerted on such railway car and communicating an electrical signal value, which is representative of such actual load weight on such railway car, to at least one of a brake control unit and a power-running control unit, said improved railway car load-setting device comprising:

(a) a preset-value generator means disposed on such railway car for communicating, as an output, a pseudo-load weight electrical signal value representative of and corresponding to a preset initial load weight of such railway car;



(b) a load-calculation circuit means disposed on such railway car for generating and communicating a load weight electrical signal value, said load-calculation circuit means including:

(i) a load-calculation unit connected to receive at a fourth input thereto said pseudo-load weight electrical signal value from said preset-value generator means and connected to receive at a first input thereto a brake command electrical signal value from a brake command communication line and connected to receive at a second input thereto an electrical signal value representative of both acceleration and deceleration of such railway car and connected to receive at a third input thereto an electrical signal value representative of a slip-sliding condition,

(ii) an empty car verification circuit for generating and communicating an electrical signal value representative of a weight of such railway car when empty, and

(iii) a high-ranking priority unit, having a first input connected to receive said load weight electrical signal value output from said load-calculation unit and a second input connected to receive said empty weight railway car electrical signal value from said empty car verification circuit, for comparing said load weight electrical signal with said empty weight railway car electrical signal and communicating as an output one of said load weight and said empty weight electrical signals as said load weight electrical signal so as to ensure that said load weight electrical signal represents a weight of such railway car that generally exceeds such weight of such railway car when empty; and

(c) a load-signal generator means connected to receive said load weight electrical signal value from said high-ranking priority unit;

wherein (i) said load calculation unit modifies said pseudo-load weight electrical signal in response to said electrical signals received at said first, second and third inputs thereto and generates therefrom for output to said high-ranking priority unit said load weight electrical signal which more accurately represents such load exerted on such railway car and (ii) said load-signal generator means communicates said load weight electrical signal received from said high-ranking priority unit as said actual load weight electrical signal which is usable by such at least one of such brake control unit and such power-running control unit to improve riding characteristics of such railway car.

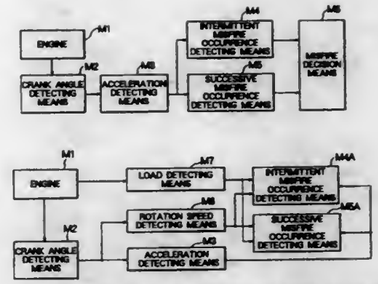
5,544,058

MISFIRE DETECTING APPARATUS FOR MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

Akira Demizu; Yukinobu Nishimura, and Masakazu Sugai, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 19, 1993, Ser. No. 138,057
Claims priority, application Japan, Oct. 20, 1992, 4-281590; Oct. 21, 1992, 4-283180; Oct. 21, 1992, 4-283181
Int. Cl.[6] G06F *19/00*; G01L *3/26*
U.S. Cl. 364—431.05 35 Claims

1. A misfire detecting apparatus for a multi-cylinder internal combustion engine having a plurality of cylinders, comprising:



crank angle detecting means coupled to said engine for detecting first and second predetermined angular intervals set, respectively, before and after a predetermined reference crank angle for each of said cylinders;

acceleration detecting means connected to the output of said crank angle detecting means for determining an acceleration based on a time ratio between times taken for a crank shaft of said engine to rotate through said first and second predetermined angular intervals, respectively, On the basis of an output signal of said crank angle detecting means;

intermittent misfire occurrence detecting means connected to said acceleration detecting means for detecting misfire occurring intermittently in the engine cylinder on the basis of the output signal of said acceleration detecting means; and

successive misfire occurrence detecting means for detecting misfire occurring successively in the engine cylinders on the basis of the output signal of said acceleration detecting means,

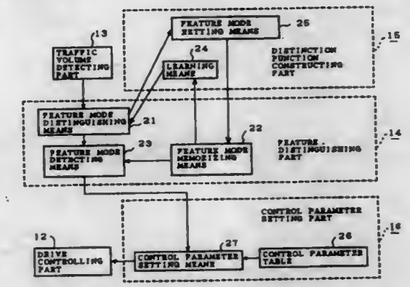
wherein said successive misfire occurrence detecting means counts a number of times magnitude of change in said acceleration exceeds a predetermined value during a predetermined interval and decides successive occurrence of misfire in the cylinder for which said change of acceleration is detected, when said number of times exceeds a second predetermined value.

5,544,059

TRAFFIC MEANS CONTROLLING APPARATUS

Shiro Hikita; Masafumi Iwata; Kiyotoshi Komaya; Masashi Asuka, and Yukio Goto, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 19, 1994, Ser. No. 277,502
Claims priority, application Japan, Jul. 27, 1993, 5-185142; Mar. 25, 1994, 6-056052; Jun. 23, 1994, 6-142005
Int. Cl.[6] B66B *1/00*
U.S. Cl. 364—436 18 Claims



1. A traffic means controlling apparatus comprising:

a traffic volume detecting part that detects a traffic volume of a traffic means;

a feature distinguishing part that selects a feature mode, representing a mode of operation of the traffic means controlling apparatus, from a plurality of feature modes based upon the traffic volume detected by said traffic volume detecting part according to a distinction function;

a distinction function constructing part that constructs the distinction function of said feature distinguishing part based upon the plurality of feature modes and a plurality of feature mode traffic volumes respectively corresponding to each of the plurality of feature modes; and

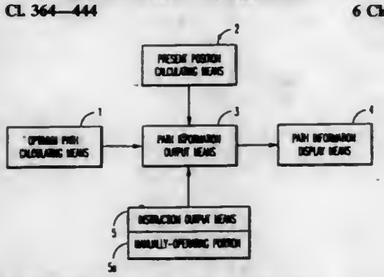
a control parameter setting part that sets a control parameter for controlling the traffic means based on the feature mode selected by said feature mode distinguishing part.

5,544,060

VEHICLE MOUNTED NAVIGATION SYSTEM WITH PREVIEW FUNCTION

Takao Fujii, Cupertino, and Toshihiro Hamahata, Palo Alto, both of Calif., assignors to Zexel USA Corporation, Fort Worth, Tex.

Continuation of Ser. No. 778,344, Oct. 16, 1991, abandoned. This application Mar. 30, 1994, Ser. No. 220,362
Int. Cl.[6] G06G *7/78*; G08G *1/123*
U.S. Cl. 364—444 **6 Claims**



1. A navigation system for a vehicle comprising:

optimum path calculating means for calculating an optimal path between a starting point and a destination in accordance with a map information;

present position calculating means for calculating a present position of the vehicle;

path information output means for transmitting a path information based on the optimal path calculated by said optimum path calculating means from the present position of the vehicle calculated by said present position calculating means;

path information display means for displaying the path information transmitted from said path information output means; and

instruction signal output means having a manually-operating portion, said instruction signal output means including means for transmitting an instruction signal responsive to said manually-operating portion; and

means in said path information output means for selecting and transmitting said path information.

5,544,061

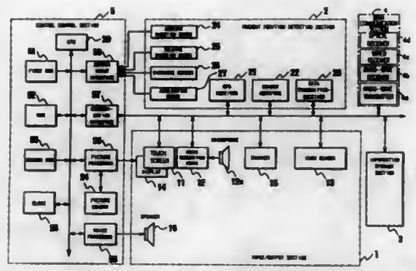
NAVIGATION SYSTEM WITH DESTINATION SET BY LONGITUDE AND LATITUDE COORDINATE POINTS

Kyoui Morimoto, Nishio, and Shoji Yokoyama, Anjo, both of, Japan, assignors to Aisin AW Co., Ltd., Japan

Filed May 27, 1994, Ser. No. 250,765
Claims priority, application Japan, May 28, 1993, 5-151318
Int. Cl.[6] G06F *165/00*
U.S. Cl. 364—444 **7 Claims**

1. A navigation system for guiding a user to a destination in accordance with a predetermined route, comprising:

storage means containing route information which can be accessed by longitude and latitude coordinates;



communication means for transmitting a request for destination information and for receiving externally transmitted signals comprising longitude and latitude coordinates;

destination setting means responsive to the receipt of the externally transmitted signals for automatically setting a destination point of said destination on the basis of the received longitude and latitude coordinates;

means responsive to the automatic setting of the destination point for retrieving selected route information from the storage means; and

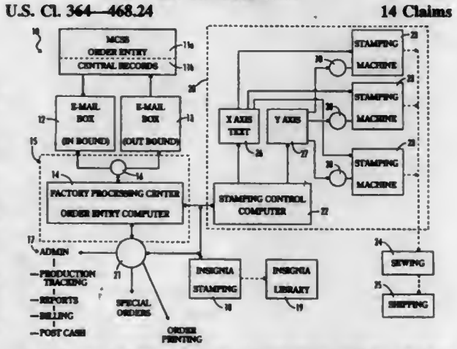
display means for displaying the set destination point of said destination on a route guide map composed from the retrieved route information.

5,544,062

AUTOMATED SYSTEM FOR MANUFACTURING OF CUSTOMIZED MILITARY UNIFORM INSIGNIA BADGES

Louie E. Johnston, Jr., 5 Jones Cir., Old Hickory, Tenn. 37138

Filed Jan. 31, 1995, Ser. No. 381,207
Int. Cl.[6] G06F *19/00*
U.S. Cl. 364—468.24 **14 Claims**



1. A system for manufacturing of customized military uniform insignia badges, each manufactured insignia badge including a graphical element and customized text selected by a customer at a store, the system comprising:

a. order entry means for electronically entering order data at an ordering store, the order data including insignia information associated with the graphical insignia element selected by the customer and the customized text associated with the customer, the order data further including information which identifies the customer and the ordering store;

b. telephone order sub-system means for electronically communicating the order data to an order processing computer, the order processing computer located at a factory processing center remote from the store, the telephone order sub-system means including means to electronically organize and communicate the order data to the order processing computer in batches;

c. stamping sub-system means for stamping the customized text on the insignia badge, the stamping sub-system located

remotely from the store and comprising at least one stamping machine and stamping control computer means for sending machine control signals to the stamping machines, the stamping machines responsive to he machine control signals;

d. first communications means for electronically communicating the order data from the order processing computer to the stamping sub-system; and

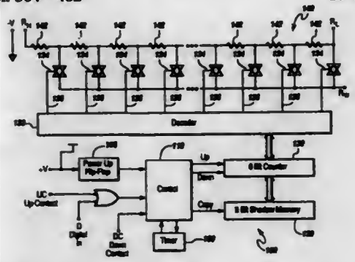
e. the stamping sub-system further comprising processor and interface means for interpreting and incorporating the order data received from the first communications means into the machine control signals whereby the stamping machines stamp the insignia badge with the customized text.

5,544,063

DIGITAL CONTROLLER

Gary V. Zanders, Dallas, and Francis A. Scherpenberg, Carrollton, both of Tex., assignors to Dallas Semiconductor Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 502,269, Mar. 30, 1990, Pat. No. 5,243,535, and Ser. No. 502,469, Mar. 30, 1990, Pat. No. 5,297,056, and Ser. No. 502,267, Mar. 30, 1990, Pat. No. 5,218,225. This application Aug. 11, 1992, Ser. No. 928,507
Int. Cl.[6] G01R *27/00*
U.S. Cl. 364—482 **25 Claims**



1. A digital controller, comprising:

(a) memory control circuitry and at least one memory register, said memory control circuitry electrically coupled to said at least one memory register, said memory control circuitry controlling contents of said at least one memory register, said at least one memory register storing at least one control bit, said at least one memory register having at least one memory register input; and

(b) an input node electrically coupled to said memory control circuitry and to said at least one memory register input of said at least one memory register, wherein said memory control circuitry in response to a first contact closure signal at said input node replaces a first pattern of said at least one control bit with

(i) a second pattern of said at least one control bit provided by said at least one control bit when a time interval between said first contact closure signal and a second contact closure signal is greater than a first time interval, said second contact closure signal preceding said first contact closure signal; or

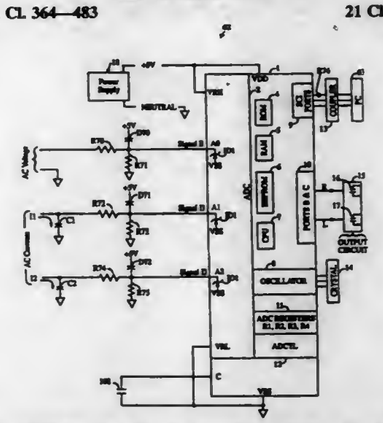
(ii) a third pattern of said at least one control bit, said third pattern of said at least one control bit differing from said second pattern of said at least one control bit when said time interval between said first contact closure signal and said second contact closure signal is less than a second time interval, said second time interval is less than said first time interval.

5,544,064

APPARATUS AND METHOD FOR SAMPLING SIGNALS SYNCHRONOUS WITH ANALOG TO DIGITAL CONVERTER

Robert W. Beckwith, 2794 Camden Rd., Clearwater, Fla. 34619

Filed May 20, 1994, Ser. No. 246,630
Int. Cl.[6] G01R *19/00*
U.S. Cl. 364—483 **21 Claims**



17. Apparatus for digitizing alternating current (AC) signals, each AC signal coming from a first and second signal terminal with the potential of said first terminal being the ground reference for said signal and with the signal potential of said second terminal alternating about said reference potential comprising, in combination,

a) clocking means providing clock cycles,

b) analog-to-digital converter means (ADC) operable by said clocking means and having a conversion period equal to a predetermined number "t" of clock cycles, said ADC having at least one analog input, having a low and a high reference voltage input and having a range of operation starting with zero for an analog input equal to said low reference input voltage,

c) processor means also operable by said clocking means,

d) multiple result register means for storing digital samples converted by said ADC,

e) said processor means running said ADC in a continuously scanning mode with conversions of the data of any selected analog input in a round robin fashion for storing in said multiple result registers wherein digital samples of each said AC signal are updated in integral numbers of clock cycles,

f) means for connecting a high ADC reference voltage means to said high reference input,

g) each of said second signal terminal being connected to a selected ADC analog input resulting in signals on said second terminals having a selected polarity which is the same as the polarity of said ADC high voltage reference,

h) said ADC having said low reference input connected to a ground reference terminal to set the change of signal polarity to said ADC zero,

i) said processor means containing programming steps which selectively repeat with said programming steps operating in integral multiples "m" of said "t" clock cycles and said programming steps operating synchronously with said continuous scanning mode of said ADC,

j) said ADC providing periodic non-zero digital samples proportional to said AC signals whenever the polarity of said AC signal is the same as said high reference voltage and providing digital samples which are zero whenever said AC signals are not of the selected polarity, and

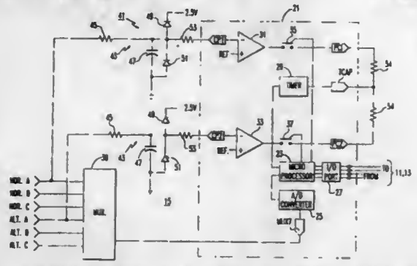
k) means for processing said non-zero digital samples to make measurements to obtain parameters of said AC signals.

5,544,065

APPARATUS FOR DIGITIZING AC SIGNALS OF UNKNOWN OR CHANGING FREQUENCY

Joseph C. Engel, Monroeville, and Thomas J. Kenny, Pittsburgh, both of Pa., assignors to Eaton Corporation, Cleveland, Ohio

Filed Aug. 9, 1994, Ser. No. 287,972
Int. Cl.[5] G01R *23/10;* **H03M** *1/00*
U.S. Cl. 364—484 **9 Claims**



1. Apparatus for digitizing ac signals from multiple sources each of which may be of unknown or varying frequency, said apparatus comprising:

selection means for alternatively selecting one of said multiple ac signals;

input circuit means generating an input pulse for each cycle of said one ac signal;

clock signal generating means generating a digital clock signal comprising clock pulses;

counter means to which said digital clock signal is applied to generate a running count of said clock pulses;

digital means having means responsive to said input circuit means for determining a difference count of clock pulses generated by said counter means between consecutive input pulses, sampling count generating means dividing said difference count of clock pulses by a sampling factor equal to a desired number of samples of said one ac signal to be taken per cycle of said one ac signal to generate a sampling count, and sampling interrupt generating means for generating a sampling interrupt signal for each sampling count of clock pulses; and

analog to digital converter means generating a digital sample of said one ac signal in response to each sampling interrupt signal.

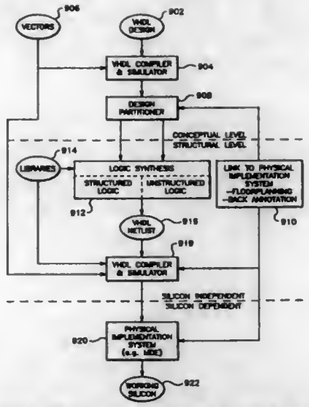
5,544,066

METHOD AND SYSTEM FOR CREATING AND VALIDATING LOW LEVEL DESCRIPTION OF ELECTRONIC DESIGN FROM HIGHER LEVEL, BEHAVIOR-ORIENTED DESCRIPTION, INCLUDING ESTIMATION AND COMPARISON OF LOW-LEVEL DESIGN CONSTRAINTS

Michael D. Rostoker, San Jose; Carlos Dangelo, Los Gatos; Vijay Nagasamy, Union City, and Doron Mintz, Sunnyvale, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Continuation-in-part of Ser. No. 54,053, Apr. 26, 1993, abandoned, and Ser. No. 77,294, Jun. 14, 1993, which is a continuation-in-part of Ser. No. 54,053, and Ser. No. 917,801, Jul. 20, 1992, Pat. No. 5,220,512, which is a continuation of Ser. No. 512,129, Apr. 19, 1990, abandoned, said Ser. No. 54,053is a continuation of Ser. No. 507,201, Apr. 6, 1990, Pat. No. 5,222,030. This application Jun. 14, 1993, Ser. No. 76,729
The portion of the term of this patent subsequent to Jun. 22, 2010, has been disclaimed.
Int. Cl.[5] G06F *17/50*
U.S. Cl. 364—489 **24 Claims**

1. In an ECAD system, a method of creating and validating a low level description of an electronic design from a higher level, behavior-oriented description thereof, comprising:



entering on an ECAD system a specification of a desired behavior of an electronic design, including high-level timing goals, in a high-level, behavior-oriented language;

on the ECAD system, iteratively simulating and changing the electronic design at the behavioral-level until the desired behavior is obtained;

on the ECAD system, partitioning the electronic design into a number of architectural blocks and constraining the architectural choices to those which meet the high-level timing goals;

on the ECAD system, directing the various architectural blocks to logic synthesis programs, said logic synthesis programs also running in the ECAD system, thereby providing a low level description of the electronic design;

comparing one or more constraints on one or more respective low-level characteristics of the electronic design against one or more respective estimates of the low-level characteristics of the electronic design, as partitioned; and

if any of the one or more constraints is not met, iteratively re-partitioning the electronic design, re-estimating the one or more low-level characteristics of the re-partitioned design and comparing them against the one or more respective constraints until the constraints are met.

5,544,067

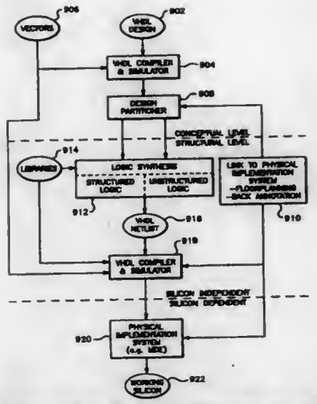
METHOD AND SYSTEM FOR CREATING, DERIVING AND VALIDATING STRUCTURAL DESCRIPTION OF ELECTRONIC SYSTEM FROM HIGHER LEVEL, BEHAVIOR-ORIENTED DESCRIPTION, INCLUDING INTERACTIVE SCHEMATIC DESIGN AND SIMULATION

Michael D. Rostoker, Boulder Creek; Carlos Dangelo, Los Gatos, and Daniel R. Watkins, Los Altos, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Continuation-in-part of Ser. No. 54,053, Apr. 26, 1993, abandoned, and Ser. No. 917,801, Jul. 20, 1992, Pat. No. 5,220,512, which is a continuation of Ser. No. 512,129, Apr. 19, 1990, abandoned, said Ser. No. 54,053is a continuation of Ser. No. 507,201, Apr. 6, 1990, Pat. No. 5,222,030. This application Jun. 14, 1993, Ser. No. 77,294
The portion of the term of this patent subsequent to Jun. 22, 2010, has been disclaimed.
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—489 **31 Claims**

1. In an ECAD system, a method of creating and validating a structural description of an electronic system from a higher level, behavior-oriented description thereof, comprising:

entering on an ECAD system a specification for a design of desired behavior of an electronic system, including high-level timing goals, in a high-level, behavior-oriented language;



on the ECAD system, iteratively simulating and changing the design of the electronic system at the behavioral-level until the desired behavior is obtained;

on the ECAD system, displaying the design of at least a portion the electronic system as a plurality of graphical objects forming a schematic diagram and simultaneously displaying simulation data on the schematic diagram adjacent to graphical objects to which the simulation data applies;

on the ECAD system, partitioning the design of the device into a number of architectural blocks and constraining the architectural choices to those which meet the high-level timing goals; and

on the ECAD system, directing the various architectural blocks to logic synthesis programs, said logic synthesis programs also running in the ECAD system, thereby providing a netlist or gate-level description of the design.

5,544,068

SYSTEM AND METHOD FOR OPTIMIZING DELAYS IN SEMICONDUCTOR CIRCUITS

Misao Takimoto, Hadano; Tooru Hiyama, Atsugi; Tetsuo Sasaki, Hadano, and Tatsuki Ishii, Tokyo, all of, Japan, assignors to Hitachi, Ltd., Kanagawa-ken, Japan

Filed Mar. 9, 1994, Ser. No. 209,331
Claims priority, application Japan, Mar. 9, 1993, 5-048097
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—489 **6 Claims**

1. In a design support system for designing a semiconductor integrated circuit containing a plural closed paths which are defined as a signal transmission passageway between storage elements, the system comprising:

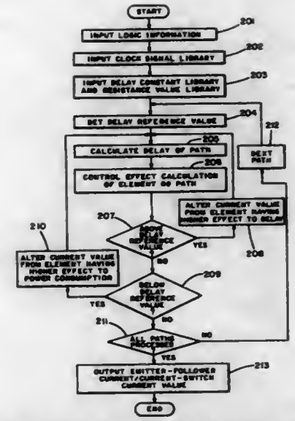
clock signal library for holding information describing identities, clock signal periods and phase differences of clock signals which are used in the semiconductor circuit;

logic information file for holding information describing type of gate elements, connective relations thereof, and identities of clock signals served to storage elements of the plural paths;

table for holding information describing information representing variations of emitter-follower current of the gate elements and the storage elements;

means for obtaining delay reference value for a path, wherein clock signal identities of storage elements of the path read out from the logic information file specifies clock signal period and phase difference of the clock signals in the clock signal file, and time difference between the clock signals is obtained as the delay reference value based on the specified information;

means calculating a delay for a path based on connective relations of gate elements, emitter-follower current, wherein a



plural types of delay may be obtained for the variations of the emitter-follower current defined in the table;

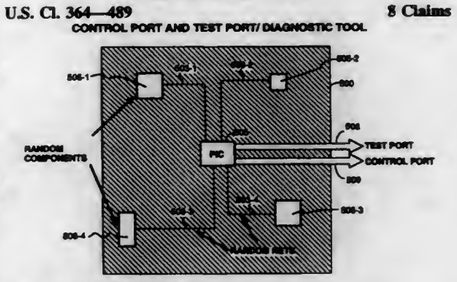
means for determining one variation of emitter-follower current so that path delay under the circumstance can have a predetermined relationship with the reference path delay.

5,544,069

STRUCTURE HAVING DIFFERENT LEVELS OF PROGRAMMABLE INTEGRATED CIRCUITS INTERCONNECTED THROUGH BUS LINES FOR INTERCONNECTING ELECTRONIC COMPONENTS

Amr M. Mohsen, Saratoga, Calif., assignor to Aptix Corporation, San Jose, Calif.

Continuation of Ser. No. 410,194, Sep. 20, 1989, Pat. No. 5,377,124. This application Dec. 22, 1993, Ser. No. 171,992
Int. Cl.[6] H03K *17/693*
U.S. Cl. 364—489 **8 Claims**



1. Structure comprising:

a board suitable for carrying electrically conductive traces;

a plurality of first component contacts formed on said board for receipt of electronic components;

a plurality of first electrically conductive traces formed on said board, each of said first conductive traces being electrically connected to a corresponding one of said first component contacts;

a group of first programmable integrated circuits connected to said board, each first programmable integrated circuit containing a plurality of first electrically conductive leads capable of being programmably interconnected by a user, each of a selected number of said first conductive leads being electrically connected to a corresponding one of said first conductive traces on said board thereby to form an electrically conductive path from each first component contact to the corresponding first conductive lead;

a plurality of bus lines, each of said bus lines being connected to a corresponding one of said first conductive leads of said first programmable integrated circuits; and

at least one second programmable integrated circuit connected to said board, each second programmable integrated circuit containing a plurality of second conductive leads capable of being programmably interconnected by a user, each of a selected number of said second conductive leads being electrically connected to a corresponding one of said bus lines thereby to form an electrically conductive path from that second conductive lead to the corresponding first conductive lead of said first programmable integrated circuits, whereby said first conductive traces and said bus lines can be programmably interconnected through said first and second programmable integrated circuits to achieve a desired electrical function from the electrical components to be connected to said board.

5,544,070

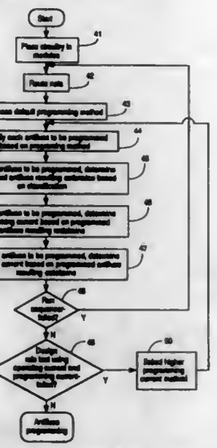
PROGRAMMED PROGRAMMABLE DEVICE AND METHOD FOR PROGRAMMING ANTIFUSES OF A PROGRAMMABLE DEVICE

William D. Cox, San Jose; Andrew K. Chan, Palo Alto; Richard J. Wong, Milpitas; James M. Apland, Gilroy, and Kathryn E. Gordon, Mountain View, all of Calif., assignors to QuickLogic Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 738,707, Jul. 31, 1991, Pat. No. 5,302,546, and a continuation-in-part of Ser. No. 907,904, Jul. 2, 1992, Pat. No. 5,327,024. This application Aug. 27, 1992, Ser. No. 937,331

Int. Cl.[6] H03K *19/177*

U.S. Cl. 364—489 **34 Claims**



1. A programmable device, comprising:

a first net comprising a first programmed antifuse, said first programmed antifuse having a first maximum permissible operating current I_{1poc}, a first peak actual operating current I_{1aoc} flowing through said first programmed antifuse during switching of said first net during normal circuit operation; and

a second net comprising a second programmed antifuse, each of said first and second programmed antifuses having a substantially identical unprogrammed structure, said second programmed antifuse having a second maximum permissible operating current I_{2poc}, a second peak actual operating current I_{2aoc} flowing through said second programmed antifuse during switching of said second net during normal circuit operation, wherein $I_{1aoc} \leq I_{1poc} < I_{2aoc} \leq I_{2poc}$.

5,544,071

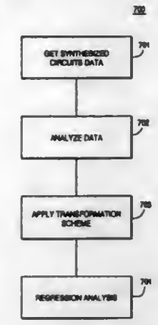
CRITICAL PATH PREDICTION FOR DESIGN OF CIRCUITS

Doron Keren, Haifa; Igal Izsak, Yokjear, and Isaacov Kobrinsky, Haifa, all of, Israel, assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 29, 1993, Ser. No. 174,729

Int. Cl.[6] H01L *25/00*

U.S. Cl. 364—489 **9 Claims**



1. In a computer system, an automatic method of critical path prediction in a network model representative of a circuit, comprising performing the following steps for each combinational block in said network model:

a. determining gate delays for each cell used for each of the drivers in said combinational block by:

(i) if said cell comprises an AND logical function and a number of outputs of the cell is less than or equal to a Fanin cone for said cell, then computing said gate delay for said cell using an average internal delay for said cell and a capacitance of said cell;

(ii) if said cell comprises an AND logical function and said number of outputs of said cell exceeds said Fanin cone for said cell then computing said gate delay for said cell using a weighted length of a path from an input to an output of said cell using said average internal delay for said cell and said capacitance of said cell;

(iii) if said cell comprises an OR logical function and said number of outputs of said cell is less than or equal to said Fanin cone for said cell then computing the gate delay for said cell using the length of the path from an input to an output of said cell; and

(iv) if said cell comprises an OR logical function and said number of outputs of said cell exceeds said Fanin cone for said cell then computing said gate delay for said cell using said weighted length of a path from an input to an output of said cell using said average internal delay for said cell and said capacitance of said cell;

b. determining load delays for each cell used for each of said drivers in said combinational block;

c. determining estimated delays for each path between each of said drivers in said combinational block and sinks coupled to each of said drivers in said combinational blocks; and

d. performing a static timing analysis on said combinational block by using said gate delays, said load delays, and said estimated delays to determine estimated required times and total capacitance for each primary output of said sinks of said combinational block, and to determine estimated arrival times for each primary input of said drivers of said combinational block.

5,544,072

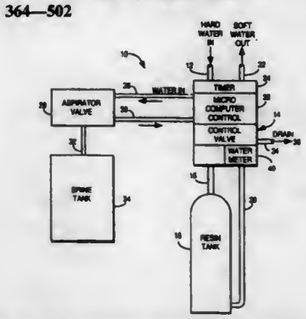
METHOD FOR REGENERATION OF A WATER SOFTENER

Jeffrey A. Zimmerman, Blaine; Gary Gauer, Cottage Grove, and Dave Marshall, St. Paul, of all, Minn., assignors to Ecowater Systems, Inc., Woodbury, Minn.

Continuation of Ser. No. 241,954, May 12, 1994, abandoned, which is a continuation of Ser. No. 705,120, May 24, 1991, abandoned. This application Apr. 14, 1995, Ser. No. 425,266

Int. Cl.[6] B01D *15/04*

U.S. Cl. 364—502 **32 Claims**



3. A method of scheduling regeneration of a resin bed of a water softener based upon the remaining available exchange capacity of the resin bed comprising the steps of:

a) selecting a design exchange capacity to which the resin bed is to be regenerated at the next regeneration,

b) determining when a regeneration of the resin bed should be scheduled by,

i) establishing a progression of capacity ranges, a threshold capacity defining the lower limit of each range, and an allocated capacity defining the upper limit of each range, said threshold capacities and said allocated capacities each being expressible as a percentage of the selected design exchange capacity, said threshold capacity defining the lower limit for a first capacity range is set at naught percent, and said allocated capacity defining the upper limit of said first capacity range is set at fifty percent of said selected design exchange capacity,

ii) selecting from said progression of capacity ranges a particular capacity range against which the remaining available exchange capacity of the resin bed, as a percentage of the selected design exchange capacity, is compared,

iii) determining the amount of exchange capacity of the resin bed, as a percentage of the selected design exchange capacity, which has been used since the most recent regeneration and,

iv) scheduling a regeneration of the resin bed when the amount of exchange capacity of the resin bed used since the most recent regeneration is greater than the allocated capacity of the selected capacity range.

5,544,073

ROTOR BALANCING CALCULATOR

Richard W. Piety, and Kenneth R. Piety, both of Knoxville, Tenn., assignors to Computational Systems, Inc., Knoxville, Tenn.

Filed Jun. 2, 1994, Ser. No. 252,734

Int. Cl.[6] G01M *7/02*

U.S. Cl. 364—508 **33 Claims**

1. A portable, hand-held, battery-powered balancing instrument of the type used for in-situ field balancing procedures of a rotor comprising:

at least one vibration sensor for producing vibration data;

a rotation sensor for producing rotation data;

a data port comprising:

a vibration sensor communications port for receiving vibration data from at least one of the vibration sensors;

a rotation sensor communications port for receiving rotation data from the rotation sensor;

a conditioning circuit for receiving and conditioning the vibration data and the rotation data;

an analog to digital converter for receiving the vibration data and converting it to digital vibration data, and for receiving the rotation data and converting it to digital rotation data;

a power supply for supplying power to the balancing instrument;

an operator interface through which a technician inputs commands and set-up data into the balancing instrument;

a memory comprising:

a data storage memory where the digital rotation and vibration data gathered from the rotation and vibration sensors is held; and

a procedure storage memory where operating procedure menus and analysis routines for the balancing instrument are held, the analysis routines further comprising at least one diagnostic routine for analyzing the vibration and rotation data for determining an alert condition indicating a problem other than unbalance that may lessen the success of the balancing procedure;

a processor for receiving, processing, and analyzing the digital rotation and vibration data, based upon and responsive to the set-up data, the commands, and the analysis routines, for selectively producing an alert output when an alert condition exists, and for producing output data which includes the alert output; and

a display for receiving and displaying at least a portion of the output data and for displaying information corresponding to the alert output when an alert condition exists.

5,544,074

METHOD AND APPARATUS FOR DETECTING THE POSITION OF AN ABNORMAL SITE OF A BURIED PIPE

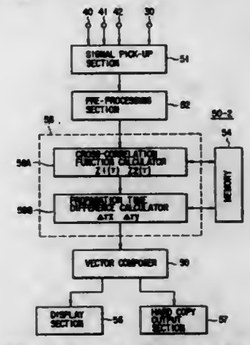
Takehiko Suzuki, Yamato; Shozo Taniguchi, Tokyo; Kohji Kanemaru, Yokohama; Yoshiyuki Sato, Tokyo, and Akihiko Enamito, Chigasaki, all of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 5,132, Jan. 15, 1993, abandoned. This application Jan. 26, 1995, Ser. No. 378,935

Claims priority, application Japan, Jan. 16, 1992, 4-005893

Int. Cl.[6] G01F *1/66*

U.S. Cl. 364—508 **23 Claims**



1. An apparatus for detecting a position of a leak occurring on a buried pipe containing a fluid and indicating said position on at least one of a display unit and a hard copy output unit, said apparatus comprising:

reference signal detecting means for detecting, as a reference signal, an acoustic signal generated from a physical defect on said buried pipe;

vibration signal detecting means for detecting vibration signals contained in said acoustic signal generated from said physical defect at a plurality of locations on a ground level;

vibration amplitude determining means for determining, based on said vibration signals obtained from said vibration signal detecting means, a vibration amplitude in a predetermined direction defined by a straight line connecting together at least two of said plurality of locations;

vibration energy propagation velocity determining means for determining a vibration energy propagation velocity in said predetermined direction based on said vibration signals obtained by said vibration signal detecting means;

cross-correlation function determining means for determining a cross-correlation function of said vibration amplitude in said predetermined direction based on said reference signal and on said vibration amplitude in said predetermined direction, and for determining a cross-correlation function of said vibration energy propagation velocity in said predetermined direction based on said reference signal and on said vibration energy propagation velocity in said predetermined direction;

vibration intensity determining means for determining a vibration intensity in said predetermined direction based on said cross-correlation function of said vibration amplitude in said predetermined direction and on said cross-correlation function of said vibration energy propagation velocity in said predetermined direction; and

outputting means for outputting, as vector data, said vibration intensity so as to obtain vector data representing a direction of said physical defect on said buried pipe.

5,544,075

METHOD TO OPTIMIZE THE BIT RATE OF A COMMUNICATIONS CHANNEL IN TIME-DIVISION MODE

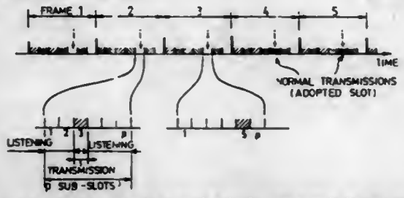
Albert Janex, Cachan, France, assignor to Thomson-CSF, Paris, France

Filed Jul. 20, 1994, Ser. No. 272,394

Claims priority, application France, Jul. 20, 1993, 93 08891

Int. Cl.[6] H04J *3/16*

U.S. Cl. 364—514 R **10 Claims**



1. A method by which a moving body can search for an unoccupied time slot in a time-division communications channel for the transmission of a message comprising at least one information element on geographical position, the moving body participating with other moving bodies located in one and the same geographical zone in an anti-collision system in which the time is conventionally divided into reproducible time periods T, each period comprising a number N of time slots referenced 1, 2, 3 . . . i . . . N, the access to a time slot for the transmission of the message from the moving body being done by the identifying of the unoccupied time slots during at least one listening period T, followed by a random choice of one slot i from among the slots identified as being unoccupied, wherein:

a) for at least one period after the moving body has decided to occupy the slot i, the time of this slot i is divided randomly into reception sub-slots R and transmission sub-slots E;

b) so long as no transmission from another moving body has been received during the reception sub-slots R, a transmission is begun or continued during the following transmission sub-slots E of the slot i in progress and the slot i is kept during the following period;

c) if a transmission is received from another moving body during a reception sub-slot R, there is no transmission made or there is no longer any transmission made during the following transmission periods E planned in the slot i in progress, and a new unoccupied slot j is chosen;

d) the above operations a) and b) are carried out again on the slot j, and if a transmission is received from another moving body, the operation c) is carried out again.

5,544,076

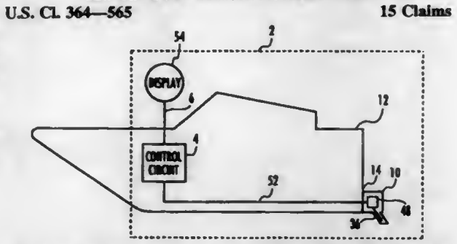
MARINE SPEEDOMETER

Ronald E. Wiggerman, McHenry; Craig Gates, Freeport; Dale L. Habbley, Woodstock, and Edward J. Hollowed, Naperville, all of Ill., assignors to Airguide Instrument Company, Racine, Wis.

Filed Aug. 19, 1994, Ser. No. 293,244

Int. Cl.[6] G01P *5/165;21/00;* **G01C** *21/00*

U.S. Cl. 364—565 **15 Claims**



1. A marine speedometer for use on a marine vessel traveling at a speed, the marine vessel including a speed sensor, the marine speedometer comprising:

a display;

a processor operatively coupled with the display and the speed sensor, the processor receiving a speed sense signal from the speed sensor and providing a marine speed signal indicative of the speed of the marine vessel in response to a software program and the speed sense signal, wherein the display provides visual indicia of the speed of the marine vessel in response to the marine speed signal; and

wherein the software program includes a look-up table for storing a plurality of T-Buoy values and a plurality of count values at locations addressed by a plurality of addresses, wherein the processor addresses a particular T-Buoy value of the T-Buoy values and a particular count value of the count values at a particular address to provide the marine speed signal.

5,544,077

HIGH AVAILABILITY DATA PROCESSING SYSTEM AND METHOD USING FINITE STATE MACHINES

Paul C. Hershey, Manassas, Va., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 19, 1994, Ser. No. 184,098

Int. Cl.[6] G06F *11/30*

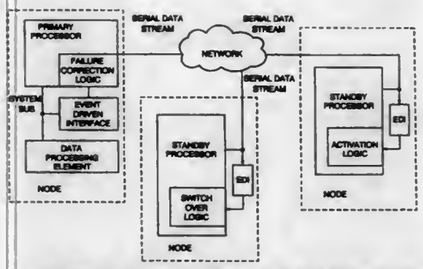
U.S. Cl. 364—570 **5 Claims**

1. A high availability data processing system, comprising:

a primary processor at a first node of a communications network with a serial data stream, having failure detection logic therein, for outputting an alarm signal to said communications network having a characteristic pattern indicating a failure in said primary processor;

a first standby processor at a second node of said communications network, having a first event driven interface therein coupled to said communications network, for detecting said alarm signal;

a first n-bit address register in said first event driven interface, having a first portion with n-x bits and a second portion with



a plurality of x bits and an input of said second portion coupled to said serial data stream, for receiving x-bit words from said serial data stream;

a first addressable memory having a plurality of data storage locations, each having a first portion with n-x bits, said first addressable memory having an n-bit address input coupled to an output of said first n-bit address register, said first addressable memory configured with data stored in first and second ones of said plurality of data storage locations to represent a finite state machine for detection of said alarm signal, said second one of said plurality of data storage locations having a switch over signal valued stored therein;

a feedback path from an output of said first addressable memory to an input of said first n-bit address register, for transferring said data from said first one of said plurality of data storage locations in said first addressable memory to said first portion of said first n-bit address register, for concatenation with said x-bit words from said serial data stream to form an address for said plurality of data storage locations of said first addressable memory;

switch over logic in said first standby processor, coupled to said second one of said plurality of data storage locations, for invoking primary status in said first standby processor; and

wherein said first addressable memory, said first n-bit address register cooperate via said feedback path to provide for detection of said alarm signal in said serial data stream such that said second one of said plurality of data storage locations of said first addressable memory outputs said switch over signal value when said alarm signal is present in said serial data stream, said switch over signal value causing said switch over logic to invoke primary status in said first standby processor.

5,544,078

TIMEKEEPING COMPARISON CIRCUITRY AND DUAL STORAGE MEMORY CELLS TO DETECT ALARMS

Bill Podkowa, Plano, Tex., assignor to Dallas Semiconductor Corporation, Dallas, Tex.

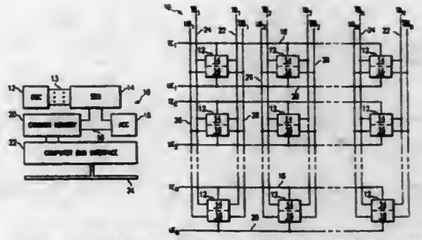
Division of Ser. No. 70,651, May 28, 1993, Pat. No. 5,347,472, which is a continuation of Ser. No. 675,570, Mar. 26, 1991, abandoned, which is a continuation of Ser. No. 371,571, Jun. 26, 1989, Pat. No. 5,003,501, which is a continuation-in-part of Ser. No. 208,889, Jun. 17, 1988, Pat. No. 5,050,114, and a continuation-in-part of Ser. No. 208,891, Jun. 17, 1988, Pat. No. 4,959,646. This application Jun. 17, 1994, Ser. No. 261,552

Int. Cl.[6] G04C *15/00;11/40*

U.S. Cl. 364—569 **9 Claims**

1. A timekeeping circuit, comprising:

(a) an array of dual storage memory cells, each dual storage memory cell of said array of dual storage memory cells having a first memory cell and a second memory cell electrically coupled together via at least one electrical connection, said first memory cell contains first timekeeping data and said second memory cell contains second timekeeping data, said first timekeeping data stored in said first memory cell selectably transferable to said second memory cell from said first memory cell, said second timekeeping data selectably transferable to said first memory cell from said second memory cell via said at least one electrical connection by transfer circuitry, said transfer circuitry electrically positioned between said first memory cell and said second memory cell of each dual storage memory cell of said array of dual storage memory cells; and



(b) comparison circuitry electrically coupled to said first memory cell of each dual storage memory cell of said array of dual storage cells, said comparison circuitry compares said first timekeeping data stored in said first memory cell of said array of dual storage cell to alarm data to detect a match between said first timekeeping data stored in said first memory cell of said array of dual storage memory cells and said alarm data.

5,544,079

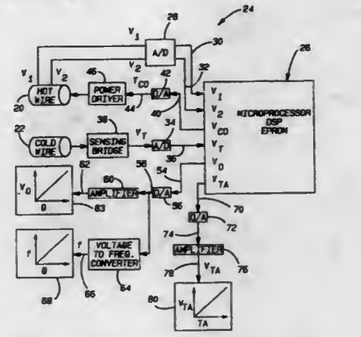
SMART MASS GAS FLOW SENSOR

George Saikalis, West Bloomfield, Mich., assignor to Hitachi America, Ltd., Tarrytown, N.Y.

Filed Jul. 15, 1994, Ser. No. 275,764

Int. Cl.[6] G01M *19/00*

U.S. Cl. 364—571.01 **11 Claims**



1. A mass gas flow sensor comprising

a housing, said housing having a bore through which a gas flows,

means in saint bore for sensing mass gas flow through the bore and for generating an analog signal proportional to said mass gas flow, said sensing means comprising a hot wire and a cold wire, said hot and cold wires being positioned in said bore,

circuit means contained in said housing for digitally maintaining a predetermined differential temperature between said hot and cold wire, for digitally processing said analog signal and for generating an output signal which is substantially linear with respect to the mass gas flow through said bore of said housing, and

means for generating an output signal representative of the temperature of the cold wire.

5,544,080

VIBRATION/NOISE CONTROL SYSTEM

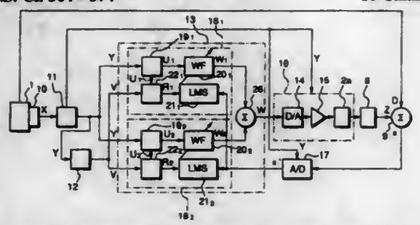
Toshiaki Kobayashi, and Hidetaka Ozawa, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 1, 1994, Ser. No. 189,912

Claims priority, application Japan, Feb. 2, 1993, 5-037458; Mar. 22, 1993, 5-086823

Int. Cl.[6] G01H *17/00*

U.S. Cl. 364—574 **16 Claims**



1. In a vibration/noise control system for controlling vibrations and noises generated from a vibration/noise source, with a periodicity or a quasi-periodicity, said vibration/noise source having at least a rotational member, including first filter means for generating a control signal for control of said vibrations and noises, a driving signal-forming means for converting said control signal into a driving signal to be delivered to a vibration/noise-transmitting path through which said vibrations and noises are transmitted, error signal-forming means for generating an error signal indicative of a difference between said driving signal transmitted through said vibration/noise-transmitting path and a vibration/noise signal indicative of said vibrations and noises generated from said vibration/noise source, second filter means for generating a transfer characteristic-dependent reference signal reflecting a transfer characteristic of said vibration/noise-transmitting path, and control signal-updating means for updating filter coefficients of said first filter means based on said error signal output from said error signal-forming means, said transfer characteristic-dependent reference signal output from said second filter means, and said filter coefficients of said first filter means, such that said error signal becomes the minimum,

the improvement comprising:

pulse signal-generating means for detecting rotation of said rotational member whenever said rotational member rotates through each predetermined very small degree, and generating a pulse signal indicative of detected rotation; and

reference signal-forming means for forming a reference signal corresponding to a repetition period of vibrations and noises peculiar to a component part of said vibration/noise source, based on an interval of occurrences of pulses of said pulse signal generated by said pulse signal-generating means, and delivering said reference signal to said first filter means;

wherein said reference signal-forming means has sine wave-forming means for forming a sine wave having a single repetition period per said repetition period of said vibrations and noises peculiar to said component part of said vibration/noise source, and

wherein said second filter means has:

correction value-selecting means for selecting a correction value representative of said transfer characteristic according to a rotational speed of said rotational member, and

transfer characteristic-dependent reference signal-forming means for correcting said reference signal based on said correction value selected by said correction value-selecting means, into said transfer characteristic-dependent reference signal.

5,544,081

OUTPUT FILTER FOR OVERSAMPLING DIGITAL-TO-ANALOG CONVERTER

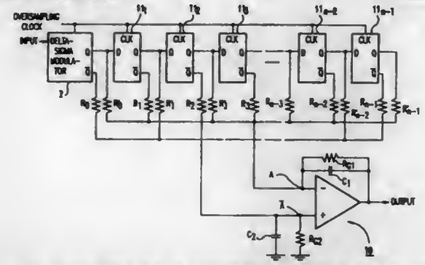
Akira Yukawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 26, 1994, Ser. No. 294,825

Claims priority, application Japan, Sep. 1, 1993, 5-240352

Int. Cl.[6] H06J *1/00;* **G06G** *7/02*

U.S. Cl. 364—602 **5 Claims**



1. An output filter for an oversampling digital-to-analog converter for converting one-bit quantization data output from a delta-sigma modulator by digital-to-analog conversion and outputting a resulting analog signal, said output filter comprising:

a plurality of D-type flip-flops commensurate with n taps for providing a predetermined finite impulse response filter characteristic, said D-type flip-flops being connected in cascade;

a first set of n first resistors corresponding to said taps of said output filter and including resistance values which are in inverse proportion to absolute values of corresponding tap coefficients, each of said first resistors including a first terminal connected to one of a first output terminal and a second output terminal of respective ones of said D-type flip-flops and a second terminal connected to a common output terminal of said output filter;

a second set of n second resistors including resistance values which are in proportion to absolute values of corresponding tap coefficients and each of said second resistors including a first terminal connected to one of said first and said second output terminal of respective ones of said D-type flip-flops a second terminal connected to a common inverting output terminal of said output filter;

wherein said first terminals of said first resistors and said first terminals of respective ones of said second resistors are connected to different output terminals of respective ones of said D-type flip-flops.

5,544,082

METHOD AND SYSTEM FOR PLACING A COMPUTER IN A REDUCED POWER STATE

Fernando Garcia-Duarte; John Hensley; Shanmugam Mohanraj; Nagarajan Subramaniyan, all of Redmond, and David B. Olsson, Seattle, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

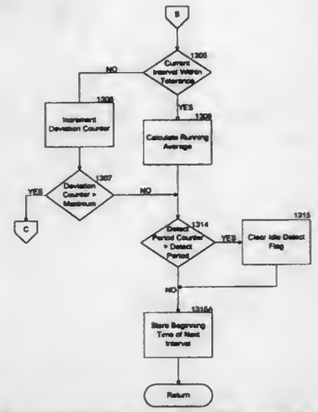
Continuation of Ser. No. 958,050, Oct. 6, 1992, Pat. No. 5,416,726. This application Feb. 15, 1995, Ser. No. 388,952

Int. Cl.[6] G06F *1/32*

U.S. Cl. 364—707 **53 Claims**

1. A method in a computer system for transitioning the computer system from a first state in which execution of a program is enabled to a second state in which execution of the program is suspended by monitoring regular occurrences of a monitored activity of an executing program, comprising the computer-implemented steps of:

calculating a running average of the period between successive occurrences of the monitored activity; and



when the period deviates from the running average by more than a selected tolerance value a number of times exceeding a preselected limit, restarting the calculation of the running average; and

when the period deviates from the running average by more than the selected tolerance value a number of times not exceeding the preselected limit, placing the computer system in the second state in which execution of the program is suspended.

5,544,083

PASSWORD MANAGEMENT METHOD AND APPARATUS

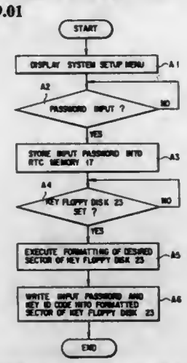
Emiko Iizuka, and Makoto Arai, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 160,334, Dec. 2, 1993, abandoned, which is a continuation of Ser. No. 950,678, Sep. 25, 1992, abandoned. This application Jul. 13, 1994, Ser. No. 274,374

Claims priority, application Japan, Apr. 27, 1992, 4-107790; Aug. 31, 1992, 4-232415

Int. Cl.[6] G06F *15/00*

U.S. Cl. 364—709.01 **35 Claims**



1. A data processing system which allows a recording medium to be set therein, comprising:

input means for inputting a password;

storage means for storing the input password;

means for checking whether the recording medium is set in the data processing system if the password is input; and

write control means for writing the input password into the recording medium if the recording medium is set in the data processing system.

5,544,084

MULTIPLIER COMPOSED OF INTEGRATED SEMICONDUCTOR CIRCUIT OCCUPYING REDUCED AREA

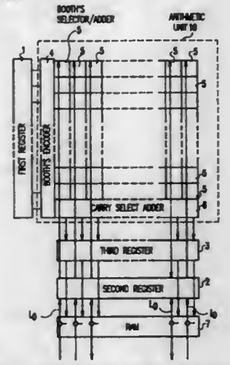
Naoko Fukumoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 7, 1994, Ser. No. 335,964

Claims priority, application Japan, Nov. 19, 1993, 5-290339

Int. Cl.[6] G06F *7/52*

U.S. Cl. 364—760 **8 Claims**



1. A multiplier comprising an integrated semiconductor circuit comprising:

a first register for storing an M-bit multiplier;

a second register for storing an N-bit multiplicand;

an arithmetic unit comprising of a rectangular matrix of arithmetic elements arranged in rows and columns, a Booth's encoder disposed along a first outer edge of said rectangular matrix parallel to said columns, and a carry select adder disposed along a second outer edge of said rectangular matrix parallel to said rows, said arithmetic elements in each of said columns having input terminals connected by a common wire in each of said columns, the arrangement being such that bits of the multiplicand stored in said second register are inputted through the common wires to the arithmetic elements, the M-bit multiplier is encoded by said Booth's encoder and outputted, and an encoded output is supplied to the arithmetic elements and added according to a carry/save process, whereby the N-bit multiplicand stored in said second register is multiplied by the M-bit multiplier stored in said first register according to a Booth's algorithm; and

a third register for storing a product produced by said arithmetic unit;

said first register extending along said Booth's encoder;

said third register extending along said carry select adder;

said second register extending along said third register in confronting relation to said carry select adder with said third register interposed therebetween;

said second register and said arithmetic unit being connected by common wires which pass through said third register.

5,544,085

FAST ADDER CHAIN

Mauro L. Sali, St. Angelo Lodigiano, and Carla Golla, Sesto S.G., both of, Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

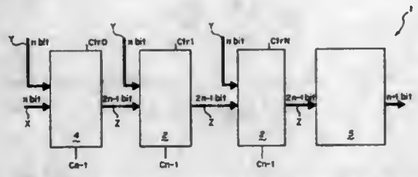
Continuation of Ser. No. 68,115, May 25, 1993, abandoned. This application Sep. 21, 1994, Ser. No. 309,793

Claims priority, application European Pat. Off., May 27, 1992, 92830267

Int. Cl.[6] G06F *7/50*

U.S. Cl. 364—787 **20 Claims**

1. An adder chain for adding together at least first and second digital words and providing a sum, comprising:



a plurality of adder blocks connected in cascade, a first adder block including:

a plurality of adder elements, each adder element receiving like weighted bits of the first and second digital words and computing a pseudosum and pseudocarry of the like weighted bits;

storage elements, coupled to the adder elements, receiving the pseudosums and the pseudocarries, and storing the pseudosums and the pseudocarries; and

transmitting elements, coupled to the storage elements, receiving the pseudosums and the pseudocarries, and transmitting the pseudosums and the pseudocarries to a subsequent adder block; and

a last adder block including:

a plurality of adding elements, wherein each of the adding elements except for a first adding element receives a pseudosum bit and a pseudocarry bit from a preceding adder block and a carry bit from an immediately preceding adding element, and provides a carry bit to a subsequent adding element and a sum bit which is part of the sum.

5,544,086

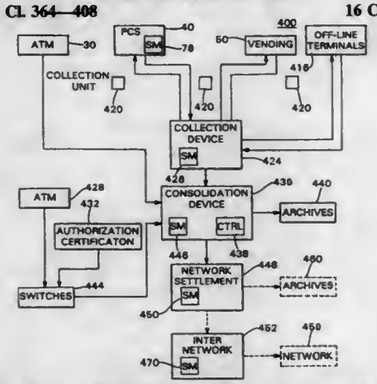
INFORMATION CONSOLIDATION WITHIN A TRANSACTION NETWORK

Terry L. Davis, Scottsdale, Ariz.; James A. Hart, Radnor, Pa.; James F. Russell, Hockessin, Del.; John W. Sears, Peoria, Ariz., and Philip H. Price, Phoenix, both of Ariz., assignors to Electronic Payment Services, Inc., Wilmington, Del.

Filed Sep. 30, 1994, Ser. No. 316,592

Int. Cl.[6] G06F *157/00*

U.S. Cl. 364—408 **16 Claims**



1. A stored value transaction system for exchanging cash-equivalent value among a plurality of system users and a plurality of system entities wherein each user has a cash-eqivalent module including a first memory for storing an amount of cash-equivalent value, the system comprising:

a plurality of value transferring devices including a value adding device for adding cash-equivalent value to the cash-equivalent module of a user in exchange for a corresponding amount of value provided by the user to a system entity and a value deducting device for deducting cash-equivalent value from the cash-equivalent module of a user in exchange for a corresponding amount of value provided to the user from a system entity, each value transferring device including a second memory for storing value transfer information corresponding to each transfer;

a first collection device for periodically receiving an accumulated amount of the stored value transfer information from the second memory of at least one of the value transferring devices, the first collection device including a third memory for storing the received accumulated value transfer information;

a first consolidation device for receiving the stored value transfer information from the third memory of the first collection device, the first consolidation device including a fourth memory for storing the received value transfer information and a processor for consolidating the received value transfer information into consolidated information according to a plurality of entities, the entities including entities that are to receive deducted cash-equivalent value and entities that are to provide added cash-equivalent value;

a first network settlement device coupled to the first consolidation device for receiving the consolidated information from the first consolidation device and for performing settlement among the system entities according to the received consolidated information.

5,544,087

NAVIGATION SYSTEM

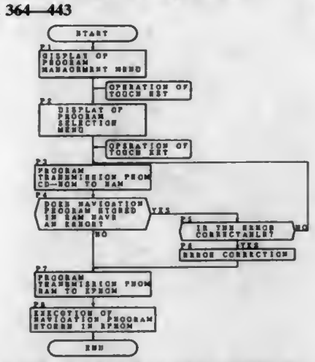
Masahiro Nakajima, and Hideo Odagaki, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed May 26, 1994, Ser. No. 249,720

Claims priority, application Japan, Jun. 4, 1993, 5-134913; Jun. 29, 1993, 5-159479

Int. Cl.[6] G06F *165/00*

U.S. Cl. 364—443 **25 Claims**



10. A navigation system for a vehicle, comprising:

a central processing unit mounted on said vehicle for executing a plurality of programs including a plurality of navigation programs, a transmitting program and a selection program;

an external storage device mounted on said vehicle for storing therein said navigation programs and said selection program;

an internal nonvolatile storage device mounted on said vehicle for storing therein said transmitting program;

an inner bus mounted on said vehicle for having said central processing unit electrically connected to said internal nonvolatile storage device to permit signals to be transmitted between said central processing unit and said internal nonvolatile storage device;

an interface unit having said external storage device electrically connected to said inner bus to permit said external storage device to be brought in communication with said central processing unit and said internal nonvolatile storage device;

said internal nonvolatile storage device including a read-only memory storing therein said transmitting program and an erasable programmable read-only memory;

when a vehicle driver requests exchange of said navigation programs, said central processing unit being firstly operated to execute said selection program to have a vehicle driver select one from said navigation programs stored in said external storage device, being secondly operated to execute said transmitting program to read the selected navigation program from said external storage device and store the read navigation program in said erasable programmable read-only memory, and being thirdly operated to repeat the execution of the navigation program stored in said erasable programmable read-only memory to provide said vehicle driver with navigation information;

said navigation program stored in said erasable programmable read-only memory having error detecting codes;

said read-only memory storing therein an error check program to be executed by said central processing unit to detect the error of said navigation program stored in said erasable programmable read-only memory on the basis of said error detecting codes of said navigation program; and

said central processing unit being operated to execute said transmitting program to correct said navigation program stored in said erasable programmable read-only memory when the error of said navigation program stored in said erasable programmable read-only memory is detected by executing said error check program.

5,544,088

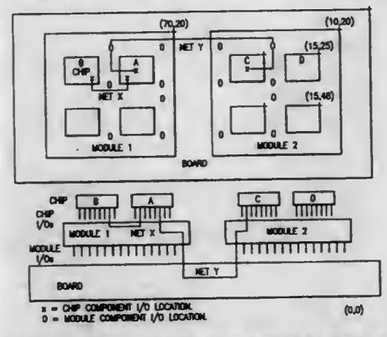
METHOD OF I/O PIN ASSIGNMENT IN A HIERARCHIAL PACKAGING SYSTEM

Matthew E. Aubertine, Austin, Tex.; Kianoush Beyzavi, Cary, N.C.; Harold J. Broker, Ulster Park, N.Y.; Ronald P. Checca, LaGrangeville, N.Y.; Michael A. Granato, Poughkeepsie, N.Y.; David A. Haeussler, Cary, N.C.; Michael Herasimtschuk, Poughkeepsie, N.Y.; Michael J. Jurkovic, Lagrange, N.Y.; Gerard M. Salem, Highland, N.Y.; Craig R. Selinger, Spring Valley, N.Y., and Paul R. Zehr, Clayerack, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 82,129, Jun. 23, 1993, abandoned. This application Jun. 19, 1995, Ser. No. 492,415

Int. Cl.[6] G06F *15/17;11/26*

U.S. Cl. 364—489 **12 Claims**



1. A method of assigning I/O pins for a physical circuit package system having multiple levels of packaging hierarchy, including a highest level and a lowest level wherein lower levels of packaging communicate with each other via higher levels of packaging, comprising the steps of:

(a) inputting net priorities into an iterative assignment process for making I/O pin assignments for connections between packages in the circuit package system, and starting at the highest level of packaging for the physical circuit package system, and moving progressively to lower levels until completed wherein successively lower levels each become the current level in sequence from the highest level to the lowest level, iteratively processing assignment of I/O pins for each level when such level becomes the current level until the I/O pins are stabilized, via steps of:

(b) propagating all I/O pin assignments to all higher level packaging of the physical circuit package system,

(c) running system timing with the I/O pin assignment and locations used during the preceding propagating step,

(d) determining if the run was performed at the lowest level, and if the run was performed at the lowest level, exiting from the method at the lowest level as stabilized I/O pin assignments for the physical circuit package, and if the run was not performed at the lowest level

(e) moving to a lower level in said sequence to make such lower level the current level, making the I/O pin assignments for the current level of packaging, and then

(f) checking the I/O pin assignments for any significant change between the I/O pin assignments after step (e), and the previous assignments for the current level of packaging immediately before step (e), and if there was no change, providing the I/O pin assignments for the current level to the testing step (d) of the process, and if there was a change providing the I/O pin assignments for the current level to the propagating step (b) of the process whereupon the I/O pin assignments are processed by step (b) and a succeeding step (c) of the process.

5,544,089

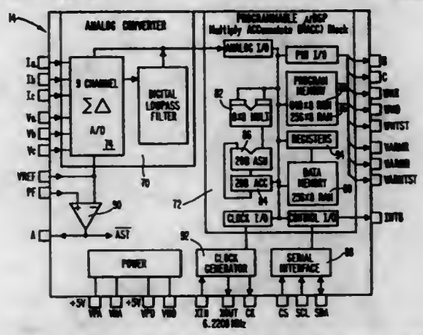
PROGRAMMABLE ELECTRICAL ENERGY METER USING MULTIPLEXED ANALOG-TO-DIGITAL CONVERTERS

Rodney C. Hemminger, and Mark L. Munday, both of Raleigh, N.C., assignors to ABB Power T&D Company Inc., Raleigh, N.C.

Continuation of Ser. No. 259,578, Jun. 14, 1994, abandoned, which is a continuation of Ser. No. 839,182, Feb. 21, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 475,409

Int. Cl.[6] G06F *17/00*

U.S. Cl. 364—492 **25 Claims**



1. A meter for measuring electrical energy usage of a circuit, comprising:

voltage sensing means for sensing the voltage in each phase of said circuit and for generating an output of voltage signals such that each voltage signal represents the voltage sensed in one of said phases;

current sensing means for sensing the current in each phase of said circuit and for generating an output of current signals such that each current signal represents the current sensed in one of said phases;

a first analog-to-digital converter coupled to said voltage sensing means for converting at least one of said voltage signals into a digital representation thereof;

a second analog-to-digital converter coupled to said current sensing means for converting at least one of said current signals into a digital representation thereof; and

a third analog-to-digital converter coupled to at least one of:

said voltage sensing means to receive one of said voltage signals for converting said one voltage signal into a digital representation thereof; and

said current sensing means to receive one of said current signals for converting said one current signal into a digital representation thereof.

5,544,090

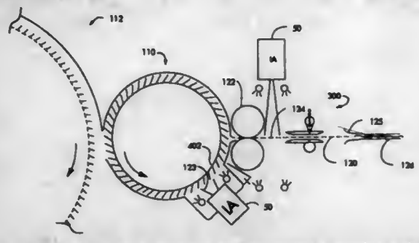
REMOVAL OF UNDESIRABLE ENTITIES IN THIN WEBS OF TEXTILE MATERIALS

Frederick M. Shofner; Joseph C. Baldwin, both of Knoxville; Gordon F. Williams, Norris, and Mark G. Townes, Knoxville, all of Tenn., assignors to Zellweger Uster, Inc., Knoxville, Tenn.

Division of Ser. No. 999,007, Dec. 31, 1992, Pat. No. 5,383,135. This application Nov. 9, 1994, Ser. No. 336,827

Int. Cl.[6] G01N *21/84*

U.S. Cl. 364—552 **9 Claims**



6. An apparatus for monitoring and processing a moving web of textile materials while being processed in a textile mill, the web including a plurality of undesirable entities and moving at a speed in a direction generally parallel to the length of the web, comprising:

means for monitoring the web of textile materials within a monitoring area and producing a monitor signal containing information corresponding to the content of the web, said information including the location of undesirable entities in the web;

a speed detector for detecting the speed of the web and producing a speed signal in response to and indicating the web speed;

computer processing means for receiving the monitor signal and the speed signal and determining a position of the entities based on the location information and the speed of the web and for generating control signals based on the determined position;

web processing means positioned downstream of said monitoring area for receiving the control signals and for processing the web in response to and in accordance with the control signals for reducing the amount of entities contained in said web; and

said computer processing means for determining the time at which one or more undesirable entities will be positioned at the web processing means based on the location information and the speed of the web.

5,544,091

CIRCUIT SCALE REDUCTION FOR BIT-SERIAL DIGITAL SIGNAL PROCESSING

Tohru Watanabe, Musashimurayama, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Mar. 2, 1994, Ser. No. 205,844

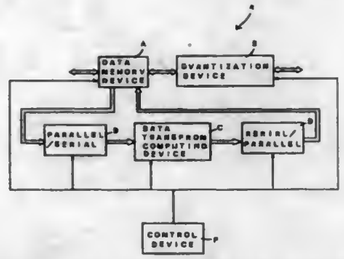
Claims priority, application Japan, Mar. 5, 1993, 5-071221

Int. Cl.[6] G06F *7/38*

U.S. Cl. 364—725 **21 Claims**

1. An apparatus for transforming digitized data, comprising:

supplying means for supplying said digitized data;



arithmetic means for executing operations on said supplied data for said transforming of the digitized data;

said arithmetic means comprising bit-serial for performing bit-serial arithmetic operations;

said bit-serial means comprising distributed strings of flip flops, adder and/or subtracter for performing said bit-serial arithmetic operations;

said strings having a function of performing multiplications without any actual bit-parallel multiplier; and

said multiplications using multiplication constants M1–MN by which said digitized data are multiplied, said multiplication constants M1–MN being integers and approximately in proportion to ideal-valued constants C1–CN such that

M1/C1≈M2/C2≈. . . ≈MN/CN ≈P in which P is a non-two's power number.

5,544,092

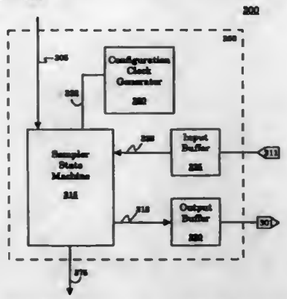
METHOD AND APPARATUS FOR CONFIGURING AN INTEGRATED CIRCUIT

Stephen H. Gunther; Gerard D. Blank, both of Folsom; James T. Curry, El Dorado Hills, and Jeff Draeger, Folsom, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Feb. 25, 1994, Ser. No. 202,337

Int. Cl.[6] G06F *1/06*

U.S. Cl. 395—800 **32 Claims**



1. In an integrated circuit, a configuration selection circuit for defining an operating characteristic for the integrated circuit by selecting one of a plurality of configuration options, the configuration selection circuit comprising:

a power up detect circuit for generating a power up reset signal responsive to power up of the integrated circuit;

an input;

a sampler circuit for sampling an input voltage level at the input, the sampler circuit being reset and beginning sampling in response to the power up reset signal, the sampler circuit taking a plurality of samples, the plurality of samples forming an input configuration waveform;

a selector circuit for comparing the input configuration waveform to a plurality of known configuration waveforms and for selecting the configuration option which corresponds to the input configuration waveform when the input configuration waveform matches one of the plurality of known configuration waveforms.

5,544,093

DUAL PORT MULTIPLE BLOCK MEMORY CAPABLE OF TIME DIVISIONAL OPERATION

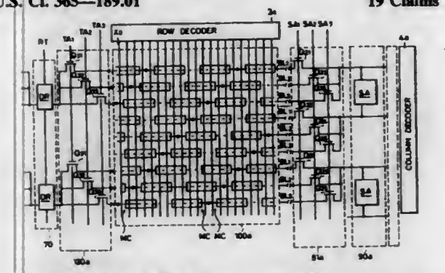
Toshiyuki Ogawa, Hyogo-ken, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 969,536, Oct. 30, 1992, abandoned, which is a continuation of Ser. No. 460,485, Jan. 3, 1990, abandoned. This application Dec. 23, 1994, Ser. No. 364,036

Claims priority, application Japan, Jan. 7, 1989, 64-1625

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—189.01 **19 Claims**



1. A semiconductor memory device comprising:

first and second memory arrays each including a plurality of bit line pairs,

a common data register means shared by said first and second memory arrays for storing a plurality of bits of information, said common data register means including a plurality of data holding means each provided corresponding to a bit line pair,

first transfer means provided between said first memory array and said common data register means and second transfer means provided between said second memory array and said common data register means, respectiveiy, for simultaneously transferring a plurality of bits between said common data register means and respective memory array, said common data register means providing bidirectional transfer of data between said first and second memory arrays, wherein

each data holding means includes a latch circuit including two inverters, an input of a first of said two inverters being directly connected to an output of a second of said two inverters, an output of said first of said two inverters being connected to an input of said second of said two inverters through a switching means.

5,544,094

Patent Not Issued For This Number

5,544,095

ROM CELL FOR A MULTIPORT MEMORY AND METHOD

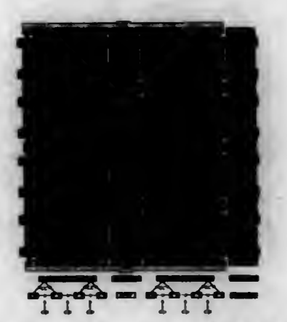
Charles W. T. Longway, and William R. Young, both of Palm Bay, Fla., assignors to Harris Corporation, Melbourne, Fla.

Division of Ser. No. 930,930, Aug. 14, 1992, Pat. No. 5,440,506. This application May 26, 1995, Ser. No. 450,879

Int. Cl.[6] G11C *17/00*

U.S. Cl. 365—63 **9 Claims**

1. An integrated circuit memory comprising plural ROM cells with three metal layers one atop the other, wherein:



a first of the metal layers comprises plural bit lines, adjacent ones of said plural bit lines crossing to reduce differential capacitive coupling;

a second of the metal layers comprises plural word lines athwart said plural bit lines; and

a third of the metal layers comprises plural circuit power lines capacitively coupled to adjacent ones of said plural bit lines, wherein capacitance of said plural bit lines is unaffected by programming of said ROM cells.

5,544,096

SEMICONDUCTOR MEMORY DEVICE HAVING VOLATILE STORAGE UNIT AND NON-VOLATILE STORAGE UNIT

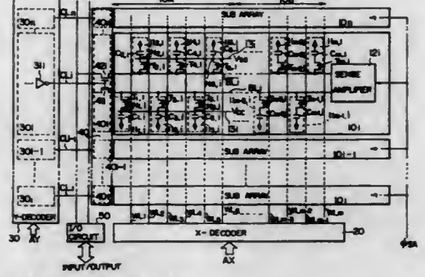
Atsushi Takasugi, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Division of Ser. No. 240,063, May 9, 1994. This application Jun. 6, 1995, Ser. No. 471,778

Claims priority, application Japan, May 31, 1993, 5-129814

Int. Cl.[6] G11C *11/24*

U.S. Cl. 365—149 **8 Claims**



1. A memory comprising:

a semiconductor substrate having a main surface;

a bit line;

a first memory cell including a first transistor and a first capacitor, both a source and a drain of the first transistor being formed in the main surface, the first capacitor being electrically connected to the source of the first transistor through a first node, the drain of the first transistor being connected to the said bit line;

a second memory cell including a second transistor and a second capacitor, both a source and a drain of the second transistor being formed in the main surface, the second capacitor being electrically connected to the source of the second transistor through a second node, the drain of the second transistor being connected to said bit line;

a third memory cell including a third transistor and a third capacitor, both a source and a drain of the third transistor being formed in the main surface, the third capacitor being electrically connected to the source of the third transistor through a third node, the drain of the third transistor being connected to said bit line; and

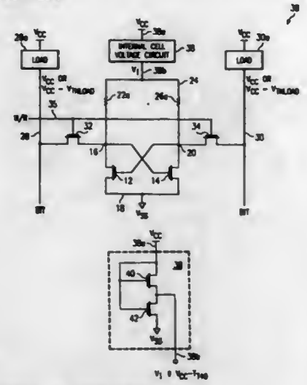
a conductive layer formed above the first, second and third transistors, said conductive layer having a predetermined potential, and being connected at the first and third nodes to the sources of said first and third transistors and the first and third capacitors.

5,544,097

SRAM MEMORY CELL WITH REDUCED INTERNAL CELL VOLTAGE

David C. McClure, and Mehdi Zamanian, both of Carrollton, Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Mar. 31, 1995, Ser. No. 414,918
Int. Cl.[6] G11C *11/40*
U.S. Cl. 365—154 **24 Claims**



1. A memory cell comprising:

a first device operable to selectively conduct and coupled between a first cell node and a low voltage reference node;

a second device operable to selectively conduct and coupled between a second cell node and said low voltage reference node;

a first and second data line;

circuitry for receiving a system level voltage and for biasing said first and second data lines at a first and second data voltage, respectively, wherein said first and second data voltages comprise logically complementary signals;

circuitry for coupling said first and second data line to said first and second cell node, respectively, such that a logical high voltage is selectively written to one of said first and second cell nodes while a logical low is written to the other of said first and second cell nodes during a write operation;

a voltage source node for receiving a cell voltage;

circuitry for coupling said voltage source node to said first and second cell nodes; and

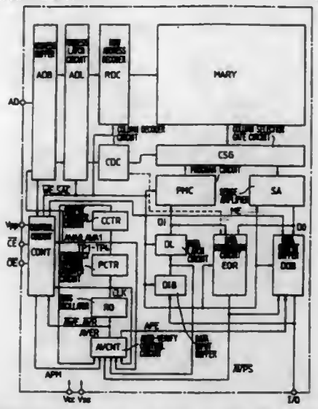
cell voltage circuitry, coupled between the system level voltage and the voltage source node, for generating the cell voltage, wherein said cell voltage circuitry is operable to output the cell voltage less than said system level voltage.

5,544,098

SEMICONDUCTOR MEMORY DEVICE HAVING AN AUTOMATICALLY ACTIVATED VERIFY FUNCTION CAPABILITY

Akinori Matsuo, Higashiyamato; Masashi Watanabe, Kokubunji; Masashi Wada; Takeshi Wada, both of Akishima, and Yasuhiro Nakamura, Kodaira, all of, Japan, assignors to Hitachi, Ltd., and Hitachi ULSI Engineering Corp., both of Tokyo, Japan

Continuation of Ser. No. 282,313, Jul. 29, 1994, Pat. No. 5,434,819, which is a continuation of Ser. No. 34,644, Mar. 22, 1993, abandoned, which is a continuation of Ser. No. 741,224, Aug. 5, 1991, abandoned, which is a continuation of Ser. No. 440,338, Nov. 22, 1989, abandoned. This application May 31, 1995, Ser. No. 455,152
Claims priority, application Japan, Nov. 22, 1988, 63-295172
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—189.07 **81 Claims**



1. A semiconductor memory device, formed on a semiconductor chip, comprising:

a plurality of memory arrays, each including a plurality of electrically programmable read only memory cells and data lines;

a plurality of external address terminals which receive address signals indicative of ones of the memory cells to be selected in said plurality of memory arrays;

a plurality of external data terminals which at least receive data to be electrically programmed in memory cells selected in accordance with said address signals;

at least one control terminal which is provided with an external control signal;

register means for storing command data from said plurality of external data terminals;

control means for providing control signals for performing programming operations and verify operations for the selected memory cells, in response to command data stored in said register means;

data latch means, coupled to said data lines, for latching program data and for providing the program data to said data lines included in at least one of said plurality of memory arrays in accordance with the control signals;

data output means for reading out data from the selected memory cells to the plurality of external data terminals after performing the programming operations for the selected memory cells; and

comparing means, coupled to said data latch means and to said data output means, for comparing the program data from said data latch means with data in the selected memory cells in the verify operations, and providing a signal outcome indicative of a comparing result,

wherein said data output means outputs state signals, responsive to the signal outcome, to at least two terminals of the plurality

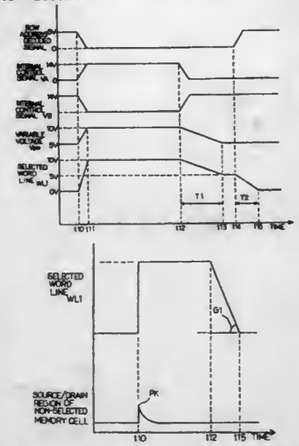
of external data terminals, in response to a change of the external control signal.

5,544,099

METHOD OF WRITING DATA INTO ELECTRICALLY ERASABLE AND PROGRAMMABLE READ ONLY MEMORY CELL WITHOUT DISTURBANCE TO OTHER CELLS

Hideki Hara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 16, 1995, Ser. No. 543,818
Claims priority, application Japan, Oct. 20, 1994, 6-255034
Int. Cl.[6] G11C *16/04*
U.S. Cl. 365—185.19 **3 Claims**



1. A method of writing data into a memory cell, comprising steps of:

a) preparing a semiconductor non-volatile memory device including a plurality of floating gate type field effect transistors serving as addressable memory cells and grouped into a plurality of sectors, each of said plurality of floating gate type field effect transistors having source and drain regions spaced from each other, a floating gate electrode associated with said source and drain regions and electrically isolated from said source and drain regions and a control gate electrode associated with said source and drain regions and electrically isolated from said floating gate electrode and said source and drain regions,

a plurality of word lines shared between said plurality of sectors and selectively connected to control gate electrodes of said plurality of floating gate type field effect transistors, and

an addressing system having a row addressing subsystem for selectively supplying a write-in pulse signal to said plurality of word lines;

b) increasing said write-in pulse signal on a selected one of said plurality of word lines for writing data into at least one floating gate type field effect transistor of a selected one of said plurality of sectors; and

c) decaying said write-in pulse along a waveform having a first gradient smaller than a second gradient of a waveform of a pulse signal applied to one of said source and drain regions forming a part of the floating gate type field effect transistor incorporated in a non-selected one of said sectors and coupled to said selected one of said plurality of word lines.

5,544,100

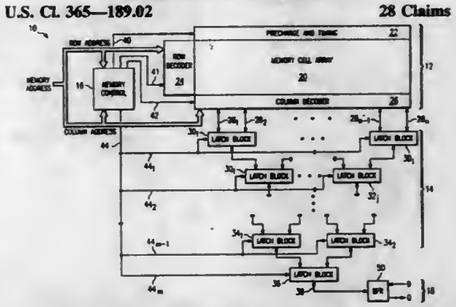
Patent Not Issued For This Number

5,544,101

MEMORY DEVICE HAVING A LATCHING MULTIPLEXER AND A MULTIPLEXER BLOCK THEREFOR

Theodore W. Houston, Richardson, Tex., assignor to Texas Instruments Inc., Dallas, Tex.

Filed Mar. 28, 1994, Ser. No. 219,609
Int. Cl.[6] G11C *7/00*; H03J *3/04*
U.S. Cl. 365—189.02 **28 Claims**



1. A memory device comprising;

a memory array comprising a plurality of memory cells, the memory array operable to provide a plurality of memory array output signals responsive to a memory address, wherein each memory array output signal represents a data state of a memory cell;

a memory device output signal representative of a preselected subset of said memory array output signals;

a multistage multiplexer block coupling said predetermined subset of memory array output signals to the memory device output, the multiplexer block comprising at least one stage having a latch block and operable to provide a data state of a memory cell selected by said memory address to the memory device output in response to a plurality of multiplexer control signals, wherein each latch block is operable to receive at least one input signal, to retain at least one data state and provide an output signal; and

a control block coupled to the memory array and to the multiplexer block, and operable to determine from the memory address whether the data state of the selected memory cell is retained by a latch block in the multiplexer block and to generate the plurality of multiplexer control signals to provide said data as said memory device output signal without performing a read operation of said memory array.

5,544,102

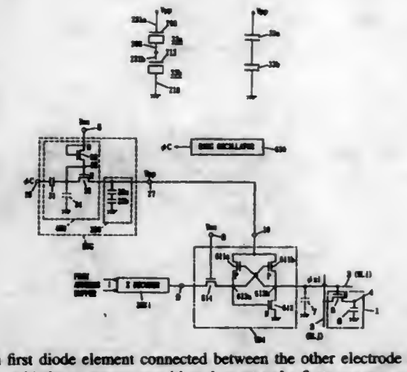
SEMICONDUCTOR MEMORY DEVICE INCLUDING STABILIZING CAPACITIVE ELEMENTS EACH HAVING A MOS CAPACITOR STRUCTURE

Yoichi Tobita, and Kenji Tokami, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 151,248, Nov. 12, 1993. This application Jun. 6, 1995, Ser. No. 471,047
Claims priority, application Japan, Dec. 18, 1992, 4-338705
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—189.09 **6 Claims**

6. A semiconductor device including an internal circuit having an insulated gate type effect transistor, comprising:

a charge pump capacitive element having one electrode coupled to receive a clock signal, and another electrode;



a first diode element connected between the other electrode of said charge pump capacitive element and a first power supply node receiving a first power source voltage;

a second diode element connected between the other electrode of said capacitive element and an output node; and

voltage generation circuitry including a plurality of stabilizing capacitive elements connected in series between said output node and a second node receiving a predetermined reference potential, for generating a potential greater in absolute value than the first power source voltage onto the output node; wherein

each of said plurality of stabilizing capacitive elements is formed by an insulated gate type field effect transistor having a gate insulating film identical in thickness to that of the insulated gate type field effect transistor of said internal circuit,

said internal circuit comprises

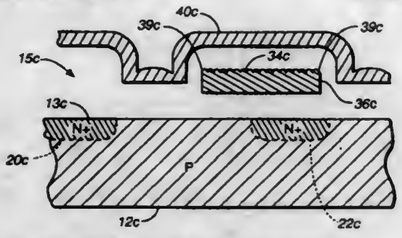
a memory cell array including a plurality of memory cells arranged in a matrix of rows and columns, each of the memory cells including an insulated gate type field effect transistor having a first gate insulating film thickness, and the thickness of the gate insulating film of each of said plurality of stabilizing capacitive elements is equal to the first gate insulating film thickness.

5,544,103

COMPACT PAGE-ERASABLE EEPROM NON-VOLATILE MEMORY

Roy T. Lambertson, Palo Alto, Calif., assignor to XICOR, Inc., Milpitas, Calif.

Continuation of Ser. No. 845,392, Mar. 3, 1992, abandoned.
This application Jul. 12, 1994, Ser. No. 273,612
Int. Cl.[6] G11C *16/04*
U.S. Cl. 365—185.15 **37 Claims**



1. A nonvolatile floating gate device comprising:

a substrate of a first conductivity type having a first surface, a first substrate region and a second substrate region, each said substrate region being disposed in said first surface and being of a second conductivity type opposite to said first conductivity type;

a first electrically insulated conductive layer spaced from said first surface having a first portion capacitively coupled to said second substrate region and a second portion overlaying a first predetermined channel area of said first surface disposed between said first substrate region and said second substrate region, said second portion spaced from said first channel area by a first spacing distance;

a second electrically insulated conductive layer having a first portion spaced from said first surface and disposed generally intermediate said first substrate region and said second portion of said first layer and a second portion overlaying said first layer, said first portion of said second layer overlaying a second predetermined channel area of said first surface and being spaced therefrom by a second spacing distance;

programming means for selectively tunneling hot electrons onto said first layer from at least said second channel area substantially only by hot electron injection, said programming means comprising a first application means for selectively applying a first potential to said first substrate region, a second application means for selectively applying a second potential to said second substrate region, and a third application means for selectively applying a program control potential to said second layer, said program control potential being selected to invert the conductivity type of said second channel area to provide a conduction path between said first substrate region and said first channel area, said first and second application means acting to create a potential difference between said first and second substrate regions, said capacitive coupling between said first portion of said first layer and said second substrate region coupling a substantial amount of said second potential to said first layer, said programming means forming a primary inversion region in said second channel area adjacent to said first substrate region, a primary pinchoff region in said second channel area and adjacent to said primary inversion region, and a secondary inversion region in said first channel area and adjacent to said primary pinchoff region, said primary pinchoff region being formed such that hot electrons are generated therein and caused to tunnel from said substrate surface to said first layer by hot electron injection; and

means for sensing the potential of said first layer; and

wherein the position of said second substrate region in relation to said first substrate region defines a first direction, said first direction being directed from said first substrate region to said second substrate region, and wherein said first portion of said first layer overlays substantially the entire length of said second substrate region along said first direction; and

wherein said first spacing distance is less than said second spacing distance such that a step in the thickness of the dielectric layer is formed above said primary pinchoff region to enhance the tunneling of hot electrons from said substrate to said first layer during programming.

5,544,104

VIRTUAL CROSSPOINT MEMORY

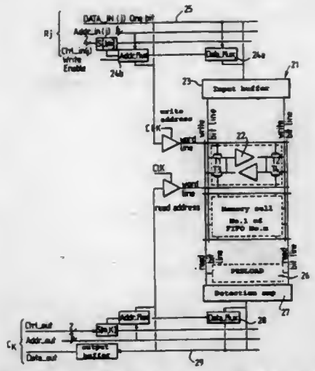
Gerard Chauvel, Antibes, France, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 14, 1995, Ser. No. 404,409
Claims priority, application France, Mar. 15, 1994, 94 03165
Int. Cl.[6] G11C *13/00*
U.S. Cl. 365—189.01 **8 Claims**

1. An interconnection-point memory comprising:

an array of a first plurality of input buses for connection to a first plurality of data-sender devices having the same number as the number of input buses included in the first plurality of input buses;

an array of a second plurality of output buses for connection to a second plurality of data-receiver devices having the same number as the number of output buses included in the second plurality of output buses;



a third plurality of switching memories, each of said third plurality of switching memories defining a first-in, first-out FIFO memory device having a write port and a read port;

first control means operably interposed between said third plurality of switching memories and said first plurality of input buses for temporarily connecting in a virtual manner the write port of at least one selected switching memory to a selected input bus; and

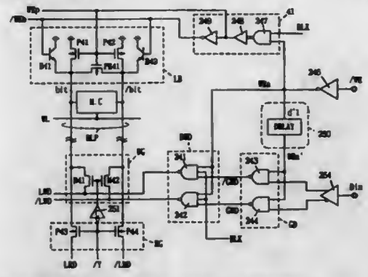
second control means operably interposed between said second plurality of output buses and said third plurality of switching memories for temporarily connecting in a virtual manner at least one output bus to the read port of said one selected switching memory, said one selected switching memory thereby constituting a temporary interconnection point independent of the first plurality of input buses and the second plurality of output buses to be interconnected.

5,544,105

STATIC SEMICONDUCTOR MEMORY DEVICE HAVING CIRCUITRY FOR LOWERING POTENTIAL OF BIT LINES AT COMMENCEMENT OF DATA WRITING

Toshihiko Hirose; Shigeki Obbayashi; Setsu Kondo; Takashi Hayasaka; Yoshiyuki Fujino, and Masayuki Iketani, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 7, 1994, Ser. No. 271,691
Claims priority, application Japan, Jul. 8, 1993, 5-168983
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—189.11 **7 Claims**



1. A semiconductor memory device, comprising:

a plurality of memory cells arranged in rows and columns;

a plurality of pairs of bit lines arranged corresponding to said columns, each said pair of bit lines including a true bit line and a complementary bit line and connecting memory cells of a corresponding column;

column selection means responsive to a column address for selecting a column among said columns; and

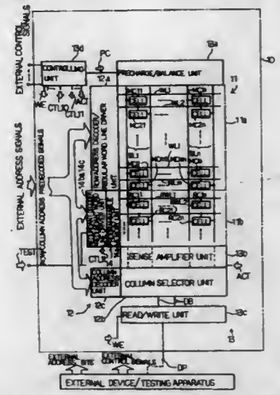
potential changing means responsive to a data write designating signal, for lowering potentials of both true and complementary bit lines of a pair of bit lines corresponding to the selected column for a predetermined time duration period from the assertion of said data write designating signal instructing a data write cycle, said predetermined time duration period being shorter than a period of said data write cycle.

5,544,106

SEMICONDUCTOR MEMORY DEVICE WITH REDUNDANT DECODER AVAILABLE FOR TEST SEQUENCE ON REDUNDANT MEMORY CELLS

Hiroki Koike, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 14, 1995, Ser. No. 388,485
Claims priority, application Japan, Feb. 15, 1994, 6-039281
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—200 **8 Claims**



1. A semiconductor memory device having a standard mode and a test mode, comprising:

a) a plurality of addressable regular memory cell groups for storing data bits;

b) a plurality of addressable redundant memory cell groups, each of said plurality of addressable regular memory cell groups being replaceable with one of said plurality of addressable redundant memory cell groups;

c) an addressing system responsive to a plurality of external address bits in both standard and test modes so as to allow an external device to selectively access said data bits stored in said plurality of addressable regular memory cell groups in the absence of a disable signal; and

d) a redundant system having

d-1) a programmable memory unit for storing at least one address assigned to one of said plurality of addressable regular memory cell groups after said test mode,

d-2) a redundant decoder unit activated in said standard mode and operative to compare an address represented by first address bits of said plurality of address bits with said at least one address to see whether or not said address is matched with said at least one address, said redundant decoder unit generating a hit signal when said address is matched with said at least one address, and

d-3) a redundant addressing unit responsive to said hit signal in said standard mode so as to replace said one of said plurality of addressable regular memory cell groups with

one of said plurality of redundant memory cell groups assigned said at least one address in said standard mode,

said redundant addressing unit being further operative to generate said disable signal when said one of said plurality of redundant memory cell groups is selected in both standard and test modes,

said redundant addressing unit being further responsive to second address bits in the presence of a test signal in said test mode so as to allow an external device to sequentially access said plurality of redundant memory cell groups.

5,544,107

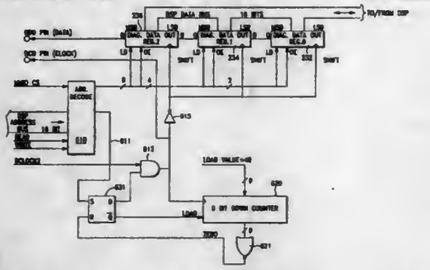
DIAGNOSTIC DATA PORT FOR A LSI OR VLSI INTEGRATED CIRCUIT

John P. Hill, Nederland, Colo., assignor to Adaptec, Inc., Milpitas, Calif.

Filed Aug. 22, 1994, Ser. No. 294,127

Int. Cl.[6] H03K *19/177;* **G06F** *11/26*

U.S. Cl. 365—201 **15 Claims**



1. In an integrated circuit, a diagnostic data port comprising:

a serially connected memory; and

an unidirectional two-pin integrated circuit output port connected to said serially connected memory where a first output pin in said two-pin integrated circuit output port is a data output pin and a second output pin in said two-pin integrated circuit output port is a clock output pin.

5,544,108

CIRCUIT AND METHOD FOR DECREASING THE CELL MARGIN DURING A TEST MODE

Mark R. Thomann, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 122,732, Sep. 15, 1993, Pat. No. 5,469,393. This application Aug. 3, 1995, Ser. No. 510,689

Int. Cl.[6] G11C *29/00*

U.S. Cl. 365—201 **29 Claims**

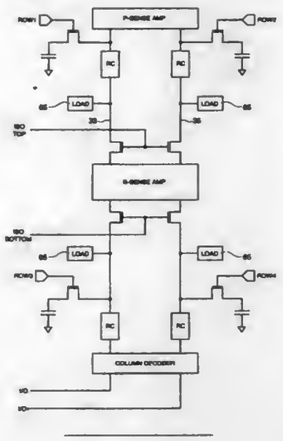
1. A monolithic memory device, comprising:

a) a storage cell configured to store electrical data;

b) a digit line, having first and second sections, said digit line in selective electrical communication with said storage cell;

c) a first test load in selective electrical communication with said first section; and

d) a second test load in selective electrical communication with said second section.



5,544,109

SEMICONDUCTOR MEMORY DEVICE

Toshiya Uchida, and Masao Taguchi, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

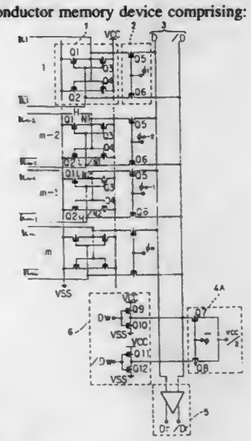
Filed Mar. 3, 1994, Ser. No. 205,361

Claims priority, application Japan, Apr. 28, 1993, 5-103288

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—203 **20 Claims**

1. A semiconductor memory device comprising:



a flip-flop circuit;

a switch provided between the flip-flop circuit and a pair of data lines;

a write circuit writing data into the flip-flop circuit via the switch and the data lines; and

a circuit applying an intermediate voltage between an upper power source voltage and a lower power source voltage to the pair of data lines when the write circuit performs a write operation so that a voltage amplitude on the pair of data lines is limited so as to be less than a voltage amplitude of the flip-flop circuit in the write operation.

5,544,110

SENSE AMPLIFIER FOR SEMICONDUCTOR MEMORY DEVICE HAVING PULL-UP AND PULL-DOWN DRIVING CIRCUITS CONTROLLED BY A POWER SUPPLY VOLTAGE DETECTION CIRCUITRY

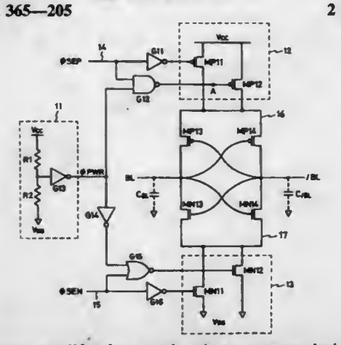
Jong B. Yuh, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co. Ltd., Kyoungki-do, Rep. of Korea

Filed Feb. 15, 1995, Ser. No. 389,199

Claims priority, application Rep. of Korea, Feb. 16, 1994, 94-2690

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—205 **2 Claims**



1. A sense amplifier for a semiconductor memory device comprising:

latch means for sense-amplifying data signals on bit lines;

pull-up driving means connected between said latch means and a supply voltage source for controlling an amount of current of a supply voltage being supplied to said latch means;

pull-downdriving means connected between said latch means and a ground voltage source for controlling an amount of current of a ground voltage being supplied to said latch means; and

voltage detection means for detecting a difference between the supply voltage and the ground voltage and controlling said pull-up driving means and said pull-down driving means in accordance with the detected result.

5,544,111

PROGRAMMING PROCESS FOR INTEGRATED MEMORY, PARTICULARLY FOR A SMART CARD

Berthozat Michel, Les Miles, and Morgavi Paul, Marseille, both of, France, assignors to Gemplus Card International, Gemenos, France

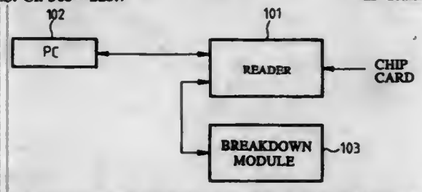
PCT No. PCT/FR92/00216, § 371 Date Aug. 31, 1993, § 102(e) Date Aug. 31, 1993, PCT Pub. No. WO92/16947, PCT Pub. Date Oct. 1, 1992

PCT Filed Mar. 14, 1991, Ser. No. 108,740

Claims priority, application France, Mar. 14, 1991, 91 03106

Int. Cl.[6] G11C *17/00*

U.S. Cl. 365—225.7 **11 Claims**



1. A process for programming a portion of an integrated circuit memory, comprising the steps of writing a program in a portion of memory in an area thereof, blowing a fuse in the memory thus preventing any further writing in said area, said blowing of a fuse including applying a current of at least 1 ampere and placing said integrated circuit in a smart card, thereby making said smart card more secure from tampering.

5,544,112

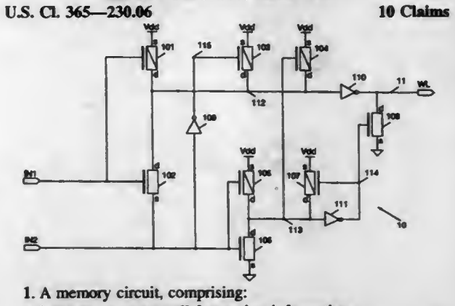
WORD LINE DRIVER CIRCUIT

Manoj Kumar, and Joseph M. Poplawski, Jr., both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 2, 1995, Ser. No. 457,704

Int. Cl.[6] G11C *8/00;* **H03K** *19/017*

U.S. Cl. 365—230.06 **10 Claims**



1. A memory circuit, comprising:

at least one memory cell for storing information;

a first circuit for supplying memory cell selection signals for accessing said at least one memory cell; and

a second circuit, coupled between said first circuit and said at least one memory cell, for producing an address signal in response to receipt from said first circuit of said memory cell selection signals, said second circuit transmitting said address signal to said at least one memory cell, wherein said second circuit enters into an operational state when producing said address signal in response to receipt from said first circuit of said memory cell selection signals, said second circuit comprising a plurality of circuit elements coupled together by one or more nodes, wherein each of said one or more nodes has a particular voltage level during said operational state of said second circuit, and wherein said second circuit further comprises means for maintaining said each of said one or more nodes at its particular voltage level during said operational state of said second circuit, wherein said second circuit further comprises:

a first input terminal for receiving a first one of said memory cell selection signals;

a second input terminal for receiving a second one of said memory cell selection signals;

an output terminal for outputting said address signal; and

first and second devices both having their first electrodes coupled to said second input terminal for receiving said second one of said memory cell selection signals, third electrodes of said first and second devices coupled together at a first one of said one or more nodes, a second electrode of said first device coupled to a first voltage reference, a second electrode of said second device coupled to a second voltage reference.

5,544,113

RANDOM ACCESS MEMORY HAVING A FLEXIBLE ARRAY REDUNDANCY SCHEME

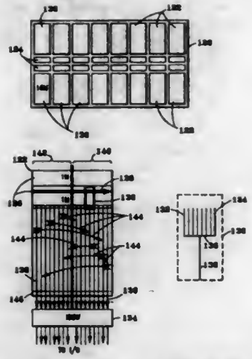
Toshiaki Kirihata, Wappingers Falls, and Yohji Watanabe, Fishkill, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 30, 1994, Ser. No. 346,965

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—200 **10 Claims**

7. A Random Access Memory (RAM) comprising:



a plurality of array units, each of said plurality of array units comprising a plurality of subarray blocks, each of said plurality of subarray blocks comprising a plurality of segments, each of said plurality of segments comprising a plurality of memory cells arranged in a two-dimensional addressable array of rows and columns and including at least one spare column;

row selection means for selecting each of said rows responsive to a row address;

column selection means for selecting either half of a subarray block as an accessed half or as a redundant half and for selecting each of said columns in every segment in said accessed half responsive to a column address;

redundancy selection means for selecting a spare column from said redundant half for each predetermined bad column selected in said accessed half; and

substitution means for electrically substituting each said selected spare column for each said predetermined bad column.

5,544,114

INTEGRATED CIRCUIT MEMORY DEVICE WITH BALANCING CIRCUIT INCLUDING FOLLOWING AMPLIFIER COUPLED TO BIT LINE

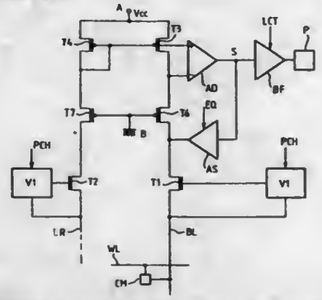
Jean-Marie Gaultier, Rousset Sur Arc, and Emilio M. Yero, Aix En Provence, both of, France, assignors to SGS-Thomson Microelectronics S.A., Saint-Genis, France

Division of Ser. No. 96,684, Jul. 23, 1993. This application Jun. 7, 1995, Ser. No. 478,463

Claims priority, application France, Jul. 24, 1992, 92 09199

Int. Cl.[6] G11C 7/00

U.S. Cl. 365—202 **6 Claims**



1. A reading device for reading a memory comprising:

a bit line connected to a memory cell of said memory,

a reference line,

a differential amplifier, having a first input and a second input,

a follower amplifier connected in a feedback arrangement between an output of the differential applifier and one of the first input and the second input of the differential amplifier;

a first precharging transistor being series connected between the bit line and the first input of the differential amplifier;

a second precharging transistor being series connected between the reference line and the second input of the differential amplifier;

a current mirror having a copy input connected to the first input of the differential amplifier and a reference input connected to the second input of the differential amplifier;

a first intermediate transistor, having a gate connected to a fixed potential, being series connected between the copy input of the current mirror and the first precharging transistor; and

a second intermediate transistor, having a gate connected to said fixed potential, being series connected between the reference input of the current mirror and the second precharging transistor.

5,544,115

SEMICONDUCTOR MEMORY DEVICE ALLOWING SELECTION OF THE NUMBER OF SENSE AMPLIFIERS TO BE ACTIVATED SIMULTANEOUSLY

Yutaka Ikeda, Hyogo-ken, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 903,400, Jun. 24, 1992, abandoned. This application Feb. 15, 1995, Ser. No. 390,261

Claims priority, application Japan, Jan. 24, 1992, 4-010924

Int. Cl.[6] G11C 7/00

U.S. Cl. 365—207 **9 Claims**

1. A semiconductor memory device, comprising:

a plurality of bit lines;

a plurality of sense amplifiers for amplifying signals on respective bit lines;

a circuit for providing a determination signal designating which of a first number or a second, greater number of sense amplifiers are to be simultaneously enabled for amplifying signals on their respective bit lines; and

timing control means responsive to said determination signal for providing a timing control signal to enable the sense amplifiers designated to be simultaneously enabled, said timing control means including means, responsive to the determination signal designating said second number of sense amplifiers to be simultaneously enabled, for delaying providing said timing control signal as compared to when said determination signal designates said first number of sense amplifiers to be simultaneously enabled.

5,544,116

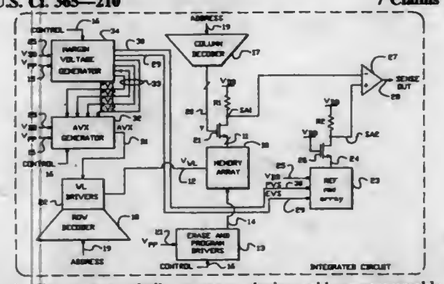
ERASE AND PROGRAM VERIFICATION CIRCUIT FOR NON-VOLATILE MEMORY

Liang Chao, Hsinchu, China; Tien-Ler Lin, Cupertino, and Tom D. Yiu, Milpitas, both of Calif., assignors to Macronix International Co., Ltd., Hsinchu, Taiwan

Division of Ser. No. 108,670, Aug. 31, 1993, Pat. No. 5,463,586. This application May 19, 1995, Ser. No. 444,672

Int. Cl.[6] G11C 7/00;29/00

U.S. Cl. 365—210 **7 Claims**



1. For a non-volatile memory device with programmable memory cells having control terminals, and a reference cell having a control terminal, and sense circuitry responsive to addressed programmable memory cells and the reference cell, and having a read potential supplied to the control terminals of the programmable memory cells and a reference potential supplied to the control terminal of the reference cell during a read mode, a method for verifying a state of the programmable memory cells, comprising:

supplying a first verify potential to the control terminal of an addressed programmable memory cell,

supplying a second verify potential to the control terminal of the reference cell different from the first verify potential; and

sensing the state of the addressed programmable memory cell with the sense circuitry during said supplying steps.

5,544,117

NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE WITH IMPROVED COLLECTIVE ERASING OPERATION

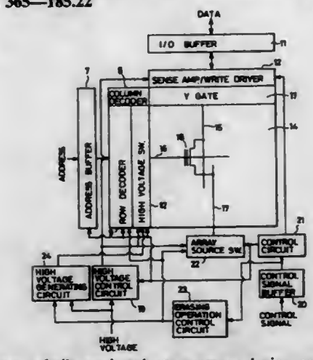
Takeshi Nakayama; Yasushi Terada; Kazuo Kobayashi; Masanori Hayashikoshi, and Yoshikazu Miyawaki, all of Hyogo-ken, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 15, 1991, Ser. No. 670,543

Claims priority, application Japan, May 18, 1990, 2-129991

Int. Cl.[6] G11C 7/00;11/34;8/00

U.S. Cl. 365—185.22 **26 Claims**



1. A non-volatile semiconductor memory device, comprising:

a plurality of memory cells each including a floating gate;

injecting means for injecting electrons to the floating gate of each memory cell;

removing means for removing electrons from the floating gate of each memory cell;

erasing instruction means for instructing an erasing operation, said erasing operation including a stage of writing before erasing operation, and a stage of pulse applying and verifying operations for erasing; and

controlling means responsive to an instruction output from said erasing instruction means for controlling said injecting means such that electrons are simultaneously injected to all the floating gates of the plurality of memory cells which are to be erased before the removing operation by the removing-means, wherein

a predetermined voltage is simultaneously applied to all of the plurality of memory cells to be erased in said stage of writing before erasing operation.

5,544,118

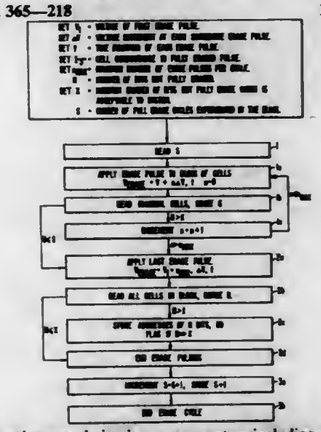
FLASH EEPROM SYSTEM CELL ARRAY WITH DEFECT MANAGEMENT INCLUDING AN ERROR CORRECTION SCHEME

Eliyahou Harari, 104 Auzerais Ct., Los Gatos, Calif. 95030

Continuation of Ser. No. 116,867, Sep. 3, 1993, which is a division of Ser. No. 563,287, Aug. 6, 1990, Pat. No. 5,268,870, which is a division of Ser. No. 380,854, Jul. 17, 1989, Pat. No. 5,043,940, which is a division of Ser. No. 204,175, Jun. 8, 1988, Pat. No. 5,095,344. This application Mar. 7, 1995, Ser. No. 400,834

Int. Cl.[6] G11C 7/00

U.S. Cl. 365—218 **14 Claims**



1. In an integrated circuit memory system including an array of non-volatile floating gate memory cells wherein individual cells are addressable for programming and reading their states, a method of operating said memory system, comprising:

providing a plurality of distinct blocks of said memory cells, wherein the cells of the individual blocks are erasable together,

performing an erase operation upon the memory cells within at least one block,

after the erase operation is performed, determining whether there are any unerased cells within said at least one block and, if so, a number of such unerased cells,

comparing the number of unerased cells with a permitted number, said permitted number being substantially the maximum number of cells whose data, if bad, are correctable by an error correction scheme,

if the number of unerased cells within said at least one block is less than said permitted number, reprogramming memory cells within the erased at least one block with new data, and

if the number of unerased cells within said at least one block is greater than said permitted number, substituting other redundant memory cells for the unerased memory cells.

5,544,119

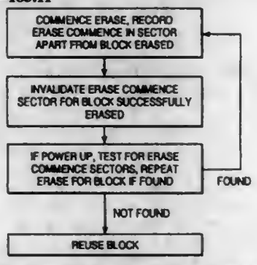
METHOD FOR ASSURING THAT AN ERASE PROCESS FOR A MEMORY ARRAY HAS BEEN PROPERLY COMPLETED

Steven E. Wells, Citrus Heights, and Eric J. Magnusson, Orangevale, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 181,672, Jan. 14, 1994, abandoned, which is a division of Ser. No. 969,032, Oct. 30, 1992, abandoned. This application Sep. 6, 1995, Ser. No. 522,980

Int. Cl.[6] G11C *17/00*; H01L *27/10*

U.S. Cl. 365—185.11 **4 Claims**



1. A method for ensuring an erase operation has been reliably performed on a first block of a flash EEPROM memory array, the flash EEPROM memory array including a plurality of blocks, the method comprising the steps of:

a) writing a first data element to a second block when the erase operation on the first block is about to commence;

b) writing a second data element to the second block if the erase operation on the first block is successfully completed;

c) testing the second block to determine whether the first and second data elements have been written to the second block, if power is reapplied to the flash EEPROM memory array; and

d) subsequently reinitiating the erase operation on the first block if the first data element has been written to the second block and the second data element has not been written to the second block.

5,544,120

SEMICONDUCTOR INTEGRATED CIRCUIT INCLUDING RING OSCILLATOR OF LOW CURRENT CONSUMPTION

Masaaki Kuwagata, Kawaguchi; Ryosuke Matsuo, Yokohama; Keiji Maruyama, Kawasaki; Naokazu Miyawaki, Yokohama, and Hisashi Ueno, Oita, all of, Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Apr. 7, 1994, Ser. No. 224,905

Claims priority, application Japan, Apr. 7, 1993, 5-080863

Int. Cl.[6] G11C *11/406*; H03B *5/00*

U.S. Cl. 365—222 **17 Claims**

1. A semiconductor integrated circuit comprising:

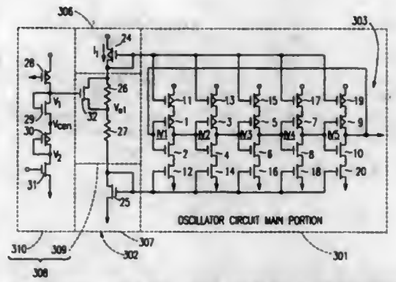
a ring oscillation circuit having an odd-number of complimentary metal oxide semiconductor (CMOS) inverter circuits;

a high bias circuit on a higher potential side for biasing transistors on the higher potential side of said CMOS inverter circuits;

a low bias circuit on a lower potential side for biasing transistors on the lower potential side of said CMOS inverter circuits;

a high bias voltage output circuit on the higher potential side for issuing a bias voltage to said high bias circuit;

a low bias voltage output circuit on the lower potential side for issuing a bias voltage to said low bias circuit; and



a bias voltage regulation circuit including a variable resistor circuit which changes a resistance value corresponding to a power source voltage and is inserted between said high bias voltage output circuit and said low bias voltage output circuit so as to form a voltage divider circuit with said high and low bias voltage output circuits for the power source voltage, thereby changing an output voltage of said high and low bias voltage output circuits,

wherein said bias voltage regulation circuit comprises:

a power source dependent variable resistor circuit including passive resistor elements and a variable control transistor having a source and drain connected between an intermediate node of said passive resistor elements, for changing a resistance value between both sides thereof by a conductive condition of said variable control transistor; and

a control voltage generation circuit for controlling a gate voltage of said variable control transistor in the manner that a voltage between a gate and said source of said variable control transistor decreases with an increase of said power source voltage.

5,544,121

SEMICONDUCTOR MEMORY DEVICE

Katsumi Dosaka; Masaki Kumanoya; Kouji Hayano; Akira Yamazaki; Hisashi Iwamoto; Hideaki Abe; Yasuhiro Konishi; Katsumitsu Himukashi; Yasuhiro Ishizuka, and Tsukasa Saiki, all of Hyogo-ken, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, and Mitsubishi Electric Engineering Co., Ltd., both of Tokyo, Japan

Division of Ser. No. 869,917, Apr. 15, 1992. This application Jun. 5, 1995, Ser. No. 463,565

Claims priority, application Japan, Apr. 18, 1991, 3-85625; Aug. 23, 1991, 3-212140; Sep. 24, 1991, 3-242286; Feb. 3, 1992, 4-17809

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—222 **2 Claims**

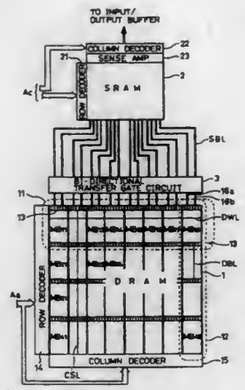
1. A semiconductor memory device including an array of dynamic type memory cells comprising:

auto-refresh means responsive to an external refresh designation signal for refreshing a memory cell of said array;

refresh setting means for generating a mode signal for setting a refresh mode of operation of said semiconductor memory device selectively to an auto-refreshing or self-refreshing mode of operation;

self-refreshing means responsive to said mode signal for refreshing a memory cell of said array every prescribed interval, said self-refreshing means including means for supplying a refresh indicating signal indicating that self-refresh mode operation is under execution in said semiconductor memory device; and

input/output switching means responsive to said mode signal for selectively setting a pin terminal to an input terminal for receiving said external refresh designation signal or to an output terminal for supplying said refresh indicating signal.



5,544,122

MULTIPLEXED MULTI-WRITE PORT SEMICONDUCTOR MEMORY

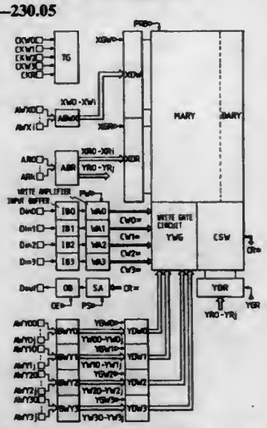
Masao Mizukami, Yokohama; Yoichi Sato, Iruma; Satoshi Shinagawa, Akishima, and Yukio Nakano, Zama, all of, Japan, assignors to Hitachi, Ltd., and Hitachi VLSI Engineering Corp., both of Tokyo, Japan

Continuation of Ser. No. 932,678, Aug. 20, 1992, abandoned. This application May 19, 1994, Ser. No. 246,267

Claims priority, application Japan, Aug. 30, 1991, 3-244851

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—230.05 **31 Claims**



1. A semiconductor integrated circuit device comprising:

a memory array,

a plurality of write word lines,

a plurality of data lines, and

a plurality of memory cells, each being coupled to a corresponding one only of said plurality of write word lines and to a corresponding one of said plurality of data lines;

a first address decoder for receiving signals based on a plurality of first address signals and for outputting a plurality of first data line selection signals;

a second address decoder for receiving signals based on a plurality of second address signals and for outputting a plurality of second data line selection signals, said second address decoder being operable at the same time as said first address decoder;

a write control circuit for selecting at least one data line from among all of said plurality of data lines in accordance with said plurality of first data line selection signals, and for selecting at least one data line from among all of said plurality of data lines in accordance with said plurality of second data line selection signals;

a third data input portion for inputting a third input data and for outputting a third write data; and

a third address decoder for receiving signals based on a plurality of third address signals and for outputting a plurality of third data line selection signals,

wherein said write control circuit further outputs said third write data to one of said plurality of data lines in accordance with said plurality of third data line selection signals.

5,544,123

SEMICONDUCTOR MEMORY DEVICE HAVING A TEST CIRCUIT

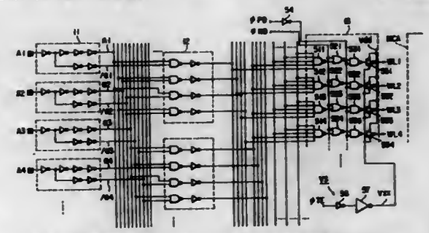
Satoru Hoshi, Kawasaki, and Masami Masuda, Yokohama, both of, Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Feb. 27, 1995, Ser. No. 395,031

Claims priority, application Japan, Mar. 3, 1994, 6-033680

Int. Cl.[6] G11C *8/00*; *29/00*

U.S. Cl. 365—230.06 **18 Claims**



1. A semiconductor memory device comprising:

a plurality of logic circuits for decoding an address signal, each of said logic circuits outputting a decode signal from an output terminal thereof to select a memory cell; and

a plurality of voltage supply circuits each having an input terminal connected to the output terminal of a corresponding one of said plurality of logic circuits and an output terminal connected to a word line for selecting the memory cell, each of said voltage supply circuits having a first input terminal supplied with a first voltage and a second input terminal supplied with a second voltage which is lower than the first voltage, each of said voltage supply circuits supplying the first voltage to the word line when the decode signal represents a selective state of the memory cell and supplying the second voltage to the word line when the decode signal represents a non-selective state thereof, the second voltage being set at a level which is equal to a level of the first voltage in a test mode where said semi-conductor memory device is tested.

5,544,124

OPTIMIZATION CIRCUITRY AND CONTROL FOR A SYNCHRONOUS MEMORY DEVICE WITH PROGRAMMABLE LATENCY PERIOD

Paul S. Zagar, and Scott Schaefer, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Mar. 13, 1995, Ser. No. 403,382

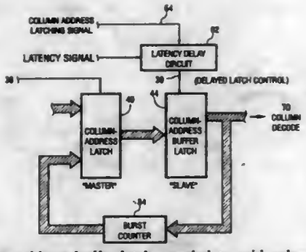
Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—230.08 **10 Claims**

1. A memory device having a memory array of rows and columns of memory cells, said memory device operating in synchronization with a system clock, said device comprising:

a column address latch coupled to said address terminals and latching a column address;

an optimization circuit receiving a latency signal and a column latching signal, said optimization circuit adjusts said column latching signal to produce an adjusted column latching signal; and



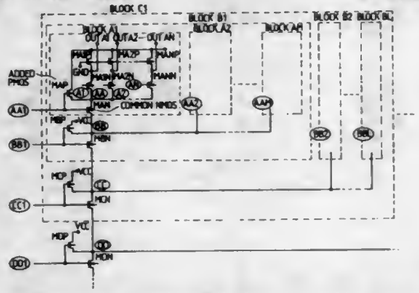
a column address buffer latch coupled to said column address latch, said column address buffer latch produces said column address for column address decoding in response to said adjusted column latching signal.

5,544,125

SEMICONDUCTOR INTEGRATED CIRCUIT HAVING LOGIC GATES

Yuji Yokoyama; Takashi Akioka; Masahiro Iwamura, all of Hitachi; Atsushi Hiraishi, Onme; Yutaka Kobayashi, Katsuta; Tatsumi Yamauchi, Hitachi; Shigeru Takahashi, Hitachiohta; Nobuyuki Gotou, and Akira Ide, both of Takasaki, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 643,372, Jan. 22, 1991, Pat. No. 5,387,827.
This application Feb. 6, 1995, Ser. No. 383,866
Claims priority, application Japan, Jan. 20, 1990, 2-10946; Feb. 27, 1990, 2-46717
Int. Cl.[6] G11C *8/00*
U.S. Cl. 365—230.06 **25 Claims**



1. A memory device comprising a plurality of memory cells for storing data; an input buffer for providing address signals in response to an input address; a decoder, coupled to said input buffer, for decoding said address signals and selecting ones of said memory cells in response thereto; a sense amplifier coupled to receive data from the selected ones of said memory cells; and an output buffer, coupled to said sense amplifier, for providing output data signals, said decoder comprising:

a plurality of logic gates each including a first input terminal for receiving one of first input signals, an output terminal and a common connection terminal;

a first switching element which comprises a transistor having a control electrode and first and second electrodes;

a second switching element which comprises another transistor having a control electrode and first and second electrodes;

a second input terminal, for receiving a second input signal, commonly connected to the control electrodes of the transistors of said first and second switching elements; and

a second output terminal provided at a common connection of the second electrodes of the transistors of said first and second switching elements,

wherein said second output terminal is coupled to said common connection terminal of all of said plurality of logic gates, to thereby form a common node,

wherein said first and second switching elements operate complementary to one another in response to said second input signal, and

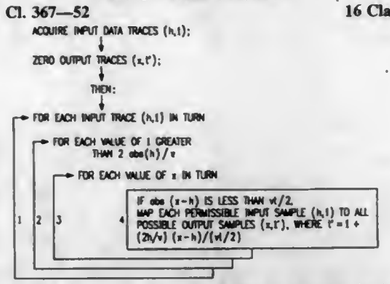
wherein said first input signals and said second input signal correspond to said address signals in which said second input signal functions as a control signal.

5,544,126

SYSTEM AND METHOD OF SEISMIC SHOT-RECORD MIGRATION

John R. Berryhill, 403 Chaparral Rd., Austin, Tex. 78745

Filed Nov. 4, 1993, Ser. No. 147,025
Int. Cl.[6] G01V *1/32;1/36*
U.S. Cl. 367—52 **16 Claims**



1. A method of processing seismic data in a system having a spaced source and receiver, said method comprising the steps of:

acquiring at least one seismic common-source record, which at least one seismic common-source record exhibits received amplitude as a function of time t and half-offset h; and

for said at least one seismic common-source record, repositioning the indication of a signal observed at (h,t) to a new location (x,t'),

wherein there are a plurality of seismic common-source records, wherein each of said plurality of seismic common-source records has a signal, wherein each signal is coherent, and wherein said step of repositioning comprises the steps of:

for each pair of x and h values, determining related pairs of values t_S and t_R, together with $t'=2t_S$ and $t=t_S+t_R$; and

adding into each sample stored at (x,t') in an output record the sample stored at (h,t) in an input record, where t and t' are related as above.

5,544,127

BOREHOLE APPARATUS AND METHODS FOR MEASURING FORMATION VELOCITIES AS A FUNCTION OF AZIMUTH, AND INTERPRETATION THEREOF

Kenneth W. Winkler, Ridgefield, Conn., assignor to Schlumberger Technology Corporation, Ridgefield, Conn.

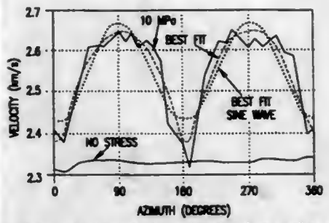
Filed Mar. 30, 1994, Ser. No. 220,717
Int. Cl.[6] G01V *1/00*
U.S. Cl. 367—27 **28 Claims**

1. Apparatus for investigating earth formations traversed by a borehole, comprising:

a) a transmitter for generating acoustic waves at a plurality azimuths about the borehole and for transmitting the acoustic waves into the earth formations;

b) a receiver axially spaced from the transmitter for receiving, at the plurality of azimuths, the acoustic waves transmitted into the formations near the borehole at the plurality of azimuths; and

c) a processor coupled to the receiver for determining acoustic velocities of the formations around the borehole as a function



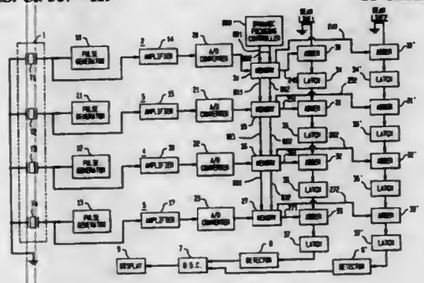
of azimuth and finding the azimuth of one of a maximum acoustic velocity and a minimum acoustic velocity and generating at least one indication relating to the earth formations as a result thereof.

5,544,128

MULTI-BEAM DIGITAL BEAMFORMING METHOD AND APPARATUS

Jin Kim, Issaquah; Lin X. Yao, Bellevue, and Zoran Banjanin, Renton, all of Wash., assignors to Siemens Medical Systems, Inc., Iselin, N.J.

Filed Jul. 5, 1994, Ser. No. 270,868
Int. Cl.[6] G01S *15/00*; A61B *8/00*
U.S. Cl. 367—119 **21 Claims**



1. A beamformer, comprising:

a plurality of parallel receiving channel means for detecting ultrasonic echo signals from a plurality of scanning beam lines and, in response thereto, producing a respective plurality of digital sample signals;

wherein each of said parallel receiving channels includes a memory that is communicative with said receiving channel, each of said memories receiving and storing said digital sample signals sequentially;

for each of said parallel receiving channels, a plurality of adders, each of said memories being communicative with said adders and transferring said digital sample signals to said adders in response to a control signal, each of said adders further being sequentially communicative with corresponding adders in each of the other parallel receiving channels, such that corresponding adders form a group of adders that process digital sample signals for a given scanning beam line;

a plurality of detectors, each of said detectors being communicative with and receiving data from one of said groups of corresponding adders, each of said detectors further filtering received digital sample signals of a respective one of said groups of corresponding adders for developing a beamformer signal; and

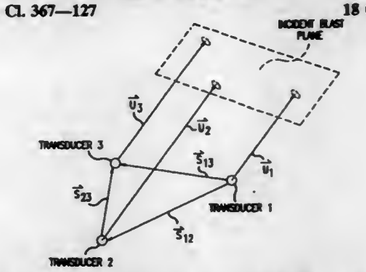
control means communicative with said memories and said adders and providing said control signals, such that each of said detectors produces a beamformer signal that is focused along one of said plurality of scanning beam lines.

5,544,129

METHOD AND APPARATUS FOR DETERMINING THE GENERAL DIRECTION OF THE ORIGIN OF A PROJECTILE

Niall B. McNeils, Baltimore, Md., assignor to AAI Corporation, Hunt Valley, Md.

Filed Aug. 30, 1994, Ser. No. 298,178
Int. Cl.[6] G01S *5/20*
U.S. Cl. 367—127 **18 Claims**



1. A method for determining the general direction of the origin of a projectile, comprising:

(A) providing at least one sensor having at least three spaced-apart transducers, each being capable of encountering a blast wave generated at an origin of and by a propellant for the projectile and generating a signal responsive thereto;

(B) measuring from the signals a time relation between at least three transducers when the blast wave serially encounters each of the at least three transducers; and

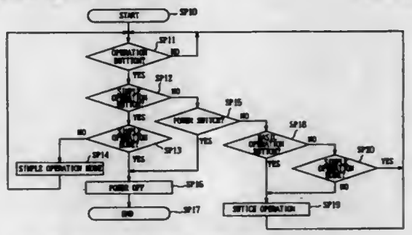
(C) determining from the time relations at least one unit sighting vector from at least one sensor to the origin of the blast wave so that the unit sighting vector points in the general direction of the origin of the projectile.

5,544,130

ELECTRONIC EQUIPMENT OPERATING IN MULTIPLE MODES AND CONTROL METHOD THEREOF

Tomoko Mizuno, Chiba; Toshiyuki Takahashi, Tokyo; Hiroshi Yamaguchi, Nagano, and Nobuaki Hisamatsu, Tokyo, all of, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 11, 1994, Ser. No. 289,105
Claims priority, application Japan, Aug. 18, 1993, 5-226373
Int. Cl.[6] H04B *1/20*
U.S. Cl. 369—1 **22 Claims**



1. An electronic equipment, comprising:

a plurality of operation buttons including basic action operation buttons operable to control basic operations of said electronic equipment, additional function operation buttons operable to control operations in addition to said basic operations, and a mode switching button; and

control means for switching overall operation of said electronic equipment in response to the operation of said basic action operation buttons and said additional function operation buttons when a normal operation mode is selected, such that when said mode switching button is operated to change over the operation mode to a simple operation mode, only said

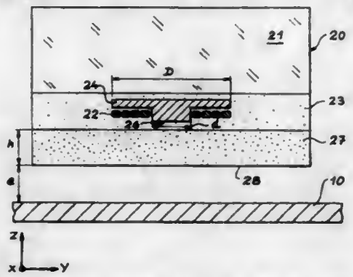
basic action operation buttons are operable and said additional function operation buttons are rendered inoperable.

5,544,131

MAGNETIC WRITING HEAD FOR MAGNETO-OPTICAL RECORDING WITH THICK PROTECTIVE COATING

Jean B. Albertini, Grenoble, and Jean-Marc Fedeli, Beaucroissant, both of, France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed May 12, 1994, Ser. No. 241,808
Claims priority, application France, May 14, 1993, 93 05832
Int. Cl.[6] G11B *11/00*
U.S. Cl. 369—13 **7 Claims**



1. A magnetic writing head for magneto-optical recording comprising:

a semiconductor substrate made of silicon and having a major surface;

an insulating layer formed on the major surface of the semiconductor substrate;

a magnetic coil embedded in the insulating layer for generating a magnetic field in the vicinity of a recording medium;

a protective coating layered on the insulating layer having at least a 5 μm thickness between a surface facing the recording medium and the insulating layer for protecting the magnetic coil from damage in a case where the magnetic writing head crashes onto the recording medium;

wherein, the magnetic coil is set back with respect to the recording medium by positioning the magnetic writing bead away from the recording medium, defined by a distance between the protective coating and the recording medium, at least 5 μm;

a magnetic material circuit embedded in the insulating material between the semiconductor substrate and the protective coating; and

radial-isolating grooves formed in a surface of the magnetic material circuit facing the semiconductor substrate for electrically isolating the magnetic circuit material into sectors without disturbing the passage of the magnetic field for preventing electric currents appearing in the magnetic circuit induced by high frequency operation of the magnetic circuit material.

5,544,132

APPARATUS FOR SELECTIVELY INVERTING A MAGNETIC BIASED FIELD FOR MAGNETO-OPTIC RECORDING

Edward P. Furlani, Lancaster, and J. Kelly Lee, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 13, 1995, Ser. No. 403,030
Int. Cl.[6] G11B *13/04*
U.S. Cl. 369—13 **6 Claims**

1. An apparatus for selectively inverting an external magnetic field in a magneto-optic recording system so that information can be selectively recorded on or erased from a magneto-optic recording element of said system moving through said field, the apparatus comprising:

(a) a permanent magnet having its north and south poles oriented along its cross-sectional dimension;

(b) a substantially U-shaped core having two ends in which one end is a proximal end disposed adjacent either the north or south pole, and the other end is a distal end radially disposed further away from said magnet than the proximal end for restricting induced flux to said core substantially to said core so that electro-magnetic interference is reduced; and

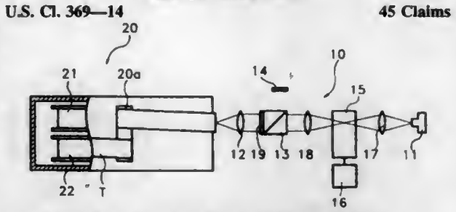
(c) a coil wrapped around said core which, when energized, causes the proximal end to impart a magnetic polarity opposite of the polarity of the pole of the magnet to which it is adjacent for selectively rotating said magnet, and which coil, when de-energized, causes the proximal end to attract said magnet for maintaining their positional relationship.

5,544,133

RECORDING/REPRODUCING APPARATUS USING OPTICAL MAGNETIC TAPE

Hyun-kuk Sin, Kyunggi-do, Rep. of Korea, assignor to Sam-Sung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jun. 10, 1992, Ser. No. 896,434
Claims priority, application Rep. of Korea, Oct. 23, 1991, 91-18683
Int. Cl.[6] G11B *13/00*
U.S. Cl. 369—14 **45 Claims**



1. A recording and reproducing apparatus, comprising:

a rotating drum having a slot formed in a peripheral surface;

a supply reel disposed in a first section of said rotating drum;

a takeup reel having an axis of rotation coinciding with an axis of rotation of said supply reel and disposed in a second section of said rotating drum;

optical magnetic tape adapted to be transferred between said supply reel and said takeup reel by passing through said slot and along an outer periphery of said rotating drum; and

an optical system for focusing light onto said optical magnetic tape, comprising:

a light source for generating light;

an objective lens for focusing said light generated by said light source onto said optical magnetic tape;

an optical scanner for moving a focal point of said objective lens across said optical magnetic tape;

a beam splitter for separating light received from said light source and light reflected from said optical magnetic tape; and

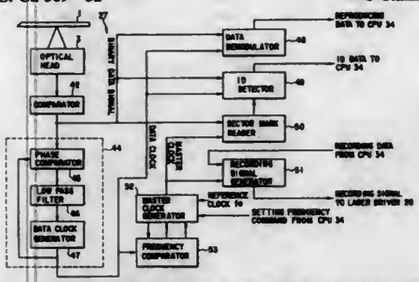
a light detecting element for detecting the separated light.

5,544,134

OPTICAL DISK APPARATUS FOR READING DATA FROM ZONES OF AN OPTICAL DISK USING DIFFERENT FREQUENCY CLOCKS

Mikio Yamamuro, Zushi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 27, 1994, Ser. No. 312,838
Claims priority, application Japan, Sep. 29, 1993, 5-242501
Int. Cl.[6] G11B *7/085*
U.S. Cl. 369—32 **8 Claims**



1. An optical data reproducing apparatus for reproducing data from an optical disk having a plurality of tracks for storing data that are arranged in a coaxial manner, said tracks being grouped into a plurality of zones partitioning said optical disk along a radial direction thereof, each zone having a plurality of sectors that are each assigned as a unit area for recording data, the tracks in a same zone being divided by a same number of sectors, and the sectors of each zone storing a data clock, the data clock for each zone varying in frequency from one zone to another, each data clock being used for reading out data from the sectors of a corresponding zone, said apparatus comprising:

means for rotating said optical disk at a constant rotation speed;

means for converging an optical beam on a track of said optical disk, for detecting an optical beam reflecting from said optical disk, and for generating a reproduction signal based on the optical beam detected;

means for moving said converging means in a radial direction of said disk;

means for storing frequencies of clocks which are different from one zone to another;

means for driving said moving means by generating a driving signal corresponding to a target track to be searched;

means for reading a clock frequency of a zone corresponding to said target track, from said storing means when said moving means is driven, and for generating a master clock based on the clock frequency read;

means for detecting a data clock from said reproduction signal;

means for comparing said data clock detected with said master clock, and for correcting a frequency of said master clock in accordance with a comparison result; and

means for detecting a start of a sector based on said reproduction signal and said master clock, and for demodulating reproduction data from said reproduction signal in said sector using said data clock in accordance with the detection of the start of the sector.

5,544,135

FAULT TOLERANT SERVO ADDRESS MARK FOR DISK DRIVE

William R. Akin, Jr., Morgan Hill, and Trinh C. Bui, Santa Ana; both of Calif., assignors to Quantum Corporation, Milpitas, Calif.

Filed Oct. 11, 1994, Ser. No. 321,307
Int. Cl.[6] G11B *17/22;5/09;5/596*
U.S. Cl. 369—32 **11 Claims**

1. A method for decoding a data pulse sequence from a stream including a servo address mark pattern following a synchronization pattern comprising a repetitive sequence of data pulses, wherein the servo address mark pattern nominally comprises a first non-pulse interval of predetermined length following the synchronization pattern and ending with an interval ending pulse, with fault tolerance for a spurious data pulse occurring during the first non-pulse interval, including the steps of:

detecting a last data pulse of the synchronization pattern nominally marking a beginning of the first non-pulse interval of the servo address mark pattern,

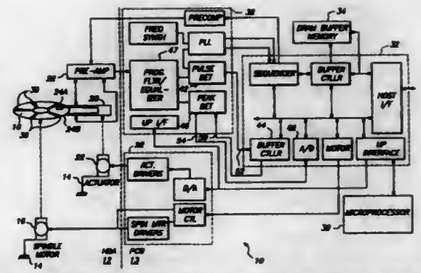
progressively monitoring the stream to determine that the synchronization pattern has ended,

continuing to monitor the stream to determine that no unexpected data pulses occur during the first non-pulse interval,

detecting an unexpected pulse during the first non-pulse interval occurring following the step of determining that the synchronization pattern has ended,

flagging presence of the detected unexpected pulse, and

continuing to monitor the stream to detect the interval ending pulse, and thereupon signaling successful detection of the first non-pulse interval.

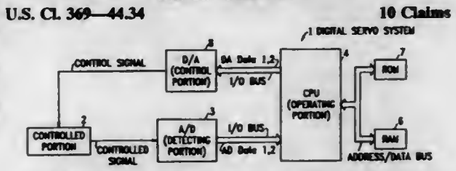


5,544,136

DIGITAL SERVO SYSTEM FOR OBTAINING BY CALCULATION A CONTROL SIGNAL CORRESPONDING TO A DESIRED VALUE ON THE BASIS OF THE CHANGE OF A CONTROL SIGNAL AND A CONTROLLED SIGNAL

Yuji Horie, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 598,079, Oct. 16, 1990, abandoned.
This application Jan. 11, 1993, Ser. No. 4,167
Claims priority, application Japan, Oct. 23, 1989, 1-276650
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—44.34 **10 Claims**



1. A digital servo system for obtaining by calculation a control signal corresponding to a target value of control on the basis of a change of the control signal and a change of a controlled signal, the system comprising:

control means for outputting the control signal;

digital-to-analog converting means for effectuating digital-to-analog conversion of the control signal from the control means and outputting a converted control signal;

controlled means, to be controlled by inputting the converted control signal from the digital-to-analog converting means, for outputting the controlled signal representing a state of the controlled means controlled by the inputted converted control signal; and

analog-to-digital converting means for effectuating analog-to-digital conversion of the controlled signal and outputting a converted controlled signal;

the control means receiving the converted controlled signal from the analog-to-digital converting means and outputting the control signal;

the control means comprising:

signal detecting means for detecting at least two instances of the converted controlled signal obtained from the analog-to-digital converting means by sequentially outputting at least two different instances of the control signal to the digital-to-analog converting means;

learning means for obtaining a first difference, Delta_DA, between the at least two instances of the control signal and a second difference, Delta_AD, between the at least two instances of the converted controlled signal detected by the signal detecting means, and obtaining a relation between the control signal and the controlled signal by calculating Delta_DA/Delta_AD, the relation between the control signal and the controlled signal being a linear relation; and

target control signal calculating means for calculating a value of the control signal corresponding to a predetermined value of the controlled signal which is the target value of control of the servo system as a function of the predetermined value of the controlled signal, the relation between the control signal and the controlled signal obtained by the learning means, and the value of one of the at least two instances of the converted controlled signal.

5,544,137

OPTICAL DISC RECORD/PLAYBACK APPARATUS

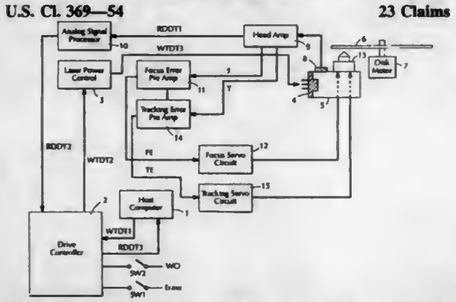
Shunji Ohara; Tamotsu Matsuo, and Kenzou Ishibashi, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 610,612, Nov. 8, 1990, abandoned. This application Jun. 21, 1993, Ser. No. 80,583

Claims priority, application Japan, Jul. 30, 1990, 2-202181

Int. Cl.[6] G11B 7/00

U.S. Cl. 369—54 **23 Claims**



1. An apparatus which utilizes a laser for optically recording, erasing and playing back information encoded on a disc which may be an erasable type disc or a write-once type disc, said disc types requiring said apparatus to be set to different operating parameters, said apparatus comprising;

(a) means for identifying which of said two disc types is inserted therein; and

(b) playback signal processing means for changing the polarity of a playback signal accordance with said identified disc type.

5,544,138

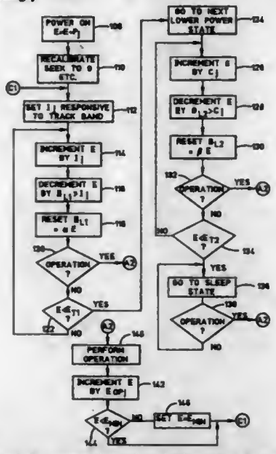
ADAPTIVE SYSTEM FOR OPTIMIZING DISK DRIVE POWER CONSUMPTION

Christopher H. Bajorek, Los Gatos, Calif.; Thomas W. Glaser, Rochester, Minn.; Klaas B. Klaassen, San Jose, Calif.; Charles R. Nielsen, San Jose, Calif.; George R. Santana, Saratoga, Calif.; Gordon J. Smith, Rochester, Minn.; David A. Thompson, San Jose, Calif., and Michael L. Workman, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 446,368, May 22, 1995, which is a division of Ser. No. 175,984, Dec. 30, 1993, Pat. No. 5,452,277. This application Nov. 1, 1995, Ser. No. 548,350

Int. Cl.[6] G11B 7/00

U.S. Cl. 369—54 **9 Claims**



1. A method for managing electrical power consumption in a data recording disk drive that has a recording disk, a head for writing data to or reading data from the disk, and a plurality of electrically powered components including a spindle motor for rotating the disk, an actuator motor for moving the head to access the disk, and a controller for receiving disk access commands, the disk drive being capable of operating in a reduced power mode, the method comprising the steps of:

entering the reduced power mode a delay time interval after completion of a first disk access;

exiting the reduced power mode after receipt of a command for a second disk access;

accumulating a history of disk accesses over a period of time; and

in response to the accumulated disk access history, thereafter adapting the delay time interval to enter the reduced power mode after completion of a subsequent disk access.

5,544,139

METHOD AND APPARATUS FOR DISPLAYING DISC NAME READ FROM A DISC

Junichi Aramaki, and Teppei Yokota, both of Chiba, Japan, assignors to Sony Corporation, Tokyo, Japan

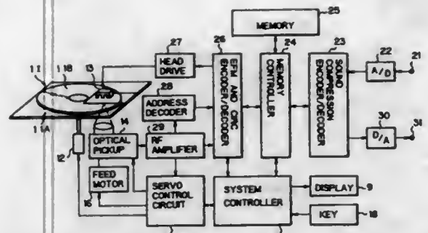
Continuation of Ser. No. 63,153, May 18, 1993, abandoned. This application May 24, 1995, Ser. No. 449,570

Claims priority, application Japan, May 22, 1992, 4-155721; May 25, 1992, 4-157412

Int. Cl.[6] G11B 7/00

U.S. Cl. 369—58 **8 Claims**

1. A display method for use with a disc having a first record region for recording data and a second record region for recording at least catalog information of the data recorded on the first record region, the method comprising the steps of:



(a) detecting whether or not a disc name, which identifies the data recorded in the first record region, has been recorded in the second record region of the disc;

(b) displaying the catalog information on a display portion if the disc name has not been recorded in the second record region of the disc; and

(c) displaying the disc name on the display portion if the disc name has been recorded in the second record region of the disc.

5,544,140

STORAGE MEDIUM AND APPARATUS AND METHOD FOR RECOVERING INFORMATION FROM SUCH MEDIUM BY OVERSAMPLING

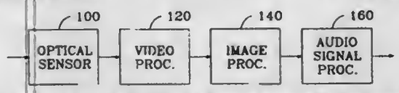
Charles G. Seagrave, San Rafael; Martin J. Richards, Redwood City; Douglas E. Mandell, San Francisco, and Mark L. Atherton, San Bruno, all of Calif., assignors to Dolby Laboratories Licensing Corporation, San Francisco, Calif.

PCT No. PCT/US92/00898, § 371 Date Sep. 30, 1992, § 102(e) Date Sep. 30, 1992

Continuation-in-part of Ser. No. 650,571, Feb. 4, 1991, abandoned, and Ser. No. 710,174, Jun. 4, 1991, abandoned. This PCT application Feb. 4, 1992, Ser. No. 937,887

Int. Cl.[6] G11B 5/00

U.S. Cl. 369—59 **34 Claims**



1. An apparatus for recovering symbols carried by an information storage medium carrying two or more blocks of differentiable symbols representing digital information, the symbols of each block being two-dimensionally encoded, said apparatus comprising

sampling means for oversampling in two dimensions said storage medium to produce samples,

processing means for storing said samples to successively obtain for each block a two-dimensional image representation and for generating recovered symbols from each two-dimensional image representation, and

means for forming a continuous data stream from the symbols recovered from two or more blocks.

5,544,141

CROSS-TALK CANCELER FOR OPTICAL DISK READING MECHANISM

Satoshi Kawasaki, Tokyo, Japan, assignor to NEC Corportion, Tokyo, Japan

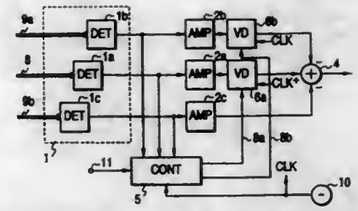
Filed May 18, 1994, Ser. No. 245,672

Claims priority, application Japan, May 18, 1993, 5-115106

Int. Cl.[6] G11B 7/00

U.S. Cl. 369—060 **1 Claim**

1. A cross-talk canceler for an optical disk reading mechanism for reading recorded information from an optical disk having at least three continuous tracks on which identical fixed patterns aligned in a radial direction thereof have been written to output a reproduced signal, said mechanism includes an optical head including a main detector, first and second sub-detectors for simultaneously reading the recorded information from three tracks, said canceler comprising:



a first level adjusting circuit for giving a first gain to a main signal read from said main detector to output a gain-adjusted main signal;

a second level adjusting circuit for giving a second gain to a first auxiliary signal read from said first sub-detector to output a first gain-adjusted auxiliary signal;

a third level adjusting circuit for giving a third gain to a second auxiliary signal read from said second sub-detector to output a second gain-adjusted auxiliary signal;

a first delay circuit having a delay amount which is set according to a first delay control signal for delaying said first gain-adjusted auxiliary signal from said second level adjusting circuit to output a delayed auxiliary signal;

a second delay circuit having a delay amount which is set according to a second delay control signal for delaying said gain-adjusted main signal from said first level adjusting circuit to output a delayed main signal;

a subtractor for subtracting said delayed auxiliary signal of said first delay circuit and said second gain-adjusted auxiliary signal of said third level adjusting circuit from said delayed main signal of said second delay circuit to output said reproduced signal;

a first measuring circuit for measuring a time difference between a rising time of said first auxiliary signal and a rising time of said second auxiliary signal to generate an output signal;

a first measuring circuit for measuring a time difference between a rising time of said first auxiliary signal and a rising time of said second auxiliary signal to generate an output signal;

a second measuring circuit for measuring a time difference between said main signal and said second auxiliary signal to generate an output signal; and

a holding circuit for holding the output signals of said first and second measuring circuits to generate said first and second delay control signals,

wherein said second measuring circuit comprises:

a second flip flop which is set by said main signal and reset by said second auxiliary signal to output a second enable signal;

a second counter for counting clock signals while said second enabling signal is at a high level; and

a second sampling means for sampling the output signal of said second counter to supply a sampled signal to said holding circuit as the output signal of said second measuring circuit at the time of a falling edge of said second enabling signal,

wherein said first measuring circuit comprises:

a first flip flop which is set by said first auxiliary signal and reset by said main signal to output a first enable signal;

a first counter for counting said clock signals while said first enabling signal is at a high level;

a first sampling means for sampling the output signal of said first counter at the time of a falling edge of said first enable signal; and

an adder for adding an output signal of said first sampling means and an output signal of said second sampling means to supply the output signal of said first measuring circuit to said holding circuit,

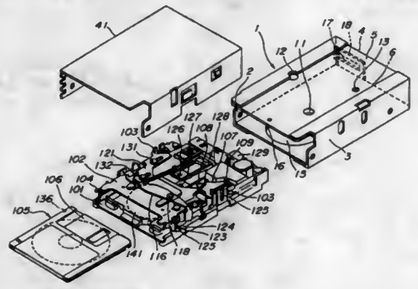
and wherein said canceler further includes a circuit for detecting a rising edge of said first auxiliary signal to clear said first and second counters.

5,544,142

DISK DRIVE WITH DUST SHIELD COVER

Atsushi Funakiri, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 195,789, Feb. 10, 1994, abandoned. This application Feb. 21, 1995, Ser. No. 391,613
Claims priority, application Japan, Feb. 15, 1993, 5-025468
Int. Cl.[6] G11B *33/14;33/02*
U.S. Cl. 369—75.1 **20 Claims**



11. In an arrangement:

a disk drive;

an electromagnetic shield cover disposed over said disk drive; and

a dust shield cover interposed between said disk drive and said electromagnetic shield cover, said dust shield cover comprising:

a first cover member having a first rear plate portion, an upper plate and a first lower plate portion, the first rear plate portion being connected to the upper plate and the first lower plate portion, the upper plate having an exterior surface;

a second cover member having side plates, a second rear plate portion, a third rear plate portion, and a second lower plate portion, the side plates being connected to the second lower plate portion and being arranged to conceal the disk drive on both sides thereof, the second and third rear plate portions being connected to at least one of the second lower plate portion and the side plates, the second cover member having connection overlaps contacting the upper plate and being connected to the side plates along bend lines, the connection overlaps overlapping the exterior surface of the upper plate;

the first cover member being connected to the second cover member, the first rear plate portion being connected to the second and third rear plate portions to form a rear plate arranged to conceal the disk drive on the rear side thereof; and

the first lower plate portion being connected to the second lower plate portion to form a lower plate, the upper and lower plates being arranged to conceal the disk drive at upper and lower sides thereof.

5,544,143

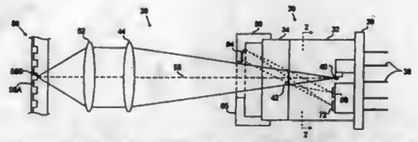
READ/WRITE LASER-DETECTOR-GRATING UNIT (LDGU) WITH AN ORTHOGONALLY-ARRANGED FOCUS AND TRACKING SENSOR SYSTEM

David B. Kay, Rochester, and Edward C. Gage, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 14, 1994, Ser. No. 259,428
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—109 **22 Claims**

1. An apparatus for providing focus and tracking error signals for controlling an application of a radiation beam from an optical source to a data track of an optical storage medium, said apparatus comprising:

a transparent substrate arranged between said optical source and said optical storage medium such that said radiation beam passes through said substrate;



a grating beam splitter supported by said transparent substrate, said grating beam splitter having at least a first grating element, a second grating element and a third grating element arranged to separate a return beam resulting from said application of said radiation beam to said data track into at least a first portion, a second portion and a third portion, respectively, said first and second grating elements separating said return beam along a plane substantially parallel to a reference plane defined by an optical axis of said radiation beam and a tangent to said data track, and said third grating element, arranged adjacent to and on one side of said first and second grating elements, separating said return beam along a plane substantially perpendicular to said reference plane;

a detector array to detect said portions of said return beam such that said focus and tracking error signals may be generated therefrom; and

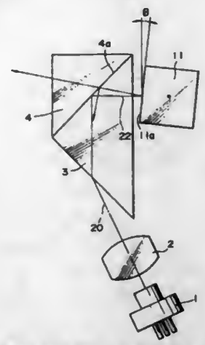
a source monitor detector adapted to detect a portion of said radiation beam to thereby provide an indication of a power level of said radiation beam.

5,544,144

OPTICAL HEAD STRUCTURE HAVING COMPACTLY ARRANGED PARTS

Suguru Takishima, Tokyo; Isao Okuda, Niiza, and Takashi Morita, Higashimatsuyama, all of, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 204,890, Mar. 2, 1994, abandoned, which is a continuation of Ser. No. 13,179, Jan. 29, 1993, abandoned, which is a continuation of Ser. No. 612,818, Nov. 14, 1990, abandoned. This application Nov. 2, 1995, Ser. No. 556,829
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—112 **29 Claims**



1. An optical head structure, employed in an optical device, comprising:

means for emitting a light beam along an optical axis;

means for splitting said light beam into a first light beam and a second light beam, an optical path of said first light beam and said optical axis defining a first plane;

means for reflecting said first light beam to define a reflected first light beam extending out of said first plane along an optical path within a second plane, said reflecting means having an incident surface and a reflecting surface distinct from said incident surface, said incident surface inclined by a predetermined angle with respect to an axis perpendicular to said optical path of said first light beam emitted from an

emitting face of said splitting means, said second plane intersecting said first plane and being distinct from said first plane; and

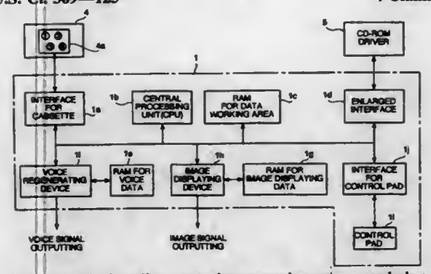
means for receiving said reflected first light beam, said receiving means outputting a signal proportional to an intensity of said reflected first light beam.

5,544,145

REGENERATION OF PHOTOGRAPHIC DATA STORED IN A CD-PLAYER

Masaru Muraoka, and Shingo Izuta, both of Daito, Japan, assignors to Funai Electric Co., Ltd., Daito, Japan

Filed May 21, 1993, Ser. No. 66,900
Claims priority, application Japan, May 25, 1992, 4-158741
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—125 **4 Claims**



1. A method of reading out and regenerating compressed photographic data stored in an optical disk from a CD-player video gaming apparatus having an interface connectable with at least one external memorizing device comprising a ROM and CD-ROM driver, said video gaming apparatus having a data-handling device, a voice-regenerating device, a control pad and an interface connected with said control pad, through said CD-ROM driver connected to said interface connectable with external memorizing devices, said method comprising the steps of connecting said at least one external memorizing device to said interface, reading and regenerating said photographic data stored in said optical disk through said CD-ROM driver connected to said interface connectable with said external memorizing devices, in accordance with system operation programs consisting of (1) a system control program, (2) a CD-ROM driver control program, and (3) a photographic data-enlarging program, which are stored in said ROM or in another external memorizing device, and steps of performing dealing and controlling of referring, zooming and panning operations of said photographic data, in accordance with a utility-controlling program stored in said ROM or in another external memorizing device.

5,544,146

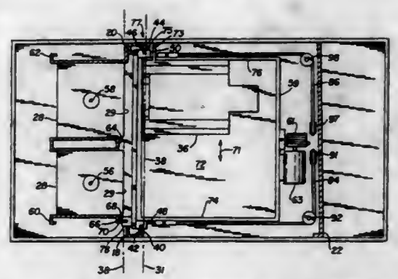
CARTRIDGE HANDLING SYSTEM

Robert W. Luffel, Greeley; D. Scott Paul, Ft. Collins, and Jon D. Rugg, Greeley, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 24, 1994, Ser. No. 296,054
Int. Cl.[6] G11B *17/12*
U.S. Cl. 369—178 **18 Claims**

1. A cartridge handling system, comprising:

a cartridge storage rack having a plurality of cartridge storage locations aligned along a cartridge storage axis substantially parallel to a YY axis of an orthogonal XX, YY, ZZ coordinate system containing an XX axis, the YY axis and a ZZ axis, each of the plurality of cartridge storage locations being adapted to receive a cartridge having an access end such that the access ends of the cartridges, when positioned in the plurality of cartridge storage locations, are aligned along a cartridge access plane substantially parallel to a YY–ZZ plane, the YY–ZZ plane containing the YY axis and the ZZ axis of the orthogonal XX, YY, ZZ coordinate system, the cartridges being substantially located on one side of the cartridge access plane;



a first elongate guide rail positioned at about the cartridge access plane and substantially parallel to only the YY–ZZ plane;

a second elongate guide rail positioned at about the cartridge access plane and substantially parallel to only the YY–ZZ plane, said first and second elongate guide rails defining a bearing plane that is substantially parallel to the cartridge access plane;

an elongate lateral guide rail positioned at about the cartridge access plane and substantially parallel to only an XX–YY plane, the XX–YY plane containing the XX axis and the YY axis of the orthogonal XX, YY, ZZ coordinate system;

a cartridge engaging assembly for releasably engaging cartridges positioned in the cartridge storage locations, said cartridge engaging assembly including first and second bearings for slidably engaging said first and second elongate guide rails and a lateral guide rail bearing for slidably engaging said elongate lateral guide rail, wherein said first and second elongate guide rails allow said cartridge engaging assembly to be moved in a first direction that is substantially parallel to the YY–ZZ plane and wherein said elongate lateral guide rail allows said cartridge engaging assembly to be moved in a second direction that is substantially parallel to the XX–YY plane, wherein said first and second guide rails and said lateral guide rail together guide said cartridge engaging assembly along a displacement path that is substantially parallel to the cartridge storage axis; and

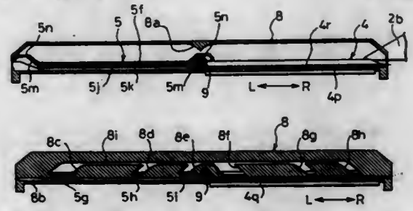
an actuator connected to said cartridge engaging assembly for positioning said cartridge engaging assembly at predetermined points along the displacement path.

5,544,147

DISK REPRODUCING APPARATUS

Satoru Koizumi; Susumu Chono; Yoshihiro Abe, and Kazuki Matsuzaki, all of Higashihiroshima, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 2, 1994, Ser. No. 353,261
Claims priority, application Japan, Aug. 17, 1994, 6-193349
Int. Cl.[6] G11B *17/06;17/08;33/02;17/22*
U.S. Cl. 369—191 **26 Claims**



1. A disk reproducing apparatus comprising:

a reproducing unit for reading recorded information from a disk;

a cabinet including a reproducing area in which a reproducing position for reading recorded information from the disk by said reproducing unit is set substantially constant relative to the cabinet and a stand-by area in which a stand-by position for exchanging a disk is set substantially constant relative to the cabinet, said reproducing area and said stand-by area being horizontally aligned in the same plane in said cabinet;

a first tray including a disk receiving face for placing thereon a disk, the disk receiving face being formed parallel to the horizontal direction, said first tray being capable of reciprocating between the reproducing position and the stand-by position;

a second tray including a disk receiving face for placing thereon a disk, the disk receiving face being formed parallel to the horizontal direction, said second tray being arranged such that when said first tray is selectively positioned at either one of the reproducing position and the stand-by position, said second tray is positioned at the other position, said second tray moving above said first tray, said first tray and said second tray moving simultaneously parallel to one another in mutually opposite horizontal directions when the trays are interchanged upon changing positions, said second tray overlapping said first tray at a predetermined height position with respect to the reproducing position;

reproducing position guide means for guiding a downward movement of said second tray from the predetermined height position to the reproducing position when said second tray is being moved from the stand-by position to the reproducing position.

5,544,148

COMPACT CONFIGURATION DISK PLAYER

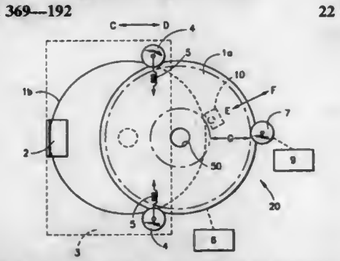
Niro Nakamichi, Tokyo, Japan, assignor to Nakamichi Corporation, Tokyo, Japan

Filed May 19, 1994, Ser. No. 246,270

Claims priority, application Japan, May 20, 1993, 5-141489; May 20, 1993, 5-141490

Int. Cl.[6] G11B *17/10;17/22*

U.S. Cl. 369—192 **22 Claims**



1. A disk player for storing and playing disks comprising:

a magazine for holding said disks;

each of said disks being concentrically aligned in said magazine;

a common axis of said disks concentrically aligned in said magazine;

a disk reader for reading a selected disk partially removed in a direction perpendicular to said common axis from said magazine to a read position whereat an axis of said selected disk is substantially remote from said common axis and said axis of said selected disk overlaps disks which remain in said magazine;

means for aligning said selected disk in said magazine with said disk reader;

means for transporting said selected disk between said disk reader and said magazine;

means for rotating said selected disk at said read position; and

said means for rotating being located outside of said magazine when said disk is rotated.

5,544,149

OPTICAL RECORDING MEDIUM, AND APPARATUS AND METHOD FOR RECORDING AND REPRODUCING INFORMATION ON THE SAME

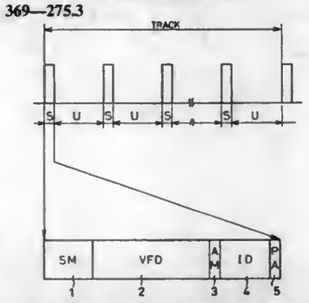
Hiroyuki Katayama; Junji Hirokane; Akira Takahashi, all of Nara, and Kenji Ohta, Kitakatsuragi-gun, all of, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 23, 1994, Ser. No. 217,434

Claims priority, application Japan, Apr. 7, 1993, 5-080567

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—275.3 **8 Claims**



1. An optical recording medium comprising a track including a plurality of sectors, each sector being divided into a header section, having a total capacity of 24 bytes, where address information is recorded and a user-input-data recording section where a user freely records data,

wherein the header section includes only one address information section, having a total of only 5 bytes, where address information of each sector is recorded, and

information is recorded on or reproduced from a user-input-data recording section of a desired sector by reading out the address information of the header section with light and accessing the user-input-data recording section.

5,544,150

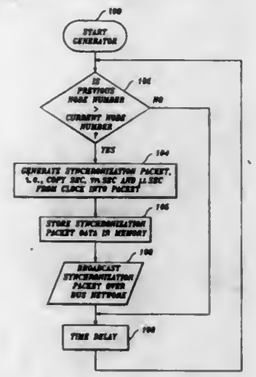
METHOD AND APPARATUS FOR DETERMINING AND INDICATING NETWORK INTEGRITY

Kenneth N. Fujimoto, Manhattan Beach, Calif., and David J. Warman, Bainbridge Island, Wash., assignors to MediaLink Technologies Corporation, Seattle, Wash.

Continuation-in-part of Ser. No. 224,481, Apr. 7, 1994, abandoned. This application Feb. 6, 1995, Ser. No. 384,567

Int. Cl.[6] H04J *3/14*

U.S. Cl. 370—14 **25 Claims**



1. A method of determining and indicating that a network comprising a plurality of nodes has experienced a break in communication which has resulted in the network being divided into a first subnetwork of one or more nodes and a second subnetwork of one or more nodes, the method comprising:

(a) causing a unique node of the first subnetwork to: (i) store a first stream of synchronization packets, and (ii) if there is more than one node in the first subnetwork, broadcast the first stream of synchronization packets to the other nodes of the first subnetwork, said first stream of synchronization packets including unique data;

(b) causing a unique node of the second subnetwork to: (i) store a second stream of synchronization packets, and (ii) if there is more than one node in the second subnetwork, broadcast the second stream of synchronization packets to the other nodes of the second subnetwork, said second stream of synchronization packets including unique data different from the unique data included in said first stream of synchronization packets;

(c) for each node of said first subnetwork, processing the first stream of synchronization packets to determine a first signaling interval for the node based on the unique data contained in said first stream of synchronization packets;

(d) for each node of said second subnetwork processing the second stream of synchronization packets to determine a second signaling interval for the node based on the unique data contained in said second stream of synchronization packets;

(e) causing each node of the first subnetwork to emit a signal at the first signaling interval so that if there is more than one node in the first subnetwork, the nodes of the first subnetwork emit signals synchronously; and

(f) causing each node of the second subnetwork to emit a signal at the second signaling interval so that if there is more than one node in the second subnetwork, the nodes of the second subnetwork emit signals synchronously.

first and second nodes through serial links, respectively, for transferring a packet from a communication system to each of said first and second nodes, and for selecting one of same two data received from said first and second nodes, respectively, and transferring the selected data to said communication system.

5,544,151

TOLERANT NETWORK ARRANGEMENT DUAL RECEIVE, DUAL TRANSMIT FAULT

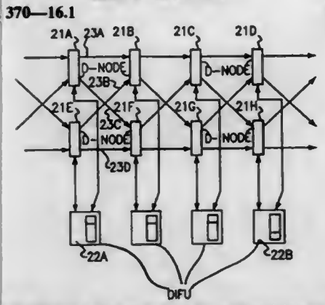
Young S. Baek; Keun W. Lee; Beyong D. Min, and Gang I. Choi, all of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Seoul, Rep. of Korea

Filed Feb. 2, 1995, Ser. No. 382,539

Claims priority, application Rep. of Korea, Dec. 2, 1994, 1994-32594

Int. Cl.[6] H04L *12/437*

U.S. Cl. 370—16.1 **3 Claims**



1. A fault tolerant network arrangement comprising a plurality of packet transfer means connected in a ring form, each of said plurality of packet transfer means comprising:

first and second nodes, each of said first and second nodes having two inputs and two outputs, for inputting the same data from two nodes of a previous-stage, abandoning one of the input data and transferring the other data to two nodes of a subsequent-stage and each node having interface input/output means for inputting and outputting data; and

interface means having first and second inputs and first and second outputs connected to the input/output means of said

---

5,544,152

METHOD FOR SETTING UP VIRTUAL CONNECTIONS IN PACKET SWITCHING NETWORKS

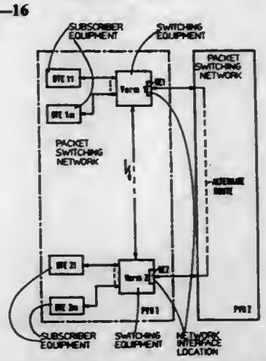
Sebastian Obermanns, Munich, and Richard Schoonhoven, Olching, both of, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 265,445, Jun. 24, 1994, abandoned. This application Sep. 28, 1995, Ser. No. 535,571

Claims priority, application European Pat. Off., Jun. 25, 1993, 93110217.2

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—16 **16 Claims**



1. A method for setting up virtual connections between a calling subscriber equipment and a called subscriber equipment, wherein the calling subscriber equipment is connected to a first switching equipment of a first packet switching network and the called subscriber equipment is connected to a second switching equipment of the first packet switching network, a first network interface location connects the first switching equipment of the first packet switching network to a second packet switching network and a second network interface location connects the second packet switching network to the second switching equipment of the first packet switching network, said method comprising the steps of:

transmitting a first call request from the calling subscriber equipment to the first switching equipment of the first packet switching network requesting connection with the called subscriber equipment;

storing address information identifying the second network interface location in a data base associated with the first switching equipment;

performing a search for a connection path between the first switching equipment of the first packet switching network and second switching equipment of the first packet switching network within the first packet switching network;

determining that a result of the search for a connection path between the first and second switching equipment of the first packet switching network within the first packet switching network is negative;

automatically recalling the stored address information identifying the second network interface location and transmitting a second call request from the first network interface location to a first switching equipment of the second packet switching network in response to a negative result of the step of determining a result of the search for a connection path, the second call request containing the address information identifying the second network interface location;

performing a search for a connection path within the second packet switching network, from the first switching equipment of the second packet switching network to the second network interface location; and

creating a virtual connection between the first and second network interface locations within the second packet switching network.

5,544,153

METHOD FOR TRANSMISSION OF DIGITAL INFORMATION

Tapio Marttinen, Alakalliontie 2 D 10, Espoo, Finland

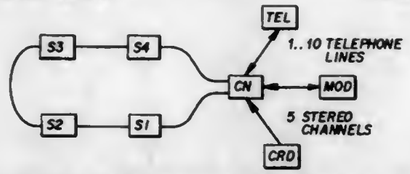
PCT No. PCT/FI93/00158, § 371 Date Jan. 17, 1995, § 102(e) Date Jan. 17, 1995, PCT Pub. No. WO93/21714, PCT Pub. Date Oct. 28, 1993

PCT Filed Apr. 14, 1993, Ser. No. 374,503

Claims priority, application Finland, Apr. 16, 1992, 921750

Int. Cl.[6] H04L *12/42*

U.S. Cl. 370—16.1 **12 Claims**



1. Procedure for the transmission of digital data in a control/monitoring system of a building, said system comprising a number of room-specific nodes interconnected by means of fibre-optic or galvanic cables and used as control units, which form a loop, and of which one node operates as a central node,

in which system the data flows in the form of packets including the fields required for data transmission in the system, the fields further comprising fields for commands and corresponding data transfer required by the system, of which fields the fields for commands have leading and trailing flags expressing a status of the fields for commands,

wherein

in a field for commands a receiver releases the field for a following user by means of a status bit acting as a trailing flag and being the last in the time scale, which status bit is transmitted in the time scale by the central node to become a status bit preceding the released field and acting as a leading flag, which informs the following user about the status of the field,

such that a transmission delay caused by the number of nodes is even at its maximum less than the time needed for the transmission of one packet when the number of nodes is at the most half of the number of bits in the packet and when the delay of one node is always less than the transmission time of two bits.

5,544,154

METHOD FOR DETERMINING THE LOAD INDUCED BY A ROUTING VERIFICATION TEST ON A NETWORK

Roch Glitho, Montreal, Canada, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Mar. 9, 1995, Ser. No. 401,161

Int. Cl.[6] H04L *12/26*

U.S. Cl. 370—17 **17 Claims**

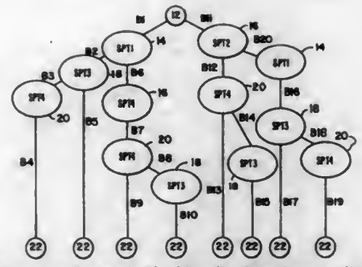
1. A method for determining the "on line" load induced by a routing verification test on a packet switching network comprising a plurality of packet switching nodes and a plurality of bi-directional links each interconnecting a distinct pair of said nodes, the packet switching network having associated therewith a telecommunications management network comprising an operation system connected to each of said nodes through respective interfacing links, said method comprising the steps of:

collecting live routing data between an operator defined source node and an operator defined destination node;

transferring collected routing data from each of the sampled nodes through the respective interfacing link to the operation system;

generating a message tree corresponding to the collected routing data in the operation system to determine the total number of messages transmitted, acknowledged and received between the defined source and destinations nodes; and

generating a signal to the operator representative of the total number of messages induced on the network.



5,544,155

METHOD OF SYNCHRONIZATION FOR CODE DIVISION MULTIPLE ACCESS RADIOTELEPHONE COMMUNICATIONS

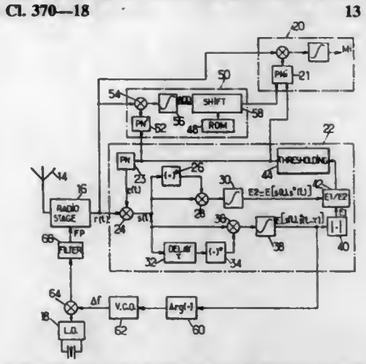
Philippe Lucas, Palaiseau; Philippe Mege, Bourg La Reine, and Stéphane Pineau, Le Chesnay, all of, France, assignors to Matra Communication, France

Filed Jun. 15, 1994, Ser. No. 260,928

Claims priority, application France, Jun. 16, 1993, 93 07269

Int. Cl.[6] H04B *1/69;7/216;* **H04J** *13/02;* **H04L** *27/30*

U.S. Cl. 370—18 **13 Claims**



9. A method of synchronization for code division multiple access (CDMA) radiotelephone communications in which each of a plurality of base stations establishes a pilot channel in addition to a plurality of CDMA transmission channels each defined by a respective spreading sequence modulating data bits to be transmitted, and transmits over said pilot channel a periodic pseudorandom reference sequence synchronized with said spreading sequences, having a chip rate greater than the bit rate of said data bits to be transmitted and belonging to a predetermined set of reference sequences, the base band signals transmitted over said pilot channel and said CDMA transmission channels of each base station being combined and then modulated on a carrier frequency to form a radio signal transmitted by said base station to mobile stations, said method comprising the following steps at a mobile station:

(i) calculating the quantities $E\{s(t)\cdot s^*(t-\tau)\}$ and $E\{s(t)\cdot s^*(t)\}$, in which $E\{\cdot\}$ designates the mean value calculated over a first integration time shorter than the period of the reference sequences, τ designates a predetermined delay, and $s(t)=r(t)\cdot c(t)$ designates the product of (a) the received base band signal and (b) the value of a candidate sequence corresponding to a time-offset version of a reference sequence belonging to said predetermined set;

(ii) calculating the first ratio $|E\{s(t)\cdot s^*(t-\tau)\}|/E\{s(t)\cdot s^*(t)\}$;

(iii) comparing said first ratio with a predetermined threshold;

(iv) if said comparing of step (iii) determines that said ratio exceeds the predetermined threshold, verifying the candidate sequence through the following sub-steps:

(iv-a) calculating the quantities $E'\{s(t)\cdot s^*(t-\tau)\}$ and $E'\{s(t)\cdot s^*(t)\}$, in which $E'\{\cdot\}$ designates the means value calculated over a second integration time longer than said first integration time;

(iv-b) calculating the second ratio $|E'\{s(t)\cdot s^*(t-\tau)\}|/E'\{s^*(t)\}$;

(iv-c) comparing said second ratio with the predetermined threshold;

(iv-d) if the comparing step (iv-c) shows that said second ratio exceeds the predetermined threshold, selecting said candidate sequence as corresponding to and being synchronized with a reference sequence transmitted over the pilot channel of one of said plurality of base stations and received by the mobile station over a propagation path; and

(iv-e) if the comparing step (iv-c) determines that said ratio does not exceed the predetermined threshold, repeating steps (i) through (v) for another candidate sequence;

(v) if the comparing step (iii) determines that said first ratio does not exceed the predetermined threshold, repeating steps (i) through (v) for another candidate sequence.

5,544,156

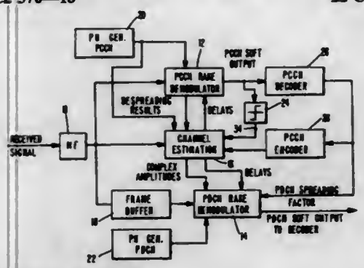
DIRECT SEQUENCE CDMA COHERENT UPLINK DETECTOR

Paul M. Teder, Täby; Lars-Magnus Ewerbring, and Lars G. Brismark, both of Stockholm, all of, Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Apr. 29, 1994, Ser. No. 235,527

Int. Cl.[6] H04B *7/216;* **H04L** *27/22*

U.S. Cl. 370—18 **22 Claims**



9. A receiver comprising:

an antenna for receiving a data channel and a control channel, said control channel including information indicating a rate of transmission of data in said data channel;

a control channel demodulator which demodulates said control channel including said information to generate a demodulated control channel signal and despreading results;

a channel estimator that uses said despreading results of said demodulated control channel signal to generate estimates of ray complex amplitudes an delays; and

a data channel demodulator which coherently demodulates said data channel using said ray complex amplitudes and delays.

5,544,157

CALIBRATION TEMPLATE FOR COMPUTED RADIOGRAPHY

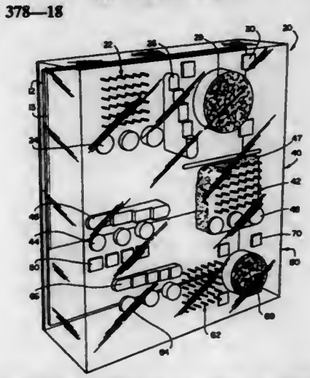
Robert S. Wenstrup, Wayland, Mass., and Joseph J. Fleno, Charlotte, N.C., assignors to Boston Test Tool Company, Winston-Salem, N.C.

Division of Ser. No. 188,386, Jan. 27, 1994, Pat. No. 5,416,816.

This application Feb. 14, 1995, Ser. No. 388,244

Int. Cl.[6] G01D *18/00*

U.S. Cl. 378—18 **3 Claims**



3. A method of standardizing the quality of computed radiographic images comprising the steps of:

distributing computed radiography data sets of images of calibration templates having portions simulating the radiographic characteristics of various human body parts to a plurality of digitized imaging stations having equipment to make images computed radiography data sets,

exposing a computed radiography imaging plate with X-rays transmitted through the calibration template at a site,

digitally processing the computed radiography imaging plate to obtain a sample image data set;

transmitting digital data of the sample image data set from the site to a selected one of the remote digitized imaging stations over digital transmission equipment,

at the selected remote digitized imaging station:

creating a first image using the received sample image data set;

creating a second image using the distributed data set; and

comparing the first and second to ascertain deviations between them, and

responsive to evaluation of the transmitted data, adjusting the data transmission equipment between the site and the remote imaging station to minimize discrepancies between the transmitted processed image and the distributed processed image.

5,544,158

METHOD FOR MULTIPLE ACCESS IN A DIGITAL COMMUNICATION SYSTEM

Dan Oprea, Kanata, and Jacob Cepelinski, Nepean, both of, Canada, assignors to Mitel Corporation, Kanata, Canada

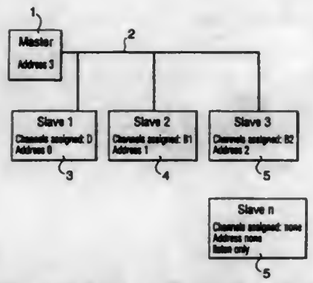
Filed Feb. 4, 1994, Ser. No. 191,470

Claims priority, application Canada, Feb. 9, 1993, 2089101

Int. Cl.[6] H04J *3/00*

U.S. Cl. 370—29 **7 Claims**

1. A digital data communications system, comprising a master station; a plurality of slave stations; a multidrop 2B+D ISDN digital link comprising two base rate channels B1, B2 and one data channel D from said master station to said slave stations and two base rate channels B1, B2 and one data channel D from said slave stations to said master station, said digital link being connected to said master station; said plurality of slave stations associated with the channels of said digital link distributed at points along said digital Link and communicating with said master station via said



digital link over said slave to master channels in a time compression multiplex scheme employing data bursts, said master station including means for transmitting in a multiplex frame a master burst over said master to slave channels, and means for receiving in the multiplex frame slave bursts from the respective slave stations; and said slave stations each including means for transmitting slave bursts over respective channels associated therewith in said multiplex frame; and said transmitting means at said slave stations transmitting said slave bursts in time windows spaced within the multiplex frame to allow for propagation delays along said link and prevent bit interference in said receiving means at said master station.

5,544,159

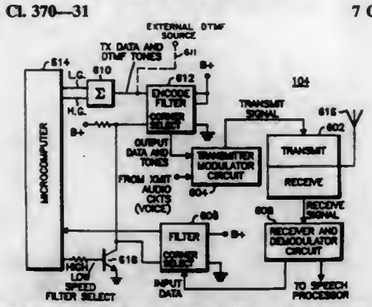
DUPLEX INTERCONNECT/DISPATCH TRUNKED RADIO

Sewim F. Ablay, Hoffman Estates, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 471,020, Jan. 22, 1990, Pat. No. 5,408,466, which is a continuation of Ser. No. 915,933, Oct. 6, 1986, which is a continuation of Ser. No. 857,514, Apr. 22, 1986, which is a continuation of Ser. No. 678,733, Dec. 6, 1984. This application Apr. 13, 1995, Ser. No. 421,638

Int. Cl.[6] H04Q *7/28*

U.S. Cl. 370—31 **7 Claims**



1. A two-way radio frequency subscriber unit having at least two user selectable modes of communication, wherein the two user selectable modes of communication include:

A) a first mode of communication comprising radio frequency two-way half-duplex dispatch communication to facilitate user selected two-way half-duplex dispatch communications between the two-way radio frequency subscriber unit and another communication unit; and

B) a second mode of communication comprising radio frequency full duplex telephone interconnect communication to facilitate user selected two-way full duplex telephone interconnect communications between the two-way radio frequency subscriber unit and another communication unit.

5,544,160

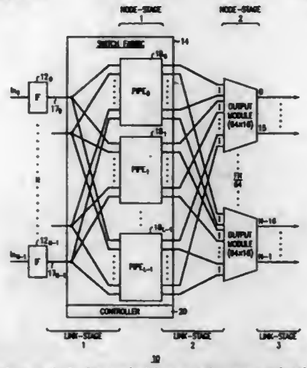
TERABIT PER SECOND PACKET SWITCH

Thomas J. Cloonan, Downers Grove, and Gaylord W. Richards, Lisle, both of Ill., assignors to AT&T Corp., Murray Hill, N.J.

Filed Dec. 30, 1994, Ser. No. 366,704

Int. Cl.[6] H04L *12/54*

U.S. Cl. 370—54 **26 Claims**



1. A packet switch for switching a telecommunication packet from a plurality of input lines to a plurality of output lines, comprising:

a plurality of input interfaces, each having an input port connected to a respective input line of said plurality of input lines, and each of said input interfaces having an output port;

a network for switching a plurality of I network input ports to a plurality of P network output ports;

each of said plurality of input interface output ports is fanned out to a respective group of F of said I network input ports, said network having a plurality of C pipes, where C is an integer of a value equal to P/I;

a plurality of output modules, said output modules together having a plurality of inputs, each of said output module inputs connected to respective network output port of said plurality of P network output ports, and together having a plurality of outputs, each of said output module outputs connected to a respective output line of said plurality of output lines;

each pipe of said C pipes providing one path for switching a respective telecommunication packet from each of the plurality of input lines which is connectable to a respective output line of the plurality of output lines; and

means for hunting a respective path through said packet switch for each telecommunication packet with a low probability of blocking.

5,544,161

ATM PACKET DEMULTIPLEXER FOR USE IN FULL SERVICE NETWORK HAVING DISTRIBUTED ARCHITECTURE

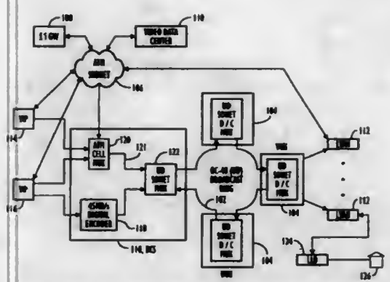
John A. Bigham, Pottstown, Pa.; Kamran Sistanizadeh, Arlington, Va., and Dave Little, Columbia, Md., assignors to Bell Atlantic Network Services, Inc., Arlington, Va.

Filed Mar. 28, 1995, Ser. No. 413,207

Int. Cl.[6] H04J *3/24*

U.S. Cl. 370—58.1 **51 Claims**

1. A network for transporting compressed, broadband data to a plurality of users, said compressed, broadband data being received from a plurality of information providers on corresponding digital signal paths as asynchronous transfer mode (ATM) cell streams having corresponding VPI/VCI identifiers, the network comprising:



a control center for assigning data transmission paths for said plurality of users, said control center outputting routing information for each data transmission to be transported to said users;

a broadcast consolidation section receiving signals from a first group of said digital signal paths and outputting a consolidated broadcast stream, said broadcast consolidation section comprising:

an ATM edge multiplexer receiving said ATM cell streams from said respective information providers and outputting a consolidated ATM cell stream,

a digital encoder for converting received analog signals into digital signals, and

a transport multiplexer for multiplexing said consolidated ATM cell stream and said digital signals into said consolidated broadcast stream;

a transport ring for transporting said consolidated broadcast stream;

a plurality of video network hubs (VNHs) distributed along said transport ring, each of said video network hubs receiving said consolidated broadcast stream and outputting a consolidated RF signal, each of said video network hubs comprising:

(i) a transport demultiplexer outputting said consolidated ATM cell stream and said digital signals from said received consolidated broadcast stream,

(ii) a first ATM demultiplexer for recovering said compressed broadband data from said consolidated ATM cell stream output by said transport demultiplexer, said first ATM demultiplexer comprising a packet address processor for outputting the recovered compressed broadband data as a plurality of data packet streams, each of said data packet streams being arranged on the basis of data packets having an identifier address assigned by said packet address processor on the basis of the VPI/VCI of corresponding ATM cells and first routing information from said control center,

(iii) means for receiving local broadcast signals,

(iv) means for recovering said analog signals from said digital signals output by said transport demultiplexer,

(v) means for modulating each of said data packet streams, said received local broadcast signals and said recovered analog signals to RF channel frequencies, respectively, on the basis of said first routing information,

(vi) a first RF combiner for combining modulated signals output by said modulating means into a consolidated RF signal, and

(vii) means for outputting said consolidated RF signal onto at least one optical fiber;

a plurality of local video access nodes (LVANs) distributed throughout a service area, each of said local video access nodes receiving local ATM cell streams and said consolidated RF signal and comprising:

(1) means for converting said consolidated RF signal on said optical fiber to an electrical consolidated RF signal,

(2) a second ATM demultiplexer, responsive to at least a first portion of said local ATM cell stream, for recovering video user data from said first portion of said local ATM cell stream for at least one of said users in accordance with second routing information from said control center, said second ATM demultiplexer comprising a second packet address processor for outputting the recovered video user data as a plurality of video user data packet streams, each of said video user data packet streams being arranged on the basis of data packets having an identifier address assigned by said second packet address processor on the basis of the VPI/VCI of corresponding ATM cells and said second routing information from said control center, said video user data packet streams being arranged for output at an RF channel frequency selected from a range of RF channels, comprising high-bandwidth data channels and low-bandwidth signaling channels, in accordance with said second routing information,

(3) a second RF combiner for combining said electrical consolidated RF signal and said video user data packet streams into a local RF signal, and

(4) means for supplying said local RF signal from said local video access node to a plurality of said users including said at least one user.

5,544,162

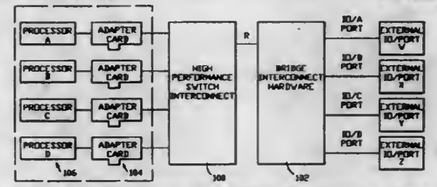
IP BRIDGE FOR PARALLEL MACHINES

Ronald Mraz, Millwood, and Michael M. Tso, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 10, 1995, Ser. No. 370,913

Int. Cl.[6] H04L *12/46;12/56*

U.S. Cl. 370—60 **6 Claims**



1. A method for transmitting data from a processor in a multiprocessor system to one of a plurality of destinations in the system or in an external network linked to the multiprocessor system via a plurality of IO ports of the system, comprising:

generating a destination Internet Protocol address representing a desired destination for the data;

generating an internal source address representing the internal address of the source of the transmitted data;

generating an internal destination address representing the internal destination for the data, wherein the internal destination is a device within the multiprocessor system configured to direct the data to the desired destination;

attaching the destination Internet Protocol address to the internal destination;

associating each internal destination in the multiprocessor system with a different one of the IO ports of the system;

if the desired destination is in an external network, directing the data from the internal source to the desired destination via the internal destination and the IO port associated with the internal destination, the IO port associated with the internal destination being coupled to receive signals from the internal destination;

if the desired destination is in the system, directing the data to the from the internal source to the desired destination via the internal destination.

5,544,163

EXPANDABLE TELECOMMUNICATIONS SYSTEM

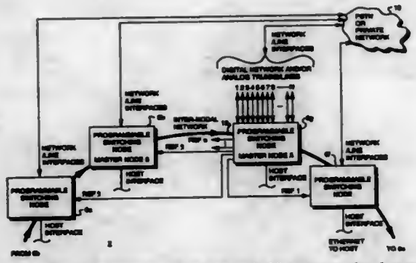
Robert P. Madonna, West Barnstable, Mass., assignor to Excel, Inc., Hyannis, Mass.

Filed Mar. 8, 1994, Ser. No. 207,931

Int. Cl.[6] H04L *12/56;* **H04Q** *11/08*

U.S. Cl. 370—60.1 **97 Claims**

1. An expandable telecommunications system comprising:



a plurality of telecommunications switching means for dynamically connecting or disconnecting communication paths with respect to various ones of a plurality of ports, each of said telecommunications switching means including means for time switching information to or from said ports, each of said time switching means having a switching capacity corresponding to a maximum number of ports that may be physically associated therewith, and means for transmitting and receiving information in packetized form, and means connected in communicating relationship with said time switching means for interfacing with one or more public or private networks which represent said ports, said communicating relationship including a bus for carrying data to and from said ports; and

means for interconnecting said plurality of telecommunications switching means in communicating relationship and operable in conjunction with said transmitting and receiving means to transfer said packetized information among said telecommunications switching means such that information, including circuit switched data, which originates from any port of any of said telecommunications switching means is substantially continuously communicable to any other port of the same or different telecommunications switching means.

5,544,164

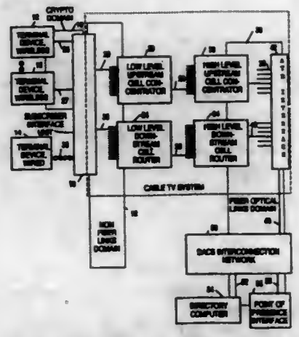
METHOD AND CELL BASED WIDE AREA NETWORK ALTERNATIVE ACCESS TELEPHONE AND DATA SYSTEM

Paul Baran, Atherton, Calif., assignor to COM 21, Inc., Mountain View, Calif.

Continuation of Ser. No. 953,744, Sep. 29, 1992, abandoned. This application Nov. 8, 1994, Ser. No. 336,325

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—60.1 **5 Claims**



1. In a communications network, an arrangement to define the virtual path to be taken by ATM cells from a calling terminal device to a called terminal device comprising:

a calling terminal device which sends out a call establishment ATM cell, the payload of said call establishment cell containing the number of said called terminal device;

a local switching system coupled to said calling terminal device which utilizes the information received from said calling terminal device and contained within both the header and the payload section of said call establishment ATM cell for routing said ATM cell;

a long distance switching network coupled to said local switching system using information contained within said header of said call establishment ATM cell being switched and received from said local switching system for routing said ATM cell; and

a directory computer coupled to said local switching system, said directory computer includes a table lookup unit to translate the number of said called terminal device to a physical path description through said local switching system and said long distance switching network, and to send an ATM cell containing said physical path description to said calling terminal device for inclusion within subsequent cells sent by said calling terminal device to route said subsequent cells to said called terminal device directly through said local switching system and said long distance switching network.

5,544,165

DISK RECORDING APPARATUS FOR GENERATING SEARCH POSITIONAL INFORMATION INDICATIVE OF MARKED POINTS ON A DISK

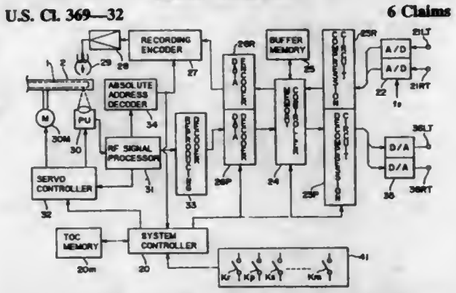
Teppei Yokota; Junichi Aramaki, both of Chiba, and Nobuyuki Kihara, Tokyo, all of, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 7, 1993, Ser. No. 117,449

Claims priority, application Japan, Sep. 7, 1992, 4-264321

Int. Cl.[6] G11B *17/22*

U.S. Cl. 369—32 **6 Claims**



1. A disc recording apparatus using a disc recorded with address data beforehand and recording information about recorded data in a predetermined area on said disc, wherein when a predetermined key is operated during recording, an address for an operation point of the predetermined key is written to the predetermined area as the information about the recorded data, and wherein, only when the predetermined key has been operated for a predetermined period of time will the address for the operation point of the predetermined key be written to the predetermined area.

5,544,166

ELECTRICAL CIRCUIT ARRANGEMENT HAVING AT LEAST TWO LOCAL TRANSMITTING UNITS FOR RECEIVING AND CODING LOCAL MEASURING SIGNALS AND FOR TRANSMITTING THE CODED MEASURING SIGNALS TO A CENTRAL UNIT

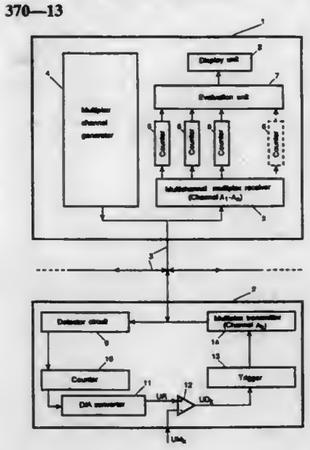
Jens Nelgard; Ole Skovgaard, and Kent Soerensen, all of Hadsten, Denmark, assignors to Carlo Gavazzi AG, Switzerland

Filed Mar. 28, 1995, Ser. No. 440,309

Claims priority, application Germany, Apr. 19, 1994, 44 13 566.1

Int. Cl.[6] H04J *1/16;3/14*

U.S. Cl. 370—13 **9 Claims**



1. An electrical circuit arrangement having at least two local transmitting units (2) for receiving and coding local measuring signals and for transmitting the coded measuring signals to a central unit (1), which local transmitting units (2) respectively have a comparator (12) for comparing the local measuring signal with a reference value and triggering means (13) for generating a binary signal to be transmitted to the central unit (1), wherein

a) the central unit (1)

a1) has a multiplex channel generator (4) having

a1.1) variation means for varying the reference value in each local transmitting unit (2),

a1.2) addressing means for addressing each local transmitting unit (2) and

a1.3) collector means for collecting the binary signals transmitted by the local transmitting units (2), and

a2) multiplex receiving means (5, 6, 7, 9) for receiving and processing the binary signals transmitted by the local transmitting units (2), said multiplex channel generator (4) being coupled both to the multiplex receiving means (5, 6, 7, 8) and to the local transmitting units (2) via a multiplex two-wire line, and

b) the local transmitting units (2) respectively have an address in the two-wire system and have

b1) processing means (9, 10, 11) for detecting a command given by the central unit (1) to vary the reference value, fox carrying out this variation and for processing the reference value varied by the multiplex channel generator (4), and

b2) multiplex transmitting means (14) for transmitting the binary signal generated by the triggering means (13) to the multiplex receiving means (5, 6, 7, 8) of the central unit (1).

5,544,167

TRANSMISSION METHOD FOR CDMA RADIOTELEPHONE COMMUNICATIONS, AND APPARATUSES FOR IMPLEMENTING SUCH METHOD

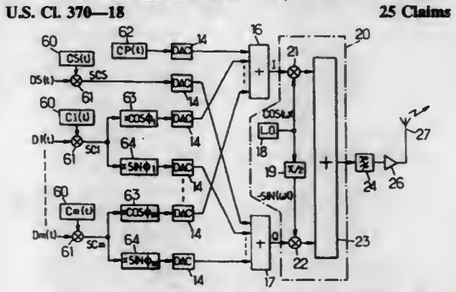
Philippe Lucas, Palaiseau, and Philippe Mege, Bourg La Reine, both of, France, assignors to Matra Communication, Quimper, France

Filed Aug. 12, 1994, Ser. No. 289,375

Claims priority, application France, Aug. 13, 1993, 93 09960

Int. Cl.[6] H04B *7/216;7/06*

U.S. Cl. 370—18 **25 Claims**



1. A transmission method for code-division multiple access radiotelephone communications, said method comprising, at a base station, the steps of:

providing n groups of CDMA channels, n being an integer greater than 1, each CDMA channel being associated with respective spreading sequence having only one real component;

assigning each one of a plurality of distinct information bit stream to a respective one of said CDMA channels;

for each of said CDMA channels, forming a respective spread spectrum signal by modulating the information bits of the stream assigned thereto with the spreading sequence associated therewith;

for each one of said n group, summing the spread spectrum signals formed for the CDMA channels of said one of said n groups to form a respective modulation component;

modulating each modulation component with a respective radio wave of n radio waves, said n radio waves having a common radio frequency and phase shifts of a multiple of $\pi/2^{-1}$ therebetween;

summing the n modulated components to form a radio signal; and

transmitting said radio signal to mobile stations.

5,544,168

ATM SWITCHING ARRANGEMENT

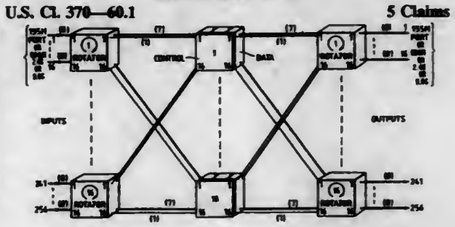
Mark T. Jeffrey; Thomas S. Maddern, and Richard J. Proctor, all of Dorset, United Kingdom, assignors to GPT Limited, United Kingdom

Continuation of Ser. No. 30,402, May 20, 1993, abandoned. This application Aug. 17, 1994, Ser. No. 292,168

Claims priority, application United Kingdom, Aug. 2, 1991, 9116749

Int. Cl.[6] H04L *12/64*

U.S. Cl. 370—60.1 **5 Claims**



1. A higher rate Asynchronous Transfer Mode (ATM) telecommunications switch for switching signals of a data rate higher than a normal port rate, comprising: a plurality of parallel data switching planes, a parallel control plane and a central switching unit for each data switching plane, each data plane having an equal number of input ports and output ports, the switching unit being arranged to switch any input port to any output port of the same data plane under the control of the control plane, at least one input port and one output port being higher rate ports for switching said higher data rate signals, wherein the higher rate input port has a plurality of links each to a separate input of the switching unit, and wherein the higher rate output port has the same number of said links each from a separate output of the switching unit thereto.

5,544,169

APPARATUS AND A METHOD FOR SUPERVISING AND CONTROLLING ATM TRAFFIC

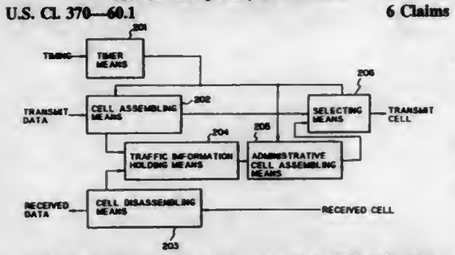
Reiko Norizuki; Ryuji Hyodo; Kenji Tanaka; Osamu Sekihata; Hiroyuki Hatta; Susumu Eda, and Katsumi Oomura, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 19,835, Feb. 19, 1993, Pat. No. 5,357,510. This application Jul. 6, 1994, Ser. No. 268,576

Claims priority, application Japan, Feb. 19, 1992, 4-031864; Mar. 19, 1992, 4-063339; May 18, 1992, 4-124622

Int. Cl.[6] H04J *3/26;* **H04L** *12/56*

U.S. Cl. 370—60.1 **6 Claims**



4. A method for supervising and controlling ATM traffic, which uses administrative cells including traffic information to manage a network, comprising the steps of:

a first step for collecting traffic information from cell assembling means for assembling transmit cells from transmit data and for collecting traffic information from cell disassembling means for disassembling received cells into received data,

a second step for assembling administrative cells to transfer said collected traffic information in accordance with a timing signal output at regular intervals, and

a third step for transferring said assembled administrative cells to a network management unit for managing a network through communication paths used by transmit cells.

5,544,170

ATM TRANSMISSION SYSTEM WITH A VARIABLE TRANSMISSION RATE

Hiroyuki Kasahara, Tokyo, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Mar. 18, 1991, Ser. No. 671,068

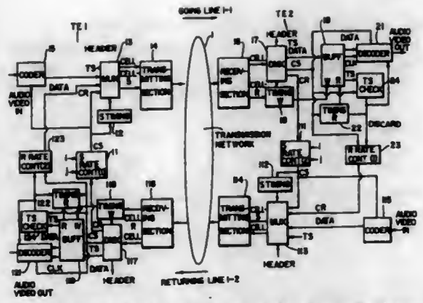
Claims priority, application Japan, Mar. 16, 1990, 2-065910

Int. Cl.[6] H04J *3/22*

U.S. Cl. 370—84 **12 Claims**

1. An asynchronous transfer mode (ATM) variable rate transmission system for performing two-way ATM transmission between a transmitting terminal and a receiving terminal through a transmission line, said system comprising:

a means for detecting cells discarded in data transmitting between said transmitting terminal and said receiving terminal,



means for transmitting information of discarded cells detected by said receiving terminal to said transmitting terminal through a receiving line of said transmission line, said transmitting means controlling a number of transmitted cells according to a frequency of the occurrence of said discarded cells.

5,544,171

CELLULAR RADIO BASE STATION AND CONTROL FOR EXTENDING RANGE TO MOBILE STATIONS OUTSIDE RADIO CELL

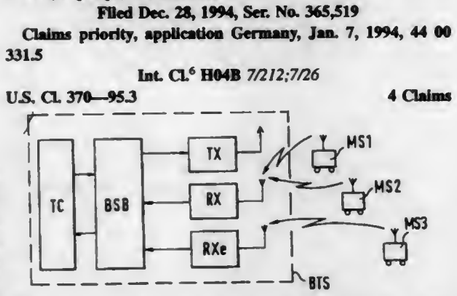
Reinhold Gödecker, Renningen, Germany, assignor to Alcatel N.V., Rijswijk, Netherlands

Filed Dec. 28, 1994, Ser. No. 365,519

Claims priority, application Germany, Jan. 7, 1994, 44 00 331.5

Int. Cl.[6] H04B *7/212;7/26*

U.S. Cl. 370—95.3 **4 Claims**



4. Time Division Multiple Access (TDMA) time control (TC) for controlling a fixed base station (BTS) for a cellular radio network, which contains a TDMA radio receiver (RX) for a radio cell (C), which receives TDMA radio pulses on at least one carrier frequency within a sequence of time slots (S0, S1, . . . , S7) that are transmitted by at least one mobile station (MS1) with reference to a time that is advanced by one time interval (T1) with respect to one of the time slots (S1), which increases with the distance from the fixed base station (BTS) to a maximum time interval (TD) corresponding to the maximum signal propagation time within the radio cell (C), to compensate for the signal propagation time of the TDMA radio pulse, characterized in that the TDMA time control (TC) for controlling the fixed base station (BTS), which contains at least one additional TDMA radio receiver (RXe) receiving on the at least one carrier frequency, but within a sequence of time slots (S0', S1', S7') that lags at least by the maximum time interval (TD), by means of a radio transmitter (TX) assigns such time slots (S1, S2), which are adjacent to each other, to mobile stations inside (MS1, MS2) and assigns such other time slots (S3), which are also adjacent each. other, to mobile stations (MS3) outside of the radio cell (C) for transmitting the TDMA radio pulses, so that the fixed base station (BTS) receives the TDMA radio pulses from the most possible mobile stations within an extended radio cell (Ce).

5,544,172

METHOD FOR THE DIGITAL TRANSMISSION OF DATA

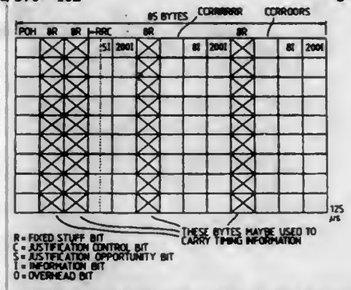
Ghani Abbas, Nottingham, United Kingdom, assignor to GPT Limited, United Kingdom

Filed Apr. 12, 1994, Ser. No. 226,647

Claims priority, application United Kingdom, Apr. 14, 1993, 9307685

Int. Cl.[6] H04L *7/04*

U.S. Cl. 370—102 **8 Claims**



1. A method for the digital transmission of data between nodes in a synchronous digital hierarchy (SDH) network, each node including a multiplexer/demultiplexer (MUX) in which the data is multiplexed from or demultiplexed into tributary streams, the network being operative to carry timing pointers, the method comprising the step of: transmitting the timing pointers in virtual containers (VC) in one or more unused fixed stuff bytes.

5,544,173

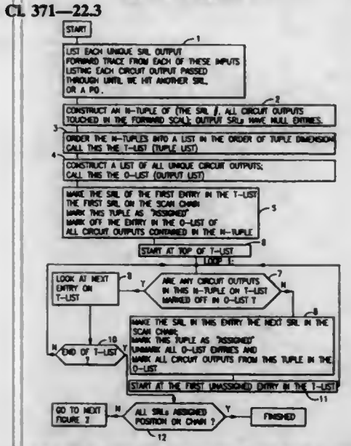
DELAY TEST COVERAGE WITHOUT ADDITIONAL DUMMY LATCHES IN A SCAN-BASED TEST DESIGN

David Meltzer, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 292,375, Aug. 18, 1994. This application Jun. 7, 1995, Ser. No. 486,112

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—22.3 **3 Claims**



1. A method of configuring a digital integrated logic circuit having a plurality of interconnected combinational circuits, each having at least one input and at least one output, and a plurality of daisy chained flip-flops arranged as a scan chain of shift register latches, each shift register latch having an output and a scan input, and wherein the output of each of the shift register latches is connected to either an input of one of the plurality interconnected combinational elements or to a primary output of said digital integrated circuit, and is connected to the scan chain input of another shift register latch by a method comprising the steps of:

determining the order of connection of said shift register latches in said scan chain to maximize the number of circuits tested for AC delay faults; and in the process assigning a scan chain order by:

a. creating a list of all shift register latches (SRLs) in the scan chain with all the combinational circuit outputs traceable from said primary output;

b. sorting said list in the order of number of circuit outputs controlled by being touched in a forward trace of said combinational circuits;

c. listing each unique combinational circuit output;

d. sequentially assigning the order of the SRLs in the scan chain so that adjacent SRLs do not control any of the same circuit outputs.

5,544,174

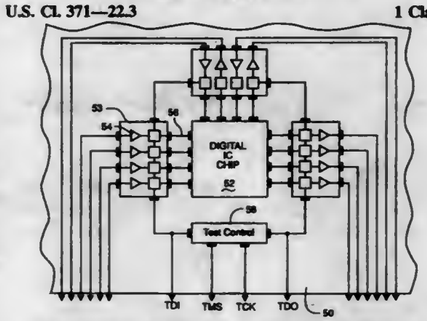
PROGRAMMABLE BOUNDARY SCAN AND INPUT OUTPUT PARAMETER DEVICE FOR TESTING INTEGRATED CIRCUITS

Robert J. Abend, Layton, Utah, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 17, 1994, Ser. No. 214,476

Int. Cl.[6] G01R *31/28*

U.S. Cl. 371—22.3 **1 Claim**



1. Apparatus for boundary scan testing a boundary scan test provision-free multi chip module integrated circuit assembly having host integrated circuit chips and interconnecting wiring, said apparatus comprising:

boundary scan test means including test integrated circuit chip means external to said host integrated circuit chips, said test integrated circuit chip means being part of said integrated circuit assembly;

said test integrated circuit chip means including a plurality of boundary scan cells and a plurality of integrated circuit test chips of laser scribed line-user configurable long and narrow physical shape wherein a laser scribe line encloses signal, power and ground lines to a next boundary scan cell;

means connecting said test integrated circuit chips to said host integrated circuit chips and to other circuits in said integrated circuit assembly; and

programmable means providing said test integrated circuit chip means with boundary scan functions consisting of input and output functions, enable and disable cells, shift register orders, rise and fall time data, logic high and logic zero output levels, input and output impedance functions, output current in the high and low states, input high and low thresholds and boundary scan cell input and output-defining programmable parameters;

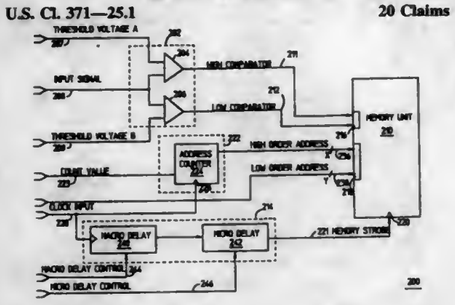
said enable and disable cells also being programmable with proper data flow determining and power conserving capability for unused cell shutdown.

5,544,175

METHOD AND APPARATUS FOR THE CAPTURING AND CHARACTERIZATION OF HIGH-SPEED DIGITAL INFORMATION

Kenneth E. Posse, Fort Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 15, 1994, Ser. No. 213,783
Int. Cl.[6] G01R 31/3143
U.S. Cl. 371—25.1 20 Claims



9. A circuit tester with high sample resolution for determining performance faults in a digital circuit under test, comprising:

a digital signal detector for sampling and storing an input digital signal occurring at a test node on the digital circuit under test for a plurality of test periods, wherein successive samples of said input digital signal are stored, at predetermined delay periods, for each of said plurality of test periods and performing a post sampling evaluation of said input digital signal by the circuit tester, said input digital signal having periodically repetitive signal characteristics, the digital signal detector comprising:

a state discriminator to determine a state of the input digital signal, said state indicating a voltage level of the input digital signal relative to one or more threshold voltages, wherein said state discriminator generates one or more signal state outputs corresponding to said one or more threshold voltages, respectively, each of said one or more signal state outputs indicating a relation of said input digital signal voltage level to a corresponding one of said one or more threshold voltages,

a memory delay control circuit to receive a clock signal having clock pulses and to generate a memory strobe signal by delaying said clock pulses by zero or more said predetermined delay periods for successive applications of said clock, wherein each of said successive applications of said clock constitutes one of said plurality of test periods, and

a memory unit, electrically coupled to said state discriminator and said memory delay control circuit, to receive said one or more signal state outputs, said memory strobe signal, and an address command, wherein said memory unit stores a predetermined number of successive samples of said one or more signal state outputs, for each of said plurality of test periods, upon receipt of said memory strobe signal at a memory location indicated by said address command, thereby achieving high sample resolution;

reference means for generating reference data representing the expected behavior of said test node; and

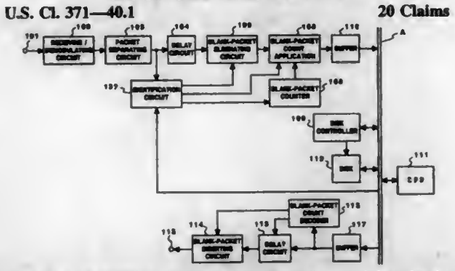
a control unit for controlling said digital signal detector and for preforming said post sampling evaluation, including comparing said reference data with said one or more signal state outputs retrieved from said memory unit to determine the existence of performance faults.

5,544,176

INFORMATION RECORDING APPARATUS WHICH ELIMINATES UNNECESSARY DATA BEFORE RECORDING

Akio Fujii, Yokohama; Motokazu Kashida, Musashino; Ikuo Watanabe, Kawasaki, and Shinichi Yamashita, Yokohama, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 653,896, Feb. 12, 1991, abandoned.
This application May 31, 1994, Ser. No. 250,940
Claims priority, application Japan, Feb. 13, 1990, 2-31721; Feb. 14, 1990, 2-34452; Feb. 7, 1991, 3-016633
Int. Cl.[6] G11B 20/12; H04N 1/64
U.S. Cl. 371—40.1 20 Claims



14. An information recording apparatus for receiving, in the form of data packets, information that includes main information as well as identificatioo information to identify the main information, and for recording information in the received information on a recording medium, said apparatus comprising:

discriminating means for discriminating, based upon the identification information, whether a data packet is (i) an effective packet that possesses useful data, or (ii) an ineffective packet;

counting means for counting ineffective packets in an interval during which data packets have been discriminated to be ineffective packets by said discriminating means;

recording means for successively recording on the recording medium, (i) data in data packets discriminated to be effective packets by said discriminating means, as well as (ii) a counted value of ineffective packets counted by said counting means, without recording the ineffective packets;

reading means for successively reading, from the recording medium, information recorded by said recording means; and

output means for (i) generating ineffective packets in a number equivalent to the counted value of ineffective packets recorded by said recording means and read by said reading means, (ii) inserting the generated ineffective packets at positions where ineffective packets existed in the received information, and (iii) successively outputting the generated ineffective packets,

wherein the identification information includes (i) synchronizing identification information for synchronizing the data packet itself and for indicating the type of information, and (ii) attribute information for indicating an attribute of the main information in each data packet.

5,544,177

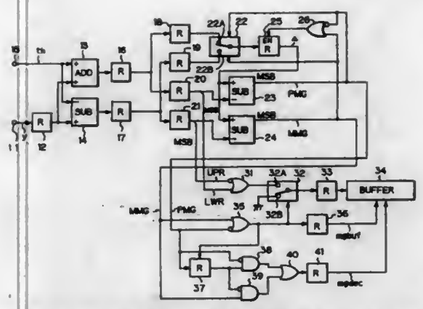
VITERBI DECODING METHOD AND VITERBI DECODING APPARATUS

Katsuhito Ishida, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 14, 1993, Ser. No. 165,852
Claims priority, application Japan, Dec. 22, 1992, 4-356798
Int. Cl.[6] H03M 13/12
U.S. Cl. 371—43 8 Claims

7. A Viterbi decoding apparatus, comprising:

means for receiving a reception code produced by precoding a transmission code and transmitting the precoded transmission code through a partial response transmission path;



means for detecting the generation of one of a no merge, a plus merge and a minus merge as a present merge;

means for estimating a provisional value for the transmission code corresponding to the reception code as zero when the present merge is a no merge and as a function of whether a difference between metrics of maximum likelihood paths respectively leading to possible transmission code values lies within a predetermined range when the present merge is a plus merge or a minus merge;

means for storing the provisional value in a buffer;

obtaining a decoded value for the transmission code as a function of whether a preceding merge is a plus or minus merge and the present merge is a plus or minus merge; and

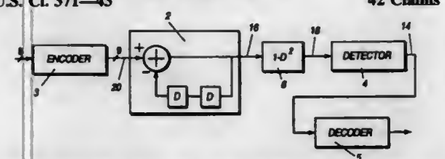
means for updating the provisional value in the buffer with the decoded value only when the present merge is a plus merge or a minus merge.

5,544,178

METHOD AND APPARATUS FOR ENCODING DATA COMMUNICATION CHANNEL

Christopher P. Zook, Longmont, Colo., assignor to Cirrus Logic, Inc., Fremont, Calif.

Filed Jun. 10, 1994, Ser. No. 258,308
Int. Cl.[6] H03M 13/12
U.S. Cl. 371—43 42 Claims



1. An apparatus for encoding an input stream of binary data into an output stream of binary codewords, comprising:

(a) a receiver connected to receive the input stream of binary data;

(b) an encoder means, connected to the receiver, for encoding a predetermined j number of bits from the input stream into a codeword comprising a predetermined k number of bits, said encoder generating the output stream of binary codewords; and

(c) a parity means for generating a parity signal having two states, active and inactive, connected to receive the codewords from the encoder, responsive to the number of "1" bits in at least part of at least one codeword generated by the encoder, said encoder utilizing the parity signal for encoding the input stream of binary data into the codewords,

wherein:

(a) the codewords are selected from a first and second plurality of codewords;

(b) the codewords comprising an even and odd interleave subsequence, the odd interleave consisting only of odd bit positions of the codeword and the even interleave consisting of even bit positions of the codeword;

(c) the codewords out of the first plurality of codewords have at least one "1" bit in both interleaves within a predetermined first N bit positions of the codeword; and

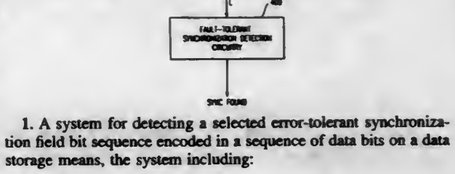
(d) the codewords out of the second plurality of codewords have at least one "1" bit in one interleave and zero "1" bits in the other interleave within the first N bit positions of the codeword.

5,544,179

MIS-SYNCHRONIZATION DETECTION SYSTEM USING A COMBINED ERROR CORRECTING AND CYCLE IDENTIFIER CODE

David Hartwell, 33 Woodward La., Boxboro, Mass. 01719

Continuation of Ser. No. 860,534, Mar. 30, 1992, abandoned.
This application Feb. 1, 1995, Ser. No. 382,953
Int. Cl.[6] G06F 11/00
U.S. Cl. 371—471 13 Claims



1. A method of transmitting data between nodes in a predetermined number of data cycles over a system bus, the method including the steps of:

A. generating transmitting node error correction symbols by encoding data to be transmitted using an error correction code combined with a transmitting node data cycle identifier which identifies the cycle in which the data are to be transmitted, said error correction code and said cycle identifier comprising combined code, said combined code having the same number of bits as said error correction code alone; and

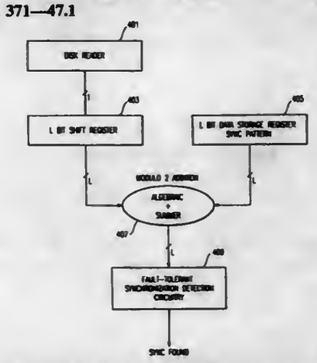
B. transmitting the data and the transmitting node error correction symbols over the system bus in the data cycle.

5,544,180

ERROR-TOLERANT BYTE SYNCHRONIZATION RECOVERY SCHEME

Alok Gupta, Irvine, Calif., assignor to QLogic Corporation, Costa Mesa, Calif.

Continuation of Ser. No. 894,262, Jun. 8, 1992, abandoned.
This application May 12, 1995, Ser. No. 439,634
Int. Cl.[6] G06F 11/00
U.S. Cl. 371—47.1 25 Claims



1. A system for detecting a selected error-tolerant synchronization field bit sequence encoded in a sequence of data bits on a data storage means, the system including:

(1) data register means, coupled to the data storage means and having a length of L bits, for serially accepting the sequence of data bits from the data storage means;

(2) synchronization pattern register means, having a length of L bits, for storing the selected error-tolerant synchronization field bit sequence;

(3) comparison means, coupled to the data register means and the synchronization pattern register means, for comparing the contents of the synchronization pattern register means with the contents of the data register means; and

(4) synchronization detection means, coupled to the comparison means and responsive thereto, for locating the error-tolerant synchronization field bit sequence encoded in the sequence of data bits, wherein the synchronization detection means provides an indication of synchronization when an output of the comparison means indicates that no more than b consecutive bits of the synchronization pattern register means do not match corresponding bits of the data register means, but a remainder of the L bits of the synchronization pattern register means do match corresponding bits of the data register means, the remainder of the L bits including all of the L bits except the b consecutive bits, and wherein b is an integer value greater than one.

5,544,181

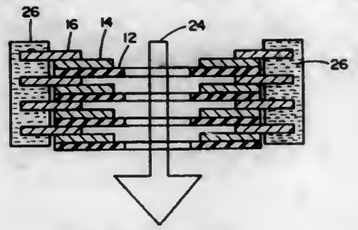
LIQUID NITROGEN TEMPERATURE MICRO-WIGGLER

Jayaram Krishnaswamy, Plainsboro, and Michael F. Reusch, West Windsor, both of N.J., assignors to Grumman Aerospace Corporation, Los Angeles, Calif.

Filed Nov. 2, 1994, Ser. No. 333,433

Int. Cl.[6] H01S *3/00*

U.S. Cl. 372—2 **18 Claims**



1. A micro-wiggler element for a micro-wiggler which produces small wiggler periods comprising:

a non-conductive substrate having a centrally located opening for receiving an electron beam;

a thin epitaxial film of high Tc superconductor for carrying current supplied by a power source thereby creating a magnetic field, said thin epitaxial film having a centrally located opening for receiving said electron beam, said thin epitaxial film deposited on top of said non-conductive substrate; and

a pair of substantially metallic conductors connected to opposite ends of said thin epitaxial film for connecting said thin epitaxial film to said power source.

5,544,182

LASER SYSTEM FOR LASER ABLATION PROCESS AND LASER ABLATION PROCESS FOR PREPARING THIN FILM OF OXIDE SUPERCONDUCTOR MATERIAL THEREBY

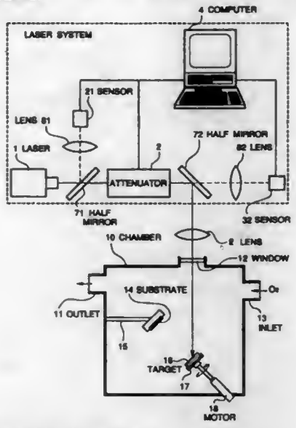
Tatsuoki Nagaishi, and Hideo Itozaki, both of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Apr. 19, 1994, Ser. No. 229,716

Claims priority, application Japan, Apr. 19, 1993, 5-115427

Int. Cl.[6] H01S *3/13*

U.S. Cl. 372—29 **4 Claims**



1. A laser system comprising:

a laser oscillator adapted to emit a laser beam;

an attenuator disposed along a light path of a laser beam emitted from said laser oscillator;

two sensors disposed along the light path of the laser beam, a first sensor being positioned upstream of said attenuator and a second sensor being disposed downstream of said attenuator and wherein said first and second sensors determine intensity of the laser beam before and after the attenuator, respectively; and

a controller for controlling a damping factor of the attenuator in response to the sensed intensity of the laser beam as determined by the sensor, wherein said attenuator, sensors and controller provide means for damping and controlling an intensity of said laser beam to maintain said intensity at a required value in a portion of the system downstream of the attenuator, while keeping a shape of said laser beam constant.

5,544,183

VARIABLE WAVELENGTH LIGHT SOURCE

Toshiyuki Takeda, Tokyo, Japan, assignor to Ando Electric Co., Ltd., Tokyo, Japan

Filed Feb. 15, 1995, Ser. No. 389,714

Claims priority, application Japan, Feb. 28, 1994, 6-054579

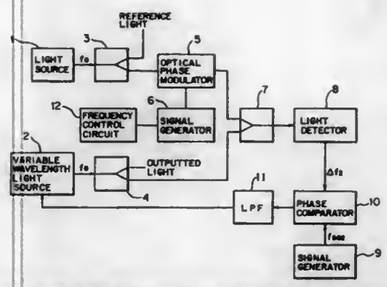
Int. Cl.[6] H01S *3/00*

U.S. Cl. 372—38 **9 Claims**

1. An assembly for generating variable wavelength light, said assembly including:

a reference light source which emits a coherent reference light having a reference frequency;

an optical phase modulator connected to said reference light source to receive said reference light, said optical phase modulator being configured to produce a modulated reference light having a modulated reference frequency based on said reference light and a modulator control signal applied to said optical phase modulator;



a first signal generator connected to said optical phase modulator, said signal generator being configured to generate an adjustable signal to said optical phase modulator as said modulator control signal;

a variable wavelength light source which emits a coherent working light having a variable frequency, said variable wavelength light source being configured to vary said frequency of said working light as a function of a light source control signal applied to said variable wavelength light source;

a first optical branching device connected to said variable wavelength light source to receive said working light, said optical branching device configured to divide said working light into an externally directed component and a monitored component;

an optical coupler connected to said optical phase modulator for receiving said modulated reference light and to said optical branching device for receiving said monitored component of said working light and to produce a combined light based on said received light;

an optical detector connected to said optical coupler for monitoring said combined light, said optical detector being configured to produce an optical detector signal having a frequency representative of the difference in frequency between said frequency of said modulated reference light and said frequency of said working light;

a second signal generator configured to produce a preliminary control signal having a variable frequency;

a phase comparator connected to said optical detector so as to receive said optical detector signal and to said second signal generator so as to receive said preliminary control signal, said phase comparator being configured to produce a phase comparison signal representative of the difference in frequency between said frequency of said optical detector signal and said frequency of said preliminary control signal; and

a low pass filter connected to said phase comparator to receive said phase comparison signal, said low pass filter being configured to filter high frequency elements from said phase comparison signal thereby creating a filtered phase comparison signal, and to apply said filtered phase comparison signal to said variable wavelength light source as said light source control signal.

5,544,184

SEMICONDUCTOR ILLUMINATION SYSTEM WITH EXPANSION MATCHED COMPONENTS

Edmund L. Wolak, Mountain View; John Endriz, Belmont; D. Philip Worland, San Jose; David D. Dawson, Santa Clara, and Donald R. Scifres, San Jose, all of Calif., assignors to SDL, Inc., San Jose, Calif.

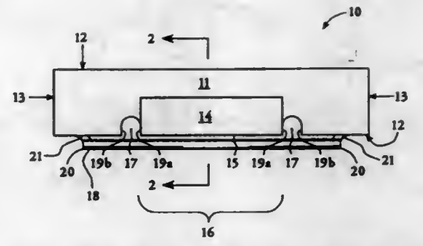
Filed Jun. 10, 1994, Ser. No. 258,521

Int. Cl.[6] H01S *3/18*

U.S. Cl. 372—43 **31 Claims**

1. An optical assembly comprising,

a structural member having a first coefficient of thermal expansion, said structural member including a means for producing a beam of light, thereby defining a radiation path,



a micro-lens having a second coefficient of thermal expansion and an axis, said axis being oriented substantially perpendicular to and positioned in said radiation path, said second coefficient of thermal expansion and said first coefficient of thermal expansion defining a difference, the absolute value being less than 5×10^{-6}/° C., and

means for rigidly attaching said micro-lens to said structural member at points spaced apart and located on opposite sides of said means for producing said beam of light.

5,544,185

VISIBLE LIGHT LASER DIODE AND MANUFACTURING METHOD OF VISIBLE LIGHT LASER DIODE

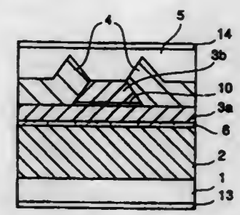
Kaoru Kadoiwa, and Manabu Kato, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 12, 1994, Ser. No. 355,349

Claims priority, application Japan, Dec. 13, 1993, 5-310947

Int. Cl.[6] H01S *3/19*

U.S. Cl. 372—44 **19 Claims**



1. A visible light laser diode comprising:

an active layer having a band gap energy;

a cladding layer disposed on said active layer; and

an etching stopping layer for forming said cladding layer, having a shape, and located at a position within said cladding layer, said etching stopping layer comprising at least one crystalline film of $Ga_xIn_{1-x}P$ ($0.53 \leq x \leq 0.57$) having a lower etching rate in an etching solution than said cladding layer, having a larger band gap energy in bulk than the band gap energy of said active layer, and that produces a quantum well structure within the cladding layer having a quantum energy level exceeding an energy corresponding to the wavelength of light produced by the visible light laser diode.

5,544,186

GAS LASER FOR EMITTING LIGHT MODULATED AT TWO DIFFERENT WAVELENGTHS AND AN ARRANGEMENT INCORPORATING THE GAS LASER TO DETECT A GASEOUS SUBSTANCE

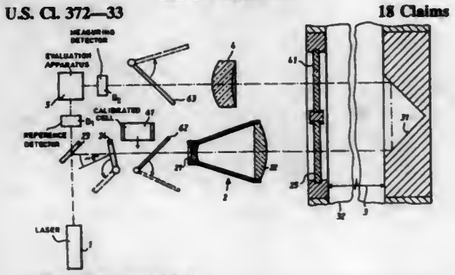
Ralf-Roland Sauer, Hüttlingen; Wolfgang Rupp, Aalen, and Alexander Hinz, Königsbronn, all of, Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim-Brenz, Germany

Filed Jan. 25, 1995, Ser. No. 378,017

Claims priority, application Germany, Jan. 25, 1994, 44 02 054.6

Int. Cl.[6] H01S 3/00

U.S. Cl. 372—33 **18 Claims**



1. A gas laser comprising:

a waveguide in which a laser gas having a predetermined composition is present;

said waveguide defining an optical axis and having first and second ends;

an excitation source for exciting said laser gas to produce laser light;

an out-coupling mirror having a predetermined reflectivity and being mounted on said optical axis adjacent said first end;

a grating arranged on said optical axis adjacent said second end and having a number of grating lines and a predetermined resolution and an angular position relative to said optical axis;

said waveguide, said out-coupling mirror and said grating conjointly defining a resonator having a length (L) measured along said axis from said out-coupling mirror to said grating;

a modulator to modulate said length (L) sinusoidally from a first length within a first interval of length to a second length within a second interval of length measured along said axis; and,

said grating, said angular position, said reflectivity, said length (L), said composition of said laser gas being selected so as to cause said gas laser to emit laser light along said optical axis at first and second wavelengths (λ_1, λ_2) when said length (L) is within first and second intervals, respectively, and to suppress emission of said laser light during transition between said intervals of length.

5,544,187

MULTIQUANTUM BARRIER STRUCTURE AND SEMICONDUCTOR LASER DIODE

Kaoru Kadoiwa; Takashi Motoda, and Manabu Kato, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 17, 1994, Ser. No. 343,909

Claims priority, application Japan, Nov. 25, 1993, 5-294861

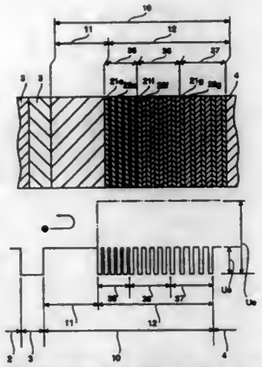
Int. Cl.[6] H01S 3/19

U.S. Cl. 372—45 **4 Claims**

1. A multiquantum barrier structure including a superlattice structure in which a plurality of well layers and a plurality of barrier layers are alternatingly laminated, said superlattice structure comprising:

a first superlattice layer comprising at least four $Ga_{0.5}In_{0.5}$ well layers each well layer being four monolayers thick, and at least four $(Al_{0.7}Ga_{0.3})_{0.5}In_{0.5}P$ barrier layers, each barrier layer being two monolayers thick, said well layers and barrier layers being alternatingly arranged, said first superlattice layer having a first electron reflectivity in an electron energy region; and

a second superlattice layer disposed continuously with the first superlattice layer and comprising at least four $Ga_{0.5}In_{0.5}P$ well layers, each well layer being four monolayers thick, and at least four $(Al_{0.7}Ga_{0.3})_{0.5}In_{0.5}P$ barrier layers, each barrier layer being four monolayers thick, said well layers and barrier layers being alternatingly arranged, said second superlattice layer having a second electron reflectivity, higher than the first electron reflectivity, in the electron energy region where the first superlattice structure has the first electron reflectivity.



5,544,188

SEMICONDUCTOR LASER DEVICE HAVING A HIGH EMISSION EFFICIENCY AND A LARGE MODULATION BANDWIDTH

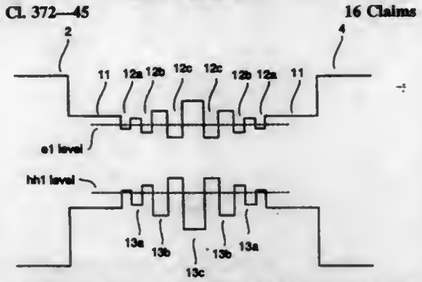
Tohru Takiguchi, and Katsuhiko Goto, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 28, 1994, Ser. No. 348,191

Claims priority, application Japan, Dec. 16, 1993, 5-315717

Int. Cl.[6] H01S 3/19

U.S. Cl. 372—45 **16 Claims**



1. In a semiconductor laser device, an active layer having opposed interfaces with other layers of the semiconductor laser device and a multiquantum well (MQW) structure comprising a plurality of well layers, each well layer having a respective first band gap energy, and a plurality of barrier layers, each barrier layer having a respective second band gap energy larger than the first band gap energies, wherein each of the well layers is disposed between a pair of said barrier layers, each of said barrier layers has a respective thickness, and the thicknesses of said barrier layers gradually decrease from a largest value in a central part of the MQW structure toward the interfaces.

5,544,189

SEMICONDUCTOR LASER DEVICE

Toru Fukushima, Tokyo, Japan, assignor to The Furukawa Electric Co., Ltd., Tokyo, Japan

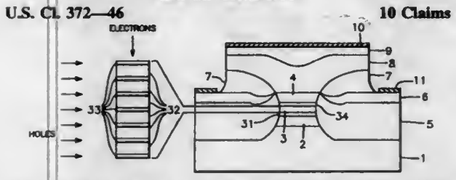
PCT No. PCT/JP93/00405, § 371 Date May 6, 1994, § 102(e) Date May 6, 1994, PCT Pub. No. WO93/20604, PCT Pub. Date Oct. 14, 1993

PCT Filed Mar. 31, 1993, Ser. No. 157,099

Claims priority, application Japan, Mar. 31, 1992, 4-105388

Int. Cl.[6] H01S 3/18

U.S. Cl. 372—46 **10 Claims**



1. A semiconductor laser device comprising a lower optical confinement layer, an active layer and an upper optical confinement layer, said active layer being positioned between said upper and lower optical confinement layers, characterized in that an electron injection path for injecting electrons into the active layer by way of the optical confinement layers and a hole injection path for injecting holes directly into the active layer substantially without passing through the optical confinement layers are formed therein and an insulating layer is formed between said electron injection path and said hole injection path.

5,544,190

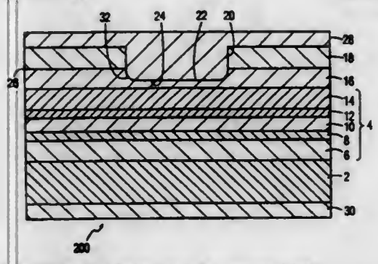
II-VI SEMICONDUCTOR DIODE LASER WITH LATERAL CURRENT CONFINEMENT

Piotr M. Mensz, Ossining, N.Y., assignor to Phillips Electronics North America Corporation, New York, N.Y.

Filed Nov. 17, 1994, Ser. No. 343,700

Int. Cl.[6] H01S 3/19

U.S. Cl. 372—46 **15 Claims**



1. A II-VI semiconductor diode laser comprising:

a substrate of semiconductor material of a first conductivity type;

a II-VI semiconductor layer structure disposed atop said substrate, said II-VI semiconductor layer structure including:

an active layer; and

a first cladding layer of a second conductivity type, opposite to that of the first conductivity type, disposed atop the active layer;

a contact layer of II-VI semiconductor material of said second conductivity type disposed atop an entire surface of the II-VI semiconductor layer structure;

a current-blocking layer of II-VI semiconductor material disposed atop said contact layer, said current-blocking layer having a groove etched therethrough to expose a stripe of said contact layer; and

a metal electrode layer contacting said current-blocking layer and extending into said groove to contact the stripe of said contact layer, said current-blocking layer confining current flow between the metal electrode layer and the contact layer to said stripe of said contact layer.

5,544,191

METAL VAPOR LASER CAPABLE OF COLD OPERATION

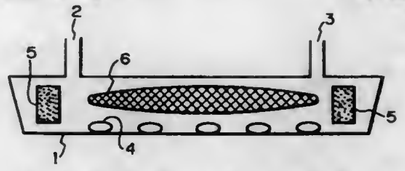
Akira Ohzu; Takashi Arisawa; Masaaki Kato, and Yoji Suzuki, all of Ibaraki-ken, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed May 31, 1994, Ser. No. 251,249

Claims priority, application Japan, Aug. 16, 1993, 5-202371

Int. Cl.[6] H01S 3/22

U.S. Cl. 372—56 **6 Claims**



1. A method for generating a metal vapor in order to form a metal vapor laser, the method comprising the steps of:

generating an electric discharge in a laser tube in which a metal is placed, said discharge being generated in the presence of a halogen gas or a hydrogen halide gas;

reacting the metal within the laser tube with the halogen or hydrogen halide gas to produce a compound of a metal halide;

dissociating the metal halide compound in the laser tube by the electric discharge to obtain metal atoms;

vaporizing the metal atoms within the laser tube; and

exciting the vaporized metal atoms with the electric discharge to cause a laser oscillation;

wherein said steps of producing the metal halide compound, dissociating the metal halide compound, vaporizing the metal atoms and exiting the vaporized metal atoms are accomplished through one of plasma etching and electric discharge within the laser tube while continually maintaining a temperature below the boiling point of the metal, thereby increasing the probability for a population inversion and the efficiency of the laser oscillation.

5,544,192

OPTICALLY PUMPED BISTABLE LASER

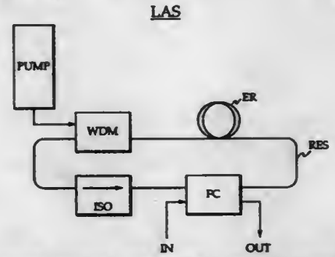
Thomas Pfeiffer, Stuttgart, Germany, assignor to Alcatel N.V., Rijswijk, Netherlands

Filed Mar. 16, 1995, Ser. No. 405,539

Claims priority, application Germany, Mar. 19, 1994, 44 09 444.2

Int. Cl.[6] H01S 3/09

U.S. Cl. 372—69 **8 Claims**



1. Optically pumped bistable laser having a pumping light source and a resonator, the resonator comprising an active laser medium connected to the pumping light source, the pumping light

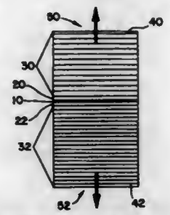
source for providing pumping light to bring the active laser medium into an excited inactive laser condition and to maintain that condition, the active laser medium further connected to an asymmetrically coupling device (PC) for coupling a signal light into the laser medium, whereby said active laser medium in an excited inactive laser condition is brought into an active laser condition when the signal light is coupled into the laser medium and whereby the active laser condition is sustained after the signal light is removed.

5,544,193

VERTICAL CAVITY LASER OF LOW RESISTIVITY

Benoit Devaud-Piedran, and Slimane Loualiche, both of Lannion, France, assignors to France Telecom, Paris, France

Filed Dec. 14, 1993, Ser. No. 166,528
Claims priority, application France, Dec. 15, 1992, 92 15090
Int. Cl.[6] H01S *3/18*
U.S. Cl. 372—96 **11 Claims**



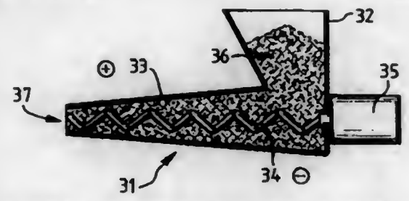
1. In a vertical emission laser structure comprising an active region between stacks of layers forming Bragg reflection mirrors respectively of the n-type and of the p-type, a structure wherein:
the stacks of layers are formed by different pairs of materials in the n-type mirror and in the p-type mirror,
the pair of materials constituting the n-type mirror comprises materials having a conduction bang gap no greater than 10 meV and a wide valance band gap,
the pair of materials constituting the p-type mirror comprises materials having zero valance band gap and a wide conduction band gap.

5,544,194

APPARATUS FOR DEGREASING ELECTRICALLY CONDUCTIVE MATERIAL

Franz Hugo, Aschaffenburg, and Erwin Wanetzky, Grosskrotzenburg, both of, Germany, assignors to Leybold Durferrit GmbH, Koln, Germany

Continuation-in-part of Ser. No. 213,645, Mar. 16, 1994, Pat. No. 5,455,789. This application Sep. 23, 1994, Ser. No. 310,969
Claims priority, application Germany, Jun. 9, 1993, 43 19 166.5; Sep. 25, 1993, 43 32 688.9
Int. Cl.[6] H05B *7/22*
U.S. Cl. 373—65 **16 Claims**



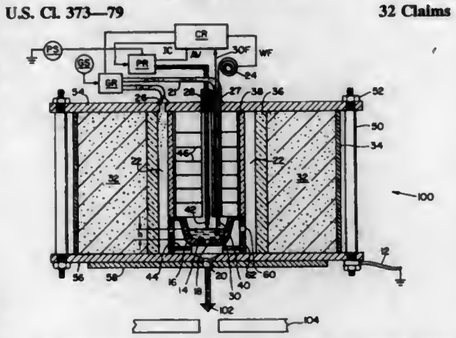
8. Apparatus for cleaning electrically conductive material, comprising
a trough;
a plunger movable into said trough to compact contaminated electrically conductive material in said trough;
a vacuum chamber in which said trough and said plunger are situated;
a suction line connected to said vacuum chamber;
a shut-off valve in said suction line;
a condenser in said suction line downstream of said shut-off valve;
a vacuum pump stand in said suction line downstream of said condenser; and
means for charging said plunger as an electrode and said trough as a counter-electrode, whereby
material in said trough can be heated by passage of direct current through said material.

5,544,195

HIGH-BANDWIDTH CONTINUOUS-FLOW ARC FURNACE

David E. Hardt, Concord, Mass., and Steven G. Lee, Ann Arbor, Mich., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Dec. 19, 1994, Ser. No. 359,158
Int. Cl.[6] F27D *3/00*
U.S. Cl. 373—79 **32 Claims**



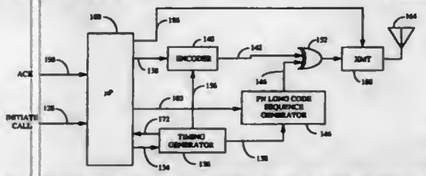
1. A system for generating a continuous flow of molten metal comprising:
a metal mass;
a crucible having an orifice for containing said metal mass;
an electrode mounted adjacent said metal mass;
a power source for providing said electrode with current, said current forming an arc between said electrode and said metal mass, said arc heating said metal mass to a molten metal mass;
a pressurized gas source for providing gas under pressure to propel said molten metal mass through said orifice;
a metal feeder for providing metal at a rate to replenish said molten metal mass as the volume of said molten metal mass is diminished when said molten metal mass is propelled through said orifice; and
a control system for controlling said electrode current, said gas pressure, and said metal feeder rate to provide a continuous stream of molten metal mass out said orifice.

5,544,196

APPARATUS AND METHOD FOR REDUCING MESSAGE COLLISION BETWEEN MOBILE STATIONS SIMULTANEOUSLY ACCESSING A BASE STATION IN A CDMA CELLULAR COMMUNICATIONS SYSTEM

Edward G. Tiedemann, Jr.; Lindsay A. Weaver, Jr., and Roberto Padovani, all of San Diego, Calif., assignors to Qualcomm Incorporated, San Diego, Calif.

Continuation of Ser. No. 847,152, Mar. 5, 1992, abandoned. This application Mar. 30, 1994, Ser. No. 219,867
Int. Cl.[6] H04B *1/69;1/707;* **H04J** *13/04*
U.S. Cl. 375—200 **85 Claims**



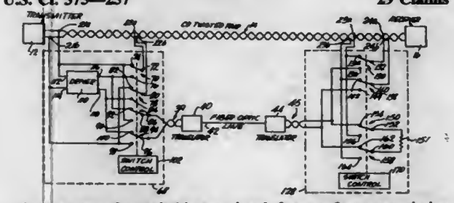
64. In a spread spectrum communications system in which a plurality of remote stations communicate messages to a base station, an apparatus in each remote station for reducing collisions between messages of said remote stations, said system comprising:
processor means for providing a timing signal, wherein said timing signal is determined in accordance with a unique identification code and for providing said message responsive to said timing signal, said processor means further including means for encoding said message for transmission according to a predetermined coding format and means for generating a first random number within a backoff delay range of numbers and means for providing a second timing signal responsive to said first random number and said timing signal and means for further delaying the provision of said message responsive to said second timing signal;
spreading means for direct sequence spreading said message; and
transmitter means for transmitting said direct sequence spread message.

5,544,197

CUTOVER APPARATUS AND METHODS FOR SWITCHING A SIGNAL BETWEEN TWO TRANSMISSION MEDIA

Carl J. Baumgaertner, Glendora, Calif., and Robert M. McKaughan, Redmond, Wash., assignors to Harvey Mudd College, Claremont, Calif.

Filed Apr. 7, 1994, Ser. No. 224,048
Int. Cl.[6] H01P *5/00*
U.S. Cl. 375—257 **29 Claims**



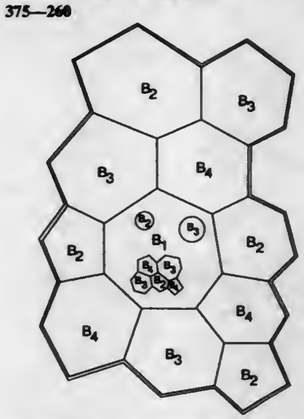
1. A system for switching a signal from a first transmission media to a second transmission media, the apparatus comprising:
driver means for driving a signal, the driver means having a driver input having a high impedance relative to a characteristic impedance of the first transmission media and the driver means having a driver output having an impedance equal to the characteristic impedance of the first transmission media;
first switching means for coupling the driver output either to the first transmission media or to the second transmission media and for coupling a signal from the first transmission media coupled to the driver input either to the first transmission media or to the second transmission media; and
first switch control means for controlling the first switching means for either simultaneously coupling the driver output to the first transmission media and the signal from the first transmission media coupled to the driver input to the second transmission media or simultaneously coupling the driver output to the second transmission media and the signal from the first transmission media coupled to the driver input to the first transmission media.

5,544,198

PROCEDURE FOR THE IDENTIFICATION OF TRANSMITTER OR REGION IN COMMON-WAVE BROADCASTING NETWORKS

Werner Saalfrank, Herzogenaurach, Germany, assignor to Grundig E.M.V., Furth/Bay, Germany

PCT No. PCT/EP91/02438, § 371 Date Sep. 10, 1993, § 102(e) Date Sep. 10, 1993, PCT Pub. No. WO92/13403, PCT Pub. Date Aug. 6, 1992
PCT Filed Dec. 18, 1991, Ser. No. 94,000
Claims priority, application Germany, Jan. 28, 1991, 41 02 408.7
Int. Cl.[6] H04L *27/28*
U.S. Cl. 375—260 **6 Claims**



1. A method for radio transmission of digital signals through a broadcasting network operating in the common-wave frequency comprising the steps of:
simultaneously transmitting a plurality of different carrier frequencies for each of a plurality of transmitting stations within the broadcasting network, said different carrier frequencies being equidistantly arranged in a frequency axis of a defined transmission frequency band;
modulating each of said plurality of different carrier frequencies only with portions of a bit sequeace representing said digital signals, whereby modulation results of said different carrier frequencies are identical for each of said plurality of transmitting stations of a transmitting region;
identifying at least one transmitting station in a transmitting region by way of simultaneously transmitting at least one unmodulated additional carrier frequency corresponding to a unique transmitter or region from at least one transmitting station, receiving said unmodulated additional carrier frequencies and evaluating the presence and frequency of said unmodulated additional carrier frequencies in a frequency raster for identification of said unique transmitter or region, wherein said unmodulated additional carrier frequencies do not interfere with transmission of said digital signals in common-wave operation within overlapping transmission

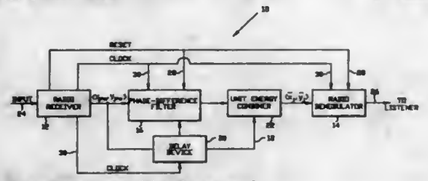
areas of each of said plurality of transmitting stations, due to the processing of said signals separately from modulation of said digital signals.

5,544,199

NON-ADAPTIVE PHASE-DIFFERENCE INTERFERENCE FILTER

James W. Bond, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 11, 1991, Ser. No. 713,660
Int. Cl.[6] H04B *15/00*; G06F *17/10*
U.S. Cl. 375—285 **8 Claims**



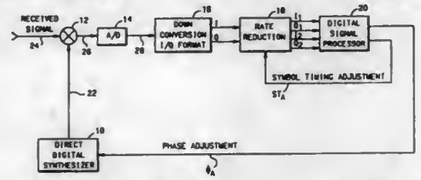
5. A method comprising the steps of:
receiving signals;
sampling said signals to get a sequence of signal samples;
finding a magnitude value for each of said signal samples of said sequence of signal samples resulting in magnitude values equal in number to said signal samples;
finding a phase value for each of said signal samples of said sequence of signal samples resulting in phase values equal in number to said signal samples;
calculating a phase-difference value for each of said signal samples of said sequence of signal samples, resulting in phase-difference values equal in number to said signal samples, and designating one of said phase-difference values as a reference phase-difference value, said phase-difference values being calculated as the difference between the phase of each signal sample of said sequence of signal samples and the phase of a previous signal sample;
storing said magnitude values and phase-difference values;
computing differences between said reference phase-difference value and said stored phase-difference values;
forming a sum of said differences to form a gain factor;
forming rotated signal samples by rotating each signal sample of said sequence of signal samples by ninety degrees counter-clockwise;
multiplying said gain factor times each of said rotated signal samples to obtain gain factor adjusted signal samples;
repeating said steps of receiving said signals, sampling said signals, finding magnitude values of said signal samples, finding phase values of said signal samples, calculating phase-difference values for each of said signal samples and designating one of said phase difference values as a reference phase-difference value, storing said magnitude values and said phase-difference values, computing differences between said reference phase-difference value and said stored phase-difference values, forming a sum of said differences to form a gain factor, forming rotated signal samples and multiplying said gain factor times each of said rotated signal samples to obtain gain factor adjusted signal samples, a preselected number of times to form a number of gain factors;
averaging the gain factors formed to get an averaged magnitude gain factor;
dividing each of said gain factor adjusted signal samples by said averaged magnitude gain factor to get averaged gain factored signal samples;
multiplying said averaged gain factored signal samples and said signal samples by respective weights to obtain weighted gain factor adjusted signal samples and weighted signal samples;
forming a sum of said weighted gain factor adjusted signal samples and said weighted signal samples; and
inserting said sum into a demodulator.

5,544,200

ACQUISITION OF CARRIER PHASE AND SYMBOL TIMING THROUGH JOINT ESTIMATION OF PHASE AND TIMING ADJUSTMENTS

Song H. An, San Diego, Calif., assignor to Titan Information Systems Corporation, San Diego, Calif.

Filed Dec. 8, 1994, Ser. No. 351,797
Int. Cl.[6] H04L *27/06*
U.S. Cl. 375—344 **7 Claims**



1. A system for acquiring carrier phase and symbol timing of a received communication signal, comprising
a local oscillator for providing a reference signal at a local oscillator frequency;
a mixer for mixing a received communication signal with a reference signal to provide the communication signal at an intermediate frequency;
an analog-to-digital converter for converting the intermediate-frequency communication signal to a digital communication signal;
a circuit for formatting the digital communication signal into in-phase (I) and quadrature-phase (Q) components;
a sampling circuit for sampling the I components at twice a predetermined symbol rate to provide a first series of I-component samples at the predetermined symbol rate and a second series of I-component samples that are intermediate to the first series of I-component samples and at the predetermined symbol rate, and for sampling the Q components at twice the predetermined symbol rate to provide a first series of Q-component samples at the predetermined symbol rate and a second series of Q-component samples that are intermediate to the first series of Q-component samples and at the predetermined symbol rate; and
a processor for processing the samples to estimate a phase-adjustment value and a symbol-timing-adjustment value;
wherein the processor is coupled to the local oscillator for adjusting the phase of the reference signal in accordance with the phase-adjustment value and to the sampling circuit for adjusting the timing of said sampling in accordance with the symbol-timing-adjustment value.

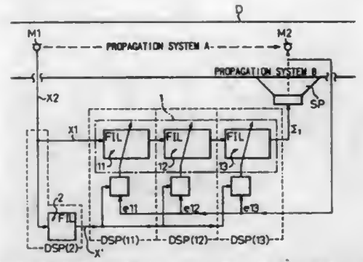
5,544,201

SIGNAL SUPPRESSING APPARATUS

Tsutomu Hoshino; Atsushi Yamaguchi; Tadashi Ohashi; Juro Ohga, and Hiroyuki Furuya, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Jul. 8, 1994, Ser. No. 272,330
Claims priority, application Japan, Sep. 17, 1993, 5-254837
Int. Cl.[6] H04B *1/10*
U.S. Cl. 345—350 **43 Claims**

1. A signal suppressing apparatus comprising:
a first filter which electrically simulates a propagation system A through which physical phenomena to be suppressed are passed, the first filter being split into a plurality of individual filters, a signal correlated to a signal input to the propagation system A being input to said individual filters of this first filter; outputs being individually calculated in the individual filters, results of said individual calculations being tabulated and output, and the output of this first filter influencing the signal input to and which passed through the propagation system A, to make the passed signal approximate an intended value of said phenomena after suppression,



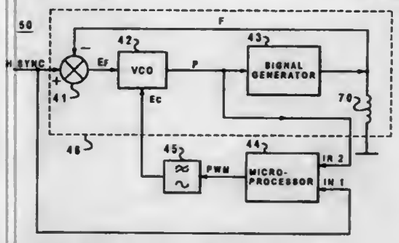
whereby a phenomena value, the same as the value obtained where a similar calculation is made without splitting the first filter, is obtained; and
a second filter which electrically simulates a propagation system B, said system B connecting at an output thereto to system A, said output of said first filter passing through said propagation system B to system A so as to exert an influence upon said signal input and passing through the propagation system A, the signal input to said first filter also being input to the second filter, an output of said second filter being input to said first filter and used for correction of coefficients of the individual filters of the first filter.

5,544,202

SYNCHRONIZATION APPARATUS

Frederick S. Jackson, Glasgow, Ireland; Michael D. Henry, Hampshire; David Leaver, Sussex, and Neil Wright-Boulton, Hampshire, all of, England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 14, 1994, Ser. No. 259,592
Claims priority, application United Kingdom, Jun. 15, 1993, 9312269
Int. Cl.[6] H03D *3/24*
U.S. Cl. 375—376 **8 Claims**



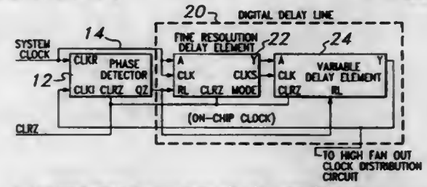
1. Synchronization apparatus comprising:
a phase locked loop for synchronizing an output signal (P) to an input signal when the frequency of the input signal is within a predetermined capture range of the output signal, the phase-locked loop comprising a variable frequency oscillator for generating the output signal and for varying the frequency of the output signal as a function of a combination of an error signal and an offset level, a signal generator for generating a feedback signal in response to the output signal, and a phase detector for generating the error signal as a function of a phase difference between the input signal and the feedback signal; and,
a controller for iteratively determining whether the output signal is synchronized to the input signal by the phase-locked loop and adjusting the frequency of the output signal to locate the output signal within the capture range of the phase locked loop if the output signal is not synchronized to the input signal, the offset level being generated by the controller as a function of the frequency of the input signal, the controller comprising means for sampling the output signal in response to the input signal and means for adjusting the offset level if at least one of a plurality of successive samples of the output signal has a value other than a first value.

5,544,203

FINE RESOLUTION DIGITAL DELAY LINE WITH COARSE AND FINE ADJUSTMENT STAGES

Joseph A. Casasanta, Allen; Bernhard H. Andresen, Dallas; Yoshinori Satoh, Plano; Stanley C. Keeney, and Robert C. Martin, both of Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 18,656, Feb. 17, 1993, abandoned.
This application Oct. 18, 1994, Ser. No. 324,856
Int. Cl.[6] H03D *3/24*
U.S. Cl. 375—376 **32 Claims**



1. A digital phase locked loop circuit, comprising:
a phase detector for detecting a phase relationship between first and second clock signals, said phase detector having first and second input for said first and second clock signals to be applied thereto;
first means connected to said phase detector for providing delay adjustment of a first range;
second means responsive to said phase detector and to said first means for providing delay adjustment of a second range, a combination of said first and second means providing a precise delay adjustment; and
said phase detector including a control circuit which, at a point in time when an edge of said second clock signal trails a corresponding edge of said first clock signal by less than one-half cycle, outputs a first control signal to said first and second means to cause the length of delay of said precise delay adjustment to increase until said edge of said second clock signal is eventually time-shifted past the next successive corresponding edge of said first clock signal.

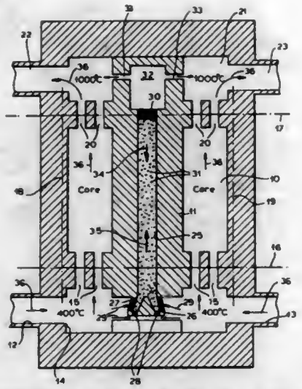
5,544,204

METHOD OF INFLUENCING THE REACTIVITY OF A NEUTRON CHAIN REACTION IN A NUCLEAR REACTOR

Jasbir Singh, Julich, and Heiko Barnert, Langerwehe, both of, Germany, assignors to Forschungszentrum Julich GmbH, Julich, Germany

Continuation of Ser. No. 114,325, Aug. 30, 1993, abandoned.
This application Mar. 6, 1995, Ser. No. 400,132
Claims priority, application Germany, Sep. 1, 1992, 42 29 091.0
Int. Cl.[6] G21C *7/30*
U.S. Cl. 376—213 **3 Claims**

1. A process for the automatic stabilization of the reactivity of a neutron chain reaction of a nuclear reactor having a core containing a main body of fissionable fuel and which is fixed in position in a core vessel, said main body of fissionable fuel generating a neutron-flux zone between two horizontal planes providing said, said process comprising the steps of:
(a) providing a tubular chamber extending through said neutron-flux zone, said tubular chamber being closed on each end by sieves and containing fissionable fuel particles constituting a minor body of fissionable fuel, said tubular chamber having an upper end substantially at an upper one of said planes and a lower end extending below a lower one of said planes;



(b) entraining said fissionable fuel particles of said minor body of fissionable fuel upwardly in said tubular chamber in a coolant flow from a location in said chamber below said zone into said zone, said coolant flow passing into said chamber through one of said sieves at said lower end and out of said chamber through another of said sieves at said upper end;

(c) providing at said location below said zone and said lower one of said planes a space in said chamber for accumulation of said fissionable fuel particles out of said neutron-flux zone, said coolant flow maintaining said fissionable fuel particles of said minor body of fissionable fuel in said zone; and

(d) automatically causing said fissionable fuel particles of said minor body of fissionable fuel to collect by gravity in said space upon a failure of upward entrainment of said fissionable fuel particles of said minor body of fissionable fuel in said coolant flow, thereby reducing the reactivity of said chain reaction, said space and the fissionable fuel particles of said minor body of fissionable fuel collected therein in step (d) being dimensioned to influence said reactivity by substantially 0.5% to 1%.

5,544,205

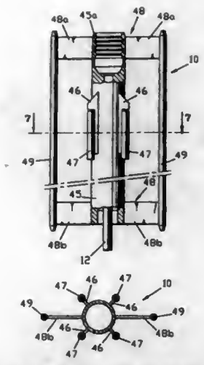
DEVICE AND METHOD FOR CHECKING THE GUIDE ELEMENTS OF A GUIDE TUBE FOR THE UPPER INTERNALS OF A PRESSURIZED WATER NUCLEAR REACTOR

Jean P. Cartry, Lyons, France, assignor to Framatome, Courbevoie, France

Filed Nov. 23, 1994, Ser. No. 347,074
Claims priority, application France, Nov. 25, 1993, 93 14119
Int. Cl.[6] G21C *17/00*
U.S. Cl. 376—245 **17 Claims**

1. Device for checking guiding elements of a guide tube in the upper internals of a pressurized water nuclear reactor arranged underwater in a cavity, said guiding elements being arranged inside said guide tube having a vertical axis in a checking position, and being comprised of guiding openings passing through horizontal plates arranged spaced apart from each other axially of said guide tube and of bores of tubular sleeves with vertical axes, said guiding openings and said bores being aligned along a plurality of vertical axial directions, said device including an inspection rod cluster having a spider assembly for attachment to a handling mast, support elements for inspection probes capable of being moved axially inside said guiding openings and said bores of said guiding elements, said inspection probes each being mounted for rotating movement on one of said support elements, about an axis parallel to the axis of said guide tube, and means for rotating said inspection probes, wherein said inspection rod cluster includes:

(a) a cylindrical body having a diameter smaller than a diameter of a central bore of said guide tube; and



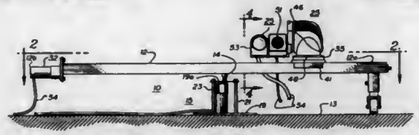
(b) a plurality of radially extending arms fixed around said cylindrical body in determined angular and axial positions and each having a part remote from said cylindrical body, said part carrying an inspection probe arranged rotatively.

5,544,206

REACTOR HEAD WORK STATION

Raymond J. Brooks, Ontario; John M. Gay, Pittsford; Bruce A. Weir, Ontario; Paul E. McEntee, Rochester, and Lauren Blood, Livonia Center, all of N.Y., assignors to R. Brooks Associates, Inc., Williamson, N.Y.

Filed Jun. 17, 1994, Ser. No. 261,485
Int. Cl.[6] G21C *17/00*
U.S. Cl. 376—248 **12 Claims**



1. Apparatus for inspecting a nuclear reactor comprising:

a boom rotatably connected to a pivot point on a base;

means for controllably rotating the boom with respect to said pivot point on said base; and

a camera assembly affixed to said boom and being longitudinally slidable thereto such that the camera assembly may be slidably adjusted with respect to said boom.

5,544,207

APPARATUS FOR MEASURING THE THICKNESS OF THE OVERLAY CLAD IN A PRESSURE VESSEL OF A NUCLEAR REACTOR

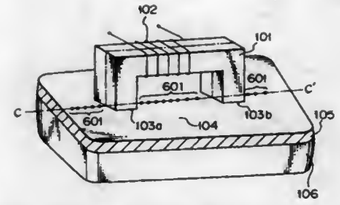
Katsuyuki Ara; Nobuya Nakajima, and Noriya Ebine, all of Ibaraki-ken, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Oct. 7, 1994, Ser. No. 319,630
Claims priority, application Japan, Oct. 8, 1993, 5-252949
Int. Cl.[6] G21C *17/01*; G01B *7/10*
U.S. Cl. 376—249 **3 Claims**

1. An apparatus for measuring the thickness of a nonmagnetic overlay clad of a ferromagnetic pressure vessel of a nuclear reactor comprising:

a magnetic yoke;

one or more exciting coils, said coils wrapped around said magnetic yoke for magnetizing said magnetic yoke to form a magnetic path through said magnetic yoke and the ferromagnetic pressure vessel of the nuclear reactor;



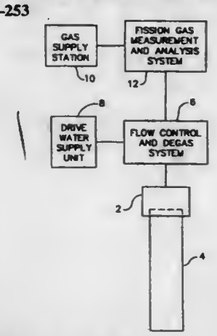
means for measuring the spatial distribution of the magnetic field component orthogonally crossing the ferromagnetic pressure vessel of the nuclear reactor.

5,544,208

METHOD AND APPARATUS FOR IN SITU DETECTION OF DEFECTIVE NUCLEAR FUEL ASSEMBLY

Hsueh-Wen Pao, Saratoga; David L. Faulstich, San Jose; Dane T. Snyder, Byron; Johnny T. Ma, San Jose; Kenneth R. Izzo, Los Gatos; Joel C. Swanson, Livermore; Martin S. Laurent, San Jose, and Peter F. Kachel, Livermore, all of Calif., assignors to General Electric Company, San Jose, Calif.

Continuation-in-part of Ser. No. 228,526, Apr. 15, 1994. This application Sep. 20, 1994, Ser. No. 309,383
Int. Cl.[6] G21C *17/00*
U.S. Cl. 376—253 **20 Claims**



12. A method for detecting a defective fuel rod in a fuel assembly, comprising the steps of:

arranging a hood on top of said fuel assembly;

accumulating a gas sample from fluid trapped under said sipping hood; and

detecting for the presence of krypton in said gas sample.

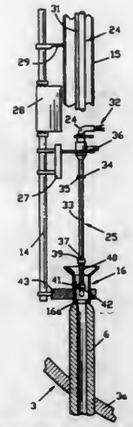
5,544,209

PROCESS FOR REPAIRING AND PROTECTING FROM CRACKING THE INNER WALL OF A TUBE FOR PENETRATING THE BOTTOM HEAD OF A PRESSURIZED-WATER NUCLEAR REACTOR VESSEL

Bernard Michaut, Lyons; Bernard Pellegrin, Saint Laurent de Mure, and Sylvie Voisembert, Heyrieux, all of, France, assignors to Framatome, Courbevoie, France

Filed Apr. 29, 1994, Ser. No. 235,330
Claims priority, application France, Apr. 29, 1993, 93 05097
Int. Cl.[6] G21C *19/00*
U.S. Cl. 376—260 **9 Claims**

1. Method for repairing and protecting from cracking the inner wall of a tube for penetrating the bottom head of a generally cylindrical vessel of a pressurized water nuclear reactor, said vessel being arranged with its axis vertical in a reactor vessel pit emerging through its upper end into a pool, said vessel comprising an upper vessel closure head and a lower convex bottom head penetrated by a plurality of substantially vertical tubes, each connected through a lower end to a reactor instrumentation room via a measurement conduit, providing the passage of a measurement probe into the reactor core which is arranged inside the vessel, said method comprising, during a period of shutdown of the nuclear reactor, the pool and the vessel inner part being filled with water, the steps of:



(a) dismounting the upper vessel closure head;

(b) removing internal equipment from said vessel;

(c) introducing into an upper end of said tube from an upper level of said pool a means for electroplating an inner surface of said tube;

(d) isolating from an inner part of said vessel filled with water and from said measurement conduit an inner zone of said tube extending along a part of an axial length of said tube through isolating means of said means for electroplating remote controlled from the upper part of said pool;

(e) filling said inner zone of said tube with an electrolyte; and so that said electric current passes through said electrolyte in order to deposit a metallic electroplating layer onto said inner surface of said tube in said inner zone.

5,544,210

PRESSURE VESSEL APPARATUS FOR CONTAINING FLUID UNDER HIGH TEMPERATURE AND PRESSURE

Bendt W. Wedellsborg, 552 Maureen La., Pleasant Hill, Calif. 94523

Filed Jul. 11, 1995, Ser. No. 500,604
Int. Cl.[6] G21C *13/00*
U.S. Cl. 376—294 **14 Claims**

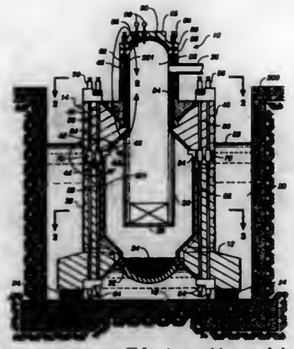
1. Pressure vessel apparatus defining a pressure vessel interior for containing fluid under high temperature and pressure, said pressure vessel apparatus comprising, in combination:

a vessel main body having a bottom and an outer peripheral wall extending upwardly from said bottom and defining a vessel main body top opening;

a vessel top body having an outer peripheral wall positioned on the outer peripheral wall of said vessel main body to form a joint therebetween and defining a vessel top body bottom opening communicating with said vessel main body top opening, and said vessel top body defining a top opening;

a vessel head positioned on said vessel top body and covering said top opening;

first securement means securing said vessel top body to said vessel main body; and



second securement means securing said vessel head to said vessel top body, said second securement means comprising a plurality of double-ended, elongated tendons under tension extending between and secured to said vessel top body and said vessel head.

5,544,211

NUCLEAR FUEL ASSEMBLY AND NUCLEAR REACTOR INCORPORATING THE SAME

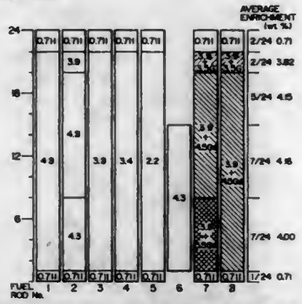
Katsumasa Haikawa, Ibaraki-ken; Takaaki Mochida, Hitachi; Mamoru Nagano, and Tsuyoshi Nakajima, both of Yokohama, all of, Japan, assignors to Hitachi, Ltd., Tokyo; Kabushiki Kaisha Toshiba, Kanagawaken, both of, Japan, and General Electric Company, Schenectady, N.Y.

Filed Oct. 12, 1994, Ser. No. 321,618

Claims priority, application Japan, Oct. 12, 1993, 5-254029

Int. Cl.[6] G21C *3/32*

U.S. Cl. 376—435 **16 Claims**



1. A fresh fuel assembly for loading in a nuclear reactor, charged with uranium and no plutonium and having a plurality of fuel rods and at least one water rod surrounded by said fuel rods, said fuel assembly comprising:

a fuel-charged zone including axially upper and lower end regions charged with natural uranium and an enriched uranium region between said upper and lower end regions, said enriched uranium region having three sections of an upper section, a middle section and a lower section of different levels of enrichment;

said middle section having an average enrichment of a level higher than an average enrichment level of said upper and lower sections;

a difference in the average enrichment level between said middle section and said lower section being smaller than a difference in the average enrichment level between said middle section and said upper section;

wherein the fuel assembly comprises said fuel rods arranged in nine columns and nine rows;

wherein a pair of water rods are disposed adjacent to each other in a central portion of the cross-section of said fuel assembly so as to occupy an area substantially equal to an area to be occupied by seven fuel rods;

wherein a part of said plurality of fuel rods comprises burnable-poison-containing fuel rods containing uranium and a burnable poison and the rest of said plurality of fuel rods comprises uranium fuel rods containing uranium and no burnable poison;

wherein a part of said uranium fuel rods have axially upper and lower end regions charged with natural uranium, and an enriched uranium region between said upper and lower end regions, said enriched uranium region having three sections of an upper section, a middle section and a lower section of different levels of enrichment, said middle section having an enrichment of a level higher than an enrichment level of said upper and lower sections, a difference in enrichment level between said middle section and said lower section being smaller than a difference in enrichment level between said middle section and said upper section; and

wherein a burnable poison content per unit axial length in the upper section of each burnable-poison-containing fuel rod is smaller than a burnable poison content per unit axial length in other sections of said enriched uranium region of the burnable-poison-containing fuel rod.

5,544,212

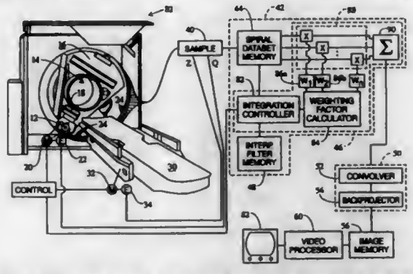
SPIRAL CT USING AN INTEGRATING INTERPOLATOR

Dominic J. Heuscher, Aurora, Ohio, assignor to Picker International, Inc., Highland Heights, Ohio

Continuation-in-part of Ser. No. 139,318, Oct. 19, 1993, Pat. No. 5,396,418, which is a continuation-in-part of Ser. No. 943,411, Sep. 9, 1992, abandoned, which is a continuation-in-part of Ser. No. 567,300, Aug. 14, 1990, Pat. No. 5,262,946, which is a continuation-in-part of Ser. No. 260,403, Oct. 20, 1988, Pat. No. 4,965,726, and a continuation-in-part of Ser. No. 438,687, Nov. 17, 1989, Pat. No. 5,276,614. This application Nov. 25, 1994, Ser. No. 344,896

Int. Cl.[6] A61B *6/03*

U.S. Cl. 378—15 **17 Claims**



1. In a CT scanner which includes an x-ray source for irradiating an examination region with penetrating radiation, the x-ray source being mounted for rotation around the examination region, a patient support which moves a patient through the examination region concurrently with rotation of the x-ray source, radiation detectors disposed across the examination region from the x-ray source to receive x-ray radiation which has traversed the examination region and convert the received radiation into electronic data, a data set memory which stores the electronic data in spiral data sets where each spiral data set contains data relating to less than 360° around the patient, the improvement comprising:

an integrating interpolator which combines the electronic data from a predetermined plural number of the spiral data sets in accordance with a filter function into a planar data set; and

a reconstruction processor which reconstructs the planar data set into a slice image representation.

14. A method of reducing partial image artifacts from cross-sectional images, the method comprising:

irradiating a patient with a beam of radiation collimated to a collimation thickness and moving the beam and patient to irradiate the patient along a spiral path;

detecting radiation which has traversed the examination region;

converting the detected radiation into electronic data representing a plurality of revolutions along the spiral path;

storing the electronic data;

selecting a slice thickness thicker than the collimation thickness;

generating weighting values in accordance with the selected slice thickness;

weighting subsets of the electronic data in accordance with corresponding weighting values;

combining the weighted selected electronic data subsets;

reconstructed the combined weighted electronic data subsets into a slice image representation, whereby the slice image representation depicts a slice which is selectively electronically broadened relative to the collimation thickness.

5,544,213

MASK HOLDING METHOD, MASK AND MASK CHUCK, EXPOSURE APPARATUS USING THE MASK AND THE MASK CHUCK, AND DEVICE PRODUCTION METHOD USING THE EXPOSURE APPARATUS

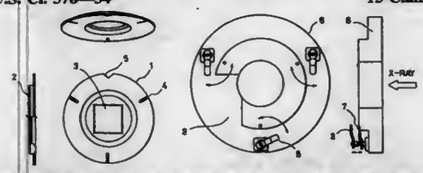
Yuji Chiba, Isehara, and Shinichi Hara, Yokohama, both of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 17, 1994, Ser. No. 343,961

Claims priority, application Japan, Nov. 30, 1993, 5-299912

Int. Cl.[6] G21K *5/00*

U.S. Cl. 378—34 **15 Claims**



1. A method of holding a mask on a mask, chuck, said method comprising:

providing a mask in which V-shaped linear groove portions are disposed at not less than three positions on a holding surface of the mask;

providing a mask chuck in which projecting portions are disposed at not less than three positions on a holding plane of the mask chuck;

aligning the V-shaped linear groove portions of the mask with the projecting portions of the mask chuck; and

engaging the V-shaped linear groove portions of the mask with corresponding projecting portions of the mask chuck to hold the mask on the mask chuck.

5,544,214

VIDEO SYSTEM WITH AUTOMATIC GAIN CONTROL

Josephus Van der Laar, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 2, 1994, Ser. No. 190,432

Claims priority, application European Pat. Off., Feb. 2, 1993, 93200258

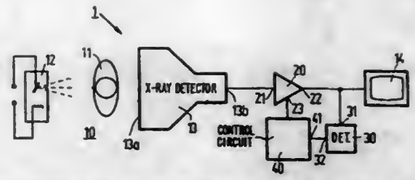
Int. Cl.[6] H04N *1/00*

U.S. Cl. 378—98.7 **8 Claims**

1. A video system with automatic gain control, comprising:

a variable gain signal amplifier having a signal input, a signal output and a gain control input;

a detector having an input of which is coupled to the signal output of the video amplifier in order to determine the level of the output signal at the signal output of the video amplifier indicated by the level of an output signal formed at an output of the detector; and



a control circuit having an input of which is coupled to the output of the detector and having an output which is coupled to said gain control input in order to apply a control signal to the video amplifier, wherein the control circuit is configured for supplying a said gain control signal to said gain control input which is proportional to the ratio of a reference value to the level of the output signal of the detector.

5,544,215

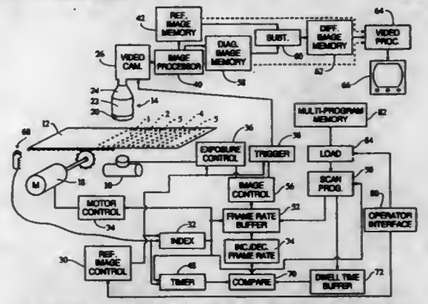
DIGITAL ANGIOGRAPHY SYSTEM WITH AUTOMATICALLY DETERMINED FRAME RATES

Robert E. Shroy, Jr., Willoughby; Donald T. Green, Madison, and Steven C. Kapp, Mentor, all of Ohio, assignors to Picker International, Inc., Highland Heights, Ohio

Filed Jan. 13, 1995, Ser. No. 372,458

Int. Cl.[6] H05G *1/64*

U.S. Cl. 378—98.12 **15 Claims**



1. A method of generating diagnostic images at a plurality of overlapping positions along a patient including at least first, second, and third contiguous positions, the method comprising:

selecting at least a first set of reference dwell times during which the diagnostic images are to be generated at the first position and a first selected imaging rate at which the diagnostic images are to be generated at the first position, a second set of reference dwell times over which the diagnostic images are to be generated at the second position, a third set of reference dwell times over which the diagnostic images are to be generated at the third position;

injecting the subject with a radiopaque dye adjacent the first position;

at the first position, generating the diagnostic images at the first imaging rate and displaying the generated diagnostic images on a human-readable display;

manually indexing to the second position in accordance with the human-readable display;

measuring a first actual dwell time over which the diagnostic images are generated at the first position;

comparing the first actual dwell time with the first set of reference dwell times;

adjusting the second imaging rate in accordance with the comparison between the first actual and reference dwell times;

at the second position, generating the diagnostic images at the adjusted second imaging rate and converting the generated images into a human-readable display;

manually indexing to the third position in accordance with the human-readable display;

measuring a second actual dwell time over which images are generated at the second position;

comparing the first and second actual dwell times with the reference dwell times;

adjusting the third imaging rate in accordance with the comparison between the actual and reference dwell times;

at the third position, generating the diagnostic images at the adjusted third imaging rate and converting the generated images into a human-readable display.

5,544,216

X-RAY EXAMINATION APPARATUS

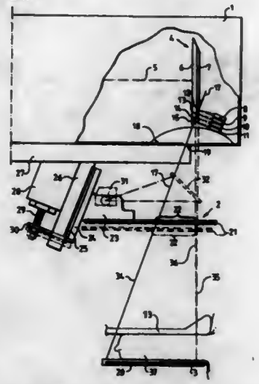
Yngve Norinager, Vallentuna, Sweden, assignor to Siemens Elema AB, Solna, Sweden

Filed May 25, 1995, Ser. No. 450,706

Claims priority, application Sweden, Jun. 2, 1994, 9401904

Int. Cl.[6] A61B *6/06*

U.S. Cl. 378—149 **5 Claims**



1. An x-ray examination apparatus comprising:

an x-ray tube having an anode dish with a plurality of selectively activatable focal spots, all of said focal spots being disposed on said anode dish intersected by a common straight line, an x-ray beam being emitted from a selected one of said focal spots which is activated;

a primary radiation diaphragm disposed so that said x-ray beam passes therethrough; and

means for displacing said primary radiation diaphragm along said straight line when switching from one of said focal spots to another of said focal spots for matching a position of said primary radiation diaphragm to the position of the selected focal spot which has been activated.

5,544,217

MOBILE MEDICAL X-RAY APPARATUS

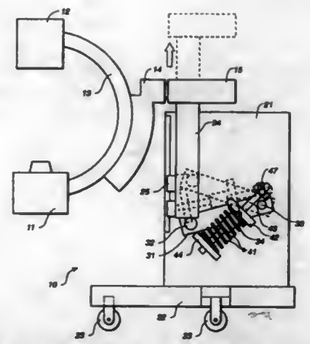
Toshio Kadowaki; Hajime Takemoto, and Shojiro Yamaguchi, all of Kyoto, Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Mar. 25, 1994, Ser. No. 218,207

Claims priority, application Japan, Mar. 31, 1993, 5-021648 U

Int. Cl.[6] A61B *6/00*

U.S. Cl. 378—198 **8 Claims**



1. A mobile medical X-ray apparatus comprising:

a mobile table;

a support column supported by said table and vertically movable with respect thereto;

an X-ray source and an X-ray detector supported by said support column;

a spring supporting member supported by said mobile table rotatably;

a spring which is expandably and compressibly supported by said spring supporting member; and

a lever which is attached to said table rotatably around a lever shaft such that the force of said spring tends to rotate said lever and to thereby push said support column upwards;

said spring supporting member comprising:

a rod;

a spring seat to which are fastened one end of said spring and one end of said rod;

a spring holder which is slidable longitudinally along said rod and is rotatably attached to said lever through a connector shaft and to which the other end of said spring is fastened; and

a rod-supporting shaft which is rotatably supported by said table and is fastened to the other end of said rod.

5,544,218

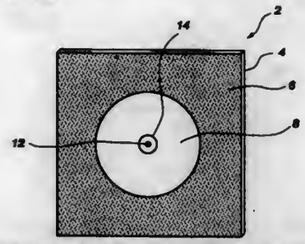
THIN FILM SAMPLE SUPPORT

D. Clark Turner; Andrew J. Nielsen; Raymond T. Perkins, and Michael Madden, all of Orem, Utah, assignors to Moxtek, Inc., Orem, Utah

Filed Oct. 28, 1994, Ser. No. 330,719

Int. Cl.[6] H05G *1/00*

U.S. Cl. 378—208 **11 Claims**



1. A sample holder for holding a micro-sample to be subjected to particle beams and beams of X-ray electromagnetic energy, the sample holder comprising:

a thin polymer film having a surface density of less than about 50 μg/cm^2 and including a generally planar upper surface and a lower surface, at least one concave impression being formed in the film and sized for receiving the micro-sample to be subjected to X-ray electromagnetic energy, while maintaining nominal scattering of X-rays; and

a support frame defining at least one orifice for holding the thin polymer film and maintaining the upper surface in a generally planar orientation, the thin film being disposed on the frame with the concave impression disposed in alignment with the orifice such that an x-ray beam may pass through the impression without contacting the frame.

5,544,219

PROCEDURE FOR AUTOMATIC POSTION–FINDING OF POINTS OF INTEREST DURING A MAMMOGRAPHY EXAMINATION USING STEREOTACTIC TECHNIQUE

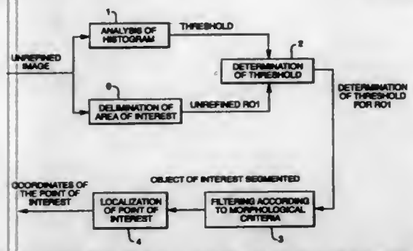
Serge Muller, Guyancourt; Michel Grimaud, Paris, and Robert Heidsieck, Chesnay, all of, France, assignors to GE Medical Systems, Buc, France

Filed Nov. 1, 1994, Ser. No. 332,743

Claims priority, application France, Nov. 9, 1993, 93 13323

Int. Cl.[6] A61B *6/12*

U.S. Cl. 378—210 **6 Claims**



1. Procedure for automatic position-finding of a point of interest in an object exhibiting high contrast in relation to the surrounding tissues using a stereotactic photographic device delivering pairs of stereotactic images, each one composed of pixels with different gray levels which constitute a histogram of said images, said device including a digital image-acquisition system associated with algorithms for processing of these images, said procedure comprising, for each image belonging to the pair of stereotactic images, a step involving analysis of the histogram of the image pixels and a step involving filtering based on morphological criteria, wherein said procedure includes the following additional steps for each image belonging to the pair of stereotactic images:

1) determination of a threshold corresponding to the difference between the high-contrast object and the surrounding tissues, said determination being based on the analysis of the image histogram;

2) comparison between said image and said previously determined threshold in order to obtain a binary image incorporating two gray levels;

3) filtering of the threshold-determined image in the preceding step, based on the morphological criteria of the object in which the point of interest is located in order to obtain a segmented projection of said object;

4) localization of the point of interest in a reference mark of the image.

5,544,220

SYSTEM FOR INTEGRATING A STAND ALONE INBOUND AUTOMATIC CALL DISTRIBUTOR AND AN OUTBOUND AUTOMATIC CALL DIALER

Alan R. Trefzger, Sterling, Va., assignor to EIS International, Inc., Stamford, Conn.

Continuation of Ser. No. 21,305, Feb. 23, 1993, Pat. No. 5,425,093. This application Jun. 1, 1995, Ser. No. 456,831

Int. Cl.[6] H04M *3/22*

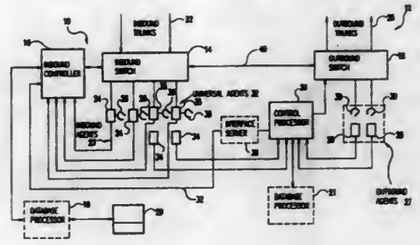
U.S. Cl. 379—266 **1 Claim**

1. A method for integrating an inbound call distributor and outbound call dialer, comprising the steps of:

transmitting an inbound call status request from said outbound call dialer to said inbound call distributor;

transmitting inbound call status data from said inbound call distributor to said outbound call dialer in response to said status request; and

designating a universal agent's status as one of available for inbound operations and available for outbound operations based on said inbound call status data received by said outbound call dialer.



5,544,221

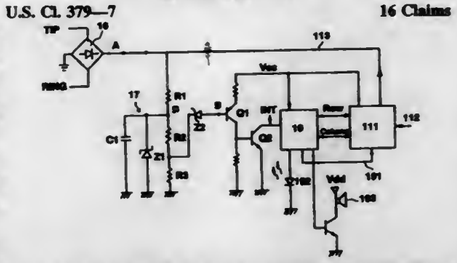
METHOD AND APPARATUS FOR PROHIBITING UNAUTHORIZED USE OF A TELECOMMUNICATION LINE

Huang Y. Sheng; Tsai Ching-hung, and Wu J. Kuang, all of Hsinchu, Taiwan, assignors to Winbond Electronics Corporation, Hsinchu, Taiwan

Filed Sep. 16, 1994, Ser. No. 307,892

Int. Cl.[6] H04M *1/66*

U.S. Cl. 379—7 **16 Claims**



1. A method for prohibiting use by unauthorized user equipment of a telecommunication line intended for use by legitimate telecommunication equipment, the legitimate telecommunication equipment having a dialer circuit for generating a dialing signal, the legitimate telecommunication equipment coupled to an anti-theft apparatus and the telecommunication line, the method comprising the steps of:

(1) determining, by the anti-theft apparatus, if the telecommunication line is being used;

(2) if the result is true in step (1), the anti-theft apparatus determining if the use is by the unauthorized user equipment;

(3) if the result is true in step (2), the anti-theft apparatus sending a trigger signal to the dialer circuit of the legitimate telecommunication equipment which generates an interference signal on the telecommunication line to prevent use by the unauthorized user equipment.

5,544,222

CELLULAR DIGTIAL PACKET DATA MOBILE DATA BASE STATION

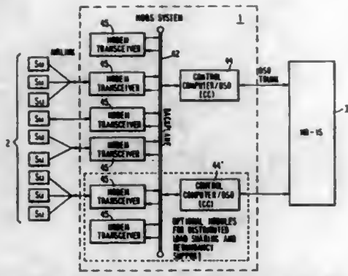
Mark T. Robinson, Carlsbad; Steven H. Gardner, San Diego; Matt Wong, San Diego; Seton P. Kasmir, San Diego; Kumar Balachandran, San Diego; Sue Graham, Encinitas; Gail Schjelderup, Poway, and Roy F. Quick, Jr., San Diego, all of Calif., assignors to Pacific Communication Sciences, Inc., San Diego, Calif.

Filed Nov. 12, 1993, Ser. No. 152,005

Int. Cl.[6] H04Q *7/30;7/20*

U.S. Cl. 379—58 **52 Claims**

19. A mobile data base station (MDBS) configured to transfer cellular digital packet data (CDPD) between at least one mobile subscriber and an external communication network (MD-IS), said MDBS comprising:



a controller board operatively connected to said MD-IS via a data link, arranged to receive and convey operating instructions

a plurality of transceiver boards providing a radio links to mobile subscribers, said transceiver boards each being separate and distinct from said controller board,

wherein said MDBS is co-located with an analog voice cellular control and switching station,

wherein said controller board and said transceiver board are operatively interconnected through a backplane,

wherein at least one power supply board operatively connected to supply power to said controller board and said transceiver board, through said backplane, said backplane comprising at least one HDLC serial bus line,

wherein said power supply board comprises means for detecting power abnormalities throughout said power supply board, said backplane, said controller board and said transceiver board,

wherein said controller boards, operatively connected through said backplane in a master/slave relationship between one of said controller boards designated as a master controller board and all remaining controller boards designated as slave controller boards,

wherein said slave controller boards operate in a redundant fashion to said master controller board,

wherein said master/slave relationship between said plural controller boards is determined by respective mounting positions of each said controller board,

wherein each said controller board comprises means for receiving external instruction data transmitted through a first utility port and a data link to an external communication network,

wherein said master controller board comprises means for functional transmission of signals from said first utility port to said slave controller boards,

wherein said master controller board comprises means for de-activating transmission of signals from said data link to said slave controller boards,

wherein external instruction data from said first utility port and said network port is downloaded into said master controller board, said master controller board and said slave controller boards being operatively connected to that said external instruction data is downloaded from said master controller board into said slave controller boards,

wherein each said controller board comprises a first field programmable gate array operatively connected to a first input/output (I/O) processor and said backplane and programmed to control data interface with said backplane,

wherein said first field programmable gate array comprises means for determining the presence of boards in said distinct mounting positions,

and means for determining status of said boards in respective distinct mounting positions,

wherein said transceiver board comprises a transceiver portion, a modem portion and a control portion,

wherein said transceiver portion comprises a first transmitter, a first receiver and a dedicated analog voice communication detector, and

wherein said dedicated analog voice communication detector is operatively connected to a digital signal processor (DSP).

5,544,223

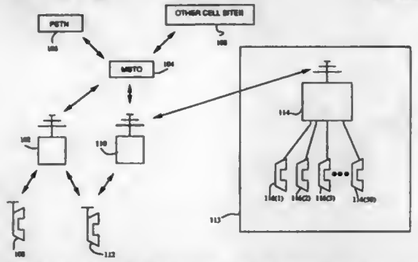
METHOD AND APPARATUS FOR PAGING A CONCENTRATED SUBSCRIBER SYSTEM FOR WIRELESS LOCAL LOOP

Barry R. Robbins, and Noam A. Ziv, both of, San Diego, Calif., assignors to Qualcomm Incorporated, San Diego, Calif.

Filed Jan. 31, 1995, Ser. No. 382,472

Int. Cl.[6] H04Q *7/30;7/38*

U.S. Cl. 379—58 **30 Claims**



11. An apparatus for generating paging messages in a cellular telephone system comprising:

means for tracking a concentrated subscriber system status for a subscriber unit and for generating a paging code in a first manner if said concentrated subscriber system status is positive, and in a second manner if said concentrated subscriber system status is negative; and

means for generating a paging message based on said paging code.

5,544,224

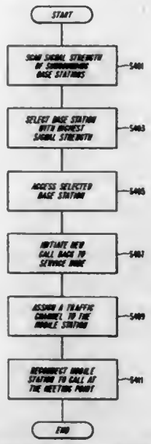
REESTABLISHMENT

Bjorn E. R. Jonsson, Jarfalla, and Walter Ghisler, Upplands Vasby, both of, Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Continuation of Ser. No. 63,976, May 20, 1993, abandoned. This application Mar. 10, 1995, Ser. No. 402,391

Int. Cl.[6] H04Q *7/20*

U.S. Cl. 379—58 **39 Claims**



1. A method for reestablishing a call after the call has been disconnected involving a terminal in a communication system, wherein a first radio communication path has been established between the terminal and a first radio station before the disconnection of the call and a second radio communication path is established between the terminal and the second radio station after the disconnection of the call, and wherein a wired communication path is established from the second radio station to a meeting point selected by a service node common to a plurality of such communication paths, at which meeting point the parties of the call are connected together, said method comprising the steps of:

initiating a new call back across said second radio communication path to said meeting point, wherein said terminal initiates said call back to said service node using an interaction number which is different from a called party's number and is entered and stored prior to call disconnection in said terminal or in equipment permanently connected to said terminal; and

said meeting point, when receiving said interaction number, reconnecting the terminal to the opposite party.

5,544,225

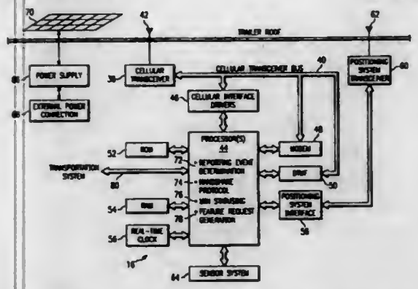
DATA MESSAGING IN A CELLULAR COMMUNICATIONS NETWORK

William C. Kennedy, III, Dallas, and Kenneth R. Westeriage, Fort Worth, both of Tex., assignors to Highwaymaster Communications, Inc., Dallas, Tex.

Continuation of Ser. No. 175,256, Dec. 28, 1993, which is a continuation-in-part of Ser. No. 95,166, Jul. 20, 1993, which is a continuation-in-part of Ser. No. 826,521, Jan. 27, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 465,525

Int. Cl.[6] H04M *11/00*

U.S. Cl. 379—59 **26 Claims**



1. A system for communicating location or status information of a mobile item to be monitored using a cellular telephone network, comprising:

a messaging unit coupled to the mobile item, the messaging unit having a cellular transceiver coupled to the cellular telephone network, the messaging unit operable to alter an identifier of the cellular transceiver to reflect the location or status information of the mobile item and to transmit the altered identifier of the cellular transceiver; and

a platform coupled to the cellular telephone network and operable to recognize a received altered identifier transmitted by the messaging unit to obtain the location or status information of the mobile item.

5,544,226

PRIVATE BRANCH EXCHANGE HAVING A CENTRAL CONTROL UNIT AND A MOBILE CONTROL UNIT SUBORDINATE THERETO

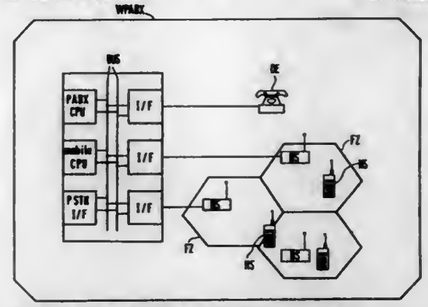
Bernd Weis, Korntal; Karl-Albert Turban, Leonberg; Monika Bezler, Stuttgart; Manfred Schulz, Hemmingen, and Gerd Siegmund, Stuttgart, all of, Germany, assignors to Alcatel N.V., Netherlands

Continuation of Ser. No. 936,894, Aug. 19, 1992, abandoned. This application Sep. 11, 1995, Ser. No. 526,354

Claims priority, application Germany, Aug. 30, 1991, 41 28 811.4

Int. Cl.[6] H04Q *7/26*

U.S. Cl. 379—61 **13 Claims**



1. A private branch exchange (PABX) comprising:

a plurality of interface modules (I/F) configured for connecting a plurality of corded terminals (DE) by wire and for connecting at least one base station (BS) which serves a radio cell (FZ) and is connectable via an air interface to a plurality of cordless terminals (HS);

a central control unit (PABX CPU) for processing all call handling in the private branch exchange for the plurality of corded terminals (DE), including processing corded terminal call-setup and corded terminal connection orders, and for further processing only a part of the call handling for the plurality of cordless terminals (HS) in response to a mobile control message signal, including processing all cordless terminal connection orders in a same manner as corded terminal connection orders, but not processing cordless terminal call-setup and call-cleardown messages;

a mobile control unit (mobile CPU) subordinate to the central control unit (PABX CPU) for processing all cordless terminal call-setup and call-cleardown messages for a predetermined set of call numbers assigned to the plurality of cordless terminals (HS), and for providing the mobile control message signal to the central control unit (PABX CPU); and

a bus system (BUS) to which are connected the central control unit (PABX CPU), the mobile control unit (mobile CPU), and the interface modules (I/F) for exchanging control messages and executing switching tasks..

5,544,227

RADIOTELEPHONE COMMUNICATIONS SYSTEM WITH DIRECT ACCESS TO INTEROFFICE TELEPHONE TRUNK CIRCUITS AND INTERFACE THEREFOR

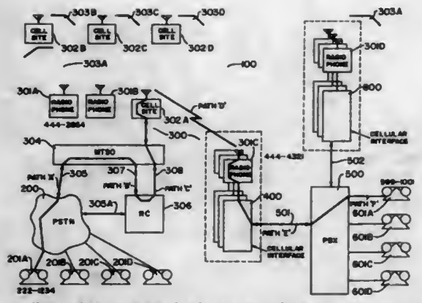
Stephen M. Blust, Lawrenceville; Edward L. Comer, Marietta, and Jere T. Sandidge, Stone Mountain, all of Ga., assignors to BellSouth Corporation, Atlanta, Ga.

Continuation of Ser. No. 114,648, Aug. 31, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 474,522

Int. Cl.[6] H04Q *7/26*

U.S. Cl. 379—63 **10 Claims**

1. A telephone system comprising:



a radiotelephone communications system including: one or more radiotelephones; one or more base stations for radio communicating with one or more of said radiotelephones; a radiotelephone switching office for selectively connecting calls between radiotelephones via said base stations;

a further system including: one or more first telephone stations; a telephone switching system for coupling calls to and from said one or more first telephone stations; a telephone trunk circuit used with said telephone switching system, said telephone trunk circuit for connecting to an interoffice telecommunications facility, said telephone trunk circuit utilizing supervision for effecting call origination and/or termination and signalling for effecting transfer of call routing information;

an interface circuit for interfacing a first of said radiotelephones with said telephone trunk circuit so that calls are routed between said radiotelephone communication system and said first telephone stations of said further system through said telephone switching system comprising: first means adapted to interact with said supervision for interfacing said supervision with said first radiotelephone for effecting a call origination and/or termination; and second means adapted to interact with said signalling for interfacing said signalling with said first radiotelephone for effecting transfer of call routing information;

said further system further including: a public switched telephone network; one or more second telephone stations connected to said public switched telephone network; said public switched telephone network being coupled to said radiotelephone switching office so that calls are coupled between a second telephone station and a radiotelephone served by the radiotelephone communications system or between a second telephone station and said first telephone station served by the radiotelephone communications system via said first of said radiotelephones; and

said radiotelephone communications system further comprising: routing correlator (RC) means having a correlation table for correlating the routing numbers of said first telephone stations with the routing number of said first radiotelephone interfaced by said interface circuit; and said radiotelephone switching office and said RC cooperating such that calls from said second telephone stations routed to said radiotelephone switching office are routed by said radiotelephone switching office to said RC to determine from said correlation table whether the routed call is to a routing number of a first telephone station correlated to said interfaced first radiotelephone and if so routing said call to said interfaced radiotelephone and transmitting said routing number to said interfaced radiotelephone and said interface.

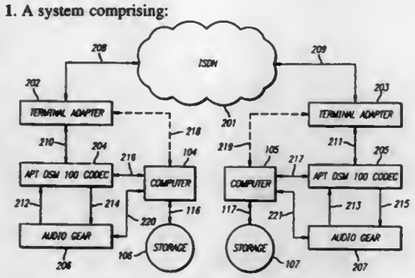
5,544,228

METHOD AND APPARATUS FOR TRANSMISSION OF FULL FREQUENCY DIGITAL AUDIO

Byron D. Wagner, Sherman Oaks; Von W. Johnson, Burbank; Jeffrey S. Miller, Agoura, and Richard T. Dempsey, Canyon Court, all of Calif., assignors to The Walt Disney Company, Burbank, Calif.

Filed Sep. 27, 1993, Ser. No. 127,586
Int. Cl.[6] H04M *1/64*
U.S. Cl. 379—67 **24 Claims**

1. A system comprising:



a network for transmitting digital information;

a plurality of sites coupled to said network, said plurality of sites comprising:

an audio source for providing an analog audio input signal;

a speaker for reproducing an analog audio output signal;

analog-to-digital conversion means coupled to said audio source for converting said analog audio input signal to a digital audio input signal;

a data compression means coupled to said analog-to-digital conversion means to convert said digital audio input signal to a compressed digital audio input signal;

digital-to-analog conversion means coupled to said speaker for providing said analog audio output signal to said speaker;

a first network interface means coupled to said data compression means, said first network interface means for transmitting said compressed digital audio input signal to said network;

a second network interface means coupled to said network for receiving said compressed digital audio input signal from said network:

digital audio storage means coupled to said second network interface means;

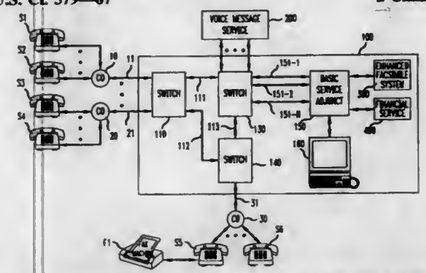
wherein said analog audio input signal is converted by said analog-to-digital conversion means to said digital audio input signal, and wherein said digital audio input signal is converted to said compressed digital audio input signal and transmitted by said network to said digital audio storage means for storage therein, and wherein said digital audio storage means retrieves said compressed digital audio input signal, wherein said compressed digital audio input signal is converted to said analog audio output signal by said digital-to-analog conversion means, and wherein said speaker reproduces said analog audio output signal.

5,544,229

SYSTEM FOR PROVIDING PERSONALIZED TELEPHONE CALLING FEATURES

Carroll W. Creswell, Basking Ridge; Steven G. Lanning, Gillette; Carol J. Papazian, Bridgewater, and James M. Rulon, Randolph, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Continuation of Ser. No. 905,265, Jun. 26, 1992, Pat. No. 5,384,831, which is a continuation-in-part of Ser. No. 754,109, Sep. 3, 1991, Pat. No. 5,222,125. This application Jan. 23, 1995, Ser. No. 376,501
Int. Cl.[6] H04M *3/42; 1/64*
U.S. Cl. 379—67 **2 Claims**



1. A communication system for providing personalized calling services comprising

means for storing a caller identifier for each of a plurality of subscriber telephone numbers,

means for answering a telephone call directed to a particular one of said subscriber telephone numbers,

means, responsive to receiving a caller identifier after said telephone call has been answered, for prompting said caller to select one of a number of different personalized calling services, and

means, responsive to receiving an indication that said caller has selected a particular one of said calling services, interacting with said caller for the purpose of receiving a telephone number identifying a destination of a facsimile,

means, responsive to receipt of said telephone number, for transmitting a carrier tone to said caller, for then interacting with the caller's facsimile machine for the purpose of receiving a facsimile from said machine and for then retransmitting said facsimile to said destination.

5,544,230

METHOD AND APPARATUS FOR RECORDING AND PLAYING BACK A TELEMARKETING SALES PRESENTATION

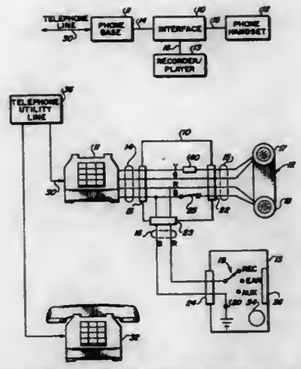
Timothy J. Megyesi, 4001 N. 32nd Way, Phoenix, Ariz. 85018

Filed Aug. 5, 1993, Ser. No. 102,401
Int. Cl.[6] H04M *11/10*
U.S. Cl. 379—67 **3 Claims**

1. A method for recording and playing back a sales presentation for use in telemarketing, the method comprising the steps of:

providing a first telephone having an audio output for transmitting audio signals from the first telephone's base to the first telephone's earpiece and an audio input for receiving audio signals at the first telephone's base from the first telephone's mouthpiece;

serially inserting an interface device between said first telephone's base and said first telephone's earpiece and mouthpiece, said interface device having a first pair of wires for connecting said first telephone's audio output to said first telephone's earpiece, a second pair of wires for connecting said first telephone's audio input to said first telephone's mouthpiece, a third pair of wires for also connecting said first telephone's audio input to a switch of a record/playback device which selectively switches between a recording input and a playback output of the record/playback device, and



selective inhibiting means, inserted within one of said second pair of wires, which selectively inhibits sound transmission from said first telephone's mouthpiece without disturbing the connections provided by said first and third pair of wires;

completing a telephone call from said first telephone to a second telephone;

selectively switching said switch to the recording input position;

inhibiting sound transmission from the second telephone's mouthpiece;

recording a telemarketing sales presentation input into said record/playback device via said first telephone's mouthpiece;

selectively switching said switch to the playback output position; and

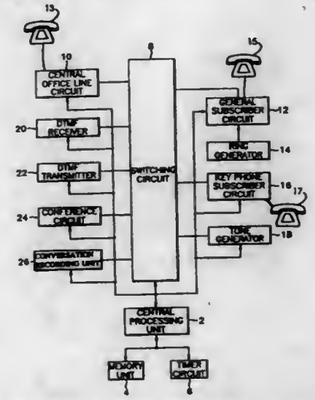
playing back said recorded sales presentation via said playback output.

5,544,231

CONVERSATION RECORDING/PLAYBACK METHOD IN A KEY PHONE SYSTEM

Seung-Hwan Cho, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Apr. 28, 1994, Ser. No. 233,417
Claims priority, application Rep. of Korea, May 31, 1993, 9490/1993
Int. Cl.[6] H04M *1/64*
U.S. Cl. 379—67 **22 Claims**



1. A conversation recording method in a key phone system comprising a timer circuit for generating time data indicative of a current time, a conversation recording unit for recording voice data and time data from a conversation between two subscribers within

JU 1189 .S4 1 AG 6 1996 UMI

said key phone system, and a conference circuit for establishing a call among said two subscribers and said conversation recording unit, said method comprising the steps of:

establishing said call among a first subscriber that enters a start-recording code, a second subscriber connected to said first subscriber via a telephone line within said key phone system, and said conversation recording unit, said call established in response to entry of said start-recording code by said first subscriber;

selecting one of a plurality of memory units within said conversation recording unit that corresponds to said first subscriber to store first voice data from a conversation between said first subscriber and said second subscriber and first time data representative of a time duration of said conversation between said first subscriber and said second subscriber;

recording said first voice data from said conversation between said first subscriber and said second subscriber in said one of said plurality of memory units within said conversation recording unit that corresponds to said first subscriber;

ending recording of said conversation between said first subscriber and said second subscriber in response to an end-recording code entered by said first subscriber;

recording said first time data representative of said time duration of said conversation between said first subscriber and said second subscriber in said one of said plurality of memory units within said conversation recording unit that corresponds to said first subscriber; and

then terminating said call.

5,544,232

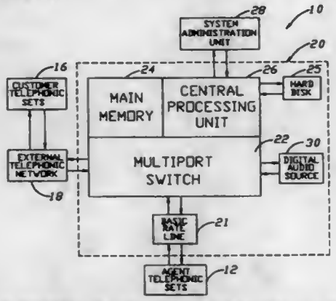
CALL DISTRIBUTOR WITH AUTOMATIC PREANNOUNCEMENT SYSTEM AND METHOD

Daniel F. Baker, Rolling Meadows, and Joseph C. Steinlicht, Glen Ellyn, both of Ill., assignors to Rockwell International Corporation, Seal Beach, Calif.

Continuation of Ser. No. 977,779, Nov. 19, 1992, abandoned. This application Jun. 8, 1995, Ser. No. 488,709

Int. Cl.[6] H04M *1/64*

U.S. Cl. 379—67 **35 Claims**



1. In an automatic call distributor having a plurality of agent sets each with a telephone to communicate with incoming telephone calls from customers at customer sets of an external telephonic switching system and a visual display for displaying information concerning customers, the improvement being an automated pre-announcement system, comprising:

means for storing preannouncement voice messages in different voices of a plurality of different agents respectively;

means for associating a sign-in code with a particular agent of the plurality of different agents;

means at the plurality of agent sets for entering in the sign-in code; and

means responsive to the sign-in code entered at any one of the plurality of agent sets to enable at least one of the preannouncement voice messages in the voice of the particular agent associated with the sign-in code to BE automatically played to incoming telephone calls from customers which have been connected by the automatic call distributor to the one of the agent sets at which the sign-in code of the particular agent has been entered and in which the at least one of the preannouncement voice messages is played in the voice of the particular agent connected to the incoming telephone calls upon the initial connection of the incoming telephone calls by the automatic call distributor to the one of the agent sets.

5,544,233

COMMUNICATION PROCESSING APPARATUS, COMMUNICATION

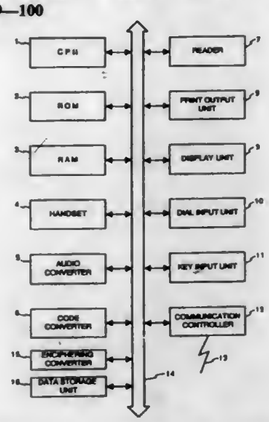
Kazumasa Sugino, Inagi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 936,625, Aug. 28, 1992, Pat. No. 5,425,082. This application Jan. 24, 1995, Ser. No. 377,785

Claims priority, application Japan, Sep. 4, 1991, 3-223910; Jul. 20, 1992, 4-192322

Int. Cl.[6] H04M *11/00;1/64*

U.S. Cl. 379—100 **14 Claims**



1. A communication processing apparatus comprising:

first converting means for converting an analog audio signal into digital audio data;

second converting means for converting the digital audio data, which has been converted by said first converting means, into character code data so as to be transmittable as a control document; and

transmitting means for transmitting the character code data converted by said second converting means,

wherein said transmitting means transmits the converted character code data and text data as the control document, and

wherein when said transmitting means transmits the audio signal as character code data, said transmitting means sets a type of data of the control document as audio data and transmits the character code data.

5,544,234

FACSIMILE APPARATUS WITH AUTOMATIC ANSWERING TELEPHONE FUNCTION, AND COMMUNICATION METHOD IN SAID APPARATUS

Hisao Terajima, Yokohama; Shigeru Koizumi, Urawa; Toru Nakayama, Yokohama; Tomoyuki Takeda, Yokohama; Hiromichi Uno, Yokohama; Kaori Nakagawa; Hideki Shimizu, both of Kawasaki, and Mitsuo Morita, Tokyo, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 266,106, Jun. 27, 1994, abandoned, which is a continuation of Ser. No. 937,675, Sep. 1, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 479,860

Claims priority, application Japan, Sep. 4, 1991, 3-224217; Nov. 14, 1991, 3-298989; Nov. 19, 1991, 3-303278; Feb. 26, 1992, 4-075276; Apr. 28, 1992, 4-136343; Jun. 19, 1992, 4-186368

Int. Cl.[6] H04M *11/00;1/64*

U.S. Cl. 379—100 **33 Claims**

1. A facsimile apparatus capable of being connected to a communication terminal which is able to perform predetermined communication in response to an incoming call on a communication line without an operation of the communication terminal being controlled by a control means of said facsimile apparatus, said facsimile apparatus comprising:

facsimile communication means for performing a facsimile communication;

line connecting means for connecting and disconnecting the communication terminal to/from the communication line via said facsimile apparatus;

first detecting means for detecting whether or not a calling party is a facsimile apparatus, in a condition where the communication terminal is connected to the communication line by said line connecting means;

second detecting means for detecting whether or not a received signal contains a control signal for controlling the communication terminal in a condition where the communication terminal is connected to the communication line by said line connecting means;

said control means for causing said line connecting means to disconnect the communication terminal from the communication line and for controlling said facsimile communication means so as to start facsimile communication, in accordance with a detection signal from the first detecting means indicating that the calling party is a facsimile apparatus; and

inhibiting means for inhibiting transition to facsimile communication by said control means in a condition where the communication terminal is connected to the communication line by said line connecting means, when the control signal is detected by said second detecting means.

5,544,235

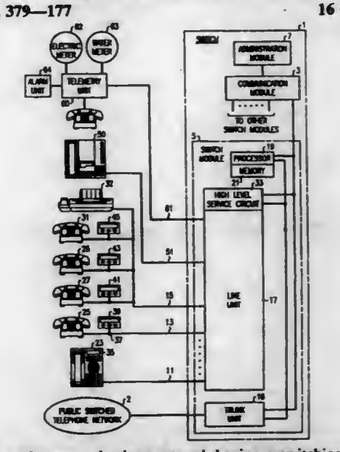
IDENTIFICATION OF CALLED DIRECTORY NUMBER AT MULTIPLE DIRECTORY NUMBER 20 PER LINE PREMISES PRIOR TO RINGING SIGNAL RECEPTION

Menachem T. Ardon, Naperville, Ill., assignor to AT&T Corp., Murray Hill, N.J.

Continuation of Ser. No. 26,919, Mar. 5, 1993, abandoned. This application Nov. 23, 1994, Ser. No. 344,787

Int. Cl.[6] H04M *5/20;13/00*

U.S. Cl. 379—177 **16 Claims**



1. In a telecommunications network having a switching system directly connected to a called station at a customer premises by one line, wherein said called station includes an audible signaling device, said customer premises also having a converter connected to said one line, wherein multiple directory numbers are assigned to said one line at said switching system, a method for identifying at said customer premises which one of said multiple directory numbers is being called, said method comprising the steps of:

receiving, in said switching system, signals from a calling station identifying one of said multiple directory numbers assigned to said one line of said called station;

said switching system delivering data on said one line identifying said one of said multiple directory numbers being called;

said converter converting said data into an identification of said one of said multiple directory numbers being called at said customer premises by generating in the called station an audible signal different for each of said multiple directory numbers depending upon said one of said multiple directory numbers being called; and

said switching system subsequently delivering a ringing signal to said called station on said one line, said ringing signal being the same for all of said multiple directory numbers assigned to said one line.

5,544,236

ACCESS TO UNSUBSCRIBED FEATURES

Donald L. Andruska, Glen Ellyn, and Venkata C. Majeti, Naperville, both of Ill., assignors to AT&T Corp., Murray Hill, N.J.

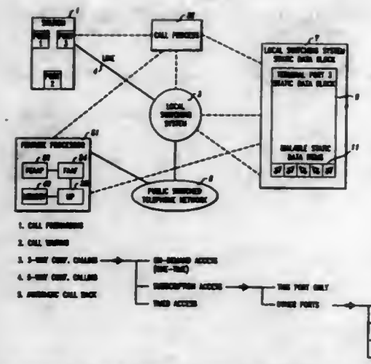
Filed Jun. 10, 1994, Ser. No. 258,197

Int. Cl.[6] H04M *3/42;11/00*

U.S. Cl. 379—201 **20 Claims**

1. An automated method of temporarily providing additional services on demand as part of a call process for a caller's terminal port in a telecommunications network, comprising:

accessing by a feature processor of a block of data in a first region of the network which defines services then available to the caller's terminal port;



accessing by a feature processor a block of data in a second region of the network which defines additional services available for the network;

receiving on demand inputs initiated by a caller;

populating the second region of the network using the feature processor with data which identifies one or more additional services as selected for the call process;

overlaying the first region data with the second region data whereby at least a portion of the second region data overshadows at least a portion of the first region data to control the call process and provide the caller, from the additional services defined in the second region data, additional services at the port temporarily during the call process;

leaving the data in the first region unchanged by the overlaying; and

automatically removing the overlaying second region upon satisfaction of the demand.

5,544,237

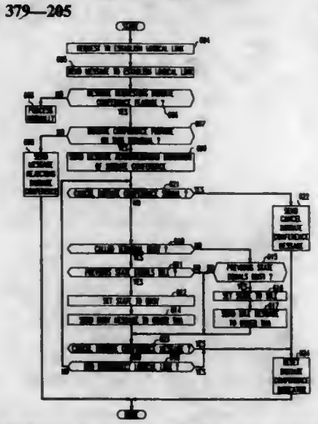
AUTOMATIC CONFERENCE INITIATION UPON ALL TELEPHONES FOR THE CONFERENCE BEING IDLE

Bruce M. Bales, Louisville, and Stephen M. Thieler, Boulder, both of Colo., assignors to AT&T Corp., Murray Hill, N.J.

Filed Dec. 22, 1994, Ser. No. 362,678

Int. Cl.[6] H04M *3/56*

U.S. Cl. 379—205 **26 Claims**



1. A method for forming a conference call upon on all station sets party to the conference call being idle, comprising the steps of:

establishing logical links between designated station sets and a station set that is initiating the conference call by the initiating station set;

receiving first messages by the initiating station set via the logical links from each of the designated station sets where the first message defines when the sending designated station set is idle;

controlling setting up the conference call by the initiating station set upon all of the designated station sets and initiating station set being idle.

5,544,238

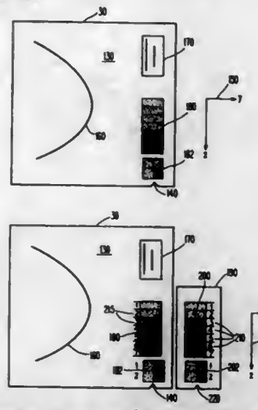
METHOD OF AND APPARATUS FOR STANDARDIZING AND MONITORING BEAM QUALITY IN MAMMOGRAPHY

Benjamin M. Galkin, Cherry Hill, N.J., assignor to Thomas Jefferson University, Philadelphia, Pa.

Continuation-in-part of Ser. No. 101,950, Aug. 4, 1993, Pat. No. 5,406,612, which is a division of Ser. No. 787,849, Nov. 5, 1991, Pat. No. 5,276,726, which is a continuation-in-part of Ser. No. 441,567, Nov. 24, 1989, Pat. No. 5,063,583. This application Nov. 28, 1994, Ser. No. 345,162

Int. Cl.[6] G01D *18/00*

U.S. Cl. 378—207 **1 Claim**



1. A method of correcting measured physical parameters of a radiographic image having a structure of interest for the effect on image quality of a film processor which develops said radiographic image on a film having an emulsion, comprising the steps of:

shielding a first portion of the film along one edge of the film from x-ray energy used for imaging of the structure of interest;

providing a beam quality phantom as said structure of interest;

impressing a first calibrated test pattern on the first portion of the film, said first pattern comprising a first calibrated graded stepwise density pattern having density positions, said density pattern produced by visible light of controlled intensity and spectrum;

providing a control film of similar emulsion as the emulsion of said film;

impressing a second calibrated test pattern along one edge of said control film said second calibrated test pattern comprising a second calibrated graded stepwise density pattern having density positions, said density pattern produced by visible light of controlled intensity and spectrum, wherein the intensity and spectrum of the visible light used for impressing said first calibrated test pattern and second calibrated test pattern are similar;

processing the film in a film processor to develop the first calibrated test pattern on the first portion of the film and the radiographic image of the structure of interest on the second portion of the film;

processing said control film to develop the second calibrated test pattern;

measuring the performance of the film processor used to develop the film by comparing the density positions between the first calibrated test pattern on the film and the second calibrated test pattern on the control film which match;

optically magnifying said structure of interest forming a magnified image, wherein the light source used is corrected for variation in light intensity;

converting said magnified image to an electrical signal;

measuring physical parameters of the magnified image of the structure of interest from said electrical signal; and

correcting the measured physical parameters for the effect of the film processor by adjusting said parameters in relation to the optical density values at the match positions of the first and second calibrated test patterns.

5,544,239

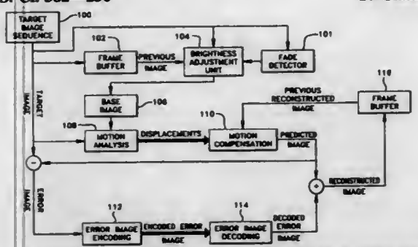
METHOD AND APPARATUS FOR IMPROVING MOTION ANALYSIS OF FADES

Stuart J. Golin, East Windsor, and Adnan M. Alattar, Plainsboro, both of N.J., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 996,711, Dec. 14, 1992, abandoned. This application Jun. 10, 1994, Ser. No. 257,950

Int. Cl.[6] H04N *11/02*

U.S. Cl. 382—236 **10 Claims**



1. A computer-implemented method for forming a compressed digital video signal from a target digital video signal representative of a target image in a sequence of digital motion video images, said target image being represented by an array of pixels, the method comprising the steps of:

(a) selecting a previous image from said sequence;

(b) determining whether said target image is within a fade and, if said target image is determined to be within a fade, then calculating a base image by adjusting the brightness of said selected previous image; step (b) comprising the steps of:

determining the average value of said target image:

(ii) determining the average value of said selected previous image:

(iii) calculating a brightness difference value by determining the difference of the average values determined in steps (b)(i) and (b)(ii); and

(iv) calculating a base image by reducing the brightness of said selected previous image by said brightness difference value;

(c) providing at least one displacement vector representing the magnitude and direction of the displacement between at least one region of pixels in said target image and a corresponding region of pixels in said base image;

(d) applying said at least one displacement vector to a corresponding region of pixels in a previous reconstructed image to form a predicted image;

(e) encoding said at least one displacement vector;

(f) subtracting pixel values in said predicted image from corresponding pixel values in said target image to form an error image;

(g) encoding said error image; and

(h) forming said compressed digital video signal from said target digital video signal in accordance with said at least one encoded displacement vector and said encoded error image, wherein said compressed digital video signal is an electrical signal representative of said target digital video signal;

wherein said pixels of said target image have associated values representative of the amplitude of said target digital video signal, and wherein said target digital video signal is representative of an electrical signal used to display said target image.

5,544,240

IMAGE PROCESSING APPARATUS WITH IMPROVED DATA CONVERSION TESTING

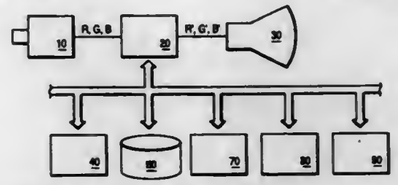
Paul Warren, Basildon, England, assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 965,814, Oct. 23, 1992, abandoned. This application Jan. 31, 1995, Ser. No. 382,940

Claims priority, application European Pat. Off., Nov. 14, 1991, 91310541

Int. Cl.[6] G06K *9/38*

U.S. Cl. 382—270 **11 Claims**



1. An image processing apparatus comprising:

a first memory for storing a plurality of digital data words corresponding to different pixels of an image;

a digital to analog convertor for converting the digital data words into an analog video signal;

an analog to digital convertor for converting the analog video signals into captured digital data values, each captured digital data value corresponding to a different one of the digital data words stored in the first memory;

a second memory for storing the captured digital data values;

analyzer logic coupled to the first and second memories, the analyzer logic comprising:

means for setting each digital data word in the first memory to a common test digital data value;

means for averaging captured digital data values derived from the test digital data value to generate a mean digital captured value;

means for determining any difference between the mean digital captured value and the test digital data value to identify any amplification error in the captured digital value data values;

means for determining first and second tolerance values respectively greater than and less than the mean captured digital value; and

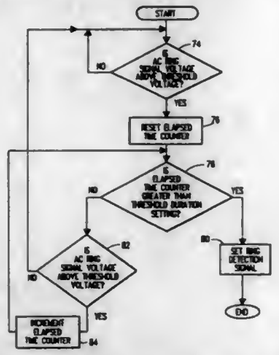
means for counting the captured digital data values between the first and second tolerance limits to identify any quantization errors in the captured digital data values.

JUL 1189 AG 6 1996 UMI

5,544,241
TELEPHONE RING DETECTOR

Andrew S. Dibner, 7 Norman Rd., Newton, Mass. 02161, and William Wang, Lexington, Mass., assignors to Andrew S. Dibner, Newton, Mass.

Filed Jun. 27, 1995, Ser. No. 495,813
Int. Cl.[6] H04M *1/00;3/00*
U.S. Cl. 379—373 **24 Claims**



23. A method of detecting a telephone ring signal comprising:

detecting a ring signal voltage;

comparing said ring signal voltage to a predetermined threshold voltage;

providing an output when said ring signal voltage exceeds said predetermined threshold voltage;

measuring a time duration of said output;

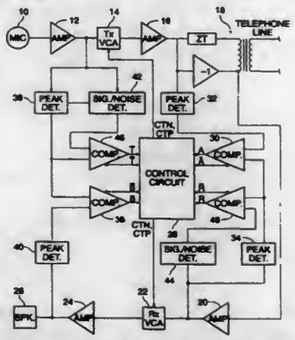
comparing said time duration to a predetermined time interval; and

providing a ring detection output signal when said time duration of said output exceeds said predetermined time interval, said predetermined time interval being less than a ring cycle.

5,544,242
SPEAKERPHONE WITH EVENT DRIVEN CONTROL CIRCUIT

Neil E. Robinson, Sunnyvale, Calif., assignor to Exar Corporation, San Jose, Calif.

Continuation of Ser. No. 67,460, May 25, 1993, abandoned. This application Dec. 6, 1994, Ser. No. 351,573
Int. Cl.[6] H04M *9/08*
U.S. Cl. 379—390 **20 Claims**



1. In a speakerphone circuit having analog transmit and receive channels with transmit and receive analog amplifiers, a control circuit for varying the gain of the amplifiers, comprising:

means, coupled to at least the inputs of said transmit and receive amplifiers, for measuring the relative magnitude of signals in said transmit and receive channels;

means, coupled to said transmit and receive channels, for detecting the presence of a voice signal on said transmit and receive channels; and

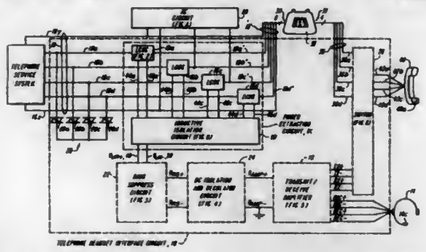
an event driven circuit, having inputs coupled to said means for measuring and said means for detecting and outputs coupled to said transmit and receive amplifiers, for varying the gain of said amplifiers in accordance with said inputs and a present state of said event driven circuit;

said event driven circuit having a transmit state, a receive state, an idle state and at least one transition state between said transmit and receive states.

5,544,243
TELEPHONE HEADSET INTERFACE CIRCUIT

Costas Papadopoulos, Acton, Mass., assignor to VXI Corporation, Rollinsford, N.H.

Continuation-in-part of Ser. No. 62,595, May 17, 1993. This application Aug. 10, 1994, Ser. No. 288,941
Int. Cl.[6] H04M *9/00*
U.S. Cl. 379—413 **13 Claims**



1. A telephone interface for use with a telephone, said telephone having a first connector for connection to a telephone line and a second connector for connection to a telephone voice accessory, wherein said telephone line includes at least a first and second pair of wires, said telephone interface comprising:

a power extraction circuit coupled to said first pair of wires for providing a predetermined output voltage in response to a specified DC voltage provided on said first pair of wires and in the absence of AC voltage on said second pair of wires,

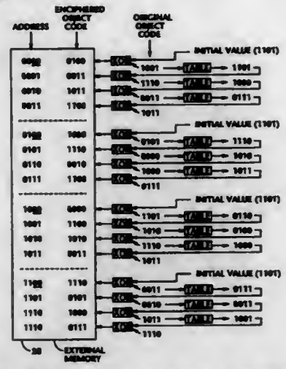
a power compensatioo circuit coupled to both said first and second pairs of wires for controlling said power extraction circuit to provide said predetermined output voltage in response to the presence of AC voltage on said second pair of wires, wherein said power compensation circuit controls said power extraction circuit to maintain substantially the same electrical impedance characteristics to said first pair of wires regardless of the presence or absence of AC voltage on said second pair of wires; and

an amplifier coupled to said second connector and to said power extraction circuit, said amplifier being powered by said output voltage.

5,544,244
METHOD FOR PROTECTING AN ENCIPHERED COMPUTER OBJECT CODE AGAINST CRYPTANALYSIS

Naoyuki Ogura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 28, 1994, Ser. No. 330,568
Claims priority, application Japan, Oct. 28, 1993, 5-270718
Int. Cl.[6] H04L *9/00*
U.S. Cl. 380—4 **8 Claims**



1. A method of sequentially enciphering a plurality of instructions of a computer object code, the enciphered instructions being stored in a memory, said method comprising the steps of:

enciphering, using a first value, each of first instructions if the first instruction is supplied for encipherment, said plurality of first instructions being separately located, in said computer object code, away from an adjacent first instruction by a predetermined number of instructions; and

enciphering, using a second value, each of a plurality of instructions other than said first instructions, said second value being determined by transforming an immediately preceding instruction.

5,544,245
MUTUAL AUTHENTICATION/CIPHER KEY DELIVERY SYSTEM

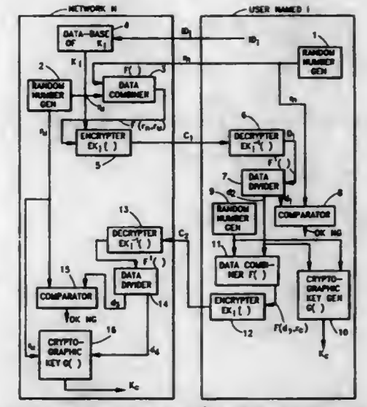
Hideki Tsubakiyama, Ohmiya, Japan, assignor to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 2, 1994, Ser. No. 252,847
Claims priority, application Japan, Jun. 10, 1993, 5-163898
Int. Cl.[6] H04K *1/00*
U.S. Cl. 380—21 **2 Claims**

1. A mutual authentication system in which a communication network and all its users have devices for implementing a common key cryptosystem; identifier ID_i of a user named i is made public in said network; an authentication key K_i of the user named i is known only to the network and the user named i;

wherein said network obtains a value by processing, with a specific function, a random number generated by said each user for the authentication of said network and sent to said network and a random number generated by said network, encrypts said value, using said authentication key of said user concerned as a cipher key and sends the encrypted value to said user concerned; and

wherein said network generates a data sequence for the authentication of each user and sends it to the user concerned, said user concerned decrypts it using his authentication key as a cipher key and processes the decrypted data with a specific function, processes a part of said processed data and a newly generated random number with another specific function, encrypts the processed value, using said authentication key of said user concerned as a cipher key and sends the encrypted data to said network,

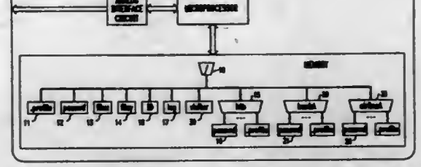


thereby making it impossible for a third party to make a chosen plaintext attack and a known plaintext attack on the encryption algorithm used.

5,544,246
SMARTCARD ADAPTED FOR A PLURALITY OF SERVICE PROVIDERS AND FOR REMOTE INSTALLATION OF SAME

Richard Mandelbaum, Manalapan; Stephen A. Sherman, Hackettstown, and Diane R. Wetherington, Bernardsville, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Sep. 17, 1993, Ser. No. 122,631
Int. Cl.[6] H04L *9/32*
U.S. Cl. 380—23 **9 Claims**



1. A multiple-application smartcard in connection with which there is a party that is an issuer/owner of the smartcard, a party that is a holder of the smartcard, and a service provider that accesses the smartcard, the smartcard comprising:

a microprocessor,

a memory coupled to the microprocessor,

a plurality of files in said memory which combine to form an operating system for the microprocessor, which operating system includes a tree-like file structure;

a plurality of executable files executed in said microprocessor, forming part of the tree-like structure and each having file characteristics that are controlled solely by said issuer/owner, which files are executable in the sense that, when referenced, they access at least one other file in said memory;

a first password file in said memory that is accessible only to said issuer/owner, which contains data and which is accessed by said issuer/owner prior to said issuer/owner gaining access to said plurality of executable files;

a second password file that is accessible only to said holder, which contains data and which is accessed by said holder prior to said holder gaining access to files in said plurality of executable files; and

a third password file that is accessible only to said service provider, which contains data and which is accessed by said

service provider prior to said service provider gaining access to files in said plurality of executable files.

5,544,247

TRANSMISSION AND RECEPTION OF A FIRST AND A SECOND MAIN SIGNAL COMPONENT

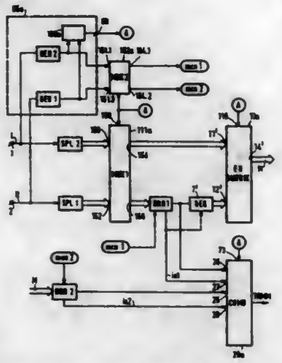
Warner R. T. Ten Kate, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 25, 1994, Ser. No. 328,999

Claims priority, application European Pat. Off., Oct. 27, 1993, 93203000

Int. Cl.[6] H04H *5/00*

U.S. Cl. 381—27 **25 Claims**



1. A transmitter for transmitting at least a first and a second main signal component via a transmission medium, the transmitter comprising

at least a first and a second input terminal for receiving the first and second main signal component,

at least a first and a second signal conversion means, each having an input coupled to a corresponding one of the input terminals and an output, the conversion means being adapted to convert an input signal applied to its input into M subsignals and to apply the M subsignals to its output,

multiplexer means having at least a first and a second input coupled to the outputs of the at least two signal conversion means, at least a first and a second output and a control signal input,

first compression means having an input coupled to the at least second output of the multiplexer means, the first compression means being adapted to carry out a data reduction step on the signal applied to its input in response to a first masking control signal and to supply a data compressed signal to an output,

masking control signal generator means for generating the first masking control signal for the first compression means, the first masking control signal having a relationship with a masking threshold of the signal applied to the input of the first compression means,

first expansion means is having an input and an output, the input being coupled to the first compression means, the expansion means being adapted to carry out a data expansion on the signal applied to its input so as to obtain a replica of the signal applied to the input of the first compression means and to supply the replica to its output,

matrixing means having at least a first and a second input, the first input being coupled to the first output of the multiplexer means and the second input being coupled to the output of the first expansion means, the matrixing means further having an output for supplying an output signal, the matrixing means being adapted to combine the signal applied to its first input and at least the signal applied to its second input so as to obtain the output signal,

second compression means having an input coupled to the output of the matrixing means and an output, the second compression means being adapted to carry out a data reduction step on the signal applied to its input in response to a second masking control signal and to supply a data reduced output signal to its output, the masking control signal generator means being adapted to generate the second masking control signal for the second compression means, the second masking control signal having a relationship with a masking threshold of the signal applied to the first input of the matrixing means,

instruction signal generator means for generating at least first and second instruction signals, the first instruction signal being generated for enabling an expansion in a receiver on the data reduced output signal of the first compression means so as to obtain a replica of the signal applied to the input of the first compression means, the second instruction signal being generated for enabling an expansion in the receiver on the data reduced output signal of the second compression means so as to obtain a replica of the output signal of the matrixing means,

control signal generator means for generating the control signal for the multiplexer means,

signal combination means for combining the output signals of the at least first and the second compression means as well as the first and second instruction signal and the control signal so as to enable the transmission of those output signals.

5,544,248

AUDIO DATA FILE ANALYZER APPARATUS

Toshihiko Date, Yamatokouriyama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 16, 1994, Ser. No. 261,107

Claims priority, application Japan, Jun. 25, 1993, 5-154713

Int. Cl.[6] H04R *29/00*

U.S. Cl. 381—56 **17 Claims**

		4 BYTES
CONTROL DATA	FILE NAME	N A M E
		B O M
	ADDRESS NAME	V O L M
		1 3 . 2 5 . 0 1
ANALYZED CHARACTERISTIC DATA	DURATION	T I M E
		0.360
	STEADINESS OF LOUDNESS	T C N T
		0.240
	STEADINESS OF TIMBRE	F C N T
		1918.9
	TONE	C E P T
		15.173
	BASS	L O W R
		0.653
	MIDRANGE	M I D R
		0.591
	TREBLE	H I G H
		0.271
	NOISE	N O I E
		0.595

1. An audio data file analyzer apparatus comprising:

a sound material input means for receiving an audio signal and producing an audio data file from the audio signal;

analyzing means for analyzing at least one of physical characteristics of the audio signal to produce an analyzed resultant data, said at least one of physical characteristics including a continuous time duration of the audio signal;

a control data input means for providing a control data for the audio data file;

a reference code generating means for producing a reference code from the analyzed resultant data and the control data; and

a reference code storing means for storing the reference code.

5,544,249

METHOD OF SIMULATING A ROOM AND/OR SOUND IMPRESSION

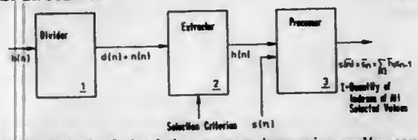
Martin Opitz, Vienna, Austria, assignor to AKG Akustische U. Kino-Geräte Gesellschaft m.b.H., Wien, Germany

Filed Aug. 19, 1994, Ser. No. 293,134

Claims priority, application United Kingdom, Aug. 26, 1993, 43 28 620.8

Int. Cl.[6] H03G *3/00;* **H04S** *1/00*

U.S. Cl. 381—63 **14 Claims**



1. A method of simulating a room impression and/or sound impression occuring at a representative listening location in a room with one of monophonic, stereophonic and multichannel reproduction, the method comprising the steps of:

selecting a room whose sound is to be simulated;

determining within the room a location of a representative listening location;

determining at the representative listening location a corresponding room impulse response at least for one channel;

determining for the determined room impulse response a threshold value which extends over at least a portion of the duration of the determined room impulse response; and

by comparing the determined room impulse response with the threshold value, producing a reduced room impulse response which within the portion of the duration of the determined room impulse response only includes those contents of the determined room impulse response in which a momentary amplitude is above the threshold value, while setting the reduced room impulse response to the value zero for those contents of the determined room impulse response whose momentary amplitude is below the threshold value, and which outside of the portion of the duration of the determined room impulse response contains the determined room impulse response in unchanged form.

5,544,250

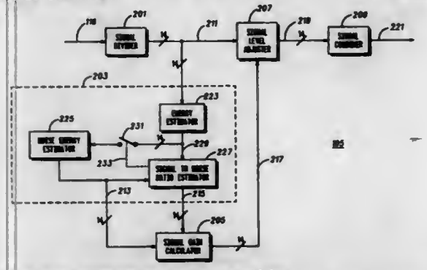
NOISE SUPPRESSION SYSTEM AND METHOD THEREFOR

Steven A. Urbanski, Round Lake Beach, Ill., assignor to Motorola, Schaumburg, Ill.

Filed Jul. 18, 1994, Ser. No. 276,737

Int. Cl.[6] H04B *15/00*

U.S. Cl. 381—94 **34 Claims**



1. A noise suppression system comprising:

a signal estimator, operatively coupled to receive an input signal, for producing a noise energy estimate of the input signal and a signal to noise ratio (SNR) estimate of the input signal;

a signal gain calculator, operatively coupled to the signal estimator, for calculating a gain value for the input signal according to a first function responsive to the noise energy estimate and the SNR estimate until the SNR estimate reaches a first predetermined SNR threshold, then calculating the gain value for the input signal according to a second function responsive to the noise energy estimate and the SNR estimate until the SNR estimate reaches a second predetermined SNR threshold below the first predetermined SNR threshold; and

a signal level adjuster, operatively coupled to the signal gain calculator, for adjusting the level of the input signal responsive to the gain value to produce an adjusted signal having suppressed noise.

5,544,251

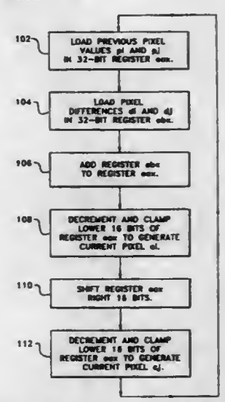
PROCESS AND APPARATUS FOR PSEUDO-SIMD PROCESSING OF IMAGE DATA

Rohan Coelho, Hillsboro, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 182,758, Jan. 14, 1994, abandoned. This application May 17, 1994, Ser. No. 243,291

Int. Cl.[6] G06K *9/36*

U.S. Cl. 382—232 **9 Claims**



1. A computer-implemented process for forming a decompressed digital video signal representative of a current digital video image, comprising the steps of:

(a) providing a first pixel signal corresponding to a first pixel of a previous digital video image;

(b) providing a second pixel signal corresponding to a second pixel of said previous image;

(c) providing a first quantized pixel difference value signal representing a first quantized pixel difference value between a first pixel of said current image and said first pixel of said previous image;

(d) providing a second quantized pixel difference value signal representing a second quantized pixel difference value between a second pixel of said current image and said second pixel of said previous image;

(e) loading a first value corresponding to said first pixel signal into a first register of a non-parallel processor;

(f) loading a second value corresponding to said second pixel signal into said first register;

(g) loading a third value corresponding to said first quantized pixel difference signal into a second register of said non-parallel processor;

(h) loading a fourth value corresponding to said second quantized pixel difference signal into said second register;

(i) currently generating first and second current pixel values corresponding respectively to said first and second pixels of said current image by adding the contents of said first and second registers in a single operation, wherein said quantized pixel difference values have been predetermined to ensure that

the additive result of said second and fourth values does not spillover into the additive result of said first and third values; and

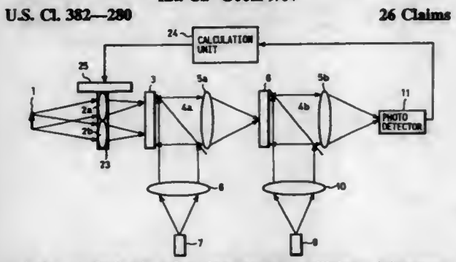
(j) generating said decompressed digital video signal in accordance with said first and second current pixel values.

5,544,252

RANGEFINDING/AUTOFOCUSING DEVICE OF JOINT TRANSFORM CORRELATION TYPE AND DRIVING METHOD THEREOF

Tadao Iwaki; Yasuyki Mitsuoka, and Nobuyuki Kasama, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

Filed Sep. 2, 1992, Ser. No. 939,130
Claims priority, application Japan, Sep. 6, 1991, 3-227402
Int. Cl.[6] G06K 9/64
U.S. Cl. 382—280 **26 Claims**



1. A rangefinding/autofocusing apparatus utilizing a joint transform correlator of a Fourier correlation optical system using a coherent light and having a correlation plane, the apparatus comprising:

input image forming means including a pair of imaging lens systems for imaging an object to form a pair of input images, a lens driving mechanism for driving the imaging lens systems in parallel manner, recording means for recording the input images, and displaying means for concurrently displaying the pair of the recorded input images in an offset relation relative to each other;

photodetecting means disposed on a correlation plane of a Fourier correlation optical system for detecting correlation peaks corresponding to a correlation coefficient of the pair of the displayed input images so as to measure an interval between the detected correlation peaks;

a calculation unit operative according to the measured interval of the correlation peaks for calculating a distance between the object and the pair of the imaging lens systems to determine a just-focus spacing between the recording means and the pair of the imaging lens systems; and

a feedback mechanism operative according to the determined just-focus spacing for controlling the lens driving mechanism to shift the pair of the imaging lens systems in a parallel manner to thereby establish a just-focus state.

5,544,253

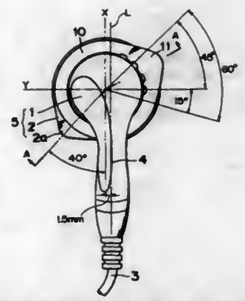
EARPHONE ASSEMBLY

Atsushi Nagayoshi, Katano, and Kazunori Kono, Hirakata, both of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 8, 1994, Ser. No. 286,259
Claims priority, application Japan, Aug. 6, 1993, 5-195878
Int. Cl.[6] H04R 25/00
U.S. Cl. 381—187 **20 Claims**

1. An earphone assembly to be fit in a human auricle, comprising:

an annular outer casing adapted to be fitted in a cavity of the auricle comprising a housing body and a front outer portion having a peripheral portion, said annular outer casing having



an electroacoustic transducer element securely incorporated therein and an outer circumference;

a cord supporting member on said annular outer casing for supporting a connection cord extending from said electroacoustic transducer element to outside of said annular outer casing; and

a movable member having an annular shape, said movable member being rotatably mounted with respect to the outer circumference of said annular outer casing and having a peripheral portion and a protruded portion protruding outwardly from a part of said peripheral portion of said movable member;

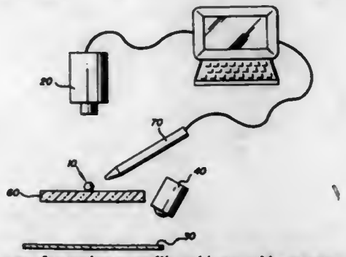
wherein said protruded portion of said movable member cooperates with said peripheral portion of said front outer portion of said annular outer casing to define a means for fitting and holding said earphone assembly in the cavity of the auricle.

5,544,254

CLASSIFYING AND SORTING CRYSTALLINE OBJECTS

Richard I. Hartley; Julia A. Noble, both of Schenectady; James C. M. Grande, Ballston Lake, all of N.Y.; William E. Jackson, Dublin, Ohio; Kenneth B. Welles, II, Scotia, and Jane S. Liu, Latham, both of N.Y., assignors to General Electric Company, Worthington, Ohio

Continuation of Ser. No. 17,208, Feb. 12, 1993, abandoned.
This application Mar. 8, 1995, Ser. No. 400,556
Int. Cl.[6] G06K 9/00;9/52;9/62
U.S. Cl. 382—108 **30 Claims**



1. Apparatus for sorting crystalline objects, said apparatus comprising:

image means for creating an image of a crystalline object viewed from a defined angle, said image comprising a set of polygonal outlines including a first polygonal outline corresponding to the representation of the silhouette of said crystalline object in said image and a second polygonal outline corresponding to the representation of the shape of a crystalline face of said crystalline object in said image;

comparison means for comparing said set of polygonal outlines of said image to (a) at least one template derived from a set of reference polygons including a first reference polygon corresponding to a silhouette of a reference crystal and a second reference polygon corresponding to the shape of a crystalline face of said reference crystal within said silhouette, wherein said template can be varied in position, size, and shape by changing the values of at least one parameter, and (b) at least one set of parameter values for said at least one template, for varying the position, size, and shape of said at least one template by changing the values of said at least one parameter, and for selecting at least one combination of a template and a set of parameter values corresponding to said image;

output means for indicating at least one parameter value selected by said comparison means; and

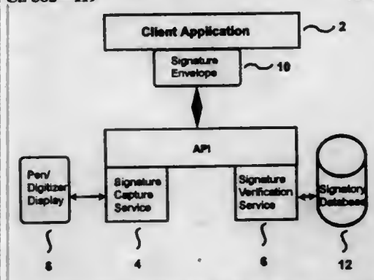
sorting means for sorting the crystalline object to one of a plurality of destinations dependent upon at least one parameter value selected by said comparison means.

5,544,255

METHOD AND SYSTEM FOR THE CAPTURE, STORAGE, TRANSPORT AND AUTHENTICATION OF HANDWRITTEN SIGNATURES

Christopher P. K. Smithies, Wimborne, and Jeremy M. Newman, Somerset, both of, England, assignors to Peripheral Vision Limited, Somerset, United Kingdom

Filed Aug. 31, 1994, Ser. No. 298,991
Int. Cl.[6] G06K 9/00
U.S. Cl. 382—119 **73 Claims**



1. A computer-based method for creating an electronic representation of a handwritten signature that relates to an electronic document, and thereafter verifying the handwritten signature, comprising the steps of:

at a first computer processor, electronically displaying an image of a document;

at the first computer processor, signing the document by electronically capturing a handwritten signature of a signatory;

statistically analyzing the handwritten signature to obtain a set of statistical measurements relating to the handwritten signature;

at the first computer processor, storing in a signature envelope the set of statistical measurements relating to the handwritten signature;

at the first computer processor, creating a checksum of the document;

at the first computer processor, storing the checksum in the signature envelope;

at the first computer processor, storing in the signature envelope a claimed identity of the signatory;

at the first computer processor, encrypting the signature envelope to create an encrypted signature envelope;

transmitting the encrypted signature envelope to a second computer processor;

at the second computer processor, decrypting the encrypted signature envelope;

at the second computer processor, retrieving a verified set of statistical measurements of a handwritten signature of a person having the claimed identity as stored in the signature envelope; and

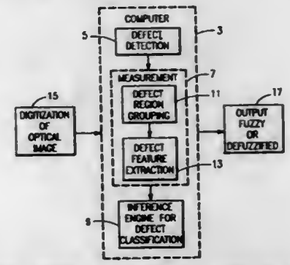
at the second computer processor, comparing the verified set of statistical measurements with the set of statistical measurements stored in the signature envelope to obtain a similarity score.

5,544,256

AUTOMATED DEFECT CLASSIFICATION SYSTEM

Virginia H. Brecher, West Cornwall, Conn.; Paul B.-L. Chou, Montvale, N.J.; Robert W. Hall, Jericho, Vt.; Debra M. Parisi, Carmel; Ravishankar Rao, White Plains, both of N.Y.; Stuart L. Riley, Colchester, Vt., and Martin C. Sturzenbecker, Carmel, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 22, 1993, Ser. No. 142,157
Int. Cl.[6] G06K 9/00;9/62; G06G 7/00
U.S. Cl. 382—149 **52 Claims**



1. A digital computer for automatically classifying defects in an object comprising:

means for forming a defect image from a digital input image of an object;

means for forming an adaptively labeled defect image from said digital input image and a reference label image of aid object;

means for creating a plurality of defect feature measurements of a defect from at least said defect image, and said adaptively labeled image;

fuzzy logic inference engine means having a plurality of if-then defect class rules each based on a plurality of fuzzy sets of fuzzy logic parameters, means for converting said defect feature measurements into fuzzy logic parameters and applying said converted parameters to said if-then rules to compute a delete class fuzzy set for each defect; and

means lot deriving output data from each said defect class fuzzy set which classifies each defect.

5,544,257

CONTINUOUS PARAMETER HIDDEN MARKOV MODEL APPROACH TO AUTOMATIC HANDWRITING RECOGNITION

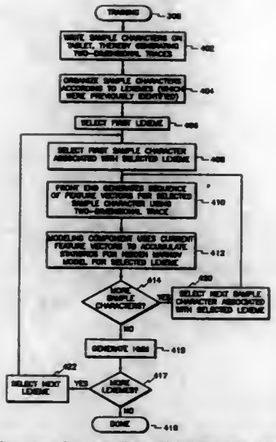
Eveline J. Bellegarda; Jerome R. Bellegarda, both of Goldens Bridge; David Nahamoo, White Plains, and Krishna S. Nathan, New York, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 8, 1992, Ser. No. 818,193
Int. Cl.[6] G06K 9/00
U.S. Cl. 382—187 **26 Claims**

1. A computer-based method for recognizing handwriting, wherein the computer comprises an input device, a memory module, a preprocessor unit, a front end unit and a modeling component, the method comprising the steps of:

(1) receiving character signals into the preprocessor unit from the input device, said character signals representing training observation sequences of sample characters;

(2) sorting said character signals in the preprocessor unit according to lexemes which represent different writing styles for a



given character, by mapping said character signals in lexographic space, said lexographic space being a location in the memory module which contains one or more character-level feature vectors, to find high-level variations in said character signals;

(3) selecting one of said lexemes;

(4) generating sequences of feature vector signals in the front end unit representing feature vectors for said character signals associated with said selected lexeme by mapping in chirographic space, said chirographic space being a location in the memory module which contains one or more flame-level feature vectors; and

(5) generating a Markov model signal in the modeling component representing a hidden Markov model for said selected lexeme, said hidden Markov model having model parameter signals and one or more states, each of said states having emission transitions and non-emission transitions, wherein said step (5) comprises the steps of:

(i) initializing said model parameter signals comprising the steps of:

(a) setting a length for said hidden Markov model;

(b) initializing state transition probabilities of said hidden Markov model to be uniform;

(c) for each of said states, tying one or more output probability distributions for said emission transitions;

(d) for each of said states, assigning a Gaussian density distribution for each of one or more codebooks; and

(e) alternatively initializing one or more mixture coefficients to be values obtained from a statistical mixture model; and

(ii) updating said model parameter signals.

5,544,258

AUTOMATIC TONE CORRECTION OF IMAGES USING NON-LINEAR HISTOGRAM PROCESSING

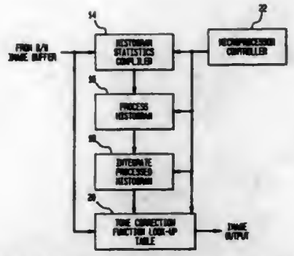
Raphael L. Levien, Rte. 1, Box 18, P.O. Box 31, McDowell, Va. 24458

Continuation of Ser. No. 979,438, Nov. 20, 1992, abandoned, which is a continuation of Ser. No. 669,564, Mar. 14, 1991, abandoned. This application Jul. 12, 1993, Ser. No. 89,622

Int. Cl.[6] G06K *9/36*

U.S. Cl. 382—169 **18 Claims**

1. In an automatic tone correction system wherein a stored image plane including a plurality of pixels, is processed by applying a tone correction function to each pixel of said stored image plane, a method of generating a tone corrected image from said stored image, comprising the steps of:



compiling a histogram of the relative occurrence of tone values corresponding to said stored pixels of said stored image plane;

processing said histogram with a non-linear function so that small histogram values have relatively more contribution to said tone correction function, and large histogram values have relatively less contribution to said tone correction function, said non-linear function comprising raising each histogram value to a power between 0 and 1;

numerically integrating said processed histogram;

normalizing said numerically integrated histogram to extend over the desired range of tone values in interest in order to form said tone correction function;

storing said tone correction function in a lookup table memory; and

applying said stored plurality of pixels of said stored image plane in said memory to said lookup table memory to provide a plurality of tone corrected image output pixels from said lookup table memory corresponding to said tone corrected image.

5,544,259

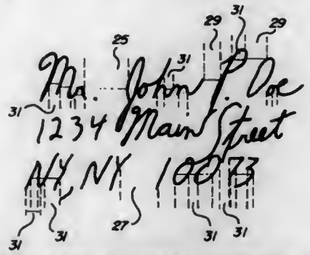
APPARATUS AND METHOD FOR SEPARATING HANDWRITTEN CHARACTERS BY LINE AND WORD

David L. McCubbrey, Ann Arbor, Mich., assignor to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Continuation of Ser. No. 272,949, Jul. 11, 1994, abandoned, which is a continuation of Ser. No. 39,813, Mar. 29, 1993, abandoned, which is a division of Ser. No. 606,578, Oct. 31, 1990, Pat. No. 5,216,725. This application Oct. 10, 1995, Ser. No. 541,938

Int. Cl.[6] G06K *9/34*

U.S. Cl. 382—177 **3 Claims**



1. A computer system for locating a predetermined group of characters from a plurality of handwritten characters characterized by a plurality of spaced, horizontally aligned, vertical strokes, said characters being chosen from a digital pixel image consisting of foreground pixels and background pixels set forth in an array of columns and row, said foreground image pixels defining said characters, said computer system comprising:

means for assigning each of said plurality of characters to one of a plurality of discrete character lines;

means for selecting a desired discrete character line from said plurality of discrete character lines;

scanning means for generating a digital data stream corresponding to individual pixels of said digital pixel image;

means for storing sequential portions of said digital data stream in a two-dimensional array;

means for recognizing from said stored data array contiguous foreground image pixels corresponding to vertical strokes and defining adjacent pairs thereof;

means for computing borizontal distances between members of said adjacent pairs of vertical strokes, and determining a histogram of occurrences of said distances and a first peak distance in said histogram, said first peak distance referred to as the interstroke distance;

means for grouping the plurality of characters together into blocks based on the interstroke distance and on a second or subsequent peak of said histogram corresponding to a wider horizontal distance between said characters, said characters being separated by the interstroke distance and said blocks being separated by the wider distance; and

means for selecting said predetermined group of characters from those grouped character blocks associated with said selected discrete character line by using said interstroke distance.

5,544,260

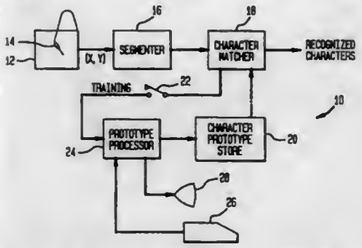
SILENT TRAINING BY ERROR CORRECTION FOR ON-LINE HANDWRITTING RECOGNITION SYSTEMS

Thomas E. Chefalas, Hawthorne, and Charles C. Tappert, Ossining, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 12, 1994, Ser. No. 274,074

Int. Cl.[6] G06K *9/00;9/62*

U.S. Cl. 382—187 **11 Claims**



1. A method of training a handwriting recognition system to recognize handwritten characters of a particular user, comprising:

(a) storing electrical representations of a plurality of prototype characters in a memory;

(b) entering a string of user-generated handwritten characters on an electronic digitizing tablet;

(c) generating an electrical representation of the string of handwritten characters;

(d) comparing the electrical representation of the user generated string of characters with the representations of the prototype characters stored in memory;

(e) displaying on the digitizing tablet, for each user generated handwritten character, a corresponding character, the corresponding character being a prototype character whose electrical representation most closely resembles the electrical representation of the particular user-generated handwritten character;

(f) entering on the digitizing tablet, for each incorrectly recognized user-input character, a user-generated handwritten correction character;

(g) comparing an electrical representation of the user generated handwritten correction character with the representations of the prototype characters stored in memory, excluding the electrical representation of the incorrectly returned character;

(h) displaying on the digitizing tablet, for each correction character, a corresponding correction character, the corresponding correction character of a particular user-generated handwritten correction character being a prototype character whose electrical representation most closely resembles the electrical representation of the particular user-generated handwritten correction character;

(i) repeating steps (f) through (h) if the corresponding correction character does not match the user generated correction character;

(j) comparing the electrical representation of the misrecognized user generated handwritten character and the user generated correction character and determining whether they resemble one another within a predetermined threshold and:

if so, retraining the system to recognize the misrecognized user generated character and the user generated correction character as the corresponding correction character;

if not, retraining the system to recognize the user generated correction character as the corresponding correction character.

5,544,261

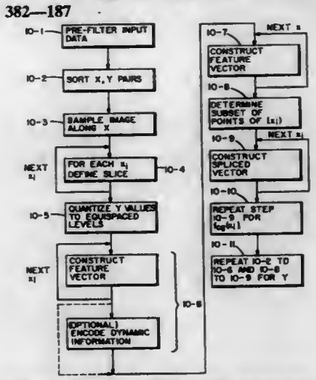
AUTOMATIC HANDWRITING RECOGNITION USING BOTH STATIC AND DYNAMIC PARAMETERS

Jerome R. Bellegarda, Goldens Bridge; David Nahamoo, White Plains, and Krishna S. Nathan, New York, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 9,515, Jan. 27, 1993, Pat. No. 5,491,758. This application May 25, 1995, Ser. No. 450,556

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—187 **2 Claims**



1. A method for processing input signals representative of a hand written character, the input signals being generated by a handwriting transducer in response to a writer and being ordered as points each having an x-axis coordinate value and a y-axis coordinate value, comprising the steps of:

coupling a handwriting processor to an output of the handwriting transducer for receiving the input signals;

operating the handwriting processor to execute the steps of,

(a) sorting points received from the input signals in terms of x-axis values;

(b) sampling along the x-axis at intervals of δx to provide a sequence of the form $\{x_i\}$, where $x_i=x_{i-1}+\delta x$;

(c) defining, for each sample point x_i, a slice of width lw centered on that sample and associating all y-axis values within the width of the slice with that sample, thereby yielding a vector of the form $\vec{y}(x_i)$;

(d) quantizing a range of y-axis values to n_y equispaced levels, l_k, and assigning, for each x_i, all associated y-axis values to one level in accordance with the expression:

$$y \epsilon l_k \Leftrightarrow l_{k-1}\Delta l < y < l_k \Delta l,$$

where $\Delta l=(ymax-ymin)/n_y$;

(e) constructing a bitmap of the slice having a grid size n_y, the step of constructing including a step of determining, for each x_i, a first feature vector $\vec{f}\,x(x_i)$ of length n_y, such that the kth element is one if at least one y-axis value was assigned to l_k, and zero otherwise;

(f) constructing, for each x_i, a second feature vector of length 1, $f_{cg}(x_i)$ such that:

$$f_{cg}(x_i)=\frac{1}{J}\sum_{j=1}^{J} y_j(x_i),$$

where the summation is over all y-axis values within the slice associated with x_i;

(g) determining a subset of points of $\{x_i\}$ such that the points are spaced ax apart, the subset of points being defined as $\{X_i\}$;

(h) constructing, at each location X_i, an N dimensional spliced vector by concatenating together H_x feature vectors f_x preceding a current point X_i, a feature vector $\vec{f}(X_i)$ at the current point, and H_x feature vectors succeeding X_i to yield a spliced feature vector, $\vec{F}(x_i)$, of length:

$$N=n_y(2H_x+1);$$

(i) repeating Step (h) for $f_{cg}(x_i)$ to obtain $\vec{F}_{cg}(x_i)$;

(j) repeating steps (a) through (e) and (g) through (h) for the y-axis dimension to obtain a feature vector, $\vec{F}_y(Y_i)$; and

further operating the handwriting processor to determine a most probable identification of the writer's handwriting in accordance with the obtained feature vectors.

5,544,262

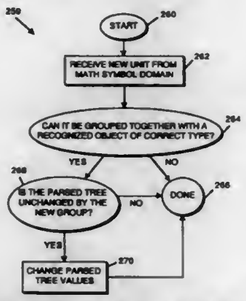
METHOD AND APPARATUS FOR PROCESSING GRAPHICALLY INPUT EQUATIONS

Giulia Pagallo, Cupertino, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Continuation-in-part of Ser. No. 864,607, Apr. 7, 1992, Pat. No. 5,317,647, Ser. No. 889,216, May 27, 1992, abandoned, and Ser. No. 1,123, Jan. 5, 1993. This application Jan. 5, 1993, Ser. No. 932

Int. Cl.[6] G06K *9/72*

U.S. Cl. 382—189 **24 Claims**



1. A method for processing handwritten equations on a computer system comprising the steps of:

receiving an input pattern comprising an equation which was derived from user handwritten strokes on a graphical user input device;

parsing said input pattern utilizing a defined constrained attribute grammar to determine if said input pattern defines a valid pattern within said constrained attribute grammar, said valid pattern including a set of subpatterns satisfying constraints of production rules included in said constrained attribute grammar, said constraints being used by said parsing step to establish correspondence between said subpatterns and said production rules, said constraints including keywords to be identified within said subpatterns;

providing a parsed tree from said step of parsing said input pattern when said input pattern is determined to be a valid pattern in said parsing step;

deriving and displaying said equation and a result of said equation utilizing said parsed tree by executing an operator at nodes of said parsed tree using operands included in said parsed tree, wherein said receiving, parsing, providing, and deriving steps are performed on said computer system;

detecting an edit made to said displayed equation having said result; and

editing said parsed tree associated with said equation in response to said edit made to said displayed equation and without changing a structure of said parsed tree when said edit changes only a value or an operator of said equation.

5,544,263

MOTION VECTOR CALCULATION CIRCUIT, WITH FLATNESS-JUDGEMENT CIRCUITRY, THAT SELECTS A GENERATED MOTION VECTOR FOR OUTPUT IN ACCORDANCE WITH A FLATNESS JUDGEMENT RESULT

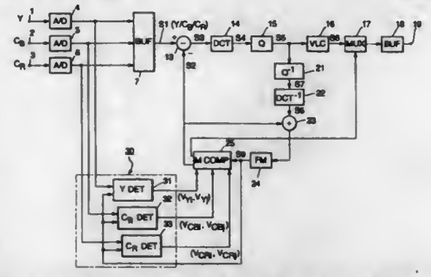
Ryuichi Iwamura, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 11,360, Jan. 29, 1993, abandoned. This application Aug. 3, 1994, Ser. No. 285,497

Claims priority, application Japan, Jan. 31, 1992, 4-016830

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—166 **12 Claims**



1. A circuit for calculating motion vectors for use in compressing a motion picture signal, the motion picture signal being divided into portions, each portion representing a picture, each portion being subdivided into blocks, each block representing a rectangular portion of the picture, and including a luminance signal, a first color signal, and a second color signal, the circuit comprising:

means for deriving a prediction picture from the motion picture signal; and

motion vector generating means for generating a motion vector for each block, the motion vector generating means including:

means for generating a luminance motion vector for the block by performing block matching between the luminance signal of the block and of the prediction picture, the luminance motion vector representing magnitude and direction of motion between the block and a luminance matching block of the prediction picture, the luminance matching block including a luminance signal component matching the luminance signal of the block, the luminance signal component having a dynamic range,

means for generating a first color motion vector for the block by performing block matching between the first color signal of the block and the prediction picture, the first color motion vector representing magnitude and direction of motion between the block and a first color matching block of the prediction picture, the first color matching block including a first color signal component matching the first color signal of the block, the first color signal component having a dynamic range,

means for generating a second color motion vector for the block by performing block matching between the second color signal of the block and the prediction picture, the second color motion vector representing magnitude and direction of motion between the block and a second color matching block of the prediction picture, the second color matching block including a second color signal component matching the second color signal of the block, the second color component having a dynamic range,

flatness judgment means for judging, in a sequence, whether the luminance signal component of the luminance matching block is not flat by determining when the dynamic range of the luminance component is above a luminance threshold level, the first color signal of the first color matching block is not flat by determining when the dynamic range of the first color component is above a first color threshold level, and the second color signal of the second color matching block is not flat by determining whether the dynamic range of the second color component is above a second color threshold level, the flatness judgment means identifying a first one of the luminance signal component, the first color signal component, and the second color signal component in the sequence judged to be not flat as a flatness judgment result, and

motion vector selecting means for selecting one of the luminance motion vector, the first color motion vector, and the second color motion vector as the motion vector for the block in response to the judgment result from the flatness judgment means.

5,544,264

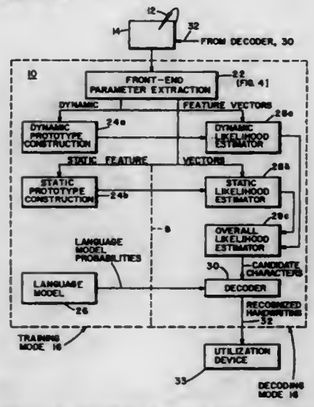
AUTOMATIC HANDWRITING RECOGNITION USING BOTH STATIC AND DYNAMIC PARAMETERS

Jerome R. Bellegarda, Goldens Bridge; David Nahamoo, White Plains, and Krishna S. Nathan, New York, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 9,515, Jan. 27, 1993, Pat. No. 5,491,758. This application May 25, 1995, Ser. No. 451,001

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—188 **3 Claims**



1. A method for operating a handwriting recognition system, comprising the steps of:

receiving, from a handwriting transducer means, x-y coordinate information generated by a writer;

extracting temporally-based feature vectors from the x-y coordinate information;

extracting spatially-based feature vectors from the x-y coordinate information; and

identifying a most probable character (U) from a set of possible characters (a) as being a character that is written by the writer, the step of identifying employing a probabilistic method that considers both the temporally-based feature vectors and the spatially-based feature vectors in accordance with the expression

$$Pr(U|a_j)=Pr(U_t|a_j)^{1/2}Pr(U_d|a_j)^{1/2},$$

where $Pr(U_t|a_j)$ is determined from the spatially-based feature vectors and where $Pr(U_d|a_j)$ is determined from the temporally-based feature vectors.

5,544,265

SHAPE RECOGNIZER FOR GRAPHICAL COMPUTER SYSTEMS

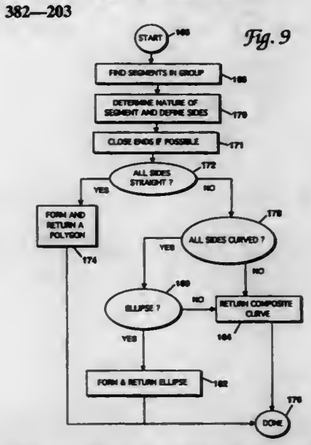
Radmilo Bozinovic, San Jose, and Giulia Pagallo, Cupertino, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 1,122, Jan. 5, 1993, abandoned, which is a continuation-in-part of Ser. No. 889,216, May 27, 1992, abandoned, and Ser. No. 1,123, Jan. 5, 1993. This application Sep. 29, 1994, Ser. No. 314,934

Int. Cl.[6] G06K *9/46*

U.S. Cl. 382—203 **8 Claims**

Fig. 9



1. A computer implemented method for recognizing and forming shapes presented on a display screen of a computer system, the method comprising the steps of:

receiving at least one incoming stroke drawn with a pointer on a display screeni

creating a live group including the at least one incoming stroke;

characterizing shape sides from said live group, as one of the group consisting of straight shape sides and curved shape sides;

characterizing the live group as a polygon and generating a polygon from angles and vertex points between said sides if all of said shape sides are straight shape sides;

characterizing the live group as an ellipse and generating an ellipse by fitting the live group to a five parameter description of an ellipse if all of said shape sides are curved shape sides;

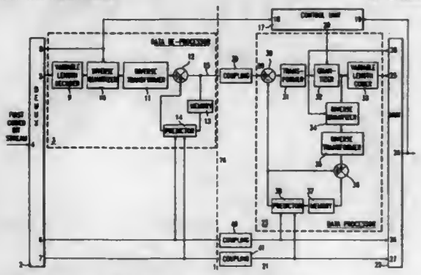
characterizing the live group as a composite curve from said shape sides if at least one of said shape sides is straight and at least one other of said shape sides is curved; and

redrawing the live group on the display screen as a polygon, ellipse, or composite curve as generated or characterized in one of the three preceding steps.

5,544,266
TRANSCODING DEVICE

Johannes F. A. Koppelmans, The Hague; Arian Koster, Mijdrecht, and Dolf A. Schinkel, Hillegom, all of, Netherlands, assignors to Koninklijke Ptt Nederland N.V., Netherlands

Filed Jul. 19, 1994, Ser. No. 276,931
Claims priority, application Netherlands, Aug. 4, 1993, 9301358
Int. Cl.[6] G06K *9/36*; H03M *7/30*; H04N *7/12*
U.S. Cl. 382—238 **30 Claims**



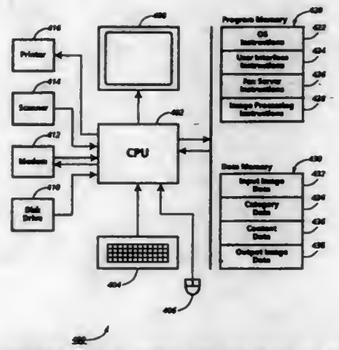
1. A transcoding device comprising:
a decoding section having:
data reprocessing means, having an input and an output, for generating a data signal; and
demultiplexing means, having an input, for receiving a first coded bit stream and having a first output coupled to the input of the data reprocessing means and having a second output for generating at least one information signal; and
a coding section having:
data processing means, having an input coupled to the output of the data reprocessing means, for receiving the data signal; and
multiplexing means, having a first input coupled to an output of the data processing means, having a second input coupled to the second output of the demultiplexing means and having an output, for receiving at least one information signal and for generating a second coded bit stream; and
characterized in that the data reprocessing means has a control input and that the data processing means has a control input, with the control inputs of both of the processing means and the data reprocessing means being coupled to the second output of the demultiplexing means.

5,544,267
USING A CATEGORY TO ANALYZE AN IMAGE SHOWING A GRAPHICAL REPRESENTATION

James V. Mahoney, San Francisco, Calif., and Satyajit Rao, Cambridge, Mass., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 24, 1993, Ser. No. 158,063
The portion of the term of this patent subsequent to Nov. 24, 2013, has been disclaimed.
Int. Cl.[6] G06K *9/20*
U.S. Cl. 382—317 **25 Claims**

12. A method of operating a machine that includes:
image input circuitry for obtaining data defining images as input; and
a processor connected for receiving data defining images from the image input circuitry;
the method comprising:
operating the processor to receive input image data from the image input circuitry, the input image data defining an image that shows an input
graphical representation whose configuration represents information; operating the processor to use the input image data to obtain category data distinct from the image input data by determining a category of graphical representations from among a plurality of accepted categories of graphical

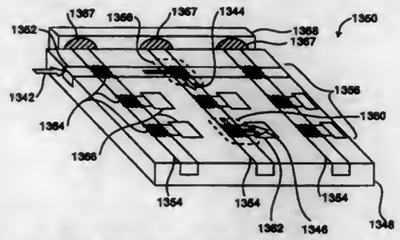


representations, the category data indicating the category of graphical representations thus determined;
operating the processor to use the category data to obtain content data indicating information represented by the configuration of the input graphical representation; and
operating the processor to use the content data to obtain output image data defining an output image that includes an output graphical representation, the output graphical representation having a configuration representing the information indicated by the content data.

5,544,268
DISPLAY PANEL WITH ELECTRICALLY-CONTROLLED WAVEGUIDE-ROUTING

William K. Bischel, Menlo Park; Michael J. Brinkman, Redwood City; David A. G. Deacon, Los Altos; Edward J. DeWath, Cupertino; Mark J. Dyer, San Jose, and Simon J. Field, Menlo Park, all of Calif., assignors to Deacon Research, Palo Alto, Calif.

Filed Sep. 9, 1994, Ser. No. 303,899
Int. Cl.[6] G02F *1/295*
U.S. Cl. 385—4 **52 Claims**

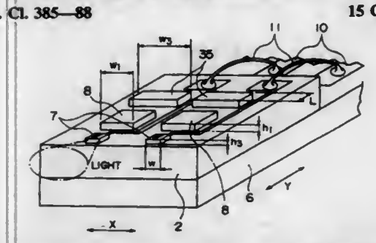


1. An optical beam directing element comprising:
a solid material for conveying optical energy;
at least a first electrically-conductive material forming a first electrode, said first electrode confronting said solid material;
a pixel waveguide segment traversing said solid material along a plane of said solid material;
a plurality of output waveguide segments traversing said solid material along said plane, at least one of said output waveguide segments being transverse to said pixel waveguide segment in a first intersection region;
an active optical energy redirector being disposed adjacent said first intersection region, said active optical energy redirector to reflect optical energy from said pixel waveguide segment into said output waveguide segments upon selective application of an electrical field from said first electrode; and
optical reflector means disposed at selected locations on said plane in line with said output waveguide segments for projecting optical energy out of said plane.

5,544,269
OPTICAL TRANSMISSION MODULE AND METHOD OF FORMING THE SAME

Hitoshi Hattori, Sagamihara, Japan, assignor to Richoh Company Ltd., Tokyo, Japan

Filed Dec. 14, 1994, Ser. No. 355,559
Int. Cl.[6] G02B *6/00;6/36*
U.S. Cl. 385—88 **15 Claims**

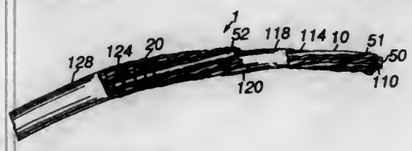


1. An optical transmission module having optical fibers and an optical semiconductor device with light couplings between said optical fibers and conversion parts of said optical semiconductor device, which conversion parts either convert optical signals into electrical signals or convert electrical signals into optical signals, said optical transmission module comprising:
a guide substrate having grooves which hold said optical fibers; and
at least one positioning part formed on and protruding from said optical semiconductor device and having a width smaller than that of said grooves,
wherein said optical semiconductor device is attached to said guide substrate such that said at least one positioning part fits into said grooves, so that said conversion parts face end surfaces of said optical fibers to establish said light couplings.

5,544,270
MULTIPLE TWISTED PAIR DATA CABLE WITH CONCENTRIC CABLE GROUPS

William T. Clark, Leominster, and Joseph Dellagala, Shrewsbury, both of Mass., assignors to Mohawk Wire and Cable Corp., Leominster, Mass.

Filed Mar. 7, 1995, Ser. No. 400,094
Int. Cl.[6] H01B *11/22*
U.S. Cl. 385—101 **20 Claims**

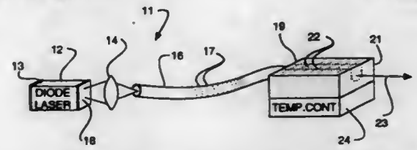


1. A data cable comprising:
a central core;
a first plurality of twisted pair wires about said central core;
a first jacket about said first plurality of twisted pair wires;
a second plurality of twisted pair wires about said first jacket;
a second jacket about said second plurality of twisted pair wires.
14. A data cable according to claim 1, wherein said central core is a fiber optic cable.

5,544,271
NONLINEAR OPTICAL GENERATOR WITH INDEX OF REFRACTION PERTURBED REFLECTOR ARRANGEMENT

Eric J. Lim, Sunnyvale, Calif., assignor to Uniphase Corporation, San Jose, Calif.

Filed Dec. 12, 1994, Ser. No. 354,316
Int. Cl.[6] G02F *1/37*
U.S. Cl. 385—122 **21 Claims**

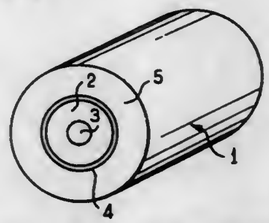


1. A nonlinear optical generator for producing output radiation having a desired frequency, said nonlinear optical generator comprising:
(a) a source of radiation having one or more actual or potential frequencies including a selected frequency that can interact with a nonlinear optical material to produce therefrom, output radiation having said desired frequency;
(b) a nonlinear material for receiving radiation from said source and producing at least partly therefrom, said output radiation having said desired frequency; and
(c) an optical fiber positioned to receive radiation from said source, which fiber includes a multitude of transitions in the effective index of a mode guided by said fiber, said transitions being chosen to cause said source to provide radiation having said selected frequency, and wherein said nonlinear material is outside a laser cavity which includes both said source of radiation and at least part of said optical fiber.

5,544,272
OPTICAL FIBER CABLE AND AN ASSOCIATED METHOD OF MANUFACTURE

Michel Carratt, Houilles, and Michel de Vecchis, Vaureal, both of, France, assignors to Alcatel Cable, Clichy Cedex, France

Division of Ser. No. 285,287, Aug. 3, 1994. This application Dec. 6, 1994, Ser. No. 354,154
Claims priority, application France, Aug. 4, 1993, 93 09615
Int. Cl.[6] G02B *6/02*
U.S. Cl. 385—128 **9 Claims**



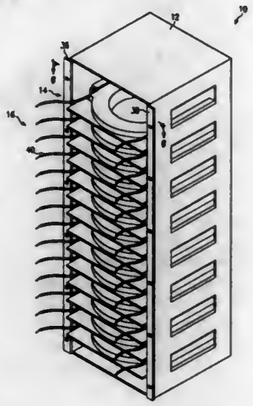
1. Optical fiber comprising an optical core surrounded by optical cladding, said optical cladding being surrounded by a substantially hermetic coating, wherein said optical fiber has a mode field diameter lying in the range 7 μm to 9 μm at around 1550 nm, and a cutoff wavelength that is less than or equal to 1.35 μm.

5,544,273

FIBER OPTIC CABLE STORAGE SHELF AND METHOD USING SAME

C. Gordon Harrison, Plano, Tex., assignor to DSC Communications Corporation, Plano, Tex.

Filed Jan. 19, 1995, Ser. No. 375,802
Int. Cl.[6] G02B 6/00
U.S. Cl. 385—135 22 Claims



1. A storage shelf for accommodating excess lengths of a plurality of optical cables extending from a telecommunications equipment, comprising:

a shelf housing having an open front side and two substantially vertical side walls;

a plurality of cable storage cartridges being slidably insertable in said shelf housing and being stackable vertically therein, each said cable storage cartridge including two opposable members closeable about a self hinge and forming a spool, one of said optical cable being coiled around said spool, said cable storage cartridge further defining two cable exit ports for allowing two ends of said cable extending therethrough out of said cable storage cartridge for connection with said telecommunications equipment; and

at least one peg formed in one opposable member and at least one corresponding indentation formed in the other opposable member for locking said opposable members closed, said peg and indentation being sized for a tight mating relationship and being in alignment with one another when said opposable members are closed about said hinge.

20. A method of storing excess lengths of a plurality of optical cables connected at two ends to electronic equipment, comprising the steps of:

coiling the excess length of each optical cable around a spool formed in a storage cartridge and pulling said two ends out of said storage cartridge through two cable exit ports;

snapping shut said storage cartridge;

inserting each said storage cartridge into shelves formed in a storage shelf;

mounting said storage shelf onto said electronic equipment; and

providing ventilation through said storage cartridges for cooling said coiled optical cables by forming ventilation ports therethrough.

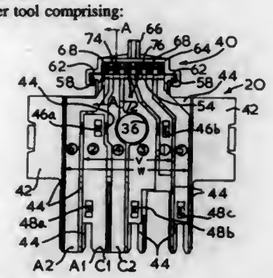
5,544,274

ELECTRICAL ARRANGEMENT IN POWER TOOLS—POWER TOOL WITH SLIDE SWITCH

Andrew Walker, Newton Aycliffe, and Steven Swaddle, Chester-Le-Street, both of, United Kingdom, assignors to Black & Decker Inc., Newark, Del.

Continuation of Ser. No. 913,334, Jul. 15, 1992, abandoned.
This application Nov. 25, 1994, Ser. No. 345,976
Claims priority, application United Kingdom, Jul. 19, 1991, 9115603
Int. Cl.[6] H02P 7/288
U.S. Cl. 388—838 17 Claims

1. A power tool comprising:



a housing;

a power source in the housing;

a motor and switch carrier member of insulating material disposed in the housing and having apertures therein and guides formed in side-by-side relation on one side of said carrier;

a motor mounted on the other side of said carrier, the motor having electrical terminals which protrude through said apertures to said one said;

a switch mounted on said carrier, said switch comprising a tray integral with said carrier and disposed substantially normally thereto, said tray including a plurality of axially extending tracks; and

first, second and roller conductors which are punched from a strip of electrically conductive material and which lie in said guides in substantially the same disposition as they lay in said strip before punching,

said motor terminals being connected to said first and second conductors, and said first conductor leading to said switch, said second conductor leading to said power source, and said third conductor connecting said switch and said power source, said first and third conductors lying in said tracks of said tray.

5,544,275

ELECTRICALLY HEATED FLUID CARRYING CONDUIT HAVING INTEGRATED HEATING ELEMENTS AND ELECTRICAL CONDUCTORS

Peter F. Ebbing, Los Altos, and Peter G. Panagas, Jr., Sunnyvale, both of, Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Mar. 17, 1993, Ser. No. 32,072
Int. Cl.[6] H05B 3/58
U.S. Cl. 392—480 17 Claims

1. A conduit for carrying fluids, comprising:

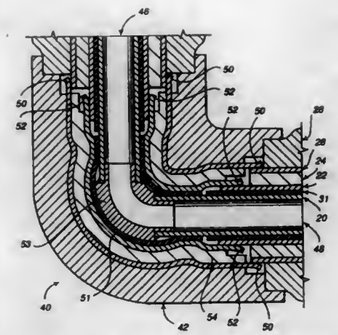
an inner conduit for transferring fluids; said inner conduit comprising a first electrical conductor

a heating element formed concentric to and coaxial with said first conductor and adapted to heat fluids carried in said conduit;

a thermally conductive electrical insulator located between said inner conduit and said first conductor;

a second electrical conductor formed concentric to, continuous about, and coaxial with said heating element; and

a thermally and electrically insulating sheath concentric to and coaxial with said second conductor, wherein said heating element is arranged between said first and second electrical



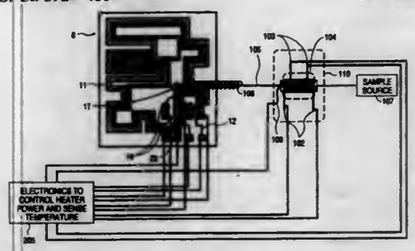
conductors to generate heat in response to an electrical current provided by said first and second conductors.

5,544,276

MINIATURE GAS CHROMATOGRAPH WITH HEATED GAS INLET FITTING, HEATED TUBING, AND HEATED MICROVALVE ASSEMBLY

Alan D. Loux, Livermore; R. Sjhon Minners, San Jose, and Paul H. Johnson, Oakland, all of Calif., assignors to Microsensors Technology, Inc., Fremont, Calif.

Filed Nov. 30, 1993, Ser. No. 159,185
Int. Cl.[6] H05B 1/02; G01N 31/08; F24H 1/10
U.S. Cl. 392—480 10 Claims



1. A microvalve assembly comprising:

a body defining a plurality of channels interconnected by valves formed in the body;

a tube connected at one end to the body;

a fitting for connection of the tube to a fluid source or sink and located at the other end of the tube;

three heater elements, one of the elements being respectively in thermal contact with each of the body, the tube, and the fitting; and

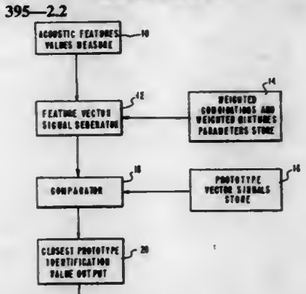
a control circuit connected to the heater elements for controlling each of the heater elements.

5,544,277

SPEECH CODING APPARATUS AND METHOD FOR GENERATING ACOUSTIC FEATURE VECTOR COMPONENT VALUES BY COMBINING VALUES OF THE SAME FEATURES FOR MULTIPLE TIME INTERVALS

Raimo Bakis; Ponani S. Gopalakrishnan, both of Yorktown Heights; Dimitri Kanevsky, Ossining; Arthur J. Nadas, Rock Tavern; David Nahamoo; Michael A. Picheny, both of White Plains, and Jan Sedivy, Hartsdale, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 28, 1993, Ser. No. 98,682
Int. Cl.[6] G10L 9/00
U.S. Cl. 395—2.2 23 Claims



1. A speech coding apparatus comprising:

means for measuring the values of at least first and second different features of an utterance during each of a series of successive time intervals; and

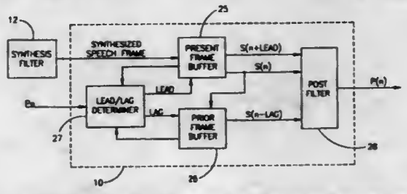
means for generating a feature vector signal for each time interval, each feature vector signal having a first component value equal to a first weighted combination of the values of only one feature of the utterance for at least two time intervals, each feature vector signal having a second component value equal to a second weighted combination, different from the first weighted combination, of the values of only one feature of the utterance for at least two time intervals, said feature vector signals forming a coded representation of the utterance.

5,544,278

PITCH POST-FILTER

Leon Bialik, and Felix Flomen, both of Rishon LeZion, Israel, assignors to Audio Codes Ltd., Or Yehuda, Israel

Filed Apr. 29, 1994, Ser. No. 235,765
Int. Cl.[6] G10L 3/02
U.S. Cl. 395—2.77 10 Claims



1. A method for pitch post-filtering of synthesized speech comprising the steps of:

receiving a frame of synthesized speech which is divided into a plurality of subframes and a pitch value associated with said frame; and

for each subframe of said frame of synthesized speech,

producing an output signal which is a pitch post-filtered version of the present subframe filtered with a selected one of the group consisting of prior and future data of said synthesized

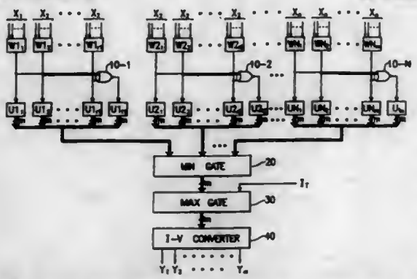
speech and future data of said synthesized speech, wherein said prior data lags the present subframe by a lag index and wherein said future data leads the present subframe by a lead index, wherein said lead and lag indices are based on said pitch value.

5,544,279

FUZZY LOGIC RECOGNITION DEVICE WHICH DETERMINES THE MODE OF AN UNKNOWN MOVE USING FUZZY SET THEORY

Zhi-Jian Li; Bing-Xue Shi, and Bin-Qiao Li, all of Beijing, China, assignors to United Microelectronics Corp., Hsinchu, Taiwan

Filed Oct. 13, 1994, Ser. No. 322,580
Int. Cl.[6] G06G *7/00*; G06F *17/00*
U.S. Cl. 395—3 **10 Claims**



1. A fuzzy logic recognition device for recognition of an unknown recognition mode as one of a plurality of target modes, wherein a plurality of predetermined feature classes are selected for the unknown recognition and target modes, and a plurality of predetermined features are selected for each feature class for the target modes, each predetermined feature having a membership with respect to each target mode, said fuzzy logic recognition device comprising:

a plurality of sets of feature extraction window means each for storing the predetermined features for one feature class therein, for comparing the stored features with the corresponding features of the unknown recognition mode, for outputting a positive binary signal via one corresponding feature extraction window means where an identicalness condition occurs, and for outputting negative binary signals via the other feature extraction window means where no identicalness condition occurs;

a plurality of sets of membership function generators for receiving respective outputs of said feature extraction window means, each membership function generator that receives said positive binary signal generating the memberships of the corresponding predetermined feature with respect to the target modes, and the membership function generators that receive said negative binary signals not generating the memberships;

a minimum gate means, coupled to said membership function generator sets, for comparing the memberships with respect to the same target mode, respectively, and for outputting the smallest membership for every one of the target modes; and

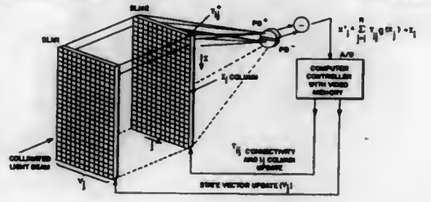
a maximum gate means, coupled to said minimum gate means, for comparing said memberships outputted from said minimum gate means, and for outputting the largest membership to indicate the unknown recognition mode as one of the target modes.

5,544,280

UNIPOLAR TERMINAL-ATTRACTOR BASED NEURAL ASSOCIATIVE MEMORY WITH ADAPTIVE THRESHOLD

Hua-Kuang Liu, Pasadena; Jacob Barhen, La Crescenta, both of Calif.; Nabil H. Farhat, Philadelphia, Pa., and Chwan-Hwa Wu, Auburn, Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 7, 1993, Ser. No. 73,018
Int. Cl.[6] G06F *15/46*
U.S. Cl. 395—24 **12 Claims**



1. In a neural-network associative memory having means for storing a set of N-tuple neuron-state vectors as terminal attractors, an iterative neural dynamic system for retrieving one of said stored vectors which best matches an input vector x'_i in which the iterative neural dynamics of said system are given by

$$x_i' = \sum_{j=1}^{N} T_{ij} \cdot g(x_j) + I_i$$

where T_{ij} is the ith row and jth column element of a weight matrix, and $g(x_i)$ is a sigmoidal threshold function, where

$$I_i = \sum_{m=1}^{M} \alpha^m [g(x_i) - u_i^m]^{1/3} \exp\{-\beta_i^m [g(x_i) - u_i^m]^2\}$$

and

$$\alpha^m = \sum_{j=1}^{N} u_j^m g(x_j)$$

is a parameter that is the inner product between one of said stored vectors and a vector of a preceding iteration that has a similarity between said one of said stored vectors and said computed vector, $\beta^m{}_i$ is a constant β^m, and $g(x_j)$ is a sigmoidal function of tanh ax_j, where $\lim_{a\to\infty} g(x_j)$ is a binary component, and

$$T_{ij} = \sum_{m=1}^{M} u_i^m u_j^m,$$

whereby

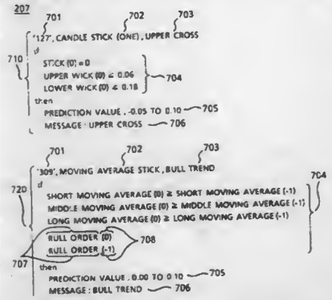
$$x_i' = \sum_{m=1}^{M} \alpha^m u_i^m - \sum_{m=1}^{M} \alpha^m [g(x_i) - u_i^m]^{1/3} \times \exp\{-\beta_i^m [g(x_i) - u_i^m]^2\}.$$

5,544,281

METHOD OF SUPPORTING DECISION-MAKING FOR PREDICTING FUTURE TIME-SERIES DATA USING MEASURED VALUES OF TIME-SERIES DATA STORED IN A STORAGE AND KNOWLEDGE STORED IN A KNOWLEDGE BASE

Tetsuya Maruoka, Sagamihara; Chizuko Yasunobu, Yokohama; Tadashi Hirose, Komae; Mayumi Kida, Kawasaki; Kouichiro Ino, Sagamihara, and Yoshiya Miyagawa, Tokyo, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 697,932, May 8, 1991, Pat. No. 5,313,560.
This application Mar. 23, 1994, Ser. No. 217,437
Claims priority, application Japan, May 11, 1990, 2-119837; Jun. 11, 1990, 2-149997
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—68 **8 Claims**



7. A method of supporting decision-making for predicting future time-series data by using measured values of time-series data stored in a means for scoring and knowledge stored in a knowledge base, said knowledge being related to interpretation and prediction of said time-series data, the method comprising the steps of:

(a) preparing in said means for storing a plurality of mime-series data in an order of time-serial points corresponding to said time-series data;

(b) storing to said knowledge base-said knowledge which includes reference to time-series data using a relative time interval from said time-series data;

(c) designating one of said time-serial points of said time-series data stored in the step (a);

(d) subtracting said relative time interval in said knowledge from said designated time-serial point to determine a time-serial point corresponding to the time-series data, and inferring said future time-series data by using said knowledge and said time-series data to determine predicted results;

(e) continuously reacting said designated time-serial point designated in the step (c) for a designated period of said time serial-point, and repeating the steps (c) and (d);

(f) storing to said means for storing said predicted results in the step (d) as a form of time-series data; and

(g) repeating the steps (c) and (d).

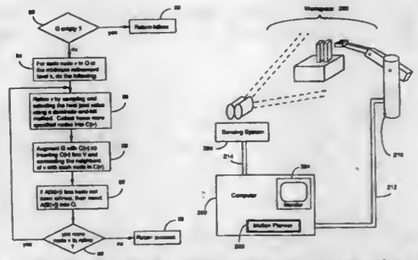
5,544,282

METHOD AND APPARATUS FOR PLANNING MOTIONS OF ROBOT MANIPULATORS

Pang C. Chen, 4000 Camino De La Sierra, N.E., Albuquerque, N.M. 87111, and Yong K. Hwang, 9036 Walter Bambrook, N.E., Albuquerque, N.M. 87122

Filed Apr. 5, 1991, Ser. No. 682,155
Int. Cl.[6] G06F *15/20*
U.S. Cl. 395—90 **45 Claims**

1. A method for moving a robot manipulator comprising a plurality of joints through a workspace containing obstacles from a preselected starting robot manipulator configuration to a preselected goal robot manipulator configuration, the method comprising the steps of:



a) selecting as subgoals robot manipulator configurations for which attitudinal positions are unspecified for one or more joints;

b) generating a sequence of the subgoals that connect the starting robot manipulator configuration to the goal robot manipulator configuration;

c) verifying that the generated sequence of subgoals is collision-free; and

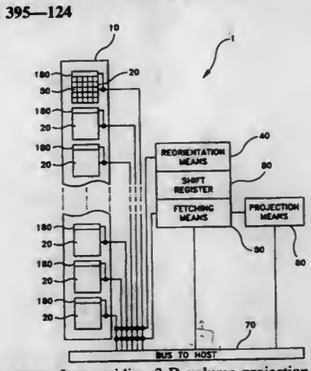
d) moving the robot manipulator from the starting robot manipulator configuration to the goal robot manipulator configuration such that a path of configurations defined by the generated sequence of subgoals is followed by the robot manipulator.

5,544,283

METHOD AND APPARATUS FOR REAL-TIME VOLUME RENDERING FROM AN ARBITRARY VIEWING DIRECTION

Arie E. Kaufman, Plainview, N.Y.; Roni Yagel, Bexley, Ohio, and Daniel Cohen-or, Tel Aviv, Israel, assignors to The Research Foundation of State University of New York, Albany, N.Y.

Filed Jul. 26, 1993, Ser. No. 97,637
Int. Cl.[6] G06T *17/50*
U.S. Cl. 395—124 **19 Claims**



1. Apparatus for providing 3-D volume projection of an object from a desired viewing direction, the desired viewing direction defining a plurality of projection rays, the apparatus comprising:

(a) modularized memory having a plurality of memory modules, each of the plurality of memory modules having a plurality of memory storage units having memory address locations, each of the plurality of memory storage units being capable of storing voxel data therein, the voxel data substantially corresponding to attributes and characteristics of the object to be displayed;

(b) reorientation means operatively coupled to each of the plurality of memory modules, the reorientation means being responsive to voxel data from at least first and second memory storage units of the plurality of memory modules, the reorientation means simultaneously outputting voxel data pre-

viously stored in the first memory storage unit to the second memory storage unit according to the desired viewing direction;

(c) fetching means operatively coupled to each of the plurality of memory modules, the fetching unit simultaneously retrieving voxel data from the plurality of memory modules according to each of the plurality of projection rays; and

(d) projection unit means coupled to the fetching means, the projection means being responsive to the voxel data retrieved from the plurality of memory modules according to each of the plurality of projection rays, the voxel data retrieved by each projection ray including a plurality of voxel attributes indicative of the characteristics of the object according to the desired viewing direction, the projection unit generating a projection value corresponding to the cumulation of voxel attributes for each of the plurality of projection rays, the projection value being indicative of the opaqueness and color of the aggregate of voxel attributes for each projection ray taken along the desired viewing direction.

5,544,284

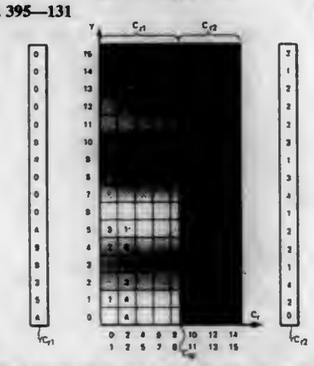
SEQUENTIAL PRODUCT CODE QUANTIZATION OF DIGITAL COLOR IMAGE

Jan P. Allebach; Charles A. Bouman, and Thyagarajan Balasubramanian, all of West Lafayette, Ind., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 11, 1992, Ser. No. 833,529

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—131 **80 Claims**



1. A method of converting a first digital color image, having a color composition encoded into first luminance representative codes and first chrominance representative codes of a first encoded color resolution, to a second digital color image having a color composition encoded at a second encoded color resolution different from said first encoded color resolution and color codes of which are selected to reproduce a color image having a quality that is pleasing to a human visual system, said method comprising the steps of:

(a) subdividing said first digital color image into a plurality of spatially adjacent groups of pixels;

(b) for each group of the pixels subdivided in step (a), deriving luminance activity values from the first luminance representative codes associated therewith;

(c) generating a color space histogram of said first luminance representative codes and said first chrominance representative codes;

(d) associating the luminance activity values derived in step (b) with the color space histogram generated in step (c);

(e) partitioning said color space histogram, along an axis associated with a chrominance component of said first digital color image, into histogram chrominance regions, based upon a chrominance composition of said color space histogram;

(f) partitioning said color space histogram chrominance regions, along an axis associated with a luminance component of said first digital color image, into histogram luminance-chrominance regions, based upon a distribution of the luminance activity values within said color spaced histogram chrominance regions;

(g) or each of said color space histogram chrominance and luminance regions, deriving a respective set of chrominance and luminance output codes based upon a distribution of the chrominance composition and luminance activity within said color space histogram chrominance and luminance regions, respectively; and

(h) defining the second color composition of a respective pixel of said second digital color image in accordance with one of the respective sets of chrominance and luminance output codes derived in step (g).

5,544,285

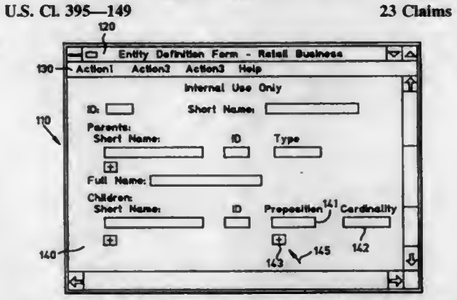
GRAPHICAL USER INTERFACE CONTROL FOR REPLICATING DATA FIELDS IN FORMS

Howard J. Glaser, San Jose, Calif.; Joanna M. Strain, Ford, and Angus T. Tuckey-Smith, Bedhampton, both of, United Kingdom, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 233,894, Apr. 26, 1994, Pat. No. 5,444,841, which is a continuation of Ser. No. 789,353, Nov. 8, 1991. This application May 18, 1995, Ser. No. 444,326

Int. Cl.[6] G06F *17/21*

U.S. Cl. 395—149 **23 Claims**



1. In a system for providing a graphical user interface for the entry of text data in a data store, the graphical user interface including a graphical document display having plural data entry fields, a method for replicating groups of said data entry fields, said method comprising the steps of:

providing user-selected control inputs representing commands to said graphical user interface;

generating a replication function indicator in said document display separate from but adjacent to said data fields;

generating a pointer in said document display;

positioning said pointer in said document display at said replication function indicator in response to a first control input; and

in response to said positioning step and to a second control input representing a data field replicating command, replicating a group of said data fields in said document display.

5,544,286

DIGITAL VIDEO DATA COMPRESSION TECHNIQUE

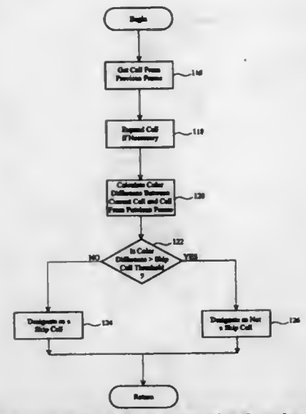
Stuart T. Laney, Seattle, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed Jan. 29, 1993, Ser. No. 11,317

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—114 **20 Claims**

1. In a data processing system, a method of compressing color data for pixels in a first cell of a frame of color data to produce compressed color data, comprising the steps of:



a) for each pixel in the first cell, comparing the color data for the pixel in the first cell with color data for a pixel in a second cell of pixels in a previous frame of color data to determine whether the color data in the first cell and the color data in the second cell are substantially the same;

b) if the color data in the first cell is substantially the same as the color data for the second cell, producing the compressed color data by encoding the color data for the pixels of the first cell as a duplicate of the color data for the pixels of the second cell;

c) if the compressed color data for the first cell has not been produced by the preceding steps, producing the compressed color data by performing the following steps:

(i) calculating the luminance of each of the pixels in the first cell;

(ii) dividing the pixels in the first cell into a set of brighter pixels and a set of dimmer pixels, based on the calculated luminances;

(iii) calculating an average color of pixels in the set of brighter pixels and calculating an average color of pixels in the set of dimmer pixels;

(iv) assigning the average color of pixels in the set of brighter pixels to each of the pixels in the set of brighter pixels; and

(v) assigning the average color of pixels in the set of dimmer pixels to each of the pixels in the dimmer set of pixels.

5,544,287

ON-LINE BARCODE PRINTER SYSTEM WITH MULTI-LEVEL USER PRINTER COMMANDS

Mark W. Roth, Miamisburg, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

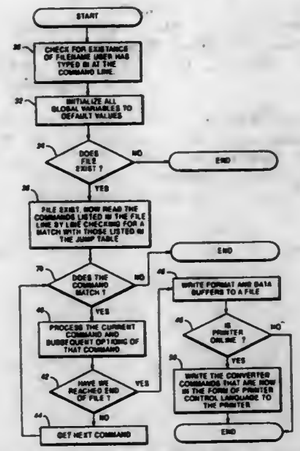
Filed Jun. 3, 1993, Ser. No. 71,676

Int. Cl.[6] G06K *19/06;19/00*

U.S. Cl. 395—114 **16 Claims**

1. A barcode printer command communication system operable on a host processing system having a user operable input device, said host processing system communicating with a barcode printer that is responsive to a printer command data stream in a predetermined printer language to print a barcode and/or alphanumeric information on a web of record members, said barcode printer command communication system comprising:

means for correlating each of a plurality of printer command functions with a plurality of multi-level user input printer commands enterable via said input device, each of said multi-level user input printer commands requiring a different level of information to be entered by a user for a given printer command function;



means responsive to said correlating means for converting an entered multi-level user input printer command into a printer command data stream in said predetermined printer language.

5,544,288

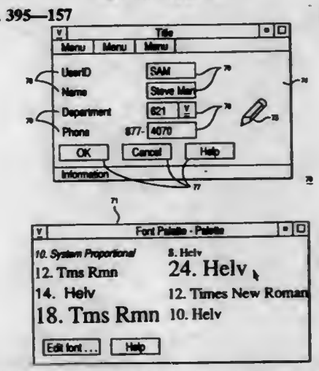
OBJECT RESIZING AND REPOSITIONING FOR A NEW FONT IN A GRAPHICAL USER INTERFACE

Scott A. Morgan; Steve S. Stone, and Craig A. Swearingen, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 48,445, Apr. 15, 1993, abandoned. This application Jun. 14, 1994, Ser. No. 259,367

Int. Cl.[6] G06F *5/06*

U.S. Cl. 395—157 **17 Claims**



1. A method for changing a graphical user interface according to a new font, comprising the steps of:

in response to a first font change command directed to a first object, determining which subset of a set of sibling objects of the first object are specified to be changed;

adjusting size and position of the first and subset of specified sibling objects according to the new font; and

presenting the first and subset of specified sibling objects according to their adjusted size and position and the new font.

5,544,289

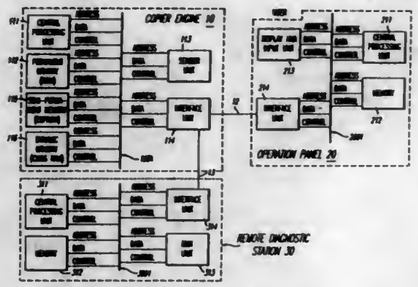
METHOD AND APPARATUS FOR CONTROLLING AND COMMUNICATING WITH BUSINESS OFFICE DEVICES

Tetsuro Motoyama, San Jose, Calif., assignor to Ricoh Company, Ltd., Tokyo, Japan, and Ricoh Corporation, San Jose, Calif.

Continuation of Ser. No. 426,679, Apr. 24, 1995, which is a continuation of Ser. No. 282,168, Jul. 28, 1994, Pat. No. 5,412,779, which is a continuation of Ser. No. 902,462, Jun. 19, 1992, abandoned, which is a continuation of Ser. No. 549,278, Jul. 6, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 473,780

Int. Cl.[6] G06F 3/00

U.S. Cl. 395—280 106 Claims



1. A method, comprising the steps of:

storing semi-static state data in a business office device, the semi-static state data including data which may change infrequently over a life of the business office device;

initiating communication between the business office device and a computer, by the business office;

transmitting the semi-static state data from the business office device to the computer; and

receiving the semi-static state data by the computer.

5,544,290

METHOD AND APPARATUS FOR PROCESSING DATA FOR A VISUAL-OUTPUT DEVICE WITH REDUCED BUFFER MEMORY REQUIREMENTS

Ronald S. Gentile, Atherton, Calif., assignor to Adobe Systems, Inc., Mountain View, Calif.

Division of Ser. No. 974,204, Nov. 10, 1992. This application Jun. 6, 1995, Ser. No. 470,737

Int. Cl.[6] G06K 15/00

U.S. Cl. 395—115 11 Claims

1. A method of generating data for producing a page representation on a page by a visual-output device, comprising the steps of:

receiving data defining the page representation;

defining a first compression factor to have a determinable value;

providing a first compression algorithm associated with a first value of the first compression factor and a second compression algorithm associated with a second value of the first compression factor;

dividing at least a portion of the page into a plurality of regions containing collectively at least a portion of the page representation;

for each region,

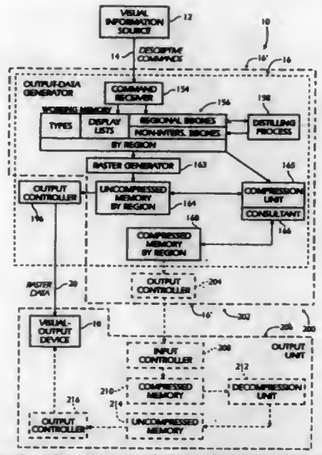
identifying separate data corresponding to the portion of the page representation contained in that region;

determining the value of the at least one compression factor;

selecting at least a first of the compression algorithms if the at least one compression factor has a value that has a predetermined relationship to a first value;

compressing identified data for the at least one region with the selected algorithm; and

storing the compressed data; and



after storing the compressed data, decompressing the stored data, and transmitting the decompressed data to the visual-output device.

5,544,291

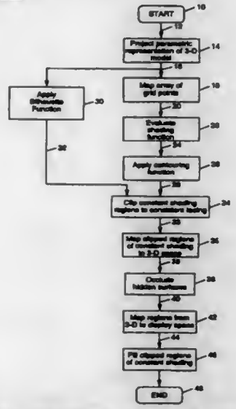
RESOLUTION-INDEPENDENT METHOD FOR DISPLAYING A THREE DIMENSIONAL MODEL IN TWO-DIMENSIONAL DISPLAY SPACE

Glenn G. Gilley, Mountain View, Calif., and Brice W. Tebbs, Chapel Hill, N.C., assignors to Adobe Systems, Inc., Mountain View, Calif.

Filed Nov. 10, 1993, Ser. No. 150,370

Int. Cl.[6] G06T 15/00

U.S. Cl. 395—123 11 Claims



1. A computer implemented method of displaying a three-dimensional model having one or more surfaces, the method comprising computer controlled steps of:

providing the three-dimensional model in a computer readable medium of a computer system;

projecting a parametric surface representation of the three-dimensional model into two-dimensional parametric space;

selecting surface regions of predetermined shading in the two-dimensional parametric space by;

a. mapping an array of grid points onto the two-dimensional parametric space;

b. forming an array of shading values by applying a shading function at each grid point; and

c. applying a contouring function to the array of shading values to select the surface regions of predetermined shading;

determining the boundaries of consistent-facing regions boundaries of the consistent-facing regions by applying a silhouette function to the parametric surface representation of the three-dimensional model;

clipping the regions of predetermined shading by the boundaries of the consistent-facing regions to derive consistent-facing regions having the predetermined shading;

mapping the derived consistent-facing regions to display space; and

displaying the mapped consistent-facing regions.

5,544,292

DISPLAY APPARATUS HAVING A DISPLAY PROCESSOR FOR STORING AND FILTERING TWO DIMENSIONAL ARRAYS FORMING A PYRAMIDAL ARRAY, AND METHOD OF OPERATING SUCH AN APPARATUS

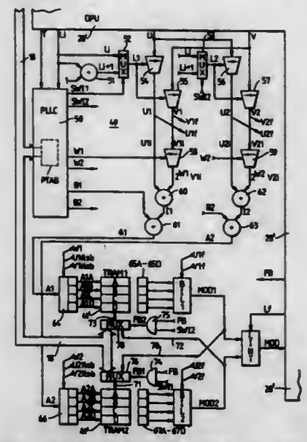
Paul A. Winser, Redhill, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 15, 1991, Ser. No. 641,387

Claims priority, application United Kingdom, Jan. 15, 1990, 9000843

Int. Cl.[6] G06T 1/00

U.S. Cl. 395—130 19 Claims



1. A display apparatus including a display processor having an associated texture memory for storing a pyramidal array of texture element ("texel") values comprising a plurality of two-dimensional (2-D) arrays representing a 2-D modulation pattern at at least two distinct levels of resolution, the display processor further having means for storing said 2-D arrays in said texture memory, means for receiving a primitive description, said primitive description including an indication that the stored modulation pattern is to be mapped onto a primitive for display, means for generating 2-D coordinate pairs addressing texel values in a stored 2-D array to effect the mapping of the stored modulation pattern onto the primitive, and 2-D interpolation means responsive to fractional parts of the 2-D coordinate pairs for combining together a number of texel values from the addressed array so as to generate an interpolated texel value, wherein the apparatus further comprises feedback means coupling an output of said 2-D interpolation means to said 2-D array storing means, whereby interpolated texel values generated by the 2-D interpolating means from one 2-D array are selectively stored back in the texture memory to form a further 2-D array of the pyramidal array thereby effecting a filtering operation on said one 2-D array enabling the generation of 2-D arrays for successive levels from a single, high resolution 2-D array.

5,544,293

BUFFER STORAGE SYSTEM AND METHOD USING PAGE DESIGNATING ADDRESS AND INTRA-PAGE ADDRESS AND DETECTING VALID DATA

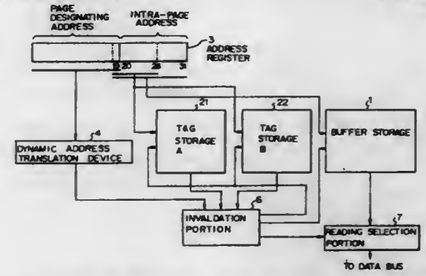
Keizou Nozawa, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 531,141, May 31, 1990, abandoned. This application Jan. 3, 1994, Ser. No. 176,679

Claims priority, application Japan, Jun. 1, 1989, 1-140846

Int. Cl.[6] G06F 12/08;12/10;12/12

U.S. Cl. 395—412 1 Claim



1. A buffer storage system using logical page designating addresses and intra-page addresses for information processing of data moved-in from a main storage unit, wherein a logical address output by a processor includes a logical page designating address and an intra-page address, said buffer storage system comprising:

address supply means for supplying a first address signal having a portion of the logical page designating address and the intra-page address and a second address signal having a portion of the logical page designating address and a portion of the intra-page address;

data storage means for storing a segment of data from the main storage unit in a data storage location designated by the first address signal received from said address supply means;

a plurality of address information storage means for storing address information concerning the data storage location in an address storage location designated by the second address signal, a number of said plurality of address information storage means being based on the portion of the logical page designating address, first address information storage means, among the plurality of address information storage means, being used for controlling an access to the data storage means and second address information storage means, among the plurality of address information storage means and in performing a write access operation, being supplied with a modified second address signal in which only the portion of the logical page designating address is different and which is used for an invalidation operation; and

invalidation means, responsive to a write instruction from the processor to the main storage unit and a comparison result, of comparing a supplied real page designating address with outputs of the second address information storage means, for setting a state of the address information of the first and second address information storage means, which corresponding to the outputs, to an invalid state.

5,544,294

METHOD FOR GENERATING A SUBPIXEL MASK FOR COMPUTER GRAPHICS SYSTEM AND APPARATUS THEREOF

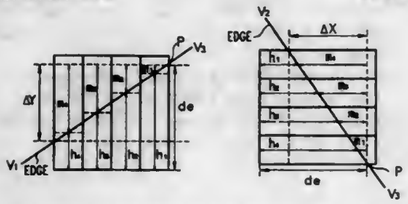
Jun-hyoung Cho; Sang-gil Choi, and Young-cheul Wee, all of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Sep. 22, 1994, Ser. No. 310,321

Claims priority, application Rep. of Korea, Dec. 28, 1993, 93-30228

Int. Cl.[6] G06F *5/00*

U.S. Cl. 395—141 **16 Claims**



1. A method for generating an n×n subpixel mask of a pixel for antialiasing by receiving ΔX and ΔY values of an edge having a slope and an initial value of a cross distance, the method comprising the steps of:

forming subblocks by dividing the pixel into n subblocks depending on the slope;

calculating a subblock coverage by:

determining a pair of reference points depending on the slope of the edge,

calculating cross distances (de) defined by the distance from one of the reference points to an intersection point of the edge and a pixel boundary,

subtracting a slope ratio value from a first cross distance after calculating a corresponding cross distance from the initial value of the first cross distance by an interpolation method and calculating slope ratio values of the formed subblocks, including calculating a slope ratio value (m_k), by drawing a first line parallel to another pixel boundary line at the intersection point and then obtaining a distance from the first line to the edge, in the subblock units, and calculating the subblock coverage (h_k) as h_k=de−m_k; and

generating an n×n subpixel mask depending on the calculated subblock coverage, whereby aliasing generated at the edge is removed.

5,544,295

METHOD AND APPARATUS FOR INDICATING A CHANGE IN STATUS OF AN OBJECT AND ITS DISPOSITION USING ANIMATION

Stephen P. Capps, San Carlos, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed May 27, 1992, Ser. No. 890,637

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—152 **25 Claims**

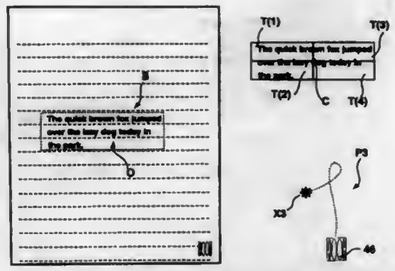
1. A method for visually animating a deletion of a computer object represented by a corresponding object image displayed on a display screen of a display assembly in a computer system, the method comprising the steps of:

indicating that the computer object is selected for deletion by selecting the corresponding object image displayed on the display screen of the display assembly;

animating a crumpling of the selected corresponding object image that is displayed on the display screen wherein the animated crumpling includes the substeps of:

dividing said corresponding object image of the selected computer object into a plurality of portions; and

converging said portions towards a central area of said corresponding object image of the selected computer object;



replacing said portions with a sprite image representing said crumpled corresponding object image; and

automatically moving said sprite image representing said crumpled corresponding object image across said display screen to a position that overlaps an icon on the display screen which indicates the deletion of said computer object.

5,544,296

DOCUMENT OUTPUT METHOD

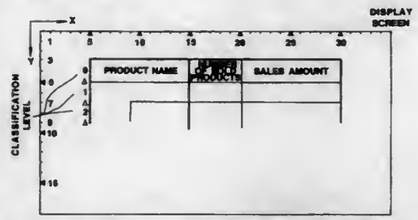
Shigeki Mineo, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 46,129, Apr. 12, 1993, abandoned, which is a continuation of Ser. No. 507,048, Apr. 9, 1990, abandoned. This application Dec. 7, 1994, Ser. No. 350,703

Claims priority, application Japan, Apr. 24, 1989, 1-104268

Int. Cl.[6] G06T *1/00*

U.S. Cl. 395—148 **1 Claim**



1. A document output method for a data processing unit including a display screen, a key input means, and a memory, the method comprising the computer steps of:

a) storing in the memory a plurality of transaction data items, said transaction data items having different classification levels to be appended thereto, and said transaction data items being stored in the memory in accordance with a classification size;

b) drawing by an operator on the display screen a field framing line for surrounding a displayed level-classified transaction data item, said level-classified transaction data item being displayed on the display screen, and said field framing line being drawn on the display screen in accordance with a classification level of the transaction data item which is to be surrounded by a field frame line;

c) arbitrarily designating by the operator, according to the classification levels, a range of a field framing line in accordance with a classification level of the field framing lines drawn on said display screen;

d) obtaining, according to the classification levels, a start point and lengths of field framing lines drawn by said drawing step and for generating, according to the classification levels and from the obtained start point and the length of the field framing line, parameters for outputting line segments constituting the field framing line, said generating step including obtaining, according to the classification levels, the field framing lines included in the range corresponding to the designated classification levels;

e) storing in the memory, according to the classification levels, the generated parameter of said line segments in units thereof;

f) storing in the memory, data indicating an output row position of a transaction data item which is to be recorded on a recording medium;

g) determining, each time a transaction data item stored in said memory is readout, the classification level of the readout transaction data item;

h) reading out parameters and transaction data from said memory and corresponding to the determined classification level;

i) forming a field framing line on the basis of the readout parameters and corresponding to the determined classification level; and

j) printing the formed field framing line together with the readout transaction data item at the output row position where the readout transaction data item is to be recorded.

5,544,297

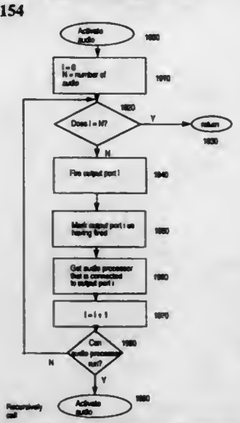
OBJECT-ORIENTED AUDIO RECORD/PLAYBACK SYSTEM

Steven H. Milne, Palo Alto; James M. Tindell, La Honda; John C. Tobias, II, Sunnyvale; Michael R. Dilts, Saratoga, and Bradley A. Edelman, Cupertino, all of Calif., assignors to Taligent, Inc., Cupertino, Calif.

Continuation of Ser. No. 120,328, Sep. 13, 1993. This application Dec. 13, 1995, Ser. No. 572,351

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—154 **15 Claims**



1. In a memory of a computer system, a multimedia application framework for creating a multimedia application which processes multimedia data in response to a request, the application framework comprising:

a subclassable media component base class for deriving media component classes used to instantiate media component objects wherein the subclassable media component base class includes data defining an input port and data defining an output port;

means responsive to the media component base class for instantiating a plurality of media component objects;

means for connecting the plurality of media component objects into a topology of media component objects wherein the connecting means connects the input ports and the output ports of the plurality of media component objects;

means, responsive to the multimedia data, for iterating through the topology to identify media component objects which am ready for execution and for placing the media component objects that are ready for execution on a run list wherein the means for iterating through the topology includes means for simulating data flow through the topology to identify media component objects which are ready for execution without requiring any of the plurality of media component objects to process media data; and

means responsive to the request for executing the media component objects on the run list.

5,544,298

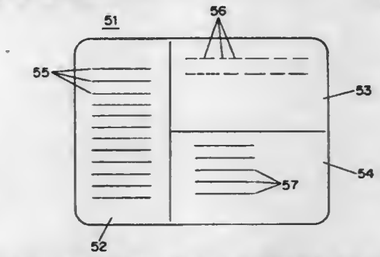
CODE GENERATION AND DATA ACCESS SYSTEM

Walter J. Kanavy, Scranton, and Timothy P. Brown, Dunmore, both of Pa., assignors to Data Management Corp., Del.

Filed Jan. 22, 1993, Ser. No. 7,595

Int. Cl.[6] G06F *3/14*

U.S. Cl. 395—155 **7 Claims**



1. A code generation and data access system for use in performing operations upon data in data files comprising records, each record comprising fields, the system comprising:

a display comprising a plurality of windows;

a processor;

a memory;

a keyboard for receiving user inputs;

first means responsive to a first user input for identifying data files and for displaying indicia indicative thereof within a first window of the display;

second means responsive to a second user input for selecting a data file, for retrieving information relating to the fields in the selected data file and displaying the information relating to the fields in a second window of the display;

means for displaying indicia corresponding to operations performable upon data in a third window of the display;

third means responsive to third user inputs for repeatedly selecting an operation from the third window, for displaying within a fourth window a program step template indicative of the selected operation, the template having placeholders, and responsive to fourth user inputs relating to the placeholders for selecting respective field information from the second window, the selected information replacing respective placeholders in the template;

whereby a plurality of program statements indicative of the operations and fields selected by the user appear in the fourth window.

5,544,299

METHOD FOR FOCUS GROUP CONTROL IN A GRAPHICAL USER INTERFACE

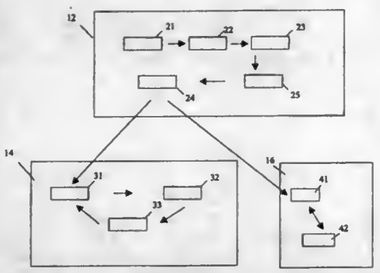
John S. Wenstrand, 35 Rondo Way, Menlo Park, Calif. 94025, and Thomas W. Ekstedt, 159 Ruby Dr., San Carlos, Calif. 94070

Filed May 2, 1994, Ser. No. 236,313

Int. Cl.[6] G06F *3/14*

U.S. Cl. 395—155 **4 Claims**

1. A method of operating a computer having a display device to allow a user thereof to input data thereto, said method comprising the steps of:



providing said user with an entry focus group and one or more secondary focus groups, no more than one of said focus groups being active at any given time, each said focus group having one or more data entry fields, said user moving between said data entry fields in the currently active said focus group by typing a predetermined key;

causing said entry focus group to initially be active and displayed;

accepting input entered by said user into at least one of said data entry fields in said entry focus group; and

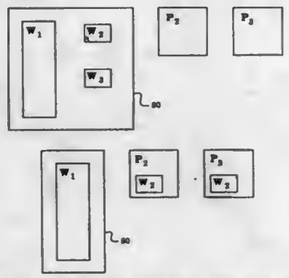
causing one of said secondary focus groups to become active in response to said user moving out of an exit data entry field, whether or not said user entered data in said exit data entry field, wherein said exit data entry field is one of said data entry fields in said entry focus group.

5,544,300

USER INTERFACE FOR DYNAMICALLY CONVERTING BETWEEN A SINGLE TOP LEVEL WINDOW AND MULTIPLE TOP LEVEL WINDOWS

Rune A. Skarbo, Hillsboro; John D. Elliott, Aloha, and Kevin A. Watts, Portland, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Nov. 12, 1993, Ser. No. 151,551
Int. Cl.[6] G06F *3/14*
U.S. Cl. 395—157 **31 Claims**



1. In an electronic conferencing system having a first computer display system in communication with a second computer display system, each of said first and second computer display systems including a central processing unit (CPU) coupled to a display such that data may be displayed substantially simultaneously on each of said displays in a plurality of windows, a method for displaying said windows and operating upon said windows in said electronic conferencing system by a user, comprising the steps of:

generating and displaying a first top level window including a video conference control panel window, a remote video window, and a local video window on at least one of said displays coupled to said first and second computer display systems;

at least one user providing an ungroup signal to at least one of said CPUs, such that said CPU receiving said ungroup signal displays a second and a third top level window and reparents said remote video window to said second top level window and said local video window to said third top level window;

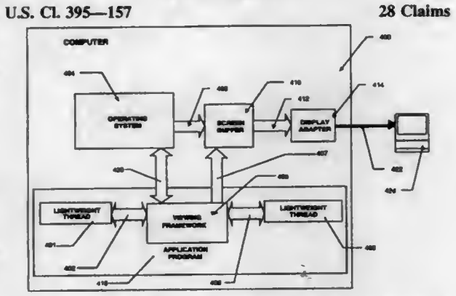
said CPU which has received said ungroup signal displaying said first top level window having said video conference control panel window disposed therein, said second top level window having said remote video window, and said third top level window having said local video window on said display coupled to said CPU.

5,544,301

OBJECT-ORIENTED VIEW LAYOUT SYSTEM

Debra L. Orton, San Jose; William F. Kraus, Sunnyvale, and Erich Gamma, Mt. View, all of Calif., assignors to Taligent, Inc., Cupertino, Calif.

Filed Dec. 30, 1993, Ser. No. 175,915
Int. Cl.[6] G06F *3/14*
U.S. Cl. 395—157 **28 Claims**



1. A system for displaying screen information in a first and a second view, in which the first view may partially obscure a portion of the second view, leaving a non-obscured visible area of the second view, the system comprising:

(a) a screen buffer for holding the screen information;

(b) display adapter means for directly obtaining the screen information from the screen buffer and for displaying the screen information on a display screen controlled by the display adapter means;

(c) a processor and an attached memory, holding a first and a second application program;

(d) layout and alignment means responsive to layout and alignment criteria provided by a user for generating layout attributes for each of the first and second views, which layout attributes specify the positions of the first and the second view on the display screen and relative to each other;

(e) view system means, responsive to the layout attributes, for generating a first visible area definition, designating a first portion of the screen buffer for holding screen information for the first view, and for maintaining a second visible area definition, designating a second portion of the screen buffer for holding screen information for the second view visible area;

(f) wherein the first and second application programs each comprise

means for obtaining a visible area definition, and

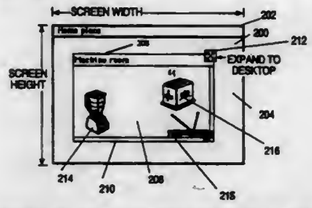
means for directly storing screen information into a portion of the screen buffer designated by the obtained visible area definition.

5,544,302

OBJECT-ORIENTED FRAMEWORK FOR CREATING AND USING CONTAINER OBJECTS WITH BUILT-IN PROPERTIES

Frank T. Nguyen, Campbell, Calif., assignor to Taligent, Inc., Cupertino, Calif.

Filed Jun. 3, 1993, Ser. No. 71,812
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—161 **24 Claims**



1. A method for organizing information in a memory of a computer system, the memory having an address space for an object-oriented operating system and an address space for an application program, the method comprising the steps of:

(a) storing information defining a container class in the operating system address space of the memory, the container class being comprised of a data structure for holding information, a member function for constructing a container object from the container class, a first member function for inserting information identifying a containable object into the data structure, plurality of member functions for performing editing operations and a second member function for inserting information identifying an editing operation into the data structure;

(b) executing the constructing member function to instantiate a container object in the application program address space of the memory;

(c) executing the first inserting member function of the instantiated container object to insert information identifying a containable object into the data structure of the instantiated container object;

(d) executing one of the editing member functions in the instantiated container object to perform an editing operation on the containable object identified by information in the data structure of the instantiated container object; and

(e) executing the second inserting member function to insert information identifying the editing operation performed in step (d) into the data structure of the instantiated container object .so that the editing operation may be undone and redone.

5,544,303

METHOD FOR CONFIGURING AND OPERATING A TELECOMMUNICATION APPARATUS

Jacques Maroteaux, Antibes, and Bernard Richard, Contes, both of, France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 12, 1993, Ser. No. 152,570
Claims priority, application European Pat. Off., Dec. 17, 1992, 92480196
Int. Cl.[6] G06F *15/62*
U.S. Cl. 395—161 **8 Claims**

1. In a telecommunication apparatus having an operator interactive display panel (FIG. 3), selector means for identifying and selecting portions of the panel, a user interface module (**800**) for handling communications with an operator, a teleprocessing module (**830**) for handling telecommunication procedures involved in the operation of the apparatus and an editor, a method for configuring and operating the apparatus including the following steps:

establishing a first window (**310**) including a first plurality of graphic objects (**311–324**) on said interactive display panel, each of said graphic objects being related to selected ones of a first set of parameters which include, telecommunication protocols, the telecommunication network and hardware components utilized in the said telecommunication apparatus,

establishing a first file (**840**) for storing the said first set of parameters, said user interface (**800**) and said teleprocessing module (**830**) having access to said first file for updating the first file via the editor and the said teleprocessing module (**830**) being able to read the said first file (**840**),

establishing a second window (**330**) including a second plurality of graphic objects (**331–336**) on said interactive display panel, each of said graphic objects being related to selected ones of a second set of data and parameters related to problem determination procedures,

establishing a second file (**850**) for storing the said second set of data and parameters, said user interface (**800**) and said teleprocessing module (**830**) having access to said second file (**850**) for updating the said second file via the editor and the said user interface (**800**) being able to read the said second file (**850**),

establishing a third window (**350**) on the interactive display panel including a third plurality of graphic objects (**351–353**), each of said graphic objects being related to selected information defining states of the telecommunications apparatus, and,

establishing a third file (**860**) for storing said information defining states of the telecommunications apparatus, said user interface (**800**) being able to read the third file (**860**) and said teleprocessing module (**830**) being able to update the third file (**860**) via the editor, whereby, the said user interface (**800**) and the teleprocessing module (**830**) can operate asynchronously.

5,544,304

FAULT TOLERANT COMMAND PROCESSING

Wayne C. Carlson; Michael J. Meadows, and Merrill B. Greco, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 25, 1994, Ser. No. 217,829
Int. Cl.[6] G06F *11/34*
U.S. Cl. 395—182.08 **20 Claims**

1. A system for fault tolerant command processing, comprising:

a first receiver for receiving commands from a command source, comprising:

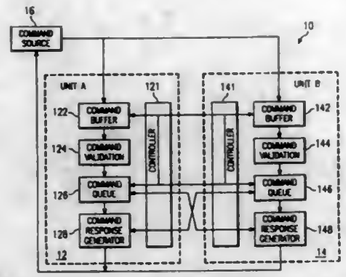
a first buffer coupled to the command source;

a first validation module coupled to receive commands from said first buffer; and

a first queue coupled to receive validated commands from said first validation module;

a first transmitter, coupled with said first receiver, for transmitting a response to the command source;

a first inter-unit interface coupled with said first receiver and said first transmitter;



said first receiver, said first transmitter and said first inter-unit interface comprising a first command processing unit;

a second receiver for receiving the command from the command source, comprising:

a second buffer coupled to the command source;

a second validation module coupled to receive commands from said second buffer; and

a second queue coupled to receive validated commands from said second validation module;

a second transmitter, coupled with said second receiver, for transmitting a response to the command source;

a second inter-unit interface coupled with said second receiver, said second transmitter and said first inter-unit interface;

said second receiver, said second transmitter and said second inter-unit interface comprising a second command processing unit; and

a controller for designating that said first command processing unit be an active unit and respond to the command and that said second command processing unit be a standby unit and respond to the command only if a failure occurs in said first command processing unit, wherein said first receiver and said first transmitter are operationally linked with said second receiver when said first command processing unit is the active unit.

5,544,305

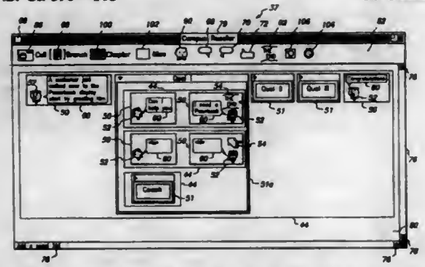
SYSTEM AND METHOD FOR CREATING AND EXECUTING INTERACTIVE INTERPERSONAL COMPUTER SIMULATIONS

Enio Ohmaye, Sunnyvale, and Arthur James, San Jose, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Jan. 25, 1994, Ser. No. 187,681

Int. Cl.[6] C06F *15/00*

U.S. Cl. 395—161 **30 Claims**



1. In a computer system having an input device, an output device and a processor, an apparatus for creating and executing an interactive simulation, the apparatus comprising:

an active simulation means for storing a plurality of simulation objects representing the interactive simulation;

an authoring editor means for modifying the objects in the active simulation means and for producing an authoring user interface on the output device in a creating mode, the authoring user interface providing a comic book layout having a plurality of cells and including graphical images representing each object, the authoring editor means coupled to the active simulation for storing objects in an executable order corresponding to a position of the objects when displayed in the authoring user interface, the authoring editor means coupled to the input device to receive input during the creating mode, and the authoring editor means coupled to the processor to produce the authoring user interface on the output device;

an engine for executing the interactive simulation by processing the simulation objects stored in the active simulation, the engine performing a computer program step sequence associated with each object and determining a next object to execute, the engine coupled to the active simulation; and

a simulation user interface means for controlling the processor to generate an output on the output device in response to signals from the engine in an execution mode, the simulation user interface means coupled to the engine.

5,544,306

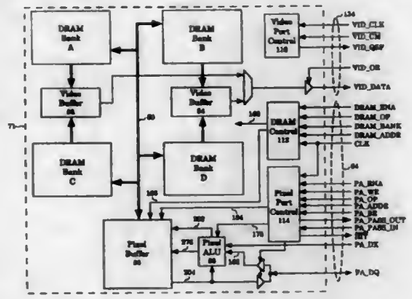
FLEXIBLE DRAM ACCESS IN A FRAME BUFFER MEMORY AND SYSTEM

Michael F. Deering, Los Altos; Stephen A. Schlapp, San Jose, and Michael G. Lavelle, Saratoga, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed May 3, 1994, Ser. No. 237,307

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—164 **61 Claims**



1. A frame buffer memory, comprising:

memory array for buffering a set of pixel data that defines an image for display on a display device, the memory array arranged as a set of memory banks, each memory bank comprising a set of memory cells and a set of sense amplifiers coupled to access the memory cells;

pixel cache coupled to access the sense amplifiers of each memory bank, the pixel cache comprising a plurality of pixel cache blocks and a set of dirty tag bits corresponding to each pixel cache block;

pixel ALU coupled to the pixel cache and coupled to a rendering bus;

memory access circuit coupled to the memory array and to the pixel cache, the memory access circuit coupled to receive a memory access request that specifies a memory access function and one of the memory banks, the memory access circuit having circuitry for initiating the memory access function according to the memory access request;

pixel access circuit coupled to the pixel cache and coupled to receive a pixel access request that specifies one of the pixel cache blocks, the pixel access circuit having circuitry for initiating a pixel access over the rendering bus to the pixel cache according to the pixel access request.

5,544,307

MICROCOMPUTER DEVELOPMENT SUPPORT SYSTEM OPERABLE WITH ONLY BACKGROUND MONITOR AND WITHOUT CACHE REPLACEMENT

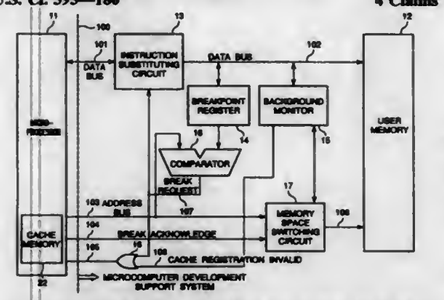
Kouji Maemura, Kanagawa, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 3, 1994, Ser. No. 283,153

Claims priority, application Japan, Aug. 3, 1993, 5-191546

Int. Cl.[6] G06F *9/00;11/00*

U.S. Cl. 395—180 **4 Claims**



1. A microcomputer development support system for a microprocessor, said microprocessor including therein an execution unit for executing a program and a cache memory associated with said execution unit, said microprocessor for inhibiting a cache registration in a cache replacement access to said cache memory, and for putting said cache memory into a "cache off" condition in a programmed manner, said microprocessor generating a break acknowledge signal when said execution unit has executed a predetermined branch instruction, the microcomputer development support system comprising:

instruction substituting means for tracing a memory access of said microcomputer and for responding to a break request signal to supply said execution unit of said microcomputer with said predetermined branch instruction in place of an instruction which has been read from a predetermined address of a user memory to be supplied to said microcomputer;

a background monitor for providing said microprocessor a memory space which is separated from a user space but peculiar to the microcomputer development support system;

a breakpoint register for registering an address where a break processing is to be performed;

a comparator for comparing a content of said breakpoint register with an address outputted from said microcomputer, and for generating said break request signal when coincidence is detected;

a memory space switching circuit for receiving said break acknowledge signal and said address outputted from said microprocessor, for separating said background monitor from said user memory, so that said background monitor functions as the memory space which is separated from the user space but is peculiar to the microcomputer development support system, whereby after said break request signal is activated, a processing is performed based on a program of said background monitor,

said microcomputer for responding to said break request signal to put said cache memory into said "cache off" condition when said program of said background monitor begins to execute,

said microcomputer returning said cache memory into a "cache on" condition when the execution of said program of said background monitor is terminated,

wherein said background monitor generates a cache registration invalid signal when said execution unit of said microcomputer is supplied with said predetermined branch instruction in place of the instruction which has been read from said user memory to be supplied to said microcomputer,

wherein said instruction substituting means is located externally of said microprocessor,

said development support system further comprising an OR circuit for receiving said break request signal and said cache registration invalid signal and for generating a cache registration control signal, and

wherein said microcomputer generates a logical product of said cache registration control signal and a cache write signal outputted from said execution unit to said cache memory, and to inhibit, when said logical product is active, said branch instruction from being registered into said cache memory.

5,544,308

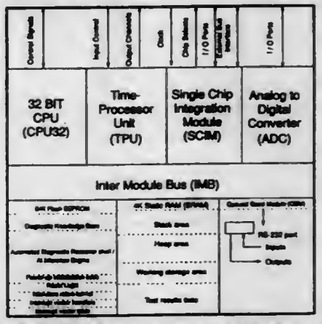
METHOD FOR AUTOMATING THE DEVELOPMENT AND EXECUTION OF DIAGNOSTIC REASONING SOFTWARE IN PRODUCTS AND PROCESSES

Gerard J. Giordano; Gregory deMare, both of Sparta; Betsy Longendorfer, Ridgewood, all of N.J.; Michael N. Granieri, Springfield, Va.; John P. Giordano, Sparta; Mary E. Nolan, Lafayette, both of N.J., and Ford Levy, Pleasantville, N.Y., assignors to Giordano Automation Corp., Sparta, N.J.

Filed Aug. 2, 1994, Ser. No. 284,382

Int. Cl.[6] G06C *15/00;* **G06F** *11/00*

U.S. Cl. 395—183.02 **18 Claims**



1. A method for automated diagnosis of faults in a system containing reparable parts comprising the steps of:

selecting a set of faults representing all known failures which can occur among a given plurality of reparable parts contained in the system, wherein each fault is characterized by symptom data comprising expected passing or failing results for tests that can be applied to a plurality of test locations in the system;

selecting a plurality of test locations in the system at which given tests can be applied and respective outputs can be acquired as actual passing or failing results for those tests;

mapping the set of faults to their characteristic symptom data of expected passing or failing test results by generating a fault/symptom matrix defined by the set of faults as matrix row indices, by the plurality of test locations as matrix column indices, and by the expected passing and failing results for the plurality of test locations as matrix elements representing the symptom data for each of the respective faults;

performing tests at at least some of the plurality of test locations of the system, then acquiring the outputs of the performed tests as actual passing or failing test results;

correlating the actual passing or failing test results to the expected test results comprising the symptom data for the faults defined in the fault/symptom matrix; and

creating a suspect list of faults having symptom data corresponding to the actual passing or failing test results of the performed tests;

wherein said method is implemented by programmed means of a computer processing unit, said fault/symptom matrix is stored as a knowledge base of the computer processing unit, and the outputs of the tests performed on the System being diagnosed are provided as inputs to the computer processing unit;

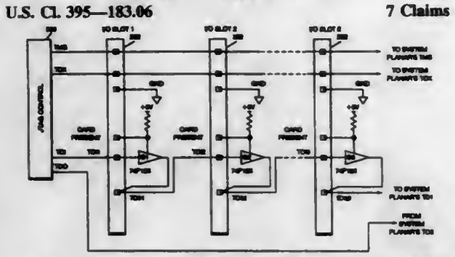
wherein said method implemented by the programmed means of the computer processing unit is optimized for run-time efficiency by preprocessing the steps of selecting the set of faults and plurality of test locations and generating the fault/symptom matrix and storing it as a preprocessed, deterministic part of the knowledge base beforehand, then dynamically processing the steps of acquiring the outputs of the performed tests, correlating the actual test results to the stored fault/symptom matrix, and creating the suspect list of faults at run time.

5,544,309

DATA PROCESSING SYSTEM WITH MODIFIED PLANAR FOR BOUNDARY SCAN DIAGNOSTICS

Luke L. Chang, Boca Raton, Fla.; John J. Cazzolla, Fuquay-Varina, N.C., and Kha D. Nguyen, Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 22, 1993, Ser. No. 52,002
Int. Cl.[6] G06F *11/34*
U.S. Cl. 395—183.06 **7 Claims**



1. A personal computer test system, incorporated within a personal computer, for use in accordance with a boundary scan test protocol for serially testing a data processing system within the personal computer having one or more card slots or stations for receiving data processing circuit devices, the personal computer test system comprising:

control means for generating serial test data signals in accordance with the boundary scan test protocol to serially scan in the serial test data signals to the card slots and stations for receiving data processing circuit devices and to scan out serial test data signals from the card slots and stations for receiving data processing circuit devices; and

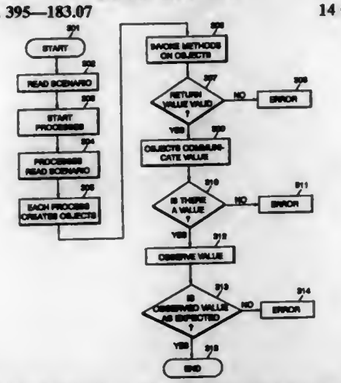
circuit means connected to each respective card slot and station for receiving data processing circuit devices for receiving the serial test data signals from the control means for either scanning in the serial test data signals to the card slot or station having a data processing circuit device or for scanning out the serial test data signal to the next succeeding serially connected card slot or station for receiving a data processing circuit device in the absence of a data processing circuit device at the respective card slot or station for receiving a data processing circuit device, wherein the circuit means includes a conduit circuit, for scanning in the serial test data signals to scan test the respective data processing circuit device at the respective card slot or station for receiving a data processing circuit device and to scan out the serial test data signals from the data processing circuit device at the respective card slot or station for receiving a data processing circuit device, and wherein the circuit means further includes a gate logic circuit, for scanning out the serial test data signals received from the control means in the absence of a data processing circuit device at the respective card slot or station for receiving a data processing circuit device (i) to a next succeeding serially connected card slot or station for receiving a data processing circuit device or (ii) to the control means for serially testing the data processing system in accordance with the boundary scan test protocol in the absence of a next succeeding card slot or station for receiving a data processing circuit device which card slot or station is in receipt of a data processing circuit device.

5,544,310

SYSTEM AND METHOD FOR TESTING DISTRIBUTED SYSTEMS

Ira R. Forman, and Hari H. Madduri, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 4, 1994, Ser. No. 318,017
Int. Cl.[6] G06F *11/34*
U.S. Cl. 395—183.07 **14 Claims**



1. A method for testing a distributed processing system program that is operable within a distributed processing system having a plurality of processing devices, the method comprising the steps of:

a) reading, by a test manager, a scenario file to identify processes of the distributed processing system program to be tested, wherein the scenario file includes identity of the processes and a sequence of testing events relating to the distributed processing system program;

b) starting, by the test manager, the processes on at least one of the plurality of processing devices;

c) reading, by each of the processes, respective portions of the scenario file;

d) performing, by each of the processes, the respective portions of the scenario file; and

e) monitoring, by the test manager, outputted values of each of the processes to determine when one of the processes outputs a value that is not as expected.

5,544,311

ON-CHIP DEBUG PORT

Donald D. Harenberg, Placentia; George A. Watson, Fullerton; Keith M. Bindloss, Irvine, and Dale E. Folwell, Placentia, all of Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Sep. 11, 1995, Ser. No. 526,472
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—183.16 **50 Claims**

1. An on-chip debug system for a programmable VLSI processor, said on-chip debug system referred to as a debug port, said debug port comprising:

(a) a plurality of units, said units including (1) a debug bus unit, (2) a debug command unit, (3) a debug instruction unit, (4) a debug inject/extract unit, and (5) a program flow unit;

(b) a first internal bus referred to as the internal debug bus;

(c) a second internal bus referred to as the move controller bus;

(d) said debug bus unit being operatively coupled (i) to receive debug information from at least one other of said plurality of units via the internal debug bus and (ii) to send debug information to at least one other of said plurality of units via the move controller bus, said debug bus unit having

(1) means for sending signals to and receiving signals from an external interface module at an external interface data exchange rate,

(2) means for receiving a service-request signal from at least one other of said plurality of units and for arbitrating and acknowledging said service-request signal,

(3) means for storing debug information received from at least one other of said plurality of units, and

(4) means for synchronizing the external interface data exchange rate and an internal debug port data exchange rate;

(e) said debug command unit operatively coupled (i) to receive a debug command from at least one other of said plurality of units via the move controller bus, said debug command unit having

(1) means for receiving a debug command from the VLSI processor,

(2) means for selecting and decoding a debug command,

(3) a status latch register for selectively latching one or more status signals received from at least one of said plurality of units,

(4) means for sending said one or more selectively latched status signals to at least one of said plurality of units,

(5) an enable latch register for selectively latching one or more enable signals received from at least one of said plurality of units,

(6) means for sending said one or more selectively latched enable signals to at least one other of said plurality of units,

(7) a timer,

(8) means for sending timer information to the VLSI processor,

(9) means for sending timer information to at least one other of said plurality of units via the internal debug bus,

(10) means for sending debug information to at least one other of said plurality of units via the internal debug bus,

(11) means for sending a service-request signal to the debug bus unit, and

(12) means for receiving a service-request acknowledgment signal from the debug bus unit;

(f) said debug instruction unit being operatively coupled (i) to receive debug information from at least one other of said plurality of units via the move controller bus and (ii) to send debug information to at least one other of said plurality of units via the internal debug bus, said debug instruction unit having

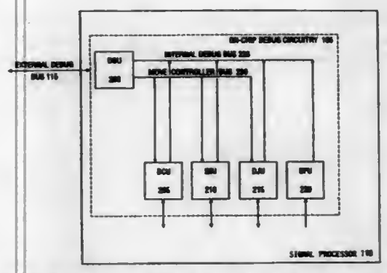
(1) means for sending a VLSI instruction to a first register internal to the VLSI processor,

(2) means for sending VLSI data associated with said VLSI instruction to a second register internal to the VLSI processor,

(3) means for receiving data from one or more registers internal to said VLSI processor,

(4) means for sending a service-request signal to the debug bus unit, and

(5) means for receiving a service-request acknowledgment signal from the debug bus unit;



(g) said debug inject/extract unit being operatively coupled to (i) receive debug information from at least one other of said plurality of units via the move controller bus and (ii) send debug information to at least one other of said plurality of units via the internal debug bus, said debug inject/extract unit having

(1) means for sending data to a register internal to the VLSI processor,

(2) means for receiving data from a register internal to the VLSI processor,

(3) means for sending a service-request signal to the debug bus unit, and

(4) means for receiving a service-request acknowledgment signal from the debug bus unit; and

(h) said program flow unit configured to monitor a task being executed by the VLSI processor, said task having a branch execution behavior, said program flow unit being operatively coupled to send debug information to at least one other of said plurality of units via the internal debug bus, said program flow unit having

(1) means for monitoring said branch execution behavior,

(2) means for reporting said branch execution behavior to the debug bus unit,

(3) means for sending a service-request signal to the debug bus unit, and

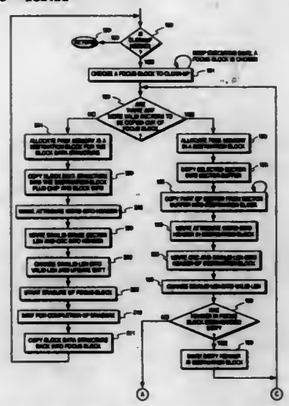
(4) means for receiving a service-request acknowledgment signal from the debug bus unit.

5,544,312

METHOD OF DETECTING LOSS OF POWER DURING BLOCK ERASURE AND WHILE WRITING SECTOR DATA TO A SOLID STATE DISK

Robert N. Hasbun, Shingle Springs, and Mark Christopherson, Folsom, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Apr. 29, 1994, Ser. No. 235,170
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—183.18 **11 Claims**



1. A method of detecting a power loss while writing a first sector of data to a nonvolatile memory array, the nonvolatile memory array storing a multiplicity of sectors of data and a translation table including a multiplicity of headers, each header being associated with a sector of data, each header including an offset pointer and a logical sector number, each logical sector number identifying a sector of data with which the header is associated, the offset pointer indicating the location of the associated sector of data within the nonvolatile memory array, the method comprising the steps of:

a. writing the first sector of data into the nonvolatile memory array;

b. writing a selected invalid logical sector number into the first header;

c. changing the selected invalid logical sector number into a valid first logical sector number associated with the first sector if there has been no loss of power since writing of the first sector of data began; and

d. determining whether the power loss occurred while writing the first sector of data by examining the logical sector number in the first header when power to the nonvolatile memory array is restored after the power loss and checking whether the logical sector number is valid.

5,544,313

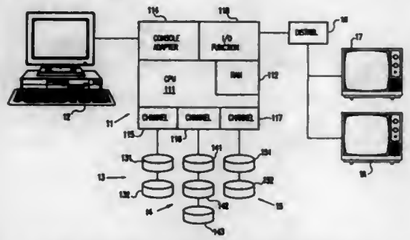
BATON PASSING OPTIMIZATION SCHEME FOR LOAD BALANCING/CONFIGURATION PLANNING IN A VIDEO-ON-DEMAND COMPUTER SYSTEM

Hadas Shachnai, Somers; Joel L. Wolf, Goldens Bridge, and Philip S. Yu, Chappaqua, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 11, 1994, Ser. No. 241,087

Int. Cl.[6] G06F *13/14*; H04N *7/173*

U.S. Cl. 395—200.01 **9 Claims**



1. A video on demand computer system, comprising:

a multimedia file server having memory for storing a limited number of videos;

a plurality of storage media connected to said multimedia file server, each of said storage media storing a plurality of videos; and

performance means, connected said multimedia file server, for performing selected ones of the videos for users responsive to received user performance request;

said multimedia file server including a central processing unit programmed to monitor numbers of videos being performed for each of the storage media and, based on the programmed monitoring operation, dynamically transferring the performance of a video in progress from one of the storage media to another storage media having a copy of the video in progress so as to balance the loads of the plurality of storage media wherein said central processing unit is further programmed to periodically perform a static reassignment of videos between said system memory and the storage media and between the storage media by transferring videos between memory and the storage media and between the storage media to optimize load balancing based on the user performance requests for each of the videos.

5,544,314

HIERARCHICAL NETWORK MANAGEMENT SYSTEM

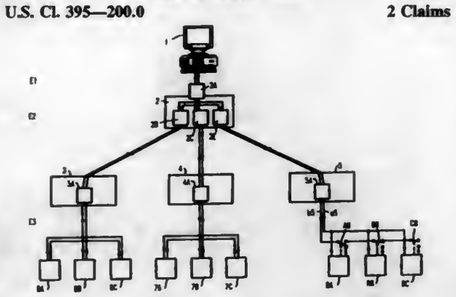
Johannes Fuchsreiter, Nürnberg; Konrad Schmidt, Ellingen; Rudolf Kasseckert, Nürnberg, and Walter Neumann, Eckental, all of, Germany, assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 957,577, Oct. 7, 1992, abandoned. This application Sep. 7, 1995, Ser. No. 531,571

Claims priority, application Germany, Oct. 9, 1991, 41 33 385.3

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.0 **2 Claims**



1. A hierarchical network management system for managing a hierarchical network of individual levels of network elements to be monitored, said network management system comprising:

a hierarchical network of components arranged in a hierarchy, said network having concentrators for separating individual levels of the hierarchy, each concentrator further having a slave side and a master side;

a central observation desk for monitoring a desired one of the network elements to be monitored by means of an address and for receiving a protocol from the network element so monitored;

at least one concentrator in the hierarchy having an interface on a master side thereof, wherein said interface is adjusted for a bus connection;

a transmission channel of arbitrary length connected to said interface, wherein said transmission channel comprises a forward line and a return line, further wherein said interface takes delays on said transmission channel of arbitrary length into consideration;

a plurality of parallel addressable apparatus connected in parallel to the forward and return lines of said transmission channel, wherein said parallel addressable apparatus comprise the network elements to be monitored and further wherein the combination of said transmission channel, said plurality of parallel addressable apparatus, and said interface constitutes the bus connection; and

a plurality of controllable change-over switches inserted in the return line of said transmission channel, wherein a controllable change-over switch is provided for each of said parallel addressable apparatus for selectively connecting a desired one of said plurality of parallel addressable apparatus to the return line, further wherein each controllable change-over switch is responsive to, that is, controlled by, an activation by a respective parallel addressable apparatus to which the controllable change-over switch is connected for changing over said respective parallel addressable apparatus from (i) being not connected, to (ii) being connected, to the return line of said transmission channel and further for being the only parallel addressable apparatus connected to the return line of said transmission channel, still further wherein the activation by a parallel addressable apparatus comprises a recognition by the parallel addressable apparatus of its address, the address having been transmitted by said at least one concentrator, further having been initially transmitted by said central observation desk.

5,544,315

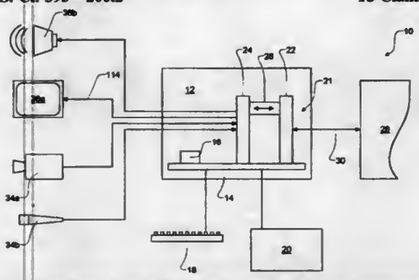
NETWORK MULTIMEDIA INTERFACE

Carl R. Lehfeldt, Morgan Hill, and Leonard P. Cygnapowicz, San Jose, both of Calif., assignors to Communication Broadband Multimedia, Inc., San Francisco, Calif.

Filed May 10, 1993, Ser. No. 59,836

Int. Cl.[6] G06F *7/00;7/10;15/16*

U.S. Cl. 395—200.2 **13 Claims**



1. A multimedia network system for operation in conjunction with a data network and a computer having a video board which is connected to the system bus of the computer and which is further connected to an audio/video device, comprising:

a high speed data bus;

a network interface board connected to the high speed data bus and further connected to a system bus of the computer and further connected to the data network; wherein

said video board is connected to the high speed data bus; and

said network interface board receives a plurality of data cells from the data network, formats said data cells into asynchronous signals and synchronous signals, routes said asynchronous signals within the data cells to the computer and further routes said synchronous signals to the high speed data bus.

5,544,316

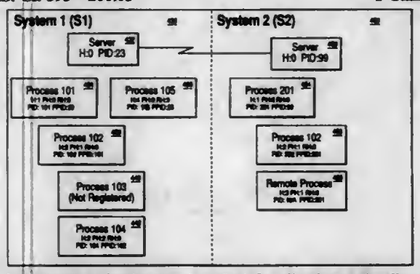
METHOD AND SYSTEM FOR OPTIONALLY REGISTERING A LOCAL PROCESS TO ALLOW PARTICIPATION IN A SINGLE SYSTEM SEMANTIC

Eric R. Carpenter, Round Rock; Christopher S. Claussen, and James O. Cox, both of Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 950,331, Sep. 24, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 483,783

Int. Cl.[6] G06F *15/163*

U.S. Cl. 395—200.03 **1 Claim**



1. A computer implemented method for allowing a plurality of computer child processes, each initiated by one of a plurality of computer parent processes, to participate in a single system semantic across a distributed data processing system having a plurality of machines, wherein at least one child process is initiated by a parent process executing on a remote machine, each machine executing a control daemon, comprising the steps of:

requesting registration by each local process with a corresponding local control daemon executing on the machine where the requesting process will be executing;

generating and recording in local memory by each local control daemon a handle for each process requesting registration;

determining by each local control daemon if each process requesting registration has a remote parent process;

if a first child process requesting registration with a first control daemon has a parent process executing on a remote machine with a remote control daemon, recording in memory by the first control daemon the handle assigned by the remote control daemon for the parent process and the remote machine executing the parent process;

if the first child process has a remote parent process, recording in memory the local control daemon as a local parent process of the first child process; and

if the first process has a remote parent process, recording in remote memory by the remote control daemon the handle assigned by the first control daemon for the first child process and the machine executing the first child process.

5,544,317

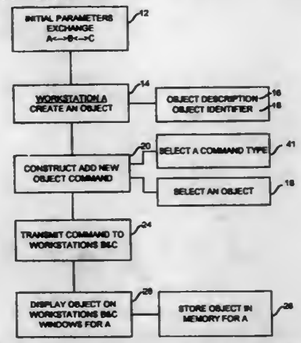
METHOD FOR CONTINUING TRANSMISSION OF COMMANDS FOR INTERACTIVE GRAPHICS PRESENTATION IN A COMPUTER NETWORK

David A. Berg, 44 Bell St., East Palo Alto, Calif. 94303

Filed Nov. 20, 1990, Ser. No. 615,986

Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—200.04 **3 Claims**



1. In a computer network including two or more networked computers, a method for transmitting and receiving data signals having variable length information over said network including the steps of:

configuring a data reception terminal of each receiving computer in a manner such that a transmitting computer terminal networked to said receiving computer may continue to generate data signals for transmission to said receiving computer terminal and said receiving computer terminal may continue to receive said generated data signals;

transmitting a data reception halted signal from said receiving computer terminal to said transmitting computer terminal when said receiving computer terminal has ceased its ability to receive data;

storing, in a first-in/first-out queue of said transmitting computer terminal, further data signals generated for transmission to said receiving computer terminal upon receipt of said data reception halted signal from said receiving computer terminal;

transmitting a ready signal from said receiving terminal to said transmitting terminal when said receiving terminal is again configured to receive data;

continuing transmission of said data from said transmitting terminal upon receipt of said ready signal from said receiving terminal;

said data from said transmitting terminal including a signal to said receiving terminal having a length which has a fixed length portion and a variable length portion;

said data included within said fixed length portion including information regarding a length of said variable length portion;

said receiving terminal tracking data generated, data transmitted, and data received so that said receiving terminal is capable of adding some further data generated after said transmission has been halted to some data received before receipt of said data reception halted signal.

5,544,318

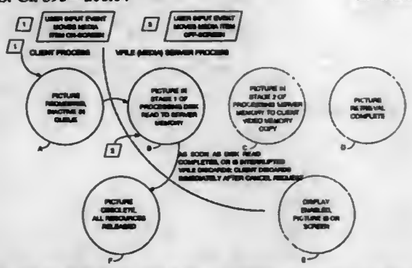
ASYNCHRONOUS MEDIA SERVER REQUEST PROCESSING SYSTEM FOR SERVICING REPRIORITIZING REQUEST FROM A CLIENT DETERMINES WHETHER OR NOT TO DELAY EXECUTING SAID REPRIORITIZING REQUEST

Patrick L. Schmitz, San Francisco, and Sheru Jauhal, Mountain View, both of Calif., assignors to Accom, Inc., a California Corporation, Menlo Park, Calif.

Filed Apr. 16, 1993, Ser. No. 49,255

Int. Cl.[6] G06F *13/00;13/14*

U.S. Cl. 395—200.04 **23 Claims**



1. An asynchronous media server request processing system for presenting information from media servers in response to media access requests from a client, including:

a main computer having a main memory;

at least one resource accessed in response to said media access requests by said client, including at least one of said media servers coupled to said main computer and having storage means for storing information;

an input device coupled to said main computer for user input of said media access requests;

first program means stored in said main memory for assigning a first client priority to a first media access request;

means for generating a reprioritizing request by said client for assigning a second client priority to said first media access request;

an output device coupled to said main computer for outputting information associated with said media access requests; and

second program means, stored in at least one of said main memory and a memory of one of said media servers, for executing said media access requests, including:

a client module for defining a client object for each one of said media access requests;

a media server module for: generating a queue for storing a plurality of said media access requests; placing said first media access request at a first position in said queue, said first position depending upon said first priority associated with said first media access request; removing from said queue ones of said media access requests which have been executed; controlling said at least one resource during execution of said first media access request; and outputting said information associated with said first media access request to said output device upon execution;

means for servicing said reprioritizing request by removing said first media access request from said first position in said queue and releasing any resource which is currently controlled by said media server module prior to completion of an execution of said first media access request; and

means for delaying said reprioritizing request servicing if said reprioritizing request is generated during a predefined portion of said execution of said first media access request.

5,544,319

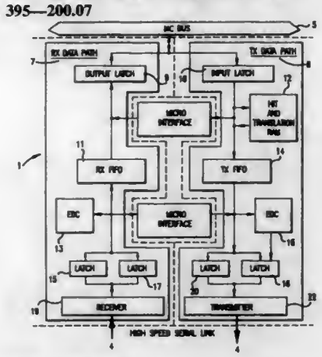
FIBER OPTIC MEMORY COUPLING SYSTEM WITH CONVERTER TRANSMITTING AND RECEIVING BUS DATA IN PARALLEL FASHION AND DIAGNOSTIC DATA IN SERIAL FASHION

John D. Acton, Plantation; Lawrence C. Grant, Coral Spring; Jack M. Hardy, Jr., Plantation; Steven P. Kent, Sunrise, and Steven E. Schelong, Plantation, all of Fla., assignors to Encore Computer U.S., Inc., Fort Lauderdale, Fla.

Continuation of Ser. No. 857,578, Mar. 25, 1992, abandoned. This application Oct. 11, 1994, Ser. No. 320,767

Int. Cl.[6] G06F *13/00;13/12;13/40*

U.S. Cl. 395—200.07 **6 Claims**



1. A system comprising:

a first and second set of plurality of nodes;

a first bus associated with and connecting said first set of plurality nodes;

a second bus associated with and connecting said second set of plurality of nodes;

each node except one of each of said first and second sets of plurality of nodes including a processing unit, a memory, a bus coupled to the processing unit and memory, and a sensor means for sensing a write from the processing unit to the memory and for transmitting the sensed write including data and an address to which said data is being written on said associated bus without intervention of the processing unit;

fiber optic means for optically transmitting data and associated addresses from one excepted node to the other excepted node;

the excepted node of the first set of plurality of nodes including first converter means connected to the first bus for (1) receiving data and associated addresses on said first bus in a parallel fashion, (2) converting said data to corresponding optical signals, (3) transmitting said optical signals via said fiber optic means, (4) receiving optical signals from said fiber optic means in a serial fashion, and (5) transmitting the optical signals received from said fiber optic means onto said first bus, said first converter means including latches receiving and outputting data from said first bus or said fiber optic means in a parallel fashion and receiving and outputting diagnostic data in a serial fashion;

the excepted node of the second set of plurality of nodes including second converter means connected to the second bus for (1) receiving data and associated addresses on said second bus in a parallel fashion, (2) converting said data to corresponding optical signals, (3) transmitting said optical signals via said fiber optic means, (4) receiving optical signals from said fiber optic means in a serial fashion, and (5) transmitting the optical signals received from said fiber optic means onto said second bus, said second converter means including latches receiving and outputting data from said second bus or said fiber optic means in a parallel fashion and receiving and outputting diagnostic data in a serial fashion;

both said first and second converter means including selection means for accepting for transmission only data having preselected associated addresses.

5,544,320

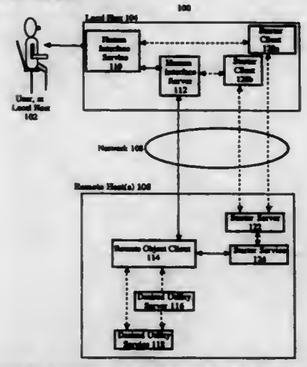
REMOTE INFORMATION SERVICE ACCESS SYSTEM BASED ON A CLIENT-SERVER-SERVICE MODEL

Allan M. Konrad, P.O. Box 4023, Berkeley, Calif. 94704

Continuation of Ser. No. 1,982, Jan. 8, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 481,642

Int. Cl.[6] G06F *3/00;13/00*

U.S. Cl. 395—200.09 **12 Claims**



1. A remote access apparatus for providing end-user access through a human interface to a desired remote utility service on a remote host computer, comprising:

a) a local host computer;

b) a remote host computer;

c) a network connection between said local host computer and said remote host computer allowing data transfer therebetween;

wherein said local host computer further comprises:

1) a human interface service means, for handling input from, and output to, an end-user;

2) a human interface server, for mediating requests for human interface services, said requests from human interface clients resident on at least one of said remote host computer and said local host computer, said human interface server operative to process said requests from said human interface clients during normal operation and exception operation; and

3) a starter client means, for issuing requests to a starter server means on said remote host computer, said requests for initiating interaction with the desired remote utility service on said remote host computer;

wherein said remote host computer further comprises:

1) said starter server means, for responding to requests from said starter client means;

2) a desired remote utility service, resident on said remote host computer and platform-independent of said local host computer;

3) a remote object client, for issuing requests for human interface services to said human interface server at said local host computer, for issuing requests for said desired remote utility service and for translating a response from said desired remote utility service into a request for human interface services issued to said human interface server; and

4) a starter service means, for initiating a remote object client indicated by said starter server means; and

wherein said network connection further comprises:

1) a remote object connection initiated by said remote host computer for transferring data between said remote object client and said human interface server resident on or serving said local host computer; and

2) a starter connection initiated by said local host computer for transferring data necessary to initiate said remote object client, said transferring of data occurring between said starter client means and said starter server.

5,544,321

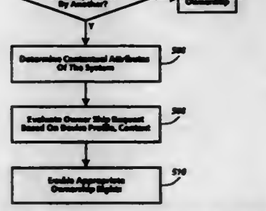
SYSTEM FOR GRANTING OWNERSHIP OF DEVICE BY USER BASED ON REQUESTED LEVEL OF OWNERSHIP, PRESENT STATE OF THE DEVICE, AND THE CONTEXT OF THE DEVICE

Marvin M. Theimer, Mountain View; Michael J. Spreitzer, Tracy; Mark D. Weiser, Palo Alto; Richard J. Goldstein, San Francisco; Scott A. Elrod, Redwood City; Daniel C. Swinehart; William N. Schilit, both of, Palo Alto; Robert T. Krivacic, San Jose, and Roy Want, Mountain View, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 161,968, Dec. 3, 1993. This application Jun. 7, 1995, Ser. No. 474,282

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.11 **2 Claims**



1. A method in a system of mobile and fixed computer controlled devices and mobile users for performing a multiplicity of operations, each computer controlled device and user being identifiable and locatable by the system, and having at least one allowable operation, the method establishing ownership control of at least a portion of a particular device by an identified user based on the context of the system and the environment of the particular device, the method comprising the steps of:

requesting a level of ownership control of said particular device;

identifying device properties of said particular device, the device properties including ownership policies;

determining a present state of said particular device, including an ownership state;

determining context of said particular device, including users and devices in proximity to said particular device;

based on said requested level of ownership control, said present state of said particular device, and said context of said particular device, determining an ownership access of said particular device to be granted to said identified user consistent with the ownership policies of the particular device; and

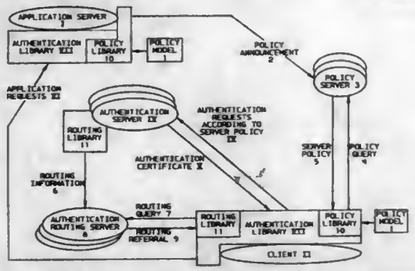
granting said ownership access to said identified user.

5,544,322

SYSTEM AND METHOD FOR POLICY-BASED INTER-REALM AUTHENTICATION WITHIN A DISTRIBUTED PROCESSING SYSTEM

Pau-Chen Cheng, Yorktown Heights, N.Y., and Shyh-Wei Luan, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 9, 1994, Ser. No. 239,669
Int. Cl.[6] G06F *13/14;* **H04L** *9/00;12/22*
U.S. Cl. 395—200.12 **9 Claims**



1. In a distributed computing system wherein individual computers are linked together by a communication network, a method for inter-realm authentication comprising the steps of:

a) requesting, by a client, an application server policy for an application server from a policy server;

b) when a policy reply from the policy server contains an authentication policy of the application server, requesting, by the client, an authentication path to the application server from an authentication routing server;

c) determining, by the authentication routing server, whether the authentication path is compliant with the authentication policy and authentication routing information;

d) when the authentication path is compliant with the authentication policy and the authentication routing information, providing, by the authentication routing server, verification of the authentication path to the client;

e) upon receiving the verification of the authentication path, requesting, by the client, an authentication certificate from an authentication server;

f) providing, by the authentication server, the authentication certificate to the client, wherein the authentication certificate is based on the authentication path;

g) upon receiving the authentication certificate, sending, by the client, a request to the application server, wherein the request includes the authentication certificate; and

h) verifying, by the application server, the client based on the authentication certificate.

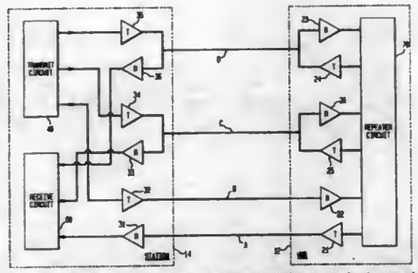
5,544,323

HIGH BIT RATE ETHERNET CONNECTION

Robert Heaton, Laguna Niguel; Nariman Yousefi; Khosrow Sadeghi, both of Irvine, and David Fischer, Santa Ana, all of Calif., assignors to Standard Microsystems Corp., Hauppauge, N.Y.

Filed Sep. 23, 1993, Ser. No. 126,176
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—200.14 **8 Claims**

4. In a network comprising a hub and a plurality of stations connected to the hub, wherein each station is connected to the hub by a first distinct unidirectional transmission path for transmitting data only from the station to the hub, a second distinct unidirectional transmission path for transmitting data only from the hub to the station and at least one distinct bidirectional transmission path for transmitting data from the station to the hub and from the hub to the station, a method for detecting collisions comprising the steps of:



detecting a start of a collision with the hub by a particular station by sensing at the station a presence of energy transmitted from the hub on the second unidirectional transmission path between the particular station and the hub while the particular station is transmitting data to the hub on the first unidirectional transmission path between the hub and the particular station and on the at least one bidirectional transmission path between the hub and the particular station,

transmitting a jam signal from the particular station to the hub on the first unidirectional transmission path for a predetermined time period,

detecting a start of a collision with the particular station by said hub by sensing at the hub a presence of energy transmitted from the particular station on the first unidirectional transmission path between the particular station and the hub while the hub is transmitting data to the particular station on the second unidirectional transmission path and on the at least one bidirectional transmission path between the hub and the particular station, and

transmitting a jam signal by the hub to each of said stations via the second unidirectional path connecting the hub to each station until the hub senses no energy on the first unidirectional transmission path from any of the stations.

5,544,324

NETWORK FOR TRANSMITTING ISOCHRONOUS-SOURCE DATA USING A FRAME STRUCTURE WITH VARIABLE NUMBER OF TIME SLOTS TO COMPENSATE FOR TIMING VARIANCE BETWEEN REFERENCE CLOCK AND DATA RATE

Brian C. Edem, San Jose, and Debra J. Worsley, Sunnyvale, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Nov. 2, 1992, Ser. No. 969,911
Int. Cl.[6] G06F *13/36;* **H04L** *5/22*
U.S. Cl. 395—200.17 **25 Claims**

1. In a local area network, apparatus for transmitting information onto physical media comprising:

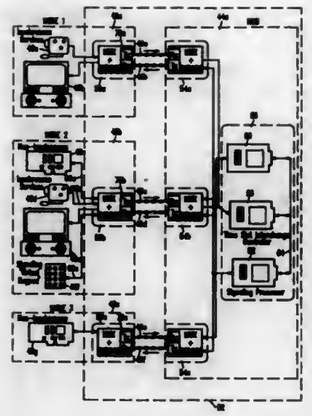
means for receiving a plurality of inputs, including at least a first isochronous data stream and a second stream of data;

means for time-multiplexing information from said plurality of inputs by transmitting said information in a repeating pattern of time frames, each time frame having a plurality of time slots, each time frame having a substantially equal duration, substantially without pause between said plurality of time frames and each time slot being used to transmit a predetermined number of data bits;

wherein first predetermined ones of said time slots of each time frame are used for transmitting data bits from said first isochronous data stream and second predetermined ones of said time slots of each time frame are used for transmitting data bits from said second stream of data;

a reference clock for setting a duration of said time frame; and

means for detecting a timing variance between said reference clock and a data rate of said inputs and altering the number of time slots in said time frame to compensate for said timing variance.

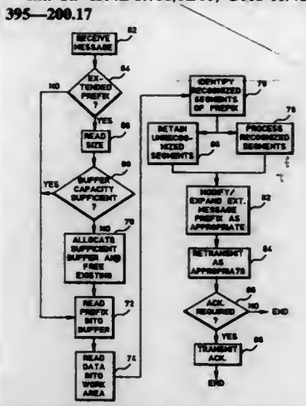


5,544,325

SYSTEM AND METHOD FOR GENERATING MESSAGES FOR USE IN TRANSACTION NETWORKS

George S. Denny; Robert S. Lai, both of San Jose; Sherry H. Li, Morgan Hill; Joseph F. Murphy; Hoang M. Nguyen, both of San Jose, and Markan Ziebarth, Morgan Hill, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 21, 1994, Ser. No. 215,348
Int. Cl.[6] H04L *29/08;12/00;* **G06F** *13/42*
U.S. Cl. 395—200.17 **23 Claims**



1. A transaction processing system, comprising:

means for generating a transaction request;

request receiving means coupled to the means for generating for receiving the request;

message generation means coupled to the request receiving means for generating a message having a size and being representative of the transaction, said message generation means having an operational version, wherein the message includes a message body and a prefix containing a size field having contents indicative of the message's size, said prefix including:

a fixed segment providing data of a first set of categories concerning the message body, said first set including a predetermined number of categories independent of the operational version;

an extended segment providing data in a second set of categories concerning the message body, said second set including a variable number of categories selected in response to the operational version; and

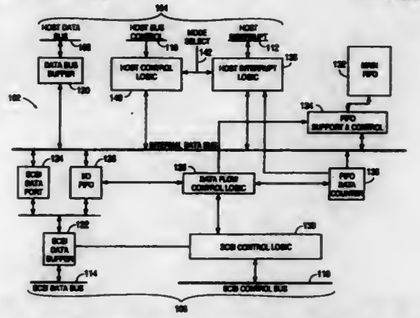
first message receiving means coupled to the message generation means, the first message receiving means including an input data buffer for receiving the message, wherein the first message receiving means is for adjusting the capacity of the input data buffer in response to the contents of the message's size field to accommodate all of the message in the buffer.

5,544,326

INTERFACE AND CONTROL CIRCUIT FOR REGULATING DATA FLOW IN A SCSI INITIATOR WITH MULTIPLE HOST BUS INTERFACE SELECTION

Allan F. Pease, San Jose, and Richard Moore, Irvine, both of Calif., assignors to Future Domain Corporation, Incorporated, Irvine, Calif.

Continuation-in-part of Ser. No. 667,754, Mar. 11, 1991, abandoned. This application Mar. 11, 1993, Ser. No. 29,910
Int. Cl.[6] G06F *13/38*
U.S. Cl. 395—250 **14 Claims**



1. A computer system interface adapter for connection between a host computer bus and an input/output SCSI bus for interconnecting a host computer to a SCSI peripheral device, said adapter comprising:

an internal interface data bus;

a main FIFO buffer coupled to said internal interface data bus;

a first interface means comprising an input/output FIFO coupled to said SCSI bus and to said internal interface data bus;

a second interface means coupled to said host computer bus and to said internal interface data bus;

control means for causing data communicated between said SCSI bus and said first interface means to flow onto said internal interface data bus and to further flow from said internal interface data bus into said main FIFO buffer;

data counter means for monitoring the quantity of data in said main FIFO buffer and for generating a numerical value, in real time, indicating the quantity of data stored in said main FIFO buffer;

interrupt logic means responsive to said main FIFO buffer for generating an interrupt signal to said host computer bus to inform said host computer that said main FIFO buffer is full; and

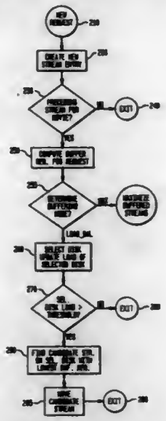
FIFO control means responsive to said numerical value generated by said data counter means for controlling transfers of data blocks to said main FIFO buffer from said input/output FIFO such that a variable block size is transmitted to said main FIFO buffer with each data transfer without overflowing said main FIFO buffer, said variable block size being limited to a maximum block size transmittable over said internal interface data bus.

5,544,327

LOAD BALANCING IN VIDEO-ON-DEMAND SERVERS BY ALLOCATING BUFFER TO STREAMS WITH SUCCESSIVELY LARGER BUFFER REQUIREMENTS UNTIL THE BUFFER REQUIREMENTS OF A STREAM CAN NOT BE SATISFIED

Asit Dan, West Harrison, and Dinkar Sitaram, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 204,038, Mar. 1, 1994. This application Jul. 26, 1994, Ser. No. 280,419
Int. Cl.[6] H04H *1/02*; H04N *7/52*; G06F *13/00*
U.S. Cl. 395—250 **2 Claims**



1. A method of managing memory buffer in a video server, wherein a plurality of clients are served from video streams provided from disks, comprising the steps of:

determining buffer requirements of a plurality of the video streams, the buffer requirements being a number of frames separating each video stream from an immediately previous video stream carrying the same video;

creating a list of streams being served from each of the disks, ordered by the buffer requirement of each of the streams;

determining when to balance the load across the disks;

allocating the buffer to the streams on a most heavily loaded one of the disks so as to serve the streams from the buffer, starting from a stream with a smallest buffer requirement and proceeding to streams with larger buffer requirements until the buffer requirement of a stream can not be satisfied; and

retaining blocks of the immediately preceding stream in the buffer allocated to its following stream and discarding the blocks from the buffer as they are read by a client viewing the following stream;

updating the list when any of starting, stopping, pausing and resuming of a video occurs; and

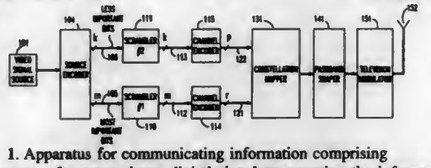
responsive to the updating, identifying the most heavily loaded one of the disks after the updating and reallocating the buffer to the streams being served from the most heavily loaded disk, starting from a stream with a smallest buffer requirement and proceeding to streams with larger buffer requirements until the buffer requirement of a stream can not be satisfied.

5,544,328

CODED MODULATION WITH UNEQUAL ERROR PROTECTION

Nambirajan Seshadri, Chatham, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 31, 1991, Ser. No. 785,723
Int. Cl.[6] H04L *5/12*
U.S. Cl. 375—261 **15 Claims**



1. Apparatus for communicating information comprising

means for generating a digital signal representing the information, the digital signal being comprised of at least first and second streams of data elements,

means for channel mapping the digital signal in such a way that the probability of channel-induced error for the data elements of the first data stream is less than the probability of channel-induced error for the data elements of the second data stream, said channel mapping means including means for multi-level coding at least one of said streams, and

means for transmitting the channel mapped signal over a communication channel;

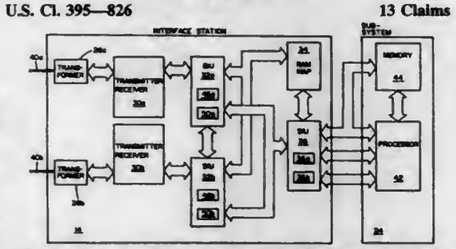
wherein said at least one of said streams includes at least two substreams, and wherein said multi-level coding means includes means for redundancy coding at least one of said substreams and for combining all of the redundancy coded substreams of said one stream and any of its substreams that are not redundancy coded to form a coded signal for use in the channel mapping.

5,544,329

INTERFACE SYSTEM WITH MEMORY MAP LOCATIONS FOR HOLDING FLAGS INDICATING A PRIORITY FOR EXECUTING INSTRUCTIONS HELD WITHIN MESSAGES RECEIVED BY THE INTERFACE

Stephen J. Engel, East Northport, and Vivian L. Buscemi, New Hyde Park, both of N.Y., assignors to Grumman Aerospace Corporation, Los Angeles, Calif.

Filed Jul. 31, 1992, Ser. No. 923,365
Int. Cl.[6] G06F *13/12;13/14*
U.S. Cl. 395—826 **13 Claims**



1. A method of operating an interface station located in series between a control station and a subsystem, the interface station being adapted to receive message from and to transmit messages to the control station, and to receive data from and to transmit data to the subsystem, each of the messages having an address field and an instruction field having instructions for the interface station, the interface station comprising a memory including a multitude of map locations, each of the map locations having a respective one address, the method comprising the steps of:

providing each map location with a respective one descriptor field including a set of instruction flags, each of the flags having and being changeable between first and second states;

using the flags to indicate the conditions of a plurality of factors;

transmitting messages to the interface station from the control station, each of the messages having instructions for the interface station to perform a specific task, wherein the interface station has a predetermined procedure for responding to the instructions in each message;

assigning each message a priority;

associating each of the messages with one of the addressable map locations in the memory unit of the interface station; and

the interface station, upon receipt of each message from the control station,

i) searching the instruction field of the message for instructions,

ii) checking the states of the flags in the one descriptor field at the memory address associated with the message,

iii) changing the predetermined procedure for responding to the instructions in the message, on the basis of the states of the flags in said one descriptor fields, and

iv) responding to the message by performing said changed procedure;

wherein said set of flags includes a high priority flag, the checking step includes the step of checking the state of the high priority flag in the descriptor field of the map location associated with the message, and the interface station processes the messages received from the control station in an order determined by the priority assigned to each message; and

further wherein the step of assigning each message a priority includes the steps of

i) assigning the message a higher priority if the high priority flag in the descriptor field in the map location associated with the message is in the first state, and

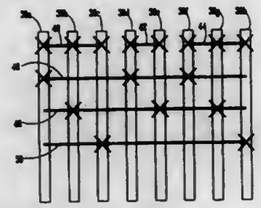
ii) assigning the message a lower priority if the high priority flag in the descriptor field in the map location associated with the message is in the second state.

5,544,330

FAULT TOLERANT INTERCONNECT TOPOLOGY USING MULTIPLE RINGS

David S. Bither, Littleton; Charles S. F. Loewy, and Paul C. Wilson, both of Upton, all of Mass., assignors to EMC Corporation, Hopkinton, Mass.

Filed Jul. 13, 1994, Ser. No. 275,005
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—280 **25 Claims**



1. A data processing system comprising:

a plurality of system components; and

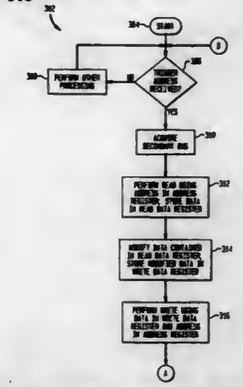
a plurality of unidirectional transmission rings interconnecting said plurality of system components, each of said plurality of system components being capable of communicating with every other one of said plurality of system components, wherein at least two of said plurality of system components are indirectly coupled through a third system component such that signals transmitted by one of said at least two system components are received by said third system component over one of said plurality of unidirectional transmission rings and wherein signals are retransmitted by said third system component over another one of said plurality of unidirectional transmission rings for receipt by the other one of said at least two system components.

5,544,331

SYSTEM AND METHOD FOR GENERATING A READ-MODIFY-WRITE OPERATION

Ronald L. Kolb, Milpitas, Calif., assignor to Silicon Graphics, Inc., Mountain View, Calif.

Filed Sep. 30, 1993, Ser. No. 128,720
Int. Cl.[6] H01J *13/00*
U.S. Cl. 395—308 **17 Claims**



1. A computer based system, comprising:

a first bus;

a second bus, said second bus being non-transaction based wherein when control of said second bus is granted to a second bus requestor, said second bus requestor retains control of said second bus until said second bus requestor releases said second bus; and

a bus adapter coupled to said first bus and said second bus, said bus adapter comprising:

first means for determining that said bus adapter has been addressed by a first device connected to said first bus upon receipt of a predetermined trigger address;

second means, coupled to and responsive to said first means, for acquiring said second bus in accordance with said determination of said first means;

third means, coupled to and responsive to said second means, for reading data via said second bus from a second device connected to said second bus once said second bus has been acquired;

fourth means, coupled to and responsive to said third means, for modifying in a predetermined manner said data read from said second device; and

fifth means, coupled to and responsive to said fourth means, for writing said modified data to said second device via said second bus.

5,544,332

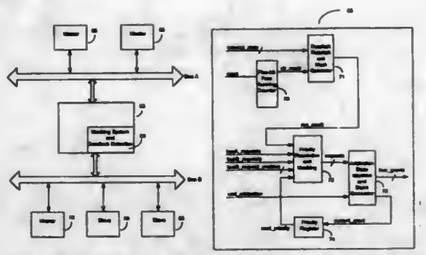
METHOD FOR PREVENTING DEADLOCK IN A MULTI-BUS COMPUTER SYSTEM

Sun-Den Chen, San Jose, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 766,835, Sep. 27, 1991, abandoned. This application Mar. 13, 1995, Ser. No. 402,727
Int. Cl.[6] G06F *13/36*
U.S. Cl. 395—288 **19 Claims**

14. In a data processing system including a bus coupler coupled between a first bus and a second bus, said first bus further coupled to at least one first bus master, said second bus further coupled to at least one second bus master and at least one slave, a method for deadlock detection and masking comprising the steps of:

providing counter means for generating a clear masking signal after a random period of time, said counter means incrementing from zero to a maximum value and resetting to zero after incrementing to said maximum value;



receiving a plurality of bus request signals from said first and second bus masters attempting to control said second bus;

providing detection means coupled to said bus coupler and to said buses for sensing an arbitration deadlock between said first bus master and said second bus master for control of said second bus, said detection means sensing said arbitration deadlock after said first bus master has released control of said second bus, after which said second bus master transmits bus request signals to said slave;

providing a request mask signal upon sensing said arbitration deadlock, and

masking said bus request signals from said second bus master using master masking means until said clear masking signal is generated by said counter means after said random period of time, wherein said first bus master has control of said second bus until said clear masking signal is generated after said random period of time.

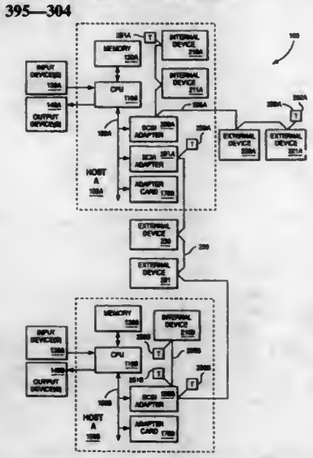
5,544,333

SYSTEM FOR ASSIGNING AND IDENTIFYING DEVICES ON BUS WITHIN PREDETERMINED PERIOD OF TIME WITHOUT REQUIRING HOST TO DO THE ASSIGNMENT

Giles R. Frazier, and Gary Y. Tsao, both of Austin, Tex., assignors to International Business Machinces Corp., Armonk, N.Y.

Continuation of Ser. No. 61,786, May 14, 1993, abandoned.
This application Jan. 30, 1995, Ser. No. 380,473
Int. Cl.[6] G06F *13/38*

U.S. Cl. 395—304 **18 Claims**



1. In a computer system having a plurality of devices on a bus, a method for a first device on the bus to designate its own identifier on the bus comprising the steps of:

first determining that no device on the bus with a desired identifier is requested by any other device on the bus over a predetermined period of time;

upon such first determination, said first device transmitting on the bus a request for a device with the desired identifier to respond;

secondly determining that no device on the bus responds to the request; and

upon such second determination, the first device designating the desired identifier to identify the first device on the bus to at least one of the plurality of devices on the bus other than the first device.

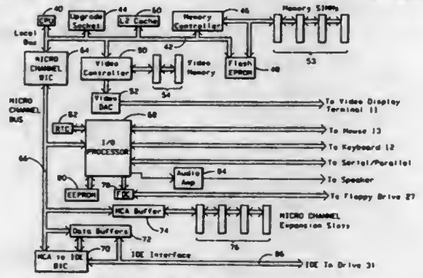
5,544,334

MICRO CHANNEL BUS COMPUTER SYSTEM WITH IDE HARD DRIVE INTERFACE

Mark G. Noll, Lake Worth, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1993, Ser. No. 172,124
Int. Cl.[6] G06F *3/00;13/00*

U.S. Cl. 395—309 **16 Claims**



1. A computer system comprising:

(a) a central processing unit (CPU);

(b) a first bus interface circuit in circuit communication with said CPU and generating a first peripheral bus, said first peripheral bus having at least one sharable hardware interrupt, said sharable interrupt having at least two states: assertion and nonassertion;

(c) a second bus interface circuit in circuit communication with said first bus interface circuit via said first peripheral bus and generating a second peripheral bus, said second peripheral bus having at least one nonsharable hardware interrupt, said nonsharable interrupt having at least two states: assertion and nonassertion;

(d) a first peripheral device in circuit communication with said first bus interface circuit via said first peripheral bus and having a first address space associated therewith; and

(e) a second peripheral device in circuit communication with said second bus interface circuit via said second peripheral bus and having a second address space associated therewith, said first and second peripheral devices having at least one overlapping address in said first and second address spaces;

said second bus interface circuit characterized by having: (1) a writable latch in circuit communication with said first peripheral bus and having at least two states, said latch states selectable from said first peripheral bus; (2) an access control circuit in circuit communication with said first and second peripheral buses and said latch for selectively allowing data transfers at said at least one overlapping address either between said CPU and said first peripheral device or between said CPU and said second peripheral device responsive to the state of said latch; (3) circuitry for assertion of said sharable interrupt of said first peripheral bus responsive to the assertion of said nonsharable interrupt of said second peripheral bus; and (4) circuitry for nonassertion of said sharable interrupt of said first peripheral bus responsive to the nonassertion of said nonsharable interrupt of said second peripheral bus.

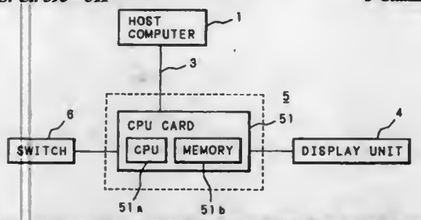
5,544,335

PROCESSOR FOR DATA TRANSMITTED IN ACCORDANCE WITH A PLURALITY OF TRANSMISSION METHODS, WHICH GENERATES OUTPUT DATA APPLICABLE TO THE OUTPUT DEVICE

Yasutaka Motomura, Nagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 814,449, Dec. 30, 1991, abandoned.
This application Jun. 24, 1994, Ser. No. 265,616
Claims priority, application Japan, Jan. 17, 1991, 3-15720
Int. Cl.[6] G06F *15/16*

U.S. Cl. 395—311 **5 Claims**



1. A processor for receiving transmitted data from an apparatus and which generates output data applicable to an output device from the transmitted data in accordance with a plurality of transmission methods each for use by the apparatus during transmission of the data to said processor, comprising:

a memory for storing, in correspondence with each of the transmission methods, a plurality of programs, each for analyzing the transmitted data in accordance with a corresponding transmission method, and a second program to generate output data applicable to the output device;

means for specifying one of the plurality of transmission methods, wherein the specifying means operates independently of information transmitted from the apparatus to the processor, and wherein the specifying means does not receive an input signal from the apparatus or from the output device; and

a CPU which analyzes the transmitted data in accordance with one of the plurality of programs which correspond to the specified transmission method thereby to generate output data applicable to the output device.

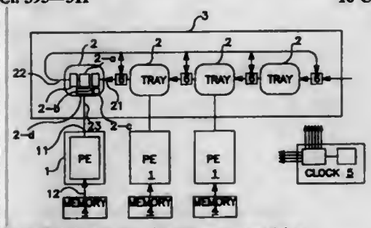
5,544,336

PARALLEL DATA PROCESSING SYSTEM WHICH EFFICIENTLY PERFORMS MATRIX AND NEUROCOMPUTER OPERATIONS, IN A NEGLIGIBLE DATA TRANSMISSION TIME

Hideki Kato, and Hideki Yoshizawa, both of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

Continuation of Ser. No. 853,429, Mar. 18, 1992, abandoned.
This application Apr. 11, 1995, Ser. No. 420,332
Claims priority, application Japan, Mar. 19, 1991, 3-0544725
Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—311 **16 Claims**



1. A parallel data processing system comprising:

a plurality of data processing units;

a plurality of trays, each including only one register, for storing and transmitting data, each of said plurality of trays being connected to each of said plurality of data processing units in only a one-to-one correspondence and being connected to each other only one-dimensionally through a data transmission path;

a plurality of tray connection switching means for selectively changing a connection of said plurality of trays via said data transmission path to either a first connection state or a second connection state, for dividing said plurality of trays and said plurality of data processing units each into a plurality of groups, and for permitting each of said plurality of groups to perform an independent operation, said first connection state having a first number of said plurality of groups of said trays connected via said data transmission path and said second connection state having a second number of said plurality of groups of said trays connected via said data transmission path, said second number being larger than said first number; and

a clock generating unit for generating a clock signal for synchronizing a data transmitting operation between said plurality of trays through said data transmission path and a data processing operation performed by said plurality of data processing units.

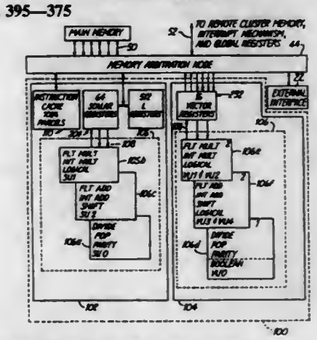
5,544,337

VECTOR PROCESSOR HAVING REGISTERS FOR CONTROL BY VECTOR RESISTERS

Douglas R. Beard, Eleva; Andrew E. Phelps; Michael A. Woodmansee, both of Eau Claire; Richard G. Blewett, Altoona; Jeffrey A. Lohman, Eau Claire; Alexander A. Silbey, Eau Claire; George A. Spix, Eau Claire; Frederick J. Simmons, Neillsville, all of Wis., and Don A. Van Dyke, Pleasanton, Calif., assignors to Cray Research, Inc., Eagan, Minn.

Continuation of Ser. No. 395,320, Feb. 28, 1995, which is a continuation of Ser. No. 536,409, Jun. 11, 1990, Pat. No. 5,430,884, which is a continuation-in-part of Ser. No. 459,083, Dec. 29, 1989, Pat. No. 5,197,130. This application Jun. 7, 1995, Ser. No. 487,952
Int. Cl.[6] G06F *9/30*

U.S. Cl. 395—375 **7 Claims**



1. Data processing apparatus comprising:

a plurality of vector registers;

a plurality of vector functional units;

program instruction initiation means responsive to a first instruction for initiating processing of at least one vector operand of said first instruction in one of said plurality of vector functional units, and said program instruction initiation means responsive to a second instruction for initiating the processing of at least another vector operand of said second instruction in said one vector functional unit dependent upon completion of the first instruction;

a first vector control register (VVC) register, corresponding to a first vector register containing said other vector operand, for storing the identity of a second vector register containing said one vector operand;

a second VVC register, corresponding to said second vector register for maintaining a busy or a non-busy status of the second vector register;

means operating with the second VVC register for releasing the second vector register to a non-busy status when the first instruction is completed; and

logic means coupled to the first VVC register and responsive to said non-busy status of said second vector register for beginning processing of the other vector operand in said one functional unit.

5,544,338

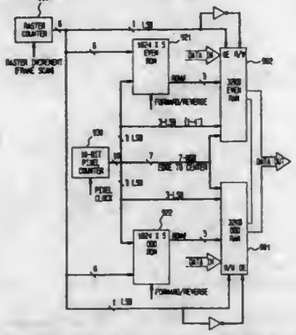
APPARATUS AND METHOD FOR RASTER GENERATION FROM SPARSE AREA ARRAY OUTPUT

Donald C. Forslund, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1992, Ser. No. 999,049

Int. Cl.[6] G06F *12/00;15/62*

U.S. Cl. 395—421.07 **11 Claims**



2. A method of operating a memory to store and access data in a field thereof including the steps of:

providing at least two sequences of numbers as partial addresses for said memory, the combination of said partial addresses forming an address sequence identifying all memory addresses in said field of said memory;

altering at least a portion of said address sequence to form an altered address sequence during one of write and read operations in said memory, said altered address sequence identifying all addresses in said field of said memory;

at least one of said address sequence and said altered address sequence identifying all addresses in said field of said memory in a non-sequential order of numerical address; and

controlling the read and write operations of said memory in accordance with a least significant bit of one of said at least two sequences of numbers.

5,544,339

ARRAY OF DISK DRIVES WITH REDUNDANT CHANNELS

Hiroshi Baba, Kamakura, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 17, 1992, Ser. No. 992,124

Claims priority, application Japan, Jan. 7, 1992, 4-000885

Int. Cl.[6] G06F *11/20;13/16;3/06*

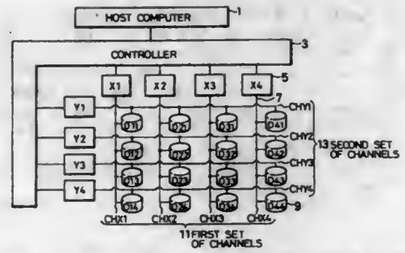
U.S. Cl. 395—441 **33 Claims**

24. An apparatus comprising:

N disk drives;

a plurality of channels for accessing the N disk drives; and

a plurality of channel controllers for controlling a flow of data between the plurality of channels and the N disk drives, wherein a first sequence of disk drives is coupled to a first channel of the plurality of channels, and a second sequence of disk drives is coupled to a second channel of the plurality of channels, the first sequence being different from the second



sequence, and the first sequence and the second sequence having at least one disk drive in common.

5,544,340

METHOD AND SYSTEM FOR CONTROLLING CACHE MEMORY WITH A STORAGE BUFFER TO INCREASE THROUGHPUT OF A WRITE OPERATION TO THE CACHE MEMORY

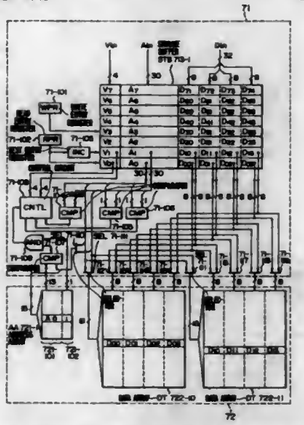
Toshio Doi, Kokubunji; Takehisa Hayashi, Sagamihara; Kenichi Ishibashi, Hachioji, and Takeshi Takemoto, Sagamihara, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 709,277, Jun. 3, 1991, abandoned. This application Dec. 22, 1994, Ser. No. 362,755

Claims priority, application Japan, Jun. 1, 1990, 2-141484

Int. Cl.[6] G06F *12/08*

U.S. Cl. 395—445 **10 Claims**



1. A cache memory control method for controlling a cache memory disposed between a central processing unit (CPU) and a main memory, said cache memory being subdivided into a plurality of banks, said method comprising the steps of:

storing in a first-in/first-out (FIFO) buffer included in said CPU a plurality of pairs of data and addresses, each of said pairs including data and an address to be written into respective data and address banks of said plurality of banks in said cache memory;

comparing respective address fields of said plurality of pairs of data and an address read from said buffer memory;

generating, based on results of said comparing step, a write control signal for writing said data in said cache memory; and

simultaneously writing said plurality of pairs of data and an address each into respective ones of said plurality of banks of said cache memory using the write control signal determined by said generating step, said addresses of said pairs being different from each other.

5,544,341

DATA ACCESS APPARATUS FOR PREVENTING FURTHER CACHE ACCESS IN CASE OF AN ERROR DURING BLOCK DATA TRANSFER

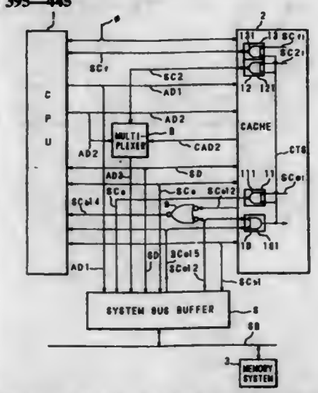
Hiromasa Nakagawa; Akira Yamada, and Masayuki Hata, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 153,541, Nov. 15, 1993, abandoned, which is a continuation of Ser. No. 686,648, Apr. 17, 1991, abandoned. This application May 31, 1995, Ser. No. 454,893

Claims priority, application Japan, May 11, 1990, 2-122463

Int. Cl.[6] G06F *13/00;11/00*

U.S. Cl. 395—445 **1 Claim**



1. A data access apparatus in a data processor, said data processor being provided with a CPU, a memory for storing data to be accessed by said CPU, a cache for storing a part of the data being stored in memory and a system bus buffer, comprising

a first circuit in said cache which receives first a second signals and outputs a third signal, said first signal being a ready signal output by said memory, said second signal being a signal indicating a bus access abnormality has occurred during transfer of data to said cache, following a cache miss, and said third signal being a bus access stop signal which is asserted when said second signal is asserted;

a second circuit in said cache for receiving said third signal and a fourth signal and outputting a fifth signal, said fourth signal being a control signal for the system bus buffer request allowance of operation of the memory, said fifth signal inhibiting a block transfer of data from said memory to said cache when said third signal is asserted; and

a third circuit in said cache for receiving said third signal and a sixth signal and outputting a seventh signal, said sixth signal being a control signal for said CPU and said seventh signal preventing said CPU from executing a new bus cycle when said third signal is asserted.

5,544,342

SYSTEM AND METHOD FOR PREFETCHING INFORMATION IN A PROCESSING SYSTEM

Mark E. Dean, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 85,602, Jun. 30, 1993, abandoned. This application Jul. 10, 1995, Ser. No. 501,244

Int. Cl.[6] G06F *12/08*

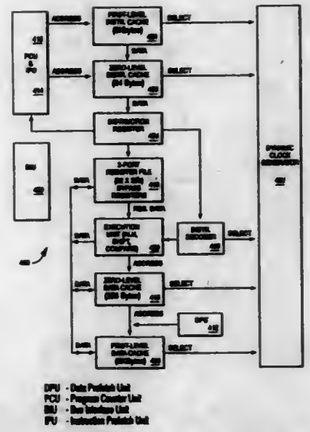
U.S. Cl. 395—446 **20 Claims**

1. A system for prefetching information in a processing system, comprising:

a first memory for storing first and second information;

a second memory for selectively storing said first and second information; and

circuitry for:



determining whether said second memory stores said first information;

accessing said first information in said second memory only if said second memory stores said first information, otherwise said first information being accessed in said first memory;

determining whether said second memory stores said second information;

after accessing said first information, accessing said second information in said second memory only if said second memory stores said second information, otherwise said second information being accessed in said first memory;

in response to accessing said second information, modifying said first information in said first memory to include an indication of said second information in said first memory; and

in response to accessing said first information, prefetching said second information from said first memory to said second memory ill response to said indication.

5,544,343

CACHE SYSTEM WITH FILE SURGE PROTECTION AND METHOD FOR MANAGING ALLOCATION OF STORAGE IN THE CACHE

Robert E. Swenson, Mandota Heights, and Joseph E. Kessler, St. Anthony, both of Minn., assignors to Unisys Corporation, Blue Bell, Pa.

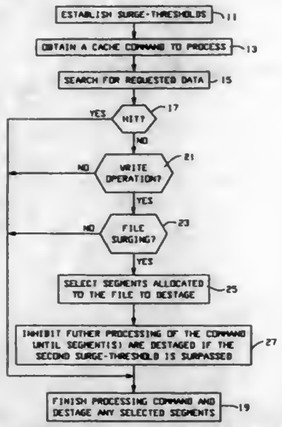
Filed Dec. 23, 1993, Ser. No. 172,651

Int. Cl.[6] G06F *12/02*

U.S. Cl. 395—460 **24 Claims**

1. A method for managing allocation of storage in an outboard file cache in a data processing system including a host processor coupled to a backing store subsystem and an outboard file cache coupled to the host processor, wherein the backing store subsystem provides long term storage for one or more files of data and each of the files is logically divided into one or more segments, wherein a file has a first segment and the remaining segments of the file are referenced by file-relative-segment-offset which is the logical position relative to the first segment of the file, the outboard file cache capable of caching a plurality of files in cache storage and being responsive to a command that specifies a function and addressing information for one or more specified segments of one of the cached files on which the function is to be performed, the method comprising the steps of:

establishing a predetermined surge-threshold, wherein said surge-threshold is used to identify a file for which destaging of written segments is being performed at a rate which is less than the rate at which segments of that file are being written in the cache storage;



searching the cache storage to determine whether the specified segments are present in the cache storage;

performing the function specified in the command if the specified segments are present in the cache storage;

allocating one or more segments of cache storage for storing one or more of the specified segments if one or more of the specified segments are not present in the cache storage;

detecting when the one of the cached files has exceeded said surge-threshold;

selecting a group of segments in cache storage allocated to the one of the cache files for which said surge-threshold has been exceeded to destage; and

destaging said group of segments from said selecting step.

5,544,344

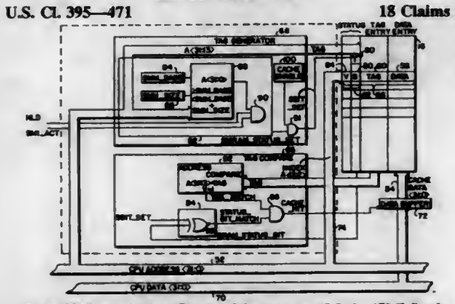
APPARATUS FOR CACHING SMRAM IN AN INTEL PROCESSOR BASED COMPUTER SYSTEM EMPLOYING SYSTEM MANAGEMENT MODE

Robert C. Frame, Westboro, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Dec. 6, 1994, Ser. No. 349,853

Int. Cl.[6] G06F *13/14*

U.S. Cl. 395—471 **18 Claims**



1. A CPU employing System Management Mode (SMM), the CPU being capable of initiating transactions between the CPU and an SMRAM when the CPU is in SMM, a transaction having an address and data associated with it, the CPU comprising:

a cache having cache entries, each cache entry having associated with it a cache tag entry, a cache data entry, and an SMRAM status bit;

means for determining whether an address associated with a given transaction is within a range of addresses defining the addressable location of SMRAM;

means for indicating whether the CPU is in SMM;

means for writing the data associated with the transaction into a cache data entry, and

means responsive to the means for determining and to the means for indicating for setting the SMRAM status bit corresponding to the cache data entry if the CPU is in SMM and the address is within the range of addresses.

5,544,345

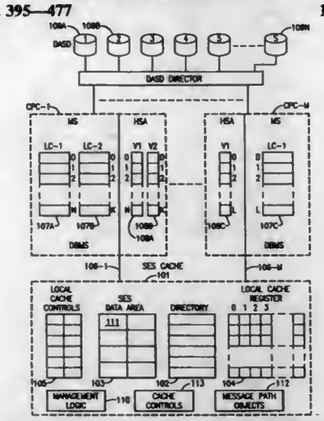
COHENRENCE CONTROLS FOR STORE-MULTIPLE SHARED DATA COORDINATED BY CACHE DIRECTORY ENTRIES IN A SHARED ELECTRONIC STORAGE

Kelly S. Carpenter, Fremont; Gerard M. Dearing, San Jose, both of Calif.; Jeffrey M. Nick, Fishkill, N.Y.; Jimmy P. Strickland, Saratoga, Calif.; Michael D. Swanson, Poughkeepsie, and Wendell W. Wilkinson, Hyde Park, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 8, 1993, Ser. No. 148,707

Int. Cl.[6] G06F *13/00;13/14*

U.S. Cl. 395—477 **12 Claims**



1. A coordination method for writing shared data in a computer sysplex having a plurality of central processor complexes (CPCs) having local storages containing local caches, direct access storage devices (sysplex DASDs) connected to the CPCs for storing data items sharable among the CPCs in the sysplex, and at least one shared electronic storage (SES) connected to some or all CPCs in the sysplex, the write coordination method comprising the steps of:

command signalling a write command by a CPC to a SES to access a SES directory entry associated with a new data version of a data item contained in the CPC,

writing an unchanged state indication in the SES directory entry for the new version in response to the write command, writinq the new version of the data item from the CPC to the sysplex DASD in coordination with the SES directory entry, and optionally writing the data item in a SES data area in the SES if indicated by the write command,

SES requesting CPC invalidation of each copy (complement copy) of the data item in the CPCs for coordinating the execution of the write command, except not invalidating a copy associated with the signalling Step in the CPC sending the write command,

setting into the SES directory entry a write-for-castout indication and a lock indication for identifying the CPC sending the write command and to lock the SES directory entry,

executing by the CPC an I/O transfer of the data item from the CPC to the sysplex DASD in response to the CPC receiving a command acceptance signal from the SES,

lock-release signalling by the CPC to the SES in response to the CPC receiving a successful I/O write completion signal from the sysplex DASD, and

resetting by the SES to an unlocked state the write-for-castout indication and the lock indication in the SES directory entry in response to the lock-release signalling step to allow other CPC commands to access the SES directory entry and to control accessing of any copy of the data item in the SES which may or may not be storing a copy of the data item.

5,544,346

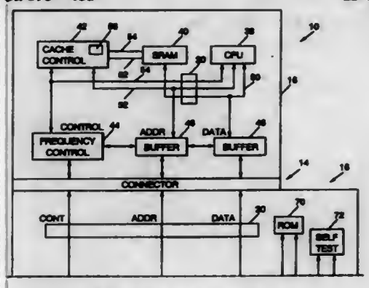
SYSTEM HAVING A BUS INTERFACE UNIT FOR OVERRIDING A NORMAL ARBITRATION SCHEME AFTER A SYSTEM RESOURCE DEVICE HAS ALREADY GAINED CONTROL OF A BUS

Nader Amini; Bechara F. Boury; Sherwood Brannon, all of Boca Raton; Richard L. Horne, Boynton Beach, and Terence J. Lohman, Boca Raton, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 815,992, Jan. 2, 1992, abandoned. This application Dec. 9, 1994, Ser. No. 353,165

Int. Cl.[6] G06F *13/00;13/36;13/40*

U.S. Cl. 395—481 **11 Claims**



1. An information handling system, comprising:

a system memory;

a plurality of system resource devices;

a first bus coupled to the system memory and the system resource devices for transferring data among the system resource devices and the system memory;

a second bus coupled to the system resource devices, said system resource devices coupled to the second bus being capable of controlling the second bus by arbitrating for control with other of said system resource devices; and

a bus interface unit coupled between the first bus and the second bus for providing data transfer capability therebetween, said bus interface unit including a buffer for temporarily storing data to be transferred between the first bus and the second bus, and control logic for generating a control signal after one of the system resource devices has gained control of the second bus in order to gain control of the first bus, thereby preventing other of said system resource devices from accessing the first bus, said control logic being dynamically responsive to signals indicative of data transfer conditions between the first bus and the second bus to generate said control signal.

5,544,347

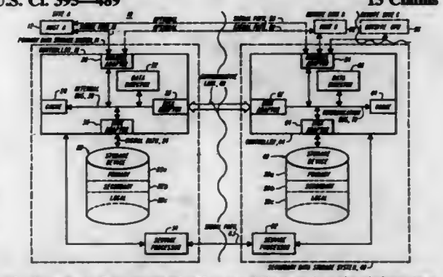
DATA STORAGE SYSTEM CONTROLLED REMOTE DATA MIRRORING WITH RESPECTIVELY MAINTAINED DATA INDICES

Moshe Yanai, Framingham; Natan Vishlitzky, Brookline; Bruno Alterescu, Newton; Daniel Castel, Framingham, and Gadi Shklarsky, Brookline, all of Mass., assignors to EMC Corporation, Hopkinton, Mass.

Continuation-in-part of Ser. No. 586,796, Sep. 24, 1990, Pat. No. 5,206,939, and a continuation-in-part of Ser. No. 587,247, Sep. 24, 1990, Pat. No. 5,269,011, and a continuation-in-part of Ser. No. 587,253, Sep. 24, 1990, Pat. No. 5,335,352. This application Apr. 23, 1993, Ser. No. 52,039

Int. Cl.[6] G06F *12/16*

U.S. Cl. 395—489 **13 Claims**



1. A system for automatically providing and maintaining data, said system comprising:

a host computer located in a first geographic location;

a first data storage system located in a first geographic location and coupled to said host computer, for storing data to be accessed by at least said host computer;

a second data storage system located in a second geographic location geographically remote from said first location, coupled to said first data storage system, for receiving at least data from said first data storage system; and

said first data storage system enabling transfer of said data to said second data storage system, concurrently with said data received from said host computer, so as to nearly simultaneously maintain a concurrent copy of data stored on said first data storage system and on said second data storage system wherein both said first and said second data storage systems maintain an index, said index including at least a first indicator providing an indication of whether a predetermined data element stored on said first data storage system is valid, and at least a second indicator providing an indication of whether said predetermined data element stored on said second data storage system is valid.

5,544,348

SIMULATION METHOD AND APPARATUS

Shigeki Umeda, Kawasaki, and Hirofumi Yoshikawa, Inzai-machi, both of, Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 724,624, Jul. 2, 1991, abandoned. This application Mar. 17, 1994, Ser. No. 210,112

Claims priority, application Japan, Jul. 3, 1990, 2-174642

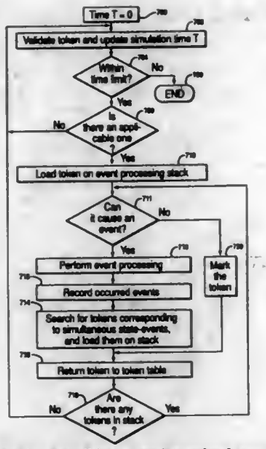
Int. Cl.[6] G06F *9/455*

U.S. Cl. 395—500 **14 Claims**

1. A data processing system for modelling a simulation of a process having object frames that cause events which are representative of changes in the state of said object frames, comprising:

means for storing said object frames for describing information relating to events;

means for storing a root frame, including a pointer group pointing to a list of said object frames, for describing information relating to conditions of events described in said object



frames, and for describing a predetermined sequence of time periods for simulating said process;

a plurality of event tokens connected to said object frames with bidirectional list pointers, each one of said event tokens representing an event described in a corresponding one of said object frames;

a time event table for storing said event tokens;

a stack generator for searching for an object frame that causes an event at the next sequential time period by referring to the sequence of times within said root frame;

means for executing the event within said object frames connected to said event tokens;

means for providing the event token corresponding to said located object frame to be loaded on a token stack;

means for searching for an event occurring simultaneous in time with said loaded event token;

means for determining, using a simultaneous event rules collection, an event intended to occur simultaneously in time with said loaded event token, as a result of executing said represented event;

means for loading event tokens corresponding to said represented event and said intended simultaneous event on said token stack; and

means for processing the object frames corresponding to all of the event tokens loaded on said token stack such that said simultaneous and said intended simultaneous events occur.

5,544,349

METHOD AND SYSTEM FOR IMPROVING THE PERFORMANCE OF MEMORY IN CONSTRAINED VIRTUAL MEMORY ENVIRONMENTS BY REDUCING PAGING ACTIVITY

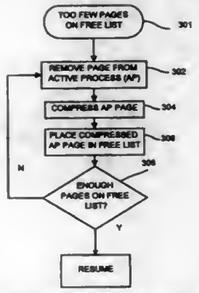
Robert F. Berry, and Michael R. Fortin, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 23, 1995, Ser. No. 376,713
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—492 **8 Claims**

1. A method for reducing physical paging of a memory in a computer system, the computer system including a memory, the memory including an active process portion and a free list portion, the method comprising the steps of:

(a) removing a page from the active process portion;

(b) compressing the page; and



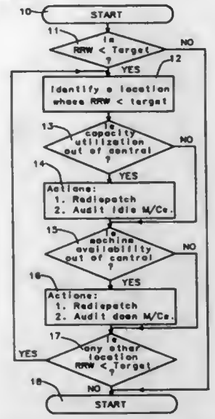
(c) placing the compressed page in the free list portion.

5,544,350

RATIO OF RUNNING WORK IN PROGRESS

Chin-Hui Hung, Hsin-Chu, and Chen-Chin Chen, Moa-Li Hsin, both of, Taiwan, assignors to Taiwan Semiconductor Manufacturing Co., Hsin-Chu, Taiwan

Filed Jul. 5, 1994, Ser. No. 270,689
Int. Cl.[6] G06G *7/64;* **G06F** *3/00*
U.S. Cl. 395—500 **19 Claims**



1. A computer-implemented method for increasing integrated circuit production of a fabrication facility comprising the steps as follows:

collecting data from a plurality of machines in an integrated circuit production of a fabrication facility,

calculating a present Ratio of Running Work in Progress, RRW,

comparing present RRW to optimum RRW,

checking the fabrication facility to determine which machines are idle, and

taking steps for increasing the number of running machines and taking steps for reducing the number of idle machines.

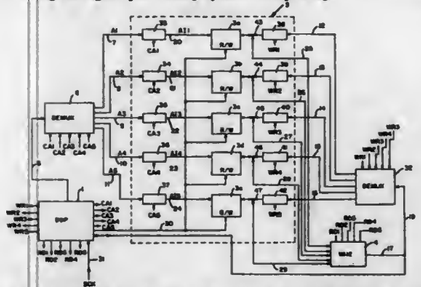
5,544,351

DIGITAL SIGNAL PROCESSING SYSTEM UTILIZING RELATIVELY SLOWER SPEED MEMORY

Bangwon Lee, Kwangmyung, and Donghol Kim, Bucheon, both of, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Sep. 21, 1993, Ser. No. 123,968
Claims priority, application Rep. of Korea, Sep. 21, 1992, 1992-17211
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—550 **14 Claims**

1. A digital signal processing system comprising:



a digital signal processor having a high-speed address bus and a high-speed data bus, said digital signal processor generating a series of memory addresses on the high-speed address bus at a first rate, each address valid for a first period;

an address demultiplexer receiving the memory address series and switching each individual address to one of a series of low-speed address buses, said low-speed address buses having a lower speed than said high-speed address bus;

a plurality of address latches, each connected to one low speed address bus, each holding one address for a period exceeding the first period;

a plurality of memory modules, each memory module having an address port connected to an address latch, each memory module having a data port connected to one of a plurality of low speed data buses, said low-speed data buses having a lower speed than said high-speed data bus, each memory module having an access time greater than the first period; and

a data multiplexer receiving data from the plurality of low speed data buses and multiplexing data from said memory modules onto said high-speed data bus.

5,544,352

METHOD AND APPARATUS FOR INDEXING, SEARCHING AND DISPLAYING DATA

Daniel Egger, Washington, D.C., assignor to Libertech, Inc., Durham, N.C.

Filed Jun. 14, 1993, Ser. No. 76,658
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—600 **52 Claims**

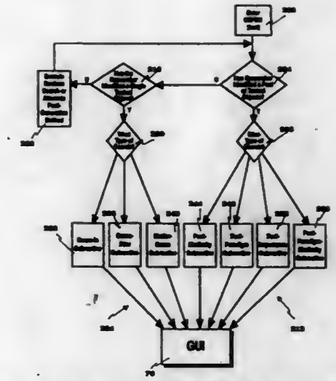
1. A research system for computerized searching of textual objects, wherein the textual objects are stored in a database, comprising:

a computer processor for processing commands and manipulating the textual objects stored in the database;

a means, coupled to the computer processor, for entering the commands to be processed by the computer processor;

a means for indexing the textual objects using the computer processor and the entered commands comprising:

a means for creating vectors representing the textual objects wherein the vectors are created using non-semantical relationships that exist among or between the textual objects;



a means for searching the indexed textual objects using the vectors to obtain a pool of textual objects comprising a means for vector searching of the indexed textual objects using the vectors;

a graphical user interface means for converting the pool of textual objects into a graphical view comprising:

a means for forming a box to graphically represent one or more of the textual objects in the pool; and

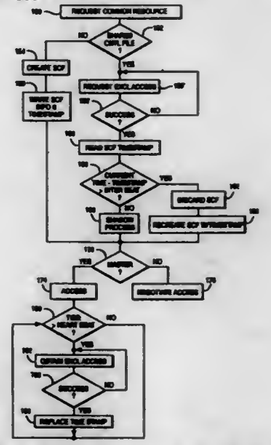
a display, operably coupled to the graphical user interface means, for showing the graphical view including any of the boxes formed.

5,544,353

DISTRIBUTED PROCESSING OBJECT SHARED RESOURCE CONTROL APPARATUS AND METHOD

Ira R. Forman, and Hari H. Madduri, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 14, 1993, Ser. No. 77,211
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—600 **6 Claims**

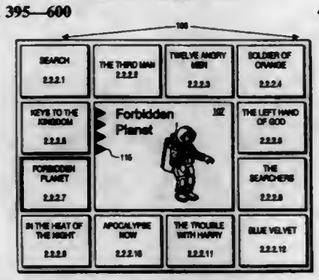


1. A method of determining a master process for control of a shared resource in a computer system having a plurality of processes operating on at least one processor that has a memory and access to a shared data storage means, the method comprising:

testing said shared data storage means for the presence of a shared resource control file for said shared resource;

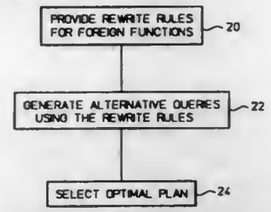
if no file exists, creating a shared resource control file in said shared data storage means, writing master process identification information to said shared resource control file, and writing a timestamp to said control file;
if a file exists, requesting exclusive access to said file;
if access denied, waiting and retrying until exclusive access to said file is obtained;
if access granted, determining the difference between current time and the last time stamp;
if said difference is less then a first preset interval, designating the requesting process as a shadow process;
if said difference is greater than said first preset interval, discarding said shared resource control file, creating a new shared resource control file and writing master process identification information to said shared resource control file, and writing a timestamp to said control file;
if said requesting process is a master process for said shared resource, replacing the timestamp in said shared resource control file with a current timestamp after a preset second interval has passed.

5,544,354
MULTIMEDIA MATRIX ARCHITECTURE USER INTERFACE
Robert May, San Francisco; James E. Granger, Corte Madera; Nicolas Peck, Millvalley, and Rohn J. Miller, San Francisco, all of Calif., assignors to Ikonic Interactive, Inc., San Francisco, Calif.
Filed Jul. 18, 1994, Ser. No. 276,864
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—600 **43 Claims**



1. A system including a display screen and a first database of records, each record represented by a record cell having preview data, content data, identification data, and attributes, providing a user interface to the first database and comprising:
a) a first plurality of displayed cell positions, each cell position displaying either:
a.1) identification data of a record cell; or,
a.2) identification data of a parser cell;
the cells displayed in the first plurality of cell positions selected from of a hierarchical plurality of matrices, each matrix including a plurality of cells, the plurality of cells including record cells or parser cells, each parser cell associated with a matrix in the plurality of matrices; each of the first plurality of cell positions responsive to:
a.3) a first user input to focus the cell displayed in the cell position; and
a.4) a second user input to select the cell in the cell position when the cell displayed therein is focused; and,
a.5) a third user input to play the cell in the cell position when the cell displayed therein is focused;
b) a content window that displays selected data of a cell;
c) a computer program stored in a computer readable memory and receiving user inputs, that:
c.1) in response to a first user input to focus a cell in a cell position:
c.1.1) displays in the content window a preview of the focused cell, the preview of a focused record cell containing preview data of the focused record cell, and the preview of a focused parser cell including a sequence of previews for the plurality of cells in the matrix associated with the focused parser cell;
c.1.2) continues to display in the cell position of the focused cell the identification data thereof; and,
c.1.3) continues to display in the cell position of each non-focused cell the identification data of the non-focused cell.

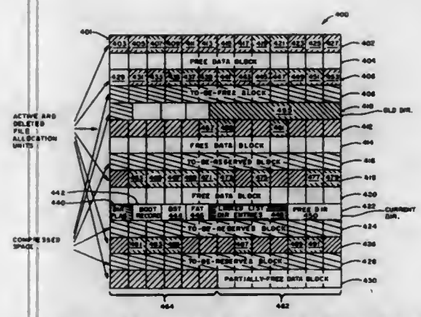
5,544,355
METHOD AND APPARATUS FOR QUERY OPTIMIZATION IN A RELATIONAL DATABASE SYSTEM HAVING FOREIGN FUNCTIONS
Surajit Chaudhuri, Stanford, Calif., and Kyuseok Shim, Greenbelt, Md., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Jun. 14, 1993, Ser. No. 77,227
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—600 **13 Claims**



1. A method for optimization of a query invoking relational database tables and foreign functions, said method comprising:
(a) providing rewrite rules for the foreign functions;
(b) receiving an input query to be executed;
(c) generating alternative queries from the input query and the rewrite rules by determining if a left-side of at least one of the rewrite rules is equivalent to at least a portion of the query using substitution mapping;
(d) generating an optimal plan for each said alternative query; and
(e) selecting for execution a lowest cost plan among said optimal plans.

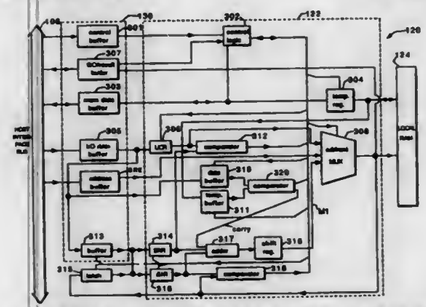
5,544,356
BLOCK-ERASABLE NON-VOLATILE SEMICONDUCTOR MEMORY WHICH TRACKS AND STORES THE TOTAL NUMBER OF WRITE/ERASE CYCLES FOR EACH BLOCK
Kurt B. Robinson, Newcastle; Dale K. Elbert, and Markus A. Levy, both of Citrus Heights, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.
Continuation of Ser. No. 153,666, Nov. 16, 1993, abandoned, which is a continuation of Ser. No. 636,238, Dec. 31, 1990, abandoned. This application Mar. 3, 1995, Ser. No. 400,272
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—600 **33 Claims**

1. A processor-controlled method of file management for a nonvolatile semiconductor memory with a plurality of physical erase blocks, wherein bits of the memory cannot be overwritten from a first logical state to a second logical state without a prior erasure, wherein erasure is by physical erase block and not on an individual byte basis, the method comprising the steps of:
(1) allocating a first physical erase block of the memory for storing an active file and a deleted file;
(2) allocating a second physical erase block of the memory for storing a copy of the active file;
(3) storing in an allocated first portion of a third physical erase block of the memory information as to whether a physical



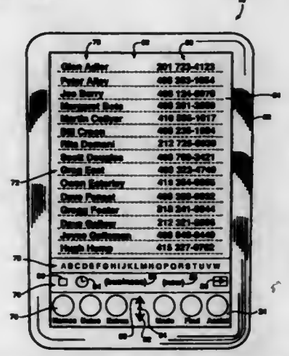
erase block of the memory has been allocated to store the active and deleted files or allocated to store the copy of the active file;
(4) reclaiming memory space by storing in the second physical erase block of the memory the copy of the active file and by erasing the entire first physical erase block of the memory in order to permit reuse of the first physical erase block of the memory for storage;
(5) tracking a number of times a physical erase block of the memory has been cycled and storing that number as a cycle count in an allocated second portion of the third physical erase block of the memory;
(6) storing in an allocated third portion of the third physical erase block of the memory a directory of active files:
(7) minimizing cycling distributions between physical erase blocks of the memory by choosing for reclamation a physical erase block of the memory with a lowest cycle count.

5,544,357
DATABASE ACCELERATOR
Lin M. Huel, Revere, Mass., assignor to Paracom Corporation, Woburn, Mass.
Continuation of Ser. No. 147,147, Nov. 2, 1993, abandoned. This application May 26, 1995, Ser. No. 451,479
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—600 **17 Claims**



1. Apparatus for managing a database stored in association with a host computer, said database having a plurality of records each identified by a record address value and at least one logical key value, the host computer having a central processor, the apparatus comprising:
a database accelerator apparatus for incorporation into the host computer, comprising:
a key memory for storing a map of key values of records of said database to record address values of said records;
a search processor for searching said key memory for a given key value in response to requests from the central processor, and providing the record address value associated therewith to the central processor;
a key memory manager for adding new map entries to say key memory, a new map entry relating a key value of a newly-created record of said database to a record address value of said newly-created record, and for deleting a map entry from said key memory when a record is deleted from said database;
a bus interface for interfacing said database accelerator to the central processor and software executing thereon; and
database management software for execution on said central processor, said database management software being a general purpose software system for providing database creation and configuration, data addition and deletion, data alteration, and data search access to the database, said database management software configured to manage databases of user-defined configuration, to request a mapping from said given key value to said record address value by issuing requests to said search processor, and to request an update of said key memory by issuing a request to said key memory manager, said requests communicated through said bus interface.

5,544,358
INTERFACE FOR A COMPUTERIZED DATABASE HAVING CARD AND LIST VIEWS
Stephen P. Capps, San Carlos; Benjamin W. Sharpe, San Francisco, and Gregg S. Foster, Woodside, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.
Continuation of Ser. No. 955,839, Oct. 2, 1992, Pat. No. 5,446,882. This application May 26, 1995, Ser. No. 451,225
Int. Cl.[6] G06F *19/00*
U.S. Cl. 395—600 **24 Claims**



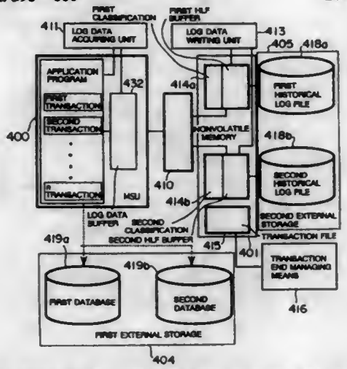
1. A method for managing a database containing at least one entity on a pen-based computer system comprising:
determining an initial filter type from a plurality of filter types;
filtering the entities of said database to locate entities that satisfy said determined filter type;
displaying a card area on a screen of a pen-based computer system which depicts selected structured information concerning the entities that satisfy said determined filter type; and,
displaying a free-form area on said screen depicting unstructured information concerning the entities.

5,544,359

APPARATUS AND METHOD FOR CLASSIFYING AND ACQUIRING LOG DATA BY UPDATING AND STORING LOG DATA

Masayuki Tada, and Hitoshi Suzuki, both of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

Filed Mar. 2, 1994, Ser. No. 204,504
Claims priority, application Japan, Mar. 30, 1993, 5-072585
Int. Cl.[6] G06F *17/40*
U.S. Cl. 395—600 16 Claims



1. An apparatus for classifying and acquiring log data in a database system that updates the log data through an execution of a transaction and stores the updated log data in a storage device, comprising:

log data acquiring means for acquiring a plurality of log data for each individual transaction executed by a same processor;

log data classifying means for classifying the plurality of log data acquired by said log data acquiring means into a plurality of groups of log data according to a predetermined classification condition;

a plurality of buffers for storing said plurality of groups of log data classified by said log data classifying means, respectively, each of said plurality of buffers being associated with the predetermined classification condition; and

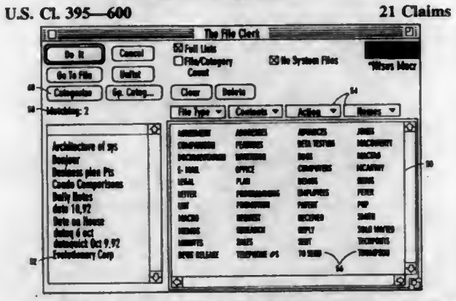
a plurality of historical log files, provided within the storage device, for storing said plurality of groups of log data written from the plurality of buffers, respectively, said plurality of historical log files being associated with the predetermined classification condition.

5,544,360

METHOD FOR ACCESSING COMPUTER FILES AND DATA, USING LINKED CATEGORIES ASSIGNED TO EACH DATA FILE RECORD ON ENTRY OF THE DATA FILE RECORD

Jerzy Lewak, Del Mar; Slawek Grzechnik, La Mesa, and Jon Matousek, San Diego, all of Calif., assignors to Paragon Concepts, Inc., Solana Beach, Calif.

Continuation of Ser. No. 980,620, Nov. 23, 1992, abandoned.
This application Feb. 3, 1995, Ser. No. 384,379
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—600 21 Claims



1. A method for accessing files in a data storage system of a computer system having means for reading and writing data from the data storage system, displaying information, and accepting user input, the method comprising the steps of:

(a) initially creating in the computer system a category description table containing a plurality of category descriptions, each category description comprising a descriptive name, the category descriptions having no predefined hierarchical relationship with such list or each other;

(b) thereafter creating in the computer system a file information directory comprising at least one entry corresponding to a file on the data storage system, each entry comprising at least a unique file identifier for the corresponding file, and a set of category descriptions selected from the category description table; and

(c) thereafter creating in the computer system a search filter comprising a set of category descriptions, wherein for each category description in the search filter there is guaranteed to be at least one entry in the file information directory having a set of category descriptions matching the set of category descriptions of the search filter.

DESIGNS

AUGUST 6, 1996

372,351

FROZEN CONFECTION

Kenneth D. Margolis, 10 Cedar Hollow Dr., Rose Valley, Pa. 19086

Filed Jun. 21, 1995, Ser. No. 40,544
Term of patent 14 years
U.S. Cl. D1—102

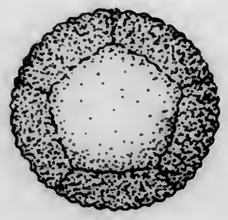


372,352

FOOD PRODUCT

Daniel L. Laughlin, White Bear Lake, Minn., assignor to General Mills, Inc., Minneapolis, Minn.

Filed Oct. 12, 1993, Ser. No. 14,069
Term of patent 14 years
U.S. Cl. D1—106

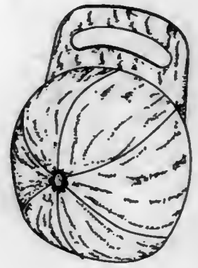


372,353

COMBINED CAP AND CARRYING BAG

Erich S. Pfefferman, 11524 Paia Mesa Dr., Northridge, Calif. 91326

Filed Mar. 22, 1993, Ser. No. 6,055
Term of patent 14 years
U.S. Cl. D2—866



372,354

SHOE SOLE

Shigeyuki Mitsu, Kakogawa; Wataru Ueda, and Katsuhiko Uno, both of Kobe, all of, Japan, assignors to Asics Corporation, Japan

Filed Sep. 6, 1994, Ser. No. 28,244
Claims priority, application Japan, Mar. 9, 1994, 6-6200
Term of patent 14 years
U.S. Cl. D2—952



372,355
WINTER GOLF SPIKE WITH STUD
Ernie L. Deacon, 319 Meadowbrook Dr., Nampa, Id. 83686, and Faris W. McMullin, 7614 E. Lemhi, #1, Boise, Id. 83709
Continuation-in-part of Ser. No. 872,819, Apr. 24, 1992, Pat. No. 5,259,129. This application Aug. 13, 1993, Ser. No. 11,738
The portion of the term of this patent subsequent to Jul. 9, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D2—962



372,356
ILLUMINATED KEY RING
Patrick Marguerite, Anecy le Vieux, France, assignor to Impex SA, Les Abrets, France
Filed Apr. 11, 1995, Ser. No. 37,362
Claims priority, application WIPO, Oct. 12, 1994, DM/030957
Term of patent 14 years
U.S. Cl. D3—209



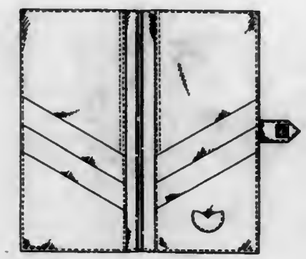
372,357
HANDBAG
Timmy S. Woods, 622 N. Foothill Rd., Beverly Hills, Calif. 90210
Filed Mar. 10, 1995, Ser. No. 35,980
Term of patent 14 years
U.S. Cl. D3—235



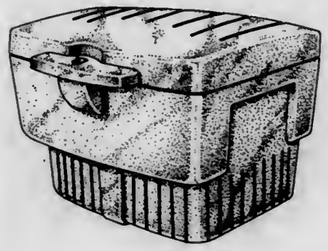
372,358
COMBINED CREDIT CARD HOLDER AND MONEY CLIP
Steven L. Mathison, 2135 S. 6th Ct., Des Moines, Iowa 50321, assignor to Steven L. Mathison, West Des Moines, Iowa
Filed Oct. 24, 1994, Ser. No. 30,237
Term of patent 14 years
U.S. Cl. D3—247



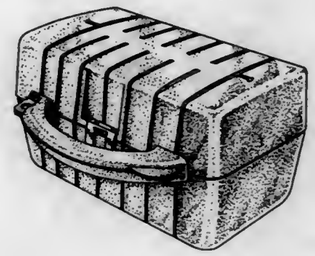
372,359
WALLET
Susan Tytula, 51 Rosetree Road N.W., Calgary, Alberta, Canada
Filed Jul. 11, 1994, Ser. No. 25,738
Term of patent 14 years
U.S. Cl. D3—253



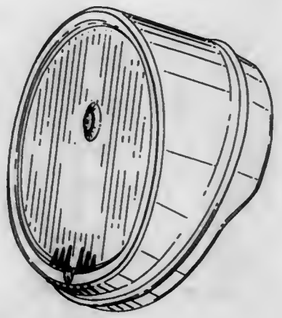
372,360
CONTAINER
Clay A. Burns, Boston; Paul C. Sabin, Milton, both of Mass.; Victor Y. Cheung, Chicago, Ill., and Clifford S. Lansil, Woburn, Mass., assignors to BRK Brands, Inc., Aurora, Ill.
Filed Jul. 31, 1995, Ser. No. 42,079
Term of patent 14 years
U.S. Cl. D3—273



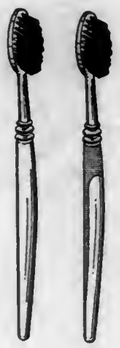
372,361
CONTAINER
Clay A. Burns, Boston; Paul C. Sabin, Milton, both of Mass.; Victor Y. Cheung, Chicago, Ill., and Clifford S. Lansil, Woburn, Mass., assignors to BRK Brands, Inc., Aurora, Ill.
Filed Jul. 31, 1995, Ser. No. 42,073
Term of patent 14 years
U.S. Cl. D3—282



372,362
GOLF BAG BOTTOM ASSEMBLY
Leslie J. Bryant, Peoria, and John A. Solheim, Phoenix, both of Ariz., assignors to Karsten Manufacturing Corporation, Phoenix, Ariz.
Filed Aug. 14, 1995, Ser. No. 42,571
Term of patent 14 years
U.S. Cl. D3—320



372,363
TOOTHBRUSH
Hans Halm, Herne, Germany, assignor to Lingner & Fischer GmbH, Buehl, Germany
Filed Aug. 18, 1993, Ser. No. 11,917
Claims priority, application United Kingdom, Feb. 18, 1993, 2029202
Term of patent 14 years
U.S. Cl. D4—104



372,364
MIRROR
William A. James, Newport Beach, Calif., assignor to Universal Furniture Industries, Inc., High Point, N.C.
Filed Apr. 4, 1995, Ser. No. 37,132
Term of patent 14 years
U.S. Cl. D6—300



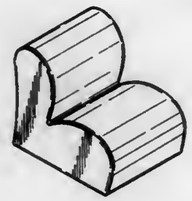
372,365
CHAIR
Michael J. Paus, High Point, N.C., assignor to Universal Furniture Industries, Inc., High Point, N.C.
Filed Mar. 22, 1995, Ser. No. 36,566
Term of patent 14 years
U.S. Cl. D6—369



372,366
CHAIR
Richard Frinier, Long Beach, Calif., assignor to Cherry Grove, Inc., Wilmington, Del.
Filed Apr. 21, 1995, Ser. No. 37,820
Term of patent 14 years
U.S. Cl. D6—369



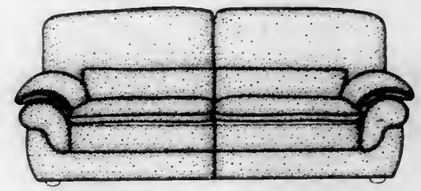
372,367
SEAT
Vincenzo A. Bonaddio, Rancho Santa Margarita, and Jose De Jesus Munoz Contreras, Apple Valley, both of Calif., assignors to Foamex L.P., Linwood, Pa.
Filed Jan. 23, 1995, Ser. No. 33,865
Term of patent 14 years
U.S. Cl. D6—375



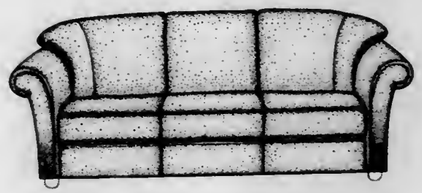
372,368
SEAT
Manuel A. Escalona, Barcelona, Spain, assignor to Comercial Kettal, S.A., Barcelona, Spain
Filed Sep. 9, 1994, Ser. No. 28,332
Claims priority, application Spain, Jul. 18, 1994, 133.096"B"
The portion of the term of this patent subsequent to May 21, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—376



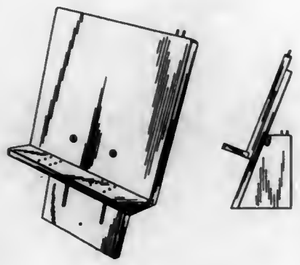
372,369
SEAT
Pasquale Natuzzi, Santeramo In Colle, and Domenico Abbruzzese, Gioia del Colle, both of, Italy, assignors to Industrie Natuzzi, SpA, Bari, Italy
Filed Sep. 11, 1995, Ser. No. 43,683
Term of patent 14 years
U.S. Cl. D6—381



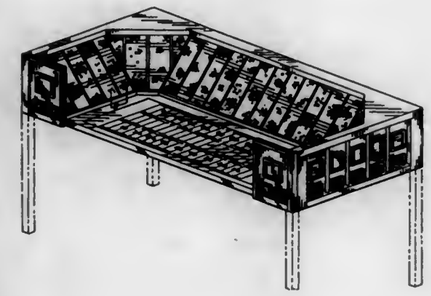
372,370
SEAT
Pasquale Natuzzi, and Raffaella Lucarelli, both of Bari, Italy, assignors to Industrie Natuzzi, SpA, Bari, Italy
Filed Sep. 11, 1995, Ser. No. 43,728
Term of patent 14 years
U.S. Cl. D6—381



372,371
READING STAND
Donald H. Grove, Jr., 505 Schuyler Rd., Silver Spring, Md. 20910
Filed Apr. 26, 1995, Ser. No. 38,127
Term of patent 14 years
U.S. Cl. D6—419



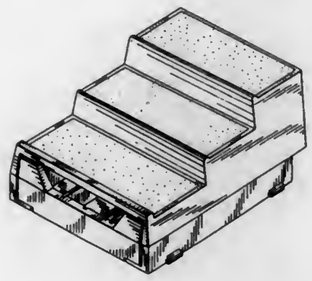
372,372
DESKTOP WITH SURROUNDING STORAGE COMPARTMENTS
Robert P. Volkman, 123 S. Mitchell, Arlington Heights, Ill. 60005
Filed Feb. 4, 1994, Ser. No. 18,413
Term of patent 14 years
U.S. Cl. D6—421



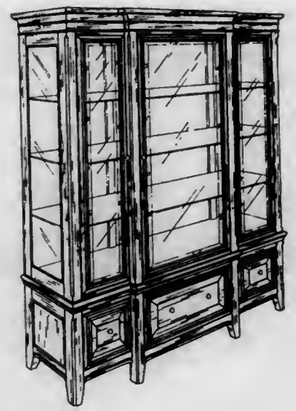
372,373
DESK
Richard A. Meier, and Michael G. Duncan, both of New York, N.Y., assignors to Steelcase Inc., Grand Rapids, Mich.
Filed Oct. 18, 1994, Ser. No. 29,855
Term of patent 14 years
U.S. Cl. D6—422



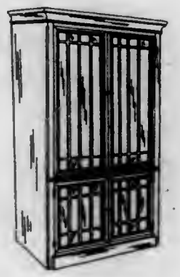
372,374
STORAGE DEVICE
Frans M. Weterrings, Tuscumbia, Ala., assignor to Robbins Industries, Inc., Florence, Ala.
Filed May 27, 1994, Ser. No. 23,625
Term of patent 14 years
U.S. Cl. D6—432



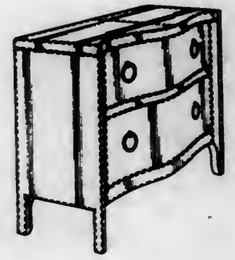
372,375
CHINA CABINET
Guy A. Walters, III, High Point, and Avis E. Tobin, Jr., Thomasville, both of N.C., assignors to Thomasville Furniture Industries, Inc., Thomasville, N.C.
Filed Oct. 20, 1994, Ser. No. 29,989
Term of patent 14 years
U.S. Cl. D6—438



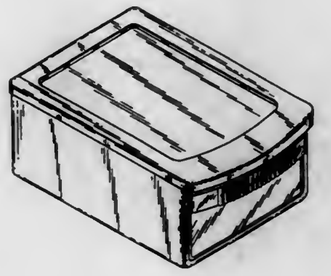
372,376
ENTERTAINMENT CENTER
Guy A. Walters, III, High Point, and Avis E. Tobin, Jr., Thomasville, both of N.C., assignors to Thomasville Furniture Industries, Inc., Thomasville, N.C.
Filed Oct. 20, 1994, Ser. No. 29,999
Term of patent 14 years
U.S. Cl. D6—445



372,377
CHEST
Paul A. Rosebrock, Morganton, N.C., assignor to Henredon Furniture Industries, Inc., Morganton, N.C.
Filed Aug. 23, 1994, Ser. No. 27,491
Term of patent 14 years
U.S. Cl. D6—446



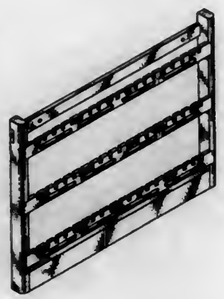
372,378
MODULAR STORAGE DRAWER
Cory J. Kruger, Gardner, Mass., assignor to Sterilite Corporation, Townsend, Mass.
Filed Mar. 23, 1994, Ser. No. 20,292
Term of patent 14 years
U.S. Cl. D6—448



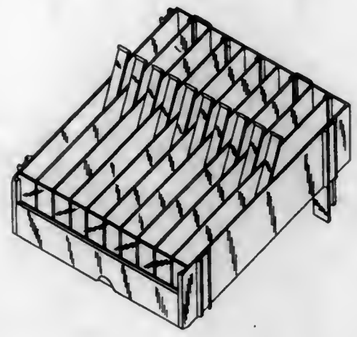
372,379
PORTABLE ENTERTAINMENT CENTER
David T. Newman, 82 Royal View Dr., Rochester, N.Y. 14625
Filed Oct. 14, 1994, Ser. No. 29,734
Term of patent 14 years
U.S. Cl. D6—467



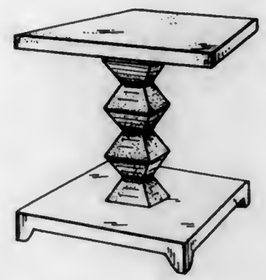
372,380
EARRING RACK
Gary Montalbo, 1165 H Tunnel Rd., Santa Barbara, Calif. 93105, and Mackey W. Davis, 10520 Ophir Rd., Auburn, Calif. 95603
Filed Mar. 13, 1995, Ser. No. 36,064
Term of patent 14 years
U.S. Cl. D6—467



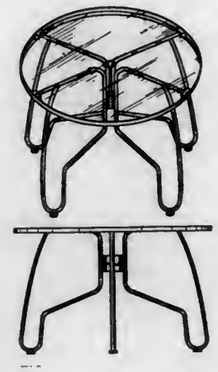
372,381
DISPLAY RACK
Harold B. Goldring, Woodcliff Lake, N.J.; Mark A. Niven, Yonkers; Ronald Namaroff, Hartsdale, both of N.Y., and Leslie G. Davis, North Caldwell, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.
Continuation-in-part of Ser. No. 11,680, Aug. 11, 1993, Pat. No. Des. 362,569. This application Jan. 26, 1994, Ser. No. 17,552
Term of patent 14 years
U.S. Cl. D6—476



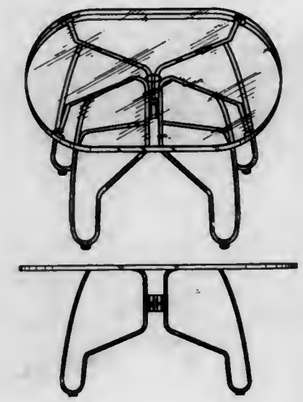
372,382
TABLE
John Hutton, New York, N.Y., assignor to Donghia Furniture, New York, N.Y.
Filed Jun. 1, 1994, Ser. No. 23,748
The portion of the term of this patent subsequent to Nov. 21, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—486



372,383
TABLE
Leonard R. Saldana, Hendersonville, Tenn., and Joseph E. Blazar, Joplin, Mo., assignors to Sunbeam Products, Inc., Fort Lauderdale, Fla.
Filed Apr. 1, 1994, Ser. No. 20,795
The portion of the term of this patent subsequent to Aug. 6, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—487



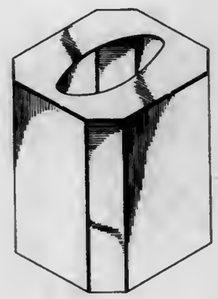
372,384
TABLE
Leonard R. Saldana, Hendersonville, Tenn., and Joseph E. Blazar, Joplin, Mo., assignors to Sunbeam Products, Inc., Fort Lauderdale, Fla.
Filed Apr. 1, 1994, Ser. No. 20,796
The portion of the term of this patent subsequent to Aug. 6, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—487



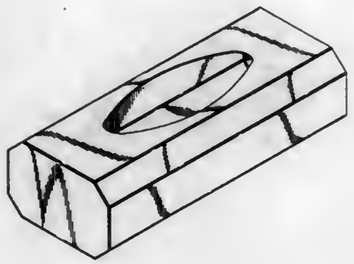
372,385
HEADBOARD
William B. Bellows, Sinking Spring, Pa., assignor to Graco Children's Products, Inc., Elverson, Pa.
Filed Mar. 6, 1995, Ser. No. 35,668
Term of patent 14 years
U.S. Cl. D6—506



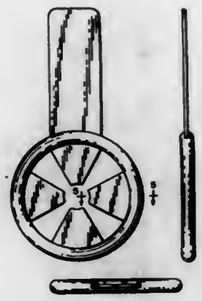
372,386
FACIAL TISSUE BOX
Morris W. Kuchenbecker, Neenah, Wis., assignor to James River Corporation of Virginia, Richmond, Va.
Filed Jul. 24, 1992, Ser. No. 917,628
Term of patent 14 years
U.S. Cl. D6—518



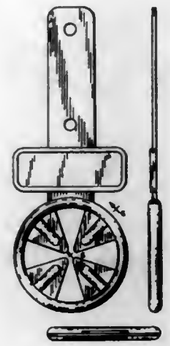
372,387
FACIAL TISSUE BOX
Morris W. Kuchenbecker, Neenah, Wis., assignor to James River Corporation of Virginia, Richmond, Va.
Filed Jul. 24, 1992, Ser. No. 917,629
Term of patent 14 years
U.S. Cl. D6—518



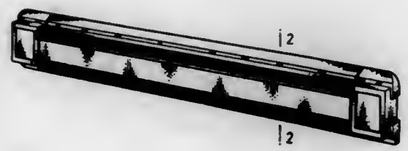
372,388
HANGING TOWEL HOLDER
David A. Kincman, Sr., 37 Tadmuck Rd., Westford, Mass. 01886
Filed Jun. 15, 1995, Ser. No. 40,346
Term of patent 14 years
U.S. Cl. D6—547



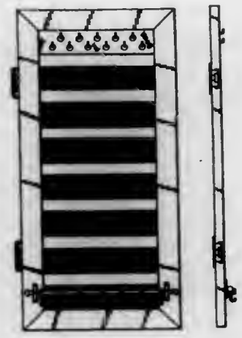
372,389
HANGING TOWEL HOLDER
David A. Kincman, Sr., 37 Tadmuck Rd., Westford, Mass. 01886
Filed Jun. 15, 1995, Ser. No. 40,347
Term of patent 14 years
U.S. Cl. D6—547



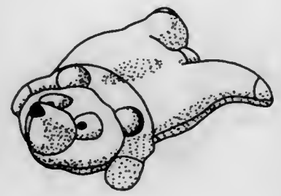
372,390
MAGNETIC UTENSIL HOLDER
Michael A. Lloyd-Morris, Barton-under-Needwood, and John F. Ewans, High Wycombe, both of, England, assignors to Bisbell Magnetic Products Ltd., United Kingdom
Filed May 30, 1995, Ser. No. 39,518
Term of patent 14 years
U.S. Cl. D6—553

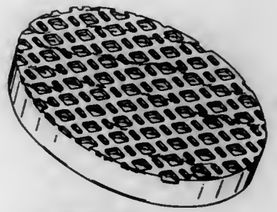


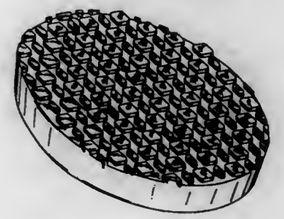
372,391
JEWELRY HANGER
Marisa Anniballi, 301 Bonavista, Rockland, Ontario, Canada
Filed May 6, 1994, Ser. No. 22,547
Claims priority, application Canada, Nov. 9, 1993, 09-11-93-7
Term of patent 14 years
U.S. Cl. D6—570



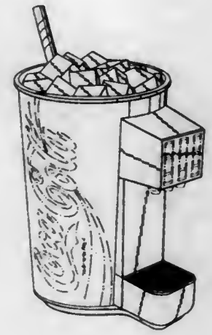
372,392
ORNAMENTAL CHILD'S PILLOW IN THE FANCIFUL FORM OF A PANDA
Virginia Bala, Culver City, Calif., assignor to KKH Corp., Los Angeles, Calif.
Filed May 30, 1995, Ser. No. 39,557
Term of patent 14 years
U.S. Cl. D6—598







372,393
HOUSING FOR A BEVERAGE DISPENSER
William S. Credle, Jr., Stone Mountain, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.
Filed Jun. 5, 1995, Ser. No. 39,737
Term of patent 14 years
U.S. Cl. D7—301

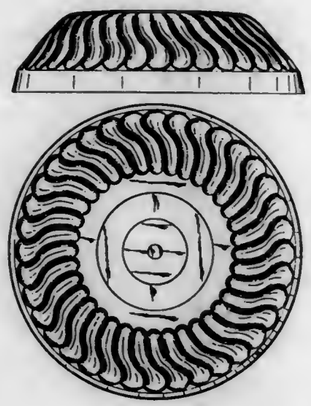


372,394
INNER BOTTOM OF A COOKING VESSEL
Gil-Francois Rossiaud, Annecy-Le-Vieux, France, assignor to Tefal S.A., Rumilly, France
Filed Jul. 29, 1993, Ser. No. 11,189
Claims priority, application France, Jan. 29, 1993, 93 0508
Term of patent 14 years
U.S. Cl. D7—359

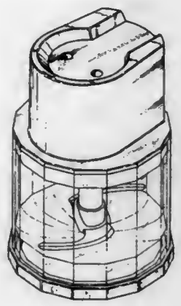
372,395
FRYING PAN
Florence Candianides, Rumilly, France, assignor to Tefal S.A., Rumilly, France
Filed Jul. 6, 1993, Ser. No. 10,313
Claims priority, application France, Jan. 6, 1993, 93 0034
Term of patent 14 years
U.S. Cl. D7—361



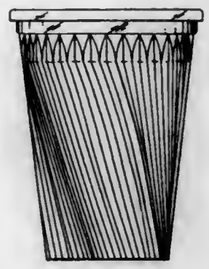
372,396
INSULATED DOME FOR FOOD PLATE
Richard H. Seager, Mystic, Conn., assignor to Dinex International, Inc., Glastonbury, Conn.
Filed Aug. 23, 1995, Ser. No. 43,022
Term of patent 14 years
U.S. Cl. D7—392.1



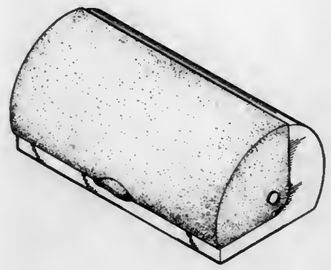
372,397
WORKING BOWL FOR PROCESSING FOOD WITH AN ATTACHMENT GEAR UNIT
Ludwig Littmann, Fasanenweg 4, 65824 Schwalbach, and Antonio Rebordosa, Pfingstbornstrasse 19a, 6144o Oberursel, both of, Germany
Filed Mar. 18, 1994, Ser. No. 20,094
Claims priority, application WIPO, Oct. 4, 1993, DM/027 507
Term of patent 14 years
U.S. Cl. D7—413



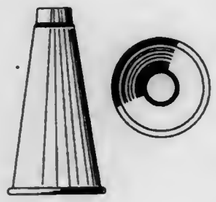
372,398
SWIRL TUMBLER
Wayne Lamson, Beaverton, Mich., assignor to Trafalgar House Inc., Beaverton, Mich.
Filed Apr. 17, 1995, Ser. No. 37,529
Term of patent 14 years
U.S. Cl. D7—529



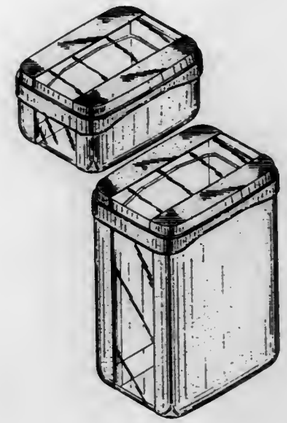
372,399
BREAD CONTAINER
Simon Wang, No. 102, Yung-an St., Tainan, Taiwan
Filed Oct. 27, 1995, Ser. No. 45,735
Term of patent 14 years
U.S. Cl. D7—609



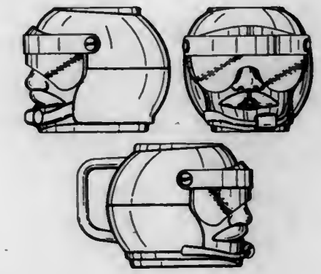
372,400
TUBE CAKE COOLER
Charles R. Bearden, 1222 West Cota, Shelton, Wash. 98584
Filed Aug. 1, 1995, Ser. No. 42,121
Term of patent 14 years
U.S. Cl. D7—610



372,401
CANISTER
Stig Lillelund, Gentofte; Eskil H. Olsen, Klampenborg; Jakob Heiberg, Charlottenlund, all of, Denmark, and Robert H. C. M. Daenen, Essene, Belgium, assignors to Dart Industries Inc., Deerfield, Ill.
Filed May 18, 1995, Ser. No. 38,673
Term of patent 14 years
U.S. Cl. D7—612



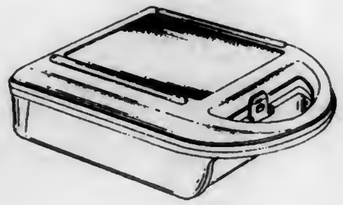
372,402
RACING HELMET DRINK CONTAINER
Karl Van Blankenburg, 61830 Lantern Cove, Washington, Mich. 48094
Filed Sep. 26, 1995, Ser. No. 44,749
Term of patent 14 years
U.S. Cl. D7—623



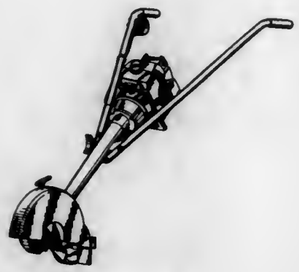
372,403
FLAVOR INJECTOR
Norman R. Jensen, 2575 W. Swain Rd., Stockton, Calif. 95207
Filed Jul. 5, 1994, Ser. No. 25,551
Term of patent 14 years
U.S. Cl. D7—669



372,404
CONTAINER
Richard D. Booten, Brentwood, Tenn., assignor to Aladdin Industries, Inc., Nashville, Tenn.
Filed Aug. 15, 1995, Ser. No. 42,691
Term of patent 14 years
U.S. Cl. D7—709



372,405
LAWN EDGER
John A. Notaras, and Angelo L. Notaras, both of P.O. Box 513, Rozelle NSW 2039, Australia
Filed Oct. 4, 1994, Ser. No. 29,389
Claims priority, application Australia, Mar. 30, 1994, 1029/94
Term of patent 14 years
U.S. Cl. D8—1



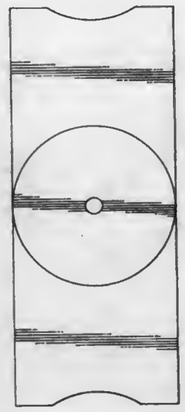
372,406
LAWN TOOL FOR MOVING LEAVES
Louis Scarvaglione, 2442 First St., Fort Lee, N.J. 07024
Filed Mar. 6, 1995, Ser. No. 35,777
Term of patent 14 years
U.S. Cl. D8—1



372,407
HEDGE TRIMMER
Koji Haneda, and Naohiro Hayakawa, both of Anjo, Japan, assignors to Makita Corporation, Anjo, Japan
Filed Jun. 28, 1995, Ser. No. 40,842
Claims priority, application Japan, Dec. 29, 1994, 6-40178
Term of patent 14 years
U.S. Cl. D8—8



372,408
WEED AND GRASS CUTTER BLADE
Daniel T. Robbins, 485 Anderson Rd., Paris, Tenn. 38242
Filed Aug. 4, 1995, Ser. No. 42,212
Term of patent 14 years
U.S. Cl. D8—8



372,409
DOUBLE-ENDED FLEX HANDLE WRENCH
Richard B. Wright, and Kenneth Milligan, both of Akron, Ohio, assignors to Wright Tool Company, Barberton, Ohio
Filed Mar. 7, 1995, Ser. No. 35,796
Term of patent 14 years
U.S. Cl. D8—25



372,410
SCISSORS
Raymond Dziuk, P.O. Box 131, Falls City, Tex. 78113
Filed Oct. 27, 1994, Ser. No. 30,358
Term of patent 14 years
U.S. Cl. D8—57



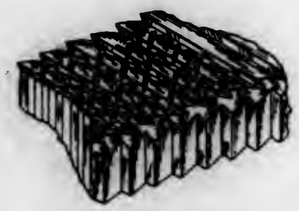
372,411
HANDLE FOR A HAND TOOL
Chu-Shun Ho, No. 288, Kwang Hsin Road, Tai Pin Hsiang, Taichung Hsien, Taiwan
Filed Dec. 6, 1994, Ser. No. 32,092
Term of patent 14 years
U.S. Cl. D8—83



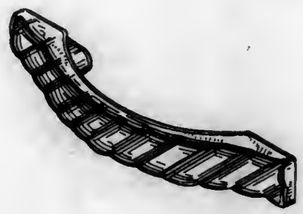
372,412
SCREWDRIVER HANDLE
Guy L. Bradshaw, Kenosha, Wis., assignor to Beere Precision Medical Instruments, Inc., Racine, Wis.
Filed Feb. 14, 1995, Ser. No. 34,844
Term of patent 14 years
U.S. Cl. D8—83



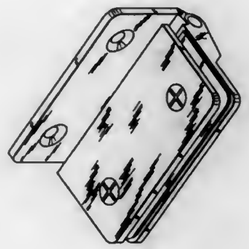
372,413
FILE SEGMENT
Elias P. Alam, New Philadelphia, Ohio, assignor to Simonds Industries, Inc., Fitchburg, Mass.
Filed Jan. 12, 1993, Ser. No. 3,655
Term of patent 14 years
U.S. Cl. D8—90



372,414
PULL
Robert De'Armond, Celina, Ohio, assignor to Newell Operating Company, Freeport, Ill.
Filed Jul. 26, 1995, Ser. No. 41,910
Term of patent 14 years
U.S. Cl. D8—317



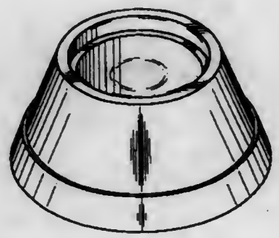
372,415
DOOR HINGE
Jean-Claude Guidotti, Boulogne, France, assignor to Creations D. Guidotti S.A., Boulogne, France
Filed Apr. 26, 1995, Ser. No. 38,003
Claims priority, application Germany, Oct. 27, 1994, 98 08 412.2
Term of patent 14 years
U.S. Cl. D8—327



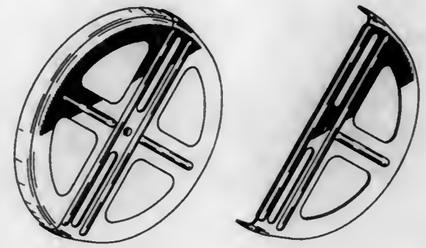
372,416
WINDOW LOCK
Frank W. Campbell, Oakdale, and Casey L. Carlson, Edina, both of Minn., assignors to Andersen Corporation, Bayport, Minn.
Filed May 19, 1995, Ser. No. 39,383
Term of patent 14 years
U.S. Cl. D8—338



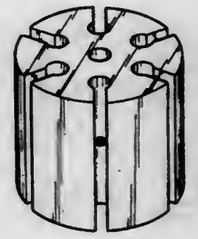
372,417
DOOR LOCK KEY CYLINDER HOUSING
Eduardo J. Jimenez, Colorado Springs, Colo., assignor to Schlage Lock Company, San Francisco, Calif.
Filed May 8, 1995, Ser. No. 38,628
Term of patent 14 years
U.S. Cl. D8—343



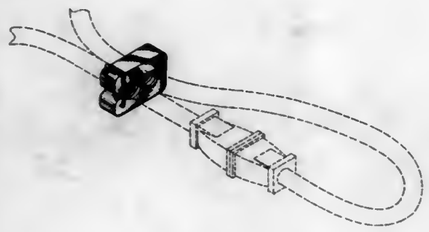
372,418
STEERING WHEEL GUARD
Kevin D. Winner, Hermitage, Pa., assignor to Winner International Royalty Corporation, Sharon, Pa.
Filed Aug. 28, 1995, Ser. No. 43,381
Term of patent 14 years
U.S. Cl. D8—346



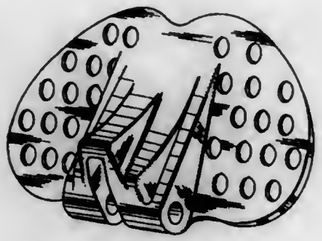
372,419
COUPLING ELEMENT FOR FURNITURE
Toshiroh Ikegami, Komachibori 1-8-31, Nishi-ku, Yasuda Bldg. 310, Osaka, Japan
Filed Nov. 1, 1989, Ser. No. 430,506
Term of patent 14 years
U.S. Cl. D8—382



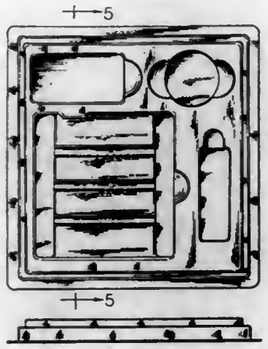
372,420
CORD LOCK AND FASTENER
Santiago Mendez, 842 Pendleton Ave., NE., Palm Bay, Fla. 32907
Filed Jan. 24, 1995, Ser. No. 33,938
Term of patent 14 years
U.S. Cl. D8—383



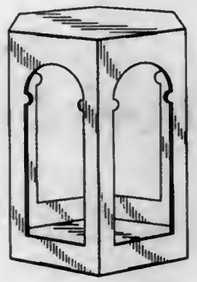
372,421
HEAVY DUTY SNOW STOP
Roger M. Cline, Bluemont, Va., assignor to Real-Tool, Inc., Purcellville, Va.
Filed Sep. 23, 1994, Ser. No. 28,605
Term of patent 14 years
U.S. Cl. D8—499



372,422
COMPACT DISC CLEANING PACKAGE
Mark L. Anderson, 12491 Queens Way N., Stillwater, Minn. 55082
Filed Jul. 13, 1995, Ser. No. 41,400
Term of patent 14 years
U.S. Cl. D9—347



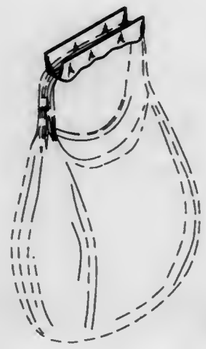
372,423
DISPLAY CONTAINER
James R. Cook, Salt Lake City, Utah, assignor to Maxim, Inc., Salt Lake City, Utah
Filed Dec. 6, 1994, Ser. No. 31,788
Term of patent 14 years
U.S. Cl. D9—418



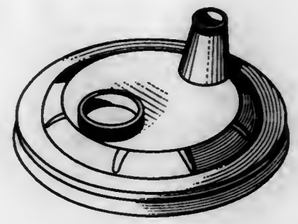
372,424
WATCH CONTAINER
Jerry Dikowitz, Plainview, N.Y., assignor to E. Gluck Corporation, Long Island City, N.Y.
Filed Sep. 22, 1995, Ser. No. 44,334
Term of patent 14 years
U.S. Cl. D9—429



372,425
SHOPPING BAG HANDLE
Rufus Kirkwood, 2012 W. Imperial Hwy., Hawthorne, Calif. 90250
Filed Nov. 13, 1995, Ser. No. 46,333
Term of patent 14 years
U.S. Cl. D9—434



372,426
REMOVABLE POURING CLOSURE
Jon M. Garnett, P.O. Box 1, Spearman, Tex. 79081
Filed Apr. 21, 1995, Ser. No. 37,856
Term of patent 14 years
U.S. Cl. D9—447



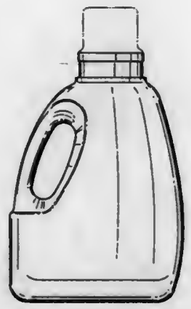
372,427
BOTTLE
Thomas E. Jago, and Gerald L. Barney, both of London, United Kingdom, assignors to Chivas Brothers Limited, Paisley, Scotland
Filed Jun. 2, 1995, Ser. No. 39,689
Claims priority, application United Kingdom, Dec. 9, 1994, 2043817
Term of patent 14 years
U.S. Cl. D9—500



372,428
BOTTLE
Derek P. Malmquist, San Francisco, Calif., assignor to The Clorox Company, Oakland, Calif.
Filed Oct. 22, 1993, Ser. No. 14,450
Term of patent 14 years
U.S. Cl. D9—523



372,429
BOTTLE
Larry Slezak, Springfield, Mass.; Margarette F. Bozanich, Walnut Creek, Calif.; Daniel Burnett, So. Hadley, Mass.; Philip H. Clark, San Jose, Calif.; Gregory Geisinger, Toledo, Ohio; Sophia M. Kabler, San Francisco, Calif.; Alan Morini, Granby; Melvin C. O'Leary, Jr., Springfield, both of Mass., and Kenneth Samson, Maumee, Ohio, assignors to The Clorox Company, Oakland, Calif.
Filed Mar. 5, 1993, Ser. No. 5,507
Term of patent 14 years
U.S. Cl. D9—528



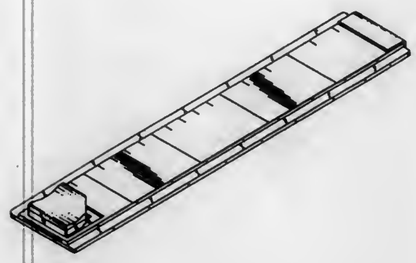
372,430
CLOCK
Emil Patatanyan, 1502 Thompson Ave., Glendale, Calif. 91201
Filed Jun. 13, 1995, Ser. No. 40,241
Term of patent 14 years
U.S. Cl. D10—24



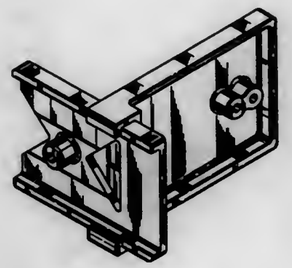
372,431
WRISTWATCH CASE AND BAND
Bernard Nguyen, Les Ulis, France, assignor to Christian Bernard Diffusion S.A., Paris, France
Filed Dec. 13, 1994, Ser. No. 32,045
Term of patent 14 years
U.S. Cl. D10—32



372,432
CUTTER WITH RULER
Kazuyo Sawano, Kyoto, Japan, assignor to Kyoto Measuring Instruments Corp., Japan
Filed Feb. 9, 1995, Ser. No. 34,627
Term of patent 14 years
U.S. Cl. D10—62



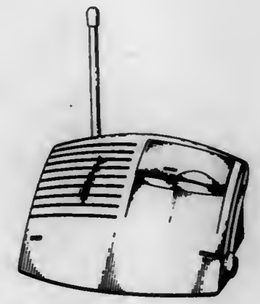
372,433
TEMPLATE USED IN INSTALLING DOOR LOCKS
David T. Brutscher, Louisville, and Leroy R. Leet, Sr., Shelbyville, both of Ky., assignors to Credo Tool Company, Woodburn, Oreg.
Filed Jun. 14, 1995, Ser. No. 40,287
Term of patent 14 years
U.S. Cl. D10—64



372,434
AIR TERMINAL
Kenneth P. Heary, Springville, N.Y., assignor to Heary Bros. Lightning Protection Co., Inc., Springville, N.Y.
Filed Jun. 22, 1995, Ser. No. 40,588
Term of patent 14 years
U.S. Cl. D10—105



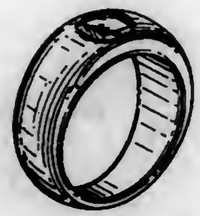
372,435
COMMUNICATOR FOR A PERSONAL EMERGENCY RESPONSE SYSTEM
Michael Bellomo, Millis; Scott Stropkay, Carlisle; David Weissburg, Arlington, and Mark Nichols, Boston, all of Mass., assignors to Lifeline Systems, Inc., Cambridge, Mass.
Filed Jul. 28, 1995, Ser. No. 42,721
Term of patent 14 years
U.S. Cl. D10—106



372,436
HAND BRACELET
Thea L. Loch, 465 Norman St., Roselle, Ill. 60172
Filed Aug. 31, 1994, Ser. No. 27,848
Term of patent 14 years
U.S. Cl. D11—3



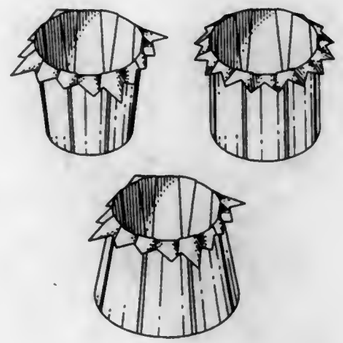
372,437
RING
Philip Petrucci, 97 Fifth Ave., New York, N.Y. 10003
Filed Jun. 1, 1995, Ser. No. 39,643
Term of patent 14 years
U.S. Cl. D11—26



372,438
SANTA CLAUS FIGURE
Seymour Cohen, Jericho, N.Y., assignor to Telco Creations, Inc., Hicksville, N.Y.
Filed Sep. 29, 1995, Ser. No. 44,708
Term of patent 14 years
U.S. Cl. D11—129



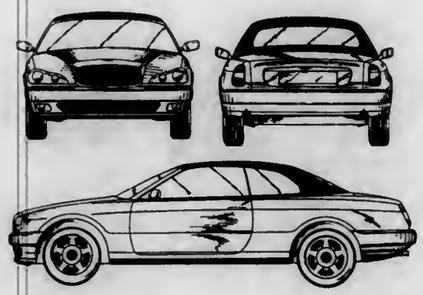
372,439
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to The Family Trust U/T/A, and Southpac Trust International, Inc.,, both of Oklahoma City, Okla.
Continuation-in-part of Ser. No. 808,550, Dec. 16, 1991, Pat. No. Des. 361,296, which is a continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, and a continuation-in-part of Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,11, and a continuation-in-part of Ser. No. 411,247, Sep. 22, 1989, and a continuation-in-part of Ser. No. 411,245, Sep. 22, 1989. This application May 10, 1993, Ser. No. 8,174
The portion of the term of this patent subsequent to Aug. 15, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D11—164



372,440
ZIPPER PULL
Larry Gelb, 1877 George Ct., Merrick, N.Y. 11566
Filed Apr. 20, 1995, Ser. No. 37,772
Term of patent 14 years
U.S. Cl. D11—221



372,441
MOTOR VEHICLE
Royden Axe, Warwick, England, assignor to Rolls-Royce Motor Cars Limited, Crewe, England
Filed Sep. 1, 1994, Ser. No. 29,270
Claims priority, application United Kingdom, Mar. 1, 1994, 2037417
Term of patent 14 years
U.S. Cl. D12—92



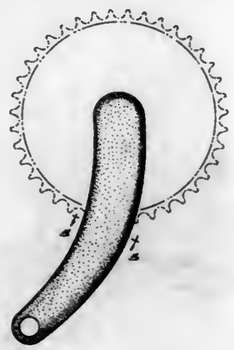
372,442
MOTORCYCLE
Makoto Kitagawa, and Hirotsugu Ueno, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 10, 1995, Ser. No. 33,351
Claims priority, application Japan, Jul. 15, 1994, 6-21292
Term of patent 14 years
U.S. Cl. D12—110



372,443
MOTORCYCLE
Toshiaki Kishi; Hideaki Yamazumi, and Shigeru Kuroda, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 3, 1995, Ser. No. 42,178
Claims priority, application Japan, Feb. 13, 1995, 7-3569
Term of patent 14 years
U.S. Cl. D12—110



372,444
BICYCLE SPROCKET CRANK ARM
Jim Kim, 22511 S. Normandie, Torrance, Calif. 90501
Filed May 15, 1995, Ser. No. 38,810
Term of patent 14 years
U.S. Cl. D12—123



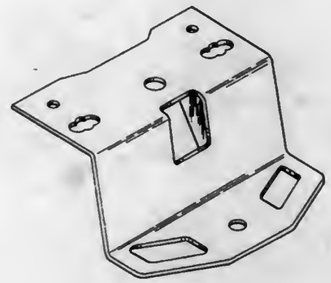
372,445
AUTOMOBILE TIRE
Nobuaki Minami, Shirakawa, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan
Filed Jan. 21, 1994, Ser. No. 17,694
Claims priority, application Japan, Jul. 21, 1993, 5-22319
Term of patent 14 years
U.S. Cl. D12—147



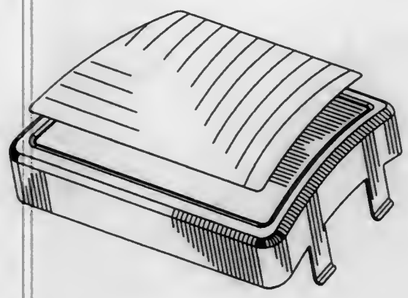
372,446
AUTOMOTIVE TOWER BRACE
John F. Hotchkis, Jr., 8531 Wellsford Pl., Santa Fe Springs, Calif. 90670
Filed Nov. 1, 1994, Ser. No. 30,521
Term of patent 14 years
U.S. Cl. D12—159



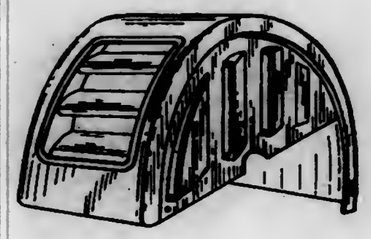
372,447
STEP BUMPER HITCH WITH HITCH PLATE OPENINGS
Richard McCoy, Granger, Ind.; Marvin L. Hanson, Vandalia, and Jon L. Krager, Cassopolis, both of Mich., assignors to Reese Products, Inc., Elkhart, Ind.
Filed Aug. 14, 1995, Ser. No. 42,589
Term of patent 14 years
U.S. Cl. D12—162



372,448
FOOT PAD
Rainer Holst, P.O. Box 97, Breslau, Ontario, Canada
Filed Mar. 24, 1994, Ser. No. 20,321
Claims priority, application Canada, Sep. 27, 1993, 27-09-93-2
Term of patent 14 years
U.S. Cl. D12—174



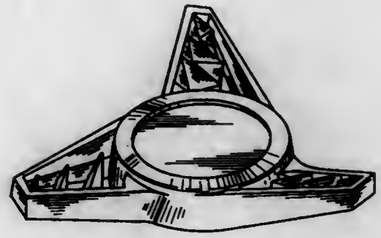
372,449
AIR FENDER SYSTEM
John H. Becker, 2110 Tudor Pl., Sumter, S.C. 29150
Filed Oct. 4, 1994, Ser. No. 29,378
Term of patent 14 years
U.S. Cl. D12—184



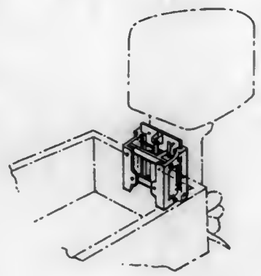
372,450
REARVIEW MIRROR
Antonio F. Santo, Rua Almirante Tamandare, No. 85, São Bernardo do Campo, São Paulo, Brazil
Filed Jul. 8, 1994, Ser. No. 25,697
Claims priority, application Brazil, Jan. 14, 1994, 5400071-8
Term of patent 14 years
U.S. Cl. D12—187



372,451
SPINNER FOR WHEELS
James K. Miansian, 218 Belmont #2, Long Beach, Calif. 90803
Filed Feb. 2, 1994, Ser. No. 18,263
Term of patent 14 years
U.S. Cl. D12—213



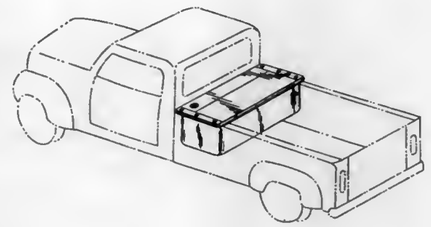
372,452
MARINE JACK PLATE
Robert O. Icenogle, 1501 33rd St. S.E., Ruskin, Fla. 33670
Filed Aug. 4, 1995, Ser. No. 42,260
Term of patent 14 years
U.S. Cl. D12—317



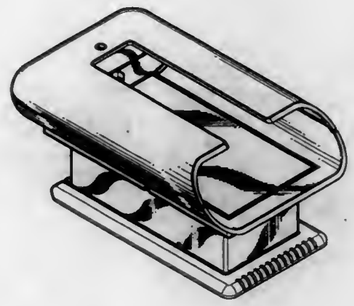
372,453
INSERT AND CHANNEL AUTO WINDSHIELD MOLDING
Peter Gold, 465 N. Wood Rd., Rockville Centre, N.Y. 11570
Filed Sep. 25, 1995, Ser. No. 44,501
Term of patent 14 years
U.S. Cl. D12—400



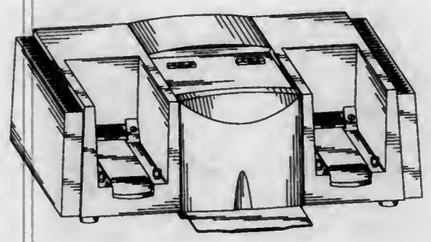
372,454
COMBINATION TOOL BOX AND FUEL TANK
Robert M. Murray, Sr., 6819 Brewster Ct., Columbus, Ga. 31904
Filed Jun. 8, 1994, Ser. No. 24,092
Term of patent 14 years
U.S. Cl. D12—423



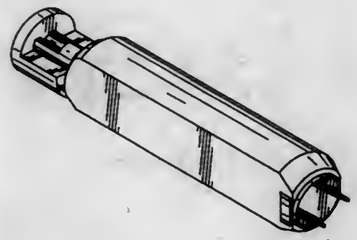
372,455
BATTERY CHARGER
James L. Tiefenthal, Dublin; Donald J. Goldhardt, Grove City, both of Ohio, and James D. Morrow, Oak Park, Ill., assignors to Abbott Laboratories, Abbott Park, Ill.
Filed Aug. 18, 1994, Ser. No. 27,327
Term of patent 14 years
U.S. Cl. D13—108



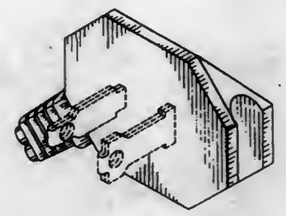
372,456
BATTERY CHARGER
Stephen V. Cooper, Amity; Phillip H. Salvatori, Salem; Jonathan N. Andrews, Monmouth; Gregory D. Brink; James D. Bledsoe, both of McMinnville; Wendy Blumberg-Dominguez, Tigard, and David L. Burton, McMinnville, all of Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed May 16, 1995, Ser. No. 38,917
Term of patent 14 years
U.S. Cl. D13—108



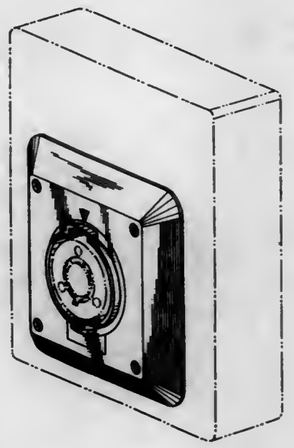
372,457
VIBRATING MOTOR
Toshihide Okuyama, and Masahiro Kaneko, both of Sayama, Japan, assignors to Sayama Precision Industries Co., Ltd., Saitama, Japan
Filed Aug. 19, 1994, Ser. No. 27,393
Claims priority, application Japan, Feb. 21, 1994, 6-4283; Jul. 18, 1994, 6-21432
Term of patent 14 years
U.S. Cl. D13—112



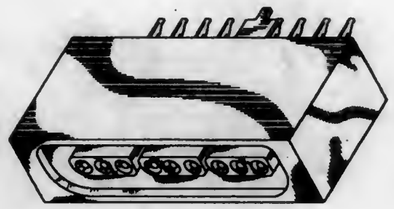
372,458
ELECTRICAL PLUG BODY
Paul A. Hedrick, West Greenwich, R.I., assignor to General Cable Industries, Inc., Highland Heights, Ky.
Filed Aug. 13, 1993, Ser. No. 11,723
Term of patent 14 years
U.S. Cl. D13—138



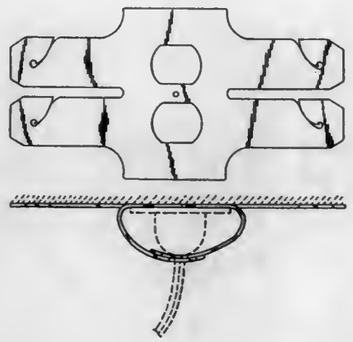
372,459
SEMI-FLUSH, MOUNTABLE ELECTRICAL CONNECTOR HOUSING
Patrick J. Tiberio, Jr., Huntington, and Thomas R. Swift, Monroe, both of Conn., assignors to Hubbell Incorporated, Orange, Conn.
Filed May 17, 1995, Ser. No. 38,934
Term of patent 14 years
U.S. Cl. D13—146



372,460
CONNECTOR
Keiji Aramaki, Tokyo, Japan, assignor to Sony Corporation, Japan
Filed Jun. 8, 1995, Ser. No. 39,998
Claims priority, application Japan, Dec. 8, 1994, 6-37332
Term of patent 14 years
U.S. Cl. D13—147



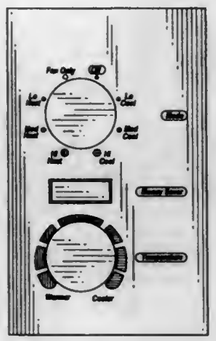
372,461
CORD HOLDING ATTACHMENT FOR ELECTRICAL RECEPTACLE
Cory Kenney, P.O. Box 330, Hardin, Mont. 59034
Filed Feb. 23, 1995, Ser. No. 35,257
Term of patent 14 years
U.S. Cl. D13—154



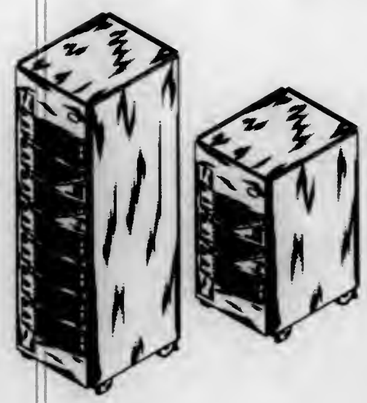
372,462
MAINTENANCE TEST UNIT
Gerald L. Shimirak; Gail J. Bingham, both of Menlo Park; Philip B. Vail, San Leandro, and Anthony Vranicar, Santa Clara, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.
Filed Mar. 17, 1995, Ser. No. 36,352
Term of patent 14 years
U.S. Cl. D13—160



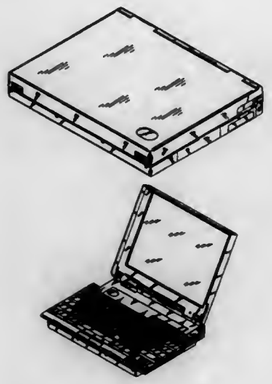
372,463
CONTROL PANEL FOR A ROOM AIR CONDITIONER
Michael Zambelli; Jonathan Marks, both of New York, N.Y.; Rengaswamy Ramakrishnan, and Joel G. Zillioux, both of San Antonio, Tex., assignors to U.S. Natural Resources, Inc., San Antonio, Tex.
Filed Jan. 20, 1995, Ser. No. 33,827
Term of patent 14 years
U.S. Cl. D13—162



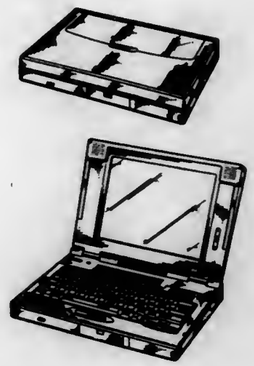
372,464
MULTIMEDIA STORAGE AND DELIVERY SYSTEM ENCLOSURE
Timothy D. Wetzel, San Jose, Calif., assignor to International Business Machines Corporation, New York, N.Y.
Filed Aug. 22, 1995, Ser. No. 43,356
Term of patent 14 years
U.S. Cl. D14—102



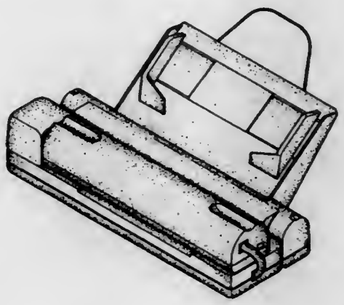
372,465
PERSONAL COMPUTER WITH EXTENDED KEYBOARD
John P. Karidis, Ossining, N.Y.; Samuel A. Lucente, II, Stamford, Conn.; Robert P. Tennant, Apex, N.C.; Lawrence A. Stone, Cary, N.C.; Michael L. King, Durham, N.C.; Martin T. Tucker, Morrisville, N.C.; Gerard McVicker, Wappingers Falls, N.Y., and Richard F. Sapper, Milan, Italy, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 9, 1995, Ser. No. 40,079
Term of patent 14 years
U.S. Cl. D14—106



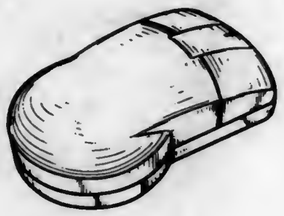
372,466
NOTEBOOK PERSONAL COMPUTER
Chi-Tsong Chu, Taipei, Taiwan, assignor to Compaq Computer Corporation, Houston, Tex.
Filed Aug. 22, 1995, Ser. No. 43,133
Term of patent 14 years
U.S. Cl. D14—106



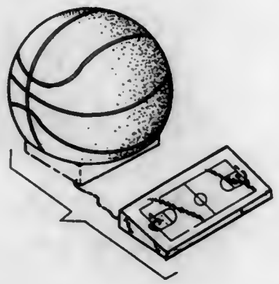
372,467
SCANNER
Marco Lee, Taipei Hsien, Taiwan, assignor to Silitek Corporation, Taipei, Taiwan
Filed Mar. 29, 1995, Ser. No. 36,848
Term of patent 14 years
U.S. Cl. D14—107



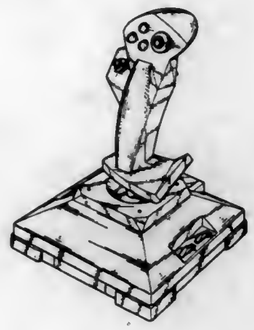
372,468
INFRARED MOUSE
Ming-kun Hsieh, No. 53, Chungcheng Rd., Hsitzu Chen, Taipei Hsien, Taiwan
Filed May 16, 1995, Ser. No. 38,848
Term of patent 14 years
U.S. Cl. D14—114



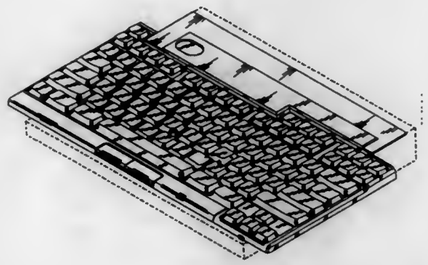
372,469
BASKETBALL MOTIF COMPUTER DUST COVER KIT
Virgil L. Samborsky, 5202 Hahn Ave., Fairborn, Ohio 45324
Filed May 19, 1995, Ser. No. 39,060
Term of patent 14 years
U.S. Cl. D14—114



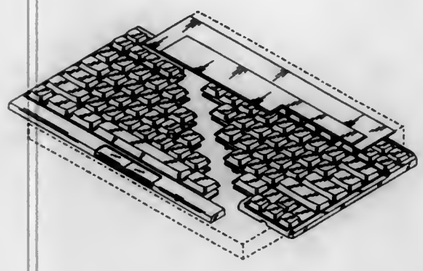
372,470
JOYSTICK
Ming-kun Hsien, No. 53, Chungcheng Rd., Hsitzu Chen, Taipei Hsien, Taiwan
Filed Sep. 21, 1995, Ser. No. 44,265
Term of patent 14 years
U.S. Cl. D14—114



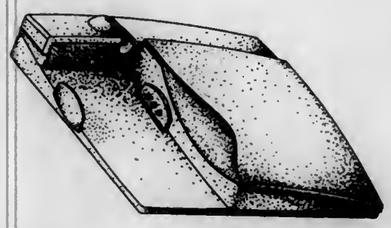
372,471
KEYBOARD
John P. Karidis, Ossining, N.Y.; Samuel A. Lucente, II, Stamford, Conn.; Robert P. Tennant, Apex, N.C.; Richard F. Sapper, Milan, Italy; Lawrence A. Stone, Cary, N.C., and Gerard McVicker, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 9, 1995, Ser. No. 40,073
Term of patent 14 years
U.S. Cl. D14—115



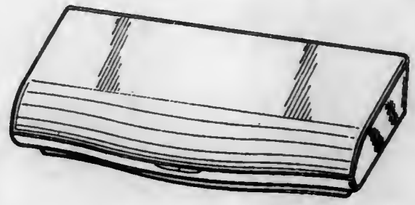
372,472
FRACTIONATED KEYBOARD
John P. Karidis, Ossining, N.Y.; Samuel A. Lucente, II, Stamford, Conn.; Robert P. Tennant, Apex, N.C.; Richard F. Sapper, Milan, Italy; Lawrence A. Stone, Cary, N.C., and Gerard McVicker, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 9, 1995, Ser. No. 40,078
Term of patent 14 years
U.S. Cl. D14—115



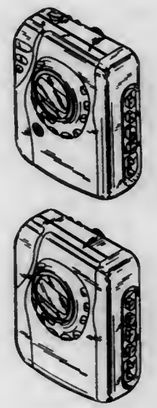
372,473
BASE FOR CORDLESS REMOTE FOR COMMUNICATIONS HEADSET
Gabriele Bungardt, Aptos, Calif., assignor to Plantronics, Inc., Santa Cruz, Calif.
Filed Apr. 17, 1995, Ser. No. 37,653
Term of patent 14 years
U.S. Cl. D14—149



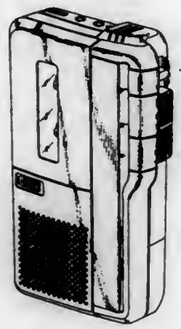
372,474
SHOWER TELEPHONE BASE UNIT
Joseph E. Ford, Cary; Donald N. Jursich, Chicago, both of Ill., and Raymond Chan, Vancouver, Canada, assignors to Jing Mei Industrial Holdings, Ltd., Cook Islands
Filed Jun. 15, 1995, Ser. No. 40,339
Term of patent 14 years
U.S. Cl. D14—149



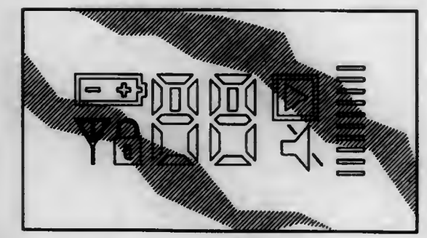
372,475
TAPE PLAYER COMBINED WITH RADIO TONER
Tomoyuki Shndo, Tokyo, Japan, assignor to Sony Corporation, Japan
Filed Jan. 31, 1995, Ser. No. 34,238
Term of patent 14 years
U.S. Cl. D14—163



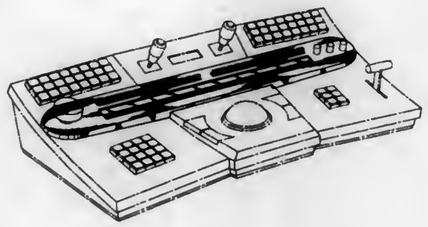
372,476
TAPE RECORDER
Mitsuhiro Shigeri, Yokohama, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Apr. 19, 1995, Ser. No. 37,762
Claims priority, application Japan, Oct. 21, 1994, 6-032098
Term of patent 14 years
U.S. Cl. D14—165



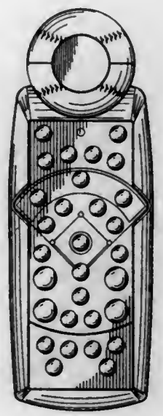
372,477
DISPLAY FOR A PORTABLE COMMUNICATION DEVICE
Suthirug N. Pisutha-Arnond, Boynton Beach; William J. Scarpone, Royal Palm Beach, and Edward R. Beyer, Pompano Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 3, 1995, Ser. No. 35,655
Term of patent 14 years
U.S. Cl. D14—191



372,478
EDITING CONTROL PANEL
James J. Ricotta, Weston; Lawrence A. Bodony, Lexington, and Peter Fasciano, Natick, all of Mass., assignors to Avid Technology, Inc., Tewksbury, Mass.
Filed Mar. 18, 1994, Ser. No. 20,076
Term of patent 14 years
U.S. Cl. D14—217



372,479
REMOTE CONTROL
Joanne Kava, Brunswick; Michael D. Reilly, Hudson, both of Ohio; Mark Dwight, Palo Alto, and Brett Lovelady, Saratoga, both of Calif., assignors to Universal Electronics Inc., Twinsburg, Ohio
Filed Jun. 21, 1994, Ser. No. 24,791
Term of patent 14 years
U.S. Cl. D14—218



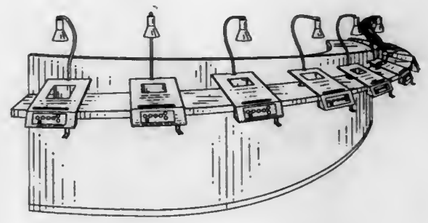
372,480
CORDLESS REMOTE FOR HEADSET
Gabriele Bungardt, Aptos, Calif., assignor to Plantronics, Inc., Santa Cruz, Calif.
Filed Apr. 17, 1995, Ser. No. 37,655
Term of patent 14 years
U.S. Cl. D14—247



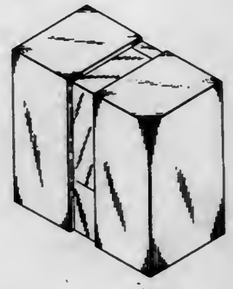
372,481
KEYPAD COVER FOR A PORTABLE COMMUNICATION DEVICE
Nicholas Mischenko, Mount Prospect, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Oct. 31, 1994, Ser. No. 30,499
Term of patent 14 years
U.S. Cl. D14—249



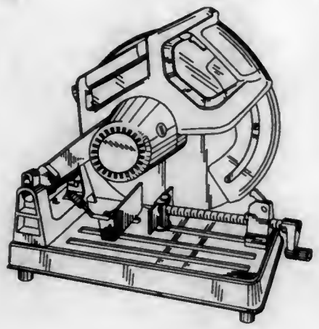
372,482
LISTENING CENTER
Mark B. Artus, Beechwold, Ohio, assignor to Blockbuster Entertainment Corporation, Ft. Lauderdale, Fla.
Filed Aug. 29, 1994, Ser. No. 27,737
Term of patent 14 years
U.S. Cl. D14—299



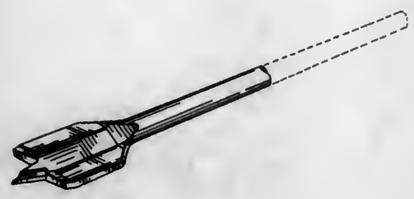
372,483
DATA STORAGE MEDIA AUTOCHANGER
James Dow, and Modest Khovaylo, both of Fort Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Dec. 21, 1994, Ser. No. 32,544
Term of patent 14 years
U.S. Cl. D14—299



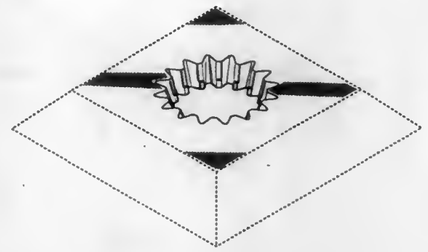
372,484
CHOP SAW DESIGN
Scott D. Price, Pylesville, and A. Nelson Dorsey, Sykesville, both of Md., assignors to Black & Decker Inc., Newark, Del.
Continuation of Ser. No. 32,545, Dec. 21, 1994, abandoned, which is a continuation of Ser. No. 7,605, Apr. 26, 1993, abandoned. This application Sep. 13, 1995, Ser. No. 43,865
Term of patent 14 years
U.S. Cl. D15—133



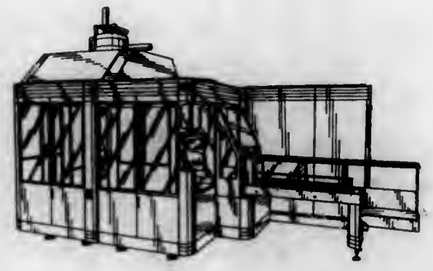
372,485
SPADE-TYPE BORING BIT
Paul A. Stone, Glen Rock, Pa., and Rickey J. Thomas, Lineboro, Md., assignors to Black & Decker, Inc., Newark, Del.
Filed Dec. 30, 1994, Ser. No. 32,861
Term of patent 14 years
U.S. Cl. D15—139



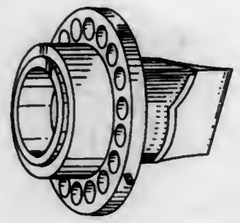
372,486
FLOWER POT WRAPPING PLEAT FORMING FIXTURE
Michael A. Morris, Menlo Park, Calif., assignor to Trans Global Products, Inc., Redwood City, Calif.
Filed Jun. 12, 1995, Ser. No. 40,183
Term of patent 14 years
U.S. Cl. D15—140



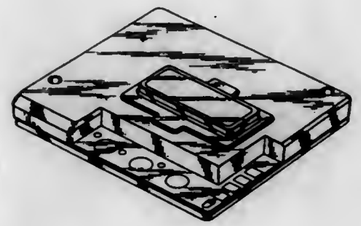
372,487
PACKAGING MACHINE
Douglas Brewer; David Brown, both of Chicago; Nils-Olof Jonsson, Arlington Heights; Timothy McKeown, Glen Ellyn, and Dean Skonieczny, Palatine, all of Ill., assignors to Tetra Laval Holdings & Finance S.A.
Filed Sep. 27, 1994, Ser. No. 28,980
Term of patent 14 years
U.S. Cl. D15—145



372,488
TUBE SEALING SYSTEM
Hans Linnér, Kalmar, Sweden, assignor to Norden Pac Development AB, Sweden
Filed Sep. 21, 1994, Ser. No. 28,736
Claims priority, application Sweden, Mar. 24, 1994, 940712; Mar. 24, 1994, 940713; Mar. 24, 1994, 940714; Mar. 24, 1994, 940715; Mar. 24, 1994, 940716; Mar. 24, 1994, 940717; Mar. 24, 1994, 940718
Term of patent 14 years
U.S. Cl. D15—146



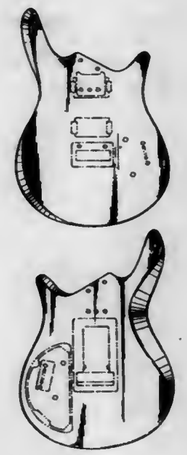
372,489
DATA IMPRINTING DEVICE FOR A CAMERA
Masao Akaiwa, and Shinobu Nakazawa, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan
Filed Apr. 17, 1995, Ser. No. 37,525
Claims priority, application Japan, Oct. 25, 1994, 6-32416; Oct. 25, 1994, 6-32417
The portion of the term of this patent subsequent to Apr. 30, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D16—219



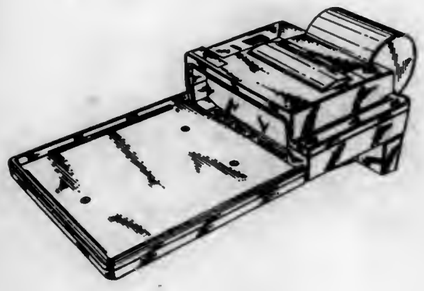
372,490
SAFETY GLASSES AND PRESCRIPTION LENS INSERT COMBINATION
Keith W. Sheffield, Kent, England, and John Chin, Tainan, Taiwan, assignors to Crews, Inc., Memphis, Tenn.
Filed Jun. 20, 1995, Ser. No. 40,485
Term of patent 14 years
U.S. Cl. D16—325



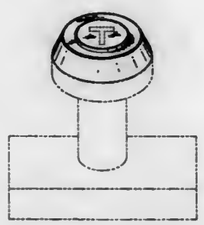
372,491
GUITAR BODY
James B. DeCola, Meridian, Miss., assignor to Peavey Electronics Corporation, Meridian, Miss.
Filed Nov. 21, 1994, Ser. No. 31,558
The portion of the term of this patent subsequent to Sep. 12, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D17—20



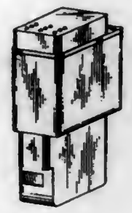
372,492
RECEIPT PRINTER AND TRANSACTION TERMINAL MOUNTING STAND
James M. Stanton, San Jose, Calif., assignor to Verifone Inc., Redwood City, Calif.
Filed Jul. 31, 1995, Ser. No. 42,056
Term of patent 14 years
U.S. Cl. D18—4



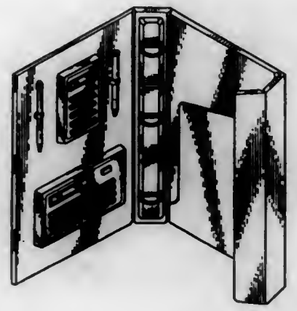
372,493
HAND STAMP HANDLE TOP
Steven J. Sculler, Manalapan, N.J., assignor to M&R Marking Systems, Inc., Piscataway, N.J.
Filed May 31, 1994, Ser. No. 23,734
The portion of the term of this patent subsequent to Apr. 26, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—18



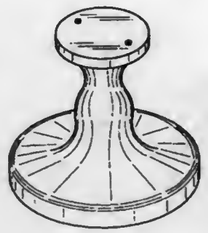
372,494
INK TANK FOR PRINTER
Hiroyuki Tokuda; Masanori Takenouchi, both of Yokohama; Yasuo Kotaki, Machida, and Yuji Hamasaki, Sagamihara, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 22, 1995, Ser. No. 35,173
Claims priority, application Japan, Aug. 23, 1994, 6-25191
Term of patent 14 years
U.S. Cl. D18—56



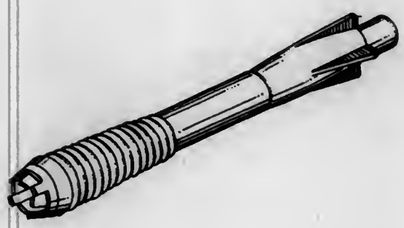
372,495
FOLDER ORGANIZER
Dwayne M. Godfrey, and Gene G. Butenschoen, both of P.O. Box 731, Wrangell, Ak. 99929
Filed Feb. 27, 1995, Ser. No. 36,423
Term of patent 14 years
U.S. Cl. D19—27



372,496
POTTER'S KICK WHEEL
Roger J. York, 3 Lemans Pl., Lake St. Louis, Mo. 63367
Filed Apr. 17, 1995, Ser. No. 37,564
Term of patent 14 years
U.S. Cl. D19—35



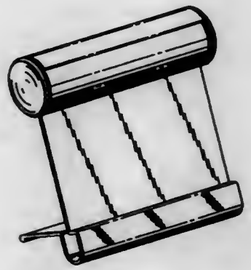
372,497
WRITING IMPLEMENT WITH FINS
Demetrios Lamber, 58 W. Maiden La., Monroe, Conn. 06468
Filed May 1, 1995, Ser. No. 38,208
The portion of the term of this patent subsequent to Jul. 11, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D19—48



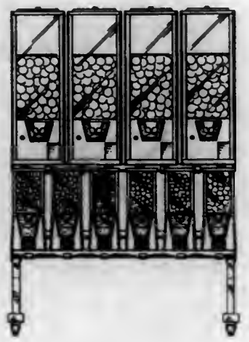
372,498
PAPER CLIP
Hisao Sato, Fujimidai Mansion 2002, 29-10, Nukui 1-Chome, Nerima-Ku, Tokyo, Japan
Filed Jun. 13, 1995, Ser. No. 40,211
Term of patent 14 years
U.S. Cl. D19—65



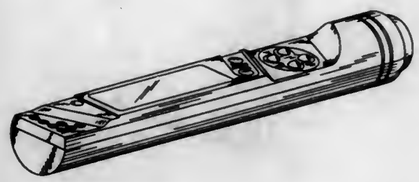
372,499
NOTICE ASSEMBLY WITH ROTATABLE MESSAGE DISPLAY
Bruce W. Carlson, Minneapolis, and Kenneth J. Kirchoff, Gem Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation-in-part of Ser. No. 31,919, Dec. 8, 1994, abandoned, which is a continuation of Ser. No. 14,809, Oct. 29, 1993, abandoned. This application Apr. 28, 1995, Ser. No. 40,249
Term of patent 14 years
U.S. Cl. D19—65



372,500
COMBINED VENDING MACHINE AND GUMBALLS AND STAND
James H. Hinton, Vernon, Calif., assignor to Oak Manufacturing Company, Los Angeles, Calif.
Filed May 8, 1995, Ser. No. 38,536
Term of patent 14 years
U.S. Cl. D20—7



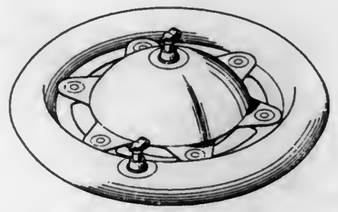
372,501
HAND-HELD ELECTRONIC GAME HOUSING
Zarko Stambolic, Oak Park; Shari L. Smith, Chicago, and Howard J. Morrison, Riverwoods, all of Ill., assignors to Tiger Electronics, Inc., Vernon Hills, Ill.
Filed Nov. 23, 1994, Ser. No. 31,339
Term of patent 14 years
U.S. Cl. D21—13



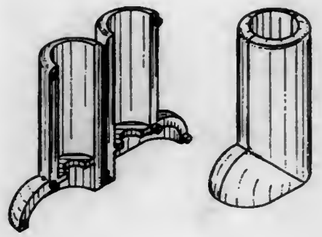
372,502
COMMUNICATION BOARD
Jerilynn F. Davis, 2801 Avon Ave., Concord, Calif. 94520
Filed Apr. 22, 1994, Ser. No. 21,727
Term of patent 14 years
U.S. Cl. D21—32



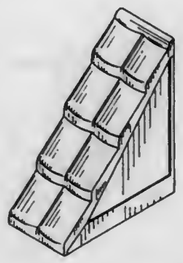
372,503
INFLATABLE TOY
Chang-Hsiung Liu, 3F, No. 60, Sec. 1, Minsheng Road, Panchiao City, Taipei Hsien, Taiwan
Filed May 23, 1995, Ser. No. 39,462
Term of patent 14 years
U.S. Cl. D21—84



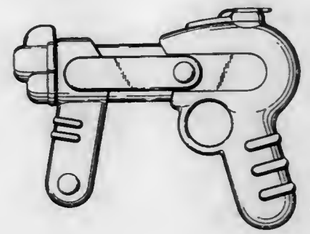
372,504
TOY PLASTER BANDAGE FOR A DOLL
Bente Jacobsen, Silkeborg, Denmark, assignor to INTER-LEGO AG, Baar, Switzerland
Filed Sep. 14, 1995, Ser. No. 43,982
Term of patent 14 years
U.S. Cl. D21—108



372,505
TOY BUILDING ELEMENT
Eileen Clark, Copenhagen, Denmark, assignor to INTER-LEGO AG, Baar, Switzerland
Filed Sep. 14, 1995, Ser. No. 43,990
Term of patent 14 years
U.S. Cl. D21—108



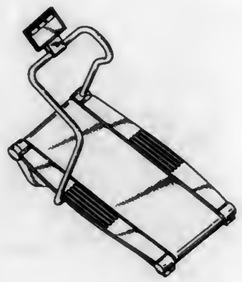
372,506
WATER MACHINE GUN
Moriya Kino, Yokohama, Japan, assignor to Royal Co., Ltd., Japan
Filed Jan. 25, 1995, Ser. No. 34,144
Claims priority, application Japan, Aug. 2, 1994, 6-23477
Term of patent 14 years
U.S. Cl. D21—147



372,507
SIT-UP EXERCISER
Taan K. Chin, 7th Fl., No. 227, Sec. 3, Roosevelt Rd., Taipei, Taiwan
Filed May 26, 1995, Ser. No. 39,807
Term of patent 14 years
U.S. Cl. D21—191



372,508
EXERCISE TREADMILL
William E. Clem, Bozeman, Mont., assignor to Tunturi, Inc., Redmond, Wash.
Filed Nov. 7, 1994, Ser. No. 30,746
Term of patent 14 years
U.S. Cl. D21—192



372,510
DIAMONDBACK RATTLESNAKE SKIN BASEBALL
Kenneth M. Stevens, Peoria, Ariz., assignor to Michael P. Chamberlin, Tempe, and Ernest E. Zaik, Chandler, both of Ariz.
Filed Mar. 27, 1995, Ser. No. 36,754
Term of patent 14 years
U.S. Cl. D21—204



372,511
TENNIS RACKET
Auerlio Bernardino, Plaza San Martin 957-Of. 301, Lima 1, Peru
Filed May 25, 1993, Ser. No. 922
Term of patent 14 years
U.S. Cl. D21—212



372,509
PHYSICAL EXERCISER
Lien-Chuan Yang, 11F-1, No. 149, Sec. 3, Roosevelt Rd., Taipei, Taiwan
Filed Feb. 16, 1995, Ser. No. 34,974
Term of patent 14 years
U.S. Cl. D21—195



372,512
GOLD CLUB HEAD
Samuel P. Simmons, 12400 Loma Rica Dr., Grass Valley, Calif. 95945
Filed Sep. 19, 1994, Ser. No. 28,574
Term of patent 14 years
U.S. Cl. D21—214



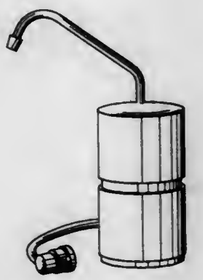
372,514
LINE ROLLER FOR A SPINNING FISHING REEL
Kyoichi Kaneko, and Eiji Shinohara, both of Higashikurume, Japan, assignors to Daiwa Seiko, Inc., Higashikurume, Japan
Filed Sep. 27, 1994, Ser. No. 29,010
Claims priority, application Japan, Jun. 15, 1994, 6-17598; Jul. 22, 1994, 6-22187
Term of patent 14 years
U.S. Cl. D22—137



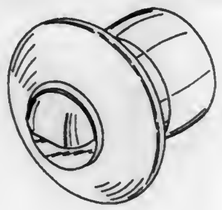
372,513
TOP PORTION OF A YELLOW JACKET CONTROL TRAP
Rodney G. Schneidmiller, Veradale, Wash., assignor to Sterling International, Inc., Veradale, Wash.
Filed Jan. 30, 1995, Ser. No. 34,227
Term of patent 14 years
U.S. Cl. D22—122



372,515
WATER PURIFICATION UNIT
John H. Douglas, Clearwater, Fla., assignor to Paragon Water Systems, Clearwater, Fla.
Filed Feb. 8, 1995, Ser. No. 34,585
Term of patent 14 years
U.S. Cl. D23—209



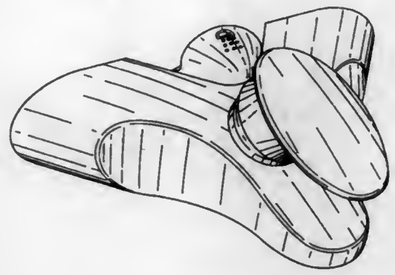
372,516
NOZZLE FOR SWIMMING POOLS OR SPAS
Craig A. Nimmo, Molendinar, Australia, assignor to Paramount Lesure Products Pty. Ltd., Molendinar, Australia
Filed Apr. 3, 1995, Ser. No. 37,386
Term of patent 14 years
U.S. Cl. D23—213



372,517
SPRAY GUN
Irmgard Farnsteiner, Tenao, Monaco, assignor to S.I.C.M.O. Societe Industrielle & Commerciale de Material & D'Outillage, Monaco
Filed May 26, 1995, Ser. No. 39,356
Claims priority, application France, Nov. 28, 1994, 946588
Term of patent 14 years
U.S. Cl. D23—223



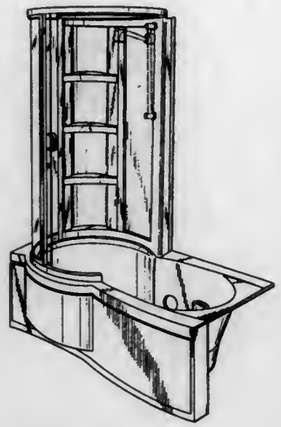
372,518
BATH FAUCET
Adolf Gottwald, Iserlohn, Germany, assignor to Friedrich Grohe Aktiengesellschaft, Hemer, Germany
Filed Aug. 25, 1995, Ser. No. 43,363
Claims priority, application Germany, Feb. 27, 1995, M9501629.5
Term of patent 14 years
U.S. Cl. D23—238



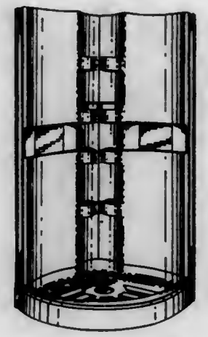
372,519
DRAIN COVER
Sherry L. Jones, London, Ohio, assignor to American Standard Inc., Piscataway, N.J.
Filed Apr. 27, 1995, Ser. No. 38,076
Term of patent 14 years
U.S. Cl. D23—261



372,520
COMBINED WHIRLPOOL BATHTUB AND SHOWER STALL
Roy A. Jacuzzi, Orinda, and Ralph D'Innocente, Benecia, both of Calif., assignors to Jacuzzi Inc., Walnut Creek, Calif.
Division of Ser. No. 26,700, Aug. 4, 1994. This application Aug. 17, 1995, Ser. No. 42,801
Term of patent 14 years
U.S. Cl. D23—275



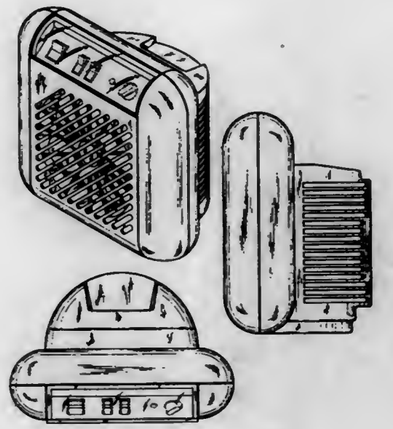
372,521
SHOWER STALL
Jean-Marie Eeckhoudt, Beauce, Canada, assignor to Maax Inc., Beauce, Canada
Filed Jul. 26, 1995, Ser. No. 41,896
Term of patent 14 years
U.S. Cl. D23—283



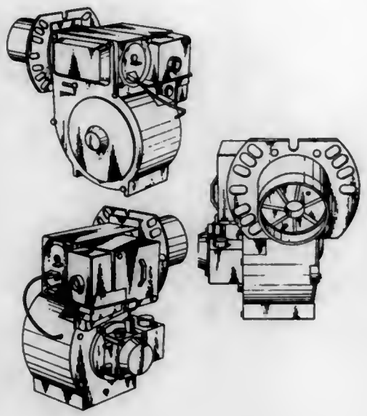
372,522
WALL MOUNTABLE SHOWER FIXTURE
Thomas A. Bonnell, and Robert C. Giese, both of Sheboygan, Wis., assignors to Kohler Co., Kohler, Wis.
Filed Jan. 25, 1995, Ser. No. 33,990
Term of patent 14 years
U.S. Cl. D23—304



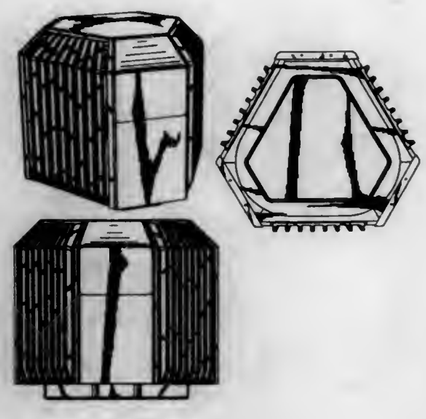
372,523
ELECTRIC FAN HEATER
Leroy F. Radtke, Jr., Lake Zurich, Ill., assignor to Circulair, Inc., Niles, Ill.
Filed Jul. 20, 1993, Ser. No. 10,858
Term of patent 14 years
U.S. Cl. D23—328



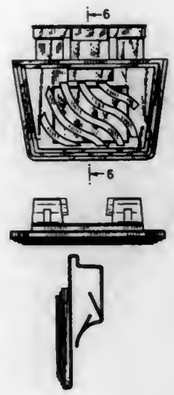
372,524
BURNER
Edoardo Tonino, S. Pietro Di Legnago (VR), Italy, assignor to Riello Bruciatori Legnago Spa, Legnago, Italy
Filed Oct. 1, 1992, Ser. No. 87
Term of patent 14 years
U.S. Cl. D23—342



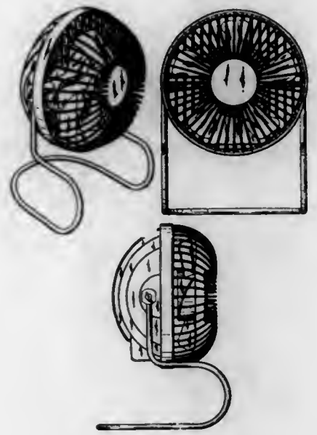
372,525
AIR CONDITIONING UNIT
Yvon Turcotte, Boucherville, Canada, assignor to Turcotte Inc., Longueuil, Canada
Filed Dec. 14, 1993, Ser. No. 16,352
Term of patent 14 years
U.S. Cl. D23—351



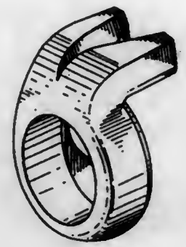
372,526
CONTAINER FOR EVAPORABLE MATERIAL
Shaun P. Rymer, Hull, England, assignor to Reckitt & Colman Products Limited, London, England
Filed Nov. 6, 1995, Ser. No. 46,040
Claims priority, application United Kingdom, May 5, 1995, 2047279
Term of patent 14 years
U.S. Cl. D23—366



372,527
SMALL ELECTRIC FAN
Leroy F. Radtke, 23888 Sunset Dr., Lake Zurich, Ill. 60047
Filed Jun. 8, 1995, Ser. No. 39,759
Term of patent 14 years
U.S. Cl. D23—382



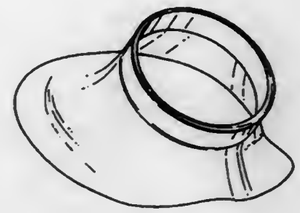
372,528
NOSE BLOCKER
Francis X. Kay, The Old School House, Church Hill, Akeley, Buckinghamshire MK18 5HB, United Kingdom
Filed Dec. 23, 1994, Ser. No. 33,221
Claims priority, application United Kingdom, Jun. 28, 1994, 2039995
Term of patent 14 years
U.S. Cl. D24—106



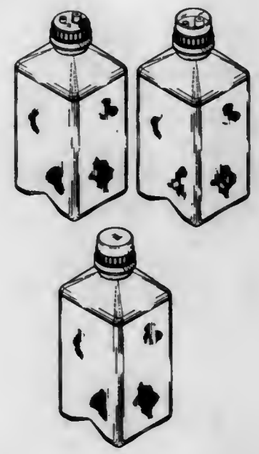
372,529
PORTABLE OXYGEN DISPENSER
Scott Remes, Burnsville, Minn., assignor to Minnesota Valley Engineering, Inc., New Prague, Minn.
Filed Jun. 30, 1995, Ser. No. 40,989
Term of patent 14 years
U.S. Cl. D24—110



372,530
RESPIRATORY FACE MASK
Jan Karlsson, Hjärup, and Carin Widerström, Höllviken, both of, Sweden, assignors to AB Astra, Sodertalje, Sweden
Filed Mar. 25, 1994, Ser. No. 28,491
Claims priority, application Sweden, Sep. 27, 1993, 93-2145
Term of patent 14 years
U.S. Cl. D24—110.4



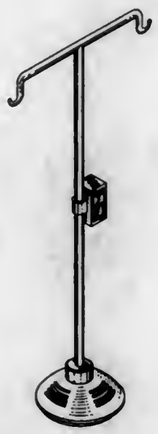
372,531
COMBINED BOTTLE AND CAP
Richard P. MacAuley, Westerville; Patrick E. McCallister, Columbus, both of Ohio; Jay A. Smithberger, Evanston, Ill.; Lewis H. Sita, Worthington, and Elwood L. Stokesbury, Westerville, both of Ohio, assignors to Abbott Laboratories, Abbott Park, Ill.
Filed Jul. 20, 1994, Ser. No. 26,132
The portion of the term of this patent subsequent to Jul. 23, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—121



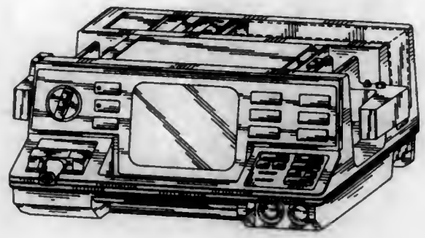
372,532
DIAPER FASTENING TAB CLOSURE
Steven J. Rossini, Hugo, and Roland R. Midgley, Minneapolis, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Feb. 11, 1993, Ser. No. 4,709
Term of patent 14 years
U.S. Cl. D24—126



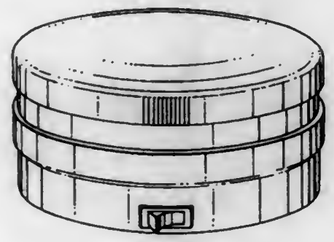
372,533
MOBILIZED CONTROL IV STAND
Judy G. Davis, 550 Water Works Rd., Bremen, Ga. 30110
Filed Apr. 28, 1995, Ser. No. 38,171
Term of patent 14 years
U.S. Cl. D24—128



372,534
DEFIBRILLATOR
Jonathan N. Andrews, Monmouth; Stephen V. Cooper, Amity; Gary N. Shepard, Salem; James D. Bledsoe, McMinnville; Wendy Blumberg-Dominguez, Tigard; Carl E. Benvegar, McMinnville, and David J. Gembala, Tualitin, all of Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed May 16, 1995, Ser. No. 38,919
Term of patent 14 years
U.S. Cl. D24—168



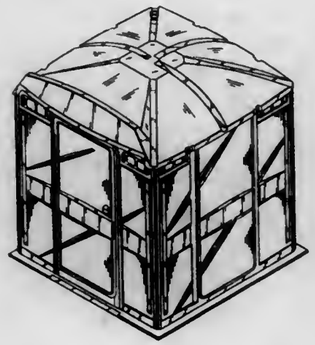
372,535
DENTURE CLEANER
Domenico DiClanna, Richmond, and Gennaro S. Avollo, Willowdale, both of, Canada, assignors to Alldente International Inc., Toronto, Canada
Filed Oct. 24, 1995, Ser. No. 45,590
Term of patent 14 years
U.S. Cl. D24—176



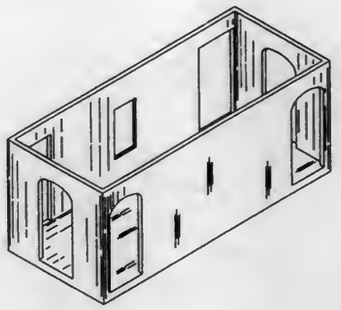
372,536
KNEE JOINT BRACE
Joachim Grifka, Bochum, Germany, assignor to Otto Bock Orthopaedische Industrie Besitz-und Verwaltungs-Kommanditgesellischaft, Duderstadt, Germany
Filed Nov. 28, 1994, Ser. No. 31,580
Claims priority, application Germany, May 28, 1994, M9404236.5
Term of patent 14 years
U.S. Cl. D24—190



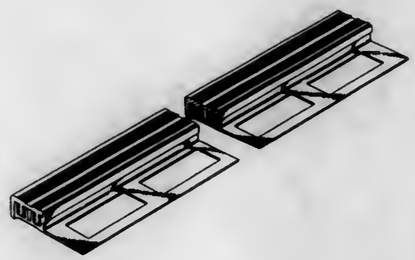
372,537
FACILITY FOR PHYSICALLY-CHALLENGED INDIVIDUALS
Douglas E. Loebertmann, Shakopee, Minn., assignor to Satellite Industries, Inc., Minneapolis, Minn.
Filed Apr. 4, 1994, Ser. No. 20,859
Term of patent 14 years
U.S. Cl. D25—16



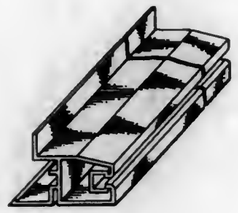
372,538
SIX DOORWAY MODULAR HOUSING UNIT
Ernest J. Del Monte, 46 Harwood La., East Rochester, N.Y. 14445
Filed Jan. 4, 1995, Ser. No. 33,069
Term of patent 14 years
U.S. Cl. D25—35



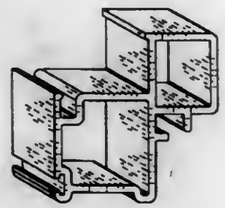
372,539
EDGING STRIP FOR TILED STEPS
Alan J. E. Davies, Hednesford, England, assignor to McKechnie UK Limited, Walsall, England
Filed Dec. 21, 1994, Ser. No. 32,575
Claims priority, application United Kingdom, Jun. 30, 1994, 2040050
The portion of the term of this patent subsequent to Oct. 31, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D25—119



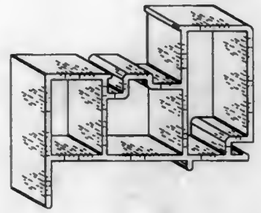
372,540
WINDOW FRAME SECTION
Reginald N. Pollard, Ancaster, Canada, assignor to Pollard Windows Inc., Burlington, Canada
Filed May 19, 1995, Ser. No. 39,074
Term of patent 14 years
U.S. Cl. D25—124



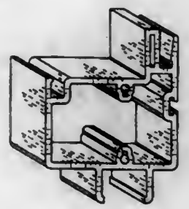
372,541
WINDOW COMPONENT EXTRUSION
Lorane C. Goss, Jr., Slippery Rock, Pa., assignor to Mikron Industries, Kent, Wash.
Filed May 31, 1995, Ser. No. 39,607
Term of patent 14 years
U.S. Cl. D25—124



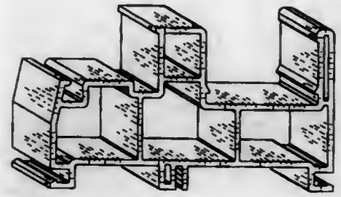
372,542
WINDOW COMPONENT EXTRUSION
Lorane C. Goss, Jr., Slippery Rock, Wash., assignor to Mikron Industries, Kent, Wash.
Filed May 31, 1995, Ser. No. 39,609
Term of patent 14 years
U.S. Cl. D25—124



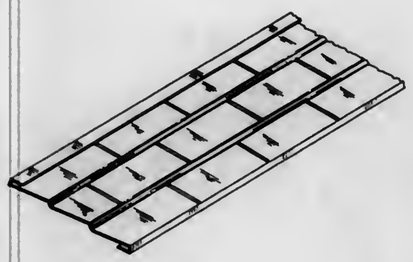
372,543
WINDOW COMPONENT EXTRUSION
Teresa A. Oliver, Kent, Wash., assignor to Mikron Industries, Kent, Wash.
Filed May 31, 1995, Ser. No. 39,612
Term of patent 14 years
U.S. Cl. D25—124



372,544
WINDOW COMPONENT EXTRUSION
Jeffrey R. Franson, Kent, Wash., assignor to Mikron Industries, Kent, Wash.
Filed May 31, 1995, Ser. No. 39,615
Term of patent 14 years
U.S. Cl. D25—124



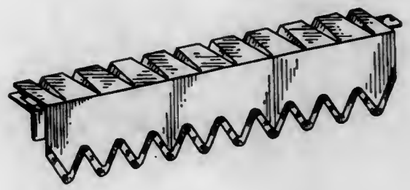
372,545
METAL ROOF PANEL OF INDETERMINATE LENGTH
Robert E. Schultz, Hatfield, Pa., assignor to Englert/Rollformer, Inc., Willow Grove, Pa.
Filed Aug. 2, 1995, Ser. No. 42,170
Term of patent 14 years
U.S. Cl. D25—138



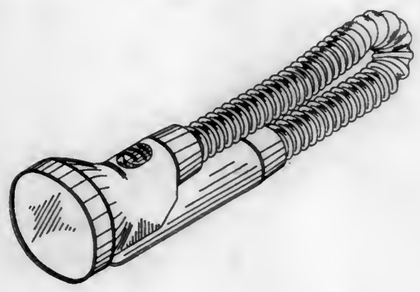
372,546
PREHUNG GAUGED COVE BASE
Lee J. Pelosi, and Frank Pelosi, Jr., both of 625 E. Chapel Ave., Cherry Hill, N.J. 08034
Filed Nov. 12, 1992, Ser. No. 1,357
Term of patent 14 years
U.S. Cl. D25—164



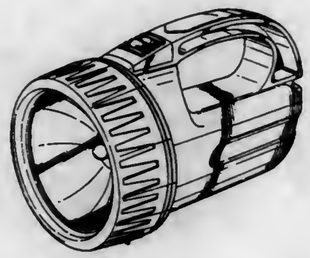
372,547
PLASTIC LANDSCAPING EDGE
Hans E. Sjödin, P.O. Box 61, Örnsköldsvik, Sweden
Filed Jun. 5, 1995, Ser. No. 39,820
Term of patent 14 years
U.S. Cl. D25—164



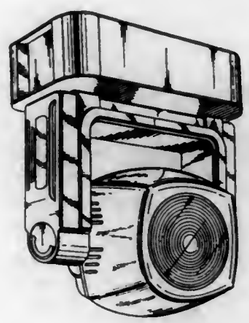
372,548
FLASHLIGHT
Richard J. Carbone, Southbury, Conn., assignor to Black & Decker Inc., Newark, Del.
Filed May 22, 1995, Ser. No. 39,176
Term of patent 14 years
U.S. Cl. D26—43



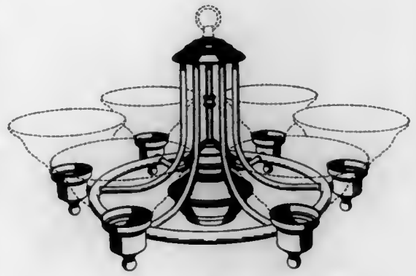
372,549
LANTERN
Kai B. Lo, Kowloon, Hong Kong, assignor to Topsa Limited, Hong Kong, Hong Kong
Filed Aug. 31, 1995, Ser. No. 43,319
Term of patent 14 years
U.S. Cl. D26—48



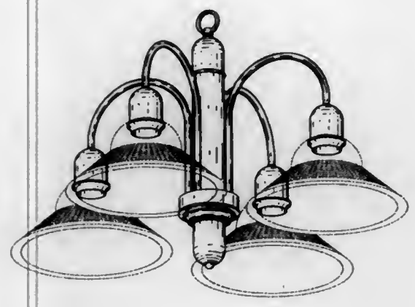
372,550
AUTOMATED COLOR MIXING WASH LUMINAIRE
Mark A. Stultz, Austin, Tex., assignor to High End Systems, Inc., Austin, Tex.
Filed Nov. 7, 1995, Ser. No. 46,135
Term of patent 14 years
U.S. Cl. D26—63



372,551
CHANDELIER
Patrick S. Dolan, 1901 NW. Upshur St., Portland, Oreg. 97209
Filed Jan. 4, 1995, Ser. No. 33,060
Term of patent 14 years
U.S. Cl. D26—81



372,552
CHANDELIER
David H. Porter, Chagrin Falls, Ohio, assignor to The L.D. Kichler Co., Cleveland, Ohio
Filed May 24, 1995, Ser. No. 39,334
Term of patent 14 years
U.S. Cl. D26—81



372,553
CHANDELIER
Patrick S. Dolan, 1901 NW. Upshur St., Portland, Oreg. 97209
Filed Apr. 25, 1995, Ser. No. 37,997
Term of patent 14 years
U.S. Cl. D26—84



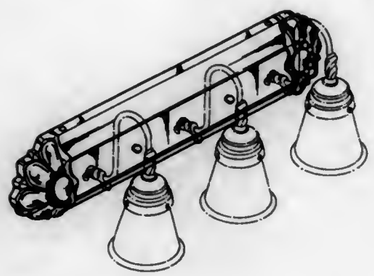
372,554
CHANDELIER
Richard Hammar, Mentor, Ohio, assignor to The L.D. Kichler Co., Cleveland, Ohio
Filed Jun. 19, 1995, Ser. No. 40,450
Term of patent 14 years
U.S. Cl. D26—84



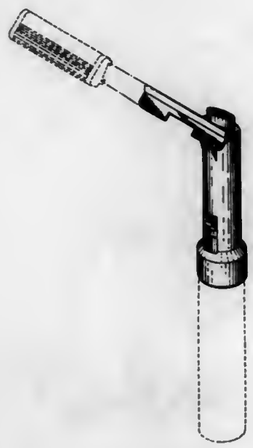
372,555
GLASS SHADE
King B. Lin, No. 116, Gong-Yih Rd., Shan-Jia Li, Jwu-Nan Jenn, Miau-Li Hsien, Taiwan
Filed Nov. 29, 1994, Ser. No. 31,478
Term of patent 14 years
U.S. Cl. D26—133



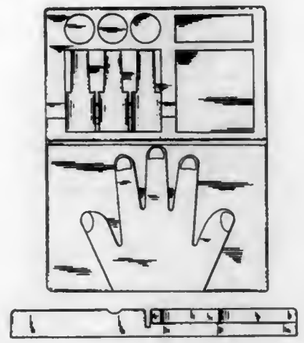
372,556
WALL FIXTURE MOUNTING BASE
Ying-Jue Lee, No. 3, Lane 1, Szu Wei Road, Wuku Hsiang, Taipei Hsien, Taiwan
Filed Jul. 17, 1995, Ser. No. 41,484
Term of patent 14 years
U.S. Cl. D26—142



372,557
COMBINATION RAZOR BODY AND SHAVING CREAM DISPENSER
John Mitchell, Darien, Ill., assignor to Venture Innovations, Inc., Westmont, Ill.
Filed Jul. 13, 1995, Ser. No. 41,423
Term of patent 14 years
U.S. Cl. D28—47



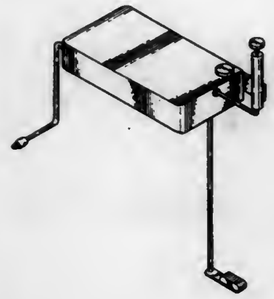
372,558
MANICURE BOARD
Irwin Schonhorn, 5 Ginny Dr., Woodcliff Lake, N.J. 07675
Filed Apr. 5, 1994, Ser. No. 20,930
Term of patent 14 years
U.S. Cl. D28—61



372,559
HELMET FOR BICYCLIST
Takeshi Murakami, Osaka, Japan, assignor to O.G.K. Hanbai, Osaka, Japan
Filed Mar. 3, 1995, Ser. No. 35,604
Claims priority, application Japan, Jan. 17, 1995, 7-750
Term of patent 14 years
U.S. Cl. D27—102



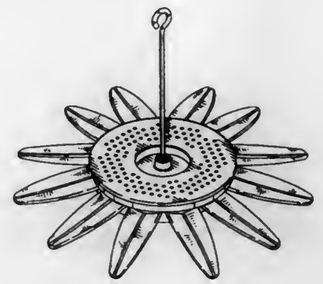
372,560
FIRE EXTINGUISHER FOR USE IN A BARBECUE GRILL
Matthew R. Matigian, 1143 N. Kenilworth, Oak Park, Ill. 60302
Filed May 25, 1995, Ser. No. 39,236
Term of patent 14 years
U.S. Cl. D29—125



372,561
COVER OF BIRD-CAGE
Yen-Hsun Lai, No. 16-5, Tayu St., Shanchung City, Taiwan
Filed May 4, 1994, Ser. No. 22,410
Term of patent 14 years
U.S. Cl. D30—119



372,562
BUTTERFLY FEEDER
Arthur C. Brown, P.O. Box 277, West Kingston, R.I. 02892
Filed Oct. 18, 1994, Ser. No. 29,851
Term of patent 14 years
U.S. Cl. D30—121



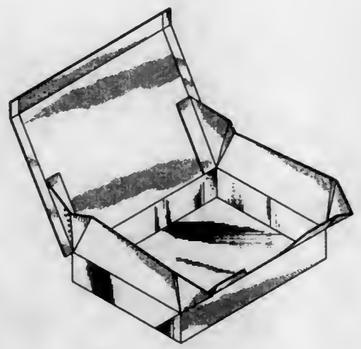
372,563
PROTECTIVE DOG GARMENT
Howard J. Waugh, Jr., P.O. Box 58, Port Mansfield, Tex. 78598
Filed May 26, 1995, Ser. No. 39,480
Term of patent 14 years
U.S. Cl. D30—145



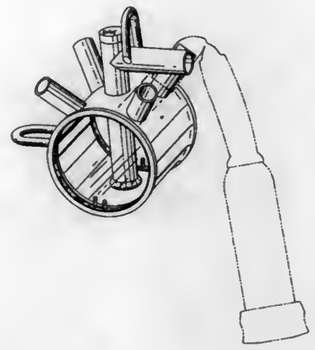
372,564
PET POUCH
Robert J. Casey, 8805 Crosswicks Ct., Gaithersburg, Md. 20879
Filed Aug. 8, 1995, Ser. No. 42,355
Term of patent 14 years
U.S. Cl. D30—152



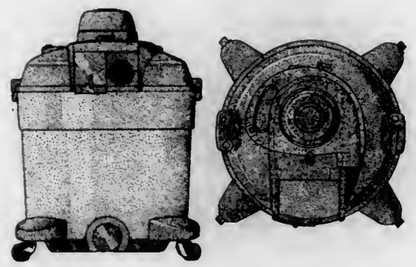
372,565
DISPOSABLE CAT LITTER BOX
David A. Rice, P.O. Box 1270, Candler, N.C. 28715
Filed Jun. 21, 1995, Ser. No. 40,554
Term of patent 14 years
U.S. Cl. D30—161



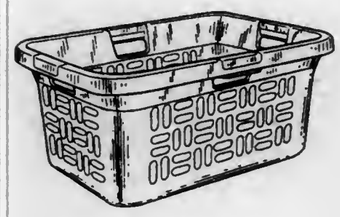
372,566
MILKING CLAW
Mofazzal Chowdhury, Lenexa, Kans., assignor to Alfa Laval Agri, Inc., Kansas City, Mo.
Filed Jun. 1, 1994, Ser. No. 23,773
Term of patent 14 years
U.S. Cl. D30—199



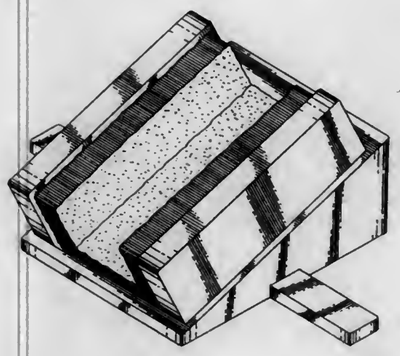
372,567
COMBINED WET AND DRY VACUUM CLEANER
David W. Moine, North Canton; Darwin T. McKnight, Louisville; Ronald J. Stephens, Rittman, and Richard A. Wareham, North Canton, all of Ohio, assignors to The Hoover Company, North Canton, Ohio
Division of Ser. No. 8,532, May 19, 1993, Pat. No. Des. 361,179. This application Jul. 11, 1995, Ser. No. 41,288
Term of patent 14 years
U.S. Cl. D32—23



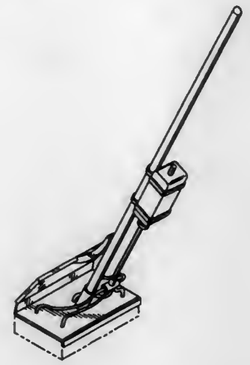
372,568
LAUNDRY BASKET
Hangwind F. Lippisch, Fitchburg, Mass., assignor to Corporation Sterilite, Townsend,, Mass.
Filed Jul. 20, 1994, Ser. No. 26,149
Term of patent 14 years
U.S. Cl. D32—37



372,569
SHOE CLEANER
Jerry D. Rook, 1004 Village Rd. Apt. B, Mt. Pleasant, Tex. 75455
Filed Aug. 22, 1995, Ser. No. 42,978
Term of patent 14 years
U.S. Cl. D32—47



372,570
GRAVITATIONALLY-FED CLEANING MOP FOR FLOORS, AND WALLS
Gregory P. Dokos, 243 E.S. Temple ∩9, Salt Lake City, Utah 84111
Filed Dec. 22, 1994, Ser. No. 32,621
Term of patent 14 years
U.S. Cl. D32—50



JUL
1189
AG
6
1996
UMI

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 6th DAY OF AUGUST, 1996

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A.B. Dick Company: *See*—
Elwakil, Hamdy A., 5,543,219, Cl. 428-402.240.

A.C. Hoffman Engineering, Inc.: *See*—
Jenkins, Thomas E., 5,542,845, Cl. 433-116.000.

A/C Enterprises, Inc.: *See*—
Carlin, T. Christopher, 5,544,028, Cl. 362-249.000.

AAI Corporation: *See*—
McNelis, Niall B., 5,544,129, Cl. 367-127.000.

AB Volvo: *See*—
Karlsson, Jan; and Dahlgren, Jan, 5,542,386, Cl. 123-184.570.

ABB Management AG: *See*—
Berger, Conrad; Grüning, Horst; Stemmler, Herbert; and Werninger, Johannes, 5,544,035, Cl. 363-132.000.

ABB Power T&D Company Inc.: *See*—
Hemminger, Rodney C.; and Munday, Mark L., 5,544,089, Cl. 364-492.000.

Abbas, Ghani, to GPT Limited. Method for the digital transmission of data. 5,544,172, Cl. 370-102.000.

Abbate, Richard; and Parente, Richard, to United States Surgical Corporation. Needle transporting apparatus. 5,542,523, Cl. 198-384.000.

Abbott Laboratories: *See*—
Alcock, Alan J., 5,542,444, Cl. 137-1.000.
Filan, Finbarr J.; Maher, Pascal J.; and Shaw, Christian, 5,543,042, Cl. 210-198.100.
Mattingly, Phillip G.; and Bennett, Larry G., 5,543,524, Cl. 546-104.000.
Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Morton, Howard E.; Reno, Daniel S.; Sham, Hing L.; Sowin, Thomas J.; and Tien, Jien-Heh J., 5,543,549, Cl. 558-405.000.
Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Kerdesky, Francis A.; Langridge, Denton C.; Leanna, M. Robert; Lijewski, Linda M.; Melcher, Laura; Morton, Howard E.; Norbeck, Daniel W.; Reno, Daniel S.; Robbins, Timothy A.; Sham, Hing L.; Sowin, Thomas J.; Tien, Jien-heh J.; Zhao, Chen; and Scarpetti, David, 5,543,551, Cl. 560-24.000.
Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Leanna, M. Robert; Lijewski, Linda M.; Melcher, Laura; Morton, Howard E.; Reno, Daniel S.; Sham, Hing L.; and Sowin, Thomas J., 5,543,552, Cl. 560-24.000.

Abco, Inc.: *See*—
Wilson, Richard C.; and Culpepper, Patrick M., 5,542,222, Cl. 52-287.100.

Abdullah, Khalid M.: *See*—
Mellors, Alan; Lo, Reggie Y. C.; and Abdullah, Khalid M., 5,543,312, Cl. 435-220.000.

Abe, Chikara; Ohashi, Junji; and Hirai, Kiyomiki, to Ajinomoto Co., Inc. Epoxy-resin composition containing titanium and/or zirconium alkoxide and latent hardener. 5,543,486, Cl. 528-92.000.

Abe, Hideaki: *See*—
Dosaka, Katsumi; Kumanoya, Masaki; Hayano, Kouji; Yamazaki, Akira; Iwamoto, Hisashi; Abe, Hideaki; Konishi, Yasuhiro; Himukashi, Katsumitsu; Ishizuka, Yasuhiro; and Saiki, Tsukasa, 5,544,121, Cl. 365-222.000.

Abe, Hisato: *See*—
Shimuta, Masanori; Takahashi, Toru; Abe, Hisato; Takahashi, Kenichi; Kurata, Akira; and Aoki, Osamu, 5,543,482, Cl. 526-289.000.

Abe, Masahiro; Sakou, Hiroshi; Sagawa, Hirohiko; Ichikawa, Akira; Inoue, Kiyoshi; Arai, Kiyoshi; Shimura, Takanori; and Toda, Yuji, to Hitachi, Ltd. Sign language learning system and method. 5,544,050, Cl. 364-419.130.

Abe, Shigeru: *See*—
Kumagai, Kajuaki; Takiguchi, Hiroshi; and Abe, Shigeru, 5,543,995, Cl. 361-65.000.

Abe, Tsutomu: *See*—
Muraoka, Tomoki; Abe, Tsutomu; Kobayashi, Kazuhiro; and Hosoda, Kenichi, 5,542,991, Cl. 148-330.000.

Abe, Yasuhiro: *See*—
Watanabe, Kiyoshi; Abe, Yasuhiro; Sakamoto, Masaho; Saitou, Takeshi; Ishii, Takayoshi; Akimoto, Yukio; Kashiki, Hironori; and Kato, Masao, 5,543,607, Cl. 235-383.000.

Abe, Yoshihiro: *See*—
Koizumi, Satoru; Chono, Susumu; Abe, Yoshihiro; and Matsuzaki, Kazuki, 5,544,147, Cl. 369-191.000.

Abel, Clayton J.; Watson, Greg; Higgins, Daniel R.; and Hill, Robert B., to Anthony-Ross Company. Apparatus for automatically cleaning smelt spouts of a chemical recovery furnace. 5,542,650, Cl. 266-135.000.

Abend, Robert J., to United States of America, Air Force. Programmable boundary scan and input output parameter device for testing integrated circuits. 5,544,174, Cl. 371-22.300.

Abitibi-Price, Inc.: *See*—
Whiting, Philip; and Mehta, Anthony H., 5,543,057, Cl. 210-721.000.

Ablay, Sewim F., to Motorola, Inc. Duplex interconnect/dispatch trunked radio. 5,544,159, Cl. 370-31.000.

Abraham, David W.; and Wong, Danny C. Y., to International Business Machines Corporation. Through-the-lens confocal height measurement. 5,543,918, Cl. 356-376.000.

Abt, Norman E.; Moazzami, Reza; and Nissan-Cohen, Yoav, to National Semiconductor Corporation. High density electrical ceramic oxide capacitor. 5,543,644, Cl. 257-295.000.

ABU AB: *See*—
Karlsson, Jarding, 5,542,619, Cl. 242-289.000.

AC&R Components, Inc.: *See*—
Westermeyer, Gary W., 5,542,499, Cl. 184-103.200.

Accom, Inc.,: *See*—
Schmitz, Patrick L.; and Jauhal, Shern, 5,544,318, Cl. 395-200.040.

Achtarides, Theodore A.: *See*—
Jurisich, Peter L.; and Achtarides, Theodore A., 5,542,365, Cl. 114-65.00R.

Acker, Duane R.: *See*—
Weimer, Ralph; and Acker, Duane R., 5,542,440, Cl. 134-65.000.

Actel Corporation: *See*—
Yen, Yeouchung; and Chen, Shih-Oh, 5,543,656, Cl. 257-530.000.

Acton, John D.; Grant, Lawrence C.; Hardy, Jack M., Jr.; Kent, Steven P.; and Schelong, Steven E., to Encore Computer U.S., Inc. Fiber optic memory coupling system with converter transmitting and receiving bus data in parallel fashion and diagnostic data in serial fashion. 5,544,319, Cl. 395-200.070.

Acushnet Company: *See*—
Chou, Arthur C. P., 5,542,666, Cl. 473-314.000.

Acuson Corporation: *See*—
Marshall, John D.; and Mullen, Donald R., 5,542,425, Cl. 128-660.010.

Adachi, Kenro: *See*—
Itoh, Kenichiro; and Adachi, Kenro, 5,542,514, Cl. 192-40.000.

Adachi, Masakazu: *See*—
Nakai, Satoru; Aihara, Koutoku; Mori, Hitomi; Tominaga, Michiaki; Adachi, Masakazu; Ichikawa, Hiroyuki; Akamatsu, Seiji; and Saito, Fumio, 5,543,412, Cl. 514-255.000.

Adams, George R. Temperature and impact sensitive safety valve. 5,542,445, Cl. 137-68.120.

Adams, Gerald E.: *See*—
Beylin, Vladimir G.; Sercel, Anthony D.; Showalter, Howard D. H.; Adams, Gerald E.; Fielden, Edward M.; Naylor, Matthew A.; and Stratford, Ian J., 5,543,527, Cl. 548-110.000.

Adams, Scott D.: *See*—
Hortin, Gregory G.; Fisher, Michael H.; Coleman, Joseph L.; and Adams, Scott D., 5,542,264, Cl. 62-338.000.

Adams, Steven P.; Lindmark, Richard J.; Miyano, Masateru; and Rico, Joseph G., to G. D. Searle & Co. Method of inhibiting platelet aggregation using phenyl amidine thio derivatives. 5,543,425, Cl. 514-357.000.

Adams, Terry; Ambrosio, Neil J.; Bratton, William E.; Forsythe, William M.; Hatton, Bruce E.; Kinder, Larry L.; and Swat, William A., to Progressive Games, Inc. Smokeless ashtray system. 5,542,438, Cl. 131-238.000.

Adamy, Steven T.; and Thomas, Barbara J., to Colgate-Palmolive Company. Microemulsion cleaning composition. 5,543,073, Cl. 510-417.000.

Adaptec, Inc.: *See*—
Hill, John P., 5,544,107, Cl. 365-201.000.

ADDCO Manufacturing, Inc.: *See*—
Luoma, Eugene H.; and Blesener, James L., 5,542,203, Cl. 40-610.000.

Adobe Systems, Inc.: *See*—
Gentile, Ronald S., 5,544,290, Cl. 395-115.000.
Gilley, Glenn G.; and Tebbs, Brice W., 5,544,291, Cl. 395-123.000.

Adrian, Willy; Bäthge, Frank; Borchers, Peter; Pietsch, Kurt; Wallbaum, Knuth; and Wente, Gerald, to Otis Elevator Company. Balustrade assembly and method for assembling a balustrade assembly. 5,542,522, Cl. 198-337.000.

Advanced Cardiovascular Systems, Inc.: *See*—
Orth, Jean C., 5,542,925, Cl. 604-102.000.

Aerospace Corporation, The: *See*—
Stupian, Gary W.; and Leung, Martin S., 5,543,364, Cl. 437-210.000.

Aerospatiale Societe Nationale Industrielle: *See*—
Monget, Francois; and Cahuzac, Georges, 5,543,005, Cl. 156-93.000.

Agence Spatiale Europeene: *See*—
Bogus, Klaus P. M., 5,542,988, Cl. 136-244.000.

Agfa-Gevaert AG: *See*—
Stumpe, Joachim; Shibaev, Valery; Kostromin, Sergei; Ivanov, Sergei; Fischer, Thomas; Läsker, Lutz; Ruhmann, Ralf; and Claussen, Uwe, 5,543,267, Cl. 430-290.000.
Weber, Beate; Hagemann, Jörg; Helling, Günter; and Geiger, Markus, 5,543,280, Cl. 430-503.000.

AGFA-Gevaert, N.V.: *See*—
Verbeeck, Ann, 5,543,284, Cl. 430-569.000.
Vermeersch, Joan; Hauquier, Guido; and Kokkelenberg, Dirk, 5,543,261, Cl. 430-159.000.

Agora Enterprises, L.L.P.: *See*—
Culpea, James E., 5,542,799, Cl. 411-271.000.

Agouridas, Constantin; Bonnefoy, Alain; Chantot, Jean-François; Denis, Alexis; and Le Martret, Odile, to Roussel Uclaf. Erythromycin compounds. 5,543,400, Cl. 514-29.000.

Ahanin, Bahram: *See*—
McClintock, Cameron; Leong, William; Cliff, Richard G.; and Ahanin, Bahram, 5,543,732, Cl. 326-41.000.

Ahls, Hermann W.: *See*—
Meyer, Helmut J. W.; Ahls, Hermann W.; Blaseck, Klaus; and Schmitting, Udo, 5,542,521, Cl. 198-324.000.

Ai, Takeshi: *See*—
Nishitani, Katsuo; Hirota, Masaki; and Ai, Takeshi, 5,543,672, Cl. 310-77.000.

Aidlin, Samuel S.: *See*—
Aidlin, Stephen H.; Aidlin, Samuel S.; and Kincaid, Larry, 5,542,789, Cl. 406-88.000.

Aidlin, Stephen H.; Aidlin, Samuel S.; and Kincaid, Larry. Multi position bottle guide assembly. 5,542,789, Cl. 406-88.000.

Aihara, Koutoku: *See*—
Nakai, Satoru; Aihara, Koutoku; Mori, Hitomi; Tominaga, Michiaki; Adachi, Masakazu; Ichikawa, Hiroyuki; Akamatsu, Seiji; and Saito, Fumio, 5,543,412, Cl. 514-255.000.

Airguide Instrument Company: *See*—
Wiggerman, Ronald E.; Gates, Craig; Habbley, Dale L.; and Hollowed, Edward J., 5,544,076, Cl. 364-565.000.

Aisin AW Co., Ltd.: *See*—
Morimoto, Kyomi; and Yokoyama, Shoji, 5,544,061, Cl. 364-444.000.
Tsukamoto, Kazumasa; Hayabuchi, Masahiro; Nishida, Masaaki; Yamamoto, Yoshihisa; Kusafuka, Muneo; Mikami, Kazuhiro; Tsutsui, Hiroshi; and Iwata, Akihito, 5,542,887, Cl. 475-63.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Makino, Tetsuo; Furukawa, Hideki; Matsubara, Osamu; Sawaki, Atsushi; and Kawai, Shinji, 5,542,133, Cl. 4-420.400.
Takeda, Nobuhiko; and Kojima, Yasuhiro, 5,542,745, Cl. 297-378.120.

Ajinomoto Co., Inc.: *See*—
Abe, Chikara; Ohashi, Junji; and Hirai, Kiyomiki, 5,543,486, Cl. 528-92.000.
Ohura, Harutoshi; Yasaki, Akihiko; Kishimoto, Shinichi; and Naruse, Masayoshi, 5,543,554, Cl. 560-41.000.

Akagawa, Tomohiko: *See*—
Kamakura, Hikoichi; Tsutsui, Kiyoshi; Akagawa, Tomohiko; Sakai, Ikunori; Ichikawa, Shigeji; and Arai, Katsunori, 5,543,454, Cl. 524-451.000.

Akamatsu, Nobuyuki: *See*—
Yamasaki, Masahiro; Housai, Koichiro; Shirahase, Hiromi; Akamatsu, Nobuyuki; Tabuchi, Michiyuki; Hirata, Toshinari; and Miyazaki, Yoshifumi, 5,543,168, Cl. 426-557.000.

Akamatsu, Seiji: *See*—
Nakai, Satoru; Aihara, Koutoku; Mori, Hitomi; Tominaga, Michiaki; Adachi, Masakazu; Ichikawa, Hiroyuki; Akamatsu, Seiji; and Saito, Fumio, 5,543,412, Cl. 514-255.000.

Akami, Noboru, to Nikon Corporation. Printed circuit board. 5,544,015, Cl. 361-749.000.

Akao, Mutsuo; and Suzuki, Osamu, to Fuji Photo Film Co., Ltd. Molded article for photographic photosensitive material, molding method and package. 5,543,270, Cl. 430-347.000.

Akashi, Akira, to Canon Kabushiki Kaisha. Device for detecting line of sight. 5,543,887, Cl. 354-410.000.

Akazaki, Shushuke: *See*—
Hasegawa, Yusuke; Nishimura, Yoichi; Komoriya, Isao; and Akazaki, Shushuke, 5,542,404, Cl. 123-690.000.

Akemi, Hitoshi: *See*—
Shirai, Fumiya; Kuniya, Masayoshi; Mikura, Chiemi; Matsushita, Tomoko; Akemi, Hitoshi; and Yamamoto, Toshiyuki, 5,543,151, Cl. 424-448.000.

Åkerfeldt, Dan, to Radi Medical Systems. Device for sterile packaging of medical equipment. 5,542,427, Cl. 128-677.000.

AKG Akustische U. Kino-Geräte Gesellschaft m.b.H.: *See*—
Opitz, Martin, 5,544,249, Cl. 381-63.000.

Akimoto, Yukio: *See*—
Watanabe, Kiyoshi; Abe, Yasuhiro; Sakamoto, Masaho; Saitou, Takeshi; Ishii, Takayoshi; Akimoto, Yukio; Kashiki, Hironori; and Kato, Masao, 5,543,607, Cl. 235-383.000.

Akin, William R., Jr.; and Bui, Trinh C., to Quantum Corporation. Fault tolerant servo address mark for disk drive. 5,544,135, Cl. 369-32.000.

Akioka, Takashi: *See*—
Yokoyama, Yuji; Akioka, Takashi; Iwamura, Masahiro; Hiraishi, Atsushi; Kobayashi, Yutaka; Yamauchi, Tatsumi; Takahashi, Shigeru; Gotou, Nobuyuki; and Ide, Akira, 5,544,125, Cl. 365-230.060.

Akiyama, Yuji: *See*—
Kuronuma, Akira; Akiyama, Yuji; Murata, Takayuki; Fukui, Hiroshi; and Omo, Shinichi, 5,543,826, Cl. 347-23.000.

Akzo Nobel N.V.: *See*—
Bergfeld, Manfred J.; and Seifert, Jürgen, 5,543,511, Cl. 536-56.000.
Telschow, Jeffrey E., 5,543,544, Cl. 558-119.000.

AKZO Nobel NV: *See*—
Petitou, Maurice; and Van Boeckel, Constant A. A., 5,543,403, Cl. 514-54.000.

Alattar, Adnan M.: *See*—
Golin, Stuart J.; and Alattar, Adnan M., 5,544,239, Cl. 382-236.000.

Alba Conseil: *See*—
Alvarez De Toledo, Marc, 5,542,865, Cl. 441-64.000.

Albemarle Corporation: *See*—
Eisenberg, David C.; Pradhan, Milind M.; and Howie, Milham S., 5,543,537, Cl. 556-157.000.

Albertini, Jean B.; and Fedeli, Jean-Marc, to Commissariat A L'Energie Atomique. Magnetic writing head for magneto-optical recording with thick protective coating. 5,544,131, Cl. 369-13.000.

Albertson, Luther D.; Key, Walter R.; and Key, Mark B. Refrigerant evaporator over-pressure relief system including a fluid containment vessel. 5,542,261, Cl. 62-174.000.

Albrecht, Konrad: *See*—
Röchling, Hans; Kocur, Jean; and Albrecht, Konrad, 5,543,385, Cl. 504-127.000.

Albrecht, Thomas R., to International Business Machines Corporation. Disk drive with shock-resistant rotary actuator. 5,543,986, Cl. 360-105.000.

Albright, Alva Z. Water powered apparatus for cleaning aquatic bodies. 5,542,141, Cl. 15-1.700.

Alcatel Cable: *See*—
Carratt, Michel; and de Vecchis, Michel, 5,544,272, Cl. 385-128.000.

Alcatel CIT: *See*—
Perrillat-Amede, Denis; Pierrejean, Didier; and Reverdy, Francois, 5,542,825, Cl. 417-423.400.

Alcatel Converters: *See*—
Andrieu, Xavier; Rocher, Michel; Guillaume, Philippe; and Poignant, Philippe, 5,543,245, Cl. 429-90.000.

Alcatel N.V.: *See*—
Gödecker, Reinhold, 5,544,171, Cl. 370-95.300.
Pfeiffer, Thomas, 5,544,192, Cl. 372-69.000.
Weis, Bernd; Turban, Karl-Albert; Bezler, Monika; Schulz, Manfred; and Siegmund, Gerd, 5,544,226, Cl. 379-61.000.

Alcock, Alan J., to Abbott Laboratories. Valve and method of using. 5,542,444, Cl. 137-1.000.

Alcon Laboratories, Inc.: *See*—
Jinkerson, David L., 5,543,504, Cl. 534-856.000.

Aldous, Duane L., to NuSkin International, Inc. Sunscreen emulsions. 5,543,136, Cl. 424-59.000.

Aldrich Chemical Company, Inc.: *See*—
Brown, Herbert C., 5,543,569, Cl. 564-8.000.

Aleksandrovich, Tjurin V.; Ivanovich, Kuroles V.; Andreyevich, Lazorkin V.; and Mikhaylovich, Volodin A. Method of radial forging. 5,542,278, Cl. 72-371.000.

Alex, Patrick; Aubert, Yves; and Frey, Alain. Non-exuding thermoplastic elastomers. 5,543,489, Cl. 528-288.000.

Alfieri, James K.: *See*—
Jakubisin, John; and Alfieri, James K., 5,543,172, Cl. 427-212.000.

Alfred Teves GmbH & Co oHG: *See*—
Reuber, Gerhard; Menne, Hans G.; and Shafry, Gavriel, 5,542,772, Cl. 403-97.000.

Alko Group Ltd.: *See*—
Timonen, Maritta; and Rha, Chokyun, 5,543,162, Cl. 426-89.000.

Allardt, Clark E.: *See*—
Hagelberg, Allen C.; and Allardt, Clark E., 5,542,333, Cl. 89-1.810.

Allebach, Jan P.; Bouman, Charles A.; and Balasubramanian, Thyagarajan, to Eastman Kodak Company. Sequential product code quantization of digital color image. 5,544,284, Cl. 395-131.000.

Allegaert, Marnix; and Wostyn, Steven, to N.V. Bekaert S.A. Fence with mesh panels. 5,542,649, Cl. 256-54.000.

Allegrini, Pietro; Nodari, Nereo; Crisci, Luciana; and Malatesta, Vincenzo, to Great Lakes Chemical Italia S.r.l. Photochromic products and method for their preparation. 5,543,533, Cl. 549-389.000.

Allen-Bradley Company, Inc.: *See*—
Tao, Jinghan; and Merrison, John, 5,543,698, Cl. 318-611.000.

Allen, Gregory B., to Pace Window & Door Corp. Ventilation stop for a sliding window or door. 5,542,721, Cl. 292-194.000.

Allen, James I.: *See*—
Meyers, Brenda J.; Herritz, Donald W.; Johansen, Jean L.; Hudson, William B., Jr.; Bell, Randall P.; Prokop, Gary F.; Caruso, James F.; and Allen, James I., 5,542,921, Cl. 604-74.000.

Allen, Michael S.: *See*—
Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Morton, Howard E.; Reno, Daniel S.; Sham, Hing L.; Sowin, Thomas J.; and Tien, Jien-Heh J., 5,543,549, Cl. 558-405.000.
Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Kerdesky, Francis A.; Langridge, Denton C.; Leanna, M. Robert; Lijewski, Linda M.; Melcher, Laura; Morton, Howard E.; Norbeck, Daniel W.; Reno, Daniel S.; Robbins, Timothy A.; Sham, Hing L.; Sowin, Thomas J.; Tien, Jien-heh J.; Zhao, Chen; and Scarpetti, David, 5,543,551, Cl. 560-24.000.

Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Leanna, M. Robert; Lijewski, Linda M.; Melcher, Laura; Morton, Howard E.; Reno, Daniel S.; Sham, Hing L.; and Sowin, Thomas J., 5,543,552, Cl. 560-24.000.

Allen, Richard C.: *See*—
Surbey, David J.; Smith, James L.; Allen, Richard C.; and Witwer, Alan D., 5,542,840, Cl. 431-116.000.

Allen, Ronald; Bae, Peter S.; Tierney, Robert; and Fukui, Kenneth D., to Komag, Inc. Memory disk clamp and method. 5,542,685, Cl. 279-2.020.

Allen Telecom Group, Inc.: *See*—
Wey, Chia-Sam, 5,543,758, Cl. 333-203.000.

Allen, Timothy P.: *See*—
Bisset, Stephen; Miller, Robert J.; Allen, Timothy P.; and Steinbach, Günter, 5,543,588, Cl. 178-18.000.
Gillespie, David; Allen, Timothy P.; Miller, Robert J.; and Faggin, Federico, 5,543,590, Cl. 178-18.000.
Gillespie, David; Allen, Timothy P.; and Wolf, Ralph, 5,543,591, Cl. 178-18.000.

Allergan: *See*—
Vuligonda, Vidyasagar; Teng, Min; Beard, Richard L.; Johnson, Alan T.; Lin, Yuan; and Chandraratna, Roshantha A., 5,543,534, Cl. 549-421.000.

AlliedSignal Inc.: *See*—
Berwanger, Fred W., 5,542,504, Cl. 188-71.800.
Huggett, Colin E.; and Cleek, John I., 5,543,696, Cl. 318-590.000.
Lupton, Francis S.; Sheridan, William G.; and Surgi, Marion R., 5,543,052, Cl. 210-616.000.
Rabinkin, Anatol, 5,542,993, Cl. 148-528.000.
Rion, Robert B., 5,542,701, Cl. 280-735.000.

Allison, Johnny H.; Hammer, Kathleen M.; and Kaminski, David P., to Ford Motor Company. Battery thermal chamber. 5,542,489, Cl. 180-68.500.

Allison, Philip. Firefighter's ceiling cutting tool. 5,542,183, Cl. 30-276.000.

Altavela, Robert P.: *See*—
Herbert, William G.; Bischoping, Patricia; Altavela, Robert P.; Kotowicz, Lawrence; Schmitt, Peter J.; Jansen, Ronald E.; Lennon, John H.; and Grey, Henry G., 5,543,028, Cl. 205-70.000.

Altera Corporation: *See*—
Cliff, Richard G.; Reddy, Srinivas T.; Veenstra, Kerry; Papaliolios, Andreas; Sung, Chiakang; Terrill, Richard S.; Raman, Rina; and Bielby, Robert R. N., 5,543,730, Cl. 326-38.000.
McClintock, Cameron; Leong, William; Cliff, Richard G.; and Ahanin, Bahram, 5,543,732, Cl. 326-41.000.

Alterescu, Bruno: *See*—
Yanai, Moshe; Vishlitzky, Natan; Alterescu, Bruno; Castel, Daniel; and Shklarsky, Gadi, 5,544,347, Cl. 395-489.000.

Altmann, Uwe; and Grieshaber, Hermann, to Robert Bosch GmbH. Method controlling an internal combustion engine. 5,542,399, Cl. 123-563.000.

Altrieth, Frederick E., III, to Eastman Kodak Company. Reproduction apparatus having touch screen operator interface and auxiliary keyboard. 5,543,897, Cl. 355-209.000.

Alumina Ceramics Co. (ACI): *See*—
Talbert, Lloyd G.; and Brazil, Steven M., 5,543,368, Cl. 501-90.000.

Aluminum Company of America: *See*—
Horn, William E., Jr.; Balaba, Willy M.; and Parker, Anthony A., 5,543,173, Cl. 427-212.000.

Alvarez De Toledo, Marc, to Alba Conseil. Triple-material fin with composite blade. 5,542,865, Cl. 441-64.000.

Alvarez Tamargo, Francisco: *See*—
Sitges Menendez, Francisco J.; Sitges Menendez, Fernando; Alvarez Tamargo, Francisco; and Lefevre, Ives, 5,543,020, Cl. 204-233.000.

Alza Corporation: *See*—
Myers, Robert M.; and Landrau, Felix A., 5,543,098, Cl. 264-104.000.
Roorda, Wouter E.; Ehnow, Fred P.; Basso, Estela; Wang, Karly S.; and Fujita, Sharon M., 5,543,156, Cl. 424-484.000.

Alzati, Angelo: *See*—
Bontempo, Gregorio; Milazzo, Patrizia; and Alzati, Angelo, 5,543,739, Cl. 327-108.000.

Amagai, Akikazu: *See*—
Kawaki, Takao; Amagai, Akikazu; Yamada, Toshiaki; Harada, Hidefumi; Ban, Hajime; Takeda, Yuji; and Yamamoto, Koji, 5,543,474, Cl. 525-440.000.

Amano, Tadashi: *See*—
Nakano, Toshihiko; Amano, Tadashi; and Okuno, Yoshitaka, 5,543,175, Cl. 427-236.000.

Ambrosio, Neil J.: *See*—
Adams, Terry; Ambrosio, Neil J.; Bratton, William E.; Forsythe, William M.; Hatton, Bruce E.; Kinder, Larry L.; and Swat, William A., 5,542,438, Cl. 131-238.000.

American Cyanamid Company: *See*—
Harrington, Philip M.; and Jung, Michael E., 5,543,510, Cl. 536-53.000.

American Dental Association Health Foundation, The: *See*—
Chow, Laurence C.; and Takagi, Shozo, 5,542,973, Cl. 106-35.000.

American Home Products Corporation: *See*—
Armstrong, Jay J.; and Sehgal, Surendra N., 5,543,418, Cl. 514-291.000.

American Variseal: *See*—
Goldstein, Clifford W.; and Miller, Timothy F., 5,542,682, Cl. 277-164.000.

Amini, Nader; Boury, Bechara F.; Brannon, Sherwood; Horne, Richard L.; and Lohman, Terence J., to International Business Machines Corporation. System having a bus interface unit for overriding a normal arbitration scheme after a system resource device has already gained control of a bus. 5,544,346, Cl. 395-481.000.

Ammermann, Eberhard: *See*—
Doetzer, Reinhard; Sauter, Hubert; Bayer, Herbert; Roehl, Franz; Lorenz, Gisela; Ammermann, Eberhard; and Wingert, Horst, 5,543,433, Cl. 514-638.000.

Ampex Systems Corporation: *See*—
Shih, Lionel C.; and Holter, Jerry E., 5,543,977, Cl. 360-48.000.

An, Song H., to Titan Information Systems Corporation. Acquisition of carrier phase and symbol timing through joint estimation of phase and timing adjustments. 5,544,200, Cl. 375-344.000.

Anagnostopoulos, Gerasimos: *See*—
Chatzopoulou, Athina; Miles, Roger J.; and Anagnostopoulos, Gerasimos, 5,543,325, Cl. 435-259.000.

Analog Devices, Inc.: *See*—
Howe, Roger T.; Barber, H. Jerome; and Judy, Michael, 5,542,295, Cl. 73-514.180.
Tsang, Robert W. K.; Farash, Jeffrey A.; and Payne, Richard S., 5,543,013, Cl. 156-643.100.

Anchored Corporation, The: *See*—
Lee, Gary D., 5,542,310, Cl. 74-372.000.

Andersen, Knud T., to F. L. Smidth & Co. A/S. roller press. 5,542,618, Cl. 241-227.000.

Andersen, Per J.; and Hodson, Simon K., to E. Khashoggi Industries. Sealable liquid-tight, thin-walled containers made from hydraulically settable materials. 5,543,186, Cl. 428-34.400.

Anderson, Carl W.; and Mangel, Walter F., to Associated Universities, Inc. Co-factor activated recombinant adenovirus proteinases. 5,543,264, Cl. 435-219.000.

Anderson, Thomas H., to Hewlett-Packard Company. Combined crystal and LC filter. 5,543,756, Cl. 333-186.000.

Andersson, Sven B.: *See*—
Carlsson, Thommy; and Andersson, Sven B., 5,543,424, Cl. 514-343.000.

Ando Electric Co., Ltd.: *See*—
Takeda, Toshiyuki, 5,544,183, Cl. 372-38.000.

Ando, Yohei: *See*—
Nakanishi, Teruo; Ando, Yohei; and Sakakibara, Kiyokatsu, 5,542,762, Cl. 366-228.000.

Ando, Yuji, to NEC Corporation. Flip-flop circuit with resonant tunneling diode. 5,543,748, Cl. 327-570.000.

Andreiko, Craig A.; and Payne, Mark A., to Ormco Corporation. Bracket placement jig assembly and method of placing orthodontic brackets on teeth therewith. 5,542,842, Cl. 433-3.000.

Andresen, Bernhard H.: *See*—
Casasanta, Joseph A.; Andresen, Bernhard H.; Satoh, Yoshinori; Keeney, Stanley C.; and Martin, Robert C., 5,544,203, Cl. 375-376.000.

Andrews, John R., to Xerox Corporation. Method and apparatus for back facet monitoring of laser diode power output. 5,543,611, Cl. 250-205.000.

Andrews, Robert C.; Cribbs, Cynthia M.; Frye, Stephen V.; Haffner, Curt D.; and Maloney, Patrick R., to Glaxo Wellcome, Inc. Inhibitors of 5-α-testosterone reductase. 5,543,406, Cl. 514-213.000.

Andreyevich, Lazorkin V.: *See*—
Aleksandrovich, Tjurin V.; Ivanovich, Kuroles V.; Andreyevich, Lazorkin V.; and Mikhaylovich, Volodin A., 5,542,278, Cl. 72-371.000.

Andrieu, Xavier; Rocher, Michel; Guillaume, Philippe; and Poignant, Philippe, to Alcatel Converters. System and method for monitoring battery aging. 5,543,245, Cl. 429-90.000.

Andruska, Donald L.; and Majeti, Venkata C., to AT&T Corp. Access to unsubscribed features. 5,544,236, Cl. 379-201.000.

Anhalt, John W.; and Zahlit, Wayne A., to ITT Corporation. Coaxial connector. 5,542,861, Cl. 439-578.000.

Anolick, Colin; Cramer, Gregory D.; Dujari, Ramdas; Lee, Win-Chung; Rao, Sundar M.; and Wheland, Robert C., to Du Pont de Nemours, E. I., and Company. Process for increasing the molecular weight of polyamides and other condensation polymers. 5,543,495, Cl. 528-481.000.

Anscher, Joseph, to National Molding Corp. Buckle which is releasable by depression of a hinged member. 5,542,161, Cl. 24-614.000.

Anthony-Ross Company: *See*—
Abel, Clayton J.; Watson, Greg; Higgins, Daniel R.; and Hill, Robert B., 5,542,650, Cl. 266-135.000.

Antwerpen, Werner; Schindler, Hermann; and Reinhardt, Gerd, to Hoechst Aktiengesellschaft. Use of copolymers based on vinyl monomers and carboxylic acid amides as a detergent additive. 5,542,951, Cl. 8-137.000.

Aoki, Harumi; Tani, Nobuhiro; and Sawanobori, Keiji, to Asahi Kogaku Kogyo Kabushiki Kaisha. Dual-type imaging device having multiple light sensitive elements. 5,543,837, Cl. 348-264.000.

Aoki, Hidemitsu: *See*—
Shiramizu, Yoshimi; Nakamori, Masaharu; Aoki, Hidemitsu; Seo, Hirofumi; and Hamano, Haruto, 5,543,030, Cl. 205-464.000.

Aoki, Mario: *See*—
Wariishi, Koji; and Aoki, Mario, 5,543,529, Cl. 548-366.700.

Aoki, Masahiro: *See*—
Suzuki, Makoto; Aoki, Masahiro; Takahashi, Makoto; and Taniwatari, Tsuyoshi, 5,543,353, Cl. 437-127.000.

Aoki, Osamu: *See*—
Shimuta, Masanori; Takahashi, Toru; Abe, Hisato; Takahashi, Kenichi; Kurata, Akira; and Aoki, Osamu, 5,543,482, Cl. 526-289.000.

Aoki, Yasushi; Fujiya, Ryosuke; and Nakamura, Iwao, to Honda Giken Kogyo Kabushiki Kaisha. Brake system in electric vehicle. 5,542,754, Cl. 303-3.000.

Aoshima, Masashi: *See*—
Nakata, Hiroki; Sato, Mitsuhiko; and Aoshima, Masashi, 5,543,470, Cl. 525-331.700.

Aotsuka, Tomoji; Nishio, Toshiyuki; Hosono, Hiroshi; Nakamura, Yoshiyuki; Matsui, Tetsuo; and Ishikawa, Hiromichi, to Green Cross Corporation, The; and Senju Pharmaceutical Co., Ltd. Quinoline-3-acetic acid derivative, process for production thereof and use thereof. 5,543,420, Cl. 514-312.000.

Aoyama, Shigeo: *See*—
Watanabe, Kazuo; Okuda, Masatoshi; Aoyama, Shigeo; and Tanaka, Yoshimasa, 5,543,382, Cl. 503-224.000.

Aoyama, Shigeru: *See*—
Mizuguchi, Yoshihiro; Hamada, Hiroshi; Aoyama, Shigeru; and Yamashita, Tsukasa, 5,543,942, Cl. 359-40.000.

Apland, James M.: *See*—
Cox, William D.; Chan, Andrew K. L.; Wong, Richard J.; Apland, James M.; and Gordon, Kathryn E., 5,544,070, Cl. 364-489.000.

Apogee Medical Products, Inc.: *See*—
Bonutti, Peter M., 5,542,423, Cl. 128-653.100.

Appel, Hans-Günter: *See*—
Laabs, Walter; and Appel, Hans-Günter, 5,542,929, Cl. 604-119.000.

Appel, William D., to International Business Machines Corporation. Reflective wave compensation on high speed processor cards. 5,544,047, Cl. 364-488.000.

Apple Computer, Inc.: *See*—
Blaney, Timothy J.; Smith, Ronald A.; and Talesfore, Nicholas F., 5,544,011, Cl. 361-683.000.
Bozinovic, Radmilo; and Pagallo, Giulia, 5,544,265, Cl. 382-203.000.
Capps, Stephen P., 5,544,295, Cl. 395-152.000.
Capps, Stephen P.; Sharpe, Benjamin W.; and Foster, Gregg S., 5,544,358, Cl. 395-600.000.
Ohmaye, Enio; and James, Arthur, 5,544,305, Cl. 395-161.000.
Pagallo, Giulia, 5,544,262, Cl. 382-189.000.

Applied Materials, Inc.: *See*—
Ebbing, Peter F.; and Panagas, Peter G., Jr., 5,544,275, Cl. 392-480.000.
Morita, Katsumi, 5,543,688, Cl. 315-111.210.

Applied Power Inc.: *See*—
de Jong, Leendert W. C.; van Heiningen, Arjan P.; and Masseling, Willem H., 5,542,823, Cl. 417-273.000.

Aptix Corporation: *See*—
Mohsen, Amr M., 5,544,069, Cl. 364-489.000.

Aqua Glass Corporation: *See*—
Mueller, Brett K.; and Higgins, Larry W., 5,543,225, Cl. 428-423.100.

Ara, Katsuyuki; Nakajima, Nobuya; and Ebine, Noriya, to Japan Atomic Energy Research Institute. Apparatus for measuring the thickness of the overlay clad in a pressure vessel of a nuclear reactor. 5,544,207, Cl. 376-249.000.

Aradigm Corporation: *See*—
Goodman, David E.; and Rubsamen, Reid M., 5,542,410, Cl. 128-200.140.

Arai, Katsunori: *See*—
Kamakura, Hikoichi; Tsutsui, Kiyoshi; Akagawa, Tomohiko; Sakai, Ikunori; Ichikawa, Shigeji; and Arai, Katsunori, 5,543,454, Cl. 524-451.000.

Arai, Kiyoshi: *See*—
Abe, Masahiro; Sakou, Hiroshi; Sagawa, Hirohiko; Ichikawa, Akira; Inoue, Kiyoshi; Arai, Kiyoshi; Shimura, Takanori; and Toda, Yuji, 5,544,050, Cl. 364-419.130.

Arai, Makoto: *See*—
Iizuka, Emiko; and Arai, Makoto, 5,544,083, Cl. 364-709.010.

Arai, Takeo, to Konica Corporation. Silver halide photographic light-sensitive material. 5,543,287, Cl. 430-628.000.

Arakawa, Mitsuaki; Zepeda, Ernesto; and Lu, William K. M., to University of California, The Regents of the. Parasitic compensating matching circuit integral with ground breaker for MRI RF coils. 5,543,712, Cl. 324-318.000.

Arakawa, Mitsuaki; Minemura, Takashi; and Krasnor, Stephen, to University of California, The Regents of the. Ground breaker for multiple control lines. 5,543,713, Cl. 324-322.000.

Arakawa, Yoshie: *See*—
Kaimai, Takashi; Tawaki, Hiroki; Yokoo, Sumio; and Arakawa, Yoshie, 5,543,068, Cl. 252-68.000.

Araki, Kazuhiro: *See*—
Kato, Tomokazu; Araki, Kazuhiro; Takano, Yoshiaki; Maruta, Syuzi; Nomura, Keiichi; Nagatani, Kentaro; Noda, Takashi; and Kishimoto, Hiroyuki, 5,543,907, Cl. 355-313.000.

Araki, Noriyuki; Shinonaga, Hideyuki; and Itoh, Yasuhiko, to Kokusai Denshin Denwa Kabushiki Kaisha. System for determining and registering location of mobile terminal for communication system with non-geosynchronous satellites. 5,543,813, Cl. 342-357.000.

Aramaki, Junichi; and Yokota, Teppei, to Sony Corporation. Method and apparatus for displaying disc name read from a disc. 5,544,139, Cl. 369-58.000.

Aramaki, Junichi: *See*—
Yokota, Teppei; Aramaki, Junichi; and Kihara, Nobuyuki, 5,544,165, Cl. 369-32.000.

Arami, Junichi: *See*—
Kawakami, Satoru; Suzuki, Tsuyoshi; Arami, Junichi; and Deguchi, Yoichi, 5,542,559, Cl. 216-67.000.

Archer, Virgil L., to Natural Pac Company. Grain-de-acidizing process mill. 5,542,616, Cl. 241-62.000.

ARCO Chemical Technology, L.P.: *See*—
Guo, Shao-Hua, 5,543,483, Cl. 526-330.000.

Ardon, Menachem T., to AT&T Corp. Identification of called directory number at multiple directory number per line premises prior to ringing signal reception. 5,544,235, Cl. 379-177.000.

Arenz, Rainer: *See*—
Mader, Hans-Jürgen; and Arenz, Rainer, 5,543,595, Cl. 200-401.000.

Arete Climbing Systems, Inc.: *See*—
Christensen, Daniel, 5,543,185, Cl. 428-15.000.

Argumedo, Armando J.; and Shelley, Kenneth R., to International Business Machines Corporation. Door opening mechanism for magnetic tape cartridge with tension control. 5,543,993, Cl. 360-132.000.

Arimoto, Kohei: *See*—
Sakano, Tetsuro; and Arimoto, Kohei, 5,543,700, Cl. 318-701.000.

Arisawa, Takashi: *See*—
Ohzu, Akira; Arisawa, Takashi; Kato, Masaaki; and Suzuki, Yoji, 5,544,191, Cl. 372-56.000.

Arment, Elton D. Apparatus for sealing friction resealable containers during air transport. 5,542,576, Cl. 220-328.000.

Armstrong, Jay J.; and Sehgal, Surendra N., to American Home Products Corporation. Innovative technique for immunosuppresion involving administration of rapamycin loaded formed blood elements. 5,543,418, Cl. 514-291.000.

Armstrong World Industries, Inc.: *See*—
Ehrhart, Wendell A.; and Setthachayanon, Songvit, 5,543,232, Cl. 428-482.000.

Arndt, Johannes, to Frank Innovation GmbH. Attachment element for the attachment of straps, belts or loop on edges of flat pieces of material. 5,542,160, Cl. 24-543.000.

Arrow Art Finishers, Inc.: *See*—
Smith, Jerrold A., 5,542,551, Cl. 211-50.000.

Arrow Precision Products, Inc.: *See*—
Weaver, George W.; Jacob, Harold; and Holsinger, Damond C., 5,542,948, Cl. 606-113.000.

Arroyo, Angeles C.: *See*—
Bolessa, Evon A.; Schwartz, Robert E.; Bills, Gerald F.; Giacobbe, Robert A.; Pelaez Perez, Fernando; Arroyo, Angeles C.; Matas, Teresa D.; Fernandez, Isabel M.; Perez, Francisca V.; Mandala, Suzanne M.; Zink, Deborah L.; Thornton, Rosemary; Thompson, John R.; and Curotto, James E., 5,543,431, Cl. 514-627.000.

Asada, Naohiro: *See*—
Fujii, Shigekatsu; Asada, Naohiro; and Kubo, Tomio, 5,542,164, Cl. 29-9.000.

Asahi Glass Company Ltd.: *See*—
Ohsaki, Hisashi; Kojima, Hiroyasu; and Suzuki, Koichi, 5,543,229, Cl. 428-432.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Nakahashi, Junichi; and Natori, Itaru, 5,543,452, Cl. 524-430.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Aoki, Harumi; Tani, Nobuhiro; and Sawanobori, Keiji, 5,543,837, Cl. 348-264.000.
Ito, Takayuki, 5,543,969, Cl. 359-690.000.
Nomura, Hiroshi; and Sasaki, Takamitsu, 5,543,971, Cl. 359-697.000.
Takishima, Suguru; Okuda, Isao; and Morita, Takashi, 5,544,144, Cl. 369-112.000.
Yamazaki, Yoshihiro; Iizuka, Takashi; and Kasai, Toshio, 5,543,955, Cl. 359-204.000.

Asahi Medical Co., Ltd.: *See*—
Nishimura, Takao, 5,543,062, Cl. 210-782.000.

Asai, Kiyoshi, to SMK Corporation; and Hewlett-Packard Company. Zero insertion force connector. 5,542,855, Cl. 439-260.000.

Asamura, Yoshinori; Hatano, Yoshiko; Onishi, Ken; and Shiroshita, Takashi, to Mitsubishi Denki Kabushiki Kaisha. High efficiency encoding apparatus. 5,543,845, Cl. 348-407.000.

Asano, Kanemitsu: *See*—
Kimura, Akira; Muto, Mineo; Asano, Kanemitsu; Nakano, Susumu; and Nakahama, Koji, 5,542,155, Cl. 24-20.00R.

Asea Brown Boveri AB: *See*—
Nettelbladt, Hans; and Widman, Michael, 5,543,638, Cl. 257-98.000.

ASER: *See*—
Jakob, Horst, 5,542,527, Cl. 198-844.200.

Ashcroft, Dale A.; and Todd, Robert R., to New Holland North America, Inc. Method of lifting a skid steer loader bucket. 5,542,814, Cl. 414-786.000.

Ashimori Kogyo Kabushiki Kaisha: *See*—
Kita, Katsuo; Nagamune, Yasushi; and Nakadegawa, Yasuyuki, 5,542,809, Cl. 414-528.000.

Ashley, Donald J., to International Business Machines Corporation. Temperature monitoring pilot transistor. 5,543,632, Cl. 257-48.000.

Aspesi, Marc S.; and Nakata, Steven T. EMI source detector. 5,543,779, Cl. 340-539.000.

ASSA AB: *See*—
Thordmark, Bo M.; and Walldén, Lars, 5,542,274, Cl. 70-495.000.

Associated Universities, Inc.: *See*—
Anderson, Carl W.; and Mangel, Walter F., 5,543,264, Cl. 435-219.000.

Asturiana De Zinc., S.A.: *See*—
Sitges Menendez, Francisco J.; Sitges Menendez, Fernando; Alvarez Tamargo, Francisco; and Lefevre, Ives, 5,543,020, Cl. 204-233.000.

Asuka, Masashi: *See*—

Hikita, Shiro; Iwata, Masafumi; Komaya, Kiyotoshi; Asuka, Masashi; and Goto, Yukio, 5,544,059, Cl. 364-436.000.

AT&T Bell Laboratories: *See*—
Seshadri, Nambirajan, 5,544,328, Cl. 375-261.000.

AT&T Corp.: *See*—
Andruska, Donald L.; and Majeti, Venkata C., 5,544,236, Cl. 379-201.000.
Ardon, Menachem T., 5,544,235, Cl. 379-177.000.
Bales, Bruce M.; and Thieler, Stephen M., 5,544,237, Cl. 379-205.000.
Cloonan, Thomas J.; and Richards, Gaylord W., 5,544,160, Cl. 370-54.000.
Creswell, Carroll W.; Lanning, Steven G.; Papazian, Carol J.; and Rulon, James M., 5,544,229, Cl. 379-67.000.
Csipkes, Andrei; and Palmquist, John M., 5,543,915, Cl. 356-345.000.
Haskell, Barin G.; and Reibman, Amy R., 5,543,853, Cl. 348-497.000.
Mandelbaum, Richard; Sherman, Stephen A.; and Wetherington, Diane R., 5,544,246, Cl. 380-23.000.

AT&T Global Information Solutions Company: *See*—
Lee, Steven S.; Fuchs, Kenneth P.; and Miller, Gayle W., 5,543,361, Cl. 437-200.000.

Atherton, Mark L.: *See*—
Seagrave, Charles G.; Richards, Martin J.; Mandell, Douglas E.; and Atherton, Mark L., 5,544,140, Cl. 369-59.000.

Atkinson, Robert W., to Zimmer, Inc. Vacuum driven fluid pump for an aspiration/irrigation instrument. 5,542,918, Cl. 604-27.000.

Atlantic Research Corporation: *See*—
Scheffee, Robert S., 5,542,688, Cl. 280-741.000.

Atlas Copco Berema Aktiebolag: *See*—
Gärdenberg, Sture S., 5,542,784, Cl. 405-232.000.

Atotech USA, Inc.: *See*—
Joshi, Nayan; McCaskie, John E.; and Boyle, Michael T., 5,543,182, Cl. 427-443.100.

Atsumi, Shiro, to OKI Electric Industry Co., Ltd. IC card having a built-in semiconductor integrated circuit device. 5,544,014, Cl. 361-737.000.

Atwell, Charles G.; Budjinski, Joseph F., II; and Shook, Jack R., to Philip Morris Incorporated. Vacuum arrangement on combiner. 5,542,901, Cl. 493-47.000.

Au, Wai-Ming W.; and Tong, Minh H., to International Business Machines Corporation. Electrostatic discharge protection circuit employing a mosfet device. 5,543,650, Cl. 257-355.000.

Aubert, Yves: *See*—
Alex, Patrick; Aubert, Yves; and Frey, Alain, 5,543,489, Cl. 528-288.000.

Aubertine, Matthew E.; Beyzavi, Kianoush; Broker, Harold J.; Checca, Ronald P.; Granato, Michael A.; Haeussler, David A.; Herasimtschuk, Michael; Jurkovic, Michael J.; Salem, Gerard M.; Selinger, Craig R.; and Zehr, Paul R., to International Business Machines Corporation. Method of I/O pin assignment in a hierarchial packaging system. 5,544,088, Cl. 364-489.000.

Aucoin, Paul G.: *See*—
Kaczmarczyk, Edward T.; Fuzzen, Daniel R.; Aucoin, Paul G.; and Norris, Lyle V., 5,542,339, Cl. 91-508.000.

Audio Alert, Inc.: *See*—
Hochstein, Peter A.; Tenenbaum, Jeffrey; and Xydis, Thomas G., 5,543,797, Cl. 342-42.000.

Audio Codes Ltd.: *See*—
Bialik, Leon; and Flomen, Felix, 5,544,278, Cl. 395-2.770.

Augaitis, Sheila R.: *See*—
Wehmeyer, Keith R.; Logan, Robert J.; Miller, Robert H.; Augaitis, Sheila R.; and Dinwiddie, Aaron H., 5,543,857, Cl. 348-589.000.

Augustin, Ulrich, to Mercedes-Benz AG. Fuel injection nozzle with integral solenoid valve. 5,542,610, Cl. 239-533.800.

Aulakh, Hardev S. Bridge cleaner and paint/debris holder apparatus. 5,542,495, Cl. 182-63.000.

Aulbach, Michael: *See*—
Winter, Andreas; Küber, Frank; Aulbach, Michael; Bachmann, Bernd; Klein, Robert; Kühlein, Klaus; Spaleck, Walter; and Kohlpaintner, Christian, 5,543,373, Cl. 502-103.000.

Ausimont S.P.A.: *See*—
Basile, Giampiero; and Musso, Ezio, 5,543,071, Cl. 252-67.000.

Auslander, Judith D.; and Berson, William, to Pitney Bowes. Bar codes using luminescent invisible inks. 5,542,971, Cl. 106-21.00A.

Austin, Jared A.; and Newkirk, David D., to Fiberweb North America, Inc. Nonwoven composite fabrics. 5,543,206, Cl. 428-198.000.

Autio, Craig R.: *See*—
L'Esperance, Lauren L.; Autio, Craig R.; Mariner, E. Thomas; and Stapelfeld, Norval D., 5,543,776, Cl. 340-426.000.

Automotive Products, plc: *See*—
Spooner, John; Young, Alastair J.; and Chippendale, John P., 5,542,316, Cl. 74-650.000.

Avco Corporation: *See*—
Bratten, James M.; and Howard, Stephen F., 5,542,796, Cl. 408-13.000.
Kimrey, Harold D., Jr.; Snyder, William B., Jr.; and Krutenat, Richard C., 5,543,605, Cl. 219-690.000.

Ave, Yoshiharu: *See*—
Iwata, Yoichi; Ave, Yoshiharu; and Nakayama, Takayoshi, 5,542,248, Cl. 60-276.000.

Avellanet, Ernesto; and Hernandez, Ernesto, to Cordis Corporation. Magnetic guidewire coupling for catheter exchange. 5,542,938, Cl. 604-280.000.

Avery Dennison Corporation: *See*—
Kidon, William E.; Hilston, Michael D.; and Nguyen, Thanh, 5,543,231, Cl. 428-447.000.

Avril, Nicolas: *See*—
Swei, Gwo S.; Avril, Nicolas; and Wijaya, Jony, 5,542,961, Cl. 51-295.000.

Awano, Yuji, to Fujitsu Limited. Resonant tunneling transistor. 5,543,749, Cl. 327-570.000.

Awashima, Hiroki: *See*—
Suzuki, Etsuro; Kawai, Hideki; and Awashima, Hiroki, 5,542,266, Cl. 62-469.000.

Azhar, Abol: *See*—
Diebold, Eric; Rapkin, Myron; Azhar, Abol; and Usmani, Arthur, 5,543,299, Cl. 435-28.000.

Baade, Wolfgang; Heinrich, Roland; Langstein, Gerhard; Mulder, Thomas; and Puskas, Judit, to Bayer AG. Process for the production of polyisoolefins. 5,543,479, Cl. 526-88.000.

Baba, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Array of disk drives with redundant channels. 5,544,339, Cl. 395-441.000.

Baba, Yukihisa: *See*—
Kagara, Kohji; Goto, Shunsuke; Yonishi, Satoshi; Ikushima, Muneharu; Baba, Yukihisa; and Horiai, Haruo, 5,543,525, Cl. 546-279.100.

Babcock & Wilcox Company, The: *See*—
Bernstein, Gary S.; and Milo, Thomas K., 5,543,116, Cl. 422-111.000.
Kitto, John B., Jr., 5,543,117, Cl. 422-145.000.
Myers, Robert B.; Bailey, Ralph T.; Burley, David R.; Feeney, Steve; Gray, Barbara J.; and Johnson, Dennis W., 5,542,609, Cl. 239-427.000.

Bach, Robert D.: *See*—
Nagel, Christopher J.; and Bach, Robert D., 5,543,558, Cl. 560-214.000.

Bacher, Walter; Biedermann, Hans; Dinglreiter, Heinz; and Kalb, Helmut, to Forschungzentrym Karlsruhe GmbH; and Bürkert GmbH. Method of making microstructured bodies of plastic material. 5,543,108, Cl. 264-553.000.

Bachmann, Bernd: *See*—
Winter, Andreas; Küber, Frank; Aulbach, Michael; Bachmann, Bernd; Klein, Robert; Kühlein, Klaus; Spaleck, Walter; and Kohlpaintner, Christian, 5,543,373, Cl. 502-103.000.

Badalamenti, Rosario: *See*—
Ozrovitz, Aaron; and Badalamenti, Rosario, 5,542,135, Cl. 5-424.000.

Bae, Peter S.: *See*—
Allen, Ronald; Bae, Peter S.; Tierney, Robert; and Fukui, Kenneth D., 5,542,685, Cl. 279-2.020.

Back, Young S.; Lee, Keun W.; Min, Beyong D.; and Choi, Gang I., to Electronics and Telecommunications Research Institute. Dual receive, dual transmit fault tolerant network arrangement. 5,544,151, Cl. 370-16.100.

Bagalini, Dante, to Circuit Breaker Industries Limited. Operating device for a circuit breaker. 5,543,766, Cl. 335-177.000.

Bagchi, Pranab: *See*—
Whitson, Mark A.; Lewis, John D.; Chen, Tienteh; Dannhauser, Thomas J.; and Bagchi, Pranab, 5,543,283, Cl. 430-569.000.

Bai, Guohui: *See*—
Zhu, Yunde; and Bai, Guohui, 5,543,577, Cl. 84-95.200.

Baier, Siegfried K.: *See*—
Klinger, Gary; and Baier, Siegfried K., 5,542,712, Cl. 285-93.000.

Bailey, Ralph T.: *See*—
Myers, Robert B.; Bailey, Ralph T.; Burley, David R.; Feeney, Steve; Gray, Barbara J.; and Johnson, Dennis W., 5,542,609, Cl. 239-427.000.

Baiocchi, Leandro, to Istituto Ricerca Francesco Angelini S.p.A. Alkyl derivatives of trazodone with CNS activity. 5,543,563, Cl. 562-443.000.

Baird, Charles J.: *See*—
Wixey, Barry D.; Young, Ronald E.; Baird, Charles J.; and Haffely, Jeffrey L., 5,542,639, Cl. 248-439.000.

Bajorek, Christopher H.; Glaser, Thomas W.; Klaassen, Klaas B.; Nielsen, Charles R.; Santana, George R.; Smith, Gordon J.; Thompson, David A.; and Workman, Michael L., to International Business Machines Corporation. Adaptive system for optimizing disk drive power consumption. 5,544,138, Cl. 369-54.000.

Bajzek, Thomas J.: *See*—
Bridges, Jack E.; Sresty, Guggilam C.; Held, Jeffrey S.; Sharp, James W.; and Bajzek, Thomas J., 5,543,111, Cl. 422-22.000.

Baker, Daniel F.; Steinlicht, Joseph C.; and Holtaway, Thomas S., to Rockwell International Corporation. Call distributor with automatic preannouncement system and method. 5,544,232, Cl. 379-67.000.

Baker, Edward J.; Lee, Robert W.; Toner, John L.; and Illig, Carl R., to Sterling Winthrop Inc. X-ray contrast compositions containing a barium salt and a cellulose derivative. 5,543,132, Cl. 424-9.411.

Baker, George L.: *See*—
Latiolais, Jerry G.; Gathright, J. Paul; Galante, Nicholas R.; Galland, M. Stephen; Gallet, J. Diores; Compton, Lewis R.; Baker, George L.; and Wang, James H., 5,543,233, Cl. 428-516.000.

Baker Hughes Incorporated: *See*—
Pessier, Rudolf C. O.; Scott, Danny E.; Grimes, Robert E.; and Isbell, Matthew R., 5,542,485, Cl. 175-371.000.

Baker, James A.: *See*—
Edwards, Stuart D.; Lax, Ronald G.; Lundquist, Ingemar H.; Sharkey, Hugh R.; and Baker, James A., 5,542,915, Cl. 604-22.000.

Bakis, Raimo; Gopalakrishnan, Ponani S.; Kanevsky, Dimitri; Nadas, Arthur J.; Nahamoo, David; Picheny, Michael A.; and Sedivy, Jan, to International Business Machines Corporation. Speech coding apparatus and method for generating acoustic feature vector component values by combining values of the same features for multiple time intervals. 5,544,277, Cl. 395-2.200.

Balaba, Willy M.: *See*—
Horn, William E., Jr.; Balaba, Willy M.; and Parker, Anthony A., 5,543,173, Cl. 427-212.000.

Balachandran, Kumar: *See*—
Robinson, Mark T.; Gardner, Steven H.; Wong, Matt; Kasmir, Seton P.; Balachandran, Kumar; Graham, Sue; Schjelderup, Gail; and Quick, Roy F., Jr., 5,544,222, Cl. 379-58.000.

Balaji, Vitukudi N.: *See*—
Chan, Ming F.; and Balaji, Vitukudi N., 5,543,521, Cl. 544-349.000.

Balasubramanian, Thyagarajan: *See*—
Allebach, Jan P.; Bouman, Charles A.; and Balasubramanian, Thyagarajan, 5,544,284, Cl. 395-131.000.

Baldus, Hans-Peter, to Bayer AG. Process for the production of preceramic polyborosilazanes and ceramic material derived thereform. 5,543,485, Cl. 528-5.000.

Baldwin, Joseph C.: *See*—
Shofner, Frederick M.; Baldwin, Joseph C.; Williams, Gordon F.; and Townes, Mark G., 5,544,090, Cl. 364-552.000.

Bales, Bruce M.; and Thieler, Stephen M., to AT&T Corp. Automatic conference initiation upon all telephones for the conference being idle. 5,544,237, Cl. 379-205.000.

Baliga, Bantval J., to North Carolina State University. Silicon carbide semiconductor devices having buried silicon carbide conduction barrier layers therein. 5,543,637, Cl. 257-77.000.

Ball, Gordon M.; and Sears, Lawrence M. Method and apparatus for actuating a direct source exhaust gas capture system. 5,542,250, Cl. 60-315.000.

Ball, Robert J.; and Lakey, Martin J., to Gleason Works, The. Front-loading rotary ring cutter. 5,542,791, Cl. 407-21.000.

Ballew, Chester N., to E2 Enterprises, Inc. Portable door stop. 5,542,725, Cl. 292-339.000.

Bally, Marcel B.: *See*—
Webb, Murray S.; Bally, Marcel B.; and Mayer, Lawrence D., 5,543,152, Cl. 424-450.000.

Balmer, Ricky D.: *See*—
Morton, Bernard W.; Nelson, Kirk A.; and Balmer, Ricky D., 5,543,090, Cl. 261-118.000.

Balz, Werner: *See*—
Bobrich, Michael; Lehner, August; Roller, Hermann; Suettinger, Rudolf; Kress, Ria; Schneider, Norbert; Lenz, Werner; Engelhardt, Peter; Rudolf, Peter; Brodt, Gregor; Balz, Werner; and Kohl, Albert, 5,543,226, Cl. 428-423.100.

Balzer, Wolfgang R.; Clausen, Thomas; Frank, Anke; and Weinges, Alexa, to Wella AG. 5-halogen-2,4-Bis (alkylamino)-1-alkylbenzenes and hair dye compositions containing same. 5,542,953, Cl. 8-416.000.

Ban, Hajime: *See*—
Kawaki, Takao; Amagai, Akikazu; Yamada, Toshiaki; Harada, Hidefumi; Ban, Hajime; Takeda, Yuji; and Yamamoto, Koji, 5,543,474, Cl. 525-440.000.

Ban, Hiroyuki: *See*—
Hayakawa, Junji; and Ban, Hiroyuki, 5,543,747, Cl. 327-565.000.

Bandura, Michael A.; and Peloza, Kirk B., to Molex Incorporated. Electrical connector with mounting post. 5,542,860, Cl. 439-567.000.

Bane, Wiliam W., III. Sheet cutting apparatus. 5,542,325, Cl. 83-415.000.

Banjanin, Zoran: *See*—
Kim, Jin; Yao, Lin X.; and Banjanin, Zoran, 5,544,128, Cl. 367-119.000.

Bannai, Tatusi: *See*—
Mita, Hideaki; and Bannai, Tatusi, 5,543,844, Cl. 348-405.000.

Bantien, Frank: *See*—
Benz, Gerhard; Marek, Jiri; Willmann, Martin; Bantien, Frank; Muenzel, Horst; Laermer, Franz; Offenberg, Michael; and Schilp, Andrea, 5,542,558, Cl. 216-2.000.

Baran, Paul, to COM 21, Inc. Method and cell based wide area network alternative access telephone and data system. 5,544,164, Cl. 370-60.100.

Barbarino, Michael J.: *See*—
Henderson, Richard D.; and Barbarino, Michael J., 5,544,049, Cl. 364-419.190.

Barber, H. Jerome: *See*—
Howe, Roger T.; Barber, H. Jerome; and Judy, Michael, 5,542,295, Cl. 73-514.180.

Barclay Brown: *See*—
Hedaya, Maurice; and Hedaya, Ezra, 5,542,767, Cl. 383-127.000.

Bárczay, Erzsébet: *See*—
Fekete, Pál; Király née Ignácz, Mária; Sipos, Gábor; Jámbor née Hoffmann, Zsuzsanna; Újfalussy, György; Góra née Hernyes, Magdolna; Klebovich, Imre; Drabant, Sándor; Mándi, Attila; Kiss née Szabó, Gizella; Bárczay, Erzsébet; and Krisztián, Mária, 5,543,155, Cl. 424-473.000.

Bard, Simon; Strat, Askold; Katz, Joseph; and Metlitsky, Boris, to Symbol Technologies, Inc. Compact bar code scanning arrangement. 5,543,610, Cl. 235-462.000.

Barenholz, Yechezkel: *See*—
Gatt, Shimon; Barenholz, Yechezkel; Bercovier, Herve; and Eldar, Zvi, 5,542,987, Cl. 134-39.000.

Barhen, Jacob: *See*—
Liu, Hua-Kuang; Barhen, Jacob; Farhat, Nabil H.; and Wu, Chwan-Hwa, 5,544,280, Cl. 395-24.000.

Baril, Albert M.: *See*—
Crenshaw, David A.; Holmes, Roy H.; and Baril, Albert M., 5,542,627, Cl. 244-121.000.

Barile, Peter, to Shelby Williams Industries, Inc. Quick release anchoring system for a seat assembly. 5,542,748, Cl. 297-463.100.

Barker, James A.: *See*—
Chen, Bing-Lin; and Barker, James A., 5,543,451, Cl. 524-224.000.

Barling, Lawrence C.: *See*—
Hume, Roger A.; Felstead, Richard A.; Lee, Douglas G. L.; Barling, Lawrence C.; and Barrell, Anthony J., 5,542,857, Cl. 439-337.000.

Barlow, Darren E.: *See*—
Miller, Michael A.; Timmons, Scott F.; and Barlow, Darren E., 5,543,447, Cl. 524-80.000.

Barlow, Geoffrey: *See*—
Pulley, Christopher J.; Specht, Steven J.; and Barlow, Geoffrey, 5,543,247, Cl. 429-129.000.

Barnert, Heiko: *See*—
Singh, Jasbir; and Barnert, Heiko, 5,544,204, Cl. 376-213.000.

Barnes, Michael S.; Coultas, Dennis K.; Forster, John C.; Keller, John H.; and Wicker, Thomas, to International Business Machines Corporation; and Lam Research Corporation. Method of reducing particulates in a plasma tool through steady state flows. 5,543,184, Cl. 427-571.000.

Barrell, Anthony J.: *See*—
Hume, Roger A.; Felstead, Richard A.; Lee, Douglas G. L.; Barling, Lawrence C.; and Barrell, Anthony J., 5,542,857, Cl. 439-337.000.

Barret, Jean; and Quessada, Daniel, to SGS-Thomson Microelectronics S.A. Forward overvoltage protection circuit for a vertical semiconductor component. 5,543,645, Cl. 257-328.000.

Barsamian, Raymond: *See*—
Cuir, Jean-Pierre; Cuir, Gérard; and Barsamian, Raymond, 5,542,353, Cl. 101-492.000.

Bartels, Günter: *See*—
Rapp, Jochen; Planker, Siegfried; Papenfuhs, Theodor; and Bartels, Günter, 5,543,550, Cl. 560-19.000.

Bartrug, Bruce A.; Koontz, Harry S.; and Winter, John A., to PPG Industries Inc. Multiple connection terminal assembly for an electrically heated transparency. 5,543,601, Cl. 219-203.000.

BASF Aktiengesellschaft: *See*—
Doetzer, Reinhard; Sauter, Hubert; Bayer, Herbert; Roehl, Franz; Lorenz, Gisela; Ammermann, Eberhard; and Wingert, Horst, 5,543,433, Cl. 514-638.000.
Hartmann, Heinrich; Denzinger, Walter; Kroener, Michael; Nilz, Claudia; Linhart, Friedrich; and Stange, Andreas, 5,543,459, Cl. 525-54.300.
Henkelmann, Jochem; and Tietze, Lutz, 5,543,568, Cl. 562-861.000.
Koehler, Ulrich; Siegel, Hardo; and Seybold, Guenther, 5,543,515, Cl. 540-604.000.
Münster, Peter; Ditrich, Klaus; Hamprecht, Gerhard; Gerber, Matthias; Westphalen, Karl-Otto; Walter, Helmut; and Karl, Rudolf, 5,543,416, Cl. 504-271.000.
Siemensmeyer, Karl; Tschierske, Carsten; Theil, Fritz; and Joachimi, Detley, 5,543,076, Cl. 252-299.610.

BASF Corporation: *See*—
Dugan, Jeffrey S., 5,542,821, Cl. 417-53.000.

BASF Magnetics GmbH: *See*—
Bobrich, Michael; Lehner, August; Roller, Hermann; Suettinger, Rudolf; Kress, Ria; Schneider, Norbert; Lenz, Werner; Engelhardt, Peter; Rudolf, Peter; Brodt, Gregor; Balz, Werner; and Kohl, Albert, 5,543,226, Cl. 428-423.100.

Basile, Giampiero; and Musso, Ezio, to Ausimont S.P.A. Compositions consisting of hydrogenated fluorocarbons. 5,543,071, Cl. 252-67.000.

Basilio, Angela: *See*—
Bills, Gerald F.; Curotto, James E.; Dreikorn, Sarah J.; Jenkins, Rosalind G.; Liesch, Jerrold M.; Morris, Sandra A.; Thompson, John R.; Zink, Deborah L.; Jansson, Richard K.; Basilio, Angela; Diez, Teresa; Pelaez, Fernando; and Vicente, Francisca, 5,543,429, Cl. 514-468.000.

Baskis, Paul T. Reforming process and apparatus. 5,543,061, Cl. 210-774.000.

Bassett, James H., to Dawn Equipment Company. Apparatus for continuously planting seed and applying a soil additive. 5,542,362, Cl. 111-120.000.

Basso, Estela: *See*—
Roorda, Wouter E.; Ehnow, Fred P.; Basso, Estela; Wang, Karly S.; and Fujita, Sharon M., 5,543,156, Cl. 424-484.000.

Bastioli, Catia: *See*—
Perego, Gabriele; Bastioli, Catia; Grzebieniak, Karolina; and Niekraszewicz, Antoni, 5,543,494, Cl. 528-354.000.

Bastyr, Charles A.: *See*—
Cassford, Keith L.; Gildersleeve, Richard E.; and Bastyr, Charles A., 5,542,911, Cl. 602-26.000.

Bates, Herbert E.: *See*—
Bliss, David F.; and Bates, Herbert E., 5,543,630, Cl. 257-33.000.

Bates, Jan B.; and Sciamanna, Steven F., to Chevron U.S.A. Inc. Clarification of produced water in the oil and gas industry. 5,543,043, Cl. 210-221.200.

Batey, Graham J.; and Whitehurst, Eric P., to Oxford Instruments (UK) Limited. Sample holding device. 5,542,256, Cl. 62-610.000.

Bath, William R.: *See*—
Yemington, Charles R.; Skaggs, John H.; and Bath, William R., 5,542,781, Cl. 405-128.000.

Bäthge, Frank: *See*—

Adrian, Willy; Bäthge, Frank; Borchers, Peter; Pietsch, Kurt; Wallbaum, Knuth; and Wente, Gerald, 5,542,522, Cl. 198-337.000.

Bathrick, Leeland M., to C.E.B. Enterprises, Inc. Non-adjustable linear drive for articulated furniture. 5,542,744, Cl. 297-362.110.

Batten, William C., to Clearline Systems, Inc. Sewage lift station. 5,543,064, Cl. 210-803.000.

Battenfeld Gloucester Engineering Co., Inc.: *See*—
Woodman, Daniel W., Jr.; St. Hilaire, Vance; and Silva, Guilherme A., 5,542,802, Cl. 414-27.000.

Baum, David M.: *See*—
Vatt, Gregory B.; Baum, David M.; and Goldberg, Steven J., 5,543,785, Cl. 345-825.440.

Baumann, Hans D. Electro-pneumatic valve positioning device. 5,542,337, Cl. 91-358.00R.

Baumgaertner, Carl J.; and McKaughan, Robert M., to Harvey Mudd College. Cutover apparatus and methods for switching a signal between two transmission media. 5,544,197, Cl. 375-257.000.

Bauss, Frieder: *See*—
Zilch, Harald; and Bauss, Frieder, 5,543,561, Cl. 562-13.000.

Baxter International, Inc.: *See*—
Nita, Henry; and Mills, Timothy, 5,542,917, Cl. 604-22.000.
Saint-Remy, Jean-Marie; Lebrun, Philippe; Lebeque, Serge; Masson, Pierre L.; and Kingdon, Henry S., 5,543,145, Cl. 424-133.100.

Bayer AG: *See*—
Baade, Wolfgang; Heinrich, Roland; Langstein, Gerhard; Mulder, Thomas; and Puskas, Judit, 5,543,479, Cl. 526-88.000.
Baldus, Hans-Peter, 5,543,485, Cl. 528-5.000.
Büding, Hartmuth, 5,542,974, Cl. 106-270.000.
Groth, Torsten; Joentgen, Winfried; Linden, Hans W.; Müller, Nikolaus; Rother, Heinz-Joachim; Wagner, Paul; and Kugler, Martin, 5,543,490, Cl. 528-328.000.
Wood, Louis L.; and Calton, Gary J., 5,543,491, Cl. 528-328.000.

Bayer Aktiengesellschaft: *See*—
Landscheidt, Heinz; Wolters, Erich; Wagner, Paul; and Klausener, Alexander, 5,543,548, Cl. 558-277.000.
von Bonin, Wulf; von Gizycki, Ulrich, deceased; Leroux, Roland; Karschti, Thomas M.; and Thürk, Jürgen, 5,543,230, Cl. 428-432.000.

Bayer Corporation: *See*—
Garand, Donald J.; and Blake, Lawrence S., 5,542,623, Cl. 242-559.400.
Prasad, Vidyanatha A.; Newallis, Peter E.; and Foote, Emerson L., Jr., 5,543,543, Cl. 558-96.000.

Bayer, Harald: *See*—
Kemmerer, Klemens; Bayer, Harald; and Gensheimer, Valentin, 5,542,657, Cl. 271-82.000.

Bayer, Herbert: *See*—
Doetzer, Reinhard; Sauter, Hubert; Bayer, Herbert; Roehl, Franz; Lorenz, Gisela; Ammermann, Eberhard; and Wingert, Horst, 5,543,433, Cl. 514-638.000.

Beakes, John M.; and Zicht, E. Wayne, to Globe Products Inc. Apparatus for manufacturing armatures. 5,542,813, Cl. 414-780.000.

Bear, Christine E.: *See*—
Riordan, John R.; Bear, Christine E.; Ramjeesingh, Mohabir; and Li, Canhui, 5,543,399, Cl. 514-21.000.

Beard, Douglas R.; Phelps, Andrew E.; Woodmansee, Michael A.; Blewett, Richard G.; Lohman, Jeffrey A.; Silbey, Alexander A.; Spix, George A.; Simmons, Frederick J.; and Van Dyke, Don A., to Cray Research, Inc. Vector processor having registers for control by vector resisters. 5,544,337, Cl. 395-375.000.

Beard, Jay T. Tape measure knife attachment for cutting drywall. 5,542,184, Cl. 30-293.000.

Beard, Richard L.: *See*—
Vuligonda, Vidyasagar; Teng, Min; Beard, Richard L.; Johnson, Alan T.; Lin, Yuan; and Chandraratna, Roshantha A., 5,543,534, Cl. 549-421.000.

Beasley, Alonzo W., to JPS Automotive Products Corporation. Air bag having panels with different permeabilities. 5,542,703, Cl. 280-739.000.

Beaton, Stephen R.: *See*—
Kindt-Larsen, Ture; Beaton, Stephen R.; Martin, Wallace A.; and Walker, Craig W., 5,542,978, Cl. 118-256.000.

Bechtoldt, Wayne; Frazier, Tom; Graszer, Matt; and Room, Dave, to Stanley Works, The. Squeakless funiture spring anchor clip and method of making same. 5,542,775, Cl. 403-188.000.

Beck, Charles E. J.: *See*—
McDermott, Keith J.; Teffenhart, John M.; Shefer, Shmuel D.; Greene, David A.; Smith, Leslie C.; and Beck, Charles E. J., 5,543,439, Cl. 523-102.000.

Becker, Joseph F.: *See*—
Sauke, Todd B.; Becker, Joseph F.; and de la Torre-Bueno, Jose, 5,543,621, Cl. 250-339.030.

Beckwith, Robert W. Apparatus and method for sampling signals synchronous with analog to digital converter. 5,544,064, Cl. 364-483.000.

Becton Dickinson and Company: *See*—
Chanoch, Lawrence H.; and Wilson, John B., 5,542,760, Cl. 366-160.400.
Vogler, Erwin A.; Shepard, Thomas A.; and Graper, Jane C., 5,543,048, Cl. 210-513.000.

Bedell, Glenn W., to Intelligent Monitoring Systems and Advanced Global Technologies. Sensor for antigen-antibody reactions. 5,543,329, Cl. 435-7.320.

Bednarz, James W. Positive acting barrel lock. 5,542,273, Cl. 70-34.000.

Beede, Richard E.: *See*—
Vinciarelli, Patrizio; and Beede, Richard E., 5,544,034, Cl. 363-89.000.

Beerstecher, Lutz: *See*—
Sutter, Ralf; Beerstecher, Lutz; Hruza, David; Stetter-Alle, Raimund; and Trackl, Karl, 5,543,119, Cl. 422-299.000.

Beesley, Brent R.: *See*—
Marjanski, George C.; Hauppa, Kevin E.; Green, David J.; Saderholm, Davin G.; and Beesley, Brent R., 5,542,691, Cl. 280-728.200.

Beghin-Say: *See*—
Mentech, Julio; Betremieux, Isabelle; and Legger, Bruno, 5,543,512, Cl. 536-115.000.

Behl, Robert S.: *See*—
Evans, Michael A.; Nichols, Colin J.; Kemp, Laura; Dubrul, William R.; and Behl, Robert S., 5,542,928, Cl. 604-113.000.

Behr, David A.; and Jones, Randall B., to Shields Enterprises, Inc. Computerized navigation system. 5,543,789, Cl. 340-995.000.

Beierlorzer, Edwin P., to Ranpak Corp. Transitional slide for use with a cushion-creating machine. 5,542,232, Cl. 53-117.000.

Beilin, Solomon I.; Chou, William T.; Kudzuma, David; Lee, Michael G.; Murase, Teruo; Peters, Michael G.; Roman, James J.; Swamy, Som S.; and Wang, Wen-chou V., to Fujitsu Limited. Multichip module substrate. 5,544,017, Cl. 361-790.000.

Beisel, Victor A., to Pogue Seed Co., Inc. Apparatus for dehulling grass seed. 5,542,612, Cl. 241-5.000.

Beisel, Weinfried; Schwarz, Hans-Michael; and Morgenstern, Bodo, to Grabener Pressensysteme GmbH & Co. KG; Schwarz, Hans-Michael; and Morgenstern, Bodo. Coin testing apparatus. 5,542,520, Cl. 194-335.000.

Belding, William A.; Janke, Scott; Holeman, William D.; and Delmas, Marc P. F., to LaRoche Industries, Inc. Enthalphy Wheel. 5,542,968, Cl. 96-125.000.

Belka, Jeffrey A., to Lottery Enterprises, Inc. Dispensing/vending machine and method with double dispensing protection. 5,542,571, Cl. 221-268.000.

Bell & Howell Phillipsburg Company: *See*—
Ricciardi, Mario, 5,542,547, Cl. 209-539.000.

Bell Atlantic Network Services, Inc.: *See*—
Bigham, John A.; Sistanizadeh, Kamran; and Little, Dave, 5,544,161, Cl. 370-58.100.

Bell, Carl-Martin; Pirner, Manfred; Buck, Reinhold; and Gohl, Hermann J., to Gambro Dialysatoren GmbH & Co. Process for the production of hydrophilic membranes. 5,543,465, Cl. 525-182.000.

Bell Communications Research, Inc.: *See*—
Leung, Chin F.; and O'Sullivan, Thomas D., 5,543,701, Cl. 320-4.000.

Bell, Gary M.: *See*—
Richison, Cecil; and Bell, Gary M., 5,542,902, Cl. 493-195.000.

Bell, James C., to Textron Inc. Air cushion vehicle with high stability skirt system. 5,542,366, Cl. 114-67.00A.

Bell, Randall P.: *See*—
Meyers, Brenda J.; Herritz, Donald W.; Johansen, Jean L.; Hudson, William B., Jr.; Bell, Randall P.; Prokop, Gary F.; Caruso, James F.; and Allen, James I., 5,542,921, Cl. 604-74.000.

Bell, Stephen H., to Gabriel Ride Control Products, Inc.; and Polaris Industries, LP. Shock absorber having externally adjustable compression. 5,542,509, Cl. 188-322.140.

Bellegarda, Eveline J.; Bellegarda, Jerome R.; Nahamoo, David; and Nathan, Krishna S., to International Business Machines Corporation. Continuous parameter hidden Markov model approach to automatic handwriting recognition. 5,544,257, Cl. 382-187.000.

Bellegarda, Jerome R.; Nahamoo, David; and Nathan, Krishna S., to International Business Machines Corporation. Automatic handwriting recognition using both static and dynamic parameters. 5,544,261, Cl. 382-187.000.

Bellegarda, Jerome R.; Nahamoo, David; and Nathan, Krishna S., to International Business Machines Corporation. Automatic handwriting recognition using both static and dynamic parameters. 5,544,264, Cl. 382-188.000.

Bellegarda, Jerome R.: *See*—
Bellegarda, Eveline J.; Bellegarda, Jerome R.; Nahamoo, David; and Nathan, Krishna S., 5,544,257, Cl. 382-187.000.

BellSouth Corporation: *See*—
Blust, Stephen M.; Comer, Edward L.; and Sandidge, Jere T., 5,544,227, Cl. 379-63.000.
Bushard, Bradley B.; Dion, Philip G.; and Heinz, Joseph V., 5,543,727, Cl. 324-760.000.

Beloit Technologies, Inc.: *See*—
Deshpande, Rajendra D.; McGraw, William R.; and Pulkowski, Jeffrey H., 5,542,192, Cl. 34-115.000.
Sims, Duke N.; and Wedel, Gregory L., 5,542,193, Cl. 34-117.000.

Belonenko, Vladimir N.: *See*—
Sarvazian, Armen P.; Belonenko, Vladimir N.; and Chalikian, Tigran V., 5,542,298, Cl. 73-597.000.

Benavides, Jésus; Ferzaz, Badia; George, Pascal; and Scatton, Bernard, to Synthelabo. Method of treatment of peripheral neuropathies and central neurodegenerative diseases. 5,543,421, Cl. 514-317.000.

Bendicks, Norbert: *See*—
Levers, Jürgen; Bendicks, Norbert; Boebel, Ralf; Feldmüller, Ludwig; and Esders, Berthold, 5,543,923, Cl. 356-445.000.

Bendzick, Ervin J. Process for compacting metal shavings. 5,542,348, Cl. 100-37.000.

Benham, Charles B.; Bohn, Mark S.; and Yakobson, Dennis L., to Resetech, Inc. Process for the production of hydrocarbons. 5,543,437, Cl. 518-700.000.

Bennett, Larry G.: *See*—

Mattingly, Phillip G.; and Bennett, Larry G., 5,543,524, Cl. 546-104.000.

Bennett, Steven L.; and Roby, Mark S., to United States Surgical Corporation. Bioabsorbable copolymer and coating composition containing same. 5,543,218, Cl. 428-375.000.

Benson, William M. Mobile unit for treating soil. 5,542,208, Cl. 47-1.010.

Bentz, Hanne: *See*—
Rhee, Woonza; Wallace, Donald G.; Michaels, Alan S.; Burns, Ramon A., Jr.; Fries, Louis; DeLustro, Frank; and Bentz, Hanne, 5,543,441, Cl. 523-105.000.

Bentz, Joseph C.: *See*—
Carroll, John T., III; Bentz, Joseph C.; and Genter, David P., 5,542,315, Cl. 74-586.000.

Benz, Gerhard; Marek, Jiri; Willmann, Martin; Bantien, Frank; Muenzel, Horst; Laermer, Franz; Offenberg, Michael; and Schilp, Andrea, to Robert Bosch GmbH. Method for manufacturing micro-mechanical components using selective anodization of silicon. 5,542,558, Cl. 216-2.000.

Bercovier, Herve: *See*—
Gatt, Shimon; Barenholz, Yechezkel; Bercovier, Herve; and Eldar, Zvi, 5,542,987, Cl. 134-39.000.

Berg, David A. Method for continuing transmission of commands for interactive graphics presentation in a computer network. 5,544,317, Cl. 395-200.040.

Bergfeld, Manfred J.; and Seifert, Jürgen, to Akzo Nobel N.V. Process for the preparation of level-off DP cellulose. 5,543,511, Cl. 536-56.000.

Bergmann, Eva Martina: *See*—
Bergmann, Thorald, 5,543,624, Cl. 250-423.00R.

Bergmann, Thorald, to Bergmann, Thorald; and Bergmann, Eva Martina. Gasphase ion source for time-of-flight mass-spectrometers with high mass resolution and large mass range. 5,543,624, Cl. 250-423.00R.

Bergmeister, Joseph J., to Phillips Petroleum Company. Process for producing polyolefins. 5,543,376, Cl. 502-117.000.

Bergvall, Göran, to Perstorp AB. Acrylate monomer having a reduced primary irritation index and a method of making same. 5,543,557, Cl. 560-209.000.

Beriger, Conrad; Grüning, Horst; Stemmler, Herbert; and Werninger, Johannes, to ABB Management AG. Converter arrangement having a low-inductance commutation circuit. 5,544,035, Cl. 363-132.000.

Berkel & Company Contractors, Inc.: *See*—
Blum, Kenneth J., 5,542,786, Cl. 405-240.000.

Bernhardt, Guenther: *See*—
Haas, Margret; and Bernhardt, Guenther, 5,543,538, Cl. 556-401.000.

Bernicke, Erhard; Rohr, Klaus; and Eibisch, Karl, to Prolux Maschinenbau GmbH. High voltage ignition circuit for a discharge lamp. 5,543,690, Cl. 315-224.000.

Bernstein, Gary S.; and Milo, Thomas K., to Babcock & Wilcox Company, The. Method for reducing NO_x using atomizing steam injection control. 5,543,116, Cl. 422-111.000.

Berry Iowa Corporation: *See*—
Stratford, James T.; Schoonveld, Alan H.; and Weaver, David A., 5,543,104, Cl. 264-328.800.

Berry, Robert F.; and Fortin, Michael R., to International Business Machines Corporation. Method and system for improving the performance of memory in constrained virtual memory environments by reducing paging activity. 5,544,349, Cl. 395-492.000.

Berryhill, John R. System and method of seismic shot-record migration. 5,544,126, Cl. 367-52.000.

Berson, William: *See*—
Auslander, Judith D.; and Berson, William, 5,542,971, Cl. 106-21.00A.

Bertelson, Robert C.; and Sallavanti, Robert A., to Gentex Corporation. Squarylium dyestuffs and compostions containing same. 5,543,086, Cl. 252-582.000.

Berthozat, Michel; and Morgavi, Paul, to Gemplus Card International. Programming process for integrated memory, particularly for a smart card. 5,544,111, Cl. 365-225.700.

Bertz, Hans-Ulrich: *See*—
Ertl, Friedrich; and Bertz, Hans-Ulrich, 5,542,188, Cl. 33-605.000.

Berwanger, Fred W., to AlliedSignal Inc. External concentric aircraft brake piston adjuster. 5,542,504, Cl. 188-71.800.

Beson, John. Dual seal valve. 5,542,645, Cl. 251-172.000.

Best, Norman D. Method for processing and assembly of small parts utilizing a robot. 5,542,168, Cl. 29-407.040.

Betremieux, Isabelle: *See*—
Mentech, Julio; Betremieux, Isabelle; and Legger, Bruno, 5,543,512, Cl. 536-115.000.

Beuck, Guenter; Mueller, Hans-Juergen; and Schliwa, Ralf, to Deutsche Aerospace Airbus GmbH. Multi-deck passenger aircraft having impact energy absorbing structures. 5,542,626, Cl. 244-107.000.

Beutel, Kurt, to Braun Aktiengesellschaft. Dry shaving apparatus with outer cutter frame locking means. 5,542,179, Cl. 030-043.920.

Beylin, Vladimir G.; Sercel, Anthony D.; Showalter, Howard D. H.; Adams, Gerald E.; Fielden, Edward M.; Naylor, Matthew A.; and Stratford, Ian J., to British Technology Group Limited; and Warner-Lambert Company. Process for preparing chiral [[(2-bromoethyl)-amino]methyl]-nitro-1H-imidazol-1-ethanol and related compounds. 5,543,527, Cl. 548-110.000.

Beyzavi, Kianoush: *See*—
Aubertine, Matthew E.; Beyzavi, Kianoush; Broker, Harold J.; Checca, Ronald P.; Granato, Michael A.; Haeussler, David A.; Herasimtschuk, Michael; Jurkovic, Michael J.; Salem, Gerard M.; Selinger, Craig R.; and Zehr, Paul R., 5,544,088, Cl. 364-489.000.

Bezanis, Matthew. Combined bandana and visor headwear. 5,542,127, Cl. 2-172.000.

Bezler, Monika: *See*—
Weis, Bernd; Turban, Karl-Albert; Bezler, Monika; Schulz, Manfred; and Siegmund, Gerd, 5,544,226, Cl. 379-61.000.

Bhandari, Rajan: *See*—
Harradine, Vincent C.; Teece, Howard J.; Ludgate, Michael J.; Bhandari, Rajan; and Walker, Gavin A., 5,543,861, Cl. 348-718.000.

Bhatt, Ashwinkumar C.; Duffy, Thomas P.; Hackett, Gerry A.; and McKeveny, Jeffrey, to International Business Machines Corporation. Method of laminating and circuitizing substrates having openings therein. 5,542,175, Cl. 29-846.000.

Bhatta, Krishan M. Surgical device and method. 5,542,944, Cl. 606-33.000.

Bhushan, Abhay K.: *See*—
Mohindra, Raj; Bhushan, Abhay K.; Bhushan, Rajiv; and Puri, Suraj, 5,542,441, Cl. 134-95.200.

Bhushan, Rajiv: *See*—
Mohindra, Raj; Bhushan, Abhay K.; Bhushan, Rajiv; and Puri, Suraj, 5,542,441, Cl. 134-95.200.

Biagiotti, Guglielmo, to Fabio Perini S.p.A. Method and machine for producing logs of web material and tearing the web upon completion of the winding of each log. 5,542,622, Cl. 242-521.000.

Bialik, Leon; and Flomen, Felix, to Audio Codes Ltd. Pitch post-filter. 5,544,278, Cl. 395-2.770.

Biedermann, Hans: *See*—
Bacher, Walter; Biedermann, Hans; Dinglreiter, Heinz; and Kalb, Helmut, 5,543,108, Cl. 264-553.000.

Bielby, Robert R. N.: *See*—
Cliff, Richard G.; Reddy, Srinivas T.; Veenstra, Kerry; Papaliolios, Andreas; Sung, Chiakang; Terrill, Richard S.; Raman, Rina; and Bielby, Robert R. N., 5,543,730, Cl. 326-38.000.

Bielinski, Michael S.; and Herber, Paul G., to NVision Grafix, Inc. Method and apparatus for autostereoscopic lenticular displays utilizing random dot patterns. 5,543,965, Cl. 359-463.000.

Bierschenk, Thomas R.; Juhlke, Timothy J.; Kawa, Hajimu; and Lagow, Richard J., to Exfluor Research Corporation. Fluorination of acetals, ketals and orthoesters. 5,543,567, Cl. 562-582.000.

Bigham, John A.; Sistanizadeh, Kamran; and Little, Dave, to Bell Atlantic Network Services, Inc. ATM packet demultiplexer for use in full service network having distributed architecture. 5,544,161, Cl. 370-58.100.

Biller, Beate: *See*—
Katzer, Hans; Kratel, Günter; and Biller, Beate, 5,543,095, Cl. 264-063.000.

Biller, Joachim, to TRW Repa GmbH. Buckle for safety belts. 5,542,162, Cl. 24-641.000.

Biller, Scott A.: *See*—
Lawrence, R. Michael; Biller, Scott A.; and Fryszman, Olga M., 5,543,542, Cl. 558-87.000.

Bills, Gerald F.; Curotto, James E.; Dreikorn, Sarah J.; Jenkins, Rosalind G.; Liesch, Jerrold M.; Morris, Sandra A.; Thompson, John R.; Zink, Deborah L.; Jansson, Richard K.; Basilio, Angela; Diez, Teresa; Pelaez, Fernando; and Vicente, Francisca, to Merck & Co., Inc. Antifungal agents. 5,543,429, Cl. 514-468.000.

Bills, Gerald F.: *See*—
Bolessa, Evon A.; Schwartz, Robert E.; Bills, Gerald F.; Giacobbe, Robert A.; Pelaez Perez, Fernando; Arroyo, Angeles C.; Matas, Teresa D.; Fernandez, Isabel M.; Perez, Francisca V.; Mandala, Suzanne M.; Zink, Deborah L.; Thornton, Rosemary; Thompson, John R.; and Curotto, James E., 5,543,431, Cl. 514-627.000.

Binary Arts Corporation: *See*—
Lammertink, Ferdinand, 5,542,673, Cl. 273-153.00S.

Bindloss, Keith M.: *See*—
Harenberg, Donald D.; Watson, George A.; Bindloss, Keith M.; and Folwell, Dale E., 5,544,311, Cl. 395-183.160.

Binney & Smith, Inc.: *See*—
Tarozzi, Richard A., 5,542,640, Cl. 248-460.000.

Biochem Systems: *See*—
Hamilton, C. Richard; and Gustafson, Ross M., 5,542,983, Cl. 134-10.000.

Bioform Engineering, Inc.: *See*—
Petersen, Paul S.; and Ster, James F., Jr., 5,542,893, Cl. 482-72.000.

Biotech Holdings, Inc.: *See*—
Lugojan, Petru P., 5,543,023, Cl. 204-618.000.

Birbaum, Jean-Luc: *See*—
Stevenson, Tyler A.; Ravichandran, Ramanathan; Holt, Mark S.; Phan, Thuy N.; Birbaum, Jean-Luc; and Toan, Vien V., 5,543,518, Cl. 544-215.000.

Bischel, William K.; Brinkman, Michael J.; Deacon, David A. G.; DeWath, Edward J.; Dyer, Mark J.; and Field, Simon J., to Deacon Research. Display panel with electrically-controlled waveguide-routing. 5,544,268, Cl. 385-4.000.

Bischoping, Patricia: *See*—
Herbert, William G.; Bischoping, Patricia; Altavela, Robert P.; Kotowicz, Lawrence; Schmitt, Peter J.; Jansen, Ronald E.; Lennon, John H.; and Grey, Henry G., 5,543,028, Cl. 205-70.000.

Bissell Inc.: *See*—
Merten, David J., 5,542,147, Cl. 15-321.000.

Bisset, Stephen; Miller, Robert J.; Allen, Timothy P.; and Steinbach, Günter, to Synaptics, Incorporated. Touch pad driven handheld computing device. 5,543,588, Cl. 178-18.000.

Bither, David S.; Loewy, Charles S. F.; and Wilson, Paul C., to EMC Corporation. Fault tolerant interconnect topology using multiple rings. 5,544,330, Cl. 395-280.000.

Bitterli, Peter, to Clariant Finance (BVI) Limited. β-crystal form of 4,4'-Diamino-3,3'-Dibromo-1,1'-Dianthraquinonyl. 5,542,975, Cl. 106-498.000.

Blach-Olszewska, Zofia: *See*—
Inglot, Anna; and Blach-Olszewska, Zofia, 5,543,300, Cl. 435-29.000.

Black & Decker Inc.: *See*—
Walker, Andrew; and Swaddle, Steven, 5,544,274, Cl. 388-838.600.

Blackard, Vernon M. Portable set of boat trailer light assemblies. 5,544,022, Cl. 362-61.000.

Blackman, Daniel S.; Warner, Richard D.; DeJidas, Lloyd P.; and Jones, Gary A., to Graphic Arts Technical Foundation. Method and apparatus for cleaning stationary and moving printing press components. 5,542,352, Cl. 101-483.000.

Blackmore, John M.; and Jobe, Richard P. Eyelid weighting system. 5,542,437, Cl. 128-899.000.

Blais, Mark R.: *See*—
Runyan, Steven; Cox, James R.; Blais, Mark R.; and Longerbeam, Donald A., 5,543,922, Cl. 356-402.000.

Blake, Lawrence S.: *See*—
Garand, Donald J.; and Blake, Lawrence S., 5,542,623, Cl. 242-559.400.

Blakely, David: *See*—
Everett, Lorne G.; and Blakely, David, 5,543,623, Cl. 250-390.040.

Blanchard, Randall D., to Palomar Technologies Corporation. Rear projection screen with high off-axis sunlight rejection. 5,543,870, Cl. 353-74.000.

Blanche, John G., IV; and Sasso, Felix T., to Hughes Aircraft Company. Active deflection compensator. 5,543,812, Cl. 343-894.000.

Blaney, Timothy J.; Smith, Ronald A.; and Talesfore, Nicholas F., to Apple Computer, Inc. Bracket and module assembly for a portable personal computer. 5,544,011, Cl. 361-683.000.

Blank, Gerard D.: *See*—
Gunther, Stephen H.; Blank, Gerard D.; Curry, James T.; and Draeger, Jeff, 5,544,092, Cl. 395-800.000.

Blanpain, Roland; and Flament, Bruno, to Commissarist A L'Energie Atomique. Three dimensional magnetic mapping process and apparatus with data filtering using an inverse computation. 5,543,714, Cl. 324-345.000.

Blanton, Fred T. Bracket for decorative lights. 5,544,031, Cl. 362-396.000.

Blaseck, Klaus: *See*—
Meyer, Helmut J. W.; Ahls, Hermann W.; Blaseck, Klaus; and Schmitting, Udo, 5,542,521, Cl. 198-324.000.

Blesener, James L.: *See*—
Luoma, Eugene H.; and Blesener, James L., 5,542,203, Cl. 40-610.000.

Blewett, Richard G.: *See*—
Beard, Douglas R.; Phelps, Andrew E.; Woodmansee, Michael A.; Blewett, Richard G.; Lohman, Jeffrey A.; Silbey, Alexander A.; Spix, George A.; Simmons, Frederick J.; and Van Dyke, Don A., 5,544,337, Cl. 395-375.000.

Bliss, David F.; and Bates, Herbert E., to United States of America, Air Force. High Tc superconducting devices on bi-crystal substrates. 5,543,630, Cl. 257-33.000.

Blood, Lauren: *See*—
Brooks, Raymond J.; Gay, John M.; Weir, Bruce A.; McEntee, Paul E.; and Blood, Lauren, 5,544,206, Cl. 376-248.000.

Blue, William H.: *See*—
Shi, Joseph C. S.; Blue, William H.; and Bruns, Jeffrey C., 5,543,372, Cl. 501-145.000.

Blum, Kenneth J., to Berkel & Company Contractors, Inc. Apparatus for monitoring grout pressure during construction of auger pressure grouted piling. 5,542,786, Cl. 405-240.000.

Blust, Stephen M.; Comer, Edward I.; and Sandidge, Jere T., to BellSouth Corporation. Radiotelephone communications system with direct access to interoffice telephone trunk circuits and interface therefor. 5,544,227, Cl. 379-63.000.

BOA AG: *See*—
Mantoan, Silvano; and Petermann, Werner, 5,542,715, Cl. 285-226.000.

Board of Regents of Univ. of NE: *See*—
Jones, Randall W., 5,543,710, Cl. 324-318.000.

Board of Regents, The University of Texas System: *See*—
Sessler, Jonathan L.; and Král, Vladimir, 5,543,514, Cl. 540-472.000.

Board of Trustees operating Michigan State University: *See*—
Mulks, Martha H.; Thacker, Brad J.; and Cruz, Maria W. T., 5,543,304, Cl. 435-69.300.

Bobrich, Michael; Lehner, August; Roller, Hermann; Suettinger, Rudolf; Kress, Ria; Schneider, Norbert; Lenz, Werner; Engelhardt, Peter; Rudolf, Peter; Brodt, Gregor; Balz, Werner; and Kohl, Albert, to BASF Magnetics GmbH. Magnetic recording media. 5,543,226, Cl. 428-423.100.

Boda, James C., to Fiskars Inc. Device for describing arcs. 5,542,185, Cl. 33-27.020.

Boduszek, Bogdan: *See*—
Powers, James C.; Boduszek, Bogdan; and Oleksyszyn, Jozef, 5,543,396, Cl. 514-19.000.

Boebel, Ralf: *See*—
Levers, Jürgen; Bendicks, Norbert; Boebel, Ralf; Feldmüller, Ludwig; and Esders, Berthold, 5,543,923, Cl. 356-445.000.

Boehringer Mannheim Corporation: *See*—
Diebold, Eric; Rapkin, Myron; Azhar, Abol; and Usmani, Arthur, 5,543,299, Cl. 435-28.000.

Boehringer Mannheim GmbH: *See*—
Bosies, Elmar; Herrmann, Dieter; and Pahlke, Wulf, 5,543,402, Cl. 514-114.000.
Zilch, Harald; and Bauss, Frieder, 5,543,561, Cl. 562-13.000.

Boehringer Mannheim Italia SpA: *See*—
Stolfi, Robert L., 5,543,401, Cl. 514-50.000.

Boeing Company, The: *See*—
Huggins, Raymond W., 5,543,627, Cl. 250-551.000.
Thaniyavarn, Suwat, 5,543,805, Cl. 342-368.000.

Boelkins, Wallace G., to Uni-Mist, Inc. Pulse action mist lubrication system. 5,542,498, Cl. 184-7.400.

Boenisch, Thomas: *See*—
Lihme, Allan O. F.; and Boenisch, Thomas, 5,543,332, Cl. 436-528.000.

Boffito, Claudio; Doni, Fabrizio; and Ferrario, Bruno, to SAES Getters S.p.A. Getter materials for the vacuum insulation of liquid hydrogen storage vessels or transport lines. 5,543,121, Cl. 423-210.000.

Bogert, Robert C.: *See*—
Rudy, Marion F., 5,543,194, Cl. 428-69.000.

Bogus, Klaus P. M., to Agence Spatiale Europeene. Photocell, its method of manufacture, and a solar panel comprising such cells. 5,542,988, Cl. 136-244.000.

Boguslawski, George; Grosch, Josephine; Shultz, John W.; and Subramanian, Sethuraman, to Solvay Enzymes, Inc. Proteases of altered stability to autolytic degradation. 5,543,302, Cl. 435-69.100.

Bohlool, Perry P.; and Ricci, George J., to Standard Enterprises, Inc. Outlet cover plate incorporating a nightlight. 5,544,025, Cl. 362-95.000.

Bohn, Mark S.: *See*—
Benham, Charles B.; Bohn, Mark S.; and Yakobson, Dennis L., 5,543,437, Cl. 518-700.000.

Bohringer, Paul: *See*—
Götz, Bruno, 5,542,884, Cl. 464-36.000.

Boidol, Werner: *See*—
Pohlenz, Hans-Dieter; Boidol, Werner; and Streber, Wolfgang, 5,543,306, Cl. 435-91.410.

Boivin, Gregory E. Multi-purpose tool for cutting, prying and punching in the event of an emergency situation. 5,542,139, Cl. 7-118.000.

Bolessa, Evon A.; Schwartz, Robert E.; Bills, Gerald F.; Giacobbe, Robert A.; Pelaez Perez, Fernando; Arroyo, Angeles C.; Matas, Teresa D.; Fernandez, Isabel M.; Perez, Francisca V.; Mandala, Suzanne M.; Zink, Deborah L.; Thornton, Rosemary; Thompson, John R.; and Curotto, James E., to Merck & Co., Inc. Anti-fungal agents. 5,543,431, Cl. 514-627.000.

Bologna, William J.; and Levine, Howard L., to Columbia Laboratories, Inc. Method of progesterone delivery and affect thereof. 5,543,150, Cl. 424-430.000.

Bombardier Inc.: *See*—
Harvey, John A.; Renaud, Benoit; Gagnon, Claude; Rondeau, Pierre; and Lapointe, Denys, 5,542,371, Cl. 114-363.000.

Bond, James W., to United States of America, Navy. Non-adaptive phase-difference interference filter. 5,544,199, Cl. 375-285.000.

Bone, Rainer: *See*—
Schneider, Erich; Bone, Rainer; Klenk, Martin; Lange, Jörg; and Dambach, Dieter-Andreas, 5,542,292, Cl. 73-118.100.

Bonnefoy, Alain: *See*—
Agouridas, Constantin; Bonnefoy, Alain; Chantot, Jean-François; Denis, Alexis; and Le Martret, Odile, 5,543,400, Cl. 514-29.000.

Bontempo, Gregorio; Milazzo, Patrizia; and Alzati, Angelo, to SGS-Thomson Microelectronics, S.r.l.; and Consorzio Per La Ricerca Sulla Microelettronica Nel Mezzogiorno. Control, reduction and equalization of delays in a driver stage. 5,543,739, Cl. 327-108.000.

Bonutti, Peter M., to Apogee Medical Products, Inc. Indexing assembly for joint imaging. 5,542,423, Cl. 128-653.100.

Boone, Theodore F.: *See*—
Dombek, Bruce B.; and Boone, Theodore F., 5,542,827, Cl. 417-486.000.

Booth, Richard B.; Gaynes, Michael A.; Murco, Robert M.; Puligandla, Viswanadham; Roldan, Judith M.; Saraf, Ravi; and Zalesinski, Jerzy M., to International Business Machines Corporation. Direct chip attachment (DCA) with electrically conductive adhesives. 5,543,585, Cl. 174-261.000.

Borchers, Peter: *See*—
Adrian, Willy; Bäthge, Frank; Borchers, Peter; Pietsch, Kurt; Wallbaum, Knuth; and Wente, Gerald, 5,542,522, Cl. 198-337.000.

Borgford, Beajamin J. Bale cutting device. 5,542,326, Cl. 83-795.000.

Borisoff, David J. Multi-tuner bridge for stringed musical instruments. 5,542,330, Cl. 84-298.000.

Borland, Mark S.; and Teague, Bruce H., to Chrysler Corporation. Method of determining start of closed-loop fuel control for an internal combustion engine. 5,542,403, Cl. 123-686.000.

Borrello, Sebastian R.: *See*—
Wadsworth, Mark V.; Borrello, Sebastian R.; and Gooch, Roland W., 5,543,641, Cl. 257-226.000.

Bosch, H. William: *See*—
Swanson, Jon R.; Bosch, H. William; Illig, Kathleen J.; Marcera, Donna M.; and Mueller, Ronald L., 5,543,133, Cl. 424-9.450.

Bosies, Elmar; Herrmann, Dieter; and Pahlke, Wulf, to Boehringer Mannheim GmbH. [3-(C_{16}-C_{18})-alkanesulphinyl and sulphonyl-2-methoxymethylpropyl]-(2-trimethylammonioethyl) phosphates, processes for the preparation thereof and pharmaceutical compositions containing them. 5,543,402, Cl. 514-114.000.

Boston Test Tool Company: *See*—
Wenstrup, Robert S.; and Fieno, Joseph J., 5,544,157, Cl. 378-18.000.

Boston University: *See*—
Moulton-Barrett, Rex; and Michener, Robert, 5,542,419, Cl. 128-630.000.

Bouchan, Christophe, to Molex Incorporated. Shunted electrical connector. 5,542,853, Cl. 439-188.000.

Bouman, Charles A.: *See*—

Allebach, Jan P.; Bouman, Charles A.; and Balasubramanian, Thyagarajan, 5,544,284, Cl. 395-131.000.

Bourang, Henry: *See*—
Imran, Mir A.; Gandhi, Deepak R.; Bourang, Henry; Quiachon, Dignah B.; and Chow, Andrew Y., 5,542,434, Cl. 128-772.000.

Bourne, Richard C.; and Springer, David A. Night-storage underfloor cooling systems. 5,542,260, Cl. 62-171.000.

Boury, Bechara F.: *See*—
Amini, Nader; Boury, Bechara F.; Brannon, Sherwood; Horne, Richard L.; and Lohman, Terence J., 5,544,346, Cl. 395-481.000.

Bowen, David C., to Molex Incorporated. Edge card connector with alignment means. 5,542,854, Cl. 439-157.000.

Boyer, Samuel R.; Sitz, Michael; and Svaldi, Paul, to Brother's Gourmet Coffee, Inc. Dual chamber vacuum storage and dispenser for coffee beans. 5,542,583, Cl. 222-425.000.

Boyette, James E., Jr.; Lo, Jiann-Chang; and Servedio, Michael, to International Business Machines Corporation. Open frame gantry probing system. 5,543,726, Cl. 324-758.000.

Boyle, Michael T.: *See*—
Joshi, Nayan; McCaskie, John E.; and Boyle, Michael T., 5,543,182, Cl. 427-443.100.

Bozinovic, Radmilo; and Pagallo, Giulia, to Apple Computer, Inc. Shape recognizer for graphical computer systems. 5,544,265, Cl. 382-203.000.

Brady, Michael J.; Krusin-Elbaum, Lia; Masselink, William T.; Santhanam, Padmanabhan; and Tamegai, Tsuyoshi, to International Business Machines Corporation. Hall sensor with bigh spatial resolution in two directions concurrently. 5,543,988, Cl. 360-112.000.

Braford-Goldberg, Sarah R.; Easton, Alan M.; Klein, Barbara K.; McKearn, John P.; and Olins, Peter O., to G.D. Searle & Co. Therapeutic methods using interleukin-3 (IL-3) human/murine hybrid polypeptides. 5,543,141, Cl. 424-85.200.

Brahmbhatt, Sudhir R., to MG Industries. Non-cryogenic method and apparatus for producing pure nitrogen. 5,543,129, Cl. 423-351.000.

Brandrup-Wognsen, Helene: *See*—
Kullander, Gregor; Reineck, Ingrid; and Brandrup-Wognsen, Helene, 5,543,210, Cl. 428-217.000.

Brandt, Bengt-Ake, to ITT Flygt AB. Impeller for a rotary pump. 5,542,817, Cl. 415-58.200.

Brandt, Kenneth A.: *See*—
Jacobson, Scott B.; and Brandt, Kenneth A., 5,542,493, Cl. 180-272.000.

Brannon, Sherwood: *See*—
Amini, Nader; Boury, Bechara F.; Brannon, Sherwood; Horne, Richard L.; and Lohman, Terence J., 5,544,346, Cl. 395-481.000.

Brantman, Robert F. Sectional toilet seat. 5,542,131, Cl. 4-239.000.

Brassel, Willy: *See*—
Steiner, Daniel; Brassel, Willy; and Hagmann, Karl, 5,542,511, Cl. 191-41.000.

Brassil, John M.: *See*—
Johnson, Bruce S.; Khosla, Mukul; Herron, John R.; Brassil, John M.; and Schoen, Alan E., 5,543,625, Cl. 250-427.000.

Bratten, James M.; and Howard, Stephen F., to Avco Corporation. Robotic drill clamp. 5,542,796, Cl. 408-13.000.

Bratton, William E.: *See*—
Adams, Terry; Ambrosio, Neil J.; Bratton, William E.; Forsythe, William M.; Hatton, Bruce E.; Kinder, Larry L.; and Swat, William A., 5,542,438, Cl. 131-238.000.

Braun Aktiengesellschaft: *See*—
Beutel, Kurt, 5,542,179, Cl. 030-043.920.

Brazil, Steven M.: *See*—
Talbert, Lloyd G.; and Brazil, Steven M., 5,543,368, Cl. 501-90.000.

Brecher, Virginia H.; Chou, Paul B.-L.; Hall, Robert W.; Parisi, Debra M.; Rao, Ravishankar; Riley, Stuart L.; and Sturzenbecker, Martin C., to International Business Machines Corporation. Automated defect classification system. 5,544,256, Cl. 382-149.000.

Brecht, Doris J.: *See*—
McGee, James B.; Petroff, Lenin J.; Brecht, Doris J.; Ollinger, William J., deceased; and Ollinger, by John M., legal representative, 5,543,082, Cl. 252-321.000.

Brecht, William B., to Trojan Battery Company. Battery electrolyte circulation system. 5,543,243, Cl. 429-51.000.

Brennan, Joseph T., to Terra International, Inc. Method of making pesticide sticker-extender. 5,543,384, Cl. 504-116.000.

Breslauer, Charles S. Ultra-light high moisture retention tile mortar. 5,542,358, Cl. 106-698.000.

Breth, Newton. Pneumatic ball valve operator. 5,542,643, Cl. 251-62.000.

Brewer, Gary, to Wake Forest University. DNA sequence encoding a polypeptide with anti-tumor properties. 5,543,499, Cl. 530-350.000.

Brewer, Melvin: *See*—
Wills, Kendall S.; Rodriguez, Paul A.; and Brewer, Melvin, 5,543,365, Cl. 437-226.000.

Brian, Frank J.; and Burrow, Gary M. Water vehicle jet pump flow control apparatus. 5,542,863, Cl. 440-47.000.

Bridges, Jack E.; Sresty, Guggilam C.; Held, Jeffrey S.; Sharp, James W.; and Bajzek, Thomas J., to ITT Research Institute. Method and apparatus for rendering medical materials safe. 5,543,111, Cl. 422-22.000.

Bried, David K.: *See*—
Elsenheimer, John A.; Bried, David K.; Sands, Jeffrey L.; Wildes, Donald; and Nugent, J. Patrick, 5,542,462, Cl. 160-178.000.

Brinda, Paul D.; and Cosentino, Louis C., to Minntech Corporation. Method of manufacture of hollow fiber filter cartridge with porous ring. 5,543,002, Cl. 156-77.000.

Brinkman, Michael J.: *See*—
Bischel, William K.; Brinkman, Michael J.; Deacon, David A. G.; DeWath, Edward J.; Dyer, Mark J.; and Field, Simon J., 5,544,268, Cl. 385-4.000.

Brismark, Lars G.: *See*—
Teder, Paul M.; Ewerbring, Lars-Magnus; and Brismark, Lars G., 5,544,156, Cl. 370-18.000.

Bristol Compressors, Inc.: *See*—
Monk, David T.; Hatzikazakis, Pantelis; and Mumpower, Kevin N., 5,542,341, Cl. 92-187.000.

British Technology Group Limited: *See*—
Coutts, Ian G. C.; and Cummins, Pamela J., 5,543,422, Cl. 514-319.000.

British Technoloyg Group Limited: *See*—
Beylin, Vladimir G.; Sercel, Anthony D.; Showalter, Howard D. H.; Adams, Gerald E.; Fielden, Edward M.; Naylor, Matthew A.; and Stratford, Ian J., 5,543,527, Cl. 548-110.000.

Brockstein, Allan J.: *See*—
Buchler, Robert J.; Brockstein, Allan J.; and Hsu, David Y., 5,543,804, Cl. 342-357.000.

Broderick, Kevin B.: *See*—
Song, Joo H.; Sundstrom, Christafor E.; Record, David W.; Townsend, Donald J.; Broderick, Kevin B.; and Schnell, Philip G., 5,543,160, Cl. 426-3.000.

Brodt, Gregor: *See*—
Bobrich, Michael; Lehner, August; Roller, Hermann; Suettinger, Rudolf; Kress, Ria; Schneider, Norbert; Lenz, Werner; Engelhardt, Peter; Rudolf, Peter; Brodt, Gregor; Balz, Werner; and Kohl, Albert, 5,543,226, Cl. 428-423.100.

Brody, Michael P., to Infrasonics, Inc. Apparatus and process for controlling the ventilation of the lungs of a patient. 5,542,415, Cl. 128-204.230.

Broger, Emil A.; Crameri, Yvo; Schmid, Rudolf; and Siegfried, Theodor, to Hoffman-La Roche Inc. Process for the enantioselective hydrogenation of ketosiophorone derivatives. 5,543,559, Cl. 560-231.000.

Broker, Harold J.: *See*—
Aubertine, Matthew E.; Beyzavi, Kianoush; Broker, Harold J.; Checca, Ronald P.; Granato, Michael A.; Haeussler, David A.; Herasimtschuk, Michael; Jurkovic, Michael J.; Salem, Gerard M.; Selinger, Craig R.; and Zehr, Paul R., 5,544,088, Cl. 364-489.000.

Bronstein, Irena Y.; Edwards, Brooks; and Juo, Rouh-Rong, to Tropix, Inc. Chemiluminescent 3—(Substituted adamant—2'—Ylidene) 1,2—Dioxetanes. 5,543,295, Cl. 435-6.000.

Brooks, Raymond J.; Gay, John M.; Weir, Bruce A.; McEntee, Paul E.; and Blood, Lauren, to R. Brooks Associates, Inc. Reactor head work station. 5,544,206, Cl. 376-248.000.

Brosha, Eric L.: *See*—
Garzon, Fernando H.; Chung, Brandon W.; Raistrick, Ian D.; and Brosha, Eric L., 5,543,025, Cl. 204-425.000.

Brother's Gourmet Coffee, Inc.: *See*—
Boyer, Samuel R.; Sitz, Michael; and Svaldi, Paul, 5,542,583, Cl. 222-425.000.

Brown, Eliezer. Rotatable wardrobe. 5,542,758, Cl. 312-249.200.

Brown, Emma J.: *See*—
Parri, Owain L.; Brown, Emma J.; Coates, David; and Goulding, Mark J., 5,543,075, Cl. 252-299.010.

Brown, Herbert C., to Aldrich Chemical Company, Inc. Borane-N,N-dialkylaniline hydroboration agents. 5,543,569, Cl. 564-8.000.

Brown, Louis R.: *See*—
Steffens, Charles E., Jr.; and Brown, Louis R., 5,542,696, Cl. 280-730.200.

Brown, Patrick W.: *See*—
Nottingham, John R.; Spirk, John W., Jr.; Brown, Patrick W.; and Perkitny, Jerzy, 5,542,570, Cl. 221-192.000.

Brown, Robert H.: *See*—
Zawadzka, Agatha; Tsang, Wen-Ghih; and Brown, Robert H., 5,543,316, Cl. 435-240.200.

Brown, Robert J., Jr.; Romanowiz, James D.; and Staples, Charles W. Energy management and home automation system. 5,544,036, Cl. 364-145.000.

Brown, Timothy P.: *See*—
Kanavy, Walter J.; and Brown, Timothy P., 5,544,298, Cl. 395-155.000.

Broz, Gordon A.: *See*—
Broz, Jayne I.; and Broz, Gordon A., 5,542,587, Cl. 224-415.000.

Broz, Jayne I.; and Broz, Gordon A. Infant carrier installable on a bicycle. 5,542,587, Cl. 224-415.000.

Brückner, Raimund; and Grau, Rüdiger, to Didier-Werke AG. Method and device for the casting of molten material to nearly final intended dimensions by commencing solidification of molten material in a casting nozzle passage while moving the solidifying material through the passage by ultrasonic vibrations. 5,542,466, Cl. 164-478.000.

Brueninghaus Hyodromatik GmbH: *See*—
Leibing, Karl-Heinz; Hansen, Kai-Uwe; and Vonnoe, Reinhard, 5,542,251, Cl. 60-426.000.

Bruggeman, Leslie A.: *See*—
Klotman, Paul E.; Bruggeman, Leslie A.; and Horikoshi, Satoshi, 5,543,509, Cl. 536-24.330.

Brugger, Joseph G., to Gemini, Inc. Changeable letters for signs. 5,542,202, Cl. 40-576.000.

Bruice, Thomas: *See*—
Cook, Phillip D.; Manoharan, Muthiah; and Bruice, Thomas, 5,543,507, Cl. 536-23.100.

Brumm, Phillip J., to Enzyme Bio-Systems Ltd. Process for the separation and recovery of *Aspergillus niger* acid protease and glucoamylase. 5,543,313, Cl. 435-225.000.

Brummond, Barbara A.; Saini, Mohan S.; and Ponticello, Ignazio S., to Johnson & Johnson Clinical Diagnostics, Inc. Labeled carbamazepine hapten analogues for competitive enzyme immunoassays. 5,543,311, Cl. 435-188.000.

Brun, Norbert: *See*—
Lopez, François; Pauty, Etienne; and Brun, Norbert, 5,544,021, Cl. 362-61.000.

Bruno, James F. Adjustable pipe hanger. 5,542,631, Cl. 248-58.000.

Bruns, Jeffrey C.: *See*—
Shi, Joseph C. S.; Blue, William H.; and Bruns, Jeffrey C., 5,543,372, Cl. 501-145.000.

Bryant, Frank R.; and Hodges, Robert L., to SGS-Thomson Microelectronics, Inc. Method fabricating an integrated circuit. 5,543,343, Cl. 437-51.000.

Bucci, Marco; Delprato, Ivano; and Spazzapan, Giorgio, to Minnesota Mining and Manufacturing Company. Infrared sensitive silver halide photographic elements. 5,543,278, Cl. 430-506.000.

Bucenos, Klaus M.; and Schmid, Helmut, to Fraunhofer Gesellschaft zur Forderung der Angewandten Forschung e.V. Gas-generating mixture. 5,542,998, Cl. 149-45.000.

Bucenos, Klaus M.; and Schmid, Helmut, to Fraunhofer Gesellschaft zur Forderung der angewandten Forschung e.V. Gas-generating mixture. 5,542,999, Cl. 149-45.000.

Buchana, William A.; Eardley, Richard A.; Tizzard, Anthony R.; and Utley, Brian G., to International Business Machines Corporation. Touchpad with dual sensor that simplifies scanning. 5,543,589, Cl. 178-18.000.

Buchanan, Harry C., Jr.; and Zhou, Peter S., to ITT Automotive Electrical Systems, Inc. Windshield wiper system having a wiper blade capable of retraction for hidden park. 5,542,145, Cl. 15-250.160.

Bucher, John C.; and Wu, Shih Tza, to Chien Luen Industries Company, Ltd., Inc. Ceiling fan safety tether. 5,542,819, Cl. 416-146.00R.

Buchler, Robert J.; Brockstein, Allan J.; and Hsu, David Y., to Litton Systems, Inc. Navagation apparatus with improved attitude determination. 5,543,804, Cl. 342-357.000.

Buck, Reinhold: *See*—
Bell, Carl-Martin; Pirner, Manfred; Buck, Reinhold; and Gohl, Hermann J., 5,543,465, Cl. 525-182.000.

Buckles, Joseph M., to Viking Industries, Inc. Dispensing gun for ratio sensitive two-part material. 5,542,578, Cl. 222-145.600.

Buding, Hartmuth, to Bayer AG. Shaped masticating agents containing paraffin. 5,542,974, Cl. 106-270.000.

Budjinski, Joseph F., II: *See*—
Atwell, Charles G.; Budjinski, Joseph F., II; and Shook, Jack R., 5,542,901, Cl. 493-47.000.

Buening, Dennis J., to Excel Industries, Inc. Flush-closing multi-pane window assembly for motor vehicles. 5,542,214, Cl. 49-380.000.

Buhler, Kirk A., to Unisen, Inc. Supporting chassis for a treadmill. 5,542,892, Cl. 482-54.000.

Bui, Trinh C.: *See*—
Akin, William R., Jr.; and Bui, Trinh C., 5,544,135, Cl. 369-32.000.

Bujaryn, L. Walter. Variable posture component system seating device. 5,542,746, Cl. 297-423.120.

Bulka, Robert J.: *See*—
O'Neill, Gerald J.; and Bulka, Robert J., 5,543,055, Cl. 210-638.000.

Bunker, S. Mark: *See*—
Green, David J.; Bunker, S. Mark; Moore, Walter A.; Pierotti, L. John; Storey, J. Kirk; and Olson, Brent K., 5,542,702, Cl. 280-737.000.

Bunte, Alan G.: *See*—
Schultz, Darald R.; Danielson, Arvin D.; Bunte, Alan G.; Sherman, Richard A.; and Jaeger, Robert B., 5,544,010, Cl. 361-686.000.

Bunyan, Peter. Hydraulically operated forcing tool. 5,542,646, Cl. 254-93.00R.

Burchett, Darvin; and Hubbard, Allen L., to Truck Covers, Inc. Cover assembly for coal carrying vehicles. 5,542,734, Cl. 296-100.000.

Burchi, Charles R., to Woodbridge Foam Corporation. Seat having a frame element of high-density, rigid foam. 5,542,747, Cl. 297-452.550.

Burger, Rainer: *See*—
Theilacker, Klaus; and Burger, Rainer, 5,542,350, Cl. 101-228.000.

Burbans, Walter R., Jr.; Kirchbaum, Nathan; and Nastasi, Richard F., to Grumman Aerospace Corporation. Gull wing aircraft. 5,542,625, Cl. 244-45.00R.

Burk, Mark J., to Du Pont de Nemours, E. I., and Company. Preparation of optically active hydrazines and amines. 5,543,571, Cl. 564-150.000.

Burke, Brian K.: *See*—
Dronzek, Peter J., Jr.; Sedran, Roger H.; and Burke, Brian K., 5,543,191, Cl. 428-41.500.

Burke, Thomas F., to Jason Incorporated. Idler roller and method of making. 5,542,900, Cl. 492-16.000.

Bürkert GmbH: *See*—
Bacher, Walter; Biedermann, Hans; Dinglreiter, Heinz; and Kalb, Helmut, 5,543,108, Cl. 264-553.000.

Burley, David R.: *See*—
Myers, Robert B.; Bailey, Ralph T.; Burley, David R.; Feeney, Steve; Gray, Barbara J.; and Johnson, Dennis W., 5,542,609, Cl. 239-427.000.

Burns, Carmen D., to Staktek Corporation. Ultra high density integrated circuit package. 5,543,664, Cl. 257-787.000.

Burns, John: *See*—
Merkle, Cliff; Burns, John; Laib, Gordon; Willis, Jim; Mitchel, Scotty; and Erickson, Dennis, 5,542,544, Cl. 209-139.100.

Burns Philp & Company Limited: *See*—
Evans, Robert J., 5,543,161, Cl. 426-62.000.

Burns, Ramon A., Jr.: *See*—
Rhee, Woonza; Wallace, Donald G.; Michaels, Alan S.; Burns, Ramon A., Jr.; Fries, Louis; DeLustro, Frank; and Bentz, Hanne, 5,543,441, Cl. 523-105.000.

Burrow, Gary M.: *See*—
Brian, Frank J.; and Burrow, Gary M., 5,542,863, Cl. 440-47.000.

Burward-Hoy, Trevor, to Sun Microsystems, Inc. Low heat loss and secure chip carrier for cryogenic cooling. 5,543,662, Cl. 257-716.000.

Buscemi, Vivian L.: *See*—
Engel, Stephen J.; and Buscemi, Vivian L., 5,544,329, Cl. 395-826.000.

Buschberger, Alfred: *See*—
Rosenmann, Jack P.; and Buschberger, Alfred, 5,542,384, Cl. 123-179.310.

Bush, M. Elizabeth: *See*—
Mar, Craig E.; Pless, Benjamin D.; and Bush, M. Elizabeth, 5,542,173, Cl. 29-825.000.

Bushard, Bradley B.; Dion, Philip G.; and Heinz, Joseph V., to BellSouth Corporation. Run-in test system for PC circuit board. 5,543,727, Cl. 324-760.000.

Bushman, Boyd B., to Lockheed Corporation. Apparatus powered using laser supplied energy. 5,542,247, Cl. 60-203.100.

Bushman, Boyd B., to Lockheed Martin Corporation. Object detector. 5,543,917, Cl. 356-364.000.

Butler, Robert J.: *See*—
DuBois, Eugene W., III; Doria, Ronald J.; and Butler, Robert J., 5,542,367, Cl. 114-218.000.

Butters, Daphne: *See*—
Heighington, John E.; Butters, Daphne; and Claxton, Stephen J., 5,543,207, Cl. 428-207.000.

Byfield, Paul C., to Western Fibres Limited. Friction fitted contour skirt for mattress pads and covers. 5,542,137, Cl. 5-500.000.

Byrne, Gerard, to Robert Bosch GmbH. P-channel transistor. 5,543,642, Cl. 257-356.000.

C.E.B. Enterprises, Inc.: *See*—
Bathrick, Leeland M., 5,542,744, Cl. 297-362.110.

Cachier, Gérard, to Thomson - C S F. Integrated electronic elements with variable electrical characteristics, especially for microwave frequencies. 5,543,765, Cl. 333-246.000.

Caddx-Caddi Controls, Inc.: *See*—
Clark, Frank B.; and Lewis, Kenneth T., 5,543,783, Cl. 340-550.000.

Cadwallader, Richard J. Waterproof closure seal for bags, clothing and other uses. 5,542,766, Cl. 383-63.000.

Caesar, Julian C.: *See*—
Pitt, Alan R.; Caesar, Julian C.; Gibson, Danuta; Wear, Trevor J.; Young, David J.; and King, Scott A., 5,543,555, Cl. 560-151.000.

Cahannes, Paul: *See*—
Demuth, Robert; Faas, Jurg; and Cahannes, Paul, 5,542,154, Cl. 19-114.000.

Cahuzac, Georges: *See*—
Monget, Francois; and Cahuzac, Georges, 5,543,005, Cl. 156-93.000.

California Pellet Mill Company: *See*—
Wilhelm, Donald M.; Hubalek, Verne A.; Smith, S. Andrew; and Immergluck, Robert, 5,542,838, Cl. 425-186.000.

California Prison Industry Authority: *See*—
Dias, Gary R., 5,542,219, Cl. 52-126.400.

Callewaert, Dennis J., to Test Projects, Inc. Thermal difference detector system. 5,542,764, Cl. 374-121.000.

Calton, Gary J.: *See*—
Wood, Louis L.; and Calton, Gary J., 5,543,491, Cl. 528-328.000.

Calvest Associates, Inc.: *See*—
Culkin, Joseph B., 5,543,862, Cl. 348-739.000.

Camco International, Inc.: *See*—
Pringle, Ronald E.; Sides, Winfield M., III; Folsom, David N.; and McGavern, Cecil G., III, 5,542,472, Cl. 166-65.100.

Cameron, Fiona H.: *See*—
Haseloff, James P.; Gerlach, Wayne L.; Jennings, Philip A.; and Cameron, Fiona H., 5,543,508, Cl. 536-23.200.

Camp, Gregory T. Water jet appliance. 5,542,909, Cl. 601-160.000.

Campau, Daniel N., to Flow-Rite Controls, Ltd. Automatic liquid dispenser. 5,542,605, Cl. 239-44.000.

Campbell, Raymond J.; Nall, Al, Jr.; and Oates, R. Terry. Latch attachment preventing chronic leakage. 5,542,448, Cl. 137-410.000.

Campisse, Nash: *See*—
Price, Billy F.; Thywissen, H. Joseph; and Campisse, Nash, 5,542,459, Cl. 141-18.000.

Canon Inc.: *See*—
Garland, Harry; and Melen, Roger, 5,544,045, Cl. 364-419.030.

Canon Kabushiki Kaisha: *See*—
Akashi, Akira, 5,543,887, Cl. 354-410.000.
Chiba, Yuji; and Hara, Shinichi, 5,544,213, Cl. 378-34.000.
Enomoto, Takashi; Yoshioka, Toshifumi; and Nishida, Naoya, 5,543,946, Cl. 359-87.000.
Fuei, Naoki; and Tanaka, Takashi, 5,543,473, Cl. 525-399.000.
Fujii, Akio; Kashida, Motokazu; Watanabe, Ikuo; and Yamashita, Shinichi, 5,544,176, Cl. 371-40.100.
Fukuzawa, Keiichi, 5,543,980, Cl. 360-85.000.

Hanyu, Yukio; Tsuboyama, Akira; Taniguchi, Osamu; Mihara, Tadashi; Nakamura, Katsutoshi; and Mori, Sunao, 5,543,943, Cl. 359-43.000.
Inami, Satoru; Ohkubo, Masaharu; and Kato, Junichi, 5,543,899, Cl. 355-219.000.
Inoue, Hiroshi; Mizutome, Atsushi; and Enomoto, Aiko, 5,543,817, Cl. 345-100.000.
Ito, Kenji, 5,543,881, Cl. 354-253.000.
Kato, Motoi; Takeuchi, Akihiko; Ochiai, Toshihiko; Miyashiro, Toshiaki; Kabeya, Nobuaki; Suzuki, Takehiko; and Kume, Takao, 5,543,904, Cl. 355-285.000.
Kuronuma, Akira; Akiyama, Yuji; Murata, Takayuki; Fukui, Hiroshi; and Omo, Shinichi, 5,543,826, Cl. 347-23.000.
Maebashi, Youichirou; Fujii, Haruo; Sasame, Hiroshi; Kawakami, Hiroaki; Kobayashi, Tatsuya; Kobayashi, Tetsuya; Enomoto, Naoki; Uchiyama, Akihiko; and Saito, Yoshiro, 5,543,900, Cl. 355-219.000.
Miura, Konoe; Takimoto, Hiroshi; Ohta, Tokuya; and Kobayashi, Masatsune, 5,542,970, Cl. 106-20.00D.
Miyawaki, Mamoru, 5,543,648, Cl. 257-347.000.
Mumura, Toshihiko, 5,543,835, Cl. 348-207.000.
Murakami, Koichi, 5,542,655, Cl. 270-58.090.
Noguchi, Hiromichi; Inamoto, Tadayoshi; and Munakata, Megumi, 5,543,266, Cl. 430-280.100.
Setoriyama, Takeshi, 5,543,891, Cl. 355-200.000.
Shishido, Kazuo; Sasaki, Shinichi; Ikemoto, Isao; Yashiro, Masahiko; Karakama, Toshiyuki; and Numagami, Atsushi, 5,543,898, Cl. 355-210.000.
Suda, Hirofumi; Toyama, Masamichi; Fujiwara, Akihiro; Yamada, Kuniniko; and Yoshimura, Katsuji, 5,543,839, Cl. 348-349.000.
Suda, Yasuo, 5,543,886, Cl. 354-406.000.
Sugino, Kazumasa, 5,544,233, Cl. 379-100.000.
Suzuki, Hajime, 5,543,908, Cl. 355-315.000.
Suzuki, Koichi; Takai, Hideyuki; Miyazaki, Hajime; Sugiyama, Satomi; and Kunieda, Mitsuhiro, 5,543,257, Cl. 430-58.000.
Terajima, Hisao; Koizumi, Shigeru; Nakayama, Toru; Takeda, Tomoyuki; Uno, Hiromichi; Nakagawa, Kaori; Shimizu, Hideki; and Morita, Mitsuo, 5,544,234, Cl. 379-100.000.
Ueno, Kazunori; Fukui, Tetsuro; Kobayashi, Motokazu; Ooi, Takehiko; Kagami, Kenji; Suzuki, Masao; and Nishino, Katsuya, 5,543,286, Cl. 430-619.000.
Uzawa, Shigeyuki; Nakai, Akiya; Imaizumi, Masaaki; Tanaka, Hiroshi; Takakura, Noburu; and Kaneko, Yoshio, 5,543,921, Cl. 356-401.000.
Yamada, Osamu; Sugiura, Susumu; and Makita, Takeshi, 5,543,855, Cl. 348-753.000.

Canon Kabushiki Kaisha, P.C.: *See*—
Hieda, Teruo; Suzuki, Masao; and Narita, Hitoshi, 5,543,836, Cl. 348-223.000.

Cap Toys, Inc.: *See*—
Nottingham, John R.; Spirk, John W., Jr.; Brown, Patrick W.; and Perkitny, Jerzy, 5,542,570, Cl. 221-192.000.

Capo, James L., to James River Corporation of Virginia. Carton having a perforated access opening. 5,542,598, Cl. 229-242.000.

Capps, Stephen P., to Apple Computer, Inc. Method and apparatus for indicating a change in status of an object and its disposition using animation. 5,544,295, Cl. 395-152.000.

Capps, Stephen P.; Sharpe, Benjamin W.; and Foster, Gregg S., to Apple Computer, Inc. Interface for a computerized database having card and list views. 5,544,358, Cl. 395-600.000.

Cardiovascular Dynamics, Inc.: *See*—
Crocker, Michael, 5,542,926, Cl. 604-102.000.

Carl-Zeiss-Stiftung: *See*—
Sauer, Ralf-Roland; Rupp, Wolfgang; and Hinz, Alexander, 5,544,186, Cl. 372-33.000.

Carlin, T. Christopher, to A/C Enterprises, Inc. Light system with light holder. 5,544,028, Cl. 362-249.000.

Carlo Gavazzi AG: *See*—
Neigard, Jens; Skovgaard, Ole; and Soerensen, Kent, 5,544,166, Cl. 370-13.000.

Carlson, Douglas W.; and Simons, Stephen P., to Hydrill Company. Free flow low energy pipe protector. 5,542,454, Cl. 138-110.000.

Carlson Tool & Machine Co.: *See*—
Toth, Mike, 5,542,749, Cl. 300-4.000.

Carlson, Wayne C.; Meadows, Michael J.; and Greco, Merrill B., to International Business Machines Corporation. Fault tolerant command processing. 5,544,304, Cl. 395-182.080.

Carlsson, Thommy; and Andersson, Sven B., to Pharmacia AB. Smoking substitute. 5,543,424, Cl. 514-343.000.

Carmosin, Richard J.; Carson, John R.; Pitis, Philip; and Raffa, Robert B., to Ortho Pharmaceutical Corporation. 4-arylisoindole analgesics. 5,543,530, Cl. 548-452.000.

Carnaudmetalbox PLC: *See*—
Dunwoody, Paul R., 5,542,277, Cl. 72-345.000.

Carobolante, Francesco; and Robinson, Curtis, to SGS-Thomson Microelectronics, Inc. Circuit and method for controlling the speed of a motor. 5,543,697, Cl. 318-594.000.

Carolan, Kevin M., to Xerox Corporation. Correction for surface velocity mismatch in multiple servo paper paths. 5,543,894, Cl. 355-208.000.

Carpenter, Eric R.; Claussen, Christopher S.; and Cox, James O., to International Business Machines Corporation. Method and system for optionally registering a local process to allow participation in a single system semantic. 5,544,316, Cl. 395-200.030.

Carpenter, Kelly S.; Dearing, Gerard M.; Nick, Jeffrey M.; Strickland, Jimmy P.; Swanson, Michael D.; and Wilkinson, Wendell W., to International Business Machines Corporation. Coherence controls for store-multiple shared data coordinated by cache directory entries in a shared electronic storage. 5,544,345, Cl. 395-477.000.

Carpentier, Pierre, to Societe e'Etudes et de Constructions Aero-Navales. Safety annular heat exchanger for incompatible fluids. 5,542,467, Cl. 165-70.000.

Carratt, Michel; and de Vecchia, Michel, to Alcatel Cable. Optical fiber cable and an associated method of manufacture. 5,544,272, Cl. 385-128.000.

Carrier Corporation: *See*—
Scarfone, Tommaso F., 5,542,831, Cl. 418-60.000.

Carrig, Timothy J.; Taylor, Antoinette J.; and Stewart, Kevin R., to University of California, The Regents of the. Electro-optic crystal mosaics for the generation of terahertz radiation. 5,543,960, Cl. 359-326.000.

Carroll, John T., III; Bentz, Joseph C.; and Genter, David P., to Cummins Engine Company, Inc.; and Toshiba Corp. Elephant's foot adjusting screw assembly for internal combustion engine. 5,542,315, Cl. 74-586.000.

Carson, John R.: *See*—
Carmosin, Richard J.; Carson, John R.; Pitis, Philip; and Raffa, Robert B., 5,543,530, Cl. 548-452.000.

Carson, Robert T.; Reckleben, Lisa; and Hogrefe, Arnold W., to Motorola, Inc. Conductive solder pad for bonding an electronic device to a ceramic substrate. 5,543,583, Cl. 174-257.000.

Carsonite International Corporation: *See*—
Mallon, Richard, 5,542,778, Cl. 404-6.000.

Carter, Ernest E., Jr.; Frulla, Roberto E.; Pettit, Paul J.; Sanford, Frank L.; and Saugier, R. Kent, to Halliburton NUS Environmental Corp. Method and apparatus for in situ installation of underground containment barriers under contaminated lands. 5,542,782, Cl. 405-129.000.

Carter, Thomas B.: *See*—
Ligon, Robert M.; and Carter, Thomas B., 5,542,582, Cl. 222-342.000.

Carter, Thomas J.; Mason, Arthur C.; and Nolan, John H., to Utica Enterprises, Inc. Rotary index table assembly. 5,542,317, Cl. 74-813.00L.

Cartry, Jean P., to Framatome. Device and method for checking the guide elements of a guide tube for the upper internals of a pressurized water nuclear reactor. 5,544,205, Cl. 376-245.000.

Caruso, James F.: *See*—
Meyers, Brenda J.; Herritz, Donald W.; Johansen, Jean L.; Hudson, William B., Jr.; Bell, Randall P.; Prokop, Gary F.; Caruso, James F.; and Allen, James l., 5,542,921, Cl. 604-74.000.

Carver Corporation: *See*—
Williamson, Robert C., 5,543,753, Cl. 330-297.000.

Carver, Edward L., Jr.; and Skiptunas, Steven, to CDC Technologies, Inc. Valve assembly. 5,542,452, Cl. 137-625.480.

Casale, Bruno: *See*—
Gubitosa, Giuseppe; and Casale, Bruno, 5,543,379, Cl. 502-184.000.

Casale, Joseph; and Mucaro, Salvatore, to Empire of Carolina. Game using slot track raceway. 5,542,668, Cl. 463-59.000.

Casalena, Joe: *See*—
Streit, Donald A.; Casalena, Joe; and Ovaert, Tim, 5,542,221, Cl. 52-403.100.

Casasanta, Joseph A.; Andresen, Bernhard H.; Satoh, Yoshinori; Keeney, Stanley C.; and Martin, Robert C., to Texas Instruments Incorporated. Fine resolution digital delay line with coarse and fine adjustment stages. 5,544,203, Cl. 375-376.000.

Casillo, Joseph; Johnson, Frederick M.; Heath, John M., Jr.; Veilleux, Gregory R.; and Dufault, William J., to Micropatent. Method for the placement of self-adhesive labels on compact disks. 5,543,001, Cl. 156-60.000.

Casio Computer Co., Ltd.: *See*—
Mineo, Shigeki, 5,544,296, Cl. 395-148.000.
Watanabe, Tohru, 5,544,091, Cl. 364-725.000.

Caso, Frank J. Ground mounted appliance with leg joint. 5,542,679, Cl. 273-413.000.

Cassford, Keith L.; Gildersleave, Richard E.; and Bastyr, Charles A., to Smith & Nephew Donjoy Inc. Orthopedic brace having a system of alternately inflatable or deflatable pneumatic pads for adjustable fitting of the brace to the body. 5,542,911, Cl. 602-26.000.

Castel, Daniel: *See*—
Yanai, Moshe; Vishlitzky, Natan; Alteresçu, Bruno; Castel, Daniel; and Shklarsky, Gadi, 5,544,347, Cl. 395-489.000.

Castleberry, Morris D. Portable fishing deck and boat with fishing deck. 5,542,370, Cl. 114-352.000.

Catalyst Semiconductor, Inc.: *See*—
Fong, Steven K., 5,543,668, Cl. 307-110.000.

Caterpillar Inc.: *See*—
Clarke, John M., 5,542,382, Cl. 123-51.0AA.

Catheter Imaging Systems: *See*—
Snoke, Phillip J.; Rowley, David S.; Lincoln, David G.; and Charles, Kirk W., 5,542,924, Cl. 604-95.000.

Cattell, Marguerita: *See*—
Starzl, Timothy W.; Cattell, Marguerita; Mihran, Richard T.; and Zapp, Loretta M., 5,542,431, Cl. 128-738.000.

Causton, Barry J.: *See*—
Robinson, Michael D.; and Causton, Barry J., 5,543,196, Cl. 428-99.000.

Cavazza, Claudio: *See*—
Tinti, Maria O.; Misiti, Domenico; Cavazza, Claudio; and Scafetta, Nazareno, 5,543,556, Cl. 560-170.000.

Cazzolla, John J.: *See*—

Chang, Luke L.; Cazzolla, John J.; and Nguyen, Kha D., 5,544,309, Cl. 395-183.060.

CBW Automation, Inc.: *See*—
Johnson, Darrell B.; and Frey, George E., 5,542,238, Cl. 53-475.000.

CCORE Technology & Licensing Limited: *See*—
Curlett, Harry B., 5,542,486, Cl. 175-424.000.

CDC Technologies, Inc.: *See*—
Carver, Edward L., Jr.; and Skiptunas, Steven, 5,542,452, Cl. 137-625.480.

Center for Innovation & Business Development Foundation: *See*—
Holloway, Harry L., Jr.; and Shoemaker, Craig A., 5,543,330, Cl. 436-79.000.

Century Products Company: *See*—
Stranski, Sandra K.; Sumser, Daniel P.; and Sedlack, Mark A., 5,542,151, Cl. 16-326.000.

Century, Theodore J. Powder Dispenser. 5,542,412, Cl. 128-203.150.

Cepelinski, Jacob: *See*—
Oprea, Dan; and Cepelinski, Jacob, 5,544,158, Cl. 370-29.000.

Cerberus AG: *See*—
Hidber, Arthur; and Ryser, Eduard, 5,543,008, Cl. 156-229.000.

Cha, Se I.: *See*—
Kang, Yong S.; Oh, Yong K.; Cha, Se I.; and Lee, Chul S., 5,543,933, Cl. 358-335.000.

Chakravarty, Sarvajit: *See*—
Kyle, Donald J.; and Chakravarty, Sarvajit, 5,543,496, Cl. 530-314.000.

Chalfant, Wayne C. Bicycle front wheel drive. 5,542,689, Cl. 280-242.100.

Chalikian, Tigran V.: *See*—
Sarvazian, Armen P.; Belonenko, Vladimir N.; and Chalikian, Tigran V., 5,542,298, Cl. 73-597.000.

Chalvignac, Philippe, to Societe d'Applications Industrielles Medicales Et Electroniques (SAIME). Apparatus for assisting ventilation including reduced exhalation pressure mode. 5,542,416, Cl. 128-204.230.

Champion Company, The: *See*—
Kang, Lei, 5,542,806, Cl. 414-422.000.

Chan, Andrew K. L.: *See*—
Cox, William D.; Chan, Andrew K. L.; Wong, Richard J.; Apland, James M.; and Gordon, Kathryn E., 5,544,070, Cl. 364-489.000.

Chan, Anthony: *See*—
Yablans, Gerald; and Chan, Anthony, 5,542,552, Cl. 211-59.300.

Chan, Ming F.; and Balaji, Vitukudi N., to Immunopharmaceutics, Inc. Compounds that modulate endothelin activity. 5,543,521, Cl. 544-349.000.

Chandraratna, Roshantha A.: *See*—
Vuligonda, Vidyasagar; Teng, Min; Beard, Richard L.; Johnson, Alan T.; Lin, Yuan; and Chandraratna, Roshantha A., 5,543,534, Cl. 549-421.000.

Chang, Chia-Chi. Front panel assembly of a diskdrive case. 5,542,757, Cl. 312-223.200.

Chang, Chien I. Chair and hand truck. 5,542,740, Cl. 297-129.000.

Chang, Ching-Fang; Yanagihara, Naofumi; Yonemitsu, Jun; Tahara, Katsumi; Yagasaki, Yoichi; and Suzuki, Teruhiko, to Sony Corporation. Digital video signal recording apparatus and digital video signal reproducing apparatus. 5,543,932, Cl. 358-335.000.

Chang, Clarence D.; Han, Scott; Martenak, Daniel J.; Santiesteban, Jose G.; and Walsh, Dennis E., to Mobil Oil Corporation. Process for hydrotreating. 5,543,036, Cl. 208-189.000.

Chang, Clarence D.; Santiesteban, Jose G.; and Stern, David L., to Mobil Oil Corporation. Catalyst comprising a modified solid oxide. 5,543,380, Cl. 502-325.000.

Chang, Gwo-Dawn: *See*—
Lin, San-Bao; Chang, Gwo-Dawn; Shie, Jin-Shown; Wang, Chein-Hsun; Weng, Ping-Kuo; and Lin, Ming-Der, 5,543,620, Cl. 250-338.300.

Chang, Luke L.; Cazzolla, John J.; and Nguyen, Kha D., to International Business Machines Corporation. Data processing system with modified planar for boundary scan diagnostics. 5,544,309, Cl. 395-183.060.

Chang, On K. Electrically-conducting adhesion-promoter. 5,542,163, Cl. 29-2.000.

Chang, Tse W., to Tanox Biosystems, Inc. Treating hypersensitivities with anti-IGE monoclonal antibodies which bind to IGE-expressing B cells but not basophils. 5,543,144, Cl. 424-133.100.

Chang, Wen F. Method and apparatus for translating closed caption data. 5,543,851, Cl. 348-468.000.

Chanoch, Lawrence H.; and Wilson, John B., to Becton Dickinson and Company. Syringe filler for mixing insulins. 5,542,760, Cl. 366-160.400.

Chantot, Jean-François: *See*—
Agouridas, Constantin; Bonnefoy, Alain; Chantot, Jean-François; Denis, Alexis; and Le Martret, Odile, 5,543,400, Cl. 514-29.000.

Chao, Liang; Lin, Tien-Ler; and Yiu, Tom D., to Macronix International Co., Ltd. Erase and program verification circuit for non-volatile memory. 5,544,116, Cl. 365-210.000.

Chari, Krishnan; Smith, Wendell F., Jr.; Spara, Paul P.; and Krishnamurthy, Sundaram, to Eastman Kodak Company. Color photographic element containing new epoxy scavengers for residual magenta coupler. 5,543,276, Cl. 430-505.000.

Charkoudian, John; Pluskal, Malcolm; Wang, David; and Phoebe, Charles, to Millipore Corporation. Method and apparatus for covalent immobilization of charge- conjugated carbohydrate molecules. 5,543,054, Cl. 210-638.000.

Charlanow, Alexander. Extruded landscape timber modules. 5,542,787, Cl. 405-258.000.

Charles, Kirk W.: *See*—
Snoke, Phillip J.; Rowley, David S.; Lincoln, David G.; and Charles, Kirk W., 5,542,924, Cl. 604-95.000.

Charron, Daniel P.; and Yeates, Daniel F., to Universal Distributing of Nevada, Inc. Method and apparatus for randomly increasing the payback in a video gaming apparatus. 5,542,669, Cl. 463-13.000.

Chartered Semiconductor Manufacturing Pte Ltd: *See*—
Chi, Keh-Fei C.; Suan, Seah K.; and Yow, Ling H., 5,543,350, Cl. 437-60.000.

Charych, Hal: *See*—
Giordano, Joseph; Gong, Frank; Rizzo, Richard; and Charych, Hal, 5,543,609, Cl. 235-462.000.

Chastain, Doyle E.; Sanders, W. Eugene, Jr.; and Sanders, Christine C., to Chastain, Doyle E. Using limonen-10-ol to kill bacteria, yeast, and fungi. 5,543,435, Cl. 514-729.000.

Chatfield, Christopher G.; Lindström, Jan N.; Sjöstrand, Mats E. K.; and Collin, Ingrid K. M., to Sandvik AB. CVD of Al_2O_3 layers on cutting inserts. 5,543,176, Cl. 427-255.300.

Chatten, J. Keith, to WCI Outdoor Products, Inc. Integrated dynamic air cleaner. 5,542,380, Cl. 123-41.700.

Chatterjee, Dilip K.; Ghosh, Syamal K.; Shaffer, Wayne K.; and Vankerkhove, Alan P., to Eastman Kodak Company. Image writing on ceramics. 5,543,269, Cl. 430-346.000.

Chatzopoulou, Athina; Miles, Roger J.; and Anagnostopoulos, Gerasimos, to United Kingdom of Great Britain and Northern Ireland, The Minister of Agriculture Fisheries and Food in her Britannic Majesty's Government of the. Two-step method of hypo-osmotic shock for reducing viability of bacteria. 5,543,325, Cl. 435-259.000.

Chaudhuri, Surajit; and Shim, Kyuseok, to Hewlett-Packard Company. Method and apparatus for query optimization in a relational database system having foreign functions. 5,544,355, Cl. 395-600.000.

Chaudiere, Jean R.: *See*—
Xu, Jinzhu; Yadan, Jean-Claude Y.; Moutet, Marc E.; and Chaudiere, Jean R., 5,543,298, Cl. 435-25.000.

Chauvel, Gerard, to Texas Instruments Incorporated. Virtual crosspoint memory. 5,544,104, Cl. 365-189.010.

Checca, Ronald P.: *See*—
Aubertine, Matthew E.; Beyzavi, Kianoush; Broker, Harold J.; Checca, Ronald P.; Granato, Michael A.; Haeussler, David A.; Herasimtschuk, Michael; Jurkovic, Michael J.; Salem, Gerard M.; Selinger, Craig R.; and Zehr, Paul R., 5,544,088, Cl. 364-489.000.

Chee, Hiram; Glowacki, Mark; and Schaller, Laurent, to Target Therapeutics, Inc. Multilumen extruded catheter. 5,542,937, Cl. 604-280.000.

Chefalas, Thomas E.; and Tappert, Charles C., to International Business Machines Corporation. Silent training by error correction for on-line handwritting recognition systems. 5,544,260, Cl. 382-187.000.

Chemie Linz Gesellschaft m.b.H.: *See*—
Pollhammer, Stefan; Scaller, Josef; and Winetzhammer, Willibald, 5,543,560, Cl. 560-234.000.

Chen, Bing-Lin; and Barker, James A., to Witco Corporation. Polyolefins/alkenyllactamide composition. 5,543,451, Cl. 524-224.000.

Chen, Chen-Chin: *See*—
Hung, Chin-Hui; and Chen, Chen-Chin, 5,544,350, Cl. 395-500.000.

Chen, Chih-Hung: *See*—
Wang, Shin-Shin; and Chen, Chih-Hung, 5,543,545, Cl. 558-255.000.

Chen, Pang C.; and Hwang, Yong K. Method and apparatus for planning motions of robot manipulators. 5,544,282, Cl. 395-90.000.

Chen, Shih-Oh: *See*—
Yen, Yeouchung; and Chen, Shih-Oh, 5,543,656, Cl. 257-530.000.

Chen, Shin H. Device for improving sound in guitars and similar stringed instruments. 5,542,329, Cl. 84-291.000.

Chen, Sun-Den, to Sun Microsystems, Inc. Method for preventing deadlock in a multi-bus computer system. 5,544,332, Cl. 395-288.000.

Chen, Tienteh: *See*—
Whitson, Mark A.; Lewis, John D.; Chen, Tienteh; Dannhauser, Thomas J.; and Bagchi, Pranab, 5,543,283, Cl. 430-569.000.

Cheng, Pau-Chen; and Luan, Shyh-Wei, to International Business Machines Corporation. System and method for policy-based inter-realm authentication within a distributed processing system. 5,544,322, Cl. 395-200.120.

Cherif Cheikh, Roland, to Delab. Needle-less parenteral introduction device. 5,542,920, Cl. 604-57.000.

Cherill, Robert J.: *See*—
Kosley, Raymond W., Jr.; Cherill, Robert J.; and O'Malley, Gerard, 5,543,427, Cl. 514-422.000.

Cherng, Meng-Jaw: *See*—
Liaw, Ing-Ruey; and Cherng, Meng-Jaw, 5,543,345, Cl. 437-52.000.

Chesebrough-Pond's USA Co., Div. of Conopco, Inc.: *See*—
Hague, Jonathon D.; and Murray, Andrew M., 5,543,074, Cl. 510-122.000.

Chesebrough-Pond's USA Co., Division of Conopco, Inc.: *See*—
Miner, Philip E., 5,543,085, Cl. 510-118.000.

Chethik, Frank, to Loral Aerospace Corp. Triangular pyramid phased array antenna. 5,543,811, Cl. 343-844.000.

Chevron Chemical Company: *See*—
Latiolais, Jerry G.; Gathright, J. Paul; Galante, Nicholas R.; Galland, M. Stephen; Gallet, J. Diores; Compton, Lewis R.; Baker, George L.; and Wang, James H., 5,543,233, Cl. 428-516.000.
Latiolais, Jerry G.; Galante, Nicholas R.; Gathright, J. Paul; and Wang, James H., 5,543,477, Cl. 526-65.000.

Chevron U.S.A. Inc.: *See*—
Bates, Jan B.; and Sciamanna, Steven F., 5,543,043, Cl. 210-221.200.
Ziemer, James N., 5,543,035, Cl. 208-111.000.

Chi, Keh-Fei C.; Suan, Seah K.; and Yow, Ling H., to Chartered Semiconductor Manufacturing Pte Ltd. SRAM resistor tab doping by plng implant from buried contact. 5,543,350, Cl. 437-60.000.

Chia, Cheo: *See—*
Chia, Meang; and Chia, Cheo, 5,542,244, Cl. 59-35.100.

Chia, Meang; and Chia, Cheo. Method of making a rope chain with a jewelry component. 5,542,244, Cl. 59-35.100.

Chiba, Yuji; and Hara, Shinichi, to Canon Kabushiki Kaisha. Mask holding method, mask and mask chuck, exposure apparatus using the mask and the mask chuck, and device production method using the exposure apparatus. 5,544,213, Cl. 378-34.000.

Chien Luen Industries Company, Ltd., Inc.: *See—*
Bucher, John C.; and Wu, Shih Tza, 5,542,819, Cl. 416-146.00R.

Chikaki, Shinichi, to NEC Corporation. Wafer polishing apparatus. 5,542,874, Cl. 451-158.000.

Chikano, Koji, to Kel Corporation. Electrical connector with improved grounding. 5,542,851, Cl. 439-108.000.

Chin, Dae-Je: *See—*
Kim, Tae-Han; Lee, Sang-Hoon; and Chin, Dae-Je, 5,543,649, Cl. 257-355.000.

Chiou, Ming D. CPU radiating flange mounting device. 5,544,013, Cl. 361-687.000.

Chippendale, John P.: *See—*
Spooner, John; Young, Alastair J.; and Chippendale, John P., 5,542,316, Cl. 74-650.000.

Chiron, Alain; and Heritier, Albert, to Marrel. Apparatus on a vehicle to pick up a load. 5,542,808, Cl. 414-498.000.

Chiu, George W., to Intel Corporation. Method and apparatus for forming solder balls and solder columns. 5,542,174, Cl. 29-840.000.

Cho, Hyun-Duk, to SamSung Electronics Co., Ltd. Video signal processing circuit using adaptive control. 5,543,860, Cl. 348-666.000.

Cho, Jun-hyoung; Choi, Sang-gil; and Wee, Young-cheul, to Samsung Electronics Co., Ltd. Method for generating a subpixel mask for computer graphics system and apparatus thereof. 5,544,294, Cl. 395-141.000.

Cho, Seung-Hwan, to SamSung Electronics Co., Ltd. Conversation recording/playback method in a key phone system. 5,544,231, Cl. 379-67.000.

Choi, Gang I.: *See—*
Baek, Young S.; Lee, Keun W.; Min, Beyong D.; and Choi, Gang I., 5,544,151, Cl. 370-16.100.

Choi, Heung S.; Jeong, Ju Y.; and Kim, Jae A., to Samsung Electronics Co., Ltd. Window mounted air conditioner. 5,542,263, Cl. 62-262.000.

Choi, Sang-gil: *See—*
Cho, Jun-hyoung; Choi, Sang-gil; and Wee, Young-cheul, 5,544,294, Cl. 395-141.000.

Choi, Sang-Soo: *See—*
Park, Byung-Sun; Oh, Yong-Ho; Choi, Sang-Soo; and Yoo, Hyung-Joun, 5,543,253, Cl. 439-5.000.

Choi, Sung H.: *See—*
Kang, Myung G.; Kang, Seong S.; Choi, Sung H.; Joung, Mun C.; Jang, Byoung G.; Ryu, Kye Y.; Yu, Hyo C.; and Lee, Sang J., 5,543,981, Cl. 360-96.600.

Choi, Wan-gyun: *See—*
Park, Chan-eon; Yun, Hwang-kyu; Sim, Sung-min; and Choi, Wan-gyun, 5,543,493, Cl. 528-353.000.

Chong Kun Dang Corp.: *See—*
Kim, Jung W.; Shin, Hee J.; Park, Joon K.; and Min, Kyeong B., 5,543,393, Cl. 514-11.000.

Chono, Susumu: *See—*
Koizumi, Satoru; Chono, Susumu; Abe, Yoshihiro; and Matsuzaki, Kazuki, 5,544,147, Cl. 369-191.000.

Chosa, Junichi: *See—*
Iriguchi, Jiro; Kuwamoto, Tomoyuki; Chosa, Junichi; and Matsuda, Tatsuhito, 5,543,456, Cl. 524-542.000.

Chou, Arthur C. P., to Acushnet Company. Insertable hosel extension for varying offset and inset of golf clubs. 5,542,666, Cl. 473-314.000.

Chou, Lai. Massage apparatus with multiple vibrator units. 5,542,907, Cl. 601-46.000.

Chou, Paul B.-L.: *See—*
Brecher, Virginia H.; Chou, Paul B.-L.; Hall, Robert W.; Parisi, Debra M.; Rao, Ravishankar; Riley, Stuart L.; and Sturzenbecker, Martin C., 5,544,256, Cl. 382-149.000.

Chou, William T.: *See—*
Beilin, Solomon I.; Chou, William T.; Kudzuma, David; Lee, Michael G.; Murase, Teruo; Peters, Michael G.; Roman, James J.; Swamy, Som S.; and Wang, Wen-chou V., 5,544,017, Cl. 361-790.000.

Chow, Andrew Y.: *See—*
Imran, Mir A.; Gandhi, Deepak R.; Bourang, Henry; Quiachon, Dignah B.; and Chow, Andrew Y., 5,542,434, Cl. 128-772.000.

Chow, David H.; and Whitney, Colin G., to Hughes Aircraft Company. Quantum well infrared filter. 5,543,628, Cl. 257-17.000.

Chow, Laurence C.; and Takagi, Shozo, to American Dental Association Health Foundation, The. Calcium phosphate hydroxyapatite precursor and methods for making and using the same. 5,542,973, Cl. 106-35.000.

Christensen, Daniel, to Arete Climbing Systems, Inc. Artificial rock climbing structure and method of making. 5,543,185, Cl. 428-15.000.

Christopher, Gary L., to Motorola, Inc. Method and apparatus for locating conductive features and testing semiconductor devices. 5,543,724, Cl. 324-754.000.

Christopherson, Mark: *See—*
Hasbun, Robert N.; and Christopherson, Mark, 5,544,312, Cl. 395-183.180.

Chrysler Corporation: *See—*
Borland, Mark S.; and Teague, Bruce H., 5,542,403, Cl. 123-686.000.
Hartman, Peter G.; Jones, Keith L.; Larson, Thomas A.; and Weber, Gregory T., 5,542,390, Cl. 123-412.000.
Kornely, Leroy A., 5,542,525, Cl. 198-495.000.
Markow, Paul A.; Cummings, Theodore M.; DeBardelaben, William D.; McElreath, John H.; and Nolle, William, 5,542,280, Cl. 73-1.00R.
McCarthy, James P., 5,542,313, Cl. 74-513.000.

Chu, Wei-Kan: *See—*
McMichael, Chase K.; Ma, Ki-Bui; and Chu, Wei-Kan, 5,542,506, Cl. 188-267.000.

Chung, Brandon W.: *See—*
Garzon, Fernando H.; Chung, Brandon W.; Raistrick, Ian D.; and Brosha, Eric L., 5,543,025, Cl. 204-425.000.

Chung, T. C.; and Lu, H. L., to Penn State Research Foundation, The. α-olefin/para-alkylstyrene copolymers. 5,543,484, Cl. 526-347.100.

Chuntharapai, Anan; Lee, James; Hebert, Caroline; and Kim, K. Jin, to Genentech Inc. Antibodies to human IL-8 type A receptor. 5,543,503, Cl. 530-388.220.

Church & Dwight Co., Inc.: *See—*
Shank, James D., Jr., 5,542,873, Cl. 451-75.000.

Ciba-Geigy Corporation: *See—*
Drewes, Rolf; Kolb, Markus; Kuhn, Karl J.; Sander, Hans-Jürgen; and Wehner, Wolfgang, 5,543,449, Cl. 524-114.000.
Fischer, Walter; and Helbling, Christine, 5,543,572, Cl. 564-179.000.
McMullan, David; Schaulin, Rudolf; and Lauk, Urs, 5,542,956, Cl. 8-641.000.
Stevenson, Tyler A.; Ravichandran, Ramanathan; Holt, Mark S.; Phan, Thuy N.; Birbaum, Jean-Luc; and Toan, Vien V., 5,543,518, Cl. 544-215.000.
Zimmermann, Jürg, 5,543,520, Cl. 544-331.000.

Ciccolella, Michael: *See—*
Gravener, Roy D.; Ianniruberto, Alex; and Ciccolella, Michael, 5,542,931, Cl. 604-167.000.

Cimbak, Joseph J., to United Technologies Corp. Vapor phase soldering machine having a tertiary cooling vapor. 5,542,596, Cl. 228-234.200.

Cipolle, David J.: *See—*
Harvey, Robert L.; Hirschler-Marchand, Patrick R.; and Cipolle, David J., 5,543,939, Cl. 358-426.000.

Cippel, Mark: *See—*
Mirchandani, Prakash K.; Thomas, Robert E.; and Cippel, Mark, 5,543,235, Cl. 428-547.000.

Circuit Breaker Industries Limited: *See—*
Bagalini, Dante, 5,543,766, Cl. 335-177.000.

Cirrus Logic, Inc.: *See—*
Pratt, Kyle A.; Yonker, Michael A.; and Xu, Frank L., 5,543,850, Cl. 348-617.000.
Xu, Frank; and Nally, Robert M., 5,543,842, Cl. 348-387.000.
Zook, Christopher P., 5,544,178, Cl. 371-43.000.

Clariant Finance (BVI) Limited: *See—*
Bitterli, Peter, 5,542,975, Cl. 106-493.000.

Clark Equipment Company: *See—*
Jacobson, Scott B.; and Brandt, Kenneth A., 5,542,493, Cl. 180-272.000.

Clark, Frank B.; and Lewis, Kenneth T., to Caddx-Caddi Controls, Inc. Glass break detector and a method therefor. 5,543,783, Cl. 340-550.000.

Clark, Harry E.; Henderson, Cynthia W.; Marcinek, Robert C.; Mayfield, Frances W.; Perkins, Thad W.; and Voss, Jorg F., to Kimberly-Clark Corporation. Process for producing a crimp-bonded fibrous cellulosic laminate. 5,543,202, Cl. 428-154.000.

Clark, William T.; and Dellagala, Joseph, to Mohawk Wire and Cable Corp. Multiple twisted pair data cable with concentric cable groups. 5,544,270, Cl. 385-101.000.

Clarke, James R.; and Diehl, Roy E., to Ford Motor Company. Dual output camshaft phase controller. 5,542,383, Cl. 123-90.170.

Clarke, John M., to Caterpillar Inc. Dual compression and dual expansion internal combustion engine and method therefor. 5,542,382, Cl. 123-51.0AA.

Clausen, Thomas: *See—*
Balzer, Wolfgang R.; Clausen, Thomas; Frank, Anke; and Weinges, Alexa, 5,542,953, Cl. 8-416.000.

Claussen, Christopher S.: *See—*
Carpenter, Eric R.; Claussen, Christopher S.; and Cox, James O., 5,544,316, Cl. 395-200.030.

Claussen, Uwe: *See—*
Stumpe, Joachim; Shibaev, Valery; Kostromin, Sergei; Ivanov, Sergei; Fischer, Thomas; Lisker, Lutz; Ruhmann, Ralf; and Claussen, Uwe, 5,543,267, Cl. 430-290.000.

Claxton, Stephen J.: *See—*
Heighington, John E.; Butters, Daphne; and Claxton, Stephen J., 5,543,207, Cl. 428-207.000.

Clayton, R. Dallas: *See—*
Grenci, Charles A.; and Clayton, R. Dallas, 5,542,828, Cl. 418-1.000.

Clearline Systems, Inc.: *See—*
Batten, William C., 5,543,064, Cl. 210-803.000.

Cleek, John I.: *See—*
Huggett, Colin E.; and Cleek, John I., 5,543,696, Cl. 318-590.000.

Cliff, Richard G.; Reddy, Srinivas T.; Veenstra, Kerry; Papaliolios, Andreas; Sung, Chiakang; Terrill, Richard S.; Raman, Rina; and Bielby, Robert R. N., to Altera Corporation. Techniques for programming programmable logic array devices. 5,543,730, Cl. 326-38.000.

Cliff, Richard G.: *See—*

McClintock, Cameron; Leong, William; Cliff, Richard G.; and Ahanin, Bahram, 5,543,732, Cl. 326-41.000.

Cloonan, Thomas J.; and Richards, Gaylord W., to AT&T Corp. Terabit per second packet switch. 5,544,160, Cl. 370-54.000.

Cloud, George T., to Lowtech Corporation, Inc. Rebar cage wheel spacer centralizer system for drilled shafts. 5,542,785, Cl. 405-239.000.

Coassin, Giovanni; Di Giusto, Bruno; Drigani, Fausto; and Morasca, Pietro, to Danieli & C. Officine Meccaniche SpA. Line to produce strip and/or sheet. 5,542,165, Cl. 29-33.00C.

Coassin, Giovanni: *See—*
Gensini, Gianni; and Coassin, Giovanni, 5,543,602, Cl. 219-491.000.

Coates, David: *See—*
Parri, Owain L.; Brown, Emma J.; Coates, David; and Goulding, Mark J., 5,543,075, Cl. 252-299.010.

Cobura Optical Industries, Inc.: *See—*
Field, Edgar L., Jr., 5,542,876, Cl. 451-540.000.

Code-Alarm, Inc.: *See—*
Stouffer, Peter J., 5,543,778, Cl. 340-539.000.

Coelho, Rohan, to Intel Corporation. Process and apparatus for pseudo-SIMD processing of image data. 5,544,251, Cl. 382-232.000.

Cohen, Moshe H., to Yehuda Welded Mesh. Ltd. Wire fencing. 5,542,648, Cl. 256-45.000.

Cohen-or, Daniel: *See—*
Kaufman, Arie E.; Yagel, Roni; and Cohen-or, Daniel, 5,544,283, Cl. 395-124.000.

Colarow, Ladislas; Dalan, Ernesto; and Kusy, Andrej, to Nestec S.A. Protein-containing foods having stability to heat-treatment. 5,543,169, Cl. 426-662.000.

Colbo, Kenneth G., Jr. Movable weight stack device and support frame for multi-station weight-training machine. 5,542,895, Cl. 482-98.000.

Colburn, Edwin H.: *See—*
Fite, Robert D., Jr.; Ilasenko, John S.; and Colburn, Edwin H., 5,543,040, Cl. 210-167.000.

Cole, Howard; Erler, Kristina W.; Smith, Kenneth L.; and Francois, Brian C., to Henkel Corporation. Alkyl polyglycosides in textile scour/bleach processing. 5,542,950, Cl. 8-107.000.

Cole, William G.; Hydeman, Jeffrey E.; Gunsallus, James M., Jr.; and Le, Qui, to Westinghouse Electric Corporation. Electron discharge machining apparatus and method. 5,543,599, Cl. 219-69.200.

Coleman Company, The: *See—*
Long, Norris R., 5,542,632, Cl. 248-205.100.

Coleman, John H., to Plasma Physics Corp. Method of forming semiconductor materials and barriers. 5,543,634, Cl. 257-54.000.

Coleman, Joseph L.: *See—*
Hortin, Gregory G.; Fisher, Michael H.; Coleman, Joseph L.; and Adams, Scott D., 5,542,264, Cl. 62-338.000.

Colgate-Palmolive Company: *See—*
Adamy, Steven T.; and Thomas, Barbara J., 5,543,073, Cl. 510-417.000.

Collagen Corporation: *See—*
Rhee, Woonza; Wallace, Donald G.; Michaels, Alan S.; Burns, Ramon A., Jr.; Fries, Louis; DeLustro, Frank; and Bentz, Hanne, 5,543,441, Cl. 523-105.000.

Collier, L. Warren, IV: *See—*
Glaug, Frank S.; Olson, Christopher P.; Ratliff, Kathleen I.; Sheldon, Donald A.; Finch, Valerie V.; and Collier, L. Warren, IV, 5,542,566, Cl. 221-48.000.

Collin, Ingrid K. M.: *See—*
Chatfield, Christopher G.; Lindström, Jan N.; Sjöstrand, Mats E. K.; and Collin, Ingrid K. M., 5,543,176, Cl. 427-255.300.

Collins, John B.; and Knapp, Richard J., to Kollmorgen Corporation. System and method for sensing color and preventing use of unauthorized color formulation software. 5,543,920, Cl. 356-402.000.

Colombo, Attilio, to Tonali S.P.A. Revolving security door for banks and the like. 5,542,211, Cl. 49-42.000.

Columbia Laboratories, Inc.: *See—*
Bologna, William J.; and Levine, Howard L., 5,543,150, Cl. 424-430.000.

Columbia Machine, Inc.: *See—*
Johnston, Llewellyn L., 5,542,837, Cl. 425-183.000.

Colvin, Bryan J., Sr.; Cook, Perry R.; and Gochnauer, Daniel, to Mediavision, Inc. Residual excited wave guide. 5,543,578, Cl. 84-622.000.

COM 21, Inc.: *See—*
Baran, Paul, 5,544,164, Cl. 370-60.100.

Combe, Incorporated: *See—*
Lapidus, Herbert, 5,543,148, Cl. 424-401.000.

Comeau, Richard J., II; and Fay, Richard, to Digital Lab Studios, LLC; and Horizon Music, Inc. Audio amplification circuits. 5,543,759, Cl. 330-282.000.

Comer, Edward I.: *See—*
Blust, Stephen M.; Comer, Edward I.; and Sandidge, Jere T., 5,544,227, Cl. 379-63.000.

Commissariat A L'Energie Atomique: *See—*
Albertini, Jean B.; and Fedeli, Jean-Marc, 5,544,131, Cl. 369-13.000.
Blanpain, Roland; and Flament, Bruno, 5,543,714, Cl. 324-345.000.

Commonwealth Scientific Industrial Research Organisation: *See—*
Eadington, Peter J.; Lisk, Mark; and Krieger, Francis W., 5,543,616, Cl. 250-55.000.

Communication Broadband Multimedia, Inc.: *See—*
Lehfeldt, Carl R.; and Cygnapowicz, Leonard P., 5,544,315, Cl. 395-200.200.

Compaq Computer Corporation: *See—*
Hayes, Donald J., 5,543,009, Cl. 156-268.000.

Compton, Lewis R.: *See—*
Latiolais, Jerry G.; Gathright, J. Paul; Galante, Nicholas R.; Galland, M. Stephen; Gallet, J. Diores; Compton, Lewis R.; Baker, George L.; and Wang, James H., 5,543,233, Cl. 428-516.000.

Compton, Timothy A.: *See—*
Stuller, Howard E.; Stuller, Stephen E.; and Compton, Timothy A., 5,542,790, Cl. 406-116.000.

Computational Systems, Inc.: *See—*
Piety, Richard W.; and Piety, Kenneth R., 5,544,073, Cl. 364-508.000.

Concept International Limited: *See—*
Sheedy, Thomas F.; and Finucane, Martin J., 5,542,878, Cl. 452-135.000.

Conci, Odero: *See—*
Hoekstra, Peter; Jackson, Timothy W.; Moyher, George C., Jr.; and Conci, Odero, 5,542,146, Cl. 15-319.000.

Conley, Jeffery R. Foam process of restoring depressions in carpet. 5,543,091, Cl. 264-36.000.

Conner, William T.: *See—*
Lee, Dosuk D.; and Conner, William T., 5,543,019, Cl. 204-192.150.

Consorzio Per La Ricerca Sulla Microelettronica Nel Mezzogiorno: *See—*
Bontempo, Gregorio; Milazzo, Patrizia; and Alzati, Angelo, 5,543,739, Cl. 327-108.000.

Construction Specialties, Inc.: *See—*
Olsen, Robert W., 5,542,224, Cl. 52-473.000.

Cook, Perry R.: *See—*
Colvin, Bryan J., Sr.; Cook, Perry R.; and Gochnauer, Daniel, 5,543,578, Cl. 84-622.000.

Cook, Phillip D.; Manoharan, Muthiah; and Bruice, Thomas, to ISIS Pharmaceuticals, Inc. Covalently cross-linked oligonucleotides. 5,543,507, Cl. 536-23.100.

Cooper Cameron Corporation: *See—*
Turner, Edwin C.; and Wolff, Danny K., 5,542,475, Cl. 166-387.000.

Cooper, J. Carl. Adjustable reference signal delay device and method. 5,543,743, Cl. 327-263.000.

Cooper, Mark R., to Vermeer Manufacturing Company. Track trencher control system and process. 5,544,055, Cl. 364-424.070.

Coors Brewing Company: *See—*
Lee, Sun Y.; Lappin, Edward R.; and Shaffer, Joseph A., 5,543,087, Cl. 261-87.000.
Merkle, Cliff; Burns, John; Laib, Gordon; Willis, Jim; Mitchel, Scotty; and Erickson, Dennis, 5,542,544, Cl. 209-139.100.

Cor-A-Vent, Inc.: *See—*
Sells, Gary L., 5,542,882, Cl. 454-365.000.

Cordis Corporation: *See—*
Avellanet, Ernesto; and Hernandez, Ernesto, 5,542,938, Cl. 604-280.000.

Corixa Corporation: *See—*
Reed, Steven G., 5,543,143, Cl. 424-130.100.

Corning Incorporated: *See—*
Wu, Shy-Hsien, 5,543,096, Cl. 264-63.000.

Corrcycle, Inc.: *See—*
Liebel, Henry L., 5,543,205, Cl. 428-184.000.

Cosentino, Louis C.: *See—*
Brinda, Paul D.; and Cosentino, Louis C., 5,543,002, Cl. 156-77.000.

Coulman, Donald J.: *See—*
Edman, James R.; and Coulman, Donald J., 5,543,222, Cl. 428-335.000.

Coultas, Dennis K.: *See—*
Barnes, Michael S.; Coultas, Dennis K.; Forster, John C.; Keller, John H.; and Wicker, Thomas, 5,543,184, Cl. 427-571.000.

Coulter Corporation: *See—*
Hollinger, John D., 5,542,305, Cl. 73-863.730.

Courteau, Donald M.: *See—*
Tochacek, Miroslav; Courteau, Donald M.; and Patel, Vinu, 5,543,004, Cl. 156-93.000.

Coutts, Ian G. C.; and Cummins, Pamela J., to British Technology Group Limited. Heterocyclic amines. 5,543,422, Cl. 514-319.000.

Cox, Christopher H.: *See—*
Siemon, John A.; and Cox, Christopher H., 5,542,549, Cl. 211-26.000.

Cox, James O.: *See—*
Carpenter, Eric R.; Claussen, Christopher S.; and Cox, James O., 5,544,316, Cl. 395-200.030.

Cox, James R.: *See—*
Runyan, Steven; Cox, James R.; Blais, Mark R.; and Longerbeam, Donald A., 5,543,922, Cl. 356-402.000.

Cox, Tom: *See—*
Yen-Maguire, Yu P.; Cox, Tom; and Lewis, Fred, 5,543,327, Cl. 435-287.900.

Cox, William D.; Chan, Andrew K. L.; Wong, Richard J.; Apland, James M.; and Gordon, Kathryn E., to QuickLogic Corporation. Programmed programmable device and method for programming antifuses of a programmable device. 5,544,070, Cl. 364-489.000.

Crabb, Thomas B.: *See—*
Dayton, Birney D.; and Crabb, Thomas B., 5,543,976, Cl. 360-46.000.

Cramer, Gregory D.: *See—*
Anolick, Colin; Cramer, Gregory D.; Dujari, Ramdas; Lee, Win-Chung; Rao, Sundar M.; and Wheland, Robert C., 5,543,495, Cl. 528-481.000.

Crameri, Yvo: *See—*
Broger, Emil A.; Crameri, Yvo; Schmid, Rudolf; and Siegfried, Theodor, 5,543,559, Cl. 560-231.000.

Crane, Stanford W., Jr.; and Portuondo, Maria M., to Panda Project, The. Apparatus having inner layers supporting surface-mount components. 5,543,586, Cl. 174-262.000.
Cray Research, Inc.: *See*—
Beard, Douglas R.; Phelps, Andrew E.; Woodmansee, Michael A.; Blewett, Richard G.; Lohman, Jeffrey A.; Silbey, Alexander A.; Spix, George A.; Simmons, Frederick J.; and Van Dyke, Don A., 5,544,337, Cl. 395-375.000.
Crenshaw, David A.; Holmes, Roy H.; and Baril, Albert M., to ITT Corporation. Quick release coupling apparatus and method for a helmet mounted night vision goggle arrangement. 5,542,627, Cl. 244-121.000.
Creswell, Carroll W.; Lanning, Steven G.; Papazian, Carol J.; and Rulon, James M., to AT&T Corp. System for providing personalized telephone calling features. 5,544,229, Cl. 379-67.000.
Cribbs, Cynthia M.: *See*—
Andrews, Robert C.; Cribbs, Cynthia M.; Frye, Stephen V.; Haffner, Curt D.; and Maloney, Patrick R., 5,543,406, Cl. 514-213.000.
Crisci, Luciana: *See*—
Allegrini, Pietro; Nodari, Nereo; Crisci, Luciana; and Malatesta, Vincenzo, 5,543,533, Cl. 549-389.000.
Crisenza, Giuseppe: *See*—
Losavio, Aldo; Crisenza, Giuseppe; and De Santi, Giorgio, 5,543,633, Cl. 257-48.000.
Crocker, Michael, to Cardiovascular Dynamics, Inc. Low profile perfusion catheter. 5,542,926, Cl. 604-102.000.
Cromlish, Wanda A.; Kennedy, Brian P.; O'Neill, Gary; Vickers, Philip J.; Wong, Elizabeth; and Mancini, Joseph A., to Merck Frosst Canada, Inc. Human cyclooxygenase-2 cDNA and assays for evaluating cyclooxygenase-2 activity. 5,543,297, Cl. 435-25.000.
Crompton, Dennis; Harris, Richard H.; Leonard, Herbert G.; Hufford, George, III; and Thomas, Jeff D., to International Business Machines Corporation. Shaft assembly for a tilt adjustment mechanism. 5,542,152, Cl. 16-354.000.
Cross, Peter E.; and Stobie, Alan, to Pfizer Inc. Quinuclidine esters process and intermediate for their preparation and pharmaceutical compositions containing them. 5,543,419, Cl. 514-305.000.
Crown Equipment Corporation, Inc.: *See*—
Kemshall, Paul A.; and Sewell, Alan R., 5,542,490, Cl. 180-422.000.
CRS Industries, Inc.: *See*—
Kroeger, Arnold C.; Lawnicki, Curt J.; and McIvor, Arthur E., 5,542,964, Cl. 95-6.000.
Cruson, Izaak P. J., to Dutch Industries Ltd. Straw spreading system. 5,542,883, Cl. 460-112.000.
Cruz, Maria W. T.: *See*—
Mulks, Martha H.; Thacker, Brad J.; and Cruz, Maria W. T., 5,543,304, Cl. 435-69.300.
Csipkes, Andrei; and Palmquist, John M., to AT&T Corp. Autofocusing system and method for positioning an interferometric fringe over a target in an image. 5,543,915, Cl. 356-345.000.
Cuir (S.A.): *See*—
Cuir, Jean-Pierre; Cuir, Gérard; and Barsamian, Raymond, 5,542,353, Cl. 101-492.000.
Cuir, Gérard: *See*—
Cuir, Jean-Pierre; Cuir, Gérard; and Barsamian, Raymond, 5,542,353, Cl. 101-492.000.
Cuir, Jean-Pierre; Cuir, Gérard; and Barsamian, Raymond, to Cuir (S:A.). Process and installation for sheet-by-sheet printing. 5,542,353, Cl. 101-492.000.
Culkin, Joseph B., to Calvest Associates, Inc. Video display and image intensifier system. 5,543,862, Cl. 348-739.000.
Culp, Charles H.: *See*—
Shavit, Gideon; and Culp, Charles H., 5,543,667, Cl. 307-39.000.
Culp, Jerry A.; and Schemansky, Kevin J., to Stryker Corporation. Medical instrument with programmable torque control. 5,543,695, Cl. 318-432.000.
Culpen, James E., to Agora Enterprises, L.L.P. Machine screw. 5,542,799, Cl. 411-271.000.
Culpepper, Patrick M.: *See*—
Wilson, Richard C.; and Culpepper, Patrick M., 5,542,222, Cl. 52-287.100.
Cummings, Theodore M.: *See*—
Markow, Paul A.; Cummings, Theodore M.; DeBardelaben, William D.; McElreath, John H.; and Nolle, William, 5,542,280, Cl. 73-1.00R.
Cummins-Allison Corp.: *See*—
Geib, Joseph J.; Jones, William J.; Mennie, Douglas U.; and Raterman, Donald E., 5,542,880, Cl. 453-10.000.
Geib, Joseph J., 5,542,881, Cl. 453-10.000.
Cummins Engine Company, Inc.: *See*—
Carroll, John T., III; Bentz, Joseph C.; and Genter, David P., 5,542,315, Cl. 74-586.000.
Cummins, Pamela J.: *See*—
Coutts, Ian G. C.; and Cummins, Pamela J., 5,543,422, Cl. 514-319.000.
Cummins, Thomas J.; and Ekeze, Tobias D., to Johnson & Johnson Clinical Diagnostics, Inc. Methods of extracting deoxyribonucleic acids without using a proteolytic enzyme. 5,543,305, Cl. 435-91.100.
Cunningham, David W. Lighting fixture for theater, television and architectural applications. 5,544,029, Cl. 362-273.000.
Curlett, Harry B., to CCORE Technology & Licensing Limited. Method of and apparatus for single plenum jet cutting. 5,542,486, Cl. 175-424.000.
Curotto, James E.: *See*—
Bills, Gerald F.; Curotto, James E.; Dreikorn, Sarah J.; Jenkins, Rosalind G.; Liesch, Jerrold M.; Morris, Sandra A.; Thompson, John R.; Zink, Deborah L.; Jansson, Richard K.; Basilio, Angela; Diez, Teresa; Pelaez, Fernando; and Vicente, Francisca, 5,543,429, Cl. 514-468.000.
Bolessa, Evon A.; Schwartz, Robert E.; Bills, Gerald F.; Giacobbe, Robert A.; Pelaez Perez, Fernando; Arroyo, Angeles C.; Matas, Teresa D.; Fernandez, Isabel M.; Perez, Francisca V.; Mandala, Suzanne M.; Zink, Deborah L.; Thornton, Rosemary; Thompson, John R.; and Curotto, James E., 5,543,431, Cl. 514-627.000.
Curran, Daniel J., to Hewlett-Packard Company. Removal of precompensation in a write data signal from a flexible disk controller. 5,543,975, Cl. 360-45.000.
Curry, James T.: *See*—
Gunther, Stephen H.; Blank, Gerard D.; Curry, James T.; and Draeger, Jeff, 5,544,092, Cl. 395-800.000.
Cutright, Edwin L.: *See*—
Scott, George R.; Cutright, Edwin L.; Heidorn, Martin W.; and Kelly, William L., 5,542,886, Cl. 470-34.000.
Cygnapowicz, Leonard P.: *See*—
Lehfeldt, Carl R.; and Cygnapowicz, Leonard P., 5,544,315, Cl. 395-200.200.
Daculsi, Guy: *See*—
Duquet, Bruno; Daculsi, Guy; and Delecrin, Joël, 5,543,209, Cl. 428-212.000.
Dade Interantional Inc.: *See*—
Stark, William A.; and Pfadenhauer, Ernest H., 5,542,575, Cl. 220-256.000.
Dade International Inc.: *See*—
Yen-Maguire, Yu P.; Cox, Tom; and Lewis, Fred, 5,543,327, Cl. 435-287.900.
Daewoo Electronics Co., Ltd.: *See*—
Jeon, Yong-Bae, 5,543,959, Cl. 359-259.000.
Dahlgren, Jan: *See*—
Karlsson, Jan; and Dahlgren, Jan, 5,542,386, Cl. 123-184.570.
Dahms, Gerd H., to Tioxide Specialties Limited. Water–in–oil emulsions. 5,543,135, Cl. 424-059.000.
Dai Nippon Printing Co., Ltd.: *See*—
Shinoda, Toshiki; Takezawa, Tetsuo; and Noguchi, Shigeru, 5,543,256, Cl. 430-22.000.
Taniguchi, Yukio; Hotta, Tsuyoshi; Kuwabara, Yuko; Morita, Hideaki; and Segawa, Toshikazu, 5,543,228, Cl. 428-429.000.
Daicel Chemical Industries, Ltd.: *See*—
Otamoto, Yoshio, 5,543,506, Cl. 536-18.700.
Daido Metal Company, Ltd.: *See*—
Tanaka, Tadashi; Sakamoto, Masaaki; Yamamoto, Koichi; and Kitagawa, Koji, 5,543,236, Cl. 428-614.000.
Daiken Iki Co., Ltd.: *See*—
Onodera, Hisashi; and Yamanaka, Junichi, 5,542,939, Cl. 604-319.000.
Dainichiseika Color & Chemicals Mfg. Co., Ltd.: *See*—
Fukutomi, Takashi; Takizawa, Minoru; and Nakamura, Michiei, 5,543,045, Cl. 210-490.000.
Dalan, Ernesto: *See*—
Colarow, Ladislas; Dalan, Ernesto; and Kusy, Andrej, 5,543,169, Cl. 426-662.000.
Dale Strohl: *See*—
Lahaussois, Pierre; and Strohl, Margaret T., 5,542,121, Cl. 2-59.000.
Dallas Semiconductor Corp: *See*—
Klughart, Kevin M., 5,543,761, Cl. 331-44.000.
Dallas Semiconductor Corporation: *See*—
Podkowa, Bill, 5,544,078, Cl. 364-569.000.
Zanders, Gary V.; and Scherpenberg, Francis A., 5,544,063, Cl. 364-482.000.
Dalton, John, to Square Peg Enterprises, Inc. Fluorescent lamp carrier and fluorescent lamp disposal apparatus. 5,542,535, Cl. 206-419.000.
Dambach, Dieter-Andreas: *See*—
Schneider, Erich; Bone, Rainer; Klenk, Martin; Lange, Jörg; and Dambach, Dieter-Andreas, 5,542,292, Cl. 73-118.100.
D'Amico, Joseph S.; Reinhold, Herbert E., III; and Knaebel, Kent S., to Nitrotec Corporation. Helium recovery. 5,542,966, Cl. 95-101.000.
Dan, Asit; and Sitaram, Dinkar, to International Business Machines Corporation. Load balancing in video-on-demand servers by allocating buffer to streams with successively larger buffer requirements until the buffer requirements of a stream can not be satisfied. 5,544,327, Cl. 395-250.000.
Dan, Shigeyuki; Nakayama, Takao; Nishizawa, Hiroshi; and Sera, Hidefumi, to Fuji Photo Film Co., Ltd. Original forme for electrophotograhic planography. 5,543,258, Cl. 430-87.000.
Dana Farber Cancer Institute: *See*—
Keyomarsi, Khandan; and Pardee, Arthur B., 5,543,291, Cl. 435-6.000.
Dangelo, Carlos: *See*—
Rostoker, Michael D.; Dangelo, Carlos; Nagasamy, Vijay; and Mintz, Doron, 5,544,066, Cl. 364-489.000.
Rostoker, Michael D.; Dangelo, Carlos; and Watkins, Daniel R., 5,544,067, Cl. 364-489.000.
Daniel, Roger P.: *See*—
Fulgenzi, Lynda K.; Daniel, Roger P.; Loftus, Heather M.; and Goins, Jeffrey L., 5,542,742, Cl. 297-237.000.
Danieli & C. Officine Meccaniche SpA: *See*—
Coassin, Giovanni; Di Giusto, Bruno; Drigani, Fausto; and Morasca, Pietro, 5,542,165, Cl. 29-33.00C.
Gensini, Gianni; and Coassin, Giovanni, 5,543,602, Cl. 219-491.000.

Daniels, Dean J.: *See*—
Kline, Mark J.; Roe, Donald C.; Daniels, Dean J.; Zorb, James E.; and Dragon, Jerry L., 5,542,942, Cl. 604-385.200.
Danielson, Arvin D.: *See*—
Schultz, Darald R.; Danielson, Arvin D.; Bunte, Alan G.; Sherman, Richard A.; and Jaeger, Robert B., 5,544,010, Cl. 361-686.000.
Danishefsky, Samuel J.; and Randolph, John T., to Sloan-Kettering Institute for Cancer Research. Synthetic compounds which bind to *H. pylori*, and uses thereof. 5,543,505, Cl. 536-17.200.
Dannhauser, Thomas J.: *See*—
Whitson, Mark A.; Lewis, John D.; Chen, Tienteh; Dannhauser, Thomas J.; and Bagchi, Pranab, 5,543,283, Cl. 430-569.000.
Danzl, Martin: *See*—
Furst, Arpad; Danzl, Martin; Mayer, Johann; and Miklosi, Stefan, 5,542,735, Cl. 296-107.000.
Darling-Delaware Company, Inc.: *See*—
Roshanravan, Mel, 5,543,050, Cl. 210-605.000.
Data Management Corp.: *See*—
Kanavy, Walter J.; and Brown, Timothy P., 5,544,298, Cl. 395-155.000.
Date, Toshihiko, to Matsushita Electric Industrial Co., Ltd. Audio data file analyzer apparatus. 5,544,248, Cl. 381-56.000.
Datta, Madhav; and Shenoy, Ravindra V., to IBM Corporation. Electroetching method and apparatus. 5,543,032, Cl. 205-670.000.
Daub, Jonathan: *See*—
Spilo, Michael L.; and Daub, Jonathan, 5,543,822, Cl. 345-189.000.
Daugherty, Charles W. Bloodless flashback vent. 5,542,932, Cl. 604-168.000.
David, John R.: *See*—
Johnson, Dee L.; Knoll, Kenneth F.; and David, John R., 5,543,190, Cl. 428-40.100.
Davies, Richard, to Plessey Semiconductors Limited. Preamplifier circuit arrangements for common current flow in a transducer. 5,543,979, Cl. 360-67.000.
Davis, David J., to Winget, Larry J. Thermoplastic air bag cover having a unitary multifunctional domed switching module. 5,542,694, Cl. 280-728.300.
Davis, Harlan R., to IMI Cornelius Inc. Beverage dispenser removable dripray. 5,542,572, Cl. 222-108.000.
Davis, Terry L.; Hart, James A.; Russell, James F.; Sears, John W.; and Trice, Philip H., to Electronic Payment Services, Inc. Information consolidation within a transaction network. 5,544,086, Cl. 364-408.000.
Dawn Equipment Company: *See*—
Bassett, James H., 5,542,362, Cl. 111-120.000.
Dawson, David D.: *See*—
Wolak, Edmund L.; Endriz, John; Worland, D. Philip; Dawson, David D.; and Scifres, Donald R., 5,544,184, Cl. 372-43.000.
Dayton, Birney D.; and Crabb, Thomas B., to Nvision, Inc. Providing transitions of slew rate dependent on pulse frequency. 5,543,976, Cl. 360-46.000.
DCM Industries, Inc.: *See*—
Normile, James M.; McGowan, Jared M.; and King, Andrew, 5,543,718, Cl. 324-539.000.
DDX Incorporated: *See*—
Starzl, Timothy W.; Cattell, Marguerita; Mihran, Richard T.; and Zapp, Loretta M., 5,542,431, Cl. 128-738.000.
Deacon, David A. G.: *See*—
Bischel, William K.; Brinkman, Michael J.; Deacon, David A. G.; DeWath, Edward J.; Dyer, Mark J.; and Field, Simon J., 5,544,268, Cl. 385-4.000.
Deacon Research: *See*—
Bischel, William K.; Brinkman, Michael J.; Deacon, David A. G.; DeWath, Edward J.; Dyer, Mark J.; and Field, Simon J., 5,544,268, Cl. 385-4.000.
Dean, Mark E., to International Business Machines Corporation. System and method for prefetching information in a processing system. 5,544,342, Cl. 395-446.000.
Dearing, Gerard M.: *See*—
Carpenter, Kelly S.; Dearing, Gerard M.; Nick, Jeffrey M.; Strickland, Jimmy P.; Swanson, Michael D.; and Wilkinson, Wendell W., 5,544,345, Cl. 395-477.000.
DeBardelaben, William D.: *See*—
Markow, Paul A.; Cummings, Theodore M.; DeBardelaben, William D.; McElreath, John H.; and Nolle, William, 5,542,280, Cl. 73-1.00R.
Decker, Owen H.; and Tarnoski, Charles P., to Morton International, Inc. Epoxy functional acrylic powder coatings. 5,543,464, Cl. 525-176.000.
Dedoes Industries, Inc.: *See*—
Dedoes, John T., 5,542,761, Cl. 366-198.000.
Dedoes, John T., to Dedoes Industries, Inc. Automatic paint stirring equipment with improved bushing. 5,542,761, Cl. 366-198.000.
Deeg, Thomas, to Maag Getriebe AG. Toothed-wheel gear with parallel shafts. 5,542,311, Cl. 74-410.000.
Deere & Company: *See*—
Gamino, Rolando P., 5,542,363, Cl. 111-170.000.
Kaczmarczyk, Edward T.; Fuzzen, Daniel R.; Aucoin, Paul G.; and Norris, Lyle V., 5,542,339, Cl. 91-508.000.
Deering, Michael F.; Schlapp, Stephen A.; and Lavelle, Michael G., to Sun Microsystems, Inc. Flexible dram access in a frame buffer memory and system. 5,544,306, Cl. 395-164.000.
DeFrancq, Hubert. Front lifting device for agricultural tractor or the like. 5,542,477, Cl. 172-439.000.
Deguchi, Yoichi: *See*—
Kawakami, Satoru; Suzuki, Tsuyoshi; Arami, Junichi; and Deguchi, Yoichi, 5,542,559, Cl. 216-67.000.
Degussa Aktiengesellschaft: *See*—
Drauz, Karlheinz; Knaup, Günter; and Groeger, Ulrich, 5,543,397, Cl. 514-19.000.
Fehn, Edmund; Schmidt, Felix; and Plessow, Joerg, 5,543,181, Cl. 427-421.000.
Dehler, John: *See*—
Dreisbach, Mark S.; Miller, Russell J.; and Dehler, John, 5,542,199, Cl. 38-12.000.
Deiss, Siegfried; and Schlotterer, Willy, to Walter AG. Rotary cutting tool with axially precision positioned end cutting inserts. 5,542,793, Cl. 407-35.000.
DeJidas, Lloyd P.: *See*—
Blackman, Daniel S.; Warner, Richard D.; DeJidas, Lloyd P.; and Jones, Gary A., 5,542,352, Cl. 101-483.000.
de Jong, Leendert W. C.; van Heiningen, Arjan P.; and Masseling, Willem H., to Applied Power Inc. Reservoir body for a radial plunger pump. 5,542,823, Cl. 417-273.000.
Dekeyser, Mark A.; and McDonald, Paul T., to Uniroyal Chemical Company, Inc; and Uniroyal Chemical Ltd/Ltee. Pesticidal phenylhydrazinephosphates. 5,543,404, Cl. 514-118.000.
De Knaep, Alfons G. M.; Moens, Luc J. R.; and Vreysen, Eduard J. C., to Janssen Pharmaceutica N.V. Intermediates for preparing enantiomerically pure imidazo[4,5,1-JK][1,4]-benzodiazepin-2-(1H)-thiones. 5,543,570, Cl. 564-87.000.
Del-Met Corporation: *See*—
Russell, Martin E., 5,542,751, Cl. 301-37.320.
Delab: *See*—
Cherif Cheikh, Roland, 5,542,920, Cl. 604-57.000.
Delaney, Richard: *See*—
Nke-Aka, Brenda C.; and Delaney, Richard, 5,543,461, Cl. 525-74.000.
de la Torre-Bueno, Jose: *See*—
Sauke, Todd B.; Becker, Joseph F.; and de la Torre-Bueno, Jose, 5,543,621, Cl. 250-339.030.
Delecrin, Joël: *See*—
Duquet, Bruno; Daculsi, Guy; and Delecrin, Joël, 5,543,209, Cl. 428-212.000.
Dell USA, L.P.: *See*—
Radloff, Timothy M.; and Scholder, Erica J., 5,544,006, Cl. 361-683.000.
Dellagala, Joseph: *See*—
Clark, William T.; and Dellagala, Joseph, 5,544,270, Cl. 385-101.000.
Delma elektro-u. medizinische Apparatebau Gesellschaft mbH: *See*—
Fritzsch, Gernod, 5,542,945, Cl. 606-48.000.
Delmas, Marc P. F.: *See*—
Belding, William A.; Janke, Scott; Holeman, William D.; and Delmas, Marc P. F., 5,542,968, Cl. 96-125.000.
Delprato, Ivano: *See*—
Bucci, Marco; Delprato, Ivano; and Spazzapan, Giorgio, 5,543,278, Cl. 430-506.000.
Delta International Machinery Corp.: *See*—
Wixey, Barry D.; Young, Ronald E.; Baird, Charles J.; and Haffely, Jeffrey L., 5,542,639, Cl. 248-439.000.
Delude, John R.: *See*—
Sypek, Maria T.; Delude, John R.; and Perron, Paul A., 5,543,262, Cl. 430-162.000.
DeLustro, Frank: *See*—
Rhee, Woonza; Wallace, Donald G.; Michaels, Alan S.; Burns, Ramon A., Jr.; Fries, Louis; DeLustro, Frank; and Bentz, Hanne, 5,543,441, Cl. 523-105.000.
Demarco, Vincent. Optical key and lock code authentication. 5,543,665, Cl. 307-10.200.
deMare, Gregory: *See*—
Giordano, Gerard J.; deMare, Gregory; Longendorfer, Betsy; Granieri, Michael N.; Giordano, John P.; Nolan, Mary E.; and Levy, Ford, 5,544,308, Cl. 395-183.020.
Demeton USA, Inc.: *See*—
Kadyrov, Ernest; and Kadyrov, Valery, 5,542,606, Cl. 239-81.000.
Demizu, Akira; Nishimura, Yukinobu; and Sugai, Masakazu, to Mitsubishi Denki Kabushiki Kaisha. Misfire detecting apparatus for a multi-cylinder internal combustion engine. 5,544,058, Cl. 364-431.050.
Dempsey, Richard T.: *See*—
Wagner, Byron D.; Johnson, Von W.; Miller, Jeffrey S.; and Dempsey, Richard T., 5,544,228, Cl. 379-67.000.
Demuth, Robert; Faas, Jurg; and Cahannes, Paul, to Maschinenfabrik Rieter AG. Connection between a revolving flat car and a drive belt. 5,542,154, Cl. 19-114.000.
Denis, Alexis: *See*—
Agouridas, Constantin; Bonnefoy, Alain; Chantot, Jean-François; Denis, Alexis; and Le Martret, Odile, 5,543,400, Cl. 514-29.000.
Dennen, Michael W., to Thunderbird Technologies, Inc. Contoured-tub fermi-threshold field effect transistor and method of forming same. 5,543,654, Cl. 257-386.000.
Denny, George S.; Lai, Robert S.; Li, Sherry H.; Murphy, Joseph F.; Nguyen, Hoang M.; and Ziebarth, Mark N., to International Business Machines Corporation. System and method for generating messages for use in transaction networks. 5,544,325, Cl. 395-200.170.
Denzinger, Walter: *See*—
Hartmann, Heinrich; Denzinger, Walter; Kroener, Michael; Nilz, Claudia; Linhart, Friedrich; and Stange, Andreas, 5,543,459, Cl. 525-54.300.

De Santi, Giorgio: *See*—
Losavio, Aldo; Crisenza, Giuseppe; and De Santi, Giorgio, 5,543,633, Cl. 257-48.000.

Deshpande, Rajendra D.; McGraw, William R.; and Pulkowski, Jeffrey H., to Beloit Technologies, Inc. Vacuum roll apparatus. 5,542,192, Cl. 34-115.000.

Detection Systems, Inc.: *See*—
Vane, Burton W.; and Lederer, David B., 5,543,777, Cl. 340-514.000.

Detterman, Don E.; and Erwin, Robert W., to R. R. Donnelley & Sons Company. Method and system for binding a pack of signatures. 5,542,800, Cl. 412-8.000.

Deutsche Aerospace Airbus GmbH: *See*—
Beuck, Guenter; Mueller, Hans-Juergen; and Schliwa, Ralf, 5,542,626, Cl. 244-107.000.

Deutsche Automobilgesellschaft mbH: *See*—
Klink, Rainer; and German, Johann, 5,543,244, Cl. 429-57.000.

Deutsche Forschungsanstalt f. Luft-und Raumfahrt e.V.: *See*—
Schlitze, Rainer, 5,542,230, Cl. 52-726.100.

Devaud-Pledran, Benoit; and Loualiche, Slimane, to France Telecom. Vertical cavity laser of low resistivity. 5,544,193, Cl. 372-96.000.

de Vecchis, Michel: *See*—
Carratt, Michel; and de Vecchis, Michel, 5,544,272, Cl. 385-128.000.

Devore, David D.: *See*—
Patton, Jasson T.; Devore, David D.; Timmers, Francis J.; Soto, Jorge; Schmidt, Gregory P.; and Wilson, David R., 5,543,480, Cl. 526-126.000.

DeVore, James H.: *See*—
Luckevich, Mark; Tuck, Brian C.; Weber, Darryl C.; and DeVore, James H., 5,542,756, Cl. 303-122.110.

DeWalch, Norman B. Tamper resistant meter locking ring. 5,542,722, Cl. 292-256.600.

DeWath, Edward J.: *See*—
Bischel, William K.; Brinkman, Michael J.; Deacon, David A. G.; DeWath, Edward J.; Dyer, Mark J.; and Field, Simon J., 5,544,268, Cl. 385-4.000.

Dexter Shoe Company: *See*—
Famolare, Leo H., 5,542,198, Cl. 36-130.000.

Diacrin, Inc.: *See*—
Zawadzka, Agatha; Tsang, Wen-Ghih; and Brown, Robert H., 5,543,316, Cl. 435-240.200.

Dias, Gary R., to California Prison Industry Authority. Wall panel interlock leveling device. 5,542,219, Cl. 52-126.400.

Dibner, Andrew S.; and Wang, William, to Dibner, Andrew S. Telephone ring detector. 5,544,241, Cl. 379-373.000.

Di Cione, Giuseppe. Hand held spherical gaming device. 5,542,660, Cl. 273-58.00R.

Dickinson, Richard C., to Loral Vought System Corporation. Heat transfer element having the thermally conductive fibers. 5,542,471, Cl. 165-170.000.

Dider Perino: *See*—
Ichiya, Mitsuo; Kasano, Fumihiro; Nishimura, Hiromi; Lewiner, Jacques; and Perino, Dider, 5,544,001, Cl. 361-233.000.

Didier-Werke AG: *See*—
Brückner, Raimund; and Grau, Rüdiger, 5,542,466, Cl. 164-478.000.

Diebold, Eric; Rapkin, Myron; Azhar, Abol; and Usmani, Arthur, to Boehringer Mannheim Corporation. Extender containing polymer compositions and uses thereof. 5,543,299, Cl. 435-28.000.

Diehl, Roy E.: *See*—
Clarke, James R.; and Diehl, Roy E., 5,542,383, Cl. 123-90.170.

Dieken, Ellen S.: *See*—
Fournier, R. E. Keith; Groudine, Mark T.; Dieken, Ellen S.; and Epner, Elliot M., 5,543,319, Cl. 435-240.260.

Diep, Daniel V.: *See*—
Hofmann, John E.; Von Harpe, Thure; Diep, Daniel V.; and Lin, M. Linda, 5,543,123, Cl. 423-235.000.

Dietz, Raymond L.; and Peck, David M., to Quantum Materials, Inc. Low temperature glass paste with improved thermal stress properties. 5,543,366, Cl. 501-41.000.

Diez, Teresa: *See*—
Bills, Gerald F.; Curotto, James E.; Dreikorn, Sarah J.; Jenkins, Rosalind G.; Liesch, Jerrold M.; Morris, Sandra A.; Thompson, John R.; Zink, Deborah L.; Jansson, Richard K.; Basilio, Angela; Diez, Teresa; Pelaez, Fernando; and Vicente, Francisca, 5,543,429, Cl. 514-468.000.

Diffenderfer, Steven J.; and Shaukatullah, Hussain, to International Business Machines Corporation. Single layer leadframe design with groundplane capability. 5,543,657, Cl. 257-666.000.

Digital Equipment Corporation: *See*—
Frame, Robert C., 5,544,344, Cl. 395-471.000.
Senn, Jeffrey A.; and Lucas, Peter, 5,544,051, Cl. 364-419.190.
Ulichney, Robert A., 5,543,936, Cl. 358-456.000.

Digital Lab Studios, LLC: *See*—
Comeau, Richard J., II; and Fay, Richard, 5,543,759, Cl. 330-282.000.

Di Giusto, Bruno: *See*—
Coassin, Giovanni; Di Giusto, Bruno; Drigani, Fausto; and Morasca, Pietro, 5,542,165, Cl. 29-33.00C.

Dillman, Daniel J.: *See*—
Walker, Lee A.; Sundararajan, Srinivasan; Fletcher, Geoffrey D.; and Dillman, Daniel J., 5,542,738, Cl. 296-189.000.

Dilts, Michael R.: *See*—
Milne, Steven H.; Tindell, James M.; Tobias, John C., II; Dilts, Michael R.; and Edelman, Bradley A., 5,544,297, Cl. 395-154.000.

Dimian, Adel F.: *See*—
Jones, Frank N.; Du, Cong; Teng, Ganghui; Dimian, Adel F.; and Wang, Daozhang, 5,543,475, Cl. 525-444.000.
Jones, Frank N.; Du, Cong; Teng, Ganghui; Dimian, Adel F.; and Wang, Daozhang, 5,543,476, Cl. 525-444.000.

Dimmick, Roger F.; Fitterer, Gary A.; Jajowka, Jeff A.; Otto, William F.; Rasmussen, Jerry R.; and Sobotta, Terry L., to International Business Machines Corporation. Computer expansion module apparatus. 5,544,008, Cl. 361-684.000.

Dinglreiter, Heinz: *See*—
Bacher, Walter; Biedermann, Hans; Dinglreiter, Heinz; and Kalb, Helmut, 5,543,108, Cl. 264-553.000.

Dinter, Peter; and Gleffe, Klaus J., to Hoechst Aktiengesellschaft. Packaging system for receiving a film web wound up in roll form onto a winding sleeve. 5,542,534, Cl. 206-407.000.

Dinwiddie, Aaron H.: *See*—
Wehmeyer, Keith R.; Logan, Robert J.; Miller, Robert H.; Augaitis, Sheila R.; and Dinwiddie, Aaron H., 5,543,857, Cl. 348-589.000.

Dion, Philip O.: *See*—
Bushard, Bradley B.; Dion, Philip G.; and Heinz, Joseph V., 5,543,727, Cl. 324-760.000.

DiPietro, David M.: *See*—
Grace, James W.; and DiPietro, David M., 5,543,728, Cl. 324-763.000.

DiPietro, Don. Children's garment with carrying member. 5,542,123, Cl. 2-80.000.

Discovery Zone, Inc: *See*—
Weimer, Ralph; and Acker, Duane R., 5,542,440, Cl. 134-65.000.

Distaso, John, to Elf Atochem North America, Inc. Paint strippers process. 5,542,986, Cl. 134-38.000.

Ditrich, Klaus: *See*—
Münster, Peter; Ditrich, Klaus; Hamprecht, Gerhard; Gerber, Matthias; Westphalen, Karl-Otto; Walter, Helmut; and Karl, Rudolf, 5,543,416, Cl. 504-271.000.

Dixon, Arnold K.; and Giger, Rudolf K. A., to Sandoz Ltd. Use of certain 3,7-disubstituted indole compounds for treating depression or cognitive disorders. 5,543,426, Cl. 514-410.000.

Djabbarah, Nizar F.; Garling, Ralph V.; Hand, David T.; and Macfadyen, Jennifer, to Mobil Oil Corporation. Foam mixture for carbon dioxide drive oil recovery method. 5,542,474, Cl. 166-263.000.

Doane, Kirk D.: *See*—
Tuckey, Charles H.; and Doane, Kirk D., 5,542,395, Cl. 123-497.000.

Dobashi, Toshio: *See*—
Sosa, Toshio; Fukuhara, Toru; Dobashi, Toshio; Hara, Masaharu; and Yokonuma, Norikazu, 5,543,888, Cl. 354-415.000.

Doetzer, Reinhard; Sauter, Hubert; Bayer, Herbert; Roehl, Franz; Lorenz, Gisela; Ammermann, Eberhard; and Wingert, Horst, to BASF Aktiengesellschaft. Azine-substituted phenylacetic acid derivatives and fungicides containing these. 5,543,433, Cl. 514-638.000.

Doi, Haruo: *See*—
Hashimoto, Kenki; Nobuki, Minoru; Nakamura, Morihiko; and Doi, Haruo, 5,542,992, Cl. 148-421.000.

Doi, Shuji: *See*—
Ohnishi, Toshihiro; Noguchi, Takanobu; and Doi, Shuji, 5,543,079, Cl. 252-301.350.

Doi, Toshio; Hayashi, Takehisa; Ishibashi, Kenichi; and Takemoto, Takeshi, to Hitachi, Ltd. Method and system for controlling cache memory with a storage buffer to increase throughput of a write operation to the cache memory. 5,544,340, Cl. 395-445.000.

Dolby Laboratories Licensing Corporation: *See*—
Seagrave, Charles G.; Richards, Martin J.; Mandell, Douglas E.; and Atherton, Mark L., 5,544,140, Cl. 369-59.000.

Dölling, Uwe: *See*—
Zeuner, Siegfried; Sans, Joachim; Dölling, Uwe; and Rödig, Karl-Heinz, 5,542,997, Cl. 149-35.000.

Dombek, Bruce B.; and Boone, Theodore F., to Navistar International Transportation Corp. Multiple nested pistons hand priming pump with spring biasing. 5,542,827, Cl. 417-486.000.

Dombroski, Edward J., to International Business Machines Corp. Stackable vertical thin package/plastic molded lead-on-chip memory cube. 5,543,660, Cl. 257-707.000.

Dondero, George V.: *See*—
Grabos, Fred F., Jr.; and Dondero, George V., 5,542,130, Cl. 2-436.000.

Doni, Fabrizio: *See*—
Boffito, Claudio; Doni, Fabrizio; and Ferrario, Bruno, 5,543,121, Cl. 423-210.000.

Donna Karan Shoe Company: *See*—
Kantro, Scott, 5,542,196, Cl. 36-44.000.

Donnelly, Craig E.; and Grose, David R., to Quantum Corporation. "Acton" load beam for a winchester disk drive. 5,543,985, Cl. 360-104.000.

Donnelly, John P. M.: *See*—
Kennedy, Gerard P.; and Donnelly, John P. M., 5,542,835, Cl. 425-136.000.

Donovan, Charles A. Wall hanger, mounting kit, and method. 5,542,641, Cl. 248-493.000.

Dooner, David B.: *See*—
Seireg, Ali A.; and Dooner, David B., 5,544,056, Cl. 364-426.040.

Doria, Ronald J.: *See*—
DuBois, Eugene W., III; Doria, Ronald J.; and Butler, Robert J., 5,542,367, Cl. 114-218.000.

Dosaka, Katsumi; Kumanoya, Masaki; Hayano, Kouji; Yamazaki, Akira; Iwamoto, Hisashi; Abe, Hideaki; Konishi, Yasuhiro; Himukashi, Katsumitsu; Ishizuka, Yasuhiro; and Saiki, Tsukasa, to Mitsubishi Denki Kabushiki Kaisha; and Mitsubishi Electric Engineering Co., Ltd. Semiconductor memory device. 5,544,121, Cl. 365-222.000.

Dotschkal, Virginia E.: *See*—
Morrison, Jan D.; Grabowski, Edward F.; Dotschkal, Virginia E.; Lynch, Anita P.; and May, Jerome E., 5,543,177, Cl. 427-288.000.

Doty, William A.: *See*—
Taylor, Roy Y.; Doty, William A.; Kroth, David J.; and Schindler, Roland R., 5,543,964, Cl. 359-463.000.

Dougherty, Thomas J.; Inkmann, Mark S.; Smith, Debra L.; and Reher, Michael T., to Globe-Union Inc. Thermal stabilization shield for storage batteries. 5,543,248, Cl. 429-163.000.

Douglas Machine Limited Liability Company: *See*—
Schoeneck, Richard J., 5,543,699, Cl. 318-616.000.

Douglas, Michael W., to Hunter Engineering Company. Wheel balancer quick calibration check. 5,542,294, Cl. 73-462.000.

Douglass, Milo R. System for self-typing of individual essences. 5,542,849, Cl. 434-236.000.

Dow Chemical Company, The: *See*—
Hammond, Charles A.; Oostwouder, Shelby P.; and Lanning, Robert A., 5,543,122, Cl. 423-220.000.
Hool, Kevin O.; and Saunders, Robert C., 5,542,289, Cl. 73-64.520.
Laughner, Michael K., 5,543,448, Cl. 524-109.000.
Patton, Jasson T.; Devore, David D.; Timmers, Francis J.; Soto, Jorge; Schmidt, Gregory P.; and Wilson, David R., 5,543,480, Cl. 526-126.000.

Dow Corning Corporation: *See*—
McGee, James B.; Petroff, Lenin J.; Brecht, Doris J.; Ollinger, William J., deceased; and Ollinger, by John M., legal representative, 5,543,082, Cl. 252-321.000.

Dowling, Adrian N.: *See*—
Layzell, David B.; Hunt, Stephen; and Dowling, Adrian N., 5,542,284, Cl. 73-23.200.

Drabant, Sándor: *See*—
Fekete, Pál; Király née Ignácz, Mária; Sipos, Gábor; Jámbor née Hoffmann, Zsuzsanna; Újfalussy, György; Góra née Hernyes, Magdolna; Klebovich, Imre; Drabant, Sándor; Mándi, Attila; Kiss née Szabó, Gizella; Bárczay, Erzsébet; and Krisztián, Mária, 5,543,155, Cl. 424-473.000.

Drach, John C.: *See*—
Townsend, Leroy B.; Drach, John C.; and Renau, Thomas E., 5,543,413, Cl. 514-258.000.

Draeger, Jeff: *See*—
Gunther, Stephen H.; Blank, Gerard D.; Curry, James T.; and Draeger, Jeff, 5,544,092, Cl. 395-800.000.

Dragoo, Jerry L.: *See*—
Kline, Mark J.; Roe, Donald C.; Daniels, Dean J.; Zorb, James E.; and Dragoo, Jerry L., 5,542,942, Cl. 604-385.200.

Drauz, Karlheinz; Knaup, Günter; and Groeger, Ulrich, to Degussa Aktiengesellschaft. New N-acyl dipeptides and their use. 5,543,397, Cl. 514-19.000.

Dreikorn, Sarah J.: *See*—
Bills, Gerald F.; Curotto, James E.; Dreikorn, Sarah J.; Jenkins, Rosalind G.; Liesch, Jerrold M.; Morris, Sandra A.; Thompson, John R.; Zink, Deborah L.; Jansson, Richard K.; Basilio, Angela; Diez, Teresa; Pelaez, Fernando; and Vicente, Francisca, 5,543,429, Cl. 514-468.000.

Dreisbach, Mark S.; Miller, Russell J.; and Dehler, John, to Hoffman/New Yorker, Inc. Garment pressing apparatus with garment end rotator. 5,542,199, Cl. 38-12.000.

Drewes, Rolf; Kolb, Markus; Kuhn, Karl J.; Sander, Hans-Jürgen; and Wehner, Wolfgang, to Ciba-Geigy Corporation. Stabilized flexible PVC. 5,543,449, Cl. 524-114.000.

Dri Steem Humidifier Company: *See*—
Morton, Bernard W.; Nelson, Kirk A.; and Balmer, Ricky D., 5,543,090, Cl. 261-118.000.

Drigani, Fausto: *See*—
Coassin, Giovanni; Di Giusto, Bruno; Drigani, Fausto; and Morasca, Pietro, 5,542,165, Cl. 29-33.00C.

Driggs, Leland W. Bale picker and stacker. 5,542,803, Cl. 414-111.000.

Dronzek, Peter J., Jr.; Sedran, Roger H.; and Burke, Brian K., to Dronzek, Jr., Peter J. Durable sheets for printing. 5,543,191, Cl. 428-41.500.

Drost, Steven W.: *See*—
Wu, Te-Kao; Milroy, William W.; and Drost, Steven W., 5,543,815, Cl. 343-909.000.

Drower, Herbert M., to Transilwrap Company, Inc. Method and apparatus for precisely positioning and attaching a protective film layer to a face of a card. 5,543,201, Cl. 428-142.000.

Drube, Thomas K.: *See*—
Preston, Duane; and Drube, Thomas K., 5,542,255, Cl. 62-45.100.

DSC Communications Corporation: *See*—
Harrison, C. Gordon, 5,544,273, Cl. 385-135.000.

D'Silva, Arthur, to Iowa State University Research Foundation, Inc. Capillary zone electrophoresis-mass spectrometer interface. 5,543,618, Cl. 250-288.000.

Du, Cong: *See*—
Jones, Frank N.; Du, Cong; Teng, Ganghui; Dimian, Adel F.; and Wang, Daozhang, 5,543,475, Cl. 525-444.000.
Jones, Frank N.; Du, Cong; Teng, Ganghui; Dimian, Adel F.; and Wang, Daozhang, 5,543,476, Cl. 525-444.000.

Du Pont de Nemours, E. I., and Company: *See*—
Anolick, Colin; Cramer, Gregory D.; Dujari, Ramdas; Lee, Win-Chung; Rao, Sundar M.; and Wheland, Robert C., 5,543,495, Cl. 528-481.000.
Burk, Mark J., 5,543,571, Cl. 564-150.000.
Edman, James R.; and Coulman, Donald J., 5,543,222, Cl. 428-335.000.
Irwin, Robert S., 5,543,492, Cl. 528-335.000.
Kourtakis, Kostantinos; and Sonnichsen, George C., 5,543,532, Cl. 549-260.000.
Morgan, Richard A., 5,543,217, Cl. 428-375.000.
Rajan, Janardhanan S.; and Sariaslani, Fateme S., 5,543,324, Cl. 435-252.400.
Rushmere, John D.; and Moffett, Robert H., 5,543,014, Cl. 162-181.600.
Tam, Wilson, 5,543,536, Cl. 556-13.000.
Taylor, Bradley K., 5,543,251, Cl. 430-1.000.
Wang, Ying, 5,543,378, Cl. 502-174.000.

DuBois, Donn A.: *See*—
Hoxmeier, Ronald J.; Job, Robert C.; Spence, Bridget A.; and DuBois, Donn A., 5,543,458, Cl. 525-271.000.

DuBois, Eugene W., III; Doria, Ronald J.; and Butler, Robert J., to Incon Marine, Inc. Portable boat docking device and method for using the same. 5,542,367, Cl. 114-218.000.

Dubrul, William R.: *See*—
Evans, Michael A.; Nichols, Colin J.; Kemp, Laura; Dubrul, William R.; and Behl, Robert S., 5,542,928, Cl. 604-113.000.

Dudek, Peter P. Unitary biological specimen processing apparatus. 5,543,114, Cl. 422-102.000.

Dufault, William J.: *See*—
Casillo, Joseph; Johnson, Frederick M.; Heath, John M., Jr.; Veilleux, Gregory R.; and Dufault, William J., 5,543,001, Cl. 156-60.000.

Duffour, Henri; Goerend, Philippe; and Loutan, Dominique, to Secheron S.A. Switch having a vacuum interrupter. 5,543,598, Cl. 218-135.000.

Duffy, Thomas P.: *See*—
Bhatt, Ashwinkumar C.; Duffy, Thomas P.; Hackett, Gerry A.; and McKeveny, Jeffrey, 5,542,175, Cl. 29-846.000.

Dugan, Jeffrey S., to BASF Corporation. Plate-type diaphragm pump and method of use. 5,542,821, Cl. 417-53.000.

Dugan, Pamela A.; Fitzpatrick, Gregory P.; Johnson, William J.; and Williams, Marvin L., to International Business Machines. Method and apparatus for marking text between paired delimiters. 5,544,048, Cl. 364-419.170.

Dujari, Ramdas: *See*—
Anolick, Colin; Cramer, Gregory D.; Dujari, Ramdas; Lee, Win-Chung; Rao, Sundar M.; and Wheland, Robert C., 5,543,495, Cl. 528-481.000.

Dumstorff, Patrick L.: *See*—
Ganucheau, Charles J., Jr.; Vanden Heuvel, Dean P.; Halley, Craig; Mun, Kyung T.; and Dumstorff, Patrick L., 5,543,781, Cl. 340-825.440.

Dunn, Michael E.; and Varnelis, Don, to Kelsey-Hayes Company. Rotor for disc brake assembly. 5,542,503, Cl. 188-18.00A.

Dunn, Steven B.: *See*—
Petterson, Grace C.; Dunn, Steven B.; and Petterson, Tor, 5,542,922, Cl. 604-77.000.

Dunwoody, Paul R., to Carnaudmetalbox PLC. Apparatus for stripping a drawn article from a punch. 5,542,277, Cl. 72-345.000.

DuPont Merck Pharmaceutical Company, The: *See*—
Smallheer, Joanne M., 5,543,517, Cl. 544-151.000.

Duquet, Bruno; Daculsi, Guy; and Delecrin, Joël, to Zimmer, Inc. Surface coating for prosthesis system containing HA/TCP composition. 5,543,209, Cl. 428-212.000.

Duracell Inc.: *See*—
Treger, Jack, 5,543,246, Cl. 429-90.000.

Durham, Dana L.: *See*—
Rahman, M. Dalil; and Durham, Dana L., 5,543,263, Cl. 430-168.000.

Dutch Industries Ltd.: *See*—
Cruson, Izaak P. J., 5,542,883, Cl. 460-112.000.

Duvenkamp, Manfred, to General Motors Corporation. Motor vehicle seat cushion. 5,543,213, Cl. 428-230.000.

Dyer, Mark J.: *See*—
Bischel, William K.; Brinkman, Michael J.; Deacon, David A. G.; DeWath, Edward J.; Dyer, Mark J.; and Field, Simon J., 5,544,268, Cl. 385-4.000.

E.C. Chemical Co., Ltd.: *See*—
Uchiyama, Hiroshi; Kogoma, Masuhiro; and Okazaki, Satiko, 5,543,017, Cl. 204-169.000.

E. Guide, Inc.: *See*—
Mankovitz, Roy J.; Ng, Yee K.; and Kwoh, Daniel S., 5,543,929, Cl. 358-335.000.

E. Khashoggi Industries: *See*—
Andersen, Per J.; and Hodson, Simon K., 5,543,186, Cl. 428-34.400.

E2 Enterprises, Inc.: *See*—
Ballew, Chester N., 5,542,725, Cl. 292-339.000.

Eadington, Peter J.; Lisk, Mark; and Krieger, Francis W., to Commonwealth Scientific Industrial Research Organisation. Identifying oil well sites. 5,543,616, Cl. 250-55.000.

Eardley, Richard A.: *See*—
Buchana, William A.; Eardley, Richard A.; Tizzard, Anthony R.; and Utley, Brian G., 5,543,589, Cl. 178-18.000.

Earle, Anthony; Pyson, John R.; and Glover, Edward C. T. S., to Eastman Kodak Company. Photographic processing chemicals. 5,543,884, Cl. 354-324.000.

Early, Timothy J., to Ethicon Endo-Surgery, Inc. Container for quick release packages for surgical instruments. 5,542,539, Cl. 206-499.000.

Eastman Chemical Company: *See—*
Miller, Richard A.; George, Scott E.; Parsons, Theron E., III; and Montgomery, Mark A., 5,543,488, Cl. 528-277.000.

Eastman Kodak Company: *See—*
Allebach, Jan P.; Bouman, Charles A.; and Balasubramanian, Thyagarajan, 5,544,284, Cl. 395-131.000.
Altrieth, Frederick E., III, 5,543,897, Cl. 355-209.000.
Chari, Krishnan; Smith, Wendell P., Jr.; Spara, Paul P.; and Krishnamurthy, Sundaram, 5,543,276, Cl. 430-505.000.
Chatterjee, Dilip K.; Ghosh, Syamal K.; Shaffer, Wayne K.; and Vankerkhove, Alan P., 5,543,269, Cl. 430-346.000.
Earle, Anthony; Fyson, John R.; and Glover, Edward C. T. S., 5,543,884, Cl. 354-324.000.
Fallet, Eric L., 5,543,913, Cl. 356-121.000.
Furlani, Edward P.; and Lee, J. Kelly, 5,544,132, Cl. 369-13.000.
Green, Andrew, 5,543,883, Cl. 354-298.000.
Isaac, Walter H.; and Wollman, Eric W., 5,543,281, Cl. 430-551.000.
Jeffers, Frederick J., 5,543,911, Cl. 356-71.000.
Kay, David B.; and Gage, Edward C., 5,544,143, Cl. 369-109.000.
McIntyre, Dale F., 5,543,889, Cl. 354-432.000.
Meyers, Mark M., 5,543,966, Cl. 359-565.000.
Pagano, Daniel M.; Wheeler, Richard B.; and Klees, Kevin J., 5,543,882, Cl. 354-311.000.
Pitt, Alan R.; Caesar, Julian C.; Gibson, Danuta; Wear, Trevor J.; Young, David J.; and King, Scott A., 5,543,555, Cl. 560-151.000.
Sheldon, Eric G.; Stephens, Ronald W.; and Vorhauer, George R., 5,543,893, Cl. 355-206.000.
Singer, Stephen P.; and Harder, John W., 5,543,277, Cl. 430-505.000.
Smith, Thomas M.; and Meyer, Arlene L., 5,543,273, Cl. 430-495.100.
Taylor, Roy Y.; Doty, William A.; Kroth, David J.; and Schindler, Roland R., 5,543,964, Cl. 359-463.000.
Whitson, Mark A.; Lewis, John D.; Chen, Tienteh; Dannhauser, Thomas J.; and Bagchi, Pranab, 5,543,283, Cl. 430-569.000.

Easton, Alan M.: *See—*
Braford-Goldberg, Sarah R.; Easton, Alan M.; Klein, Barbara K.; McKearn, John P.; and Otins, Peter O., 5,543,141, Cl. 424-85.200.

Eaton Corporation: *See—*
Engel, Joseph C.; and Kenny, Thomas J., 5,544,065, Cl. 364-484.000.
Tatavoosian, Vanacan; Helstern, Robert P.; and Lombardo, John J., 5,544,019, Cl. 362-23.000.

Eaton, Harry E.; Holowczak, John E.; and Reinfelder, William C., to United Technologies Corporation. Engineered ceramic components for the leading edge of a helicopter rotor blade. 5,542,820, Cl. 416-224.000.

Ebara Corporation: *See—*
Saito, Mutsumi; Yahiro, Tomoyuki; and Hatakeyama, Masahiro, 5,543,615, Cl. 250-251.000.

Ebbing, Peter F.; and Panagas, Peter G., Jr., to Applied Materials, Inc. Electrically heated fluid carrying conduit having integrated heating elements and electrical conductors. 5,544,275, Cl. 392-480.000.

Ebenhoch, Sebastian: *See—*
Krueger, Douglas A.; and Ebenhoch, Sebastian, 5,542,792, Cl. 407-35.000.

Ebine, Noriya: *See—*
Ara, Katsuyuki; Nakajima, Nobuya; and Ebine, Noriya, 5,544,207, Cl. 376-249.000.

EC Engineering+Consulting Spezialmaschinen GmbH: *See—*
Kasper, Ernst, 5,542,492, Cl. 180-253.000.

Ecowater Systems, Inc.: *See—*
Zimmerman, Jeffrey A.; Gauer, Gary; and Marshall, Dave, 5,544,072, Cl. 364-502.000.

Eda, Susumu: *See—*
Norizuki, Reiko; Hyodo, Ryuji; Tanaka, Kenji; Sekihata, Osamu; Hatta, Hiroyuki; Eda, Susumu; and Oomura, Katsumi, 5,544,169, Cl. 370-60.100.

Eddison, Alan M., to Schlumberger Technology Corporation. Articulated directional drilling motor assembly. 5,542,482, Cl. 175-61.000.

Edelman, Bradley A.: *See—*
Milne, Steven H.; Tindell, James M.; Tobias, John C., II; Dilts, Michael R.; and Edelman, Bradley A., 5,544,297, Cl. 395-154.000.

Edem, Brian C.; and Worsley, Debra J., to National Semiconductor Corporation. Network for transmitting isochronous-source data using a frame structure with variable number of time slots to compensate for timing variance between reference clock and data rate. 5,544,324, Cl. 395-200.170.

Edgar, Albert D., to International Business Machines Corporation. Method and apparatus for linear color processing. 5,543,820, Cl. 345-153.000.

Edison Polymer Innovation Corporation: *See—*
Ishida, Hatsuo, 5,543,516, Cl. 544-69.000.

Edman, James R.; and Coulman, Donald J., to Du Pont de Nemours, E. I., and Company. Metallized polyimide film containing a hydrocarbyl tin compound. 5,543,222, Cl. 428-335.000.

Edman, Knut O. Method for overburden drilling, casing shoe and casing tube for the method, and coupling element for the casing tubes. 5,542,483, Cl. 175-257.000.

Edvardsson, Kurt O., to SAAB Marine Electronics AB. Device for gauging the level of a fluid. 5,543,720, Cl. 324-643.000.

Edwards, Brooks: *See—*
Bronstein, Irena Y.; Edwards, Brooks; and Juo, Rouh-Rong, 5,543,295, Cl. 435-6.000.

Edwards, Stuart D.; Lax, Ronald G.; Lundquist, Ingemar H.; Sharkey, Hugh R.; and Baker, James A., to Vidamed, Inc. Thermal mapping catheter with ultrasound probe. 5,542,915, Cl. 604-22.000.

Egger, Daniel, to Libertech, Inc. Method and apparatus for indexing, searching and displaying data. 5,544,352, Cl. 395-600.000.

Egis Gyogyszergyar Rt.: *See—*
Fekete, Pál; Király née Ignácz, Mária; Sipos, Gábor; Jámbor née Hoffmann, Zsuzsanna; Újfalussy, György; Góra née Hernyes, Magdolna; Klebovich, Imre; Drabant, Sándor; Mándi, Attila; Kiss née Szabó, Gizella; Bárczay, Erzsébet; and Krisztián, Mária, 5,543,155, Cl. 424-473.000.

Ehnow, Fred P.: *See—*
Roorda, Wouter E.; Ehnow, Fred P.; Basso, Estela; Wang, Karly S.; and Fujita, Sharon M., 5,543,156, Cl. 424-484.000.

Ehrhart, Wendell A.; and Setthachayanon, Songvit, to Armstrong World Industries, Inc. (Meth) acrylated aromatic polyester floor covering wear layer. 5,543,232, Cl. 428-482.000.

Eibisch, Karl: *See—*
Bernicke, Erhard; Rohr, Klaus; and Eibisch, Karl, 5,543,690, Cl. 315-224.000.

Eibl, Markus: *See—*
Rüf, Hartmut; Eibl, Markus; and Jurkovic, Raimund, 5,543,101, Cl. 264-187.000.

Eiichi, Kuramochi: *See—*
Richard, Nötzel; Jiro, Temmyo; Toshiaki, Tamamura; Mitsuru, Sugo; Eiichi, Kuramochi; and Teruhiko, Nishiya, 5,543,354, Cl. 437-129.000.

Eimori, Takahisa: *See—*
Satoh, Shinichi; Ozaki, Hiroji; and Eimori, Takahisa, 5,543,646, Cl. 257-344.000.

Eipper, Konrad: *See—*
Heiss, Werner; Weller, Martin; and Eipper, Konrad, 5,542,491, Cl. 180-232.000.

EIS International, Inc.: *See—*
Trefzger, Alan R., 5,544,220, Cl. 379-266.000.

Eisenberg, David C.; Pradhan, Milind M.; and Howie, Milham S., to Albemarle Corporation. Process for preparing trimethylaluminum. 5,543,537, Cl. 556-157.000.

Ekeze, Tobias D.: *See—*
Cummins, Thomas J.; and Ekeze, Tobias D., 5,543,305, Cl. 435-91.100.

Ekstedt, Thomas W.: *See—*
Wenstrand, John S.; and Ekstedt, Thomas W., 5,544,299, Cl. 395-155.000.

Elbert, Dale K.: *See—*
Robinson, Kurt B.; Elbert, Dale K.; and Levy, Markus A., 5,544,356, Cl. 395-600.000.

ELC Produtos de Seguranca Industria e Comercio Ltda: *See—*
Netto, Eduardo D. C., 5,542,724, Cl. 292-317.000.

Eldar, Zvi: *See—*
Gatt, Shimon; Barenholz, Yechezkel; Bercovier, Herve; and Eldar, Zvi, 5,542,987, Cl. 134-39.000.

Electric Power Research Institute: *See—*
Virkar, Anil V.; Fung, Kuan-Zong; and Tanner, Cameron W., 5,543,239, Cl. 429-33.000.

Electrolux Corporation: *See—*
Hoekstra, Peter; Jackson, Timothy W.; Moyher, George C., Jr.; and Conci, Odero, 5,542,146, Cl. 15-319.000.

Electronic Payment Services, Inc.: *See—*
Davis, Terry L.; Hart, James A.; Russell, James F.; Sears, John W.; and Trice, Philip H., 5,544,086, Cl. 364-408.000.

Electronics & Telecommunications Research Inst.: *See—*
Park, Byung-Sun; Oh, Yong-Ho; Choi, Sang-Soo; and Yoo, Hyung-Joun, 5,543,253, Cl. 439-5.000.

Electronics and Telecommunications Research Institute: *See—*
Baek, Young S.; Lee, Keun W.; Min, Beyong D.; and Choi, Gang I., 5,544,151, Cl. 370-16.100.

Electronics For Imaging: *See—*
Sherman, Doron, 5,543,940, Cl. 358-518.000.

Electrotech Instruments Limited: *See—*
Evans, Peter D.; and Heffernan, William J. B., 5,543,773, Cl. 336-183.000.

Elek, Robert A.: *See—*
Srinivasan, Ravi; Elek, Robert A.; and Liu, Haiying, 5,543,711, Cl. 324-318.000.

Elektroschmelzwerk Kempten GmbH: *See—*
Sigl, Lorenz; Thaler, Hubert; and Schwetz, Karl-Alexander, 5,543,370, Cl. 501-92.000.

Elenbaas, George H. Electrical switch. 5,543,767, Cl. 335-205.000.

Elf Atochem North America, Inc.: *See—*
Distaso, John, 5,542,986, Cl. 134-38.000.
Stein, Daryl L., 5,543,553, Cl. 560-32.000.

Eli Lilly and Company: *See—*
Queener, Stephen W.; and Zock, Joseph M., 5,543,497, Cl. 530-324.000.
Sawyer, Jason S.; Spaethe, Stephen M.; and Starling, James J., 5,543,428, Cl. 514-456.000.

Eliason, Jeffrey M.: *See—*
Howe, Maynard A., Jr.; and Eliason, Jeffrey M., 5,542,676, Cl. 473-202.000.

Ellinwood, Laroy R. Scraper attachment for a hammer. 5,542,140, Cl. 7-146.000.

Elliott, John D.: *See—*
Skarbo, Rune A.; Elliott, John D.; and Watts, Kevin A., 5,544,300, Cl. 395-157.000.

Elrod, Scott A.: *See—*
Theimer, Marvin M.; Spreitzer, Michael J.; Weiser, Mark D.; Goldstein, Richard J.; Elrod, Scott A.; Swinehart, Daniel C.; Schilit, William N.; Krivacic, Robert T.; and Want, Roy, 5,544,321, Cl. 395-200.110.

Elsenheimer, John A.; Bried, David K.; Sands, Jeffrey L.; Wildes, Donald; and Nugent, J. Patrick, to Newell Operating Company. Cord release device. 5,542,462, Cl. 160-178.000.

Elwakil, Hamdy A., to A.B. Dick Company. Encapsulated magnetic particles pigments and carbon black, compositions and methods related thereto. 5,543,219, Cl. 428-402.240.

EMC Corporation: *See—*
Bither, David S.; Loewy, Charles S. F.; and Wilson, Paul C., 5,544,330, Cl. 395-280.000.
Yanai, Moshe; Vishlitzky, Natan; Alterescu, Bruno; Castel, Daniel; and Shklarsky, Gadi, 5,544,347, Cl. 395-489.000.

Emerson Electric Co.: *See—*
Williams, Ronald D., 5,543,671, Cl. 310-71.000.

Emhart Inc.: *See—*
Gronau, Randall J.; and Osterland, Robert, 5,542,158, Cl. 24-295.000.
Sakoda, K., 5,542,524, Cl. 198-409.000.

Empire of Carolina: *See—*
Casale, Joseph; and Mucaro, Salvatore, 5,542,668, Cl. 463-59.000.

Empire Plastics, Inc.: *See—*
Norman, Donald E., 5,543,466, Cl. 525-190.000.

Emrey, David L. Workcar insert. 5,542,500, Cl. 187-273.000.

En-Ovation Technology, Inc.: *See—*
Newarski, Emil J., 5,542,401, Cl. 123-572.000.

Enami, Hiromichi; Katsuyama, Kiyomi; and Katsuyama, Masanori, to Hitachi, Ltd. Removing damage caused by plasma etching and high energy implantation using hydrogen. 5,543,336, Cl. 437-24.000.

Enamito, Akihiko: *See—*
Suzuki, Takehiko; Taniguchi, Shozo; Kanemaru, Kohji; Sato, Yoshiyuki; and Enamito, Akihiko, 5,544,074, Cl. 364-508.000.

Encore Computer U.S., Inc.: *See—*
Acton, John D.; Grant, Lawrence C.; Hardy, Jack M., Jr.; Kent, Steven P.; and Schelong, Steven E., 5,544,319, Cl. 395-200.070.

Encore Holdings Limited: *See—*
Yeung, Choi K., 5,542,531, Cl. 206-308.100.

Endo, Shozo; Endo, Youichi; and Endo, Shuji. Anchoring system for installing exterior materials to a building structure. 5,542,225, Cl. 52-511.000.

Endo, Shuji: *See—*
Endo, Shozo; Endo, Youichi; and Endo, Shuji, 5,542,225, Cl. 52-511.000.

Endo, Youichi: *See—*
Endo, Shozo; Endo, Youichi; and Endo, Shuji, 5,542,225, Cl. 52-511.000.

Endo, Youichi: *See—*
Endo, Shozo; Endo, Youichi; and Endo, Shuji, 5,542,225, Cl. 52-511.000.

Endriz, John: *See—*
Wolak, Edmund L.; Endriz, John; Worland, D. Philip; Dawson, David D.; and Scifres, Donald R., 5,544,184, Cl. 372-43.000.

Energy Conversion Devices, Inc.: *See—*
Ovshinsky, Stanford R., 5,543,737, Cl. 326-104.000.

Engel, Joseph C.; and Kenny, Thomas J., to Eaton Corporation. Apparatus for digitizing ac signals of unknown or changing frequency. 5,544,065, Cl. 364-484.000.

Engel, Stephen J.; and Buscemi, Vivian L., to Grumman Aerospace Corporation. Interface system with memory map locations for holding flags indicating a priority for executing instructions held within messages received by the interface. 5,544,329, Cl. 395-826.000.

Engelhardt, Peter: *See—*
Bobrich, Michael; Lehner, August; Roller, Hermann; Suettinger, Rudolf; Kress, Ria; Schneider, Norbert; Lenz, Werner; Engelhardt, Peter; Rudolf, Peter; Brodt, Gregor; Balz, Werner; and Kohl, Albert, 5,543,226, Cl. 428-423.100.

Engineered Fabrics Corporation: *See—*
Smith, Charles S.; and Wright, Hancel R., 5,542,765, Cl. 383-17.000.

Engineering & Research Associates, Inc.: *See—*
Taylor, Junius E., 5,543,604, Cl. 219-643.000.

Enkotec A/S: *See—*
Nielsen, Ove; and Frandsen, Jesper, 5,542,276, Cl. 72-344.000.

Enomoto, Aiko: *See—*
Inoue, Hiroshi; Mizutome, Atsushi; and Enomoto, Aiko, 5,543,817, Cl. 345-100.000.

Enomoto, Naoki: *See—*
Maebashi, Youichirou; Fujii, Haruo; Sasame, Hiroshi; Kawakami, Hiroaki; Kobayashi, Tatsuya; Kobayashi, Tetsuya; Enomoto, Naoki; Uchiyama, Akihiko; and Saito, Yoshiro, 5,543,900, Cl. 355-219.000.

Enomoto, Takashi; Yoshioka, Toshifumi; and Nishida, Naoya, to Canon Kabushiki Kaisha. Liquid crystal device and display apparatus with multilayer electrodes. 5,543,946, Cl. 359-87.000.

Ensminger, William D.; and Gavin, Robert F., to Michigan TransTech Corporation. Implantable access devices. 5,542,923, Cl. 604-93.000.

Environmental Research Institute of Michigan: *See—*
McCubbrey, David L., 5,544,259, Cl. 382-177.000.

Enzyme Bio-Systems Ltd.: *See—*
Brumm, Phillip J., 5,543,313, Cl. 435-225.000.

Epner, Elliot M.: *See—*
Fournier, R. E. Keith; Groudine, Mark T.; Dieken, Ellen S.; and Epner, Elliot M., 5,543,319, Cl. 435-240.260.

Erdman, Frank H., to Frederick Erdman Association. Method and apparatus for cardiovascular diagnosis. 5,542,421, Cl. 128-633.000.

Erdman, John L.; and Stoner, Marcus D., to Honeywell Inc. Method of incorporating wide tolerance set point potentiometers into devices with fixed orientation setpoint indicator scales. 5,542,279, Cl. 73-1.00R.

Erickson, Dennis: *See—*
Merkle, Cliff; Burns, John; Laib, Gordon; Willis, Jim; Mitchel, Scotty; and Erickson, Dennis, 5,542,544, Cl. 209-139.100.

Erickson, James R.: *See—*
Stevens, Craig A.; Rao, Bhaskar P.; Veith, Cary A.; and Erickson, James R., 5,543,472, Cl. 525-387.000.

Erickson, Steven E.; and Peterson, Stanley D., to Outlook Window Partnership L.P. locking terminal for full tilt double-hung windows. 5,542,212, Cl. 49-181.000.

Erler, Kristina W.: *See—*
Cole, Howard; Erler, Kristina W.; Smith, Kenneth L.; and Francois, Brian C., 5,542,950, Cl. 8-107.000.

Errico, Joseph P.; and Hultquist, Steven J. Amorphous metal - ceramic composite material. 5,543,187, Cl. 428-34.600.

Ertl, Friedrich; and Bertz, Hans-Ulrich, to Zeiss Messgerätebau GmbH. Measuring apparatus for checking the dimensions of cylindrical workpieces. 5,542,188, Cl. 33-605.000.

Erwin, Robert W.: *See—*
Detterman, Don E.; and Erwin, Robert W., 5,542,800, Cl. 412-8.000.

Erwin Sick GmbH, Optik-Elektronik: *See—*
Ruprecht, Harald, 5,543,997, Cl. 361-93.000.

Esders, Berthold: *See—*
Levers, Jürgen; Bendicks, Norbert; Boebel, Ralf; Feldmüller, Ludwig; and Esders, Berthold, 5,543,923, Cl. 356-445.000.

Esselte Meto International GmbH: *See—*
Schneider, Peter; and Umbach, Dirk, 5,542,769, Cl. 400-225.000.

Etex Corporation: *See—*
Lee, Dosuk D.; and Conner, William T., 5,543,019, Cl. 204-192.150.

Ethicon Endo-Surgery, Inc.: *See—*
Early, Timothy J., 5,542,539, Cl. 206-499.000.

ETI Systems: *See—*
Tice, Bill, 5,543,694, Cl. 318-379.000.

Eubanks Engineering Company: *See—*
Hoffa, Jack L.; and Talley, Lloyd A., 5,542,592, Cl. 226-118.000.

Eun, Kwang-Yong: *See—*
Lee, Kwang-Ryeol; and Eun, Kwang-Yong, 5,542,281, Cl. 73-9.000.

Eun, Suk-Hyun: *See—*
Lee, Seung-Gap; Gil, Sung-Ho; and Eun, Suk-Hyun, 5,542,267, Cl. 62-485.000.

Eurocopter France: *See—*
Monvaillier, Jérome M.; and Polveda, Jacques J., 5,542,818, Cl. 416-134.00A.

Eurotherm Recorders Limited: *See—*
Loeber, Peter J.; Hurst, Peter W., deceased; and Hurst, George R., legal representative, 5,544,020, Cl. 362-29.000.

Evans, Donald P. Collectible cards and displays for same. 5,542,709, Cl. 283-61.000.

Evans, Keith R., to United States of America, Air Force. Desorption mass spectrometric control of alloy composition during molecular beam epitaxy. 5,543,170, Cl. 427-8.000.

Evans, Marc D.: *See—*
Monteleone, Michael G.; Weiss, Richard A.; Evans, Marc D.; and Hanna, Marie R., 5,543,398, Cl. 512-23.000.

Evans, Michael A.; Nichols, Colin J.; Kemp, Laura; Dubrul, William R.; and Behl, Robert S., to InnerDyne, Inc. Method and device for thermal ablation having improved heat transfer. 5,542,928, Cl. 604-113.000.

Evans, Paul M.: *See—*
Jones, Richard S.; Hodges, William H., Jr.; and Evans, Paul M., 5,543,596, Cl. 200-573.000.

Evans, Peter D.; and Heffernan, William J. B., to Electrotech Instruments Limited. Transformers and coupled inductors with optimum interleaving of windings. 5,543,773, Cl. 336-183.000.

Evans, Robert J., to Burns Philp & Company Limited. Yeast strain. 5,543,161, Cl. 426-62.000.

Evens, Lance J., to Lennox Industries, Inc. Crimped joint design for clamshell heat exchanger. 5,542,470, Cl. 165-170.000.

Everett, Lorne G.; and Blakely, David, to TTI Environmental Inc. Method for detecting and mitigating underground organic contamination. 5,543,623, Cl. 250-390.040.

Ewerbring, Lars–Magnus: *See—*
Teder, Paul M.; Ewerbring, Lars–Magnus; and Brismark, Lars G., 5,544,156, Cl. 370-18.000.

Exar Corporation: *See—*
Robinson, Neil E., 5,544,242, Cl. 379-390.000.

Excel, Inc.: *See—*
Madonna, Robert P., 5,544,163, Cl. 370-60.100.

Excel Industries, Inc.: *See—*
Buening, Dennis J., 5,542,214, Cl. 49-380.000.

Exfluor Research Corporation: *See—*
Bierschenk, Thomas R.; Juhlke, Timothy J.; Kawa, Hajimu; and Lagow, Richard J., 5,543,567, Cl. 562-582.000.

Exxon Chemical Patents Inc.: *See—*
Struglinski, Mark J.; Ver Strate, Gary W.; and Fetters, Lewis J., 5,543,469, Cl. 525-314.000.

170–651 O.G.–96–28: QL3

Williams, Dennis A.; McDougall, Lee A.; and Looney, James R., 5,543,388, Cl. 507-269.000.

Exxon Production Research Co.: *See—*
Mokadam, Anita R.; Strubelt, Charles E.; Williams, Dennis A.; and Webber, Kenneth M., 5,543,387, Cl. 507-135.000.

Ezaki, Tadashi, to Sony Corporation. Recording and reproducing apparatus. 5,543,926, Cl. 358-310.000.

F. L. Smidth & Co. A/S: *See—*
Andersen, Knud T., 5,542,618, Cl. 241-227.000.

FA. Felsdekor Kluh und Precht: *See—*
Klüh, Gorden; and Precht, Sven, 5,543,100, Cl. 264-130.000.

Faas, Jurg: *See—*
Demuth, Robert; Faas, Jurg; and Cahannes, Paul, 5,542,154, Cl. 19-114.000.

Fabio Perini S.p.A.: *See—*
Biagiotti, Guglielmo, 5,542,622, Cl. 242-521.000.

Fabretti Holdings Limited: *See—*
Puumalainen, Pertti, 5,543,331, Cl. 436-153.000.

Faggin, Federico: *See—*
Gillespie, David; Allen, Timothy P.; Miller, Robert J.; and Faggin, Federico, 5,543,590, Cl. 178-18.000.

Fakler, Bernhard, to Robert Bosch GmbH. Slipring-less claw-pole generator. 5,543,677, Cl. 310-263.000.

Fallet, Eric L., to Eastman Kodak Company. Device for measuring the spatial characteristics of a light source. 5,543,913, Cl. 356-121.000.

Fallon, Kenneth M.; Jimarez, Miguel A.; and Zdimal, Joseph E., to International Business Machines Corporation. Rework process for semiconductor chips mounted in a flip chip configuration on an organic substrate. 5,542,601, Cl. 228-119.000.

Family Trust U/T/A, The: *See—*
Weder, Donald E., 5,542,169, Cl. 29-469.500.

Famolare, Leo H., to Dexter Shoe Company. Bowling shoe construction with removable slide pad and heel. 5,542,198, Cl. 36-130.000.

Fang, Ta-Yun. Methods for preparing polyacrylamide gels for electrophoretic analysis. 5,543,097, Cl. 264-102.000.

Fanini, Otto N.: *See—*
Singer, Bension; Maurer, Hans M.; Strack, Kurt M.; and Fanini, Otto N., 5,543,715, Cl. 324-368.000.

Fanuc Ltd.: *See—*
Sakano, Tetsuro; and Arimoto, Kohei, 5,543,700, Cl. 318-701.000.

Farash, Jeffrey A.: *See—*
Tsang, Robert W. K.; Farash, Jeffrey A.; and Payne, Richard S., 5,543,013, Cl. 156-643.100.

Farhat, Nabil H.: *See—*
Liu, Hua-Kuang; Barhen, Jacob; Farhat, Nabil H.; and Wu, Chwan-Hwa, 5,544,280, Cl. 395-24.000.

Farlow, Douglas: *See—*
Gordon, Thomas; and Farlow, Douglas, 5,542,457, Cl. 140-147.000.

Farrugia, Steven; Yee, Hansen; and Nickolls, Peter, to Telectronics Pacing Systems, Inc. Apparatus and method for discriminating between cardiac rhythms on the basis of their morphology using a neural network. 5,542,430, Cl. 128-705.000.

Farwell, Randall S.; Shaw, Robert W.; and Marshall, Roger N., to Proxima Corporation. High resolution display system and method of using same. 5,543,819, Cl. 345-150.000.

Fas-Co Coders, Inc.: *See—*
VanSteenkiste, Roger C.; and VanSteenkiste, David G., 5,543,827, Cl. 347-27.000.

Faulstich, David L.: *See—*
Pao, Hsueh-Wen; Faulstich, David L.; Snyder, Dane T.; Ma, Johnny T.; Izzo, Kenneth R.; Swanson, Joel C.; Laurent, Martin S.; and Kachel, Peter F., 5,544,208, Cl. 376-253.000.

Fawn Engineering Corporation: *See—*
Wittern, Francis A., Jr.; and Hawkins, Paul L., 5,544,024, Cl. 362-89.000.

Fay, Richard: *See—*
Comeau, Richard J., II; and Fay, Richard, 5,543,759, Cl. 330-282.000.

Feco Engineered Systems, Inc.: *See—*
Wurgler, Winston A., 5,542,526, Cl. 198-803.700.

Fedeli, Jean-Marc: *See—*
Albertini, Jean B.; and Fedeli, Jean-Marc, 5,544,131, Cl. 369-13.000.

Feeney, Steve: *See—*
Myers, Robert B.; Bailey, Ralph T.; Burley, David R.; Feeney, Steve; Gray, Barbara J.; and Johnson, Dennis W., 5,542,609, Cl. 239-427.000.

Fehervari, Edit: *See—*
Moreno, Fulgencio Powell; Litkei, Laszlo; Galamb, Vilmos; Gulyas, Imre; Repasi, Janos; Veres, Agota Repasine; Vigh, Jozsef; Koczka, Istvanne; Fehervari, Edit; Roka, Laszlone; Pethe, Laszlone; and Neu, Jozsef, 5,543,562, Cl. 562-17.000.

Fehlner, James R.; and Firnberg, Dow, to Inrad. Photoconversion of steroids in microreactors. 5,543,016, Cl. 204-157.600.

Fehn, Edmund; Schmidt, Felix; and Plessow, Joerg, to Degussa Aktiengesellschaft. Process and device for defined impregnation of honeycomb structures with parallel flow channels. 5,543,181, Cl. 427-421.000.

Feigenbaum, Bernard E.; and Loso, Francis G., to United States of America, Army. Dual band EHF, VHF vehicular whip antenna. 5,543,808, Cl. 343-727.000.

Fekete, Pál; Király née Ignácz, Mária; Sipos, Gábor; Jámbor née Hoffmann, Zsuzsanna; Újfalussy, György; Góra née Hernyes, Magdolna; Klebovich, Imre; Drabant, Sándor; Mándi, Attila; Kiss née Szabó, Gizella; Bárczay, Erzsébet; and Krisztián, Mária, to Egis Gyogyszergyar Rt. Diffusion-osmotic controlled drug-release pharmaceutical composition and process for preparing same. 5,543,155, Cl. 424-473.000.

Feldmüller, Ludwig: *See—*
Levers, Jürgen; Bendicks, Norbert; Boebel, Ralf; Feldmüller, Ludwig; and Esders, Berthold, 5,543,923, Cl. 356-445.000.

Fell, Barry M., to Hexcell Corporation. Continuous process for the preparation of unitary thermoplastic honeycomb containing areas with different physical properties. 5,543,199, Cl. 428-116.000.

Felstead, Richard A.: *See—*
Hume, Roger A.; Felstead, Richard A.; Lee, Douglas G. L.; Barling, Lawrence C.; and Barrell, Anthony J., 5,542,857, Cl. 439-337.000.

Feng, Genquan. Method of and arrangement for optimizing and checking heart diagnosis. 5,542,429, Cl. 128-702.000.

Fenlon, Christopher, to Ishida-Nonpareil Limited. Testing of packages. 5,542,288, Cl. 73-49.300.

Ferag AG: *See—*
Gösslinghoff, Reinhard, 5,542,349, Cl. 100-161.000.
Stauber, Hans-Ulrich, 5,542,656, Cl. 271-11.000.
Stauber, Hans-Ulrich, 5,543,708, Cl. 324-133.000.

Fernald, Kenneth W., to Intermedics, Inc. Hybrid analog-to-digital convertor for low power applications, such as use in an implantable medical device. 5,543,795, Cl. 341-163.000.

Fernandez, Isabel M.: *See—*
Bolessa, Evon A.; Schwartz, Robert E.; Bills, Gerald F.; Giacobbe, Robert A.; Pelaez Perez, Fernando; Arroyo, Angeles C.; Matas, Teresa D.; Fernandez, Isabel M.; Perez, Francisca V.; Mandala, Suzanne M.; Zink, Deborah L.; Thornton, Rosemary; Thompson, John R.; and Curotto, James E., 5,543,431, Cl. 514-627.000.

Fernandez, Rickey J., to Muncie Power Products, Inc. Drag brake for truck mounted, clutch operated power takeoff device. 5,542,306, Cl. 74-15.860.

Ferrari, Bernard; and Taillades, Jelle, born Arnaud, to Sanofi. Imidazolines. 5,543,528, Cl. 548-301.400.

Ferrario, Bruno: *See—*
Boffito, Claudio; Doni, Fabrizio; and Ferrario, Bruno, 5,543,121, Cl. 423-210.000.

Ferren, Bran, to Walt Disney Company, The. Drinking fountain with sound effects. 5,542,604, Cl. 239-29.000.

Ferri, Vincent: *See—*
Kettle, Paul J., Jr.; Santoro, Ralph, Jr.; and Ferri, Vincent, 5,542,891, Cl. 477-96.000.

Ferzaz, Badia: *See—*
Benavides, Jésus; Ferzaz, Badia; George, Pascal; and Scatton, Bernard, 5,543,421, Cl. 514-317.000.

Fetters, Lewis J.: *See—*
Struglinski, Mark J.; Ver Strate, Gary W.; and Fetters, Lewis J., 5,543,469, Cl. 525-314.000.

Fi-Pro Limited: *See—*
Ollerenshaw, Robert C. A. W.; and Roe, Maurice A., 5,542,962, Cl. 71-10.000.

Fl-Tek Purification Systems, Inc.: *See—*
Fite, Robert D., Jr.; Ilasenko, John S.; and Colburn, Edwin H., 5,543,040, Cl. 210-167.000.

Fiberweb North America, Inc.: *See—*
Austin, Jared A.; and Newkirk, David D., 5,543,206, Cl. 428-198.000.

Fichtel & Sachs AG: *See—*
Wack, Erwin, 5,542,516, Cl. 192-70.170.

Fico Cables, S.A.: *See—*
Gabas, Carlos, 5,542,453, Cl. 138-30.000.

Field, Edgar L., Jr., to Coburn Optical Industries, Inc. V-profile grinding wheel. 5,542,876, Cl. 451-540.000.

Field, Joseph: *See—*
McAuley, John M.; and Field, Joseph, 5,543,780, Cl. 340-573.000.

Field, Simon J.: *See—*
Bischel, William K.; Brinkman, Michael J.; Deacon, David A. G.; DeWath, Edward J.; Dyer, Mark J.; and Field, Simon J., 5,544,268, Cl. 385-4.000.

Fielden, Edward M.: *See—*
Beylin, Vladimir G.; Sercel, Anthony D.; Showalter, Howard D. H.; Adams, Gerald E.; Fielden, Edward M.; Naylor, Matthew A.; and Stratford, Ian J., 5,543,527, Cl. 548-110.000.

Fieno, Joseph J.: *See—*
Wenstrup, Robert S.; and Fieno, Joseph J., 5,544,157, Cl. 378-18.000.

Filan, Finbarr J.; Maher, Pascal J.; and Shaw, Christian, to Abbott Laboratories. Waste agent reservoir for suction drainage system. 5,543,042, Cl. 210-198.100.

Finch, Valerie V.: *See—*
Glaug, Frank S.; Olson, Christopher P.; Ratliff, Kathleen I.; Sheldon, Donald A.; Finch, Valerie V.; and Collier, L. Warren, IV, 5,542,566, Cl. 221-48.000.

Findikoglu, Alp T.; and Nakamura, Takao, to Sumitomo Electric Industries, Ltd.; and University of Maryland. Joint device including superconductive probe-heads for capacitive microwave coupling. 5,543,386, Cl. 505-210.000.

Finnigan Corporation: *See—*
Johnson, Bruce S.; Khosla, Mukul; Herron, John R.; Brassil, John M.; and Schoen, Alan E., 5,543,625, Cl. 250-427.000.

Finucane, Martin J.: *See—*

Sheedy, Thomas F.; and Finucane, Martin J., 5,542,878, Cl. 452-135.000.

Firnberg, Dow: *See—*
Fehlner, James R.; and Firnberg, Dow, 5,543,016, Cl. 204-157.600.

Fischer, David: *See—*
Heaton, Robert; Yousefi, Nariman; Sadeghi, Khosrow; and Fischer, David, 5,544,323, Cl. 395-200.140.

Fischer, Thomas: *See—*
Stumpe, Joachim; Shibaev, Valery; Kostromin, Sergei; Ivanov, Sergei; Fischer, Thomas; Läsker, Lutz; Ruhmann, Ralf; and Claussen, Uwe, 5,543,267, Cl. 430-290.000.

Fischer, Walter; and Helbling, Christine, to Ciba-Geigy Corporation. Monocarboxamides of polyamines. 5,543,572, Cl. 564-179.000.

Fisher Controls International, Inc.: *See—*
Hutchens, Wilbur D.; Pepper, Virgil W.; and Jensen, Frank E., 5,542,681, Cl. 277-106.000.

Fisher, Michael H.: *See—*
Hortin, Gregory G.; Fisher, Michael H.; Coleman, Joseph L.; and Adams, Scott D., 5,542,264, Cl. 62-338.000.

Fisher, Rayette A.; Hennessy, William A.; and Wiegman, Herman L. N., to General Electric Company. Synchronous rectifier package for high-efficiency operation. 5,544,038, Cl. 363-147.000.

Fisher-Votava, Martha: *See—*
Katsumata, Shin; Fisher-Votava, Martha; and Halsey, David, 5,543,673, Cl. 310-90.500.

Fishman, Mark C.; Igarashi, Michihiro; and Strittmatter, Stephen M., to General Hospital Corporation, The. Peptides to overcome inhibition of nerve growth. 5,543,498, Cl. 530-328.000.

Fiskars Inc.: *See—*
Boda, James C., 5,542,185, Cl. 33-27.020.

Fisli, Tibor; Guerin, Jean-Michel; Maeda, Patrick Y.; and Quant, Donald J., to Xerox Corporation. High efficiency multispot facet tracked raster output scanning system. 5,543,825, Cl. 346-141.000.

Fisli, Tibor, to Xerox Corporation. Method and apparatus for adjusting the curvature of a folding mirror in a raster scanning system. 5,543,829, Cl. 347-241.000.

Fite, Robert D., Jr.; Ilasenko, John S.; and Colburn, Edwin H., to Fl-Tek Purification Systems, Inc. Apparatus for purification of water-based fluids in closed-loop flow systems. 5,543,040, Cl. 210-167.000.

Fitterer, Gary A.: *See—*
Dimmick, Roger F.; Fitterer, Gary A.; Jajowka, Jeff A.; Otto, William F.; Rasmussen, Jerry R.; and Sobotta, Terry L., 5,544,008, Cl. 361-684.000.

FitzGerald, David J., to Wheelmasters, Inc. Wheel cover assembly retainer ring. 5,542,750, Cl. 301-37.370.

Fitzpatrick, Gregory P.: *See—*
Dugan, Pamela A.; Fitzpatrick, Gregory P.; Johnson, William J.; and Williams, Marvin L., 5,544,048, Cl. 364-419.170.

Flament, Bruno: *See—*
Blanpain, Roland; and Flament, Bruno, 5,543,714, Cl. 324-345.000.

Fleitman, Jeffrey S.: *See—*
Fu, Roger C.; Leung, De-Mei; Fleitman, Jeffrey S.; Rizzolio, Michele C.; and Miksztal, Andrew R., 5,543,408, Cl. 514-233.500.

Fleming, James. Pilot's flight desk. 5,542,360, Cl. 108-44.000.

Fleming, Paul D., to W&P Manufacturing, Inc. Multipoint lock assembly for a sliding door. 5,542,720, Cl. 292-32.000.

Fletcher, Geoffrey D.: *See—*
Walker, Lee A.; Sundararajan, Srinivasan; Fletcher, Geoffrey D.; and Dillman, Daniel J., 5,542,738, Cl. 296-189.000.

Flomen, Felix: *See—*
Bialik, Leon; and Flomen, Felix, 5,544,278, Cl. 395-2.770.

Florus, H. Cameron. Easily removable dual purpose apparatus for safely transporting personal watercraft in truck bed. 5,542,810, Cl. 414-538.000.

Flow-Rite Controls, Ltd.: *See—*
Campau, Daniel N., 5,542,605, Cl. 239-44.000.

Fluid Precision (Proprietary) Limited: *See—*
Rosenmann, Jack P.; and Buschberger, Alfred, 5,542,384, Cl. 123-179.310.

FMC Corporation: *See—*
Goudar, Jaidev S., 5,543,541, Cl. 558-6.000.
Schwindeman, James A., 5,543,540, Cl. 556-466.000.

Föhl, Artur, to TRW Repa GmbH. Trigger mechanism for belt pretensioner. 5,542,697, Cl. 280-806.000.

Follett Corporation: *See—*
Frantz, James, 5,542,573, Cl. 222-129.100.

Folsom, David N.: *See—*
Pringle, Ronald E.; Sides, Winfield M., III; Folsom, David N.; and McGavern, Cecil G., III, 5,542,472, Cl. 166-65.100.

Foltz, Dale E.: *See—*
Smith, Gregory A.; Foltz, Dale E.; Wisebaker, Robert E.; and Loy, Robert E., 5,542,275, Cl. 72-90.000.

Folwell, Dale E.: *See—*
Harenberg, Donald D.; Watson, George A.; Bindloss, Keith M.; and Folwell, Dale E., 5,544,311, Cl. 395-183.160.

Fong, Steven K., to Catalyst Semiconductor, Inc. Charge stacking on-chip high-voltage generator and method. 5,543,668, Cl. 307-110.000.

Foote, Emerson L., Jr.: *See—*
Prasad, Vidyanatha A.; Newallis, Peter E.; and Foote, Emerson L., Jr., 5,543,543, Cl. 558-96.000.

Foote, James C.; and Puplett, Derrick J., to Normalair-Garrett (Holdings) Limited. Aircrew breathing systems. 5,542,447, Cl. 137-113.000.

Ford, Betty J.: *See—*
Keown, Wendy J.; Ford, Betty J.; and Stoddard, Sandra L., 5,543,405, Cl. 514-188.000.

Ford, Colin, to Riverwood International Corporation. Packaging of rectangular articles. 5,542,537, Cl. 206-431.000.

Ford Motor Company: *See—*
Allison, Johnny H.; Hammer, Kathleen M.; and Kaminski, David P., 5,542,489, Cl. 180-68.500.
Clarke, James R.; and Diehl, Roy E., 5,542,383, Cl. 123-90.170.
Fulgenzi, Lynda K.; Daniel, Roger P.; Loftus, Heather M.; and Goins, Jeffrey L., 5,542,742, Cl. 297-237.000.
James, John V., 5,542,291, Cl. 73-117.300.
Lee, George C.; and Kunz, Fred P., 5,542,402, Cl. 123-573.000.
Narula, Chaitanya K.; Kim, Byung R.; and Salmeen, Irving T., 5,543,367, Cl. 501-87.000.
Peruski, Nancy A., 5,542,517, Cl. 192-85.0AA.
Pierce, Stanley L.; and Moan, Richard D., 5,542,889, Cl. 475-275.000.
Povinger, Bela P., 5,542,392, Cl. 123-480.000.
Richardson, John A.; and Nicopolis, Dean L., 5,542,515, Cl. 192-44.000.
Surowiec, Roman, 5,543,924, Cl. 356-446.000.
Walker, Lee A.; Sundararajan, Srinivasan; Fletcher, Geoffrey D.; and Dillman, Daniel J., 5,542,738, Cl. 296-189.000.
York, Michael T.; and Harris, Richard K., 5,543,676, Cl. 310-263.000.

Form Rite, Corporation: *See—*
Rea, Perry J.; Miller, Michael R.; Kinder, Dennis G.; Kargula, Christopher J.; and Stevens, William E., 5,542,717, Cl. 285-319.000.

Forman, Ira R.; and Madduri, Hari H., to International Business Machines Corporation. System and method for testing distributed systems. 5,544,310, Cl. 395-183.070.

Forman, Ira R.; and Madduri, Hari H., to International Business Machines Corporation. Distributed processing object shared resource control apparatus and method. 5,544,353, Cl. 395-600.000.

Forschungszentrum Julich GmbH: *See—*
Singh, Jasbir; and Barnert, Heiko, 5,544,204, Cl. 376-213.000.
Woyke, Thomas; and Schober, Tilman, 5,543,687, Cl. 313-556.000.

Forschungzentrym Karlsruhe GmbH: *See—*
Bacher, Walter; Biedermann, Hans; Dinglreiter, Heinz; and Kalb, Helmut, 5,543,108, Cl. 264-553.000.

Forsline, Ladd B. Silicone paint brush artist's tool. 5,542,144, Cl. 15-245.100.

Forslund, Donald C., to International Business Machines Corporation. Apparatus and method for raster generation from sparse area array output. 5,544,338, Cl. 395-421.070.

Forster, John C.: *See—*
Barnes, Michael S.; Coultas, Dennis K.; Forster, John C.; Keller, John H.; and Wicker, Thomas, 5,543,184, Cl. 427-571.000.

Forsythe, William M.: *See—*
Adams, Terry; Ambrosio, Neil J.; Bratton, William E.; Forsythe, William M.; Hatton, Bruce E.; Kinder, Larry L.; and Swat, William A., 5,542,438, Cl. 131-238.000.

Forth Research, Inc.: *See—*
Kozicki, Michael N., 5,542,690, Cl. 280-304.100.

Fortin, Michael R.: *See—*
Berry, Robert F.; and Fortin, Michael R., 5,544,349, Cl. 395-492.000.

Fost, Dennis L.; Komor, Joseph A.; and Novakovic, Mario, to Mona Industries, Inc. Synthetic detergent bars and method of making the same. 5,543,072, Cl. 510-151.000.

Foster, Gregg S.: *See—*
Cappa, Stephen P.; Sharpe, Benjamin W.; and Foster, Gregg S., 5,544,358, Cl. 395-600.000.

Foster, Joseph E. Water distribution device. 5,542,451, Cl. 137-625.110.

Four M Manufacturing Group of CPC, Inc.: *See—*
Smith, Glenn M., 5,542,541, Cl. 206-600.000.

Fournier, R. E. Keith; Groudine, Mark T.; Dieken, Ellen S.; and Epner, Elliot M., to Fred Hutchinson Cancer Research Center. Recombination-proficient avian/mammalian microcell hybrids. 5,543,319, Cl. 435-240.260.

Framatome: *See—*
Cartry, Jean P., 5,544,205, Cl. 376-245.000.
Michaut, Bernard; Pellegrin, Bernard; and Voisembert, Sylvie, 5,544,209, Cl. 376-260.000.

Frame, Robert C., to Digital Equipment Corporation. Apparatus for caching smram in an intel processor based computer system employing system management mode. 5,544,344, Cl. 395-471.000.

France Telecom: *See—*
Devaud-Piedran, Benoit; and Loualiche, Slimane, 5,544,193, Cl. 372-96.000.

Francesconi, Stephen C.: *See—*
Shields, Malcolm S.; and Francesconi, Stephen C., 5,543,317, Cl. 435-240.200.

Francois, Brian C.: *See—*
Cole, Howard; Erler, Kristina W.; Smith, Kenneth L.; and Francois, Brian C., 5,542,950, Cl. 8-107.000.

Frandsen, Jesper: *See—*
Nielsen, Ove; and Frandsen, Jesper, 5,542,276, Cl. 72-344.000.

Frank, Anke: *See—*
Balzer, Wolfgang R.; Clausen, Thomas; Frank, Anke; and Weinges, Alexa, 5,542,953, Cl. 8-416.000.

Frank Innovation GmbH: *See—*
Arndt, Johannes, 5,542,160, Cl. 24-543.000.

Frantz, James, to Follett Corporation. Under-counter ice storage apparatus for dispensing ice-dual sided. 5,542,573, Cl. 222-129.100.

Frantz, Robert H., to Whitaker Corporation, The. Pivotal electrical connector. 5,542,850, Cl. 439-31.000.
Fraunhofer Gesellschaft zur Forderung der Angewandten Forschung e.V.: *See—*
Bucerius, Klaus M.; and Schmid, Helmut, 5,542,998, Cl. 149-45.000.
Bucerius, Klaus M.; and Schmid, Helmut, 5,542,999, Cl. 149-45.000.
Fraunhofer-Gesellschaft zur Forderung der Angewandten Forshung e.v.: *See—*
Kordas, Norbert, 5,543,717, Cl. 324-444.000.
Frayne, Clifford G. Structural metal roof system. 5,542,227, Cl. 52-639.000.
Frazier, Giles R.; and Tsao, Gary Y., to International Business Machinces Corp. System for assigning and identifying devices on bus within predetermined period of time without requiring host to do the assignment. 5,544,333, Cl. 395-304.000.
Frazier, Tom: *See—*
Bechtoldt, Wayne; Frazier, Tom; Graszer, Matt; and Room, Dave, 5,542,775, Cl. 403-188.000.
Fred Hutchinson Cancer Research Center: *See—*
Fournier, R. E. Keith; Groudine, Mark T.; Dieken, Ellen S.; and Epner, Elliot M., 5,543,319, Cl. 435-240.260.
Frederick Erdman Association: *See—*
Erdman, Frank H., 5,542,421, Cl. 128-633.000.
Freedenberg, Candace J.; Herring, Frederick A.; and Ziemins, Uldis A., to International Business Machines Corporation. Variable magnification laser imaging system. 5,543,963, Cl. 359-432.000.
Freelander, Robert C., to Richard's Homewares, Inc. Suspended adjustable shelving for garment bag. 5,542,530, Cl. 206-292.000.
Freeman, Arvie E., to Freeman Marine Equipment, Inc. Sliding marine closure. 5,542,213, Cl. 49-221.000.
Freeman, Jeffrey W.: *See—*
Lashier, Mark E.; Freeman, Jeffrey W.; and Knudsen, Ronald D., 5,543,375, Cl. 502-117.000.
Freeman, Jonathan P.; Ingleton, Martyn; and Staveley, Christopher B., to GEC-Marconi Limited. Helmet mounted display systems. 5,543,968, Cl. 359-631.000.
Freeman Marine Equipment, Inc.: *See—*
Freeman, Arvie E., 5,542,213, Cl. 49-221.000.
Fresenius AG: *See—*
Simon, Wolfgang; Pototzky, Günther; Groos, Rolf; and Schmidt, Günter, 5,542,919, Cl. 604-29.000.
Frey, Alain: *See—*
Alex, Patrick; Aubert, Yves; and Frey, Alain, 5,543,489, Cl. 528-288.000.
Frey, George E.: *See—*
Johnson, Darrell B.; and Frey, George E., 5,542,238, Cl. 53-475.000.
Frey, Rolf: *See—*
Stummer, Friedrich; and Frey, Rolf, 5,543,105, Cl. 264-407.000.
Friedow, Michael: *See—*
Staib, Helmut; and Friedow, Michael, 5,542,755, Cl. 303-119.200.
Friedrich, Peter W. Plate assembly gripping member. 5,542,577, Cl. 220-759.000.
Fries, Louis: *See—*
Rhee, Woonza; Wallace, Donald G.; Michaels, Alan S.; Burns, Ramon A., Jr.; Fries, Louis; DeLustro, Frank; and Bentz, Hanne, 5,543,441, Cl. 523-105.000.
Fritz, Thomas A.: *See—*
Unger, Evan C.; Fritz, Thomas A.; Matsunaga, Terry; Ramaswami, VaradaRajan; Yellowhair, David; and Wu, Guanli, 5,542,935, Cl. 604-190.000.
Fritzsch, Gernod, to Delma elektro-u. medizinische Apparatebau Gesellschaft mbH. Electro-surgical radio-frequency instrument. 5,542,945, Cl. 606-48.000.
Fruehauf, John P. 5.5 kD TNF degradation product. 5,543,139, Cl. 424-85.100.
Frulla, Roberto E.: *See—*
Carter, Ernest E., Jr.; Frulla, Roberto E.; Pettit, Paul J.; Sanford, Frank L.; and Saugier, R. Kent, 5,542,782, Cl. 405-129.000.
Frye, Stephen V.: *See—*
Andrews, Robert C.; Cribbs, Cynthia M.; Frye, Stephen V.; Haffner, Curt D.; and Maloney, Patrick R., 5,543,406, Cl. 514-213.000.
Fryszman, Olga M.: *See—*
Lawrence, R. Michael; Biller, Scott A.; and Fryszman, Olga M., 5,543,542, Cl. 558-87.000.
Fu, Chien-Chih: *See—*
Lee, Fong-Chun; Fu, Chien-Chih; and Wang, Nan-Chueh, 5,543,738, Cl. 327-51.000.
Fu, Roger C.; Leung, De-Mei; Fleitman, Jeffrey S.; Rizzolio, Michele C.; and Miksztal, Andrew R., to Syntex (U.S.A.) Inc. Crystalline anhydrous mycophenolate mofetil and intravenous formulation thereof. 5,543,408, Cl. 514-233.500.
Fuca, Albert F. Basin wrench for plastic nuts. 5,542,321, Cl. 81-125.100.
Fuchs, Kenneth P.: *See—*
Lee, Steven S.; Fuchs, Kenneth P.; and Miller, Gayle W., 5,543,361, Cl. 437-200.000.
Fuchsreiter, Johannes; Schmidt, Konrad; Kasseckert, Rudolf; and Neumann, Walter, to Lucent Technologies Inc. Hierarchical network management system. 5,544,314, Cl. 395-200.000.
Fuei, Naoki; and Tanaka, Takashi, to Canon Kabushiki Kaisha. Electrophotographic photosensitive member, and electrophotographic apparatus, device unit, and facsimile machine employing the same. 5,543,473, Cl. 525-399.000.
Fuji Electric Co., Ltd.: *See—*
Ichikawa, Yukimi, 5,542,989, Cl. 136-251.000.
Nakagawa, Wataru; Sakaue, Satoru; and Tsuruoka, Michihiko, 5,543,956, Cl. 359-225.000.
Fuji Oozx Inc.: *See—*
Kenmoku, Takeji; Umino, Shinichi; Hirai, Eiji; Kurosawa, Kazuyoshi; and Matsumura, Yoshio, 5,543,029, Cl. 205-109.000.
Fuji Photo Film Co., Ltd.: *See—*
Akao, Mutsuo; and Suzuki, Osamu, 5,543,270, Cl. 430-347.000.
Dan, Shigeyuki; Nakayama, Takao; Nishizawa, Hiroshi; and Sera, Hidefumi, 5,543,258, Cl. 430-87.000.
Kanamori, Shion, 5,543,841, Cl. 348-375.000.
Kojima, Tetsuro; Yoshikawa, Masaru; and Fujita, Yoshihiro, 5,543,272, Cl. 430-455.000.
Makuta, Toshiyuki, 5,543,275, Cl. 430-503.000.
Matsuda, Naoto; Yamada, Makoto; Ono, Michio; Ishiwata, Yasuhiro; and Uchida, Osamu, 5,543,279, Cl. 430-559.000.
Mihayashi, Keiji; and Shimada, Yasuhiro, 5,543,282, Cl. 430-558.000.
Tateishi, Keiichi; Ishige, Sadao; and Kamikawa, Hiroshi, 5,543,260, Cl. 430-138.000.
Wariishi, Koji; and Aoki, Mario, 5,543,529, Cl. 548-366.700.
Yasuda, Tomokazu; Karino, Yukio; and Nakanishi, Masatoshi, 5,543,288, Cl. 430-631.000.
Fuji Photo Optical Co., Ltd.: *See—*
Kanaya, Motonori; Noguchi, Kenichi; Nagaya, Yoshiaki; and Itoh, Hisashi, 5,543,612, Cl. 250-208.100.
Fuji Xerox Co., Ltd.: *See—*
Watanabe, Masao, 5,543,237, Cl. 428-691.000.
Fujii, Akio; Kashida, Motokazu; Watanabe, Ikuo; and Yamashita, Shinichi, to Canon Kabushiki Kaisha. Information recording apparatus which eliminates unnecessary data before recording. 5,544,176, Cl. 371-40.100.
Fujii, Haruo: *See—*
Maebashi, Youichirou; Fujii, Haruo; Sasame, Hiroshi; Kawakami, Hiroaki; Kobayashi, Tatsuya; Kobayashi, Tetsuya; Enomoto, Naoki; Uchiyama, Akihiko; and Saito, Yoshiro, 5,543,900, Cl. 355-219.000.
Fujii, Noboru; Kawabata, Kenji; Hashi, Masaaki; Nükura, Junji; and Ouya, Tomotoshi, to Sekisui Jushi Kabushiki Kaisha. Method for welding a packing band of thermoplastic resin and a welded band resulting therefrom. 5,542,239, Cl. 53-477.000.
Fujii, Shigekatsu; Asada, Naohiro; and Kubo, Tomio, to Gamakatsu Co., Ltd. Method for forming a barb on a tip of a fishhook. 5,542,164, Cl. 29-9.000.
Fujii, Takao; and Hamahata, Toshihiro, to Zexel USA Corporation. Vehicle mounted navigation system with preview function. 5,544,060, Cl. 364-444.000.
Fujii, Tomoyuki: *See—*
Tsuno, Nobuo; and Fujii, Tomoyuki, 5,543,130, Cl. 428-623.000.
Fujii, Toshiro: *See—*
Murakami, Kazuo; Fujii, Toshiro; Iwama, Kazuaki; and Ohyama, Katsuya, 5,542,340, Cl. 92-71.000.
Fujikura, Ltd.: *See—*
Nakakura, Yasushi; Tanaka, Hideki; Sano, Akira; Mogi, Akio; Miyamoto, Matsuhiro; and Suzuki, Kazunari, 5,543,189, Cl. 428-36.800.
Fujimoto, Kenneth N.; and Warman, David J., to MediaLink Technologies Corporation. Method and apparatus for determining and indicating network integrity. 5,544,150, Cl. 370-14.000.
Fujimoto, Sachito: *See—*
Katoh, Akira; Kitagawa, Hiroshi; Tsuzuki, Shunichi; Takahashi, Jun; Fujimoto, Sachito; and Hirota, Toshiaki, 5,542,393, Cl. 123-491.000.
Fujino, Yoshiyuki: *See—*
Hirose, Toshihiko; Ohbayashi, Shigeki; Kondo, Setsu; Hayasaka, Takashi; Fujino, Yoshiyuki; and Iketani, Masayuki, 5,544,105, Cl. 365-189.110.
Fujisawa Pharmaceutical Co., Ltd.: *See—*
Kagara, Kohji; Goto, Shunsuke; Yonishi, Satoshi; Ikushima, Muneharu; Baba, Yukihisa; and Horiai, Haruo, 5,543,525, Cl. 546-279.100.
Fujishima, Susumu: *See—*
Fujita, Nobuo; Nanba, Hideyuki; Kawashima, Masato; Komuro, Akihiro; Fujishima, Susumu; and Matsui, Toshihiro, 5,543,903, Cl. 355-283.000.
Fujita, Kazunobu: *See—*
Yoshimura, Mitsuhiro; Fujita, Kazunobu; and Teramura, Akira, 5,542,220, Cl. 52-167.100.
Fujita, Nobuo; Nanba, Hideyuki; Kawashima, Masato; Komuro, Akihiro; Fujishima, Susumu; and Matsui, Toshihiro, to Fujitsu Limited. Heat roller type toner image fixing device having cleaning roller. 5,543,903, Cl. 355-283.000.
Fujita, Sharon M.: *See—*
Roorda, Wouter E.; Ehnow, Fred P.; Basso, Estela Wang, Karly S.; and Fujita, Sharon M., 5,543,156, Cl. 424-484.000.
Fujita, Takehiro; Kakumoto, Shigeru; and Nomoto, Yasuei, to Hitachi, Ltd. Digital cartographic system for geographical information processing. 5,544,052, Cl. 364-420.000.
Fujita, Yoshihiro: *See—*
Kojima, Tetsuro; Yoshikawa, Masaru; and Fujita, Yoshihiro, 5,543,272, Cl. 430-455.000.
Fujitetsumo Co., Ltd.: *See—*
Onodera, Hirofumi, 5,543,167, Cl. 426-524.000.
Fujitsu Limited: *See—*
Awano, Yuji, 5,543,749, Cl. 327-570.000.

Beilin, Solomon I.; Chou, William T.; Kudzuma, David; Lee, Michael G.; Murase, Teruo; Peters, Michael G.; Roman, James J.; Swamy, Som S.; and Wang, Wen-chou V., 5,544,017, Cl. 361-790.000.
Fujita, Nobuo; Nanba, Hideyuki; Kawashima, Masato; Komuro, Akihiro; Fujishima, Susumu; and Matsui, Toshihiro, 5,543,903, Cl. 355-283.000.
Hoshino, Tsutomu; Yamaguchi, Atsushi; Ohashi, Tadashi; Ohga, Juro; and Furuya, Hiroyuki, 5,544,201, Cl. 345-350.000.
Iwase, Nobuhiro; Kano, Hiroshi; Tadaki, Shinji; Hasegawa, Masami; and Koshino, Nagaaki, 5,543,080, Cl. 252-301.40H.
Kasahara, Hiroyuki, 5,544,170, Cl. 370-84.000.
Kato, Hideki; Yoshizawa, Hideki; Iciki, Hiroki; and Masumoto, Daiki, 5,544,336, Cl. 395-311.000.
Mikuni, Maki, 5,543,788, Cl. 340-990.000.
Norizuki, Reiko; Hyodo, Ryuji; Tanaka, Kenji; Sekihata, Osamu; Hatta, Hiroyuki; Eda, Susumu; and Oomura, Katsumi, 5,544,169, Cl. 370-60.100.
Nozawa, Keizou, 5,544,293, Cl. 395-412.000.
Ohshita, Masaru, 5,542,620, Cl. 242-332.400.
Ohta, Ryusuke; and Sekizawa, Yoshihiro, 5,543,689, Cl. 315-111.210.
Tada, Masayuki; and Suzuki, Hitoshi, 5,544,359, Cl. 395-600.000.
Uchida, Toshiya; and Taguchi, Masao, 5,544,109, Cl. 365-203.000.
Watanabe, Kazuhiro; and Hara, Yasushi, 5,542,426, Cl. 128-662.030.
Fujiwara, Akihiro: *See—*
Soda, Hirofumi; Toyama, Masamichi; Fujiwara, Akihiro; Yamada, Kunihiko; and Yoshimura, Katsuji, 5,543,839, Cl. 348-349.000.
Fujiwara, Hideo: *See—*
Kitakami, Osamu; Fujiwara, Hideo; and Ogawa, Yoichi, 5,543,221, Cl. 428-332.000.
Fujiwara, Isao: *See—*
Iwaya, Shouichi; Yahagi, Masahiro; Kudou, Hitoshi; Itou, Shigeru; Fujiwara, Isao; Ogasawara, Tadashi; Morita, Makoto; Taguchi, Teruo; and Sasaki, Setuo, 5,544,002, Cl. 361-302.000.
Fujiwara, Takayoshi: *See—*
Sone, Yoshinori; Fujiwara, Takayoshi; Honjo, Takashi; Hirayama, Takuya; and Yoshizawa, Hiroyasu, 5,542,832, Cl. 418-152.000.
Fujiwara, Yoshio: *See—*
Ito, Kengo; Mizumachi, Motohiro; Fujiwara, Yoshio; and Shinohara, Satoru, 5,543,453, Cl. 524-445.000.
Fujiya, Ryosuke: *See—*
Aoki, Yasushi; Fujiya, Ryosuke; and Nakamura, Iwao, 5,542,754, Cl. 303-3.000.
Fukuhara, Toru: *See—*
Sosa, Toshio; Fukuhara, Toru; Dobashi, Toshio; Hara, Masaharu; and Yokonuma, Norikazu, 5,543,888, Cl. 354-415.000.
Fukui, Hiroshi: *See—*
Kuronuma, Akira; Akiyama, Yuji; Murata, Takayuki; Fukui, Hiroshi; and Omo, Shinichi, 5,543,826, Cl. 347-23.000.
Fukui, Kenneth D.: *See—*
Allen, Ronald; Bae, Peter S.; Tierney, Robert; and Fukui, Kenneth D., 5,542,685, Cl. 279-2.020.
Fukui, Masayuki: *See—*
Yokota, Koji; Fukui, Masayuki; and Tanaka, Toshiyuki, 5,543,124, Cl. 423-239.100.
Fukui, Tetsuro: *See—*
Ueno, Kazunori; Fukui, Tetsuro; Kobayashi, Motokazu; Ooi, Takehiko; Kagami, Kenji; Suzuki, Masao; and Nishino, Katsuya, 5,543,286, Cl. 430-619.000.
Fukumoto, Naoko, to NEC Corporation. Multiplier composed of integrated semiconductor circuit occupying reduced area. 5,544,084, Cl. 364-760.000.
Fukuoka, Hiroki: *See—*
Hatakeyama, Yoshiharu; Fukuoka, Hiroki; and Teshima, Kenzo, 5,542,580, Cl. 222-183.000.
Fukuoka Kagaku Ltd.: *See—*
Fukuoka, Masahiro, 5,542,741, Cl. 297-217.300.
Fukuoka, Masahiro, to Fukuoka Kagaku Ltd. Apparatus for vibrating seats. 5,542,741, Cl. 297-217.300.
Fukushima, Shigenobu, to Minolta Camera Kabushiki Kaisha. Facsimile apparatus and method for transmitting information to a plurality of destinations. 5,543,938, Cl. 358-407.000.
Fukushima, Toru, to Furukawa Electric Co., Ltd., The. Semiconductor laser device. 5,544,189, Cl. 372-46.000.
Fukushima, Toshihiko: *See—*
Kadoh, Mituo; Fukushima, Toshihiko; Itoh, Masaaki; Uchida, Mari; Matsushima, Hiroaki; Kogure, Hiroshi; and Takaku, Syoji, 5,542,271, Cl. 62-502.000.
Fukutomi, Takashi; Takizawa, Minoru; and Nakamura, Michiei, to Dainichiseika Color & Chemicals Mfg. Co., Ltd. Charge mosaic membrane and production process thereof. 5,543,045, Cl. 210-490.000.
Fukuwatari, Yasuo: *See—*
Tomita, Mamoru; Shimamura, Seiichi; Fukuwatari, Yasuo; and Shinoda, Ichizo, 5,543,392, Cl. 514-8.000.
Fukuzawa, Keiichi, to Canon Kabushiki Kaisha. Tape loading device having an urging element for urging a tape tension detecting arm after a predetermined rotation of a driving member. 5,543,980, Cl. 360-85.000.
Fukuzumi, Shuzo: *See—*
Shibata, Jun; Obayashi, Hiroaki; Kimura, Makoto; Fukuzumi, Shuzo; Yoshikawa, Hironori; Hitotsumatsu, Atsushi; Hashimoto, Yukio; Yamanoi, Toshimi; and Takaya, Seiji, 5,542,700, Cl. 280-735.000.
Fulgenzi, Lynda K.; Daniel, Roger P.; Loftus, Heather M.; and Goins, Jeffrey L., to Ford Motor Company. Integrated infant seat for vehicles. 5,542,742, Cl. 297-237.000.
Fuli Electric Co., Ltd.: *See—*
Hosen, Toru, 5,543,659, Cl. 257-692.000.
Fuller, Timothy J.: *See—*
Schwarz, William M.; and Fuller, Timothy J., 5,543,259, Cl. 430-106.000.
Funai Electric Co., Ltd.: *See—*
Muraoka, Masaru; and Izuta, Shingo, 5,544,145, Cl. 369-125.000.
Funakiri, Atsushi, to Sony Corporation. Disk drive with dust shield cover. 5,544,142, Cl. 369-75.100.
Funatsu, Hiroshi: *See—*
Takada, Hiroshi; and Funatsu, Hiroshi, 5,542,888, Cl. 475-134.000.
Fünfschilling, Peter, to Sandoz Ltd. Thiophen compounds and their preparation. 5,543,531, Cl. 549-62.000.
Fung, Kuan-Zong: *See—*
Virkar, Anil V.; Fung, Kuan-Zong; and Tanner, Cameron W., 5,543,239, Cl. 429-33.000.
Furlani, Edward P.; and Lee, J. Kelly, to Eastman Kodak Company. Apparatus for selectively inverting a magnetic biased field for magneto-optic recording. 5,544,132, Cl. 369-13.000.
Fürst, Arpad; Danzl, Martin; Mayer, Johann; and Miklosi, Stefan, to Webasto Karosseriesysteme GmbH. Lengthwise movable vehicle roof. 5,542,735, Cl. 296-107.000.
Furukawa Denchi Kabushiki Kaisha: *See—*
Furukawa, Jun, 5,542,958, Cl. 29-623.100.
Furukawa Electric Co., Ltd., The: *See—*
Fukushima, Toru, 5,544,189, Cl. 372-46.000.
Furukawa, Hideki: *See—*
Makino, Tetsuo; Furukawa, Hideki; Matsubara, Osamu; Sawaki, Atsushi; and Kawai, Shinji, 5,542,133, Cl. 4-420.400.
Furukawa, Jun, to Furukawa Denchi Kabushiki Kaisha. Method for manufacturing a hydrogen absorbing alloy electrode. 5,542,958, Cl. 29-623.100.
Furuya, Hiroyuki: *See—*
Hoshino, Tsutomu; Yamaguchi, Atsushi; Ohashi, Tadashi; Ohga, Juro; and Furuya, Hiroyuki, 5,544,201, Cl. 345-350.000.
Futaba Denshi Kogyo K.K.: *See—*
Okamoto, Yoshinari; Tsuruoka, Yoshihisa; Hirakawa, Haruhisa; and Sato, Eiji, 5,543,685, Cl. 313-496.000.
Future Domain Corporation, Incorporated: *See—*
Pease, Allan F.; and Moore, Richard, 5,544,326, Cl. 395-250.000.
Fuzzen, Daniel R.: *See—*
Kaczmarczyk, Edward T.; Fuzzen, Daniel R.; Aucoin, Paul G.; and Norris, Lyle V., 5,542,339, Cl. 91-508.000.
Fyson, John R.: *See—*
Earle, Anthony; Fyson, John R.; and Glover, Edward C. T. S., 5,543,884, Cl. 354-324.000.
G. D. Searle & Co.: *See—*
Adams, Steven P.; Lindmark, Richard J.; Miyano, Masateru; and Rico, Joseph G., 5,543,425, Cl. 514-357.000.
Braford-Goldberg, Sarah R.; Easton, Alan M.; Klein, Barbara K.; McKearn, John P.; and Olins, Peter O., 5,543,141, Cl. 424-85.200.
Gabaldon, Albert T., Jr.: *See—*
Mills, George T.; and Gabaldon, Albert T., Jr., 5,543,800, Cl. 342-197.000.
Gabas, Carlos, to Fico Cables, S.A. Pressurized hydraulic piston-cylinder device with internal volume variation compensation. 5,542,453, Cl. 138-30.000.
Gabriel, Richard, to Matrix Toys, Ltd. Rod for construction system. 5,542,871, Cl. 446-126.000.
Gabriel Ride Control Products, Inc.: *See—*
Bell, Stephen H., 5,542,509, Cl. 188-322.140.
Gage, Edward C.: *See—*
Kay, David B.; and Gage, Edward C., 5,544,143, Cl. 369-109.000.
Gagnon, Claude: *See—*
Harvey, John A.; Renaud, Benoit; Gagnon, Claude; Rondeau, Pierre; and Lapointe, Denys, 5,542,371, Cl. 114-363.000.
Gaige, Dennis G.: *See—*
McVay, Kenneth R.; Gaige, Dennis G.; and Kain, William S., 5,543,565, Cl. 562-523.000.
Gajun, L.C.: *See—*
Groves, Billy M., 5,543,163, Cl. 426-231.000.
Galamb, Vilmos: *See—*
Moreno, Fulgencio Powell; Litkei, Laszlo; Galamb, Vilmos; Gulyas, Imre; Repasi, Janos; Veres, Agota Repasine; Vigh, Jozsef; Koczka, Istvanne; Fehervari, Edit; Roka, Laszlone; Pethe, Laszlone; and Neu, Jozsef, 5,543,562, Cl. 562-17.000.
Galante, Nicholas R.: *See—*
Latiolais, Jerry G.; Gathright, J. Paul; Galante, Nicholas R.; Galland, M. Stephen; Gallet, J. Diores; Crompton, Lewis R.; Baker, George L.; and Wang, James H., 5,543,233, Cl. 428-516.000.
Latiolais, Jerry G.; Galante, Nicholas R.; Gathright, J. Paul; and Wang, James H., 5,543,477, Cl. 526-65.000.
Galbreath Incorporated: *See—*
Kruzick, Kent, 5,542,807, Cl. 414-491.000.
Galkin, Benjamin M., to Thomas Jefferson University. Method of and apparatus for standardizing and monitoring beam quality in mammography. 5,544,238, Cl. 378-207.000.

Gallagher, Kevin P.; Vermilion, Donn R.; and Ponn, Frederick H., to Owens Corning Fiberglas Technology, Inc. Asphalt fibers. 5,543,211, Cl. 428-224.000.

Galland, M. Stephen: *See—*
Latiolais, Jerry G.; Gathright, J. Paul; Galante, Nicholas R.; Galland, M. Stephen; Gallet, J. Diores; Compton, Lewis R.; Baker, George L.; and Wang, James H., 5,543,233, Cl. 428-516.000.

Gallet, J. Diores: *See—*
Latiolais, Jerry G.; Gathright, J. Paul; Galante, Nicholas R.; Galland, M. Stephen; Gallet, J. Diores; Compton, Lewis R.; Baker, George L.; and Wang, James H., 5,543,233, Cl. 428-516.000.

Gallicchio, Vincent S.: *See—*
Yatvin, Milton B.; Stowell, Michael H. B.; Gallicchio, Vincent S.; and Meredith, Michael J., 5,543,390, Cl. 514-2.000.
Yatvin, Milton B.; Stowell, Michael H. B.; Gallicchio, Vincent S.; and Meredith, Michael J., 5,543,391, Cl. 514-2.000.

Gamakatsu Co., Ltd.: *See—*
Fujii, Shigekatsu; Asada, Naohiro; and Kubo, Tomio, 5,542,164, Cl. 29-9.000.

Gambro Dialysatoren GmbH & Co.: *See—*
Bell, Carl-Martin; Pirner, Manfred; Buck, Reinhold; and Gohl, Hermann J., 5,543,465, Cl. 525-182.000.

Gamino, Rolando P., to Deere & Company. Self locking seed tube. 5,542,363, Cl. 111-170.000.

Gamma, Erich: *See—*
Orton, Debra L.; Kraus, William F.; and Gamma, Erich, 5,544,301, Cl. 395-157.000.

Gandhi, Deepak R.: *See—*
Imran, Mir A.; Gandhi, Deepak R.; Bourang, Henry; Quiachon, Dignah B.; and Chow, Andrew Y., 5,542,434, Cl. 128-772.000.

Ganucheau, Charles J., Jr.; Vanden Heuvel, Dean P.; Halley, Craig; Mun, Kyung T.; and Dumstorff, Patrick L., to Motorola, Inc. Method and apparatus for user selectable quick data access in a selective call receiver. 5,543,781, Cl. 340-825.440.

Ganzel, Blaise J., to Kelsey-Hayes Company. Vehicular braking system having a low-restriction master cylinder check valve. 5,542,253, Cl. 60-562.000.

Garand, Donald J.; and Blake, Lawrence S., to Bayer Corporation. Method and apparatus for installing a media supply cassette in an imagesetter. 5,542,623, Cl. 242-559.400.

Garcia-Duarte, Fernando; Hensley, John; Mohanraj, Shanmugam; Subramaniyan, Nagarajan; and Olsson, David B., to Microsoft Corporation. Method and system for placing a computer in a reduced power state. 5,544,082, Cl. 364-707.000.

Garden Way Incoporated: *See—*
Lydy, Bruce S.; Keitel, Michael A.; and Wissmueller, Jay K., 5,542,241, Cl. 56-11.300.

Gårdenberg, Sture S., to Atlas Copco Berema Aktiebolag. Method and means for driving pipes into the ground and cartridge used therefor and for subsequent pipe blasting. 5,542,784, Cl. 405-232.000.

Gardlik, John M.: *See—*
Trinh, Toan; and Gardlik, John M., 5,543,157, Cl. 424-493.000.

Gardner, Harry N.; Gregory, Charles R.; and Garvie, Douglas W., to United Technologies Corporation. Gate array architecture and layout for deep space applications. 5,543,736, Cl. 326-101.000.

Gardner, Steven H.: *See—*
Robinson, Mark T.; Gardner, Steven H.; Wong, Matt; Kasmir, Seton P.; Balachandran, Kumar; Graham, Sue; Schjelderup, Gail; and Quick, Roy F., Jr., 5,544,222, Cl. 379-58.000.

Garland, Harry; and Melen, Roger, to Canon Inc. Unified scanner computer printer. 5,544,045, Cl. 364-419.030.

Garling, Ralph V.: *See—*
Djabbarah, Nizar F.; Garling, Ralph V.; Hand, David T.; and Macfadyen, Jennifer, 5,542,474, Cl. 166-263.000.

Garverick, Timothy L.: *See—*
Sutherland, James; Garverick, Timothy L.; Takiar, Hem P.; and Reyling, George F., Jr., 5,543,640, Cl. 257-202.000.

Garvie, Douglas W.: *See—*
Gardner, Harry N.; Gregory, Charles R.; and Garvie, Douglas W., 5,543,736, Cl. 326-101.000.

Garza, Mario, to LSI Logic Corporation. Photoresist solution capable of being applied as an aerosol containing 3 to 12 percent by weight solvent. 5,543,265, Cl. 430-270.100.

Garzon, Fernando H.; Chung, Brandon W.; Raistrick, Ian D.; and Brosha, Eric L., to University of California, Office of Technology Transfer, The Regents of the. Solid state oxygen sensor. 5,543,025, Cl. 204-425.000.

Gas Research Institute: *See—*
Kelly, John T., 5,542,839, Cl. 431-10.000.
Worek, William M.; and Zheng, Weixiang, 5,542,259, Cl. 62-94.000.

Gates, Craig: *See—*
Wiggerman, Ronald E.; Gates, Craig; Habbley, Dale L.; and Hollowed, Edward J., 5,544,076, Cl. 364-565.000.

Gathright, J. Paul: *See—*
Latiolais, Jerry G.; Gathright, J. Paul; Galante, Nicholas R.; Galland, M. Stephen; Gallet, J. Diores; Compton, Lewis R.; Baker, George L.; and Wang, James H., 5,543,233, Cl. 428-516.000.
Latiolais, Jerry G.; Galante, Nicholas R.; Gathright, J. Paul; and Wang, James H., 5,543,477, Cl. 526-65.000.

Gatt, Shimon; Barenholz, Yechezkel; Bercovier, Herve; and Eldar, Zvi, to Hebrew University of Jerusalem, Yissum Research Development Company of the. Method for cleaning the surfaces of a motor vehicle. 5,542,987, Cl. 134-39.000.

Gauer, Gary: *See—*
Zimmerman, Jeffrey A.; Gauer, Gary; and Marshall, Dave, 5,544,072, Cl. 364-502.000.

Gaultier, Jean-Marie; and Yero, Emilio M., to SGS-Thomson Micoroelectronics S.A. Integrated circuit memory device with balancing circuit including following amplifier coupled to bit line. 5,544,114, Cl. 365-202.000.

Gaultier, Philippe; Vouillon, Patrick; and Simon, Frédéric, to Sextant Avionique. Multimode manipulator. 5,543,592, Cl. 200-6.00A.

Gavin, Robert F.: *See—*
Ensminger, William D.; and Gavin, Robert F., 5,542,923, Cl. 604-93.000.

Gay, John M.: *See—*
Brooks, Raymond J.; Gay, John M.; Weir, Bruce A.; McEntee, Paul E.; and Blood, Lauren, 5,544,206, Cl. 376-248.000.

Gaylord, Caroline J. Interior cutting edge fork utensil. 5,542,181, Cl. 30-148.000.

Gaynes, Michael A.; Papathomas, Kostas; Phelan, Giana M.; and Woychik, Charles G., to International Business Machines Corporation. Stabilization of conductive adhesive by metallurgical bonding. 5,542,602, Cl. 228-175.000.

Gaynes, Michael A.: *See—*
Booth, Richard B.; Gaynes, Michael A.; Murco, Robert M.; Puligandla, Viswanadham; Roldan, Judith M.; Saraf, Ravi; and Zalesinski, Jerzy M., 5,543,585, Cl. 174-261.000.

GE Medical Systems: *See—*
Muller, Serge; Grimaud, Michel; and Heidsieck, Robert, 5,544,219, Cl. 378-210.000.

GEC-Marconi Limited: *See—*
Freeman, Jonathan P.; Ingleton, Martyn; and Staveley, Christopher B., 5,543,968, Cl. 359-631.000.

Geib, Joseph J.; Jones, William J.; Mennie, Douglas U.; and Raterman, Donald E., to Cummins-Allison Corp. Coin handling system with shunting mechanism. 5,542,880, Cl. 453-10.000.

Geib, Joseph J., to Cummins-Allison Corp. Coin sorting mechanism having dual recycle channels. 5,542,881, Cl. 453-10.000.

Geibel, Stephen A.: *See—*
Stoyell, Richard C.; Williamson, Kenneth M.; Hopkins, Scott D.; Geibel, Stephen A.; and Wolff, Terry L., 5,543,047, Cl. 210-493.200.

Geiger, Markus: *See—*
Weber, Beate; Hagemann, Jörg; Helling, Günter; and Geiger, Markus, 5,543,280, Cl. 430-503.000.

Gemill, Roderique S.; and Tarulli, Joseph R. Portable sink table for dental prophys and procedures. 5,542,377, Cl. 119-753.000.

Gemini, Inc.: *See—*
Brugger, Joseph G., 5,542,202, Cl. 40-576.000.

Gemplus Card International: *See—*
Berthozat, Michel; and Morgavi, Paul, 5,544,111, Cl. 365-225.700.

GenCorp Inc.: *See—*
Hargis, I. Glen; Livigni, Russell A.; Melby, Earl G.; and Vitus, Francis J., 5,543,200, Cl. 428-122.000.

Gene Shears Pty. Limited: *See—*
Haseloff, James P.; Gerlach, Wayne L.; Jennings, Philip A.; and Cameron, Fiona H., 5,543,508, Cl. 536-23.200.

Genentech Inc.: *See—*
Chuntharapai, Anan; Lee, James; Hebert, Caroline; and Kim, K. Jin, 5,543,503, Cl. 530-388.220.

General Atomics: *See—*
Streckert, Holger H.; and Trester, Paul W., 5,543,183, Cl. 427-529.000.

General Electric Company: *See—*
Fisher, Rayette A.; Hennessy, William A.; and Wiegman, Herman L. N., 5,544,038, Cl. 363-147.000.
Haikawa, Katsumasa; Mochida, Takaaki; Nagano, Mamoru; and Nakajima, Tsuyoshi, 5,544,211, Cl. 376-435.000.
Hartley, Richard I.; Noble, Julia A.; Grande, James C. M.; Jackson, William E.; Welles, Kenneth B., II; and Liu, Jane S., 5,544,254, Cl. 382-108.000.
Howson, Paul E.; Mackenzie, Patricia D.; and Horney, David P., 5,543,059, Cl. 210-757.000.
Hume, Roger A.; Felstead, Richard A.; Lee, Douglas G. L.; Barling, Lawrence C.; and Barrell, Anthony J., 5,542,857, Cl. 439-337.000.
Lewis, Larry N.; and Jeram, Edward M., 5,543,457, Cl. 524-736.000.
Mahood, James A., 5,543,102, Cl. 264-211.000.
Pao, Hsueh-Wen; Paulstich, David L.; Snyder, Dane T.; Ma, Johnny T.; Izzo, Kenneth R.; Swanson, Joel C.; Laurent, Martin S.; and Kachel, Peter F., 5,544,208, Cl. 376-253.000.
Stearns, Charles W., 5,543,622, Cl. 250-363.030.

General Hospital Corporation, The: *See—*
Fishman, Mark C.; Igarashi, Michihiro; and Strittmatter, Stephen M., 5,543,498, Cl. 530-328.000.
Zawadzka, Agatha; Tsang, Wen-Ghih; and Brown, Robert H., 5,543,316, Cl. 435-240.200.

General Motors Corporation: *See—*
Duvenkamp, Manfred, 5,543,213, Cl. 428-230.000.

General Motors of Canada Limited: *See—*
Iltgen, Joerg, 5,543,159, Cl. 425-543.000.

General Plastics, Inc.: *See—*

Inda, John P.; and Inda, Joseph J., 5,542,223, Cl. 52-302.100.

Genet, Alain; and Lagrance, Alain, to L'Oreal. Dye composition containing sulphur-containing p-phenylenediamines and corresponding dyeing processes, novel sulphur-containing p-phenylenediamines and process for the preparation thereof. 5,542,952, Cl. 8-410.000.

Genetic Therapy, Inc.: *See—*
McClelland, Alan; and Stevenson, Susan C., 5,543,328, Cl. 435-320.100.

Genetics Institute, Inc.: *See—*
Keith, James C., 5,543,138, Cl. 424-85.100.
Wozney, John M.; Rosen, Vicki A.; and Wang, Elizabeth A., 5,543,394, Cl. 514-12.000.

Gensheimer, Valentin: *See—*
Kemmerer, Klemens; Bayer, Harald; and Gensheimer, Valentin, 5,542,657, Cl. 271-82.000.

Gensini, Gianni; and Coassin, Giovanni, to Danieli & C. Officine Meccaniche SpA. Method for the storage and controlled supply of electric energy for discontinuous loads in steelworks. 5,543,602, Cl. 219-491.000.

Genter, David P.: *See—*
Carroll, John T., III; Bentz, Joseph C.; and Genter, David P., 5,542,315, Cl. 74-586.000.

Gentex Corporation: *See—*
Bertelson, Robert C.; and Sallavanti, Robert A., 5,543,086, Cl. 252-582.000.

Gentile, Ronald S., to Adobe Systems, Inc. Method and apparatus for processing data for a visual-output device with reduced buffer memory requirements. 5,544,290, Cl. 395-115.000.

George, Pascal: *See—*
Benavides, Jésus; Ferzaz, Badia; George, Pascal; and Scatton, Bernard, 5,543,421, Cl. 514-317.000.

George, Scott E.: *See—*
Miller, Richard A.; George, Scott E.; Parsons, Theron E., III; and Montgomery, Mark A., 5,543,488, Cl. 528-277.000.

Georgia Tech Research Corp.: *See—*
Powers, James C.; Boduszek, Bogdan; and Oleksyszyn, Jozef, 5,543,396, Cl. 514-19.000.

Gerbaulet, Jean-Pierre. System for management of common purchase operations for goods and services. 5,544,040, Cl. 364-401.00R.

Gerber, Matthias: *See—*
Münster, Peter; Ditrich, Klaus; Hamprecht, Gerhard; Gerber, Matthias; Westphalen, Karl-Otto; Walter, Helmut; and Karl, Rudolf, 5,543,416, Cl. 504-271.000.

Gerber Products Company: *See—*
Meyers, Brenda J.; Herritz, Donald W.; Johansen, Jean L.; Hudson, William B., Jr.; Bell, Randall P.; Prokop, Gary F.; Caruso, James F.; and Allen, James I., 5,542,921, Cl. 604-74.000.

Gerhardt, Heinz A., to Northrop Grumman Corporation. Linear turbine propulsion system. 5,542,357, Cl. 105-64.200.

Gerhardy, Reinhard, to Stihl, Andreas. Membrane carburetor. 5,542,405, Cl. 123-702.000.

Gerlach, Wayne L.: *See—*
Haseloff, James P.; Gerlach, Wayne L.; Jennings, Philip A.; and Cameron, Fiona H., 5,543,508, Cl. 536-23.200.

German, Johann: *See—*
Klink, Rainer; and German, Johann, 5,543,244, Cl. 429-57.000.

Gerster, Peter; and Zimmerli, Kurt. Protective and warming bonnet for food. 5,542,560, Cl. 220-252.000.

Ghead, Ali; Leland, Jonathan K.; Zoski, Glenn D.; Goodman, Jack E.; and Grosser, John T., to IGEN, Inc. Apparatus and methods for carrying out electrochemiluminescence test measurements. 5,543,112, Cl. 422-52.000.

Ghisler, Walter: *See—*
Jonsson, Bjorn E. R.; and Ghisler, Walter, 5,544,224, Cl. 379-58.000.

Ghosh, Syamal K.: *See—*
Chatterjee, Dilip K.; Ghosh, Syamal K.; Shaffer, Wayne K.; and Vankerkhove, Alan P., 5,543,269, Cl. 430-346.000.

Giacobbe, Robert A.: *See—*
Bolessa, Evon A.; Schwartz, Robert E.; Bills, Gerald F.; Giacobbe, Robert A.; Pelaez Perez, Fernando; Arroyo, Angeles C.; Matas, Teresa D.; Fernandez, Isabel M.; Perez, Francisca V.; Mandala, Suzanne M.; Zink, Deborah L.; Thornton, Rosemary; Thompson, John R.; and Curotto, James E., 5,543,431, Cl. 514-627.000.

Gibson, Danuta: *See—*
Pitt, Alan R.; Caesar, Julian C.; Gibson, Danuta; Wear, Trevor J.; Young, David J.; and King, Scott A., 5,543,555, Cl. 560-151.000.

Gibson, David E., to NCR Corporation. Hot air circulation apparatus and method for wave soldering machines. 5,542,595, Cl. 228-207.000.

Gics & Vermee, L.P.: *See—*
Gics, Paul W., 5,543,606, Cl. 219-730.000.

Gics, Paul W., to Gics & Vermee, L.P. Non-circular ovenable food package having a base with depending leg members and at least one raised portion and associated food package. 5,543,606, Cl. 219-730.000.

Gigatek Memory Systems: *See—*
Hu, Xiaobong; and Johnson, Rayburn, 5,543,992, Cl. 360-132.000.

Giger, Rudolf K. A.: *See—*
Dixon, Arnold K.; and Giger, Rudolf K. A., 5,543,426, Cl. 514-410.000.

Gil, Sung-Ho: *See—*
Lee, Seung-Gap; Gil, Sung-Ho; and Eun, Suk-Hyun, 5,542,267, Cl. 62-485.000.

Gilbarco Inc.: *See—*
Long, Joseph D., 5,543,849, Cl. 348-460.000.
Payne, Edward A.; and Hartsell, Hal C., Jr., 5,542,458, Cl. 141-7.000.

Gildersleeve, Richard E.: *See—*
Cassford, Keith L.; Gildersleeve, Richard E.; and Bastyr, Charles A., 5,542,911, Cl. 602-26.000.

Gillespie, David; Allen, Timothy P.; Miller, Robert J.; and Faggin, Federico, to Synaptics, Incorporated. Object position detector with edge motion feature. 5,543,590, Cl. 178-18.000.

Gillespie, David; Allen, Timothy P.; and Wolf, Ralph, to Synaptics, Incorporated. Object position detector with edge motion feature and gesture recognition. 5,543,591, Cl. 178-18.000.

Gilley, Glenn G.; and Tebbs, Brice W., to Adobe Systems, Inc. Resolution-independent method for displaying a three dimensional model in two-dimensional display space. 5,544,291, Cl. 395-123.000.

Giordano Automation Corp.: *See—*
Giordano, Gerard J.; deMare, Gregory; Longendorfer, Betsy; Granieri, Michael N.; Giordano, John P.; Nolan, Mary E.; and Levy, Ford, 5,544,308, Cl. 395-183.020.

Giordano, Gerard J.; deMare, Gregory; Longendorfer, Betsy; Granieri, Michael N.; Giordano, John P.; Nolan, Mary E.; and Levy, Ford, to Giordano Automation Corp. Method for automating the development and execution of diagnostic reasoning software in products and processes. 5,544,308, Cl. 395-183.020.

Giordano, John P.: *See—*
Giordano, Gerard J.; deMare, Gregory; Longendorfer, Betsy; Granieri, Michael N.; Giordano, John P.; Nolan, Mary E.; and Levy, Ford, 5,544,308, Cl. 395-183.020.

Giordano, Joseph; Gong, Frank; Rizzo, Richard; and Charych, Hal, to Symbol Technologies, Inc. Arrangement for and method of providing shock protection and vibration isolation for a scan module. 5,543,609, Cl. 235-462.000.

Gist-Brocades: *See—*
van Ooijen, Albert J. J.; Rietveld, Krijn; Hoekema, Andreas; Pen, Jan; Sijmons, Peter C.; Verwoerd, Teunis C.; and Quax, Wilhemus J., 5,543,576, Cl. 800-250.000.

GKN Automotive AG: *See—*
Krude, Werner; and Harz, Peter, 5,542,885, Cl. 464-145.000.

Glaser, Howard J.; Strain, Joanna M.; and Tuckey-Smith, Angus T., to International Business Machines Corporation. Graphical user interface control for replicating data fields in forms. 5,544,285, Cl. 395-149.000.

Glaser, Thomas W.: *See—*
Bajorek, Christopher H.; Glaser, Thomas W.; Klaassen, Klaas B.; Nielsen, Charles R.; Santana, George R.; Smith, Gordon J.; Thompson, David A.; and Workman, Michael L., 5,544,138, Cl. 369-54.000.

Glaug, Frank S.; Olson, Christopher P.; Ratliff, Kathleen I.; Sheldon, Donald A.; Finch, Valerie V.; and Collier, L. Warren, IV, to Kimberly Clark Corporation. Reusable dispenser and a plurality of disposable child mitt wipes contained therein. 5,542,566, Cl. 221-48.000.

Glaxo Wellcome, Inc.: *See—*
Andrews, Robert C.; Cribbs, Cynthia M.; Frye, Stephen V.; Haffner, Curt D.; and Maloney, Patrick R., 5,543,406, Cl. 514-213.000.

Gleason Works, The: *See—*
Ball, Robert J.; and Lakey, Martin J., 5,542,791, Cl. 407-21.000.

Gleffe, Klaus J.: *See—*
Dinter, Peter; and Gleffe, Klaus J., 5,542,534, Cl. 206-407.000.

Glitho, Roch, to Telefonaktiebolaget LM Ericsson. Method for determining the load induced by a routing verification test on a network. 5,544,154, Cl. 370-17.000.

Globe Products Inc.: *See—*
Beakes, John M.; and Zicht, E. Wayne, 5,542,813, Cl. 414-780.000.

Globe-Union Inc.: *See—*
Dougherty, Thomas J.; Inkmann, Mark S.; Smith, Debra L.; and Reher, Michael T., 5,543,248, Cl. 429-163.000.

Glory Kogyo Kabushiki Kaisha: *See—*
Miki, Shoji; Tsubota, Hiroki; Yokota, Masanori; and Hori, Kenta, 5,544,043, Cl. 364-406.000.

Glover, Edward C. T. S.: *See—*
Earle, Anthony; Fyson, John R.; and Glover, Edward C. T. S., 5,543,884, Cl. 354-324.000.

Glowacki, Mark: *See—*
Chee, Hiram; Glowacki, Mark; and Schaller, Laurent, 5,542,937, Cl. 604-280.000.

Gochnauer, Daniel: *See—*
Colvin, Bryan J., Sr.; Cook, Perry R.; and Gochnauer, Daniel, 5,543,578, Cl. 84-622.000.

Gödecker, Reinhold, to Alcatel N.V. Cellular radio base station and control for extending range to mobile stations outside radio cell. 5,544,171, Cl. 370-95.300.

Goerend, Philippe: *See—*
Duffour, Henri; Goerend, Philippe; and Loutan, Dominique, 5,543,598, Cl. 218-135.000.

Goetze Payen GmbH: *See—*
Papendorf, Jörg; and Wagner, Franz-Josef, 5,542,683, Cl. 277-180.000.

Gohl, Hermann J.: *See—*
Bell, Carl-Martin; Pirner, Manfred; Buck, Reinhold; and Gohl, Hermann J., 5,543,465, Cl. 525-182.000.

Goins, Garrett: *See—*
Pinkalla, Cary; and Goins, Garrett, 5,542,463, Cl. 160-273.100.

Goins, Jeffrey L.: *See—*
Fulgenzi, Lynda K.; Daniel, Roger P.; Loftus, Heather M.; and Goins, Jeffrey L., 5,542,742, Cl. 297-237.000.

Goken, Garold L.; and Strehlow, Wolfgang H., to Minnesota Mining and Manufacturing Company. Solid phase extraction using composite sheet for direct measurement of radioactivity. 5,543,314, Cl. 436-57.000.

Gold, Larry; and Tasset, Diane, to NeXstar Pharmaceuticals, Inc. DNA ligands of thrombin. 5,543,293, Cl. 435-6.000.

Gold Star C., Ltd.: *See—*
Kang, Yong S.; Oh, Yong K.; Cha, Se I.; and Lee, Chul S., 5,543,933, Cl. 358-335.000.

Goldberg, Steven J.: *See—*
Vatt, Gregory B.; Baum, David M.; and Goldberg, Steven J., 5,543,785, Cl. 345-825.440.

Goldblatt, Richard S.: *See—*
Rothbaum, Arthur H.; and Goldblatt, Richard S., 5,543,782, Cl. 340-568.000.

Goldman, Arnold J.; and Greenberg, David L. Personalized method and system for storage, communication, analysis, and processing of health-related data. 5,542,420, Cl. 128-630.000.

Goldowsky, Michael P.: *See—*
Karidis, John P.; Goldowsky, Michael P.; and McVicker, Gerard, 5,543,787, Cl. 341-20.000.

Goldstar Co., Ltd.: *See—*
Jo, Sung H., 5,543,681, Cl. 313-414.000.
Kang, Myung G.; Kang, Seong S.; Choi, Sung H.; Joung, Mun C.; Jang, Byoung G.; Ryu, Kye Y.; Yu, Hyo C.; and Lee, Sang J., 5,543,981, Cl. 360-96.600.
Lee, Je H.; and Lee, Choon, 5,543,931, Cl. 358-335.000.
Park, Chan Y., 5,542,262, Cl. 62-229.000.

Goldstein, Clifford W.; and Miller, Timothy F., to American Variseal. Slant coil spring and seal. 5,542,682, Cl. 277-164.000.

Goldstein, Mark, to Goldstein Technology PTY Limited. Keyboard. 5,543,790, Cl. 341-22.000.

Goldstein, Richard J.: *See—*
Theimer, Marvin M.; Spreitzer, Michael J.; Weiser, Mark D.; Goldstein, Richard J.; Elrod, Scott A.; Swinehart, Daniel C.; Schilit, William N.; Krivacic, Robert T.; and Want, Roy, 5,544,321, Cl. 395-200.110.

Goldstein Technology PTY Limited: *See—*
Goldstein, Mark, 5,543,790, Cl. 341-22.000.

Golin, Stuart J.; and Alattar, Adnan M., to Intel Corporation. Method and apparatus for improving motion analysis of fades. 5,544,239, Cl. 382-236.000.

Golla, Carla: *See—*
Sali, Mauro L.; and Golla, Carla, 5,544,085, Cl. 364-787.000.

Gong, Frank: *See—*
Giordano, Joseph; Gong, Frank; Rizzo, Richard; and Charych, Hal, 5,543,609, Cl. 235-462.000.

Gongwer, Todd, to Nelgro Mfg. Corp. Deflector for an automatic food cooking machine. 5,542,345, Cl. 99-345.000.

Gooch, Roland W.: *See—*
Wadsworth, Mark V.; Borrello, Sebastian R.; and Gooch, Roland W., 5,543,641, Cl. 257-226.000.

Gooding, Robert W.: *See—*
Hoffmann, John D.; Gooding, Robert W.; Roberts, Norman; and Hart, Robert S., 5,542,542, Cl. 209-17.000.

Goodman, David E.; and Rubsamen, Reid M., to Aradigm Corporation. Delivery of aerosol medications for inspiration. 5,542,410, Cl. 128-200.140.

Goodman, Jack E.: *See—*
Ghead, Ali; Leland, Jonathan K.; Zoski, Glenn D.; Goodman, Jack E.; and Grosser, John T., 5,543,112, Cl. 422-52.000.

Goodwin, Raymond G.: *See—*
Park, Linda S.; and Goodwin, Raymond G., 5,543,320, Cl. 435-240.270.

Goodyear, Richard G. Hydraulic assist propulsion apparatus for vehicle drive. 5,542,335, Cl. 91-61.000.

Gopalakrishnan, Ponani S.: *See—*
Bakis, Raimo; Gopalakrishnan, Ponani S.; Kanevsky, Dimitri; Nadas, Arthur J.; Nahamoo, David; Picheny, Michael A.; and Sedivy, Jan, 5,544,277, Cl. 395-2.200.

Góra née Hernyes, Magdolna: *See—*
Fekete, Pál; Király née Ignácz, Mária; Sipos, Gábor; Jámbor née Hoffmann, Zsuzsanna; Újfalussy, György; Góra née Hernyes, Magdolna; Klebovich, Imre; Drabant, Sándor; Mándi, Attila; Kiss née Szabó, Gizella; Bárczay, Erzsébet; and Krisztián, Mária, 5,543,155, Cl. 424-473.000.

Gordon, Kathryn E.: *See—*
Cox, William D.; Chan, Andrew K. L.; Wong, Richard J.; Apland, James M.; and Gordon, Kathryn E., 5,544,070, Cl. 364-489.000.

Gordon, Thomas; and Farlow, Douglas. Fine pitch electronic component lead straightening method and appratus. 5,542,457, Cl. 140-147.000.

Goreau, Thomas J.: *See—*
Hilbertz, Wolf H.; and Goreau, Thomas J., 5,543,034, Cl. 205-688.000.

Goren, Yehuda; and Mahale, Narayan K., to United States of America, Energy. Fast superconducting magnetic field switch. 5,543,769, Cl. 335-216.000.

Gorman, Gary W., Sr., to Gorman, Sr., Gary W. Used oil filter cleaning system. 5,542,442, Cl. 134-104.400.

Gösslinghoff, Reinhard, to Ferag AG. Pressing apparatus for folded printing products such as newspapers, periodicals and parts thereof. 5,542,349, Cl. 100-161.000.

Goto, Katsuhiko: *See—*
Takiguchi, Tohru; and Goto, Katsuhiko, 5,544,188, Cl. 372-45.000.

Goto, Masahito: *See—*
Tsuji, Kiyoshi; Uchikubo, Akinobu; Kimura, Kenji; Goto, Masahito; and Hirai, Tsutomu, 5,543,831, Cl. 348-65.000.

Goto, Shunsuke: *See—*
Kagara, Kohji; Goto, Shunsuke; Yonishi, Satoshi; Ikushima, Muneharu; Baba, Yukihisa; and Horiai, Haruo, 5,543,525, Cl. 546-279.100.

Goto, Tetsuro; and Wakabayshi, Tsutomu, to Nikon Corporation. Camera equipped with an information recording apparatus. 5,543,872, Cl. 354-106.000.

Goto, Yukio: *See—*
Hikita, Shiro; Iwata, Masafumi; Komaya, Kiyotoshi; Asuka, Masashi; and Goto, Yukio, 5,544,059, Cl. 364-436.000.

Gotoh, Kenichi: *See—*
Takahata, Toshio; Nakazawa, Shinsuke; Iochi, Atsushi; Kuriki, Hiroshi; and Gotoh, Kenichi, 5,542,397, Cl. 123-520.000.

Gotou, Nobuyuki: *See—*
Yokoyama, Yuji; Akioka, Takashi; Iwamura, Masahiro; Hiraishi, Atsushi; Kobayashi, Yutaka; Yamauchi, Tatsumi; Takahashi, Shigeru; Gotou, Nobuyuki; and Ide, Akira, 5,544,125, Cl. 365-230.060.

Gotte, Jost; Schnez, Harald; and Singewald, Arno, to Kali und Salz GmbH. Process and apparatus for non-agitated flotation of substances with a low degree of hydrophoby and/or low stability in the foam structure, in particular of salt mixtures. 5,542,546, Cl. 209-164.000.

Gottlieb, Saul: *See—*
Slater, Charles R.; Palmer, Matthew A.; Kortenbach, Jurgen A.; McBrayer, Michael S.; and Gottlieb, Saul, 5,542,432, Cl. 128-751.000.

Götz, Bruno, to Bohringer, Paul. Mechanical overload protection device for machines, particularly jaw crushers. 5,542,884, Cl. 464-36.000.

Goube, Michel: *See—*
Logroscino, Carlo; and Goube, Michel, 5,542,946, Cl. 606-61.000.

Goudar, Jaidev S., to FMC Corporation. Method of preparing aryl triazolinones with trialkyl orthoacetates. 5,543,541, Cl. 558-6.000.

Goulding, Mark J.: *See—*
Parri, Owain L.; Brown, Emma J.; Coates, David; and Goulding, Mark J., 5,543,075, Cl. 252-299.010.

Goyert, Sanna M. Recombinant myelomonocytic differentiation antigen CD14. 5,543,303, Cl. 435-69.100.

GPT Limited: *See—*
Abbas, Ghani, 5,544,172, Cl. 370-102.000.
Jeffrey, Mark T.; Maddern, Thomas S.; and Proctor, Richard J., 5,544,168, Cl. 370-60.100.

Grabener Pressensysteme GmbH & Co. KG: *See—*
Beisel, Weinfried; Schwarz, Hans-Michael; and Morgenstern, Bodo, 5,542,520, Cl. 194-335.000.

Grabos, Fred P., Jr.; and Dondero, George V., to Smith Sport Optics, Inc. Protective goggle and lens with adjustable ventilation. 5,542,130, Cl. 2-436.000.

Grabowski, Edward F.: *See—*
Morrison, Jan D.; Grabowski, Edward F.; Dotschkal, Virginia E.; Lynch, Anita P.; and May, Jerome E., 5,543,177, Cl. 427-288.000.

Grabowski, Wojciech, to OSi Specialties, Inc. Efficient diesel fuel antifoams of low silicon content. 5,542,960, Cl. 44-320.000.

Grace, James W.; and DiPietro, David M. Low leakage diode switches for a tester circuit for integrated circuits. 5,543,728, Cl. 324-763.000.

Graffin, André, to SERAC. Packaging installation for receptacles each having a base presenting at least one long side and at least one short side. 5,542,233, Cl. 53-282.000.

Graham, Sue: *See—*
Robinson, Mark T.; Gardner, Steven H.; Wong, Matt; Kasmir, Seton P.; Balachandran, Kumar; Graham, Sue; Schjelderup, Gail; and Quick, Roy F., Jr., 5,544,222, Cl. 379-58.000.

Granato, Michael A.: *See—*
Aubertine, Matthew E.; Beyzavi, Kianoush; Broker, Harold J.; Checca, Ronald P.; Granato, Michael A.; Haeussler, David A.; Herasimtschuk, Michael; Jurkovic, Michael J.; Salem, Gerard M.; Selinger, Craig R.; and Zehr, Paul R., 5,544,088, Cl. 364-489.000.

Grande, James C. M.: *See—*
Hartley, Richard I.; Noble, Julia A.; Grande, James C. M.; Jackson, William E.; Welles, Kenneth B., II; and Liu, Jane S., 5,544,254, Cl. 382-108.000.

Grandoe Corp., The: *See—*
Zuckerwar, Richard J., 5,542,125, Cl. 2-158.000.

Granger, James E.: *See—*
May, Robert; Granger, James E.; Peck, Nicolas; and Miller, Rohn J., 5,544,354, Cl. 395-600.000.

Granieri, Michael N.: *See—*
Giordano, Gerard J.; deMare, Gregory; Longendorfer, Betsy; Granieri, Michael N.; Giordano, John P.; Nolan, Mary E.; and Levy, Ford, 5,544,308, Cl. 395-183.020.

Grant, Lawrence C.: *See—*
Acton, John D.; Grant, Lawrence C.; Hardy, Jack M., Jr.; Kent, Steven P.; and Schelong, Steven E., 5,544,319, Cl. 395-200.070.

Graper, Jane C.: *See—*
Vogler, Erwin A.; Shepard, Thomas A.; and Graper, Jane C., 5,543,048, Cl. 210-513.000.

Graphic Arts Technical Foundation: *See—*
Blackman, Daniel S.; Warner, Richard D.; DeJidas, Lloyd P.; and Jones, Gary A., 5,542,352, Cl. 101-483.000.

Graphics Microsystems, Inc.: *See—*
Runyan, Steven; Cox, James R.; Blais, Mark R.; and Longerbeam, Donald A., 5,543,922, Cl. 356-402.000.

Graszer, Matt: *See—*
Bechtoldt, Wayne; Frazier, Tom; Graszer, Matt; and Room, Dave, 5,542,775, Cl. 403-188.000.

Grau, Rüdiger: *See—*
Brückner, Raimund; and Grau, Rüdiger, 5,542,466, Cl. 164-478.000.

Gravener, Roy D.; Iannirubertо, Alex; and Ciccolella, Michael, to United States Surgical Corporation. Valve assembly for introducing instruments into body cavities. 5,542,931, Cl. 604-167.000.

Gray, Barbara J.: *See—*
Myers, Robert B.; Bailey, Ralph T.; Burley, David R.; Feeney, Steve; Gray, Barbara J.; and Johnson, Dennis W., 5,542,609, Cl. 239-427.000.

Great Lakes Chemical Italia S.r.l.: *See—*
Allegrini, Pietro; Nodari, Nereo; Crisci, Luciana; and Malatesta, Vincenzo, 5,543,533, Cl. 549-389.000.

Greco, Merrill B.: *See—*
Carlson, Wayne C.; Meadows, Michael J.; and Greco, Merrill B., 5,544,304, Cl. 395-182.080.

Green, Andrew, to Eastman Kodak Company. Calibration of sensitometers. 5,543,883, Cl. 354-298.000.

Green Cross Corporation, The: *See—*
Aetsuka, Tomoji; Nishio, Toshiyuki; Hosono, Hiroshi; Nakamura, Yoshiyuki; Matsui, Tetsuo; and Ishikawa, Hiromichi, 5,543,420, Cl. 514-312.000.

Green, David J.; Bunker, S. Mark; Moore, Walter A.; Pierotti, L. John; Storey, J. Kirk; and Olson, Brent K., to Morton International, Inc. Pressurized gas inflator for vehicle occupant protection systems. 5,542,702, Cl. 280-737.000.

Green, David J.: *See—*
Marjanski, George C.; Hauppa, Kevin E.; Green, David J.; Saderholm, Davin G.; and Beesley, Brent R., 5,542,691, Cl. 280-728.200.

Green, Donald T.: *See—*
Shroy, Robert E., Jr.; Green, Donald T.; and Kapp, Steven C., 5,544,215, Cl. 378-98.120.

Green, John E.: *See—*
King, Stanley C.; Knop, Richard C.; Green, John E.; Gyde, Thomas R.; and Silzle, L. William, Jr., 5,542,450, Cl. 137-614.200.

Green, Mark R.: *See—*
Sobol, Robert E.; Green, Mark R.; and Kawasaki, Ernest S., 5,543,296, Cl. 435-6.000.

Greenberg, David L.: *See—*
Goldman, Arnold J.; and Greenberg, David L., 5,542,420, Cl. 128-630.000.

Greene, David A.: *See—*
McDermott, Keith J.; Teffenhart, John M.; Shefer, Shmuel D.; Greene, David A.; Smith, Leslie C.; and Beck, Charles E. J., 5,543,439, Cl. 523-102.000.

Greenwald, Roger J.: *See—*
Oravecz, Michael G.; Greenwald, Roger J.; McGarry, Daniel E.; and Sauer, Jude S., 5,543,832, Cl. 348-65.000.

Gref, Ruxandra; Minamitake, Yoshiharu; and Langer, Robert S., to Massachusetts Institute of Technology. Biodegradable injectable nanoparticles. 5,543,158, Cl. 424-501.000.

Gregan, David C., to OMNICO (PTY) Ltd. Tethered ball apparatus. 5,542,661, Cl. 273-26.00E.

Gregory, Charles R.: *See—*
Gardner, Harry N.; Gregory, Charles R.; and Garvie, Douglas W., 5,543,736, Cl. 326-101.000.

Gregory, Thomas A.; Hagan, James A.; and Keller, Christopher G., to International Business Machines Corporation. Servo controlled lubricant thickness for near magnetic recording. 5,543,983, Cl. 360-97.020.

Grenci, Charles A.; and Clayton, R. Dallas. Light-gas-isolation, oil-free, scroll vaccum-pump system. 5,542,828, Cl. 418-1.000.

Gretz, Thomas J.: *See—*
Stark, Thomas S.; Gretz, Thomas J.; and O'Neil, Daniel J., 5,543,582, Cl. 174-65.0SS.

Grey, Henry G.: *See—*
Herbert, William G.; Bischoping, Patricia; Altavela, Robert P.; Kotowicz, Lawrence; Schmitt, Peter J.; Jansen, Ronald E.; Lennon, John H.; and Grey, Henry G., 5,543,028, Cl. 205-70.000.

Grey, Michael J.; Williams, Wayne; and Shaw, William H., to ReSource America, Inc. Recycle shipping assembly. 5,542,237, Cl. 53-472.000.

Grieshaber, Hermann: *See—*
Altmann, Uwe; and Grieshaber, Hermann, 5,542,399, Cl. 123-563.000.

Grilliot, Mary I.: *See—*
Grilliot, William L.; and Grilliot, Mary I., 5,542,124, Cl. 2-81.000.

Grilliot, William L.; and Grilliot, Mary I., to Morning Pride. Firefighters coat having a partially removable liner. 5,542,124, Cl. 2-81.000.

Grimaud, Michel: *See—*
Muller, Serge; Grimaud, Michel; and Heidsieck, Robert, 5,544,219, Cl. 378-210.000.

Grimes, Robert E.: *See—*
Pessier, Rudolf C. O.; Scott, Danny E.; Grimes, Robert E.; and Isbell, Matthew R., 5,542,485, Cl. 175-371.000.

Grindmaster Corporation: *See—*
McNeill, Robert C.; and Nance, Douglass, 5,542,342, Cl. 99-280.000.

Groeger, Ulrich: *See—*
Drauz, Karlheinz; Knaup, Günter; and Groeger, Ulrich, 5,543,397, Cl. 514-19.000.

Gronau, Randall J.; and Osterland, Robert, to Emhart Inc. Grommet fastener assembly for automobiles. 5,542,158, Cl. 24-295.000.

Grondal, Daniel J.; and Johnstone, Robert M., to Prolume, Inc. Indirectly illuminated sign. 5,542,201, Cl. 40-570.000.

Gronwick, Jerry P.; and Koniewicz, Leonard A., to Sloan Valve Company. Adjustable tail ground joint. 5,542,718, Cl. 285-357.000.

Groos, Rolf: *See—*
Simon, Wolfgang; Pototzky, Günther; Groos, Rolf; and Schmidt, Günter, 5,542,919, Cl. 604-29.000.

Grosch, Josephine: *See—*
Boguslawski, George; Grosch, Josephine; Shultz, John W.; and Subramanian, Sethuraman, 5,543,302, Cl. 435-69.100.

Grose, David R.: *See—*
Donnelly, Craig E.; and Grose, David R., 5,543,985, Cl. 360-104.000.

Groshens, Pierre; and Paire, Christian, to Laniere de Picarde. Thermoadhesive cross-linkable textile product. 5,543,214, Cl. 428-261.000.

Gross, Heinz; and Meier-Kaiser, Michael, to Gross, Heinz. Device for extruding and smoothing plastic films. 5,542,836, Cl. 425-141.000.

Grosser, John T.: *See—*
Ghead, Ali; Leland, Jonathan K.; Zoski, Glenn D.; Goodman, Jack E.; and Grosser, John T., 5,543,112, Cl. 422-52.000.

Groth, Torsten; Joentgen, Winfried; Linden, Hans W.; Müller, Nikolaus; Rother, Heinz-Joachim; Wagner, Paul; and Kugler, Martin, to Bayer AG. Process for the preparation of polysuccinimide, polyaspartic acid and salts thereof, and the use of these compounds. 5,543,490, Cl. 528-328.000.

Groudine, Mark T.: *See—*
Fournier, R. E. Keith; Groudine, Mark T.; Dieken, Ellen S.; and Epner, Elliot M., 5,543,319, Cl. 435-240.260

Grove, John L.; and Lute, Gerald E., to JLG Industries, Inc. Crane having swing away hoist mount. 5,542,812, Cl. 414-543.000.

Groves, Billy M., to Gajun, L.C. Method for enhancing the flavor and shelf life of food products. 5,543,163, Cl. 426-231.000.

Groves, Michael A.: *See—*
Qaiesi, Husein O.; and Groves, Michael A., 5,542,896, Cl. 482-105.000.

Grubbs, Dennis R.: *See—*
Rajaiah, Jayanth; Saud, Abel; MacKay, Bruce J.; and Grubbs, Dennis R., 5,543,443, Cl. 523-120.000.

Grubisich, Michael J., to National Semiconductor Corporation. Bipolar and BiCMOS structures. 5,543,653, Cl. 257-593.000.

Grumman Aerospace Corporation: *See—*
Burhans, Walter R., Jr.; Kirchbaum, Nathan; and Nastasi, Richard F., 5,542,625, Cl. 244-45.00R.
Engel, Stephen J.; and Buscemi, Vivian L., 5,544,329, Cl. 395-826.000.
Krishnaswamy, Jayaram; and Reusch, Michael F., 5,544,181, Cl. 372-2.000.

Grundig E.M.V.: *See—*
Saalfrank, Werner, 5,544,198, Cl. 375-260.000.

Gründl, Andreas: *See—*
Richert, Withold; Gründl, Andreas; and Hoffmann, Bernhard, 5,542,356, Cl. 104-289.000.

Grüning, Horst: *See—*
Beriger, Conrad; Grüning, Horst; Stemmler, Herbert; and Werninger, Johannes, 5,544,035, Cl. 363-132.000.

Grzebieniak, Karolina: *See—*
Perego, Gabriele; Bastioli, Catia; Grzebieniak, Karolina; and Niekraszewicz, Antoni, 5,543,494, Cl. 528-354.000.

Grzechnik, Slawek: *See—*
Lewak, Jerzy; Grzechnik, Slawek; and Matousek, Jon, 5,544,360, Cl. 395-600.000.

Gsell, Thomas C.: *See—*
Pall, David B.; Gsell, Thomas C.; and Muellers, Brian T., 5,543,060, Cl. 210-767.000.

Gubitosa, Giuseppe; and Casale, Bruno, to Montecatini Technologie S.r.l. Hydrogenation catalyst, and a method for its preparation and use, in particular for hydrogenation and/or hydrogenolysis of carbohydrates and polyhydric alcohols. 5,543,379, Cl. 502-184.000.

Gueret, Jean-Louis, to L'Oreal. Brush for applying a cosmetic product. 5,542,439, Cl. 132-218.000.

Guerin, Jean-Michel: *See—*
Fisli, Tibor; Guerin, Jean-Michel; Maeda, Patrick Y.; and Quant, Donald J., 5,543,825, Cl. 346-141.000.

Gügel, Gerhard: *See—*
Heine, Helmut; Schmidt, Otto H.; Gügel, Gerhard; Merkt, Norbert; and Zirnheld, Arno, 5,542,904, Cl. 600-197.000.

Guilford Mills, Inc.: *See—*
Richards, David T., 5,542,269, Cl. 66-195.000.

Guillaume, Philippe: *See—*
Andrieu, Xavier; Rocher, Michel; Guillaume, Philippe; and Poignant, Philippe, 5,543,245, Cl. 429-90.000.

Gulyas, Imre: *See—*
Moreno, Fulgencio Powell; Litkei, Laszlo; Galamb, Vilmos; Gulyas, Imre; Repasi, Janos; Veres, Agota Repasine; Vigh, Jozsef; Koczka, Istvanne; Fehervari, Edit; Roka, Laszlone; Pethe, Laszlone; and Neu, Jozsef, 5,543,562, Cl. 562-17.000.

Gunsallus, James M., Jr.: *See—*
Cole, William G.; Hydeman, Jeffrey E.; Gunsallus, James M., Jr.; and Le, Qui, 5,543,599, Cl. 219-69.200.

Gunther, Stephen H.; Blank, Gerard D.; Curry, James T.; and Draeger, Jeff, to Intel Corporation. Method and apparatus for configuring an integrated circuit. 5,544,092, Cl. 395-800.000.

Guo, Shao-Hua, to ARCO Chemical Technology, L.P. Hydroxy-functional allyl terpolymers. 5,543,483, Cl. 526-330.000.

Guo, Song: *See—*

Stankus, John C.; and Guo, Song, 5,542,788, Cl. 405-288.000.

Guodong, Yang, to Ningbo Institute of Microcirculation and Henbane. Preparation and application of scopolamine and chlorpromazine as a drug-withdrawal agent. 5,543,407, Cl. 514-226.200.

Gupta, Alok, to QLogic Corporation. Error-tolerant byte synchronization recovery scheme. 5,544,180, Cl. 371-47.100.

Guri, Assaf Z., to Plant Cell Technology, Inc. Colored plant culture media. 5,543,321, Cl. 435-240.400.

Gustafson, Ross M.: *See—*
Hamilton, C. Richard; and Gustafson, Ross M., 5,542,983, Cl. 134-10.000.

GWF Gas & Wassermesserfabrik AG: *See—*
Mettler, Roland, 5,543,613, Cl. 250-231.150.

Gyde, Thomas R.: *See—*
King, Stanley C.; Knop, Richard C.; Green, John E.; Gyde, Thomas R.; and Silzle, L. William, Jr., 5,542,450, Cl. 137-614.200.

H-Tech, Inc.: *See—*
Messinger, Robert; and Pinelli, Thomas P., 5,542,714, Cl. 285-158.000.

Haas, Margret; and Bernhardt, Guenther, to Huels Aktiengesellschaft. Acryloyloxypropylalkoxysilanes, process for their preparation and use thereof. 5,543,538, Cl. 556-401.000.

Habbley, Dale L.: *See—*
Wiggerman, Ronald E.; Gates, Craig; Habbley, Dale L.; and Hollowed, Edward J., 5,544,076, Cl. 364-565.000.

Habermehl, G. Lyle; and Scherer, Paul T., to Habermehl, G. Lyle. Screw strip with overlapping washers, and method and apparatus for installation. 5,542,323, Cl. 81-434.000.

Habora, Barbara M.; and Hall, Rebecca V. Dual service sprayer. 5,542,581, Cl. 222-331.000.

Hackett, Gerry A.: *See—*
Bhatt, Ashwinkumar C.; Duffy, Thomas P.; Hackett, Gerry A.; and McKeveny, Jeffrey, 5,542,175, Cl. 29-846.000.

Haefner, Hans-Ulrich: *See—*
Mattern-Klosson, Monika; Mundinger, Hans-Juergen; Haefner, Hans-Ulrich; and Timm, Uwe, 5,542,257, Cl. 62-55.500.

Haeussler, David A.: *See—*
Aubertine, Matthew E.; Beyzavi, Kianoush; Broker, Harold J.; Checca, Ronald P.; Granato, Michael A.; Haeussler, David A.; Herasimtschuk, Michael; Jurkovic, Michael J.; Salem, Gerard M.; Selinger, Craig R.; and Zehr, Paul R., 5,544,088, Cl. 364-489.000.

Haffely, Jeffrey L.: *See—*
Wixey, Barry D.; Young, Ronald E.; Baird, Charles J.; and Haffely, Jeffrey L., 5,542,639, Cl. 248-439.000.

Haffner, Curt D.: *See—*
Andrews, Robert C.; Cribbs, Cynthia M.; Frye, Stephen V.; Haffner, Curt D.; and Maloney, Patrick R., 5,543,406, Cl. 514-213.000.

Hagan, James A.: *See—*
Gregory, Thomas A.; Hagan, James A.; and Keller, Christopher G., 5,543,983, Cl. 360-97.020.

Hagelberg, Allen C.; and Allardt, Clark E., to Hughes Missile Systems Company. Undersea vehicle ejection from capsules. 5,542,333, Cl. 89-1.810.

Hagemann, Jörg: *See—*
Weber, Beate; Hagemann, Jörg; Helling, Günter; and Geiger, Markus, 5,543,280, Cl. 430-503.000.

Hagens Fiedre K/S: *See—*
Hagens, Peter, 5,542,228, Cl. 52-712.000.

Hagens, Peter, to Hagens Fiedre K/S. Tieing device made of wire for connecting reinforcing rods for concrete constructions. 5,542,228, Cl. 52-712.000.

Hagmann, Karl: *See—*
Steiner, Daniel; Brassel, Willy; and Hagmann, Karl, 5,542,511, Cl. 191-41.000.

Hague, Jonathon D.; and Murray, Andrew M., to Chesebrough-Pond's USA Co., Div. of Conopco, Inc. Personal washing compositions. 5,543,074, Cl. 510-122.000.

Hahn, Dieter: *See—*
Hartmann, Harry; and Hahn, Dieter, 5,542,331, Cl. 84-383.00A.

Haight, Anthony R.: *See—*
Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Morton, Howard E.; Reno, Daniel S.; Sham, Hing L.; Sowin, Thomas J.; and Tien, Jien-Heh J., 5,543,549, Cl. 558-405.000.
Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Kerdesky, Francis A.; Langridge, Denton C.; Leanna, M. Robert; Lijewski, Linda M.; Melcher, Laura; Morton, Howard E.; Norbeck, Daniel W.; Reno, Daniel S.; Robbins, Timothy A.; Sham, Hing L.; Sowin, Thomas J.; Tien, Jien-heh J.; Zhao, Chen; and Scarpetti, David, 5,543,551, Cl. 560-24.000.
Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Leanna, M. Robert; Lijewski, Linda M.; Melcher, Laura; Morton, Howard E.; Reno, Daniel S.; Sham, Hing L.; and Sowin, Thomas J., 5,543,552, Cl. 560-24.000.

Haikawa, Katsumasa; Mochida, Takaaki; Nagano, Mamoru; and Nakajima, Tsuyoshi, to Hitachi, Ltd.; Kabushiki Kaisha Toshiba; and General Electric Company. Nuclear fuel assembly and nuclear reactor incorporating the same. 5,544,211, Cl. 376-435.000.

Hain, Matthew: *See—*
McKean, Wanda L.; Hain, Matthew; and Koyfman, Ilya S., 5,542,594, Cl. 227-178.100.

Halbirt, John P., to Jaeger Products, Inc. Random packing. 5,543,088, Cl. 261-94.000.

Hale, Robert: *See—*
Hirsch, Chaya; Hale, Robert; and Strul, Bruno, 5,542,916, Cl. 604-22.000.

Hall, Rebecca V.: *See—*
Habora, Barbara M.; and Hall, Rebecca V., 5,542,581, Cl. 222-331.000.

Hall, Robert W.: *See—*
Brecher, Virginia H.; Chou, Paul B.-L.; Hall, Robert W.; Parisi, Debra M.; Rao, Ravishankar; Riley, Stuart L.; and Sturzenbecker, Martin C., 5,544,256, Cl. 382-149.000.

Hall, Timothy L. Exercise pump device. 5,542,897, Cl. 482-111.000.

Halley, Craig: *See—*
Ganucheau, Charles J., Jr.; Vanden Heuvel, Dean P.; Halley, Craig; Mun, Kyung T.; and Dumstorff, Patrick L., 5,543,781, Cl. 340-825.440.

Halliburton NUS Environmental Corp.: *See—*
Carter, Ernest E., Jr.; Frulla, Roberto E.; Pettit, Paul J.; Sanford, Frank L.; and Saugier, R. Kent, 5,542,782, Cl. 405-129.000.

Hallmark Pharmaceutical, Inc.: *See—*
Zhang, Guohua; and Pinnamaraju, Prasad, 5,543,099, Cl. 264-115.000.

Halsey, David: *See—*
Katsumata, Shin; Fisher-Votava, Martha; and Halsey, David, 5,543,673, Cl. 310-90.500.

Halverson, Larry: *See—*
Handelsman, Jo; Halverson, Larry; Stabb, Eric V.; Lethbridge, Benjamin; and Silo, Laura, 5,543,301, Cl. 435-34.000.

Ham, Young M., to Hyundai Electronics Industries Co., Ltd. Half-tone type phase shift mask and method for fabrication thereof. 5,543,255, Cl. 430-5.000.

Ham, Young M.: *See—*
Kim, Young S.; and Ham, Young M., 5,543,254, Cl. 430-5.000.

Hama, Kaoru: *See—*
Yoshii, Ichiro; Kamijoh, Hiroyuki; Ozawa, Yoshio; Yamabe, Kikuo; Hashimoto, Kazuhiko; Okumura, Katsuya; and Hama, Kaoru, 5,543,334, Cl. 437-8.000.

Hamada, Akihiko; Yubuki, Yoshikazu; and Kato, Akira, to Sumitomo Rubber Industries, Ltd. Golf ball. 5,543,467, Cl. 525-207.000.

Hamada, Akira: *See—*
Nishioka, Masato; Hamada, Akira; Tateyama, Eiji, deceased; Nishizawa, Nobuyoshi; and Tsutsumi, Masaru, 5,543,241, Cl. 429-39.000.

Hamada, Hiroshi: *See—*
Mizuguchi, Yoshihiro; Hamada, Hiroshi; Aoyama, Shigeru; and Yamashita, Tsukasa, 5,543,942, Cl. 359-40.000.

Hamaguchi, Hiroshi: *See—*
Takagi, Kazuhiro; Ohtani, Takashi; Nishida, Tateki; Hamaguchi, Hiroshi; Nishimatsu, Tetsuyoshi; and Kanaoka, Atsushi, 5,543,573, Cl. 514-590.000.

Hamahata, Toshihiro: *See—*
Fujii, Takao; and Hamahata, Toshihiro, 5,544,060, Cl. 364-444.000.

Hamai, Shinji; Iketani, Akira; Matsumi, Chiyoko; Juri, Tatsuro; Yamada, Masazumi; Kawakami, Yasunori; and Murakami, Yuuzou, to Matsushita Electric Industrial Co. Ltd. Apparatus for recording and playing back digital data. 5,543,937, Cl. 358-341.000.

Hamano, Haruto: *See—*
Shiramizu, Yoshimi; Nakamori, Masaharu; Aoki, Hidemitsu; Seo, Hirofumi; and Hamano, Haruto, 5,543,030, Cl. 205-464.000.

Hamilton, Brian; and Renz, Robert, to Oea, Inc. Automotive inflatable safety system propellant with complexing agent. 5,542,704, Cl. 280-741.000.

Hamilton, C. Richard; and Gustafson, Ross M., to Biochem Systems. Process for cleaning metal surfaces with physical emulsion of terpene and water. 5,542,983, Cl. 134-10.000.

Hammer, Kathleen M.: *See—*
Allison, Johnny H.; Hammer, Kathleen M.; and Kaminski, David P., 5,542,489, Cl. 180-68.500.

Hammerl, Erwig; Mandelman, Jack A.; Ho, Herbert L.; Shiozawa, Junichi; and Stengl, Reinhard J., to Kabushiki Kaisha Toshiba; Siemens Aktiengesellschaft; and International Business Machines Corp. Controlled recrystallization of buried strap in a semiconductor memory device. 5,543,348, Cl. 437-60.000.

Hammond, Charles A.; Oostwouder, Shelby P.; and Lanning, Robert A., to Dow Chemical Company, The. Process for the removal of h_2S from non-condensible gas streams and from steam. 5,543,122, Cl. 423-220.000.

Hamprecht, Gerhard: *See—*
Münster, Peter; Ditrich, Klaus; Hamprecht, Gerhard; Gerber, Matthias; Westphalen, Karl-Otto; Walter, Helmut; and Karl, Rudolf, 5,543,416, Cl. 504-271.000.

Hampshire Chemical Corp.: *See—*
O'Neill, Gerald J.; and Bulka, Robert J., 5,543,055, Cl. 210-638.000.
Parker, Brian A.; and Holejko, Longin V., 5,543,383, Cl. 504-116.000.

Han, Kenneth N.; and Meng, Xinghui, to South Dakota School of Mines and Technology. Recovery of platinum group metals and rhenium from materials using halogen reagents. 5,542,957, Cl. 75-732.000.

Han, Scott: *See—*
Chang, Clarence D.; Han, Scott; Martenak, Daniel J.; Santiesteban, Jose G.; and Walsh, Dennis E., 5,543,036, Cl. 208-189.000.

Hanatani, Shoichi: *See—*
Nakamura, Hitoshi; Hanatani, Shoichi; Tanaka, Shigehisa; Ohtoshi, Tsukuru; Ishida, Koji; and Matsuoka, Yausunobu, 5,543,629, Cl. 257-21.000.

Hanazato, Yoshio; Nakako, Mamiko; Shiono, Satoru; and Inatomi, Kenichi, to Mitsubishi Denki Kabushiki Kaisha. Glucose sensitive FET sensor and method of making same. 5,543,024, Cl. 204-403.000.

Hand, David T.: *See—*

Djabbarah, Nizar F.; Garling, Ralph V.; Hand, David T.; and Macfadyen, Jennifer, 5,542,474, Cl. 166-263.000.

Handelsman, Jo; Halverson, Larry; Stabb, Eric V.; Lethbridge, Benjamin; and Silo, Laura, to Wisconsin Alumni Research Foundation. Method of identifying *Bacillus cereus* having biocontrol activity. 5,543,301, Cl. 435-34.000.

Handford, Edward F.; Harvilchuck, Joseph M.; Interrante, Mario J.; Jackson, Raymond A.; Master, Raj N.; Ray, Sudipta K.; Sablinski, William E.; and Wassick, Thomas A., to International Business Machines Corporation. Structure for repairing electrical lines. 5,543,584, Cl. 174-261.000.

Hani, Tsutomu: *See—*
Takahashi, Nobukazu; Hani, Tsutomu; Kohara, Teiji; and Natsuume, Tadao, 5,543,948, Cl. 359-73.000.

Hann, Cheryl, executrix: *See—*
Louden, James A.; Hawkins, Brian F.; Hann, Wayne D., Sr. deceased, 5,543,044, Cl. 210-386.000.

Hann, Wayne D., Sr. deceased (by Cheryl Hann, executrix): *See—*
Louden, James A.; Hawkins, Brian F.; Hann, Wayne D., Sr. deceased, 5,543,044, Cl. 210-386.000.

Hanna, Marie R.: *See—*
Monteleone, Michael G.; Weiss, Richard A.; Evans, Marc D.; and Hanna, Marie R., 5,543,398, Cl. 512-23.000.

Hansen, Finn H. Apparatus for drilling and maintenance of holes in a golf course. 5,542,476, Cl. 172-22.000.

Hansen, Kai-Uwe: *See—*
Leibing, Karl-Heinz; Hansen, Kai-Uwe; and Vonnoe, Reinhard, 5,542,251, Cl. 60-426.000.

Hansen, Michael R.; and Young, Richard H., Sr., to Weyerhaeuser Company. Polymeric binders for binding particles to fibers. 5,543,215, Cl. 428-283.000.

Hanson, Ralph W., to R. Stresau Laboratory, Inc. Air bag deployment system. 5,542,695, Cl. 280-729.000.

Hanst, Donald R. Composition for soil surface stabilization. 5,542,977, Cl. 106-706.000.

Hanyu, Yukio; Tsuboyama, Akira; Taniguchi, Osamu; Mihara, Tadashi; Nakamura, Katsutoshi; and Mori, Sunao, to Canon Kabushiki Kaisha. Chiral smectic device subjected to a simultaneous thermal and AC field treatment. 5,543,943, Cl. 359-43.000.

Hanzawa, Shigeru; and Komiyama, Tsuneo, to NGK Insulators, Ltd. Silicon carbide body for radiating far-infrared radiation, drying apparatus including the body, and firing apparatus including the body. 5,542,194, Cl. 34-266.000.

Hara, Akihito; Higuchi, Toshiharu; Yakabe, Toru; Kanda, Shigeo; and Yamamoto, Eiji, to Kabushiki Kaisha Toshiba. Cathode assembly incorporating a black layer formed from particles having a specified average particle size. 5,543,682, Cl. 313-446.000.

Hara, Hideki, to NEC Corporation. Method of writing data into electrically erasable and programmable read only memory cell without disturbance to other cells. 5,544,099, Cl. 365-185.190.

Hara, Masaharu: *See—*
Sosa, Toshio; Fukuhara, Toru; Dobashi, Toshio; Hara, Masaharu; and Yokonuma, Norikazu, 5,543,888, Cl. 354-415.000.

Hara, Shinichi: *See—*
Chiba, Yuji; and Hara, Shinichi, 5,544,213, Cl. 378-34.000.

Hara, Takahisa; Matsumoto, Masahito; Usui, Nobuhiro; and Matubara, Shigeyoshi, to Sumitomo Chemical Company, Limited. Method of forming a multilayer molded article. 5,543,094, Cl. 264-46.400.

Hara, Yasuhiro: *See—*
Uezono, Kouichi; Hara, Yasuhiro; and Nakamura, Tsuyoshi, 5,543,705, Cl. 323-369.000.

Hara, Yasushi: *See—*
Watanabe, Kazuhiro; and Hara, Yasushi, 5,542,426, Cl. 128-662.030.

Harada, Hidefumi: *See—*
Kawaki, Takao; Amagai, Akikazu; Yamada, Toshiaki; Harada, Hidefumi; Ban, Hajime; Takeda, Yuji; and Yamamoto, Koji, 5,543,474, Cl. 525-440.000.

Harada, Mitsuhiro: *See—*
Nishimura, Masaaki; Hirano, Masatoshi; and Harada, Mitsuhiro, 5,542,456, Cl. 140-92.100.

Haran, Eliyahou. Flash EEPROM system cell array with defect management including an error correction scheme. 5,544,118, Cl. 365-218.000.

Harder, John W.: *See—*
Singer, Stephen P.; and Harder, John W., 5,543,277, Cl. 430-505.000.

Harding, Matthew W.: *See—*
Zelle, Robert E.; and Harding, Matthew W., 5,543,423, Cl. 514-332.000.

Hardt, David E.; and Lee, Steven G., to Massachusetts Institute of Technology. High-bandwidth continuous-flow arc furnace. 5,544,195, Cl. 373-79.000.

Hardy, Donald P.: *See—*
Parker, Eric G.; and Hardy, Donald P., 5,542,705, Cl. 280-772.000.

Hardy, Jack M., Jr.: *See—*
Acton, John D.; Grant, Lawrence C.; Hardy, Jack M., Jr.; Kent, Steven P.; and Schelong, Steven E., 5,544,319, Cl. 395-200.070.

Harenberg, Donald D.; Watson, George A.; Bindloss, Keith M.; and Folwell, Dale E., to Rockwell International Corporation. On-chip debug port. 5,544,311, Cl. 395-183.160.

Hargis, I. Glen; Livigni, Russell A.; Melby, Earl G.; and Vitus, Francis J., to GenCorp Inc. Abrasion-resistant article coated with a coating compositions based on fluorinated monohydric alcohol. 5,543,200, Cl. 428-122.000.

Harkleroad, Zeke S. Razor for shaving curved areas of the body. 5,542,178, Cl. 30-34.100.

Harleman, Donald R. F.: *See—*
Murcott, Susan E.; and Harleman, Donald R. F., 5,543,056, Cl. 210-705.000.

Harper, Bruce M.: *See—*
Nguyen, Hoang; and Harper, Bruce M., 5,543,022, Cl. 204-298.150.

Harradine, Vincent C.; Teece, Howard J.; Ludgate, Michael J.; Bhandari, Rajan; and Walker, Gavin A., to Sony Corporation; and Sony United Kingdom Limited. Multichannel video data storage including buffers for reading data at fast rates and supplying data at slower rates. 5,543,861, Cl. 348-718.000.

Harrington, Philip M.; and Jung, Michael E., to American Cyanamid Company. Process and intermediates for the preparation of (+)-hydantocidin and analogs thereof. 5,543,510, Cl. 536-53.000.

Harrington, Steven J., to Xerox Corporation. Halftoning method using space filling curves. 5,543,935, Cl. 358-429.000.

Harris Corporation: *See—*
Longway, Charles W. T.; and Young, William R., 5,544,095, Cl. 365-63.000.

Harris, Marian R. Shopping cart with purse security enclosure. 5,542,687, Cl. 280-33.993.

Harris, Richard H.: *See—*
Crompton, Dennis; Harris, Richard H.; Leonard, Herbert G.; Hufford, George, III; and Thomas, Jeff D., 5,542,152, Cl. 16-354.000.

Harris, Richard K.: *See—*
York, Michael T.; and Harris, Richard K., 5,543,676, Cl. 310-263.000.

Harris, Scott, to State of New South Wales, The Minister for Public Works and Services for and on Behalf of the. Biological phosphorus removal from waste water. 5,543,051, Cl. 210-605.000.

Harrison, C. Gordon, to DSC Communications Corporation. Fiber optic cable storage shelf and method using same. 5,544,273, Cl. 385-135.000.

Harsco Corporation: *See—*
Madison, Harry; and Schultz, Charles R., 5,542,355, Cl. 104-17.100.

Hart, James A.: *See—*
Davis, Terry L.; Hart, James A.; Russell, James F.; Sears, John W.; and Trice, Philip H., 5,544,086, Cl. 364-408.000.

Hart, Robert S.: *See—*
Hoffmann, John D.; Gooding, Robert W.; Roberts, Norman; and Hart, Robert S., 5,542,542, Cl. 209-17.000.

Hartley, Richard I.; Noble, Julia A.; Grande, James C. M.; Jackson, William E.; Welles, Kenneth B., II; and Liu, Jane S., to General Electric Company. Classifying and sorting crystalline objects. 5,544,254, Cl. 382-108.000.

Hartman, Peter G.; Jones, Keith L.; Larson, Thomas A.; and Weber, Gregory T., to Chrysler Corporation. Method of altitude compensation of exhaust gas recirculation in an intake manifold for an internal combustion engine. 5,542,390, Cl. 123-412.000.

Hartmann, Harry; and Hahn, Dieter. Sound-producing reed for wind instruments. 5,542,331, Cl. 84-383.00A.

Hartmann, Heinrich; Denzinger, Walter; Kroener, Michael; Nilz, Claudia; Linhart, Friedrich; and Stange, Andreas, to BASF Aktiengesellschaft. Graft polymers of natural substances containing saccharide structures or derivatives thereof and ethylenically unsaturated compounds and their use. 5,543,459, Cl. 525-54.300.

Hartsell, Hal C., Jr.: *See—*
Payne, Edward A.; and Hartsell, Hal C., Jr., 5,542,458, Cl. 141-7.000.

Hartwell, David. Mis-synchronization detection system using a combined error correcting and cycle identifier code. 5,544,179, Cl. 371-471.000.

Harvanek, Daniel. Instructional hand glove. 5,542,126, Cl. 2-161.200.

Harvey, Colin M. Application of trace elements to animals. 5,543,432, Cl. 514-630.000.

Harvey, John A.; Renaud, Benoit; Gagnon, Claude; Rondeau, Pierre; and Lapointe, Denys, to Bombardier Inc. Watercraft seat suspension. 5,542,371, Cl. 114-363.000.

Harvey Mudd College: *See—*
Baumgaertner, Carl J.; and McKaughan, Robert M., 5,544,197, Cl. 375-257.000.

Harvey, Robert L.; Hirschler-Marchand, Patrick R.; and Cipolle, David J., to Massachusetts Institute of Technology. Video telephone systems. 5,543,939, Cl. 358-426.000.

Harvilchuck, Joseph M.: *See—*
Handford, Edward F.; Harvilchuck, Joseph M.; Interrante, Mario J.; Jackson, Raymond A.; Master, Raj N.; Ray, Sudipta K.; Sablinski, William E.; and Wassick, Thomas A., 5,543,584, Cl. 174-261.000.

Harz, Peter: *See—*
Krude, Werner; and Harz, Peter, 5,542,885, Cl. 464-145.000.

Hasbun, Robert N.; and Christopherson, Mark, to Intel Corporation. Method of detecting loss of power during block erasure and while writing sector data to a solid state disk. 5,544,312, Cl. 395-183.180.

Hasegawa, Masami: *See—*
Iwase, Nobuhiro; Kano, Hiroshi; Tadaki, Shinji; Hasegawa, Masami; and Koshino, Nagaaki, 5,543,080, Cl. 252-301.40H.

Hasegawa, Toshiyuki; and Iida, Masaru, to Kanzaki Kokyukoki Mfg. Co., Ltd. Hydrostatic transmission. 5,542,307, Cl. 74-15.630.

Hasegawa, Yusuke; Nishimura, Yoichi; Komoriya, Isao; and Akazaki, Shushuke, to Honda Giken Kogyo Kabushiki Kaisha. Trouble detection system for internal combustion engine. 5,542,404, Cl. 123-690.000.

Haseloff, James P.; Gerlach, Wayne L.; Jennings, Philip A.; and Cameron, Fiona H., to Gene Shears Pty. Limited. Ribozymes. 5,543,508, Cl. 536-23.200.

Hashi, Masaaki: *See—*
Fujii, Noboru; Kawabata, Kenji; Hashi, Masaaki; Niikura, Junji; and Ouya, Tomotoshi, 5,542,239, Cl. 53-477.000.

Hashimoto, Eiji: *See*—
Morino, Seiji; Hashimoto, Eiji; and Tomoda, Terutoshi, 5,543,679, Cl. 310-316.000.
Hashimoto, Kazuhiko: *See*—
Yoshii, Ichiro; Kamijoh, Hiroyuki; Ozawa, Yoshio; Yamabe, Kikuo; Hashimoto, Kazuhiko; Okumura, Katsuya; and Hama, Kaoru, 5,543,334, Cl. 437-8.000.
Hashimoto, Kenki; Nobuki, Minoru; Nakamura, Morihiko; and Doi, Haruo, to National Research Institute For Metals. Tial base alloy having high strength performance at high temperature. 5,542,992, Cl. 148-421.000.
Hashimoto, Koji: *See*—
Shibata, Tsuyoshi; Hashimoto, Koji; Heida, Katsuhiko; Kawano, Kenji; Ito, Shinichi; and Horioka, Keiji, 5,543,252, Cl. 430-5.000.
Hashimoto, Toru: *See*—
Matsumoto, Takuya; Hashimoto, Toru; Miyake, Mitsuhiro; Kamura, Hitoshi; and Yoshida, Yasuhisa, 5,542,400, Cl. 123-571.000.
Hashimoto, Yasufumi; Umeda, Hiroyuki; and Ohira, Tsunehisa, to Victor Company of Japan, Ltd. Tape cassette having a rear cover composed of two pieces of plates rotatably connected to each other. 5,543,991, Cl. 360-132.000.
Hashimoto, Yukio: *See*—
Shibata, Jun; Obayashi, Hiroaki; Kimura, Makoto; Fukuzumi, Shuzo; Yoshikawa, Hironori; Hitotsumatsu, Atsushi; Hashimoto, Yukio; Yamanoi, Toshimi; and Takaya, Seiji, 5,542,700, Cl. 280-735.000.
Haskell, Barin G.; and Reibman, Amy R., to AT&T Corp. Encoder/decoder buffer control for variable bit-rate channel. 5,543,853, Cl. 348-497.000.
Hasler, Peter, to RMT Reinhardt Microtech AG. Resistive film. 5,543,208, Cl. 428-210.000.
Hass, Edward C.: *See*—
Stachler, Thomas H.; and Hass, Edward C., 5,542,479, Cl. 173-90.000.
Hasuda, Masanori: *See*—
Matsubara, Takashi; Hasuda, Masanori; and Kanamuro, Masayuki, 5,543,880, Cl. 354-252.000.
Hata, Kazuyoshi; Maekawa, Yukio; Takamoto, Katsuhiro; and Saka, Manami, to Minolta Camera Kabushiki Kaisha. Zoom lens system. 5,543,970, Cl. 359-690.000.
Hata, Masayuki: *See*—
Nakagawa, Hiromasa; Yamada, Akira; and Hata, Masayuki, 5,544,341, Cl. 395-445.000.
Hatakeyama, Hiroki: *See*—
Kitaike, Yukio; Hatakeyama, Hiroki; Tayama, Suehiro; and Nakagawa, Kazuhiko, 5,543,463, Cl. 525-79.000.
Hatakeyama, Masahiro: *See*—
Saitō, Mutsumi; Yahiro, Tomoyuki; and Hatakeyama, Masahiro, 5,543,615, Cl. 250-251.000.
Hatakeyama, Yoshiharu; Fukuoka, Hiroki; and Teshima, Kenzo, to Yoshida Industry Co., Ltd. Tube container. 5,542,580, Cl. 222-183.000.
Hatano, Yoshiko: *See*—
Asamura, Yoshinori; Hatano, Yoshiko; Onishi, Ken; and Shiroshita, Takashi, 5,543,845, Cl. 348-407.000.
Hatta, Hiroyuki: *See*—
Norizuki, Reiko; Hyodo, Ryuji; Tanaka, Kenji; Sekihata, Osamu; Hatta, Hiroyuki; Eda, Susumu; and Oomura, Katsumi, 5,544,169, Cl. 370-60.100.
Hatton, Bruce E.: *See*—
Adams, Terry; Ambrosio, Neil J.; Bratton, William E.; Forsythe, William M.; Hatton, Bruce E.; Kinder, Larry L.; and Swat, William A., 5,542,438, Cl. 131-238.000.
Hattori, Hitoshi, to Ricoh Company Ltd. Optical transmission module and method of forming the same. 5,544,269, Cl. 385-88.000.
Hatzikazakis, Pantelis: *See*—
Monk, David T.; Hatzikazakis, Pantelis; and Mumpower, Kevin N., 5,542,341, Cl. 92-187.000.
Haupenthal, Rudi, to Heidelberger Druckmaschinen AG. Multi-way slide-type shutoff valve for suction air of suction-type grippers on a sheet-transfer drum. 5,542,659, Cl. 271-108.000.
Hauppa, Kevin E.: *See*—
Marjanski, George C.; Hauppa, Kevin E.; Green, David J.; Saderholm, Davin G.; and Beesley, Brent R., 5,542,691, Cl. 280-728.200.
Hauquier, Guido: *See*—
Vermeersch, Joan; Hauquier, Guido; and Kokkelenberg, Dirk, 5,543,261, Cl. 430-159.000.
Hausmann, Steven: *See*—
Walker, John P.; and Hausmann, Steven, 5,543,063, Cl. 210-788.000.
Haven, Duane A.; and Pong, Chungdee, to Silicon Video Corporation. Faceplate for field emission display including wall gripper structures. 5,543,683, Cl. 313-461.000.
Hawkins, Brian F.: *See*—
Louden, James A.; Hawkins, Brian F.; Hann, Wayne D., Sr. deceased, 5,543,044, Cl. 210-386.000.
Hawkins, Paul L.: *See*—
Wittern, Francis A., Jr.; and Hawkins, Paul L., 5,544,024, Cl. 362-89.000.
Hawkinson, Eric, to Hon Industries Inc. Fireplace assembly. 5,542,407, Cl. 126-77.000.
Hayabuchi, Masahiro: *See*—
Tsukamoto, Kazumasa; Hayabuchi, Masahiro; Nishida, Masaaki; Yamamoto, Yoshihisa; Kusafuka, Muneo; Mikami, Kazuhiro; Tsutsui, Hiroshi; and Iwata, Akihito, 5,542,887, Cl. 475-63.000.
Hayakawa, Junji; and Ban, Hiroyuki, to Nippondenso Co., Ltd. Bipolar integrated device having parasitic current detector. 5,543,747, Cl. 327-565.000.
Hayama, Kazuhide; Saitoh, Yukio; Kitani, Yasuo; and Yamada, Katsuhiko, to Mitsubishi Chemical Corporation. Process for producing powdered carboxyl-containing polymer. 5,543,440, Cl. 523-103.000.
Hayami, Masayoshi: *See*—
Serizawa, Hideaki; Hayami, Masayoshi; and Yokozuka, Kunimoto, 5,542,176, Cl. 29-890.030.
Hayano, Kouji: *See*—
Dosaka, Katsumi; Kumanoya, Masaki; Hayano, Kouji; Yamazaki, Akira; Iwamoto, Hisashi; Abe, Hideaki; Konishi, Yasuhiro; Himukashi, Katsumitsu; Ishizuka, Yasuhiro; and Saiki, Tsukasa, 5,544,121, Cl. 365-222.000.
Hayasaka, Takashi: *See*—
Hirose, Toshihiko; Ohbayashi, Shigeki; Kondo, Setsu; Hayasaka, Takashi; Fujino, Yoshiyuki; and Iketani, Masayuki, 5,544,105, Cl. 365-189.110.
Hayashi, Kazuyuki; Ohsugi, Minoru; Morii, Hiroko; and Sugita, Norio, to Toda Kogyo Corporation. Magnetic particles for magnetic recording medium and process for producing the same. 5,543,069, Cl. 252-62.580.
Hayashi, Takayuki: *See*—
Yanagihara, Nobuyuki; Kawano, Hiroshi; Hayashi, Takayuki; and Tsuji, Masato, 5,543,250, Cl. 429-241.000.
Hayashi, Takehisa: *See*—
Doi, Toshio; Hayashi, Takehisa; Iahibashi, Kenichi; and Takemoto, Takeshi, 5,544,340, Cl. 395-445.000.
Hayashida, Mitsumori: *See*—
Miyamoto, Hirofumi; Sakai, Mitsugu; Hayashida, Mitsumori; and Sakai, Nobuaki, 5,543,614, Cl. 250-234.000.
Hayashikoshi, Masanori: *See*—
Nakayama, Takeshi; Terada, Yasushi; Kobayashi, Kazuo; Hayashikoshi, Masanori; and Miyawaki, Yoshikazu, 5,544,117, Cl. 365-185.220.
Hayden, Douglas L., to Oculon Corporation. System and method for detecting cataractogenesis using quasi-elastic light scattering. 5,542,422, Cl. 128-633.000.
Hayden, James D.: *See*—
Nguyen, Bich-Yen; McNelly, Thomas F.; Tobin, Philip J.; and Hayden, James D., 5,543,635, Cl. 257-66.000.
Hayes, Donald J., to Compaq Computer Corporation. Method of manufacturing a sidewall actuator array for an ink jet printhead. 5,543,009, Cl. 156-268.000.
HDC AG: *See*—
Kessler, Alfred, 5,542,379, Cl. 123-25.00C.
Heacock, Gregory L., to Virtual Vision. Head mounted display system with aspheric optics. 5,543,816, Cl. 345-8.000.
Heaney, William H. Fly-fishing line holding device. 5,542,204, Cl. 43-4.000.
Heath, Edward H., to Madison Combustion Associates. Exhaust apparatus. 5,542,249, Cl. 60-293.000.
Heath, John M., Jr.: *See*—
Casillo, Joseph; Johnson, Frederick M.; Heath, John M., Jr.; Veilleux, Gregory R.; and Dufault, William J., 5,543,001, Cl. 156-60.000.
Heaton, Robert; Youseñi, Nariman; Sadeghi, Khosrow; and Fischer, David, to Standard Microsystems Corp. High bit rate ethernet connection. 5,544,323, Cl. 395-200.140.
Hebert, Caroline: *See*—
Chuntharapai, Anan; Lee, James; Hebert, Caroline; and Kim, K. Jin, 5,543,503, Cl. 530-388.220.
Hebrew University of Jerusalem, Yissum Research Development Company of the: *See*—
Gatt, Shimon; Barenholz, Yechezkel; Bercovier, Herve; and Eldar, Zvi, 5,542,987, Cl. 134-39.000.
Hedaya, Ezra: *See*—
Hedaya, Maurice; and Hedaya, Ezra, 5,542,767, Cl. 383-127.000.
Hedaya, Maurice; and Hedaya, Ezra, to Barclay Brown. Bag stuffer. 5,542,767, Cl. 383-127.000.
Heffernan, William J. B.: *See*—
Evans, Peter D.; and Heffernan, William J. B., 5,543,773, Cl. 336-183.000.
Heger, Charles E., to Zircon Corporation. Swept range gate radar system for detection of nearby objects. 5,543,799, Cl. 342-85.000.
Heida, Katsuhiko: *See*—
Shibata, Tsuyoshi; Hashimoto, Koji; Heida, Katsuhiko; Kawano, Kenji; Ito, Shinichi; and Horioka, Keiji, 5,543,252, Cl. 430-5.000.
Heidelberger Druckmaschinen AG: *See*—
Haupenthal, Rudi, 5,542,659, Cl. 271-108.000.
Wirz, Arno; Sobotta, Peter; and Renner, Jochen, 5,542,658, Cl. 271-107.000.
Heidorn, Martin W.: *See*—
Scott, George R.; Cutright, Edwin L.; Heidorn, Martin W.; and Kelly, William L., 5,542,886, Cl. 470-34.000.
Heidsieck, Robert: *See*—
Muller, Serge; Grimaud, Michel; and Heidsieck, Robert, 5,544,219, Cl. 378-210.000.
Heighington, John E.; Butters, Daphne; and Claxton, Stephen J., to Synthomer Limited. Wall coverings. 5,543,207, Cl. 428-207.000.
Hein, Carl C., III; Koschak, Matthew S.; Powell, Mark S.; Shearer, Peter P.; and Wong, Milly M. L., to R. J. Reynolds Tobacco Company. High barrier packages for smoking articles and other products. 5,542,529, Cl. 206-245.000.

Heine, Helmut; Schmidt, Otto H.; Gügel, Gerhard; Merkt, Norbert; and Zirnheld, Arno, to Heine Optotechnik GmbH & Co. KG. Handgrip for an electro-optical diagnostic apparatus set. 5,542,904, Cl. 600-197.000.
Heine Optotechnik GmbH & Co. KG: *See*—
Heine, Helmut; Schmidt, Otto H.; Gügel, Gerhard; Merkt, Norbert; and Zirnheld, Arno, 5,542,904, Cl. 600-197.000.
Heinemann, Albert, to Theodor Kromer GmbH & Co. KG Spezialfabrik Fur Sicherheitsschlosser. Numerical combination lock with turning knob, cam plate, and drop lever. 5,542,272, Cl. 70-278.000.
Heinrich, Roland: *See*—
Baade, Wolfgang; Heinrich, Roland; Langstein, Gerhard; Mulder, Thomas; and Puskas, Judit, 5,543,479, Cl. 526-88.000.
Heinz, Joseph V.: *See*—
Bushard, Bradley B.; Dion, Philip G.; and Heinz, Joseph V., 5,543,727, Cl. 324-760.000.
Heiple, Ashley, to Rockland, Inc. Combination sloper and tailgrader attachment for vehicles. 5,542,478, Cl. 172-782.000.
Heiss, Werner; Weller, Martin; and Eipper, Konrad, to Mercedes Benz-AG. Scuttle structure for a motor vehicle having a drive unit arranged at the front. 5,542,491, Cl. 180-232.000.
Helbling, Christine: *See*—
Fischer, Walter; and Helbling, Christine, 5,543,572, Cl. 564-179.000.
Held, Jeffrey S.: *See*—
Bridges, Jack E.; Sresty, Guggilam C.; Held, Jeffrey S.; Sharp, James W.; and Bajzek, Thomas J., 5,543,111, Cl. 422-22.000.
Helix Software Company, Inc.: *See*—
Spilo, Michael L.; and Daub, Jonathan, 5,543,822, Cl. 345-189.000.
Heller, Adam; Katakis, Ioanis; and Ye, Ling. Biosensor including chemically modified enzymes. 5,543,326, Cl. 435-287.900.
Helling, Günter: *See*—
Weber, Beate; Hagemann, Jörg; Helling, Günter; and Geiger, Markus, 5,543,280, Cl. 430-503.000.
Helstern, Robert P.: *See*—
Tatavoosian, Vanacan; Helstern, Robert P.; and Lombardo, John J., 5,544,019, Cl. 362-23.000.
Hemminger, Rodney C.; and Munday, Mark L., to ABB Power T&D Company Inc. Programmable electrical energy meter using multiplexed analog-to-digital converters. 5,544,089, Cl. 364-492.000.
Henderson, Cynthia W.: *See*—
Clark, Harry E.; Henderson, Cynthia W.; Marcinek, Robert C.; Mayfield, Frances W.; Perkins, Thad W.; and Voss, Jorg F., 5,543,202, Cl. 428-154.000.
Henderson, Richard D.; and Barbarino, Michael J., to Xerox Corporation. Method for performing a search of a plurality of documents for similarity to a plurality of query words. 5,544,049, Cl. 364-419.190.
Henderson, Robert C.: *See*—
Wang, Tak K.; and Henderson, Robert C., 5,542,286, Cl. 73-23.220.
Hendry, James W., to ICP Systems, Inc. Method and apparatus for fluid compression of injection molded plastic material. 5,542,611, Cl. 239-553.500.
Henkel Corporation: *See*—
Cole, Howard; Erler, Kristina W.; Smith, Kenneth L.; and Francois, Brian C., 5,542,950, Cl. 8-107.000.
McVay, Kenneth R.; Gaige, Dennis G.; and Kain, William S., 5,543,565, Cl. 562-523.000.
Mudge, Elbert H., 5,543,065, Cl. 252-8.840.
Henkelmann, Jochem; and Tietze, Lutz, to BASF Aktiengesellschaft. Preparation of α,β-unsaturated β-oxycarboxylic acid chlorides. 5,543,568, Cl. 562-861.000.
Henley, Francois J., to Photon Dynamics, Inc. Testing apparatus and connector for liquid crystal display substrates. 5,543,729, Cl. 324-770.000.
Hennessy, William A.: *See*—
Fisher, Rayette A.; Hennessy, William A.; and Wiegman, Herman L. N., 5,544,038, Cl. 363-147.000.
Henry, Michael D.: *See*—
Jackson, Frederick S.; Henry, Michael D.; Leaver, David; and Wright-Boulton, Neil, 5,544,202, Cl. 375-376.000.
Henshaw, Philip D.; and Lis, Steven A., to Sparta, Inc. Apparatus and methods employing harmonic analysis for measuring the difference in phase between two coherent beams. 5,543,914, Cl. 356-345.000.
Hensley, John: *See*—
Garcia-Duarte, Fernando; Hensley, John; Mohanraj, Shanmugam; Subramaniyan, Nagarajan; and Olsson, David B., 5,544,082, Cl. 364-707.000.
Herasimtschuk, Michael: *See*—
Aubertine, Matthew E.; Beyzavi, Kianoush; Broker, Harold J.; Checca, Ronald P.; Granato, Michael A.; Haeussler, David A.; Herasimtschuk, Michael; Jurkovic, Michael J.; Salem, Gerard M.; Selinger, Craig R.; and Zehr, Paul R., 5,544,088, Cl. 364-489.000.
Herber, Paul G.: *See*—
Bielinski, Michael S.; and Herber, Paul G., 5,543,965, Cl. 359-463.000.
Herbert, William G.; Bischoping, Patricia; Altavela, Robert P.; Kotowicz, Lawrence; Schmitt, Peter J.; Jansen, Ronald E.; Lennon, John H.; and Grey, Henry G., to Xerox Corporation. Electroforming semi-step carousel, and process for using the same. 5,543,028, Cl. 205-70.000.
Hercules Incorporated: *See*—
Rodriguez, William, 5,543,446, Cl. 524-52.000.
Hering, C. J., Jr. Dynamic filtration filter apparatus with level control and deflector plate. 5,543,037, Cl. 210-104.000.
Heritier, Albert: *See*—
Chiron, Alain; and Heritier, Albert, 5,542,808, Cl. 414-498.000.
Herman, Michael, to Herman Pearl Button Company, Inc. Decorative multi-part button assemblies and use thereof. 5,542,157, Cl. 24-113.0MP.
Herman Pearl Button Company, Inc.: *See*—
Herman, Michael, 5,542,157, Cl. 24-113.0MP.
Hernandez, Ernesto: *See*—
Avellanet, Ernesto; and Hernandez, Ernesto, 5,542,938, Cl. 604-280.000.
Heron, Ralph P.: *See*—
Mattos, Derwin W.; Heron, Ralph P.; and Lee, Donald, 5,543,733, Cl. 326-81.000.
Herring, Frederick A.: *See*—
Freedenberg, Candace J.; Herring, Frederick A.; and Ziemins, Uldis A., 5,543,963, Cl. 359-432.000.
Herritz, Donald W.: *See*—
Meyers, Brenda J.; Herritz, Donald W.; Johansen, Jean L.; Hudson, William B., Jr.; Bell, Randall P.; Prokop, Gary F.; Caruso, James P.; and Allen, James I., 5,542,921, Cl. 604-74.000.
Herrmann, Dieter: *See*—
Bosies, Elmar; Herrmann, Dieter; and Pahlke, Wulf, 5,543,402, Cl. 514-114.000.
Herrmann, Klaus; and Krauss, Guenther, to Siemens Aktiengesellschaft. Acoustic therapy apparatus for treatment with focused waves. 5,542,906, Cl. 601-2.000.
Herron, John R.: *See*—
Johnson, Bruce S.; Khosla, Mukul; Herron, John R.; Brassil, John M.; and Schoen, Alan E., 5,543,625, Cl. 250-427.000.
Hershey, Paul C., to International Business Machines Corporation. High availability data processing system and method using finite state machines. 5,544,077, Cl. 364-570.000.
Herz, William S., to Sony Corporation; and Sony Electronics Inc. Variable speed playback of digital video stored in a non-tape media. 5,543,927, Cl. 358-312.000.
Hess, Clarence E., to Restorative Care of America Incorporated. Foot splint. 5,542,912, Cl. 602-27.000.
Hetterle, Peter B.: *See*—
Sullivan, Dan E.; and Hetterle, Peter B., 5,542,314, Cl. 74-552.000.
Heuscher, Dominic J., to Picker International, Inc. Spiral CT using an integrating interpolator. 5,544,212, Cl. 378-15.000.
Hewlett-Packard Company: *See*—
Anderson, Thomas H., 5,543,756, Cl. 333-186.000.
Asai, Kiyoshi, 5,542,855, Cl. 439-260.000.
Chaudhuri, Surajit; and Shim, Kyuseok, 5,544,355, Cl. 395-600.000.
Curran, Daniel J., 5,543,975, Cl. 360-45.000.
Luffel, Robert W.; Paul, D. Scott; and Rugg, Jon D., 5,544,146, Cl. 369-178.000.
Posse, Kenneth E., 5,544,175, Cl. 371-25.100.
Wang, Tak K.; and Henderson, Robert C., 5,542,286, Cl. 73-23.220.
Hexcell Corporation: *See*—
Fell, Barry M., 5,543,199, Cl. 428-116.000.
Hicks, Geoffrey: *See*—
Ison, Wendell; Wright, Douglas; Ireland, Scott; Hicks, Geoffrey; and Hyde, Bradley J., 5,542,859, Cl. 439-536.000.
Hidalgo-Lopez, Miguel A. Soup plate. 5,542,565, Cl. 220-574.100.
Hidber, Arthur; and Ryser, Eduard, to Cerberus AG. Method of manufacture of a protective coating on an electronic assembly. 5,543,008, Cl. 156-229.000.
Hidding, Douglas J.: *See*—
Hidding, Walter E.; Hidding, Douglas J.; and Hidding, Robert D., 5,542,555, Cl. 215-265.000.
Hidding, Robert D.: *See*—
Hidding, Walter E.; Hidding, Douglas J.; and Hidding, Robert D., 5,542,555, Cl. 215-265.000.
Hidding, Walter E.; Hidding, Douglas J.; and Hidding, Robert D. Valved bottle cap. 5,542,555, Cl. 215-265.000.
Hieda, Teruo; Suzuki, Masao; and Narita, Hitoshi, to Canon Kabushiki Kaisha, P.C. White balance using combined feedback and external color information for control. 5,543,836, Cl. 348-223.000.
Higashiyama, Katsuhiko, to Matsushita Electric Industrial Co. Ltd. Temperature protected power transistor circuit. 5,543,998, Cl. 361-103.000.
Higgins, Daniel R.: *See*—
Abel, Clayton J.; Watson, Greg; Higgins, Daniel R.; and Hill, Robert B., 5,542,650, Cl. 266-135.000.
Higgins, Larry W.: *See*—
Mueller, Brett K.; and Higgins, Larry W., 5,543,225, Cl. 428-423.100.
Highwaymaster Communications, Inc.: *See*—
Kennedy, William C., III; and Westerlage, Kenneth R., 5,544,225, Cl. 379-59.000.
Higuchi, Matsuo: *See*—
Katayama, Tetsuya; Murabe, Kaoru; Komura, Osamu; Kawai, Chihiro; Yamakawa, Akira; Matsunuma, Kenji; Yasuoka, Norio; Higuchi, Matsuo; and Miyake, Masaya, 5,543,371, Cl. 501-97.000.
Higuchi, Toshiharu: *See*—
Hara, Akihito; Higuchi, Toshiharu; Yakabe, Toru; Kanda, Shigeo; and Yamamoto, Eiji, 5,543,682, Cl. 313-446.000.
Hikita, Shiro; Iwata, Masafumi; Komaya, Kiyotoshi; Asuka, Masashi; and Goto, Yukio, to Mitsubishi Denki Kabushiki Kaisha. Traffic means controlling apparatus. 5,544,059, Cl. 364-436.000.
Hilbertz, Wolf H.; and Goreau, Thomas J. Method of enhancing the growth of aquatic organisms, and structures created thereby. 5,543,034, Cl. 205-688.000.

Hill, John P., to Adaptec, Inc. Diagnostic data port for a LSI or VLSI integrated circuit. 5,544,107, Cl. 365-201.000.
Hill, Julie B. Process of making a soluble tea product with champagne-like properties. 5,543,165, Cl. 426-435.000.
Hill, Robert B.: *See—*
Abel, Clayton J.; Watson, Greg; Higgins, Daniel R.; and Hill, Robert B., 5,542,650, Cl. 266-135.000.
Hillestad, Mark W. Boiler tube bank repair. 5,542,177, Cl. 29-890.031.
Hilston, Michael D.: *See—*
Kidon, William E.; Hilston, Michael D.; and Nguyen, Thanh, 5,543,231, Cl. 428-447.000.
Hilti Aktiengesellschaft: *See—*
Obermeier, Josef, 5,542,797, Cl. 408-226.000.
Himukashi, Katsumitsu: *See—*
Dosaka, Katsumi; Kumanoya, Masaki; Hayano, Kouji; Yamazaki, Akira; Iwamoto, Hisashi; Abe, Hideaki; Konishi, Yasuhiro; Himukashi, Katsumitsu; Ishizuka, Yasuhiro; and Saiki, Tsukasa, 5,544,121, Cl. 365-222.000.
Hinosawa, Shinji: *See—*
Kamei, Takahiro; Hinosawa, Shinji; Takahashi, Tokuji; Terada, Yoshiji; Nakajima, Takeaki; and Sakata, Yoshiyasu, 5,542,707, Cl. 280-834.000.
Hinz, Alexander: *See—*
Sauer, Ralf-Roland; Rupp, Wolfgang; and Hinz, Alexander, 5,544,186, Cl. 372-33.000.
Hirai, Eiji: *See—*
Kenmoku, Takeji; Umino, Shinichi; Hirai, Eiji; Kurosawa, Kazuyoshi; and Matsumura, Yoshio, 5,543,029, Cl. 205-109.000.
Hirai, Kiyomiki: *See—*
Abe, Chikara; Ohashi, Junji; and Hirai, Kiyomiki, 5,543,486, Cl. 528-92.000.
Hirai, Tsutomu: *See—*
Tsuji, Kiyoshi; Uchikubo, Akinobu; Kimura, Keiji; Goto, Masahito; and Hirai, Tsutomu, 5,543,831, Cl. 348-65.000.
Hirai, Yoshihiko; Morimoto, Kiyoshi; Terui, Yasuaki; Niwa, Masaaki; Yasui, Juro; Okada, Kenji; Udagawa, Masaharu; and Yuki, Koichiro, to Matsushita Electric Industrial Co., Ltd. Method of producing electrically insulated silicon structure. 5,543,351, Cl. 437-063.000.
Hirai, Yoshikatsu: *See—*
Nakai, Satoru; Kaneta, Mayumi; Kikumoto, Yoshikazu; Hong, Yeong-Man; Kawai, Kazuyoshi; Takegata, Setsuko; Ishii, Kiyoshi; Yanagihara, Yasuo; and Hirai, Yoshikatsu, 5,543,140, Cl. 424-85.200.
Hirai, Yukio: *See—*
Yura, Masaki; Hirai, Yukio; and Oya, Hirosi, 5,542,443, Cl. 134-176.000.
Hiraishi, Atsushi: *See—*
Yokoyama, Yuji; Akioka, Takashi; Iwamura, Masahiro; Hiraishi, Atsushi; Kobayashi, Yutaka; Yamauchi, Tatsumi; Takahashi, Shigeru; Gotou, Nobuyuki; and Ide, Akira, 5,544,125, Cl. 365-230.060.
Hirakawa, Haruhisa: *See—*
Okamoto, Yoshinari; Tsuruoka, Yoshihisa; Hirakawa, Haruhisa; and Sato, Eiji, 5,543,685, Cl. 313-496.000.
Hirano, Masatoshi, to Odawara Engineering Co., Ltd. Apparatus for inserting insulation sheets into slots of a stator core. 5,542,170, Cl. 29-734.000.
Hirano, Masatoshi: *See—*
Nishimura, Masaaki; Hirano, Masatoshi; and Harada, Mitsuhiro, 5,542,456, Cl. 140-92.100.
Hirao, Yasuhiro: *See—*
Kobayashi, Yasumi; Matsui, Kuniyuki; Hirao, Yasuhiro; Takeuchi, Kousuke; Kayaki, Hiroshi; Takahashi, Yusuke; Tanaka, Toshiharu; Kiyose, Isao; and Shibata, Kenichi, 5,543,757, Cl. 333-195.000.
Hirasa, Takashi; Takimoto, Hiroshi; and Mise, Nobutake, to Mitsubishi Chemical Corporation. Recording liquid. 5,542,969, Cl. 106-20.00C.
Hirata, Sumiaki; Yamaguchi, Ikunori; and Maekawa, Kazunobu, to Minolta Camera Kabushiki Kaisha. Image forming apparatus connected to an information management apparatus through a communication line. 5,543,892, Cl. 355-205.000.
Hirata, Toshinari: *See—*
Yamasaki, Masahiro; Hoosai, Koichiro; Shirahase, Hiromi; Akamatsu, Nobuyuki; Tabuchi, Michiyuki; Hirata, Toshinari; and Miyazaki, Yoshifumi, 5,543,168, Cl. 426-557.000.
Hiratani, Haruyuki; Nakata, Kazuhiko; Ichinohe, Shoji; Yamazaki, Toshio; and Kato, Hideto, to Menicon Co., Ltd.; and Shin-Etsu Chemical Co., Ltd. Ocular lens material. 5,543,442, Cl. 523-107.000.
Hirayama, Takuya: *See—*
Sone, Yoshinori; Fujiwara, Takayoshi; Honjo, Takashi; Hirayama, Takuya; and Yoshizawa, Hiroyasu, 5,542,832, Cl. 418-152.000.
Hiroi, Kazuo, to Kabushiki Kaisha Toshiba. Process control system. 5,544,039, Cl. 364-151.000.
Hirokane, Junji: *See—*
Katayama, Hiroyuki; Hirokane, Junji; Takahashi, Akira; and Ohta, Kenji, 5,544,149, Cl. 369-275.300.
Hiroki, Masaaki: *See—*
Mase, Akira; Hiroki, Masaaki; Takemura, Yasuhiko; and Yamazaki, Shunpei, 5,543,947, Cl. 359-84.000.
Hirono, Tadashi: *See—*
Inagaki, Shuichiro; Hirono, Tadashi; and Hosokawa, Shigefumi, 5,544,004, Cl. 361-633.000.
Hirose, Kenichi: *See—*
Hishinuma, Nobuyuki; Hirose, Kenichi; and Igarashi, Tatsushi, 5,542,867, Cl. 445-32.000.
Hirose, Tadashi: *See—*
Maruoka, Tetsuya; Yasunobu, Chizuko; Hirose, Tadashi; Kida, Mayumi; Ino, Kouichiro; and Miyagawa, Yoshiya, 5,544,281, Cl. 395-68.000.
Hirose, Toshihiko; Ohbayashi, Shigeki; Kondo, Setsu; Hayasaka, Takashi; Fujino, Yoshiyuki; and Iketani, Masayuki, to Mitsubishi Denki Kabushiki Kaisha. Static semiconductor memory device having circuitry for lowering potential of bit lines at commencement of data writing. 5,544,105, Cl. 365-189.110.
Hirota, Katsuaki, to Sony Corporation. Method and apparatus for flange back adjustment of camera inner focus lens assembly. 5,543,840, Cl. 348-345.000.
Hirota, Masaki: *See—*
Nishitani, Katsuo; Hirota, Masaki; and Ai, Takeshi, 5,543,672, Cl. 310-77.000.
Hirota, Toshiaki: *See—*
Katoh, Akira; Kitagawa, Hiroshi; Tsuzuki, Shunichi; Takahashi, Jun; Fujimoto, Sachito; and Hirota, Toshiaki, 5,542,393, Cl. 123-491.000.
Hirsch, Chaya; Hale, Robert; and Strul, Bruno, to Vidamed, Inc. Dual-channel RF power delivery system. 5,542,916, Cl. 604-22.000.
Hirschler-Marchand, Patrick R.: *See—*
Harvey, Robert L.; Hirschler-Marchand, Patrick R.; and Cipolle, David J., 5,543,939, Cl. 358-426.000.
Hirschman, Richard; and Shin, Chul W., to Hudson Optical Corporation. Method and kit for attaching side shields to eyeglass temples. 5,543,864, Cl. 351-47.000.
Hisamatsu, Nobuaki: *See—*
Mizuno, Tomoko; Takahashi, Toshiyuki; Yamaguchi, Hiroshi; and Hisamatsu, Nobuaki, 5,544,130, Cl. 369-1.000.
Hisanaga, Shigeru: *See—*
Inagaki, Mitsuo; Matsuda, Mikio; Ogawa, Hiroshi; Hisanaga, Shigeru; and Oki, Yasuhiro, 5,542,829, Cl. 418-55.300.
Hishinuma, Nobuyuki; Hirose, Kenichi; and Igarashi, Tatsushi, to Ushiodenki Kabushiki Kaisha. Process for connection of a molybdenum foil to a molybdenum lead portion and method of producing a hermetically enclosed part of a lamp using the process. 5,542,867, Cl. 445-32.000.
Hitachi America, Ltd.: *See—*
Saikalis, George, 5,544,079, Cl. 364-571.010.
Hitachi Computer Engineering Co, Ltd.: *See—*
Watanabe, Kiyoshi; Abe, Yasuhiro; Sakamoto, Masaho; Saitou, Takeshi; Ishii, Takayoshi; Akimoto, Yukio; Kashiki, Hironori; and Kato, Masao, 5,543,607, Cl. 235-383.000.
Hitachi Denshi Kabushiki Kaisha: *See—*
Kanaya, Motonori; Noguchi, Kenichi; Nagaya, Yoshiaki; and Itoh, Hisashi, 5,543,612, Cl. 250-208.100.
Hitachi, Ltd.: *See—*
Abe, Masahiro; Sakou, Hiroshi; Sagawa, Hirohiko; Ichikawa, Akira; Inoue, Kiyoshi; Arai, Kiyoshi; Shimura, Takanori; and Toda, Yuji, 5,544,050, Cl. 364-419.130.
Doi, Toshio; Hayashi, Takehisa; Ishibashi, Kenichi; and Takemoto, Takeshi, 5,544,340, Cl. 395-445.000.
Enami, Hiromichi; Katsuyama, Kiyomi; and Katsuyama, Masanori, 5,543,336, Cl. 437-24.000.
Fujita, Takehiro; Kakumoto, Shigeru; and Nomoto, Yasuei, 5,544,052, Cl. 364-420.000.
Haikawa, Katsumasa; Mochida, Takaaki; Nagano, Mamoru; and Nakajima, Tsuyoshi, 5,544,211, Cl. 376-435.000.
Ikeda, Shuji; and Saeki, Makoto, 5,543,652, Cl. 257-377.000.
Imai, Kyoko; Imai, Kazumichi; and Nomura, Yasushi, 5,543,292, Cl. 435-6.000.
Kayano, Mitsuo; Minowa, Toshimichi; Ishii, Junichi; and Morinaga, Shigeki, 5,544,054, Cl. 364-424.010.
Kudoh, Mituo; Fukushima, Toshihiko; Itoh, Masaaki; Uchida, Mari; Matsushima, Hiroaki; Kogure, Hiroshi; and Takaku, Syoji, 5,542,271, Cl. 62-502.000.
Kumagai, Kajuaki; Takiguchi, Hiroshi; and Abe, Shigeru, 5,543,995, Cl. 361-65.000.
Maruoka, Tetsuya; Yasunobu, Chizuko; Hirose, Tadashi; Kida, Mayumi; Ino, Kouichiro; and Miyagawa, Yoshiya, 5,544,281, Cl. 395-68.000.
Matsuo, Akinori; Watanabe, Masashi; Wada, Masashi; Wada, Takeshi; and Nakamura, Yasuhiro, 5,544,098, Cl. 365-189.070.
Miwa, Hiroaki; Sudo, Ryoichi; Tajima, Tetsuo; and Koyama, Eiji, 5,543,271, Cl. 430-347.000.
Mizukami, Masao; Sato, Yoichi; Shinagawa, Satoshi; and Nakano, Yukio, 5,544,122, Cl. 365-230.050.
Murakami, Eiichi; and Kimura, Shin'ichiro, 5,543,356, Cl. 437-152.000.
Nakamura, Hitoshi; Hanatani, Shoichi; Tanaka, Shigehisa; Ohtoshi, Tsukuru; Ishida, Koji; and Matsuoka, Yausunobu, 5,543,629, Cl. 257-21.000.
Suzuki, Makoto; Aoki, Masahiro; Takahashi, Makoto; and Taniwatari, Tsuyoshi, 5,543,353, Cl. 437-127.000.
Takimoto, Misao; Hiyama, Tooru; Sasaki, Tetsuo; and Ishii, Tatsuki, 5,544,068, Cl. 364-489.000.
Tani, Hiroshi; Ishihara, Heigo; and Matsumoto, Hiroyuki, 5,543,203, Cl. 428-156.000.
Watanabe, Atsuji; Ohshita, Youichi; Ohno, Masatomo; Tsukushi, Masanori; and Tokuyama, Shunji, 5,543,597, Cl. 218-60.000.
Watanabe, Kiyoshi; Abe, Yasuhiro; Sakamoto, Masaho; Saitou, Takeshi; Ishii, Takayoshi; Akimoto, Yukio; Kashiki, Hironori; and Kato, Masao, 5,543,607, Cl. 235-383.000.

Yokoyama, Yuji; Akioka, Takashi; Iwamura, Masahiro; Hiraishi, Atsushi; Kobayashi, Yutaka; Yamauchi, Tatsumi; Takahashi, Shigeru; Gotou, Nobuyuki; and Ide, Akira, 5,544,125, Cl. 365-230.060.
Hitachi Maxell, Ltd.: *See—*
Kitakami, Osamu; Fujiwara, Hideo; and Ogawa, Yoichi, 5,543,221, Cl. 428-332.000.
Miwa, Hiroaki; Sudo, Ryoichi; Tajima, Tetsuo; and Koyama, Eiji, 5,543,271, Cl. 430-347.000.
Hitachi Medical Corporation: *See—*
Kajiyama, Koji, 5,543,709, Cl. 324-309.000.
Hitachi ULSI Engineering Corp.: *See—*
Matsuo, Akinori; Watanabe, Masashi; Wada, Masashi; Wada, Takeshi; and Nakamura, Yasuhiro, 5,544,098, Cl. 365-189.070.
Hitachi VLSI Engineering Corp.: *See—*
Mizukami, Masao; Sato, Yoichi; Shinagawa, Satoshi; and Nakano, Yukio, 5,544,122, Cl. 365-230.050.
Hitotsumatsu, Atsushi: *See—*
Shibata, Jun; Obayashi, Hiroaki; Kimura, Makoto; Fukuzumi, Shuzo; Yoshikawa, Hironori; Hitotsumatsu, Atsushi; Hashimoto, Yukio; Yamanoi, Toshimi; and Takaya, Seiji, 5,542,700, Cl. 280-735.000.
Hiyama, Tooru: *See—*
Takimoto, Misao; Hiyama, Tooru; Sasaki, Tetsuo; and Ishii, Tatsuki, 5,544,068, Cl. 364-489.000.
HMT Technology Corporation: *See—*
Nguyen, Hoang; and Harper, Bruce M., 5,543,022, Cl. 204-298.150.
Ho, Herbert L.: *See—*
Hammerl, Erwin; Mandelman, Jack A.; Ho, Herbert L.; Shiozawa, Junichi; and Stengl, Reinhard J., 5,543,348, Cl. 437-60.000.
Ho, Tsai W. Transmission mechanism of a toy motorcycle. 5,542,872, Cl. 446-440.000.
Hochstein, Peter A.; Tenenbaum, Jeffrey; and Xydis, Thomas G., to Audio Alert, Inc. Supervised personnel monitoring system. 5,543,797, Cl. 342-42.000.
Hocquaux, Michel; and Philippe, Michel, to L'Oreal. Carbazole derivatives and their use in cosmetics. 5,543,436, Cl. 424-61.000.
Hodges, Robert L.: *See—*
Bryant, Frank R.; and Hodges, Robert L., 5,543,343, Cl. 437-51.000.
Hodges, William H., Jr.: *See—*
Jones, Richard S.; Hodges, William H., Jr.; and Evans, Paul M., 5,543,596, Cl. 200-573.000.
Hodson, Simon K.: *See—*
Andersen, Per J.; and Hodson, Simon K., 5,543,186, Cl. 428-34.400.
Hoechst AG: *See—*
Winter, Andreas; Küber, Frank; Aulbach, Michael; Bachmann, Bernd; Klein, Robert; Kühlein, Klaus; Spaleck, Walter; and Kohlpaintner, Christian, 5,543,373, Cl. 502-103.000.
von der Eltz, Andreas; and Russ, Werner H., 5,542,972, Cl. 106-22.00H.
Hoechst Aktiengesellschaft: *See—*
Antwerpen, Werner; Schindler, Hermann; and Reinhardt, Gerd, 5,542,951, Cl. 8-137.000.
Dinter, Peter; and Gleffe, Klaus J., 5,542,534, Cl. 206-407.000.
Kulpe, Jürgen; Strutz, Heinz; Rüffer, Hans-Martin; and Rittner, Siegbert, 5,543,564, Cl. 562-467.000.
Röchling, Hans; Kocur, Jean; and Albrecht, Konrad, 5,543,385, Cl. 504-127.000.
Rapp, Jochen; Planker, Siegfried; Papenfuhs, Theodor; and Bartels, Günter, 5,543,550, Cl. 560-19.000.
Schrell, Andreas; and Russ, Werner H., 5,542,954, Cl. 8-532.000.
Schrell, Andreas; and von der Eltz, Andreas, 5,542,955, Cl. 8-561.000.
Hoechst Celanese Corporation: *See—*
Rahman, M. Dalil; and Durham, Dana L., 5,543,263, Cl. 430-168.000.
Hoechst-Roussel Pharmaceuticals Inc.: *See—*
Kosley, Raymond W., Jr.; Cherill, Robert J.; and O'Malley, Gerard, 5,543,427, Cl. 514-422.000.
Hoeganaes Corporation: *See—*
Rutz, Howard G., 5,543,174, Cl. 427-213.000.
Hoekema, Andreas: *See—*
van Ooijen, Albert J. J.; Rietveld, Krijn; Hoekema, Andreas; Pen, Jan; Sijmons, Peter C.; Verwoerd, Teunis C.; and Quax, Wilhemus J., 5,543,576, Cl. 800-250.000.
Hoekstra, Peter; Jackson, Timothy W.; Moyher, George C., Jr.; and Conci, Odero, to Electrolux Corporation; and Newtronics Pty, Ltd. Electronic vacuum cleaner control system. 5,542,146, Cl. 15-319.000.
Hoff, Louis B.; Lachenmeier, Eric W.; Raysberg, Yefim M.; and Nordman, Eric S., to Perkin-Elmer Corporation, The. Real-time scanning fluorescence electrophoresis apparatus for the analysis of polynucleotide fragments. 5,543,026, Cl. 204-612.000.
Hoffa, Jack L.; and Talley, Lloyd A., to Eubanks Engineering Company. Cable and wire pre-feed apparatus. 5,542,592, Cl. 226-118.000.
Hoffman-La Roche Inc.: *See—*
Broger, Emil A.; Crameri, Yvo; Schmid, Rudolf; and Siegfried, Theodor, 5,543,559, Cl. 560-231.000.
Ridley, Robert G.; and Scaife, John G., 5,543,323, Cl. 435-252.300.
Sobol, Robert E.; Green, Mark R.; and Kawasaki, Ernest S., 5,543,296, Cl. 435-6.000.
Hoffman/New Yorker, Inc.: *See—*
Dreisbach, Mark S.; Miller, Russell J.; and Dehler, John, 5,542,199, Cl. 38-12.000.
Hoffmann, Bernhard: *See—*
Richert, Withold; Gründl, Andreas; and Hoffmann, Bernhard, 5,542,356, Cl. 104-289.000.
Hoffmann, John D.; Gooding, Robert W.; Roberts, Norman; and Hart, Robert S., to Pulp and Paper Research Institute of Canada. System for detecting contaminants. 5,542,542, Cl. 209-17.000.
Hoffner, James A.: *See—*
Thomas, Gerald F.; and Hoffner, James A., 5,543,796, Cl. 342-4.000.
Hofmann, John E.; Von Harpe, Thure; Diep, Daniel V.; and Lin, M. Linda, to Nalco Fuel Tech. Low pressure formation of a urea hydrolysate for nitrogen oxides reduction. 5,543,123, Cl. 423-235.000.
Hogan, S. David; and Parker, David A. Process of surface shaping. 5,543,103, Cl. 264-219.000.
Hogen, Delman R.; and Robin, James R., to Hogen, Delman R. Microbial mediated water treatment. 5,543,049, Cl. 210-601.000.
Hogrefe, Arnold W.: *See—*
Carson, Robert T.; Reckleben, Lisa; and Hogrefe, Arnold W., 5,543,583, Cl. 174-257.000.
Hohne, Hans-Jurgen: *See—*
Mista, Kresimir; and Hohne, Hans-Jurgen, 5,542,270, Cl. 66-207.000.
Hoiberg, Dane A. Flat motors. 5,543,678, Cl. 310-307.000.
Holbrook, Gary D. Running lights for in-line roller skates. 5,544,026, Cl. 362-103.000.
Holdermann, Konstantin, to Siemens Solar GmbH. Method for manufacturing a solar cell having combined metallization. 5,543,333, Cl. 437-4.000.
Holejko, Longin V.: *See—*
Parker, Brian A.; and Holejko, Longin V., 5,543,383, Cl. 504-116.000.
Holeman, William D.: *See—*
Belding, William A.; Janke, Scott; Holeman, William D.; and Delmas, Marc P. F., 5,542,968, Cl. 96-125.000.
Hollerich, Donald: *See—*
Rother, David J.; Lee, John S.; Schmidt, Terence J.; Hollerich, Donald; Skubic, Robert L.; and Laveen, Eric, 5,542,768, Cl. 400-120.160.
Hollinger, John D., to Coulter Corporation. Liquid metering and transfer valve assembly particularly for flow cytometer. 5,542,305, Cl. 73-863.730.
Holloway, Harry L., Jr.; and Shoemaker, Craig A., to Center for Innovation & Business Development Foundation. Method for diagnosing myofibrogranuloma (MFG) in walleye. 5,543,330, Cl. 436-79.000.
Hollowed, Edward J.: *See—*
Wiggerman, Ronald E.; Gates, Craig; Habbley, Dale L.; and Hollowed, Edward J., 5,544,076, Cl. 364-565.000.
Holma, Hannu: *See—*
Tuovinen, Heikki; Saari, Jorma; Roine, Antti; Holma, Hannu; and Kalliokoski, Matti, 5,543,128, Cl. 423-303.000.
Holmes, Roy H.: *See—*
Crenshaw, David A.; Holmes, Roy H.; and Baril, Albert M., 5,542,627, Cl. 244-121.000.
Holowczak, John E.: *See—*
Eaton, Harry E.; Holowczak, John E.; and Reinfelder, William C., 5,542,820, Cl. 416-224.000.
Holsinger, Damond C.: *See—*
Weaver, George W.; Jacob, Harold; and Holsinger, Damond C., 5,542,948, Cl. 606-113.000.
Holt, Mark S.: *See—*
Stevenson, Tyler A.; Ravichandran, Ramanathan; Holt, Mark S.; Phan, Thuy N.; Birbaum, Jean-Luc; and Toan, Vien V., 5,543,518, Cl. 544-215.000.
Holtaway, Thomas S.: *See—*
Baker, Daniel F.; Steinlicht, Joseph C.; and Holtaway, Thomas S., 5,544,232, Cl. 379-67.000.
Holter, Jerry E.: *See—*
Shih, Lionel C.; and Holter, Jerry E., 5,543,977, Cl. 360-48.000.
Holzheimer, Günter: *See—*
Stretz, Manfred; Holzheimer, Günter; and Neubauer, Hans-Rene, 5,542,822, Cl. 417-68.000.
Home Saving Termite Control, Inc.: *See—*
Morris, Wayne F., Sr., 5,542,207, Cl. 43-132.100.
Homma, Koichi: *See—*
Ishida, Akihiko; Homma, Koichi; Yato, Michihisa; Nishiyama, Shinsuke; and Okumura, Fumikazu, 5,543,409, Cl. 514-247.000.
Hon Industries Inc.: *See—*
Hawkinson, Eric, 5,542,407, Cl. 126-77.000.
Olson, Ogden R.; and Simmons, Loren M., 5,542,743, Cl. 297-353.000.
Schultz, Craig H.; and Olson, Ogden R., 5,542,159, Cl. 24-341.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Aoki, Yasushi; Fujiya, Ryosuke; and Nakamura, Iwao, 5,542,754, Cl. 303-3.000.
Hasegawa, Yusuke; Nishimura, Yoichi; Komoriya, Isao; and Akazaki, Shushuke, 5,542,404, Cl. 123-690.000.
Iwata, Yoichi; Ave, Yoshiharu; and Nakayama, Takayoshi, 5,542,248, Cl. 60-276.000.
Kamei, Takahiro; Hinosawa, Shinji; Takahashi, Tokuji; Terada, Yoshiji; Nakajima, Takeaki; and Sakata, Yoshiyasu, 5,542,707, Cl. 280-834.000.
Katoh, Akira; Kitagawa, Hiroshi; Tsuzuki, Shunichi; Takahashi, Jun; Fujimoto, Sachito; and Hirota, Toshiaki, 5,542,393, Cl. 123-491.000.
Kobayashi, Toshiaki; and Ozawa, Hidetaka, 5,544,080, Cl. 364-574.000.
Maehara, Kazutaka, 5,542,512, Cl. 192-4.00A.
Yamada, Ichiho; Miyagi, Tomoyoshi; Nezuka, Shoji; Ichihashi, Satoru; and Isozaki, Hiroshi, 5,542,899, Cl. 483-32.000.
Honda, Jun; and Miyata, Kunihiro, to Pioneer Electronic Corporation. Protection circuit for a power amplifier. 5,543,760, Cl. 330-298.000.
Honeywell Inc.: *See—*
Erdman, John L.; and Stoner, Marcus D., 5,542,279, Cl. 73-1.00R.

VOL 1189 ISS 1 AUG 6 1996 UMI

Serfling, Steven E.; and Stangeland, Rodney L., 5,543,803, Cl. 342-357.000.
Shavit, Gideon; and Culp, Charles H., 5,543,667, Cl. 307-39.000.
Hong, Gary: *See—*
Hsu, Chen-Chung; and Hong, Gary, 5,543,344, Cl. 437-52.000.
Hong, Yeong-Man: *See—*
Nakai, Satoru; Kaneta, Mayumi; Kikumoto, Yoshikazu; Hong, Yeong-Man; Kawai, Kazuyoshi; Takegata, Setsuko; Ishii, Kiyoshi; Yanagihara, Yasuo; and Hirai, Yoshikatsu, 5,543,140, Cl. 424-85.200.
Honjo, Takashi: *See—*
Sone, Yoshinori; Fujiwara, Takayoshi; Honjo, Takashi; Hirayama, Takuya; and Yoshizawa, Hiroyasu, 5,542,832, Cl. 418-152.000.
Hool, Kevin O.; and Saunders, Robert C., to Dow Chemical Company, The. Apparatus and method for the study of liquid-liquid interfacial rheology. 5,542,289, Cl. 73-64.520.
Hopkins, Scott D.: *See—*
Stoyell, Richard C.; Williamson, Kenneth M.; Hopkins, Scott D.; Geibel, Stephen A.; and Wolff, Terry L., 5,543,047, Cl. 210-493.200.
Hori, Kenta: *See—*
Miki, Shoji; Tsubota, Hiroki; Yokota, Masanori; and Hori, Kenta, 5,544,043, Cl. 364-406.000.
Horiai, Haruo: *See—*
Kagara, Kohji; Goto, Shunsuke; Yonishi, Satoshi; Ikushima, Muneharu; Baba, Yukihisa; and Horiai, Haruo, 5,543,525, Cl. 546-279.100.
Horiba, Ltd.: *See—*
Koike, Hideki; and Takeda, Kenji, 5,543,113, Cl. 422-83.000.
Horie, Yuji, to Olympus Optical Co., Ltd. Digital servo system for obtaining by calculation a control signal corresponding to a desired value on the basis of the change of a control signal and a controlled signal. 5,544,136, Cl. 369-44.340.
Horigichi, Masaharu: *See—*
Kada, Kazumasa; Horigichi, Masaharu; and Yamada, Hiroaki, 5,543,912, Cl. 356-73.100.
Horikoshi, Satoshi: *See—*
Klotman, Paul E.; Bruggeman, Leslie A.; and Horikoshi, Satoshi, 5,543,509, Cl. 536-24.330.
Horikoshi, Seita; Kurihara, Mikio; Naitoh, Atsuhisa; and Yoshihara, Kazuhide, to International Business Machines Corporation. Keyboard storage apparatus having a cable end moved by movement of a keyboard housing section. 5,544,005, Cl. 361-680.000.
Horioka, Keiji: *See—*
Shibata, Tsuyoshi; Hashimoto, Koji; Heida, Katsuhiko; Kawano, Kenji; Ito, Shinichi; and Horioka, Keiji, 5,543,252, Cl. 430-5.000.
Horiuchi, Tadahiko, to NEC Corporation. Method of forming a titanium silicide film involved in a semiconductor device. 5,543,359, Cl. 437-195.000.
Horizon Music, Inc.: *See—*
Comeau, Richard J., II; and Fay, Richard, 5,543,759, Cl. 330-282.000.
Hormannsdorfer, Gerd. Form drilling or turning device. 5,542,324, Cl. 82-1.300.
Horn, Larry L.: *See—*
Merkle, Frank P.; Horn, Larry L.; James, Barry R.; and Merkle, William L., 5,542,804, Cl. 414-165.000.
Horn, Stephen T. Personal cooling apparatus. 5,542,413, Cl. 128-204.150.
Horn, William E., Jr.; Balaba, Willy M.; and Parker, Anthony A., to Aluminum Company of America. Surface treating aluminum trihydrate powders with prehydrolized silane. 5,543,173, Cl. 427-212.000.
Hornak, Joseph P.; and Szeglowski, Scott D., to Rochester Institute of Technology. Resonator for magnetic resonance imaging. 5,542,424, Cl. 128-653.500.
Horne, Richard L.: *See—*
Amini, Nader; Boury, Bechara F.; Brannon, Sherwood; Horne, Richard L.; and Lohman, Terence J., 5,544,346, Cl. 395-481.000.
Horney, David P.: *See—*
Howson, Paul E.; Mackenzie, Patricia D.; and Horney, David P., 5,543,059, Cl. 210-757.000.
Hortin, Gregory G.; Fisher, Michael H.; Coleman, Joseph L.; and Adams, Scott D., to Whirlpool Corporation. Water reservoir for a refrigerator. 5,542,264, Cl. 62-338.000.
Hosen, Toru, to Fuli Electric Co., Ltd. Package for power semiconductor device with snubber circuit. 5,543,659, Cl. 257-692.000.
Hoshi, Satoru; and Masuda, Masami, to Kabushiki Kaisha Toshiba. Semiconductor memory device having a test circuit. 5,544,123, Cl. 365-230.060.
Hoshino, Tsutomu; Yamaguchi, Atsushi; Ohashi, Tadashi; Ohga, Juro; and Furuya, Hiroyuki, to Fujitsu Limited. Signal suppressing apparatus. 5,544,201, Cl. 345-350.000.
Hosier, Paul A.; and Tandon, Jagdish C., to Xerox Corporation. Signal multiplexing system for an image sensor array. 5,543,838, Cl. 348-311.000.
Hosoda, Kenichi: *See—*
Muraoka, Tomoki; Abe, Tsutomu; Kobayashi, Kazuhiro; and Hosoda, Kenichi, 5,542,991, Cl. 148-330.000.
Hosokawa, Ryuji; and Yanagida, Satoru, to Kabushiki Kaisha Toshiba. Method of manufacturing resin-sealed semiconductor device, lead frame used in this method for mounting plurality of semiconductor elements, and resin-sealed semiconductor device. 5,543,658, Cl. 257-676.000.
Hosokawa, Shigefumi: *See—*
Inagaki, Shuichiro; Hirono, Tadashi; and Hosokawa, Shigefumi, 5,544,004, Cl. 361-633.000.
Hosono, Hiroshi: *See—*
Aotsuka, Tomoji; Nishio, Toshiyuki; Hosono, Hiroshi; Nakamura, Yoshiyuki; Matsui, Tetsuo; and Ishikawa, Hiromichi, 5,543,420, Cl. 514-312.000.
Hosoya, Ryo; and Kobayashi, Takaichi, to Kabushiki Kaisha Toshiba. Portable electronic apparatus having ejector for removing card-like electronic part from portable electronic apparatus. 5,544,009, Cl. 361-684.000.
Hosoya, Yoshihiro: *See—*
Nagataki, Yasunobu; Tsuyama, Seishi; Hosoya, Yoshihiro; Okita, Tomoyoshi; Kanetoh, Sbuzi; and Takada, Yasuyuki, 5,542,996, Cl. 148-652.000.
Hotcan International, Ltd.: *See—*
James, Dean B., 5,542,418, Cl. 126-263.060.
Hotta, Tsuyoshi: *See—*
Taniguchi, Yukio; Hotta, Tsuyoshi; Kuwabara, Yuko; Morita, Hideaki; and Segawa, Toshikazu, 5,543,228, Cl. 428-429.000.
Houk, Talbott M.: *See—*
Wilhelm, Dana; and Houk, Talbott M., 5,543,994, Cl. 361-18.000.
Housai, Koichiro: *See—*
Yamasaki, Masahiro; Housai, Koichiro; Shirahase, Hiromi; Akamatsu, Nobuyuki; Tabuchi, Michiyuki; Hirata, Toshinari; and Miyazaki, Yoshifumi, 5,543,168, Cl. 426-557.000.
Houston, Theodore W., to Texas Instruments Inc. Memory device having a latching multiplexer and a multiplexer block therefor. 5,544,101, Cl. 365-189.020.
Howard, Stephen F.: *See—*
Bratten, James M.; and Howard, Stephen F., 5,542,796, Cl. 408-13.000.
Howe, Maynard A., Jr.; and Eliason, Jeffrey M., to Soundadvice for Sports, Inc. Biosensor feedback device for sporting implements. 5,542,676, Cl. 473-202.000.
Howe, Roger T.; Barber, H. Jerome; and Judy, Michael, to Analog Devices, Inc. Apparatus to minimize stiction in micromachined structures. 5,542,295, Cl. 73-514.180.
Howie, David M.; and Youssef, Abbas M., to TRW Inc. Method and apparatus for controlling an electric motor for moving a member. 5,543,692, Cl. 318-282.000.
Howie, Milham S.: *See—*
Eisenberg, David C.; Pradhan, Milind M.; and Howie, Milham S., 5,543,537, Cl. 556-157.000.
Howmedica Inc.: *See—*
Sun, Deh-Chuan; and Stark, Casper F., 5,543,471, Cl. 525-333.700.
Howson, Paul E.; Mackenzie, Patricia D.; and Horney, David P., to General Electric Company. Enhanced reactive metal wall for dehalogenation of hydrocarbons. 5,543,059, Cl. 210-757.000.
Hoxmeier, Ronald J.; Job, Robert C.; Spence, Bridget A.; and DuBois, Donn A., to Shell Oil Company. Process for making graft block copolymers by growing anionic polymer chains from functionalized polyolefin backbones. 5,543,458, Cl. 525-271.000.
Hoy, David J. Orthotic joint. 5,542,774, Cl. 403-116.000.
Hoye, Thomas R., to University of Minnesota, Regents of the. Method and intermediates for the synthesis of korupensamines. 5,543,523, Cl. 546-14.000.
HR Smith (Technical Developments) Ltd.: *See—*
Smith, Henry R., 5,542,624, Cl. 244-1.00A.
Hruza, David: *See—*
Sutter, Ralf; Beerstecher, Lutz; Hruza, David; Stetter-Alle, Raimund; and Trackl, Karl, 5,543,119, Cl. 422-299.000.
HSC Research & Development Limited Partnership: *See—*
Riordan, John R.; Bear, Christine E.; Ramjeesingh, Mohabir; and Li, Canhui, 5,543,399, Cl. 514-21.000.
Hsu, Chen-Chung; and Hong, Gary, to United Microelectronics Corp. Method of making programmable read-only memory. 5,543,344, Cl. 437-52.000.
Hsu, David Y.: *See—*
Buchler, Robert J.; Brockstein, Allan J.; and Hsu, David Y., 5,543,804, Cl. 342-357.000.
Hsueh, Yu-Yuan. Safety protection AC mains power socket. 5,542,852, Cl. 439-135.000.
Hu, Xiaohong; and Johnson, Rayburn, to Gigatek Memory Systems. Tape cartridge with increased storage capacity. 5,543,992, Cl. 360-132.000.
Huang, Chien-Ta. Single-outlet hot/cold water faucet with a water temperature display device. 5,542,449, Cl. 137-551.000.
Huang, Chung-Chen, to Teh Yor Industrial Co., Ltd. Safety tassel for pull cords. 5,542,461, Cl. 160-178.100.
Huang, Jammy Chin-Ming; and Tsai, Chun-Hui, to Industrial Technology Research Institute. Electrostatic focussing means for field emission displays. 5,543,686, Cl. 313-497.000.
Hubalek, Verne A.: *See—*
Wilhelm, Donald M.; Hubalek, Verne A.; Smith, S. Andrew; and Immergluck, Robert, 5,542,838, Cl. 425-186.000.
Hubbard, Allen L.: *See—*
Burchett, Darvin; and Hubbard, Allen L., 5,542,734, Cl. 296-100.000.
Huck, Ralf, to Mannesmann Aktiengesellschaft. Thin-film measurement resistor and process for producing same. 5,543,775, Cl. 338-306.000.
Hudson Optical Corporation: *See—*
Hirschman, Richard; and Shin, Chul W., 5,543,864, Cl. 351-47.000.
Hudson, William B., Jr.: *See—*
Meyers, Brenda J.; Herritz, Donald W.; Johansen, Jean L.; Hudson, William B., Jr.; Bell, Randall P.; Prokop, Gary F.; Caruso, James F.; and Allen, James I., 5,542,921, Cl. 604-74.000.
Huei, Lin M., to Paracom Corporation. Database accelerator. 5,544,357, Cl. 395-600.000.
Huels Aktiengesellschaft: *See—*

Haas, Margret; and Bernhardt, Guenther, 5,543,538, Cl. 556-401.000.
Huetsch, Larry C. Two-speed jack. 5,542,647, Cl. 254-420.000.
Hufford, George, III: *See—*
Crompton, Dennis; Harris, Richard H.; Leonard, Herbert G.; Hufford, George, III; and Thomas, Jeff D., 5,542,152, Cl. 16-354.000.
Huggett, Colin E.; and Cleek, John I., to AlliedSignal Inc. Position control for hybrid servomechanisms. 5,543,696, Cl. 318-590.000.
Huggins, Raymond W., to Boeing Company, The. Method for maximizing the solar cell OPTO-electronic conversion efficiency in optically controlled hydraulic actuators. 5,543,627, Cl. 250-551.000.
Hughes Aircraft Company: *See—*
Blanche, John G., IV; and Sasso, Felix T., 5,543,812, Cl. 343-894.000.
Chow, David H.; and Whitney, Colin G., 5,543,628, Cl. 257-17.000.
Pruitt, Gerald R., 5,542,254, Cl. 62-06.000.
Wells, Michael L., 5,542,334, Cl. 89-1.812.
Wu, Te-Kao; Milroy, William W.; and Drost, Steven W., 5,543,815, Cl. 343-909.000.
Hughes Missile Systems Company: *See—*
Hagelberg, Allen C.; and Allardt, Clark E., 5,542,333, Cl. 89-1.810.
Park, Pyong K., 5,543,810, Cl. 343-771.000.
Hughes, Zephuren J.; and Torgussen, Ole G., to Sureguard, Inc. Soluble salt-free contaminant-free pigmented mirror coatings. 5,543,227, Cl. 428-425.800.
Hugo, Franz; and Wanetzky, Erwin, to Leybold Durferrit GmbH. Apparatus for degreasing electrically conductive material. 5,544,194, Cl. 373-65.000.
Hultman, Ake. Folding furniture. 5,542,739, Cl. 297-56.000.
Hultquist, Steven J.: *See—*
Errico, Joseph P.; and Hultquist, Steven J., 5,543,187, Cl. 428-34.600.
Humble, Jeffrey S.: *See—*
Kelly, Kenneth W.; Malone, Anthony W.; and Humble, Jeffrey S., 5,542,435, Cl. 128-846.000.
Hume, Roger A.; Felstead, Richard A.; Lee, Douglas G. L.; Barling, Lawrence C.; and Barrell, Anthony J., to General Electric Company. Lamps and lamp holders in display lighting. 5,542,857, Cl. 439-337.000.
Hung, Chin-Hui; and Chen, Chen-Chin, to Taiwan Semiconductor Manufacturing Co. Ratio of running work in progress. 5,544,350, Cl. 395-500.000.
Hung, Michael. Safety valve structure for hydraulic jacks. 5,542,252, Cl. 60-477.000.
Hunt Holdings, Inc.: *See—*
Schriner, Michael J., 5,542,637, Cl. 248-346.010.
Hunt, Stephen: *See—*
Layzell, David B.; Hunt, Stephen; and Dowling, Adrian N., 5,542,284, Cl. 73-23.200.
Hunter Engineering Company: *See—*
Douglas, Michael W., 5,542,294, Cl. 73-462.000.
Hupfl, Martin. Apparatus for supporting plantlife growing in a ground area. 5,542,210, Cl. 47-47.000.
Hurst, George R., legal representative: *See—*
Locber, Peter J.; Hurst, Peter W., deceased; and Hurst, George R., legal representative, 5,544,020, Cl. 362-29.000.
Hurst, Linda S., George R. Bosworth, legal representatives: *See—*
Locber, Peter J.; Hurst, Peter W., deceased; and Hurst, George R., legal representative, 5,544,020, Cl. 362-29.000.
Hurst, Peter W., deceased (by Linda S. Hurst, George R. Bosworth, legal representatives): *See—*
Locber, Peter J.; Hurst, Peter W., deceased; and Hurst, George R., legal representative, 5,544,020, Cl. 362-29.000.
Hutchens, Wilbur D.; Pepper, Virgil W.; and Jensen, Frank E., to Fisher Controls International, Inc. Graphite packing. 5,542,681, Cl. 277-106.000.
Huth, Andreas; Seidelmann, Dieter; Schmiechen, Ralph; Schneider, Herbert; and Turski, Lechoslaw, to Schering Aktiengesellschaft. 3-aryl or 3-hetaryl-β-carbolines, their production and use in pharmaceutical agents. 5,543,519, Cl. 544-238.000.
Huwmedica Inc.: *See—*
Treacy, Patrick J., 5,542,947, Cl. 606-88.000.
Hwang, Yong K.: *See—*
Chen, Pang C.; and Hwang, Yong K., 5,544,282, Cl. 395-90.000.
Hyde, Bradley J.: *See—*
Isoh, Wendell; Wright, Douglas; Ireland, Scott; Hicks, Geoffrey; and Hyde, Bradley J., 5,542,859, Cl. 439-536.000.
Hydeman, Jeffrey E.: *See—*
Cole, William G.; Hydeman, Jeffrey E.; Gunsallus, James M., Jr.; and Le, Qui, 5,543,599, Cl. 219-69.200.
Hydrill Company: *See—*
Carlson, Douglas W.; and Simons, Stephen P., 5,542,454, Cl. 138-110.000.
Hyodo, Ryuji: *See—*
Norizuki, Reiko; Hyodo, Ryuji; Tanaka, Kenji; Sekihata, Osamu; Hatta, Hiroyuki; Eda, Susumu; and Oomura, Katsumi, 5,544,169, Cl. 370-60.100.
Hyundai Electronics America: *See—*
Lee, Steven S.; Fuchs, Kenneth P.; and Miller, Gayle W., 5,543,361, Cl. 437-200.000.
Hyundai Electronics Industries Co., Ltd.: *See—*
Ham, Young M., 5,543,255, Cl. 430-5.000.
Krum, Dong Y.; Park, Cheol S.; and Ryou, Eui K., 5,543,346, Cl. 437-52.000.
Kim, Young S.; and Ham, Young M., 5,543,254, Cl. 430-5.000.
Oh, Young N., 5,543,750, Cl. 327-589.000.
Yuh, Jong B., 5,544,110, Cl. 365-205.000.
Hyundai Motor Company: *See—*
Kim, Yoonsuk, 5,542,385, Cl. 123-184.520.
Ianniruberto, Alex: *See—*
Gravener, Roy D.; Ianniruberto, Alex; and Ciccolella, Michael, 5,542,931, Cl. 604-167.000.
Ibar, Jean-Pierre, to Solomat Partners, L.P. Method for exerting stress tensor to molding material. 5,543,092, Cl. 264-40.100.
IBM Corporation: *See—*
Datta, Madhav; and Shenoy, Ravindra V., 5,543,032, Cl. 205-670.000.
Ichiguchi, Hirokazu. Abrasive wheel. 5,542,875, Cl. 451-533.000.
Ichihashi, Satoru: *See—*
Yamada, Ichiho; Miyagi, Tomoyoshi; Nezuka, Shoji; Ichihashi, Satoru; and Isozaki, Hiroshi, 5,542,899, Cl. 483-32.000.
Ichikawa, Akira: *See—*
Abe, Masahiro; Sakou, Hiroshi; Sagawa, Hirohiko; Ichikawa, Akira; Inoue, Kiyoshi; Arai, Kiyoshi; Shimura, Takanori; and Toda, Yuji, 5,544,050, Cl. 364-419.130.
Ichikawa, Hiroyuki: *See—*
Nakai, Satoru; Aihara, Koutoku; Mori, Hitomi; Tominaga, Michiaki; Adachi, Masakazu; Ichikawa, Hiroyuki; Akamatsu, Seiji; and Saito, Fumio, 5,543,412, Cl. 514-255.000.
Ichikawa, Shigeji: *See—*
Kamakura, Hikoichi; Tsutsui, Kiyoshi; Akagawa, Tomohiko; Sakai, Ikunori; Ichikawa, Shigeji; and Arai, Katsunori, 5,543,454, Cl. 524-451.000.
Ichikawa, Shunji: *See—*
Suzuki, Fumio; Shimada, Junichi; Ishii, Akio; Nakamura, Joji; Ichikawa, Shunji; Kitamura, Shigeto; and Koike, Nobuaki, 5,543,415, Cl. 514-263.000.
Ichikawa, Yukimi, to Fuji Electric Co., Ltd. Solar battery roofing for a solar house. 5,542,989, Cl. 136-251.000.
Ichino, Rie; Ito, Michiyasu; Kuriyama, Yuji; and Shiraki, Kouji, to Toyoda Gosei Co., Ltd. Circular air bag mounted to an instrument panel. 5,542,698, Cl. 280-732.000.
Ichinohe, Shoji: *See—*
Hiratani, Haruyuki; Nakata, Kazuhiko; Ichinohe, Shoji; Yamazaki, Toshio; and Kato, Hideto, 5,543,442, Cl. 523-107.000.
Ichinose, Eiji: *See—*
Nishida, Katsunori; Miyano, Keiichiro; Iwase, Masaki; and Ichinose, Eiji, 5,542,903, Cl. 494-53.000.
Ichinose, Hiroki; Sadakane, Shinji; Takeda, Keiso; and Kojima, Susumu, to Toyota Jidosha Kabushiki Kaisha. Air-flow control device for engine. 5,542,388, Cl. 123-336.000.
Ichiya, Mitsuo; Kasano, Fumihiro; Nishimura, Hiromi; Lewiner, Jacques; and Perino, Dider, to Matsushita Electric Works, Ltd.; Jacques Lewiner; and Dider Perino. Electrostatic relay. 5,544,001, Cl. 361-233.000.
Iciki, Hiroki: *See—*
Kato, Hideki; Yoshizawa, Hideki; Iciki, Hiroki; and Masumoto, Daiki, 5,544,336, Cl. 395-311.000.
ICP Systems, Inc.: *See—*
Hendry, James W., 5,542,611, Cl. 239-553.500.
Ide, Akira: *See—*
Yokoyama, Yuji; Akioka, Takashi; Iwamura, Masahiro; Hiraishi, Atsushi; Kobayashi, Yutaka; Yamauchi, Tatsumi; Takahashi, Shigeru; Gotou, Nobuyuki; and Ide, Akira, 5,544,125, Cl. 365-230.060.
Idemitsu Kosan Co., Ltd.: *See—*
Okada, Akihiko; and Sato, Nobuyuki, 5,543,462, Cl. 525-74.000.
Takeuchi, Mizutomo; and Tomotsu, Norio, 5,543,481, Cl. 526-126.000.
Igarashi, Kazunori: *See—*
Ishiyama, Kouichi; Igarashi, Kazunori; Komada, Norikazu; Takeshita, Takuo; and Ookubo, Kiyoyuki, 5,543,070, Cl. 252-62.590.
Igarashi, Michihiro: *See—*
Fishman, Mark C.; Igarashi, Michihiro; and Strittmatter, Stephen M., 5,543,498, Cl. 530-328.000.
Igarashi, Tatsushi: *See—*
Hishinuma, Nobuyuki; Hirose, Kenichi; and Igarashi, Tatsushi, 5,542,867, Cl. 445-32.000.
Igarashi, Tomoya: *See—*
Ohmi, Hidehiko; Kubo, Tateo; and Igarashi, Tomoya, 5,542,556, Cl. 215-329.000.
IGEN, Inc.: *See—*
Ghead, Ali; Leland, Jonathan K.; Zoski, Glenn D.; Goodman, Jack E.; and Grosser, John T., 5,543,112, Cl. 422-52.000.
Iida, Kazumasa: *See—*
Miyamoto, Katsuhiko; and Iida, Kazumasa, 5,542,389, Cl. 123-339.100.
Iida, Masaru: *See—*
Hasegawa, Toshiyuki; and Iida, Masaru, 5,542,307, Cl. 74-15.630.
IIT Research Institute: *See—*
Bridges, Jack E.; Sresty, Guggilam C.; Held, Jeffrey S.; Sharp, James W.; and Bajzek, Thomas J., 5,543,111, Cl. 422-22.000.
Iizuka, Emiko; and Arai, Makoto, to Kabushiki Kaisha Toshiba. Password management method and apparatus. 5,544,083, Cl. 364-709.010.
Iizuka, Takashi: *See—*
Yamazaki, Yoshihiro; Iizuka, Takashi; and Kasai, Toshio, 5,543,955, Cl. 359-204.000.
Ikeda, Hideo; Ukita, Toshiyuki; and Shimizu, Hatsushi, to Ikeda, Hideo. Method of multiplying a vector in *E. coli* host. 5,543,307, Cl. 435-172.300.
Ikeda, Manabu: *See—*
Suzuki, Tatsuya; Matsutani, Shunji; Sugita, Yukihiko; Katagiri, Moriya; and Ikeda, Manabu, 5,543,876, Cl. 354-149.110.
Ikeda, Naoki: *See—*
Matsuoka, Fumitomo; and Ikeda, Naoki, 5,543,360, Cl. 437-195.000.

Ikeda, Shuji; and Saeki, Makoto, to Hitachi, Ltd. Semiconductor device having a two-channel MISFET arrangement defined by I-V characteristic having a negative resistance curve and SRAM cells employing the same. 5,543,652, Cl. 257-377.000.
Ikeda, Yutaka, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device allowing selection of the number of sense amplifiers to be activated simultaneously. 5,544,115, Cl. 365-207.000.
Ikejima, Hiroyuki; and Yasue, Masanori, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for controlling an elevator to reduce vibrations created in a linear drive motor. 5,542,501, Cl. 187-292.000.
Ikemoto, Isao: *See*—
Shishido, Kazuo; Sasaki, Shinichi; Ikemoto, Isao; Yashiro, Masahiko; Karakama, Toshiyuki; and Numagami, Atsushi, 5,543,898, Cl. 355-210.000.
Iketani, Akira: *See*—
Hamai, Shinji; Iketani, Akira; Matsumi, Chiyoko; Juri, Tatsuro; Yamada, Masazumi; Kawakami, Yasunori; and Murakami, Yuuzou, 5,543,937, Cl. 358-341.000.
Iketani, Masayuki: *See*—
Hirose, Toshihiko; Ohbayashi, Shigeki; Kondo, Setsu; Hayasaka, Takashi; Fujino, Yoshiyuki; and Iketani, Masayuki, 5,544,105, Cl. 365-189.110.
Ikonic Interactive, Inc.: *See*—
May, Robert; Granger, James E.; Peck, Nicolas; and Miller, Rohn J., 5,544,354, Cl. 395-600.000.
Ikura, Kenichiro; and Miura, Masakazu, to Nissha Printing Co., Ltd. Input unit. 5,543,587, Cl. 178-18.000.
Ikushima, Muneharu: *See*—
Kagara, Kohji; Goto, Shunsuke; Yonishi, Satoshi; Ikushima, Muneharu; Baba, Yukihisa; and Horiai, Haruo, 5,543,525, Cl. 546-279.100.
Ilasenko, John S.: *See*—
Fite, Robert D., Jr.; Ilasenko, John S.; and Colburn, Edwin H., 5,543,040, Cl. 210-167.000.
Illig, Carl R.: *See*—
Baker, Edward J.; Lee, Robert W.; Toner, John L.; and Illig, Carl R., 5,543,132, Cl. 424-9.411.
Illig, Kathleen J.: *See*—
Swanson, Jon R.; Bosch, H. William; Illig, Kathleen J.; Marcera, Donna M.; and Mueller, Ronald L., 5,543,133, Cl. 424-9.450.
Illinois Tool Works Inc.: *See*—
Parker, Eric G.; and Hardy, Donald P., 5,542,705, Cl. 280-772.000.
Ungar, Robert E.; and Krogman, Stanley R., 5,542,231, Cl. 53-48.400.
Van Erden, Donald L.; and Toczycki, Jan, 5,542,508, Cl. 188-290.000.
Iltgen, Joerg, to General Motors of Canada Limited. Flash-proof rim mold and method of making. 5,543,159, Cl. 425-543.000.
Imada, Satoshi: *See*—
Iwane, Hiroshi; Miyagi, Hidekazu; Imada, Satoshi; Seo, Shoichi; and Yoneyama, Takahiro, 5,543,547, Cl. 558-274.000.
Imai, Kazumichi: *See*—
Imai, Kyoko; Imai, Kazumichi; and Nomura, Yasushi, 5,543,292, Cl. 435-6.000.
Imai, Kyoko; Imai, Kazumichi; and Nomura, Yasushi, to Hitachi, Ltd. Process for the measurement of nucleic acids. 5,543,292, Cl. 435-6.000.
Imaizumi, Masaaki: *See*—
Uzawa, Shigeyuki; Nakai, Akiya; Imaizumi, Masaaki; Tanaka, Hiroshi; Takakura, Noburu; and Kaneko, Yoshio, 5,543,921, Cl. 356-401.000.
Imamura, Takashi: *See*—
Kayane, Shigeto; Kawai, Takashi; Sakata, Masaru; Imamura, Takashi; Tanigaki, Masanobu; and Kurosaki, Tomihiro, 5,543,310, Cl. 435-180.000.
ImaR Pharmaceutical Corp.: *See*—
Unger, Evan C.; Fritz, Thomas A.; Matsunaga, Terry; Ramaswami, VaradaRajan; Yellowhair, David; and Wu, Guanli, 5,542,935, Cl. 604-190.000.
IMI Cornelius Inc.: *See*—
Davis, Harlan R., 5,542,572, Cl. 222-108.000.
Immergluck, Robert: *See*—
Wilhelm, Donald M.; Hubalek, Verne A.; Smith, S. Andrew; and Immergluck, Robert, 5,542,838, Cl. 425-186.000.
Immunex Corporation: *See*—
Park, Linda S.; and Goodwin, Raymond G., 5,543,320, Cl. 435-240.270.
Immunodex K/S: *See*—
Lihme, Allan O. F.; and Boenisch, Thomas, 5,543,332, Cl. 436-528.000.
Immunopharmaceutics, Inc.: *See*—
Chan, Ming F.; and Balaji, Vitukudi N., 5,543,521, Cl. 544-349.000.
IMO Industries, Inc.: *See*—
Peebles, D. Scott, 5,542,864, Cl. 440-61.000.
Imodco, Inc.: *See*—
Pollack, Jack, 5,542,783, Cl. 405-223.100.
Imperial Chemical Industries PLC: *See*—
Nield, Eric; and Palasz, Peter D., 5,543,445, Cl. 523-406.000.
Imran, Mir A.; Gandhi, Deepak R.; Bourang, Henry; Quiachon, Dignah B.; and Chow, Andrew Y., to Intelliwire Inc. Guide wire with deflectable tip and method. 5,542,434, Cl. 128-772.000.
Imura, Yoshio: *See*—
Machida, Kiyosada; Imura, Yoshio; and Takeuchi, Yoshihiro, 5,543,875, Cl. 354-149.100.
Inaba, Minoru. Photographic film. 5,543,274, Cl. 430-496.000.
Inagaki, Mitsuo; Matsuda, Mikio; Ogawa, Hiroshi; Hisanaga, Shigeru; and Oki, Yasuhiro, to Nippondenso Co., Ltd.; and Nippon Soken, Inc. Scroll compressor. 5,542,829, Cl. 418-55.300.
Inagaki, Shuichiro; Hirono, Tadashi; and Hosokawa, Shigefumi, to Nippon Telegraph and Telephone Corporation. Pin-board matrix switch. 5,544,004, Cl. 361-633.000.
Inami, Satoru; Ohkubo, Masaharu; and Kato, Junichi, to Canon Kabushiki Kaisha. Charging member having a foamed layer of a material with specified density and pore properties, charging device, process cartridge and image forming apparatus featuring the charging member. 5,543,899, Cl. 355-219.000.
Inamoto, Tadayoshi: *See*—
Noguchi, Hiromichi; Inamoto, Tadayoshi; and Munakata, Megumi, 5,543,266, Cl. 430-280.100.
Inao, Yoshikazu: *See*—
Kobayashi, Tsuyoshi; Sakon, Ichiro; Nakashima, Shigeo; Numa, Sachiko; and Inao, Yoshikazu, 5,543,444, Cl. 523-205.000.
Inatomi, Kenichi: *See*—
Hanazato, Yoshio; Nakako, Mamiko; Shiono, Satoru; and Inatomi, Kenichi, 5,543,024, Cl. 204-403.000.
Incon Marine, Inc.: *See*—
DuBois, Eugene W., III; Doria, Ronald J.; and Butler, Robert J., 5,542,367, Cl. 114-218.000.
Inda, John P.; and Inda, Joseph J., to General Plastics, Inc. Air duct boot. 5,542,223, Cl. 52-302.100.
Inda, Joseph J.: *See*—
Inda, John P.; and Inda, Joseph J., 5,542,223, Cl. 52-302.100.
Index Systems, Inc.: *See*—
Yuen, Henry C.; Kwoh, Daniel S.; Leung, Wing P.; and Tam, Tony T., 5,543,852, Cl. 348-478.000.
Industrial Business Consultants, Inc: *See*—
Stuller, Howard E.; Stuller, Stephen E.; and Compton, Timothy A., 5,542,790, Cl. 406-116.000.
Industrial Technology Research Institute: *See*—
Huang, Jammy Chin-Ming; and Tsai, Chun-Hui, 5,543,686, Cl. 313-497.000.
Tsai, Chun-hui, 5,542,866, Cl. 445-2.000.
Wang, Shin-Shin; and Chen, Chih-Hung, 5,543,545, Cl. 558-255.000.
Inex Pharmaceuticals Corporation: *See*—
Webb, Murray S.; Bally, Marcel B.; and Mayer, Lawrence D., 5,543,152, Cl. 424-450.000.
Infrasonics, Inc.: *See*—
Brody, Michael P., 5,542,415, Cl. 128-204.230.
INGE S.p.A.: *See*—
Lanfranconi, Antonio; Munari, Giorgio; Zappettini, Adelelmo; and Rizzo, Roberto, 5,542,528, Cl. 206-221.000.
Ingersoll-Rand Company: *See*—
Salzmann, David R.; and Purington, James C., 5,543,180, Cl. 427-397.700.
Ingleton, Martyn: *See*—
Freeman, Jonathan P.; Ingleton, Martyn; and Staveley, Christopher B., 5,543,968, Cl. 359-631.000.
Inglot, Anna; and Blach-Olszewska, Zofia, to Torf Establishment. Method and composition for determining the immunological activity of bioactive substances. 5,543,300, Cl. 435-29.000.
Ingram, Robert T. Kayak Safety buoyancy stirrup. 5,542,369, Cl. 114-347.000.
Inkmann, Mark S.: *See*—
Dougherty, Thomas J.; Inkmann, Mark S.; Smith, Debra L.; and Reher, Michael T., 5,543,248, Cl. 429-163.000.
Inland Aqua-Tech Equipment Systems, Inc.: *See*—
Walker, John P.; and Hausmann, Steven, 5,543,063, Cl. 210-788.000.
Inner Act, Inc.: *See*—
Muldner, James S., 5,542,282, Cl. 72-389.300.
InnerDyne, Inc.: *See*—
Evans, Michael A.; Nichols, Colin J.; Kemp, Laura; Dubrul, William R.; and Behl, Robert S., 5,542,928, Cl. 604-113.000.
Innovis Corporation: *See*—
Rompel, Wade D., 5,542,218, Cl. 52-34.000.
Ino, Kouichiro: *See*—
Maruoka, Tetsuya; Yasunobu, Chizuko; Hirose, Tadashi; Kida, Mayumi; Ino, Kouichiro; and Miyagawa, Yoshiya, 5,544,281, Cl. 395-68.000.
Inoue, Hiroshi; Mizutome, Atsushi; and Enomoto, Aiko, to Canon Kabushiki Kaisha. Data processing system and apparatus. 5,543,817, Cl. 345-100.000.
Inoue, Kanji, to Kabushiiki Kaisha Toshiba. Card-shaped electronic device used with an electronic apparatus and having shield plate with conductive portion on a lateral side. 5,544,007, Cl. 361-684.000.
Inoue, Kiyoshi: *See*—
Abe, Masahiro; Sakou, Hiroshi; Sagawa, Hirohiko; Ichikawa, Akira; Inoue, Kiyoshi; Arai, Kiyoshi; Shimura, Takanori; and Toda, Yuji, 5,544,050, Cl. 364-419.130.
Inrad: *See*—
Fehlner, James R.; and Firnberg, Dow, 5,543,016, Cl. 204-157.600.
Instrumentarium Corp.: *See*—
Meriläinen, Pekka, 5,542,414, Cl. 128-204.220.
Meriläinen, Timo; Rantala, Börje; and Weckström, Kurt, 5,542,285, Cl. 73-23.210.
Integrated Process Equipment Corp.: *See*—
Mumola, Peter B., 5,543,919, Cl. 356-382.000.
Intel Corporation: *See*—
Chiu, George W., 5,542,174, Cl. 29-840.000.
Coelho, Rohan, 5,544,251, Cl. 382-232.000.
Golin, Stuart J.; and Alattar, Adnan M., 5,544,239, Cl. 382-236.000.

Gunther, Stephen H.; Blank, Gerard D.; Curry, James T.; and Draeger, Jeff, 5,544,092, Cl. 395-800.000.
Hasbun, Robert N.; and Christopherson, Mark, 5,544,312, Cl. 395-183.180.
Keren, Doron; Izsak, Igal; and Kobrinsky, Iaacov, 5,544,071, Cl. 364-489.000.
Robinson, Kurt B.; Elbert, Dale K.; and Levy, Markus A., 5,544,356, Cl. 395-600.000.
Skarbo, Rune A.; Elliott, John D.; and Watts, Kevin A., 5,544,300, Cl. 395-157.000.
Volk, Andrew M.; Zaidi, Sajjad A.; and Selvin, Eric B., 5,543,734, Cl. 326-83.000.
Wells, Steven E.; and Magnusson, Eric J., 5,544,119, Cl. 365-185.110.
Intelligent Monitoring Systems and Advanced Global Technologies: *See*—
Bedell, Glenn W., 5,543,329, Cl. 435-7.320.
Intelliwire Inc.: *See*—
Imran, Mir A.; Gandhi, Deepak R.; Bourang, Henry; Quiachon, Dignah B.; and Chow, Andrew Y., 5,542,434, Cl. 128-772.000.
Intermedics, Inc.: *See*—
Fernald, Kenneth W., 5,543,795, Cl. 341-163.000.
International Business Machinces Corp.: *See*—
Frazier, Giles R.; and Tsao, Gary Y., 5,544,333, Cl. 395-304.000.
International Business Machines: *See*—
Dugan, Pamela A.; Fitzpatrick, Gregory P.; Johnson, William J.; and Williams, Marvin L., 5,544,048, Cl. 364-419.170.
Riggio, Salvatore R., Jr., 5,543,791, Cl. 341-101.000.
International Business Machines Corporation: *See*—
Abraham, David W.; and Wong, Danny C. Y., 5,543,918, Cl. 356-376.000.
Albrecht, Thomas R., 5,543,986, Cl. 360-105.000.
Amini, Nader; Boury, Bechara F.; Brannon, Sherwood; Horne, Richard L.; and Lohman, Terence J., 5,544,346, Cl. 395-481.000.
Appel, William D., 5,544,047, Cl. 364-488.000.
Arguedo, Armando J.; and Shelley, Kenneth R., 5,543,993, Cl. 360-132.000.
Ashley, Donald J., 5,543,632, Cl. 257-48.000.
Au, Wai-Ming W.; and Tong, Minh H., 5,543,650, Cl. 257-355.000.
Aubertine, Matthew E.; Beyzavi, Kianoush; Broker, Harold J.; Checca, Ronald P.; Granato, Michael A.; Haeussler, David A.; Herasimtschuk, Michael; Jurkovic, Michael J.; Salem, Gerard M.; Selinger, Craig R.; and Zehr, Paul R., 5,544,088, Cl. 364-489.000.
Bajorek, Christopher H.; Glaser, Thomas W.; Klaassen, Klaas B.; Nielsen, Charles R.; Santana, George R.; Smith, Gordon J.; Thompson, David A.; and Workman, Michael L., 5,544,138, Cl. 369-54.000.
Bakis, Raimo; Gopalakrishnan, Ponani S.; Kanevsky, Dimitri; Nadas, Arthur J.; Nahamoo, David; Picheny, Michael A.; and Sedivy, Jan, 5,544,277, Cl. 395-2.200.
Barnes, Michael S.; Coultas, Dennis K.; Forster, John C.; Keller, John H.; and Wicker, Thomas, 5,543,184, Cl. 427-571.000.
Bellegarda, Eveline J.; Bellegarda, Jerome R.; Nahamoo, David; and Nathan, Krishna S., 5,544,257, Cl. 382-187.000.
Bellegarda, Jerome R.; Nahamoo, David; and Nathan, Krishna S., 5,544,261, Cl. 382-187.000.
Bellegarda, Jerome R.; Nahamoo, David; and Nathan, Krishna S., 5,544,264, Cl. 382-188.000.
Berry, Robert F.; and Fortin, Michael R., 5,544,349, Cl. 395-492.000.
Bhatt, Ashwinkumar C.; Duffy, Thomas P.; Hackett, Gerry A.; and McKeveny, Jeffrey, 5,542,175, Cl. 29-846.000.
Booth, Richard B.; Gaynes, Michael A.; Murco, Robert M.; Puligandla, Viswanadham; Roldan, Judith M.; Saraf, Ravi; and Zalesinski, Jerzy M., 5,543,585, Cl. 174-261.000.
Boyette, James E., Jr.; Lo, Jiann-Chang; and Servedio, Michael, 5,543,726, Cl. 324-758.000.
Brady, Michael J.; Krusin-Elbaum, Lia; Masselink, William T.; Santhanam, Padmanabhan; and Tamegai, Tsuyoshi, 5,543,988, Cl. 360-112.000.
Brecher, Virginia H.; Chou, Paul B.-L.; Hall, Robert W.; Parisi, Debra M.; Rao, Ravishankar; Riley, Stuart L.; and Sturzenbecker, Martin C., 5,544,256, Cl. 382-149.000.
Buchana, William A.; Eardley, Richard A.; Tizzard, Anthony R.; and Utley, Brian G., 5,543,589, Cl. 178-18.000.
Carlson, Wayne C.; Meadows, Michael J.; and Greco, Merrill B., 5,544,304, Cl. 395-182.080.
Carpenter, Eric R.; Claussen, Christopher S.; and Cox, James O., 5,544,316, Cl. 395-200.030.
Carpenter, Kelly S.; Dearing, Gerard M.; Nick, Jeffrey M.; Strickland, Jimmy P.; Swanson, Michael D.; and Wilkinson, Wendell W., 5,544,345, Cl. 395-477.000.
Chang, Luke L.; Cazzolla, John J.; and Nguyen, Kha D., 5,544,309, Cl. 395-183.060.
Chefalas, Thomas E.; and Tappert, Charles C., 5,544,260, Cl. 382-187.000.
Cheng, Pau-Chen; and Luan, Shyh-Wei, 5,544,322, Cl. 395-200.120.
Crompton, Dennis; Harris, Richard H.; Leonard, Herbert G.; Hufford, George, III; and Thomas, Jeff D., 5,542,152, Cl. 16-354.000.
Dan, Asit; and Sitaram, Dinkar, 5,544,327, Cl. 395-250.000.
Dean, Mark E., 5,544,342, Cl. 395-446.000.
Denny, George S.; Lai, Robert S.; Li, Sherry H.; Murphy, Joseph F.; Nguyen, Hoang M.; and Ziebarth, Mark N., 5,544,325, Cl. 395-200.170.
Diffenderfer, Steven J.; and Shaukatullah, Hussain, 5,543,657, Cl. 257-666.000.
Dimmick, Roger F.; Fitterer, Gary A.; Jajowka, Jeff A.; Otto, William F.; Rasmussen, Jerry R.; and Sobotta, Terry L., 5,544,008, Cl. 361-684.000.
Dombroski, Edward J., 5,543,660, Cl. 257-707.000.
Edgar, Albert D., 5,543,820, Cl. 345-153.000.
Fallon, Kenneth M.; Jimarez, Miguel A.; and Zdimal, Joseph E., 5,542,601, Cl. 228-119.000.
Forman, Ira R.; and Madduri, Hari H., 5,544,310, Cl. 395-183.070.
Forman, Ira R.; and Madduri, Hari H., 5,544,353, Cl. 395-600.000.
Forslund, Donald C., 5,544,338, Cl. 395-421.070.
Freedenberg, Candace J.; Herring, Frederick A.; and Ziemins, Uldis A., 5,543,963, Cl. 359-432.000.
Gaynes, Michael A.; Papathomas, Kostas; Phelan, Giana M.; and Woychik, Charles G., 5,542,602, Cl. 228-175.000.
Glaser, Howard J.; Strain, Joanna M.; and Tuckey-Smith, Angus T., 5,544,285, Cl. 395-149.000.
Gregory, Thomas A.; Hagan, James A.; and Keller, Christopher G., 5,543,983, Cl. 360-97.020.
Hammerl, Erwin; Mandelman, Jack A.; Ho, Herbert L.; Shiozawa, Junichi; and Stengl, Reinhard J., 5,543,348, Cl. 437-60.000.
Handford, Edward F.; Harvilchuck, Joseph M.; Interrante, Mario J.; Jackson, Raymond A.; Master, Raj N.; Ray, Sudipta K.; Sablinski, William E.; and Wassick, Thomas A., 5,543,584, Cl. 174-261.000.
Hershey, Paul C., 5,544,077, Cl. 364-570.000.
Horikoshi, Seita; Kurihara, Mikio; Naitoh, Atsuhisa; and Yoshihara, Kazuhide, 5,544,005, Cl. 361-680.000.
Jackson, Frederick S.; Henry, Michael D.; Leaver, David; and Wright-Boulton, Neil, 5,544,202, Cl. 375-376.000.
Johnson, William J.; Vegatoro, Guillermo; and Lachman, Larry M., 5,543,792, Cl. 341-123.000.
Karidis, John P.; Goldowsky, Michael P.; and McVicker, Gerard, 5,543,787, Cl. 341-20.000.
Kirihata, Toshiaki; and Watanabe, Yohji, 5,544,113, Cl. 365-200.000.
Kumar, Manoj; and Poplawski, Joseph M., Jr., 5,544,112, Cl. 365-230.060.
Lo, Tin-chee, 5,543,735, Cl. 326-93.000.
Maroteaux, Jacques; and Richard, Bernard, 5,544,303, Cl. 395-161.000.
Meltzer, David, 5,544,173, Cl. 371-22.300.
Morgan, Scott A.; Stone, Steve S.; and Swearingen, Craig A., 5,544,288, Cl. 395-157.000.
Mraz, Ronald; and Tsao, Michael M., 5,544,162, Cl. 370-60.000.
Noll, Mark G., 5,544,334, Cl. 395-309.000.
Shachnai, Hadas; Wolf, Joel L.; and Yu, Philip S., 5,544,313, Cl. 395-200.010.
Sigal, Leon J.; and Warnock, James D., 5,543,731, Cl. 326-40.000.
Sivarajan, Kumar N.; and Steinberg, David G., 5,543,953, Cl. 359-189.000.
Takagi, Tatsuo; and Tsujino, Hitoshi, 5,543,982, Cl. 360-97.010.
Umeda, Shigeki; and Yoshikawa, Hirofumi, 5,544,348, Cl. 395-500.000.
Warren, Paul, 5,544,240, Cl. 382-270.000.
Westwood, John D., 5,543,989, Cl. 360-113.000.
International Flavors & Fragrances Inc.: *See*—
McDermott, Keith J.; Teffenhart, John M.; Shefer, Shmuel D.; Greene, David A.; Smith, Leslie C.; and Beck, Charles E. J., 5,543,439, Cl. 523-102.000.
Monteleone, Michael G.; Weiss, Richard A.; Evans, Marc D.; and Hanna, Marie R., 5,543,398, Cl. 512-23.000.
International Institute of Cellular and Molecular Pathology: *See*—
Saint-Remy, Jean-Marie; Lebrun, Philippe; Lebeque, Serge; Masson, Pierre L.; and Kingdon, Henry S., 5,543,145, Cl. 424-133.100.
International Paper Company: *See*—
Sypek, Maria T.; Delude, John R.; and Perron, Paul A., 5,543,262, Cl. 430-162.000.
International Rectifier Corporation: *See*—
Wilhelm, Dana; and Houk, Talbott M., 5,543,994, Cl. 361-18.000.
International Superconductivity Technology Center: *See*—
Murakami, Masato; Takaichi, Hiroshi; Tanaka, Shoji; and Sakai, Naomichi, 5,543,768, Cl. 335-216.000.
Interrante, Mario J.: *See*—
Handford, Edward F.; Harvilchuck, Joseph M.; Interrante, Mario J.; Jackson, Raymond A.; Master, Raj N.; Ray, Sudipta K.; Sablinski, William E.; and Wassick, Thomas A., 5,543,584, Cl. 174-261.000.
Iochi, Atsushi: *See*—
Takahata, Toshio; Nakazawa, Shinsuke; Iochi, Atsushi; Kuriki, Hiroshi; and Gotoh, Kenichi, 5,542,397, Cl. 123-520.000.
Ionex Corporation: *See*—
Lomasney, Henry L., 5,543,719, Cl. 324-557.000.
Iowa State University Research Foundation, Inc.: *See*—
D'Silva, Arthur, 5,543,618, Cl. 250-288.000.
Ireland, Scott: *See*—
Ison, Wendell; Wright, Douglas; Ireland, Scott; Hicks, Geoffrey; and Hyde, Bradley J., 5,542,859, Cl. 439-536.000.
Iriguchi, Jiro; Kuwamoto, Tomoyuki; Chosa, Junichi; and Matsuda, Tatsuhito, to Nippon Shokubai Co., Ltd. Process for preparing an aqueous resin dispersion and an aqueous resin dispersion obtained by the process. 5,543,456, Cl. 524-542.000.
Irwin, Robert S., to Du Pont de Nemours, E. I., and Company. Hydrolysis-resistant aramids. 5,543,492, Cl. 528-335.000.

VOL 1189 ISS 1 AG 6 1996 UMI

Isaac, Walter H.; and Wollman, Eric W., to Eastman Kodak Company. Mercaptotetrazole transition metal salts for control of cyan stain. 5,543,281, Cl. 430-551.000.

Isbell, Matthew R.: *See—*
Pessier, Rudolf C. O.; Scott, Danny E.; Grimes, Robert E.; and Isbell, Matthew R., 5,542,485, Cl. 175-371.000.

Ishibashi, Kenichi: *See—*
Doi, Toshio; Hayashi, Takehisa; Ishibashi, Kenichi; and Takemoto, Takeshi, 5,544,340, Cl. 395-445.000.

Ishibashi, Kenzou: *See—*
Ohara, Shunji; Matsuo, Tamotsu; and Ishibashi, Kenzou, 5,544,137, Cl. 369-54.000.

Ishida, Akihiko; Homma, Koichi; Yato, Michihisa; Nishiyama, Shinsuke; and Okumura, Fumikazu, to Tanabe Seiyaku Co., Ltd. Indane derivatives for treating endotoxin shock and/or nephritis. 5,543,409, Cl. 514-247.000.

Ishida, Hatsuo, to Edison Polymer Innovation Corporation. Process for preparation of benzoxazine compounds in solventless systems. 5,543,516, Cl. 544-69.000.

Ishida, Katsuhito, to Sony Corporation. Viterbi decoding method and viterbi decoding apparatus. 5,544,177, Cl. 371-43.000.

Ishida, Koji: *See—*
Nakamura, Hitoshi; Hanatani, Shoichi; Tanaka, Shigehisa; Ohtoshi, Tsukuru; Ishida, Koji; and Matsuoka, Yasunobu, 5,543,629, Cl. 257-21.000.

Ishida, Noboru; Ishimaru, Mitsuaki; and Kagaya, Mineo, to Nippon Oil Co., Ltd. Lubricant additive. 5,543,081, Cl. 508-194.000.

Ishida-Nonpareil Limited: *See—*
Fenlon, Christopher, 5,542,288, Cl. 73-49.300.

Ishige, Sadao: *See—*
Tateishi, Keiichi; Ishige, Sadao; and Kamikawa, Hiroshi, 5,543,260, Cl. 430-138.000.

Ishihara, Heigo: *See—*
Tani, Hiroshi; Ishihara, Heigo; and Matsumoto, Hiroyuki, 5,543,203, Cl. 428-156.000.

Ishii, Akio: *See—*
Suzuki, Fumio; Shimada, Junichi; Ishii, Akio; Nakamura, Joji; Ichikawa, Shunji; Kitamura, Shigeto; and Koike, Nobuaki, 5,543,415, Cl. 514-263.000.

Ishii, Junichi: *See—*
Kayano, Mitsuo; Minowa, Toshimichi; Ishii, Junichi; and Morinaga, Shigeki, 5,544,054, Cl. 364-424.010.

Ishii, Kiyoshi: *See—*
Nakai, Satoru; Kaneta, Mayumi; Kikumoto, Yoshikazu; Hong, Yeong-Man; Kawai, Kazuyoshi; Takegata, Setsuko; Ishii, Kiyoshi; Yanagihara, Yasuo; and Hirai, Yoshikatsu, 5,543,140, Cl. 424-85.200.

Ishii, Takayoshi: *See—*
Watanabe, Kiyoshi; Abe, Yasuhiro; Sakamoto, Masaho; Saitou, Takeshi; Ishii, Takayoshi; Akimoto, Yukio; Kashiki, Hironori; and Kato, Masao, 5,543,607, Cl. 235-383.000.

Ishii, Tatsuki: *See—*
Takimoto, Misao; Hiyama, Tooru; Sasaki, Tetsuo; and Ishii, Tatsuki, 5,544,068, Cl. 364-489.000.

Ishikawa, Hiromichi: *See—*
Aotsuka, Tomoji; Nishio, Toshiyuki; Hosono, Hiroshi; Nakamura, Yoshiyuki; Matsui, Tetsuo; and Ishikawa, Hiromichi, 5,543,420, Cl. 514-312.000.

Ishimaru, Mitsuaki: *See—*
Ishida, Noboru; Ishimaru, Mitsuaki; and Kagaya, Mineo, 5,543,081, Cl. 508-194.000.

Ishiwata, Yasuhiro: *See—*
Matsuda, Naoto; Yamada, Makoto; Ono, Michio; Ishiwata, Yasuhiro; and Uchida, Osamu, 5,543,279, Cl. 430-559.000.

Ishiyama, Kouichi; Igarashi, Kazunori; Komada, Norikazu; Takeshita, Takuo; and Ookubo, Kiyoyuki, to Mitsubishi Materials Corporation. Magnetic recording powder having low curie temperature and high saturation magnetization. 5,543,070, Cl. 252-62.590.

Ishizuka, Yasuhiro: *See—*
Dosaka, Katsumi; Kumanoya, Masaki; Hayano, Kouji; Yamazaki, Akira; Iwamoto, Hisashi; Abe, Hideaki; Konishi, Yasuhiro; Himukashi, Katsumitsu; Ishizuka, Yasuhiro; and Saiki, Tsukasa, 5,544,121, Cl. 365-222.000.

Isis Innovation Limited: *See—*
Southern, Edwin, 5,543,033, Cl. 205-687.000.

ISIS Pharmaceuticals, Inc.: *See—*
Cook, Phillip D.; Manoharan, Muthiah; and Bruice, Thomas, 5,543,507, Cl. 536-23.100.

Ismailov, Alexandre M.: *See—*
Stevens, John K.; and Ismailov, Alexandre M., 5,543,018, Cl. 204-461.000.

Ison, Wendell; Wright, Douglas; Ireland, Scott; Hicks, Geoffrey; and Hyde, Bradley J., to Woods Industries, Inc. Quick mount electrical wall socket. 5,542,859, Cl. 439-536.000.

Isozaki, Hiroshi: *See—*
Yamada, Ichiho; Miyagi, Tomoyoshi; Nezuka, Shoji; Ichihashi, Satoru; and Isozaki, Hiroshi, 5,542,899, Cl. 483-32.000.

Istituto Ricerca Francesco Angelini S.p.A.: *See—*
Baiocchi, Leandro, 5,543,563, Cl. 562-443.000.

Italgom U.S.A.: *See—*
Micciche, Gino; Martorana, Giovanni; and Martorana, Sergio, 5,542,675, Cl. 473-329.000.

Itex Environmental Services, Inc.: *See—*
Toor, Irfan A., 5,542,614, Cl. 241-21.000.

Ito, Kengo; Mizumachi, Motohiro; Fujiwara, Yoshio; and Shinohara, Satoru, to Sony Corporation. Composition for fixing water–color ink, cover film for thermal transfer image using composition for fixing water–color ink, and thermal transfer image recorded medium. 5,543,453, Cl. 524-445.000.

Ito, Kenji, to Canon Kabushiki Kaisha. Lens barrier mechanism of optical apparatus. 5,543,881, Cl. 354-253.000.

Ito, Michiyasu: *See—*
Ichino, Rie; Ito, Michiyasu; Kuriyama, Yuji; and Shiraki, Kouji, 5,542,698, Cl. 280-732.000.

Ito, Nobukazu: *See—*
Yamada, Yoshiaki; Ito, Nobukazu; Miyakawa, Kuniko; and Yamanaka, Michiko, 5,543,357, Cl. 437-192.000.

Ito, Shinichi: *See—*
Shibata, Tsuyoshi; Hashimoto, Koji; Heida, Katsuhiko; Kawano, Kenji; Ito, Shinichi; and Horioka, Keiji, 5,543,252, Cl. 430-5.000.

Ito, Takayuki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Zoom lens system. 5,543,969, Cl. 359-690.000.

Ito, Yasuo: *See—*
Miyata, Shigeru; Yamada, Yoshitaka; Yoshida, Hideji; Matsubara, Yoshihiro; and Ito, Yasuo, 5,543,716, Cl. 324-402.000.

Itoh, Hisashi: *See—*
Kanaya, Motonori; Noguchi, Kenichi; Nagaya, Yoshiaki; and Itoh, Hisashi, 5,543,612, Cl. 250-208.100.

Itoh, Ikuo: *See—*
Sasaki, Tsutomu; and Itoh, Ikuo, 5,543,770, Cl. 335-299.000.

Itoh, Jun, to Kabushiki Kaisha Toshiba. Disk drive with fluid bearing, bearing plate and disk-moving mechanism. 5,543,984, Cl. 360-99.090.

Itoh, Kenichiro; and Adachi, Kenro, to NTN Corporation. Rotational transmission device. 5,542,514, Cl. 192-40.000.

Itoh, Masaaki: *See—*
Kudoh, Mituo; Fukushima, Toshihiko; Itoh, Masaaki; Uchida, Mari; Matsushima, Hiroaki; Kogure, Hiroshi; and Takaku, Syoji, 5,542,271, Cl. 62-502.000.

Itoh, Masakazu: *See—*
Yamamoto, Naoki; Yanagase, Akira; Iwasaki, Tadashi; and Itoh, Masakazu, 5,543,460, Cl. 525-64.000.

Itoh, Yasuhiko: *See—*
Araki, Noriyuki; Shinonaga, Hideyuki; and Itoh, Yasuhiko, 5,543,813, Cl. 342-357.000.

Itou, Makoto: *See—*
Kumeji, Yasushi; Nishimura, Seiichi; Nakajima, Yoshinobu; and Itou, Makoto, 5,543,755, Cl. 333-185.000.

Itou, Shigeru: *See—*
Iwaya, Shouichi; Yahagi, Masahiro; Kudou, Hitoshi; Itou, Shigeru; Fujiwara, Isao; Ogasawara, Tadashi; Morita, Makoto; Taguchi, Teruo; and Sasaki, Setuo, 5,544,002, Cl. 361-302.000.

Itozaki, Hideo: *See—*
Nagaishi, Tatsuoki; and Itozaki, Hideo, 5,544,182, Cl. 372-29.000.

ITT Automotive Electrical Systems, Inc.: *See—*
Buchanan, Harry C., Jr.; and Zhou, Peter S., 5,542,145, Cl. 15-250.160.

ITT Corporation: *See—*
Anhalt, John W.; and Zahlit, Wayne A., 5,542,861, Cl. 439-578.000.
Crenshaw, David A.; Holmes, Roy H.; and Baril, Albert M., 5,542,627, Cl. 244-121.000.
Klinger, Gary; and Baier, Siegfried K., 5,542,712, Cl. 285-93.000.
Szabo, George; and McGuire, Andrew G., 5,542,716, Cl. 285-305.000.

ITT Flygt AB: *See—*
Brandt, Bengt-Ake, 5,542,817, Cl. 415-58.200.

Iuchi, Kenji: *See—*
Shibayama, Kouichi; Suzuki, Masao; Ogasa, Masao; and Iuchi, Kenji, 5,543,438, Cl. 521-140.000.

IVAC Corporation: *See—*
Warner, Eric A., 5,542,826, Cl. 417-474.000.

Ivanov, Sergei: *See—*
Stumpe, Joachim; Shibaev, Valery; Kostromin, Sergei; Ivanov, Sergei; Fischer, Thomas; Läsker, Lutz; Ruhmann, Ralf; and Claussen, Uwe, 5,543,267, Cl. 430-290.000.

Ivanovich, Kuroles V.: *See—*
Aleksandrovich, Tjurin V.; Ivanovich, Kuroles V.; Andreyevich, Lazorkin V.; and Mikhaylovich, Volodin A., 5,542,278, Cl. 72-371.000.

Iwaki, Tadao; Mitsuoka, Yasuyki; and Kasama, Nobuyuki, to Seiko Instruments Inc. Rangefinding/autofocusing device of joint transform correlation type and driving method thereof. 5,544,252, Cl. 382-280.000.

Iwama, Kazuaki: *See—*
Murakami, Kazuo; Fujii, Toshiro; Iwama, Kazuaki; and Ohyama, Katsuya, 5,542,340, Cl. 92-71.000.

Iwamoto, Hisashi: *See—*
Dosaka, Katsumi; Kumanoya, Masaki; Hayano, Kouji; Yamazaki, Akira; Iwamoto, Hisashi; Abe, Hideaki; Konishi, Yasuhiro; Himukashi, Katsumitsu; Ishizuka, Yasuhiro; and Saiki, Tsukasa, 5,544,121, Cl. 365-222.000.

Iwamura, Masahiro: *See—*
Yokoyama, Yuji; Akioka, Takashi; Iwamura, Masahiro; Hiraishi, Atsushi; Kobayashi, Yutaka; Yamauchi, Tatsumi; Takahashi, Shigeru; Gotou, Nobuyuki; and Ide, Akira, 5,544,125, Cl. 365-230.060.

Iwamura, Ryuichi, to Sony Corporation. Motion vector calculation circuit, with flatness-judgement circuitry, that selects a generated motion vector for output in accordance with a flatness judgement result. 5,544,263, Cl. 382-166.000.

Iwane, Hiroshi; Miyagi, Hidekazu; Imada, Satoshi; Seo, Shoichi; and Yoneyama, Takahiro, to Mitsubishi Chemical Corporation. Method of producing aromatic carbonate. 5,543,547, Cl. 558-274.000.

Iwasaki, Tadashi: *See—*
Yamamoto, Naoki; Yanagase, Akira; Iwasaki, Tadashi; and Itoh, Masakazu, 5,543,460, Cl. 525-64.000.

Iwase, Atsushi: *See—*
Tsuda, Hiroshi; Iwase, Atsushi; Nomura, Ken; and Matsui, Kazuma, 5,542,293, Cl. 73-146.500.

Iwase, Masaki: *See—*
Nishida, Katsunori; Miyano, Keiichiro; Iwase, Masaki; and Ichinose, Eiji, 5,542,903, Cl. 494-53.000.

Iwase, Nobuhiro; Kano, Hiroshi; Tadaki, Shinji; Hasegawa, Masami; and Koshino, Nagaaki, to Fujitsu Limited. Method of forming an x-ray image using photostimulable phosphor. 5,543,080, Cl. 252-301.40H.

Iwata, Akihito: *See—*
Tsukamoto, Kazumasa; Hayabuchi, Masahiro; Nishida, Masaaki; Yamamoto, Yoshihisa; Kusafuka, Muneo; Mikami, Kazuhiro; Tsutsui, Hiroshi; and Iwata, Akihito, 5,542,887, Cl. 475-63.000.

Iwata Denko Co., Ltd.: *See—*
Nakamoto, Takayuki, 5,542,167, Cl. 29-229.000.

Iwata, Katsuichi: *See—*
Tsuchimoto, Tomonori; Iwata, Katsuichi; and Kurashima, Yoshihiko, 5,543,242, Cl. 429-049.000.

Iwata, Masafumi: *See—*
Hikita, Shiro; Iwata, Masafumi; Komaya, Kiyotoshi; Asuka, Masashi; and Goto, Yukio, 5,544,059, Cl. 364-436.000.

Iwata, Yoichi; Ave, Yoshiharu; and Nakayama, Takayoshi, to Honda Giken Kogyo Kabushiki Kaisha. Air-fuel ratio control system for internal combustion engines. 5,542,248, Cl. 60-276.000.

Iwaya, Shouichi; Yahagi, Masahiro; Kudou, Hitoshi; Itou, Shigeru; Fujiwara, Isao; Ogasawara, Tadashi; Morita, Makoto; Taguchi, Teruo; and Sasaki, Setuo, to TDK Corporation. High voltage capacitor and magnetron. 5,544,002, Cl. 361-302.000.

IXYS Corporation: *See—*
Zommer, Nathan, 5,543,335, Cl. 437-10.000.

Izard, David G.: *See—*
Lynch, Steven K.; Ruggie, Mark A.; Rinker, William E.; Izard, David G.; and Young, William J., 5,543,234, Cl. 428-537.100.

Izsak, Igal: *See—*
Keren, Doron; Izsak, Igal; and Kobrinsky, Iaacov, 5,544,071, Cl. 364-489.000.

Izuta, Shingo: *See—*
Muraoka, Masaru; and Izuta, Shingo, 5,544,145, Cl. 369-125.000.

Izzo, Kenneth R.: *See—*
Pao, Hsueh-Wen; Faulstich, David L.; Snyder, Dane T.; Ma, Johnny T.; Izzo, Kenneth R.; Swanson, Joel C.; Laurent, Martin S.; and Kachel, Peter F., 5,544,208, Cl. 376-253.000.

J. H. Williams Company: *See—*
Knox, Robert L.; and Reddy, John C., 5,542,322, Cl. 81-177.600.

Jachimowicz, Karen E.: *See—*
Lebby, Michael S.; Kelly, George R.; and Jachimowicz, Karen E., 5,543,958, Cl. 359-254.000.

Jackson, Frederick S.; Henry, Michael D.; Leaver, David; and Wright-Boulton, Neil, to International Business Machines Corporation. Synchronization apparatus. 5,544,202, Cl. 375-376.000.

Jackson, Raymond A.: *See—*
Handford, Edward P.; Harvilchuck, Joseph M.; Interrante, Mario J.; Jackson, Raymond A.; Master, Raj N.; Ray, Sudipta K.; Sablinski, William E.; and Wassick, Thomas A., 5,543,584, Cl. 174-261.000.

Jackson, Timothy W.: *See—*
Hoekstra, Peter; Jackson, Timothy W.; Moyher, George C., Jr.; and Conci, Odero, 5,542,146, Cl. 15-319.000.

Jackson, William E.: *See—*
Hartley, Richard I.; Noble, Julia A.; Grande, James C. M.; Jackson, William E.; Welles, Kenneth B., II; and Liu, Jane S., 5,544,254, Cl. 382-108.000.

Jacob, Harold: *See—*
Weaver, George W.; Jacob, Harold; and Holsinger, Damond C., 5,542,948, Cl. 606-113.000.

Jacobson, Scott B.; and Brandt, Kenneth A., to Clark Equipment Company. Hall effect sensor assembly. 5,542,493, Cl. 180-272.000.

Jacques Lewiner: *See—*
Ichiya, Mitsuo; Kasano, Fumihiro; Nishimura, Hiromi; Lewiner, Jacques; and Perino, Dider, 5,544,001, Cl. 361-233.000.

Jaeckels, Norman J.; and Mesun, Randy O., to Kohler Co. Pump operated plumbing fixture. 5,542,132, Cl. 4-313.000.

Jaeger Products, Inc.: *See—*
Halbirt, John P., 5,543,088, Cl. 261-94.000.

Jaeger, Robert B.: *See—*
Schultz, Darald R.; Danielson, Arvin D.; Bunte, Alan G.; Sherman, Richard A.; and Jaeger, Robert B., 5,544,010, Cl. 361-686.000.

Jajowka, Jeff A.: *See—*
Dimmick, Roger F.; Fitterer, Gary A.; Jajowka, Jeff A.; Otto, William F.; Rasmussen, Jerry R.; and Sobotta, Terry L., 5,544,008, Cl. 361-684.000.

Jakob, Horst, to ASER. Flexible jointing device for conveyor belt. 5,542,527, Cl. 198-844.200.

Jakubisin, John; and Alfieri, James K., to King Associates Inc. Fall zone covering for playground. 5,543,172, Cl. 427-212.000.

Jámbor née Hoffmann, Zsuzsanna: *See—*
Fekete, Pál; Király née Ignácz, Mária; Sipos, Gábor; Jámbor née Hoffmann, Zsuzsanna; Újfalussy, György; Góra née Hernyes, Magdolna; Klebovich, Imre; Drabant, Sándor; Mándi, Attila; Kiss née Szabó, Gizella; Bárczay, Erzsébet; and Krisztián, Mária, 5,543,155, Cl. 424-473.000.

James, Arthur: *See—*
Ohmaye, Enio; and James, Arthur, 5,544,305, Cl. 395-161.000.

James, Barry R.: *See—*
Merkle, Frank P.; Horn, Larry L.; Jaines, Barry R.; and Merkle, William L., 5,542,804, Cl. 414-165.000.

James, Dean B., to Hotcan International, Ltd. Acid-base fuels for self heating food containers. 5,542,418, Cl. 126-263.060.

James, John V., to Ford Motor Company. Misfire detection in an internal combustion engine using modified median averaging. 5,542,291, Cl. 73-117.300.

James River Corporation of Virginia: *See—*
Capo, James L., 5,542,598, Cl. 229-242.000.

Jamonet, Bernard: *See—*
Karinthi, Pierre; and Jamonet, Bernard, 5,543,127, Cl. 423-294.000.

Janca, Reiner; and Spieker, Reinhold, to Leopold Kostal GmbH & Co. KG. Method for the control of the opening and closing process of electrically-driven device. 5,543,693, Cl. 318-283.000.

Janex, Albert, to Thomson-CSF. Method to optimize the bit rate of a communications channel in time-division mode. 5,544,075, Cl. 364-514.00R.

Jang, Byoung G.: *See—*
Kang, Myung G.; Kang, Seong S.; Choi, Sung H.; Joung, Mun C.; Jang, Byoung G.; Ryu, Kye Y.; Yu, Hyo C.; and Lee, Sang J., 5,543,981, Cl. 360-96.600.

Janke, Scott: *See—*
Belding, William A.; Janke, Scott; Holeman, William D.; and Delmas, Marc P. F., 5,542,968, Cl. 96-125.000.

Janseu, Ronald E.: *See—*
Herbert, William G.; Bischoping, Patricia; Altavela, Robert P.; Kotowicz, Lawrence; Schmitt, Peter J.; Jansen, Ronald E.; Lennon, John H.; and Grey, Henry G., 5,543,028, Cl. 205-70.000.

Janssen Pharmaceutica N.V.: *See—*
De Knaep, Alfons G. M.; Moens, Luc J. R.; and Vreysen, Eduard J. C., 5,543,570, Cl. 564-87.000.

Jansson, Richard K.: *See—*
Bills, Gerald F.; Curotto, James E.; Dreikorn, Sarah J.; Jenkins, Rosalind G.; Liesch, Jerrold M.; Morris, Sandra A.; Thompson, John R.; Zink, Deborah L.; Jansson, Richard K.; Basilio, Angela; Diez, Teresa; Pelaez, Fernando; and Vicente, Francisca, 5,543,429, Cl. 514-468.000.

Jansson, Robert E. W.: *See—*
Kinlen, Patrick J.; and Jansson, Robert E. W., 5,543,084, Cl. 252-500.000.

Jantunen, Heli: *See—*
Turunen, Aimo; and Jantunen, Heli, 5,543,764, Cl. 333-202.000.

Japan Atomic Energy Research Institute: *See—*
Ara, Katsuyuki; Nakajima, Nobuya; and Ebine, Noriya, 5,544,207, Cl. 376-249.000.
Ohzu, Akira; Arisawa, Takashi; Kato, Masaaki; and Suzuki, Yoji, 5,544,191, Cl. 372-56.000.

Japan Crown Cork Co., Ltd.: *See—*
Ohmi, Hidehiko; Kubo, Tateo; and Igarashi, Tomoya, 5,542,556, Cl. 215-329.000.

Japan Energy Corporation: *See—*
Kaimai, Takashi; Tawaki, Hiroki; Yokoo, Sumio; and Arakawa, Yoshie, 5,543,068, Cl. 252-68.000.

Japan Exlan Company Limited: *See—*
Shiomi, Yozo; and Wakitani, Mituru, 5,543,216, Cl. 428-373.000.

Jason Incorporated: *See—*
Burke, Thomas F., 5,542,900, Cl. 492-16.000.

Jauhal, Shern: *See—*
Schmitz, Patrick L.; and Jauhal, Shern, 5,544,318, Cl. 395-200.040.

Jayne, Cynthia P., to SpaceLabs Medical, Inc. Method and apparatus for removing artifact encountered during automatic blood pressure measurements. 5,542,428, Cl. 128-681.000.

JDP Innovations, Inc.: *See—*
Pfeiffer, John D., 5,543,702, Cl. 320-15.000.

Jeffers, Frederick J., to Eastman Kodak Company. Method of currency or document validation by use of an anti-counterfeiting magnetic viewing strip. 5,543,911, Cl. 356-71.000.

Jeffrey, Mark T.; Maddern, Thomas S.; and Proctor, Richard J., to GPT Limited. ATM switching arrangement. 5,544,168, Cl. 370-60.100.

Jem-Yuan, Lin. Circularly cleaning swab structure. 5,542,143, Cl. 15-119.100.

Jenkins, Rosalind G.: *See—*
Bills, Gerald F.; Curotto, James E.; Dreikorn, Sarah J.; Jenkins, Rosalind G.; Liesch, Jerrold M.; Morris, Sandra A.; Thompson, John R.; Zink, Deborah L.; Jansson, Richard K.; Basilio, Angela; Diez, Teresa; Pelaez, Fernando; and Vicente, Francisca, 5,543,429, Cl. 514-468.000.

Jenkins, Thomas E., to A.C. Hoffman Engineering, Inc. Dental syringe safety sheath with modified duckbill valve. 5,542,845, Cl. 433-116.000.

Jenness, James R., Jr. Dielectric-supported antenna. 5,543,814, Cl. 343-840.000.

Jenni, Hans R.: *See—*

Wenger, Urs; Jenni, Hans R.; and Wüthrich, Andreas, 5,542,309, Cl. 74-337.500.
Jennings, Philip A.: *See*—
Haseloff, James P.; Gerlach, Wayne L.; Jennings, Philip A.; and Cameron, Fiona H., 5,543,508, Cl. 536-23.200.
Jennmar Corporation: *See*—
Stankus, John C.; and Guo, Song, 5,542,788, Cl. 405-288.000.
Jensen, Frank E.: *See*—
Hutchens, Wilbur D.; Pepper, Virgil W.; and Jensen, Frank E., 5,542,681, Cl. 277-106.000.
Jensen, James A. Polymer precursor for silicon carbide/aluminum nitride ceramics. 5,543,369, Cl. 501-92.000.
Jeon, Yong-Bae, to Daewoo Electronics Co., Ltd. Actuator array and method for the manufacture thereof. 5,543,959, Cl. 359-259.000.
Jeong, Ju Y.: *See*—
Choi, Heung S.; Jeong, Ju Y.; and Kim, Jae A., 5,542,263, Cl. 62-262.000.
Jeram, Edward M.: *See*—
Lewis, Larry N.; and Jeram, Edward M., 5,543,457, Cl. 524-736.000.
Jerhel Plastics, Inc.: *See*—
Slink, John J.; and Mecca, Anna, 5,542,561, Cl. 220-291.000.
Jermo, Olli A., to Tamfelt Corp. Groove configuration for a press belt in an extended nip press. 5,543,015, Cl. 162-358.400.
Jewett Automation, Inc.: *See*—
Scott, George R.; Cutright, Edwin L.; Heidorn, Martin W.; and Kelly, William L., 5,542,886, Cl. 470-34.000.
Jimarez, Miguel A.: *See*—
Fallon, Kenneth M.; Jimarez, Miguel A.; and Zdimal, Joseph E., 5,542,601, Cl. 228-119.000.
Jimenez, Jean, to SGS-Thomson Microelectronics S.A. Method for forming thin and thick metal layers. 5,543,358, Cl. 437-195.000.
Jinkerson, David L., to Alcon Laboratories, Inc. Polymerizable yellow dyes and their use in ophthalmic lenses. 5,543,504, Cl. 534-856.000.
Jiro, Temmyo: *See*—
Richard, Nötzel; Jiro, Temmyo; Toshiaki, Tamamura; Mitsuru, Sugo; Eiichi, Kuramochi; and Teruhiko, Nishiya, 5,543,354, Cl. 437-129.000.
JLG Industries, Inc.: *See*—
Grove, John L.; and Lute, Gerald E., 5,542,812, Cl. 414-543.000.
Jo, Sung H., to Goldstar Co., Ltd. In-line type electron guns for color picture tube. 5,543,681, Cl. 313-414.000.
Joachimi, Detley: *See*—
Siemensmeyer, Karl; Tschierske, Carsten; Theil, Fritz; and Joachimi, Detley, 5,543,076, Cl. 252-299.610.
Job, Robert C.: *See*—
Hoxmeier, Ronald J.; Job, Robert C.; Spence, Bridget A.; and DuBois, Donn A., 5,543,458, Cl. 525-271.000.
Jobe, Richard P.: *See*—
Blackmore, John M.; and Jobe, Richard P., 5,542,437, Cl. 128-899.000.
Joentgen, Winfried: *See*—
Groth, Torsten; Joentgen, Winfried; Linden, Hans W.; Müller, Nikolaus; Rother, Heinz-Joachim; Wagner, Paul; and Kugler, Martin, 5,543,490, Cl. 528-328.000.
Johannessen, Jørgen M. Distributing and regulating unit. 5,543,038, Cl. 210-417.000.
Johansen, Jean L.: *See*—
Meyers, Brenda J.; Herritz, Donald W.; Johansen, Jean L.; Hudson, William B., Jr.; Bell, Randall P.; Prokop, Gary P.; Caruso, James F.; and Allen, James L., 5,542,921, Cl. 604-74.000.
Johanson, Lars. Self-locking railvice guided along a T-slot. 5,542,654, Cl. 269-137.000.
Johnson, Alan T.: *See*—
Vuligonda, Vidyasagar; Teng, Min; Beard, Richard L.; Johnson, Alan T.; Lin, Yuan; and Chandraratna, Roshantha A., 5,543,534, Cl. 549-421.000.
Johnson, Alan W.: *See*—
Louis, Joseph E.; and Johnson, Alan W., 5,542,494, Cl. 180-305.000.
Johnson & Johnson Clinical Diagnostics, Inc.: *See*—
Brummond, Barbara A.; Saini, Mohan S.; and Ponticello, Ignazio S., 5,543,311, Cl. 435-188.000.
Cummins, Thomas J.; and Ekeze, Tobias D., 5,543,305, Cl. 435-91.100.
Johnson & Johnson Vision Products, Inc.: *See*—
Kindt-Larsen, Ture; Beaton, Stephen R.; Martin, Wallace A.; and Walker, Craig W., 5,542,978, Cl. 118-256.000.
Johnson, Anthony D.: *See*—
Weston, John A.; and Johnson, Anthony D., 5,542,519, Cl. 194-217.000.
Johnson, Bruce S.; Khosla, Mukul; Herron, John R.; Brassil, John M.; and Schoen, Alan E., to Finnigan Corporation. Filament assembly for mass spectrometer ion sources. 5,543,625, Cl. 250-427.000.
Johnson, Darrell B.; and Frey, George E., to CBW Automation, Inc. Apparatus and method for loading horizontal stacks of containers into a carton. 5,542,238, Cl. 53-475.000.
Johnson, Dee L.; Knoll, Kenneth F.; and David, John R., to Minnesota Mining and Manufacturing Company. Album containing pads of two-side coated repositionable tapes. 5,543,190, Cl. 428-40.100.
Johnson, Dennis W.: *See*—
Myers, Robert B.; Bailey, Ralph T.; Burley, David R.; Feeney, Steve; Gray, Barbara J.; and Johnson, Dennis W., 5,542,609, Cl. 239-427.000.
Johnson Electric S.A: *See*—
Steiner, Jean-Pierre, 5,543,675, Cl. 310-248.000.
Johnson, Frederick M.: *See*—
Casillo, Joseph; Johnson, Frederick M.; Heath, John M., Jr.; Veilleux, Gregory R.; and Dufault, William J., 5,543,001, Cl. 156-60.000.
Johnson, Larry K.: *See*—
Reidemeister, Eric P.; Johnson, Larry K.; Mandeville, Raymond E.; Strott, Douglas B.; and Southworth, Robert O., 5,542,296, Cl. 73-514.320.
Johnson, Martin E., to Martin Marietta Corporation. Fastener for composite structures. 5,542,777, Cl. 403-389.000.
Johnson, Paul H.: *See*—
Loux, Alan D.; Minners, R. Sjhon; and Johnson, Paul H., 5,544,276, Cl. 392-480.000.
Johnson, Rayburn: *See*—
Hu, Xiaohong; and Johnson, Rayburn, 5,543,992, Cl. 360-132.000.
Johnson, Thomas E.; and Thompson, Craig G., to United Technologies Corporation. Bulkhead cooling fairing. 5,542,246, Cl. 60-39.360.
Johnson, Von W.: *See*—
Wagner, Byron D.; Johnson, Von W.; Miller, Jeffrey S.; and Dempsey, Richard T., 5,544,228, Cl. 379-67.000.
Johnson, William J.; Vegatoro, Guillermo; and Lachman, Larry M., to International Business Machines Corporation. Method and apparatus to enhance the efficiency of storing digitized analog signals. 5,543,792, Cl. 341-123.000.
Johnson, William J.: *See*—
Dugan, Pamela A.; Fitzpatrick, Gregory P.; Johnson, William J.; and Williams, Marvin L., 5,544,048, Cl. 364-419.170.
Johnston, Llewellyn L., to Columbia Machine, Inc. Mold box assembly with partition plates. 5,542,837, Cl. 425-183.000.
Johnston, Louie E., Jr. Automated system for mannfacturing of customized military uniform insignia badges. 5,544,062, Cl. 364-468.240.
Johnston Pump/General Valve, Inc.: *See*—
Smith, Gordon M., 5,542,644, Cl. 251-163.000.
Johnstone, Robert M.: *See*—
Grondal, Daniel J.; and Johnstone, Robert M., 5,542,201, Cl. 40-570.000.
Jones, Frank N.; Du, Cong; Teng, Ganghui; Dimian, Adel F.; and Wang, Daozhang, to North Dakota State University. Compounds with liquid crystalline properties and coating binders based thereon. 5,543,475, Cl. 525-444.000.
Jones, Frank N.; Du, Cong; Teng, Ganghui; Dimian, Adel F.; and Wang, Daozhang, to North Dakota State University. Compounds with liquid crystalline properties and coating binders based thereon. 5,543,476, Cl. 525-444.000.
Jones, Gary A.: *See*—
Blackman, Daniel S.; Warner, Richard D.; DeJidas, Lloyd P.; and Jones, Gary A., 5,542,352, Cl. 101-483.000.
Jones, Keith L.: *See*—
Hartman, Peter G.; Jones, Keith L.; Larson, Thomas A.; and Weber, Gregory T., 5,542,390, Cl. 123-412.000.
Jones, Randall B.: *See*—
Behr, David A.; and Jones, Randall B., 5,543,789, Cl. 340-995.000.
Jones, Randall W., to Board of Regents of Univ. of NE. NMR conformal solenoidal coil. 5,543,710, Cl. 324-318.000.
Jones, Richard S.; Hodges, William H., Jr.; and Evans, Paul M., to Union Switch & Signal Inc. Highway crossing gate mechanism circuit contact. 5,543,596, Cl. 200-573.000.
Jones, William J.: *See*—
Geib, Joseph J.; Jones, William J.; Mennie, Douglas U.; and Raterman, Donald E., 5,542,880, Cl. 453-10.000.
Jonker, Johannes C. Biodegradable disposable diaper. 5,542,940, Cl. 604-367.000.
Jonsson, Bjorn E. R.; and Ghisler, Walter, to Telefonaktiebolaget LM Ericsson. Reestablishment. 5,544,224, Cl. 379-58.000.
Jordan, Dicky R. Flexible athletic training perimeter system. 5,542,894, Cl. 482-83.000.
Joseph, William G. Fry pan cooking shield and method. 5,542,347, Cl. 99-422.000.
Joshi, Nayan; McCaskie, John E.; and Boyle, Michael T., to Atotech USA, Inc. Self-accelerating and replenishing non-formaldehyde immersion coating method. 5,543,182, Cl. 427-443.100.
Joung, Mun C.: *See*—
Kang, Myung G.; Kang, Seong S.; Choi, Sung H.; Joung, Mun C.; Jang, Byoung G.; Ryu, Kye Y.; Yu, Hyo C.; and Lee, Sang J., 5,543,981, Cl. 360-96.600.
Jourdain, Gérard E. A.; and Soligny, Marcel R., to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation S.N.E.C.M.A. Supersonic nozzle, in particular for a turbojet engine. 5,542,607, Cl. 239-265.410.
JPS Automotive Products Corporation: *See*—
Beasley, Alonzo W., 5,542,703, Cl. 280-739.000.
Judy, Michael: *See*—
Howe, Roger T.; Barber, H. Jerome; and Judy, Michael, 5,542,295, Cl. 73-514.180.
Juhlke, Timothy J.: *See*—
Bierschenk, Thomas R.; Juhlke, Timothy J.; Kawa, Hajimu; and Lagow, Richard J., 5,543,567, Cl. 562-582.000.
Julien, Robert A.: *See*—
Malik, John H.; Mikula, John J.; and Julien, Robert A., 5,543,107, Cl. 264-529.000.
Julius, Robert P., to Nice-Pak Products, Inc. Moist tissue package construction and tissue. 5,542,567, Cl. 221-63.000.

Julius, Robert P., to Nice-Pak Products, Inc. Moist tissue package construction and tissue. 5,542,568, Cl. 221-63.000.
Jung, Michael E.: *See*—
Harrington, Philip M.; and Jung, Michael E., 5,543,510, Cl. 536-53.000.
Juo, Rouh-Rong: *See*—
Bronstein, Irena Y.; Edwards, Brooks; and Juo, Rouh-Rong, 5,543,295, Cl. 435-6.000.
Juri, Tatsuro: *See*—
Hamai, Shinji; Iketani, Akira; Matsumi, Chiyoko; Juri, Tatsuro; Yamada, Masazumi; Kawakami, Yasunori; and Murakami, Yuuzou, 5,543,937, Cl. 358-341.000.
Jurisich, Peter L.; and Achtarides, Theodore A. Ship having a crushable, energy absorbing hull assembly. 5,542,365, Cl. 114-65.00R.
Jurkovic, Michael J.: *See*—
Aubettine, Matthew E.; Beyzavi, Kianoush; Broker, Harold J.; Checca, Ronald P.; Granato, Michael A.; Haeussler, David A.; Herasimtschuk, Michael; Jurkovic, Michael J.; Salem, Gerard M.; Selinger, Craig R.; and Zehr, Paul R., 5,544,088, Cl. 364-489.000.
Jurkovic, Raimund: *See*—
Rüf, Hartmut; Eibl, Markus; and Jurkovic, Raimund, 5,543,101, Cl. 264-187.000.
Juskey, Frank J.; Suppelsa, Anthony B.; and Nounou, Fadia, to Motorola, Inc. Method of selectively releasing plastic molding material from a surface. 5,542,171, Cl. 29-840.000.
Kabeya, Nobuaki: *See*—
Kato, Motoi; Takeuchi, Akihiko; Ochiai, Toshihiko; Miyashiro, Toshiaki; Kabeya, Nobuaki; Suzuki, Takehiko; and Kume, Takao, 5,543,904, Cl. 355-285.000.
Kabushiiki Kaisha Toshiba: *See*—
Inoue, Kanji, 5,544,007, Cl. 361-684.000.
Kabushiki Kaisha Hayashibara: *See*—
Mandai, Takahiko; Shibuya, Takashi; Sugimoto, Toshiyuki; and Miyake, Toshio, 5,543,513, Cl. 536-123.130.
Kabushiki Kaisha Kawai Gakki Seisa Kusho: *See*—
Tamai, Yutaka; Shimoda, Yoshiaki; and Tsukamoto, Kazuhiro, 5,542,332, Cl. 84-435.000.
Kabushiki Kaisha Komatsu Seisakusho: *See*—
Matsuno, Akira; and Nire, Takashi, 5,542,979, Cl. 118-719.000.
Kabushiki Kaisha Meidensha: *See*—
Suzuki, Yorikatsu, 5,542,290, Cl. 73-117.000.
Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho: *See*—
Koide, Teruhiko, 5,542,693, Cl. 280-728.200.
Kabushiki Kaisha Topcon: *See*—
Kitajima, Nobuaki; and Takagi, Kazutoshi, 5,543,962, Cl. 359-384.000.
Kabushiki Kaisha Toshiba: *See*—
Haikawa, Katsumasa; Mochida, Takaaki; Nagano, Mamoru; and Nakajima, Tsuyoshi, 5,544,211, Cl. 376-435.000.
Hammerl, Erwin; Mandelman, Jack A.; Ho, Herbert L.; Shiozawa, Junichi; and Stengl, Reinhard J., 5,543,348, Cl. 437-60.000.
Hara, Akihito; Higuchi, Toshiharu; Yakabe, Toru; Kanda, Shigeo; and Yamamoto, Eiji, 5,543,682, Cl. 313-446.000.
Hiroi, Kazuo, 5,544,039, Cl. 364-151.000.
Hoshi, Satoru; and Masuda, Masami, 5,544,123, Cl. 365-230.060.
Hosokawa, Ryuji; and Yanagida, Satoru, 5,543,658, Cl. 257-676.000.
Hosoya, Ryo; and Kobayashi, Takaichi, 5,544,009, Cl. 361-684.000.
Iizuka, Emiko; and Arai, Makoto, 5,544,083, Cl. 364-709.010.
Itoh, Jun, 5,543,984, Cl. 360-99.090.
Koike, Norihiro, 5,544,012, Cl. 361-695.000.
Kuwagata, Masaaki; Matsuo, Ryosuke; Maruyama, Keiji; Miyawaki, Naokazu; and Ueno, Hisashi, 5,544,120, Cl. 365-222.000.
Machida, Shigeru; Urano, Taeko I.; Sano, Kenji; and Mori, Yasushi, 5,543,949, Cl. 359-75.000.
Matsuoka, Fumitomo; and Ikeda, Naoki, 5,543,360, Cl. 437-195.000.
Nakanishi, Hidetoshi; Usui, Yasunori; and Yakushiji, Shigenori, 5,543,639, Cl. 257-133.000.
Shibata, Tsuyoshi; Hashimoto, Koji; Heida, Katsuhiko; Kawano, Kenji; Ito, Shinichi; and Horioka, Keiji, 5,543,252, Cl. 430-5.000.
Sone, Yoshinori; Fujiwara, Takayoshi; Honjo, Takashi; Hirayama, Takuya; and Yoshizawa, Hiroyasu, 5,542,832, Cl. 418-152.000.
Suzuki, Takehiko; Taniguchi, Shozo; Kanemaru, Kohji; Sato, Yoshiyuki; and Enamito, Akihiko, 5,544,074, Cl. 364-508.000.
Takubo, Chiaki, 5,543,663, Cl. 257-720.000.
Wada, Ichiro, 5,542,301, Cl. 73-861.110.
Yamamuro, Mikio, 5,544,134, Cl. 369-32.000.
Yoshii, Ichiro; Kamijoh, Hiroyuki; Ozawa, Yoshio; Yamabe, Kikuo; Hashimoto, Kazuhiko; Okumura, Katsuya; and Hama, Kaoru, 5,543,334, Cl. 437-8.000.
Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Murakami, Kazuo; Fujii, Toshiro; Iwama, Kazuaki; and Ohyama, Katsuya, 5,542,340, Cl. 92-71.000.
Kabushiki Kaisha Toyota Chuo Kenkyusho: *See*—
Yokota, Koji; Fukui, Masayuki; and Tanaka, Toshiyuki, 5,543,124, Cl. 423-239.100.
Kachanov, Alexander A., to Science Solutions, Inc. Interferometer with alignment assembly and with processor for linearizing fringes for determining the wavelength of laser light. 5,543,916, Cl. 356-354.000.
Kachel, Peter F.: *See*—
Pao, Hsueh-Wen; Faulstich, David L.; Snyder, Dane T.; Ma, Johnny T.; Izzo, Kenneth R.; Swanson, Joel C.; Laurent, Martin S.; and Kachel, Peter F., 5,544,208, Cl. 376-253.000.
Kaczmarczyk, Edward T.; Fuzzen, Daniel R.; Aucoin, Paul G.; and Norris, Lyle V., to Deere & Company. Tube clamp for bundling a set of tubes for shipment and for mounting them to a loader boom. 5,542,339, Cl. 91-508.000.
Kada, Kazumasa; Horigichi, Masaharu; and Yamada, Hiroaki, to Nippon Telegraph and Telephone Corporation. Reflectometry of an optical waveguide using a low coherence reflectometer. 5,543,912, Cl. 356-73.100.
Kadar, Avraham: *See*—
Margulies, Joseph Y., 5,542,847, Cl. 433-173.000.
Kadoiwa, Kaoru; and Kato, Manabu, to Mitsubishi Denki Kabushiki Kaisha. Visible light laser diode and manufacturing method of visible light laser diode. 5,544,185, Cl. 372-44.000.
Kadoiwa, Kaoru; Motoda, Takashi; and Kato, Manabu, to Mitsubishi Denki Kabushiki Kaisha. Multiquantum barrier structure and semiconductor laser diode. 5,544,187, Cl. 372-45.000.
Kadowaki, Toshio; Takemoto, Hajime; and Yamaguchi, Shojiro, to Shimadzu Corporation. Mobile medical X-ray apparatus. 5,544,217, Cl. 378-198.000.
Kadyrov, Ernest; and Kadyrov, Valery, to Demeton USA, Inc. Gas detonation spraying apparatus. 5,542,606, Cl. 239-81.000.
Kadyrov, Valery: *See*—
Kadyrov, Ernest; and Kadyrov, Valery, 5,542,606, Cl. 239-81.000.
Kaesemeyer, W. H. Method and formulation of stimulating nitric oxide synthesis. 5,543,430, Cl. 514-565.000.
Kagami, Kenji: *See*—
Ueno, Kazunori; Fukui, Tetsuro; Kobayashi, Motokazu; Ooi, Takehiko; Kagami, Kenji; Suzuki, Masao; and Nishino, Katsuya, 5,543,286, Cl. 430-619.000.
Kagara, Kohji; Goto, Shunsuke; Yonishi, Satoshi; Ikushima, Muneharu; Baba, Yukihisa; and Horiai, Haruo, to Fujisawa Pharmaceutical Co., Ltd. Process for producing pyrrolidine derivative and salt thereof. 5,543,525, Cl. 546-279.100.
Kagaya, Mineo: *See*—
Ishida, Noboru; Ishimaru, Mitsuaki; and Kagaya, Mineo, 5,543,081, Cl. 508-194.000.
Kaimai, Takashi; Tawaki, Hiroki; Yokoo, Sumio; and Arakawa, Yoshie, to Japan Energy Corporation; and Nissan Motor Co., Ltd. Lubricating oils for flon compressors, compositions adapted for flon compresors and composed of mixtures of said lubricating oils and flon, and process for lubricating flon compressor by using said lubricating oils. 5,543,068, Cl. 252-68.000.
Kain, William S.: *See*—
McVay, Kenneth R.; Gaige, Dennis G.; and Kain, William S., 5,543,565, Cl. 562-523.000.
Kajiyama, Koji, to Hitachi Medical Corporation. Magnetic resonance imaging method and apparatus for generating a plurality of single spin echoes. 5,543,709, Cl. 324-309.000.
Kakavoulis-Perera, Dionisis; and Minichiello, Chris, to Kakavoulis-Perera, Dionisis. Storage rack for holding articles in a cantilever fashion. 5,542,550, Cl. 211-40.000.
Kakumoto, Shigeru: *See*—
Fujita, Takehiro; Kakumoto, Shigeru; and Nomoto, Yasuei, 5,544,052, Cl. 364-420.000.
Kalb, Helmut: *See*—
Bacher, Walter; Biedermann, Hans; Dinglreiter, Heinz; and Kalb, Helmut, 5,543,108, Cl. 264-553.000.
Kaldnes Miljoteknologi A/S: *See*—
Odegaard, Hallvard, 5,543,039, Cl. 210-150.000.
Kali und Salz GmbH: *See*—
Gotte, Jost; Schnez, Harald; and Singewald, Arno, 5,542,546, Cl. 209-164.000.
Kalliokoski, Matti: *See*—
Tuovinen, Heikki; Saari, Jorma; Roine, Antti; Holma, Hannu; and Kalliokoski, Matti, 5,543,128, Cl. 423-303.000.
Kamae, Hirosuke: *See*—
Terada, Masahiro; Kamae, Hirosuke; Yusawa, Motoyasu; Watanabe, Kazuyuki; and Saito, Mitsuo, 5,542,982, Cl. 134-5.000.
Kamakura, Hikoichi; Tsutsui, Kiyoshi; Akagawa, Tomohiko; Sakai, Ikunori; Ichikawa, Shigeji; and Arai, Katsunori, to Ube industries, Ltd.; and Kansei Corp. Reinforced polypropylene resin composition. 5,543,454, Cl. 524-451.000.
Kamei, Takahiro; Hinosawa, Shinji; Takahashi, Tokuji; Terada, Yoshiji; Nakajima, Takeaki; and Sakata, Yoshiyasu, to Honda Giken Kogyo Kabushiki Kaisha. Subframe assembly for vehicle. 5,542,707, Cl. 280-834.000.
Kamewada, Shunichi, to Raax Co., Ltd. Mirror for producing a development picture of the wall of a borehole in the ground and device therefor. 5,543,972, Cl. 359-834.000.
Kameyama, Kenji: *See*—
Kimura, Yuji; Obta, Eiichi; Kondo, Hitoshi; Takahashi, Masaetsu; Kameyama, Kenji; and Yamada, Katsuyuki, 5,543,945, Cl. 359-55.000.
Kamijoh, Hiroyuki: *See*—
Yoshii, Ichiro; Kamijoh, Hiroyuki; Ozawa, Yoshio; Yamabe, Kikuo; Hashimoto, Kazuhiko; Okumura, Katsuya; and Hama, Kaoru, 5,543,334, Cl. 437-8.000.
Kamikawa, Hiroshi: *See*—
Tateishi, Keiichi; Ishige, Sadao; and Kamikawa, Hiroshi, 5,543,260, Cl. 430-138.000.
Kaminski, David P.: *See*—
Allison, Johnny H.; Hammer, Kathleen M.; and Kaminski, David P., 5,542,489, Cl. 180-68.500.
Kamisaki, Akiyoshi: *See*—

Oda, Katsunari; Kamisaki, Akiyoshi; Kubota, Norimasa; and Narikawa, Teruo, 5,543,905, Cl. 355-285.000.
Kamiya, Kozo: *See*—
Okazaki, Hajime; Kazato, Manabu; Ouchi, Masaoki; Nagano, Haruki; Ushio, Masaru; and Kamiya, Kozo, 5,543,041, Cl. 210-181.000.
Kamura, Hitoshi: *See*—
Matsumoto, Takuya; Hashimoto, Toru; Miyake, Mitsuhiro; Kamura, Hitoshi; and Yoshida, Yasuhisa, 5,542,400, Cl. 123-571.000.
Kanamori, Shion, to Fuji Photo Film Co., Ltd. Side grip for a video camera. 5,543,841, Cl. 348-375.000.
Kanamuro, Masayuki: *See*—
Matsubara, Takashi; Hasuda, Masanori; and Kanamuro, Masayuki, 5,543,880, Cl. 354-252.000.
Kanaoka, Atsushi: *See*—
Takagi, Kazuhiro; Ohtani, Takashi; Nishida, Tateki; Hamaguchi, Hiroshi; Nishimatsu, Tetsuyoshi; and Kanaoka, Atsushi, 5,543,573, Cl. 514-590.000.
Kanavy, Walter J.; and Brown, Timothy P., to Data Management Corp. Code generation and data access system. 5,544,298, Cl. 395-155.000.
Kanaya, Motonori; Noguchi, Kenichi; Nagaya, Yoshiaki; and Itoh, Hisashi, to Texas Instruments Incorporated; Fuji Photo Optical Co., Ltd.; and Hitachi Denshi Kabushiki Kaisha. Image pickup device with attached interference stripe noise prevention mechanism. 5,543,612, Cl. 250-208.100.
Kanazumi, Hisao; and Yamashiro, Akiyoshi, to Mitsubishi Materials Corporation. Melt discharging launder and metallurgical furnace installation using same. 5,542,651, Cl. 266-231.000.
Kanda, Shigemi, to Ricoh Company, Ltd. Cleaning apparatus disposed on an image forming apparatus. 5,543,906, Cl. 355-299.000.
Kanda, Shigeo: *See*—
Hara, Akihito; Higuchi, Toshiharu; Yakabe, Toru; Kanda, Shigeo; and Yamamoto, Eiji, 5,543,682, Cl. 313-446.000.
Kaneko, Tatsushi: *See*—
Shimizu, Takaaki; Kinsho, Takeshi; Ogihara, Tsutomu; Kaneko, Tatsushi; Saito, Ryuichi; and Kurihara, Hideshi, 5,543,539, Cl. 556-406.000.
Kaneko, Yoshio: *See*—
Uzawa, Shigeyuki; Nakai, Akiya; Imaizumi, Masaaki; Tanaka, Hiroshi; Takakura, Noburu; and Kaneko, Yoshio, 5,543,921, Cl. 356-401.000.
Kanemaru, Kohji: *See*—
Suzuki, Takehiko; Taniguchi, Shozo; Kanemaru, Kohji; Sato, Yoshiyuki; and Enamito, Akihiko, 5,544,074, Cl. 364-508.000.
Kaneta, Mayumi: *See*—
Nakai, Satoru; Kaneta, Mayumi; Kikumoto, Yoshikazu; Hong, Yeong-Man; Kawai, Kazuyoshi; Takegata, Setsuko; Ishii, Kiyoshi; Yanagihara, Yasuo; and Hirai, Yoshikatsu, 5,543,140, Cl. 424-85.200.
Kanetoh, Shuzi: *See*—
Nagataki, Yasunobu; Tsuyama, Seishi; Hosoya, Yoshihiro; Okita, Tomoyoshi; Kanetoh, Shuzi; and Takada, Yasuyuki, 5,542,996, Cl. 148-652.000.
Kanevsky, Dimitri: *See*—
Bakis, Raimo; Gopalakrishnan, Ponani S.; Kanevsky, Dimitri; Nadas, Arthur J.; Nahamoo, David; Picheny, Michael A.; and Sedivy, Jan, 5,544,277, Cl. 395-2.200.
Kang, Lei, to Champion Company, The. Fluid actuated lifting and tilting device. 5,542,806, Cl. 414-422.000.
Kang, Myung G.; Kang, Seong S.; Choi, Sung H.; Joung, Mun C.; Jang, Byoung G.; Ryu, Kye Y.; Yu, Hyo C.; and Lee, Sang J., to Goldstar Co., LTD. Cassette housing for magnetic recording and reproducing apparatus and method for manufacturing the same. 5,543,981, Cl. 360-96.600.
Kang, Seong S.: *See*—
Kang, Myung G.; Kang, Seong S.; Choi, Sung H.; Joung, Mun C.; Jang, Byoung G.; Ryu, Kye Y.; Yu, Hyo C.; and Lee, Sang J., 5,543,981, Cl. 360-96.600.
Kang, Yong S.; Oh, Yong K.; Cha, Se I.; and Lee, Chul S., to Gold Star C., Ltd. Reserve-recording method and apparatus for VCR. 5,543,933, Cl. 358-335.000.
Kanno, Masaaki: *See*—
Yamaguchi, Manabu; and Kanno, Masaaki, 5,543,027, Cl. 204-660.000.
Kano, Hiroshi: *See*—
Iwase, Nobuhiro; Kano, Hiroshi; Tadaki, Shinji; Hasegawa, Masami; and Koshino, Nagaaki, 5,543,080, Cl. 252-301.40H.
Kansei Corp.: *See*—
Kamakura, Hikoichi; Tsutsui, Kiyoshi; Akagawa, Tomohiko; Sakai, Ikunori; Ichikawa, Shigeji; and Arai, Katsunori, 5,543,454, Cl. 524-451.000.
Kanthal GmbH: *See*—
Schmädig, Harald; and Klöck, Hubert, 5,543,603, Cl. 219-550.000.
Kantro, Scott, to Donna Karan Shoe Company. Insole. 5,542,196, Cl. 36-44.000.
Kanzaki Kokyukoki Mfg. Co., Ltd.: *See*—
Hasegawa, Toshiyuki; and Iida, Masaru, 5,542,307, Cl. 74-15.630.
Kanzaki, Teruaki, to Mitsubishi Denki Kabushiki Kaisha. Successive approximation analog-to-digital converter using CMOS inverter with pull-up and/or pull-down switches. 5,543,794, Cl. 341-161.000.
Kao Corporation: *See*—
Kayane, Shigeto; Kawai, Takashi; Sakata, Masaru; Imamura, Takashi; Tanigaki, Masanobu; and Kurosaki, Tomihiro, 5,543,310, Cl. 435-180.000.
Kapak Corporation: *See*—
Richison, Cecil; and Bell, Gary M., 5,542,902, Cl. 493-195.000.
Kapoor, Ashok K., to LSI Logic Corporation. Combined JFET and MOS transistor device, circuit. 5,543,643, Cl. 257-262.000.
Kapp, Steven C.: *See*—
Shroy, Robert E., Jr.; Green, Donald T.; and Kapp, Steven C., 5,544,215, Cl. 378-98.120.
Karakama, Toshiyuki: *See*—
Shishido, Kazuo; Sasaki, Shinichi; Ikemoto, Isao; Yashiro, Masahiko; Karakama, Toshiyuki; and Numagami, Atsushi, 5,543,898, Cl. 355-210.000.
Karakawa, Fuminari, to Mizuho USA, Inc. Specimen handling device. 5,543,115, Cl. 422-102.000.
Karani, Ron R., to NPK Construction Equipment, Inc. Heavy duty shear with anti-jam feature. 5,542,180, Cl. 30-134.000.
Kargula, Christopher J.: *See*—
Rea, Perry J.; Miller, Michael R.; Kinder, Dennis G.; Kargula, Christopher J.; and Stevens, William E., 5,542,717, Cl. 285-319.000.
Karidis, John P.; Goldowsky, Michael P.; and McVicker, Gerard, to International Business Machines Corporation. Keyboard with translating sections. 5,543,787, Cl. 341-20.000.
Karino, Yukio: *See*—
Yasuda, Tomokazu; Karino, Yukio; and Nakanishi, Masatoshi, 5,543,288, Cl. 430-631.000.
Karinthi, Pierre; and Jamonet, Bernard, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Dilute solution of a hydride in liquid nitrogen. 5,543,127, Cl. 423-294.000.
Karl Mayer Textilmachinenfabrik GmbH: *See*—
Mista, Kresimir; and Hohne, Hans-Jurgen, 5,542,270, Cl. 66-207.000.
Karl, Rudolf: *See*—
Münster, Peter; Ditrich, Klaus; Hamprecht, Gerhard; Gerber, Matthias; Westphalen, Karl-Otto; Walter, Helmut; and Karl, Rudolf, 5,543,416, Cl. 504-271.000.
Karlsson, Jan; and Dahlgren, Jan, to AB Volvo. Intake system for multiple cylinder combustion engines. 5,542,386, Cl. 123-184.570.
Karlsson, Jarding, to ABU AB. Fishing reel of the multiplier type. 5,542,619, Cl. 242-289.000.
Karschti, Thomas M.: *See*—
von Bonin, Wulf; von Gizycki, Ulrich, deceased; Leroux, Roland; Karschti, Thomas M.; and Thürk, Jürgen, 5,543,230, Cl. 428-432.000.
Kasahara, Hiroyuki, to Fujitsu Limited. ATM transmission system with a variable transmission rate. 5,544,170, Cl. 370-84.000.
Kasai, Toshio: *See*—
Yamazaki, Yoshihiro; Iizuka, Takashi; and Kasai, Toshio, 5,543,955, Cl. 359-204.000.
Kasama, Nobuyuki: *See*—
Iwaki, Tadao; Mitsuoka, Yasuyki; and Kasama, Nobuyuki, 5,544,252, Cl. 382-280.000.
Kasano, Fumihiro: *See*—
Ichiya, Mitsuo; Kasano, Fumihiro; Nishimura, Hiromi; Lewiner, Jacques; and Perino, Dider, 5,544,001, Cl. 361-233.000.
Kashida, Motokazu: *See*—
Fujii, Akio; Kashida, Motokazu; Watanabe, Ikuo; and Yamashita, Shinichi, 5,544,176, Cl. 371-40.100.
Kashihara, Hideki; Nishimura, Akira; and Takiguchi, Toshihiko, to Sumitomo Electric Industries, Ltd. Escape device for aircraft. 5,542,629, Cl. 244-137.200.
Kashihara, Hideki: *See*—
Nishimura, Akira; and Kashihara, Hideki, 5,542,628, Cl. 244-137.200.
Kashiki, Hironori: *See*—
Watanabe, Kiyoshi; Abe, Yasuhiro; Sakamoto, Masaho; Saitou, Takeshi; Ishii, Takayoshi; Akimoto, Yukio; Kashiki, Hironori; and Kato, Masao, 5,543,607, Cl. 235-383.000.
Kasik, David P. Guard for a cooking device. 5,542,408, Cl. 126-201.000.
Kasmir, Seton P.: *See*—
Robinson, Mark T.; Gardner, Steven H.; Wong, Matt; Kasmir, Seton P.; Balachandran, Kumar; Graham, Sue; Schjelderup, Gail; and Quick, Roy F., Jr., 5,544,222, Cl. 379-58.000.
Kasper, Ernst, to EC Engineering+Consulting Spezialmaschinen GmbH. Device for driving, guiding and steering a vehicle wheel. 5,542,492, Cl. 180-253.000.
Kasseckert, Rudolf: *See*—
Fuchsreiter, Johannes; Schmidt, Konrad; Kasseckert, Rudolf; and Neumann, Walter, 5,544,314, Cl. 395-200.000.
Katagiri, Moriya: *See*—
Suzuki, Tatsuya; Matsutani, Shnnji; Sugita, Yukihiko; Katagiri, Moriya; and Ikeda, Manabu, 5,543,876, Cl. 354-149.110.
Katakis, Ioanis: *See*—
Heller, Adam; Katakis, Ioanis; and Ye, Ling, 5,543,326, Cl. 435-287.900.
Katayama, Hiroyuki; Hirokane, Junji; Takahashi, Akira; and Ohta, Kenji, to Sharp Kabushiki Kaisha. Optical recording medium. and apparatus and method for recording and reproducing information on the same. 5,544,149, Cl. 369-275.300.
Katayama, Tetsuya; Murabe, Kaoru; Komura, Osamu; Kawai, Chihiro; Yamakawa, Akira; Matsunuma, Kenji; Yasuoka, Norio; Higuchi, Matsuo; and Miyake, Masaya, to Sumitomo Electric Industries, Ltd. Slide member and method of manufacturing the same. 5,543,371, Cl. 501-97.000.
Kato, Akira; and Yabuki, Yoshikazu, to Sumitomo Rubber Industries, Ltd. Thread wound golf ball. 5,542,663, Cl. 473-363.000.
Kato, Akira: *See*—
Hamada, Akihiko; Yubuki, Yoshikazu; and Kato, Akira, 5,543,467, Cl. 525-207.000.

Kato, Harunori; Mizutani, Yasukazu; Shibata, Shigekazu; Kimura, Katsuhiro; Koseki, Hideki; Urano, Mitsuhiro; and Watanabe, Masayuki, to Ubukata Industries. Inertia switching device. 5,542,299, Cl. 73-654.000.
Kato, Hideki; Yoshizawa, Hideki; Iciki, Hiroki; and Masumoto, Daiki, to Fujitsu Limited. Parallel data processing system which efficiently performs matrix and neurocomputer operations, in a negligible data transmission time. 5,544,336, Cl. 395-311.000.
Kato, Hideto: *See*—
Hiratani, Haruyuki; Nakata, Kazuhiko; Ichinohe, Shoji; Yamazaki, Toshio; and Kato, Hideto, 5,543,442, Cl. 523-107.000.
Kato, Junichi: *See*—
Inami, Satoru; Ohkubo, Masaharu; and Kato, Junichi, 5,543,899, Cl. 355-219.000.
Kato, Manabu: *See*—
Kadoiwa, Kaoru; and Kato, Manabu, 5,544,185, Cl. 372-44.000.
Kadoiwa, Kaoru; Motoda, Takashi; and Kato, Manabu, 5,544,187, Cl. 372-45.000.
Kato, Masaaki: *See*—
Ohzu, Akira; Arisawa, Takashi; Kato, Masaaki; and Suzuki, Yoji, 5,544,191, Cl. 372-56.000.
Kato, Masao: *See*—
Watanabe, Kiyoshi; Abe, Yasuhiro; Sakamoto, Masaho; Saitou, Takeshi; Ishii, Takayoshi; Akimoto, Yukio; Kashiki, Hironori; and Kato, Masao, 5,543,607, Cl. 235-383.000.
Kato, Motoi; Takeuchi, Akihiko; Ochiai, Toshihiko; Miyashiro, Toshiaki; Kabeya, Nobuaki; Suzuki, Takehiko; and Kume, Takao, to Canon Kabushiki Kaisha. Fixating device. 5,543,904, Cl. 355-285.000.
Kato, Motoki; Yagasaki, Yoichi; and Yonemitsu, Jun, to Sony Corporation. Communication jack nose cleaning tool. 5,543,843, Cl. 348-400.000.
Kato, Motoki, to Sony Corporation. Picture coding and decoding method for random accessing. 5,543,847, Cl. 348-415.000.
Kato, Tomokazu; Araki, Kazuhiro; Takano, Yoshiaki; Maruta, Syuzi; Nomura, Keiichi; Nagatani, Kentaro; Noda, Takashi; and Kishimoto, Hiroyuki, to Minolta Camera Kabushiki Kaisha. Copying apparatus which can prohibit the sorting process. 5,543,907, Cl. 355-313.000.
Kato, Toshiyuki: *See*—
Seto, Kazuhiro; Okuda, Kaneharu; Sakata, Kei; Kato, Toshiyuki; and Ono, Takashi, 5,542,994, Cl. 148-603.000.
Kato, Yasunari: *See*—
Suzuki, Haruhiko; Kato, Yasunari; Ota, Kazuomi; and Yamaguchi, Hiroaki, 5,544,000, Cl. 361-139.000.
Kato, Yoshiaki: *See*—
Murakami, Tokumichi; Kato, Yoshiaki; and Shimada, Toshiaki, 5,543,848, Cl. 348-416.000.
Katoh, Akira; Kitagawa, Hiroshi; Tsuzuki, Shunichi; Takahashi, Jun; Fujimoto, Sachito; and Hirota, Toshiaki, to Honda Giken Kogyo Kabushiki Kaisha. Fuel injection amount control system for internal combustion engines. 5,542,393, Cl. 123-491.000.
Katsuhara, Kenji, to Mita Industrial Co., Ltd. Method of adjusting density detecting device used for image forming apparatus. 5,543,895, Cl. 355-203.000.
Katsumata, Shin; Fisher-Votava, Martha; and Halsey, David, to Sundstrand Corporation. High performance magnetic bearing. 5,543,673, Cl. 310-90.500.
Katsuyama, Kiyomi: *See*—
Enami, Hiromichi; Katsuyama, Kiyomi; and Katsuyama, Masanori, 5,543,336, Cl. 437-24.000.
Katsuyama, Masanori: *See*—
Enami, Hiromichi; Katsuyama, Kiyomi; and Katsuyama, Masanori, 5,543,336, Cl. 437-24.000.
Katz, Joseph: *See*—
Bard, Simon; Strat, Askold; Katz, Joseph; and Metlitsky, Boris, 5,543,610, Cl. 235-462.000.
Katzer, Hans; Kratel, Günter; and Biller, Beate, to Wacker-Chemie GmbH. Process for producing shaped bodies having thermally insulating properties. 5,543,095, Cl. 264-063.000.
Kaufman, Arie E.; Yagel, Roni; and Cohen-or, Daniel, to Research Foundation of State University of New York, The. Method and apparatus for real-time volume rendering from an arbitrary viewing direction. 5,544,283, Cl. 395-124.000.
Kaufman, Jack W. Waste treatment material dispensing canister. 5,543,118, Cl. 422-292.000.
Kawa, Hajimu: *See*—
Bierschenk, Thomas R.; Juhlke, Timothy J.; Kawa, Hajimu; and Lagow, Richard J., 5,543,567, Cl. 562-582.000.
Kawabata, Kenji: *See*—
Fujii, Noboru; Kawabata, Kenji; Hashi, Masaaki; Niikura, Junji; and Ouya, Tomotoshi, 5,542,239, Cl. 53-477.000.
Kawahara, Takayuki; Suzuki, Hitoshi; and Kominato, Asao, to Mitsubishi Chemical Corporation; and Nisshin Steel Co., Ltd. Process for preparing an ambient temperature molten salt using thionyl chloride. 5,543,522, Cl. 546-2.000.
Kawai, Chihiro: *See*—
Katayama, Tetsuya; Murabe, Kaoru; Komura, Osamu; Kawai, Chihiro; Yamakawa, Akira; Matsunuma, Kenji; Yasuoka, Norio; Higuchi, Matsuo; and Miyake, Masaya, 5,543,371, Cl. 501-97.000.
Kawai, Hideki: *See*—
Suzuki, Etsuro; Kawai, Hideki; and Awashima, Hiroki, 5,542,266, Cl. 62-469.000.
Kawai, Kazuyoshi: *See*—
Nakai, Satoru; Kaneta, Mayumi; Kikumoto, Yoshikazu; Hong, Yeong-Man; Kawai, Kazuyoshi; Takegata, Setsuko; Ishii, Kiyoshi; Yanagihara, Yasuo; and Hirai, Yoshikatsu, 5,543,140, Cl. 424-85.200.
Kawai, Shinji: *See*—
Makino, Tetsuo; Furukawa, Hideki; Matsubara, Osamu; Sawaki, Atsushi; and Kawai, Shinji, 5,542,133, Cl. 4-420.400.
Kawai, Takashi: *See*—
Kayane, Shigeto; Kawai, Takashi; Sakata, Masaru; Imamura, Takashi; Tanigaki, Masanobu; and Kurosaki, Tomihiro, 5,543,310, Cl. 435-180.000.
Kawakami, Hiroaki: *See*—
Maebashi, Youichirou; Fujii, Haruo; Sasame, Hiroshi; Kawakami, Hiroaki; Kobayashi, Tatsuya; Kobayashi, Tetsuya; Enomoto, Naoki; Uchiyama, Akihiko; and Saito, Yoshiro, 5,543,900, Cl. 355-219.000.
Kawakami, Satoru; Suzuki, Tsuyoshi; Arami, Junichi; and Deguchi, Yoichi, to Tokyo Electron Kabushiki Kaisha. Plasma treatment apparatus. 5,542,559, Cl. 216-67.000.
Kawakami, Shigeru: *See*—
Miyata, Minoru; and Kawakami, Shigeru, 5,543,859, Cl. 348-625.000.
Kawakami, Yasunori: *See*—
Hamai, Shinji; Iketani, Akira; Matsumi, Chiyoko; Juri, Tatsuro; Yamada, Masazumi; Kawakami, Yasunori; and Murakami, Yuuzou, 5,543,937, Cl. 358-341.000.
Kawaki, Takao; Amagai, Akikazu; Yamada, Toshiaki; Harada, Hidefumi; Ban, Hajime; Takeda, Yuji; and Yamamoto, Koji, to Mitsubishi Gas Company, Inc. Resin composition. 5,543,474, Cl. 525-440.000.
Kawamura, Osamu: *See*—
Nakamura, Yoshikatsu; Kawamura, Osamu; Takahashi, Teruo; and Yamamoto, Shinichi, 5,542,990, Cl. 148-319.000.
Kawano, Hideo; Shiotani, Keiji; Mikami, Masao; Suzuki, Tatsuya; and Shishiguchi, Seiichi, to NEC Corporation. Method of forming silicon film having jagged surface. 5,543,347, Cl. 437-60.000.
Kawano, Hiroshi: *See*—
Yanagihara, Nobuyuki; Kawano, Hiroshi; Hayashi, Takayuki; and Tsuji, Masato, 5,543,250, Cl. 429-241.000.
Kawano, Kenji: *See*—
Shibata, Tsuyoshi; Hashimoto, Koji; Heida, Katsuhiko; Kawano, Kenji; Ito, Shinichi; and Horioka, Keiji, 5,543,252, Cl. 430-5.000.
Kawasaki, Ernest S.: *See*—
Sobol, Robert E.; Green, Mark R.; and Kawasaki, Ernest S., 5,543,296, Cl. 435-6.000.
Kawasaki, Satoshi, to NEC Corportion. Cross-talk canceler for optical disk reading mechanism. 5,544,141, Cl. 369-060.000.
Kawasaki Steel Corporation: *See*—
Seto, Kazuhiro; Okuda, Kaneharu; Sakata, Kei; Kato, Toshiyuki; and Ono, Takashi, 5,542,994, Cl. 148-603.000.
Kawashima, Masato: *See*—
Fujita, Nobuo; Nanba, Hideyuki; Kawashima, Masato; Komuro, Akihiro; Fujishima, Susumu; and Matsui, Toshihiro, 5,543,903, Cl. 355-283.000.
Kawasumi, Masanori: *See*—
Sakai, Toshihisa; and Kawasumi, Masanori, 5,543,224, Cl. 428-409.000.
Kay, David B.; and Gage, Edward C., to Eastman Kodak Company. Read/write laser-detector-grating unit (LDGU) with an orthogonally-arranged focus and tracking sensor system. 5,544,143, Cl. 369-109.000.
Kayaki, Hiroshi: *See*—
Kobayashi, Yasumi; Matsui, Kuniyuki; Hirao, Yasuhiro; Takeuchi, Kousuke; Kayaki, Hiroshi; Takahashi, Yusuke; Tanaka, Toshiharu; Kiyose, Isao; and Shibata, Kenichi, 5,543,757, Cl. 333-195.000.
Kayane, Shigeto; Kawai, Takashi; Sakata, Masaru; Imamura, Takashi; Tanigaki, Masanobu; and Kurosaki, Tomihiro, to Kao Corporation. Immobilized phosphorylase. 5,543,310, Cl. 435-180.000.
Kayano, Mitsuo; Minowa, Toshimichi; Ishii, Junichi; and Morinaga, Shigeki, to Hitachi, Ltd. Vehicle multi-processor control system and method with processing load optimization. 5,544,054, Cl. 364-424.010.
Kaylor, Joseph B., to Valkyrie Scientific Proprietary, L.C. Aspirating nozzles. 5,542,608, Cl. 239-400.000.
Kazato, Manabu: *See*—
Okazaki, Hajime; Kazato, Manabu; Ouchi, Masaoki; Nagano, Haruki; Ushio, Masaru; and Kamiya, Kozo, 5,543,041, Cl. 210-181.000.
Keeney, Stanley C.: *See*—
Casasanta, Joseph A.; Andresen, Bernhard H.; Satoh, Yoshinori; Keeney, Stanley C.; and Martin, Robert C., 5,544,203, Cl. 375-376.000.
Keitel, Michael A.: *See*—
Lydy, Bruce S.; Keitel, Michael A.; and Wissmueller, Jay K., 5,542,241, Cl. 56-11.300.
Keith, James C., to Genetics Institute, Inc.; and Virginia Polytechnic Institute and State Univ. Methods of diagnosing and treating preeclampsia. 5,543,138, Cl. 424-85.100.
Kejr Engineering, Inc.: *See*—
Scott, Gregory H., 5,542,481, Cl. 175-23.000.
Kel Corporation: *See*—
Chikano, Koji, 5,542,851, Cl. 439-108.000.
Keller, Christopher G.: *See*—
Gregory, Thomas A.; Hagan, James A.; and Keller, Christopher G., 5,543,983, Cl. 360-97.020.
Keller, John H.: *See*—
Barnes, Michael S.; Coultas, Dennis K.; Forster, John C.; Keller, John H.; and Wicker, Thomas, 5,543,184, Cl. 427-571.000.
Kelly, George R.: *See*—

Lebby, Michael S.; Kelly, George R.; and Jachimowicz, Karen E., 5,543,958, Cl. 359-254.000.
Kelly, John T., to Gas Research Institute. Temperature controlled low emissions burner. 5,542,839, Cl. 431-10.000.
Kelly, Kenneth W.; Malone, Anthony W.; and Humble, Jeffrey S., to Teays Quality Molding, Inc. Disposable surgical shield. 5,542,435, Cl. 128-846.000.
Kelly, William L.: *See*—
Scott, George R.; Cutright, Edwin L.; Heidorn, Martin W.; and Kelly, William L., 5,542,886, Cl. 470-34.000.
Kelsey-Hayes Company: *See*—
Dunn, Michael E.; and Varnelis, Don, 5,542,503, Cl. 188-18.00A.
Ganzel, Blaise J., 5,542,253, Cl. 60-562.000.
Kelsey–Hayes Company: *See*—
Luckevich, Mark; Tuck, Brian C.; Weber, Darryl C.; and DeVore, James H., 5,542,756, Cl. 303-122.110.
Kemmerer, Klemens; Bayer, Harald; and Gensheimer, Valentin, to MAN Roland Druckmaschinen AG. Gripper apparatus for sheet-fed printing machines. 5,542,657, Cl. 271-82.000.
Kemp, Laura: *See*—
Evans, Michael A.; Nichols, Colin J.; Kemp, Laura; Dubrul, William R.; and Behl, Robert S., 5,542,928, Cl. 604-113.000.
Kempf, Mark, to Vadnais Technologies Corporation. Torque limiting device with restraining mechanism. 5,542,505, Cl. 188-77.00W.
Kemshall, Paul A.; and Sewell, Alan R., to Crown Equipment Corporation, Inc. Opto-sensor steering system for forklift truck. 5,542,490, Cl. 180-422.000.
Keng, Leigh L. Document protecting apparatus. 5,543,010, Cl. 156-285.000.
Kenmoku, Takeji; Umino, Shinichi; Hirai, Eiji; Kurosawa, Kazuyoshi; and Matsumura, Yoshio, to Fuji Oozx Inc. Properties of the surface of a titanium alloy engine valve. 5,543,029, Cl. 205-109.000.
Kennametal Inc.: *See*—
Mitchell, Robert N., 5,542,795, Cl. 407-35.000.
Smith, William E.; Vogel, Scott W.; and Shomaker, Robert L., 5,542,794, Cl. 407-35.000.
Kennedy, Brian P.: *See*—
Cromlish, Wanda A.; Kennedy, Brian P.; O'Neill, Gary; Vickers, Philip J.; Wong, Elizabeth; and Mancini, Joseph A., 5,543,297, Cl. 435-25.000.
Kennedy, Gerard P.; and Donnelly, John P. M., to Teetotum Limited. Leak detector for an injection moulding machine. 5,542,835, Cl. 425-136.000.
Kennedy, Norman L.: *See*—
Starr, Fredricke S.; Wong, Joseph M.; and Kennedy, Norman L., 5,543,110, Cl. 422-5.000.
Kennedy, William C., III; and Westerlage, Kenneth R., to Highwaymaster Communications, Inc. Data messaging in a cellular communications network. 5,544,225, Cl. 379-59.000.
Kenny, Thomas J.: *See*—
Engel, Joseph C.; and Kenny, Thomas J., 5,544,065, Cl. 364-484.000.
Kent State University: *See*—
Lavrentovich, Oleg D.; and Nazarenko, Vassil O., 5,543,950, Cl. 359-77.000.
Kent, Steven P.: *See*—
Acton, John D.; Grant, Lawrence C.; Hardy, Jack M., Jr.; Kent, Steven P.; and Schelong, Steven E., 5,544,319, Cl. 395-200.070.
Keown, Wendy J.; Ford, Betty J.; and Stoddard, Sandra L. Composition and method for weight reduction and long term management of obesity. 5,543,405, Cl. 514-188.000.
Kerdesky, Francis A.: *See*—
Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Kerdesky, Francis A.; Langridge, Denton C.; Leanna, M. Robert; Lijewski, Linda M.; Melcher, Laura; Morton, Howard E.; Norbeck, Daniel W.; Reno, Daniel S.; Robbins, Timothy A.; Sham, Hing L.; Sowin, Thomas J.; Tien, Jien-heh J.; Zhao, Chen; and Scarpetti, David, 5,543,551, Cl. 560-24.000.
Keren, Doron; Izsak, Igal; and Kobrinsky, Isacov, to Intel Corporation. Critical path prediction for design of circuits. 5,544,071, Cl. 364-489.000.
Kessler, Alfred, to HDC AG. Emulsion fuel feeding apparatus and method. 5,542,379, Cl. 123-25.00C.
Kessler, Joseph E.: *See*—
Swenson, Robert E.; and Kessler, Joseph E., 5,544,343, Cl. 395-460.000.
Kettle, Paul J., Jr.; Santoro, Ralph, Jr.; and Ferri, Vincent, to Westinghouse Air Brake Company. Apparatus for interlocking reverser handle on a control stand of a railway locomotive. 5,542,891, Cl. 477-96.000.
Keum, Dong Y.; Park, Cheol S.; and Ryou, Eui K., to Hyundai Electronics Industries Co., Ltd. Method of fabricating a dynamic random access memory stacked capacitor. 5,543,346, Cl. 437-52.000.
Key, Mark B.: *See*—
Albertson, Luther D.; Key, Walter R.; and Key, Mark B., 5,542,261, Cl. 62-174.000.
Key, Walter R.: *See*—
Albertson, Luther D.; Key, Walter R.; and Key, Mark B., 5,542,261, Cl. 62-174.000.
Keyomarsi, Khandan; and Pardee, Arthur B., to Dana Farber Cancer Institute. Method of detecting carcinoma. 5,543,291, Cl. 435-6.000.
Khorsandian, Ali: *See*—
Skaar, Leif; Sheppard, Kenneth; Stanley, Donald; Zeinali, Hossein A.; Khorsandian, Ali; and Krula, David A., 5,542,593, Cl. 226-196.000.
Khosla, Mukul: *See*—
Johnson, Bruce S.; Khosla, Mukul; Herron, John R.; Brassil, John M.; and Schoen, Alan E., 5,543,625, Cl. 250-427.000.
Kida, Mayumi: *See*—
Maruoka, Tetsuya; Yasunobu, Chizuko; Hirose, Tadashi; Kida, Mayumi; Ino, Kouichiro; and Miyagawa, Yoshiya, 5,544,281, Cl. 395-68.000.
Kidon, William E.; Hilston, Michael D.; and Nguyen, Thanh, to Avery Dennison Corporation. Radiation-curable silicone release compositions. 5,543,231, Cl. 428-447.000.
Kihara, Nobuyuki: *See*—
Yokota, Teppei; Aramaki, Junichi; and Kihara, Nobuyuki, 5,544,165, Cl. 369-32.000.
Kikuchi, Hiroaki: *See*—
Koyama, Masayasu; Oda, Yasuhiro; Kikuchi, Hiroaki; and Yamada, Muneki, 5,542,557, Cl. 215-347.000.
Kikumoto, Yoshikazu: *See*—
Nakai, Satoru; Kaneta, Mayumi; Kikumoto, Yoshikazu; Hong, Yeong-Man; Kawai, Kazuyoshi; Takegata, Setsuko; Ishii, Kiyoshi; Yanagihara, Yasuo; and Hirai, Yoshikatsu, 5,543,140, Cl. 424-85.200.
Kim, Byung R.: *See*—
Narula, Chaitanya K.; Kim, Byung R.; and Salmeen, Irving T., 5,543,367, Cl. 501-87.000.
Kim, Donghoi: *See*—
Lee, Bangwon; and Kim, Donghoi, 5,544,351, Cl. 395-550.000.
Kim, Dong-Wug, to Samsung Electronics Co., Ltd. Indoor unit of air conditioner. 5,542,469, Cl. 165-122.000.
Kim, Il-gon: *See*—
Lee, Seo-jae; Kim, Il-gon; and Lee, Jong-wook, 5,543,240, Cl. 429-38.000.
Kim, Jae A.: *See*—
Choi, Heung S.; Jeong, Ju Y.; and Kim, Jae A., 5,542,263, Cl. 62-262.000.
Kim, Jin; Yao, Lin X.; and Banjanin, Zoran, to Siemens Medical Systems, Inc. Multi-beam digital beamforming method and apparatus. 5,544,128, Cl. 367-119.000.
Kim, Jin-Man. Golf swing correcting and exercising apparatus. 5,542,674, Cl. 473-218.000.
Kim, Jung W.; Shin, Hee J.; Park, Joon K.; and Min, Kyeong B., to Chong Kun Dang Corp. Cyclosporin containing powder composition. 5,543,393, Cl. 514-11.000.
Kim, K. Jin: *See*—
Chuntharapai, Anan; Lee, James; Hebert, Caroline; and Kim, K. Jin, 5,543,503, Cl. 530-388.220.
Kim, Tae-Han; Lee, Sang-Hoon; and Chin, Dae-Je, to Samsung Electronics Co., Ltd. Electrostatic discharge protection device for a semiconductor circuit. 5,543,649, Cl. 257-355.000.
Kim, Yoonsuk, to Hyundai Motor Company. Intake manifold for an internal combustion engine. 5,542,385, Cl. 123-184.520.
Kim, Young S.; and Ham, Young M., to Hyundai Electronics Industries Co., Ltd. Phase shift mask and method for fabricating the same. 5,543,254, Cl. 430-5.000.
Kimberly-Clark Corporation: *See*—
Clark, Harry E.; Henderson, Cynthia W.; Marcinek, Robert C.; Mayfield, Frances W.; Perkins, Thad W.; and Voss, Jorg F., 5,543,202, Cl. 428-154.000.
Glaug, Frank S.; Olson, Christopher P.; Ratliff, Kathleen I.; Sheldon, Donald A.; Finch, Valerie V.; and Collier, L. Warren, IV, 5,542,566, Cl. 221-48.000.
Van Iten, Thomas P., 5,542,914, Cl. 604-11.000.
Kimrey, Harold D., Jr.; Snyder, William B., Jr.; and Krutenat, Richard C., to Avco Corporation. Microwave fiber coating apparatus. 5,543,605, Cl. 219-690.000.
Kimura, Akira; Muto, Mineo; Asano, Kanemitsu; Nakano, Susumu; and Nakahama, Koji, to Togo Seisakusho Corp. Spread diameter locking mechanism for a spring biased hose clip. 5,542,155, Cl. 24-20.00R.
Kimura, Katsuhiro: *See*—
Kato, Harunori; Mizutani, Yasukazu; Shibata, Shigekazu; Kimura, Katsuhiro; Koseki, Hideki; Urano, Mitsuhiro; and Watanabe, Masayuki, 5,542,299, Cl. 73-654.000.
Kimura, Kenji: *See*—
Tsuji, Kiyoshi; Uchikubo, Akinobu; Kimura, Kenji; Goto, Masahito; and Hirai, Tsutomu, 5,543,831, Cl. 348-65.000.
Kimura, Makoto: *See*—
Shibata, Jun; Obayashi, Hiroaki; Kimura, Makoto; Fukuzumi, Shuzo; Yoshikawa, Hironori; Hitotsumatsu, Atsushi; Hashimoto, Yukio; Yamanoi, Toshimi; and Takaya, Seiji, 5,542,700, Cl. 280-735.000.
Kimura, Mitsuteru: *See*—
Mizuno, Jun; Nottmeyer, Kay; and Kimura, Mitsuteru, 5,542,297, Cl. 73-514.360.
Kimura, Shin'icniro: *See*—
Murakami, Eiichi; and Kimura, Shin'icniro, 5,543,356, Cl. 437-152.000.
Kimura, Yuji; Ohta, Eiichi; Kondo, Hitoshi; Takahashi, Masaetsu; Kameyama, Kenji; and Yamada, Katsuyuki, to Ricoh Company, Ltd. Method of driving an LCD employing combining two voltages which change polarity at different times in a frame. 5,543,945, Cl. 359-55.000.
Kincaid, Larry: *See*—
Aidlin, Stephen H.; Aidlin, Samuel S.; and Kincaid, Larry, 5,542,789, Cl. 406-88.000.
Kinder, Dennis G.: *See*—
Rea, Perry J.; Miller, Michael R.; Kinder, Dennis G.; Kargula, Christopher J.; and Stevens, William E., 5,542,717, Cl. 285-319.000.
Kinder, Larry L.: *See*—

Adams, Terry; Ambrosio, Neil J.; Bratton, William E.; Forsythe, William M.; Hatton, Bruce E.; Kinder, Larry L.; and Swat, William A., 5,542,438, Cl. 131-238.000.
Kindt-Larsen, Ture; Beaton, Stephen R.; Martin, Wallace A.; and Walker, Craig W., to Johnson & Johnson Vision Products, Inc. Apparatus for applying a surfactant to mold surfaces. 5,542,978, Cl. 118-256.000.
King, Andrew: *See*—
Normile, James M.; McGowan, Jared M.; and King, Andrew, 5,543,718, Cl. 324-539.000.
King Associates Inc.: *See*—
Jakubisin, John; and Alfieri, James K., 5,543,172, Cl. 427-212.000.
King, Scott A.: *See*—
Pitt, Alan R.; Caesar, Julian C.; Gibson, Danuta; Wear, Trevor J.; Young, David J.; and King, Scott A., 5,543,555, Cl. 560-151.000.
King, Stanley C.; Knop, Richard C.; Green, John E.; Gyde, Thomas R.; and Silzle, L. William, Jr., to Lubrizol Corporation, The. Apparatus for metering fluids. 5,542,450, Cl. 137-614.200.
Kingdon, Henry S.: *See*—
Saint-Remy, Jean-Marie; Lebrun, Philippe; Lebeque, Serge; Masson, Pierre L.; and Kingdon, Henry S., 5,543,145, Cl. 424-133.100.
Kinlen, Patrick J.; and Jansson, Robert E. W., to Monsanto Company. Electrocoating compositions. 5,543,084, Cl. 252-500.000.
Kinsho, Takeshi: *See*—
Shimizu, Takaaki; Kinsho, Takeshi; Ogihara, Tsutomu; Kaneko, Tatsushi; Saito, Ryuichi; and Kurihara, Hideshi, 5,543,539, Cl. 556-406.000.
Kintz, Damon B. Truck tarp assembly. 5,542,733, Cl. 296-98.000.
Kinugawa Rubber Industrial Co., Ltd.: *See*—
Watanabe, Shozo; and Shinohara, Kibatsu, 5,542,833, Cl. 425-71.000.
Király née Ignácz, Mária: *See*—
Fekete, Pál; Király née Ignácz, Mária; Sipos, Gábor; Jámbor née Hoffmann, Zsuzsanna; Újfalussy, György; Góra née Hernyes, Magdolna; Klebovich, Imre; Drabant, Sándor; Mándi, Attila; Kiss née Szabó, Gizella; Bárczay, Erzsébet; and Krisztián, Mária, 5,543,155, Cl. 424-473.000.
Kirchbaum, Nathan: *See*—
Burhans, Walter R., Jr.; Kirchbaum, Nathan; and Nastasi, Richard F., 5,542,625, Cl. 244-45.00R.
Kirihata, Toshiaki; and Watanabe, Yohji, to International Business Machines Corporation. Random access memory having a flexible array redundancy scheme. 5,544,113, Cl. 365-200.000.
Kirsch, Howard C.: *See*—
Roth, Scott S.; and Kirsch, Howard C., 5,543,339, Cl. 437-43.000.
Kishimoto, Hiroyuki: *See*—
Kato, Tomokazu; Araki, Kazuhiro; Takano, Yoshiaki; Maruta, Syuzi; Nomura, Keiichi; Nagatani, Kentaro; Noda, Takashi; and Kishimoto, Hiroyuki, 5,543,907, Cl. 355-313.000.
Kishimoto, Shinichi: *See*—
Ohura, Harutoshi; Yasaki, Akihiko; Kishimoto, Shinichi; and Naruse, Masayoshi, 5,543,554, Cl. 560-41.000.
Kishimoto, Yoshio; and Suzuki, Masaaki, to Matsushita Electrio Industrial Co., Ltd. Rewritable recording medium and a method of recording in the same. 5,543,381, Cl. 503-201.000.
Kiss née Szabó, Gizella: *See*—
Fekete, Pál; Király née Ignácz, Mária; Sipos, Gábor; Jámbor née Hoffmann, Zsuzsanna; Újfalussy, György; Góra née Hernyes, Magdolna; Klebovich, Imre; Drabant, Sándor; Mándi, Attila; Kiss née Szabó, Gizella; Bárczay, Erzsébet; and Krisztián, Mária, 5,543,155, Cl. 424-473.000.
Kita, Katsuo; Nagamune, Yasushi; and Nakadegawa, Yasuyuki, to Ashimori Kogyo Kabushiki Kaisha; and Nippon Light Metal Company, Limited. Self-driven liftup conveyor, vehicular liftup conveyor, truck-freight loader/unloader, and truck freight loading system. 5,542,809, Cl. 414-528.000.
Kitada, Hideto: *See*—
Niwa, Masahiro; Sugano, Yuji; Uenishi, Ken-ichi; Kitada, Hideto; Yamaguchi, Yoshihisa; Kobayashi, Eiko; Kubo, Kunimichi; and Sano, Akira, 5,543,478, Cl. 526-82.000.
Kitagawa, Hiroshi: *See*—
Katoh, Akira; Kitagawa, Hiroshi; Tsuzuki, Sbunichi; Takahashi, Jun; Fujimoto, Sachito; and Hirota, Toshiaki, 5,542,393, Cl. 123-491.000.
Kitagawa, Koji: *See*—
Tanaka, Tadashi; Sakamoto, Masaaki; Yamamoto, Koichi; and Kitagawa, Koji, 5,543,236, Cl. 428-614.000.
Kitaike, Yukio; Hatakeyama, Hiroki; Tayama, Suehiro; and Nakagawa, Kazuhiko, to Mitsubishi Rayon Company Ltd. Mat thermoplastic resin composition and laminate therefrom, matting agent therefore, and method for matting thermoplastic resin. 5,543,463, Cl. 525-79.000.
Kitajima, Nobuaki; and Takagi, Kazutoshi, to Kabushiki Kaisha Topcon. Binocular stereoscopic microscope. 5,543,962, Cl. 359-384.000.
Kitakami, Osamu; Fujiwara, Hideo; and Ogawa, Yoichi, to Hitachi Maxell, Ltd. Magnetic recording medium. 5,543,221, Cl. 428-332.000.
Kitamura, Shigeto: *See*—
Suzuki, Fumio; Shimada, Junichi; Ishii, Akio; Nakamura, Joji; Ichikawa, Shunji; Kitamura, Shigeto; and Koike, Nobuaki, 5,543,415, Cl. 514-263.000.
Kitani, Yasuo: *See*—
Hayama, Kazuhide; Saitoh, Yukio; Kitani, Yasuo; and Yamada, Katsuhiko, 5,543,440, Cl. 523-103.000.
Kitano, Kazuaki; Morita, Shigeru; Kuriyama, Masato; and Maejima, Kazutaka, to Takeda Chemical Industries, Ltd. DNA coding for alkaline protease. 5,543,322, Cl. 435-252.300.
Kitto, John B., Jr., to Babcock & Wilcox Company, The. System and method for heating and gasification of residual waste liquor. 5,543,117, Cl. 422-145.000.
Kiyose, Isao: *See*—
Kobayashi, Yasumi; Matsui, Kuniyuki; Hirao, Yasuhiro; Takeuchi, Kousuke; Kayaki, Hiroshi; Takahashi, Yusuke; Tanaka, Toshiharu; Kiyose, Isao; and Shibata, Kenichi, 5,543,757, Cl. 333-195.000.
Klaassen, Klaas B.: *See*—
Bajorek, Christopher H.; Glaser, Thomas W.; Klaassen, Klaas B.; Nielsen, Charles R.; Santana, George R.; Smith, Gordon J.; Thompson, David A.; and Workman, Michael L., 5,544,138, Cl. 369-54.000.
Klausener, Alexander: *See*—
Landscheidt, Heinz; Wolters, Erich; Wagner, Paul; and Klausener, Alexander, 5,543,548, Cl. 558-277.000.
Klebovich, Imre: *See*—
Fekete, Pál; Király née Ignácz, Mária; Sipos, Gábor; Jámbor née Hoffmann, Zsuzsanna; Újfalussy, György; Góra née Hernyes, Magdolna; Klebovich, Imre; Drabant, Sándor; Mándi, Attila; Kiss née Szabó, Gizella; Bárczay, Erzsébet; and Krisztián, Mária, 5,543,155, Cl. 424-473.000.
Klees, Kevin J.: *See*—
Pagano, Daniel M.; Wheeler, Richard B.; and Klees, Kevin J., 5,543,882, Cl. 354-311.000.
Klein, Barbara K.: *See*—
Braford-Goldberg, Sarah R.; Easton, Alan. M.; Klein, Barbara K.; McKearn, John P.; and Olins, Peter O., 5,543,141, Cl. 424-85.200.
Klein, Robert: *See*—
Winter, Andreas; Küber, Frank; Aulbach, Michael; Bachmann, Bernd; Klein, Robert; Kühlein, Klaus; Spaleck, Walter; and Kohlpaintner, Christian, 5,543,373, Cl. 502-103.000.
Klenk, Martin: *See*—
Schneider, Erich; Bone, Rainer; Klenk, Martin; Lange, Jörg; and Dambach, Dieter-Andreas, 5,542,292, Cl. 73-118.100.
Kline, Mark J.; Roe, Donald C.; Daniels, Dean J.; Zorb, James E.; and Dragoo, Jerry L., to Procter & Gamble Company, The. Absorbent article with improved elasticized waistband. 5,542,942, Cl. 604-385.200.
Klinger, Gary; and Baier, Siegfried K., to ITT Corporation. Quick connector housing with elongated barb design. 5,542,712, Cl. 285-93.000.
Klink, Rainer; and German, Johann, to Deutsche Automobilgesellschaft mbH. Electrochemical storage device. 5,543,244, Cl. 429-57.000.
Klöck, Hubert: *See*—
Schmädig, Harald; and Klöck, Hubert, 5,543,603, Cl. 219-550.000.
Klöckner-Moeller GmbH: *See*—
Mader, Hans-Jürgen; and Arenz, Rainer, 5,543,595, Cl. 200-401.000.
Klotman, Paul E.; Bruggeman, Leslie A.; and Horikoshi, Satoshi, to United States of America, Health and Human Services. Method for quantifying laminin and β-actin messenger RNA. 5,543,509, Cl. 536-24.330.
Klughart, Kevin M., to Dallas Semiconductor Corp. Prepackaged crystal oscillator calibration and configuration interface. 5,543,761, Cl. 331-44.000.
Klüh, Gorden; and Precht, Sven, to FA. Felsdekor Kluh und Precht. Method for making artificial rocks, in particular large–scale rock imitations. 5,543,100, Cl. 264-130.000.
Knaebel, Kent S.: *See*—
D'Amico, Joseph S.; Reinhold, Herbert E., III; and Knaebel, Kent S., 5,542,966, Cl. 95-101.000.
Knapp, Edward R.; Knapp, Edward R., II; and Knapp, Miranda A. Box lid support. 5,542,540, Cl. 206-525.000.
Knapp, Edward R., II: *See*—
Knapp, Edward R.; Knapp, Edward R., II; and Knapp, Miranda A., 5,542,540, Cl. 206-525.000.
Knapp, Miranda A.: *See*—
Knapp, Edward R.; Knapp, Edward R., II; and Knapp, Miranda A., 5,542,540, Cl. 206-525.000.
Knapp, Richard J.: *See*—
Collins, John B.; and Knapp, Richard J., 5,543,920, Cl. 356-402.000.
Knaup, Günter: *See*—
Drauz, Karlheinz; Knaup, Günter; and Groeger, Ulrich, 5,543,397, Cl. 514-19.000.
Knoll, Kenneth F.: *See*—
Johnson, Dee L.; Knoll, Kenneth F.; and David, John R., 5,543,190, Cl. 428-40.100.
Knop, Richard C.: *See*—
King, Stanley C.; Knop, Richard C.; Green, John E.; Gyde, Thomas R.; and Silzle, L. William, Jr., 5,542,450, Cl. 137-614.200.
Knox, Robert L.; and Reddy, John C., to J. H. Williams Company. Compact folding wrench. 5,542,322, Cl. 81-177.600.
Knudsen, Ronald D.: *See*—
Lashier, Mark E.; Freeman, Jeffrey W.; and Knudsen, Ronald D., 5,543,375, Cl. 502-117.000.
Knuuti, Mika, to Nokia Telecommunications OY. Method and device for extending the dynamic range in measurements carried out with a directional coupler. 5,543,721, Cl. 324-647.000.
Kobayashi, Eiko: *See*—
Niwa, Masahiro; Sugano, Yuji; Uenishi, Ken-ichi; Kitada, Hideto; Yamaguchi, Yoshihisa; Kobayashi, Eiko; Kubo, Kunimichi; and Sano, Akira, 5,543,478, Cl. 526-82.000.
Kobayashi, Kazuhiro: *See*—
Muraoka, Tomoki; Abe, Tsutomu; Kobayashi, Kazuhiro; and Hosoda, Kenichi, 5,542,991, Cl. 148-330.000.
Kobayashi, Kazuo: *See*—

Nakayama, Takeshi; Terada, Yasushi; Kobayashi, Kazuo; Hayashikoshi, Masanori; and Miyawaki, Yoshikazu, 5,544,117, Cl. 365-185.220.

Kobayashi, Maiko; and Kuroi, Takashi, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device having a plurality of impurity layers. 5,543,647, Cl. 257-345.000.

Kobayashi, Makoto: *See*—
Kurata, Kazunori; and Kobayashi, Makoto, 5,543,581, Cl. 174-52.100.

Kobayashi, Masatsune: *See*—
Miura, Konoe; Takimoto, Hiroshi; Ohta, Tokuya; and Kobayashi, Masatsune, 5,542,970, Cl. 106-20.00D.

Kobayashi, Motokazu: *See*—
Ueno, Kazunori; Fukui, Tetsuro; Kobayashi, Motokazu; Ooi, Takehiko; Kagami, Kenji; Suzuki, Masao; and Nishino, Katsuya, 5,543,286, Cl. 430-619.000.

Kobayashi, Noboru, to Yamaha Hatsudoki Kabushiki Kaisha. Watercraft with pivot control. 5,542,862, Cl. 440-38.000.

Kobayashi, Shigeki; and Yamamoto, Norihito, to Omron Corporation. Automatic soldering apparatus, apparatus and method for teaching same, soldering inspection apparatus and method, and apparatus and method for automatically correcting soldering. 5,542,600, Cl. 228-102.000.

Kobayashi, Takaichi: *See*—
Hosoya, Ryo; and Kobayashi, Takaichi, 5,544,009, Cl. 361-684.000.

Kobayashi, Tatsuya: *See*—
Maebashi, Youichirou; Fujii, Haruo; Sasame, Hiroshi; Kawakami, Hiroaki; Kobayashi, Tatsuya; Kobayashi, Tetsuya; Enomoto, Naoki; Uchiyama, Akihiko; and Saito, Yoshiro, 5,543,900, Cl. 355-219.000.

Kobayashi, Tetsuya: *See*—
Maebashi, Youichirou; Fujii, Haruo; Sasame, Hiroshi; Kawakami, Hiroaki; Kobayashi, Tatsuya; Kobayashi, Tetsuya; Enomoto, Naoki; Uchiyama, Akihiko; and Saito, Yoshiro, 5,543,900, Cl. 355-219.000.

Kobayashi, Toshiaki; and Ozawa, Hidetaka, to Honda Giken Kogyo Kabushiki Kaisha. Vibration/noise control system. 5,544,080, Cl. 364-574.000.

Kobayashi, Tsuyoshi; Sakon, Ichiro; Nakashima, Shigeo; Numa, Sachiko; and Inao, Yoshikazu, to Rinkagaku Kogyo Co., Ltd. Red phosphorus flame retardant and nonflammable resinous composition. 5,543,444, Cl. 523-205.000.

Kobayashi, Yasumi; Matsui, Kuniyuki; Hirao, Yasuhiro; Takeuchi, Kousuke; Kayaki, Hiroshi; Takahashi, Yusuke; Tanaka, Toshiharu; Kiyose, Isao; and Shibata, Kenichi, to Sanyo Electric Co., Ltd. Surface acoustic wave filter including alternate open and shorted reflector grating. 5,543,757, Cl. 333-195.000.

Kobayashi, Yutaka: *See*—
Yokoyama, Yuji; Akioka, Takashi; Iwamura, Masahiro; Hiraishi, Atsushi; Kobayashi, Yutaka; Yamauchi, Tatsumi; Takahashi, Shigeru; Gotou, Nobuyuki; and Ide, Akira, 5,544,125, Cl. 365-230.060.

Kobrinsky, Isaacov: *See*—
Keren, Doron; Izsak, Igal; and Kobrinsky, Isacov, 5,544,071, Cl. 364-489.000.

Kocur, Jean: *See*—
Röchling, Hans; Kocur, Jean; and Albrecht, Konrad, 5,543,385, Cl. 504-127.000.

Koczka, Istvanne: *See*—
Moreno, Fulgencio Powell; Litkei, Laszlo; Galamb, Vilmos; Gulyas, Imre; Repasi, Janos; Veres, Agota Repasine; Vigh, Jozsef; Koczka, Istvanne; Fehervari, Edit; Roka, Laszlone; Pethe, Laszlone; and Neu, Jozsef, 5,543,562, Cl. 562-17.000.

Kodama, Masafumi: *See*—
Morikawa, Yasuhiro; Ohashi, Tomonori; and Kodama, Masafumi, 5,543,854, Cl. 348-512.000.

Kodera, Masanobu: *See*—
Nakashima, Takashi; and Kodera, Masanobu, 5,542,841, Cl. 431-160.000.

Koehler, Gerard, to Radio Energie. Dynamoelectric machine composed of sectors having transverse fluxes. 5,543,674, Cl. 310-164.000.

Koehler, Ulrich; Siegel, Hardo; and Seybold, Guenther, to BASF Aktiengesellschaft. Preparation of tertiary amine oxides. 5,543,515, Cl. 540-604.000.

Koether, Bernard G.; and Scott, Paul D., to Technology Licensing Corporation. Sous vide rethermalizer. 5,542,344, Cl. 99-330.000.

Kogoma, Masuhiro: *See*—
Uchiyama, Hiroshi; Kogoma, Masuhiro; and Okazaki, Satiko, 5,543,017, Cl. 204-169.000.

Kogure, Hiroshi: *See*—
Kudoh, Mituo; Fukushima, Toshihiko; Itoh, Masaaki; Uchida, Mari; Matsushima, Hiroaki; Kogure, Hiroshi; and Takaku, Syoji, 5,542,271, Cl. 62-502.000.

Kohara, Teiji: *See*—
Takahashi, Nobukazu; Hani, Tsutomu; Kohara, Teiji; and Natsuume, Tadao, 5,543,948, Cl. 359-73.000.

Kohl, Albert: *See*—
Bobrich, Michael; Lehner, August; Roller, Hermann; Suettinger, Rudolf; Kress, Ria; Schneider, Norbert; Lenz, Werner; Engelhardt, Peter; Rudolf, Peter; Brodt, Gregor; Balz, Werner; and Kohl, Albert, 5,543,226, Cl. 428-423.100.

Kohler Co.: *See*—
Jaeckels, Norman J.; and Mesun, Randy O., 5,542,132, Cl. 4-313.000.

Kohlmann, Richard: *See*—
Straubinger, Werner; Pecher, Günter; and Kohlmann, Richard, 5,542,965, Cl. 95-14.000.

Kohlpaintner, Christian: *See*—
Winter, Andreas; Küber, Frank; Aulbach, Michael; Bachmann, Bernd; Klein, Robert; Kühlein, Klaus; Spaleck, Walter; and Kohlpaintner, Christian, 5,543,373, Cl. 502-103.000.

Koide, Teruhiko, to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho. Air bag apparatus and method of removing an inflator. 5,542,693, Cl. 280-728.200.

Koike, Hideki; and Takeda, Kenji, to Horiba, Ltd. Gas analyzing apparatus. 5,543,113, Cl. 422-83.000.

Koike, Hiroki, to NEC Corporation. Semiconductor memory device with redundant decoder available for test sequence on redundant memory cells. 5,544,106, Cl. 365-200.000.

Koike, Nobuaki: *See*—
Suzuki, Fumio; Shimada, Junichi; Ishii, Akio; Nakamura, Joji; Ichikawa, Shunji; Kitamura, Shigeto; and Koike, Nobuaki, 5,543,415, Cl. 514-263.000.

Koike, Norihiro, to Kabushiki Kaisha Toshiba. Cooling system for cooling electronic apparatus. 5,544,012, Cl. 361-695.000.

Koizumi, Satoru; Chono, Susumu; Abe, Yoshihiro; and Matsuzaki, Kazuki, to Sharp Kabushiki Kaisha. Disk reproducing apparatus. 5,544,147, Cl. 369-191.000.

Koizumi, Shigeru: *See*—
Terajima, Hisao; Koizumi, Shigeru; Nakayama, Toru; Takeda, Tomoyuki; Uno, Hiromichi; Nakagawa, Kaori; Shimizu, Hideki; and Morita, Mitsuo, 5,544,234, Cl. 379-100.000.

Kojima, Hiroyasu: *See*—
Ohsaki, Hisashi; Kojima, Hiroyasu; and Suzuki, Koichi, 5,543,229, Cl. 428-432.000.

Kojima, Susumu: *See*—
Ichinose, Hiroki; Sadakane, Shinji; Takeda, Keiso; and Kojima, Susumu, 5,542,388, Cl. 123-336.000.

Kojima, Tetsuro; Yoshikawa, Masaru; and Fujita, Yoshihiro, to Fuji Photo Film Co., Ltd. Photographic composition having fixing capacity and a method for processing using the same. 5,543,272, Cl. 430-455.000.

Kojima, Yasuhiro: *See*—
Takeda, Nobuhiko; and Kojima, Yasuhiro, 5,542,745, Cl. 297-378.120.

Kokkelenberg, Dirk: *See*—
Vermeersch, Joan; Hauquier, Guido; and Kokkelenberg, Dirk, 5,543,261, Cl. 430-159.000.

Kokubun, Yoshihiro: *See*—
Nishizawa, Junichi; and Kokubun, Yoshihiro, 5,542,373, Cl. 117-103.000.

Kokusai Denshin Denwa Kabushiki Kaisha: *See*—
Araki, Noriyuki; Shinonaga, Hideyuki; and Itoh, Yasuhiko, 5,543,813, Cl. 342-357.000.
Tsubakiyama, Hideki, 5,544,245, Cl. 380-21.000.

Kolb, Markus: *See*—
Drewes, Rolf; Kolb, Markus; Kuhn, Karl J.; Sander, Hans-Jürgen; and Wehner, Wolfgang, 5,543,449, Cl. 524-114.000.

Kolb, Ronald L., to Silicon Graphics, Inc. System and method for generating a read-modify-write operation. 5,544,331, Cl. 395-308.000.

Kollmorgen Corporation: *See*—
Collins, John B.; and Knapp, Richard J., 5,543,920, Cl. 356-402.000.

Komada, Norikazu: *See*—
Ishiyama, Kouichi; Igarashi, Kazunori; Komada, Norikazu; Takeshita, Takuo; and Ookubo, Kiyoyuki, 5,543,070, Cl. 252-62.590.

Komag, Inc.: *See*—
Allen, Ronald; Bae, Peter S.; Tierney, Robert; and Fukui, Kenneth D., 5,542,685, Cl. 279-2.020.

Komano, Hiroshi: *See*—
Tanaka, Hatsuyuki; Sato, Mitsuru; Nakayama, Toshimasa; and Komano, Hiroshi, 5,543,268, Cl. 430-331.000.

Komaya, Kiyotoshi: *See*—
Hikita, Shiro; Iwata, Masafumi; Komaya, Kiyotoshi; Asuka, Masashi; and Goto, Yukio, 5,544,059, Cl. 364-436.000.

Kominato, Asao: *See*—
Kawahara, Takayuki; Suzuki, Hitoshi; and Kominato, Asao, 5,543,522, Cl. 546-2.000.

Komiyama, Tsuneo: *See*—
Hanzawa, Shigeru; and Komiyama, Tsuneo, 5,542,194, Cl. 34-266.000.

Komline- Sanderson Engineering Corp.: *See*—
Louden, James A.; Hawkins, Brian F.; Hann, Wayne D., Sr. deceased, 5,543,044, Cl. 210-386.000.

Komor, Joseph A.: *See*—
Fost, Dennis L.; Komor, Joseph A.; and Novakovic, Mario, 5,543,072, Cl. 510-151.000.

Komoriya, Isao: *See*—
Hasegawa, Yusuke; Nishimura, Yoichi; Komoriya, Isao; and Akazaki, Shushuke, 5,542,404, Cl. 123-690.000.

Komura, Osamu: *See*—
Katayama, Tetsuya; Murabe, Kaoru; Komura, Osamu; Kawai, Chihiro; Yamakawa, Akira; Matsunuma, Kenji; Yasuoka, Norio; Higuchi, Matsuo; and Miyake, Masaya, 5,543,371, Cl. 501-97.000.

Komuro, Akihiro: *See*—
Fujita, Nobuo; Nanba, Hideyuki; Kawashima, Masato; Komuro, Akihiro; Fujishima, Susumu; and Matsui, Toshihiro, 5,543,903, Cl. 355-283.000.

Konar, Ronald C. Boxed liquid valve operator. 5,542,584, Cl. 222-505.000.

Kondo, Hitoshi: *See*—
Kimura, Yuji; Ohta, Eiichi; Kondo, Hitoshi; Takahashi, Masaetsu; Kameyama, Kenji; and Yamada, Katsuyuki, 5,543,945, Cl. 359-55.000.

Kondo, Setsu: *See*—

Hirose, Toshihiko; Ohbayashi, Shigeki; Kondo, Setsu; Hayasaka, Takashi; Fujino, Yoshiyuki; and Iketani, Masayuki, 5,544,105, Cl. 365-189.110.

Kondo, Takashi. Auxialiary opening-closing mechanism for an automobile door. 5,542,736, Cl. 296-152.000.

Konica Corporation: *See*—
Arai, Takeo, 5,543,287, Cl. 430-628.000.

Koniewicz, Leonard A.: *See*—
Gronwick, Jerry P.; and Koniewicz, Leonard A., 5,542,718, Cl. 285-357.000.

Koninklijke Ptt Nederland N.V.: *See*—
Koppelmans, Johannes F. A.; Koster, Arian; and Schinkel, Dolf A., 5,544,266, Cl. 382-238.000.

Konishi, Yasuhiro: *See*—
Dosaka, Katsumi; Kumanoya, Masaki; Hayano, Kouji; Yamazaki, Akira; Iwamoto, Hisashi; Abe, Hideaki; Konishi, Yasuhiro; Himukashi, Katsumitsu; Ishizuka, Yasuhiro; and Saiki, Tsukasa, 5,544,121, Cl. 365-222.000.

Kono, Kazunori: *See*—
Nagayoshi, Atsushi; and Kono, Kazunori, 5,544,253, Cl. 381-187.000.

Konrad, Allan M. Remote information service access system based on a client-server-service model. 5,544,320, Cl. 395-200.090.

Konstandin, Horst, to PVT Piepenbrock Verpackungstechnik GmbH. Method and apparatus for manufacturing a blister cardboard pack. 5,542,235, Cl. 53-454.000.

Koontz, Harry S.: *See*—
Bartrug, Bruce A.; Koontz, Harry S.; and Winter, John A., 5,543,601, Cl. 219-203.000.

Koppelmans, Johannes F. A.; Koster, Arian; and Schinkel, Dolf A., to Koninklijke Ptt Nederland N.V. Transcoding device. 5,544,266, Cl. 382-238.000.

Kordas, Norbert, to Fraunhofer-Gesellschaft zur Forderung der Angewandten Forshung e.v. Integrable conductivity measuring device. 5,543,717, Cl. 324-444.000.

Kore Technology Limited: *See*—
Mullock, Stephen J., 5,543,619, Cl. 250-288.000.

Korea Institute of Science and Technology: *See*—
Lee, Kwang-Ryeol; and Eun, Kwang-Yong, 5,542,281, Cl. 73-9.000.

Kornely, Leroy A., to Chrysler Corporation. Dynamic belt cleaning unit and method of cleaning belts. 5,542,525, Cl. 198-495.000.

Kortenbach, Jurgen A.: *See*—
Slater, Charles R.; Palmer, Matthew A.; Kortenbach, Jurgen A.; McBrayer, Michael S.; and Gottlieb, Saul, 5,542,432, Cl. 128-751.000.

Koschak, Matthew S.: *See*—
Hein, Carl C., III; Koschak, Matthew S.; Powell, Mark S.; Shearer, Peter P.; and Wong, Milly M. L., 5,542,529, Cl. 206-245.000.

Koseki, Hideki: *See*—
Kato, Harunori; Mizutani, Yasukazu; Shibata, Shigekazu; Kimura, Katsuhiro; Koseki, Hideki; Urano, Mitsuhiro; and Watanabe, Masayuki, 5,542,299, Cl. 73-654.000.

Koshino, Nagaaki: *See*—
Iwase, Nobuhiro; Kano, Hiroshi; Tadaki, Shinji; Hasegawa, Masami; and Koshino, Nagaaki, 5,543,080, Cl. 252-301.40H.

Kosley, Raymond W., Jr.; Cherill, Robert J.; and O'Malley, Gerard, to Hoechst-Roussel Pharmaceuticals Inc. Carbamoyloxylabdanes. 5,543,427, Cl. 514-422.000.

Koster, Arian: *See*—
Koppelmans, Johannes F. A.; Koster, Arian; and Schinkel, Dolf A., 5,544,266, Cl. 382-238.000.

Kostromin, Sergei: *See*—
Stumpe, Joachim; Shibaev, Valery; Kostromin, Sergei; Ivanov, Sergei; Fischer, Thomas; Läsker, Lutz; Ruhmann, Ralf; and Claussen, Uwe, 5,543,267, Cl. 430-290.000.

Kotowicz, Lawrence: *See*—
Herbert, William G.; Bischoping, Patricia; Altavela, Robert P.; Kotowicz, Lawrence; Schmitt, Peter J.; Jansen, Ronald E.; Lennon, John H.; and Grey, Henry G., 5,543,028, Cl. 205-70.000.

Koufopoulos, Peter F.: *See*—
Palevsky, Alan; and Koufopoulos, Peter F., 5,543,691, Cl. 315-366.000.

Koui, Tomoaki; and Takano, Shinji, to NEC Corporation. Optical modulator and method of producing the same. 5,543,957, Cl. 359-245.000.

Kourgli, Mokhtar. Underground chamber. 5,542,780, Cl. 405-55.000.

Kourtakis, Kostantinos; and Sonnichsen, George C., to Du Pont de Nemours, E. I., and Company. Catalyst and method for vapor phase oxidation of alkane hydrocarbons. 5,543,532, Cl. 549-260.000.

Kouzai, Keiji; and Tanaka, Junichi, to Tachikara Co., Ltd. Sports ball and production method thereof. 5,542,662, Cl. 273-58.0BA.

Kowalski, William M., to Natural Industries, Inc. Method for naturally regulating plant growth using *Actinomyces viscosus*. 5,543,142, Cl. 424-93.400.

Koyama, Eiji: *See*—
Miwa, Hiroaki; Sudo, Ryoichi; Tajima, Tetsuo; and Koyama, Eiji, 5,543,271, Cl. 430-347.000.

Koyama, Masayasu; Oda, Yasuhiro; Kikuchi, Hiroaki; and Yamada, Muneki, to Toyo Seikan Kaisha, Ltd. Container closure wth liner and method of producing the same. 5,542,557, Cl. 215-347.000.

Koyfman, Ilya S.: *See*—
McKean, Wanda L.; Hain, Matthew; and Koyfman, Ilya S., 5,542,594, Cl. 227-178.100.

Kozicki, Michael N., to Forth Research, Inc. Wheelchair for controlled environments. 5,542,690, Cl. 280-304.100.

Kozuka, Sadao, to Sony Corporation. Method and apparatus for stretching a damper wire. 5,542,868, Cl. 445-37.000.

Krajicek, Richard W., to Serv-Tech, Inc. Method for dispersion of sludge and for preparing a circulator for dispersing sludge. 5,542,984, Cl. 134-22.100.

Kríl, Vladimir: *See*—
Sessler, Jonathan L.; and Kríl, Vladimir, 5,543,514, Cl. 540-472.000.

Krasnor, Stephen: *See*—
Arakawa, Mitsuaki; Minemura, Takashi; and Krasnor, Stephen, 5,543,713, Cl. 324-322.000.

Kratel, Günter: *See*—
Katzer, Hans; Kratel, Günter; and Biller, Beate, 5,543,095, Cl. 264-063.000.

Kraus, William F.: *See*—
Orton, Debra L.; Kraus, William F.; and Gamma, Erich, 5,544,301, Cl. 395-157.000.

Krauss, Guenther: *See*—
Herrmann, Klaus; and Krauss, Guenther, 5,542,906, Cl. 601-2.000.

Kress, Ria: *See*—
Bobrich, Michael; Lehner, August; Roller, Hermann; Suettinger, Rudolf; Kress, Ria; Schneider, Norbert; Lenz, Werner; Engelhardt, Peter; Rudolf, Peter; Brodt, Gregor; Balz, Werner; and Kohl, Albert, 5,543,226, Cl. 428-423.100.

Krieger, Francis W.: *See*—
Eadington, Peter J.; Lisk, Mark; and Krieger, Francis W., 5,543,616, Cl. 250-55.000.

Krishnamurthy, Sundaram: *See*—
Chari, Krishnan; Smith, Wendell F., Jr.; Spara, Paul P.; and Krishnamurthy, Sundaram, 5,543,276, Cl. 430-505.000.

Krishnaswamy, Jayaram; and Reusch, Michael F., to Grumman Aerospace Corporation. Liquid nitrogen temperature micro-wiggler. 5,544,181, Cl. 372-2.000.

Krisztián, Mária: *See*—
Fekete, Pál; Király née Ignácz, Mária; Sipos, Gábor; Jámbor née Hoffmann, Zsuzsanna; Ujfalussy, György; Góra née Hernyes, Magdolna; Klebovich, Imre; Drabant, Sándor; Mándi, Attila; Kiss née Szabó, Gizella; Bárczay, Erzsébet; and Krisztián, Mária, 5,543,155, Cl. 424-473.000.

Krivacic, Robert T.: *See*—
Theimer, Marvin M.; Spreitzer, Michael J.; Weiser, Mark D.; Goldstein, Richard J.; Elrod, Scott A.; Swinehart, Daniel C.; Schilit, William N.; Krivacic, Robert T.; and Want, Roy, 5,544,321, Cl. 395-200.110.

Krivec, Bert, to Snap-on Technologies, Inc. Shock absorbing disconnect latch for drawer slides. 5,542,759, Cl. 312-334.440.

Krochta, John M.; and McHugh, Tara H., to University of California, The Regents of the. Water-insoluble protein-based edible barrier coatings and films. 5,543,164, Cl. 426-302.000.

Kroeger, Arnold C.; Lawnicki, Curt J.; and McIvor, Arthur E., to CRS Industries, Inc. Method of air purification. 5,542,964, Cl. 95-6.000.

Kroener, Michael: *See*—
Hartmann, Heinrich; Denzinger, Walter; Kroener, Michael; Nilz, Claudia; Linhart, Friedrich; and Stange, Andreas, 5,543,459, Cl. 525-54.300.

Krogman, Stanley R.: *See*—
Ungar, Robert E.; and Krogman, Stanley R., 5,542,231, Cl. 53-48.400.

Kroth, David J.: *See*—
Taylor, Roy Y.; Doty, William A.; Kroth, David J.; and Schindler, Roland R., 5,543,964, Cl. 359-463.000.

Krude, Werner; and Harz, Peter, to GKN Automotive AG. Constant velocity universal ball joint with cage securing elements. 5,542,885, Cl. 464-145.000.

Krueger, Douglas A.; and Ebenhoch, Sebastian, to Waukesha Cutting Tools, Inc. Cutting device with removable nosepiece. 5,542,792, Cl. 407-35.000.

Krula, David A.: *See*—
Skaar, Leif; Sheppard, Kenneth; Stanley, Donald; Zeinali, Hossein A.; Khorsandian, Ali; and Krula, David A., 5,542,593, Cl. 226-196.000.

Krusin-Elbaum, Lia: *See*—
Brady, Michael J.; Krusin-Elbaum, Lia; Masselink, William T.; Santhanam, Padmanabhan; and Tamegai, Tsuyoshi, 5,543,988, Cl. 360-112.000.

Krutenat, Richard C.: *See*—
Kimrey, Harold D., Jr.; Snyder, William B., Jr.; and Krutenat, Richard C., 5,543,605, Cl. 219-690.000.

Kruzick, Kent, to Galbreath Incorporated. Vehicle mounted, variable length hook hoist. 5,542,807, Cl. 414-491.000.

Kuang, Wu J.: *See*—
Sheng, Huang Y.; Tsai, Ching-hung; and Kuang, Wu J., 5,544,221, Cl. 379-7.000.

Küber, Frank: *See*—
Winter, Andreas; Küber, Frank; Aulbach, Michael; Bachmann, Bernd; Klein, Robert; Kühlein, Klaus; Spaleck, Walter; and Kohlpaintner, Christian, 5,543,373, Cl. 502-103.000.

Kubiak, Stephen M.; and Nishida, Tatsuo, to Saint-Gobain/Norton Industrial Ceramics Corp. Waterwall tube block design. 5,542,378, Cl. 122-235.120.

Kubly, Kris D., to Safety Engineering Associates, Inc. Motor vehicle fuel system. 5,542,706, Cl. 280-833.000.

Kubo, Kunimichi: *See*—
Niwa, Masahiro; Sugano, Yuji; Uenishi, Ken-ichi; Kitada, Hideto; Yamaguchi, Yoshihisa; Kobayashi, Eiko; Kubo, Kunimichi; and Sano, Akira, 5,543,478, Cl. 526-82.000.

Kubo, Tateo: *See*—
Ohmi, Hidehiko; Kubo, Tateo; and Igarashi, Tomoya, 5,542,556, Cl. 215-329.000.

Kubo, Tomio: *See*—
Fujii, Shigekatsu; Asada, Naohiro; and Kubo, Tomio, 5,542,164, Cl. 29-9.000.

Kubo, Yuichi, to YKK Architectural Products Inc. Sash supporting structure of hinged swinging window. 5,542,215, Cl. 49-397.000.

Kubota Corporation: *See*—
Yuki, Mikio; Kurohara, Kazuaki; Matsui, Akio; and Uemura, Katsuhiko, 5,542,243, Cl. 56-13.300.

Kubota, Norimasa: *See*—
Oda, Katsunari; Kamisaki, Akiyoshi; Kubota, Norimasa; and Narikawa, Teruo, 5,543,905, Cl. 355-285.000.

Kudoh, Mituo; Fukushima, Toshihiko; Itoh, Masaaki; Uchida, Mari; Matsushima, Hiroaki; Kogure, Hiroshi; and Takaku, Syoji, to Hitachi, Ltd. Air-conditioner employing non-azeotrope refrigerant. 5,542,271, Cl. 62-502.000.

Kudou, Hitoshi: *See*—
Iwaya, Shouichi; Yahagi, Masahiro; Kudou, Hitoshi; Itou, Shigeru; Fujiwara, Isao; Ogasawara, Tadashi; Morita, Makoto; Taguchi, Teruo; and Sasaki, Setuo, 5,544,002, Cl. 361-302.000.

Kudzuma, David: *See*—
Beilin, Solomon I.; Chou, William T.; Kudzuma, David; Lee, Michael G.; Murase, Teruo; Peters, Michael G.; Roman, James J.; Swamy, Som S.; and Wang, Wen-chou V., 5,544,017, Cl. 361-790.000.

Kugler, Martin: *See*—
Groth, Torsten; Joentgen, Winfried; Linden, Hans W.; Müller, Nikolaus; Rother, Heinz-Joachim; Wagner, Paul; and Kugler, Martin, 5,543,490, Cl. 528-328.000.

Kühlein, Klaus: *See*—
Winter, Andreas; Küber, Frank; Aulbach, Michael; Bachmann, Bernd; Klein, Robert; Kühlein, Klaus; Spaleck, Walter; and Kohlpaintner, Christian, 5,543,373, Cl. 502-103.000.

Kuhn, Karl J.: *See*—
Drewes, Rolf; Kolb, Markus; Kuhn, Karl J.; Sander, Hans-Jürgen; and Wehner, Wolfgang, 5,543,449, Cl. 524-114.000.

Kulite Semiconductor Products, Inc.: *See*—
Kurtz, Anthony D.; and Ned, Alexander A., 5,543,349, Cl. 437-60.000.

Kullander, Gregor; Reineck, Ingrid; and Brandrup-Wognsen, Helene, to Sandvik AB. Diamond coated body. 5,543,210, Cl. 428-217.000.

Kulpe, Jürgen; Strutz, Heinz; Rüffer, Hans-Martin; and Rittner, Siegbert, to Hoechst Aktiengesellschaft. Process for releasing acidic organic compounds from salts thereof by carbon dioxide. 5,543,564, Cl. 562-467.000.

Kumagai, Kajuaki; Takiguchi, Hiroshi; and Abe, Shigeru, to Hitachi, Ltd. Method and apparatus for protecting a power transmission line. 5,543,995, Cl. 361-65.000.

Kumanoya, Masaki: *See*—
Dosaka, Katsumi; Kumanoya, Masaki; Hayano, Kouji; Yamazaki, Akira; Iwamoto, Hisashi; Abe, Hideaki; Konishi, Yasuhiro; Himukashi, Katsumitsu; Ishizuka, Yasuhiro; and Saiki, Tsukasa, 5,544,121, Cl. 365-222.000.

Kumar, Manoj; and Poplawski, Joseph M., Jr., to International Business Machines Corporation. Word line driver circuit. 5,544,112, Cl. 365-230.060.

Kumar, Nalin; and Xie, Chenggang, to Microelectronics and Computer Technology Corporation. Flat panel display based on diamond thin films. 5,543,684, Cl. 313-495.000.

Kume, Takao: *See*—
Kato, Motoi; Takeuchi, Akihiko; Ochiai, Toshihiko; Miyashiro, Toshiaki; Kabeya, Nobuaki; Suzuki, Takehiko; and Kume, Takao, 5,543,904, Cl. 355-285.000.

Kumeji, Yasushi; Nishimura, Seiichi; Nakajima, Yoshinobu; and Itou, Makoto, to Matsushita Electric Industrial Co., Ltd. Indictive component with zig zag parts and an opening in the exterior mold. 5,543,755, Cl. 333-185.000.

Kummler + Matter AG Fahrleitungstechnik: *See*—
Steiner, Daniel; Brassel, Willy; and Hagmann, Karl, 5,542,511, Cl. 191-41.000.

Kunieda, Mitsuhiro: *See*—
Suzuki, Koichi; Takai, Hideyuki; Miyazaki, Hajime; Sugiyama, Satomi; and Kunieda, Mitsuhiro, 5,543,257, Cl. 430-58.000.

Kunig, Helmut; and Szymanski, Marek, to Nordischer Maschinenbau Rud. Baader GmbH + Co KG. Method and apparatus for detaching the meat from the bones of the extremities of animals. 5,542,879, Cl. 452-135.000.

Kuniya, Masayoshi: *See*—
Shirai, Fumiya; Kuniya, Masayoshi; Mikura, Chiemi; Matsushita, Tomoko; Akemi, Hitoshi; and Yamamoto, Toshiyuki, 5,543,151, Cl. 424-448.000.

Kunz, Fred P.: *See*—
Lee, George C.; and Kunz, Fred P., 5,542,402, Cl. 123-573.000.

Kuo, James R., to National Semiconductor Corp. Programmable CMOS current source having positive temperature coefficient. 5,543,746, Cl. 327-543.000.

Kurashima, Yoshihiko: *See*—
Tsuchimoto, Tomonori; Iwata, Katsuichi; and Kurashima, Yoshihiko, 5,543,242, Cl. 429-049.000.

Kurata, Akira: *See*—
Shimuta, Masanori; Takahashi, Toru; Abe, Hisato; Takahashi, Kenichi; Kurata, Akira; and Aoki, Osamu, 5,543,482, Cl. 526-289.000.

Kurata, Kazunori; and Kobayashi, Makoto, to Sumitomo Wiring Systems, Ltd. Branching connection box for electrical circuits. 5,543,581, Cl. 174-52.100.

Kurihara, Hideshi: *See*—
Shimizu, Takaaki; Kinsho, Takeshi; Ogihara, Tsutomu; Kaneko, Tatsushi; Saito, Ryuichi; and Kurihara, Hideshi, 5,543,539, Cl. 556-406.000.

Kurihara, Mikio: *See*—
Horikoshi, Seita; Kurihara, Mikio; Naitoh, Atsuhisa; and Yoshihara, Kazuhide, 5,544,005, Cl. 361-680.000.

Kuriki, Hiroshi: *See*—
Takahata, Toshio; Nakazawa, Shinsuke; Iochi, Atsushi; Kuriki, Hiroshi; and Gotoh, Kenichi, 5,542,397, Cl. 123-520.000.

Kurisu, Motohiro, to SamSung Electronics Co., Ltd. Data storing method of a row buffer in on-screen display and control circuit thereof. 5,543,823, Cl. 345-196.000.

Kuriyama, Masato: *See*—
Kitano, Kazuaki; Morita, Shigeru; Kuriyama, Masato; and Maejima, Kazutaka, 5,543,322, Cl. 435-252.300.

Kuriyama, Yuji: *See*—
Ichino, Rie; Ito, Michiyasu; Kuriyama, Yuji; and Shiraki, Kouji, 5,542,698, Cl. 280-732.000.

Kurohara, Kazuaki: *See*—
Yuki, Mikio; Kurohara, Kazuaki; Matsui, Akio; and Uemura, Katsuhiko, 5,542,243, Cl. 56-13.300.

Kuroi, Takashi: *See*—
Kobayashi, Maiko; and Kuroi, Takashi, 5,543,647, Cl. 257-345.000.

Kuronuma, Akira; Akiyama, Yuji; Murata, Takayuki; Fukui, Hiroshi; and Omo, Shinichi, to Canon Kabushiki Kaisha. Ink jet apparatus and method for recovery thereof. 5,543,826, Cl. 347-23.000.

Kurosaki, Tomihiro: *See*—
Kayane, Shigeto; Kawai, Takashi; Sakata, Masaru; Imamura, Takashi; Tanigaki, Masanobu; and Kurosaki, Tomihiro, 5,543,310, Cl. 435-180.000.

Kurosawa, Kazuo; Matsuo, Kazuto; and Minoguchi, Akira, to Toyo Communication Equipment Co., Ltd. Method of identifying the denominations of pieces of paper. 5,542,518, Cl. 194-206.000.

Kurosawa, Kazuyoshi: *See*—
Kenmoku, Takeji; Umino, Shinichi; Hirai, Eiji; Kurosawa, Kazuyoshi; and Matsumura, Yoshio, 5,543,029, Cl. 205-109.000.

Kurtz, Anthony D.; and Ned, Alexander A., to Kulite Semiconductor Products, Inc. Method for fabricating a beam pressure sensor employing dielectrically isolated resonant beams. 5,543,349, Cl. 437-60.000.

Kusafuka, Muneo: *See*—
Tsukamoto, Kazumasa; Hayabuchi, Masahiro; Nishida, Masaaki; Yamamoto, Yoshihisa; Kusafuka, Muneo; Mikami, Kazuhiro; Tsutsui, Hiroshi; and Iwata, Akihito, 5,542,887, Cl. 475-63.000.

Kusase, Shin; Mitani, Kenzo; Umeda, Atsushi; Tokura, Norihito; and Sato, Hirohide, to Nippondenso Co., Ltd. Generator motor for vehicles. 5,543,703, Cl. 322-16.000.

Kusy, Andrej: *See*—
Colarow, Ladislas; Dalan, Ernesto; and Kusy, Andrej, 5,543,169, Cl. 426-662.000.

Kuwabara, Yuko: *See*—
Taniguchi, Yukio; Hotta, Tsuyoshi; Kuwabara, Yuko; Morita, Hideaki; and Segawa, Toshikazu, 5,543,228, Cl. 428-429.000.

Kuwagata, Masaaki; Matsuo, Ryosuke; Maruyama, Keiji; Miyawaki, Naokazu; and Ueno, Hisashi, to Kabushiki Kaisha Toshiba. Semiconductor integrated circuit including ring oscillator of low current consumption. 5,544,120, Cl. 365-222.000.

Kuwamoto, Tomoyuki: *See*—
Iriguchi, Jiro; Kuwamoto, Tomoyuki; Chosa, Junichi; and Matsuda, Tatsuhito, 5,543,456, Cl. 524-542.000.

Kuwano, Shigeru: *See*—
Yonenaga, Kazushige; Kuwano, Shigeru; Shibata, Nori; and Norimatsu, Seiji, 5,543,952, Cl. 359-181.000.

Kwoh, Daniel S.: *See*—
Mankovitz, Roy J.; Ng, Yee K.; and Kwoh, Daniel S., 5,543,929, Cl. 358-335.000.
Yuen, Henry C.; Kwoh, Daniel S.; Leung, Wing P.; and Tam, Tony T., 5,543,852, Cl. 348-478.000.

KYC, Inc.: *See*—
Nakashima, Takashi; and Kodera, Masanobu, 5,542,841, Cl. 431-160.000.

Kyle, Donald J.; and Chakravarty, Sarvajit, to Scios Nova Inc. Cyclic bradykinin antagonist peptides. 5,543,496, Cl. 530-314.000.

Kyoto Daiichi Kagaku Co., Ltd.: *See*—
Sugiyama, Koji; and Yamamoto, Hiroshi, 5,543,315, Cl. 436-161.000.

Kyowa Hakko Kogyo Co., Ltd.: *See*—
Suzuki, Fumio; Shimada, Junichi; Ishii, Akio; Nakamura, Joji; Ichikawa, Shunji; Kitamura, Shigeto; and Koike, Nobuaki, 5,543,415, Cl. 514-263.000.

L.I.M.A.D. Limited: *See*—
Minin, Leonid; and Saizev, Slava, 5,543,410, Cl. 514-248.000.

L'Oreal: *See*—
Hocquaux, Michel; and Philippe, Michel, 5,543,436, Cl. 424-61.000.

Laabs, Walter; and Appel, Hans-Günter. Suction device for medical use. 5,542,929, Cl. 604-119.000.

Lachenmeier, Eric W.: *See*—
Hoff, Louis B.; Lachenmeier, Eric W.; Raysberg, Yefim M.; and Nordman, Eric S., 5,543,026, Cl. 204-612.000.

Lachman, Larry M.: *See*—
Johnson, William J.; Vegatoro, Guillermo; and Lachman, Larry M., 5,543,792, Cl. 341-123.000.

Laermer, Franz: *See*—
Benz, Gerhard; Marek, Jiri; Willmann, Martin; Bantien, Frank; Muenzel, Horst; Laermer, Franz; Offenberg, Michael; and Schilp, Andrea, 5,542,558, Cl. 216-2.000.

Lagow, Richard J.: *See*—
Bierschenk, Thomas R.; Juhlke, Timothy J.; Kawa, Hajimu; and Lagow, Richard J., 5,543,567, Cl. 562-582.000.

Lagrance, Alain: *See*—
Genet, Alain; and Lagrance, Alain, 5,542,952, Cl. 8-410.000.

Lahaussois, Pierre; and Strohl, Margaret T., to Dale Strohl. Dispensable, disposable reversible forearm protector. 5,542,121, Cl. 2-59.000.

Lai, Robert S.: *See*—
Denny, George S.; Lai, Robert S.; Li, Sherry H.; Murphy, Joseph F.; Nguyen, Hoang M.; and Ziebarth, Mark N., 5,544,325, Cl. 395-200.170.

Laib, Gordon: *See*—
Merkle, Cliff; Burns, John; Laib, Gordon; Willis, Jim; Mitchel, Scotty; and Erickson, Dennis, 5,542,544, Cl. 209-139.100.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See*—
Karinthi, Pierre; and Jamonet, Bernard, 5,543,127, Cl. 423-294.000.

Lakeland Industries, Inc.: *See*—
Smith, Raymond, 5,543,011, Cl. 156-308.400.

Lakey, Martin J.: *See*—
Ball, Robert J.; and Lakey, Martin J., 5,542,791, Cl. 407-21.000.

Lam Research Corporation: *See*—
Barnes, Michael S.; Coultas, Dennis K.; Forster, John C.; Keller, John H.; and Wicker, Thomas, 5,543,184, Cl. 427-571.000.

Lambertson, Roy T., to XICOR, Inc. Compact page-erasable eeprom nonvolatile memory. 5,544,103, Cl. 365-185.150.

Lammertink, Ferdinand, to Binary Arts Corporation. Intersecting manipulable puzzle. 5,542,673, Cl. 273-153.00S.

Landrau, Felix A.: *See*—
Myers, Robert M.; and Landrau, Felix A., 5,543,098, Cl. 264-104.000.

Landscheidt, Heinz; Wolters, Erich; Wagner, Paul; and Klausener, Alexander, to Bayer Aktiengesellschaft. Process for the preparation of dimethyl carbonate. 5,543,548, Cl. 558-277.000.

Laney, Stuart T., to Microsoft Corporation. Digital video data compression technique. 5,544,286, Cl. 395-114.000.

Lanfranconi, Antonio; Munari, Giorgio; Zappettini, Adelelmo; and Rizzo, Roberto, to INGE S.p.A. Bottle for preserving in a separated condition substances to be mixed together before dispensing. 5,542,528, Cl. 206-221.000.

Lange, Jörg: *See*—
Schneider, Erich; Bone, Rainer; Klenk, Martin; Lange, Jörg; and Dambach, Dieter-Andreas, 5,542,292, Cl. 73-118.100.

Langer, Robert S.: *See*—
Gref, Ruxandra; Minamitake, Yoshiharu; and Langer, Robert S., 5,543,158, Cl. 424-501.000.

Langridge, Denton C.: *See*—
Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Kerdesky, Francis A.; Langridge, Denton C.; Leanna, M. Robert; Lijewski, Linda M.; Melcher, Laura; Morton, Howard E.; Norbeck, Daniel W.; Reno, Daniel S.; Robbins, Timothy A.; Sham, Hing L.; Sowin, Thomas J.; Tien, Jien-heh J.; Zhao, Chen; and Scarpetti, David, 5,543,551, Cl. 560-24.000.

Langstein, Gerhard: *See*—
Baade, Wolfgang; Heinrich, Roland; Langstein, Gerhard; Mulder, Thomas; and Puskas, Judit, 5,543,479, Cl. 526-88.000.

Laniere de Picarde: *See*—
Groshens, Pierre; and Paire, Christian, 5,543,214, Cl. 428-261.000.

Lanning, Robert A.: *See*—
Hammond, Charles A.; Oostwouder, Shelby P.; and Lanning, Robert A., 5,543,122, Cl. 423-220.000.

Lanning, Steven G.: *See*—
Creswell, Carroll W.; Lanning, Steven G.; Papazian, Carol J.; and Rulon, James M., 5,544,229, Cl. 379-67.000.

Lapidus, Herbert, to Combe, Incorporated. Stick delivery system for topical application of a treatment agent. 5,543,148, Cl. 424-401.000.

Lapointe, Denys: *See*—
Harvey, John A.; Renaud, Benoit; Gagnon, Claude; Rondeau, Pierre; and Lapointe, Denys, 5,542,371, Cl. 114-363.000.

Lappin, Edward R.: *See*—
Lee, Sun Y.; Lappin, Edward R.; and Shaffer, Joseph A., 5,543,087, Cl. 261-87.000.

Larivee, William V., Jr. Molded one-piece entry door flashing pan. 5,542,217, Cl. 49-471.000.

Larkin, Robert F., to Martin Marietta Corporation. Positioning apparatus and method utilizing PWM control of a double-acting hydraulic cylinder. 5,542,336, Cl. 91-166.000.

LaRoche Industries, Inc.: *See*—
Belding, William A.; Janke, Scott; Holeman, William D.; and Delmas, Marc P. P., 5,542,968, Cl. 96-125.000.

Larson, Thomas A.: *See*—
Hartman, Peter G.; Jones, Keith L.; Larson, Thomas A.; and Weber, Gregory T., 5,542,390, Cl. 123-412.000.

Laser Surge, Inc.: *See*—
Oravecz, Michael G.; Greenwald, Roger J.; McGarry, Daniel E.; and Sauer, Jude S., 5,543,832, Cl. 348-65.000.

Lashier, Mark E.; Freeman, Jeffrey W.; and Knudsen, Ronald D., to Phillips Petroleum Company. Olefin production. 5,543,375, Cl. 502-117.000.

Läsker, Lutz: *See*—
Stumpe, Joachim; Shibaev, Valery; Kostromin, Sergei; Ivanov, Sergei; Fischer, Thomas; Läsker, Lutz; Ruhmann, Ralf; and Claussen, Uwe, 5,543,267, Cl. 430-290.000.

Lassalle, Gilbert: *See*—
Mallart, Sergio; Lassalle, Gilbert; Purcell, Thomas Andrew; and Muller, Jean Claude, 5,543,526, Cl. 548-110.000.

Lathrop, Robert L.: *See*—
Marchis, Carlos; McVicar, David N.; and Lathrop, Robert L., 5,543,821, Cl. 345-167.000.

Latiolais, Jerry G.; Gathright, J. Paul; Galante, Nicholas R.; Galland, M. Stephen; Gallet, J. Diores; Compton, Lewis R.; Baker, George L.; and Wang, James H., to Chevron Chemical Company. Laminate of ethylene-alkyl acrylate copolymer and polypropylene. 5,543,233, Cl. 428-516.000.

Latiolais, Jerry G.; Galante, Nicholas R.; Gathright, J. Paul; and Wang, James H., to Chevron Chemical Company. Copolymers of ethylene and alkyl acrylate with improved melt-point temperatures. 5,543,477, Cl. 526-65.000.

Laughlin, Robert G.: *See*—
Phan, Dean V.; Trokhan, Paul D.; Laughlin, Robert G.; and Trinh, Toan, 5,543,067, Cl. 106-287.250.

Laughner, Michael K., to Dow Chemical Company, The. Polycarbonate polyester blends modified with poly(phenylene ether). 5,543,448, Cl. 524-109.000.

Lauk, Urs: *See*—
McMullan, David; Schaulin, Rudolf; and Lauk, Urs, 5,542,956, Cl. 8-641.000.

Laurent, Martin S.: *See*—
Pao, Hsueh-Wen; Faulstich, David L.; Snyder, Dane T.; Ma, Johnny T.; Izzo, Kenneth R.; Swanson, Joel C.; Laurent, Martin S.; and Kachel, Peter F., 5,544,208, Cl. 376-253.000.

LaVange, Donald: *See*—
Peters, Ray; Wilson, Woodrow S.; and LaVange, Donald, 5,542,585, Cl. 222-531.000.

Laveen, Eric: *See*—
Rother, David J.; Lee, John S.; Schmidt, Terence J.; Hollerich, Donald; Skubic, Robert L.; and Laveen, Eric, 5,542,768, Cl. 400-120.160.

Lavelle, Michael G.: *See*—
Deering, Michael F.; Schlapp, Stephen A.; and Lavelle, Michael G., 5,544,306, Cl. 395-164.000.

Lavrentovich, Oleg D.; and Nazarenko, Vassil G., to Kent State University. Liquid crystalline electrooptical device. 5,543,950, Cl. 359-77.000.

Lawnicki, Curt J.: *See*—
Kroeger, Arnold C.; Lawnicki, Curt J.; and McIvor, Arthur E., 5,542,964, Cl. 95-6.000.

Lawrence, R. Michael; Biller, Scott A.; and Fryszman, Olga M. Methods of preparing α-phosphonosulfinate squalene synthetase inhibitors. 5,543,542, Cl. 558-87.000.

Lax, Ronald G.: *See*—
Edwards, Stuart D.; Lax, Ronald G.; Lundquist, Ingemar H.; Sharkey, Hugh R.; and Baker, James A., 5,542,915, Cl. 604-22.000.

Layzell, David B.; Hunt, Stephen; and Dowling, Adrian N., to Queen's University at Kingston. Method and instrument for measuring differential oxygen concentration between two flowing gas streams. 5,542,284, Cl. 73-23.200.

Le Carbone Lorraine: *See*—
Yazami, Rachid; and Moreau, Michel, 5,543,021, Cl. 204-294.000.

Le, Qui: *See*—
Cole, William G.; Hydeman, Jeffrey E.; Gunsallus, James M., Jr.; and Le, Qui, 5,543,599, Cl. 219-69.200.

Lea, Michael C., to Minnesota Mining and Manufacturing Company. Apparatus with light emitting element, microlens and gradient index lens characteristics for imaging continuous tone images. 5,543,830, Cl. 347-241.000.

Leanna, M. Robert: *See*—
Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Kerdesky, Francis A.; Langridge, Denton C.; Leanna, M. Robert; Lijewski, Linda M.; Melcher, Laura; Morton, Howard E.; Norbeck, Daniel W.; Reno, Daniel S.; Robbins, Timothy A.; Sham, Hing L.; Sowin, Thomas J.; Tien, Jien-heh J.; Zhao, Chen; and Scarpetti, David, 5,543,551, Cl. 560-24.000.
Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Leanna, M. Robert; Lijewski, Linda M.; Melcher, Laura; Morton, Howard E.; Reno, Daniel S.; Robbins, Timothy A.; Sham, Hing L.; and Sowin, Thomas J., 5,543,552, Cl. 560-24.000.

Leatherman, Sheila, to United Healthcare Corporation. Method for evaluation of health care quality. 5,544,044, Cl. 364-401.000.

Leaver, David: *See*—
Jackson, Frederick S.; Henry, Michael D.; Leaver, David; and Wright-Boulton, Neil, 5,544,202, Cl. 375-376.000.

Lebby, Michael S.; Kelly, George R.; and Jachimowicz, Karen E., to Motorola. Integrated electro-optic package for reflective spatial light modulators. 5,543,958, Cl. 359-254.000.

Lebeque, Serge: *See*—
Saint-Remy, Jean-Marie; Lebrun, Philippe; Lebeque, Serge; Masson, Pierre L.; and Kingdon, Henry S., 5,543,145, Cl. 424-133.100.

Lebrun, Philippe: *See*—

Saint-Remy, Jean-Marie; Lebrun, Philippe; Lebeque, Serge; Masson, Pierre L.; and Kingdon, Henry S., 5,543,145, Cl. 424-133.100.
Lederer, David B.: *See—*
Vane, Burton W.; and Lederer, David B., 5,543,777, Cl. 340-514.000.
Lee, Bangwon; and Kim, Donghoi, to Samsung Electronics Co., Ltd. Digital signal processing system utilizing relatively slower speed memory. 5,544,351, Cl. 395-550.000.
Lee, Choon: *See—*
Lee, Je H.; and Lee, Choon, 5,543,931, Cl. 358-335.000.
Lee, Chul S.: *See—*
Kang, Yong S.; Oh, Yong K.; Cha, Se I.; and Lee, Chul S., 5,543,933, Cl. 358-335.000.
Lee, Ciel E., Sr. Process for removing mineral deposits from lagoon recycle lines. 5,542,981, Cl. 134-3.000.
Lee, Donald: *See—*
Mattos, Derwin W.; Heron, Ralph P.; and Lee, Donald, 5,543,733, Cl. 326-81.000.
Lee, Dosuk D.; and Conner, William T., to Etex Corporation. Method of coating medical devices and device coated thereby. 5,543,019, Cl. 204-192.150.
Lee, Douglas G. L.: *See—*
Hume, Roger A.; Felstead, Richard A.; Lee, Douglas G. L.; Barling, Lawrence C.; and Barrell, Anthony J., 5,542,857, Cl. 439-337.000.
Lee, Fong-Chun; Fu, Chien-Chih; and Wang, Nan-Chueh, to United Microelectronics Corp. Multi-stage sense amplifier for read-only memory having current comparators. 5,543,738, Cl. 327-51.000.
Lee, Gary D., to Anchored Corporation, The. Continuous-torque variable-speed mechanical gear transmission. 5,542,310, Cl. 74-372.000.
Lee, George C.; and Kunz, Fred P., to Ford Motor Company. Positive crankcase ventilation system with a centrifugal oil separator. 5,542,402, Cl. 123-573.000.
Lee, James: *See—*
Chuntharapai, Anan; Lee, James; Hebert, Caroline; and Kim, K. Jin, 5,543,503, Cl. 530-388.220.
Lee, Je H.; and Lee, Choon, to Goldstar Co., Ltd. Apparatus for and method of reproducing digital video signals at a varied speed. 5,543,931, Cl. 358-335.000.
Lee, J. Kelly: *See—*
Furlani, Edward P.; and Lee, J. Kelly, 5,544,132, Cl. 369-13.000.
Lee, John S.: *See—*
Rother, David J.; Lee, John S.; Schmidt, Terence J.; Hollerich, Donald; Skubic, Robert L.; and Laveen, Eric, 5,542,768, Cl. 400-120.160.
Lee, Jong-wook: *See—*
Lee, Seo-jae; Kim, Il-gon; and Lee, Jong-wook, 5,543,240, Cl. 429-38.000.
Lee, Joo-hyung, to Samsung Electronics Co., Ltd. Method for manufacturing offset polysilicon thin-film transistor. 5,543,340, Cl. 437-44.000.
Lee, Keun W.: *See—*
Baek, Young S.; Lee, Keun W.; Min, Beyong D.; and Choi, Gang I., 5,544,151, Cl. 370-16.100.
Lee, Kwang-Ryeol; and Eun, Kwang-Yong, to Korea Institute of Science and Technology. Method for testing the abrasion property and measuring friction coefficient of circumferential surface of cylindrical object and apparatus for the same. 5,542,281, Cl. 73-9.000.
Lee, Michael G.: *See—*
Beilin, Solomon I.; Chou, William T.; Kudzuma, David; Lee, Michael G.; Murase, Teruo; Peters, Michael G.; Roman, James J.; Swamy, Som S.; and Wang, Wen-chou V., 5,544,017, Cl. 361-790.000.
Lee, Robert W.: *See—*
Baker, Edward J.; Lee, Robert W.; Toner, John L.; and Illig, Carl R., 5,543,132, Cl. 424-9.411.
Lee, Sang J.: *See—*
Kang, Myung G.; Kang, Seong S.; Choi, Sung H.; Joung, Mun C.; Jang, Byoung G.; Ryu, Kye Y.; Yu, Hyo C.; and Lee, Sang J., 5,543,981, Cl. 360-96.600.
Lee, Sang-Hoon: *See—*
Kim, Tae-Han; Lee, Sang-Hoon; and Chin, Dae-Je, 5,543,649, Cl. 257-355.000.
Lee, Seo-jae; Kim, Il-gon; and Lee, Jong-wook, to Samsung Electronics Co., Ltd. Fuel cell stack. 5,543,240, Cl. 429-38.000.
Lee, Seung-Gap; Gil, Sung-Ho; and Eun, Suk-Hyun, to Samsung Electronics Co., Ltd. Absorption heating and cooling device. 5,542,267, Cl. 62-485.000.
Lee, Shih-Ying, to Setra Systems, Inc. Low cost, center-mounted capacitive pressure sensor. 5,542,300, Cl. 73-724.000.
Lee, Steven G.: *See—*
Hardt, David E.; and Lee, Steven G., 5,544,195, Cl. 373-79.000.
Lee, Steven S.; Fuchs, Kenneth P.; and Miller, Gayle W., to AT&T Global Information Solutions Company; Hyundai Electronics America; and Symbios Logic Inc. Process for forming titanium silicide local interconnect. 5,543,361, Cl. 437-200.000.
Lee, Sun Y.; Lappin, Edward R.; and Shaffer, Joseph A., to Coors Brewing Company. Multi-function fluid treatment system and method for using the same. 5,543,087, Cl. 261-87.000.
Lee, Sung-Tae, to Samsung Electronics Co., Ltd. Refrigerant compressor having interconnected muffler section. 5,542,824, Cl. 417-312.000.
Lee, Win-Chung: *See—*
Asolick, Colin; Cramer, Gregory D.; Dujari, Ramdas; Lee, Win-Chung; Rao, Sundar M.; and Wheland, Robert C., 5,543,495, Cl. 528-481.000.
Leeco Industries, Inc.: *See—*
Smith, Keith; Smith, Kenneth M.; and Smith, Scott D., 5,542,635, Cl. 248-221.120.
Lefevre, Ives: *See—*
Sitges Menendez, Francisco J.; Sitges Menendez, Fernando; Alvarez Tamargo, Francisco; and Lefevre, Ives, 5,543,020, Cl. 204-233.000.
Legger, Bruno: *See—*
Mentech, Julio; Betremieux, Isabelle; and Legger, Bruno, 5,543,512, Cl. 536-115.000.
Lehfeldt, Carl R.; and Cygnapowicz, Leonard P., to Communication Broadband Multimedia, Inc. Network multimedia interface. 5,544,315, Cl. 395-200.200.
Lehner, August: *See—*
Bobrich, Michael; Lehner, August; Roller, Hermann; Suettinger, Rudolf; Kress, Ria; Schneider, Norbert; Lenz, Werner; Engelhardt, Peter; Rudolf, Peter; Brodt, Gregor; Balz, Werner; and Kohl, Albert, 5,543,226, Cl. 428-423.100.
Leibing, Karl-Heinz; Hansen, Kai-Uwe; and Vonnoe, Reinhard, to Bruening-haus Hyodromatik GmbH. Control and regulation device for a vehicle travel drive. 5,542,251, Cl. 60-426.000.
Leland, Jonathan K.: *See—*
Ghead, Ali; Leland, Jonathan K.; Zoski, Glenn D.; Goodman, Jack E.; and Grosser, John T., 5,543,112, Cl. 422-52.000.
Le Martret, Odile: *See—*
Agouridas, Constantin; Bonnefoy, Alain; Chantot, Jean-François; Denis, Alexis; and Le Martret, Odile, 5,543,400, Cl. 514-29.000.
Lennon, John H.: *See—*
Herbert, William G.; Bischoping, Patricia; Altavela, Robert P.; Kotowicz, Lawrence; Schmitt, Peter J.; Jansen, Ronald E.; Lennon, John H.; and Grey, Henry G., 5,543,028, Cl. 205-70.000.
Lennox Industries, Inc.: *See—*
Evens, Lance J., 5,542,470, Cl. 165-170.000.
Lenz, Werner: *See—*
Bobrich, Michael; Lehner, August; Roller, Hermann; Suettinger, Rudolf; Kress, Ria; Schneider, Norbert; Lenz, Werner; Engelhardt, Peter; Rudolf, Peter; Brodt, Gregor; Balz, Werner; and Kohl, Albert, 5,543,226, Cl. 428-423.100.
Lenzing Aktiengesellschaft: *See—*
Rüf, Hartmut; Eibl, Markus; and Jurkovic, Raimund, 5,543,101, Cl. 264-187.000.
Leonard, Herbert G.: *See—*
Crompton, Dennis; Harris, Richard H.; Leonard, Herbert G.; Hufford, George, III; and Thomas, Jeff D., 5,542,152, Cl. 16-354.000.
Leong, William: *See—*
McClintock, Cameron; Leong, William; Cliff, Richard G.; and Ahanin, Bahram, 5,543,732, Cl. 326-41.000.
Leonidov, Nikolai B.; and Selezenev, Nikolai G., to Leonidov, Nikolai B. Crystalline modification of 2,4-dioxo-6-methyl-1,2,3,4-tetrahydropyrimidine, a method for the preparation thereof and a medicinal preparation based on it. 5,543,147, Cl. 424-400.000.
Leopold Kostal GmbH & Co. KG: *See—*
Janca, Reiner; and Spieker, Reinhold, 5,543,693, Cl. 318-283.000.
Levers, Jürgen; Bendicks, Norbert; Boebel, Ralf; Feldmüller, Ludwig; and Esders, Berthold, 5,543,923, Cl. 356-445.000.
Leroux, Roland: *See—*
von Bonin, Wulf; von Gizycki, Ulrich, deceased; Leroux, Roland; Karschti, Thomas M.; and Thürk, Jürgen, 5,543,230, Cl. 428-432.000.
L'Esperance, Lauren L.; Autio, Craig R.; Mariner, E. Thomas; and Stapelfeld, Norval D., to Whistler Corporation. Vehicle security system. 5,543,776, Cl. 340-426.000.
Lethbridge, Benjamin: *See—*
Handelsman, Jo; Halverson, Larry; Stabb, Eric V.; Lethbridge, Benjamin; and Silo, Laura, 5,543,301, Cl. 435-34.000.
Leung, Chiu F.; and O'Sullivan, Thomas D., to Bell Communications Research, Inc. Electrical storage cell polarization controller. 5,543,701, Cl. 320-4.000.
Leung, De-Mei: *See—*
Fu, Roger C.; Leung, De-Mei; Fleitman, Jeffrey S.; Rizzolio, Michele C.; and Miksztal, Andrew R., 5,543,408, Cl. 514-233.500.
Leung, Martin S.: *See—*
Stupian, Gary W.; and Leung, Martin S., 5,543,364, Cl. 437-210.000.
Leung, Wing P.: *See—*
Yuen, Henry C.; Kwoh, Daniel S.; Leung, Wing P.; and Tam, Tony T., 5,543,852, Cl. 348-478.000.
Lever Brothers Company, Division of Conopco, Inc.: *See—*
Stockwell, Colin, 5,542,586, Cl. 222-538.000.
Levers, Jürgen; Bendicks, Norbert; Boebel, Ralf; Feldmüller, Ludwig; and Esders, Berthold, to Leopold Kostal GmbH & Co. KG. Sensor device. 5,543,923, Cl. 356-445.000.
Levien, Raphael L. Automatic tone correction of images using non-linear histogram processing. 5,544,258, Cl. 382-169.000.
Levin, Michael I. Phase shifting transformer or autotransformer. 5,543,771, Cl. 336-10.000.
Levine, Howard L.: *See—*
Bologna, William J.; and Levine, Howard L., 5,543,150, Cl. 424-430.000.
Levocz, Reynold J.; and Szewc, Joseph W. Adjustable golf putter. 5,542,665, Cl. 473-313.000.
Levy, Ford: *See—*
Giordano, Gerard J.; deMare, Gregory; Longendorfer, Betsy; Granieri, Michael N.; Giordano, John P.; Nolan, Mary E.; and Levy, Ford, 5,544,308, Cl. 395-183.020.

Levy, Jay A., to University of California, The Regents of the. HIV-2 strains capable of infecting humans and non-human primates, and infected non-human primates with immune system disease. 5,543,131, Cl. 424-9.200.
Levy, Markus A.: *See—*
Robinson, Kurt B.; Elbert, Dale K.; and Levy, Markus A., 5,544,356, Cl. 395-600.000.
Lewak, Jerzy; Grzechnik, Slawek; and Matousek, Jon, to Paragon Concepts, Inc. Method for accessing computer files and data, using linked categories assigned to each data file record on entry of the data file record. 5,544,360, Cl. 395-600.000.
Lewiner, Jacques: *See—*
Ichiya, Mitsuo; Kasano, Fumihiro; Nishimura, Hiromi; Lewiner, Jacques; and Perino, Dider, 5,544,001, Cl. 361-233.000.
Lewis, Fred: *See—*
Yen-Maguire, Yu P.; Cox, Tom; and Lewis, Fred, 5,543,327, Cl. 435-287.900.
Lewis, John D.: *See—*
Whitson, Mark A.; Lewis, John D.; Chen, Tienteh; Dannhauser, Thomas J.; and Bagchi, Pranab, 5,543,283, Cl. 430-569.000.
Lewis, Kenneth T.: *See—*
Clark, Frank B.; and Lewis, Kenneth T., 5,543,783, Cl. 340-550.000.
Lewis, Larry N.; and Jeram, Edward M., to General Electric Company. Additive for the prevention of nitrosamine formation in silicone articles. 5,543,457, Cl. 524-736.000.
Leybold Aktiengesellschaft: *See—*
Mattern-Klosson, Monika; Mundinger, Hans-Juergen; Haefner, Hans-Ulrich; and Timm, Uwe, 5,542,257, Cl. 62-55.500.
Rolff, Norbert, 5,543,706, Cl. 324-115.000.
Leybold Durferrit GmbH: *See—*
Hugo, Franz; and Wanetzky, Erwin, 5,544,494, Cl. 373-65.000.
Lezdey, Darren B.: *See—*
Lezdey, Jarett R.; Lezdey, Darren B.; and Schneeweiss, Joseph G., 5,542,667, Cl. 273-84.00R.
Lezdey, Jarett R.; Lezdey, Darren B.; and Schneeweiss, Joseph G. Martial arts training device. 5,542,667, Cl. 273-84.00R.
Li, Bin-Qiao: *See—*
Li, Zhi-Jian; Shi, Bing-Xue; and Li, Bin-Qiao, 5,544,279, Cl. 395-3.000.
Li, Canhui: *See—*
Riordan, John R.; Bear, Christine E.; Ramjeesingh, Mohabir; and Li, Canhui, 5,543,399, Cl. 514-21.000.
Li, Sherry H.: *See—*
Denny, George S.; Lai, Robert S.; Li, Sherry H.; Murphy, Joseph F.; Nguyen, Hoang M.; and Ziebarth, Mark N., 5,544,325, Cl. 395-200.170.
Li, Zhi-Jian; Shi, Bing-Xue; and Li, Bin-Qiao, to United Microelectronics Corp. Fuzzy logic recognition device which determines the mode of an unknown move using fuzzy set theory. 5,544,279, Cl. 395-3.000.
Liao, Nan W. Christmas light bulb socket. 5,542,858, Cl. 439-419.000.
Liaw, Ing-Ruey; and Cherng, Meng-Jaw, to Vanguard International Semiconductor Corp. Method for fabricating crown capacitors for a dram cell. 5,543,345, Cl. 437-52.000.
Libertech, Inc.: *See—*
Egger, Daniel, 5,544,352, Cl. 395-600.000.
Liebel, Henry L., to Corrcycle, Inc. Composite article made from used or surplus corrugated boxes or sheets. 5,543,205, Cl. 428-184.000.
Liesch, Jerrold M.: *See—*
Bills, Gerald F.; Curotto, James E.; Dreikorn, Sarah J.; Jenkins, Rosalind G.; Liesch, Jerrold M.; Morris, Sandra A.; Thompson, John R.; Zink, Deborah L.; Jansson, Richard K.; Basilio, Angela; Diez, Teresa; Pelaez, Fernando; and Vicente, Francisca, 5,543,429, Cl. 514-468.000.
Ligon, Robert M.; and Carter, Thomas B. Dispensing system for particulate material. 5,542,582, Cl. 222-342.000.
Lihme, Allan O. F.; and Boenisch, Thomas, to Immunodex K/S. Water-soluable, polymer-based reagents and conjugates comprising moieties derived from divinyl sulfone. 5,543,332, Cl. 436-528.000.
Lijewski, Linda M.: *See—*
Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Kerdesky, Francis A.; Langridge, Denton C.; Leanna, M. Robert; Lijewski, Linda M.; Melcher, Laura; Morton, Howard E.; Norbeck, Daniel W.; Reno, Daniel S.; Robbins, Timothy A.; Sham, Hing L.; Sowin, Thomas J.; Tien, Jien-heh J.; Zhao, Chen; and Scarpetti, David, 5,543,551, Cl. 560-24.000.
Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Leanna, M. Robert; Lijewski, Linda M.; Melcher, Laura; Morton, Howard E.; Reno, Daniel S.; Sham, Hing L.; and Sowin, Thomas J., 5,543,552, Cl. 560-24.000.
Lilja, Launo L.; and Mäkitalo, Valto J., to Outokumpu Research Oy. Method for adjusting the supply of a reaction gas to be fed into a smelting furnace, and a multipurpose burner designed for realizing the same. 5,542,361, Cl. 110-341.000.
Lim, Eric J., to Uniphase Corporation. Nonlinear optical generator with index of refraction perturbed reflector arrangement. 5,544,271, Cl. 385-122.000.
Lim, Samuel S. S.; and Tan, Siew K., to Sunright Limited. Reusable carrier for burn-in/testing on non packaged die. 5,543,725, Cl. 324-755.000.
Lin, Chuen-Sheng. CPU heat dissipator hook-up apparatus. 5,542,468, Cl. 165-80.300.
Lin, Jui-Ming, to Three Soma Technology Co., Ltd. Eye protecting mask of computer video display. 5,543,863, Cl. 348-835.000.
Lin, Meng H. Multifunctional micropocessor input device. 5,542,770, Cl. 400-477.000.
Lin, Ming-Der: *See—*
Lin, San-Bao; Chang, Gwo-Dawn; Shie, Jin-Shown; Wang, Chein-Hsun; Weng, Ping-Kuo; and Lin, Ming-Der, 5,543,620, Cl. 250-338.300.
Lin, M. Linda: *See—*
Hofmann, John E.; Von Harpe, Thure; Diep, Daniel V.; and Lin, M. Linda, 5,543,123, Cl. 423-235.000.
Lin, San-Bao; Chang, Gwo-Dawn; Shie, Jin-Shown; Wang, Chein-Hsun; Weng, Ping-Kuo; and Lin, Ming-Der, to Opto Tech Corporation. Wide-view-angle and planarized-packing structure for IR heat sensing elements. 5,543,620, Cl. 250-338.300.
Lin, Tien-Ler: *See—*
Chao, Liang; Lin, Tien-Ler; and Yiu, Tom D., 5,544,116, Cl. 365-210.000.
Lin, Yuan: *See—*
Vuligonda, Vidyasagar; Teng, Min; Beard, Richard L.; Johnson, Alan T.; Lin, Yuan; and Chandraratna, Roshantha A., 5,543,534, Cl. 549-421.000.
Lincoln, David G.: *See—*
Snoke, Phillip J.; Rowley, David S.; Lincoln, David G.; and Charles, Kirk W., 5,542,924, Cl. 604-95.000.
Lindbeck, Per A.: *See—*
Sundström, Jan I.; and Lindbeck, Per A., 5,544,033, Cl. 363-40.000.
Linden, Hans W.: *See—*
Groth, Torsten; Joentgen, Winfried; Linden, Hans W.; Müller, Nikolaus; Rother, Heinz-Joachim; Wagner, Paul; and Kugler, Martin, 5,543,490, Cl. 528-328.000.
Lindmark, Richard J.: *See—*
Adams, Steven P.; Lindmark, Richard J.; Miyano, Masateru; and Rico, Joseph G., 5,543,425, Cl. 514-357.000.
Lindsay, Erin J., to Minnesota Mining and Manufacturing Company. In-line quick connect apparatus for medical fluid circulating systems. 5,542,913, Cl. 604-4.000.
Lindström, Jan N.: *See—*
Chatfield, Christopher G.; Lindström, Jan N.; Sjöstrand, Mats E. K.; and Collin, Ingrid K. M., 5,543,176, Cl. 427-255.300.
Linhart, Friedrich: *See—*
Hartmann, Heinrich; Denzinger, Walter; Kroener, Michael; Nilz, Claudia; Linhart, Friedrich; and Stange, Andreas, 5,543,459, Cl. 525-54.300.
Lique, Roger M., to Trilogy Communications, Inc.. Method of forming radiating coaxial cable. 5,543,000, Cl. 156-52.000.
Lis, Steven A.: *See—*
Henshaw, Philip D.; and Lis, Steven A., 5,543,914, Cl. 356-345.000.
Lisch, Albert. Lure and tackle stacking container. 5,542,206, Cl. 43-54.100.
Lisco, Inc.: *See—*
Mahaffey, Steve; and Rivest, Rene, 5,542,664, Cl. 473-305.000.
Sullivan, Michael J.; and Weiss, Robert A., 5,542,677, Cl. 473-385.000.
Lisec, Peter. Device for moving plate-shaped articles. 5,542,805, Cl. 414-280.000.
Lisk, Mark: *See—*
Eadington, Peter J.; Lisk, Mark; and Krieger, Francis W., 5,543,616, Cl. 250-55.000.
Lisowsky, Richard, to Witco GmbH. Organotin compounds useful in preparing bridged stereorigid metallocenes. 5,543,535, Cl. 556-11.000.
Litkei, Laszlo: *See—*
Moreno, Fulgencio Powell; Litkei, Laszlo; Galamb, Vilmos; Gulyas, Imre; Repasi, Janos; Veres, Agota Repasine; Vigh, Jozsef; Koczka, Istvanne; Fehervari, Edit; Roka, Laszlone; Pethe, Laszlone; and Neu, Jozsef, 5,543,562, Cl. 562-17.000.
Little, Dave: *See—*
Bigham, John A.; Sistanizadeh, Kamran; and Little, Dave, 5,544,161, Cl. 370-58.100.
Litton Systems, Inc.: *See—*
Buchler, Robert J.; Brocksteiu, Allan J.; and Hsu, David Y., 5,543,804, Cl. 342-357.000.
Liu, Haiying: *See—*
Srinivasan, Ravi; Elek, Robert A.; and Liu, Haiying, 5,543,711, Cl. 324-318.000.
Liu, Hua-Kuang; Barhen, Jacob; Farhat, Nabil H.; and Wu, Chwan-Hwa, to United States of America, National Aeronautics and Space Administration. Unipolar terminal-attractor based neural associative memory with adaptive threshold. 5,544,280, Cl. 395-24.000.
Liu, Jane S.: *See—*
Hartley, Richard I.; Noble, Julia A.; Grande, James C. M.; Jackson, William E.; Welles, Kenneth B., II; and Liu, Jane S., 5,544,254, Cl. 382-108.000.
Livigni, Russell A.: *See—*
Hargis, I. Glen; Livigni, Russell A.; Melby, Earl G.; and Vitus, Francis J., 5,543,200, Cl. 428-122.000.
LK-Products Oy: *See—*
Turunen, Aimo; and Jantunen, Heli, 5,543,764, Cl. 333-202.000.
Lo, Jiann-Chang: *See—*
Boyette, James E., Jr.; Lo, Jiann-Chang; and Servedio, Michael, 5,543,726, Cl. 324-758.000.
Lo, Reggie Y. C.: *See—*
Mellors, Alan; Lo, Reggie Y. C.; and Abdullah, Khalid M., 5,543,312, Cl. 435-220.000.
Lo, Tin-chee, to International Business Machines Corporation. Method of controlling signal transfer between self-resetting logic circuits. 5,543,735, Cl. 326-93.000.
Lockheed Corporation: *See—*

Bushman, Boyd B., 5,542,247, Cl. 60-203.100.

Lockheed Martin Corporation: *See—*
Bushman, Boyd B., 5,543,917, Cl. 356-364.000.

Loeber, Peter J.; Hurst, Peter W., deceased (by Linda S. Hurst, George R. Bosworth, legal representatives); and Hurst, George R., legal representative, to Eurotherm Recorders Limited. Keyboard having visible and invisible states. 5,544,020, Cl. 362-29.000.

Loewy, Charles S. F.: *See—*
Bither, David S.; Loewy, Charles S. F.; and Wilson, Paul C., 5,544,330, Cl. 395-280.000.

Löf, C. Stefan L., to Telefonaktiebolaget Ericsson. Method and a device for protecting a printed circuit board against overcurrents. 5,543,774, Cl. 337-297.000.

Loftus, Heather M.: *See—*
Fulgenzi, Lynda K.; Daniel, Roger P.; Loftus, Heather M.; and Goins, Jeffrey L., 5,542,742, Cl. 297-237.000.

Logan, Robert J.: *See—*
Wehmeyer, Keith R.; Logan, Robert J.; Miller, Robert H.; Augaitis, Sheila R.; and Dinwiddie, Aaron H., 5,543,857, Cl. 348-589.000.

Logitech, Inc.: *See—*
Marchis, Carlos; McVicar, David N.; and Lathrop, Robert L., 5,543,821, Cl. 345-167.000.

Logroscino, Carlo; and Goube, Michel, to Sofamor S.N.C. Hook for an occipito-cervical rod or plate of an occipito-cervical osteosynthesis instrumentation. 5,542,946, Cl. 606-61.000.

Lohman, Jeffrey A.: *See—*
Beard, Douglas R.; Phelps, Andrew E.; Woodmansee, Michael A.; Blewett, Richard G.; Lohman, Jeffrey A.; Silbey, Alexander A.; Spix, George A.; Simmons, Frederick J.; and Van Dyke, Don A., 5,544,337, Cl. 395-375.000.

Lohman, Terence J.: *See—*
Amini, Nader; Boury, Bechara F.; Brannon, Sherwood; Horne, Richard L.; and Lohman, Terence J., 5,544,346, Cl. 395-481.000.

Lomas, Christiane. Headwear for supporting a breathing apparatus. 5,542,128, Cl. 2-173.000.

Lomasney, Henry L., to Ionex Corporation. Barrier leak detection using electrokinetic ION transport. 5,543,719, Cl. 324-557.000.

Lombardo, John J.: *See—*
Tatavoosian, Vanacan; Helstern, Robert P.; and Lombardo, John J., 5,544,019, Cl. 362-23.000.

Long, Joseph D., to Gilbarco Inc. Synchronization of prerecorded audio/video signals with multi-media controllers. 5,543,849, Cl. 348-460.000.

Long, Norris R., to Coleman Company, The. Mounting assembly for radiant heater. 5,542,632, Cl. 248-205.100.

Longendorfer, Betsy: *See—*
Giordano, Gerard J.; deMare, Gregory; Longendorfer, Betsy; Granieri, Michael N.; Giordano, John P.; Nolan, Mary E.; and Levy, Ford, 5,544,308, Cl. 395-183.020.

Longerbeam, Donald A.: *See—*
Runyan, Steven; Cox, James R.; Blais, Mark R.; and Longerbeam, Donald A., 5,543,922, Cl. 356-402.000.

Longway, Charles W. T.; and Young, William R., to Harris Corporation. Rom cell for a multiport memory and method. 5,544,095, Cl. 365-63.000.

Looney, James R.: *See—*
Williams, Dennis A.; McDougall, Lee A.; and Looney, James R., 5,543,388, Cl. 507-269.000.

Lopez, François; Pauty, Etienne; and Brun, Norbert, to Valeo Vision. Motor vehicle headlight including a two-filament lamp for selectively generating a main beam and an anti-fog beam. 5,544,021, Cl. 362-61.000.

Loral Aerospace Corp.: *See—*
Chethik, Frank, 5,543,811, Cl. 343-844.000.

Loral Corporation: *See—*
Stangel, John J., 5,543,807, Cl. 342-374.000.

Loral Vought System Corporation: *See—*
Dickinson, Richard C., 5,542,471, Cl. 165-170.000.

Loral Vought Systems Corporation: *See—*
Thomas, Gerald P.; and Hoffner, James A., 5,543,796, Cl. 342-4.000.

L'Oreal: *See—*
Genet, Alain; and Lagrance, Alain, 5,542,952, Cl. 8-410.000.
Gueret, Jean-Louis, 5,542,439, Cl. 132-218.000.

Lorenz, Gisela: *See—*
Doetzer, Reinhard; Sauter, Hubert; Bayer, Herbert; Roehl, Franz; Lorenz, Gisela; Ammermann, Eberhard; and Wingert, Horst, 5,543,433, Cl. 514-638.000.

Losavio, Aldo; Crisenza, Giuseppe; and De Santi, Giorgio, to SGS-Thomson Microelectronics S.r.l. Process and structure for measuring the planarity degree of a dielectric layer in an integrated circuit and integrated circuit including means for performing said process. 5,543,633, Cl. 257-48.000.

Loso, Francis G.: *See—*
Feigenbaum, Bernard E.; and Loso, Francis G., 5,543,808, Cl. 343-727.000.

Lotery Enterprises, Inc.: *See—*
Belka, Jeffrey A., 5,542,571, Cl. 221-268.000.

Loualiche, Slimane: *See—*
Devaud-Pledran, Benoit; and Loualiche, Slimane, 5,544,193, Cl. 372-96.000.

Louden, James A.; Hawkins, Brian F.; Hann, Wayne D., Sr. deceased (by Cheryl Hann, executrix), to Komline- Sanderson Engineering Corp. Apparatus for preparing a material for high pressure deliquification. 5,543,044, Cl. 210-386.000.

Louis, Joseph E.; and Johnson, Alan W., to Sauer Inc. Hydrostatic transmission and axle assembly. 5,542,494, Cl. 180-305.000.

Loutan, Dominique: *See—*
Duffour, Henri; Goerend, Philippe; and Loutan, Dominique, 5,543,598, Cl. 218-135.000.

Loux, Alan D.; Minners, R. Sjhon; and Johnson, Paul H., to Microsensors Technology, Inc. Miniature gas chromatograph with heated gas inlet fitting, heated tubing, and heated microvalve assembly. 5,544,276, Cl. 392-480.000.

Lowtech Corporation, Inc.: *See—*
Cloud, George T., 5,542,785, Cl. 405-239.000.

Loy, Robert E.: *See—*
Smith, Gregory A.; Foltz, Dale E.; Wisebaker, Robert E.; and Loy, Robert E., 5,542,275, Cl. 72-90.000.

LSI Logic Corporation: *See—*
Garza, Mario, 5,543,265, Cl. 430-270.100.
Kapoor, Ashok K., 5,543,643, Cl. 257-262.000.
Rostoker, Michael D.; Dangelo, Carlos; Nagasamy, Vijay; and Mintz, Doron, 5,544,066, Cl. 364-489.000.
Rostoker, Michael D.; Dangelo, Carlos; and Watkins, Daniel R., 5,544,067, Cl. 364-489.000.
Yeh, Stanley; O, Sungki; and Sundararajan, Partha, 5,543,337, Cl. 437-35.000.

Lu, H. L.: *See—*
Chung, T. C.; and Lu, H. L., 5,543,484, Cl. 526-347.100.

Lu, William K. M.: *See—*
Arakawa, Mitsuaki; Zepeda, Ernesto; and Lu, William K. M., 5,543,712, Cl. 324-318.000.

Luan, Shyh-Wei: *See—*
Cheng, Pau-Chen; and Luan, Shyh-Wei, 5,544,322, Cl. 395-200.120.

Lubrizol Corporation, The: *See—*
King, Stanley C.; Knop, Richard C.; Green, John E.; Gyde, Thomas R.; and Silzle, L. William, Jr., 5,542,450, Cl. 137-614.200.

Lucas, Peter: *See—*
Senn, Jeffrey A.; and Lucas, Peter, 5,544,051, Cl. 364-419.190.

Lucas, Philippe; Mege, Philippe; and Pineau, Stéphane, to Matra Communication. Method of synchronization for code division multiple access radiotelephone communications. 5,544,155, Cl. 370-18.000.

Lucas, Philippe; and Mege, Philippe, to Matra Communication. Transmission method for CDMA radiotelephone communications, and apparatuses for implementing such method. 5,544,167, Cl. 370-18.000.

Lucent Technologies Inc.: *See—*
Fuchsreiter, Johannes; Schmidt, Konrad; Kasseckert, Rudolf; and Neumann, Walter, 5,544,314, Cl. 395-200.000.

Luckevich, Mark; Tuck, Brian C.; Weber, Darryl C.; and DeVore, James H., to Kelsey–Hayes Company. Reduced brake switch dependence control method and system for vehicle anti-lock brake system. 5,542,756, Cl. 303-122.110.

Ludgate, Michael J.: *See—*
Harradine, Vincent C.; Teece, Howard J.; Ludgate, Michael J.; Bhandari, Rajan; and Walker, Gavin A., 5,543,861, Cl. 348-718.000.

Luecke, Francis S., to New Focus, Inc. Magnetostrictive actuator for optical alignment screws. 5,543,670, Cl. 310-26.000.

Luffel, Robert W.; Paul, D. Scott; and Rugg, Jon D., to Hewlett-Packard Company. Cartridge handling system. 5,544,146, Cl. 369-178.000.

Luger, Siegfried, to Tridonic Bauelemente GmbH. Control arrangement for consumer units which are allocated to groups. 5,544,037, Cl. 364-146.000.

Lugojan, Petru P., to Biotech Holdings, Inc. Gel electrophoresis cassette. 5,543,023, Cl. 204-618.000.

Lunardon, Giulio, to OroAmerica, Inc. Compressed jewelry chain and method of making same. 5,542,245, Cl. 59-35.100.

Lundquist, Ingemar H.: *See—*
Edwards, Stuart D.; Lax, Ronald G.; Lundquist, Ingemar H.; Sharkey, Hugh R.; and Baker, James A., 5,542,915, Cl. 604-22.000.

Lungu, Octavian: *See—*
Silverstein, Saul J.; Lungu, Octavian; and Wright, Thomas C., Jr., 5,543,294, Cl. 435-6.000.

Luoma, Eugene H.; and Biesener, James L., to ADDCO Manufacturing, Inc. Mobile sign with solar panel. 5,542,203, Cl. 40-610.000.

Lupke, Manfred A. A. Skinned double wall pipe and apparatus for making same. 5,542,834, Cl. 425-133.100.

Lupton, Francis S.; Sheridan, William O.; and Surgi, Marion R., to Allied-Signal Inc. Process for removal of organic pollutants from waste water. 5,543,052, Cl. 210-616.000.

Lute, Gerald E.: *See—*
Grove, John L.; and Lute, Gerald E., 5,542,812, Cl. 414-543.000.

Luton, Keith. Timing chain adjusting device. 5,542,189, Cl. 33-600.000.

Lutz, Theodore A. System for use in recycling of waste material. 5,542,538, Cl. 206-442.000.

Lydy, Bruce S.; Keitel, Michael A.; and Wissmueller, Jay K., to Garden Way Incoporated. Control for lawn mowers and the like and other wheeled walk behind powered apparatus. 5,542,241, Cl. 56-11.300.

Lynch, Anita P.: *See—*
Morrison, Jan D.; Grabowski, Edward F.; Dotschkal, Virginia E.; Lynch, Anita P.; and May, Jerome E., 5,543,177, Cl. 427-288.000.

Lynch, Steven K.; Ruggie, Mark A.; Rinker, William E.; Izard, David G.; and Young, William J., to Masonite Corporation. Molded wood composites having non-blistering profile with uniform paintability and nesting. 5,543,234, Cl. 428-537.100.

M.K. Manufacturing Incorporated: *See—*
Sullivan, Dan E.; and Hetterle, Peter B., 5,542,314, Cl. 74-552.000.

M V Research & Development: *See—*
Masel, Ruben; and Valdshtein, George, 5,543,166, Cl. 426-523.000.

Ma, Johnny T.: *See—*
Pao, Hsueh-Wen; Faulstich, David L.; Snyder, Dane T.; Ma, Johnny T.; Izzo, Kenneth R.; Swanson, Joel C.; Laurent, Martin S.; and Kachel, Peter F., 5,544,208, Cl. 376-253.000.

Ma, Ki-Bui: *See—*
McMichael, Chase K.; Ma, Ki-Bui; and Chu, Wei-Kan, 5,542,506, Cl. 188-267.000.

Maag Getriebe AG: *See—*
Deeg, Thomas, 5,542,311, Cl. 74-410.000.

Maag, Hans: *See—*
Nestor, John J.; Womble, Scott W.; and Maag, Hans, 5,543,414, Cl. 514-262.000.

Macduff, Jim. Hydronic heating system. 5,542,603, Cl. 237-69.000.

Macfadyen, Jennifer: *See—*
Djabbarah, Nizar F.; Garling, Ralph V.; Hand, David T.; and Macfadyen, Jennifer, 5,542,474, Cl. 166-263.000.

Machida, Junji; Yoshida, Masazumi; and Tanaka, Susumu, to Minolta Camera Kabushiki Kaisha. Method of recycling a waste recording member. 5,542,985, Cl. 134-38.000.

Machida, Kiyosada; Imura, Yoshio; and Takeuchi, Yoshihiro, to Nikon Corporation. Multi-motor camera for normal and trimming photography having variable focal length photographing lens and finder and variable illuminating angle flash device. 5,543,875, Cl. 354-149.100.

Machida, Shigeru; Urano, Taeko I.; Sano, Kenji; and Mori, Yasushi, to Kabushiki Kaisha Toshiba. LCD polymer orienting film with a dipole moment greater than 20 debye and is bound to the substrate surface through a surface treating agent. 5,543,949, Cl. 359-75.000.

MacKay, Bruce J.: *See—*
Rajaiah, Jayanth; Saud, Abel; MacKay, Bruce J.; and Grubbs, Dennis R., 5,543,443, Cl. 523-120.000.

Mackenzie, Patricia D.: *See—*
Howson, Paul E.; Mackenzie, Patricia D.; and Horney, David P., 5,543,059, Cl. 210-757.000.

Macronix International Co., Ltd.: *See—*
Chao, Liang; Lin, Tien-Ler; and Yiu, Tom D., 5,544,116, Cl. 365-210.000.

Macyszyn, Witold S. Ladder level adjusting attachment. 5,542,497, Cl. 182-201.000.

Madden, Michael: *See—*
Turner, D. Clark; Nielsen, Andrew J.; Perkins, Raymond T.; and Madden, Michael, 5,544,218, Cl. 378-208.000.

Madden, William R. Air deflector for the rear of a vehicle. 5,542,737, Cl. 296-180.100.

Maddern, Thomas S.: *See—*
Jeffrey, Mark T.; Maddern, Thomas S.; and Proctor, Richard J., 5,544,168, Cl. 370-60.100.

Madduri, Hari H.: *See—*
Forman, Ira R.; and Madduri, Hari H., 5,544,310, Cl. 395-183.070.
Forman, Ira R.; and Madduri, Hari H., 5,544,353, Cl. 395-600.000.

Mader, Hans-Jürgen; and Arenz, Rainer, to Klöckner-Moeller GmbH. Circuit breaker with a blocking mechanism and a blocking mechanism for a circuit breaker. 5,543,595, Cl. 200-401.000.

Madison Combustion Associates: *See—*
Heath, Edward H., 5,542,249, Cl. 60-293.000.

Madison, Harry; and Schultz, Charles R., to Harsco Corporation. Tie plate track fastener feeder. 5,542,355, Cl. 104-17.100.

Madonna, Robert P., to Excel, Inc. Expandable telecommunications system. 5,544,163, Cl. 370-60.100.

Maebashi, Youichirou; Fujii, Haruo; Sasame, Hiroshi; Kawakami, Hiroaki; Kobayashi, Tatsuya; Kobayashi, Tetsuya; Enomoto, Naoki; Uchiyama, Akihiko; and Saito, Yoshiro, to Canon Kabushiki Kaisha. Image forming apparatus which reduces toner fusion on an image bearing member. 5,543,900, Cl. 355-219.000.

Maeda, Patrick Y.: *See—*
Fisli, Tibor; Guerin, Jean-Michel; Maeda, Patrick Y.; and Quant, Donald J., 5,543,825, Cl. 346-141.000.

Maehara, Kazutaka, to Honda Giken Kogyo Kabushiki Kaisha. Selector device for an automatic transmission system provided with locking means. 5,542,512, Cl. 192-4.00A.

Maejima, Kazutaka: *See—*
Kitano, Kazuaki; Morita, Shigeru; Kuriyama, Masato; and Maejima, Kazutaka, 5,543,322, Cl. 435-252.300.

Maekawa, Kazunobu: *See—*
Hirata, Sumiaki; Yamaguchi, Ikunori; and Maekawa, Kazunobu, 5,543,892, Cl. 355-205.000.

Maekawa, Yukio: *See—*
Hata, Kazuyoshi; Maekawa, Yukio; Takamoto, Katsuhiro; and Saka, Manami, 5,543,970, Cl. 359-690.000.

Maemura, Kouji, to NEC Corporation. Microcomputer development support system operable with only background monitor and without cache replacement. 5,544,307, Cl. 395-180.000.

Magnusson, Eric J.: *See—*
Wells, Steven E.; and Magnusson, Eric J., 5,544,119, Cl. 365-185.110.

Mahaffey, Steve; and Rivest, Rene, to Lisco, Inc. Dual adhesive assembly system for golf clubs. 5,542,664, Cl. 473-305.000.

Mahale, Narayan K.: *See—*
Goren, Yehuda; and Mahale, Narayan K., 5,543,769, Cl. 335-216.000.

Maher, Pascal J.: *See—*
Filan, Finbarr J.; Maher, Pascal J.; and Shaw, Christian, 5,543,042, Cl. 210-198.100.

Mahoney, James V.; and Rao, Satyajit, to Xerox Corporation. Using a category to analyze an image showing a graphical representation. 5,544,267, Cl. 382-317.000.

Mahood, James A., to General Electric Company. Melt extrusion process. 5,543,102, Cl. 264-211.000.

Majeti, Venkata C.: *See—*
Andruska, Donald L.; and Majeti, Venkata C., 5,544,236, Cl. 379-201.000.

Makino, Tetsuo; Furukawa, Hideki; Matsubara, Osamu; Sawaki, Atsushi; and Kawai, Shinji, to Aisin Seiki Kabushiki Kaisha. Sanitary device. 5,542,133, Cl. 4-420.400.

Makita, Takeshi: *See—*
Yamada, Osamu; Sugiura, Susumu; and Makita, Takeshi, 5,543,855, Cl. 348-753.000.

Mäkitalo, Valto J.: *See—*
Lilja, Launo L.; and Mäkitalo, Valto J., 5,542,361, Cl. 110-341.000.

Makuta, Toshiyuki, to Fuji Photo Film Co., Ltd. Silver halide color photographic material. 5,543,275, Cl. 430-503.000.

Malachowsky, Chris: *See—*
Priem, Curtis; Malachowsky, Chris; McIntyre, Bruce; and Moffat, Guy, 5,543,824, Cl. 345-201.000.

Malatesta, Vincenzo: *See—*
Allegrini, Pietro; Nodari, Nereo; Crisci, Luciana; and Malatesta, Vincenzo, 5,543,533, Cl. 549-389.000.

Malik, John H.; Mikula, John J.; and Julien, Robert A., to Sonoco Products Company. Blow molding a closed plastic drum including two speed compression molding of an integral handling ring. 5,543,107, Cl. 264-529.000.

Mallart, Sergio; Lassalle, Gilbert; Purcell, Thomas Andrew; and Muller, Jean Claude, to Synthelabo. 1-amino-4-(1H-imidazole)- aminobutaneboronic acid derivatives, their preparation and use as synthetic intermediates. 5,543,526, Cl. 548-110.000.

Mallon, Richard, to Carsonite International Corporation. C-channel device for median barriers and method for protecting electrical wires along median barriers. 5,542,778, Cl. 404-6.000.

Malloy, Kevin: *See—*
Reamey, Robert H.; and Malloy, Kevin, 5,543,944, Cl. 359-51.000.

Malone, Anthony W.: *See—*
Kelly, Kenneth W.; Malone, Anthony W.; and Humble, Jeffrey S., 5,542,435, Cl. 128-846.000.

Maloney, Maurice E. Portable modular framing table apparatus. 5,542,653, Cl. 269-37.000.

Maloney, Patrick R.: *See—*
Andrews, Robert C.; Cribbs, Cynthia M.; Frye, Stephen V.; Haffner, Curt D.; and Maloney, Patrick R., 5,543,406, Cl. 514-213.000.

MAN Roland Druckmaschinen AG: *See—*
Kemmerer, Klemens; Bayer, Harald; and Gensheimer, Valentin, 5,542,657, Cl. 271-82.000.
Theilacker, Klaus; and Burger, Rainer, 5,542,350, Cl. 101-228.000.

Mancini, Joseph A.: *See—*
Cromlish, Wanda A.; Kennedy, Brian P.; O'Neill, Gary; Vickers, Philip J.; Wong, Elizabeth; and Mancini, Joseph A., 5,543,297, Cl. 435-25.000.

Mandai, Takahiko; Shibuya, Takashi; Sugimoto, Toshiyuki; and Miyake, Toshio, to Kabushiki Kaisha Hayashibara; and Seibutsu Kagaku Kenkyujo. Trehalose desiccant product and dehydration therewith. 5,543,513, Cl. 536-123.130.

Mandala, Suzanne M.: *See—*
Bolessa, Evon A.; Schwartz, Robert E.; Bills, Gerald F.; Giacobbe, Robert A.; Pelaez Perez, Fernando; Arroyo, Angeles C.; Matas, Teresa D.; Fernandez, Isabel M.; Perez, Francisca V.; Mandala, Suzanne M.; Zink, Deborah L.; Thornton, Rosemary; Thompson, John R.; and Curotto, James E., 5,543,431, Cl. 514-627.000.

Mandelbaum, Richard; Sherman, Stephen A.; and Wetherington, Diane R., to AT&T Corp. Smartcard adapted for a plurality of service providers and for remote installation of same. 5,544,246, Cl. 380-23.000.

Mandell, Douglas E.: *See—*
Seagrave, Charles G.; Richards, Martin J.; Mandell, Douglas E.; and Atherton, Mark L., 5,544,140, Cl. 369-59.000.

Mandelman, Jack A.: *See—*
Hammerl, Erwin; Mandelman, Jack A.; Ho, Herbert L.; Shiozawa, Junichi; and Stengl, Reinhard J., 5,543,348, Cl. 437-60.000.

Mandeville, Raymond E.: *See—*
Reidemeister, Eric P.; Johnson, Larry K.; Mandeville, Raymond E.; Strott, Douglas B.; and Southworth, Robert O., 5,542,296, Cl. 73-514.320.

Mándi, Attila: *See—*
Fekete, Pál; Király née Ignácz, Mária; Sipos, Gábor; Jámbor née Hoffmann, Zsuzsanna; Újfalussy, György; Góra née Herwyes, Magdolna; Klebovich, Imre; Drabant, Sándor; Mándi, Attila; Kiss née Szabó, Gizella; Bárczay, Erzsébet; and Krisztián, Mária, 5,543,155, Cl. 424-473.000.

Mangel, Walter F.: *See—*
Anderson, Carl W.; and Mangel, Walter F., 5,543,264, Cl. 435-219.000.

Mankovitz, Roy J.; Ng, Yee K.; and Kwoh, Daniel S., to E. Guide, Inc. Television for controlling a video cassette recorder to access programs on a video cassette tape. 5,543,929, Cl. 358-335.000.

Mann, Barbara A.: *See—*
Mann, John P.; and Mann, Barbara A., 5,542,636, Cl. 248-229.260.

Mann, John P.; and Mann, Barbara A. Clips for supporting miniature Christmas lights at any of a plurality of locations. 5,542,636, Cl. 248-229.260.

Mannesmann Aktiengesellschaft: *See*—
Huck, Ralf, 5,543,775, Cl. 338-306.000.

Manoharan, Muthiah: *See*—
Cook, Phillip D.; Manoharan, Muthiah; and Bruice, Thomas, 5,543,507, Cl. 536-23.100.

Mantoan, Silvano; and Petermann, Werner, to BOA AG. Metal expansion joint and vibration absorber apparatus for pipe systems. 5,542,715, Cl. 285-226.000.

Mar, Craig E.; Pless, Benjamin D.; and Bush, M. Elizabeth, to Ventritex, Inc. Method of making flexible defibrillation electrode. 5,542,173, Cl. 29-825.000.

Marcera, Donna M.: *See*—
Swanson, Jon R.; Bosch, H. William; Illig, Kathleen J.; Marcera, Donna M.; and Mueller, Ronald L., 5,543,133, Cl. 424-9.450.

Marchis, Carlos; McVicar, David N.; and Lathrop, Robert L., to Logitech, Inc. Track ball mounted on keyboard. 5,543,821, Cl. 345-167.000.

Marcinek, Robert C.: *See*—
Clark, Harry E.; Henderson, Cynthia W.; Marcinek, Robert C.; Mayfield, Frances W.; Perkins, Thad W.; and Voss, Jorg F., 5,543,202, Cl. 428-154.000.

Marcon, Robert V. LPG fuel tank, and fuel supply system, for engines. 5,542,398, Cl. 123-527.000.

Marek, Jiri: *See*—
Benz, Gerhard; Marek, Jiri; Willmann, Martin; Bantien, Frank; Muenzel, Horst; Laermer, Franz; Offenberg, Michael; and Schilp, Andrea, 5,542,558, Cl. 216-2.000.

Margulies, Joseph Y., to Margulies, Joseph Y.; and Kadar, Avraham. Method, apparatus and device for dental prosthesis implantation. 5,542,847, Cl. 433-173.000.

Mariner, E. Thomas: *See*—
L'Esperance, Lauren L.; Autio, Craig R.; Mariner, E. Thomas; and Stapelfeld, Norval D., 5,543,776, Cl. 340-426.000.

Marjanski, George C.; Hauppa, Kevin E.; Green, David J.; Saderholm, Davin G.; and Beesley, Brent R., to Morton International, Inc. Exterior seat back mounted side impact airbag module assembly. 5,542,691, Cl. 280-728.200.

Markovich, Joseph G. Roofer's grid apparatus. 5,542,226, Cl. 52-548.000.

Markow, Paul A.; Cummings, Theodore M.; DeBardelaben, William D.; McElreath, John H.; and Nolle, William, to Chrysler Corporation. Automated gauge, assessment system and method. 5,542,280, Cl. 73-1.00R.

Marks, Ronald. Catheter valve. 5,542,933, Cl. 604-188.000.

Maroteaux, Jacques; and Richard, Bernard, to International Business Machines Corporation. Method for configuring and operating a telecommunication apparatus. 5,544,303, Cl. 395-161.000.

Marrel: *See*—
Chiron, Alain; and Heritier, Albert, 5,542,808, Cl. 414-498.000.

Mars Incorporated: *See*—
Weston, John A.; and Johnson, Anthony D., 5,542,519, Cl. 194-217.000.

Marshall, Dave: *See*—
Zimmerman, Jeffrey A.; Gauer, Gary; and Marshall, Dave, 5,544,072, Cl. 364-502.000.

Marshall, John D.; and Mullen, Donald R., to Acuson Corporation. Apparatus and method for preventing contact damage in electrical equipment. 5,542,425, Cl. 128-660.010.

Marshall, Roger N.: *See*—
Farwell, Randall S.; Shaw, Robert W.; and Marshall, Roger N., 5,543,819, Cl. 345-150.000.

Martenak, Daniel J.: *See*—
Chang, Clarence D.; Han, Scott; Martenak, Daniel J.; Santiesteban, Jose G.; and Walsh, Dennis E., 5,543,036, Cl. 208-189.000.

Martin, Ed; Simard, Claude; and Thompson, Brad, to Martin, Ed; and Simard, Claude. Refractory imitation fireplace objects. 5,542,976, Cl. 106-675.000.

Martin, Jon W., to TRW Inc. Power steering assembly with damping ring. 5,542,343, Cl. 91-375.00R.

Martin Marietta Corporation: *See*—
Johnson, Martin E., 5,542,777, Cl. 403-389.000.
Larkin, Robert F., 5,542,336, Cl. 91-166.000.
Profera, Charles E., Jr., 5,543,809, Cl. 343-753.000.

Martin, Robert C.: *See*—
Casasanta, Joseph A.; Andresen, Bernhard H.; Satoh, Yoshinori; Keeney, Stanley C.; and Martin, Robert C., 5,544,203, Cl. 375-376.000.

Martin, Stephen E.: *See*—
Silverschotz, Stanford B.; Rua, Louis, Jr.; Polunas, David M.; and Martin, Stephen E., 5,542,710, Cl. 283-94.000.

Martin, Wallace A.: *See*—
Kindt-Larsen, Ture; Beaton, Stephen R.; Martin, Wallace A.; and Walker, Craig W., 5,542,978, Cl. 118-256.000.

Martinez, Leo. Cove mitering tool. 5,542,182, Cl. 30-179.000.

Martorana, Giovanni: *See*—
Micciche, Gino; Martorana, Giovanni; and Martorana, Sergio, 5,542,675, Cl. 473-329.000.

Martorana, Sergio: *See*—
Micciche, Gino; Martorana, Giovanni; and Martorana, Sergio, 5,542,675, Cl. 473-329.000.

Marttinen, Tapio. Method for transmission of digital information. 5,544,153, Cl. 370-16.100.

Maruoka, Tetsuya; Yasunobu, Chizuko; Hirose, Tadashi; Kida, Mayumi; Ino, Kouichiro; and Miyagawa, Yoshiya, to Hitachi, Ltd. Method of supporting decision–making for predicting future time–series data using measured values of time–series data stored in a storage and knowledge stored in a knowledge base. 5,544,281, Cl. 395-68.000.

Maruta, Syuzi: *See*—
Kato, Tomokazu; Araki, Kazuhiro; Takano, Yoshiaki; Maruta, Syuzi; Nomura, Keiichi; Nagatani, Kentaro; Noda, Takashi; and Kishimoto, Hiroyuki, 5,543,907, Cl. 355-313.000.

Maruyama, Keiji: *See*—
Kuwagata, Masaaki; Matsuo, Ryosuke; Maruyama, Keiji; Miyawaki, Naokazu; and Ueno, Hisashi, 5,544,120, Cl. 365-222.000.

Maschinenfabrik Mueller-Weingarten AG: *See*—
Stummer, Friedrich; and Frey, Rolf, 5,543,105, Cl. 264-407.000.

Maschinenfabrik Rieter AG: *See*—
Demuth, Robert; Faas, Jurg; and Cahannes, Paul, 5,542,154, Cl. 19-114.000.

Mase, Akira; Hiroki, Masaaki; Takemura, Yasuhiko; and Yamazaki, Shunpei, to Semiconductor Energy Laboratory Co., Ltd. Method of driving an LCD employing an active matrix with short pulses for gray scale. 5,543,947, Cl. 359-84.000.

Masel, Ruben; and Valdshtein, George, to M V Research & Development. Cooking method and appliance. 5,543,166, Cl. 426-523.000.

Mason, Arthur C.: *See*—
Carter, Thomas J.; Mason, Arthur C.; and Nolan, John H., 5,542,317, Cl. 74-813.00L.

Masonite Corporation: *See*—
Lynch, Steven K.; Ruggie, Mark A.; Rinker, William E.; Izard, David G.; and Young, William J., 5,543,234, Cl. 428-537.100.

Massachusetts Institute of Technology: *See*—
Gref, Ruxandra; Minamitake, Yoshiharu; and Langer, Robert S., 5,543,158, Cl. 424-501.000.
Hardi, David E.; and Lee, Steven G., 5,544,195, Cl. 373-79.000.
Harvey, Robert L.; Hirschler-Marchand, Patrick R.; and Cipolle, David J., 5,543,939, Cl. 358-426.000.
Murcott, Susan E.; and Harleman, Donald R. F., 5,543,056, Cl. 210-705.000.

Masseling, Willem H.: *See*—
de Jong, Leendert W. C.; van Heiningen, Arjan P.; and Masseling, Willem H., 5,542,823, Cl. 417-273.000.

Masselink, William T.: *See*—
Brady, Michael J.; Krusin-Elbaum, Lia; Masselink, William T.; Santhanam, Padmanabhan; and Tamegai, Tsuyoshi, 5,543,988, Cl. 360-112.000.

Masson, Pierre L.: *See*—
Saint-Remy, Jean-Marie; Lebrun, Philippe; Lebeque, Serge; Masson, Pierre L.; and Kingdon, Henry S., 5,543,145, Cl. 424-133.100.

Master, Raj N.: *See*—
Handford, Edward F.; Harvilchuck, Joseph M.; Interrante, Mario J.; Jackson, Raymond A.; Master, Raj N.; Ray, Sudipta K.; Sablinski, William E.; and Wassick, Thomas A., 5,543,584, Cl. 174-261.000.

Masuda, Hideyuki, to Yamaha Corporation. Tone synthesizer. 5,543,580, Cl. 84-723.000.

Masuda, Masami: *See*—
Hoshi, Satoru; and Masuda, Masami, 5,544,123, Cl. 365-230.060.

Masuda, Tsuyoshi: *See*—
Noda, Yasushi; Masuda, Tsuyoshi; and Matayoshi, Yutaka, 5,542,381, Cl. 123-41.740.

Masuhiro Kogoma: *See*—
Uchiyama, Hiroshi; Kogoma, Masuhiro; and Okazaki, Satiko, 5,543,017, Cl. 204-169.000.

Masumoto, Daiki: *See*—
Kato, Hideki; Yoshizawa, Hideki; Iciki, Hiroki; and Masumoto, Daiki, 5,544,336, Cl. 395-311.000.

Masumoto, Yasuhiro, to Sailor Pen Co., Ltd. Applicator having cap which pressurizes and seals inner space. 5,542,771, Cl. 401-213.000.

Matas, Teresa D.: *See*—
Bolessa, Evon A.; Schwartz, Robert E.; Bills, Gerald F.; Giacobbe, Robert A.; Pelaez Perez, Fernando; Arroyo, Angeles C.; Matas, Teresa D.; Fernandez, Isabel M.; Perez, Francisca V.; Mandala, Suzanne M.; Zink, Deborah L.; Thornton, Rosemary; Thompson, John R.; and Curotto, James E., 5,543,431, Cl. 514-627.000.

Matayoshi, Yutaka: *See*—
Noda, Yasushi; Masuda, Tsuyoshi; and Matayoshi, Yutaka, 5,542,381, Cl. 123-41.740.

Matias, Carlos J. D. Modified flexible insert for a generally rectangular container. 5,542,563, Cl. 220-470.000.

Matousek, Jon: *See*—
Lewak, Jerzy; Grzechnik, Slawek; and Matousek, Jon, 5,544,360, Cl. 395-600.000.

Matra Communication: *See*—
Lucas, Philippe; Mege, Philippe; and Pineau, Stéphane, 5,544,155, Cl. 370-18.000.
Lucas, Philippe; and Mege, Philippe, 5,544,167, Cl. 370-18.000.

Matra Marconi Space UK Limited: *See*—
Shawyer, Roger J., 5,543,801, Cl. 342-354.000.

Matrix Toys, Ltd.: *See*—
Gabriel, Richard, 5,542,871, Cl. 446-126.000.

Matsubara, Osamu: *See*—
Makino, Tetsuo; Furukawa, Hideki; Matsubara, Osamu; Sawaki, Atsushi; and Kawai, Shinji, 5,542,133, Cl. 4-420.400.

Matsubara, Takashi; Hasuda, Masanori; and Kanamuro, Masayuki, to Nikon Corporation. Friction member for brake mechanism in camera shutter. 5,543,880, Cl. 354-252.000.

Matsubara, Yoshihiro: *See*—
Miyata, Shigeru; Yamada, Yoshitaka; Yoshida, Hideji; Matsubara, Yoshihiro; and Ito, Yasuo, 5,543,716, Cl. 324-402.000.

Matsuda, Mikio: *See*—
Inagaki, Mitsuo; Matsuda, Mikio; Ogawa, Hiroshi; Hisanaga, Shigeru; and Oki, Yasuhiro, 5,542,829, Cl. 418-55.300.

Matsuda, Naoto; Yamada, Makoto; Ono, Michio; Ishiwata, Yasuhiro; and Uchida, Osamu, to Fuji Photo Film Co., Ltd. Silver halide light-sensitive material. 5,543,279, Cl. 430-559.000.

Matsuda, Tatsuhito: *See*—
Iriguchi, Jiro; Kuwamoto, Tomoyuki; Chosa, Junichi; and Matsuda, Tatsuhito, 5,543,456, Cl. 524-542.000.

Matsui, Akio: *See*—
Yuki, Mikio; Kurohara, Kazuaki; Matsui, Akio; and Uemura, Katsuhiko, 5,542,243, Cl. 56-13.300.

Matsui, Kazuma: *See*—
Tsoda, Hiroshi; Iwase, Atsushi; Nomura, Ken; and Matsui, Kazuma, 5,542,293, Cl. 73-146.500.

Matsui, Kuniyuki: *See*—
Kobayashi, Yasumi; Matsui, Kuniyuki; Hirao, Yasuhiro; Takeuchi, Kousuke; Kayaki, Hiroshi; Takahashi, Yusuke; Tanaka, Toshiharu; Kiyose, Isao; and Shibata, Kenichi, 5,543,757, Cl. 333-195.000.

Matsui, Tetsuo: *See*—
Aotsuka, Tomoji; Nishio, Toshiyuki; Hosono, Hiroshi; Nakamura, Yoshiyuki; Matsui, Tetsuo; and Ishikawa, Hiromichi, 5,543,420, Cl. 514-312.000.

Matsui, Toshihiro: *See*—
Fujita, Nobuo; Nanba, Hideyuki; Kawashima, Masato; Komuro, Akihiro; Fujishima, Susumu; and Matsui, Toshihiro, 5,543,903, Cl. 355-283.000.

Matsumi, Chiyoko: *See*—
Hamai, Shinji; Iketani, Akira; Matsumi, Chiyoko; Juri, Tatsuro; Yamada, Masazumi; Kawakami, Yasunori; and Murakami, Yuuzou, 5,543,937, Cl. 358-341.000.

Matsumoto, Hiroyuki: *See*—
Tani, Hiroshi; Ishihara, Heigo; and Matsumoto, Hiroyuki, 5,543,203, Cl. 428-156.000.

Matsumoto, Kenji, to Teac Corporation. Head carriage device having applying force means disposed within pillar portion. 5,543,987, Cl. 360-105.000.

Matsumoto, Masahito: *See*—
Hara, Takahisa; Matsumoto, Masahito; Usui, Nobuhiro; and Matubara, Shigeyoshi, 5,543,094, Cl. 264-46.400.

Matsumoto, Takuya; Hashimoto, Toru; Miyake, Mitsuhiro; Kamura, Hitoshi; and Yoshida, Yasuhisa, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Apparatus and method for determining a failure of an EGR apparatus. 5,542,400, Cl. 123-571.000.

Matsumura, Yoshio: *See*—
Kenmoku, Takeji; Umino, Shinichi; Hirai, Eiji; Kurosawa, Kazuyoshi; and Matsumura, Yoshio, 5,543,029, Cl. 205-109.000.

Matsunaga, Terry: *See*—
Unger, Evan C.; Fritz, Thomas A.; Matsunaga, Terry; Ramaswami, VaradaRajan; Yellowhair, David; and Wu, Guanli, 5,542,935, Cl. 604-190.000.

Matsuno, Akira; and Nire, Takashi, to Kabushiki Kaisha Komatsu Seisakusho. Apparatus for producing thin film. 5,542,979, Cl. 118-719.000.

Matsunuma, Kenji: *See*—
Katayama, Tetsuya; Murabe, Kaoru; Komura, Osamu; Kawai, Chihiro; Yamakawa, Akira; Matsunuma, Kenji; Yasuoka, Norio; Higuchi, Matsuo; and Miyake, Masaya, 5,543,371, Cl. 501-97.000.

Matsuo, Akinori; Watanabe, Masashi; Wada, Masashi; Wada, Takeshi; and Nakamura, Yasuhiro, to Hitachi, Ltd.; and Hitachi ULSI Engineering Corp. Semiconductor memory device having an automatically activated verify function capability. 5,544,098, Cl. 365-189.070.

Matsuo, Kazuto: *See*—
Kurosawa, Kazuo; Matsuo, Kazuto; and Minoguchi, Akira, 5,542,518, Cl. 194-206.000.

Matsuo, Ryosuke: *See*—
Kuwagata, Masaaki; Matsuo, Ryosuke; Maruyama, Keiji; Miyawaki, Naokazu; and Ueno, Hisashi, 5,544,120, Cl. 365-222.000.

Matsuo, Tamotsu: *See*—
Ohara, Shunji; Matsuo, Tamotsu; and Ishibashi, Kenzou, 5,544,137, Cl. 369-54.000.

Matsuoka, Fumitomo; and Ikeda, Naoki, to Kabushiki Kaisha Toshiba. Method of making a semiconductor device with sidewall etch stopper and wide through–hole having multilayered wiring structure. 5,543,360, Cl. 437-195.000.

Matsuoka, Masaaki, to World Auto Plate, Ltd. Number plate including luminous characters. 5,542,200, Cl. 40-204.000.

Matsuoka, Toshiyuki, to Nabco Ltd. Load setting device for railway cars. 5,544,057, Cl. 364-426.050.

Matsuoka, Yausunobu: *See*—
Nakamura, Hitoshi; Hanatani, Shoichi; Tanaka, Shigehisa; Ohtoshi, Tsukuru; Ishida, Koji; and Matsuoka, Yausunobu, 5,543,629, Cl. 257-21.000.

Matsushima, Hiroaki: *See*—
Kudoh, Mituo; Fukushima, Toshihiko; Itoh, Masaaki; Uchida, Mari; Matsushima, Hiroaki; Kogure, Hiroshi; and Takaku, Syoji, 5,542,271, Cl. 62-502.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Date, Toshihiko, 5,544,248, Cl. 381-56.000.
Hamai, Shinji; Iketani, Akira; Matsumi, Chiyoko; Juri, Tatsuro; Yamada, Masazumi; Kawakami, Yasunori; and Murakami, Yuuzou, 5,543,937, Cl. 358-341.000.
Higashiyama, Katsuhiko, 5,543,998, Cl. 361-103.000.
Hirai, Yoshihiko; Morimoto, Kiyoshi; Terui, Yasuaki; Niwa, Masaaki; Yasui, Juro; Okada, Kenji; Udagawa, Masaharu; and Yuki, Koichiro, 5,543,351, Cl. 437-063.000.
Kishimoto, Yoshio; and Suzuki, Masaaki, 5,543,381, Cl. 503-201.000.
Kumeji, Yasushi; Nishimura, Seiichi; Nakajima, Yoshinobu; and Itou, Makoto, 5,543,755, Cl. 333-185.000.
Mita, Hideaki; and Bannai, Tatusi, 5,543,844, Cl. 348-405.000.
Miyata, Minoru; and Kawakami, Shigeru, 5,543,859, Cl. 348-625.000.
Mizoh, Yoshiaki; and Yohda, Hiroshi, 5,543,990, Cl. 360-122.000.
Nagayoshi, Atsushi; and Kono, Kazunori, 5,544,253, Cl. 381-187.000.
Nouchi, Norimoto; Sakaguchi, Masaya; Yoda, Hiroshi; and Mizoh, Yoshiaki, 5,543,179, Cl. 427-346.000.
Ohara, Shunji; Matsuo, Tamotsu; and Ishibashi, Kenzou, 5,544,137, Cl. 369-54.000.
Sugita, Satoshi, 5,543,974, Cl. 360-33.100.
Takeuchi, Koso; and Suesada, Kunio, 5,543,934, Cl. 358-341.000.
Yamamoto, Hajime; and Terada, Hiroshi, 5,543,901, Cl. 355-246.000.
Yanagihara, Nobuyuki; Kawano, Hiroshi; Hayashi, Takayuki; and Tsuji, Masato, 5,543,250, Cl. 429-241.000.
Yura, Masaki; Hirai, Yukio; and Oya, Hirosi, 5,542,443, Cl. 134-176.000.

Matsushita Electric Works, Ltd.: *See*—
Ichiya, Mitsuo; Kasano, Fumihiro; Nishimura, Hiromi; Lewiner, Jacques; and Perino, Dider, 5,544,001, Cl. 361-233.000.

Matsushita Refrigeration Company: *See*—
Suzuki, Etsuro; Kawai, Hideki; and Awashima, Hiroki, 5,542,266, Cl. 62-469.000.

Matsushita, Tomoko: *See*—
Shirai, Fumiya; Kuniya, Masayoshi; Mikura, Chiemi; Matsushita, Tomoko; Akemi, Hitoshi; and Yamamoto, Toshiyuki, 5,543,151, Cl. 424-448.000.

Matsutani, Shunji: *See*—
Suzuki, Tatsuya; Matsutani, Shunji; Sugita, Yukihiko; Katagiri, Moriya; and Ikeda, Manabu, 5,543,876, Cl. 354-149.110.

Matsuzaki, Kazuki: *See*—
Koizumi, Satoru; Chono, Susumu; Abe, Yoshihiro; and Matsuzaki, Kazuki, 5,544,147, Cl. 369-191.000.

Mattern-Klosson, Monika; Mundinger, Hans-Juergen; Haefner, Hans-Ulrich; and Timm, Uwe, to Leybold Aktiengesellschaft. Cryogenic pump with an essentially cup-shaped housing. 5,542,257, Cl. 62-55.500.

Mattingly, Phillip G.; and Bennett, Larry G., to Abbott Laboratories. Chemiluminescent acridinium salts. 5,543,524, Cl. 546-104.000.

Mattos, Derwin W.; Heron, Ralph P.; and Lee, Donald, to VLSI Technology, Inc. High voltage tolerant CMOS input/output circuit. 5,543,733, Cl. 326-81.000.

Matubara, Shigeyoshi: *See*—
Hara, Takahisa; Matsumoto, Masahito; Usui, Nobuhiro; and Matubara, Shigeyoshi, 5,543,094, Cl. 264-46.400.

Matz, John E.: *See*—
Stedman, Robert B.; and Matz, John E., 5,543,751, Cl. 330-124.00D.

Maurer, Hans M.: *See*—
Singer, Bension; Maurer, Hans M.; Strack, Kurt M.; and Fanini, Otto N., 5,543,715, Cl. 324-368.000.

May, Jerome E.: *See*—
Morrison, Jan D.; Grabowski, Edward F.; Dotschkal, Virginia E.; Lynch, Anita P.; and May, Jerome E., 5,543,177, Cl. 427-288.000.

May, Robert; Granger, James E.; Peck, Nicolas; and Miller, Rohn J., to Ikonic Interactive, Inc. Multimedia matrix architecture user interface. 5,544,354, Cl. 395-600.000.

Mayer, Johann: *See*—
Fürst, Arpad; Danzl, Martin; Mayer, Johann; and Miklosi, Stefan, 5,542,735, Cl. 296-107.000.

Mayer, Lawrence D.: *See*—
Webb, Murray S.; Bally, Marcel B.; and Mayer, Lawrence D., 5,543,152, Cl. 424-450.000.

Mayfield, Frances W.: *See*—
Clark, Harry E.; Henderson, Cynthia W.; Marcinek, Robert C.; Mayfield, Frances W.; Perkins, Thad W.; and Voss, Jorg F., 5,543,202, Cl. 428-154.000.

Mazda Motor Corporation: *See*—
Takada, Hiroshi; and Funatsu, Hiroshi, 5,542,888, Cl. 475-134.000.

McAuley, John M.; and Field, Joseph, to Secure Care Products, Inc. Monitoring tag with removal detection. 5,543,780, Cl. 340-573.000.

McBrayer, Michael S.: *See*—
Slater, Charles R.; Palmer, Matthew A.; Kortenbach, Jurgen A.; McBrayer, Michael S.; and Gottlieb, Saul, 5,542,432, Cl. 128-751.000.

McCarthy, James P., to Chrysler Corporation. Dual radius geometry accelerator control system. 5,542,313, Cl. 74-513.000.

McCaskie, John E.: *See*—
Joshi, Nayan; McCaskie, John E.; and Boyle, Michael T., 5,543,182, Cl. 427-443.100.

McClelland, Alan; and Stevenson, Susan C., to Genetic Therapy, Inc. Adenoviruses having modified fiber proteins. 5,543,328, Cl. 435-320.100.

McClintock, Cameron; Leong, William; Cliff, Richard G.; and Ahanin, Bahram, to Altera Corporation. Programmable logic array devices with interconnect lines of various lengths. 5,543,732, Cl. 326-41.000.

McClure, David C.; and Zamanian, Mehdi, to SGS-Thomson Microelectronics, Inc. SRAM memory cell with reduced internal cell voltage. 5,544,097, Cl. 365-154.000.

McCubbrey, David L., to Environmental Research Institute of Michigan. Apparatus and method for separating handwritten characters by line and word. 5,544,259, Cl. 382-177.000.

McDermott, Keith J.; Teffenhart, John M.; Shefer, Shmuel D.; Greene, David A.; Smith, Leslie C.; and Beck, Charles E. J., to International Flavors & Fragrances Inc. Extruded fragrance-containing polyvinyl alcohol and use thereof. 5,543,439, Cl. 523-102.000.

McDonald, Paul T.: *See*—
Dekeyser, Mark A.; and McDonald, Paul T., 5,543,404, Cl. 514-118.000.

McDonnell Douglas Corporation: *See*—
Rawdon, Blaine K.; and Rohrlick, Myles A., 5,542,798, Cl. 410-100.000.

McDougall, Lee A.: *See*—
Williams, Dennis A.; McDougall, Lee A.; and Looney, James R., 5,543,388, Cl. 507-269.000.

McElreath, John H.: *See*—
Markow, Paul A.; Cummings, Theodore M.; DeBardelaben, William D.; McElreath, John H.; and Nolle, William, 5,542,280, Cl. 73-1.00R.

McEntee, Paul E.: *See*—
Brooks, Raymond J.; Gay, John M.; Weir, Bruce A.; McEntee, Paul E.; and Blood, Lauren, 5,544,206, Cl. 376-248.000.

McGarry, Daniel E.: *See*—
Oravecz, Michael G.; Greenwald, Roger J.; McGarry, Daniel E.; and Sauer, Jude S., 5,543,832, Cl. 348-65.000.

McGavern, Cecil G., III: *See*—
Pringle, Ronald E.; Sides, Winfield M., III; Folsom, David N.; and McGavern, Cecil G., III, 5,542,472, Cl. 166-65.100.

McGee, James B.; Petroff, Lenin J.; Brecht, Doris J.; Ollinger, William J., deceased; and Ollinger, by John M., legal representative, to Dow Corning Corporation. Silicone foam control compositions. 5,543,082, Cl. 252-321.000.

McGowan, Jared M.: *See*—
Normile, James M.; McGowan, Jared M.; and King, Andrew, 5,543,718, Cl. 324-539.000.

McGraw, William R.: *See*—
Deshpande, Rajendra D.; McGraw, William R.; and Pulkowski, Jeffrey H., 5,542,192, Cl. 34-115.000.

McGuire, Andrew G.: *See*—
Szabo, George; and McGuire, Andrew G., 5,542,716, Cl. 285-305.000.

McHugh, Tara H.: *See*—
Krochta, John M.; and McHugh, Tara H., 5,543,164, Cl. 426-302.000.

McInnes, Malcolm B., to SDS PTY, Ltd. Liquid reciprocating piston hammer drilling arrangement without cavitation. 5,542,484, Cl. 175-296.000.

McIntyre, Bruce: *See*—
Priem, Curtis; Malachowsky, Chris; McIntyre, Bruce; and Moffat, Guy, 5,543,824, Cl. 345-201.000.

McIntyre, Dale F., to Eastman Kodak Company. Camera with pointing aid. 5,543,889, Cl. 354-432.000.

McIvor, Arthur E.: *See*—
Kroeger, Arnold C.; Lawnicki, Curt J.; and McIvor, Arthur E., 5,542,964, Cl. 95-6.000.

McKaughan, Robert M.: *See*—
Baumgaertner, Carl J.; and McKaughan, Robert M., 5,544,197, Cl. 375-257.000.

McKean, Wanda L.; Hain, Matthew; and Koyfman, Ilya S., to United States Surgical Corporation. Surgical stapling apparatus with biocompatible surgical fabric. 5,542,594, Cl. 227-178.100.

McKearn, John P.: *See*—
Braford-Goldberg, Sarah R.; Easton, Alan M.; Klein, Barbara K.; McKearn, John P.; and Olins, Peter O., 5,543,141, Cl. 424-85.200.

McKee, Carl B. Desk structure for vehicles. 5,542,589, Cl. 224-275.000.

McKeon, James, to McKeon Rolling Steel Door Company, Inc. Self-closing fire door. 5,542,460, Cl. 160-7.000.

McKeon Rolling Steel Door Company, Inc.: *See*—
McKeon, James, 5,542,460, Cl. 160-7.000.

McKeveny, Jeffrey: *See*—
Bhatt, Ashwinkumar C.; Duffy, Thomas P.; Hackett, Gerry A.; and McKeveny, Jeffrey, 5,542,175, Cl. 29-846.000.

McMichael, Chase K.; Ma, Ki-Bui; and Chu, Wei-Kan, to University of Houston-University Park. Magnet-superconductor systems for controlling and influencing relative motion. 5,542,506, Cl. 188-267.000.

McMichael, John P. System for use in treating a patient with FK 506 to prevent an adverse immune response. 5,542,436, Cl. 128-897.000.

McMillan Company: *See*—
McMillan, Robert D.; and McMillan, Robert M., 5,542,302, Cl. 73-861.870.

McMillan, Robert D.; and McMillan, Robert M., to McMillan Company. Turbine wheel flow measuring transducer. 5,542,302, Cl. 73-861.870.

McMillan, Robert M.: *See*—
McMillan, Robert D.; and McMillan, Robert M., 5,542,302, Cl. 73-861.870.

McMullan, David; Schaulin, Rudolf; and Lauk, Urs, to Ciba-Geigy Corporation. Process for dyeing or printing hydroxyl group containing fiber materials. 5,542,956, Cl. 8-641.000.

McNeill, Robert C.; and Nance, Douglass, to Grindmaster Corporation. Coffee grinder and brewer apparatus with basket sensing and grind only feature. 5,542,342, Cl. 99-280.000.

McNelis, Niall B., to AAI Corporation. Method and apparatus for determining the general direction of the origin of a projectile. 5,544,129, Cl. 367-127.000.

McNelly, Thomas F.: *See*—
Nguyen, Bich-Yen; McNelly, Thomas F.; Tobin, Philip J.; and Hayden, James D., 5,543,635, Cl. 257-66.000.

McVay, Kenneth R.; Gaige, Dennis G.; and Kain, William S., to Henkel Corporation. Method for forming two terminal carboxylic acid groups from an ozonide. 5,543,565, Cl. 562-523.000.

McVicar, David N.: *See*—
Marchis, Carlos; McVicar, David N.; and Lathrop, Robert L., 5,543,821, Cl. 345-167.000.

McVicker, Gerard: *See*—
Karidis, John P.; Goldowsky, Michael P.; and McVicker, Gerard, 5,543,787, Cl. 341-20.000.

Meadows, Michael J.: *See*—
Carlson, Wayne C.; Meadows, Michael J.; and Greco, Merrill B., 5,544,304, Cl. 395-182.080.

Mecca, Anna: *See*—
Slink, John J.; and Mecca, Anna, 5,542,561, Cl. 220-291.000.

MediaLink Technologies Corporation: *See*—
Fujimoto, Kenneth N.; and Warman, David J., 5,544,150, Cl. 370-14.000.

Mediavision, Inc.: *See*—
Colvin, Bryan J., Sr.; Cook, Perry R.; and Gochnauer, Daniel, 5,543,578, Cl. 84-622.000.

Mege, Philippe: *See*—
Lucas, Philippe; Mege, Philippe; and Pineau, Stéphane, 5,544,155, Cl. 370-18.000.
Lucas, Philippe; and Mege, Philippe, 5,544,167, Cl. 370-18.000.

Megyesi, Timothy J. Method and apparatus for recording and playing back a telemarketing sales presentation. 5,544,230, Cl. 379-67.000.

Mehta, Anthony H.: *See*—
Whiting, Philip; and Mehta, Anthony H., 5,543,057, Cl. 210-721.000.

Meier-Kaiser, Michael: *See*—
Gross, Heinz; and Meier-Kaiser, Michael, 5,542,836, Cl. 425-141.000.

Melby, Earl G.: *See*—
Hargis, I. Glen; Livigni, Russell A.; Melby, Earl G.; and Vitus, Francis J., 5,543,200, Cl. 428-122.000.

Melcher, Laura: *See*—
Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Kerdesky, Francis A.; Langridge, Denton C.; Leanna, M. Robert; Lijewski, Linda M.; Melcher, Laura; Morton, Howard E.; Norbeck, Daniel W.; Reno, Daniel S.; Robbins, Timothy A.; Sham, Hing L.; Sowin, Thomas J.; Tien, Jien-heh J.; Zhao, Chen; and Scarpetti, David, 5,543,551, Cl. 560-24.000.
Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Leanna, M. Robert; Lijewski, Linda M.; Melcher, Laura; Morton, Howard E.; Reno, Daniel S.; Sham, Hing L.; and Sowin, Thomas J., 5,543,552, Cl. 560-24.000.

Melen, Roger: *See*—
Garland, Harry; and Melen, Roger, 5,544,045, Cl. 364-419.030.

Mello, Frank C.: *See*—
Wyslotsky, Ihor; and Mello, Frank C., 5,542,234, Cl. 53-433.000.

Mellors, Alan; Lo, Reggie Y. C.; and Abdullah, Khalid M., to University of Guelph. Pastuerella haemolytica glycoprotease gene and the purified enzyme. 5,543,312, Cl. 435-220.000.

Meltzer, David, to International Business Machines Corporation. Delay test coverage without additional-dummy-latches in a scan-based test design. 5,544,173, Cl. 371-22.300.

Mendenhall, Donna M. Oven occupancy warning apparatus. 5,543,784, Cl. 340-568.000.

Meng, Xinghui: *See*—
Han, Kenneth N.; and Meng, Xinghui, 5,542,957, Cl. 75-732.000.

Menicon Co., Ltd.: *See*—
Hiratani, Haruyuki; Nakata, Kazuhiko; Ichinohe, Shoji; Yamazaki, Toshio; and Kato, Hideto, 5,543,442, Cl. 523-107.000.

Menne, Hans G.: *See*—
Reuber, Gerhard; Menne, Hans G.; and Shafry, Gavriel, 5,542,772, Cl. 403-97.000.

Mennie, Douglas U.: *See*—
Geib, Joseph J.; Jones, William J.; Mennie, Douglas U.; and Raterman, Donald E., 5,542,880, Cl. 453-10.000.

Mensz, Piotr M., to Phillips Electronics North America Corporation. II-VI Semiconductor diode laser with lateral current confinement. 5,544,190, Cl. 372-46.000.

Mentech, Julio; Betremieux, Isabelle; and Legget, Bruno, to Beghin-Say. Method for preparing saccharide monomers comprising at least one polymerizable carbonyl-oxyvinyl group. 5,543,512, Cl. 536-115.000.

Mercedes-Benz AG: *See*—
Augustin, Ulrich, 5,542,610, Cl. 239-533.800.
Heiss, Werner; Weller, Martin; and Eipper, Konrad, 5,542,491, Cl. 180-232.000.

Merck & Co., Inc.: *See*—

Bills, Gerald F.; Curotto, James E.; Dreikorn, Sarah J.; Jenkins, Rosalind G.; Liesch, Jerrold M.; Morris, Sandra A.; Thompson, John R.; Zink, Deborah L.; Jansson, Richard K.; Basilio, Angela; Diez, Teresa; Pelaez, Fernando; and Vicente, Francisca, 5,543,429, Cl. 514-468.000.

Bolessa, Evon A.; Schwartz, Robert E.; Bills, Gerald F.; Giacobbe, Robert A.; Pelaez Perez, Fernando; Arroyo, Angeles C.; Matas, Teresa D.; Fernandez, Isabel M.; Perez, Francisca V.; Mandala, Suzanne M.; Zink, Deborah L.; Thornton, Rosemary; Thompson, John R.; and Curotto, James E., 5,543,431, Cl. 514-627.000.

Rork, Gerald S.; and Pipkin, James D., 5,543,154, Cl. 424-473.000.

Waldstreicher, Joanne, 5,543,417, Cl. 514-284.000.

Merck Frosst Canada, Inc.: *See*—
Cromlish, Wanda A.; Kennedy, Brian P.; O'Neill, Gary; Vickers, Philip J.; Wong, Elizabeth; and Mancini, Joseph A., 5,543,297, Cl. 435-25.000.

Merck Patent Gesellschaft Mit Beschrankter Haftung: *See*—
Parri, Owain L.; Brown, Emma J.; Coates, David; and Goulding, Mark J., 5,543,075, Cl. 252-299.010.
Rieger, Bernhard; Yoshitake, Hiroki; Sawada, Atsushi; Plach, Herbert; and Weber, Georg, 5,543,077, Cl. 252-299.630.

Meredith, Chris. Fishing rod and reel electronic game controller. 5,542,672, Cl. 463-37.000.

Meredith, Michael J.: *See*—
Yatvin, Milton B.; Stowell, Michael H. B.; Gallicchio, Vincent S.; and Meredith, Michael J., 5,543,390, Cl. 514-2.000.
Yatvin, Milton B.; Stowell, Michael H. B.; Gallicchio, Vincent S.; and Meredith, Michael J., 5,543,391, Cl. 514-2.000.

Merilainen, Pekka, to Instrumentarium Corp. Gas supplying head enclosure with expandable pressure indicator. 5,542,414, Cl. 128-204.220.

Merilainen, Timo; Rantala, Börje; and Weckström, Kurt, to Instrumentarium Corp. Method and apparatus for transient temperature compensation in gas analyzer equipment. 5,542,285, Cl. 73-23.210.

Merkle, Cliff; Burns, John; Laib, Gordon; Willis, Jim; Mitchel, Scotty; and Erickson, Dennis, to Coors Brewing Company. Apparatus and method for separating low density solids from an airflow. 5,542,544, Cl. 209-139.100.

Merkle Engineers, Inc.: *See*—
Merkle, Frank P.; Horn, Larry L.; James, Barry R.; and Merkle, William L., 5,542,804, Cl. 414-165.000.

Merkle, Frank P.; Horn, Larry L.; James, Barry R.; and Merkle, William L., to Merkle Engineers, Inc. Modular solids charger. 5,542,804, Cl. 414-165.000.

Merkle, William L.: *See*—
Merkle, Frank P.; Horn, Larry L.; James, Barry R.; and Merkle, William L., 5,542,804, Cl. 414-165.000.

Merkt, Norbert: *See*—
Heine, Helmut; Schmidt, Otto H.; Gügel, Gerhard; Merkt, Norbert; and Zirnheld, Arno, 5,542,904, Cl. 600-197.000.

Merrison, John: *See*—
Tao, Jinghan; and Merrison, John, 5,543,698, Cl. 318-611.000.

Merten, David J., to Bissell Inc. Spray suction and agitator control and deep cleaning machine. 5,542,147, Cl. 15-321.000.

Messinger, Robert; and Pinelli, Thomas P., to H-Tech, Inc. Adapter for coupling a pair of pipe elements. 5,542,714, Cl. 285-158.000.

Mestha, Lingappa K., to Xerox Corporation. Method for measurement of tone reproduction curve using a single structured patch. 5,543,896, Cl. 355-208.000.

Mesun, Randy O.: *See*—
Jaeckels, Norman J.; and Mesun, Randy O., 5,542,132, Cl. 4-313.000.

Metlitsky, Boris: *See*—
Bard, Simon; Strat, Askold; Katz, Joseph; and Metlitsky, Boris, 5,543,610, Cl. 235-462.000.

Mettler, Roland, to GWF Gas & Wassermesserfabrik AG. Multi-digit fluid flow roller meter. 5,543,613, Cl. 250-231.150.

Meyer, Arlene L.: *See*—
Smith, Thomas M.; and Meyer, Arlene L., 5,543,273, Cl. 430-495.100.

Meyer, Helmut J. W.; Ahls, Hermann W.; Blaseck, Klaus; and Schmitting, Udo, to Otis Elevator Company. Step Platform for an escalator. 5,542,521, Cl. 198-324.000.

Meyers, Brenda J.; Herritz, Donald W.; Johansen, Jean L.; Hudson, William B., Jr.; Bell, Randall P.; Prokop, Gary P.; Caruso, James F.; and Allen, James I., to Gerber Products Company. Electric breast pump. 5,542,921, Cl. 604-74.000.

Meyers, Mark M., to Eastman Kodak Company. Hybrid refractive/diffractive achromatic camera lens. 5,543,966, Cl. 359-565.000.

MFM Industries, Inc.: *See*—
Palmer, Whitfield M., Jr., 5,542,374, Cl. 119-173.000.

MG Industries: *See*—
Brahmbhatt, Sudhir R., 5,543,129, Cl. 423-351.000.

Micciche, Gino; Martorana, Giovanni; and Martorana, Sergio, to Italgom U.S.A. Adaptor for golf putter and golf putter fitted therewith. 5,542,675, Cl. 473-329.000.

Michaels, Alan S.: *See*—
Rhee, Woonza; Wallace, Donald G.; Michaels, Alan S.; Burns, Ramon A., Jr.; Fries, Louis; DeLustro, Frank; and Bentz, Hanne, 5,543,441, Cl. 523-105.000.

Michaut, Bernard; Pellegrin, Bernard; and Voisembert, Sylvie, to Framatome. Process for repairing and protecting from cracking the inner wall of a tube for penetrating the bottom head of a pressurized-water nuclear reactor vessel. 5,544,209, Cl. 376-260.000.

Michener, Robert: *See*—
Moulton-Barrett, Rex; and Michener, Robert, 5,542,419, Cl. 128-630.000.

Michigan TransTech Corporation: *See*—
Ensminger, William D.; and Gavin, Robert F., 5,542,923, Cl. 604-93.000.

Microelectronics and Computer Technology Corporation: *See*—
Kumar, Nalin; and Xie, Chenggang, 5,543,684, Cl. 313-495.000.
Sommerfeldt, Scott C.; Rudwick, Thomas W., III; and Miracky, Robert F., 5,544,018, Cl. 361-792.000.

Micron Communications, Inc.: *See*—
Tuttle, Mark E., 5,542,959, Cl. 29-623.300.

Micron Technology, Inc.: *See*—
Thomann, Mark R., 5,544,108, Cl. 365-201.000.
Zagar, Paul S.; and Schaefer, Scott, 5,544,124, Cl. 365-230.080.

Micropatent: *See*—
Casillo, Joseph; Johnson, Frederick M.; Heath, John M., Jr.; Veilleux, Gregory R.; and Dufault, William J., 5,543,001, Cl. 156-60.000.

Microsensors Technology, Inc.: *See*—
Loux, Alan D.; Minners, R. Sjhon; and Johnson, Paul H., 5,544,276, Cl. 392-480.000.

Microsoft Corporation: *See*—
Garcia-Duarte, Fernando; Hensley, John; Mohanraj, Shanmugam; Subramaniyan, Nagarajan; and Olsson, David B., 5,544,082, Cl. 364-707.000.
Laney, Stuart T., 5,544,286, Cl. 395-114.000.

Mihara, Tadashi: *See*—
Hanyu, Yukio; Tsuboyama, Akira; Taniguchi, Osamu; Mihara, Tadashi; Nakamura, Katsutoshi; and Mori, Sunao, 5,543,943, Cl. 359-43.000.

Mihayashi, Keiji; and Shimada, Yasuhiro, to Fuji Photo Film Co., Ltd. Silver halide color photographic photosensitive materials comprising heterocyclic cyan couplers. 5,543,282, Cl. 430-558.000.

Mihran, Richard T.: *See*—
Starzl, Timothy W.; Cattell, Marguerita; Mihran, Richard T.; and Zapp, Loretta M., 5,542,431, Cl. 128-738.000.

Mikami, Kazuhiro: *See*—
Tsukamoto, Kazumasa; Hayabuchi, Masahiro; Nishida, Masaaki; Yamamoto, Yoshihisa; Kusafuka, Muneo; Mikami, Kazuhiro; Tsutsui, Hiroshi; and Iwata, Akihito, 5,542,887, Cl. 475-63.000.

Mikami, Masao: *See*—
Kawano, Hideo; Shiotani, Keiji; Mikami, Masao; Suzuki, Tatsuya; and Shishiguchi, Seiichi, 5,543,347, Cl. 437-60.000.

Mikhaylovich, Volodin A.: *See*—
Aleksandrovich, Tjurin V.; Ivanovich, Kuroles V.; Andreyevich, Lazorkin V.; and Mikhaylovich, Volodin A., 5,542,278, Cl. 72-371.000.

Miki, Shoji; Tsubota, Hiroki; Yokota, Masanori; and Hori, Kenta, to Glory Kogyo Kabushiki Kaisha. Check processing equipment. 5,544,043, Cl. 364-406.000.

Miklosi, Stefan: *See*—
Fürst, Arpad; Danzl, Martin; Mayer, Johann; and Miklosi, Stefan, 5,542,735, Cl. 296-107.000.

Miksztal, Andrew R.: *See*—
Fu, Roger C.; Leung, De-Mei; Fleitman, Jeffrey S.; Rizzolio, Michele C.; and Miksztal, Andrew R., 5,543,408, Cl. 514-233.500.

Mikula, John J.: *See*—
Malik, John H.; Mikula, John J.; and Julien, Robert A., 5,543,107, Cl. 264-529.000.

Mikuni, Maki, to Fujitsu Limited. Map management system in geographic information management system. 5,543,788, Cl. 340-990.000.

Mikura, Chiemi: *See*—
Shirai, Fumiya; Kuniya, Masayoshi; Mikura, Chiemi; Matsushita, Tomoko; Akemi, Hitoshi; and Yamamoto, Toshiyuki, 5,543,151, Cl. 424-448.000.

Milazzo, Patrizia: *See*—
Bontempo, Gregorio; Milazzo, Patrizia; and Alzati, Angelo, 5,543,739, Cl. 327-108.000.

Miles, Roger J.: *See*—
Chatzopoulou, Athina; Miles, Roger J.; and Anagnostopoulos, Gerasimos, 5,543,325, Cl. 435-259.000.

Millar, Marty R., to Simplyfry Inc. Condiment vending machine. 5,542,569, Cl. 221-116.000.

Miller, Alan B.: *See*—
Ramsby, Scott D.; and Miller, Alan B., 5,542,153, Cl. 16-389.000.

Miller, Colin J. Crank mechanism and machines, especially engines, using same. 5,542,308, Cl. 74-44.000.

Miller, Gayle W.: *See*—
Lee, Steven S.; Fuchs, Kenneth P.; and Miller, Gayle W., 5,543,361, Cl. 437-200.000.

Miller, Irwin. Method of dispensing unit doses of medications and associated products. 5,542,236, Cl. 53-467.000.

Miller, Jack C. Process for removing proteinaceous materials, fat and oils from food processing wastewater and recovering same. 5,543,058, Cl. 210-725.000.

Miller, Jeffrey S.: *See*—
Wagner, Byron D.; Johnson, Von W.; Miller, Jeffrey S.; and Dempsey, Richard T., 5,544,228, Cl. 379-67.000.

Miller, Michael A.; Timmons, Scott F.; and Barlow, Darren E., to Southwest Research Institute. Stabilization of red amorphous phosphorus by ordered polymeric structures for the manufacture of non-emissive fire retardant plastics. 5,543,447, Cl. 524-80.000.

Miller, Michael R.: *See*—

VOL 1189 SEP 1 AG 6 1996 UMI

Rea, Perry J.; Miller, Michael R.; Kinder, Dennis G.; Kargula, Christopher J.; and Stevens, William E., 5,542,717, Cl. 285-319.000.

Miller, Richard A.; George, Scott E.; Parsons, Theron E., III; and Montgomery, Mark A., to Eastman Chemical Company. Water-dispersible adhesive composition and process. 5,543,488, Cl. 528-277.000.

Miller, Robert H.: *See*—
Wehmeyer, Keith R.; Logan, Robert J.; Miller, Robert H.; Augaitis, Sheila R.; and Dinwiddie, Aaron H., 5,543,857, Cl. 348-589.000.

Miller, Robert J.: *See*—
Bisset, Stephen; Miller, Robert J.; Allen, Timothy P.; and Steinbach, Günter, 5,543,588, Cl. 178-18.000.
Gillespie, David; Allen, Timothy P.; Miller, Robert J.; and Faggin, Federico, 5,543,590, Cl. 178-18.000.

Miller, Rohn J.: *See*—
May, Robert; Granger, James E.; Peck, Nicolas; and Miller, Rohn J., 5,544,354, Cl. 395-600.000.

Miller, Russell J.: *See*—
Dreisbach, Mark S.; Miller, Russell J.; and Dehler, John, 5,542,199, Cl. 38-12.000.

Miller, Timothy F.: *See*—
Goldstein, Clifford W.; and Miller, Timothy F., 5,542,682, Cl. 277-164.000.

Millipore Corporation: *See*—
Charkoudian, John; Pluskal, Malcolm; Wang, David; and Phoebe, Charles, 5,543,054, Cl. 210-638.000.

Mills, George T.; and Gabaldon, Albert T., Jr., to United States of America, Navy. Radar decoder. 5,543,800, Cl. 342-197.000.

Mills, Timothy: *See*—
Nita, Henry; and Mills, Timothy, 5,542,917, Cl. 604-22.000.

Milne, Steven H.; Tindell, James M.; Tobias, John C., II; Dilts, Michael R.; and Edelman, Bradley A., to Taligent, Inc. Object-oriented audio record/playback system. 5,544,297, Cl. 395-154.000.

Milo, Thomas K.: *See*—
Bernstein, Gary S.; and Milo, Thomas K., 5,543,116, Cl. 422-111.000.

Milroy, William W.: *See*—
Wu, Te-Kao; Milroy, William W.; and Drost, Steven W., 5,543,815, Cl. 343-909.000.

Miltenyi, Stefan. Methods and materials for improved high gradient magnetic separation of biological materials. 5,543,289, Cl. 435-2.000.

Mimura, Hiroshi, to Nemic-Lambda Kabushiki Kaisha. Switching power supply. 5,544,032, Cl. 363-16.000.

Min, Beyong D.: *See*—
Back, Young S.; Lee, Keun W.; Min, Beyong D.; and Choi, Gang I., 5,544,151, Cl. 370-16.100.

Min, Kyeong B.: *See*—
Kim, Jung W.; Shin, Hee J.; Park, Joon K.; and Min, Kyeong B., 5,543,393, Cl. 514-11.000.

Minagawa, Kazushi: *See*—
Toyoda, Kenji; and Minagawa, Kazushi, 5,543,833, Cl. 348-110.000.

Minamimura, Masaaki: *See*—
Nakamura, Nobuyuki; Minamimura, Masaaki; Shiozawa, Fumio; and Yamagiwa, Yoshitoshi, 5,543,093, Cl. 264-40.500.

Minamitake, Yoshiharu: *See*—
Gref, Ruxandra; Minamitake, Yoshiharu; and Langer, Robert S., 5,543,158, Cl. 424-501.000.

Minemura, Takashi: *See*—
Arakawa, Mitsuaki; Minemura, Takashi; and Krasnor, Stephen, 5,543,713, Cl. 324-322.000.

Mineo, Shigeki, to Casio Computer Co., Ltd. Document output method. 5,544,296, Cl. 395-148.000.

Miner, Philip E., to Chesebrough-Pond's USA Co., Division of Conopco, Inc. Thickened nail polish remover. 5,543,085, Cl. 510-118.000.

Minichiello, Chris: *See*—
Kakavoulis-Perera, Dionisis; and Minichiello, Chris, 5,542,550, Cl. 211-40.000.

Minin, Leonid; and Saizev, Slava, to L.I.M.A.D. Limited. Pharmacological use of phthaloylhydrazide derivatives; combination and application thereof. 5,543,410, Cl. 514-248.000.

Ministero Dell'Univerita' E Della Ricerca Scientifica E Tecnologica: *See*—
Perego, Gabriele; Bastioli, Catia; Grzebieniak, Karolina; and Niekraszewicz, Antoni, 5,543,494, Cl. 528-354.000.

Minners, R. Sjhon: *See*—
Loux, Alan D.; Minners, R. Sjhon; and Johnson, Paul H., 5,544,276, Cl. 392-480.000.

Minnesota Mining and Manufacturing Company: *See*—
Bucci, Marco; Delprato, Ivano; and Spazzapan, Giorgio, 5,543,278, Cl. 430-506.000.
Goken, Garoid L.; and Strehlow, Wolfgang H., 5,543,314, Cl. 436-57.000.
Johnson, Dee L.; Knoll, Kenneth F.; and David, John R., 5,543,190, Cl. 428-40.100.
Lea, Michael C., 5,543,830, Cl. 347-241.000.
Lindsay, Erin J., 5,542,913, Cl. 604-4.000.
Tochacek, Miroslav; Courteau, Donald M.; and Patel, Vinu, 5,543,004, Cl. 156-93.000.

Minnesota Valley Engineering, Inc.: *See*—
Preston, Duane; and Drube, Thomas K., 5,542,255, Cl. 62-45.100.

Minntech Corporation: *See*—
Brinda, Paul D.; and Cosentino, Louis C., 5,543,002, Cl. 156-77.000.

Minoguchi, Akira: *See*—
Kurosawa, Kazuo; Matsuo, Kazuto; and Minoguchi, Akira, 5,542,518, Cl. 194-206.000.

Minolta Camera Kabushiki Kaisha: *See*—
Fukushima, Shigenobu, 5,543,938, Cl. 358-407.000.
Hata, Kazuyoshi; Maekawa, Yukio; Takamoto, Katsuhiro; and Saka, Manami, 5,543,970, Cl. 359-690.000.
Hirata, Sumiaki; Yamaguchi, Ikunori; and Maekawa, Kazunobu, 5,543,892, Cl. 355-205.000.
Kato, Tomokazu; Araki, Kazuhiro; Takano, Yoshiaki; Maruta, Syuzi; Nomura, Keiichi; Nagatani, Kentaro; Noda, Takashi; and Kishimoto, Hiroyuki, 5,543,907, Cl. 355-313.000.
Machida, Junji; Yoshida, Masazumi; and Tanaka, Susumu, 5,542,985, Cl. 134-38.000.
Oda, Katsunari; Kamisaki, Akiyoshi; Kubota, Norimasa; and Narikawa, Teruo, 5,543,905, Cl. 355-285.000.

Minowa, Masahiro, to Seiko Epson Corporation. Recording apparatus having a print head drive apparatus with an IC drive circuit employing shift registers for handling drive data in sequential fashion and a method for driving the print head. 5,543,828, Cl. 347-195.000.

Minowa, Toshimichi: *See*—
Kayano, Mitsuo; Minowa, Toshimichi; Ishii, Junichi; and Morinaga, Shigeki, 5,544,054, Cl. 364-424.010.

Mintz, Doron: *See*—
Rostoker, Michael D.; Dangelo, Carlos; Nagasamy, Vijay; and Mintz, Doron, 5,544,066, Cl. 364-489.000.

Miracky, Robert F.: *See*—
Sommerfeldt, Scott C.; Rudwick, Thomas W., III; and Miracky, Robert F., 5,544,018, Cl. 361-792.000.

Mirchandani, Prakash K.; Thomas, Robert E.; and Cippel, Mark, to Sinter-Met. Multiple grade cemented carbide articles and a method of making the same. 5,543,235, Cl. 428-547.000.

Mise, Nobutake: *See*—
Hirasa, Takashi; Takimoto, Hiroshi; and Mise, Nobutake, 5,542,969, Cl. 106-20.00C.

Misiti, Domenico: *See*—
Tinti, Maria O.; Misiti, Domenico; Cavazza, Claudio; and Scafetta, Nazareno, 5,543,556, Cl. 560-170.000.

Mista, Kresimir; and Hohne, Hans-Jurgen, to Karl Mayer Textilmaschinenfabrik GmbH. Guide bar arrangment for warp knitting machine having bending tranducers. 5,542,270, Cl. 66-207.000.

Mita, Hideaki; and Bannai, Tatusi, to Matsushita Electric Industrial Co., Ltd. Method and apparatus for coding image data. 5,543,844, Cl. 348-405.000.

Mita Industrial Co., Ltd.: *See*—
Katsuhara, Kenji, 5,543,895, Cl. 355-203.000.
Sakai, Toshihisa; and Kawasumi, Masanori, 5,543,224, Cl. 428-409.000.

Mitani, Kenzo: *See*—
Kusase, Shin; Mitani, Kenzo; Umeda, Atsushi; Tokura, Norihito; and Sato, Hirohide, 5,543,703, Cl. 322-16.000.

Mitchel, Scotty: *See*—
Merkle, Cliff; Burns, John; Laib, Gordon; Willis, Jim; Mitchel, Scotty; and Erickson, Dennis, 5,542,544, Cl. 209-139.100.

Mitchell, David C. Compact disc holder. 5,542,532, Cl. 206-308.100.

Mitchell, Robert N., to Kennametal Inc. Plunge and face milling cutter with universal insert seats. 5,542,795, Cl. 407-35.000.

Mitel Corporation: *See*—
Oprea, Dan; and Cepelinski, Jacob, 5,544,158, Cl. 370-29.000.
Purits, Valentin, 5,543,741, Cl. 327-143.000.

Mitsa, Theophano: *See*—
Parker, Kevin J.; and Mitsa, Theophano, 5,543,941, Cl. 358-534.000.

Mitsubishi Chemical Corporation: *See*—
Hayama, Kazuhide; Saitoh, Yukio; Kitani, Yasuo; and Yamada, Katsuhiko, 5,543,440, Cl. 523-103.000.
Hirasa, Takashi; Takimoto, Hiroshi; and Mise, Nobutake, 5,542,969, Cl. 106-20.00C.
Iwane, Hiroshi; Miyagi, Hidekazu; Imada, Satoshi; Seo, Shoichi; and Yoneyama, Takahiro, 5,543,547, Cl. 558-274.000.
Kawahara, Takayuki; Suzuki, Hitoshi; and Kominato, Asao, 5,543,522, Cl. 546-2.000.
Miura, Konoe; Takimoto, Hiroshi; Ohta, Tokuya; and Kobayashi, Masatsune, 5,542,970, Cl. 106-20.00D.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Asamura, Yoshinori; Hatano, Yoshiko; Onishi, Ken; and Shiroshita, Takashi, 5,543,845, Cl. 348-407.000.
Baba, Hiroshi, 5,544,339, Cl. 395-441.000.
Demizu, Akira; Nishimura, Yukinobu; and Sugai, Masakazu, 5,544,058, Cl. 364-431.050.
Dosaka, Katsumi; Kumanoya, Masaki; Hayano, Kouji; Yamazaki, Akira; Iwamoto, Hisashi; Abe, Hideaki; Konishi, Yasuhiro; Himukashi, Katsumitsu; Ishizuka, Yasuhiro; and Saiki, Tsukasa, 5,544,121, Cl. 365-222.000.
Hanazato, Yoshio; Nakako, Mamiko; Shiono, Satoru; and Inatomi, Kenichi, 5,543,024, Cl. 204-403.000.
Hikita, Shiro; Iwata, Masafumi; Komaya, Kiyotoshi; Asuka, Masashi; and Goto, Yukio, 5,544,059, Cl. 364-436.000.
Hirose, Toshihiko; Ohbayeshi, Shigeki; Kondo, Setsu; Hayasaka, Takashi; Fujino, Yoshiyuki; and Iketani, Masayuki, 5,544,105, Cl. 365-189.110.
Ikeda, Yutaka, 5,544,115, Cl. 365-207.000.
Ikejima, Hiroyuki; and Yasue, Masanori, 5,542,501, Cl. 187-292.000.
Kadoiwa, Kaoru; and Kato, Manabu, 5,544,185, Cl. 372-44.000.

Kadoiwa, Kaoru; Motoda, Takashi; and Kato, Manabu, 5,544,187, Cl. 372-45.000.
Kanzaki, Teruaki, 5,543,794, Cl. 341-161.000.
Kobayashi, Maiko; and Kuroi, Takashi, 5,543,647, Cl. 257-345.000.
Morikawa, Yasuhiro; Ohashi, Tomonori; and Kodama, Masafumi, 5,543,854, Cl. 348-512.000.
Motomura, Yasutaka, 5,544,335, Cl. 395-311.000.
Mukai, Takao; and Yoshioka, Nobuyuki, 5,543,342, Cl. 437-44.000.
Murakami, Tokumichi; Kato, Yoshiaki; and Shimada, Toshiaki, 5,543,848, Cl. 348-416.000.
Nakagawa, Hiromasa; Yamada, Akira; and Hata, Masayuki, 5,544,341, Cl. 395-445.000.
Nakayama, Takeshi; Terada, Yasushi; Kobayashi, Kazuo; Hayashikoshi, Masanori; and Miyawaki, Yoshikazu, 5,544,117, Cl. 365-185.220.
Niwa, Tomomitsu, 5,544,046, Cl. 364-474.010.
Notani, Hiromi, 5,543,745, Cl. 327-538.000.
Ogawa, Toshiyuki, 5,544,093, Cl. 365-189.010.
Saiki, Nobuyuki, 5,543,793, Cl. 341-155.000.
Satoh, Shinichi; Ozaki, Hiroji; and Eimori, Takahisa, 5,543,646, Cl. 257-344.000.
Suzuki, Hiroyoshi; Okada, Akira; and Moronaga, Takahiro, 5,543,722, Cl. 324-675.000.
Takiguchi, Tohru; and Goto, Katsuhiko, 5,544,188, Cl. 372-45.000.
Tobita, Yoichi; and Tokami, Kenji, 5,544,102, Cl. 365-189.090.
Tokunoh, Futoshi; and Satoh, Katsumi, 5,543,363, Cl. 437-208.000.
Taukahara, Yoshihiro, 5,543,752, Cl. 330-124.00R.

Mitsubishi Electric Engineering Co., Ltd.: *See*—
Dosaka, Katsumi; Kumanoya, Masaki; Hayano, Kouji; Yamazaki, Akira; Iwamoto, Hisashi; Abe, Hideaki; Konishi, Yasuhiro; Himukashi, Katsumitsu; Ishizuka, Yasuhiro; and Saiki, Tsukasa, 5,544,121, Cl. 365-222.000.

Mitsubishi Gas Chemical Co., Inc.: *See*—
Shimuta, Masanori; Takahashi, Toru; Abe, Hisato; Takahashi, Kenichi; Kurata, Akira; and Aoki, Osamu, 5,543,482, Cl. 526-289.000.

Mitsubishi Gas Company, Inc.: *See*—
Kawaki, Takao; Amagai, Akikazu; Yamada, Toshiaki; Harada, Hidefumi; Ban, Hajime; Takeda, Yuji; and Yamamoto, Koji, 5,543,474, Cl. 525-440.000.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See*—
Matsumoto, Takuya; Hashimoto, Toru; Miyake, Mitsuhiro; Kamura, Hitoshi; and Yoshida, Yasuhisa, 5,542,400, Cl. 123-571.000.
Miyamoto, Katsuhiko; and Iida, Kazumasa, 5,542,389, Cl. 123-339.100.
Nakashima, Yasuhiro, 5,544,053, Cl. 364-424.100.

Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Nakanishi, Teruo; Ando, Yohei; and Sakakibara, Kiyokatsu, 5,542,762, Cl. 366-228.000.
Yoshimura, Mitsuhiro; Fujita, Kazunobu; and Teramura, Akira, 5,542,220, Cl. 52-167.100.
Yuzaki, Tsuneo, 5,542,830, Cl. 418-55.600.

Mitsubishi Materials Corporation: *See*—
Ishiyama, Kouichi; Igarashi, Kazunori; Komada, Norikazu; Takeshita, Takuo; and Ookubo, Kiyoyuki, 5,543,070, Cl. 252-62.590.
Kanazumi, Hisao; and Yamashiro, Akiyoshi, 5,542,651, Cl. 266-231.000.

Mitsubishi Rayon Company Ltd.: *See*—
Kitaike, Yukio; Hatakeyama, Hiroki; Tayama, Suchiro; and Nakagawa, Kazuhiko, 5,543,463, Cl. 525-79.000.
Yamamoto, Naoki; Yanagase, Akira; Iwasaki, Tadashi; and Itoh, Masakazu, 5,543,460, Cl. 525-64.000.

Mitsui Petrochemical Industries Co., Ltd.: *See*—
Tsutsui, Toshiyuki; and Yoshitsugu, Ken, 5,543,377, Cl. 502-125.000.

Mitsui Petrochemical Industries, Ltd.: *See*—
Terada, Masahiro; Kamae, Hirosuke; Yusawa, Motoyasu; Watanabe, Kazuyuki; and Saito, Mitsuo, 5,542,982, Cl. 134-5.000.

Mitsuoka, Yasuyki: *See*—
Iwaki, Tadao; Mitsuoka, Yasuyki; and Kasama, Nobuyuki, 5,544,252, Cl. 382-280.000.

Mitsuru, Sugo: *See*—
Richard, Nötzel; Jiro, Temmyo; Toshiaki, Tamamura; Mitsuru, Sugo; Eiichi, Kuramochi; and Teruhiko, Nishiya, 5,543,354, Cl. 437-129.000.

Miura, Konoe; Takimoto, Hiroshi; Ohta, Tokuya; and Kobayashi, Masatsune, to Canon Kabushiki Kaisha; and Mitsubishi Chemical Corporation. Monoazo compound and recording liquid containing the same. 5,542,970, Cl. 106-20.00D.

Miura, Masakazu: *See*—
Ikura, Kenichiro; and Miura, Masakazu, 5,543,587, Cl. 178-18.000.

Miwa, Hiroaki; Sudo, Ryoichi; Tajima, Tetsuo; and Koyama, Eiji, to Hitachi, Ltd.; and Hitachi Maxell, Ltd. Optical recording and reproduction apparatus. 5,543,271, Cl. 430-347.000.

Miyagawa, Yoshiya: *See*—
Maruoka, Tetsuya; Yasunobu, Chizuko; Hirose, Tadashi; Kida, Mayumi; Ino, Kouichiro; and Miyagawa, Yoshiya, 5,544,281, Cl. 395-68.000.

Miyagi, Hidekazu: *See*—
Iwane, Hiroshi; Miyagi, Hidekazu; Imada, Satoshi; Seo, Shoichi; and Yoneyama, Takahiro, 5,543,547, Cl. 558-274.000.

Miyagi, Tomoyoshi: *See*—
Yamada, Ichiho; Miyagi, Tomoyoshi; Nezuka, Shoji; Ichihashi, Satoru; and Isozaki, Hiroshi, 5,542,899, Cl. 483-32.000.

Miyakawa, Kumiko: *See*—
Yamada, Yoshiaki; Ito, Nobukazu; Miyakawa, Kuniko; and Yamanaka, Michiko, 5,543,357, Cl. 437-192.000.

Miyake, Masaya: *See*—
Katayama, Tetsuya; Murabe, Kaoru; Komura, Osamu; Kawai, Chihiro; Yamakawa, Akira; Matsunuma, Kenji; Yasuoka, Norio; Higuchi, Matsuo; and Miyake, Masaya, 5,543,371, Cl. 501-97.000.

Miyake, Mitsuhiro: *See*—
Matsumoto, Takuya; Hashimoto, Toru; Miyake, Mitsuhiro; Kamura, Hitoshi; and Yoshida, Yasuhisa, 5,542,400, Cl. 123-571.000.

Miyake, Toshio: *See*—
Mandai, Takahiko; Shibuya, Takashi; Sugimoto, Toshiyuki; and Miyake, Toshio, 5,543,513, Cl. 536-123.130.

Miyamoto, Hirofumi; Sakai, Mitsugu; Hayashida, Mitsumori; and Sakai, Nobuaki, to Olympus Optical Co., Ltd. Scanning probe microscope capable of suppressing probe vibration caused by feedback control. 5,543,614, Cl. 250-234.000.

Miyamoto, Katsuhiko; and Iida, Kazumasa, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Control system for multi-cylinder internal combustion engine. 5,542,389, Cl. 123-339.100.

Miyamoto, Matsuhiro: *See*—
Nakakura, Yasushi; Tanaka, Hideki; Sano, Akira; Mogi, Akio; Miyamoto, Matsuhiro; and Suzuki, Kazunari, 5,543,189, Cl. 428-36.800.

Miyanaga, Akiharu: *See*—
Ohtani, Hisashi; Miyanaga, Akiharu; Zhang, Hongyong; Yamaguchi, Naoaki; and Suzuki, Atsunori, 5,543,352, Cl. 437-101.000.

Miyano, Keiichiro: *See*—
Nishida, Katsumori; Miyano, Keiichiro; Iwase, Masaki; and Ichinose, Eiji, 5,542,903, Cl. 494-53.000.

Miyano, Masateru: *See*—
Adams, Steven P.; Lindmark, Richard J.; Miyano, Masateru; and Rico, Joseph G., 5,543,425, Cl. 514-357.000.

Miyashiro, Toshiaki: *See*—
Kato, Motoi; Takeuchi, Akihiko; Ochiai, Toshihiko; Miyashiro, Toshiaki; Kabeya, Nobuaki; Suzuki, Takehiko; and Kume, Takao, 5,543,904, Cl. 355-285.000.

Miyata, Kunihiro: *See*—
Honda, Jun; and Miyata, Kunihiro, 5,543,760, Cl. 330-298.000.

Miyata, Minoru; and Kawakami, Shigeru, to Matsushita Electric Industrial Co., Ltd. Horizontal contour emphasizing signal processor. 5,543,859, Cl. 348-625.000.

Miyata, Shigeru; Yamada, Yoshitaka; Yoshida, Hideji; Matsubara, Yoshihiro; and Ito, Yasuo, to NGK Spark Plug Co., Ltd. Sparkplug voltage probe for use with an internal combustion engine by clamping sparkplug cables with an insulation base. 5,543,716, Cl. 324-402.000.

Miyawaki, Mamoru, to Canon Kabushiki Kaisha. Semiconductor member and semiconductor device having a substrate with a hydrogenated surface. 5,543,648, Cl. 257-347.000.

Miyawaki, Naokazu: *See*—
Kuwagata, Masaaki; Matsuo, Ryosuke; Maruyama, Keiji; Miyawaki, Naokazu; and Ueno, Hisashi, 5,544,120, Cl. 365-222.000.

Miyawaki, Yoshikazu: *See*—
Nakayama, Takeshi; Terada, Yasushi; Kobayashi, Kazuo; Hayashikoshi, Masanori; and Miyawaki, Yoshikazu, 5,544,117, Cl. 365-185.220.

Miyazaki, Hajime: *See*—
Suzuki, Koichi; Takai, Hideyuki; Miyazaki, Hajime; Sugiyama, Satomi; and Kunieda, Mitsuhiro, 5,543,257, Cl. 430-58.000.

Miyazaki, Hidekazu: *See*—
Miyazaki, Takeshi; Narita, Takumi; and Miyazaki, Hidekazu, 5,542,713, Cl. 285-158.000.

Miyazaki, Takeshi; Narita, Takumi; and Miyazaki, Hidekazu, to Toyoda Gosei Co., LTD. Hose coupling device. 5,542,713, Cl. 285-158.000.

Miyazaki, Yoshifumi: *See*—
Yamasaki, Masahiro; Houssi, Koichiro; Shirahase, Hiromi; Akamatsu, Nobuyuki; Tabuchi, Michiyuki; Hirata, Toshinari; and Miyazaki, Yoshifumi, 5,543,168, Cl. 426-557.000.

Mizoh, Yoshiaki; and Yohda, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Multitrack magnetic head assembly for scanning a magnetic tape with a plurality of magnetic head tips. 5,543,990, Cl. 360-122.000.

Mizoh, Yoshiaki: *See*—
Nouchi, Norimoto; Sakaguchi, Masaya; Yoda, Hiroshi; and Mizoh, Yoshiaki, 5,543,179, Cl. 427-346.000.

Mizuguchi, Yoshihiro; Hamada, Hiroshi; Aoyama, Shigeru; and Yamashita, Tsukasa, to Sharp Kabushiki Kaisha; and Omron Corporation. LCD microlens substrate with a lens array and a uniform material bonding member, each having a thermal resistance not lower than 150°C. 5,543,942, Cl. 359-40.000.

Mizuho USA, Inc.: *See*—
Karakawa, Fuminari, 5,543,115, Cl. 422-102.000.

Mizukami, Masao; Sato, Yoichi; Shinagawa, Satoshi; and Nakano, Yukio, to Hitachi, Ltd.; and Hitachi VLSI Engineering Corp. Multiplexed multi-write port semiconductor memory. 5,544,122, Cl. 365-230.050.

Mizumachi, Motobiro: *See*—
Ito, Kengo; Mizumachi, Motohiro; Fujiwara, Yoshio; and Shinohara, Satoru, 5,543,453, Cl. 524-445.000.

Mizuno, Jun; Nonmeyer, Kay; and Kimura, Mitsuteru, to Zexel Corporation. Acceleration sensor. 5,542,297, Cl. 73-514.360.

Mizuno, Tomoko; Takahashi, Toshiyuki; Yamaguchi, Hiroshi; and Hisamatsu, Nobuaki, to Sony Corporation. Electronic equipment operating in multiple modes and control method thereof. 5,544,130, Cl. 369-1.000.

Mizutani, Yasukazu: *See*—

Kato, Harunori; Mizutani, Yasukazu; Shibata, Shigekazu; Kimura, Katsuhiro; Koseki, Hideki; Urano, Mitsuhiro; and Watanabe, Masayuki, 5,542,299, Cl. 73-654.000.

Mizutome, Atsushi: *See—*
Inoue, Hiroshi; Mizutome, Atsushi; and Enomoto, Aiko, 5,543,817, Cl. 345-100.000.

Moan, Richard D.: *See—*
Pierce, Stanley L.; and Moan, Richard D., 5,542,889, Cl. 475-275.000.

Moazzami, Reza: *See—*
Abt, Norman E.; Moazzami, Reza; and Nissan-Cohen, Yoav, 5,543,644, Cl. 257-295.000.

Mobil Oil Corporation: *See—*
Chang, Clarence D.; Han, Scott; Martenak, Daniel J.; Santiesteban, Jose G.; and Walsh, Dennis E., 5,543,036, Cl. 208-189.000.
Chang, Clarence D.; Santiesteban, Jose G.; and Stern, David L., 5,543,380, Cl. 502-325.000.
Djabbarah, Nizar F.; Garling, Ralph V.; Hand, David T.; and Macfadyen, Jennifer, 5,542,474, Cl. 166-263.000.

Mochida, Takaaki: *See—*
Haikawa, Katsumasa; Mochida, Takaaki; Nagano, Mamoru; and Nakajima, Tsuyoshi, 5,544,211, Cl. 376-435.000.

Moehrmann, Karl-Heinz, to Siemens Aktiengesellschaft. Method for receive-side clock supply for video signals digitally transmitted with ATM in fiber/coaxial subscriber lioc networks. 5,543,951, Cl. 359-158.000.

Moens, Luc J. R.: *See—*
De Knaep, Alfons G. M.; Moens, Luc J. R.; and Vreysen, Eduard J. C., 5,543,570, Cl. 564-87.000.

Moffat, Guy: *See—*
Priem, Curtis; Malachowsky, Chris; McIntyre, Bruce; and Moffat, Guy, 5,543,824, Cl. 345-201.000.

Moffett, Robert H.: *See—*
Rushmere, John D.; and Moffett, Robert H., 5,543,014, Cl. 162-181.600.

Mogen International: *See—*
van Ooijen, Albert J. J.; Rietveld, Krijn; Hoekema, Andreas; Pen, Jan; Sijmons, Peter C.; Verwoerd, Teunis C.; and Quax, Wilhemus J., 5,543,576, Cl. 800-250.000.

Mogi, Akio: *See—*
Nakakura, Yasushi; Tanaka, Hideki; Sano, Akira; Mogi, Akio; Miyamoto, Matsuhiro; and Suzuki, Kazumari, 5,543,189, Cl. 428-36.800.

Mohanraj, Shanmugam: *See—*
Garcia-Duarte, Fernando; Hensley, John; Mohanraj, Shanmugam; Subramaniyan, Nagarajan; and Olsson, David B., 5,544,082, Cl. 364-707.000.

Mohawk Wire and Cable Corp.: *See—*
Clark, William T.; and Dellagala, Joseph, 5,544,270, Cl. 385-101.000.

Mohindra, Raj; Bhushan, Abhay K.; Bhushan, Rajiv; and Puri, Suraj, to YieldUP International. Apparatus for delivering ultra-low particle counts in semiconductor manufacturing. 5,542,441, Cl. 134-95.200.

Mohler, Thomas H. Sliding door closing device. 5,542,216, Cl. 49-404.000.

Mohsen, Amr M., to Aptix Corporation. Structure having different levels of programmable integrated circuits interconnected through bus lines for interconnecting electronic components. 5,544,069, Cl. 364-489.000.

Mokadam, Anita R.; Strubelt, Charles E.; Williams, Dennis A.; and Webber, Kenneth M., to Nalco/Exxon Energy Chemicals, L.P; and Exxon Production Research Co. Surfactant additive for oilfield acidizing. 5,543,387, Cl. 507-135.000.

Moldovan, Jack. Ornamental feature with apparel or carrying article. 5,542,122, Cl. 2-69.000.

Molex Incorporated: *See—*
Bandura, Michael A.; and Peloza, Kirk B., 5,542,860, Cl. 439-567.000.
Bouchan, Christophe, 5,542,853, Cl. 439-188.000.
Bowen, David C., 5,542,854, Cl. 439-157.000.

Molten Metal Technology, Inc.: *See—*
Nagel, Christopher J.; and Bach, Robert D., 5,543,558, Cl. 560-214.000.

Mona Industries, Inc.: *See—*
Fost, Dennis L.; Komor, Joseph A.; and Novakovic, Mario, 5,543,072, Cl. 510-151.000.

Monarch Marking Systems, Inc.: *See—*
Roth, Mark W., 5,544,287, Cl. 395-114.000.

Monget, Francois; and Cahuzac, Georges, to Aerospatiale Societe Nationale Industrielle. Method and machine for producing a reinforcement for a composite component. 5,543,005, Cl. 156-93.000.

Monk, David T.; Hatzikazakis, Pantelis; and Mumpower, Kevin N., to Bristol Compressors, Inc. Wrist pin construction. 5,542,341, Cl. 92-187.000.

Monsanto Company: *See—*
Kinlen, Patrick J.; and Jansson, Robert E. W., 5,543,084, Cl. 252-500.000.

Monsanto Europe S.A./N.V.: *See—*
Moreno, Fulgencio Powell; Litkei, Laszlo; Galamb, Vilmos; Gulyas, Imre; Repasi, Janos; Veres, Agota Repasine; Vigh, Jozsef; Koczka, Istvanne; Fehervari, Edit; Roka, Laszlone; Pethe, Laszlone; and Neu, Jozsef, 5,543,562, Cl. 562-17.000.

Montecatini Technologie S.r.l.: *See—*
Gubitosa, Giuseppe; and Casale, Bruno, 5,543,379, Cl. 502-184.000.

Monteleone, Michael G.; Weiss, Richard A.; Evans, Marc D.; and Hanna, Marie R., to International Flavors & Fragrances Inc. Para-C_3 alkyl-substituted ethoxycyclohexanes, organoleptic uses thereof and processes for preparing same. 5,543,398, Cl. 512-23.000.

Montgomery, Mark A.: *See—*
Miller, Richard A.; George, Scott E.; Parsons, Theron E., III; and Montgomery, Mark A., 5,543,488, Cl. 528-277.000.

Monvaillier, Jérome M.; and Polveda, Jacques J., to Eurocopter France. Ducted Anti-torque rotor with floating blades. 5,542,818, Cl. 416-134.00A.

Moore Business Forms, Inc.: *See—*
Shipston, Adele C.; and Rice, David K., II, 5,543,192, Cl. 428-40.600.

Moore, Donal; and Pringle, Colin D., to Tecsyn, Inc. Side bracket for netting and process for assembling the netting thereto. 5,542,591, Cl. 224-545.000.

Moore, Richard: *See—*
Pease, Allan F.; and Moore, Richard, 5,544,326, Cl. 395-250.000.

Moore, Walter A.: *See—*
Green, David J.; Bunker, S. Mark; Moore, Walter A.; Pierotti, L. John; Storey, J. Kirk; and Olson, Brent K., 5,542,702, Cl. 280-737.000.

Morano, Emanuel P., to Playtex Products, Inc. Flow control element and covered drinking cup. 5,542,670, Cl. 220-714.000.

Morasca, Pietro: *See—*
Coassin, Giovanni; Di Giusto, Bruno; Drigani, Fausto; and Morasca, Pietro, 5,542,165, Cl. 29-33.00C.

Moreau, Michel: *See—*
Yazami, Rachid; and Moreau, Michel, 5,543,021, Cl. 204-294.000.

Moreno, Fulgencio Powell; Litkei, Laszlo; Galamb, Vilmos; Gulyas, Imre; Repasi, Janos; Veres, Agota Repasine; Vigh, Jozsef; Koczka, Istvanne; Fehervari, Edit; Roka, Laszlone; Pethe, Laszlone; and Neu, Jozsef, to Monsanto Europe S.A./N.V. Non-hygroscopic monoammonium salts of phosphonic acids or phosphinic acids. 5,543,562, Cl. 562-17.000.

Morgan, Richard A., to Du Pont de Nemours, E. I., and Company. Amorphous copolymers of tetrafluoroethylene and hexafluoropropylene. 5,543,217, Cl. 428-375.000.

Morgan, Richard D., to New England Biolabs, Inc. Isolated DNA encoding the FSEI restriction endonuclease and related methods for producing the same. 5,543,308, Cl. 435-172.300.

Morgan, Scott A.; Stone, Steve S.; and Swearingen, Craig A., to International Business Machines Corporation. Object resizing and repositioning for a new font in a graphical user interface. 5,544,288, Cl. 395-157.000.

Morgavi, Paul: *See—*
Berthozat, Michel; and Morgavi, Paul, 5,544,111, Cl. 365-225.700.

Morgenstern, Bodo: *See—*
Beisel, Weinfried; Schwarz, Hans-Michael; and Morgenstern, Bodo, 5,542,520, Cl. 194-335.000.

Mori, Hitomi: *See—*
Nakai, Satoru; Aihara, Koutoku; Mori, Hitomi; Tominaga, Michiaki; Adachi, Masakazu; Ichikawa, Hiroyuki; Akamatsu, Seiji; and Saito, Fumio, 5,543,412, Cl. 514-255.000.

Mori, Sunao: *See—*
Hanyu, Yukio; Tsuboyama, Akira; Taniguchi, Osamu; Mihara, Tadashi; Nakamura, Katsutoshi; and Mori, Sunao, 5,543,943, Cl. 359-43.000.

Mori, Yasushi: *See—*
Machida, Shigeru; Urano, Taeko I.; Sano, Kenji; and Mori, Yasushi, 5,543,949, Cl. 359-75.000.

Morii, Hiroko: *See—*
Hayashi, Kazuyuki; Ohsugi, Minoru; Morii, Hiroko; and Sugita, Norio, 5,543,069, Cl. 252-62.580.

Morikawa, Akihiko: *See—*
Sasada, Ichiro; and Morikawa, Akihiko, 5,542,304, Cl. 73-862.333.

Morikawa, Yasuhiro; Ohashi, Tomonori; and Kodama, Masafumi, to Mitsubishi Denki Kabushiki Kaisha. Video signal processing apparatus, video signal processing method, and video signal recording/reproduction apparatus. 5,543,854, Cl. 348-512.000.

Morimoto, Kiyoshi: *See—*
Hirai, Yoshihiko; Morimoto, Kiyoshi; Terui, Yasuaki; Niwa, Masaaki; Yasui, Juro; Okada, Kenji; Udagawa, Masaharu; and Yuki, Koichiro, 5,543,351, Cl. 437-063.000.

Morimoto, Kyomi; and Yokoyama, Shoji, to Aisin AW Co., Ltd. Navigation system with destination set by longitude and latitude coordinate points. 5,544,061, Cl. 364-444.000.

Morinaga, Masazumi; and Takata, Kousuke, to Roland Corporation. Effector. 5,543,579, Cl. 84-701.000.

Morinaga Milk Industry Co., Ltd.: *See—*
Tomita, Mamoru; Shimamura, Seiichi; Fukuwatari, Yasuo; and Shinoda, Ichizo, 5,543,392, Cl. 514-8.000.

Morinaga, Shigeki: *See—*
Kayano, Mitsuo; Minowa, Toshimichi; Ishii, Junichi; and Morinaga, Shigeki, 5,544,054, Cl. 364-424.010.

Morino, Seiji; Hashimoto, Eiji; and Tomoda, Terutoshi, to Nippondenso Co., Ltd.; and Toyota Jidosha Kabushiki Kaisha. Piezoelectric-element drive apparatus. 5,543,679, Cl. 310-316.000.

Morita, Hideaki: *See—*
Taniguchi, Yukio; Hotta, Tsuyoshi; Kuwabara, Yuko; Morita, Hideaki; and Segawa, Toshikazu, 5,543,228, Cl. 428-429.000.

Morita, Katsumi, to Applied Materials Inc. Plasma generation apparatus with interleaved electrodes and corresponding method. 5,543,688, Cl. 315-111.210.

Morita, Makoto: *See—*
Iwaya, Shouichi; Yahagi, Masahiro; Kudou, Hitoshi; Itou, Shigeru; Fujiwara, Isao; Ogasawara, Tadashi; Morita, Makoto; Taguchi, Teruo; and Sasaki, Setuo, 5,544,002, Cl. 361-302.000.

Morita, Mitsuo: *See—*
Terajima, Hisao; Koizumi, Shigeru; Nakayama, Toru; Takeda, Tomoyuki; Uno, Hiromichi; Nakagawa, Kaori; Shimizu, Hideki; and Morita, Mitsuo, 5,544,234, Cl. 379-100.000.

Morita, Shigeru: *See—*
Kitano, Kazuaki; Morita, Shigeru; Kuriyama, Masato; and Maejima, Kazutaka, 5,543,322, Cl. 435-252.300.

Morita, Takashi: *See—*
Takishima, Suguru; Okuda, Isao; and Morita, Takashi, 5,544,144, Cl. 369-112.000.

Morita, Yasuko, to Procter & Gamble Company, The. Absorbent article having elasticized side flaps. 5,542,941, Cl. 604-385.100.

Moriya, Atusi: *See—*
Tsuneki, Hideaki; Onda, Yoshiyuki; Moriya, Atusi; and Yoshida, Hiroshi, 5,543,546, Cl. 558-270.000.

Moriyama, Masaru, to Victor Company of Japan, Ltd. Magnetic field generating apparatus for generating bias magnetic field in a magnetic information transfer system. 5,543,973, Cl. 360-17.000.

Morning Pride: *See—*
Grilliot, William L.; and Grilliot, Mary L., 5,542,124, Cl. 2-81.000.

Moronaga, Takahiro: *See—*
Suzuki, Hiroyoshi; Okada, Akira; and Moronaga, Takahiro, 5,543,722, Cl. 324-675.000.

Morris, Sandra A.: *See—*
Bills, Gerald F.; Curotto, James E.; Dreikorn, Sarah J.; Jenkins, Rosalind G.; Liesch, Jerrold M.; Morris, Sandra A.; Thompson, John R.; Zink, Deborah L.; Jansson, Richard K.; Basilio, Angela; Diez, Teresa; Pelaez, Fernando; and Vicente, Francisca, 5,543,429, Cl. 514-468.000.

Morris, Wayne F., Sr., to Home Saving Termite Control, Inc. Process for controlling insect infestations in a structure. 5,542,207, Cl. 43-132.100.

Morrison, Jan D.; Grabowski, Edward F.; Dotschkal, Virginia E.; Lynch, Anita P.; and May, Jerome E., to Xerox Corporation. Marking materials containing retroreflecting fillers. 5,543,177, Cl. 427-288.000.

Morton, Bernard W.; Nelson, Kirk A.; and Balmer, Ricky D., to Dri Steem Humidifier Company. Rapid absorption steam humidifying system. 5,543,090, Cl. 261-118.000.

Morton, Howard E.: *See—*
Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Morton, Howard E.; Reno, Daniel S.; Sham, Hing L.; Sowin, Thomas J.; and Tien, Jien-Heh J., 5,543,549, Cl. 558-405.000.
Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Kerdesky, Francis A.; Langridge, Denton C.; Leanna, M. Robert; Lijewski, Linda M.; Melcher, Laura; Morton, Howard E.; Norbeck, Daniel W.; Reno, Daniel S.; Robbins, Timothy A.; Sham, Hing L.; Sowin, Thomas J.; Tien, Jien-heh J.; Zhao, Chen; and Scarpetti, David, 5,543,551, Cl. 560-24.000.
Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Leanna, M. Robert; Lijewski, Linda M.; Melcher, Laura; Morton, Howard E.; Reno, Daniel S.; Sham, Hing L.; and Sowin, Thomas J., 5,543,552, Cl. 560-24.000.

Morton International, Inc.: *See—*
Decker, Owen H.; and Tarnoski, Charles P., 5,543,464, Cl. 525-176.000.
Green, David J.; Bunker, S. Mark; Moore, Walter A.; Pierotti, L. John; Storey, J. Kirk; and Olson, Brent K., 5,542,702, Cl. 280-737.000.
Marjanski, George C.; Hauppa, Kevin E.; Green, David J.; Saderholm, Davin G.; and Beesley, Brent R., 5,542,691, Cl. 280-728.200.
Shah, Pankaj, 5,543,455, Cl. 524-521.000.
Shaklik, Brian; and Saderholm, Davin G., 5,542,692, Cl. 280-728.200.

Mosnot, David M.: *See—*
Schmitt, Karl R.; and Mosnot, David M., 5,544,023, Cl. 362-66.000.

Motoda, Takashi: *See—*
Kadoiwa, Kaoru; Motoda, Takashi; and Kato, Manabu, 5,544,187, Cl. 372-45.000.

Motomura, Yasutaka, to Mitsubishi Denki Kabushiki Kaisha. Processor for data transmitted in accordance with a plurality of transmission methods, which generates output data applicable to the output device. 5,544,335, Cl. 395-311.000.

Motorola: *See—*
Lebby, Michael S.; Kelly, George R.; and Jachimowicz, Karen E., 5,543,958, Cl. 359-254.000.
Urbanski, Steven A., 5,544,250, Cl. 381-94.000.

Motorola, Inc.: *See—*
Ablay, Sewim F., 5,544,159, Cl. 370-31.000.
Carson, Robert T.; Reckleben, Lisa; and Hogrefe, Arnold W., 5,543,583, Cl. 174-257.000.
Christopher, Gary L., 5,543,724, Cl. 324-754.000.
Ganucheau, Charles J., Jr.; Vanden Heuvel, Dean P.; Halley, Craig; Mun, Kyung T.; and Dumstorff, Patrick L., 5,543,781, Cl. 340-825.440.
Juskey, Frank J.; Suppelsa, Anthony B.; and Nounou, Fadia, 5,542,171, Cl. 29-840.000.
Nguyen, Bich-Yen; McNelly, Thomas F.; Tobin, Philip J.; and Hayden, James D., 5,543,635, Cl. 257-66.000.
Roth, Scott S.; and Kirsch, Howard C., 5,543,339, Cl. 437-43.000.
Sigmon, Bernard E., 5,543,762, Cl. 333-128.000.
Stedman, Robert B.; and Matz, John E., 5,543,751, Cl. 330-124.00D.
Vatt, Gregory B.; Baum, David M.; and Goldberg, Steven J., 5,543,785, Cl. 345-825.440.
Villevieille, Jean-Marc; and Tischhauser, Tom, 5,543,802, Cl. 342-357.000.
Wu, Wei E., 5,543,362, Cl. 437-200.000.

Motoyama, Tetsuro, to Ricoh Company, Ltd.; and Ricoh Corporation. Method and apparatus for controlling and communicating with business office devices. 5,544,289, Cl. 395-280.000.

Moulton-Barrett, Rex; and Michener, Robert, to Boston University. Noninvasive method to detect gastric *Helicobacter pylori*. 5,542,419, Cl. 128-630.000.

Moutet, Marc E.: *See—*
Xu, Jinzhu; Yadan, Jean-Claude Y.; Moutet, Marc E.; and Chaudiere, Jean R., 5,543,298, Cl. 435-25.000.

Moxtek, Inc.: *See—*
Turner, D. Clark; Nielsen, Andrew J.; Perkins, Raymond T.; and Madden, Michael, 5,544,218, Cl. 378-208.000.

Moyher, George C., Jr.: *See—*
Hoekstra, Peter; Jackson, Timothy W.; Moyher, George C., Jr.; and Conci, Odero, 5,542,146, Cl. 15-319.000.

Moz, Rudolf, to Robert Bosch GmbH. Method for ventilating a fuel system for an internal combustion. 5,542,396, Cl. 123-520.000.

Mraz, Ronald; and Tsao, Michael M., to International Business Machines Corporation. IP bridge for parallel machines. 5,544,162, Cl. 370-60.000.

Mucaro, Salvatore: *See—*
Casale, Joseph; and Mucaro, Salvatore, 5,542,668, Cl. 463-59.000.

Mudge, Elbert H., to Henkel Corporation. Smoke reduction of fiber lubricants. 5,543,065, Cl. 252-8.840.

Mueller, Brett K.; and Higgins, Larry W., to Aqua Glass Corporation. Multilayer fiber reinforced polymeric shaped article. 5,543,225, Cl. 428-423.100.

Mueller, Hans-Juergen: *See—*
Beuck, Guenter; Mueller, Hans-Juergen; and Schliwa, Ralf, 5,542,626, Cl. 244-107.000.

Mueller, Ronald L.: *See—*
Swanson, Jon R.; Bosch, H. William; Illig, Kathleen J.; Marcera, Donna M.; and Mueller, Ronald L., 5,543,133, Cl. 424-9.450.

Muellers, Brian T.: *See—*
Pall, David B.; Gsell, Thomas C.; and Muellers, Brian T., 5,543,060, Cl. 210-767.000.

Muenzel, Horst: *See—*
Benz, Gerhard; Marek, Jiri; Willmann, Martin; Bantien, Frank; Muenzel, Horst; Laermer, Franz; Offenberg, Michael; and Schilp, Andrea, 5,542,558, Cl. 216-2.000.

Mukai, Takao; and Yoshioka, Nobuyuki, to Mitsubishi Denki Kabushiki Kaisha. Method of ion implantation. 5,543,342, Cl. 437-44.000.

Mulder, Thomas: *See—*
Baade, Wolfgang; Heinrich, Roland; Langstein, Gerhard; Mulder, Thomas; and Puskas, Judit, 5,543,479, Cl. 526-88.000.

Muldner, James S., to Inner Act, Inc. Markless press brake material protector. 5,542,282, Cl. 72-389.300.

Mulks, Martha H.; Thacker, Brad J.; and Cruz, Maria W. T., to Board of Trustees operating Michigan State University. 43 Kd protein vaccine and method for the production thereof. 5,543,304, Cl. 435-69.300.

Mullen, Donald R.: *See—*
Marshall, John D.; and Mullen, Donald R., 5,542,425, Cl. 128-660.010.

Muller, Jean Claude: *See—*
Mallart, Sergio; Lassalle, Gilbert; Purcell, Thomas Andrew; and Muller, Jean Claude, 5,543,526, Cl. 548-110.000.

Müller, Nikolaus: *See—*
Groth, Torsten; Joentgen, Winfried; Linden, Hans W.; Müller, Nikolaus; Rother, Heinz-Joachim; Wagner, Paul; and Kugler, Martin, 5,543,490, Cl. 528-328.000.

Muller, Serge; Grimaud, Michel; and Heidsieck, Robert, to GE Medical Systems. Procedure for automatic position-finding of points of interest during a mammography examination using stereotactic technique. 5,544,219, Cl. 378-210.000.

Mullock, Stephen J., to Kore Technology Limited. Vacuum inlet. 5,543,619, Cl. 250-288.000.

Mumford, Robin B. Method and apparatus for the amelioration for visual stress and dyslexia. 5,543,867, Cl. 351-246.000.

Mumola, Peter B., to Integrated Process Equipment Corp. Apparatus and method for performing high spatial resolution thin film layer thickness metrology. 5,543,919, Cl. 356-382.000.

Mumpower, Kevin N.: *See—*
Monk, David T.; Hatzikazakis, Pantelis; and Mumpower, Kevin N., 5,542,341, Cl. 92-187.000.

Mumura, Toshihiko, to Canon Kabushiki Kaisha. Electronic camera featuring single image processing. 5,543,835, Cl. 348-207.000.

Mun, Kyung T.: *See—*
Ganucheau, Charles J., Jr.; Vanden Heuvel, Dean P.; Halley, Craig; Mun, Kyung T.; and Dumstorff, Patrick L., 5,543,781, Cl. 340-825.440.

Munakata, Megumi: *See—*
Noguchi, Hiromichi; Inamoto, Tadayoshi; and Munakata, Megumi, 5,543,266, Cl. 430-280.100.

Munari, Giorgio: *See—*
Lanfranconi, Antonio; Munari, Giorgio; Zappettini, Adelelmo; and Rizzo, Roberto, 5,542,528, Cl. 206-221.000.

Munchkin, Inc.: *See—*
Petterson, Grace C.; Dunn, Steven B.; and Petterson, Tor, 5,542,922, Cl. 604-77.000.

Muncie Power Products, Inc.: *See—*
Fernandez, Rickey J., 5,542,306, Cl. 74-15.860.

Munday, Mark L.: *See—*
Hemminger, Rodney C.; and Munday, Mark L., 5,544,089, Cl. 364-492.000.

Mundinger, Hans-Juergen: *See—*
Mattern-Klosson, Monika; Mundinger, Hans-Juergen; Haefner, Hans-Ulrich; and Timm, Uwe, 5,542,257, Cl. 62-55.500.

Munoz, Douglas G. Convertible hat and catching glove. 5,542,129, Cl. 2-209.120.

Münster, Peter; Ditrich, Klaus; Hamprecht, Gerhard; Gerber, Matthias; Westphalen, Karl-Otto; Walter, Helmut; and Karl, Rudolf, to BASF Aktiengesellschaft. Cyanoisoxazoles. 5,543,416, Cl. 504-271.000.
Murabe, Kaoru: *See*—
Katayama, Tetsuya; Murabe, Kaoru; Komura, Osamu; Kawai, Chihiro; Yamakawa, Akira; Matsunuma, Kenji; Yasuoka, Norio; Higuchi, Matsuo; and Miyake, Masaya, 5,543,371, Cl. 501-97.000.
Murakami, Eiichi; and Kimura, Shin'ichiro, to Hitachi, Ltd. Method of impurity doping into semiconductor. 5,543,356, Cl. 437-152.000.
Murakami, Hiroshi, to Nikon Corporation. Film feed device with film velocity detector and deceleration and braking control. 5,543,878, Cl. 354-173.100.
Murakami, Kazuo; Fujii, Toshiro; Iwama, Kazuaki; and Obyama, Katsuya, to Kabushiki Kaisha Toyoda Jidoshokki Seisakussho. Wave cam type compressor. 5,542,340, Cl. 92-71.000.
Murakami, Koichi, to Canon Kabushiki Kaisha. Sheet finisher with staple mode select switch. 5,542,655, Cl. 270-58.090.
Murakami, Masato; Takaichi, Hiroshi; Tanaka, Shoji; and Sakai, Naomichi, to International Superconductivity Technology Center. Composite of high-temperature superconductive bulk form with coil magnet. 5,543,768, Cl. 335-216.000.
Murakami, Tokumichi; Kato, Yoshiaki; and Shimada, Toshiaki, to Mitsubishi Denki Kabushiki Kaisha. Method and apparatus for filtering and coding images based on characteristics of an input image signal. 5,543,848, Cl. 348-416.000.
Murakami, Yuuzou: *See*—
Hamai, Shinji; Iketani, Akira; Matsumi, Chiyoko; Juri, Tatsuro; Yamada, Masazumi; Kawakami, Yasunori; and Murakami, Yuuzou, 5,543,937, Cl. 358-341.000.
Muraoka, Masaru; and Izuta, Shingo, to Funai Electric Co., Ltd. Regeneration of photographic data stored in a CD-player. 5,544,145, Cl. 369-125.000.
Muraoka, Tomoki; Abe, Tsutomu; Kobayashi, Kazuhiro; and Hosoda, Kenichi, to NSK Ltd.; and Sanyo Special Steel Co., Ltd. Rail for a linear motion guide bearing. 5,542,991, Cl. 148-330.000.
Murase, Teruo: *See*—
Beilin, Solomon I.; Chou, William T.; Kudzuma, David; Lee, Michael G.; Murase, Teruo; Peters, Michael G.; Roman, James J.; Swamy, Som S.; and Wang, Wen-chou V., 5,544,017, Cl. 361-790.000.
Murata Manufacturing Co., Ltd.: *See*—
Nakashima, Mikio, 5,543,106, Cl. 264-430.000.
Oyama, Yuusei, 5,543,763, Cl. 333-189.000.
Murata, Takayuki: *See*—
Kuronuma, Akira; Akiyama, Yuji; Murata, Takayuki; Fukui, Hiroshi; and Omo, Shinichi, 5,543,826, Cl. 347-23.000.
Murayama, Masatoshi: *See*—
Ozamoto, Daisuke; Murayama, Masatoshi; and Sugitani, Yuji, 5,543,600, Cl. 219-124.340.
Murco, Robert M.: *See*—
Booth, Richard B.; Gaynes, Michael A.; Murco, Robert M.; Puligandla, Viswanadham; Roldan, Judith M.; Saraf, Ravi; and Zalesinski, Jerzy M., 5,543,585, Cl. 174-261.000.
Murcott, Susan E.; and Harleman, Donald R. F., to Massachusetts Institute of Technology. Method of drinking water treatment with natural cationic polymers. 5,543,056, Cl. 210-705.000.
Murphy, Joseph F.: *See*—
Denny, George S.; Lai, Robert S.; Li, Sherry H.; Murphy, Joseph F.; Nguyen, Hoang M.; and Ziebarth, Mark N., 5,544,325, Cl. 395-200.170.
Murray, Andrew M.: *See*—
Hague, Jonathon D.; and Murray, Andrew M., 5,543,074, Cl. 510-122.000.
Musso, Ezio: *See*—
Basile, Giampiero; and Musso, Ezio, 5,543,071, Cl. 252-67.000.
Muto, Mineo: *See*—
Kimura, Akira; Muto, Mineo; Asano, Kanemitsu; Nakano, Susumu; and Nakahama, Koji, 5,542,155, Cl. 24-20.00R.
Mycogen Plant Science, Inc.: *See*—
Slightom, Jerry L.; and Tepfer, David A., 5,543,501, Cl. 530-350.000.
Myers, Robert B.; Bailey, Ralph T.; Burley, David R.; Feeney, Steve; Gray, Barbara J.; and Johnson, Dennis W., to Babcock & Wilcox Company, The. Extended wear life low pressure drop right angle single exit orifice dual-fluid atomizer with replaceable wear materials. 5,542,609, Cl. 239-427.000.
Myers, Robert M.; and Landrau, Felix A., to Alza Corporation. Iontophoretic delivery device and method of making same. 5,543,098, Cl. 264-104.000.
N.V. Bekaert S.A.: *See*—
Allegaert, Marnix; and Wostyn, Steven, 5,542,649, Cl. 256-54.000.
Nabco Ltd.: *See*—
Matsuoka, Toshiyuki, 5,544,057, Cl. 364-426.050.
Nadas, Arthur J.: *See*—
Bakis, Raimo; Gopalakrishnan, Ponani S.; Kanevsky, Dimitri; Nadas, Arthur J.; Nahamoo, David; Picheny, Michael A.; and Sedivy, Jan, 5,544,277, Cl. 395-2.200.
Nagai, Yasuo: *See*—
Takagaki, Takanari; and Nagai, Yasuo, 5,543,007, Cl. 156-189.000.
Nagaishi, Tatsuoki; and Itozaki, Hideo, to Sumitomo Electric Industries, Ltd. Laser system for laser ablation process and laser ablation process for preparing thin film of oxide superconductor material thereby. 5,544,182, Cl. 372-29.000.
Nagamune, Yasushi: *See*—
Kita, Katsuo; Nagamune, Yasushi; and Nakadegawa, Yasuyuki, 5,542,809, Cl. 414-528.000.
Nagano, Haruki: *See*—
Okazaki, Hajime; Kazato, Manabu; Ouchi, Masaoki; Nagano, Haruki; Ushio, Masaru; and Kamiya, Kozo, 5,543,041, Cl. 210-181.000.
Nagano, Mamoru: *See*—
Haikawa, Katsumasa; Mochida, Takaaki; Nagano, Mamoru; and Nakajima, Tsuyoshi, 5,544,211, Cl. 376-435.000.
Nagasamy, Vijay: *See*—
Rostoker, Michael D.; Dangelo, Carlos; Nagasamy, Vijay; and Mintz, Doron, 5,544,066, Cl. 364-489.000.
Nagataki, Yasunobu; Tsuyama, Seishi; Hosoya, Yoshihiro; Okita, Tomoyoshi; Kanetoh, Shuzi; and Takada, Yasuyuki, to NKK Corporation. Method for manufacturing an ultra-high strength cold-rolled steel sheet with desirable delayed fracture resistance. 5,542,996, Cl. 148-652.000.
Nagatani, Kentaro: *See*—
Kato, Tomokazu; Araki, Kazuhiro; Takano, Yoshiaki; Maruta, Syuzi; Nomura, Keiichi; Nagatani, Kentaro; Noda, Takashi; and Kishimoto, Hiroyuki, 5,543,907, Cl. 355-313.000.
Nagatsuma, Tadao: *See*—
Shinagawa, Mitsuru; and Nagatsuma, Tadao, 5,543,723, Cl. 324-752.000.
Nagaya, Yoshiaki: *See*—
Kanaya, Motonori; Noguchi, Kenichi; Nagaya, Yoshiaki; and Itoh, Hisashi, 5,543,612, Cl. 250-208.100.
Nagayoshi, Atsushi; and Kono, Kazunori, to Matsushita Electric Industrial Co., Ltd. Earphone assembly. 5,544,253, Cl. 381-187.000.
Nagel, Christopher J.; and Bach, Robert D., to Molten Metal Technology, Inc. Method for producing unsaturated organics from organic-containing feeds. 5,543,558, Cl. 560-214.000.
Nagel, Thomas O., to Trion Industries, Inc. Merchandise retention device for retrofit installation on display hooks. 5,542,633, Cl. 248-214.000.
Nahamoo, David: *See*—
Bakis, Raimo; Gopalakrishnan, Ponani S.; Kanevsky, Dimitri; Nadas, Arthur J.; Nahamoo, David; Picheny, Michael A.; and Sedivy, Jan, 5,544,277, Cl. 395-2.200.
Bellegarda, Eveline J.; Bellegarda, Jerome R.; Nahamoo, David; and Nathan, Krishna S., 5,544,257, Cl. 382-187.000.
Bellegarda, Jerome R.; Nahamoo, David; and Nathan, Krishna S., 5,544,261, Cl. 382-187.000.
Bellegarda, Jerome R.; Nahamoo, David; and Nathan, Krishna S., 5,544,264, Cl. 382-188.000.
Naitoh, Atsuhisa: *See*—
Horikoshi, Seita; Kurihara, Mikio; Naitoh, Atsuhisa; and Yoshihara, Kazuhide, 5,544,005, Cl. 361-680.000.
Nakadegawa, Yasuyuki: *See*—
Kita, Katsuo; Nagamune, Yasushi; and Nakadegawa, Yasuyuki, 5,542,809, Cl. 414-528.000.
Nakagawa, Hiromasa; Yamada, Akira; and Hata, Masayuki, to Mitsubishi Denki Kabushiki Kaisha. Data access apparatus for preventing further cache access in case of an error during block data transfer. 5,544,341, Cl. 395-445.000.
Nakagawa, Kaori: *See*—
Terajima, Hisao; Koizumi, Shigeru; Nakayama, Toru; Takeda, Tomoyuki; Uno, Hiromichi; Nakagawa, Kaori; Shimizu, Hideki; and Morita, Mitsuo, 5,544,234, Cl. 379-100.000.
Nakagawa, Kazuhiko: *See*—
Kitaike, Yukio; Hatakeyama, Hiroki; Tayama, Suehiro; and Nakagawa, Kazuhiko, 5,543,463, Cl. 525-79.000.
Nakagawa, Wataru; Sakaue, Satoru; and Tsuruoka, Michihiko, to Fuji Electric Co., Ltd. Torsional vibrators and light deflectors using the torsional vibrator. 5,543,956, Cl. 359-225.000.
Nakago, Manabu, to NEC Corporation. Protective circuit for protecting transistor from thermal destruction. 5,543,996, Cl. 361-90.000.
Nakahama, Koji: *See*—
Kimura, Akira; Muto, Mineo; Asano, Kanemitsu; Nakano, Susumu; and Nakahama, Koji, 5,542,155, Cl. 24-20.00R.
Nakahama, Teturo: *See*—
Takahashi, Kiyobumi; and Nakahama, Teturo, 5,543,566, Cl. 562-571.000.
Nakahashi, Junichi; and Natori, Itaru, to Asahi Kasei Kogyo Kabushiki Kaisha. Flame-resistant polyamide resin compositions and flame retardants therefor. 5,543,452, Cl. 524-430.000.
Nakai, Akiya: *See*—
Uzawa, Shigeyuki; Nakai, Akiya; Imaizumi, Masaaki; Tanaka, Hiroshi; Takakura, Noburu; and Kaneko, Yoshio, 5,543,921, Cl. 356-401.000.
Nakai, Satoru; Kaneta, Mayumi; Kikumoto, Yoshikazu; Hong, Yeong-Man; Kawai, Kazuyoshi; Takegata, Setsuko; Ishii, Kiyoshi; Yanagihara, Yasuo; and Hirai, Yoshikatsu, to Otsuka Pharmaceutical Co., Ltd. Method and use of IL-1α. 5,543,140, Cl. 424-85.200.
Nakai, Satoru; Aihara, Koutoku; Mori, Hitomi; Tominaga, Michiaki; Adachi, Masakazu; Ichikawa, Hiroyuki; Akamatsu, Seiji; and Saito, Fumio, to Otsuka Pharmaceutical Co., Ltd. Hepatitis treatment with carbostyril compounds. 5,543,412, Cl. 514-255.000.
Nakajima, Masahiro; and Odagaki, Hideo, to Sumitomo Electric Industries, Ltd. Navigation system. 5,544,087, Cl. 364-443.000.
Nakajima, Nobuya: *See*—
Ara, Katsuyuki; Nakajima, Nobuya; and Ebine, Noriya, 5,544,207, Cl. 376-249.000.
Nakajima, Takeaki: *See*—
Kamei, Takahiro; Hinosawa, Shinji; Takahashi, Tokuji; Terada, Yoshiji; Nakajima, Takeaki; and Sakata, Yoshiyasu, 5,542,707, Cl. 280-834.000.

Nakajima, Tsuyoshi: *See*—
Haikawa, Katsumasa; Mochida, Takaaki; Nagano, Mamoru; and Nakajima, Tsuyoshi, 5,544,211, Cl. 376-435.000.
Nakajima, Yoshinobu: *See*—
Kumeji, Yasushi; Nishimura, Seiichi; Nakajima, Yoshinobu; and Itou, Makoto, 5,543,755, Cl. 333-185.000.
Nakako, Mamiko: *See*—
Hanazato, Yoshio; Nakako, Mamiko; Shiono, Satoru; and Inatomi, Kenichi, 5,543,024, Cl. 204-403.000.
Nakakura, Yasushi; Tanaka, Hideki; Sano, Akira; Mogi, Akio; Miyamoto, Matsuhiro; and Suzuki, Kazunari, to Tokuyama Corporation; and Fujikura, Ltd. Resin compositions, production process thereof, and products using the resin compositions. 5,543,189, Cl. 428-36.800.
Nakamichi Corporation: *See*—
Nakamichi, Niro, 5,544,148, Cl. 369-192.000.
Nakamichi, Niro, to Nakamichi Corporation. Compact configuration disk player. 5,544,148, Cl. 369-192.000.
Nakamori, Masaharu: *See*—
Shiramizu, Yoshimi; Nakamori, Masaharu; Aoki, Hidemitsu; Seo, Hirofumi; and Hamano, Haruto, 5,543,030, Cl. 205-464.000.
Nakamoto, Takayuki, to Iwata Denko Co., Ltd. Device for attaching/detaching shaft snap ring and hole snap ring. 5,542,167, Cl. 29-229.000.
Nakamura, Hitoshi; Hanatani, Shoichi; Tanaka, Shigehisa; Ohtoshi, Tsukuru; Ishida, Koji; and Matsuoka, Yasunobu, to Hitachi, Ltd. Superlattice avalanche photodiode (APD). 5,543,629, Cl. 257-21.000.
Nakamura, Iwao: *See*—
Aoki, Yasushi; Fujiya, Ryosuke; and Nakamura, Iwao, 5,542,754, Cl. 303-3.000.
Nakamura, Joji: *See*—
Suzuki, Fumio; Shimada, Junichi; Ishii, Akio; Nakamura, Joji; Ichikawa, Shunji; Kitamura, Shigeto; and Koike, Nobuaki, 5,543,415, Cl. 514-263.000.
Nakamura, Katsutoshi: *See*—
Hanyu, Yukio; Tsuboyama, Akira; Taniguchi, Osamu; Mihara, Tadashi; Nakamura, Katsutoshi; and Mori, Sunao, 5,543,943, Cl. 359-43.000.
Nakamura, Michiei: *See*—
Fukutomi, Takashi; Takizawa, Minoru; and Nakamura, Michiei, 5,543,045, Cl. 210-490.000.
Nakamura, Morihiko: *See*—
Hashimoto, Kenki; Nobuki, Minoru; Nakamura, Morihiko; and Doi, Haruo, 5,542,992, Cl. 148-421.000.
Nakamura, Nobuyuki; Minamimura, Masaaki; Shiozawa, Fumio; and Yamagiwa, Yoshitoshi, to Nissei Plastic Industrial Co., Ltd. Injection molding method and apparatus. 5,543,093, Cl. 264-40.500.
Nakamura, Takao: *See*—
Findikoglu, Alp T.; and Nakamura, Takao, 5,543,386, Cl. 505-210.000.
Nakamura, Tsuyoshi: *See*—
Uezono, Kouichi; Hara, Yasuhiro; and Nakamura, Tsuyoshi, 5,543,705, Cl. 323-369.000.
Nakamura, Yasuhiro: *See*—
Matsuo, Akinori; Watanabe, Masashi; Wada, Masashi; Wada, Takeshi; and Nakamura, Yasuhiro, 5,544,098, Cl. 365-189.070.
Nakamura, Yoshikatsu; Kawamura, Osamu; Takahashi, Teruo; and Yamamoto, Shinichi, to Nippon Piston Ring Co., Ltd. Camshaft. 5,542,990, Cl. 148-319.000.
Nakamura, Yoshiyuki: *See*—
Aotsuka, Tomoji; Nishio, Toshiyuki; Hosono, Hiroshi; Nakamura, Yoshiyuki; Matsui, Tetsuo; and Ishikawa, Hiromichi, 5,543,420, Cl. 514-312.000.
Nakanishi, Hidetoshi; Usui, Yasunori; and Yakushiji, Shigenori, to Kabushiki Kaisha Toshiba. MOS gate controlled thyristor. 5,543,639, Cl. 257-133.000.
Nakanishi, Masatoshi: *See*—
Yasuda, Tomokazu; Karino, Yukio; and Nakanishi, Masatoshi, 5,543,288, Cl. 430-631.000.
Nakanishi, Teruo; Ando, Yohei; and Sakakibara, Kiyokatsu, to Mitsubishi Jukogyo Kabushiki Kaisha. Agitator powered by electric motor having a spherical rotor. 5,542,762, Cl. 366-228.000.
Nakano, Masaki; and Oshidari, Toshikazu, to Nissan Motor Co., Ltd. Toroidal stepless transmission. 5,542,890, Cl. 476-10.000.
Nakano, Susumu: *See*—
Kimura, Akira; Muto, Mineo; Asano, Kanemitsu; Nakano, Susumu; and Nakahama, Koji, 5,542,155, Cl. 24-20.00R.
Nakano, Toshihiko; Amano, Tadashi; and Okuno, Yoshitaka, to Shin-Etsu Chemical Co., Ltd. Method for forming a scale preventive coating film on inner wall surfaces of a polymerization vessel. 5,543,175, Cl. 427-236.000.
Nakano, Yukio: *See*—
Mizukami, Masao; Sato, Yoichi; Shinagawa, Satoshi; and Nakano, Yukio, 5,544,122, Cl. 365-230.050.
Nakashima, Mikio, to Murata Manufacturing Co., Ltd. Method of polarizing piezoelectric ceramic substrate. 5,543,106, Cl. 264-430.000.
Nakashima, Shigeo: *See*—
Kobayashi, Tsuyoshi; Sakon, Ichiro; Nakashima, Shigeo; Numa, Sachiko; and Inao, Yoshikazu, 5,543,444, Cl. 523-205.000.
Nakashima, Takashi; and Kodera, Masanobu, to KYC, Inc. Burner apparatus for use in a glass furnace. 5,542,841, Cl. 431-160.000.
Nakashima, Yasuhiro, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. System and method for the control of shifting of vehicle automatic transmission. 5,544,053, Cl. 364-424.100.
Nakata, Hiroki; Sato, Mitsuhiko; and Aoshima, Masashi, to Sumitomo Chemical Company, Limited. Vulcanized rubber for heat resistant vibration-isolator. 5,543,470, Cl. 525-331.700.
Nakata, Kazuhiko: *See*—
Hiratani, Haruyuki; Nakata, Kazuhiko; Ichinohe, Shoji; Yamazaki, Toshio; and Kato, Hideto, 5,543,442, Cl. 523-107.000.
Nakata, Steven T.: *See*—
Aspesi, Marc S.; and Nakata, Steven T., 5,543,779, Cl. 340-539.000.
Nakayama, Takao: *See*—
Dan, Shigeyuki; Nakayama, Takao; Nishizawa, Hiroshi; and Sera, Hidefumi, 5,543,258, Cl. 430-87.000.
Nakayama, Takayoshi: *See*—
Iwata, Yoichi; Ave, Yoshiharu; and Nakayama, Takayoshi, 5,542,248, Cl. 60-276.000.
Nakayama, Takeshi; Terada, Yasushi; Kobayashi, Kazuo; Hayashikoshi, Masanori; and Miyawaki, Yoshikazu, to Mitsubishi Denki Kabushiki Kaisha. Non-volatile semiconductor memory device with improved collective erasing operation. 5,544,117, Cl. 365-185.220.
Nakayama, Toru: *See*—
Terajima, Hisao; Koizumi, Shigeru; Nakayama, Toru; Takeda, Tomoyuki; Uno, Hiromichi; Nakagawa, Kaori; Shimizu, Hideki; and Morita, Mitsuo, 5,544,234, Cl. 379-100.000.
Nakayama, Toshimasa: *See*—
Tanaka, Hatsuyuki; Sato, Mitsuru; Nakayama, Toshimasa; and Komano, Hiroshi, 5,543,268, Cl. 430-331.000.
Nakazawa, Shinsuke: *See*—
Takahata, Toshio; Nakazawa, Shinsuke; Iochi, Atsushi; Kuriki, Hiroshi; and Gotoh, Kenichi, 5,542,397, Cl. 123-520.000.
Nalco Fuel Tech: *See*—
Hofmann, John E.; Von Harpe, Thure; Diep, Daniel V.; and Lin, M. Linda, 5,543,123, Cl. 423-235.000.
Nalco/Exxon Energy Chemicals, L.P: *See*—
Mokadam, Anita R.; Strubelt, Charles E.; Williams, Dennis A.; and Webber, Kenneth M., 5,543,387, Cl. 507-135.000.
Nall, Al, Jr.: *See*—
Campbell, Raymond J.; Nall, Al, Jr.; and Oates, R. Terry, 5,542,448, Cl. 137-410.000.
Nally, Robert M.: *See*—
Xu, Frank; and Nally, Robert M., 5,543,842, Cl. 348-387.000.
Nanba, Hideyuki: *See*—
Fujita, Nobuo; Nanba, Hideyuki; Kawashima, Masato; Komuro, Akihiro; Fujishima, Susumu; and Matsui, Toshihiro, 5,543,903, Cl. 355-283.000.
Nance, Douglass: *See*—
McNeill, Robert C.; and Nance, Douglass, 5,542,342, Cl. 99-280.000.
Nanjo, Tsuguo, to Nidek Co., Ltd. Fundus camera with partially common coaxial observation and photographing optical systems. 5,543,865, Cl. 351-206.000.
NanoSystems L.L.C.: *See*—
Swanson, Jon R.; Bosch, H. William; Illig, Kathleen J.; Marcera, Donna M.; and Mueller, Ronald L., 5,543,133, Cl. 424-9.450.
Narikawa, Teruo: *See*—
Oda, Katsunari; Kamisaki, Akiyoshi; Kubota, Norimasa; and Narikawa, Teruo, 5,543,905, Cl. 355-285.000.
Narita, Hitoshi: *See*—
Hieda, Teruo; Suzuki, Masao; and Narita, Hitoshi, 5,543,836, Cl. 348-223.000.
Narita, Takumi: *See*—
Miyazaki, Takeshi; Narita, Takumi; and Miyazaki, Hidekazu, 5,542,713, Cl. 285-158.000.
Narula, Chaitanya K.; Kim, Byung R.; and Salmeen, Irving T., to Ford Motor Company. Pyrolytic conversion of paint sludge to useful materials. 5,543,367, Cl. 501-87.000.
Naruse, Masayoshi: *See*—
Ohura, Harutoshi; Yasaki, Akihiko; Kishimoto, Shinichi; and Naruse, Masayoshi, 5,543,554, Cl. 560-41.000.
Nastasi, Richard F.: *See*—
Burhans, Walter R., Jr.; Kirchbaum, Nathan; and Nastasi, Richard F., 5,542,625, Cl. 244-45.00R.
Nathan, Krishna S.: *See*—
Bellegarda, Eveline J.; Bellegarda, Jerome R.; Nahamoo, David; and Nathan, Krishna S., 5,544,257, Cl. 382-187.000.
Bellegarda, Jerome R.; Nahamoo, David; and Nathan, Krishna S., 5,544,261, Cl. 382-187.000.
Bellegarda, Jerome R.; Nahamoo, David; and Nathan, Krishna S., 5,544,264, Cl. 382-188.000.
National Machinery Company, The: *See*—
Smith, Gregory A.; Foltz, Dale E.; Wisebaker, Robert E.; and Loy, Robert E., 5,542,275, Cl. 72-90.000.
National Molding Corp.: *See*—
Anscher, Joseph, 5,542,161, Cl. 24-614.000.
National Research Institute For Metals: *See*—
Hashimoto, Kenki; Nobuki, Minoru; Nakamura, Morihiko; and Doi, Haruo, 5,542,992, Cl. 148-421.000.
National Seating Company: *See*—
Smith, Rodney F., 5,542,638, Cl. 248-421.000.
National Semiconductor Corporation: *See*—
Abt, Norman E.; Moazzami, Reza; and Nissan-Cohen, Yoav, 5,543,644, Cl. 257-295.000.
Edem, Brian C.; and Worsley, Debra J., 5,544,324, Cl. 395-200.170.
Grubisich, Michael J., 5,543,653, Cl. 257-593.000.

Kuo, James R., 5,543,746, Cl. 327-543.000.
Onodera, Keith K., 5,543,754, Cl. 331-25.000.
Sutherland, James; Garverick, Timothy L.; Takiar, Hem P.; and Reyling, George F., Jr., 5,543,640, Cl. 257-202.000.

National Tank Company: *See*—
Yamaguchi, Manabu; and Kanno, Masaaki, 5,543,027, Cl. 204-660.000.

Natori, Itaru: *See*—
Nakahashi, Junichi; and Natori, Itaru, 5,543,452, Cl. 524-430.000.

Natsuume, Tadao: *See*—
Takahashi, Nobukazu; Hani, Tsutomu; Kohara, Teiji; and Natsuume, Tadao, 5,543,948, Cl. 359-73.000.

Natural Industries, Inc.: *See*—
Kowalski, William M., 5,543,142, Cl. 424-93.400.

Natural Pac Company: *See*—
Archer, Virgil L., 5,542,616, Cl. 241-62.000.

Navistar International Transportation Corp.: *See*—
Dombek, Bruce B.; and Boone, Theodore F., 5,542,827, Cl. 417-486.000.

Naylor, Matthew A.: *See*—
Beylin, Vladimir G.; Sercel, Anthony D.; Showalter, Howard D. H.; Adams, Gerald E.; Fielden, Edward M.; Naylor, Matthew A.; and Stratford, Ian J., 5,543,527, Cl. 548-110.000.

Nazarenko, Vassil G.: *See*—
Lavrentovich, Oleg D.; and Nazarenko, Vassil G., 5,543,950, Cl. 359-77.000.

NCR Corporation: *See*—
Gibson, David E., 5,542,595, Cl. 228-207.000.
Nekomoto, Yoshihiko, 5,544,041, Cl. 364-401.00R.

NEC Corporation: *See*—
Ando, Yuji, 5,543,748, Cl. 327-570.000.
Chikaki, Shinichi, 5,542,874, Cl. 451-158.000.
Fukumoto, Naoko, 5,544,084, Cl. 364-760.000.
Hara, Hideki, 5,544,099, Cl. 365-185.190.
Horiuchi, Tadahiko, 5,543,359, Cl. 437-195.000.
Kawano, Hideo; Shiotani, Keiji; Mikami, Masao; Suzuki, Tatsuya; and Shishiguchi, Seiichi, 5,543,347, Cl. 437-60.000.
Koike, Hiroki, 5,544,106, Cl. 365-200.000.
Koui, Tomoaki; and Takano, Shinji, 5,543,957, Cl. 359-245.000.
Maemura, Kouji, 5,544,307, Cl. 395-180.000.
Nakago, Manabu, 5,543,996, Cl. 361-90.000.
Ogura, Naoyuki, 5,544,244, Cl. 380-4.000.
Okumura, Koichiro, 5,543,744, Cl. 327-333.000.
Ookubo, Mitsuyoshi, 5,543,355, Cl. 437-129.000.
Shiramizu, Yoshimi; Nakamori, Masaharu; Aoki, Hidemitsu; Seo, Hirofumi; and Hamano, Haruto, 5,543,030, Cl. 205-464.000.
Takano, Hajime, 5,543,930, Cl. 358-335.000.
Tomihari, Yoshinori, 5,543,680, Cl. 313-336.000.
Yamada, Yoshiaki; Ito, Nobukazu; Miyakawa, Kuniko; and Yamanaka, Michiko, 5,543,357, Cl. 437-192.000.
Yukawa, Akira, 5,544,081, Cl. 364-602.000.

NEC Corportion: *See*—
Kawasaki, Satoshi, 5,544,141, Cl. 369-060.000.

Ned, Alexander A.: *See*—
Kurtz, Anthony D.; and Ned, Alexander A., 5,543,349, Cl. 437-60.000.

Neigard, Jens; Skovgaard, Ole; and Soerensen, Kent, to Carlo Gavazzi AG. Electrical circuit arrangement having at least two local transmitting units for receiving and coding local measuring signals and for transmitting the coded measuring signals to a central unit. 5,544,166, Cl. 370-13.000.

Nekomoto, Yoshihiko, to NCR Corporation. Time-dependent data control system. 5,544,041, Cl. 364-401.00R.

Nelgro Mfg. Corp.: *See*—
Gongwer, Todd, 5,542,345, Cl. 99-345.000.

Nelson, Kirk A.: *See*—
Morton, Bernard W.; Nelson, Kirk A.; and Balmer, Ricky D., 5,543,090, Cl. 261-118.000.

Nemic-Lambda Kabushiki Kaisha: *See*—
Mimura, Hiroshi, 5,544,032, Cl. 363-16.000.

Nestec S.A.: *See*—
Colarow, Ladislas; Dalan, Ernesto; and Kusy, Andrej, 5,543,169, Cl. 426-662.000.

Nestor, John J.; Womble, Scott W.; and Maag, Hans, to Syntex (USA) Inc. Achiral amino acid acyl esters of ganciclovir and its derivatives. 5,543,414, Cl. 514-262.000.

Nettelbladt, Hans; and Widman, Michael, to Asea Brown Boveri AB. Semiconductor light emitting device. 5,543,638, Cl. 257-98.000.

Netto, Eduardo D. C., to ELC Produtos de Seguranca Industria e Comercio Ltda. Sealing system, security seal and injection moulding system for manufacturing a sealing system. 5,542,724, Cl. 292-317.000.

Neu, Jozsef: *See*—
Moreno, Fulgencio Powell; Litkei, Laszlo; Galamb, Vilmos; Gulyas, Imre; Repasi, Janos; Veres, Agota Repasine; Vigh, Jozsef; Koczka, Istvanne; Fehervari, Edit; Roka, Laszlone; Pethe, Laszlone; and Neu, Jozsef, 5,543,562, Cl. 562-17.000.

Neubauer, Hans-Rene: *See*—
Stretz, Manfred; Holzheimer, Günter; and Neubauer, Hans-Rene, 5,542,822, Cl. 417-68.000.

Neuffer, A. Erich. Dual-peak torque measuring apparatus. 5,542,303, Cl. 73-862.230.

Neumann, Walter: *See*—
Fuchsreiter, Johannes; Schmidt, Konrad; Kasseckert, Rudolf; and Neumann, Walter, 5,544,314, Cl. 395-200.000.

New England Biolabs, Inc.: *See*—
Morgan, Richard D., 5,543,308, Cl. 435-172.300.

New Focus, Inc.: *See*—
Luecke, Francis S., 5,543,670, Cl. 310-26.000.

New Holland North America, Inc.: *See*—
Ashcroft, Dale A.; and Todd, Robert R., 5,542,814, Cl. 414-786.000.

New Oji Paper Co., Ltd.: *See*—
Watanabe, Kazuo; Okuda, Masatoshi; Aoyama, Shigeo; and Tanaka, Yoshimasa, 5,543,382, Cl. 503-224.000.

Newallis, Peter E.: *See*—
Prasad, Vidyanatha A.; Newallis, Peter E.; and Foote, Emerson L., Jr., 5,543,543, Cl. 558-96.000.

Newarski, Emil J., to En-Ovation Technology, Inc. Internal combustion engine crankcase vacuum method and apparatus. 5,542,401, Cl. 123-572.000.

Newell Operating Company: *See*—
Elsenheimer, John A.; Bried, David K.; Sands, Jeffrey L.; Wildes, Donald; and Nugent, J. Patrick, 5,542,462, Cl. 160-178.000.

Newkirk, David D.: *See*—
Austin, Jared A.; and Newkirk, David D., 5,543,206, Cl. 428-198.000.

Newman, Jeremy M.: *See*—
Smithies, Christopher P. K.; and Newman, Jeremy M., 5,544,255, Cl. 382-119.000.

Newtronics Pty, Ltd.: *See*—
Hoekstra, Peter; Jackson, Timothy W.; Moyher, George C., Jr.; and Conci, Odero, 5,542,146, Cl. 15-319.000.

NeXstar Pharmaceuticals, Inc.: *See*—
Gold, Larry; and Tasset, Diane, 5,543,293, Cl. 435-6.000.

Nezuka, Shoji: *See*—
Yamada, Ichiho; Miyagi, Tomoyoshi; Nezuka, Shoji; Ichihashi, Satoru; and Isozaki, Hiroshi, 5,542,899, Cl. 483-32.000.

Ng, Yee K.: *See*—
Mankovitz, Roy J.; Ng, Yee K.; and Kwoh, Daniel S., 5,543,929, Cl. 358-335.000.

NGK Insulators, Ltd.: *See*—
Hanzawa, Shigeru; and Komiyama, Tsuneo, 5,542,194, Cl. 34-266.000.
Tsuchimoto, Tomonori; Iwata, Katsuichi; and Kurashima, Yoshihiko, 5,543,242, Cl. 429-049.000.
Tsuno, Nobuo; and Fujii, Tomoyuki, 5,543,130, Cl. 428-623.000.

NGK Spark Plug Co., Ltd.: *See*—
Miyata, Shigeru; Yamada, Yoshitaka; Yoshida, Hideji; Matsubara, Yoshihiro; and Ito, Yasuo, 5,543,716, Cl. 324-402.000.

Nguyen, Bich-Yen; McNelly, Thomas F.; Tobin, Philip J.; and Hayden, James D., to Motorola, Inc. Thin film transistor and method of formation. 5,543,635, Cl. 257-66.000.

Nguyen, Frank T., to Taligent, Inc. Object-oriented framework for creating and using container objects with built-in properties. 5,544,302, Cl. 395-161.000.

Nguyen, Hoang; and Harper, Bruce M., to HMT Technology Corporation. Disc-handling apparatus. 5,543,022, Cl. 204-298.150.

Nguyen, Hoang M.: *See*—
Denny, George S.; Lai, Robert S.; Li, Sherry H.; Murphy, Joseph F.; Nguyen, Hoang M.; and Ziebarth, Mark N., 5,544,325, Cl. 395-200.170.

Nguyen, Kha D.: *See*—
Chang, Luke L.; Cazzolla, John J.; and Nguyen, Kha D., 5,544,309, Cl. 395-183.060.

Nguyen, Thanh: *See*—
Kidon, William E.; Hilston, Michael D.; and Nguyen, Thanh, 5,543,231, Cl. 428-447.000.

Nice-Pak Products, Inc.: *See*—
Julius, Robert P., 5,542,567, Cl. 221-63.000.
Julius, Robert P., 5,542,568, Cl. 221-63.000.

Nichols, Colin J.: *See*—
Evans, Michael A.; Nichols, Colin J.; Kemp, Laura; Dubrul, William R.; and Behl, Robert S., 5,542,928, Cl. 604-113.000.

Nicholson, James E. Method and apparatus for selectively scanning for or aiming a signal. 5,543,954, Cl. 359-201.000.

Nick, Jeffrey M.: *See*—
Carpenter, Kelly S.; Dearing, Gerard M.; Nick, Jeffrey M.; Strickland, Jimmy P.; Swanson, Michael D.; and Wilkinson, Wendell W., 5,544,345, Cl. 395-477.000.

Nickolls, Peter: *See*—
Farrugia, Steven; Yee, Hansen; and Nickolls, Peter, 5,542,430, Cl. 128-705.000.

Nicopolis, Dean L.: *See*—
Richardson, John A.; and Nicopolis, Dean L., 5,542,515, Cl. 192-44.000.

Nidek Co., Ltd.: *See*—
Nanjo, Tsuguo, 5,543,865, Cl. 351-206.000.

Nied, Roland. Process for impact crushing of solid particles. 5,542,613, Cl. 241-5.000.

Niekraszewicz, Antoni: *See*—
Perego, Gabriele; Bastioli, Catia; Grzebieniak, Karolina; and Niekraszewicz, Antoni, 5,543,494, Cl. 528-354.000.

Nield, Eric; and Palasz, Peter D., to Imperial Chemical Industries PLC. Aqueous coating composition. 5,543,445, Cl. 523-406.000.

Nielsen, Andrew J.: *See*—
Turner, D. Clark; Nielsen, Andrew J.; Perkins, Raymond T.; and Madden, Michael, 5,544,218, Cl. 378-208.000.

Nielsen, Charles R.: *See*—

Bajorek, Christopher H.; Glaser, Thomas W.; Klaassen, Klaas B.; Nielsen, Charles R.; Santana, George R.; Smith, Gordon J.; Thompson, David A.; and Workman, Michael L., 5,544,138, Cl. 369-54.000.

Nielsen, Ove; and Frandsen, Jesper, to Enkotec A/S. Method and an apparatus for ejecting an elongate blank from a die. 5,542,276, Cl. 72-344.000.

Nihon Nohyaku Co., Ltd.: *See*—
Takagi, Kazuhiro; Ohtani, Takashi; Nishida, Tateki; Hamaguchi, Hiroshi; Nishimatsu, Tetsuyoshi; and Kanaoka, Atsushi, 5,543,573, Cl. 514-590.000.

Niikura, Junji: *See*—
Fujii, Noboru; Kawabata, Kenji; Hashi, Masaaki; Niikura, Junji; and Ouya, Tomotoshi, 5,542,239, Cl. 53-477.000.

Nikon Corporation: *See*—
Akami, Noboru, 5,544,015, Cl. 361-749.000.
Goto, Tetsuro; and Wakabayshi, Tsutomu, 5,543,872, Cl. 354-106.000.
Machida, Kiyosada; Imura, Yoshio; and Takeuchi, Yoshihiro, 5,543,875, Cl. 354-149.100.
Matsubara, Takashi; Hasuda, Masanori; and Kanamuro, Masayuki, 5,543,880, Cl. 354-252.000.
Murakami, Hiroshi, 5,543,878, Cl. 354-173.100.
Sosa, Toshio; Fukuhara, Toru; Dobashi, Toshio; Hara, Masaharu; and Yokonuma, Norikazu, 5,543,888, Cl. 354-415.000.
Takagi, Tadao, 5,543,879, Cl. 354-202.000.
Toyoda, Kenji; and Minagawa, Kazushi, 5,543,833, Cl. 348-110.000.
Yamano, Shozo; and Ogawa, Hidehiro, 5,543,885, Cl. 354-400.000.

Nilz, Claudia: *See*—
Hartmann, Heinrich; Denzinger, Walter; Kroener, Michael; Nilz, Claudia; Linhart, Friedrich; and Stange, Andreas, 5,543,459, Cl. 525-54.300.

Ningbo Dongfang Music Movements General Factory: *See*—
Zhu, Yunde; and Bai, Guohui, 5,543,577, Cl. 84-95.200.

Ningbo Institute of Microcirculation and Henbane: *See*—
Guodong, Yang, 5,543,407, Cl. 514-226.200.

Nippon Light Metal Company, Limited: *See*—
Kita, Katsuo; Nagamune, Yasushi; and Nakadegawa, Yasuyuki, 5,542,809, Cl. 414-528.000.

Nippon Mektron, Limited: *See*—
Yamamoto, Yuichi; and Tatsu, Haruyoshi, 5,543,468, Cl. 525-245.000.

Nippon Mining & Metals Co., Ltd.: *See*—
Okamoto, Hidenori; and Takebayashi, Kazuaki, 5,543,031, Cl. 205-564.000.

Nippon Oil Co., Ltd.: *See*—
Ishida, Noboru; Ishimaru, Mitsuaki; and Kagaya, Mineo, 5,543,081, Cl. 508-194.000.
Okazaki, Hajime; Kazato, Manabu; Ouchi, Masaoki; Nagano, Haruki; Ushio, Masaru; and Kamiya, Kozo, 5,543,041, Cl. 210-181.000.

Nippon Petrochemicals Company, Limited: *See*—
Niwa, Masahiro; Sugano, Yuji; Uenishi, Ken-ichi; Kitada, Hideto; Yamaguchi, Yoshihisa; Kobayashi, Eiko; Kubo, Kunimichi; and Sano, Akira, 5,543,478, Cl. 526-82.000.

Nippon Petroleum Refining Company, Ltd.: *See*—
Okazaki, Hajime; Kazato, Manabu; Ouchi, Masaoki; Nagano, Haruki; Ushio, Masaru; and Kamiya, Kozo, 5,543,041, Cl. 210-181.000.

Nippon Piston Ring Co., Ltd.: *See*—
Nakamura, Yoshikatsu; Kawamura, Osamu; Takahashi, Teruo; and Yamamoto, Shinichi, 5,542,990, Cl. 148-319.000.

Nippon Shokubai Co., Ltd.: *See*—
Iriguchi, Jiro; Kuwamoto, Tomoyuki; Chosa, Junichi; and Matsuda, Tatsuhito, 5,543,456, Cl. 524-542.000.
Tsuneki, Hideaki; Onda, Yoshiyuki; Moriya, Atusi; and Yoshida, Hiroshi, 5,543,546, Cl. 558-270.000.

Nippon Soken, Inc.: *See*—
Inagaki, Mitsuo; Matsuda, Mikio; Ogawa, Hiroshi; Hisanaga, Shigeru; and Oki, Yasuhiro, 5,542,829, Cl. 418-55.300.

Nippon Steel Corporation: *See*—
Sasaki, Tsutomu; and Itoh, Ikuo, 5,543,770, Cl. 335-299.000.

Nippon Telegraph and Telephone Corporation: *See*—
Inagaki, Shuichiro; Hirono, Tadashi; and Hosokawa, Shigefumi, 5,544,004, Cl. 361-633.000.
Kada, Kazumasa; Horigichi, Masaharu; and Yamada, Hiroaki, 5,543,912, Cl. 356-73.100.
Richard, Nötzel; Jiro, Temmyo; Toshiaki, Tamamura; Mitsuru, Sugo; Eiichi, Kuramochi; and Teruhiko, Nishiya, 5,543,354, Cl. 437-129.000.
Shinagawa, Mitsuru; and Nagatsuma, Tadao, 5,543,723, Cl. 324-752.000.
Yonenaga, Kazushige; Kuwano, Shigeru; Shibata, Nori; and Norimatsu, Seiji, 5,543,952, Cl. 359-181.000.

Nippon Zeon Co., Ltd.: *See*—
Takahashi, Nobukazu; Hani, Tsutomu; Kohara, Teiji; and Natsuume, Tadao, 5,543,948, Cl. 359-73.000.

Nippondenso Co., Ltd.: *See*—
Hayakawa, Junji; and Ban, Hiroyuki, 5,543,747, Cl. 327-565.000.
Inagaki, Mitsuo; Matsuda, Mikio; Ogawa, Hiroshi; Hisanaga, Shigeru; and Oki, Yasuhiro, 5,542,829, Cl. 418-55.300.
Kusase, Shin; Mitani, Kenzo; Umeda, Atsushi; Tokura, Norihito; and Sato, Hirohide, 5,543,703, Cl. 322-16.000.
Morino, Seiji; Hashimoto, Eiji; and Tomoda, Terutoshi, 5,543,679, Cl. 310-316.000.
Suzuki, Haruhiko; Kato, Yasunari; Ota, Kazuomi; and Yamaguchi, Hiroaki, 5,544,000, Cl. 361-139.000.
Takagaki, Takanari; and Nagai, Yasuo, 5,543,007, Cl. 156-189.000.
Tsuda, Hiroshi; Iwase, Atsushi; Nomura, Ken; and Matsui, Kazuma, 5,542,293, Cl. 73-146.500.

Nire, Takashi: *See*—
Matsuno, Akira; and Nire, Takashi, 5,542,979, Cl. 118-719.000.

Nishida, Katsunori; Miyano, Keiichiro; Iwase, Masaki; and Ichinose, Eiji, to Tsukishima Kikai Co., Ltd. Centrifugal liquid separating machine using deceleration vanes. 5,542,903, Cl. 494-53.000.

Nishida, Masaaki: *See*—
Tsukamoto, Kazumasa; Hayabuchi, Masahiro; Nishida, Masaaki; Yamamoto, Yoshihisa; Kusafuka, Muneo; Mikami, Kazuhiro; Tsutsui, Hiroshi; and Iwata, Akihito, 5,542,887, Cl. 475-63.000.

Nishida, Naoya: *See*—
Enomoto, Takashi; Yoshioka, Toshifumi; and Nishida, Naoya, 5,543,946, Cl. 359-87.000.

Nishida, Tateki: *See*—
Takagi, Kazuhiro; Ohtani, Takashi; Nishida, Tateki; Hamaguchi, Hiroshi; Nishimatsu, Tetsuyoshi; and Kanaoka, Atsushi, 5,543,573, Cl. 514-590.000.

Nishida, Tatsuo: *See*—
Kubiak, Stephen M.; and Nishida, Tatsuo, 5,542,378, Cl. 122-235.120.

Nishimatsu, Tetsuyoshi: *See*—
Takagi, Kazuhiro; Ohtani, Takashi; Nishida, Tateki; Hamaguchi, Hiroshi; Nishimatsu, Tetsuyoshi; and Kanaoka, Atsushi, 5,543,573, Cl. 514-590.000.

Nishimura, Akira; and Kashihara, Hideki, to Sumitomo Electric Industries, Ltd. Escape device for aircraft. 5,542,628, Cl. 244-137.200.

Nishimura, Akira: *See*—
Kashihara, Hideki; Nishimura, Akira; and Takiguchi, Toshihiko, 5,542,629, Cl. 244-137.200.

Nishimura, Hiromi: *See*—
Ichiya, Mitsuo; Kasano, Fumihiro; Nishimura, Hiromi; Lewiner, Jacques; and Perino, Dider, 5,544,001, Cl. 361-233.000.

Nishimura, Masaaki; Hirano, Masatoshi; and Harada, Mitsuhiro, to Odawara Engineering Co., Ltd. Coil wire handling apparatus. 5,542,456, Cl. 140-92.100.

Nishimura, Seiichi: *See*—
Kumeji, Yasushi; Nishimura, Seiichi; Nakajima, Yoshinobu; and Itou, Makoto, 5,543,755, Cl. 333-185.000.

Nishimura, Takao, to Asahi Medical Co., Ltd. Leukocyte-removing filter device and system and method of using thereof. 5,543,062, Cl. 210-782.000.

Nishimura, Tohru: *See*—
Ota, Isao; and Nishimura, Tohru, 5,543,126, Cl. 423-263.000.

Nishimura, Yoichi: *See*—
Hasegawa, Yusuke; Nishimura, Yoichi; Komoriya, Isao; and Akazaki, Shushuke, 5,542,404, Cl. 123-690.000.

Nishimura, Yukinobu: *See*—
Demizu, Akira; Nishimura, Yukinobu; and Sugai, Masakazu, 5,544,058, Cl. 364-431.050.

Nishino, Katsuya: *See*—
Ueno, Kazunori; Fukui, Tetsuro; Kobayashi, Motokazu; Ooi, Takehiko; Kagami, Kenji; Suzuki, Masao; and Nishino, Katsuya, 5,543,286, Cl. 430-619.000.

Nishio, Toshiyuki: *See*—
Aotsuka, Tomoji; Nishio, Toshiyuki; Hosono, Hiroshi; Nakamura, Yoshiyuki; Matsui, Tetsuo; and Ishikawa, Hiromichi, 5,543,420, Cl. 514-312.000.

Nishioka, Masato; Hamada, Akira; Tateyama, Eiji, deceased (by Yosiko Tateyama, legal representative); Nishizawa, Nobuyoshi; and Tsutsumi, Masaru, to Sanyo Electric Co., Ltd. Fuel cell. 5,543,241, Cl. 429-39.000.

Nishitani, Katsuo; Hirota, Masaki; and Ai, Takeshi, to Yazaki Corporation. Rotation detecting device with magnet brake. 5,543,672, Cl. 310-77.000.

Nishiyama, Shinsuke: *See*—
Ishida, Akihiko; Homma, Koichi; Yato, Michihisa; Nishiyama, Shinsuke; and Okumura, Fumikazu, 5,543,409, Cl. 514-247.000.

Nishizawa, Hiroshi: *See*—
Dan, Shigeyuki; Nakayama, Takao; Nishizawa, Hiroshi; and Sera, Hidefumi, 5,543,258, Cl. 430-87.000.

Nishizawa, Junichi; and Kokubun, Yoshihiro, to Research Development Corporation of Japan; Nishizawa, Junichi; and Kokubun, Yoshihiro. Method of manufacturing GaAs single crystals. 5,542,373, Cl. 117-103.000.

Nishizawa, Nobuyoshi: *See*—
Nishioka, Masato; Hamada, Akira; Tateyama, Eiji, deceased; Nishizawa, Nobuyoshi; and Tsutsumi, Masaru, 5,543,241, Cl. 429-39.000.

Nissan Chemical Industries, Ltd.: *See*—
Ota, Isao; and Nishimura, Tohru, 5,543,126, Cl. 423-263.000.

Nissan Motor Co., Ltd.: *See*—
Kaimai, Takashi; Tawaki, Hiroki; Yokoo, Sumio; and Arakawa, Yoshie, 5,543,068, Cl. 252-68.000.
Nakano, Masaki; and Oshidari, Toshikazu, 5,542,890, Cl. 476-10.000.
Noda, Yasushi; Masuda, Tsuyoshi; and Matayoshi, Yutaka, 5,542,381, Cl. 123-41.740.
Shibata, Jun; Obayashi, Hiroaki; Kimura, Makoto; Fukuzumi, Shuzo; Yoshikawa, Hironori; Hiotsumatsu, Atsushi; Hashimoto, Yukio; Yamanoi, Toshimi; and Takaya, Seiji, 5,542,700, Cl. 280-735.000.
Takahata, Toshio; Nakazawa, Shinsuke; Iochi, Atsushi; Kuriki, Hiroshi; and Gotoh, Kenichi, 5,542,397, Cl. 123-520.000.
Terada, Masahiro; Kanae, Hirosuke; Yusawa, Motoyasu; Watanabe, Kazuyuki; and Saito, Mitsuo, 5,542,982, Cl. 134-5.000.

Nissan-Cohen, Yoav: *See*—
Abt, Norman E.; Moazzami, Reza; and Nissan-Cohen, Yoav, 5,543,644, Cl. 257-295.000.
Nissei Plastic Industrial Co., Ltd.: *See*—
Nakamura, Nobuyuki; Minamimura, Masaaki; Shiozawa, Fumio; and Yamagiwa, Yoshitoshi, 5,543,093, Cl. 264-40.500.
Nissha Printing Co., Ltd.: *See*—
Ikura, Kenichiro; and Miura, Masakazu, 5,543,587, Cl. 178-18.000.
Nisshin Steel Co., Ltd.: *See*—
Kawahara, Takayuki; Suzuki, Hitoshi; and Kominato, Asao, 5,543,522, Cl. 546-2.000.
Nissin Shokuhin Kabushiki Kaisha: *See*—
Yamasaki, Masahiro; Housai, Koichiro; Shirahase, Hiromi; Akamatsu, Nobuyuki; Tabuchi, Michiyuki; Hirata, Toshinari; and Miyazaki, Yoshifumi, 5,543,168, Cl. 426-557.000.
Nita, Henry; and Mills, Timothy, to Baxter International, Inc. Ultrasound delivery catheters incorporating improved distal tip construction. 5,542,917, Cl. 604-22.000.
Nitrotec Corporation: *See*—
D'Amico, Joseph S.; Reinhold, Herbert E., III; and Knaebel, Kent S., 5,542,966, Cl. 95-101.000.
Nitto Chemical Industry Co., Ltd.: *See*—
Takahashi, Kiyobumi; and Nakahama, Teturo, 5,543,566, Cl. 562-571.000.
Nitto Denko Corporation: *See*—
Shirai, Fumiya; Kuniya, Masayoshi; Mikura, Chiemi; Matsushita, Tomoko; Akemi, Hitoshi; and Yamamoto, Toshiyuki, 5,543,151, Cl. 424-448.000.
Niwa, Masaaki: *See*—
Hirai, Yoshihiko; Morimoto, Kiyoshi; Terui, Yasuaki; Niwa, Masaaki; Yasui, Juro; Okada, Kenji; Udagawa, Masaharu; and Yuki, Koichiro, 5,543,351, Cl. 437-063.000.
Niwa, Masahiro; Sugano, Yuji; Uenishi, Ken-ichi; Kitada, Hideto; Yamaguchi, Yoshihisa; Kobayashi, Eiko; Kubo, Kunimichi; and Sano, Akira, to Nippon Petrochemicals Company, Limited. Method for operating reactor for polymerizing olefins. 5,543,478, Cl. 526-82.000.
Niwa, Tomomitsu, to Mitsubishi Denki Kabushiki Kaisha. Numerical control unit. 5,544,046, Cl. 364-474.010.
Nixon, Dale B. Electric vehicle having multiple replacement batteries. 5,542,488, Cl. 180-65.100.
Nke-Aka, Brenda C.; and Delaney, Richard, to Novacor Chemicals (International) SA. Environmental stress crack resistance of hips. 5,543,461, Cl. 525-74.000.
NKK Corporation: *See*—
Nagataki, Yasunobu; Tsuyama, Seishi; Hosoya, Yoshihiro; Okita, Tomoyoshi; Kanetoh, Shuzi; and Takada, Yasuyuki, 5,542,996, Cl. 148-652.000.
Ozamoto, Daisuke; Murayama, Masatoshi; and Sugitani, Yuji, 5,543,600, Cl. 219-124.340.
Noble, Julia A.: *See*—
Hartley, Richard I.; Noble, Julia A.; Grande, James C. M.; Jackson, William E.; Welles, Kenneth B., II; and Liu, Jane S., 5,544,254, Cl. 382-108.000.
Nobuki, Minoru: *See*—
Hashimoto, Kenki; Nobuki, Minoru; Nakamura, Morihiko; and Doi, Haruo, 5,542,992, Cl. 148-421.000.
Noda, Takashi: *See*—
Kato, Tomokazu; Araki, Kazuhiro; Takano, Yoshiaki; Maruta, Syuzi; Nomura, Keiichi; Nagatani, Kentaro; Noda, Takashi; and Kishimoto, Hiroyuki, 5,543,907, Cl. 355-313.000.
Noda, Yasushi; Masuda, Tsuyoshi; and Matayoshi, Yutaka, to Nissan Motor Co., Ltd. Cylinder block for liquid-cooled engine. 5,542,381, Cl. 123-41.740.
Nodari, Nereo: *See*—
Allegrini, Pietro; Nodari, Nereo; Crisci, Luciana; and Malatesta, Vincenzo, 5,543,533, Cl. 549-389.000.
Noguchi, Hiromichi; Inamoto, Tadayoshi; and Munakata, Megumi, to Canon Kabushiki Kaisha. Active energy ray-curing resin composition. 5,543,266, Cl. 430-280.100.
Noguchi, Kenichi: *See*—
Kanaya, Motonori; Noguchi, Kenichi; Nagaya, Yoshiaki; and Itoh, Hisashi, 5,543,612, Cl. 250-208.100.
Noguchi, Shigeru: *See*—
Shinoda, Toshiki; Takezawa, Tetsuo; and Noguchi, Shigeru, 5,543,256, Cl. 430-22.000.
Noguchi, Takanobu: *See*—
Ohnishi, Toshihiro; Noguchi, Takanobu; and Doi, Shuji, 5,543,079, Cl. 252-301.350.
Nokia Telecommunications OY: *See*—
Knuuti, Mika, 5,543,721, Cl. 324-647.000.
Nolan, John H.: *See*—
Carter, Thomas J.; Mason, Arthur C.; and Nolan, John H., 5,542,317, Cl. 74-813.00L.
Nolan, Mary E.: *See*—
Giordano, Gerard J.; deMare, Gregory; Longendorfer, Betsy; Granieri, Michael N.; Giordano, John P.; Nolan, Mary E.; and Levy, Ford, 5,544,308, Cl. 395-183.020.
Noll, Mark O., to International Business Machines Corporation. Micro channel bus computer system with IDE hard drive interface. 5,544,334, Cl. 395-309.000.
Nolle, William: *See*—
Markow, Paul A.; Cummings, Theodore M.; DeBardelaben, William D.; McElreath, John H.; and Nolle, William, 5,542,280, Cl. 73-1.00R.
Nomoto, Yasuei: *See*—
Fujita, Takehiro; Kakumoto, Shigeru; and Nomoto, Yasuei, 5,544,052, Cl. 364-420.000.
Nomura, Hiroshi; and Sasaki, Takamitsu, to Asahi Kogaku Kogyo Kabushiki Kaisha. Backlash removing device for stowed lens barrel. 5,543,971, Cl. 359-697.000.
Nomura, Keiichi: *See*—
Kato, Tomokazu; Araki, Kazuhiro; Takano, Yoshiaki; Maruta, Syuzi; Nomura, Keiichi; Nagatani, Kentaro; Noda, Takashi; and Kishimoto, Hiroyuki, 5,543,907, Cl. 355-313.000.
Nomura, Ken: *See*—
Tsuda, Hiroshi; Iwase, Atsushi; Nomura, Ken; and Matsui, Kazuma, 5,542,293, Cl. 73-146.500.
Nomura, Yasushi: *See*—
Imai, Kyoko; Imai, Kazumichi; and Nomura, Yasushi, 5,543,292, Cl. 435-6.000.
Non-Invasive Monitoring Systems, Inc.: *See*—
Watson, Herman L.; and Pak, Chu, 5,543,012, Cl. 156-440.000.
Norand Corporation: *See*—
Schultz, Darald R.; and Sherman, Richard A., 5,542,487, Cl. 178-4.10A.
Schultz, Darald R.; Danielson, Arvin D.; Bunte, Alan G.; Sherman, Richard A.; and Jaeger, Robert B., 5,544,010, Cl. 361-686.000.
Norbeck, Daniel W.: *See*—
Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Kerdesky, Francis A.; Langridge, Denton C.; Leanna, M. Robert; Lijewski, Linda M.; Melcher, Laura; Morton, Howard E.; Norbeck, Daniel W.; Reno, Daniel S.; Robbins, Timothy A.; Sham, Hing L.; Sowin, Thomas J.; Tien, Jien-heh J.; Zhao, Chen; and Scarpetti, David, 5,543,551, Cl. 560-24.000.
Nordfang, Ole; and Rasmussen, Mirella E., to Novo Nordisk A/S. Process for producing a coagulation active complex of factor VIII fragments. 5,543,502, Cl. 530-383.000.
Nordin, Harvey L. Stationary standby sand spreading unit for roadways. 5,542,719, Cl. 291-3.000.
Nordischer Maschinenbau Rud. Baader GmbH + Co KG: *See*—
Kunig, Helmut; and Szymanski, Marek, 5,542,879, Cl. 452-135.000.
Nordman, Eric S.: *See*—
Hoff, Louis B.; Lachenmeier, Eric W.; Raysberg, Yefim M.; and Nordman, Eric S., 5,543,026, Cl. 204-612.000.
Norhager, Yngve, to Siemens Elema AB. X-ray examination apparatus. 5,544,216, Cl. 378-149.000.
Norimatsu, Seiji: *See*—
Yonenaga, Kazushige; Kuwano, Shigeru; Shibata, Nori; and Norimatsu, Seiji, 5,543,952, Cl. 359-181.000.
Norizuki, Reiko; Hyodo, Ryuji; Tanaka, Kenji; Sekihata, Osamu; Hatta, Hiroyuki; Eda, Susumu; and Oomura, Katsumi, to Fujitsu Limited. Apparatus and a method for supervising and controlling ATM traffic. 5,544,169, Cl. 370-60.100.
Normalair-Garrett (Holdings) Limited: *See*—
Foote, James C.; and Puplett, Derrick J., 5,542,447, Cl. 137-113.000.
Norman, Donald E., to Empire Plastics, Inc. Extended flex life core and overlay compositions and laminates thereof. 5,543,466, Cl. 525-190.000.
Normile, James M.; McGowan, Jared M.; and King, Andrew, to DCM Industries, Inc. Cable testing device. 5,543,718, Cl. 324-539.000.
Norris, Lyle V.: *See*—
Kaczmarczyk, Edward T.; Fuzzen, Daniel R.; Aucoin, Paul G.; and Norris, Lyle V., 5,542,339, Cl. 91-508.000.
North Carolina State University: *See*—
Baliga, Bantval J., 5,543,637, Cl. 257-77.000.
North Dakota State University: *See*—
Jones, Frank N.; Du, Cong; Teng, Ganghui; Dimian, Adel F.; and Wang, Daozhang, 5,543,475, Cl. 525-444.000.
Jones, Frank N.; Du, Cong; Teng, Ganghui; Dimian, Adel F.; and Wang, Daozhang, 5,543,476, Cl. 525-444.000.
Northern Illinois Gas Company: *See*—
Powers, Robert D., 5,542,287, Cl. 73-40.50R.
Northrop Grumman Corporation: *See*—
Gerhardt, Heinz A., 5,542,357, Cl. 105-64.200.
Pulley, Christopher J.; Specht, Steven J.; and Barlow, Geoffrey, 5,543,247, Cl. 429-129.000.
Norton Company: *See*—
Swei, Gwo S.; Avril, Nicolas; and Wijaya, Jony, 5,542,961, Cl. 51-295.000.
Notani, Hiromi, to Mitsubishi Denki Kabushiki Kaisha. Voltage controlled current source and bias generation circuit using such current source. 5,543,745, Cl. 327-538.000.
Nottingham, John R.; Spirk, John W., Jr.; Brown, Patrick W.; and Perkitny, Jerzy, to Cap Toys, Inc. Toy dispenser with feed means. 5,542,570, Cl. 221-192.000.
Nottmeyer, Kay: *See*—
Mizuno, Jun; Nottmeyer, Kay; and Kimura, Mitsuteru, 5,542,297, Cl. 73-514.360.
Nouchi, Norimoto; Sakaguchi, Masaya; Yoda, Hiroshi; and Mizoh, Yoshiaki, to Matsushita Electric Industrial Co., Ltd. Head cleaning device. 5,543,179, Cl. 427-346.000.
Nounou, Fadia: *See*—
Juskey, Frank J.; Suppelsa, Anthony B.; and Nounou, Fadia, 5,542,171, Cl. 29-840.000.
Novacor Chemicals (International) SA: *See*—

Nke-Aka, Brenda C.; and Delaney, Richard, 5,543,461, Cl. 525-74.000.
Novakovic, Mario: *See*—
Fost, Dennis L.; Komor, Joseph A.; and Novakovic, Mario, 5,543,072, Cl. 510-151.000.
Novo Nordisk A/S: *See*—
Nordfang, Ole; and Rasmussen, Mirella E., 5,543,502, Cl. 530-383.000.
Rex, Jørn, 5,542,411, Cl. 128-203.150.
Nozawa, Keizou, to Fujitsu Limited. Buffer storage system and method using page designating address and intra-page address and detecting valid data. 5,544,293, Cl. 395-412.000.
NPK Construction Equipment, Inc.: *See*—
Karani, Ron R., 5,542,180, Cl. 30-134.000.
NSK Ltd.: *See*—
Muraoka, Tomoki; Abe, Tsutomu; Kobayashi, Kazuhiro; and Hosoda, Kenichi, 5,542,991, Cl. 148-330.000.
NTN Corporation: *See*—
Itoh, Kenichiro; and Adachi, Kenro, 5,542,514, Cl. 192-40.000.
Nugent, J. Patrick: *See*—
Elsenheimer, John A.; Bried, David K.; Sands, Jeffrey L.; Wildes, Donald; and Nugent, J. Patrick, 5,542,462, Cl. 160-178.000.
Numa, Sachiko: *See*—
Kobayashi, Tsuyoshi; Sakon, Ichiro; Nakashima, Shigeo; Numa, Sachiko; and Inao, Yoshikazu, 5,543,444, Cl. 523-205.000.
Numagami, Atsushi: *See*—
Shishido, Kazuo; Sasaki, Shinichi; Ikemoto, Isao; Yashiro, Masahiko; Karakama, Toshiyuki; and Numagami, Atsushi, 5,543,898, Cl. 355-210.000.
NuSkin International, Inc.: *See*—
Aldous, Duane L., 5,543,136, Cl. 424-59.000.
Nussenbaum, Joseph, to Propper Manufacturing Co., Inc. Switch mechanism for use in a laryngoscope handle. 5,542,905, Cl. 600-191.000.
NVision Grafix, Inc.: *See*—
Bielinski, Michael S.; and Herber, Paul G., 5,543,965, Cl. 359-463.000.
Nvision, Inc.: *See*—
Dayton, Birney D.; and Crabb, Thomas B., 5,543,976, Cl. 360-46.000.
O, Sungki: *See*—
Yeh, Stanley; O, Sungki; and Sundararajan, Partha, 5,543,337, Cl. 437-35.000.
O'Neill, Gerald J.; and Bulka, Robert J., to Hampshire Chemical Corp. Purifications of flourinated dimethyl ethers. 5,543,055, Cl. 210-638.000.
Oakley, William H. Alignment assembly and method. 5,542,187, Cl. 33-404.000.
Oates, R. Terry: *See*—
Campbell, Raymond J.; Nall, Al, Jr.; and Oates, R. Terry, 5,542,448, Cl. 137-410.000.
Obayashi Corporation: *See*—
Yoshimura, Mitsuhiro; Fujita, Kazunobu; and Teramura, Akira, 5,542,220, Cl. 52-167.100.
Obayashi, Hiroaki: *See*—
Shibata, Jun; Obayashi, Hiroaki; Kimura, Makoto; Fukuzumi, Sbuzo; Yoshikawa, Hironori; Hitotsumatsu, Atsushi; Hashimoto, Yukio; Yamanoi, Toshimi; and Takaya, Seiji, 5,542,700, Cl. 280-735.000.
Obermanns, Sebastian; and Schoonhoven, Richard, to Siemens Aktiengesellschaft. Method for setting up virtual connections in packet switching networks. 5,544,152, Cl. 370-16.000.
Obermeier, Josef, to Hilti Aktiengesellschaft. Tool bit and tool bit chuck for manually operated tools. 5,542,797, Cl. 408-226.000.
Ochiai, Toshihiko: *See*—
Kato, Motoi; Takeuchi, Akihiko; Ochiai, Toshihiko; Miyashiro, Toshiaki; Kabeya, Nobuaki; Suzuki, Takehiko; and Kume, Takao, 5,543,904, Cl. 355-285.000.
Oculon Corporation: *See*—
Hayden, Douglas L., 5,542,422, Cl. 128-633.000.
Oda, Katsunari; Kamisaki, Akiyoshi; Kubota, Norimasa; and Narikawa, Teruo, to Minolta Camera Kabushiki Kaisha. Toner fixing device for image forming apparatus. 5,543,905, Cl. 355-285.000.
Oda, Yasuhiro: *See*—
Koyama, Masayasu; Oda, Yasuhiro; Kikuchi, Hiroaki; and Yamada, Muneki, 5,542,557, Cl. 215-347.000.
Odagaki, Hideo: *See*—
Nakajima, Masahiro; and Odagaki, Hideo, 5,544,087, Cl. 364-443.000.
Odagiri, Nobuyuki: *See*—
Opsedo, Hiroki; and Odagiri, Nobuyuki, 5,543,212, Cl. 428-229.000.
Odawara Engineering Co., Ltd.: *See*—
Hirano, Masatoshi, 5,542,170, Cl. 29-734.000.
Nishimura, Masaaki; Hirano, Masatoshi; and Harada, Mitsuhiro, 5,542,456, Cl. 140-92.100.
Odegaard, Hallvard, to Kaldnes Miljoteknologi A/S. Reactor for purification of water. 5,543,039, Cl. 210-150.000.
Oea, Inc.: *See*—
Hamilton, Brian; and Renz, Robert, 5,542,704, Cl. 280-741.000.
Offenberg, Michael: *See*—
Benz, Gerhard; Marek, Jiri; Willmann, Martin; Bantien, Frank; Muenzel, Horst; Laermer, Franz; Offenberg, Michael; and Schilp, Andrea, 5,542,558, Cl. 216-2.000.
Ogasa, Masao: *See*—
Shibayama, Kouichi; Suzuki, Masao; Ogasa, Masao; and Iuchi, Kenji, 5,543,438, Cl. 521-140.000.
Ogasawara, Tadashi: *See*—
Iwaya, Shouichi; Yahagi, Masahiro; Kudou, Hitoshi; Itou, Shigeru; Fujiwara, Isao; Ogasawara, Tadashi; Morita, Makoto; Taguchi, Teruo; and Sasaki, Setuo, 5,544,002, Cl. 361-302.000.
Ogawa, Hidehiro: *See*—
Yamano, Shozo; and Ogawa, Hidehiro, 5,543,885, Cl. 354-400.000.
Ogawa, Hiroshi: *See*—
Inagaki, Mitsuo; Matsuda, Mikio; Ogawa, Hiroshi; Hisanaga, Shigeru; and Oki, Yasuhiro, 5,542,829, Cl. 418-55.300.
Ogawa, Toshiyuki, to Mitsubishi Denki Kabushiki Kaisha. Dual port multiple block memory capable of time divisional operation. 5,544,093, Cl. 365-189.010.
Ogawa, Yoichi: *See*—
Kitakami, Osamu; Fujiwara, Hideo; and Ogawa, Yoichi, 5,543,221, Cl. 428-332.000.
Ogihara, Tsutomu: *See*—
Shimizu, Takaaki; Kinsho, Takeshi; Ogihara, Tsutomu; Kaneko, Tatsushi; Saito, Ryuichi; and Kurihara, Hideshi, 5,543,539, Cl. 556-406.000.
Oglesby, Larry W. Trouser leg retaining device. 5,542,156, Cl. 24-72.100.
Ogura, Naoyuki, to NEC Corporation. Method for protecting an enciphered computer object code against cryptanalysis. 5,544,244, Cl. 380-4.000.
Oh, Yong K.: *See*—
Kang, Yong S.; Oh, Yong K.; Cha, Se I.; and Lee, Chul S., 5,543,933, Cl. 358-335.000.
Oh, Yong-Ho: *See*—
Park, Byung-Sun; Oh, Yong-Ho; Choi, Sang-Soo; and Yoo, Hyung-Joun, 5,543,253, Cl. 439-5.000.
Oh, Young N., to Hyundai Electronics Industries Co. Ltd. Bootstrap circuit. 5,543,750, Cl. 327-589.000.
Ohara, Sbunji; Matsuo, Tamotsu; and Ishibashi, Kenzou, to Matsushita Electric Industrial Co., Ltd. Optical disc record/playback apparatus. 5,544,137, Cl. 369-54.000.
Ohashi, Junji: *See*—
Abe, Chikara; Ohashi, Junji; and Hirai, Kiyomiki, 5,543,486, Cl. 528-92.000.
Ohashi, Tadashi: *See*—
Hoshino, Tsutomu; Yamaguchi, Atsushi; Ohashi, Tadashi; Ohga, Juro; and Furuya, Hiroyuki, 5,544,201, Cl. 345-350.000.
Ohashi, Tomonori: *See*—
Morikawa, Yasuhiro; Ohashi, Tomonori; and Kodama, Masafumi, 5,543,854, Cl. 348-512.000.
Ohbayashi, Shigeki: *See*—
Hirose, Toshihiko; Ohbayashi, Shigeki; Kondo, Setsu; Hayasaka, Takashi; Fujino, Yoshiyuki; and Iketani, Masayuki, 5,544,105, Cl. 365-189.110.
Ohga, Juro: *See*—
Hoshino, Tsutomu; Yamaguchi, Atsushi; Ohashi, Tadashi; Ohga, Juro; and Furuya, Hiroyuki, 5,544,201, Cl. 345-350.000.
Ohira, Tsunehisa: *See*—
Hashimoto, Yasufumi; Umeda, Hiroyuki; and Ohira, Tsunehisa, 5,543,991, Cl. 360-132.000.
Ohkubo, Masaharu: *See*—
Inami, Satoru; Ohkubo, Masaharu; and Kato, Junichi, 5,543,899, Cl. 355-219.000.
Ohmaye, Enio; and James, Arthur, to Apple Computer, Inc. System and method for creating and executing interactive interpersonal computer simulations. 5,544,305, Cl. 395-161.000.
Ohmi, Hidehiko; Kubo, Tateo; and Igarashi, Tomoya, to Japan Crown Cork Co., Ltd. Plastic closure with structural thread formation. 5,542,556, Cl. 215-329.000.
Ohnishi, Toshihiro; Noguchi, Takanobu; and Doi, Sbuji, to Sumitomo Chemical Company, Limited. Polymeric fluorescent substance and organic electroluminescence devices using the same. 5,543,079, Cl. 252-301.350.
Ohno, Masatomo: *See*—
Watanabe, Atsuji; Ohshita, Youichi; Ohno, Masatomo; Tsukushi, Masanori; and Tokuyama, Shunji, 5,543,597, Cl. 218-60.000.
Ohsaki, Hisashi; Kojima, Hiroyasu; and Suzuki, Koichi, to Asahi Glass Company Ltd. Method of making a heat treated coated glass. 5,543,229, Cl. 428-432.000.
Ohshita, Masaru, to Fujitsu Limited. Tape threading apparatus used in a tape unit. 5,542,620, Cl. 242-332.400.
Ohshita, Youichi: *See*—
Watanabe, Atsuji; Ohshita, Youichi; Ohno, Masatomo; Tsukushi, Masanori; and Tokuyama, Shunji, 5,543,597, Cl. 218-60.000.
Ohsugi, Minoru: *See*—
Hayashi, Kazuyuki; Ohsugi, Minoru; Morii, Hiroko; and Sugita, Norio, 5,543,069, Cl. 252-62.580.
Ohta, Atsushi: *See*—
Takeda, Fuchio; and Ohta, Atsushi, 5,543,902, Cl. 355-259.000.
Ohta, Eiichi: *See*—
Kimura, Yuji; Ohta, Eiichi; Kondo, Hitoshi; Takahashi, Masaetsu; Kameyama, Kenji; and Yamada, Katsuyuki, 5,543,945, Cl. 359-55.000.
Ohta, Kenji: *See*—
Katayama, Hiroyuki; Hirokane, Junji; Takahashi, Akira; and Ohta, Kenji, 5,544,149, Cl. 369-275.300.
Ohta, Ryusuke; and Sekizawa, Yoshihiro, to Fujitsu Limited. High frequency power source having corrected power output. 5,543,689, Cl. 315-111.210.
Ohta, Tokuya: *See*—
Miura, Konoe; Takimoto, Hiroshi; Ohta, Tokuya; and Kobayashi, Masatsune, 5,542,970, Cl. 106-20.00D.

Ohtani, Hisashi; Miyanaga, Akiharu; Zhang, Hongyong; Yamaguchi, Naoaki; and Suzuki, Atsunori, to Semiconductor Energy Laboratory Co., Ltd.; and Sharp Corporation. Method for manufacturing a semiconductor device using a catalyst. 5,543,352, Cl. 437-101.000.
Ohtani, Takashi: *See—*
Takagi, Kazuhiro; Ohtani, Takashi; Nishida, Tateki; Hamaguchi, Hiroshi; Nishimatsu, Tetsuyoshi; and Kanaoka, Atsushi, 5,543,573, Cl. 514-590.000.
Ohtonen, Aimo, to Valmet Corporation. Two sided clamp for manipulating heads of paper rolls. 5,542,729, Cl. 294-87.100.
Ohtoshi, Tsukuru: *See—*
Nakamura, Hitoshi; Hanatani, Shoichi; Tanaka, Shigehisa; Ohtoshi, Tsukuru; Ishida, Koji; and Matsuoka, Yausunobu, 5,543,629, Cl. 257-21.000.
Ohura, Harutoshi; Yasaki, Akihiko; Kishimoto, Shinichi; and Naruse, Masayoshi, to Ajinomoto Co., Inc. Process for preparing dry crystals of the methyl ester of α-L-aspartyl-L-phenylalanine, having improved solubility. 5,543,554, Cl. 560-41.000.
Ohyama, Katsuya: *See—*
Murakami, Kazuo; Fujii, Toshiro; Iwama, Kazuaki; and Ohyama, Katsuya, 5,542,340, Cl. 92-71.000.
Ohzu, Akira; Arisawa, Takashi; Kato, Masaaki; and Suzuki, Yoji, to Japan Atomic Energy Research Institute. Metal vapor laser capable of cold operation. 5,544,191, Cl. 372-56.000.
Okada, Akihiko; and Sato, Nobuyuki, to Idemitsu Kosan Co., Ltd. Impact resistant polystyrene composition. 5,543,462, Cl. 525-74.000.
Okada, Akira: *See—*
Suzuki, Hiroyoshi; Okada, Akira; and Moronaga, Takahiro, 5,543,722, Cl. 324-675.000.
Okada, Kenji: *See—*
Hirai, Yoshihiko; Morimoto, Kiyoshi; Terui, Yasuaki; Niwa, Masaaki; Yasui, Juro; Okada, Kenji; Udagawa, Masaharu; and Yuki, Koichiro, 5,543,351, Cl. 437-063.000.
Okada, Shoichi: *See—*
Tanaka, Yoneta; and Okada, Shoichi, 5,543,890, Cl. 355-53.000.
Okamoto, Hidenori; and Takebayashi, Kazuaki, to Nippon Mining & Metals Co., Ltd. Method for recovering indium by electrowinning and apparatus therefor. 5,543,031, Cl. 205-564.000.
Okamoto, Yoshinari; Tsuruoka, Yoshihisa; Hirakawa, Haruhisa; and Sato, Eiji, to Futaba Denshi Kogyo K.K. Flourescent display device having a protective film interposed between color filters and anode electrodes. 5,543,685, Cl. 313-496.000.
Okamoto, Yoshio, to Daicel Chemical Industries, Ltd. Polysaccharide derivative and separating agent. 5,543,506, Cl. 536-18.700.
Okazaki, Hajime; Kazato, Manabu; Ouchi, Masaoki; Nagano, Haruki; Ushio, Masaru; and Kamiya, Kozo, to Nippon Oil Company, Ltd.; and Nippon Petroleum Refining Company, Ltd. Supply system of petroleum heavy oil containing magnetic fine particles. 5,543,041, Cl. 210-181.000.
Okazaki, Satiko: *See—*
Uchiyama, Hiroshi; Kogoma, Masuhiro; and Okazaki, Satiko, 5,543,017, Cl. 204-169.000.
OKI Electric Industry Co., Ltd.: *See—*
Atsumi, Shiro, 5,544,014, Cl. 361-737.000.
Takasugi, Atsushi, 5,544,096, Cl. 365-149.000.
Oki, Yasuhiro: *See—*
Inagaki, Mitsuo; Matsuda, Mikio; Ogawa, Hiroshi; Hisanaga, Shigeru; and Oki, Yasuhiro, 5,542,829, Cl. 418-55.300.
Okita, Tomoyoshi: *See—*
Nagataki, Yasunobu; Tsuyama, Seishi; Hosoya, Yoshihiro; Okita, Tomoyoshi; Kanetoh, Shuzi; and Takada, Yasuyuki, 5,542,996, Cl. 148-652.000.
Okubo, Akihiko, to Yamaha Hatsudoki Kabushiki Kaisha. Component layout for engine. 5,542,387, Cl. 123-192.200.
Okuda, Isao: *See—*
Takishima, Suguru; Okuda, Isao; and Morita, Takashi, 5,544,144, Cl. 369-112.000.
Okuda, Kaneharu: *See—*
Seto, Kazuhiro; Okuda, Kaneharu; Sakata, Kei; Kato, Toshiyuki; and Ono, Takashi, 5,542,994, Cl. 148-603.000.
Okuda, Masatoshi: *See—*
Watanabe, Kazuo; Okuda, Masatoshi; Aoyama, Shigeo; and Tanaka, Yoshimasa, 5,543,382, Cl. 503-224.000.
Okumura, Fumikazu: *See—*
Ishida, Akihiko; Homma, Koichi; Yato, Michihisa; Nishiyama, Shinsuke; and Okumura, Fumikazu, 5,543,409, Cl. 514-247.000.
Okumura, Katsuya: *See—*
Yoshii, Ichiro; Kamijoh, Hiroyuki; Ozawa, Yoshio; Yamabe, Kikuo; Hashimoto, Kazuhiko; Okumura, Katsuya; and Hama, Kaoru, 5,543,334, Cl. 437-8.000.
Okumura, Koichiro, to NEC Corporation. Driver/receiver circuit for reducing transmission delay. 5,543,744, Cl. 327-333.000.
Okuno, Yoshitaka: *See—*
Nakano, Toshihiko; Amano, Tadashi; and Okuno, Yoshitaka, 5,543,175, Cl. 427-236.000.
Oleksyszyn, Jozef: *See—*
Powers, James C.; Boduszek, Bogdan; and Oleksyszyn, Jozef, 5,543,396, Cl. 514-19.000.
Olin Corporation: *See—*
Sigler, John W., 5,542,354, Cl. 102-478.000.
Olins, Peter O.: *See—*
Braford-Goldberg, Sarah R.; Easton, Alan M.; Klein, Barbara K.; McKearn, John P.; and Olins, Peter O., 5,543,141, Cl. 424-85.200.
Oliver, Tiura. Neck support. 5,542,910, Cl. 602-18.000.
Ollerenshaw, Robert C. A. W.; and Roe, Maurice A., to Fi-Pro Limited. Treating biomass material. 5,542,962, Cl. 71-10.000.
Ollinger, by John M., legal representative: *See—*
McGee, James B.; Petroff, Lenin J.; Brecht, Doris J.; Ollinger, William J., deceased; and Ollinger, by John M., legal representative, 5,543,082, Cl. 252-321.000.
Ollinger, William J., deceased: *See—*
McGee, James B.; Petroff, Lenin J.; Brecht, Doris J.; Ollinger, William J., deceased; and Ollinger, by John M., legal representative, 5,543,082, Cl. 252-321.000.
Olsen, Robert W., to Construction Specialties, Inc. Louver. 5,542,224, Cl. 52-473.000.
Olson, Brent K.: *See—*
Green, David J.; Bunker, S. Mark; Moore, Walter A.; Pierotti, L. John; Storey, J. Kirk; and Olson, Brent K., 5,542,702, Cl. 280-737.000.
Olson, Christopher P.: *See—*
Glaug, Frank S.; Olson, Christopher P.; Ratliff, Kathleen I.; Sheldon, Donald A.; Finch, Valerie V.; and Collier, L. Warren, IV, 5,542,566, Cl. 221-48.000.
Olson, Ogden R.; and Simmons, Loren M., to Hon Industries Inc. Task chair. 5,542,743, Cl. 297-353.000.
Olson, Ogden R.: *See—*
Schultz, Craig H.; and Olson, Ogden R., 5,542,159, Cl. 24-341.000.
Olsson, David B.: *See—*
Garcia-Duarte, Fernando; Hensley, John; Mohanraj, Shanmugam; Subramaniyan, Nagarajan; and Olsson, David B., 5,544,082, Cl. 364-707.000.
Olympus Optical Co., Ltd.: *See—*
Horie, Yuji, 5,544,136, Cl. 369-44.340.
Miyamoto, Hirofumi; Sakai, Mitsugu; Hayashida, Mitsumori; and Sakai, Nobuaki, 5,543,614, Cl. 250-234.000.
Shimizu, Tokuo, 5,543,871, Cl. 354-106.000.
Suzuki, Tatsuya; Matsutani, Shunji; Sugita, Yukihiko; Katagiri, Moriya; and Ikeda, Manabu, 5,543,876, Cl. 354-149.110.
Takashi, Shinya; and Tanaka, Nobuyuki, 5,543,877, Cl. 354-173.100.
Tsuji, Kiyoshi; Uchikubo, Akinobu; Kimura, Kenji; Goto, Masahito; and Hirai, Tsutomu, 5,543,831, Cl. 348-65.000.
O'Malley, Gerard: *See—*
Kosley, Raymond W., Jr.; Cherill, Robert J.; and O'Malley, Gerard, 5,543,427, Cl. 514-422.000.
OMNICO (PTY) Ltd: *See—*
Gregan, David C., 5,542,661, Cl. 273-26.00E.
Omo, Shinichi: *See—*
Kuronuma, Akira; Akiyama, Yuji; Murata, Takayuki; Fukui, Hiroshi; and Omo, Shinichi, 5,543,826, Cl. 347-23.000.
Omron Corporation: *See—*
Kobayashi, Shigeki; and Yamamoto, Norihito, 5,542,600, Cl. 228-102.000.
Mizuguchi, Yoshihiro; Hamada, Hiroshi; Aoyama, Shigeru; and Yamashita, Tsukasa, 5,543,942, Cl. 359-40.000.
Sasada, Ichiro; and Morikawa, Akihiko, 5,542,304, Cl. 73-862.333.
Onda, Yoshiyuki: *See—*
Tsuneki, Hideaki; Onda, Yoshiyuki; Moriya, Atusi; and Yoshida, Hiroshi, 5,543,546, Cl. 558-270.000.
O'Neil, Daniel J.: *See—*
Stark, Thomas S.; Gretz, Thomas J.; and O'Neil, Daniel J., 5,543,582, Cl. 174-65.0SS.
O'Neill, Gary: *See—*
Cromlish, Wanda A.; Kennedy, Brian P.; O'Neill, Gary; Vickers, Philip J.; Wong, Elizabeth; and Mancini, Joseph A., 5,543,297, Cl. 435-25.000.
Oneto, Michael A. Retractable bolt assembly for compressed gas powered gun. 5,542,406, Cl. 124-73.000.
Onishi, Ken: *See—*
Asamura, Yoshinori; Hatano, Yoshiko; Onishi, Ken; and Shiroshita, Takashi, 5,543,845, Cl. 348-407.000.
Ono, Michio: *See—*
Matsuda, Naoto; Yamada, Makoto; Ono, Michio; Ishiwata, Yasuhiro; and Uchida, Osamu, 5,543,279, Cl. 430-559.000.
Ono, Taisaburo. Wave-damping underwater truss structure. 5,542,779, Cl. 405-33.000.
Ono, Takashi: *See—*
Seto, Kazuhiro; Okuda, Kaneharu; Sakata, Kei; Kato, Toshiyuki; and Ono, Takashi, 5,542,994, Cl. 148-603.000.
Onodera, Hirofumi, to Fujitetsumo Co., Ltd. Cooked rice freezing method and apparatus. 5,543,167, Cl. 426-524.000.
Onodera, Hisashi; and Yamanaka, Junichi, to Daiken Iki Co., Ltd. Fluid aspiration-collection apparatus. 5,542,939, Cl. 604-319.000.
Onodera, Keith K., to National Semiconductor Corporation. Capacitor and resistor controlled oscillator timing lock loop for precision time constants. 5,543,754, Cl. 331-25.000.
Ooi, Takehiko: *See—*
Ueno, Kazunori; Fukui, Tetsuro; Kobayashi, Motokazu; Ooi, Takehiko; Kagami, Kenji; Suzuki, Masao; and Nishino, Katsuya, 5,543,286, Cl. 430-619.000.
Ookubo, Kiyoyuki: *See—*
Ishiyama, Kouichi; Igarashi, Kazunori; Komada, Norikazu; Takeshita, Takuo; and Ookubo, Kiyoyuki, 5,543,070, Cl. 252-62.590.

Ookubo, Mitsuyoshi, to NEC Corporation. Method for manufacturing semiconductor laser device having current blocking layers. 5,543,355, Cl. 437-129.000.
Oomura, Katsumi: *See—*
Norizuki, Reiko; Hyodo, Ryuji; Tanaka, Kenji; Sekihata, Osamu; Hatta, Hiroyuki; Eda, Susumu; and Oomura, Katsumi, 5,544,169, Cl. 370-60.100.
Oosedo, Hiroki; and Odagiri, Nobuyuki, to Toray Industries, Inc. Prepregs comprising a reinforcing fiber layer, a knitted fabric of thermoplastic fibers and a matrix resin. 5,543,212, Cl. 428-229.000.
Oostwouder, Shelby P.: *See—*
Hammond, Charles A.; Oostwouder, Shelby P.; and Lanning, Robert A., 5,543,122, Cl. 423-220.000.
Opitz, Martin, to AKG Akustische U. Kino-Geräte Gesellschaft m.b.H. Method of simulating a room and/or sound impression. 5,544,249, Cl. 381-63.000.
Oprea, Dan; and Cepelinski, Jacob, to Mitel Corporation. Method for multiple access in a digital communication system. 5,544,158, Cl. 370-29.000.
Opto Tech Corporation: *See—*
Lin, San-Bao; Chang, Gwo-Dawn; Shie, Jin-Shown; Wang, Chein-Hsun; Weng, Ping-Kuo; and Lin, Ming-Der, 5,543,620, Cl. 250-338.300.
Oratz, Ben. Magnetized fluid vessel. 5,542,562, Cl. 220-410.000.
Oravecz, Michael G.; Greenwald, Roger J.; McGarry, Daniel E.; and Sauer, Jude S., to Laser Surge, Inc. Video display system for projecting an image on to a tilted screen adjacent a surgical field. 5,543,832, Cl. 348-65.000.
Orbey Plastiques and Industries: *See—*
Vaudry, Jean-Paul, 5,542,711, Cl. 285-41.000.
Oregon Health Sciences University, a non profit organization, State of Oregon, Acting by and Through the Oregon State Board of Higher Education on Behalf of the: *See—*
Yatvin, Milton B.; and Stowell, Michael H B, 5,543,389, Cl. 514-2.000.
Oregon Health Sciences University, State of Oregon, Acting by and Through the Oregon State Board of Higher Education, Acting for and on Behalf of the: *See—*
Yatvin, Milton B.; Stowell, Michael H. B.; Gallicchio, Vincent S.; and Meredith, Michael J., 5,543,390, Cl. 514-2.000.
Yatvin, Milton B.; Stowell, Michael H. B.; Gallicchio, Vincent S.; and Meredith, Michael J., 5,543,391, Cl. 514-2.000.
Ormco Corporation: *See—*
Andreiko, Craig A.; and Payne, Mark A., 5,542,842, Cl. 433-3.000.
OroAmerica, Inc.: *See—*
Lunardon, Giulio, 5,542,245, Cl. 59-35.100.
Orsano, Anthony. LED display for protective helmet and helmet containing same. 5,544,027, Cl. 362-105.000.
Orth, Jean C., to Advanced Cardiovascular Systems, Inc. Dilatation catheter with oblong perfusion ports. 5,542,925, Cl. 604-102.000.
Orthman Manufacturing, Inc.: *See—*
Wahls, Stephen L., 5,542,190, Cl. 33-624.000.
Ortho Pharmaceutical Corporation: *See—*
Carmosin, Richard J.; Carson, John R.; Pitis, Philip; and Raffa, Robert B., 5,543,530, Cl. 548-452.000.
Orton, Debra L.; Kraus, William F.; and Gamma, Erich, to Taligent, Inc. Object-oriented view layout system. 5,544,301, Cl. 395-157.000.
O'Shea, James: *See—*
Rekuc, Richard J.; and O'Shea, James, 5,542,510, Cl. 190-18.00A.
Oshidari, Toshikazu: *See—*
Nakano, Masaki; and Oshidari, Toshikazu, 5,542,890, Cl. 476-10.000.
OSi Specialties, Inc.: *See—*
Grabowski, Wojciech, 5,542,960, Cl. 44-320.000.
Osterland, Robert: *See—*
Gronau, Randall J.; and Osterland, Robert, 5,542,158, Cl. 24-295.000.
Ostermayer, Volker; and Quigley, Scott, to Wangner Systems Corp. Papermaking fabric having diagonal rows of pockets separated by diagonal rows of strips having a co-planar surface. 5,542,455, Cl. 139-383.00A.
O'Sullivan, Thomas D.: *See—*
Leung, Chiu F.; and O'Sullivan, Thomas D., 5,543,701, Cl. 320-4.000.
Ota, Isao; and Nishimura, Tohru, to Nissan Chemical Industries, Ltd. Process for preparing crystalline ceric oxide. 5,543,126, Cl. 423-263.000.
Ota, Kazuomi: *See—*
Suzuki, Haruhiko; Kato, Yasunari; Ota, Kazuomi; and Yamaguchi, Hiroaki, 5,544,000, Cl. 361-139.000.
Otis Elevator Company: *See—*
Adrian, Willy; Bäthge, Frank; Borchers, Peter; Pietsch, Kurt; Wallbaum, Knuth; and Wente, Gerald, 5,542,522, Cl. 198-337.000.
Meyer, Helmut J. W.; Ahls, Hermann W.; Blaseck, Klaus; and Schmitting, Udo, 5,542,521, Cl. 198-324.000.
Otsuka Pharmaceutical Co., Ltd.: *See—*
Nakai, Satoru; Kaneta, Mayumi; Kikumoto, Yoshikazu; Hong, Yeong-Man; Kawai, Kazuyoshi; Takegata, Setsuko; Ishii, Kiyoshi; Yanagihara, Yasuo; and Hirai, Yoshikatsu, 5,543,140, Cl. 424-85.200.
Nakai, Satoru; Aihara, Koutoku; Mori, Hitomi; Tominaga, Michiaki; Adachi, Masakazu; Ichikawa, Hiroyuki; Akamatsu, Seiji; and Saito, Fumio, 5,543,412, Cl. 514-255.000.
Ottestad Breathing Systems AS: *See—*
Ottestad, Nils T., 5,542,417, Cl. 128-205.240.
Ottestad, Nils T., to Ottestad Breathing Systems AS. Pressure regulating unit for supplying a pressurized fluid from alternative supply lines. 5,542,417, Cl. 128-205.240.
Otto, William F.: *See—*
Dimmick, Roger F.; Fitterer, Gary A.; Jajowka, Jeff A.; Otto, William F.; Rasmussen, Jerry R.; and Sobotta, Terry L., 5,544,008, Cl. 361-684.000.
Ouchi, Masaoki: *See—*
Okazaki, Hajime; Kazato, Manabu; Ouchi, Masaoki; Nagano, Haruki; Ushio, Masaru; and Kamiya, Kozo, 5,543,041, Cl. 210-181.000.
Outlook Window Partnership L.P.: *See—*
Erickson, Steven E.; and Peterson, Stanley D., 5,542,212, Cl. 49-181.000.
Outokumpu Research Oy: *See—*
Lilja, Launo L.; and Mäkitalo, Valto J., 5,542,361, Cl. 110-341.000.
Ouya, Tomotoshi: *See—*
Fujii, Noboru; Kawabata, Kenji; Hashi, Masaaki; Niikura, Junji; and Ouya, Tomotoshi, 5,542,239, Cl. 53-477.000.
Ovaert, Tim: *See—*
Streit, Donald A.; Casalena, Joe; and Ovaert, Tim, 5,542,221, Cl. 52-403.100.
Ovshinsky, Stanford R., to Energy Conversion Devices, Inc. Logical operation circuit employing two-terminal chalcogenide switches. 5,543,737, Cl. 326-104.000.
Owen, Harrold D.; and Wesson, David S., to Owen Oil Tools, Inc. Perforating gun with retrievable mounting strips. 5,542,480, Cl. 175-4.510.
Owen Oil Tools, Inc.: *See—*
Owen, Harrold D.; and Wesson, David S., 5,542,480, Cl. 175-4.510.
Owens Corning Fiberglas Technology, Inc.: *See—*
Gallagher, Kevin P.; Vermilion, Donn R.; and Ponn, Frederick H., 5,543,211, Cl. 428-224.000.
Oxford Instruments (UK) Limited: *See—*
Batey, Graham J.; and Whitehurst, Eric P., 5,542,256, Cl. 62-610.000.
Oxis International S.A.: *See—*
Xu, Jinzhu; Yadan, Jean-Claude Y.; Moutet, Marc E.; and Chaudiere, Jean R., 5,543,298, Cl. 435-25.000.
Oy, Neste: *See—*
Tuovinen, Heikki; Saari, Jorma; Roine, Antti; Holma, Hannu; and Kalliokoski, Matti, 5,543,128, Cl. 423-303.000.
Oya, Hirosi: *See—*
Yura, Masaki; Hirai, Yukio; and Oya, Hirosi, 5,542,443, Cl. 134-176.000.
Oyama, Yousei, to Murata Manufacturing Co., Ltd. Piezoelectric component for ladder type filter and method of manufacturing thereof. 5,543,763, Cl. 333-189.000.
Ozaki, Hiroji: *See—*
Satoh, Shinichi; Ozaki, Hiroji; and Eimori, Takahisa, 5,543,646, Cl. 257-344.000.
Ozamoto, Daisuke; Murayama, Masatoshi; and Sugitani, Yuji, to NKK Corporation. Lattice welding robot and method for the lattice welding. 5,543,600, Cl. 219-124.340.
Ozawa, Hidetaka: *See—*
Kobayashi, Toshiaki; and Ozawa, Hidetaka, 5,544,080, Cl. 364-574.000.
Ozawa, Kazushige, to Tenryu Technics Co., Ltd. Vacuum fixing device for parts. 5,542,726, Cl. 294-64.100.
Ozawa, Yoshio: *See—*
Yoshii, Ichiro; Kamijoh, Hiroyuki; Ozawa, Yoshio; Yamabe, Kikuo; Hashimoto, Kazuhiko; Okumura, Katsuya; and Hama, Kaoru, 5,543,334, Cl. 437-8.000.
Ozrovitz, Aaron; and Badalamenti, Rosario, to Safe Surroundings, Inc. Self-retaining bumper pad. 5,542,135, Cl. 5-424.000.
P.O.P. Displays, Inc.: *See—*
Yablans, Gerald; and Chan, Anthony, 5,542,552, Cl. 211-59.300.
Pace Window & Door Corp.: *See—*
Allen, Gregory B., 5,542,721, Cl. 292-194.000.
Pacific Communication Sciences, Inc.: *See—*
Robinson, Mark T.; Gardner, Steven H.; Wong, Matt; Kasmir, Seton P.; Balachandran, Kumar; Graham, Sue; Schjelderup, Gail; and Quick, Roy F., Jr., 5,544,222, Cl. 379-58.000.
Padovani, Roberto: *See—*
Tiedemann, Edward G., Jr.; Weaver, Lindsay A., Jr.; and Padovani, Roberto, 5,544,196, Cl. 375-200.000.
Pagallo, Giulia, to Apple Computer, Inc. Method and apparatus for processing graphically input equations. 5,544,262, Cl. 382-189.000.
Pagallo, Giulia: *See—*
Bozinovic, Radmilo; and Pagallo, Giulia, 5,544,265, Cl. 382-203.000.
Pagano, Daniel M.; Wheeler, Richard B.; and Klees, Kevin J., to Eastman Kodak Company. Method and apparatus for processing photosensitive film. 5,543,882, Cl. 354-311.000.
Pahlke, Wulf: *See—*
Bosies, Elmar; Herrmann, Dieter; and Pahlke, Wulf, 5,543,402, Cl. 514-114.000.
Paire, Christian: *See—*
Groshens, Pierre; and Paire, Christian, 5,543,214, Cl. 428-261.000.
Pak, Chu: *See—*
Watson, Herman L.; and Pak, Chu, 5,543,012, Cl. 156-440.000.
Palange, Walter, to Walter Palange, Inc. Hand knitting apparatus and method. 5,542,268, Cl. 66-1.00R.
Palasz, Peter D.: *See—*
Nield, Eric; and Palasz, Peter D., 5,543,445, Cl. 523-406.000.
Palevsky, Alan; and Koufopoulos, Peter F., to Raytheon Company. Field emission display with focus grid and method of operating same. 5,543,691, Cl. 315-366.000.
Pall Corporation: *See—*

Pall, David B.; Gsell, Thomas C.; and Muellers, Brian T., 5,543,060, Cl. 210-767.000.
Stoyell, Richard C.; Williamson, Kenneth M.; Hopkins, Scott D.; Geibel, Stephen A.; and Wolff, Terry L., 5,543,047, Cl. 210-493.200.
Pall, David B.; Gsell, Thomas C.; and Muellers, Brian T., to Pall Corporation. Method for processing blood for human transfusion. 5,543,060, Cl. 210-767.000.
Palmer, Matthew A.: *See—*
Slater, Charles R.; Palmer, Matthew A.; Kortenbach, Jurgen A.; McBrayer, Michael S.; and Gottlieb, Saul, 5,542,432, Cl. 128-751.000.
Palmer, Whitfield M., Jr., to MFM Industries, Inc. Animal litter of clay and western red cedar. 5,542,374, Cl. 119-173.000.
Palmquist, John M.: *See—*
Csipkes, Andrei; and Palmquist, John M., 5,543,915, Cl. 356-345.000.
Palomar Technologies Corporation: *See—*
Blanchard, Randall D., 5,543,870, Cl. 353-74.000.
Panagas, Peter G., Jr.: *See—*
Ebbing, Peter F.; and Panagas, Peter G., Jr., 5,544,275, Cl. 392-480.000.
Panda Project, The: *See—*
Crane, Stanford W., Jr.; and Portuondo, Maria M., 5,543,586, Cl. 174-262.000.
Pao, Hsueh-Wen; Faulstich, David L.; Snyder, Dane T.; Ma, Johnny T.; Izzo, Kenneth R.; Swanson, Joel C.; Laurent, Martin S.; and Kachel, Peter F., to General Electric Company. Method and apparatus for in situ detection of defective nuclear fuel assembly. 5,544,208, Cl. 376-253.000.
Papadopoulos, Costas, to VXI Corporation. Telephone headset interface circuit. 5,544,243, Cl. 379-413.000.
Papaliolios, Andreas: *See—*
Cliff, Richard G.; Reddy, Srinivas T.; Veenstra, Kerry; Papaliolios, Andreas; Sung, Chiakang; Terrill, Richard S.; Raman, Rina; and Bielby, Robert R. N., 5,543,730, Cl. 326-38.000.
Papathomas, Kostas: *See—*
Gaynes, Michael A.; Papathomas, Kostas; Phelan, Giana M.; and Woychik, Charles G., 5,542,602, Cl. 228-175.000.
Papazian, Carol J.: *See—*
Creswell, Carroll W.; Lanning, Steven G.; Papazian, Carol J.; and Rulon, James M., 5,544,229, Cl. 379-67.000.
Papendorf, Jörg; and Wagner, Franz-Josef, to Goetze Payen GmbH. Cylinder head gasket with folded u-shaped stopper. 5,542,683, Cl. 277-180.000.
Papenfuhs, Theodor: *See—*
Rapp, Jochen; Planker, Siegfried; Papenfuhs, Theodor; and Bartels, Günter, 5,543,550, Cl. 560-19.000.
Paracom Corporation: *See—*
Huei, Lin M., 5,544,357, Cl. 395-600.000.
Paragon Concepts, Inc.: *See—*
Lewak, Jerzy; Grzechnik, Slawek; and Matousek, Jon, 5,544,360, Cl. 395-600.000.
Pardee, Arthur B.: *See—*
Keyomarsi, Khandan; and Pardee, Arthur B., 5,543,291, Cl. 435-6.000.
Parente, Richard: *See—*
Abbate, Richard; and Parente, Richard, 5,542,523, Cl. 198-384.000.
Parisi, Debra M.: *See—*
Brecher, Virginia H.; Chou, Paul B.-L.; Hall, Robert W.; Parisi, Debra M.; Rao, Ravishankar; Riley, Stuart L.; and Sturzenbecker, Martin C., 5,544,256, Cl. 382-149.000.
Park, Byung-Sun; Oh, Yong-Ho; Choi, Sang-Soo; and Yoo, Hyung-Joun, to Electronics & Telecommunications Research Inst. Photomask for t-gate formation and process for fabricating the same. 5,543,253, Cl. 439-5.000.
Park, Chan Y., to Goldstar Co., Ltd. Apparatus for controlling kimchi storage temperature in refrigerator. 5,542,262, Cl. 62-229.000.
Park, Chan-eon; Yun, Hwang-kyu; Sim, Sung-min; and Choi, Wan-gyun, to Samsung Electronics Co., Ltd. Method for treating a polyimide surface. 5,543,493, Cl. 528-353.000.
Park, Cheol S.: *See—*
Keum, Dong Y.; Park, Cheol S.; and Ryou, Eui K., 5,543,346, Cl. 437-52.000.
Park, Hyoung-woon, to Samsung Electronics Co., Ltd. Adaptive equalizer of disk reproducing apparatus using a constant angular velocity method. 5,543,978, Cl. 360-65.000.
Park, Joon K.: *See—*
Kim, Jung W.; Shin, Hee J.; Park, Joon K.; and Min, Kyeong B., 5,543,393, Cl. 514-11.000.
Park, Linda S.; and Goodwin, Raymond G., to Immunex Corporation. Antibodies to interleuken-7 receptors. 5,543,320, Cl. 435-240.270.
Park, Pyong K., to Hughes Missile Systems Company. Common aperture dual polarization array fed by rectangular waveguides. 5,543,810, Cl. 343-771.000.
Parker, Anthony A.: *See—*
Horn, William E., Jr.; Balaba, Willy M.; and Parker, Anthony A., 5,543,173, Cl. 427-212.000.
Parker, Brian A.; and Holejko, Longin V., to Hampshire Chemical Corp. Herbicidal compositions comprising solutions of glyphosate and polyurea and/or polyurethane. 5,543,383, Cl. 504-116.000.
Parker, David A.: *See—*
Hogan, S. David; and Parker, David A., 5,543,103, Cl. 264-219.000.
Parker, Eric G.; and Hardy, Donald P., to Illinois Tool Works Inc. Dual compensating stabilizer. 5,542,705, Cl. 280-772.000.
Parker, Kevin J.; and Mitsa, Theophano, to Research Corporation Technologies, Inc. Method and apparatus for halftone rendering of a gray image using a blue noise mask. 5,543,941, Cl. 358-534.000.
Parri, Owain L.; Brown, Emma J.; Coates, David; and Goulding, Mark J., to Merck Patent Gesellschaft Mit Beschrankter Haftung. Liquid crystalline material. 5,543,075, Cl. 252-299.010.
Parrish, George R.: *See—*
Williams, Terry N.; and Parrish, George R., 5,542,138, Cl. 5-658.000.
Parrish, Ottis O.: *See—*
Wright, James A.; and Parrish, Ottis O., 5,543,575, Cl. 800-200.000.
Parsons, Theron E., III: *See—*
Miller, Richard A.; George, Scott E.; Parsons, Theron E., III; and Montgomery, Mark A., 5,543,488, Cl. 528-277.000.
Patel, Vinu: *See—*
Tochacek, Miroslav; Courteau, Donald M.; and Patel, Vinu, 5,543,004, Cl. 156-93.000.
Patel, Viren C., to SGS-Thomson Microelectronics, Inc. Transistor structure for improved base–collector junction characteristics. 5,543,655, Cl. 257-514.000.
Patton, Jasson T.; Devore, David D.; Timmers, Francis J.; Soto, Jorge; Schmidt, Gregory F.; and Wilson, David R., to Dow Chemical Company, The. Polymerization process using diene containing catalysts. 5,543,480, Cl. 526-126.000.
Paul, D. Scott: *See—*
Luffel, Robert W.; Paul, D. Scott; and Rugg, Jon D., 5,544,146, Cl. 369-178.000.
Pauty, Etienne: *See—*
Lopez, François; Pauty, Etienne; and Brun, Norbert, 5,544,021, Cl. 362-61.000.
Payne, Edward A.; and Hartsell, Hal C., Jr., to Gilbarco Inc. Vapor recovery system for a fuel delivery system. 5,542,458, Cl. 141-7.000.
Payne, LeRoy. Continuous structure forming method. 5,543,006, Cl. 156-177.000.
Payne, Mark A.: *See—*
Andreiko, Craig A.; and Payne, Mark A., 5,542,842, Cl. 433-3.000.
Payne, Richard S.: *See—*
Tsang, Robert W. K.; Farash, Jeffrey A.; and Payne, Richard S., 5,543,013, Cl. 156-643.100.
Pease, Allan F.; and Moore, Richard, to Future Domain Corporation, Incorporated. Interface and control circuit for regulating data flow in a SCSI initiator with multiple host bus interface selection. 5,544,326, Cl. 395-250.000.
Pecher, Günter: *See—*
Straubinger, Werner; Pecher, Günter; and Kohlmann, Richard, 5,542,965, Cl. 95-14.000.
Peck, David M.: *See—*
Dietz, Raymond L.; and Peck, David M., 5,543,366, Cl. 501-41.000.
Peck, Nicolas: *See—*
May, Robert; Granger, James E.; Peck, Nicolas; and Miller, Rohn J., 5,544,354, Cl. 395-600.000.
Peebles, D. Scott, to IMO Industries, Inc. Steering cylinder for outboard engines. 5,542,864, Cl. 440-61.000.
Pelaez, Fernando: *See—*
Bills, Gerald F.; Curotto, James E.; Dreikorn, Sarah J.; Jenkins, Rosalind G.; Liesch, Jerrold M.; Morris, Sandra A.; Thompson, John R.; Zink, Deborah L.; Jansson, Richard K.; Basilio, Angela; Diez, Teresa; Pelaez, Fernando; and Vicente, Francisca, 5,543,429, Cl. 514-468.000.
Pelaez Perez, Fernando: *See—*
Bolessa, Evon A.; Schwartz, Robert E.; Bills, Gerald F.; Giacobbe, Robert A.; Pelaez Perez, Fernando; Arroyo, Angeles C.; Matas, Teresa D.; Fernandez, Isabel M.; Perez, Francisca V.; Mandala, Suzanne M.; Zink, Deborah L.; Thornton, Rosemary; Thompson, John R.; and Curotto, James E., 5,543,431, Cl. 514-627.000.
Pellegrin, Bernard: *See—*
Michaut, Bernard; Pellegrin, Bernard; and Voisembert, Sylvie, 5,544,209, Cl. 376-260.000.
Peloza, Kirk B.: *See—*
Bandura, Michael A.; and Peloza, Kirk B., 5,542,860, Cl. 439-567.000.
Pen, Jan: *See—*
van Ooijen, Albert J. J.; Rietveld, Krijn; Hoekema, Andreas; Pen, Jan; Sijmons, Peter C.; Verwoerd, Teunis C.; and Quax, Wilhemus J., 5,543,576, Cl. 800-250.000.
Penn State Research Foundation, The: *See—*
Chung, T. C.; and Lu, H. L., 5,543,484, Cl. 526-347.100.
Streit, Donald A.; Casalena, Joe; and Ovaert, Tim, 5,542,221, Cl. 52-403.100.
Penniman, William E. Ladder caddy. 5,542,553, Cl. 211-70.600.
Pepper, Virgil W.: *See—*
Hutchens, Wilbur D.; Pepper, Virgil W.; and Jensen, Frank E., 5,542,681, Cl. 277-106.000.
Perego, Gabriele; Bastioli, Catia; Grzebieniak, Karolina; and Niekraszewicz, Antoni, to Ministero Dell'Univerita' E Della Ricerca Scientifica E Tecnologica. Process for the production of poly(lactic acid). 5,543,494, Cl. 528-354.000.
Perez, Carlos, to Prostahelp, Inc. Dietary supplement for alleviating the symptoms associated with enlargement of the prostate gland. 5,543,146, Cl. 424-195.100.
Perez, Francisca V.: *See—*
Bolessa, Evon A.; Schwartz, Robert E.; Bills, Gerald F.; Giacobbe, Robert A.; Pelaez Perez, Fernando; Arroyo, Angeles C.; Matas, Teresa D.; Fernandez, Isabel M.; Perez, Francisca V.; Mandala, Suzanne M.; Zink, Deborah L.; Thornton, Rosemary; Thompson, John R.; and Curotto, James E., 5,543,431, Cl. 514-627.000.

Perino, Dider: *See—*
Ichiya, Mitsuo; Kasano, Fumihiro; Nishimura, Hiromi; Lewiner, Jacques; and Perino, Dider, 5,544,001, Cl. 361-233.000.
Peripheral Vision Limited: *See—*
Smithies, Christopher P. K.; and Newman, Jeremy M., 5,544,255, Cl. 382-119.000.
Perkin-Elmer Corporation, The: *See—*
Hoff, Louis B.; Lachenmeier, Eric W.; Raysberg, Yefim M.; and Nordman, Eric S., 5,543,026, Cl. 204-612.000.
Perkins, Raymond T.: *See—*
Turner, D. Clark; Nielsen, Andrew J.; Perkins, Raymond T.; and Madden, Michael, 5,544,218, Cl. 378-208.000.
Perkins, Thad W.: *See—*
Clark, Harry E.; Henderson, Cynthia W.; Marcinek, Robert C.; Mayfield, Frances W.; Perkins, Thad W.; and Voss, Jorg F., 5,543,202, Cl. 428-154.000.
Perkitny, Jerzy: *See—*
Nottingham, John R.; Spirk, John W., Jr.; Brown, Patrick W.; and Perkitny, Jerzy, 5,542,570, Cl. 221-192.000.
Perret, Gerard A., Jr. Disposable orthodontic bracket pad. 5,542,844, Cl. 433-9.000.
Perrillat-Amede, Denis; Pierrejean, Didier; and Reverdy, Francois, to Alcatel CIT. Turbomolecular vacuum pump. 5,542,825, Cl. 417-423.400.
Perron, Paul A.: *See—*
Sypek, Maria T.; Delude, John R.; and Perron, Paul A., 5,543,262, Cl. 430-162.000.
Perstorp AB: *See—*
Bergvall, Göran, 5,543,557, Cl. 560-209.000.
Peruski, Nancy A., to Ford Motor Company. Balance dam return spring for friction element of an automatic transmission. 5,542,517, Cl. 192-85.0AA.
Pessier, Rudolf C. O.; Scott, Danny E.; Grimes, Robert E.; and Isbell, Matthew R., to Baker Hughes Incorporated. Earth-boring bit with improved cutting structure. 5,542,485, Cl. 175-371.000.
Petermann, Werner: *See—*
Mantoan, Silvano; and Petermann, Werner, 5,542,715, Cl. 285-226.000.
Peters, Bryan T. Hand control for vehicles. 5,542,312, Cl. 74-481.000.
Peters, Michael G.: *See—*
Beilin, Solomon I.; Chou, William T.; Kudzuma, David; Lee, Michael G.; Murase, Teruo; Peters, Michael G.; Roman, James J.; Swamy, Som S.; and Wang, Wen-chou V., 5,544,017, Cl. 361-790.000.
Peters, Ray; Wilson, Woodrow S.; and LaVange, Donald, to Polytop Corporation. Dispensing closure with pivotably mounted spout and means for limiting travel thereof. 5,542,585, Cl. 222-531.000.
Petersen, Paul S.; and Ster, James F., Jr., to Bioform Engineering, Inc. Exercise machine which converts reciprocating motion to unidirectional rotational motion. 5,542,893, Cl. 482-72.000.
Peterson, Ralph: *See—*
Proudfit, James R.; and Peterson, Ralph, 5,542,680, Cl. 473-378.000.
Peterson, Stanley D.: *See—*
Erickson, Steven E.; and Peterson, Stanley D., 5,542,212, Cl. 49-181.000.
Pethe, Laszlone: *See—*
Moreno, Fulgencio Powell; Litkei, Laszlo; Galamb, Vilmos; Gulyas, Imre; Repasi, Janos; Veres, Agota Repasine; Vigh, Jozsef; Koczka, Istvanne; Fehervari, Edit; Roka, Laszlone; Pethe, Laszlone; and Neu, Jozsef, 5,543,562, Cl. 562-17.000.
Petitou, Maurice; and Van Boeckel, Constant A. A., to AKZO Nobel NV; and Sanofi S.A. Sulfated glycosaminoglycanoid derivatives of the heparin and heparan sulfate type. 5,543,403, Cl. 514-54.000.
Petroff, Lenin J.: *See—*
McGee, James B.; Petroff, Lenin J.; Brecht, Doris J.; Ollinger, William J., deceased; and Ollinger, by John M., legal representative, 5,543,082, Cl. 252-321.000.
Petterson, Grace C.; Dunn, Steven B.; and Petterson, Tor, to Munchkin, Inc. System and method for dispensing liquid medicaments to infants. 5,542,922, Cl. 604-77.000.
Petterson, Tor: *See—*
Petterson, Grace C.; Dunn, Steven B.; and Petterson, Tor, 5,542,922, Cl. 604-77.000.
Pettit, Paul J.: *See—*
Carter, Ernest E., Jr.; Frulla, Roberto E.; Pettit, Paul J.; Sanford, Frank L.; and Saugier, R. Kent, 5,542,782, Cl. 405-129.000.
Petty, Frank L. Bubble blowing apparatus. 5,542,869, Cl. 446-016.000.
Pfadenhauer, Ernest H.: *See—*
Stark, William A.; and Pfadenhauer, Ernest H., 5,542,575, Cl. 220-256.000.
Pfeiffer, John D., to JDP Innovations, Inc. Alkaline battery charging method and battery charger. 5,543,702, Cl. 320-15.000.
Pfeiffer, Thomas, to Alcatel N.V. Optically pumped bistable laser. 5,544,192, Cl. 372-69.000.
Pfitzenmaier, Shirley L. Theft resistant pouch for use in a motor vehicle. 5,542,590, Cl. 224-275.000.
Pfizer Inc: *See—*
Cross, Peter E.; and Stobie, Alan, 5,543,419, Cl. 514-305.000.
Pfizer Inc.: *See—*
Swindell, Archie C.; and Wong, Samuel S., 5,543,411, Cl. 514-254.000.
Phan, Dean V.; Trokhan, Paul D.; Laughlin, Robert G.; and Trinh, Toan, to Procter & Gamble Company, The. Waterless self-emulsiviable biodegradable chemical softening composition useful in fibrous cellulosic materials. 5,543,067, Cl. 106-287.250.
Phan, Thuy N.: *See—*
Stevenson, Tyler A.; Ravichandran, Ramanathan; Holt, Mark S.; Phan, Thuy N.; Birbaum, Jean-Luc; and Toan, Vien V., 5,543,518, Cl. 544-215.000.
Pharmacia AB: *See—*
Carlsson, Thommy; and Andersson, Sven B., 5,543,424, Cl. 514-343.000.
Phelan, Giana M.: *See—*
Gaynes, Michael A.; Papathomas, Kostas; Phelan, Giana M.; and Woychik, Charles G., 5,542,602, Cl. 228-175.000.
Phelps, Andrew E.: *See—*
Beard, Douglas R.; Phelps, Andrew E.; Woodmansee, Michael A.; Blewett, Richard G.; Lohman, Jeffrey A.; Silbey, Alexander A.; Spix, George A.; Simmons, Frederick J.; and Van Dyke, Don A., 5,544,337, Cl. 395-375.000.
Philip Morris Incorporated: *See—*
Atwell, Charles G.; Budjinski, Joseph F., II; and Shook, Jack R., 5,542,901, Cl. 493-47.000.
Philippe, Michel: *See—*
Hocquaux, Michel; and Philippe, Michel, 5,543,436, Cl. 424-61.000.
Philips Electronics North America Corporation: *See—*
Wong, Stephen L., 5,543,740, Cl. 327-108.000.
Phillips Electronics North America Corporation: *See—*
Mensz, Piotr M., 5,544,190, Cl. 372-46.000.
Phillips Petroleum Company: *See—*
Bergmeister, Joseph J., 5,543,376, Cl. 502-117.000.
Lashier, Mark E.; Freeman, Jeffrey W.; and Knudsen, Ronald D., 5,543,375, Cl. 502-117.000.
Wu, An-hsiang, 5,543,374, Cl. 502-107.000.
Phoebe, Charles: *See—*
Charkoudian, John; Pluskal, Malcolm; Wang, David; and Phoebe, Charles, 5,543,054, Cl. 210-638.000.
Photon Dynamics, Inc.: *See—*
Henley, Francois J., 5,543,729, Cl. 324-770.000.
Pichardo, Antonio C. Device for aeration of polluted water. 5,543,089, Cl. 261-116.000.
Picheny, Michael A.: *See—*
Bakis, Raimo; Gopalakrishnan, Ponani S.; Kanevsky, Dimitri; Nadas, Arthur J.; Nahamoo, David; Picheny, Michael A.; and Sedivy, Jan, 5,544,277, Cl. 395-2.200.
Picker International, Inc.: *See—*
Heuscher, Dominic J., 5,544,212, Cl. 378-15.000.
Shroy, Robert E., Jr.; Green, Donald T.; and Kapp, Steven C., 5,544,215, Cl. 378-98.120.
Srinivasan, Ravi; Elek, Robert A.; and Liu, Haiying, 5,543,711, Cl. 324-318.000.
Pierce, Stanley L.; and Moan, Richard D., to Ford Motor Company. Multiple-speed automatic transmission for a motor vehicle. 5,542,889, Cl. 475-275.000.
Pierotti, L. John: *See—*
Green, David J.; Bunker, S. Mark; Moore, Walter A.; Pierotti, L. John; Storey, J. Kirk; and Olson, Brent K., 5,542,702, Cl. 280-737.000.
Pierrejean, Didier: *See—*
Perrillat-Amede, Denis; Pierrejean, Didier; and Reverdy, Francois, 5,542,825, Cl. 417-423.400.
Pietsch, Kurt: *See—*
Adrian, Willy; Bäthge, Frank; Borchers, Peter; Pietsch, Kurt; Wallbaum, Knuth; and Wente, Gerald, 5,542,522, Cl. 198-337.000.
Piety, Kenneth R.: *See—*
Piety, Richard W.; and Piety, Kenneth R., 5,544,073, Cl. 364-508.000.
Piety, Richard W.; and Piety, Kenneth R., to Computational Systems, Inc. Rotor balancing calculator. 5,544,073, Cl. 364-508.000.
Pimentel, Robert L. Piano hammer rail stop assembly. 5,542,328, Cl. 84-220.000.
Pineau, Stéphane: *See—*
Lucas, Philippe; Mege, Philippe; and Pineau, Stéphane, 5,544,155, Cl. 370-18.000.
Pinelli, Thomas F.: *See—*
Messinger, Robert; and Pinelli, Thomas F., 5,542,714, Cl. 285-158.000.
Pinkalla, Cary; and Goins, Garrett, to Rite-Hite Corporation. Roll-up strip curtain barrier apparatus. 5,542,463, Cl. 160-273.100.
Pinnamaraju, Prasad: *See—*
Zhang, Guohua; and Pinnamaraju, Prasad, 5,543,099, Cl. 264-115.000.
Pioneer Electronic Corporation: *See—*
Honda, Jun; and Miyata, Kunihiro, 5,543,760, Cl. 330-298.000.
Pioneer-Hi-Bred International, Inc.: *See—*
Wright, James A.; and Parrish, Ottis O., 5,543,575, Cl. 800-200.000.
Pipkin, James D.: *See—*
Rork, Gerald S.; and Pipkin, James D., 5,543,154, Cl. 424-473.000.
Pirner, Manfred: *See—*
Bell, Carl-Martin; Pirner, Manfred; Buck, Reinhold; and Gohl, Hermann J., 5,543,465, Cl. 525-182.000.
Pischel, Ernie. Carrier containing enzymes for treating sewage sludge. 5,543,309, Cl. 435-177.000.
Pitis, Philip: *See—*
Carmosin, Richard J.; Carson, John R.; Pitis, Philip; and Raffa, Robert B., 5,543,530, Cl. 548-452.000.
Pitney Bowes: *See—*

Auslander, Judith D.; and Berson, William, 5,542,971, Cl. 106-21.00A.
Pitt, Alan R.; Caesar, Julian C.; Gibson, Danuta; Wear, Trevor J.; Young, David J.; and King, Scott A., to Eastman Kodak Company. Surfactants and hydrophilic colloid compositions and materials containing them. 5,543,555, Cl. 560-151.000.
Plach, Herbert: *See—*
Rieger, Bernhard; Yoshitake, Hiroki; Sawada, Atsushi; Plach, Herbert; and Weber, Georg, 5,543,077, Cl. 252-299.630.
Plaehn, Jay. Parallel randomly stacked, stranded, laminated bamboo boards and beams. 5,543,197, Cl. 428-106.000.
Planker, Siegfried: *See—*
Rapp, Jochen; Planker, Siegfried; Papenfuhs, Theodor; and Bartels, Günter, 5,543,550, Cl. 560-19.000.
Plant Cell Technology, Inc.: *See—*
Guri, Assaf Z., 5,543,321, Cl. 435-240.400.
Plasma Physics Corp.: *See—*
Coleman, John H., 5,543,634, Cl. 257-54.000.
Playtex Products, Inc.: *See—*
Morano, Emanuel P., 5,542,670, Cl. 220-714.000.
Pless, Benjamin D.: *See—*
Mar, Craig E.; Pless, Benjamin D.; and Bush, M. Elizabeth, 5,542,173, Cl. 29-825.000.
Plessey Semiconductors Limited: *See—*
Davies, Richard, 5,543,979, Cl. 360-67.000.
Plessow, Joerg: *See—*
Fehn, Edmund; Schmidt, Felix; and Plessow, Joerg, 5,543,181, Cl. 427-421.000.
Plumer, Mark J. Wheel opening inserts and lug nut assemblies thereof for mounting non-ferrous vehicle wheels. 5,542,753, Cl. 301-65.000.
Pluskal, Malcolm: *See—*
Charkoudian, John; Pluskal, Malcolm; Wang, David; and Phoebe, Charles, 5,543,054, Cl. 210-638.000.
Podkowa, Bill, to Dallas Semiconductor Corporation. Timekeeping comparison circuitry and dual storage memory cells to detect alarms. 5,544,078, Cl. 364-569.000.
Pogue Seed Co., Inc.: *See—*
Beisel, Victor A., 5,542,612, Cl. 241-5.000.
Pohlenz, Hans-Dieter; Boidol, Werner; and Streber, Wolfgang, to Schering Aktiengesellschaft. Process for the isolation and characterisation of a gene enzyme system for inactivation of the herbicide phenmedipham and transfer of the gene into plants. 5,543,306, Cl. 435-91.410.
Poignant, Philippe: *See—*
Andrieu, Xavier; Rocher, Michel; Guillaume, Philippe; and Poignant, Philippe, 5,543,245, Cl. 429-90.000.
Polaris Industries, LP: *See—*
Bell, Stephen H., 5,542,509, Cl. 188-322.140.
Pollack, Jack, to Imodco, Inc. TLP and detachable derrick vessel. 5,542,783, Cl. 405-223.100.
Pollhammer, Stefan; Scaller, Josef; and Winetzhammer, Willibald, to Chemie Linz Gesellschaft m.b.H. Hydrogenolytic reduction of peroxidic ozonolysis products. 5,543,560, Cl. 560-234.000.
Pollman, Beverly E. Combined supplemental shading and carrier apparatus for a canopied stroller. 5,542,732, Cl. 296-77.100.
Polries, Donald J. Collapsible fish cleaning table. 5,542,359, Cl. 108-26.000.
Polunas, David M.: *See—*
Silverschotz, Stanford B.; Rua, Louis, Jr.; Polunas, David M.; and Martin, Stephen E., 5,542,710, Cl. 283-94.000.
Polveda, Jacques J.: *See—*
Monvaillier, Jérome M.; and Polveda, Jacques J., 5,542,818, Cl. 416-134.00A.
Polytop Corporation: *See—*
Peters, Ray; Wilson, Woodrow S.; and LaVange, Donald, 5,542,585, Cl. 222-531.000.
Pomerantz, Carl. Adhesive hang tab. 5,542,634, Cl. 248-214.000.
Pong, Chungdee: *See—*
Haven, Duane A.; and Pong, Chungdee, 5,543,683, Cl. 313-461.000.
Ponizovsky, Aleksander Z.: *See—*
Ponizovsky, Lazar Z.; Ponizovsky, Aleksander Z.; Potapov, Viktor A.; and Shvedchikov, Adolf P., 5,542,967, Cl. 96-82.000.
Ponizovsky, Lazar Z.; Ponizovsky, Aleksander Z.; Potapov, Viktor A.; and Shvedchikov, Adolf P. High voltage electrical apparatus for removing ecologically ooxious substances from gases. 5,542,967, Cl. 96-82.000.
Ponn, Frederick H.: *See—*
Gallagher, Kevin P.; Vermilion, Donn R.; and Ponn, Frederick H., 5,543,211, Cl. 428-224.000.
Ponticello, Ignazio S.: *See—*
Brummond, Barbara A.; Saini, Mohan S.; and Ponticello, Ignazio S., 5,543,311, Cl. 435-188.000.
Poplawski, Joseph M., Jr.: *See—*
Kumar, Manoj; and Poplawski, Joseph M., Jr., 5,544,112, Cl. 365-230.060.
Porta, Norbert: *See—*
Weissen, Hans J.; and Porta, Norbert, 5,543,066, Cl. 510-515.000.
Portuondo, Maria M.: *See—*
Crane, Stanford W., Jr.; and Portuondo, Maria M., 5,543,586, Cl. 174-262.000.
Posse, Kenneth E., to Hewlett-Packard Company. Method and apparatus for the capturing and characterization of high-speed digital information. 5,544,175, Cl. 371-25.100.
Post, Friedhelm. Bending machine. 5,542,283, Cl. 72-446.000.
Potapov, Viktor A.: *See—*
Ponizovsky, Lazar Z.; Ponizovsky, Aleksander Z.; Potapov, Viktor A.; and Shvedchikov, Adolf P., 5,542,967, Cl. 96-82.000.
Pototzky, Günther: *See—*
Simon, Wolfgang; Pototzky, Günther; Groos, Rolf; and Schmidt, Günter, 5,542,919, Cl. 604-29.000.
Poulos, Philip. Clippings receptacle with orbiting lawn mower. 5,542,242, Cl. 56-13.500.
Povinger, Bela P., to Ford Motor Company. Compressed natural gas fuel injection control system with improved mechanism for compensating for pressure, temperature and supply voltage variations. 5,542,392, Cl. 123-480.000.
Powell, Mark S.: *See—*
Hein, Carl C., III; Koschak, Matthew S.; Powell, Mark S.; Shearer, Peter P.; and Wong, Milly M. L., 5,542,529, Cl. 206-245.000.
Powers, James C.; Boduszek, Bogdan; and Oleksyszyn, Jozef, to Georgia Tech Research Corp. Proline phosphonate derivatives. 5,543,396, Cl. 514-19.000.
Powers, Robert D., to Northern Illinois Gas Company. Portable gas pressure monitor with independently adjustable high and low set points. 5,542,287, Cl. 73-40.50R.
PPG Industries Inc.: *See—*
Bartrug, Bruce A.; Koontz, Harry S.; and Winter, John A., 5,543,601, Cl. 219-203.000.
Pradhan, Milind M.: *See—*
Eisenberg, David C.; Pradhan, Milind M.; and Howie, Milham S., 5,543,537, Cl. 556-157.000.
Prasad, Vidyanatha A.; Newallis, Peter E.; and Foote, Emerson L., Jr., to Bayer Corporation. Process for preparing phosphorodichloridodithioates by reacting alkyl mercaptans with PCl_3 $PSCl_3$ and sulfur. 5,543,543, Cl. 558-96.000.
Pratt, Kyle A.; Yonker, Michael A.; and Xu, Frank L., to Cirrus Logic, Inc. System and method for displaying closed caption data on a PC monitor. 5,543,850, Cl. 348-617.000.
Precht, Sven: *See—*
Klüh, Gorden; and Precht, Sven, 5,543,100, Cl. 264-130.000.
Preston, Duane; and Drube, Thomas K., to Minnesota Valley Engineering, Inc. High temperature resistant thermal insulation for cryogenic tanks. 5,542,255, Cl. 62-45.100.
Price, Billy F.; Thywissen, H. Joseph; and Campisse, Nash, to Price Compressor Company Inc. Process and apparatus for complete fast filling with dehydrated compressed natural gas. 5,542,459, Cl. 141-18.000.
Price Compressor Company Inc.: *See—*
Price, Billy F.; Thywissen, H. Joseph; and Campisse, Nash, 5,542,459, Cl. 141-18.000.
Price, Michael T. Rotatably driven autoclavable ligation instrument. 5,542,843, Cl. 433-4.000.
Priem, Curtis; Malachowsky, Chris; McIntyre, Bruce; and Moffat, Guy, to Sun Microsystems, Inc. Apparatus for selecting frame buffers for display in a double buffered display system. 5,543,824, Cl. 345-201.000.
Priesemuth, Wolfgang. Method of reducing the peak load of energy supply network systems and apparatus for limiting the power consumption of a consumer unit fed from an energy supply connection. 5,543,666, Cl. 307-39.000.
Primlani, Indru J. Paper, leaf and laminate binder. 5,542,708, Cl. 281-21.100.
Princeton Video Image, Inc.: *See—*
Rosser, Roy J.; and Williams, Brown F., 5,543,856, Cl. 348-578.000.
Pringle, Colin D.: *See—*
Moore, Donal; and Pringle, Colin D., 5,542,591, Cl. 224-545.000.
Pringle, Ronald E.; Sides, Winfield M., III; Folsom, David N.; and McGavern, Cecil G., III, to Camco International, Inc. Metal coiled tubing with signal transmitting passageway. 5,542,472, Cl. 166-65.100.
Pringle, Ronald E. Simplified sealing and anchoring device for a well tool. 5,542,473, Cl. 166-120.000.
Prinzing Enterprises, Inc.: *See—*
Turek, Mark E., 5,543,593, Cl. 200-43.110.
Procter & Gamble Company, The: *See—*
Kline, Mark J.; Roe, Donald C.; Daniels, Dean J.; Zorb, James E.; and Dragoo, Jerry L., 5,542,942, Cl. 604-385.200.
Morita, Yasuko, 5,542,941, Cl. 604-385.100.
Phan, Dean V.; Trokhan, Paul D.; Laughlin, Robert G.; and Trinh, Toan, 5,543,067, Cl. 106-287.250.
Rajaiah, Jayanth; Saud, Abel; MacKay, Bruce J.; and Grubbs, Dennis R., 5,543,443, Cl. 523-120.000.
Sageser, David M., 5,542,943, Cl. 604-385.200.
Sivik, Mark R.; and Severns, John C., 5,543,083, Cl. 252-403.000.
Trinh, Toan; and Gardlik, John M., 5,543,157, Cl. 424-493.000.
Proctor, Richard J.: *See—*
Jeffrey, Mark T.; Maddern, Thomas S.; and Proctor, Richard J., 5,544,168, Cl. 370-60.100.
Profera, Charles E., Jr., to Martin Marietta Corp. Reflectarray antenna for communication satellite frequency re-use applications. 5,543,809, Cl. 343-753.000.
Progressive Games, Inc.: *See—*
Adams, Terry; Ambrosio, Neil J.; Bratton, William E.; Forsythe, William M.; Hatton, Bruce E.; Kinder, Larry L.; and Swat, William A., 5,542,438, Cl. 131-238.000.
Prokop, Gary F.: *See—*
Meyers, Brenda J.; Herritz, Donald W.; Johansen, Jean L.; Hudson, William B., Jr.; Bell, Randall P.; Prokop, Gary F.; Caruso, James F.; and Allen, James L., 5,542,921, Cl. 604-74.000.
Prolume, Inc.: *See—*

Grondal, Daniel J.; and Johnstone, Robert M., 5,542,201, Cl. 40-570.000.
Prolux Maschinenbau GmbH: *See—*
Bernicke, Erhard; Rohr, Klaus; and Eibisch, Karl, 5,543,690, Cl. 315-224.000.
Propper Manufacturing Co., Inc.: *See—*
Nussenbaum, Joseph, 5,542,905, Cl. 600-191.000.
Prostahelp, Inc.: *See—*
Perez, Carlos, 5,543,146, Cl. 424-195.100.
Protex International Corp.: *See—*
Rothbaum, Arthur H.; and Goldblatt, Richard S., 5,543,782, Cl. 340-568.000.
Proudfit, James R.; and Peterson, Ralph, to Wilson Sporting Goods Co. Golf ball with clear cover. 5,542,680, Cl. 473-378.000.
Proxima Corporation: *See—*
Farwell, Randall S.; Shaw, Robert W.; and Marshall, Roger N., 5,543,819, Cl. 345-150.000.
Pruitt, Gerald R., to Hughes Aircraft Company. Cryogenic cooler. 5,542,254, Cl. 62-06.000.
Pukalo, Walter P.: *See—*
Warchocki, Mark; and Pukalo, Walter P., 5,542,507, Cl. 188-290.000.
Puligandla, Viswanadham: *See—*
Booth, Richard B.; Gaynes, Michael A.; Murco, Robert M.; Puligandla, Viswanadham; Roldan, Judith M.; Saraf, Ravi; and Zalesinski, Jerzy M., 5,543,585, Cl. 174-261.000.
Pulkowski, Jeffrey H.: *See—*
Deshpande, Rajendra D.; McGraw, William R.; and Pulkowski, Jeffrey H., 5,542,192, Cl. 34-115.000.
Pulley, Christopher J.; Specht, Steven J.; and Barlow, Geoffrey, to Northrop Grumman Corporation. High temperature cell electrical insulation. 5,543,247, Cl. 429-129.000.
Pulp and Paper Research Institute of Canada: *See—*
Hoffmann, John D.; Gooding, Robert W.; Roberts, Norman; and Hart, Robert S., 5,542,542, Cl. 209-17.000.
Puplett, Derrick J.: *See—*
Foote, James C.; and Puplett, Derrick J., 5,542,447, Cl. 137-113.000.
Purcell, Thomas Andrew: *See—*
Mallart, Sergio; Lassalle, Gilbert; Purcell, Thomas Andrew; and Muller, Jean Claude, 5,543,526, Cl. 548-110.000.
Puri, Suraj: *See—*
Mohindra, Raj; Bhushan, Abhay K.; Bbushan, Rajiv; and Puri, Suraj, 5,542,441, Cl. 134-95.200.
Purington, James C.: *See—*
Salzmann, David R.; and Purington, James C., 5,543,180, Cl. 427-397.700.
Purits, Valentin, to Mitel Corporation. Reset circuit for generating reset pulse over an interval of reduced voltage supply. 5,543,741, Cl. 327-143.000.
Puskas, Judit: *See—*
Baade, Wolfgang; Heinrich, Roland; Langstein, Gerhard; Mulder, Thomas; and Puskas, Judit, 5,543,479, Cl. 526-88.000.
Puumalainen, Pertti, to Fabretti Holdings Limited. Method of detection of alien matter contents in gases. 5,543,331, Cl. 436-153.000.
PVT Piepenbrock Verpackungstechnik GmbH: *See—*
Konstandin, Horst, 5,542,235, Cl. 53-454.000.
Pyszczek, Michael F.: *See—*
Takeuchi, Esther S.; and Pyszczek, Michael F., 5,543,249, Cl. 429-217.000.
Qaiesi, Husein O.; and Groves, Michael A. Limb encircling exercise weight with mounting structures. 5,542,896, Cl. 482-105.000.
QLogic Corporation: *See—*
Gupta, Alok, 5,544,180, Cl. 371-47.100.
Quaglia, Lawrence D. Wheel product comprised of a new wheel tread lock and a new wheel tread material. 5,542,752, Cl. 301-64.700.
Qualcomm Incorporated: *See—*
Robbins, Barry R.; and Ziv, Noam A., 5,544,223, Cl. 379-58.000.
Tiedemann, Edward G., Jr.; Weaver, Lindsay A., Jr.; and Padovani, Roberto, 5,544,196, Cl. 375-200.000.
Quant, Donald J.: *See—*
Fisli, Tibor; Guerin, Jean-Michel; Maeda, Patrick Y.; and Quant, Donald J., 5,543,825, Cl. 346-141.000.
Quantum Corporation: *See—*
Akin, William R., Jr.; and Bui, Trinh C., 5,544,135, Cl. 369-32.000.
Donnelly, Craig E.; and Grose, David R., 5,543,985, Cl. 360-104.000.
Quantum Materials, Inc.: *See—*
Dietz, Raymond L.; and Peck, David M., 5,543,366, Cl. 501-41.000.
Quax, Wilhemus J.: *See—*
van Ooijen, Albert J. J.; Rietveld, Krijn; Hoekema, Andreas; Pen, Jan; Sijmons, Peter C.; Verwoerd, Teunis C.; and Quax, Wilhemus J., 5,543,576, Cl. 800-250.000.
Queener, Stephen W.; and Zock, Joseph M., to Eli Lilly and Company. Genes encoding and method of expressing a novel enzyme: phthalyl amidase. 5,543,497, Cl. 530-324.000.
Queen's University at Kingston: *See—*
Layzell, David B.; Hunt, Stephen; and Dowling, Adrian N., 5,542,284, Cl. 73-23.200.
Quesnel, Lisbeth S., to Xerox Corporation. Two step, large latitude, stalled roll registration system. 5,543,909, Cl. 355-317.000.
Quessada, Daniel: *See—*
Barret, Jean; and Quessada, Daniel, 5,543,645, Cl. 257-328.000.
Quiachon, Dignah B.: *See—*
Imran, Mir A.; Gandhi, Deepak R.; Bourang, Henry; Quiachon, Dignah B.; and Chow, Andrew Y., 5,542,434, Cl. 128-772.000.
Quick, Roy F., Jr.: *See—*
Robinson, Mark T.; Gardner, Steven H.; Wong, Matt; Kasmir, Seton P.; Balachandran, Kumar; Graham, Sue; Schjelderup, Gail; and Quick, Roy F., Jr., 5,544,222, Cl. 379-58.000.
QuickLogic Corporation: *See—*
Cox, William D.; Chan, Andrew K. L.; Wong, Richard J.; Apland, James M.; and Gordon, Kathryn E., 5,544,070, Cl. 364-489.000.
Quigley, Scott: *See—*
Ostermayer, Volker; and Quigley, Scott, 5,542,455, Cl. 139-383.00A.
Quinn, Michael J.; and Richmond, George E., to Young Dental Manufacturing, Co., Inc. Dental tool chuck. 5,542,846, Cl. 433-127.000.
R. Brooks Associates, Inc.: *See—*
Brooks, Raymond J.; Gay, John M.; Weir, Bruce A.; McEntee, Paul E.; and Blood, Lauren, 5,544,206, Cl. 376-248.000.
R. J. Reynolds Tobacco Company: *See—*
Hein, Carl C., III; Koschak, Matthew S.; Powell, Mark S.; Shearer, Peter P.; and Wong, Milly M. L., 5,542,529, Cl. 206-245.000.
R. R. Donnelley & Sons Company: *See—*
Detterman, Don E.; and Erwin, Robert W., 5,542,800, Cl. 412-8.000.
R. Stresau Laboratory, Inc.: *See—*
Hanson, Ralph W., 5,542,695, Cl. 280-729.000.
Raax Co., Ltd.: *See—*
Kamewada, Shunichi, 5,543,972, Cl. 359-834.000.
Rabinkin, Anatol, to AlliedSignal Inc. Low melting nickel-palladium-silicon brazing alloy. 5,542,993, Cl. 148-528.000.
Radi Medical Systems: *See—*
Åkerfeldt, Dan, 5,542,427, Cl. 128-677.000.
Radio Energie: *See—*
Koehler, Gerard, 5,543,674, Cl. 310-164.000.
Radloff, Timothy M.; and Scholder, Erica J., to Dell USA, L.P. Computer chassis having flexible card guide for expansion card insertion and removal. 5,544,006, Cl. 361-683.000.
Raffa, Robert B.: *See—*
Carmosin, Richard J.; Carson, John R.; Pitis, Philip; and Raffa, Robert B., 5,543,530, Cl. 548-452.000.
Rahman, M. Dalil; and Durham, Dana L., to Hoechst Celanese Corporation. Photoresist having a low level of metal ions. 5,543,263, Cl. 430-168.000.
Raistrick, Ian D.: *See—*
Garzon, Fernando H.; Chung, Brandon W.; Raistrick, Ian D.; and Brosha, Eric L., 5,543,025, Cl. 204-425.000.
Rajaiah, Jayanth; Saud, Abel; MacKay, Bruce J.; and Grubbs, Dennis R., to Procter & Gamble Company, The. Denture stabiliziog compositions. 5,543,443, Cl. 523-120.000.
Rajan, Janardhanan S.; and Sariaslani, Fateme S., to Du Pont de Nemours, E. I., and Company. Microbially mediated degradation of nitrogen-containing phenol compounds. 5,543,324, Cl. 435-252.400.
Rajewski, David E. Mobile paper shredder. 5,542,617, Cl. 241-101.761.
Raman, Rina: *See—*
Cliff, Richard G.; Reddy, Srinivas T.; Veenstra, Kerry; Papaliolios, Andreas; Sung, Chiakang; Terrill, Richard S.; Raman, Rina; and Bielby, Robert R. N., 5,543,730, Cl. 326-38.000.
Ramaswami, VaradaRajan: *See—*
Unger, Evan C.; Fritz, Thomas A.; Matsunaga, Terry; Ramaswami, VaradaRajan; Yellowhair, David; and Wu, Guanli, 5,542,935, Cl. 604-190.000.
Ramjeesingh, Mohabir: *See—*
Riordan, John R.; Bear, Christine E.; Ramjeesingh, Mohabir; and Li, Canhui, 5,543,399, Cl. 514-21.000.
Ramsby, Scott D.; and Miller, Alan B. Simulated butt hinge construction. 5,542,153, Cl. 16-389.000.
Randolph, John T.: *See—*
Danishefsky, Samuel J.; and Randolph, John T., 5,543,505, Cl. 536-17.200.
Ranpak Corp.: *See—*
Beierlorzer, Edwin P., 5,542,232, Cl. 53-117.000.
Rantala, Börje: *See—*
Meriläinen, Timo; Rantala, Börje; and Weckström, Kurt, 5,542,285, Cl. 73-23.210.
Rantalainen, Erkki. Method and the system for identifyiag a visual object with a polarizing marker. 5,543,608, Cl. 235-454.000.
Rao, Bhaskar P.: *See—*
Stevens, Craig A.; Rao, Bhaskar P.; Veith, Cary A.; and Erickson, James R., 5,543,472, Cl. 525-387.000.
Rao, Ravishankar: *See—*
Brecher, Virginia H.; Chou, Paul B.-L.; Hall, Robert W.; Parisi, Debra M.; Rao, Ravishankar; Riley, Stuart L.; and Sturzenbecker, Martin C., 5,544,256, Cl. 382-149.000.
Rao, Satyajit: *See—*
Mahoney, James V.; and Rao, Satyajit, 5,544,267, Cl. 382-317.000.
Rao, Sundar M.: *See—*
Anolick, Colin; Cramer, Gregory D.; Dujari, Ramdas; Lee, Win-Chung; Rao, Sundar M.; and Wheland, Robert C., 5,543,495, Cl. 528-481.000.
Rapkin, Myron: *See—*
Diebold, Eric; Rapkin, Myron; Azhar, Abol; and Usmani, Arthur, 5,543,299, Cl. 435-28.000.

Rapp, Jochen; Planker, Siegfried; Papenfuhs, Theodor; and Bartels, Günter, to Hoechst Aktiengesellschaft. Process for the preparation of 5-fluoroanthranilic alkyl esters and/or 5-fluoroanthranilic acid. 5,543,550, Cl. 560-19.000.

Rasmussen, Jerry R.: *See—*
Dimmick, Roger F.; Fitterer, Gary A.; Jajowka, Jeff A.; Otto, William F.; Rasmussen, Jerry R.; and Sobotta, Terry L., 5,544,008, Cl. 361-684.000.

Rasmussen, Mirella E.: *See—*
Nordfang, Ole; and Rasmussen, Mirella E., 5,543,502, Cl. 530-383.000.

Raterman, Donald E.: *See—*
Geib, Joseph J.; Jones, William J.; Mennie, Douglas U.; and Raterman, Donald E., 5,542,880, Cl. 453-10.000.

Ratliff, Kathleen I.: *See—*
Glaug, Frank S.; Olson, Christopher P.; Ratliff, Kathleen I.; Sheldon, Donald A.; Finch, Valerie V.; and Collier, L. Warren, IV, 5,542,566, Cl. 221-48.000.

Ravichandran, Ramanathan: *See—*
Stevenson, Tyler A.; Ravichandran, Ramanathan; Holt, Mark S.; Phan, Thuy N.; Birbaum, Jean-Luc; and Toan, Vien V., 5,543,518, Cl. 544-215.000.

Rawdon, Blaine K.; and Rohrlick, Myles A., to McDonnell Douglas Corporation. Restraining and tensioning apparatus for a cargo tie-down belt. 5,542,798, Cl. 410-100.000.

Ray, Hemen, to United States of America, Navy. Bi-directionally corrugated sandwich construction. 5,543,204, Cl. 428-179.000.

Ray, Sudipta K.: *See—*
Handford, Edward F.; Harvilchuck, Joseph M.; Interrante, Mario J.; Jackson, Raymond A.; Master, Raj N.; Ray, Sudipta K.; Sablinski, William E.; and Wassick, Thomas A., 5,543,584, Cl. 174-261.000.

Raychem Corporation: *See—*
Reamey, Robert H.; and Malloy, Kevin, 5,543,944, Cl. 359-51.000.

Raysberg, Yefim M.: *See—*
Hoff, Louis B.; Lachenmeier, Eric W.; Raysberg, Yefim M.; and Nordman, Eric S., 5,543,026, Cl. 204-612.000.

Raytheon Company: *See—*
Palevsky, Alan; and Koufopoulos, Peter F., 5,543,691, Cl. 315-366.000.

Razi, Dean M. Sheath for introducing catheter. 5,542,936, Cl. 604-264.000.

Rea, Perry J.; Miller, Michael R.; Kinder, Dennis G.; Kargula, Christopher J.; and Stevens, William E., to Form Rite, Corporation. Quick connect coupling. 5,542,717, Cl. 285-319.000.

Reamey, Robert H.; and Malloy, Kevin, to Raychem Corporation. Method of imbibing a component into a liquid crystal composite. 5,543,944, Cl. 359-51.000.

Reckleben, Lisa: *See—*
Carson, Robert T.; Reckleben, Lisa; and Hogrefe, Arnold W., 5,543,583, Cl. 174-257.000.

Record, David W.: *See—*
Song, Jon H.; Sundstrom, Christafor E.; Record, David W.; Townsend, Donald J.; Broderick, Kevin B.; and Schnell, Philip G., 5,543,160, Cl. 426-3.000.

Reddy, John C.: *See—*
Knox, Robert L.; and Reddy, John C., 5,542,322, Cl. 81-177.600.

Reddy, Srinivas T.: *See—*
Cliff, Richard G.; Reddy, Srinivas T.; Veenstra, Kerry; Papaliolios, Andreas; Sung, Chiakang; Terrill, Richard S.; Raman, Rina; and Bielby, Robert R. N., 5,543,730, Cl. 326-38.000.

Reed, Steven G., to Corixa Corporation. Method for activating macrophages/monocytes. 5,543,143, Cl. 424-130.100.

Regnier, Leo. Torch-on roofing degranulator system. 5,543,003, Cl. 156-82.000.

Rego, James A.: *See—*
Walba, David M.; Ros, Maria B.; Rego, James A.; and Sierra, Teresa, 5,543,078, Cl. 252-299.650.

Reher, Michael T.: *See—*
Dougherty, Thomas J.; Inkmann, Mark S.; Smith, Debra L.; and Reher, Michael T., 5,543,248, Cl. 429-163.000.

Reibman, Amy R.: *See—*
Haskell, Barin G.; and Reibman, Amy R., 5,543,853, Cl. 348-497.000.

Reidemeister, Eric P.; Johnson, Larry K.; Mandeville, Raymond E.; Strott, Douglas B.; and Southworth, Robert O. Compact capacitive acceleration sensor. 5,542,296, Cl. 73-514.320.

Reilly, Robert. Method of making steel strapping and strip and strapping and strip. 5,542,995, Cl. 148-630.000.

Reineck, Ingrid: *See—*
Kullander, Gregor; Reineck, Ingrid; and Brandrup-Wognsen, Helène, 5,543,210, Cl. 428-217.000.

Reinfelder, William C.: *See—*
Eaton, Harry E.; Holowczak, John E.; and Reinfelder, William C., 5,542,820, Cl. 416-224.000.

Reinhardt, Gerd: *See—*
Antwerpen, Werner; Schindler, Hermann; and Reinhardt, Gerd, 5,542,951, Cl. 8-137.000.

Reinhold, Herbert E., III: *See—*
D'Amico, Joseph S.; Reinhold, Herbert E., III; and Knaebel, Kent S., 5,542,966, Cl. 95-101.000.

Rekuc, Richard J.; and O'Shea, James, to Royalox International, Inc. Rolling catalog case with pull-out handle. 5,542,510, Cl. 190-18.00A.

Renau, Thomas E.: *See—*
Townsend, Leroy B.; Drach, John C.; and Renau, Thomas E., 5,543,413, Cl. 514-258.000.

Renaud, Benoit: *See—*
Harvey, John A.; Renaud, Benoit; Gagnon, Claude; Rondeau, Pierre; and Lapointe, Denys, 5,542,371, Cl. 114-363.000.

Renner, Jochen: *See—*
Wirz, Arno; Sobotta, Peter; and Renner, Jochen, 5,542,658, Cl. 271-107.000.

Reno, Daniel S.: *See—*
Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Morton, Howard E.; Reno, Daniel S.; Sham, Hing L.; Sowin, Thomas J.; and Tien, Jien-Heh J., 5,543,549, Cl. 558-405.000.
Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Kerdesky, Francis A.; Langridge, Denton C.; Leanna, M. Robert; Lijewski, Linda M.; Melcher, Laura; Morton, Howard E.; Norbeck, Daniel W.; Reno, Daniel S.; Robbins, Timothy A.; Sham, Hing L.; Sowin, Thomas J.; Tien, Jien-heh J.; Zhao, Chen; and Scarpetti, David, 5,543,551, Cl. 560-24.000.
Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Leanna, M. Robert; Lijewski, Linda M.; Melcher, Laura; Morton, Howard E.; Reno, Daniel S.; Sham, Hing L.; and Sowin, Thomas J., 5,543,552, Cl. 560-24.000.

Rentech, Inc.: *See—*
Benham, Charles B.; Bohn, Mark S.; and Yakobson, Dennis L., 5,543,437, Cl. 518-700.000.

Renz, Robert: *See—*
Hamilton, Brian; and Renz, Robert, 5,542,704, Cl. 280-741.000.

Repasi, Janos: *See—*
Moreno, Fulgencio Powell; Litkei, Laszlo; Galamb, Vilmos; Gulyas, Imre; Repasi, Janos; Veres, Agota Repasine; Vigh, Jozsef; Koczka, Istvanne; Fehervari, Edit; Roka, Laszlone; Pethe, Laszlone; and Neu, Jozsef, 5,543,562, Cl. 562-17.000.

Repper, George R.; and Repper, Helen Z. Method of protecting against sunburn. 5,543,137, Cl. 424-59.000.

Repper, Helen Z.: *See—*
Repper, George R.; and Repper, Helen Z., 5,543,137, Cl. 424-59.000.

Research Corporation Technologies, Inc.: *See—*
Parker, Kevin J.; and Mitsa, Theophano, 5,543,941, Cl. 358-534.000.

Research Development Corporation of Japan: *See—*
Nishizawa, Junichi; and Kokubun, Yoshihiro, 5,542,373, Cl. 117-103.000.

Research Foundation of State University of New York, The: *See—*
Kaufman, Arie E.; Yagel, Roni; and Cohen-or, Daniel, 5,544,283, Cl. 395-124.000.

Resnick, Michael. Display stand. 5,542,554, Cl. 211-186.000.

ReSource America, Inc.: *See—*
Grey, Michael J.; Williams, Wayne; and Shaw, William H., 5,542,237, Cl. 53-472.000.

Restorative Care of America Incorporated: *See—*
Hess, Clarence E., 5,542,912, Cl. 602-27.000.

Reuber, Gerhard; Menne, Hans G.; and Shafry, Gavriel, to Alfred Teves GmbH & Co oHG. Articulated joint fitting for automotive vehicle seat. 5,542,772, Cl. 403-97.000.

Reusch, Michael F.: *See—*
Krishnaswamy, Jayaram; and Reusch, Michael F., 5,544,181, Cl. 372-2.000.

Reverdy, Francois: *See—*
Perrillat-Amede, Denis; Pierrejean, Didier; and Reverdy, Francois, 5,542,825, Cl. 417-423.400.

Revuelta, Jose O. Chuck jaw manufacture. 5,542,686, Cl. 279-153.000.

Rex, Jørn, to Novo Nordisk A/S. Manually operated dispenser for dispensing a predetermined amount of powdered substance. 5,542,411, Cl. 128-203.150.

Reyco Industries, Inc.: *See—*
Stuart, John W., 5,542,652, Cl. 267-49.000.

Reyes, Daniel. Parking brake system. 5,542,513, Cl. 192-9.000.

Reyling, George F., Jr.: *See—*
Sutherland, James; Garverick, Timothy L.; Takiar, Hem P.; and Reyling, George F., Jr., 5,543,640, Cl. 257-202.000.

Reynolds, Graeme E. Hose-to wireline connector. 5,542,776, Cl. 403-389.000.

Rha, Chokyun: *See—*
Timonen, Maritta; and Rha, Chokyun, 5,543,162, Cl. 426-89.000.

Rhee, Woonza; Wallace, Donald G.; Michaels, Alan S.; Burns, Ramon A., Jr.; Fries, Louis; DeLustro, Frank; and Bentz, Hanne, to Collagen Corporation. Implants coated with collagen-polymer conjugates. 5,543,441, Cl. 523-105.000.

Ricci, George J.: *See—*
Bohlool, Perry P.; and Ricci, George J., 5,544,025, Cl. 362-95.000.

Ricciardi, Mario, to Bell & Howell Phillipsburg Company. Document sorting section having a plurality of primary sorting paths. 5,542,547, Cl. 209-539.000.

Rice, Daniel A.: *See—*
Vahabi-Nejad, Mariam; and Rice, Daniel A., 5,542,801, Cl. 412-43.000.

Rice, David K., II: *See—*
Shipston, Adele C.; and Rice, David K., II, 5,543,192, Cl. 428-40.600.

Richard, Bernard: *See—*
Maroteaux, Jacques; and Richard, Bernard, 5,544,303, Cl. 395-161.000.

Richard, Nötzel; Jiro, Temmyo; Toshiaki, Tamamura; Mitsuru, Sugo; Eiichi, Kuramochi; and Teruhiko, Nishiya, to Nippon Telegraph and Telephone Corporation. Method of fabricating a quantum dot structure on a (n11) substrate. 5,543,354, Cl. 437-129.000.

Richards, Barbara A., to Richards, Gordon R. Precut wrapping paper for wrapping packages. 5,542,597, Cl. 229-116.500.

Richards, David T., to Guilford Mills, Inc. Warp knitted fabric with ribbed satin-like back. 5,542,269, Cl. 66-195.000.

Richards, Gaylord W.: *See—*
Cloonan, Thomas J.; and Richards, Gaylord W., 5,544,160, Cl. 370-54.000.

Richards, Gordon R.: *See—*
Richards, Barbara A., 5,542,597, Cl. 229-116.500.

Richard's Homewares, Inc.: *See—*
Freelander, Robert C., 5,542,530, Cl. 206-292.000.

Richards, Martin J.: *See—*
Seagrave, Charles G.; Richards, Martin J.; Mandell, Douglas E.; and Atherton, Mark L., 5,544,140, Cl. 369-59.000.

Richardson, John A.; and Nicopolis, Dean L., to Ford Motor Company. Device for controlling a part-time drive axle for a motor vehicle. 5,542,515, Cl. 192-44.000.

Richert, Withold; Gründl, Andreas; and Hoffmann, Bernhard. Track-guided transport vehicle. 5,542,356, Cl. 104-289.000.

Richison, Cecil; and Bell, Gary M., to Kapak Corporation. Vented pouch arrangement and method. 5,542,902, Cl. 493-195.000.

Richmond, George E.: *See—*
Quinn, Michael J.; and Richmond, George E., 5,542,846, Cl. 433-127.000.

Richter, Klaus H.: *See—*
Vick, Charles B.; Richter, Klaus H.; and River, Bryan H., 5,543,487, Cl. 528-158.000.

Rico, Joseph G.: *See—*
Adams, Steven P.; Lindmark, Richard J.; Miyano, Masateru; and Rico, Joseph G., 5,543,425, Cl. 514-357.000.

Ricoh Company Ltd.: *See—*
Hattori, Hitoshi, 5,544,269, Cl. 385-88.000.
Kanda, Shigemi, 5,543,906, Cl. 355-299.000.
Kimura, Yuji; Ohta, Eiichi; Kondo, Hitoshi; Takahashi, Masaetsu; Kameyama, Kenji; and Yamada, Katsuyuki, 5,543,945, Cl. 359-55.000.
Motoyama, Tetsuro, 5,544,289, Cl. 395-280.000.
Takeda, Fuchio; and Ohta, Atsushi, 5,543,902, Cl. 355-259.000.

Ricoh Corporation: *See—*
Motoyama, Tetsuro, 5,544,289, Cl. 395-280.000.

Ridley, Robert G.; and Scaife, John G., to Hoffman-La Roche Inc. Plasmodium merozoite rhoptries antigenic polypeptides. 5,543,323, Cl. 435-252.300.

Rieger, Bernhard; Yoshitake, Hiroki; Sawada, Atsushi; Plach, Herbert; and Weber, Georg, to Merck Patent Gesellschaft mit Beschrankter Haftung. Nematic liquid-crystal composition. 5,543,077, Cl. 252-299.630.

Riesselmann, John. Fire hose carrier. 5,542,730, Cl. 294-157.000.

Rietveld, Krijn: *See—*
van Ooijen, Albert J. J.; Rietveld, Krijn; Hoekema, Andreas; Pen, Jan; Sijmons, Peter C.; Verwoerd, Teunis C.; and Quax, Wilhemus J., 5,543,576, Cl. 800-250.000.

Riggio, Salvatore R., Jr., to International Business Machines. Non-volatile parallel-to-serial converter system utilizing thin-film floating-gate, amorphous transistors. 5,543,791, Cl. 341-101.000.

Riley, Andrew T. Surge protector for computer equipment. 5,543,999, Cl. 361-119.000.

Riley, Stuart L.: *See—*
Brecher, Virginia H.; Chou, Paul B.-L.; Hall, Robert W.; Parisi, Debra M.; Rao, Ravishankar; Riley, Stuart L.; and Sturzenbecker, Martin C., 5,544,256, Cl. 382-149.000.

Rimage Corporation: *See—*
Rother, David J.; Lee, John S.; Schmidt, Terence J.; Hollerich, Donald; Skubic, Robert L.; and Laveen, Eric, 5,542,768, Cl. 400-120.160.

Rinkagaku Kogyo Co., Ltd.: *See—*
Kobayashi, Tsuyoshi; Sakon, Ichiro; Nakashima, Shigeo; Numa, Sachiko; and Inao, Yoshikazu, 5,543,444, Cl. 523-205.000.

Rinker, William E.: *See—*
Lynch, Steven K.; Ruggie, Mark A.; Rinker, William E.; Izard, David G.; and Young, William J., 5,543,234, Cl. 428-537.100.

Rion, Robert B., to AlliedSignal Inc. Wire track with integral sealing mechanism and inflator. 5,542,701, Cl. 280-735.000.

Riordan, John R.; Bear, Christine E.; Ramjeesingh, Mohabir; and Li, Canhui, to HSC Research & Development Limited Partnership. Cystic fibrosis transmembrane conductance regulator (CFTR) protein. 5,543,399, Cl. 514-21.000.

Rite-Hite Corporation: *See—*
Pinkalla, Cary; and Goins, Garrett, 5,542,463, Cl. 160-273.100.

Rittner, Siegbert: *See—*
Kulpe, Jürgen; Strutz, Heinz; Rüffer, Hans-Martin; and Rittner, Siegbert, 5,543,564, Cl. 562-467.000.

Rivard, Robert L., to Tuthill Corporation. Turbine support structure. 5,542,642, Cl. 248-676.000.

River, Bryan H.: *See—*
Vick, Charles B.; Richter, Klaus H.; and River, Bryan H., 5,543,487, Cl. 528-158.000.

Riverwood International Corporation: *See—*
Ford, Colin, 5,542,537, Cl. 206-431.000.
Sutherland, Robert L., 5,542,536, Cl. 206-427.000.

Rivest, Rene: *See—*
Mahaffey, Steve; and Rivest, Rene, 5,542,664, Cl. 473-305.000.

Rizzo, Richard: *See—*
Giordano, Joseph; Gong, Frank; Rizzo, Richard; and Charych, Hal, 5,543,609, Cl. 235-462.000.

Rizzo, Roberto: *See—*
Lanfranconi, Antonio; Munari, Giorgio; Zappettini, Adelelmo; and Rizzo, Roberto, 5,542,528, Cl. 206-221.000.

Rizzolio, Michele C.: *See—*
Fu, Roger C.; Leung, De-Mei; Fleitman, Jeffrey S.; Rizzolio, Michele C.; and Miksztal, Andrew R., 5,543,408, Cl. 514-233.500.

RMT Reinhardt Microtech AG: *See—*
Hasler, Peter, 5,543,208, Cl. 428-210.000.

Robbins, Barry R.; and Ziv, Noam A., to Qualcomm Incorporated. Method and apparatus for paging a concentrated subscriber system for wireless local loop. 5,544,223, Cl. 379-58.000.

Robbins, Edward S., III. Dispensing cap with internal measuring chamber and selectively useable sifter. 5,542,579, Cl. 222-158.000.

Robbins, Timothy A.: *See—*
Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Kerdesky, Francis A.; Langridge, Denton C.; Leanna, M. Robert; Lijewski, Linda M.; Melcher, Laura; Morton, Howard E.; Norbeck, Daniel W.; Reno, Daniel S.; Robbins, Timothy A.; Sham, Hing L.; Sowin, Thomas J.; Tien, Jien-heh J.; Zhao, Chen; and Scarpetti, David, 5,543,551, Cl. 560-24.000.

Robert Bosch GmbH: *See—*
Altmann, Uwe; and Grieshaber, Hermann, 5,542,399, Cl. 123-563.000.
Benz, Gerhard; Marek, Jiri; Willmann, Martin; Bantien, Frank; Muenzel, Horst; Laermer, Franz; Offenberg, Michael; and Schilp, Andrea, 5,542,558, Cl. 216-2.000.
Byrne, Gerard, 5,543,642, Cl. 257-356.000.
Fakler, Bernhard, 5,543,677, Cl. 310-263.000.
Moz, Rudolf, 5,542,396, Cl. 123-520.000.
Schneider, Erich; Bone, Rainer; Klenk, Martin; Lange, Jörg; and Dambach, Dieter-Andreas, 5,542,292, Cl. 73-118.100.
Staib, Helmut; and Friedow, Michael, 5,542,755, Cl. 303-119.200.

Roberts, Norman: *See—*
Hoffmann, John D.; Gooding, Robert W.; Roberts, Norman; and Hart, Robert S., 5,542,542, Cl. 209-17.000.

Robin, James R.: *See—*
Hogen, Delman R.; and Robin, James R., 5,543,049, Cl. 210-601.000.

Robinson, Curtis: *See—*
Carobolante, Francesco; and Robinson, Curtis, 5,543,697, Cl. 318-594.000.

Robinson, Kurt B.; Elbert, Dale K.; and Levy, Markus A., to Intel Corporation. Block-erasable non-volatile semiconductor memory which tracks and stores the total number of write/erase cycles for each block. 5,544,356, Cl. 395-600.000.

Robinson, Mark T.; Gardner, Steven H.; Wong, Matt; Kasmir, Seton P.; Balachandran, Kumar; Graham, Sue; Schjelderup, Gail; and Quick, Roy F., Jr., to Pacific Communication Sciences, Inc. Cellular digtial packet data mobile data base station. 5,544,222, Cl. 379-58.000.

Robinson, Michael D.; and Causton, Barry J. Selvedge reinforcement. 5,543,196, Cl. 428-99.000.

Robinson, Neil E., to Exar Corporation. Speakerphone with event driven control circuit. 5,544,242, Cl. 379-390.000.

Robson, Nicholas B. Book shade apparatus. 5,543,967, Cl. 359-614.000.

Roby, Mark S.: *See—*
Bennett, Steven L.; and Roby, Mark S., 5,543,218, Cl. 428-375.000.

Rocher, Michel: *See—*
Andrieu, Xavier; Rocher, Michel; Guillaume, Philippe; and Poignant, Philippe, 5,543,245, Cl. 429-90.000.

Rochester Institute of Technology: *See—*
Hornak, Joseph P.; and Szeglowski, Scott D., 5,542,424, Cl. 128-653.500.

Röchling, Hans; Kocur, Jean; and Albrecht, Konrad, to Hoechst Aktiengesellschaft. Water-dispersible glufosinate granules. 5,543,385, Cl. 504-127.000.

Rockland, Inc.: *See—*
Heiple, Ashley, 5,542,478, Cl. 172-782.000.

Rockwell International Corporation: *See—*
Baker, Daniel P.; Steinlicht, Joseph C.; and Holtaway, Thomas S., 5,544,232, Cl. 379-67.000.
Harenberg, Donald D.; Watson, George A.; Bindloss, Keith M.; and Folwell, Dale E., 5,544,311, Cl. 395-183.160.

Rödig, Karl-Heinz: *See—*
Zeuner, Siegfried; Sans, Joachim; Dölling, Uwe; and Rödig, Karl-Heinz, 5,542,997, Cl. 149-35.000.

Rodriguez, Paul A.: *See—*
Wills, Kendall S.; Rodriguez, Paul A.; and Brewer, Melvin, 5,543,365, Cl. 437-226.000.

Rodriguez, William, to Hercules Incorporated. Water-soluble acrylamide/acrylic acid polymers and their use as dry strength additives for paper. 5,543,446, Cl. 524-52.000.

Roe, Donald C.: *See—*
Kline, Mark J.; Roe, Donald C.; Daniels, Dean J.; Zorb, James E.; and Dragoo, Jerry L., 5,542,942, Cl. 604-385.200.

Roe, Maurice A.: *See—*
Ollerenshaw, Robert C. A. W.; and Roe, Maurice A., 5,542,962, Cl. 71-10.000.

Roehl, Franz: *See—*
Doetzer, Reinhard; Sauter, Hubert; Bayer, Herbert; Roehl, Franz; Lorenz, Gisela; Ammermann, Eberhard; and Wingert, Horst, 5,543,433, Cl. 514-638.000.

Roeling, James E. Method of using a coupling system for motorized vehicles. 5,542,815, Cl. 414-786.000.
Rohm Co. Ltd.: *See*—
Sato, Kazuo, 5,543,651, Cl. 257-369.000.
Shimoji, Noriyuki, 5,543,338, Cl. 437-41.000.
Takeda, Isoshi; and Shimada, Yoshikazu, 5,543,742, Cl. 327-232.000.
Rohr, Klaus: *See*—
Bernicke, Erhard; Rohr, Klaus; and Eibisch, Karl, 5,543,690, Cl. 315-224.000.
Rohrlick, Myles A.: *See*—
Rawdon, Blaine K.; and Rohrlick, Myles A., 5,542,798, Cl. 410-100.000.
Roine, Antti: *See*—
Tuovinen, Heikki; Saari, Jorma; Roine, Antti; Holma, Hannu; and Kalliokoski, Matti, 5,543,128, Cl. 423-303.000.
Roka, Laszlone: *See*—
Moreno, Fulgencio Powell; Litkei, Laszlo; Galamb, Vilmos; Gulyas, Imre; Repasi, Janos; Veres, Agota Repasine; Vigh, Jozsef; Koczka, Istvanne; Fehervari, Edit; Roka, Laszlone; Pethe, Laszlone; and Neu, Jozsef, 5,543,562, Cl. 562-17.000.
Roland Corporation: *See*—
Morinaga, Masazumi; and Takata, Kousuke, 5,543,579, Cl. 84-701.000.
Roldan, Judith M.: *See*—
Booth, Richard B.; Gaynes, Michael A.; Murco, Robert M.; Puligandla, Viswanadham; Roldan, Judith M.; Saraf, Ravi; and Zalesinski, Jerzy M., 5,543,585, Cl. 174-261.000.
Rolff, Norbert, to Leybold Aktiengesellschaft. Circuit and method for measuring current in a circuit. 5,543,706, Cl. 324-115.000.
Roller, Hermann: *See*—
Bobrich, Michael; Lehner, August; Roller, Hermann; Suettinger, Rudolf; Kress, Ria; Schneider, Norbert; Lenz, Werner; Engelhardt, Peter; Rudolf, Peter; Brodt, Gregor; Balz, Werner; and Kohl, Albert, 5,543,226, Cl. 428-423.100.
Rolls-Royce plc: *See*—
Savill, Anthony M., 5,542,630, Cl. 244-200.000.
Roman, James J.: *See*—
Beilin, Solomon I.; Chou, William T.; Kudzuma, David; Lee, Michael G.; Murase, Teruo; Peters, Michael G.; Roman, James J.; Swamy, Som S.; and Wang, Wen-chou V., 5,544,017, Cl. 361-790.000.
Romanowiz, James D.: *See*—
Brown, Robert J., Jr.; Romanowiz, James D.; and Staples, Charles W., 5,544,036, Cl. 364-145.000.
Romans, William W. Seed metering device. 5,542,364, Cl. 111-185.000.
Romero-Herrera, Ricardo. Electrical push button switch with built-in lamp. 5,543,594, Cl. 200-314.000.
Rompel, Wade D., to Innovis Corporation. Structural support frame for ceramic tile corner seats and service trays. 5,542,218, Cl. 52-34.000.
Rondeau, Pierre: *See*—
Harvey, John A.; Renaud, Benoit; Gagnon, Claude; Rondeau, Pierre; and Lapointe, Denys, 5,542,371, Cl. 114-363.000.
Room, Dave: *See*—
Bechtoldt, Wayne; Frazier, Tom; Graszer, Matt; and Room, Dave, 5,542,775, Cl. 403-188.000.
Roorda, Wouter E.; Ehnow, Fred P.; Basso, Estela; Wang, Karly S.; and Fujita, Sharon M., to Alza Corporation. Bioerodible devices and compositions for diffusional release of agents. 5,543,156, Cl. 424-484.000.
Rork, Gerald S.; and Pipkin, James D., to Merck & Co., Inc. Controlled release nifedipine delivery device. 5,543,154, Cl. 424-473.000.
Ros, Maria B.: *See*—
Walba, David M.; Ros, Maria B.; Rego, James A.; and Sierra, Teresa, 5,543,078, Cl. 252-299.650.
Roscoe, Bradley A.; Schweitzer, Jeffrey S.; and Stephenson, Kenneth E., to Schlumberger Technology Corporation. Method of measuring flow velocities using tracer techniques. 5,543,617, Cl. 250-259.000.
Rose, Richard H. Scuba buoyancy control valve. 5,542,446, Cl. 137-81.200.
Rosen, Vicki A.: *See*—
Wozney, John M.; Rosen, Vicki A.; and Wang, Elizabeth A., 5,543,394, Cl. 514-12.000.
Rosenmann, Jack P.; and Buschberger, Alfred, to Fluid Precision (Proprietary) Limited. Hydraulic engine starting equipment. 5,542,384, Cl. 123-179.310.
Roshasravan, Mel, to Darling-Delaware Company, Inc. Grease trap wastewater treatment process. 5,543,050, Cl. 210-605.000.
Rosser, Roy J.; and Williams, Brown F., to Princeton Video Image, Inc. System and method for downstream application and control electronic billboard system. 5,543,856, Cl. 348-578.000.
Rostoker, Michael D.; Dangelo, Carlos; Nagasamy, Vijay; and Mintz, Doron, to LSI Logic Corporation. Method and system for creating and validating low level description of electronic design from higher level, behavior-oriented description, including estimation and comparison of low-level design constraints. 5,544,066, Cl. 364-489.000.
Rostoker, Michael D.; Dangelo, Carlos; and Watkins, Daniel R., to LSI Logic Corporation. Method and system for creating, deriving and validating structural description of electronic system from higher level, behavior-oriented description, including interactive schematic design and simulation. 5,544,067, Cl. 364-489.000.
Roth, Leslie D. Method for printing designs on pile fabrics. 5,542,351, Cl. 101-483.000.
Roth, Mark W., to Monarch Marking Systems, Inc. On-line barcode printer system with multi-level user printer commands. 5,544,287, Cl. 395-114.000.
Roth, Scott S.; and Kirsch, Howard C., to Motorola, Inc. Process for forming an electrically programmable read-only memory cell. 5,543,339, Cl. 437-43.000.
Rothbaum, Arthur H.; and Goldblatt, Richard S., to Protex International Corp. Security device for merchandise and the like. 5,543,782, Cl. 340-568.000.
Rother, David J.; Lee, John S.; Schmidt, Terence J.; Hollerich, Donald; Skubic, Robert L.; and Laveen, Eric, to Rimage Corporation. Apparatus for printing on plastic disk. 5,542,768, Cl. 400-120.160.
Rother, Heinz-Joachim: *See*—
Groth, Torsten; Joentgen, Winfried; Linden, Hans W.; Müller, Nikolaus; Rother, Heinz-Joachim; Wagner, Paul; and Kugler, Martin, 5,543,490, Cl. 528-328.000.
Roussel Uclaf: *See*—
Agouridas, Constantin; Bonnefoy, Alain; Chantot, Jean-François; Denis, Alexis; and Le Martret, Odile, 5,543,400, Cl. 514-29.000.
Rowley, David S.: *See*—
Snoke, Phillip J.; Rowley, David S.; Lincoln, David G.; and Charles, Kirk W., 5,542,924, Cl. 604-95.000.
Royalox International, Inc.: *See*—
Rekuc, Richard J.; and O'Shea, James, 5,542,510, Cl. 190-18.00A.
Rua, Louis, Jr.: *See*—
Silverschotz, Stanford B.; Rua, Louis, Jr.; Polunas, David M.; and Martin, Stephen E., 5,542,710, Cl. 283-94.000.
Rubin, Stan M. Treatment for insect bites. 5,543,149, Cl. 424-405.000.
Rubsamen, Reid M.: *See*—
Goodman, David E.; and Rubsamen, Reid M., 5,542,410, Cl. 128-200.140.
Rudolf, Peter: *See*—
Bobrich, Michael; Lehner, August; Roller, Hermann; Suettinger, Rudolf; Kress, Ria; Schneider, Norbert; Lenz, Werner; Engelhardt, Peter; Rudolf, Peter; Brodt, Gregor; Balz, Werner; and Kohl, Albert, 5,543,226, Cl. 428-423.100.
Rudwick, Thomas W., III: *See*—
Sommerfeldt, Scott C.; Rudwick, Thomas W., III; and Miracky, Robert F., 5,544,018, Cl. 361-792.000.
Rudy, Marion F., to Bogert, Robert C. Pressurizable envelope and method. 5,543,194, Cl. 428-69.000.
Rüf, Hartmut; Eibl, Markus; and Jurkovic, Raimund, to Lenzing Aktiengesellschaft. Process of making cellulose fibres. 5,543,101, Cl. 264-187.000.
Rüffer, Hans-Martin: *See*—
Kulpe, Jürgen; Strutz, Heinz; Rüffer, Hans-Martin; and Rittner, Siegbert, 5,543,564, Cl. 562-467.000.
Rugg, Jon D.: *See*—
Luffel, Robert W.; Paul, D. Scott; and Rugg, Jon D., 5,544,146, Cl. 369-178.000.
Ruggie, Mark A.: *See*—
Lynch, Steven K.; Ruggie, Mark A.; Rinker, William E.; Izard, David G.; and Young, William J., 5,543,234, Cl. 428-537.100.
Ruhmann, Ralf: *See*—
Stumpe, Joachim; Shibaev, Valery; Kostromin, Sergei; Ivanov, Sergei; Fischer, Thomas; Läsker, Lutz; Ruhmann, Ralf; and Claussen, Uwe, 5,543,267, Cl. 430-290.000.
Rulon, James M.: *See*—
Creswell, Carroll W.; Lanning, Steven G.; Papazian, Carol J.; and Rulon, James M., 5,544,229, Cl. 379-67.000.
Runyan, Steven; Cox, James R.; Blais, Mark R.; and Longerbeam, Donald A., to Graphics Microsystems, Inc. Method and apparatus for on-press color measurement. 5,543,922, Cl. 356-402.000.
Rupp, Arthur, to ZF Friedrichshafen AG. Rotary slide valve for power-assisted steering systems of motor vehicles. 5,542,338, Cl. 91-375.00R.
Rupp, Wolfgang: *See*—
Sauer, Ralf-Roland; Rupp, Wolfgang; and Hinz, Alexander, 5,544,186, Cl. 372-33.000.
Ruprecht, Harald, to Erwin Sick GmbH, Optik-Elektronik. Safety switching system for a working apparatus. 5,543,997, Cl. 361-93.000.
Rushmere, John D.; and Moffett, Robert H., to Du Pont de Nemours, E. I., and Company. Process for preparing water soluble polyaluminosilicates. 5,543,014, Cl. 162-181.600.
Russ, Werner H.: *See*—
Schrell, Andreas; and Russ, Werner H., 5,542,954, Cl. 8-532.000.
von der Eltz, Andreas; and Russ, Werner H., 5,542,972, Cl. 106-22.00H.
Russell, James F.: *See*—
Davis, Terry L.; Hart, James A.; Russell, James F.; Sears, John W.; and Trice, Philip H., 5,544,086, Cl. 364-408.000.
Russell, Martin E., to Del-Met Corporation. Grip ring wheel cover retention system. 5,542,751, Cl. 301-37.320.
Rutland, Michael D. External refrigerator-mounted liquid dispenser. 5,542,265, Cl. 62-389.000.
Rutz, Howard G., to Hoeganaes Corporation. Thermoplastic coated magnetic powder compositions and methods of making same. 5,543,174, Cl. 427-213.000.
Ryou, Eui K.: *See*—
Keum, Dong Y.; Park, Cheol S.; and Ryou, Eui K., 5,543,346, Cl. 437-52.000.
Ryser, Eduard: *See*—
Hidber, Arthur; and Ryser, Eduard, 5,543,008, Cl. 156-229.000.
Ryu, Kye Y.: *See*—
Kang, Myung G.; Kang, Seong S.; Choi, Sung H.; Joung, Mun C.; Jang, Byoung G.; Ryu, Kye Y.; Yu, Hyo C.; and Lee, Sang J., 5,543,981, Cl. 360-96.600.
SAAB Marine Electronics AB: *See*—

Edvardsson, Kurt O., 5,543,720, Cl. 324-643.000.
Saalfrank, Werner, to Grundig E.M.V. Procedure for the identification of transmitter or region in common-wave broadcasting networks. 5,544,198, Cl. 375-260.000.
Saari, Jorma: *See*—
Tuovinen, Heikki; Saari, Jorma; Roine, Antti; Holma, Hannu; and Kalliokoski, Matti, 5,543,128, Cl. 423-303.000.
Sablinski, William E.: *See*—
Handford, Edward F.; Harvilchuck, Joseph M.; Interrante, Mario J.; Jackson, Raymond A.; Master, Raj N.; Ray, Sudipta K.; Sablinski, William E.; and Wassick, Thomas A., 5,543,584, Cl. 174-261.000.
Sadakane, Shinji: *See*—
Ichinose, Hiroki; Sadakane, Shinji; Takeda, Keiso; and Kojima, Susumu, 5,542,388, Cl. 123-336.000.
Sadeghi, Khosrow: *See*—
Heaton, Robert; Yousefi, Nariman; Sadeghi, Khosrow; and Fischer, David, 5,544,323, Cl. 395-200.140.
Saderholm, Davin G.: *See*—
Marjanski, George C.; Hauppa, Kevin E.; Green, David J.; Saderholm, Davin G.; and Beesley, Brent R., 5,542,691, Cl. 280-728.200.
Shaklik, Brian; and Saderholm, Davin G., 5,542,692, Cl. 280-728.200.
Saeki, Makoto: *See*—
Ikeda, Shuji; and Saeki, Makoto, 5,543,652, Cl. 257-377.000.
SAES Getters S.p.A.: *See*—
Boffito, Claudio; Doni, Fabrizio; and Ferrario, Bruno, 5,543,121, Cl. 423-210.000.
Safe Surroundings, Inc.: *See*—
Ozrovitz, Aaron; and Badalamenti, Rosario, 5,542,135, Cl. 5-424.000.
Safety Engineering Associates, Inc.: *See*—
Kubly, Kris D., 5,542,706, Cl. 280-833.000.
Sagawa, Hirohiko: *See*—
Abe, Masahiro; Sakou, Hiroshi; Sagawa, Hirohiko; Ichikawa, Akira; Inoue, Kiyoshi; Arai, Kiyoshi; Shimura, Takanori; and Toda, Yuji, 5,544,050, Cl. 364-419.130.
Sageser, David M., to Procter & Gamble Company, The. Absorbeut article having inflected barrier cuffs and method for making the same. 5,542,943, Cl. 604-385.200.
Saikalis, George, to Hitachi America, Ltd. Smart mass gas flow sensor. 5,544,079, Cl. 364-571.010.
Saiki, Nobuyuki, to Mitsubishi Denki Kabushiki Kaisha. Analog/digital conversion system. 5,543,793, Cl. 341-155.000.
Saiki, Tsukasa: *See*—
Dosaka, Katsumi; Kumanoya, Masaki; Hayano, Kouji; Yamazaki, Akira; Iwamoto, Hisashi; Abe, Hideaki; Konishi, Yasuhiro; Himukashi, Katsumitsu; Ishizuka, Yasuhiro; and Saiki, Tsukasa, 5,544,121, Cl. 365-222.000.
Sailor Pen Co., Ltd.: *See*—
Masumoto, Yasuhiro, 5,542,771, Cl. 401-213.000.
Saini, Mohan S.: *See*—
Brummond, Barbara A.; Saini, Mohan S.; and Ponticello, Ignazio S., 5,543,311, Cl. 435-188.000.
Saint-Gobain/Norton Industrial Ceramics Corp.: *See*—
Kubiak, Stephen M.; and Nishida, Tatsuo, 5,542,378, Cl. 122-235.120.
Saint-Remy, Jean-Marie; Lebrun, Philippe; Lebeque, Serge; Masson, Pierre L.; and Kingdon, Henry S., to Baxter International, Inc.; and International Institute of Cellular and Molecular Pathology. Pharmaceutical composition and method for the suppression of factor VIII inhibitor production. 5,543,145, Cl. 424-133.100.
Saito, Fumio: *See*—
Nakai, Satoru; Aihara, Koutoku; Mori, Hitomi; Tominaga, Michiaki; Adachi, Masakazu; Ichikawa, Hiroyuki; Akamatsu, Seiji; and Saito, Fumio, 5,543,412, Cl. 514-255.000.
Saito, Makoto; and Tanaka, Yoshinori, to Tonen Corporation. Concrete pole and method of reinforcing same. 5,542,229, Cl. 52-721.500.
Saito, Mitsuo: *See*—
Terada, Masahiro; Kamae, Hirosuke; Yusawa, Motoyasu; Watanabe, Kazuyuki; and Saito, Mitsuo, 5,542,982, Cl. 134-5.000.
Saitō, Mutsumi; Yahiro, Tomoyuki; and Hatakeyama, Masahiro, to Ebara Corporation. Beam charge exchanging apparatus. 5,543,615, Cl. 250-251.000.
Saito, Ryuichi: *See*—
Shimizu, Takaaki; Kinsho, Takeshi; Ogihara, Tsutomu; Kaneko, Tatsushi; Saito, Ryuichi; and Kurihara, Hideshi, 5,543,539, Cl. 556-406.000.
Saito, Yoshiro: *See*—
Maebashi, Youichirou; Fujii, Haruo; Sasame, Hiroshi; Kawakami, Hiroaki; Kobayashi, Tatsuya; Kobayashi, Tetsuya; Enomoto, Naoki; Uchiyama, Akihiko; and Saito, Yoshiro, 5,543,900, Cl. 355-219.000.
Saitoh, Yukio: *See*—
Hayama, Kazuhide; Saitoh, Yukio; Kitani, Yasuo; and Yamada, Katsuhiko, 5,543,440, Cl. 523-103.000.
Saitou, Takeshi: *See*—
Watanabe, Kiyoshi; Abe, Yasuhiro; Sakamoto, Masaho; Saitou, Takeshi; Ishii, Takayoshi; Akimoto, Yukio; Kashiki, Hironori; and Kato, Masao, 5,543,607, Cl. 235-383.000.
Saizev, Slava: *See*—
Minin, Leonid; and Saizev, Slava, 5,543,410, Cl. 514-248.000.
Saka, Manami: *See*—
Hata, Kazuyoshi; Maekawa, Yukio; Takamoto, Katsuhiro; and Saka, Manami, 5,543,970, Cl. 359-690.000.
Sakaguchi, Masaya: *See*—
Nouchi, Norimoto; Sakaguchi, Masaya; Yoda, Hiroshi; and Mizoh, Yoshiaki, 5,543,179, Cl. 427-346.000.
Sakai, Ikunori: *See*—
Kamakura, Hikoichi; Tsutsui, Kiyoshi; Akagawa, Tomohiko; Sakai, Ikunori; Ichikawa, Shigeji; and Arai, Katsunori, 5,543,454, Cl. 524-451.000.
Sakai, Mitsugu: *See*—
Miyamoto, Hirofumi; Sakai, Mitsugu; Hayashida, Mitsumori; and Sakai, Nobuaki, 5,543,614, Cl. 250-234.000.
Sakai, Naomichi: *See*—
Murakami, Masato; Takaichi, Hiroshi; Tanaka, Shoji; and Sakai, Naomichi, 5,543,768, Cl. 335-216.000.
Sakai, Nobuaki: *See*—
Miyamoto, Hirofumi; Sakai, Mitsugu; Hayashida, Mitsumori; and Sakai, Nobuaki, 5,543,614, Cl. 250-234.000.
Sakai, Toshihisa; and Kawasumi, Masanori, to Mita Industrial Co., Ltd. High molecular electret film. 5,543,224, Cl. 428-409.000.
Sakakibara, Kiyokatsu: *See*—
Nakanishi, Teruo; Ando, Yohei; and Sakakibara, Kiyokatsu, 5,542,762, Cl. 366-228.000.
Sakamoto, Masaaki: *See*—
Tanaka, Tadashi; Sakamoto, Masaaki; Yamamoto, Koichi; and Kitagawa, Koji, 5,543,236, Cl. 428-614.000.
Sakamoto, Masaho: *See*—
Watanabe, Kiyoshi; Abe, Yasuhiro; Sakamoto, Masaho; Saitou, Takeshi; Ishii, Takayoshi; Akimoto, Yukio; Kashiki, Hironori; and Kato, Masao, 5,543,607, Cl. 235-383.000.
Sakano, Tetsuro; and Arimoto, Kohei, to Fanuc Ltd. Driver circuit and a driving method for a variable-reluctance motor. 5,543,700, Cl. 318-701.000.
Sakata, Kei: *See*—
Seto, Kazuhiro; Okuda, Kancharu; Sakata, Kei; Kato, Toshiyuki; and Ono, Takashi, 5,542,994, Cl. 148-603.000.
Sakata, Masaru: *See*—
Kayane, Shigeto; Kawai, Takashi; Sakata, Masaru; Imamura, Takashi; Tanigaki, Masanobu; and Kurosaki, Tomihiro, 5,543,310, Cl. 435-180.000.
Sakata, Yoshiyasu: *See*—
Kamei, Takahiro; Hinosawa, Shinji; Takahashi, Tokuji; Terada, Yoshiji; Nakajima, Takeaki; and Sakata, Yoshiyasu, 5,542,707, Cl. 280-834.000.
Sakaue, Satoru: *See*—
Nakagawa, Wataru; Sakaue, Satoru; and Tsuruoka, Michihiko, 5,543,956, Cl. 359-225.000.
Sakoda, K., to Emhart Inc. Separator/feeder for headed fasteners. 5,542,524, Cl. 198-409.000.
Sakon, Ichiro: *See*—
Kobayashi, Tsuyoshi; Sakon, Ichiro; Nakashima, Shigeo; Numa, Sachiko; and Inao, Yoshikazu, 5,543,444, Cl. 523-205.000.
Sakou, Hiroshi: *See*—
Abe, Masahiro; Sakou, Hiroshi; Sagawa, Hirohiko; Ichikawa, Akira; Inoue, Kiyoshi; Arai, Kiyoshi; Shimura, Takanori; and Toda, Yuji, 5,544,050, Cl. 364-419.130.
Salem, Gerard M.: *See*—
Aubertine, Matthew E.; Beyzavi, Kianoush; Broker, Harold J.; Checca, Ronald P.; Granato, Michael A.; Haeussler, David A.; Herasimtschuk, Michael; Jurkovic, Michael J.; Salem, Gerard M.; Selinger, Craig R.; and Zehr, Paul R., 5,544,088, Cl. 364-489.000.
Sali, Mauro L.; and Golla, Carla, to SGS-Thomson Microelectronics S.r.l. Fast adder chain. 5,544,085, Cl. 364-787.000.
Sallavanti, Robert A.: *See*—
Bertelson, Robert C.; and Sallavanti, Robert A., 5,543,086, Cl. 252-582.000.
Salmeen, Irving T.: *See*—
Narula, Chaitanya K.; Kim, Byung R.; and Salmeen, Irving T., 5,543,367, Cl. 501-87.000.
Salzmann, David R.; and Purington, James C., to Ingersoll-Rand Company. Moisture resistant ceramic igniter for a burner. 5,543,180, Cl. 427-397.700.
Sampayo, Eduardo A. Solar concentrator system. 5,542,409, Cl. 126-606.000.
SamSung Electronics Co., Ltd.: *See*—
Cho, Hyun-Duk, 5,543,860, Cl. 348-666.000.
Cho, Jun-hyoung; Choi, Sang-gil; and Wee, Young-cheul, 5,544,294, Cl. 395-141.000.
Cho, Seung-Hwan, 5,544,231, Cl. 379-67.000.
Choi, Heung S.; Jeong, Ju Y.; and Kim, Jae A., 5,542,263, Cl. 62-262.000.
Kim, Dong-Wug, 5,542,469, Cl. 165-122.000.
Kim, Tae-Han; Lee, Sang-Hoon; and Chin, Dae-Je, 5,543,649, Cl. 257-355.000.
Kurisu, Motohiro, 5,543,823, Cl. 345-196.000.
Lee, Bangwon; and Kim, Donghoi, 5,544,351, Cl. 395-550.000.
Lee, Joo-hyung, 5,543,340, Cl. 437-44.000.
Lee, Seo-jae; Kim, Il-gon; and Lee, Jong-wook, 5,543,240, Cl. 429-38.000.
Lee, Seung-Gap; Gil, Sung-Ho; and Eun, Suk-Hyun, 5,542,267, Cl. 62-485.000.
Lee, Sung-Tae, 5,542,824, Cl. 417-312.000.
Park, Chan-eon; Yun, Hwang-kyu; Sim, Sung-min; and Choi, Wan-gyun, 5,543,493, Cl. 528-353.000.
Park, Hyoung-woon, 5,543,978, Cl. 360-65.000.
Shim, Jae E., 5,542,258, Cl. 62-80.000.

Sin, Hyun-kuk, 5,544,133, Cl. 369-14.000.
San Jose State University Foundation: *See—*
Sauke, Todd B.; Becker, Joseph F.; and de la Torre-Bueno, Jose, 5,543,621, Cl. 250-339.030.
Sander, Hans-Jürgen: *See—*
Drewes, Rolf; Kolb, Markus; Kuhn, Karl J.; Sander, Hans-Jürgen; and Wehner, Wolfgang, 5,543,449, Cl. 524-114.000.
Sanders, Christine C.: *See—*
Chastain, Doyle E.; Sanders, W. Eugene, Jr.; and Sanders, Christine C., 5,543,435, Cl. 514-729.000.
Sanders, W. Eugene, Jr.: *See—*
Chastain, Doyle E.; Sanders, W. Eugene, Jr.; and Sanders, Christine C., 5,543,435, Cl. 514-729.000.
Sandidge, Jere T.: *See—*
Blust, Stephen M.; Comer, Edward I.; and Sandidge, Jere T., 5,544,227, Cl. 379-63.000.
Sandoz Ltd.: *See—*
Dixon, Arnold K.; and Giger, Rudolf K. A., 5,543,426, Cl. 514-410.000.
Fünfschilling, Peter, 5,543,531, Cl. 549-62.000.
Sands, Jeffrey L.: *See—*
Elsenheimer, John A.; Bried, David K.; Sands, Jeffrey L.; Wildes, Donald; and Nugent, J. Patrick, 5,542,462, Cl. 160-178.000.
Sandvik AB: *See—*
Chatfield, Christopher G.; Lindström, Jan N.; Sjöstrand, Mats E. K.; and Collin, Ingrid K. M., 5,543,176, Cl. 427-255.300.
Kullander, Gregor; Reineck, Ingrid; and Brandrup-Wognsen, Helène, 5,543,210, Cl. 428-217.000.
Sanford, Frank L.: *See—*
Carter, Ernest E., Jr.; Frulla, Roberto E.; Pettit, Paul J.; Sanford, Frank L.; and Saugier, R. Kent, 5,542,782, Cl. 405-129.000.
Sano, Akira: *See—*
Nakakura, Yasushi; Tanaka, Hideki; Sano, Akira; Mogi, Akio; Miyamoto, Matsuhiro; and Suzuki, Kazunari, 5,543,189, Cl. 428-36.800.
Niwa, Masahiro; Sugano, Yuji; Uenishi, Ken-ichi; Kitada, Hideto; Yamaguchi, Yoshihisa; Kobayashi, Eiko; Kubo, Kunimichi; and Sano, Akira, 5,543,478, Cl. 526-82.000.
Sano, Kenji: *See—*
Machida, Shigeru; Urano, Taeko I.; Sano, Kenji; and Mori, Yasushi, 5,543,949, Cl. 359-75.000.
Sanofi: *See—*
Ferrari, Bernard; and Taillades, Jëlle, born Arnaud, 5,543,528, Cl. 548-301.400.
Sanofi S.A.: *See—*
Petitou, Maurice; and Van Boeckel, Constant A. A., 5,543,403, Cl. 514-54.000.
Sans, Joachim: *See—*
Zeuner, Siegfried; Sans, Joachim; Dölling, Uwe; and Rödig, Karl-Heinz, 5,542,997, Cl. 149-35.000.
Santana, George R.: *See—*
Bajorek, Christopher H.; Glaser, Thomas W.; Klaassen, Klaas B.; Nielsen, Charles R.; Santana, George R.; Smith, Gordon J.; Thompson, David A.; and Workman, Michael L., 5,544,138, Cl. 369-54.000.
Santhanam, Padmanabhan: *See—*
Brady, Michael J.; Krusin-Elbaum, Lia; Masselink, William T.; Santhanam, Padmanabhan; and Tamegai, Tsuyoshi, 5,543,988, Cl. 360-112.000.
Santiesteban, Jose G.: *See—*
Chang, Clarence D.; Han, Scott; Martenak, Daniel J.; Santiesteban, Jose G.; and Walsh, Dennis E., 5,543,036, Cl. 208-189.000.
Chang, Clarence D.; Santiesteban, Jose G.; and Stern, David L., 5,543,380, Cl. 502-325.000.
Santoro, Ralph, Jr.: *See—*
Kettle, Paul J., Jr.; Santoro, Ralph, Jr.; and Ferri, Vincent, 5,542,891, Cl. 477-96.000.
Sanyo Electric Co., Ltd.: *See—*
Kobayashi, Yasumi; Matsui, Kuniyuki; Hirao, Yasuhiro; Takeuchi, Kousuke; Kayaki, Hiroshi; Takahashi, Yusuke; Tanaka, Toshiharu; Kiyose, Isao; and Shibata, Kenichi, 5,543,757, Cl. 333-195.000.
Nishioka, Masato; Hamada, Akira; Tateyama, Eiji, deceased; Nishizawa, Nobuyoshi; and Tsutsumi, Masaru, 5,543,241, Cl. 429-39.000.
Sanyo Special Steel Co., Ltd.: *See—*
Muraoka, Tomoki; Abe, Tsutomu; Kobayashi, Kazuhiro; and Hosoda, Kenichi, 5,542,991, Cl. 148-330.000.
Sara Lee Corporation: *See—*
Wyslotsky, Ihor; and Mello, Frank C., 5,542,234, Cl. 53-433.000.
Saraf, Ravi: *See—*
Booth, Richard B.; Gaynes, Michael A.; Murco, Robert M.; Puligandla, Viswanadham; Roldan, Judith M.; Saraf, Ravi; and Zalesinski, Jerzy M., 5,543,585, Cl. 174-261.000.
Sariaslani, Fateme S.: *See—*
Rajan, Janardhanan S.; and Sariaslani, Fateme S., 5,543,324, Cl. 435-252.400.
Sarvazian, Armen P.; Belonenko, Vladimir N.; and Chalikian, Tigran V. Method for determining physical stage parameters of a medium and an apparatus for carrying out same. 5,542,298, Cl. 73-597.000.
Sasada, Ichiro; and Morikawa, Akihiko, to OMRON Corporation. Magnetostrictive torque sensor, magnetostrictive torque measuring apparatus, and condition-monitoring apparatus for a cutting tool using the same. 5,542,304, Cl. 73-862.333.
Sasaki, Setuo: *See—*
Iwaya, Shouichi; Yahagi, Masahiro; Kudou, Hitoshi; Itou, Shigeru; Fujiwara, Isao; Ogasawara, Tadashi; Morita, Makoto; Taguchi, Teruo; and Sasaki, Setuo, 5,544,002, Cl. 361-302.000.
Sasaki, Shinichi: *See—*
Shishido, Kazuo; Sasaki, Shinichi; Ikemoto, Isao; Yashiro, Masahiko; Karakama, Toshiyuki; and Numagami, Atsushi, 5,543,898, Cl. 355-210.000.
Sasaki, Takamitsu: *See—*
Nomura, Hiroshi; and Sasaki, Takamitsu, 5,543,971, Cl. 359-697.000.
Sasaki, Tetsuo: *See—*
Takimoto, Misao; Hiyama, Tooru; Sasaki, Tetsuo; and Ishii, Tatsuki, 5,544,068, Cl. 364-489.000.
Sasaki, Tsutomu; and Itoh, Ikuo, to Nippon Steel Corporation. Apparatus for generating uniform and parallel magnetic field, the intensity of which is variable. 5,543,770, Cl. 335-299.000.
Sasame, Hiroshi: *See—*
Maebashi, Youichirou; Fujii, Haruo; Sasame, Hiroshi; Kawakami, Hiroaki; Kobayashi, Tatsuya; Kobayashi, Tetsuya; Enomoto, Naoki; Uchiyama, Akihiko; and Saito, Yoshiro, 5,543,900, Cl. 355-219.000.
Sasso, Felix T.: *See—*
Blanche, John G., IV; and Sasso, Felix T., 5,543,812, Cl. 343-894.000.
Satiko Okazaki: *See—*
Uchiyama, Hiroshi; Kogoma, Masuhiro; and Okazaki, Satiko, 5,543,017, Cl. 204-169.000.
Sato, Eiji: *See—*
Okamoto, Yoshinari; Tsuruoka, Yoshihisa; Hirakawa, Haruhisa; and Sato, Eiji, 5,543,685, Cl. 313-496.000.
Sato, Hirohide: *See—*
Kusase, Shin; Mitani, Kenzo; Umeda, Atsushi; Tokura, Norihito; and Sato, Hirohide, 5,543,703, Cl. 322-16.000.
Sato, Kazuo, to Rohm Co. Ltd. Semiconductor integrated circuit device. 5,543,651, Cl. 257-369.000.
Sato, Mitsuhiko: *See—*
Nakata, Hiroki; Sato, Mitsuhiko; and Aoshima, Masashi, 5,543,470, Cl. 525-331.700.
Sato, Mitsuru: *See—*
Tanaka, Hatsuyuki; Sato, Mitsuru; Nakayama, Toshimasa; and Komano, Hiroshi, 5,543,268, Cl. 430-331.000.
Sato, Nobuyuki: *See—*
Okada, Akihiko; and Sato, Nobuyuki, 5,543,462, Cl. 525-74.000.
Sato, Yoichi: *See—*
Mizukami, Masao; Sato, Yoichi; Shinagawa, Satoshi; and Nakano, Yukio, 5,544,122, Cl. 365-230.050.
Sato, Yoshiyuki: *See—*
Suzuki, Takehiko; Taniguchi, Shozo; Kanemaru, Kohji; Sato, Yoshiyuki; and Enamito, Akihiko, 5,544,074, Cl. 364-508.000.
Satoh, Katsumi: *See—*
Tokunoh, Futoshi; and Satoh, Katsumi, 5,543,363, Cl. 437-208.000.
Satoh, Shinichi; Ozaki, Hiroji; and Eimori, Takahisa, to Mitsubishi Denki Kabushiki Kaisha. Field effect transistor with a shaped gate electrode. 5,543,646, Cl. 257-344.000.
Satoh, Yoshinori: *See—*
Casasanta, Joseph A.; Andresen, Bernhard H.; Satoh, Yoshinori; Keeney, Stanley C.; and Martin, Robert C., 5,544,203, Cl. 375-376.000.
Satokawa, Shigeo: *See—*
Uchida, Hiroshi; Takahashi, Iruru; Yamaseki, Ken-ichi; and Satokawa, Shigeo, 5,543,125, Cl. 423-239.200.
Saud, Abel: *See—*
Rajaiah, Jayanth; Saud, Abel; MacKay, Bruce J.; and Grubbs, Dennis R., 5,543,443, Cl. 523-120.000.
Sauer Inc.: *See—*
Louis, Joseph E.; and Johnson, Alan W., 5,542,494, Cl. 180-305.000.
Sauer, Jude S.: *See—*
Oravecz, Michael G.; Greenwald, Roger J.; McGarry, Daniel E.; and Sauer, Jude S., 5,543,832, Cl. 348-65.000.
Sauer, Ralf-Roland; Rupp, Wolfgang; and Hinz, Alexander, to Carl-Zeiss-Stiftung. Gas laser for emitting light modulated at two different wavelengths and an arrangement incorporating the gas laser to detect a gaseous substance. 5,544,186, Cl. 372-33.000.
Saugier, R. Kent: *See—*
Carter, Ernest E., Jr.; Frulla, Roberto E.; Pettit, Paul J.; Sanford, Frank L.; and Saugier, R. Kent, 5,542,782, Cl. 405-129.000.
Sauke, Todd B.; Becker, Joseph F.; and de la Torre-Bueno, Jose, to San Jose State University Foundation; and Seti Institute. Laser diode spectrometer for analyzing the ratio of isotopic species in a substance. 5,543,621, Cl. 250-339.030.
Saunders Archery Co.: *See—*
Saunders, Charles A., 5,542,186, Cl. 33-265.000.
Saunders, Charles A., to Saunders Archery Co. Clear view peep sight for archery bow. 5,542,186, Cl. 33-265.000.
Saunders, Robert C.: *See—*
Hool, Kevin O.; and Saunders, Robert C., 5,542,289, Cl. 73-64.520.
Saupe, Brian. Leg to waist prisoner restraint. 5,542,433, Cl. 128-869.000.
Sauter, Hubert: *See—*
Doetzer, Reinhard; Sauter, Hubert; Bayer, Herbert; Roehl, Franz; Lorenz, Gisela; Ammermann, Eberhard; and Wingert, Horst, 5,543,433, Cl. 514-638.000.
Savill, Anthony M., to Rolls-Royce plc. Control of fluid flow. 5,542,630, Cl. 244-200.000.
Sawada, Atsushi: *See—*

Rieger, Bernhard; Yoshitake, Hiroki; Sawada, Atsushi; Plach, Herbert; and Weber, Georg, 5,543,077, Cl. 252-299.630.
Sawaki, Atsushi: *See—*
Makino, Tetsuo; Furukawa, Hideki; Matsubara, Osamu; Sawaki, Atsushi; and Kawai, Shinji, 5,542,133, Cl. 4-420.400.
Sawanobori, Keiji: *See—*
Aoki, Harumi; Tani, Nobuhiro; and Sawanobori, Keiji, 5,543,837, Cl. 348-264.000.
Sawaragi, Yoshiatsu: *See—*
Senba, Hiroyuki; and Sawaragi, Yoshiatsu, 5,543,109, Cl. 420-446.000.
Sawyer, Jason S.; Spaethe, Stephen M.; and Starling, James J., to Eli Lilly and Company. Method for treating resistant tumors. 5,543,428, Cl. 514-456.000.
Scafetta, Nazareno: *See—*
Tinti, Maria O.; Misiti, Domenico; Cavazza, Claudio; and Scafetta, Nazareno, 5,543,556, Cl. 560-170.000.
Scaife, John G.: *See—*
Ridley, Robert G.; and Scaife, John G., 5,543,323, Cl. 435-252.300.
Scaller, Josef: *See—*
Pollhammer, Stefan; Scaller, Josef; and Winetzhammer, Willibald, 5,543,560, Cl. 560-234.000.
Scarfone, Tommaso F., to Carrier Corporation. Twin cylinder rotary compressor. 5,542,831, Cl. 418-60.000.
Scarpetti, David: *See—*
Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Kerdesky, Francis A.; Langridge, Denton C.; Leanna, M. Robert; Lijewski, Linda M.; Melcher, Laura; Morton, Howard E.; Norbeck, Daniel W.; Reno, Daniel S.; Robbins, Timothy A.; Sham, Hing L.; Sowin, Thomas J.; Tien, Jien-heh J.; Zhao, Chen; and Scarpetti, David, 5,543,551, Cl. 560-24.000.
Scatton, Bernard: *See—*
Benavides, Jésus; Ferzaz, Badia; George, Pascal; and Scatton, Bernard, 5,543,421, Cl. 514-317.000.
Schaefer, Scott: *See—*
Zagar, Paul S.; and Schaefer, Scott, 5,544,124, Cl. 365-230.080.
Schaller, Laurent: *See—*
Chee, Hiram; Glowacki, Mark; and Schaller, Laurent, 5,542,937, Cl. 604-280.000.
Scharf, Kenneth R. Portable privacy lock. 5,542,723, Cl. 292-289.000.
Schaulin, Rudolf: *See—*
McMullan, David; Schaulin, Rudolf; and Lauk, Urs, 5,542,956, Cl. 8-641.000.
Scheffee, Robert S., to Atlantic Research Corporation. Two-part igniter for gas generating compositions. 5,542,688, Cl. 280-741.000.
Schelong, Steven E.: *See—*
Acton, John D.; Grant, Lawrence C.; Hardy, Jack M., Jr.; Kent, Steven P.; and Schelong, Steven E., 5,544,319, Cl. 395-200.070.
Schemansky, Kevin J.: *See—*
Culp, Jerry A.; and Schemansky, Kevin J., 5,543,695, Cl. 318-432.000.
Scherer, Paul T.: *See—*
Habermehl, G. Lyle; and Scherer, Paul T., 5,542,323, Cl. 81-434.000.
Schering Aktiengesellschaft: *See—*
Huth, Andreas; Seidelmann, Dieter; Schmiechen, Ralph; Schneider, Herbert; and Turski, Lechoslaw, 5,543,519, Cl. 544-238.000.
Pohlenz, Hans-Dieter; Boidol, Werner; and Streber, Wolfgang, 5,543,306, Cl. 435-91.410.
Scherpenberg, Francis A.: *See—*
Zanders, Gary V.; and Scherpenberg, Francis A., 5,544,063, Cl. 364-482.000.
Schilit, William N.: *See—*
Theimer, Marvin M.; Spreitzer, Michael J.; Weiser, Mark D.; Goldstein, Richard J.; Elrod, Scott A.; Swinehart, Daniel C.; Schilit, William N.; Krivacic, Robert T.; and Want, Roy, 5,544,321, Cl. 395-200.110.
Schilp, Andrea: *See—*
Benz, Gerhard; Marek, Jiri; Willmann, Martin; Bantien, Frank; Muenzel, Horst; Laermer, Franz; Offenberg, Michael; and Schilp, Andrea, 5,542,558, Cl. 216-2.000.
Schindler, Hermann: *See—*
Antwerpen, Werner; Schindler, Hermann; and Reinhardt, Gerd, 5,542,951, Cl. 8-137.000.
Schindler, Roland R.: *See—*
Taylor, Roy Y.; Doty, William A.; Kroth, David J.; and Schindler, Roland R., 5,543,964, Cl. 359-463.000.
Schinkel, Dolf A.: *See—*
Koppelmans, Johannes F. A.; Koster, Arian; and Schinkel, Dolf A., 5,544,266, Cl. 382-238.000.
Schjelderup, Gail: *See—*
Robinson, Mark T.; Gardner, Steven H.; Wong, Matt; Kasmir, Seton P.; Balachandran, Kumar; Graham, Sue; Schjelderup, Gail; and Quick, Roy F., Jr., 5,544,222, Cl. 379-58.000.
Schlapp, Stephen A.: *See—*
Deering, Michael F.; Schlapp, Stephen A.; and Lavelle, Michael G., 5,544,306, Cl. 395-164.000.
Schliwa, Ralf: *See—*
Beuck, Guenter; Mueller, Hans-Juergen; and Schliwa, Ralf, 5,542,626, Cl. 244-107.000.
Schlotterer, Willy: *See—*
Deiss, Siegfried; and Schlotterer, Willy, 5,542,793, Cl. 407-35.000.
Schlumberger Technology Corporation: *See—*
Eddison, Alan M., 5,542,482, Cl. 175-61.000.
Roscoe, Bradley A.; Schweitzer, Jeffrey S.; and Stephenson, Kenneth E., 5,543,617, Cl. 250-259.000.
Winkler, Kenneth W., 5,544,127, Cl. 367-27.000.
Schmädig, Harald; and Klöck, Hubert, to Kanthal GmbH. Heat conductor support disk. 5,543,603, Cl. 219-550.000.
Schmid, Helmut: *See—*
Bucerius, Klaus M.; and Schmid, Helmut, 5,542,998, Cl. 149-45.000.
Bucerius, Klaus M.; and Schmid, Helmut, 5,542,999, Cl. 149-45.000.
Schmid, Rudolf: *See—*
Broger, Emil A.; Crameri, Yvo; Schmid, Rudolf; and Siegfried, Theodor, 5,543,559, Cl. 560-231.000.
Schmidt, Felix: *See—*
Fehn, Edmund; Schmidt, Felix; and Plessow, Joerg, 5,543,181, Cl. 427-421.000.
Schmidt, Gregory F.: *See—*
Patton, Jasson T.; Devore, David D.; Timmers, Francis J.; Soto, Jorge; Schmidt, Gregory F.; and Wilson, David R., 5,543,480, Cl. 526-126.000.
Schmidt, Günter: *See—*
Simon, Wolfgang; Pototzky, Günther; Groos, Rolf; and Schmidt, Günter, 5,542,919, Cl. 604-29.000.
Schmidt, Konrad: *See—*
Fuchsreiter, Johannes; Schmidt, Konrad; Kasseckert, Rudolf; and Neumann, Walter, 5,544,314, Cl. 395-200.000.
Schmidt, Otto H.: *See—*
Heine, Helmut; Schmidt, Otto H.; Gügel, Gerhard; Merkt, Norbert; and Zirnheld, Arno, 5,542,904, Cl. 600-197.000.
Schmidt, Terence J.: *See—*
Rother, David J.; Lee, John S.; Schmidt, Terence J.; Hollerich, Donald; Skubic, Robert L.; and Laveen, Eric, 5,542,768, Cl. 400-120.160.
Schmiechen, Ralph: *See—*
Huth, Andreas; Seidelmann, Dieter; Schmiechen, Ralph; Schneider, Herbert; and Turski, Lechoslaw, 5,543,519, Cl. 544-238.000.
Schmitt, Karl R.; and Mosnot, David M., to Textron Inc. Horizontal zero indicator assembly. 5,544,023, Cl. 362-66.000.
Schmitt, Peter J.: *See—*
Herbert, William G.; Bischoping, Patricia; Altavela, Robert P.; Kotowicz, Lawrence; Schmitt, Peter J.; Jansen, Ronald E.; Lennon, John H.; and Grey, Henry G., 5,543,028, Cl. 205-70.000.
Schmitting, Udo: *See—*
Meyer, Helmut J. W.; Ahls, Hermann W.; Blaseck, Klaus; and Schmitting, Udo, 5,542,521, Cl. 198-324.000.
Schmitz, Patrick L.; and Jauhal, Shern, to Accom, Inc.,. Asynchronous media server request processing system for servicing reprioritizing request from a client determines whether or not to delay executing said reprioritizing request. 5,544,318, Cl. 395-200.040.
Schneeweiss, Joseph G.: *See—*
Lezdey, Jarett R.; Lezdey, Darren B.; and Schneeweiss, Joseph G., 5,542,667, Cl. 273-84.00R.
Schneider, Erich; Bone, Rainer; Klenk, Martin; Lange, Jörg; and Dambach, Dieter-Andreas, to Robert Bosch GmbH. Method and device for monitoring a secondary-air system of a motor vehicle. 5,542,292, Cl. 73-118.100.
Schneider, Herbert: *See—*
Huth, Andreas; Seidelmann, Dieter; Schmiechen, Ralph; Schneider, Herbert; and Turski, Lechoslaw, 5,543,519, Cl. 544-238.000.
Schneider, Norbert: *See—*
Bobrich, Michael; Lehner, August; Roller, Hermann; Suettinger, Rudolf; Kress, Ria; Schneider, Norbert; Lenz, Werner; Engelhardt, Peter; Rudolf, Peter; Brodt, Gregor; Balz, Werner; and Kohl, Albert, 5,543,226, Cl. 428-423.100.
Schneider, Peter; and Umbach, Dirk, to Esselte Meto International GmbH. Printer such as a printer for printing self-adhesive labels having a ribbon drive. 5,542,769, Cl. 400-225.000.
Schnell, Philip G.: *See—*
Song, Joo H.; Sundstrom, Christafor E.; Record, David W.; Townsend, Donald J.; Broderick, Kevin B.; and Schnell, Philip G., 5,543,160, Cl. 426-3.000.
Schnez, Harald: *See—*
Gotte, Jost; Schnez, Harald; and Singewald, Arno, 5,542,546, Cl. 209-164.000.
Schober, Tilman: *See—*
Woyke, Thomas; and Schober, Tilman, 5,543,687, Cl. 313-556.000.
Schoen, Alan E.: *See—*
Johnson, Bruce S.; Khosla, Mukul; Herron, John R.; Brassil, John M.; and Schoen, Alan E., 5,543,625, Cl. 250-427.000.
Schoeneck, Richard J., to Douglas Machine Limited Liability Company. Random infeed timing device and methods. 5,543,699, Cl. 318-616.000.
Scholder, Erica J.: *See—*
Radloff, Timothy M.; and Scholder, Erica J., 5,544,006, Cl. 361-683.000.
Schoonhoven, Richard: *See—*
Obermanns, Sebastian; and Schoonhoven, Richard, 5,544,152, Cl. 370-16.000.
Schoonveld, Alan H.: *See—*
Stratford, James T.; Schoonveld, Alan H.; and Weaver, David A., 5,543,104, Cl. 264-328.800.
Schott Glaswerke: *See—*
von Bonin, Wulf; von Gizycki, Ulrich, deceased; Leroux, Roland; Karschti, Thomas M.; and Thürk, Jürgen, 5,543,230, Cl. 428-432.000.
Schrell, Andreas; and Russ, Werner H., to Hoechst Aktiengesellschaft. Production of aminated cotton fibers. 5,542,954, Cl. 8-532.000.

Schrell, Andreas; and von der Eltz, Andreas, to Hoechst Aktiengesellschaft. Dyeing modified viscose fibers with acid or direct dyes. 5,542,955, Cl. 8-561.000.
Schriner, Michael J., to Hunt Holdings, Inc. Mouse pad with storage compartment. 5,542,637, Cl. 248-346.010.
Schuermann, Josef H., to Texas Instruments Deutschland GmbH. Method of providing a synchronized data stream suitable for use in a combined FDX and HDX RF-ID system. 5,543,798, Cl. 342-42.000.
Schultz, Charles R.: *See*—
Madison, Harry; and Schultz, Charles R., 5,542,355, Cl. 104-17.100.
Schultz, Craig H.; and Olson, Ogden R., to Hon Industries Inc. Combined chair glide and coupler. 5,542,159, Cl. 24-341.000.
Schultz, Darald R.; and Sherman, Richard A., to Norand Corporation. Portable compact multi-function printer with cartridge paper supply. 5,542,487, Cl. 178-4.10A.
Schultz, Darald R.; Danielson, Arvin D.; Bunte, Alan G.; Sherman, Richard A.; and Jaeger, Robert B., to Norand Corporation. Portable electronic device docking system. 5,544,010, Cl. 361-686.000.
Schultz, Roger. Wire stripping apparatus. 5,542,327, Cl. 83-861.000.
Schulz, Manfred: *See*—
Weis, Bernd; Turban, Karl-Albert; Bezler, Monika; Schulz, Manfred; and Siegmund, Gerd, 5,544,226, Cl. 379-61.000.
Schur, Israel. Catheter assembly. 5,542,930, Cl. 604-164.000.
Schütze, Rainer, to Deutsche Forschungsanstalt f. Luft-und Raumfahrt e.V. Connecting rods. 5,542,230, Cl. 52-726.100.
Schwartz, Robert E.: *See*—
Bolessa, Evon A.; Schwartz, Robert E.; Bills, Gerald F.; Giacobbe, Robert A.; Pelaez Perez, Fernando; Arroyo, Angeles C.; Matas, Teresa D.; Fernandez, Isabel M.; Perez, Francisca V.; Mandala, Suzanne M.; Zink, Deborah L.; Thornton, Rosemary; Thompson, John R.; and Curotto, James E., 5,543,431, Cl. 514-627.000.
Schwarz, Hans-Michael: *See*—
Beisel, Weinfried; Schwarz, Hans-Michael; and Morgenstern, Bodo, 5,542,520, Cl. 194-335.000.
Schwarz, William M.; and Fuller, Timothy J., to Xerox Corporation. Developer compositions. 5,543,259, Cl. 430-106.000.
Schweitzer, Jeffrey S.: *See*—
Roscoe, Bradley A.; Schweitzer, Jeffrey S.; and Stephenson, Kenneth E., 5,543,617, Cl. 250-259.000.
Schwetz, Karl-Alexander: *See*—
Sigl, Lorenz; Thaler, Hubert; and Schwetz, Karl-Alexander, 5,543,370, Cl. 501-92.000.
Schwindeman, James A., to FMC Corporation. Process for preparing trimethylsilyloxy functionalized alkyllithium. 5,543,540, Cl. 556-466.000.
Sciamanna, Steven F.: *See*—
Bates, Jan B.; and Sciamanna, Steven F., 5,543,043, Cl. 210-221.200.
Science Solutions, Inc.: *See*—
Kachanov, Alexander A., 5,543,916, Cl. 356-354.000.
Scifres, Donald R.: *See*—
Wolak, Edmund L.; Endriz, John; Worland, D. Philip; Dawson, David D.; and Scifres, Donald R., 5,544,184, Cl. 372-43.000.
Scios Nova Inc.: *See*—
Kyle, Donald J.; and Chakravarty, Sarvajit, 5,543,496, Cl. 530-314.000.
Scott, Danny E.: *See*—
Pessier, Rudolf C. O.; Scott, Danny E.; Grimes, Robert E.; and Isbell, Matthew R., 5,542,485, Cl. 175-371.000.
Scott, Ed, to Sony Corporation; and Sony Trans Com Inc. Method and apparatus for entering text using an input device having a small number of keys. 5,543,818, Cl. 345-168.000.
Scott, George R.; Cutright, Edwin L.; Heidorn, Martin W.; and Kelly, William L., to Jewett Automation, Inc. Process and apparatus for the production of star profile nails. 5,542,886, Cl. 470-34.000.
Scott, Gregory H., to Kejr Engineering, Inc. Drive point locking method and apparatus. 5,542,481, Cl. 175-23.000.
Scott, Paul D.: *See*—
Koether, Bernard G.; and Scott, Paul D., 5,542,344, Cl. 99-330.000.
Scriven, Reginald K. Hoist driven rescue mat for swimming pool. 5,542,502, Cl. 187-414.000.
SDL, Inc.: *See*—
Wolak, Edmund L.; Endriz, John; Worland, D. Philip; Dawson, David D.; and Scifres, Donald R., 5,544,184, Cl. 372-43.000.
SDS PTY, Ltd.: *See*—
McInnes, Malcolm B., 5,542,484, Cl. 175-296.000.
Seagrave, Charles G.; Richards, Martin J.; Mandell, Douglas E.; and Atherton, Mark L., to Dolby Laboratories Licensing Corporation. Storage medium and apparatus and method for recovering information from such medium by oversampling. 5,544,140, Cl. 369-59.000.
Sears, John W.: *See*—
Davis, Terry L.; Hart, James A.; Russell, James F.; Sears, John W.; and Trice, Philip H., 5,544,086, Cl. 364-408.000.
Sears, Lawrence M.: *See*—
Ball, Gordon M.; and Sears, Lawrence M., 5,542,250, Cl. 60-315.000.
Secheron S.A.: *See*—
Duffour, Henri; Goerend, Philippe; and Loutan, Dominique, 5,543,598, Cl. 218-135.000.
Secure Care Products, Inc.: *See*—
McAuley, John M.; and Field, Joseph, 5,543,780, Cl. 340-573.000.
Sedivy, Jan: *See*—
Bakis, Raimo; Gopalakrishnan, Ponani S.; Kanevsky, Dimitri; Nadas, Arthur J.; Nahamoo, David; Picheny, Michael A.; and Sedivy, Jan, 5,544,277, Cl. 395-2.200.
Sedlack, Mark A.: *See*—
Stranski, Sandra K.; Sumser, Daniel P.; and Sedlack, Mark A., 5,542,151, Cl. 16-326.000.
Sedran, Roger H.: *See*—
Dronzek, Peter J., Jr.; Sedran, Roger H.; and Burke, Brian K., 5,543,191, Cl. 428-41.500.
Segawa, Toshikazu: *See*—
Taniguchi, Yukio; Hotta, Tsuyoshi; Kuwabara, Yuko; Morita, Hideaki; and Segawa, Toshikazu, 5,543,228, Cl. 428-429.000.
Sehgal, Surendra N.: *See*—
Armstrong, Jay J.; and Sehgal, Surendra N., 5,543,418, Cl. 514-291.000.
Seibutsu Kagaku Kenkyujo: *See*—
Mandai, Takahiko; Shibuya, Takashi; Sugimoto, Toshiyuki; and Miyake, Toshio, 5,543,513, Cl. 536-123.130.
Seidelmann, Dieter: *See*—
Huth, Andreas; Seidelmann, Dieter; Schmiechen, Ralph; Schneider, Herbert; and Turski, Lechoslaw, 5,543,519, Cl. 544-238.000.
Seifert, Jürgen: *See*—
Bergfeld, Manfred J.; and Seifert, Jürgen, 5,543,511, Cl. 536-56.000.
Seiko Epson Corporation: *See*—
Minowa, Masahiro, 5,543,828, Cl. 347-195.000.
Yoneyama, Gen; and Tsukahara, Eiji, 5,543,707, Cl. 324-115.000.
Seiko Instruments Inc.: *See*—
Iwaki, Tadao; Mitsuoka, Yasuyki; and Kasama, Nobuyuki, 5,544,252, Cl. 382-280.000.
Seireg, Ali A.; and Dooner, David B. Computerized control of automobile speed. 5,544,056, Cl. 364-426.040.
Sekihata, Osamu: *See*—
Norizuki, Reiko; Hyodo, Ryuji; Tanaka, Kenji; Sekihata, Osamu; Hatta, Hiroyuki; Eda, Susumu; and Oomura, Katsumi, 5,544,169, Cl. 370-60.100.
Sekisui Chemical Co., Ltd.: *See*—
Shibayama, Kouichi; Suzuki, Masao; Ogasa, Masao; and Iuchi, Kenji, 5,543,438, Cl. 521-140.000.
Sekisui Jushi Kabushiki Kaisha: *See*—
Fujii, Noboru; Kawabata, Kenji; Hashi, Masaaki; Niikura, Junji; and Ouya, Tomotoshi, 5,542,239, Cl. 53-477.000.
Sekizawa, Yoshihiro: *See*—
Ohta, Ryusuke; and Sekizawa, Yoshihiro, 5,543,689, Cl. 315-111.210.
Selby, Thomas W., to United States of America, Energy. Method for converting asbestos to non-carcinogenic compounds. 5,543,120, Cl. 423-167.100.
Selezenev, Nikolai G.: *See*—
Leonidov, Nikolai B.; and Selezenev, Nikolai G., 5,543,147, Cl. 424-400.000.
Selinger, Craig R.: *See*—
Aubertine, Matthew E.; Beyzavi, Kianoush; Broker, Harold J.; Checca, Ronald P.; Granato, Michael A.; Haeussler, David A.; Herasimtschuk, Michael; Jurkovic, Michael J.; Salem, Gerard M.; Selinger, Craig R.; and Zehr, Paul R., 5,544,088, Cl. 364-489.000.
Sells, Gary L., to Cor-A-Vent, Inc. Roof ventilating cap. 5,542,882, Cl. 454-365.000.
Selvin, Eric B.: *See*—
Volk, Andrew M.; Zaidi, Sajjad A.; and Selvin, Eric B., 5,543,734, Cl. 326-83.000.
Semiconductor Energy Laboratory Co., Ltd.: *See*—
Mase, Akira; Hiroki, Masaaki; Takemura, Yasuhiko; and Yamazaki, Shunpei, 5,543,947, Cl. 359-84.000.
Ohtani, Hisashi; Miyanaga, Akiharu; Zhang, Hongyong; Yamaguchi, Naoaki; and Suzuki, Atsunori, 5,543,352, Cl. 437-101.000.
Yamazaki, Shunpei, 5,543,636, Cl. 257-66.000.
Senapati, Nagabhusan, to Sweco, Incorporated. Fine mesh screening. 5,542,548, Cl. 209-365.100.
Senba, Hiroyuki; and Sawaragi, Yoshiatsu, to Sumitomo Metal Industries, Ltd. Heat resistant high chromium austenitic alloy excellent in strength at elevated temperatures. 5,543,109, Cl. 420-446.000.
Senju Pharmaceutical Co., Ltd.: *See*—
Aotsuka, Tomoji; Nishio, Toshiyuki; Hosono, Hiroshi; Nakamura, Yoshiyuki; Matsui, Tetsuo; and Ishikawa, Hiromichi, 5,543,420, Cl. 514-312.000.
Senn, Jeffrey A.; and Lucas, Peter, to Digital Equipment Corporation. Document management system using multiple threaded processes and having asynchronous repository responses and no busy cursor. 5,544,051, Cl. 364-419.190.
Seo, Hirofumi: *See*—
Shiramizu, Yoshimi; Nakamori, Masaharu; Aoki, Hidemitsu; Seo, Hirofumi; and Hamano, Haruto, 5,543,030, Cl. 205-464.000.
Seo, Shoichi: *See*—
Iwane, Hiroshi; Miyagi, Hidekazu; Imada, Satoshi; Seo, Shoichi; and Yoneyama, Takahiro, 5,543,547, Cl. 558-274.000.
Sera, Hidefumi: *See*—
Dan, Shigeyuki; Nakayama, Takao; Nishizawa, Hiroshi; and Sera, Hidefumi, 5,543,258, Cl. 430-87.000.
SERAC: *See*—
Graffin, André, 5,542,233, Cl. 53-282.000.
Sercel, Anthony D.: *See*—
Beylin, Vladimir G.; Sercel, Anthony D.; Showalter, Howard D. H.; Adams, Gerald E.; Fielden, Edward M.; Naylor, Matthew A.; and Stratford, Ian J., 5,543,527, Cl. 548-110.000.
Serfling, Steven E.; and Stangeland, Rodney L., to Honeywell Inc. Fail safe receiver system. 5,543,803, Cl. 342-357.000.

Serizawa, Hideaki; Hayami, Masayoshi; and Yokozuka, Kunimoto, to Serizawa, Hideaki. Radiation plate and method of producing the same. 5,542,176, Cl. 29-890.030.
Serv-Tech, Inc.: *See*—
Krajicek, Richard W., 5,542,984, Cl. 134-22.100.
Servedio, Michael: *See*—
Boyette, James E., Jr.; Lo, Jiann-Chang; and Servedio, Michael, 5,543,726, Cl. 324-758.000.
Seshadri, Nambirajan, to AT&T Bell Laboratories. Coded modulation with unequal error protection. 5,544,328, Cl. 375-261.000.
Sessa, Raymond V., to Wolverine World Wide, Inc. Shoe construction with internal cushioning ribs. 5,542,195, Cl. 36-28.000.
Sessler, Jonathan L.; and Král, Vladimir, to Board of Regents, The University of Texas System. Water-soluble sapphyrins. 5,543,514, Cl. 540-472.000.
Seti Institute: *See*—
Sauke, Todd B.; Becker, Joseph F.; and de la Torre-Bueno, Jose, 5,543,621, Cl. 250-339.030.
Seto, Kazuhiro; Okuda, Kaneharu; Sakata, Kei; Kato, Toshiyuki; and Ono, Takashi, to Kawasaki Steel Corporation. Method for manufacturing a high-formable, high-strength cold-rolled steel sheet excellent in resistance to secondary working embrittlement. 5,542,994, Cl. 148-603.000.
Setoriyama, Takeshi, to Canon Kabushiki Kaisha. Electrophotographic image forming apparatus with a process cartridge mounting feature. 5,543,891, Cl. 355-200.000.
Setra Systems, Inc.: *See*—
Lee, Shih-Ying, 5,542,300, Cl. 73-724.000.
Setthachayanon, Songvit: *See*—
Ehrhart, Wendell A.; and Setthachayanon, Songvit, 5,543,232, Cl. 428-482.000.
Severns, John C.: *See*—
Sivik, Mark R.; and Severns, John C., 5,543,083, Cl. 252-403.000.
Sewell, Alan R.: *See*—
Kemshall, Paul A.; and Sewell, Alan R., 5,542,490, Cl. 180-422.000.
Sextant Avionique: *See*—
Gaultier, Philippe; Vouillon, Patrick; and Simon, Frédéric, 5,543,592, Cl. 200-6.00A.
Seybold, Guenther: *See*—
Koehler, Ulrich; Siegel, Hardo; and Seybold, Guenther, 5,543,515, Cl. 540-604.000.
SGS-Thomson Micoroelectronics S.A.: *See*—
Gaultier, Jean-Marie; and Yero, Emilio M., 5,544,114, Cl. 365-202.000.
SGS-Thomson Microelectronics, Inc.: *See*—
Bryant, Frank R.; and Hodges, Robert L., 5,543,343, Cl. 437-51.000.
Carobolante, Francesco; and Robinson, Curtis, 5,543,697, Cl. 318-594.000.
McClure, David C.; and Zamanian, Mehdi, 5,544,097, Cl. 365-154.000.
Patel, Viren C., 5,543,655, Cl. 257-514.000.
SGS-Thomson Microelectronics S.A.: *See*—
Barret, Jean; and Quessada, Daniel, 5,543,645, Cl. 257-328.000.
Jimenez, Jean, 5,543,358, Cl. 437-195.000.
SGS-Thomson Microelectronics, S.r.l.: *See*—
Bontempo, Gregorio; Milazzo, Patrizia; and Alzati, Angelo, 5,543,739, Cl. 327-108.000.
Losavio, Aldo; Crisenza, Giuseppe; and De Santi, Giorgio, 5,543,633, Cl. 257-48.000.
Sali, Mauro L.; and Golla, Carla, 5,544,085, Cl. 364-787.000.
Shachnai, Hadas; Wolf, Joel L.; and Yu, Philip S., to International Business Machines Corporation. Baton passing optimization scheme for load balancing/configuration planning in a video-on-demand computer system. 5,544,313, Cl. 395-200.010.
Shaffer, Joseph A.: *See*—
Lee, Sun Y.; Lappin, Edward R.; and Shaffer, Joseph A., 5,543,087, Cl. 261-87.000.
Shaffer, Wayne K.: *See*—
Chatterjee, Dilip K.; Ghosh, Syamal K.; Shaffer, Wayne K.; and Vankerkhove, Alan P., 5,543,269, Cl. 430-346.000.
Shafry, Gavriel: *See*—
Reuber, Gerhard; Menne, Hans G.; and Shafry, Gavriel, 5,542,772, Cl. 403-97.000.
Shah, Gautam P., to W. R. Grace & Co.-Conn. Moisture barrier film. 5,543,223, Cl. 428-349.000.
Shah, Pankaj, to Morton International, Inc. Waterborne contact adhesive. 5,543,455, Cl. 524-521.000.
Shaklik, Brian; and Saderholm, Davin G., to Morton International, Inc. Inflatable cushion assembly and system. 5,542,692, Cl. 280-728.200.
Sham, Hing L.: *See*—
Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Morton, Howard E.; Reno, Daniel S.; Sham, Hing L.; Sowin, Thomas J.; and Tien, Jien-Heh J., 5,543,549, Cl. 558-405.000.
Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Kerdesky, Francis A.; Langridge, Denton C.; Leanna, M. Robert; Lijewski, Linda M.; Melcher, Laura; Morton, Howard E.; Norbeck, Daniel W.; Reno, Daniel S.; Robbins, Timothy A.; Sham, Hing L.; Sowin, Thomas J.; Tien, Jien-heh J.; Zhao, Chen; and Scarpetti, David, 5,543,551, Cl. 560-24.000.
Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Leanna, M. Robert; Lijewski, Linda M.; Melcher, Laura; Morton, Howard E.; Reno, Daniel S.; Sham, Hing L.; and Sowin, Thomas J., 5,543,552, Cl. 560-24.000.
Shank, James D., Jr., to Church & Dwight Co., Inc. Novel media valve. 5,542,873, Cl. 451-75.000.
Sharkey, Hugh R.: *See*—
Edwards, Stuart D.; Lax, Ronald G.; Lundquist, Ingemar H.; Sharkey, Hugh R.; and Baker, James A., 5,542,915, Cl. 604-22.000.
Sharp Corporation: *See*—
Ohtani, Hisashi; Miyanaga, Akiharu; Zhang, Hongyong; Yamaguchi, Naoaki; and Suzuki, Atsunori, 5,543,352, Cl. 437-101.000.
Sharp, James W.: *See*—
Bridges, Jack E.; Sresty, Guggilam C.; Held, Jeffrey S.; Sharp, James W.; and Bajzek, Thomas J., 5,543,111, Cl. 422-22.000.
Sharp Kabushiki Kaisha: *See*—
Katayama, Hiroyuki; Hirokane, Junji; Takahashi, Akira; and Ohta, Kenji, 5,544,149, Cl. 369-275.300.
Koizumi, Satoru; Chono, Susumu; Abe, Yoshihiro; and Matsuzaki, Kazuki, 5,544,147, Cl. 369-191.000.
Mizuguchi, Yoshihiro; Hamada, Hiroshi; Aoyama, Shigeru; and Yamashita, Tsukasa, 5,543,942, Cl. 359-40.000.
Takakura, Eiichi, 5,543,928, Cl. 358-335.000.
Sharpe, Benjamin W.: *See*—
Capps, Stephen P.; Sharpe, Benjamin W.; and Foster, Gregg S., 5,544,358, Cl. 395-600.000.
Shaukatullah, Hussain: *See*—
Diffenderfer, Steven J.; and Shaukatullah, Hussain, 5,543,657, Cl. 257-666.000.
Shavit, Gideon; and Culp, Charles H., to Honeywell Inc. Load control for partially increasing/decreasing power usage. 5,543,667, Cl. 307-39.000.
Shaw, Christian: *See*—
Filan, Finbarr J.; Maher, Pascal J.; and Shaw, Christian, 5,543,042, Cl. 210-198.100.
Shaw, Robert W.: *See*—
Farwell, Randall S.; Shaw, Robert W.; and Marshall, Roger N., 5,543,819, Cl. 345-150.000.
Shaw, William H.: *See*—
Grey, Michael J.; Williams, Wayne; and Shaw, William H., 5,542,237, Cl. 53-472.000.
Shawyer, Roger J., to Matra Marconi Space UK Limited. Digitally controlled beam former for a spacecraft. 5,543,801, Cl. 342-354.000.
Shearer, Peter P.: *See*—
Hein, Carl C., III; Koschak, Matthew S.; Powell, Mark S.; Shearer, Peter P.; and Wong, Milly M. L., 5,542,529, Cl. 206-245.000.
Sheedy, Thomas F.; and Finucane, Martin J., to Concept International Limited. Method and apparatus for separating meat from a bone of an animal carcass. 5,542,878, Cl. 452-135.000.
Shefer, Shmuel D.: *See*—
McDermott, Keith J.; Teffenhart, John M.; Shefer, Shmuel D.; Greene, David A.; Smith, Leslie C.; and Beck, Charles E. J., 5,543,439, Cl. 523-102.000.
Shelby Williams Industries, Inc.: *See*—
Barile, Peter, 5,542,748, Cl. 297-463.100.
Sheldon, Donald A.: *See*—
Glaug, Frank S.; Olson, Christopher P.; Ratliff, Kathleen I.; Sheldon, Donald A.; Finch, Valerie V.; and Collier, L. Warren, IV, 5,542,566, Cl. 221-48.000.
Sheldon, Eric G.; Stephens, Ronald W.; and Vorhauer, George R., to Eastman Kodak Company. Copier apparatus and method with improved jam recovery. 5,543,893, Cl. 355-206.000.
Shell Oil Company: *See*—
Hoxmeier, Ronald J.; Job, Robert C.; Spence, Bridget A.; and DuBois, Donn A., 5,543,458, Cl. 525-271.000.
Stevens, Craig A.; Rao, Bhaskar P.; Veith, Cary A.; and Erickson, James R., 5,543,472, Cl. 525-387.000.
Shelley, Kenneth R.: *See*—
Argumedo, Armando J.; and Shelley, Kenneth R., 5,543,993, Cl. 360-132.000.
Sheng, Huang Y.; Tsai, Ching-hung; and Kuang, Wu J., to Winbond Electronics Corporation. Method and apparatus for prohibiting unauthorized use of a telecommunication line. 5,544,221, Cl. 379-7.000.
Shenk, Steve. Crumb collection tray. 5,542,346, Cl. 99-400.000.
Shenoy, Ravindra V.: *See*—
Datta, Madhav; and Shenoy, Ravindra V., 5,543,032, Cl. 205-670.000.
Shepard, Thomas A.: *See*—
Vogler, Erwin A.; Shepard, Thomas A.; and Graper, Jane C., 5,543,048, Cl. 210-513.000.
Sheppard, Kenneth: *See*—
Skaar, Leif; Sheppard, Kenneth; Stanley, Donald; Zeinali, Hossein A.; Khorsandian, Ali; and Krula, David A., 5,542,593, Cl. 226-196.000.
Sheridan, William G.: *See*—
Lupton, Francis S.; Sheridan, William G.; and Surgi, Marion R., 5,543,052, Cl. 210-616.000.
Sherman, Doron, to Electronics For Imaging. Method and apparatus for converting color scanner signals into colorimetric values. 5,543,940, Cl. 358-518.000.
Sherman, Richard A.: *See*—
Schultz, Darald R.; and Sherman, Richard A., 5,542,487, Cl. 178-4.10A.
Schultz, Darald R.; Danielson, Arvin D.; Bunte, Alan G.; Sherman, Richard A.; and Jaeger, Robert B., 5,544,010, Cl. 361-686.000.
Sherman, Stephen A.: *See*—
Mandelbaum, Richard; Sherman, Stephen A.; and Wetherington, Diane R., 5,544,246, Cl. 380-23.000.
Sherwood, William L. Direct iron and steelmaking. 5,542,963, Cl. 75-382.000.
Sheu, Shyong-Shyy. Stalk support for flowers. 5,542,209, Cl. 47-44.000.

Shi, Bing-Xue: *See*—
Li, Zhi-Jian; Shi, Bing-Xue; and Li, Bin-Qiao, 5,544,279, Cl. 395-3.000.
Shi, Joseph C. S.; Blue, William H.; and Bruns, Jeffrey C., to Thiele Kaolin Company. Stable high solids slurries of structured clay materials and process for the manufacture thereof. 5,543,372, Cl. 501-145.000.
Shibaev, Valery: *See*—
Stumpe, Joachim; Shibaev, Valery; Kostromin, Sergei; Ivanov, Sergei; Fischer, Thomas; Läsker, Lutz; Ruhmann, Ralf; and Claussen, Uwe, 5,543,267, Cl. 430-290.000.
Shibata, Jun; Obayashi, Hiroaki; Kimura, Makoto; Fukuzumi, Shuzo; Yoshikawa, Hironori; Hitotsumatsu, Atsushi; Hashimoto, Yukio; Yamanoi, Toshimi; and Takaya, Seiji, to Nissan Motor Co., Ltd. Control system for occupant restraint system. 5,542,700, Cl. 280-735.000.
Shibata, Kenichi: *See*—
Kobayashi, Yasumi; Matsui, Kuniyuki; Hirao, Yasuhiro; Takeuchi, Kousuke; Kayaki, Hiroshi; Takahashi, Yusuke; Tanaka, Toshiharu; Kiyose, Isao; and Shibata, Kenichi, 5,543,757, Cl. 333-195.000.
Shibata, Nori: *See*—
Yonenaga, Kazushige; Kuwano, Shigeru; Shibata, Nori; and Norimatsu, Seiji, 5,543,952, Cl. 359-181.000.
Shibata, Shigekazu: *See*—
Kato, Harunori; Mizutani, Yasukazu; Shibata, Shigekazu; Kimura, Katsuhiro; Koseki, Hideki; Urano, Mitsuhiro; and Watanabe, Masayuki, 5,542,299, Cl. 73-654.000.
Shibata, Tsuyoshi; Hashimoto, Koji; Heida, Katsuhiko; Kawano, Kenji; Ito, Shinichi; and Horioka, Keiji, to Kabushiki Kaisha Toshiba. Method for manufacturing exposure mask and the exposure mask. 5,543,252, Cl. 430-5.000.
Shibayama, Kouichi; Suzuki, Masao; Ogasa, Masao; and Iuchi, Kenji, to Sekisui Chemical Co., Ltd. Plastic foam material composed of a polyolefin based resin composition and method for making same. 5,543,438, Cl. 521-140.000.
Shibuya, Takashi: *See*—
Mandai, Takahiko; Shibuya, Takashi; Sugimoto, Toshiyuki; and Miyake, Toshio, 5,543,513, Cl. 536-123.130.
Shie, Jin-Shown: *See*—
Lin, San-Bao; Chang, Gwo-Dawn; Shie, Jin-Shown; Wang, Chein-Hsun; Weng, Ping-Kuo; and Lin, Ming-Der, 5,543,620, Cl. 250-338.300.
Shields Enterprises, Inc.: *See*—
Behr, David A.; and Jones, Randall B., 5,543,789, Cl. 340-995.000.
Shields, Malcolm S.; and Francesconi, Stephen C. Microbial degradation of trichloroethylene dichloroethylenes and aromatic pollutants. 5,543,317, Cl. 435-240.200.
Shih, Lionel C.; and Holter, Jerry E., to Ampex Systems Corporation. Data recording system having improved longitudinal and helical search capability. 5,543,977, Cl. 360-48.000.
Shiina, Nobuhiro, to Toso Company, Limited. Roller blind with screen rolled up by a spring and rolled down by hand. 5,542,464, Cl. 160-296.000.
Shim, Jae E., to Samsung Electronics Co., Ltd. Method for controlling a dew prevention heater for a refrigerator. 5,542,258, Cl. 62-80.000.
Shim, Kyuseok: *See*—
Chaudhuri, Surajit; and Shim, Kyuseok, 5,544,355, Cl. 395-600.000.
Shimada, Junichi: *See*—
Suzuki, Fumio; Shimada, Junichi; Ishii, Akio; Nakamura, Joji; Ichikawa, Shunji; Kitamura, Shigeto; and Koike, Nobuaki, 5,543,415, Cl. 514-263.000.
Shimada, Toshiaki: *See*—
Murakami, Tokumichi; Kato, Yoshiaki; and Shimada, Toshiaki, 5,543,848, Cl. 348-416.000.
Shimada, Yasuhiro: *See*—
Mihayashi, Keiji; and Shimada, Yasuhiro, 5,543,282, Cl. 430-558.000.
Shimada, Yoshikazu: *See*—
Takeda, Isoshi; and Shimada, Yoshikazu, 5,543,742, Cl. 327-232.000.
Shimadzu Corporation: *See*—
Kadowaki, Toshio; Takemoto, Hajime; and Yamaguchi, Shojiro, 5,544,217, Cl. 378-198.000.
Shimamura, Seiichi: *See*—
Tomita, Mamoru; Shimamura, Seiichi; Fukuwatari, Yasuo; and Shinoda, Ichizo, 5,543,392, Cl. 514-8.000.
Shimizu, Hatsushi: *See*—
Ikeda, Hideo; Ukita, Toshiyuki; and Shimizu, Hatsushi, 5,543,307, Cl. 435-172.300.
Shimizu, Hideki: *See*—
Terajima, Hisao; Koizumi, Shigeru; Nakayama, Toru; Takeda, Tomoyuki; Uno, Hiromichi; Nakagawa, Kaori; Shimizu, Hideki; and Morita, Mitsuo, 5,544,234, Cl. 379-100.000.
Shimizu, Takaaki; Kinsho, Takeshi; Ogihara, Tsutomu; Kaneko, Tatsushi; Saito, Ryuichi; and Kurihara, Hideshi, to Shin-Etsu Chemical Co., Ltd. Silacyclohexane compound, a method of preparing it and a liquid crystal composition containing it. 5,543,539, Cl. 556-406.000.
Shimizu, Tokuo, to Olympus Optical Co. Ltd. Camera capable of magnetically recording photograph information on a film. 5,543,871, Cl. 354-106.000.
Shimoda, Yoshiaki: *See*—
Tamai, Yutaka; Shimoda, Yoshiaki; and Tsukamoto, Kazuhiro, 5,542,332, Cl. 84-435.000.
Shimoji, Noriyuki, to Rohm Co., Ltd. Method for manufacturing a semiconductor device using a semiconductor-on-insulator substrate. 5,543,338, Cl. 437-41.000.
Shimura, Takanori: *See*—
Abe, Masahiro; Sakou, Hiroshi; Sagawa, Hirohiko; Ichikawa, Akira; Inoue, Kiyoshi; Arai, Kiyoshi; Shimura, Takanori; and Toda, Yuji, 5,544,050, Cl. 364-419.130.
Shimuta, Masanori; Takahashi, Toru; Abe, Hisato; Takahashi, Kenichi; Kurata, Akira; and Aoki, Osamu, to Mitsubishi Gas Chemical Co., Inc. Composition for high refractive index lens comprising copolymer of vinylbenzylthio compound and a monomer copolymerizable therewith. 5,543,482, Cl. 526-289.000.
Shin, Chul W.: *See*—
Hirschman, Richard; and Shin, Chul W., 5,543,864, Cl. 351-47.000.
Shin-Etsu Chemical Co., Ltd.: *See*—
Hiratani, Haruyuki; Nakata, Kazuhiko; Ichinohe, Shoji; Yamazaki, Toshio; and Kato, Hideto, 5,543,442, Cl. 523-107.000.
Nakano, Toshihiko; Amano, Tadashi; and Okuno, Yoshitaka, 5,543,175, Cl. 427-236.000.
Shimizu, Takaaki; Kinsho, Takeshi; Ogihara, Tsutomu; Kaneko, Tatsushi; Saito, Ryuichi; and Kurihara, Hideshi, 5,543,539, Cl. 556-406.000.
Takita, Kenichi; and Takahashi, Masaharu, 5,543,450, Cl. 524-190.000.
Shin, Hee J.: *See*—
Kim, Jung W.; Shin, Hee J.; Park, Joon K.; and Min, Kyeong B., 5,543,393, Cl. 514-11.000.
Shinagawa, Mitsuru; and Nagatsuma, Tadao, to Nippon Telegraph and Telephone Corporation. Apparatus for electro-optic sampling measuring of electrical signals in integrated circuits with improved probe positioning accuracy. 5,543,723, Cl. 324-752.000.
Shinagawa, Satoshi: *See*—
Mizukami, Masao; Sato, Yoichi; Shinagawa, Satoshi; and Nakano, Yukio, 5,544,122, Cl. 365-230.050.
Shinoda, Ichizo: *See*—
Tomita, Mamoru; Shimamura, Seiichi; Fukuwatari, Yasuo; and Shinoda, Ichizo, 5,543,392, Cl. 514-8.000.
Shinoda, Toshiki; Takezawa, Tetsuo; and Noguchi, Shigeru, to Dai Nippon Printing Co., Ltd. Method for exposing a pattern plate having an alignment pattern and a pattern plate exposed by said method. 5,543,256, Cl. 430-22.000.
Shinohara, Kibatsu: *See*—
Watanabe, Shozo; and Shinohara, Kibatsu, 5,542,833, Cl. 425-71.000.
Shinohara, Satoru: *See*—
Ito, Kengo; Mizumachi, Motohiro; Fujiwara, Yoshio; and Shinohara, Satoru, 5,543,453, Cl. 524-445.000.
Shinonaga, Hideyuki: *See*—
Araki, Noriyuki; Shinonaga, Hideyuki; and Itoh, Yasuhiko, 5,543,813, Cl. 342-357.000.
Shiomi, Yozo; and Wakitani, Mituru, to Japan Exlan Company Limited. Acrylic composite fiber. 5,543,216, Cl. 428-373.000.
Shiono, Satoru: *See*—
Hanazato, Yoshio; Nakako, Mamiko; Shiono, Satoru; and Inatomi, Kenichi, 5,543,024, Cl. 204-403.000.
Shiotani, Keiji: *See*—
Kawano, Hideo; Shiotani, Keiji; Mikami, Masao; Suzuki, Tatsuya; and Shishiguchi, Seiichi, 5,543,347, Cl. 437-60.000.
Shiozawa, Fumio: *See*—
Nakamura, Nobuyuki; Minamimura, Masaaki; Shiozawa, Fumio; and Yamagiwa, Yoshitoshi, 5,543,093, Cl. 264-40.500.
Shiozawa, Junichi: *See*—
Hammerl, Erwin; Mandelman, Jack A.; Ho, Herbert L.; Shiozawa, Junichi; and Stengl, Reinhard J., 5,543,348, Cl. 437-60.000.
Shipston, Adele C.; and Rice, David K., II, to Moore Business Forms, Inc. Printable release. 5,543,192, Cl. 428-40.600.
Shirahase, Hiromi: *See*—
Yamasaki, Masahiro; Housai, Koichiro; Shirahase, Hiromi; Akamatsu, Nobuyuki; Tabuchi, Michiyuki; Hirata, Toshinari; and Miyazaki, Yoshifumi, 5,543,168, Cl. 426-557.000.
Shirai, Fumiya; Kuniya, Masayoshi; Mikura, Chiemi; Matsushita, Tomoko; Akemi, Hitoshi; and Yamamoto, Toshiyuki, to Nitto Denko Corporation. Medical pressure-sensitive adhesive and medical bandage formed using the same. 5,543,151, Cl. 424-448.000.
Shiraki, Kouji: *See*—
Ichino, Rie; Ito, Michiyasu; Kuriyama, Yuji; and Shiraki, Kouji, 5,542,698, Cl. 280-732.000.
Shiramizu, Yoshimi; Nakamori, Masaharu; Aoki, Hidemitsu; Seo, Hirofumi; and Hamano, Haruto, to NEC Corporation. Method for producing electrolyzed water. 5,543,030, Cl. 205-464.000.
Shiroshita, Takashi: *See*—
Asamura, Yoshinori; Hatano, Yoshiko; Onishi, Ken; and Shiroshita, Takashi, 5,543,845, Cl. 348-407.000.
Shishido, Kazuo; Sasaki, Shinichi; Ikemoto, Isao; Yashiro, Masahiko; Karakama, Toshiyuki; and Numagami, Atsushi, to Canon Kabushiki Kaisha. Process cartridge, method for assembling process cartridge and image forming apparatus. 5,543,898, Cl. 355-210.000.
Shishiguchi, Seiichi: *See*—
Kawano, Hideo; Shiotani, Keiji; Mikami, Masao; Suzuki, Tatsuya; and Shishiguchi, Seiichi, 5,543,347, Cl. 437-60.000.
Shklarsky, Gadi: *See*—
Yanai, Moshe; Vishlitzky, Natan; Alterescu, Bruno; Castel, Daniel; and Shklarsky, Gadi, 5,544,347, Cl. 395-489.000.
Shoemaker, Craig A.: *See*—
Holloway, Harry L., Jr.; and Shoemaker, Craig A., 5,543,330, Cl. 436-79.000.

Shofner, Frederick M.; Baldwin, Joseph C.; Williams, Gordon P.; and Townes, Mark G., to Zellweger Uster, Inc. Removal of undesirable entities in thin webs of textile materials. 5,544,090, Cl. 364-552.000.
Shomaker, Robert L.: *See*—
Smith, William E.; Vogel, Scott W.; and Shomaker, Robert L., 5,542,794, Cl. 407-35.000.
Shook, Jack R.: *See*—
Atwell, Charles G.; Budjinski, Joseph F., II; and Shook, Jack R., 5,542,901, Cl. 493-47.000.
Shores, A. Andrew. Process of manufacturing a coated article. 5,543,171, Cl. 427-177.000.
Short Brothers PLC: *See*—
Wilson, Robert S., 5,543,198, Cl. 428-116.000.
Shouse, Elizabeth J.; and Shouse, Ronald W., to Shouse Financial Corporation. Footwear drying insert. 5,542,191, Cl. 34-104.000.
Shouse Financial Corporation: *See*—
Shouse, Elizabeth J.; and Shouse, Ronald W., 5,542,191, Cl. 34-104.000.
Shouse, Ronald W.: *See*—
Shouse, Elizabeth J.; and Shouse, Ronald W., 5,542,191, Cl. 34-104.000.
Showalter, Howard D. H.: *See*—
Beylin, Vladimir G.; Sercel, Anthony D.; Showalter, Howard D. H.; Adams, Gerald E.; Fielden, Edward M.; Naylor, Matthew A.; and Stratford, Ian J., 5,543,527, Cl. 548-110.000.
Shroy, Robert E., Jr.; Green, Donald T.; and Kapp, Steven C., to Picker International, Inc. Digital angiography system with automatically determined frame rates. 5,544,215, Cl. 378-98.120.
Shultz, John W.: *See*—
Boguslawski, George; Grosch, Josephine; Shultz, John W.; and Subramanian, Sethuraman, 5,543,302, Cl. 435-69.100.
Shvedchikov, Adolf P.: *See*—
Ponizovsky, Lazar Z.; Ponizovsky, Aleksander Z.; Potapov, Viktor A.; and Shvedchikov, Adolf P., 5,542,967, Cl. 96-82.000.
Sides, Winfield M., III: *See*—
Pringle, Ronald E.; Sides, Winfield M., III; Folsom, David N.; and McGavern, Cecil G., III, 5,542,472, Cl. 166-65.100.
Siegel, Hardo: *See*—
Koehler, Ulrich; Siegel, Hardo; and Seybold, Guenther, 5,543,515, Cl. 540-604.000.
Siegfried, Theodor: *See*—
Broger, Emil A.; Crameri, Yvo; Schmid, Rudolf; and Siegfried, Theodor, 5,543,559, Cl. 560-231.000.
Siegmund, Gerd: *See*—
Weis, Bernd; Turban, Karl-Albert; Bezler, Monika; Schulz, Manfred; and Siegmund, Gerd, 5,544,226, Cl. 379-61.000.
Siemens Aktiengesellschaft: *See*—
Hammerl, Erwin; Mandelman, Jack A.; Ho, Herbert L.; Shiozawa, Junichi; and Stengl, Reinhard J., 5,543,348, Cl. 437-60.000.
Herrmann, Klaus; and Krauss, Guenther, 5,542,906, Cl. 601-2.000.
Moehrmann, Karl-Heinz, 5,543,951, Cl. 359-158.000.
Obermanns, Sebastian; and Schoonhoven, Richard, 5,544,152, Cl. 370-16.000.
Silberhorn, Gottfried, 5,543,669, Cl. 307-125.000.
Strasser, Karl, 5,543,238, Cl. 429-17.000.
Stretz, Manfred; Holzheimer, Günter; and Neubauer, Hans-Rene, 5,542,822, Cl. 417-68.000.
Sutter, Ralf; Beerstecher, Lutz; Hruza, David; Stetter-Alle, Raimund; and Trackl, Karl, 5,543,119, Cl. 422-299.000.
Siemens Elema AB: *See*—
Norhager, Yngve, 5,544,216, Cl. 378-149.000.
Siemens Medical Systems, Inc.: *See*—
Kim, Jin; Yao, Lin X.; and Banjanin, Zoran, 5,544,128, Cl. 367-119.000.
Siemens Solar GmbH: *See*—
Holdermann, Konstantin, 5,543,333, Cl. 437-4.000.
Siemensmeyer, Karl; Tschierske, Carsten; Theil, Fritz; and Joachimi, Detley, to BASF Aktiengesellschaft. Use of the chiral group (1S, 4R)-1,4-dihydroxy-2-cyclopentenyl in the preparation of polar, liquid-crystalline compounds. 5,543,076, Cl. 252-299.610.
Siemon Company, The: *See*—
Siemon, John A.; and Cox, Christopher H., 5,542,549, Cl. 211-26.000.
Siemon, John A.; and Cox, Christopher H., to Siemon Company, The. Cross connect frame for communication connector blocks and other devices. 5,542,549, Cl. 211-26.000.
Sierra, Teresa: *See*—
Walba, David M.; Ros, Maria B.; Rego, James A.; and Sierra, Teresa, 5,543,078, Cl. 252-299.650.
Sigal, Leon J.; and Warnock, James D., to International Business Machines Corporation. Dynamic and preset static multiplexer in front of latch circuit for use in static circuits. 5,543,731, Cl. 326-40.000.
Sigl, Lorenz; Thaler, Hubert; and Schwetz, Karl-Alexander, to Elektroschmelzwerk Kempten GmbH. Composite materials based on boron carbide, titanium diboride and elemental carbon and processes for the preparation of same. 5,543,370, Cl. 501-92.000.
Sigler, John W., to Olin Corporation. Segmenting warhead projectile. 5,542,354, Cl. 102-478.000.
Sigma-Tau Industrie Farmaceutiche Riunite S.p.A.: *See*—
Tinti, Maria O.; Misiti, Domenico; Cavazza, Claudio; and Scafetta, Nazareno, 5,543,556, Cl. 560-170.000.
Sigmon, Bernard E., to Motorola, Inc. N-way impedance transforming power divider/combiner. 5,543,762, Cl. 333-128.000.
Sijmons, Peter C.: *See*—
van Ooijen, Albert J. J.; Rietveld, Krijn; Hoekema, Andreas; Pen, Jan; Sijmons, Peter C.; Verwoerd, Teunis C.; and Quax, Wilhemus J., 5,543,576, Cl. 800-250.000.
Silberhorn, Gottfried, to Siemens Aktiengesellschaft. Remote feed circuit in communication systems. 5,543,669, Cl. 307-125.000.
Silbey, Alexander A.: *See*—
Beard, Douglas R.; Phelps, Andrew E.; Woodmansee, Michael A.; Blewett, Richard G.; Lohman, Jeffrey A.; Silbey, Alexander A.; Spix, George A.; Simmons, Frederick J.; and Van Dyke, Don A., 5,544,337, Cl. 395-375.000.
Silicon Graphics, Inc.: *See*—
Kolb, Ronald L., 5,544,331, Cl. 395-308.000.
Silicon Video Corporation: *See*—
Haven, Duane A.; and Pong, Chungdee, 5,543,683, Cl. 313-461.000.
Silo, Laura: *See*—
Handelsman, Jo; Halverson, Larry; Stabb, Eric V.; Lethbridge, Benjamin; and Silo, Laura, 5,543,301, Cl. 435-34.000.
Silva, Guilherme A.: *See*—
Woodman, Daniel W., Jr.; St. Hilaire, Vance; and Silva, Guilherme A., 5,542,802, Cl. 414-27.000.
Silver, Richard M. Multiple carpule hypodermic syringe. 5,542,934, Cl. 604-191.000.
Silverschotz, Stanford B.; Rua, Louis, Jr.; Polunas, David M.; and Martin, Stephen E., to Webcraft Technologies, Inc. Recyclable instant scratch off lottery ticket. 5,542,710, Cl. 283-94.000.
Silverstein, Saul J.; Lungu, Octavian; and Wright, Thomas C., Jr., to Trustees of Columbia University in the City of New York, The. Polymerase chain reaction/restriction fragment length polymorphism method for the detection and typing of myobacteria. 5,543,294, Cl. 435-6.000.
Silzle, L. William, Jr.: *See*—
King, Stanley C.; Knop, Richard C.; Green, John E.; Gyde, Thomas R.; and Silzle, L. William, Jr., 5,542,450, Cl. 137-614.200.
Sim, Sung-min: *See*—
Park, Chan-eon; Yun, Hwang-kyu; Sim, Sung-min; and Choi, Wan-gyun, 5,543,493, Cl. 528-353.000.
Simard, Claude: *See*—
Martin, Ed; Simard, Claude; and Thompson, Brad, 5,542,976, Cl. 106-675.000.
Simmons, Frederick J.: *See*—
Beard, Douglas R.; Phelps, Andrew E.; Woodmansee, Michael A.; Blewett, Richard G.; Lohman, Jeffrey A.; Silbey, Alexander A.; Spix, George A.; Simmons, Frederick J.; and Van Dyke, Don A., 5,544,337, Cl. 395-375.000.
Simmons, Loren M.: *See*—
Olson, Ogden R.; and Simmons, Loren M., 5,542,743, Cl. 297-353.000.
Simon, Frédéric: *See*—
Gaultier, Philippe; Vouillon, Patrick; and Simon, Frédéric, 5,543,592, Cl. 200-6.00A.
Simon, Wolfgang; Pototzky, Günther; Groos, Rolf; and Schmidt, Günter, to Fresenius AG. Peritoneal dialysis device. 5,542,919, Cl. 604-29.000.
Simons, Stephen P.: *See*—
Carlson, Douglas W.; and Simons, Stephen P., 5,542,454, Cl. 138-110.000.
Simplyfry Inc.: *See*—
Millar, Marty R., 5,542,569, Cl. 221-116.000.
Sims, Duke N.; and Wedel, Gregory L., to Beloit Technologies, Inc. Dryer group for curl control. 5,542,193, Cl. 34-117.000.
Sin, Hyun-kuk, to SamSung Electronics Co., Ltd. Recording/reproducing apparatus using optical magnetic tape. 5,544,133, Cl. 369-14.000.
Singer, Bension; Maurer, Hans M.; Strack, Kurt M.; and Fanini, Otto N., to Western Atlas International, Inc. Method and apparatus for measuring formation resistivity through casing using single-conductor electrical logging cable. 5,543,715, Cl. 324-368.000.
Singer, Stephen P.; and Harder, John W., to Eastman Kodak Company. Photographic elements containing scavengers for oxidized developing agent. 5,543,277, Cl. 430-505.000.
Singewald, Arno: *See*—
Gotte, Jost; Schnez, Harald; and Singewald, Arno, 5,542,546, Cl. 209-164.000.
Singh, Jasbir; and Barnert, Heiko, to Forschungszentrum Julich GmbH. Method of influencing the reactivity of a neutron chain reaction in a nuclear reactor. 5,544,204, Cl. 376-213.000.
SinterMet: *See*—
Mirchandani, Prakash K.; Thomas, Robert E.; and Cippel, Mark, 5,543,235, Cl. 428-547.000.
Sipos, Gábor: *See*—
Fekete, Pál; Király née Ignácz, Mária; Sipos, Gábor; Jámbor née Hoffmann, Zsuzsanna; Újfalussy, György; Góra née Hernyes, Magdolna; Klebovich, Imre; Drabant, Sándor; Mándi, Attila; Kiss née Szabó, Gizella; Bárczay, Erzsébet; and Krisztián, Mária, 5,543,155, Cl. 424-473.000.
Sison, John P. C. Adjustable pen holder. 5,542,588, Cl. 224-218.000.
Sistanizadeh, Kamran: *See*—
Bigham, John A.; Sistanizadeh, Kamran; and Little, Dave, 5,544,161, Cl. 370-58.100.
Sitaram, Dinkar: *See*—
Dan, Asit; and Sitaram, Dinkar, 5,544,327, Cl. 395-250.000.
Sitges Menendez, Fernando: *See*—
Sitges Menendez, Francisco J.; Sitges Menendez, Fernando; Alvarez Tamargo, Francisco; and Lefevre, Ives, 5,543,020, Cl. 204-233.000.

Sitges Menendez, Francisco J.; Sitges Menendez, Fernando; Alvarez Tamargo, Francisco; and Lefevre, Ives, to Asturiana De Zinc., S.A. Cleaning system for electrolytic tanks. 5,543,020, Cl. 204-233.000.

Sitz, Michael: *See—*
Boyer, Samuel R.; Sitz, Michael; and Svaldi, Paul, 5,542,583, Cl. 222-425.000.

Sivarajan, Kumar N.; and Steinberg, David G., to International Business Machines Corporation. Servo control mechanism with wide input dynamic range and fast response. 5,543,953, Cl. 359-189.000.

Sivik, Mark R.; and Severns, John C., to Procter & Gamble Company, The. Fatty amine derivatives of butylated hydroxy toluene for the protection of surfaces from physical and chemical degradation. 5,543,083, Cl. 252-403.000.

Sjöstrand, Mats E. K.: *See—*
Chatfield, Christopher G.; Lindström, Jan N.; Sjöstrand, Mats E. K.; and Collin, Ingrid K. M., 5,543,176, Cl. 427-255.300.

Skaar, Leif; Sheppard, Kenneth; Stanley, Donald; Zeinali, Hossein A.; Khorsandian, Ali; and Krula, David A., to Verbatim Corporation. Tape guides for magnetic tape equipment. 5,542,593, Cl. 226-196.000.

Skaggs, John H.: *See—*
Yemington, Charles R.; Skaggs, John H.; and Bath, William R., 5,542,781, Cl. 405-128.000.

Skarbo, Rune A.; Elliott, John D.; and Watts, Kevin A., to Intel Corporation. User interface for dynamically converting between a single top level window and multiple top level windows. 5,544,300, Cl. 395-157.000.

Skiptunas, Steven: *See—*
Carver, Edward L., Jr.; and Skiptunas, Steven, 5,542,452, Cl. 137-625.480.

Skovgaard, Ole: *See—*
Neigard, Jens; Skovgaard, Ole; and Soerensen, Kent, 5,544,166, Cl. 370-13.000.

Skubic, Robert L.: *See—*
Rother, David J.; Lee, John S.; Schmidt, Terence J.; Hollerich, Donald; Skubic, Robert L.; and Laveen, Eric, 5,542,768, Cl. 400-120.160.

Slater, Charles R.; Palmer, Matthew A.; Kortenbach, Jurgen A.; McBrayer, Michael S.; and Gottlieb, Saul, to Symbiosis Corporation. Endoscopic multiple sample bioptome. 5,542,432, Cl. 128-751.000.

Slightom, Jerry L.; and Tepfer, David A., to Mycogen Plant Science, Inc. Ri T-DNA promoters. 5,543,501, Cl. 530-350.000.

Slink, John J.; and Mecca, Anna, to Jerhel Plastics, Inc. Compact or container with attached cap and optional airtight closure. 5,542,561, Cl. 220-291.000.

Sloan-Kettering Institute for Cancer Research: *See—*
Danishefsky, Samuel J.; and Randolph, John T., 5,543,505, Cl. 536-17.200.

Sloan Valve Company: *See—*
Gronwick, Jerry P.; and Koniewicz, Leonard A., 5,542,718, Cl. 285-357.000.

Smallheer, Joanne M., to DuPont Merck Pharmaceutical Company, The. Substituted bicyclic phosphoramides and derivatives thereof. 5,543,517, Cl. 544-151.000.

SMH Management Services AG: *See—*
Wenger, Urs; Jenni, Hans R.; and Wüthrich, Andreas, 5,542,309, Cl. 74-337.500.

Smith & Nephew Donjoy Inc.: *See—*
Cassford, Keith L.; Gildersleeve, Richard E.; and Bastyr, Charles A., 5,542,911, Cl. 602-26.000.

Smith, Charles S.; and Wright, Hancel R., to Engineered Fabrics Corporation. Container for carrying flowable materials and related method. 5,542,765, Cl. 383-17.000.

Smith, David A.; and Townsend, Laurace E. Method of isolation, culture and proliferation of human atrial myocytes. 5,543,318, Cl. 435-240.200.

Smith, Debra L.: *See—*
Dougherty, Thomas J.; Inkmann, Mark S.; Smith, Debra L.; and Reher, Michael T., 5,543,248, Cl. 429-163.000.

Smith, Glenn M., to Four M Manufacturing Group of CPC, Inc. Multi-sided collapsible container. 5,542,541, Cl. 206-600.000.

Smith, Gordon J.: *See—*
Bajorek, Christopher H.; Glaser, Thomas W.; Klaassen, Klaas B.; Nielsen, Charles R.; Santana, George R.; Smith, Gordon J.; Thompson, David A.; and Workman, Michael L., 5,544,138, Cl. 369-54.000.

Smith, Gordon M., to Johnston Pump/General Valve, Inc. Plug-valve having a plug assembly with retractible seals that can be removed without leakage. 5,542,644, Cl. 251-163.000.

Smith, Gregory A.; Foltz, Dale E.; Wisebaker, Robert E.; and Loy, Robert E., to National Machinery Company, The. Flat die thread roller. 5,542,275, Cl. 72-90.000.

Smith, Harry W. Grout finishing method with kit. 5,543,178, Cl. 427-299.000.

Smith, Henry R., to HR Smith (Technical Developments) Ltd. Lightning strike protection. 5,542,624, Cl. 244-1.00A.

Smith, James L.: *See—*
Surbey, David J.; Smith, James L.; Allen, Richard C.; and Witwer, Alan D., 5,542,840, Cl. 431-116.000.

Smith, Jerrold A., to Arrow Art Finishers, Inc. Display stand with reinforced bottom shelf. 5,542,551, Cl. 211-50.000.

Smith, Keith; Smith, Kenneth M.; and Smith, Scott D., to Leeco Industries, Inc. File container assembly including brackets for wall or cart mounting. 5,542,635, Cl. 248-221.120.

Smith, Kenneth L.: *See—*
Cole, Howard; Erler, Kristina W.; Smith, Kenneth L.; and Francois, Brian C., 5,542,950, Cl. 8-107.000.

Smith, Kenneth M.: *See—*
Smith, Keith; Smith, Kenneth M.; and Smith, Scott D., 5,542,635, Cl. 248-221.120.

Smith, Leslie C.: *See—*
McDermott, Keith J.; Teffenhart, John M.; Shefer, Shmuel D.; Greene, David A.; Smith, Leslie C.; and Beck, Charles E. J., 5,543,439, Cl. 523-102.000.

Smith, Raymond, to Lakeland Industries, Inc. Process for manufacturing panels for protective garments. 5,543,011, Cl. 156-308.400.

Smith, Rodney F., to National Seating Company. Base assembly for use with a suspension system of a vehicle seat. 5,542,638, Cl. 248-421.000.

Smith, Ronald A.: *See—*
Blaney, Timothy J.; Smith, Ronald A.; and Talesfore, Nicholas F., 5,544,011, Cl. 361-683.000.

Smith, S. Andrew: *See—*
Wilhelm, Donald M.; Hubalek, Verne A.; Smith, S. Andrew; and Immergluck, Robert, 5,542,838, Cl. 425-186.000.

Smith, Scott D.: *See—*
Smith, Keith; Smith, Kenneth M.; and Smith, Scott D., 5,542,635, Cl. 248-221.120.

Smith, Sheldon M., to United States of America, National Aeronautics and Space Administration. Far-infrared diffuse reflector. 5,543,961, Cl. 359-350.000.

Smith Sport Optics, Inc.: *See—*
Grabos, Fred F., Jr.; and Dondero, George V., 5,542,130, Cl. 2-436.000.

Smith, Thomas M.; and Meyer, Arlene L., to Eastman Kodak Company. Radiation-sensitive photographic plates and improved method for manufacture thereof. 5,543,273, Cl. 430-495.100.

Smith, Wendell F., Jr.: *See—*
Chari, Krishnan; Smith, Wendell F., Jr.; Spara, Paul P.; and Krishnamurthy, Sundaram, 5,543,276, Cl. 430-505.000.

Smith, William E.; Vogel, Scott W.; and Shomaker, Robert L., to Kennametal Inc. Multi-handed milling cutter having indexable wedges and inserts. 5,542,794, Cl. 407-35.000.

Smithies, Christopher P. K.; and Newman, Jeremy M., to Peripheral Vision Limited. Method and system for the capture, storage, transport and authentication of handwritten signatures. 5,544,255, Cl. 382-119.000.

SMK Corporation: *See—*
Asai, Kiyoshi, 5,542,855, Cl. 439-260.000.

Snap-on Technologies, Inc.: *See—*
Krivec, Bert, 5,542,759, Cl. 312-334.440.

Snider, Danny G.: *See—*
Snider, Trent G.; and Snider, Danny G., 5,542,240, Cl. 56-8.000.

Snider, Trent G.; and Snider, Danny G. Water craft for reducing aquatic plant infestation. 5,542,240, Cl. 56-8.000.

Snoke, Phillip J.; Rowley, David S.; Lincoln, David G.; and Charles, Kirk W., to Catheter Imaging Systems. Method of forming a catheter having a multiple durometer. 5,542,924, Cl. 604-95.000.

Snyder, Dane T.: *See—*
Pao, Hsueh-Wen; Faulstich, David L.; Snyder, Dane T.; Ma, Johnny T.; Izzo, Kenneth R.; Swanson, Joel C.; Laurent, Martin S.; and Kachel, Peter P., 5,544,208, Cl. 376-253.000.

Snyder, William B., Jr.: *See—*
Kimrey, Harold D., Jr.; Snyder, William B., Jr.; and Krutenat, Richard C., 5,543,605, Cl. 219-690.000.

Sobol, Robert E.; Green, Mark R.; and Kawasaki, Ernest S., to Hoffman-La Roche Inc.; and University of California, Regents of the. Detection of carcinoma metastases by nucleic acid amplification. 5,543,296, Cl. 435-6.000.

Sobol, Ronald E. Biodegradable thermally insulated beverage cup. 5,542,599, Cl. 229-403.000.

Sobotta, Peter: *See—*
Wirz, Arno; Sobotta, Peter; and Renner, Jochen, 5,542,658, Cl. 271-107.000.

Sobotta, Terry L.: *See—*
Dimmick, Roger F.; Fitterer, Gary A.; Jajowka, Jeff A.; Otto, William F.; Rasmussen, Jerry R.; and Sobotta, Terry L., 5,544,008, Cl. 361-684.000.

Societe d'Applications Industrielles Medicales Et Electroniques (SAIME): *See—*
Chalvignac, Philippe, 5,542,416, Cl. 128-204.230.

Societe e'Etudes et de Constructions Aero-Navales: *See—*
Carpentier, Pierre, 5,542,467, Cl. 165-70.000.

Societe Nationale D'Etude et de Construction de Moteurs D'Aviation S.N.E.C.M.A.: *See—*
Jourdain, Gérard E. A.; and Soligny, Marcel R., 5,542,607, Cl. 239-265.410.

Soerensen, Kent: *See—*
Neigard, Jens; Skovgaard, Ole; and Soerensen, Kent, 5,544,166, Cl. 370-13.000.

Sofamor S.N.C.: *See—*
Logroscino, Carlo; and Goube, Michel, 5,542,946, Cl. 606-61.000.

Soligny, Marcel R.: *See—*
Jourdain, Gérard E. A.; and Soligny, Marcel R., 5,542,607, Cl. 239-265.410.

Solomat Partners, L.P.: *See—*
Ibar, Jean-Pierre, 5,543,092, Cl. 264-40.100.

Solvay Enzymes, Inc.: *See—*
Boguslawski, George; Grosch, Josephine; Shultz, John W.; and Subramanian, Sethuraman, 5,543,302, Cl. 435-69.100.

Somerville, Dean S.: *See—*

Vasichek, Richard A.; Vasichek, Robert J.; Somerville, Dean S.; and Trostad, Mitchel D., 5,542,320, Cl. 81-125.000.

Sommerfeldt, Scott C.; Rudwick, Thomas W., III; and Miracky, Robert F., to Microelectronics and Computer Technology Corporation. Electrical interconnect device with customizeable surface layer and interwoven signal lines. 5,544,018, Cl. 361-792.000.

Sone, Yoshinori; Fujiwara, Takayoshi; Honjo, Takashi; Hirayama, Takuya; and Yoshizawa, Hiroyasu, to Kabushiki Kaisha Toshiba. Rotary fluid compressor having an oldham mechanism. 5,542,832, Cl. 418-152.000.

Song, Jon H.; Sundstrom, Christafor E.; Record, David W.; Townsend, Donald J.; Broderick, Kevin B.; and Schnell, Philip G., to Wm. Wrigley Jr. Company. Total chewing gum manufacture using high efficiency continuous mixing. 5,543,160, Cl. 426-3.000.

Sonnichsen, George C.: *See—*
Kourtakis, Kostantinos; and Sonnichsen, George C., 5,543,532, Cl. 549-260.000.

Sonoco Products Company: *See—*
Malik, John H.; Mikula, John J.; and Julien, Robert A., 5,543,107, Cl. 264-529.000.

Sonsub, Inc.: *See—*
Yemington, Charles R.; Skaggs, John H.; and Bath, William R., 5,542,781, Cl. 405-128.000.

Sony Cinema Products Corporation: *See—*
Tachi, Katsuichi, 5,543,868, Cl. 352-27.000.

Sony Corporation: *See—*
Aramaki, Junichi; and Yokota, Teppei, 5,544,139, Cl. 369-58.000.
Chang, Ching-Fang; Yanagihara, Naofumi; Yonemitsu, Jun; Tahara, Katsumi; Yagasaki, Yoichi; and Suzuki, Teruhiko, 5,543,932, Cl. 358-335.000.
Ezaki, Tadashi, 5,543,926, Cl. 358-310.000.
Funakiri, Atsushi, 5,544,142, Cl. 369-75.100.
Harradine, Vincent C.; Teece, Howard J.; Ludgate, Michael J.; Bhandari, Rajan; and Walker, Gavin A., 5,543,861, Cl. 348-718.000.
Herz, William S., 5,543,927, Cl. 358-312.000.
Hirota, Katsuaki, 5,543,840, Cl. 348-345.000.
Ishida, Katsuhito, 5,544,177, Cl. 371-43.000.
Ito, Kengo; Mizumachi, Motohiro; Fujiwara, Yoshio; and Shinohara, Satoru, 5,543,453, Cl. 524-445.000.
Iwamura, Ryuichi, 5,544,263, Cl. 382-166.000.
Kato, Motoki; Yagasaki, Yoichi; and Yonemitsu, Jun, 5,543,843, Cl. 348-400.000.
Kato, Motoki, 5,543,847, Cl. 348-415.000.
Kozuka, Sadao, 5,542,868, Cl. 445-37.000.
Mizuno, Tomoko; Takahashi, Toshiyuki; Yamaguchi, Hiroshi; and Hisamatsu, Nobuaki, 5,544,130, Cl. 369-1.000.
Scott, Ed, 5,543,818, Cl. 345-168.000.
Taguchi, Osamu, 5,542,621, Cl. 242-347.100.
Yagasaki, Yoichi, 5,543,846, Cl. 348-415.000.
Yokota, Teppei; Aramaki, Junichi; and Kihara, Nobuyuki, 5,544,165, Cl. 369-32.000.

Sony Electronics Inc.: *See—*
Herz, William S., 5,543,927, Cl. 358-312.000.

Sony Trans Com Inc.: *See—*
Scott, Ed, 5,543,818, Cl. 345-168.000.

Sony United Kingdom Limited: *See—*
Harradine, Vincent C.; Teece, Howard J.; Ludgate, Michael J.; Bhandari, Rajan; and Walker, Gavin A., 5,543,861, Cl. 348-718.000.

Sosa, Toshio; Fukuhara, Toru; Dobashi, Toshio; Hara, Masaharu; and Yokonuma, Norikazu, to Nikon Corporation. Control device for preventing red-eye effect on camera. 5,543,888, Cl. 354-415.000.

Soto, Jorge: *See—*
Patton, Jasson T.; Devore, David D.; Timmers, Francis J.; Soto, Jorge; Schmidt, Gregory F.; and Wilson, David R., 5,543,480, Cl. 526-126.000.

Soundadvice for Sports, Inc.: *See—*
Howe, Maynard A., Jr.; and Eliason, Jeffrey M., 5,542,676, Cl. 473-202.000.

South Dakota School of Mines and Technology: *See—*
Han, Kenneth N.; and Meng, Xinghui, 5,542,957, Cl. 75-732.000.

Southern, Edwin, to Isis Innovation Limited. Electrochemical treatment of surfaces. 5,543,033, Cl. 205-687.000.

Southpac Trust International, Inc.: *See—*
Weder, Donald E., 5,542,169, Cl. 29-469.500.

Southwest Research Institute: *See—*
Miller, Michael A.; Timmons, Scott F.; and Barlow, Darren E., 5,543,447, Cl. 524-80.000.

Southworth, Robert O.: *See—*
Reidemeister, Eric P.; Johnson, Larry K.; Mandeville, Raymond E.; Strott, Douglas B.; and Southworth, Robert O., 5,542,296, Cl. 73-514.320.

Sowin, Thomas J.: *See—*
Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Morton, Howard E.; Reno, Daniel S.; Sham, Hing L.; Sowin, Thomas J.; and Tien, Jien-Heh J., 5,543,549, Cl. 558-405.000.
Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Kerdesky, Francis A.; Langridge, Denton C.; Leanna, M. Robert; Lijewski, Linda M.; Melcher, Laura; Morton, Howard E.; Norbeck, Daniel W.; Reno, Daniel S.; Robbins, Timothy A.; Sham, Hing L.; Sowin, Thomas J.; Tien, Jien-heh J.; Zhao, Chen; and Scarpetti, David, 5,543,551, Cl. 560-24.000.
Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Leanna, M. Robert; Lijewski, Linda M.; Melcher, Laura; Morton, Howard E.; Reno, Daniel S.; Sham, Hing L.; and Sowin, Thomas J., 5,543,552, Cl. 560-24.000.

SpaceLabs Medical, Inc.: *See—*
Jayne, Cynthia P., 5,542,428, Cl. 128-681.000.

Spaethe, Stephen M.: *See—*
Sawyer, Jason S.; Spaethe, Stephen M.; and Starling, James J., 5,543,428, Cl. 514-456.000.

Spaleck, Walter: *See—*
Winter, Andreas; Küber, Frank; Aulbach, Michael; Bachmann, Bernd; Klein, Robert; Kühlein, Klaus; Spaleck, Walter; and Kohlpaintner, Christian, 5,543,373, Cl. 502-103.000.

Spara, Paul P.: *See—*
Chari, Krishnan; Smith, Wendell F., Jr.; Spara, Paul P.; and Krishnamurthy, Sundaram, 5,543,276, Cl. 430-505.000.

Sparta, Inc.: *See—*
Henshaw, Philip D.; and Lis, Steven A., 5,543,914, Cl. 356-345.000.

Spazzapan, Giorgio: *See—*
Bucci, Marco; Delprato, Ivano; and Spazzapan, Giorgio, 5,543,278, Cl. 430-506.000.

Specht, Steven J.: *See—*
Pulley, Christopher J.; Specht, Steven J.; and Barlow, Geoffrey, 5,543,247, Cl. 429-129.000.

Specialized Health Products, Inc.: *See—*
Thorne, Gale H.; and Thorne, David L., 5,542,927, Cl. 604-110.000.

Spence, Bridget A.: *See—*
Hoxmeier, Ronald J.; Job, Robert C.; Spence, Bridget A.; and DuBois, Donn A., 5,543,458, Cl. 525-271.000.

Spieker, Reinhold: *See—*
Janca, Reiner; and Spieker, Reinhold, 5,543,693, Cl. 318-283.000.

Spilo, Michael L.; and Daub, Jonathan, to Helix Software Company, Inc. Method for increasing the video throughput in computer systems. 5,543,822, Cl. 345-189.000.

Spirk, John W., Jr.: *See—*
Nottingham, John R.; Spirk, John W., Jr.; Brown, Patrick W.; and Perkitny, Jerzy, 5,542,570, Cl. 221-192.000.

Spix, George A.: *See—*
Beard, Douglas R.; Phelps, Andrew E.; Woodmansee, Michael A.; Blewett, Richard G.; Lohman, Jeffrey A.; Silbey, Alexander A.; Spix, George A.; Simmons, Frederick J.; and Van Dyke, Don A., 5,544,337, Cl. 395-375.000.

Spooner, John; Young, Alastair J.; and Chippendale, John P., to Automotive Products, plc. Cam type gearless interaxle differential mechanism. 5,542,316, Cl. 74-650.000.

Spreitzer, Michael J.: *See—*
Theimer, Marvin M.; Spreitzer, Michael J.; Weiser, Mark D.; Goldstein, Richard J.; Elrod, Scott A.; Swinehart, Daniel C.; Schilit, William N.; Krivacic, Robert T.; and Want, Roy, 5,544,321, Cl. 395-200.110.

Springer, David A.: *See—*
Bourne, Richard C.; and Springer, David A., 5,542,260, Cl. 62-171.000.

Sprinter System AB: *See—*
Wallin, Kay, 5,542,816, Cl. 414-798.900.

Square Peg Enterprises, Inc.: *See—*
Dalton, John, 5,542,535, Cl. 206-419.000.

Squires, William J.; and Squires Jr., William Th. Flocked woven fabric with flattened flock fibers. 5,543,195, Cl. 428-90.000.

Squires Jr., William Th.: *See—*
Squires, William J.; and Squires Jr., William Th., 5,543,195, Cl. 428-90.000.

Squirrell, Anton F., to WES Technology Inc. Cantilever spring seals for gas isolators. 5,542,684, Cl. 277-236.000.

Sresty, Guggilam C.: *See—*
Bridges, Jack E.; Sresty, Guggilam C.; Held, Jeffrey S.; Sharp, James W.; and Bajzek, Thomas J., 5,543,111, Cl. 422-22.000.

Srinivasan, Ravi; Elek, Robert A.; and Liu, Haiying, to Picker International, Inc. Multiple quadrature volume coils for magnetic resonance imaging. 5,543,711, Cl. 324-318.000.

Stabb, Eric V.: *See—*
Handelsman, Jo; Halverson, Larry; Stabb, Eric V.; Lethbridge, Benjamin; and Silo, Laura, 5,543,301, Cl. 435-34.000.

Stachler, Thomas H.; and Hass, Edward C. Hand operated impact tool. 5,542,479, Cl. 173-90.000.

Staib, Helmut; and Friedow, Michael, to Robert Bosch GmbH. Electromagnetically actuatable valve for a hydraulic brake system. 5,542,755, Cl. 303-119.200.

Staktek Corporation: *See—*
Burns, Carmen D., 5,543,664, Cl. 257-787.000.

Standard Enterprises, Inc.: *See—*
Bohlool, Perry P.; and Ricci, George J., 5,544,025, Cl. 362-95.000.

Standard Microsystems Corp.: *See—*
Heaton, Robert; Yousefi, Nariman; Sadeghi, Khosrow; and Fischer, David, 5,544,323, Cl. 395-200.140.

Stange, Andreas: *See—*
Hartmann, Heinrich; Denzinger, Walter; Kroener, Michael; Nilz, Claudia; Linhart, Friedrich; and Stange, Andreas, 5,543,459, Cl. 525-54.300.

Stangel, John J., to Loral Corporation. Electronic commutation switch for cylindrical array antennas. 5,543,807, Cl. 342-374.000.

Stangeland, Rodney L.: *See—*

VOL 1189 SEP 1 AG 6 1996 UMI

Serfling, Steven E.; and Stangeland, Rodney L., 5,543,803, Cl. 342-357.000.

Stankus, John C.; and Guo, Song, to Jennmar Corporation. Method and apparatus for monitoring mine roof support systems. 5,542,788, Cl. 405-288.000.

Stanley, Donald: *See—*
Skaar, Leif; Sheppard, Kenneth; Stanley, Donald; Zeinali, Hossein A.; Khorsandian, Ali; and Krula, David A., 5,542,593, Cl. 226-196.000.

Stanley Works, The: *See—*
Bechtoldt, Wayne; Frazier, Tom; Graszer, Matt; and Room, Dave, 5,542,775, Cl. 403-188.000.

Stapelfeld, Norval D.: *See—*
L'Esperance, Lauren L.; Autio, Craig R.; Mariner, E. Thomas; and Stapelfeld, Norval D., 5,543,776, Cl. 340-426.000.

Staples, Charles W.: *See—*
Brown, Robert J., Jr.; Romanowiz, James D.; and Staples, Charles W., 5,544,036, Cl. 364-145.000.

Stark, Casper F.: *See—*
Sun, Deh-Chuan; and Stark, Casper F., 5,543,471, Cl. 525-333.700.

Stark, Thomas S.; Gretz, Thomas J.; and O'Neil, Daniel J. Liquid tight cord grip. 5,543,582, Cl. 174-65.0SS.

Stark, William A.; and Pfadenhauer, Ernest H., to Dade Interantional Inc. Liquid reagent container having a primary and secondary closure mechanism. 5,542,575, Cl. 220-256.000.

Starling, James J.: *See—*
Sawyer, Jason S.; Spaethe, Stephen M.; and Starling, James J., 5,543,428, Cl. 514-456.000.

Starr, Fredricke S.; Wong, Joseph M.; and Kennedy, Norman L., to Westvaco Corporation. Tall oil deodorization process. 5,543,110, Cl. 422-5.000.

Starzl, Timothy W.; Cattell, Marguerita; Mihran, Richard T.; and Zapp, Loretta M., to DDX Incorporated. Heat detection for animals including cows. 5,542,431, Cl. 128-738.000.

State of New South Wales, The Minister for Public Works and Services for and on Behalf of the: *See—*
Harris, Scott, 5,543,051, Cl. 210-605.000.

Stauber, Hans-Ulrich, to Ferag AG. Apparatus for individually separating stacked printed products. 5,542,656, Cl. 271-11.000.

Stauber, Hans-Ulrich, to Ferag AG. Method and apparatus for controlling continuously conveyed printed products. 5,543,708, Cl. 324-133.000.

Staveley, Christopher B.: *See—*
Freeman, Jonathan P.; Ingleton, Martyn; and Staveley, Christopher B., 5,543,968, Cl. 359-631.000.

St. Denis, Carroll R. Robotic centering device. 5,542,496, Cl. 182-133.000.

Stearns, Charles W., to General Electric Company. Method for determining data normalization factors for image reconstruction. 5,543,622, Cl. 250-363.030.

Stedman, Robert B.; and Matz, John E., to Motorola, Inc. Power combiner for use in a radio frequency system and a method of constructing a power combiner. 5,543,751, Cl. 330-124.00D.

Steffens, Charles E., Jr.; and Brown, Louis R., to TRW Vehicle Safety Systems Inc. Seat mounted air bag module. 5,542,696, Cl. 280-730.200.

Stein, Daryl L., to Elf Atochem North America, Inc. Functionalized peroxides for polymerization reactions. 5,543,553, Cl. 560-32.000.

Steinbach, Günter: *See—*
Bisset, Stephen; Miller, Robert J.; Allen, Timothy P.; and Steinbach, Günter, 5,543,588, Cl. 178-18.000.

Steinberg, David G.: *See—*
Sivarajan, Kumar N.; and Steinberg, David G., 5,543,953, Cl. 359-189.000.

Steiner, Daniel; Brassel, Willy; and Hagmann, Karl, to Kummler + Matter AG Fahrleitungstechnik. Apparatus for suspending at least one current-carrying contact wire for current collectors of overhead line buses or trams. 5,542,511, Cl. 191-41.000.

Steiner, Jean-Pierre, to Johnson Electric S.A. Brush leaf means. 5,543,675, Cl. 310-248.000.

Steinlicht, Joseph C.: *See—*
Baker, Daniel F.; Steinlicht, Joseph C.; and Holtaway, Thomas S., 5,544,232, Cl. 379-67.000.

Stemmler, Herbert: *See—*
Beriger, Conrad; Grüning, Horst; Stemmler, Herbert; and Werninger, Johannes, 5,544,035, Cl. 363-132.000.

Stengl, Reinhard J.: *See—*
Hammerl, Erwin; Mandelman, Jack A.; Ho, Herbert L.; Shiozawa, Junichi; and Stengl, Reinhard J., 5,543,348, Cl. 437-60.000.

Stephens, Ronald W.: *See—*
Sheldon, Eric G.; Stephens, Ronald W.; and Vorhauer, George R., 5,543,893, Cl. 355-206.000.

Stephenson, Kenneth E.: *See—*
Roscoe, Bradley A.; Schweitzer, Jeffrey S.; and Stephenson, Kenneth E., 5,543,617, Cl. 250-259.800.

Ster, James F., Jr.: *See—*
Petersen, Paul S.; and Ster, James F., Jr., 5,542,893, Cl. 482-72.000.

Sterling Winthrop Inc.: *See—*
Baker, Edward J.; Lee, Robert W.; Toner, John L.; and Illig, Carl R., 5,543,132, Cl. 424-9.411.
Walton, William C., 5,543,153, Cl. 424-466.000.

Stern, David L.: *See—*
Chang, Clarence D.; Santiesteban, Jose G.; and Stern, David L., 5,543,380, Cl. 502-325.000.

Stern, Leif E. Air driven condiment dispenser. 5,542,574, Cl. 222-137.000.

Stetter-Alle, Raimund: *See—*
Sutter, Ralf; Beerstecher, Lutz; Hruza, David; Stetter-Alle, Raimund; and Trackl, Karl, 5,543,119, Cl. 422-299.000.

Stevens, Craig A.; Rao, Bhaskar P.; Veith, Cary A.; and Erickson, James R., to Shell Oil Company. Concurrent epoxidation and catalyst residue extraction. 5,543,472, Cl. 525-387.000.

Stevens, John K.; and Ismailov, Alexandre M., to Visible Genetics Inc. Method and apparatus for automated electrophoresis using light polarization detector. 5,543,018, Cl. 204-461.000.

Stevens, William E.: *See—*
Rea, Perry J.; Miller, Michael R.; Kinder, Dennis G.; Kargula, Christopher J.; and Stevens, William E., 5,542,717, Cl. 285-319.000.

Stevenson, Susan C.: *See—*
McClelland, Alan; and Stevenson, Susan C., 5,543,328, Cl. 435-320.100.

Stevenson, Tyler A.; Ravichandran, Ramanathan; Holt, Mark S.; Phan, Thuy N.; Birbaum, Jean-Luc; and Toan, Vien V., to Ciba-Geigy Corporation. Red-shifted tris-aryl-s-triazines and compositions stabilized therewith. 5,543,518, Cl. 544-215.000.

Stewart, Kevin R.: *See—*
Carrig, Timothy J.; Taylor, Antoinette J.; and Stewart, Kevin R., 5,543,960, Cl. 359-326.000.

Stewart, Walter M. Method for playing game of dice. 5,542,671, Cl. 273-146.000.

St. Hilaire, Vance: *See—*
Woodman, Daniel W., Jr.; St. Hilaire, Vance; and Silva, Guilherme A., 5,542,802, Cl. 414-27.000.

Stihl, Andreas: *See—*
Gerhardy, Reinhard, 5,542,405, Cl. 123-702.000.

Stobie, Alan: *See—*
Cross, Peter E.; and Stobie, Alan, 5,543,419, Cl. 514-305.000.

Stockwell, Colin, to Lever Brothers Company, Division of Conopco, Inc. Detergent dispenser. 5,542,586, Cl. 222-538.000.

Stoddard, Sandra L.: *See—*
Keown, Wendy J.; Ford, Betty J.; and Stoddard, Sandra L., 5,543,405, Cl. 514-188.000.

Stolfi, Robert L., to Boehringer Mannheim Italia SpA. UDPG as a rescue agent in cancer therapy after the administration of antipyrimidine or related anti-tumor agents with or without BAU. 5,543,401, Cl. 514-50.000.

Stone, Steve S.: *See—*
Morgan, Scott A.; Stone, Steve S.; and Swearingen, Craig A., 5,544,288, Cl. 395-157.000.

Stoner, Marcus D.: *See—*
Erdman, John L.; and Stoner, Marcus D., 5,542,279, Cl. 73-1.00R.

Storey, J. Kirk: *See—*
Green, David J.; Bunker, S. Mark; Moore, Walter A.; Pierotti, L. John; Storey, J. Kirk; and Olson, Brent K., 5,542,702, Cl. 280-737.000.

Stouffer, Peter J., to Code-Alarm, Inc. Security system. 5,543,778, Cl. 340-539.000.

Stowell, Michael H B: *See—*
Yatvin, Milton B.; and Stowell, Michael H B, 5,543,389, Cl. 514-2.000.

Stowell, Michael H. B.: *See—*
Yatvin, Milton B.; Stowell, Michael H. B.; Gallicchio, Vincent S.; and Meredith, Michael J., 5,543,390, Cl. 514-2.000.
Yatvin, Milton B.; Stowell, Michael H. B.; Gallicchio, Vincent S.; and Meredith, Michael J., 5,543,391, Cl. 514-2.000.

Stoyell, Richard C.; Williamson, Kenneth M.; Hopkins, Scott D.; Geibel, Stephen A.; and Wolff, Terry L., to Pall Corporation. Filter with over-laid pleats in intimate contact. 5,543,047, Cl. 210-493.200.

Strack, Kurt M.: *See—*
Singer, Bension; Maurer, Hans M.; Strack, Kurt M.; and Fanini, Otto N., 5,543,715, Cl. 324-368.000.

Strain, Joanna M.: *See—*
Glaser, Howard J.; Strain, Joanna M.; and Tuckey-Smith, Angus T., 5,544,285, Cl. 395-149.000.

Stranski, Sandra K.; Sumser, Daniel P.; and Sedlack, Mark A., to Century Products Company. Rotatable bending joint for collapsible playpen. 5,542,151, Cl. 16-326.000.

Strasser, Karl, to Siemens Aktiengesellschaft. Fuel cell and method for moistening the electrolyte of the fuel cell. 5,543,238, Cl. 429-17.000.

Strat, Askold: *See—*
Bard, Simon; Strat, Askold; Katz, Joseph; and Metlitsky, Boris, 5,543,610, Cl. 235-462.000.

Stratford, Ian J.: *See—*
Beylin, Vladimir G.; Sercel, Anthony D.; Showalter, Howard D. H.; Adams, Gerald E.; Fielden, Edward M.; Naylor, Matthew A.; and Stratford, Ian J., 5,543,527, Cl. 548-110.000.

Stratford, James T.; Schoonveld, Alan H.; and Weaver, David A., to Berry Iowa Corporation. Method for molding a multi-pack container assembly. 5,543,104, Cl. 264-328.800.

Straubinger, Werner; Pecher, Günter; and Kohlmann, Richard, to U.E. Sebald Druck und Verlag GmbH. Process and installation for removing solvent vapor from exhaust air. 5,542,965, Cl. 95-14.000.

Streber, Wolfgang: *See—*
Pohlenz, Hans-Dieter; Boidol, Werner; and Streber, Wolfgang, 5,543,306, Cl. 435-91.410.

Streckert, Holger H.; and Trester, Paul W., to General Atomics. Chromium surface treatment of nickel-based substrates. 5,543,183, Cl. 427-529.000.

Strehlow, Wolfgang H.: *See—*
Goken, Garold L.; and Strehlow, Wolfgang H., 5,543,314, Cl. 436-57.000.

Streit, Donald A.; Casalena, Joe; and Ovaert, Tim, to Penn State Research Foundation, The. Dual stiffness flooring. 5,542,221, Cl. 52-403.100.

Stretz, Manfred; Holzheimer, Günter; and Neubauer, Hans-Rene, to Siemens Aktiengesellschaft. Liquid ring pump and separator container assembly. 5,542,822, Cl. 417-68.000.

Strickland, Jimmy P.: *See—*
Carpenter, Kelly S.; Dearing, Gerard M.; Nick, Jeffrey M.; Strickland, Jimmy P.; Swanson, Michael D.; and Wilkinson, Wendell W., 5,544,345, Cl. 395-477.000.

Strittmatter, Stephen M.: *See—*
Fishman, Mark C.; Igarashi, Michihiro; and Strittmatter, Stephen M., 5,543,498, Cl. 530-328.000.

Strohl, Margaret T.: *See—*
Lahaussois, Pierre; and Strohl, Margaret T., 5,542,121, Cl. 2-59.000.

Strott, Douglas B.: *See—*
Reidemeister, Eric P.; Johnson, Larry K.; Mandeville, Raymond E.; Strott, Douglas B.; and Southworth, Robert O., 5,542,296, Cl. 73-514.320.

Strubelt, Charles E.: *See—*
Mokadam, Anita R.; Strubelt, Charles E.; Williams, Dennis A.; and Webber, Kenneth M., 5,543,387, Cl. 507-135.000.

Struglinski, Mark J.; Ver Strate, Gary W.; and Fetters, Lewis J., to Exxon Chemical Patents Inc. Viscosity modifier polymers. 5,543,469, Cl. 525-314.000.

Strul, Bruno: *See—*
Hirsch, Chaya; Hale, Robert; and Strul, Bruno, 5,542,916, Cl. 604-22.000.

Strutz, Heinz: *See—*
Kulpe, Jürgen; Strutz, Heinz; Rüffer, Hans-Martin; and Rittner, Siegbert, 5,543,564, Cl. 562-467.000.

Stryker Corporation: *See—*
Culp, Jerry A.; and Schemansky, Kevin J., 5,543,695, Cl. 318-432.000.
Tappel, James G., 5,542,136, Cl. 5-710.000.

Stuart, John W., to Reyco Industries, Inc. Anti-friction pad for a bushed pivot point connection of a main leaf spring and a secondary leaf spring. 5,542,652, Cl. 267-49.000.

Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Morton, Howard E.; Reno, Daniel S.; Sham, Hing L.; Sowin, Thomas J.; and Tien, Jien-Heh J., to Abbott Laboratories. Process for the preparation of a substituted 2,5-Diamino-3-Hydroxyhexane. 5,543,549, Cl. 558-405.000.

Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Kerdesky, Francis A.; Langridge, Denton C.; Leanna, M. Robert; Lijewski, Linda M.; Melcher, Laura; Morton, Howard E.; Norbeck, Daniel W.; Reno, Daniel S.; Robbins, Timothy A.; Sham, Hing L.; Sowin, Thomas J.; Tien, Jien-heh J.; Zhao, Chen; and Scarpetti, David, to Abbott Laboratories. Process for the preparation of a substituted 2,5-diamino-3-hydroxyhexane. 5,543,551, Cl. 560-24.000.

Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Leanna, M. Robert; Lijewski, Linda M.; Melcher, Laura; Morton, Howard E.; Reno, Daniel S.; Sham, Hing L.; and Sowin, Thomas J., to Abbott Laboratories. Process for the preparation of a substituted 2,5-diamino-3-hydroxyhexane. 5,543,552, Cl. 560-24.000.

Stuller, Howard E.; Stuller, Stephen E.; and Compton, Timothy A., to Industrial Business Consultants, Inc. Module disperser. 5,542,790, Cl. 406-116.000.

Stuller, Stephen E.: *See—*
Stuller, Howard E.; Stuller, Stephen E.; and Compton, Timothy A., 5,542,790, Cl. 406-116.000.

Stummer, Friedrich; and Frey, Rolf, to Maschinenfabrik Mueller-Weingarten AG. Pressure diecasting or injection molding machine. 5,543,105, Cl. 264-407.000.

Stumpe, Joachim; Shibaev, Valery; Kostromin, Sergei; Ivanov, Sergei; Fischer, Thomas; Läsker, Lutz; Ruhmann, Ralf; and Claussen, Uwe, to Agfa-Gevaert AG. Photo-induced optically anisotropic amorphous film materials from side group polymers. 5,543,267, Cl. 430-290.000.

Stupian, Gary W.; and Leung, Martin S., to Aerospace Corporation, The. Hydrogen out venting electronic package. 5,543,364, Cl. 437-210.000.

Sturzenbecker, Martin C.: *See—*
Brecher, Virginia H.; Chou, Paul B.-L.; Hall, Robert W.; Parisi, Debra M.; Rao, Ravishankar; Riley, Stuart L.; and Sturzenbecker, Martin C., 5,544,256, Cl. 382-149.000.

Su, Hong: *See—*
Sun, Xnjiang; Zhang, Junmin; Wang, Tongshun; Zhang, Jun; Su, Hong; and Xia, Hongxia, 5,542,372, Cl. 117-68.000.

Suan, Seah K.: *See—*
Chi, Keh-Fei C.; Suan, Seah K.; and Yow, Ling H., 5,543,350, Cl. 437-60.000.

Subramanian, Sethuraman: *See—*
Boguslawski, George; Grosch, Josephine; Shultz, John W.; and Subramanian, Sethuraman, 5,543,302, Cl. 435-69.100.

Subramaniyan, Nagarajan: *See—*
Garcia-Duarte, Fernando; Hensley, John; Mohanraj, Shanmugam; Subramaniyan, Nagarajan; and Olsson, David B., 5,544,082, Cl. 364-707.000.

Suda, Hirofumi; Toyama, Masamichi; Fujiwara, Akihiro; Yamada, Kunihiko; and Yoshimura, Katsuji, to Canon Kabushiki Kaisha. Focus adjusting device wherein effective focal length is derived by detecting low frequency changes in image signals. 5,543,839, Cl. 348-349.000.

Suda, Yasuo, to Canon Kabushiki Kaisha. Focus state detection apparatus. 5,543,886, Cl. 354-406.000.

Sudo, Ryoichi: *See—*
Miwa, Hiroaki; Sudo, Ryoichi; Tajima, Tetsuo; and Koyama, Eiji, 5,543,271, Cl. 430-347.000.

Suesada, Kunio: *See—*
Takeuchi, Koso; and Suesada, Kunio, 5,543,934, Cl. 358-341.000.

Suettinger, Rudolf: *See—*
Bobrich, Michael; Lehner, August; Roller, Hermann; Suettinger, Rudolf; Kress, Ria; Schneider, Norbert; Lenz, Werner; Engelhardt, Peter; Rudolf, Peter; Brodt, Gregor; Balz, Werner; and Kohl, Albert, 5,543,226, Cl. 428-423.100.

Sugai, Masakazu: *See—*
Demizu, Akira; Nishimura, Yukinobu; and Sugai, Masakazu, 5,544,058, Cl. 364-431.050.

Sugano, Yuji: *See—*
Niwa, Masahiro; Sugano, Yuji; Uenishi, Ken-ichi; Kitada, Hideto; Yamaguchi, Yoshihisa; Kobayashi, Eiko; Kubo, Kunimichi; and Sano, Akira, 5,543,478, Cl. 526-82.000.

Sugimoto, Toshiyuki: *See—*
Mandai, Takahiko; Shibuya, Takashi; Sugimoto, Toshiyuki; and Miyake, Toshio, 5,543,513, Cl. 536-123.130.

Sugino, Kazumasa, to Canon Kabushiki Kaisha. Communication processing apparatus, communication. 5,544,233, Cl. 379-100.000.

Sugita, Norio: *See—*
Hayashi, Kazuyuki; Ohsugi, Minoru; Morii, Hiroko; and Sugita, Norio, 5,543,069, Cl. 252-62.580.

Sugita, Satoshi, to Matsushita Electric Industrial Co., Ltd. Image quality adjusting device which detects the grade of an envelope of an FM luminance signal. 5,543,974, Cl. 360-33.100.

Sugita, Yukihiko: *See—*
Suzuki, Tatsuya; Matsutani, Shunji; Sugita, Yukihiko; Katagiri, Moriya; and Ikeda, Manabu, 5,543,876, Cl. 354-149.110.

Sugitani, Yuji: *See—*
Ozamoto, Daisuke; Murayama, Masatoshi; and Sugitani, Yuji, 5,543,600, Cl. 219-124.340.

Sugiura, Susumu: *See—*
Yamada, Osamu; Sugiura, Susumu; and Makita, Takeshi, 5,543,855, Cl. 348-753.000.

Sugiyama, Koji; and Yamamoto, Hiroshi, to Kyoto Daiichi Kagaku Co., Ltd. Method for stabilizing measurement values by high speed liquid chromatography. 5,543,315, Cl. 436-161.000.

Sugiyama, Satomi: *See—*
Suzuki, Koichi; Takai, Hideyuki; Miyazaki, Hajime; Sugiyama, Satomi; and Kunieda, Mitsuhiro, 5,543,257, Cl. 430-58.000.

Sullivan, Dan E.; and Hetterle, Peter B., to M.K. Manufacturing Incorporated. Computer supports. 5,542,314, Cl. 74-552.000.

Sullivan, Michael J.; and Weiss, Robert A., to Lisco, Inc. Golf ball cover compositions. 5,542,677, Cl. 473-385.000.

Sumida, Reiko, to Sumitomo Metal Ceramics Inc. Semiconductor ceramic package with terminal vias. 5,543,661, Cl. 257-707.000.

Sumitomo Chemical Company, Limited: *See—*
Hara, Takahisa; Matsumoto, Masahito; Usui, Nobuhiro; and Matubara, Shigeyoshi, 5,543,094, Cl. 264-46.400.
Nakata, Hiroki; Sato, Mitsuhiko; and Aoshima, Masashi, 5,543,470, Cl. 525-331.700.
Ohnishi, Toshihiro; Noguchi, Takanobu; and Doi, Shuji, 5,543,079, Cl. 252-301.350.

Sumitomo Electric Industries, Ltd.: *See—*
Findikoglu, Alp T.; and Nakamura, Takao, 5,543,386, Cl. 505-210.000.
Kashihara, Hideki; Nishimura, Akira; and Takiguchi, Toshihiko, 5,542,629, Cl. 244-137.200.
Katayama, Tetsuya; Murabe, Kaoru; Komura, Osamu; Kawai, Chihiro; Yamakawa, Akira; Matsunuma, Kenji; Yasuoka, Norio; Higuchi, Matsuo; and Miyake, Masaya, 5,543,371, Cl. 501-97.000.
Nagaishi, Tatsuoki; and Itozaki, Hideo, 5,544,182, Cl. 372-29.000.
Nakajima, Masahiro; and Odagaki, Hideo, 5,544,087, Cl. 364-443.000.
Nishimura, Akira; and Kashihara, Hideki, 5,542,628, Cl. 244-137.200.

Sumitomo Metal Ceramics Inc.: *See—*
Sumida, Reiko, 5,543,661, Cl. 257-707.000.

Sumitomo Metal Industries, Ltd.: *See—*
Senba, Hiroyuki; and Sawaragi, Yoshiatsu, 5,543,109, Cl. 420-446.000.

Sumitomo Rubber Industries, Ltd.: *See—*
Hamada, Akihiko; Yubuki, Yoshikazu; and Kato, Akira, 5,543,467, Cl. 525-207.000.
Kato, Akira; and Yabuki, Yoshikazu, 5,542,663, Cl. 473-363.000.

Sumitomo Wiring Systems, Ltd.: *See—*
Kurata, Kazunori; and Kobayashi, Makoto, 5,543,581, Cl. 174-52.100.
Yasukuni, Jun, 5,542,543, Cl. 209-127.100.

Summerall, Albert M.: *See—*
Winnek, Douglas F.; and Summerall, Albert M., 5,543,873, Cl. 354-112.000.

Sumser, Daniel P.: *See—*
Stranski, Sandra K.; Sumser, Daniel P.; and Sedlack, Mark A., 5,542,151, Cl. 16-326.000.

Sun, Deh-Chuan; and Stark, Casper F., to Howmedica Inc. Non-oxidizing polymeric medical implant. 5,543,471, Cl. 525-333.700.

Sun Microsystems, Inc.: *See—*
Burward-Hoy, Trevor, 5,543,662, Cl. 257-716.000.
Chen, Sun-Den, 5,544,332, Cl. 395-288.000.
Deering, Michael F.; Schlapp, Stephen A.; and Lavelle, Michael G., 5,544,306, Cl. 395-164.000.
Priem, Curtis; Malachowsky, Chris; McIntyre, Bruce; and Moffat, Guy, 5,543,824, Cl. 345-201.000.

Sun, Xujiang; Zhang, Junmin; Wang, Tongshun; Zhang, Jun; Su, Hong; and Xia, Hongxia, to Tianjin Petro-Chemical Corporation. Process for purification of DMT by film crystallization. 5,542,372, Cl. 117-68.000.

Sundararajan, Partha: *See*—
Yeh, Stanley; O, Sungki; and Sundararajan, Partha, 5,543,337, Cl. 437-35.000.

Sundararajan, Srinivasan: *See*—
Walker, Lee A.; Sundararajan, Srinivasan; Fletcher, Geoffrey D.; and Dillman, Daniel J., 5,542,738, Cl. 296-189.000.

Sundstrand Corporation: *See*—
Katsumata, Shin; Fisher-Votava, Martha; and Halsey, David, 5,543,673, Cl. 310-90.500.

Sundstrom, Christafor E.: *See*—
Song, Joo H.; Sundstrom, Christafor E.; Record, David W.; Townsend, Donald J.; Broderick, Kevin B.; and Schnell, Philip G., 5,543,160, Cl. 426-3.000.

Sundström, Jan I.; and Lindbeck, Per A., to Telefonaktiebolaget LM Ericsson. Devices and methods for suppressing oscillations in voltage converters. 5,544,033, Cl. 363-40.000.

Sung, Chiakang: *See*—
Cliff, Richard G.; Reddy, Srinivas T.; Veenstra, Kerry; Papaliolios, Andreas; Sung, Chiakang; Terrill, Richard S.; Raman, Rina; and Bielby, Robert R. N., 5,543,730, Cl. 326-38.000.

Sunright Limited: *See*—
Lim, Samuel S. S.; and Tan, Siew K., 5,543,725, Cl. 324-755.000.

Suppelsa, Anthony B.: *See*—
Juskey, Frank J.; Suppelsa, Anthony B.; and Nounou, Fadia, 5,542,171, Cl. 29-840.000.

Surbey, David J.; Smith, James L.; Allen, Richard C.; and Witwer, Alan D., to Zeeco Inc. Burner for combusting gas and/or liquid fuel with low NO_x production. 5,542,840, Cl. 431-116.000.

Sureguard, Inc.: *See*—
Hughes, Zephuren J.; and Torgussen, Ole G., 5,543,227, Cl. 428-425.800.

Surgi, Marion R.: *See*—
Lupton, Francis S.; Sheridan, William G.; and Surgi, Marion R., 5,543,052, Cl. 210-616.000.

Surowiec, Roman, to Ford Motor Company. Method and apparatus for evaluating pummeled glass. 5,543,924, Cl. 356-446.000.

Sutherland, James; Garverick, Timothy L.; Takiar, Hem P.; and Reyling, George F., Jr., to National Semiconductor Corporation. Logical three dimensional interconnections between integrated circuit chips using a two dimensional multi-chip module. 5,543,640, Cl. 257-202.000.

Sutherland, Robert L., to Riverwood International Corporation. Wrap-around carrier with bar code blocking end panel. 5,542,536, Cl. 206-427.000.

Sutter, Ralf; Beerstecher, Lutz; Hruza, David; Stetter-Alle, Raimund; and Trackl, Karl, to Siemens Aktiengesellschaft. Cassette for treating medical instruments. 5,543,119, Cl. 422-299.000.

Suzuki, Atsunori: *See*—
Ohtani, Hisashi; Miyanaga, Akiharu; Zhang, Hongyong; Yamaguchi, Nacaki; and Suzuki, Atsunori, 5,543,352, Cl. 437-101.000.

Suzuki, Etsuro; Kawai, Hideki; and Awashima, Hiroki, to Matsushita Refrigeration Company. Refrigeration system with compressor using refrigeration oil insoluble in refrigerant. 5,542,266, Cl. 62-469.000.

Suzuki, Fumio; Shimada, Junichi; Ishii, Akio; Nakamura, Joji; Ichikawa, Shunji; Kitamura, Shigeto; and Koike, Nobuaki, to Kyowa Hakko Kogyo Co., Ltd. Antidepressants. 5,543,415, Cl. 514-263.000.

Suzuki, Hajime, to Canon Kabushiki Kaisha. Image forming apparatus having endless recording material carrying member. 5,543,908, Cl. 355-315.000.

Suzuki, Haruhiko; Kato, Yasunari; Ota, Kazuomi; and Yamaguchi, Hiroaki, to Nippondenso Co., Ltd. Electric control apparatus. 5,544,000, Cl. 361-139.000.

Suzuki, Hiroyoshi; Okada, Akira; and Moronaga, Takahiro, to Mitsubishi Denki Kabushiki Kaisha. Channel forming fuel permittivity sensor with automatic temperature compensation. 5,543,722, Cl. 324-675.000.

Suzuki, Hitoshi: *See*—
Kawahara, Takayuki; Suzuki, Hitoshi; and Kominato, Asao, 5,543,522, Cl. 546-2.000.
Tada, Masayuki; and Suzuki, Hitoshi, 5,544,359, Cl. 395-600.000.

Suzuki, Kazunari: *See*—
Nakakura, Yasushi; Tanaka, Hideki; Sano, Akira; Mogi, Akio; Miyamoto, Matsuhiro; and Suzuki, Kazunari, 5,543,189, Cl. 428-36.800.

Suzuki, Koichi; Takai, Hideyuki; Miyazaki, Hajime; Sugiyama, Satomi; and Kunieda, Mitsuhiro, to Canon Kabushiki Kaisha. Electrophotographic photosensitive member, process cartridge including same and electrophotographic apparatus. 5,543,257, Cl. 430-58.000.

Suzuki, Koichi: *See*—
Ohsaki, Hisashi; Kojima, Hiroyasu; and Suzuki, Koichi, 5,543,229, Cl. 428-432.000.

Suzuki, Makoto; Aoki, Masahiro; Takahashi, Makoto; and Taniwatari, Tsuyoshi, to Hitachi, Ltd. Method of manufacturing a semiconductor photonic integrated circuit. 5,543,353, Cl. 437-127.000.

Suzuki, Masaaki: *See*—
Kishimoto, Yoshio; and Suzuki, Masaaki, 5,543,381, Cl. 503-201.000.

Suzuki, Masao: *See*—
Hieda, Teruo; Suzuki, Masao; and Narita, Hitoshi, 5,543,836, Cl. 348-223.000.
Shibayama, Kouichi; Suzuki, Masao; Ogasa, Masao; and Iuchi, Kenji, 5,543,438, Cl. 521-140.000.
Ueno, Kazunori; Fukui, Tetsuro; Kobayashi, Motokazu; Ooi, Takehiko; Kagami, Kenji; Suzuki, Masao; and Nishino, Katsuya, 5,543,286, Cl. 430-619.000.

Suzuki, Osamu: *See*—
Akao, Mutsuo; and Suzuki, Osamu, 5,543,270, Cl. 430-347.000.

Suzuki, Takehiko; Taniguchi, Shozo; Kanemaru, Kohji; Sato, Yoshiyuki; and Enamito, Akihiko, to Kabushiki Kaisha Toshiba. Method and apparatus for detecting the position of an abnormal site of a buried pipe. 5,544,074, Cl. 364-508.000.

Suzuki, Takehiko: *See*—
Kato, Motoi; Takeuchi, Akihiko; Ochiai, Toshihiko; Miyashiro, Toshiaki; Kabeya, Nobuaki; Suzuki, Takehiko; and Kume, Takao, 5,543,904, Cl. 355-285.000.

Suzuki, Tatsuya; Matsutani, Shunji; Sugita, Yukihiko; Katagiri, Moriya; and Ikeda, Manabu, to Olympus Optical Co., Ltd. Camera. 5,543,876, Cl. 354-149.110.

Suzuki, Tatsuya: *See*—
Kawano, Hideo; Shiotani, Keiji; Mikami, Masao; Suzuki, Tatsuya; and Shishiguchi, Seiichi, 5,543,347, Cl. 437-60.000.

Suzuki, Teruhiko: *See*—
Chang, Ching-Fang; Yanagihara, Naofumi; Yonemitsu, Jun; Tahara, Katsumi; Yagasaki, Yoichi; and Suzuki, Teruhiko, 5,543,932, Cl. 358-335.000.

Suzuki, Tsuyoshi: *See*—
Kawakami, Satoru; Suzuki, Tsuyoshi; Arami, Junichi; and Deguchi, Yoichi, 5,542,559, Cl. 216-67.000.

Suzuki, Yoji: *See*—
Ohzu, Akira; Arisawa, Takashi; Kato, Masaaki; and Suzuki, Yoji, 5,544,191, Cl. 372-56.000.

Suzuki, Yorikatsu, to Kabushiki Kaisha Meidensha. Control system for chassis dynamometer for simulating road test of automotive vehicle. 5,542,290, Cl. 73-117.000.

Svaldi, Paul: *See*—
Boyer, Samuel R.; Sitz, Michael; and Svaldi, Paul, 5,542,583, Cl. 222-425.000.

Swaddle, Steven: *See*—
Walker, Andrew; and Swaddle, Steven, 5,544,274, Cl. 388-838.000.

Swamy, Som S.: *See*—
Beilin, Solomon I.; Chou, William T.; Kudzuma, David; Lee, Michael G.; Murase, Teruo; Peters, Michael G.; Roman, James J.; Swamy, Som S.; and Wang, Wen-chou V., 5,544,017, Cl. 361-790.000.

Swanson, Joel C.: *See*—
Pao, Hsueh-Wen; Faulstich, David L.; Snyder, Dane T.; Ma, Johnny T.; Izzo, Kenneth R.; Swanson, Joel C.; Laurent, Martin S.; and Kacbel, Peter F., 5,544,208, Cl. 376-253.000.

Swanson, Jon R.; Bosch, H. William; Illig, Kathleen J.; Marcera, Donna M.; and Mueller, Ronald L., to NanoSystems L.L.C. Process of preparing x-ray contrast compositions containing nanoparticles. 5,543,133, Cl. 424-9.450.

Swanson, Michael D.: *See*—
Carpenter, Kelly S.; Dearing, Gerard M.; Nick, Jeffrey M.; Strickland, Jimmy P.; Swanson, Michael D.; and Wilkinson, Wendell W., 5,544,345, Cl. 395-477.000.

Swat, William A.: *See*—
Adams, Terry; Ambrosio, Neil J.; Bratton, William E.; Forsythe, William M.; Hatton, Bruce E.; Kinder, Larry L.; and Swat, William A., 5,542,438, Cl. 131-238.000.

Swearingen, Craig A.: *See*—
Morgan, Scott A.; Stone, Steve S.; and Swearingen, Craig A., 5,544,288, Cl. 395-157.000.

Sweco, Incorporated: *See*—
Senapati, Nagabhusan, 5,542,548, Cl. 209-365.100.

Swei, Gwo S.; Avril, Nicolas; and Wijaya, Jony, to Norton Company. Dielectric curing. 5,542,961, Cl. 51-295.000.

Swenson, Robert E.; and Kessler, Joseph E., to Unisys Corporation. Cache system with file surge protection and method for managing allocation of storage in the cache. 5,544,343, Cl. 395-460.000.

Swindell, Archie C.; and Wong, Samuel S., to Pfizer Inc. Hydroxylated metabolites and derivatives of doxazosin as anti-atherosclerosis agents. 5,543,411, Cl. 514-254.000.

Swinehart, Daniel C.: *See*—
Theimer, Marvin M.; Spreitzer, Michael J.; Weiser, Mark D.; Goldstein, Richard J.; Elrod, Scott A.; Swinehart, Daniel C.; Schilit, William N.; Krivacic, Robert T.; and Want, Roy, 5,544,321, Cl. 395-200.110.

Symbios Logic Inc.: *See*—
Lee, Steven S.; Fuchs, Kenneth P.; and Miller, Gayle W., 5,543,361, Cl. 437-200.000.

Symbiosis Corporation: *See*—
Slater, Charles R.; Palmer, Matthew A.; Kortenbach, Jurgen A.; McBrayer, Michael S.; and Gottlieb, Saul, 5,542,432, Cl. 128-751.000.

Symbol Technologies, Inc.: *See*—
Bard, Simon; Strat, Askold; Katz, Joseph; and Metlitsky, Boris, 5,543,610, Cl. 235-462.000.
Giordano, Joseph; Gong, Frank; Rizzo, Richard; and Charych, Hal, 5,543,609, Cl. 235-462.000.

Synaptics, Incorporated: *See*—
Bisset, Stephen; Miller, Robert J.; Allen, Timothy P.; and Steinbach, Günter, 5,543,588, Cl. 178-18.000.
Gillespie, David; Allen, Timothy P.; Miller, Robert J.; and Faggin, Federico, 5,543,590, Cl. 178-18.000.

Gillespie, David; Allen, Timothy P.; and Wolf, Ralph, 5,543,591, Cl. 178-18.000.

Syntex (U.S.A.) Inc.: *See*—
Fu, Roger C.; Leung, De-Mei; Fleitman, Jeffrey S.; Rizzolio, Michele C.; and Miksztal, Andrew R., 5,543,408, Cl. 514-233.500.
Nestor, John J.; Womble, Scott W.; and Maag, Hans, 5,543,414, Cl. 514-262.000.

Synthelabo: *See*—
Benavides, Jésus; Ferzaz, Badia; George, Pascal; and Scatton, Bernard, 5,543,421, Cl. 514-317.000.
Mallart, Sergio; Lassalle, Gilbert; Purcell, Thomas Andrew; and Muller, Jean Claude, 5,543,526, Cl. 548-110.000.

Synthomer Limited: *See*—
Heighington, John E.; Butters, Daphne; and Claxton, Stephen J., 5,543,207, Cl. 428-207.000.

Sypek, Maria T.; Delude, John R.; and Pegron, Paul A., to International Paper Company. Benzanthrone polymerization gate in photopolymerizable compositions. 5,543,262, Cl. 430-162.000.

Szabo, George; and McGuire, Andrew G., to ITT Corporation. Quick connector with snap-on retainer. 5,542,716, Cl. 285-305.000.

Szeglowski, Scott D.: *See*—
Hornak, Joseph P.; and Szeglowski, Scott D., 5,542,424, Cl. 128-653.500.

Szewc, Joseph W.: *See*—
Levocz, Reynold J.; and Szewc, Joseph W., 5,542,665, Cl. 473-313.000.

Szymanski, Marek: *See*—
Kunig, Helmut; and Szymanski, Marek, 5,542,879, Cl. 452-135.000.

Tabuchi, Michiyuki: *See*—
Yamasaki, Masahiro; Housai, Koichiro; Shirahase, Hiromi; Akamatsu, Nobuyuki; Tabuchi, Michiyuki; Hirata, Toshinari; and Miyazaki, Yoshifumi, 5,543,168, Cl. 426-557.000.

Tachi, Katsuichi, to Sony Cinema Products Corporation. Method and apparatus of reproducing a digital signal recorded on a movie film. 5,543,868, Cl. 352-27.000.

Tachikara Co., Ltd.: *See*—
Kouzai, Keiji; and Tanaka, Junichi, 5,542,662, Cl. 273-58.0BA.

Tada, Masayuki; and Suzuki, Hitoshi, to Fujitsu Limited. Apparatus and method for classifying and acquiring log data by updating and storing log data. 5,544,359, Cl. 395-600.000.

Tadaki, Shinji: *See*—
Iwase, Nobuhiro; Kano, Hiroshi; Tadaki, Shinji; Hasegawa, Masami; and Koshino, Nagaaki, 5,543,080, Cl. 252-301.40H.

Taguchi, Masao: *See*—
Uchida, Toshiya; and Taguchi, Masao, 5,544,109, Cl. 365-203.000.

Taguchi, Osamu, to Sony Corporation. Tape cassette. 5,542,621, Cl. 242-347.100.

Taguchi, Teruo: *See*—
Iwaya, Shouichi; Yahagi, Masahiro; Kudou, Hitoshi; Itou, Shigeru; Fujiwara, Isao; Ogasawara, Tadashi; Morita, Makoto; Taguchi, Teruo; and Sasaki, Setuo, 5,544,002, Cl. 361-302.000.

Tahara, Katsumi: *See*—
Chang, Ching-Fang; Yanagihara, Naofumi; Yonemitsu, Jun; Tahara, Katsumi; Yagasaki, Yoichi; and Suzuki, Teruhiko, 5,543,932, Cl. 358-335.000.

Taillades, Jëlle, born Arnaud: *See*—
Ferrari, Bernard; and Taillades, Jëlle, born Arnaud, 5,543,528, Cl. 548-301.400.

Taiwan Semiconductor Manufacturing Co.: *See*—
Hung, Chin-Hui; and Chen, Chen-Chin, 5,544,350, Cl. 395-500.000.

Tajima, Tetsuo: *See*—
Miwa, Hiroaki; Sudo, Ryoichi; Tajima, Tetsuo; and Koyama, Eiji, 5,543,271, Cl. 430-347.000.

Takada, Hiroshi; and Funatsu, Hiroshi, to Mazda Motor Corporation. Automatic transmission control system with variable pressure discharge. 5,542,888, Cl. 475-134.000.

Takada, Yasuyuki: *See*—
Nagataki, Yasunobu; Tsuyama, Seishi; Hosoya, Yoshihiro; Okita, Tomoyoshi; Kanetoh, Shuzi; and Takada, Yasuyuki, 5,542,996, Cl. 148-652.000.

Takagaki, Takanari; and Nagai, Yasuo, to Nippondenso Co. Ltd. Filter element manufacturing method. 5,543,007, Cl. 156-189.000.

Takagi, Kazuhiro; Ohtani, Takashi; Nishida, Tateki; Hamaguchi, Hiroshi; Nishimatsu, Tetsuyoshi; and Kanaoka, Atsushi, to Nihon Nohyaku Co., Ltd. Hydrazinecarboxyamide derivatives, a process for production thereof and uses thereof. 5,543,573, Cl. 514-590.000.

Takagi, Kazutoshi: *See*—
Kitajima, Nobuaki; and Takagi, Kazutoshi, 5,543,962, Cl. 359-384.000.

Takagi, Shozo: *See*—
Chow, Laurence C.; and Takagi, Shozo, 5,542,973, Cl. 106-35.000.

Takagi, Tadao, to Nikon Corporation. Driving apparatus. 5,543,879, Cl. 354-202.000.

Takagi, Tatsuo; and Tsujino, Hitoshi, to International Business Machines Corporation. Disk drive apparatus having a device inside the disk drive housing for electrically connecting a spin motor cable outside the housing to a connector outside the housing. 5,543,982, Cl. 360-97.010.

Takahashi, Akira: *See*—
Katayama, Hiroyuki; Hirokane, Junji; Takahashi, Akira; and Obta, Kenji, 5,544,149, Cl. 369-275.300.

Takahashi, Iruru: *See*—
Uchida, Hiroshi; Takahashi, Iruru; Yamaseki, Ken-ichi; and Satokawa, Shigeo, 5,543,125, Cl. 423-239.200.

Takahashi, Jun: *See*—
Katoh, Akira; Kitagawa, Hiroshi; Tsuzuki, Shunichi; Takahashi, Jun; Fujimoto, Sachito; and Hirota, Toshiaki, 5,542,393, Cl. 123-491.000.

Takahashi, Kenichi: *See*—
Shimuta, Masanori; Takahashi, Toru; Abe, Hisato; Takahashi, Kenichi; Kurata, Akira; and Aoki, Osamu, 5,543,482, Cl. 526-289.000.

Takahashi, Kiyobumi; and Nakahama, Teturo, to Nitto Chemical Industry Co., Ltd. Process for preparing amino-polycarboxylic acids or salts thereof. 5,543,566, Cl. 562-571.000.

Takahashi, Makoto: *See*—
Suzuki, Makoto; Aoki, Masahiro; Takahashi, Makoto; and Taniwatari, Tsuyoshi, 5,543,353, Cl. 437-127.000.

Takahashi, Masaetsu: *See*—
Kimura, Yuji; Ohta, Eiichi; Kondo, Hitoshi; Takahashi, Masaetsu; Kameyama, Kenji; and Yamada, Katsuyuki, 5,543,945, Cl. 359-55.000.

Takahashi, Masaharu: *See*—
Takita, Kenichi; and Takahashi, Masaharu, 5,543,450, Cl. 524-190.000.

Takahashi, Nobukazu; Hani, Tsutomu; Kohara, Teiji; and Natsuume, Tadao, to Nippon Zeon Co., Ltd. Thermoplastic saturated norbornene resin phase plate. 5,543,948, Cl. 359-73.000.

Takahashi, Shigeru: *See*—
Yokoyama, Yuji; Akioka, Takashi; Iwamura, Masahiro; Hiraishi, Atsushi; Kobayashi, Yutaka; Yamauchi, Tatsumi; Takahashi, Shigeru; Gotou, Nobuyuki; and Ide, Akira, 5,544,125, Cl. 365-230.060.

Takahashi, Teruo: *See*—
Nakamura, Yoshikatsu; Kawamura, Osamu; Takahashi, Teruo; and Yamamoto, Shinichi, 5,542,990, Cl. 148-319.000.

Takahashi, Tokuji: *See*—
Kamei, Takahiro; Hinosawa, Shinji; Takahashi, Tokuji; Terada, Yoshiji; Nakajima, Takeaki; and Sakata, Yoshiyasu, 5,542,707, Cl. 280-834.000.

Takahashi, Toru: *See*—
Shimuta, Masanori; Takahashi, Toru; Abe, Hisato; Takahashi, Kenichi; Kurata, Akira; and Aoki, Osamu, 5,543,482, Cl. 526-289.000.

Takahashi, Toshiyuki: *See*—
Mizuno, Tomoko; Takahashi, Toshiyuki; Yamaguchi, Hiroshi; and Hisamatsu, Nobuaki, 5,544,130, Cl. 369-1.000.

Takahashi, Yusuke: *See*—
Kobayashi, Yasumi; Matsui, Kuniyuki; Hirao, Yasuhiro; Takeuchi, Kousuke; Kayaki, Hiroshi; Takahashi, Yusuke; Tanaka, Toshiharu; Kiyose, Isao; and Shibata, Kenichi, 5,543,757, Cl. 333-195.000.

Takahsta, Toshio; Nakazawa, Shinsuke; Iochi, Atsushi; Kuriki, Hiroshi; and Gotoh, Kenichi, to Nissan Motor Co., Ltd. Leak test system for vaporized fuel treatment mechanism. 5,542,397, Cl. 123-520.000.

Takai, Hideyuki: *See*—
Suzuki, Koichi; Takai, Hideyuki; Miyazaki, Hajime; Sugiyama, Satomi; and Kunieda, Mitsuhiro, 5,543,257, Cl. 430-58.000.

Takaichi, Hiroshi: *See*—
Murakami, Masato; Takaichi, Hiroshi; Tanaka, Shoji; and Sakai, Naomichi, 5,543,768, Cl. 335-216.000.

Takaku, Syoji: *See*—
Kudoh, Mituo; Fukushima, Toshihiko; Itoh, Masaaki; Uchida, Mari; Matsushima, Hiroaki; Kogure, Hiroshi; and Takaku, Syoji, 5,542,271, Cl. 62-502.000.

Takakura, Eiichi, to Sharp Kabushiki Kaisha. Digital recording and/or reproducing apparatus which rearranges error correction blocks representing video signal and corresponding to data blocks of image represented by video signal. 5,543,928, Cl. 358-335.000.

Takakura, Noburu: *See*—
Uzawa, Shigeyuki; Nakai, Akiya; Imaizumi, Masaaki; Tanaka, Hiroshi; Takakura, Noburu; and Kaneko, Yoshio, 5,543,921, Cl. 356-401.000.

Takamoto, Katsuhiro: *See*—
Hata, Kazuyoshi; Maekawa, Yukio; Takamoto, Katsuhiro; and Saka, Manami, 5,543,970, Cl. 359-690.000.

Takano, Hajime, to NEC Corporation. Video data management method and apparatus. 5,543,930, Cl. 358-335.000.

Takano, Shinji: *See*—
Koui, Tomoaki; and Takano, Shinji, 5,543,957, Cl. 359-245.000.

Takano, Yoshiaki: *See*—
Kato, Tomokazu; Araki, Kazuhiro; Takano, Yoshiaki; Maruta, Syuzi; Nomura, Keiichi; Nagatani, Kentaro; Noda, Takashi; and Kishimoto, Hiroyuki, 5,543,907, Cl. 355-313.000.

Takashi, Shinya; and Tanaka, Nobuyuki, to Olympus Optical Co., Ltd. Means for controlling driving of a driving fork and take-up spool for automatic feeding and rewinding of a film in a camera. 5,543,877, Cl. 354-173.100.

Takasugi, Atsushi, to Oki Electric Industry Co., Ltd. Semiconductor memory device having volatile storage unit and non-volatile storage unit. 5,544,096, Cl. 365-149.000.

Takata, Kousuke: *See*—
Morinaga, Masazumi; and Takata, Kousuke, 5,543,579, Cl. 84-701.000.

Takaya, Seiji: *See*—
Shibata, Jun; Obayashi, Hiroaki; Kimura, Makoto; Fukuzumi, Shuzo; Yoshikawa, Hironori; Hitotsumatsu, Atsushi; Hashimoto, Yukio; Yamanoi, Toshimi; and Takaya, Seiji, 5,542,700, Cl. 280-735.000.

Takebayashi, Kazuaki: *See*—
Okamoto, Hidenori; and Takebayashi, Kazuaki, 5,543,031, Cl. 205-564.000.

Takeda Chemical Industries, Ltd.: *See*—
Kitano, Kazuaki; Morita, Shigeru; Kuriyama, Masato; and Maejima, Kazutaka, 5,543,322, Cl. 435-252.300.

Takeda, Fuchio; and Ohta, Atsushi, to Ricoh Company, Ltd. Developing device for an image forming apparatus. 5,543,902, Cl. 355-259.000.
Takeda, Isoshi; and Shimada, Yoshikazu, to Rohm Co., Ltd. Phase shifting circuit. 5,543,742, Cl. 327-232.000.
Takeda, Keiso: *See*—
Ichinose, Hiroki; Sadakane, Shinji; Takeda, Keiso; and Kojima, Susumu, 5,542,388, Cl. 123-336.000.
Takeda, Kenji: *See*—
Koike, Hideki; and Takeda, Kenji, 5,543,113, Cl. 422-83.000.
Takeda, Nobuhiko; and Kojima, Yasuhiro, to Aisin Seiki Kabushiki Kaisha. Vehicle seat apparatus including a rotatable seat back. 5,542,745, Cl. 297-378.120.
Takeda, Tomoyuki: *See*—
Terajima, Hisao; Koizumi, Shigeru; Nakayama, Toru; Takeda, Tomoyuki; Uno, Hiromichi; Nakagawa, Kaori; Shimizu, Hideki; and Morita, Mitsuo, 5,544,234, Cl. 379-100.000.
Takeda, Toshiyuki, to Ando Electric Co., Ltd. Variable wavelength light source. 5,544,183, Cl. 372-38.000.
Takeda, Yuji: *See*—
Kawaki, Takao; Amagai, Akikazu; Yamada, Toshiaki; Harada, Hidefumi; Ban, Hajime; Takeda, Yuji; and Yamamoto, Koji, 5,543,474, Cl. 525-440.000.
Takegata, Setsuko: *See*—
Nakai, Satoru; Kaneta, Mayumi; Kikumoto, Yoshikazu; Hong, Yeong-Man; Kawai, Kazuyoshi; Takegata, Setsuko; Ishii, Kiyoshi; Yanagihara, Yasuo; and Hirai, Yoshikatsu, 5,543,140, Cl. 424-85.200.
Takemoto, Hajime: *See*—
Kadowaki, Toshio; Takemoto, Hajime; and Yamaguchi, Shojiro, 5,544,217, Cl. 378-198.000.
Takemoto, Takeshi: *See*—
Doi, Toshio; Hayashi, Takehisa; Ishibashi, Kenichi; and Takemoto, Takeshi, 5,544,340, Cl. 395-445.000.
Takemura, Yasuhiko: *See*—
Mase, Akira; Hiroki, Masaaki; Takemura, Yasuhiko; and Yamazaki, Shunpei, 5,543,947, Cl. 359-84.000.
Takeshita, Takuo: *See*—
Ishiyama, Kouichi; Igarashi, Kazunori; Komada, Norikazu; Takeshita, Takuo; and Ookubo, Kiyoyuki, 5,543,070, Cl. 252-62.590.
Takeuchi, Akihiko: *See*—
Kato, Motoi; Takeuchi, Akihiko; Ochiai, Toshihiko; Miyashiro, Toshiaki; Kabeya, Nobuaki; Suzuki, Takehiko; and Kume, Takao, 5,543,904, Cl. 355-285.000.
Takeuchi, Esther S.; and Pyszczek, Michael F., to Wilson Greatbatch Ltd. Aqueous blended electrode material for use in electrochemical cells and method of manufacture. 5,543,249, Cl. 429-217.000.
Takeuchi, Koso; and Suesada, Kunio, to Matsushita Electric Industrial Co., Ltd. Apparatus and method for respectively recording digital video and audio signals in both ends portions and middle portion of each inclined track of magnetic tape. 5,543,934, Cl. 358-341.000.
Takeuchi, Kousuke: *See*—
Kobayashi, Yasumi; Matsui, Kuniyuki; Hirao, Yasuhiro; Takeuchi, Kousuke; Kayaki, Hiroshi; Takahashi, Yusuke; Tanaka, Toshiharu; Kiyose, Isao; and Shibata, Kenichi, 5,543,757, Cl. 333-195.000.
Takeuchi, Mizutomo; and Tomotsu, Norio, to Idemitsu Kosan Co., Ltd. Process for producing a styrenic polymer. 5,543,481, Cl. 526-126.000.
Takeuchi, Yoshihiro: *See*—
Machida, Kiyosada; Imura, Yoshio; and Takeuchi, Yoshihiro, 5,543,875, Cl. 354-149.100.
Takezawa, Tetsuo: *See*—
Shinoda, Toshiki; Takezawa, Tetsuo; and Noguchi, Shigeru, 5,543,256, Cl. 430-22.000.
Takiar, Hem P.: *See*—
Sutherland, James; Garverick, Timothy L.; Takiar, Hem P.; and Reyling, George F., Jr., 5,543,640, Cl. 257-202.000.
Takiguchi, Hiroshi: *See*—
Kumagai, Kajuaki; Takiguchi, Hiroshi; and Abe, Shigeru, 5,543,995, Cl. 361-65.000.
Takiguchi, Tohru; and Goto, Katsuhiko, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor laser device having a high emission efficiency and a large modulation bandwidth. 5,544,188, Cl. 372-45.000.
Takiguchi, Toshihiko: *See*—
Kashihara, Hideki; Nishimura, Akira; and Takiguchi, Toshihiko, 5,542,629, Cl. 244-137.200.
Takimoto, Hiroshi: *See*—
Hirasa, Takashi; Takimoto, Hiroshi; and Mise, Nobutake, 5,542,969, Cl. 106-20.00C.
Miura, Konoe; Takimoto, Hiroshi; Ohta, Tokuya; and Kobayashi, Masatsune, 5,542,970, Cl. 106-20.00D.
Takimoto, Misao; Hiyama, Tooru; Sasaki, Tetsuo; and Ishii, Tatsuki, to Hitachi, Ltd. System and method for optimizing delays in semiconductor circuits. 5,544,068, Cl. 364-489.000.
Takishima, Suguru; Okuda, Isao; and Morita, Takashi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Optical head structure having compactly arranged parts. 5,544,144, Cl. 369-112.000.
Takita, Kenichi; and Takahashi, Masaharu, to Shin-Etsu Chemical Co., Ltd. Nonflammable silicone rubber compositions. 5,543,450, Cl. 524-190.000.
Takizawa, Minoru: *See*—
Fukutomi, Takashi; Takizawa, Minoru; and Nakamura, Michiei, 5,543,045, Cl. 210-490.000.
Takubo, Chiaki, to Kabushiki Kaisha Toshiba. Semiconductor device and BGA package. 5,543,663, Cl. 257-720.000.
Talbert, Lloyd G.; and Brazil, Steven M., to Alumina Ceramics Co. (ACI). Graphite-loaded silicon carbide. 5,543,368, Cl. 501-90.000.
Talesfore, Nicholas F.: *See*—
Blaney, Timothy J.; Smith, Ronald A.; and Talesfore, Nicholas F., 5,544,011, Cl. 361-683.000.
Taligent, Inc.: *See*—
Milne, Steven H.; Tindell, James M.; Tobias, John C., II; Dilts, Michael R.; and Edelman, Bradley A., 5,544,297, Cl. 395-154.000.
Nguyen, Frank T., 5,544,302, Cl. 395-161.000.
Orton, Debra L.; Kraus, William F.; and Gamma, Erich, 5,544,301, Cl. 395-157.000.
Talley, Lloyd A.: *See*—
Hoffa, Jack L.; and Talley, Lloyd A., 5,542,592, Cl. 226-118.000.
Tam, Tony T.: *See*—
Yuen, Henry C.; Kwoh, Daniel S.; Leung, Wing P.; and Tam, Tony T., 5,543,852, Cl. 348-478.000.
Tam, Wilson, to Du Pont de Nemours, E. I., and Company. Monodentate phosphite and nickel catalyst composition for monoolefin hydrocyanation. 5,543,536, Cl. 556-13.000.
Tamai, Yutaka; Shimoda, Yoshiaki; and Tsukamoto, Kazuhiro, to Kabushiki Kaisha Kawai Gakki Seisa Kusho. Keyboard apparatus for electronic musical instrument. 5,542,332, Cl. 84-435.000.
Tamegai, Tsuyoshi: *See*—
Brady, Michael J.; Krusin-Elbaum, Lia; Masselink, William T.; Santhanam, Padmanabhan; and Tamegai, Tsuyoshi, 5,543,988, Cl. 360-112.000.
Tamfelt Corp.: *See*—
Jermo, Olli A., 5,543,015, Cl. 162-358.400.
Tan, Siew K.: *See*—
Lim, Samuel S. S.; and Tan, Siew K., 5,543,725, Cl. 324-755.000.
Tanabe Seiyaku Co., Ltd.: *See*—
Ishida, Akihiko; Homma, Koichi; Yato, Michihisa; Nishiyama, Shinsuke; and Okumura, Fumikazu, 5,543,409, Cl. 514-247.000.
Tanaka, Hatsuyuki; Sato, Mitsuru; Nakayama, Toshimasa; and Komano, Hiroshi, to Tokyo Ohka Kogyo Co., Ltd. Developer solution for actinic ray-sensitive resist. 5,543,268, Cl. 430-331.000.
Tanaka, Hideki: *See*—
Nakakura, Yasushi; Tanaka, Hideki; Sano, Akira; Mogi, Akio; Miyamoto, Matsuhiro; and Suzuki, Kazunari, 5,543,189, Cl. 428-36.800.
Tanaka, Hiroshi: *See*—
Uzawa, Shigeyuki; Nakai, Akiya; Imaizumi, Masaaki; Tanaka, Hiroshi; Takakura, Noburu; and Kaneko, Yoshio, 5,543,921, Cl. 356-401.000.
Tanaka, Junichi: *See*—
Kouzai, Keiji; and Tanaka, Junichi, 5,542,662, Cl. 273-58.0BA.
Tanaka, Kenji: *See*—
Norizuki, Reiko; Hyodo, Ryuji; Tanaka, Kenji; Sekihata, Osamu; Hatta, Hiroyuki; Eda, Susumu; and Oomura, Katsumi, 5,544,169, Cl. 370-60.100.
Tanaka, Nobuyuki: *See*—
Takashi, Shinya; and Tanaka, Nobuyuki, 5,543,877, Cl. 354-173.100.
Tanaka, Shigehisa: *See*—
Nakamura, Hitoshi; Hanatani, Shoichi; Tanaka, Shigehisa; Ohtoshi, Tsukuru; Ishida, Koji; and Matsuoka, Yausunobu, 5,543,629, Cl. 257-21.000.
Tanaka, Shoji: *See*—
Murakami, Masato; Takaichi, Hiroshi; Tanaka, Shoji; and Sakai, Naomichi, 5,543,768, Cl. 335-216.000.
Tanaka, Susumu: *See*—
Machida, Junji; Yoshida, Masazumi; and Tanaka, Susumu, 5,542,985, Cl. 134-38.000.
Tanaka, Tadashi; Sakamoto, Masaaki; Yamamoto, Koichi; and Kitagawa, Koji, to Daido Metal Company, Ltd. Multi-layered slide bearing material. 5,543,236, Cl. 428-614.000.
Tanaka, Takashi: *See*—
Fuei, Naoki; and Tanaka, Takashi, 5,543,473, Cl. 525-399.000.
Tanaka, Toshiharu: *See*—
Kobayashi, Yasumi; Matsui, Kuniyuki; Hirao, Yasuhiro; Takeuchi, Kousuke; Kayaki, Hiroshi; Takahashi, Yusuke; Tanaka, Toshiharu; Kiyose, Isao; and Shibata, Kenichi, 5,543,757, Cl. 333-195.000.
Tanaka, Toshiyuki: *See*—
Yokota, Koji; Fukui, Masayuki; and Tanaka, Toshiyuki, 5,543,124, Cl. 423-239.100.
Tanaka, Yoneta; and Okada, Shoichi, to Ushiodenki Kabushiki Kaisha. Process and device for adjusting the distance between a workpiece and a mask. 5,543,890, Cl. 355-53.000.
Tanaka, Yoshimasa: *See*—
Watanabe, Kazuo; Okuda, Masatoshi; Aoyama, Shigeo; and Tanaka, Yoshimasa, 5,543,382, Cl. 503-224.000.
Tanaka, Yoshinori: *See*—
Saito, Makoto; and Tanaka, Yoshinori, 5,542,229, Cl. 52-721.500.
Tandon, Jagdish C.: *See*—
Hosier, Paul A.; and Tandon, Jagdish C., 5,543,838, Cl. 348-311.000.
Tani, Hiroshi; Ishihara, Heigo; and Matsumoto, Hiroyuki, to Hitachi, Ltd. Magnetic recording medium having a protective layer which includes high and low surface energy regions and a lubricant. 5,543,203, Cl. 428-156.000.
Tani, Nobuhiro: *See*—
Aoki, Harumi; Tani, Nobuhiro; and Sawanobori, Keiji, 5,543,837, Cl. 348-264.000.
Tanigaki, Masanobu: *See*—

Kayane, Shigeto; Kawai, Takashi; Sakata, Masaru; Imamura, Takashi; Tanigaki, Masanobu; and Kurosaki, Tomihiro, 5,543,310, Cl. 435-180.000.
Taniguchi, Osamu: *See*—
Hanyu, Yukio; Tsuboyama, Akira; Taniguchi, Osamu; Mihara, Tadashi; Nakamura, Katsutoshi; and Mori, Sunao, 5,543,943, Cl. 359-43.000.
Taniguchi, Shozo: *See*—
Suzuki, Takehiko; Taniguchi, Shozo; Kanemaru, Kohji; Sato, Yoshiyuki; and Enamito, Akihiko, 5,544,074, Cl. 364-508.000.
Taniguchi, Yukio; Hotta, Tsuyoshi; Kuwabara, Yuko; Morita, Hideaki; and Segawa, Toshikazu, to Dai Nippon Printing Co., Ltd. Molded relief bologram. 5,543,228, Cl. 428-429.000.
Taniwatari, Tsuyoshi: *See*—
Suzuki, Makoto; Aoki, Masahiro; Takahashi, Makoto; and Taniwatari, Tsuyoshi, 5,543,353, Cl. 437-127.000.
Tanner, Cameron W.: *See*—
Virkar, Anil V.; Fung, Kuan-Zong; and Tanner, Cameron W., 5,543,239, Cl. 429-33.000.
Tanox Biosystems, Inc.: *See*—
Chang, Tse W., 5,543,144, Cl. 424-133.100.
Tao, Jinghan; and Merrison, John, to Allen-Bradley Company, Inc. Method and apparatus used with AC motor for detecting unbalance. 5,543,698, Cl. 318-611.000.
Tappel, James G., to Stryker Corporation. Portable mattress for treating decubitus ulcers. 5,542,136, Cl. 5-710.000.
Tappert, Charles C.: *See*—
Chefalas, Thomas E.; and Tappert, Charles C., 5,544,260, Cl. 382-187.000.
Target Therapeutics, Inc.: *See*—
Chee, Hiram; Glowacki, Mark; and Schaller, Laurent, 5,542,937, Cl. 604-280.000.
Tarnoski, Charles P.: *See*—
Decker, Owen H.; and Tarnoski, Charles P., 5,543,464, Cl. 525-176.000.
Tarozzi, Richard A., to Binney & Smith, Inc. Easel. 5,542,640, Cl. 248-460.000.
Tarulli, Joseph R.: *See*—
Gemill, Roderique S.; and Tarulli, Joseph R., 5,542,377, Cl. 119-753.000.
Tasset, Diane: *See*—
Gold, Larry; and Tasset, Diane, 5,543,293, Cl. 435-6.000.
Tatavoosian, Vanacan; Heistern, Robert P.; and Lombardo, John J., to Eaton Corporation. Display system. 5,544,019, Cl. 362-23.000.
Tateishi, Keiichi; Ishige, Sadao; and Kamikawa, Hiroshi, to Fuji Photo Film Co., Ltd. Diazo heat-sensitive recording material. 5,543,260, Cl. 430-138.000.
Tateyama, Eiji, deceased (by Yosiko Tateyama, legal representative): *See*—
Nishioka, Masato; Hamada, Akira; Tateyama, Eiji, deceased; Nishizawa, Nobuyoshi; and Tsutsumi, Masaru, 5,543,241, Cl. 429-39.000.
Tateyama, Yosiko, legal representative: *See*—
Nishioka, Masato; Hamada, Akira; Tateyama, Eiji, deceased; Nishizawa, Nobuyoshi; and Tsutsumi, Masaru, 5,543,241, Cl. 429-39.000.
Tatsu, Haruyoshi: *See*—
Yamamoto, Yuichi; and Tatsu, Haruyoshi, 5,543,468, Cl. 525-245.000.
Tawaki, Hiroki: *See*—
Kaimai, Takashi; Tawaki, Hiroki; Yokoo, Sumio; and Arakawa, Yoshie, 5,543,068, Cl. 252-68.000.
Tayama, Suchiro: *See*—
Kitaike, Yukio; Hatakeyama, Hiroki; Tayama, Suchiro; and Nakagawa, Kazuhiko, 5,543,463, Cl. 525-79.000.
Taylor, Antoinette J.: *See*—
Carrig, Timothy J.; Taylor, Antoinette J.; and Stewart, Kevin R., 5,543,960, Cl. 359-326.000.
Taylor, Bradley K., to Du Pont de Nemours, E. I., and Company. Method of recording plural holographic images into a holographic recording material by temporal interleaving. 5,543,251, Cl. 430-1.000.
Taylor, George E. Method and apparatus for extracting meat from crab claws. 5,542,877, Cl. 452-7.000.
Taylor, Junius E., to Engineering & Research Associates, Inc. RF Generator for plastic tubing sealers. 5,543,604, Cl. 219-643.000.
Taylor, Roy Y.; Doty, William A.; Kroth, David J.; and Schindler, Roland R., to Eastman Kodak Company. Depth image apparatus and method with angularly changing display information. 5,543,964, Cl. 359-463.000.
TDK Corporation: *See*—
Iwaya, Shouichi; Yahagi, Masahiro; Kudou, Hitoshi; Itou, Shigeru; Fujiwara, Isao; Ogasawara, Tadashi; Morita, Makoto; Taguchi, Teruo; and Sasaki, Setuo, 5,544,002, Cl. 361-302.000.
Teac Corporation: *See*—
Matsumoto, Kenji, 5,543,987, Cl. 360-105.000.
Teague, Bruce H.: *See*—
Borland, Mark S.; and Teague, Bruce H., 5,542,403, Cl. 123-686.000.
Teays Quality Molding, Inc.: *See*—
Kelly, Kenneth W.; Malone, Anthony W.; and Humble, Jeffrey S., 5,542,435, Cl. 128-846.000.
Tebbs, Brice W.: *See*—
Gilley, Glenn G.; and Tebbs, Brice W., 5,544,291, Cl. 395-123.000.
Technology Licensing Corporation: *See*—
Koether, Bernard G.; and Scott, Paul D., 5,542,344, Cl. 99-330.000.
Tecsyn, Inc.: *See*—
Moore, Donal; and Pringle, Colin D., 5,542,591, Cl. 224-545.000.
Teder, Paul M.; Ewerbring, Lars–Magnus; and Brismark, Lars G., to Telefonaktiebolaget LM Ericsson. Direct sequence CDMA coherent uplink detector. 5,544,156, Cl. 370-18.000.
Teece, Howard J.: *See*—
Harradine, Vincent C.; Teece, Howard J.; Ludgate, Michael J.; Bhandari, Rajan; and Walker, Gavin A., 5,543,861, Cl. 348-718.000.
Te'eni, Moshe. Flexible protective membrane particularly useful for waterproofing and protecting reinforced concrete bodies and metal pipes. 5,543,188, Cl. 428-36.200.
Teetotum Limited: *See*—
Kennedy, Gerard P.; and Donnelly, John P. M., 5,542,835, Cl. 425-136.000.
Teffenhart, John M.: *See*—
McDermott, Keith J.; Teffenhart, John M.; Shefer, Shmuel D.; Greene, David A.; Smith, Leslie C.; and Beck, Charles E. J., 5,543,439, Cl. 523-102.000.
Teh Yor Industrial Co., Ltd.: *See*—
Huang, Chung-Chen, 5,542,461, Cl. 160-178.100.
Telectronics Pacing Systems, Inc.: *See*—
Farrugia, Steven; Yee, Hansen; and Nickolls, Peter, 5,542,430, Cl. 128-705.000.
Telefonaktiebolaget Ericsson: *See*—
Löf, C. Stefan L., 5,543,774, Cl. 337-297.000.
Telefonaktiebolaget LM Ericsson: *See*—
Glitho, Roch, 5,544,154, Cl. 370-17.000.
Jonsson, Bjorn E. R.; and Ghisler, Walter, 5,544,224, Cl. 379-58.000.
Sundström, Jan I.; and Lindbeck, Per A., 5,544,033, Cl. 363-40.000.
Teder, Paul M.; Ewerbring, Lars–Magnus; and Brismark, Lars G., 5,544,156, Cl. 370-18.000.
Thorén, Hans C., 5,543,704, Cl. 323-222.000.
Telschow, Jeffrey E., to Akzo Nobel N.V. Bis(pentaerythritol phosphate alcohol) hydrogen phosphonate. 5,543,544, Cl. 558-119.000.
Temic Bayern-Chemie Airbag GmbH: *See*—
Zeuner, Siegfried; Sans, Joachim; Dölling, Uwe; and Rödig, Karl-Heinz, 5,542,997, Cl. 149-35.000.
Tenenbaum, Jeffrey: *See*—
Hochstein, Peter A.; Tenenbaum, Jeffrey; and Xydis, Thomas G., 5,543,797, Cl. 342-42.000.
Teng, Ganghui: *See*—
Jones, Frank N.; Du, Cong; Teng, Ganghui; Dimian, Adel F.; and Wang, Daozhang, 5,543,475, Cl. 525-444.000.
Jones, Frank N.; Du, Cong; Teng, Ganghui; Dimian, Adel F.; and Wang, Daozhang, 5,543,476, Cl. 525-444.000.
Teng, Min: *See*—
Vuligonda, Vidyasagar; Teng, Min; Beard, Richard L.; Johnson, Alan T.; Lin, Yuan; and Chandraratna, Roshantha A., 5,543,534, Cl. 549-421.000.
Ten Kate, Warner R. T., to U.S. Philips Corporation. Transmission and reception of a first and a second main signal component. 5,544,247, Cl. 381-27.000.
Tenryu Technics Co., Ltd.: *See*—
Ozawa, Kazushige, 5,542,726, Cl. 294-64.100.
Tepfer, David A.: *See*—
Slightom, Jerry L.; and Tepfer, David A., 5,543,501, Cl. 530-350.000.
Terada, Hiroshi: *See*—
Yamamoto, Hajime; and Terada, Hiroshi, 5,543,901, Cl. 355-246.000.
Terada, Masahiro; Kamae, Hirosuke; Yusawa, Motoyasu; Watanabe, Kazuyuki; and Saito, Mitsuo, to Nissan Motor Co., Ltd.; and Mitsui Petrochemical Industries, Ltd. Method of removing coating films. 5,542,982, Cl. 134-5.000.
Terada, Yasushi: *See*—
Nakayama, Takeshi; Terada, Yasushi; Kobayashi, Kazuo; Hayashikoshi, Masanori; and Miyawaki, Yoshikazu, 5,544,117, Cl. 365-185.220.
Terada, Yoshiji: *See*—
Kamei, Takahiro; Hinosawa, Shinji; Takahashi, Tokuji; Terada, Yoshiji; Nakajima, Takeaki; and Sakata, Yoshiyasu, 5,542,707, Cl. 280-834.000.
Terajima, Hisao; Koizumi, Shigeru; Nakayama, Toru; Takeda, Tomoyuki; Uno, Hiromichi; Nakagawa, Kaori; Shimizu, Hideki; and Morita, Mitsuo, to Canon Kabushiki Kaisha. Facsimile apparatus with automatic answering telephone function, and communication method in said apparatus. 5,544,234, Cl. 379-100.000.
Teramura, Akira: *See*—
Yoshimura, Mitsuhiro; Fujita, Kazunobu; and Teramura, Akira, 5,542,220, Cl. 52-167.100.
Terra International, Inc.: *See*—
Brennan, Joseph T., 5,543,384, Cl. 504-116.000.
Terrill, Richard S.: *See*—
Cliff, Richard G.; Reddy, Srinivas T.; Veenstra, Kerry; Papaliolios, Andreas; Sung, Chiakang; Terrill, Richard S.; Raman, Rina; and Bielby, Robert R. N., 5,543,730, Cl. 326-38.000.
Teruhiko, Nishiya: *See*—
Richard, Nötzel; Jiro, Temmyo; Toshiaki, Tamamura; Mitsuru, Sugo; Eiichi, Kuramochi; and Teruhiko, Nishiya, 5,543,354, Cl. 437-129.000.
Terui, Yasuaki: *See*—
Hirai, Yoshihiko; Morimoto, Kiyoshi; Terui, Yasuaki; Niwa, Masaaki; Yasui, Juro; Okada, Kenji; Udagawa, Masaharu; and Yuki, Koichiro, 5,543,351, Cl. 437-063.000.
Tesch, Gunter. Wood covering, particularly wood floor covering. 5,543,193, Cl. 428-285.000.

Tescorp Seismic Products, Inc.: *See—*
Wood, Richard G., 5,542,856, Cl. 439-281.000.
Teshima, Kenzo: *See—*
Hatakeyama, Yoshiharu; Fukuoka, Hiroki; and Teshima, Kenzo, 5,542,580, Cl. 222-183.000.
Test Projects, Inc.: *See—*
Callewaert, Dennis J., 5,542,764, Cl. 374-121.000.
Texas Instruments Deutschland GmbH: *See—*
Schuermann, Josef H., 5,543,798, Cl. 342-42.000.
Texas Instruments Incorporated: *See—*
Casasanta, Joseph A.; Andresen, Bernhard H.; Satoh, Yoshinori; Keeney, Stanley C.; and Martin, Robert C., 5,544,203, Cl. 375-376.000.
Chauvel, Gerard, 5,544,104, Cl. 365-189.010.
Houston, Theodore W., 5,544,101, Cl. 365-189.020.
Kanaya, Motonori; Noguchi, Kenichi; Nagaya, Yoshiaki; and Itoh, Hisashi, 5,543,612, Cl. 250-208.100.
Wadsworth, Mark V.; Borrello, Sebastian R.; and Gooch, Roland W., 5,543,641, Cl. 257-226.000.
Wills, Kendall S.; Rodriguez, Paul A.; and Brewer, Melvin, 5,543,365, Cl. 437-226.000.
Textron Inc.: *See—*
Bell, James C., 5,542,366, Cl. 114-67.00A.
Schmitt, Karl R.; and Mosnot, David M., 5,544,023, Cl. 362-66.000.
Thacker, Brad J.: *See—*
Mulks, Martha H.; Thacker, Brad J.; and Cruz, Maria W. T., 5,543,304, Cl. 435-69.300.
Thaler, Hubert: *See—*
Sigl, Lorenz; Thaler, Hubert; and Schwetz, Karl-Alexander, 5,543,370, Cl. 501-92.000.
Thaniyavarn, Suwat, to Boeing Company, The. Phased array beam controller using integrated electro-optic circuits. 5,543,805, Cl. 342-368.000.
Theil, Fritz: *See—*
Siemensmeyer, Karl; Tschierske, Carsten; Theil, Fritz; and Joachimi, Detley, 5,543,076, Cl. 252-299.610.
Theilacker, Klaus; and Burger, Rainer, to MAN Roland Druckmaschinen AG. Draw-in device and process for feeding webs of material into a printing machine. 5,542,350, Cl. 101-228.000.
Theimer, Marvin M.; Spreitzer, Michael J.; Weiser, Mark D.; Goldstein, Richard J.; Elrod, Scott A.; Swinehart, Daniel C.; Schilit, William N.; Krivacic, Robert T.; and Want, Roy, to Xerox Corporation. System for granting ownership of device by user based on requested level of ownership, present state of the device, and the context of the device. 5,544,321, Cl. 395-200.110.
Theodor Kromer GmbH & Co. KG Spezialfabrik Fur Sicherheitsschlosser: *See—*
Heinemann, Albert, 5,542,272, Cl. 70-278.000.
Thiele Kaolin Company: *See—*
Shi, Joseph C. S.; Blue, William H.; and Bruns, Jeffrey C., 5,543,372, Cl. 501-145.000.
Thieler, Stephen M.: *See—*
Bales, Bruce M.; and Thieler, Stephen M., 5,544,237, Cl. 379-205.000.
Thomann, Mark R., to Micron Technology, Inc. Circuit and method for decreasing the cell margin during a tes: mode. 5,544,108, Cl. 365-201.000.
Thomas, Barbara J.: *See—*
Adamy, Steven T.; and Thomas, Barbara J., 5,543,073, Cl. 510-417.000.
Thomas, Gerald F.; and Hoffner, James A., to Loral Vought Systems Corporation. Broadband microwave absorber. 5,543,796, Cl. 342-4.000.
Thomas, Jeff D.: *See—*
Crompton, Dennis; Harris, Richard H.; Leonard, Herbert G.; Hufford, George, III; and Thomas, Jeff D., 5,542,152, Cl. 16-354.000.
Thomas Jefferson University: *See—*
Galkin, Benjamin M., 5,544,238, Cl. 378-207.000.
Thomas, Robert E.: *See—*
Mirchandani, Prakash K.; Thomas, Robert E.; and Cippel, Mark, 5,543,235, Cl. 428-547.000.
Thompson, Brad: *See—*
Martin, Ed; Simard, Claude; and Thompson, Brad, 5,542,976, Cl. 106-675.000.
Thompson, Craig G.: *See—*
Johnson, Thomas E.; and Thompson, Craig G., 5,542,246, Cl. 60-39.360.
Thompson, David A.: *See—*
Bajorek, Christopher H.; Glaser, Thomas W.; Klaassen, Klaas B.; Nielsen, Charles R.; Santana, George R.; Smith, Gordon J.; Thompson, David A.; and Workman, Michael L., 5,544,138, Cl. 369-54.000.
Thompson, John R.: *See—*
Bills, Gerald F.; Curotto, James E.; Dreikorn, Sarah J.; Jenkins, Rosalind G.; Liesch, Jerrold M.; Morris, Sandra A.; Thompson, John R.; Zink, Deborah L.; Jansson, Richard K.; Basilio, Angela; Diez, Teresa; Pelaez, Fernando; and Vicente, Francisca, 5,543,429, Cl. 514-468.000.
Bolessa, Evon A.; Schwartz, Robert E.; Bills, Gerald F.; Giacobbe, Robert A.; Pelaez Perez, Fernando; Arroyo, Angeles C.; Matas, Teresa D.; Fernandez, Isabel M.; Perez, Francisca V.; Mandala, Suzanne M.; Zink, Deborah L.; Thornton, Rosemary; Thompson, John R.; and Curotto, James E., 5,543,431, Cl. 514-627.000.
Thomson - C S F: *See—*
Cachier, Gérard, 5,543,765, Cl. 333-246.000.
Thomson Consumer Electronics, Inc.: *See—*
Wehmeyer, Keith R.; Logan, Robert J.; Miller, Robert H.; Augaitis, Sheila R.; and Dinwiddie, Aaron H., 5,543,857, Cl. 348-589.000.
Thomson-CSF: *See—*
Janex, Albert, 5,544,075, Cl. 364-514.00R.
Thordmark, Bo M.; and Walldén, Lars, to ASSA AB. Cylinder lock. 5,542,274, Cl. 70-495.000.
Thorén, Hans C., to Telefonaktiebolaget LM Ericsson. Pulse width modulated DC-to-DC boost converter. 5,543,704, Cl. 323-222.000.
Thorne, David L.: *See—*
Thorne, Gale H.; and Thorne, David L., 5,542,927, Cl. 604-110.000.
Thorne, Gale H.; and Thorne, David L., to Specialized Health Products, Inc. Self retracting syringe needle apparatus and methods. 5,542,927, Cl. 604-110.000.
Thornton, Rosemary: *See—*
Bolessa, Evon A.; Schwartz, Robert E.; Bills, Gerald F.; Giacobbe, Robert A.; Pelaez Perez, Fernando; Arroyo, Angeles C.; Matas, Teresa D.; Fernandez, Isabel M.; Perez, Francisca V.; Mandala, Suzanne M.; Zink, Deborah L.; Thornton, Rosemary; Thompson, John R.; and Curotto, James E., 5,543,431, Cl. 514-627.000.
Three Soma Technology Co., Ltd.: *See—*
Lin, Jui-Ming, 5,543,863, Cl. 348-835.000.
Thunderbird Technologies, Inc.: *See—*
Dennen, Michael W., 5,543,654, Cl. 257-386.000.
Thürk, Jürgen: *See—*
von Bonin, Wulf; von Gizycki, Ulrich, deceased; Leroux, Roland; Karschti, Thomas M.; and Thürk, Jürgen, 5,543,230, Cl. 428-432.000.
Thywissen, H. Joseph: *See—*
Price, Billy F.; Thywissen, H. Joseph; and Campisse, Nash, 5,542,459, Cl. 141-18.000.
Tianjin Petro-Chemical Corporation: *See—*
Sun, Xujiang; Zhang, Junmin; Wang, Tongshun; Zhang, Jun; Su, Hong; and Xia, Hongxia, 5,542,372, Cl. 117-68.000.
Tice, Bill, to ETI Systems. Control circuit for feedback, motor-operated valve. 5,543,694, Cl. 318-379.000.
Tiedemann, Edward G., Jr.; Weaver, Lindsay A., Jr.; and Padovani, Roberto, to Qualcomm Incorporated. Apparatus and method for reducing message collision between mobile stations simultaneously accessing a base station in a CDMA cellular communications system. 5,544,196, Cl. 375-200.000.
Tien, Jien-Heh J.: *See—*
Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Morton, Howard E.; Reno, Daniel S.; Sham, Hing L.; Sowin, Thomas J.; and Tien, Jien-Heh J., 5,543,549, Cl. 558-405.000.
Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Kerdesky, Francis A.; Langridge, Denton C.; Leanna, M. Robert; Lijewski, Linda M.; Melcher, Laura; Morton, Howard E.; Norbeck, Daniel W.; Reno, Daniel S.; Robbins, Timothy A.; Sham, Hing L.; Sowin, Thomas J.; Tien, Jien-heh J.; Zhao, Chen; and Scarpetti, David, 5,543,551, Cl. 560-24.000.
Tierney, Robert: *See—*
Allen, Ronald; Bae, Peter S.; Tierney, Robert; and Fukui, Kenneth D., 5,542,685, Cl. 279-2.020.
Tietze, Lutz: *See—*
Henkelmann, Jochem; and Tietze, Lutz, 5,543,568, Cl. 562-861.000.
Timm, Uwe: *See—*
Mattern-Klosson, Monika; Mundinger, Hans-Juergen; Haefner, Hans-Ulrich; and Timm, Uwe, 5,542,257, Cl. 62-55.500.
Timmermans, Josef M. K., to U.S. Philips Corporation. Playback apparatus with selective user preset control of picture presentation. 5,543,925, Cl. 358-310.000.
Timmers, Francis J.: *See—*
Patton, Jasson T.; Devore, David D.; Timmers, Francis J.; Soto, Jorge; Schmidt, Gregory F.; and Wilson, David R., 5,543,480, Cl. 526-126.000.
Timmons, Scott F.: *See—*
Miller, Michael A.; Timmons, Scott F.; and Barlow, Darren E., 5,543,447, Cl. 524-80.000.
Timonen, Maritta; and Rha, Chokyun, to Alko Group Ltd. Polymeric capsules, method of making the same, and foodstuffs containing the same. 5,543,162, Cl. 426-89.000.
Tindell, James M.: *See—*
Milne, Steven H.; Tindell, James M.; Tobias, John C., II; Dilts, Michael R.; and Edelman, Bradley A., 5,544,297, Cl. 395-154.000.
Tinti, Maria O.; Misiti, Domenico; Cavazza, Claudio; and Scafetta, Nazareno, to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A. Esters of acyl l-carnitines with gamma-hydroxybutyric acid and pharmaceutical compositions containing them for inhibiting neuronal degeneration and for the treatment of coma. 5,543,556, Cl. 560-170.000.
Tioxide Specialties Limited: *See—*
Dahms, Gerd H., 5,543,135, Cl. 424-059.000.
Tischhauser, Tom: *See—*
Villevieille, Jean-Marc; and Tischhauser, Tom, 5,543,802, Cl. 342-357.000.
Titan Information Systems Corporation: *See—*
An, Song H., 5,544,200, Cl. 375-344.000.
Tizzard, Anthony R.: *See—*
Buchana, William A.; Eardley, Richard A.; Tizzard, Anthony R.; and Utley, Brian G., 5,543,589, Cl. 178-18.000.
Toan, Vien V.: *See—*
Stevenson, Tyler A.; Ravichandran, Ramanathan; Holt, Mark S.; Phan, Thuy N.; Birbaum, Jean-Luc; and Toan, Vien V., 5,543,518, Cl. 544-215.000.
Tobias, John C., II: *See—*
Milne, Steven H.; Tindell, James M.; Tobias, John C., II; Dilts, Michael R.; and Edelman, Bradley A., 5,544,297, Cl. 395-154.000.

Tobin, Philip J.: *See—*
Nguyen, Bich-Yen; McNelly, Thomas F.; Tobin, Philip J.; and Hayden, James D., 5,543,635, Cl. 257-66.000.
Tobita, Yoichi; and Tokami, Kenji, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device including stabilizing capacitive elements each having a MOS capacitor structure. 5,544,102, Cl. 365-189.090.
Tochacek, Miroslav; Courteau, Donald M.; and Patel, Vinu, to Minnesota Mining and Manufacturing Company. Stitchbonded articles and method of making same. 5,543,004, Cl. 156-93.000.
Toczycki, Jan: *See—*
Van Erden, Donald L.; and Toczycki, Jan, 5,542,508, Cl. 188-290.000.
Toda Kogyo Corporation: *See—*
Hayashi, Kazuyuki; Ohsugi, Minoru; Morii, Hiroko; and Sugita, Norio, 5,543,069, Cl. 252-62.580.
Toda, Yuji: *See—*
Abe, Masahiro; Sakou, Hiroshi; Sagawa, Hirohiko; Ichikawa, Akira; Inoue, Kiyoshi; Arai, Kiyoshi; Shimura, Takanori; and Toda, Yuji, 5,544,050, Cl. 364-419.130.
Todd, Robert R.: *See—*
Ashcroft, Dale A.; and Todd, Robert R., 5,542,814, Cl. 414-786.000.
Togo Seisakusho Corp.: *See—*
Kimura, Akira; Muto, Mineo; Asano, Kanemitsu; Nakano, Susumu; and Nakahama, Koji, 5,542,155, Cl. 24-20.00R.
Tokami, Kenji: *See—*
Tobita, Yoichi; and Tokami, Kenji, 5,544,102, Cl. 365-189.090.
Tokunoh, Futoshi; and Satoh, Katsumi, to Mitsubishi Denki Kabushiki Kaisha. Process for adhesively attaching a semiconductor device to an electrode plate. 5,543,363, Cl. 437-208.000.
Tokura, Norihito: *See—*
Kusase, Shin; Mitani, Kenzo; Umeda, Atsushi; Tokura, Norihito; and Sato, Hirohide, 5,543,703, Cl. 322-16.000.
Tokuyama Corporation: *See—*
Nakakura, Yasushi; Tanaka, Hideki; Sano, Akira; Mogi, Akio; Miyamoto, Matsuhiro; and Suzuki, Kazunari, 5,543,189, Cl. 428-36.800.
Tokuyama, Shunji: *See—*
Watanabe, Atsuji; Ohshita, Youichi; Ohno, Masatomo; Tsukushi, Masanori; and Tokuyama, Shunji, 5,543,597, Cl. 218-60.000.
Tokyo Electron Kabushiki Kaisha: *See—*
Kawakami, Satoru; Suzuki, Tsuyoshi; Arami, Junichi; and Deguchi, Yoichi, 5,542,559, Cl. 216-67.000.
Tokyo Gas Co., Ltd.: *See—*
Uchida, Hiroshi; Takahashi, Iruru; Yamaseki, Ken-ichi; and Satokawa, Shigeo, 5,543,125, Cl. 423-239.200.
Tokyo Ohka Kogyo Co., Ltd.: *See—*
Tanaka, Hatsuyuki; Sato, Mitsuru; Nakayama, Toshimasa; and Komano, Hiroshi, 5,543,268, Cl. 430-331.000.
Tomihari, Yoshinori, to NEC Corporation. Field emission type cathode structure for cathode-ray tube. 5,543,680, Cl. 313-336.000.
Tominaga, Michiaki: *See—*
Nakai, Satoru; Aihara, Koutoku; Mori, Hitomi; Tominaga, Michiaki; Adachi, Masakazu; Ichikawa, Hiroyuki; Akamatsu, Seiji; and Saito, Fumio, 5,543,412, Cl. 514-255.000.
Tomisawa, Naoki, to Unisia Jecs Corporation. Vehicle engine refueling detection apparatus and method and fuel supply apparatus and method. 5,542,394, Cl. 123-491.000.
Tomita, Mamoru; Shimamura, Seiichi; Fukuwatari, Yasuo; and Shinoda, Ichizo, to Morinaga Milk Industry Co., Ltd. Digestive tract cell activating agent of EGF and lactoferrin. 5,543,392, Cl. 514-8.000.
Tomoda, Terutoshi: *See—*
Morino, Seiji; Hashimoto, Eiji; and Tomoda, Terutoshi, 5,543,679, Cl. 310-316.000.
Tomotsu, Norio: *See—*
Takeuchi, Mizutomo; and Tomotsu, Norio, 5,543,481, Cl. 526-126.000.
Tonali S.P.A.: *See—*
Colombo, Attilio, 5,542,211, Cl. 49-42.000.
Tonen Corporation: *See—*
Saito, Makoto; and Tanaka, Yoshinori, 5,542,229, Cl. 52-721.500.
Toner, John L.: *See—*
Baker, Edward J.; Lee, Robert W.; Toner, John L.; and Illig, Carl R., 5,543,132, Cl. 424-9.411.
Tong, Minh H.: *See—*
Au, Wai-Ming W.; and Tong, Minh H., 5,543,650, Cl. 257-355.000.
Toor, Irfan A., to Itex Environmental Services, Inc. Processing of waste material. 5,542,614, Cl. 241-21.000.
Toray Industries, Inc.: *See—*
Oosedo, Hiroki; and Odagiri, Nobuyuki, 5,543,212, Cl. 428-229.000.
Torf Establishment: *See—*
Inglot, Anna; and Blach-Olszewska, Zofia, 5,543,300, Cl. 435-29.000.
Torgussen, Ole G.: *See—*
Hughes, Zephuren J.; and Torgussen, Ole G., 5,543,227, Cl. 428-425.800.
Toshiaki, Tamamura: *See—*
Richard, Nötzel; Jiro, Temmyo; Toshiaki, Tamamura; Mitsuru, Sugo; Eiichi, Kuramochi; and Teruhiko, Nishiya, 5,543,354, Cl. 437-129.000.
Toshiba Corp.: *See—*
Carroll, John T., III; Bentz, Joseph C.; and Genter, David P., 5,542,315, Cl. 74-586.000.
Toso Company, Limited: *See—*
Shiina, Nobuhiro, 5,542,464, Cl. 160-296.000.
Toth, Mike, to Carlson Tool & Machine Co. Method and apparatus for gathering and forming a tuft of brush bristles. 5,542,749, Cl. 300-4.000.
Townes, Mark G.: *See—*
Shofner, Frederick M.; Baldwin, Joseph C.; Williams, Gordon F.; and Townes, Mark G., 5,544,090, Cl. 364-552.000.
Townsend, Donald J.: *See—*
Song, Joo H.; Sundstrom, Christafor E.; Record, David W.; Townsend, Donald J.; Broderick, Kevin B.; and Schnell, Philip G., 5,543,160, Cl. 426-3.000.
Townsend, Laurace E.: *See—*
Smith, David A.; and Townsend, Laurace E., 5,543,318, Cl. 435-240.200.
Townsend, Leroy B.; Drach, John C.; and Renau, Thomas E., to University of Michigan, Regents of the. Heterocyclic thioamides and related analogs as antiviral agents with a unique mode of action. 5,543,413, Cl. 514-258.000.
Toyama, Masamichi: *See—*
Suda, Hirofumi; Toyama, Masamichi; Fujiwara, Akihiro; Yamada, Kunihiko; and Yoshimura, Katsuji, 5,543,839, Cl. 348-349.000.
Toyo Communication Equipment Co., Ltd.: *See—*
Kurosawa, Kazuo; Matsuo, Kazuto; and Minoguchi, Akira, 5,542,518, Cl. 194-206.000.
Toyo Seikan Kaisha, Ltd.: *See—*
Koyama, Masayasu; Oda, Yasuhiro; Kikuchi, Hiroaki; and Yamada, Muneki, 5,542,557, Cl. 215-347.000.
Toyoda Gosei Co., Ltd.: *See—*
Ichino, Rie; Ito, Michiyasu; Kuriyama, Yuji; and Shiraki, Kouji, 5,542,698, Cl. 280-732.000.
Miyazaki, Takeshi; Narita, Takumi; and Miyazaki, Hidekazu, 5,542,713, Cl. 285-158.000.
Toyoda, Kenji; and Minagawa, Kazushi, to Nikon Corporation. Scanner focussing method and apparatus concurrently displaying multiple partial scans with different focus settings. 5,543,833, Cl. 348-110.000.
Toyota Jidosha Kabushiki Kaisha: *See—*
Ichinose, Hiroki; Sadakane, Shinji; Takeda, Keiso; and Kojima, Susumu, 5,542,388, Cl. 123-336.000.
Morino, Seiji; Hashimoto, Eiji; and Tomoda, Terutoshi, 5,543,679, Cl. 310-316.000.
Trackl, Karl: *See—*
Sutter, Ralf; Beerstecher, Lutz; Hruza, David; Stetter-Alle, Raimund; and Trackl, Karl, 5,543,119, Cl. 422-299.000.
Transilwrap Company, Inc.: *See—*
Drower, Herbert M., 5,543,201, Cl. 428-142.000.
Treacy, Patrick J., to Huwmedica Inc. Slotted patella resection guide and stylus. 5,542,947, Cl. 606-88.000.
Trefzger, Alan R., to EIS International, Inc. System for integrating a stand alone inbound automatic call distributor and an outbound automatic call dialer. 5,544,220, Cl. 379-266.000.
Treger, Jack, to Duracell Inc. Battery tester adhesive system. 5,543,246, Cl. 429-90.000.
Trester, Paul W.: *See—*
Streckert, Holger H.; and Trester, Paul W., 5,543,183, Cl. 427-529.000.
Trice, Philip H.: *See—*
Davis, Terry L.; Hart, James A.; Russell, James F.; Sears, John W.; and Trice, Philip H., 5,544,086, Cl. 364-408.000.
Tridonic Bauelemente GmbH: *See—*
Luger, Siegfried, 5,544,037, Cl. 364-146.000.
Trilogy Communications, Inc.,: *See—*
Lique, Roger M., 5,543,000, Cl. 156-52.000.
Trinh, Toan; and Gardlik, John M., to Procter & Gamble Company, The. Solid consumer product compositions containing small particle cyclodextrin complexes. 5,543,157, Cl. 424-493.000.
Trinh, Toan: *See—*
Phan, Dean V.; Trokhan, Paul D.; Laughlin, Robert G.; and Trinh, Toan, 5,543,067, Cl. 106-287.250.
Trion Industries, Inc.: *See—*
Nagel, Thomas O., 5,542,633, Cl. 248-214.000.
Trojan Battery Company: *See—*
Brecht, William B., 5,543,243, Cl. 429-51.000.
Trokhan, Paul D.: *See—*
Phan, Dean V.; Trokhan, Paul D.; Laughlin, Robert G.; and Trinh, Toan, 5,543,067, Cl. 106-287.250.
Tropix, Inc.: *See—*
Bronstein, Irena Y.; Edwards, Brooks; and Juo, Rouh-Rong, 5,543,295, Cl. 435-6.000.
Trostad, Mitchel D.: *See—*
Vasichek, Richard A.; Vasichek, Robert J.; Somerville, Dean S.; and Trostad, Mitchel D., 5,542,320, Cl. 81-125.000.
Truck Covers, Inc.: *See—*
Burchett, Darvin; and Hubbard, Allen L., 5,542,734, Cl. 296-100.000.
Trustees of Columbia University in the City of New York, The: *See—*
Silverstein, Saul J.; Lungu, Octavian; and Wright, Thomas C., Jr., 5,543,294, Cl. 435-6.000.
TRW Inc.: *See—*
Howie, David M.; and Youssef, Abbas M., 5,543,692, Cl. 318-282.000.
Martin, Jon W., 5,542,343, Cl. 91-375.00R.
TRW Repa GmbH: *See—*
Biller, Joachim, 5,542,162, Cl. 24-641.000.
Föhl, Artur, 5,542,697, Cl. 280-806.000.
TRW Vehicle Safety Systems Inc.: *See—*

/U
1189
1
AG
6
19 96
UMI

Steffens, Charles E., Jr.; and Brown, Louis R., 5,542,696, Cl. 280-730.200.
Tsai, Ching-hung: *See*—
Sheng, Huang Y.; Tsai, Ching-hung; and Kuang, Wu J., 5,544,221, Cl. 379-7.000.
Tsai, Chun-hui, to Industrial Technology Research Institute. Field emission display provided with repair capability of defects. 5,542,866, Cl. 445-2.000.
Tsai, Chun-Hui: *See*—
Huang, Jammy Chin-Ming; and Tsai, Chun-Hui, 5,543,686, Cl. 313-497.000.
Tsang, Robert W. K.; Farash, Jeffrey A.; and Payne, Richard S., to Analog Devices, Inc. Method of forming a microstructure with bare silicon ground plane. 5,543,013, Cl. 156-643.100.
Tsang, Wen-Ghih: *See*—
Zawadzka, Agatha; Tsang, Wen-Ghih; and Brown, Robert H., 5,543,316, Cl. 435-240.200.
Tsao, Gary Y.: *See*—
Frazier, Giles R.; and Tsao, Gary Y., 5,544,333, Cl. 395-304.000.
Tsao, Michael M.: *See*—
Mraz, Ronald; and Tsao, Michael M., 5,544,162, Cl. 370-60.000.
Tschierske, Carsten: *See*—
Siemensmeyer, Karl; Tschierske, Carsten; Theil, Fritz; and Joachimi, Detley, 5,543,076, Cl. 252-299.610.
Tsubakiyama, Hideki, to Kokusai Denshin Denwa Kabushiki Kaisha. Mutual authentication/cipher key delivery system. 5,544,245, Cl. 380-21.000.
Tsubota, Hiroki: *See*—
Miki, Shoji; Tsubota, Hiroki; Yokota, Masanori; and Hori, Kenta, 5,544,043, Cl. 364-406.000.
Tsuboyama, Akira: *See*—
Hanyu, Yukio; Tsuboyama, Akira; Taniguchi, Osamu; Mihara, Tadashi; Nakamura, Katsutoshi; and Mori, Sunao, 5,543,943, Cl. 359-43.000.
Tsuchimoto, Tomonori; Iwata, Katsuichi; and Kurashima, Yoshihiko, to NGK Insulators, Ltd. Apparatus for disposing of sodium sulfur cells. 5,543,242, Cl. 429-049.000.
Tsuda, Hiroshi; Iwase, Atsushi; Nomura, Ken; and Matsui, Kazuma, to Nippondenso Co., Ltd. Pressure detecting apparatus for detecting vehicle tire air pressure. 5,542,293, Cl. 73-146.500.
Tsuji, Kiyoshi; Uchikubo, Akinobu; Kimura, Kenji; Goto, Masahito; and Hirai, Tsutomu, to Olympus Optical Co., Ltd. Endoscope system having reduced noise emission/permeation. 5,543,831, Cl. 348-65.000.
Tsuji, Masato: *See*—
Yanagihara, Nobuyuki; Kawano, Hiroshi; Hayashi, Takayuki; and Tsuji, Masato, 5,543,250, Cl. 429-241.000.
Tsujino, Hitoshi: *See*—
Takagi, Tatsuo; and Tsujino, Hitoshi, 5,543,982, Cl. 360-97.010.
Tsukahara, Eiji: *See*—
Yoneyama, Gen; and Tsukahara, Eiji, 5,543,707, Cl. 324-115.000.
Tsukahara, Yoshihiro, to Mitsubishi Denki Kabushiki Kaisha. Microwave amplifier circuit having reduced harmonic distortion. 5,543,752, Cl. 330-124.00R.
Tsukamoto, Kazuhiro: *See*—
Tamai, Yutaka; Shimoda, Yoshiaki; and Tsukamoto, Kazuhiro, 5,542,332, Cl. 84-435.000.
Tsukamoto, Kazumasa; Hayabuchi, Masahiro; Nishida, Masaaki; Yamamoto, Yoshihisa; Kusafuka, Muneo; Mikami, Kazuhiro; Tsutsui, Hiroshi; and Iwata, Akihito, to Aisin Aw Co., Ltd. Automatic transmission control apparatus. 5,542,887, Cl. 475-63.000.
Tsukishima Kikai Co., Ltd.: *See*—
Nishida, Katsunori; Miyano, Keiichiro; Iwase, Masaki; and Ichinose, Eiji, 5,542,903, Cl. 494-53.000.
Tsukushi, Masanori: *See*—
Watanabe, Atsuji; Ohshita, Youichi; Ohno, Masatomo; Tsukushi, Masanori; and Tokuyama, Shunji, 5,543,597, Cl. 218-60.000.
Tsuneki, Hideaki; Onda, Yoshiyuki; Moriya, Atusi; and Yoshida, Hiroshi, to Nippon Shokubai Co., Ltd. Process for preparing carbonate esters. 5,543,546, Cl. 558-270.000.
Tsuno, Nobuo; and Fujii, Tomoyuki, to NGK Insulators, Ltd. Metal ceramic composite structure. 5,543,130, Cl. 428-623.000.
Tsuruoka, Michihiko: *See*—
Nakagawa, Wataru; Sakaue, Satoru; and Tsuruoka, Michihiko, 5,543,956, Cl. 359-225.000.
Tsuruoka, Yoshihisa: *See*—
Okamoto, Yoshinari; Tsuruoka, Yoshihisa; Hirakawa, Haruhisa; and Sato, Eiji, 5,543,685, Cl. 313-496.000.
Tsutsui, Hiroshi: *See*—
Tsukamoto, Kazumasa; Hayabuchi, Masahiro; Nishida, Masaaki; Yamamoto, Yoshihisa; Kusafuka, Muneo; Mikami, Kazuhiro; Tsutsui, Hiroshi; and Iwata, Akihito, 5,542,887, Cl. 475-63.000.
Tsutsui, Kiyoshi: *See*—
Kamakura, Hikoichi; Tsutsui, Kiyoshi; Akagawa, Tomohiko; Sakai, Ikunori; Ichikawa, Shigeji; and Arai, Katsunori, 5,543,454, Cl. 524-451.000.
Tsutsui, Toshiyuki; and Yoshitsugu, Ken, to Mitsui Petrochemical Industries Co., Ltd. Olefin polymerization catalysts and methods of olefin polymerization. 5,543,377, Cl. 502-125.000.
Tsutsumi, Masaru: *See*—
Nishioka, Masato; Hamada, Akira; Tateyama, Eiji, deceased; Nishizawa, Nobuyoshi; and Tsutsumi, Masaru, 5,543,241, Cl. 429-39.000.
Tsuyama, Seishi: *See*—
Nagataki, Yasunobu; Tsuyama, Seishi; Hosoya, Yoshihiro; Okita, Tomoyoshi; Kanetoh, Shuzi; and Takada, Yasuyuki, 5,542,996, Cl. 148-652.000.
Tsuzuki, Shunichi: *See*—
Katoh, Akira; Kitagawa, Hiroshi; Tsuzuki, Shunichi; Takahashi, Jun; Fujimoto, Sachito; and Hirota, Toshiaki, 5,542,393, Cl. 123-491.000.
TTI Environmental Inc.: *See*—
Everett, Lorne G.; and Blakely, David, 5,543,623, Cl. 250-390.040.
Tu, A-Shih. Simple push button type link control structure. 5,542,150, Cl. 16-115.000.
Tu, A-Shih. Secure screw bush type drag-link movable positioning structure. 5,542,773, Cl. 403-109.000.
Tuck, Brian C.: *See*—
Luckevich, Mark; Tuck, Brian C.; Weber, Darryl C.; and DeVore, James H., 5,542,756, Cl. 303-122.110.
Tuckey, Charles H.; and Doane, Kirk D., to Walbro Corporation. Temperature-compensated engine fuel delivery. 5,542,395, Cl. 123-497.000.
Tuckey-Smith, Angus T.: *See*—
Glaser, Howard J.; Strain, Joanna M.; and Tuckey-Smith, Angus T., 5,544,285, Cl. 395-149.000.
Tuovinen, Heikki; Saari, Jorma; Roine, Antti; Holma, Hannu; and Kalliokoski, Matti, to Oy, Neste. Regeneration method for process waste containing sulfur and phosphorus. 5,543,128, Cl. 423-303.000.
Turban, Karl-Albert: *See*—
Weis, Bernd; Turban, Karl-Albert; Bezler, Monika; Schulz, Manfred; and Siegmund, Gerd, 5,544,226, Cl. 379-61.000.
Turek, Mark E., to Prinzing Enterprises, Inc. Electrical switch lockout device. 5,543,593, Cl. 200-43.110.
Turner, D. Clark; Nielsen, Andrew J.; Perkins, Raymond T.; and Madden, Michael, to Moxtek, Inc. Thin film sample support. 5,544,218, Cl. 378-208.000.
Turner, Edwin C.; and Wolff, Danny K., to Cooper Cameron Corporation. Blanking plug assembly. 5,542,475, Cl. 166-387.000.
Turski, Lechoslaw: *See*—
Huth, Andreas; Seidelmann, Dieter; Schmiechen, Ralph; Schneider, Herbert; and Turski, Lechoslaw, 5,543,519, Cl. 544-238.000.
Turunen, Aimo; and Jantunen, Heli, to LK-Products Oy. Filter having an electromagnetically tunable transmission zero. 5,543,764, Cl. 333-202.000.
Tuthill Corporation: *See*—
Rivard, Robert L., 5,542,642, Cl. 248-676.000.
Tuttle, Mark E., to Micron Communications, Inc. Method of forming button-type battery lithium electrodes. 5,542,959, Cl. 29-623.300.
Tymco, Inc.: *See*—
Young, Gary B., 5,542,148, Cl. 15-346.000.
U.E. Sebald Druck und Verlag GmbH: *See*—
Straubinger, Werner; Pecher, Günter; and Kohlmann, Richard, 5,542,965, Cl. 95-14.000.
U. S. Philips Corporation: *See*—
Wischermann, Gerhard, 5,543,858, Cl. 348-618.000.
Ube industries, Ltd.: *See*—
Kamakura, Hikoichi; Tsutsui, Kiyoshi; Akagawa, Tomohiko; Sakai, Ikunori; Ichikawa, Shigeji; and Arai, Katsunori, 5,543,454, Cl. 524-451.000.
Ubukata Industries: *See*—
Kato, Harunori; Mizutani, Yasukazu; Shibata, Shigekazu; Kimura, Katsuhiro; Koseki, Hideki; Urano, Mitsuhiro; and Watanabe, Masayuki, 5,542,299, Cl. 73-654.000.
Uchida, Hiroshi; Takahashi, Iruru; Yamaseki, Ken-ichi; and Satokawa, Shigeo, to Tokyo Gas Co., Ltd. Method of purifying non-containing exhaust gases using iron containing mordenite. 5,543,125, Cl. 423-239.200.
Uchida, Mari: *See*—
Kudoh, Mituo; Fukushima, Toshihiko; Itoh, Masaaki; Uchida, Mari; Matsushima, Hiroaki; Kogure, Hiroshi; and Takaku, Syoji, 5,542,271, Cl. 62-502.000.
Uchida, Osamu: *See*—
Matsuda, Naoto; Yamada, Makoto; Ono, Michio; Ishiwata, Yasuhiro; and Uchida, Osamu, 5,543,279, Cl. 430-559.000.
Uchida, Toshiya; and Taguchi, Masao, to Fujitsu Limited. Semiconductor memory device. 5,544,109, Cl. 365-203.000.
Uchikubo, Akinobu: *See*—
Tsuji, Kiyoshi; Uchikubo, Akinobu; Kimura, Kenji; Goto, Masahito; and Hirai, Tsutomu, 5,543,831, Cl. 348-65.000.
Uchiyama, Akihiko: *See*—
Maebashi, Youichirou; Fujii, Haruo; Sasame, Hiroshi; Kawakami, Hiroaki; Kobayashi, Tatsuya; Kobayashi, Tetsuya; Enomoto, Naoki; Uchiyama, Akihiko; and Saito, Yoshiro, 5,543,900, Cl. 355-219.000.
Uchiyama, Hiroshi; Kogoma, Masuhiro; and Okazaki, Satiko, to E.C. Chemical Co., Ltd.; Satiko Okazaki; and Masuhiro Kogoma. Atmospheric pressure glow discharge plasma treatment method. 5,543,017, Cl. 204-169.000.
Udagawa, Masaharu: *See*—
Hirai, Yoshihiko; Morimoto, Kiyoshi; Terui, Yasuaki; Niwa, Masaaki; Yasui, Juro; Okada, Kenji; Udagawa, Masaharu; and Yuki, Koichiro, 5,543,351, Cl. 437-063.000.
Udelle, Laura L.: *See*—
Udelle, Steven D.; and Udelle, Laura L., 5,542,376, Cl. 119-707.000.
Udelle, Steven D.; and Udelle, Laura L. Animal entertainment and exercise stimulator. 5,542,376, Cl. 119-707.000.
Uemura, Katsuhiko: *See*—
Yuki, Mikio; Kurohara, Kazuaki; Matsui, Akio; and Uemura, Katsuhiko, 5,542,243, Cl. 56-13.300.

Uenishi, Ken-ichi: *See*—
Niwa, Masahiro; Sugano, Yuji; Uenishi, Ken-ichi; Kitada, Hideto; Yamaguchi, Yoshihisa; Kobayashi, Eiko; Kubo, Kunimichi; and Sano, Akira, 5,543,478, Cl. 526-82.000.
Ueno, Hisashi: *See*—
Kuwagata, Masaaki; Matsuo, Ryosuke; Maruyama, Keiji; Miyawaki, Naokazu; and Ueno, Hisashi, 5,544,120, Cl. 365-222.000.
Ueno, Kazunori; Fukui, Tetsuro; Kobayashi, Motokazu; Ooi, Takehiko; Kaganti, Kenji; Suzuki, Masao; and Nishino, Katsuya, to Canon Kabushiki Kaisha. Dry process silver salt photosensitive material and image forming method making use of the dry process silver salt photosensitive material. 5,543,286, Cl. 430-619.000.
Uezono, Kouichi; Hara, Yasuhiro; and Nakamura, Tsuyoshi, to Yazaki Corporation. Voltage regulating circuit and PTC element for automotive vehicles. 5,543,705, Cl. 323-369.000.
Újfalussy, György: *See*—
Fekete, Pál; Király née Ignácz, Mária; Sipos, Gábor; Jámbor née Hoffmann, Zsuzsanna; Újfalussy, György; Góra née Hernyes, Magdolna; Klebovich, Imre; Drabant, Sándor; Mándi, Attila; Kiss née Szabó, Gizella; Bárczay, Erzsébet; and Krisztián, Mária, 5,543,155, Cl. 424-473.000.
Ukita, Toshiyuki: *See*—
Ikeda, Hideo; Ukita, Toshiyuki; and Shimizu, Hatsushi, 5,543,307, Cl. 435-172.300.
Ulichney, Robert A., to Digital Equipment Corporation. Image adjustment system for translating raw input levels to adjusted input levels. 5,543,936, Cl. 358-456.000.
Umbach, Dirk: *See*—
Schneider, Peter; and Umbach, Dirk, 5,542,769, Cl. 400-225.000.
Umeda, Atsushi: *See*—
Kusase, Shin; Mitani, Kenzo; Umeda, Atsushi; Tokura, Norihito; and Sato, Hirohide, 5,543,703, Cl. 322-16.000.
Umeda, Hiroyuki: *See*—
Hashimoto, Yasufumi; Umeda, Hiroyuki; and Ohira, Tsunehisa, 5,543,991, Cl. 360-132.000.
Umeda, Shigeki; and Yoshikawa, Hirofumi, to International Business Machines Corporation. Simulation method and apparatus. 5,544,348, Cl. 395-500.000.
Umino, Shinichi: *See*—
Kramoku, Takeji; Umino, Shinichi; Hirai, Eiji; Kurosawa, Kazuyoshi; and Matsumura, Yoshio, 5,543,029, Cl. 205-109.000.
Ungar, Robert E.; and Krogman, Stanley R., to Illinois Tool Works Inc. Apparatus for adapting carrier stock-applying machine to apply carrier stock having container-engaging and handle portions.. 5,542,231, Cl. 53-48.400.
Unger, Evan C.; Fritz, Thomas A.; Matsunaga, Terry; Ramaswami, VaradaRajan; Yellowhair, David; and Wu, Guanli, to ImaR,Pharmaceutical Corp. Therapeutic delivery systems related applications. 5,542,935, Cl. 604-190.000.
Uni-Mist, Inc.: *See*—
Boelkins, Wallace G., 5,542,498, Cl. 184-7.400.
Union Switch & Signal Inc.: *See*—
Jones, Richard S.; Hodges, William H., Jr.; and Evans, Paul M., 5,543,596, Cl. 200-573.000.
Uniphase Corporation: *See*—
Lim, Eric J., 5,544,271, Cl. 385-122.000.
Uniroyal Chemical Company, Inc: *See*—
Dekeyser, Mark A.; and McDonald, Paul T., 5,543,404, Cl. 514-118.000.
Uniroyal Chemical Ltd/Ltee: *See*—
Dekeyser, Mark A.; and McDonald, Paul T., 5,543,404, Cl. 514-118.000.
Unisen, Inc.: *See*—
Buhler, Kirk A., 5,542,892, Cl. 482-54.000.
Unisia Jecs Corporation: *See*—
Tomisawa, Naoki, 5,542,394, Cl. 123-491.000.
Unisys Corporation: *See*—
Swenson, Robert E.; and Kessler, Joseph E., 5,544,343, Cl. 395-460.000.
United Healthcare Corporation: *See*—
Leatherman, Sheila, 5,544,044, Cl. 364-401.000.
United Kingdom of Great Britain and Northern Ireland, The Minister of Agriculture Fisheries and Food in her Britannic Majesty's Government of the: *See*—
Chatzopoulou, Athina; Miles, Roger J.; and Anagnostopoulos, Gerasimos, 5,543,325, Cl. 435-259.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
Wilkinson, Robert, 5,543,806, Cl. 342-368.000.
United Microelectronics Corp.: *See*—
Hsu, Chen-Chung; and Hong, Gary, 5,543,344, Cl. 437-52.000.
Lee, Fong-Chun; Fu, Chien-Chih; and Wang, Nan-Chueh, 5,543,738, Cl. 327-51.000.
Li, Zhi-Jian; Shi, Bing-Xue; and Li, Bin-Qiao, 5,544,279, Cl. 395-3.000.
Wu, Chyi-Chang, 5,543,786, Cl. 341-22.000.
United States of America
Agriculture: *See*—
Vick, Charles B.; Richter, Klaus H.; and River, Bryan H., 5,543,487, Cl. 528-158.000.
Air Force: *See*—
Abend, Robert J., 5,544,174, Cl. 371-22.300.
Bliss, David F.; and Bates, Herbert E., 5,543,630, Cl. 257-33.000.
Evans, Keith R., 5,543,170, Cl. 427-8.000.
Army: *See*—
Feigenbaum, Bernard E.; and Loso, Francis G., 5,543,808, Cl. 343-727.000.
Energy: *See*—
Goren, Yehuda; and Mahale, Narayan K., 5,543,769, Cl. 335-216.000.
Selby, Thomas W., 5,543,120, Cl. 423-167.100.
Health and Human Services: *See*—
Klotman, Paul E.; Bruggeman, Leslie A.; and Horikoshi, Satoshi, 5,543,509, Cl. 536-24.330.
National Aeronautics and Space Administration: *See*—
Liu, Hua-Kuang; Barhen, Jacob; Farhat, Nabil H.; and Wu, Chwan-Hwa, 5,544,280, Cl. 395-24.000.
Smith, Sheldon M., 5,543,961, Cl. 359-350.000.
Navy: *See*—
Bond, James W., 5,544,199, Cl. 375-285.000.
Mills, George T.; and Gabaldon, Albert T., Jr., 5,543,800, Cl. 342-197.000.
Ray, Hemen, 5,543,204, Cl. 428-179.000.
Wallin, C. Roger, 5,543,910, Cl. 356-3.140.
U.S. Philips Corporation: *See*—
Ten Kate, Warner R. T., 5,544,247, Cl. 381-27.000.
Timmermans, Josef M. K., 5,543,925, Cl. 358-310.000.
Van der Laar, Josephus C., 5,544,214, Cl. 378-98.700.
Wijbenga, Hendrik, 5,544,030, Cl. 362-297.000.
Winser, Paul A., 5,544,292, Cl. 395-130.000.
United States Surgical Corporation: *See*—
Abbate, Richard; and Pareate, Richard, 5,542,523, Cl. 198-384.000.
Bennett, Steven L.; and Roby, Mark S., 5,543,218, Cl. 428-375.000.
Gravener, Roy D.; Ianniruberto, Alex; and Ciccolella, Michael, 5,542,931, Cl. 604-167.000.
McKean, Wanda L.; Hain, Matthew; and Koyfman, Ilya S., 5,542,594, Cl. 227-178.100.
United Technologies Corp.: *See*—
Cimbak, Joseph J., 5,542,596, Cl. 228-234.200.
Eaton, Harry E.; Holowczak, John E.; and Reinfelder, William C., 5,542,820, Cl. 416-224.000.
Gardner, Harry N.; Gregory, Charles R.; and Garvie, Douglas W., 5,543,736, Cl. 326-101.000.
Johnson, Thomas E.; and Thompson, Craig G., 5,542,246, Cl. 60-39.360.
Universal Distributing of Nevada, Inc.: *See*—
Charron, Daniel P.; and Yeates, Daniel F., 5,542,669, Cl. 463-13.000.
University of California, Office of Technology Transfer, The Regents of the: *See*—
Garzon, Fernando H.; Chung, Brandon W.; Raistrick, Ian D.; and Brosha, Eric L., 5,543,025, Cl. 204-425.000.
University of California, The Regents of the: *See*—
Arakawa, Mitsuaki; Zepeda, Ernesto; and Lu, William K. M., 5,543,712, Cl. 324-318.000.
Arakawa, Mitsuaki; Minemura, Takashi; and Krasnor, Stephen, 5,543,713, Cl. 324-322.000.
Carrig, Timothy J.; Taylor, Antoinette J.; and Stewart, Kevin R., 5,543,960, Cl. 359-326.000.
Krochta, John M.; and McHugh, Tara H., 5,543,164, Cl. 426-302.000.
Levy, Jay A., 5,543,131, Cl. 424-9.200.
Sobol, Robert E.; Green, Mark R.; and Kawasaki, Ernest S., 5,543,296, Cl. 435-6.000.
University of Guelph: *See*—
Mellors, Alan; Lo, Reggie Y. C.; and Abdullah, Khalid M., 5,543,312, Cl. 435-220.000.
University of Houston-University Park: *See*—
McMichael, Chase K.; Ma, Ki-Bui; and Chu, Wei-Kan, 5,542,506, Cl. 188-267.000.
University of Maryland: *See*—
Findikoglu, Alp T.; and Nakamura, Takao, 5,543,386, Cl. 505-210.000.
University of Michigan, Regents of the: *See*—
Townsend, Leroy B.; Drach, John C.; and Renau, Thomas E., 5,543,413, Cl. 514-258.000.
University of Minnesota, Regents of the: *See*—
Hoye, Thomas R., 5,543,523, Cl. 546-14.000.
University Research Corporation: *See*—
Walba, David M.; Ros, Maria B.; Rego, James A.; and Sierra, Teresa, 5,543,078, Cl. 252-299.650.
Uno, Hiromichi: *See*—
Terajima, Hisao; Koizumi, Shigeru; Nakayama, Toru; Takeda, Tomoyuki; Uno, Hiromichi; Nakagawa, Kaori; Shimizu, Hideki; and Morita, Mitsuo, 5,544,234, Cl. 379-100.000.
Updike, Lester. Automatic hook setting fishing pole holder. 5,542,205, Cl. 43-15.000.
Urano, Mitsuhiro: *See*—
Kato, Harunori; Mizutani, Yasukazu; Shibata, Shigekazu; Kimura, Katsuhiro; Koseki, Hideki; Urano, Mitsuhiro; and Watanabe, Masayuki, 5,542,299, Cl. 73-654.000.
Urano, Taeko I.: *See*—
Machida, Shigeru; Urano, Taeko I.; Sano, Kenji; and Mori, Yasushi, 5,543,949, Cl. 359-75.000.
Urbanski, Steven A., to Motorola. Noise suppression system and method therefor. 5,544,250, Cl. 381-94.000.
Ushio, Masaru: *See*—
Okazaki, Hajime; Kazato, Manabu; Ouchi, Masaoki; Nagano, Haruki; Ushio, Masaru; and Kamiya, Kozo, 5,543,041, Cl. 210-181.000.
Ushiodenki Kabushiki Kaisha: *See*—

Hishinuma, Nobuyuki; Hirose, Kenichi; and Igarashi, Tatsushi, 5,542,867, Cl. 445-32.000.
Tanaka, Yoneta; and Okada, Shoichi, 5,543,890, Cl. 355-53.000.

Usmani, Arthur: *See—*
Diebold, Eric; Rapkin, Myron; Azhar, Abol; and Usmani, Arthur, 5,543,299, Cl. 435-28.000.

Usui, Nobuhiro: *See—*
Hara, Takahisa; Matsumoto, Masahito; Usui, Nobuhiro; and Matubara, Shigeyoshi, 5,543,094, Cl. 264-46.400.

Usui, Yasunori: *See—*
Nakanishi, Hidetoshi; Usui, Yasunori; and Yakushiji, Shigenori, 5,543,639, Cl. 257-133.000.

Utica Enterprises, Inc.: *See—*
Carter, Thomas J.; Mason, Arthur C.; and Nolan, John H., 5,542,317, Cl. 74-813.00L.

Utley, Brian G.: *See—*
Buchana, William A.; Eardley, Richard A.; Tizzard, Anthony R.; and Utley, Brian G., 5,543,589, Cl. 178-18.000.

Uzawa, Shigeyuki; Nakai, Akiya; Imaizumi, Masaaki; Tanaka, Hiroshi; Takakura, Noburu; and Kaneko, Yoshio, to Canon Kabushiki Kaisha. Aligning method utilizing reliability weighting coefficients. 5,543,921, Cl. 356-401.000.

Vadnais Technologies Corporation: *See—*
Kempf, Mark, 5,542,505, Cl. 188-77.00W.

Vahabi-Nejad, Mariam; and Rice, Daniel A., to VeloBind, Inc. Manual binding apparatus for flexible bookbinding strips. 5,542,801, Cl. 412-43.000.

Valdshtein, George: *See—*
Masel, Ruben; and Valdsbtein, George, 5,543,166, Cl. 426-523.000.

Valeo Vision: *See—*
Lopez, François; Pauty, Etienne; and Brun, Norbert, 5,544,021, Cl. 362-61.000.

Valkyrie Scientific Proprietary, L.C.: *See—*
Kaylor, Joseph B., 5,542,608, Cl. 239-400.000.

Valmet Corporation: *See—*
Ohtonen, Aimo, 5,542,729, Cl. 294-87.100.

Van de Velde, Jozef F.: *See—*
Van de Velde, Frans J., 5,543,866, Cl. 351-221.000.

Van Boeckel, Constant A. A.: *See—*
Petitou, Maurice; and Van Boeckel, Constant A. A., 5,543,403, Cl. 514-54.000.

Vanden Heuvel, Dean P.: *See—*
Ganucheau, Charles J., Jr.; Vanden Heuvel, Dean P.; Halley, Craig; Mun, Kyung T.; and Dumstorff, Patrick L., 5,543,781, Cl. 340-825.440.

Van der Laar, Josephus C., to U.S. Philips Corporation. Video system with automatic gain control. 5,544,214, Cl. 378-98.700.

Van de Velde, Frans J., to Van de Velde, Jozef F. Scanning laser ophthalmoscope for binocular imaging and functional testing. 5,543,866, Cl. 351-221.000.

Van Dyke, Don A.: *See—*
Beard, Douglas R.; Phelps, Andrew E.; Woodmansee, Michael A.; Blewett, Richard G.; Lohman, Jeffrey A.; Silbey, Alexander A.; Spix, George A.; Simmons, Frederick J.; and Van Dyke, Don A., 5,544,337, Cl. 395-375.000.

Vane, Burton W.; and Lederer, David B., to Detection Systems, Inc. Smoke detector with individual sensitivity calibration and monitoring. 5,543,777, Cl. 340-514.000.

Van Erden, Donald L.; and Toczycki, Jan, to Illinois Tool Works Inc. Fluid free damper. 5,542,508, Cl. 188-290.000.

Vanguard International Semiconductor Corp.: *See—*
Liaw, Ing-Ruey; and Cherng, Meng-Jaw, 5,543,345, Cl. 437-52.000.

van Heiningen, Arjan P.: *See—*
de Jong, Leendert W. C.; van Heiningen, Arjan P.; and Masseling, Willem H., 5,542,823, Cl. 417-273.000.

Van Iten, Thomas P., to Kimberly-Clark Corporation. Encapsulated tampon with an applicator. 5,542,914, Cl. 604-11.000.

Vankerkhove, Alan P.: *See—*
Chatterjee, Dilip K.; Ghosh, Syamal K.; Shaffer, Wayne K.; and Vankerkhove, Alan P., 5,543,269, Cl. 430-346.000.

van Ooijen, Albert J. J.; Rietveld, Krijn; Hoekema, Andreas; Pen, Jan; Sijmons, Peter C.; Verwoerd, Teunis C.; and Quax, Wilhemus J., to Mogen International; and Gist-Brocades. Production of enzymes in seeds and their use. 5,543,576, Cl. 800-250.000.

Van Rijn, Cornelis J. M. Inorganic membrane for microfiltration, and a process for production of such an inorganic membrane. 5,543,046, Cl. 210-490.000.

VanSteenkiste, David G.: *See—*
VanSteenkiste, Roger C.; and VanSteenkiste, David G., 5,543,827, Cl. 347-27.000.

VanSteenkiste, Roger C.; and VanSteenkiste, David G., to Fas-Co Coders, Inc. Ink jet print head nozzle cleaning coinciding with nozzle vibration. 5,543,827, Cl. 347-27.000.

Vargas, Joseph H., III. Surgical scalpel cradle. 5,542,533, Cl. 206-363.000.

Varnelis, Don: *See—*
Dunn, Michael E.; and Varnelis, Don, 5,542,503, Cl. 188-18.00A.

Vartanian, Roger. Wheelchair lift with laterally displaceable support post for vertical and rotational displacement. 5,542,811, Cl. 414-541.000.

Vasichek Enterprises LLC: *See—*
Vasichek, Richard A.; Vasichek, Robert J.; Somerville, Dean S.; and Trostad, Mitchel D., 5,542,320, Cl. 81-125.000.

Vasichek, Richard A.; Vasichek, Robert J.; Somerville, Dean S.; and Trostad, Mitchel D., to Vasichek Enterprises LLC. Magnetic keeper accessory for wrench sockets. 5,542,320, Cl. 81-125.000.

Vasichek, Robert J.: *See—*
Vasichek, Richard A.; Vasichek, Robert J.; Somerville, Dean S.; and Trostad, Mitchel D., 5,542,320, Cl. 81-125.000.

Vatt, Gregory B.; Baum, David M.; and Goldberg, Steven J., to Motorola, Inc. Distributed multi-outlet paging. 5,543,785, Cl. 345-825.440.

Vaudry, Jean-Paul, to Orbey Plastiques and Industries. Device for fitting a hot element to a hollow body made of thermoplastic including at least one cold fluid inlet, and hollow body including such a device. 5,542,711, Cl. 285-41.000.

Vaughan, Joe L. Portable electrical distribution panel. 5,544,003, Cl. 361-625.000.

Veenstra, Kerry: *See—*
Cliff, Richard G.; Reddy, Srinivas T.; Veenstra, Kerry; Papaliolios, Andreas; Sung, Chiakang; Terrill, Richard S.; Raman, Rina; and Bielby, Robert R. N., 5,543,730, Cl. 326-38.000.

Vegatoro, Guillermo: *See—*
Johnson, William J.; Vegatoro, Guillermo; and Lachman, Larry M., 5,543,792, Cl. 341-123.000.

Veilleux, Gregory R.: *See—*
Casillo, Joseph; Johnson, Frederick M.; Heath, John M., Jr.; Veilleux, Gregory R.; and Dufault, William J., 5,543,001, Cl. 156-60.000.

Veith, Cary A.: *See—*
Stevens, Craig A.; Rao, Bhaskar P.; Veith, Cary A.; and Erickson, James R., 5,543,472, Cl. 525-387.000.

VeloBind, Inc.: *See—*
Vahabi-Nejad, Mariam; and Rice, Daniel A., 5,542,801, Cl. 412-43.000.

Ventritex, Inc.: *See—*
Mar, Craig E.; Pless, Benjamin D.; and Bush, M. Elizabeth, 5,542,173, Cl. 29-825.000.

Verbatim Corporation: *See—*
Skaar, Leif; Sheppard, Kenneth; Stanley, Donald; Zeinali, Hossein A.; Khorsandian, Ali; and Krula, David A., 5,542,593, Cl. 226-196.000.

Verbeeck, Ann, to AGFA-Gevaert, N.V. Preparation method of regular silver halide light-sensitive emulsions comprising silver halide crystals rich in chloride and material comprising said emulsions. 5,543,284, Cl. 430-569.000.

Verdick, George W. Method and article for protecting a motor vehicle component. 5,542,699, Cl. 280-732.000.

Veres, Agota Repasine: *See—*
Moreno, Fulgencio Powell; Litkei, Laszlo; Galamb, Vilmos; Gulyas, Imre; Repasi, Janos; Veres, Agota Repasine; Vigh, Jozsef; Koczka, Istvanne; Fehervari, Edit; Roka, Laszlone; Pethe, Laszlone; and Neu, Jozsef, 5,543,562, Cl. 562-17.000.

Vermeer Manufacturing Company: *See—*
Cooper, Mark R., 5,544,055, Cl. 364-424.070.

Vermeersch, Joan; Hauquier, Guido; and Kokkelenberg, Dirk, to AGFA-Gevaert, N.V. Storage stability of a diazo-based imaging element for making a printing plate. 5,543,261, Cl. 430-159.000.

Vermilion, Donn R.: *See—*
Gallagher, Kevin P.; Vermilion, Donn R.; and Ponn, Frederick H., 5,543,211, Cl. 428-224.000.

Ver Strate, Gary W.: *See—*
Struglinski, Mark J.; Ver Strate, Gary W.; and Fetters, Lewis J., 5,543,469, Cl. 525-314.000.

Vertex Pharmaceuticals, Incorporated: *See—*
Zelle, Robert E.; and Harding, Matthew W., 5,543,423, Cl. 514-332.000.

Verwoerd, Teunis C.: *See—*
van Ooijen, Albert J. J.; Rietveld, Krijn; Hoekema, Andreas; Pen, Jan; Sijmons, Peter C.; Verwoerd, Teunis C.; and Quax, Wilhemus J., 5,543,576, Cl. 800-250.000.

Vetter, Richard. Frame registration. 5,543,869, Cl. 352-184.000.

Vibratech, Inc.: *See—*
Warchocki, Mark; and Pukalo, Walter P., 5,542,507, Cl. 188-290.000.

Vicente, Francisca: *See—*
Bills, Gerald F.; Curotto, James E.; Dreikorn, Sarah J.; Jenkins, Rosalind G.; Liesch, Jerrold M.; Morris, Sandra A.; Thompson, John R.; Zink, Deborah L.; Jansson, Richard K.; Basilio, Angela: Diez, Teresa; Pelaez, Fernando; and Vicente, Francisca, 5,543,429, Cl. 514-468.000.

Vick, Charles B.; Richter, Klaus H.; and River, Bryan H., to United States of America, Agriculture. Hydroxymethylated resorcinol coupling agent and method for bonding wood. 5,543,487, Cl. 528-158.000.

Vickers, Philip J.: *See—*
Cromlish, Wanda A.; Kennedy, Brian P.; O'Neill, Gary; Vickers, Philip J.; Wong, Elizabeth; and Mancini, Joseph A., 5,543,297, Cl. 435-25.000.

Victor Company of Japan, Ltd.: *See—*
Hashimoto, Yasufumi; Umeda, Hiroyuki; and Ohira, Tsunehisa, 5,543,991, Cl. 360-132.000.
Moriyama, Masaru, 5,543,973, Cl. 360-17.000.

Vidamed, Inc.: *See—*
Edwards, Stuart D.; Lax, Ronald G.; Lundquist, Ingemar H.; Sharkey, Hugh R.; and Baker, James A., 5,542,915, Cl. 604-22.000.
Hirsch, Chaya; Hale, Robert; and Strul, Bruno, 5,542,916, Cl. 604-22.000.

Vigh, Jozsef: *See—*
Moreno, Fulgencio Powell; Litkei, Laszlo; Galamb, Vilmos; Gulyas, Imre; Repasi, Janos; Veres, Agota Repasine; Vigh, Jozsef; Koczka, Istvanne; Fehervari, Edit; Roka, Laszlone; Pethe, Laszlone; and Neu, Jozsef, 5,543,562, Cl. 562-17.000.

Viking Industries, Inc.: *See—*
Buckles, Joseph M., 5,542,578, Cl. 222-145.600.

Villevieille, Jean-Marc; and Tischhauser, Tom, to Motorola, Inc. Position/navigation device and method. 5,543,802, Cl. 342-357.000.

Vincent, Maurice. Snowshoe with adjustable decking tension. 5,542,197, Cl. 36-122.000.

Vinciarelli, Patrizio; and Beede, Richard E., to VLT Corporation. Efficient power conversion. 5,544,034, Cl. 363-89.000.

Virginia Polytechnic Institute and State Univ.: *See—*
Keith, James C., 5,543,138, Cl. 424-85.100.

Virkar, Anil V.; Fung, Kuan-Zong; and Tanner, Cameron W., to Electric Power Research Institute. Electrode design for solid state devices, fuel cells and sensors. 5,543,239, Cl. 429-33.000.

Virtual Vision: *See—*
Heacock, Gregory L., 5,543,816, Cl. 345-8.000.

Vishlitzky, Natan: *See—*
Yanai, Moshe; Vishlitzky, Natan; Alterescu, Bruno; Castel, Daniel; and Shklarsky, Gadi, 5,544,347, Cl. 395-489.000.

Visible Genetics Inc.: *See—*
Stevens, John K.; and Ismailov, Alexandre M., 5,543,018, Cl. 204-461.000.

Vitus, Francis J.: *See—*
Hargis, I. Glen; Livigni, Russell A.; Melby, Earl G.; and Vitus, Francis J., 5,543,200, Cl. 428-122.000.

VLSI Technology, Inc.: *See—*
Mattos, Derwin W.; Heron, Ralph P.; and Lee, Donald, 5,543,733, Cl. 326-81.000.

VLT Corporation: *See—*
Vinciarelli, Patrizio; and Beede, Richard E., 5,544,034, Cl. 363-89.000.

Vogel, Scott W.: *See—*
Smith, William E.; Vogel, Scott W.; and Shomaker, Robert L., 5,542,794, Cl. 407-35.000.

Vogler, Erwin A.; Shepard, Thomas A.; and Graper, Jane C., to Becton, Dickinson and Company. Blood collection assembly with blood compatible, shear sensitive gels. 5,543,048, Cl. 210-513.000.

Voisembert, Sylvie: *See—*
Michaut, Bernard; Pellegrin, Bernard; and Voisembert, Sylvie, 5,544,209, Cl. 376-260.000.

Volk, Andrew M.; Zaidi, Sajjad A.; and Selvin, Eric B., to Intel Corporation. Voltage supply isolation buffer. 5,543,734, Cl. 326-83.000.

von Bonin, Wulf; von Gizycki, Ulrich, deceased (by Ursula von Gizycki, heir); Leroux, Roland; Karschti, Thomas M.; and Thürk, Jürgen, to Bayer Aktiengesellschaft; and Schott Glaswerke. Laminated glass construction having an intermediate layer of a fire-proofing gel. 5,543,230, Cl. 428-432.000.

von der Eltz, Andreas; and Russ, Werner H., to Hoechst AG. Reactive dyes for inkjet printing. 5,542,972, Cl. 106-22.00H.

von der Eltz, Andreas: *See—*
Schrell, Andreas; and von der Eltz, Andreas, 5,542,955, Cl. 8-561.000.

von Gizycki, Ulrich, deceased (by Ursula von Gizycki, heir): *See—*
von Bonin, Wulf; von Gizycki, Ulrich, deceased; Leroux, Roland; Karschti, Thomas M.; and Thürk, Jürgen, 5,543,230, Cl. 428-432.000.

von Gizycki, Ursula, heir: *See—*
von Bonin, Wulf; von Gizycki, Ulrich, deceased; Leroux, Roland; Karschti, Thomas M.; and Thürk, Jürgen, 5,543,230, Cl. 428-432.000.

Von Harpe, Thure: *See—*
Hofmann, John E.; Von Harpe, Thure; Diep, Daniel V.; and Lin, M. Linda, 5,543,123, Cl. 423-235.000.

Vonnoe, Reinhard: *See—*
Leibing, Karl-Heinz; Hansen, Kai-Uwe; and Vonnoe, Reinhard, 5,542,251, Cl. 60-426.000.

Voren, Howard J. Egg incubation system and method. 5,542,375, Cl. 119-312.000.

Vorhauer, George R.: *See—*
Sheldon, Eric G.; Stephens, Ronald W.; and Vorhauer, George R., 5,543,893, Cl. 355-206.000.

Voss, Jorg F.: *See—*
Clark, Harry E.; Henderson, Cynthia W.; Marcinek, Robert C.; Mayfield, Frances W.; Perkins, Thad W.; and Voss, Jorg F., 5,543,202, Cl. 428-154.000.

Vouillon, Patrick: *See—*
Gaultier, Philippe; Vouillon, Patrick; and Simon, Frédéric, 5,543,592, Cl. 200-6.00A.

Vreysen, Eduard J. C.: *See—*
De Knaep, Alfons G. M.; Moens, Luc J. R.; and Vreysen, Eduard J. C., 5,543,570, Cl. 564-87.000.

Vuligonda, Vidyasagar; Teng, Min; Beard, Richard L.; Johnson, Alan T.; Lin, Yuan; and Chandraratna, Roshantha A., to Allergan. Acetylenes disubstituted with a 5 substituted tetrahydronaphthyl group and with an aryl or heteroaryl groups having retinoid-like biological activity. 5,543,534, Cl. 549-421.000.

VXI Corporation: *See—*
Papadopoulos, Costas, 5,544,243, Cl. 379-413.000.

W&F Manufacturing, Inc.: *See—*
Fleming, Paul D., 5,542,720, Cl. 292-32.000.

W. R. Grace & Co.-Conn.: *See—*
Shah, Gautam P., 5,543,223, Cl. 428-349.000.

Wack, Erwin, to Fichtel & Sachs AG. Friction clutch for a transmission of a motor vehicle and a clutch plate for a friction clutch. 5,542,516, Cl. 192-70.170.

Wacker-Chemie GmbH: *See—*
Katzer, Hans; Kratel, Günter; and Biller, Beate, 5,543,095, Cl. 264-063.000.

Wada, Ichiro, to Kabushiki Kaisha Toshiba. Electromagnetic flowmeters and method of producing electromagnetic flowmeters with slits to reduce eddy currents. 5,542,301, Cl. 73-861.110.

Wada, Masashi: *See—*
Matsuo, Akinori; Watanabe, Masashi; Wada, Masashi; Wada, Takeshi; and Nakamura, Yasuhiro, 5,544,098, Cl. 365-189.070.

Wada, Takeshi: *See—*
Matsuo, Akinori; Watanabe, Masashi; Wada, Masashi; Wada, Takeshi; and Nakamura, Yasuhiro, 5,544,098, Cl. 365-189.070.

Wadsworth, Mark V.; Borrello, Sebastian R.; and Gooch, Roland W., to Texas Instruments Incorporated. Hybrid signal conditioning/infared imaging structure. 5,543,641, Cl. 257-226.000.

Wagner, Byron D.; Johnson, Von W.; Miller, Jeffrey S.; and Dempsey, Richard T., to Walt Disney Company, The. Method and apparatus for transmission of full frequency digital audio. 5,544,228, Cl. 379-67.000.

Wagner, Franz-Josef: *See—*
Papendorf, Jörg; and Wagner, Franz-Josef, 5,542,683, Cl. 277-180.000.

Wagner, Paul: *See—*
Groth, Torstea; Joestgen, Winfried; Linden, Hans W.; Müller, Nikolaus; Rother, Heinz-Joachim; Wagner, Paul; and Kugler, Martin, 5,543,490, Cl. 528-328.000.
Landscheidt, Heinz; Wolters, Erich; Wagner, Paul; and Klausener, Alexander, 5,543,548, Cl. 558-277.000.

Wahls, Stephen L., to Orthman Manufacturing, Inc. Bifold field marker. 5,542,190, Cl. 33-624.000.

Wakabayshi, Tsutomu: *See—*
Goto, Tetsuro; and Wakabayshi, Tsutomu, 5,543,872, Cl. 354-106.000.

Wake Forest University: *See—*
Brewer, Gary, 5,543,499, Cl. 530-350.000.

Wakitani, Mituru: *See—*
Shiomi, Yozo; and Wakitani, Mituru, 5,543,216, Cl. 428-373.000.

Walba, David M.; Ros, Maria B.; Rego, James A.; and Sierra, Teresa, to University Research Corporation. Ferroelectric liquid crystals for noelinear optics applications. 5,543,078, Cl. 252-299.650.

Walbro Corporation: *See—*
Tuckey, Charles H.; and Doane, Kirk D., 5,542,395, Cl. 123-497.000.

Waldstreicher, Joanne, to Merck & Co., Inc. Combination method of treating acne using 4-AZA-5α-cholestan-ones and 4-AZA-5α-androstan-ones as selective 5α-reductase inhibitors with anti-bacterial, keratolytic, or anti-inflammatory agents. 5,543,417, Cl. 514-284.000.

Walker, Andrew; and Swaddle, Steven, to Black & Decker Inc. Electrical arrangement in power tools—power tool with slide switch. 5,544,274, Cl. 388-838.000.

Walker, Craig W.: *See—*
Kindt-Larsen, Ture; Beaton, Stephen R.; Martin, Wallace A.; and Walker, Craig W., 5,542,978, Cl. 118-256.000.

Walker, Gavin A.: *See—*
Harradine, Vincent C.; Teece, Howard J.; Ludgate, Michael J.; Bhandari, Rajan; and Walker, Gavin A., 5,543,861, Cl. 348-718.000.

Walker, John P.; and Hausmann, Steven, to Inland Aqua-Tech Equipment Systems, Inc. Method for recovering produce wash treatment effluent. 5,543,063, Cl. 210-788.000.

Walker, Lee A.; Sundararajan, Srinivasan; Fletcher, Geoffrey D.; and Dillman, Daniel J., to Ford Motor Company. Energy absorbing vehicle door with guard beam load distributor. 5,542,738, Cl. 296-189.000.

Wallace, Donald G.: *See—*
Rhee, Woonza; Wallace, Donald G.; Michaels, Alan S.; Burns, Ramon A., Jr.; Fries, Louis; DeLustro, Frank; and Bentz, Hanne, 5,543,441, Cl. 523-105.000.

Wallbaum, Knuth: *See—*
Adrian, Willy; Bäthge, Frank; Borchers, Peter; Pietsch, Kurt; Wallbaum, Knuth; and Wente, Gerald, 5,542,522, Cl. 198-337.000.

Walldén, Lars: *See—*
Thordmark, Bo M.; and Walldén, Lars, 5,542,274, Cl. 70-495.000.

Wallin, C. Roger, to United States of America, Navy. Passive submarine range finding device and method. 5,543,910, Cl. 356-3.140.

Wallin, Kay, to Sprinter System AB. Method and apparatus for reorienting blanks while feeding individual blanks from a stack to an erecting machine. 5,542,816, Cl. 414-798.900.

Walsh, Dennis E.: *See—*
Chang, Clarence D.; Han, Scott; Martenak, Daniel J.; Santiesteban, Jose G.; and Walsh, Dennis E., 5,543,036, Cl. 208-189.000.

Walt Disney Company, The: *See—*
Ferren, Bran, 5,542,604, Cl. 239-29.000.
Wagner, Byron D.; Johnson, Von W.; Miller, Jeffrey S.; and Dempsey, Richard T., 5,544,228, Cl. 379-67.000.

Walter AG: *See—*
Deiss, Siegfried; and Schlotterer, Willy, 5,542,793, Cl. 407-35.000.

Walter, Helmut: *See—*
Münster, Peter; Ditrich, Klaus; Hamprecht, Gerhard; Gerber, Matthias; Westphalen, Karl-Otto; Walter, Helmut; and Karl, Rudolf, 5,543,416, Cl. 504-271.000.

Walter Palange, Inc.: *See—*
Palange, Walter, 5,542,268, Cl. 66-1.00R.

Walton, William C., to Sterling Winthrop Inc. Antacid. 5,543,153, Cl. 424-466.000.

Wanetzky, Erwin: *See*—
Hugo, Franz; and Wanetzky, Erwin, 5,544,194, Cl. 373-65.000.

Wang, Chein-Hsun: *See*—
Lin, San-Bao; Chang, Gwo-Dawn; Shie, Jin-Shown; Wang, Chein-Hsun; Weng, Ping-Kuo; and Lin, Ming-Der, 5,543,620, Cl. 250-338.300.

Wang, Daozhang: *See*—
Jones, Frank N.; Du, Cong; Teng, Ganghui; Dimian, Adel F.; and Wang, Daozhang, 5,543,475, Cl. 525-444.000.
Jones, Frank N.; Du, Cong; Teng, Ganghui; Dimian, Adel F.; and Wang, Daozhang, 5,543,476, Cl. 525-444.000.

Wang, David: *See*—
Charkoudian, John; Pluskal, Malcolm; Wang, David; and Phoebe, Charles, 5,543,054, Cl. 210-638.000.

Wang, Elizabeth A.: *See*—
Wozney, John M.; Rosen, Vicki A.; and Wang, Elizabeth A., 5,543,394, Cl. 514-12.000.

Wang, James H.: *See*—
Latiolais, Jerry G.; Gathright, J. Paul; Galante, Nicholas R.; Galland, M. Stephen; Gallet, J. Diores; Compton, Lewis R.; Baker, George L.; and Wang, James H., 5,543,233, Cl. 428-516.000.
Latiolais, Jerry G.; Galante, Nicholas R.; Gathright, J. Paul; and Wang, James H., 5,543,477, Cl. 526-65.000.

Wang, Karly S.: *See*—
Roorda, Wouter E.; Ehnow, Fred P.; Basso, Estela; Wang, Karly S.; and Fujita, Sharon M., 5,543,156, Cl. 424-484.000.

Wang, Kun. Control device for folding and expanding a base portion of a playpen. 5,542,134, Cl. 5-99.100.

Wang, Nan-Chueh: *See*—
Lee, Fong-Chun; Fu, Chien-Chih; and Wang, Nan-Chueh, 5,543,738, Cl. 327-51.000.

Wang, Shin-Shin; and Chen, Chih-Hung, to Industrial Technology Research Institute. Method for the preparaton of α-methyl-β-acylthiopropionates. 5,543,545, Cl. 558-255.000.

Wang, Tak K.; and Henderson, Robert C., to Hewlett-Packard Company. Method and apparatus for correcting flow and pressure sensor drift in a gas chromatograph. 5,542,286, Cl. 73-23.220.

Wang, Tongshun: *See*—
Sun, Xujiang; Zhang, Junmin; Wang, Tongshun; Zhang, Jun; Su, Hong; and Xia, Hongxia, 5,542,372, Cl. 117-68.000.

Wang, Wen-chou V.: *See*—
Beilin, Solomon I.; Chou, William T.; Kudzuma, David; Lee, Michael G.; Murase, Teruo; Peters, Michael G.; Roman, James J.; Swamy, Som S.; and Wang, Wen-chou V., 5,544,017, Cl. 361-790.000.

Wang, William: *See*—
Dibner, Andrew S.; and Wang, William, 5,544,241, Cl. 379-373.000.

Wang, Ying, to Du Pont de Nemours, E. I., and Company. Carbon nanostructures encapsulating palladium. 5,543,378, Cl. 502-174.000.

Wang, Zigiang: *See*—
Yu, Liangzhong; and Wang, Zigiang, 5,542,615, Cl. 241-57.000.

Wangner Systems Corp.: *See*—
Ostermayer, Volker; and Quigley, Scott, 5,542,455, Cl. 139-383.00A.

Want, Roy: *See*—
Theimer, Marvin M.; Spreitzer, Michael J.; Weiser, Mark D.; Goldstein, Richard J.; Elrod, Scott A.; Swinehart, Daniel C.; Schilit, William N.; Krivacic, Robert T.; and Want, Roy, 5,544,321, Cl. 395-200.110.

Warchocki, Mark; and Pukalo, Walter P., to Vibratech, Inc. Position dependent variable output torque viscous damper. 5,542,507, Cl. 188-290.000.

Wariishi, Koji; and Aoki, Mario, to Fuji Photo Film Co., Ltd. 1-carbamoyl-5-hydroxypyrazole compounds and salts thereof. 5,543,529, Cl. 548-366.700.

Warman, David J.: *See*—
Fujimoto, Kenneth N.; and Warman, David J., 5,544,150, Cl. 370-14.000.

Warner, Eric A., to IVAC Corporation. Fluid delivery system with mounting linkage. 5,542,826, Cl. 417-474.000.

Warner-Lambert Company: *See*—
Beylin, Vladimir G.; Sercel, Anthony D.; Showalter, Howard D. H.; Adams, Gerald E.; Fielden, Edward M.; Naylor, Matthew A.; and Stratford, Ian J., 5,543,527, Cl. 548-110.000.

Warner, Richard D.: *See*—
Blackman, Daniel S.; Warner, Richard D.; DeJidas, Lloyd P.; and Jones, Gary A., 5,542,352, Cl. 101-483.000.

Warnock, James D.: *See*—
Sigal, Leon J.; and Warnock, James D., 5,543,731, Cl. 326-40.000.

Warren, Paul, to International Business Machines Corporation. Image processing apparatus with improved data conversion testing. 5,544,240, Cl. 382-270.000.

Wassick, Thomas A.: *See*—
Handford, Edward F.; Harvilchuck, Joseph M.; Interrante, Mario J.; Jackson, Raymond A.; Master, Raj N.; Ray, Sudipta K.; Sablinski, William E.; and Wassick, Thomas A., 5,543,584, Cl. 174-261.000.

Watanabe, Atsuji; Otshita, Youichi; Ohno, Masatomo; Tsukushi, Masanori; and Tokuyama, Shunji, to Hitachi, Ltd. Grounding switch gear device. 5,543,597, Cl. 218-60.000.

Watanabe, Ikuo: *See*—
Fujii, Akio; Kashida, Motokazu; Watanabe, Ikuo; and Yamashita, Shinichi, 5,544,176, Cl. 371-40.100.

Watanabe, Kazuhiro; and Hara, Yasushi, to Fujitsu Limited. Method of fabricating ultrasonic probe. 5,542,426, Cl. 128-662.030.

Watanabe, Kazuo; Okuda, Masatoshi; Aoyama, Shigeo; and Tanaka, Yoshimasa, to New Oji Paper Co., Ltd. Heat-sensitive recording paper. 5,543,382, Cl. 503-224.000.

Watanabe, Kazuyuki: *See*—
Terada, Masahiro; Kamae, Hirosuke; Yusawa, Motoyasu; Watanabe, Kazuyuki; and Saito, Mitsuo, 5,542,982, Cl. 134-5.000.

Watanabe, Kiyoshi; Abe, Yasuhiro; Sakamoto, Masaho; Saitou, Takeshi; Ishii, Takayoshi; Akimoto, Yukio; Kashiki, Hironori; and Kato, Masao, to Hitachi, Ltd.; and Hitachi Computer Engineering Co, Ltd. Self check-out system and POS system. 5,543,607, Cl. 235-383.000.

Watanabe, Masao, to Fuji Xerox Co., Ltd. Inorganic thin film electroluminescent device having an emission layer. 5,543,237, Cl. 428-691.000.

Watanabe, Masashi: *See*—
Matsuo, Akinori; Watanabe, Masashi; Wada, Masashi; Wada, Takeshi; and Nakamura, Yasuhiro, 5,544,098, Cl. 365-189.070.

Watanabe, Masayuki: *See*—
Kato, Harunori; Mizutani, Yasukazu; Shibata, Shigekazu; Kimura, Katsuhiro; Koseki, Hideki; Urano, Mitsuhiro; and Watanabe, Masayuki, 5,542,299, Cl. 73-654.000.

Watanabe, Shozo; and Shinohara, Kibatsu, to Kinugawa Rubber Industrial Co., Ltd. Apparatus for continuously vulcanizing rubber product. 5,542,833, Cl. 425-71.000.

Watanabe, Tohru, to Casio Computer Co., Ltd. Circuit scale reduction for bit-serial digital signal processing. 5,544,091, Cl. 364-725.000.

Watanabe, Yohji: *See*—
Kirihata, Toshiaki; and Watanabe, Yohji, 5,544,113, Cl. 365-200.000.

Watkins, Daniel R.: *See*—
Rostoker, Michael D.; Dangelo, Carlos; and Watkins, Daniel R., 5,544,067, Cl. 364-489.000.

Watson, George A.: *See*—
Harenberg, Donald D.; Watson, George A.; Bindloss, Keith M.; and Folwell, Dale E., 5,544,311, Cl. 395-183.160.

Watson, Greg: *See*—
Abel, Clayton J.; Watson, Greg; Higgins, Daniel R.; and Hill, Robert B., 5,542,650, Cl. 266-135.000.

Watson, Herman L.; and Pak, Chu, to Non-Invasive Monitoring Systems, Inc. Apparatus for making a stretchable band-type transducer particularly suited for use with respiration monitoring apparatus. 5,543,012, Cl. 156-440.000.

Watts, Kevin A.: *See*—
Skarbo, Rune A.; Elliott, John D.; and Watts, Kevin A., 5,544,300, Cl. 395-157.000.

Waukesha Cutting Tools, Inc.: *See*—
Krueger, Douglas A.; and Ebenhoch, Sebastian, 5,542,792, Cl. 407-35.000.

WCI Outdoor Products, Inc.: *See*—
Chatten, J. Keith, 5,542,380, Cl. 123-41.700.

Wear, Trevor J.: *See*—
Pitt, Alan R.; Caesar, Julian C.; Gibson, Danuta; Wear, Trevor J.; Young, David J.; and King, Scott A., 5,543,555, Cl. 560-151.000.

Weaver, David A.: *See*—
Stratford, James T.; Schoonveld, Alan H.; and Weaver, David A., 5,543,104, Cl. 264-328.800.

Weaver, George W.; Jacob, Harold; and Holsinger, Damond C., to Arrow Precision Products, Inc. Surgical combination inject and snare apparatus. 5,542,948, Cl. 606-113.000.

Weaver, Lindsay A., Jr.: *See*—
Tiedemann, Edward G., Jr.; Weaver, Lindsay A., Jr.; and Padovani, Roberto, 5,544,196, Cl. 375-200.000.

Webasto Karosseriesysteme GmbH: *See*—
Fürst, Arpad; Danzl, Martin; Mayer, Johann; and Miklosi, Stefan, 5,542,735, Cl. 296-107.000.

Webb, Murray S.; Bally, Marcel B.; and Mayer, Lawrence D., to Inex Pharmaceuticals Corporation. Sphingosomes for enhanced drug delivery. 5,543,152, Cl. 424-450.000.

Webber, Kenneth M.: *See*—
Mokadam, Anita R.; Strubelt, Charles E.; Williams, Dennis A.; and Webber, Kenneth M., 5,543,387, Cl. 507-135.000.

Webcraft Technologies, Inc.: *See*—
Silverschotz, Stanford B.; Rua, Louis, Jr.; Polunas, David M.; and Martin, Stephen E., 5,542,710, Cl. 283-94.000.

Weber, Beate; Hagemann, Jörg; Helling, Günter; and Geiger, Markus, to AGFA-Gevaert AG. Colour photographic recording material. 5,543,280, Cl. 430-503.000.

Weber, Darryl C.: *See*—
Luckevich, Mark; Tuck, Brian C.; Weber, Darryl C.; and DeVore, James H., 5,542,756, Cl. 303-122.110.

Weber, Georg: *See*—
Rieger, Bernhard; Yoshitake, Hiroki; Sawada, Atsushi; Plach, Herbert; and Weber, Georg, 5,543,077, Cl. 252-299.630.

Weber, Gregory T.: *See*—
Hartman, Peter G.; Jones, Keith L.; Larson, Thomas A.; and Weber, Gregory T., 5,542,390, Cl. 123-412.000.

Weckström, Kurt: *See*—
Merilläinen, Timo; Rantala, Börje; and Weckström, Kurt, 5,542,285, Cl. 73-23.210.

Wedel, Gregory L.: *See*—
Sims, Duke N.; and Wedel, Gregory L., 5,542,193, Cl. 34-117.000.

Wedellsborg, Bendt W. Pressure vessel apparatus for containing fluid under high temperature and pressure. 5,544,210, Cl. 376-294.000.

Weder, Donald E., to Family Trust U/T/A, The; and Southpac Trust International, Inc. Covering for flower pot and floral grouping. 5,542,169, Cl. 29-469.500.

Wee, Young-cheul: *See*—
Cho, Jun-hyoung; Choi, Sang-gil; and Wee, Young-cheul, 5,544,294, Cl. 395-141.000.

Weg, Stuart L. Nasal administration of ketamine to manage pain. 5,543,434, Cl. 514-647.000.

Wehmeyer, Keith R.; Logan, Robert J.; Miller, Robert H.; Augaitis, Sheila R.; and Dinwiddie, Aaron H., to Thomson Consumer Electronics, Inc. Graphical menu for a television receiver. 5,543,857, Cl. 348-589.000.

Wehner, Wolfgang: *See*—
Drewes, Rolf; Kolb, Markus; Kuhn, Karl J.; Sander, Hans-Jürgen; and Wehner, Wolfgang, 5,543,449, Cl. 524-114.000.

Wei, Chen. Adjustable rachet-style self-tightening wrench. 5,542,319, Cl. 81-105.000.

Weimer, Ralph; and Acker, Duane R., to Discovery Zone, Inc. Apparatus and method for washing balls. 5,542,440, Cl. 134-65.000.

Weinberger, Lester. Hybrid organic-inorganic bistable nonlinear optical gate. 5,543,631, Cl. 257-40.000.

Weinges, Alexa: *See*—
Balzer, Wolfgang R.; Clausen, Thomas; Frank, Anke; and Weinges, Alexa, 5,542,953, Cl. 8-416.000.

Weir, Bruce A.: *See*—
Brooks, Raymond J.; Gay, John M.; Weir, Bruce A.; McEntee, Paul E.; and Blood, Lauren, 5,544,206, Cl. 376-248.000.

Weis, Bernd; Turban, Karl-Albert; Bezler, Monika; Schulz, Manfred; and Siegmund, Gerd, to Alcatel N.V. Private branch exchange having a central control unit and a mobile control unit subordinate thereto. 5,544,226, Cl. 379-61.000.

Weiser, Mark D.: *See*—
Theimer, Marvin M.; Spreitzer, Michael J.; Weiser, Mark D.; Goldstein, Richard J.; Elrod, Scott A.; Swinehart, Daniel C.; Schilit, William N.; Krivacic, Robert T.; and Want, Roy, 5,544,321, Cl. 395-200.110.

Weiss, Richard A.: *See*—
Monteleone, Michael G.; Weiss, Richard A.; Evans, Marc D.; and Hanna, Marie R., 5,543,398, Cl. 512-23.000.

Weiss, Robert A.: *See*—
Sullivan, Michael J.; and Weiss, Robert A., 5,542,677, Cl. 473-385.000.

Weissen, Hans J.; and Porta, Norbert. Biodegradable fabric softening composition. 5,543,066, Cl. 510-515.000.

Wella AG: *See*—
Balzer, Wolfgang R.; Clausen, Thomas; Frank, Anke; and Weinges, Alexa, 5,542,953, Cl. 8-416.000.

Weller, Martin: *See*—
Heiss, Werner; Weller, Martin; and Eipper, Konrad, 5,542,491, Cl. 180-232.000.

Welles, Kenneth B., II: *See*—
Hartley, Richard I.; Noble, Julia A.; Grande, James C. M.; Jackson, William E.; Welles, Kenneth B., II; and Liu, Jane S., 5,544,254, Cl. 382-108.000.

Wells, Michael L., to Hughes Aircraft Company. Missile launch safety enhancement apparatus. 5,542,334, Cl. 89-1.812.

Wells, Steven E.; and Magnusson, Eric J., to Intel Corporation. Method for assuring that an erase process for a memory array has been properly completed. 5,544,119, Cl. 365-185.110.

Weng, Ping-Kuo: *See*—
Lin, San-Bao; Chang, Gwo-Dawn; Shie, Jin-Shown; Wang, Chein-Hsun; Weng, Ping-Kuo; and Lin, Ming-Der, 5,543,620, Cl. 250-338.300.

Wenger, Urs; Jenni, Hans R.; and Wüthrich, Andreas, to SMH Management Services AG. Gearbox. 5,542,309, Cl. 74-337.500.

Wenstrand, John S.; and Ekstedt, Thomas W. Method for focus group control in a graphical user interface. 5,544,299, Cl. 395-155.000.

Wenstrup, Robert S.; and Fieno, Joseph J., to Boston Test Tool Company. Calibration template for computed radiography. 5,544,157, Cl. 378-18.000.

Wente, Gerald: *See*—
Adrian, Willy; Bäthge, Frank; Borchers, Peter; Pietsch, Kurt; Wallbaum, Knuth; and Wente, Gerald, 5,542,522, Cl. 198-337.000.

Werninger, Johannes: *See*—
Beriger, Conrad; Grüning, Horst; Stemmler, Herbert; and Werninger, Johannes, 5,544,035, Cl. 363-132.000.

WES Technology Inc.: *See*—
Squirrell, Anton F., 5,542,684, Cl. 277-236.000.

Wesch, William E., Jr. Bi-directional gripping apparatus. 5,542,318, Cl. 81-57.330.

Wesson, David S.: *See*—
Owen, Harrold D.; and Wesson, David S., 5,542,480, Cl. 175-4.510.

Westerlage, Kenneth R.: *See*—
Kennedy, William C., III; and Westerlage, Kenneth R., 5,544,225, Cl. 379-59.000.

Westermeyer, Gary W., to AC&R Components, Inc. Electromechanical oil level regulator. 5,542,499, Cl. 184-103.200.

Western Atlas International, Inc.: *See*—
Singer, Benson; Maurer, Hans M.; Strack, Kurt M.; and Fanini, Otto N., 5,543,715, Cl. 324-368.000.

Western Fibres Limited: *See*—
Byfield, Paul C., 5,542,137, Cl. 5-500.000.

Westersund, Curtis D. Folding box diorama toy. 5,542,870, Cl. 446-75.000.

Westinghouse Air Brake Company: *See*—
Kettle, Paul J., Jr.; Santoro, Ralph, Jr.; and Ferri, Vincent, 5,542,891, Cl. 477-96.000.

Westinghouse Electric Corporation: *See*—
Cole, William G.; Hydeman, Jeffrey E.; Gunsallus, James M., Jr.; and Le, Qui, 5,543,599, Cl. 219-69.200.

Weston, John A.; and Johnson, Anthony D., to Mars Incorporated. Method and apparatus for controlling the dispensing of money. 5,542,519, Cl. 194-217.000.

Westphalen, Karl-Otto: *See*—
Münster, Peter; Ditrich, Klaus; Hamprecht, Gerhard; Gerber, Matthias; Westphalen, Karl-Otto; Walter, Helmut; and Karl, Rudolf, 5,543,416, Cl. 504-271.000.

Westvaco Corporation: *See*—
Starr, Fredricke S.; Wong, Joseph M.; and Kennedy, Norman L., 5,543,110, Cl. 422-5.000.

Westwood, John D., to International Business Machines Corporation. Magnetic storage system including a magnetoresistive read sensor with sendust shield utilizing an optimized sendust seed layer. 5,543,989, Cl. 360-113.000.

Wetherington, Diane R.: *See*—
Mandelbaum, Richard; Sherman, Stephen A.; and Wetherington, Diane R., 5,544,246, Cl. 380-23.000.

Wey, Chia-Sam, to Allen Telecom Group, Inc. Asymmetric dual-band combine filter. 5,543,758, Cl. 333-203.000.

Weyerhaeuser Company: *See*—
Hansen, Michael R.; and Young, Richard H., Sr., 5,543,215, Cl. 428-283.000.

Wheeler, Richard B.: *See*—
Pagano, Daniel M.; Wheeler, Richard B.; and Klees, Kevin J., 5,543,882, Cl. 354-311.000.

Wheelmasters, Inc.: *See*—
FitzGerald, David J., 5,542,750, Cl. 301-37.370.

Wheland, Robert C.: *See*—
Anolick, Colin; Cramer, Gregory D.; Dujari, Ramdas; Lee, Win-Chung; Rao, Sundar M.; and Wheland, Robert C., 5,543,495, Cl. 528-481.000.

Whirlpool Corporation: *See*—
Hortin, Gregory G.; Fisher, Michael H.; Coleman, Joseph L.; and Adams, Scott D., 5,542,264, Cl. 62-338.000.

Whistler Corporation: *See*—
L'Esperance, Lauren L.; Autio, Craig R.; Mariner, E. Thomas; and Stapelfeld, Norval D., 5,543,776, Cl. 340-426.000.

Whitaker Corporation, The: *See*—
Frantz, Robert H., 5,542,850, Cl. 439-31.000.

Whitehurst, Eric P.: *See*—
Batey, Graham J.; and Whitehurst, Eric P., 5,542,256, Cl. 62-610.000.

Whiting, Philip; and Mehta, Anthony H., to Abitibi-Price, Inc. Supercritical water oxidation of organics using a mobile surface. 5,543,057, Cl. 210-721.000.

Whitney, Colin G.: *See*—
Chow, David H.; and Whitney, Colin G., 5,543,628, Cl. 257-17.000.

Whitson, Mark A.; Lewis, John D.; Chen, Tienteh; Dannhauser, Thomas J.; and Bagchi, Pranab, to Eastman Kodak Company. Attachment of gelatin-grafted plymer particles to pre-precipitated silver halide grains. 5,543,283, Cl. 430-569.000.

Wicker, Thomas: *See*—
Barnes, Michael S.; Coultas, Dennis K.; Forster, John C.; Keller, John H.; and Wicker, Thomas, 5,543,184, Cl. 427-571.000.

Widman, Michael: *See*—
Nettelbladt, Hans; and Widman, Michael, 5,543,638, Cl. 257-98.000.

Wiegman, Herman L. N.: *See*—
Fisher, Rayette A.; Hennessy, William A.; and Wiegman, Herman L. N., 5,544,038, Cl. 363-147.000.

Wiggerman, Ronald E.; Gates, Craig; Habbley, Dale L.; and Hollowed, Edward J., to Airguide Instrument Company. Marine speedometer. 5,544,076, Cl. 364-565.000.

Wijaya, Jony: *See*—
Swei, Gwo S.; Avril, Nicolas; and Wijaya, Jony, 5,542,961, Cl. 51-295.000.

Wijbenga, Hendrik, to U.S. Philips Corporation. Luminaire. 5,544,030, Cl. 362-297.000.

Wildes, Donald: *See*—
Elsenheimer, John A.; Bried, David K.; Sands, Jeffrey L.; Wildes, Donald; and Nugent, J. Patrick, 5,542,462, Cl. 160-178.000.

Wilhelm, Dana; and Houk, Talbott M., to International Rectifier Corporation. MOSFET driver with fault reporting outputs. 5,543,994, Cl. 361-18.000.

Wilhelm, Donald M.; Hubalek, Verne A.; Smith, S. Andrew; and Immergluck, Robert, to California Pellet Mill Company. System providing rapid die change capability to a pellet mill. 5,542,838, Cl. 425-186.000.

Wilkinson, Robert, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Adaptive antenna arrays for HF radio beamforming communications. 5,543,806, Cl. 342-368.000.

Wilkinson, Wendell W.: *See*—
Carpenter, Kelly S.; Dearing, Gerard M.; Nick, Jeffrey M.; Strickland, Jimmy P.; Swanson, Michael D.; and Wilkinson, Wendell W., 5,544,345, Cl. 395-477.000.

Wilkinson, William T. Multifunction exercise and aerobic bench. 5,542,898, Cl. 482-142.000.

Williams, Brown F.: *See*—
Rosser, Roy J.; and Williams, Brown F., 5,543,856, Cl. 348-578.000.

170–651 O.G.–96–31: QL3

Williams, Dennis A.; McDougall, Lee A.; and Looney, James R., to Exxon Chemical Patents Inc. Intensified corrosion inhibitor and method of use. 5,543,388, Cl. 507-269.000.
Williams, Dennis A.: *See*—
Mokadam, Anita R.; Strubelt, Charles E.; Williams, Dennis A.; and Webber, Kenneth M., 5,543,387, Cl. 507-135.000.
Williams, Gordon F.: *See*—
Shofner, Frederick M.; Baldwin, Joseph C.; Williams, Gordon F.; and Townes, Mark G., 5,544,090, Cl. 364-552.000.
Williams, Marvin L.: *See*—
Dugan, Pamela A.; Fitzpatrick, Gregory P.; Johnson, William J.; and Williams, Marvin L., 5,544,048, Cl. 364-419.170.
Williams, Ronald D., to Emerson Electric Co. Electric motor terminal board with integral switch locking means. 5,543,671, Cl. 310-71.000.
Williams, Terry N.; and Parrish, George R. Bedside control unit for a hospital bed. 5,542,138, Cl. 5-658.000.
Williams, Wayne: *See*—
Grey, Michael J.; Williams, Wayne; and Shaw, William H., 5,542,237, Cl. 53-472.000.
Williamson, Kenneth M.: *See*—
Stoyell, Richard C.; Williamson, Kenneth M.; Hopkins, Scott D.; Geibel, Stephen A.; and Wolff, Terry L., 5,543,047, Cl. 210-493.200.
Williamson, Robert C., to Carver Corporation. Audio frequency power amplifiers with actively damped filter. 5,543,753, Cl. 330-297.000.
Willis, Jim: *See*—
Merkle, Cliff; Burns, John; Laib, Gordon; Willis, Jim; Mitchel, Scotty; and Erickson, Dennis, 5,542,544, Cl. 209-139.100.
Willmann, Martin: *See*—
Benz, Gerhard; Marek, Jiri; Willmann, Martin; Bantien, Frank; Muenzel, Horst; Laermer, Franz; Offenberg, Michael; and Schilp, Andrea, 5,542,558, Cl. 216-2.000.
Wills, Joan F. Carrier for stacked plates. 5,542,731, Cl. 294-161.000.
Wills, Kendall S.; Rodriguez, Paul A.; and Brewer, Melvin, to Texas Instruments Incorporated. Wafer scribe technique using laser by forming polysilicon. 5,543,365, Cl. 437-226.000.
Wilson, David R.: *See*—
Patton, Jasson T.; Devore, David D.; Timmers, Francis J.; Soto, Jorge; Schmidt, Gregory F.; and Wilson, David R., 5,543,480, Cl. 526-126.000.
Wilson Greatbatch Ltd.: *See*—
Takeuchi, Esther S.; and Pyszczek, Michael F., 5,543,249, Cl. 429-217.000.
Wilson, John B.: *See*—
Chanoch, Lawrence H.; and Wilson, John B., 5,542,760, Cl. 366-160.400.
Wilson, Paul C.: *See*—
Bither, David S.; Loewy, Charles S. F.; and Wilson, Paul C., 5,544,330, Cl. 395-280.000.
Wilson, Richard C.; and Culpepper, Patrick M., to Abco, Inc. Corner post support member. 5,542,222, Cl. 52-287.100.
Wilson, Robert S., to Short Brothers PLC. Noise attenuation panel. 5,543,198, Cl. 428-116.000.
Wilson Sporting Goods Co.: *See*—
Proudfit, James R.; and Peterson, Ralph, 5,542,680, Cl. 473-378.000.
Wilson, Woodrow S.: *See*—
Peters, Ray; Wilson, Woodrow S.; and LaVange, Donald, 5,542,585, Cl. 222-531.000.
Winbond Electronics Corporation: *See*—
Sheng, Huang Y.; Tsai, Ching-hung; and Kuang, Wu J., 5,544,221, Cl. 379-7.000.
Winetzhammer, Willibald: *See*—
Pollhammer, Stefan; Scaller, Josef; and Winetzhammer, Willibald, 5,543,560, Cl. 560-234.000.
Wingert, Horst: *See*—
Doetzer, Reinhard; Sauter, Hubert; Bayer, Herbert; Roehl, Franz; Lorenz, Gisela; Ammermann, Eberhard; and Wingert, Horst, 5,543,433, Cl. 514-638.000.
Winget, Larry J.: *See*—
Davis, David J., 5,542,694, Cl. 280-728.300.
Winkler, Kenneth W., to Schlumberger Technology Corporation. Borehole apparatus and methods for measuring formation velocities as a function of azimuth, and interpretation thereof. 5,544,127, Cl. 367-27.000.
Winnek, Douglas P.; and Summerall, Albert M. Instant printer for volumetric imaging of data from a sonic signal source apparatus. 5,543,873, Cl. 354-112.000.
Winnek, Douglas F. Instant printer for volumetric imaging of data from electromagnetic radiation output device. 5,543,874, Cl. 354-112.000.
Winser, Paul A., to U.S. Philips Corporation. Display apparatus having a display processor for storing and filtering two dimensional arrays forming a pyramidal array, and method of operating such an apparatus. 5,544,292, Cl. 395-130.000.
Winter, Andreas; Küber, Frank; Aulbach, Michael; Bachmann, Bernd; Klein, Robert; Köhlein, Klaus; Spaleck, Walter; and Kohlpaintner, Christian, to Hoechst AG. Metallocene compound. 5,543,373, Cl. 502-103.000.
Winter, John A.: *See*—
Bartrug, Bruce A.; Koontz, Harry S.; and Winter, John A., 5,543,601, Cl. 219-203.000.
Wirz, Arno; Sobotta, Peter; and Renner, Jochen, to Heidelberger Druckmaschinen AG. Suction head for a feeder of a sheet-fed rotary printing press. 5,542,658, Cl. 271-107.000.
Wischermann, Gerhard, to U. S. Philips Corporation. Method of and apparatus for reducing noise in a motion detector signal. 5,543,858, Cl. 348-618.000.
Wisconsin Alumni Research Foundation: *See*—
Handelsman, Jo; Halverson, Larry; Stabb, Eric V.; Lethbridge, Benjamin; and Silo, Laura, 5,543,301, Cl. 435-34.000.
Wisebaker, Robert E.: *See*—
Smith, Gregory A.; Foltz, Dale E.; Wisebaker, Robert E.; and Loy, Robert E., 5,542,275, Cl. 72-90.000.
Wissmueller, Jay K.: *See*—
Lydy, Bruce S.; Keitel, Michael A.; and Wissmueller, Jay K., 5,542,241, Cl. 56-11.300.
Witco Corporation: *See*—
Chen, Bing-Lin; and Barker, James A., 5,543,451, Cl. 524-224.000.
Witco GmbH: *See*—
Lisowsky, Richard, 5,543,535, Cl. 556-11.000.
Wittern, Francis A., Jr.; and Hawkins, Paul L., to Fawn Engineering Corporation. Means and method for illuminating parts of a vending machine. 5,544,024, Cl. 362-89.000.
Witwer, Alan D.: *See*—
Surbey, David J.; Smith, James L.; Allen, Richard C.; and Witwer, Alan D., 5,542,840, Cl. 431-116.000.
Wixey, Barry D.; Young, Ronald E.; Baird, Charles J.; and Haffely, Jeffrey L., to Delta International Machinery Corp. Flat folding support. 5,542,639, Cl. 248-439.000.
Wm. Wrigley Jr. Company: *See*—
Song, Joo H.; Sundstrom, Christafor E.; Record, David W.; Townsend, Donald J.; Broderick, Kevin B.; and Schnell, Philip G., 5,543,160, Cl. 426-3.000.
Wolak, Edmund L.; Endriz, John; Worland, D. Philip; Dawson, David D.; and Scifres, Donald R., to SDL, Inc. Semiconductor illumination system with expansion matched components. 5,544,184, Cl. 372-43.000.
Wolf, Joel L.: *See*—
Shachnai, Hadas; Wolf, Joel L.; and Yu, Philip S., 5,544,313, Cl. 395-200.010.
Wolf, Ralph: *See*—
Gillespie, David; Allen, Timothy P.; and Wolf, Ralph, 5,543,591, Cl. 178-18.000.
Wolff, Danny K.: *See*—
Turner, Edwin C.; and Wolff, Danny K., 5,542,475, Cl. 166-387.000.
Wolff, Terry L.: *See*—
Stoyell, Richard C.; Williamson, Kenneth M.; Hopkins, Scott D.; Geibel, Stephen A.; and Wolff, Terry L., 5,543,047, Cl. 210-493.200.
Wollman, Eric W.: *See*—
Isaac, Walter H.; and Wollman, Eric W., 5,543,281, Cl. 430-551.000.
Wolniak, Robert T. Die space access system for tie-bar style die-casting machines. 5,542,465, Cl. 164-341.000.
Wolters, Erich: *See*—
Landscheidt, Heinz; Wolters, Erich; Wagner, Paul; and Klausener, Alexander, 5,543,548, Cl. 558-277.000.
Wolverine World Wide, Inc.: *See*—
Sessa, Raymond V., 5,542,195, Cl. 36-28.000.
Womble, Scott W.: *See*—
Nestor, John J.; Womble, Scott W.; and Maag, Hans, 5,543,414, Cl. 514-262.000.
Wong, Danny C. Y.: *See*—
Abraham, David W.; and Wong, Danny C. Y., 5,543,918, Cl. 356-376.000.
Wong, Elizabeth: *See*—
Cromlish, Wanda A.; Kennedy, Brian P.; O'Neill, Gary; Vickers, Philip J.; Wong, Elizabeth; and Mancini, Joseph A., 5,543,297, Cl. 435-25.000.
Wong, Joseph M.: *See*—
Starr, Fredricke S.; Wong, Joseph M.; and Kennedy, Norman L., 5,543,110, Cl. 422-5.000.
Wong, Matt: *See*—
Robinson, Mark T.; Gardner, Steven H.; Wong, Matt; Kasmir, Seton P.; Balachandran, Kumar; Graham, Sue; Schjelderup, Gail; and Quick, Roy F., Jr., 5,544,222, Cl. 379-58.000.
Wong, Milly M. L.: *See*—
Hein, Carl C., III; Koschak, Matthew S.; Powell, Mark S.; Shearer, Peter P.; and Wong, Milly M. L., 5,542,529, Cl. 206-245.000.
Wong, Richard J.: *See*—
Cox, William D.; Chan, Andrew K. L.; Wong, Richard J.; Apland, James M.; and Gordon, Kathryn E., 5,544,070, Cl. 364-489.000.
Wong, Samuel S.: *See*—
Swindell, Archie C.; and Wong, Samuel S., 5,543,411, Cl. 514-254.000.
Wong, Stephen L., to Philips Electronics North America Corporation. Integrated half-bridge driver circuit. 5,543,740, Cl. 327-108.000.
Wood, Louis L.; and Calton, Gary J., to Bayer AG. Copolymers of polysuccinimide and polycarboxylic acids. 5,543,491, Cl. 528-328.000.
Wood, Richard G., to Teacorp Seismic Products, Inc. Field repairable electrical connector. 5,542,856, Cl. 439-281.000.
Woodbridge Foam Corporation: *See*—
Burchi, Charles R., 5,542,747, Cl. 297-452.550.
Woodbridge, M. Josephine. Chess and checkers game pieces having selectable indicia. 5,542,678, Cl. 273-260.000.
Woodman, Daniel W., Jr.; St. Hilaire, Vance; and Silva, Guilherme A., to Battenfeld Gloucester Engineering Co., Inc. Wicket stacking guide. 5,542,802, Cl. 414-27.000.
Woodmansee, Michael A.: *See*—

Beard, Douglas R.; Phelps, Andrew E.; Woodmansee, Michael A.; Blewett, Richard G.; Lohman, Jeffrey A.; Silbey, Alexander A.; Spix, George A.; Simmons, Frederick J.; and Van Dyke, Don A., 5,544,337, Cl. 395-375.000.
Woods Industries, Inc.: *See*—
Ison, Wendell; Wright, Douglas; Ireland, Scott; Hicks, Geoffrey; and Hyde, Bradley J., 5,542,859, Cl. 439-536.000.
Worek, William M.; and Zheng, Weixiang, to Gas Research Institute. Open cycle desiccant cooling process. 5,542,259, Cl. 62-94.000.
Workman, Michael L.: *See*—
Bajorek, Christopher H.; Glaser, Thomas W.; Klaassen, Klaas B.; Nielsen, Charles R.; Santana, George R.; Smith, Gordon J.; Thompson, David A.; and Workman, Michael L., 5,544,138, Cl. 369-54.000.
Worland, D. Philip: *See*—
Wolak, Edmund L.; Endriz, John; Worland, D. Philip; Dawson, David D.; and Scifres, Donald R., 5,544,184, Cl. 372-43.000.
World Auto Plate, Ltd.: *See*—
Matsuoka, Masaaki, 5,542,200, Cl. 40-204.000.
Worsley, Debra J.: *See*—
Edem, Brian C.; and Worsley, Debra J., 5,544,324, Cl. 395-200.170.
Wostyn, Steven: *See*—
Allegaert, Marnix; and Wostyn, Steven, 5,542,649, Cl. 256-54.000.
Woychik, Charles G.: *See*—
Gaynes, Michael A.; Papathomas, Kostas; Phelan, Giana M.; and Woychik, Charles G., 5,542,602, Cl. 228-175.000.
Woyke, Thomas; and Schober, Tilman, to Forschungszentrum Julich GmbH. Hydrogen-gas discharge lamp. 5,543,687, Cl. 313-556.000.
Wozney, John M.; Rosen, Vicki A.; and Wang, Elizabeth A., to Genetics Institute, Inc. Bone morphogenetic protein 5(BMP-5) compositions. 5,543,394, Cl. 514-12.000.
Wright, Douglas: *See*—
Ison, Wendell; Wright, Douglas; Ireland, Scott; Hicks, Geoffrey; and Hyde, Bradley J., 5,542,859, Cl. 439-536.000.
Wright, Erlene. Potpourri assembly. 5,542,564, Cl. 220-480.000.
Wright, Hancel R.: *See*—
Smith, Charles S.; and Wright, Hancel R., 5,542,765, Cl. 383-17.000.
Wright, James A.; and Parrish, Ottis O., to Pioneer-Hi-Bred International, Inc. Inbred corn line PHK46. 5,543,575, Cl. 800-200.000.
Wright, Thomas C., Jr.: *See*—
Silverstein, Saul J.; Lungu, Octavian; and Wright, Thomas C., Jr., 5,543,294, Cl. 435-6.000.
Wright-Boulton, Neil: *See*—
Jackson, Frederick S.; Henry, Michael D.; Leaver, David; and Wright-Boulton, Neil, 5,544,202, Cl. 375-376.000.
Wu, An-hsiang, to Phillips Petroleum Company. Isomerization catalyst and use thereof in alkane/cycloalkane isomerization. 5,543,374, Cl. 502-107.000.
Wu, Chwan-Hwa: *See*—
Liu, Hua-Kuang; Barhen, Jacob; Farhat, Nabil H.; and Wu, Chwan-Hwa, 5,544,280, Cl. 395-24.000.
Wu, Chyi-Chang, to United Microelectronics Corp. Keyboard scanning circuit. 5,543,786, Cl. 341-22.000.
Wu, Guanli: *See*—
Unger, Evan C.; Fritz, Thomas A.; Matsunaga, Terry; Ramaswami, VaradaRajan; Yellowhair, David; and Wu, Guanli, 5,542,935, Cl. 604-190.000.
Wu, Shih Tza: *See*—
Bucher, John C.; and Wu, Shih Tza, 5,542,819, Cl. 416-146.00R.
Wu, Shy-Hsien, to Corning Incorporated. Method for producing activated carbon bodies having silicone resin binder. 5,543,096, Cl. 264-63.000.
Wu, Te-Kao; Milroy, William W.; and Drost, Steven W., to Hughes Aircraft Company. Shielding screen for integration of multiple antennas. 5,543,815, Cl. 343-909.000.
Wu, Wei E., to Motorola, Inc. Process for fabricating refractory-metal silicide layers in a semiconductor device. 5,543,362, Cl. 437-200.000.
Wuhan University of Technology: *See*—
Yu, Liangzhong; and Wang, Zigiang, 5,542,615, Cl. 241-57.000.
Wurgler, Winston A., to Feco Engineered Systems, Inc. Chuck assembly and method for processing an open-ended article. 5,542,526, Cl. 198-803.700.
Wüthrich, Andreas: *See*—
Wenger, Urs; Jenni, Hans R.; and Wüthrich, Andreas, 5,542,309, Cl. 74-337.500.
Wyslotsky, Ihor; and Mello, Frank C., to Sara Lee Corporation. Improved method of providing resealable containers and matching lockable lids. 5,542,234, Cl. 53-433.000.
Xerox Corporation: *See*—
Andrews, John R., 5,543,611, Cl. 250-205.000.
Carolan, Kevin M., 5,543,894, Cl. 355-208.000.
Fisli, Tibor; Guerin, Jean-Michel; Maeda, Patrick Y.; and Quant, Donald J., 5,543,825, Cl. 346-141.000.
Fisli, Tibor, 5,543,829, Cl. 347-241.000.
Harrington, Steven J., 5,543,935, Cl. 358-429.000.
Henderson, Richard D.; and Barbarino, Michael J., 5,544,049, Cl. 364-419.190.
Herbert, William G.; Bischoping, Patricia; Altavela, Robert P.; Kotowicz, Lawrence; Schmitt, Peter J.; Jansen, Ronald E.; Lennon, John H.; and Grey, Henry G., 5,543,028, Cl. 205-70.000.
Hosier, Paul A.; and Tandon, Jagdish C., 5,543,838, Cl. 348-311.000.
Mahoney, James V.; and Rao, Satyajit, 5,544,267, Cl. 382-317.000.
Mestha, Lingappa K., 5,543,896, Cl. 355-208.000.
Morrison, Jan D.; Grabowski, Edward F.; Dotschkal, Virginia E.; Lynch, Anita P.; and May, Jerome E., 5,543,177, Cl. 427-288.000.
Quesnel, Lisbeth S., 5,543,909, Cl. 355-317.000.
Schwarz, William M.; and Fuller, Timothy J., 5,543,259, Cl. 430-106.000.
Theimer, Marvin M.; Spreitzer, Michael J.; Weiser, Mark D.; Goldstein, Richard J.; Elrod, Scott A.; Swinehart, Daniel C.; Schilit, William N.; Krivacic, Robert T.; and Want, Roy, 5,544,321, Cl. 395-200.110.
Xia, Hongxia: *See*—
Sun, Xujiang; Zhang, Junmin; Wang, Tongshun; Zhang, Jun; Su, Hong; and Xia, Hongxia, 5,542,372, Cl. 117-68.000.
XICOR, Inc.: *See*—
Lambertson, Roy T., 5,544,103, Cl. 365-185.150.
Xie, Chenggang: *See*—
Kumar, Nalin; and Xie, Chenggang, 5,543,684, Cl. 313-495.000.
Xu, Frank; and Nally, Robert M., to Cirrus Logic, Inc. Apparatus and method for providing multiple video data streams from a single source. 5,543,842, Cl. 348-387.000.
Xu, Frank L.: *See*—
Pratt, Kyle A.; Yonker, Michael A.; and Xu, Frank L., 5,543,850, Cl. 348-617.000.
Xu, Jinzhu; Yadan, Jean-Claude Y.; Moutet, Marc E.; and Chaudiere, Jean R., to Oxis International S.A. Method for assaying the sod activity by using a self-oxidizable compound necessary for its implementation, self-oxidizable compounds and preparation thereof. 5,543,298, Cl. 435-25.000.
Xydis, Thomas G.: *See*—
Hochstein, Peter A.; Tenenbaum, Jeffrey; and Xydis, Thomas G., 5,543,797, Cl. 342-42.000.
Yablans, Gerald; and Chan, Anthony, to P.O.P. Displays, Inc. Adjustable display and dispenser rack. 5,542,552, Cl. 211-59.300.
Yabuki, Yoshikazu: *See*—
Kato, Akira; and Yabuki, Yoshikazu, 5,542,663, Cl. 473-363.000.
Yadan, Jean-Claude Y.: *See*—
Xu, Jinzhu; Yadan, Jean-Claude Y.; Moutet, Marc E.; and Chaudiere, Jean R., 5,543,298, Cl. 435-25.000.
Yagasaki, Yoichi, to Sony Corporation. Motion picture encoding system. 5,543,846, Cl. 348-415.000.
Yagasaki, Yoichi: *See*—
Chang, Ching-Fang; Yanagihara, Naofumi; Yonemitsu, Jun; Tahara, Katsumi; Yagasaki, Yoichi; and Suzuki, Teruhiko, 5,543,932, Cl. 358-335.000.
Kato, Motoki; Yagasaki, Yoichi; and Yonemitsu, Jun, 5,543,843, Cl. 348-400.000.
Yagel, Roni: *See*—
Kaufman, Arie E.; Yagel, Roni; and Cohen-or, Daniel, 5,544,283, Cl. 395-124.000.
Yahagi, Masahiro: *See*—
Iwaya, Shouichi; Yahagi, Masahiro; Kudou, Hitoshi; Itou, Shigeru; Fujiwara, Isao; Ogasawara, Tadashi; Morita, Makoto; Taguchi, Teruo; and Sasaki, Setuo, 5,544,002, Cl. 361-302.000.
Yahiro, Tomoyuki: *See*—
Saitō, Mutsumi; Yahiro, Tomoyuki; and Hatakeyama, Masahiro, 5,543,615, Cl. 250-251.000.
Yakabe, Toru: *See*—
Hara, Akihito; Higuchi, Toshiharu; Yakabe, Toru; Kanda, Shigeo; and Yamamoto, Eiji, 5,543,682, Cl. 313-446.000.
Yakobson, Dennis L.: *See*—
Benham, Charles B.; Bohn, Mark S.; and Yakobson, Dennis L., 5,543,437, Cl. 518-700.000.
Yakushiji, Shigenori: *See*—
Nakanishi, Hidetoshi; Usui, Yasunori; and Yakushiji, Shigenori, 5,543,639, Cl. 257-133.000.
Yamabe, Kikuo: *See*—
Yoshii, Ichiro; Kamijoh, Hiroyuki; Ozawa, Yoshio; Yamabe, Kikuo; Hashimoto, Kazuhiko; Okumura, Katsuya; and Hama, Kaoru, 5,543,334, Cl. 437-8.000.
Yamada, Akira: *See*—
Nakagawa, Hiromasa; Yamada, Akira; and Hata, Masayuki, 5,544,341, Cl. 395-445.000.
Yamada, Hiroaki: *See*—
Kada, Kazumasa; Horigichi, Masaharu; and Yamada, Hiroaki, 5,543,912, Cl. 356-73.100.
Yamada, Ichiho; Miyagi, Tomoyoshi; Nezuka, Shoji; Ichihashi, Satoru; and Isozaki, Hiroshi, to Honda Giken Kogyo Kabushiki Kaisha. Multispindle-head machine tool. 5,542,899, Cl. 483-32.000.
Yamada, Katsuhiko: *See*—
Hayama, Kazuhide; Saitoh, Yukio; Kitani, Yasuo; and Yamada, Katsuhiko, 5,543,440, Cl. 523-103.000.
Yamada, Katsuyuki: *See*—
Kimura, Yuji; Ohta, Eiichi; Kondo, Hitoshi; Takahashi, Masaetsu; Kameyama, Kenji; and Yamada, Katsuyuki, 5,543,945, Cl. 359-55.000.
Yamada, Kunihiko: *See*—
Suda, Hirofumi; Toyama, Masamichi; Fujiwara, Akihiro; Yamada, Kunihiko; and Yoshimura, Katsuji, 5,543,839, Cl. 348-349.000.
Yamada, Makoto: *See*—
Matsuda, Naoto; Yamada, Makoto; Ono, Michio; Ishiwata, Yasuhiro; and Uchida, Osamu, 5,543,279, Cl. 430-559.000.
Yamada, Masazumi: *See*—
Hamai, Shinji; Iketani, Akira; Matsumi, Chiyoko; Juri, Tatsuro; Yamada, Masazumi; Kawakami, Yasunori; and Murakami, Yuuzou, 5,543,937, Cl. 358-341.000.

Yamada, Muneki: *See*—
Koyama, Masayasu; Oda, Yasuhiro; Kikuchi, Hiroaki; and Yamada, Muneki, 5,542,557, Cl. 215-347.000.

Yamada, Osamu; Sugiura, Susumu; and Makita, Takeshi, to Canon Kabushiki Kaisha. Image processing method and apparatus with error diffusion. 5,543,855, Cl. 348-753.000.

Yamada, Toshiaki: *See*—
Kawaki, Takao; Amagai, Akikazu; Yamada, Toshiaki; Harada, Hidefumi; Ban, Hajime; Takeda, Yuji; and Yamamoto, Koji, 5,543,474, Cl. 525-440.000.

Yamada, Yoshiaki; Ito, Nobukazu; Miyakawa, Kuniko; and Yamanaka, Michiko, to NEC Corporation. Process of manufacturing a semiconductor device by filling a via hole in an interlayered film of the device with wiring metal. 5,543,357, Cl. 437-192.000.

Yamada, Yoshitaka: *See*—
Miyata, Shigeru; Yamada, Yoshitaka; Yoshida, Hideji; Matsubara, Yoshihiro; and Ito, Yasuo, 5,543,716, Cl. 324-402.000.

Yamagiwa, Yoshitoshi: *See*—
Nakamura, Nobuyuki; Minamimura, Masaaki; Shiozawa, Fumio; and Yamagiwa, Yoshitoshi, 5,543,093, Cl. 264-40.500.

Yamaguchi, Atsushi: *See*—
Hoshino, Tsutomu; Yamaguchi, Atsushi; Ohashi, Tadashi; Ohga, Juro; and Furuya, Hiroyuki, 5,544,201, Cl. 345-350.000.

Yamaguchi, Hiroaki: *See*—
Suzuki, Haruhiko; Kato, Yasunari; Ota, Kazuomi; and Yamaguchi, Hiroaki, 5,544,000, Cl. 361-139.000.

Yamaguchi, Hiroshi: *See*—
Mizuno, Tomoko; Takahashi, Toshiyuki; Yamaguchi, Hiroshi; and Hisamatsu, Nobuaki, 5,544,130, Cl. 369-1.000.

Yamaguchi, Ikunori: *See*—
Hirata, Sumiaki; Yamaguchi, Ikunori; and Maekawa, Kazunobu, 5,543,892, Cl. 355-205.000.

Yamaguchi, Manabu; and Kanno, Masaaki, to National Tank Company. Apparatus for electrostatic liquid/liquid contactor. 5,543,027, Cl. 204-660.000.

Yamaguchi, Naoaki: *See*—
Ohtani, Hisashi; Miyanaga, Akiharu; Zhang, Hongyong; Yamaguchi, Naoaki; and Suzuki, Atsunori, 5,543,352, Cl. 437-101.000.

Yamaguchi, Shojiro: *See*—
Kadowaki, Toshio; Takemoto, Hajime; and Yamaguchi, Shojiro, 5,544,217, Cl. 378-198.000.

Yamaguchi, Yoshihisa: *See*—
Niwa, Masahiro; Sugano, Yuji; Uenishi, Ken-ichi; Kitada, Hideto; Yamaguchi, Yoshihisa; Kobayashi, Eiko; Kubo, Kunimichi; and Sano, Akira, 5,543,478, Cl. 526-82.000.

Yamaha Corporation: *See*—
Masuda, Hideyuki, 5,543,580, Cl. 84-723.000.

Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Kobayashi, Noboru, 5,542,862, Cl. 440-38.000.
Okubo, Akihiko, 5,542,387, Cl. 123-192.200.

Yamakawa, Akira: *See*—
Katayama, Tetsuya; Murabe, Kaoru; Komura, Osamu; Kawai, Chihiro; Yamakawa, Akira; Matsunuma, Kenji; Yasuoka, Norio; Higuchi, Matsuo; and Miyake, Masaya, 5,543,371, Cl. 501-97.000.

Yamamoto, Eiji: *See*—
Hara, Akihito; Higuchi, Toshiharu; Yakabe, Toru; Kanda, Shigeo; and Yamamoto, Eiji, 5,543,682, Cl. 313-446.000.

Yamamoto, Hajime; and Terada, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Electrophotographic developing method using magnetic developing material and apparatus employed therefor. 5,543,901, Cl. 355-246.000.

Yamamoto, Hiroshi: *See*—
Sugiyama, Koji; and Yamamoto, Hiroshi, 5,543,315, Cl. 436-161.000.

Yamamoto, Koichi: *See*—
Tanaka, Tadashi; Sakamoto, Masaaki; Yamamoto, Koichi; and Kitagawa, Koji, 5,543,236, Cl. 428-614.000.

Yamamoto, Koji: *See*—
Kawaki, Takao; Amagai, Akikazu; Yamada, Toshiaki; Harada, Hidefumi; Ban, Hajime; Takeda, Yuji; and Yamamoto, Koji, 5,543,474, Cl. 525-440.000.

Yamamoto, Naoki; Yanagase, Akira; Iwasaki, Tadashi; and Itoh, Masakazu, to Mitsubishi Rayon Co., Ltd. Graft copolymer particles their production and compositions comprising them. 5,543,460, Cl. 525-64.000.

Yamamoto, Norihito: *See*—
Kobayashi, Shigeki; and Yamamoto, Norihito, 5,542,600, Cl. 228-102.000.

Yamamoto, Shinichi: *See*—
Nakamura, Yoshikatsu; Kawamura, Osamu; Takahashi, Teruo; and Yamamoto, Shinichi, 5,542,990, Cl. 148-319.000.

Yamamoto, Toshiyuki: *See*—
Shirai, Fumiya; Kuniya, Masayoshi; Mikura, Chiemi; Matsushita, Tomoko; Akemi, Hitoshi; and Yamamoto, Toshiyuki, 5,543,151, Cl. 424-448.000.

Yamamoto, Yoshihisa: *See*—
Tsukamoto, Kazumasa; Hayabuchi, Masahiro; Nishida, Masaaki; Yamamoto, Yoshihisa; Kusafuka, Muneo; Mikami, Kazuhiro; Tsutsui, Hiroshi; and Iwata, Akihito, 5,542,887, Cl. 475-63.000.

Yamamoto, Yuichi; and Tatsu, Haruyoshi, to Nippon Mektron, Limited. Vulcanizable, fluorine-containing elastomer composition. 5,543,468, Cl. 525-245.000.

Yamamuro, Mikio, to Kabushiki Kaisha Toshiba. Optical disk apparatus for reading data from zones of an optical disk using different frequency clocks. 5,544,134, Cl. 369-32.000.

Yamanaka, Junichi: *See*—
Onodera, Hisashi; and Yamanaka, Junichi, 5,542,939, Cl. 604-319.000.

Yamanaka, Michiko: *See*—
Yamada, Yoshiaki; Ito, Nobukazu; Miyakawa, Kuniko; and Yamanaka, Michiko, 5,543,357, Cl. 437-192.000.

Yamano, Shozo; and Ogawa, Hidehiro, to Nikon Corporation. Camera system. 5,543,885, Cl. 354-400.000.

Yamanoi, Toshimi: *See*—
Shibata, Jun; Obayashi, Hiroaki; Kimura, Makoto; Fukuzumi, Shuzo; Yoshikawa, Hironori; Hitotsumatsu, Atsushi; Hashimoto, Yukio; Yamanoi, Toshimi; and Takaya, Seiji, 5,542,700, Cl. 280-735.000.

Yamasaki, Masahiro; Housai, Koichiro; Shirahase, Hiromi; Akamatsu, Nobuyuki; Tabuchi, Michiyuki; Hirata, Toshinari; and Miyazaki, Yoshifumi, to Nissin Shokuhin Kabushiki Kaisha. Process for producing fresh three-layered noodles. 5,543,168, Cl. 426-557.000.

Yamaseki, Ken-ichi: *See*—
Uchida, Hiroshi; Takahashi, Iruru; Yamaseki, Ken-ichi; and Satokawa, Shigeo, 5,543,125, Cl. 423-239.200.

Yamashiro, Akiyoshi: *See*—
Kanazumi, Hisao; and Yamashiro, Akiyoshi, 5,542,651, Cl. 266-231.000.

Yamashita, Shinichi: *See*—
Fujii, Akio; Kashida, Motokazu; Watanabe, Ikuo; and Yamashita, Shinichi, 5,544,176, Cl. 371-40.100.

Yamashita, Tsukasa: *See*—
Mizuguchi, Yoshihiro; Hamada, Hiroshi; Aoyama, Shigeru; and Yamashita, Tsukasa, 5,543,942, Cl. 359-40.000.

Yamauchi, Tatsumi: *See*—
Yokoyama, Yuji; Akioka, Takashi; Iwamura, Masahiro; Hiraishi, Atsushi; Kobayashi, Yutaka; Yamauchi, Tatsumi; Takahashi, Shigeru; Gotou, Nobuyuki; and Ide, Akira, 5,544,125, Cl. 365-230.060.

Yamazaki, Akira: *See*—
Dosaka, Katsumi; Kumanoya, Masaki; Hayano, Kouji; Yamazaki, Akira; Iwamoto, Hisashi; Abe, Hideaki; Konishi, Yasuhiro; Himukashi, Katsumitsu; Ishizuka, Yasuhiro; and Saiki, Tsukasa, 5,544,121, Cl. 365-222.000.

Yamazaki, Shunpei, to Semiconductor Energy Laboratory Co., Ltd. Insulated gate field effect transistor. 5,543,636, Cl. 257-66.000.

Yamazaki, Shunpei: *See*—
Mase, Akira; Hiroki, Masaaki; Takemura, Yasuhiko; and Yamazaki, Shunpei, 5,543,947, Cl. 359-84.000.

Yamazaki, Toshio: *See*—
Hiratani, Haruyuki; Nakata, Kazuhiko; Ichinohe, Shoji; Yamazaki, Toshio; and Kato, Hideto, 5,543,442, Cl. 523-107.000.

Yamazaki, Yoshihiro; Iizuka, Takashi; and Kasai, Toshio, to Asahi Kogaku Kogyo Kabushiki Kaisha. Optical scanning system. 5,543,955, Cl. 359-204.000.

Yanagase, Akira: *See*—
Yamamoto, Naoki; Yanagase, Akira; Iwasaki, Tadashi; and Itoh, Masakazu, 5,543,460, Cl. 525-64.000.

Yanagida, Satoru: *See*—
Hosokawa, Ryuji; and Yanagida, Satoru, 5,543,658, Cl. 257-676.000.

Yanagihara, Naofumi: *See*—
Chang, Ching-Fang; Yanagihara, Naofumi; Yonemitsu, Jun; Tahara, Katsumi; Yagasaki, Yoichi; and Suzuki, Teruhiko, 5,543,932, Cl. 358-335.000.

Yanagihara, Nobuyuki; Kawano, Hiroshi; Hayashi, Takayuki; and Tsuji, Masato, to Matsushita Electric Industrial Co., Ltd. Electrode for storage battery and method for producing the same. 5,543,250, Cl. 429-241.000.

Yanagihara, Yasuo: *See*—
Nakai, Satoru; Kaneta, Mayumi; Kikumoto, Yoshikazu; Hong, Yeong-Man; Kawai, Kazuyoshi; Takegata, Setsuko; Ishii, Kiyoshi; Yanagihara, Yasuo; and Hirai, Yoshikatsu, 5,543,140, Cl. 424-85.200.

Yanai, Moshe; Vishlitzky, Natan; Alterescu, Bruno; Castel, Daniel; and Shklarsky, Gadi, to EMC Corporation. Data storage system controlled remote data mirroring with respectively maintained data indices. 5,544,347, Cl. 395-489.000.

Yao, Lin X.: *See*—
Kim, Jin; Yao, Lin X.; and Banjanin, Zoran, 5,544,128, Cl. 367-119.000.

Yasaki, Akihiko: *See*—
Ohura, Harutoshi; Yasaki, Akihiko; Kishimoto, Shinichi; and Naruse, Masayoshi, 5,543,554, Cl. 560-41.000.

Yashiro, Masahiko: *See*—
Shishido, Kazuo; Sasaki, Shinichi; Ikemoto, Isao; Yashiro, Masahiko; Karakama, Toshiyuki; and Numagami, Atsushi, 5,543,898, Cl. 355-210.000.

Yasuda, Tomokazu; Karino, Yukio; and Nakanishi, Masatoshi, to Fuji Photo Film Co., Ltd. Surface-active compound and a silver halide photographic material containing the same. 5,543,288, Cl. 430-631.000.

Yasue, Masanori: *See*—
Ikejima, Hiroyuki; and Yasue, Masanori, 5,542,501, Cl. 187-292.000.

Yasui, Juro: *See*—
Hirai, Yoshihiko; Morimoto, Kiyoshi; Terui, Yasuaki; Niwa, Masaaki; Yasui, Juro; Okada, Kenji; Udagawa, Masaharu; and Yuki, Koichiro, 5,543,351, Cl. 437-063.000.

Yasukuni, Jun, to Sumitomo Wiring Systems, Ltd. Electrostatic separation and classification apparatus. 5,542,543, Cl. 209-127.100.

Yasunobu, Chizuko: *See*—

Maruoka, Tetsuya; Yasunobu, Chizuko; Hirose, Tadashi; Kida, Mayumi; Ino, Kouichiro; and Miyagawa, Yoshiya, 5,544,281, Cl. 395-68.000.

Yasuoka, Norio: *See*—
Katayama, Tetsuya; Murabe, Kaoru; Komura, Osamu; Kawai, Chihiro; Yamakawa, Akira; Matsunuma, Kenji; Yasuoka, Norio; Higuchi, Matsuo; and Miyake, Masaya, 5,543,371, Cl. 501-97.000.

Yato, Michihisa: *See*—
Ishida, Akihiko; Homma, Koichi; Yato, Michihisa; Nishiyama, Shinsuke; and Okumura, Fumikazu, 5,543,409, Cl. 514-247.000.

Yatvin, Milton B.; and Stowell, Michael H B, to Oregon Health Sciences University, a non profit organization, State of Oregon, Acting by and Through the Oregon State Board of Higher Education on Behalf of the. Covalent polar lipid-peptide conjugates for use in salves. 5,543,389, Cl. 514-2.000.

Yatvin, Milton B.; Stowell, Michael H. B.; Gallicchio, Vincent S.; and Meredith, Michael J., to Oregon Health Sciences University, State of Oregon, Acting by and Through the Oregon State Board of Higher Education, Acting for and on Behalf of the. Covalent microparticle-drug conjugates for biological targeting. 5,543,390, Cl. 514-2.000.

Yatvin, Milton B.; Stowell, Michael H. B.; Gallicchio, Vincent S.; and Meredith, Michael J., to Oregon Health Sciences University, State of Oregon, Acting by and Through the Oregon State Board of Higher Education, Acting for and on Behalf of the. Covalent microparticle-drug conjugates for biological targeting. 5,543,391, Cl. 514-2.000.

Yazaki Corporation: *See*—
Nishitani, Katsuo; Hirota, Masaki; and Ai, Takeshi, 5,543,672, Cl. 310-77.000.
Uezono, Kouichi; Hara, Yasuhiro; and Nakamura, Tsuyoshi, 5,543,705, Cl. 323-369.000.

Yazami, Rachid; and Moreau, Michel, to Le Carbone Lorraine. Negative electrode based on pre-lithiated carbonaceous material for a rechargeable electrochemical lithium generator. 5,543,021, Cl. 204-294.000.

Ye, Ling: *See*—
Heller, Adam; Katakis, Ioanis; and Ye, Ling, 5,543,326, Cl. 435-287.900.

Yeates, Daniel F.: *See*—
Charron, Daniel P.; and Yeates, Daniel F., 5,542,669, Cl. 463-13.000.

Yee, Hansen: *See*—
Farrugia, Steven; Yee, Hansen; and Nickolls, Peter, 5,542,430, Cl. 128-705.000.

Yeh, Stanley; O, Sungki; and Sundararajan, Partha, to LSI Logic Corporation. Method for fabricating field effect transistor structure using symmetrical high tilt angle punchthrough implants. 5,543,337, Cl. 437-35.000.

Yehuda Welded Mesh. Ltd.: *See*—
Cohen, Moshe H., 5,542,648, Cl. 256-45.000.

Yellowhair, David: *See*—
Unger, Evan C.; Fritz, Thomas A.; Matsunaga, Terry; Ramaswami, VaradaRajan; Yellowhair, David; and Wu, Guanli, 5,542,935, Cl. 604-190.000.

Yemington, Charles R.; Skaggs, John H.; and Bath, William R., to Sonsub, Inc. Method and apparatus for removing contaminated surface soil. 5,542,781, Cl. 405-128.000.

Yen, Yeouchung; and Chen, Shih-Oh, to Actel Corporation. Metal to metal antifuse. 5,543,656, Cl. 257-530.000.

Yen-Maguire, Yu P.; Cox, Tom; and Lewis, Fred, to Dade International Inc. Apparatus for conducting the cytotoxicity assays on tumor cells. 5,543,327, Cl. 435-287.900.

Yero, Emilio M.: *See*—
Gaultier, Jean-Marie; and Yero, Emilio M., 5,544,114, Cl. 365-202.000.

Yeung, Choi K., to Encore Holdings Limited. Holder for compact disc having carrier part. 5,542,531, Cl. 206-308.100.

YieldUP International: *See*—
Mohindra, Raj; Bhushan, Abhay K.; Bhushan, Rajiv; and Puri, Suraj, 5,542,441, Cl. 134-95.200.

Yiu, Tom D.: *See*—
Chao, Liang; Lin, Tien-Ler; and Yiu, Tom D., 5,544,116, Cl. 365-210.000.

YKK Architectural Products Inc.: *See*—
Kubo, Yuichi, 5,542,215, Cl. 49-397.000.

Yoda, Hiroshi: *See*—
Nouchi, Norimoto; Sakaguchi, Masaya; Yoda, Hiroshi; and Mizoh, Yoshiaki, 5,543,179, Cl. 427-346.000.

Yohda, Hiroshi: *See*—
Mizoh, Yoshiaki; and Yohda, Hiroshi, 5,543,990, Cl. 360-122.000.

Yokonuma, Norikazu: *See*—
Sosa, Toshio; Fukuhara, Toru; Dobashi, Toshio; Hara, Masaharu; and Yokonuma, Norikazu, 5,543,888, Cl. 354-415.000.

Yokoo, Sumio: *See*—
Kaimai, Takashi; Tawaki, Hiroki; Yokoo, Sumio; and Arakawa, Yoshie, 5,543,068, Cl. 252-68.000.

Yokota, Koji; Fukui, Masayuki; and Tanaka, Toshiyuki, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Process for reducing nitrogen oxides. 5,543,124, Cl. 423-239.100.

Yokota, Masanori: *See*—
Miki, Shoji; Tsubota, Hiroki; Yokota, Masanori; and Hori, Kenta, 5,544,043, Cl. 364-406.000.

Yokota, Teppei; Aramaki, Junichi; and Kihara, Nobuyuki, to Sony Corporation. Disk recording apparatus for generating search positional information indicative of marked points on a disk. 5,544,165, Cl. 369-32.000.

Yokota, Teppei: *See*—
Aramaki, Junichi; and Yokota, Teppei, 5,544,139, Cl. 369-58.000.

Yokoyama, Shoji: *See*—
Morimoto, Kyomi; and Yokoyama, Shoji, 5,544,061, Cl. 364-444.000.

Yokoyama, Yuji; Akioka, Takashi; Iwamura, Masahiro; Hiraishi, Atsushi; Kobayashi, Yutaka; Yamauchi, Tatsumi; Takahashi, Shigeru; Gotou, Nobuyuki; and Ide, Akira, to Hitachi, Ltd. Semiconductor integrated circuit having logic gates. 5,544,125, Cl. 365-230.060.

Yokozuka, Kunimoto: *See*—
Serizawa, Hideaki; Hayami, Masayoshi; and Yokozuka, Kunimoto, 5,542,176, Cl. 29-890.030.

Yonemitsu, Jun: *See*—
Chang, Ching-Fang; Yanagihara, Naofumi; Yonemitsu, Jun; Tahara, Katsumi; Yagasaki, Yoichi; and Suzuki, Teruhiko, 5,543,932, Cl. 358-335.000.
Kato, Motoki; Yagasaki, Yoichi; and Yonemitsu, Jun, 5,543,843, Cl. 348-400.000.

Yonenaga, Kazushige; Kuwano, Shigeru; Shibata, Nori; and Norimatsu, Seiji, to Nippon Telegraph and Telephone Corporation. Optical transmission system. 5,543,952, Cl. 359-181.000.

Yoneyama, Gen; and Tsukahara, Eiji, to Seiko Epson Corporation. Digital tester. 5,543,707, Cl. 324-115.000.

Yoneyama, Takahiro: *See*—
Iwane, Hiroshi; Miyagi, Hidekazu; Imada, Satoshi; Seo, Shoichi; and Yoneyama, Takahiro, 5,543,547, Cl. 558-274.000.

Yonishi, Satoshi: *See*—
Kagara, Kohji; Goto, Shunsuke; Yonishi, Satoshi; Ikushima, Muneharu; Baba, Yukihisa; and Horiai, Haruo, 5,543,525, Cl. 546-279.100.

Yonker, Michael A.: *See*—
Pratt, Kyle A.; Yonker, Michael A.; and Xu, Frank L., 5,543,850, Cl. 348-617.000.

Yoo, Hyung-Joun: *See*—
Park, Byung-Sun; Oh, Yong-Ho; Choi, Sang-Soo; and Yoo, Hyung-Joun, 5,543,253, Cl. 439-5.000.

Yoon, InBae. Multifunctional clip applier instrument. 5,542,949, Cl. 606-143.000.

York, Michael T.; and Harris, Richard K., to Ford Motor Company. Rotating electrical machine with magnetic inserts. 5,543,676, Cl. 310-263.000.

Yoshida, Hideji: *See*—
Miyata, Shigeru; Yamada, Yoshitaka; Yoshida, Hideji; Matsubara, Yoshihiro; and Ito, Yasuo, 5,543,716, Cl. 324-402.000.

Yoshida, Hiroshi: *See*—
Tsuneki, Hideaki; Onda, Yoshiyuki; Moriya, Atusi; and Yoshida, Hiroshi, 5,543,546, Cl. 558-270.000.

Yoshida Industry Co., Ltd.: *See*—
Hatakeyama, Yoshiharu; Fukuoka, Hiroki; and Teshima, Kenzo, 5,542,580, Cl. 222-183.000.

Yoshida, Masazumi: *See*—
Machida, Junji; Yoshida, Masazumi; and Tanaka, Susumu, 5,542,985, Cl. 134-38.000.

Yoshida, Yasuhisa: *See*—
Matsumoto, Takuya; Hashimoto, Toru; Miyake, Mitsuhiro; Kamura, Hitoshi; and Yoshida, Yasuhisa, 5,542,400, Cl. 123-571.000.

Yoshihara, Kazuhide: *See*—
Horikoshi, Seita; Kurihara, Mikio; Naitoh, Atsuhisa; and Yoshihara, Kazuhide, 5,544,005, Cl. 361-680.000.

Yoshii, Ichiro; Kamijoh, Hiroyuki; Ozawa, Yoshio; Yamabe, Kikuo; Hashimoto, Kazuhiko; Okumura, Katsuya; and Hama, Kaoru, to Kabushiki Kaisha Toshiba. Method of screening semiconductor device. 5,543,334, Cl. 437-8.000.

Yoshikawa, Hirofumi: *See*—
Umeda, Shigeki; and Yoshikawa, Hirofumi, 5,544,348, Cl. 395-500.000.

Yoshikawa, Hironori: *See*—
Shibata, Jun; Obayashi, Hiroaki; Kimura, Makoto; Fukuzumi, Shuzo; Yoshikawa, Hironori; Hitotsumatsu, Atsushi; Hashimoto, Yukio; Yamanoi, Toshimi; and Takaya, Seiji, 5,542,700, Cl. 280-735.000.

Yoshikawa, Masaru: *See*—
Kojima, Tetsuro; Yoshikawa, Masaru; and Fujita, Yoshihiro, 5,543,272, Cl. 430-455.000.

Yoshimura, Katsuji: *See*—
Suda, Hirofumi; Toyama, Masamichi; Fujiwara, Akihiro; Yamada, Kunihiko; and Yoshimura, Katsuji, 5,543,839, Cl. 348-349.000.

Yoshimura, Mitsuhiro; Fujita, Kazunobu; and Teramura, Akira, to Mitsubishi Jukogyo Kabushiki Kaisha; and Obayashi Corporation. Hydrostatic anti-vibration system and adjusting method therefor. 5,542,220, Cl. 52-167.100.

Yoshioka, Kenji. Lightweight anchor with tail fin. 5,542,368, Cl. 114-301.000.

Yoshioka, Nobuyuki: *See*—
Mukai, Takao; and Yoshioka, Nobuyuki, 5,543,342, Cl. 437-44.000.

Yoshioka, Toshifumi: *See*—
Enomoto, Takashi; Yoshioka, Toshifumi; and Nishida, Naoya, 5,543,946, Cl. 359-87.000.

Yoshitake, Hiroki: *See*—
Rieger, Bernhard; Yoshitake, Hiroki; Sawada, Atsushi; Plach, Herbert; and Weber, Georg, 5,543,077, Cl. 252-299.630.

Yoshitsugu, Ken: *See*—
Tsutsui, Toshiyuki; and Yoshitsugu, Ken, 5,543,377, Cl. 502-125.000.

Yoshizawa, Hideki: *See*—
Kato, Hideki; Yoshizawa, Hideki; Iciki, Hiroki; and Masumoto, Daiki, 5,544,336, Cl. 395-311.000.

Yoshizawa, Hiroyasu: *See*—
Sone, Yoshinori; Fujiwara, Takayoshi; Honjo, Takashi; Hirayama, Takuya; and Yoshizawa, Hiroyasu, 5,542,832, Cl. 418-152.000.

Young, Alastair J.: *See*—

Spooner, John; Young, Alastair J.; and Chippendale, John P., 5,542,316, Cl. 74-650.000.

Young, David J.: *See*—
Pitt, Alan R.; Caesar, Julian C.; Gibson, Danuta; Wear, Trevor J.; Young, David J.; and King, Scott A., 5,543,555, Cl. 560-151.000.

Young Dental Manufacturing, Co., Inc.: *See*—
Quinn, Michael J.; and Richmond, George E., 5,542,846, Cl. 433-127.000.

Young, Gary B., to Tymco, Inc. Broom assisted pick-up head. 5,542,148, Cl. 15-346.000.

Young, Richard H., Sr.: *See*—
Hansen, Michael R.; and Young, Richard H., Sr., 5,543,215, Cl. 428-283.000.

Young, Ronald E.: *See*—
Wixey, Barry D.; Young, Ronald E.; Baird, Charles J.; and Haffely, Jeffrey L., 5,542,639, Cl. 248-439.000.

Young, Wayne C. Pond cleaning device. 5,542,142, Cl. 15-1.700.

Young, William J.: *See*—
Lynch, Steven K.; Ruggie, Mark A.; Rinker, William E.; Izard, David G.; and Young, William J., 5,543,234, Cl. 428-537.100.

Young, William R.: *See*—
Longway, Charles W. T.; and Young, William R., 5,544,095, Cl. 365-63.000.

Yousefi, Nariman: *See*—
Heaton, Robert; Yousefi, Nariman; Sadeghi, Khosrow; and Fischer, David, 5,544,323, Cl. 395-200.140.

Youssef, Abbas M.: *See*—
Howie, David M.; and Youssef, Abbas M., 5,543,692, Cl. 318-282.000.

Yow, Ling H.: *See*—
Chi, Keh-Fei C.; Suan, Seah K.; and Yow, Ling H., 5,543,350, Cl. 437-60.000.

Yu, Ching-Jung. Carriage and rail assembly for a curtain. 5,542,149, Cl. 16-87.40R.

Yu, Hyo C.: *See*—
Kang, Myung G.; Kang, Seong S.; Choi, Sung H.; Joung, Mun C.; Jang, Byoung G.; Ryu, Kye Y.; Yu, Hyo C.; and Lee, Sang J., 5,543,981, Cl. 360-96.600.

Yu, Liangzhong; and Wang, Zigiang, to Wuhan University of Technology. Pulverizing appratus. 5,542,615, Cl. 241-57.000.

Yu, Philip S.: *See*—
Shachnai, Hadas; Wolf, Joel L.; and Yu, Philip S., 5,544,313, Cl. 395-200.010.

Yu, Ying X., to Yu, Ying Xue. Process for phosphate beneficiation. 5,542,545, Cl. 209-166.000.

Yu, Ying Xue: *See*—
Yu, Ying X., 5,542,545, Cl. 209-166.000.

Yubuki, Yoshikazu: *See*—
Hamada, Akihiko; Yubuki, Yoshikazu; and Kato, Akira, 5,543,467, Cl. 525-207.000.

Yuen, Henry C.; Kwoh, Daniel S.; Leung, Wing P.; and Tam, Tony T., to Index Systems, Inc. Apparatus and methods for avoiding loss of closed caption data when using extended data services. 5,543,852, Cl. 348-478.000.

Yuh, Jong B., to Hyundai Electronics Industries Co. Ltd. Sense amplifier for semiconductor memory device having pull-up and pull-down driving circuits controlled by a power supply voltage detection circuitry. 5,544,110, Cl. 365-205.000.

Yukawa, Akira, to NEC Corporation. Output filter for oversampling digital-to-analog converter. 5,544,081, Cl. 364-602.000.

Yuki, Koichiro: *See*—
Hirai, Yoshihiko; Morimoto, Kiyoshi; Terui, Yasuaki; Niwa, Masaaki; Yasui, Juro; Okada, Kenji; Udagawa, Masaharu; and Yuki, Koichiro, 5,543,351, Cl. 437-063.000.

Yuki, Mikio; Kurohara, Kazuaki; Matsui, Akio; and Uemura, Katsuhiko, to Kubota Corporation. Lawn tractor having a blower unit and a grass clippings transport duct. 5,542,243, Cl. 56-13.300.

Yun, Hwang-kyu: *See*—
Park, Chan-eon; Yun, Hwang-kyu; Sim, Sung-min; and Choi, Wan-gyun, 5,543,493, Cl. 528-353.000.

Yura, Masaki; Hirai, Yukio; and Oya, Hirosi, to Matsushita Electric Industrial Co., Ltd. Dishwasher. 5,542,443, Cl. 134-176.000.

Yusawa, Motoyasu: *See*—
Terada, Masahiro; Kamae, Hirosuke; Yusawa, Motoyasu; Watanabe, Kazuyuki; and Saito, Mitsuo, 5,542,982, Cl. 134-5.000.

Yuzaki, Tsuneo, to Mitsubishi Jukogyo Kabushiki Kaisha. Bearing lubrication for scroll-type compressor. 5,542,830, Cl. 418-55.600.

Zagar, Paul S.; and Schaefer, Scott, to Micron Technology, Inc. Optimization circuitry and control for a synchronous memory device with programmable latency period. 5,544,124, Cl. 365-230.080.

Zahlit, Wayne A.: *See*—
Anhalt, John W.; and Zahlit, Wayne A., 5,542,861, Cl. 439-578.000.

Zaidi, Sajjad A.: *See*—
Volk, Andrew M.; Zaidi, Sajjad A.; and Selvin, Eric B., 5,543,734, Cl. 326-83.000.

Zalesinski, Jerzy M.: *See*—
Booth, Richard B.; Gaynes, Michael A.; Murco, Robert M.; Puligandla, Viswanadham; Roldan, Judith M.; Saraf, Ravi; and Zalesinski, Jerzy M., 5,543,585, Cl. 174-261.000.

Zamanian, Mehdi: *See*—
McClure, David C.; and Zamanian, Mehdi, 5,544,097, Cl. 365-154.000.

Zanders, Gary V.; and Scherpenberg, Francis A., to Dallas Semiconductor Corporation. Digital controller. 5,544,063, Cl. 364-482.000.

Zapp, Loretta M.: *See*—
Starzl, Timothy W.; Cattell, Marguerita; Mihran, Richard T.; and Zapp, Loretta M., 5,542,431, Cl. 128-738.000.

Zappettini, Adelelmo: *See*—
Lanfranconi, Antonio; Munari, Giorgio; Zappettini, Adelelmo; and Rizzo, Roberto, 5,542,528, Cl. 206-221.000.

Zawadzka, Agatha; Tsang, Wen-Ghih; and Brown, Robert H., to Diacrin, Inc.; and General Hospital Corporation, The. Injectable culture medium for maintaining viability of myoblast cells. 5,543,316, Cl. 435-240.200.

Zdimal, Joseph E.: *See*—
Fallon, Kenneth M.; Jimarez, Miguel A.; and Zdimal, Joseph E., 5,542,601, Cl. 228-119.000.

Zeeco Inc.: *See*—
Surbey, David J.; Smith, James L.; Allen, Richard C.; and Witwer, Alan D., 5,542,840, Cl. 431-116.000.

Zehr, Paul R.: *See*—
Aubertine, Matthew E.; Beyzavi, Kianoush; Broker, Harold J.; Checca, Ronald P.; Granato, Michael A.; Haeussler, David A.; Herasimtschuk, Michael; Jurkovic, Michael J.; Salem, Gerard M.; Selinger, Craig R.; and Zehr, Paul R., 5,544,088, Cl. 364-489.000.

Zeinali, Hossein A.: *See*—
Skaar, Leif; Sheppard, Kenneth; Stanley, Donald; Zeinali, Hossein A.; Khorsandian, Ali; and Krula, David A., 5,542,593, Cl. 226-196.000.

Zeiss Messgerätebau GmbH: *See*—
Ertl, Friedrich; and Bertz, Hans-Ulrich, 5,542,188, Cl. 33-605.000.

Zelle, Robert E.; and Harding, Matthew W., to Vertex Pharmaceuticals, Incorporated. Amino acid derivatives with improved multi-drug resistance activity. 5,543,423, Cl. 514-332.000.

Zellweger Uster, Inc.: *See*—
Shofner, Frederick M.; Baldwin, Joseph C.; Williams, Gordon F.; and Townes, Mark G., 5,544,090, Cl. 364-552.000.

Zepeda, Ernesto: *See*—
Arakawa, Mitsuaki; Zepeda, Ernesto; and Lu, William K. M., 5,543,712, Cl. 324-318.000.

Zeuner, Siegfried; Sans, Joachim; Dölling, Uwe; and Rödig, Karl-Heinz, to Temic Bayern-Chemie Airbag GmbH. Gas-generating mixture. 5,542,997, Cl. 149-35.000.

Zexel Corporation: *See*—
Mizuno, Jun; Nottmeyer, Kay; and Kimura, Mitsuteru, 5,542,297, Cl. 73-514.360.

Zexel USA Corporation: *See*—
Fujii, Takao; and Hamahata, Toshihiro, 5,544,060, Cl. 364-444.000.

ZF Friedrichshafen AG: *See*—
Rupp, Arthur, 5,542,338, Cl. 91-375.00R.

Zhang, Guohua; and Pinnamaraju, Prasad, to Hallmark Pharmaceutical, Inc. Process to manufacture micronized nifedipine granules for sustained release medicaments. 5,543,099, Cl. 264-115.000.

Zhang, Hongyong: *See*—
Ohtani, Hisashi; Miyanaga, Akiharu; Zhang, Hongyong; Yamaguchi, Naoaki; and Suzuki, Atsunori, 5,543,352, Cl. 437-101.000.

Zhang, Jun: *See*—
Sun, Xujiang; Zhang, Junmin; Wang, Tongshun; Zhang, Jun; Su, Hong; and Xia, Hongxia, 5,542,372, Cl. 117-68.000.

Zhang, Junmin: *See*—
Sun, Xujiang; Zhang, Junmin; Wang, Tongshun; Zhang, Jun; Su, Hong; and Xia, Hongxia, 5,542,372, Cl. 117-68.000.

Zhao, Chen: *See*—
Stuk, Timothy L.; Allen, Michael S.; Haight, Anthony R.; Kerdesky, Francis A.; Langridge, Denton C.; Leanna, M. Robert; Lijewski, Linda M.; Melcher, Laura; Morton, Howard E.; Norbeck, Daniel W.; Reno, Daniel S.; Robbins, Timothy A.; Sham, Hing L.; Sowin, Thomas J.; Tien, Jien-heh J.; Zhao, Chen; and Scarpetti, David, 5,543,551, Cl. 560-24.000.

Zheng, Weixiang: *See*—
Worek, William M.; and Zheng, Weixiang, 5,542,259, Cl. 62-94.000.

Zhou, Peter S.: *See*—
Buchanan, Harry C., Jr.; and Zhou, Peter S., 5,542,145, Cl. 15-250.160.

Zhu, Yunde; and Bai, Guohui, to Ningbo Dongfang Music Movements General Factory. Construction of music box. 5,543,577, Cl. 84-95.200.

Zicht, E. Wayne: *See*—
Beakes, John M.; and Zicht, E. Wayne, 5,542,813, Cl. 414-780.000.

Ziebarth, Mark N.: *See*—
Denny, George S.; Lai, Robert S.; Li, Sherry H.; Murphy, Joseph F.; Nguyen, Hoang M.; and Ziebarth, Mark N., 5,544,325, Cl. 395-200.170.

Ziemer, James N., to Chevron U.S.A. Inc. Process for producing a high quality lubricating oil using a VI selective catalyst. 5,543,035, Cl. 208-111.000.

Ziemins, Uldis A.: *See*—
Freedenberg, Candace J.; Herring, Frederick A.; and Ziemins, Uldis A., 5,543,963, Cl. 359-432.000.

Zilch, Harald; and Bauss, Frieder, to Boehringer Mannheim GmbH. Acyclic amidine group-containing diphosphonic acid derivatives, processes for their preparation and medicaments containing these compounds. 5,543,561, Cl. 562-13.000.

Zimmer, Inc.: *See*—
Atkinson, Robert W., 5,542,918, Cl. 604-27.000.
Duquet, Bruno; Daculsi, Guy; and Delecrin, Joël, 5,543,209, Cl. 428-212.000.

Zimmerli, Kurt: *See*—
Gerster, Peter; and Zimmerli, Kurt, 5,542,560, Cl. 220-252.000.

Zimmerman, Jeffrey A.; Gauer, Gary; and Marshall, Dave, to Ecowater Systems, Inc. Method for regeneration of a water softener. 5,544,072, Cl. 364-502.000.

Zimmermann, Jürg, to Ciba-Geigy Corporation. Pyrimidine derivatives. 5,543,520, Cl. 544-331.000.

Zink, Deborah L.: *See*—
Bills, Gerald F.; Curotto, James E.; Dreikorn, Sarah J.; Jenkins, Rosalind G.; Liesch, Jerrold M.; Morris, Sandra A.; Thompson, John R.; Zink, Deborah L.; Jansson, Richard K.; Basilio, Angela; Diez, Teresa; Pelaez, Fernando; and Vicente, Francisca, 5,543,429, Cl. 514-468.000.
Bolessa, Evon A.; Schwartz, Robert E.; Bills, Gerald F.; Giacobbe, Robert A.; Pelaez Perez, Fernando; Arroyo, Angeles C.; Matas, Teresa D.; Fernandez, Isabel M.; Perez, Francisca V.; Mandala, Suzanne M.; Zink, Deborah L.; Thornton, Rosemary; Thompson, John R.; and Curotto, James E., 5,543,431, Cl. 514-627.000.

Zircon Corporation: *See*—
Heger, Charles E., 5,543,799, Cl. 342-85.000.

Zirnheld, Arno: *See*—
Heine, Helmut; Schmidt, Otto H.; Gügel, Gerhard; Merkt, Norbert; and Zirnheld, Arno, 5,542,904, Cl. 600-197.000.

Ziv, Noam A.: *See*—
Robbins, Barry R.; and Ziv, Noam A., 5,544,223, Cl. 379-58.000.

Zock, Joseph M.: *See*—
Queener, Stephen W.; and Zock, Joseph M., 5,543,497, Cl. 530-324.000.

Zommer, Nathan, to IXYS Corporation. Advanced power device process for low drop. 5,543,335, Cl. 437-10.000.

Zook, Christopher P., to Cirrus Logic, Inc. Method and apparatus for encoding data in a PRML class-IV digital communication channel. 5,544,178, Cl. 371-43.000.

Zorb, James E.: *See*—
Kline, Mark J.; Roe, Donald C.; Daniels, Dean J.; Zorb, James E.; and Dragoo, Jerry L., 5,542,942, Cl. 604-385.200.

Zoski, Glenn D.: *See*—
Ghead, Ali; Leland, Jonathan K.; Zoski, Glenn D.; Goodman, Jack E.; and Grosser, John T., 5,543,112, Cl. 422-52.000.

Zuckerwar, Richard J., to Grandoe Corp., The. Gloves with interchangeable finger and mitten caps. 5,542,125, Cl. 2-158.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 6th DAY OF AUGUST, 1996

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Blaner, Bartholomew: *See*—
Vassiliadis, Stamatis; Phillips, James E.; and Blaner, Bartholomew, Re. 35,311, Cl. 364-736.000.
Christoudias, George C., to Surgical Inventions & Innovations, Inc. Christoudias endospongestick probe. Re. 35,312, Cl. 600-207.000.
International Business Machines Corporation: *See*—
Vassiliadis, Stamatis; Phillips, James E.; and Blaner, Bartholomew, Re. 35,311, Cl. 364-736.000.
Matsushima, Noboru; and Wada, Noriyuki, to NOK Corporation. Sealing device. Re. 35,309, Cl. 277-37.000.
Moskovich, Jacob, to U.S. Precision Lens Incorporated. Color corrected projection lens. Re. 35,310, Cl. 359-649.000.
NOK Corporation: *See*—
Matsushima, Noboru; and Wada, Noriyuki, Re. 35,309, Cl. 277-37.000.
Phillips, James E.: *See*—
Vassiliadis, Stamatis; Phillips, James E.; and Blaner, Bartholomew, Re. 35,311, Cl. 364-736.000.
Surgical Inventions & Innovations, Inc.: *See*—
Christoudias, George C., Re. 35,312, Cl. 600-207.000.
U.S. Precision Lens Incorporated: *See*—
Moskovich, Jacob, Re. 35,310, Cl. 359-649.000.
Vassiliadis, Stamatis; Phillips, James E.; and Blaner, Bartholomew, to International Business Machines Corporation. Data dependency collapsing hardware apparatus. Re. 35,311, Cl. 364-736.000.
Wada, Noriyuki: *See*—
Matsushima, Noboru; and Wada, Noriyuki, Re. 35,309, Cl. 277-37.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Baske, Walter E.: *See*—
Brown, Ernest C.; and Baske, Walter E., B1 4,377,109, Cl. 99-401.000.
Bergh, Ralph A.; Culshaw, Brian; Lefevre, Herve C.; Shaw, Herbert J.; and Cutler, C. Chapin, to Leland Stanford Junior University, The Board of Trustees of the. Interferometer with Kerr effect compensation. B1 4,773,759, Cl. 356-350.000.
Brown, Ernest C.; and Baske, Walter E., to Wolverine Corporation. Apparatus for baking food products such as pizzas and the like. B1 4,377,109, Cl. 99-401.000.
Culshaw, Brian: *See*—
Bergh, Ralph A.; Culshaw, Brian; Lefevre, Herve C.; Shaw, Herbert J.; and Cutler, C. Chapin, B1 4,773,759, Cl. 356-350.000.
Cutler, C. Chapin: *See*—
Bergh, Ralph A.; Culshaw, Brian; Lefevre, Herve C.; Shaw, Herbert J.; and Cutler, C. Chapin, B1 4,773,759, Cl. 356-350.000.
Lefevre, Herve C.: *See*—
Bergh, Ralph A.; Culshaw, Brian; Lefevre, Herve C.; Shaw, Herbert J.; and Cutler, C. Chapin, B1 4,773,759, Cl. 356-350.000.
Leland Stanford Junior University, The Board of Trustees of the: *See*—
Bergh, Ralph A.; Culshaw, Brian; Lefevre, Herve C.; Shaw, Herbert J.; and Cutler, C. Chapin, B1 4,773,759, Cl. 356-350.000.
Shaw, Herbert J.: *See*—
Bergh, Ralph A.; Culshaw, Brian; Lefevre, Herve C.; Shaw, Herbert J.; and Cutler, C. Chapin, B1 4,773,759, Cl. 356-350.000.
Wolverine Corporation: *See*—
Brown, Ernest C.; and Baske, Walter E., B1 4,377,109, Cl. 99-401.000.

LIST OF DESIGN PATENTEES

AB Astra: *See*—
Karlsson, Jan; and Widerström, Carin, 372,530, Cl. D24-110.400.
Abbott Laboratories: *See*—
MacAuley, Richard P.; McCallister, Patrick E.; Smithberger, Jay A.; Sita, Lewis H.; and Stokesbury, Elwood L., 372,531, Cl. D24-121.000.
Tiefenthal, James L.; Goldhardt, Donald J.; and Morrow, James D., 372,455, Cl. D13-108.000.
Abbruzzese, Domenico: *See*—
Natuzzi, Pasquale; and Abbruzzese, Domenico, 372,369, Cl. D6-381.000.
Akaiwa, Masao; and Nakazawa, Shinobu, to Seiko Epson Corporation. Data imprinting device for a camera. 372,489, Cl. D16-219.000.
Aladdin Industries, Inc.: *See*—
Booten, Richard D., 372,404, Cl. D7-709.000.
Alam, Elias P., to Simonds Industries, Inc. File segment. 372,413, Cl. D8-90.000.
Alfa Laval Agri, Inc.: *See*—
Chowdhury, Mofazzal, 372,566, Cl. D30-199.000.
Alldente International Inc.: *See*—
DiCianna, Domenico; and Avolio, Gennaro S., 372,535, Cl. D24-176.000.
American Standard Inc.: *See*—
Jones, Sherry L., 372,519, Cl. D23-261.000.
Andersen Corporation: *See*—
Campbell, Frank w.; and Carlson, Casey L., 372,416, Cl. D8-338.000.
Anderson, Mark L. Compact disc cleaning package. 372,422, Cl. D9-347.000.
Andrews, Jonathan N.; Cooper, Stephen V.; Shepard, Gary N.; Bledsoe, James D.; Blumberg-Dominguez, Wendy; Benvegar, Carl E.; and Gembala, David J., to Hewlett-Packard Company. Defibrillator. 372,534, Cl. D24-168.000.
Andrews, Jonathan N.: *See*—
Cooper, Stephen V.; Salvatori, Phillip H.; Andrews, Jonathan N.; Brink, Gregory D.; Bledsoe, James D.; Blumberg-Dominguez, Wendy; and Burton, David L., 372,456, Cl. D13-108.000.
Anniballi, Marisa. Jewelry hanger. 372,391, Cl. D6-570.000.
Aramaki, Keiji, to Sony Corporation. Connector. 372,460, Cl. D13-147.000.
Artus, Mark B., to Blockbuster Entertainment Corporation. Listening center. 372,482, Cl. D14-299.000.
Asics Corporation: *See*—
Mitsu, Shigeyuki; Ueda, Wataru; and Uno, Katsuhiko, 372,354, Cl. D2-952.000.
Avid Technology, Inc.: *See*—
Ricotta, James J.; Bodony, Lawrence A.; and Fasciano, Peter, 372,478, Cl. D14-217.000.
Avolio, Gennaro S.: *See*—
DiCianna, Domenico; and Avolio, Gennaro S., 372,535, Cl. D24-176.000.
Axe, Royden, to Rolls-Royce Motor Cars Limited. Motor vehicle. 372,441, Cl. D12-92.000.
Bala, Virginia, to KKH Corp. Ornamental child's pillow in the fanciful form of a panda. 372,392, Cl. D6-598.000.
Barney, Gerald L.: *See*—
Jago, Thomas E.; and Barney, Gerald L., 372,427, Cl. D9-500.000.
Bearden, Charles R. Tube cake cooler. 372,400, Cl. D7-610.000.
Becker, John H. Air fender system. 372,449, Cl. D12-184.000.
Beere Precision Medical Instruments, Inc.: *See*—
Bradshaw, Guy L., 372,412, Cl. D8-83.000.
Bellomo, Michael; Stropkay, Scott; Weissburg, David; and Nichols, Mark, to Lifeline Systems, Inc. Communicator for a personal emergency response system. 372,435, Cl. D10-106.000.
Bellows, William B., to Graco Children's Products, Inc. Headboard. 372,385, Cl. D6-506.000.
Benvegar, Carl E.: *See*—
Andrews, Jonathan N.; Cooper, Stephen V.; Shepard, Gary N.; Bledsoe, James D.; Blumberg-Dominguez, Wendy; Benvegar, Carl E.; and Gembala, David J., 372,534, Cl. D24-168.000.
Bernardino, Auerlio. Tennis racket. 372,511, Cl. D21-212.000.
Beyer, Edward R.: *See*—
Pisutha-Arnond, Suthirug N.; Scarpone, William J.; and Beyer, Edward R., 372,477, Cl. D14-191.000.

Bingham, Gail J.: *See*—
Shimirak, Gerald L.; Bingham, Gail J.; Vail, Philip B.; and Vranicar, Anthony, 372,462, Cl. D13-160.000.
Bisbell Magnetic Products Ltd.: *See*—
Lloyd-Morris, Michael A.; and Ewans, John F., 372,390, Cl. D6-553.000.
Black & Decker Inc.: *See*—
Carbone, Richard J., 372,548, Cl. D26-43.000.
Price, Scott D.; and Dorsey, A. Nelson, 372,484, Cl. D15-133.000.
Stone, Paul A.; and Thomas, Rickey J., 372,485, Cl. D15-139.000.
Blazar, Joseph E.: *See*—
Saldana, Leonard R.; and Blazar, Joseph E., 372,383, Cl. D6-487.000.
Saldana, Leonard R.; and Blazar, Joseph E., 372,384, Cl. D6-487.000.
Bledsoe, James D.: *See*—
Andrews, Jonathan N.; Cooper, Stephen V.; Shepard, Gary N.; Bledsoe, James D.; Blumberg-Dominguez, Wendy; Benvegar, Carl E.; and Gembala, David J., 372,534, Cl. D24-168.000.
Cooper, Stephen V.; Salvatori, Phillip H.; Andrews, Jonathan N.; Brink, Gregory D.; Bledsoe, James D.; Blumberg-Dominguez, Wendy; and Burton, David L., 372,456, Cl. D13-108.000.
Blockbuster Entertainment Corporation: *See*—
Artus, Mark B., 372,482, Cl. D14-299.000.
Blumberg-Dominguez, Wendy: *See*—
Andrews, Jonathan N.; Cooper, Stephen V.; Shepard, Gary N.; Bledsoe, James D.; Blumberg-Dominguez, Wendy; Benvegar, Carl E.; and Gembala, David J., 372,534, Cl. D24-168.000.
Cooper, Stephen V.; Salvatori, Phillip H.; Andrews, Jonathan N.; Brink, Gregory D.; Bledsoe, James D.; Blumberg-Dominguez, Wendy; and Burton, David L., 372,456, Cl. D13-108.000.
Bodony, Lawrence A.: *See*—
Ricotta, James J.; Bodony, Lawrence A.; and Fasciano, Peter, 372,478, Cl. D14-217.000.
Bonaddio, Vincenzo A.; and Contreras, Jose De Jesus Munoz, to Foamex L.P. Seat. 372,367, Cl. D6-375.000.
Bonnell, Thomas A.; and Giese, Robert C., to Kohler Co. Wall mountable shower fixture. 372,522, Cl. D23-304.000.
Booten, Richard D., to Aladdin Industries, Inc. Container. 372,404, Cl. D7-709.000.
Bozanich, Margarette F.: *See*—
Slezak, Larry; Bozanich, Margarette F.; Burnett, Daniel; Clark, Philip H.; Geisinger, Gregory; Kabler, Sophia M.; Morini, Alan; O'Leary, Melvin C., Jr.; and Samson, Kenneth, 372,429, Cl. D9-528.000.
Bradshaw, Guy L., to Beere Precision Medical Instruments, Inc. Screwdriver handle. 372,412, Cl. D8-83.000.
Brewer, Douglas; Brown, David; Jonsson, Nils-Olof; McKeown, Timothy; and Skonieczny, Dean, to Tetra Laval Holdings & Finance S.A. Packaging machine. 372,487, Cl. D15-145.000.
Brink, Gregory D.: *See*—
Cooper, Stephen V.; Salvatori, Phillip H.; Andrews, Jonathan N.; Brink, Gregory D.; Bledsoe, James D.; Blumberg-Dominguez, Wendy; and Burton, David L., 372,456, Cl. D13-108.000.
BRK Brands, Inc.: *See*—
Burns, Clay A.; Sabin, Paul C.; Cheung, Victor Y.; and Lansil, Clifford S., 372,360, Cl. D3-273.000.
Burns, Clay A.; Sabin, Paul C.; Cheung, Victor Y.; and Lansil, Clifford S., 372,361, Cl. D3-282.000.
Brown, Arthur C. Butterfly feeder. 372,562, Cl. D30-121.000.
Brown, David: *See*—
Brewer, Douglas; Brown, David; Jonsson, Nils-Olof; McKeown, Timothy; and Skonieczny, Dean, 372,487, Cl. D15-145.000.
Brutscher, David T.; and Leet, Leroy R., Sr., to Credo Tool Company. Template used in installing door locks. 372,433, Cl. D10-64.000.
Bryant, Leslie J.; and Solheim, John A., to Karsten Manufacturing Corporation. Golf bag bottom assembly. 372,362, Cl. D3-320.000.
Bungardt, Gabriele, to Plantronics, Inc. Base for cordless remote for communications headset. 372,473, Cl. D14-149.000.
Bungardt, Gabriele, to Plantronics, Inc. Cordless remote for headset. 372,480, Cl. D14-247.000.
Burnett, Daniel: *See*—
Slezak, Larry; Bozanich, Margarette F.; Burnett, Daniel; Clark, Philip H.; Geisinger, Gregory; Kabler, Sophia M.; Morini, Alan; O'Leary, Melvin C., Jr.; and Samson, Kenneth, 372,429, Cl. D9-528.000.
Burns, Clay A.; Sabin, Paul C.; Cheung, Victor Y.; and Lansil, Clifford S., to BRK Brands, Inc. Container. 372,360, Cl. D3-273.000.
Burns, Clay A.; Sabin, Paul C.; Cheung, Victor Y.; and Lansil, Clifford S., to BRK Brands, Inc. Container. 372,361, Cl. D3-282.000.
Burton, David L.: *See*—
Cooper, Stephen V.; Salvatori, Phillip H.; Andrews, Jonathan N.; Brink, Gregory D.; Bledsoe, James D.; Blumberg-Dominguez, Wendy; and Burton, David L., 372,456, Cl. D13-108.000.
Butenschoen, Gene G.: *See*—
Godfrey, Dwayne M.; and Butenschoen, Gene G., 372,495, Cl. D19-27.000.
Campbell, Frank w.; and Carlson, Casey L., to Andersen Corporation. Window lock. 372,416, Cl. D8-338.000.
Candianides, Florence, to Tefal S.A. Frying pan. 372,395, Cl. D7-361.000.
Canon Kabushiki Kaisha: *See*—
Tokuda, Hiroyuki; Takenouchi, Masanori; Kotaki, Yasuo; and Hamasaki, Yuji, 372,494, Cl. D18-56.000.
Carbone, Richard J., to Black & Decker Inc. Flashlight. 372,548, Cl. D26-43.000.
Carlson, Bruce W.; and Kirchhoff, Kenneth J., to Minnesota Mining and Manufacturing Company. Notice assembly with rotatable message display. 372,499, Cl. D19-65.000.
Carlson, Casey L.: *See*—
Campbell, Frank w.; and Carlson, Casey L., 372,416, Cl. D8-338.000.
Casey, Robert J. Pet pouch. 372,564, Cl. D30-152.000.
Chamberlin, Michael P.: *See*—
Stevens, Kenneth M., 372,510, Cl. D21-204.000.
Chan, Raymond: *See*—
Ford, Joseph E.; Jursich, Donald N.; and Chan, Raymond, 372,474, Cl. D14-149.000.
Cherry Grove, Inc.: *See*—
Frinier, Richard, 372,366, Cl. D6-369.000.
Cheung, Victor Y.: *See*—
Burns, Clay A.; Sabin, Paul C.; Cheung, Victor Y.; and Lansil, Clifford S., 372,360, Cl. D3-273.000.
Burns, Clay A.; Sabin, Paul C.; Cheung, Victor Y.; and Lansil, Clifford S., 372,361, Cl. D3-282.000.
Chin, John: *See*—
Sheffield, Keith W.; and Chin, John, 372,490, Cl. D16-325.000.
Chin, Taan K. Sit-up exerciser. 372,507, Cl. D21-191.000.
Chivas Brothers Limited: *See*—
Jago, Thomas E.; and Barney, Gerald L., 372,427, Cl. D9-500.000.
Chowdhury, Mofazzal, to Alfa Laval Agri, Inc. Milking claw. 372,566, Cl. D30-199.000.
Christian Bernard Diffusion S.A.: *See*—
Nguyen, Bernard, 372,431, Cl. D10-32.000.
Chu, Chi-Tsong, to Compaq Computer Corporation. Notebook personal computer. 372,466, Cl. D14-106.000.
Circulair, Inc.: *See*—
Radtke, Leroy F., Jr., 372,523, Cl. D23-328.000.
Clark, Eileen, to Interlego AG. Toy building element. 372,505, Cl. D21-108.000.
Clark, Philip H.: *See*—
Slezak, Larry; Bozanich, Margarette F.; Burnett, Daniel; Clark, Philip H.; Geisinger, Gregory; Kabler, Sophia M.; Morini, Alan; O'Leary, Melvin C., Jr.; and Samson, Kenneth, 372,429, Cl. D9-528.000.
Clem, William E., to Tunturi, Inc. Exercise treadmill. 372,508, Cl. D21-192.000.
Cline, Roger M., to Real-Tool, Inc. Heavy duty snow stop. 372,421, Cl. D8-499.000.
Clorox Company, The: *See*—
Malmquist, Derek P., 372,428, Cl. D9-523.000.
Slezak, Larry; Bozanich, Margarette F.; Burnett, Daniel; Clark, Philip H.; Geisinger, Gregory; Kabler, Sophia M.; Morini, Alan; O'Leary, Melvin C., Jr.; and Samson, Kenneth, 372,429, Cl. D9-528.000.
Coca-Cola Company, The: *See*—
Credle, William S., Jr., 372,393, Cl. D7-301.000.
Cohen, Seymour, to Telco Creations, Inc. Santa Claus figure. 372,438, Cl. D11-129.000.
Colgate-Palmolive Company: *See*—
Goldring, Harold B.; Niven, Mark A.; Namaroff, Ronald; and Davis, Leslie G., 372,381, Cl. D6-476.000.
Comercial Kettal, S.A.: *See*—
Escalona, Manuel A., 372,368, Cl. D6-376.000.
Compaq Computer Corporation: *See*—
Chu, Chi-Tsong, 372,466, Cl. D14-106.000.
Contreras, Jose De Jesus Munoz: *See*—
Bonaddio, Vincenzo A.; and Contreras, Jose De Jesus Munoz, 372,367, Cl. D6-375.000.
Cook, James R., to Maxim, Inc. Display container. 372,423, Cl. D9-418.000.
Cooper, Stephen V.; Salvatori, Phillip H.; Andrews, Jonathan N.; Brink, Gregory D.; Bledsoe, James D.; Blumberg-Dominguez, Wendy; and Burton, David L., to Hewlett-Packard Company. Battery charger. 372,456, Cl. D13-108.000.
Cooper, Stephen V.: *See*—
Andrews, Jonathan N.; Cooper, Stephen V.; Shepard, Gary N.; Bledsoe, James D.; Blumberg-Dominguez, Wendy; Benvegar, Carl E.; and Gembala, David J., 372,534, Cl. D24-168.000.
Creations D. Guidotti S.A.: *See*—
Guidotti, Jean-Claude, 372,415, Cl. D8-327.000.
Credle, William S., Jr., to Coca-Cola Company, The. Housing for a beverage dispenser. 372,393, Cl. D7-301.000.
Credo Tool Company: *See*—
Brutscher, David T.; and Leet, Leroy R., Sr., 372,433, Cl. D10-64.000.
Crews, Inc.: *See*—
Sheffield, Keith W.; and Chin, John, 372,490, Cl. D16-325.000.
Daenen, Robert H. C. M.: *See*—
Lillelund, Stig; Olsen, Eskil H.; Heiberg, Jakob; and Daenen, Robert H. C. M., 372,401, Cl. D7-612.000.
Daiwa Seiko, Inc.: *See*—
Kaneko, Kyoichi; and Shinohara, Eiji, 372,514, Cl. D22-137.000.
Dart Industries Inc.: *See*—
Lillelund, Stig; Olsen, Eskil H.; Heiberg, Jakob; and Daenen, Robert H. C. M., 372,401, Cl. D7-612.000.
Davies, Alan J. E., to McKechnie UK Limited. Edging strip for tiled steps. 372,539, Cl. D25-119.000.
Davis, Jerilyan F. Communication board. 372,502, Cl. D21-32.000.
Davis, Judy G. Mobilized control iv stand. 372,533, Cl. D24-128.000.
Davis, Leslie G.: *See*—

Goldring, Harold B.; Niven, Mark A.; Namaroff, Ronald; and Davis, Leslie G., 372,381, Cl. D6-476.000.
Davis, Mackey W.: *See—*
Montalbo, Gary; and Davis, Mackey W., 372,380, Cl. D6-467.000.
Deacon, Ernie L.; and McMullin, Faris W. Winter golf spike with stud. 372,355, Cl. D2-962.000.
De'Armond, Robert, to Newell Operating Company. Pull. 372,414, Cl. D8-317.000.
DeCola, James B., to Peavey Electronics Corporation. Guitar body. 372,491, Cl. D17-20.000.
Del Monte, Ernest J. Six doorway modular housing unit. 372,538, Cl. D25-35.000.
DiCianna, Domenico; and Avolio, Gennaro S., to Alldente International Inc. Denture cleaner. 372,535, Cl. D24-176.000.
Dikowitz, Jerry, to E. Gluck Corporation. Watch container. 372,424, Cl. D9-429.000.
Dinex International, Inc.: *See—*
Seager, Richard H., 372,396, Cl. D7-392.100.
D'Innocente, Ralph: *See—*
Jacuzzi, Roy A.; and D'Innocente, Ralph, 372,520, Cl. D23-275.000.
Dokos, Gregory P. Gravitationally-fed cleaning mop for floors, and walls. 372,570, Cl. D32-50.000.
Dolan, Patrick S. Chandelier. 372,551, Cl. D26-81.000.
Dolan, Patrick S. Chandelier. 372,553, Cl. D26-84.000.
Donghia Furniture: *See—*
Hutton, John, 372,382, Cl. D6-486.000.
Dorsey, A. Nelson: *See—*
Price, Scott D.; and Dorsey, A. Nelson, 372,484, Cl. D15-133.000.
Douglas, John H., to Paragon Water Systems. Water purification unit. 372,515, Cl. D23-209.000.
Dow, James; and Khovaylo, Modest, to Hewlett-Packard Company. Data storage media autochanger. 372,483, Cl. D14-299.000.
Duncan, Michael G.: *See—*
Meier, Richard A.; and Duncan, Michael G., 372,373, Cl. D6-422.000.
Dwight, Mark: *See—*
Kava, Joanne; Reilly, Michael D.; Dwight, Mark; and Lovelady, Brett, 372,479, Cl. D14-218.000.
Dziuk, Raymond. Scissors. 372,410, Cl. D8-57.000.
E. Gluck Corporation: *See—*
Dikowitz, Jerry, 372,424, Cl. D9-429.000.
Eeckhoudt, Jean-Marie, to Maax Inc. Shower stall. 372,521, Cl. D23-283.000.
Englert/Rollformer, Inc.: *See—*
Schultz, Robert E., 372,545, Cl. D25-138.000.
Escalona, Manuel A., to Comercial Kettal, S.A. Seat. 372,368, Cl. D6-376.000.
Ewans, John F.: *See—*
Lloyd-Morris, Michael A.; and Ewans, John F., 372,390, Cl. D6-553.000.
Family Trust U/T/A, The: *See—*
Weder, Donald E.; and Straeter, Joseph G., 372,439, Cl. D11-164.000.
Farnsteiner, Irmgard, to S.I.C.M.O. Societe Industrielle & Commerciale de Material & d'Outillage. Spray gun. 372,517, Cl. D23-223.000.
Fasciano, Peter: *See—*
Ricotta, James J.; Bodony, Lawrence A.; and Fasciano, Peter, 372,478, Cl. D14-217.000.
Foamex L.P.: *See—*
Bonaddio, Vincenzo A.; and Contreras, Jose De Jesus Munoz, 372,367, Cl. D6-375.000.
Ford, Joseph E.; Jursich, Donald N.; and Chan, Raymond, to Jing Mei Industrial Holdings, Ltd. Shower telephone base unit. 372,474, Cl. D14-149.000.
Franson, Jeffrey R., to Mikron Industries. Window component extrusion. 372,544, Cl. D25-124.000.
Friedrich Grohe Aktiengesellschaft: *See—*
Gottwald, Adolf, 372,518, Cl. D23-238.000.
Frinier, Richard, to Cherry Grove, Inc. Chair. 372,366, Cl. D6-369.000.
Garnett, Jon M. Removable pouring closure. 372,426, Cl. D9-447.000.
Geisinger, Gregory: *See—*
Siezak, Larry; Bozanich, Margarette F.; Burnett, Daniel; Clark, Philip H.; Geisinger, Gregory; Kabler, Sophia M.; Morini, Alan; O'Leary, Melvin C., Jr.; and Samson, Kenneth, 372,429, Cl. D9-528.000.
Gelb, Larry. Zipper pull. 372,440, Cl. D11-221.000.
Gembala, David J.: *See—*
Andrews, Jonathan N.; Cooper, Stephen V.; Shepard, Gary N.; Bledsoe, James D.; Blumberg-Dominguez, Wendy; Benvegar, Carl E.; and Gembala, David J., 372,534, Cl. D24-168.000.
General Cable Industries, Inc.: *See—*
Hedrick, Paul A., 372,458, Cl. D13-138.000.
General Mills, Inc.: *See—*
Laughlin, Daniel L., 372,352, Cl. D1-106.000.
Giese, Robert C.: *See—*
Bonnell, Thomas A.; and Giese, Robert C., 372,522, Cl. D23-304.000.
Godfrey, Dwayne M.; and Butenschoen, Gene G. Folder organizer. 372,495, Cl. D19-27.000.
Gold, Peter. Insert and channel auto windshield molding. 372,453, Cl. D12-400.000.
Goldhardt, Donald J.: *See—*
Tiefenthal, James L.; Goldhardt, Donald J.; and Morrow, James D., 372,455, Cl. D13-108.000.
Goldring, Harold B.; Niven, Mark A.; Namaroff, Ronald; and Davis, Leslie G., to Colgate-Palmolive Company. Display rack. 372,381, Cl. D6-476.000.
Goss, Lorane C., Jr., to Mikron Industries. Window component extrusion. 372,541, Cl. D25-124.000.
Goss, Lorane C., Jr., to Mikron Industries. Window component extrusion. 372,542, Cl. D25-124.000.
Gottwald, Adolf, to Friedrich Grohe Aktiengesellschaft. Bath faucet. 372,518, Cl. D23-238.000.
Graco Children's Products, Inc.: *See—*
Bellows, William B., 372,385, Cl. D6-506.000.
Grifka, Joachim, to Otto Bock Orthopaedische Industrie Besitz-und Verwaltungs-Kommanditgesellschaft. Knee joint brace. 372,536, Cl. D24-190.000.
Grove, Donald H., Jr. Reading stand. 372,371, Cl. D6-419.000.
Guidotti, Jean-Claude, to Creations D. Guidotti S.A. Door hinge. 372,415, Cl. D8-327.000.
Halm, Hans, to Lingner & Fischer GmbH. Toothbrush. 372,363, Cl. D4-104.000.
Hamasaki, Yuji: *See—*
Tokuda, Hiroyuki; Takenouchi, Masanori; Kotaki, Yasuo; and Hamasaki, Yuji, 372,494, Cl. D18-56.000.
Hammar, Richard, to L.D. Kichler Co., The. Chandelier. 372,554, Cl. D26-84.000.
Haneda, Koji; and Hayakawa, Naohiro, to Makita Corporation. Hedge trimmer. 372,407, Cl. D8-8.000.
Hanson, Marvin L.: *See—*
McCoy, Richard; Hanson, Marvin L.; and Krager, Jon L., 372,447, Cl. D12-162.000.
Hayakawa, Naohiro: *See—*
Haneda, Koji; and Hayakawa, Naohiro, 372,407, Cl. D8-8.000.
Heary Bros. Lightning Protection Co., Inc.: *See—*
Heary, Kenneth P., 372,434, Cl. D10-105.000.
Heary, Kenneth P., to Heary Bros. Lightning Protection Co., Inc. Air terminal. 372,434, Cl. D10-105.000.
Hedrick, Paul A., to General Cable Industries, Inc. Electrical plug body. 372,458, Cl. D13-138.000.
Heiberg, Jakob: *See—*
Lillelund, Stig; Olsen, Eskil H.; Heiberg, Jakob; and Daenen, Robert H. C. M., 372,401, Cl. D7-612.000.
Henredon Furniture Industries, Inc.: *See—*
Rosebrock, Paul A., 372,377, Cl. D6-446.000.
Hewlett-Packard Company: *See—*
Andrews, Jonathan N.; Cooper, Stephen V.; Shepard, Gary N.; Bledsoe, James D.; Blumberg-Dominguez, Wendy; Benvegar, Carl E.; and Gembala, David J., 372,534, Cl. D24-168.000.
Cooper, Stephen V.; Salvatori, Phillip H.; Andrews, Jonathan N.; Brink, Gregory D.; Bledsoe, James D.; Blumberg-Dominguez, Wendy; and Burton, David L., 372,456, Cl. D13-108.000.
Dow, James; and Khovaylo, Modest, 372,483, Cl. D14-299.000.
High End Systems, Inc.: *See—*
Stultz, Mark A., 372,550, Cl. D26-63.000.
Hinton, James H., to Oak Manufacturing Company. Combined vending machine and gumballs and stand. 372,500, Cl. D20-7.000.
Ho, Chu-Shun. Handle for a hand tool. 372,411, Cl. D8-83.000.
Holst, Rainer. Foot pad. 372,448, Cl. D12-174.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Kishi, Toshiaki; Yamazumi, Hideaki; and Kuroda, Shigeru, 372,443, Cl. D12-110.000.
Kitagawa, Makoto; and Ueno, Hirotsugu, 372,442, Cl. D12-110.000.
Hoover Company, The: *See—*
Moine, David W.; McKnight, Darwin T.; Stephens, Ronald J.; and Wareham, Richard A., 372,567, Cl. D32-23.000.
Hotchkis, John F., Jr. Automotive tower brace. 372,446, Cl. D12-159.000.
Hsieh, Ming-kun. Infrared mouse. 372,468, Cl. D14-114.000.
Hsien, Ming-kun. Joystick. 372,470, Cl. D14-114.000.
Hubbell Incorporated: *See—*
Tiberio, Patrick J., Jr.; and Swift, Thomas R., 372,459, Cl. D13-146.000.
Hutton, John, to Donghia Furniture. Table. 372,382, Cl. D6-486.000.
Icenogle, Robert O. Marine jack plate. 372,452, Cl. D12-317.000.
Ikegami, Toshiroh. Coupling element for furniture. 372,419, Cl. D8-382.000.
Impex SA: *See—*
Marguerite, Patrick, 372,356, Cl. D3-209.000.
Industrie Natuzzi, SpA: *See—*
Natuzzi, Pasquale; and Abbruzzese, Domenico, 372,369, Cl. D6-381.000.
Natuzzi, Pasquale; and Lucarelli, Raffaella, 372,370, Cl. D6-381.000.
Interlego AG: *See—*
Clark, Eileen, 372,505, Cl. D21-108.000.
Jacobsen, Bente, 372,504, Cl. D21-108.000.
International Business Machines Corporation: *See—*
Karidis, John P.; Lucente, Samuel A., II; Tennant, Robert P.; Stone, Lawrence A.; King, Michael L.; Tucker, Martin T.; McVicker, Gerard; and Sapper, Richard F., 372,465, Cl. D14-106.000.
Karidis, John P.; Lucente, Samuel A., II; Tennant, Robert P.; Sapper, Richard F.; Stone, Lawrence A.; and McVicker, Gerard, 372,471, Cl. D14-115.000.
Karidis, John P.; Lucente, Samuel A., II; Tennant, Robert P.; Sapper, Richard F.; Stone, Lawrence A.; and McVicker, Gerard, 372,472, Cl. D14-115.000.
Wetzel, Timothy D., 372,464, Cl. D14-102.000.

Jacobsen, Bente, to Interlego AG. Toy plaster bandage for a doll. 372,504, Cl. D21-108.000.
Jacuzzi Inc.: *See—*
Jacuzzi, Roy A.; and D'Innocente, Ralph, 372,520, Cl. D23-275.000.
Jacuzzi, Roy A.; and D'Innocente, Ralph, to Jacuzzi Inc. Combined whirlpool bathtub and shower stall. 372,520, Cl. D23-275.000.
Jago, Thomas E.; and Barney, Gerald L., to Chivas Brothers Limited. Bottle. 372,427, Cl. D9-500.000.
James River Corporation of Virginia: *See—*
Kuchenbecker, Morris W., 372,386, Cl. D6-518.000.
Kuchenbecker, Morris W., 372,387, Cl. D6-518.000.
James, William A., to Universal Furniture Industries, Inc. Mirror. 372,364, Cl. D6-300.000.
Jensen, Norman R. Flavor injector. 372,403, Cl. D7-669.000.
Jimenez, Eduardo J., to Schlage Lock Company. Door lock key cylinder housing. 372,417, Cl. D8-343.000.
Jing Mei Industrial Holdings, Ltd.: *See—*
Ford, Joseph E.; Jursich, Donald N.; and Chan, Raymond, 372,474, Cl. D14-149.000.
Jones, Sherry L., to American Standard Inc. Drain cover. 372,519, Cl. D23-261.000.
Jonsson, Nils-Olof: *See—*
Brewer, Douglas; Brown, David; Jonsson, Nils-Olof; McKeown, Timothy; and Skonieczny, Dean, 372,487, Cl. D15-145.000.
Jursich, Donald N.: *See—*
Ford, Joseph E.; Jursich, Donald N.; and Chan, Raymond, 372,474, Cl. D14-149.000.
Kabler, Sophia M.: *See—*
Siezak, Larry; Bozanich, Margarette F.; Burnett, Daniel; Clark, Philip H.; Geisinger, Gregory; Kabler, Sophia M.; Morini, Alan; O'Leary, Melvin C., Jr.; and Samson, Kenneth, 372,429, Cl. D9-528.000.
Kaneko, Kyoichi; and Shinohara, Eiji, to Daiwa Seiko, Inc. Line roller for a spinning fishing reel. 372,514, Cl. D22-137.000.
Kaneko, Masahiro: *See—*
Okuyama, Toshihide; and Kaneko, Masahiro, 372,457, Cl. D13-112.000.
Karidis, John P.; Lucente, Samuel A., II; Tennant, Robert P.; Stone, Lawrence A.; King, Michael L.; Tucker, Martin T.; McVicker, Gerard; and Sapper, Richard F., to International Business Machines Corporation. Personal computer with extended keyboard. 372,465, Cl. D14-106.000.
Karidis, John P.; Lucente, Samuel A., II; Tennant, Robert P.; Sapper, Richard F.; Stone, Lawrence A.; and McVicker, Gerard, to International Business Machines Corporation. Keyboard. 372,471, Cl. D14-115.000.
Karidis, John P.; Lucente, Samuel A., II; Tennant, Robert P.; Sapper, Richard F.; Stone, Lawrence A.; and McVicker, Gerard, to International Business Machines Corporation. Fractionated keyboard. 372,472, Cl. D14-115.000.
Karlsson, Jan; and Widerström, Carin, to AB Astra. Respiratory face mask. 372,530, Cl. D24-110.400.
Karsten Manufacturing Corporation: *See—*
Bryant, Leslie J.; and Solheim, John A., 372,362, Cl. D3-320.000.
Kava, Joanne; Reilly, Michael D.; Dwight, Mark; and Lovelady, Brett, to Universal Electronics Inc. Remote control. 372,479, Cl. D14-218.000.
Kay, Francis X. Nose blocker. 372,528, Cl. D24-106.000.
Kenney, Cory. Cord holding attachment for electrical receptacle. 372,461, Cl. D13-154.000.
Khovaylo, Modest: *See—*
Dow, James; and Khovaylo, Modest, 372,483, Cl. D14-299.000.
Kim, Jim. Bicycle sprocket crank arm. 372,444, Cl. D12-123.000.
Kincman, David A., Sr. Hanging towel holder. 372,388, Cl. D6-547.000.
Kincman, David A., Sr. Hanging towel holder. 372,389, Cl. D6-547.000.
King, Michael L.: *See—*
Karidis, John P.; Lucente, Samuel A., II; Tennant, Robert P.; Stone, Lawrence A.; King, Michael L.; Tucker, Martin T.; McVicker, Gerard; and Sapper, Richard F., 372,465, Cl. D14-106.000.
Kino, Moriya, to Royal Co., Ltd. Water machine gun. 372,506, Cl. D21-147.000.
Kirchhoff, Kenneth J.: *See—*
Carlson, Bruce W.; and Kirchhoff, Kenneth J., 372,499, Cl. D19-65.000.
Kirkwood, Rufus. Shopping bag handle. 372,425, Cl. D9-434.000.
Kishi, Toshiaki; Yamazumi, Hideaki; and Kuroda, Shigeru, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle. 372,443, Cl. D12-110.000.
Kitagawa, Makoto; and Ueno, Hirotsugu, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle. 372,442, Cl. D12-110.000.
KKH Corp.: *See—*
Bala, Virginia, 372,392, Cl. D6-598.000.
Kohler Co.: *See—*
Bonnell, Thomas A.; and Giese, Robert C., 372,522, Cl. D23-304.000.
Kotaki, Yasuo: *See—*
Tokuda, Hiroyuki; Takenouchi, Masanori; Kotaki, Yasuo; and Hamasaki, Yuji, 372,494, Cl. D18-56.000.
Krager, Jon L.: *See—*
McCoy, Richard; Hanson, Marvin L.; and Krager, Jon L., 372,447, Cl. D12-162.000.
Kruger, Cory J., to Sterilite Corporation. Modular storage drawer. 372,378, Cl. D6-448.000.
Kuchenbecker, Morris W., to James River Corporation of Virginia. Facial tissue box. 372,386, Cl. D6-518.000.
Kuchenbecker, Morris W., to James River Corporation of Virginia. Facial tissue box. 372,387, Cl. D6-518.000.
Kuroda, Shigeru: *See—*
Kishi, Toshiaki; Yamazumi, Hideaki; and Kuroda, Shigeru, 372,443, Cl. D12-110.000.
Kyoto Measuring Instruments Corp.: *See—*
Sawano, Kazuyo, 372,432, Cl. D10-62.000.
L.D. Kichler Co., The: *See—*
Hammar, Richard, 372,554, Cl. D26-84.000.
Porter, David H., 372,552, Cl. D26-81.000.
Lai, Yen-Hsun. Cover of bird-cage. 372,561, Cl. D30-119.000.
Lamber, Demetrios. Writing implement with fins. 372,497, Cl. D19-48.000.
Lamson, Wayne, to Trafalgar House Inc. Swirl tumbler. 372,398, Cl. D7-529.000.
Lansil, Clifford S.: *See—*
Burns, Clay A.; Sabin, Paul C.; Cheung, Victor Y.; and Lansil, Clifford S., 372,360, Cl. D3-273.000.
Burns, Clay A.; Sabin, Paul C.; Cheung, Victor Y.; and Lansil, Clifford S., 372,361, Cl. D3-282.000.
Laughlin, Daniel L., to General Mills, Inc. Food product. 372,352, Cl. D1-106.000.
Lee, Marco, to Silitek Corporation. Scanner. 372,467, Cl. D14-107.000.
Lee, Ying-Jue. Wall fixture mounting base. 372,556, Cl. D26-142.000.
Leet, Leroy R., Sr.: *See—*
Brutscher, David T.; and Leet, Leroy R., Sr., 372,433, Cl. D10-64.000.
Lifeline Systems, Inc.: *See—*
Bellomo, Michael; Stropkay, Scott; Weissburg, David; and Nichols, Mark, 372,435, Cl. D10-106.000.
Lillelund, Stig; Olsen, Eskil H.; Heiberg, Jakob; and Daenen, Robert H. C. M., to Dart Industries Inc. Canister. 372,401, Cl. D7-612.000.
Lin, King B. Glass shade. 372,555, Cl. D26-133.000.
Lingner & Fischer GmbH: *See—*
Halm, Hans, 372,363, Cl. D4-104.000.
Linnér, Hans, to Norden Pac Development AB. Tube sealing system. 372,488, Cl. D15-146.000.
Lippisch, Hangwind F., to Steriite Corporation. Laundry basket. 372,568, Cl. D32-37.000.
Littmann, Ludwig; and Rebordosa, Antonio. Working bowl for processing food with an attachable gear unit. 372,397, Cl. D7-413.000.
Liu, Chang-Hsiung. Inflatable toy. 372,503, Cl. D21-84.000.
Lloyd-Morris, Michael A.; and Ewans, John F., to Bisbell Magnetic Products Ltd. Magnetic utensil holder. 372,390, Cl. D6-553.000.
Lo, Kai B., to Topsa Limited. Lantern. 372,549, Cl. D26-48.000.
Loch, Thea L. Hand bracelet. 372,436, Cl. D11-3.000.
Loebertmann, Douglas E., to Satellite Industries, Inc. Facility for physically-challenged individuals. 372,537, Cl. D25-16.000.
Lovelady, Brett: *See—*
Kava, Joanne; Reilly, Michael D.; Dwight, Mark; and Lovelady, Brett, 372,479, Cl. D14-218.000.
Lucarelli, Raffaella: *See—*
Natuzzi, Pasquale; and Lucarelli, Raffaella, 372,370, Cl. D6-381.000.
Lucente, Samuel A., II: *See—*
Karidis, John P.; Lucente, Samuel A., II; Tennant, Robert P.; Stone, Lawrence A.; King, Michael L.; Tucker, Martin T.; McVicker, Gerard; and Sapper, Richard F., 372,465, Cl. D14-106.000.
Karidis, John P.; Lucente, Samuel A., II; Tennant, Robert P.; Sapper, Richard F.; Stone, Lawrence A.; and McVicker, Gerard, 372,471, Cl. D14-115.000.
Karidis, John P.; Lucente, Samuel A., II; Tennant, Robert P.; Sapper, Richard F.; Stone, Lawrence A.; and McVicker, Gerard, 372,472, Cl. D14-115.000.
M&R Marking Systems, Inc.: *See—*
Sculler, Steven J., 372,493, Cl. D18-18.000.
Maax Inc.: *See—*
Eeckhoudt, Jean-Marie, 372,521, Cl. D23-283.000.
MacAuley, Richard P.; McCallister, Patrick E.; Smithberger, Jay A.; Sita, Lewis H.; and Stokesbury, Elwood L., to Abbott Laboratories. Combined bottle and cap. 372,531, Cl. D24-121.000.
Makita Corporation: *See—*
Haneda, Koji; and Hayakawa, Naohiro, 372,407, Cl. D8-8.000.
Malmquist, Derek P., to Clorox Company, The. Bottle. 372,428, Cl. D9-523.000.
Margolis, Kenneth D. Frozen confection. 372,351, Cl. D1-102.000.
Marguerite, Patrick, to Impex SA. Illuminated key ring. 372,356, Cl. D3-209.000.
Marks, Jonathan: *See—*
Zambelli, Michael; Marks, Jonathan; Ramakrishnan, Rengaswamy; and Zillioux, Joel G., 372,463, Cl. D13-162.000.
Mathison, Steven L., to Mathison, Steven L. Combined credit card holder and money clip. 372,358, Cl. D3-247.000.
Matigian, Matthew R. Fire extinguisher for use in a barbecue grill. 372,560, Cl. D29-125.000.
Maxim, Inc.: *See—*
Cook, James R., 372,423, Cl. D9-418.000.
McCallister, Patrick E.: *See—*
MacAuley, Richard P.; McCallister, Patrick E.; Smithberger, Jay A.; Sita, Lewis H.; and Stokesbury, Elwood L., 372,531, Cl. D24-121.000.
McCoy, Richard; Hanson, Marvin L.; and Krager, Jon L., to Reese Products, Inc. Step bumper hitch with hitch plate openings. 372,447, Cl. D12-162.000.
McKechnie UK Limited: *See—*
Davies, Alan J. E., 372,539, Cl. D25-119.000.
McKeown, Timothy: *See—*
Brewer, Douglas; Brown, David; Jonsson, Nils-Olof; McKeown, Timothy; and Skonieczny, Dean, 372,487, Cl. D15-145.000.
McKnight, Darwin T.: *See—*

Moine, David W.; McKnight, Darwin T.; Stephens, Ronald J.; and Wareham, Richard A., 372,567, Cl. D32-23.000.

McMullin, Faris W.: *See*—
Deacon, Ernie L.; and McMullin, Faris W., 372,355, Cl. D2-962.000.

McVicker, Gerard: *See*—
Karidis, John P.; Lucente, Samuel A., II; Tennant, Robert P.; Stone, Lawrence A.; King, Michael L.; Tucker, Martin T.; McVicker, Gerard; and Sapper, Richard F., 372,465, Cl. D14-106.000.
Karidis, John P.; Lucente, Samuel A., II; Tennant, Robert P.; Sapper, Richard F.; Stone, Lawrence A.; and McVicker, Gerard, 372,471, Cl. D14-115.000.
Karidis, John P.; Lucente, Samuel A., II; Tennant, Robert P.; Sapper, Richard F.; Stone, Lawrence A.; and McVicker, Gerard, 372,472, Cl. D14-115.000.

Meier, Richard A.; and Duncan, Michael G., to Steelcase Inc. Desk. 372,373, Cl. D6-422.000.

Mendez, Santiago. Cord lock and fastener. 372,420, Cl. D8-383.000.

Miansian, James K. Spinner for wheels. 372,451, Cl. D12-213.000.

Midgley, Roland R.: *See*—
Rossini, Steven J.; and Midgley, Roland R., 372,532, Cl. D24-126.000.

Mikron Industries: *See*—
Franson, Jeffrey R., 372,544, Cl. D25-124.000.
Goss, Lorane C., Jr., 372,541, Cl. D25-124.000.
Goss, Lorane C., Jr., 372,542, Cl. D25-124.000.
Oliver, Teresa A., 372,543, Cl. D25-124.000.

Milligan, Kenneth: *See*—
Wright, Richard B.; and Milligan, Kenneth, 372,409, Cl. D8-25.000.

Minami, Nobuaki, to Sumitomo Rubber Industries, Ltd. Automobile tire. 372,445, Cl. D12-147.000.

Minnesota Mining and Manufacturing Company: *See*—
Carlson, Bruce W.; and Kirchhoff, Kenneth J., 372,499, Cl. D19-65.000.
Rossini, Steven J.; and Midgley, Roland R., 372,532, Cl. D24-126.000.

Minnesota Valley Engineering, Inc.: *See*—
Remes, Scott, 372,529, Cl. D24-110.000.

Mischenko, Nicholas, to Motorola, Inc. Keypad cover for a portable communication device. 372,481, Cl. D14-249.000.

Mitchell, John, to Venture Innovations, Inc. Combination razor body and shaving cream dispenser. 372,557, Cl. D28-47.000.

Mitsu, Shigeyuki; Ueda, Wataru; and Uno, Katsuhiko, to Asics Corporation. Shoe sole. 372,354, Cl. D2-952.000.

Moine, David W.; McKnight, Darwin T.; Stephens, Ronald J.; and Wareham, Richard A., to Hoover Company, The. Combined wet and dry vacuum cleaner. 372,567, Cl. D32-23.000.

Montalbo, Gary; and Davis, Mackey W. Earring rack. 372,380, Cl. D6-467.000.

Morini, Alan: *See*—
Slezak, Larry; Bozanich, Margarette F.; Burnett, Daniel; Clark, Philip H.; Geisinger, Gregory; Kabler, Sophia M.; Morini, Alan; O'Leary, Melvin C., Jr.; and Samson, Kenneth, 372,429, Cl. D9-528.000.

Morris, Michael A., to Trans Global Products, Inc. Flower pot wrapping pleat forming fixture. 372,486, Cl. D15-140.000.

Morrison, Howard J.: *See*—
Stambolic, Zarko; Smith, Shari L.; and Morrison, Howard J., 372,501, Cl. D21-13.000.

Morrow, James D.: *See*—
Tiefenthal, James L.; Goldhardt, Donald J.; and Morrow, James D., 372,455, Cl. D13-108.000.

Motorola, Inc.: *See*—
Mischenko, Nicholas, 372,481, Cl. D14-249.000.
Pisutha-Arnond, Suthirug N.; Scarpone, William J.; and Beyer, Edward R., 372,477, Cl. D14-191.000.

Murakami, Takeshi, to O.G.K. Hanbai. Helmet for bicyclist. 372,559, Cl. D27-102.000.

Murray, Robert M., Sr. Combination tool box and fuel tank. 372,454, Cl. D12-423.000.

Nakazawa, Shinobu: *See*—
Akaiwa, Masao; and Nakazawa, Shinobu, 372,489, Cl. D16-219.000.

Namaroff, Ronald: *See*—
Goldring, Harold B.; Niven, Mark A.; Namaroff, Ronald; and Davis, Leslie G., 372,381, Cl. D6-476.000.

Natuzzi, Pasquale; and Abbruzzese, Domenico, to Industrie Natuzzi, SpA. Seat. 372,369, Cl. D6-381.000.

Natuzzi, Pasquale; and Lucarelli, Raffaella, to Industrie Natuzzi, SpA. Seat. 372,370, Cl. D6-381.000.

Newell Operating Company: *See*—
De'Armond, Robert, 372,414, Cl. D8-317.000.

Newman, David T. Portable entertainment center. 372,379, Cl. D6-467.000.

Nguyen, Bernard, to Christian Bernard Diffusion S.A. Wristwatch case and band. 372,431, Cl. D10-32.000.

Nichols, Mark: *See*—
Bellomo, Michael; Stropkay, Scott; Weissburg, David; and Nichols, Mark, 372,435, Cl. D10-106.000.

Nimmo, Craig A., to Paramount Lesure Products Pty. Ltd. Nozzle for swimming pools or spas. 372,516, Cl. D23-213.000.

Niven, Mark A.: *See*—
Goldring, Harold B.; Niven, Mark A.; Namaroff, Ronald; and Davis, Leslie G., 372,381, Cl. D6-476.000.

Norden Pac Development AB: *See*—
Linnér, Hans, 372,488, Cl. D15-146.000.

Notaras, Angelo L.: *See*—
Notaras, John A.; and Notaras, Angelo L., 372,405, Cl. D8-1.000.

Notaras, John A.; and Notaras, Angelo L. Lawn edger. 372,405, Cl. D8-1.000.

O.G.K. Hanbai: *See*—
Murakami, Takeshi, 372,559, Cl. D27-102.000.

Oak Manufacturing Company: *See*—
Hinton, James H., 372,500, Cl. D20-7.000.

Okuyama, Toshihide; and Kaneko, Masahiro, to Sayama Precision Industries Co., Ltd. Vibrating motor. 372,457, Cl. D13-112.000.

O'Leary, Melvin C., Jr.: *See*—
Slezak, Larry; Bozanich, Margarette F.; Burnett, Daniel; Clark, Philip H.; Geisinger, Gregory; Kabler, Sophia M.; Morini, Alan; O'Leary, Melvin C., Jr.; and Samson, Kenneth, 372,429, Cl. D9-528.000.

Oliver, Teresa A., to Mikron Industries. Window component extrusion. 372,543, Cl. D25-124.000.

Olsen, Eskil H.: *See*—
Lillelund, Stig; Olsen, Eskil H.; Heiberg, Jakob; and Daenen, Robert H. C. M., 372,401, Cl. D7-612.000.

Olympus Optical Co., Ltd.: *See*—
Shigeri, Mitsuhiro, 372,476, Cl. D14-165.000.

Otto Bock Orthopaedische Industrie Besitz-und Verwaltungs-Kommanditgesellschaft: *See*—
Grifka, Joachim, 372,536, Cl. D24-190.000.

Paragon Water Systems: *See*—
Douglas, John H., 372,515, Cl. D23-209.000.

Paramount Lesure Products Pty. Ltd.: *See*—
Nimmo, Craig A., 372,516, Cl. D23-213.000.

Patatanyan, Emil. Clock. 372,430, Cl. D10-24.000.

Paus, Michael J., to Universal Furniture Industries, Inc. Chair. 372,365, Cl. D6-369.000.

Peavey Electronics Corporation: *See*—
DeCola, James B., 372,491, Cl. D17-20.000.

Pelosi, Frank, Jr.: *See*—
Pelosi, Lee J.; and Pelosi, Frank, Jr., 372,546, Cl. D25-164.000.

Pelosi, Lee J.; and Pelosi, Frank, Jr. Prehung gauged cove base. 372,546, Cl. D25-164.000.

Petrucci, Philip. Ring. 372,437, Cl. D11-26.000.

Pfefferman, Erich S. Combined cap and carrying bag. 372,353, Cl. D2-866.000.

Pisutha-Arnond, Suthirug N.; Scarpone, William J.; and Beyer, Edward R., to Motorola, Inc. Display for a portable communication device. 372,477, Cl. D14-191.000.

Plantronics, Inc.: *See*—
Bungardt, Gabriele, 372,473, Cl. D14-149.000.
Bungardt, Gabriele, 372,480, Cl. D14-247.000.

Pollard, Reginald N., to Pollard Windows Inc. Window frame section. 372,540, Cl. D25-124.000.

Pollard Windows Inc.: *See*—
Pollard, Reginald N., 372,540, Cl. D25-124.000.

Porter, David H., to L.D. Kichler Co., The. Chandelier. 372,552, Cl. D26-81.000.

Price, Scott D.; and Dorsey, A. Nelson, to Black & Decker Inc. Chop saw design. 372,484, Cl. D15-133.000.

Radtke, Leroy F. Small electric fan. 372,527, Cl. D23-382.000.

Radtke, Leroy F., Jr., to Circulair, Inc. Electric fan heater. 372,523, Cl. D23-328.000.

Ramakrishnan, Rengaswamy: *See*—
Zambelli, Michael; Marks, Jonathan; Ramakrishnan, Rengaswamy; and Zillioux, Joel G., 372,463, Cl. D13-162.000.

Raychem Corporation: *See*—
Shimirak, Gerald L.; Bingham, Gail J.; Vail, Philip B.; and Vranicar, Anthony, 372,462, Cl. D13-160.000.

Real-Tool, Inc.: *See*—
Cline, Roger M., 372,421, Cl. D8-499.000.

Rebordosa, Antonio: *See*—
Littmann, Ludwig; and Rebordosa, Antonio, 372,397, Cl. D7-413.000.

Reckitt & Colman Products Limited: *See*—
Rymer, Shaun P., 372,526, Cl. D23-366.000.

Reese Products, Inc.: *See*—
McCoy, Richard; Hanson, Marvin L.; and Krager, Jon L., 372,447, Cl. D12-162.000.

Reilly, Michael D.: *See*—
Kava, Joanne; Reilly, Michael D.; Dwight, Mark; and Lovelady, Brett, 372,479, Cl. D14-218.000.

Remes, Scott, to Minnesota Valley Engineering, Inc. Portable oxygen dispenser. 372,529, Cl. D24-110.000.

Rice, David A. Disposable cat litter box. 372,565, Cl. D30-161.000.

Ricotta, James J.; Bodony, Lawrence A.; and Fasciano, Peter, to Avid Technology, Inc. Editing control panel. 372,478, Cl. D14-217.000.

Riello Bruciatori Legnago SpA: *See*—
Tonini, Edoardo, 372,524, Cl. D23-342.000.

Robbins, Daniel T. Weed and grass cutter blade. 372,408, Cl. D8-8.000.

Robbins Industries, Inc.: *See*—
Weterrings, Frans M., 372,374, Cl. D6-432.000.

Rolls-Royce Motor Cars Limited: *See*—
Axe, Royden, 372,441, Cl. D12-92.000.

Rook, Jerry D. Shoe cleaner. 372,569, Cl. D32-47.000.

Rosebrock, Paul A., to Henredon Furniture Industries, Inc. Chest. 372,377, Cl. D6-446.000.

Rossiaud, Gil-Francois, to Tefal S.A. Inner bottom of a cooking vessel. 372,394, Cl. D7-359.000.

Rossini, Steven J.; and Midgley, Roland R., to Minnesota Mining and Manufacturing Company. Diaper fastening tab closure. 372,532, Cl. D24-126.000.

Royal Co., Ltd.: *See*—
Kino, Moriya, 372,506, Cl. D21-147.000.

Rymer, Shaun P., to Reckitt & Colman Products Limited. Container for evaporable material. 372,526, Cl. D23-366.000.

S.I.C.M.O. Societe Industrielle & Commerciale de Material & d'Outillage: *See*—
Farnsteiner, Irmgard, 372,517, Cl. D23-223.000.

Sabin, Paul C.: *See*—
Burns, Clay A.; Sabin, Paul C.; Cheung, Victor Y.; and Lansil, Clifford S., 372,360, Cl. D3-273.000.
Burns, Clay A.; Sabin, Paul C.; Cheung, Victor Y.; and Lansil, Clifford S., 372,361, Cl. D3-282.000.

Saldana, Leonard R.; and Blazar, Joseph E., to Sunbeam Products, Inc. Table. 372,383, Cl. D6-487.000.

Saldana, Leonard R.; and Blazar, Joseph E., to Sunbeam Products, Inc. Table. 372,384, Cl. D6-487.000.

Salvatori, Phillip H.: *See*—
Cooper, Stephen V.; Salvatori, Phillip H.; Andrews, Jonathan N.; Brink, Gregory D.; Bledsoe, James D.; Blumberg-Dominguez, Wendy; and Burton, David L., 372,456, Cl. D13-108.000.

Samborsky, Virgil L. Basketball motif computer dust cover kit. 372,469, Cl. D14-114.000.

Samson, Kenneth: *See*—
Slezak, Larry; Bozanich, Margarette F.; Burnett, Daniel; Clark, Philip H.; Geisinger, Gregory; Kabler, Sophia M.; Morini, Alan; O'Leary, Melvin C., Jr.; and Samson, Kenneth, 372,429, Cl. D9-528.000.

Santo, Antonio F. Rearview mirror. 372,450, Cl. D12-187.000.

Sapper, Richard F.: *See*—
Karidis, John P.; Lucente, Samuel A., I., Tennant, Robert P.; Stone, Lawrence A.; King, Michael L.; Tucker, Martin T.; McVicker, Gerard; and Sapper, Richard F., 372,465, Cl. D14-106.000.
Karidis, John P.; Lucente, Samuel A., II; Tennant, Robert P.; Sapper, Richard F.; Stone, Lawrence A.; and McVicker, Gerard, 372,471, Cl. D14-115.000.
Karidis, John P.; Lucente, Samuel A., II; Tennant, Robert P.; Sapper, Richard F.; Stone, Lawrence A.; and McVicker, Gerard, 372,472, Cl. D14-115.000.

Satellite Industries, Inc.: *See*—
Loebertmann, Douglas E., 372,537, Cl. D25-16.000.

Sato, Hisao. Paper clip. 372,498, Cl. D19-65.000.

Sawano, Kazuyo, to Kyoto Measuring Instruments Corp. Cutter with ruler. 372,432, Cl. D10-62.000.

Sayama Precision Industries Co., Ltd.: *See*—
Okuyama, Toshihide; and Kaneko, Masahiro, 372,457, Cl. D13-112.000.

Scarpone, William J.: *See*—
Pisutha-Arnond, Suthirug N.; Scarpone, William J.; and Beyer, Edward R., 372,477, Cl. D14-191.000.

Scarvaglione, Louis. Lawn tool for moving leaves. 372,406, Cl. D8-1.000.

Schlage Lock Company: *See*—
Jimenez, Eduardo J., 372,417, Cl. D8-343.000.

Schneidmiller, Rodney G., to Sterling International, Inc. Top portion of a yellow jacket control trap. 372,513, Cl. D22-122.000.

Schonhorn, Irwin. Manicure board. 372,558, Cl. D28-61.000.

Schultz, Robert E., to Englert/Rollformer, Inc. Metal roof panel of indeterminate length. 372,545, Cl. D25-138.000.

Sculler, Steven J., to M&R Marking Systems, Inc. Hand stamp handle top. 372,493, Cl. D18-18.000.

Seager, Richard H., to Dinex International, Inc. Insulated dome for food plate. 372,396, Cl. D7-392.100.

Seiko Epson Corporation: *See*—
Akaiwa, Masao; and Nakazawa, Shinobu, 372,489, Cl. D16-219.000.

Sheffield, Keith W.; and Chin, John, to Crews, Inc. Safety glasses and prescription lens insert combination. 372,490, Cl. D16-325.000.

Shepard, Gary N.: *See*—
Andrews, Jonathan N.; Cooper, Stephen V.; Shepard, Gary N.; Bledsoe, James D.; Blumberg-Dominguez, Wendy; Benvegar, Carl E.; and Gembala, David J., 372,534, Cl. D24-168.000.

Shigeri, Mitsuhiro, to Olympus Optical Co., Ltd. Tape recorder. 372,476, Cl. D14-165.000.

Shimirak, Gerald L.; Bingham, Gail J.; Vail, Philip B.; and Vranicar, Anthony, to Raychem Corporation. Maintenance test unit. 372,462, Cl. D13-160.000.

Shinohara, Eiji: *See*—
Kaneko, Kyoichi; and Shinohara, Eiji, 372,514, Cl. D22-137.000.

Shudo, Tomoyuki, to Sony Corporation. Tape player combined with radio tuner. 372,475, Cl. D14-163.000.

Silitek Corporation: *See*—
Lee, Marco, 372,467, Cl. D14-107.000.

Simmons, Samuel P. Gold club head. 372,512, Cl. D21-214.000.

Simonds Industries, Inc.: *See*—
Alam, Elias P., 372,413, Cl. D8-90.000.

Sita, Lewis H.: *See*—
MacAuley, Richard P.; McCallister, Patrick E.; Smithberger, Jay A.; Sita, Lewis H.; and Stokesbury, Elwood L., 372,531, Cl. D24-121.000.

Sjödin, Hans E. Plastic landscaping edge. 372,547, Cl. D25-164.000.

Skonieczny, Dean: *See*—
Brewer, Douglas; Brown, David; Jonsson, Nils-Olof; McKeown, Timothy; and Skonieczny, Dean, 372,487, Cl. D15-145.000.

Slezak, Larry; Bozanich, Margarette F.; Burnett, Daniel; Clark, Philip H.; Geisinger, Gregory; Kabler, Sophia M.; Morini, Alan; O'Leary, Melvin C., Jr.; and Samson, Kenneth, to Clorox Company, The. Bottle. 372,429, Cl. D9-528.000.

Smith, Shari L.: *See*—
Stambolic, Zarko; Smith, Shari L.; and Morrison, Howard J., 372,501, Cl. D21-13.000.

Smithberger, Jay A.: *See*—
MacAuley, Richard P.; McCallister, Patrick E.; Smithberger, Jay A.; Sita, Lewis H.; and Stokesbury, Elwood L., 372,531, Cl. D24-121.000.

Solheim, John A.: *See*—
Bryant, Leslie J.; and Solheim, John A., 372,362, Cl. D3-320.000.

Sony Corporation: *See*—
Aramaki, Keiji, 372,460, Cl. D13-147.000.
Shudo, Tomoyuki, 372,475, Cl. D14-163.000.

Southpac Trust International, Inc.,: *See*—
Weder, Donald E.; and Straeter, Joseph G., 372,439, Cl. D11-164.000.

Stambolic, Zarko; Smith, Shari L.; and Morrison, Howard J., to Tiger Electronics, Inc. Hand-held electronic game housing. 372,501, Cl. D21-13.000.

Stanton, James M., to Verifone Inc. Receipt printer and transaction terminal mounting stand. 372,492, Cl. D18-4.000.

Steelcase Inc.: *See*—
Meier, Richard A.; and Duncan, Michael G., 372,373, Cl. D6-422.000.

Stephens, Ronald J.: *See*—
Moine, David W.; McKnight, Darwin T.; Stephens, Ronald J.; and Wareham, Richard A., 372,567, Cl. D32-23.000.

Steriite Corporation: *See*—
Lippisch, Hangwind F., 372,568, Cl. D32-37.000.

Sterilite Corporation: *See*—
Kruger, Cory J., 372,378, Cl. D6-448.000.

Sterling International, Inc.: *See*—
Schneidmiller, Rodney G., 372,513, Cl. D22-122.000.

Stevens, Kenneth M., to Chamberlin, Michael P.; and Zaik, Ernest E. Diamondback rattlesnake skin baseball. 372,510, Cl. D21-204.000.

Stokesbury, Elwood L.: *See*—
MacAuley, Richard P.; McCallister, Patrick E.; Smithberger, Jay A.; Sita, Lewis H.; and Stokesbury, Elwood L., 372,531, Cl. D24-121.000.

Stone, Lawrence A.: *See*—
Karidis, John P.; Lucente, Samuel A., II; Tennant, Robert P.; Stone, Lawrence A.; King, Michael L.; Tucker, Martin T.; McVicker, Gerard; and Sapper, Richard F., 372,465, Cl. D14-106.000.
Karidis, John P.; Lucente, Samuel A., II; Tennant, Robert P.; Sapper, Richard F.; Stone, Lawrence A.; and McVicker, Gerard, 372,471, Cl. D14-115.000.
Karidis, John P.; Lucente, Samuel A., II; Tennant, Robert P.; Sapper, Richard F.; Stone, Lawrence A.; and McVicker, Gerard, 372,472, Cl. D14-115.000.

Stone, Paul A.; and Thomas, Rickey J., to Black & Decker, Inc. Spade-type boring bit. 372,485, Cl. D15-139.000.

Straeter, Joseph G.: *See*—
Weder, Donald E.; and Straeter, Joseph G., 372,439, Cl. D11-164.000.

Stropkay, Scott: *See*—
Bellomo, Michael; Stropkay, Scott; Weissburg, David; and Nichols, Mark, 372,435, Cl. D10-106.000.

Stultz, Mark A., to High End Systems, Inc. Automated color mixing wash luminaire. 372,550, Cl. D26-63.000.

Sumitomo Rubber Industries, Ltd.: *See*—
Minami, Nobuaki, 372,445, Cl. D12-147.000.

Sunbeam Products, Inc.: *See*—
Saldana, Leonard R.; and Blazar, Joseph E., 372,383, Cl. D6-487.000.
Saldana, Leonard R.; and Blazar, Joseph E., 372,384, Cl. D6-487.000.

Swift, Thomas R.: *See*—
Tiberio, Patrick J., Jr.; and Swift, Thomas R., 372,459, Cl. D13-146.000.

Takenouchi, Masanori: *See*—
Tokuda, Hiroyuki; Takenouchi, Masanori; Kotaki, Yasuo; and Hamasaki, Yuji, 372,494, Cl. D18-56.000.

Tefal S.A.: *See*—
Candianides, Florence, 372,395, Cl. D7-361.000.
Rossiaud, Gil-Francois, 372,394, Cl. D7-359.000.

Telco Creations, Inc.: *See*—
Cohen, Seymour, 372,438, Cl. D11-129.000.

Tennant, Robert P.: *See*—
Karidis, John P.; Lucente, Samuel A., II; Tennant, Robert P.; Stone, Lawrence A.; King, Michael L.; Tucker, Martin T.; McVicker, Gerard; and Sapper, Richard F., 372,465, Cl. D14-106.000.
Karidis, John P.; Lucente, Samuel A., II; Tennant, Robert P.; Sapper, Richard F.; Stone, Lawrence A.; and McVicker, Gerard, 372,471, Cl. D14-115.000.
Karidis, John P.; Lucente, Samuel A., II; Tennant, Robert P.; Sapper, Richard F.; Stone, Lawrence A.; and McVicker, Gerard, 372,472, Cl. D14-115.000.

Tetra Laval Holdings & Finance S.A.: *See*—
Brewer, Douglas; Brown, David; Jonsson, Nils-Olof; McKeown, Timothy; and Skonieczny, Dean, 372,487, Cl. D15-145.000.

Thomas, Rickey J.: *See*—
Stone, Paul A.; and Thomas, Rickey J., 372,485, Cl. D15-139.000.

Thomasville Furniture Industries, Inc.: *See*—
Walters, Guy A., III; and Tobin, Avis E., Jr., 372,375, Cl. D6-438.000.
Walters, Guy A., III; and Tobin, Avis E., Jr., 372,376, Cl. D6-445.000.

Tiberio, Patrick J., Jr.; and Swift, Thomas R., to Hubbell Incorporated. Semi-flush, mountable electrical connector housing. 372,459, Cl. D13-146.000.
Tiefenthal, James L.; Goldhardt, Donald J.; and Morrow, James D., to Abbott Laboratories. Battery charger. 372,455, Cl. D13-108.000.
Tiger Electronics, Inc.: *See*—
Stambolic, Zarko; Smith, Shari L.; and Morrison, Howard J., 372,501, Cl. D21-13.000.
Tobin, Avis E., Jr.: *See*—
Walters, Guy A., III; and Tobin, Avis E., Jr., 372,375, Cl. D6-438.000.
Walters, Guy A., III; and Tobin, Avis E., Jr., 372,376, Cl. D6-445.000.
Tokuda, Hiroyuki; Takenouchi, Masanori; Kotaki, Yasuo; and Hamasaki, Yuji, to Canon Kabushiki Kaisha. Ink tank for printer. 372,494, Cl. D18-56.000.
Tonini, Edoardo, to Riello Bruciatori Legnago SpA. Burner. 372,524, Cl. D23-342.000.
Topsa Limited: *See*—
Lo, Kai B., 372,549, Cl. D26-48.000.
Trafalgar House Inc.: *See*—
Lamson, Wayne, 372,398, Cl. D7-529.000.
Trans Global Products, Inc.: *See*—
Morris, Michael A., 372,486, Cl. D15-140.000.
Tucker, Martin T.: *See*—
Karidis, John P.; Lucente, Samuel A., II; Tennant, Robert P.; Stone, Lawrence A.; King, Michael L.; Tucker, Martin T.; McVicker, Gerard; and Sapper, Richard P., 372,465, Cl. D14-106.000.
Tunturi, Inc.: *See*—
Clem, William E., 372,508, Cl. D21-192.000.
Turcotte Inc.: *See*—
Turcotte, Yvon, 372,525, Cl. D23-351.000.
Turcotte, Yvon, to Turcotte Inc. Air conditioning unit. 372,525, Cl. D23-351.000.
Tytula, Susan. Wallet. 372,359, Cl. D3-253.000.
Ueda, Wataru: *See*—
Mitsu, Shigeyuki; Ueda, Wataru; and Uno, Katsuhiko, 372,354, Cl. D2-952.000.
Ueno, Hirotsugu: *See*—
Kitagawa, Makoto; and Ueno, Hirotsugu, 372,442, Cl. D12-110.000.
U.S. Natural Resources, Inc.: *See*—
Zambelli, Michael; Marks, Jonathan; Ramakrishnan, Rengaswamy; and Zillioux, Joel G., 372,463, Cl. D13-162.000.
Universal Electronics Inc.: *See*—
Kava, Joanne; Reilly, Michael D.; Dwight, Mark; and Lovelady, Brett, 372,479, Cl. D14-218.000.
Universal Furniture Industries, Inc.: *See*—
James, William A., 372,364, Cl. D6-300.000.
Paus, Michael J., 372,365, Cl. D6-369.000.
Uno, Katsuhiko: *See*—
Mitsu, Shigeyuki; Ueda, Wataru; and Uno, Katsuhiko, 372,354, Cl. D2-952.000.
Vail, Philip B.: *See*—
Shimirak, Gerald L.; Bingham, Gail J.; Vail, Philip B.; and Vranicar, Anthony, 372,462, Cl. D13-160.000.
Van Blankenburg, Karl. Racing helmet drink container. 372,402, Cl. D7-623.000.
Venture Innovations, Inc.: *See*—
Mitchell, John, 372,557, Cl. D28-47.000.
Verifone Inc.: *See*—
Stanton, James M., 372,492, Cl. D18-4.000.
Volkman, Robert P. Desktop with surrounding storage compartments. 372,372, Cl. D6-421.000.
Vranicar, Anthony: *See*—
Shimirak, Gerald L.; Bingham, Gail J.; Vail, Philip B.; and Vranicar, Anthony, 372,462, Cl. D13-160.000.
Walters, Guy A., III; and Tobin, Avis E., Jr., to Thomasville Furniture Industries, Inc. China cabinet. 372,375, Cl. D6-438.000.
Walters, Guy A., III; and Tobin, Avis E., Jr., to Thomasville Furniture Industries, Inc. Entertainment center. 372,376, Cl. D6-445.000.
Wang, Simon. Bread container. 372,399, Cl. D7-609.000.
Wareham, Richard A.: *See*—
Moine, David W.; McKnight, Darwin T.; Stephens, Ronald J.; and Wareham, Richard A., 372,567, Cl. D32-23.000.
Waugh, Howard J., Jr. Protective dog garment. 372,563, Cl. D30-145.000.
Weder, Donald E.; and Straeter, Joseph G., to Family Trust U/T/A, The; and Southpac Trust International, Inc.,. Flower pot cover. 372,439, Cl. D11-164.000.
Weissburg, David: *See*—
Bellomo, Michael; Stropkay, Scott; Weissburg, David; and Nichols, Mark, 372,435, Cl. D10-106.000.
Weterrings, Frans M., to Robbins Industries, Inc. Storage device. 372,374, Cl. D6-432.000.
Wetzel, Timothy D., to International Business Machines Corporation. Multimedia storage and delivery system enclosure. 372,464, Cl. D14-102.000.
Widerström, Carin: *See*—
Karlsson, Jan; and Widerström, Carin, 372,530, Cl. D24-110.400.
Winner International Royalty Corporation: *See*—
Winner, Kevin D., 372,418, Cl. D8-346.000.
Winner, Kevin D., to Winner International Royalty Corporation. Steering wheel guard. 372,418, Cl. D8-346.000.
Woods, Timmy S. Handbag. 372,357, Cl. D3-235.000.
Wright, Richard B.; and Milligan, Kenneth, to Wright Tool Company. Double-ended flex handle wrench. 372,409, Cl. D8-25.000.
Wright Tool Company: *See*—
Wright, Richard B.; and Milligan, Kenneth, 372,409, Cl. D8-25.000.
Yamazumi, Hideaki: *See*—
Kishi, Toshiaki; Yamazumi, Hideaki; and Kuroda, Shigeru, 372,443, Cl. D12-110.000.
Yang, Lien-Chuan. Physical exerciser. 372,509, Cl. D21-195.000.
York, Roger J. Potter's kick wheel. 372,496, Cl. D19-35.000.
Zaik, Ernest E.: *See*—
Stevens, Kenneth M., 372,510, Cl. D21-204.000.
Zambelli, Michael; Marks, Jonathan; Ramakrishnan, Rengaswamy; and Zillioux, Joel G., to U.S. Natural Resources, Inc. Control panel for a room air conditioner. 372,463, Cl. D13-162.000.
Zillioux, Joel G.: *See*—
Zambelli, Michael; Marks, Jonathan; Ramakrishnan, Rengaswamy; and Zillioux, Joel G., 372,463, Cl. D13-162.000.

LIST OF PLANT PATENTEES

Endisch, Gerd; Endisch-Burmeister, Ursula; and Endisch, Wolf, to Endisch, Gerd. Geranium plant named 'Neila'. 9,619, Cl. Plt.-87.120.
Endisch, Wolf: *See*—
Endisch, Gerd; Endisch-Burmeister, Ursula; and Endisch, Wolf, 9,619, Cl. Plt.-87.120.
Endisch-Burmeister, Ursula: *See*—
Endisch, Gerd; Endisch-Burmeister, Ursula; and Endisch, Wolf, 9,619, Cl. Plt.-87.120.
Ets, Guillon Freres: *See*—
Guillou, Jacques; Guillou, Bernard; and Guillou, Maurice, 9,620, Cl. Plt.-87.120.
Geo. J. Ball, Inc.: *See*—
Leue, Ellen F., 9,618, Cl. Plt.-87.600.
Guillou, Bernard: *See*—
Guillou, Jacques; Guillou, Bernard; and Guillou, Maurice, 9,620, Cl. Plt.-87.120.
Guillou, Jacques; Guillou, Bernard; and Guillou, Maurice, to Ets, Guillon Freres. Geranium plant named 'Guivin'. 9,620, Cl. Plt.-87.120.
Guillou, Maurice: *See*—
Guillou, Jacques; Guillou, Bernard; and Guillou, Maurice, 9,620, Cl. Plt.-87.120.
Lamb, Ann E., to Twyford International Inc. Calathea plant named Eclipse. 9,621, Cl. Plt.-88.100.
Leue, Ellen F., to Geo. J. Ball, Inc. Impatiens plant named 'Sparkler Salmon'. 9,618, Cl. Plt.-87.600.
Twyford International Inc.: *See*—
Lamb, Ann E., 9,621, Cl. Plt.-88.100.

LIST OF STATUTORY INVENTION REGISTRATIONS

APPLICANTS TO WHOM
STATUTORY INVENTION REGISTRATIONS WERE ISSUED ON THE
6th DAY OF AUGUST, 1996

Ahr, Nicholas A. Absorbent article having a braided wicking structure. H1,585, Cl. 604-378.000.
Atlantic Richfield Company: *See*—
Moore, Terry J.; and Aubert, Winton G., H1,584, Cl. 588-250.000.
Aubert, Winton G.: *See*—
Moore, Terry J.; and Aubert, Winton G., H1,584, Cl. 588-250.000.
Azar, Michael G., to Smith International, Inc. Matrix diamond drag bit with PCD cylindrical cutters. H1,566, Cl. 76-108.200.
Barg, Cynthia H.: *See*—
Hanzlik, Cheryl A.; Radulski, Charles A.; and Barg, Cynthia H., H1,577, Cl. 430-120.000.
Behl, Wishvender K.: *See*—
Walker, Charles W., Jr.; Plichta, Edward J.; and Behl, Wishvender K., H1,576, Cl. 429-192.000.
Bish, Christopher J.; Brugel, Edward G.; Ennis, Royce E.; and Soape, Jerry W., to Du Pont de Nemours, E. I., and Company. Process for preparation of chlorinated and chlorosulfonated olefin polymers having low levels of residual monofluorobenzene reaction solvent and its chlorinated by-products. H1,582, Cl. 525-344.000.
Brugel, Edward G.: *See*—
Bish, Christopher J.; Brugel, Edward G.; Ennis, Royce E.; and Soape, Jerry W., H1,582, Cl. 525-344.000.
Budde, Richard A. Reduced mass/inertia suspension. H1,573, Cl. 360-104.000.
Daugherty, Barbara J. H.: *See*—
Daugherty, Thomas H.; and Daugherty, Barbara J. H., H1,575, Cl. 428-284.000.
Daugherty, Thomas H.; and Daugherty, Barbara J. H. Apertured hydrophilic polymer film topsheet with improved absorbency and comfort properties. H1,575, Cl. 428-284.000.
Dow Chemical Company, The: *See*—
Motter, Gregg A; and Kosinski, James E., H1,574, Cl. 428-69.000.
Du Pont de Nemours, E. I., and Company: *See*—
Bish, Christopher J.; Brugel, Edward G.; Ennis, Royce E.; and Soape, Jerry W., H1,582, Cl. 525-344.000.
Ennis, Royce E.: *See*—
Bish, Christopher J.; Brugel, Edward G.; Ennis, Royce E.; and Soape, Jerry W., H1,582, Cl. 525-344.000.
Exxon Production Research Company: *See*—
Huang, Pin Y.; and Tsao, Yuh-Hwang, H1,568, Cl. 210-748.000.
Furio, Diane L. Odor-controlling compositions and articles. H1,579, Cl. 502-402.000.
Hansen, Peder M.; and Schukantz, James H. Dual-feed, dual-mode antenna for mono-directional pattern. H1,571, Cl. 343-728.000.
Hanzlik, Cheryl A.; Radulski, Charles A.; and Barg, Cynthia H. Toner and developer compositions with high surface additive loadings. H1,577, Cl. 430-120.000.
Harvey, James F.: *See*—
Lux, Robert A.; and Harvey, James F., H1,570, Cl. 257-25.000.
Hood, Patrick J., to United States of America, Air Force. Wavelength stabilizing laser mirror. H1,572, Cl. 359-359.000.
Huang, Pin Y.; and Tsao, Yuh-Hwang, to Exxon Production Research Company. Acoustic separation of liquid hydrocarbons from wastewater. H1,568, Cl. 210-748.000.
Hwo, Charles C.; and Wilpers, Dale J., to Shell Oil Company. Elastomeric polybutylene polymer. H1,583, Cl. 526-348.600.
Kluttz, Robert Q., to Shell Oil Company. Asphalt composition containing highly coupled radial polymers. H1,580, Cl. 524-58.000.
Kosinski, James E.: *See*—
Motter, Gregg A; and Kosinski, James E., H1,574, Cl. 428-69.000.
Lux, Robert A.; and Harvey, James F., to United States of America, Army. Variable lateral quantum confinement transistor. H1,570, Cl. 257-25.000.
Mooney, Fred E.: *See*—
Parsons, Gordon R.; and Mooney, Fred E., H1,567, Cl. 89-36.020.
Moore, Terry J.; and Aubert, Winton G., to Atlantic Richfield Company. Mine tailings replacement. H1,584, Cl. 588-250.000.
Motter, Gregg A; and Kosinski, James E., to Dow Chemical Company, The. Evacuated foam insulation panel containing a getter material. H1,574, Cl. 428-69.000.
Parsons, Gordon R.; and Mooney, Fred E., to United States of America, Army. Transparent ceramic armor. H1,567, Cl. 89-36.020.
Plichta, Edward J.: *See*—
Walker, Charles W., Jr.; Plichta, Edward J.; and Behl, Wishvender K., H1,576, Cl. 429-192.000.
Radulski, Charles A.: *See*—
Hanzlik, Cheryl A.; Radulski, Charles A.; and Barg, Cynthia H., H1,577, Cl. 430-120.000.
Schukantz, James H.: *See*—
Hansen, Peder M.; and Schukantz, James H., H1,571, Cl. 343-728.000.
Shell Oil Company: *See*—
Hwo, Charles C.; and Wilpers, Dale J., H1,583, Cl. 526-348.600.
Kluttz, Robert Q., H1,580, Cl. 524-58.000.
Southwick, Jeffrey G., H1,581, Cl. 524-258.000.
Smith International, Inc.: *See*—
Azar, Michael G., H1,566, Cl. 76-108.200.
Soape, Jerry W.: *See*—
Bish, Christopher J.; Brugel, Edward G.; Ennis, Royce E.; and Soape, Jerry W., H1,582, Cl. 525-344.000.
Southwick, Jeffrey G., to Shell Oil Company. Process for the reduction of diene polymer hot melt adhesive color (II). H1,581, Cl. 524-258.000.
Taguchi, Masaaki. Silver halide photographic light-sensitive material. H1,578, Cl. 430-523.000.
Tsao, Yuh-Hwang: *See*—
Huang, Pin Y.; and Tsao, Yuh-Hwang, H1,568, Cl. 210-748.000.
United States of America
Air Force: *See*—
Hood, Patrick J., H1,572, Cl. 359-359.000.
Army: *See*—
Lux, Robert A.; and Harvey, James F., H1,570, Cl. 257-25.000.
Parsons, Gordon R.; and Mooney, Fred E., H1,567, Cl. 89-36.020.
Walker, Charles W., Jr.; Plichta, Edward J.; and Behl, Wishvender K., H1,576, Cl. 429-192.000.
Walker, Charles W., Jr.; Plichta, Edward J.; and Behl, Wishvender K., to United States of America, Army. Solid polymer electrolyte having an increased conductivity and solid state cell including the electrolyte. H1,576, Cl. 429-192.000.
Wilpers, Dale J.: *See*—
Hwo, Charles C.; and Wilpers, Dale J., H1,583, Cl. 526-348.600.

UMI

JU
1189
1
AG
6
1996
UMI

CLASSIFICATION OF PATENTS

ISSUED AUGUST 6, 1996

NOTE—First number, class; second number, subclass; third number, patent number

CLASS 2

59 5,542,121
69 5,542,122
80 5,542,123
81 5,542,124
158 5,542,125
161.2 5,542,126
172 5,542,127
173 5,542,128
209.12 5,542,129
436 5,542,130

CLASS 4

239 5,542,131
313 5,542,132
420.4 5,542,133

CLASS 5

99.1 5,542,134
424 5,542,135
500 5,542,137
658 5,542,138
710 5,542,136

CLASS 7

118 5,542,139
146 5,542,140

CLASS 8

107 5,542,950
137 5,542,951
410 5,542,952
416 5,542,953
532 5,542,954
561 5,542,955
641 5,542,956

CLASS 15

1.7 5,542,141
1 5,542,142
119.1 5,542,143
245.1 5,542,144
250.16 5,542,145
319 5,542,146
321 5,542,147
346 5,542,148

CLASS 16

87.4 R 5,542,149
115 5,542,150
326 5,542,151
354 5,542,152
389 5,542,153

CLASS 19

114 5,542,154

CLASS 24

20 R 5,542,155
72.1 5,542,156
113 MP 5,542,157
295 5,542,158
341 5,542,159
543 5,542,160
614 5,542,161
641 5,542,162

CLASS 29

2 5,542,163
9 5,542,164
33 C 5,542,165
229 5,542,167
407.04 5,542,168
469.5 5,542,169
623.1 5,542,958
623.3 5,542,959
734 5,542,170
825 5,542,173
840 5,542,171
5,542,174
846 5,542,175
890.03 5,542,176
890.031 5,542,177

CLASS 30

34.1 5,542,178
043.92 5,542,179
134 5,542,180
148 5,542,181
179 5,542,182
276 5,542,183
293 5,542,184

CLASS 33

27.02 5,542,185
265 5,542,186
404 5,542,187
600 5,542,189
605 5,542,188
624 5,542,190

CLASS 34

104 5,542,191
115 5,542,192
117 5,542,193
266 5,542,194

CLASS 36

28 5,542,195
44 5,542,196
122 5,542,197
130.0 5,542,198

CLASS 38

12 5,542,199

CLASS 40

204 5,542,200
570 5,542,201
576 5,542,202
610 5,542,203

CLASS 43

4 5,542,204
15 5,542,205
54.1 5,542,206
132.1 5,542,207

CLASS 44

320 5,542,960

CLASS 47

1.01 5,542,208
44 5,542,209
47 5,542,210

CLASS 49

42 5,542,211
181 5,542,212
221 5,542,213
380 5,542,214
397 5,542,215
404 5,542,216
471 5,542,217

CLASS 51

295 5,542,961

CLASS 52

34 5,542,218
126.4 5,542,219
167.1 5,542,220
287.1 5,542,222
302.1 5,542,223
403.1 5,542,221
473 5,542,224
511 5,542,225
548 5,542,226
639 5,542,227
712 5,542,228
721.5 5,542,229
726.1 5,542,230

CLASS 53

48.4 5,542,231
117 5,542,232
282 5,542,233
433 5,542,234
454 5,542,235
467 5,542,236
472 5,542,237
475 5,542,238
477 5,542,239

CLASS 56

8 5,542,240
11.3 5,542,241
13.3 5,542,243
13.5 5,542,242

CLASS 59

35.1 5,542,244
5,542,245

CLASS 60

39.36 5,542,246
203.1 5,542,247
276 5,542,248
293 5,542,249
315 5,542,250
426 5,542,251
477 5,542,252
562 5,542,253

CLASS 62

06 5,542,254
45.1 5,542,255
55.5 5,542,257
80 5,542,258
94 5,542,259
171 5,542,260
174 5,542,261
229 5,542,262
262 5,542,263
338 5,542,264
389 5,542,265
469 5,542,266
485 5,542,267
502 5,542,271
610 5,542,256

CLASS 66

1 R 5,542,268
195 5,542,269
207 5,542,270

CLASS 70

34 5,542,273
278 5,542,272
495 5,542,274

CLASS 71

10 5,542,962

CLASS 72

90 5,542,275
344 5,542,276
345 5,542,277
371 5,542,278
389.3 5,542,282
446 5,542,283

CLASS 73

1 R 5,542,279
5,542,280
9 5,542,281
23.2 5,542,284
23.21 5,542,285
23.22 5,542,286
40.5 R 5,542,287
49.3 5,542,288
64.52 5,542,289
117 5,542,290
117.3 5,542,291
118.1 5,542,292
146.5 5,542,293
462 5,542,294
514.18 5,542,295
514.32 5,542,296
514.36 5,542,297
597 5,542,298
654 5,542,299
724 5,542,300
861.11 5,542,301
861.87 5,542,302
862.23 5,542,303
862.333 5,542,304
863.73 5,542,305

CLASS 74

15.63 5,542,307
15.86 5,542,306
44 5,542,308
337.5 5,542,309
372 5,542,310
410 5,542,311
481 5,542,312
513 5,542,313
552 5,542,314
586 5,542,315
650 5,542,316
813 L 5,542,317

CLASS 75

382 5,542,963
732 5,542,957

CLASS 81

57.33 5,542,318
105 5,542,319
125 5,542,320
125.1 5,542,321
177.6 5,542,322
434 5,542,323

CLASS 82

1.3 5,542,324

CLASS 83

415 5,542,325
795 5,542,326
861 5,542,327

CLASS 84

95.2 5,543,577
220 5,542,328
291 5,542,329
298 5,542,330
383 A 5,542,331
435 5,542,332
622 5,543,578
701 5,543,579
723 5,543,580

CLASS 89

1.81 5,542,333
1.812 5,542,334

CLASS 91

61 5,542,335
166 5,542,336
358 R 5,542,337
375 R 5,542,338
5,542,343
508 5,542,339

CLASS 92

71 5,542,340
187 5,542,341

CLASS 95

6 5,542,964
14 5,542,965
101 5,542,966

CLASS 96

82 5,542,967
125 5,542,968

CLASS 99

280 5,542,342
330 5,542,344
345 5,542,345
400 5,542,346
401 B1 4,377,109
422 5,542,347

CLASS 100

37 5,542,348
161 5,542,349

CLASS 101

228 5,542,350
483 5,542,351
5,542,352
492 5,542,353

CLASS 102

478 5,542,354

CLASS 104

17.1 5,542,355
289 5,542,356

CLASS 105

64.2 5,542,357

CLASS 106

20 C 5,542,969
20 D 5,542,970
21 A 5,542,971
22 H 5,542,972
35 5,542,973
270 5,542,974
287.25 5,543,067
493 5,542,975
675 5,542,976
698 5,542,358
706 5,542,977

CLASS 108

26 5,542,359
44 5,542,360

CLASS 110

341 5,542,361

CLASS 111

120 5,542,362
170 5,542,363
185 5,542,364

CLASS 114

65 R 5,542,365
67 A 5,542,366
218 5,542,367
301 5,542,368
347 5,542,369
352 5,542,370
363 5,542,371

CLASS 117

68 5,542,372
103 5,542,373

CLASS 118

256 5,542,978
719 5,542,979

CLASS 119

173 5,542,374
312 5,542,375
707 5,542,376
753 5,542,377

CLASS 122

235.12 5,542,378

CLASS 123

25 C 5,542,379
41.7 5,542,380
41.74 5,542,381
51 AA 5,542,382
90.17 5,542,383
179.31 5,542,384
184.52 5,542,385
184.57 5,542,386
192.2 5,542,387
336 5,542,388
339.1 5,542,389
412 5,542,390
480 5,542,392
491 5,542,393
5,542,394
497 5,542,395
520 5,542,396
5,542,397
527 5,542,398
563 5,542,399
571 5,542,400
572 5,542,401
573 5,542,402
686 5,542,403
690 5,542,404
702 5,542,405

CLASS 124

73 5,542,406

CLASS 126

77 5,542,407
201 5,542,408
263.06 5,542,418
606 5,542,409

CLASS 128

200.14 5,542,410
203.15 5,542,411
5,542,412
204.15 5,542,413
204.22 5,542,414
204.23 5,542,415
5,542,416
205.24 5,542,417
630 5,542,419
5,542,420
633 5,542,421
5,542,422
653.1 5,542,423
653.5 5,542,424
660.010 5,542,425
662.03 5,542,426
677 5,542,427
681 5,542,428
702 5,542,429
705 5,542,430
738 5,542,431
751 5,542,432
772 5,542,434
846 5,542,435
869 5,542,433
897 5,542,436
899 5,542,437

CLASS 131

238 5,542,438

CLASS 132

218 5,542,439

CLASS 134

3 5,542,981
5 5,542,982
10 5,542,983
22.1 5,542,984
38 5,542,985
5,542,986
39 5,542,987
65 5,542,440
95.2 5,542,441
104.4 5,542,442
176 5,542,443

CLASS 136

244 5,542,988
251 5,542,989

CLASS 137

1 5,542,444
68.12 5,542,445
81.2 5,542,446
113 5,542,447
410 5,542,448
551 5,542,449
614.2 5,542,450
625.11 5,542,451
625.48 5,542,452

CLASS 138

30 5,542,453
110 5,542,454

CLASS 139

383 A 5,542,455

CLASS 140

92.1 5,542,456
147 5,542,457

CLASS 141

7 5,542,458
18 5,542,459

CLASS 148

319 5,542,990
330 5,542,991
421 5,542,992
528 5,542,993
603 5,542,994
630 5,542,995
652 5,542,996

CLASS 149

35 5,542,997
45 5,542,998
5,542,999

CLASS 156

52 5,543,000
60 5,543,001
77 5,543,002
82 5,543,003
93 5,543,004
5,543,005
177 5,543,006
189 5,543,007
229 5,543,008
268 5,543,009
285 5,543,010
308.4 5,543,011
440 5,543,012
643.1 5,543,013

CLASS 160

7 5,542,460
178 5,542,462
178.1 5,542,461
273.1 5,542,463

296 5,542,464

CLASS 162

181.6 5,543,014
358.4 5,543,015

CLASS 164

341 5,542,465
478 5,542,466

CLASS 165

70 5,542,467
80.3 5,542,468
122 5,542,469
170 5,542,470
5,542,471

CLASS 166

65.1 5,542,472
120 5,542,473
263 5,542,474
387 5,542,475

CLASS 172

22 5,542,476
439 5,542,477
782 5,542,478

CLASS 173

90 5,542,479

CLASS 174

52.1 5,543,581
65 SS 5,543,582
257 5,543,583
261 5,543,584
5,543,585
262 5,543,586

CLASS 175

4.51 5,542,480
23 5,542,481
61 5,542,482
257 5,542,483
296 5,542,484
371 5,542,485
424 5,542,486

CLASS 178

4.1 A 5,542,487
18 5,543,587
5,543,588
5,543,589
5,543,590
5,543,591

CLASS 180

65.1 5,542,488
68.5 5,542,489
232 5,542,491
253 5,542,492
272 5,542,493
305 5,542,494
422 5,542,490

CLASS 182

63 5,542,495
133 5,542,496
201 5,542,497

CLASS 184

7.4 5,542,498
103.2 5,542,499

CLASS 187

273 5,542,500
292 5,542,501
414 5,542,502

CLASS 188

18 A 5,542,503
71.8 5,542,504
77 W 5,542,505
267 5,542,506
290 5,542,507
5,542,508
322.14 5,542,509

CLASS 190

18 A 5,542,510

CLASS 191

41 5,542,511

CLASS 192

4 A 5,542,512
9 5,542,513
40 5,542,514
44 5,542,515
70.17 5,542,516
85 AA 5,542,517

CLASS 194

206 5,542,518
217 5,542,519
335 5,542,520

CLASS 198

324 5,542,521
337 5,542,522
384 5,542,523
409 5,542,524
495 5,542,525
803.7 5,542,526
844.2 5,542,527

CLASS 200

6 A 5,543,592
43.11 5,543,593
314 5,543,594
401 5,543,595
573 5,543,596

CLASS 204

157.6 5,543,016
169 5,543,017
192.15 5,543,019
233 5,543,020
294 5,543,021
298.15 5,543,022
403 5,543,024
425 5,543,025
461 5,543,018
612 5,543,026
618 5,543,023
660 5,543,027

CLASS 205

70 5,543,028
109 5,543,029
464 5,543,030
564 5,543,031
670 5,543,032
687 5,543,033
688 5,543,034

CLASS 206

221 5,542,528
245 5,542,529
292 5,542,530
308.1 5,542,531
5,542,532
363 5,542,533
407 5,542,534
419 5,542,535
427 5,542,536
431 5,542,537
442 5,542,538
499 5,542,539
525 5,542,540
600 5,542,541

CLASS 208

111 5,543,035
189 5,543,036

CLASS 209

17 5,542,542
127.1 5,542,543
139.1 5,542,544
164.000 5,542,546
166 5,542,545
365.1 5,542,548
539 5,542,547

CLASS 210

104 5,543,037
150 5,543,039
167 5,543,040
181 5,543,041
198.1 5,543,042
221.2 5,543,043
386 5,543,044
417 5,543,038
490 5,543,045
5,543,046
493.2 5,543,047
513 5,543,048
601 5,543,049
605 5,543,050
5,543,051
616 5,543,052
638 5,543,054
5,543,055
705 5,543,056
721 5,543,057
725 5,543,058
757 5,543,059
767 5,543,060
774 5,543,061
782 5,543,062
788 5,543,063
803 5,543,064

CLASS 211

26 5,542,549
40 5,542,550
50 5,542,551
59.3 5,542,552
70.6 5,542,553
186 5,542,554

CLASS 215

265 5,542,555
329 5,542,556
347 5,542,557

CLASS 216

2 5,542,558
67 5,542,559

CLASS 218

60 5,543,597
135 5,543,598

CLASS 219

69.2 5,543,599
124.34 5,543,600
203 5,543,601
491 5,543,602
550 5,543,603
643 5,543,604
690 5,543,605
730 5,543,606

CLASS 220

252 5,542,560
256 5,542,575
291 5,542,561
328 5,542,576
410 5,542,562
470 5,542,563
480 5,542,564
574.1 5,542,565
714 5,542,670
759 5,542,577

CLASS 221

48 5,542,566
63 5,542,567
5,542,568
116 5,542,569
192 5,542,570
268 5,542,571

CLASS 222

108 5,542,572
129.1 5,542,573
137 5,542,574
145.6 5,542,578
158 5,542,579
183 5,542,580
331 5,542,581
342 5,542,582
425 5,542,583
505 5,542,584
531 5,542,585
538 5,542,586

CLASS 224

218 5,542,588
275 5,542,589
5,542,590
415 5,542,557
545 5,542,591

CLASS 226

118 5,542,592
196 5,542,593

CLASS 227

178.1 5,542,594

CLASS 228

102 5,542,600
119 5,542,601
175 5,542,602
207 5,542,595
234.2 5,542,596

CLASS 229

116.5 5,542,597
242 5,542,598
403 5,542,599

CLASS 235

383 5,543,607
454 5,543,608
462 5,543,609
5,543,610

CLASS 237

69 5,542,603

CLASS 239

29 5,542,604
44 5,542,605
81 5,542,606
265.41 5,542,607
400 5,542,608
427 5,542,609
533.8 5,542,610
553.5 5,542,611

CLASS 241

5 5,542,612
5,542,613
21 5,542,614
57 5,542,615
62 5,542,616
101.761 5,542,617
227 5,542,618

CLASS 242

289 5,542,619
332.4 5,542,620
347.1 5,542,621
521 5,542,622
559.4 5,542,623

CLASS 244

1 A 5,542,624
45 R 5,542,625
107 5,542,626
121 5,542,627
137.2 5,542,628
5,542,629
200 5,542,630

CLASS 248

58 5,542,631
205.1 5,542,632
214 5,542,633
5,542,634
221.12 5,542,635
229.26 5,542,636
346.01 5,542,637
421 5,542,638
439 5,542,639
460 5,542,640
493 5,542,641
676 5,542,642

CLASS 250

55 5,543,616
205 5,543,611
208.1 5,543,612
231.15 5,543,613
234 5,543,614
251 5,543,615
259 5,543,617
288 5,543,618
5,543,619
338.3 5,543,620
339.03 5,543,621
363.03 5,543,622
390.04 5,543,623
423 R 5,543,624
427 5,543,625
551 5,543,627

CLASS 251

62 5,542,643
163 5,542,644
172 5,542,645

CLASS 252

8.84 5,543,065
62.58 5,543,069
62.59 5,543,070
67 5,543,071
68 5,543,068
299.01 5,543,075
299.61 5,543,076
299.63 5,543,077
299.65 5,543,078
301.35 5,543,079
301.4 H 5,543,080
321 5,543,082
403 5,543,083
500 5,543,084
582 5,543,086

CLASS 254

93 R 5,542,646
420 5,542,647

CLASS 256

45 5,542,648
54 5,542,649

CLASS 257

17 5,543,628
21 5,543,629
33 5,543,630
40 5,543,631
48 5,543,632
5,543,633
54 5,543,634
66 5,543,635
5,543,636
77 5,543,637
98 5,543,638
133 5,543,639
202 5,543,640
226 5,543,641
262 5,543,643
295 5,543,644
328 5,543,645
344 5,543,646
345 5,543,647
347 5,543,648
355 5,543,649
5,543,650
356 5,543,642
369 5,543,651
377 5,543,652
386 5,543,654
514 5,543,655
530 5,543,656
593 5,543,653
666 5,543,657
676 5,543,658
692 5,543,659
707 5,543,660
5,543,661
716 5,543,662
720 5,543,663
787 5,543,664

CLASS 261

87 5,543,087
94 5,543,088
116 5,543,089
118 5,543,090

CLASS 264

36 5,543,091
40.1 5,543,092
40.5 5,543,093
46.4 5,543,094
063 5,543,095
5,543,096
102 5,543,097
104 5,543,098
115 5,543,099
130 5,543,100
187 5,543,101
211 5,543,102
219 5,543,103
328.8 5,543,104
407 5,543,105
430 5,543,106
529 5,543,107
553 5,543,108

CLASS 266

135 5,542,650
231 5,542,651

CLASS 267

49 5,542,652

CLASS 269

37 5,542,653
137 5,542,654

CLASS 270

58.09 5,542,655

CLASS 271

11 5,542,656
82 5,542,657
107 5,542,658
108 5,542,659

CLASS 273

26 E 5,542,661
58 BA 5,542,662
58 R 5,542,660
84 R 5,542,667
146 5,542,671
153 S 5,542,673
260 5,542,678
413 5,542,679

CLASS 277

37 Re.35,309
106 5,542,681
164 5,542,682
180 5,542,683
236 5,542,684

CLASS 279

2.02 5,542,685
153 5,542,686

CLASS 280

33.993 5,542,687
242.1 5,542,689
304.1 5,542,690
728.2 5,542,691
5,542,692
728.3 5,542,694
729 5,542,695
730.2 5,542,696
732 5,542,698
5,542,699
735 5,542,700
5,542,701
737 5,542,702
739 5,542,703
741 5,542,688
5,542,704
772 5,542,705
806 5,542,697
833 5,542,706
834 5,542,707

CLASS 281

21.1 5,542,708

CLASS 283

61 5,542,709
94 5,542,710

CLASS 285

41 5,542,711
93 5,542,712
158 5,542,713
5,542,714
226 5,542,715
305 5,542,716
319 5,542,717
357 5,542,718

CLASS 291

3 5,542,719

CLASS 292

32 5,542,720
194 5,542,721
256.6 5,542,722
289 5,542,723
317 5,542,724
339 5,542,725

CLASS 294

64.1 5,542,726
87.1 5,542,729
157 5,542,730
161 5,542,731

CLASS 296

77.1 5,542,732
98 5,542,733
100 5,542,734
107 5,542,735
152 5,542,736
180.1 5,542,737
189 5,542,738

CLASS 297

56 5,542,739
129 5,542,740
217.3 5,542,741
237 5,542,742
353 5,542,743
362.11 5,542,744
378.12 5,542,745
423.12 5,542,746
452.55 5,542,747
463.1 5,542,748

CLASS 300

4 5,542,749

CLASS 301

37.32 5,542,751
37.37 5,542,750
64.7 5,542,752
65 5,542,753

CLASS 303

3 5,542,754
119.2 5,542,755
122.11 5,542,756

CLASS 307

10.2 5,543,665
39 5,543,666
5,543,667
110 5,543,668
125 5,543,669

CLASS 310

26 5,543,670
71 5,543,671
77 5,543,672
90.5 5,543,673
164 5,543,674
248 5,543,675
263 5,543,676
5,543,677
307 5,543,678

316 5,543,679

CLASS 312

223.2 5,542,757
249.2 5,542,758
334.44 5,542,759

CLASS 313

336 5,543,680
414 5,543,681
446 5,543,682
461 5,543,683
495 5,543,684
496 5,543,685
497 5,543,686
556 5,543,687

CLASS 315

111.21 5,543,688
5,543,689
224 5,543,690
366 5,543,691

CLASS 318

282 5,543,692
283 5,543,693
379.000 5,543,694
432 5,543,695
590 5,543,696
594 5,543,697
611 5,543,698
616 5,543,699
701 5,543,700

CLASS 320

4 5,543,701
15 5,543,702

CLASS 322

16 5,543,703

CLASS 323

222 5,543,704
369 5,543,705

CLASS 324

115 5,543,706
5,543,707
133 5,543,708
309 5,543,709
318 5,543,710
5,543,711
5,543,712
322 5,543,713
345 5,543,714
368 5,543,715
402 5,543,716
444 5,543,717
539 5,543,718
557 5,543,719
643 5,543,720
647 5,543,721
675 5,543,722
752 5,543,723
754 5,543,724
755 5,543,725
758 5,543,726
760 5,543,727
763 5,543,728
770 5,543,729

CLASS 326

38 5,543,730
40 5,543,731
41 5,543,732
81 5,543,733
83 5,543,734
93 5,543,735
101 5,543,736
104 5,543,737

CLASS 327

51 5,543,738
108 5,543,739
5,543,740
143 5,543,741
232 5,543,742
263 5,543,743
333 5,543,744
538 5,543,745
543 5,543,746
565 5,543,747
570 5,543,748
5,543,749
589 5,543,750

CLASS 330

124 D 5,543,751
124 R 5,543,752
282 5,543,759
297 5,543,753
298 5,543,760

CLASS 331

25 5,543,754
44 5,543,761

CLASS 333

128 5,543,762
185 5,543,755
186 5,543,756
189 5,543,763
195 5,543,757
202 5,543,764
203 5,543,758
246 5,543,765

CLASS 335

177 5,543,766
205 5,543,767
216 5,543,768
5,543,769
299 5,543,770

CLASS 336

10 5,543,771
183 5,543,773
192 5,543,772

CLASS 337

297 5,543,774

CLASS 338

306 5,543,775

CLASS 340

426 5,543,776
514 5,543,777
539 5,543,778
5,543,779
550 5,543,783
568 5,543,782
5,543,784
573 5,543,780
825.44 5,543,781
990 5,543,788
995 5,543,789

CLASS 341

20 5,543,787
22 5,543,786
5,543,790
101 5,543,791
123 5,543,792
155 5,543,793
161 5,543,794
163 5,543,795

CLASS 342

4 5,543,796
42 5,543,797
5,543,798
85 5,543,799
197 5,543,800
354 5,543,801
357 5,543,802
5,543,803
5,543,804
5,543,813
368 5,543,805
5,543,806
374 5,543,807

CLASS 343

727 5,543,808
753 5,543,809
771 5,543,810
840 5,543,814
844 5,543,811
894 5,543,812
909 5,543,815

CLASS 345

8 5,543,816
100 5,543,817
150 5,543,819
153 5,543,820
167 5,543,821
168 5,543,818
189 5,543,822
196 5,543,823
201 5,543,824
350 5,544,201
825.44 5,543,785

CLASS 346

141 5,543,825

CLASS 347

23 5,543,826
27 5,543,827
195 5,543,828
241 5,543,829
5,543,830

CLASS 348

65 5,543,831
5,543,832
110 5,543,833
207 5,543,835
223 5,543,836
264 5,543,837
311 5,543,838
345 5,543,840
349 5,543,839
375 5,543,841
387 5,543,842
400 5,543,843
405 5,543,844
407 5,543,845
415 5,543,846
5,543,847
416 5,543,848
460 5,543,849
468 5,543,851
478 5,543,852
497 5,543,853
512 5,543,854
578 5,543,856
589 5,543,857
617 5,543,850
618 5,543,858
625 5,543,859
666 5,543,860
718 5,543,861
739 5,543,862
753 5,543,855
835 5,543,863

CLASS 351

47 5,543,864
206 5,543,865
221 5,543,866
246 5,543,867

CLASS 352

27 5,543,868
184 5,543,869

CLASS 353

74 5,543,870

CLASS 354

106 5,543,871
5,543,872
112 5,543,873
5,543,874
149.1 5,543,875
149.11 5,543,876
173.1 5,543,877
5,543,878
5,543,879
697 5,543,880
834 5,543,972

CLASS 360

17 5,543,973
33.1 5,543,974
45 5,543,975
46 5,543,976
48 5,543,977
65 5,543,978
67 5,543,979
85 5,543,980
96.6 5,543,981
97.01 5,543,982
97.02 5,543,983
99.09 5,543,984
104 5,543,985
105 5,543,986
5,543,987
112 5,543,988
113 5,543,989
122 5,543,990
132 5,543,991
5,543,992
5,543,993

CLASS 361

18 5,543,994
65 5,543,995
90 5,543,996
93 5,543,997
103 5,543,998
119 5,543,999
139 5,544,000
233 5,544,001
302 5,544,002
625 5,544,003
633 5,544,004
680 5,544,005
683 5,544,006
5,544,011
684 5,544,007
5,544,008
5,544,009
686 5,544,010
687 5,544,013
695 5,544,012
737 5,544,014
749 5,544,015
790 5,544,017
792 5,544,018

CLASS 362

23 5,544,019
29 5,544,020
61 5,544,021
5,544,022
66 5,544,023
89 5,544,024
95 5,544,025
103 5,544,026
105 5,544,027
249 5,544,028
273 5,544,029
297 5,544,030
396 5,544,031

CLASS 363

16 5,544,032
40 5,544,033
89 5,544,034
132 5,544,035
147 5,544,038

CLASS 364

145 5,544,036
146 5,544,037
151 5,544,039
401 5,544,044
401 R 5,544,040
5,544,041
406 5,544,043
408 5,544,086
419.03 5,544,045
419.13 5,544,050
419.17 5,544,048
419.19 5,544,049
5,544,051
420 5,544,052
424.01 5,544,054
424.07 5,544,055
424.1 5,544,053
426.04 5,544,056
426.05 5,544,057
431.05 5,544,058
436 5,544,059
443 5,544,087
444 5,544,060
5,544,061
468.24 5,544,062
474.01 5,544,046
482 5,544,063
483 5,544,064
484 5,544,065
488 5,544,047
489 5,544,066
5,544,067
5,544,068
5,544,069
5,544,070
5,544,071
5,544,088
492 5,544,089
502 5,544,072
508 5,544,073
5,544,074
514 R 5,544,075
552 5,544,090
565 5,544,076
569 5,544,078
570 5,544,077
571.01 5,544,079
574 5,544,080
602 5,544,081
707 5,544,082
709.01 5,544,083
725 5,544,091
736 Re.35,311
760 5,544,084
787 5,544,085

CLASS 365

63 5,544,095
149 5,544,096
154 5,544,097
183.11 5,544,119
185.15 5,544,103
185.19 5,544,099
185.22 5,544,117
189.01 5,544,093
5,544,104
189.02 5,544,101
189.07 5,544,098
189.09 5,544,102
189.11 5,544,105
200 5,544,106
5,544,113
201 5,544,107
5,544,108
202 5,544,114
203 5,544,109
205 5,544,110
207 5,544,115
210 5,544,116
218 5,544,118
222 5,544,120
5,544,121
225.7 5,544,111
230.05 5,544,122
230.06 5,544,112
5,544,123
5,544,125
230.08 5,544,124

CLASS 366

160.4 5,542,760
198 5,542,761
228 5,542,762

CLASS 367

27 5,544,127
52 5,544,126
119 5,544,128
127 5,544,129

CLASS 369

1 5,544,130
13 5,544,131
5,544,132
14 5,544,133
32 5,544,134
5,544,135
5,544,165
44.34 5,544,136
54 5,544,137
5,544,138
58 5,544,139
59 5,544,140
060 5,544,141
75.1 5,544,142
109 5,544,143
112 5,544,144
125 5,544,145
178 5,544,146
191 5,544,147
192 5,544,148
275.3 5,544,149

CLASS 370

13 5,544,166
14 5,544,150
16 5,544,152
16.1 5,544,151
5,544,153
17 5,544,154
18 5,544,155
5,544,156
5,544,167
29 5,544,158
31 5,544,159
54 5,544,160
58.1 5,544,161
60 5,544,162
60.1 5,544,163
5,544,164
5,544,168
84 5,544,170
95.3 5,544,171
102 5,544,172

CLASS 371

22.3 5,544,173
5,544,174
25.1 5,544,175
40.1 5,544,176
43 5,544,177
5,544,178
47.1 5,544,180
471 5,544,179

CLASS 372

2 5,544,181
29 5,544,182
33 5,544,186
38 5,544,183
43 5,544,184
44 5,544,185
45 5,544,187
5,544,188
46 5,544,189
5,544,190
56 5,544,191
69 5,544,192
96 5,544,193

CLASS 373

65 5,544,194
79 5,544,195

CLASS 374

121 5,542,764

CLASS 375

200 5,544,196
257 5,544,197
260 5,544,198
261 5,544,328
285 5,544,199
344 5,544,200
376 5,544,202
5,544,203

CLASS 376

213 5,544,204
245 5,544,205
248 5,544,206
249 5,544,207
253 5,544,208
260 5,544,209
294 5,544,210
435 5,544,211

CLASS 378

15 5,544,212
18 5,544,157
34 5,544,213
98.12 5,544,215
98.7 5,544,214
149 5,544,216
198 5,544,217
207 5,544,238
208 5,544,218
210 5,544,219

CLASS 379

7 5,544,221
58 5,544,222
5,544,223
5,544,224
59 5,544,225
61 5,544,226
63 5,544,227
67 5,544,228
5,544,229
5,544,230
5,544,231
5,544,232
100 5,544,233
5,544,234
177 5,544,235
201 5,544,236
205 5,544,237
266 5,544,220
373 5,544,241
390 5,544,242
413 5,544,243

CLASS 380

4 5,544,244
21 5,544,245
23 5,544,246

CLASS 381

27 5,544,247
56 5,544,248
63 5,544,249
94 5,544,250
187 5,544,253

CLASS 382

108 5,544,254
119 5,544,255
149 5,544,256
166 5,544,263
169 5,544,258
177 5,544,259
187 5,544,257
5,544,260
5,544,261
188 5,544,264
189 5,544,262
203 5,544,265
232 5,544,251
236 5,544,239
238 5,544,266
270 5,544,240
280 5,544,252
317 5,544,267

CLASS 383

17 5,542,765
63 5,542,766
127 5,542,767

CLASS 385

4 5,544,268
88 5,544,269
101 5,544,270
122 5,544,271
128 5,544,272
135 5,544,273

CLASS 388

838 5,544,274

CLASS 392

480 5,544,275
5,544,276

CLASS 395

2.2 5,544,277
2.77 5,544,278
3 5,544,279
24 5,544,280
68 5,544,281
90 5,544,282
114 5,544,286
115 5,544,287
123 5,544,290
124 5,544,291
130 5,544,283
131 5,544,292
141 5,544,284
148 5,544,294
149 5,544,296
152 5,544,285
154 5,544,295
155 5,544,297
5,544,298
5,544,299
157 5,544,288
5,544,300
5,544,301
161 5,544,302
5,544,303
164 5,544,305
180 5,544,306
182.08 5,544,307
183.02 5,544,304
183.06 5,544,308
183.07 5,544,309
183.16 5,544,310
183.18 5,544,311
200.0 5,544,312
200.01 5,544,314
200.03 5,544,313
200.04 5,544,316
5,544,317
200.07 5,544,318
200.09 5,544,319
200.11 5,544,320
200.12 5,544,321
200.14 5,544,322
200.17 5,544,323
5,544,324
200.2 5,544,325
250 5,544,315
5,544,326
280 5,544,327
5,544,289
288 5,544,330
304 5,544,332
308 5,544,333
309 5,544,331
311 5,544,334
5,544,335
5,544,336
375 5,544,337
412 5,544,293
421.07 5,544,338
441 5,544,339
445 5,544,340
5,544,341
446 5,544,342
460 5,544,343
471 5,544,344
477 5,544,345
481 5,544,346
489 5,544,347
492 5,544,349
500 5,544,348
5,544,350
550 5,544,351
600 5,544,352
5,544,353
5,544,354
5,544,355
5,544,356
5,544,357
5,544,358
5,544,359
5,544,360
800 5,544,092
826 5,544,329

CLASS 400

120.16 5,542,768
225 5,542,769
477 5,542,770

CLASS 401

213 5,542,771

CLASS 403

97 5,542,772
109 5,542,773
116 5,542,774
188 5,542,775
389 5,542,776
5,542,777

CLASS 404

6 5,542,778

CLASS 405

33 5,542,779
55 5,542,780
128 5,542,781
129 5,542,782
223.1 5,542,783
232 5,542,784
239 5,542,785
240 5,542,786
258 5,542,787
288 5,542,788

CLASS 406

88 5,542,789
116 5,542,790

CLASS 407

21 5,542,791
35 5,542,792
5,542,793
5,542,794
5,542,795

CLASS 408

13 5,542,796
226 5,542,797

CLASS 410

100 5,542,798

CLASS 411

271 5,542,799

CLASS 412

8 5,542,800
43 5,542,801

CLASS 414

27 5,542,802
111 5,542,803
165 5,542,804
280 5,542,805
422 5,542,806
491 5,542,807
498 5,542,808
528 5,542,809
538 5,542,810
541 5,542,811
543 5,542,812
780 5,542,813
786 5,542,814
5,542,815
798.9 5,542,816

CLASS 415

58.2 5,542,817

CLASS 416

134 A 5,542,818
146 R 5,542,819
224 5,542,820

CLASS 417

53 5,542,821
68 5,542,822
273 5,542,823
312 5,542,824
423.4 5,542,825
474 5,542,826
486 5,542,827

CLASS 418

1 5,542,828
55.3 5,542,829
55.6 5,542,830
60 5,542,831
152 5,542,832

CLASS 420

446 5,543,109

CLASS 422

5 5,543,110
22 5,543,111
52 5,543,112
83 5,543,113
102 5,543,114
5,543,115
111 5,543,116
145 5,543,117
292 5,543,118
299 5,543,119

CLASS 423

167.1 5,543,120
210 5,543,121
220 5,543,122
235 5,543,123
239.1 5,543,124
239.2 5,543,125
263 5,543,126
294 5,543,127
303 5,543,128
351 5,543,129

CLASS 424

9.2 5,543,131
9.411 5,543,132
9.45 5,543,133
059 5,543,135
5,543,136
5,543,137
61 5,543,436
85.1 5,543,138
5,543,139
85.2 5,543,140
5,543,141
93.4 5,543,142
130.1 5,543,143
133.1 5,543,144
5,543,145
5,543,146
195.1 5,543,147
400 5,543,148
401 5,543,149
405 5,543,150
430 5,543,151
448 5,543,152
450 5,543,153
466 5,543,154
473 5,543,155
5,543,156
484 5,543,157
493 5,543,158
501

CLASS 425

71 5,542,833
133.1 5,542,834
136 5,542,835
141 5,542,836
183 5,542,837
186 5,542,838
343 5,543,159

CLASS 426

3 5,543,160
62 5,543,161
89 5,543,162
231 5,543,163
302 5,543,164
435 5,543,165
523 5,543,166
524 5,543,167
557 5,543,168
662 5,543,169

CLASS 427

8 5,543,170
177 5,543,171
212 5,543,172
5,543,173
213 5,543,174
236 5,543,175
255.3 5,543,176
288 5,543,177
299 5,543,178
346 5,543,179
397.7 5,543,180
421 5,543,181
443.1 5,543,182
529 5,543,183
571 5,543,184

CLASS 428

15 5,543,185
34.4 5,543,186
34.6 5,543,187
36.2 5,543,188
36.8 5,543,189
40.1 5,543,190
40.6 5,543,192
41.5 5,543,191
69 5,543,194
90 5,543,195
99 5,543,196
106 5,543,197
116 5,543,198
5,543,199
122 5,543,200
142 5,543,201
154 5,543,202
156 5,543,203
179 5,543,204
184 5,543,205
198 5,543,206
207 5,543,207
210 5,543,208
212 5,543,209
217 5,543,210
224 5,543,211
229 5,543,212
230 5,543,213
261 5,543,214
283 5,543,215
285 5,543,193
332 5,543,221
335 5,543,222
349 5,543,223
373 5,543,216
375 5,543,217
402.24 5,543,218
409 5,543,219
423.1 5,543,224
5,543,225
5,543,226
425.8 5,543,227
429 5,543,228
432 5,543,229
5,543,230
447 5,543,231
482 5,543,232
516 5,543,233
537.1 5,543,234
547 5,543,235
614 5,543,236
623 5,543,130
691 5,543,237

CLASS 429

17 5,543,238
33 5,543,239
38 5,543,240
39 5,543,241
049 5,543,242
51 5,543,243
57 5,543,244
90 5,543,245
5,543,246
129 5,543,247
163 5,543,248
217 5,543,249
241 5,543,250

CLASS 430

1 5,543,251
5 5,543,252
5,543,254
5,543,255
22 5,543,256
58 5,543,257
87 5,543,258
106 5,543,259
138 5,543,260
159 5,543,261
162 5,543,262
168 5,543,263
270.1 5,543,265
280.1 5,543,266
290 5,543,267
331 5,543,268
346 5,543,269
347 5,543,270
5,543,271
455 5,543,272
495.1 5,543,273
496 5,543,274
503 5,543,275
5,543,280
505 5,543,276
5,543,277
506 5,543,278
551 5,543,281
558 5,543,282
559 5,543,279
569 5,543,283
5,543,284
619 5,543,286
628 5,543,287
631 5,543,288

CLASS 431

10 5,542,839
116 5,542,840
160 5,542,841

CLASS 433

3 5,542,842
4 5,542,843
9 5,542,844
116 5,542,845
127 5,542,846
173 5,542,847

CLASS 434

236 5,542,849

CLASS 435

2 5,543,289
6 5,543,291
5,543,292
5,543,293
5,543,294
5,543,295
7.32 5,543,329
25 5,543,297
5,543,298
28 5,543,299
29 5,543,300
34 5,543,301
69.1 5,543,302
5,543,303
69.3 5,543,304
91.1 5,543,305
91.41 5,543,306
172.3 5,543,307
5,543,308
177 5,543,309
180 5,543,310
188 5,543,311
219 5,543,264
220 5,543,312
225 5,543,313
240.2 5,543,316
5,543,317
5,543,318
240.26 5,543,319
240.27 5,543,320
240.4 5,543,321
252.3 5,543,322
5,543,323
252.4 5,543,324
259 5,543,325
287.9 5,543,326
5,543,327
320.1 5,543,328

CLASS 436

57 5,543,314
79 5,543,330
153 5,543,331
161 5,543,315
528 5,543,332

CLASS 437

4 5,543,333
8 5,543,334
10 5,543,335
24 5,543,336
35 5,543,337
41 5,543,338
43 5,543,339
44 5,543,340
5,543,342
51 5,543,343
52 5,543,344
5,543,345
5,543,346
60 5,543,347
5,543,348
5,543,349
063 5,543,350
063 5,543,351
101 5,543,352
127 5,543,353
129 5,543,354
5,543,355
152 5,543,356
192 5,543,357
195 5,543,358
5,543,359
5,543,360
200 5,543,361
5,543,362
208 5,543,363
210 5,543,364
226 5,543,365

CLASS 439

5 5,543,233
31 5,542,850
108 5,542,851
135 5,542,852
157 5,542,854
188 5,542,853
260 5,542,855
281 5,542,856
337 5,542,857
419 5,542,858
536 5,542,859
567 5,542,860
578 5,542,861

CLASS 440

38 5,542,862
47 5,542,863
61 5,542,864

CLASS 441

64 5,542,865

CLASS 445

2 5,542,866
32 5,542,867
37 5,542,868

CLASS 446

016 5,542,869
75 5,542,870
126 5,542,871
440 5,542,872

CLASS 451

75 5,542,873
158 5,542,874
533 5,542,875
540 5,542,876

CLASS 452

7 5,542,877
135 5,542,878
5,542,879

CLASS 453

10 5,542,880
5,542,881

CLASS 454

365 5,542,882

CLASS 460

112 5,542,883

CLASS 463

13 5,542,669
37 5,542,672
59 5,542,668

CLASS 464

36 5,542,884
145 5,542,885

CLASS 470

34 5,542,886

CLASS 473

202 5,542,676
218 5,542,674
305 5,542,664
313 5,542,665
314 5,542,666
329 5,542,675
363 5,542,663
378 5,542,680
385 5,542,677

CLASS 475

63 5,542,887
134 5,542,888
275 5,542,889

CLASS 476

10 5,542,890

CLASS 477

96 5,542,891

CLASS 482

54 5,542,892
72 5,542,893
83 5,542,894
98 5,542,895
105 5,542,896
111 5,542,897
142 5,542,898
19 5,543,396
5,543,397
21 5,543,399
29 5,543,400
50 5,543,401
54 5,543,403
114 5,543,402
118 5,543,404
188 5,543,405
213 5,543,406
226.2 5,543,407
233.5 5,543,408
247 5,543,409
248 5,543,410
254 5,543,411
255 5,543,412
258 5,543,413
262 5,543,414
263 5,543,415
284 5,543,417
291 5,543,418
305 5,543,419
312 5,543,420
317 5,543,421
319 5,543,422
332 5,543,423
343 5,543,424
357 5,543,425
410 5,543,426
422 5,543,427
456 5,543,428
468 5,543,429
565 5,543,430
590 5,543,573
627 5,543,431
630 5,543,432
638 5,543,433
647 5,543,434
729 5,543,435

CLASS 518

700 5,543,437

CLASS 521

140 5,543,438

CLASS 523

102 5,543,439
103 5,543,440
105 5,543,441
107 5,543,442
120 5,543,443
205 5,543,444
406 5,543,445

CLASS 524

52 5,543,446
80 5,543,447
109 5,543,448
114 5,543,449
190 5,543,450
224 5,543,451
430 5,543,452
445 5,543,453
451 5,543,454
521 5,543,455
542 5,543,456
736 5,543,457

CLASS 525

54.3 5,543,459
64 5,543,460
74 5,543,461
5,543,462
79 5,543,463
176 5,543,464
182 5,543,465
190 5,543,466
207 5,543,467
245 5,543,468
271 5,543,458
314 5,543,469
331.7 5,543,470
333.7 5,543,471
387 5,543,472
399 5,543,473
440 5,543,474
444 5,543,475
5,543,476

CLASS 526

65 5,543,477
82 5,543,478
88 5,543,479
126 5,543,480
5,543,481
289 5,543,482
330 5,543,483
347.1 5,543,484

CLASS 528

5 5,543,485
92 5,543,486
158 5,543,487
277 5,543,488
288 5,543,489
328 5,543,490
5,543,491
335 5,543,492
353 5,543,493
354 5,543,494
481 5,543,495

CLASS 530

314 5,543,496
324 5,543,497
328 5,543,498
350 5,543,499
5,543,501
383 5,543,502
388.22 5,543,503

CLASS 534

856 5,543,504

CLASS 536

17.2 5,543,505
18.7 5,543,506
23.1 5,543,507
23.2 5,543,508
24.33 5,543,509
53 5,543,510
56 5,543,511
115 5,543,512
123.13 5,543,513

CLASS 540

472 5,543,514
604 5,543,515

CLASS 544

69 5,543,516
151 5,543,517
215 5,543,518
238 5,543,519
331 5,543,520
349 5,543,521

CLASS 546

2 5,543,522
14 5,543,523
104 5,543,524
279.1 5,543,525

CLASS 548

110 5,543,526
5,543,527
301.4 5,543,528
366.7 5,543,529
452 5,543,530

CLASS 549

62 5,543,531
260 5,543,532
389 5,543,533
421 5,543,534

CLASS 556

11 5,543,535
13 5,543,536
157 5,543,537
401 5,543,538
406 5,543,539
466 5,543,540

CLASS 558

6 5,543,541
87 5,543,542
96 5,543,543
119 5,543,544
255 5,543,545
270 5,543,546
274 5,543,547
277 5,543,548
405 5,543,549

CLASS 560

19 5,543,550
24 5,543,551
5,543,552
32 5,543,553
41 5,543,554
151 5,543,555
170 5,543,556
209 5,543,557
214 5,543,558
231 5,543,559
234 5,543,560

CLASS 562

13 5,543,561
17 5,543,562
443 5,543,563
467 5,543,564
523 5,543,565
571 5,543,566
582 5,543,567
861 5,543,568

CLASS 564

8 5,543,569
87 5,543,570
150 5,543,571
179 5,543,572

CLASS 600

191 5,542,905
197 5,542,904
207 Re.35,312

CLASS 601

2 5,542,906
46 5,542,907
160 5,542,909

CLASS 602

18 5,542,910
26 5,542,911
27 5,542,912

CLASS 604

4 5,542,913
11 5,542,914
22 5,542,915
5,542,916
5,542,917
27 5,542,918
29 5,542,919
57 5,542,920
74 5,542,921
77 5,542,922
93 5,542,923
95 5,542,924
102 5,542,925
5,542,926
110 5,542,927
113 5,542,928
119 5,542,929
164 5,542,930
167 5,542,931
168 5,542,932
188 5,542,933
190 5,542,935
191 5,542,934
264 5,542,936
280 5,542,937
5,542,938
319 5,542,939
367 5,542,940
385.1 5,542,941
385.2 5,542,942
5,542,943

CLASS 606

33 5,542,944
48 5,542,945
61 5,542,946
88 5,542,947
113 5,542,948
143 5,542,949

CLASS 800

200 5,543,575
250 5,543,576

CLASSIFICATION OF DESIGNS

D1— 102 372,351
106 372,352
D2— 866 372,353
952 372,354
962 372,355
D3— 209 372,356
235 372,357
247 372,358
253 372,359
273 372,360
282 372,361
320 372,362
D4— 104 372,363
D6— 300 372,364
369 372,365
372,366
375 372,367
376 372,368
381 372,369
372,370
419 372,371
421 372,372
422 372,373
432 372,374
438 372,375
445 372,376
446 372,377
448 372,378
467 372,379
372,380
476 372,381
486 372,382
487 372,383
372,384
506 372,385
518 372,386
372,387
547 372,388
372,389
553 372,390
570 372,391
598 372,392
D7— 301 372,393
359 372,394
361 372,395
392.1 372,396
413 372,397
529 372,398
609 372,399
610 372,400
612 372,401
623 372,402
669 372,403
709 372,404
D8— 1 372,405
372,406
8 372,407
372,408
25 372,409
57 372,410
83 372,411
372,412
90 372,413
317 372,414
327 372,415
338 372,416
343 372,417
346 372,418
382 372,419
383 372,420
499 372,421
D9— 347 372,422
418 372,423
429 372,424
434 372,425
447 372,426
500 372,427
523 372,428
528 372,429
D10— 24 372,430
32 372,431
62 372,432
64 372,433
105 372,434
106 372,435
D11— 3 372,436
26 372,437
129 372,438
164 372,439
221 372,440
D12— 92 372,441
110 372,442
372,443
123 372,444
147 372,445
159 372,446
162 372,447
174 372,448
184 372,449
187 372,450
213 372,451
317 372,452
400 372,453
423 372,454
D13— 108 372,455
372,456
112 372,457
138 372,458
146 372,459
147 372,460
154 372,461
160 372,462
162 372,463
D14— 102 372,464
106 372,465
372,466
107 372,467
114 372,468
372,469
372,470
115 372,471
174 372,472
149 372,473
372,474
163 372,475
165 372,476
191 372,477
217 372,478
218 372,479
247 372,480
249 372,481
299 372,482
372,483
D15— 133 372,484
139 372,485
140 372,486
145 372,487
146 372,488
219 372,489
D16— 325 372,490
D17— 20 372,491
D18— 4 372,492
18 372,493
56 372,494

CLASSIFICATION OF PATENTS

D19—	27	372,495		195	372,509		328	372,523	D25—	16	372,537		81	372,551		161	372,565
	35	372,496		204	372,510		342	372,524		35	372,538			372,552		199	372,566
	48	372,497		212	372,511		351	372,525		119	372,539		84	372,553	D32—	23	372,567
	65	372,498		214	372,512		366	372,526		124	372,540			372,554		37	372,568
		372,499	D22—	122	372,513		382	372,527			372,541		133	372,555		47	372,569
D20—	7	372,500		137	372,514	D24—	106	372,528			372,542		142	372,556		50	372,570
D21—	13	372,501	D23—	209	372,515		110	372,529			372,543	D27—	102	372,559			
	32	372,502		213	372,516		110.4	372,530			372,544	D28—	47	372,557			
	84	372,503		223	372,517		121	372,531		138	372,545		61	372,558			
	108	372,504		238	372,518		126	372,532		164	372,546	D29—	125	372,560			
		372,505		261	372,519		128	372,533			372,547	D30—	119	372,561			
	147	372,506		275	372,520		168	372,534	D26—	43	372,548		121	372,562			
	191	372,507		283	372,521		176	372,535		48	372,549		145	372,563			
	192	372,508		304	372,522		190	372,536		63	372,550		152	372,564			

CLASSIFICATION OF PLANTS

P.—	87.12	9,619		9,620		87.6	9,618	
	88.1	9,621						

STATUTORY INVENTION REGISTRATIONS

76—	108.2	H1566	343—	728	H1571		284	H1575	502—	402	H1579	526—	348.6	H1583
89—	36.02	H1567	359—	359	H1572	429—	192	H1576	524—	58	H1580	588—	250	H1584
210—	748	H1568	360—	104	H1573	430—	120	H1577		258	H1581	604—	378	H1585
257—	25	H1570	428—	69	H1574		523	H1578	525—	344	H1582			

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 : 5,542,280	5,542,400	5,543,035	5,543,694	5,543,994	5,544,301
5,542,312	5,542,409	5,543,091	5,543,696	5,544,011	5,544,302
5,542,579	5,542,415	5,543,098	5,543,697	5,544,017	5,544,305
04 : 5,542,401	5,542,418	5,543,131	5,543,712	5,544,019	5,544,306
5,542,582	5,542,419	5,543,139	5,543,713	5,544,029	5,544,311
5,542,671	5,542,425	5,543,145	5,543,718	5,544,045	5,544,312
5,542,690	5,542,434	5,543,156	5,543,728	5,544,049	5,544,315
5,542,935	5,542,437	5,543,164	5,543,729	5,544,060	5,544,317
5,543,604	5,542,441	5,543,171	5,543,730	5,544,066	5,544,318
5,543,762	5,542,442	5,543,183	5,543,732	5,544,067	5,544,320
5,543,785	5,542,457	5,543,184	5,543,733	5,544,069	5,544,321
5,543,827	5,542,571	5,543,185	5,543,734	5,544,070	5,544,323
5,543,958	5,542,575	5,543,186	5,543,743	5,544,092	5,544,324
5,543,993	5,542,588	5,543,194	5,543,746	5,544,103	5,544,325
5,544,026	5,542,592	5,543,197	5,543,754	5,544,116	5,544,326
5,544,086	5,542,593	5,543,243	5,543,756	5,544,118	5,544,331
5,544,230	5,542,637	5,543,265	5,543,769	5,544,119	5,544,332
5,544,304	5,542,666	5,543,296	5,543,784	5,544,135	5,544,345
05 : 5,543,163	5,542,685	5,543,332	5,543,799	5,544,138	5,544,354
5,543,368	5,542,686	5,543,335	5,543,800	5,544,140	5,544,355
5,543,384	5,542,720	5,543,337	5,543,804	5,544,150	5,544,356
06 : 5,542,122	5,542,750	5,543,364	5,543,810	5,544,164	5,544,358
5,542,123	5,542,753	5,543,405	5,543,811	5,544,180	5,544,360
5,542,142	5,542,783	5,543,408	5,543,812	5,544,184	4,773,759
5,542,163	5,542,798	5,543,414	5,543,815	5,544,196	08 : 5,542,126
5,542,168	5,542,810	5,543,441	5,543,818	5,544,197	5,542,238
5,542,173	5,542,826	5,543,503	5,543,819	5,544,199	5,542,431
5,542,174	5,542,838	5,543,507	5,543,821	5,544,200	5,542,433
5,542,182	5,542,839	5,543,521	5,543,824	5,544,208	5,542,544
5,542,184	5,542,842	5,543,534	5,543,825	5,544,210	5,542,583
5,542,207	5,542,845	5,543,578	5,543,829	5,544,222	5,542,584
5,542,216	5,542,861	5,543,588	5,543,851	5,544,223	5,542,643
5,542,218	5,542,863	5,543,590	5,543,852	5,544,228	5,542,682
5,542,219	5,542,869	5,543,591	5,543,869	5,544,242	5,542,704
5,542,244	5,542,892	5,543,621	5,543,870	5,544,262	5,542,746
5,542,254	5,542,911	5,543,623	5,543,873	5,544,265	5,542,828
5,542,260	5,542,915	5,543,625	5,543,874	5,544,267	5,542,983
5,542,265	5,542,916	5,543,628	5,543,911	5,544,268	5,543,078
5,542,282	5,542,917	5,543,640	5,543,922	5,544,271	5,543,087
5,542,295	5,542,922	5,543,643	5,543,927	5,544,275	5,543,293
5,542,328	5,542,925	5,543,644	5,543,929	5,544,276	5,543,361
5,542,330	5,542,926	5,543,653	5,543,940	5,544,280	5,543,437
5,542,333	5,542,928	5,543,656	5,543,944	5,544,285	5,543,736
5,542,334	5,542,933	5,543,662	5,543,961	5,544,289	5,543,975
5,542,343	5,542,937	5,543,665	5,543,976	5,544,290	5,544,107
5,542,351	5,542,968	5,543,668	5,543,977	5,544,291	5,544,146
5,542,354	5,542,986	5,543,670	5,543,986	5,544,295	5,544,175
5,542,357	5,543,022	5,543,678	5,543,989	5,544,297	5,544,178
5,542,365	5,543,026	5,543,683	5,543,992	5,544,299	5,544,237

09 : 5,542,121
5,542,139
5,542,201
5,542,246
5,542,249
5,542,452
5,542,523
5,542,549
5,542,561
5,542,567
5,542,568
5,542,594
5,542,596
5,542,640
5,542,668
5,542,820
5,542,931
5,542,971
5,543,001
5,543,085
5,543,092
5,543,148
5,543,195
5,543,218
5,543,404
5,543,411
5,543,505
5,543,617
5,543,919
5,543,920
5,544,127
5,544,256
10 : 5,542,325
5,543,014
5,543,324
5,543,369
5,543,378
5,543,446
5,543,492
5,543,495
5,543,532
5,543,571
11 : 5,544,352
12 : 5,542,171
5,542,189
5,542,202
5,542,240
5,542,305
5,542,335
5,542,344
5,542,347
5,542,358
5,542,371
5,542,374
5,542,375
5,542,376
5,542,377
5,542,432
5,542,438
5,542,513
5,542,545
5,542,581
5,542,590
5,542,611
5,542,641
5,542,766
5,542,789
5,542,819
5,542,844
5,542,864
5,542,912
5,542,936
5,542,938
5,542,964
5,542,978
5,543,012
5,543,037
5,543,146
5,543,178
5,543,196
5,543,317
5,543,435
5,543,582
5,543,583
5,543,586
5,543,589
5,543,726
5,543,781
5,543,791
5,544,036
5,544,047
5,544,064
5,544,095
5,544,309
5,544,319
5,544,334
5,544,346
13 : 5,542,208
5,542,322
5,542,450
5,542,536
5,542,537
5,542,595
5,542,765
5,542,785
5,542,924
5,543,010
5,543,202
5,543,372
5,543,396
5,543,430
5,543,915
5,544,227
15 : 5,542,206
5,542,849
16 : 5,542,130
5,542,205
5,542,959
5,544,108
5,544,124
17 : 5,542,131
5,542,169
5,542,192
5,542,193
5,542,231
5,542,234
5,542,259
5,542,287
5,542,321
5,542,327
5,542,329
5,542,362
5,542,363
5,542,382
5,542,408
5,542,423
5,542,440
5,542,444
5,542,462
5,542,471
5,542,499
5,542,508
5,542,547
5,542,554
5,542,555
5,542,647
5,542,705
5,542,718
5,542,744
5,542,749
5,542,775
5,542,801
5,542,804
5,542,827
5,542,854
5,542,860
5,542,880
5,542,881
5,542,896
5,542,995
5,543,052
5,543,061
5,543,107
5,543,111
5,543,123
5,543,160
5,543,201
5,543,219
5,543,234
5,543,313
5,543,455
5,543,524
5,543,549
5,543,551
5,543,552
5,543,553
5,543,593
5,543,667
5,543,673
5,543,724
5,543,751
5,543,789
5,543,802
5,544,023
5,544,076
5,544,159
5,544,160
5,544,232
5,544,235
5,544,236
5,544,250
18 : 5,542,181
5,542,261
5,542,264
5,542,315
5,542,342
5,542,345
5,542,504
5,542,540
5,542,725
5,542,807
5,542,859
5,542,882
5,543,299
5,543,302
5,543,428
5,543,497
5,543,569
5,543,767
5,543,857
5,544,284
19 : 5,542,159
5,542,364
5,542,407
5,542,487
5,542,494
5,542,572
5,542,681
5,542,733
5,542,743
5,543,618
5,544,010
5,544,024
5,544,055
20 : 5,542,191
5,542,481
5,542,632
5,543,154
5,543,543
5,544,028
21 : 5,542,734
5,543,205
22 : 5,542,141
5,542,366
5,542,380
5,543,043
5,543,537
5,543,719
5,544,022
23 : 5,542,140
5,542,198
5,542,653
5,542,944
24 : 5,542,777
5,542,898
5,542,949
5,542,966
5,542,973
5,543,112
5,543,328
5,543,386
5,543,491
5,543,496
5,543,509
5,543,631
5,544,129
25 : 5,542,296
5,542,300
5,542,336
5,542,367
5,542,378
5,542,410
5,542,422
5,542,532
5,542,587
5,542,623
5,542,642
5,542,664
5,542,672
5,542,677
5,542,802
5,542,934
5,543,013
5,543,019
5,543,054
5,543,055
5,543,056
5,543,138
5,543,158
5,543,162
5,543,246
5,543,262
5,543,291
5,543,295
5,543,308
5,543,316
5,543,366
5,543,394
5,543,423
5,543,425
5,543,461
5,543,498
5,543,558
5,543,630
5,543,691
5,543,776
5,543,866
5,543,914
5,543,936
5,543,939
5,543,985
5,544,034
5,544,157
5,544,163
5,544,179
5,544,195
5,544,241
5,544,243
5,544,270
5,544,330
5,544,344
5,544,347
5,544,357
4,377,109
26 : 5,542,135
5,542,136
5,542,147
5,542,158
5,542,195
5,542,214
5,542,222
5,542,253
5,542,289
5,542,291
5,542,303
5,542,313
5,542,317
5,542,383
5,542,390
5,542,392
5,542,395
5,542,402
5,542,403
5,542,489
5,542,498
5,542,503
5,542,515
5,542,517
5,542,541
5,542,564
5,542,589
5,542,591
5,542,605
5,542,631
5,542,694
5,542,696
5,542,701
5,542,712
5,542,716
5,542,717
5,542,738
5,542,742
5,542,747
5,542,756
5,542,761
5,542,764
5,542,889
5,542,913
5,542,923
5,543,040
5,543,082
5,543,304
5,543,318
5,543,367
5,543,413
5,543,475
5,543,476
5,543,480
5,543,501
5,543,527
5,543,676
5,543,692
5,543,695
5,543,737
5,543,772
5,543,778
5,543,797
5,543,924
5,544,079
5,544,259
27 : 5,542,129
5,542,203
5,542,255
5,542,279
5,542,348
5,542,505
5,542,676
5,542,768
5,542,843
5,542,893
5,543,002
5,543,004
5,543,049
5,543,090
5,543,190
5,543,314
5,543,523
5,543,699
5,543,727
5,543,803
5,543,830
5,543,983
5,544,008
5,544,044
5,544,072
5,544,343
28 : 5,543,000
29 : 5,542,226
5,542,294
5,542,370
5,542,445
5,542,550
5,542,652
5,542,786
5,542,846
5,543,084
5,543,129
5,543,141
5,543,671
5,543,759
30 : 5,542,360
5,542,553
5,542,803
5,542,895
5,543,006
31 : 5,542,186
5,542,190
5,542,212
5,543,710
32 : 5,542,599
5,542,669
5,542,778
5,543,758
5,543,862
33 : 5,542,337
5,543,383
5,543,780
34 : Re.35,312
5,542,153
5,542,204
5,542,210
5,542,224
5,542,225
5,542,227
5,542,346
5,542,497
5,542,510
5,542,577
5,542,633
5,542,654
5,542,667
5,542,670
5,542,679
5,542,710
5,542,714
5,542,760
5,542,831
5,542,947
5,542,993
5,543,036
5,543,044
5,543,072
5,543,073
5,543,099
5,543,182
5,543,187
5,543,321
5,543,349
5,543,380
5,543,398
5,543,417
5,543,427
5,543,429
5,543,431
5,543,434
5,543,439
5,543,469
5,543,471
5,543,510
5,543,518
5,543,541
5,543,655
5,543,701
5,543,808
5,543,809
5,543,853
5,543,856
5,543,867
5,544,181
5,544,229
5,544,238
5,544,239
5,544,246
5,544,308
5,544,328
35 : 5,543,025
5,543,329
5,543,960
5,543,999
5,544,282
36 : Re.35,311
5,542,125
5,542,157
5,542,161
5,542,175
5,542,183
5,542,196
5,542,250
5,542,406
5,542,424
5,542,429
5,542,460
5,542,507
5,542,551
5,542,552
5,542,562
5,542,565
5,542,601
5,542,602
5,542,604
5,542,625
5,542,675
5,542,678
5,542,721
5,542,752
5,542,767
5,542,787
5,542,847
5,542,873
5,542,905
5,542,909
5,542,930
5,542,961
5,543,011
5,543,028
5,543,032
5,543,034
5,543,047
5,543,059
5,543,060
5,543,096
5,543,118
5,543,149
5,543,150
5,543,177
5,543,191
5,543,192
5,543,249
5,543,259
5,543,264
5,543,269
5,543,273
5,543,276
5,543,277
5,543,281
5,543,283
5,543,294
5,543,303
5,543,305
5,543,311
5,543,334
5,543,348
5,543,401
5,543,457
5,543,544
5,543,555
5,543,584
5,543,609
5,543,610
5,543,611
5,543,632
5,543,634
5,543,657
5,543,731
5,543,735
5,543,740
5,543,741
5,543,777
5,543,779
5,543,782
5,543,787
5,543,807
5,543,822
5,543,832
5,543,838
5,543,864
5,543,882
5,543,889
5,543,893
5,543,894
5,543,896
5,543,897
5,543,909
5,543,918
5,543,935
5,543,941
5,543,953
5,543,964
5,543,966
5,543,988
5,544,027
5,544,038
5,544,113
5,544,132
5,544,143
5,544,162
5,544,173
5,544,190
5,544,206
5,544,254
5,544,257
5,544,260
5,544,261
5,544,264
5,544,277
5,544,283
5,544,313
5,544,322

5,544,327
5,544,329
5,544,338
37 : 5,542,138
5,542,152
5,542,156
5,542,217
5,542,269
5,542,458
5,542,500
5,542,502
5,542,529
5,542,597
5,542,794
5,542,795
5,542,821
5,542,877
5,542,950
5,543,048
5,543,058
5,543,064
5,543,065
5,543,406
5,543,499
5,543,540
5,543,637
5,543,654
5,543,849
5,543,963
5,544,089
38 : 5,542,320
5,542,359
5,542,493
5,542,719
5,543,330
39 : Re.35,310
5,542,124
5,542,145
5,542,151
5,542,177
5,542,180
5,542,275
5,542,435
5,542,479
5,542,526
5,542,539
5,542,548
5,542,570
5,542,576
5,542,598
5,542,609
5,542,689
5,542,709
5,542,774
5,542,800
5,542,806
5,542,813
5,542,900
5,542,918
5,542,942
5,542,943
5,543,023
5,543,067
5,543,083
5,543,086
5,543,116
5,543,117
5,543,157
5,543,170
5,543,200
5,543,211
5,543,222
5,543,231
5,543,247
5,543,443
5,543,466
5,543,516
5,543,565
5,543,711
5,543,950
5,544,212
5,544,215
5,544,287
40 : 5,542,223
5,542,306
5,542,612
5,542,840
5,542,876
5,543,374
5,543,375
5,543,376
5,544,003
41 : 5,542,213
5,542,530
5,542,578
5,542,650
5,542,731
5,542,871
5,543,097
5,543,289
5,543,390
5,543,391
5,544,251
5,544,300
42 : 5,542,127
5,542,144
5,542,199
5,542,221
5,542,237
5,542,286
5,542,352
5,542,412
5,542,421
5,542,436
5,542,446
5,542,451
5,542,478
5,542,538
5,542,573
5,542,636
5,542,639
5,542,665
5,542,723
5,542,758
5,542,788
5,542,811
5,542,812
5,542,814
5,542,850
5,542,891
5,542,948
5,543,016
5,543,132
5,543,133
5,543,173
5,543,174
5,543,180
5,543,199
5,543,204
5,543,232
5,543,235
5,543,251
5,543,418
5,543,464
5,543,483
5,543,484
5,543,517
5,543,530
5,543,536
5,543,542
5,543,599
5,543,601
5,543,606
5,543,814
5,544,051
5,544,065
5,544,161
5,544,298
44 : 5,542,585
5,543,263
5,543,910
45 : 5,542,187
5,542,455
5,542,646
5,542,703
5,542,981
5,543,110
5,543,165
5,543,206
5,543,223
5,543,596
46 : 5,542,957
47 : 5,542,146
5,542,323
5,542,341
5,542,355
5,542,635
5,542,638
5,542,680
5,542,748
5,542,751
5,542,796
5,543,120
5,543,225
5,543,451
5,543,488
5,543,575
5,543,605
5,544,062
5,544,073
5,544,090
48 : 5,542,148
5,542,178
5,542,236
5,542,247
5,542,273
5,542,302
5,542,318
5,542,448
5,542,454
5,542,459
5,542,470
5,542,472
5,542,473
5,542,474
5,542,475
5,542,480
5,542,485
5,542,486
5,542,488
5,542,506
5,542,569
5,542,614
5,542,616
5,542,644
5,542,645
5,542,722
5,542,732
5,542,776
5,542,781
5,542,782
5,542,790
5,542,799
5,542,856
5,542,894
5,542,977
5,542,984
5,543,009
5,543,050
5,543,088
5,543,122
5,543,142
5,543,144
5,543,172
5,543,227
5,543,233
5,543,326
5,543,339
50 : 5,542,533
5,543,343
5,543,362
5,543,365
5,543,387
5,543,388
5,543,447
5,543,448
5,543,458
5,543,472
5,543,477
5,543,504
5,543,514
5,543,567
5,543,585
5,543,635
5,543,641
5,543,664
5,543,684
5,543,715
5,543,761
5,543,783
5,543,792
5,543,795
5,543,796
5,543,820
5,543,842
5,543,850
5,543,917
5,543,965
5,544,006
5,544,018
5,544,031
5,544,048
5,544,063
5,544,078
5,544,088
5,544,097
5,544,101
5,544,112
5,544,126
5,544,203
5,544,225
5,544,273
5,544,288
5,544,310
5,544,316
5,544,333
5,544,342
5,544,349
5,544,353
5,542,310
5,542,691
5,542,692
5,542,702
5,542,927
5,542,932
5,543,103
5,543,136
5,543,239
5,544,174
5,544,218
5,542,533
5,543,650
5,543,660
5,542,242
5,542,413
5,542,495
5,542,608
5,542,627
5,542,688
5,542,886
5,542,901
5,543,104
5,543,137
5,544,025
5,544,077
5,544,220
5,544,258
53 : 5,542,232
5,542,314
5,542,428
5,542,535
5,542,708
5,542,837
5,543,063
5,543,143
5,543,215
5,543,309
5,543,319
5,543,320
5,543,327
5,543,627
5,543,753
5,543,805
5,543,816
5,543,954
5,544,082
5,544,128
5,544,286
54 : 5,543,102
5,543,217
55 : 5,542,132
5,542,185
5,542,241
5,542,463
5,542,465
5,542,525
5,542,566
5,542,606
5,542,687
5,542,695
5,542,699
5,542,706
5,542,730
5,542,759
5,542,792
5,542,815
5,542,897
5,542,902
5,542,914
5,542,921
5,543,248
5,543,301
5,543,487
5,543,622
5,543,698
5,544,056
5,544,337

DESIGN PATENTS

01 : 372,374
02 : 372,495
04 : 372,362
372,510
06 : 372,353
372,357
372,364
372,366
372,367
372,380
372,392
372,403
372,425
372,428
372,430
372,444
372,446
372,451
372,462
372,464
372,473
372,480
372,486
372,492
372,500
372,502
372,512
372,520
08 : 372,417
372,483
09 : 372,396
372,459
372,497
372,548
12 : 372,420
372,452
372,477
372,515
13 : 372,393
372,454
372,533
16 : 372,355
17 : 372,372
372,436
372,439
372,474
372,481
372,487
372,501
372,523
372,527
372,557
372,560
18 : 372,447
19 : 372,358
20 : 372,566
21 : 372,433
24 : 372,371
372,484
372,564
25 : 372,360
372,361
372,378
372,388
372,389
372,429
372,435
372,478
372,568
26 : 372,398
372,402
27 : 372,352
372,416
372,422
372,499
372,529
372,532
372,537
28 : 372,491
29 : 372,496
30 : 372,461
372,508
34 : 372,381
372,406
372,493
372,546
372,558
372,519
372,531
372,552
372,554
372,567
41 : 372,456
372,534
372,551
372,553
42 : 372,351
372,385
372,418
372,485
372,541
372,545
44 : 372,458
372,562
372,377
372,565
39 : 372,409
372,413
372,414
372,455
372,469
372,479
372,482
372,519
49 : 372,423
372,570
51 : 372,421
53 : 372,400
372,513
372,542
372,543
372,544
55 : 372,386
372,387
372,412
372,522
45 : 372,449
47 : 372,383
372,384
372,404
372,408
48 : 372,410
372,426
372,550
372,563
372,569

PLANT PATENTS

12 : 9,621 | 17 : 9,618

STATUTORY INVENTION REGISTRATIONS

06 : H1571	26 : H1574	H1576	H1575	48 : H1566	H1581
10 : H1582	27 : H1573	36 : H1577	H1579	H1568	H1583
25 : H1567	34 : H1570	39 : H1572	H1585	H1580	H1584

CHANGE OF ADDRESS FORM

NAME– FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

Mail this form to: NEW ADDRESS

Superintendent of Documents
Government Printing Office SSOM
Washington, D.C. 20402

Attach last subscription label here.

VOL 1189 SEC 1 AG 6 1996 UMI

UM
1189
SP
1
AG
6
1996
UMI

Superintendent of Documents **Subscription** Order Form

Order Processing Code:
*** 5606**

❑ **YES,** enter _____ subscription(s) to **Official Gazette of the U.S. Patent and Trademark Office: Patents** (OG) for $549 per year ($686.25 foreign).

The total cost of my order is $_____. Price includes regular shipping and handling and is subject to change. International customers please add 25%.

Company or personal name (Please type or print)

Additional address/attention line

Street address

City, State, Zip code

Daytime phone including area code

Purchase order number (optional)

Charge your order. It's easy!

For privacy protection, check the box below:
❑ Do not make my name available to other mailers

Fax your orders (202) 512–2250

Check method of payment:
❑ Check payable to Superintendent of Documents
❑ GPO Deposit Account ☐☐☐☐☐☐☐–☐
❑ VISA ❑ MasterCard

☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

☐☐☐☐ (expiration date)

Phone your orders (202) 512–1800

Thank you for your order!

Authorizing signature 4/95

Mail To: Superintendent of Documents
P.O. Box 371954, Pittsburgh, PA 15250–7954

Important: Please be sure to include this completed order form with your remittance.

11 89

1

A G

6

19 96

UMI

Superintendent of Documents **Subscription** Order Form

Order Processing Code:
*** 5606**

❑ **YES,** enter _____ subscription(s) to **Official Gazette of the U.S. Patent and Trademark Office: Patents** (OG) for $549 per year ($686.25 foreign).

The total cost of my order is $_____. Price includes regular shipping and handling and is subject to change. International customers please add 25%.

_____
Company or personal name (Please type or print)

_____
Additional address/attention line

_____
Street address

_____
City, State, Zip code

_____
Daytime phone including area code

_____
Purchase order number (optional)

Charge your order. It's easy!

For privacy protection, check the box below:
❑ Do not make my name available to other mailers

Fax your orders (202) 512–2250

Check method of payment:
❑ Check payable to Superintendent of Documents
❑ GPO Deposit Account ☐☐☐☐☐☐–☐
❑ VISA ❑ MasterCard

Phone your orders (202) 512–1800

☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐
☐☐☐☐ (expiration date)

Thank you for your order!

_____
Authorizing signature 4/95

Mail To: Superintendent of Documents
P.O. Box 371954, Pittsburgh, PA 15250–7954

Important: Please be sure to include this completed order form with your remittance.

/IU
1189
C
1
AG
6
1996
UMI

VOL
1189

ISS
1

AG
6

1996

U.S. DEPARTMENT OF COMMERCE
Michael Kantor, *Secretary*
PATENT AND TRADEMARK OFFICE
Bruce Lehman *Commissioner*

UMI

1189
AG
19 96
UMI

Vol. 1189 Number 2

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

August 13, 1996



ute to:

U.S.
DEPARTMENT
OF COMMERCE

Patent
and
Trademark
Office

VOL
1189
SER
2
AG
1
1996
UMI

OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
August 13, 1996 Volume 1189 Number 2

CONTENTS

			Page
Patent and Trademark Office Notices			
Patent Cooperation Treaty (PCT) Information	1189	OG	27
Notice of Maintenance Fees Payable	1189	OG	27
Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee	1189	OG	28
Reissue Applications Filed	1189	OG	35
Requests for Reexaminations Filed	1189	OG	35
Notice of Expiration of Trademark Registrations Due to Failure to Renew	1189	OG	35
Service by Publication	1189	OG	37
Patents Available For License or Sale	1189	OG	37
Disclaimer	1189	OG	38
Patent Certificate of Correction	1189	OG	38
Summary of Final Decisions			
Issued by the Trademark Trial and Appeal Board	1189	OG	39
Special Boxes for Mail	1189	OG	40
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1189	OG	42
Patent Examining Corps	1189	OG	44
Condition of Trademark Applications	1189	OG	45
Reexaminations			811
Reissue Patents Granted (35,313)			815
Plant Patents Granted (9,622)			817
Patents Granted			
General and Mechanical (5,544,361)			819
Chemical (5,545,235)			1123
Electrical (5,545,839)			1301
Design Patents Granted (372,571)			1565
Index of Patentees			PI 1
Indices of Reissue, Reexaminations, Design and Plant Patents			PI 105
Classification of			
Patents (Including Reissues and Reexaminations)			PI 113
Designs and Plants Applications			PI 117
Geographical Index of Residence of Inventors			
Patents (Including Reissues and Reexaminations)			PI 119
Designs and Plants Applications			PI 121
Change of Address Form			PI 123
Subscription Order Form			PI 125

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402, to whom all subscriptions should be made payable and all communications addressed. VISA or MasterCard may be used for telephone orders, (202)-512-1800.

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly. Stock No. 703-033-00000-8
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly. Stock No. 703-034-00000-4
PATENT AND TRADEMARK OFFICE NOTICES, issued weekly. Stock No. 703-035-00000-1
GENERAL INFORMATION concerning PATENTS. Stock No. 003-004-00661-7

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $3.00 each; PLANT PATENTS in color, $12.00 each; copies of TRADEMARKS at $3.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S.P.T.O.

For sale by the U.S. Government Printing Office
Superintendent of Documents, Mail Stop: SSOP; Washington, DC 20402–9328

701
1189
AG
T
1996
UMI

Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1187 O.G. 49, on June 18, 1996.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective July 1, 1996, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1187 O.G. 73, on June 25, 1996.

International fees were changed, effective on January 1, 1996, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1181 O.G. 49, on December 19, 1995.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1995, and were announced in the *Official Gazette* at 1177 O.G. 171, on August 29, 1995.

The schedule of PCT fees (in U.S. dollars), effective July 1, 1996, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	220.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed	660.00
— Corresponding prior U.S. national application filed	430.00
— Supplemental search fee, per additional invention (payable only upon invitation)	190.00
European Patent Office as ISA	1585.00
International fees	
Basic fee	677.00
Basic supplemental fee (for each page over 30)	13.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	164.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	164.00
— Confirmation fee	82.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	207.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	470.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	710.00
— Additional examination fee, per additional invention (payable only upon invitation)	250.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied — provisions of PCT Article 33(2) to (4)	47.00	94.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	340.00	680.00
USPTO was ISA but not IPEA	375.00	750.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	505.00	1010.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	440.00	880.00
Other National fees		
— For each independent claim in excess of 3	39.00	78.00
— For each claim in excess of 20.	11.00	22.00
— For each application containing a multiple dependent claim	125.00	250.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(l)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(l)	130.00	130.00

June 4, 1996

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

---

Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on August 10, 1993 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,233,703 through 5,235,702
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on August 08, 1989 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,853,973 through 4,856,108
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on August 06, 1985 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,532,653 through 4,534,064
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1994, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $495.00
By other than a small entity $990.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $995.00
By other than a small entity $1,990.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,495.00
By other than a small entity $2,990.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $660.00
(2) unintentional $1,550.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED June 5, 1996
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,078	06/719,795	02/04/86
(4,452,685)	(06/490,612)	(06/05/84)
Re. 33,199	07/110,094	04/17/90
(4,452,462)	(06/539,595)	(06/05/84)
4,451,931	06/422,229	06/05/84
4,451,938	06/422,374	06/05/84
4,451,944	06/282,165	06/05/84
4,451,954	06/336,382	06/05/84
4,451,956	06/288,931	06/05/84
4,451,967	06/368,372	06/05/84
4,451,969	06/456,621	06/05/84
4,451,975	06/387,949	06/05/84
4,451,987	06/388,187	06/05/84
4,451,988	06/508,199	06/05/84
4,451,989	06/485,236	06/05/84
4,451,997	06/248,678	06/05/84
4,452,004	06/400,465	06/05/84
4,452,006	06/430,834	06/05/84
4,452,007	06/367,684	06/05/84
4,452,008	06/511,361	06/05/84
4,452,009	06/443,374	06/05/84
4,452,012	06/406,279	06/05/84
4,452,013	06/404,778	06/05/84
4,452,014	06/445,418	06/05/84
4,452,016	06/352,766	06/05/84
4,452,018	06/366,771	06/05/84
4,452,037	06/368,938	06/05/84
4,452,038	06/443,163	06/05/84
4,452,055	06/445,985	06/05/84
4,452,056	06/489,064	06/05/84
4,452,059	06/285,765	06/05/84
4,452,060	06/368,663	06/05/84
4,452,063	06/304,812	06/05/84
4,452,067	06/412,699	06/05/84
4,452,068	06/351,389	06/05/84
4,452,070	06/333,493	06/05/84
4,452,071	06/443,198	06/05/84
4,452,073	06/370,546	06/05/84
4,452,078	06/380,064	06/05/84
4,452,086	06/312,977	06/05/84
4,452,095	06/354,542	06/05/84
4,452,101	06/250,004	06/05/84
4,452,105	06/439,102	06/05/84
4,452,126	06/366,839	06/05/84
4,452,138	06/389,174	06/05/84
4,452,147	06/242,516	06/05/84
4,452,148	06/297,292	06/05/84
4,452,153	06/340,650	06/05/84
4,452,158	06/373,480	06/05/84
4,452,160	06/441,239	06/05/84
4,452,161	06/371,299	06/05/84
4,452,173	06/413,435	06/05/84
4,452,179	06/390,774	06/05/84
4,452,181	06/432,368	06/05/84
4,452,183	06/377,482	06/05/84
4,452,198	06/392,791	06/05/84
4,452,199	06/540,345	06/05/84
4,452,208	06/469,684	06/05/84
4,452,210	06/420,885	06/05/84

Patent Number	Serial Number	Issue Date
4,452,221	06/479,141	06/05/84
4,452,232	06/450,727	06/05/84
4,452,233	06/354,850	06/05/84
4,452,241	06/383,962	06/05/84
4,452,242	06/391,401	06/05/84
4,452,249	06/326,388	06/05/84
4,452,256	06/324,127	06/05/84
4,452,258	06/378,671	06/05/84
4,452,264	06/405,093	06/05/84
4,452,269	06/399,911	06/05/84
4,452,272	06/236,645	06/05/84
4,452,278	06/430,423	06/05/84
4,452,282	06/365,276	06/05/84
4,452,283	06/426,655	06/05/84
4,452,285	06/328,511	06/05/84
4,452,288	06/351,400	06/05/84
4,452,292	06/490,988	06/05/84
4,452,295	06/264,183	06/05/84
4,452,300	06/403,638	06/05/84
4,452,309	06/416,796	06/05/84
4,452,311	06/423,151	06/05/84
4,452,314	06/369,442	06/05/84
4,452,316	06/294,135	06/05/84
4,452,317	06/347,232	06/05/84
4,452,322	06/377,740	06/05/84
4,452,324	06/312,563	06/05/84
4,452,333	06/383,336	06/05/84
4,452,346	06/356,176	06/05/84
4,452,352	06/259,243	06/05/84
4,452,353	06/421,335	06/05/84
4,452,357	06/483,746	06/05/84
4,452,358	06/522,618	06/05/84
4,452,359	06/328,300	06/05/84
4,452,370	06/447,629	06/05/84
4,452,376	06/471,322	06/05/84
4,452,401	06/298,012	06/05/84
4,452,403	06/437,198	06/05/84
4,452,404	06/409,839	06/05/84
4,452,424	06/469,692	06/05/84
4,452,426	06/357,258	06/05/84
4,452,435	06/379,470	06/05/84
4,452,441	06/303,319	06/05/84
4,452,447	06/242,888	06/05/84
4,452,450	06/282,792	06/05/84
4,452,461	06/409,119	06/05/84
4,452,463	06/305,572	06/05/84
4,452,465	06/270,620	06/05/84
4,452,466	06/443,192	06/05/84
4,452,470	06/340,859	06/05/84
4,452,474	06/411,498	06/05/84
4,452,479	06/324,546	06/05/84
4,452,484	06/310,388	06/05/84
4,452,488	06/329,658	06/05/84
4,452,489	06/420,149	06/05/84
4,452,493	06/401,421	06/05/84
4,452,494	06/297,021	06/05/84
4,452,495	06/371,085	06/05/84
4,452,499	06/349,511	06/05/84
4,452,504	06/333,112	06/05/84
4,452,505	06/494,135	06/05/84
4,452,508	06/522,527	06/05/84
4,452,509	06/372,810	06/05/84
4,452,511	06/454,706	06/05/84
4,452,519	06/450,282	06/05/84
4,452,520	06/450,284	06/05/84
4,452,533	06/286,099	06/05/84
4,452,535	06/377,870	06/05/84
4,452,552	06/378,863	06/05/84
4,452,553	06/300,067	06/05/84
4,452,555	06/303,549	06/05/84
4,452,560	06/385,584	06/05/84
4,452,565	06/332,693	06/05/84
4,452,566	06/273,346	06/05/84
4,452,567	06/278,675	06/05/84
4,452,573	06/349,973	06/05/84
4,452,574	06/421,176	06/05/84
4,452,576	06/483,093	06/05/84
4,452,589	06/292,934	06/05/84
4,452,600	06/296,180	06/05/84
4,452,601	06/360,012	06/05/84
4,452,604	06/540,678	06/05/84
4,452,608	06/469,494	06/05/84
4,452,610	06/403,818	06/05/84
4,452,617	06/453,516	06/05/84
4,452,623	06/375,263	06/05/84
4,452,630	06/322,202	06/05/84
4,452,631	06/366,884	06/05/84
4,452,635	06/470,550	06/05/84
4,452,637	06/457,683	06/05/84
4,452,647	06/280,344	06/05/84
4,452,651	06/396,244	06/05/84
4,452,652	06/454,192	06/05/84
4,452,656	06/407,970	06/05/84
4,452,657	06/432,886	06/05/84
4,452,676	06/373,768	06/05/84
4,452,677	06/462,836	06/05/84
4,452,678	06/481,855	06/05/84
4,452,680	06/309,349	06/05/84
4,452,684	06/474,320	06/05/84
4,452,686	06/360,447	06/05/84
4,452,689	06/394,681	06/05/84
4,452,690	06/390,102	06/05/84
4,452,704	06/546,238	06/05/84
4,452,708	06/349,952	06/05/84
4,452,709	06/310,352	06/05/84
4,452,711	06/459,316	06/05/84
4,452,712	06/459,317	06/05/84
4,452,728	06/467,974	06/05/84
4,452,732	06/446,840	06/05/84
4,452,734	06/407,197	06/05/84
4,452,737	06/373,962	06/05/84
4,452,741	06/469,197	06/05/84
4,452,749	06/417,983	06/05/84
4,452,750	06/483,850	06/05/84
4,452,752	06/339,228	06/05/84
4,452,756	06/390,340	06/05/84
4,452,760	06/340,135	06/05/84
4,452,761	06/403,527	06/05/84
4,452,762	06/271,038	06/05/84
4,452,763	06/341,717	06/05/84
4,452,768	06/455,252	06/05/84
4,452,771	06/426,369	06/05/84
4,452,772	06/408,656	06/05/84
4,452,775	06/446,749	06/05/84
4,452,781	06/431,783	06/05/84
4,452,784	06/399,656	06/05/84
4,452,785	06/522,492	06/05/84
4,452,786	06/320,974	06/05/84
4,452,791	06/357,941	06/05/84
4,452,796	06/434,371	06/05/84
4,452,797	06/233,055	06/05/84
4,452,800	06/371,623	06/05/84
4,452,801	06/417,003	06/05/84
4,452,802	06/526,193	06/05/84
4,452,803	06/533,677	06/05/84
4,452,804	06/541,831	06/05/84
4,452,805	06/397,965	06/05/84
4,452,806	06/438,199	06/05/84
4,452,809	06/485,497	06/05/84
4,452,813	06/377,074	06/05/84
4,452,823	06/483,766	06/05/84
4,452,851	06/343,243	06/05/84
4,452,859	06/296,303	06/05/84
4,452,864	06/418,610	06/05/84
4,452,878	06/492,696	06/05/84
4,452,885	06/428,519	06/05/84
4,452,888	06/279,254	06/05/84
4,452,894	06/310,090	06/05/84
4,452,895	06/359,080	06/05/84
4,452,898	06/319,847	06/05/84
4,452,900	06/312,606	06/05/84
4,452,902	06/323,102	06/05/84
4,452,906	06/463,416	06/05/84
4,452,910	06/388,697	06/05/84
4,452,917	06/509,614	06/05/84
4,452,931	06/478,377	06/05/84

Patent Number	Serial Number	Issue Date
4,452,940	06/547,670	06/05/84
4,452,942	06/350,265	06/05/84
4,452,945	06/372,165	06/05/84
4,452,946	06/512,161	06/05/84
4,452,953	06/402,475	06/05/84
4,452,954	06/412,431	06/05/84
4,452,955	06/302,712	06/05/84
4,452,956	06/234,204	06/05/84
4,452,957	06/407,015	06/05/84
4,452,958	06/497,319	06/05/84
4,452,959	06/447,002	06/05/84
4,452,966	06/482,326	06/05/84
4,452,969	06/502,434	06/05/84
4,452,970	06/502,435	06/05/84
4,452,974	06/423,088	06/05/84
4,452,977	06/386,314	06/05/84
4,452,987	06/449,129	06/05/84
4,452,989	06/384,137	06/05/84
4,452,990	06/441,335	06/05/84
4,452,993	06/381,598	06/05/84
4,452,998	06/405,772	06/05/84
4,452,999	06/380,609	06/05/84
4,453,000	06/496,002	06/05/84
4,453,004	06/364,325	06/05/84
4,453,006	06/233,742	06/05/84
4,453,009	06/433,438	06/05/84
4,453,016	06/415,079	06/05/84
4,453,018	06/364,327	06/05/84
4,453,019	06/414,382	06/05/84
4,453,030	06/291,160	06/05/84
4,453,032	06/364,883	06/05/84
4,453,035	06/429,530	06/05/84
4,453,036	06/429,781	06/05/84
4,453,040	06/452,587	06/05/84
4,453,042	06/452,588	06/05/84
4,453,044	06/461,147	06/05/84
4,453,048	06/445,801	06/05/84
4,453,049	06/445,802	06/05/84
4,453,051	06/348,616	06/05/84
4,453,065	06/378,955	06/05/84
4,453,066	06/397,698	06/05/84
4,453,073	06/331,152	06/05/84
4,453,074	06/312,705	06/05/84
4,453,076	06/286,716	06/05/84
4,453,079	06/343,530	06/05/84
4,453,083	06/315,039	06/05/84
4,453,087	06/286,768	06/05/84
4,453,099	06/341,959	06/05/84
4,453,102	06/368,501	06/05/84
4,453,103	06/369,180	06/05/84
4,453,107	06/341,941	06/05/84
4,453,111	06/367,142	06/05/84
4,453,113	06/473,514	06/05/84
4,453,115	06/397,577	06/05/84
4,453,125	06/397,899	06/05/84
4,453,128	06/258,870	06/05/84
4,453,135	06/398,244	06/05/84
4,453,136	06/310,675	06/05/84
4,453,139	06/320,981	06/05/84
4,453,141	06/343,644	06/05/84
4,453,142	06/317,661	06/05/84
4,453,148	06/469,264	06/05/84
4,453,152	06/456,875	06/05/84
4,453,156	06/329,669	06/05/84
4,453,178	06/331,471	06/05/84
4,453,181	06/311,889	06/05/84
4,453,189	06/333,669	06/05/84
4,453,191	06/403,270	06/05/84
4,453,193	06/433,467	06/05/84
4,453,197	06/314,006	06/05/84
4,453,205	06/312,148	06/05/84
4,453,211	06/258,514	06/05/84
4,453,220	06/239,441	06/05/84
4,453,222	06/369,406	06/05/84
4,453,226	06/283,599	06/05/84
4,453,232	06/532,297	06/05/84
4,453,239	06/293,082	06/05/84
4,453,241	06/328,875	06/05/84
4,453,244	06/316,616	06/05/84
4,453,246	06/431,853	06/05/84
4,453,250	06/324,815	06/05/84
4,453,254	06/357,675	06/05/84
4,453,255	06/345,459	06/05/84
4,453,257	06/420,717	06/05/84
4,453,258	06/268,513	06/05/84
4,453,261	06/377,548	06/05/84
4,453,262	06/381,614	06/05/84
4,453,264	06/422,261	06/05/84
4,747,162	07/033,337	05/31/88
4,747,168	06/883,381	05/31/88
4,747,171	06/895,767	05/31/88
4,747,175	07/074,026	05/31/88
4,747,180	06/874,952	05/31/88
4,747,183	06/945,229	05/31/88
4,747,186	06/863,258	05/31/88
4,747,190	07/002,240	05/31/88
4,747,192	06/896,346	05/31/88
4,747,199	06/609,939	05/31/88
4,747,201	06/914,939	05/31/88
4,747,203	07/048,723	05/31/88
4,747,204	07/026,984	05/31/88
4,747,209	07/020,001	05/31/88
4,747,210	07/072,758	05/31/88
4,747,213	06/839,924	05/31/88
4,747,216	07/006,485	05/31/88
4,747,218	06/946,570	05/31/88
4,747,219	07/028,488	05/31/88
4,747,223	06/797,572	05/31/88
4,747,225	06/561,279	05/31/88
4,747,226	07/083,173	05/31/88
4,747,230	07/018,963	05/31/88
4,747,232	06/892,804	05/31/88
4,747,236	06/896,520	05/31/88
4,747,237	07/035,538	05/31/88
4,747,242	06/872,653	05/31/88
4,747,254	07/000,228	05/31/88
4,747,256	06/947,931	05/31/88
4,747,263	06/922,932	05/31/88
4,747,267	07/066,771	05/31/88
4,747,268	06/922,197	05/31/88
4,747,269	06/929,096	05/31/88
4,747,270	07/013,657	05/31/88
4,747,273	07/022,075	05/31/88
4,747,279	07/046,529	05/31/88
4,747,291	06/867,081	05/31/88
4,747,297	07/012,650	05/31/88
4,747,299	07/114,157	05/31/88
4,747,305	06/802,004	05/31/88
4,747,315	06/500,809	05/31/88
4,747,320	06/932,796	05/31/88
4,747,322	06/759,912	05/31/88
4,747,336	07/035,961	05/31/88
4,747,339	06/893,892	05/31/88
4,747,340	06/837,455	05/31/88
4,747,343	07/095,132	05/31/88
4,747,348	07/043,950	05/31/88
4,747,353	06/917,859	05/31/88
4,747,360	06/507,359	05/31/88
4,747,362	07/021,250	05/31/88
4,747,366	07/049,286	05/31/88
4,747,374	06/930,140	05/31/88
4,747,381	07/091,510	05/31/88
4,747,407	06/869,867	05/31/88
4,747,413	06/928,441	05/31/88
4,747,415	07/090,393	05/31/88
4,747,418	06/899,472	05/31/88
4,747,419	06/875,184	05/31/88
4,747,423	06/867,099	05/31/88
4,747,430	07/082,918	05/31/88
4,747,431	06/944,477	05/31/88
4,747,433	07/015,794	05/31/88
4,747,434	07/088,237	05/31/88
4,747,438	06/908,677	05/31/88
4,747,439	06/853,611	05/31/88
4,747,448	06/861,668	05/31/88
4,747,453	07/022,770	05/31/88

Patent Number	Serial Number	Issue Date
4,747,461	07/054,400	05/31/88
4,747,462	06/902,084	05/31/88
4,747,464	07/012,737	05/31/88
4,747,470	07/060,834	05/31/88
4,747,472	07/038,248	05/31/88
4,747,477	06/871,383	05/31/88
4,747,481	06/881,952	05/31/88
4,747,482	06/804,613	05/31/88
4,747,483	06/916,583	05/31/88
4,747,484	07/009,390	05/31/88
4,747,486	07/030,064	05/31/88
4,747,488	06/937,626	05/31/88
4,747,493	06/771,661	05/31/88
4,747,495	07/004,938	05/31/88
4,747,496	07/043,484	05/31/88
4,747,501	07/070,894	05/31/88
4,747,509	07/060,940	05/31/88
4,747,510	07/070,218	05/31/88
4,747,511	06/884,136	05/31/88
4,747,515	06/883,735	05/31/88
4,747,516	06/812,862	05/31/88
4,747,517	07/029,275	05/31/88
4,747,519	06/785,363	05/31/88
4,747,525	07/042,049	05/31/88
4,747,529	06/887,347	05/31/88
4,747,536	06/850,147	05/31/88
4,747,540	06/272,086	05/31/88
4,747,545	06/429,955	05/31/88
4,747,546	06/897,494	05/31/88
4,747,552	06/851,140	05/31/88
4,747,555	06/918,299	05/31/88
4,747,562	06/900,837	05/31/88
4,747,565	06/780,562	05/31/88
4,747,568	07/043,856	05/31/88
4,747,579	07/028,899	05/31/88
4,747,582	06/876,894	05/31/88
4,747,590	06/923,017	05/31/88
4,747,593	06/886,374	05/31/88
4,747,595	07/002,244	05/31/88
4,747,606	07/032,939	05/31/88
4,747,610	07/087,347	05/31/88
4,747,615	07/021,260	05/31/88
4,747,623	06/918,106	05/31/88
4,747,624	06/930,280	05/31/88
4,747,635	07/020,368	05/31/88
4,747,636	06/922,264	05/31/88
4,747,637	06/938,817	05/31/88
4,747,639	06/939,394	05/31/88
4,747,643	07/042,355	05/31/88
4,747,644	07/033,413	05/31/88
4,747,646	07/028,372	05/31/88
4,747,647	06/875,418	05/31/88
4,747,649	06/813,954	05/31/88
4,747,651	06/839,601	05/31/88
4,747,654	07/045,162	05/31/88
4,747,656	06/861,544	05/31/88
4,747,658	06/474,755	05/31/88
4,747,663	06/841,804	05/31/88
4,747,666	06/875,873	05/31/88
4,747,669	06/796,001	05/31/88
4,747,670	06/840,138	05/31/88
4,747,678	06/942,899	05/31/88
4,747,681	06/735,488	05/31/88
4,747,682	06/558,047	05/31/88
4,747,687	06/898,730	05/31/88
4,747,703	06/923,889	05/31/88
4,747,708	06/866,254	05/31/88
4,747,710	06/943,719	05/31/88
4,747,712	07/038,454	05/31/88
4,747,714	06/925,231	05/31/88
4,747,719	06/889,634	05/31/88
4,747,720	06/775,765	05/31/88
4,747,721	07/007,103	05/31/88
4,747,723	07/011,883	05/31/88
4,747,725	07/005,340	05/31/88
4,747,726	06/947,513	05/31/88
4,747,727	07/065,365	05/31/88
4,747,731	07/027,187	05/31/88
4,747,736	06/944,041	05/31/88
4,747,741	06/451,051	05/31/88
4,747,744	07/001,774	05/31/88
4,747,748	07/030,837	05/31/88
4,747,767	06/944,666	05/31/88
4,747,773	07/059,332	05/31/88
4,747,778	07/012,480	05/31/88
4,747,779	06/920,612	05/31/88
4,747,781	06/933,350	05/31/88
4,747,785	06/944,655	05/31/88
4,747,797	06/912,336	05/31/88
4,747,798	07/018,540	05/31/88
4,747,800	06/943,852	05/31/88
4,747,802	06/932,743	05/31/88
4,747,806	07/086,213	05/31/88
4,747,815	06/931,885	05/31/88
4,747,818	07/005,341	05/31/88
4,747,823	06/875,795	05/31/88
4,747,832	06/864,173	05/31/88
4,747,833	06/921,379	05/31/88
4,747,845	06/815,874	05/31/88
4,747,853	07/064,568	05/31/88
4,747,855	07/006,343	05/31/88
4,747,856	07/087,840	05/31/88
4,747,859	07/095,287	05/31/88
4,747,860	07/089,272	05/31/88
4,747,862	06/909,805	05/31/88
4,747,863	06/864,988	05/31/88
4,747,866	06/897,306	05/31/88
4,747,872	06/711,852	05/31/88
4,747,875	07/067,395	05/31/88
4,747,877	06/940,425	05/31/88
4,747,878	07/049,906	05/31/88
4,747,880	07/045,903	05/31/88
4,747,884	06/719,446	05/31/88
4,747,896	06/834,124	05/31/88
4,747,901	06/806,829	05/31/88
4,747,908	07/036,404	05/31/88
4,747,909	06/853,762	05/31/88
4,747,914	06/867,809	05/31/88
4,747,918	06/875,617	05/31/88
4,747,925	06/878,062	05/31/88
4,747,933	07/030,806	05/31/88
4,747,935	06/844,463	05/31/88
4,747,938	06/853,117	05/31/88
4,747,941	06/940,528	05/31/88
4,747,947	07/059,187	05/31/88
4,747,949	06/922,426	05/31/88
4,747,951	06/525,930	05/31/88
4,747,953	06/831,672	05/31/88
4,747,966	06/913,195	05/31/88
4,747,967	06/737,559	05/31/88
4,747,969	07/014,098	05/31/88
4,747,978	06/894,167	05/31/88
4,747,979	06/701,846	05/31/88
4,747,983	06/814,717	05/31/88
4,747,985	06/906,685	05/31/88
4,747,995	06/943,824	05/31/88
4,747,996	07/023,496	05/31/88
4,747,998	06/831,122	05/31/88
4,747,999	07/028,664	05/31/88
4,748,006	06/816,274	05/31/88
4,748,012	07/041,031	05/31/88
4,748,013	06/852,114	05/31/88
4,748,014	06/802,634	05/31/88
4,748,015	06/917,796	05/31/88
4,748,019	06/789,960	05/31/88
4,748,026	06/897,755	05/31/88
4,748,037	07/014,103	05/31/88
4,748,041	06/836,913	05/31/88
4,748,044	06/330,795	05/31/88
4,748,047	07/039,728	05/31/88
4,748,048	06/922,082	05/31/88
4,748,050	06/806,145	05/31/88
4,748,071	07/034,682	05/31/88
4,748,072	06/820,712	05/31/88
4,748,078	06/938,291	05/31/88
4,748,091	06/939,835	05/31/88

Patent Number	Serial Number	Issue Date
4,748,095	07/022,866	05/31/88
4,748,108	06/883,117	05/31/88
4,748,109	06/626,777	05/31/88
4,748,112	06/837,494	05/31/88
4,748,116	07/053,569	05/31/88
4,748,118	06/667,259	05/31/88
4,748,125	06/911,373	05/31/88
4,748,132	06/941,841	05/31/88
4,748,141	07/043,737	05/31/88
4,748,142	06/909,188	05/31/88
4,748,144	06/896,044	05/31/88
4,748,145	07/012,924	05/31/88
4,748,147	06/802,821	05/31/88
4,748,148	06/929,786	05/31/88
4,748,153	07/092,352	05/31/88
4,748,154	06/939,103	05/31/88
4,748,156	07/003,465	05/31/88
4,748,157	06/827,209	05/31/88
4,748,161	06/739,183	05/31/88
4,748,164	07/104,849	05/31/88
4,748,165	06/377,137	05/31/88
4,748,172	07/002,091	05/31/88
4,748,175	06/947,700	05/31/88
4,748,176	06/867,032	05/31/88
4,748,177	06/698,805	05/31/88
4,748,183	07/027,453	05/31/88
4,748,185	06/944,942	05/31/88
4,748,190	06/813,130	05/31/88
4,748,198	07/039,279	05/31/88
4,748,203	07/023,053	05/31/88
4,748,206	06/929,071	05/31/88
4,748,212	07/058,624	05/31/88
4,748,215	06/910,030	05/31/88
4,748,225	07/052,402	05/31/88
4,748,233	07/055,044	05/31/88
4,748,236	06/670,434	05/31/88
4,748,237	07/036,725	05/31/88
4,748,245	06/841,964	05/31/88
4,748,250	06/729,951	05/31/88
4,748,251	06/824,227	05/31/88
4,748,254	06/779,779	05/31/88
4,748,256	06/867,954	05/31/88
4,748,258	07/041,693	05/31/88
4,748,263	06/924,467	05/31/88
4,748,265	06/652,610	05/31/88
4,748,268	06/891,760	05/31/88
4,748,272	06/891,846	05/31/88
4,748,273	06/803,700	05/31/88
4,748,278	06/886,973	05/31/88
4,748,281	06/919,526	05/31/88
4,748,283	07/015,388	05/31/88
4,748,286	07/078,004	05/31/88
4,748,287	06/920,102	05/31/88
4,748,289	07/003,538	05/31/88
4,748,296	06/937,328	05/31/88
4,748,300	06/696,603	05/31/88
4,748,304	07/026,390	05/31/88
4,748,308	07/002,382	05/31/88
4,748,311	07/019,694	05/31/88
4,748,315	07/005,846	05/31/88
4,748,322	06/912,097	05/31/88
4,748,323	07/029,201	05/31/88
4,748,329	07/015,704	05/31/88
4,748,334	07/035,811	05/31/88
4,748,336	06/858,168	05/31/88
4,748,337	07/063,296	05/31/88
4,748,338	07/046,548	05/31/88
4,748,340	06/931,253	05/31/88
4,748,353	06/840,647	05/31/88
4,748,354	07/106,008	05/31/88
4,748,368	06/686,871	05/31/88
4,748,369	06/850,156	05/31/88
4,748,373	06/904,439	05/31/88
4,748,374	07/109,793	05/31/88
4,748,377	06/852,745	05/31/88
4,748,378	06/846,530	05/31/88
4,748,379	06/839,018	05/31/88
4,748,382	06/911,321	05/31/88
4,748,385	07/033,713	05/31/88
4,748,388	06/757,647	05/31/88
4,748,389	06/928,275	05/31/88
4,748,394	06/875,212	05/31/88
4,748,396	06/934,941	05/31/88
4,748,397	07/051,186	05/31/88
4,748,401	07/006,904	05/31/88
4,748,404	06/830,067	05/31/88
4,748,405	06/873,670	05/31/88
4,748,406	06/907,875	05/31/88
4,748,412	07/016,401	05/31/88
4,748,426	06/927,989	05/31/88
4,748,428	07/079,700	05/31/88
4,748,430	06/931,087	05/31/88
4,748,433	06/821,282	05/31/88
4,748,441	06/908,292	05/31/88
4,748,443	06/766,435	05/31/88
4,748,446	06/543,420	05/31/88
4,748,448	06/508,541	05/31/88
4,748,457	07/000,488	05/31/88
4,748,460	07/001,775	05/31/88
4,748,461	07/065,137	05/31/88
4,748,466	06/913,135	05/31/88
4,748,475	07/059,733	05/31/88
4,748,488	06/653,523	05/31/88
4,748,495	06/763,957	05/31/88
4,748,502	06/897,497	05/31/88
4,748,503	07/037,379	05/31/88
4,748,504	07/004,556	05/31/88
4,748,515	06/915,751	05/31/88
4,748,528	06/824,045	05/31/88
4,748,534	07/008,774	05/31/88
4,748,535	07/009,292	05/31/88
4,748,547	07/011,740	05/31/88
4,748,551	06/945,374	05/31/88
4,748,552	06/867,681	05/31/88
4,748,554	06/896,417	05/31/88
4,748,561	06/879,840	05/31/88
4,748,562	06/910,253	05/31/88
4,748,563	06/699,935	05/31/88
4,748,569	06/756,496	05/31/88
4,748,571	07/004,947	05/31/88
4,748,573	06/749,837	05/31/88
4,748,574	06/921,560	05/31/88
4,748,579	06/765,918	05/31/88
4,748,581	06/770,548	05/31/88
4,748,595	06/890,110	05/31/88
4,748,598	06/876,821	05/31/88
4,748,603	07/055,178	05/31/88
4,748,614	06/483,470	05/31/88
4,748,641	06/751,584	05/31/88
4,748,643	07/025,474	05/31/88
4,748,645	06/598,294	05/31/88
4,748,646	07/027,553	05/31/88
4,748,647	06/764,455	05/31/88
4,748,657	06/865,759	05/31/88
4,748,660	06/749,007	05/31/88
4,748,671	06/934,122	05/31/88
4,748,679	06/889,575	05/31/88
4,748,688	06/856,482	05/31/88
5,117,508	07/538,110	06/02/92
5,117,509	07/549,356	06/02/92
5,117,510	07/714,925	06/02/92
5,117,511	07/465,839	06/02/92
5,117,513	07/612,484	06/02/92
5,117,514	07/695,967	06/02/92
5,117,517	07/744,487	06/02/92
5,117,522	07/675,826	06/02/92
5,117,524	07/760,912	06/02/92
5,117,529	07/470,494	06/02/92
5,117,534	07/629,695	06/02/92
5,117,537	07/666,261	06/02/92
5,117,538	07/685,429	06/02/92
5,117,546	07/716,047	06/02/92
5,117,549	07/682,686	06/02/92
5,117,550	07/619,386	06/02/92
5,117,553	07/714,527	06/02/92
5,117,557	07/513,217	06/02/92

Patent Number	Serial Number	Issue Date
5,117,558	07/753,919	06/02/92
5,117,561	07/636,688	06/02/92
5,117,563	07/628,371	06/02/92
5,117,564	07/517,036	06/02/92
5,117,565	07/740,717	06/02/92
5,117,566	07/694,916	06/02/92
5,117,572	07/672,228	06/02/92
5,117,574	07/693,151	06/02/92
5,117,576	07/640,843	06/02/92
5,117,585	07/745,812	06/02/92
5,117,593	07/647,813	06/02/92
5,117,594	07/502,613	06/02/92
5,117,595	07/598,606	06/02/92
5,117,600	07/213,568	06/02/92
5,117,605	07/303,736	06/02/92
5,117,616	07/557,130	06/02/92
5,117,622	07/518,430	06/02/92
5,117,634	07/771,512	06/02/92
5,117,635	07/563,400	06/02/92
5,117,640	07/677,950	06/02/92
5,117,649	07/662,176	06/02/92
5,117,650	07/572,865	06/02/92
5,117,662	07/588,845	06/02/92
5,117,665	07/604,346	06/02/92
5,117,666	07/756,512	06/02/92
5,117,668	07/412,791	06/02/92
5,117,672	07/657,452	06/02/92
5,117,678	07/657,101	06/02/92
5,117,684	07/533,438	06/02/92
5,117,689	07/618,790	06/02/92
5,117,701	07/653,524	06/02/92
5,117,713	07/554,673	06/02/92
5,117,721	07/604,251	06/02/92
5,117,724	07/640,269	06/02/92
5,117,734	07/765,421	06/02/92
5,117,735	07/596,331	06/02/92
5,117,740	07/703,921	06/02/92
5,117,749	07/619,113	06/02/92
5,117,759	07/740,522	06/02/92
5,117,764	07/683,464	06/02/92
5,117,765	07/643,119	06/02/92
5,117,771	07/748,862	06/02/92
5,117,772	07/617,151	06/02/92
5,117,774	07/689,983	06/02/92
5,117,775	07/608,363	06/02/92
5,117,776	07/620,257	06/02/92
5,117,777	07/277,664	06/02/92
5,117,778	07/772,680	06/02/92
5,117,783	07/787,516	06/02/92
5,117,788	06/915,899	06/02/92
5,117,795	07/530,192	06/02/92
5,117,798	07/589,615	06/02/92
5,117,806	07/529,666	06/02/92
5,117,807	07/345,659	06/02/92
5,117,818	07/585,082	06/02/92
5,117,827	07/603,984	06/02/92
5,117,834	07/563,106	06/02/92
5,117,842	07/657,147	06/02/92
5,117,845	07/629,391	06/02/92
5,117,847	07/740,722	06/02/92
5,117,848	07/783,841	06/02/92
5,117,851	07/552,492	06/02/92
5,117,853	07/550,735	06/02/92
5,117,856	07/762,279	06/02/92
5,117,858	07/767,391	06/02/92
5,117,864	07/760,082	06/02/92
5,117,870	07/678,825	06/02/92
5,117,885	07/564,572	06/02/92
5,117,886	07/467,462	06/02/92
5,117,889	07/564,126	06/02/92
5,117,892	07/542,467	06/02/92
5,117,893	06/763,454	06/02/92
5,117,899	07/694,776	06/02/92
5,117,907	07/632,837	06/02/92
5,117,908	07/585,124	06/02/92
5,117,911	07/686,220	06/02/92
5,117,913	07/589,056	06/02/92
5,117,920	07/515,102	06/02/92
5,117,928	07/761,317	06/02/92
5,117,944	07/672,347	06/02/92
5,117,951	07/787,361	06/02/92
5,117,952	07/635,477	06/02/92
5,117,961	07/645,853	06/02/92
5,117,962	07/558,088	06/02/92
5,117,964	07/532,385	06/02/92
5,117,975	07/581,179	06/02/92
5,117,978	07/680,412	06/02/92
5,117,980	07/611,826	06/02/92
5,117,984	07/682,667	06/02/92
5,117,985	07/641,056	06/02/92
5,117,986	07/687,951	06/02/92
5,117,992	07/646,932	06/02/92
5,117,995	07/734,502	06/02/92
5,117,997	07/502,933	06/02/92
5,117,998	07/772,157	06/02/92
5,118,000	07/772,271	06/02/92
5,118,003	07/613,264	06/02/92
5,118,004	07/295,659	06/02/92
5,118,005	07/785,474	06/02/92
5,118,006	07/750,538	06/02/92
5,118,008	07/629,651	06/02/92
5,118,011	07/622,510	06/02/92
5,118,012	07/661,772	06/02/92
5,118,019	07/638,066	06/02/92
5,118,024	07/739,094	06/02/92
5,118,031	07/701,797	06/02/92
5,118,037	07/719,372	06/02/92
5,118,044	07/541,137	06/02/92
5,118,052	07/115,333	06/02/92
5,118,055	07/548,265	06/02/92
5,118,056	07/673,312	06/02/92
5,118,061	07/648,189	06/02/92
5,118,064	07/667,629	06/02/92
5,118,074	07/664,343	06/02/92
5,118,079	07/729,357	06/02/92
5,118,081	07/673,011	06/02/92
5,118,092	07/475,146	06/02/92
5,118,097	07/681,946	06/02/92
5,118,104	07/726,970	06/02/92
5,118,107	07/606,502	06/02/92
5,118,111	07/714,938	06/02/92
5,118,112	07/633,321	06/02/92
5,118,113	07/660,392	06/02/92
5,118,114	07/745,387	06/02/92
5,118,116	07/625,034	06/02/92
5,118,118	07/381,384	06/02/92
5,118,122	07/455,375	06/02/92
5,118,125	07/605,126	06/02/92
5,118,131	07/660,959	06/02/92
5,118,132	07/610,116	06/02/92
5,118,136	07/637,279	06/02/92
5,118,142	07/594,625	06/02/92
5,118,143	07/648,558	06/02/92
5,118,149	07/712,969	06/02/92
5,118,151	07/730,484	06/02/92
5,118,153	07/665,326	06/02/92
5,118,155	07/681,984	06/02/92
5,118,156	07/655,788	06/02/92
5,118,171	07/663,627	06/02/92
5,118,173	07/648,859	06/02/92
5,118,176	07/657,149	06/02/92
5,118,178	07/550,126	06/02/92
5,118,180	07/660,440	06/02/92
5,118,184	07/615,922	06/02/92
5,118,188	07/661,731	06/02/92
5,118,194	07/700,346	06/02/92
5,118,198	07/534,544	06/02/92
5,118,200	07/537,400	06/02/92
5,118,206	07/685,039	06/02/92
5,118,212	07/796,472	06/02/92
5,118,216	07/578,368	06/02/92
5,118,217	07/677,253	06/02/92
5,118,223	07/665,910	06/02/92
5,118,224	07/626,742	06/02/92
5,118,225	07/725,229	06/02/92
5,118,232	07/486,012	06/02/92

Patent Number	Serial Number	Issue Date
5,118,236	07/664,251	06/02/92
5,118,238	07/539,067	06/02/92
5,118,242	07/563,931	06/02/92
5,118,245	07/558,821	06/02/92
5,118,246	07/498,567	06/02/92
5,118,250	07/333,626	06/02/92
5,118,255	07/503,800	06/02/92
5,118,259	07/602,712	06/02/92
5,118,262	07/678,722	06/02/92
5,118,272	07/418,861	06/02/92
5,118,275	07/469,536	06/02/92
5,118,285	07/592,494	06/02/92
5,118,286	07/642,536	06/02/92
5,118,292	07/705,075	06/02/92
5,118,294	07/632,104	06/02/92
5,118,296	07/565,222	06/02/92
5,118,308	07/741,337	06/02/92
5,118,312	07/713,271	06/02/92
5,118,318	07/655,842	06/02/92
5,118,322	07/560,357	06/02/92
5,118,325	07/636,529	06/02/92
5,118,336	07/460,134	06/02/92
5,118,337	07/511,447	06/02/92
5,118,353	07/637,350	06/02/92
5,118,355	07/605,115	06/02/92
5,118,357	07/672,372	06/02/92
5,118,358	07/508,237	06/02/92
5,118,369	07/572,164	06/02/92
5,118,374	07/588,170	06/02/92
5,118,381	07/572,682	06/02/92
5,118,383	07/636,203	06/02/92
5,118,386	07/452,198	06/02/92
5,118,395	07/529,093	06/02/92
5,118,396	07/364,769	06/02/92
5,118,397	07/593,028	06/02/92
5,118,401	07/532,624	06/02/92
5,118,408	07/755,993	06/02/92
5,118,413	07/684,182	06/02/92
5,118,414	07/678,970	06/02/92
5,118,425	07/794,717	06/02/92
5,118,434	07/661,778	06/02/92
5,118,435	07/615,767	06/02/92
5,118,450	07/566,074	06/02/92
5,118,454	07/694,508	06/02/92
5,118,459	07/487,672	06/02/92
5,118,460	07/544,830	06/02/92
5,118,467	07/619,900	06/02/92
5,118,468	07/382,582	06/02/92
5,118,474	07/245,525	06/02/92
5,118,477	07/517,876	06/02/92
5,118,478	07/237,988	06/02/92
5,118,488	07/573,748	06/02/92
5,118,492	07/552,765	06/02/92
5,118,498	07/615,184	06/02/92
5,118,499	07/717,368	06/02/92
5,118,500	07/356,734	06/02/92
5,118,501	07/456,220	06/02/92
5,118,524	07/582,616	06/02/92
5,118,542	07/566,834	06/02/92
5,118,548	07/509,582	06/02/92
5,118,552	07/664,217	06/02/92
5,118,562	07/587,087	06/02/92
5,118,565	07/450,475	06/02/92
5,118,574	07/469,428	06/02/92
5,118,585	07/697,046	06/02/92
5,118,604	07/539,028	06/02/92
5,118,611	07/252,614	06/02/92
5,118,614	07/297,753	06/02/92
5,118,619	07/059,438	06/02/92
5,118,629	07/225,488	06/02/92
5,118,633	07/557,649	06/02/92
5,118,662	07/711,778	06/02/92
5,118,670	07/284,074	06/02/92
5,118,680	07/721,901	06/02/92
5,118,686	07/514,788	06/02/92
5,118,688	07/583,070	06/02/92
5,118,693	07/566,273	06/02/92
5,118,700	07/547,560	06/02/92
5,118,702	07/628,790	06/02/92
5,118,707	07/674,628	06/02/92
5,118,713	07/718,087	06/02/92
5,118,720	07/731,115	06/02/92
5,118,721	07/397,244	06/02/92
5,118,725	07/592,617	06/02/92
5,118,729	07/638,485	06/02/92
5,118,739	07/540,761	06/02/92
5,118,741	07/755,608	06/02/92
5,118,742	07/504,148	06/02/92
5,118,755	07/499,741	06/02/92
5,118,774	07/643,692	06/02/92
5,118,778	07/698,076	06/02/92
5,118,781	07/645,089	06/02/92
5,118,786	07/653,990	06/02/92
5,118,790	07/557,514	06/02/92
5,118,795	07/534,136	06/02/92
5,118,796	07/130,827	06/02/92
5,118,804	07/560,740	06/02/92
5,118,808	07/528,307	06/02/92
5,118,810	07/549,040	06/02/92
5,118,811	07/613,737	06/02/92
5,118,813	07/597,282	06/02/92
5,118,814	07/414,060	06/02/92
5,118,819	07/680,171	06/02/92
5,118,824	07/646,642	06/02/92
5,118,831	07/661,246	06/02/92
5,118,834	07/755,180	06/02/92
5,118,837	07/013,608	06/02/92
5,118,839	07/576,850	06/02/92
5,118,843	07/596,054	06/02/92
5,118,844	07/677,173	06/02/92
5,118,846	07/515,913	06/02/92
5,118,848	07/635,021	06/02/92
5,118,849	07/688,003	06/02/92
5,118,852	07/671,033	06/02/92
5,118,857	07/550,259	06/02/92
5,118,858	07/601,157	06/02/92
5,118,874	07/717,910	06/02/92
5,118,876	07/298,533	06/02/92
5,118,877	07/639,523	06/02/92
5,118,878	07/691,902	06/02/92
5,118,882	07/482,885	06/02/92
5,118,887	07/676,279	06/02/92
5,118,888	07/528,896	06/02/92
5,118,890	07/529,603	06/02/92
5,118,896	07/606,100	06/02/92
5,118,900	07/749,025	06/02/92
5,118,901	07/716,566	06/02/92
5,118,903	07/679,031	06/02/92
5,118,908	07/609,715	06/02/92
5,118,916	07/611,607	06/02/92
5,118,926	07/490,619	06/02/92
5,118,927	07/626,265	06/02/92
5,118,940	07/659,904	06/02/92
5,118,943	07/585,941	06/02/92
5,118,950	07/459,017	06/02/92
5,118,952	07/605,008	06/02/92
5,118,956	07/570,611	06/02/92
5,118,969	07/478,106	06/02/92
5,118,978	07/493,389	06/02/92
5,118,983	07/495,127	06/02/92
5,118,985	07/727,299	06/02/92
5,118,986	07/541,533	06/02/92
5,119,002	07/600,932	06/02/92
5,119,004	07/474,753	06/02/92
5,119,005	07/573,817	06/02/92
5,119,009	07/340,636	06/02/92
5,119,017	07/597,917	06/02/92
5,119,020	07/431,909	06/02/92
5,119,022	07/710,516	06/02/92
5,119,023	07/481,207	06/02/92
5,119,024	07/664,865	06/02/92
5,119,032	07/572,165	06/02/92
5,119,048	07/609,343	06/02/92
5,119,050	07/514,805	06/02/92
5,119,055	07/747,235	06/02/92
5,119,058	07/715,266	06/02/92

Patent Number	Serial Number	Issue Date
5,119,065	07/641,168	06/02/92
5,119,068	07/634,394	06/02/92
5,119,077	07/363,246	06/02/92
5,119,087	07/596,557	06/02/92
5,119,096	07/566,558	06/02/92
5,119,097	07/230,978	06/02/92
5,119,100	07/672,731	06/02/92
5,119,107	07/482,532	06/02/92
5,119,109	07/539,790	06/02/92
5,119,110	07/701,571	06/02/92
5,119,111	07/704,076	06/02/92
5,119,130	07/683,878	06/02/92
5,119,153	07/588,515	06/02/92
5,119,172	07/663,347	06/02/92
5,119,174	07/604,072	06/02/92
5,119,175	07/569,107	06/02/92
5,119,176	07/500,407	06/02/92
5,119,184	07/498,905	06/02/92
5,119,191	07/530,235	06/02/92
5,119,212	07/673,156	06/02/92
5,119,215	07/735,845	06/02/92
5,119,218	07/413,000	06/02/92
5,119,225	07/298,543	06/02/92
5,119,233	07/720,019	06/02/92
5,119,241	07/462,094	06/02/92
5,119,257	07/470,898	06/02/92
5,119,261	07/474,801	06/02/92
5,119,277	07/576,859	06/02/92
5,119,280	07/782,476	06/02/92
5,119,282	07/630,403	06/02/92
5,119,283	07/712,371	06/02/92
5,119,289	07/449,590	06/02/92
5,119,292	07/384,824	06/02/92
5,119,318	07/339,535	06/02/92
5,119,323	07/465,297	06/02/92
5,119,324	07/482,264	06/02/92
5,119,348	07/523,419	06/02/92
5,119,378	07/513,636	06/02/92
5,119,383	07/635,016	06/02/92
5,119,384	07/699,582	06/02/92
5,119,388	07/616,365	06/02/92
5,119,389	07/635,470	06/02/92
5,119,407	07/594,442	06/02/92
5,119,410	07/670,014	06/02/92
5,119,418	07/703,657	06/02/92
5,119,419	07/453,703	06/02/92
5,119,420	07/540,248	06/02/92
5,119,445	07/442,502	06/02/92
5,119,448	07/586,453	06/02/92
5,119,458	07/355,004	06/02/92
5,119,459	07/655,839	06/02/92
5,119,476	07/369,232	06/02/92
5,119,486	07/297,389	06/02/92
5,119,490	07/778,749	06/02/92
5,119,494	07/551,592	06/02/92

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

5,208,762, Re. S.N. 08/434,693, May 4, 1995, Cl. 364/478, AUTOMATED PRESCRIPTION VIAL FILLING SYSTEM, Kenneth A. Charhut, et. al., Owner of Record: *Baxter International Inc., Deerfield, Ill.*, Attorney or Agent: Robert M. Barrett, Ex. Gp.: 2306

5,318,584, Re. S.N. 08/609,627, Mar. 1, 1996, Cl. 606/182, BLOOD LANCET DEVICE AND METHOD FOR WITHDRAWING FOR DIAGNOSTIC PURPOSES, Hans Lange, et. al., Owner of Record: *Boehringer Mannheim Gmbh, Mannheim, Germany*, Attorney or Agent: Mark M. Newman, Ex. Gp.: 3309

5,320,261, Re. S.N. 08/663,527, June 13, 1996, Cl. 224/194, RESTRAINING AND PROTECTION DEVICE FOR NECK-STRAP-SUSPEND EQUIPMENT, M. Dan Andersen, Owner of Record: *Inventor*, Attorney or Agent: Grant R. Clayton, Ex. Gp.: 3105

5,365,942, Re. S.N. 08/654,630, May 29, 1996, Cl. 128/772, GUIDEWIRE TIP CONSTRUCTION, Peter J. Shank, Owner of Record: *C. R. Bard, Inc., Murray Hill, N.J.*, Attorney or Agent: Israel Blum, Ex. Gp.: 3305

5,410,648, Re. S.N. 08/663,346, June 13, 1996, Cl. 395/700, DEBUGGING SYSTEM WHEREIN MULTIPLE CODE VIEWS ARE SIMULTANEOUSLY MANAGED, Donald P. Pazel, Owner of Record: *International Business Machines Corp., Armonk, N.Y.*, Attorney or Agent: Edward J. Kessler, Ex. Gp.: 2316

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,940,503, Reexam. No. 90/004,295, July 3, 1996, Cl. 156/279, PROCESS FOR THE PRODUCTION OF AN ABSRASION RESISTANT DECORATIVE THERMOSETTING LAMINATE, Kent O. Lindgren, et. al., Owner of Record: *Perstorp, AB, Perstorp, Sweden*, Attorney or Agent: Ellsworth H. Mosher, Stevens Davis Miller & Mosher, Alexandria, Va., Ex. Gp.: 1304, Requester: Wilsonant International, Inc., Temple, Tex.

5,382,207, Reexam. No. 90/004,296, July 8, 1996, Cl. 482/054, EXERCISE TREADMILL, Richard E. Skowronski, et. al., Owner of Record: *Life Fitness, Inc., Franklin Park, Ill.*, Attorney or Agent: None, Ex. Gp.: 3302, Requester: Prear, Inc., c/o Thomas D. Thiesen, Christensen, O'Connor, Johnson & Kindness, Seattle, Wash.

5,396,155, Reexam. No. 90/004,294, July 2, 1996, Cl. 315/291, SELF-DIMMING ELECTRONIC BALLAST, Ronald J. Bezdon, et. al., Owner of Record: *Energy Savings, Inc., Schaumburg, Ill.*, Attorney or Agent: Paul F. Wille, Cahill, Sutton & Thomas, Pheonix, Ariz., Ex. Gp.: 2502, Requester: Owner

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED
MARCH 25, 1996
DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
104,915	71/083,556	06/22/1915
325,263	71/350,001	06/18/1935
325,292	71/361,825	06/18/1935

Reg. Number	Serial Number	Reg. Date
325,304	71/346,287	06/18/1935
325,310	71/357,942	06/18/1935
325,343	71/254,908	06/18/1935
325,350	71/355,930	06/18/1935
325,351	71/355,929	06/18/1935
325,355	71/361,799	06/18/1935
325,366	71/360,364	06/18/1935
325,370	71/360,306	06/18/1935
325,377	71/360,080	06/18/1935
325,637	71/362,024	07/02/1935
607,479	71/660,284	06/21/1955
607,490	71/665,156	06/21/1955
607,506	71/671,025	06/21/1955
607,507	71/671,054	06/21/1955
607,510	71/671,263	06/21/1955
607,514	71/660,515	06/21/1955
607,517	71/663,093	06/21/1955
607,527	71/671,100	06/21/1955
607,528	71/672,087	06/21/1955
607,549	71/663,610	06/21/1955
607,551	71/664,105	06/21/1955
607,554	71/671,291	06/21/1955
607,556	71/658,613	06/21/1955
607,559	71/670,791	06/21/1955
607,560	71/670,792	06/21/1955
607,562	71/630,201	06/21/1955
607,569	71/664,341	06/21/1955
607,574	71/656,961	06/21/1955
607,589	71/671,742	06/21/1955
607,594	71/675,392	06/21/1955
607,598	71/636,514	06/21/1955
607,599	71/638,989	06/21/1955
607,600	71/638,990	06/21/1955
607,619	71/665,790	06/21/1955
607,638	71/654,226	06/21/1955
607,644	71/659,788	06/21/1955
607,658	71/671,467	06/21/1955
607,667	71/655,804	06/21/1955
607,673	71/669,040	06/21/1955
607,681	71/644,176	06/21/1955
607,682	71/655,106	06/21/1955
607,684	71/669,121	06/21/1955
607,685	71/671,626	06/21/1955
607,686	71/671,628	06/21/1955
607,688	71/672,467	06/21/1955
607,689	71/672,468	06/21/1955
607,690	71/672,469	06/21/1955
607,693	71/661,736	06/21/1955
607,703	71/636,276	06/21/1955
607,709	71/672,244	06/21/1955
607,711	71/664,274	06/21/1955
607,712	71/664,907	06/21/1955
607,714	71/669,359	06/21/1955
607,722	71/638,071	06/21/1955
607,735	71/660,378	06/21/1955
607,736	71/662,535	06/21/1955
607,744	71/671,758	06/21/1955
607,746	71/671,383	06/21/1955
607,750	71/661,402	06/21/1955
607,751	71/661,469	06/21/1955
607,752	71/662,947	06/21/1955
607,754	71/669,288	06/21/1955
607,762	71/655,026	06/21/1955
607,764	71/653,946	06/21/1955
607,771	71/657,235	06/21/1955
607,773	71/659,722	06/21/1955
607,774	71/665,287	06/21/1955
1,013,266	73/004,659	06/17/1975
1,013,268	73/007,436	06/17/1975
1,013,280	73/020,105	06/17/1975
1,013,286	73/029,661	06/17/1975
1,013,287	73/030,057	06/17/1975
1,013,288	73/033,661	06/17/1975
1,013,292	73/012,145	06/17/1975
1,013,297	73/030,036	06/17/1975
1,013,300	73/011,340	06/17/1975
1,013,302	73/012,260	06/17/1975
1,013,303	73/012,317	06/17/1975
1,013,304	73/012,318	06/17/1975
1,013,308	73/015,945	06/17/1975
1,013,309	73/016,153	06/17/1975
1,013,311	73/016,299	06/17/1975
1,013,312	73/017,432	06/17/1975
1,013,315	73/019,317	06/17/1975
1,013,323	73/021,223	06/17/1975
1,013,324	73/021,491	06/17/1975
1,013,325	73/021,704	06/17/1975
1,013,330	73/021,715	06/17/1975
1,013,331	73/021,725	06/17/1975
1,013,333	73/022,040	06/17/1975
1,013,334	73/022,322	06/17/1975
1,013,337	73/024,851	06/17/1975
1,013,338	73/024,852	06/17/1975
1,013,339	73/025,588	06/17/1975
1,013,342	73/031,180	06/17/1975
1,013,344	73/031,554	06/17/1975
1,013,356	73/031,266	06/17/1975
1,013,362	73/012,591	06/17/1975
1,013,364	73/015,412	06/17/1975
1,013,369	73/023,584	06/17/1975
1,013,375	73/028,215	06/17/1975
1,013,376	73/028,229	06/17/1975
1,013,378	73/028,306	06/17/1975
1,013,379	73/029,328	06/17/1975
1,013,380	73/030,740	06/17/1975
1,013,384	73/003,767	06/17/1975
1,013,385	73/006,593	06/17/1975
1,013,386	73/007,526	06/17/1975
1,013,391	73/034,288	06/17/1975
1,013,392	73/000,270	06/17/1975
1,013,393	73/001,418	06/17/1975
1,013,394	73/001,419	06/17/1975
1,013,400	73/008,304	06/17/1975
1,013,401	73/009,225	06/17/1975
1,013,406	73/013,679	06/17/1975
1,013,411	73/024,895	06/17/1975
1,013,412	73/025,359	06/17/1975
1,013,413	73/025,845	06/17/1975
1,013,414	73/028,408	06/17/1975
1,013,416	73/000,168	06/17/1975
1,013,420	73/008,225	06/17/1975
1,013,421	73/008,768	06/17/1975
1,013,422	73/008,917	06/17/1975
1,013,430	73/014,074	06/17/1975
1,013,434	73/017,081	06/17/1975
1,013,443	73/022,053	06/17/1975
1,013,444	73/022,184	06/17/1975
1,013,445	73/023,419	06/17/1975
1,013,456	73/025,700	06/17/1975
1,013,457	73/025,764	06/17/1975
1,013,458	73/026,109	06/17/1975
1,013,461	73/027,233	06/17/1975
1,013,463	73/027,789	06/17/1975
1,013,465	73/030,724	06/17/1975
1,013,468	73/001,200	06/17/1975
1,013,481	73/025,058	06/17/1975
1,013,483	73/025,636	06/17/1975
1,013,485	73/027,478	06/17/1975
1,013,486	73/027,505	06/17/1975
1,013,487	73/027,707	06/17/1975
1,013,488	73/027,742	06/17/1975
1,013,495	73/034,787	06/17/1975
1,013,497	73/006,467	06/17/1975
1,013,502	73/011,981	06/17/1975
1,013,505	73/021,904	06/17/1975
1,013,508	73/025,699	06/17/1975
1,013,509	73/026,119	06/17/1975
1,013,510	73/027,570	06/17/1975
1,013,514	73/029,918	06/17/1975
1,013,516	73/004,280	06/17/1975
1,013,518	73/016,801	06/17/1975
1,013,524	73/020,888	06/17/1975
1,013,530	73/021,616	06/17/1975
1,013,531	73/029,200	06/17/1975
1,013,532	73/000,721	06/17/1975
1,013,535	73/002,994	06/17/1975

Reg. Number	Serial Number	Reg. Date
1,013,536	73/005,056	06/17/1975
1,013,538	73/006,498	06/17/1975
1,013,540	73/007,165	06/17/1975
1,013,547	73/013,375	06/17/1975
1,013,548	73/014,422	06/17/1975
1,013,549	73/015,698	06/17/1975
1,013,552	73/019,075	06/17/1975
1,013,557	73/014,368	06/17/1975
1,013,568	73/028,643	06/17/1975
1,013,569	73/006,578	06/17/1975
1,013,574	73/023,813	06/17/1975
1,013,577	73/016,509	06/17/1975
1,013,582	73/029,509	06/17/1975
1,013,583	73/030,144	06/17/1975
1,013,584	73/030,770	06/17/1975
1,013,592	73/027,771	06/17/1975
1,013,593	73/025,412	06/17/1975
1,013,596	73/006,322	06/17/1975
1,013,598	73/009,827	06/17/1975
1,013,600	73/014,934	06/17/1975
1,013,602	73/018,233	06/17/1975
1,013,605	73/029,102	06/17/1975
1,013,606	73/005,401	06/17/1975
1,013,613	73/013,366	06/17/1975
1,013,618	73/028,219	06/17/1975
1,013,619	73/030,065	06/17/1975
1,013,621	73/030,241	06/17/1975
1,013,626	73/011,750	06/17/1975
1,013,628	73/013,105	06/17/1975
1,013,631	73/019,048	06/17/1975
1,013,634	73/020,431	06/17/1975
1,013,636	73/022,710	06/17/1975
1,013,641	73/027,752	06/17/1975
1,013,642	73/028,054	06/17/1975
1,013,643	73/028,674	06/17/1975
1,013,650	73/021,217	06/17/1975
1,013,652	73/024,701	06/17/1975
1,013,654	73/025,036	06/17/1975
1,013,656	73/025,970	06/17/1975
1,013,661	73/013,777	06/17/1975
1,013,663	73/020,119	06/17/1975
1,013,665	73/009,652	06/17/1975
1,013,671	73/001,588	06/17/1975
1,013,672	73/003,282	06/17/1975
1,013,676	73/018,976	06/17/1975
1,013,679	73/027,168	06/17/1975
1,013,682	73/028,046	06/17/1975
1,013,684	73/000,138	06/17/1975
1,013,690	73/009,649	06/17/1975
1,013,694	73/019,627	06/17/1975
1,013,695	73/022,663	06/17/1975
1,013,702	73/008,160	06/17/1975
1,013,709	73/026,578	06/17/1975
1,013,718	73/003,606	06/17/1975
1,013,723	73/028,987	06/17/1975
1,013,724	73/029,538	06/17/1975
1,013,728	73/009,905	06/17/1975
1,013,732	73/011,593	06/17/1975
1,013,733	73/023,008	06/17/1975
1,013,735	73/013,692	06/17/1975
1,013,736	73/015,697	06/17/1975
1,013,739	73/024,877	06/17/1975
1,013,741	73/027,354	06/17/1975
1,013,743	73/028,480	06/17/1975
1,013,744	73/029,208	06/17/1975
1,013,745	73/029,209	06/17/1975
1,013,748	73/029,536	06/17/1975
1,013,749	73/029,909	06/17/1975
1,013,750	73/030,167	06/17/1975
1,013,752	73/034,430	06/17/1975
1,013,754	73/001,789	06/17/1975
1,013,760	73/007,558	06/17/1975
1,013,763	73/009,200	06/17/1975
1,013,766	73/010,884	06/17/1975
1,013,769	72/436,817	06/17/1975
1,013,773	72/450,665	06/17/1975
1,013,782	72/451,078	06/17/1975
1,013,783	72/455,934	06/17/1975
1,013,789	72/464,759	06/17/1975
1,013,791	72/423,478	06/17/1975
1,013,793	72/428,772	06/17/1975
1,013,794	72/444,237	06/17/1975
1,013,798	72/407,437	06/17/1975
1,013,800	72/437,401	06/17/1975
1,013,805	72/459,232	06/17/1975
1,013,809	72/435,430	06/17/1975
1,013,814	72/455,391	06/17/1975
1,013,815	72/457,319	06/17/1975
1,013,816	72/460,427	06/17/1975
1,013,822	72/449,005	06/17/1975
1,013,823	72/461,112	06/17/1975
1,013,824	72/462,639	06/17/1975
1,013,826	72/418,130	06/17/1975
1,013,828	72/447,010	06/17/1975
1,013,829	72/461,250	06/17/1975
1,013,830	72/419,310	06/17/1975
1,013,834	72/453,425	06/17/1975
1,013,837	72/462,002	06/17/1975
1,013,839	72/465,093	06/17/1975
1,013,842	72/446,178	06/17/1975
1,013,843	72/423,897	06/17/1975
1,013,851	72/266,524	06/17/1975
1,013,852	72/413,842	06/17/1975
1,013,857	72/431,535	06/17/1975
1,013,860	72/422,549	06/17/1975
1,013,862	72/438,396	06/17/1975
1,013,864	72/443,678	06/17/1975
1,013,865	72/454,629	06/17/1975
1,013,866	72/444,828	06/17/1975
1,013,868	72/452,786	06/17/1975
1,013,869	73/004,203	06/17/1975
1,013,874	72/466,048	06/17/1975
1,013,875	72/466,049	06/17/1975
1,013,876	73/046,335	06/17/1975
1,013,881	73/002,820	06/17/1975
1,013,883	73/014,055	06/17/1975
1,013,884	72/419,645	06/17/1975
1,013,889	72/457,237	06/17/1975
1,013,891	73/002,462	06/17/1975
1,013,893	72/443,928	06/17/1975

Service by Publication

A petition to cancel the registrations identified below having been filed, and the notice of such proceeding sent by certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

Seawind Cruise Line, Coral Gables, Fla., Reg. No. 1,652,624, for the mark "SEAWIND CRUISE LINE", Canc. No. 25,078.

Berven Carpets Corp., Fresno, Calif., Reg. No. 724,858, for the mark "BERVEN", Canc. No. 24,848.

JEAN BROWN
Technical Support Manager,
Trademark Trial
and Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner
for Trademarks

Patents Available For License or Sale

5,448,458 HAND MOUNTING OF ILLUMINATION DEVICE

Contact: Douglas B. Smyly, Jr.
Rt. 2 Box 88

HC-67
Jackson, Ala. 36545
(voice): (334) 246-4958

5,483,923 TIMER CONTROLLED PET FEEDER

Contact: Samir M. Sabbara
3348 Deerwood Dr.
Anaheim, Calif. 92804
(voice): (714) 827-0125
(fax): (714) 445-2408

5,509,844 LEGLESS STORAGE AND PLAY TABLE FOR USE BY CHILDREN

Contact: Robert P. Simpson
Jaeckle, Fleischmann & Mugel
Fleet Bank Building
12 Fountain Plaza
Buffalo, N.Y. 14202-2292
(voice): (716) 856-0600
ext. 212

5,529,429 TRAFFIC CONTROL ASSEMBLY

Contact: Oscar D. Pelegrin
17038 W. Dixie Hwy.
Suite 202
North Miami Beach
Fla. 33160
(voice): (305) 899-7377
(fax): (305) 944-5568

Disclaimer

5,102,495 — Joseph A. Maher, South Hamilton; E. John Vowles, Goffstown, both of Mass.; Joseph D. Napoli, Winham, N.H.; Arthur W. Zafiropoulo, Manchester; Mark W. Miller, Burlington, both of Mass. METHOD PROVIDING MULTIPLE-PROCESSING OF SUBSTRATES. Patent dated April 7, 1992. Disclaimer filed August 31, 1995, by the assignee, General Signal Corporation.

The term of this patent subsequent to May 7, 2008, has been disclaimed.

Certificate of Correction
For Week of August 13, 1996

P. 09,395	5,284,709	5,413,779	5,445,966
D. 363,190	5,296,434	5,416,913	5,445,993
D. 365,812	5,318,564	5,418,232	5,447,679
D. 366,009	5,318,999	5,419,887	5,448,334
D. 368,440	5,326,847	5,420,019	5,448,519
D. 369,318	5,333,133	5,420,288	5,449,727
D. 369,364	5,338,562	5,422,188	5,450,418
D. 369,994	5,349,200	5,423,003	5,450,692
D. 370,101	5,354,674	5,424,474	5,451,258
D. 370,618	5,368,279	5,426,086	5,451,392
4,782,631	5,372,319	5,426,620	5,451,409
4,786,920	5,378,609	5,426,917	5,452,101
4,792,315	5,384,078	5,427,737	5,453,310
4,861,816	5,384,903	5,429,822	5,453,459
4,883,583	5,386,773	5,431,639	5,454,276
4,939,430	5,388,205	5,431,729	5,454,710
5,019,583	5,388,216	5,432,458	5,455,992
5,111,664	5,391,166	5,433,598	5,456,928
5,126,981	5,393,379	5,434,043	5,456,952
5,222,297	5,396,048	5,436,242	5,457,516
5,222,895	5,398,436	5,436,447	5,457,552
5,231,410	5,401,964	5,437,215	5,457,567
5,234,441	5,403,115	5,439,818	5,457,732
5,248,824	5,406,311	5,440,898	5,458,929
5,258,300	5,411,965	5,443,451	5,459,275
5,273,790	5,413,772	5,443,768	5,459,543
5,459,675	5,482,460	5,498,122	5,510,271
5,460,819	5,483,988	5,498,279	5,510,374
5,460,847	5,484,391	5,498,564	5,510,462
5,460,965	5,484,959	5,498,635	5,510,876
5,461,430	5,485,053	5,498,946	5,511,172
5,462,052	5,485,202	5,499,160	5,511,560
5,462,154	5,485,400	5,499,223	5,511,931
5,462,337	5,485,557	5,499,410	5,512,058
5,462,521	5,485,891	5,499,510	5,512,211
5,462,607	5,486,405	5,499,771	5,512,774
5,463,142	5,486,425	5,499,826	5,513,037
5,463,725	5,486,541	5,500,321	5,513,351
5,463,769	5,486,653	5,500,492	5,513,366
5,464,352	5,486,930	5,500,495	5,513,414
5,465,000	5,487,216	5,500,536	5,513,688
5,465,502	5,487,308	5,500,857	5,513,841
5,465,516	5,487,349	5,501,941	5,514,146
5,465,812	5,487,469	5,502,185	5,514,265
5,465,900	5,488,483	5,502,550	5,514,343
5,466,258	5,488,673	5,502,570	5,514,457
5,466,549	5,489,118	5,502,773	5,514,466
5,466,993	5,489,165	5,502,799	5,514,482
5,467,148	5,489,498	5,502,801	5,514,661
5,467,524	5,489,580	5,503,561	5,514,693
5,467,725	5,489,855	5,503,619	5,514,745
5,468,572	5,490,029	5,503,844	5,514,903
5,468,690	5,490,129	5,503,889	5,514,988
5,468,997	5,490,274	5,503,950	5,515,027
5,469,162	5,491,109	5,503,957	5,515,145
5,470,456	5,491,634	5,504,081	5,515,677
5,470,509	5,491,977	5,504,233	5,515,818
5,470,986	5,492,044	5,504,407	5,516,439
5,471,384	5,492,201	5,504,524	5,516,443
5,472,481	5,492,462	5,504,624	5,516,444
5,472,901	5,492,758	5,504,920	5,516,929
5,473,530	5,493,034	5,505,336	5,517,296
5,474,383	5,493,048	5,505,447	5,517,467
5,475,094	5,493,467	5,505,468	5,517,567
5,475,123	5,493,494	5,505,484	5,517,584
5,475,137	5,493,810	5,505,857	5,517,594
5,475,677	5,494,479	5,506,147	5,517,600
5,475,719	5,494,904	5,506,152	5,517,731
5,475,834	5,494,999	5,506,160	5,518,219
5,476,041	5,495,152	5,506,257	5,518,540
5,476,850	5,495,336	5,506,274	5,518,813
5,477,596	5,495,348	5,506,537	5,519,043
5,478,078	5,495,378	5,507,990	5,519,078
5,478,918	5,495,599	5,508,114	5,519,652
5,479,026	5,495,872	5,508,245	5,519,720
5,479,596	5,496,023	5,508,535	5,519,817
5,480,103	5,496,190	5,508,610	5,519,861
5,480,429	5,496,638	5,508,825	5,519,871
5,480,437	5,497,032	5,509,188	5,521,150
5,481,569	5,497,249	5,509,390	5,521,404
5,482,206	5,497,363	5,509,631	5,522,177
5,482,440	5,497,895	5,509,658	5,522,947
5,482,447	5,498,028	5,510,172	5,523,750

Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
May 27-31, 1996

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
5-28	CANC (SJ)	19,861	Capital Speakers Inc. v. Capital Speakers Club of Washington, D.C., Inc.	whether cancellation petitioner may amend its petition for cancellation to add a claim of fraud; abandonment; whether respondent's rendering of "services" to its own members is "commerce" in connection with which a service mark registration may be issued	Motion to amend the petition for cancellation denied; respondent's motion for summary judgment granted [Petition to cancel Denied]		"CAPITAL SPEAKERS CLUB WASHINGTON, D.C. — CSC" (and design) [social club services, including the fostering of interest in public speaking]		Yes
5-30	EX	74/253,586	Cosco Int'l. Inc.	whether applicant is required, under Sec. 6, to disclaim the words "APPLE SIDRA" apart from the mark as a whole	Refusal Affirmed	"APPLE SIDRA — COSCO" (and apple design) [concentrates used in the preparation of soft drinks]			No
5-31	EX	74/432,560	Sidran, Inc.	2(d)	Refusal Affirmed	"CRIPPLE CREEK BY CIRCLE S" (and design) [shirts, blouses, jeans, dress jackets and coats, etc.]	"CIRCLE S" [footwear]; "CIRCLE S" (and design) [jackets and jeans]		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION

SPECIAL BOXES FOR PATENT MAIL

Special box designations should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special boxes. If any documents other than the specified type identified for each special box are addressed to that box, they will be significantly delayed in reaching the appropriate area for which they are intended.

Please address mail as follows:

Box _____
Assistant Commissioner for Patents
Washington, D.C. 20231

Box Designations	Explanation
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 12	Contributions to the Examiner Education Program.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or materials related to the Disclosure Document Program.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	All communications following the receipt of a PTOL–85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box Missing Parts	Response to the Notice to File Missing Parts of Application and associated papers and fees.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent applications and associated papers and fees.
Box Patent Ext.	Applications for patent term extension and any communications relating thereto.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filing of all provisional patent applications and any communications relating thereto.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

SPECIAL BOXES FOR TRADEMARK MAIL

Special box designations should be used to allow forwarding of particular types of trademark mail to the appropriate areas as quickly as possible. In addition to these box designations, filers are encouraged to indicate whether the contents of the envelope contain a fee. Envelopes containing a fee should be marked "FEE;" envelopes not containing a fee should be marked "NO FEE." Box designations and "FEE/NO FEE" indicators should appear on the envelope as well as on the cover sheet or first page of any document.

Please address mail as follows:

Box _____
FEE (or NO FEE)
Assistant Commissioner for Trademarks
2900 Crystal Drive
Arlington, Virginia 22202-3513

Box Designations	Explanation
Box NEW APP FEE	New trademark applications and fees.
Box ITU FEE	Statements of Use (SOUs) and extension requests.
Box TTAB FEE	Oppositions, cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions, and extension requests.
Box STATUS NO FEE	Written status inquiries.
Box POST REG FEE	Affidavits, renewals, corrections and amendments.
Box RESPONSES NO FEE	Responses to Examining Attorneys' Office actions and Post Registration actions.

SPECIAL BOXES APPLICABLE TO *BOTH* PATENT AND TRADEMARK MAIL

The following special box designations are applicable to both patent and trademark related mail, and the recommendations for "Special Boxes for Patent Mail" (above) should be followed for the types of mail listed below.

Please address mail as follows:

Box _____
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Box Designations	Explanation
Box 3	Mail for the Office of Personnel from NFC.
Box 4	Mail for the Deputy Assistant Secretary of Commerce and Deputy Commissioner of Patents and Trademarks; Office of Legislative and International Affairs.
Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation and disciplinary proceedings*; papers relating to pending litigation in court cases shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box M Fee	Correspondence regarding patent maintenance fees and related matter.
Box OED	Mail for the Office of Enrollment and Discipline.

Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries

The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information in various formats from the U.S. Patent and Trademark Office. Many PTDLs have on file all full-text patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PTDLs have both the patent and trademark sections of the *Official Gazette of the U.S. Patent and Trademark Office*. The full-text utility and design patents are distributed numerically on 16 mm microfilm, and plant patents on color microfiche. Patent and trademark search systems on CD-ROM (Compact Disc-Read Only) format are available at all PTDLs to increase utilization of and enhance access to the information found in patents and trademarks. It is through the CD-ROM systems that preliminary patent and trademark searches can be conducted through the numerically arranged collections.

All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 844-1747
	Birmingham Public Library	(205) 226-3620
Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4488
	Sunnyvale Center for Innovation, Invention and Ideas	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6249
Connecticut	New Haven: Science Park Library	(203) 786-5447
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(317) 494-2872
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
Kansas	Wichita: Ablah Library, Wichita State University	(316) 689-3155
Kentucky	Louisville Free Public Library	(502) 574-1611
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maine	Orono: Raymond H. Fogler Library, University of Maine	(207) 581-1678
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Media Union Library, University of Michigan	(313) 647-5735
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit: Great Lakes Patent and Trademark Center	(313) 833-3379
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada, Reno Library	(702) 784-6579
New Hampshire	Concord: New Hampshire State Library	Not Yet Operational
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
New York	Albany: New York State Library	(518) 474-5355
	Buffalo and Erie County Public Library	(716) 858-7101

Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries—(continued)

State	*Name of Library*	*Telephone Contact*
	New York Public Library (The Research Libraries)	(212) 592-7000
North Carolina	Raleigh: D.H. Hill Library, North Carolina State University	(919) 515-3280
North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Akron - Summit County Public Library	Not Yet Operational
	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Portland: Paul L. Boley Law Library, Lewis & Clark College	(503) 768-6786
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Puerto Rico	Mayaquez General Library, University of Puerto Rico	Not Yet Operational
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Clemson University Libraries	(803) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	(605) 394-6822
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
	Lubbock: Texas Tech University	Not Yet Operational
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3051
Wyoming	Casper: Natrona County Public Library	(307) 237-4935

PATENT EXAMINING CORPS

BRUCE A. LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
EDWARD R. KAZENSKE, Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—JOHN E. KITTLE, Director	308-0661	10/06/94
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200—RICHARD V. FISHER, Director	308-1235	07/18/94
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—BARRY S. RICHMAN, Director	308-0651	09/15/94
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	12/29/94
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	07/15/94
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	08/16/94
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	12/27/94
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—BOBBY R. GRAY, Director	305-9600	10/07/93
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3800	04/19/94
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	12/23/94
TELECOMMUNICATIONS, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	11/15/94
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	12/19/94
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	05/31/94
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—CARLTON R. CROYLE, Director	308-1148	09/08/94
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	04/24/95
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	03/23/95
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	10/04/94

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Philip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of July 1, 1996

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 101—Ron Williams, Managing Attorney, (703) 308–9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/30/95	03/15/96
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308–9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/19/95	01/06/96
Law Office 103—Kathryn Erskine, Managing Attorney, (703) 308–9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/26/95	05/28/96
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/05/96	04/13/96
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/26/96	04/03/96
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/03/96	03/07/96
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/16/96	03/21/96
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/13/96	03/22/96
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308–9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/28/96	04/12/96
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Vacant (703) 308-9100 Trademark Assistance Center—(703) 308-9000 Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188 Intent-To-Use—(ITU)—(703) 308-9500 Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126		
Affidavits Under Sections 8 & 15 (All Classes)	01/15/96	—0—
Renewals (All Classes)	04/15/96	—0—
Section 12(c) Publications (All Classes)	01/25/96	—0—

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

REEXAMINATIONS

AUGUST 13, 1996

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 Re. 34,674 (2965th)

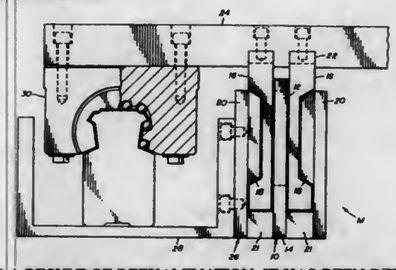
LINEAR MOTOR

Bruce E. Beakley, and Thomas E. Flanders, both of Houston, Tex., assignors to Trilogy Systems Corp., Houston, Tex.

Reexamination Request No. 90/003,690, Jan. 17, 1995.
Reexamination Certificate for Reissue Patent Re. 34,674, issued Jul. 26, 1994, Ser. No. 711,637, Jun. 6, 1991.
Original No. 4,839,543, dated Jun. 13, 1989, Ser. No. 152,315, Feb. 4, 1988.

Int. Cl.[6] H02K *41/02*

U.S. Cl. 310—12



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–16** is confirmed.

Claims **17–40** are cancelled.

New claims **41–62** are added and determined to be patentable.

41. A linear motor, comprising:

a plurality of magnets aligned in a row forming a magnet plane and having a longitudinal axis, said magnets aligned with alternating pole orientations on the faces of said magnet plane;

a coil assembly located substantially in a plane substantially parallel to said magnet plane;

said coil assembly being formed of a plurality of individual coil loops having sides and ends, said loop sides being substantially perpendicular to the magnet row longitudinal axis, and said loop ends being substantially parallel to the magnet row longitudinal axis, said individual coil loops connected to form at least two phases and at least two poles per phase;

a magnetic circuit completing means located in a plane substantially parallel to said magnet plane and said coil assembly; and

a metallic plate for attachment to an external material for improving heat exchange capabilities, said metallic plate connected to the top of said coil assembly;

wherein said individual coil loop thickness is approximately said individual coil loop total width divided by two times the number of phases and wherein at least one individual coil loop forming a pole of a phase overlaps portions of said individual coil loops forming two poles of each other, wherein the ends of at least two of said individual coil loops are angled with respect to said magnet plane and wherein the vertex of said angled ends is at the same location for each individual coil loop of a phase and the vertex of said angled ends is at different locations for each phase, such that said angled ends of each phase are in contact with and overlay said angled ends of at least one other phase.

B1 Re. 34,955 (2966th)

OPTICAL FIBER DISTRIBUTION FRAME

Mark A. Anton, Minneapolis; Jory A. Steinman, Plymouth; Paul A. Suek, Minneapolis, and Wayne A. Johnson, Rosemount, all of Minn., assignors to ADC Telecommunications, Inc., Minneapolis, Minn.

Reexamination Request No. 90/004,103, Jan. 16, 1996.
Reexamination Certificate for Reissue Patent Re. 34,955, issued May 30, 1995, Ser. No. 23,112, Feb. 26, 1993.
Original No. 4,995,688, dated Feb. 26, 1991, Ser. No. 388,060, Jul. 31, 1989.

Int. Cl.[6] G02B *6/00;6/24*

U.S. Cl. 385—53



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–11, 18** and **19** is confirmed.

Claims **12** and **15** are determined to be patentable as amended.

Claims **13, 14, 16** and **17**, dependent on an amended claim, are determined to be patentable.

New claims **20–28** and **29** are added and determined to be patentable.

12. An optical fiber distribution frame, comprising:

a structure having a plurality of cabinet attachment locations;

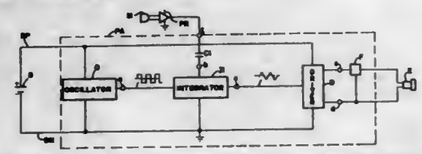
a plurality of cabinets attached to said structure at said plurality of attachment **[**location**]** *locations*;

said plurality of cabinets including at least one connector cabinet having a panel accessible at both a rear and a forward face of said panel, *the panel having left and right fields adjacent left and right sides, respectively, of said cabinet,* said cabinet including a plurality of fiber optic connectors carried on said panel, each of said fiber optic connectors including means for receiving and mounting optical fibers to said fiber optic connectors with a first fiber extending to said rear face and with a second fiber extending to said forward face and with said fibers connected in optical alignment;

[wherein said fiber optic connectors are provided with means for holding said plurality of fibers at a predetermined angle to a plane of said forward face with said angle selected to be less than 90 degrees**]** *and*

holding structure for holding a first set of a plurality of said fiber optic connectors mounted in said right field at an angle directed toward said right side of the cabinet, and for holding a second set of a plurality of said fiber optic connectors mounted in said left field at an angle directed toward said left side of the cabinet.

B1 4,592,087 (2967th)
CLASS D HEARING AID AMPLIFIER
Mead C. Killion, Elk Grove Village, Ill., assignor to Knowles Electronics, Inc., Itasca, Ill.
Reexamination Request No. 90/003,462, Jun. 2, 1994.
Reexamination Certificate for Patent 4,592,087, issued May 27, 1986, Ser. No. 559,386, Dec. 8, 1983.
Int. Cl.[6] H04R *25/00*
U.S. Cl. 381—68



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–7**, **9** and **11–12** are determined to be patentable as amended.

Claims **8**, **10** and **13–17**, dependent on an amended claim, are determined to be patentable.

New claims **18–28** are added and determined to be patentable.

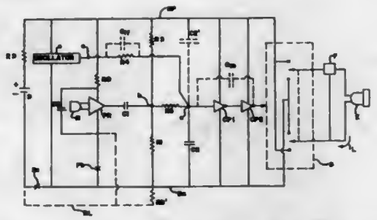
1. In a *head worn* hearing aid *for a hearing impaired individual, said hearing aid* having a microphone, a power amplifier, **[**and**]** an output receiver transducer *for delivering sound only to the hearing impaired individual, and a nominal 1.2–1.5 volt battery*, said power amplifier being coupled to receive audio frequency input signals produced by said microphone and to drive said transducer in response to the *audio frequency* input *signals* to said microphone, the improvement wherein: said power amplifier is of the pulse-width modulation type *powered by said battery*, and in response to the absence of **[**an**]** *the audio frequency* input **[**signal**]** *signals* from said microphone said power amplifier couples to said transducer an alternating electrical pulse train of positive and negative electrical pulses of substantially zero average value at an ultrasonic frequency, said amplifier including means for controlling the time duration of said positive and negative electrical pulses responsively to the amplitude of the audio frequency **[**signal**]** *input signals* applied to the input of said power amplifier so as to provide to said transducer an audio frequency facsimile of said *audio frequency* input **[**signal**]** *signals, said amplifier including a MOS-FET switching driver to drive said transducer,* wherein said hearing aid is provided with a hearing aid housing configured for **[**in-the-ear**]** *headworn* mounting and which contains said power amplifier.

B1 4,689,819 (2968th)
CLASS D HEARING AID AMPLIFYER
Mead C. Killion, Elk Grove Village, Ill., assignor to Knowles Electronics, Inc., Itasca, Ill.
Reexamination Request No. 90/003,454, Jun. 2, 1994.
Reexamination Certificate for Patent 4,689,819, issued Aug. 25, 1987, Ser. No. 839,876, Mar. 19, 1986.
The portion of the term of this patent subsequent to Dec. 8, 2003, has been disclaimed.
Int. Cl.[6] H04R *25/00*
U.S. Cl. 381—68

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–6**, **8–10** and **12–17** are determined to be patentable as amended.

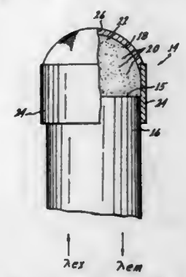
Claims **7**, **11** and **18–21**, dependent on an amended claim, are determined to be patentable.



New claims **22–30** are added and determined to be patentable.

2. The bearing aid of claim 1 further including filter means electrically interposed between said power amplifier output terminals and said transducer for passing said audio frequency facsimile of said *audio frequency* input **[**signal**]** *signals* to said transducer, said filter means presenting to the output terminals of said amplifier a substantially inductive characteristic at said ultrasonic frequency and the principal harmonics thereof, to thereby reflect a substantial fraction of the power contained in ultrasonic frequencies back to said battery to minimize the net current drain on said battery, said filter means including an inductor electrically interposed between one of said output terminals and said transducer.

B1 4,824,789 (2969th)
GAS SENSOR
Masao Yafuso, El Toro, and John K. Suzuki, San Juan Capistrano, both of Calif., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Reexamination Request No. 90/003,660, Dec. 13, 1994.
Reexamination Certificate for Patent 4,824,789, issued Apr. 25, 1989, Ser. No. 917,912, Oct. 10, 1986.
Int. Cl.[6] G01N *33/49;* **G02B** *6/02*
U.S. Cl. 436—68



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim 12 is cancelled.

Claims **1**, **13**, **15–18**, **21–22** and **24–26** are determined to be patentable as amended.

Claims **2–11**, **14**, **19–20** and **23**, dependent on an amended claim, are determined to be patentable.

New claims **27–31** are added and determined to be patentable.

1. A gas sensing composition which comprises:
suspended dispersed microcompartments of an aqueous first phase in a cross-linked polymeric second phase wherein said aqueous first phase is present in micro-compartments smaller than 5 microns, said first phase comprising an aqueous buffer solvent, **[**and**]** a solute, *and at least one emulsification enhancement agent,* said solute including a dye soluble in said solvent, and said second cross-linked polymeric phase comprising a gas permeable, light permeable, ion impermeable and substantially aqueous impermeable polymeric material.

The patentability of claims **1–20** and **24–27** are confirmed.

Claims **21** and **22** are determined to be patentable as amended.

Claims **23** and **28** dependent on an amended claim are determined to be patentable.

New claims **29–37** are added and determined to be patentable.

11. An improved roller cone rock drill bit comprising:
a plurality of cone cutters;
each cone cutter being rotatably mounted on journals with sliding bearing surfaces and being sealed by an elastomeric cone/journal seal;
each cone cutter being further adapted to drill the bottom of a borehole and being characterized by the cooperative operation of primary and secondary cutting structures;
the primary and secondary cutting structures being functionally effective to maintain a full gage borehole during rotary drilling;
the primary cutting structure comprising a circumferential heel row of wear resistant inserts for cutting the corner of a borehole at substantially gage diameter;
a gage surface adjacent to the heel row;
the secondary cutting structure comprising a circumferential gage row of wear resistant gage inserts for cutting the gage diameter in the sidewall of the borehole, the inserts being rigidly secured in apertures in the adjacent gage surface and protruding from the gage surface; and
a clearance area between the gage surface and the gage inserts being functionally effective for chip formation, chip removal and heat dissipation.

B1 5,108,463 (2970th)
CONDUCTIVE COATED ABRASIVES
Scott J. Buchanan, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Reexamination Request No. 90/003,861, Jun. 19, 1995.
Reexamination Certificate for Patent 5,108,463, issued Apr. 28, 1992, Ser. No. 551,091, Jul. 16, 1990.
Continuation-in-part of Ser. No. 495,458, Mar. 16, 1990, abandoned, which is a continuation-in-part of Ser. No. 396,513, Aug. 21, 1989, abandoned.
Int. Cl.[6] B24D *3/34;* **B24B** *1/00*
U.S. Cl. 51—295

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

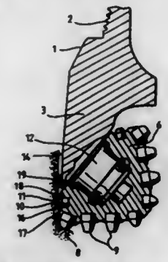
The patentability of claims **15–25** is confirmed.

Claims **2–14** dependent on an amended claim, are determined to be patentable.

New claims **26–37** are added and determined to be patentable.

1. An abrasive article comprising:
(a) a support member having a front surface and a back surface, said support member optionally being saturated with an adhesive binder, said support member optionally having a binder adhesive coating on said front surface, and said support member optionally having a binder adhesive coating on said back surface;
(b) abrasive granules;
(c) a **[**first**]** *make* layer of binder adhesive on said support member having said abrasive granules at least partially embedded therein; and
(d) at least one additional layer of binder adhesive overlying said **[**first**]** *make* layer of binder adhesive; wherein at least one of said binder adhesive layers, coatings, and saturant contains a quantity of carbon black aggregates sufficient to provide said binder adhesive containing said carbon black aggregate with a surface resistivity of less than 2000 kilo-ohms/cm.

B1 5,145,016 (2971st)
ROCK BIT WITH REAMING ROWS
Roy D. Estes, Weatherford, Tex., assignor to Rock Bit International, Inc., Fort Worth, Tex.
Reexamination Request No. 90/003,982, Sep. 29, 1994.
Reexamination Certificate for Patent 5,145,016, issued Sep. 8, 1992, Ser. No. 647,849, Jan. 30, 1991.
Continuation of Ser. No. 516,728, Apr. 30, 1990, abandoned.
Int. Cl.[6] E21B *10/16*
U.S. Cl. 175—331



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

B1 5,295,305 (2972nd)
RAZOR BLADE TECHNOLOGY
Steve S. Hahn, Wellesley Hills, and John Madeira, Assonet, both of Mass., assignors to Gillette Company, Boston, Mass.
Reexamination Request No. 90/003,825, May 9, 1995.
Reexamination Certificate for Patent 5,295,305, issued Mar. 22, 1995, Ser. No. 8,396, Jan. 25, 1994.
Continuation of Ser. No. 835,251, Feb. 13, 1992, abandoned.
Int. Cl.[6] B26B *21/54*
U.S. Cl. 30—50



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **9**, **14**, **19** and **22** are determined to be patentable as amended.

Claims **2–8**, **10–13**, **15–18**, **20**, **21**, **23** and **24** dependent on an amended claim, are determined to be patentable.

New claims **25–44** are added and determined to be patentable.

1. A process for forming a razor blade comprising the steps of providing a substrate, forming a wedge-shaped sharpened edge on

1189
AG
13
1996
UMI

said substrate that has an included angle of less than thirty degrees and a trip radius of less than twelve hundred angstroms; depositing na interlayer of material selected from the group consisting of [silicon,] silicon carbide, vanadium, tantalum, niobium, and niobium-molybdenum alloy and alloys of such materials on said sharpened edge; and depositing a layer of diamond or diamond-like carbon (DLC) material on said interlayer.

B1 5,358,366 (2973rd)

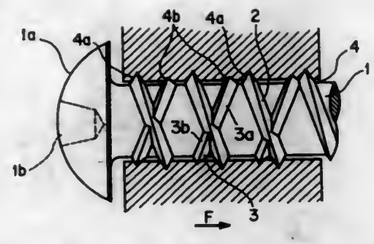
SCREW AND THREAD ROLLING DIE

Yasuo Suzuki, Saitama, Japan, assignor to Kabushiki Kaisha Suzuki Rashi Seisakusho, Asaki, and OSG Corp., Toyokawa, both of, Japan

Reexamination Request No. 90/003,819, May 3, 1995.
Reexamination Certificate for Patent 5,358,366, issued Oct. 25, 1994, Ser. No. 949,821, Jul. 12, 1991.
PCT No. PCT/JP91/00939, § 371 Date Dec. 18, 1992, § 102(e) Date Dec. 18, 1992, PCT Pub. No. WO92/01165, PCT Pub. Date Jan. 23, 1992
Claims priority, application Japan, Jul. 13, 1990, 2-183888; Sep. 18, 1990, 2-246203
Int. Cl.[6] F16B *35/04;39/30;* **B21D** *17/00*
U.S. Cl. 411—311

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim 3 is confirmed.



Claims 1 and 2 are determined to be patentable as amended.

1. A *repeatedly usable* screw comprising:

a head portion formed at an end of said screw, said head portion having engaging means for engaging said head portion with a rotating driver;

a main clockwise/counterclockwise thread to be screwed in; and a counterclockwise/clockwise sub-thread formed in the direction opposite to the main thread;

said sub-thread having an external diameter smaller than that of the main thread and *adapted to be* larger than a diameter of a pre-drilled hole of a mating member[,];

characterized in that a slant surface of said sub-thread on a screw-loosening side has a sharp slope and that on a screw-tightening side has a gentle slope; *and a ratio of the pitches of the main and sub-thread is designated so as not to be an integer.*

REISSUES

AUGUST 13, 1996

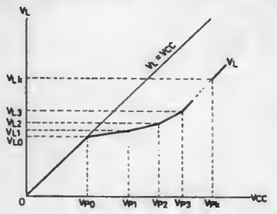
Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,313

SEMICONDUCTOR INTEGRATED CIRCUIT WITH VOLTAGE LIMITER HAVING DIFFERENT OUTPUT RANGES FROM NORMAL OPERATION AND PERFORMING OF AGING TESTS

Ryoichi Hori, Hinode; Kiyoo Itoh, Higashikurume, and Hitoshi Tanaka, Tachikawa, all of, Japan, assignors to Hitachi, Ltd., and Hitachi Micro Computer Engineering, Ltd., both of Tokyo, Japan

Original No. 4,916,389, dated Apr. 10, 1990, Ser. No. 140,628, Jan. 4, 1988. Continuation of Ser. No. 562,969, Dec. 19, 1983, abandoned, which is a continuation-in-part of Ser. No. 368,162, Apr. 14, 1982, Pat. No. 4,482,958. Application for reissue Apr. 28, 1992, Ser. No. 875,088
Claims priority, application Japan, Apr. 17, 1981, 56-57143; Oct. 23, 1981, 56-168698; Dec. 17, 1982, 57-220083
Int. Cl.[6] G01R *31/10;31/3173;* **H02M** *3/158*
U.S. Cl. 371—22.1 **27 Claims**



1. A semiconductor integrated circuit contained within a chip having a regulated voltage comprising:

circuit means contained within the semiconductor integrated circuit which has an input to which is coupled the regulated voltage for powering said circuit means;

means for producing the regulated voltage having an input adapted to be coupled to a means for supplying an external supply voltage, and an output which is coupled to the input of the circuit means *to which* the regulated voltage is applied, the regulated voltage being a function of the external supply voltage whose rate of change with respect to change in the external supply voltage is not constant when external supply voltage is changed from a value thereof in a predetermined ordinary operation range of the semiconductor integrated circuit to a different value within a range for performing an aging test on said semiconductor integrated circuit, said means for producing the regulated voltage comprising a first transistor having an input terminal to which a reference voltage is applied from a reference voltage generator producing a reference voltage and an output which is the regulated voltage, the output also being applied to a second transistor coupled to a reference potential which applies a negative feedback to at least one additional transistor coupled between the output of the first transistor and the second transistor; and

the regulated voltage provided during the aging test approximately equalizing stress conditions of transistors of small geometries receiving the regulated voltage to stress conditions of transistors of large geometries receiving the external voltage.

1189
AG
1
1996
UMI

PLANT PATENTS

GRANTED AUGUST 13, 1996

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,622

CHERRY ROOTSTOCK GI 148/2

Werner Gruppe, Linden/Grossen/Linden, and Hanna Schmidt, Ahrensburg, both of, Germany, assignors to Inter-Plant Patent Marketing, Inc., Ontario, Canada

Filed Jun. 7, 1995, Ser. No. 485,402
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—37 **1 Claim**

1. A new and distinct variety of cherry hybrid tree as shown and described herein.

9,623

CHERRY ROOTSTOCK GI 148/9

Werner Gruppe, Linden/Grossen/Linden, and Hanna Schmidt, Ahrensburg, both of, Germany, assignors to Inter-Plant Patent Marketing, Inc., Ontario, Canada

Filed Jun. 7, 1995, Ser. No. 485,403
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—37 **1 Claim**

1. A new and distinct variety of cherry hybrid tree as shown and described herein.

9,624

ALSTROEMERIA PLANT NAMED 'LITTLE ELEANOR'

Frank Goemans, Sussex, England, assignor to Wuelfinghoff Alstroemeria B.V., Rijswijk, Netherlands

Filed May 3, 1995, Ser. No. 434,389
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—37.1 **1 Claim**

1. A new and distinct cultivar of Alstroemeria plant named 'Little Eleanor', as illustrated and described.

9,625

LILY PLANT NAMED 'NIPPON'

Cees A. Van Der Voort, Katwijk, Netherlands, assignor to Vletter & Den Haan Beheer B.V., AE Rijnsburg, Netherlands

Filed May 15, 1995, Ser. No. 440,661
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—87.4 **1 Claim**

1. A new and distinct lily plant named Nippon, as described and illustrated.

9,626

LONGIFLORUM×ASIATIC HYBRID LILY PLANT +1 CEB DAZZLE'

Donald L. Egger, 7115 SW. Frog Pond La., Wilsonville, Oreg. 97070

Filed May 23, 1995, Ser. No. 447,934
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—87.4 **1 Claim**

1. A new and distinct cultivar of Longiflorum-Asiatic hybrid lily plant characterized by large, upright, bright yellow flowers with a lighter blush and some maroon spots, large yellow buds, thick tepals with wavy outer tepal margins, tall, strong stems and excellent vase life.

9,627

+I NEOREGELIA CAROLINAE PLANT NAMED 'GRUVROE'

Luc J. Devroe, Lochristi, Belgium, assignor to Reginald Deroose, Evergem, Belgium

Filed Jan. 18, 1995, Ser. No. 374,298
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—88.8 **1 Claim**

1. A new and distinct cultivar of *Neoregelia carolinae* plant named Gruvroe, as illustrated and described.

VOL
1189
SS
2
AG
13
1996
UMI

PATENTS

GRANTED August 13, 1996

ERRATA

For CLASS	See PATENT NO.
053–148	5,544,515
137–224	5,544,670
267–221	5,544,725
215–011	5,544,766
256–026	5,544,870
473–314	5,544,879
473–313	5,544,883
473–327	5,544,884
473–350	5,544,885
473–143	5,544,886
473–230	5,544,887
473–220	5,544,888
473–383	5,544,889
473–383	5,544,890
366–163	5,544,951
366–175	5,544,952
374–164	5,544,953
384–045	5,544,954
384–295	5,544,955
08–471	5,545,235
08–549	5,545,236
264–102	5,545,297
510–517	5,545,340
510–299	5,545,342
514–557	5,545,343
510–223	5,545,344
510–237	5,545,354
424–484	5,545,423
429–218	5,545,468

VOL 1189 ISS 2 AG 19 96

ERRATA–CONTINUED

For CLASS	See PATENT NO.
435–097	5,555,587
252–353	5,545,622
524–409	5,545,715
424–085	5,555,723
510–119	5,555,731
523–122	5,555,823
524–590	5,545,824
524–195	5,545,825
525–057	5,555,826
526–057	5,555,827
526–072	5,555,828
526–160	5,555,829
528–015	5,555,830
524–731	5,555,831
528–211	5,555,832
528–337	5,555,833
544–006	5,555,834
544–215	5,555,835
544–216	5,555,836
556–460	5,555,837
564–089	5,555,838
315–224	5,555,955
324–072	5,555,975
324–076	5,555,976
395–600	5,556,107
356–005	5,556,176
359–158	5,556,190

UMI

PATENTS

GRANTED AUGUST 13, 1996

GENERAL AND MECHANICAL

5,544,361

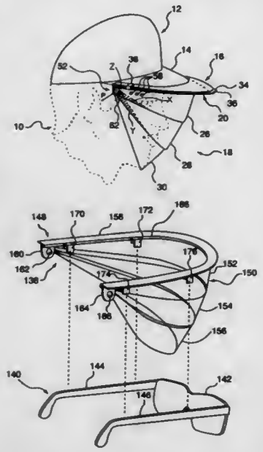
HEADGEAR MOUNTABLE PROTECTIVE FACE SHIELD

Wendy J. Fine, Coral Springs, Fla.; Gary A. Davidson, 6985 N.W. 29th Ter., Fort Lauderdale, Fla. 33309, and Alexander Rykman, 6285 Island Way, Margate, Fla. 33063, assignors to Gary A. Davidson, Fort Lauderdale, and Alexander Rykman, Margate, both of Fla.

Filed Jan. 19, 1995, Ser. No. 374,886

Int. Cl.[6] A42B *1/06;* **G02C** *7/16*

U.S. Cl. 2—10 **18 Claims**



1. A headgear mountable protective face shield to substantially completely cover a wearer's face and protect the face from exposure to ultraviolet radiation, said face shield comprising:

first hinge means to be positioned outwardly of a first side of the wearer's head;

second hinge means to be positioned outwardly of a second side of the wearer's head;

articulated shielding means comprising an upper segment, a middle segment, and a lower segment, each segment being curved and elongated and extending across the wearer's face, each segment having a first end secured to the first hinge means and a second end secured to the second hinge means, the upper segment being in frontal blocking relationship to the eyes of the wearer; and

means to secure the hinge means to an article of headgear to be worn by the wearer;

at least said middle and lower segments of the shielding means being pivotable about a pivot axis extending through the first and second hinge means;

the shielding means preventing at least some ultraviolet radiation from reaching the wearer's face.

5,544,362

BALL GLOVE WITH WEB ASSEMBLY

Richard J. Synek, 1024 Whitfield Rd., Northbrook, Ill. 60062

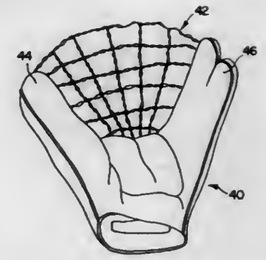
Filed Oct. 12, 1994, Ser. No. 321,563

Int. Cl.[6] A41D *13/08*

U.S. Cl. 2—19 **17 Claims**

1. A ball glove having spaced-apart thumb and finger portions, a palm region joined to the thumb and finger portions, and a flexible reticulate web assembly extending between the thumb and finger portions and the palm region, said web assembly comprising a central patch spaced apart from the thumb and finger portions and the palm region and web filaments extending outwardly from the central patch and connecting the central patch to the thumb and finger portions and the palm region, the web filaments defining a plurality of voids;

the web assembly having an area defined by the central patch and the web filaments, with about three-quarters of the defined area being a void area.



5,544,363

AMBULANCE ATTENDANT'S SAFETY VEST AND HARNESS

Patrick O. McCue, 5841 E. Calle Del Paisano, Phoenix, Ariz. 85018, and Nedward B. Dunnington, 20512 W. Lower Buckeye Rd., Buckeye, Ariz. 85326

Continuation-in-part of Ser. No. 114,927, Sep. 2, 1993, abandoned. This application Mar. 29, 1995, Ser. No. 412,313

Int. Cl.[6] A41D *1/02;13/00;* **B60R** *22/00*

U.S. Cl. 2—102 **1 Claim**



1. A vest and harness combination comprising:

a sleeveless vest formed of a fabric material for covering the shoulders, front and back of a wearer,

a harness secured to said vest and comprising a first pair of spaced webs attached to and extending longitudinally along the front of said vest and a second pair of spaced webs attached to said vest and extending laterally of said first pair of webs at least partially around said vest,

said first pair of webs extending over the shoulders of said vest, criss cross the back of said vest and fastened to opposite sides thereof,

said first pair of webs at the point of criss crossing being provided with a slotted ring-like frame through which each of said first pair of webs extend,

one of said pair of webs being provided with a second slotted ring-like frame at a point midway of the back of the vest,

the other of said second pair of webs being provided with a slotted buckle at one end and a clasp at its other end for engaging said buckle,

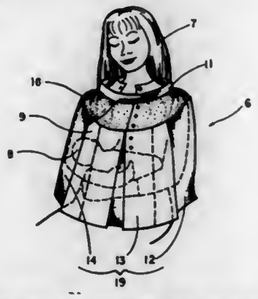
at least one additional ring-like frame attached to the front of the harness,

each of said first, second and the at least one additional ring-like frames being detachably connectable to a retractable wall mountable reel for containment of the user of the vest and harness combination in a limited movable position,

a pair of metallic rings one positioned at each of the opposite sides of said vest each attachable to both ends of one of said first pair of webs, and

a third pair of webs for attaching one at each end thereof to a different one of said rings and the other end of each of said third pair of webs after completely surrounding a leg of a user to the associated one of said rings.

5,544,364
NURSING APRON
Joan Weber, 2916 Chiplay St., Sacramento, Calif. 95826
Filed Mar. 2, 1995, Ser. No. 398,167
Int. Cl.[6] A41D *1/20;1/22;13/04*
U.S. Cl. 2—104 **8 Claims**



1. A nursing apron for covering the upper portion of a mother's body and an infant during the act of breast-feeding, comprising:

(a) a neck band, said neck band having first and second ends and top and bottom edges, said neck band including cooperating attachment means located at each end for closure of said neck band to secure the apron around the mother's neck and vary the size of the apron;

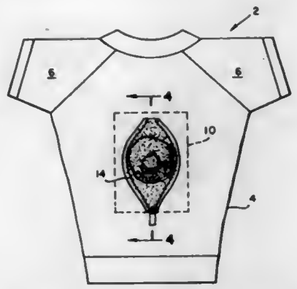
(b) a ventilated transparent viewing panel, said viewing panel having top and bottom edges, said viewing panel affixed to and extending downward from the bottom edge of said neck band, said viewing panel disposed to extend across the mother's upper chest below the neck, between her shoulders and above her breasts, and to cross the mother's line of sight from her eyes to her breasts; and

(c) an opaque skin, said skin affixed to the bottom edge of said viewing panel, said skirt draping downward from said viewing panel and disposed to cover at least the mother's middle front torso region and her infant during the act of breast feeding, wherein said viewing panel allows the mother downward unobstructed viewing of the infant and the infant upward unobstructed viewing of the mother and wherein said opaque skin obstructs public viewing of the mother's breast and the nursing infant.

5,544,365
CLOTHING ARTICLE HAVING AN EXTENSIBLE DISPLAY
Kertious Moody, 3420 Elizabeth St., Apt. 11, Miami, Fla. 33133
Filed Jun. 10, 1994, Ser. No. 258,206
Int. Cl.[6] A41B *1/00*
U.S. Cl. 2—115 **5 Claims**

1. A clothing article, comprising

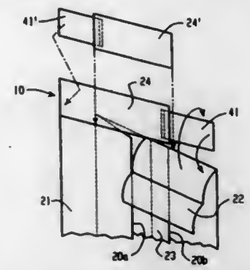
(a) a main body section containing a recessed pocket;



(b) closure means connected with said body section for opening and closing said pocket; and

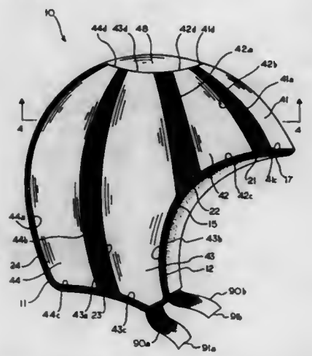
(c) a resilient compressible display member having a predetermined extended configuration, said display member having a peripheral portion connected with said body section within said pocket, said display member being compressed from said extended configuration for insertion within said pocket when said closure means closes said pocket, said display member automatically extending into the predetermined configuration beyond said pocket when said closure means opens said pocket with said peripheral portion remaining within said pocket.

5,544,366
ELASTIC WAIST STRUCTURE FOR TROUSERS AND SKIRTS
Kohji Kato, 189 Takehana-Cho, Hashima, Japan
Filed May 24, 1995, Ser. No. 449,079
Claims priority, application Japan, May 26, 1994, 6-112617; Jun. 15, 1994, 6-133296; Oct. 12, 1994, 6-246201
Int. Cl.[6] A41D *1/06*
U.S. Cl. 2—237 **6 Claims**



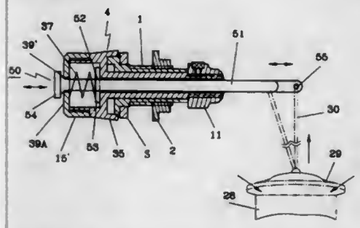
3. An elastic waist structure for a pair of pants or skirt, comprising a tuck having inner fabric whose top edge is unsewn, a first elastic strip material, a second elastic strip material, a waist portion having a waist fabric, and an additional waist fabric and a fabric cover wide enough to cover any stretched length of said first elastic strip material, said inner fabric capable of moving sideways below the waist portion of the pants or skirt as said elastic strip materials change in length, said first elastic strip material covered with said fabric cover attached at its front end to the waist fabric and at its rear end to the back side of said fabric cover, said second elastic strip material covered, with said waist portion attached at its front end to the waist front end of the fabric and at its rear end to the front end of said additional waist fabric, and said additional waist fabric attached at its rear end to the back side of said fabric cover, such that when the waist portion is widened stretching said elastic strip materials behind said fabric cover and waist portion, respectively, said inner fabric of said tuck eliminates forming of wrinkles or furrows outside the pants or skirt.

5,544,367
FLEXIBLE HELMET
Richard W. March, II, P.O. Box 264, Franklinton, N.C. 27525
Filed Sep. 1, 1994, Ser. No. 299,532
Int. Cl.[6] A42B *3/00*
U.S. Cl. 2—410 **12 Claims**



1. A flexible protective helmet assembly comprising an inner layer of a plurality of enclosed chambers formed from elastic textile fabric, the inner layer chambers each confining within them a discreet impact resistant and energy absorbing structure and forming the lower margins of the helmet, an integral fixedly attached overlying outer layer of a plurality of enclosed chambers formed from materials selected from the group consisting of flexible textile fabric and elastic textile fabric and leather, the outer layer chambers each confining within them a discreet impact resistant segment of material, a crown area, and means for attaching the inner layer chambers to adjacent inner layer chambers and attaching the outer layer chambers to the inner layer chambers whereby the wearer is provided protection from impacts substantially equivalent to that provided by protective helmets employing and comprising in part, substantially unitary relatively rigid outer shells.

5,544,368
TWO-STAGE FLUSH DEVICE FOR A TOILET TANK
Kuo-Hsin Wang, An Tsun, Jen Te Hsiang, Tainan Hsuan, Taiwan
Division of Ser. No. 321,355, Oct. 11, 1994, Pat. No. 5,491,848.
This application Sep. 26, 1995, Ser. No. 533,892
Int. Cl.[6] E03D *1/14*
U.S. Cl. 4—405.000 **1 Claim**



1. A two stage flush device for a toilet tank comprising:

a cylindrical bolt having a central aperture therethrough and adapted to be fixedly mounted in a hole in a sidewall of said toilet tank;

a nut threadably mated with said bolt for securing said bolt in said hole, and a washer which cooperates with said nut to provide a bearing surface for said bolt against said sidewall;

a rotatable lever having a shaft connected thereto, said shaft extending through said aperture in said bolt, said shaft having a central aperture extending therethrough, a housing at one end thereof forming an inner chamber and having male threads on an exterior surface thereof, and teeth at an opposite end thereof;

an elongate pull rod having a button formed on one end thereof and a through-hole formed in an opposite end, said opposite end of said pull rod extending through said aperture in said shaft and into said tank, said pull rod further having an aperture therethrough for retaining a stop bar therein, said aperture in said rod and said stop bar being located in said housing;

an annular cap having female threads mating with said male threads on said shaft housing, said button of said pull rod extending through a hole formed in said cap;

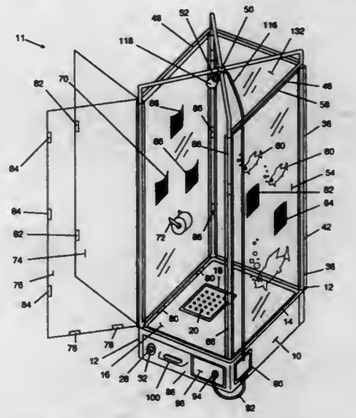
a recovery spring surrounding said pull rod and located in said housing between said stop bar and said annular cap to bias said opposite end of said pull rod into said tank;

an actuating arm having a toothed receiving hole at one end thereof receiving said toothed end of said shaft, a threaded hole extending partially through said one end into said toothed receiving hole, and a set screw received by said threaded hole for tightly securing said actuating arm to said shaft, said arm having an opposite end which is adapted for connection to a low level flush outlet valve; and,

means connected to said through hole in said pull rod for operating a high level flush outlet valve; whereby,

rotation of said lever rotates said actuating arm and lifts said opposite end thereof to open said low level outlet valve, and pulling said button of said elongate pull rod pulls said opposite end of said pull rod against the bias of said recovery spring, actuating said means for operating said high level outlet valve to open said high level valve.

5,544,369
PORTABLE SHOWER/MULTI USE STALL
Ralph J. Roberts, 2281 Shetland Rd., Livermore, Calif. 94550
Filed Sep. 16, 1994, Ser. No. 126,359
Int. Cl.[6] A47K *3/23*
U.S. Cl. 4—599 **18 Claims**

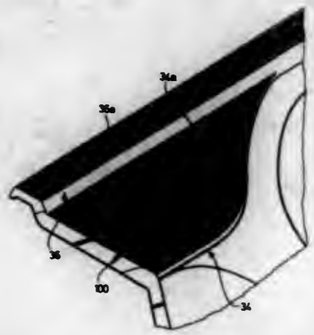


1. A portable shower stall, comprising:

a hollow base, said base having a first compartment for storage of waste water and a second compartment separate from said first compartment, said second compartment comprising a sealable cavity for storage of fresh water, said base having a recessed top surface with a drain opening, said drain opening being in fluid connection with said first compartment,

a plurality of support rods and a support rod attachment means for attaching said plurality of support rods to said base, and a shower curtain and a curtain attachment means for attaching said shower curtain to said plurality of support rods.

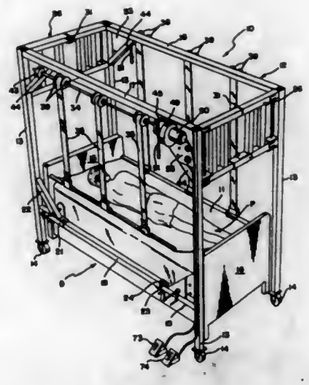
5,544,370
BUILT-IN SINK
Hans Götter, Sulzfeld; Manfred Mäck, Kürnbach, and Thomas Wilhelm, Sulzfeld, all of, Germany, assignors to Blanco GmbH & Co. KG, Oberderdingden, Germany
PCT No. PCT/EP93/00115, § 371 Date Jan. 12, 1995, § 102(e) Date Jan. 12, 1995, PCT Pub. No. WO93/15282, PCT Pub. Date Aug. 5, 1993
PCT Filed Jan. 20, 1993, Ser. No. 256,890
Claims priority, application Germany, Jan. 30, 1992, 42 02 517.6
Int. Cl.[6] A47K *1/04*
U.S. Cl. 4—619 **8 Claims**



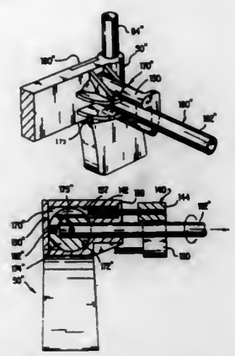
1. A built-in sink unit with at least one basin, comprising first surface areas, subject to severe wear during use as well as second surface areas, subject to less severe wear during use and the first surface areas being provided with a three-dimensional surface structure and the second surface areas being smooth, wherein the surface structure of the first areas is formed by microgrooves at least approximately straight and extending parallel to one another, the surface roughness measured transversely to the longitudinal direction of the microgrooves being greater than 0.1 μm and at the most approximately 0.4 μm.

5,544,371
BED PATIENT TURNING, LIFTING AND TRANSPORTING APPARATUS WITH MOBILE, FOLDING AND KNOCKDOWN FRAME
Carmel U. Fuller, Postal Rte. 1, Box 480, Haysi, Va. 24256
Filed Apr. 13, 1993, Ser. No. 46,889
Int. Cl.[6] A61G *7/10*
U.S. Cl. 5—85.1 **2 Claims**

1. A bed patient turning and lifting apparatus having side frames and end frames wherein the improvement comprises the end frames being variable in length so that the width of the apparatus can be reduced for movement through narrow passageways, hinges are attached to the side frames, foldable padded supports are supported by the hinges, and a brace is positioned on the side frames to prevent the foldable padded supports from dropping below a horizontal position, whereby the foldable padded supports can be folded down from a vertical position to a horizontal position when it is desired to remove a patient from a bed and to transport the patient.

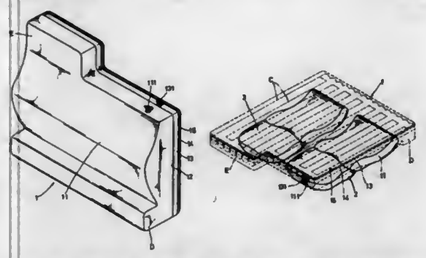


5,544,372
BALL AND SOCKET JOINT, USEFUL WITH COLLAPSIBLE PLAYPENS
Thomas A. Garland, Jamestown, R.I.; Robert A. Kolich, East Aurora, N.Y.; Charles W. Paddock, Lancaster, N.Y., and James P. Bicheler, Alden, N.Y., assignors to Fisher-Price, Inc., East Aurora, N.Y.
Division of Ser. No. 998,370, Dec. 30, 1992, Pat. No. 5,363,521, which is a continuation-in-part of Ser. No. 891,854, Jun. 1, 1992, abandoned. This application Nov. 14, 1994, Ser. No. 339,673
Int. Cl.[6] A47D *13/06*
U.S. Cl. 5—99.1 **13 Claims**



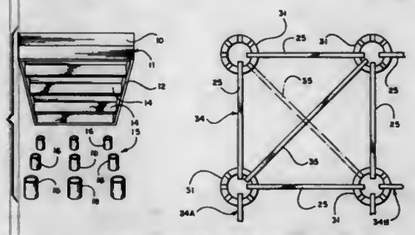
1. A ball and socket joint comprising:
a rail member having a ball mounted on one end thereof; and
a base member having a socket defined therein, said socket defining a radial slot in said base member permitting pivoting of said rail section relative to said base member between a first position and a second position, and said socket permitting rotation of said ball in said socket to permit rotation of said rail member about the longitudinal axis between a locked orientation and an unlocked orientation when said rail member is in the first position, and wherein when said rail section is in the locked orientation said rail section is retained in the first position and when said rail section is in the unlocked orientation said rail section is free to pivot relative to said base member between the first and second positions.

5,544,373
AIR CUSHION FOR SLEEPING IN A CAR
Yung-Yi Chang, No. 664, Sec. 2, Shan-Chiao Rd., Tien-Chung Chen, Changua Hsien, Taiwan
Filed Apr. 11, 1995, Ser. No. 420,366
Int. Cl.[6] A47C *27/10*
U.S. Cl. 5—118 **1 Claim**



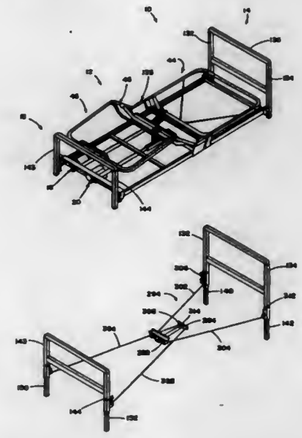
1. An air cushion for sleeping in a car comprising a plastic lower layer, a plastic intermediate layer, a plastic upper layer, a plastic mattress, and a flannel cloth, having an edge portion of each said layer, said plastic mattress and said flannel cloth fastened together;
the plastic lower layer and the plastic intermediate layer forming a first chamber (A), and the plastic intermediate layer and the plastic upper layer forming a second chamber (B) which is positioned above and separated from the first chamber (A) without air circulation between said first and second chambers, having a plurality of air chambers formed in between said intermediate layer add said upper layer;
a valve formed on each side portion of the plastic lower layer and the plastic upper layer for inflating and deflating said first and second chambers;
the plastic lower layer engageable with at least a car seat so that when said first chamber is fully inflated, said plastic lower layer is stably retained upon the car seat;
a seat holding portion protruding rearwardly downwardly from the air cushion for retaining an end portion of said car seat when flattened;
a rectangular extension portion protruding forwardly from the air cushion adjacent to a front end of a passenger's seat beside a driver's seat to provide a space for stretching a user's feet; and
said air cushion having an area covering the driver's seat and the passenger's seat to provide an enlarged and comfortable flat sleeping space.

5,544,374
LEG SYSTEM FOR BEDS
Mark J. Strobel, 3131 Industrial Pkwy., Jeffersonville, Ind. 47130
Filed Mar. 13, 1995, Ser. No. 402,905
Int. Cl.[6] A47C *19/02*
U.S. Cl. 5—310 **11 Claims**



7. In a bed including a mattress, and a support for said mattress, said support for said mattress including a plurality of stringers having a given width, said stringers extending longitudinally and transversely of said mattress, the combination therewith of a leg set for supporting said stringers above a supporting surface, said leg set comprising a plurality of tubular members, each tubular member of said plurality of tubular members defining a plurality of notches in the upper end thereof, each notch of said plurality of notches having a width substantially equal to the width of said stringers for snugly receiving one of said stringers therein.

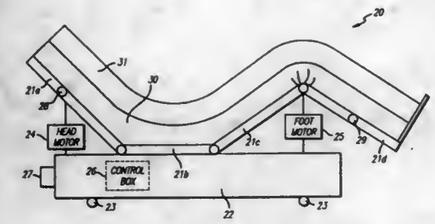
5,544,375
TWO MOTOR, FULL ELECTRIC SECTIONAL BED
Randall J. Urness, and John A. Sheehan, both of Stevens Point, Wis., assignors to Joerns Healthcare Inc., Stevens Point, Wis.
Filed Jun. 22, 1994, Ser. No. 263,543
Int. Cl.[6] A61G *7/012;7/015;7/018*
U.S. Cl. 5—611 **15 Claims**



1. An adjustable bed, comprising:
a mattress frame including pivotally interconnected sections;
a high/low assembly connected to said mattress frame and permitting the mattress frame to be moved between high and low positions;
an actuator operatively connected to said mattress frame and said high/low assembly for moving said mattress frame between said high or low positions and for pivoting sections of said mattress frame relative to each other only when said mattress frame is in said low position; and
another actuator connected to another section of said mattress frame for pivoting said another section when said mattress frame is in said high and said low positions.

5,544,376
ARTICULATED BED WITH CUSTOMIZABLE REMOTE CONTROL
Leonard E. Fromson, Cerritos, Calif., assignor to Maxwell Products, Inc., Cerritos, Calif.
Filed Jan. 31, 1994, Ser. No. 189,963
Int. Cl.[6] A61G *7/002*
U.S. Cl. 5—618 **8 Claims**

1. In an articulated bed having a motor for raising and lowering the bed in response to a control circuit remotely operated by a user of the bed, the improvement comprising:
a first user memory in the control circuit for storing a first user variable which is remotely communicated to said control circuit to indicate a user-selected first preferred position of the bed;



a first recall control by which the user can remotely command that the bed be returned to said first preferred position indicated by said first user variable; and

a handler routine in the control circuit responsive to said first recall control for returning the bed to said first preferred position indicated by said first user variable.

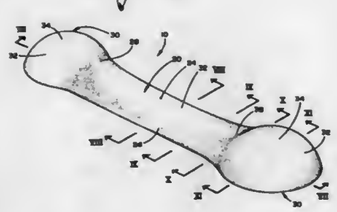
5,544,377

THERAPEUTIC PILLOW FOR LOW BACK PAIN

Mark L. Gostine, 3110 Bonnell, S.E., Grand Rapids, Mich. 49506-3136

Filed May 8, 1995, Ser. No. 436,566
Int. Cl.[6] A47C *20/00*; A61G *7/06*
U.S. Cl. 5—630 **26 Claims**





1. A pillow for relieving lower back pain, said pillow being formed from a flexible, resilient material and comprising:

a flexible, resilient base;

an elongated, flexible, resilient midsection having a lumbar support portion and rounded sides extending from said support portion to said base; and

oppositely spaced end sections integral with said midsection, said end sections being flexible, resilient and generally rounded in shape, said rounded end sections extending to a beight above the thickness of said midsection;

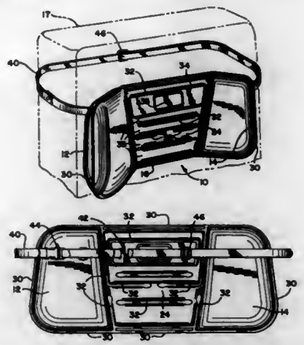
said pillow providing a support for portions of the body which flexes, wraps around and conforms to the body when placed under such body portions.

5,544,378

INFLATABLE PILLOW

Pok Y. J. Chow, 12/F, Union Industrial Bldg.116Wai Yip Street, Kwun Ton, Kln, Hong Kong

Filed Jun. 7, 1995, Ser. No. 487,805
Int. Cl.[6] A47C *7/38*
U.S. Cl. 5—644 **2 Claims**



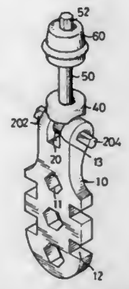
1. An inflatable pillow adapted to be connected to a seat comprising relatively large inflatable end sections and an intermediate section that is generally trapezoidal in shape with a larger upper portion and a smaller lower portion to accommodate free movement of the user's head portion, which intermediate section is inflatable to a fraction of the size of the end sections and adapted to receive a resting head between said end sections, valve means secured to said pillow to control the air flow to said pillow, the intermediate section defining passage means interconnecting said end sections to permit simultaneous enlargement of said end sections when air is introduced into said pillow through said valve means, and adjustable strap means connected to said pillow for securing the pillow to a seat to support the pillow in place while being used.

5,544,379

MULTIFUNCTIONAL QUICK RELEASE FOR A BICYCLE

Chao-Hu Chen, Taichung Hsien, Taiwan, assignor to Kalloy Industrial Co., Ltd., Taichung Hsien, Taiwan

Filed Jul. 19, 1994, Ser. No. 277,001
Int. Cl.[6] B25F *1/00*
U.S. Cl. 7—138 **3 Claims**



1. A quick release for a bicycle comprising a handle portion (**10**) which has two ears extending from one end thereof such that a space (**13**) is defined between said two ears, a pin (**20**) pivotally engaged in said space (**13**) between said two ears of said handle portion (**10**), a bolt (**50**) having a first end fixed to said pin (**20**) between said two ears of said handle portion (**10**) and a second threaded end, a nut (**60**) threadedly engaged with the second end of said bolt (**50**), a washer (**40**) mounted around said bolt (**50**) and movably abutting against said two ears of said handle portion (**10**), the improvement comprising:

said bolt (**50**) having an extension portion (**52**) extending from said second threaded end thereof and disposed outside said nut (**60**), said extension portion (**52**) being hexagonal in section;

said pin (**20**) having a first end (**202**) and a second end (**204**) respectively extending outwards of said two ears of said handle portion (**10**), said first and second ends (**202**) and (**204**) being hexagonal in section; and

said handle portion (**10**) having a plurality of hexagonal slots (**11**) defined in a mediate portion thereof and having a plurality of rectangular openings (**12**) defined in a peripheral portion thereof.

a source of hydraulic fluid, an hydraulic power circuit coupled between said source of hydraulic fluid and said first hydraulic cylinder and said second hydraulic cylinder to control movement of said deck and said lip, said hydraulic power circuit including a pump to deliver fluid under pressure from said source of hydraulic fluid, first valve means operatively coupled to said pump to control fluid flow between said source and said first hydraulic cylinder, second valve means operatively coupled to said pump to control fluid flow between said source and said second hydraulic cylinder, a check valve and pressure relief valve in series and coupling said second valve means to said source of hydraulic fluid, said pressure relief valve preventing a back flow of fluid from said second hydraulic cylinder as said check valve closes to prevent said lip from drooping after said pump has supplied fluid under pressure through said second valve means to extend said lip.

5,544,380

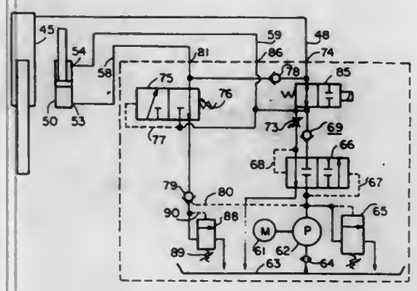
Patent Not Issued For This Number

5,544,381

DOCK LEVELER HYDRAULIC CIRCUIT

James C. Alexander, London, Canada, assignor to United Dominion Industries, Inc., Charlotte, N.C.

Filed Aug. 2, 1994, Ser. No. 284,248
Int. Cl.[6] E01D *1/00*
U.S. Cl. 14—71.7 **20 Claims**



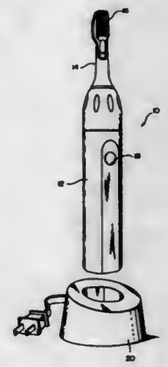
1. A hydraulic circuit for a dock leveler having a deck powered by a first hydraulic cylinder and lip powered by a second hydraulic cylinder comprising:

5,544,382

PACING TOOTHBRUSH

David Giuliani, Mercer Island; Ryan W. McMahon, and David Engel, both of Seattle, all of Wash., assignors to Optiva Corp., Bellevue, Wash.

Filed Sep. 14, 1994, Ser. No. 306,132
Int. Cl.[6] A61C *17/34*; A46B *13/02*
U.S. Cl. 15—22.1 **11 Claims**



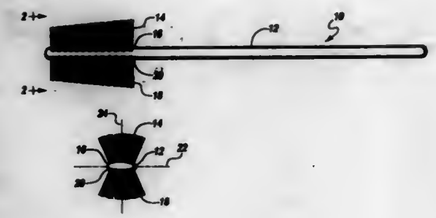
1. A dental hygiene device for cleaning teeth, comprising:

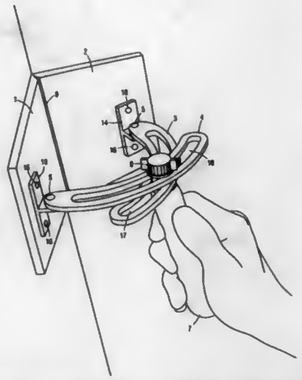
a power toothbrush, including a support member having a brushhead at a distal end thereof and means for driving the brushhead;

timing means, responsive to the device being turned on, for producing successive indications of intervals of elapsed time, wherein the intervals of elapsed time are related to desired times for brushing portions of the dental region, wherein the successive indications of time are provided within a pre-established set period of time during which the brush is operating; and

means for maintaining the status of the timing means for a selected period of time after the apparatus has been turned off during said pre-established period of time after the apparatus has been turned on.

5,544,383
TOOTHBRUSH
John A. Gamble, 609 Country Club Rd., La Grange, Ga. 30240
Filed Jul. 21, 1995, Ser. No. 505,699
Int. Cl.[6] A46B *9/04*
U.S. Cl. 15—106 **7 Claims**



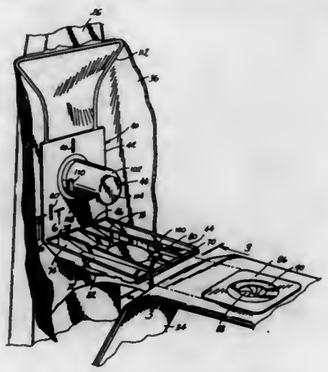


1. A toothbrush comprising:
a longitudinal handle having an end portion of substantially elliptical cross section in which a first side and a second side thereof are of substantially similar elliptical curvature,
the end portion is of substantially the same elliptical cross section along the length of the end portion,
a plurality of bristles are attached to the aforesaid first and second sides, and
the bristles on both said first and second sides taper positionably from a shorter extant near a free end of the end portion to a longer extant farther from the free end of the end portion and adjacent said handle,
whereby the end portion may provide a user with simultaneous brushing action to two distinct areas within the user's mouth.

5,544,384
WALL CORNER FINISHING TOOL
Frank E. Forselius, 925 Vera Ave., Redwood City, Calif. 94061, and Kenneth Tariow, 94 Birch Ave., Corte Madera, Calif. 94925
Filed Feb. 13, 1995, Ser. No. 387,163
Int. Cl.[6] B05C *17/10;* **E01C** *19/12*
U.S. Cl. 15—235.7 **9 Claims**

1. A wall finishing tool, comprising:
a pair of hingeably connected blades, each blade having a front working surface and a back surface;
a pair of arcuate arms each having one end pivotally connected to said back surface of one of said blades, each arm having a longitudinal opening extending therethrough, said arms extending toward each other so as to intersect each other opposite said back surfaces of said blades; and
adjustable fastening means extending through said openings of said arms at the intersection thereof for fastening said arms together, so that when said fastening means is loosened, said arms are movable relative to each other for adjusting an angle between said front working surfaces of said blades, and when said blades are adjusted to a desired angle, said fastening means is tightenable for fastening said arms together.

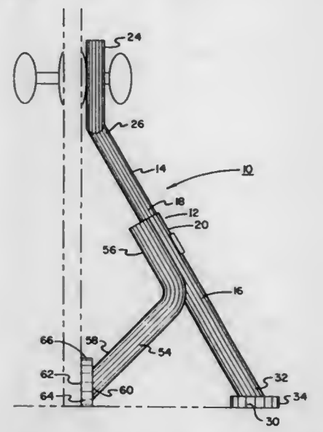
5,544,385
FILTER BAG MOUNTING ASSEMBLY FOR A VACUUM CLEANER
John Jailor, Rockford; William H. Frederick, Grandville; Steven R. Umbach, East Grand Rapids; Scott R. Graham, Zeeland; Kenneth L. Roberts, Battle Creek, and Eric R. Metzger, Sand Lake, all of Mich., assignors to Bissell Inc., Grand Rapids, Mich.
Filed Apr. 13, 1996, Ser. No. 421,403
Int. Cl.[6] A47L *5/28;9/14*
U.S. Cl. 15—350 **14 Claims**



1. An improved vacuum cleaner comprising:
a vacuum housing,
a suction nozzle mounted to the vacuum housing adapted to collect dirt from a surface to be cleaned;
a filter enclosure mounted to the housing;
a working air conduit extending from the suction nozzle to the filter enclosure and defining a working air flow path therebetween;

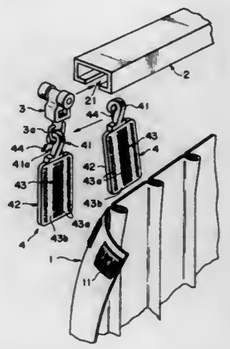
a vacuum motor in the vacuum housing connected to the working air conduit and adapted to draw air from the nozzle through the working air conduit and force the air into the filter enclosure;
a filter bag having an aperture formed therein to filter dirt from dirt laden air and a mounting collar secured to the bag;
a first mounting member mounted to the vacuum housing and having an outlet opening coupled to the working air conduit;
a second mounting member removably mounting the filter bag thereto;
a hinge pivotally interconnecting the first and second mounting members for rotational movement of the second mounting member with respect to the first mounting member between a first position wherein the filter bag aperture is in fluid communication with the first mounting member outlet opening and a second position wherein the filter bag aperture is pivoted out of fluid communication with the outlet opening for removal and replacement of the filter bag, characterized in that:
the hinge is integrally molded to the first and second mounting members.

5,544,386
DOOR STOPPER DEVICE
Elliott G. Cobb, P.O. Box 381, Raeford, N.C. 28376
Filed Sep. 15, 1994, Ser. No. 306,399
Int. Cl.[6] E05F *5/02*
U.S. Cl. 16—82 **3 Claims**



1. A new and improved door stopper device comprising, in combination:
a central post having an upper component and a lower component formed of steel tubing, the upper and lower components each having an upper extent and a lower extent, the lower extent of the upper component being linear and of a reduced diameter and the upper extent of the lower component being linear and of an enlarged diameter to receive the lower extent of the upper component;
a U-shaped fork formed in the upper extent of the upper component, the fork being positioned vertically with respect to the door to be maintained closed, the lower extent of the upper component being formed at an angle of between about 140 and 160 degrees with respect to the fork;
a horizontal foot formed at the lower end of the lower component with an elastomeric shield thereover to form a frictional surface with the ground;
spring-urged locking components coupling the lower extent of the upper component within the upper extent of the lower component, the locking components including aligned apertures in the upper component and in the lower component, a spring-urged finger coupling the aligned apertures and
a pair of side support rods formed of a rigid material and in an inverted Y-shaped configuration coupled with respect to the upper extent of the lower component, the support rods including an upper region parallel with the lower component and a lower region at an angle between 110 and 130 degrees with respect thereto, the lower end of the lower region of the support rods angling outwardly from the central post, each at an angle of between 40 and 50 degrees from the central post, the support rods each having a bottom end formed vertically and including a foot secured thereto, each foot being provided with an elastomeric cover to form a frictional surface with the door.

5,544,387
CURTAIN ATTACHMENT CONNECTOR ASSEMBLY AND CURTAIN ATTACHMENT CONNECTOR
Toru Yamamoto, Osaka; Akihiko Hisano, Nara-ken, and Toshiaki Takizawa, Toyama-ken, all of, Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan
Filed Apr. 15, 1994, Ser. No. 228,261
Claims priority, application Japan, Apr. 15, 1993, 5-019284; May 27, 1993, 5-028040
Int. Cl.[6] E05D *15/00;* **A47H** *13/00*
U.S. Cl. 16—87.4 R **9 Claims**



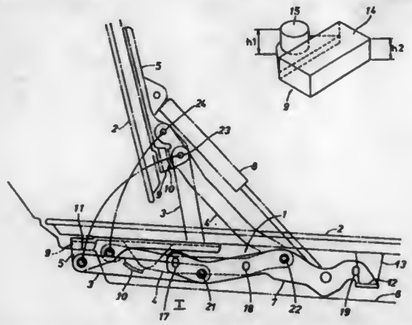
1. A curtain attachment connector assembly for connecting a series of curtain hanger members slidably mounted on an elongated guide member and a top edge of a curtain including a series of separable fastener members mounted on and along the top edge at predetermined intervals, said curtain attachment connector assembly comprising:
(a) a plurality of curtain attachment connectors molded of synthetic resin and each including
(i) a fastener member having a fastener surface releasably engageable with a fastener surface of each of the separable fastener members of the curtain, and
(ii) a hook member integral with said fastener member and adapted to be attached to, and detached from, one of the curtain hanger members and having an opening, and a blocking means disposed at said opening of said hook member for preventing another article from entering said hook member through said opening, said blocking means being broken when an external force of a predetermined intensity is exerted thereon; and
(b) at least one flexible cord interconnecting the respective fastener members of said curtain attachment connectors at predetermined intervals which is smaller than said intervals of said separable fastener members of the curtain.

5,544,388

STOPPER STRUCTURE FOR A LID MEMBER

Tatsuo Chiura, Saitama-ken, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 22, 1994, Ser. No. 263,662
Claims priority, application Japan, Aug. 27, 1993, 5-235586
Int. Cl.[6] E05F 5/06
U.S. Cl. 16—375 7 Claims



1. A stopper structure defining opening and closing limits of a lid member attached to a fixed member via a linkage hinge mechanism, comprising:

a stopper member fixedly secured to an inner surface of said lid member;

a first abutting surface formed on a link arm of said linkage hinge mechanism for engaging said stopper member when said lid member is fully opened; and

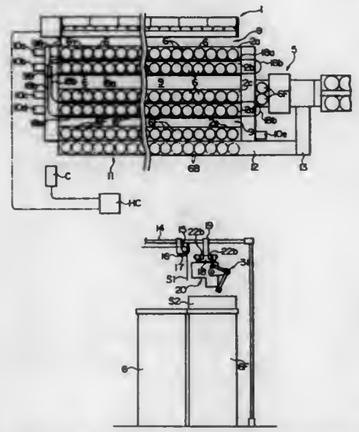
a second abutting surface formed on said fixed member for engaging said stopper member when said lid member is fully closed.

5,544,389

SLIVER PIECING IN SPINNING MACHINES

Keiji Onoue; Yukio Saito, and Takashi Imai, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Jan. 31, 1994, Ser. No. 189,492
Int. Cl.[6] D01H 15/00
U.S. Cl. 19—157 17 Claims



1. A sliver piecing machine in a spinning machine where the spinning machine has a plurality of spinning units, a row of supply cans each for containing therein a supply of sliver for supplying the spinning units during spinning operation of said spinning machine, a row of new cans each for containing new sliver, and an automatic machine carrying said sliver piecing machine where the sliver piecing machine is constructed to move from one end to the other end of said spinning machine along said row of supply cans, said sliver piecing machine comprising:

a sliver cutting device operative after the spinning operation of said spinning machine is stopped for cutting the supply slivers supplied to the respective spinning units and allowing the end of each cut supply sliver to be suspended toward the associated supply can; and

a sliver piecing device for piecing each suspended sliver end with a respective new sliver from within a respective new can;

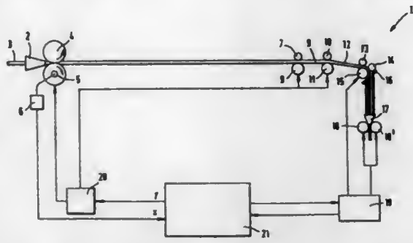
said sliver cutting device and said sliver piecing device being located on said sliver piecing machine with said sliver cutting device being ahead of said sliver piecing device in the direction of said movement of said sliver piecing machine from said one end to said other end of said spinning machine.

5,544,390

REGULATING DRAWING UNIT FOR A SILVER DRAWING FRAME AND REGULATING METHOD

Reinhard Hartung, and Fritz Hösel, both of Mönchengladbach, Germany, assignors to Trützschler GmbH & Co. KG, Mönchengladbach, Germany

Filed Dec. 13, 1994, Ser. No. 358,586
Claims priority, application Germany, Dec. 20, 1993, 43 43 499.1; Nov. 18, 1994, 44 41 067.0
Int. Cl.[6] D01H 5/38
U.S. Cl. 19—240 16 Claims



1. In a drawing frame including

an inlet measuring organ sensing a property of a plurality of slivers as they are simultaneously introduced into the drawing frame and emitting a first or measuring signal representing a magnitude of said property;

a regulating drawing unit including

a plurality of drawing rolls defining a drawing region along which the slivers are drafted as they run through the drawing frame;

a drive for rotating the drawing rolls; and

control means for regulating said drive as a function of said measuring signal for varying the draft of said slivers in said drawing region such that mass fluctuations in the slivers are equalized;

the improvement wherein said control means comprises

(a) means for generating a second signal representing an operational parameter influencing said first signal;

(b) recalculating means for changing said first signal into a third or actual control signal as a function of said second signal to compensate for influences derived from said operational parameter and affecting measuring results; and

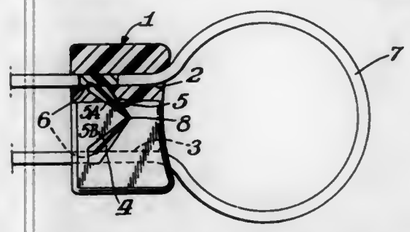
(c) means for applying said third signal to said drive.

5,544,391

TIE HEAD AND FASTENING SYSTEM

Richard A. Hoffman, Landenberg, Pa., assignor to Dymetrol Company, Inc., Hockessin, Del.

Filed Apr. 7, 1995, Ser. No. 418,701
Int. Cl.[6] B65D 63/00
U.S. Cl. 24—16 PB 16 Claims



1. A tie head for use with an elongate plastic tie strap to form a bundle tie, the tie head comprising:

(a) a housing including a pair of spaced-apart slots extending therein forming a pair of strap-receiving passageways, each passageway having an entrance opening and at least one of the passageways having an exit opening, the housing further including a pawl-receiving channel extending intermediate the passageways, the channel having a portion intersecting each said passageway; and

(b) a spring pawl having a substantially V-shaped configuration pivotally mounted at its vertex in the channel, and including two arm extending outwardly from the vertex of the V, each arm having a free end with a toothed edge, each toothed edge positioned to extend into one of the strap-receiving passageways to provide an engagement of the toothed edge with an inserted tie strap;

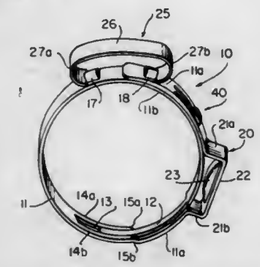
whereby a tie strap inserted through the entrance openings into each passageway is retained by the tie head against withdrawal by gripping engagement of the strap between the toothed edges of the pawl and the surfaces of the passageways.

5,544,392

CLAMP STRUCTURE WITH SPRING ELEMENT

Hans Oetiker, Horgen, Switzerland, assignor to Hans Oetiker AG Maschinen -und Apparatefabrik, Switzerland

Filed Mar. 1, 1995, Ser. No. 396,256
Int. Cl.[6] F16L 33/02
U.S. Cl. 24—20 CW 9 Claims



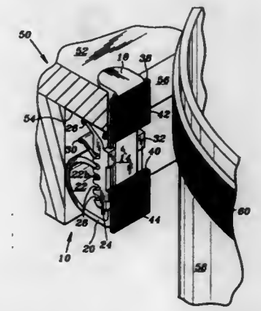
1. An open clamp, comprising clamping band means having overlapping band portions, means for tightening the clamp about an object to be fastened thereby and further means operatively connecting overlapping band portions, said further means including spring means separate from the clamping band means and operable to provide a predetermined elastic tightening force in the presence of forces seeking to increase the diametric dimensions of the clamp structure, said spring means being of at least part-convexly shaped configuration including mutually facing end portions, and connecting means operatively connecting said spring means with the clamping band means including tongue-like extensions at the mutually facing end portions operable to engage in tunnel-shaped embossment means provided in the clamping band means, said tunnel-shaped embossment means being located in the end area of the outer band portion and within an area of the clamping band means just ahead of the end of the outer band portion where the clamping band means passes over into the inner band portion.

5,544,393

DRAPERY CLIP

Jerry J. Lightfoot, Frisco, Tex., assignor to Display Products, Inc., Dallas, Tex.

Filed Jun. 20, 1995, Ser. No. 492,669
Int. Cl.[6] A47H 1/00
U.S. Cl. 24—306 12 Claims



1. A clip for alternatively draping one of two structures, the first structure having a top surface, an underside surface, and a peripheral edge; the second structure having a rod support member, the clip comprising:

a face portion having front and back surfaces and first and second ends, such that said back surface of said face portion contacts the peripheral edge of the first structure;

a first leg perpendicularly disposed to and extending rearwardly from said back surface at said first end of said face portion, such that said first leg contacts the top surface of the first structure;

a slide member disposed adjacent said back surface of said face portion and movable between said first and second ends of said face portion;

said slide member including a linear portion for engaging the underside surface of the first structure of various sized peripheral edges of the first structure;

said slide member further including a plurality of fasteners;

a second leg having a curvilinear portion;

said curvilinear portion of said second leg extending rearwardly from said back surface at said second end of said face portion for engaging the rod support member of the second structure, said curvilinear portion having first and second ends, said first end connected to said back surface of said second end of said face portion and said second end being spaced apart from said back surface of said face portion;

said second end of said curvilinear portion being selectively received by one of said plurality of fasteners on said slide member for selectively connecting said second leg to said slide member; and

fastener means attached to said face portion for detachably mating with fasteners on the drape.

5,544,394

AUTO-LOCK SLIDER FOR CONCEALED SLIDE FASTENER

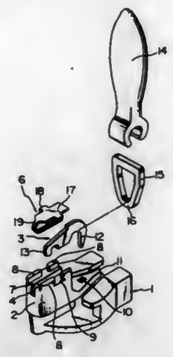
Iwao Yaguramaki, Toyama, Japan, assignor to YKK Corporation, Tokyo, Japan

Continuation of Ser. No. 285,732, Aug. 4, 1994, abandoned. This application Dec. 7, 1995, Ser. No. 555,220

Claims priority, application Japan, Aug. 31, 1993, 5-047301 U

Int. Cl.[6] A44B 19/30

U.S. Cl. 24—424 4 Claims



1. An auto-lock slider, for a concealed slide fastener, comprising:

a slider body having a guide lug having in its upper portion a locking-lever-receiving groove and a leaf-spring-receiving portion;

a locking lever received vertically in said locking-lever-receiving groove, said locking lever having at one end a locking claw and at the other end an anchor portion;

a leaf spring having a shape such that one end is deformable to a greater extent compared to the other end, said leaf spring covering said locking lever at a side toward said anchor portion in such a manner that said anchor portion is pivotally held within said groove and said locking claw is resiliently urged to project into said body, said leaf spring being resiliently in contact with said locking lever with the more deformable end facing toward said locking claw; and

a pull tab connector having a pintle inserted in a base of said locking claw;

wherein said leaf-spring-receiving portion has front and rear holding projections spaced from one another and projecting from respective upper surfaces of opposite side walls of said locking-lever-receiving groove and wherein said leaf spring has a horizontal U shape composed of a wide upper plate and a narrow resilient strip extending downwardly from said upper plate, said upper plate having a pair of side arms projecting centrally from opposite sides of said upper plate in a plane including said upper plate, said upper plate of said leaf spring being held in position by inserting said side arms between said front and rear holding projections and then clinching said front and rear holding projections over said wide upper plate, said resilient strip being pressed against an upper surface of said locking lever.

5,544,395

CLAMPING DEVICE FOR A TEXTILE EDGE

Carl Cilius Rosenvinge, DK-8723 Lösning, Sneppevej 97, Denmark

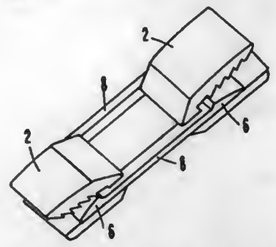
PCT No. PCT/DK93/00042, § 371 Date Aug. 3, 1994, § 102(e) Date Aug. 3, 1994, PCT Pub. No. WO93/15622, PCT Pub. Date Aug. 19, 1993

PCT Filed Feb. 5, 1993, Ser. No. 256,978

Claims priority, application Denmark, Feb. 7, 1992, 0156/92

Int. Cl.[6] B42F 1/00

U.S. Cl. 24—460 8 Claims



1. In a clamping device comprising a casing, being U-shaped in cross section, defined by two U-legs joined by a U-bottom, each of said U-legs having inner side walls, an insertion opening between the U-legs for receiving at least a portion of an article to be clamped, said insertion opening having a mouth, and a slide element arranged in the casing for displacement away from and towards a clamping position, wherein one of said inner side walls having a high friction surface relative to the other inner side wall, said other inner side wall having a low friction surface enabling displacement of the slide element relative to the casing, the improvement which comprises: the inner side walls of the U legs, at least proximal the U-bottom, diverge outwardly in a direction toward the insertion opening thereby providing an inner wedge; the slide element is a supporting means for the casing; and the slide element is provided with connecting means, one part of which extends perpendicularly to the U-bottom of the casing, for connecting the clamping device to a suspension means, such that the slide element, when the clamping device is in a connected condition, is displaceable between, a region of the inner wedge proximal to the U-bottom, and at least the mouth of the insertion opening and the casing further comprises a slit in the U-bottom, capable of receiving therethrough the connecting means, wherein the slit guides the displacement of the slide element relative to the casing.

5,544,396

HOLDER FOR SECURING OBJECTS

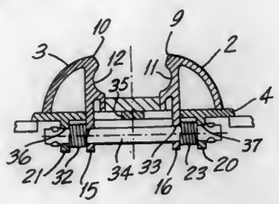
Erich Mekyska, Güterstrasse 41-43, Pforzheim, Germany

Filed Oct. 17, 1994, Ser. No. 317,924

Claims priority, application Germany, Nov. 5, 1993, 43 38 052.2

Int. Cl.[6] A44B 21/00

U.S. Cl. 24—523 9 Claims



1. A device for clamping objects of a plurality of dimensions, comprising:

a base plate including a top side defining at least one opening and first and second support walls each having a recess extending therethrough;

first and second clamp jaws, each of said first and second clamp jaws including an inner surface area and an extending end having a recess extending therethrough, said extending end of both said first and second clamp jaws positioned to extend through the at least one opening in the base,

a bolt extending through the recess in said first and second support walls and the recess in said first and second clamp jaws for mounting said first and second clamp jaws to said base plate, said first clamp jaw being movable along said bolt; and

a first spring positioned about said bolt and connected between said first clamp jaw and said first support wall for exerting a moving force on said extending end of said first clamp jaw towards said second clamp jaw, said device movable between a first unclamped position in which said inner surface area of said first and second clamp jaws are at least partially in contact and said first spring is in a first extended position and a second clamped position in which an object is clamped between said inner surface area of said first and second clamp jaws, said first and second clamp jaws being separated by a distance equal to a width of the object slid therebetween and said first spring is in a second tensioned position.

5,544,397

FIBER CRIMPING APPARATUS WITH MOVABLE CRIMPING MEMBER

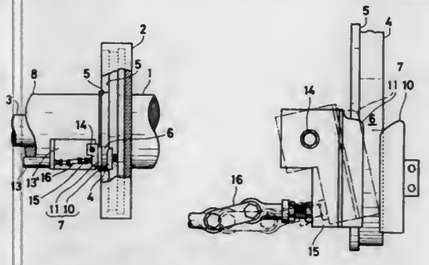
Katsuomi Takehara, Mukou, Japan, assignor to Kabushiki Kaisha Takehara Kikai Kenkyusho, Nagaokakyo, Japan

Filed Sep. 20, 1995, Ser. No. 531,269

Claims priority, application Japan, Nov. 14, 1994, 6-317468

Int. Cl.[6] D02G 1/12

U.S. Cl. 28—263 6 Claims



1. A fiber crimping apparatus comprising:

a ring roller of a large diameter and rotatable in one direction;

an inscribed roller rotatable in the same direction at the same velocity as said ring roller and in contact with an inner surface thereof, thus forming a nip zone for bundles of fibers to be crimped thereat between said rollers;

side rings of respective said rollers at opposite sides of said nip zone, said side rings being rotatable in the same direction at the same velocity as said rollers;

a stuffing box defined at a downstream side of said nip zone, relative to the direction of rotation, by continuously rotatable inner surfaces of said side rings and contacting surfaces of said rollers; and

a crimping resisting device installed at a downstream side of said stuffing box, relative to the direction of rotation, to contact the bundles of fibers having passed through said nip zone, said device including a movable crimping resisting member mounted for movement in a widthwise direction of said stuffing box and of bundles of fibers passing therethrough.

5,544,398

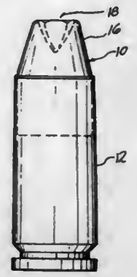
METHOD OF MAKING A COATED BULLET

Alan J. Corzine, Marine; Jack D. Dippold, Edwardsville, both of Ill., and David K. Schluckebier, Cabot, Ark., assignors to Olin Corporation, East Alton, Ill.

Continuation of Ser. No. 131,102, Oct. 4, 1993, abandoned, which is a continuation of Ser. No. 906,182, Jun. 29, 1992, abandoned, which is a division of Ser. No. 863,647, Apr. 2, 1992, Pat. No. 5,208,424, which is a continuation-in-part of Ser. No. 679,475, Apr. 2, 1991, Pat. No. 5,101,732. This application May 2, 1994, Ser. No. 237,423

Int. Cl.[6] B21K 21/06

U.S. Cl. 29—1.23 4 Claims



1. A method for the manufacture of a jacketed bullet, comprising the steps of:

(a) forming a copper alloy blank into a cup-shaped jacket blank having an inner surface, an opposing outer surface and a continuous, generally flat, bottom;

(b) coating said outer surface with a copper oxide layer;

(c) polishing said copper oxide layer; and

(d) disposing a malleable metal core in said cup-shaped jacket blank.

5,544,399

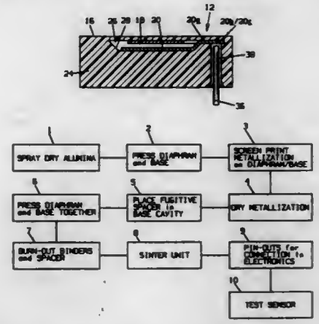
METHOD FOR MAKING A PRESSURE TRANSDUCER

Robert P. Bishop, Pembroke, and Paul L. Hainey, Douglas, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 218,785, Mar. 28, 1994, Pat. No. 5,436,795. This application Feb. 17, 1995, Ser. No. 394,526

Int. Cl.[6] H01G 7/00

U.S. Cl. 29—25.41 9 Claims



1. A method for making a capacitive transducer comprising the steps of

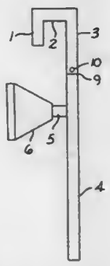
forming a flat diaphragm and a relatively thick base having a top and bottom surface and having a recess formed in the top

surface of the base and a plurality of bores extending through the base from the top to the bottom surface spaced from the recess,

applying a metalized layer on a bottom surface of the diaphragm and on the top surface of the base, the metalized layer on the diaphragm including an interior portion on the diaphragm and having a via extending to a first terminal pad adjacent to and spaced from the outer periphery of the diaphragm, the metalized layer also including a second terminal pad being disposed adjacent to and spaced from the outer periphery and spaced from the first terminal pad,

the metalized layer on the top surface of the base including a portion on the top surface of the base within the recess with a via extending out of the recess to a first joinder pad on the base adjacent to and spaced from the outer periphery of the base, placing the diaphragm onto the top surface of the base with the interior portion of the metalized layer on the bottom surface of the diaphragm aligned with the metalized layer on the top surface of the base within the recess and the first terminal pad aligned with a first bore of said plurality of bores and the second terminal pad aligned with the first joinder pad and a second bore of said plurality of bores, placing conductive means into the bores in conductive engagement with the first and second terminal pads and inserting an electrically conductive pin in each of the first and second bores, each pin having a distal free end disposed within the conductive means in the respective bore adjacent the top surface thereof, to form a continuous electrical path from a terminal pin, through conductive means to the first terminal pad on the bottom surface of the diaphragm and from another conductive pin through conductive means to the second terminal pad and from there to the first joinder pad, via and metalized layer on the top surface of the base within the recess, and heating the diaphragm and base to form electrically conductive paths of the metalized layers and joining the diaphragm and base together.

5,544,400
ROTARY JOINT INTERNAL SPRING COMPRESSOR
John E. Wells, 124 Lakeland Dr., West Monroe, La. 71291
Filed Nov. 7, 1994, Ser. No. 335,251
Int. Cl.[6] B23P *19/04*
U.S. Cl. 29—227 **4 Claims**



1. A maintenance tool for compressing an internal spring in a rotary joint assembly having a cover plate and internal spring pressing thereagainst, said cover plate being affixed in place on said assembly by removable fasteners, and an accessible movable member available external to the assembly for compressing the internal spring during maintenance assembly and disassembly of the rotary joint, comprising in combination:

a first manually operable compression lever arm member coupled to a second anchor lever arm member by a hinge,

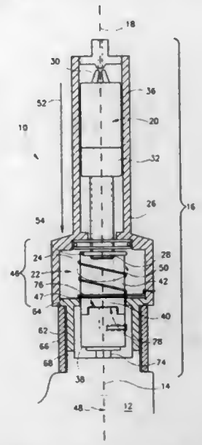
engagement means coupled to the first lever arm member remote from the hinge and adapted to engage and move said movable member into a position compressing the spring,

anchoring means coupled to a position on said second anchor lever arm at a position remote from the hinge adapted to engage the rotary joint for supporting the maintenance tool,

said lever arms having said engagement means and said anchoring means respectively positioned for engaging the rotary joint with the engagement means and the anchoring means with the lever arms at the hinge substantially perpendicularly disposed, and

a manual operating handle extension portion on the first lever arm member extending away from the rotary joint to a position operable by a maintenance worker to compress the spring while the operator adjusts the removable fasteners affixing the removable plate to the rotary joint assembly with the operator in a position lateral to the cover plate, thereby permitting safe removal and replacement of the cover plate with the internal spring compressed.

5,544,401
RIVETING DEVICE
Avraham Danino, 8 Granados St., Ramatgan 52326, Israel
Filed Apr. 21, 1995, Ser. No. 427,202
Claims priority, application Israel, Jan. 2, 1995, 112214
Int. Cl.[6] B21J *15/26*
U.S. Cl. 29—243.526 **15 Claims**



1. A power-driven riveting attachment for mounting onto a unidirectional rotational power source having a rotational output along a rotation axis, said attachment comprising:

rivet holding and pulling means mounted for axial translation along a work axis between extended and retracted positions, said rivet holding and pulling means having a rearwardly extending threaded shank integrally formed therewith, said rivet holding and pulling means being restrained from rotation about said work axis;

transmission means for selectable operation by the rotational power source, and threadedly engaged with said threaded shank along said axis, operation of the rotational power source causing rotation of said transmission means aboot said work axis in a first direction, thereby to cause a linear translation of said threaded shank and thus said rivet holding and pulling means along said work axis in a corresponding first axial direction, from the extended to the retracted position; and

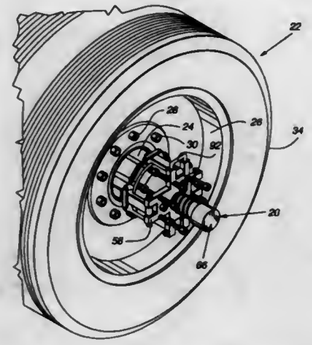
windable resilient return means associated with said transmission means and which, when the rotational power source is operated so as to rotate said transmission means, is operative to be wound, and which, when said transmission means is disengaged from the rotational power source, is operative to rotate said transmission means in a second, reverse direction, thereby to cause a corresponding linear translation of said rivet holding and pulling means in a second axial direction, thereby to return said rivet holding and pulling means from the retracted to the extended position;

and wherein said transmission means comprises:

a cylindrical spindle restrained against linear translation along said work axis and having formed therein an internal screw thread for threaded engagement with said threaded shank; and

coupling means having a first portion associated with said spindle and a second portion associated with said power source and couplable to said first portion, wherein coupling of said first and second portions of said coupling means is operative to couple the rotational power source to said spindle, thereby to cause rotation thereof.

5,544,402
AXLE PULLER
William B. O'Neil, P.O. Box 1144, Fort Morgan, Colo. 80701
Filed Jan. 17, 1995, Ser. No. 372,972
Int. Cl.[6] B23P *19/04*
U.S. Cl. 29—261 **6 Claims**



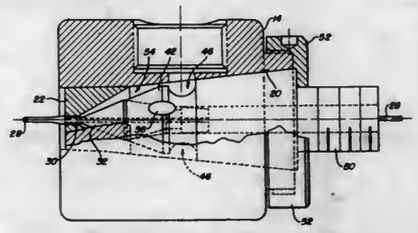
1. An axle puller for removing an axle from a wheel assembly, the axle having an axle plate fixed to an axle shaft extending axially of the wheel assembly, the axle plate defining a plurality of apertures, and the wheel assembly having a hub and an axle housing fixed to a vehicle and defining an axial cylindrical cavity for slidably receiving the axle shaft, a plurality of lug bolts affixed to and extending axially outwardly from the hub, each-having an axially outer end; the axle plate being positioned axially outwardly from the hub and the lug bolts extending through the apertures in the axle plate when the axle shaft is inserted into the cylindrical cavity, the axle plate having an axially inner surface proximate to the hub, and an axially outer surface facing outwardly from the hub, the axle puller comprising in combination:

a. a main body arranged to be positioned axially outwardly of the axle plate;

b. a plurality of book-arms, each with an axially inner end and an axially outer end, said axially outer ends being pivotally attached to said main body, said axially inner ends each defining a radially inwardly extending protrusion, said protrusion engaging the axially inner surface of the axle plate to operably and releasably attach the main body to the axially inner surface of the axle plate, and wherein said axially inner ends of said hook-arms are resiliently biased to a radially inner position defined by contact with said axle plate; and

c. axially adjustable means attached to the main body for engaging at least one lug bolt and biasing the main body axially away from the axle plate to separate the axle plate from the hub.

5,544,403
METHOD FOR REMOVING ELEMENTS FROM BORE OF CROSS-HEAD DIE BODY
James A. Milliman, P.O. Box 109, Camden, N.Y. 13316
Filed Jun. 10, 1994, Ser. No. 258,473
Int. Cl.[6] B23P *19/00;* **B05L** *3/02;* **A23G** *1/22*
U.S. Cl. 29—426.5 **4 Claims**



1. A method of releasing an internal element of a cross-head die assembly from mating engagement of a frustoconical, external surface of said element with an essentially identical, frustoconical, internal surface of an axial bore extending into the rear end of the body of said assembly, said frustoconical surfaces tapering inwardly from the rear toward the front end of said body, said method comprising:

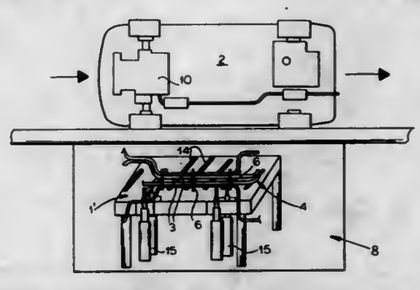
a) providing a threaded portion on said element extending outwardly from said body rear end;

b) providing an abutment surface, fixed with respect to said body, laterally adjacent said threaded portion;

c) advancing a release nut on said threaded portion into abutting relation with said abutment surface; and

d) applying a torque to said release nut tending to advance it in the direction of said abutment surface sufficient to exert an axial force on said element in a rearward direction relative to said body to release the mating engagement of said frustoconical surfaces.

5,544,404
METHOD OF INSTALLING A MOTOR-VEHICLE TUBE ASSEMBLY
Erwin Brunnhofer, Fuldabrück, Germany, assignor to Technoflow Tube-Systems GmbH, Fuldabruck, Germany
Filed Jan. 23, 1995, Ser. No. 376,370
Claims priority, application Germany, Feb. 17, 1994, 44 04 879.3
Int. Cl.[6] B21D *39/03*
U.S. Cl. 29—430 **6 Claims**



1. In a method of manufacturing a motor vehicle having fluid-using elements where the vehicle is moved as it is being made past a station, the improvement comprising the steps of:

delivering to the station an assembly having

a plurality of substantially straight and longitudinally extending tubes having ends,

respective fittings on the ends adapted to be secured to the elements of the vehicle, and

transverse cleats laterally interconnecting the tubes into the assembly;

plastically bending at least some of the tubes at the assembly station;

fitting the assembly with the bent tubes to the vehicle at the station;

securing the fittings to the respective elements; and

fastening at least one of the cleats to the vehicle.

5,544,405

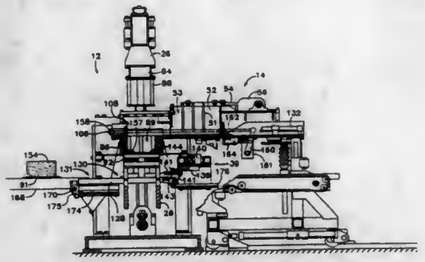
METHOD FOR FORMING CONCRETE PRODUCTS

Allen Anseth, Woodland, and Robert A. Schmitt, Vancouver, both of Wash., assignors to Columbia Machine, Inc., Vancouver, Wash.

Division of Ser. No. 193,272, Feb. 7, 1994, Pat. No. 5,395,228. This application Jul. 28, 1994, Ser. No. 282,427

Int. Cl.[6] B23P *19/04;* **B28B** *15/00*

U.S. Cl. 29—467 **3 Claims**



1. A method for aligning a cement mold box in a concrete product forming machine, the mold box including a head assembly and a mold assembly, comprising:

locating the head assembly in a predetermined alignment in relation to the mold assembly;

locking the head assembly and mold assembly together in the predetermined alignment;

mounting the locked head assembly to a vertically displaceable upper beam of the concrete product forming machine and mounting the locked mold assembly to a stationary frame of the concrete product forming machine;

unlocking the head assembly from the mold assembly while both the head assembly and the mold assembly remain locked to the concrete product forming machine; and

moving the head assembly with the upper beam and holding the mold assembly to the frame in the predetermined aligned position while forming concrete products with the concrete product forming machine.

5,544,406

TUBE FITTING ASSEMBLY METHOD

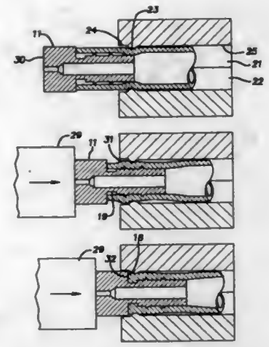
Ralph G. Ridenour, Mansfield, and Dennis W. Kerr, Ashland, both of Ohio, assignors to Universal Enterprises, Inc., Mansfield, Ohio

Filed Apr. 26, 1994, Ser. No. 233,846

Int. Cl.[6] B21D *39/00*

U.S. Cl. 29—520 **20 Claims**

1. A method of assembling a malleable tube to a rigid fitting, the fitting having an external surface with at least one barb thereon, said at least one barb having a locking face facing away from a forward end of the fitting and a sloping face facing the forward end of the fitting, and the fitting having an abutment facing the forward end of the fitting and located rearward of the barb, and said method comprising the steps of:



placing the tube over the forward end of the fitting and the at least one barb and engaging the abutment;

gripping the tube with jaws which have an inward nose projection of a small axial extent at about the forward end of the fitting;

longitudinally moving the fitting and the tube relative to the jaws until the nose projection has relatively moved past the at least one barb; and

guiding the tube with a rear portion of said jaws during the step of relative longitudinal movement.

5,544,407

CONTINUOUS RIVETING METHOD FOR FASTENING BLIND RIVETS

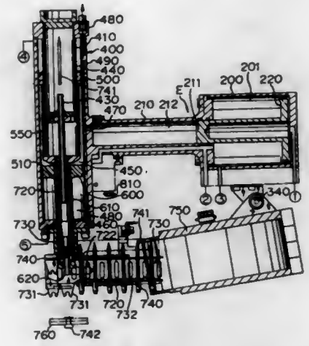
Masatoshi Obuchi, Koriyama, and Masaru Matsumoto, Machida, both of, Japan, assignors to Opt Engineering Co., Ltd., Koriyama, Japan

Continuation of Ser. No. 92,201, Jul. 14, 1993, abandoned. This application May 24, 1995, Ser. No. 449,484

Claims priority, application Japan, Dec. 29, 1992, 4-360303

Int. Cl.[6] B21J *15/06*

U.S. Cl. 29—525.06 **8 Claims**



1. A continuous riveting method for fastening conventional blind rivets, each mounted in sequence by a pair of tabs with each blind rivet in generally spaced parallel relationship to each other on a continuous carrier, comprising the steps of:

positioning a blind rivet having a bead and an elongate stem into alignment with a hole in a workpiece to be riveted at a riveting station embodying a nose piece having an elastic ring, and jaws having through in-line apertures;

placing the blind rivet gripped by said jaws into said hole with said head abutting against said workpiece and said stem extending along a direction generally away from said workpiece;

initially pulling said stem:substantially along said direction while maintaining said head of said rivet against said workpiece to effect riveting action,

further tearing and pulling said stem so as to separate a remaining torn stem core from said blind rivet;

releasing and directing said torn stem core into a torn stem core storage compartment and maintaining said blind rivet in place with said elastic ring, and bending said pair of tabs as said nose piece and jaws descend, and releasing said torn stem core while vacuuming said torn stem core storage compartment for pulling in and receiving and storing a plurality of said torn stem cores;

and clearing said riveting station so as to allow a further blind rivet to be prepared for riveting.

5,544,408

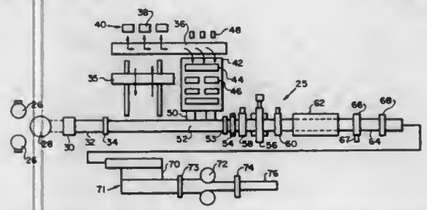
INTERMEDIATE THICKNESS SLAB CASTER AND INLINE HOT STRIP AND PLATE LINE WITH SLAB SEQUENCING

George W. Tippins, and John E. Thomas, both of Pittsburgh, Pa., assignors to Tippins Incorporated, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 123,149, Sep. 20, 1993, Pat. No. 5,414,923, which is a continuation of Ser. No. 881,615, May 12, 1992, Pat. No. 5,276,952. This application Jan. 11, 1995, Ser. No. 371,407

Int. Cl.[6] B21B *1/00;13/22*

U.S. Cl. 29—527.7 **10 Claims**



1. An intermediate thickness slab caster and inline hot strip and plate line comprising:

a) an intermediate thickness continuous strip caster;

b) an inline cutoff downstream of said caster for cutting an intermediate thickness slab;

c) a feed and run back table inline with said cutoff;

d) a slab transfer table adjacent said feed and run back table operable transverse of said feed and run back table to selectively remove slabs from said feed and run back table;

e) a slab conveyor table adjacent said slab transfer table and adapted to receive slabs from said slab transfer table;

f) a slab collection and storage area adjacent said slab conveyor table adapted to receive slabs from said slab conveyor table;

g) a reheat furnace adjacent said slab conveyor table adapted to receive slabs from said slab conveyor table, said furnace having an exit end positioned adjacent said feed and run back table;

h) a hot reversing mill means inline with said feed and run back table for reducing a slab on said feed and run back table to an intermediate product of a thickness sufficient for coiling in a number of flat passes; and

i) a pair of coiler furnaces positioned inline with said feed and run back table, one located upstream of said hot reversing mill means and the other located downstream, said coiler furnaces capable of receiving and paying out said intermediate product as it is passed between said coiler furnaces and through said hot reversing mill means so as to be reduced to an end product.

4. A method of processing metal slabs comprising the steps of:

a) continuously casting an intermediate thickness strand;

b) cutting said strand into a slab of predetermined length;

c) selectively either:

i) removing said slab from an inline continuous processing line including a hot reversing mill having a coiler furnace on each of an upstream and downstream side thereof and feeding said slab into at least one heating furnace, and extracting said slab to be worked from said heating furnace onto said continuous processing line; or

ii) directly feeding said slab to said mill bypassing said furnace;

d) flat passing said slab to be worked back and forth through said mill to form an intermediate product of a thickness sufficient for coiling;

e) coiling said intermediate product in one of said coiler furnaces; and

f) passing said coiled intermediate product back and forth through said mill to reduce said coiled intermediate product to an end product of a thickness of equal to or less than about 0.060 inch, said intermediate product being collected in and fed out of each of said coiler furnaces on each pass through said hot reversing mill.

5,544,409

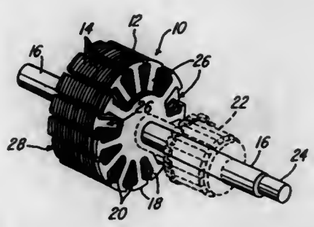
METHOD FOR MANUFACTURING ARMATURES

John M. Beakes, Fairborn, and E. Wayne Zicht, Huber Heights, both of Ohio, assignors to Globe Products Inc., Huber Heights, Ohio

Division of Ser. No. 267,285, Jun. 28, 1994, Pat. No. 5,500,993, which is a continuation of Ser. No. 234,136, Apr. 28, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 473,083

Int. Cl.[6] H02K *15/02*

U.S. Cl. 29—548 **4 Claims**



1. A method for rotationally orienting an armature shaft having a cam body extending from one end thereof before said shaft is inserted into a shaft-receiving transfer block of an armature lamination and shaft assembly machine so that said cam body has a desired angular orientation relative to the axis of rotation of said armature shaft, said method comprising the steps of:

providing a powered ram movable along a predetermined axis, said ram having a nosepiece provided with a socket having a size and shape to slidably receive the cam body, with said socket being located relative to said predetermined axis in the same rotational orientation as said desired orientation of said cam body relative to said axis of rotation of said armature shaft;

providing an abutment in confronting alignment with said ram;

supporting said armature shaft so that its axis of rotation is aligned with said predetermined axis;

actuating said ram so that said nosepiece presses on said one end of said armature shaft and the opposite end thereof is extended into engagement with said abutment; and

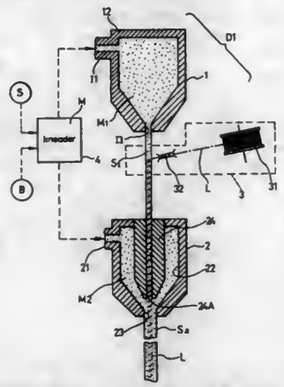
while maintaining pressure on the ends of said armature shaft, rotating said armature shaft until said cam body is rotationally aligned with said socket in said ram nosepiece whereupon said ram nosepiece slides over said cam body.

5,544,410

METHOD OF MANUFACTURING ELECTRONIC PARTS

Ikuo Kato, and Kenichiro Nogi, both of c/o Taiyo Yuden Kabushiki Kaisha of 6-16-20, Ueno, Taito-ku, Tokyo, Japan

Filed Mar. 29, 1994, Ser. No. 219,523
Int. Cl.[6] H01F *41/06*
U.S. Cl. 29—605 3 Claims



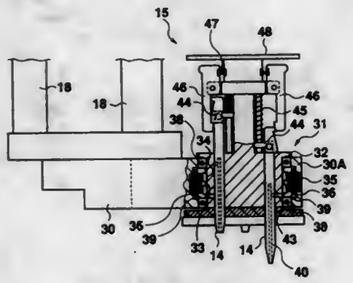
1. A method for making electronic parts comprising:
molding a first molded component as a core by kneading and shaping a first magnetic material and a binder,
spirally winding a conductive material on the periphery of said first molded component with a constant winding pitch,
molding a cover component by covering the wound conductive material as well as said first molded component with a kneaded mixture of a second magnetic material and a binder, thereby forming a second molded component comprising said cover component and said first molded component,
integrally sintering said second molded component,
cutting said second molded component into tips of desired length to thereby partially expose said conductive material out of two end surfaces of said second molded component, and
fixing terminal electrodes to said conductive material at each of said end surfaces of said second molded component.

5,544,411

AUTOMATIC ELECTRONIC PARTS-MOUNTING APPARATUS

Yoshinori Kano, and Masayuki Mohara, both of Ooizumi-machi, Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed May 20, 1994, Ser. No. 246,760
Claims priority, application Japan, May 26, 1993, 5-124320
Int. Cl.[6] B23P *19/04*
U.S. Cl. 29—740 12 Claims



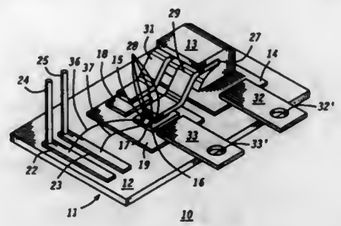
1. An automatic electronic parts-mounting apparatus for mounting electronic parts supplied from a parts feeder at predetermined positions on a printed substrate, said apparatus comprising:
an adsorptive nozzle for adsorbing the electronic parts one by one;
an adsorptive mechanism for adsorbing and releasing the electronic parts to and from the adsorptive nozzle;
a parts-adsorbing station for holding the electronic parts supplied from the parts feeder;
a parts-recognizing unit for recognizing the state of the electronic parts being adsorbed by the adsorptive nozzle in said parts-adsorbing station;
a parts-mounting station for holding the printed substrate on which the electronic parts adsorbed by the adsorptive nozzle are to be mounted;
a nozzle head having a nozzle-rotating motor for correcting the position of the adsorbed electronic parts by rotating said adsorptive nozzle within a plane being perpendicular to a nozzle axis of said adsorptive nozzle in accordance with the adsorbed state of the electronic parts recognized by said parts-recognizing unit, the nozzle-rotating motor including a stator and a rotor, wherein at least two adsorptive nozzles are provided at the outer periphery of the rotor, and each adsorptive nozzle is capable of moving toward and away from the rotor;
a movable nozzle base containing said nozzle head for sequentially moving said nozzle head toward said stations; and
a head up/down mechanism for vertically moving said nozzle head, said head up/down mechanism moved to a predetermined position toward an adsorbing position or a releasing position of the electronic parts.

5,544,412

METHOD FOR COUPLING A POWER LEAD TO A BOND PAD IN AN ELECTRONIC MODULE

Guillermo L. Romero, and Joe L. Martinez, Jr., both of Phoenix, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 24, 1994, Ser. No. 247,944
Int. Cl.[6] H05K *3/30*
U.S. Cl. 29—832 20 Claims



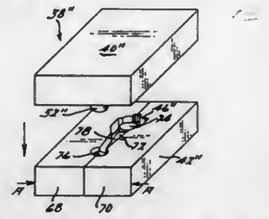
1. A method for coupling a power lead to a bond pad in an electronic module, comprising the steps of:
forming a baseplate having a top surface and a bottom surface;
mounting at least one isolation structure to the top surface, the at least one isolation structure having a first region electrically isolated from a second region;
mounting a first clip support to the first region of the at least one isolation structure, wherein the first clip support is coupled to the first portion of the top surface by the at least one isolation structure;
coupling the bond pad to the second region of the at least one isolation structure;
electrically coupling the power lead to the first clip support; and
electrically coupling the first clip support to the bond pad with a clip, wherein the power lead becomes electrically coupled to the bond pad, and wherein the first clip support and the first and second regions of the at least one isolation structure are electrically conductive.

5,544,413

METHOD AND APPARATUS FOR MANFACTURING A FLASHLESS METAL CONNECTING ROD

Robert J. Stevens, and Terrance M. McInerney, both of Columbus, Ind., assignors to Omni Forge, Inc., Remington, Ind.

Filed Jun. 10, 1994, Ser. No. 258,284
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—888.092 14 Claims



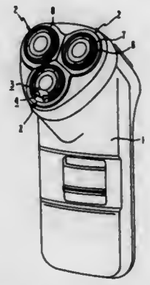
1. A method of manufacturing a flashless metal connecting rod for an internal combustion engine of the type having a one-piece construction and being fracturable into a cap portion and a body portion, the method comprising the steps of:
(a) providing a preform;
(b) heating said preform;
(c) sequentially forging the preform between at least one multi-action die set to form a final flashless forging; and
(d) controlled cooling of the final forging; wherein said at least one multi-action die set includes a lower die having independently movable first and second portions and an independently movable upper die such that said first and second portions of said lower die are urged together as said upper die is moved toward said lower die.

5,544,414

SHAVING APPARATUS HAVING CONTOURED HEADS

Jacobus N. Dekker, Drachten; Elwin De Valk, Groningen, and Fred Fraij, Hoogeveen, all of, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 3, 1994, Ser. No. 333,679
Claims priority, application Belgium, Nov. 5, 1993, 09301225
Int. Cl.[6] B26B *19/14*
U.S. Cl. 30—43.6 3 Claims



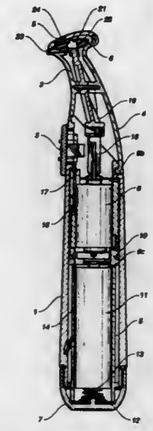
1. A shaving apparatus having at least one shaving unit comprising an external shaving member and an internal shaving member which is rotatably drivable relative to the external shaving member, the external shaving member having an outwardly directed annular wall portion with lamellae which extend in substantially radial directions and between which hair-entry apertures are formed, the edges of the annular wall portion having a rounding radius of 0.3–0.7 mm viewed in a radial direction, and the internal shaving member comprising cutters having cutting edges which describe an annular path adjoining the inner side of the annular wall portion of the external shaving member, characterized in that, viewed in a radial cross-section, at least a part of the outer side of the annular wall portion, which part is situated opposite the annular path of the cutting edges, has an outwardly directed arcuate shape, the perpendicular distance between the axially outermost point of this arcuate part and a line through those points of the outer side of the annular wall portion, which are situated directly opposite the inner diameter and the outer diameter, respectively, of the annular path, being 12–100 μm.

5,544,415

WATER-PROOF AND WASHABLE ELECTRIC RAZOR

Joseph Huang, Taipei, Taiwan, assignor to Kunnex Incorporated, Taipei, Taiwan

Filed Dec. 6, 1994, Ser. No. 349,890
Int. Cl.[6] B26B *19/02*
U.S. Cl. 30—43.92 3 Claims

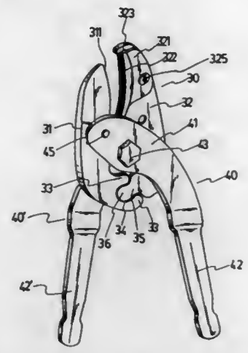


1. A waterproof and washable electric razor comprising:
an inner shell having an upper chamber and a lower chamber on an interior of said inner shell, said lower chamber receiving a battery therein, said upper chamber receiving a motor therein, a spring piece being fitted in said upper chamber, said spring piece extending into said lower chamber so as to connect with a negative terminal of said battery, said spring piece connecting with a positive pole of said motor so as to transfer energy from said battery to said motor, said inner shell being positioned within a hollow generally cylindrical grip, said motor having a shaft interconnected with a swinging lever, said swinging lever connected to a driving block so as to move a moving blade back and forth relative to a non-moving blade, said moving blade being positioned in close proximity to said non-moving blade, a slide member movably positioned on said inner shell and in said cylindrical grip so as to control a contact between said spring piece and the pole of said motor, a button secured to said slide member and disposed on an outer surface of said cylindrical grip, said button arranged so as to maintain contact with said spring piece by a reverse hook penetrating through a hole on said cylindrical grip;
a waterproof socket positioned on a surface of said inner shell so as to prevent water infiltration into said inner shell, a rubber collar disposed between an end of said cylindrical grip and said battery, said swinging lever having a center of rotation disposed in-between a front neck and a back neck of said cylindrical grip, said back neck having a shaft hole at its top end for receiving a shaft at an end of a blade lid, said blade lid receiving said spring piece and said moving blade and said non-moving blade through a pair of reverse hooks in a blade fixing piece, said blade fixing piece having sides exposing

themselves outside of said blade lid and said front neck and said back neck, said pair of reverse hooks being pressable by an outside force such that said blade lid is uncovered outside said front neck; and

a claw on an inner wall of a lower portion of each of said front and back necks so as to connect with or disconnect from a concave surface on an upper edge of said cylindrical grip so as to open an interior of said cylindrical grip.

5,544,416
SHEARS
Mao-Sen Lin, No. 8, Kung Yeh Rd, Chung Ho Tsun, Lung Ching Hsiang, Taichung Hsien, Taiwan
Filed Mar. 21, 1995, Ser. No. 407,848
Int. Cl.[6] B26B *17/00*
U.S. Cl. 30—193 **1 Claim**



1. A shears comprising a cutting unit consisting of a first blade and a second blade, and two pivoted actuating bars turned relative to each other to drive said first and second blades, causing them to make a scissors action for cutting things, wherein:

said actuating bars each comprises a coupling portion at one end and a handgrip portion at an opposite end, the coupling portions of said actuating bars having a respective middle part pivoted to each other by a pivot and a respective front end pivoted to one blade of said cutting unit;

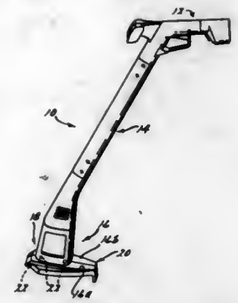
said first blade comprises two projecting portions at one end, a smoothly curved side notch defined between said projecting portions, and a smoothly curved cutting edge at an opposite end along one side;

said second blade comprises a neck portion at one end, a smoothly curved locating head extended from said neck portion, and an anvil at an opposite end facing said smoothly curved cutting edge of said first blade, said smoothly curved locating head being inserted into said curved side notch and turnable therein it to limit the turning angle of said first and second blades, said anvil having a plurality of anti-skid teeth for action against said smoothly curved cutting edge.

5,544,417
MULTI-PURPOSE MOTOR MOUNTING SYSTEM FOR A STRING TRIMMER
Sheldon Atos, Mallorytown, and Jacob Prosper, Brockville, both of, Canada, assignors to Black & Decker Inc., Newark, Del.
Filed Oct. 20, 1994, Ser. No. 326,729
Int. Cl.[6] B26B *25/00*
U.S. Cl. 30—276 **20 Claims**

1. An outdoor power tool for trimming vegetation, comprising:

a first housing section;



a second housing section securable to said first housing section;

each of said first and second housing sections including an interior surface wall;

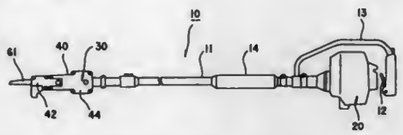
each of said first and second housing sections including a generally circumferential groove formed therein, each said groove further being positioned such that when said first and second housing sections are secured together said grooves are disposed within a common plane to effectively form a generally circumferential groove extending about substantially an entire length of each said interior surface wall of each of said first and second housing sections;

a motor disposed within said first and second housing sections;

a cutting implement operationally coupled to said motor so as to be drivable rotationally by said motor; and

a motor mounting assembly including a plate member fixedly secured to said motor, said plate member being of dimensions enabling said plate member to be inserted at least partially within said grooves within said first and second housing sections such that said plate member is supported at a plurality of circumferential locations about said interior surface wall of each of said first and second housing sections to thereby support said motor fixedly relative to said first and second housing sections without said motor contacting any portion of said interior surface wall of said first housing section or any portion of said interior surface wall of said second housing section.

5,544,418
BRANCH TRIMMER
Kazuo Harada, 3-10, Uraguoka 1-chome, Yokosuka-shi, Kanagawa, Japan
Filed May 30, 1995, Ser. No. 453,159
Claims priority, application Japan, May 31, 1994, 6-118731
Int. Cl.[6] B27B *3/00*
U.S. Cl. 30—392 **6 Claims**



1. A branch trimmer, comprising:

a momentum converter for converting rotary motion of the output of a power source into linear reciprocation;

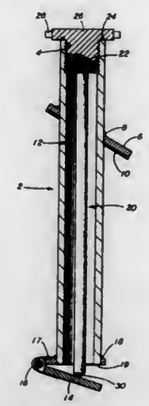
a saw blade mounted for slidable reciprocation in a longitudinal direction thereof under the application of power transmitted from said momentum converter;

a gear case body for accommodating said saw blade and the momentum converter; and

a gear case cover for covering a bottom portion of said gear case body to keep out debris harmful to gears in said gear case body, wherein said gear case cover is divided into a plurality

of parts to facilitate blade removal and replacement, a first part of which is formed such that the outline thereof is slightly larger than the outline of said saw blade disposed in said gear case body, when said saw blade is extended to its maximum position and at least one other part that encloses the gears such that said first part may be removed to replace the saw blade without exposing any gears.

5,544,419
DIPSTICK ASSEMBLY
Sean G. Smeltzer, Youngwood, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.
Filed Apr. 28, 1995, Ser. No. 430,233
Int. Cl.[6] G01F *23/04*
U.S. Cl. 33—731 **11 Claims**



1. An improved dipstick assembly for measuring a liquid level in a chamber containing both a liquid and a gas which may be measured even when such liquid is agitated and when such gas may have a pressure differing from atmospheric, said improved dipstick assembly comprising:

(a) a tube having a first predetermined length insertable into an interior portion of such chamber and a second predetermined length thereof which will extend outwardly from an opening provided through a wall portion of such chamber which will receive said tube therein, said tube having an upper end, a lower end, an inside surface, an outside surface and a predetermined cross sectional shape;

(b) an attachment means engageable with said outer surface of said tube at a predetermined distance from said upper end thereof and with an outer surface of such wall portion of such chamber for attaching said tube to such chamber adjacent such opening and in a position such that said lower end of said tube extends into such liquid at a point which is a lowest level of such liquid to be measured;

(c) a first sealing means engageable with such outer surface of such wall portion adjacent such opening and with at least one of said outer surface of said tube adjacent an inner surface of said attachment means and said inner surface of said attachment means for providing a gas-tight seal of said dipstick assembly to such chamber;

(d) a liquid level indicating means having an upper end, a lower end and a predetermined cross sectional shape, a major portion of said indicating means being insertable within said tube for indicating a level of such liquid contained within such chamber;

(e) a first portion of a second sealing means disposed on said inner surface of said tube adjacent said upper end thereof and a second portion of said second sealing means disposed on said indicating means adjacent said upper end thereof for providing at least a partial seal between said indicating means and said tube over a predetermined range of relative elevations between said indicating means and said tube as said indicating means is being withdrawn from said tube;

(f) a third sealing means disposed adjacent said upper end of said indicating means for providing a seal between said indicating means and said tube when said indicating means is fully inserted into said tube;

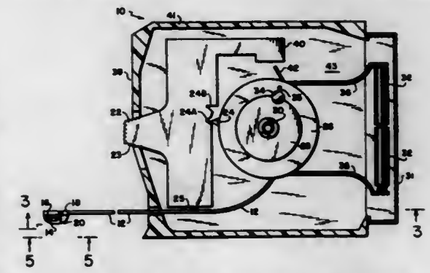
(g) a valve seat formed on said lower end of said tube;

(h) a fourth sealing means disposed adjacent said lower end of said tube and having a single movable member resiliently pressed against said valve seat on said tube for sealing said tube when said indicating means is withdrawn and for permitting liquid communication between such chamber and said tube when said single movable member is pressed away from said valve seat by insertion of said indicating means into said tube; and

(i) a gas pressure equalization means formed through a wall portion of said tube at a predetermined position on said tube adjacent such gas in such chamber for equalizing gas pressure between such chamber and said tube;

said fourth sealing means having a hinged cover plate resiliently mounted to said lower end of said tube and adapted to press against said valve seat when said indicating rod is withdrawn, but pressed away from said valve seat when said rod is inserted to permit liquid communication between such chamber and said tube.

5,544,420
COMBINATION TAPE MEASURE AND LIGHT BULB
Young J. Choi, 168 Manito Ave., Oakland, N.J. 07436
Filed Feb. 14, 1995, Ser. No. 388,363
Int. Cl.[6] G01B *3/10;* **G01D** *11/28*
U.S. Cl. 33—760 **11 Claims**



1. A combination tape measure and light bulb, comprising:

(a) a tape measure having at least a portion of said tape measure being electrically conductive substantially along the full length of said tape measure;

(b) a spool, said tape measure being wound upon said spool, said tape measure being connected to said spool at one end, and free of said spool at its other end, said tape measure fabricated from a sufficiently rigid material such that when it is extended outward from said spool in a substantially straight plane, said tape measure is capable of self sustaining itself, in said plane, for distances up to at least two feet;

(c) a light bulb being affixed to said free end of said tape measure;

(d) an electrically conductive strip of material being secured substantially along a side of said tape measure and the full length of said tape measure;

(e) means for electrically connecting said light bulb between said portion of said tape measure which is electrically conductive and said conductive strip of material; and,

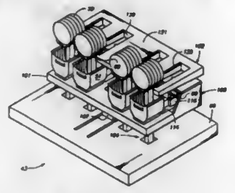
(f) means for providing electric current to said strip of material and said portion of said tape measure which is electrically conductive so that said light bulb is lighted when said electric current is provided.

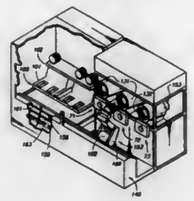
5,544,421

SEMICONDUCTOR WAFER PROCESSING SYSTEM

Raymon F. Thompson, Lakeside; Robert W. Berner, Kalispell; Gary L. Curtis, Kila; Stephen P. Culliton, Kalispell, and Blaine G. Wright, Whitefish, all of Mont., assignors to Semitool, Inc., Kalispell, Mont.

Filed Apr. 28, 1994, Ser. No. 236,424
Int. Cl.[6] F26B *17/24*
U.S. Cl. 34—58 **38 Claims**





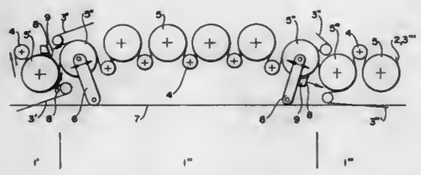
1. A semiconductor processor for processing wafers, comprising:
a frame;
an enclosure connected to the frame for providing an enclosed work space;
an interface port in said general enclosure through which wafers are moved relative to said work space;
an interface for moving wafers through said interface port relative to said work space;
a wafer transfer for transferring wafers from a wafer carrier to a wafer tray;
a plurality of processing stations; said processing stations having access openings which open to the work space to allow installation and removal of wafers relative to said processing stations;
a conveyor for conveying wafers loaded onto said wafer trays to and from said plurality of processing stations.

5,544,422

DRYING SECTION

Werner Leitenberger, Schlier-Wetzisreute, Germany, assignor to Volth Sulzer Paplermaschinen GmbH, Heidenheim, Germany

Filed Jan. 24, 1995, Ser. No. 377,333
Claims priority, application Germany, Feb. 1, 1994, 44 02 928.4
Int. Cl.[6] F26B *11/02*
U.S. Cl. 34—117 **12 Claims**



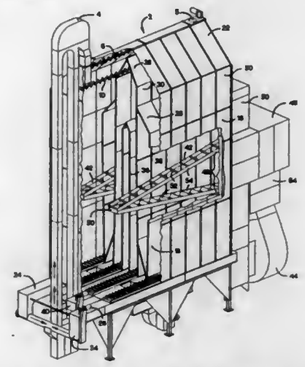
1. A drying section of a papermaking machine, said drying section being comprised of several drying groups, a paper web, wherein said paper web, together with at least one endless dry sieve associated with each of the several drying groups, is alternately guided over reversing rolls and heated by drying cylinders, with the paper web being located between the dry sieves and the drying cylinders, wherein within each drying group only one side of the paper web comes into contact with the drying cylinders, with the side being reversed between each drying group, with the paper web extending directly from a last drying cylinder of one drying group to a first drying cylinder of a following drying group, wherein the last drying cylinder of the one drying group is arranged at a short distance from the first drying cylinder of the following drying group, and wherein at least one of the last drying cylinder of the one drying group and the first drying cylinder of the following drying group is movably arranged for changing the distance between said last and said first drying cylinders.

5,544,423

GAS DISTRIBUTOR

Christianus M. T. Westelaken, P.O. Box 1349, Grand Bend, Ontario, Canada

Filed Dec. 9, 1994, Ser. No. 353,072
Int. Cl.[6] F26B *17/12*
U.S. Cl. 34—174 **21 Claims**



1. A dryer for particulate material comprising a chamber for drying said particulate material, said chamber having a particulate material inlet, a particulate material outlet, a drying gas inlet and an exhaust gas outlet, said inlet containing a gas distributor for conducting gas in a flow direction along a flow path from an inlet end to a terminal end of the distributor said distributor containing a plurality of gas deflectors spaced apart to slice diagonally across the gas flow path in a gas flow direction from the inlet end of the distributor to the terminal end of the distributor, said deflectors being oriented to direct gas flow exiting the distributor in a direction transverse to the direction of gas flow entering the distributor.

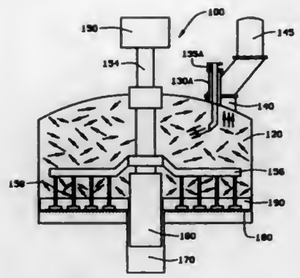
5,544,424

AGGRESSIVE CONVECTIVE DRYING IN A CONICAL SCREW TYPE MIXER/DRYER

Len W. Haleen, Edwardsville, Ill., assignor to Mallinckrodt Medical, Inc., St. Louis, Mo.

Filed May 17, 1995, Ser. No. 443,280
Int. Cl.[6] F26B *11/12*
U.S. Cl. 34—181 **11 Claims**

1. A method of aggressive drying of chemical compounds in a conical screw type mixer modified for use as a dryer comprising:
a cone shaped compression vessel;
a cover attached to and covering said vessel, said cover including an inlet port for the introduction of drying medium to said vessel and an outlet port for the release of vaporized liquids from a product charged to said vessel;
an discharge port located at the lower end of said vessel for discharge of product from said vessel;
an screw agitator housed within said vessel, said agitator including a helical blade for mixing product charged to said vessel;
at least one drive means attached to said screw agitator and adapted to drive said agitator; and
means to create turbulence within said vessel during a drying cycle said method comprising:
charging product to be dried to said vessel;
covering said vessel with said cover;
starting said drive means to drive said screw agitator to mix said product;
creating turbulence within said vessel;
removing volatiles evaporated from said product through said outlet port;
continuing said steps of driving said screw agitator and creating turbulence and removing volatiles until the volatile level within said product have been decreased to a predetermined level;
stopping turbulence within said vessel;
stopping said drive means; and
removing said product from said vessel wherein said means to create turbulence comprises at least one high velocity nozzle for injecting drying medium at high velocity into said vessel.

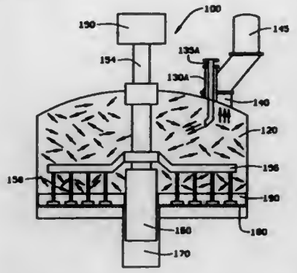


5,544,425

AGGRESSIVE CONVECTIVE DRYING IN A NUTSCHE TYPE FILTER/DRYER

Len W. Haleen, Edwardsville, Ill., assignor to Mallinckrodt Medical, Inc., St. Louis, Mo.

Filed May 17, 1995, Ser. No. 443,250
Int. Cl.[6] F26B *11/00*
U.S. Cl. 34—187 **11 Claims**



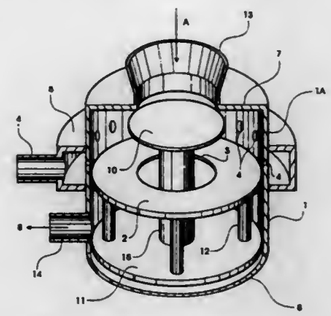
1. A method of aggressive drying of chemical compounds in a nutsche type filter modified for use as a dryer comprising:
a compression vessel having walls and a bottom;
a filter plate located on said bottom of said vessel;
a cover attached to and covering said vessel, said cover including an inlet port for the introduction of drying medium to said vessel and an outlet port for the release of vaporized liquids from a product charged to said vessel;
an agitator housed within said vessel, said agitator including blades for smoothing and plowing product charged to said vessel;
a drive means attached to said agitator and adapted to drive said agitator; and
means to create turbulence within said vessel during a drying cycle;
said method comprising:
charging product to be dried to said vessel;
covering said vessel with said cover;
starting said drive means to drive said agitator to smooth and plow said product;
creating turbulence within said vessel;
removing volatiles evaporated from said product through said outlet port;
continuing said steps of driving said agitator and creating turbulence and removing volatiles until the volatile level within said product have been decreased to a predetermined level;
stopping turbulence within said vessel;
stopping said drive means; and
removing said product from said vessel, wherein said means to create turbulence comprises at least one high velocity nozzle for injecting drying medium at high velocity into said vessel.

5,544,426

APPARATUS AND METHOD FOR PROCESSING MOISTENED POWDER AND GRANULAR MATERIALS

Katunori Yoshida; Ichirho Koizumi; Koiichi Kimura, and Nobuharu Moriya, all of Osaka, Japan, assignors to Fuji Pandal Kabushiki Kaisha, Osaka, Japan

Filed May 25, 1994, Ser. No. 248,966
Claims priority, application Japan, Jul. 17, 1993, 5-196818
Int. Cl.[6] F26B *5/08*
U.S. Cl. 34—314 **11 Claims**



1. An apparatus for processing moistened powder and granular materials comprising a cylindrical housing, a working plate rotatably mounted in said housing in coaxial alignment with said housing, said working plate having a central opening, means for introducing a working fluid internally into said housing above said working plate, means for supplying moistened powder and granular materials onto said working plate, and means for discharging processed materials through said opening of said working plate.

5,544,427

PROCESS FOR THE PRODUCTION OF GRANULES SUITABLE AS WETTING AGENTS, DETERGENTS AND/OR CLEANING PRODUCTS

Wilfried Raehse; Wilhelm Beck, both of Duesseldorf; Dieter Jung, Hilden, and Dieter Sonnemann, Dueselldorf, all of, Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

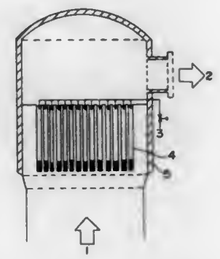
PCT No. PCT/EP93/00265, § 371 Date Aug. 12, 1994, § 102(e) Date Aug. 12, 1994, PCT Pub. No. WO93/15812, PCT Pub. Date Aug. 19, 1993

PCT Filed Feb. 4, 1993, Ser. No. 284,694

Claims priority, application Germany, Feb. 12, 1992, 42 04 090.6; Feb. 12, 1992, 42 04 035.3; Feb. 27, 1992, 42 06 050.8; Mar. 2, 1992, 42 06 495.3

Int. Cl.[6] F26B *3/08*

U.S. Cl. 34—372 **11 Claims**



1. A process for the production of pourable and free flowing granules for use as wetting agents, detergents or cleaning products comprising:

a) drying an aqueous solution or suspension of materials selected from the group consisting of wetting agents, detergents, cleaning products and mixtures thereof, in a drying vessel using a hot gas stream of superheated steam to form granules thereof,

b) terminating step a) before said granules are damaged by heat,

c) freeing said hot gas stream from entrained particles of said materials by means of filters, and

d) exposing said filters to bursts of superheated steam to remove any particles of said materials from said filters.

5,544,428

CLOTHES DRIER WITH DRYING TERMINATION DETERMINING FUNCTION

Koichi Kuroda, Gamo-gun; Yoshiaki Aoki, Otsu; Kiyokazu Fujikawa, Inukami-gun; Youzon Kawamura, Koka-gun; Tatsuya Hirota, Kyoto; Tamotsu Kawamura, Yokaich; Takashi Fukuda, Otsu; Minoru Kishi, Otsu, and Hisanori Hirose, Koka-gun, all of, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Apr. 3, 1995, Ser. No. 415,318

Claims priority, application Japan, Apr. 27, 1994, 6-090151

Int. Cl.[6] F26B *3/00*

U.S. Cl. 34—493 **6 Claims**

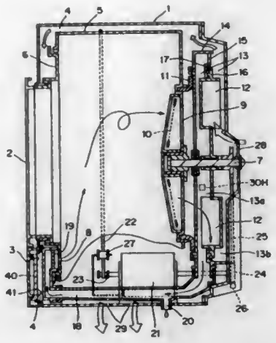
1. A clothes drier comprising:

a rotating drum comprising an air inlet and an air outlet for containing clothes;

circulating air duct means having its one end connected to the air outlet in the rotating drum and the other end connected to the air inlet in said rotating drum;

heating means provided in said circulating air duct means for heating air to provide heated air;

air blower means for circulating the heated air provided by said heating means in said circulating air duct means and said rotating drum;



dehumidifying means for dehumidifying the heated air when it goes out of said rotating drum and goes through said circulating air duct means;

a control substrate having a large thermal capacity;

first temperature detecting means for detecting the temperature of the heated air exhausted from said rotating drum;

second temperature detecting means provided outside said circulating air duct means and disposed on said control substrate for detecting the temperature of said control substrate; and

determining means disposed on said control substrate for determining whether or not drying processing is terminated on the basis of the temperature difference between temperatures respectively detected by said first temperature detecting means and said second temperature detecting means.

5,544,429

SHOE WITH NATURALLY CONTOURED SOLE

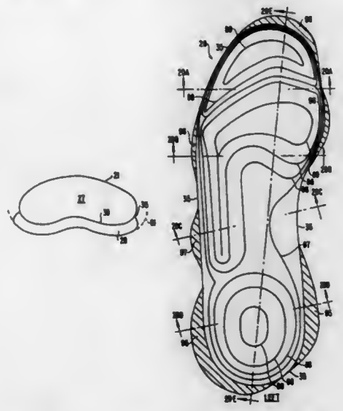
Frampton E. Ellis, III, 2895 S. Abingdon St., Suite B-2, Arlington, Va. 22206

Continuation of Ser. No. 930,469, Aug. 20, 1992, Pat. No. 5,317,819, which is a continuation of Ser. No. 239,667, Sep. 2, 1988, abandoned. This application Dec. 8, 1993, Ser. No. 162,962

The portion of the term of this patent subsequent to Jun. 7, 2011, has been disclaimed.

Int. Cl.[6] A43B *13/14*

U.S. Cl. 36—25 R **51 Claims**



1. A shoe sole, comprising:

a shoe sole with an upper, foot sole-contacting surface that conforms substantially to the shape of at least part of a sole of a wearer's foot, including at least part one curved side of the foot sole;

the shoe sole is characterized by at least a part of the load-bearing portions of the shoe sole having a substantially uniform thickness, so that a lower, ground-contacting surface substantially parallels said upper surface, when measured in frontal plane cross sections;

said shoe sole thickness being defined as the shortest distance between any point on an upper, foot sole-contacting surface of said shoe sole and a lower, ground-contacting surface of said shoe sole, when measured in frontal plane cross sections;

the substantially uniform thickness of the shoe sole, as measured in frontal plane cross sections, extends through at least one contoured side portion at least high enough to provide direct load-bearing support between sole of foot and ground through a sideways tilt of 20 degrees;

the shoe sole thickness is varying when measured in sagittal plane cross sections and is greater in a heel area than in a forefoot area; and

the substantially uniform thickness of the shoe sole is different when measured in at least two separate frontal plane cross sections wherein the shoe sole has at least one contoured side portion with the substantially uniform thickness extending through at least a sideways tilt of 20 degrees, so that there are at least two different thicknesses of the contoured side portions, when measured in frontal plane cross sections.

5,544,430

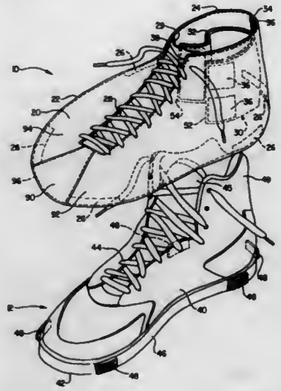
ATHLETIC SHOE COVER AND ANKLE SUPPORT COMBINATION

Joseph G. Jacko, Dallas, Tex., assignor to Jaguo, Inc., Dallas, Tex.

Filed Mar. 22, 1994, Ser. No. 216,178

Int. Cl.[6] A43B *5/00;5/18;7/20*

U.S. Cl. 36—7.1 R **18 Claims**



1. A combination shoe cover and ankle support for use on a selected shoe having an upper portion and a sole portion, the sole portion having a bottom surface and a side surface, the combination comprising:

(a) a covering member of pliable material generally having a shape conforming to the shape of the selected shoe when the covering material is placed thereover, the covering member having an open bottom end and an oppositely disposed open top end;

(b) a fastener attached to the covering member to removably fasten the covering member to the shoe, whereby the covering member is in a position that substantially covers the upper portion of the shoe without obstructing the bottom surface of the sole;

(c) a retention means for tightly retaining the top end of the covering member around the top of the upper portion of the shoe and around a user's ankle, the retention means adapted to pull the covering material snugly against the upper portion of the shoe; and

(d) a support means for supporting the user's ankle to prevent injury, the support means attached to the covering member and comprising at least one support strap that can tightly surround and support the user's ankle, wherein the support means does not cover any portion of the bottom surface of the sole.

5,544,431

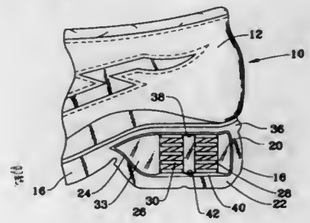
SHOCK ABSORBING SHOE WITH ADJUSTABLE INSERT

Roy Dixon, 1101 Grandview Cir., Royal Palm Beach, Fla. 33411

Filed Jun. 16, 1995, Ser. No. 491,097

Int. Cl.[6] A43B *21/30;13/28*

U.S. Cl. 36—38.0 **8 Claims**



1. A sports shoe having an upper portion forming a covering for insertion of a foot and a lower portion secured to said upper portion forming a sole for support of the foot, the improvement comprising;

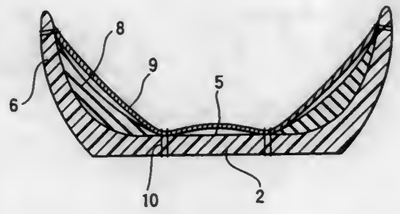
a spring biased heel section defined by a flexible rear wall having an upper edge secured to a bottom side surface of a sole support and a flexible front wall secured to said bottom side surface of said sole support, said sole support secured to said sole and said front wall spaced apart from said rear wall and adjoined thereto along a lower edge by a rigid support platform forming a chamber therebetween accessible by an aperture formed between said front and rear walls;

a plurality of coil springs having a known compression ratio in said chamber biasing said rigid support platform away from said sole; and

a spring adjustment means removably insertable into said chamber for altering said compression ratio of said coil springs;

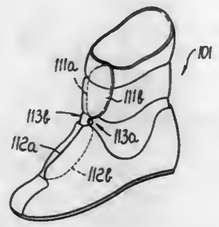
whereby said coil springs having a known compression ratio to provide a wearer of the shoe with a spring lift which reacts upon the application of weight to said springs wherein said spring adjustment means to control coil spring compression ratio allowing the wearer to personally adjust the coil spring compression ratio to accommodate the type of sporting event to be encountered.

5,544,432
INSOLE FOR SHOES PROVIDING HEEL STABILIZATION
Kenjiro Kita, Osaka, Japan, assignor to Mizuno Corporation, Osaka, Japan
Filed Dec. 13, 1994, Ser. No. 357,256
Claims priority, application Japan, Dec. 28, 1993, 5-075342 U
Int. Cl.[6] A43B *13/38;19/00*
U.S. Cl. 36—43 **5 Claims**



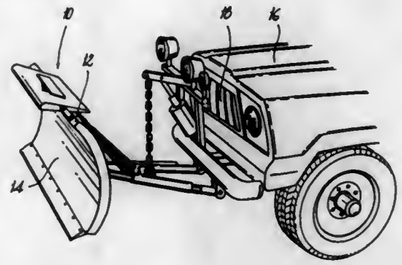
5. An insole for shoes to be disposed within a shoe, comprising:
a body of elastic material adapted to fit to a bottom member of a shoe and having a flat portion and a concave side wall portion formed integrally with the flat portion, the side wall having an upper surface and extending from an area corresponding to an inner arch portion of a foot to an area corresponding to an outer lateral side of the foot through an area corresponding to a heel portion of the foot;
at least one impact cushioning material having open-cell foam impregnated with bouncing putty, which is plastically deformed easily under a stress applied slowly and exhibits a high degree of bounce under a stress applied suddenly, disposed along the upper surface of the side wall; and
a sheet made of a material, selected from the group consisting of woven fabrics, unwoven fabrics and leather, covering the impact cushioning material to retain it on the upper surface of the side wall.

5,544,433
INNERBOOT FOR SPORTS SHOES
Bruno Borsoi, Vittorio Veneto, and Ivan Martinazzo, Montebelluna, both of, Italy, assignors to Nordica S.p.A., Trevignano, Italy
Filed Apr. 14, 1995, Ser. No. 422,574
Claims priority, application Italy, Jun. 24, 1994, TV94A0073
Int. Cl.[6] A43B *5/04;3/10*
U.S. Cl. 36—117.7 **11 Claims**



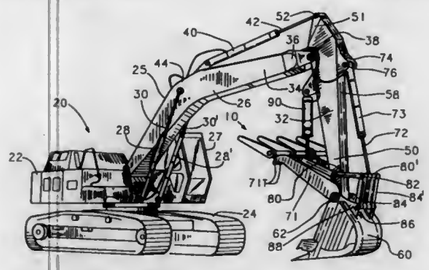
1. An innerboot for sports shoes having an inside for accommodating a user's foot, a lateral region, a medial region, a foot instep region, and a front tibial region, the innerboot comprising:
a first main portion extending, in a closed arrangement of the innerboot, at said lateral region and at said foot instep and front tibial regions;
a second main portion extending, in said closed arrangement of the innerboot, at said medial region and at said foot instep and front tibial regions;
wherein in said closed arrangement of the innerboot said first main portion and said second main portion mutually overlap substantially at said foot instep and front tibial regions, and wherein said first and second main portions have respective free edges such that the innerboot is openable into an open arrangement by moving at least one of said main portions to form an opening extending substantially at said foot instep and front tibial regions for permitting insertion and extraction of a user's foot into the inside of the innerboot; and
wherein one of said main portions comprises a first flap portion arranged substantially at said front tibial region in said closed arrangement and a second flap portion arranged substantially at said foot instep region in said closed arrangement, a recess being provided in said one of said main portions extending between said first flap portion and said second flap portion such that one of said flap portions of said one of said main portions may be arranged over a first portion of the other main portion with respect to said inside of the innerboot in said closed arrangement and the other of said flap portions of said one of said main portions may be arranged under a second portion of the other main portion with respect to said inside of the innerboot in said closed arrangement.

5,544,434
AIR FLOW DEFLECTOR FOR A SNOW PLOW
John J. Calvachio, Jr., Harvard Dr., R.F.D. #7, Carmel, N.Y. 10512
Filed Jul. 29, 1994, Ser. No. 282,926
Int. Cl.[6] E01H *5/00;* **B60K** *11/00*
U.S. Cl. 37—266 **8 Claims**



1. An air flow deflector for a snow plow mounted on a motor vehicle having a radiator, said air flow deflector comprising: a wedge-shaped deflector fin for deflecting air flow against the radiator, said deflector fin including a main body having rounded leading and trailing edges, an upper surface, a lower surface spaced from the upper surface and opposite side surfaces connecting said upper and lower surfaces, said leading edge providing a wind deflecting surface; means for mounting said deflector fin to a top surface of said snow plow in spaced relation thereto so as to define an air flow passage between the plow and bottom surface of said deflector fin; and means for mounting said deflector fin for rotation about an axis parallel to the top surface of said snow plow and for releasably fixing the angular orientation of said deflector fin with respect to said mounting means.

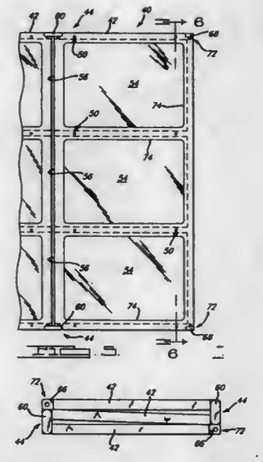
5,544,435
BRUSH RAKE
Nick Somero, Rte. 1, Box 133, Raymond, Wash. 98577
Filed Sep. 27, 1994, Ser. No. 312,693
Int. Cl.[6] E02F *3/96;3/00*
U.S. Cl. 37—405 **5 Claims**



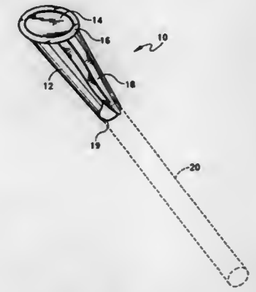
1. A brush rake for mounting on an excavator equipped with a boom, an arm, a bucket, and a thumb operably connected to said arm having inner and outer teeth reinforced by gussets, and a hydraulic system for controlling movements of the boom and the thumb, comprising:
(a) a rake bar;
(b) a plurality of spaced-apart, parallel, rake teeth each having a first end attached to the rake bar and a second, opposite, pointed free end extending away from the rake bar in a longitudinal direction;
(c) a mounting plate having a first portion attached to the rake bar, a second, opposite portion that extends away from the rake bar in a reverse longitudinal direction, and a third portion intermediate the first and second portions and integral therewith; and
(d) means for attaching the brush rake to the thumb without requiring removal of the bucket from the arm;
wherein the rake bar is a tube sealed by caps inserted into the opposite ends thereof, and the first end of each rake tooth has a bore through which is inserted the rake bar, whereby each rake tooth is rigidly attached to the rake bar.

5,544,436
MULTI-PHOTO DISPLAY APPARATUS
Jay Lefkowitz, 13312 Ludlow, Huntington Woods, Mich. 48070
Filed Jan. 25, 1994, Ser. No. 186,283
Int. Cl.[6] G09F *1/10*
U.S. Cl. 40—124.2 **12 Claims**

1. An apparatus for the simultaneous display of a plurality of photographs, pictures, or cards, comprising:
a plurality of rigid, vertically-arranged display panels, said display panels being positioned laterally adjacent to one another;
each said display panel comprising a front section, a back section, a plurality of divider members and at least one notch located at a corner thereof;
said front section and said back section being joined by first connection means comprising a plurality of projection portions formed in said front section and a corresponding plurality of receptacle portions formed in said back section, said projection portions of said front section being inserted into said receptacle portions of said back section to interlock said front section to said back section;
said plurality of divider members closing said display panel at opposite vertical ends thereof and creating a plurality of compartments within said display panel, each said compartment being dimensioned to receive said photographs, pictures or cards and having at least one access slot to allow said photographs, pictures or cards to be placed within and removed from said compartment; and
at least one said display panel being connected directly to an adjacent said display panel by second connection means comprising a link-type hinge connection being pivotally connected at opposite horizontal ends thereof to each of said adjacent display panels, each said hinge connection being disposed within said notch of each said adjacent display panel.



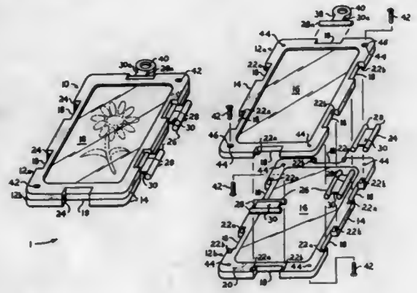
5,544,437
INSTRUMENT DISPLAY CAP WITH PIVOTING TOP
Louis A. Lanoie, West Warwick, R.I., assignor to Phenix Group, Inc., West Warwick, R.I.
Filed Jun. 12, 1995, Ser. No. 489,986
Int. Cl.[6] B43K *23/00*
U.S. Cl. 40—334 **10 Claims**



1. An instrument display cap, comprising:
a substantially tubular body having a bottom open end and a top open end and an inner wall surface and an outer wall surface; said bottom open end having a first diameter; said top open end having a second diameter and forming a top edge describing a circle in a plane which is positioned less than 90 degrees and greater than zero degrees relative to the central longitudinal axis of said substantially tubular body; said substantially tubular body being tapered out from bottom to top with said first diameter being smaller than said second diameter;
a transparent disk pivotally positioned on said substantially tubular body at said top open end and having a front surface and a rear surface; said transparent disk pivotally communicating with said inner wall surface; said transparent disk having a diameter slightly smaller than said second diameter;
a pocket affixed to said rear surface; and

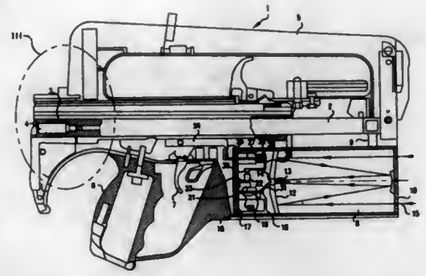
ring means connected to said top edge for retaining said transparent disk in communication with said inner wall surface.

5,544,438
CARD AND PICTURE HOLDER
James I. Fazekas, 8820 W. 174th St., Tinley Park, Ill. 60477
Filed Apr. 3, 1995, Ser. No. 415,449
Int. Cl.[6] G09F *7/00*
U.S. Cl. 40—605 **20 Claims**



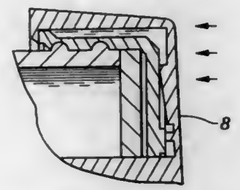
1. A card and picture holder, comprising:
a first half and a second half identical to said first half, with each said half having a periphery surrounding a transparent window;
each said periphery having a plurality of inset slots formed therein, with each said periphery further having a mating face with a first channel and an opposite second channel formed therein and disposed on opposite sides of each of said slots, and with said first channel and said second channel of each of said slots being coaxial and adapted to form a first and an opposite second interconnector pin capture passage on said opposite sides of each of said slots when said first half and said second half of said card and picture holder are secured together in a planar parallel relationship to form said card and picture holder, and;
a plurality of interconnectors, with each of said interconnectors including two parallel and spaced apart pins having an interconnecting member extending therebetween, with each of said pins being adapted to engage and to be captured within said first and said second interconnector pin capture passage when said first half and said second half are secured together to form said card and picture holder, whereby;
said first half and said identical second half are assembled together to form a completed said card and picture holder for the display of a planar article therein, with said interconnectors providing for the assembly of plural said card and picture holders together as desired.

5,544,439
DEVICE FOR FIRING A FIREARM USING AN INFRARED DETECTOR
Eric Grember, and Claude Boutet, both of Bourges, France, assignors to Giat Industries, Versailles Cedex, France
Continuation of Ser. No. 118,676, Sep. 10, 1993, abandoned. This application Mar. 21, 1995, Ser. No. 408,117
Claims priority, application France, Sep. 10, 1992, 92-10812
Int. Cl.[6] F41A *19/59*
U.S. Cl. 42—100 **13 Claims**



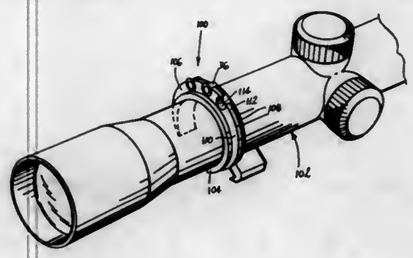
1. A device for firing a small or medium caliber hand-held firearm, having a firing pin and a trigger that actuates the firing pin, the device comprising:
an electric energy source;
an observation sight with an infrared detector coupled to the electric energy source for detecting a target heat signature and supplying a target electrical signal corresponding to the target heat signature, the infrared detector being disposed at a focus of the observation sight;
an electronic processing assembly coupled to the electric energy source for processing the target electrical signal supplied by the infrared detector; and
an electronic trigger assembly that fires the firearm upon detection of the target heat signature in response to the target electrical signal, the electronic trigger assembly including an electromagnet activated in accordance with the target electrical signal to cause percussion firing and a control bar coupled to the electromagnet and actuated to move translationally under action of the electromagnet and said trigger to engage said firing pin.

5,544,440
GUN LOCK
Gregory W. Stockman, 35 E. I. St., Sparks, Nev. 89431
Filed Feb. 28, 1994, Ser. No. 203,994
Int. Cl.[6] F41A *17/54*
U.S. Cl. 42—70.07 **2 Claims**



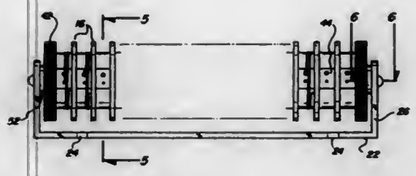
1. An external firearm safety device comprising a block for fitting over a trigger guard of a firearm and a post for insertion in interstices between a trigger of said firearm and a back portion of said trigger guard wherein a child resistant cap means comprises an outer cap and an inner cap, said outer cap being in direct communication with said post and said inner cap being in direct communication with thread means to engage threads of said block such that when said threads are engaged, said post is engaged with said block such that when an operator wished to remove said safety device from said firearm pressure must be axially applied to said outer cap to engage engagement means of said inner cap in order to actuate said inner cap with respect to said threads and remove said outer and inner caps and posts from said block.

5,544,441
MUZZLE LOADING WEAPON IGNITION SYSTEM
Gary Mahn, 9470 Oriole Dr., Coopersville, Mich. 49404, and Gary Bowman, 871 Dolphin SW., Wyoming, Mich. 49509
Division of Ser. No. 954,502, Sep. 29, 1992, Pat. No. 5,307,583. This application Mar. 18, 1994, Ser. No. 210,720
Int. Cl.[6] F41C *27/00*; **A45F** *5/00*
U.S. Cl. 42—106 **6 Claims**



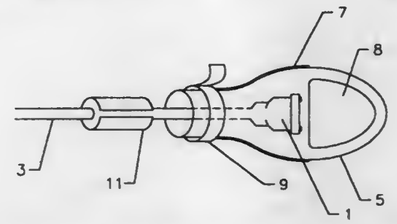
1. A holder for spare primers comprising:
a semicircular ring adapted to snap onto a receiving surface of a gun, said ring having
boles therethrough for receiving primers, each hole being sized to frictionally retain a primer.

5,544,442
MULTIPLE FISHING HOOK AND LEADER STORAGE DEVICE
Jamie Perkins, 8294 NW. 24th St., Coral Springs, Fla. 33065
Filed Nov. 27, 1995, Ser. No. 562,704
Int. Cl.[6] A01K *97/06*
U.S. Cl. 43—57.2 **6 Claims**



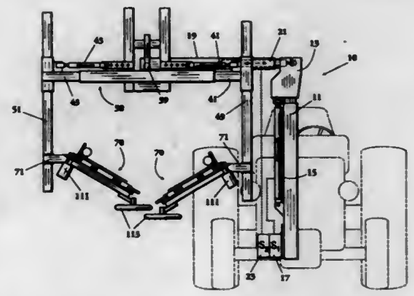
2. A multiple fishing hook and leader storage device comprising:
a reel including a tube, two end plates and a plurality of discs, the tube being formed in a hollow elongated cylindrical configuration with two ends and an outer surface, each end plate being formed in a planar circular configuration with a central aperture and an outer perimeter including thumb knurling, one end plate being releasably coupled to each end of the tube, the tube including an elongated rectangular shaped line coupling region extending longitudinally across the outer surface of the tube from one end plate to the other, an elastomeric coating being positioned around the outer surface of the tube except for the line coupling region, the discs being fabricated of elastomeric materials and radially positioned along the tube at equidistantly spaced intervals, one large aperture and one small aperture being positioned within the line coupling region adjacent to each disc.

5,544,443
SPRAYER RETROFIT UNIT FOR SPECIFIC AREA HERBICIDE APPLICATION
Travis W. Steglich, Rte. 1, Box 118 Indian Creek Rd., Holland, Tex. 76534
Filed Aug. 25, 1995, Ser. No. 519,255
Int. Cl.[6] A01C *13/00*
U.S. Cl. 47—1.5 **7 Claims**



1. A disposable retrofit wiper type applicator unit for a sprayer comprising:
a) a soaker head means fastenable over a spray nozzle on said sprayer, said soaker head means comprising:
1) a pear shaped porous fabric pouch with an inlet opening on a smaller end that is large enough to slipover said spray nozzle,
2) a water impervious elongated compressible sealing means and a flexible compressing fastener means, said elongated compressible sealing means fitting over a spray nozzle pipe attached to said spray nozzle and being sized to slide into said inlet opening of said pouch; said compressing fastener means being sized to allow manually sliding over said inlet opening of said pouch after said elongated compressible means is fitted into said pouch and with said compressing fastener means being manually activatable to fasten said pouch in a water tight manner to said spray nozzle pipe; and
3) a water absorbent material shaped to loosely fill an interior of said pouch.

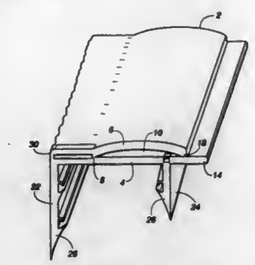
5,544,444
SINGLE CURTAIN WINE AND JUICE GRAPE VINE PRUNER
Tommy L. Oldridge, 1118 Concord St., Lowell, Ark. 72745
Filed Dec. 22, 1994, Ser. No. 361,289
Int. Cl.[6] A01G *7/00*
U.S. Cl. 47—4 **24 Claims**



1. A vine cane pruner comprising:
a hedger mounted on a ground engaging frame with a direction of travel having cutting teeth extending forwardly of said hedger in relation to said direction; and

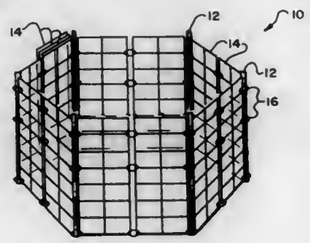
means mounted on said bedger for engaging canes not otherwise in a path of said cutting teeth to draw said canes into said cutting teeth.

5,544,445
LANDSCAPE EDGING DEVICE
Jose A. Mantilla, 8140 Scootswood Dr., North Charleston, S.C. 29418
Filed Feb. 1, 1995, Ser. No. 382,514
Int. Cl.[6] A01G *1/08*
U.S. Cl. 47—33 22 Claims



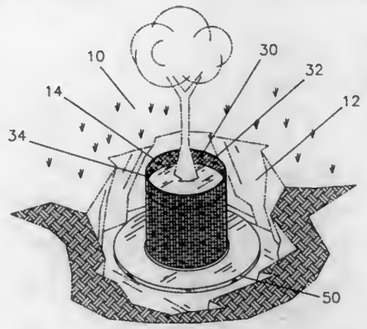
12. A landscape edging device, comprising:
a. a split horizontal member which comprises an upper leaf having a first end connected to a generally horizontal lower flange at a connecting point, said upper leaf extending generally parallel to said lower flange and having a displaceable portion spaced above said lower flange which is capable of downward displacement relative to said lower flange, and wherein said upper leaf has a second end which, in use, traverses along said lower flange as said upper leaf is displaced downwardly relative to said lower flange; and
b. at least one gripping member which extends from said split horizontal member.

5,544,446
COLLAPSIBLE AND ADJUSTABLE PLANT SUPPORT AND PROTECTOR
Donald O. Benson, Jr., 10 Livery Rd., Chelmsford, Mass. 01824
Filed May 15, 1995, Ser. No. 441,040
Int. Cl.[6] A01G *17/06;17/14*
U.S. Cl. 47—45 6 Claims



1. A plant support comprising:
(a) three or more connected sections, each said connected section including vertical edges,
(b) connecting means for adjacent said vertical edges of said connected sections to allow freedom of motion between two adjacent sections,
(c) vertical support structures unattached to said sections and unattached to said connecting means whereby each vertical support structure can be placed at any desirable location and can be driven into the ground to an independent depth,
(d) means to hold said connected sections to said vertical support structures, and
(e) means to extend the height of the plant support by placing additional connected sections above the bottom of corresponding connected sections, said means to extend including at least one said vertical support structure extending through the connecting means of the additional connected sections and through the connecting means of the corresponding connected sections.

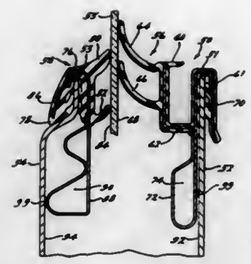
5,544,447
CHEMICAL GROW BAG FOR ROOT GROWTH CONTROL AND CONTAINMENT
Norman Easey, 7853 S. Leewynn Ct., Sarasota, Fla. 34240, and John Conroy, 1913 SE. 12th St., Cape Coral, Fla. 33990
Continuation-in-part of Ser. No. 26,359, Jul. 26, 1994. This application Aug. 28, 1995, Ser. No. 520,131
Int. Cl.[6] A01G *9/02*
U.S. Cl. 47—66 30 Claims



1. A root control and containment system for holding and growing a plant in a cavity in the earth for controlling vertical and horizontal root growth comprising in combination:
a vessel having upstanding sidewalls and a base therebelow and an open top thereabove, the sidewalls and base having a smooth inner and outer surface;
a root inhibiting carbon bound material in chemical communication with the vessel for storing and releasing the root inhibiting carbon bound materials over protracted periods of time for rejecting lateral root growth therethrough the wall and rejecting vertical root growth therethrough the base of the vessel; and
an arcuate collar being attached to an upper edge of the sidewall of the vessel for resisting ultraviolet breakdown and being disposed above the surface of the earth surrounding the cavity for rapid identification of the cavity by field personnel when performing field tasks in the nursery.

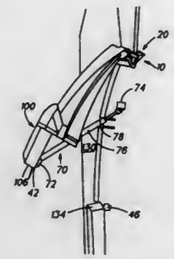
5,544,448
STRUCTURAL DOOR BELT SEAL
Noah B. Mass, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Dec. 27, 1994, Ser. No. 363,792
Int. Cl.[6] B60J *1/16*
U.S. Cl. 49—377 12 Claims

1. A structural door belt seal for operative engagement between an upper belt edge portion of an automotive vehicle door panel and a window pane carried adjacent the edge portion, the structural door belt seal comprising:



an elastomeric seal member having a mounting portion adapted to be received in mounting relationship on the edge portion and a lip seal portion adapted to be sealingly engaged against the window pane;
a metallic stiffening member having a first portion mounted within said elastomeric seal member; and
a second portion forming a door reinforcement member carried and extending outwardly from the elastomeric seal member and fixedly secured to the door panel at a point below the elastomeric seal member.

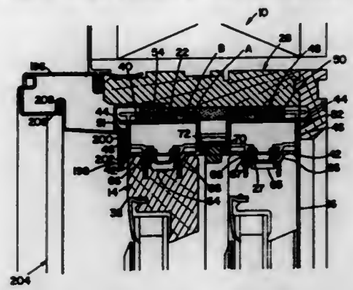
5,544,449
AIRCRAFT DUPLEX HINGE ASSEMBLY
Armand F. Amello, New Milford, and David N. Susek, Monroe, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.
Filed Oct. 20, 1993, Ser. No. 139,257
Int. Cl.[6] E05D *11/00*
U.S. Cl. 49—383 12 Claims



1. A duplex hinge assembly for an aircraft having a compound curvature airframe and access panel, the access panel having forward and side edges having an open beveled configuration and an aft edge having a beveled locking configuration, and the compound curvature airframe having complementarily-configured beveled edges defining an opening for the access panel, comprising:
dual hinge mechanisms mounted in combination with the access panel and the airframe and operative to allow movement of the access panel for opening thereof, said dual hinge mechanisms including means for preventing strike damage in the access panel during opening and closing thereof;
an aft pin subassembly means mounted in combination with the access panel and the airframe for maintaining the access panel in the closed position, said aft pin subassembly means being further operative to accommodate motion of the aft beveled locking edge of the access panel with respect to the complementarily-configured edge of the airframe during the opening sequence; and
latching means for deactivating said duplex hinge assembly with the access panel in the closed position.

5,544,450
DOUBLE-HUNG TILTING SASH TYPE WINDOW SYSTEM
Melvin J. Schmidt, Lakeland, Minn.; Thomas P. Coech, Osceola, Wis.; Glenn C. Hause, Woodbury, Minn.; Dennis A. Galowitz, Stillwater, Minn.; James P. Wyman, White Bear Lake, Minn.; Robert A. Hendricks, New Richmond, Wis.; Lawrence J. Ver Steeg, Sioux Falls, S. Dak., and Harold H. Evans, Hudson, Wis., assignors to Andersen Corporation, Bayport, Minn.
Continuation-in-part of Ser. No. 903,368, Jun. 24, 1992, Pat. No. 5,243,783. This application Aug. 7, 1992, Ser. No. 927,204
Int. Cl.[6] E05D *13/00*
U.S. Cl. 49—419 16 Claims

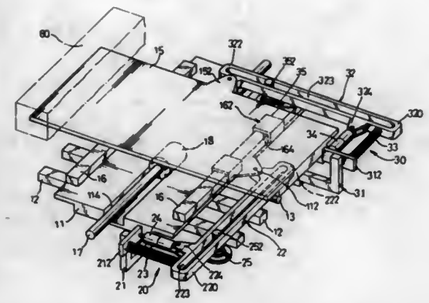
1. A window having an inside and outside, comprising:



(a) a frame having at least two oppositely disposed side members, a top member and a bottom member;
(b) a jamb liner approximately parallel to and operably connected to at least one side member, the jamb liner having a front face;
(c) a sash, having two opposingly disposed sides, the sash being slidably mounted in the frame and having a tilted position and an untilted position, the two sides of the sash being parallel and proximate opposite frame side members when the sash is in the untilted position;
(d) a plough extending from the face of each jamb liner in the direction of the opposite frame side member, the plough having an inside facing side and an outside facing side, wherein the outside facing side has a projecting portion extending generally in the direction of the outside of the window; and
(e) a sash groove in each side of the sash for slidably mounting the sash in the frame by receiving adjacent ploughs when the sash is in the closed position, the groove having a generally inside facing side and a generally outside facing side, wherein the inside facing side has a projecting portion projecting generally in the direction of the inside of the window; so that when the sash is in the untilted position the projecting portion of the plough engages with the projecting portion of the groove to resist inward displacement of the sash.

5,544,451
VIBRATION SUPPRESSION DEVICE FOR A STRUCTURE
Chao-hsi Cheng, and Yuan-jyi Lee, both of Taichung Hsien, Taiwan, assignors to Taichung Machinery Works, Co., Ltd., Taichung, Taiwan
Filed Aug. 28, 1995, Ser. No. 520,196
Int. Cl.[6] E04H *9/02*; E04B *1/98*
U.S. Cl. 52—167.2 3 Claims

1. A vibration suppression device for a structure which has a top face, said vibration suppression device comprising:
a plurality of first elongated linear guides (12) fixedly mounted on the top face of said structure and arranged in parallel with each other;
a first support table (11) slidably mounted on said plurality of first elongated linear guides (12);



a first adjustable damping system (**20**) pivotally mounted between said plurality of first elongated linear guides (**12**) and said first support table (**11**) for damping slidable movement of said first support table (**11**) on said plurality of first elongated linear guides (**12**);

a plurality of second elongated linear guides (**16**) fixedly mounted on a top face of said first table (**11**) and arranged in parallel with each other and perpendicular to said plurality of first elongated linear guides (**12**);

a second support table (**15**) slidably mounted on said plurality of second elongated linear guides (**16**), an active mass (**60**) fixedly supported on a top face of said second support table (**15**);

a second adjustable damping system (**30**) pivotally mounted between said plurality of second elongated linear guides (**16**) and said second support table (**15**) for damping slidable movement of said second support table (**15**) on said plurality of second elongated linear guides (**16**).

5,544,452

METHOD OF AND APPARATUS FOR DAMPING THE VIBRATION OF A BUILDING

Fujita Takafumi, Nagareyama; Shimoda Ikuo; Mochimaru Masami, both of Fujisawa; Otsuka Susumu, Osaka; Kawai Nobuyasu, Osaka; Kurimoto Masahiro, Osaka, and Inaba Kanemasa, Osaka, all of, Japan, assignors to Oiles Corporation, Tokyo, and Okumura Corporation, Osaka, both of, Japan

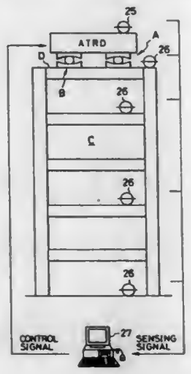
Filed Jul. 5, 1994, Ser. No. 269,605

Claims priority, application Japan, Jul. 7, 1993, 5-193186

Int. Cl.[6] E04H *9/02;* **E04B** *1/98*

U.S. Cl. 52—167.2 **3 Claims**

1. A method of damping the vibration of a building, comprising



the steps of:

providing a passive vibration-damping unit including a lower member fixed integrally on a building and having on its upper surface an upwardly-oriented concave arcuate surface, an upper member having on its lower surface a downwardly-oriented concave arcuate surface, said upper member being placed on the upwardly-oriented concave arcuate surface of said lower member with a roller member interposed therebetween, such that said upper member is capable of moving in a shaking manner in a vibrating direction of the building, and a weight mounted on said upper member, an amount of movement of said weight being restricted by a stopper member in a range in which said weight is not dislocated from said lower member, and an active vibration-damping unit having a motor for moving said weight of said passive vibration-damping unit in a damping direction with respect to said lower member in response to driving said motor;

operating said active vibration-damping unit, including driving said motor to move said weight of said passive vibration-damping unit, with a control force corresponding to the velocity of the vibration and displacement of the building when the building is vibrated; and

stopping the operation of the motor of said active vibration-damping unit and operating only said passive vibration-damping unit when one of (1) a relative displacement of said weight to the lower member by means of said active vibration-damping unit, and (2) a torque of said motor required for the displacement of said weight has reached a given limit value.

5,544,453

FOUNDATION FOR A BUILDING STRUCTURE

Sten Engwall, Märsta, Sweden, assignor to System Teeg AB, Bromma, Sweden

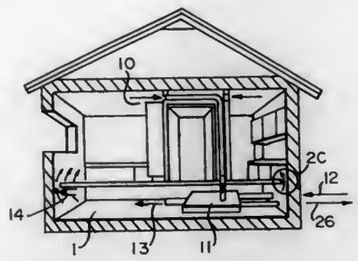
PCT No. PCT/SE92/00302, § 371 Date Nov. 9, 1993, § 102(e) Date Nov. 9, 1993, PCT Pub. No. WO92/20883, PCT Pub. Date Nov. 26, 1992

PCT Filed May 8, 1992, Ser. No. 146,062

Claims priority, application Sweden, May 10, 1991, 9101414

Int. Cl.[6] E04B *1/62;* **E02D** *27/01*

U.S. Cl. 52—169.5 **8 Claims**



1. A building foundation of a building having at least a bottom story with a floor, which building foundation includes an insulated service space for the accommodation of house-running appliances and service appliances, and a heating means located in said insulated service space, said service space being located between said floor and the ground and being limited by encircling external foundation walls, said floor and said foundation walls defining an open substantially horizontal gap along said foundation walls, through which gap said service space directly communicates with a space above said floor, said gap allowing air flow and cable drawing therethrough, said heating means exhausting heated air directly into said service space to form an insulated heated service space and causing said heated air to flow upwardly through said gap to heat an area above said first floor.

5,544,454

FOAM RAIL DOOR

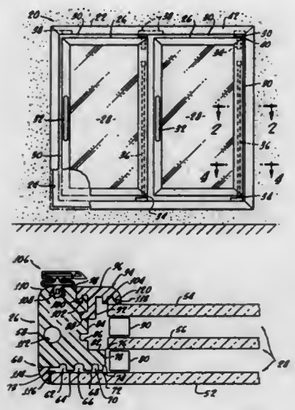
Richard J. Richardson, Simi Valley, and Charles E. Crown, San Fernando, both of Calif., assignors to Anthony's Manufacturing Company, Inc., San Fernando, Calif.

Continuation of Ser. No. 849,900, Mar. 12, 1992, Pat. No. 5,363,611, which is a continuation-in-part of Ser. No. 644,072, Jan. 18, 1991, Pat. No. 5,113,628, which is a continuation-in-part of Ser. No. 585,602, Sep. 20, 1990, Pat. No. 5,097,642.

This application May 3, 1994, Ser. No. 237,558

Int. Cl.[6] E06B *3/00*

U.S. Cl. 52—171.1 **12 Claims**



1. A door for a refrigeration unit comprising:

door rail elements formed from a foamed polymeric substance being free of any metallic support structure in at least part of at least one of the door elements, the door rail elements including opposing vertical rail elements with a groove formed on an inside surface thereof;

a plurality of substantially transparent panels supported, retained and sealed in the door rail elements, wherein a forward panel extends wider than the remaining panels in the plurality of panels such that the door rail elements are positioned entirely behind the forward panel;

corner connecting units for securing the door rail elements together, the corner connecting units being sized to fit within the grooves of the vertical rail elements; and

at least one hinge for allowing pivotal movement of the door about an axis.

5,544,455

SKYLIGHT WITH MODULAR SHAFT

David A. DeBlock, Holland, Mich., assignor to ODL, Incorporated, Zeeland, Mich.

Filed Aug. 12, 1994, Ser. No. 289,405

Int. Cl.[6] E04B *7/18*

U.S. Cl. 52—200 **15 Claims**

1. A skylight, comprising:

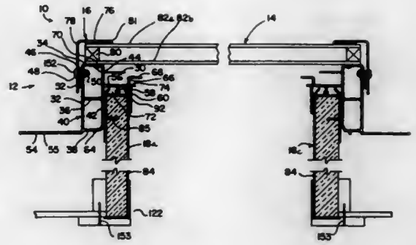
a roof curb adapted to mount about an opening formed in a roof, said curb including a flange adapted to engage the roof and said curb defining a channel;

a glazing material;

first securing means for securing said glazing material to said curb;

a ceiling frame adapted to mount about an opening formed in a ceiling;

a modular shaft extending between said curb and said frame; said shaft including a plurality of interconnected independent rigid panels each defining a sidewall of said shaft; and said shaft further including a second securing means for securing said shaft to said curb through a slide fit into said channel and third securing means for securing said shaft directly to said ceiling frame.



5,544,456

DOOR AND JAMBS AND JAMB-LININGS PERTAINING THERETO

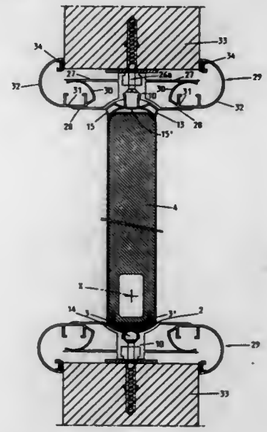
Rudi Dries, Zoersel, Belgium, assignor to Liexco S.A., Grand Duche du Luxembourg, Luxembourg

Filed Aug. 24, 1994, Ser. No. 295,089

Claims priority, application Belgium, Aug. 24, 1993, 09300868

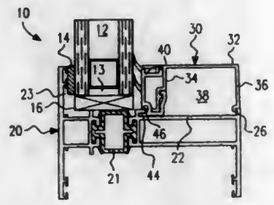
Int. Cl.[6] E06B *1/04*

U.S. Cl. 52—204.1 **20 Claims**



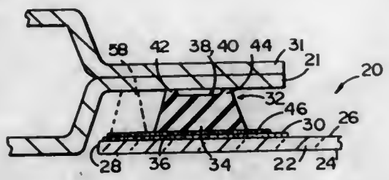
1. A door comprising a door sheet and jambs and jamblinings which are to be fitted into a wall opening, a first jamb being fitted vertically against one side of the wall opening, the door sheet having a pivot axis positioned a predetermined distance from the first jamb, at least the first jamb having a continuous bowl-shaped cavity facing the door sheet, a corresponding edge of the door sheet fitting into the continuous bowl-shaped cavity, the bowl-shaped cavity having a radius substantially equal to a distance between a center line of the pivot axis of the door sheet and the edge of the door sheet and having a continuous open chamber, the continuous open chamber having a cross-section for receiving different abutments and bumpers and the continuous open chamber having lateral continuous grooves.

5,544,457
BEAD FOR RETAINING AND AIR SEALING A WINDOWPANE AND WINDOW ASSEMBLY THEREWITH
Normand Labrecque, Beloeil, Canada, assignor to A. & D. Prevost Inc., Richelieu, Canada
Filed Feb. 8, 1995, Ser. No. 385,756
Int. Cl.[6] E06B *3/66*
U.S. Cl. 52—204.69 **10 Claims**



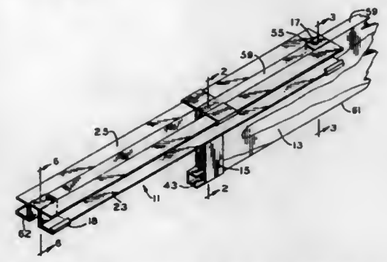
7. A window assembly comprising:
a framework having a lateral projection;
a windowpane set in the framework;
a bead for retaining and air sealing the windowpane to the framework, the bead being interlocked with the lateral projection of the framework, the bead comprising:
a bead frame having a front and a rear longitudinally extending flange which are spaced apart from each other, the front flange facing the windowpane;
a weatherstrip connected and extending along the bead frame before the front flange, the weatherstrip having a portion overlapping at least an end portion of the front flange for preventing direct contact of the front flange with the framework, the weatherstrip comprising a first flexible portion projecting therefrom and pressing against the periphery of the windowpane, and a second flexible portion projecting from the weatherstrip and pressing against the framework; and
securing means for interlocking the bead with the lateral projection of the framework, the securing means at least comprising a longitudinally extending tongue portion projecting from the weatherstrip and engaged in a corresponding groove portion of the lateral projection of the framework.

5,544,458
VEHICLE PANEL ASSEMBLY
Daniel J. Fisher; Douglas Crank; Marc A. Lovell; Sabina J. Houle, all of Holland, Mich., and James L. Brodie, Hudsonville, Mich., assignors to Donnelly Corporation, Holland, Mich.
Filed Mar. 5, 1993, Ser. No. 27,078
Int. Cl.[6] E06B *3/54;* **B60J** *1/10;10/02*
U.S. Cl. 52—204.591 **75 Claims**



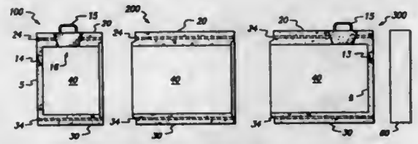
1. A panel assembly for closing a window opening in a vehicle and having a gasket on one surface thereof, comprising:
a glass panel having opposing first and second surfaces terminating in a peripheral edge;
a primer layer applied to a portion of one of said first and second surfaces, said primer layer having a transition temperature of at least 200° F. at or above which said primer layer exhibits improved adhesion properties for polymeric gaskets molded thereon at such temperatures; and
a polymeric gasket molded on said portion of one of said first and second surfaces of said glass panel and bonded thereto by said primer layer when said primer layer is heated to a temperature equal to or greater than said transition temperature, said glass panel including said primer layer being preheated to a temperature equal to or greater than said transition temperature prior to the molding of said gasket.

5,544,459
DUCT CHASE FRAME FOR JOISTS
Raymond J. Konger, 8732 Winchester Rd., Fort Wayne, Ind. 46819
Filed Nov. 21, 1994, Ser. No. 342,623
Int. Cl.[6] E04C *2/52*
U.S. Cl. 52—220.3 **7 Claims**



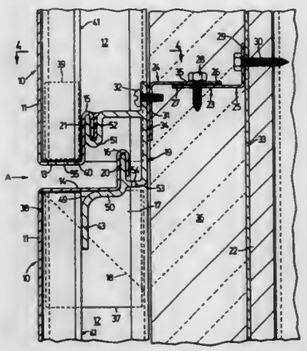
1. A composite floor joist structure having two partially overlapping portions only one of which allows passage therethrough of HVAC ducts, said joist structure having upper and lower edges and adapted to extend between two support surfaces, said portions each having first and second ends with the first end of each portion disposed intermediate the first and second ends of the other portion, said joist structure further comprising:
a first load bearing surface on the lower edge of said one portion for engaging one of said support surfaces;
a second load bearing surface on the lower edge of the other of said portions for engaging the other of said support surfaces;
a third load bearing surface on the upper edge of the other of said portions located intermediate the ends thereof;
a fourth load bearing surface near the first end of said one portion for engaging said third load bearing surface;
a fifth load bearing surface on the lower edge of the other portion and near the second end of said other portion; and
a sixth load bearing surface on said one portion intermediate the ends thereof for engaging said fifth load bearing surface.

5,544,460
MULTI-COMPONENT FLUID TANK
Jerome J. Fife, Occidental, Calif., assignor to Janice Faye Fife, Occidental, Calif.
Filed Mar. 31, 1994, Ser. No. 220,785
Int. Cl.[6] B65D *8/04;88/76;90/08;* **E04C** *5/08*
U.S. Cl. 52—223.3 **14 Claims**



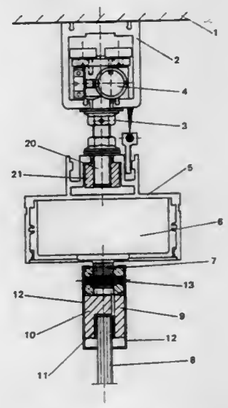
3. A multi-component tank comprising:
a first end component having a first end wall;
a second end component having a second end wall;
a plurality of intermediate components disposed between said first end component and said second end component to form a line of components that define one or more interior regions for storing fluids; and
post-tensioning means for providing a compressive force to the line of components by applying a force to said first and second end components by stressing and elongating post-tension cables so that said force is distributed throughout the line of components thereby providing pressure at each component junction so that a fluid tight seal exists between each of the components;
wherein each of said first component, said second component, and said plurality of intermediate components includes
a generally cylindrical body having an outer surface, a wall thickness, and an inner surface, the inner surface having a cross-sectional diameter, and a length;
a first rectangular region formed on a first portion of the outer surface of the cylindrical body having a width approximately equal to the cross-sectional diameter of the inner surface of the cylindrical body and extending along the length of the cylindrical body, and having a first minimum thickness approximately equal to said wall thickness, the first rectangular region having planar top surface;
a second rectangular region formed on a second portion of the outer surface of the cylindrical body diametrically opposed to the first portion having a second minimum thickness approximately equal to said wall thickness and having a planar bottom surface that is parallel to said planar top surface; and
wherein each of said first and second rectangular regions includes a plurality of chase ways running substantially parallel to said length through which post-tension cables can be routed.

5,544,461
PANEL MOUNTING STRUCTURE
Michael Sommerstein, 75 Green Acres Road, Thornhill, Ontario L4J 4S2, Canada
Filed Sep. 30, 1994, Ser. No. 315,387
Int. Cl.[6] E04H *1/00*
U.S. Cl. 52—235 **8 Claims**



1. A panel mounting structure comprising a plurality of vertically adjacent panels each having an upper edge portion and a lower edge portion, supports each of which is for mounting the upper edge portion of one of the panels and the lower edge portion of the upwardly adjacent panel, with each support having a vertically extending panel upper edge engagement member and a vertically extending panel lower edge engagement member, said upper edge portion of said one of the panels having a vertically extending support engagement member which is vertically movable by vertical movement of said one of the panels into and out of engagement with said panel upper edge engagement member of the support without vertical movement of the upwardly adjacent panel, said lower edge portion of the upwardly adjacent panel having a vertically extending support engagement member which is vertically movable by vertical movement of the upwardly adjacent panel into and out of engagement with said panel lower edge engagement member of the support without vertical movement of said one of the panels, thereby to provide said mounting on the support of the upper edge portion of said one of the panels and the lower edge portion of the upwardly adjacent panel, with the upper edge portion and the lower edge portion of each panel being so mountable on the respective supports without disturbing the mounting of the vertically adjacent panels, and the support engagement member of the upper edge portion of said one of the panels extending above the lower edge of the upwardly adjacent panel.

5,544,462
MOVABLE WALL SYSTEM
Herbert Kordes, Pad Salzuflan, Germany, assignor to DORMA Gmb + Co. KG, Ennepetal, Germany
Filed Nov. 2, 1993, Ser. No. 147,769
Int. Cl.[6] E05D *3/02*
U.S. Cl. 52—243.1 **15 Claims**



1. A movable wall system, said movable wall system comprising:
at least one movable wall panel for forming a wall;
guide rail means for guiding movement of said at least one wall panel;
means for movably supporting said at least one wall panel from said guide rail means above a floor;
said at least one wall panel comprising a door-opening therethrough;
a swinging door for being disposed in said door opening, said swinging door being pivotable within said door-opening between an open position and a closed position for opening and closing said door-opening;
door closer means for moving said swinging door from an open position to a closed position within said door-opening;
said door closer means being disposed within said at least one wall panel for being moved along with said at least one wall panel;
said door opening has a bottom portion disposed towards the floor, and a top portion disposed substantially above said bottom portion towards said guide rail mean;
said door closer means is disposed within said at least one wall panel at a position substantially above said door-opening and adjacent said top portion of said door opening;

said door closer means comprises a drive shaft for moving said swinging door from the open position to the closed position;

said drive shaft being configured to project downwardly from said door closer means towards a floor disposed below said at least one wall panel; and

said drive shaft of said door closer means supporting said swinging door for thus moving said swinging door from the open position to the closed position.

5,544,463

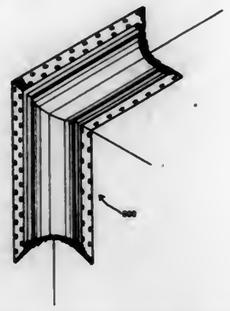
PREFINISHED CORNER BEAD

Blaine R. Bergin, P.O. Box 992, Emmett, Id. 83617

Filed Aug. 30, 1994, Ser. No. 297,974

Int. Cl.[6] E04B *1/00*

U.S. Cl. 52—254 **13 Claims**



1. A prefinished corner molding having a longitudinal axis and two ends, comprising:

a pair of fastening flanges, each flange having a front side, a back side, an inside edge and an outside edge, each flange extending perpendicularly from the longitudinal axis of the corner molding, the pair of flanges having a diverging cross-section;

a pair of stop-bead/expansion joints, each stop-bead/expansion joint having a generally U-shaped cross-sectional configuration, each stop-bead/expansion joint having a pair of walls, each wall having two edges, one edge of each wall converging to form the U-shaped cross-section, the second edge of one wall being joined to a first fastening flange and the second edge of the second wall being joined to a recessed face;

the recessed face, having a front side, a back side, and a pair of edges, the recessed face being disposed between the pair of stop-bead/expansion joints so that one edge of the recessed face is joined to the second edge of one wall of the stop-bead/expansion joint, and the second edge of the recessed face means is joined to the second edge of the second wall of the stop-bead/expansion joint; and

a veneer strip configured to fit into the recessed face means.

5,544,464

COMPOSITE STEEL AND CONCRETE FLOOR SYSTEM

Marcel Dutil, Montreal, Canada, assignor to Canam Hambro, Quebec, Canada

Filed Apr. 5, 1994, Ser. No. 222,947

Int. Cl.[6] E04B *5/18*

U.S. Cl. 52—330 **15 Claims**

1. A steel joist for use in a composite steel and concrete floor, said joist comprising:

an elongated top chord including a shear connector component having a serpentine shape in vertical cross section, said shear connector component having a first horizontal component, a sloping flange component and a second horizontal component, said sloping flange extending between said first horizontal component and said second horizontal component,

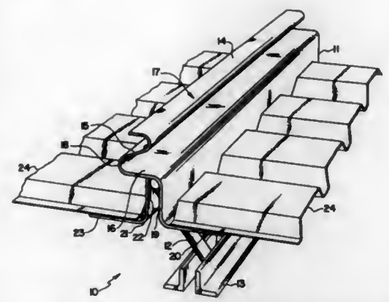
a vertical web, and

a bottom chord,

said top chord having a downwardly depending vertical first flange, terminating in horizontal second flange, said first flange being fastened to said web, said horizontal second flange extending away from said web to form a first horizontal shelf,

and an elongated angle member, having a vertical third flange and a horizontal fourth flange, and said vertical third flange being fastened to said web, on the side of said web opposite said vertical first flange, said horizontal fourth flange extending away from said web to form a second horizontal shelf opposite and aligned with said first shelf at a point substantially above said bottom chord,

said horizontal shelves being provided to support sections of corrugated steel deck on either side of said joist, said deck being adapted to support concrete and reinforcing mesh during the construction phase of said composite floor, the deck being intended for permanent embedment in said concrete.



5,544,465

THERMALLY INSULATING MULTIPANE GLAZING STRUTURE

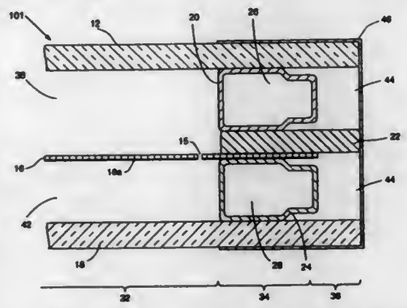
Thomas G. Hood, San Francisco; Roger F. Iles, San Carlos, and Peter Millar, Grass Valley, all of Calif., assignors to Southwall Technologies, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 389,231, Aug. 2, 1989, Pat. No. 5,156,894. This application Jun. 10, 1992, Ser. No. 896,478

The portion of the term of this patent subsequent to Oct. 20, 2009, has been disclaimed.

Int. Cl.[6] F06B *3/663*

U.S. Cl. 52—786.13 **9 Claims**



1. A multipane glazing structure, said structure having three distinct, substantially parallel glazing sheets, each spaced apart from the others by adhered peripheral spacers, wherein the first and third of said sheets being rigid glass or plastic and representing the exterior faces of said structure, and wherein the second of said sheets is a flexible transparent plastic sheet and is contained on the interior of said structure, said first and second sheets being separated from one another by an adhered composite spacer comprised of a body of physically stable closed cell foamed polymer having a thermal conductivity of less than about 0.8 BTU/in/×ft²×hr ×°F. and at least one hollow cross-sectional tubular structure, said tubular structure and said body of foamed polymer being parallel to one another and to the first and second sheets and together disposed between said first and second sheets to hold the first and second sheets in spaced relationship, and said second and third sheets being separated from one another by an adhered non-composite spacer.

5,544,466

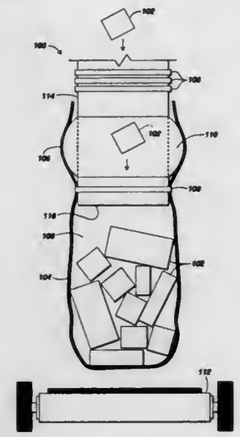
METHOD AND APPARATUS FOR LOADING AND CLOSING A CONTAINER

Henri Bonnet, Atlanta, Ga., assignor to United Parcel Service of America, Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 195,875, Feb. 14, 1994, Pat. No. 5,444,962. This application Nov. 10, 1994, Ser. No. 337,301

Int. Cl.[6] B65B *51/04*

U.S. Cl. 53—138.7 **24 Claims**



1. An apparatus for loading and closing a container having a flexible open end, comprising:

a container having a flexible open end;

a movable chute assembly comprising a support frame and at least two chutes supported by said support frame, each chute having a chute open end adapted to receive the flexible open end of the container thereabout and being movable to alternately position each of said chutes to receive a material from a material source;

a selectively inflatable bladder disposed around the chute open end of each of said chutes and adapted (a) to engage the flexible open end of the container when inflated to secure the open end of the container to the chute open end of the respective chute and (b) to disengage the flexible end of the container when deflated to release the container from the chute open end of the respective chute; and

a closure engaged about the open end of the container, wherein said closure automatically closes the open end of the container in response to the container disengaging from the chute open end.

5,544,467

APPARATUS FOR PRODUCING CIGARETTE PACKS

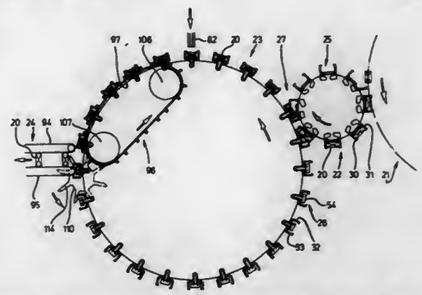
Heinz Focke, Verden, Germany, assignor to Focke & Co. (GmbH & Co.), Verden, Germany

Filed Jan. 10, 1994, Ser. No. 179,565

Claims priority, application Germany, Jan. 8, 1993, 43 00 149.1

Int. Cl.[6] B65B *7/00;11/28*

U.S. Cl. 53—387.2 **18 Claims**



1. An apparatus for producing cuboidal cigarette packs (**20**), and comprising rotating turrets (**22**, **23**), having pockets (**25**, **26**) in which the packs are transported during production, said packs being transferred from a releasing pocket in a first turret to a receiving pocket in an adjacent turret, wherein:

a) the pockets (**25**, **26**) are attached to each turret (**22**, **23**) so that they always are radially directed;

b) the pockets (**25**, **26**) have pocket walls (**30**, **31**, **32**, **33**) which hold the packs (**20**), and which are movable relative to one another for opening and closing, each pocket having a base which is not movable;

c) in the closed position of the pockets (**25**, **26**), the pocket walls are aligned in parallel, and in the open position at an angle to one another;

d) the rotating turrets (**22**, **23**) have parallel rotational axes which are spaced from one another such that the rotating pockets (**25**, **26**) have paths of movement which intersect one another in a transfer region (**27**) for the packs (**20**);

e) the pocket walls (**30** . . . **33**) are shaped like a comb such that they can be moved past one another in the transfer region (**27**) without contact; and

f) the pocket walls (**30**, **31**) of each pocket (**25**) that releases a pack are closed at a beginning of the transfer region (**27**), thereby opening the pack-receiving pocket (**25**); in a middle position of the pockets (**25**, **26**), the pocket walls of both pockets (**25**, **26**) are closed; and in a following section of the transfer region, the pocket walls (**32**, **33**) of the receiving pocket (**26**) are in the closed position and the releasing pocket (**25**) is movable little by little into the open position.

5,544,468

PORTABLE SHIPPING STATION

Lewis I. Harrison, and Marjorie S. Harrison, both of Boulder, Colo., assignors to Preferred Packaging Systems, Inc., Boulder, Colo.

Filed Aug. 17, 1994, Ser. No. 292,086

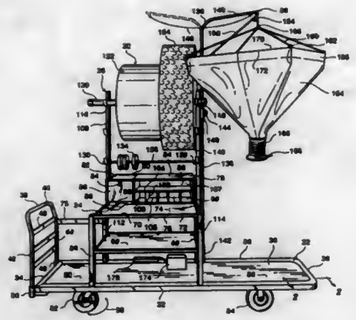
Int. Cl.[6] B65B *67/00*

U.S. Cl. 53—390 **29 Claims**

1. A mobile shipping station for use in article-packaging operations, comprising:

a cart having a deck operably coupled with a plurality of downwardly extending wheels for rolling said station from a first ground location to a second ground location;

a work table having a top presenting an uppermost working surface and a top-supporting frame rising from said cart and operably coupled with said top to hold said top at a working elevation;



a roll-support frame rising from said table to an elevation greater than said working elevation, said roll-support frame having means for retaining a rolled wrapper material-dispensing bar at a sufficient elevation above said working surface to dispense packaging materials mounted on said dispensing bar in an essentially downward direction for use at said working surface; and

a hopper for dispensing particulate packaging filler material, and means coupled with said cart for supporting said hopper over said deck, and for permitting selective adjustment in at least three degrees of freedom of a position of said hopper relative to said deck,

said supporting means including a pivot having a vertically oriented pivot axis, said pivot being connected to a boom extending outwardly from said pivot axis over a distance sufficient to place said hopper at selected positions along an arc traveling across said deck, and means for hanging said hopper from said boom to permit selective adjustment of a position of said hopper relative to a position of said boom.

5,544,469

WRAPPING MATERIAL HAVING AN EXTENSION FOR DESIGN INDICIA FOR WRAPPING FLOWER POTS AND FLORAL ARRANGEMENTS AND METHODS

Donald E. Weder, Highland, and Lisa A. Straeter, Breese, both of Ill., assignors to Southpac Trust International, Inc., Highland, Ill.

Continuation-in-part of Ser. No. 893,586, Jun. 2, 1992, Pat. No. 5,181,364, and a continuation-in-part of Ser. No. 865,563, May 21, 1992, Pat. No. 5,245,814, which is a continuation of Ser. No. 649,379, Jan. 31, 1991, Pat. No. 5,211,638, which is a continuation of Ser. No. 249,761, Sep. 26, 1988, abandoned, which is a continuation of Ser. No. 707,417, May 28, 1991, abandoned, which is a continuation of Ser. No. 502,358, Mar. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 391,463, Aug. 9, 1989, abandoned, which is a continuation-in-part of Ser. No. 249,761, Sep. 26, 1988, abandoned. This application Nov. 9, 1992, Ser. No. 973,471

Int. Cl.[6] B65B *61/00;11/02*

U.S. Cl. 53—410 **20 Claims**

1. A wrapping method comprising the steps of:

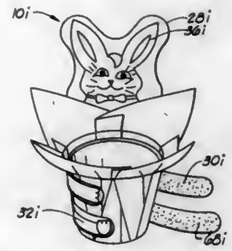
providing a sheet of material having an upper surface, a lower surface and an outer periphery;

providing an extension having a design indicia thereon, the extension sized smaller than an outer diameter of a pot;

providing a pot having an upper end, a lower end and an outer peripheral surface;

wrapping the sheet of material about the pot whereby the sheet of material substantially surrounds and encompasses the outer peripheral surface of the pot, the sheet of material thereby forming a wrapping;

positioning the extension on the wrapping such that the extension extends a distance away from the wrapping thereby



effectively displaying the design indicia on the extension, the extension extending about only a portion of the outer peripheral surface of the wrapping; and

connecting the extension to the wrapping.

5,544,470

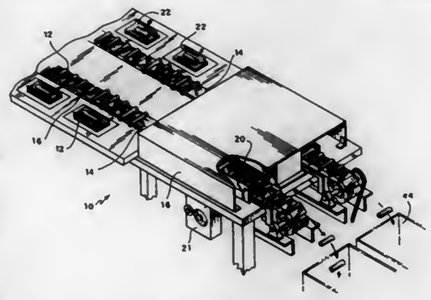
MACHINE AND PROCESS FOR SEALING WRAPPED EPOXY STICKS

Harvey M. Yarbrough, Ringgold, Ga., assignor to Illinois Tool Works Inc., Glenview, Ill.

Filed Apr. 6, 1995, Ser. No. 418,020

Int. Cl.[6] B65B *53/02*

U.S. Cl. 53—442 **7 Claims**



1. A heat-sealing machine comprising:

means for conveying, comprising at least one conveyor belt dimensioned and configured to convey hand-wrapped epoxy sticks having a plastic wrapping material having a grain oriented in parallel with a long axis of each epoxy stick;

means for adjusting a conveying speed of said conveyor belt;

a heating chamber through which said at least one conveyor belt passes;

a plurality of heating elements in said heating chamber, said heating elements directing heat towards said at least one conveyor belt;

means for spatially adjusting said heating elements;

means for adjusting temperatures of said heating elements; and

a control panel for controlling said means for adjusting a conveying speed of said conveyor belt, said means for spatially adjusting said heating elements, and said means for adjusting temperatures of said heating elements for heat sealing the wrapper around said hand-wrapped epoxy sticks with minimal shrinking of the wrapper in the axial direction.

5,544,471

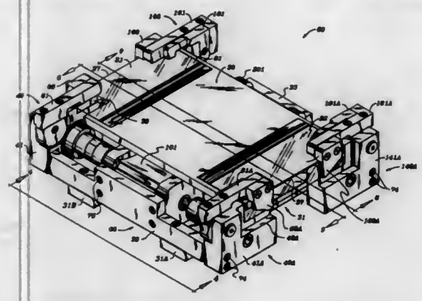
FLEXIBLE PRODUCT FOLDING AND TRANSFERRING APPARATUS AND PROCESS

David A. Smith, Midland, and Robert J. Nestle, Essexville, both of Mich., assignors to Dowbrands L.P., Indianapolis, Ind.

Continuation of Ser. No. 994,836, Dec. 22, 1992. This application Nov. 4, 1994, Ser. No. 334,767

Int. Cl.[6] B65B *35/30*

U.S. Cl. 53—447 **25 Claims**



1. An apparatus comprising:

a base support member having an area for receiving a stack of flexible products, and a retractable means mounted to said base support member, said retractable means having means for clamping and folding the stack of flexible products between the retractable means and said base support member, the retractable means including at least one pair of clamping finger members, said clamping finger members positioned opposite to eacb other in mirror image.

5,544,472

METHOD FOR PACKAGING OF BULK GOODS INTO A UNIT-LOAD PACKAGE AND A UNIT-LOAD PACKAGE FOR BULK GOODS

Erkki Koskinen, Pori, Finland, and Tom Stenmark, Waterloo, Belgium, assignors to Oy W. Rosenlew AB, Pori, Finland

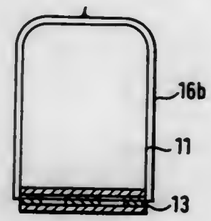
PCT No. PCT/FI93/00080, § 371 Date Oct. 25, 1994, § 102(e) Date Oct. 25, 1994, PCT Pub. No. WO93/17911, PCT Pub. Date Sep. 16, 1993

PCT Filed Mar. 8, 1993, Ser. No. 302,668

Claims priority, application Finland, Mar. 10, 1992, 921043; Dec. 7, 1992, 925555

Int. Cl.[6] B65B *11/58*

U.S. Cl. 53—449 **12 Claims**



1. Method for packaging bulk goods into a unit-lead package, comprising the steps of:

displacing two formwork halves towards one another so that they form a closed formwork construction shaped as a parallelepiped and having a hollow interior;

placing an inner package made of a flexible resilient material into said interior of said closed formwork construction;

filling said inner package with bulk goods, whereby said inner package obtains substantially a quadrangular shape inside said formwork construction;

subjecting said inner package, which has been filled with the bulk goods, to a negative pressure;

shifting said formwork halves apart from one another, whereby the inner package, which has been filled with the bulk goods and subjected to said negative pressure, retains said substantially quadrangular shape; and

surrounding said inner package with an outer package made of plastic material to provide stability.

5,544,473

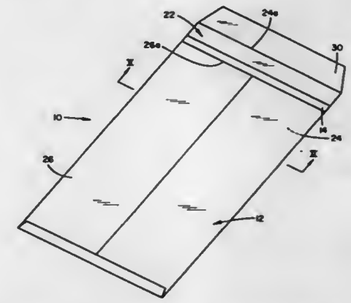
PROTECTIVE SHIPPING OR MAILING ENVELOPES AND METHOD OF MAKING

Richard C. Maida, Staten Island, and Joseph Sferlazza, West Hempstead, both of N.Y., assignors to Prompac Industries, Inc., Staten Island, N.Y.

Filed Sep. 15, 1994, Ser. No. 306,458

Int. Cl.[6] B31B *39/00;* **B65B** *11/00;61/22*

U.S. Cl. 53—460 **18 Claims**



13. A method of packaging an article comprising: providing a shipping envelope including (i) an outer envelope extending in longitudinal and transverse directions, and (ii) first and second sections of packing material located opposite each other inside the outer envelope, each of said first and second sections of packing material being comprised of a resilient and flexible paper material having a multitude of slits arranged to allow said section to be pulled into a three-dimensional shape, wherein the outer envelope has a transversely extending top edge and forms an opening at said top edge providing access to inside the outer envelope, and said slits are arranged in a multitude of transversely extending rows;

placing the article between said first and second sections of the packing material; and

pulling the first and second sections in the longitudinal direction to expand the first and second sections in a direction perpendicular to both said longitudinal and transverse directions, into three-dimensional shapes, to form a protective enclosure for the article.

5,544,474

SYSTEM FOR HARVESTING CROP ITEMS AND CROP HARVESTING TOOLS USED THEREWITH

Zvi Finkelstein, 16 Ha'Gefen, Aseret 76858, Israel

Filed Feb. 21, 1995, Ser. No. 391,988

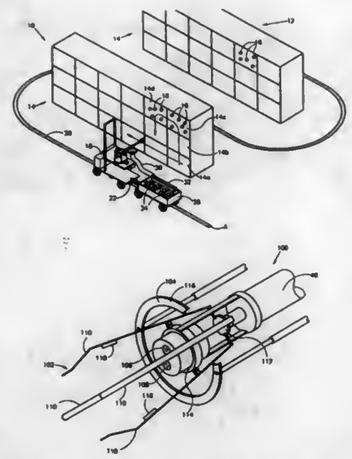
Int. Cl.[6] A01D *46/24*

U.S. Cl. 56—10.2 A **19 Claims**

11. A harvesting tool for harvesting a crop item hanging by a stem from its growth source, the harvesting tool comprising:

(a) a base;

(b) a cutterhead mounted on said base, said cutterhead including:



(i) an array of at least three fingers for accommodating the stem between a pair of adjacent fingers, said array of fingers having a substantially arcuate configuration and dimensioned so as to envelop at least the top portion of the crop item, and

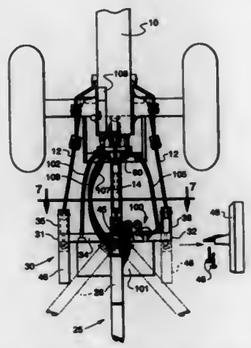
(ii) a stem cutter for cutting the stem when accommodated by said pair of adjacent fingers; and

(c) means for activating said cutterhead once the stem has been positioned between said pair of adjacent fingers.

5,544,475
DUAL HITCH

Dennis Skibo, Manheim, Pa., assignor to Pequea Machine Inc., Gordonville, Pa.

Filed Jul. 22, 1994, Ser. No. 278,904
Int. Cl.[6] A01D 78/00
U.S. Cl. 56—15.5 26 Claims



1. A dual hitch for towing two rakes, tedders and other implements behind a tractor, each implement having its own wheel-supported frame and a reel, the tractor having a three-point-hitch, the two implements including a front implement which tracks behind the tractor and a rear implement postitionable selectively in three positions, a first position of the rear implement being in-line with the front implement and the tractor for road travel, a second position for a swath to the left of the swath engaged by the front implement and a third position to the right of the front implement swath, comprising, in combination:

a fore-and-aft extruding main frame having a forward and a rearward end;

a front transverse arch having spaced vertically extending legs and a cross bar;

means connecting said front arch legs and said cross bar to the three-point-hitch of the tractor;

a pivotal connection between said forward end of said main frame and said front arch;

a hitch of said front implement extending through said front arch for connection to the tractor drawbar;

a transverse beam at said rearward end of said main frame;

a pair of ground wheels on opposite ends of said beam and pivotal about vertically extending axes;

a rear transverse arch on said rearward end of said main frame and having arms connected to said beam on opposite sides of a central portion of the beam;

a hitch member on said beam to which the rear implement connects to be towed behind said beam;

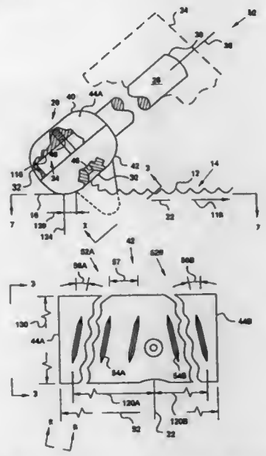
steering means carried on said beam between said wheels whereby the wheels can be pivoted to selectively steer the beam and the rear implement to the left or the right of the front implement; and

a connection to the hydraulic system of the tractor and extending along said main frame to said rearward end and said beam to operate said steering means.

5,544,476
SAND-TRAP RAKE WITH OPPOSITELY-ANGLED TEETH

Robert E. South, and Steven J. Petty, both of Warsaw, Ind., assignors to Midwest Rake Co., Winona Lake, Ind.

Filed Jan. 27, 1995, Ser. No. 379,070
Int. Cl.[6] A01D 7/06
U.S. Cl. 56—400.07 20 Claims



1. A rake (**10**) for plowing, transversely moving, and ironing sand surfaces (**18A** and **18B**) in response to pulling said rake along a longitudinal axis (**22**) with a handle (**28**) thereof inclined upwardly with respect to said longitudinal axis, which rake comprises:

an elongated head (**26**) being disposed transversely to said longitudinal axis, and having ends (**44A** and **44B**) that are disposed on opposite sides of said longitudinal axis;

first plowing means, comprising a first plurality (**52A**) of spaced-apart blades (**54A**) that extend downwardly from said elongated head on one side of said longitudinal axis, for plowing said sand surface (**18A**) in response to said pulling of said rake along said longitudinal axis;

second plowing means, comprising a second plurality (**52B**) of spaced-apart blades (**54B**) that extend downwardly from said elongated head on an opposite side of said longitudinal axis, for plowing said sand surface (**18B**) in response to said pulling of said rake along said longitudinal axis;

first transverse moving means, comprising said first plurality of said blades being disposed at a first angle (**56A**) to said longitudinal axis, for moving grains (**122A**) of sand in a first width in a first transverse direction (**20A**) in response to said plowing of said first width;

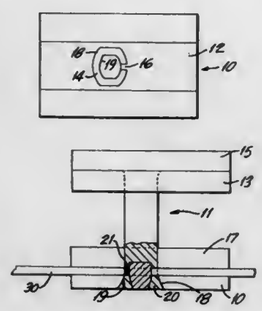
second transverse moving means, comprising said second plurality of said blades being disposed at an opposite angle (**56B**) to said longitudinal axis, for moving grains (**122B**) of sand in a second width in a second transverse direction (**20B**) in response to said plowing of said second width; and

ironing surface means, comprising an ironing surface (**62**) of said elongated head, and comprising both of said pluralities of said blades being disposed, at least partially, intermediate of said handle and said ironing surface, for ironing said widths subsequent to said plowing and moving.

5,544,477
METHOD OF PRODUCING CHAIN LINKS FOR FINE JEWELRY ROPE CHAINS

David Rozenwasser, Savion, Israel, assignor to Avraham Moshe Rozenwasser, Savion, Israel

Continuation-in-part of Ser. No. 264,568, Jun. 22, 1994, abandoned. This application Oct. 24, 1995, Ser. No. 547,348
Claims priority, application Israel, Jun. 1, 1994, 109858
Int. Cl.[6] B21L 17/00
U.S. Cl. 59—13 11 Claims



1. A commercially viable process for producing chain links suitable for use in making fine jewelry rope chains, said chain links having gaps for intertwining one link within another, comprising the steps of:

a) providing a sheet of precious metal selected from silver, gold, platinum, and their alloys having a Mohs hardness of at least 2.5; said sheet of precious metal being of an appropriate thickness determined by the thickness of the link to be produced;

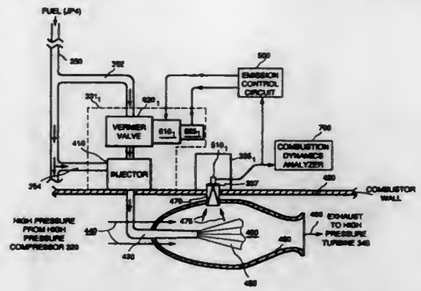
b) piercing said sheet with a single punch from a mating punch and die set having the predetermined shape of the link to produce a finished link with a gap in the range of 0.2–0.7 mm which link is separated from said sheet; and

c) recovering the link.

5,544,478
OPTICAL SENSING OF COMBUSTION DYNAMICS

Emily Y. Shu, Niskayuna, and Dale M. Brown, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 15, 1994, Ser. No. 339,843
Int. Cl.[6] F02C 9/28
U.S. Cl. 60—39.03 20 Claims



1. A system for monitoring combustion dynamics within a gas turbine combustor, comprising:

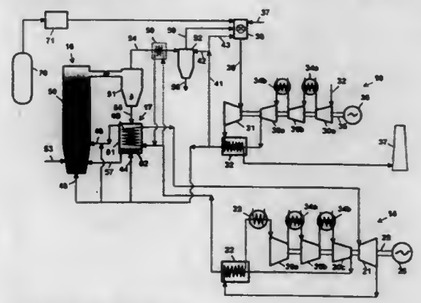
an optical radiation detector for detecting optical emission from a combustion flame in the combustor to produce a detector signal; and

apparatus for recognizing at least one peak frequency component of the detector signal as an indicator of a systematic gas pressure vibration related to combustion.

5,544,479
DUAL BRAYTON-CYCLE GAS TURBINE POWER PLANT UTILIZING A CIRCULATING PRESSURIZED FLUIDIZED BED COMBUSTOR

Xinglong Yan, Cambridge, and Lawrence M. Lidsky, Newton, both of Mass., assignors to Longmark Power International, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 194,726, Feb. 10, 1994. This application Apr. 20, 1994, Ser. No. 230,338
Int. Cl.[6] F02C 1/10;3/26;6/00
U.S. Cl. 60—39.183 67 Claims



1. A power plant comprising:

a circulating pressurized fluidized bed combustor having an outlet for a flue gas stream;

an indirect heater in communication with said fluidized bed combustor for receiving solid particles from said outlet of said fluidized bed combustor;

first piping connected to said outlet of said fluidized bed combustor and said indirect heater for directing the solid particles from said outlet of said fluidized bed combustor to said indirect heater;

second piping connected to an outlet of said indirect heater and said fluidized bed combustor for returning solid particles to said fluidized bed combustor;

a heat exchanger located in said indirect heater for heat transfer from solid particles in said indirect heater;

a closed-cycle gas turbine comprising:

a compressor, a turbine, and a generator connected on a common shaft, and

a closed piping system for circulating a first working fluid through said closed-cycle gas turbine, said closed piping system further comprising a piping section located for directing the working fluid downstream of said compressor to said heat exchanger in said indirect heater and for returning the first working fluid to said turbine, whereby the first working fluid on said piping section is heated by heat transfer from the solid particles in said indirect heater; and

an open-cycle gas turbine comprising:

a compressor, a turbine, and a generator connected on a common shaft, and

an open piping system comprising:

a first section in fluid communication with said fluidized bed combustor for circulating the flue gas stream from said fluidized bed combustor to said turbine for expansion, and

a second section for circulating a second working fluid to said compressor and said indirect heater to fluidize the solid particles in said indirect heater and for directing said second working fluid to said fluidized bed combustor.

5,544,480

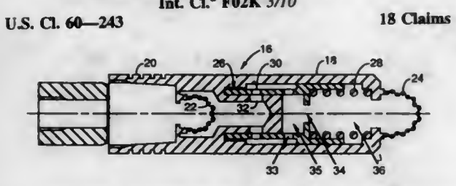
AUGMENTOR LIGHT-OFF IMPROVEMENT

Thomas R. Edwards, Mason, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 30, 1994, Ser. No. 269,296

Int. Cl.[6] F02K *3/10*

U.S. Cl. 60—243 **18 Claims**



1. A system for regulating the flow of fuel to a combustion chamber of an afterburner of a gas turbine engine, comprising:

an in-line flow tube for delivering fuel to said afterburner, said flow tube having a permanently open inlet orifice for providing low pressure fuel therethrough and

a variable device within said flow tube, said variable flow device having means responsive to pressure of the fuel being delivered for maintaining fixed flow through said orifice.

5,544,481

ENGINE AIR/FUEL CONTROL SYSTEM AND CATALYTIC CONVERTER MONITORING

Christopher K. Davey, Farmington Hills; Donald F. Dickison, Sterling Heights, and Robert J. Jerger, Livonia, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

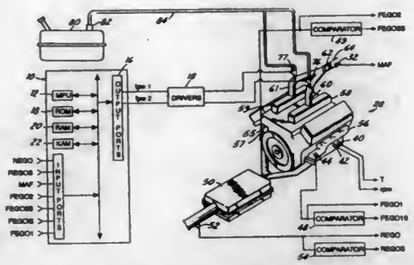
Filed Mar. 31, 1995, Ser. No. 414,569

Int. Cl.[6] F01N *3/10*

U.S. Cl. 60—274 **15 Claims**

1. A control method for an engine having its exhaust coupled to a catalytic converter, comprising the steps of:

detecting changes in gradient of output amplitude from a downstream exhaust gas oxygen sensor positioned downstream of the converter;



providing a downstream switch indication whenever a difference between a first of said output amplitudes of said downstream sensor occurring at a first of said changes in said gradient and a subsequent second of said changes of said output amplitudes of said downstream sensor occurring at a second of said changes in said gradient exceeds a predetermined value; and

indicating catalytic efficiency from a ratio of counts of said downstream switch indications to a ratio of counts in transitions of an upstream signal derived from at least one upstream exhaust gas oxygen sensor positioned upstream of the converter.

5,544,482

EXHAUST GAS-PURIFYING SYSTEM FOR INTERNAL COMBUSTION ENGINES

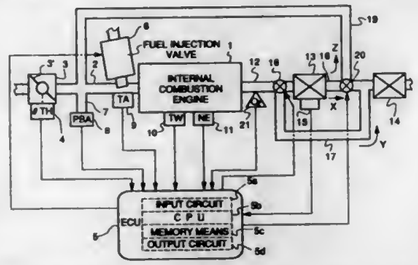
Seiji Matsumoto; Takuya Aoki; Yuichi Shimasaki; Seiji Hatcho; Toshikazu Oketani; Yukio Miyashita; Akihisa Saito; Takashi Komatsuda, and Hiroaki Kato, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 16, 1995, Ser. No. 405,517

Claims priority, application Japan, Mar. 18, 1994, 6-073911

Int. Cl.[6] F01N *3/18*

U.S. Cl. 60—279 **13 Claims**



1. In combination with an internal combustion engine having an intake passage, an exhaust passage, an air-fuel ratio sensor arranged in said exhaust passage, for detecting an air-fuel ratio of exhaust gases from said engine and generating an electric signal indicative of the detected air-fuel ratio of said exhaust gases, a control means for performing the function of calculating an air-fuel ratio control amount for controlling an air-fuel ratio of an air-fuel mixture supplied to said engine to a predetermined air-fuel ratio in response to said air-fuel ratio of said exhaust gases detected by said air-fuel ratio sensor, and an exhaust gas-purifying system including an adsorbing device arranged in said exhaust passage for adsorbing or desorbing said unburnt components contained in said exhaust gases,

the improvement comprising:

an exhaust gas recirculation passage branching off from said exhaust passage at a first branch point downstream of said adsorbing device and extending to said intake passage, for returning exhaust gases flowing through said adsorbing device to said intake passage;

changeover means for changing a path of exhaust gases to selectively introduce said exhaust gases containing said unburnt components into said exhaust gas recirculation passage; and

said control means further performing the function of checking adsorbing capacity of said adsorbing device, based on a manner of change in said air-fuel ratio indicated by said electric signal generated by said air-fuel ratio sensor when said exhaust gases are introduced into said exhaust gas recirculation passage.

5,544,483

INTERNAL COMBUSTION ENGINE WITH A SECONDARY AIR-FUEL SUPPLY

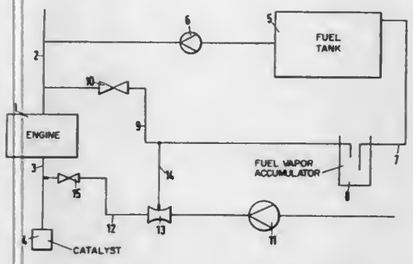
Karsten Heuer, Wasbüttel, Germany, assignor to Volkswagen AG, Wolfsburg 1, Germany

Filed Jan. 27, 1994, Ser. No. 187,649

Claims priority, application Germany, Feb. 19, 1993, 43 05 151.0

Int. Cl.[6] F01N *3/36*

U.S. Cl. 60—283 **3 Claims**



1. An internal combustion engine arrangement comprising an internal combustion engine, a catalyst arrangement receiving exhaust gases from the engine to eliminate undesirable exhaust gas components, a fuel vapor accumulator for accumulating fuel vapor from a fuel supply system for the engine, and a secondary air supply for supplying secondary air to the catalyst arrangement including a pump and valve means for causing fuel vapor from the accumulator to be drawn into the secondary air supply for the catalyst arrangement during cold-starting of the engine to increase the energy content of the exhaust gases to accelerate the effectiveness of the catalyst arrangement.

5,544,484

ENGINE INDUCTION AIR DRIVEN ALTERNATOR

Mark G. Voss, Franksville, Wis.; Gregory E. Peterson, Sylvan Lake, Mich.; William O. Harvey, and Randall L. Perrin, both of Cadillac, Mich., assignors to Nartron Corporation, Reed City, Mich.

Continuation-in-part of Ser. No. 136,666, Oct. 14, 1993, which is a continuation-in-part of Ser. No. 12,942, Feb. 3, 1993. This application Jul. 29, 1994, Ser. No. 282,708

Int. Cl.[6] F16D *31/02*

U.S. Cl. 60—397 **20 Claims**

13. A turboalternator and air flow control assembly for mounting on a combustion air intake of an internal combustion engine, said assembly comprising:

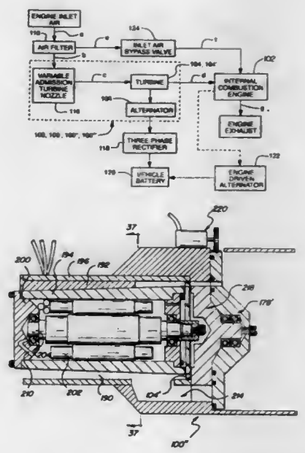
a body having an inlet and an outlet and defining therebetween an air flow path;

a nozzle carrier in the body and defining a plurality of turbine nozzles spaced arcuately about and generally parallel with a central axis, said nozzles having inlet and outlet ends and forming a portion of said air flow path;

a rotor mounted in the body on bearings for rotation on said central axis, said rotor being drivingly connected with an electric generator and including a turbine wheel having blades axially adjacent and radially aligned with said nozzles;

a bypass passage in said body and connecting said inlet and outlet separately from said nozzles, said bypass passage having an annular inlet that substantially surrounds and is centered on said axis; and

a bypass valve in said bypass passage and operable to control air flow through said bypass passage.



5,544,485

MASTER CYLINDER HAVING RESTRICTION MEANS WITH PISTON

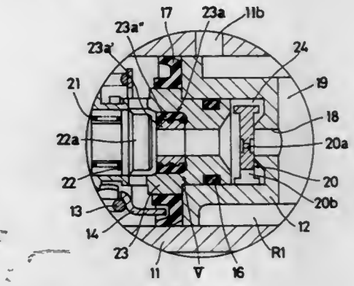
Toshihiro Nakano, Chiryu; Hideaki Iijima, Kariya, and Haruo Arakawa, Toyota, all of, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 17, 1995, Ser. No. 406,054

Claims priority, application Japan, Mar. 31, 1994, 6-062721

Int. Cl.[6] B60T *11/16*

U.S. Cl. 60—589 **6 Claims**



1. A master cylinder comprising:

a cylinder body including a cylinder portion;

a piston fit into the cylinder portion so as to fluid-tightly divide the cylinder portion into a pressure chamber and a supply chamber;

a connecting passage in the piston and which connects the pressure chamber with the supply chamber;

a valve mechanism mounted on the piston for closing the connecting passage when the piston is moved in a predetermined direction; and

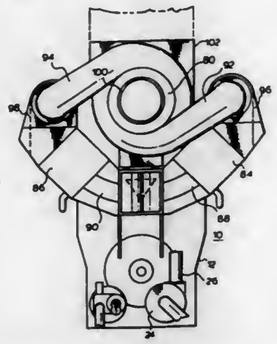
restriction means installed in the connecting passage for restricting a flow of a fluid from the pressure chamber into the supply chamber when the piston is moved in the predetermined direction and for allowing the flow of the fluid from the supply chamber into the pressure chamber when the piston is moved in a direction opposite the predetermined direction.

5,544,486

DUAL OUTLET TURBOCHARGER AND TWIN AFTERCOOLERS FOR A DIESEL ENGINE

Yao-Shun Lu, Erie, Pa., assignor to General Electric Company, Erie, Pa.

Filed Dec. 14, 1994, Ser. No. 355,719
Int. Cl.[6] F02B *29/04*
U.S. Cl. 60—599 **6 Claims**



1. An improvement for a sixteen cylinder diesel engine comprising:

the adaptation of a turbocharger having twin discharge ducts to the engine by means of a hollow adapter member,

and the adaptation of a pair of aftercoolers to the engine such that each aftercooler is in communication with one duct of said turbocharger,

said turbocharger and said aftercoolers being mounted on said adapter member so that said turbocharger is centrally located at the front of said engine, said aftercoolers being mounted on said adapter member in symmetrical relationship on either side of said turbocharger.

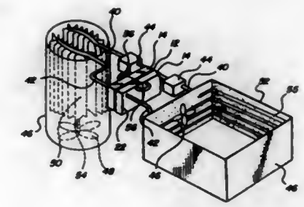
5,544,487

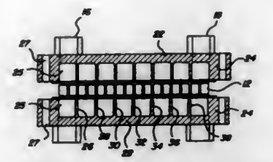
THERMOELECTRIC HEAT PUMP W/HOT & COLD LIQUID HEAT EXCHANGE CIRCUTIS

Graeme S. Attey; Jesse H. Searls, and Gary L. Sargeant, all of Fremantle, Australia, assignors to Hydrocool Pty Ltd, Fremantle, Australia

PCT No. PCT/AU92/00008, § 371 Date Jul. 7, 1993, § 102(e) Date Jul. 7, 1993, PCT Pub. No. WO92/13243, PCT Pub. Date Aug. 6, 1992
PCT Filed Jan. 10, 1992, Ser. No. 84,271
Claims priority, application Australia, Jan. 15, 1991, PK4212
Int. Cl.[6] F25B *21/02*
U.S. Cl. 62—3.7 **24 Claims**

1. A thermoelectric system comprising at least one thermoelectric heat pump having a plurality of thermocouples disposed between first and second opposed thermally conductive outer faces, the first outer face being relatively cool and the second outer face being relatively hot in use, a first and second manifold





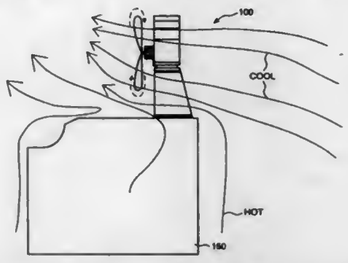
defining a volume being attached to each opposed outer face of the thermoelectric heat pump, respectively, each manifold having an outer wall spaced from the thermoelectric heat pump and side walls abutting the respective first and second outer faces thereby defining an open face, the respective side walls and outer wall and outer face thereby defining the volume, each manifold having a fluid inlet and fluid outlet so that, in use, fluid flows through the manifolds wherein each outer face directly contacts the fluid flowing through the respective manifold, first and second heat exchangers, the first manifold being connected to the first heat exchanger, and the second manifold being connected to the second heat exchanger, and first and second fluid pumps being provided for circulating fluid as a liquid between the manifolds and the heat exchangers wherein the first manifold attached to the cold outer face is connected to the first fluid pump and the first heat exchanger and the second manifold attached to the hot outer face is connected to the second fluid pump and the second heat exchanger so that fluid from the first manifold attached to the cold outer face of the thermoelectric heat pump is circulated through the first heat exchanger by the first fluid pump and fluid from the second manifold attached to the hot outer face of the thermoelectric heat pump is circulated through the second heat exchanger by the second fluid pump.

5,544,488

SELF-POWERED HEAT TRANSFER FAN

Randall H. Reid, R.R.#4, Wiarton, Ontario, Canada

Filed Aug. 8, 1994, Ser. No. 287,306
Claims priority, application Canada, Aug. 10, 1993, 2103734
Int. Cl.[6] F25B *21/02*
U.S. Cl. 62—3.7 **8 Claims**



1. A self-powered fan for circulating air for use in cooperation with a heat source, said fan comprising a first heat transfer member having a first heat transfer surface thermally and physically connected with said heat source, electric motor, fan blades which

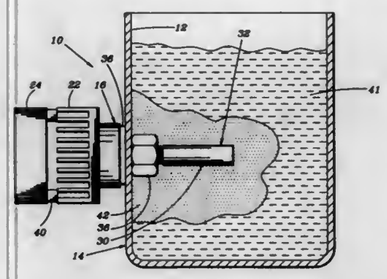
operably create a first or warm air flow and a second or cooler air flow, a second heat transfer member having a second heat transfer surface, thermocouple structure cooperable with said motor, said first heat transfer member and said second heat transfer member, the improvement comprising said first heat transfer member being of suitable material, size, mass and shape as to provide a suitable temperature gradient between said thermocouple structure and said heat source to operably allow of such sufficient heat transfer from said first heat transfer member to said thermocouple structure to generate sufficient power to effect rotation of said blades, but not to cause thermal damage to said thermocouple structure; and wherein said fan blades are constructed and arranged to cause a portion of said second air flow to be drawn past said first heat transfer surface to effect a cooling heat transfer effect upon said first heat transfer member.

5,544,489

DISPENSING APPARATUS FOR A COOLED LIQUID WITH THERMOELECTRIC PROBE

Ulf Moren, San Rafael, Calif., assignor to Coolworks, Inc., San Rafael, Calif.

Filed Jan. 26, 1995, Ser. No. 378,540
Int. Cl.[6] F25B *21/02*
U.S. Cl. 62—3.64 **9 Claims**



1. An apparatus for dispensing a cooled liquid, comprising a receptacle defining a compartment for retaining said liquid and having a side wall with a hole defined in it;

a thermoelectric device operable for producing a first surface having a relatively cool temperature and a second surface having a relatively elevated temperature;

heat sink means adjacent to the second surface and operable for removing heat from the second surface to reduce the temperature of the second surface;

a thermally conductive probe in direct physical contact with the first surface of said thermoelectric device and extending through the hole in said wall;

said first surface being substantially in complete physical contact with said probe;

connecting means operable for urging and maintaining direct physical contact between said probe and the first surface of said thermoelectric device; and

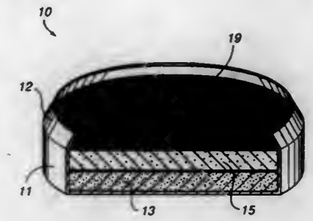
sealing means disposed within said container operable for maintaining said probe positioned through the hole in the wall while inhibiting any leaking of the liquid through the hole in said wall.

5,544,490

DEVICE FOR MAINTAINING A VACUUM IN A THERMALLY INSULATING JACKET AND METHOD OF MAKING SUCH DEVICE

Paolo Manini, Arluno, and Fortunato Belloni, Villastanza Di Parabiago, both of, Italy, assignors to SAES Getters S.p.A, Milan, Italy

Filed Jun. 6, 1995, Ser. No. 479,343
Claims priority, application Italy, Jul. 7, 1994, MI94A1415
Int. Cl.[6] F17C *11/00*
U.S. Cl. 62—46.1 **15 Claims**



1. A method for manufacturing a device for maintaining a vacuum, comprising the steps of:

a) providing a substantially gas-impermeable container having open and closed ends;

b) compressing a powder including a Ba—Li getter alloy at a pressure of between about 30 bar and about 1000 bar to form a first pellet;

c) locating said first pellet in said container proximate to said closed end; and

d) locating a second pellet including a drying agent in said container proximate to said open end such that said second pellet covers substantially said first pellet;

whereby said device is capable of maintaining a nitrogen sorption rate of at least about one cubic centimeter/second after exposure to air for fifteen minutes.

5,544,491

ABYSSAL CASTING APPARATUS FOR LIQUEFIED CARBONATED GAS

Masahiko Ozaki; Keisuke Sonoda; Hiroshi Kikuchi; Osamu Tsukamoto; Masao Komatsu, all of Nagasaki, and Koetsu Asai, Tokyo, all of, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 2, 1995, Ser. No. 398,163
Claims priority, application Japan, Mar. 3, 1994, 6-033481; Mar. 30, 1994, 6-060962; Apr. 20, 1994, 6-104581
Int. Cl.[6] F17C *1/00*
U.S. Cl. 62—53.1 **9 Claims**

1. An abyssal casting apparatus, comprising:

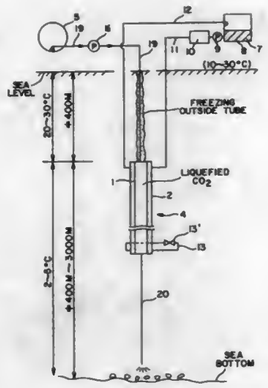
a base on the sea having a liquefied carbonated gas reservoir thereon;

a casting tube extending from said liquefied carbonated gas reservoir into the sea, said casting tube having an upper end portion mounted on said base and a lower end portion in the sea open to the sea at a casting position, said casting tube having a length of at least 3,000 m;

wherein said casting tube comprises a direct heating portion directly heated by sea water therearound for heating liquefied carbonated gas in said casting tube, said direct heating portion extending a length of at least 100 m from the sea level;

wherein said casting tube further comprises an upstream casting tube portion and a downstream casting tube portion located upstream and downstream of said direct heating portion, respectively; and

a forcible heating device comprising a fluid pump connected to a heating fluid source and to one of said upstream casting tube portion and said downstream casting tube portion.

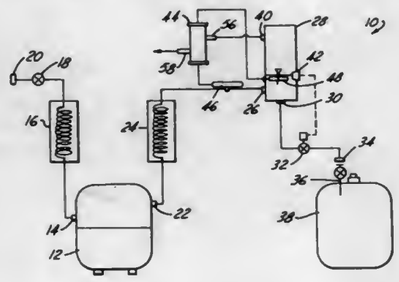


5,544,492

REFRIGERANT HANDLING SYSTEM AND METHOD WITH AIR PURGE AND MULTIPLE REFRIGERANT CAPABILITIES

Kenneth W. Manz, Paulding, Ohio, assignor to SPX Corporation, Muskegon, Mich.

Filed Jun. 5, 1995, Ser. No. 463,709
Int. Cl.[6] F25B *47/00*
U.S. Cl. 62—85 **12 Claims**



1. A method of purging non-condensibles from refrigerant comprising the steps of:

(a) directing the refrigerant into a chamber such that the refrigerant collects in liquid phase at a lower portion of said chamber and non-condensibles are trapped in an upper portion of said chamber over the liquid refrigerant,

(b) measuring temperatures of the refrigerant entering said chamber and of said collected refrigerant,

(c) determining partial pressure of non-condensibles in said upper portion of said chamber as a function of a difference between said temperatures measured in said step (b), and

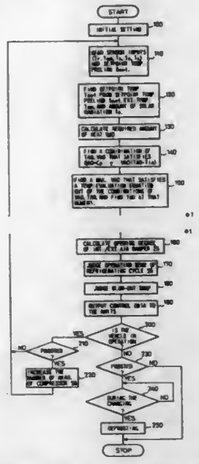
(d) purging non-condensibles from said upper portion of said chamber when said partial pressure determined in said step (c) reaches a selected threshold.

5,544,493

AIR-CONDITIONING DEVICE FOR ELECTRIC AUTOMOBILES

Takahisa Suzuki, Kariya; Kunio Iritani, Anjo; Hiroshi Ishikawa, Hazu-gun, and Akira Isaji, Nishio, all of, Japan, assignors to Nippondenso Co., Ltd., Japan

Filed Jul. 7, 1994, Ser. No. 271,464
Claims priority, application Japan, Jul. 7, 1993, 5-167709; Dec. 27, 1993, 5-351649
Int. Cl.[6] F25D *21/06*
U.S. Cl. 62—133 **7 Claims**



1. An air-conditioning device for electric automobiles powered by a power source of secondary batteries, comprising:

an internal heat exchanger installed in a blast duct that sends air into a passenger compartment;

an external heat exchanger for exchanging heat with external air;

a compressor provided in a coolant circulation circuit that includes said internal heat exchanger and said external heat exchanger, and compresses a coolant; and

an electric motor which is rotated by the power source of said secondary batteries to drive said compressor; wherein,

during the heating operation, the high-temperature gaseous coolant supplied from said compressor is fed to said internal heat exchanger, so that said internal heat exchanger works as a source of heat; said air-conditioning device for electric automobiles further comprising:

a frost judging means which judges the formation of frost on said external heat exchanger; wherein,

when said frost judging means has detected frost formed on said external heat exchanger, the defrosting operation for said external heat exchanger is inhibited while said vehicle is in operation.

5,544,494

METHOD AND APPARATUS FOR REFRIGERANT PURIFICATION

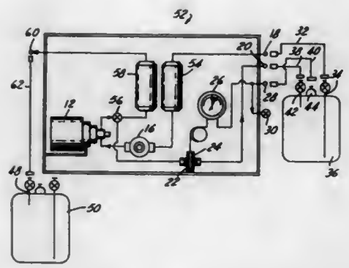
Kenneth W. Manz, Paulding, and Daniel L. Olds, Bryan, both of Ohio, assignors to SPX Corporation, Muskegon, Mich.

Filed Dec. 27, 1994, Ser. No. 364,783
Int. Cl.[6] F25B *45/00*
U.S. Cl. 62—292 **19 Claims**

1. A method of purifying refrigerant comprising the steps of:

(a) circulating the refrigerant in a closed path from first refrigerant containment means through filter/dryer means back to said first containment means,

(b) purging non-condensibles from the refrigerant in said first containment means during operation of said step (a), and



(c) following completion of said step (b) when non-condensibles have been purged from the refrigerant in said first containment means, transferring the refrigerant from said first containment means through filter/dryer means into second refrigerant containment means.

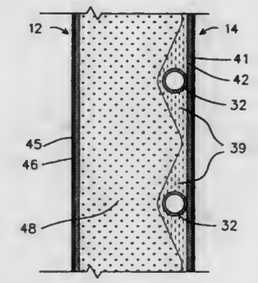
2. The method set forth in claim 1 comprising the additional step, prior to said step (c), of: (d) evacuating said second refrigerant containment means.

5,544,495

CONSTRUCTION OF REFRIGERATED CONTAINERS

Bruce Anderson, and Philip Gipson, both of Naples, Fla., assignors to Frigid-Rigid, Inc., Naples, Fla.

Filed Feb. 14, 1995, Ser. No. 388,282
Int. Cl.[6] F25D *3/08*; F25B *39/02*
U.S. Cl. 62—457.7 **16 Claims**



1. A refrigerated container comprising:

a cabinet having an outer shell forming the cabinet exterior, an inner shell arranged within, but separated from, said outer shell and enclosing a refrigerated space, and a foamed insulating material disposed between the shells, both said outer and inner shells constructed of a first resin that is reinforced with glass fiber;

an evaporator disposed between said outer and inner shells, said evaporator comprising multiple turns of metal tubing wound around the walls of said inner shell to form a coil, said tubing turns spaced apart, one from the next, said evaporator coil arranged to return vaporized refrigerant to a refrigerant compressor; and

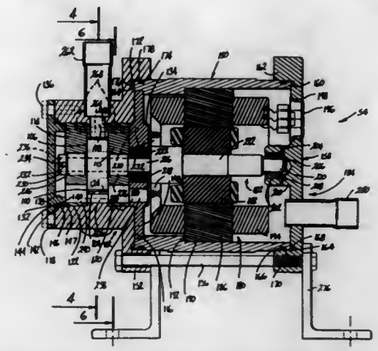
a heat conducting adhesive bonding agent comprising a second resin that is compatible with said first resin with granules of a conductive metal dispersed therein covering said metal tubing and bonding it to the surface of said inner shell wall, said bonding agent containing at least 10% by weight of metal granules and extending between adjacent tubing turns to form a heat conducting layer on the shell wall surface between tubing turns.

5,544,496

REFRIGERATION SYSTEM AND PUMP THEREFOR

Thomas D. Stoll, Grand Rapids, and Lawrence E. Switek, Hopkins, both of Mich., assignors to Delaware Capital Formation, Inc., Wilmington, Del.

Filed Jul. 15, 1994, Ser. No. 276,054
Int. Cl.[6] F25B *1/00*
U.S. Cl. 62—498 **14 Claims**



1. In a refrigeration system having a condensing unit, an evaporating unit, a refrigerant for circulation between the condensing unit and the evaporating unit, and a pump to pump liquid refrigerant from the condensing unit to the evaporating unit, the improvement comprising:

the pump comprising a hermetically sealed enclosure with an inlet opening and an outlet opening, a pump rotor mounted for rotation within the hermetically sealed enclosure on bearings wholly within the hermetically sealed housing, the pump rotor having a plurality of radially disposed vanes which form with the rotor and the enclosure a balanced rotor, positive displacement vane pump;

the enclosure has a housing forming a generally elliptical rotor chamber, the rotor is mounted for rotation therein, a discharge passage extends axially from the rotor chamber;

the rotor has a series of slots in which the vanes are slidably mounted, each slot having a radial outer end and a leading radial wall;

the rotor further has a groove at the outer end of each slot at its leading radial wall to decrease a flow restriction upon the refrigerant leaving the rotor chamber; and

the hermetically sealed enclosure housing further forms a motor chamber, and a discharge passage extends from the rotor chamber into the motor chamber.

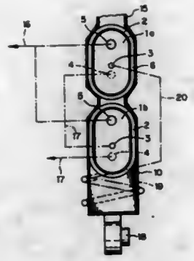
5,544,497

REGENERATOR FOR ABSORPTION REFRIGERATING MACHINE

Naoyuki Inoue, Kanagawa-ken, Japan, assignor to Ebara Corporation, Tokyo, Japan

Filed Jun. 6, 1994, Ser. No. 254,899
Claims priority, application Japan, Jun. 8, 1993, 5-163311
Int. Cl.[6] F25B *33/00*
U.S. Cl. 62—497 **2 Claims**

1. A regenerator for an absorption refrigerating machine which uses combustion gas as a heat source, said regenerator comprising a plurality of drum shells provided in a body casing of said regenerator, said each drum shell having a solution inlet provided in a shell part of said drum shell, a solution outlet having an overflow structure and provided in said shell part at a position lower than said solution inlet, a vapor outlet provided in said shell part at a position higher than said solution inlet, a multiplicity of heat transfer fins provided on an outer periphery of a shell part of said drum shell, and a circulation guide provided along an inner



periphery of said shell part; wherein said plurality of drum shells are arranged in an up and down series relationship, said solution inlet of said uppermost drum shell is connected with a solution supply means from an absorber, said solution outlet of the upper drum shell is communicated with said solution inlet of the lower drum shell so that a solution from said upper drum shell sequentially overflows into said lower drum shell or drum shells, whereas a combustion gas first comes into contact with said fins provided on the lowermost drum shell and then sequentially contact the fins of the upper drum shell or shells.

5,544,498

EFFICIENY COOLING FLUID CIRCUIT

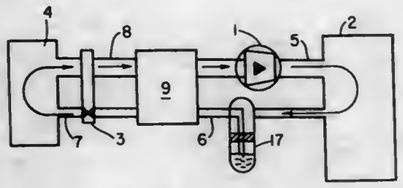
Olusegun O. Benedict, Les Ulis, France, assignor to Valeo Thermique Habitacle, Saint-Denis, France

Filed May 2, 1994, Ser. No. 236,396

Claims priority, application France, May 6, 1993, 93 05456

Int. Cl.[6] F28D *7/02*; F25B *41/00*

U.S. Cl. 62—513 **8 Claims**



1. A cooling fluid circuit comprising a compressor adapted to bring cooling fluid in vapor phase from a low pressure to a high pressure, a condenser adapted to bring high-pressure cooling fluid from the vapor phase to the liquid phase by yielding heat to an external medium, an expansion valve adapted to bring cooling fluid in liquid phase from high pressure to low pressure, an evaporator adapted to bring low-pressure cooling fluid from the liquid phase to the vapor phase by receiving heat from an external medium, and first, second, third and fourth ducts for transferring cooling fluid respectively from the compressor to the condenser, from the condenser to the expansion valve, from the expansion valve to the evaporator and from the evaporator to the compressor, a heat exchanger operable to transfer heat from the second duct to the fourth duct, outside the circuit, to condense residual vapor and to vaporize residual liquid which may be respectively located therein, said heat exchanger having a housing with a high-pressure chamber and a low-pressure chamber into which the second and fourth ducts respectively open, upstreams and downstreams, an said housing containing means for transmitting heat from one to the other by conducting and by convection, wherein said housing containing means have two blocks of fine disposed respectively in said chambers, the fine of each block extending the direction of flow of the cooling fluid in the corresponding chamber.

5,544,499

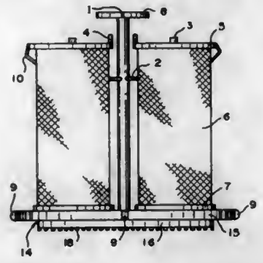
YARN ORGANIZER FOR KEEPING YARN SEPARATED WHEN HAND KNITTING

Linda W. Boggs, 5140 Woodford Dr., Centreville, Va. 22020

Filed May 15, 1995, Ser. No. 441,632

Int. Cl.[6] D04B *35/00*; A41H *31/00*; A47G *19/00*; B65D *21/02*

U.S. Cl. 66—1 A **13 Claims**



1. A yarn organizer for simultaneously supplying different yarns during manual knitting comprising a supporting baseplate having a non-slip surface on the bottom thereof, an upper plate interlocked to and rotable with said baseplate for manual rotation of said upper plate in relation to said baseplate, at least two yarn storage container means, each of said yarn storage container means being an elongated receptacle having an open top end and a lower end, said lower end contacting said upper plate, attachment means for securing said yarn storage container means to a fixed location on said upper plate, a removable cap means closing each of said open top of each of said yarn storage container means, said cap means including a yarn outlet guide means connecting the interior of each of said yarn storage container means to the exterior, said yarn outlet guide means being of such a size to permit a single yarn to pass therethrough, whereby the rotation of said upper plate permits the parallel supply of different yarns preventing entanglement.

5,544,500

GUIDE BAR ARRANGEMENT FOR A CROCHET GALLON KNITTING MACHINE

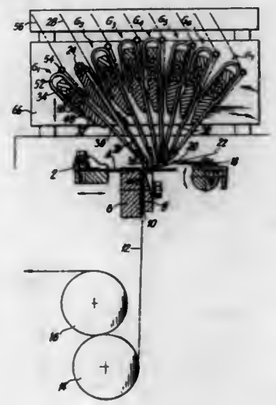
Francisco Speich, Gipf-Oberfrick, Switzerland, assignor to Textilma AG, Hergiswil, Switzerland

Filed Dec. 5, 1994, Ser. No. 347,457

Claims priority, application Switzerland, Apr. 7, 1993, 1062/93

Int. Cl.[6] D04B *27/26*

U.S. Cl. 66—85 R **5 Claims**



1. A knitting machine, comprising:

a plurality of knitting needles; and

at least one guide bar group associated with the plurality of knitting needles and comprising at least two upright guide bars equipped, respectively, with thread guides and arranged one above another;

wherein the guide bars have a substantially flat profile,

wherein one of the two guide bars has a web lying in a main plane of the two arranged one above another guide bars, and another of the two guide bars has a complementary groove for receiving the web of the one guide bar, and

wherein, the thread guides of the arranged one above another guide bars do not intersect and have each a profile such that the thread guide can be placed on a respective guide bar only from a top of the respective guide bar and overlaps another guide bar without contacting the another guide bar.

5,544,501

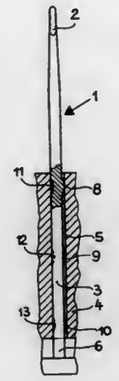
KNITTING NEEDLE FOR A CHAINSTITCH KNITTING MACHINE

Adolf Hägel, Bad Steben, Germany, assignor to Liba Maschinenfabrik GmbH, Naila, Germany

Filed Apr. 11, 1995, Ser. No. 420,074

Int. Cl.[6] D04B *35/04*

U.S. Cl. 66—124 **11 Claims**



1. A needle for a warp knitting machine having a needle bar, the needle comprising: a hook, and a needle shank for insertion into a groove of the needle bar and for fastening therein, wherein said needle shank has at least two elevations on one side of the shank distant from the hook, the dimension of one of said elevations together with the thickness of said shank being at most 0.01 mm less than a given width of said groove, wherein the side of the needle shank opposite the elevations fully abuts side of the groove except for areas opposite the elevations, and the elevations abut against an opposite side of the groove.

5,544,502

KNITTING YARN FEEDING APPARATUS FOR FLAT KNITTING MACHINE

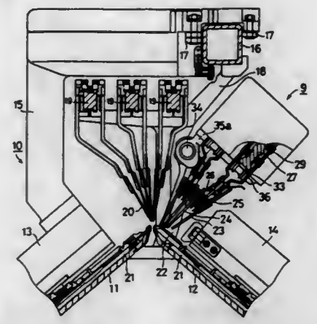
Toshinori Nakamori; Minoru Sonomura, both of Wakayama, and Kenji Nakai, Naga-gun, all of, Japan, assignors to Shima Seiki Manufacturing Limited, Wakayama, Japan

Filed May 1, 1995, Ser. No. 432,583

Claims priority, application Japan, May 2, 1994, 6-093550

Int. Cl.[6] D04B *7/00*

U.S. Cl. 66—126 A **8 Claims**



1. A knitting yarn feeding apparatus for a flat knitting machine, the apparatus feeding knitting yarn to knitting needles of a flat knitting machine, comprising:

a base body having a guide route extending along a needle bed in a longitudinal direction,

a knitting yarn feeding member detachable from the base body and movable reciprocally on the guide route of the base body, for feeding the knitting yarn to the knitting needles projecting from the needle bed by a predetermined height,

a drive belt applied to move reciprocally in the longitudinally direction of the base body, and having the knitting yarn feeding member coupled at one side thereof,

a motor provided at a longitudinal end of the base body, for driving the knitting yarn feeding member reciprocally in the longitudinal direction of the base body through the drive belt, and

an oscillating mechanism coupled to the base body for displacing and driving the base body in a flat plane vertically to the longitudinal direction of the base body.

5,544,503

TENSION SWITCH ASSEMBLY AND YARN CONDUCTOR OF KNITTING MACHINE

Masaki Miyamoto, Wakayama, Japan, assignor to Shima Seiki Manufacturing Ltd., Wakayama, Japan

Filed Jan. 6, 1995, Ser. No. 369,693

Claims priority, application Japan, Jan. 10, 1994, 6-000673

Int. Cl.[6] D04B *15/44*

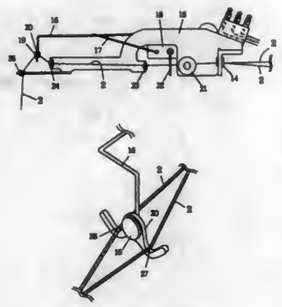
U.S. Cl. 66—146 **10 Claims**

1. A tension switch assembly for use in a knitting machine said tension switch assembly Comprising:

an arm;

a main body and a sensor for detecting a pivotal movement of said arm;

said arm including a forward end for guiding a yarn, and a base end pivotably attached to the main body to tension the yarn, the sensor being operable to detect the pivotal movement of said arm due to a break in the yarn to stop an operation of the knitting machine, the tension switch assembly further comprising a yarn conductor having a rotation supporting point thereof and a pair of yarn supports arranged respectively on opposite sides of the rotation supporting point, said yarn conductor being coupled to a forward end portion of said arm,



said pair of yarn supports being rotatably disposed about said rotation support point.

5,544,504

DEVICE FOR BLOWING FLUFF OR THE LIKE AWAY FROM A CIRCULAR KNITTING MACHINE AND A CIRCULAR KNITTING MACHINE FITTED WITH SUCH A DEVICE

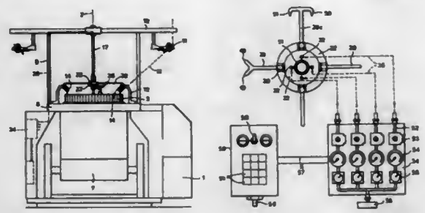
Paul Neher, Messstetten, and Wilfried Schick, Bitz, both of, Germany, assignors to SIPRA Patententwicklungs-und Beteiligungsgesellschaft mbH, Albstadt, Germany

Filed Dec. 8, 1994, Ser. No. 352,553

Claims priority, application Germany, Dec. 15, 1993, 9319234 U; Nov. 10, 1994, 44 40 075.6

Int. Cl.[6] D04B *35/32*

U.S. Cl. 66—168 **19 Claims**



1. A device for a circular knitting machine for blowing away fluff, comprising: a central rod-like mounting means (**17**) defining an axis (**2, 70**); a bolder (**23, 76**) rotatably mounted on said mounting means for rotating around said axis; a plurality of hollow chambers (**27, 77**) provided in said holder; a distribution device (**34, 72**) being connectable with a source (**56**) of compressed air; means connecting said chambers with said distribution device; a plurality of blower opening (**47–51**), said openings being substantially radially and outwardly spaced from said holder and being distributed around said axis; a plurality of tubes (**28, 72**) each connecting a blowing opening with an associated one of said chambers; and means for rotating to and fro said holder, said distribution device having means (**53, 83**) for providing said blowing openings via said chambers with compressed air from said source in a way selected from the group consisting of providing in a predetermined sequence and providing in groups.

5,544,505

LOCK BRACKET

John D. McIntosh, 9 Applegum Grove, East Doncaster, Victoria 3109, and Paul J. Clark, Kangaroo Ground, both of, Australia, assignors to John Dalwyn McIntosh, Victoria, Australia

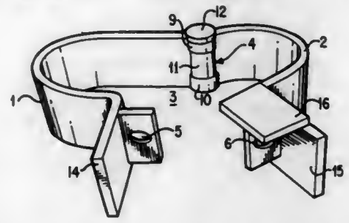
PCT No. PCT/AU93/00179, § 371 Date Nov. 28, 1994, § 102(e) Date Nov. 28, 1994, PCT Pub. No. WO93/22534, PCT Pub. Date Nov. 11, 1993

PCT Filed Apr. 28, 1993, Ser. No. 325,389

Claims priority, application Australia, Apr. 28, 1992, PL2098

Int. Cl.[6] E05B *73/00;67/38*

U.S. Cl. 70—18 **15 Claims**



1. A lock bracket for securing together two adjacent objects, the lock bracket comprising:

two bracket members movable relative to each other between a closed orientation, wherein said bracket members cooperate to define an enclosed area adapted to receive the two adjacent objects, and an open orientation, wherein a gap is formed between said bracket members that enables said lock bracket to be placed around or removed from the two adjacent objects;

each said bracket member comprising a padlock receiving device, each said padlock receiving device being cooperable when said lock bracket is in its closed orientation to form a passage that extends through each said padlock receiving device, said passage having openings at opposing ends and being adapted to receive a shackle of a padlock through said openings for locking said bracket members together in the closed orientation; and

each said bracket member comprising a padlock shielding member, said padlock shielding members being located on opposing sides of said passage and being cooperable to protect the shackle of the padlock when the shackle is inserted through said passage.

5,544,506

AUXILIARY LOCK

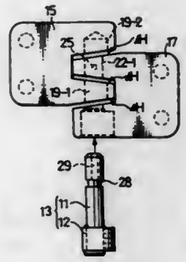
Yoshio Nakano, Tokyo, Japan, assignor to Sanpou Lock Co., Ltd., Tokyo, Japan

Filed Jan. 24, 1995, Ser. No. 377,235

Claims priority, application Japan, Nov. 2, 1994, 6-269396

Int. Cl.[6] E05B *67/36*

U.S. Cl. 70—34 **2 Claims**



1. An auxiliary lock for closing and fastening a movable part to a stationary part using a key comprising: a bolt assembly comprising an inner cylinder having a key hole and an outer cylinder encircling one end of the inner cylinder, the inner cylinder and outer cylinder being rotatable relative to each other using the key; a first re-entrant engagement member, comprising an engagement, projection and defining an indentation adjacent the engagement projection, fixed to the movable part; and a second re-entrant engagement member, comprising an engagement projection and defining an indentation adjacent the engagement projection, fixed to the stationary part, said first re-entrant engagement member and said second re-entrant engagement member defining holes therein to be put in alignment when the first re-entrant engagement member and the second re-entrant engagement member are nested together, the engagement projection of each re-entrant engagement member inserted in the indentation of the counter re-entrant engagement member;

wherein said outer cylinder of said bolt assembly has means for preventing said outer cylinder from rotating in the holes of said first re-entrant engagement member and said second re-entrant engagement member while allowing said inner cylinder to rotate in the holes when the inner cylinder is unlocked from the first re-entrant engagement member and the second re-entrant engagement member using the key; and

wherein said inner cylinder has a distal end, an annular slot made toward the distal end, a longitudinal slot made at the distal end and communicating with the annular slot, wherein the annular slot is adapted to be caught by a counter stud pin mounted on a surface of the holes, thereby preventing said bolt assembly from slipping off said holes of said first re-entrant engagement member and said second re-entrant engagement member upon locking.

5,544,507

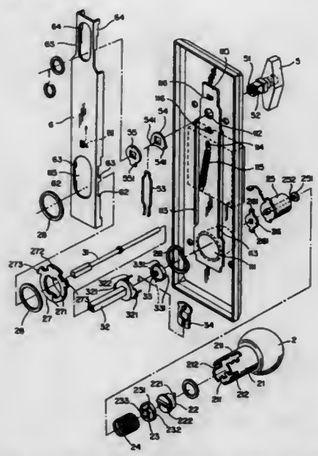
DOOR LOCK ASSEMBLY

Jui-Chang Lin, Kaohsiung Hsien, Taiwan, assignor to Taiwan Fu Hsing Industrial Co., Ltd., Kaohsiung Hsien, Taiwan

Filed Feb. 15, 1994, Ser. No. 196,755

Int. Cl.[6] E05B *59/00*

U.S. Cl. 70—107 **2 Claims**



1. A door lock assembly comprising an inner cap and an outer cap for fixing to a door panel, a slide slidably disposed in said inner cap and movable up and down and including a lower end portion having a first shoulder means formed therein and an upper end having a second shoulder means formed therein, means for biasing said slide upward, a first inner knob including a tube extended through said inner cap, a button slidably disposed in said first inner knob and slightly extended outward of said first inner knob, a rod slidably disposed in said tube and engaged with said button, a follower fixed on said rod and including at least one extension extended therefrom, an outer knob engaged with said outer cap, a shaft secured to said tube, a pole extended through said shaft and including a first end secured to said outer knob such that said pole rotates in concert with said outer knob and including a second end having a disc fixed thereon and rotated in concert with said pole, said disc including a groove for engaging with said extension of said follower, said disc and said outer knob being rotated in concert with said follower when said extension is engaged with said groove, said outer knob being freely rotatable when said extension is disengaged from said groove, a ring secured on said tube and including at least one first projection extended therefrom for engaging with said first shoulder means of said slide so as to move said slide downward, a second inner knob including an axle engaged with said inner cap, at least one disc secured on said axle and including at least one second projection for engaging with said second shoulder means, said axle being rotated by said second projection and said second shoulder means when said slide is moved downward by said ring and when said first inner knob is rotated, whereby, said axle is actuated by said first inner knob.

5,544,508

MOTOR-VEHICLE CENTRAL LOCK SYSTEM FOR TRUNK AND GAS-FILLER DOORS

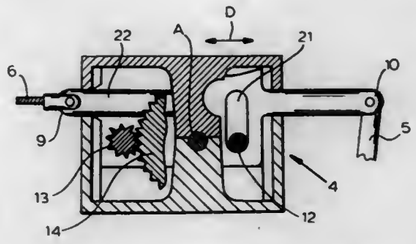
Thorsten Torkowski, Herne, Germany, assignor to Kiekert Aktiengesellschaft, Heiligenhaus, Germany

Filed Feb. 21, 1995, Ser. No. 391,678

Claims priority, application Germany, Apr. 16, 1994, 44 13 277.8

Int. Cl.[6] E05B *63/14*

U.S. Cl. 70—264 **10 Claims**



1. In a motor vehicle having a trunk door and a gas-filler door, a central lock system comprising:

respective latches at the trunk and gas-filler doors movable between locked and unlocked positions corresponding to locked and unlocked conditions of the respective doors;

an actuator adjacent the trunk latch having a single output member displaceable between an actuated and an unactuated position, and a motor connected to the member for displacing same between the respective positions;

means including respective trunk and gas-filler links connected to the respective latches and both connected to the member for simultaneously displacing both the trunk and gas-filler latches into the respective unlocked conditions on displacement of the output member into the actuated position and into the respective locked conditions on displacement of the output member into the unactuated position; and

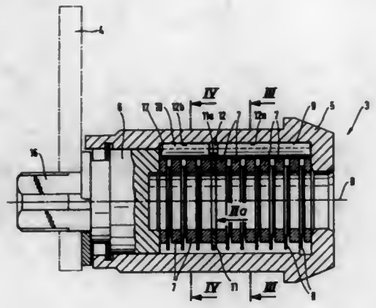
control means connected to the motor for actuating same and thereby simultaneously moving the trunk and gas-filler latches between the locked and unlocked positions.

5,544,509

CYLINDER LOCK-KEY-COMBINATION

Pekka Mielonen, Reijola, Finland, assignor to Abloy Security Ltd. Oy, Helsinki, Finland

Filed Oct. 26, 1994, Ser. No. 329,237
Claims priority, application Finland, Nov. 19, 1993, 935157
Int. Cl.[6] E05B 29/02
U.S. Cl. 70—366 8 Claims



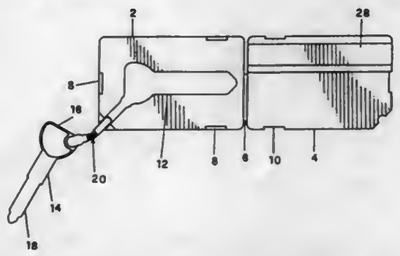
1. A cylinder lock apparatus, which comprises a lock body (5) having a lock cylinder (6) which is arranged to control a bolt element (4) connected thereto and which encloses a stack of locking discs (7) provided with peripheral notches (13) determining an opening combination of the lock, the peripheral notches being located within a cutting range, and the locking discs being symmetrical so that the cutting range of the peripheral notches (13) is located on both sides of their axis of symmetry (A), and first and second locking bar elements (9;10) which in a locked position are located partly in a longitudinal groove (12) made in an inner surface of the lock body (5) and partly in a slot (17) in the lock cylinder (6) preventing turning of the lock cylinder (6) with regard to the lock body (5), whereby a first set of the locking discs (7) can be turned by means of a first key of the lock in a first direction into a position in which the peripheral notches (13) thereof form a uniform channel into which the first locking bar element (9) enters thereby releasing the lock cylinder (6) to turn with regard to the lock body (5) in said first direction, and a second set of the locking discs can be turned by means of a second key of the lock in a second direction, opposite the first direction, into a position in which the peripheral notches (13) thereof form a uniform channel into which the second locking bar element (10) enters thereby releasing the lock cylinder (6) to turn with regard to the lock body (5) in said second direction, whereby the first locking bar element and the first set of locking discs form a first locking unit and the second locking bar element and the second set of locking discs form a second locking unit, the two locking units being functionally independent of each other the opening direction of which being opposite with regard to each, and the groove (12) located in the lock body (5) comprising a transversal extension (12*a*;12*b*) for each of the locking bar elements (9;10) so that the extension (12*a*) for the first locking bar element (9) extends in the second direction and the extension (12*b*) for the second locking bar element (10) extends in the first direction thereby allowing movement of the locking bar element (9;10) in question without the respective locking unit being open.

5,544,510

KEY AND HOLDER COMBINATION

Renato Botteon, Vittorio Veneto, and Ezio Chies, Colle Umberto, both of, Italy, assignors to Silca S.P.A., Italy

PCT No. PCT/EP93/01155, § 371 Date Oct. 12, 1994, § 102(e) Date Oct. 12, 1994, PCT Pub. No. WO93/22948, PCT Pub. Date Nov. 25, 1993
PCT Filed May 11, 1993, Ser. No. 313,189
Claims priority, application Italy, May 13, 1992, VE92A0018
Int. Cl.[6] A47G 29/10
U.S. Cl. 70—456 R 24 Claims



1. A key and holder combination, comprising a holder shaped as a card having an impression for housing a key, and an articulated joint element for connecting said holder to said key, said joint element having three degrees of freedom and being formed in at least two parts to provide said connection both when said key is housed in said impression and when said key is completely spaced from said holder, wherein

said articulated joint element connects a corner of a head of said key with a corner of said holder,

said holder comprises a base and a cover hinged to each other along a side and having, when superposed, sizes of a usual credit card (85×54 mm),

said cover and said base are provided with means which are mutually snap-engageable, and

a thickness of a corner part of said base to which said articulated joint element is applied corresponds to an overall thickness of said base plus said cover;

wherein said head of the key is provided with a seat into which an appendix snap engages being integral with a bottom of the impression;

wherein the appendix consists of a radially shrinkable peg cooperating with a circumferential rib foreseen in said seat;

wherein said key is axially pierced to snap engage an arm of a cross piece articulated to a portion around an axis orthogonal to an axis of said arm, and portion being articulated to said holder;

wherein said portion consists of two different parts, respectively a cross piece articulated to said holder and an intermediate element supporting said cross piece and elastically snap engaging with said cross piece.

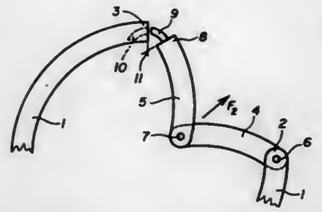
5,544,511

OPENABLE RING WITH A LOCKING MEANS

Joseph Cavaleri, 39, route de Vevey, CH - 1009 Pully, Switzerland

Filed Oct. 18, 1994, Ser. No. 324,878
Claims priority, application Switzerland, Oct. 19, 1993, 3144/93
Int. Cl.[6] A44B 15/00
U.S. Cl. 70—457 3 Claims

1. An openable key-ring provided with locking means, including a first ring portion extending between its ends over an angle of 180° to 300°, a second and third ring portion extending each over an angle of 30° to 150° between their respective ends, in such a manner as to provide, in the closed state, a full ring, a first end of said first ring portion and a first end of said second ring portion including a first hinged connection, the second end of said second ring portion and a first end of said third ring portion including a second hinged connection, said hinged connections allowing a pivoting movement in the plane of the ring, and the second ends of said first and third ring portions including a male locking member and a female locking member, said locking members being formed, respectively, as a non-linear protrusion curved along its longitudinal extent and as a hollow of a similar cross-section having the same radius and the same center of curvature as the protrusion, the arrangement of said locking members allowing a disengagement thereof and hence an opening of the ring when said second hinged connection is moved inwards of the ring against a resilient force of said first ring portion thereof, and preventing a disengagement of said locking members when an outwardly directed force is exerted on the closed ring.

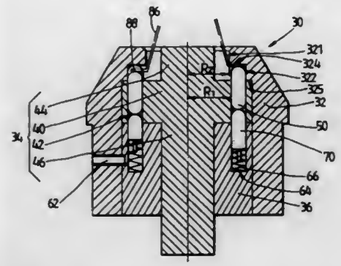


5,544,512

BURGLARYPROOF AXIAL PIN TUMBLER LOCK

Jin-Ren Shieh, No. 178, Shih Chia Rd., Taichung, Taiwan

Filed Aug. 23, 1994, Ser. No. 294,593
Int. Cl.[6] E05B 27/00
U.S. Cl. 70—491 7 Claims



1. An axial pin tumbler lock comprising:

a housing provided with a first axial hole, a second axial hole, a third axial hole, the first axial hole, the second axial hole, and the third axial hole all being coaxial, the housing including a first shoulder located between said first axial hole and said second axial hole and a second shoulder located between said second axial hole and said third axial hole, said first axial hole provided in an inner wall thereof with a locating slot:

an outer tumbler pin seat mounted rotatably in said housing and provided with a lock core, a plurality of through holes, and a plurality of outer tumbler pins which are equal in number to said through holes and are respectively and slidably disposed in said through holes; and

an inner tumbler pin seat fixed in said housing and provided with a plurality of recesses corresponding in location to said through holes, said recesses provided therein respectively with a biasing means and an inner tumbler pin which is slidable along the direction of an axis of said recesses and is urged at one end thereof by said biasing means so as to enable another end of said inner tumbler pin to urge an inner end of said outer tumbler pin, thereby causing an outer end of said outer tumbler pin to press against said first shoulder;

wherein the plurality of through holes of said outer tumbler pin seat comprises a first set of holes and a second set of holes;

wherein tumbler pins slidably disposed in the first set have a first minimum distance from the axis of less than a radius of said first axial hole;

wherein tumbler pins slidably disposed in the second set have a second minimum distance from the axis of more than a radius of said first axial hole; and

wherein the second set includes at least one hole.

5,544,513

METHOD FOR CONTROLLING THE STRETCHING OF ROLLING STOCK

Hans J. Pehle, Jüchen, Germany, assignor to Mannesmann Aktiengeselschaft, Düsseldorf, Germany

Filed Dec. 3, 1993, Ser. No. 162,637
Claims priority, application Germany, Dec. 3, 1992, 42 41 188.2
Int. Cl.[6] B21B 37/10
U.S. Cl. 72—12.2 4 Claims

1. A method for controlling stretching of pipe rolling stock with a pilot control system for a pipe rolling mill, comprising the steps of: determining temperature in an interior region of the rolling stock prior to rolling by integrally measuring a physical quantity of the pipe rolling stock other than surface temperature proportional to the temperature in the interior region; and superimposing the temperature as a signal on the pilot control system.

5,544,514

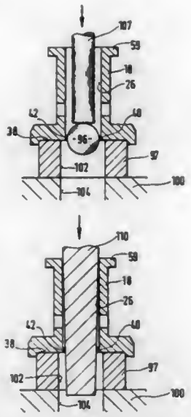
METHOD FOR PRODUCING A NOZZLE HOLDER OF AN ELECTROMAGNETICALLY ACTUATED INJECTION VALVE

Stefan Maier, Schwieberdingen, and Jochen Hommel, Leonberg, both of, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Division of Ser. No. 83,239, Jun. 29, 1993, Pat. No. 5,359,876, which is a division of Ser. No. 978,012, Nov. 17, 1982, Pat. No. 5,255,855. This application Jnn. 30, 1994, Ser. No. 268,985
Claims priority, application Germany, Nov. 19, 1991, 41 37 994.2
Int. Cl.[6] B21D 41/02;51/16
U.S. Cl. 72—75 2 Claims

1. A method for sizing an armature guide protrusion of a nozzle holder of an electromagnetically actuatable injection valve, wherein the armature is disposed in a nozzle holder bore of the nozzle holder having at least one, partway encompassing interior guide protrusion within the nozzle holder bore, which comprises mounting the nozzle holder (18) with a step (38) on a nozzle holder retainer (97) having an axial bore greater than the nozzle holder bore, pressing a completely spherical, freely movable ball (96) through the nozzle holder bore (26) from a direction of a retaining shoulder (59) of the nozzle holder (18), and in a direction of the step (38) of the nozzle holder (18), so that only the at least one guide protrusion (42), extending at least partway around an inner surface of the nozzle holder bore, is opened out to a rated size substantially the same as the diameter of the ball.

2. A method for sizing an armature guide protrusion of a nozzle holder of an electromagnetically actuatable injection valve, wherein the armature is disposed in a nozzle holder bore of the nozzle holder having at least one, partway encompassing interior guide protrusion within the nozzle holder bore, which comprises mounting the nozzle holder (18) with a step (38) on a nozzle holder retainer (97) having an axial bore greater than the nozzle holder bore, driving a conically embodied mandrel (110) having a conical surface along its length into the nozzle holder bore (26), from a direction of a retaining shoulder (59) of the nozzle holder (18) in a



direction of the step (**38**) of the nozzle holder (**18**), to such a distance that the at least one extending guide protrusion (**42**) is opened out to a rated size only by the conical surface of the mandrel (**110**) and is formed with a conical inner guide surface that guides an armature.

5,544,515

METHOD OF AND APPARATUS FOR THE FORMATION OF THE CIGARETTE BLOCKS

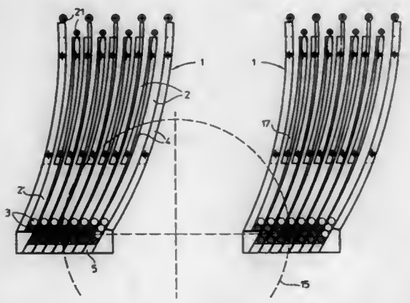
Jurgen Zwiechowski, Schwelm, Germany, assignor to Maschinenfabrik Alfred Schmermund GmbH & Co., Gevelsberg, Germany

Filed Dec. 19, 1994, Ser. No. 358,839

Claims priority, application Germany, Dec. 22, 1993, 43 43 803.2

Int. Cl.[6] B65B *19/04*

U.S. Cl. 53—148 **19 Claims**



1. In an apparatus for the formation of cigarette blocks consisting of at least three rows of cigarettes, the middle one of such three rows containing one cigarette less than the other rows, the apparatus having an array of feed shafts defined by shaft walls which are spaced from one another, the number of shafts corresponding to the maximum number of cigarettes in any one of the rows increased by one, the shafts having a width larger than the diameter of the cigarettes being formed into blocks whereby cigarettes may be delivered to and travel down the shafts so as to be arranged one above the other in the shafts, the apparatus further having a block receptacle and a block slide for simultaneously pushing a number of rows of cigarettes commensurate with the size of the cigarette block to be formed out of a lower extraction region of the shafts into the block receptacle, the extraction region extending upwardly from a shaft bottom, the block receptacle defining a passage, the improvement comprising:

at least the lower ends of the shafts extending upwardly at an angle other than perpendicular relative to the shaft bottom, the outermost shaft of the array at one end thereof having means for closing the two lower rows whereby the rows of cigarettes proceeding upwardly from the lowermost row will be offset to one another, row-to-row accordingly to their arrangement in the cigarette block to be formed;

the block receptacle defined passage having fixed dimensions; and

at least some of the shaft defining walls being provided with extensions which project into the passage defined by the block receptacle.

5,544,516

SYSTEM TO ROLL AT LEAST TWO SECTIONS IN BLOCKS OF FAST ROLLING MILL STANDS

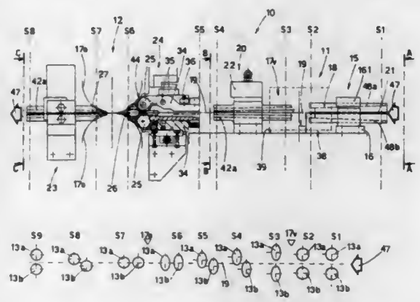
Severo Robolini, Torbole Casaglio, and Claudio Picotti, Gorizia, both of, Italy, assignors to Danieli & C. Officine Meccaniche SpA, Buttrio, Italy

Filed Jul. 13, 1994, Ser. No. 274,982

Claims priority, application Italy, Jul. 13, 1993, UD93A0136

Int. Cl.[6] B21B *39/16*

U.S. Cl. 72—235 **14 Claims**



1. System to roll at least two sections comprising a plurality of blocks of fast rolling mill stands arranged along a rolling axis, each fast rolling mill stand including one pair of rolling rolls supported as cantilevers, the respective fast rolling mill stands having alternately along said rolling axis rolling rolls having a horizontal axis and a vertical axis, the rolling rolls having a diameter between 160 and 250 mm. and a distance between 600 and 1200 mm. between the center of one pair and the center of the next pair of rolls, respective alternate rolling rolls defining a vertical plane substantially intermediate between the respective rolling rolls having a vertical axis and a horizontal plane substantially intermediate between the respective rolling rolls having a horizontal axis, the rolling axis being defined by an intersection of the vertical axis and the horizontal axis and being intermediate between the sections, the system further comprising, in cooperation with the respective pairs of rolling rolls of two blocks of fast rolling mill stands, a first guide box for round sections which is positioned upstream of a first pair of rolling rolls, a second guide box which receives oval sections and displaces at least partly at least two sections from a first rolling plane of the first pair of rolling rolls to a second plane perpendicular to the first rolling plane, a third guide box with rolls which receives oval sections and aligns the same on the second rolling plane of a second pair of rolling rolls and a fourth guide box which receives round sections and displaces the sections at least partly from the second rolling plane of the second pair of rolling rolls to the first plane perpendicular to the second plane, the fourth guide box being followed by a fifth box which aligns the round sections on the first plane, the second, third and fourth guide boxes displacing the sections without changing a circumferential position of axes of sections in relation to the horizontal.

5,544,517

METHOD OF REDRAWING A PREDRAWN COATED METAL CAN

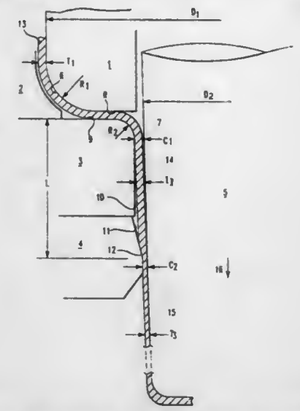
Kelichi Shimizu, Hikari, Japan, assignor to Toyo Kohan Co., Ltd., Tokyo, Japan

Filed Sep. 7, 1994, Ser. No. 301,852

Claims priority, application Japan, Dec. 22, 1993, 5-345629

Int. Cl.[6] B21D *22/00*

U.S. Cl. 72—349 **10 Claims**



1. Method of redrawing a predrawn metal can coated with an organic film, said method comprising the steps of

drawing a metal can from a metal blank coated with an organic film and having a thickness T_0 to form a predrawn can, said predrawn can having an inner surface, an outer surface, and a wall thickness T_1,

holding said predrawn can between a blank holder having a shoulder of radius R_1 facing said inner surface and a redrawing die having a shoulder of radius R_2 facing said outer surface,

redrawing said predrawn can by moving a punch through said redrawing die to produce a redrawn can having a wall thickness T_2,

ironing said redrawn can by moving said punch through an ironing portion of an ironing die adjacent to and at a distance of 10 to 30 mm from the shoulder of said redrawing die to produce a redrawn and ironed can having a wall thickness T_3, the reduction ratio for the ironing die being defined by:

$$\frac{(T_2 - T_3)}{(T_2)} \times 100\%$$

said reduction ratio being in the range of 10 to 50%.

5,544,518

APPARATUS AND METHOD FOR CALIBRATING MANIFOLDED TANKS

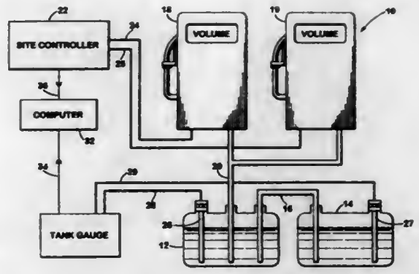
Robert P. Hart, East Hampton, Conn., and Leonid M. Malinin, Cambridge, Mass., assignors to Veeder-Root Company, Simsbury, Conn.

Filed Jun. 2, 1995, Ser. No. 459,122

Int. Cl.[6] G01M *3/04*

U.S. Cl. 73—1 H **18 Claims**

1. An apparatus for calibrating manifolded liquid storage tanks, comprising:



(a) sensors disposed within the tanks, said sensors sensing liquid levels in each of the tanks and providing first and second output signals;

(b) at least one metering device for measuring the amount of liquid being dispensed into or out of the storage tanks and providing third output signals; and

(c) a processor having first and second inputs for receiving said first and second output signals, and a third input for receiving said third output signals, said processor being operative:

to store a first set of data values including a plurality of ratios of changes in liquid levels in one tank to associated changes in liquid levels in the other tank, said liquid levels used in determining said changes being measured by the sensors during a plurality of idle periods following associated dispensing periods and at a plurality of different liquid levels of the liquid in the tanks.

5,544,519

METHOD AND APPARATUS FOR MEASURING THE FLOW RESISTANCE OF A CATHETER IN AN IMPLANTED MEDICATION INFUSION SYSTEM

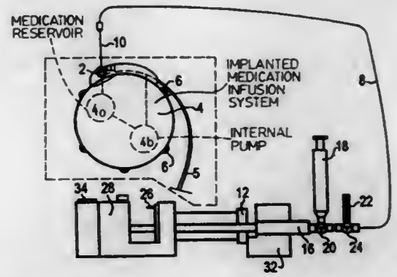
Bjoern Hammarberg, Solna; Jan Rosen, Grillby, and Bruno Slettenmark, Jaerfaella, all of, Sweden, assignors to Siemens Elema AB, Solna, Sweden

Filed Oct. 20, 1994, Ser. No. 326,199

Claims priority, application Sweden, Oct. 22, 1993, 9303484

Int. Cl.[6] G01M *19/00;* **B01L** *3/02*

U.S. Cl. 73—37 **11 Claims**



1. A method for extracorporeally measuring flow resistance in a catheter in a completely implanted medication infusion system, said implanted medication infusion system including a medication reservoir and an internal pump for conveying the medication from the reservoir in vivo via said catheter to a specified site within the patient, said catheter being connected to an output of said internal pump via a one-way valve, and said system including a rinsing input providing access to said catheter, said rinsing input disposed upstream of said catheter and downstream of said internal pump, said method comprising the steps of:

percutaneously introducing, from an extracorporeal location, a predetermined volume of liquid at a predetermined pressure into said implanted catheter via said rinsing input; and

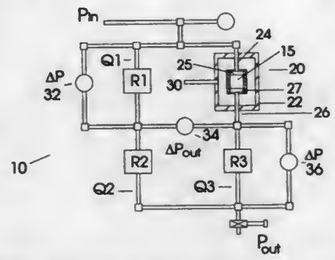
measuring a time required for all of said predetermined volume of liquid to pass through said implanted catheter via said rinsing input at said predetermined pressure.

5,544,520

BRIDGE PERMEAMETER

Darin C. Graf, Edgewood, and Norman R. Warpinski, Albuquerque, both of N.M., assignors to Sandia Corporation, Albuquerque, N.M.

Filed Feb. 10, 1995, Ser. No. 386,836
Int. Cl.[6] G01N *15/08*
U.S. Cl. 73—38 **8 Claims**



1. Apparatus for measuring the permeability of a material comprising:

a fluid bridge having a plurality of paths for a test fluid,

one of said paths including means for holding the material, whereby fluid in said one path passes through the material; and

others of said paths including flow resistors having a predetermined resistance to fluid flow, whereby fluid in each of said other paths passes through a flow resistor; and

means for determining the pressure drop across a plurality of said paths,

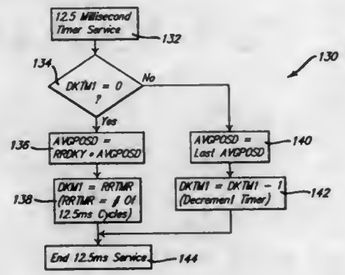
the permeability of said material being a function of measured pressure drops, predetermined resistances, and fluid viscosity at said resistances.

5,544,521

ENGINE MISFIRE DETECTION WITH ROUGH ROAD INHIBIT

Jay C. McComble, Rochester Hills, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.

Filed Jun. 6, 1995, Ser. No. 469,040
Int. Cl.[6] G01M *15/00*
U.S. Cl. 73—117.3 **10 Claims**



1. A method of detecting misfires in individual cylinders of an internal combustion engine and being operable to reduce noise effects, said method comprising the steps of:

detecting misfires in individual cylinders of the internal combustion engine;

sensing rotation of a crankshaft;

determining deviations of change of velocity of adjacent expected cylinder firings;

determining a comparison value as a function of change in positive deviations of change of velocity and a time decay rate;

comparing the comparison value with a threshold value;

disabling the misfire detection when the comparison value exceeds the threshold value; and

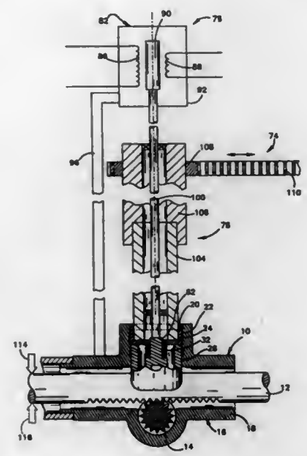
reducing the comparison value with the time decay rate.

5,544,522

STEERING ASSEMBLY AND METHOD

Scott C. Little, Chilhowie, Va., assignor to TRW Inc., Lyndhurst, Ohio

Filed Oct. 28, 1994, Ser. No. 330,986
Int. Cl.[6] G01M *19/00*; B62D *5/22*
U.S. Cl. 73—118.1 **19 Claims**



1. A method of obtaining a desired range of movement between a rack and a pinion of a steering assembly in a direction transverse to a longitudinal axis of the rack, said method comprising the steps of:

applying force to the rack to position the rack at a first end of the desired range of movement;

pressing a yoke against the rack when the rack is at the first end of the desired range of movement to position the yoke at a first reference position;

moving the yoke away from the first reference position;

measuring the distance through which the yoke moves away from the first reference position;

interrupting movement of the yoke away from the first reference position when the measured distance is equal to the desired range of transverse movement between the rack and pinion and the yoke has moved to a second reference position for the yoke; and

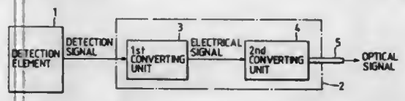
blocking further movement of the yoke away from the first reference position when the yoke is at the second reference position.

5,544,523

PHYSICAL QUANTITY SENSOR ARRANGEMENT

Kaoru Uchiyama, Oomiya-machi; Mitsukuni Tsutsui, Naka-machi; Shotaro Naito, Katsuta, and Seiji Suda, Mito, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 792,421, Nov. 15, 1991, abandoned. This application Mar. 7, 1994, Ser. No. 206,219
Claims priority, application Japan, Nov. 16, 1990, 2-310261
Int. Cl.[6] G01F *15/02*
U.S. Cl. 73—118.2 **8 Claims**



1. A physical quantity sensor unit for detecting a physical quantity and outputting an optical sensor signal corresponding to the detected physical quantity to an external apparatus, comprising:

detecting means for detecting the physical quantity and outputting a first electrical signal indicative of a voltage amplitude corresponding to the physical quantity;

a first converting unit for converting the first electrical signal output from said detecting means into a second electrical signal indicative of either of a frequency or a digital value corresponding to the first electrical signal;

a second converting unit for converting the second electrical signal output from said first converting unit into said optical sensor signal corresponding to the second electrical signal, said second converting unit including a laser diode for generating said optical sensor signal, wherein at least a portion of said detecting means, said first converting unit and said second converting unit, including said laser diode, are formed on a single semiconductor substrate;

a housing for accommodating said portion of said detecting means, said first converting unit and said second converting unit, formed on said single semiconductor substrate; and

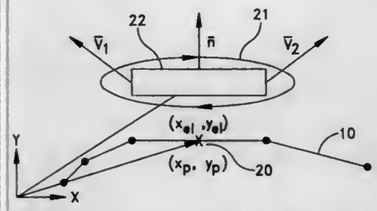
photo transmission means secured to said housing for transmitting said optical sensor signal output from said laser diode included in said second converting unit to said external apparatus.

5,544,524

APPARATUS AND METHOD FOR PREDICTING FLOW CHARACTERISTICS

Stephen A. Huyer, Portsmouth; John R. Grant, and James S. Uhlman, both of Jamestown, all of R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 20, 1995, Ser. No. 506,583
Int. Cl.[6] G01M *9/00*
U.S. Cl. 73—147 **16 Claims**



1. Apparatus for producing a representation of predicted flow in an area of interest around an object comprising:

means for defining a model of the object,

means for defining a plurality of vorticity segments over the area of interest including vorticity segments at the surface of the object having a known velocity,

means for defining over the area of interest a plurality of sets of boxes, each set having a predetermined relationship in size and position to the boxes in the other sets,

means for determining the velocity for each segment based upon the vorticity of that segment, the vorticity of each segment in the same box and in neighboring boxes and the vorticity of groups of other boxes surrounding the neighboring boxes taken collectively,

means for summing the velocities thereby to determine the velocity of each segment based upon the influence of all the vorticity segments in the area of interest, and

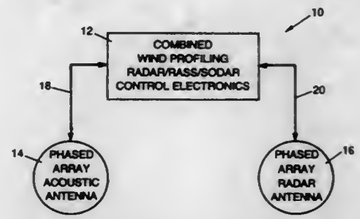
means responsive to the summed segment velocities for displaying the predicted flow over the area of interest.

5,544,525

ATMOSPHERIC REMOTE SENSING INSTRUMENT SYSTEM

K. Russell Peterman, Boulder, Colo., and Michael V. Smith, Knoxville, Tenn., assignors to Radian Corporation, Austin, Tex.

Continuation-in-part of Ser. No. 288,939, Aug. 10, 1994. This application Dec. 16, 1994, Ser. No. 357,723
Int. Cl.[6] G01W *1/00*
U.S. Cl. 73—170.13 **16 Claims**



3. A system of atmospheric remote sensing instruments comprising:

a steerable acoustic antenna, wherein said steerable acoustic antenna is responsive to a first acoustic transmit signal for providing a first directed beam of transmitted acoustic energy, wherein said steerable acoustic antenna is responsive to a second acoustic transmit signal for providing a second directed beam of transmitted acoustic energy, and wherein said steerable acoustic antenna is responsive to a reflected portion of said first directed beam of transmitted acoustic energy for providing an acoustic receive signal, said reflected portion of said first directed beam of transmitted acoustic energy being reflected by wind in the atmosphere;

a steerable radar antenna, wherein said steerable radar antenna is responsive to a first radar transmit signal for providing a first directed beam of transmitted electromagnetic energy, wherein said steerable radar antenna is responsive to a second radar transmit signal for providing a second directed beam of transmitted electromagnetic energy, wherein said steerable radar antenna is responsive to a backscattered portion of said first directed beam of transmitted electromagnetic energy for providing a first radar receive signal, said backscattered portion of said first directed beam of transmitted electromagnetic energy being backscattered by said second directed beam of transmitted acoustic energy, and wherein said steerable radar antenna is responsive to a backscattered portion of said second directed beam of transmitted electromagnetic energy for providing a second radar receive signal, said backscattered portion of said second directed beam of transmitted electromagnetic energy being backscattered by wind in the atmosphere; and

control and processing means for generating said acoustic transmit signals and said radar transmit signals so as to temporally coordinate the use of said steerable acoustic antenna and said steerable radar antenna, respectively, said control and process-

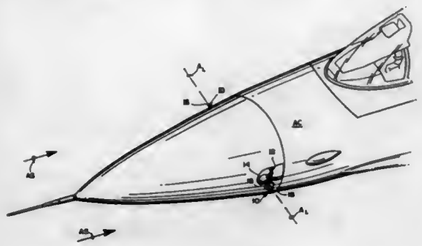
ing means being responsive to said acoustic receive signal for providing an indication of wind characteristics based on the characteristics of said reflected portion of said first directed beam of transmitted acoustic energy as compared to the characteristics of said first directed beam of transmitted acoustic energy, said control and processing means being responsive to said first radar receive signal for providing an indication of temperature characteristics based on the characteristics of said reflected portion of said first directed beam of transmitted electromagnetic energy as compared to the characteristics of said first directed beam of transmitted electromagnetic energy, said control and processing means being responsive to said second radar receive signal for providing an indication of wind characteristics based on the characteristics of said reflected portion of said second directed beam of transmitted electromagnetic energy as compared to the characteristics of said second directed beam of transmitted electromagnetic energy.

5,544,526

COMBINED AIRCRAFT ANGLE OF ATTACK AND DYNAMIC/STATIC PRESSURE SENSOR ASSEMBLY

Guntis U. Baltins, Charlottesville; Russell W. Boyle, Earlysville; Denis G. Mason, Charlottesville; Howard M. Moore, Stanardsville; A. DeBow Owen, Charlottesville, and Joseph A. Sharp, Stanardsville, all of Va., assignors to Avionics Specialties, Inc., Earlysville, Va.

Filed Jun. 30, 1994, Ser. No. 268,919
Int. Cl.[6] G01C *21/00*; G01F *1/46*
U.S. Cl. 73—180 **31 Claims**



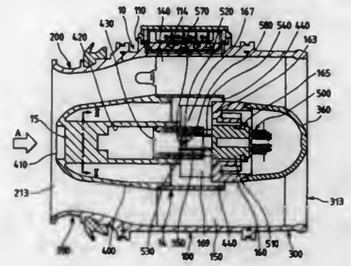
1. A combined aircraft angle of attack and dynamic/static pressure sensor assembly for aircraft comprising:
a proximal housing;
a distal probe element defining an exterior surface adapted for lateral projection from the aircraft along a projection axis into an airstream flowing substantially normally to said projection axis, said probe element being mounted to said housing for rotational movement about said projection axis;
a pair of circumferentially spaced-apart pneumatic sensing ports formed in said exterior surface of said probe element;
a dynamic pressure sensing port formed in said exterior surface of said probe element and disposed substantially circumferentially midway between said pair of pneumatic sensing ports; and
output ports communicating respectively with said pair of pneumatic sensing ports and said dynamic pressure sensing port, wherein
said exterior surface of said probe element rotates about said projection angle in response to a pressure balance upset between said sensing ports to cause said sensing ports to be rotatably realigned relative to said airstream so as to reestablish a pressure balanced condition therebetween, and to cause said dynamic pressure sensing port to be rotatably disposed in a line of maximum pressure on the exterior surface of said probe element due to airstream impingement when said sensing ports are in said pressure balanced condition.

5,544,527

FLOW METER HAVING A MAIN PASSAGE AND A BRANCH PASSAGE PARTIALLY PARTITIONED INTO PLURAL REGIONS

Noboru Kitahara, Kariya; Minoru Kondo, Chiryu, and Yukio Sawada, Anjo, all of, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 23, 1994, Ser. No. 363,006
Claims priority, application Japan, Dec. 24, 1993, 5-328646
Int. Cl.[6] G01F *1/68*
U.S. Cl. 73—204.21 **7 Claims**



1. A flow meter comprising:
a tubular member having a main passage in which fluid flows;
a branch passage member disposed in said main passage and having a branch passage in which the fluid flows;
a support member connecting said branch passage member and a wall of said tubular member, and supporting said branch passage member within said main passage;
a partition arrangement disposed in said branch passage and dividing said branch passage into a plurality of sub passages extending along a flow of the fluid, said sub passages converging at a meeting position downstream of said partition arrangement;
a flow-rate measuring resistor disposed in a region of said branch passage downstream of said partition arrangement and also downstream of said meeting position for sensing a rate of a flow of the fluid in said branch passage;
a control circuit electrically connected to said flow-rate measuring resistor for calculating a measurement value from an output signal of said flow-rate measuring resistor; and
an outlet formed in said branch passage member for connecting said branch passage with said main passage to enable the fluid to move from said branch passage into said main passage after the fluid meets said flow-rate measuring resistor;
wherein said partition arrangement comprises a partition plate, and a length of a part of said partition plate, measured along a direction of the fluid flow, depends on a position of said part.

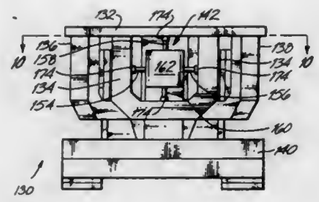
5,544,528

HIGH FREQUENCY VIBRATION TEST FIXTURE WITH HYDRAULIC SERVO VALVE AND PISTON ACTUATOR

William B. Woyski, La Habra Heights; Robert C. Tauscher, Hacienda Heights, both of Calif., and Klaus L. Cappel, Madison, Ala., assignors to Team Corporation, Burlington, Wash.

Division of Ser. No. 248,372, May 24, 1994, which is a division of Ser. No. 871,678, Apr. 20, 1992, Pat. No. 5,343,752.
This application Jun. 5, 1995, Ser. No. 461,134
Int. Cl.[6] G01M *7/06*
U.S. Cl. 73—665 **8 Claims**

1. A multiple axis vibration test fixture comprising a fixture base for carrying a unit under test;
a plurality of vibration actuators affixed to the base, each vibration actuator including a reciprocating actuating arm, and a hydraulic servo valve having a pair of opposed fluid flow



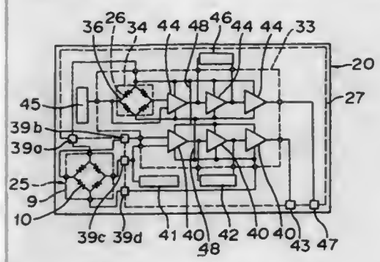
control outlet ports for imparting vibrating motion to the corresponding actuating arm along an axis;
means coupling each vibration actuator to the fixture base so that the actuating arm of each vibration actuator reciprocates along a separate axis aligned at an angle with respect to and intersecting a different axis along which the actuating arm of another vibration actuator reciprocates, each vibration actuator applying a vibrating motion to the fixture base along the axis of the corresponding actuating arm to vibrate the fixture base in multiple axes; and means for decoupling from each independent vibration actuator the vibrating motion imparted to the fixture base from other vibration actuators applying forces to the fixture base along other axes,
each hydraulic servo valve having an alternating energy input source that induces each servo valve to produce alternating fluid flow control outputs from the outlet ports of each servo valve at a frequency corresponding to the desired vibration frequency under test, the flow control outlet ports from opposite sides of each servo valve being in close proximity to and passing directly into inlet ports of the vibration actuators so as to substantially minimize the total volume of trapped fluid between the servo valve outlet ports and the vibration actuators so that alternating fluid flow control outputs to alternating volumes of the trapped volumes of fluid in the vibration actuators reciprocates the vibration actuators at a high frequency to impart corresponding vibrating motion to the fixture base and the unit under test.

5,544,529

PRESSURE SENSOR AND CHIP THEREFOR

Tateki Mitani; Motomi Ichihashi, and Mikio Bessho, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 11, 1994, Ser. No. 320,741
Claims priority, application Japan, Oct. 8, 1993, 5-253151
Int. Cl.[6] G01L *13/02;15/00;9/06*
U.S. Cl. 73—716 **5 Claims**



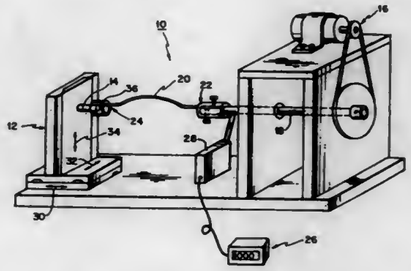
1. A pressure sensor comprising:
a first pressure sensor; and
an atmospheric pressure sensor;
wherein each sensor has a respective pressure-sensitive element, and a respective amplifying circuit for amplifying a respective output signal from the respective pressure-sensitive element;
wherein the respective amplifying circuit for the first pressure sensor, and the respective pressure-sensitive element and the respective amplifying circuit for the atmospheric pressure sensor are provided on a single chip; and
wherein the single chip is free of the respective pressure-sensitive element for the first pressure sensor.

5,544,530

ASSEMBLY SUITABLE FOR LIFE TESTING A MULTI-DIMENSIONAL FORCE TRANSDUCER

Charles A. Rudisill, Apex, N.C.; Joseph D. Rutledge, Mahopac, N.Y., and Edwin J. Selker, Palo Alto, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 28, 1994, Ser. No. 330,878
Int. Cl.[6] G01N *3/32*
U.S. Cl. 73—810 **5 Claims**



1. A test assembly for mechanically cycling a multi-dimensional force transducer through all directions of lateral deflection of a sensing member until the force transducer functionally fails, comprising:
1) a rigid shaft;
2) a mounting mechanism for holding and positioning a force transducer under test, said force transducer having such sensing member defining an axis with respect to which lateral forces applied to said sensing member are sensed, said mounting mechanism positioning said sensing member and said rigid shaft coaxially along a common axis;
3) a motor for rotating said rigid shaft;
4) a cantilever spring having first and second ends, said first end being rigidly connected to the rigid shaft and said second end being mechanically coupled to the sensing member under lateral spring tension so that the cantilever spring can rotate with the rigid shaft while applying a lateral force to the sensing member, the applied lateral force rotating in direction with the rigid shaft; and
5) a counter for recording a cumulative number of rotations of the rigid shaft until the force transducer functionally fails.

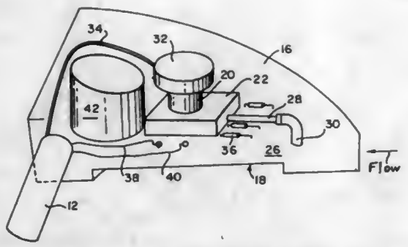
5,544,531

FLOWMETER HAVING ACTIVE TEMPERATURE COMPENSATION

Donald B. Heckman, Purcellville, Va., assignor to Marsh-McBirney, Inc., Frederick, Md.

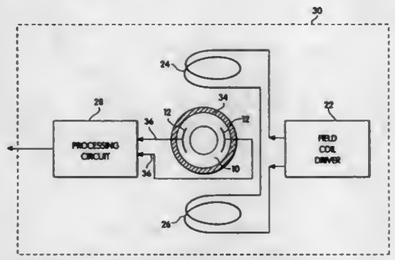
Filed Jan. 9, 1995, Ser. No. 370,246
Int. Cl.[6] G01F *15/02*
U.S. Cl. 73—861.01 **13 Claims**

1. A method for measuring fluid flow in an open channel, comprising the steps of
(a) actively compensating for temperature variation in a submersed fluid level pressure transducer by automatically correcting for fluctuations in fluid level as a function of fluid temperature, said compensating step including the steps of



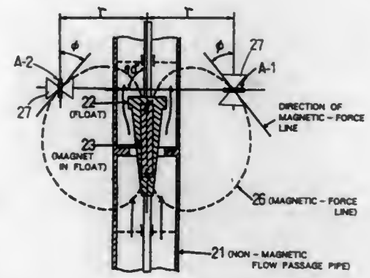
(1) operating the pressure transducer at a plurality of different combinations of pressure and temperature;
(2) measuring drive and output voltages of the transducer at each pressure and temperature combinations, said output voltage comprising a differential voltage;
(3) deriving a plurality of temperature/pressure coefficients from said measured voltages, the number of coefficients being no greater than the total number of pressure and temperature combinations; and
(4) entering said coefficients into a data logger;
(b) measuring the pressure of the fluid as a function of fluid level;
(c) calculating the cross sectional area of the fluid in accordance with said pressure measurements and said temperature coefficients;
(d) determining the velocity of the fluid; and
(e) calculating the fluid flow as a function of the cross sectional area and the velocity of the fluid.

5,544,532
MAGNETIC FLOWMETER WITH IMPROVED ACCURACY
Christopher R. Brown, Wrentham, Mass., assignor to The Foxboro Company, Foxboro, Mass.
PCT No. PCT/US92/06375, § 371 Date May 25, 1994, § 102(e) Date May 25, 1994, PCT Pub. No. WO93/03332, PCT Pub. Date Feb. 18, 1993
Continuation-in-part of Ser. No. 738,595, Jul. 31, 1991, Pat. No. 5,289,725. This PCT application Jul. 31, 1992, Ser. No. 190,037
Int. Cl.[6] G01F *1/58*
U.S. Cl. 73—861.16 **23 Claims**



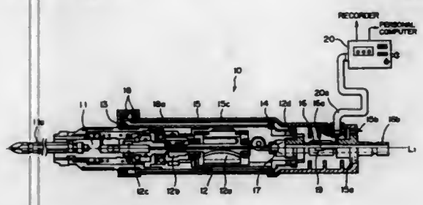
8. A magnetic flowmeter for measuring a flow rate of a fluid, comprising:
a conduit adapted to carry the fluid to be measured;
a primary magnetic field source which provides a primary magnetic field passing through the conduit and the fluid;
a pair of electrodes, coupled to the conduit, which detect a signal resulting from motion of the fluid through the conduit; and
a secondary magnetic field source which provides a secondary magnetic field passing through the conduit and the fluid and which is added to the primary magnetic field to create a summed magnetic field, wherein an average direction of the summed magnetic field is altered relative to a longitudinal axis of the conduit, to yield the resulting signal having a value of substantially zero when a velocity of the fluid in the conduit is substantially zero; and
a measuring circuit, coupled to the pair of electrodes, which receives and processes the resulting signal and outputs a signal representative of the average velocity of the fluid through the conduit.

5,544,533
AREA FLOW METER WITH HALL DEVICES HAVING MAGNETISM-RESPONSIVE SURFACES
Tokio Sugi, Tokyo, and Fumiya Furuno, Yokohama, both of, Japan, assignors to Tokyo Keiso Kabushiki-kaisha, Tokyo, Japan
Filed Dec. 15, 1994, Ser. No. 356,838
Claims priority, application Japan, Dec. 29, 1993, 5-351162
Int. Cl.[6] G01R *33/025*
U.S. Cl. 73—861.56 **3 Claims**



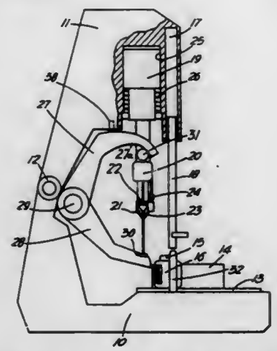
1. In an area flow meter comprising:
a vertical flow passage pipe through which a fluid being measured flows upward; and
a float made of a material larger in specific gravity than said fluid, said float being mounted in said flow passage pipe so as to be vertically movable in said flow passage pipe, an effective cross-sectional area of which varies when said float is vertically moved by said fluid;
the improvement wherein:
the area flow meter further comprises a magnet (**23**) and a pair of Hall devices;
said magnet is mounted in said float, and is so magnetized as to have its north and south poles aligned vertically, whereby said magnet produces magnetic-force lines symmetrically with respect to a vertical symmetry axis thereof which is parallel to a direction in which said float moves; and
each of said pair of Hall devices is provided with a magnetism-responsive surface, is at the same distance from said symmetry axis of said magnet, and is disposed outside said flow passage pipe on a plane perpendicular to said symmetry axis of said magnet so that one of said Hall devices has said magnetism-responsive surface thereof arranged horizontally while the other of said Hall devices has said magnetism-responsive surface thereof arranged vertically.

5,544,534
ROTARY POWER TOOL
Junichi Fujitaka, Isehara, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Filed Sep. 30, 1994, Ser. No. 317,654
Claims priority, application Japan, Oct. 1, 1993, 5-246653
Int. Cl.[6] G01L *5/24*
U.S. Cl. 73—862.23 **32 Claims**



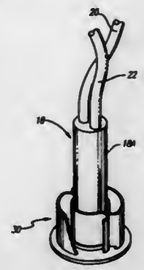
1. A rotary power tool comprising:
a rotatable shaft;
a body supporting said shaft for providing a drive force for driving said shaft;
torque detecting means for detecting a torque in said shaft;
peak holding means for holding a peak torque, which said peak torque has been detected by said torque detecting means; and
peak hold cancelling means for resetting the peak torque held by said peak holding means in response to a detection of at least one of a start and an end of a drive force of said body.

5,544,535
PIPETTING DEVICE
Nicholas Thomas, Cardiff, United Kingdom, assignor to Amersham International PLC, Buckinghamshire, United Kingdom
PCT No. PCT/GB93/00622, § 371 Date Sep. 15, 1994, § 102(e) Date Sep. 15, 1994, PCT Pub. No. WO93/21534, PCT Pub. Date Oct. 28, 1993
PCT Filed Mar. 26, 1993, Ser. No. 307,743
Claims priority, application United Kingdom, Apr. 16, 1992, 9208386
Int. Cl.[6] G01N *35/00*
U.S. Cl. 73—864.22 **18 Claims**



1. A pipetting device comprising: means for locating a supply container in a predetermined position, a pipette, automatic means for actuating guided movement of the pipette into said predetermined position and into selected operative positions for abstracting liquid from the supply container and for discharging the abstracted liquid into receiving containers disposed in said selected operative positions, respectively, means for drawing controlled volumes of liquid into and expelling liquid from the pipette, means for preventing the liquid from being expelled from the pipette in the absence of a said receiving container in a said selected operative position, and a rack removably and replaceably disposed in a predetermined location and comprising a base portion having means for locating the receiving containers in said respective selected positions and a lid assembly comprising upper and lower lid elements, whereof the lower element has vertical holes for extending about the respective receiving containers and the upper element has vertical holes and is movable into and out of a position in which the holes therein register with the holes in the lower element to open access to the receiving containers.
9. A pipetting device comprising:
a supply container support at which a supply container will be supported in the device in a predetermined position, a pipette, means for moving the pipette to allow the pipette to abstract liquid from the supply container in said predetermined position and to discharge liquid into a respective receiving container disposed in a selected operative position, means for drawing liquid into and expelling liquid from said pipette, means for preventing liquid from being expelled from said pipette in the absence of the receiving container in said selected operative position, and a rack comprising a base portion having a vertically extending hole configured to accommodate the receiving container, and an element disposed on top of said base portion and having a hole alignable with the vertically extending hole in said base portion; wherein said means for preventing initiates automated pipetting operation of the device in response to movement of the rack into a predetermined position in the device.

5,544,536
MOUNTING ADAPTER FOR MAGNETIC REED SWITCH
Jae H. Kim, Kyunggi-Do, Rep. of Korea, assignor to K & J Electronics, Inc., Kyunggi-Do, Rep. of Korea
Filed Aug. 3, 1995, Ser. No. 510,604
Int. Cl.[6] H01H *9/02*
U.S. Cl. 73—866.5 **10 Claims**



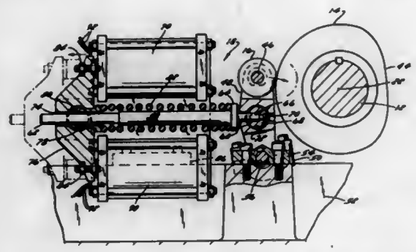
1. An adapter for mounting an elongated member of circular cross section in a hole in an object formed of non-pliable material, said adapter including: a rigid disc-shaped end member, first and second strip members extending axially outwardly from the plane of said end member in spaced relationship with one another, each of said strip members having a rigid arcuate portion secured at one of its edges to said end member adjacent to the periphery of said end member, and each of said strip members having a radially resilient bent-over arcuate portion integral with the corresponding one of said rigid arcuate portion but detached from said end member, the resilient arcuate portions of the strip members facing one another and defining an essentially circular receptacle for receiving one end of the elongated member and retaining the elongated member in the adapter in a position extending axially outwardly from the plane of said end member, the rigid arcuate portions of the strip members having an outer diameter selected to be received in the hole of the non-pliable object, and at least one tooth formed in the outer surface of at least one of the rigid arcuate portions to engage and interlock with the bore of the hole in the object so as to cause the elongated member to be retained therein.

5,544,537

ENERGY BALANCE SYSTEM CONFIGURED TO COMPENSATE FOR THE CHANGES IN ENERGY ABSORBED BY A ROTATING SHAFT

Daryl R. Konzal, Colgate, Wis., assignor to Paper Machinery Corporation, Milwaukee, Wis.

Filed Jan. 21, 1994, Ser. No. 184,573
Int. Cl.[6] F16H *25/08;53/06*
U.S. Cl. 74—53 15 Claims



1. An energy balance apparatus for use on a machine, the energy balance apparatus comprising:
- a shaft which rotates about an axis and upon which a torque load is imposed;
- a cam supported on the shaft for coincident rotation therewith;
- a cam follower in cooperative engagement with the cam, configured to limit a twisting of the shaft when loaded in torque;
- a spring loaded actuator mechanism connected to the cam follower to force the cam follower against the cam with a predetermined force load;
- a release mechanism cooperating with the actuator mechanism operable to reduce the predetermined force load;
- wherein the actuator mechanism is comprised of a coil spring for providing the predetermined force load and includes:
  - a rod having a proximal end and a distal end, the rod including a flange disposed proximate the distal end;
  - a bracket configured to slidably receive the proximal end of the rod, the coil spring being held between the flange and the bracket; and
  - a lever arm connected to the cam follower and pivotably mounted about a pivot point, the proximal end of the rod being connected to the lever arm;
  - wherein the release mechanism is connected to the bracket and selectively moves the bracket towards the distal end of the rod to release tension in the coil spring; and
  - further wherein the release mechanism includes a pneumatic cylinder.

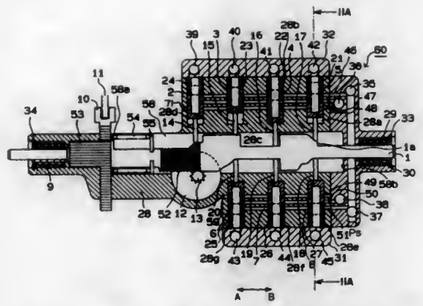
5,544,538

HYDRAULIC CONTROLLER FOR AUTOMATIC TRANSMISSION HAVING AUTOMATIC MANUAL CONTROL AND AUTOMATIC FAILSAFE OPERATION

Akira Takagi, Obu; Fumiaki Murakami, Okazaki; Masami Fujutsuna, Kariya; Kazuyuki Natsume, Toyohashi; Masaru Suzuki, Kariya, and Toshihiro Takei, Okazaki, all of, Japan, assignors to Nippondenson., Ltd., Kariya, Japan

Filed Jun. 3, 1994, Ser. No. 253,570
Claims priority, application Japan, Jun. 4, 1993, 5-160350; Jan. 31, 1994, 6-029010
Int. Cl.[6] F16H *61/18;63/08;* F16K *31/524;31/54*
U.S. Cl. 74—335 7 Claims

1. A hydraulic controller for an automatic transmission which switches and controls engagement and disengagement of a plurality of friction engaging elements provided within the automatic transmission by selecting one of a plurality of speed change positions by switching oil passages selectively connectable to respective ones of said friction engaging elements, said hydraulic controller comprising:



an integrated valve which integrates a plurality of hydraulic valves for switching the oil passages selectively connectable to the respective friction engaging elements;

valve switching means for switching said plurality of hydraulic valves directly and simultaneously;

automatic hydraulic valve switching means for automatically driving and controlling said valve switching means by switching only a forward speed change position in said automatic transmission; and

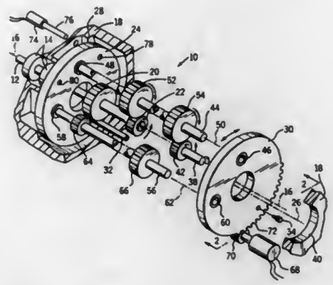
manual hydraulic valve switching means for manually driving and controlling said valve switching means by switching at least forward and reverse speed change positions in said automatic transmission, at least one hydraulic valve switched by said manual hydraulic valve switching means in said reverse speed change position being a hydraulic valve switched by said automatic hydraulic valve switching means in said forward speed change position.

5,544,539

GEAR DRIVE WITH ECCENTRIC SHIFT MECHANISM

Dale R. Spridco, DeForest, and J. Marc Gruneberg, Madison, both of Wis., assignors to GearTechnic Corporation, Madison, Wis.

Filed Jan. 23, 1995, Ser. No. 376,576
Int. Cl.[6] F16H *3/34*
U.S. Cl. 74—353 9 Claims



1. A gearbox comprising:
(a) a housing
(b) a first drive shaft extending into the housing to turn with respect to the housing along a first drive shaft axis supporting a coaxial first drive gear and a coaxial second drive gear;
(c) a second drive shaft extending into the housing to turn with respect to the housing along a second drive shaft axis supporting a coaxial third drive gear;
(d) a shaft carrier supported at its outer edge against an inner surface of the housing to turn about a carrier axis to a first and second angles, the carrier axis displaced from the first and second drive shaft axes;

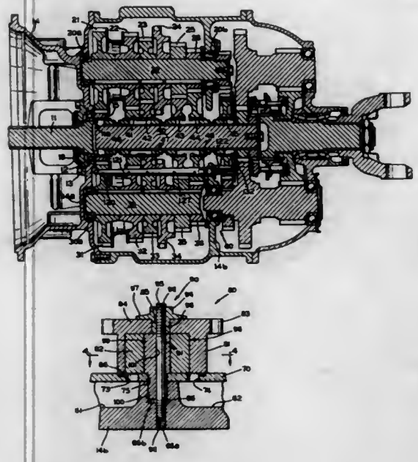
(e) a first idler shaft supported by the shaft carrier at a first position on the shaft carrier and having mounted thereon a coaxial first and second idler gear to follow an orbit about the first and second drive shaft axes with turning of the shaft carrier between the first and second angles whereby:
(i) the first idler gear is engaged with the first drive gear at the first angle and is disengaged from the first drive gear at the second angle; and
(ii) the second idler gear is engaged with the third drive gear at the first angle and is disengaged from the third drive gear at the second angle;
(f) a second idler shaft supported by the shaft carrier at a second position on the shaft carrier and having mounted thereon a coaxial third and fourth idler gear to follow an orbit about the drive gear with turning of the shaft carrier between the first and second angles wherein:
(i) the third idler gear is disengaged from the second drive gear at the first angle and is engaged with the second drive gear at the second angle;
(ii) the fourth idler gear is disengaged from the third drive gear at the first angle and is engaged with the third drive gear at the second angle.

5,544,540

GEROTOR PUMP FOR VEHICLE TRANSMISSION LUBRICATION SYSTEM

James L. Holman, Wauseon, Ohio, assignor to Dana Corporation, Toledo, Ohio

Filed Dec. 29, 1994, Ser. No. 365,770
Int. Cl.[6] F16H *57/04;* F16N *7/38;* F16C *1/10*
U.S. Cl. 74—467 22 Claims



1. A gerotor pump comprising:
a hollow outer pump element including an inner surface having a plurality of teeth formed thereon, said outer pump element including an end wall formed integrally with said outer pump element at one end thereof which extends radially inwardly; and
an inner pump element disposed within said outer pump element and including an outer surface having a plurality of teeth formed thereon which mesh with said teeth formed on said inner surface of said outer pump element.

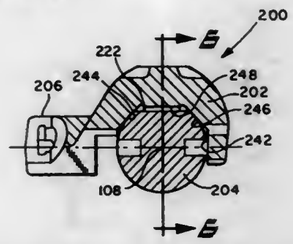
9. A transmission comprising:
a housing defining a sump;
an input shaft extending within said housing;
an output shaft extending within said housing;
a plurality of gears contained within said housing and selectively connectable between said input shaft and said output shaft for providing a plurality of gear ratios therebetween;
a gerotor pump disposed within said housing, said gerotor pump including a hollow outer pump element including an inner surface having a plurality of teeth formed thereon, said outer element including an end wall formed integrally with said outer element at one end thereof which extends radially inwardly and an inner pump element disposed within said outer pump element, said inner pump element including an outer surface having a plurality of teeth formed thereon which mesh with said teeth formed on said inner surface of said outer element;
a first fluid conduit providing fluid communication between said sump and said pump;
a lubricant discharge member supported within said housing, said lubricant discharge member having at least one aperture formed therein; and
a second fluid conduit providing fluid communication between said pump and said lubricant discharge member.

5,544,541

SHIFT SHAFT AND SHIFT BLOCK ASSEMBLY

Kenneth J. Kruizenga, Climax, and James D. Gluys, Portage, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jan. 5, 1995, Ser. No. 368,948
Int. Cl.[6] B60K *20/00*
U.S. Cl. 74—473 R 6 Claims



1. A single-shaft shifting mechanism (**200**) for selection and for engagement and disengagement of selectable gear ratios in a multiple-speed transmission (**10**), said mechanism comprising a shift shaft (**204**) having a first axis (**108**) and being mounted for axial and rotational movement in a housing (H), a shift block member (**202**) separate from said shift shaft and fixed for axial and rotational movement with said shift shaft, said shift block member defining a fitting (**104**) for receiving a shift actuator movable in a first direction (X—X) generally parallel to the axis (**108**) of said shaft and in a second direction (Y—Y) generally perpendicular to the axis of said shaft, and a plurality of shift forks (**60A, 62A, 64A**), each having a hub portion (**118, 120, 122**) defining a through bore for receipt of said shift shaft, said shifting mechanism characterized by:
said shift shaft defining (i) a bore (**208**) having a second axis (**208A**) for receipt of a shank (**188A**) of a fastener; (ii) an outer surface (**222**) surrounding an opening to said bore; (iii) a pair of radially extending axially inwardly facing shoulders (**210, 212**) separated by a first axial distance (**218**), and (iv) a first pair of generally chordally extending ramps (**230, 232**) inclined toward said outer surface and equally radially spaced about said second axis and defining planes which, if extended, will intersect at said second axis;
said shift block defining (i) a through bore (**240**) for receipt of a shank of a fastener; (ii) a pair of radially extending axially outwardly facing surfaces (**236, 238**) separated by a second axial distance (**234**) generally equal to said first axial distance; and (iii) an inner diameter surface (**242**) surrounding said shift shaft and defining a second pair of ramps (**244, 246**) equally

spaced from an opening to said through bore and complementary to and engageable with said first pair of ramps, said inner diameter surface surrounding the opening to said through bore further defining an opposed surface (248) opposite from and spaced from said outer surface when said first and second pairs of ramps are in contact; and

a shanked fastener (188) having a shank received in said bores for clamping said first and second pairs of ramps into contact.

5,544,542

SHOCK ABSORBING STEERING DEVICE AND METHOD OF MANUFACTURING THE DEVICE

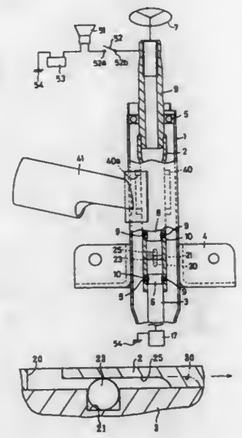
Terukazu Nakajima, Nara, Japan, assignor to Koyo Seiko Co., Ltd., Osaka, Japan

Filed Jun. 7, 1994, Ser. No. 255,715

Claims priority, application Japan, Jun. 8, 1993, 5-036373

Int. Cl.[6] B62D *1/18*

U.S. Cl. 74—492 7 Claims



1. A shock absorbing steering device having a first shaft and a second shaft, which is inserted in the first shaft so that transfer of rotation between the two shafts and relative axial movement between the two shafts are allowable, to transfer rotation of a steering wheel to a steering gear, comprising:

a through hole formed through the first shaft,

a groove formed on the inner surface of the first shaft so that the groove connects with the through hole,

a recess formed on the outer surface of the second shaft, and

a ball beld by the recess so that a portion of the ball projects from the outer surface of the second shaft,

wherein the ball is sized so as to be able to pass through the through hole, and the portion of the ball projecting from the outer surface of the second shaft is inserted in the groove, and wherein

the groove is formed by the projecting portion of the ball causing plastic deformation of the inner surface of the first shaft as the result of relative axial movement between the first and second shafts.

5,544,543

DEVICE FOR ADJUSTING THE LENGTH OF FLEXIBLE, MECHANICAL REMOTE-CONTROLS WITH TWO MUTUALLY ADJUSTABLE COMPONENTS THAT CAN BE LOCKED IN DIFFERENT POSITIONS RELATIVE TO EACH OTHER

Gunter Hilgert, Wetzlar-Naunheim, and Thomas Medebach, Wetzlar-Dudenhofer, both of, Germany, assignors to Kuster & Co., GmbH, Ehringshausen, Germany

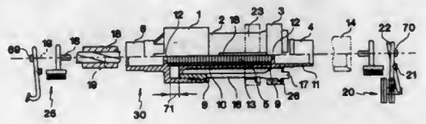
PCT No. PCT/EP93/01102, § 371 Date Jan. 7, 1994, § 102(e) Date Jan. 7, 1994, PCT Pub. No. WO93/22571, PCT Pub. Date Nov. 11, 1993

PCT Filed May 5, 1993, Ser. No. 175,367

Claims priority, application Germany, May 7, 1992, 42 14 533.3

Int. Cl.[6] F16C *1/22*

U.S. Cl. 74—502.4 10 Claims



1. A device for adjusting the length of cables comprising first and second relatively adjustable components which can be locked at different relative positions, wherein said first component is designed as a bush component in a configuration of an index bolt, said index bolt being provided with an outer toothing, and said second component having a configuration of a collet, said collet being integrally provided with elastically bendable arms having an inner toothing, said inner toothing meshing with said outer toothing in a plurality of locking positions,

and wherein a displaceable securing element is provided, said securing element being configured as a securing sleeve, said sleeve being slideably mounted on said collet and manually movable along said collet to-and-fro between a securing position and an unlocking position of said arms of said collet, said securing element locking said first and second components in one of said locking positions when in said securing position.

5,544,544

THROTTLE TRIGGER DEVICE FOR AN INTERNAL COMBUSTION ENGINE OF A WORKING TOOL

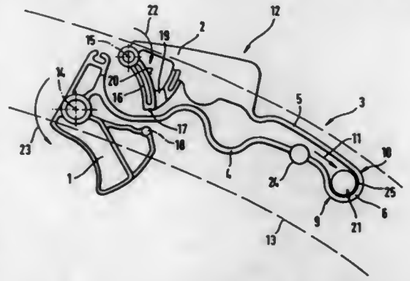
Klaus Höppner, Marbach, and Bernd Kaiser, Winnenden, both of, Germany, assignors to Andreas Stihl, Waiblingen, Germany

Filed Dec. 14, 1994, Ser. No. 355,852

Claims priority, application Germany, Dec. 14, 1993, 9319165 U

Int. Cl.[6] G05G *5/08*

U.S. Cl. 74—526 18 Claims



1. A throttle trigger device for an internal combustion engine of a working tool, said throttle trigger device comprising:

a throttle trigger connected to a handle of the working tool so as to be pivotable about a pivot axis;

a throttle trigger lock connected to the handle of the working tool so as to be pivotable about a pivot axis;

a spring connected between said throttle trigger and said throttle trigger lock;

said throttle trigger, said throttle trigger lock, and said spring forming a unitary part; and

wherein said spring rests at an abutment of the handle at least when under load such that said spring is divided into functionally independent sections, a first said section extending between said abutment and said throttle trigger and a second said section extending between said abutment and said throttle trigger lock.

5,544,545

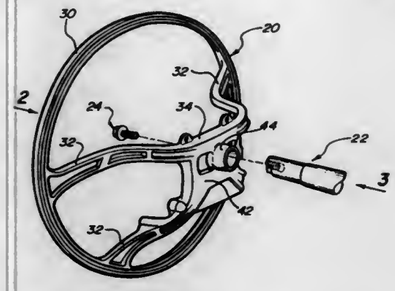
STEERING WHEEL WITH TAPERED HUB SLEEVE

Fritz Sanders, Livonia, and Gregory F. Exner, Woodhaven, both of Mich., assignors to United Technologies Automotive, Inc., Dearborn, Mich.

Filed Feb. 22, 1994, Ser. No. 199,557

Int. Cl.[6] B62D *1/04;* G05G *1/10*

U.S. Cl. 74—552 28 Claims



1. A steering wheel comprising:

a hub having an inside face and an outside face;

a sleeve being formed as a single piece with said hub, said sleeve and said hub having an inside surface with a longitudinal bore, at least a portion of said inside surface of said sleeve further having a longitudinally oriented tapered configuration said tapered portion being longitudinally disposed with a section of said bore closet to said inside face; and

a flat first locking sleeve formation positioned along said tapered portion longitudinally adjacent an end of said bore.

5,544,546

TRANSMISSION ARRANGEMENT

Stefan Döpke, Eppelheim, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany

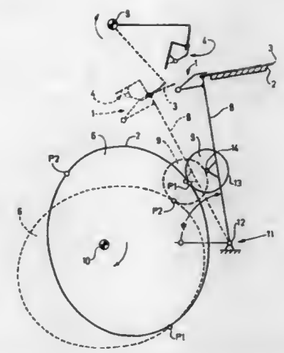
Filed May 18, 1994, Ser. No. 245,654

Claims priority, application Germany, May 18, 1993, 43 16 599.0

Int. Cl.[6] F16H *53/06*

U.S. Cl. 74—569 4 Claims

1. Transmission arrangement comprising a plurality of transmission linkages, at least one of said transmission linkages performing an oscillating movement which is repeated, after the termination of a period in the course of a respectively further period, a control cam formed on a first one of said transmission linkages, a feeler roller rotatably mounted on a second one of said transmission linkages, said control cam and a contact surface of said feeler roller being in operative rolling contact during at least part of a period repeating in the respective periods, a bearing support for said second transmission linkage, said second transmission linkage



having a degree of freedom with respect to said bearing support for shifting said second transmission linkage due to deflections of said feeler roller mounted on said second transmission linkage as a result of a relative movement between said control cam and said feeler roller, said second transmission linkage having a first operational setting in the respective part of the period in accordance with a first contact location of said control cam with said feeler roller situated on said control cam, and said second transmission linkage also having a second operational setting in the respective part of the period in accordance with a second contact location of said control cam with said feeler roller, a point on said contact surface of said feeler roller which coincides with said first contact point in said first operational setting of said second transmission linkage coinciding at least approximately with said second contact point in said second operational setting of said second transmission linkage.

5,544,547

TRANSMISSION FOR A WORKING VEHICLE

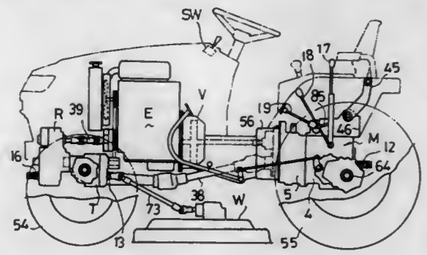
Yoshitaka Ishimaru, Amagasaki, Japan, assignor to Kanzaki Kokyukoki Mfg. Co., Ltd., Amagasaki, Japan

Filed Jun. 9, 1994, Ser. No. 257,163

Claims priority, application Japan, Oct. 22, 1993, 5-264972

Int. Cl.[6] F16H *47/00*

U.S. Cl. 74—730.1 38 Claims



1. A transmission for a working vehicle, comprising:

a housing;

a hydraulic stepless speed change device disposed in said housing having an input shaft and an output shaft;

a power takeout transmission mechanism disposed in said housing for connecting said input shaft of said hydraulic stepless speed change device with a power takeout shaft of said power takeout transmission mechanism, said power takeout transmission comprising a clutch means for intermitteotly rotating said power takeout shaft and a first speed change device for controlling power to the power takeout shaft; and

VOL 1189 ISS 2 AG 13 1996 UMI

a driving transmission mechanism disposed in said housing for connecting said output shaft of said hydraulic stepless speed change device with a pair of axles disposed in said housing, said driving transmission mechanism comprising a second speed change device for controlling a speed of said pair of axles and a differential gear for differentially coupling said pair of axles to each other,

wherein said input shaft and said output shaft are vertically juxtaposed in a first portion of said housing, said first speed change device and said differential gear are vertically juxtaposed in a second portion of the housing, and said clutch means and said second speed change device are vertically juxtaposed in a third portion of the housing between said first and second portions.

5,544,548

COLD FORMING METHOD OF TOOTHED RING-SHAPED PRODUCTS AND FORMING APPARATUS FOR ITS USE

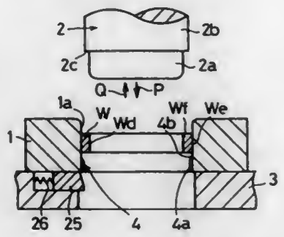
Michio Iihara, Hamamatsu; Osamu Shimizu, and Akira Sera, both of Iwata, all of, Japan, assignors to NTN Corporation, Osaka, Japan

Filed Mar. 28, 1994, Ser. No. 219,299

Claims priority, application Japan, Aug. 31, 1993, 5-240657; Nov. 30, 1993, 5-329894

Int. Cl.[6] B21K *1/30*; B21J *5/12*

U.S. Cl. 76—107.1 **9 Claims**



1. A cold forming method for forming toothed ring-shaped products having a tooth profile portion formed in an outer peripheral surface of the ring-shaped product by plastic deformation processing of a ring-shaped workpiece, the method comprising the steps of:

preparing a first forming die having an inner peripheral surface provided with a tooth forming part having a shape corresponding to the shape of the tooth profile portion of the ring-shaped product;

preparing a second forming die provided with a pressing part for pressing an end surface of a ring-shaped workpiece and a shape-keeping part for engaging and supporting an inner peripheral surface of the ring-shaped workpiece, the pressing part having an outer diameter which is smaller than the minimum inner diameter of the tooth forming part; and

displacing the first forming die and the second forming die relative to each other in an axial direction so that (1) the pressing part moves from a first end to a second end of the tooth forming part while engaging an end surface of the ring-shaped workpiece and (2) the shape-keeping part engages and supports an inner peripheral surface of the ring-shaped workpiece, to thereby press the ring-shaped workpiece through the tooth forming part in the axial direction and form the tooth profile portion in the ring-shaped workpiece.

5,544,549

PROCESS FOR THE PRODUCTION OF A STEEL PUNCHING SHEET

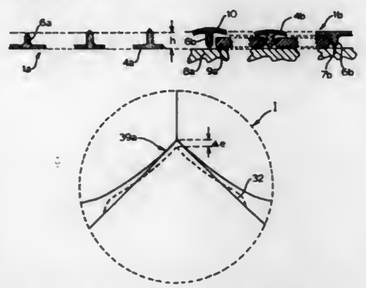
Fritz Helferich, FL-9495 Holdenstrasse 501, Triesen, Liechtenstein

Division of Ser. No. 203,957, Mar. 1, 1994, which is a continuation of Ser. No. 585,482, Sep. 20, 1990, abandoned. This application May 9, 1995, Ser. No. 239,817

Claims priority, application Switzerland, Sep. 22, 1989, 3643/39

Int. Cl.[6] B21K *5/20*

U.S. Cl. 76—107.8 **18 Claims**



1. A process for the production of a steel punching sheet, comprising:

covering a steel starting sheet with etch resists,

subjecting said steel starting sheet to at least one etching process,

forming on said steel starting sheet a sharply defined punching edge with an extended configuration, with a perpendicular distance between said punching edge and a back of said steel punching sheet that has a positive tolerance with respect to a required perpendicular distance, and

removing steel material from said back of said punching sheet to achieve said required perpendicular distance within a tolerance of not more than 0.02 mm over said extended configuration of said punching edge.

13. A process for production of a steel punching sheet, comprising:

covering a steel starting sheet with etch resists,

subjecting said steel starting sheet to at least one etching process, to form at least two side steel walls thereon,

removing steel material from said side walls to form a sharply defined punching edge, and

pressing a non-cutting tool along said side walls immediately adjacent said side punching edge to form compressed curve surfaces on both of said walls immediately adjacent said punching edge to adjust said punching edge to a required perpendicular distance between said punching edge and a back of said punching sheet within a defined tolerance.

5,544,550

FABRICATION METHOD FOR ROTARY BITS AND BIT COMPONENTS

Redd H. Smith, Salt Lake City, Utah, assignor to Baker Hughes Incorporated, Houston, Tex.

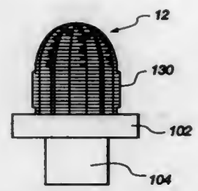
Division of Ser. No. 213,866, Mar. 16, 1994, Pat. No. 5,433,280. This application May 9, 1995, Ser. No. 438,200

Int. Cl.[6] B21K *5/04*

U.S. Cl. 76—108.2 **48 Claims**

1. A method of fabricating a rotary bit body component from a three-dimensional, solid model of said bit body component, comprising: depositing a first, substantially planar layer of matrix material;

defining a periphery in said first layer at a first level corresponding to the periphery of said bit body solid model component at said first level;



depositing a second, substantially planar layer of matrix material on said first layer;

securing said second layer to said first layer and defining a periphery in said second layer at a second level corresponding to the periphery of said bit body solid model component at said second level;

depositing third and successive layers of matrix material on said second layer, securing each of said third and successive layers to the next lower matrix material layer prior to applying the next higher matrix material layer and defining a periphery in each of said third and successive layers corresponding to the periphery of said bit body solid model component of a corresponding level until a bit body component of matrix material corresponding in configuration and size to said three-dimensional solid model component is formed.

5,544,551

DEVICE TO DRAW MUSHROOM-SHAPED CORKS

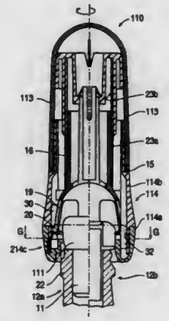
Franco Marcorin, Cinto Caomaggiore; Ivo S. Tonel, Pordenone, and Dino Munini, S. Quirino, all of, Italy, assignors to Mikrostamp SrL, S. Quirino, Italy

Filed Jan. 9, 1995, Ser. No. 370,206

Claims priority, application Italy, Jan. 20, 1994, UD94A0008

Int. Cl.[6] B67B *7/18*

U.S. Cl. 81—3.29 **8 Claims**



1. Device to draw mushroom-shaped corks, which can be gripped and operated by hand and is suitable to draw mushroom-shaped corks consisting of cork or a plastic from bottles of sparkling wine, comprising:

an outer shell;

a supporting ring solidly fixed longitudinally to a lower portion of the outer shell, and free to rotate circumferentially in relation to the outer shell;

an extractor element secured to the outer shell and being able to move axially between a first lower end-of-travel position and a second upper end-of-travel position but circumferentially prevented from rotating;

supporting elements provided at a lower portion of the supporting ring able to cooperate with a protruding ledge on a neck of 74*a* bottle; and

anchorage and clamping arms provided on the extractor element, the anchorage and clamping arms being equipped at their lower inner ends with claws which cooperate with a base of an upper head of the mushroom-shaped cork, and are equipped at their lower outer ends with elements having an inclined surface and cooperating with abutment elements included on the inner surface of the supporting ring, whereby axial ascending movement of the extractor element causes the anchorage and clamping arms to be thrust radially inward to clamp the cork.

5,544,552

A TOOL FOR SETTING A FASTENING NAIL

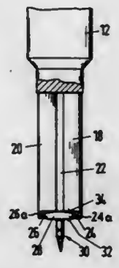
Axel Kirsch, Sonnenbergstrasse 37, D70184 Stuttgart, and Walter Duerr, Remchingen, both of, Germany, assignors to Axel Kirsch, Filderstadt, and Eberle Medizintechnische Elemente GmbH, Wurmberg, both of, Germany

Division of Ser. No. 175,967, Dec. 30, 1993. This application Jun. 2, 1995, Ser. No. 460,807

Claims priority, application Germany, Jan. 4, 1993, 43 00 039.8

Int. Cl.[6] B25C *3/00*

U.S. Cl. 81—44 **6 Claims**



1. A setting tool for introducing a fastening nail having a nail shaft having a pointed part at one end and a nail head at the opposite end, said tool comprising an elongated gripping part with one end having a pressure/impact head and an opposite end being provided with resilient means for holding the fastening nail, said resilient means including at least two resilient gripping jaws, each jaw having an end face with a recess having a seating surface and a lip, said seating surface being spaced from the end face by the lip and by an amount smaller than the height of the nail head so that during introduction of the nail into a member, the nail head will contact a surface of the member without interference from the tool.

5,544,553

OFF-SET GEARED NUTRUNNER ATTACHMENT

Donald E. Galat, 1001 Badder, Troy, Mich. 48083

Continuation-in-part of Ser. No. 201,065, Feb. 24, 1994, abandoned. This application Nov. 18, 1994, Ser. No. 342,236

Int. Cl.[6] B25B *17/00*

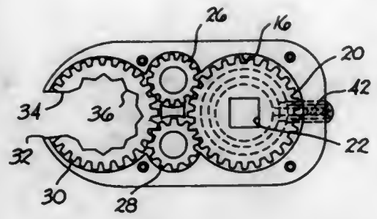
U.S. Cl. 81—57.3 **9 Claims**

1. An open-ended, off-set geared nut runner with a non-threaded drive coupling, comprising:

a housing having an opening;

a driving gear mounted in the housing for rotation about an axis in either a first direction or in the opposite, second direction, the driving gear having an internal socket opening for releasably receiving a rotatable driving stud;

a substantially annular driven gear having an internal opening having structure engageable with a fastener nut for rotating same, the driven gear being mounted in the housing and being rotatable in either a driving direction or in a reverse direction;



an idler gear mounted in the housing between the driving gear and the driven gear to rotate the driven gear in the driving direction as the driving gear is rotated in a first direction, and to rotate the driven gear in the reverse direction as the driving gear is rotated in the second direction;

the driven gear having a radial opening which can be aligned with the opening in the housing for receiving a tube to a position in the internal opening of the driven gear when the radial opening is aligned with the opening in the housing;

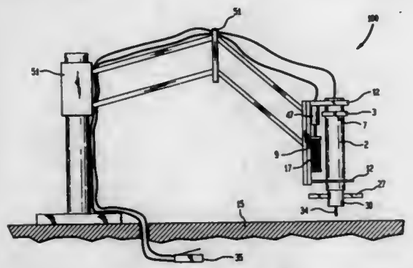
seating structure mounted on the housing adjacent the driving gear for seating the head of a wrench such that a stud carried thereby is received in the socket opening of the driving gear by a generally linear motion along the axis of rotation of the driving gear, and the seating structure includes a collar with a cylindrical opening for receiving the wrench head, and the collar has a cut-out section for mating with the wrench head.

5,544,554

ERGONOMIC TORQUE WRENCH MOUNTING

Todd Joseph Brightly, Hudson, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 20, 1994, Ser. No. 326,577
Int. Cl.[6] B25B *29/00*
U.S. Cl. 81—57.4 **14 Claims**



1. An automatic assembly apparatus comprising:

mounting means pivotally anchored at one end to a fixed point of reference for securing and rotating the assembly apparatus;

automatic fastener driver coupled to a second end of the mounting means and supported by the mounting means, the driver including bit driving means for rotatably driving a bit;

automatic vertical positioning means for vertically positioning the driver on a work piece and for automatically vertically driving the bit when the bit is rotatably driven, the automatic vertical positioning means include counterbalance means to selectively overcome the weight of the assembly apparatus; and

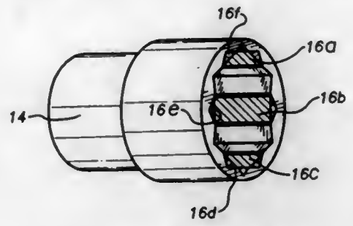
gripper means for selectively preventing the fastener driver from rotating.

5,544,555

WRENCH SOCKET

Ronald E. Corley, and Carol A. Perry, both of 4508 America St., New Orleans, La. 70126

Filed May 23, 1995, Ser. No. 447,437
Int. Cl.[6] B25B *13/02*
U.S. Cl. 81—125 **20 Claims**



1. In a wrench socket of the type having an interior aperture having a twelve point cross-sectional shape, the improvement comprising:

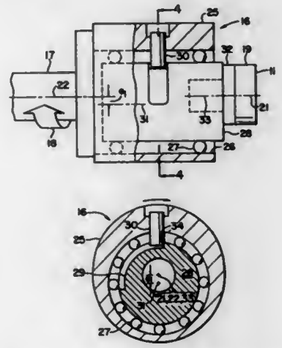
at least one elongated magnetic member secured to at least one surface partially defining a point recess of said socket, said magnetic member being shaped in a manner such that at least a portion of each said magnetic member extends up to a line drawn between a first and second edge of said point recess.

5,544,556

REVERSIBLY ROTATABLE CHUCK WITH INTERNAL CAM FOR SHIFTING WORK AXIS

Russell W. Jones, Lebanon, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Apr. 25, 1994, Ser. No. 232,973
Int. Cl.[6] B23B *1/00;15/00;31/00*
U.S. Cl. 82—1.11 **4 Claims**



1. A rotary chucking apparatus for automatically turning a workpiece about alternate axes of rotation, comprising:

a chuck body, having a body axis of rotation;

a cam unit;

bearing means affixed to said body for rotatably supporting said cam unit about a first cam unit axis with respect to said body, and for permitting said cam unit to freely rotate, in opposite directions, within a predetermined arc, in accordance with chuck body rotation and inertial forces acting on said cam unit;

chuck means affixed to said cam unit for holding a workpiece with respect to a second cam unit axis, said first and second cam unit axes being parallel and spaced apart; and

stop means for limiting rotary movement of said cam unit with respect to said chuck body, and for transmitting a driving force to said cam unit from said chuck body, in reverse directions;

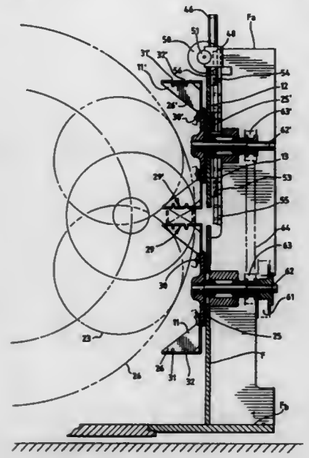
whereby a directional change of rotation of said chuck body, about its body axis, will cause said cam unit to rotate about its first cam unit axis with respect to said chuck body and position said second cam unit axis and workpiece with respect to said body axis for a workpiece operation.

5,544,557

METHOD AND APPARATUS FOR CUTTING SUPERPOSED WEBS

Larry D. Wierschke, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.

Filed Jan. 13, 1995, Ser. No. 372,645
Int. Cl.[6] B26D *1/58*
U.S. Cl. 83—37 **22 Claims**



1. A method of cutting an elongated, multi-ply, flat-surfaced ribbon of web material comprising the steps of:

advancing said ribbon along a linear path at a speed of advance,

rotating a pair of cantilever-mounted drums on opposite sides of said path to flank said ribbon flat surfaces, each of said drums having a periphery and a plurality of axially-extending slots in the periphery thereof, said slots when said drums are rotated defining slot orbits,

orbiting a saw blade adjacent said path, and

cyclically intersecting the blade orbit with the slot orbits to transversely cut said ribbon into a series of products while advancing said saw blade parallel to said path.

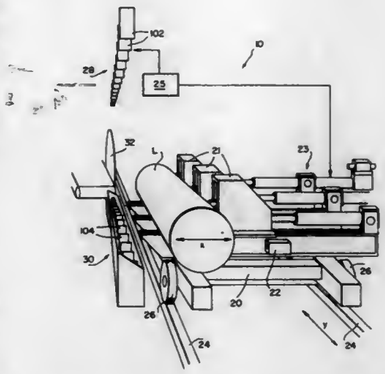
5,544,558

APPARATUS FOR DETECTING THE POSITION OF AN OBJECT ALONG A SECONDARY AXIS AND SCANNING A PROFILE OF THE OBJECT IN A PRIMARY AXIS

Michael Hughes, Beaver Meadow, Vt., assignor to Silvatech Corporation, Bethel, Vt.

Filed Jan. 19, 1994, Ser. No. 183,434
Int. Cl.[6] B26D *5/00;* **B27B** *29/10;* **G01N** *21/84*
U.S. Cl. 83—75.5 **16 Claims**

1. An apparatus for determining a position of an object along a secondary axis while a profile of the object in a primary axis, which is perpendicular to the secondary axis, is determined, said apparatus comprising:



a carriage which supports the object;

means for moving the object on said carriage along the primary axis;

means for moving said carriage along the secondary axis;

a transmitter mounted on said carriage, said transmitter emitting a first signal;

a detection array comprising a plurality of detectors disposed along a line which is parallel to said second secondary axis;

means for determining the profile of said object based on respective detection status of said detectors;

means for directing the first signal towards said detection array; and

means for determining a position of the object based on which of said detectors receives said first signal.

9. An sawmill apparatus for determining a position of a carriage carrying a log along a secondary axis while a profile of the log in a primary axis, which is perpendicular to the secondary axis, is determined, said apparatus comprising:

a saw blade for carrying out a sawing operation on the log;

a carriage which supports the log;

means for moving the log on said carriage along the primary axis;

means for moving said carriage along the secondary axis;

a transmitter mounted on said carriage, said transmitter emitting a first signal;

a detection array comprising a plurality of detectors disposed along a line which is parallel to said second secondary axis;

means for determining the profile of the log based on respective detection status of said detectors;

means for directing the first signal towards said detection array; and

means for determining a position of the log based on which of said detectors receives said first signal.

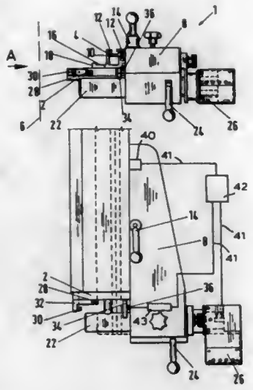
5,544,559

WORKPIECE ABUTMENT FOR MACHINE TOOLS

Siegfried Thiele, Minden, and Jürgen Sensmeier, Loöhne, both of, Germany, assignors to Wilhelm Altendorf GmbH & Co. KG, Minden, Germany

Filed May 6, 1994, Ser. No. 238,918
Claims priority, application Germany, May 14, 1993, 9307328 U
Int. Cl.[6] B26D *7/01*
U.S. Cl. 83—43.8 **5 Claims**

1. An adjustable stop mechanism for limiting the movement of a rip fence toward a cutting plane of a panel saw, wherein the rip fence includes a support mounted on a machine frame and movable toward and away from the cutting plane and defining a support reference, a selectively oriented abutment bar mounted on said support and having a first rotational orientation presenting a first abutment face of relatively low height, located at a relatively



greater distance from said support reference, and a second rotational orientation presenting a second abutment face of relative greater beight located at a relatively lesser distance from said support reference, the improvement characterized by

(a) stop means alternatively operative between first and second stop conditions, for controllably limiting movement of said support in a direction toward said cutting plane,

(b) said stop means including a stop member mounted on said support and first and second abutment stop elements mounted on said machine frame between said cutting plane and said support for selective cooperation with said stop member to limit movement of said support in a direction toward said cutting plane,

(c) said stop member being movable between first and second positions in response to first and second rotational orientations of said abutment bar,

(d) said stop member being engageable alternatively with said first and second abutment stop elements when said stop member is in said first and second positions, respectively,

(e) said stop member and said stop elements cooperating to automatically block movement of said support in a direction toward said cutting plane at a position spaced farther from said cutting plane when said abutment bar is in said first rotational orientation than when said abutment bar is in said second rotational orientation.

5,544,560

WIND INSTRUMENT STAND

Americole R. Biasini, 2101 Ontario St., Bellingham, Wash. 98226

Filed Feb. 28, 1994, Ser. No. 202,434

Int. Cl.[6] G10D *7/10*

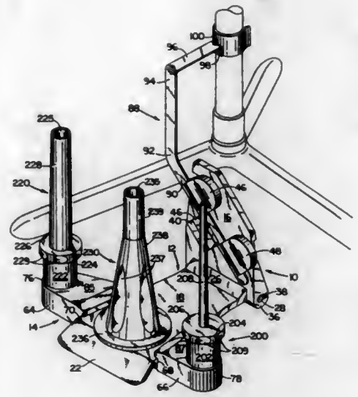
U.S. Cl. 84—387 A **19 Claims**

1. A wind musical instrument stand for temporarily, accessibly storing a wind musical instrument, said instrument stand interconnectable to a conventional music stand, comprising:

a base for stabilizing said stand upon a floor surface;

a wind instrument support member anchorable to said base for stably supporting a wind musical instrument; and

interconnecting attachment means connectable to said instrument stand and to said music stand for securely interconnecting said instrument stand to said music stand.



5,544,561

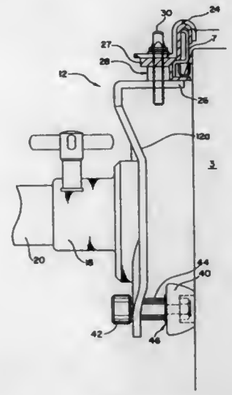
INTERGRATED MOUNTING SYSTEM FOR DRUMS

Takenori Isomi, Nashville, Tenn., assignor to Pearl Musical Instrument Company

Continuation-in-part of Ser. No. 004,408, Jan. 14, 1994, abandoned. This application Jun. 15, 1994, Ser. No. 258,619

Int. Cl.[6] G10D *13/02;* **G10G** *5/00*

U.S. Cl. 84—421 **16 Claims**



1. A mounting system for a drum having a cylindrical shell, a drum head, a drum rim, and tuning means for adjusting a tune of said drum bead, said tuning means passing through said drum rim, said mounting system comprising:

a drum mounting bracket means for adjustably securing said drum to a fixed support, said bracket means comprising a first end and a second end distal to said first end;

affixing means for securing said bracket means to said drum rim at various locations about a circumference of said drum, said affixing means located at said first end; and

lower support means for supporting said drum, said lower support means secured to said second end of said bracket means and comprising a resilient member resting against said drum shell.

5,544,562

APPARATUS OF A PLAYING PRACTICE FOR ELECTRONIC MUSICAL INSTRUMENT AND CONTROL METHOD THEREOF

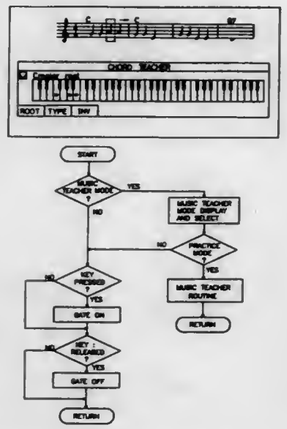
Ik B. Jeon, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Rep. of Korea

Filed Jul. 7, 1994, Ser. No. 271,787

Claims priority, application Rep. of Korea, Jul. 8, 1993, 12845/1993; Aug. 17, 1993, 15886/1993

Int. Cl.[6] G09B *15/00*

U.S. Cl. 84—470 R **11 Claims**



1. An apparatus for practicing playing an electronic musical instrument, the apparatus comprising:

a keyboard section including a plurality of keys;

a select section for selecting a music teacher mode and a plurality of practice menus therein;

a microcomputer for controlling both a display section and an output section according to the select section and an output section according to a pushed key of the keyboard;

a display section for displaying a predetermined display according to a control signal of the microcomputer; and

an output section for outputting an audible sound according to a control signal of the microcomputer.

5,544,563

PRIMER CARTRIDGE LEADER FOR GUNS

Edwin A. Richards, Barrow-in-Furness; David J. Balch, Ulverston, and Howard Atherton, Arnold, all of, United Kingdom, assignors to Vickers Shipbuilding & Engineering Ltd., Cumbria, and Royal Ordinance PLC, Nottingham, both of, United Kingdom

Filed Dec. 9, 1993, Ser. No. 168,054

Claims priority, application United Kingdom, Dec. 9, 1992, 9225754

Int. Cl.[6] F41A *3/10*

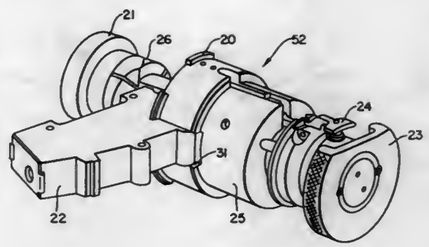
U.S. Cl. 89—24 **12 Claims**

1. A primer loader for feeding a primer cartridge into a chamber in a breech block of a gun, which primer loader comprises:

a tubular guide member having a bore constituting a guide for positioning said primer cartridge and being alignable with said chamber of said breech block, and

means for moving said primer cartridge along said guide and then into said chamber of said breech block wherein

said chamber is separated from the end of said guide adjacent to said breech block so that there is a gap across which said primer cartridge has to pass in order to be placed in said chamber; and



said means for moving said primer cartridge along said guide and into said chamber of the breech block is a rod movable within the confines of said guide further wherein the movement of said rod is such that it is (i) retractable to a first position, to allow said primer cartridge to be positioned in said guide at a predetermined location, (ii) advanceable until it first contacts said primer cartridge, and then moves said primer cartridge until said primer cartridge is placed in said chamber at which time said rod is at a second position lying within said guide in said tubular member, (iii) advanceable an additional distance to a third position beyond said second position, said additional distance being not less than the width of said gap so that the further advance of the rod from its second to its third position moves the primer cartridge across the gap and fully into the chamber; and (iv) retractable back into said tubular member after having completed its further advance to said third position.

5,544,564

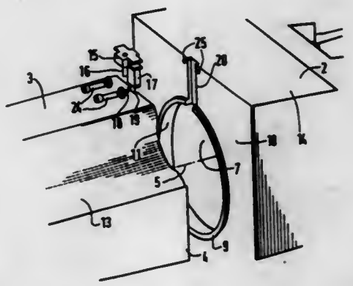
ASSEMBLY FOR THE REMOVABLE FASTENING OF THE CRADLE TO THE BREECH OF A WEAPON

Patrick Balbo; Philippe Grelat, both of Bourges; Guy Malassenet, Pigny, and Fabienne Mandereau, Bourges, all of, France, assignors to Giat Industries, Versailles, France

Filed May 23, 1995, Ser. No. 447,937

Int. Cl.[6] F41A *3/66;21/48*

U.S. Cl. 89—37.01 **20 Claims**



1. A weapon assembly for centering and releasably attaching a cradle to a breech ring, said assembly comprising:

a centering device formed as an integral portion of each of the cradle and the breech ring;

a common channel adjacent the centering device that is radially formed when the cradle and the breech ring are engaged in a fastened position; and

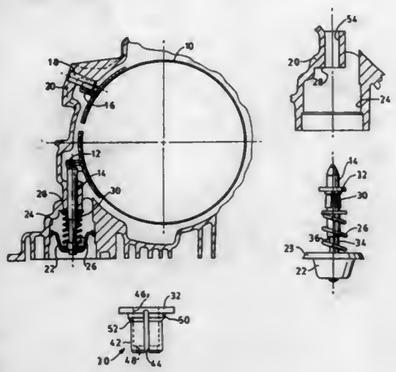
a releasable fastener disposed at least partially within the common channel.

5,544,565

BRAKE BAND SERVO FOR AUTOMATIC TRANSMISSION

Joseph S. Van Selous, Highland, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 6, 1995, Ser. No. 399,259
Int. Cl.[6] F01B *31/00*
U.S. Cl. 92—130 R **10 Claims**



1. A servo for actuating a device, comprising:
a casing defining a cylinder and a cavity;
a brake band located in the casing cavity, having first and second ends, the first end fixed to the casing against displacement relative to the second end, the second end displaceable with respect to the first end;
a piston located in the cylinder, having a stem adapted to move the second end of the brake band with respect to the first end of the brake band in response to piston movement within the cylinder;
a retainer having a opening through which the piston extends;
a spring carried on the piston, having a first end contacting the retainer and a second end contacting the piston, biasing the retainer into contact with the casing;
means for holding the piston against movement relative to the retainer in one axial direction and permitting movement of the piston relative to the retainer in a direction opposite the first direction comprising a first locking surface formed on the stem, a second locking surface formed on the retainer, and means for resiliently urging the first and second locking surfaces into mutual engagement.

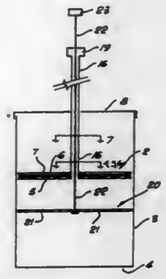
9. A servo for actuating a device, comprising:
a piston sealed for movement along a cylinder, supporting a stem fixed to the piston and directed axially from the piston, the stem having a first cylindrical surface, a second cylindrical surface adjacent and slightly smaller than the first cylindrical surface, said first and second surfaces defining a first shoulder;
a retainer having a opening through which the piston stem extends, a second shoulder extending into the opening and sized smaller than the stem to produce an interference fit therebetween;
a spring carried on the stem, having a first end adjacent the retainer and a second end adjacent the piston;
the second shoulder urged into engagement with the first shoulder of the stem due to said interference fit, said engagement holding the piston against movement relative to the retainer in one axial direction and permitting movement of the piston relative to the retainer in a direction opposite the first direction.

5,544,566

TWO STAGE COFFEE PLUNGER

Ian J. Bersten, 105 Roseville Av., Roseville NSW 2069, Australia

PCT No. PCT/AU93/00236, § 371 Date Nov. 16, 1994, § 102(e) Date Nov. 16, 1994, PCT Pub. No. WO93/24041, PCT Pub. Date Dec. 9, 1993
PCT Filed May 24, 1993, Ser. No. 338,498
Claims priority, application Australia, May 26, 1992, PL2623
Int. Cl.[6] A47J *19/00*
U.S. Cl. 99—287 **9 Claims**



1. A two stage coffee plunger for use in a vessel adapted for holding liquid, said vessel having at least one side wall and a bottom, the plunger comprising:
a plunger filter element movable within the vessel and adapted to be hand driven through the vessel, when the vessel contains liquid, said liquid containing solids dispersed therein
comprising a plunger filter of the kind adapted to filter coffee, said coffee plunger being hand driven through a liquid contained in a vessel towards the bottom wall of the vessel and a baffle adapted for movement independently, vertically, of the filter element between the filter element and the vessel bottom wall.

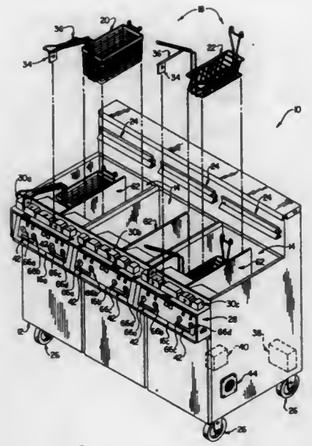
5,544,567

EARLY PRODUCT REMOVAL ALARM

John Davis, Shreveport, and John Kinch, Bossier City, both of La., assignors to The Frymaster Corporation, Shreveport, La.

Filed Dec. 16, 1994, Ser. No. 357,112
Int. Cl.[6] A47J *37/12*
U.S. Cl. 99—336 **25 Claims**

1. The combination of a timed frying apparatus, a sensor and an alarm for detecting when a food cycle can be initiated and for signalling when food being cooked in the frying apparatus has been removed for serving before a cook time has elapsed, comprising:
a) a heated frypot
b) a control system responsive to user input for initiating a cook cycle for a batch of food product to be cooked in the frypot and for terminating said cook cycle by generating a signal indicative of a completed cook time corresponding to a suitable cooking time for said batch of food;
c) a sensor mounted in association with said frypot and operatively connected to said control system to generate and send a signal to the control system when the batch of food product is placed in the frypot for cooking to indicate that a cook cycle can be initiated and maintained, said signal being interrupted when said batch of food is removed from the frypot for serving; and
d) an alarm responsively connected to said control system to produce a warning alarm to the user if said batch of food product is removed from said fryer before the cook cycle is completed.

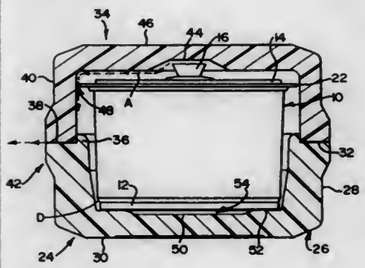


5,544,568

COOKWARE

Jacobus L. Potgieter, P.O. Box 334, Steenberg 7945, South Africa

Filed Oct. 10, 1995, Ser. No. 541,907
Claims priority, application South Africa, Oct. 12, 1994, 94/7968
Int. Cl.[6] A47J *27/00;36/00;* **A45C** *11/20;* **B65D** *81/38*
U.S. Cl. 99—340 **10 Claims**



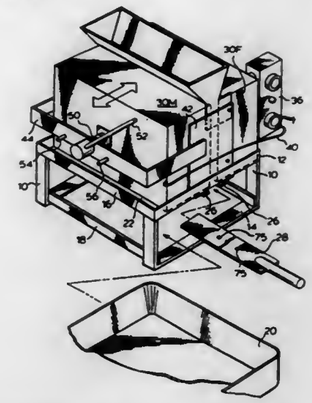
1. In combination a cooking pot which is circular in plan view and which has a lid, and a heat insulating container for receiving the pot, the container being of foamed synthetic plastics material and including an upwardly open base part having a side wall and base wall and into which said pot with its lid thereon can be lowered until it is supported by a top surface of said base wall, and a downwardly open cover part which includes a top wall and a side wall depending from the top wall, the cover part fitting onto said base part and defining therewith a cavity within which the pot is enclosed, the internal diameter of the container being greater than the external diameter of the pot whereby there is a heat insulating air gap between the pot and inner faces of said side walls.

5,544,569

GRIDDLE AND HEATER BAG

Jerome Langhammer, 1407 Royal York Rd. Suite 307, Weston, Ontario, Canada

Continuation-in-part of Ser. No. 271,494, Jul. 7, 1994, abandoned, which is a continuation of Ser. No. 64,206, May 21, 1993, abandoned. This application Aug. 9, 1994, Ser. No. 287,806
Int. Cl.[6] A47J *37/10;* **B65D** *30/22*
U.S. Cl. 99—422 **12 Claims**



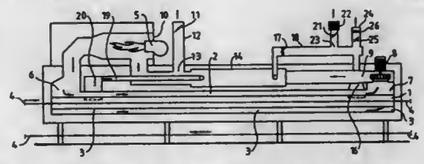
1. Vertical double contact griddle comprising:
a first generally vertical heating panel and means for heating said first panel,
a second generally vertical heating panel facing said panel and means for heating said second panel,
facing surfaces on said first and second panels which are respectively generally smooth,
said facing surfaces defining a heating space between them,
means for adjusting the relative spacing of said heating panels,
opposed end walls connected to said panels while allowing said adjusting each facing said space and located to define the ends of said heating space,
a hinged screens located between said panels adapted to receive hamburg patties between them and, when closed on said patties, to be received in said heating space.

5,544,570

CONTINUOUS OVEN FOR MAKING BAKED WARE

Franz Haas, Sr., Vienna; Johann Haas, Klosterneuburg, and Engelbert Baum, all of, Austria, assignors to Franz Haas Waffelmaschinen Industriegesellschaft m.b.H., Vienna, Austria

Filed May 3, 1994, Ser. No. 237,122
Claims priority, application Austria, May 5, 1993, 877/93
Int. Cl.[6] A21B *1/42*
U.S. Cl. 99—443 C **1 Claim**

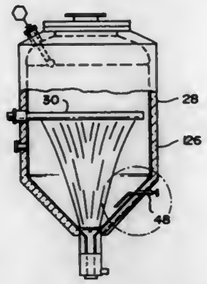


1. An oven for baking edible baked goods, the oven defining an elongate baking chamber extending in a longitudinal direction and having opposite open ends, the baking chamber containing air, which oven comprises

(a) two superposed radiant heaters extending in the longitudinal direction for heating the baking chamber,
(b) a revolving endless conveyor belt having an upper course passing in the longitudinal direction between the radiant heaters for supporting the goods to be baked and transporting them through the baking chamber, and a lower course disposed outside the baking chamber,
(c) a first recycling circuit through which the baking chamber air flows in a predetermined direction, the first recycling circuit including
(1) the baking chamber and
(2) a duct in communication therewith and succeeding the baking chamber in said direction, the duct comprising a manifold and a fresh air supply inlet succeeding the manifold in said direction,
(d) a second recycling circuit through which heating gases flow in a predetermined direction, the second recycling circuit including
(1) the radiant heaters and
(2) a recycle duct in communication therewith and succeeding the radiant heaters in the direction of the heating gases flow, the recycle duct comprising an exhaust gas outlet and a burner generating the heating gases and receiving fresh air from a fresh air inlet, the burner succeeding the exhaust gas duct in the direction of the heating gases flow, and
(e) a heat exchanger being arranged in the first recycling circuit duct between the fresh air supply inlet and the baking chamber, and in the recycle duct of the second recycling circuit between the radiant heaters and the exhaust gas outlet whereby the heating gases recycled from the radiant heaters to the burner pass through the heat exchanger and impart heat thereto while the baking chamber air recycled to the baking chamber is warmed by the heat exchanger.

5,544,571
APPARATUS FOR TREATING FLUENT MATERIAL

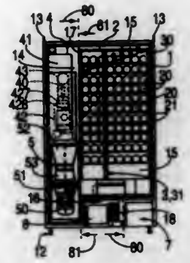
John E. Nahra, Rockville, and Artur G. Zimmer, Columbia, both of Md., assignors to DASI Corporation, Rockville, Md.
Filed Apr. 11, 1995, Ser. No. 420,833
Int. Cl.[6] A23C *3/02*; B01F *3/04*
U.S. Cl. 99—454 22 Claims



1. An apparatus for treating a fluent material with a heated gas comprising a pressure vessel, dispensing means mounted within said vessel for forming at least one thin, continuous film of the fluent material, fluid outlet means coupled to said vessel for withdrawing treated fluent material therefrom and fluid collecting means within said vessel for intercepting the film and for supplying the treated fluent material to outlet means with a minimum of physical agitation, said vessel having a longitudinal axis extending substantially vertically, an upper portion having an inlet for the heated gas, said vessel having inlet means for the fluent material to be treated, a lower portion having said fluid collecting means and a venting passage in said lower portion above said fluid outlet means.

5,544,572
MACHINE FOR AUTOMATICALLY PREPARING AND DISPENSING FRUIT JUICE

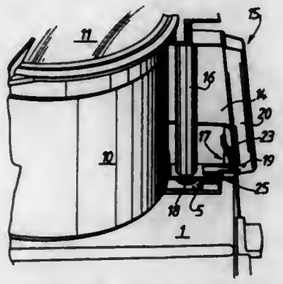
Jose L. Garmendia, Guipuzcoa, Spain, assignor to Zumatu, S.A., Spain
Filed Mar. 30, 1995, Ser. No. 413,695
Claims priority, application Spain, Mar. 30, 1994, 9400696
Int. Cl.[6] A23N *1/00*
U.S. Cl. 99—489 26 Claims



1. A machine for automatically preparing and dispensing fruit juice from pieces of fruit stored in said machine, said machine comprising:
(a) a compartmented support cabinet for housing a plurality of removable modules;
(b) a storage module for storing pieces of fruit in their natural state, said storage module being removably housed in said cabinet;
(c) a squeezer module for cutting and squeezing juice from said fruit and for holding juice from said fruit, said squeezer module being removably housed in said cabinet;
(d) a feed module for transferring pieces of fruit from said storage module to said squeezer module, said feed module being removably housed in said cabinet;
(e) a refrigerating module for cooling pieces of fruit in said storage module and said feed module, said refrigerating module being removably housed in said cabinet; and
(f) a control module for controlling the operation of the modules in said cabinet, said operational control module being removably housed in said cabinet.

5,544,573
DEVICE FOR LOCKING A BOWL ON A MOTOR SUPPORT OF A FOOD PROCESSOR

Andre Gateaud, Perrecy-Les-Forges, France, assignor to Robot-Coupe (S.N.C.), France
Filed Nov. 7, 1995, Ser. No. 554,487
Claims priority, application France, Nov. 9, 1994, 94 13475
Int. Cl.[6] A23N *1/00*; A47J *43/046;43/07*; B02C *18/16*
U.S. Cl. 99—492 4 Claims

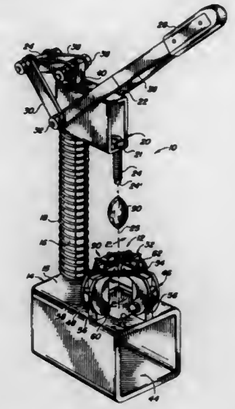


1. A device for locking a bowl on a motor support for a food processor appliance, the bowl being fixed on the support via its

center and including at its periphery a part for providing a rotary abutment, the device comprising a part secured to the base and having a rotary abutment surface and a locking face opposite to said abutment surface, and comprising, on a handle, a hinged latch including a locking face designed to co-operate with the locking face of the base while the latch is in a first position, and moving above said locking face while the latch is in a second position.

5,544,574
PECAN SHUCKER

Joe D. Daugherty, 402 E. Blodgett, Carlsbad, N.M. 88220
Filed Mar. 22, 1995, Ser. No. 408,232
Int. Cl.[6] A23N *5/08*
U.S. Cl. 99—572 20 Claims

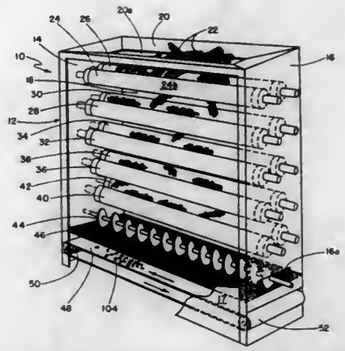


1. A pecan shucker for pecans having an outer shell and inner meat having a base (**15**), from which there is supported a pecan guide and crusher assembly (**12**), said pecan guide and crusher assembly having an axial passageway (**25**) formed therethrough for crushing pecans (**90**) as said pecans move through said passageway;
a pecan pusher means (**24**) for effecting relative movement between the pecan and said pecan guide and crusher assembly, to move a pecan along said axial passageway and through said crusher assembly; whereby, pecans are sequentially forced to travel axially through said guide and crusher assembly, and,
blade means (**80**) oriented to engage and bisect a crushed pecan as the pecan is traversing said guide and crusher assembly, to thereby shuck pecan meat halves from the shell of a crushed pecan.

5,544,575
SHELLER FOR SEED CORN

Robert H. Spry, 21 Sunset Rd., Bloomington, Ill. 61701
Continuation-in-part of Ser. No. 363,937, Dec. 27, 1994, Pat. No. 5,454,303. This application Sep. 8, 1995, Ser. No. 525,397
Int. Cl.[6] A01F *11/06;12/26*
U.S. Cl. 99—628 19 Claims

1. Apparatus for shelling high moisture content ears of seed corn wherein kernels are removed from a cob of an ear of corn, said apparatus comprising:
first and second pluralities of generally vertically aligned rollers, wherein said first and second pluralities of rollers are arranged in pairs of horizontally aligned rollers and wherein spacing between adjacent horizontally aligned pairs of rollers in said first and second pluralities of rollers decreases in proceeding from an upper pair of rollers to a lower pair of rollers, and wherein each roller includes a compressible, resilient, rough-textured outer portion;



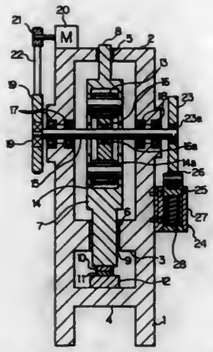
first drive means for rotationally displacing each of said first plurality of rollers at a first RPM and each of said second plurality of rollers at a second RPM, wherein said first and second pluralities of rollers are rotationally displaced in opposite directions in a manner so as to urge ears of corn deposited between said first and second pluralities of rollers in a downward direction toward said lower pair of rollers and wherein the ears of corn are engaged by said rollers for loosening and removing kernels from the cobs;
second drive means coupled to said first plurality of rollers for displacing said first plurality of rollers relative to said second plurality of rollers in a reciprocating manner along the lengths of said first plurality of rollers for orienting the cobs lengthwise horizontally along the lengths of said first and second pluralities of rollers whereby the cobs are rotationally displaced by engagement with said first and second pluralities of rollers for removing kernels about the entire periphery of the cob; and
means disposed below said first and second pluralities of rollers for separating the cobs from the kernels removed from the cobs.

5,544,576
MECHANICAL PRESSING MACHINE HAVING A LOAD FLUCTUATING TORQUE CANCELLING DEVICE

Heizaburo Kato, Shizuoka-ken, Japan, assignor to Sankyo Seisakusho Co., Tokyo, Japan
Filed Oct. 25, 1994, Ser. No. 328,464
Claims priority, application Japan, Oct. 26, 1993, 5-267289
Int. Cl.[6] B30B *1/06*
U.S. Cl. 100—35 16 Claims

1. In a mechanical pressing machine comprising an input shaft having a flywheel mounted on one end thereof; a motor operatively connected to said input shaft for transmitting a rotational force of said motor to said input shaft; a slider having a linear reciprocal movement; a drive plate cam fixedly mounted on said input shaft for rotation therewith; and a cam follower on said slider for converting a rotational motion of said drive cam plate into a reciprocal linear motion of said slider;
the improvement comprising a torque compensation plate cam mounted on the other end of said input shaft for cancelling a load fluctuating torque produced on said input shaft during the entire rotation of the input shaft; a resilient force-producing device including a piston rod; and a cam follower mounted on a distal end of said piston rod and pressed against said torque compensation plate cam for cancelling the load fluctuating torque produced during the entire rotation of the said input shaft.

12. A method of cancelling the load fluctuation of a mechanical pressing machine comprising an input shaft having a flywheel



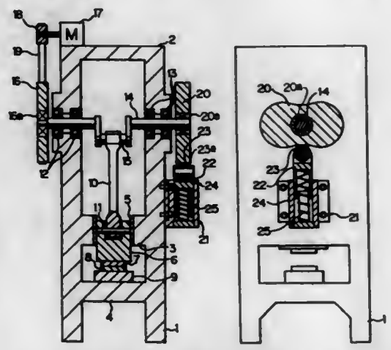
mounted on one end thereof; a motor operatively connected to said input shaft for transmitting a rotational force of said motor to said input shaft; a slider having linear reciprocal movement; a drive plate cam fixedly mounted on said input shaft for rotation therewith; and a drive plate cam follower connected to said slider for converting a rotational motion of said drive cam plate into reciprocal linear motion of said slider; the method comprising mounting a torque compensation plate cam on the other end of said input shaft for entirely cancelling the load fluctuating torque produced on said input shaft; a resilient force-producing device including a piston rod; a cam follower mounted on the distal end of said piston rod and pressed against said torque compensation plate cam, the torque compensation plate cam having a caming contour so that said torque compensation plate cam in conjunction with said resilient force-producing device cancels the load fluctuating torque during the entire rotation of the input shaft.

5,544,577

MECHANICAL PRESSING MACHINE WITH MEANS FOR CANCELLING LOAD FLUCTUATION TORQUE

Heizaburo Kato, Shizuoka-ken, Japan, assignor to Sankyo Seisakusho Co., Tokyo, Japan

Filed Oct. 25, 1994, Ser. No. 328,908
Claims priority, application Japan, Oct. 26, 1993, 5-267290
Int. Cl.[6] B30B *1/06*
U.S. Cl. 100—35 **22 Claims**



1. In a mechanical pressing machine comprising a crankshaft having a flywheel mounted on one end thereof; a motor operatively connected to said crankshaft for transmitting a rotational force of said motor to said crankshaft; a slider having a linear reciprocal stroke; and a connecting rod connected between said crankshaft and said slider for converting a rotational motion of said crankshaft into a reciprocal linear motion of said slider; the improvement comprising a generally cocoon-shape torque compensation plate cam mounted on the other end of said crankshaft for cancelling a load fluctuating torque produced on said crankshaft during the entire rotation of the crankshaft; a resilient force-producing device including a piston rod; a cam follower mounted on a distal end of said piston rod and pressed against said torque compensation plate cam for cancelling the load fluctuation torque produced during the entire rotation of the crankshaft.

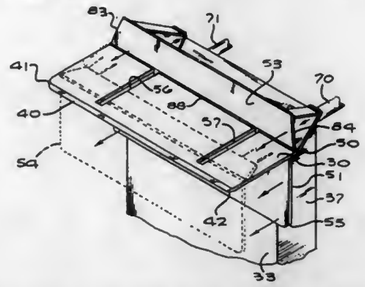
16. A method of cancelling the load fluctuation of a mechanical pressing machine comprising a crankshaft having a flywheel mounted on one end thereof; a motor operatively connected to said crankshaft for transmitting a rotational force of said motor to said crankshaft; a slider having a linear reciprocal stroke; and a connecting rod connected between said crankshaft and said slider for converting a rotational motion of said crankshaft into a reciprocal linear motion of said slider; the method comprising mounting a torque compensation plate cam on the other end of said crankshaft for entirely cancelling the load fluctuating torque produced on said crankshaft; a resilient force-producing device including a piston rod; a cam follower mounted on a distal end of said piston rod and pressed against said torque compensation plate cam, the torque compensation plate cam having a caming contour so that said torque compensation plate cam in conjunction with said resilient force-producing device cancels the load fluctuating torque during the entire rotation of the crankshaft.

5,544,578

TIRE LOAD COMPRESSOR

Michael Keller, and Gerald Wheeler, both of 550 S. Alameda St., Compton, Calif. 90221

Filed Sep. 1, 1994, Ser. No. 299,742
Int. Cl.[6] B30B *5/00*
U.S. Cl. 100—100 **8 Claims**



1. A device for compressing tires in a shipping container comprising:

a. a support frame attached to a fork lift;

b. a fixture attached to and moveable vertically upward along the support frame and being released so that the fixture's weight compresses any tires below the compression platen, the fixture comprising:

i. a compression platen extending in a general horizontal plane, the compression platen having a slot extending through the compression platen;

ii. a pusher plate extending in a plane perpendicular to the plane of the compression platen, the pusher plate having a lower pusher plate depending from the compression platen and an upper pusher plate extending above the compression platen, the upper pusher plate being mounted for pivoting between an upright orientation aligned with the lower pusher plate and an orientation that is angled to the lower pusher plate, the pusher plate being mounted in the slot of the compression platen for movement along the slot of the compression platen; and

iii. the fixture being of sufficient weight to compress tires stacked below the compression platen;

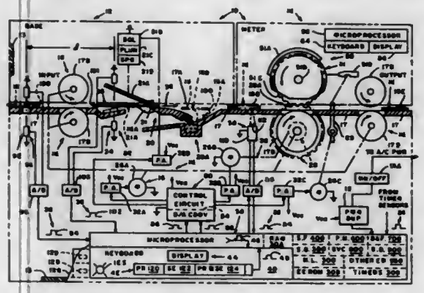
c. a horizontal driver connected to the pusher plate for pushing the pusher plate away from the support frame.

5,544,579

MAILING MACHINE INCLUDING OVERRIDEABLE SHEET LENGTH DISCRIMINATING STRUCTURE

Dennis M. Gallagher, Danbury; Thomas M. Pfeifer, Bridgeport, and Richard P. Schoonmaker, Wilton, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 17, 1992, Ser. No. 991,899
Int. Cl.[6] B41L *47/46*
U.S. Cl. 101—91 **8 Claims**



1. A mailing machine comprising:

a) means for feeding a sheet in a path of travel;

b) means for printing indicia on the sheet;

c) means for controlling the sheet feeding and printing means, the controlling means including a microprocessor, the controlling means including means for sensing the sheet in the path of travel, the sensing means including a first sensor for sequentially sensing the leading and trailing edges of the sheet and providing corresponding sequential first signals to the microprocessor, the sensing means including a second sensor downstream from the first sensor for sensing the leading edge of the sheet and providing a corresponding second sensing signal to the microprocessor; and

d) the microprocessor programmed for

1) causing the sheet feeding means to feed the sheet,

2) commencing a count of a first time interval when the trailing edge of the sheet is sensed by the first sensor and ending when the leading edge of the sheet is sensed by the second sensor,

3) determining whether the first time interval count is less than a predetermined second time interval, and

4) terminating sheet feeding if the first time interval count is not less than the predetermined second time interval.

5,544,580

MIMEOGRAPHIC PRINTING MACHINE HAVING SHEET JAMMING DETECTOR

Yasuhiro Takahashi, Tokyo, Japan, assignor to Riso Kagaku Corporation, Tokyo, Japan

Filed Mar. 1, 1995, Ser. No. 396,526
Claims priority, application Japan, Mar. 1, 1994, 6-031381
Int. Cl.[6] B41L *13/04;* **B41F** *33/06*
U.S. Cl. 101—118 **4 Claims**

1. A mimeographic printing machine comprising:

first and second sheet supplying rollers;

means for providing relative movement between said first and second rollers between a first position at which said first and second rollers are in contact and a second position at which said first and second rollers are separated, said first and second rollers clamping a printing sheet when said first and second rollers are in said first position, and said first and second rollers being rotatable to convey the printing sheet;

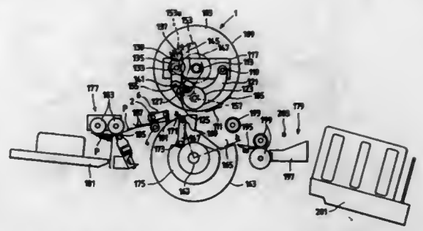
a rotary cylindrical drum having a tubular wall on which a stencil paper is wound;

pushing means for pushing the printing sheet conveyed by rotating said first and second rollers against the stencil paper wound on said rotary cylindrical drum in order to perform a mimeographic printing operation;

jamming detecting means for detecting abnormal conveyance of printing sheets in a printing-sheet conveying path;

preventing means for preventing said first and second rollers from assuming said first position; and

control means for automatically activating said preventing means when said jamming detecting means detects the abnormal conveyance of the printing sheet in said printing-sheet conveying path.

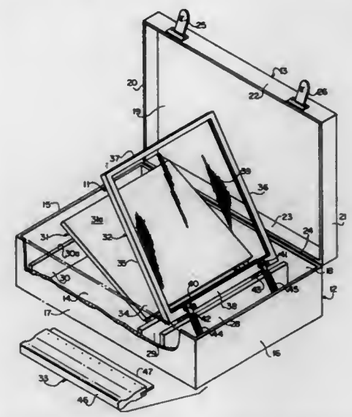


5,544,581

GARMENT SILKSCREENING APPARATUS

Abudulcadir A. Haji, 6814 F St., Capitol Heights, Md. 20743

Filed Oct. 12, 1994, Ser. No. 321,744
Int. Cl.[6] B05C *17/06*
U.S. Cl. 101—126 **13 Claims**



1. An apparatus for silkscreening a garment comprising:

a base member;

a support panel pivotally connected along one edge thereof to said base member, having a free end thereof receivable within an opening in said garment to position a portion of said garment on an upper surface of said support panel; and

a silkscreening member pivotally secured, independently of said support panel, to said base member and pivotal between an upper inoperative position and a lower operative position, having a silkscreen portion adapted to overlie said garment portion disposed on said support panel when in said operative position.

5,544,582

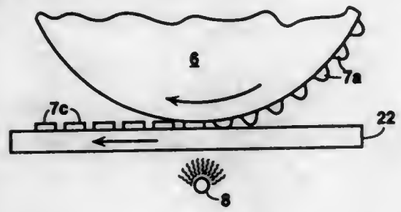
METHOD FOR PRINTING A COLOR FILTER

Peter L. Bocko, Painted Post, N.Y.; Bernard A. Eid, Champagne/Seine, France; Ronald E. Johnson, Tioga, Pa.; William E. Lock, Horseheads; Robert D. Shoup, Hammonsport, both of N.Y., and Jean-Pierre Themont, Montigny Sur Loing, France, assignors to Corning Incorporated, Corning, N.Y.

Continuation-in-part of Ser. No. 145,155, Nov. 3, 1993, and a continuation-in-part of Ser. No. 145,244, Nov. 3, 1993. This application Feb. 16, 1994, Ser. No. 197,141

Int. Cl.[6] B41M *1/20;1/34*

U.S. Cl. 101—211 **57 Claims**



47. A method of making a color filter for liquid crystal displays, comprising:

depositing a multicolored radiation curable ink pattern to a substrate, said multicolored pattern deposited in one deposition step; and

curing said ink pattern during said depositing step.

5,544,583

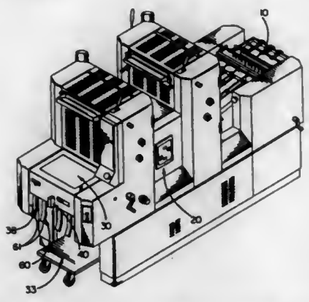
DELIVERY INTERRUPT MECHANISM FOR A PRINTING MACHINE

Ronald A. Banike, Orland Park, Ill., assignor to A.B. Dick Company, Niles, Ill.

Filed Jun. 8, 1995, Ser. No. 488,739

Int. Cl.[6] B41F *13/64*

U.S. Cl. 101—240 **17 Claims**



1. A delivery interrupt mechanism for a printing machine comprising:

a support frame having a stationary guide defining a guide path having a curved portion;

an input shaft rotatably supported by the frame;

a flexible finger slidably supported by the guide for movement along the curved portion of the guide path while substantially conforming in shape to the curved portion between a retracted position and an extended position in which the finger extends from the frame to support leading edges of printed sheets in a printing machine; and

a connecting member connected between the input shaft and the finger for rotation with the input shaft, the connecting member moving the finger along the curved portion of the guide path between its retracted and extended positions when the input shaft is rotated.

5,544,584

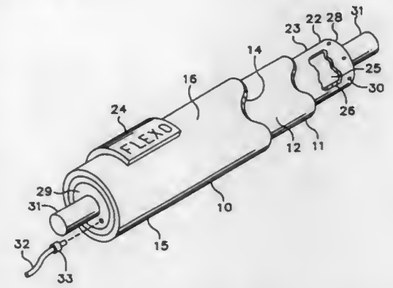
PROCESS FOR PRODUCING POLYMER-COVERED FLEXOGRAPHIC PRINTING SLEEVES

William L. Thompson, Vancouver, Wash., and Mark A. Borski, Gresham, Oreg., assignors to Thompson Urethane Products, Vancouver, Wash.

Filed Dec. 9, 1994, Ser. No. 352,955

Int. Cl.[6] B41N *1/12*

U.S. Cl. 101—401.1 **31 Claims**



1. A process for producing a durable, readily-storable, cylindrically-shaped flexographic printing sleeve having inner and outer cylindrically-shaped walls and a substantially constant cross-sectional inner and outer diameter, the flexographic printing sleeve being readily axially mountable on and dismountable from a complementary cylindrically-shaped printing cylinder having an outer cylindrically shaped wall, which comprises

providing a printing sleeve body, the diameter of the printing sleeve body being expandable by the introduction of low pressure fluid between an inner surface of the printing sleeve body and the outer cylindrically-shaped wall of the printing cylinder, the printing sleeve body being contractible by the removal of low pressure fluid;

applying a layer of a low temperature curable polymeric material to an outer surface of the printing sleeve body;

curing the layer of the low temperature curable polymeric material at a temperature not greater than about 150 degrees F. to form a hardened layer of polymeric material having a substantially uniform degree of hardness without damaging or distorting the printing sleeve; and

removing a portion of the hardened layer of the polymeric material to produce said flexographic printing sleeve, said flexographic printing sleeve having a thickness of up to about 0.375" and an impression range comprising an engagement distance of at least about 0.015", without any substantial visible reduction in print performance, said print performance comprising a print dot distortion of not more than about 0.0005" in the machine direction and not more than about 0.0002" in the cross machine direction.

5,544,585

ELECTRO-PYROTECHNICAL INITIATOR

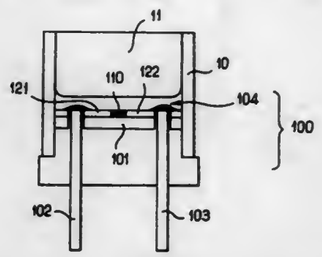
Jean-Rene Duguet, Orry La Ville, France, assignor to NCS Pyrotechnie et Technologies, Fosses, France

Filed May 3, 1994, Ser. No. 237,287

Claims priority, application France, May 5, 1993, 93 05370

Int. Cl.[6] F42C *19/12*

U.S. Cl. 102—202.5 **10 Claims**



1. An electro-pyrotechnical initiator comprising a pyrotechnical charge initiated by a heating resistive element placed in contact with said charge, and designed in particular for igniting the pyrotechnical system of an air bag type device, wherein said resistive element comprises a flat strip of narrow width l, lying in the range 80 micrometers to 300 micrometers, and of length L lying in the range 0.3 mm to 3 mm, the strip being obtained by photoetching a thin film of resistive metal alloy that has a thickness lying in the range 1 μm to 15 μm and that has previously been secured to a printed circuit support, said resistive element being connected to two current feeds via two large electrically-conductive areas, and wherein the pyrotechnical charge is a thermosensitive substance applied in the form of an explosive varnish covering the resistive element.

5,544,586

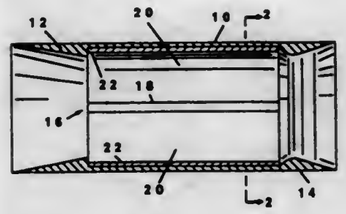
SOLID FUEL RAMJET TUBULAR PROJECTILE

Joseph Huerta, Aberdeen, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 30, 1994, Ser. No. 300,004

Int. Cl.[5] F02K *7/10*

U.S. Cl. 102—374 **15 Claims**



1. A ramjet comprising:

a) a generally tubular body having a bore formed therethrough and having an inlet means at a first end of said bore for decelerating incoming air from supersonic velocity to subsonic velocity, and an exhaust nozzle means at a second end of said bore for expulsion of combustion gases;

b) a combustion chamber within said body defined by a portion of the bore formed therethrough and extending longitudinally substantially the length of said body between said inlet means and said exhaust nozzle means;

c) a partition in said combustion chamber which extends across and divides said combustion chamber into a plurality of individual combustion chambers;

d) wherein said partition is a longitudinally disposed planar structure having opposed edge surfaces joined to interior surfaces of the combustion chamber to divide the combustion chamber into a plurality of individual combustion chambers which each extend from said inlet means substantially the length of said body to thereby divide said decelerated incoming air into a plurality of discrete, substantially parallel combustion flow paths; and

e) fuel disposed within said plurality of individual combustion chambers.

5,544,587

CANNON AMMUNITION HAVING COMBUSTIBLE CARTRIDGE CASE

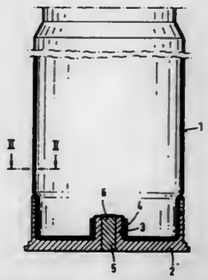
Stefan Thiesen, Willich; Eckhard Rahnenführer, Dormagen, and Josef Köhler, Ampfing, all of, Germany, assignors to Rheinmetall Industrie GmbH, Ratingen, Germany, and WNC Nitrochemie GmbH, Aschau a. Inn, Germany

Filed Dec. 8, 1994, Ser. No. 354,824

Claims priority, application Germany, Dec. 13, 1993, 43 42 428.7

Int. Cl.[6] F42B *5/18*

U.S. Cl. 102—431 **21 Claims**



1. In cannot ammunition including a cartridge case containing a propellant charge, a case bottom to which the cartridge case is connected, a charge igniter, and a primer element positioned in the case bottom, the improvement in which:

the cartridge case is combustible, is connected to the primer element, and comprises a combustible material and a pyrotechnical mixture which is embedded within the combustible material and which is comprised of at least one reducing agent and at least one oxidizing agent which form a pyrotechnical redox system; and

the charge igniter consists of the cartridge case.

5,544,588

ELECTRICAL POWER FEED ASSEMBLY FOR ELECTROTHERMAL GUN AND CARTRIDGE

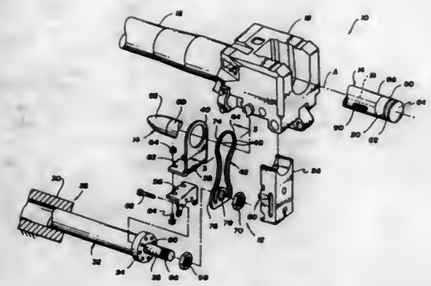
Rao L. Boggavarapu, Bloomfield Hills, Mich.; Yeshayahu S. A. Goldstein, Gaithersburg, Md.; Catherine M. Keogh, Harrison Township, Macomb County, Mich.; Anthony J. Suchocki, and Melvin M. Widner, both of Rochester Hills, Mich., assignors to General Dynamics Land Systems, Inc., Sterling Heights, Mich.

Division of Ser. No. 233,347, Apr. 26, 1994, Pat. No. 5,463,928. This application Apr. 13, 1995, Ser. No. 421,396

Int. Cl.[6] F42B *5/08*

U.S. Cl. 102—472 **2 Claims**

1. An electrothermal gun cartridge that is fired upon being supplied a current on the order of tens of kiloamps and greater, the



cartridge comprising: a casing having an elongated construction with a central axis and including a projectile end and a base end; a plasma generator located within the casing extending from the base end thereof toward the projectile end of the casing; a propellant within the casing; a projectile mounted by the projectile end of the casing; the base end of the casing having an axial face along the direction of the central axis and including first and second side contacts that are connected to the plasma generator and that are engageable in a radial direction with respect to the central axis; each side contact is made from one of the materials of the group consisting of copper, solder, lead, indium and an electrically conductive plastic, whose electrical conductivity and plastic deformability permit establishment of electrical contact with an associated gun connector to fire the cartridge by energizing the plasma generator to provide a plasma that ignites the propellant to provide heated and pressurized gas that propels the projectile from the casing; each of the side contacts having an annular shape; one of the side contacts having a hollow construction; and the other side contact having an insulative coating.

5,544,589

FRAGMENTATION WARHEAD

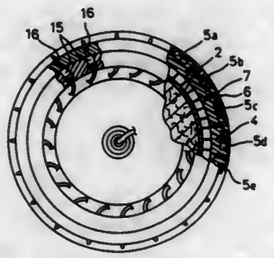
Manfred Held, Aresing, Germany, assignor to Daimler-Benz Aerospace AG, Munich, Germany

Filed Dec. 2, 1992, Ser. No. 990,117

Claims priority, application Germany, Sep. 6, 1991, 41 39 372.4

Int. Cl.[6] F42B *12/22*

U.S. Cl. 102—492 **5 Claims**



1. Fragmentation warhead, comprising:
an axially extending cylindrical jacket having an outer surface and an inner surface;
a fragmentation layer encircling and in contact with the outer surface of said jacket;
a main explosive charge located within the jacket;
a plurality of separate deformation charges located around and spaced outwardly from said fragmentation layer, said deformation charges extending in the axial direction of said jacket and arranged to inwardly deform the jacket and fragmentation layer along a side of the warhead facing a target before igniting the main explosive charge located within the jacket;
means for locating the deformation charges around and spaced outwardly from the fragmentation layer;
means for individually controlling and igniting a group of said deformation charges;
an axially extending central tube located within and spaced inwardly from said cylindrical jacket and forming therebetween an annular space, wherein said main explosive charge is located within said annular space between said central tube and cylindrical jacket;
wherein said fragmentation layer has;
an outer surface;
a damping layer extending radially outwardly from the outer surface of said fragmentation layer and forming an axially extending outer surface of said warhead; and
axially and radially inwardly extending recesses located in the outer surface of said damping layer, said recesses spaced circumferentially apart and containing said deformation charges.

5,544,590

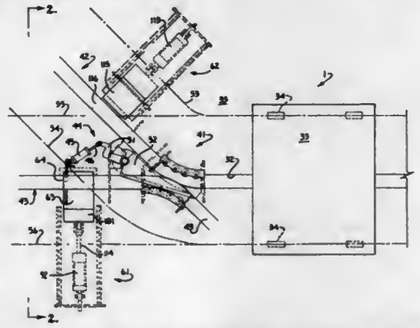
AUTOMATIC SEAL CROSSOVER SYSTEM FOR POWER AND FREE CONVEYOR ON-FLOOR CARRIAGES

Gareth D. Summa, Denver, Mo., and Darrel Hespe, Olathe, Kans., assignors to Mid-West Conveyor Company, Kansas City, Kans.

Filed Sep. 14, 1995, Ser. No. 527,956

Int. Cl.[6] B61B *10/00*

U.S. Cl. 104—130.09 **16 Claims**



1. In a power and free conveyor system comprising first and second power and free conveyor loops; a conveyor switch with a first switch position in which a drive trolley stays on a path which follows a free track of said first conveyor loop and a second switch position in which a drive trolley switches from said first conveyor loop to a path within a free track of a second conveyor loop; each of said first and second conveyor loops being positioned beneath a floor and including a slot extending through the floor which follows the path of the respective conveyor loop, said first and second conveyor loops and said slots diverging on at least one side of said conveyor switch; said drive trolley propelling a load carriage with wheels which roll on said floor, said wheels being positioned such that, when the drive trolley is switched onto the first conveyor loop, at least some load carriage wheels encounter a crossover portion of the slot of the second conveyor loop and, when the drive trolley is switched onto the second conveyor loop, at least some of the load carriage wheels encounter a crossover portion of the slot of the first conveyor loop; a crossover seal system comprising:
a. a first crossover seal assembly which is operative to place a first seal plate over the crossover portion of the first conveyor loop slot when said conveyor switch is in the first position; and
b. a second crossover seal assembly for placing a second seal plate over the crossover portion of the second conveyor loop slot when said conveyor switch is in said second position, said first and second seal plates being independent of each other and being independently operated by said first and second crossover seal assemblies, respectively.

5,544,591

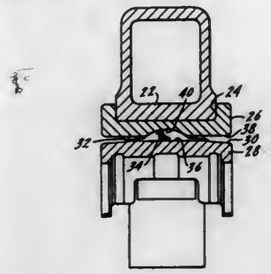
STABILIZED ROLLER BEARING ADAPTER

Armand P. Taillon, Chicago, Ill., assignor to Standard Car Truck Company, Park Ridge, Ill.

Filed Feb. 24, 1995, Ser. No. 365,413

Int. Cl.[6] B61F *5/32*

U.S. Cl. 105—223 **5 Claims**



1. A rail car truck having a pair of side frames, a pair of wheelsets, each wheelset having an axis transverse to the side frames, a roller bearing adapter seated on each end of each wheelset and each roller bearing adapter having an axis parallel to a respective said wheelset axis, each side frame having a pedestal at each end thereof, with each pedestal being formed and adapted to seat on a respective said roller bearing adapter, each roller bearing adapter having an upper surface facing a respective said side frame pedestal, with each roller bearing adapter upper surface having a planar portion and an arcuate projection extending upwardly therefrom, each such arcuate projection extending transverse to the roller bearing adapter axis, each side frame pedestal having surface means facing said roller bearing upper surface, which surface means has a planar portion and a concave depression, each roller bearing adapter projection extending into a respective said side frame pedestal surface means concave depression to thereby provide resistance to unsquaring relative movement between the wheelsets and side frames, the radius of each concave depression being greater than the radius of each arcuate projection, the planar surface portions on each roller bearing adapter and each side frame pedestal surface means being normally spaced with the space therebetween permitting limited rolling movement between a respective said side frame and wheelset before there is contact between said roller bearing adapter surface planar portion and said side frame pedestal surface means planar portion.

5,544,592

FOLDABLE AND EXTENDABLE TABLE FOR SPRAY BOOTHS

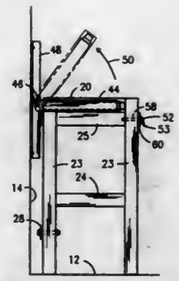
Matthew R. Leezer, 6648 67th Way North, Pinellas Park, Fla. 34665

Filed Nov. 23, 1994, Ser. No. 344,761

Int. Cl.[6] A47B *5/00*

U.S. Cl. 108—48 **6 Claims**

1. A table, comprising:
a flat platform;
said platform having opposite ends longitudinally spaced apart from one another;
a first telescoping arm having a distal end secured to a first end of said platform;
a second telescoping arm having a distal end secured to a second end of said platform;



a first bracket means secured to an upstanding support wall;
said platform having a rectangular configuration including a front edge and a back edge parallel to a plane of said support wall;
said first and second ends of said platform being disposed normal to said plane of said support wall;
a first telescoping guide secured to said first end of said platform for slideably receiving said first telescoping arm;
a second telescoping guide secured to said second end of said platform for slideably receiving said second telescoping arm;
said first bracket means being an elongate bracket member that is vertically disposed to facilitate its mounting to said upstanding support wall;
said first telescoping arm having a proximal end pivotally secured to said first bracket means;
a second bracket means secured to said upstanding support wall;
said second bracket means being an elongate bracket member that is vertically disposed in parallel relation to said first bracket means to facilitate its mounting to said upstanding support wall;
said second telescoping arm having a proximal end pivotally secured to said second bracket means;
leg means for supporting said table atop a support surface;
said leg means being foldably mounted to an underside of said platform, said leg means having a deployed configuration where they are disposed normal to a plane of said platform and having a stored configuration where they are disposed substantially parallel to said plane of said platform;
said leg means including a plurality of legs, said plurality of legs including a first leg pivotally mounted to said first end of said platform, a second leg pivotally mounted to a middle section of said platform, and a third leg pivotally mounted to said second end of said platform;
leg interlocking means pivotally connected to each leg of said plurality of legs so that folding a preselected leg of said plurality of legs in a first direction simultaneously effects folding of other legs in said first direction;
whereby said table is positionable atop said support surface by said telescoping means at a plurality of differing positions of functional adjustment; and
whereby said table has a storage position where it lies generally parallel to said upstanding support wall.

5,544,593

ADJUSTABLE DESK SYSTEM

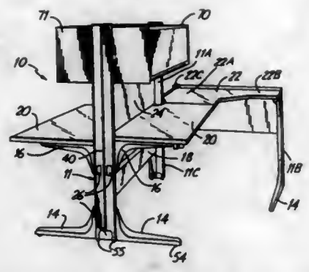
Thomas F. Canfield, Hopkins; Lloyd C. Mollenkopf, Apple Valley; Russell J. Rein, St. Louis Park, and Larry M. Jilk, Farmington, all of Minn., assignors to Rosemount Office Systems, Inc., Lakeville, Minn.

Filed Sep. 3, 1993, Ser. No. 117,257

Int. Cl.[6] A47B *35/00*

U.S. Cl. 108—50 **29 Claims**

1. An adjustable desk system comprising:
a superstructure upright having a generally vertically disposed spaced series of first elements of removable mating pairs of interlocking elements along one edge thereof;



a cantilever support having a series of second elements of the removable mating pairs of interlocking elements along a base edge, the second elements being spaced to match the spacing of the vertically disposed series of first elements, said elements interlocking to support the cantilever support on the superstructure upright;

the edge of the superstructure upright having a rounded exterior surface formed in cross section around a longitudinally extending axis of the superstructure upright; and

the cantilever support having a curved surface engaging the rounded exterior surface of the superstructure upright when in place and supported by the interlocking elements, the curved surface of the cantilever support formed to generally conform to at least a portion of the rounded exterior surface of the superstructure upright to urge the second elements to one lateral side of the mating elements on the superstructure upright.

5,544,594

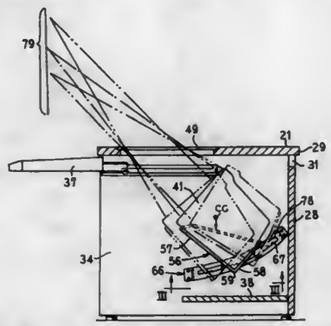
ADJUSTABLE MONITOR SUPPORT ASSEMBLY

Edward C. Schairbaum, Ft. Worth, Tex., assignor to Nova Manufacturing & Assembly, Inc., Effingham, Ill.

Filed May 31, 1995, Ser. No. 454,677

Int. Cl.[6] A47B *35/00*

U.S. Cl. 108—50 **15 Claims**



1. An adjustable monitor support assembly for mounting within a desk-like structure that has a top surface member with a transparent portion and through which transparent portion a monitor that is supported by said monitor support assembly is viewable, said monitor support assembly comprising in combination:

(a) a shelf member for supporting said monitor, said shelf member having opposed lateral sides;

(b) at least three stub shaft means each of which is associated with said shelf member and including association means therefor, each said stub shaft means being laterally outwardly extending from said lateral sides, so that said shelf member is supportable by said stub shaft means;

(c) a pair of rail means, each one of said rail means being adjacently locatable along a different one of said lateral sides, and including means for mounting said rail means to said desk-like structure, each one of said rail means having a parabolic-type curvature and being orientable so that one thereof is substantially a mirror image of the other thereof;

(d) said stub shaft means being engagable with said rail means so that said shelf member is supported by, and is slidably movable relative to, said rail means;

(e) retaining means for holding said shelf member at desired locations along said rail means; and

(f) the interrelationship between said shelf member, said stub shaft means, said rail means and said retaining means being such that said monitor when supported by said shelf member is adjustable to a variety of positions and angles with the front face of said monitor being maintained in a generally perpendicular position relative to various locations within a predetermined height range extending generally vertically above said desk-like structure when said monitor support assembly is mounted within said desk-like structure.

5,544,595

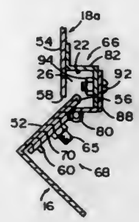
SECURITY HINGE FOR GAMING DEVICE

Orlando W. Stephenson,III, Kentwood; Lee M. Terpstra, Caledonia, and Charles E. Armock, Conklin, all of Mich., assignors to Spec International Inc., Grand Rapids, Mich.

Filed May 5, 1994, Ser. No. 238,376

Int. Cl.[6] E06B *3/36*

U.S. Cl. 109—74 **18 Claims**



1. A gaming device cabinet comprising:

a cabinet defining an interior space and an access opening, said cabinet including

a side panel having a first marginal strip defining a first edge of said access opening;

a cabinet access door configured to cover said access opening, said cabinet access door including a side flange having a second marginal strip extending generally perpendicular to a front face of said door defining a second edge;

a hinge pivotally connecting said cabinet access door to said cabinet for movement between a closed position where said second edge defines a gap with said first edge, and an open position, said hinge including a pivot axis spaced from said gap and security flanges defining a pocket on the inside of said gap; one of said first and second edges pivoting into said pocket as said cabinet access door is opened, said hinge security flanges extending continuously from a top to a bottom of said access opening such that they form a secure barrier preventing unauthorized entry into the interior space.

5,544,596

METHOD OF SUPPLYING COAL AND SULPHUR ABSORBENT TO A COMBUSTOR AND A POWER PLANT IN WHICH THE METHOD IS APPLIED

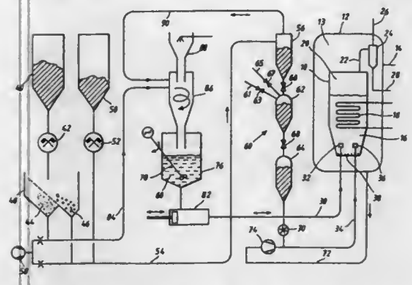
Roine Brännström, Finspong, Sweden, assignor to ABB Stal AB, Finspong, Sweden

Continuation of Ser. No. 917,069, Aug. 3, 1992. This application Sep. 2, 1994, Ser. No. 300,200

Claims priority, application Sweden, Feb. 1, 1990, 9000354

Int. Cl.[6] F23K *1/00*

U.S. Cl. 110—106 **14 Claims**



1. A method of supplying coal and sulphur absorbent to a combustor with combustion of coal occurring in a fluidized bed of particulate material, comprising the steps of:

a) dividing crushed coal into a fine and a coarse fraction;

b) supplying the fine coal fraction to at least one of a dust separator and a scrubber;

c) separating the fine coal fraction from the transport gas and thereafter supplying said fine fraction to a container for preparation of a paste;

d) preparing a paste of the fine fraction by the addition of a liquid while leaving the coarse fraction in a dry state;

e) pumping said paste into the fluidizing bed of the combustor through at least one first nozzle; and

f) transporting the coarse coal fraction to a pressure increasing device, prior to supplying said coarse fraction to the fluidized bed; and

g) supplying the coarse coal fraction and crushed absorbent to the combustor in said dry state.

5,544,597

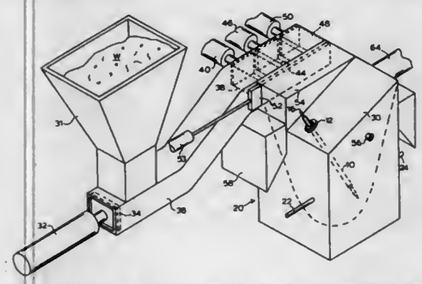
PLASMA PYROLYSIS AND VITRIFICATION OF MUNICIPAL WASTE

Salvador L. Camacho, Raleigh, N.C., assignor to Plasma Technology Corporation, Raleigh, N.C.

Filed Aug. 29, 1995, Ser. No. 521,129

Int. Cl.[6] F23G *5/02*

U.S. Cl. 110—223 **9 Claims**



1. Apparatus for the pyrolysis and vitrification of mixed waste comprising:

(a) a reactor providing a waste processing chamber with a hearth at the bottom of the chamber and above said hearth enclosing top panel and side wall structure;

(b) delivery means for delivering said mixed waste to said reactor, comprising:

(i) a storage receptacle for receiving a bulk supply of mixed waste to be processed;

(ii) a compactor associated with said receptacle and operative to receive from said receptacle and compact successive quantities of said mixed waste with minimum entry of air and transfer said mixed waste as an elongated compacted mass of substantially uniform cross section to a first location proximate said top panel structure;

(iii) a waste inlet at a second location proximate said first location for receiving compacted waste to be processed within said reactor, said waste inlet being configured for receiving selected portions of said compacted waste removed from said elongated compacted mass; and

(iv) a transporter operable in coordination with the forming of said elongated compacted mass of waste at said first location for moving said selected portions of said compacted elongated mass through said waste inlet into said chamber; and

(c) an elongated plasma arc torch mounted in said chamber and providing a source of plasma heat at a discharge end thereof directed toward said hearth for the pyrolysis and vitrification of said waste delivered to said reactor.

5,544,598

SYSTEM FOR INJECTING SLURRY TO BE INCINERATED INTO AN INCINERATION FURNACE, CORRESPONDING OPERATING PROCEDURE, USE AND FURNACE

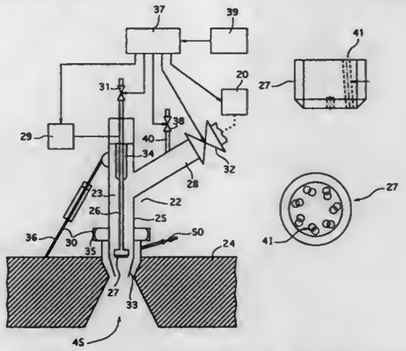
Eric Guibelin, Livry-Gargan, and Yves Valette, Orsay, both of, France, assignors to OTV Omnium de Traitements et de Valorisation S.A., Saint Maurice Cedex, France

Filed Jan. 23, 1995, Ser. No. 377,713

Claims priority, application France, Jan. 26, 1994, 94 01050

Int. Cl.[6] F23G *7/04*

U.S. Cl. 110—238 **17 Claims**



1. A system for injecting slurry or other pasty wastes to be incinerated into an incineration furnace, the furnace having an incineration hearth on which household waste is deposited in order to be incinerated, the system comprising:

an injection device for injecting the slurry to be incinerated into the furnace, the injection device being essentially situated above the incineration hearth to feed the slurry to the hearth at least in part by gravity, the injection device including,

a slurry spray device for spraying the slurry as the slurry is injected into the furnace,

an injection casing forming a spray chamber having a slurry feed intake and a discharge nozzle provided to inject the slurry into the furnace,

a pressurized gas injection tube provided within the spray chamber and having a first end, which is fitted with a diffuser, provided in an area of the discharge nozzle of the spray chamber, and

a displacement device coupled to the pressurized gas injection tube to displace the diffuser in relation to the discharge nozzle to provide adjustment of the slurry spray.

14. A process of incinerating slurry type wastes in an incineration furnace having an incineration hearth on which household waste is deposited and having an injection device situated so as to feed slurry to the incineration hearth, the process comprising the steps of:

feeding slurry to a spray chamber of the injection device;

feeding the slurry through the spray chamber past a gas injection tube having a diffuser formed on an end thereof;

feeding the slurry to a discharge nozzle of the injection device to discharge a slurry spray; and

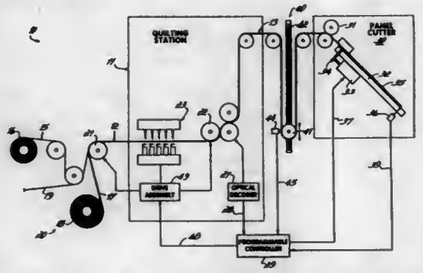
adjusting the slurry spray exiting the discharge tube by moving the diffuser of the gas injection tube relative to the discharge nozzle.

5,544,599

PROGRAM CONTROLLED QUILTER AND PANEL CUTTER SYSTEM WITH AUTOMATIC SHRINKAGE COMPENSATION

James T. Frazer; David B. Scott, both of Coral Springs, Fla., and James F. Bondanza, Fremont, Calif., assignors to L&P Property Management Company, Chicago, Ill.

Filed Jul. 6, 1994, Ser. No. 271,420
Int. Cl.[6] D05B *11/00*
U.S. Cl. 112—118 **23 Claims**



1. An apparatus for manufacturing quilted panels from a continuous quilted web formed of multiple layers of fabric, the apparatus comprising:

a quilting station having a stitching mechanism thereat operable to sequentially quilt a series of patterns along a multiple layered web of fabric extending through the quilting station;

feed rollers rotatably supported at the quilting station and positioned to drivably engage and longitudinally feed the quilted web of fabric downstream through the quilting station;

a longitudinal feed measuring device linked to the feed rollers and operative to generate a signal proportional to the length of fabric being fed downstream through the quilting station;

a panel cutter downstream of the quilting station positioned to receive the quilted web of fabric from the quilting station, the panel cutter having a transverse cutoff mechanism mounted thereon that is operable to transversely sever a panel of quilted fabric from the web in response to a cutoff signal;

feed elements on the panel cutter operable to advance a leading edge of the quilted web of fabric through and beyond the cutoff mechanism;

sensing means for generating the cutoff signal in response to the feeding of a predetermined length of quilted web past the cutoff mechanism; and

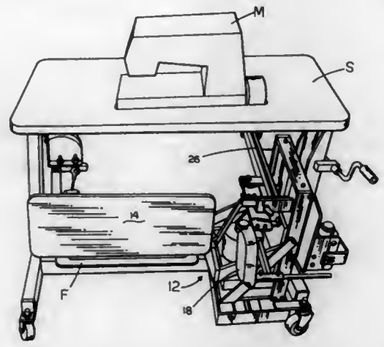
a controller having means for computing, in response to signals from the measurement device and the sensing means, a longitudinal dimensional change between the web fed from the quilting station and the web fed beyond the cutoff mechanism, to control the positioning of quilted patterns on the web at the quilting station and the feed of the web at the quilting station.

5,544,600

KNEE CONTROL MECHANISM FOR INDUSTRIAL SEWING MACHINE

Morris D. Hunt, Stantonville, Tenn., assignor to DBH Limited, Inc., Adamsville, Tenn.

Filed Apr. 25, 1994, Ser. No. 232,882
Int. Cl.[6] D05B *69/06;* **G05G** *1/14;1/20*
U.S. Cl. 112—217.3 **16 Claims**



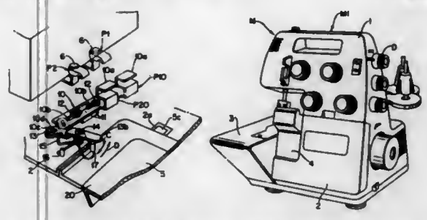
1. A knee control mechanism for operation of a machine, the mechanism comprising at least one rigid surface positioned for contact by a machine operator's knee and operatively connected to the machine in such manner as to cause operation of the machine upon contact by a knee of the operator while the operator is standing with both feet firmly placed on the floor at all times during operation of the machine, wherein the knee control mechanism is positioned forwardly of and substantially entirely to one side of the operator, and further having at least one support bar connected to the at least one rigid surface and adjustably mounted in relation to the machine in such manner as to provide the machine operator with selective placement of the at least one rigid surface, to suit the needs of a particular operator, and at least one pivotal lever, wherein the at least one support bar is adjustably mounted at one end of the at least one pivotal lever, to thereby cause pivotal movement of the lever upon pressing contact of the rigid surface by a knee of the operator of the machine, and further comprising at least one fluid cylinder connected to the machine and disposed for releasable contact by the at least one lever upon movement of the at least one rigid surface by the knee of a machine operator, to thereby control operation of the machine, wherein the at least one rigid contact surface comprises a knee plate disposed vertically with a surface thereof directly in front of the machine operator's knees for selective pushing contact thereby, and a press disposed vertically to one side of the operator at the operator's knee level, substantially perpendicular to the rigid plate, for selective lateral pressing contact by the operator's knee on the corresponding side.

5,544,601

SAFETY DEVICE FOR AN OVERLOCK SEWING MACHINE

Yasushi Baba, Tokyo, Japan, assignor to Juki Corporation, Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 363,865
Claims priority, application Japan, Dec. 27, 1993, 5-069950
Int. Cl.[6] D05B *83/00;69/36*
U.S. Cl. 112—261 **5 Claims**



1. A safety device for an overlock sewing machine, the overlock sewing machine having a looper cover movable between a first position covering the front of the looper and a second position opening the front of the looper, an auxiliary cloth table, a cloth waste cover, and at least two selectable stitching modes including a first stitching mode and a second stitching mode, said safety device comprising:

select means having an operating part located at which the looper cover covers, said select means for selectively setting said operating part to one of a first mode set-up position to set up the first stitching mode and a second mode set-up position to set up the second stitching mode;

contact means having an engaging part that is structurally capable of engaging said operating part of said select means, said contact means being movably supported by the looper cover such that said engaging part is positioned in front of the second mode set-up position when the auxiliary cloth table is set together with the looper cover, and that said engaging part is positioned in front of the first mode set-up position when the cloth waste cover is set together with the looper cover, in the case that said engaging part comes in contact with said operating part, the contacting means hindering the looper cover from turning toward the first position thereof; and

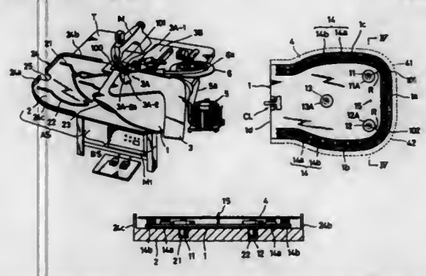
operating means coupled with the contact means so as to move the contact means when one of said auxiliary cloth table and said cloth waste cover is set to the looper cover.

5,544,602

AUTOMATED SEWING DEVICE

Kiyoshi Kawasaki, Akishima, Japan, assignor to Tachi-S Co., Ltd., Tokyo, Japan

Filed Aug. 29, 1994, Ser. No. 294,831
Int. Cl.[6] D05B *21/00*
U.S. Cl. 112—470.09 **17 Claims**



1. An automated sewing device for sewing a base material with a pair of first and second curved corner portions formed in at least one side thereof, each having a same radius of curvature, said automated sewing device comprising:

a sewing machine including a sewing needle and a feeding member;

a movable guide means having a shape generally similar to that of said base material, upon which movable guide means, said base material is to be secured;

said movable guide means being provided, on a reverse side thereof, with a first guide roller, a second guide roller and a third guide roller, in such a manner that said first and second guide rollers are respectively disposed at one point corresponding to a center of curvature of said first curved corner portion of said base material and at another point corresponding to a center of curvature of said second curved corner portion of the same base material, and further that all said first, second and third guide rollers are disposed at three apexes of an equilateral triangle, respectively;

a base guide plate means in which a plurality of guide grooves are formed in such a pattern that describes three loci respectively of said first, second and third guide rollers required to cause proper displacements of said movable guide means for guiding said at least one side of said base material including said first and second curved corner portions in a direction to said sewing needle of said sewing machine, wherein, upon said base guide plate means, said movable guide means is movably mounted, with said first, second and third guide rollers being slidably fitted in said plurality of guide grooves,

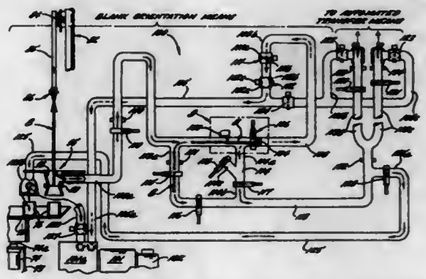
wherein said at least one side of the base material secured on the movable guide means is automatically fed and sewn by said sewing machine, with said movable guide means being displaced under guidance of said first, second and third guide rollers which follow the respective said three loci.

5,544,603

APPARATUS FOR HANDLING FLEXIBLE OBJECTS

Cecil R. Bell, Pinnacle; Charles R. Moyer; Gregory S. Poole, both of Charlotte, and Kenneth B. Silvers, Mt. Holly, all of N.C., assignors to Monarch Knitting Machinery Corporation, Glendale, N.Y.

Continuation-in-part of Ser. No. 222,801, Apr. 5, 1994. This application Aug. 25, 1994, Ser. No. 295,984
Int. Cl.[6] D05B *21/00*
U.S. Cl. 112—475.12 **4 Claims**



1. Apparatus for handling and orienting circular knit hosiery blanks for further processing, said apparatus comprising

support means for supporting the hosiery blanks in spaced apart relation,

first means for removing a small number of hosiery blanks from a mass of randomly arranged blanks and for depositing the same on said support means in spaced relation to previously deposited hosiery blanks,

second means for removing individual hosiery blanks from said support means and for transporting the same along a predetermined path of travel,

orientation means for receiving individual hosiery blanks from said blank transporting means, orionting the blanks in a pre-

determined orientation and delivering the properly oriented blanks for further processing, said orientation means comprises first conveying means for conveying individual hosiery blanks, one at a time, to a sensing station, sensing means at the sensing station for sensing the thickness of the portion of the hosiery blank beneath said sensing means to indicate the particular orientation of that hosiery blank at that time, and second conveying means for conveying the hosiery blank, welt end first, along one of two alternate paths of travel depending on the sensed orientation of the blank,

means for further processing hosiery blanks, and

transfer means for transferring hosiery blanks from said second conveying means to said further processing means, said transfer means comprising means for clamping the hosiery blanks in spaced relation to the termination of said second conveying means with the welt end thereof protruding a predetermined distance from said second conveying means, means for turning or folding back the protruding portion of the welt end of the hosiery blank, and gripping finger means for entering the turned-back welt end portion and for gripping the welt eod portion of the hosiery blank to withdraw the hosiery blank from said second conveying means and to transfer the hosiery blank to said further processing means.

5,544,604

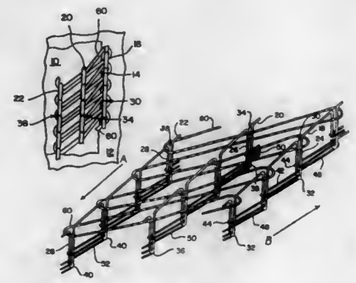
THREE NEEDLE STITCH WITH COVER THREAD

Frank F. Winter, Prospects Heights, Ill., assignor to Union Special Corporation, Huntley, Ill.

Continuation-in-part of Ser. No. 63,096, May 17, 1993, Pat. No. 5,383,414. This application Dec. 19, 1994, Ser. No. 358,868

Int. Cl.[6] D05B *1/08;93/00*

U.S. Cl. 112—475.17 **13 Claims**



1. A seam consisting of a number of stitches, said seam beginning at a starting point and progressing in the direction of stitch formation such that completed stitches are behind the stitch being formed and the stitch being formed is in front of or forward of the completed stitches, each stitch of said seam having a fixed lateral width greater than 20 gauge (5/16 inch) and each stitch comprising:

two outer and a central needle threads formed into three thread loops, each thread loop having a bight portion, said thread loops adapted to penetrate a fabric in a vertical plane arranged at an acute angle to a line defining the lateral width of the stitch;

three looper threads, each corresponding to one of said needle threads, each looper thread passing through the bight portion of a thread loop of the corresponding needle thread and then forming a bight portion through which the next loop formed in the corresponding needle thread passes to form three parallel rows of stitches;

a cover thread, adapted to lay on the top surface of the fabric along a serpentine pattern that is confined to the lateral width of the stitch; and

said cover thread looping around the points of penetration of the outer needle threads and includes a cover thread strand portion that connects the looped around portions of the cover thread to connect said three parallel rows of stitches.

5,544,605

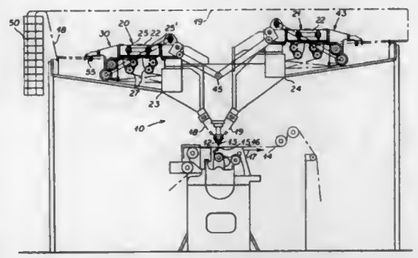
AUXILIARY YARN FEED MODULE FOR TUFTING MACHINE WITH PATTERN CONTROL YARN FEED MECHANISM

Steven L. Frost, Signal Mountain, Tenn., assignor to Tuftco Corporation, Chattanooga, Tenn.

Filed Mar. 10, 1994, Ser. No. 209,517

Int. Cl.[6] D05C *15/26*

U.S. Cl. 112—475.23 **1 Claim**



1. A method of manufacturing patterned and bordered scatter rugs on a tufting machine having a plurality of reciprocal needles operated by a needle drive to stitch at least first and second yarns provided from a yarn supply through base fabric, and also having a pattern control yarn feed mechanism utilizing a tube bank to direct individual yarns to respective needles, and further having an auxiliary yarn feed mechanism, comprising the steps of:

(a) threading the first and second yarns which are to form the pattern portion of the scatter rugs from the yarn supply through the pattern control yarn feed mechanism and tube bank to respective needles;

(b) threading the first yarns which are to form the side border portions of the scatter rugs from the yarn supply through the auxiliary yarn feed mechanism and the tube bank to respective needles;

(c) initializing a stitch counting mechanism;

(d) feeding the base fabric through the tufting machine for a predetermined number of stitches comprising the front border of a scatter rug, with the auxiliary yarn feed mechanism supplying first yarns from the yarn supply to respective needles at a constant high speed, and the pattern control yarn feed mechanism supplying first yarns at a high speed and supplying second yarns at a low speed to respective needles;

(e) feeding the base fabric through the tufting machine for a predetermined number of stitches comprising the patterned section of a scatter rug with the auxiliary yarn feed mechanism supplying first yarns from the yarn supply to respective needles at a constant high speed, and the pattern control yarn feed mechanism supplying first yarns at high and low speed and supplying second yarns at high and low speed to respective needles as indicated by the pattern;

(f) feeding the base fabric through the tufting machine for a predetermined number of stitches comprising the rear border of a scatter rug, with the auxiliary yarn feed mechanism supplying first yarns from the yarn supply to respective needles at a constant high speed, and the pattern control yarn feed mechanism supplying first yarns at a high speed and supplying second yarns at a low speed to respective needles;

(g) feeding the base fabric through the tufting machine for at least one stitch with the pattern control yarn feed mechanism supplying all first and second yarns to respective needles at low speed to form a cut line;

(h) repeating steps (d) through (g) until a plurality of patterns have been tufted;

(i) cutting the patterned base fabric into separate scatter rugs along the cut lines;

(j) binding or serging the edges of each scatter rug to provide a finished appearance.

5,544,606

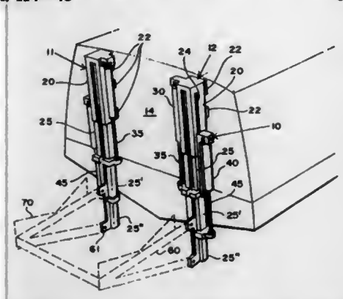
BOAT LIFTING DEVICE

Anthony Schmidt, Jr., North Fort Myers, Fla., assignor to Jack Bradley, Ft. Lauderdale, Fla.

Filed May 9, 1995, Ser. No. 437,694

Int. Cl.[6] B63C *1/02*

U.S. Cl. 114—48 **5 Claims**



1. A lifting device for boats, comprising, in combination, a plurality of support units, each said support unit comprising:

a hollow vertical support member having a front vertical slot and a side vertical slot;

means for attaching said hollow vertical support member to another surface;

a plurality of vertical extension members movable up and down within said hollow vertical support unit;

a plurality of hydraulic cylinders attached to and connecting said extension members;

power means for driving said cylinders; and

horizontal boat support means connected to said extension members through said front slot;

said plurality of vertical extension members comprising a hollow first member having a vertical front slot and movable by a first cylinder within said hollow vertical support member, a second member movable within said first member by a second cylinder; said horizontal boat support means being anchored to said second member and driven by a third cylinder, said device being characterized in that actuation of said power means selectively and rigidly raises or lowers a boat position on said support means.

5,544,607

MOVEABLE SPONSONS FOR HYDROFOIL WATERCRAFT, INCLUDING BOTH LARGE ENTENDED-PERFORMANCE HYDROFOIL WATERCRAFT AND LEAPING PERSONAL HYDROFOIL WATERCRAFT

Dale Rorabaugh, and Ron Costa, both of P.O. Box 1864, Rancho Sante Fe, Calif. 92067

Filed Feb. 13, 1995, Ser. No. 390,500

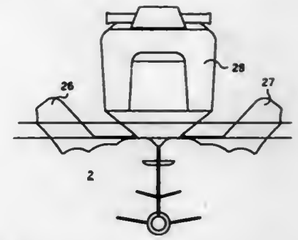
Int. Cl.[6] B63B *43/14*

U.S. Cl. 114—123 **16 Claims**

1. A hydrofoil watercraft comprising:

a displacement hull of a shape suitable to (i) slice through heavy seas, but ineffective to (ii) provide at a first speed of the watercraft a sufficient lifting force so as to permit the watercraft to come onto a first plane on its hull;

wherein the displacement hull does not suffice to serve as a planing hull at the first speed of the hydrofoil watercraft through the water;



hydrofoils, attached to the hull and extending into the water below the hull, providing at a second speed, faster than the first speed, of the watercraft through the water a second lifting force by which lifting second force the watercraft may come onto a second plane, separate from the first hull plane, on its hydrofoils; and

a plurality of sponsons each of which is attached to the hull and which sponsons are collectively moveable between

inboard positions both closely proximate to the displacement hull and so integrated into the shape thereof so as support that the displacement hull should slice through heavy seas,

outboard positions, separated from the displacement hull, where, at the first speed of the watercraft through the water, a first lifting force is provided by which first lifting force the watercraft comes onto its first, hull, plane;

wherein the watercraft is enabled to come onto its first, hull, plane not by action of its displacement hull but rather by action of its plurality of sponsons in their outboard positions; and

wherein the watercraft is enabled to come onto the second plane by its hydrofoils.

5,544,608

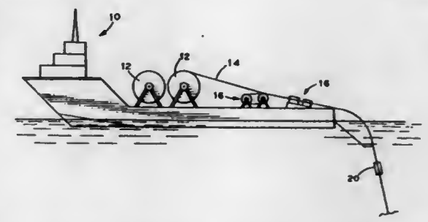
METHOD OF INSTALLING OR RETRIEVING MOORING LINES INDEEP WATER

Edward E. Horton, III, Rancho Palos Verdes, Calif., assignor to Deep Oil Technology, Inc., Irvine, Calif.

Filed Nov. 29, 1995, Ser. No. 564,838

Int. Cl.[6] B63B *21/00*

U.S. Cl. 114—230 **1 Claim**



1. A method for setting out or retrieving a mooring line, comprising:

a. providing a vessel having a supply drum containing a length of mooring line that has one or more connectors alone the length of the line, a traction winch, and a linear winch;

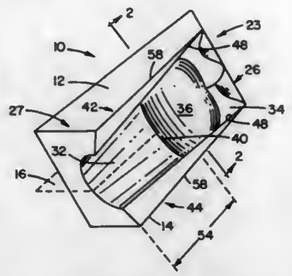
b. utilizing the traction winch to maintain tension on the mooring line during paying out or retrieving of the mooring line until a connector on the mooring line nears the traction winch;

c. engaging the linear winch with the mooring line and transferring tension from the traction winch to the linear winch;

d. paying out or retrieving the mooring line utilizing the linear winch until the connector on the mooring line has passed through the traction winch; and

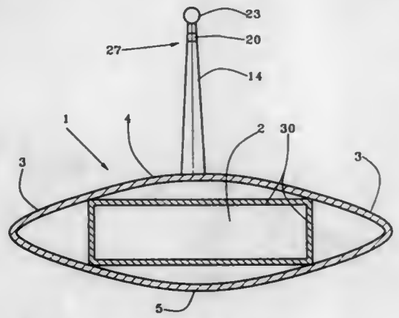
e. disengaging the linear winch from the mooring line while reengaging the traction with the mooring line to transfer tension on the mooring line to the traction winch.

5,544,609
EARLY PLANING BOAT HULL
James D. Miller, 28 Trail Rd., Bristol, Va. 24201
Filed Jun. 20, 1995, Ser. No. 492,718
Int. Cl.[6] B63B *1/32*
U.S. Cl. 114—288 **17 Claims**



1. A boat hull configuration having floor means, a bow section, two outboard sides, and a stern section, said floor means having bottom surface means, at least one upwardly formed cavity means in a forward portion of said bottom surface means defined by an upwardly domed surface, at least two longitudinal, laterally spaced keel means running along the lower portions of the hull substantially the full length thereof with said bottom surface and cavity means extending therebetween, wherein a rearward surface portion of said cavity means is located adjacent the longitudinal mid-point of said bottom surface means and provides a forwardly facing fulcrum surface means extending generally upwardly for engaging air and water as the hull is powered forward and causing upward pivoting about said fulcrum surface means of the rear of the boat in response to air and water pressure generated in the cavity means by forward motion of the boat and directed against said fulcrum surface means.

5,544,610
CARGO SUBMARINE
David K. Harding, 88 Tilt St., Haledon, N.J. 07508
Continuation of Ser. No. 781,922, Oct. 24, 1991, abandoned.
This application Nov. 27, 1992, Ser. No. 982,428
Int. Cl.[6] B63G *8/04*
U.S. Cl. 114—312 **32 Claims**



1. A cargo submarine comprising:

vertically-tapered and hydrodynamically-contoured buoyancy-and-trim hull sides with parallel edges between a bow section and a stern section;

a vertically-tapered and hydrodynamically-countered buoyancy-and-trim hull bow with a leading edge in a plane parallel to a vertically-tapered and hydrodynamically-contoured buoyancy-and-trim hull stern between the hydrodynamically-contoured buoyancy-and-trim hull sides;

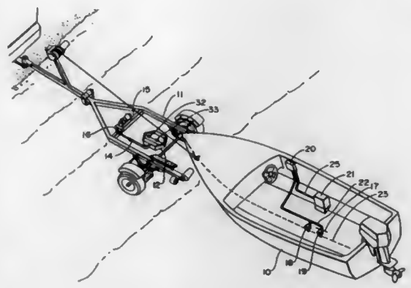
a cargo hold positioned between the said vertically-tapered and hydrodynamically-contoured buoyancy-and-trim hull sides, the said vertically-tapered and hydrodynamically-contoured buoyancy-and-trim hull bow and the said vertically-tapered and hydrodynamically-contoured buoyancy-and-trim hull stern;

a cargo-hold cover positionable in hydrodynamically-contoured covering relationship to the cargo hold;

a cargo-handling means positionable in the cargo hold and extendible out from the cargo hold for loading freight onto and for unloading freight from the cargo submarine; and

an elliptically-arced top surface of the cargo submarine in hydrodynamically-contoured relationship to the said vertically-tapered and hydrodynamically-contoured buoyancy-and-trim hull sides, the said vertically-tapered and hydrodynamically-contoured buoyancy-and-trim hull bow and the said vertically-tapered and hydrodynamically-contoured buoyancy-and-trim hull stern.

5,544,611
BOAT TO TRAILER PROXIMITY INDICATOR
Stephen Fahringer, Sr., and Stephen Fahringer, Jr., both of Dublin, Calif., assignors to Fahringer Enterprises, Dublin, Calif.
Filed May 10, 1994, Ser. No. 240,226
Int. Cl.[6] B63B *35/00*
U.S. Cl. 114—343 **31 Claims**



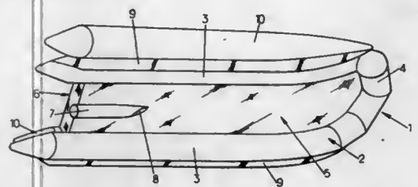
1. An apparatus for positioning a boat onto a boat trailer comprising:

two magnetic reed switches adapted to be attached inside the bilge of a boat, said magnetic reed switches located along a central, longitudinal axis of the boat;

an indicator box adapted to be mounted in the boat and electrically connected to said reed switches for providing a signal indicating that the boat is properly positioned onto the boat trailer;

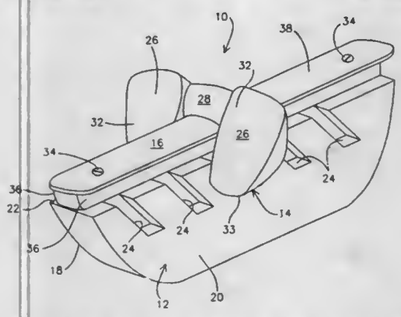
two permanent magnets adapted to be attached to the boat trailer along a central, longitudinal axis thereof and separated by a distance approximately equal to the distance between said magnetic reed switches, whereby when the boat is moved onto the boat trailer such that the permanent magnets attached to the trailer are adjacent to the magnetic reed switches inside the boat, the magnetic reed switches are closed thereby causing the indicator box to signal that the boat is properly positioned onto the boat trailer.

5,544,612
INFLATABLE BOAT OPERATING AS A CATAMARAN, AND HAVING IMPROVED STABILITY
Michel Eymard, Toulouse, France, assignor to Zodiac International, Issy-Les-Moulineaux, France
Filed Jul. 5, 1995, Ser. No. 498,387
Claims priority, application France, Apr. 14, 1995, 95 04549
Int. Cl.[6] B63B *7/00*
U.S. Cl. 114—345 **15 Claims**



1. An inflatable boat (1) comprising at least one inflatable buoyancy tube (2) forming two substantially parallel branches (3) that are united towards the forward end (4); a bottom (5) that is rigid in the transverse direction and that is held between said two branches (3) of the inflatable tube (2); and a transom (6) at the stern used for supporting an outboard motor assembly; the boat being characterized in that at least one projecting bulb (7) is provided only in the stern of the underside of its bottom (5) and projecting therefrom, said at least one projecting bulb (7) being elongate in the longitudinal direction of the boat and being constituted by a flexible bag which is inflated by a fluid under pressure, said bulb (4) being disposed facing a position which is occupied by an arm of the motor assembly adapted to be supported by said transom which arm plunges into the water and which arm supports at least one thrust member together with anticavitation plates.

5,544,613
FOOT REST FOR BOATS
Charles S. Scarborough, Rockwood, Tenn.; Robert M. Kelly, Wilmington, Del.; Rodney W. Gaylor, Oliver Springs, and Patrick J. Rogers, Rockwood, both of Tenn., assignors to Dagger Canoe Co., Inc., Harriman, Tenn.
Filed Aug. 11, 1995, Ser. No. 514,453
Int. Cl.[6] B63B *17/00*
U.S. Cl. 114—363 **16 Claims**



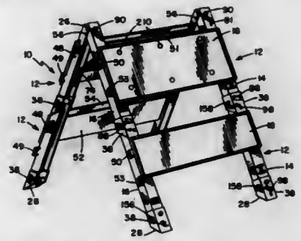
1. A foot rest for supporting the feet of a boater seated in a boat, said foot rest comprising:

a mounting rail positioned along a longitudinal axis on the boat, said mounting rail defining a plurality of indexing receptors;

a foot support block including a pair of foot engagement pads carried at either end of a bridge, each of said pair of foot engagement pads carrying at least one indexing member between said pair of foot engagement pads and extending toward the other of said pair of foot engagement pads, said indexing member being configured to be closely received within one of said plurality of indexing receptors defined by said mounting rail; and

a retainer rail slidably received by said foot support block between said pair of foot engagement pads and releasably secured to said mounting rail, said retainer rail defining linear recesses dimensioned to slidably receive said indexing member when said indexing member is retracted from said indexing receptor.

5,544,614
TRAFFIC BARRICADE
Veronica B. Cushman, La Jolla, Calif., assignor to VBCO, La Jolla, Calif.
Filed Mar. 9, 1994, Ser. No. 208,968
Int. Cl.[6] G09F *15/00*; **E01F** *9/00*
U.S. Cl. 116—63 P **23 Claims**



1. A barricade assembly, comprising:

a plurality of panel units each having an outer face and an inner face, each panel unit comprising spaced, parallel first and second legs and a planar cross member extending transversely between the legs and oriented co-planar with both legs, the legs of each panel unit having upper and lower end portions, and the panel units being selectively securable together in a plurality of different configurations, each configuration including at least a first panel unit and a second panel unit;

a releasable hinge means for releasably hinging the upper end portions of the first panel unit directly to the upper end portions of the legs of the second panel unit, the inner faces of the first and second panel units facing one another in every possible configuration of the panel units, the first and second hinged panel units being pivotable about the hinge means between a collapsed position and an open, freestanding position in which the first and second panel units are at an angle to one another, the configurations including a first configuration comprising said first and second panel units, but not additional of said panel units, said first configuration forming a first hinged stand of a first height;

each panel unit having a first interlocking formation at the upper end portion of each leg and a second interlocking formation at the lower end portion of each leg, each second interlocking formation dimensioned and configured for releasable securing engagement with the first interlocking formation at the upper end of the legs of another of said panel units; and

the configurations further including a second configuration in which said first and second panel units are hinged together and form an upper part of a second hinged, V-shaped stand, one side of the second stand comprising said first panel unit and a third panel unit, the second interlocking formations at the lower end portions of each leg of the first panel unit being releasably secured to the respective first interlocking formations at the upper end portions of each leg of the third panel unit with the first legs of the first and third panel units extending coaxially and the second legs of the first and third panel units extending coaxially, and the other side of said second stand comprising said second panel unit and a fourth panel unit, the second interlocking formations at the lower end portions of each leg of the second panel unit being

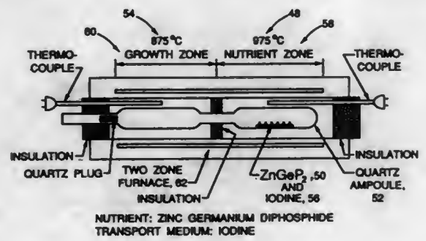
releasably secured to the respective first interlocking formations at the upper end portions of each leg of the fourth panel unit with the first legs of the second and fourth panel units extending coaxially and the second legs of the second and fourth panel units extending coaxially, the second stand having a height greater than the first height, said configurations further including additional configurations wherein additional of said panel units are securable to the third and fourth panel units to selectively adjust the height of the assembly.

5,544,615

SYNTHESIS AND GROWTH PROCESSES FOR ZINC GERMANIUM DIPHOSPHIDE SINGLE CRYSTALS

Meckie T. Harris, Nashua, N.H.; David F. Bliss, Arlington, Mass.; Alton F. Armington, Lexington, Mass.; William M. Higgins, Westborough, Mass., and George G. Bryant, Waltham, Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 29, 1994, Ser. No. 282,869
Int. Cl.[6] C01B *25/00*; C30B *15/00*
U.S. Cl. 117—18 **5 Claims**



1. A process of producing single crystal of $ZnGeP_2$, said process comprising the steps of:

preparing a polycrystalline charge of $ZnGeP_2$, said preparing using the liquid encapsulated Kyropoulos process wherein an injector directly inputs phosphorus into a melt of Zn and Ge;

placing said charge and a transporting agent in a chemical vapor transport apparatus, said charge and said transporting agent being placed together in a sealed ampoule of said vapor transport apparatus, said ampoule having a charge region and a growth region, said ampoule being placed in a two zone furnace, said charge region being placed in a nutrient zone, said growth region being placed in a growth zone, said nutrient zone having a higher temperature than said growth zone;

heating said nutrient zone to a temperature above an equilibrium temperature of a reaction GeI_4 plus Ge equals 2 GeI_2 occurring between said charge and said transporting agent;

heating said growth zone to a temperature below said temperature in said nutrient zone;

allowing said temperatures to remain therein while said growth takes place in the growth zone;

cooling said crystals in said growth zone;

opening said ampoule while removing excess phosphorus and said transporting agent; and

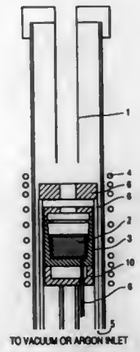
removing said single crystal of $ZnGeP_2$.

5,544,616

CRYSTALLIZATION FROM HIGH TEMPERATURE SOLUTIONS OF SI IN CU/AL SOLVENT

Theodore F. Ciszek, Evergreen, and Tihu Wang, Golden, both of Colo., assignors to Midwest Research Institute, Kansas City, Mo.

Continuation-in-part of Ser. No. 881,416, May 13, 1992, Pat. No. 5,314,571. This application May 27, 1994, Ser. No. 249,957
Int. Cl.[6] C30B *19/02*
U.S. Cl. 117—60 **6 Claims**



1. A liquid phase epitaxy method for forming thin crystalline layers of device quality silicon having less than 3×10^{16} Cu atoms/cc impurity, comprising:

a) preparing a saturated liquid solution of Si in a Cu/Al solvent at about 20 to about 40 at. % Si at a temperature range of from about 850° C. to about 1100° C. in an inert gas;

b) immersing or partially immersing a multicrystalline silicon substrate in said saturated liquid solution;

c) super saturating the solution melt by lowing the temperature of said saturated solution melt;

d) holding the substrate in the saturated solution melt for a period of time sufficient to cause growing Si to precipitate out of solution and form a crystalline layer of Si on the substrate; and

e) withdrawing the substrate from the solution.

5,544,617

METHOD FOR PRODUCING SINGLE CRYSTAL, AND NEEDLE-LIKE SINGLE CRYSTAL

Yoshinori Terui, and Ryuichi Terasaki, both of Tokyo, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 63,721, May 20, 1993, abandoned. This application Apr. 14, 1995, Ser. No. 422,167
Claims priority, application Japan, May 22, 1992, 4-154118
Int. Cl.[6] C30B *25/04*
U.S. Cl. 117—87 **19 Claims**

1. A method for producing a single crystal pin on a surface of a



single crystal substrate, comprising the steps of:

(1) placing a metal layer pattern on a surface of a single crystal substrate;

(2) etching said surface of said single crystal substrate around said metal layer pattern; and

(3) perpendicularly growing a single crystal pin on said single crystal substrate in a gas atmosphere containing an element or elements constituting said single crystal substrate.

5,544,618

APPARATUS FOR DEPOSITING A COATING ON A SUBSTRATE

Richard A. Stall, 31 Wolf Hill Dr., Warren, N.J. 07060; Gary S. Tompa, 681-H Dover Ct., Somerville, N.J. 08876; Alexander Gurary, 618 Foothill Rd., Bridgewater, N.J. 08807, and Craig R. Nelson, 67 Maple Ave., Berkeley Heights, N.J. 07922

Division of Ser. No. 803,647, Dec. 4, 1991, Pat. No. 5,336,324. This application May 23, 1994, Ser. No. 247,659
Int. Cl.[6] H01L *21/20*; C30B *23/08*
U.S. Cl. 117—102 **8 Claims**

1. A method for depositing a coating of a composition on a substrate, comprising the steps of:

supporting said substrate within a housing,

evacuating said housing,

providing vapors of materials for forming said composition to said housing,

placing said vapors in a molecular flow condition by passing said vapors through an orifice having a variable cross-section to substantially decrease the pressure of said vapors,

controlling the flow of said vapors by adjusting said cross-section of said orifice, and

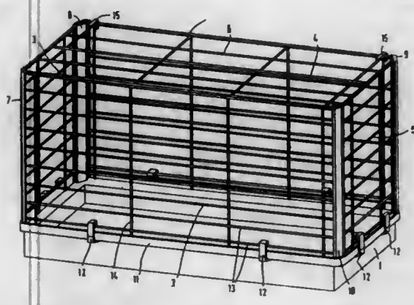
conducting said vapors under said molecular flow condition through a path in said housing having heated surfaces whereby said vapors contact said heated surfaces before depositing on said substrate.

5,544,619

COLLAPSIBLE CAGE

Hans Braun, Ludwigsburg, Germany, assignor to Wagner & Keller GmbH & Co., Ludwisburg, Germany

Filed Sep. 16, 1994, Ser. No. 307,289
Claims priority, application Germany, Sep. 16, 1993, 9314021 U
Int. Cl.[6] A01K *1/03*
U.S. Cl. 119—474 **34 Claims**



1. A collapsible cage, comprising:

a tray;

a plurality of side walls, said side walls being secured to said tray and arranged at right angles;

securing means for securing said plurality of side walls to said tray; and

a plurality of sectional corner connectors, each separably joined to two edges of adjacent side walls,

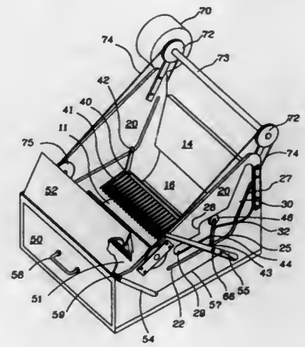
each said sectional corner connector comprising bars divided longitudinally into two parts, at least two clamping devices for tightly connecting the two parts together along with said edges of said adjacent side walls, and at least one spreader device which allows said two tightly connected parts to move apart relative to each other to a certain extent.

5,544,620

SELF-CLEANING CAT BOX

Geoffrey Sarkissian, 28592 Markuson Rd., Modjeska, Calif. 92676

Filed May 17, 1995, Ser. No. 446,902
Int. Cl.[6] A01K *29/00*
U.S. Cl. 119—166 **19 Claims**



1. A self cleaning cat box comprising:

a tray for holding litter and a storage area;

a rake with pivotable tines movable through the litter;

means interacting with said rake so as to move said rake through litter, rotate said rake, and move said rake over said storage area;

in combination, a scraper and scraping means located over storage area for removing waste from said rake whereby said scraper comes down over waste while said rake is over said storage area and said scraper pulls the waste into said storage area as said rake retracts.

5,544,621

METHOD AND DEVICE FOR FEEDING LIVE INSECTS TO FISH

Paul Haurilesko, 524 Sandra Dr., Level Green, Trafford, Pa. 15085

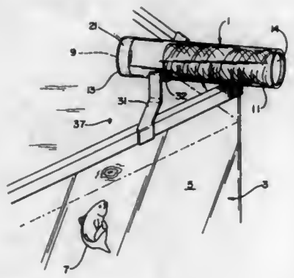
Filed Dec. 13, 1994, Ser. No. 354,645
Int. Cl.[6] A01K *61/02*
U.S. Cl. 119—230 **17 Claims**

1. A method of feeding a fish or animal in a tank, comprising the steps of:

providing a container having an opening and a tacky substance surrounding the opening on an outside surface of the container;

providing means for producing a plurality of live flightless insects within the container; and

positioning the container with the opening over an open area of the tank.



5,544,622

BUILDING FOR ACCOMMODATING LIVESTOCK

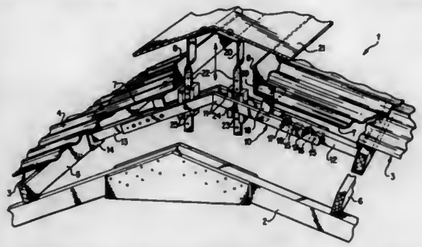
Johannes M. W. Weelink, No. 58, Tynaarlosestraat, NL-9481 AD Vries, Netherlands

Filed Nov. 17, 1994, Ser. No. 341,094

Claims priority, application Netherlands, Nov. 18, 1993, 9302000

Int. Cl.[6] A01K *1/00*

U.S. Cl. 119—436 **12 Claims**



1. Building for accommodating livestock with a roof having two roof parts extending obliquely downward from a ridge, wherein transparent plate material extends parallel to the ridge, the end edges of which plate material close to the ridge form between them a ventilation slot and wherein at a distance above the ventilation slot a roof cap is arranged with a width greater than that of the ventilation slot, wherein longitudinal beams of the roof extend at a distance parallel to the ridge, from which beams the transparent plate material extends.

5,544,623

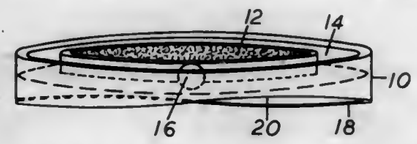
BALL AND TRACK FOR CATS WITH PIVOTING BASE

Steven D. Udelle, and Laura L. Udelle, both of 26414 Barranquilla Ave., Punta Gorda, Fla. 33983

Filed May 30, 1995, Ser. No. 454,402

Int. Cl.[6] A01K *1/035*

U.S. Cl. 119—706 **6 Claims**



1. A ball and track device for cats with pivoting base comprising:

a) a circular housing having an upper surface with an annular ring forming a continuous track encircling said upper surface of said housing, said continuous track having an inner wall, a substantially vertical outer wall, a bottom, and an open top;

b) said continuous track having a freely movable object disposed therein;

c) said substantially vertical outer wall of said continuous track having an arcuate lower edge extending between a first pair diametrically opposing points along the circumference of said housing, the height of said outer wall at said first pair of diametrically opposing points being less than the height of said outer wall at a second pair of diametrically opposing points disposed at ninety degrees with respect to said first pair of diametrically opposing points such that the lower edge of said outer wall forms a convex rocker-like base for said housing, said rocker-like base providing an unstable platform for said housing, whereby when an animal contacts said housing, said housing is caused to rock on said rocker-like base indirectly causing said freely movable object to move within said annular track.

5,544,624

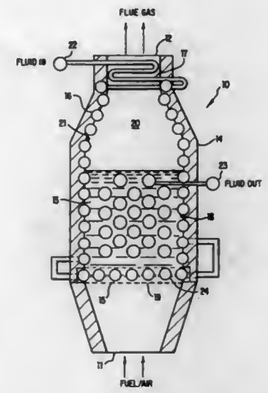
GAS-FIRED, POROUS MATRIX, COMBUSTOR-STEAM GENERATOR

Tian-yu Xiong, Darien, Ill., assignor to Institute of Gas Technology, Des Plaines, Ill.

Continuation-in-part of Ser. No. 90,339, Jul. 12, 1993, Pat. No. 5,375,563. This application Sep. 12, 1994, Ser. No. 304,502

Int. Cl.[6] F22B *1/00*

U.S. Cl. 122—4 D **13 Claims**



1. A porous matrix, surface combustor-fluid heating apparatus comprising:

at least one combustor wall forming a combustion chamber, said combustion chamber having an inlet end and an outlet end;

a stationary porous bed disposed within said combustion chamber;

retention means for retaining said stationary porous bed within said combustion chamber;

means for introducing a fuel/oxidant mixture into said stationary porous bed;

distribution means for distributing said fuel/oxidant mixture within said stationary porous bed proximate said inlet end of said combustion chamber, said distribution means comprising a wall having a plurality of openings through which said fuel/oxidant mixture flows into said stationary porous bed and at least one fluid-cooled tube disposed within said wall; and

porous bed heat exchanger means comprising at least one vertically oriented, fluid-cooled tube disposed in said stationary porous bed.

5,544,625

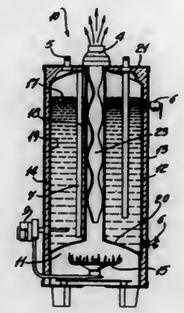
FLUE BAFFLE FOR GAS-FIRED HOT WATER TANKS

Louis Rivern, Epiphanie, Canada, assignor to Giant Factories Inc., Montreal, Canada

Filed Jun. 20, 1995, Ser. No. 492,512

Int. Cl.[6] F22B *7/00*

U.S. Cl. 122—155.2 **9 Claims**



1. A flue baffle for use in a hot water tank flue through which flue gases from a burner chamber are discharged, said baffle being comprised of an elongated flat undulated metal strip having a securable upper end, said undulated metal strip being shaped to define a plurality of integrally formed wave-shaped deformations on opposed side portions of a central longitudinal axis thereof, and a narrower undulated metal band secured to said metal strip on opposed sides thereof and disposed substantially mid-way between said wave-shaped deformations on opposed sides of said flat metal strip, said upper end being adapted to retain said flue baffle axially within said flue to create turbulence and resistance to hot flue gases rising from said burner chamber to enhance heat exchange between said flue and a liquid being heated and in direct contact with an exterior surface of said flue.

5,544,626

FINGER FOLLOWER ROCKER ARM WITH ENGINE VALVE DEACTIVATOR

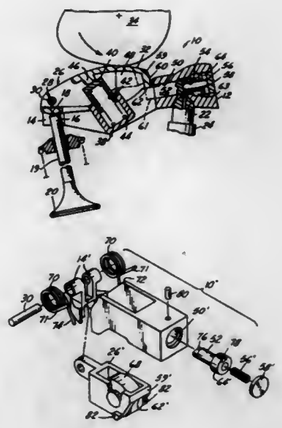
Matthew B. Diggs, Farmington, and Gordon W. Sweetnam, Milford, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 9, 1995, Ser. No. 401,372

Int. Cl.[6] F01L *13/00;* **F02D** *13/06*

U.S. Cl. 123—90.16 **6 Claims**

1. A self-contained engine camshaft cam lobe actuated finger follower type rocker arm assembly for drop-in installation in an engine, comprising, a longitudinally extending outer hollow body engagable adjacent one end with an engine valve stem for actuation thereof, moveable lash adjuster pivot fulcrum means adjacent the opposite end, and lost motion arm means pivotally mounted to and within the body adjacent the stem engaging body end, spring means urging the lost motion means into engagement with a rotatable cam lobe, means mounting the arm means for a pivotal arcuate movement of the arm means by the cam lobe relative to the body preventing actuation at times of the valve stem by the body upon movement of the arm means, and latch means wholly contained within the lash adjuster end of the body extending essentially parallel to the body longitudinal axis for movement in opposite directions, the latch means including a plunger means projectably movable longitudinally to a latch position into the path of arcuate movement of the arm means for engagement therewith thereby preventing relative movement between the body and the arm means in one direction to thereby transmit movement of the arm means by the cam lobe to the body for actuating the valve stem, the plunger means and arm means having engagable mating flat surfaces providing wide surface area contact when engaged while permitting limited sideways movement therebetween thereby minimizing contact stresses therebetween and the need for precise thrust surfaces.



5,544,627

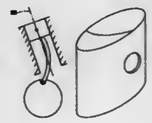
ENGINE DESIGN FOR GASOLINE/DIESEL ENGINES

Nicola Terziev, 5100 N. Ocean Blvd. Apt. 1407, Ft. Lauderdale, Fla. 33308, and Leonid Popov, 29 Clinton Ave. Apt. 1A, Norwalk, Conn. 06854

Filed Mar. 21, 1995, Ser. No. 407,854

Int. Cl.[6] F16J *1/04;* **F02B** *35/02*

U.S. Cl. 123—53.1 **2 Claims**



1. An improved engine configuration which comprises:

a cylinder with an elliptical cross section;

a piston with an elliptical cross section;

a crankshaft; and

a bow-shaped connecting rod connected to said crankshaft via a crank pin;

wherein the centerline axes of the cylinder and piston are at an oblique angle to a plane which passes through the axis of revolution of the crankshaft and through said crank pin when said piston is at top dead center.

5,544,628

VALVE CONTROL ARRANGEMENT FOR AN INTERNAL ENGINE

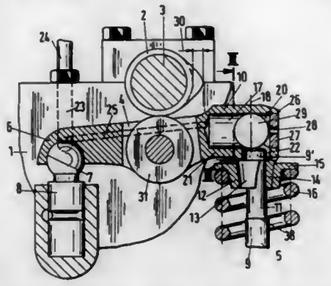
Dieter Voigt, Wolfsburg, Germany, assignor to Volkswagen AG, Wolfsburg, Germany

Filed Jun. 5, 1995, Ser. No. 461,719

Claims priority, application Germany, Jul. 6, 1994, 44 23 606.9

Int. Cl.[6] F01L *1/12*; F02D *13/06*

U.S. Cl. 123—90.16 14 Claims



1. A valve control arrangement for an internal combustion engine comprising a cylinder head having a camshaft and at least one deactivatable valve driven by the camshaft, a coupling element for coupling the valve to the camshaft, a locking element displaceable between a first position connecting the valve in locked relation to the coupling element to activate the valve and a second position permitting relative displacement of the coupling element with respect to the valve to deactivate the valve, a spring plate assembly engaging the coupling element, and a valve-closing spring engaging the spring plate assembly to maintain the coupling element in constant contact with the camshaft.

5,544,629

INTAKE SYSTEM IN V-SHAPED ENGINE

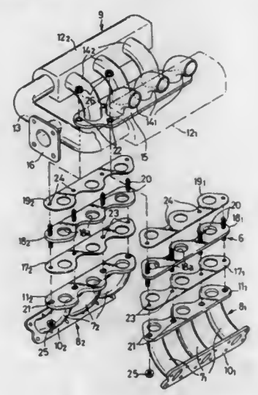
Satoru Ohata, and Tomohiro Iiboshi, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 29, 1995, Ser. No. 496,909

Claims priority, application Japan, Jun. 29, 1994, 6-148149

Int. Cl.[6] F02M *35/10*

U.S. Cl. 123—184.36 4 Claims



1. An intake system for use in a V-shaped engine, comprising:

an intake manifold capable of being disposed in a valley defined between a pair of cylinder heads disposed in a substantially V-shaped arrangement, wherein said intake manifold includes first and second intake pipe assemblies each having a plurality of intake pipes capable of being coupled at a first end of said respective intake pipes to said cylinders heads, respectively and wherein a second end of said first intake pipe assembly is provided with a first flange and a second end of said second intake pipe assembly is provided with a second flange;

a surge tank;

wherein said first and second said intake pipe assemblies and said surge tank are formed from a synthetic resin; and

a spacer made of metal and having clamping bolts integrally provided thereon;

wherein said spacer is interposed between said flanges provided at said second end of said first and second intake pipe assemblies and a third flange that is provided at said surge tank;

wherein said first, second and third flanges are coupled by said clamping bolts inserted through said first and second flanges so as to flange-couple said surge tank and first and second intake pipe assemblies.

5,544,630

ALARM WHICH MAY BE USED AT THE TIME OF STARTING OF ENGINE FOR WORKING MACHINE

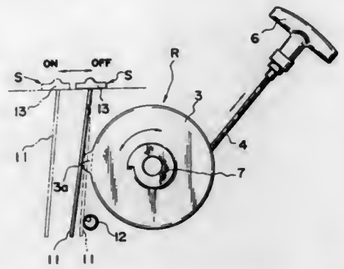
Hiroaki Koga, Tokyo, Japan, assignor to Kioritzt Corporation, Tokyo, Japan

Filed Nov. 14, 1994, Ser. No. 338,406

Claims priority, application Japan, Nov. 15, 1993, 5-065704

Int. Cl.[6] F02N *3/02*; F02P *11/06*

U.S. Cl. 123—185.3 1 Claim



1. An alarm system for an internal combustion engine equipped with an electric spark ignition system comprising a protruding part located on the outer periphery of a recoil drum, a movable member provided so as to move conjointly with a slide switch for starting and stopping the engine, said movable member contacting with said protruding part only when said slide switch is moved toward the OFF-state position to stop the engine, and warning signal generating means for generating a warning signal when said movable member contacts with said protruding part.

5,544,631

CYLINDER HEAD CONSTRUCTION FOR OUTBOARD MOTOR WITH FOUR-STROKE ENGINE

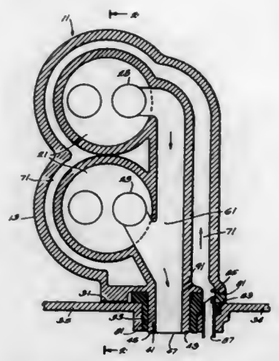
Tom Westberg, Gurnee, Ill.; Jeffrey F. Wagner, Shreveport, La.; James C. Kantola, and Lawrence E. Zdanowicz, both of Waukegan, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Oct. 5, 1994, Ser. No. 318,369

Int. Cl.[6] F02B *75/18*

U.S. Cl. 123—193.5 4 Claims

1. A cylinder head comprising a one-piece casting including a cylinder block mounting surface adapted to mate with a mounting surface on a cylinder block and including vertically spaced first and second recesses adapted to respectively form portions of first and second combustion chambers and respectively including first and second exhaust ports, a bottom surface extending transversely to the cylinder block mounting surface and including an exhaust gas outlet, and an internal exhaust gas passage extending between the exhaust ports and the exhaust gas outlet.



5,544,632

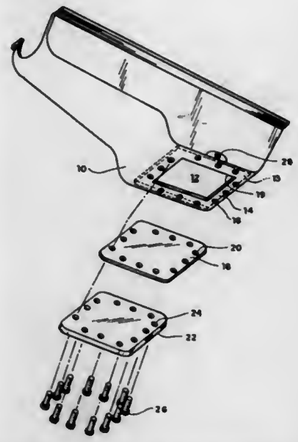
REMOVABLE ENGINE PLATE AND INSTALLATION METHOD THEREFOR

Randall W. Choate, 1916 Bonnie View Ct., Evansville, Ind. 47715

Filed Apr. 14, 1995, Ser. No. 422,216

Int. Cl.[6] F02F *7/00*

U.S. Cl. 123—195 C 5 Claims



1. An engine plate for an internal combustion engine oil pan, the oil pan having a throughbore, the throughbore having a peripheral edge, the engine plate comprising:

a reinforcing member contacting the peripheral edge of the oil pan for structurally enhancing the oil pan, said reinforcing member being generally flat, and extending entirely around the throughbore;

a gasket dimensioned and configured to sealingly mate with the peripheral edge of the oil pan, said gasket being generally planar, and extending entirely across the throughbore;

a plate dimensioned and configured to mate with said gasket, said plate being generally planar, and extending entirely across the throughbore; and

means for demountably fixing said gasket and said plate to the engine oil pan.

5,544,633

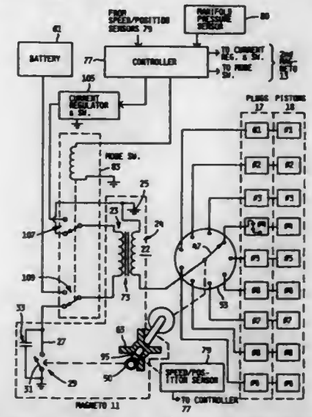
MAGNETO WITH DUAL MODE OPERATION

Bradley D. Mottier; J. Norman MacLeod, both of Jacksonville; Dean Mechlowitz, Ponte Vedra Beach, and Randy Erickson, Jacksonville, all of Fla., assignors to Unison Industries Limited Partnership, Jacksonville, Fla.

Continuation-in-part of Ser. No. 263,458, Jun. 22, 1994. This application Jul. 27, 1994, Ser. No. 281,492

Int. Cl.[6] F02P *1/00;5/15;15/02*

U.S. Cl. 123—310 20 Claims



1. An ignition system for an internal combustion engine comprising a magneto driven by the engine for delivering energy to a primary coil of the magneto, a secondary winding of the magneto for coupling energy stored in the primary coil to a spark plug for generating an ignition spark, a source of energy for delivering power to the primary coil independent of engine position and speed, at least one breaker mechanically responsive to the position and speed of the engine for controlling a discharging of energy stored in the primary coil into the plug by way of the secondary coil, a timing switch responsive to an electronic controller for controlling the discharging of energy stored in the primary coil into the plug by way of the secondary coil, and a mode switch for normally selecting the timing switch for controlling the discharging of energy stored in the primary and alternatively for selecting the at least one breaker for controlling the discharging of the energy stored in the primary coil when there is a failure of the electronic controller.

5,544,634

METHOD AND ARRANGEMENT FOR CONTROLLING AN INTERNAL COMBUSTION ENGINE

Thomas Zeller, Ditzingen; Detlev Zieger, Markgröningen, and Günter Hönig, Ditzingen, all of, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

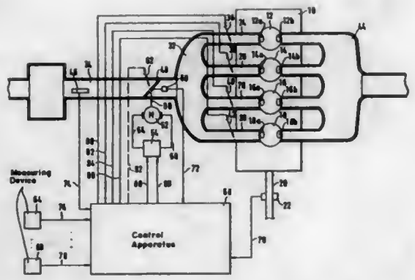
Filed Nov. 29, 1993, Ser. No. 158,470

Claims priority, application Germany, Nov. 27, 1992, 42 39 842.8

Int. Cl.[6] F02D *9/02;41/18*

U.S. Cl. 123—399 10 Claims

1. A method for controlling an internal combustion engine of a motor vehicle wherein the engine is equipped with a throttle flap



adjustable to a setting by an operator of the vehicle for adjusting air flowing through an intake pipe to the engine, the method comprising the steps of:

providing a control unit for electrically actuating said throttle flap in dependence upon a command of the operator;

detecting the air flowing to the engine and supplying a signal indicative of the air mass;

evaluating said signal to detect a backflow of said air in said intake pipe; and,

moving said throttle flap from and independently of said setting to close said throttle flap when said backflow occurs thereby preventing said backflow.

5,544,635

SPARK-IGNITION ENGINE AND A METHOD OF ADAPTIVE CONTROL ON THE IGNITION TIMING THEREOF

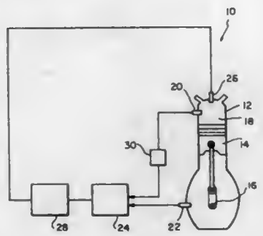
Hiroaki Hara, and Haruo Komoriya, both of Saitama, Japan, assignors to Cosmo Research Institute, and Cosmo Oil Co., Ltd., both of Tokyo, Japan

Filed Nov. 9, 1994, Ser. No. 337,524

Claims priority, applicatioo Japan, Nov. 12, 1993, 5-307266

Int. Cl.[6] F02P *5/153*

U.S. Cl. 123—425 **6 Claims**



1. In a spark-ignition engine that has a cylinder and a crank connected to the piston in the cylinder and which converts the reciprocating motion of the piston to rotary motion via the crank, the improvement wherein said engine further includes:

an angle sensor for measuring the crank angle;

a combustion sensor for measuring the burned mass fraction of a fuel in the combustion chamber;

a computing unit for calculating the ignition timing of the spark-ignition engine on the basis of the measured crank angle and burned mass fraction by the following equation:

$$Y=aX+b$$

(where Y is the ignition timing expressed by the crank angle before top dead center; X is the difference between the crank angle at a reference burned mass fraction of the fuel injected into the cylinder and the crank angle at a burned mass fraction in the progress of combustion; a and b are constants determined by the characteristics of the spark-ignition engine); and

a control unit for controlling the ignition timing of the spark-ignition engine on the basis of the calculated ignition timing.

5,544,636

METHOD FOR OBTAINING TRIGGER SIGNALS TO REGULATE ENERGY CONVERSION IN THE COMBUSTION CHAMBER OF AN INTERNAL COMBUSTION ENGINE

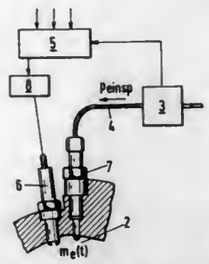
Istvan Geiger, and Winfried Oppermann, both of Braunschweig, Germany, assignors to Volkswagen AG, Wolfsburg, Germany

Filed Dec. 8, 1994, Ser. No. 351,676

Claims priority, application Germany, Dec. 16, 1993, 43 42 985.8

Int. Cl.[6] F02D *41/04;43/00;* **F02P** *5/15;* **B60K** *26/00*

U.S. Cl. 123—478 **9 Claims**



1. A method for obtaining trigger signals to regulate the energy conversion of an internal combustion engine having an individual fuel injection valve for each of the engine combustion chambers comprising determining fuel injection parameters by detection of fuel injection characteristics with sensors and generating energy conversion trigger signals using those parameters, wherein the fuel injection flow rate ($m_e(t)$) with respect to time and the commencement of fuel injection (t_{me}) are detected as fuel injection parameters.

5,544,637

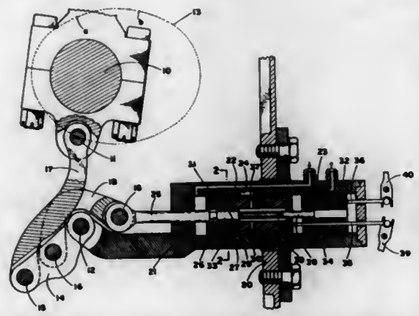
SIMPLIFIED PUMPS FOR FUEL INJECTION

Héctor L. Tapia P., M. Arredondo No. 2539, Los Cipreses Lima 1, Peru

Filed Jan. 18, 1995, Ser. No. 374,182

Int. Cl.[6] F02M *37/00*

U.S. Cl. 123—495 **8 Claims**



1. Fuel injection pump for internal combustion engines, by means of pistons, each piston formed by four consecutive cylindric

parts with a common axis, the first and third parts have an even diameter, the second and the fourth have a diameter that is shorter than the first and third parts, said third part has one or more periphery channels along its entire length, the fourth part has an internal channel parallel to the axis which connects to the periphery by means of holes placed at both ends of said internal channel, one of these holes is located at the brink of the fourth part on the limit with the third part, every piston is axially sliding within two consecutive cylinders which, at the same time, are independently and axially sliding within the pump body, the first of the mentioned cylindric bodies, corresponding to any of the pistons, comprises from the first up to the fourth part of its respective piston matching exactly the diameter of the first and third parts of said piston, with the exception of a small span in the internal end which also matches precisely to the diameter of the fourth part forming in this way an enclosure of variable volume every time that the corresponding piston displaces internally, said first cylinder has a hole in such a radial direction that the outside is communicated with a channel of the pump body channel that is feeding the fuel to the pump, and the inside end of such hole of radial direction has a sliding contact with the peripherial cylindric surface of the third part of the piston, without reaching the communication with any of the periphery channels of such third part of the piston, the discharge of the pump toward the respective injector is carried out through the channels which have communication with the mentioned enclosure of variable volume, the second cylinder corresponding to any one of the pistons matches precisely the mentioned fourth part of the respective piston.

5,544,638

APPARATUS FOR DISPOSING OF FUEL VAPOR

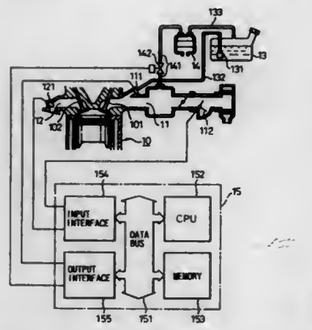
Shuji Yuda, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Mar. 30, 1995, Ser. No. 413,576

Claims priority, application Japan, Apr. 22, 1994, 6-084745

Int. Cl.[6] F02D *41/14;* **F02M** *25/08*

U.S. Cl. 123—674 **2 Claims**



1. An apparatus for disposing of fuel-vapor comprising:

a charcoal canister for absorbing the fuel-vapor evaporating from a fuel tank of an engine;

a purge valve arranged in a purge pipe which connects said charcoal canister and an inlet pipe, and controls the flow rate of the purge gas;

an air-fuel ratio detecting means arranged in an exhaust pipe of the engine for detecting the air-fuel ratio of the exhaust gas;

an air-fuel ratio control means for calculating an air-fuel ratio correction factor in order to control the air-fuel ratio detected by said air-fuel ratio detecting means to a predetermined target air-fuel ratio;

a vapor concentration learning means for learning the vapor concentration of the fuel-vapor purged into the inlet pipe in accordance with the air-fuel ratio correction factor calculated by said air-fuel ratio control means;

a basic air-fuel ratio correction factor learning means for learning the base air-fuel ratio correction factor in accordance with the air-fuel ratio correction factor calculated by said air-fuel ratio control means; and

a purge valve control means for controlling the opening of the purge valve in accordance with the air-fuel ratio correction factor calculated by said air-fuel ratio control means, the vapor concentration learned by said vapor concentration learning means and the basic air-fuel ratio correction factor learned by said basic air-fuel ratio correction factor learning means; wherein

said apparatus for disposing of fuel-vapor further includes a learning control means,

which opens said purge valve, allows the learning of the concentration of the fuel-vapor by said vapor concentration learning means, and inhibits the learning of the basic air-fuel correction factor by said basic air-fuel correction factor learning means when it is determined that the basic air-fuel correction factor has been learned by said basic air-fuel correction factor learning means, or when it is determined that the basic air-fuel correction factor has not been learned by said basic air-fuel correction factor learning means and the concentration of fuel-vapor in the purged gas is high,

and which closes said purge valve, inhibits the learning of the concentration of the fuel-vapor by said vapor concentration learning means, and allows the learning of the basic air-fuel correction factor by said basic air-fuel correction factor learning means when it is determined that the basic air-fuel correction factor has not been learned by said basic air-fuel correction factor learning means and the concentration of fuel-vapor in the purge-gas is low.

5,544,639

TEMPERATURE PREDICTING SYSTEM FOR INTERNAL COMBUSTION ENGINE AND TEMPERATURE CONTROL SYSTEM INCLUDING SAME

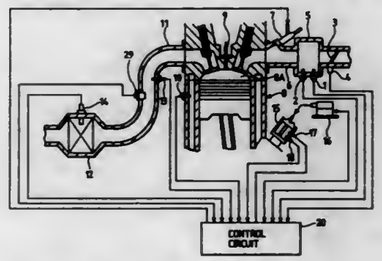
Hirofumi Shouda, Toyota; Yoshihiko Hirata, Kariya; Katsuhiko Kawai, Kariya; Toshio Kondo, Kariya, and Hiroshi Haraguchi, Kariya, all of, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Aug. 30, 1994, Ser. No. 298,585

Claims priority, application Japan, Aug. 31, 1993, 5-216671; Dec. 27, 1993, 5-338871; Jul. 25, 1994, 6-172604

Int. Cl.[6] F02D *41/00*

U.S. Cl. 123—676 **29 Claims**



1. A temperature predicting system for an internal combustion engine, comprising:

a temperature sensor for detecting a temperature of a portion of said engine where the temperature changes depending on an operating condition of the engine;

flow velocity detecting means for detecting a flow velocity of a fluid flowing at said portion; and

a microcomputer having

a predicting section for predicting an actual temperature of said portion based on an actual temperature model which is an inverse of a sensor temperature model, said sensor temperature model being formed in a manner to reflect a response

delay of said temperature sensor by using at least a current temperature value and a last temperature value detected by said temperature sensor, and said actual temperature, and

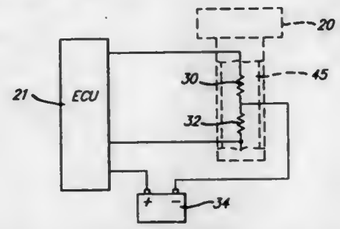
a sensor model constant deriving section for deriving in real time a model constant of said sensor temperature model, based on the flow velocity detected by said flow velocity detecting means.

5,544,640

SYSTEM AND METHOD FOR HEATING AN OXYGEN SENSOR VIA MULTIPLE HEATING ELEMENTS

Christopher P. Thomas, West Bloomfield; Timothy A. Coatesworth, Lake Orion; Kenneth P. DeGroot, Macomb Twp; Jeffery C. Ehlers, Davisburg, and Mark E. McMackin, Royal Oak, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Jul. 3, 1995, Ser. No. 498,270
Int. Cl.[6] F02D *41/14*; G01N *27/416*
U.S. Cl. 123—689 **8 Claims**



1. A system for heating an oxygen sensor, the oxygen sensor having an operating temperature range and an inner core element, the system for heating an oxygen sensor comprising:

an Electronic Control Unit (ECU) having a microprocessor, memory (volatile and nonvolatile), and at least one data line, the ECU in electrically operable relation with the oxygen sensor, for selectively applying current to the oxygen sensor;

a high resistance heating element in communication with the inner core element and having a first terminal connected to the ECU and a second terminal connected to ground, the high resistance heating element receiving current flow from the ECU when the oxygen sensor is within the operating temperature range;

a low resistance heating element in communication with the inner core element and having a first terminal connected to the ECU and a second terminal connected to ground, the low resistance heating element receiving current flow from the ECU when the oxygen sensor is not within the operating temperature range; and

a battery having a positive terminal and a negative terminal, the positive terminal connected to the ECU and the negative terminal connected to ground, the battery supplying electrical power to the ECU.

5,544,641

ARROW STORING MEANS AND AIMING MEANS FOR A CROSSBOW

Chin S. Jena, No. 23-6, Ping Ho St., Ta Lin Chen, Chia I Hsien, Taiwan

Filed Jul. 6, 1994, Ser. No. 267,899
Int. Cl.[6] F41B *5/12*
U.S. Cl. 124—25 **15 Claims**

1. An arrow storing means for a crossbow, said crossbow comprising a frame, a bow engaged to said frame and an activating means disposed in said frame, said crossbow comprising a bow and a bow string, a slot defined in said frame and a recess defined in said frame and communicating with said slot in which said bow string is disposed, said frame having a receiving chamber defined in an under side thereof, said receiving chamber having four inner sides and communicating with said slot and said activating means can move within said recess;

said arrow storing means comprising:

a magazine replaceably disposed in said receiving chamber of said frame, said magazine having four sides, an opening and a bottom, at least one spring disposed in said magazine and connected to a plate and said bottom with two ends thereof respectively so as to push said plate upwardly within said magazine, at least one U-shaped recess defined in one side of said magazine and a Z-shaped element pivotally engaged in said U-shaped recess, a spring being disposed between said U-shaped recess and a lower end of said Z-shaped element such that an uppermost arrow disposed in said magazine is held by an upper end of said Z-shaped element.

5. An aiming means for a crossbow, said crossbow comprising a frame, a bow engaged to said frame and an activating means disposed in said frame, said crossbow comprising a bow and a bow string, a slot defined in said frame and a recess defined in said frame and communicating with said slot in which said bow string is disposed;

said aiming means adjustably engaged to an upper end of said frame and comprising a tube having first and second ends, a convex lens disposed in said first end of said tube, a bulb removably disposed in said second end of said tube and an electrical device disposed in said frame for providing electricity to said bulb, said tube having a flange projecting from said under side thereof in which a threaded bole is defined, a bolt engaged through said threaded hole and being supported by two plates projecting from said frame and positioned on both sides of said tube.

5,544,642

MULTIPLE PROJECTILE BLOW GUN MAGAZINE ASSEMBLY

Christopher L. Guthrie, Henryville, Ind., assignor to G&G Innovations, Inc., Henryville, Ind.

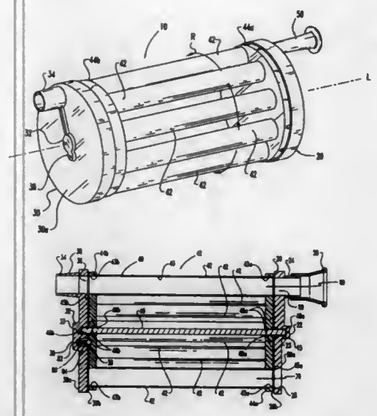
Filed Jul. 14, 1995, Ser. No. 503,077
Int. Cl.[6] F41B *1/00*; *11/02*
U.S. Cl. 124—62 **16 Claims**

16. A blow gun assembly, comprising: (a) a projectile magazine defining a plurality of chambers, each chamber having a proximal end and a distal end, said chambers being rotatable around a first axis;

(b) a first end cap adjacent to said proximal end, including an air input aperture and a projectile loading aperture;

(c) a second end cap adjacent to said distal end, including a projectile exiting aperture;

wherein said first end cap and said second end cap are aligned such that when a projectile firing axis is defined by said air input aperture, one of said projectile magazine chambers and said projectile exiting aperture, a projectile loading axis is simultaneously defined by said projectile loading aperture and another of said projectile magazine chambers.

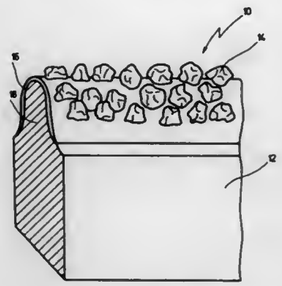


5,544,643

METHOD FOR SAVING DUCTILE FROM MATERIAL HAVING A CONCRETE LINING

Günter Bauer, Stuttgart, Germany, and Rudolf Breu, Arbon, Switzerland, assignors to C&E Fein, Gmbh & Co., Stuttgart, Germany

Filed Jun. 3, 1994, Ser. No. 254,033
Claims priority, application Germany, Jul. 7, 1993, 43 22 544.6
Int. Cl.[6] B28D *1/06*
U.S. Cl. 125—12 **15 Claims**



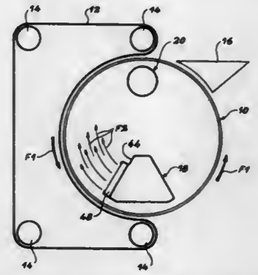
1. A method of cutting a pipe made of a ductile iron-based material and having a lining comprising a material made from one of a cement-based material and a fiber-reinforced material, the method comprising sawing the pipe with a saw blade comprising a metallic base element and a cutting region disposed along an edge of said base element, said cutting region at least partially covered with a metallic coating in which a plurality of boron nitride particles are dispersed, said particles protruding at least partially outwardly from said coating.

5,544,644

DRYING AND IRONING MACHINE HAVING A ROTARY CYLINDER EQUIPPED WITH AN IMPROVED PIPE BURNER

Michel Adler, Villery, France, assignor to Dubix De Souza SNC, Pres Troyes, France

Filed Apr. 24, 1995, Ser. No. 426,859
Claims priority, application France, May 13, 1994, 94 05904
Int. Cl.[6] F24C *3/00*
U.S. Cl. 126—91 R **10 Claims**



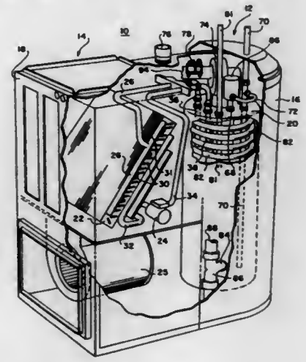
1. Drying and ironing machine having a rotary cylinder and a pipe burner comprising, within the cylinder, a pipe burner, means for supplying the pipe burner with an air-gas mixture, connected to one end thereof, calibrated holes formed in the pipe burner in order to permit the passage of the air-gas mixture, and means for igniting the gas passing out of the calibrated holes, characterized in that the calibrated holes define a network of microperforations having a density and cross-section such that the combustion of the air-gas mixture occurs mainly in the microperforations and the heating which results is mainly in the infrared range.

5,544,645

COMBINATION WATER HEATING AND SPACE HEATING APPARATUS

David L. Armijo, Plano; Tony R. Baker, Highland Village; Floyd E. Cherington; Delbert S. Christopher, both of Carrolltoon; David J. Moody, Allen; James J. Mullen, Carrolltoon; Hugh E. Vinson, Hurst; John L. Warren, Grand Prairie, all of Tex.; Robert C. Beilfuss, Smyrna, Tenn., and John H. Wiker, Plainfield, Ill., assignors to Lennox Industries Inc., Dallas, Tex.

Filed Aug. 25, 1994, Ser. No. 296,112
Int. Cl.[6] F24D *9/00*
U.S. Cl. 126—101 **19 Claims**



1. In combination:

water heating apparatus having a water storage tank, a heating device for heating water stored in said tank and a first temperature sensor for sensing water temperature in the tank and for providing a first electrical signal in response to said water temperature being at least a first temperature increment below a first temperature setpoint corresponding to a desired water temperature, said first electrical signal indicating a demand for water heating;

space heating apparatus having an air duct for supplying air to an indoor space, a heat exchanger for heating air supplied to the indoor space, an air mover for moving air over said heat exchanger and a second temperature sensor for sensing air temperature of the indoor space and for providing a second electrical signal in response to said air temperature being at least a second temperature increment below a second temperature setpoint corresponding to a desired air temperature, said second electrical signal indicating a demand for space heating;

a water circulating device for circulating water between said tank and said heat exchanger; and

a control device adapted to control said heating device to heat the water in said tank in response to said first electrical signal and to control said water circulating device to supply heated water from said tank to said heat exchanger and to control said air mover to move air over said heat exchanger in response to said second electrical signal, whereby air to be supplied to the indoor space is heated, said control device being adapted to raise said first temperature setpoint by a predetermined amount in response to said second electrical signal.

5,544,646

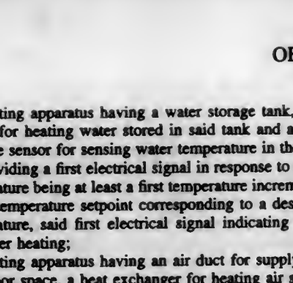
SYSTEMS FOR THE INTRAPULMONARY DELIVERY OF AEROSOLIZED AQUEOUS FORMULATIONS

Lester J. Lloyd, Orinda; Peter M. Lloyd, Oakland; Reid M. Rubsamen, and Jeffrey A. Schuster, both of Berkeley, all of Calif., assignors to Aradigm Corporation, Hayward, Calif.

Continuation-in-part of Ser. No. 166,972, Dec. 14, 1993, Pat. No. 5,497,763, which is a continuation-in-part of Ser. No. 65,660, May 21, 1993. This application May 20, 1994, Ser. No. 247,012

Int. Cl.[6] A61M *11/00*

U.S. Cl. 128—200.14 **17 Claims**



1. A disposable package, comprising:

a container having at least one wall which is collapsible by the application of a force the container having therein a dry pharmaceutically active drug with at least one wall having an opening;

a porous membrane covering the opening wherein the membrane pores have a diameter in the range of from about 0.25 micron to about 6 microns; and

a liquid container having a flowable liquid therein, the liquid container being in fluid connection with the container having the dry drug therein, wherein the liquid container is separated from the container having the dry drug therein by a membrane which is ruptured upon the application of force.

5,544,647

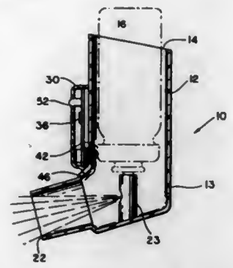
METERED DOSE INHALATOR

Warren Jewett, and Frederick A. Ebeling, both of Cary, N.C., assignors to IEP Group, Inc., Raleigh, N.C.

Filed Nov. 29, 1994, Ser. No. 346,524

Int. Cl.[6] A61M *11/00*

U.S. Cl. 128—200.23 **10 Claims**



1. An assembly with a metered dose inhalation canister containing a pre-determined number of doses of an aerosol formulation, for delivery orally or intra-nasally, which comprises;

(a) a hollow closed tube having

(i) a first open end adapted by size and configuration to receive a spray stem of an aerosol inhalation canister;

(ii) a second open end adapted by size and configuration to couple with an oral or nasal orifice of a mammal;

(b) a spray-directing element fixedly located within said tube hollow, and having continuous communication with the first open end and the second open end, for directing sprays of the formulation through a portion of the hollow and out of the second open end of said tube, when the inhalation canister is assembled with the apparatus and activated by a user;

(c) a metered dose inhalation canister slidably mounted in the first open end of the tube for delivery of a metered dose to the spray-directing element;

(d) microelectronic means associated with the tube for indicating the number of doses remaining in the canister, after each activation; and

(e) switch means for activating said microelectronic means, said switch means being isolated from exposure to the tube hollow;

said microelectronic means being enclosed within a hermetically sealed sleeve housing, mountable on the canister and adapted by size and configuration to slide over the tube exterior.

5,544,648

DEVICE FOR INTRATRACHEAL VENTILATION AND INTRATRACHEAL PULMONARY VENTILATION INCLUDING REVERSE VENTURI

Frank J. Fischer, Jr., Bloomington, Ind., assignor to Cook Incorporated, Bloomington, Ind.

Filed May 12, 1995, Ser. No. 440,533

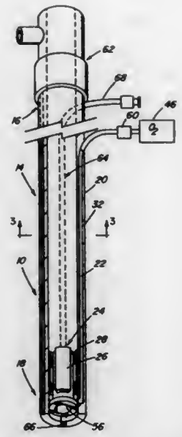
Int. Cl.[6] A61M *16/00*

U.S. Cl. 128—207.14 **22 Claims**

1. A device (**10**) for creating a sub-atmospheric pressure near a patient's carina (**12**), comprising:

a tracheal or endotracheal tube (**14**) having a proximal tube end (**16**), a distal tube end (**18**) spaced from the proximal tube end (**16**), a tube wall (**20**) connected to and extending between the proximal tube end (**16**) and the distal tube end (**18**), and a tube passageway (**22**) for the flow of an oxygen-containing gas; and

an insert (**24**) received in and circumferentially abutted by the distal tube end (**18**), the insert (**24**) having a surface (**26**) defining at least one insert channel (**28**) in communication



with the tube passageway (**22**), and the at least one insert channel (**28**) being open towards the proximal tube end (**16**); such that a zone (**30**) of sub-atmospheric pressure is established, inside the tracheal or endotracheal tube (**14**) adjacent the distal tube end (**18**) during patient exhalation, upon passage of an oxygen-containing gas through the tube passageway (**22**) and the at least one insert channel (**28**).

5,544,649

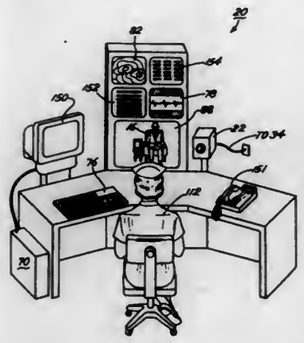
AMBULATORY PATIENT HEALTH MONITORING TECHNIQUES UTILIZING INTERACTIVE VISUAL COMMUNICATION

Daniel David, and Zipora David, both of Ranana, Israel, assignors to Cardiomedix, Inc., Evanston, Ill.

Continuation-in-part of Ser. No. 66,903, May 25, 1993, Pat. No. 5,441,047, which is a continuation-in-part of Ser. No. 857,470, Mar. 25, 1992, abandoned. This application Mar. 15, 1995, Ser. No. 404,559

Int. Cl.[6] A61B *5/00*

U.S. Cl. 128—630 **5 Claims**



1. An interactive system for monitoring the condition of a patient by a health practitioner, said patient located at a remote location from a central monitoring station and capable of activity of the head and face, said health practitioner located at the central station, the system comprising, in combination:

a) first audio-visual means for generating a first audio-visual signal of said patient at the remote location;

b) means for generating medical signals representative of a measured medical condition, said means for generating including the visual and the audio transmission signal for specified anatomical, morphological and expression features of the head and face of the patient and changes in said anatomical, morphological and expression features of the head and face of said patient in response to patient performance of commands affecting the head and face within the audio and visual field of the means for generating the first audio visual signal;

c) a central monitoring station;

d) means for measuring the medical condition of said patient at the central station, said means for measuring including means for audibly and visually observing and measuring specified anatomical, morphological and expression features of the head and face of said patient;

e) means for transmission of said first audio-visual signal to said central station;

g) display means at said central station for display of said first audio-visual signal including said medical signals;

h) means at the central station for recordal and analysis of the anatomical, morphological and expression feature measurements of said patient;

i) second audio-visual means for generating a second audio-visual signal of said health practitioner originating from said central station;

j) means for transmission of said second audio-visual signal to said remote location; and

k) means for display of said second audio-visual signal at said remote location for observation by the patient simultaneously with transmission of the first audio-visual transmission;

whereby said patient and said health practitioner are capable of substantially simultaneous interactive communication concerning said medical condition.

5,544,650

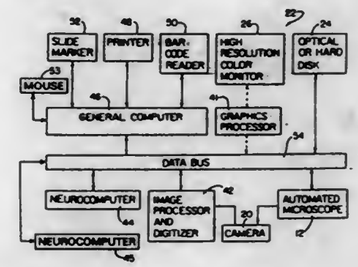
AUTOMATED SPECIMEN CLASSIFICATION SYSTEM AND METHOD

Mathilde E. Boon; Lanbrecht P. Kok, both of Lieveren, Netherlands; Laurie J. Mango, Roosevelt Island, N.Y.; Akiva Rutenberg, and Mark R. Rutenberg, both of Monsey, N.Y., assignors to Neuromedical Systems, Inc., Suffern, N.Y.

Continuation-in-part of Ser. No. 179,060, Apr. 8, 1988, Pat. No. 4,965,725, and Ser. No. 420,105, Oct. 11, 1989, Pat. No. 5,287,272, which is a continuation-in-part of Ser. No. 425,665, Oct. 23, 1989, Pat. No. 4,983,984, which is a continuation-in-part of Ser. No. 502,611, Mar. 30, 1990, abandoned. This application Feb. 14, 1994, Ser. No. 196,982

Int. Cl.[6] G06F *159/00*

U.S. Cl. 128—632 **23 Claims**



1. A semi-automated method of classifying a specimen for the presence of premalignant or malignant cells, comprising the steps of:

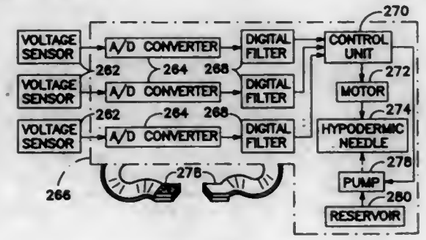
a) treating a specimen with an immunochemical marker to provide a visual indication of cell proliferation;

b) ranking individual objects in the specimen in an order according to the likelihood that each object has attributes consistent with a premalignant or malignant cell or cell cluster;
c) selecting for display a set of said objects according to said ranking; and
d) displaying images of said selected objects to facilitate review by an operator.

5,544,651
MEDICAL SYSTEM AND ASSOCIATED METHOD FOR AUTOMATIC TREATMENT

Peter J. Wilk, 185 W. End Ave., New York, N.Y. 10023

Continuation-in-part of Ser. No. 941,569, Sep. 8, 1992, Pat. No. 5,145,167. This application Feb. 17, 1994, Ser. No. 198,095
Int. Cl.[6] A61B *5/00*; A61M *5/00*
U.S. Cl. 128—633 **16 Claims**



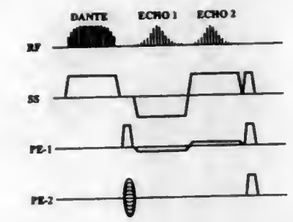
1. A medical device comprising:
sensor means for at least periodically measuring a predetermined physiological parameter of a patient and for generating a signal encoding a measured value of said physiological parameter;
comparator means operatively connected to said sensor means for comparing the measured value of said physiological parameter with a predetermined threshold value for said physiological parameter to determine whether the measured value of said physiological parameter has passed said threshold value;
treatment means operatively connected to said comparator means for automatically injecting a predetermined chemical composition into the patient upon a determination by said comparator means that the measured value of said physiological parameter has passed said threshold value, said treatment means including a hypodermic needle and means operatively connected to said hypodermic needle for automatically inserting said hypodermic needle subcutaneously; and
attachment means for attaching said sensor means, said comparator means and said treatment means to the patient.

5,544,652
ULTRAFAST BURST IMAGING USING SHIFTING OF EXCITED REGIONS

Jozef H. Duyn, Kensington, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Mar. 4, 1994, Ser. No. 205,434
Int. Cl.[6] A61B *5/055*
U.S. Cl. 128—653.2 **14 Claims**

1. A method of nuclear magnetic resonance imaging an object which comprises the steps of:
a) positioning an object in a static magnetic field;
b) applying a magnetic field gradient to said object;
c) applying a burst of RF pulses to said object together with a slice selection gradient to excite a set of strips of said object and generate spin-echo signals;

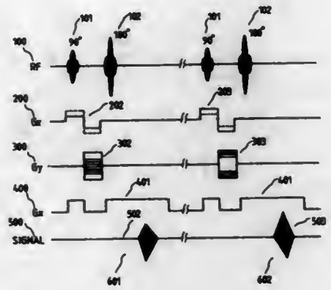


d) collecting a set of spin-echo signals produced in step c);
e) repeating steps c) and d) a number of times after shifting a location of the excited strips of said object on successive repetitions by at least one strip width; and
f) producing an image of said object from said sets of spin-echo signals.

5,544,653
MAGNETIC RESONANCE IMAGING METHOD AND APPARATUS

Tetsuhiko Takahashi, Souka; Shinji Kawasaki, Tokyo, and Hiroshi Nishimura, Kashiwa, all of, Japan, assignors to Hitachi Medical Corporation, Tokyo, Japan

Filed Oct. 26, 1994, Ser. No. 330,070
Claims priority, application Japan, Oct. 28, 1993, 5-270952
Int. Cl.[6] A61B *5/55*
U.S. Cl. 128—653.2 **14 Claims**

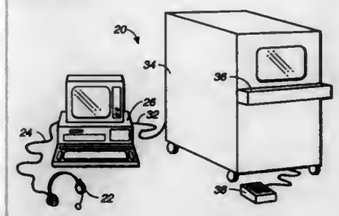


1. A magnetic resonance imaging method, which comprises the steps of:
repeatedly applying a radio frequency pulse, a slice selecting gradient magnetic field pulse along a first axis, a phase encoding gradient magnetic field pulse along a second axis perpendicular to said first axis and a frequency encoding gradient magnetic field pulse along a third axis perpendicular to said first and second axes to an object to be imaged which is placed in a static magnetic field while varying an amount of phase encoding given by said phase encoding gradient magnetic field pulse to thereby generate nuclear magnetic resonance signals from a slice of said object normal to said first axis;
changing a thickness of said slice corresponding to said amount of phase encoding given by said phase encoding gradient magnetic field pulse so that said nuclear magnetic resonance signals are obtained from said slice which has been changed in thickness; and
producing an image of said object in accordance with said nuclear magnetic resonance signals obtained from said slice which has been changed in thickness.

5,544,654
VOICE CONTROL OF A MEDICAL ULTRASOUND SCANNING MACHINE

Sean Murphy, Fremont, and Daniel E. Need, Palo Alto, both of Calif., assignors to Acuson Corporation, Mountain View, Calif.

Filed Jun. 6, 1995, Ser. No. 471,373
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—660.07 **24 Claims**

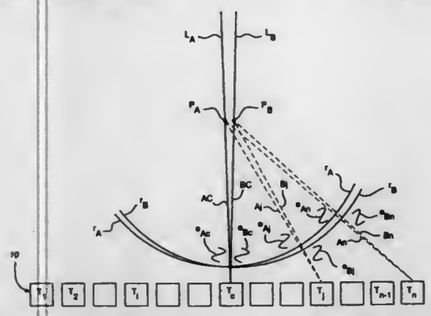


1. A method for voice activation of an ultrasound system having a plurality of voice commands, comprising the steps of:
providing a group of voice commands for controlling the ultrasound system, said group including more than one sub-group of voice commands, wherein each of said sub-groups contains fewer number of voice commands than the group;
selecting at least one of said sub-groups;
deriving a signal from a spoken voice command using said selected at least one sub-group; and
applying said signal to the ultrasound system to control the system.

5,544,655
ULTRASONIC MULTILINE BEAMFORMING WITH INTERLEAVED SAMPLING

Ronald E. Daigle, Redmond, Wash., assignor to Atlantis Diagnostics International, LLC, Bothell, Wash.

Filed Sep. 16, 1994, Ser. No. 307,124
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—661.010 **25 Claims**

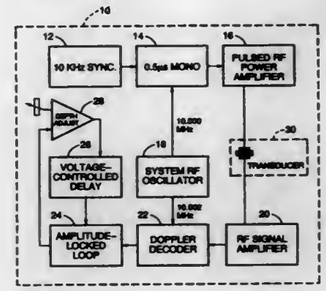


1. An ultrasonic diagnostic system for receiving multiple lines of ultrasonic energy using an array of transducer elements comprising:
means for transmitting ultrasonic energy which insonifies the locations of two or more spatially distinct lines in a spatial field being interrogated;
means for forming two or more sequences of echo information from said lines from echoes received by elements of said array, including
means for sampling the signals received by individual ones of said elements, each at sampling times comprising two or more interleaved sequences of sampling signal phase relationships related to the phases of signals of said two or more receive lines which are to be received by that individual element to produce a sequence of signal samples; and
means, responsive to said sampling means, for separately summing the signal samples produced by each of said sampling signal phase relationships to form coherent signals of two or more receive lines,
wherein the relative delays of said signal samples enabling the formation of coherent signals of said two or more receive lines are provided by said sampling times of said sampling means.

5,544,656
METHOD AND APPARATUS FOR MYOCARDIAL WALL MEASUREMENT

Koullis F. Pitsillides, Sacramento, and John C. Longhurst, Winters, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Dec. 2, 1994, Ser. No. 349,356
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—661.04 **16 Claims**



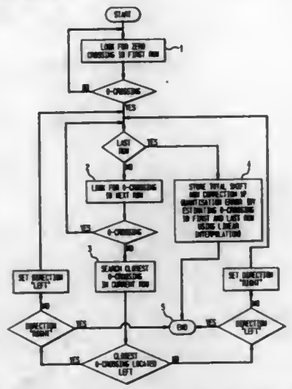
1. An apparatus for measuring the thickness of the myocardial wall in a heart, comprising:
(a) transmitting means for transmitting an ultrasonic signal;
(b) receiving means for receiving an ultrasonic signal which is a reflection of said transmitted ultrasonic signal;
(c) transducer means electrically coupled to said transmitting means and said receiving means for emitting and detecting said transmitted and received ultrasonic signals; and
(d) means associated with said transmitting and receiving means for acquiring a reflected signal from a first volumetric region within the myocardium of the heart so as to spatially position a reference volume within the myocardium, for acquiring a reflected signal from a second volumetric region wherein one-half of said second volumetric region is within said myocardium and one-half of said second volumetric region is within the adjacent ventricular chamber so as to spatially position an interface volume at the endocardial muscle/blood interface, for comparing signal levels from said reference volume and said interface volume at successive time intervals during a cardiac cycle, and for generating an output signal indicative of a differential in said signal levels.

5,544,657

ULTRASOUND BLOOD FLOW MONITOR OF THE NON-DOPPLER TYPE

Lorenz V. Kurowski, Princeton; Wolf-Ekkehard Blanz, Belle Mead, both of N.J., and Wolf Delong, Mercer Island, Wash., assignors to Siemens Medical Systems, Inc., Iselin, N.J.

Filed Sep. 9, 1994, Ser. No. 304,103
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—661.08 **3 Claims**



1. A method of measuring the velocity of a moving scatterer using ultrasound, comprising the steps of:

transmitting a series of ultrasonic waves toward the moving scatterer;

receiving a series of ultrasonic waves reflected back by the moving scatterer;

converting the reflected back series of ultrasonic waves into a corresponding series of echo signals;

identifying in a first echo signal a zero-crossover amplitude feature and a direction corresponding to such feature;

determining location of a corresponding zero-crossover amplitude feature having the same direction in successive echo signals; and

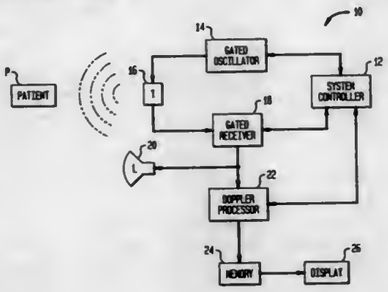
deriving velocity of the scatterer from changes in the zero-crossover amplitude feature location among the successive echo signals.

5,544,658

DOPPLER ULTRASOUND VELOCITY ESTIMATION

Jin H. Kim, Issaquah, and Dong-Chyuan Liu, Mercer Island, both of Wash., assignors to Siemens Medical Systems, Inc., Iselin, N.J.

Filed Sep. 18, 1995, Ser. No. 529,777
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—661.09 **14 Claims**



1. A doppler ultrasound method for estimating the velocity of a moving target at multiple sample points, comprising the steps of:

transmitting groups of ultrasound pulse signals towards the target, each group transmitted at a periodic interval;

receiving at least N groups of ultrasound echo signals caused by reflections of the transmitted groups off the target;

generating a set of at least M digitized samples for each received group, each sample of a given set spatially-displaced relative to other samples of the same given set, each received group temporally-displaced relative to other received groups;

defining a plurality of spatial-temporal averages for an m-th sample of an n-th group using spatial-temporal displaced sample pairs for each spatial-temporal average;

computing power for each of the defined spatial-temporal averages; and

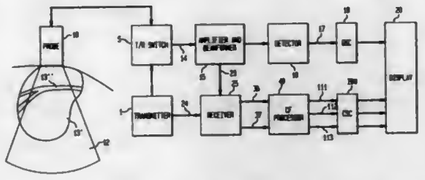
selecting one of the defined spatial-temporal averages for use in determining the doppler frequency shift of the m-th sample of the n-th received group, the selected one being that which has highest absolute value of power determined during the power computing step.

5,544,659

ULTRASONIC DOPPLER IMAGER HAVING A REDUCED HARDWARE ADAPTIVE TISSUE REJECTION FILTER ARRANGEMENT

Zoran B. Banjanin, Renton, Wash., assignor to Siemens Medical Systems, Inc., Iselin, N.J.

Filed Dec. 29, 1994, Ser. No. 366,206
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—661.09 **17 Claims**



1. An ultrasonic flow imaging and/or measuring system comprising:

a transmitter/receiver arrangement for transmitting a plurality of ultrasonic pulses into an area to be scanned and developing a corresponding plurality of acoustic line signals for each beam-line of the scanned area in response to processing of reflections of said transmitted ultrasonic pulses received from within said scanned area;

a memory, operative during a write mode for receiving and storing said acoustic line signals as a plurality of sequential samples for each acoustic line, and operative during a read-out mode for supplying said samples of said acoustic lines at a memory output;

a tissue motion rejection arrangement having a signal input responsive to said acoustic line samples from said memory output, and a control input responsive to a control signal representative of tissue movement within said scanned area, said tissue motion rejection arrangement being responsive to said control signal for processing said acoustic line signals so as to provide at an output filtered acoustic line signals wherein signal components representative of tissue movement within said scanned area are suppressed;

a flow processor responsive to said acoustic line signals for developing therefrom estimate signals representative of movement in said scanned area; and,

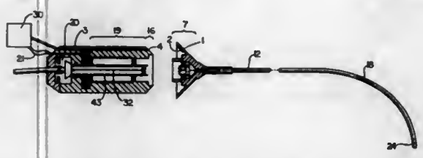
a signal directing means, operative in a first mode for applying said acoustic line signals from said memory output to said flow processor without any intervening processing, and operative in a second mode for applying said acoustic line signals to said flow processor via said tissue motion rejection arrangement.

5,544,660

ACOUSTIC IMAGING CATHETER AND METHOD OF OPERATION

Robert J. Crowley, Wayland, Mass., assignor to Boston Scientific Corp., Natick, Mass.

Filed Mar. 30, 1995, Ser. No. 413,373
Int. Cl.[6] A61B *8/12*
U.S. Cl. 128—662.06 **9 Claims**



1. An acoustical imaging catheter adapted to be used with a drive and control system wherein the system can be advised to compensate for different characteristics of different acoustical imaging catheters used on said drive and control system, said catheter comprising:

an elongated sheath having a proximal and a distal end, said sheath having a lumen therein;

a drive shaft having a proximal and a distal end and an acoustic transducer disposed on the distal end of said drive shaft, said drive shaft and said transducer being disposed in the lumen of said sheath;

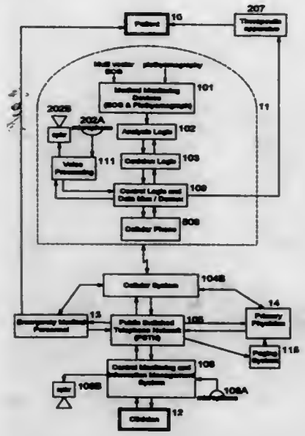
indicia means disposed on said sheath, said indicia means being encoded with characteristics and identification especially related to said catheter and transducer, said indicia means being disposed to be read by a sensor associated with said control system to enable said control system to compensate for the individual characteristics and identification of the catheter and transducer being used.

5,544,661

REAL TIME AMBULATORY PATIENT MONITOR

Charles L. Davis, 16830 SW. Spellman Dr., Beaverton, Oreg. 97007, and Paul V. Long, Newberg, Oreg., assignors to Charles L. Davis, Beaverton, Oreg.

Filed Jan. 13, 1994, Ser. No. 180,867
Int. Cl.[6] A61B *5/0402*
U.S. Cl. 128—700 **12 Claims**



1. A device adapted to be worn by a patient for transmitting data to a central monitoring station, said device comprising:

measurement means for measuring physiological parameters of the patient and for generating data representative of the measured parameters,

analysis means for analyzing said data and for comparing the analyzed data to preset parameters and for generating an alarm signal when said data exceeds said preset parameters,

wireless communication means connecting said device to said central monitoring station,

means for initiating contact with said central monitoring station via said wireless communication means when said alarm signal is generated,

so that said central station is notified without intervention by said patient when said alarm signal is generated;

the device including said measurement, analysis, communications and contact initiating means being packaged in a modular unit sized to be worn externally on a patient's arm and the unit including means for mounting the unit on the patient's arm;

the measurement means including at least one external sensor affixable to a sensing location on the patient's skin to detect at least one physiological parameter at a location spaced from the unit;

the wireless communication means including a speaker-microphone connected to the unit and adapted for mounting adjacent the patient's head for bidirectional voice communications with the central monitoring station;

said voice communications being enabled by said means for initiating contact with said central monitoring station; and

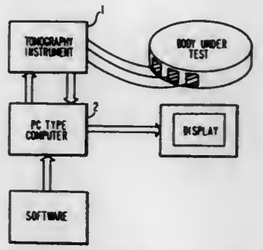
the wireless communication means including means for multiplexed transmission and reception of both data and voice communications via a common channel.

5,544,662

HIGH-SPEED ELECTRIC TOMOGRAPHY

Gary J. Saulnier, Rexford; David G. Gisser, Albany; Jonathan C. Newell, Glenmont, all of N.Y.; Raymond D. Cook, Reston; John C. Goble, Charlottesville, both of Va., and David Isaacson, Latham, N.Y., assignors to Rensselaer Polytechnic Institute, Troy, N.Y.

Continuation-in-part of Ser. No. 727,075, Jul. 9, 1991, Pat. No. 5,390,110, Ser. No. 734,591, Jul. 23, 1991, Pat. No. 5,381,333, and Ser. No. 808,795, Dec. 16, 1991, Pat. No. 5,284,142. This application Oct. 6, 1993, Ser. No. 132,457
Int. Cl.[6] A61B *5/05*
U.S. Cl. 128—734 **14 Claims**



1. An apparatus for electrical impedance imaging of a body, comprising:

a plurality of electrodes in an array and adapted to be in electrical contact with the body;

waveform means for supplying a plurality of voltage waveforms;

a plurality of voltage-to-current converters connected to the waveform means for receiving the voltage waveforms, each converter being separately connected to each electrode for applying a repetitive current waveform to each respective electrode, all of said repetitive current waveforms together forming a spatial current pattern for application to the array to

generate voltage signals at the electrodes with respect to a common ground, for use in forming an electrical impedance image of at least part of a volume in the body;

control means for operating each of said voltage-to-current converters to apply the repetitive current waveforms to the current patterns in synchronism to said electrodes a multiplicity of times, said control means including said waveform means for generating, applying and removing a plurality of repetitive waveforms to and from all of said voltage-to-current converters simultaneously to power said plurality of electrodes simultaneously, said waveform means having a single master clock for use with all of said voltage-to-current converters and a common read-only memory with a digitally stored sinusoid for use in providing the repetitive waveforms;

separate voltmeter means connected to each electrode for measuring individual voltages at each electrode with respect to the common ground due to the multiplicity of concurrent patterns for use in imaging at least part of the volume of the body;

image means for receiving the voltages and forming an impedance image therefrom; and digital-to-analog converter means connected to each voltage-to-current converter and forming part of a voltage reference source for each voltage-to-current converter, each digital-to-analog converter means comprising at least one high-speed digital-to-analog converter for determining a shape of the waveform according to values of a sequence of digital words applied consecutively at a uniform rate to an input of the voltage-to-current converter, and repeated for each cycle of the repetitive waveform, each high-speed digital-to-analog converter connected to an output of a low-speed digital-to-analog converter, the low-speed digital-to-analog converter for determining an amplitude and polarity of the waveform according to values of a separate digital word and forming a reference voltage at the output.

5,544,663

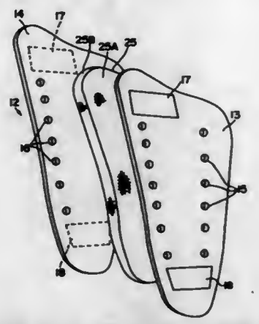
FRONT-TO-BACK AND SIDE-TO-SIDE CUSTOM-MOLDED PROTECTIVE DEVICE

Jeffrey E. Duback, Davidson, N.C., assignor to Parker Medical Associates, Charlotte, N.C.

Filed Jul. 20, 1995, Ser. No. 504,609

Int. Cl.[6] A61F *5/37;5/00*

U.S. Cl. 128—846 **14 Claims**



1. A protective pad for being custom-fitted to a body member to be protected, comprising:

(a) a first flexible cushion layer for being placed against the body member in a first orientation;

(b) an initially flexible fiberglass intermediate layer comprised of first and second fiberglass sheets, wherein said first fiberglass sheet is wider than the second fiberglass sheet to thereby provide only a single sheet of fiberglass adjacent the side edges of the protective pad to thereby provide enhanced flexibility on the sides of the protective pad, said fiberglass intermediate layer having a first side positioned adjacent to the first layer, said intermediate layer comprised of a fabric impregnated with a moisture-curable resin which hardens upon curing to form a rigid structure of the fabric which retains a body part-defined shape into which it is molded during curing, thereby also holding the flexible first cushion layer in the same body-part defined shape;

(c) a second flexible cushion layer positioned adjacent a second side of said intermediate layer for being held by the intermediate layer in the same body-part defined shape as the intermediate layer, for being placed against the body part to be protected in a second orientation;

(d) a connector for connecting together said first and second flexible cushion layers and the intermediate layer sandwiched therebetween to form said protective pad into a unitary structure; and

(e) said protective pad having a shape which is asymmetrical from top-to-bottom and from side-to-side and which is anatomically shaped to provide enhanced protection to a different area of the body part being protected depending on its side-to-side and top-to-bottom orientation.

5,544,664

METHOD OF ADVANCING A SUTURE THROUGH TISSUE

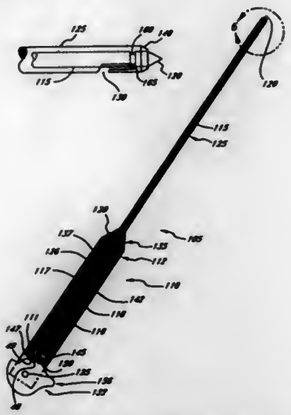
Theodore V. Benderev, 27748 Sommerset La., San Juan Capistrano, Calif. 92675; Neil H. Naves, 28852 Woodcreek, Mission Viejo, Calif. 92692, and Mark J. Legome, 28255 Driza, Mission Viejo, Calif. 92692

Division of Ser. No. 042,739, Apr. 5, 1993, which is a continuation-in-part of Ser. No. 801,747, Dec. 3, 1991, abandoned. This application May 16, 1994, Ser. No. 243,690

Claims priority, application WIPO, Dec. 3, 1992, PCT/US92/10451

Int. Cl.[6] A61B *17/04*

U.S. Cl. 128—898 **8 Claims**



1. A method of advancing a suture through tissue, comprising the steps of:

positioning a suture on one side of the tissue;

providing a suture passer having an elongate probe for penetrating tissue and a releasable suture engagement structure on a distal portion thereof, the suture engagement structure being adapted to engage the suture at a point spaced apart from an end of the suture;

advancing the suture passer distally through the tissue towards the suture;

grasping the suture at the point spaced apart from the end of the suture within the suture engaging structure by activating the suture engagement structure to lock the suture in the suture engaging structure; and thereafter

withdrawing the suture passer proximally to draw the suture through the tissue.

5,544,665

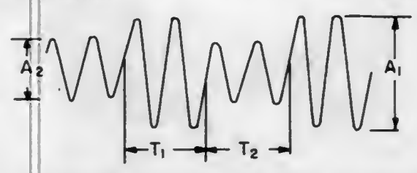
PROTECTION OF LIVING SYSTEMS FROM ADVERSE EFFECTS OF ELECTRIC, MAGNETIC AND ELECTROMAGNETIC FIELDS

Theodore A. Litovitz, Annapolis, and Luis M. Penafiel, Rockville, both of Md., assignors to The Catholic University of America, Washington, D.C.

Continuation-in-part of Ser. No. 642,417, Jan. 17, 1991. This application Aug. 18, 1993, Ser. No. 107,623

Int. Cl.[6] A61B *19/00*

U.S. Cl. 128—897 **8 Claims**



1. An apparatus for creating a bioprotective electromagnetic field surrounding a personal communication device (PCD) which transmits a radio frequency signal, the apparatus comprising the combination of:

a PCD;

an electrical coil means for generating an electromagnetic field, said coil means positioned adjacent to or integral with the PCD;

a source means for generating a signal to be conducted through the coil means; and

an electrical modulation means for modulating said signal within time intervals of less than 10 seconds one or more fundamental properties of the signal, said fundamental properties including amplitude, period, phase, waveform and polarity, said modulation means being coupled to said coil means to drive said coil means whereby said coil means generates a bioprotective electromagnetic field.

5,544,666

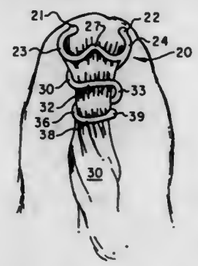
HAIR STYLING DEVICE

Bernadine Schach, 905 Rainbow Dr., Richardson, Tex. 75081

Filed Aug. 31, 1995, Ser. No. 521,885

Int. Cl.[6] A45D *8/04;8/34;8/36*

U.S. Cl. 132—273 **14 Claims**



1. An improved hair braiding device comprising an elongated structure having an upper section and a lower section; said upper section having:

(a) a right side and a left side, said right side being bounded by a surface defining a first aperture, said left side being bounded by another surface defining a second aperture, said first and said second apertures being disposed in juxtaposed relation; and

(b) a hump within said elongated structure joining said right side and said left side;

said lower section being connected with said upper section and having a plurality of serpentine bends defining with said upper section a third aperture between said hump and one of said bends.

5,544,667

APPARATUS AND A PROCEDURE FOR CLEANING TOOLS DURING THE MANUFACTURE OF SHELLS OR CORE PACKETS THAT ARE READY FOR CASING

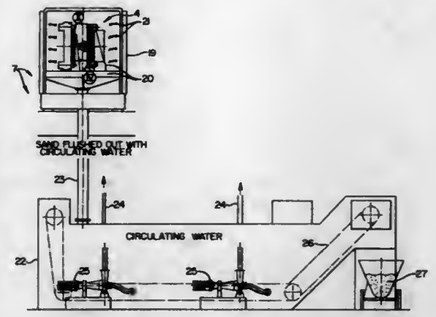
Werner Landua, and Wolfgang Schimpf, both of Mannheim, Germany, assignors to Adolf Hottinger Maschinenbau GmbH, Mannheim, Germany

Filed Jul. 5, 1994, Ser. No. 271,062

Claims priority, application Germany, Jul. 5, 1993, 43 22 192.0; Jul. 9, 1993, 43 23 107.1

Int. Cl.[6] B08B *3/10*

U.S. Cl. 134—64 R **8 Claims**



1. An apparatus for cleaning tool sets of the type adapted to mold shells or core packets that are utilized for casting metal products, and wherein the tool sets comprise a tool upper section (1), an ejector plate (2) for the tool upper section, and a tool lower section (3) which is separable from the tool upper section, said cleaning apparatus comprising

a delivery system (6) for supporting the tool sets,

a first flushing system (7) for spraying the tool sets with water,

at least one ultrasound bath (8) for supporting the tool sets in a liquid bath which is subjected to ultrasound energy,

a second flushing system (9) for spraying the tool sets with water,

a cooling system (10) for cooling the tool sets which have been heated by the one ultrasound bath,

a drying system (12) for air drying the tool sets,

a removal system (14) for supporting the tool sets, and

means for moving the tool sets from the delivery system (6) and serially to the first flushing system (7), the one ultrasound bath (8), the second flushing system (9), the cooling system (10), the drying system (12), and the removal system (14).

5,544,668

APPARATUS FOR TREATING WORK OBJECTS

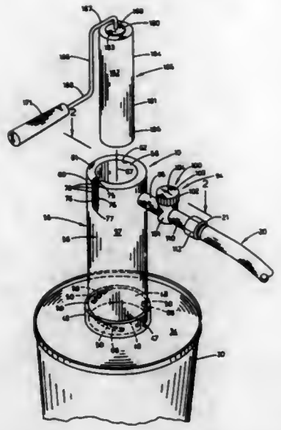
Arthur J. Dollar, 1216 E. Kelso Ave., Fresno, Calif. 93720

Filed Mar. 21, 1994, Ser. No. 215,802

Int. Cl.[6] B08B *3/02*

U.S. Cl. 134—104.2 **4 Claims**

1. An apparatus for cleaning residual substances from the sleeve of a paint roller which has a handle having a mount borne for rotational movement substantially about a longitudinal axis and



mounting said sleeve thereon for rotation with the mount substantially about said longitudinal axis, the apparatus comprising:

A. a substantially cylindrical housing, having upper and lower end portions, a substantially cylindrical passage of predetermined diameter extending through the housing along a longitudinal axis of reference and the upper and lower end portions thereof through annular openings of predetermined diameter, dimensioned substantially fully to receive the mount and sleeve of the paint roller therewithin in a predetermined cleaning position substantially concentric to said passage of the housing;

B. an annular shield mounted on the upper end portion of the housing overhanging the opening thereof having a concave surface substantially facing said cleaning position and extending to an annulus bounding a substantially circular entrance opening communicating with said cleaning position in substantially axial alignment with said longitudinal axis of reference;

C. a conduit mounted on the upper end portion of the housing communicating with the cleaning position thereof through a plurality of fluid ports along substantially parallel axes substantially right-angularly related to and offset relative to said longitudinal axis of reference;

D. a valve assembly, adapted for connection to a source of fluid under pressure, mounted on said conduit and operable to control the volume of fluid passing from the source of fluid under pressure through said conduit and through said plurality of fluid ports; and

E. a sealing assembly mounted on the upper end portion of the housing defining a passage extending through said shield and inwardly of the upper end portion of the housing along a course substantially parallel to said longitudinal axis of reference to a terminus engageable by said handle of the paint roller, when the mount and sleeve thereof are received in said cleaning position, to support the paint roller in said cleaning position and including a plurality of bristles interlaced in said passage substantially to seal the passage against release of fluid therethrough whereby a paint roller, disposed in said cleaning position with the handle thereof in said sealing assembly has said residual substances removed therefrom by fluid under pressure released by the valve assembly through said fluid ports against the sleeve to rotate the mount of the paint roller about said longitudinal axis thereof so as to remove said residual substances by the flushing action of said fluid under pressure and by centrifugal force in rotation of the mount substantially about said longitudinal axis.

5,544,669

SYSTEM FOR WASHING A TANK AND RECOVERING AND TREATING RESIDUAL TANK LIQUID

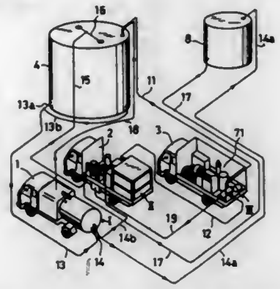
Nobuyuki Manabe, Fujisawa, and Masaaki Ando, Kobe, both of, Japan, assignors to Taiho Industries Co., Ltd., Tokyo, Japan

Division of Ser. No. 125,793, Sep. 24, 1993, Pat. No. 5,421,903. This application Mar. 1, 1995, Ser. No. 396,646

Claims priority, application Japan, Sep. 24, 1992, 4-277770; May 7, 1993, 5-028999; Jun. 17, 1993, 5-169803

Int. Cl.[6] B08B *9/12;13/00*

U.S. Cl. 134—109 **1 Claim**



1. A system for washing a tank and recovering and treating residual tank liquid, comprising:

a first system unit equipped with a suction device sucking residual liquid from the tank and discharging the residual liquid to an oil-water separator;

a second system unit equipped with the oil-water separator separating an oil component from the residual liquid received from the suction device, a device treating the separated oil component and a supply mechanism supplying washing liquid into the tank;

a third system unit equipped with an inert gas generator, said generator producing an inert gas to be supplied to the tank;

a first conveyor conveying the first system unit to the tank;

a second conveyor conveying the second system unit to the tank; and

a third conveyor conveying the third system unit to the tank.

5,544,670

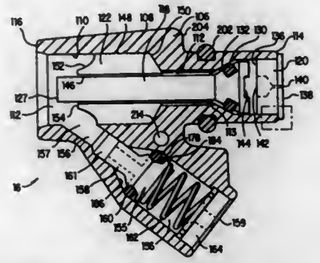
INFLATION DEVICE FOR AN INFLATABLE ARTICLE OF MANUFACTURE AND ADAPTOR THEREFOR

Matthew L. Phillips, North Easton, Mass., and Anthony S. Hollars, Tucson, Ariz., assignors to Reebok International Ltd., Stoughton, Mass., and Innovations in Cycling, Tucson, Ariz.

Filed Dec. 15, 1993, Ser. No. 167,007

Int. Cl.[6] F16K *15/20;* **B60C** *29/00*

U.S. Cl. 137—224 **27 Claims**



1. An inflation device, comprising:

a head unit, said head unit including an inlet, an outlet, and a passageway extending between said inlet and said outlet;

a source of pressurized gas in fluid communication with said inlet of said head unit;

a valve assembly for controlling the flow of gas from said source of pressurized gas to said head unit disposed within said passageway of said head unit, said valve assembly being biased in a closed position which is moveable into an open position by a depressing means positioned in contact with said valve assembly;

means for maintaining said source of pressurized gas in fluid communication with said inlet of said head unit;

a nozzle positioned in fluid communication with said outlet of said head unit, said nozzle including a first end, a second end engageable with an inflation valve of an inflatable article of manufacture, a conduit extending between said first end and said second end, means for controlling the flow rate of the gas passing to said nozzle from said head unit, said means for controlling the flow rate of the gas being positioned near said first end of said nozzle and downstream of said valve assembly, a pin movably positioned within said nozzle downstream of said flow rate controlling means for enabling the release of gas from said device when a force is applied to the end of said pin, and means for relieving a build-up of excess pressure, said pressure relieving means being positioned downstream of said pin within a channel in fluid communication with said conduit of said nozzle, said pressure relieving means including a poppet, a spring for biasing said poppet against a seat formed by a wall of said channel, and a plug, said plug defining a hole through which excess gas may pass to relieve the build-up of excess pressure.

5,544,671

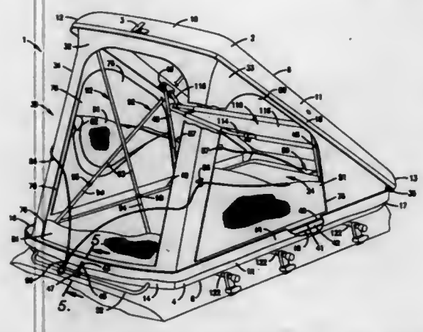
LIGHTWEIGHT, PORTABLE, SELF-OPENING, COLLAPSIBLE SHELTER/CAMPER/STORAGE UNIT

Jeffrey O. Phillips, Columbia, Mo., assignor to High Gear Inc., Columbia, Mo.

Filed Aug. 26, 1994, Ser. No. 296,496

Int. Cl.[6] E04H *15/06*

U.S. Cl. 135—88.14 **14 Claims**



1. A portable, collapsible shelter/camper/storage unit comprising:

upper and lower shells, each having a body section formed with front, back and side flanges projecting toward, and aligned with corresponding front, back and side flanges of the opposed shell;

means for pivotally securing said back flanges to one another such that said upper and lower shells form a V-shape when erected to an open position, said front, back and side flanges of said upper and lower shells having respective downwardly and upwardly directed rims which meet in a sealing relation when said upper and lower shells are closed;

a flexible tent section having front, back and side walls with top and bottom edges spanning an opening between said upper and lower shells; and

a displaceable clip, permanently secured to an exterior surface of said body section of said lower shell, for releasably securing said shelter/camper/storage unit to a supporting structure.

5,544,672

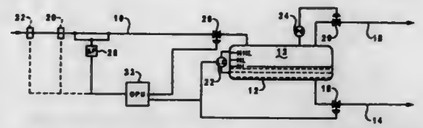
SLUG FLOW MITIGATION CONTROL SYSTEM AND METHOD

Richard L. Payne, McKinney, Tex.; Richard E. Huff, and Wayne E. Ogren, both of Anchorage, Ak., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Oct. 20, 1993, Ser. No. 139,391

Int. Cl.[6] B01D *19/00*

U.S. Cl. 137—1 **9 Claims**



4. A method for mitigating the flow of liquid slugs through a fluid flowline connected to a gas-liquid separator vessel, said flowline having a normally open control valve interposed therein upstream of said separator vessel with respect to the direction of flow of fluid through said flowline and means for detecting the presence of a liquid slug flowing through said flowline toward said control valve, comprising the steps of:

determining the available volume in said vessel for receiving a liquid slug;

determining the presence of a liquid slug flowing toward said control valve through said flowline; determining the liquid volume of said slug;

comparing the volume of said slug to said available volume in said vessel and at least partially closing said control valve to reduce the flow therethrough when said volume of said slug exceeds said available volume in said vessel.

5,544,673

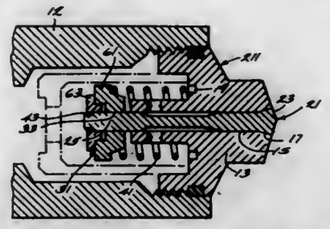
METHOD AND ARRANGEMENT FOR ASSEMBLING FUEL INJECTION NOZZLES

Christopher R. Irgens, Elm Grove, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Continuation-in-part of Ser. No. 276,718, Jul. 18, 1994, Pat. No. 5,472,013. This application Apr. 25, 1995, Ser. No. 428,338

Int. Cl.[6] F16K *17/04*

U.S. Cl. 137—15 **12 Claims**



1. A method of assembling a nozzle assembly comprising a housing including a central bore having, at one end thereof, a valve seat, an elongated needle member having, at one end thereof, a valve portion engageable with the valve seat, and having, at the other end thereof, an end portion, a retainer member having therein

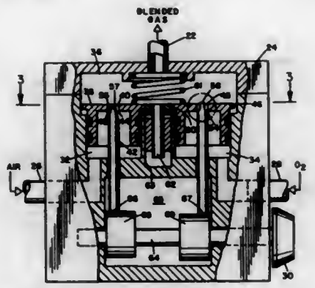
a bore receiving the end portion of the needle, and being fixed to the end portion of the needle, and a spring acting between the housing and the retainer member to bias the valve portion into engagement with the valve seat, said method comprising the steps of locating the needle member in the bore in the housing with the valve portion in engagement with the valve seat and with the end portion extending from the housing, locating the spring in surrounding relation to the end portion of the needle member and in operative engagement with the housing, locating the retainer member with the end portion of the needle member passing through the bore in the retainer member, spacing the retainer member from the housing with the spring in compression between the retainer member and the housing, fixing the retainer member to the end portion while maintaining the spacing of the retainer from the housing and while maintaining the engagement of the valve portion of the needle member with the valve seat and with the spring in compression between the housing and the retainer member, and removing the spacing from between the housing and the retainer member, thereby permitting movement of the valve portion of the needle member away from the valve seat in opposition to action of the spring.

5,544,674

GAS MIXING APPARATUS FOR RESPIRATOR

Edmund F. Kelly, Murrieta, Calif., assignor to Infrasonics, Inc., San Diego, Calif.

Filed Jul. 14, 1995, Ser. No. 502,629
Int. Cl.[6] G05D *11/03*
U.S. Cl. 137—98 **14 Claims**



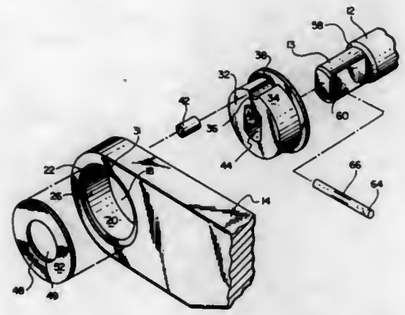
1. A gas mixing apparatus, comprising:
- a first chamber having an inlet for connection to a supply of a first gas:
- a second chamber having an inlet for connection to a supply of a second gas;
- a third, mixing chamber having an outlet for a mixture of said first and second gases;
- the first and second chambers having first and second passageways, respectively, connecting said first and second chambers, respectively, to said third chamber;
- a first piston slidably mounted in said first passageway and having a first opening defining a first valve seat;
- a first valve member movably mounted in said first chamber for movement between a closed position seated against said first valve seat to close said opening and prevent gas flow between said first chamber and said mixing chamber, and a second position defining a maximum flow area orifice between said valve member and valve seat;
- a second piston slidably mounted in said second passageway and having a second opening defining a second valve seat;
- a second valve member movably mounted in said second chamber for movement between a closed position seated against said second valve seat to close said opening and prevent gas flow between said second chamber and said mixing chamber, and a second position defining a maximum flow area orifice between said valve member and valve seat;
- an adjustment mechanism linked to said first and second valve members to control the position of each valve member, whereby the areas of the orifices between each valve member and valve seat are controlled to select the proportions of the two gases supplied to the mixing chamber;
- the first and second pistons being connected together and being movable relative to said valve seats to vary the flow area of each orifice in response to variations in pressure drop across the respective pistons; and
- each valve member and valve seat having opposing surfaces of predetermined shape for forming a series of orifices of progressively increasing area as said valve members and valve seats move relative to one another from said closed position to said maximum flow area position, each series corresponding to the same geometrical progression having a predetermined progression ratio.

5,544,675

FRANGIBLE VALVE HANDLE

Robert H. Dean, Evanston, Ill., assignor to Midland Manufacturing Corp., Skokie, Ill.

Filed Oct. 6, 1995, Ser. No. 556,290
Int. Cl.[6] F16K *35/04*
U.S. Cl. 137—797 **13 Claims**



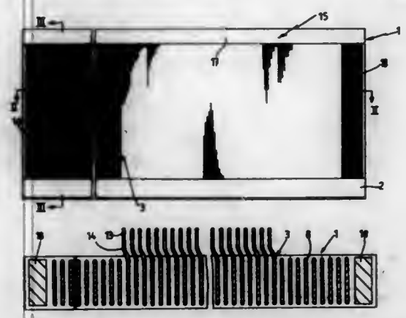
1. A torque limiting valve handle for rotating a shaft of a valve, the valve handle comprising:
- an elongated arm having a first opening therein adjacent to one end thereof forming an inner surface and a first channel formed in the inner surface;
- a hub disposed in the first opening and engagable with the shaft, the hub having an exterior surface and a second channel formed in the exterior surface;
- the hub having a drive position relative to the arm wherein the first and second channels cooperate to define a pocket; and
- a shear pin disposed in the pocket for preventing rotation of the hub relative to the arm so that the hub rotates in response to rotation of the arm to apply torque to the shaft to rotate the shaft, the pin being frangible in response to application thereto of a force in excess of a pre-determined force to permit relative rotation of the hub and the arm and prevent application to the shaft of a torque greater than a predetermined torque.

5,544,676

LOOM REED WITH INTEGRAL DEFLECTOR HEALD FRAME

Carlos Derudder, Waterhoek, Belgium, assignor to N.V. Michel Van De Wiele, Kortrijk-Marke, Belgium

Filed Oct. 27, 1994, Ser. No. 329,422
Claims priority, application Belgium, Oct. 28, 1993, 9301163
Int. Cl.[6] D03D *49/62*
U.S. Cl. 139—192 **2 Claims**



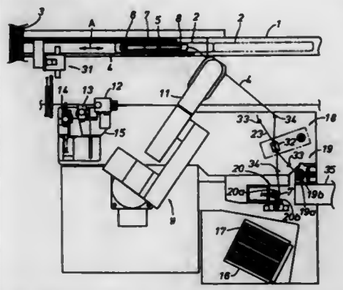
1. A loom reed with integral deflector heald frame in a face-to-face or a pile wire weaving-loom configured to prevent the weaving yarns running in the warp and weft directions from becoming entangled during the weaving of carpets and/or velvets, said reed including dents or drop wires, in order to separate a number of pile warp threads from each other, said loom reed having all dents or drop wires identical and made up of a front part and rear part, which are both parallel to the warp direction and laterally staggered or offset relative to one another in the weft direction.

5,544,677

ROBOTIC APPARATUS FOR AUTOMATIC COP CHANGING FOR A WEAVING MACHINE

Hiroyuki Okubo, Saitama-ken, Japan, assignor to Nippon Felt Co., Ltd., Tokyo, Japan

Filed Nov. 17, 1994, Ser. No. 341,387
Claims priority, application Japan, Nov. 17, 1993, 5-312567
Int. Cl.[6] D03D *45/20*
U.S. Cl. 139—245 **15 Claims**



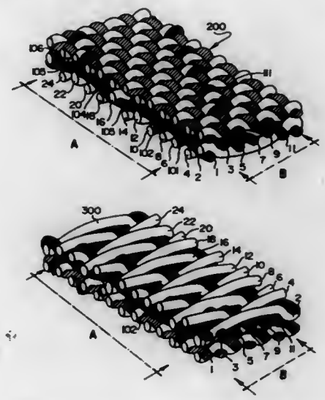
1. A cop changing device for a weaving machine in which a shuttle, carrying a cop consisting of a bobbin around which weft is wound, is reciprocated between shuttle boxes at opposite ends of warps so as to weave said weft between said warps, said cop changing device comprising:
- a base for positioning adjacent a shuttle box having a shuttle retention means for selectively retaining a shuttle with a cop;
- a new cop stand, an old cop stand, and a hand stand mounted on said base;
- a robot positioned on said base for being in spaced-apart relationship with said shuttle box, said new cop stand, said old cop stand, and said hand stand;
- a plurality of hands positioned on said hand stand, said hands adapted to be interchangeably and selectively mounted on said robot, said plurality of hands including at least one cop hand having bobbin fingers and weft fingers for positioning cops and wefts, and a shuttle hand having a shuttle finger for positioning the shuttle and a hook for raising and lowering the cops from the shuttle;
- weft tying means mounted on said base for tying an old weft from an old cop mounted on the old cop stand with a new weft from a new cop mounted on the new cop stand to form a continuous weft; and
- a control means in communication with the shuttle box, said robot, and said weft tying means for controlling the operations in changing cops and tying wefts.

5,544,678

COMPOSITE FORMING FABRIC WOVEN WITH AN NX2N MACHINE SIDE LAYER

Rex Barrett, Peachtree City, Ga., assignor to JWI Ltd., Kanata, Canada

Filed Apr. 14, 1995, Ser. No. 421,940
Int. Cl.[6] D03D *3/00*
U.S. Cl. 139—383 A **38 Claims**



1. A composite forming fabric, for a paper making machine, which comprises:
- a) a paper side layer of interwoven warp and weft yarns;
- b) a machine side layer of interwoven warp and weft yarns; and
- c) interwoven binder yarns binding the paper side layer and the machine side layer together into a unified structure;

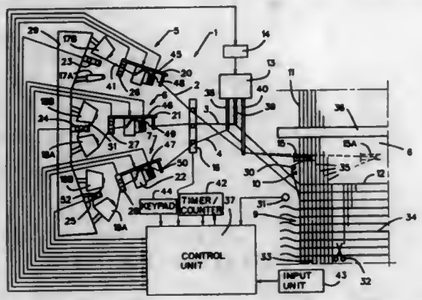
wherein in the machine side layer of the composite forming fabric:
- i) the warp and weft yarns are woven according to a repeating multiple shed pattern which is an N by 2N weave in which N is the number of sheds and is an integer from 3 to 12 inclusive;
- ii) the multiple shed pattern provides at least two distinct warp yarn floats having different float counts within one repeat of the weave pattern;
- iii) the multiple shed pattern provides at least one distinct weft yarn float within one repeat of the weave pattern;
- iv) all of the weft yarn floats are located substantially in a single plane and are exposed on the machine side of the machine side layer, and
- v) all of the ward yarn floats are located substantially in a single plane and are exposed on the paper side of the machine side layer in contact with the machine side of the paper side layer.

5,544,679

DEFECTIVE WEFT YARN INSERTION PREVENTION

Jo Tacq, Ypres, Belgium, assignor to Picanol N.V., Ypres, Belgium

Filed Nov. 29, 1994, Ser. No. 348,868
Claims priority, application Belgium, Dec. 1, 1993, 9301329
Int. Cl.[6] D03D *47/34*
U.S. Cl. 139—450 18 Claims



1. A method of controlling a weft yarn feeding mechanism, the feed mechanism including a control unit; means for alternately feeding at least two weft yarns, each weft yarn being fed by its own feed device, with each feed device including a yarn supply; and means for selecting a weft yarn to be inserted into a weaving shed to form a fabric, comprising the steps of:

monitoring the weft yarns for quality defects in the region between the yarn supplies and the fabric;

generating a defect-indicating signal based on said monitoring when a defect is detected;

transmitting the signal to said control unit;

causing the selection means to exclude the weft yarn with the defect from its selection operation; and

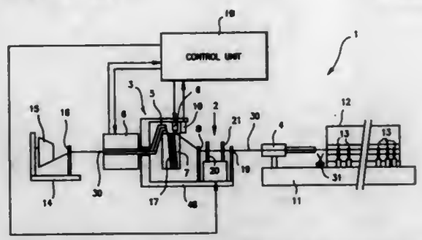
after detection of the defect, continuing to move the weft yarn containing the defect through said selection means until the defect has reached a predetermined position downstream of said selection means at which insertion of a non-defective portion of the weft yarn containing the defect will not cause the defect to be inserted within the shed.

5,544,680

WEFT THREAD BRAKE WITH ROTARY DRIVE

Ignace De Ro, Ieper, Belgium, assignor to Picanol N.V., Ieper, Belgium

Filed Dec. 21, 1994, Ser. No. 361,193
Claims priority, application Belgium, Dec. 22, 1993, BE9301434
Int. Cl.[6] D03D *47/34*
U.S. Cl. 139—450 9 Claims



1. A thread brake for a loom, said loom including storage means for storing a weft thread to be inserted and insertion means for causing the weft thread stored in the storage means to travel along an insertion path in order to insert the weft thread, said thread brake comprising:

at least one thread guide and drive means for moving the thread guide in order to deflect the weft thread from the insertion path and, as a result of the deflection of the weft thread from the insertion path, thereby brake the weft thread;

supporting means for supporting said thread guide;

a transmission which includes means for transmitting motion of said drive means to said thread guide supporting means while also allowing relative motion between the drive means and the thread guide supporting means,

wherein the drive means is a rotary drive device having a drive shaft connected by said transmission to said thread guide so as to join said thread guide supporting means and drive shaft in a relatively displaceable and coaxial manner.

5,544,681

CORED BATTERY PLATES FOR LEAD/ACID BATTERIES

Robert S. Feldstein, Pelham, N.Y., assignor to Derafe, Ltd., Buffalo, N.Y.

Division of Ser. No. 74,363, Jun. 10, 1993, Pat. No. 5,339,873.
This application Jun. 1, 1994, Ser. No. 252,644
Int. Cl.[6] H01M *4/36*
U.S. Cl. 141—1.001 11 Claims

1. A method of fabricating a cored structure, where said cored structure comprises a core element and an active surface which is placed over said core element;

where the principal active constituent of the active surface is one which may enter into a chemical process when in us, in the presence of an electrolyte or other agent which will promote such chemical process; and where said method comprises the steps of:

(a) producing a pre-formed core element; and

(b) producing a thin layer of the active surface material over the surface of said pre-formed core element;

wherein said thin layer of active material is placed on said pre-formed core element using an accelerator and where the initial kinetic energy of the accelerator is determined by accelerator voltage by which said active material placed on said core element is varied over time;

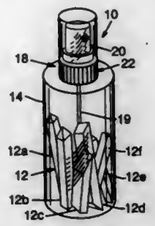
whereby a graded junction of said active surface material on the material of said pre-formed core element is effected.

5,544,682

RESOLVATION SYSTEM FOR AN ACTIVE-INGREDIENT-CONTAINING LIQUID SOLUTION

Freddie B. McDaniel, 1104 Keysfr Ave., Natchitoches, La. 71457

Filed Jul. 19, 1994, Ser. No. 277,199
Int. Cl.[6] B65B *1/04;3/04*
U.S. Cl. 141—9.000 9 Claims



1. A deodorant resolvator for a liquid solution containing an active ingredient that tends to kill odor-causing-bacteria, comprising:

an amount of a solid including only a soluble active ingredient that tends to kill odor-causing-bacteria, the amount of solid being formed as plural crystal rocks;

container structure for holding both the solid and a first volume of liquid solvent capable of solvating a first portion of the solid to release a first charge of the active ingredient into the first volume of solvent to make a first active-ingredient-containing solution, wherein the container structure is constructed from visible-light-transmissive material for a user to determine when an additional volume of liquid solvent and an additional amount of solid may be added to the container structure; and

a removable closure device associated with the container structure, wherein removal of the closure device accommodates addition of additional volumes of liquid solvent into the container structure and closure of the closure device prevents entry of additional volumes of liquid solvent into the container structure;

wherein the closure device includes liquid-emission structure having actuator substructure actuable by such user to emit a desired amount of the solution to a desired target area, wherein entry of additional volumes of solvent into the container structure via the removable closure device produces no emission of the solution from the container structure via the liquid-emission structure;

wherein the amount of solid exceeds that which can be dissolved into the first volume of solvent, and the removable closure device being configured to accommodate addition of a second volume of liquid solvent into the container structure after the user has emitted at least some of the first active-ingredient-containing solution, with the addition of the second volume of solvent causing release of a second charge of the active ingredient into the solvent to make a second active-ingredient-containing solution which the user can emit, via the liquid-emission structure, in desired amounts to desired target areas; and

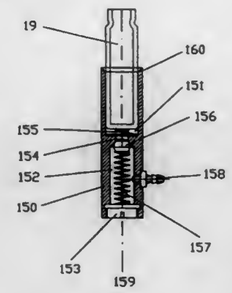
wherein the amount of solid completely dissolves after addition of multiple subsequent volumes of liquid solvent into the container structure such that no amount of solid remains in the container structure.

5,544,683

SAMPLE FILLING DEVICE

Peter Guhl, Karlsruhe, Germany, assignor to Bruker Analytische Messtechnik GmbH, Germany

Filed Dec. 6, 1994, Ser. No. 349,976
Claims priority, application Germany, Dec. 18, 1993, 43 43 400.2
Int. Cl.[6] G01N *35/06*
U.S. Cl. 141—65 4 Claims



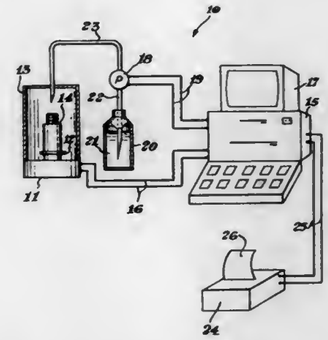
1. A shaking and holding device for the quantitative filling of a powder or granulated sample substance from a sample vessel, comprising an open hollow cylindrical chamber and a closed chamber which are connected by a pressure valve, the open chamber being adapted to accept the sample vessel with close tolerance, so that a ring-shaped gap remains between an inside wall of the open chamber and an outside wall of the sample vessel and further comprising pumping means for activation of the shaking and holding device by pumping on the closed chamber to periodically open and close the pressure valve in response to a pressure decrease and a pressure increase, whereby the pressure increase and decrease set the sample vessel into oscillation, and, suction the sample vessel with an average reduced pressure to hold the sample vessel for pouring into a measuring vessel.

5,544,684

MULTIPLE SOLUTE STANDARD PREPARATION

Rex T. Robinette, III, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 8, 1994, Ser. No. 352,332
Int. Cl.[6] B65B *1/30;3/26*
U.S. Cl. 141—83 6 Claims



1. A method for the preparation of a standard solution containing at least a first solute and a second solute dissolved in a solvent, the solution containing an essentially desired concentration of the first solute and a substantially desired concentration of the second solute, comprising the steps of:

(a) weigh a container to determine the tare weight of the container;

(b) assign a target weight for the solvent;

(c) assign a target weight for the first solute;

(d) assign a target weight for the second solute;

(e) add the first solute to the container;

(f) weigh the container to determine the weight of the first solute added to the container;

(g) determine the ratio of the weight of the first solute added to the container to the target weight for the first solute;

(h) multiply the target weight for the second solute by the ratio of step (g) to obtain an updated target weight for the second solute;

(i) add the second solute to the container;

(j) weigh the container to determine the weight of the second solute added to the container; and

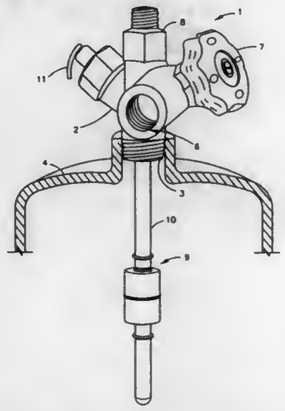
(k) add a weight of the solvent to the container, the weight of the solvent being essentially equal to the quantity of the weight of step (f) divided by the weight of step (c) which quantity is then multiplied by the weight of step (b).

5,544,685

FILL CONTROLLER FOR LIQUIFIED GAS CONTAINER AND APPARATUS FOR FILLING TANK USING SAME

Dale M. Stieferman, Jefferson City, Mo., assignor to Kelfer Controls, Inc., Orlando, Fla.

Filed Sep. 2, 1994, Ser. No. 300,154
Int. Cl.[6] B65B *1/30;3/28*
U.S. Cl. 141—198 **17 Claims**



1. An electronic sensor and fill controller for use with a refillable liquified gas container, said controller comprising:

a. a valve body adapted to be sealingly attached to said container so as to close said container, said valve body having a liquified gas passage therethrough and a valve adapted to control the flow of a liquified gas through said liquified gas passage;

b. a shaft attached to and extending coaxially from said valve body so as to extend into said container;

c. a float actuated electronic sensor disposed on said shaft, said electronic sensor adapted to sense the presence of said liquified gas; and

d. a controller adapted to perform, upon said electronic sensor sensing contact with said liquified gas, at least one function selected from the group consisting of:

i. initiating an electrical signal;

ii. terminating an electrical signal; and

iii. altering an electrical signal.

5,544,686

DUST CONTROL SYSTEM

Ken Kearney, Alpha, Ill., assignor to Agricultural Building Holdings, Inc., Mendota, Ill.

Filed Nov. 3, 1994, Ser. No. 333,843
Int. Cl.[6] B65B *1/30;3/28*
U.S. Cl. 141—192 **11 Claims**

1. A system for continuously controlling the emission of dust from a pit designed to have grain periodically dumped at high flow rates into the pit comprising:

a) a pit;

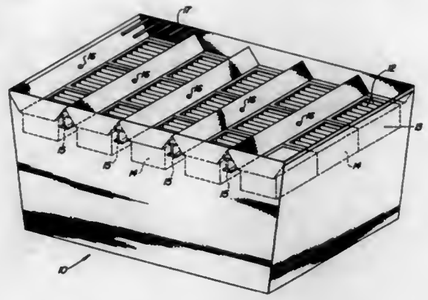
b) a plurality of units arranged to form a lid on said pit;

c) said plurality of units, including at least one metering unit and at least one dumping unit;

d) each of said units having a plurality of louvers;

e) means on each of said units for opening and closing said louvers in said units;

f) a first portion of the louvers in said metering section connected to a first one of said means for opening and closing said louvers and a second portion of said louvers connected to a second means for opening and closing said louvers;



g) all louvers in said dumping unit connected to a single means for opening and closing said louvers;

h) sensing means to generate a signal when grain is present on said units;

i) said sensing means located on at least one of said metering units;

j) means responsive to said signal from said sensing means to open said louvers on said metering unit after a predetermined time lapse;

k) means to generate a signal sent to said units for opening all louvers on all units;

l) said signal directed to all means for opening and closing said louvers in said units sent to said units; and

m) means for generating a subsequent signal sent to said units to close all of said louvers whereby the dust is prevented from escaping the pit at all times including during the unloading of grain into said pit.

5,544,687

GAS GENERANT COMPOSITIONS USING DICYANAMIDE SALTS AS FUEL

Michael W. Barnes; Thomas M. Deppert, both of Brigham City, and Robert D. Taylor, Hyrum, all of Utah, assignors to Morton International, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 165,771, Dec. 10, 1993: This application Jan. 14, 1994, Ser. No. 182,478
Int. Cl.[6] C06B *29/08*
U.S. Cl. 149—83 **14 Claims**

1. A gas generant composition comprising between about 10 and about 60 wt % of a fuel, at least about 25 wt % up to 100% of which is a transition metal salt of dicyanamide or mixture of transition metal salts of dicyanamide, balance other fuel and between about 40 and about 90 wt % of an oxidizer selected from the group consisting of ammonium, alkali metal and alkanline earth metal chlorates, perchlorates, nitrates and mixtures thereof.

5,544,688

TWO STAGE KNEELING VALVE

Alan R. Freigang, Scotts; Gary R. Schultz, Kalamazoo; Thomas L. Runeks, Battle Creek, and Kurt R. Gerlofs, Kalamazoo, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio

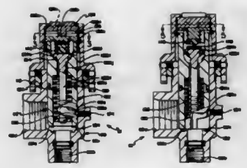
Filed Dec. 23, 1994, Ser. No. 363,134
Int. Cl.[6] B60C *23/00;* **F16K** *31/528*
U.S. Cl. 152—415 **13 Claims**

1. A valve assembly comprising:

a body including:

a first port in fluid communication with a volume of pressurized fluid;

a second port fluidly connected to a source of pressurized fluid for increasing the fluid pressure in said volume; and



a third port for controlling the venting of pressurized fluid from said volume to the atmosphere;

a first valve member disposed in said body and movable to alternately allow and prevent fluid flow between said first and second ports;

a second valve member movably disposed substantially within said first valve member to selectively permit fluid flow from said first port to said vent port when said first valve member prohibits fluid flow between said first and second ports;

first biasing means for bringing the fluid pressure in said volume to a first predetermined pressure by acting upon said second valve member to allow fluid flow until pressure at said first port is insufficient to overcome the force exerted by said first biasing means; and

second biasing means for selectively acting in cooperation with said first biasing means to bring said volume pressure to a second predetermined pressure by allowing fluid flow until pressure at said first port is insufficient to overcome the force exerted by the combination of said first and second biasing means.

5,544,689

WINDOW ATTACHMENT SCREEN SYSTEM

Gary D. Wegner, N.30 W.28706 Lakeside Rd., Pewaukee, Wis. 53072

Continuation of Ser. No. 62,999, May 17, 1993, abandoned. This application Oct. 5, 1994, Ser. No. 318,197
Int. Cl.[6] A47H *1/00*
U.S. Cl. 160—100 **7 Claims**

1. A screen mounting system, comprising:

(a) a flexible screen material, at least a portion of the flexible screen material residing within a first plane, the flexible screen material having a free edge and a captive edge;

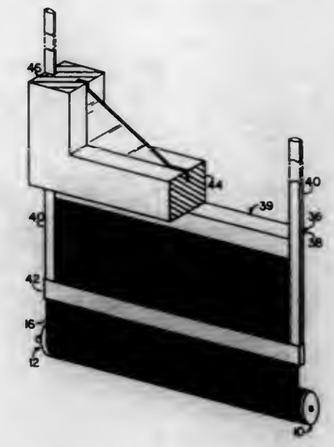
(b) a drum, the drum having a perimeter surface, a first diameter and a first longitudinal axis, the drum being mounted so as to be rotatable about the first longitudinal axis, the drum being mounted so that the perimeter surface is tangential to the first plane;

(c) a constant force spring, the constant force spring imparting a substantially constant torsional force to the drum, thereby biasing the drum to rotate about the first longitudinal axis at a substantially constant angular acceleration; and

(d) a drum end cap, the drum end cap comprising:

(i) a first region, the first region being a key, the key being shaped so as to be rigidly retained within a mating fitting external to the drum;

(ii) a second region, the second region being integrally formed with the first region, the second region having a second diameter and a second longitudinal axis, the second diameter being substantially equal to the first diameter of the drum, the second region being mounted in a spaced apart relationship from a first end of the drum, the second longitudinal axis being coaxial with the first longitudinal axis;



(iii) a third region, the third region being integrally formed with the second region, the third region having a third diameter, the third diameter being less than the first diameter such that the third region fits within an interior region of the drum in a spaced apart relationship; and

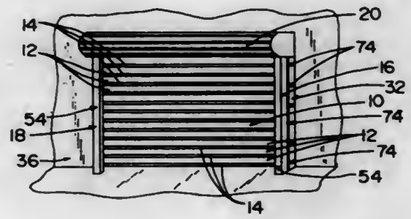
(iv) a fourth region, the fourth region being integrally formed with the third region, the fourth region having a fourth diameter, the fourth diameter being less than the third diameter, a first end of the constant force spring being rigidly affixed to the fourth region so as to impart a torsional biasing force to the drum.

5,544,690

ROLL-UP DOOR PROVIDED WITH THERMAL PROTECTION MEANS AND A DIRECT DRIVE GEARING ARRANGEMENT

Sebastian Magro, 22 Hallock Meadow Dr. North, and Vincent Magro, 44 Melvern La., both of Stonybrook, N.Y. 11790

Filed May 11, 1994, Ser. No. 240,573
Int. Cl.[6] E06B *9/08*
U.S. Cl. 160—133 **23 Claims**



1. A roll-up door comprising:

a plurality of elongated slats extending in a horizontal direction, said slats being disposed one above the other to provide said door;

hinge means connecting longitudinal edges of adjacent ones of said slats together to provide pivotal movement therebetween;

spaced apart side rails being disposed in a vertical direction to provide a vertically disposed track in each of said side rails for receiving opposite ends of said slats therein so that said slats can ride up and down along each track;

a horizontally disposed support roller being positioned between upper portions of said side rails for rolling up said slats thereon into a raised opened position;

a roll-up and roll-down mechanism coacting with said support roller for raising and lowering said slats;

thermal protection means being provided in said side rails to prevent cold outside temperature from transferring through said side rails and into a doorway covered by said slats when said slats are in a lowered closed position;

each of said side rails including a vertical metal first flange having a second leg secured to a wall adjacent one associated side of the doorway;

vertical metal second and third flanges having associated first legs secured to a first leg of said first flange, and associated second legs of said second and third flanges being horizontally spaced apart to provide said track;

said thermal protection means including a vertically extending plastic member disposed between said first leg of said first flange on one side thereof and said first legs of said second and third flanges on an opposite side thereof to provide a thermal break therebetween; and

said first, second and third flanges and said plastic member being secured together by bolts extending there-through and nuts fastened on said bolts, each of said bolts being provided with a plastic sleeve to provide a thermal break between an outside portion of said bolt and inside portions of said second and third flanges.

5,544,691

REVERSING MECHANISM FOR AN OVERHEAD DOOR OPENER

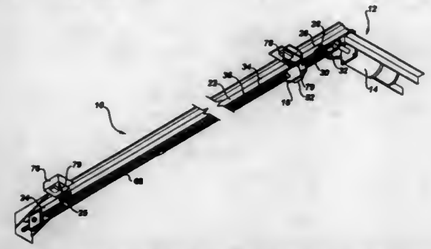
Raymond Wandio, 10506 - 80 Street, Edmonton, Alberta, Canada

Filed May 19, 1995, Ser. No. 444,747

Claims priority, application Canada, May 20, 1994, 2124222

Int. Cl.[6] E05F *11/00;15/02;* E06B *3/48;9/17*

U.S. Cl. 160—188 **5 Claims**



1. A reversing mechanism for an overhead door opener which includes a drive motor which rotates a chain to which is attached a trolley with a control arm that is adapted to be secured to an overhead door, comprising:

a. a channel-form trolley track having a first end, a second end, opposed sides, a top and a bottom, one of the top and the bottom having a centrally positioned longitudinal slot extending for the length of the trolley track, and openings at the first end and the second end through at least one of the opposed sides;

b. an elongate trolley plate having opposed faces, a first end, a second end, a channel edge and a control arm edge, the trolley plate is positioned in the trolley track with the control arm edge extending out through the slot;

c. a chain/cable return guide having an axial chain/cable receiving passage secured to one of the opposed faces between the first end and the second end of the trolley plate adjacent the control arm edge;

d. channel engaging guide means projecting from the opposed faces of the trolley plate adjacent the channel edge, the channel engaging guide means engaging the top and bottom of the trolley track thereby preventing the trolley plate from being withdrawn through the slot in the trolley track;

e. chain/cable attachment means at the first end and the second end of the trolley plate, whereby a chain/cable is extended through the axial chain/cable receiving passage of the chain/cable return guide, looped into the trolley track from the first end and the second end and secured to the trolley plate;

f. a control arm attachment means adjacent the control arm edge at the second end of the trolley plate, whereby the trolley plate is adapted to be coupled by a control arm to an overhead door; and

g. limit switches adjacent to the first end and the second end of the trolley track, each of the limit switches having an activating lever extending through the openings in at least one of the opposed sides into the trolley track, such that the limit switches are activated upon the activating lever being struck by one of the trolley plate and the channel engaging guide means as the trolley moves along the trolley track.

5,544,692

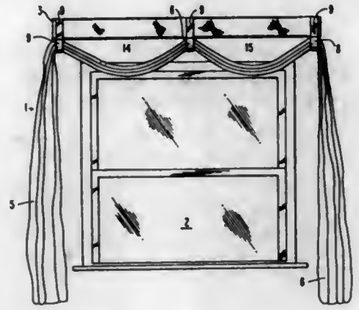
CURTAIN DRAPING HARDWARE AND METHOD FOR DRAPING CURTAINS

Dannie L. McMichael, West Kingston, R.I., assignor to Kenney Manufacturing Company, Warwick, R.I.

Continuation of Ser. No. 101,498, Aug. 3, 1993, abandoned. This application Apr. 12, 1995, Ser. No. 420,628

Int. Cl.[6] A47H *1/00*

U.S. Cl. 160—349.2 **22 Claims**



12. A draped curtain comprising:

a curtain rod having a lower lip,

a curtain,

attachment means for attaching the curtain to the curtain rod, whereby the front of the curtain rod is covered by the curtain,

a curtain holder that holds a portion of the curtain, the curtain holder being attached to the lower lip of the curtain rod by releasable attachment means, wherein the curtain holder may be disposed at any one of a plurality of positions along the length of the curtain rod, wherein the curtain holder may be moved along the length of the curtain rod to another of the plurality of positions along the curtain rod, and wherein the curtain holder may be removed from the curtain rod by releasing the releasable attachment means from the lower lip of the curtain rod.

5,544,693

PROCESS AND APPARATUS FOR MAKING SOLID SAMPLES OF MOLTEN MATERIAL FOR ANALYSIS OR THE LIKE

Pierre Begin; Denis Choquette, and Rejean Tremblay, all of Quebec, Canada, assignors to Alcan International Limited, Montreal, Canada

Filed Dec. 14, 1994, Ser. No. 355,596

Int. Cl.[6] B22D *2/00;* G01N *1/14*

U.S. Cl. 164—4.1 **12 Claims**



1. A process of obtaining an homogeneous solid sample suitable for analysis from a pool of a molten material having a particular heat capacity, comprising:

providing a tubular element having an internal bore forming a mould for a sample of said molten material, said mould having a length and maximum thickness defining an elongated shape such that a ratio of said length to said maximum thickness of said shape is at least 2:1;

rapidly drawing an amount of said molten material from said pool into said tubular element to fill said mould;

conducting heat from said sample at a rate fast enough to solidify said sample in said mould in a period of two seconds or less from commencement of withdrawal of said sample from said molten pool, said rate of heat conduction being assured by choosing a substance for said tubular element that has a heat capacity such that the ratio of the heat capacity of said sample to the heat capacity of said substance is within the range of 1:10 to 1:450; and

removing said solidified sample from said mould.

5,544,694

APPARATUS AND A PROCEDURE FOR SHOT-HOOD CLEANING DURING THE PRODUCTION OF CASTING MOLDS OR CORE PACKETS THAT ARE READY FOR CASTING

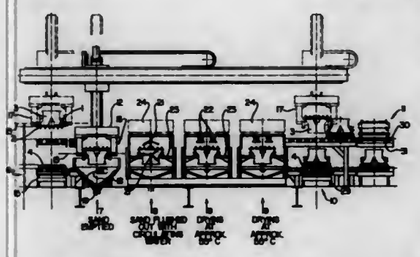
Werner Landua, and Wolfgang Schimpf, both of Mannheim, Germany, assignors to Adolf Hottinger Maschinenbau GmbH, Mannheim, Germany

Filed Jul. 5, 1994, Ser. No. 270,267

Claims priority, application Germany, Jul. 9, 1993, 43 22 986.7

Int. Cl.[6] B22C *15/20;15/23*

U.S. Cl. 164—20 **26 Claims**



1. An apparatus for cleaning shot hoods (3) of the type comprising a shot plate (1) and shot nozzles (2) extending outwardly from one side of the shot plate, and which are adapted for use in the manufacture of casting molds or core pockets of sand and that are ready for casting, said apparatus comprising: a delivery system (5); manipulator means (12); a transfer station (6); an emptying station (7); a flushing station (8); a drying station (9); and an exit station (10)

wherein the delivery system (5) for supporting the shot hoods with the nozzles positioned downwardly and for delivering the same to the transfer station (6),

the manipulator means (12) for lifting each shot hood from the transfer station and rotating the lifted shot hood through approximately 180° about a horizontal axis so that the nozzles point upwardly, and serially delivering the rotated shot hood to the emptying station (7), the flushing station (8), and the drying station (9), then rotating the shot hood through approximately 180° about the horizontal axis so that the nozzles again point downwardly, and then delivering the shot hood to the exit station (10).

5,544,695

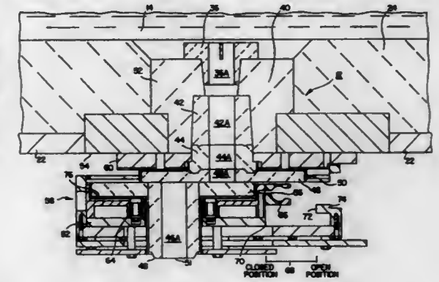
ANTIVORTEXING NOZZLE SYSTEM FOR POURING MOLTEN METAL

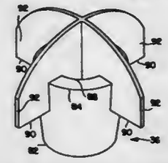
Michael Harasym, 184 Hunt Valley Cir., Berwyn, Pa. 19312

Continuation-in-part of Ser. No. 69,896, Jun. 1, 1993, abandoned. This application Dec. 6, 1993, Ser. No. 162,749

Int. Cl.[6] B22D *41/16;41/50*

U.S. Cl. 164—437 **2 Claims**





1. In combination, an antivortexing device and a metal pouring vessel, said vessel having a horizontal base surface and a refractory lining including an outlet orifice having a central opening therein for the passage of molten metal therethrough, said antivortexing device comprising a housing defining an opening corresponding to the central opening and at least one straight vane above the horizontal base surface of the vessel and extending completely across and beyond the central opening for interacting with molten metal flowing therethrough, said antivortexing device being located at an inlet region of the central opening.

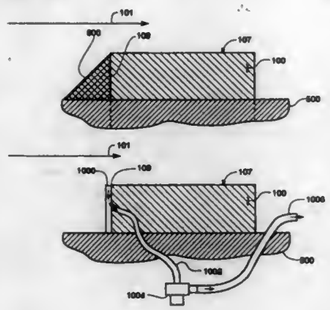
2. In combination, a metal pouring vessel having a horizontal base surface and a refractory lining, a stopper rod assembly and an antivortexing means, the metal pouring vessel having a pouring orifice comprising an inlet portion, an outlet portion, an opening extending between the inlet and the outlet portions defining a passage for the flow of molten metal therethrough, and a stopper rod assembly for selectably controlling flow of molten metal through the opening, the stopper rod having a plurality of vanes extending radially outward from a tip region thereof, the antivortexing means being located in the opening adjacent the inlet portion and comprising a housing defining a second central opening for receiving the tip region of said stopper rod and a plurality of vanes extending above the base surface of said vessel and extending radially toward the second opening, said vanes on said stopper rod and on said antivortexing means interacting with molten metal flowing through said second opening.

5,544,696

ENHANCED NUCLEATE BOILING HEAT TRANSFER FOR ELECTRONIC COOLING AND THERMAL ENERGY TRANSFER

John E. Leland, Beavercreek, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 1, 1994, Ser. No. 269,738
Int. Cl.[6] F28F *13/02*
U.S. Cl. 165—80.4 20 Claims



1. The method of cooling an electronic part with nucleate boiling in a flowing stream of coolant fluid comprising the steps of:

disposing said electronic part in said flowing stream with a major surface portion thereof extending substantially parallel with said flowing stream and a lesser minor surface portion thereof extending substantially perpendicular to said flowing stream in an upstream-most location of said part;

whereby nucleate boiling of said coolant fluid tends to occur at each of said major and minor surface portions and at any additional coolant exposed surface portions of said electronic part and said nucleate boiling at said upstream-most lesser minor surface portion together with said flowing stream of coolant fluid tends to dispose an undesirable vapor film blanket from said lesser minor surface portion nucleate boiling over said major surface portion of said electronic part; and

precluding said undesirable vapor film blanket disposition, to increase and stabilize nucleate boiling cooling of said electronic part major surface portion, by excluding said coolant fluid from boiling contact with a predetermined portion of said lesser minor surface portion of said electronic part.

17. Nucleate boiling electronics cooling apparatus comprising the combination of:

a thermal energy dissipating electronic part member having adjoining small and larger external surface portions that are non-coplanar in physical disposition;

a moving stream of nucleate boiling vaporizable coolant fluid;

means for mounting said electronic part within said coolant fluid moving stream with said small surface portion in an upstream-most position and with said moving stream extending along said larger surface portion; and

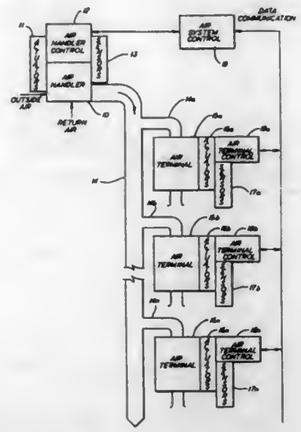
means for limiting the amount of vapor blanket coverage of and cooling fluid isolation of said larger surface portion from boiling vapor generation occurring at said upstream small surface portion in said cooling apparatus.

5,544,697

DIFFERENTIAL TEMPERATURE CONTROL

William E. Clark, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Division of Ser. No. 91,370, Aug. 26, 1987, Pat. No. 4,890,666, which is a continuation of Ser. No. 762,002, Aug. 2, 1985, abandoned, which is a continuation-in-part of Ser. No. 691,730, Jan. 16, 1985, Pat. No. 4,533,080, which is a continuation of Ser. No. 528,813, Sep. 2, 1983, abandoned. This application Nov. 27, 1987, Ser. No. 125,919
Int. Cl.[6] F25B *29/00*
U.S. Cl. 165—209 16 Claims



1. A method for controlling an air distribution system including a plurality of zones which are supplied with heated or cooled air by an air handler which supplies air to the zones through air terminals comprising the steps of:

determining the temperature in each zone;

comparing the temperature in each zone with a corresponding heating and cooling set point for the zone, and responsive thereto determining whether each zone requires heating or cooling;

determining whether the majority of the zones require heating or cooling and responsive thereto placing all of the terminals in a heating or cooling mode of operation;

supplying heated or cooled air in accordance with the mode of operation of the terminals;

comparing the temperature in each zone with the set point corresponding to the mode of operation to determine terminal satisfaction in each zone which is defined by the zone being at the set point corresponding to the mode of operation or within a predetermined dead band centered on the set point corresponding to the mode of operation;

operating each of the terminals so as to achieve terminal satisfaction; and

controlling the air handler to supply air to enable the terminals to achieve terminal satisfaction.

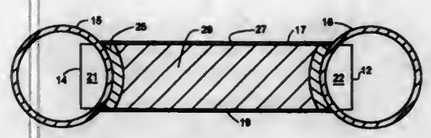
5,544,698

DIFFERENTIAL COATINGS FOR MICROEXTRUDED TUBES USED IN PARALLEL FLOW HEAT EXCHANGERS

Roger Paulman, Barrington, Ill., assignor to Peerless of America, Incorporated, Chicago, Ill.

Filed Mar. 30, 1994, Ser. No. 220,159
Int. Cl.[6] F28F *19/02*
U.S. Cl. 165—133 21 Claims

1. An elongated microextruded tube having two side surfaces, front and trailing edge surfaces and two ends which are each



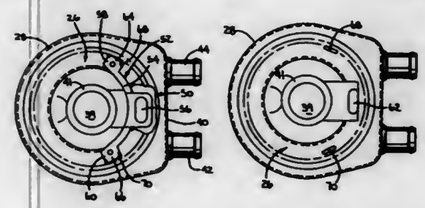
inserted into aligned slots in headers to complete a heat exchanger assembly, wherein said tube includes a first coating composition containing an adhesive binder vehicle, flux material and brazing alloy deposited on the side surfaces adjacent each of the ends of said tube, with said first coating composition on the side surfaces structurally arranged to engage the aligned slots in the headers to align and to control the depth of insertion of each of the ends of the tubes into the headers, with each of the side surfaces of said microextruded tube having a second side surface coating containing an adhesive binder vehicle, flux material, zinc and silicon extending the length of side tube between said first coating, and with each of the front and trailing edge surfaces having a third surface coating composition containing adhesive binder vehicle, flux material and zinc.

5,544,699

OIL COOLER WITH A SELF-FASTENING, SELF-ORIENTING PRESSURE RELIEF VALVE

Kevin J. Robers, Racine; Richard A. Breti, Union Grove; Lawrence W. Gabbey, Racine; William J. Kerkman, Racine, and Tod T. Kersher, Racine, all of Wis., assignors to Modine Manufacturing Company, Racine, Wis.

Filed Feb. 10, 1995, Ser. No. 386,418
Int. Cl.[6] G05D *23/00*
U.S. Cl. 165—283 11 Claims



9. In an oil cooler including a housing, a coolant inlet to the housing, and coolant outlet from the housing, a housing surface adapted to be sealed against an oil filter, a plurality of interconnected heat exchange units within said housing, an oil inlet to one of said units, an oil outlet from another of said units, an oil bypass through at least some of said units, a bypass outlet in said housing surface and a bypass valve normally closing said bypass outlet, the improvement wherein said bypass valve comprises:

a generally C-shaped, sheet-like resilient flapper having ends;

a valve element intermediate the ends of said flapper and sized to close the bypass outlet; and

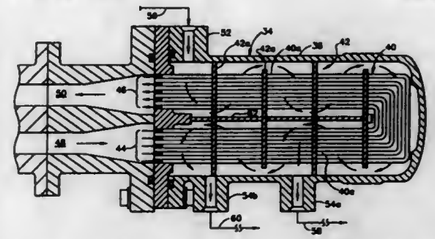
cooperating means at or near said ends and on said surface for connection together to mount said flapper on said surface and to at least nominally locate said valve element with respect to said bypass outlet.

5,544,700

METHOD AND APPARATUS FOR PREFERENTIAL COOLING

John G. Shagoury, Reading, Mass., assignor to General Electric Company, Cincinnati, Ohio

Filed Aug. 22, 1994, Ser. No. 293,619
Int. Cl.[6] F02C *7/06*
U.S. Cl. 165—139 7 Claims



1. A heat exchanger for exchanging heat between a first fluid and a different temperature second fluid in a gas turbine engine comprising:

a shell including a flow divider separating said shell into two compartments;

a first circuit disposed in said shell for channeling said first fluid, and having a plurality of parallel flow tubes aligned together at one end thereof to collectively define a primary inlet and aligned together at an opposite end thereof to collectively define a primary outlet;

said flow tubes being generally U-shaped in configuration with parallel legs thereof straddling said shell divider for positioning said primary inlet and said primary outlet on opposite sides of said divider;

a second circuit disposed in said shell adjacent to said first circuit for channeling said second fluid in counterflow with said first circuit for exchanging heat therebetween, and having a secondary inlet at one end disposed through said shell adjacent to said primary outlet, a first secondary outlet at an intermediate location in series flow with said secondary inlet, and a second secondary outlet at an opposite end in succession with said first secondary outlet and being disposed through said shell adjacent to said primary inlet, said first secondary outlet being disposed through said shell between said primary outlet and both said primary inlet and said second secondary outlet for discharging said second fluid therefrom at different temperatures; and

said second circuit further including a plurality of baffles spaced apart from each other inside said shell to define a serpentine crossflow channel over said flow tubes for exchanging heat between said first and second fluids flowable therethrough, said baffles extending outwardly from said divider into both said compartments for channeling said second fluid from said secondary inlet across said tubes and through said two compartments in turn for discharging a first portion of said second fluid from said first secondary outlet, and for discharging a remaining, second portion thereof from said second secondary outlet.

5,544,701

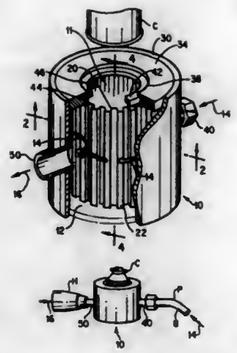
CANISTER WARMING APPARATUS

Roy W. Elder, 12585 Rock Chapel Ct., Herndon, Va. 22070

Filed Jul. 19, 1994, Ser. No. 277,585
Int. Cl.[6] F28F *7/00*
U.S. Cl. 165—80.5 22 Claims

1. A shaving cream canister warming apparatus for fluid communication between a water supply line and a shower head, the shaving cream canister warming apparatus comprising:

an inner wall having an upper end and a lower end, the inner wall sized to receive a portion of the shaving cream canister therebetween;



an outer wall spaced about the inner wall, the outer wall having an upper end and a lower end;

an upper plate having a plate aperture sized to receive a portion of the shaving cream canister therethrough, the upper plate secured to the upper end of the inner wall and to the upper end of the outer wall;

a lower plate secured to the lower end of the inner wall and to the lower end of the outer wall, the lower plate extending substantially between the inner wall to support the shaving cream canister thereon; the inner wall, the upper plate and the lower plate forming a warming chamber therebetween;

the inner wall, the outer wall, the upper plate and the lower plate forming a water jacket surrounding the warming chamber, wherein a plurality of ribs extend from the inner wall into a portion of the water jacket to expand the surface contact between the inner wall and the fluid in the water jacket;

an inlet fitting extending from the water jacket for fluid communication with the water supply line;

an outlet fitting extending from the water jacket for fluid communication with the shower head; whereby

the shaving cream canister having a shaving cream dispensing spout extends above the warming chamber for access to the shaving cream while the shaving cream canister is disposed within the warming chamber.

11. A warming apparatus having a warming chamber for accepting a canister therein, the warming apparatus comprising:

an outer wall having an upper end and a lower end;

an inner wall disposed in spaced relation within the outer wall, the inner wall having an upper end and a lower end;

an upper end plate secured between the inner wall and the outer wall, the upper end plate having an upper plate aperture sized to receive a portion of the canister therethrough, the upper plate aperture positioned between the inner wall;

a lower end plate secured to the lower end of the outer wall and extending substantially between the outer wall;

an inner plate secured to the lower end of the inner wall in spaced relation above the lower end plate, the inner plate extending substantially between the inner wall;

a warming chamber formed between the inner wall, the aperture in the upper plate and the portion of the inner plate extending between the inner wall, the warming chamber sized to receive a portion of the canister therein;

a water jacket formed between the inner wall and the outer wall, and extending beneath the warming chamber between the inner plate and the lower end plate;

an inlet fitting for admitting water from a water supply line into the water jacket; and

a water outlet fitting for expelling water from the water jacket; and

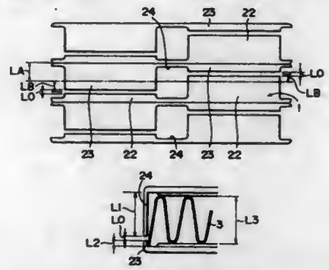
a shower head connected in fluid communication to the water outlet fitting.

5,544,702

LAMINATED HEAT EXCHANGER WITH A SINGLE TANK STRUCTURE

Kunihiko Nishishita, Konan, Japan, assignor to Zexel Corporation, Tokyo, Japan

Filed Apr. 20, 1995, Ser. No. 425,438
Claims priority, application Japan, Apr. 28, 1994, 6-114178
Int. Cl.[6] F28D *1/03*
U.S. Cl. 165—153 **11 Claims**



1. A laminated heat exchanger comprising:

a plurality of elongate tube elements, each of said tube elements having first and second longitudinal ends and tank portions formed at said first longitudinal end;

a plurality of elongate corrugated fins alternately laminated with said tube elements in a thickness direction substantially perpendicular to the longitudinal direction;

wherein each tube element of each adjacent pair of said tube elements includes a pair of fin holding portions extending in said thickness direction toward the other tube element of said adjacent pair of said tube elements;

wherein said fin holding portions of each said pair of fin holding portions are respectively provided at opposite transverse side portions of said second longitudinal end of the respective said tube element;

wherein distal ends of said fin holding portions of each said pair of fin holding portions are offset relative to one another in said thickness direction; and

wherein, for each adjacent pair of said tube elements, said fin holding portions of one of the tube elements which extend toward the other of said tube elements are respectively coplanar with and spaced apart in said thickness direction from said fin holding portions of the other of said tube elements which extend toward said one of said tube elements.

5,544,703

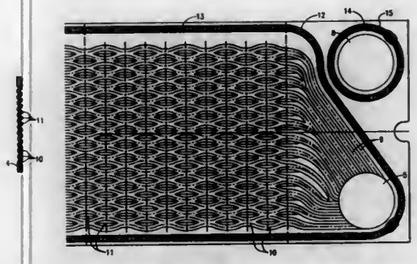
PLATE HEAT EXCHANGER

Richard Joël, Eybens; Robert Nicolas; Roussel Claude, both of Echirolles, and Chopard Fabrice, Saint Martin D'Heres, all of, France, assignors to Vicarb, France

Filed May 18, 1994, Ser. No. 245,448
Claims priority, application France, May 18, 1993, 93 06257
Int. Cl.[6] F28F *3/08*
U.S. Cl. 165—167 **6 Claims**

1. A plate heat exchanger with parallel and counterflow circulation of heat-exchange fluids, said heat exchanger comprising:

a stack of a predetermined number of ribbed plates of the same size, the plates of said stack being clamped against one another between two flanges, said ribbed plates having openings in their corners defining, within the stack, respective supply and outlet channels for the heat-exchange fluids, the plates being made of bulk graphite, previously impregnated with a resin waterproofing material, said stack of ribbed plates further including a system of ducts between each pair of adjacent plates, said system of ducts fluidly connecting said respective supply and outlet channels and each duct of said system of ducts varying in cross-sectional dimensions between the channels to control acceleration of the heat



exchange fluids and optimize the rate of heat exchange, wherein at least one of two faces of each of the plates has a profile including:

distribution regions A consisting of a plurality of half-ducts extending substantially radially over a sector between two openings of the plate corresponding to said respective supply and outlet channels, said half-ducts being formed by a machining process; and

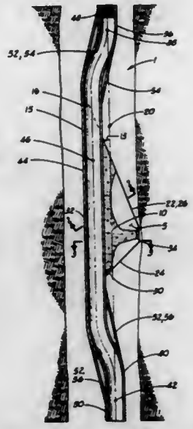
a heat-exchange region B, connecting the two distribution regions A and including a plurality of machining-formed obstacles to the progression of the fluid circulating between two adjacent plates, thereby forming said system of ducts and points of bearing of one respective plate on the immediately adjacent plate.

5,544,704

DRILLABLE WHIPSTOCK

David F. Laurel; James F. Heathman, both of Duncan, Okla., and Kenneth P. Marcel, Lafayette, La., assignors to Halliburton Company, Duncan, Okla.

Filed Mar. 23, 1995, Ser. No. 409,378
Int. Cl.[6] E21B *7/08*
U.S. Cl. 166—117.6 **24 Claims**



1. A whipstock apparatus for assisting directional drilling in a well bore, comprising:

a whipstock case;

a whipstock body disposed in said whipstock case, said whipstock body having an upper end and a lower end;

an inclined whipstock ramp defined at said upper end of said whipstock body;

a whipstock mandrel attached to said whipstock case, said whipstock mandrel having an upper portion, a center portion and a lower portion, wherein said upper portion and said lower portion are coaxial and wherein said central portion is laterally offset from said upper and lower portions; and

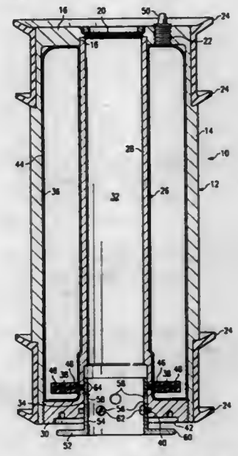
wherein said whipstock case includes a long side and a short side, and wherein said center portion of said whipstock mandrel is attached to said long side of said whipstock case.

5,544,705

METHOD FOR INJECTING FLUID INTO A WELLBORE

Richard R. Jones, Allen, and William N. Wilson, Houston, both of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jan. 13, 1995, Ser. No. 372,459
Int. Cl.[6] E21B *33/16*
U.S. Cl. 166—250.4 **26 Claims**



1. A method for containing a first fluid in an intermediate plug and disposing said intermediate plug in a wellbore, comprising the following steps in the sequence set forth:

storing said first fluid in a reservoir in said intermediate plug;

pumping said intermediate plug down a casing string in said wellbore until said intermediate plug lands on a bottom wiper plug; and

transferring said first fluid into a second fluid as said second fluid flows within said wellbore.

5,544,706

RETRIEVABLE SEALING PLUG COIL TUBING SUSPENSION DEVICE

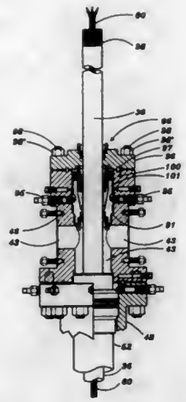
Lehman T. Reed, 3219 Candlewood Dr., Bakersfield, Calif. 93306

Filed May 24, 1995, Ser. No. 448,877
Int. Cl.[6] E21B *33/04;19/00*
U.S. Cl. 166—379 **25 Claims**

14. A method for removably installing at an operating well depth a motor-pump assembly suspended by a coil tubing with a power cable housed therein, within a production tubing string supported at a wellhead assembly and deployed down a well, the method comprising:

a. connecting a diversionary member having a vertical passageway, and a BOP to the wellhead assembly;

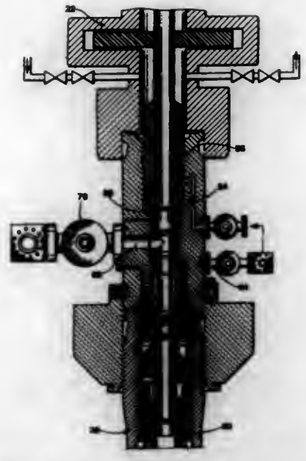
b. lowering the coil tubing with power cable therein and with the motor-pump assembly attached thereto, through the BOP and the diversionary member into the wellhead assembly and down the production tubing string until the motor-pump assembly is a small distance above the operating well depth;



c. supporting the coil tubing with split spider means positioned on top of the BOP;
d. installing an outer housing having a vertical channel around the coil tubing and on top of the split spider means, the outer housing having outer seal means for preventing fluid flow between the outer housing and the vertical passageway of the diversionary member;
e. installing a slip assembly in the vertical channel of the outer housing between the outer housing and the coil tubing;
f. setting the slip assembly in the outer housing around coil tubing;
g. attaching removable locking means to the outer housing and locking the outer housing and the slip assembly to the coil tubing with the locking means;
h. removing the split spider means supporting the coil tubing;
i. lowering the coil tubing into the well until the outer housing lands in the diversionary member; and
j. securing the outer housing to the diversionary member.

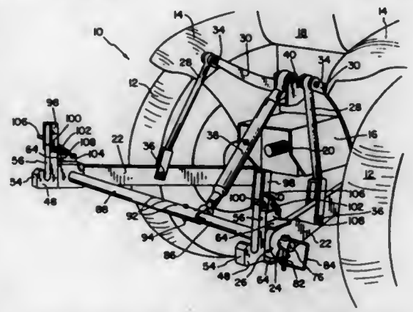
5,544,707
WELLHEAD
Hans P. Hopper, Aberdeen, Scotland, and Thomas G. Cassity, Surrey, England, assignors to Cooper Cameron Corporation, Houston, Tex.
PCT No. PCT/US93/05246, § 371 Date Mar. 16, 1994, § 102(e) Date Mar. 16, 1994, PCT Pub. No. WO93/24730, PCT Pub. Date Dec. 9, 1993
PCT Filed May 28, 1993, Ser. No. 204,397
Claims priority, application European Pat. Off., Jun. 1, 1992, 92305014
Int. Cl.[6] E21B *33/03*
U.S. Cl. 166—382 **13 Claims**

2. A wellhead comprising:
a wellhead housing;
a spool tree fixed and sealed to the housing, and having at least a lateral production fluid outlet port connected to a valve;
a tubing hanger landed within the spool tree at a predetermined angular position at which a lateral production fluid outlet port in the tubing hanger is in alignment with that in the spool tree; 'the tubing hanger and spool tree having complementary guide means to rotate the tubing hanger into the predetermined angular position relatively to the spool tree as the tubing hanger is lowered on to its landing, the guide means being provided by complementary oblique edge surfaces, one facing downwards on an orientation sleeve depending from the tubing hanger and the other facing upwards on an orientation sleeve carried by the spool tree;
a production casing hanger carried in the housing below the spool tree;



an isolation sleeve which is sealed at its lower end to the production casing hanger and at its upper end to the spool tree to define an annular void between the isolation sleeve and the housing; and
an adapter located in the annular void and providing part of a passage from a production casing annulus to a production casing annulus pressure monitoring port in the spool tree, the adapter having a valve for opening and closing the passage, the valve being operable through the spool tree after withdrawal of the isolation sleeve up through the spool tree.

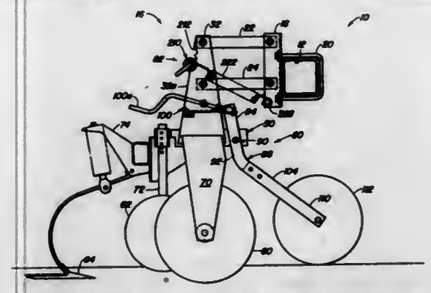
5,544,708
HITCH APPARATUS FOR TRACTOR LIFT ARMS
Kenneth L. Braun, 8110 Wayne Trace, Fort Wayne, Ind. 46816
Filed Jan. 5, 1995, Ser. No. 368,869
Int. Cl.[6] A01B *63/10;* **B60D** *1/10*
U.S. Cl. 172—272 **20 Claims**



1. A hitch apparatus for use with a pair of tractor lift arms for selectively detachably attaching implements thereto, said hitch apparatus comprising:
a pair of hook members, each of said hook members having a mouth for receiving an implement attachment shaft;
wherein each of said hook members include attachment means for selectively detachably attaching each of said hook members to one of the tractor lift arms;
wherein each of said attachment means includes a U-shaped portion forming a longitudinal channel, one of each said tractor lift arms extending into one of each said attachment means longitudinal channels;

wherein said U-shaped portions comprise a valley flat section and a pair of upright walls extending away from said valley flat section, said respective tractor lift arms selectively being received between said pair of upright walls; and,
wherein said tractor lift arms are provided with a bore and a mounting peg is provided and extends from each of said valley flat sections, said mounting peg received through said tractor lift arm bores when said lift arms are received in said channel and between said upright walls.

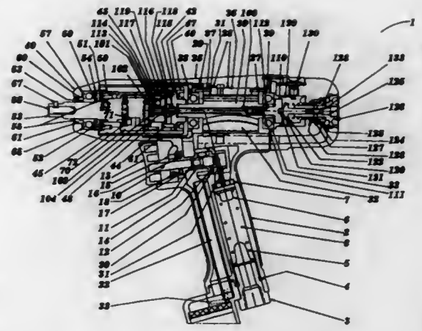
5,544,709
DOWN PRESSURE SPRING ADJUSTMENT
Terry L. Lowe, Ankeny, and James T. Noonan, Johnston, both of Iowa, assignors to Deere & Company, Moline, Ill.
Filed Apr. 17, 1995, Ser. No. 422,925
Int. Cl.[6] A01B *39/22*
U.S. Cl. 172—661 **19 Claims**



1. In a tool supporting rig for an agricultural implement supported from a frame by a parallel bar linkage rockable about a transversely extending axis, the parallel bar linkage including upper and lower links having first ends, first pivot structure connecting the first ends to a first bracket, and second ends connected to a second bracket, a spring tensioning assembly for adjustably biasing the rig a preselected direction, the spring tensioning assembly including:
an upright notched portion supported adjacent the first pivot structure, the notched portion including vertically spaced notches of preselected configuration;
a rotatable indexing member including a mating portion generally conforming to at least a portion of the configuration of the notches;
a down pressure spring connected between the rotatable indexing member and the second bracket, the down pressure spring biasing the mating portion of the indexing member into engagement with one of the notches; and
structure for selectively rotating the indexing member to move the mating portion incrementally in a vertical direction along the notches and thereby adjust the tension of the spring; wherein the notched portion comprises a saw-tooth section with straight-edged teeth extending vertically along and integral with one of the brakcets, and wherein the rotatable indexing member includes sides conforming to the area between the teeth.

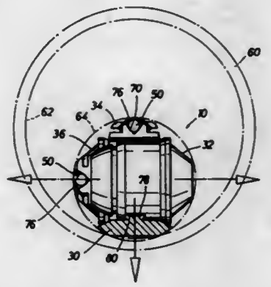
5,544,710
PULSE TOOL
Joseph R. Grosbans, Clinton; Jeffrey Spooner, West Winfield, and Seth A. Jones, Camden, all of N.Y., assignors to Chicago Pneumatic Tool Company, Utica, N.Y.
Filed Jun. 20, 1994, Ser. No. 262,638
Int. Cl.[6] B25B *21/00*
U.S. Cl. 173—176 **26 Claims**

24. A power tool comprising:
a housing;



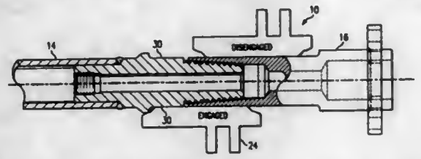
a motor within said housing;
a pulse cylinder, operatively coupled to said motor; and
an anvil, rotatably mounted with respect to said pulse cylinder, said pulse cylinder and said anvil defining a pulse chamber therebetween, said pulse chamber including a high pressure area and a low pressure area, wherein said pulse cylinder and said anvil each have a channel therein fluidically coupling said high pressure area to said low pressure area of said pulse chamber to create a pulse by intermittently locking the pulse cylinder to the anvil.

5,544,711
MULTIPHASED THROUGH TUBING STRIPGUN
John Aitken, Kenney, Tex., and Vittorio L. Orla, Provincia De Buenos Aires, Argentina, assignors to Texas Petrodet, Inc., Kenney, Tex.
Filed Feb. 2, 1995, Ser. No. 382,504
Int. Cl.[6] E21B *43/118*
U.S. Cl. 175—4.6 **19 Claims**



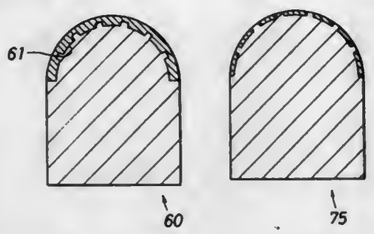
1. A through tubing stripgun well casing perforating charge assembly for well casing perforating activities, comprising:
(a) an elongate explosive resistant retrievable perforating charge support strip having an elongate external perforating charge interlocking track situate along the length thereof; and
(b) a plurality of sealed explosive well casing perforating charges each having an externally exposed interlocking mount thereon for establishing interlocking engagement with said elongate perforating charge interlocking track for support of said perforating charges externally of said perforating charge support strip and in mechanically interlocked assembly with said elongate perforating charge interlocking track and for orienting said perforating charges in selective phase orientation with respect to said elongate explosive resistant retrievable perforating charge support strip.

5,544,712
DRILL PIPE BREAKOUT DEVICE
Richard McEwen, Coyle, and Darrel W. Sparks, Perry, both of Okla., assignors to The Charles Machine Works, Inc., Perry, Okla.
Filed Nov. 18, 1994, Ser. No. 344,653
Int. Cl.[6] E21B *19/00*
U.S. Cl. 175—57 5 Claims



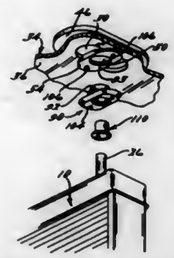
1. A mechanism for locking a pipe in a drill string for rotation with the saver sub of a drill unit, the end of the pipe threaded to the saver sub, comprising:
a slidable outer collar mounted on the saver sub for movement between a first position and a second position, the saver sub having a flat formed thereon, the outer collar having at least one continuous lug formed thereon engaging the flat on the saver sub, the continuous lug engaging the flat on the saver sub as the slidable outer collar is moved between the first position and the second position, the end of the pipe having a flat thereon, the continuous lug of the slidable outer collar engaging the flat on the pipe when the slidable outer collar is moved to the first position to secure the pipe for rotation with the saver sub, the continuous lug being simultaneously in contact with the flat on the saver sub and the flat on the end of the pipe in the first position, the flats on the saver sub and pipe being in alignment when engaged by the continuous lug.

5,544,713
CUTTING ELEMENT FOR DRILL BITS
Mahlon D. Dennis, Kingwood, Tex., assignor to Dennis Tool Company, Houston, Tex.
Continuation-in-part of Ser. No. 108,071, Aug. 17, 1993, Pat. No. 5,379,854. This application Oct. 17, 1994, Ser. No. 323,898
Int. Cl.[6] E21B *10/56*.
U.S. Cl. 175—434 6 Claims



1. A cutting element comprising:
(a) a metal carbide stud having an elongate cylindrical body portion;
(b) an outer hemispherical end portion on said stud;
(c) a layer of polycrystalline material disposed over said hemispherical end portion wherein said polycrystalline material comprises particles selected from diamond, cubic boron nitride, wurtzite boron nitride, and mixtures thereof bonded together in a unitary relationship and in contact with the hemispheric end portion; and
(d) wherein said hemispheric end portion defines a bonding surface for said polycrystalline material layer including an encircling terminal shoulder therearound so that said bonded layer is above said shoulder.

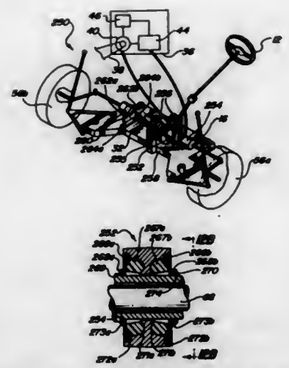
5,544,714
QUICK-CONNECT FASTENER AND VIBRATION ISOLATOR UNIT FOR ATTACHMENT OF AUTOMOTIVE COMPONENTS
Robert J. May, Livonia; Stephen E. Gaballs, Washington, and Todd S. Weakley, Waterford, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.
Filed May 18, 1994, Ser. No. 247,152
Int. Cl.[6] B60K *11/04*
U.S. Cl. 180—68.4 8 Claims



1. A quick-connect fastener for attaching a component to a support having a slot therethrough with spaced and opposing side edges facing one another, the component having a pin projecting through said slot, said fastener comprising a body member having upper and lower retainers and a neck portion integral with said upper and lower retainers to space said retainers a predetermined distance from one another, an axial opening extending through said retainers and said neck portion for receiving said pin, said lower retainer being dimensioned so that said fastener can be turned to a selected position relative to said slot in said support and inserted therethrough while said upper retainer covers at least a portion of said slot, said neck portion having first peripheral surfaces spaced from said side edges of said slot when said lower retainer is initially inserted through said slot and said pin extends through said axial opening, said neck portion further having second peripheral surfaces radially spaced from said first surfaces, said second surfaces being spaced from one another by a distance substantially equal to the spacing of said side edges of said slot opposing one another, said upper retainer having discrete gripping means so that said fastener can be physically gripped and turned on said pin to a retention position in which said upper and lower retainers secure opposing portions of said support defining said slot therebetween and said second surfaces of said neck portion physically contact said side edges of said slot in said support, said upper and lower retainers having projecting portions extending beyond the side edges of said slot when the fastener is in the retention position, and a resilient rubber-like isolator attached to and supported by said fastener body for vibrationally isolating said component from said support.

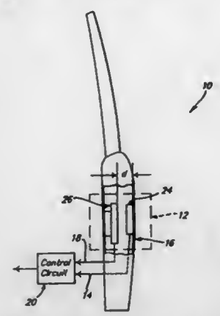
5,544,715
METHOD AND APPARATUS FOR ENHANCING STABILITY IN SERVO SYSTEMS COMPRISING HYDRO-MECHANICALLY DRIVEN ACTUATORS
Edward H. Phillips, Troy, Mich., assignor to Edward H. Phillips-Techo Corp., Troy, Mich.
Continuation of Ser. No. 69,631, Jun. 1, 1993, abandoned. This application Dec. 15, 1994, Ser. No. 357,158
Int. Cl.[6] B62D *5/06*; F16D *3/00*
U.S. Cl. 180—417 10 Claims

1. A series damping device for enhancing a shudder stability in a hydro-mechanical system, said damping device comprising:
a frame;
a hydraulic actuator having a driven member reciprocally displaceable along an axis;
a linkage assembly connected to said driven member of said actuator;



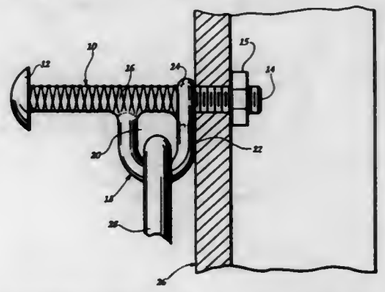
means for compliantly coupling said hydraulic actuator to one of said frame and said linkage assembly, said means for compliantly coupling having at least one first biasing element and at least one second biasing element positioned to exert a biasing force along said axis, said first biasing element being preloaded and having a first predetermined stiffness, said at least one second biasing element having a second predetermined stiffness which is less than said first predetermined stiffness, and applied only when said driven member is axially displaced by said hydraulic actuator to exert a force upon said means for coupling greater than said first predetermined stiffness of said at least one biasing member.

5,544,716
DUAL, INDEPENDENT SENSOR VEHICLE IMPACT DETECTIN SYSTEM
Craig W. White, Grosse Pointe, Mich., assignor to Automotive Systems Laboratory, Inc., Farmington Hills, Mich.
Filed Jun. 22, 1995, Ser. No. 493,713
Int. Cl.[6] B60R *21/32*
U.S. Cl. 180—274 4 Claims



1. A system for controlling actuation of a vehicle occupant safety restraint device in response to an impact with an outer surface of the vehicle comprising:
a first sensor means affixed to the outer surface of the vehicle for generating a continuous first output signal representative of a condition of the outer surface;
a second sensor means affixed to an inner surface of the vehicle for producing a second output signal if the outer surface has been deformed so as to be in contact with said second sensor means;
a processor means for monitoring said first sensor output signal comprising means for performing signal analysis on said continuous first output signal to determine whether said first output signal is indicative of an impact of sufficient severity to require actuation of the safety restraint device, and prediction means responsive to said signal analysis means for generating a third output signal at a calculated time t; and
means for actuating the occupant safety restraint device if both said second and third output signals are coexistently generated.

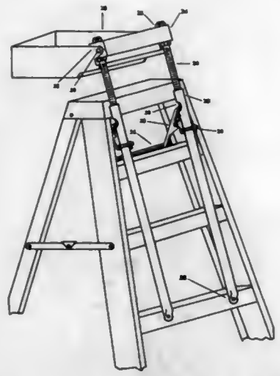
5,544,717
COMBINATION STEP BOLT AND HARNESS ATTACHMENT
George W. White, Union Mills; Robert W. Teague, Forest City; Antony D. Tennent, Charlotte, all of N.C., and James A. Robinson, Jr., Rock Hill, S.C., assignors to Duke Power Company, Charlotte, N.C.
Filed Jul. 6, 1994, Ser. No. 271,358
Int. Cl.[6] E04G *3/00*
U.S. Cl. 182—90 4 Claims



1. A combination step bolt and harness attachment for use with transmission structures comprising:
a generally longitudinally extending rod member having an enlarged head portion at one end thereof, a threaded portion at the other end thereof for mounting the combination step bolt and harness attachment to the transmission structure, and an intermediate portion having a predetermined length sufficient to receive and support the shoe of a person climbing the transmission structure, and
a flange member fixed to said rod member at a location between said threaded portion and said intermediate portion thereof, said flange member including an opening therein positioned beneath said intermediate portion of said rod and fixed to receive a hook attached to the harness of a person,
wherein said flange member and said rod member are formed as separate units and said flange member has a second opening, said second opening being sized to permit said threaded portion of said rod member to pass therethrough, whereby said flange member can be mounted to said transmission structure by said rod member.

5,544,718
LADDER LIFT WITH SWIVEL TRAY
Lawrence H. Schumacher, 35647 Larkspur Dr., Wildomar, Calif. 92595
Filed Mar. 31, 1995, Ser. No. 414,915
Int. Cl.[6] E06C *7/00*
U.S. Cl. 182—129 1 Claim

1. A ladder mounted lifting accessory, comprising:
a. two vertically parallel tubes into each a threaded shaft of smaller diameter and of greater length than said tubes is inserted to provide a sliding and support means and
b. a cross member bored at each end vertically through its' thickness to allow the upper most end of said rods shafts to be inserted and secured to by a bolting means and



c. cylindrical protrusions at each end of said cross member extending outwardly and parallel with said cross member's length and

d. a horizontal platform comprising a main body and vertical sides with two of said sides being of extended length from the main body and parallel to one another and having openings of the same size of said cylindrical protrusions to provide a mounting means to said cross member thus permitting radial motion and removal of said platform and

e. spring loaded clamps, each having a leverage and clamping ends, attached to said tubes on their undersides by a pipe clamp means allowing the clamping ends of said spring loaded clamps to engage against said shafts' threaded surface through an opening on the underside of said tubes to permit securing of said tubes at infinitely variable heights and

f. a release bar means suspended horizontally across the distance between said spring loaded clamps and attached to the leverage ends of said spring loaded clamps by a bolting means whereby said clamps can be disengaged from said threaded shafts simultaneously to permit said threaded shafts to slide freely within said parallel tubes.

5,544,719

LIFT TRUCK FOR TRANSFERRING REELS TO A USER MACHINE

Silvano Boriani, and Alessandro Minarelli, both of Bononia, Italy, assignors to G.D Societa' Per Azioni, Bononia, Italy

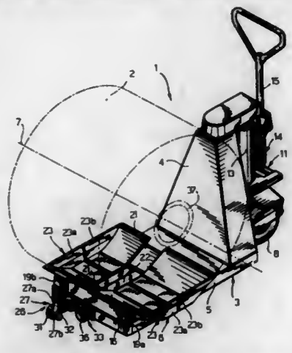
Filed Mar. 30, 1994, Ser. No. 220,368

Claims priority, application Italy, Apr. 9, 1993, BO93A0139

Int. Cl.[6] B66F *9/12*

U.S. Cl. 187—237 **9 Claims**

1. A lift truck for transferring reels to a user machine; the truck



comprising a vertically adjustable supporting platform; actuating means for vertically adjusting the position of the supporting platform in relation to a supporting surface of the truck; container means for receiving at least one reel on edge; guide means interposed between said supporting platform and said container means, for enabling the container means to travel, in relation to the supporting platform and in a given direction, between two limit positions; and elastic push means for pushing said container means into a first of said limit positions.

5,544,720

ENTRAINING AND UNLATCHING APPARATUS FOR ELEVATOR DOORS

Peter A. Spiess, Meggen, Switzerland, assignor to Inventio AG, Hergiswil NW, Switzerland

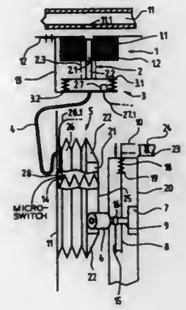
Filed Jan. 26, 1995, Ser. No. 378,597

Claims priority, application European Pat. Off., Feb. 21, 1994, 94102545.4

Int. Cl.[6] B66B *13/12*

U.S. Cl. 187—319 **19 Claims**

1. An entraining and unlatching apparatus for elevators compris-



ing:

an actuator means for mounting on a wall of an elevator car, said actuator means being selectively actuatable for latching and unlatching a door of the elevator car;

an entraining and unlatching cam for mounting on the elevator car door, said cam being movable in a generally horizontal direction for extending toward and retracting from entraining and unlatching rollers mounted on an elevator shaft door when the elevator car is adjacent the shaft door;

a first variable volume means in said actuator means;

a second variable volume means in said entraining and unlatching cam; and

a flexible connector connected between said first and second variable volume means, said connector and said first and second variable volume means being in fluid communication and retaining a predetermined volume of fluid, whereby when said actuator means is actuated to latch the car door, said fluid flows in one direction between said first and second variable volume means to retract said cam and when said actuator means is not actuated, the car door is unlatched and said fluid flows in an opposite direction between said first and second variable volume means to extend said cam.

5,544,721

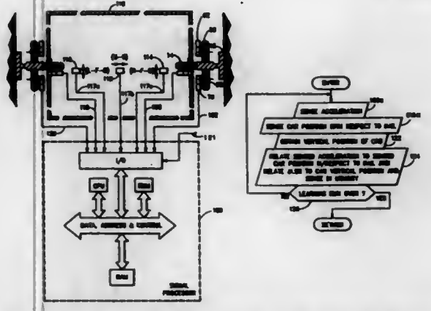
METHOD AND APPARATUS FOR ADJUSTING AN ELEVATOR CAR BASED ON STORED HORIZONTAL DISPLACEMENT AND ACCELERATION INFORMATION

Randall K. Roberts, Amston, Conn., assignor to Otis Elevator Company, Farmington, Conn.

Continuation of Ser. No. 67,414, May 25, 1993, abandoned, which is a continuation of Ser. No. 668,546, Mar. 13, 1991, abandoned. This application Jul. 25, 1994, Ser. No. 279,826

Int. Cl.[6] B66B *1/44*

U.S. Cl. 187—394 **6 Claims**



6. A method for controlling an elevator, comprising the steps of:

providing elevator car vertical position signals with elevator car vertical position indicating means depending on a vertical position of the elevator car along opposed guide rails in a hoistway;

providing, in response to the elevator car vertical position signals, learned-rail memory read signals from an elevator car control means;

retrieving, in response to the learned-rail memory read signals, learned-rail information signals which contain learned information about a sensed horizontal displacement of the elevator car in relation to opposed guide rails and a sensed horizontal acceleration of the elevator car, the learned-rail information signals being indexed according to the vertical position of the elevator car along the opposed guide rails from a learned-rail memory means;

providing horizontal adjustment control signals from the elevator car control means in response to the learned-rail information signals, the horizontal adjustment control signals depending upon the vertical position of the elevator car along the opposed guide rails, the sensed horizontal displacement of the elevator car in relation to the opposed guide rails and the sensed horizontal acceleration of the elevator car; and

adjusting the elevator car horizontally in relation to the opposed guide rails in the elevator hoistway with actuator means in response to the horizontal adjustment control signals.

5,544,722

GUIDE ASSEMBLY

Ian A. McKenzie, Transvaal, South Africa, assignor to Continental Aktiengesellschaft, Hanover, Germany

Filed Sep. 16, 1994, Ser. No. 306,948

Int. Cl.[6] B66B *7/04*

U.S. Cl. 187—410 **19 Claims**

1. A guide assembly for receiving a lateral load, the guide assembly comprising:

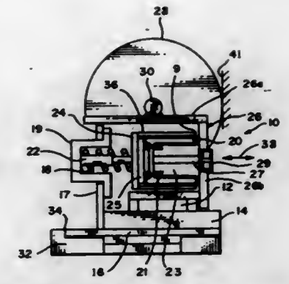
a base having a mounting bracket;

a frame;

coupling means for coupling said frame to said base so as to permit movement by said frame relative to said base;

first and second biasing means;

said first biasing means being mounted between said mounting bracket and said second biasing means;



said second biasing means being mounted between said first biasing means and said frame;

receiving means mounted on said frame to receive said lateral load thereby causing said frame to transmit said load to said biasing means and move relative to said base; and,

said coupling means including: a slideway mounted on said base; and, a slider for supporting said frame and slidably engaging said slideway so as to permit linear movement of said frame relative to said base.

5,544,723

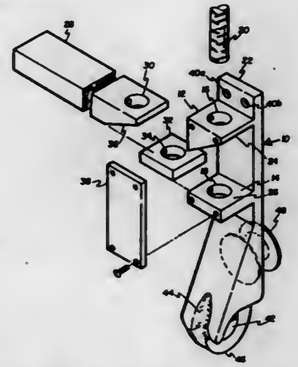
SELF-BELAYING APPARATUS

Donald J. Gettemy, 1350 Sioux, Los Alamos, N.M. 87544

Filed May 17, 1995, Ser. No. 443,326

Int. Cl.[6] B65H *59/24*

U.S. Cl. 188—65.4 **4 Claims**



1. A self-belaying apparatus comprising in combination:

a. an elongated base having an upper end and a lower end, a first axis along its long dimension, a first flange located closest to the upper end of said base, and a second flange spaced-apart from the first flange, the first flange and the second flange each having a circular hole centered along the first axis and adapted for slidably receiving a climbing rope, the first flange further having a tapered face opposing a flat face of the second flange;

b. an elongated bar having an axis along its long dimension and a tapered portion at one end thereof through which a circular hole having its axis perpendicular to the second axis and adapted for slidably receiving the climbing rope, is placed, said bar being located between the first flange and the second flange in said base such that the axis of the hole in said bar is generally colinear with the first axis and the tapered portion of said bar faces the flat face of the second flange and tapers in the same general direction as the tapered face of the first flange; and

c. a generally flat plate having a circular hole therein adapted for slidably receiving the climbing rope with some restriction, said plate being located adjacent to the second flange of said base such that the axis of the hole in said plate is generally colinear with the first axis, whereby the climbing rope may slide substantially unhindered through said apparatus in the direction from the upper end to the lower end of said base, while when moving in the opposite direction, the rope causes said plate to move against the tapered portion of said bar which in turn forces the holes in said bar and said plate to become out of alignment with the holes in the first flange and the second flange, thereby causing the climbing rope to reversibly bind in said apparatus.

5,544,724

HYDRAULIC BRAKE SYSTEM HAVING SERVO PRESSURE GENERATOR ACTIVATED BY MOVEMENT OF BRAKING DEVICE DUE TO TORQUE TRANSMITTED FROM ROTOR TO BRAKE PAD

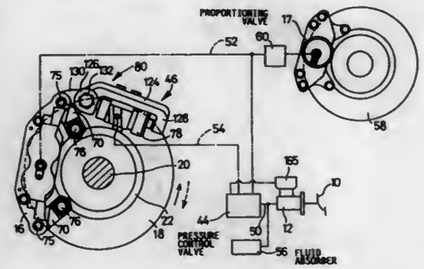
Ryoichi Kurasako, Gotenba, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi-ken, Japan

Filed Oct. 31, 1994, Ser. No. 331,702

Claims priority, application Japan, Nov. 4, 1993, 5-275666; Dec. 29, 1993, 5-355366

Int. Cl.[6] F16D *55/14;55/46*

U.S. Cl. 188—72.2 **20 Claims**



1. A hydraulically operated brake system comprising:

an operator-controlled brake operating member;

an operator-controlled pressure generating device for generating a pressure of a brake fluid depending upon an operation of said brake operating member;

a braking device having a brake pad, a pad support member supporting said brake pad, and a brake cylinder operated by a pressure of the brake fluid to force said brake pad against a disc rotor, said braking device being attached to a stationary member near said disc rotor, rotatably in a rotating direction of the disc rotor;

a servo pressure generating device activated by a torque transmitted to said pad support member from said disc rotor during operation of said brake cylinder, to generate a servo pressure of the brake fluid;

a pressure control valve having a first pressure chamber connected to said operator-controlled pressure generating device, a second pressure chamber connected to said braking device and a third pressure chamber connected to said servo pressure generating device, said pressure control valve operating to effect selective connection and disconnection of said first, second and third pressure chambers, for controlling a pressure of the brake fluid in said second pressure chamber such that the pressure in the second pressure chamber is higher than and relating to the pressure in said first pressure chamber;

said pressure control valve inhibiting a flow of the brake fluid from said braking device toward said servo pressure generating device when the pressure in said servo pressure generating device is lower than the pressure in said braking device;

a first by-pass passage for connecting said braking device and said servo pressure generating device while by-passing said pressure control valve; and

a shut-off valve provided in said first by-pess passage, said shut-off valve being open when the pressure in said operator-controlled pressure generating device is lower than a predetermined level, and closed when the pressure in said operator-controlled pressure generating device is higher than said predetermined level.

5,544,725

VIBRATION DAMPER HAVING A SPRING PLATE, TUBE AND BASE WHICH ARE JOINED BY A WELD

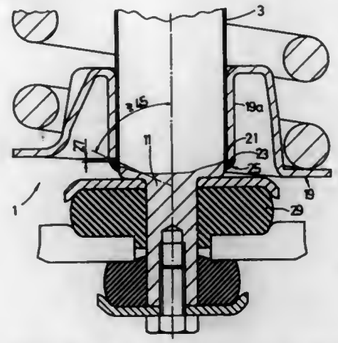
Günther Handke, Euerbach, and Georg Memmel, Forst, both of, Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

Filed Mar. 22, 1995, Ser. No. 407,980

Claims priority, application Germany, Mar. 22, 1994, 44 09 661.5

Int. Cl.[6] F16F *9/16;9/54;* **B60G** *13/00;* **B62D** *33/06*

U.S. Cl. 267—221 **19 Claims**



1. A vibration damper for a motor vehicle, said vibration damper comprising:

a tube;

a chamber disposed at least partially within said tube, said chamber containing a damping fluid;

a piston rod sealingly projecting into said chamber and being axially displaceable within said chamber;

a piston being attached to said piston rod, said piston being slidably disposed within said chamber to sealingly divide said chamber into first and second work chambers;

means for permitting fluid communication between said first chamber and said second chamber;

said tube comprising a first end and a second end;

said first and second end being disposed a substantial distance from one another;

said chamber being substantially disposed between said first end and said second end of said tube;

said chamber having a first end and a second end;

said first end of said chamber being disposed near said first end of said tube;

said second end of said chamber being disposed near said second end of said tube;

said first end comprising first means for connecting said vibration damper to a first body;

said second end comprising second means for connecting said vibration damper to a second body;

a spring for extending said vibration damper;

said spring comprising a first end and a second end;

a spring plate disposed at said first end of said spring;

said tube having an outer portion surrounding at least a portion of said chamber;

a base being disposed at said first end of said tube for sealing said first end of said tube;

said spring plate being disposed at said first end of said tube;

each of said base, said spring plate and said tube having a surface area; and

a continuous weld contacting and connecting each of said surface areas of said base, said spring plate and said tube at said first end of said tube.

5,544,726

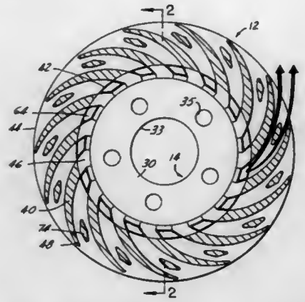
BRAKE ROTOR WITH FLOW THROUGH VENTILATION

Daron Topouzian, West Bloomfield, and James E. Riley, Northville, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 6, 1994, Ser. No. 301,447

Int. Cl.[6] F16D *65/12*

U.S. Cl. 188—264 A **2 Claims**



1. A one-piece ventilated brake rotor for a disc brake assembly for use in a motor vehicle, said brake rotor comprising:

an integral hub portion and inner and outer annular braking portions constructed to be engaged by a pair of brake shoes;

said annular braking portions being spaced apart by internal radially extending circumferentially spaced primary fins that define radially extending passages;

said primary fins extending radially outwardly to a tip substantially adjacent an outer periphery of said inner and outer annular braking portions;

said primary fins extending radially inwardly beyond an inner periphery of said inner and outer annular braking portions terminating at inwardly extending ends;

said inwardly extending ends of said primary fins extending from said inner and outer annular braking portions to said integral hub portion, said inwardly extending ends of said primary fins being operative as cantilever supports for said inner and outer annular braking portions;

said inwardly extending ends of said primary fins defining a series of circumferentially spaced inlets, each inlet includes a first, second and third inlet portion disposed between said annular braking portions and said integral hub portion, each of said inlets being in communication with one of said radially extending passages;

said primary fins being generally arcuate and having a taper when viewed in an axial direction, said taper being narrowest at radially outer ends of said primary fins, whereby said air passages have a generally arcuate configuration; and

a circumferentially arranged series of short secondary fins, one of said secondary fins being disposed in an outer end of each of said radially extending passages where by bifurcating said radially extending passages and providing a combined cross-sectional area substantially equivalent to that of said inner end of said radially extending passages;

said inner and outer annular braking portions being of substantially the same radial dimension and thickness, and said primary fins being arranged whereby when the brake rotor is being engaged by said brake pads, thermal stresses in said brake rotor are minimized by even thermal conduction of heat between said inner and outer annular braking portions and convective cooling through said axially extending passages and said radially extending passages.

5,544,727

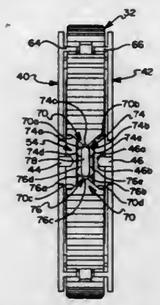
SYNCHRONIZER WITH SELF-ENERGIZING

Eugene R. Braun, Royal Oak, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 172,796, Dec. 27, 1993, abandoned. This application Aug. 15, 1994, Ser. No. 293,761

Int. Cl.[6] F16D *23/06*

U.S. Cl. 192—48.91 **22 Claims**



1. A clutch for frictionally synchronizing and positive connecting first and second drives disposed for relative rotation about a common axis; the clutch including:

first jaw means axially movable from a neutral position to an engaged position with second jaw means for positive connecting the drives in response to engaging movement of the first jaw means by an axially directed shift force (F_a), the first jaw means including a central opening having internal splines with axially extending flank surfaces slidably mating continuously with axially extending flank surfaces of external splines for preventing relative rotation between the internal and external splines, and the external splines affixed against rotation and axial movement relative to the first drive;

a first friction surface axially movable into engagement with a second friction surface in response to the engaging movement of the first jaw means for producing a synchronizing torque (T_o);

first and second angled blocker surfaces movable into engagement in response to the engaging movement of the first jaw means for preventing asynchronous engagement of the jaw means, for transmitting the shift force (F_a) to the first friction surface to effect an engagement force of the friction surfaces, and for producing a torque counter to the synchronizing torque for moving the first and second blocker means out of engagement as synchronization is reached;

first and second self-energizing means operative when engaged to react the synchronizing torque therebetween for producing an additive axial force (F_a) in the direction of the shift force (F_a) for increasing the engagement force of the friction surfaces, the first and second self-energizing means including means for directing the additive axial force (F_a) to the first friction surface via the blocker surfaces; the improvement comprising:

a hub including an outer circumference defining the external splines;

a first baulkring including the first friction surface and a plurality of the second blocker surfaces, the baulkring being axially movable away from the hub toward the second friction surface;

the first jaw means central opening and internal splines defined by a shift sleeve;

the first self-energizing means including a plurality of first self-energizing ramp surfaces defined in the hub outer circumference;

a plurality of rigid members mounted for limited rotation relative to the shift sleeve and mounted for non-axial movement relative to the shift sleeve, each rigid member including one side defining a second angled self-energizing ramp surface of the second self-energizing means and another side defining the first blocker surface, each rigid member interposed one of the second blocker surfaces and one of the first self-energizing ramp surfaces such that both the axially directed shift force (F_s) and the additive axial force (F_a) are transferred across the rigid member.

5,544,728

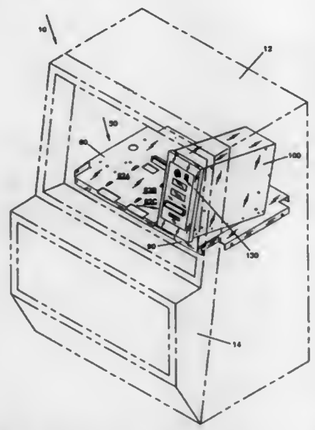
RETROFIT BILL VALIDATOR ASSEMBLY

Stanley P. Dabrowski, 8068 W. Sahara Ave., Suite C, Las Vegas, Nev. 89117

Continuation-in-part of Ser. No. 23,371, May 24, 1994, Pat. No. Des. 360,227, and a continuation-in-part of Ser. No. 23,391, May 24, 1994, and a continuation-in-part of Ser. No. 23,396, May 24, 1994, Pat. No. Des. 360,22. This application Jul. 11, 1995, Ser. No. 500,548

Int. Cl.[6] G07F *7/04;9/10*

U.S. Cl. 194—206 **2 Claims**



1. A bill validator assembly for use as a conversion assembly for converting a coin and token only slot machine into a slot machine that can also accept paper currency comprising:

a) a mounting plate having a plurality of slot reel stations positioned thereon in close proximity to one another so as to provide sufficient space in the interior of the slot machine to receive a bill validator unit therein;

b) a bill validator unit mounted on the mounting plate adjacent to the slot reel stations;

c) the bill validator unit comprising:

1) a face plate having a bill insert shelf and a first display for showing any accrued credits;

2) a bill validator mounted behind the face plate for validating currency inserted through the bill insert shelf; and

3) a bill cassette mounted to a base and positioned behind the bill validator for stacking and storing currency which has been validated.

5,544,729

CURVED ESCALATOR

Erik Brunn, Deimenhorst, Germany, assignor to O&K Rolltreppen GmbH, Hattingen, Germany

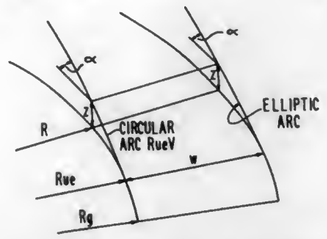
PCT No. PCT/EP93/02530, § 371 Date Jan. 13, 1995, § 102(e) Date Jan. 13, 1995, PCT Pub. No. WO94/07787, PCT Pub. Date Apr. 14, 1994

PCT Filed Sep. 18, 1993, Ser. No. 284,520

Claims priority, application Germany, Sep. 25, 1992, 42 32 113.1

Int. Cl.[6] B66B *21/06*

U.S. Cl. 198—328 **6 Claims**



1. Curved escalator consisting of a stair section (1), which is curved when viewed in plan and which is provided with a central region (1*a*) with a predetermined constant angle of inclination, upper and lower stair landing regions (1*c*) essentially with an angle of inclination that is zero as well as transition regions (1*b*) which connect the central region (1*a*) with the upper and lower stair landing regions (1*c*) and which are provided with changing angles of inclination for a smooth connection of these regions, wherein in the lower and upper stair landing region (1*c*) a plurality of horizontally arranged steps (21) may be provided, guide curves (23, 23'), which ensure that the step treads in the regions (1*a*, 1*b*, 1*c*) are oriented horizontally, and inner and outer drive chains (24, 24') that are fixedly linked to the steps (21) and that are provided with a constant length between the steps, consisting of a plurality of chain links for driving the steps on an outer and inner arc (25, 25'), wherein

the arc of the central region (1*a*) when viewed in plan has a constant radius R and the angular velocities of the inner drive chain (24) and of the outer drive chain (24') while in the central region are the same at any given time,

the arc of the upper and lower stair landing regions (1*c*) when viewed in plan has a constant radius Rg which is made larger compared to R, and the angular velocities of the inner drive chain (24) and of the outer drive chain (24') are the same everywhere in the upper and lower stair landing regions as well,

characterized in that the arc in each of the upper and lower transition regions (1*b*) when viewed in plan is provided with a constant radius (Rue) which is between R and Rg and that the angular velocities of the inner drive chain (24) and of the outer drive chain (24') in each of these respective upper and lower transition regions are the same overall, said steps (21) having skirts which are shaped to compensate for the temporary angular displacements of the drive chains (24, 24') occurring in the transition regions (1*b*).

5,544,730

TENSION RELEASE FOR PASSENGER CONVEYOR

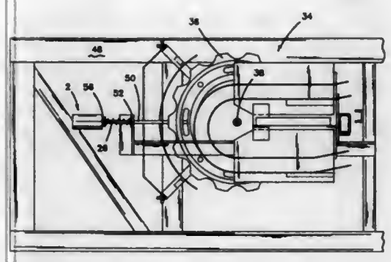
Willy Adrian, Obernkirchen, and Klaus Bruehl, Hanover, both of, Germany, assignors to Otis Elevator Company, Farmington, Conn.

Filed Mar. 1, 1994, Ser. No. 204,109

Int. Cl.[6] B65G *43/00*

U.S. Cl. 198—336 **9 Claims**

1. An escalator or moving walkway passenger conveyor comprising:



a) a handrail;

b) a handrail drive assembly including first spring means which applies a compressive force to the handrail;

c) a step chain assembly including a step chain and a step chain sprocket; and second spring means operably connected to said sprocket for applying tension to said step chain; and

d) first detensioning means connected to said first spring means and operable to disable the latter from applying said compressive force to the handrail during periods of time when motive power to the conveyor is interrupted.

5,544,731

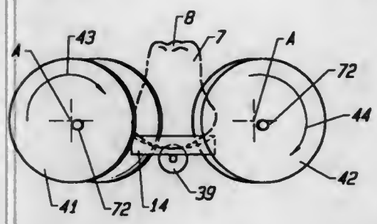
AGITATING APPLE ORIENTOR

Edward E. Ross, San Rafael, and Konrad E. Meissner, Lafayette, both of Calif., assignors to Atlas Pacific Engineering Company, Pueblo, Colo.

Filed Mar. 27, 1995, Ser. No. 410,678

Int. Cl.[6] B65G *47/24*

U.S. Cl. 198—387 **8 Claims**



1. In an apple orientor used to orient round and elongated apples with either the stem end or the blossom end pointed downwardly, including a support movable over a path, at least one receptacle in said support having an open bottom, the improvement comprising:

agitator means carried above said receptacle comprising at least one movable member which continuously agitates, lifts and rotates said round and elongated apples by contacting a downwardly facing surface and one side surface of each of said apples until each apple is oriented, and

drive means connected to said agitator means.

5,544,732

METHOD AND APPARATUS FOR ORIENTING AND CONVEYING FLEXIBLE OR THIN ARTICLES

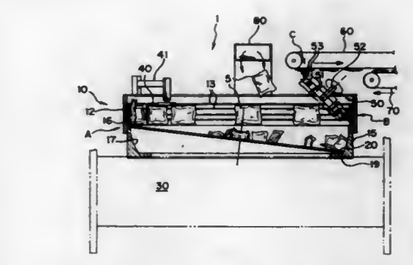
Werner H. Schmitt, Falls Church, Va., assignor to Hoppmann Corporation, Chantilly, Va.

Filed Feb. 6, 1995, Ser. No. 383,928

Int. Cl.[6] B65G *47/24*

U.S. Cl. 198—392 **21 Claims**

1. An article handler for orienting and conveying flexible or thin articles, comprising:



a centrifugal drum rotatable about a central axis, said centrifugal drum including an upper cylindrical wall portion, a lower wall portion and a ledge formed between said upper cylindrical wall portion and said lower wall portion for supporting an article thereon; both the upper wall portion and the lower wall portion being vertically oriented;

a rotary disc disposed radially inward of said lower wall portion and rotated about a slanted axis relative to said central axis of said centrifugal drum, said centrifugal drum including the upper and lower wall portions and said rotary disc rotate simultaneously and a circumference of said rotary disc approaches a position adjacent to said ledge at one location as the rotary disc rotates about said slanted axis; and

discharging means for removing articles on the ledge from said centrifugal drum.

5,544,733

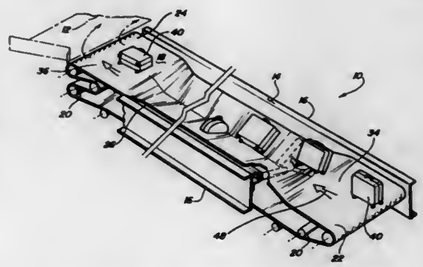
WHEELED LUGGAGE TIPPER

Robert Shaver, Brighton, Mich., assignor to Jervis B. Webb Company, Farmington Hills, Mich.

Filed Sep. 30, 1994, Ser. No. 315,606

Int. Cl.[6] B65G *47/24*

U.S. Cl. 198—408 **7 Claims**



1. A conveyor for transporting an item comprising;

a belt;

a frame having an intermediate section, said intermediate section having a support structure for said belt, said support structure forming a V-shaped trough in said belt such that said item being transported on said belt is tipped to a prone position; and

means for driving said belt about said frame.

5,544,734

ASSEMBLY CONVEYOR

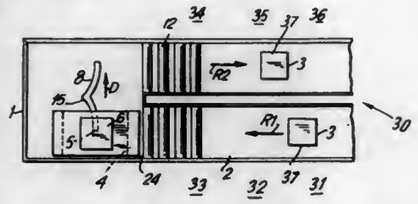
Günter Gebhardt, Sinsheim, Germany, assignor to Gebhardt Fördertechnick GmbH, Sinsheim, Germany

Filed Sep. 6, 1994, Ser. No. 301,287

Claims priority, application Germany, Sep. 4, 1993, 9313348 U

Int. Cl.[6] B65G *47/24*

U.S. Cl. 198—412 21 Claims



1. An assembly conveyor, comprising:

two conveyor bands displaceable in opposite directions and defining oppositely arranged assembly work stations, and

a substantially transversely displaceable elevation table provided at a discharge end of one of the two conveyor bands for transferring an assembly object from the one of the two conveyor bands to the other of the two conveyor bands, the elevation table including means for rotating the assembly object during a linear displacement thereof from the one conveyor band to the other conveyor band.

5,544,735

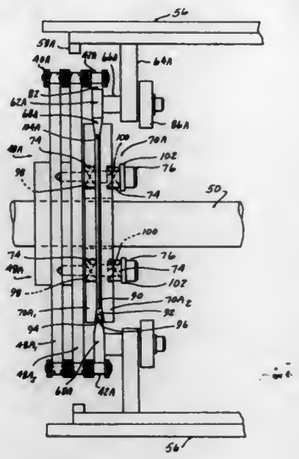
CHAIN CONVEYOR WITH FRICTIONALLY DRIVEN RECIRCULATED PALLETS LINKED TOGETHER IN SUB GROUPINGS

Jack D. Gyger, Charlotte, Mich., assignor to Roberts Sinto Corporation, Lansing, Mich.

Division of Ser. No. 219,976, Mar. 29, 1994, Pat. No. 5,407,058, which is a continuation-in-part of Ser. No. 49,343, Apr. 21, 1993, abandoned. This application Mar. 20, 1995, Ser. No. 373,062

Int. Cl.[6] B65G *37/00*

U.S. Cl. 198—465.3 10 Claims



1. A chain conveyor comprising:

an elongated conveyor frame;

a pair of side-by-side aligned conveyor chain loops mounted extending along each side of said conveyor frame, each chain loop received over respective aligned pairs of sprockets at either end of said conveyor, said sprockets each being rotationally mounted and at least one of said pairs of sprockets adapted to be power driven to advance said chain loops in respective endless paths about said conveyor;

each chain loop including an upper run along an upper portion of said conveyor frame and a lower run along a bottom portion thereof;

a first and second gripper mechanism rotationally mounted at respective ends of said conveyor frame to be aligned and rotated with a respective one of said sprocket pairs at each end of said conveyor;

said first and second gripper mechanism at each end of said conveyor each comprised of a disc assembly comprised of a pair of aligned discs rotated with said sprockets at a respective end of said conveyor, each disc having facing tapered perimeters together defining a tapered perimeter groove;

said pair of discs in each assembly mounted for limited axial spreading movement and spring means urging said pair of discs together;

a series of pallets driven by said chain loops, each pallet adapted to rest on said upper runs of said chain loops when being advanced down said upper run;

each pallet having at least one gripper bar fixed spaced below said pallet and having a tapered edge at the bottom when said pallet is resting on said upper run of said chain loops, said tapered edge aligned with said tapered perimeter groove of said split discs gripper mechanism located at each end of said upper and lower runs of said chain loops, said tapered edge driven into said groove to spread said discs and be gripped therein as said pallet reaches said end of said upper and lower runs, rotation of said discs causing swinging of a gripped pallet about the axis of the respective sprockets.

5,544,736

ULTRACLEAN TRANSPORTATION

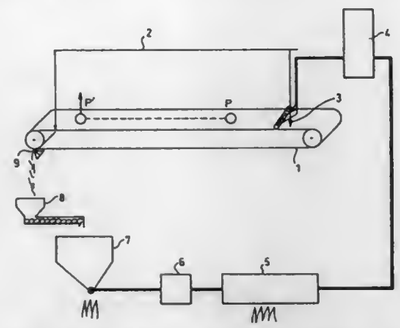
Jean-Pierre Piriou, Cholet; Jean-Jacques Hermant, Angers, and Hervé Roussel, Bouchemaine, all of, France, assignors to UNIR (Ultra Propre Nutrition Industrie Recherche) Association Loi de 1901, Paris, and Protial S.A., Beaucouze, both of, France

Filed May 24, 1995, Ser. No. 424,395

Claims priority, application France, Oct. 22, 1992, 92 12659

Int. Cl.[6] B65G *47/22*

U.S. Cl. 198—493 8 Claims



1. Process for the ultraclean continuous transportation of material from a point P to a point P' within a bacteriologically controlled zone by means of a conveyor, comprising continuously covering the conveyor from upstream of point P to downstream of point P' with respect to the direction of travel of the conveyor, with a solid covering whose surface adapted to come into contact with the material is sterile, depositing said material at point P on said covering, removing the transported material from contact with the solid covering at point P', enclosing the path of said material at least between points P and P', and establishing a bacteria-free atmosphere in said enclosed path.

5,544,737

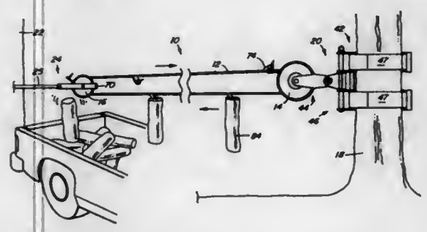
CONVEYOR DEVICES

David Connor, #308-1230 Quayside Dr., New Westminster, British Columbia, Canada

Filed Feb. 16, 1995, Ser. No. 389,508

Int. Cl.[6] B65G *35/00*

U.S. Cl. 198—615 10 Claims



1. A conveyor device, comprising:

a chainsaw;

a drive chain and driven disc installed on said chainsaw in place of a saw chain and bar, said drive chain being in driving engagement with said driven disc;

a reduction gearing having an input connected to said driven disc and an output;

a sheave connected to said output of said reduction gearing for rotation thereby;

a first retainer device connected to said sheave for securing said sheave to a first support;

a freely rotatable pulley;

a second retainer device carrying said pulley for securing said pulley to a second support;

an endless member extending around said sheave and said pulley; and

a plurality of securing devices attached to said endless member and spaced apart along said endless member for temporarily securing objects to said endless member for conveyance thereby.

5,544,738

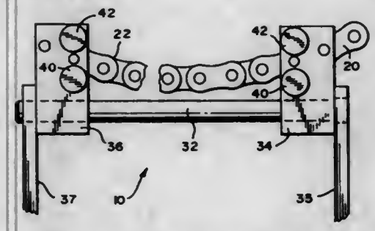
ADJUSTABLE POCKET MECHANISM

Kraig L. Klopfenstein, South Barrington, Ill., assignor to The Paxall Group, Skokie, Ill.

Filed Nov. 7, 1994, Ser. No. 336,672

Int. Cl.[6] B65G *15/14*

U.S. Cl. 198—626.5 5 Claims



1. An adjustable pocket mechanism for a cartoner of the type having a plurality of adjustable pockets to accommodate different sizes of cartons and means for transporting the cartons along a non-linear pathway, said adjustable pocket mechanism comprising a pair of parallel endless chains, a leading transport lug fixed to a first of said chains and freely movable forwardly and rearwardly in the direction of movement with respect to the second of said chains, a trailing transport lug fixed to said second of said chains and freely movable forwardly and rearwardly in the direction of movement with respect to said first of said chains, means for adjusting the chains relative to one another and means for fixing the relevant position of said chains with respect to one another so that the length of the pocket formed by said leading and trailing lugs can be adjusted to accommodate different sizes of cartons, and means for maintaining the leading and trailing lugs parallel as they are transported along a non-linear pathway.

5,544,739

INSTALLATION FOR THE TEMPORARY STORAGE OF BULK GOODS

Jozef P. M. Christiaens, and Petrus G. A. M. Christiaens, both of Horst, Netherlands, assignors to Christiaens B.V., Horst, Netherlands

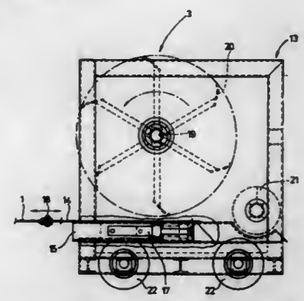
PCT No. PCT/NL93/00056, § 371 Date Nov. 8, 1994, § 102(e) Date Nov. 8, 1994, PCT Pub. No. WO93/17986, PCT Pub. Date Sep. 16, 1993

PCT Filed Mar. 10, 1993, Ser. No. 302,797

Claims priority, application Netherlands, Mar. 10, 1992, 9200443

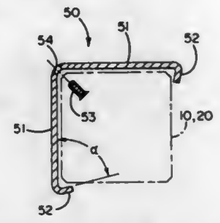
Int. Cl.[6] B65G *25/00*

U.S. Cl. 198—750.6 9 Claims



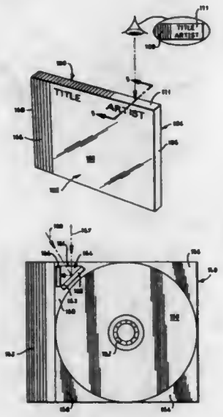
1. Drive means (3) for an installation for the temporary storage of bulk goods, which installation comprises a number of supported floor plates (1), which are slidable in their longitudinal direction, for receiving the bulk goods, said floor plates (1) being jointly movable from their rest position in order to discharge the bulk goods, and some of the number of plates (1) being individually movable back to the rest position, in which case the bulk goods are prevented from moving back by the other floor plates (1) which, in each case, are not moving, said drive means adapted to be positioned opposite one end of said floor plates (1) and comprising a frame (13) having a base consisting of a number of base plates (14), each base plate (14) including coupling means (24) which can be brought into cooperation with corresponding coupling means (23) provided at said end of an associated floor plate (1), said base plates (14) being each slidable in the frame (13) in their longitudinal direction and at least a few subsets of said plates being drivable by their own drive installation, whereby the frame is displaceable between individual sets (11) of floor plates for successive actuation thereof.

5,544,740
CONVEYING APPARATUS
Darrell E. Kissee, Kenner, La., assignor to The Laitram Corporation, Harahan, La.
Filed Jul. 25, 1994, Ser. No. 279,538
Int. Cl.[6] B65G *23/06*
U.S. Cl. 198—834 **38 Claims**



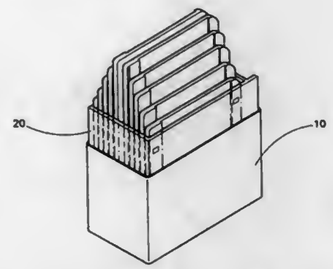
1. A drive arrangement for a belt-type conveying apparatus comprising:
a rotatable shaft;
a drive member mounted on the shaft for transmitting drive force between the shaft and a conveyor belt; and
a retaining clamp mounted on the shaft adjoining the drive member, the retaining clamp having a body shaped to fit loosely around the shaft and having first and second ends spaced by a gap, and a force-applying member disposed on the body for urging a portion of the body adjoining the force-applying member away from the shaft and pressing the ends of the body against the shaft to prevent movement of the body along the shaft.

5,544,741
FLAT BOX SYSTEM WITH EDGE VIEW OPTICS
Stephen D. Fantone, Lynnfield, Mass.; Anthony L. Gelardi, Cape Porpoise, and John A. Gelardi, Kennebunkport, both of Me., assignors to Insight, Inc., Lynnfield, Mass.
Filed Apr. 1, 1994, Ser. No. 221,837
Int. Cl.[6] B65D *85/57*
U.S. Cl. 206—308.1 **5 Claims**



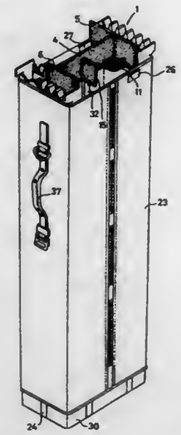
1. A box system for containing at least one compact disc, said box system comprising:
a flat base comprising a first flat panel having shallow raised side walls connected around the peripheral edges thereof;
a flat front cover comprising a second flat panel also having shallow raised side walls connected around the peripheral edges thereof, said flat front cover and said flat base being pivotally connected to one another to form a hinge between them so that they can be moved between a closed position in which they fit together to define an interior chamber therebetween for releasably receiving a compact disc, at least one of said shallow raised side walls of said flat base and said flat front cover having a window section through which an observer can look;
information providing means disposed within said interior chamber for providing information that is in a plane substantially parallel to one of said first and second flat panels;
a compact disc holder located in said flat base and extending between said shallow raised side walls thereof; and
optical means located on said compact disc holder for providing at least one folded optical path between said window section of said shallow raised side walls of said flat base and said flat front cover and said information providing means so that an observer looking at said window section can see information disposed on said information providing means.

5,544,742
DISK STORAGE BOX
Chin-Chu Li, No. 1-4, Wu Nan Rd., Wu Chi Chen, Taichung Hsien, Taiwan
Filed Mar. 28, 1995, Ser. No. 412,169
Int. Cl.[6] B65D *85/57*
U.S. Cl. 206—308.3 **3 Claims**



1. A disk storage box comprising:
a cover defining a rectangular receiving chamber, having an elongated locating block inside said rectangular receiving chamber, and a stop block securely fixed to said elongated locating block, also within said rectangular receiving chamber, said stop block having at least one series of steps within said chamber; and
a case body defining a rectangular storage chamber for holding disks, having an elongated rail at one side within said rectangular storage chamber for separating storage disks into two groups, said rectangular storage chamber having an open top side and a bottom wall, an outer track in a side wall thereof abutted to said elongated rail for receiving said stop block when said cover is covered on said case body, an elongated side opening at an opposite side remote from said elongated rail, and a transverse gap through the bottom wall of said rectangular storage chamber adjacent to said elongated side opening;
wherein said cover is covered on said case body over the top open side of said rectangular storage chamber when said stop block is inserted into said outer track; said cover is shaped such that, when turned upside-down, said cover supports said case body in the open position for easy access of storage disks by inserting said elongated locating block and said stop block into said elongated side opening and said transverse gap, permitting storage disks to be partially pushed out of the top open side of said rectangular storage chamber.

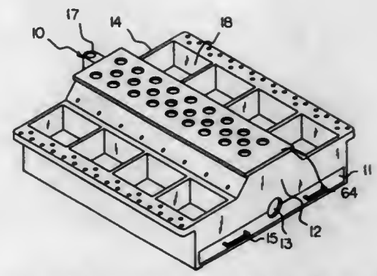
5,544,743
GOLF BAG
Bum-Ki Hong, 105-903 Hyundai first APT, 653 Gaepo-dong, Kangnam-gu, Seoul, Rep. of Korea
Filed Apr. 4, 1994, Ser. No. 222,749
Int. Cl.[6] A63B *55/00*
U.S. Cl. 206—315.3 **8 Claims**



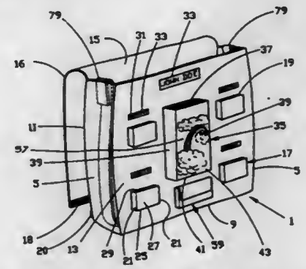
1. A golf bag comprising:
an upper bolder having at least one longitudinal hole and an upper insert hole, said upper holder being partitioned, by a pair of flanges crossing opposed ends of an arm, into iron club cell sections provided at the outside of said flanges and a wood club cell section provided between said flanges and divided into two parts by said arm, each said iron club cell section having means defining a plurality of iron club cells while said wood club cell section having a plurality of wood club cells, wherein a plurality of support frames are mounted on said arm and said flanges for defining said wood club cells in said wood club cell section in cooperation with both said arm and said flanges, said support frames being inclined downward from their top ends towards said arm and said flanges;
a cloth body including means for coupling said body to said upper holder at its top end;
a lower holder including means for detachably coupling said lower holder to a bottom end of said cloth body wherein said lower holder has a lower insert hole; and
a support column extending between said upper and lower holders for supporting a shape of said golf bag, said column being detachably coupled to said upper insert hole and lower insert hole of said upper and lower holders at its opposed ends.

5,544,744
ENGINE PARTS ORGANIZER
John L. Oman, 1714 Buchanan St., Great Falls, Mont. 59404-6228
Filed May 1, 1995, Ser. No. 432,464
Int. Cl.[6] B65D *85/68;85/28*
U.S. Cl. 206—319 **4 Claims**

1. An engine parts organizer for neatly organizing engine parts in an exact place as they come out of an engine comprising, in combination:
a parts organizer having two outer bins and an upwardly extending inner bin therebetween, the two outer bins having a plurality of small compartments formed therein, the two outer bins having an inner edge and an outer edge, the inner edge integral with the upwardly extending inner bin, the outer edge having an outwardly extending lip portion integral therewith, the outwardly extending lip portion having a plurality of through holes therein, the upwardly extending inner bin having an open top and a closed bottom, the inner bin having distributor holder secured to an outer edge thereof, the parts organizer having a side portion with an opening in the side portion and a drawer removably coupled with the opening in the side portion thereof, the drawer having handles secured thereto, the drawer having a holding chamber formed within a central portion thereof cooperating with an opening in the side portion of the parts organizer to form a circular retaining hole;
a first insert having a first portion, a second portion, and an intermediate portion therebetween, the first portion having a recess formed therein, the first portion having a plurality of apertures formed on opposing sides of the recess formed therein, the first portion having a finger hole formed adjacent to an end portion thereof, the second portion having a plurality of apertures formed therethrough, the second portion having a finger hole formed adjacent to an end portion thereof, the first insert having legs extending downwardly from four corners thereof, means to removably couple the first insert with the inner bin of the parts organizer with the legs supporting the first insert within the inner bin;
a second insert having a first portion, a second portion, and an intermediate portion therebetween, the first portion and the second portion having a plurality of apertures formed therethrough, means to removably couple the second insert with the open top of the inner bin of the parts organizer.



5,544,745
CASE FOR EXCHANGING AUDIBLE AND WRITTEN MESSAGES
Judith R. Famorca, 1990 Hawthorne Dr., Lot 197, N. Charleston, S.C. 29418, assignor to Judith R. Famorca, Summerville, S.C.
Filed Nov. 10, 1992, Ser. No. 975,401
The portion of the term of this patent subsequent to Apr. 10, 2010, has been disclaimed.
Int. Cl.[6] B65D *85/575*
U.S. Cl. 206—320 **5 Claims**



1. For transmitting audible and written messages, a case attachable to a rail of a bed, said case comprising:

a. two side panels, a bottom panel, contrapositioned walls defining a rear wall attached at the bottom edge thereof to said bottom panel's rear edge and attached at each side edge thereof to the rear edges of each of said two side panels, a front wall attached at the bottom edge thereof to said bottom panel's front edge and attached at each side edge thereof to the front edges of each of said two side panels such that said two side panels, said bottom panel, said rear wall and said front wall form an open container, a flap for holding said case to a rail of a bed, said flap extensible over a rail of a bed, and fastening means for removably attaching said flap to the bottom exterior edge of said rear wall;

b. a plurality of cassette pockets for holding audio cassettes, said cassette pockets attached to the exterior portion of said front wall and each comprising left and right end walls, a bottom pocket wall and a front pocket wall attached together in such manner that each forms an open receptacle;

c. a detachable recorder pocket for holding and carrying an audio cassette recorder, said recorder pocket attached to said front wall between said cassette pockets at the mid-portion on the exterior of said front wall, said recorder pocket comprising left and right end recorder pocket walls, a bottom recorder pocket wall and contrapositioned walls defining a front recorder pocket wall and a back recorder pocket wall attached together at the edges of each such wall in such manner as to form an open receptacle, and second fastening means for detachably fastening said detachable recorder pocket to said front wall;

d. a supplementary recorder pocket centrally attached to the exterior of said flap, said supplementary recorder pocket comprising left and right supplementary pocket end walls, a bottom supplementary pocket wall and a front supplementary pocket wall attached together in such a manner as to form an open receptacle in which an audio cassette recorder may be stored;

e. a shoulder strap for carrying said case, said shoulder strap having two ends wherein one said end is attached to a top edge of one of said two side panels and the other said end is attached to a top edge of the other of said two side panels, said shoulder strap storable in said open case;

f. a battery pocket for storing batteries, said battery pocket attached to said front wall below said detachable recorder pocket at the exterior of said front wall, said battery pocket comprising left and right end battery pocket walls, a bottom battery pocket wall, a front battery pocket wall and a canopy attached together in such a manner as to form a covered receptacle, said canopy attached to the exterior of said front wall and third fastening means for detachably fastening said canopy to said front battery pocket wall;

g. a plurality of identification windows behind which name tags are displayed, said identification windows having a top, a bottom and two ends defining substantially rectangular strips of transparent material wherein the top, bottom, and one end thereof are attached to the exterior of said front wall leaving an open end such that a name tag may be inserted therethrough, said identification window disposed one above each of said cassette pockets and said detachable recorder pocket such that the identification window disposed over said detachable recorder pocket is of larger dimension than those disposed over said cassette pockets.

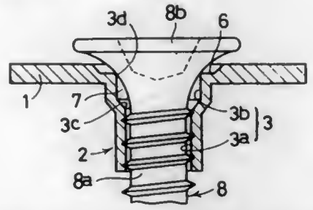
h. a divider insertable into said case for cataloging documents inside said case, said divider comprising a plurality of planar members of like size and shape and joined together at the bottom and sides thereof, but not at the top thereof, in order to define thereby a plurality of pockets and a top attached to the outer most of said planar members said top being of such size and shape as to cover all pockets defined by said planar members.

5,544,746

BELT FOR HOLDING A TRAIN OF SCREWS

Yuji Dohi, Toyonaka, Japan, assignor to Japan Power Fastening Co. Ltd., Osaka, Japan

Filed Oct. 11, 1994, Ser. No. 321,107
Claims priority, application Japan, Oct. 13, 1993, 5-055376 U
Int. Cl.[6] B65D *85/24*
U.S. Cl. 206—346 **9 Claims**



1. A resinous belt holding a train of screws and a train of screws held by said belt, each of the screws having a shank and a head, the belt comprising:

a series of screw retaining bores formed in the belt at a predetermined pitch longitudinally of the belt, each of the screw retaining bores being defined by a tube, each said screw retaining bore having a diametrically smaller shank retaining portion for engagement with the shank of a corresponding screw, each said screw retaining bore having a diametrically larger root portion which has a first edge adjoining the shank retaining portion and a second edge remote from the shank retaining portion; and

a plurality of removal facilitating holes formed in the belt around each said screw retaining bore in communication therewith;

wherein the root portion of each said screw retaining bore has an intermediate portion which is located radially outside an imaginary cone defined by the first and second edges of the root portion; and

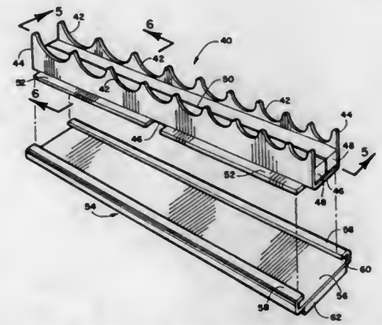
wherein the second edge of the root portion is diametrically smaller than the head of said corresponding screw.

5,544,747

MAGNETIC HOLDERS FOR CYLINDRICAL OBJECTS

Billy L. Horn, 1313 Greenbrier, Rapid City, S. Dak. 57701

Continuation-in-part of Ser. No. 232,369, Apr. 25, 1994, Pat. No. 5,456,359. This application Feb. 27, 1995, Ser. No. 394,591
Int. Cl.[6] B65D *85/70*
U.S. Cl. 206—378 **23 Claims**



1. A holder for magnetic metal cylinders of regularly varying diameters which comprises:

an elongated member having a plurality of closely spaced partial-cylindrical transverse recesses along a first surface;

said partial-cylindrical recesses increasing in diameter along at least a portion of said first surface, said recesses having an inner surface;

an elongated magnet in engagement with said elongated member opposite said recesses;

a surface of said magnet positioned adjacent to said recesses and having alternate transverse north and south pole regions with an interface between each pair of regions;

said interface between adjacent surface north and south pole regions lying substantially in a plane including the axis of each recess and perpendicular to said elongated member; and

a non-magnetized region having a thickness of from about 0.020 to 0.100 inch emplaced at said interface between each adjacent pair of north and south poles;

whereby a cylindrical object placed in a recess of corresponding diameter will be closely adjacent to said magnet along said interface between adjacent north and south poles.

7. A holder for magnetic metal cylinders of regularly varying diameters which comprises:

an elongated member having a generally U-shaped channel configuration including spaced sidewalls and a bridging wall therebetween;

said sidewalls having a plurality of closely spaced, complementary, partial-cylindrical transverse recesses;

said partial-cylindrical recesses regularly increasing in diameter along at least a portion of said elongated member; and

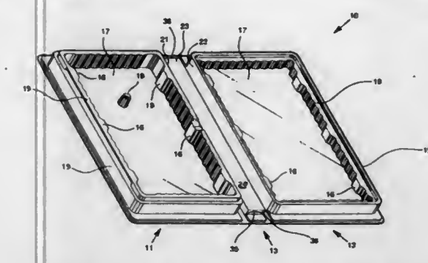
an elongated magnet positioned on said bridging wall.

5,544,748

VIDEO CASE AND METHOD OF MANUFACTURING

Kurt Kollinek, Wayne, N.J., assignor to American Sealcut Corporation, South Hackensack, N.J.

Continuation of Ser. No. 188,687, Jan. 31, 1994, Pat. No. 5,421,456, which is a division of Ser. No. 117,400, Sep. 3, 1993, Pat. No. 5,353,932. This application Dec. 27, 1994, Ser. No. 364,855
Int. Cl.[6] B65D *85/672*
U.S. Cl. 206—387.13 **11 Claims**



1. A foldable case for holding a video cassette, comprising:

a) first and second case sections joined by an integral flexible spine to form an integral body, each of the first and second case sections having on a first major side an area defined by four end-to-end connected walls forming a well for receiving the video cassette such that the case sections can be closed with the cassette inside and having on a second major side opposite to the first side a generally flat surface, one of the four walls of each of the first and second case sections extending parallel to and adjacent the integral flexible spine,

b) said first and second case sections and integral flexible spine comprising a sandwich made up of a thermoformed sheet of relatively rigid heat-sealable thermoplastic material facing said first major side, a stiffener member of a sheet-like non-heat-sealable material on said thermoformed sheet on the second major side, and at least one relatively flexible sheet of heat-sealable thermoplastic material over the stiffener member and heat-sealed around its periphery to the periphery only of the thermoformed sheet so as to enclose the stiffener member,

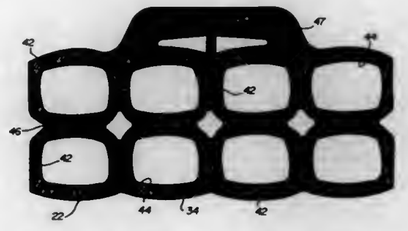
c) said flexible spine on the first major side having a raised portion with a flat surface extending along substantially the length of the flexible spine and spaced by hinge regions from the said one adjacent walls of the first and second case sections, the height of the raised portion above the hinge regions and relative to the height of the said one adjacent walls of the first and second case sections being such that, when the first and second case sections are folded toward one another in the process of closing the case, the facing portions of the said one walls adjacent to the flexible spine engage the flat surface of the raised portion of the flexible spine causing the first and second case sections to align with one another while closing.

5,544,749

CARRIER WITH REFLECTIVE MEANS TO BLOCK READING OF A BAR CODE

Leslie M. Watts, Medinah, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.

Filed Feb. 1, 1995, Ser. No. 382,246
Int. Cl.[6] B65D *85/00;* **G06K** *19/00*
U.S. Cl. 206—459.5 **9 Claims**



1. A carrier for carrying a group of discrete containers, each container including an individual machine readable bar code thereon, said carrier comprising a substantially transparent, plastic material having reflector elements thereon, said carrier including portions for extending around the containers to form a package, said reflector elements being disposed on said portions for at least partially covering the individual machine readable bar codes when the carrier is assembled with the containers for preventing machine reading of the bar codes, said reflector elements being micro-embossed reflector elements.

6. A package comprising a carrier, a group of items retained by said carrier, each item having an individual machine readable bar code thereon, said carrier comprising plastic material including micro-embossed reflector elements disposed for at least partially overlaying said bar codes for preventing machine reading of said bar codes.

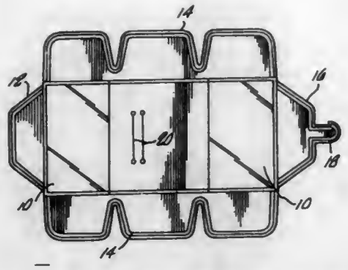
5,544,750

PORTABLE HOLDER FOR TISSUES

Carol C. Randall, 1242 Redondo Blvd., Los Angeles, Calif. 90019

Filed May 2, 1995, Ser. No. 432,784
Int. Cl.[6] B65D *83/08*
U.S. Cl. 206—494 **2 Claims**

1. A portable holder for tissues, said holder being constructed from a transparent flexible material, said holder having a main body portion being rectangular in shape, the rectangular main body portion having like pockets on an interior surface thereof, said pockets being located on opposite ends of said interior surface of said rectangular main body portion, each pocket being sealed on three edges that form the outer perimeter of said rectangular main



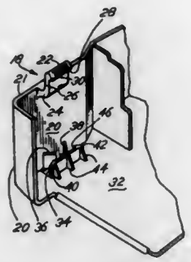
body portion, each pocket having an opening transverse to the length of said rectangular main body portion, each pocket extending the full width of said rectangular main body portion, said rectangular main body portion containing two like parallel slits, said slits being positioned to act as part of a securing mechanism to affect closure of said holder when said holder is in a folded condition; said holder comprising four flaps, including two like notched side flaps extending from opposite sides of said rectangular main body portion, a third flap extending from one end of said holder and a fourth flap having an arrow shaped extension and extending from an opposite end of said holder, each flap having parallel crease lines at its juncture to said rectangular main body portion.

5,544,751

STACKING CONNECTOR FOR STORAGE CONTAINER

Gerald Klodt, Baraboo, and Timothy D. Killinger, Prairie du Sac, both of Wis., assignors to Flambeau Products Corp., Middlefield, Ohio

Filed May 3, 1995, Ser. No. 433,316
Int. Cl.[6] B65D *21/032*
U.S. Cl. 206—509 **11 Claims**



1. A connector for removably connecting a plurality of molded plastic trays to each other in stacked relation, each tray having a bottom and a side wall, said connector being integrally molded as part of the side wall and bottom of each said tray, said side wall having a top edge, an inner surface, and an outer surface, said connector comprising

a tab projecting inwardly and upwardly from said top edge and terminating in

an inwardly-extending lip,

an opening in said tray bottom aligned with said tab to receive the tab of an adjacent stacked tray,

spring means integrally molded with said inner surface and extending into the space above said opening,

a vertical rib extending upwardly from said tray bottom opposite said spring means and terminating in an upper edge,

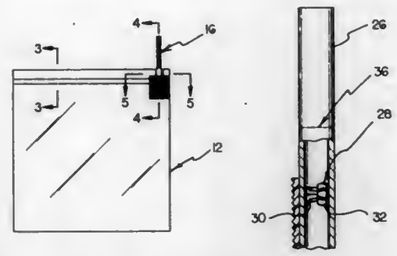
whereby said trays may be stacked with a tab on one tray inserted in the opening in the bottom of an adjacent tray with said tab disposed between said spring means and said vertical rib, said lip engaging said upper edge of said vertical rib.

5,544,752

EVACUABLE STORAGE BAG

Dean M. Cox, P.O. Box 372, Brushton, N.Y. 12916

Filed Feb. 9, 1995, Ser. No. 386,315
Int. Cl.[6] B65D *81/20;33/24*
U.S. Cl. 206—524.8 **3 Claims**



1. An evacuable storage bag comprising:

a bag means having a flexible upper panel; a flexible lower panel coupled to the flexible upper panel along outer peripheral edges thereof so as to define an expansible space between the upper and lower panels, the panels being uncoupled relative to one another along a forward edge thereof to define an opening through which objects can be placed into the bag means;

a bag sealing means extending across an open end of the bag means comprising a first bag sealing strip coupled to an interior surface of the upper panel; and a second bag sealing strip coupled to an interior surface of the lower panel and positioned for engagement with the first bag sealing strip;

a suction means comprising a conduit directed through the bag means and into fluid communication with an interior of the bag means; and a conduit sealing means positioned within the conduit, said sealing means comprising a first conduit sealing strip extending along a first interior surface of the conduit and a second conduit sealing strip extending along a second interior surface of the conduit and positioned for cooperative engagement with the first conduit sealing strip wherein pressure applied to an exterior of the conduit will effect collapsing thereof and cooperative engagement of the conduit sealing strips to preclude fluid communication through the conduit;

a gripping pad coupled to an exterior of the conduit proximal to the conduit sealing strips positioned therewithin;

and,

wherein the conduit further comprises a frangible means extending thereabout for permitting selective fracturing of a portion of the conduit.

5,544,753

KIT FOR THE CARE OF BACK AILMENTS

Julianne H. Monica, 1616 Kennedy Blvd., Union City, N.J. 07087-1912

Filed Dec. 8, 1994, Ser. No. 354,754
Int. Cl.[6] B65D *85/00*
U.S. Cl. 206—570 **10 Claims**

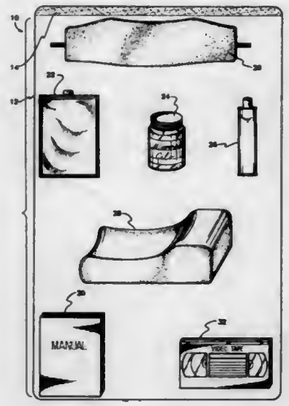
1. A kit for the care of back ailments comprising:

ice pack means dimensioned such that said ice pack can be placed on a desired location on a user's body;

dietary supplement, said supplement compounded to promote healing;

analgesic balm; and

containment means for the securing of said ice pack, said analgesic balm, and said dietary supplement.

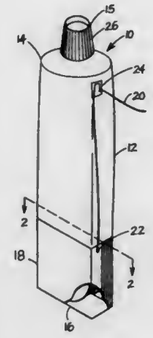


5,544,754

DENTAL APPLIANCE

Kevin J. Stahl, 311 Fulton Ave., Rochester, Ind. 46975

Filed Aug. 1, 1994, Ser. No. 283,826
Int. Cl.[6] A61C *15/00;* **B65D** *69/00*
U.S. Cl. 206—581 **10 Claims**



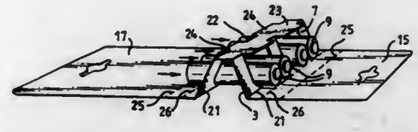
1. A dental appliance comprising an elongated dentifrice package, said package having opposite ends and a longitudinal axis, a dentifrice dispenser at one of said package ends, said dispenser and package being a squeeze tube, a hollow base being secured to said package at the other of said package ends, a winding of dental floss positioned within said base, an exit opening adjacent said other of said package ends through which said floss is threaded, and a floss cutter on said package spaced from said exit opening, whereby floss may be dispensed from said package and measured against said package between said exit opening and said cutter to dispense floss and said package may be wound about said base and squeezed against said base to empty said package of dentifrice.

5,544,755

PACKAGING

Jacky M. G. N. Paumen, Begijnenoijk; Rowland Hemming, Brussels, both of, Belgium; Kai Hartmann, Weitnau-Wengen, Germany, and Marc Beckers, Garivate, Italy, assignors to Duracell Inc., Bethel, Conn.

Division of Ser. No. 802,018, Dec. 3, 1991, Pat. No. 5,428,940.
This application Jan. 17, 1995, Ser. No. 373,345
Int. Cl.[6] B65D *85/88*
U.S. Cl. 206—705 **4 Claims**



1. The combination of a package and a cylindrical battery, comprising a sheet of material bent or folded along a plurality of substantially parallel fold lines to define an upwardly extending substantially flat panel region, an upper end locating region extending forwardly from a lower extremity of said panel region, a first limb extending obliquely downwardly and rearwardly from the forward extremity of the upper end locating region, a web portion integral with and extending obliquely downwardly from a lower extremity of said first limb, a second limb integral with and extending obliquely forwardly and downwardly from the lower extremity of said web portion, said first limb defining with said web portion and said second limb a channel region, a lower end locating region extending rearwardly from the lower extremity of said second limb, and a rear panel region extending upwardly from the rear extremity of the lower end locating region and said rear panel region extending upwardly beyond said upper end locating region, said rear panel region having an aperture therethrough for hanging said combination, a tab portion integral with and extending away from said web portion of the channel region, said web portion adhering to a portion of the rear panel region to increase the friction between the said limbs and the battery, each limb being provided with at least one opening, the openings in respective limbs being aligned with one another, in which at least a portion of an edge of the openings conforms to and makes close contact with at least the forward part of the circumference of the battery and a portion of the rear circumferential surface of the battery rests against and is supported by a portion of said rear panel and another portion of the rear circumferential surface of the battery is pressed against and supported by said tab, and said limbs are taut, thereby frictionally gripping and preventing rotation of the battery.

5,544,756

DYNAMIC MINING SYSTEM COMPRSING HYDRATED MULTIPLE RECOVERY SITES AND RELATED METHODS

Noel Tanner, Lakeshore, Utah, assignor to Peter Abt, Calgary, Canada; Rennat Trust, and Jamiece T. Trust, both of Lakeshore, Utah

Filed Mar. 14, 1994, Ser. No. 212,745
Int. Cl.[6] B03B *5/06*
U.S. Cl. 209—458 **13 Claims**

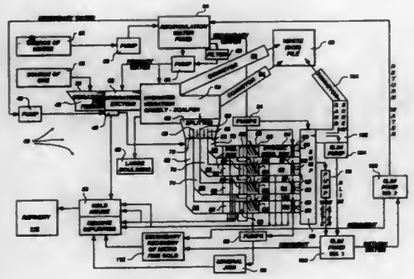
1. A gold recovery apparatus comprising:

a trough in which a stream of ore and carrier water turbulently flows;

at least one flow constraint by which flow adjacent to a trough bottom region is slowed to laminar flow;

at least one slot disposed in the bottom region into which gold particles move from the laminar flow;

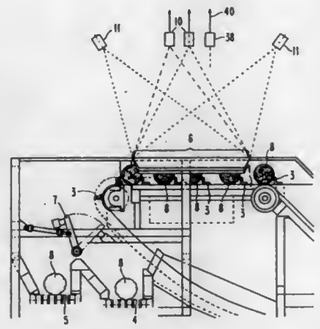
a passageway disposed below and in liquid communication with the slot whereby flow in the passageway of secondary water from any, source enhances entry of gold particles into the slot.



5,544,757
METHOD AND DEVICE FOR SEPERATING PIECES OF WOOD

Bertram Geiger, and Rainer Grabher, both of Graz, Austria, assignors to Andritz-Patentverwaltungs-Gesellschaft M.B.H., Graz, Austria

Division of Ser. No. 833,847, Feb. 10, 1992, Pat. No. 5,335,790. This application May 9, 1994, Ser. No. 239,979
Claims priority, application Austria, Feb. 8, 1991, 275/91
Int. Cl.[6] B07C *5/14;5/342*
U.S. Cl. 209—518 **35 Claims**

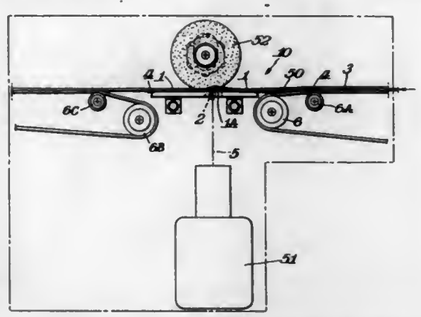


1. An apparatus for separating pieces of wood comprising
a first feed conveyor for carrying a plurality of pieces of wood having a longitudinal dimension;
a second conveyor having a plurality of carrier fields, each field receiving said pieces of wood from said first feed conveyor and for continuously conveying and rolling said pieces through a viewing zone, said second conveyor comprising means for orienting said pieces transverse to a direction of travel of said pieces;
camera means for viewing a plurality of said carrier fields in said viewing zone and for viewing a plurality of measuring fields on each of said pieces while rolling through said viewing zone and measuring brightness and surface texture in said plurality of measuring fields of each of said pieces of wood as a function of the intensity of reflected light and for producing a signal responsive to a measured brightness in each of said measuring fields;
data processing means receiving said signal and producing a control signal in response to said measured brightness and texture; and
separating means receiving said control signal and being actuated by said control signal for selectively discbarging said pieces of wood to one of at least two discharge conveyors.

5,544,758
MAIL APERTURE ASSEMBLY FOR MAIL SORTING SYSTEM

James Malatesta, and Marsha Pohl, both of Hockessin, Del., assignors to Promer, Inc., Wilmington, Del.

Filed Jun. 24, 1994, Ser. No. 264,906
Int. Cl.[6] B07C *5/00*
U.S. Cl. 209—584 **12 Claims**

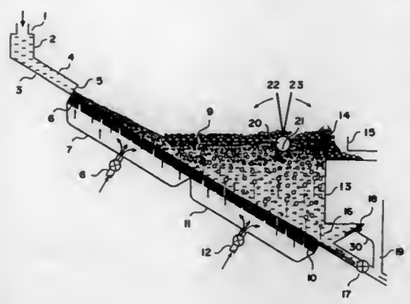


1. A mail aperture assembly of a mail sorting system having two surfaces in separate but parallel planes juxtaposed to an aperture so as to slightly bend an item of mail causing a plastic window and plastic covering to flatten against address and bar code information on contents inside an envelope eliminating wrinkles and folds and preventing an optical character reader and bar code reader light from creating glare in a line of view of said optical character reader and bar code reader on the contents inside the envelope.

5,544,759
PROCEDURE AND APPARATUS FOR MATERIALS SEPARATION BY PNEUMATIC FLOTATION

Daniel F. Urizar, Estado 235 Of. 511, Santiago, Chile

Continuation-in-part of Ser. No. 187,461, Jan. 28, 1994, abandoned. This application Apr. 5, 1995, Ser. No. 417,399
Claims priority, application Chile, Jan. 29, 1993, 0113-93
Int. Cl.[6] B03D *1/24*
U.S. Cl. 209—164 **25 Claims**



1. A froth flotation process for recovering hydrophobic particles from a pulp, comprising the steps of:
a) providing a downwardly slanted first gas-permeable surface;
b) feeding a thin layer of pulp onto the first gas-permeable surface, whereby the pulp flows downwardly along the first gas-permeable surface by gravity;
c) supplying a low pressure gas homogeneously through the first gas-permeable surface thereby to generate bubbles that contact and collect hydrophobic materials in the pulp;

d) discharging the aerated pulp into a downstream reservoir formed by a downwardly slanted second gas-permeable surface and a wall at the lower end of the second slanted gas-permeable surface;
e) supplying a low pressure gas homogeneously through the second gas-permeable surface thereby to separate a froth phase containing the hydrophobic material from the pulp, containing hydrophilic solids, flowing downwardly on the second gas-permeable surface;
f) forcing the entire froth in the reservoir to flow underneath a liquid sprinkler by means of baffles disposed transversely to the froth flow and carried by the sprinkler, and washing the froth to cause drainage of the hydrophilic material;
g) discharging the froth accumulated in the reservoir to a launder by permitting the froth to overflow the wall;
h) evacuating the pulp continuously through a discharge means disposed in the lower part of the wall located at the downstream end of the second gas-permeable surface.

5,544,760
FLOTATION OF LEAD SULFIDES USING RAPESEED OIL

Freddy W. Benn; Marion Dattilo, and William L. Cornell, all of Rolla Research Center, Bureau of Mines, Department of the Interior, 1300 N. Bishop, Rolla, Mo. 65401

Filed Oct. 20, 1994, Ser. No. 326,299
Int. Cl.[6] B03D *1/02;1/06*
U.S. Cl. 209—166 **20 Claims**

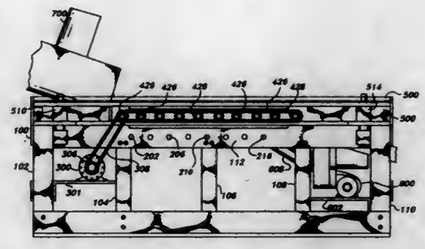
1. A method for recovering lead sulfides from a mineral deposit material containing lead sulfides which comprises:
(a) pulverizing the mineral deposit material to a particle size of from about 35 to about 150 microns;
(b) mixing the pulverized mineral deposit particles with water to produce a mixture having from about 5 to about 50 percent solids by weight;
(c) agitating the mixture and adjusting its pH to a range of from about pH 8 to about 10.5 to produce a conditioned slurry;
(d) adding a sufficient amount of rapeseed oil to the conditioned slurry to render the surface of the lead sulfide particles hydrophobic;
(e) agitating the resultant slurry from step (d) under conditions and for a time sufficient to obtain a homogeneous mixture;
(f) adding a frothing agent to the homogenous mixture in an amount sufficient to cause frothing of the homogenous mixture upon injection of air;
(g) injecting air bubbles into the resultant composition from step (f) in an amount and under conditions sufficient to cause the hydrophobic lead sulfide particles to become attached to the air bubbles and cause the resultant air bubbles with attached lead sulfide particles to rise and form a froth fraction; and
(h) separating the froth fraction and recovering lead sulfide.

5,544,761
SOFT CRANBERRY AND UNDERSIZE CRANBERRY SEPARATOR AND METHOD

Jerome J. Zdroik, 7262 10th St., Stevens Point, Wis. 54481

Filed Oct. 24, 1994, Ser. No. 328,009
Int. Cl.[6] B07B *13/075*
U.S. Cl. 209—672 **10 Claims**

1. A cranberry separator, used for separating out undersize and soft cranberries, from hard marketable cranberries, comprising:
a. a frame;
b. a cranberry loading hopper, affixed to said frame;
c. a cranberry feed chute, extending from said loading hopper;
d. a plurality of finned, rollers, rotatably mounted, perimeter to perimeter, to said frame, the first of said rollers mounted adjacent to said feed chute;
e. a plurality of combs;
f. a plurality of comb teeth, extending from said combs, extending between the fins, of said finned rollers;

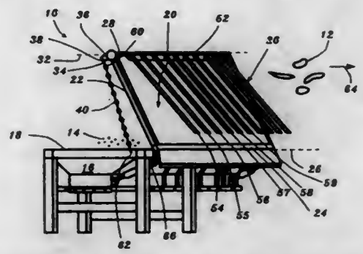


g. a plurality of sponge rollers, rotatably mounted, perimeter to perimeter, to said frame, said sponge rollers mounted adjustably above, and adjacent to, said finned rollers;
h. a plurality of pinch points, formed by the perimeter of said finned rollers, and the perimeter of said sponge rollers; the first pinch point, located adjacent to said feed chute;
i. means to drive rollers;
j. a cranberry outlet;
k. a last pinch point, adjacent to said cranberry outlet;
wherein hard cranberries, fed from the loading chute, at the first pinch point, upon engagement of the roller drive means, are fed into said first pinch point, forced against said first hard finned roller, transported, pinch point to pinch point, from the cranberry inlet chute, to the cranberry outlet.

5,544,762
SEPARATING APPARATUS

William J. Liimatainen, Monroe, and Daniel R. Brauer, Beloit, both of Wis., assignors to Knight Manufacturing Corp., Brodhead, Wis.

Filed Aug. 26, 1994, Ser. No. 297,311
Int. Cl.[6] B07B *13/05*
U.S. Cl. 209—675 **16 Claims**



1. A separating apparatus for separating debris from materials, said apparatus comprising:
a container having an opening for the flow therethrough of the materials;
a frame having a first side pivotally connected to said container about a pivotal axis and a second side disposed remote from said first side, said frame being disposed adjacent to said opening when said frame is in a first location thereof:
separating means pivotally secured to said frame about a further pivotal axis, said separating means extending across said opening between said first and second side of said frame when said separating means is in a first disposition thereof;
actuating means being secured to said separating means for permitting movement of said separating means to a second disposition thereof away from said frame and said opening, such that when said frame is pivoted away from said first location thereof away from said opening to a second location thereof, said separating means moves to said second disposition thereof away from said frame and said opening for ejecting the debris away from said frame;

said actuating means including:

an arm having a first and second end, said first end being rigidly secured to said separating means, said second end extending away from said further pivotal axis towards said opening; and

flexible means extending from said second end of said arm to said container, the arrangement being such that when said frame is pivoted away from said opening, said flexible means pulls said second end of said arm so that said arm and separating means pivot about said further axis,

said separating means moving away from said frame and said opening for ejecting the debris away from said opening.

5,544,763

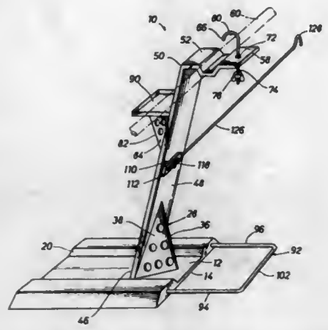
VEHICLE STABILIZED SUPPORT STAND FOR BICYCLES

David W. McClain, 4015 Fernwood, Houston, Tex. 77021

Filed Oct. 3, 1994, Ser. No. 317,167

Int. Cl.[6] A47F *7/00*

U.S. Cl. 211—22 **20 Claims**



1. A portable bicycle support stand adapted for stabilization and protection against theft by the wheel of an automotive vehicle, comprising:

(a) a base structure adapted to rest upoo a surface and defining an intermediate vehicle wheel engagement portion adapted to be held to said surface by a wheel of an automotive vehicle for retention and stabilization thereof;

(b) a pair of rib elements being located on opposite sides of said intermediate portion and being of greater height than said intermediate portion, said rib elements cooperating with said intermediate portion to define a recess for receiving the wheel of the automotive vehicle,

(c) a support strut extending upwardly from said base structure and being oriented relative to said wheel engagement portion so as to be positioned clear of the side of said automotive vehicle; and

(d) bicycle support means being connected to said support strut and adapted for support and stabilization of a bicycle.

5,544,764

HOLDER FOR PENS, PENCILS, TOOLS, OR THE LIKE

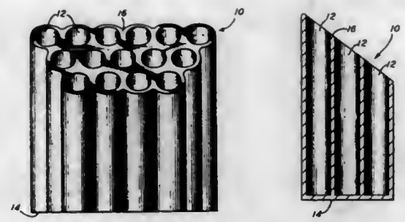
Michael D. Cima, 1261 Rodi Rd., Turtle Creek, Pa. 15145

Filed Jun. 21, 1994, Ser. No. 263,065

Int. Cl.[6] A47F *7/00*

U.S. Cl. 211—60.1 **15 Claims**

1. A holder for pens, pencils, elongated tools and the like, consisting essentially of a body having a plurality of rows of elongated chambers therethrough, each of which are aligned in a side-by-side, parallel relationship, wherein parallel planes that dissect the elongated chambers along a longitudinal axis of each of said elongated chambers disposed in a row of said elongated chambers are bisected by transverse parallel planes at each respective longitudinal axis of alternating parallel rows of said elongated chambers, said body having a generally flat bottom surface transverse to said parallel elongated chambers and adapted to be a base under-surface upon which said body can rest on a horizontal supporting surface such that said parallel elongated chambers will extend generally vertically from such horizontal supporting surface, and an upper surface at least a portion of which is at an inclined angle to said parallel, elongated chambers.



5,544,765

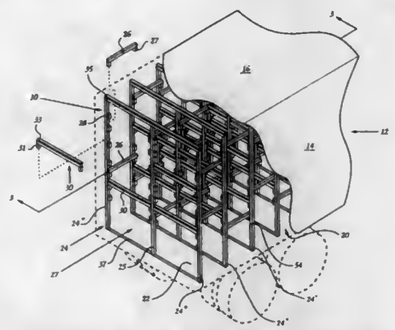
COLLAPSIBLE GARMENT SUPPORT RACK

Edwin L. Farbman, 3020 Valencia Ter., Charlotte, N.C. 28211

Filed Dec. 23, 1993, Ser. No. 173,417

Int. Cl.[6] A47F *7/00*

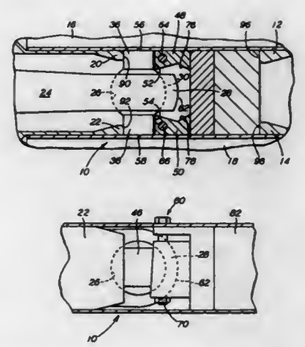
U.S. Cl. 211—189 **27 Claims**



1. A collapsible garment support rack for transportation of a plurality of garments disposed on hooked garment hangers in a longitudinally extending cargo container of the general type having a cargo support surface and an associated cover, the cover being generally box-like and including a plurality of generally planar vertically oriented opposing side wall members, generally planar vertically oriented end wall members and a generally planar ceiling member disposed on the wall members, defining an interior compartment for cargo stowage, said garment rack comprising:

means for forming a garment supporting frame structure configured for occupation of the interior compartment of the cargo container including a frame structure being formed from a plurality of subframes, each subframe being framed from at least two vertical support members, and at least one horizontal support member extending therebetween for disposition across the transverse dimension of the cargo container, and a plurality of spacer members removably mounted to said subframes to extend longitudinally within the cargo container intermediate each subframe to position and stabilize said subframes along the longitudinal dimension of the cargo container and further including means for supporting garments thereon; and

means for facilitating movement of said frame forming means between a garment support condition wherein said frame forming means is configured in an assembled disposition for occupation of the interior compartment of the cargo container for supporting garments within the cargo container for transportation of the garments, and a stowage condition wherein said frame forming means is in a disassembled disposition for transportation of the frame forming means.



5,544,766

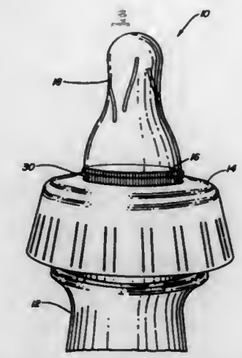
CODED TWO PART NIPPLE MEMBERS FOR BABY BOTTLES AND METHOD OF MAKING

Steven B. Dunn, Beverly Hills, and Fernando Suarez, Costa Mesa, both of Calif., assignors to Munchkin Bottling Inc., Van Nuys, Calif.

Filed Nov. 4, 1994, Ser. No. 334,206

Int. Cl.[6] A61J *11/00*

U.S. Cl. 215—11.1 **22 Claims**



1. A nipple member for an infant nursing system, comprising:

a means for mounting said nipple member to a bottle, said means for mounting comprising a mounting flange portion, said mounting flange portion being immutably nontransparent; and

a nursing portion, said nursing portion being substantially clear and transparent, whereby a caregiver can readily ascertain that said nursing portion is clean before feeding an infant.

14. A nipple member for an infant nursing system, comprising:

a nursing portion, said nursing portion comprising a first material; and

a means for mounting said nipple member to a bottle, said means for mounting comprising a mounting flange portion, unitary with said nursing portion, said mounting flange portion comprising a second material that is harder than said first material, whereby said nipple member is more difficult to pull out from a nursing system during nursing than was heretofore possible.

5,544,767

FREIGHT RAILWAY CAR SLACKLESS DRAWBAR ASSEMBLY

David W. Daugherty, Jr., Bolingbrook, Ill., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Jun. 28, 1995, Ser. No. 495,881

Int. Cl.[6] B61G *9/00*

U.S. Cl. 213—50.5 **18 Claims**

1. An improved slackless drawbar assembly for connecting adjacently disposed ends of a pair of railway freight cars together in a substantially semipermanent manner, said slackless drawbar assembly comprising:

(a) a first pair of vertically disposable rear draft stop members engageable with and securable to respective ones of a pair of vertically disposed side wall portions of a center sill member disposed along a longitudinal centerline of a first railway freight car;

(b) a first pair of vertically disposable front draft stop members engageable with and securable to such respective ones of such pair of vertically disposed side wall portions of such center sill member disposed along such longitudinal centerline of such first railway freight car;

(c) each one of at least one of said first pair of rear draft stop members and said first pair of front draft stop members having a substantially flat surface portion;

(d) an elongated drawbar member having a predetermined length;

(e) a first aperture, having a predetermined configuration, formed through said elongated drawbar member adjacent a first end thereof;

(f) a first ball member having at least a portion thereof disposed in said first aperture, said first ball member having a predetermined diameter;

(g) a first race assembly secured to said elongated drawbar member adjacent said first aperture and having an inner surface thereof surrounding said at least a portion of said first ball member disposed in said first aperture;

(h) a first pair of elongated shaft members extending outwardly from radially opposed sides of said first ball member for a predetermined distance, each of said first pair of shaft members having at least a portion thereof being wedge shaped;

(i) a first pair of wedge members engageable with respective surfaces of said wedge shaped portions of said first pair of elongated shaft members, and each said wedge member having a substantially concave side that faces the drawbar member; and

(j) a first securing means engageable with each one of said first pair of wedge members for securing said first pair of wedge members to such center sill and thereby securing said first end of said drawbar assembly to such end of such first railway freight car.

5,544,768

CHILD RESISTANT CLOSURE

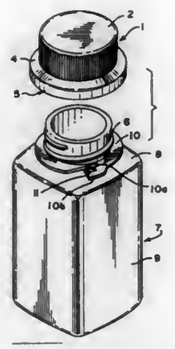
Frank V. Gargione, Egg Harbor, N.J., assignor to Comar Inc., Buena, N.J.

Filed Oct. 12, 1995, Ser. No. 542,054

Int. Cl.[6] B65D *50/04*

U.S. Cl. 215—209 **3 Claims**

1. A child resistant closure for a container having a threaded neck portion and a ring member molded integral with the threaded neck portion, a cylindrical cap having a depending skirt portion threadably mounted on said neck portion, a circumferential, outwardly extending collar portion integral with the lower end portion



of said skirt, a flange portion on the lower end of said collar portion, said flange portion having continuous inner and outer peripheral wall portions and a continuous, planar, bottom wall portion extending between the inner and outer peripheral wall portions, a plurality of circumferentially spaced recesses forming ratchet teeth contained in said bottom wall between the inner and outer peripheral wall portions of said flange portion, a resilient tab member integral with said ring member and extending substantially tangentially relative thereto, a ratchet tooth integral with the tab extending upwardly in a direction toward said recesses, the ratchet tooth being received in said recesses in an escaping relationship during the threading of the cap onto the container neck and in a locking relationship during the unthreading of the cap from the container neck, said flange portion and said ring member being peripherally coextensive, whereby the ratchet tooth and associated recesses are hidden from view, a portion of said resilient tab extending beyond the periphery of the ring member and manually depressed to move the ratchet tooth on the tab out of a respective recess in the cap to thereby unlock the cap for removal from the container.

5,544,769

PACKAGE TO BE MOUNTED ON A BOTTLE

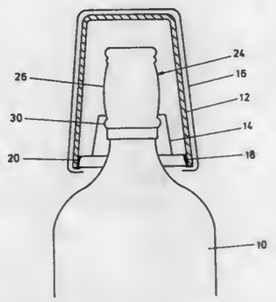
Glyn W. Dowler, Little Hadham, and Edward I. Pruchniewicz, West Yorks, both of, United Kingdom, assignors to Mailway (UK) Limited, West Yorkshire, England

Filed Aug. 30, 1994, Ser. No. 298,054

Claims priority, application United Kingdom, May 13, 1994, 9409579

Int. Cl.[6] B65D *23/12*

U.S. Cl. 215—227 **13 Claims**



1. A package for placement on a bottle having a neck, said package before placement on said bottle comprising an article, a first and a second part, said first part inserted within and being concentrically engaged with said article, said first part defining an opening therethrough for mounting said first part on the bottle whereby said first part supports said package on the bottle, said article having opposed ends, said first part having means at said opening for engaging the neck of the bottle, a portion of said means being spaced axially and radially from said ends, said first part being radially and axially smaller than said article, said second part engaging with said first part and said article to prevent separation of said first and second parts.

5,544,770

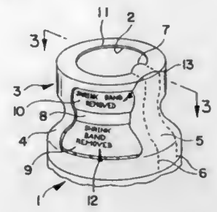
TAMPER EVIDENT SEAL AND SYSTEM

Frank P. Travisano, 601-B Waverly Way, Jamesburg, N.J. 08831

Filed May 7, 1993, Ser. No. 57,809

Int. Cl.[6] B65D *39/00*

U.S. Cl. 215—230 **13 Claims**



1. A tamper evident seal system comprising, in combination, a container having an open mouth, a closure adapted for removable engagement with said container over said mouth, and first and second independent tamper evident seal means applied to said container wherein said first tamper evident seal means comprises first warning indicia printed on said container at a location below said closure and a band of opaque heat shrink material applied about said closure and said container and having a length to extend beyond the location of said first warning indicia whereby said first warning indicia is temporarily covered and obscured by said band when said band is applied, and wherein said second tamper evident seal means comprises second warning indicia printed on a circumferential lip of said container mouth and an opaque foil sheet peelably adhered to said container over said mouth and said second warning indicia, whereby said second warning indicia is temporarily covered and obscured by said sheet when said sheet is applied, whereby said first and second warning indicia, when exposed by removal of said opaque band and sheet, signify that said seal system has been tampered with.

5,544,771

METHOD FOR MANUFACTURING A COLLIMATOR

Jueng-gil Lee; Sun-hoo Park, and Gil-heyun Choi, all of Kyungki, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Division of Ser. No. 365,447, Dec. 28, 1994. This application Jun. 22, 1995, Ser. No. 493,735

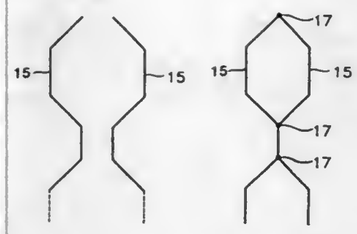
Claims priority, application Rep. of Korea, Feb. 23, 1994, 94-3231

Int. Cl.[6] C23F *1/00*; **B04C** *1/22*

U.S. Cl. 216—2 **8 Claims**

1. A method for manufacturing a collimator comprising the steps of:

patterning each one of a plurality of thin strips into a plurality of basic plates;



forming grooves on front and back surfaces of each one of the plurality of basic plates;

folding each one of the plurality of thin strips to form a portion of at least one pillar cell;

mating an opposing pair of folded thin strips to form at least one pillar cell; and,

welding the mated pair of folded thin strips.

5,544,772

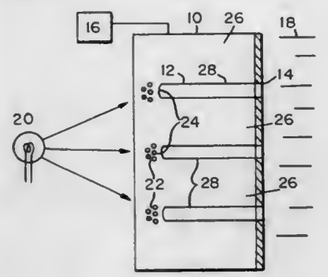
FABRICATION OF A MICROCHANNEL PLATE FROM A PERFORATED SILICON

Robert J. Soave, Cortland, N.Y.; Alan M. Then, Auburn, Mass.; Steven M. Shank, Ithaca, N.Y., and G. William Tasker, West Brookfield, Mass., assignors to Galileo Electro-Optics Corporation, Sturbridge, Mass.

Filed Jul. 25, 1995, Ser. No. 507,027

Int. Cl.[6] B44C *1/22*; **C03C** *15/00*; **H01L** *21/00*

U.S. Cl. 216—2 **23 Claims**



1. A method for manufacturing a microchannel plate electron multiplier comprising the steps of:

defining an array of pores in an etchable substrate;

photoelectrochemically etching on the substrate to produce highly anisotropic pores having wall portions in the substrate in accordance with a defined array; and

activating the pores to produce a thin-film dynode with an electron emissive surface on the wall portions of the pores.

5,544,773

METHOD FOR MAKING MULTILAYER PRINTED CIRCUIT BOARD HAVING BLIND HOLES AND RESIN-COATED COPPER FOIL USED FOR THE METHOD

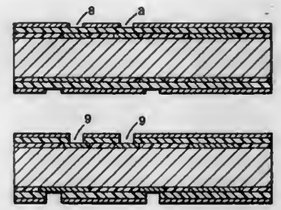
Youichi Haruta, 2-13, Tachibanacho, Kuwana-shi, MIE 511; Tomio Kambayashi, 5-813, Uedayama, Tempaku-ku, Nagoya-shi, Aichi 468; Hitoshi Kato, Espoir Toyoake II-103, 2-1, Yoshiike, Shindencho, Toyoake-shi, Aichi 470-11, and Hiromu Taguchi, Southern Hill Yagoto 1-804, 47-147, Takigawacho, Showa-ku, Nagoya-shi, Aichi 466, all of, Japan

Division of Ser. No. 937,592, Aug. 31, 1992, abandoned. This application Jun. 2, 1994, Ser. No. 252,928

Claims priority, application Japan, Sep. 6, 1991, 3-254261; Mar. 13, 1992, 4-88395; Apr. 6, 1992, 4-112304

Int. Cl.[6] C23F *1/00*

U.S. Cl. 216—13 **9 Claims**



1. A method for making a multilayer printed circuit board having blind holes, which comprises laminating a copper foil and an inner layer panel together by means of an uncured resin layer under heating, said inner panel being a copper-clad laminate having circuit patterns on one or both sides thereof, said resin layer being soluble in an aqueous alkali solution and having a flowability upon heating; forming via holes in the surface of the copper foil by etching; and then dissolving and removing the resin layer under said via holes with an aqueous alkali solution thereby selectively removing the resin and forming blind holes in which the copper foil of the inner layer panel is exposed and thereafter curing the remaining resin layer; and electrically interconnecting the copper foil through the blind holes by conductive plating or conductive paste.

5,544,774

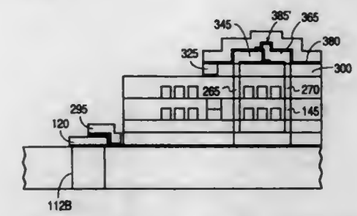
METHOD OF ELIMINATING POLE RECESSION IN A THIN FILM MAGNETIC HEAD

G. Robert Gray, Fremont, Calif., assignor to AIWA Research and Development, Inc., Fremont, Calif.

Filed Aug. 26, 1994, Ser. No. 296,389

Int. Cl.[6] B44C *1/22*

U.S. Cl. 216—22 **10 Claims**



1. A method of fabricating a thin film magnetic head on a substrate comprising the steps of:

forming a lower pole member of magnetic material on the substrate, the lower pole member including first and second ends;

forming first and second side pole members of magnetic material at the first and second ends, respectively, of the lower pole

member, the first and second side pole members being built up from a plurality of layers of magnetic material deposited layer upon layer, the first and second side pole members including tops and bottoms;

forming a conductor coil around one of the first and second side pole members while the first and second side pole members are being formed, the conductor coil being separated from the first and second side pole members by insulative layers;

forming first and second pole piece members of magnetic material at the tops of the first and second side pole members, respectively, the first and second pole piece members facing each other and forming a gap region therebetween;

depositing a durable wear layer on the first and second pole piece members and an area of the head surrounding the first and second pole piece members;

machining the durable wear layer, the gap region, and the first and second pole piece members such that the first and second pole piece members recede to a greater extent than the durable wear layer; and

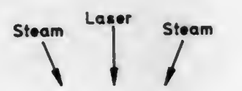
plasma etching the durable wear layer down to the level of the first and second pole piece members such that the durable wear layer and the first and second pole piece members are in the same plane.

5,544,775

LASER MACHINED SLIDER

Randall T. Kerth; Douglas J. Krajnovich; Murlidhar V. Kulkarni, all of San Jose; Wing P. Leung, Arcadia, and Andrew C. Tam, Saratoga, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1994, Ser. No. 363,159
Int. Cl.[6] B23C *3/00*
U.S. Cl. 216—65 **23 Claims**



1. A method of machining a high definition, high aspect ratio pattern into an amorphous carbon element comprising the steps of:

etching the carbon element with a laser beam; and

while etching, subjecting the carbon element to a gas substantially saturated with water vapor.

5,544,776

COMPOSITION IN A LIQUID USED FOR REMOVING A PHOTORESIST FILM AND METHOD THEREFOR

Taneaki Okuda, and Arata Toyoda, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Apr. 25, 1995, Ser. No. 428,672
Claims priority, application Japan, Apr. 26, 1994, 6-088577
Int. Cl.[6] B44C *1/22*
U.S. Cl. 216—83 **9 Claims**

4. A method for removing a photoresist from a material comprising the steps of:

removing said photoresist from said material by use of a remover composition comprising a solvent selected from the group consisting of 4-methoxy-1-butanol, 3-methoxy-1-butanol and a mixture thereof and propylene carbonate; and

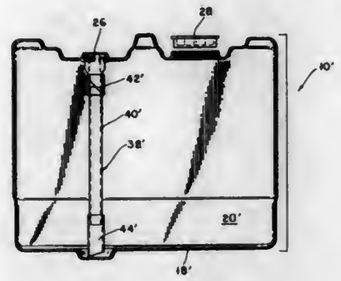
rinsing said remover remaining on said material by use of water.

5,544,777

STACKABLE PLASTIC CONTAINER WITH DRAIN SUMP AND PALLET AND METHOD OF MAKING THE SAME

Lowell G. Watson, Belleville, Canada, assignor to Greif Bros. Corporation, Delaware, Ohio

Continuation of Ser. No. 782,975, Oct. 21, 1991, abandoned, which is a continuation-in-part of Ser. No. 660,699, Feb. 25, 1991, abandoned. This application May 27, 1993, Ser. No. 68,603
Int. Cl.[6] B65D *19/00*
U.S. Cl. 220—4.13 **17 Claims**



1. A plastic container comprising:

a unitary plastic body having a sidewall, a top and a bottom, said top including a plurality of raised ribs, a first access hole and a second access hole being positioned between and below said ribs, and said bottom having a sump with a surface which defines the lowest surface in said body, said sump being vertically aligned with one of said first and second access hole; and

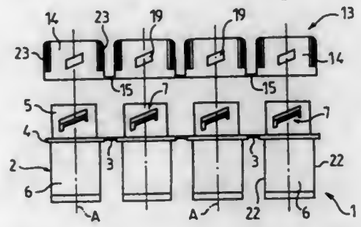
a plastic pallet of integral construction separately formed from the body having an upwardly extending sidewall and secured to the bottom of the container, said pallet and container sidewalls cooperating so as to securely maintain the pallet thereto through an interference therebetween.

5,544,778

COMBINATION OF A ROW OF CONTAINERS AND A STRIP OF CAPS, AND ASSEMBLY OF A CONTAINER AND CAP

Antonin Goncalves, Montmorency, France, assignor to L'Oreal, Paris, France

Filed Apr. 7, 1994, Ser. No. 224,318
Claims priority, application France, Apr. 26, 1993, 93 04881
Int. Cl.[6] B65D *21/02;41/17*
U.S. Cl. 220—23.4 **4 Claims**



1. Assembly of a container and a cap, comprising;

a container having a neck with at least one projecting thread portion and a stop at each end of the thread portion; and

a cap with at least one catch capable of clicking into place at the thread portion by fitting between the stops,

wherein the cap is fixed on the neck of the container by a translational movement parallel to the axis of the container and removed from the container by rotating the cap relative to the container, and

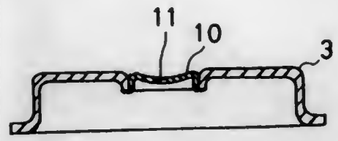
wherein the cap includes on a wall thereof, above the catch, an opening and at least one male ramp which comes into a position, after click-fastening, above the thread portion.

5,544,779

SAFETY DEVICE FOR PRESSURE VESSEL

Katsuya Yamamoto, Konosu, and Norifumi Inada, Sagamihara, both of, Japan, assignors to Sanyo Electric Co., Ltd., Osaka-fu, and Coca-Cola (Japan) Co., Ltd., Tokyo-to, both of, Japan

Filed Jun. 29, 1994, Ser. No. 267,707
Int. Cl.[6] B65D *51/16*
U.S. Cl. 220—89.2 **22 Claims**



1. A safety device for a pressure vessel comprising:

an easily-breakable member of a first thickness having a top wall formed with a breakable portion of a thickness less than said first thickness, said breakable portion being adapted to break when pressure in the pressure vessel which is applied to said breakable portion is larger than a predetermined pressure, said easily-breakable member having a peripheral wall extending from and surrounding said top wall and having an end; and

a fixing member of a thickness greater than said easily-breakable member first thickness for attachment to the pressure vessel and for fixing said easily-breakable member to the pressure vessel, said fixing member having a wall portion which extends toward the inside of said pressure vessel to define an opening having a shape complementary to said peripheral wall of said easily-breakable member to permit communication between the inside and the outside of the said pressure vessel, said fixing member wall portion having an inner end;

said easily-breakable member being fit into said opening of said fixing member such that said end of said easily-breakable member peripheral wall is directed toward the inside of said vessel, and said peripheral wall of said easily-breakable member and said wall portion of said fixing portion being connected to each other for sealing said opening of said fixing portion.

5,544,780

POWER GAS TANK COVER

Cherng B. Jye, P.O. Box 82-144, Taipei, Taiwan

Filed Sep. 26, 1994, Ser. No. 312,399
Int. Cl.[6] B65D *55/00*
U.S. Cl. 220—211 **5 Claims**

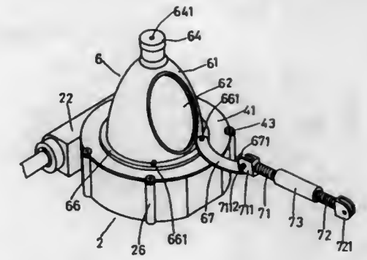
1. A power gas tank cover comprising:

a motor;

a collar including an annular portion, a tubular portion formed at one side of the annular portion and having a hole in communication with an opening of the annular portion, a recess between the annular portion and a neck portion, and an inclined track on an inner side of the neck portion, said recess having a semi-circular groove;

a worm shaft inserted into said tubular portion and connected with said motor;

a sleeve fitted in said inclined track;



an inner jacket which is a cone-shaped member with a first orifice and fixedly mounted on said collar;

an outer jacket which is a cone-shaped member and rotatably fitted on said inner jacket and provided at a lower portion with a worm gear meshed with said worm shaft, said outer jacket having a second orifice which will align with the first orifice of said inner jacket when said outer jacket is rotated to a predetermined position, said worm gear being provided at a bottom with a positioning pin adapted to be received in the semi-circular groove of said recess;

a pressure relief valve arranged on a top of said inner jacket; and

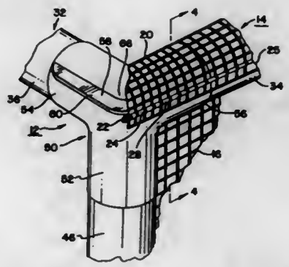
a transmission shaft having a first end pivotally connected with said outer jacket and a second end pivotally connected with a gas tank door.

5,544,781

RECEPTACLE CONSTRUCTION FOR SUPPORTING A COLLAPSIBLE BAG

Henry Mattesky, Cedar Grove, N.J., assignor to Seymour Housewares Corporation, Seymour, Ind.

Filed Jan. 14, 1994, Ser. No. 180,123
Int. Cl.[6] A63B *55/04*
U.S. Cl. 220—404 **14 Claims**



1. A receptacle construction for supporting a collapsible bag having a first opening at a bag end, said bag having an annular edge region with draw string receiving means at said end and a draw string in said receiving means for selectively closing the opening upon drawing the draw string, said construction comprising:

a receptacle defining a cavity for receiving the bag therein and including rim means defining a second opening for receiving at least said edge region, said rim means for receiving and supporting the edge region while said bag is received in said cavity permitting the first opening to be in an open state coincident with said second opening so the bag can receive objects therein through said first opening;

edge region receiving means coupled to the receptacle adjacent to the rim means for releasably receiving and capturing the edge region including the draw string receiving means about the second opening when the bag is received in said cavity,

said edge region receiving means including means for selectively releasably securing the edge region to the receptacle while simultaneously maintaining the first opening in the open state; and

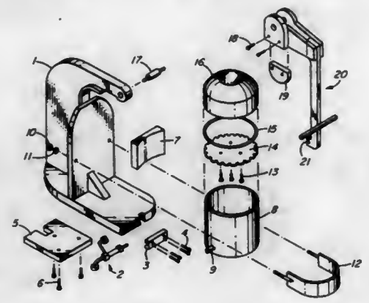
said receptacle having a top and a bottom, said second opening being adjacent to the top of the receptacle, said cavity and second opening defining a common axis extending in a direction from the top to bottom said edge region receiving means comprising spaced flanges having a planar surface extending transversely outwardly from said axis.

5,544,782

PRECISION INVESTMENT CASTING PRESSURE VESSEL

Nels O. Lindholm, P.O. Box 5155, Squamish, B.C., Canada

Filed Jun. 7, 1993, Ser. No. 73,394
Int. Cl.[6] B65D *25/00*
U.S. Cl. 220—584 **14 Claims**



1. An apparatus for subjecting a work piece to pressure, the apparatus comprising:

(a) a hollow pressure vessel comprising first and second vessel portions having respective sealable complementary edges which cooperate to produce a closed sealed interior of the vessel, and can be separated to permit access to the interior of the vessel to insert and remove the workpiece, the interior being subjectable to an interior pressure different from atmospheric pressure.

(b) a support for supporting the first vessel portion,

(c) a clamping or lever arm having a first arm portion hinged to the support for swinging thereabouts and a second arm portion which cooperates with the second vessel portion of the pressure vessel, so that in a first position of the arm the first and second vessel portions are clamped together to close the vessel, and

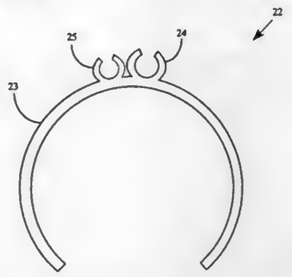
(d) a locking structure to lock the clamping arm with respect to the support, the locking structure including an over-centering latching structure which is over-centered when the clamping arm is in the first position thereof, the locking structure also being responsive to the interior pressure to lock the clamping arm in the first position thereof when the interior of the vessel is subjected to the interior pressure, so as to lock the vessel portions together to prevent opening of the vessel when the interior of the vessel is subjected to the interior pressure.

5,544,783

SPRAY CAN ACCESSORY HOLDER

Charles Conigliaro, 769 SW. Lighthouse Dr., Palm City, Fla. 34990

Continuation of Ser. No. 189,575, Jan. 31, 1994, abandoned.
This application Mar. 22, 1995, Ser. No. 409,906
Int. Cl.[6] B67D *5/06*
U.S. Cl. 220—735 **1 Claim**



1. A device for holding straws to a cylindrical aerosol container when said straws are not being used to direct spray from said container, said device comprising:

a clip-on device having a friction fit, flexible, circular clip-on portion to be attached to a side wall of said aerosol container, said clip-on portion extending substantially but not completely around said sidewall portion as a C-shaped clip, whereby said clip-on portion can snugly engage said side wall; and

said clip-on device including two integral brackets, each of said integral brackets removably receiving by friction fit a straw, each of said integral brackets being formed by a pair of curved legs unitarily formed in one piece with the clip-on portion, said pair of curved legs being spaced on said clip portion and having a bridging segment of the clip portion between them, said pair of curved legs extending from the clip-on portion to form with said bridging segment, a complete C-shaped configuration for substantially but not completely surrounding said straw when engaged, whereby said straw can be attached to said container solely by friction fit of said clip-on portion to said side wall and said straw to said bracket, one of said integral brackets having longer curved legs than the other of said brackets for accommodating a larger straw.

5,544,784

RECHARGEABLE BATTERY VENDING MACHINE

Francis P. Malaspina, Gainesville, Ga., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 26, 1995, Ser. No. 451,594
Int. Cl.[6] A24F *27/14*
U.S. Cl. 221—135 **18 Claims**

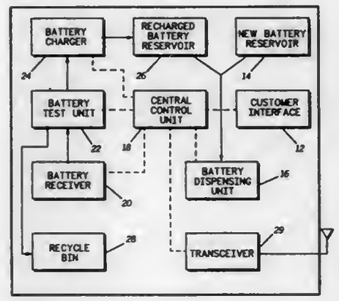
7. A vending machine for vending a rechargeable battery pack, comprising:

control unit having a memory, at least a portion of said memory containing instruction code;

money handling unit, responsive to said control unit, for receiving a payment and generating payment information, said payment information being signaled to said control unit;

interface unit, responsive to said control unit, for displaying alternative operations said vending machine may perform and providing a selection entry means whereby a selection of one of said alternative operations may be entered, thereby generating selection information, said selection information being signaled to said control unit;

battery pack storage space for storing said rechargeable battery pack;



dispensing unit, responsive to said control unit, for moving said rechargeable battery pack from said battery pack storage space to a delivery bin;

battery pack receiver unit, responsive to said control unit, for accepting a received battery pack, said received battery pack having a voltage level;

test unit, responsive to said control unit, for testing said received battery pack and generating test information, said test information being signaled to said control unit;

recharging unit, responsive to said control unit, for recharging said received battery pack, thereby providing a recharged battery pack;

battery pack handling mechanism, responsive to said control unit, for moving said battery pack within said vending machine as directed by said control unit; and

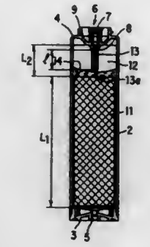
wherein said control unit processes said payment, selection, and test information and controls the operation of said vending machine according to said instruction code.

5,544,785

RESERVOIR OF GASEOUS FUEL IN LIQUID PHASE

Rene Frigiere, Charbonnieres les Bains, France, assignor to Cricket, Rillieux la Pape, France

PCT No. PCT/FR94/00063, § 371 Date Nov. 29, 1994, § 102(e) Date Nov. 29, 1994, PCT Pub. No. WO94/17334, PCT Pub. Date Aug. 4, 1994
PCT Filed Jan. 18, 1994, Ser. No. 302,738
Claims priority, application France, Jan. 19, 1993, 93 00683
Int. Cl.[6] B67D *5/00*
U.S. Cl. 222—3 **6 Claims**



1. A reservoir for gaseous fuel in a liquid phase, said reservoir comprising:

an elongate cylindrical wall;

a lower end wall abutting the cylindrical wall and provided with a filling orifice;

an upper end wall abutting the cylindrical wall and provided with a draw-off orifice equipped with a draw-off member and with a pressure reducer;

an internal volume defined by the cylindrical wall and the end walls;

an absorbent medium occupying less than all of the internal volume; and

a chamber defined by an unoccupied portion of the internal volume between the absorbent medium and the upper end wall,

wherein the chamber has a volume that is at least equal to a volume of the fuel in the liquid phase not absorbed by the absorbent medium when the reservoir is upside down;

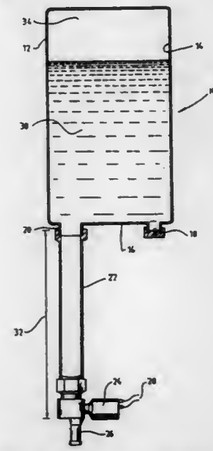
wherein the draw-off orifice is equipped with a draw-off tube of fine bore positioned upstream of the pressure reducer and housed axially in the chamber, and wherein the draw-off tube is of sufficient length that an innermost end of the draw-off tube is not below a level of the fuel in the liquid phase which may be present in the chamber when the reservoir is upside down.

5,544,786

VOLUME AND FLOW MEASURING APPARATUS

James Gamilis, North Carlton, and Emmanuel A. Gamilis, East Brighton, both of, Australia, assignors to Technichem Pty. Ltd., Australia

PCT No. PCT/AU90/00496, § 371 Date Jun. 15, 1992, § 102(e) Date Jun. 15, 1992, PCT Pub. No. WO91/05986, PCT Pub. Date May 2, 1991
PCT Filed Oct. 17, 1990, Ser. No. 859,476
Claims priority, application Australia, Oct. 17, 1989, PJ6923
Int. Cl.[6] B67D *5/08*
U.S. Cl. 222—59 **2 Claims**



1. An apparatus for dispensing a metered volume of liquid comprising:

a liquid container body for containing liquid in a lower portion thereof;

a pressure responsive, one-way valve extending through said container body so as to be responsive to pressure within said container body and so as to be responsive to the pressure of a gas applied to the valve exterior of said container body, said valve allowing gas flow into said container body when the gas pressure exterior of said container body exceeds the internal pressure in the container;

a liquid outlet from said container body, said one-way valve and said outlet being located at the same level of said container body and at a level lower than the level of liquid in said container body;

a conduit connected to said outlet and through which the liquid flows at the constant pressure;

a flow valve for controlling the flow of liquid through the conduit, said flow valve being open for a predetermined time to deliver a measured volume of liquid;

a processing means connected to said flow valve; and

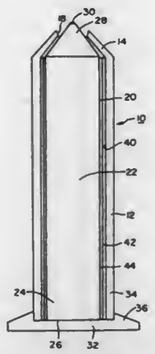
a measurement instrument in said conduit for measuring the flow parameters of liquid flowing through said conduit, having a first capacitance device connected to said processing means, said first capacitance device having a deflectable strip member attached to and in electrical isolation from a reference strip member, and a second capacitance device connected to said processing means, said second capacitance device comprising a second strip member attached to and in electrical isolation from a second reference member, the end of said second strip member distal from the attachment of said second reference member being provided with lateral fins which protrude into the flow path of the liquid in said conduit and are aligned parallel to the flow of liquid, the capacitance between said deflectable strip member and said reference member of said first capacitance device and the capacitance between said second strip member and said second reference member of said second capacitance device providing information to said processing means on the flow parameters of the liquid, said parameters being used by said processing means to determine the open time of said flow valve.

5,544,787

REUSABLE DISPENSING ASSEMBLY FOR SUSCEPTOR-FREE MICROWAVEABLE ADHESIVE CHARGE, AND MICROWAVEABLE ADHESIVE CHARGE THEREFOR

Bernard M. Malofsky, Bloomfield, Conn., assignor to Loctite Corporation, Hartford, Conn.

Filed Aug. 10, 1994, Ser. No. 287,978
Int. Cl.[6] B65D *35/56*
U.S. Cl. 222—105 **10 Claims**



1. A two-part dispensing assembly for heating and subsequent dispensing of a microwaveable adhesive material, comprising:

(I) a reusable dispenser including:

(A) a housing having a microwaveable adhesive charge-receiving cavity therein, said housing including a sleeve with an interior surface, said sleeve being:

formed of thermal insulating material, and

constructed and arranged for (i) removable insertion of said microwavable adhesive charge into the cavity with a discharge portion of the microwavable adhesive charge protruding from the sleeve for selective dispensing of microwaved adhesive material by compressive force exteriorly exerted on the sleeve, and (ii) thermally insulating the microwavable adhesive charge other than the protruding discharge portion thereof; and

(B) a microwave susceptor on the interior surface of the sleeve, said microwave susceptor being constructed and arranged to receive microwave energy when the dispensing assembly is exposed to microwave radiation and to responsively generate heat for transmission to the microwavable adhesive charge inserted into the cavity of the housing; and

(II) a unitary microwaveable adhesive charge of a size and a shape for removable insertion thereof into and retention in the cavity of the housing, and selectively removable from the cavity, the unitary microwaveable adhesive charge comprising:

(A) a container, and

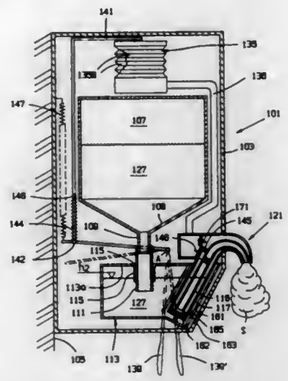
(B) a microwaveable adhesive material in said container, wherein the microwaveable unitary adhesive charge is (i) devoid of susceptor materials and susceptor structure, and (ii) in heat-transfer relationship with said microwave susceptor when the microwaveable unitary adhesive charge is inserted into and retained in the cavity of the housing, and the dispensing assembly is exposed to microwave radiation.

5,544,788

METHOD OF AND APPARATUS FOR DISPENSING BATCHES OF SOAP LATHER

Paul Meyer, Kreuzlingen, Switzerland, assignor to Steiner Company, Inc., Chicago, Ill.

Division of Ser. No. 342,891, Nov. 21, 1994, Pat. No. 5,439,140, which is a division of Ser. No. 18,735, Feb. 17, 1993, Pat. No. 5,398,845. This application Apr. 20, 1995, Ser. No. 425,456
Int. Cl.[6] B67D *5/00*
U.S. Cl. 222—110 **18 Claims**



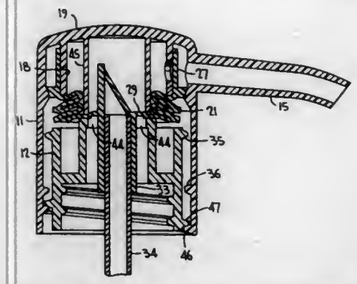
1. A dispenser for batches of lather, comprising first and second vessels for first and second supplies of liquid soap, said second vessel being disposed below said first vessel and including a lower portion for said second supply, an upper portion for a body of air and a first outlet for evacuating of liquid soap from said lower portion; a lather generator connected with said lower portion through said first outlet and defining a mixing chamber having a second outlet; means for repeatedly compressing said body of air to thus expel successive quantities of liquid soap from said second supply into said mixing chamber through said first outlet and to admit compressed air into said mixing chamber to form successive batches of lather which is expelled through said second outlet; and means for replenishing said second supply from said first supply upon expulsion of a quantity of liquid soap from said second vessel including a conduit having an intake end connected with said first vessel and a discharge end for admission of liquid soap at a predetermined level within said second vessel, said conduit extending downwardly through the upper portion of said second vessel, said discharge end establishing a boundary between the second supply and the body of air in said second vessel.

5,544,789

BELLOWS PUMP DISPENSER

James R. Gillingham, Hacienda Heights, Calif., assignor to Calmar Inc., City of Industry, Calif.

Filed Jan. 5, 1995, Ser. No. 369,114
Int. Cl.[6] B67D *5/33*
U.S. Cl. 222—153.13 **8 Claims**



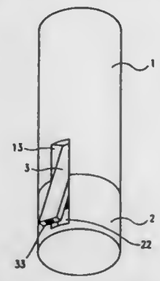
1. A pump dispenser, comprising, a housing including a pair of relatively reciprocable parts, a tubular resilient bellows defining a pump chamber and being sealed at one end between said parts, said bellows having a valve controlled inlet and outlet, one of said parts including a discharge passage communicating with said valve controlled outlet, the other of said parts having a container vent opening and being adapted for mounting the dispenser to a container of product to be dispensed, the improvement wherein said other part has a wall containing said vent opening and a valve seat surrounding said opening, an end of said bellows opposite said one end overlying said vent opening, said one part having a bearing element for sealingly engaging said bellows against said valve seat in a non-use position of shipping and storage in which said one part is fully depressed relative to said other part for sealing said container vent closed, and cooperating means on said parts for locking the dispenser in said non-use position.

5,544,790

PLASTIC SQUEEZE CONTAINER

Yen-Ho Lu, No. 12, Lane 5, Alley 301, Hsiao-Yang Road, Chang Hua, Taiwan

Filed Oct. 24, 1995, Ser. No. 547,359
Int. Cl.[6] B65D *37/00*
U.S. Cl. 222—212 **1 Claim**



1. A plastic squeeze container comprising:

a container body to hold a fluid, said container body comprising a neck at a bottom end thereof, a first longitudinal side notch adjacent to said neck, a recessed retaining hole at one end of said first longitudinal side notch of said container body remote from said neck, and a slope longitudinally downwardly extended from said neck to said recessed retaining hole;

a cap covered on said neck of said container body, said cap comprising a recessed bottom hole, which receives said neck of said container body, a second longitudinal side notch, which aligns with the first longitudinal side notch of said container body when said neck of said container body is fitted into said recessed bottom hole of said cap, a guide tube in said second longitudinal side notch of said cap, two small recessed portions at two opposite side walls of 20 said second longitudinal side notch of said cap, and a fluid tube in communication between said guide tube and said recessed bottom hole; and

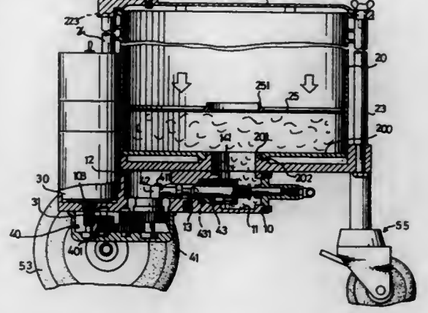
a guide block fitted into said first longitudinal side notch of said container body and said second longitudinal side notch of said cap, said guide block comprising a springy coupling portion at one end fastened to said recessed retaining hole of said container body, a spout at an opposite end, a back hole coupled to said guide tube of said cap, a fluid passage in communication between said spout and said back hole, and two small raised portions at two opposite lateral sides respectively turned in the small recessed portions of said cap, said guide block turned on said two small raised portion of said guide block between first position in which said guide tube is closed and a second position in which said guide tube is opened.

5,544,791

GREASE PUMPING ASSEMBLY

Chen-keng Chih, 6F-2, No. 57, Hsuehfu Rd., Taichung, Taiwan

Filed Nov. 7, 1995, Ser. No. 553,147
Int. Cl.[6] G01F *11/00*
U.S. Cl. 222—262 **6 Claims**



1. A grease pumping assembly comprising:

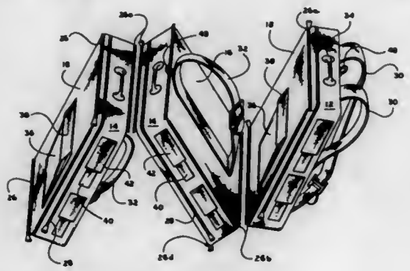
a drum having an open top and a bottom, the bottom having a first central hole defined therein;

a base having a first end and a second end, said first end thereof having a first recess defined in an upper portion thereof and a first hole defined transversely therein which communicates with said first recess, said second end thereof having a second recess defined in said upper portion thereof and a second hole defined in said base and located between said first and said second recesses, a communicating passage defined in said base and communicating with said first recess and said second hole, a bottom defining said second recess having a third hole defined therein;

a bottom plate having a first end and a second end, said bottom plate disposed to an under side of said base, said first end thereof having a reduction means disposed therein which has a top plate disposed thereto from which an eccentric rod extends upwardly and said eccentric rod extending into said second hole of said base, said reduction means having a gear disposed near said second end of said bottom plate,

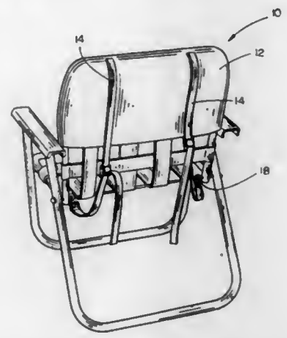
a motor having a first end and a second end, said second end thereof having a pinion rotatably extending therefrom, said pinion engaged to said gear;
a connector having a first end and a second end, said first end thereof having a socket and said second end thereof having a ring for receiving said eccentric rod therein;
a pushing rod having a first end and a second end and extending through said communicating passage, a central passage defined longitudinally in said pushing rod and extending through said first end of said pushing rod and an inclined passage defined radially in said pushing rod and said inclined passage communicating with said central passage, a first stop and a second stop respectively and securely engaged to said pushing rod and a first spring mounted to said pushing rod and located between said first and said second stops, a conic element engaged with said first end of said pushing rod and movably sealing said central passage, a second spring disposed in said central passage and connected to said conic element with one end of said second spring, the other end of said second spring being secured to a pin which extends radially in said central passage, said second end of said pushing rod engaged to a threaded rod, said threaded rod having one end with a ball which is rotatably engaged to said second end of said pushing rod and said threaded rod threadedly engaged to said socket of said connector, and
a pipe having a first end connected to said first end of said base and communicating with said first hole of said base, a second end of said pipe connected to a grease gun;
said drum disposed to said base and said first central hole communicating with said first recess such that said grease dropping into said first recess from said drum and said pushing rod is moved reciprocatingly within said communicating passage by rotating said top plate so as to pump said grease to said grease gun via said pipe.

5,544,792
CONVERTIBLE STUDENT BOOK BAG
Billy C. Arnwine, 16909 Old Colony Way, Rockville, Md. 20853
Filed Sep. 6, 1994, Ser. No. 300,959
Int. Cl.[6] A45F *4/02*
U.S. Cl. 224—153 **4 Claims**



1. A convertible book bag comprising:
a primary compartment having an inner side panel with a pair of shoulder straps secured thereto and an outer side panel, wherein said side panels are bordered by a bottom, a top, and two end panels and further comprising zipper slide elements positioned along a top, and bottom border of said outer side panel;
a secondary compartment having an inner side panel with a single shoulder strap secured thereto and an outer side panel, wherein said side panels are bordered by a bottom, a top, and two end panels and comprising zipper slide elements positioned along a top and bottom border of said outer side panel and further comprising zipper mating elements positioned along a top and bottom border of said inner side panel by mating with said zipper slide elements of the primary compartment, said shoulder strap positioned on said inner side panel such that it is concealed by said outer side panel of said primary compartment when said primary compartment is zipped to said secondary compartment;
whereby, said primary and secondary compartments may be converted into a fully opened relationship by unzipping the zipper slide element along the top of said primary compartment.

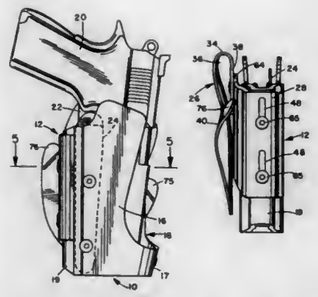
5,544,793
FOLDING CHAIR BACKPACK
Kathy L. Harrop, 2026 W. 66th St., Davenport, Iowa 52806
Filed Mar. 28, 1995, Ser. No. 412,245
Int. Cl.[6] A45F *3/04*
U.S. Cl. 224—645 **4 Claims**



1. A device for transporting folding chairs having seatbacks and seats, comprising:
(a) a seatback sleeve having a closed end and an open end dimensioned to receive the seatback of a folding chair; and
(b) left and right shoulder straps, each having a first end and a second end, each of said first ends attached to said closed end of the seatback sleeve and having first fastener means extending within said seatback sleeve adapted for attachment to a seatback upper-crossmember of said chair, and each of said second ends having second fastener means adapted for attachment to a central cross-member of said chair.

5,544,794
HOLSTER WITH HANGER DEVICE
Richard E. D. Nichols, San Diego, Calif., assignor to R. E. D. Nichols & Associates, San Diego, Calif.
Continuation of Ser. No. 113,052, Aug. 25, 1993, abandoned. This application Oct. 19, 1995, Ser. No. 547,689
Int. Cl.[6] F41C *33/02*
U.S. Cl. 224—667 **29 Claims**

1. A holster for receiving a handgun of selected size, comprising:
a holster body having an inner side wall, an outer side wall, a rear end wall and a front end wall forming a cavity for securely seating a handgun in a single, predetermined orientation, the holster cavity being of predetermined shape and dimensions for securely seating a handgun of selected size in said predetermined orientation only in which a rear edge of the handgun including a trigger guard faces said rear end wall, whereby the handgun cannot be securely seated in said cavity in any other orientation;
the rear end wall being substantially rigid and preformed for receiving the trigger guard of a handgun of said selected size inserted into said cavity;
a hanger device having a first end part including means for suspending the hanger device from a person, a second end part spaced from the first end part, and a connecting piece extending between said first and second end parts;
at least the second end part and connecting piece of the hanger device being substantially rigid and the second end part being preformed to conform permanently to the shape of at least part of said rear end wall, said second end part receiving and overlying said part of said rear end wall; and
at least one securing device securing the second end part to the rear end wall of the holster.

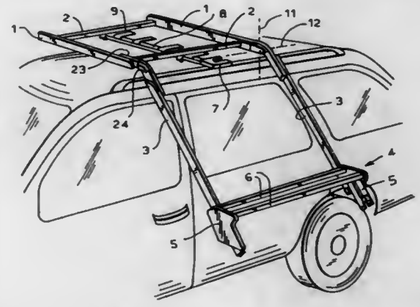


5,544,795
SHOCK ABSORBING SHOULDER STRAP
Stephen J. Perrin, 2542 Yucca Dr., Camarillo, Calif. 93010
Continuation of Ser. No. 147,332, Nov. 3, 1993, Pat. No. 5,450,995. This application Aug. 10, 1995, Ser. No. 513,542
Int. Cl.[6] A45F *3/14*
U.S. Cl. 224—254 **3 Claims**



1. A shock-absorbing shoulder strap for use in carrying an item over one's shoulder, said strap comprising:
an inelastic body portion adapted to rest on one's shoulder during use and defining a first end, a second end, an inner surface and an outer surface and comprising a length of compressible foam material encased between an outer layer of material and an inner layer of material, said inner layer of material being a tacky vinyl, an inelastic strap secured to said outer layer of material and defining extended strap ends, and stitching extending between said inner and outer lengths of material so as to define at least one longitudinally extending channel in said inner surface of said body portion to prevent lateral slippage of said shoulder strap on one's shoulder;
a first elastic strap member;
a first coupling secured to and extending between said first elastic strap member and one of said ends of said inelastic strap;
a second elastic strap member;
a second coupling secured to and extending between said second elastic strap member and the other of said ends of said inelastic strap;
a first means for releasibly attaching said first elastic strap member to the item at a first location thereon; and
a second means for releasibly attaching said second elastic strap member to said item at a second location thereon, said second location being spaced from said first location.

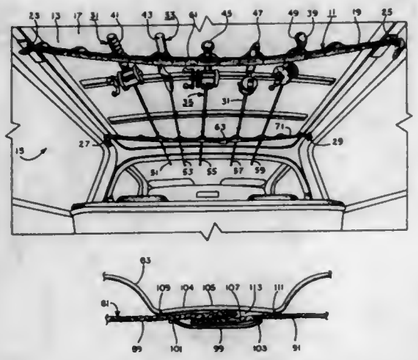
5,544,796
ROOF RACK FOR VEHICLES
Fredi Dubach, Bäretswil, Switzerland, assignor to Milz Produkte AG, Switzerland
Filed Jul. 24, 1995, Ser. No. 506,379
Claims priority, application Switzerland, Jul. 25, 1994, 2341/94
Int. Cl.[6] B60R *9/042*
U.S. Cl. 224—310 **12 Claims**



12. A device for supporting a load on a vehicle's roof comprising:
at least one substantially rigid track including a horizontal roof section and an auxiliary section extending outward and downward from an end of said roof section, and
at least one carriage for receiving said load,
wherein said carriage is mounted to and displaceable along said track and wherein said track and said carriage comprise a guiding mechanism for preventing a tilting of said carriage while said carriage is displaced along and between said roof and said auxiliary sections of said track.

5,544,797
FISHING ROD TRANSPORT APPARATUS
John H. Silva, 3301 Loma Vista, Waco, Tex. 96708
Continuation of Ser. No. 808,074, Feb. 10, 1991, abandoned, which is a continuation of Ser. No. 728,008, Jul. 3, 1991, abandoned, which is a continuation of Ser. No. 460,824, Jan. 4, 1990, abandoned. This application Sep. 28, 1994, Ser. No. 314,339
Int. Cl.[6] B60R *7/00*
U.S. Cl. 224—311 **12 Claims**

1. A fishing rod carrier for use in a vehicle cab interior bounded in-part by a vehicle cab roof, for receiving a plurality of fishing rods having a handle at one end and a rod tip at the opposite end, comprising:
(a) a first carrier member, including:
a plurality of segments of flexible elongated material;



at least one flexible elastomeric expansion joint secured between successive ones of said plurality of segments of flexible elongated material;

said plurality of segments of flexible elongated material and said at least one flexible elastomeric expansion joint together forming a load-bearing strap with upper and lower surfaces and first and second ends;

a positioning strap of flexible elastomeric material coupled to said load bearing strap at selected locations to form a plurality of elastomeric loops along said upper surface of said load bearing strap, each loop defining a clearance between said load-bearing strap and said positioning strap;

means for releasably coupling said first and second ends of said first strap to said vehicle cab roof;

(b) a second carrier member, including:

a plurality of segments of flexible elongated material;

at least one flexible elastomeric expansion joint secured between successive ones of said plurality of segments of flexible elongated material;

said plurality of segments of flexible elongated material and said at least one flexible elastomeric expansion joint together forming a load-bearing strap with upper and lower surfaces and first and second ends;

a positioning strap of flexible elastomeric material coupled to said load bearing strap at selected locations to form a plurality of elastomeric loops along said upper surface of said load bearing strap, each loop defining a clearance between said load-bearing strap and said positioning strap;

means for releasably coupling said first and second ends of said first strap to said vehicle cab roof; and

(c) wherein said at least one expansion joint allows said load bearing straps of said first and second carrier members to expand to accommodate additional fishing rods by stretching in response to the increased load, and which minimizes sagging to said load-bearing straps by contracting in response to a decrease in load.

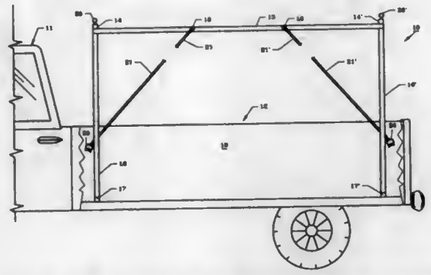
5,544,798

ELONGATED ARTICLE CARRIER

Douglas S. Shumate, 320 Farmington Rd., and Samuel D. Crumpton, 325 Richardson Rd., both of Reidsville, N.C. 27320

Filed Oct. 17, 1994, Ser. No. 323,769
Int. Cl.[6] B60R *9/08*
U.S. Cl. 224—402 **17 Claims**

1. Apparatus for supporting a canoe above a truck bed during transportation comprising: a first transverse bar, a second transverse bar, a longitudinal member, said first and said second transverse bars each having a middle and being attached to said longitudinal member at opposite ends of said longitudinal member proximate the middle of each of said first and said second transverse bars, a first post, said first post having an upper end and a



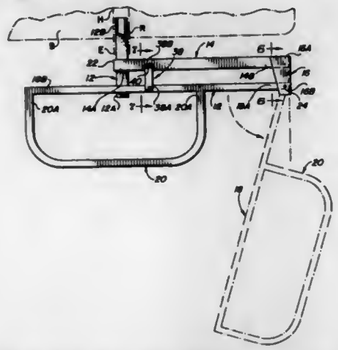
lower end, said post joined to said longitudinal member to elevate said longitudinal member above said truck bed, means to stabilize said apparatus, said stabilizing means connected to said longitudinal member, and a stabilizer, said stabilizer joined to said stabilizing means and adapted to be joined to the truck bed.

5,544,799

SWING AWAY CARGO CARRIER ASSEMBLY

Ralph L. Didlake, 9215 W. Douglas, Wichita, Kans. 67209-1453

Filed Jun. 14, 1995, Ser. No. 490,206
Int. Cl.[6] B60R *9/06*
U.S. Cl. 224—502 **17 Claims**



1. A swing away cargo carrier assembly for use with a vehicle having a receiver-type hitch disposed at the rear of the vehicle, said carrier assembly comprising:

(a) a main support member including a front end adapted for insertion into the receiver hitch and extending rearwardly from the receiver hitch to a rear end spaced from the receiver hitch;

(b) a main extension arm fixedly attached at an inner end thereof to said main support member at a location between and spaced from said front and rear ends of said main support member and adjacent to a rear end of the receiver hitch, said main extension arm extending laterally from said main support member along the rear of the vehicle to an outer end;

(c) a pivot support member fixedly attached to said outer end of said main extension arm and extending rearwardly therefrom;

(d) a swing arm mounted at an outer end to said pivot support member for undergoing pivotal movement relative thereto and to said main extension arm between a retracted position in which said swing arm is disposed adjacent to and rearwardly of said main extension arm and adjacent to the rear of the vehicle with an inner end of said swing arm overlapping and extending laterally beyond said rear end of said main support member and an extended position in which said swing arm is disposed away from said main extension arm and the rear of the vehicle; and

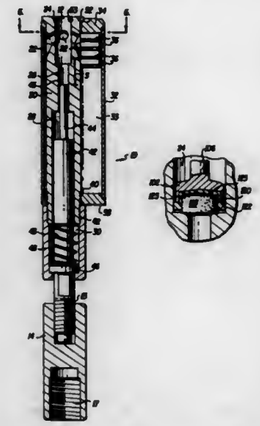
(e) means attached to and extending reawardly from said swing arm for supporting a cargo container.

5,544,800

SELF-POWERED FASTENER SYSTEM

William D. Armstrong, Dallas, Tex., assignor to Innovative Quality Products Corporation, Dallax, Tex.

Division of Ser. No. 147,577, Nov. 5, 1993, Pat. No. 5,423,469.
This application May 26, 1995, Ser. No. 450,883
Int. Cl.[6] B25C *1/10*
U.S. Cl. 227—009 **10 Claims**



10. A tool for driving a powered fastener into a work surface, said fastener including a shaft, a penetration end and a receptacle head end having a cavity for receiving a power charge, and a power charge received in said cavity, said tool comprising:

a barrel bore having a muzzle for receiving said fastener, a surface for supporting said fastener in a stationary position, and

a spring-biased firing pin for driving into said power charge to ignite said power charge,

wherein said tool receives said fastener such that said fastener penetration end extends out of said muzzle prior to firing and is to be placed in contact with said work surface, wherein said work surface, said fastener penetration end, said fastener receptacle head end, said supporting surface and said firing pin cooperate to ignite said power charge to drive said fastener into said work surface.

5,544,801

FASTENING DEVICE FOR BELT CONNECTORS

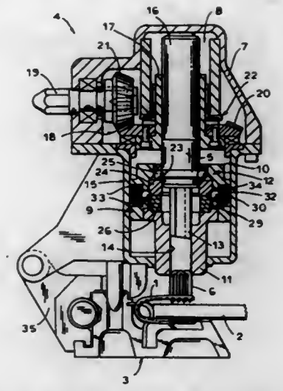
Jean-François Schick, Monteferrier/Lez, France, assignor to Goro S.A., Saint Privat des Vieux, France

Filed Mar. 31, 1995, Ser. No. 412,324
Claims priority, application Germany, Apr. 23, 1994, 44 14 262.5
Int. Cl.[6] F16G *3/16;3/04*
U.S. Cl. 227—110 **8 Claims**

1. An apparatus for stapling a belt-connecting clip fitted to a belt end, the apparatus comprising:

a crimping die adapted to support the belt end over which is fitted the clip;

a pressure-head housing fixable relative to the crimping die and having a lower section forming a vertical guide and an upper section;



a hold-down device having a lower end engageable with the clip on the belt end on the crimping die, having an outer guide ring vertically slidable in the housing, and forming a vertically throughgoing guide bore adapted to hold staples engageable through the clip and belt end on the crimping die;

a penetrating die vertically displaceable in the housing and having an extension projecting vertically downward through the guide bore and engageable with the staples therein;

means including a spindle/nut mechanism in the upper housing section for vertically displacing the penetrating die in the housing between an upper position with its extension above and out of contact with the staples, clip, and belt end and a lower position engaged down on the staples and forcing same through the clip and belt end and against the crimping die; and

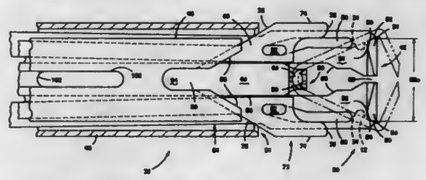
means including a spring-mounted deep-groove ball coupling between the hold-down device and the penetrating die for joint downward movement of the hold-down device and penetrating die until the hold-down device is urged upward with a force exceeding a specific contact force and thereafter for downward travel only of the penetrating die, whereby the hold-down device will move downward with the penetrating die until the hold-down device engages and clamps the clip and belt end to the crimping die and thereafter the penetrating die alone moves downward to drive the staples through the clip and belt end and against the crimping die.

5,544,802

SURGICAL STAPLE AND STAPLER DEVICE THEREFOR

Lawrence Crainich, Ceda Rd., P.O. Box 996, Charlestown, N.H. 03603

Filed Jul. 27, 1994, Ser. No. 281,307
Int. Cl.[6] A61B *17/068*
U.S. Cl. 227—176.1 **18 Claims**



1. A surgical stapler, comprising:

a housing having a diameter;

means for storing at least one staple within the housing, wherein the staple comprises a base having first and second base segments defining in an un-deformed state a substantially V-shaped configuration having an apex, each of said first and

second base segments having a first end and a second end wherein the first end of the first base segment is joined to the first end of the second base segment at the apex of the V-shaped configuration as so to define a first angle between the first base segment and the second base segment of less than about 180°; and first and second legs each having a first end and a second end, the first and second legs being connected substantially perpendicular at the first ends of the first and second legs to the second ends of the first and second base segments respectively;

forming means within the housing for deforming the staple to a final deformed state wherein the staple has a substantially O-shaped configuration bent at at least one point in each of the first and second base segments and bent at the apex to a second angle larger than the first angle, wherein the forming means comprises an anvil and forming blade means for forming the staple against the anvil to the final deformed state, wherein the forming blade means comprises a first forming blade for forming the staple against the anvil to an intermediate deformed state wherein the staple is bent at the apex to the second angle, and a second forming blade for forming the staple against the anvil to the final deformed state, wherein the second forming blade comprises two longitudinally extending arms, and the second forming blade is slidably mounted within the housing between a withdrawn position and a deforming position wherein the arms extend longitudinally past the anvil so as to bend each base segment and thereby deform the staple into the final deformed state, and wherein the longitudinally extending arms are laterally deflectable between a first lateral spacing in the withdrawn position and a second lateral spacing wider than the first lateral spacing in the deforming position; and

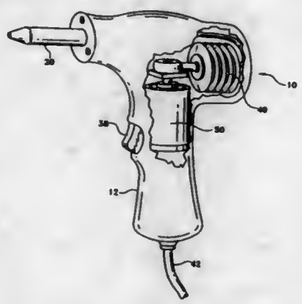
transfer means for transferring a staple from the storing means to the forming means.

5,544,803

PORTABLE ELECTRIC DESOLDERING TOOL

David C. Jacks, Pomona, Calif., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Aug. 8, 1994, Ser. No. 287,547
Int. Cl.[6] B23K *3/03*
U.S. Cl. 228—20.5 **12 Claims**



1. An electronic desoldering gun comprising:

a heating tip;

a vacuum pump connected to said heating tip; and

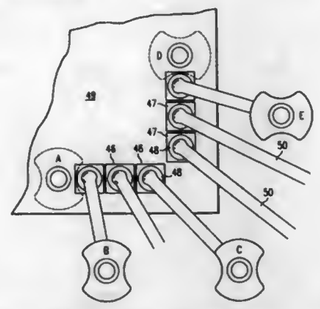
an electric motor connected to said pump, wherein said heating tip is electrically connected in partial series with said motor.

5,544,804

CAPILLARY DESIGNS AND PROCESS FOR FINE PITCH BALL BONDING

Howard R. Test, Plano, Tex.; Michael R. Vinson, Lansdale, Pa., and Albert H. Kuckhahn, Frisco, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 8, 1994, Ser. No. 255,582
Int. Cl.[6] B23K *20/10*
U.S. Cl. 228—180.5 **10 Claims**



5. A capillary for bonding wire comprising:

(a) a rigid tubular member having a wall portion and a central bore therethrough,

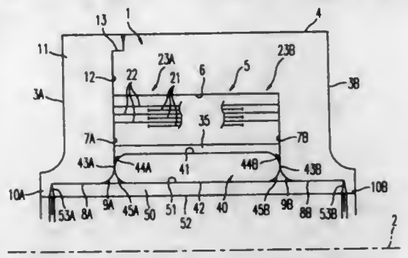
(b) said wall portion having the general cross-sectional shape of a bow tie.

5,544,805

METHOD OF PRODUCING A FIBRE-REINFORCED METALLIC CIRCULAR PART

Philippe L. A. Alassoeur, Le Vesinet; André C. F. Collot, Mennecy; Xavier J. M. Guyonnet, St Fargeau Ponthierry; Gilles C. C. Klein, Mery S/oise, and Ludovic E. C. Molliex, Paris, all of, France, assignors to Societe National d'Etude et de Construction de Moteurs d'Aviation "Snecma", Paris, France

Filed Feb. 10, 1995, Ser. No. 386,775
Claims priority, application France, Feb. 10, 1994, 94.01490
Int. Cl.[6] B23K *20/00;* **B21K** *3/00*
U.S. Cl. 228—190 **20 Claims**



1. A method of producing a fiber-reinforced metallic circular part having a central hollow and wherein the reinforcing fibers are arranged in said part in the vicinity of said hollow said method comprising the steps of:

a) providing an annular metallic blank having a geometric axis and containing a channel-sectioned circular groove opening towards said axis;

b) placing uncompressed concentric layers of said reinforcing fibers and additional metal in said groove, said fiber layers alternating with said additional metal layers;

c) covering said groove with a deformable closure member;

d) evacuating and hermetically sealing said groove;

e) placing the assembly consisting of said blank and said layers of fibers and additional metal sealed in said groove of said blank in an autoclave and subjecting the assembly thereto to a temperature at least equal to the superplastic forging temperature of said additional metal layers and a pressure at least equal to the superplastic forging pressure of said additional metal layers such that said fiber layers and said additional metal layers are compressed together and welded to said blank by superplastic forging in a single operation; and

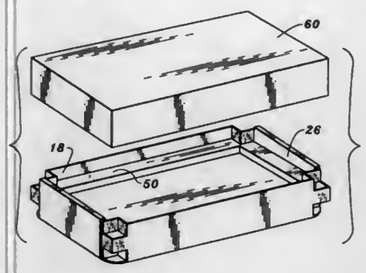
f) machining the compressed and welded assembly resulting from step (e) to obtain the required part.

5,544,806

BOX FOR CARRYING AND PROTECTING A PAINTING

Thomas J. Anderson, 1325 Greenbrook Dr., and Hugh C. Walker, 120 Raven Ct., both of Danville, Calif. 94526

Filed Aug. 22, 1995, Ser. No. 517,261
Int. Cl.[6] B65D *5/42;81/02*
U.S. Cl. 229—178 **11 Claims**



1. A box for carrying and protecting a painting having corners, said box comprising, in combination:

a primary panel having two opposed side edges and two opposed end edges extending between said side edges;

side panels extending along said two opposed side edges, said side panels being spaced from one another and disposed orthogonally with respect to said primary panel;

end panels extending along said two opposed end edges, said end panels being spaced from one another and disposed orthogonally with respect to both said primary panel and said side panels;

locking means locking together said side panels and said end panels and maintaining said side panels and said end panels orthogonally disposed relative to said primary panel; and

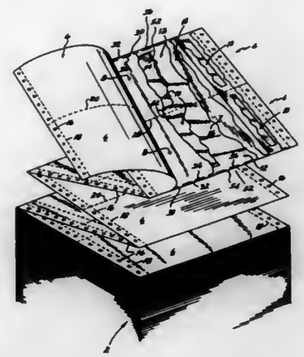
painting engagement means for engaging opposed sides of a painting positioned between said side and end panels at corners of the painting to maintain the painting spaced from said primary panel and out of engagement with said primary panel, said painting engagement means comprising a plurality of pairs of spaced painting engagement members projecting inwardly of said end panels and side panels and adjacent to said primary panel, each pair of painting engagement members defining a space for accommodating a corner of a painting positioned in said box with the painting engagement members of each pair thereof frictionally engageable with both sides of the painting at a corner of the painting, each said painting engagement member comprising two painting engagement panels interconnected at a fold line and disposed at an angle with respect to one another, and said painting engagement panels being at least partially defined by said side panels.

5,544,807

MAILER ASSEMBLY

Russell L. Kreider, Boothwyn, Pa., assignor to International Business Systems, Incorporated, King of Prussia, Pa.

Filed Feb. 6, 1995, Ser. No. 384,518
Int. Cl.[6] B65D *27/06*
U.S. Cl. 229—305 **1 Claim**



1. A continuous mailer assembly comprising:

a plurality of interconnected units stackable into an array, each said unit including a first fly sheet ply, a second outgoing envelope face ply, a third insert ply, a fourth return envelope face ply and a fifth outgoing and return envelope back ply, said second and fifth plies cooperating to define an outgoing envelope, said fourth and fifth plies cooperating to define a return envelope, said third ply disposed between said second and fourth plies;

said second ply of one of said units being connected to said second ply of an adjacent unit with a series of transversely spaced ties;

said fourth ply of said one unit being connected to said fourth ply of said adjacent unit with a series of transversely spaced ties;

said second ply ties being transversely offset with respect to said fourth ply ties;

said second plies of said one and adjacent units and said fourth plies of said one and adjacent units including a series of transversely spaced slots which are separated by said ties;

said ties being partially cut transversely;

said mailer assembly thereby being foldable at the interconnection of said one and adjacent units with said second and fourth plies combining to form only a single ply thickness required to be folded.

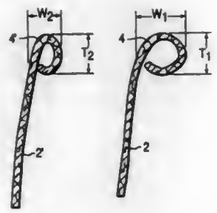
5,544,808

PRECONDITIONED PAPERBOARD CONTAINERS

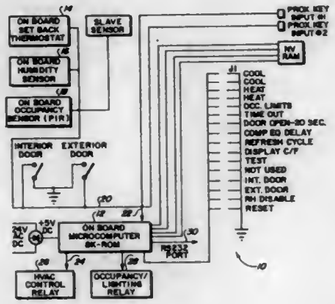
Robert J. Aloisi, Neenah, Wis.; Arthur Livingston, Hamilton, Pa., and Brian S. Huss, Little Chute, Wis., assignors to James River Corporation of Virginia, Richmond, Va.

Continuation-in-part of Ser. No. 208,883, Mar. 11, 1994, Pat. No. 5,472,402. This application May 18, 1994, Ser. No. 245,544
Int. Cl.[6] B65D *3/30*
U.S. Cl. 229—400 **17 Claims**

1. A paperboard container formed of a paperboard material having a basis weight B in pounds per 3,000 square feet of material, the container having a defect free curved and curled brim formed about an upper periphery thereof wherein a maximum forming strain in percent of an inside brim circumference exceeds 4.41+0.0156×B, and B is in a range of 130 to 200 pounds per 3,000 square feet of material.



5,544,809
HVAC CONTROL SYSTEM AND METHOD
Mark K. Keating, West Palm Beach, and Fredrick J. Staudt, North Palm Beach, both of Fla., assignors to Senercomm, Inc., Palm Beach Gardens, Fla.
Filed Dec. 28, 1993, Ser. No. 179,573
Int. Cl.[6] B01F *3/02*
U.S. Cl. 236—44. C **20 Claims**



1. A system for controlling HVAC in an enclosed space, the system comprising:

means for determining occupancy status of an enclosed space and delivering a signal indicating an unoccupied condition;

means for sensing temperature in the space and providing a signal corresponding to the sensed temperature;

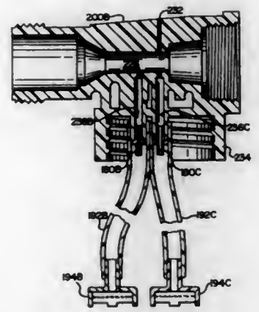
means for sensing humidity in the space and providing a signal corresponding to the sensed humidity;

means for comparing the sensed temperature to a predetermined temperature and providing first and second temperatures enabling the condition signals representative of differences between the sensed and predetermined temperatures;

means for comparing the sensed humidity to a predetermined humidity and providing first and second enabling condition signals representative of differences between the sensed and predetermined humidity;

means for enabling the HVAC for bringing the room temperature and humidity to the predetermined temperature and humidity, the enabling means responsive to the unoccupied condition signal in combination with one of the temperature enabling condition signals in combination with one of the humidity enabling condition signals.

5,544,810
PRECISION-RATIOED FLUID-MIXING DEVICE AND SYSTEM
Stephen R. Horvath, Jr.; Robert D. Abrams, and Thomas A. Helf, all of Racine, Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.
Filed Nov. 30, 1993, Ser. No. 159,909
Int. Cl.[6] B05B *7/28*
U.S. Cl. 239—10 **21 Claims**



9. A fluid-mixing system for filling a liquid mixture container with a diluted fluid, comprising:

a plurality of concentrate containers, each such concentrate container having an opening and being adapted to contain a respective one of a plurality of liquid concentrates;

a plurality of plugs, each such plug being disposed into a respective one of the plural concentrate container openings and being affixed thereto, each such plug defining a plug aperture;

a plurality of first conduit means, one end of each such first conduit means carried by a respective one of the plural plugs in a manner so as to be in fluid communication with its respective plug aperture, the other end of each such first conduit means being immersed into a liquid concentrate contained within a respective one of the plural concentrate containers;

a plurality of nozzles, each such nozzle defining a nozzle inlet adapted for receiving a pressurized liquid diluent, a nozzle mixing chamber, and a nozzle outlet, whereupon each such nozzle mixing chamber becomes a vacuum region when pressurized liquid diluent enters its nozzle inlet and discharges from its nozzle outlet;

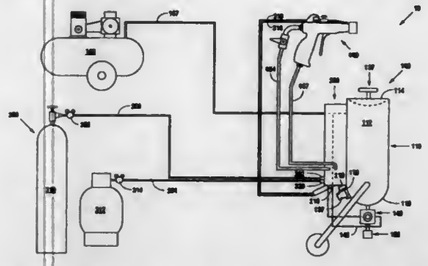
a plurality of first liquid-metering means, each such first liquid-metering means having an outlet port which is in fluid communication with the nozzle mixing chamber of a respective one of the plural nozzles and an inlet port that communicates with the respective nozzle mixing chamber via the outlet port of its first liquid-metering means;

a plurality of second liquid-metering means, each such second liquid-metering means being disposed in a respective one of the plural first conduit means and having an outlet port that is in fluid communication with the inlet port of a respective one of the plural first liquid-metering means, each such second liquid-metering means including an inlet port that communicates with the nozzle mixing chamber of a respective one of the plural nozzles via the outlet port of a respective one of the first liquid-metering means, for combining liquid diluent and liquid concentrate in predetermined ratioed amounts in each respective one of the plural nozzle mixing chambers, to thereby produce a plurality of liquid mixtures for purposes of filling the liquid mixture container with at least one of the plural liquid mixtures, each such liquid mixture being discharged from a respective one of the plural nozzles via its nozzle outlet;

means for supporting the plurality of concentrate containers; and

a valved manifold carried by the supporting means for individually providing each one of the plural nozzle inlets with pressurized liquid diluent.

5,544,811
FLAME SPRAY SYSTEM AND METHOD OF USING THE SAME
Dean Tillery; Paul D. Musgrave; John McClusky, and Russell L. Myers, all of San Antonio, Tex., assignors to Acoatings, Inc., San Antonio, Tex.
Filed Jul. 12, 1994, Ser. No. 273,930
Int. Cl.[6] B05B *7/20*
U.S. Cl. 239—13 **29 Claims**



1. A spray gun for applying thermoplastic powdered material onto surfaces by passing said thermoplastic powdered material through a flame, comprising:

a shaft section;

a handle section fixedly attached to said shaft section;

a trigger system for controlling the release of said thermoplastic powdered material and gases for fueling said flame, said trigger system adjacent the intersection of said shaft section and said handle section;

a gas control mechanism attached to said shaft section of said spray gun;

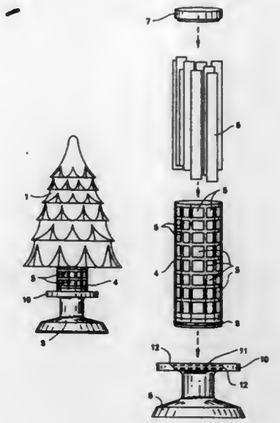
a gas mixing mechanism contiguous to said shaft section distal from said intersection of said shaft section and said handle section;

a powder nozzle interposed in said shaft section of said gun, having a first end and a second end, said first end proximate to said gas mixing mechanism, said second end attached to a powder/air regulation system; and

a control system communicating with said trigger system.

5,544,812
TABLE-TOP AIR FRESHENER
David F. Torres, Ctra. Nacional 340 Km. 118, 04230 Huercal De Almeria (Almeria-Spain), Spain
Filed Aug. 6, 1993, Ser. No. 102,827
Claims priority, application Spain, Aug. 7, 1992, 92.02.490/4
Int. Cl.[6] A61L *9/12*
U.S. Cl. 239—55 **4 Claims**

1. An air freshener comprising a tubular cylinder having a closed bottom, a peripheral wall and a top, plural openings in said wall for outward transmission of perfume from the cylinder, a perfume element within said cylinder comprising a plurality of cellulose strips impregnated with perfume, and a cover for the top of the cylinder, said air freshener including a housing for the cylinder, said housing having a cylindrical cavity to receive the cylinder with a press-fit and with the bottom of the cylinder exposed at one end of the cavity whereby the cylinder can be withdrawn from the cavity to a selected length to provide a required perfuming effect, a stand for supporting the cylinder and housing on a support surface, and releasable attachment means on the stand and on the bottom of the cylinder.



5,544,813
ADJUSTABLE SPRAY SYSTEM AND ASSEMBLY METHOD
Durham K. Giles, and David C. Slaughter, both of Davis, Calif., assignors to Regents of the University of California, Oakland, Calif.
Continuation of Ser. No. 154,918, Nov. 17, 1993, abandoned.
This application Mar. 22, 1995, Ser. No. 410,013
Int. Cl.[6] B05B *15/08*
U.S. Cl. 239—71 **36 Claims**



1. A unitary spray cartridge to be received in a cartridge retaining fitting of a delivery system, the delivery system providing a source of a material to be sprayed to said cartridge, the retaining fitting being configured to couple with the cartridge and hold and seal to the cartridge in use such that the engagement of the cartridge is completed by the application of a force along a cartridge receiving axis of the cartridge retaining fitting by pressing the cartridge toward the cartridge retaining fitting along the cartridge receiving axis and thereby holding said cartridge, said hold and seal being achieved without the necessity of simultaneously applying a twisting torque, the cartridge is held by the cartridge receiving fitting, and the retaining fitting is configured to uncouple from the cartridge by applying a release force to a release portion of the retaining fitting to uncouple the cartridge from the retaining fitting so that the cartridge can move along said cartridge receiving axis away from said retaining fitting without the necessity of simultaneously applying a twisting torque between the cartridge and the cartridge retaining fitting, the cartridge comprising:

an elongated tubular body member defining an interior passage therethrough wherein said body member has

a proximal end configured to form a uniform tubular section to engage and be retained by the cartridge retaining fitting and

when so engaged and retained to seal the interior passage for the material to be sprayed between the cartridge retaining fitting and an interior passage of said tubular body member and

a distal end configured to hold a nozzle tip in communication with said interior passage of said body member and in a particular orientation with respect to said body member when the cartridge is in use and when the cartridge is being installed and removed from the cartridge retaining fitting.

5,544,814

ROTARY SPRINKLERS

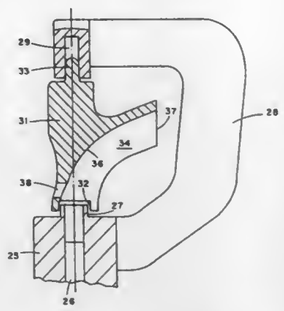
Benjamin Spenser, Zichron-Jacob, Israel, assignor to Dan Mamtirim, Israel Limited Partnership, Galil Elion, Israel

Filed Jun. 23, 1994, Ser. No. 264,516

Claims priority, application Israel, Jun. 25, 1993, 106138

Int. Cl.[6] B05B *3/04*

U.S. Cl. 239—241 **7 Claims**



1. A rotatable outlet nozzle for use in a rotary sprinkler adapted to be rotatably mounted and driven in a sprinkler housing and comprising a through-flow tube portion; a curved deflector wall portion merging with an outlet end of said through-flow tube and defining a main outlet and an auxiliary outlet formed in said curved deflector wall in a position thereof opposite said main outlet, the positioning and dimensions of the auxiliary outlet being such that an auxiliary water spray emerges therefrom in a direction opposite to that of a main water spray emerging from said main outlet and wherein a discharge coefficient C, which is the ratio of (1) the quotient of the discharge rate of the main outlet and the discharge rate of the auxiliary outlet to (2) the quotient of the discharge area of the main outlet and the discharge area of the auxiliary outlet, lies substantially in the range of 5 to 40.

5,544,815

FUEL INJECTION NOZZLE

Michael P. Cooke, and George N. Felton, both of Gillingham, United Kingdom, assignors to Lucas Industries public limited company, West Midlands, England

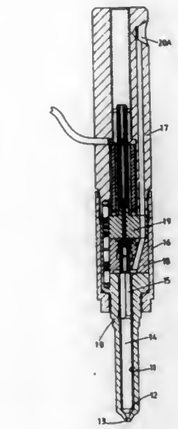
Division of Ser. No. 318,090, Oct. 5, 1994. This application Jun. 2, 1995, Ser. No. 458,782

Claims priority, application United Kingdom, Oct. 8, 1993, 9320798

Int. Cl.[6] F02M *47/02*

U.S. Cl. 239—533.8 **4 Claims**

1. An actuator for a valve including a core member and an armature, the core member comprising a pair of "E" cores having their central pole pieces presented to each other, the faces of said central pole pieces being curved, said armature being of hollow cylindrical form and being located in spaced relationship between said faces, a helical groove formed on the outer periphery of the armature and complementary helical grooves formed on said faces of the pole pieces, electrical windings carried by said central pole pieces and connected so that when energised the pole pieces assume opposite magnetic polarity, means for adjusting the relative angular position of the armature and the central pole pieces and a plug located with clearance within the armature, the plug being formed from magnetizable material.



5,544,816

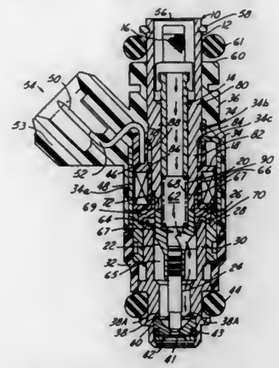
HOUSING FOR COIL OF SOLENOID-OPERATED FUEL INJECTOR

Debora E. Nally, Williamsburg, and Bryan C. Hall, Newport News, both of Va., assignors to Siemens Automotive L.P., Auburn Hills, Mich.

Filed Aug. 18, 1994, Ser. No. 292,455

Int. Cl.[6] F02M *51/06;* **F16K** *31/02;* **B05B** *1/30*

U.S. Cl. 239—585.5 **12 Claims**



1. An electrically operated fuel injector for injecting fuel into an internal combustion engine comprising

an internal passage within said fuel injector for conveying fuel from a fuel inlet at which fuel enters the fuel injector to a nozzle at which fuel is ejected from the fuel injector,

a stator structure,

an electromagnetic coil having an axial through-hole containing said stator structure, said coil forming one part of said stator structure that forms a portion of a magnetic circuit for magnetic flux generated by said coil,

a tubular, cylindrical housing having a longitudinal axis and a uniform wall thickness that circumferentially bounds said coil and forms another part of said stator structure, said housing being a cylindrical body overlapping and joined to a portion of said stator structure,

a cylindrical neck on said housing circumferentially bounding and joined to said stator structure,

a shoulder extending between said neck and said body, including curved bends for merging with said body and said neck,

single through-hole means extending through at least one of said neck, shoulder, and body of said housing, said through-hole subtending an angle about said longitudinal axis of said housing, and

electrical terminal means projecting from said coil through said single through-hole means.

5,544,817

ZIRCONIUM SILICATE GRINDING METHOD AND MEDIUM

Thomas I. Brownbridge, Oklahoma City, and Phillip M. Story, Yukon, both of Okla., assignors to Kerr-McGee Chemical Corporation, Oklahoma City, Okla.

Continuation-in-part of Ser. No. 186,085, Jan. 25, 1994, abandoned. This application Dec. 19, 1994, Ser. No. 359,219

Int. Cl.[6] B02C *23/18*

U.S. Cl. 241—21 **27 Claims**

1. A method for milling a powder comprising the steps of:

(1) providing a starting powder characterized by a starting powder particle size;

(2) providing a grinding medium comprising naturally occurring zirconium silicate sand characterized by a grinding medium density in the range of from about 4.0 g/cc absolute and a particle size in the range of from about 100 microns to about 500 microns to about 6.0 g/cc absolute;

(3) providing a liquid medium;

(4) mixing said starting powder, said grinding medium and said liquid medium to form a milling slurry;

(5) milling said milling slurry in a high energy mill for a time sufficient to produce a product slurry including a product powder characterized by a desired product powder particle size and having substantially the same composition as said starting powder; and

(6) separating said product slurry including said product powder from said milling slurry so that said grinding medium remains in said milling slurry.

5,544,818

PULVERIZING METHOD AND HORIOZONTAL MILL

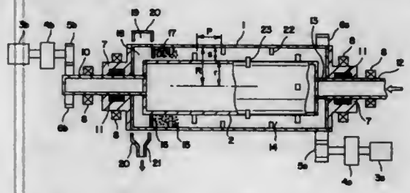
Hirohisa Yoshida, and Katsuyuki Ueda, both of Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 21, 1995, Ser. No. 505,636

Claims priority, application Japan, Sep. 28, 1994, 6-232994

Int. Cl.[6] B02C *17/00;17/18*

U.S. Cl. 241—29 **2 Claims**



1. A pulverizing method comprising the steps of:

1) charging material to a space containing pulverizing media having a diameter of 5 to 15 mm,

said space being defined by an inner surface of an outer horizontal hollow cylinder and an outer surface of an inner cylinder, wherein the ratio of an outer diameter of said inner cylinder to an inner diameter of said outer cylinder is not less than 0.5,

said cylinders being positioned such that the difference between the outer diameter of said inner cylinder and the inner diameter of said outer cylinder is not less than three times the diameter of said pulverizing media,

said inner surface of said outer cylinder having a plurality of agitating vanes mounted thereon and said outer surface of said inner cylinder having a plurality of agitating vanes mounted thereon, said vanes of said inner and outer cylinders being spaced at axial intervals of three to sixty times the diameter of said pulverizing media;

2) rotating at least one of said inner and outer cylinders at a rotational speed such that the maximum acceleration applied to said pulverizing media does not exceed three times the gravitational acceleration to pulverize the material; and

3) delivering ultra-fine pulverized material from a discharge outlet at an end portion of said outer cylinder.

5,544,819

ROTARY DISINTEGRATORS

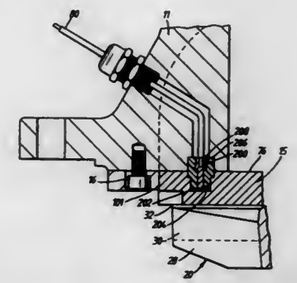
Nigel R. C Shepherd, Nr. Goodrich, England, assignor to The Haigh Engineering Company Ltd., Herefordshire, England

Filed Jun. 7, 1994, Ser. No. 255,184

Claims priority, application United Kingdom, Jun. 11, 1993, 9312069; Nov. 29, 1993, 9324497

Int. Cl.[6] B02C *7/00;7/11*

U.S. Cl. 241—37 **6 Claims**



1. A rotary disintegrator for liquid-borne solid waste, farm manure and other slurries comprising a cutter head having a pair of relatively rotatable cutting parts having cutting edges lying in respective faces thereof and urged into contact with one another, face-to-face, and a signalling means for signalling predetermined wear of one of said faces comprising a wear detector fixed with respect thereto and arranged to detect when said predetermined amount of wear has occurred and activate the signalling means,

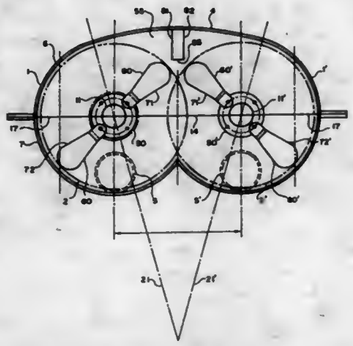
in which the wear detector comprises an electrode which is located so as to be electrically insulated from said one of the faces within a recess in the face until exposable to the slurry by wear of the face by the other of said faces.

5,544,820

CLEAR-TRAJECTORY ROTARY-DRIVEN IMPACT COMMINUTER

Jerry W. Walters, 5765 Kleinpeter Rd., Baton Rouge, La. 70811

Filed Feb. 21, 1995, Ser. No. 392,557
Int. Cl.[6] B02C *13/282*
U.S. Cl. 241—38 **5 Claims**



1. An apparatus for comminuting comminutable material of known size comprised of

a. a housing which encloses a slightly overlapping double cylindrical barrel shaped master chamber, wherein said master chamber has a near-flat roof, a bottom section with two barrel bellies, a first barrel-end wall, a second barrel-end wall with an exit port, and an intake duct for receiving said comminutable material, which master chamber defines two parallel and coplanar cylindrical barrel axes which intersect said first barrel-end wall and said second barrel-end wall, which master chamber defines a breaker bar line along the apex of the near-flat-roof, which breaker bar line is parallel to said barrel axes;

b. a breaker bar attached to said near-flat-roof on the inside of said master chamber along said breaker bar line, whereby a clear-trajectory zone is established in said master chamber, said zone being free of other stationary impediments;

c. a pair of shafts, each journaled through said master chamber along one of said barrel axes, respectively, said shafts being capable of being counter-rotated by a prime mover coupled to said shafts; and,

d. a pair of rotary lifters, wherein each rotary lifter is comprised of a shaft sleeve with a centrifugally balanced plurality of swingably attached parallel pairs of independent blades, and wherein said pair of rotary lifters are complementary mounted on said shafts.

5,544,821

ENERGY EFFICIENT CENTRIFUGAL GRINDER

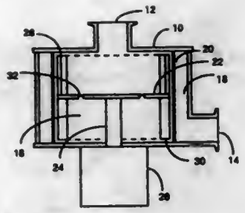
Rajendra P. Gupta, 9 Veery Lane, Gloucester, Ontario, Canada, and Grant W. Wood, 836 Vinette Crescent, Orleans, Ontario, Canada

Filed Jun. 22, 1995, Ser. No. 493,414
Int. Cl.[6] B02C *7/175*
U.S. Cl. 241—46.017 **10 Claims**

1. An energy efficient centrifugal grinder for grinding solids in liquids into resulting solid-liquid slurry which minimizes the formation of vortex and concomitant suction of air into said resulting solid-liquid slurry; comprising:

a housing having a screen wall defining the housing into a first and second chambers,

a first rotatable disc in the first chamber substantially conforming to the size of the first chamber and being rotatable about a central perpendicular axis,



cutters attached on a first side of the first rotatable disc near but inside its perimeter,

hammers attached on a second side of the first rotatable disc near but inside its perimeter,

an inlet connecting to the first chamber for introducing the solids in liquids to the first side of the disc,

an outlet connecting to the second chamber for discharging the solid-liquid slurry therefrom, and

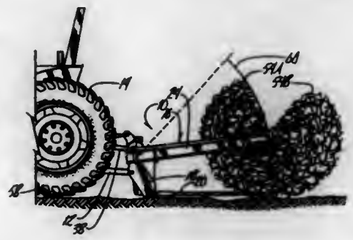
motor mechanically connecting the first rotatable disc to drive the same.

5,544,822

HAY CUTTER WITH FORK LIFT

Benjamin R. Neier, Dodge City, Kans., assignor to Roto-Mix Enterprise, Ltd., Dodge City, Kans.

Filed Dec. 12, 1994, Ser. No. 353,704
Int. Cl.[6] B02C *1/00;21/02*
U.S. Cl. 241—101.73 **11 Claims**



1. A hay cutter with fork lift comprising,

a frame assembly having upper and lower portions,

a cutter assembly including a cutting arm having inner and outer ends with said inner end pivoted to said upper portion of said frame, and a downwardly facing cutting means on the outer end of said arm,

a fork assembly having a fork arm with inner and outer ends and said inner end of said fork arm being pivoted to said frame below said cutter assembly,

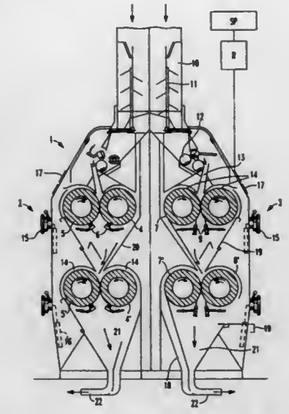
power means interconnecting said cutter arm and said fork arm for applying downward pressure on said cutting means and upward pivotal pressure on said fork arm for pivoting upwardly said fork arm whereby hay being cut by said cutting means can fall away from said cutting means.

5,544,823

MILL FOR THE PRODUCTION OF MILLED GRAIN PRODUCTS AND GRAIN MILLING SYSTEM

Werner Baltensperger, Oberuzwil, and Christian Lippuner, Niederuzwil, both of, Switzerland, assignors to Buehler AG, Switzerland

Continuation of Ser. No. 146,397, Nov. 1, 1993, Pat. No. 5,373,997, which is a continuation of Ser. No. 970,061, Nov. 2, 1992, Pat. No. 5,310,123, which is a continuation of Ser. No. 728,621, Jul. 11, 1991, abandoned, which is a continuation of Ser. No. 350,557, Mar. 22, 1989, Pat. No. 5,100,062. This application Dec. 19, 1994, Ser. No. 359,036
Claims priority, application Switzerland, Oct. 7, 1987, 3893/87
Int. Cl.[6] B02B *5/00*
U.S. Cl. 241—79 **36 Claims**



1. A roll stand in an advanced mill for producing milled grain products, and especially flour, comprising:

a housing;

at least one double grinding pass positioned in the housing and having only two roll pairs arranged sequentially without sifting therebetween;

means for feeding grain products into the housing and the first roll pair;

means for removing the milled grain products from the second roll pair and the housing; and

air ducts positioned substantially around each of the two roll pairs to maintain an air flow through the roll stand to direct the grain products and milled grain products through the roll pairs.

5,544,824

PULVERIZER

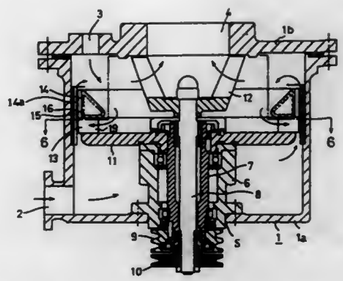
Masahiro Inoki, Kyoto, Japan, assignor to Hosokawa Micron Corporation, Osaka, Japan

Filed Aug. 7, 1995, Ser. No. 511,684
Claims priority, application Japan, Aug. 8, 1994, 6-185649
Int. Cl.[6] B02C *13/14*
U.S. Cl. 241—80 **4 Claims**

1. A pulverizer comprising:

a ring-form rotary hammer supported by a rotary shaft and including a pulverizing blade which has a plurality of concaves and convexes on its outer surface;

a liner fixed so that a gap is left between the rotary hammer and the liner and having a plurality of concaves and convexes on its surface which faces the hammer; and



rotary-fan-type classifying means for discharging toward an exit a material pulverized between the rotary hammer and the liner into a predetermined particle diameter or smaller and directed to an upper part,

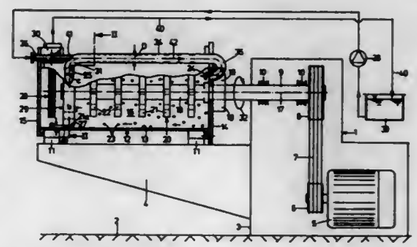
wherein said pulverizing blade is provided substantially on an entire periphery, and wherein a circulation passage for directing downward a material not discharged toward the exit is provided below the pulverizing blade.

5,544,825

AGITATOR MILL

Norbert Stehr, Grünstadt, Germany, assignor to EVV-Vermögensverwaltungs-GmbH, Weisloch, Germany

Filed Aug. 24, 1995, Ser. No. 519,820
Claims priority, application Germany, Sep. 9, 1994, 44 32 198.8
Int. Cl.[6] B02C *17/16*
U.S. Cl. 241—171 **11 Claims**



1. An agitator mill comprising

a grinding receptacle (12, 12', 12", 12"') having a wall (13, 13') and a first end and a second end, and defining a grinding chamber (16), a high-speed agitator disposed in the grinding receptacle (12, 12', 12", 12"') and having a central longitudinal axis (17),

auxiliary grinding bodies at least partially filling the grinding chamber (16),

a grinding-stock/auxiliary-grinding-body inlet (24) opening into the grinding chamber (16) and disposed at the first end of the grinding receptacle (12, 12', 12", 12"'),

an auxiliary-grinding-body retaining device (28) disposed at the second end of the grinding receptacle (12, 12', 12", 12"') for grinding stock to be discharged,

an auxiliary-grinding-body outlet (25, 25', 25") adjoining the retaining device (28) and disposed upstream of the retaining device (28) towards the second end of the grinding receptacle (12, 12', 12", 12"'),

an auxiliary-grinding-body return line leading from the auxiliary-grinding-body outlet (25, 25', 25") to the grinding-stock/auxiliary-grinding-body inlet (24),

a grinding-stock supply line (36) to be passed through in a direction of flow (42) of a grinding stock, and

a junction (41), which—referred to the direction of flow (42)—is disposed upstream of the grinding-stock/auxiliary-grinding-body inlet (24), and where the grinding-stock supply line (36) and the auxiliary-grinding-body return line are joined to form a grinding-stock supply and auxiliary-grinding-body return line (34),

wherein the junction (41) is directly adjacent to the auxiliary-grinding-body outlet (25, 25', 25").

5,544,826

CUTTER KNIFE FOR ENSILAGE HARVESTER CUTTERHEAD

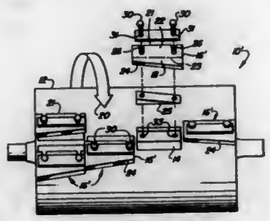
Alban Klingler, Gersheim, and Georg Leeb, Zweibrucken, both of, Germany, assignors to Deere & Company, Moline, Ill.

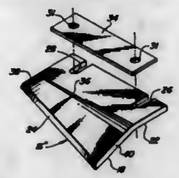
Filed May 26, 1995, Ser. No. 451,696

Claims priority, application Germany, May 28, 1994, 44 18 697.5

Int. Cl.[6] B02C *18/06;18/18*

U.S. Cl. 241—242 **13 Claims**





6. In a cutterhead including a closed cylindrical drum having a plurality of angular knife retainers fixed to an outer surface of the drum in a plurality of circular rows along the width of the drum, each retainer including a flat rectangular mounting surface extending lengthwise of said drum in parallel relationship to an axis of rotation of said drum, a cutter knife being mounted to each retainer and including a planar rectangular attaching region, coupling means for securing said attaching region to said rectangular mounting surface, and each cutter knife further including a separating region extending beyond said mounting surface and blending into a cutting edge, the improvement comprising: the separating region of each knife including at least one trapezoidal portion having short and long ends joined by said cutting edge and being disposed such that, as considered across the width of the drum, one end of the cutting edge leads the other end with the entire cutting edge being located along an imaginary cylinder extending about said axis of rotation of said drum.

5,544,827

AUTOMATIC COIL WINDER

Fumiharu Yano, Fukushima, Japan, assignor to Nittoku Engineering Kabushiki Kaisha, Saitama, Japan

Filed Jan. 19, 1994, Ser. No. 183,542

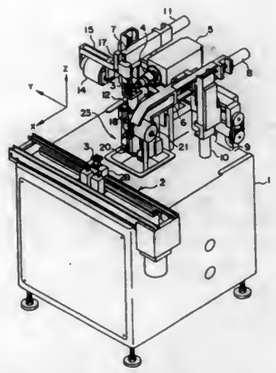
Claims priority, application Japan, Jan. 28, 1993, 5-012631

Int. Cl.[6] B21F *3/02*

U.S. Cl. 242—445.100 **12 Claims**

1. An automatic coil winder comprising:

a base;



a spindle adapted to carry a bobbin;

a motor on said base for rotating said spindle;

a nozzle for supplying a wire to said bobbin for winding;

a first arm moveable along three orthogonal axes;

means on said base for moving said first arm along each of said three orthogonal axes, said nozzle being supported on said first arm;

a second arm

means for moving said second arm along each of the last said three orthogonal axes; and

auxiliary tool means supported on said second arm.

5,544,828

AUTOMATIC BOBBIN-CHANGING DEVICE HAVING A VERTICAL ROTATING AXIS

Helmut Winkler, Schwabach, and George-Michael Horndler, Barthelmesaurach, both of, Germany, assignors to Maschinenfabrik Niehoff GmbH & Co. KG, Schwabach, Germany

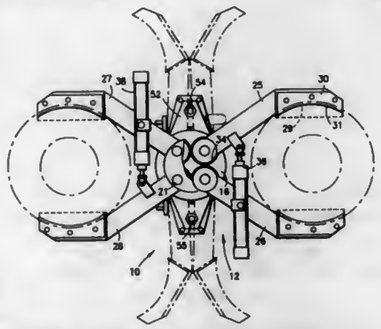
PCT No. PCT/EP92/02539, § 371 Date Jun. 17, 1994, § 102(e) Date Jun. 17, 1994, PCT Pub. No. WO93/09052, PCT Pub. Date May 13, 1993

PCT Filed Nov. 5, 1992, Ser. No. 232,259

Claims priority, application Germany, Nov. 6, 1991, 41 36 545.3

Int. Cl.[6] B65H *54/02;19/22*

U.S. Cl. 242—35.50 A **14 Claims**



1. Automatic bobbin-changing device comprising:

a bobbin carrier which is rotatable about a first vertical axis from a first to a second bobbin-holding position displaced at an angle of about 180°, and vice versa;

said bobbin carrier comprising four gripper arms each having a first inner end rotatably supported about a rotating axis near to said first vertical axis and a second outer end, whereby the rotating axis of each gripper arm is parallel to said first vertical axis and at least one bobbin-support surface is provided on each second outer end of each of said gripper arms;

said four gripper arms being arranged in a first pair and in a second pair, each gripper arm of each pair being coupled in relative movement to said other gripper arm of said pair;

a first driving device which causes a rotating movement of the gripper arms about the rotating axes;

a lifting mechanism provided to raise the whole bobbin carrier along the direction of said first vertical axis; and

a second driving device which causes a rotating movement of said raised bobbin carrier about said first vertical axis, from said first bobbin-holding position into said second bobbin-holding position;

said gripper arms and said first driving device being dimensioned such that each said pair of gripper arms is moveable with respect to a bobbin in such a way that the bobbin-support surface is positioned underneath a flange of the bobbin.

5,544,829

PALLET TRANSPORT SYSTEM FOR A CHEESE-PRODUCING TEXTILE MACHINE

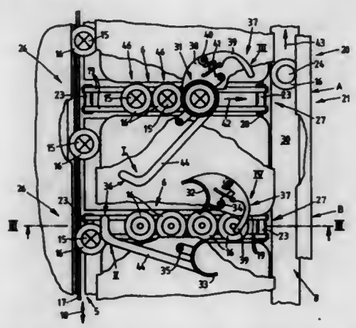
Rene Bucken, Grefrath; Rudolf Consoir, Hückelhoven; Ferdinand-Josef Hermanns, Erkelenz; Gregor Kathke, Viersen; Hans-Werner Schwalm, Mönchengladbach; Waldemar Schultz, Kaarst; Hedde-Christoph Paulsen, and Michael Kery, both of Mönchengladbach, all of, Germany, assignors to W. Schlafhorst AG & Co., Moenchengladbach, Germany

Filed Nov. 22, 1994, Ser. No. 343,347

Claims priority, application Germany, Nov. 24, 1993, 43 39 964.9

Int. Cl.[6] B65H *54/02;69/04*

U.S. Cl. 242—35.5 R **9 Claims**



1. A textile machine for winding yarn into cheeses, having a plurality of aligned winding heads and a transport system for conveying pallets for selectively carrying yarn-wound cops and empty bobbins disposed upright thereon to and from the winding heads, the pallet transport system having at least one cop supply track, at least one empty bobbin return track and plural transport tracks transversely connecting the individual winding heads with the at least one cop supply track and the at least one empty bobbin return track, and blocking means disposed in association with each of the plural transport tracks for selective movement into and out of an operative position blocking an entrance region into any selected transport track from the cop supply track to prevent the transfer of cop-equipped pallets onto the selected transport track from the cop supply track while permitting empty pallets to be transferred onto the selected transport track, wherein each winding head comprises an openable and closable blower chamber disposed in the region of the associated transverse transport track, the blocking means being connected to the blower chamber for disposition in the operative position when the blower chamber is open.

5,544,830

CHANGING DEVICE FOR A MACHINE FOR SIMULTANEOUS SPOOLING OF SEVERAL PARALLEL THREADS

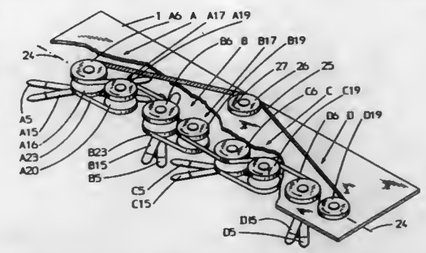
Heiner Kudrus, Moltkestrasse 25, D-25355 Barmstedt, Germany

Filed Feb. 3, 1994, Ser. No. 191,000

Claims priority, application Germany, Feb. 11, 1993, 43 04 055.1

Int. Cl.[6] B65H *54/28;* **B65M** *57/28*

U.S. Cl. 242—43 A **5 Claims**



1. A changing device for a machine for simultaneous spooling of several parallel threads, comprising a plurality of changing units arranged in series, each of said changing units including a first rotor and a second rotor, each of said rotors being provided with a propeller-like set of blades and a toothed pulley rotatable jointly with said set, said blades of said first rotors of all said changing units being located in a first plane while said blades of said second rotors of all of said changing units being located in a second plane, each of said changing units having a transmission which couples said first rotor with said second rotor so that said first rotor and said second rotor rotate in opposite directions, said transmission including a drive belt provided with teeth at its both sides and wrapped around said toothed pulleys of said first rotors of said changing units so as to engage said toothed pulleys of adjacent ones of said changing units at alternating sides of side pulleys, a roller associated with said first and second rotors of each of said changing units and having a first toothed rim and a second toothed rim, said drive belt being wrapped around said toothed pulley of said first rotor and said first toothed rim of an associated one of said rollers at alternating sides of side pulleys, and a toothed belt wrapped in form of an open belt transmission around said toothed pulley of said second rotor and said second toothed rim of an associated one of said rollers.

5,544,831

YARN CADDY

Alice H. Netta, 7106 Peppermill La., Memphis, Tenn. 38125

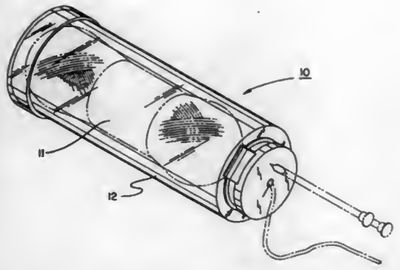
Filed Dec. 20, 1994, Ser. No. 359,394

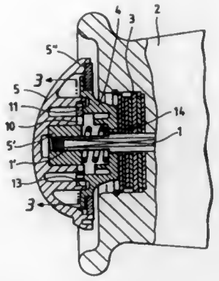
Int. Cl.[6] B65H *49/30;18/28;54/46*

U.S. Cl. 242—127 **1 Claim**

1. A yarn caddy for holding skeins of yarn and allowing an individual continuous strand of yarn to be dispensed from one of the skeins for use comprising, in combination:

a rigid upstanding transparent plastic body including a containment tube for holding skeins of yard therein in a sequenced configuration, the containment tube having a central axis defined therethrough, an open top end, an open bottom end, and a plurality of threads extended radially outwards therefrom at a location adjacent to the bottom end, the body further including a tubular mouth in axial alignment with the containment tube for receiving a strand of yarn from one of the skeins, the mouth having an open lower end with an annular flange extending radially outwards therefrom and interconnected with the top end of the containment tube and an open upper end with an annular lip projected radially outwards





therefrom, the body additionally having an axial length 2¾ times the diametric extent of the containment tube;

a rigid transparent plastic end cap having a horizontal circular planar lower end wall, a tubular lower side wall extended upwards from the periphery of the lower end wall, and a plurality of inwardly projected radial threads disposed on the lower side wall, the end cap threadedly securable to the bottom end of the body in one orientation for preventing access therein and openable in another orientation for allowing access therein for loading and unloading skeins of yarn;

a generally flexible transparent plastic lid having a horizontal circular planar upper end wall with a circular bore disposed centrally therethrough and with the bore having a diameter sized for slidably receiving a strand of yarn therein, a linear slit extending radially outwards from the bore and having a length at least that of the bore diameter, a tubular upper side wall extended downwards from the periphery of the upper end wall and terminated at a peripheral edge, the upper side wall having an interior surface, an exterior surface, a tongue extended outwards from the exterior surface at a location adjacent to peripheral edge for allowing a user a firm grip of the lid, and an annular recess formed on the interior surface at a location adjacent to the upper end wall and with the recess having a size for snapidly and snugly receiving the lip on the mouth of the body; and

a flexible transparent plastic hinge coupling the lid to the mouth of the body, the hinge having an annular plastic base extended in slidable contact about the mouth below the lip and a band with a lower end integral with the base and an upper end integral with the upper side wall of the lid near the peripheral edge thereof and at a location diametrically opposed to the tongue, the hinge allowing the lid to be placed over and removably snapidly coupled to the mouth of the body and further allowing the lid to be decoupled from the body for allowing access therein.

5,544,832

BRAKE DEVICE FOR USE IN A FISHING REEL

Naoki Okamoto, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan

Filed Oct. 17, 1994, Ser. No. 325,089

Claims priority, application Japan, Oct. 21, 1993, 5-61375 U

Int. Cl.[6] A01K *89/027;89/033*

U.S. Cl. 242—245 **11 Claims**

1. A spring member incorporated in a brake device of a fishing reel for providing a click feeling during a rotational operation of an adjust member and preventing an undesirable free rotation of said adjust member, said adjust member being used to adjust a braking force of said brake device to a spool, said spring member comprising:

a frame in the form of a closed annulus elastically and restorably deformable in a radial direction;

an engagement projection formed in said frame, wherein when said frame is deformed said projection is displaced in the radial direction with no significant displacement in the axial direction; and

a securing portion formed in said frame and located diametrically opposite from said engagement projection.

5,544,833

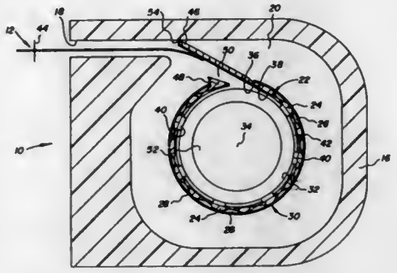
FILM ROLL ACCUMULATING DEVICE

Dennis R. Zander, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 21, 1995, Ser. No. 391,757

Int. Cl.[6] G03B *23/02*

U.S. Cl. 242—348 **7 Claims**



1. A film roll accumulating device for forming a filmstrip into a cylindrical film roll, comprising:

an arcuate film guide at least partially enclosing a cylindrically-shaped space having a centerline, including a film ingress opening through which a filmstrip can be fed to be guided concentrically about the centerline into a cylindrical film roll in the space, and being flexible and secured to permit the film ingress opening to widen to expand the cylindrically-shaped space concentrically about its centerline in order to accommodate enlargement of the cylindrical film roll without any shift in the centerline as additional film is fed through the opening, and not being capable of recovering its shape after its film ingress opening is widened to expand the cylindrically-shaped space; and

a return spring biases said arcuate film guide to narrow the film ingress opening to contract the cylindrically-shaped space concentrically about its centerline.

5,544,834

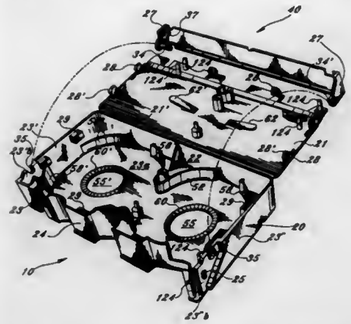
VIDEO TAPE CASSETTE

Alfonso Esguerra, and George Esguerra, both of Miami, Fla., assignors to WTI International Corporation, Miami, Fla.

Continuation-in-part of Ser. No. 120,791, Sep. 15, 1993, which is a continuation of Ser. No. 615,116, Nov. 19, 1990, abandoned. This application Aug. 5, 1994, Ser. No. 286,824

Int. Cl.[6] G11B *23/87*

U.S. Cl. 242—347.1 **15 Claims**



1. In a video tape cassette for use in conjunction with a video cassette player machine, comprising a housing formed of plastic and including top and bottom sections for enclosing a pair of rotatable video tape-holding spools, and a dust-cover rotatably attached to said housing at a front portion thereof, said dust-cover being biased in a closed position and being rotatable into an open position when placed in a video player/recorder machine, the improvement wherein

said housing comprises a pair of opposite side walls (**23'**, **23"**), at least one of said side walls (**23'**) having an indented portion (**23'***b*) at the front portion of said video tape cassette, said dust-cover (**40**) having a side wall (**27**) which lies adjacent said indented portion (**23'***b*) when said dust-cover is closed, said video tape cassette further comprising a latching flap (**70**) disposed in and unitary and integral with said indented portion (**23'***b*) of said side wall (**23'**), said latching flap (**70**) being integrally hinged at its upper end so as to be pivotable inwardly of said housing about its integral hinge and carrying a latching projection (**74**) on its exterior surface, and said dust cover side wall (**27**) having a latching recess (**75**) on its interior surface for mating with said latching projection (**74**) when said dust cover is closed.

5,544,835

PHOTOGRAPHIC FILM CASSETTE, AND APPARATUS AND METHOD OF LOADING AND REMOVING PHOTOGRAPHIC FILM IN ASSOCIATION WITH THE CASSETTE

Koichi Takahashi; Tetsuya Takatori; Haruo Ichikawa; Akimasa Kaya, and Tomoyuki Takahashi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 91,626, Jul. 15, 1993. This application Jun. 6, 1995, Ser. No. 467,836

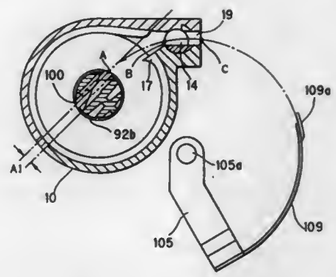
Claims priority, application Japan, Jul. 15, 1992, 4-212135

Int. Cl.[6] B65H *75/28;* **G03B** *17/26*

U.S. Cl. 242—348.1 **2 Claims**

1. A photographic film cassette in which photographic film is completely contained in a cassette shell, a trailer of said photographic film is attached on a core of said spool, and rotation of said spool in an unwinding direction exits said photographic film to an outside of said cassette shell, said photographic film cassette comprising:

at least one retaining hole formed in said trailer;



a slot formed in said core of said spool and extending in an axial direction of said spool for receiving said trailer, said slot dividing said core into first and second portions;

at least one retaining claw projecting from a surface of said first portion into said slot so as to be fitted on said retaining hole, thereby retaining said trailer on said spool; and

at least one preventive projection, projecting from a surface of said second portion into said slot in opposition to said retaining claw, for preventing said retaining hole from slipping away from said retaining claw;

a center of said slot being offset from a rotational axis of said spool and said second portion having a thickness in the range of 0.3 mm to 1.5 mm.

5,544,836

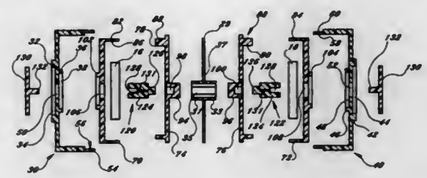
EXTENSIBLE AND SELF-RETRACTABLE CABLE DEVICE

Ivo E. Pera, Pembroke Pines, Fla., assignor to Lloyds International Trust, Hollywood, Fla.

Filed Jun. 3, 1994, Ser. No. 253,947

Int. Cl.[6] B65H *75/48*

U.S. Cl. 242—372 **11 Claims**



1. An extensible and self-retractable device, for use with a cable or cord or the like disposed within said device, said device allowing a user to pull a portion of said cord out of said device and providing for automatic return of said portion within said device once said pull has been released, said extensible and self-retractable device, comprising:

a housing having cord openings disposed at opposite ends of said housing, the first end and the second end of said cord extending out of said housing through its associated cord opening, said housing having a first shell member and a second sbell member;

means for allowing a portion of said cord to be withdrawn out of one of said cord openings, the portion of said cord disposed within said housing before being withdrawn, said means for allowing disposed within said housing; and

means for automatically returning the portion of said cord withdrawn back into said housing, said means for automatically returning disposed within said housing, said means for automatically returning comprising:

a first spring housing and a second spring housing, each spring housing having a body member and a plate member attached to each other to define a spring receiving area,

a divider member having a cord receiving aperture extending therethrough, said first spring housing attached to one side of said divider member to define a first reel and said second spring housing attached to an opposite side of said divider member to define a second reel, said cord being inserted through said cord receiving aperture to allow a first portion of said cord to be disposed around said first reel and a second portion of said cord to be disposed around said second reel;

a first spring disposed within said first spring housing, at least one end of said first spring attached to said first spring housing, wherein a first end of said first spring is attached to a first pin member disposed within said first spring housing; and

a second spring disposed within said second spring housing, at least one end of said second spring attached to said second spring housing, wherein a first end of said second spring is attached to a second pin member disposed within said second spring housing;

wherein said first shell member, said second shell member and said plate members having apertures extending therethrough, said pin members each having cap receiving cavities, said device further including a first cap member and a second cap member, said cap members each having tip portions, wherein the tip portion of said first cap member being inserted through the aperture of said first shell member and the plate member of said first spring housing for mating with the cap receiving cavity of said first pin member, wherein the tip portion of said second cap member being inserted through the aperture of said second shell member and the plate member of said second spring housing for mating with the cap receiving cavity of said second pin member.

5,544,837

BRAKING ASSEMBLY FOR A REEL-HOLDER FLANGE IN TEXTILE MACHINES

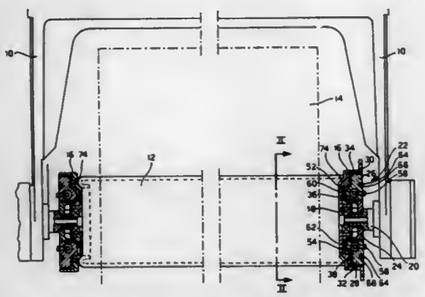
Carlo Menegatto, Milan, Italy, assignor to Menegatto S.r.l., Milan, Italy

Filed Dec. 23, 1994, Ser. No. 363,522

Claims priority, application Italy, Dec. 24, 1993, MI93A02734

Int. Cl.[6] **B65H** *49/26;54/00;54/553;* **F16D** *51/00*

U.S. Cl. 242—599.3 **11 Claims**



1. Braking assembly for a reel-holder flange in textile apparatus, comprising a fixed flange having an annular braking band connected to an arm for supporting a reel, at least a first and a second arcuate braking shoes supported by said fixed flange, in which each of said braking shoes has a lateral end face with the lateral end faces of one of said braking shoes parallel and opposite to the end faces of the other braking shoe, and a respective external arcuate lateral face which defines a braking surface, the braking assembly also comprising means for blocking rotation of said first and second braking shoes in relation to said fixed flange, means for driving said first and second shoes towards and against said annular braking band to engage it with friction and to brake rotation of said reel-holder flange, elastic return means comprising a continuous elastic element which winds around said braking shoes and acts in a radial direction to bring them close one to the other and return them to a rest condition, said means for driving the shoes comprising at least a first and a second thrust device provided between said first and second braking shoes at the facing and opposite end faces of said braking shoes, said thrust devices acting on said braking shoes in a circumferential direction to the latter in order to move them apart one from the other towards and against said coupling band of said reel-holder flange.

5,544,838

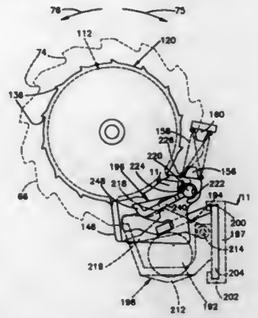
SEAT BELT RETRACTOR

Richard Boelstler, Warren, and Chhay S. Slev, Shelby Township, both of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Feb. 9, 1994, Ser. No. 194,030

Int. Cl.[6] **B60R** *22/38*

U.S. Cl. 242—384.2 **10 Claims**



1. A vehicle seat belt retractor comprising:

a spool on which seat belt webbing is wound and which is rotatable in belt withdrawal and belt retraction directions;

a lever for use in preventing rotation of said spool in the belt withdrawal direction and having a cylindrical portion and a key extending radially outward from said cylindrical portion said lever including a surface defining a recess in said lever facing said axial stop surface; and

support means for supporting said lever for pivotal movement relative to said support means including first surface means for defining a cylindrical chamber for receiving said cylindrical portion of said lever and second surface means for defining a keyway extending radially outward from said cylindrical chamber for receiving said key of said lever, said second surface means including an axial stop surface engageable by said key of said lever to block axial movement of said cylindrical portion relative to said cylindrical chamber.

5,544,839

SPOOL HOLDER FOR TRANSFERRING LINE

Brad J. Burch, 12311 Advance, Houston, Tex. 77065

Filed May 27, 1994, Ser. No. 250,363

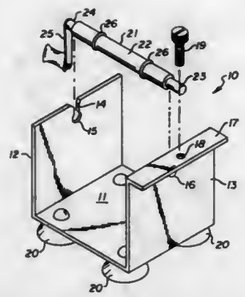
Int. Cl.[6] **B65H** *59/00*

U.S. Cl. 242—396.6 **2 Claims**

1. A spool holder for holding a spool having a central bore to transfer a quantity of line between the spool and a reel comprising:

a generally U-shaped member having a horizontal bottom wall with an underside, first and second vertical side walls fixed in laterally spaced relation, a horizontal portion at an upper end of said first vertical side wall extending perpendicular thereto;

suction cup mounding means on the underside of said horizontal bottom wall for releasably securing said U-shaped member to a support surface;



a first circular aperture extending through said first vertical wall a distance downwardly from said upper end, a second circular aperture extending through said second vertical side wall a distance downwardly from an upper end thereof in horizontal axial alignment with said first circular aperture, an open ended vertical slot extending downwardly from said second vertical side wall upper end and terminating in said second circular aperture, and a threaded bore extending vertically through said horizontal portion with its axis perpendicular to the horizontal axis of said circular apertures;

a shaft having a central portion adapted to be received through said spool central bore and frictionally engaged therein to prevent relative rotation between said shaft and said central bore and having first and second reduced diameter outer ends;

said first reduced diameter end extending rotatably through said first circular aperture and axially outward from said first vertical side wall to rotate relative thereto and said second reduced diameter end being pressed downwardly through said slot and received in said second circular aperture to extend rotatably therethrough and axially outward from said second vertical side wall to rotate relative thereto such that said spool and said shaft rotate as a single unit relative to said vertical side walls;

a hand crank operatively connected to said second reduced diameter end of said shaft to rotate said spool and said shaft as a single unit; and

an adjustable thumb screw having a threaded shaft threadedly engaged in said threaded bore to extend vertically through said horizontal portion of said first side wall and a bottom end selectively movable into engagement with said first reduced diameter end of said shaft to apply an adjustable amount of frictional resistance to said shaft during rotation to maintain tension in said line when being unwound from said spool and transferred onto the reel, and being movable out of engagement with said first reduced diameter end to allow free rotation of said shaft and said spool when said line is being unwound from the reel and transferred onto said spool.

5,544,840

CONTINUOUS FILM TAKE-UP APPARATUS

Motoaki Murakami, Wakayama, Japan, assignor to Noritsu Koki Co., Ltd., Wakayama, Japan

Filed Nov. 10, 1994, Ser. No. 339,251

Claims priority, application Japan, Nov. 12, 1993, 5-283489

Int. Cl.[6] **B65H** *18/10*

U.S. Cl. 242—532.7 **6 Claims**

1. A continuous film take-up apparatus comprising:

a guide feeder means for guiding and feeding a succession of films into a film supplier; and

a drive train for rotating a take-up reel of the film supplier;

wherein a guide part of the guide feeder means moves towards the film supplier to place the leading end of a current film under either a film hold-down plate of the reel or the trailing end of a preceding film wound on the reel, and then the guide part of the guide feeder means moves away from the film supplier while lifting the trailing end of the current film away from the reel;

wherein the guide feeder means has a guide section, the guide part constituting a front end of the guide section, and the guide section is such that when the guide section conducts a tilting action, the guide part moves close to or away from the film supplier; and

wherein the guide feeder means has feed rollers for feeding the film towards the film supplier and a drive unit for rotating the feed rollers, and the tiltable guide section is actuated by the power of the drive unit transmitted through a common drive shaft to the feed roller.

5,544,841

METHOD AND APPARATUS FOR REELING A TRAVELING WEB INTO A WOUND WEB ROOL

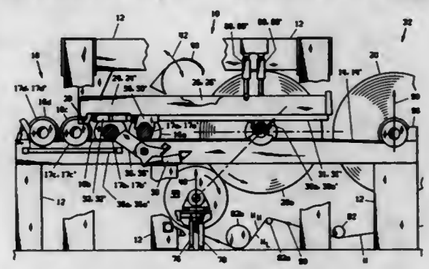
James J. Didier, Beloit, Wis.; Bruce L. Lindstrand, and Ernest W. Wight, both of Roscoe, Ill., assignors to Beloit Technologies, Inc., Wilmington, Del.

Filed Aug. 18, 1994, Ser. No. 292,594

Int. Cl.[6] **B65H** *18/16*

U.S. Cl. 242—541.1 **7 Claims**

1. A method of reeling a traveling web having upper and lower



sides into a wound web roll, comprising the steps:

1) moving a reel spool having a rotational axis to an initial position where it is rotatively supported;

2) bringing the traveling web into supported engagement with a segment of the peripheral surface of a translationally movable, rotatively driven support drum, with the said upper side of the web facing inwardly toward the support drum surface;

3) applying torque to the reel spool to rotate and drive the reel spool to maintain tension in the web between the reel spool and support drum;

4) bringing the traveling web into wrapping engagement with the reel spool with the upper side of the web facing outwardly as it is commenced to be wound into a wound web roll thereon;

5) moving the web roll being wound translationally substantially horizontally from the initial position to a winding position, the

winding position being upstream relative to the support drum, while maintaining it rotatively supported;

6) maintaining torque on the reel spool until the wound web roll reaches a predetermined diameter.

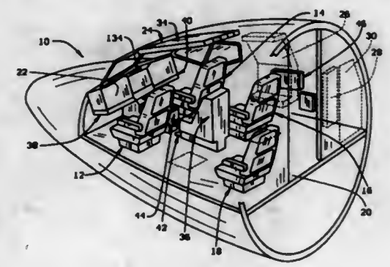
5,544,842

APPARATUS AND METHOD FOR THE CONVERSION OF A THREE CREW MEMBER AIRCRAFT COCKPIT TO A TWO CREW MEMBER AIRCRAFT COCKPIT

Edward Smith, 429 Cottage Grove Rd. P.O. Box 2159, Lake Arrowhead, Calif. 92352, and Richard Taylor, 6617 Vickiview Dr., West Hills, Calif. 91307

Filed Sep. 21, 1993, Ser. No. 124,976
Int. Cl.[6] B64D *43/00*
U.S. Cl. 244—1 R **35 Claims**

1. In an aircraft customarily designed and rated for flight having



a three-man cockpit crew, said three-man cockpit crew customarily comprising a captain, a first officer, and a flight engineer, and said aircraft having a cockpit within which systems controls are mounted for access and use by a flight crew, the improvement comprising an aircraft systems control mounted in said cockpit for access and use by a two-man cockpit crew;

said aircraft systems control includes a plurality of controls for controlling a plurality of systems aboard said aircraft, at least one of said controls being partially automated to thereby reduce the workload required to monitor and operate said controls and thereby accommodate safe and efficient operation of said aircraft by two crew members;

said partially automated controls include a fuel control, an electrical control, and an environmental control;

said partially automated electrical control includes an automatic mode for engagement after pre-flight checks and a manual mode, said automatic mode having means for automatically maintaining automatic optimum configuration of the electrical system;.

said automatic mode includes means for automatically continuously testing for a fault condition and means responsive thereto for attempting to correct for a detected fault condition; and

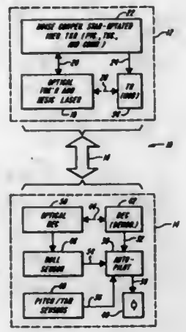
a mechanical extension of a manual gear extension operating apparatus to within operable access of a seated first or second crew member without modification to an underfloor manual gear apparatus.

5,544,843

BALLISTIC MISSILE REMOTE TARGETING SYSTEM AND METHOD

William M. Johnson, Sudbury, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Aug. 1, 1991, Ser. No. 749,652
Int. Cl.[6] F41G *7/30*
U.S. Cl. 244—3.11 **54 Claims**



1. Space-based command guidance controller apparatus and a controlled deliverable traveling at speeds of about Mach five that are cooperative to cause the controlled deliverable to follow a coherent designator beam controlled by the space-based command guidance controller towards a target location designated by the beam along an over-the-horizon trajectory, comprising:

space-based command guidance controller first means for controllably pointing a coherent designator beam along an optical path defined with respect to inertial space that corresponds to the trajectory that the controlled deliverable is to follow;

space-based command guidance controller second means cooperative with the first means and responsive to optical energy present along the reciprocal optical path of the coherent designator beam for providing a signal representative of where the controlled deliverable is with respect to the optical path of the coherent designator beam;

space-based command guidance controller third means cooperative with the first and second means and responsive to the signal representative of where the controlled deliverable is with respect to the optical path of the coherent designator beam for providing a command guidance signal representative of what maneuver the controlled deliverable needs to execute to conform its trajectory to the optical path of the coherent designator beam;

controlled deliverable fourth-means for providing a signal representative of the real-time attitude of the controlled deliverable in pitch, in yaw and in roll; and

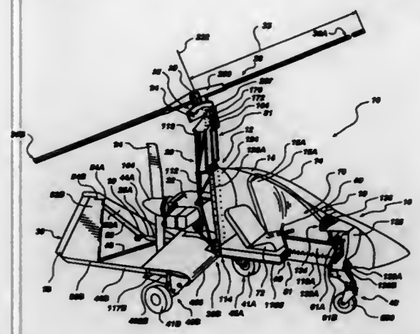
controlled deliverable fifth means cooperative with the fourth means and responsive to the signal representative of the real-time attitude of the controlled deliverable in pitch, roll, and in yaw and responsive to the command guidance signal for executing the command guidance signal at that phase in pitch, roll and yaw that allows the controlled deliverable to conform its trajectory to the beam path of the coherent designator beam and thereby to deliver itself to a target at the target location with surgical-like precision.

5,544,844

AUTOGYRO AIRCRAFT

Henry J. Groen, 1813 Downing Ave., Salt Lake City, Utah 84108, and David L. Groen, Twenty Benchmark, Tooele, Utah 84074

Continuation of Ser. No. 931,018, Aug. 17, 1992, Pat. No. 5,301,900, which is a continuation-in-part of Ser. No. 857,317, Mar. 25, 1992, abandoned, which is a continuation-in-part of Ser. No. 626,972, Dec. 12, 1990, Pat. No. 5,304,036. This application Apr. 11, 1994, Ser. No. 266,015
The portion of the term of this patent subsequent to Apr. 12, 2011, has been disclaimed.
Int. Cl.[6] B64C *27/02*
U.S. Cl. 244—8 **16 Claims**



1. An autogyro comprising:

frame means to support a load in flight and on a support surface;

support means connected to extend beneath said frame means to support said autogyro upon a surface;

tower means attached to said frame means to extend above said frame means, said tower means having a distal end and a tower longitudinal axis;

head means tiltably attached to said distal end of said tower means to tilt relative to said tower longitudinal axis, said head means having a rotor axis, a head pitch axis and a head roll axis;

rotor means rotatably attached to said head means to rotate about said rotor axis, said rotor means having a teeter axis;

wing means attached to said rotor means to extend away therefrom and rotate therewith to generate a lift force, said wing means being comprised of blade means tiltable between a first minimum lift angle and a second lift angle;

propulsion means attached to said frame means for generating a force to urge said autogyro forward, and to selectively rotate said rotor means;

first control means connected to said frame means to control operation of said propulsion means, said first control means having means positioned to be operable by a user supported on the frame means;

second control means connected to said head means to control the tilting of said head means, said second control means having means positioned to be operable by the user; and

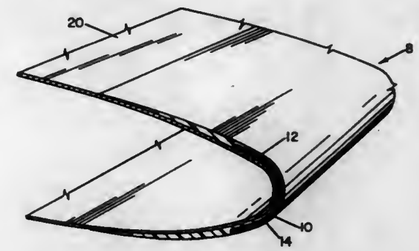
third control means connected to said rotor means to rotate said wing between said first minimum lift angle and said second maximum lift angle and to stop rotation of said wing at any position thereof between said first minimum lift angle and said second maximum lift angle, said third control means having means positioned to be operable by the user.

5,544,845

POLYURETHANE DEICER

Michael J. Giamati, Akron; Robert W. Ray, Jr., Cuyahoga Falls, and Terry L. Stuss, Louisville, all of Ohio, assignors to The B.F. Goodrich Company, Akron, Ohio

Continuation of Ser. No. 130,208, Oct. 1, 1993, abandoned. This application Mar. 7, 1995, Ser. No. 399,791
Int. Cl.[6] B64D *15/00;15/12;15/18*
U.S. Cl. 244—134 E **20 Claims**



1. An ice protection apparatus for an airfoil comprising an active element layer disposed between a resilient top layer and a bottom layer cured into a unitary matrix, said top layer comprising a thermoset polyurethane derived from a thermoplastic polyurethane cross-linked with a curing agent.

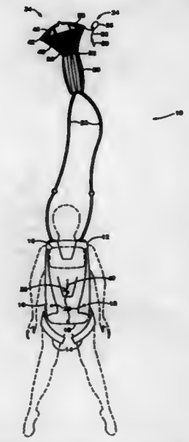
5,544,846

PARACHUTE DEPLOYMENT SYSTEM

Robert W. Stroud, 9000 E. Memorial, Jones, Okla. 73049

Continuation of Ser. No. 303,637, Sep. 9, 1994, abandoned. This application Oct. 10, 1995, Ser. No. 541,809
Int. Cl.[6] B64D *17/64;17/50;17/52;17/40*
U.S. Cl. 244—147 **18 Claims**

1. An apparatus for deploying a parachute, comprising:



a pilot bag having an upper portion and a lower portion;

said lower portion having means for allowing air to inflate said pilot bag;

means for containing the parachute; and

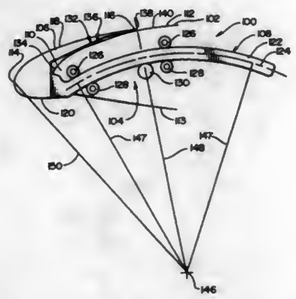
wherein said means for containing the parachute is an integral part of said pilot bag and is located within said lower portion thereof.

5,544,847

LEADING EDGE SLAT/WING COMBINATION

Wayne T. Bliesner, Snohomish, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Nov. 10, 1993, Ser. No. 150,374
Int. Cl.[6] B64C 3/50;9/22
U.S. Cl. 244—214 29 Claims



1. A slat/fixed wing combination, comprising:

a. a fixed wing having a leading edge portion, an upper surface comprising a concealed forward nose and upper surface portion, and a main upper surface portion located rearwardly of the concealed forward nose and upper surface portion, and also a lower surface;

b. a slat having a leading edge, a trailing edge, and a forward and upper surface portion extending from said leading edge to said leading edge portion of the fixed wing in a manner to be movable between three positions, namely:

i. a first cruise position where the slat is immediately adjacent to the fixed wing leading edge portion to conceal said concealed forward nose and upper surface portion;

ii. a second intermediate take-off/climb position where the slat is located forwardly of the cruise position, and the trailing edge of the slat is in contact with, or closely adjacent to, said forward concealed nose and upper surface portion; and

iii. a third high lift position where the slat is moved forwardly and downwardly from the second position with the trailing edge of the slat forming an aerodynamic high lift position gap with the leading edge portion of the fixed wing;

c. said fixed wing having a fixed wing outer contour envelope contained within said upper and lower surfaces of said fixed wing;

d. a slat actuating mechanism comprising a substantially circularly curved carrier track means having a forward end to which the slat is mounted with a substantially fixed angular orientation relative to said track means, said track means having an arcuate lengthwise track axis extending in a substantial curve along said track means, said track means being mounted for movement along said track axis from a rear track position where the flap is positioned in the first cruise position, to an intermediate track position where the slat is positioned in said second intermediate position, and a forward track position where the slat is located in said third high lift position;

e. said track means having a track structural and operating envelope having a maximum width dimension generally perpendicular to said lengthwise track axis and a maximum length dimension extending along said lengthwise track axis, said track means being arranged relative to said outer surface contour envelope of said fixed wing in a manner that in the cruise position the track structural envelope is positioned substantially entirely within the outer surface contour envelope of the fixed wing;

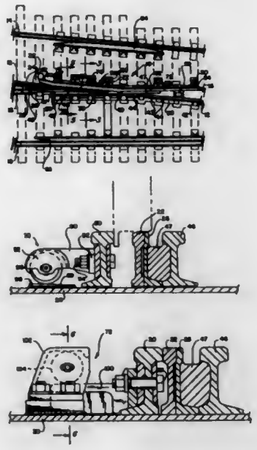
f. the leading edge portion of the fixed wing having a horizontal lengthwise dimension extending from a most forward nose surface portion of the leading edge portion of the fixed wing in a cordwise direction to a location of the trailing edge of the slat in the first cruise configuration, said fixed wing having a first vertical thickness dimension of the fixed wing at a first vertical thickness location which is spaced from the most forward nose surface portion rearwardly 12½% of the lengthwise dimension, said first fixed wing vertical dimension being at least as great as 63% of the total vertical thickness dimension of the slat/wing combination at said first vertical thickness location when in the first cruise position.

5,544,848

RAILROAD SPRING FROG

Stephen R. Kuhn, Richton Park, and Keith Young, Naperville, both of Ill., assignors to ABC Rail Products Corporation, Chicago, Ill.

Filed Feb. 6, 1995, Ser. No. 384,026
Int. Cl.[6] B61L 11/00
U.S. Cl. 246—276 5 Claims



1. In a railroad trackwork frog assembly having a relatively fixed rigid wing rail and a partially movable spring wing rail, in combination:

a base plate element;

a roller outrigger element fixedly attached to the spring wing rail; and

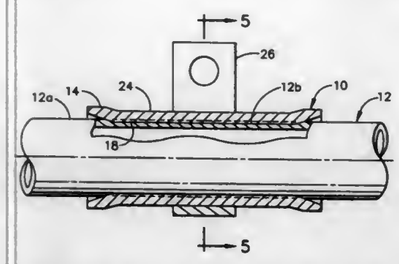
a ramp plate element fixedly attached to the base plate element, said roller outrigger element and said ramp plate element co-operating to vertically elevate said spring wing rail when the spring wing rail is moved laterally relative to the rigid wing rail by an engaged rail car wheel flange.

5,544,849

SWAGED WEAR SLEEVE AND METHOD

Ivan H. Peterson; James S. Hoelle, both of Hamilton; Neil F. Cunningham, Blanchester, and Michael A. Umney, Mason, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Nov. 4, 1994, Ser. No. 334,309
Int. Cl.[6] A47F 7/00
U.S. Cl. 248—74.1 11 Claims



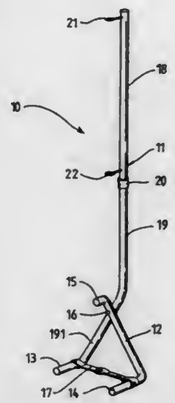
1. A tubular wear sleeve for surrounding a fluid carrying tube subject to vibration comprising a radially outer surface and a radially inner surface, said inner surface having at least one protuberance extending radially inwardly therefrom for being received in a complementary indentation in said fluid tube for restraining relative movement between said wear sleeve and said fluid tube.

5,544,850

BANNER HOLDING DEVICE

Alan Fankhauser, 5 Konan Ct., Ashmore, Queensland 4214, Australia

Filed Nov. 3, 1994, Ser. No. 333,773
Claims priority, application Australia, Nov. 3, 1993, PM2159
Int. Cl.[6] F16M 11/20
U.S. Cl. 248—164 8 Claims



1. A device for holding a banner in position over a motor vehicle which comprises:

1. at least two upright means;

2. separate prop means attached to the lower portion of each upright means;

3. foot means connected to the bottom of each of the upright means and to the bottom of each of the prop means, and extending substantially at right angles to the upright means and the prop means;

4. positioning means connected to an upper end of the prop means, extending substantially at right angles thereto; and

5. adjusting means connected to the prop means such that each foot means may be positioned to one side of a corresponding tire of the motor vehicle,

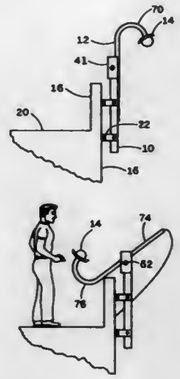
wherein the upright means and corresponding prop means extend generally upwards across the outside of that tire, whereby a banner may be connected to one upright means and extend above the vehicle to a corresponding second upright means.

5,544,851

BRACKET FOR EXTERIOR MOUNTINGS ON BUILDINGS

Steven A. Moore, 1125 Emilie St., Green Bay, Wis. 54301

Filed Oct. 17, 1994, Ser. No. 323,902
Int. Cl.[6] F21V 21/20
U.S. Cl. 248—544 49 Claims



1. A bracket adapted to be mounted along a wall of a building, for thus mounting a fixture to the wall, said bracket comprising:

(a) a wall mount subassembly to be mounted to the wall, said wall mount subassembly comprising a body member having a first side for being disposed outwardly away from the wall, a second side for being disposed inwardly toward the wall, and a path for receiving an elongate fixture holder therealong;

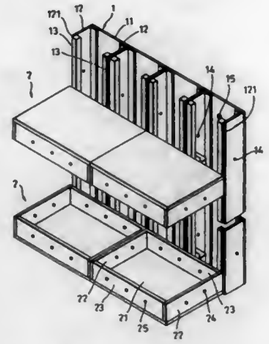
(b) an interface subassembly mounted to said wall mount subassembly, serving as an interface between said wall mount subassembly and the elongate fixture holder, said interface subassembly comprising (i) an interface plate having a first holder mounted thereto and mounting the fixture holder to said interface plate;

(c) a second holder spaced from said interface plate, holding the elongate fixture holder to said wall mount subassembly and immobile along the path; and

(d) securing apparatus securing said interface subassembly to said wall mount subassembly,

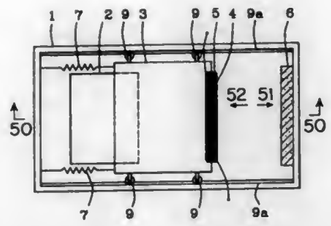
said bracket being configured such that said first and second holders hold the fixture holder to the bracket at respective spaced locations such that the first and second spaced holders cooperate in providing primary directional support to hold the fixture holder in a given attitude.

5,544,852
MODULAR FORM ASSEMBLY FOR CONCRETE STRUCTURE
Wen-Yuan Lee, 7F-3 No.8, Lane 390, Sec.1, Chien-Kang Rd., Tainan City, Taiwan
Filed Jan. 18, 1995, Ser. No. 373,853
Int. Cl.[6] E04G *9/03;11/06;17/14*
U.S. Cl. 249—192 **10 Claims**



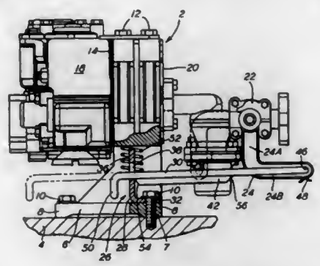
1. A modular form assembly comprising:
a plurality of vertical channel pieces coupled detachably side by side to one another, each of said channel pieces including two opposing vertical walls, and an intermediate vertical wall which interconnects said vertical walls and which serves as a form wall, said vertical walls of said channel pieces abutting against and being attached respectively and detachably to adjacent two of said vertical walls so as to arrange said form walls in a side-to-side contiguity, thereby placing said form walls in a common vertical plane; and
a plurality of horizontal reinforcement units interconnected detachably to each other, said reinforcement units abutting against and being connected detachably to said vertical walls opposite to said form walls so as to keep said form walls in said common vertical plane, each of said reinforcement units including a horizontal plate which has two opposing sides parallel to said form walls and two other opposing sides parallel to said vertical walls, each of said reinforcement units further including first flanges which extend vertically from said opposing sides of said horizontal plate, and second flanges which extend vertically from said other opposing sides of said horizontal plate, each of said second flanges abutting against and being connected detachably to an adjacent one of said second flanges.

5,544,853
DAMPER DEVICE
Jeong M. Choi, Kyungki-Do, Rep. of Korea, assignor to Golstar Co., Ltd., Rep. of Korea
Filed Apr. 20, 1994, Ser. No. 230,241
Claims priority, application Rep. of Korea, Apr. 24, 1993, 6936/1993
Int. Cl.[6] F16K *31/08*
U.S. Cl. 251—65 **18 Claims**



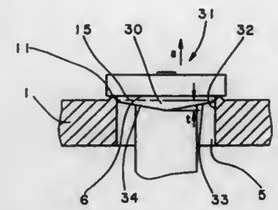
1. A damper device, comprising:
a damper casing having a recess and a damper opening provided in said recess;
an opening/closing member slidable in said recess of the damper casing for opening/closing said damper opening;
means provided on the opening/closing member for slidably supporting the opening/closing member within said recess for slidable movement of said opening/closing member with respect to said damper opening;
a first magnet provided fixedly at an end of the opening/closing member second magnet provided fixedly within the recess of the damper casing at a position remote from said first magnet and said damper opening;
means for selectively causing said first and second magnets to attract such that the opening/closing member slidable moves within said recess from a home position for opening the damper opening; and
means for elastically supporting the opening/closing member, provided fixedly between an end of the recess opposite from the end of the recess at which the second magnet is fixedly provided and the opposing/closing member for returning the opening/closing member to the home position.
4. The device of claim 1, wherein said first magnet is a permanent magnet and said second magnet is an electromagnet.

5,544,854
REMOTE CONTROL OF CUT-OUT COCK
John B. Carroll, Irwin, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.
Filed Mar. 28, 1995, Ser. No. 412,501
Int. Cl.[6] F16K *35/00;* **B60T** *17/04*
U.S. Cl. 251—99 **16 Claims**



1. A remote handle actuating mechanism for a two-position valve device where said valve device is located on the back side of a pipe bracket that is mounted on a railroad car body by at least one mounting pedestal that supports the pipe bracket with the underside thereof in spaced-apart relationship with the car body comprising:
a) a lever having one end connected to a movable member of said valve device;
b) an extension member having one end connected to the other end of said lever and a handle end terminating at the front side of said pipe bracket;
c) a bracket member affixed to said at least one mounting pedestal and having an opening therethrough via which said extension member passes in the space between the underside of said pipe bracket and said car body; and
d) detent means including said bracket member for providing latching engagement of said extension member therewith in a first position of said extension member in which said valve device is in a first operative condition and in a second position of said extension member in which said valve device is in a second operative condition.

5,544,855
VALVE
Immanuel Henken, Laatzen, and Horst Langner, Hannover, both of, Germany, assignors to WABCO Vermogensverwaltungs GmbH, Hanover, Germany
Filed Sep. 12, 1994, Ser. No. 304,765
Claims priority, application Germany, Sep. 15, 1993, 43 31 417.1
Int. Cl.[6] F16K *47/04*
U.S. Cl. 251—121 **1 Claim**

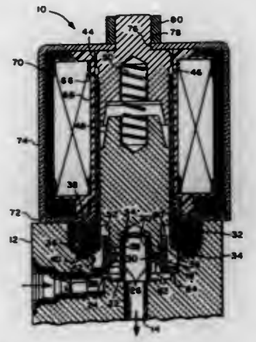


1. A valve, comprising:
a valve body having a face,
a counterpart having an opening with an outlet area and an encircling edge,
an extension having a circumferential surface, wherein said extension extends from said face into said counterpart opening,
a guiding area formed on said circumferential surface, said guiding area passing through said encircling edge with a clearance fit,
a countersink formed on said extension facing away from said face, said countersink having a cross-section which widens as the distance from said face increases, wherein said countersink is positioned so that, when said valve is closed, at least one part of said countersink extends beyond said encircling edge, and when said valve is opened, said at least one part at least partially passes said encircling edge, and
said countersink comprising at least two end surfaces inclined towards said face, said end surfaces being formed on an end of said countersink away from said face, said end surfaces intersecting each other, their region of intersection being said end surfaces' remotest portion from said face.

5,544,856
REMOTELY CONTROLLING MODULATED FLOW TO A FUEL GAS BURNER AND VALVE THEREFOR
Todd L. King, Cedarburg; James E. Mading, Sussex, and Earl T. Piber, Oconomowoc, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio
Filed Jul. 13, 1994, Ser. No. 274,319
Int. Cl.[6] F16K *31/02;47/08*
U.S. Cl. 251—129.08 **24 Claims**

1. A modulating gas valve assembly comprising:
(a) housing means defining therein an inlet, outlet and a flow metering bore communicating with said outlet having a valve seat formed therearound at one end thereof, said bore communicating with a valving chamber;
(b) a metering valve closely interfitting said metering bore in sliding arrangement including a poppet attached thereto and operable in a closed position for seating against said valve seat for preventing flow through said bore and operable in an open position to permit such flow;
(c) a metering groove formed in said valve member, and having for a predetermined distance from said poppet, a generally constant area in the direction of movement of said valve member, with the area thereof decreasing at a first predetermined rate beyond said distance; and an area decreasing in area at a second lesser rate therebeyond;
(d) a coil of electrically conductive material attached to said metering valve means and moveable therewith and including end leads adapted for electrical connection thereto;
(e) means defining a magnetic circuit attached to said housing means and disposed generally concentrically with respect to said coil; and,
(f) guide means piloting the end of said metering valve remote from said poppet wherein said coil is operable upon electrical energization to electromagnetically effect movement of said poppet and metering valve member a distance substantially proportional to the level of energization.

5,544,857
ELECTRICALLY OPERATED EXPANSION VALVE
Robert J. Torrence, Sanford, N.C., assignor to Eaton Corporation, Cleveland, Ohio
Filed Feb. 17, 1995, Ser. No. 390,399
Int. Cl.[6] F16K *31/02*
U.S. Cl. 251—129.15 **18 Claims**



1. An electrically operated valve assembly comprising:
(a) body means defining an inlet, an outlet and a valving chamber communicating with said inlet and outlet;
(b) an armature guide means having a tubular configuration and formed from non-magnetic material and having a first end attached to said body means and sealed thereon for forming a portion of said valving chamber;
(c) an armature, formed of material of high magnetic permeability and slidably disposed in said tubular guide means;
(d) a glide tube having one end attached to said outlet and another end remote from said one end closed and extending

into said valving chamber, said tube having at least one cross-port formed therein;

(e) a valving sleeve attached to said armature for movement therewith and slidably engaging said glide tube in closely fitting arrangement; and,

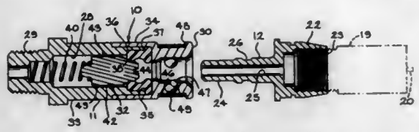
(f) solenoid means disposed about said armature guide means and operative upon electrical energization to effect movement of said armature, wherein said valving sleeve covers said at least one cross-port in the de-energized condition of said solenoid means and said valving sleeve progressively uncovers said at least one cross-port with increasing levels of energization of said solenoid means.

5,544,858

QUICK DISCONNECT FLUID COUPLING

Russell L. Rogers, Munith, and William C. Marrison, Jackson, both of Mich., assignors to Aeroquip Corporation, Maumee, Ohio

Filed Jul. 26, 1995, Ser. No. 507,123
Int. Cl.[6] F16L *37/28*
U.S. Cl. 251—149.6 **12 Claims**



1. A fluid coupling comprising a first coupling member and a second coupling member, said first coupling member defining a central passageway, a valve member positioned for movement within said central passageway, said second coupling member including a stem for positioning within said central passageway, said first coupling member defining a plurality of circumferentially spaced openings adjacent said central passageway, a ball positioned in each of said openings and a constant force spring mounted on said first coupling member, said constant force spring comprising a coiled flat ribbon spring, said constant force spring urging said balls into a locking relationship with said second coupling member.

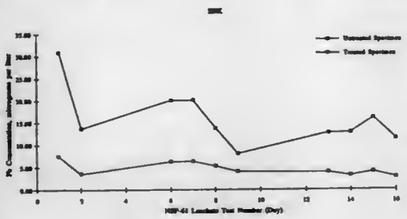
3. A fluid coupling, according to claim 1, including a valve seal having a sealing surface mounted adjacent one end of said valve member and a spring positioned within said first coupling member for urging said valve member against said sealing surface of said valve seal.

5,544,859

APPARATUS AND METHOD FOR INHIBITING THE LEACHING OF LEAD IN WATER

Enzo L. Coltrinari, Golden; Jerome P. Downey, Parker; Wayne C. Hazen, Denver, and Paul B. Queneau, Golden, all of Colo., assignors to Hazen Research, Inc., Golden, Colo.

Filed Jun. 3, 1994, Ser. No. 253,746
Int. Cl.[6] F16K *31/00*
U.S. Cl. 251—368 **17 Claims**



1. An apparatus for conducting the flow of a fluid, the apparatus comprising:

a solid body piece having a conduit surface that defines a conduit volume through which the flow of a fluid may be directed, said body piece comprising a first solid phase being a continuous phase and a second solid phase of dispersoids comprising lead dispersed in said first solid phase, a plurality of said dispersoids in said body piece being adjacent said conduit surface; and

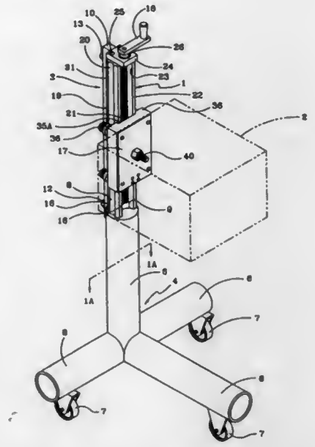
a noncontinuous surface coating at said conduit surface, wherein said surface coating comprises multiple distinct occurrences of coating material, at least a portion of said occurrences interposed between at least a portion of said conduit volume and at least a portion of said plurality of dispersoids.

5,544,860

HOIST AND POSITIONING APPARATUS

Richard L. Craig, Lisbon, Ohio, assignor to R. L. Craig, Inc., Lisbon, Ohio

Filed Nov. 7, 1994, Ser. No. 334,945
Int. Cl.[6] B60P *1/10*
U.S. Cl. 254—7 R **27 Claims**



1. A hoist apparatus for lifting, supporting and positioning a load comprising:

an elongated post having a pair of sides with arcuate guide channels formed thereon and a front surface having a recess formed thereon;

base means for supporting the post in an upright position;

a drive screw extending within said recess in said front surface;

carriage means for supporting a load, which carriage means operatively communicates with said drive screw;

follower means engaging each respective arcuate guide channel for movement of the carriage means therealong;

said follower means being carried by said carriage means; and

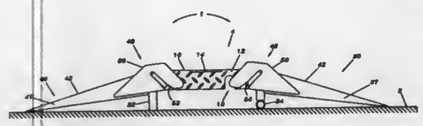
adjusting means for adjusting the follower means toward and away from a respective arcuate guide channel to remove any movement therebetween.

5,544,861

ADJUSTABLE RISER-RAMP ASSEMBLY

Craig A. Wisner, Wauwatosa; James C. Graham, Waukesha, and Thomas F. Mandery, Pewaukee, all of Wis., assignors to Hein-Werner Corporation, Waukesha, Wis.

Filed May 3, 1994, Ser. No. 237,458
Int. Cl.[6] B21D *1/12*
U.S. Cl. 254—88 **9 Claims**



1. An adjustable riser ramp assembly for supporting a vehicle above a work surface, said assembly comprising:

a platform having a pair of adjustable leg sets with each leg set being self-locking and said platform is further provided with a guide slot for each leg set and with each leg set provided with a guide pin adapted to engage the guide slot as the leg set is selectively moved from one position to another position,

a ramp attached to the platform with the ramp being provided with a pair of multi-level slide locks with each said slide lock including a slide plate having an angled lock slot with a front surface and a back surface, with said angled lock slot adapted to engage an angled key stock member fixed to the platform as the ramp is selectively moved from one position to another position, and

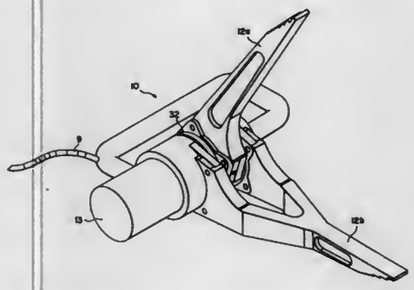
an adjustable retaining device engaging the platform and having a means for connecting the assembly to the work surface.

5,544,862

RESCUE TOOL

William Hickerson, Hardyston Township, N.J., assignor to Curtiss Wright Flight Systems Inc., Fairfield, N.J.

Continuation of Ser. No. 94,502, Jul. 20, 1993, abandoned, which is a continuation-in-part of Ser. No. 952,688, Sep. 29, 1992, Pat. No. 5,297,780. This application Aug. 12, 1994, Ser. No. 289,842
Int. Cl.[6] B66F *3/00*
U.S. Cl. 254—124 **9 Claims**



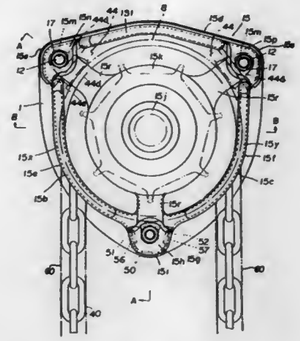
1. A light weight portable rescue device having two arms which deliver rotational motion, therebetween, under very high loads, said rescue device comprising a portable heavy duty electric motor, and gear means for converting the output of the motor to a low controllable speed and high torque to at least one of said arms, said gear means comprising a rotary multiple stage gear box having a compound planetary output stage.

5,544,863

MANUAL CHAIN BLOCK

Yoshio Ueno, and Yasuo Wada, both of Osaka Sayama, Japan, assignors to Elephant Chain Block Company Limited, Osaka, Japan

Filed Jun. 27, 1994, Ser. No. 265,777
Claims priority, application Japan, Jul. 2, 1993, 5-164896; Jul. 2, 1993, 5-164897
Int. Cl.[6] B66D *1/20*
U.S. Cl. 254—358 **13 Claims**



1. A manual chain block comprising:

a pair of side plates;

a load sheave rotatably supported between said side plates and around which a load chain is looped,

an actuating mechanism disposed outside one of said side plates, having a hand chain looped around a hand wheel for actuating said load sheave;

a wheel cover for covering said actuating mechanism, said wheel cover having introducing openings for said hand chain to pass through and

a cover holding member for holding said wheel cover to one of said side plates, said cover holding member being provided separately from said wheel cover and located between said introducing openings, said cover holding member having (i) side surfaces defining lower edges of said introducing openings, said side surfaces being located relative to each other such that said lower edges are spaced apart from a usual movement pathway of said hand chain, and (ii) a cover receiving portion for receiving said wheel cover, such that said cover holding member is tightened with said wheel cover to said side plate by a stay bolt.

5,544,864

COLLAPSIBLE PORTABLE CHILD'S PLAY-PEN

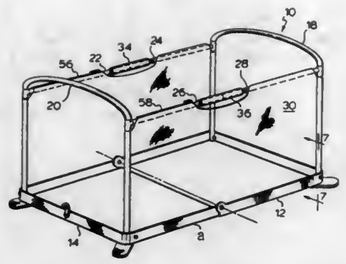
Christopher Gabriel-Lacki, Pointe-Claire, and Andrzej Kryszstofowicz, Brossard, both of, Canada, assignors to Quinn Wise & Associates Inc., Toronto

Filed Jul. 11, 1994, Ser. No. 273,066
Int. Cl.[6] E04H *17/16*; A47D *7/01*; F16D *3/00*
U.S. Cl. 256—25 **20 Claims**

1. A collapsible, portable child's play-pen, comprising:

a pair of half members pivotably coupled to each other along an axis, each pivotable about said axis from a first open position wherein each lies in a substantially flat plane to form a base, to a second portable closed position wherein each are folded together in substantially mutually overlying relationship;

a pair of frame members, each pivotably coupled at their respective ends to said base proximate parallel but opposite side edges of said base, whereby said frame members may be pivoted onto said base during collapsible folding of said play-pen;



a first pair of linking arms pivotably coupled to one of said frame members at one end thereof and at another end extending generally perpendicularly outwardly from said frame members when said play-pen is in the open position;

a second pair of linking arms pivotably coupled to another of said frame members at one end thereof and at an opposite end extending generally perpendicularly outwardly from said respective frame member when said play-pen is in the open position;

at least one linking arm of each pair of first and second linking arms possessing releasibly detachable locking engagement means to allow a free end having a releasibly detachable locking engagement of a respective liking arm of said first pair of liking arms with a respective liking arm of said second pair of liking arms so as to form two generally parallel but opposite upper side edges of the child's play-pen when said play-pen is in said open position;

said linking arms and frame members supporting on said upper side edges thereof a flexible sheet in a vertical position around a periphery of said play-pen when said play-pen is in said open position, thereby forming a plurality of vertical walls; and

releasible securement means located on said flexible sheet along at least a portion of said upper side edges of said child's play-pen;

whereby at least two linking arms each on mutually opposite upper side edges of said play-pen, when released by said releasible securement means from said flexible sheet, may be pivoted free from said flexible sheet and folded onto a respective frame member to which it is pivotably coupled, and said frame members may, at the same time as said other two linking arms and flexible sheet are being folded onto said frame members, be pivotably folded onto said base, and said half-members then pivoted about said axis to said portable closed position.

5,544,865

RAIL SUPPORT BRACKET

Michael T. Abbaticchio, 16017 Comus Rd., Clarksburg, Md. 20871

Filed Dec. 16, 1994, Ser. No. 358,094
Int. Cl.[6] E04F *11/18*
U.S. Cl. 256—67 **13 Claims**

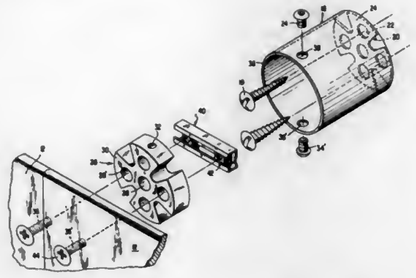
1. In combination with a rail segment, a bracket for mounting said rail segment on a surface, said bracket comprising:

first fastening means for fastening said bracket to the surface;

second fastening means for fastening said bracket to said rail segment, wherein said second fastening means is adjustable from a first state in which it loosely attaches said bracket to said rail segment and allows said rail segment to be shifted, within a limited range of motion, into a desired orientation relative to said bracket, to a second state in which it tightly secures said rail segment to said bracket in the desired orientation;

wherein said bracket further comprises:

housing means for housing said first and second fastening means; and



wherein said second fastening means further comprises:

a support disc;

third fastening means for fastening said support disc to said housing means; and

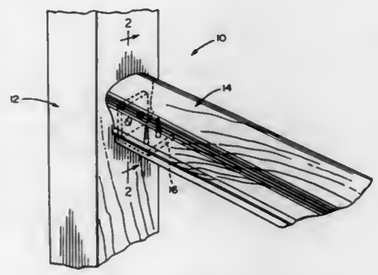
fourth fastening means for fastening said support disc to said rail segment.

5,544,866

HANDRAIL ASSEMBLY

Robert Dye, P.O. Box 305, Medford, Oreg. 97501

Filed Nov. 29, 1994, Ser. No. 350,121
Int. Cl.[6] E04H *17/14*
U.S. Cl. 256—69 **18 Claims**



10. A handrail assembly comprising:

a post,

a handrail,

an L-shaped bracket having two portions extending substantially perpendicular to each other,

at least one screw for securing said bracket to

said post and at least one screw extending upwardly through said bracket and into said handrail forsecuring said bracket to said handrail,

each of said two portions having at least one hole for receipt of said at least one screw for securing said bracket to said post and for receipt of said at least one screw for securing said bracket to said handrail,

one of said two portions being recessed completely in one end of said handrail and said one of said two portions and said one end of said handrail contacting said post, and

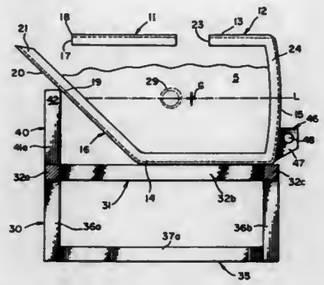
the other of said two portions being recessed completely in said handrail.

5,544,867

APPARATUS AND PROCESS FOR TRANSPORTING MOLTEN METAL

Richard H. Neyer, 12135 Bridgeport La., Cincinnati, Ohio 45240

Filed Mar. 13, 1995, Ser. No. 402,892
Int. Cl.[6] C21B *7/12*
U.S. Cl. 266—45 **22 Claims**



1. A vessel for holding molten metal during the transporting thereof, said vessel comprising:

a. a first portion having a generally cylindrical wall, a closed end, and an open end, said first portion having an opening formed in the cylindrical wall for receiving molten metal therethrough and said open end having an opening formed therein that is commensurate with the inside diameter of the cylindrical wall;

b. a spout formed over the open end of said first portion, said spout having:

(i) an inlet that is commensurate with the opening formed in the open end of said first portion;

(ii) a bottom portion that angles upwardly to provide a smooth path along which the molten metal can be discharged; and

(iii) an orifice through which the molten metal can be discharged from the vessel, said orifice being disposed so as to be above a load of molten metal in the vessel when the vessel is in an untilted position; and

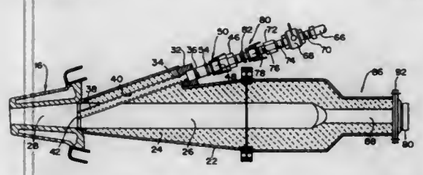
c. means for tilting said vessel to discharge the molten metal therefrom.

5,544,868

BLOW PIPE AND GAS LANCE FOR BLAST FURNANCE

Guy Randall, O Fallen, and Gregory P. Calvin, Collinsville, both of Ill., assignors to National Steel Corporation, Mishawaka, Ind.

Filed Jul. 31, 1995, Ser. No. 509,466
Int. Cl.[6] C21B *7/16*
U.S. Cl. 266—47 **5 Claims**



1. An improved fuel lance and blow pipe system for injecting supplemental fuel into a blast furnace, said system comprising

a tuyere mounted in a wall of the furnace and providing an open passage into the furnace,

a blow pipe including a metal case and a refractory lining having a central axial opening therethrough in communication with said tuyere providing a hot blast flow path through the blow pipe and tuyere and into the furnace,

lance support means defining a lance guide opening extending through said metal case and refractory lining at an acute angle to said central axial opening and in the general direction of said open passage into the furnace, said lance support means including mounting means on said metal casing,

an elongated lance having an open end, said elongated lance being adapted to be telescopingly received in said lance guide opening and releasably supported by said lance support means with said open end within said hot blast flow path,

manually operable cam actuated quick disconnect coupling means releasably connecting said lance on said lance support means, said coupling means being operable to release said lance to permit withdrawal of the lance from said hot blast flow path, and

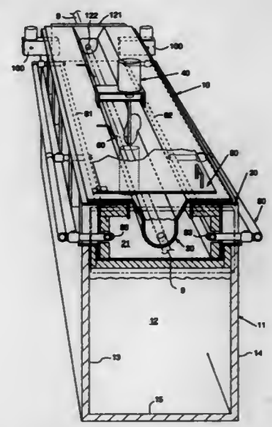
fuel supply means for supplying supplemental fuel to said lance to be discharged from said open end into said hot blast flow path.

5,544,869

APPARATUS FOR PLATING TUBING AND OTHER SHAPES

Peter K. Chifo, 702 W. Oakcrest Ave., Brea, Calif. 92621

Filed Aug. 22, 1994, Ser. No. 293,709
Int. Cl.[6] C23C *2/06*
U.S. Cl. 266—88 **12 Claims**



1. Apparatus for plating tubing and other shaped material comprising:

a reservoir adapted to hold molten plating material,

first heating means for heating said plating material in said reservoir and keeping said material molten,

a plating enclosure means having upper and lower surfaces which forms an elongated chamber having a longitudinal plating trough formed in said upper surface,

transfer means for moving molten plating material from said reservoir to said longitudinal plating trough,

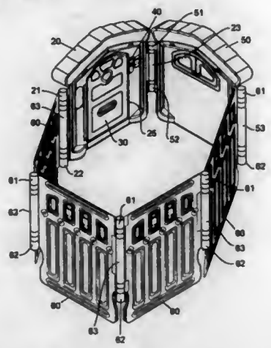
temperature sensing means for measuring the temperature of said molten plating material in said plating trough, and

second heating means carried within said plating enclosure means for heating said molten plating material transferred from said reservoir into said plating trough, said second heating means co-operating with said temperature sensing means for maintaining the temperature of said molten plating material in said trough.

5,544,870
PLAY ENCLOSURE APPARATUS

Miriam Kelley, Buffalo, and Daniel M. Dignitti, Hamburg, both of N.Y., assignors to Fisher-Price, Inc., East Aurora, N.Y.

Filed Aug. 19, 1994, Ser. No. 292,821
Int. Cl.[6] E04H *17/16;* **A63H** *33/42*
U.S. Cl. 256—26 **14 Claims**

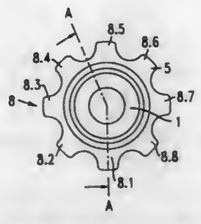


1. An enclosure apparatus comprising:
a plurality of panels, each said panel having a first side and a second side;
a plurality of first connector portions, each of said first connector portions being mounted on one of said first sides of one of said panels, respectively;
a plurality of second connector portions, each of said second connector portions being mounted on one of said second sides of one of said panels, respectively, and any of said second connector portions being releasably connectable with any of said first connector portions to connect any one said panel to any other said panels at more than one relative angle, so that one said panel is detachably connectable to another said panel with any one of the more than one angles therebetween; and
a mechanism for selectively locking one of said first connector portions to one of said second connector portions to selectively fix the relative angle between two connected ones of said panels.

5,544,871
HOLDER FOR VIBRATION-DECOUPLED FASTENING OF A SUBSTANTIALLY FLAT MACHINE PART

Otto Reinemuth, and Kurt Jäger, both of Weinheim, Germany, assignors to Firma Carl Freudenberg, Weinham, Germany

Continuation of Ser. No. 268,421, Jun. 30, 1994, abandoned. This application Jun. 2, 1995, Ser. No. 459,876
Claims priority, application Germany, Jul. 28, 1993, 43 25 250.8
Int. Cl.[6] F16F *3/04*
U.S. Cl. 267—293 **9 Claims**



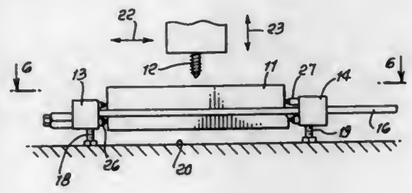
1. A holder for vibration-decoupled fastening of a substantially flat machine part, said machine part having a recess, said holder comprising:
a hollow cylindrical sleeve of a relatively rigid material; and
an elastomeric body which surrounds said sleeve and is non-rotatable with respect to said sleeve, said elastomeric body comprising an annular groove surrounding said sleeve of an axial size corresponding substantially to a thickness of said machine part adjacent said groove, said elastomeric body further comprising a groove base adapted to a shape of said recess and defining a radial limitation of said groove and groove faces defining axial limitations of said groove, said groove base and said groove faces being shaped for engagement with said machine part under initial elastic stress, said elastomeric body comprising a friction-reducing surface coating on said groove face, wherein said elastomeric body is manufactured in one piece.

5,544,872
UNIVERSAL, HYDRAULIC, SELF ADJUSTING, WORK CLAMPING DEVICE

Johannes Schuit, 1433 Camilo Trillado, Carpinteria, Calif. 93013

Filed Aug. 11, 1994, Ser. No. 288,688
Int. Cl.[6] B25B *5/14*
U.S. Cl. 269—26 **9 Claims**

1. Apparatus for clamping and orienting work relative to a tool,



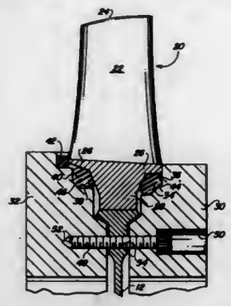
for processing, comprising, in combination
a) two laterally extending longitudinally separated support bars, and connector means connected to and extending between said bars for positioning them in fixed separated condition, there being work receiving space between the bars,
b) bar leveling means extending downwardly from said bars for supporting the bars on a support bed, said means being adjustable to adjust the leveling of the bars,
c) there being elongated bores in the bars and elongated work clamping pistons carried by the bars for hydraulically actuated movement in said bores toward said work receiving space for engaging and clamping the work to hold the work in fixed position relative to said bed, the pistons fitting the bores along elongated surfaces defined by the pistons,
d) multiple of said pistons carried by each bar and hydraulic fluid passages in each said bar to intercommunicate the pistons carried by that bar, the pistons having reduced end portions in the form of inserts having hardened tips to locally engage work surfaces,
e) and adjustable displacement means for displacing hydraulic fluid toward all of said pistons carried by each bar, displacing only that amount of hydraulic fluid toward all of said pistons carried by each bar as will preclude complete displacement of any piston from the bar,
f) each piston being free of restraint that would block complete piston displacement from the bar,
g) whereby work may be received in the space between the bars, with said leveling means extending upwardly, after which the pistons may be caused to clamp the work, and the bars and work then inverted to cause the leveling means to support the work on a support bed.

5,544,873
APPARATUS TO HOLD COMPRESSOR OR TURBINE BLADE DURING MANUFACTURE

Thomas E. Vickers, Mesa, and James A. Sanger, Prescott, both of Ariz., assignors to AlliedSignal Inc., Morris Township, N.J.

Division of Ser. No. 812,776, Dec. 23, 1991, Pat. No. 5,191,711. This application Oct. 13, 1992, Ser. No. 959,893
Int. Cl.[6] B23P *1/00*
U.S. Cl. 269—47 **4 Claims**

1. An assembly fixture for securely positioning compressor or

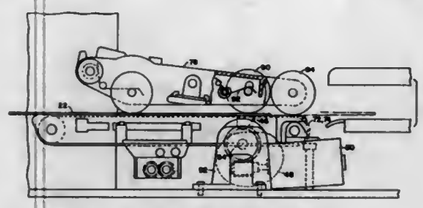


turbine blades loosely assembled onto a rotor to simulate actual positioning when subsequently assembled into a gas turbine engine, comprising:
a first annular ring fixture disposed on one axial side of the rotor and blades, said first ring fixture having annular radial and axial walls facing but spaced from a first portion of each of the blades protruding axially from the rotor;
a first annular resilient biasing member contacting said radial and axial walls of the first fixture and said first portions of the blades;
a second annular ring fixture disposed on an opposite axial side of the rotor and blades, said first ring fixture having annular radial and axial walls facing but spaced from a second portion of each of the blades protruding axially from the rotor;
a second annular resilient biasing member contacting said radial and axial walls of the second fixture and said second portions of the blades; and
means for axially clamping said first and second ring fixtures together and thereupon compressing both said first and second biasing members to urge said blades radially relative to said rotor to simulate actual assembled positions in the engine.

5,544,874
ANTI-SKEW DEVICE FOR ENVELOPE TURNER

Carlos L. DeFigueiredo, Sandy Hook, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 31, 1994, Ser. No. 332,305
Int. Cl.[6] B65H *5/00*
U.S. Cl. 271—2 **5 Claims**

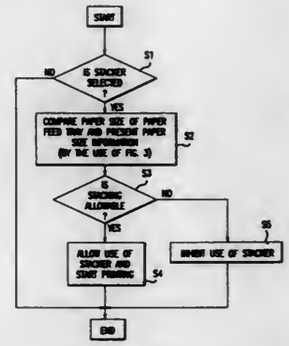


1. Apparatus for turning an envelope, comprising:
a pivotable feed deck for receiving an envelope;
means for stopping said envelope on said feed deck;
means for raising and lowering the downstream end of said feed deck; and
a pivotable upper arm drive located above said feed deck, said drive being pivotable at its upstream end, and including a pair of feed rollers fixedly secured to the upstream end of said drive, a pair of exit rollers fixedly secured to the downstream end of said drive, and a pair of biased exit rollers secured to said drive adjacent and upstream of said fixedly secured exit rollers.

5,544,875
PAPER STACKING APPARATUS

Noriyuki Obara, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 12, 1994, Ser. No. 321,515
Claims priority, application Japan, Jan. 17, 1994, 6-016986
Int. Cl.[6] B65H *43/00*
U.S. Cl. 271—176 **7 Claims**



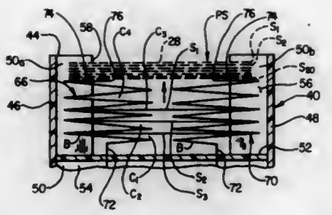
1. A paper stacking apparatus comprising:
paper stacking means for stacking plural sheets of paper thereon;
paper size detecting means for detecting a size of said paper to be stacked on said paper stacking means;
paper stack detecting means for detecting whether said paper is present or absent on said paper stacking means; and
control means for inhibiting stacking of said paper when said paper size detected by said paper size detecting means is different from a preset paper size, and for allowing the stacking when absence of said paper on said paper stacking means is detected by said paper stack detecting means during inhibition of the stacking.

5,544,876
PRINTED PAPER RECEIVING AND STACKING APPARATUS FOR AN IMAGE REPRODUCTION MACHINE

Mark H. Ruch, Spring, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Jun. 16, 1994, Ser. No. 260,697
Int. Cl.[6] B65H *29/42*
U.S. Cl. 271—179 **19 Claims**

1. An image reproduction machine comprising:
printing means for receiving a stack of imprintable sheets, imprinting selected indicia on sides of the sheets, and successively discharging the printed sheets, printed side up, in a horizontal direction; and
printed sheet receiving and stacking means for receiving the discharged printed sheets and forming therefrom a printed sheet stack in which the printed sheets, printed side up, are



successively disposed, from top to bottom, in the order in which they were discharged from said printing means, said printed sheet receiving and stacking means including:

a spaced plurality of vertically oriented helical first means supported for driven rotation about vertical axes and having top end portions, said helical first means being operative, during rotation thereof and discharge of printed sheets from said printing means, to form said printed sheet stack on said top end portions by sequentially receiving and supporting each successively discharged sheet, moving the supported sheet upwardly along the lengths of said helical first means, and then causing the supported sheet to upwardly exit said plurality of helical first means and come to rest on said top end portions thereof, said spaced plurality of vertically oriented helical first means including a first spaced apart pair of helical drive members positioned to laterally receive a first side edge portion of each sheet discharged from said printing means, and a second spaced apart pair of helical drive members positioned to laterally receive a second side edge portion of each sheet discharged from said printing means, and

second means selectively operable to rotationally drive said plurality of helical first means about said vertical axes,

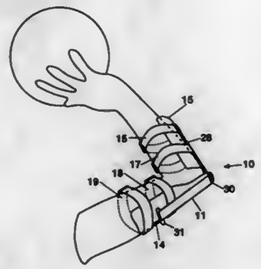
said printing means being operative to discharge the printed sheets in a first horizontal direction,

said first pair of helical drive members being spaced apart in said first horizontal direction, with a first one of said first pair of helical drive members being positioned between said printing means and the second one of said first pair of helical drive members,

said second pair of helical drive members being spaced apart in said first horizontal direction, with a first one of said second pair of helical drive members being positioned between said printing means and the second one of said second pair of helical drive members, and

said second ones of said first and second pairs of helical drive members being downwardly offset from said first ones of said first and second pairs of helical drive members.

5,544,877
BASKETBALL SHOOTING TRAINING AID
Neal G. Brownell, P.O. Box 420, Wassaic, N.Y. 12592
Filed Jun. 5, 1995, Ser. No. 463,977
Int. Cl.[6] A63B *69/00*
U.S. Cl. 273—1.5 A **4 Claims**



1. A basketball shooting training aid comprising:

a forearm brace;

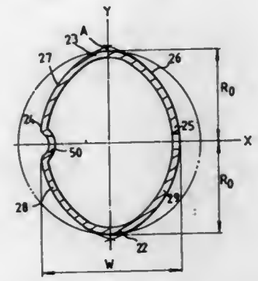
an upper arm brace;

said forearm brace and said upper arm brace having a length and width and form to accommodate a portion of the forearm and upper arm respectively of the user, and freely moveable adjustable strap means connected to said braces for attaching said braces to the arm of a user on the part of the arm adjacent to the outside of the elbow;

a flexible but longitudinally un-yielding control strap interconnecting said forearm brace and said upper arm brace; and

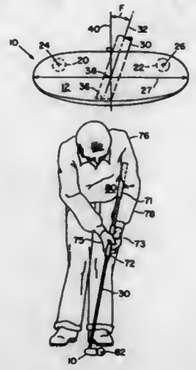
adjusting means associated with said control strap, said forearm brace and said upper arm brace for restricting the angle to which the forearm and upper arm can be bent at the elbow on backward movement of the arm of a user.

5,544,878
RACKET
Henry Hsu, No. 121, Section 1, Shen Lin Rd., Taya Hsiang, Taichung Hsien, Taiwan
Filed Sep. 11, 1995, Ser. No. 526,316
Int. Cl.[6] A63B *49/02*
U.S. Cl. 273—73 C **2 Claims**



1. A racket comprising a head portion, a throat portion and a handle, said throat portion including two rods and disposed between said head portion and said handle, at least one segment of said head portion and/or said throat portion having an ovoid cross section when taken in a plane orthogonal to an axis of said segment, said ovoid cross section having a front arc, a rear arc, an inner arc, an outer arc and four quadrant arcs which are a first quadrant arc, a second quadrant arc, a third quadrant arc and a fourth quadrant arc, said rear arc connected between said first quadrant arc and said second quadrant arc, said outer arc connected between said first quadrant arc and said fourth quadrant arc, said front arc connected between said fourth quadrant arc and said third quadrant arc and, said inner arc connected between said third quadrant arc and said second quadrant arc, said front arc and said rear arc respectively inscribed to an imaginary circle with radius **R0** at point A which is located on a vertical central line of said imaginary circle, a profile of a first quadrant and a second quadrant of said cross section being symmetrical to that of said third quadrant and said fourth quadrant of said cross section about a horizontal central line, a respective extension curve of said first quadrant arc and said second quadrant arc intersecting at two points one of which is located above said point A, a length of any radius of said four quadrant arcs being equal to 1.025–1.25 timers that of **R0** and the widest portion of said cross section being less than **2R0**.

5,544,879
PUTTER GOLF CLUB
Clark R. Collins, 896 Sandalwood Pl., Jenson Beach, Fla. 34957
Filed Jun. 9, 1995, Ser. No. 488,809
Int. Cl.[6] A63B *53/04;53/00*
U.S. Cl. 473—314 **24 Claims**



1. A putter golf club comprising a shaft and a head,

said head having a front face having a height and a maximum width, a back edge, a top surface and a bottom surface,

spaced apart weight means having a density greater than a density of said head and extending at least about 35% of a maximum distance between said back edge and said front face,

said weight means being spaced apart a distance of at least about 50% of a maximum width of said front face and having a centerline positioned at least about 50% of a maximum height of said front face above said bottom surface,

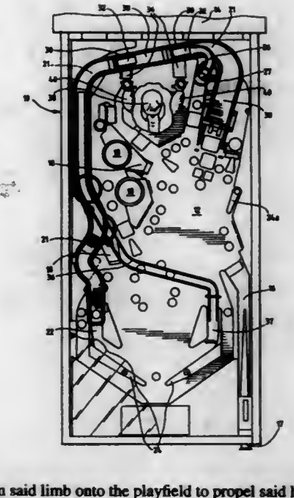
said weight means having a weight between about 20% and about 80% of a weight of said head without said weight means,

said shaft extending into said head from said top surface at a first angle from a direction normal to said top surface toward said front face of between about 10° and about 20° and at a second angle from said direction normal to said top surface toward a user of said club between about 10° and about 20° and being positioned at least about 70% of a maximum length between said front surface and said back edge away from said front face,

said shaft having a centerline extending the length of said shaft and a midpoint on said centerline positioned equidistant between said top surface of said head and a shaft bottom surface positioned within said head and

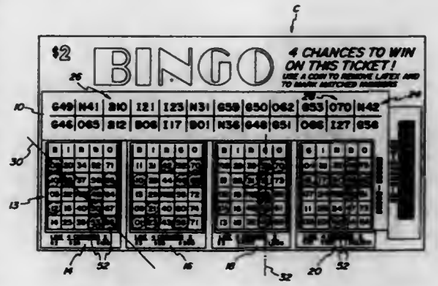
said midpoint being positioned a distance less than about 10% of the maximum width of said front face from a line extending through a centerpoint of said front face and said line being normal to said top surface.

5,544,880
PINBALL MACHINE WITH BALL THROWING FIGURE
John D. Borg, Lisle, Ill., assignor to Sega Pinball, Inc., Melrose Park, Ill.
Filed Jan. 13, 1995, Ser. No. 372,156
Int. Cl.[6] A63F *7/02*
U.S. Cl. 273—119 R **16 Claims**



1. A pinball machine which comprises a playfield; a shooter for propelling balls on the playfield; and a figure on the playfield having at least one movable limb, said limb being mounted on a rotatable, generally horizontal shaft, said shaft being rotatably connected to a motor to cause generally vertical pivoting of said limb between a first position where the limb is capable of receiving and holding a ball, and a second position where the ball is propelled from said limb onto the playfield to propel said ball from the limb; a device to retract said limb back to said first position; and a ball delivery trough positioned to deliver balls to said limb in the first position.

5,544,881
ERASABLE SCRATCH-OFF LOTTERY TICKET
Louis Rua, Jr., Plainsboro, and Stephen E. Martin, Jamesburg, both of N.J., assignors to Webcraft Technologies, Inc., North Brunswick, N.J.
Filed Jan. 19, 1994, Ser. No. 183,389
Int. Cl.[6] A63F *3/06*
U.S. Cl. 273—139 **21 Claims**



1. A scratch-off game card which can be marked with an object to determine a winning pattern, comprising:

a) a first section including a first set of game data covered by a substantially opaque scratch-off material;

b) a second section including a second set of game data covered by a substantially transparent material;

c) said second section including a substantially transparent coating over said transparent material; and

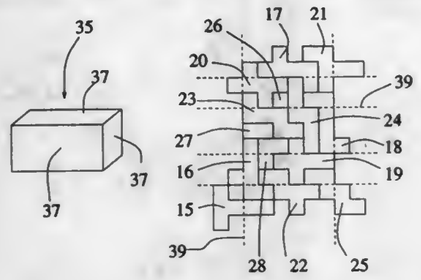
d) said coating can be erasably marked by a metallic object.

5,544,882

PUZZLE INCLUDING OVERLAYING PUZZLE PIECES

Jyotirmoy Sarkar, 5613 N. Woodside Dr., Indianapolis, Ind. 46208

Filed May 8, 1995, Ser. No. 436,565
Int. Cl.[6] A63F *9/12*
U.S. Cl. 273—157 R **13 Claims**



1. A puzzle comprising;
at least one puzzle base comprising an exterior periphery, wherein said exterior periphery defines a three-dimensional shape and includes multiple surfaces, each surface comprising a surface area;
a plurality of puzzle pieces each including a two-dimensional outline forming a surface covering area, said plurality of puzzle pieces positionable by a puzzle user in covering relationship with said puzzle base surfaces to cover at least a portion of said three-dimensional exterior periphery during puzzle solving, wherein said surface covering area of at least one of said plurality of puzzle pieces is less than said surface area of at least one of said puzzle base surfaces; and
wherein said plurality of puzzle pieces comprises a first puzzle piece and a second puzzle piece, wherein said two-dimensional outline of said first puzzle piece differs from said two-dimensional outline of said second puzzle piece, and wherein said two-dimensional outline of each of said first and second puzzle pieces corresponds to an outline of the six faces of an unfolded and flattened unit cube.

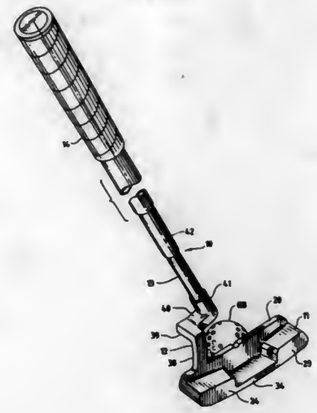
5,544,883

FACE-BALANCED PUTTER WITH OFFSET HOSEL

Dean E. Meyer, LaGrange Park, Ill., assignor to Wilson Sporting Goods Co., Chicago, Ill.

Filed Aug. 16, 1995, Ser. No. 515,862
Int. Cl.[6] A63B *53/02;53/04*
U.S. Cl. 473—313 **15 Claims**

1. A golf putter comprising:
a putter head having a substantially flat face with a top edge and a bottom edge, a sole portion extending rearwardly from the bottom edge of the face, a toe portion, and a heel portion,
a hosel mounted on the putter head and having a bottom portion which extends generally upwardly from the putter head adjacent the heel portion, a forwardly extending portion which extends forwardly from the bottom portion of the hosel beyond the face of the putter head, a laterally extending portion which extends from the forwardly extending portion toward the toe portion in a direction generally parallel to the face, the laterally extending portion being positioned forwardly of the face, and a shaft-attaching portion connected to the laterally extending portion, and
a shaft attached to the shaft-attaching portion of the hosel and extending generally upwardly therefrom.

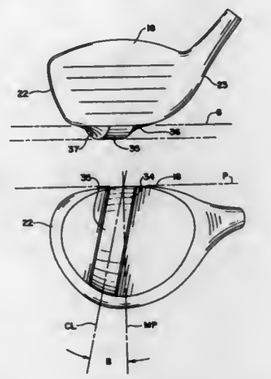


5,544,884

GOLF CLUB WITH SKEWED SOLE

Thomas F. Hardman, Palm Beach Gardens, Fla., assignor to Wilson Sporting Goods Co., Chicago, Ill.

Filed Mar. 27, 1995, Ser. No. 411,437
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—327 **13 Claims**



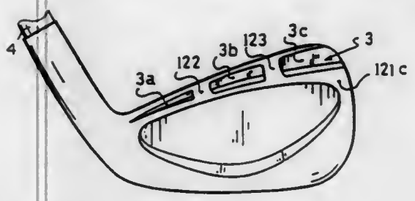
1. A golf clubhead comprising a body having a striking face, a toe, a heel, a top portion, a back portion, and a sole, the sole having only a single downwardly extending projection between the toe and the heel the remainder of said sole being free of any projections, the single projection extending rearwardly from the face and away from the heel, whereby the clubhead is forced to proceed with a minimum of resistance in a heel-to-toe direction upon impact of the striking face with a golf ball.

5,544,885

IRON WITH IMPROVED MASS DISTRIBUTION

Philippe Besnard, Yverdon, Switzerland; Larry Tang, Casabasa, Calif.; Richard L. Rugge, Encinitas, Calif.; Jim Sieleman, San Diego, Calif., and Franck Dumontier, Vista, Calif., assignors to Taylor Made Golf Co., Inc., Carlsbad, Calif.

Filed Aug. 31, 1995, Ser. No. 521,733
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—350 **11 Claims**



1. An iron type golf club head comprising:
a face portion including a golf ball striking surface;
a toe;
a sole adapted to rest on the ground at address;
an upper edge portion;
a heel;
a rear portion having a main cavity extending towards said face portion and a peripheral mass belt extending around said main cavity defining a heel perimeter portion, a toe perimeter portion, an upper perimeter portion, and a lower perimeter portion, said main cavity having a predeterminate volume;
said upper perimeter portion of said peripheral mass belt comprising a secondary recess, said secondary recess having a volume smaller than said predeterminate volume of said main cavity and a volume per unit length that increases in a direction toward said toe of the club head;
said recess having a bottom, said recess bottom being a portion of said recess closest to said striking surface to thereby define a predeterminate thickness of the club head between said bottom and striking surface; and
said upper edge portion having a thickness extending from said striking surface, measured at an upper end of said striking surface, to said rear portion of the golf club head, said thickness of said upper edge portion being greater than said predeterminate thickness, measured at all points along said recess bottom.

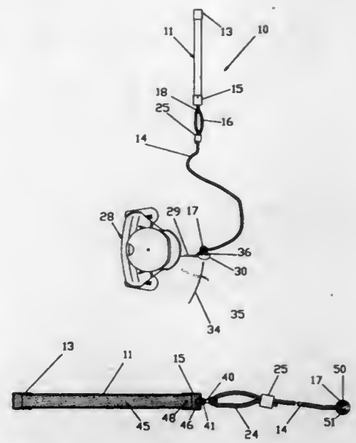
5,544,886

GOLF PRACTICE DEVICE

David VanSkiver, 1109 Beaumont Ave., Port Charlotte, Fla. 33948

Filed Jul. 7, 1995, Ser. No. 499,184
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—143 **3 Claims**

1. A system for enabling golf practice to be held in a limited space, said system comprising:
a cylindrical, PVC, containing weight means and having a first end with an end cap fastened thereon, an eye bolt fastened to said first end cap, and a second end having an end cap fastened thereon, forming a sealed container for said weight means,
a golf ball having a bore formed therethrough at the diameter, said bore countersunk at one end, and
a tethering cord having a first end and a second end, said cord secured at said first end to said golf ball, said cord passing through said bore and secured therein, and shaped to conform to the outer surface of said golf ball at said first end, and said tethering cord secured at a second end to said eye bolt, said second end passing through said eye bolt, and secured to itself by a clamp, thereby forming a loop,
whereby when said golf ball, said cord and said pipe casing are strung out in alignment and said ball is struck by a golf club, said ball will travel along its natural trajectory until restrained by said weighted pipe casing, thereby allowing viewing of at least the initial portion of the trajectory of said ball and enabling said ball to travel substantially double the distance of the length of said cord.

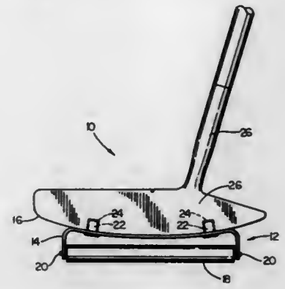


5,544,887

GOLF PUTTER TRAINING DEVICE

Judy Bryant, 16 Maple St., Arlington, Mass. 02174

Filed Jul. 28, 1995, Ser. No. 508,925
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—230 **6 Claims**



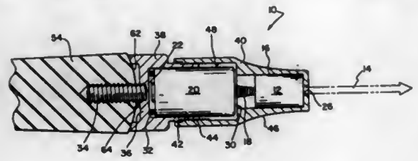
1. A golf putter, comprising:
a putter head having a bottom surface;
a generally U-shaped resilient bracket removeably attached to said bottom surface of said putter head by coacting resiliently engaged male and female members, respectively, attached to said bracket and said bottom surface, said bracket projecting below said bottom surface of said golf putter head; and
a cylindrical roller mounted between the downwardly extending arms of said U-shaped bracket;
wherein said cylindrical roller provides directional feedback to a user to indicate a misaligned putt during a putting stroke.

5,544,888

GOLF SWING TRAINING DEVICE

John T. Pellegrini, Michigan City, Ind., assignor to Plane Sight, Inc., Michigan City, Ind.

Filed Aug. 4, 1995, Ser. No. 511,128
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—220 **15 Claims**





1. A golf swing training device for use on a golf club having a shaft defining a longitudinal axis of the golf club, a head at a first end of the shaft and a handle at an oppositely-disposed second end of the shaft, the golf swing training device comprising:

means for producing a parallel light beam;

means for attaching the producing means to the handle of the golf club such that the parallel light beam is emitted coaxially along the longitudinal axis of the shaft of the golf club in a direction away from the head of the golf club; and

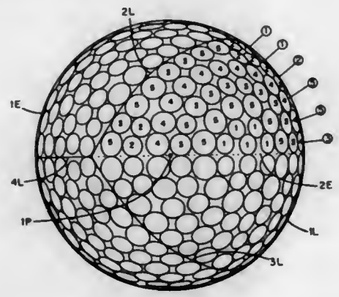
means for switching the producing means between an activated state in which the producing means emits the parallel light beam and a deactivated state in which the parallel light beam is not emitted, the switching means comprising an elastomeric member and means for compressing the elastomeric member to permit current flow to the producing means when the producing means is in the activated state.

5,544,889

GOLF BALL

Jae-Chang Moon, Kwangju, Rep. of Korea, assignor to Kumho & Co., Inc., Seoul, Rep. of Korea

Filed Jan. 3, 1995, Ser. No. 368,169
Claims priority, application Rep. of Korea, Nov. 28, 1994, 31540/1994
Int. Cl.[6] A63B *37/14*
U.S. Cl. 473—383 **21 Claims**



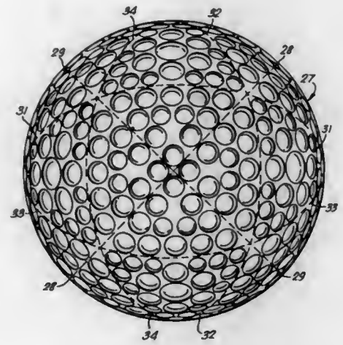
20. A golf ball having a spherical surface including many approximately uniformly distributed dimples, the dimples being arranged so there are only two great circles of the surface that do not have dimples lying thereon.

5,544,890

GOLF BALL DIMPLE PATTERNS

Michael Shaw, Wakefield, and Gary W. Slater, Castleford, both of, England, assignors to Dunlop Limited, London, England

Continuation of Ser. No. 361,015, Dec. 21, 1994, abandoned, which is a continuation of Ser. No. 226,377, Apr. 12, 1994, abandoned, which is a continuation of Ser. No. 666,884, Mar. 8, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 479,549
Claims priority, application United Kingdom, Mar. 29, 1990, 9007092
Int. Cl.[6] A63B *37/14*
U.S. Cl. 473—383 **19 Claims**



1. A dimpled golf ball having a spherical surface and in said spherical surface a various number of dimple-free great circles, said spherical surface having a dimple pattern arranged in eight equilateral triangles corresponding to the edges of a regular octahedron projected directly on the spherical surface, and each of said eight equilateral triangles being sub-divided by great circles into a various number of sub-triangles, whereby the total number of dimple-free great circles on the surface of the ball is six, seven or nine and the corresponding total number of triangular elements is forty-eight, forty or fifty-six, respectively.

5,544,891

EXERCISE AND NUTRITIONAL GAME AND METHOD OF USING SAME

Sandra J. Gibson, 333 South East, Apt. 403, Oak Park, Ill. 60302, and Marlene Barclay, 5301 Hallford Dr., Dunwoody, Ga. 30338

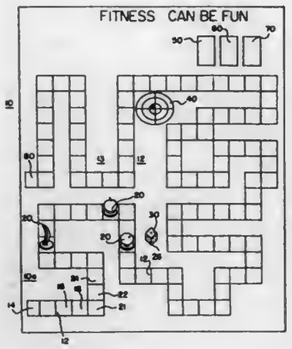
Filed May 2, 1995, Ser. No. 432,769
Int. Cl.[6] A63F *3/00*
U.S. Cl. 273—244 **5 Claims**

1. A method of playing an exercise and nutritional game comprising the steps of:

providing a game board having a plurality of contiguous spaces, including exercise spaces, nutritional question spaces, exercise reduction spaces, and city structure spaces;

providing a plurality of playing pieces;

providing a plurality of combat cards.

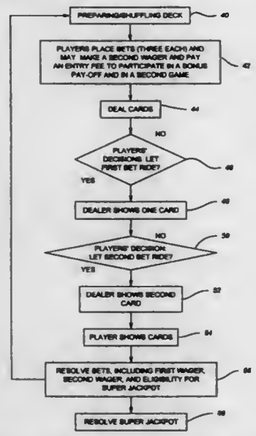


5,544,892

MULTI-TIERED WAGERING METHOD AND GAME

John G. Breeding, St. Louis Park, Minn., assignor to Shuffle Master, Inc., Eden Prairie, Minn.

Continuation-in-part of Ser. No. 43,413, Apr. 6, 1993, Pat. No. 5,417,430, which is a continuation-in-part of Ser. No. 23,196, Feb. 5, 1993, Pat. No. 5,288,081. This application Feb. 14, 1995, Ser. No. 388,292
Int. Cl.[6] A63F *1/00*
U.S. Cl. 273—292 **30 Claims**



23. A method for playing a series of casino card games between a casino and a plurality of players, with a super jackpot comprising:

each player placing a first wager to become a participant in the casino card game;

each player placing a second wager to become eligible to win a bonus pay-off and the super jackpot;

dealing a hand of cards to each player;

resolving each player's first wager based on said hand, wherein if a player's hand comprises a predetermined arrangement of cards, that player wins a preselected amount from the casino;

resolving each player's second wager based on said hand, wherein if a player's hand comprises a subset of the predetermined arrangement of cards, that player wins a predetermined bonus pay-off from the casino, and further wherein if a player's hand comprises a narrower subset of the predetermined arrangement of cards, that player becomes a finalist eligible to win the super jackpot; and

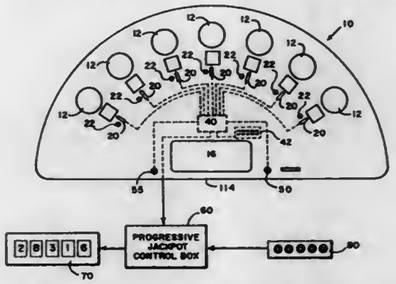
playing a second game to select a winner of the super jackpot.

5,544,893

APPARATUS FOR PROGRESSIVE JACKPOT GAMING

Daniel A. Jones, and James P. Suttle, both of Las Vegas, Nev., assignors to Progressive Games, Inc., Ft. Lauderdale, Fla.

Continuation of Ser. No. 337,661, Nov. 9, 1994, which is a division of Ser. No. 40,925, Mar. 31, 1993, Pat. No. 5,364,104, which is a division of Ser. No. 800,631, Nov. 27, 1991, Pat. No. 5,288,077, which is a continuation-in-part of Ser. No. 361,276, Jun. 5, 1989, Pat. No. 5,078,405, which is a division of Ser. No. 214,934, Jul. 5, 1988, Pat. No. 4,861,041, which is a continuation-in-part of Ser. No. 182,374, Apr. 18, 1988, Pat. No. 4,836,553. This application Jun. 7, 1995, Ser. No. 486,700
Int. Cl.[6] A63F *9/24*; A47B *25/00*
U.S. Cl. 273—309 **16 Claims**



1. An apparatus for including a jackpot component as an additional feature in a live casino table card game, comprising:

a gaming table having a plurality of player locations at which a player receives playing cards from a dealer to play said live casino table card game;

an acceptor associated with each player location for accepting a gaming token by which a player makes a wager to participate in the additional jackpot component of the live casino table card game;

a light indicator associated with each playing location for visually indicating that a player has wagered a gaming token to participate in the jackpot component of the live casino table card game;

a manually activated lockout switch adapted for manual activation by the dealer for preventing a player from participating in said jackpot component by making a wager after activation of said lockout switch by the dealer; and

a manually activated reset switch for resetting the apparatus at the end of each hand of the live casino table card game upon activation of said reset switch by the dealer.

5,544,894

TETHERED BALL HAVING FACIAL FEATURES AND SOUND OUTPUT

Stanley B. Howard, 6910 NW. 179th St. #203, Higleahonio, Fla. 33015, assignor to Stanley B. Howard, Miami, Fla.

Filed Apr. 18, 1994, Ser. No. 229,199
Int. Cl.[6] A63B *67/10*
U.S. Cl. 273—414 **1 Claim**

1. A method of using a tethered ball to simulate the recreational activity of a person "bungee jumping," comprising:

providing a ball member having an outer surface, said ball member further having a pressure-activated audio circuit therein for producing screaming sound simulating a bungee jumper while jumping, said outer surface including a representation of a face with exaggerated, abnormal facial features located at a first region of said outer surface, said facial



features including: stating eyes with distended veins and dilated pupils, wind-blown hair, and a large smile with missing teeth, and said first region is further printed thereon with the legend "Bungee Face" to further reinforce the concept that said ball member represents a bungee jumper;

attaching a bungee cord at a first end to said outer surface of said ball member at a point facing away from said first region;

attaching a hand or wrist strap to a second end of said bungee cord for attachment to a player's hand or wrist during play;

attaching said hand or wrist strap to a respective hand or wrist of a player. and throwing said ball to simulate a bungee jumper whereby said screaming sounds, said exaggerated facial features, and said printed legend cooperate to convey the concept of bungee jumping.

5,544,895

SHAFT PACKING

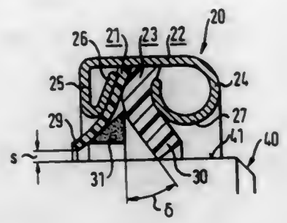
Steffen Heine, Kubsen; Heiko Schumacher, Bad Oldesloe, and Rolf Johnen, Hoisdorf, all of, Germany, assignors to Dichtungstechnik G. Bruss GmbH & Co. KG, Hoisdorf/Hamburg, Germany

Filed Jul. 7, 1994, Ser. No. 271,604

Claims priority, application Germany, Jul. 21, 1993, 43 24 529.3

Int. Cl.[6] F16J *15/32*

U.S. Cl. 277—9.5 **5 Claims**



1. A shaft packing for sealing a shaft comprising:

a casing comprising a first leg and a second leg;

a first polymeric disk forming a first sealing lip having a first internal diameter, said first disk being clamped between said first and second legs;

a second polymeric disk forming a second sealing lip having a second internal diameter, said second disk being clamped between said first and second legs; and

a ring disposed between and separating said first and second sealing lips and expanding at least said first internal diameter, said ring comprising a solid lubricant material which melts during use and thereby lubricates said shaft.

5,544,896

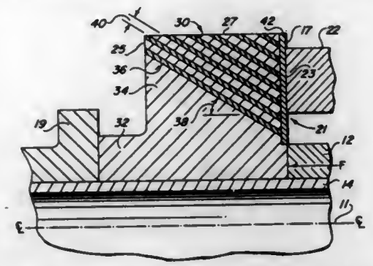
COMPOSITE FACE SEAL

Barry S. Draskovich, Scottsdale, and M. Rifat Ullah, Phoenix, both of Ariz., assignors to AlliedSignal Inc., Morris Township, N.J.

Filed Feb. 6, 1995, Ser. No. 384,162

Int. Cl.[6] F16J *15/34*

U.S. Cl. 277—22 **10 Claims**



1. A face seal comprising an annular rotor having a base portion and a head portion, said head portion having a first flat surface in rubbing contact with a second flat surface of an annular stator, said annular rotor made of a metal matrix having a plurality of graphite fiber embedded only in said head portion, said head portion having an outer surface extending from said first flat surface to a backface surface which is parallel to said first flat surface, at least one of said fibers extending from said first flat surface to said outer surface, and at least one of said fibers extending from said first flat surface to said backface surface.

5,544,897

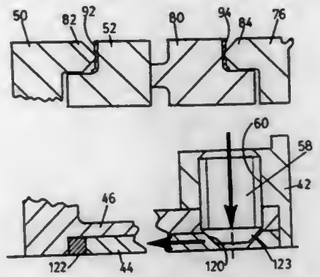
CARTRIDGE SEAL HAVING A HIGH CONTACT PRESSURE SEAL AND MEANS FOR INTERSLEEVE ADJUSTMENT INCLUDING QUENCH FLUID DELIVERY

Larry Di Pietro, Middleton, Mass., and Henri Azibert, Winohan, N.H., assignors to A. W. Chesterton Co., Stoneham, Mass.

Filed Aug. 19, 1993, Ser. No. 108,452

Int. Cl.[6] F16J *15/34*

U.S. Cl. 277—81 R **22 Claims**



1. A mechanical seal for a rotating shaft extending through a casing of a rotary fluid handling device, comprising:

a rotary ring holder mounted coaxially onto said shaft to rotate therewith;

a stationary ring holder mounted coaxially around said shaft and fixed to said casing for non-rotation;

a rotary seal ring mounted coaxially around said shaft and fixed for rotation with said rotary ring holder and sealed to said rotary ring holder with a first seal arrangement applied between said rotary seal ring and said rotary ring holder;

a stationary seal ring mounted coaxially around said shaft and fixed for non-rotation to said stationary ring holder and sealed to said stationary ring holder with a second seal arrangement applied between said stationary seal ring and said stationary ring holder, said rotary seal ring and said stationary seal ring in rotary sliding contact and providing a fluid seal therebetween; and

at least one of said first and second seal arrangements comprising a protuberance formed on one of the respective seal ring or ring holder, a gasket sealing surface formed on a respective other of the seal ring or ring holder, and a gasket, said protuberance having an edge exerting a localized high contact pressure through a thickness of said gasket onto said gasket sealing surface.

5,544,898

SEALING RING FOR A SHUT-OFF VALVE HAVING A MULTI-PLY STRUCTURE

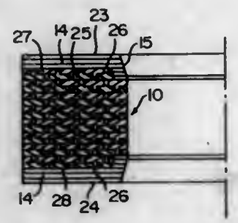
Gerhard Nendzig, Gaaden, and Alfred Taus, Guntramsdorf, both of, Austria, assignors to Klinger AG, Zug, Switzerland

Division of Ser. No. 165,111, Dec. 10, 1993, Pat. No. 5,381,818. This application Oct. 20, 1994, Ser. No. 326,602

Claims priority, application Germany, Dec. 12, 1992, 42 41 963.8; Aug. 23, 1993, 9312956 U

Int. Cl.[6] F16J *15/26*

U.S. Cl. 277—166 **8 Claims**



1. An annular seal ring for a shut-off valve, said seal ring having top, bottom and inside surfaces, said seal ring comprising:

radially extending first lamellae, said first lamellae comprising a soft lubricating material and having a thickness and a non-homogenous structure;

radially extending metal lamellae having top and bottom surfaces and regularly distributed projections extending from said top and bottom surfaces, said metal lamellae being interposed between and bonded to said first lamellae, said projections penetrating abutting of said first lamellae a distance corresponding to at least two thirds of the thickness of said soft material; and

a pair of striping rings comprised of a material having a low coefficient of friction, one of said stripping rings being arranged on said seal ring top surface and the other of said stripping rings being arranged on said seal ring bottom surface, said stripping rings each having a stripping edge.

5,544,899

METALLIC GASKET

Kosaku Ueta, Kumagaya, Japan, assignor to Japan Metal Gasket Co., Ltd., Japan

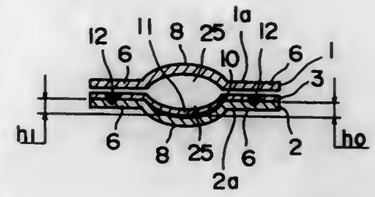
Filed Dec. 1, 1993, Ser. No. 160,398

Claims priority, application Japan, Jan. 14, 1993, 5-021877; Jul. 15, 1993, 5-175401

Int. Cl.[6] F16J *15/08*

U.S. Cl. 277—235 B **1 Claim**

1. A metallic gasket having a laminate structure formed of two



elastic base plates made of a metal material and stacked to each other and a subplate having a thickness thinner than that of said base plates and disposed between inner sides of said base plates, comprising:

at least two cylinder bore holes formed in each of said base plates and said subplate in the laminated state;

a bead protruding outwardly from an outer side of each of the base plates at the periphery of each cylinder bore hole in each of said base plates by way of and along the outer circumference of a flat area on said base plates;

a linear bead, which joins the beads for both of the adjacent cylinder bore holes and extends perpendicularly to a line connecting a center of both of the cylinder bore holes, formed between said adjacent cylinder bore holes in each of the base plates;

said subplate including an essentially circular circumferential edge portion present only at the periphery of each of said cylinder bore holes and a continuous part that makes a portion of said subplate continuous between adjacent cylinder bore holes;

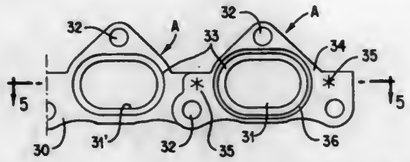
said subplate secured over the entire circumference to the inner side of one of said base plates at a portion of said flat area of said base plate adjacent the cylinder bore hole, with the inner circumferential edge of the cylinder bore hole of said subplate being aligned with the inner circumferential edge of the cylinder bore hole of said base plate;

the outer circumferential end at the peripheral edge portion of said subplate being varied within the width of the bead formed in said base plate to provide a variation to the width of each peripheral edge portion; and

a linear bead contained within the linear bead of said base plate and formed only in the continuous part of said subplate;

wherein the bead formed between the cylinder bore holes in said subplate is such that a protrusive amount on a protruding outside is made smaller than a concave depth of a concave inside of the bead formed between the cylinder bore holes in the base plate to which the subplate is secured.

5,544,900
MANIFOLD GASKET WITH DEFORMATION ABSORBING MECHANISM
Katsuji Aoki, Tokyo, Japan, assignor to Ishikawa Gasket Co., Ltd., Tokyo, Japan
Filed Dec. 12, 1994, Ser. No. 355,268
Claims priority, application Japan, Dec. 16, 1993, 5-67217 U
Int. Cl.[6] F16J *15/08*
U.S. Cl. 277—235 B **6 Claims**



1. A manifold gasket for sealing around manifold holes of a manifold, said manifold having at least three manifold holes arranged side by side, comprising:

a first metal plate extending around the manifold holes to constitute a manifold gasket, said first metal plate having first holes corresponding to the respective manifold holes and containing two end holes and at least one center hole, and beads situated around the respective first holes for sealing therearound and containing two end beads situated around the two end holes and at least one center bead situated around said at least one center hole, and

two spacers attached to two longitudinal end portions of the first metal plate, each spacer having a second hole greater than an outer shape of each bead to allow the bead to be situated inside the second hole, and a thickness shorter than a height of the bead, each of said two spacers being situated around each of said two end beads so that the manifold gasket can be securely fixed to an engine part through the spacers without creep relaxation of the two end beads while the at least one center bead not surrounded by the spacer absorbs deformation of the manifold by heat.

5,544,901
METAL GASKET FOR CHAIN CASE-CARRYING ENGINES
Kenji Kubouchi, Hirakata; Yuji Fukui, and Kunitoshi Inoue, both of Higashiosaka, all of, Japan, assignors to Nippon Gasket Co., Ltd., Osaka-fu, Japan
Filed May 26, 1995, Ser. No. 452,396
Claims priority, application Japan, Sep. 6, 1994, 6-236050
Int. Cl.[6] F16J *15/06*
U.S. Cl. 277—235 B **13 Claims**

1. A metal gasket for chain case-carrying engines of the type having a cylinder block, a chain case affixed to the cylinder block, the chain case having therein a hollow space in which a chain moves, and a cylinder head, the gasket comprising:

three thin laminated metal plates for location over the cylinder block and the chain case, the cylinder head adapted to be fixed to the cylinder block, said thin metal plates are provided with combustion chamber openings,

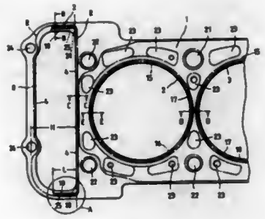
said thin metal plates including first and second elastic metal plates provided as both side members of a laminate of said three plates, and an intermediate plate provided between said first and second elastic metal plates,

each of said first and second elastic metal plates and said intermediate plate being provided with an opening through which said chain moving in said hollow space of said chain case moves,

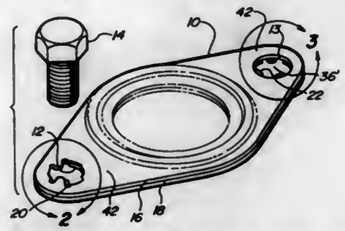
each of said first and second elastic metal plates being provided with a bead extending along said opening,

said intermediate plate being provided with bores which in use of said metal gasket will extend from abutting surfaces in a boundary between the chain case and the cylinder block over the chain case, said bores being packed with seal members for sealing a height difference occurring at upper surfaces of the chain case and the cylinder block which correspond to the abutting surfaces when said metal gasket is located in use between the cylinder block and the cylinder head,

said second elastic metal plate being provided with recesses formed by cutting out the portions thereof which correspond to regions in which said seal members are positioned, said first elastic metal plate and said intermediate plate extending over said recesses formed in said second elastic metal plate.



5,544,902
METAL GASKET WITH BOLT RETENTION FREATURE
Jerome G. Belter, Mt. Prospect, Ill., assignor to Dana Corporation, Toledo, Ohio
Filed Jun. 30, 1994, Ser. No. 268,413
Int. Cl.[6] F16J *15/08*
U.S. Cl. 277—236 **15 Claims**

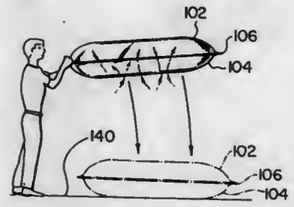


1. A high temperature gasket assembly for sealing two metal surfaces, the gasket assembly comprising:

at least one threaded fastener with a major thread diameter and a minor thread diameter, the fastener adapted to clamp the metal surfaces; and

a metal plate adapted to be disposed between the metal surfaces, the plate having at least one aperture for receiving the threaded fastener, the aperture having a first inner diameter larger than the major thread diameter and a plurality of tabs extending radially inwardly and defining a second inner diameter larger than the minor thread diameter and smaller than the major thread diameter, with a least a first tab having a tip extending from the first inner diameter to the second inner diameter and having sides defined in part by adjacent scalloped portions, a circumferential gap between at least two of the tabs sufficiently large to accommodate threading of the threaded fastener into and out of the aperture, wherein a second tab extends a greater circumferential extent than the first tab, and extends radially between the first inner diameter and the second inner diameter, the second tab providing additional stiffness against fastener removal from the aperture.

5,544,903
AIR BAG TOY
James A. Bears, 3317 Nixon Drive, Osgoode, Ontario, Canada
Continuation-in-part of Ser. No. 959,132, Oct. 9, 1992, Pat. No. 5,320,369. This application Jun. 10, 1994, Ser. No. 258,482
Claims priority, application Canada, Oct. 11, 1991, 2053414
Int. Cl.[6] B60V *1/00*
U.S. Cl. 280—18 **20 Claims**



1. A toy for riding upon by a person to allow the person to slide upon a relatively smooth firm underlying surface, the toy comprising:

a flexible bag forming a substantially air tight enclosure when inflated and placed in contact with the underlying surface, the flexible bag having a top and a bottom, the top and bottom being connected together solely around their respective peripheries, and the bag being of a size and weight so that the person may lift the bag off the underlying surface and lower the bag by hand onto the underlying surface from above;

at least one air flow region providing minimal resistance to air flow therethrough defined by removing a substantial portion of the surface of said flexible bag in contact with the underlying surface so that the bag may be inflated to a fully operative condition by the person lifting the bag off the underlying surface and then lowering the bag by hand onto the underlying surface from above with the at least one air flow region facing downward; and

air sealing means comprised of that portion of the surface of the bag which surrounds the at least one air flow region and which contacts the underlying surface sealing the air within the bag in a substantially air tight fashion, so that the air within the bag when in use consists solely of air captured within the flexible bag when the bag is lowered by the person by hand onto the underlying surface and is pressurised solely by the weight of the person upon the flexible bag

whereby substantially lower friction between the underlying surface and the flexible bag is achieved.

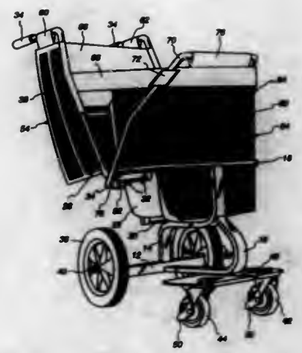
5,544,904
CONVERTIBLE STROLLER
Jay A. Maher, Barrington, Ill., assignor to Nelson-Whittaker, Ltd., Cary, Ill.
Filed Mar. 2, 1995, Ser. No. 399,158
Int. Cl.[6] B62B *3/02*
U.S. Cl. 280—47.35 **7 Claims**

1. A convertible stroller and shopping cart, comprising:

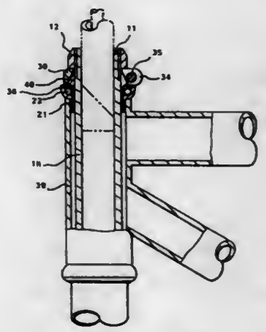
a) a stroller portion and a shopping cart portion,

b) said stroller portion including a frame supported by a plurality of wheels, a seat rigidly secured to said frame, said seat including a bottom portion, a back portion, and a pair of side portions, and including a safety bar having a transverse portion extending across a forward part of said seat, and a handle assembly secured to said frame and located rearwardly of said back portion, and

c) said shopping cart portion comprising a collapsible receptacle including a pivotal bar connected to said frame, said pivotal bar having a transverse portion, and a bag formed of flexible material secured to said pivotal bar, said receptacle being movable between a deployed position with said pivotal bar pivoted away from said handle and said bag being located substantially within a boundary formed by the back, bottom, and side portions of said seat and said safety bar to form an open bag and with the transverse portion of the pivotal bar being located above the transverse portion of the safety bar, and a collapsed position with said pivotal bar lying against said handle assembly and said bag extending between said handle assembly and said back portion of said seat.



5,544,905
DEVICE FOR MAKING MICROADJUSTMENT OF BEARING OF BICYCLE HEAD BOWL
Sheng-Luen Chen, Taichung, Taiwan, assignor to Dia-Compe, Taiwan Co., Ltd., Taichung, Taiwan
Filed Mar. 30, 1995, Ser. No. 415,358
Int. Cl.[6] B62K *21/18*
U.S. Cl. 280—279 **1 Claim**



1. An adjusting device assembly for making a microadjustment of a bicycle head bowl bearing comprising:

a front fork upright tube provided at a top end thereof with threads engageable with a fastening nut;

a head tube dimensioned to receive therein said front fork upright tube;

a clamping ring provided with an inverted conical surface, two lugs having respectively a threaded hole, and an adjustment bolt engageable with said threaded holes of said two lugs;

a locating ring provided with a tapered circumferential edge corresponding in shape to said inverted conical surface of said clamping ring, a tapered protruded edge, and an opening;

an inner ring provided with a tapered circumferential edge corresponding in location to said tapered protruded edge of said locating ring;

a bearing located under said inner ring; and

a bearing bowl having a bottom dimensioned to fit into a top end of said head tube, said bearing bowl further having an upper portion in which said inner ring and said bearing are received;

wherein said adjustment bolt of said clamping ring can be fastened manually to cause said clamping ring and said locating ring to move downwards at the same time so as to force said inner ring to move downwards to locate securely said bearing.

5,544,906

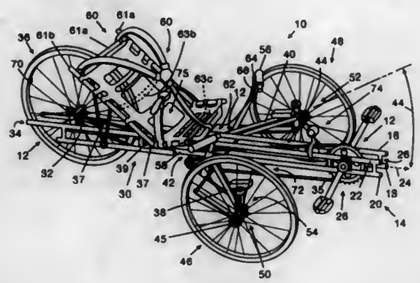
HUMAN POWERED RECUMBENT VEHICLE

Lawrence D. Clapper, 1120 Delno St., San Jose, Calif. 95126

Filed Jun. 30, 1994, Ser. No. 269,279

Int. Cl.[6] B62K *5/08*

U.S. Cl. 280—288.1 **10 Claims**



1. A frame for a human-powered vehicle comprising in operative combination:

a central keel having a longitudinal axis;

said keel comprising a plurality of longitudinal members spaced from and generally parallel to said axis;

said longitudinal members terminating at a first forward end and at a second rearward end, the longitudinal members of said keel terminating at the forward end thereof in a common plane so that said vehicle including said frame can be stored vertically on said forward end;

a pair of outrigger arms mounted to said central keel medial of said forward and rearward ends, and oriented to diverge outwardly at equal angles from the longitudinal axis, said outrigger arms being of substantially equal length; and

the divergent angle that said outrigger arms form with said keel providing access areas between each of said arms and said keel for permitting access to a seat mounted on said keel at substantially the juncture of said outrigger arms with said keel, said access areas enabling a rider to backup towards and sit on said seat without stepping over any portion of said frame.

5,544,907

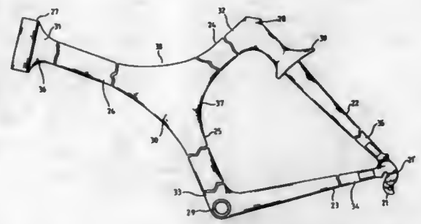
COMPOSITE BICYCLE FRAME WITH Y SHAPED TUBULAR CONFIGURATION

Chin-I Lin, Tainan Hsien; Yu-Hsuan Chen, Kao Hsiung, and Gou-Doo Chu, Hsing Chu, all of, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu Hsien, Taiwan

Filed Mar. 31, 1995, Ser. No. 414,257

Int. Cl.[6] B62K *3/02*

U.S. Cl. 280—288.3 **25 Claims**



1. A bicycle frame comprising a hollow front frame portion and a hollow rear frame portion, wherein said hollow front frame portion containing:

(a) a generally hollow common junction;

(b) a main tube connected between a front fork assembly of said bicycle and a middle portion of said generally hollow common junction in a slanted manner;

(c) an upper branch tube connected between a seat assembly of said bicycle and an upper portion of said generally hollow common junction in a slanted manner;

(d) a lower branch tube connected between a pedal axle support assembly of said bicycle and a lower portion of said generally hollow common junction in a slanted manner;

(e) said generally hollow common junction, said upper branch tube and said lower branch tube contain at least one layer of a fibrous material impregnated with a synthetic resin and are integrally molded together to form a unitary front frame portion;

and said rear frame portion containing:

(f) an upper support paw connected between said seat assembly and a rear wheel assembly of said bicycle, said upper support paw being disposed at one side of said rear wheel assembly; and

(g) a lower support paw connected between said pedal support assembly and said rear wheel assembly, said lower support paw being disposed at another side of said rear wheel assembly.

5,544,908

THERMOPLASTIC COMPOSITE SKI AND METHOD OF MANUFACTURE

Louis J. Fezio, Vashon, Wash., assignor to K-2 Corporation, Vashon, Wash.

Filed May 6, 1994, Ser. No. 239,221

Int. Cl.[6] A63C *5/14*

U.S. Cl. 280—610 **17 Claims**

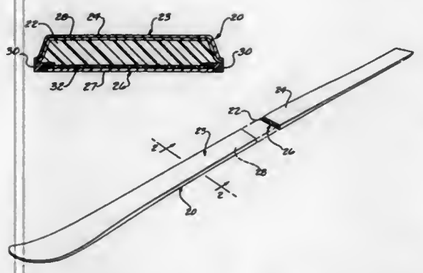
17. A method of manufacturing a runner having a base and a core covered with a shell, the shell including an outer layer, the method comprising the steps of:

(a) providing a thermoplastic composite layer comprised of fibers disposed within a thermoplastic resin;

(b) joining the thermoplastic composite layer to the outer layer to increase the thermal stability of the shell;

(c) joining a structural layer to the core on at least the top of the core; and

(d) joining the thermoplastic composite layer and outer layer to the structural layer and the core after the structural layer is disposed on the core and after the thermoplastic composite layer and outer layer are joined together, wherein the theromoplastic composite and outer layers cover the top and sides of the runner.



5,544,909

STEP-IN BOOT BINDING

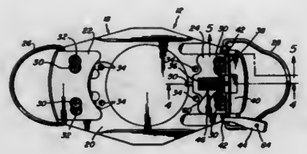
James Laughlin, Burlington, and David J. Dodge, Shelburne, both of Vt., assignors to The Burton Corporation, Burlington, Vt.

Continuation-in-part of Ser. No. 187,653, Jan. 27, 1994, abandoned. This application Jan. 28, 1994, Ser. No. 188,970

Int. Cl.[6] A63C *9/18*

U.S. Cl. 280—617 **17 Claims**





1. A boot binding comprising:

(a) a base having front and rear ends;

(b) a first bail pivotally connected to said base at one of said ends;

(c) a second bail pivotally connected to said base at the other of said ends;

(d) an operating arm connected to said second bail and pivotally connected to said base;

(e) a trigger mechanism connected to said second bail to move said second bail from a first unlocked position to a second locked position, said trigger mechanism including a shaft that is rotatably connected to said base, said operating arm being pivoted in a first direction to cause said second bail to move from said second locked position to said first unlocked position; and

(f) an eccentric link fixedly mounted on each axial end of said shaft for rotation therewith.

5,544,910

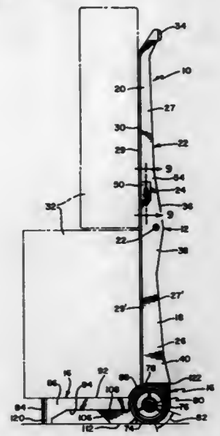
PORTABLE LUGGAGE CART

Patsy Esposito, Brooklyn, N.Y., assignor to Products Finishing Corporation, Brooklyn, N.Y.

Continuation of Ser. No. 981,293, Nov. 25, 1992, abandoned. This application Sep. 26, 1994, Ser. No. 311,903

Int. Cl.[6] B62B *1/12*

U.S. Cl. 280—654 **11 Claims**



1. A luggage cart for carrying luggage items across a floor, comprising:

a handle having two pivotally connected sections which are selectively collapsible about a pivot axis between a fully extended position and a fully collapsed position, said handle further including two vertical, generally parallel, spaced side rails and at least one horizontal cross rung connected to each side rail to provide structural rigidity, said side rails having a "T" shape cross section, the flat top portion of said "T" facing forward, towards said carrying platform and the perpendicular stem portion of the "T" extending towards the rear of the luggage cart;

a carrying platform for receiving said luggage items;

a hinge located along a hinge axis and connecting said carrying platform to said handle so that said carrying platform is pivotal between a fully raised position wherein said carrying platform is generally parallel to said handle, and a fully lowered position wherein said carrying platform is generally perpendicular to said handle; and

means for supporting said luggage cart in a vertical position with respect to said floor when said carrying platform is in either said fully raised position or said fully lowered position.

5,544,911

AIRBAG MODULE DIFFUSER WITH FLANGE EXTENSIONS

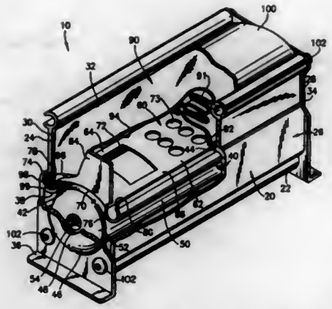
Daniel C. Vine, Layton, Utah, assignor to Morton International, Inc., Chicago, Ill.

Filed Jul. 5, 1995, Ser. No. 498,202

Int. Cl.[6] B60R *21/20;21/26*

U.S. Cl. 280—728.2 **16 Claims**

1. A diffuser for use in an airbag module assembly, the airbag module assembly having a trough-shaped reaction canister with a pair of sidewalls forming a pair of open ends, an open top and a pair of endplates respectively covering the open ends, an inflator mounted within the reaction canister between the endplates and an airbag cushion, having a folded portion leading to an open mouth partly formed by two opposite mouth ends, mounted within the reaction canister between the endplates and above the inflator, the diffuser comprising:



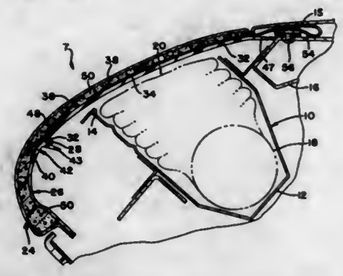
a diffuser shelf sized and adapted to be positioned within the canister to enclose the inflator and separate the inflator from the airbag cushion, the diffuser shelf defining a plurality of diffusing openings and having a pair of opposite diffuser side edges and a pair of opposite diffuser ends; and

a pair of flange extensions attached to the opposite diffuser ends, respectively, and extending generally perpendicular to the diffuser shelf, the flange extensions sized and adapted to fit within the open mouth of the airbag cushion with the opposite mouth ends held open respectively by the flange extensions, whereby the flange extensions will prevent the mouth ends from collapsing inwardly during inflation of the airbag cushion and will help direct the flow of inflation gas into the mouth of the airbag cushion, the flange extensions sized and adapted to extend between the sidewalls of the canister and substantially to the open top of the canister to contain the folded portion of the airbag cushion within the ends of the reaction canister independently of the endplates, whereby the flange extensions will also prevent the folded portion of the airbag cushion from getting pinched by the endplates of the reaction canister.

5,544,912
SUPPLEMENTAL INFLATION RESTRAINT AND DOOR ARRANGEMENT

James J. Sommer, Tipp City, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 19, 1994, Ser. No. 359,304
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—728.3 **6 Claims**

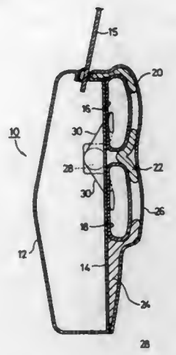


1. A single hinge passenger side supplemental inflation restraint and door arrangement comprising:
   an air bag housing having closed and opened ends, the housing being mounted in a forward portion of the vehicle;
   an air bag inflator positioned within the housing for providing a source of rapid fluid inflation;
   an air bag for receipt of fluid inflation from the inflator; and
   an instrument panel normally covering the air bag and air bag housing, the instrument panel including:
   a generally rigid self-supporting polymeric base, the base having a preform defining a door portion and a door opening portion;
   a generally non-supporting polymeric skin covering the base and spaced therefrom;
   a molded polymeric foam with a density lower than that of the base and the skin supporting the skin on the base; and
   a self-supporting foam border material joined to the base on the door opening portion on a side of the base adjacent the polymeric skin generally adjacent to the preform along the door opening and the self-supporting foam border material extending toward the skin.

5,544,913
PROTECTIVE DEVICE FOR PROTECTING VEHICLE OCCUPANT

Takahiro Yamanishi; Hiroaki Fujii, and Nobuya Osada, all of Shiga, Japan, assignors to Takata Corporation, Tokyo, Japan

Filed Aug. 4, 1995, Ser. No. 511,363
Int. Cl.[6] B60R *21/22*
U.S. Cl. 280—730.2 **14 Claims**



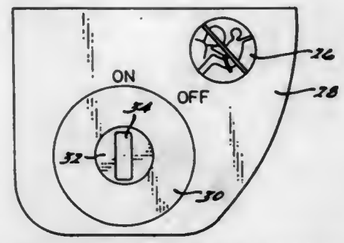
1. A protective device for protecting a vehicle occupant comprising:
   at least one air bag mounted along a compartment-side surface of a side member of a vehicle and being expandable toward a compartment of the vehicle by gas introduced therein,
   a gas supply unit for supplying gas into said at least one air bag in a lateral collision of the vehicle,
   a trim sheet for an interior of the vehicle covering the compartment-side surface of said at least one air bag, said trim sheet being made of a stretchable material for allowing expansion of said at least one air bag, and
   a pad situated between said at least one air bag and said trim sheet, said pad being divided into a plurality of pieces to allow the divided pieces to be separated from each other.

5,544,914
AIR BAG DISABLER CONTROL CIRCUIT

Thomas E. Borninski, Canton; Colm P. Boran, Novi; Paul Simmons, Chesterfield, and Matt A. Nieluchowski, Troy, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 27, 1994, Ser. No. 456,275
Int. Cl.[6] B60R *21/32*
U.S. Cl. 280—735 **10 Claims**

1. A control circuit for an air bag disabling system for an automotive vehicle having an ignition key cylinder and having an air bag mounted in an instrument panel in the vehicle and activated

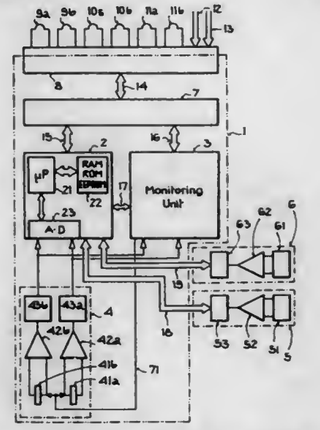


to inflate a cushioning bag in response to a condition sensed by an acceleration sensor operatively carried with the vehicle, the disabling system control circuit comprising:
   a source of electrical power mounted in the vehicle;
   a switch electrically connected to said source of electrical power and to the air bag assembly and selectively movable between a first position interconnecting said source of electrical power and the air bag to enable activation of the air bag assembly and a second position preventing said activation; and
   a resistive test load substantially equivalent to the resistive load of the air bag assembly connected electrically in parallel with said air bag and wherein in said first position said switch is electrically disconnected from said resistive test load.

5,544,915
PROCESS FOR TRIGGERING SIDE AIRBAGS OF A PASSIVE SAFETY DEVICE FOR MOTOR VEHICLES

Günter Fendt; Peter Hora, both of Schrobenhausen; Hans Spies, Pfaffenhofen; Helmut Steurer, Junkenhofen; Willibald Watzka, Aichach, and Guido Wetzel, Neuburg, all of, Germany, assignors to Temic Telefunken microelectronic GmbH, Heilbronn, Germany

Filed Jul. 19, 1995, Ser. No. 504,249
Claims priority, application Germany, Jul. 21, 1994, 44 25 846.1
Int. Cl.[6] B60R *21/32;21/16;21/04;* **G01P** *15/00*
U.S. Cl. 280—735 **4 Claims**

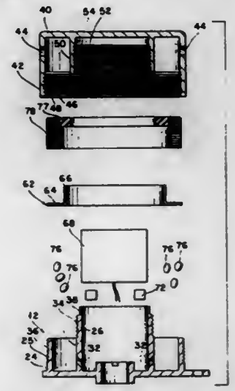


1. A process for triggering side airbags of a passive safety device for motor vehicles, which additionally comprises a driver as well as a passenger airbag, a collision sensor located centrally inside the motor vehicle for detecting head-on and side collisions, and left-hand and right-hand side collision sensors, as well as a control unit evaluating the sensor signals generated by these collision sensors; and, for evaluating the force of a side collision impact, threshold values are specified for the sensor signals of the centrally located collision sensor as well as for the sensor signals of the side collision sensors; and a collision signal will be generated whenever a sensor signal exceeds the lowest threshold value specified, and wherein a triggering signal for an airbag will be generated if
   a) the centrally located collision sensor as well as at least one side collision sensor simultaneously generate a collision signal each, indicating a side crash, with one of the two sensor signal values when compared to the other value exceeding the next higher threshold value, or both values exceeding the next higher value, or
   b) the centrally located collision sensor as well as one side collision sensor simultaneously provide a collision signal each of equal force, indicating a side crash, with the value of these signals being lower than the largest threshold value, and if at the same time the other side collision sensor provides a collision signal indicating the same side crash event; the force of the latter signal either corresponds to the force of the collision signal generated by the centrally located collision sensor or is lower than that force.

5,544,916
TWO PIECE INFLATOR HOUSING

Torbjorn Thuen, Morris Plains, and Allen Breed, Boonton Township, both of N.J., assignors to Breed Automotive Technology, Inc., Lakeland, Fla.

Continuation of Ser. No. 972,603, Nov. 6, 1992, abandoned, which is a division of Ser. No. 728,890, Jul. 10, 1991, Pat. No. 5,201,542. This application Sep. 12, 1994, Ser. No. 304,414
The portion of the term of this patent subsequent to Apr. 13, 2010, has been disclaimed.
Int. Cl.[6] B60R *21/28*
U.S. Cl. 280—741 **20 Claims**



1. An inflator for a motor vehicle passenger restraint system, said inflator comprising:
   a two piece housing including first and second members threadedly engaged to form at least a first and a second chamber with a portion of the first member and a portion of the second member defining a cylindrical wall between the first and second chambers, said portions having threads for engaging the members, said members each including an outer wall with outer wall threads for engaging said members, said portions and said outer walls being partially overlapped in an axial direction;
   the threads of the portions and outer walls being so constructed and arranged for interlocking said portions and outer walls together in a radial direction;
   said first member being of one piece construction and said second member also being of one piece construction; the threads of the portions and said outer walls having matching

thread pitches so that the threads of said respective portions and outer walls engage simultaneously to provide a pressure resistant coupling of the members and cooperate in providing a seal of the chambers;

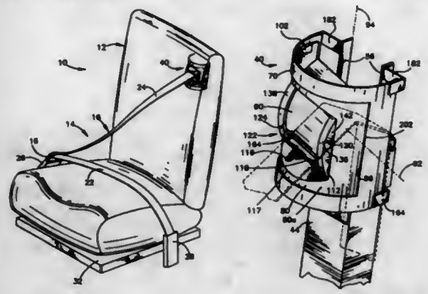
gas generator means disposed in said first chamber; and activating means disposed in said second chamber for activating said gas generator means.

5,544,917

SEAT BELT WEBBING GUIDE ASSEMBLY

Steven R. Loxton, Lakeport, and Donald P. Czarnecki, Marysville, both of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Jan. 13, 1995, Ser. No. 502,169
Int. Cl.[6] B60R *22/00*
U.S. Cl. 280—801.2 **18 Claims**



1. An apparatus for restraining a vehicle occupant, said apparatus comprising:

seat belt webbing extendable about the vehicle occupant;

a structure having an opening through which said webbing extends;

a movable closure member which at least partially blocks the opening in said structure and has a slot through which said webbing extends; and

support means for supporting said closure member for rotational movement relative to said structure about a first axis and for supporting said closure member for rotational movement relative to said structure about a second axis which extends transverse to said first axis to enable the position of said slot to be adjusted to accommodate vehicle occupants of different sizes.

5,544,918

SEAT BELT WEBBING ENERGY MANAGEMENT DEVICE

William J. Fleming, Rochester Hills, and Charles E. Steffens, Jr., Washington, both of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Nov. 8, 1994, Ser. No. 335,894
Int. Cl.[6] B60R *22/28*
U.S. Cl. 280—805 **25 Claims**

1. A vehicle safety apparatus comprising:

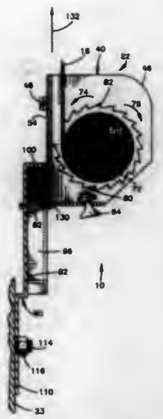
a length of seat belt webbing for restraining a vehicle occupant;

a seat belt webbing retractor having a spool on which said seat belt webbing is wound, said seat belt webbing extending from said retractor in a first direction;

a crush plate secured to said retractor, said crush plate comprising means for crushing material;

means for mounting said retractor on the vehicle for movement, including guide means for constraining movement of said retractor and said crush plate to only said first direction; and

a crushable energy absorbing material disposed in the path of movement of said crush plate and remaining in the path of movement of said crush plate during crushing by said crush plate for controlling movement of said retractor in the first direction.

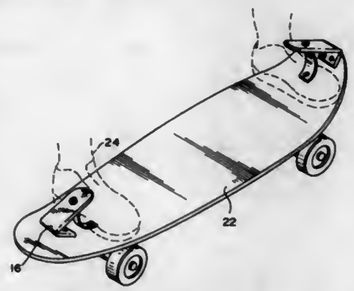


5,544,919

FOOT SUPPORT APPARATUS FOR SUPPORTING A USER'S FOOT RELATIVE TO A SPORTSBOARD

Mike R. Tinkler, 1130 Fifth St., Hood River, Oreg. 97031

Filed Oct. 31, 1994, Ser. No. 331,686
Int. Cl.[6] A63C *3/00*
U.S. Cl. 280—809 **7 Claims**



1. A foot support apparatus for supporting a user's foot relative to a sportsboard comprising:

a) a resilient hinge having a lower portion securely attachable to an upper surface of a sportsboard and an upper portion having a first end and a second end, the second end being hingedly connected to said lower portion and being located outwardly of said first end when the hinge is secured to the sportsboard; and

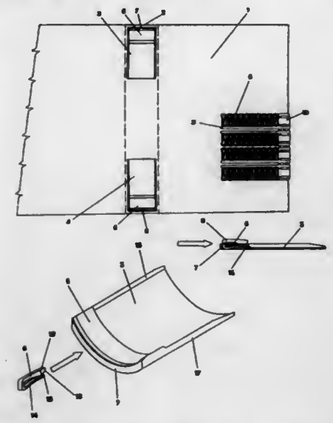
b) a strap having a first end connected to said upper portion at a first connection point and a second end connected to one of the upper surface of the sportsboard and the lower portion, said upper portion being biased to a raised position away from said lower portion, and a lower surface of said upper portion having a foot engageable portion extending between said first connection point and the first end of said upper portion, wherein the foot engageable portion of said lower surface, together with at least a portion of said strap which extends between the user's foot and an upper surface of the sportsboard, forms an open ended region within which a user's foot may be wedged for support when the upper portion is in the raised position.

5,544,920

DEVICE WITH SHAPED HEAD FOR THE INTRODUCTION OF SPRINGS CAPABLE OF HOOKING BROCHURES AND PAMPHLETS WITHIN A CONTAINER

Giuseppe Lanzarin, Vicenza, Italy, assignor to Cartotecnica Montebello, s.r.l., Strada Provinciale della Favorita Sarego, Italy

Filed Jun. 20, 1994, Ser. No. 262,269
Claims priority, application Italy, Jul. 9, 1993, VI93A0120
Int. Cl.[6] B42F *11/02*
U.S. Cl. 281—46 **3 Claims**



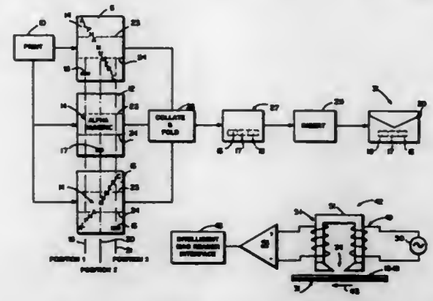
1. A device for introducing springs into a container (1), said springs hooking pamphlets, brochures and the like within said container, said container having a back, a dorsal plate (2), said dorsal plate (2) having an interior, which comprises two small plates (3) and (4) fixed to said interior of said dorsal plate (2), each of said small plates having lateral borders (17) and (18), said small plates (3) and (4) having projecting shaped connecting members (5) and (6), and bars (7) and (8), each of said connecting members (5) and (6) having an extremity, each of said bars (7) and (8) protruding from each of said extremity, said shaped connecting members emerging from said interior of said dorsal plate (2), the device comprising a plurality of springs (9), each of said springs having a U-shape, a lower part (14) and an upper part (12), said lower part having an end, a projection (15) at the end of said lower part (14), said upper part (12) having a curved end (13), each of said curved end (13) of each spring being introduced into each of said pamphlets and brochures, and being held above each of said connecting members (5) and (6), each of said connecting members having a protruding border (19), said projection (15) hooking to said protruding border (19), wherein each of said small plates (3) and (4) has a plane, each of said connecting members (5) and (6) of said plates (3) and (4) is raised with respect to said plane of each of said plates (3) and (4) and said lower part (14) of each of said springs is inserted under each of said connecting members and is held between each of said bars (7) and (8) and said connecting members, and wherein the device comprises rods (11), said container has a border, a third plate (10) is hooked to said border, said rods (11) are integral with said third plate (10), said springs being placed on said third plate, said springs (9) are fixed to said rods (11) and each of said springs (9) is removable from said rods (11) in order to insert each of said springs within one of said plates (3) and (4).

5,544,921

PACKAGE VERIFICATION METHOD

T. F. Cynan, Grand Island, and Dennis C. Pollutro, Cherry Creek, both of N.Y., assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Apr. 13, 1993, Ser. No. 45,200
Int. Cl.[6] B42D *15/08*
U.S. Cl. 283—70 **20 Claims**



1. A method of determining whether the correct business form parts have been provided in an outgoing package containing a plurality of parts, utilizing a magnetic detector capable of detecting magnetic toner within the package, comprising the steps of:

(a) imaging predetermined detectable indicia with magnetic toner on predetermined portions of each of the business form parts, the indicia located at a different position on different parts; then

(b) forming the business form parts into a package so that the detectable magnetic toner indicia is covered by at least one sheet of material; then

(c) providing the magnetic detector substantially stationary, and moving the package with respect to the detector so that the magnetic detector is positioned to sense the detectable magnetic toner indicia within the package; and then

(d) sensing the detectable magnetic toner indicia within the package to determine whether all the correct parts are properly in the package by determining whether all business form parts within the package have the predetermined magnetic toner indicia the predetermined portions thereof;

(e) in response to step (d), rejecting a package if it is determined that the package does not have the predetermined detectable magnetic toner indicia on the predetermined portions thereof; and

wherein step (a) is practiced to image the detectable magnetic toner indicia so that when formed into the package the indicia on the various parts is disposed in a substantially straight line; and wherein step (c) is practiced by moving the package with respect to the detector in a substantially straight line, in alignment with the detectable indicia substantially straight line.

5,544,922

WEDGE ASSEMBLY RESTRAINT

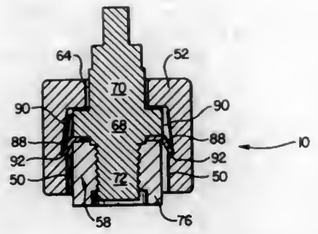
Dennis D. Shumard, and Michael L. Lundstrom, both of Eastland, Tex., assignors to EBAA Iron, Inc., Eastland, Tex.

Filed Apr. 21, 1995, Ser. No. 425,874
Int. Cl.[6] F16L *55/00*
U.S. Cl. 285—23 **21 Claims**

1. A wedge assembly restraint, comprising:

a) means for receiving a wedge assembly, said receiving means being defined by a plurality of sidewalls, an open mouth, and an outer wall having a hole, wherein at least one of said plurality of sidewalls comprises a groove; and

b) a wedge assembly inserted in said mouth of said receiving means, said wedge assembly comprising:



a bolt having a first ends a second end, and means for preventing said bolt from passing through said hole in said outer wall, said preventing means being intermediate said first end and said second end of said bolt;

a pipe-pressing member engaged with said bolt; and

means for retaining said wedge assembly within said mouth of said receiving means, said retaining means being engaged with a member of the group consisting of said bolt and said pipe-pressing member and comprising at least one flap;

wherein said at least one flap of said retaining means engages said groove of said at least one sidewall to retain said wedge assembly within said receiving means.

5,544,923

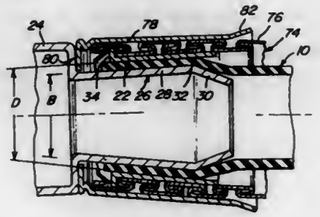
APPARATUS FOR ATTACHING HOSES AND TUBES TO A FITTING

Donald D. Bartholomew, Marine City, Mich., assignor to Proprietary Technology, Inc., Bloomfield Hills, Mich.

Division of Ser. No. 776,824, Oct. 15, 1991, Pat. No. 5,388,870, which is a division of Ser. No. 504,543, Apr. 4, 1990, Pat. No. 5,261,706, which is a division of Ser. No. 265,263, Oct. 31, 1988, Pat. No. 4,923,226, which is a continuation-in-part of Ser. No. 189,395, May 2, 1988, abandoned, which is a continuation-in-part of Ser. No. 66,749, Jun. 23, 1987, abandoned. This application Nov. 7, 1994, Ser. No. 335,541

Int. Cl.[6] F16L *33/22*

U.S. Cl. 285—242 **12 Claims**



1. A hose coupling for terminating the end of a deformable hose or tubular member, comprising a fitting having an end adapted to be received interiorly of said hose and to expand the interior diameter of said hose when inserted therein, and a locking sleeve locatable over said hose, said locking sleeve to clampingly secure the hose between the fitting and sleeve, said fitting and sleeve are constructed such that a portion of each is formed with matching frusto-conical surfaces defined by a double included angle of less than ten but greater than one degree, the conical surfaces increasing in diameter toward the inserting end of said fitting, and an exterior conduit surrounding said hose and sleeve, said exterior conduit being formed from a substantial rigid material to provide mechanical strength to said coupling and means for securing said external conduit about said fitting.

5,544,924

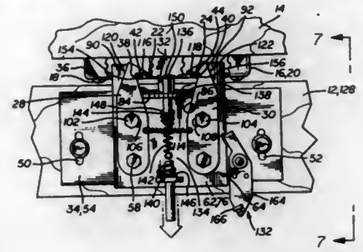
SECURITY MECHANISM FOR SECURING A MOVABLE CLOSURE

Max Paster, P.O. Box 2052, Culver City, Calif. 90231

Filed Jan. 28, 1994, Ser. No. 188,577

Int. Cl.[6] E05C *5/00*

U.S. Cl. 292—6 **17 Claims**



14. A security mechanism for securing a movable closure supported within a support frame to the support frame, the closure being movable from a secured position to a plurality of unsecured positions, the security mechanism comprising:

a securing element having a first opening and a second opening;

a base element:

a slider element movably mounted on the base element:

a latch element comprising a first locking latch and a second locking latch wherein the first and second locking latches are pivotally attached to the base element, wherein the first locking latch has a first cam surface and the second locking latch has a first cam surface, and wherein the first locking latch engages the first opening of the securing element and the second locking latch engages the second opening of the securing element;

an unlatching element movable from a compressed position to a relaxed position wherein the unlatching element is mounted on the slider element, and wherein the unlatching element has a first cam surface for engaging the first cam surface of the first locking latch and has a second cam surface for engaging the first cam surface of the second locking latch; and

a locking element being movable from a locked position to an unlocked position and being engaged to the slider element when the locking element is in its locked position.

5,544,925

SPRING MOUNTING DEVICE FOR AUTOMOTIVE DOOR LOCK APPARATUS

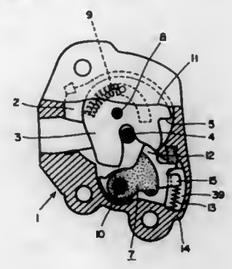
Takao Ikeda, Utsunomiya, Japan, assignor to Mitsui Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 148,919, Nov. 5, 1993, abandoned. This application Nov. 3, 1995, Ser. No. 553,088

Claims priority, application Japan, Nov. 9, 1992, 4-323597; Nov. 26, 1992, 4-339725; Nov. 30, 1992, 4-343167

Int. Cl.[6] E05C *3/16*

U.S. Cl. 292—216 **13 Claims**



1. An automotive door lock apparatus comprising:

a lock body having a latch for engaging with a striker, a ratchet engageable with the latch for maintaining the engagement between the latch and the striker, and a spring for resiliently engaging a pawl of the ratchet against the latch, said lock body defining a first cavity for receiving the latch and the ratchet;

a first holding portion formed in the lock body for temporarily holding one end of the spring;

a synthetic resin silencer to be attached to the ratchet for suppressing noise thereof, said silencer has a second holding portion for temporarily holding the other end of the spring;

an elongated second cavity formed in the lock body between the first and second holding portions for receiving the spring; said second cavity being shorter than the spring before compression;

a cover plate mounted on the lock body for covering the first and second cavities and preventing the spring from jumping out of the second cavity when engaged in said second cavity;

said second holding portion having a holding piece extending toward the first holding portion and a holding space, defined below the holding piece, into which the other end of the spring is inserted.

5,544,926

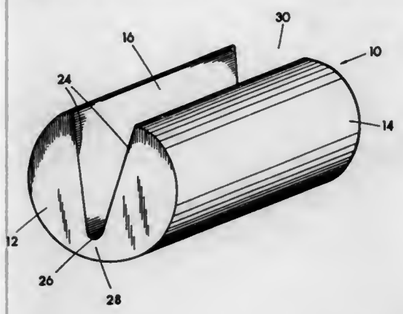
SHAFT GRIPPER FOR PULLING AN ARROW

Gary N. Ravencroft, 5011 Ravelle Ct., Paradise, Calif. 95969

Continuation-in-part of Ser. No. 34,196, Jan. 30, 1995. This application Apr. 24, 1995, Ser. No. 432,368

Int. Cl.[6] B25B *9/00*

U.S. Cl. 294—1.1 **3 Claims**



ing pressure gain for use in gripping an arrow shaft of an arrow during pulling of the arrow from a target, said gripper member comprising:

an elongated main body having an exterior surface for grasping in a human hand with said main body placed against the palm of the hand with the fingers and thumb of the hand wrapping about said main body so that said main body may be tightly squeezed by the hand;

said main body having a deep longitudinal groove defined by

a first and a second convergent side wall each facing one another,

the first and second convergent side walls each beginning at said exterior surface in spaced relationship to one another and defining a

wide open mouth of said groove, the first and second convergent side walls extending inward of said main body toward one another and a

narrow closed bottom end of said groove adjacent a

hinge portion of said exterior surface connecting the first and second convergent side walls to one another;

said groove extending from a first terminal end of said main body through said main body and through a second terminal end of said main body;

said wide open mouth and a substantial depth of said groove downward toward said narrow closed bottom end each of sufficient width for accepting an arrow shaft lengthwise aligned with said groove so that an arrow shaft can be inserted through said wide open mouth and positioned deeply within said groove;

said hinge portion of said exterior surface being flexible and resilient material connecting the convergent side walls to one another and serving as a resilient hinge structured to hold said wide open mouth normally open, and allowing the convergent side walls to be brought inward toward one another to narrow the width of said groove with applied inward squeezing pressure against said exterior surface of said main body;

said groove of sufficient depth and width relative to an arrow shaft to allow for placing an arrow shaft within said groove with the arrow shaft positioned sufficiently deep within said groove and away from said wide open mouth as to leave

extending lever portions of the convergent side walls outward beyond an inserted arrow shaft toward said wide open mouth;

said extending lever portions having a degree of stiffness sufficient to be operable in combination with said wide open mouth being sufficiently wide open when an arrow shaft is positioned within said groove that upon squeezing of said main body by hand with pressure applied to said exterior surface on each opposite side of said wide open mouth and on said extending lever portions beyond an inserted arrow shaft, said extending lever portions move inward toward one another tightly squeezing the convergent side walls against the arrow shaft, with the arrow shaft serving as a fulcrum for said extending lever portions, whereby substantially increased squeezing and thus gripping of an arrow shaft by said gripper member is provided beyond the hand applied squeezing pressure against said exterior surface of said gripper member.

5,544,927

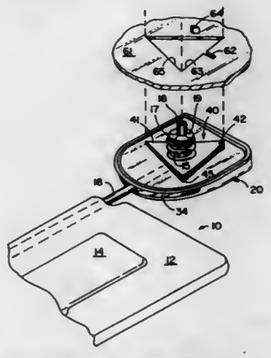
TWIST–IN VISOR MOUNT

Ronald P. Snyder, and Jesse Kalkman, both of Holland, Mich., assignors to Prince Corporation, Holland, Mich.

Filed Aug. 10, 1994, Ser. No. 288,469

Int. Cl.[6] B60J *3/00*

U.S. Cl. 296—97.9 **21 Claims**



19. A visor mounting system comprising:

a visor body having a visor pivot rod with an end extending therefrom;

a bezel including an aperture for receiving said visor rod end and an interlocking member extending from said bezel wherein said bezel includes a cover hingedly joined to said bezel body and a slot for allowing said pivot rod to rotate between said cover and said bezel body;

a non-circular locking plate having an aperture for receiving said pivot rod and an interlocking member engaging said interlocking member of said bezel to prevent relative rotation of

said bezel and locking plate when both are extended over said end of said pivot rod while permitting said locking plate to move toward and away from said bezel, said locking plate having a locking extension which faces a roof support member for engaging a slot in the roof support member, said locking plate further including an edge inclined away from said bezel; and

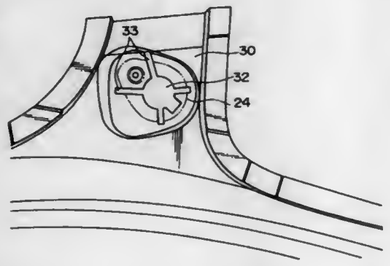
a spring coupled to said locking plate for urging said locking plate toward said bezel.

5,544,928

MOUNTING STRUCTURE OF SUN VISOR FOR AUTOMOBILE

Kazuhumi Mori, Toyota; Shigemi Sugimori, Aichi, and Hitoshi Suga, Nagoya, all of, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Dec. 20, 1994, Ser. No. 359,549
Claims priority, application Japan, Dec. 20, 1993, 5-344469
Int. Cl.[6] B60J *3/00*
U.S. Cl. 296—97.9 **2 Claims**



1. A mounting structure of a sun visor disposed in a passenger compartment of a vehicle, in which a bracket for supporting a pivotal shaft portion of an arm of the sun visor is mounted on a panel of said vehicle, said mounting structure comprising:

means for absorbing energy based on a load which is applied to the bracket and directed from the inside to the outside of the compartment by deforming at least a portion of said panel disposed outwardly of the bracket,

wherein said panel has a hole allowing the insertion of said pivotal shaft portion, and said means comprises a weak portion provided around the hole including at least one slit provided on the peripheral edge of said hole, said at least one slit extending beyond an outer periphery of the bracket when the bracket is mounted on the panel.

5,544,929

AUTOMOBILE HAVING FRESH AIR VENTILATION AND OTHER HEALTH AND SAFETY FEATURES

Shinichi Nagai, Hirakata, Japan, assignor to Yngenkaisha Paramount Corporation, Osaka, Japan

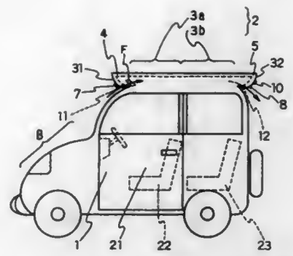
Filed Jun. 14, 1995, Ser. No. 490,359
Claims priority, application Japan, Feb. 7, 1995, 7-019559; Feb. 17, 1995, 7-029712
Int. Cl.[6] B62D *25/06*
U.S. Cl. 296—99.1 **3 Claims**

1. An automobile, comprising:

a front visor protruded forward from a front head portion of a body of said automobile and a rear visor protruded backward from a rear head portion of the body;

a plurality of air-inlets formed in the front visor for introducing air outside of the automobile into the automobile;

said air-inlets having a filter for filtering the introduced air;



a plurality of air-outlets formed in the rear visor for exhausting air within the automobile to outside the automobile;

said air-inlets including a first set of air-inlets formed at a center of the front visor, each air inlet of said first set of air inlets having an oval shape and having a longitudinal axis thereof extending along a front to rear direction of the body and two second sets of air-inlets formed, respectively, at opposite sides of the first set of air-inlets, each air inlet of said two second sets of air-inlets having an oval shape and having a longitudinal axis thereof extending along the direction of the width of the body;

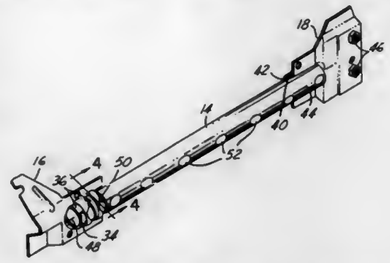
said air-outlets including a first set of air-outlets formed at a center of the rear visor, each air outlet of said first set of air outlets having an oval shape and having a longitudinal axis thereof extending along a front to rear direction of the body and two second sets of air-outlets formed, respectively, at opposite sides of the first set of air-outlets, each air-outlet of said two second sets of air-outlets having an oval shape and having a longitudinal axis thereof extending along the direction of the width of the body.

5,544,930

FLOATING END STRUCTURAL REINFORCEMENT FOR A VEHICLE DOOR

Dennis F. Stedman, Ortonville, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.

Filed Oct. 5, 1994, Ser. No. 318,403
Int. Cl.[6] B60J *5/04*
U.S. Cl. 296—146.6 **14 Claims**



1. A floating end structural reinforcement for a vehicle door, the floating end structural reinforcement comprising:

an energy absorbing tubular bar sufficiently long to extend substantially across a length of the vehicle door in a direction approximately parallel to a lower edge of the door and having a first end and a second end and a longitudinal axis passing through the first end and the second end;

a first bracket retaining the first end of the tubular bar wherein the bracket has a predetermined amount of rotational float relative to the bar; and

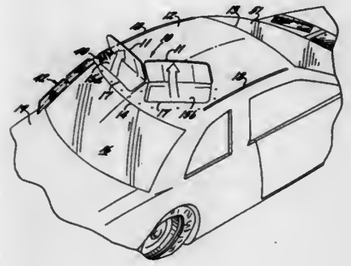
a second bracket having a seat portion receiving and fixed to the second end of the bar.

5,544,931

AERODYNAMIC STABILIZER FOR USE WITH A MOTOR VEHICLE

Gary Nelson, Concord, N.C., assignor to National Association For Stock Car Anto Racing, Inc., Daytona Beach, Fla.

Continuation-in-part of Ser. No. 182,411, Jan. 14, 1994, Pat. No. 5,374,098. This application Oct. 31, 1994, Ser. No. 331,897
Int. Cl.[6] B62D *35/00*
U.S. Cl. 296—180.1 **10 Claims**



1. An aerodynamic stabilizer assembly adapted to be mounted in the roof of a motor vehicle having a rear deck and a rear window located between said roof and said rear deck comprising:

an assembly framework having a front edge, a rear edge, side edges and partitioned so as to define a left opening and a right opening;

a pair of elongated air deflection panels, each having a front edge and a rear edge, and each panel being sized to cover one of said framework openings and each air deflection panel being pivotedly mounted along a longitudinal axis at the front edge of said assembly framework so as to be pivotable between a lowered passive position covering the respective framework opening and a raised active position;

means arranged on each longitudinal axis for biasing each air deflection panel toward said passive position;

means for limiting the upward rotational movement of the rear edge of each of each elongated air deflection panels beyond said raised active position, whereby when said motor vehicle is moving at a high rate of speed and is spinning out the low pressure of the air moving across the roof creates a pressure differential which acts on the panels and rotates said panels from said passive position to said active position thereby resulting in a downward force acting on the panels and thus on the motor vehicle roof by reason of the air moving across the roof and urging the motor vehicle against the road; and

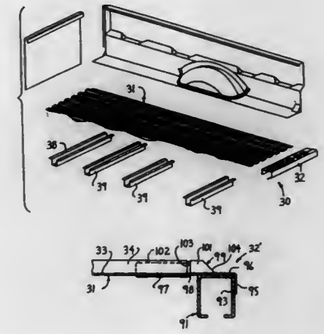
an air deflection plate pivotedly mounted to the left side of said left opening whereby said air deflection panels rotate from said passive position to said active position said deflection plate rotates to said active position urging the motor vehicle against the road.

5,544,932

TRUCK BED AND METHOD OF MANUFACTURE WITH IMPROVED REAR SILL MEMBER

Tom M. Walworth, Jr., Grosse Pointe Farms; Joseph J. Jurica, Mt. Clemens; Donald E. Wellemann, Romeo, and Joseph Turner, Bloomingdale, all of Mich., assignors to Pullman Industries, Inc., Pullman, Mich.

PCT No. PCT/US93/01888, § 371 Date Dec. 13, 1994, § 102(e) Date Dec. 13, 1994, PCT Pub. No. WO93/19970, PCT Pub. Date Oct. 14, 1993
Continuation-in-part of Ser. No. 864,741, Apr. 7, 1992, Pat. No. 5,188,418. This PCT application Feb. 18, 1993, Ser. No. 318,646
Int. Cl.[6] B62D *25/20*
U.S. Cl. 296—183 **11 Claims**



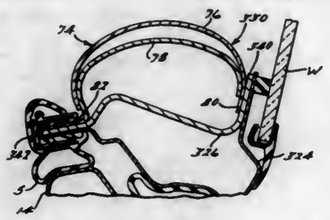
1. In a vehicle bed assembly having a horizontally-enlarged one-piece monolithic floor pan member constructed from a thin metal sheet and having a plurality of generally parallel and sidewardly-spaced stiffening ribs extending longitudinally thereof, said stiffening ribs being of generally downwardly-opening channel-like cross sections which are deformed so as to project upwardly from the sheet, and a horizontally elongated rear sill structure positioned at least partially under and fixedly secured to a transversely extending rear portion of said pan member, said rear sill structure being elongated in a direction generally perpendicularly with respect to the longitudinal direction of said pan member, comprising the improvement wherein said stiffening ribs project longitudinally throughout the entire length of said pan member so as to terminate at front and rear free edges of said pan member, said front and rear free edges of said pan member each having a corrugated configuration, said rear sill structure having first and second elongate members which extend transversely along the rear portion of said pan member with said first member being positioned generally over and fixedly secured to said second member, said first member having a generally horizontally extending top wall and additionally having a plurality of rib-closing projections projecting upwardly from said top wall, said rib-closing projections being disposed in a row extending in the elongated direction of the rear sill structure and spaced apart at intervals corresponding to the spacing between adjacent ribs on said floor pan member, the transversely extending rear portion of said floor pan member being positioned on the top wall of said first member so that rear free edges of said ribs align with and substantially abut the respective rib-end projections on the first member for closing off said ribs and said first member being of thinner wall thickness than said second member.

5,544,933

ENERGY ABSORBING VEHICLE PILLAR STRUCTURE

Syed A. Shahab, Bloomfield, and Mehran Chirehdast, Ann Arbor, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 8, 1994, Ser. No. 272,365
Int. Cl.[6] B62D *25/04*
U.S. Cl. 296—189 **4 Claims**



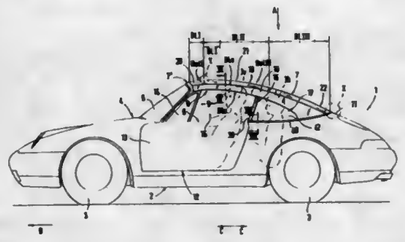
1. An energy absorbing pillar structure for an automotive vehicle, comprising:
an exterior panel arranged in generally vertical orientation to define an outwardly concave exterior surface of the vehicle;
an interior panel arranged in longitudinal registration with the exterior panel and defining an interior surface convex with respect to the exterior panel exterior surface and defining an energy absorbing chamber with the exterior panel;
an interior trim pillar formed in closed section of a flexible material and fixedly secured to in complementary relationship with substantially all of interior panel interior surface and defining another energy absorbing chamber therein; and
energy absorbing media carried laterally within the other chamber and including a plurality of tubes carried within the other chamber and extending generally parallel to the vertical axis of the pillar.

5,544,934

PASSENGER CAR WITH A REMOVABLE TOP ASSEMBLY

Stephen Murkett, Gerlingen, and Jürgen Bayer, Weissach, both of, Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Weissach, Germany

Filed Oct. 17, 1994, Ser. No. 324,395
Claims priority, application Germany, Oct. 15, 1993, 43 35 653.2
Int. Cl.[6] B60J *7/047*
U.S. Cl. 296—215 **38 Claims**



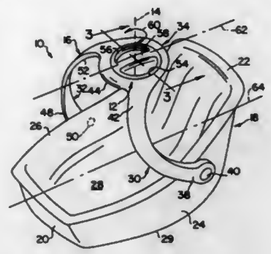
20. A top for a passenger car of the type having a windshield frame, a belt line extending rearwardly of the windshield frame, side windows extending above the belt line, and said top, said top comprising:
a pair of laterally spaced lateral roof frames attachable to the windshield frame so as to extend rearwardly over said side windows in a downwardly sloping curve toward the belt line,
a first angularly movable wind deflector roof section extending laterally between and supported at a forward section of the lateral roof frames,
a second movable roof section disposed rearwardly of the first roof section,
a third roof section disposed rearwardly of the second roof section, said third roof section extending between and fixedly supported by respective rearward sections of the lateral roof frames,
and lateral guide rails disposed directly on the lateral roof frames which supportably guide movement of the second roof section between a closed top position in front of the third roof section and an open top position disposed at least partially under the third roof section,
wherein said first, second and third roof sections are all constructed of transparent material for ensuring a good view for all occupants of the passenger car.

5,544,935

CARRIER APPARATUS

Richard E. Cone, II, Athens, Ohio, and Alvin L. Fowler, Columbus, Ind., assignors to Cosco, Inc., Columbus, Ind.

Filed Oct. 20, 1994, Ser. No. 326,483
Int. Cl.[6] A47D *3/02*
U.S. Cl. 297—183.2 **40 Claims**



1. A carrier apparatus comprising
a container having an exterior bottom wall,
a frame coupled to the container, and
a lifting handle rotatably mounted on the frame and configured for rotation about an axis that is generally perpendicular to the exterior bottom wall of the container to a plurality of fixed discrete positions, each position of which varies the orientation of the lifting handle with respect to the carrier to permit lifting of the carrier by the lifting handle in any of the positions.

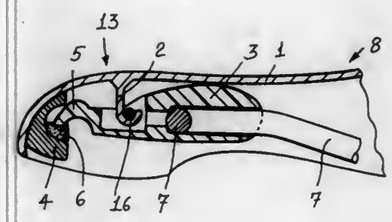
5,544,936

BICYCLE RESILIENT SADDLE

Giuseppe Bigolin, Via Aldo Moro 7, 36026-Rossano Veneto (Vicenza), Italy

Filed Aug. 25, 1994, Ser. No. 295,928
Claims priority, application Italy, Sep. 17, 1993, MI9300725 U
Int. Cl.[6] B60N *2/38*
U.S. Cl. 297—195.1 **5 Claims**

1. An improved resilient bicycle resilient saddle comprising a metal rod framework and a saddle body supported by said metal framework, wherein said saddle body has a substantially smooth top surface and a bottom surface, said saddle including therein a front suspension assembly, comprising a swinging flexible plastic lever having a convex rear portion contacting said bottom surface of said saddle body, said lever being provided with an intermediate pin having an axis of rotation, a book element projecting from said bottom surface of said saddle body and engaging said hook element and a rubber pad disposed within in a front holding element, wherein said holding element is attached to a front portion of said bottom surface of said saddle body, and wherein a front end portion of said metal framework is engaged within said rear portion of said lever.

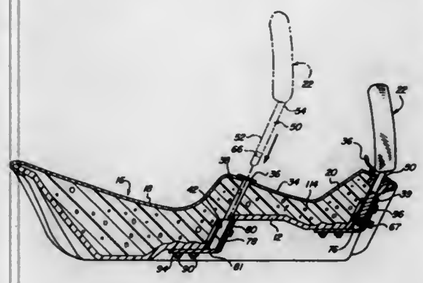


5,544,937

MOTORCYCLE SEAT AND METHOD OF MAKING SAME

Michael W. Hanagan, 25980 Paseo Estribo, Monterey, Calif. 93940

Filed Jan. 25, 1995, Ser. No. 377,650
Int. Cl.[6] B62J *1/28*
U.S. Cl. 297—215.12 **15 Claims**



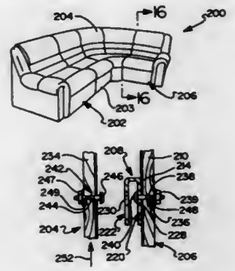
1. A tandem motorcycle seat for attachment to a frame of an associated motorcycle comprising:
(a) a unitary rigid, elongated platform member configured to seat upon and be secured to the frame of the associated motorcycle for firm support thereby, said platform member having front and rear ends and side margins;
(b) an elongated tandem saddle on said platform member providing a driver seat portion at its front end and a passenger seat portion at its rear end;
(c) support members on said platform member positioned adjacent the rear end of each of said seat portions and intermediate said side margins thereof, said support members each providing an upwardly opening receptacle, said tandem saddle having passages therethrough aligned with said receptacles of said support members; and
(d) a backrest for a person seated on one of said seat portions, said backrest having a depending leg spaced inwardly from the side margins thereof and extending through one of said passages in said saddle, said leg having its lower end releasably seated in the receptacle of the support member, said backrest being movable from one seat portion to the other seat portion.

5,544,938

MOUNTING APPARATUS FOR SECURING INDEPENDENT SECTIONS OF A SECTIONAL SOFA ASSEMBLY

Jonathan R. Saul, LaSalle; Richard E. Marshall, Monroe, and Larry P. LaPointe, Temperance, all of Mich., assignors to La-Z-Boy Chair Company, Monroe, Mich.

Continuation-in-part of Ser. No. 109,832, Aug. 20, 1993. This application Mar. 10, 1994, Ser. No. 209,159
Int. Cl.[6] A47C *15/00*
U.S. Cl. 297—248 **13 Claims**



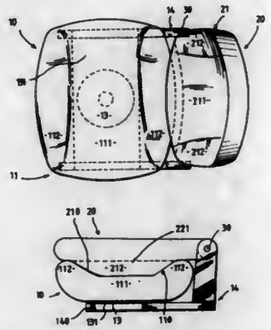
5. An apparatus for securing a first and second independent modular seating section of a modular sofa assembly together, wherein the first seating section includes a first side wall and the second seating section includes a second side wall, said apparatus comprising:
first fastener means having a shaft portion and an enlarged head portion, said first fastener means for securement to the first side wall and protruding outwardly therefrom;
second fastener means having an elongated shaft portion and an enlarged head portion, said second fastener means for securement to the second side wall and protruding outwardly therefrom, the second side wall being adapted to be disposed closely adjacent the first side wall when the first and second modular seating sections are assembled together to form the modular sofa assembly; and
bracket means for interdisposing between the first side wall and the second side wall for securing the first and second modular seating sections together, said bracket means including:
a first wall portion;
a first closed key-hole like opening formed in said first wall portion and being adapted to receive said enlarged head portion of said first fastener means therethrough such that said bracket means is releasably secured to said first fastener means;
a connecting wall portion extending from said first wall portion;
a second wall portion extending from said connecting wall portion; and
a second closed key-hole like opening formed in said second wall portion, said second key-hole like opening receiving therethrough said enlarged head portion of said second fastener means when the second side wall is positioned closely adjacent the first side wall, to thereby releasably lock the first and second modular seating sections together.

5,544,939

BUCKET SEAT AND ITS APPLICATION TO A LAND-BASED MOTOR VEHICLE

Frédéric Baret, Montargis, and Francois Faurrey, Montbellard, both of, France, assignors to Cesa- Compagnie Europeenne de Sieges Pour Automobiles, Perret Cedex, France

Filed May 10, 1994, Ser. No. 240,595
Claims priority, application France, May 10, 1993, 93 05590
Int. Cl.[6] A47C *1/023*; B60N *2/10;2/14*
U.S. Cl. 297—340 **7 Claims**



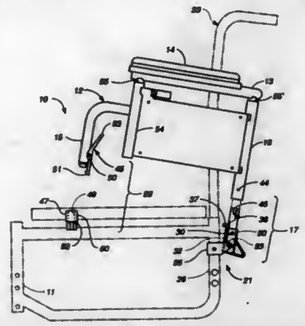
1. A bucket seat for a land-based motor vehicle, comprising a seat part (**10**) with a cushion (**11**) carried by a framework (**12**) mounted on a subframe (**14**), a backrest (**20**) with a cushion (**21**) carried by a framework (**22**), and an articulation (**30**) connecting the subframe (**14**) of the seat part (**10**) to the framework (**22**) of the backrest (**20**) in order to allow the cushion (**21**) of the backrest (**20**) to be pivoted about an axis (**300**) between a first, upright position and a second, folded-down position in which the cushion (**21**) of the backrest (**20**) is against the seat part cushion (**11**), wherein the framework (**12**) of the seat part (**10**) cushion (**11**) is mounted on the subframe (**14**) by the interposition of a turntable (**13**) so that the seat part cushion (**11**) can turn about an axis (**130**) not parallel to the axis (**300**) of pivoting of the backrest cushion (**21**), between a normal position and a turned access position, wherein the seat part and backrest cushions (**11,21**) each comprise a middle supporting face (**111,211**) and lateral padded rolls (**112,212**) which border it for holding an occupant of the seat when he is subjected to transverse or lateral forces, and wherein the middle supporting face (**111**) and the lateral padded rolls (**112**) of the seat part cushion (**11**) delimit a surface (**110**) which is conjugate with a complementary surface (**210**) delimited by the middle supporting face (**211**) and the lateral padded rolls (**212**) of the backrest cushion (**21**) so that, when the seat part cushion (**11**) occupies its turned access position, and the backrest (**20**) cushion (**21**) occupies its second, folded-down position, the corresponding surfaces (**110,210**) of the seat part (**10**) cushion (**11**) and of the backrest (**20**) cushion (**21**) fit at least partially into one another; and wherein the bucket seat further comprises automatic-control means (**50**), connected to said turntable (**12**) and to said framework (**22**) of the backrest (**20**), for automatically controlling turning of the seat part cushion (**11**) from its normal position to its turned access position upon pivoting of the backrest cushion (**21**) from its first, upright position to its second, folded-down position.

5,544,940

PIVOTAL REAR LATCH ASSEMBLY FOR AN ARMREST APPARATUS FOR A WHEELCHAIR

Rex W. Stevens, Fresno, Calif., assignor to Quickie Designs Inc., Fresno, Calif.

Filed Dec. 12, 1994, Ser. No. 353,636
Int. Cl.[6] A47C *7/54*
U.S. Cl. 297—411.28 **16 Claims**



10. An armrest apparatus for use with a wheelchair having a wheelchair frame, said armrest apparatus comprising:

an armrest frame having a front post and downwardly depending rear post;

a latch assembly operably mounting said armrest frame to a wheelchair frame, including

a retaining pin movable between an engaged position, coupling said rear post to the wheelchair frame proximate a rear portion thereof, and a disengaged position, enabling removal of said rear post from said wheelchair frame, and

a tube member operably housing said retaining pin therein, and formed and dimensioned for sliding telescopic engagement with said rear post, said tube member pivotally mounting said armrest frame to said wheelchair frame for pivotal movement between a closed position, enabling said retaining pin to move toward said engaged position, and an opened position, pivoting said front post away from said wheelchair frame and releasing said retaining pin from said engaged position; and

a locking mechanism operably coupling said front post to the wheelchair frame proximate a front portion thereof, said locking mechanism manually movable between a locked position, releasably locking said front post to said wheelchair frame when said tube member is in said closed position, and an unlocked position, releasing said front post from said wheelchair frame.

5,544,941

ADJUSTABLE FOOT REST

James K. Campbell, Sandwich; Ned C. Pfeiffer, Chicago, both of Ill.; Nicola Balderi, Bloomfield Hills, and Doug G. Schaefer, Taylor, both of Mich., assignors to Fellowes Manufacturing Company, Itasca, Ill.

Filed Nov. 10, 1994, Ser. No. 337,177
Int. Cl.[6] A47C *16/00*
U.S. Cl. 297—423.45 **16 Claims**

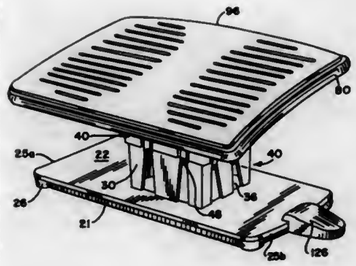
16. A foot rest comprising:

a. a base with an upward extending support, the support having at least one horizontal slot;

a tilt column surrounding the support;

c. a spring received within the support to bias the tilt column in an upward position;

d. an adjusting plate disposed between the support and the tilt column and associated with the tilt column, the plate having at least one horizontal slot; and,



e. a locking assembly comprising:

i. an extension having a top and a bottom with a top having at least one tooth; and

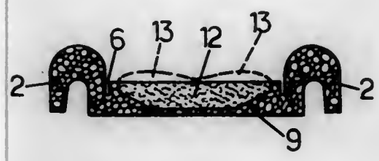
ii. a lever connected to the bottom of the extension and extending outwardly of the base whereby the one tooth can be rotated from a first position where it extends through the horizontal slot on the adjusting plate and the horizontal slot on the support and locks the tilt column to a second position where it does not extend through the horizontal slots.

5,544,942

MOTOR VEHICLE SEAT PADDING

Thanh Vu Khac, Etampes; Michel Sabin, Vineuil, and Thierry Guerinot, Etampes, all of, France, assignors to Bertrand Faure Automobile "BFA", Massy Cedex, France

Filed Jun. 28, 1994, Ser. No. 266,551
Claims priority, application France, Jun. 29, 1993, 93 07926
Int. Cl.[6] A47C *7/18*
U.S. Cl. 297—452.37 **10 Claims**



1. A seat padding comprising:

a foam block having

a support face,

an opposite face, and

a recess provided in said support face;

a base adjacent said opposite face which closes said recess;

at least two lining return grooves in said support face with said recess therebetween, said return grooves being substantially symmetrical to each other with respect to a longitudinal vertical mid-plane of the seat padding such that said two lining grooves define two re-entrant lines for a cover used to surround the seat padding;

two respective partitions which transversely separate respective said grooves from said recess and which are made of a hard foam material, each said partition including a free end distal from said base which is adapted to be engaged by the cover emerging from an associated said lining groove and stretched over said recess; and

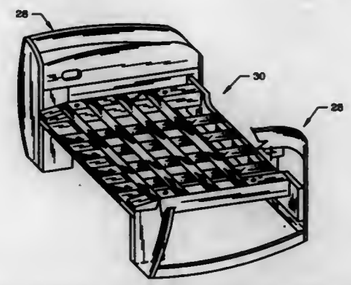
an insert which fills said recess, said insert being made from a material which is more permeable to one of air or moisture than a material of said foam block.

5,544,943

SEAT CONSTRUCTION AND METHOD

Walter E. Durling, Tupelo, Miss., assignor to Matrex Furniture Components, Inc., Greensboro, N.C.

Continuation of Ser. No. 229,925, Apr. 19, 1994, abandoned.
This application Nov. 13, 1995, Ser. No. 557,383
Int. Cl.[6] A47C *7/02*
U.S. Cl. 297—452.56 **20 Claims**



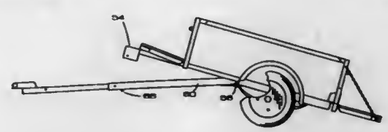
1. Seat construction comprising: a frame, said frame having a pair of sides, a front, and a rear, said front and said rear attached to each of said sides, said front and said rear positioned vertically lower than said sides, a first stretchable webbing, said first stretchable webbing attached to said vertically lower front and rear, a second stretchable webbing, said second stretchable webbing attached to said sides, said second stretchable webbing being vertically, angularly spaced from and incontiguous to said first stretchable webbing.

5,544,944

ADJUSTABLE UTILITY TRAILER

Charles R. Keech, 86364 Panorama Rd., Springfield, Oreg. 97478

Filed Jul. 20, 1994, Ser. No. 278,374
Int. Cl.[6] B60P *1/12*
U.S. Cl. 298—5 **1 Claim**



1. An adjustable trailer for transporting cargo comprising:

(a) a box having a right side, a left side, a front end and a rear end;

(b) an axle assembly including an axle mounted to spring means;

(c) a hollow frame having a forward end and a longitudinal axis, said frame having a tilt lock hole located at the forward end and a pivot bracket, said box being mounted to said frame, said axle assembly being mounted to said frame at a location on said frame that is rearwardly of said pivot bracket;

(d) a hollow tongue housing having a rear end and a longitudinal axis, an extension lock hole, a tilt lock keeper and a pivot bearing located at the rear end of said tongue housing, said pivot bracket of said frame being releasably connected to said pivot bearing of said tongue housing by a pivot bolt, whereby the longitudinal axis of said frame is substantially aligned with the longitudinal axis of said tongue housing when said pivot bracket is connected to said pivot bearing by said pivot bolt;

(e) an elongated tongue having a hitch means for connecting the trailer to a vehicle and a series of position holes spaced along the length of said tongue, whereby said tongue telescopes into

said hollow frame and said hollow tongue housing and is releasably locked to said tongue housing by a tongue-lock bolt that extends through one of said position holes and said extension lock hole on said tongue housing;

(f) a front endgate having a bottom and hinge means mounted to said bottom for pivotally connecting said front endgate to the front end of said box whereby said front endgate can be pivoted into an open position in which said front endgate rests on said frame; and

(g) a rear end gate having a bottom and hinge means mounted to said bottom for pivotally connecting said rear endgate to the rear end of said box.

5,544,945

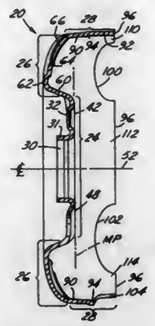
METHOD AND APPARATUS FOR MAKING DISC WHEELS AND WHEELS MADE THEREBY

Anwar R. Daudi, East Lansing, Mich., assignor to Motor Wheel Corporation

Division of Ser. No. 311,955, Sep. 26, 1994, which is a division of Ser. No. 133,188, Oct. 12, 1993, Pat. No. 5,388,330. This application May 11, 1995, Ser. No. 439,182

Int. Cl.[6] B60B *3/14*

U.S. Cl. 301—63.1 **11 Claims**



1. A one-piece sheet metal wheel disc having a central bolt-circle mounting portion for fastening onto a vehicle hub or the like, a peripheral outer annular flange portion extending generally axially of said wheel disc to an inboard free edge of said disc and adapted for telescopic mounting into a mating wheel rim, and an annular window vent and hat intermediate portion integrally joining said central and flange portions, said disc flange portion having an annular rim-mounting portion extending axially outboard of said disc from said inboard free edge of said disc flange portion to a given location spaced axially inboard of a radially outermost peripheral portion of said disc intermediate portion, said disc flange portion being initially progressively draw die cold formed to include a preform of said flange rim-mounting portion having an unfinished cross-sectional contour corresponding in shape generally to but slightly diametrically smaller than said disc flange rim-mounting portion, and then said rim mounting portion is finish formed in a cold working sizing operation wherein said preform rim mounting portion of said flange is radially expanded to circumferentially stretch the same beyond the yield point of the blank metal sufficiently to cause said preform flange rim-mounting portion to take a permanent set into the final predetermined expanded and finished shape of said rim-mounting portion of said disc flange adapted for precision telescopic mounting of the same into a mating wheel rim, said predetermined expanded and finished shape of said disc rim mounting portion being characterized by having a predetermined circumferentially stretched cylindrical or slightly inboard divergent frusto-conical shape in radial cross section substantially free of waviness and undulations circumferentially of the radially inward and outer peripheral surfaces of said rim mounting portion, and having a substantially uniform outside diameter at any given selected measurement points taken at spaced locations axially of the disc along said outer peripheral surface of said rim mounting portion within substantially reduced tolerance limits as compared to the corresponding dimensions of said disc flange preform rim mounting portion.

5,544,946

MOTORCYCLE BRAKING SYSTEM AND METHOD

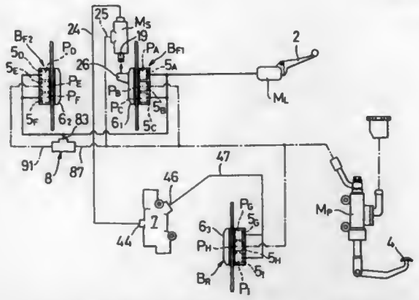
Hidetoshi Toyoda; Tetsuo Tsuchida, and Kanau Iwashita, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 7, 1995, Ser. No. 473,578

Claims priority, application Japan, Jun. 14, 1994, 6-131824

Int. Cl.[6] B60T *13/00;8/26*

U.S. Cl. 303—9.64 **15 Claims**



1. A brake system for a motorcycle having a first master cylinder and a second master cylinder comprising:

a first front wheel brake connected directly with the first master cylinder;

a second front wheel brake having a first piston connected directly to the first master cylinder and a second piston connected indirectly with the first master cylinder;

a pressure controller connecting the first and second master cylinders to the second piston of said second front wheel brake, said pressure controller changing a liquid pressure transmission ratio supplied to the second piston of said second front wheel brake by the first and second master cylinders in accordance with an output liquid pressure of the second master cylinder to selectively provide the output liquid pressure from the second master cylinder to the second piston of said second front wheel brake.

5,544,947

HYDRAULIC BRAKE DEVICE FOR A VEHICLE

Michiharu Nishii, Toyota, and Satoshi Ishida, Chiryu, both of, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 20, 1995, Ser. No. 426,004

Claims priority, application Japan, Apr. 21, 1994, 6-083024; May 31, 1994, 6-118840

Int. Cl.[6] B60T *8/50*

U.S. Cl. 303—116.2 **9 Claims**

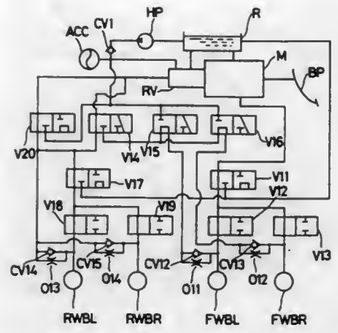
1. A hydraulic brake device for a vehicle comprising:

a reservoir for storing brake fluid;

a master cylinder connected to the reservoir for generating a first hydraulic brake pressure corresponding to a magnitude of an operation force of a brake operation member of the vehicle;

a hydraulic pump connected to the reservoir for pumping out brake fluid from the reservoir to generate a second hydraulic brake pressure;

an accumulator connected to the hydraulic pump for storing pressurized brake fluid under the second hydraulic brake pressure;



a regulator valve connected to the accumulator for generating a third hydraulic brake pressure corresponding to the magnitude of the operation force of the brake operation member;

a wheel brake for being mounted on a wheel of the vehicle to apply a brake force to the wheel;

a pressure control unit connecting the regulator valve to the wheel brake to supply hydraulic brake pressure to the wheel brake under an anti-lock condition and connecting the wheel brake to the reservoir to discharge brake fluid from the wheel brake to the reservoir under the anti-lock condition, the pressure control unit including an orifice for allowing a restricted flow of brake fluid from the regulator valve to the wheel brake while fluid is being discharged to the reservoir, the brake fluid flowing through the orifice being of such a quantity that when brake fluid is flowing into the wheel brake from the regulator valve and is being discharged to the reservoir from the wheel brake the quantity of brake fluid flowing through the orifice is less than the quantity of brake fluid being discharged from the wheel brake to the reservoir.

5,544,948

SERVICE AND EMERGENCY BRAKE SYSTEM HAVING A MASTER CYLINDER WITH A TRAVEL SIMULATOR GAS-FILLED SPRING

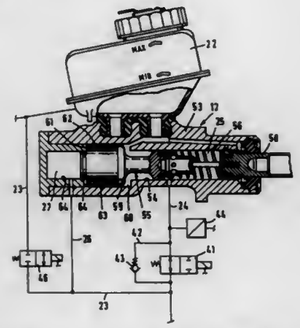
Guenther Schmidt, Tamm, and Klaus Schmidt, Moeglingen, both of, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 14, 1994, Ser. No. 339,726

Claims priority, application Germany, Dec. 18, 1993, 43 43 386.3

Int. Cl.[6] B60T *13/10*

U.S. Cl. 303—122.11 **4 Claims**



1. A hydraulic brake system (**10**) for road vehicles, having a power-actuated service brake actuated by an engaging brake pedal (**48**) and an emergency brake actuated manually by engagement of said brake pedal during a failure of said power-actuated service brake,

a master cylinder (**12**) including a housing (**53**), said master cylinder is actuated with the brake pedal (**48**) and which has a pressure fluid reservoir (**22**) and an intermediate piston (**55**) which is moved against a spring (**63**),

a first line (**21**) of a brake circuit (**11**) which leads from the pressure fluid reservoir (**22**) to at least one wheel brake cylinder (**13**), a servo pressure source (**15**) is connected to said first line,

a second line (**23**) which connects at least one wheel brake cylinder (**13**) of the brake circuit (**11**) to the pressure fluid reservoir (**22**),

a valve assembly (**16**) for modulating the pressure in at least one wheel brake cylinder (**13**), comprising an inlet valve (**36**) in the first line (**21**) and an outlet valve (**37**) in the second line (**23**),

a third line (**24**), which leads from a first pressure chamber (**25**) of the master cylinder (**12**) on a pedal side of said master cylinder and is attached to the brake circuit (**11**), an electromagnetically actuated first stop valve (**41**) is disposed in said third line (**24**), which in an absence of current assumes an open position,

the spring (**63**) cooperates with the intermediate piston (**55**) and is embodied as a travel simulator spring which determines a pedal force characteristic,

the third line (**24**) is connected to the second line (**23**) between the master cylinder (**12**) and the outlet valve (**37**) of the valve assembly, said outlet valve (**37**) assumes an open position in an absence of current,

an electromagnetically actuated second stop valve (**46**), which assumes a closed position in an absence of current, said second stop valve is disposed in the second line (**23**) between the connection of the third line (**24**) and the pressure fluid reservoir (**22**),

a fourth line (**26**) is connected to the second line (**23**) of the brake circuit (**11**) between the first stop valve (**41**) and the second stop valve (**46**), said fourth line (**26**) leads from a second pressure chamber (**27**) of the master cylinder (**12**) remote from the pedal,

when the service brake is in operation, the first stop valve (**41**) assumes an electromagnetically actuated closed position and the second stop valve (**46**) assumes an electromagnetically actuated open position, and

when the emergency brake is in operation, both stop valves (**41**, **46**) remain in the positions they assume in the absence of current.

5,544,949

TRACTION CONTROL SYSTEM

Johannes Schmitt, Markgroeningen, Germany; Andreas Burg, Clayton, Australia, and Ralf Donath, Ditzingen, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Sep. 19, 1995, Ser. No. 531,211

Claims priority, application Germany, Sep. 20, 1994, 44 33 459.1

Int. Cl.[6] B60T *8/32;* **B60K** *23/04;28/16*

U.S. Cl. 303—140 **19 Claims**

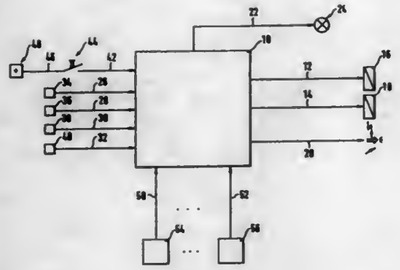
1. Method for controlling drive slippage of drive wheels in a vehicle having an engine, first and second drive wheels, and brakes at said drive wheels, said method comprising

determining when the first drive wheel has a slippage which exceeds a threshold drive slippage,

building-up brake pressure at said first drive wheel when said first drive wheel exceeds said threshold drive slippage,

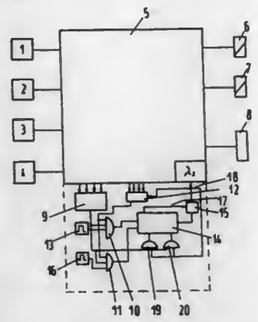
reducing brake pressure at said first drive wheel,

determining when the second drive wheel has a slippage which exceeds said threshold drive slippage, and



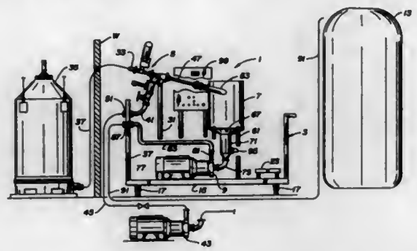
not building-up brake pressure at the second drive wheel before said brake pressure at said first drive wheel has been reduced to a predetermined minimum pressure.

5,544,950
DRIVE SLIP CONTROL SYSTEM
Andreas Burg, Clayton, Australia, and Johannes Schmitt, Markgroeningen, Germany, assignors to Robert Bosch GMBH, Stuttgart, Germany
PCT No. PCT/DE93/00549, § 371 Date Dec. 30, 1994, § 102(e) Date Dec. 30, 1994, PCT Pub. No. WO94/01310, PCT Pub. Date Jan. 20, 1994
PCT Filed Jun. 24, 1993, Ser. No. 360,839
Claims priority, application Germany, Jul. 6, 1992, 42 22 159.5
Int. Cl.[6] B60T *8/32;* **B60K** *28/16*
U.S. Cl. 303—165 **15 Claims**



1. Drive slip control system for a vehicle having driven wheels, non-driven wheels, and an engine which produces torque, said wheels bearing tires having a diameter, said system comprising
means for determining the speeds VHL and VHR of the driven wheels,
means for determining the speeds VNAL and VNAR of the nondriven wheels,
means for determining the slip of the driven wheels,
means for comparing the slip of at least one driven wheel to a predetermined slip threshold,
means for at least one of braking said at least one driven wheel and reducing said torque when said slip exceeds said predetermined threshold,
means for detecting an impermissible difference between the diameters of the tires on the driven wheels based solely on the speeds of the driven wheels and the speeds of the non-driven wheels, and
means for raising said predetermined slip threshold when said impermissible difference is detected.

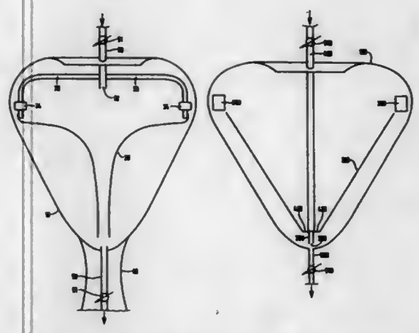
5,544,951
MIXING MODULE FOR MIXING A FLUENT PARTICULATE MATERIAL WITH A WORKING FLUID
Charles S. Alack, St. Louis, Mo., assignor to Semi-Bulk Systems, Inc., St. Louis, Mo.
Filed Sep. 30, 1994, Ser. No. 316,649
Int. Cl.[6] B01F *15/02*
U.S. Cl. 366—163.2 **19 Claims**



13. An in-line process for mixing a particulate fluent material received from a source of particulate material and a working fluid received from a source of pressurized working fluid, said process comprising
moving a frame carrying an eductor-mixer and a small surge tank relative to said source of particulate material and relative to said source of pressurized working fluid to a set-up location,
after moving the frame to said set-up location, connecting the source of particulate material to a first inlet of the eductor-mixer by means of a first supply line, and connecting the source of pressurized working fluid to a second inlet of the eductor-mixer by means of a second supply line,
conveying said particulate material through said first supply line from the source of said particulate material to said first inlet of the eductor-mixer,
pumping pressurized working fluid through the second supply line to the second inlet of the eductor-mixer,
said eductor-mixer being operable to mix said particulate material and said working fluid to form a mixture of said particulate material and said working fluid,
discharging said mixture from the eductor-mixer into the small surge tank at a first flow rate, and
pumping said mixture out of the tank at a second flow rate approximately equal to said first flow rate for delivery to a remote location via an outfeed line.

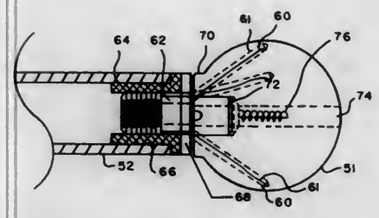
5,544,952
SPIRAL VORTEX DEVICE
Siegfried Schneider, Georg-Groening-Strasse 88, 28209 Bremen, Germany
Filed Oct. 18, 1994, Ser. No. 324,573
Claims priority, application Germany, Oct. 18, 1993, P 43 35 483.1
Int. Cl.[6] B01F *5/12;7/16;9/10;* **F15D** *1/10*
U.S. Cl. 366—175.1 **25 Claims**

1. Spiral vortex device for the determined production of spiral flows in a liquid, said device comprising:
a rotation-symmetrical external container,
a rotation-symmetrical internal container arranged centrally within the external container and having an upper open end and a lower open end and defining a liquid flow space between said internal and external container,
a drive shaft, and
at least one fixed deflection piece being arranged in the upper part of the external container above the upper open end of the internal container,
wherein the driveshaft (**40, 400**) either drives the external container (**10, 100**), the internal container (**20, 200**) being fixed,



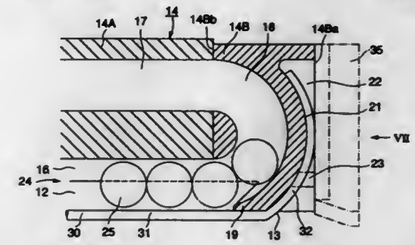
or drives the internal container (**20, 200**), the external container (**10, 100**) being fixed, and
wherein, in the case the external container (**10, 100**) is driven, an ascending spiral flow of liquid rotating in a first direction is generated between the external container (**10, 100**) and the internal container (**20, 200**), which liquid flow is inverted upon interaction with the deflection piece (**35, 350**), wherein said liquid flow then descends in the form of a spiral flow rotating in the opposite direction to the direction of rotation of the ascending flow, and in the case the internal container (**20, 200**) is driven, the ascending and descending flows are directed in opposite directions to those in the case that the external container is driven.

5,544,953
ROLLING-BALL THERMOELECTRIC POTENTIAL PROBE AND HOUSING FOR NONDESTRUCTIVE TESTING OF METALLIC AND SEMICONDUCTOR OBJECTS
John R. M. Vierti, Niskayuna, N.Y., assignor to General Electric Co., Schenectady, N.Y.
Filed May 18, 1994, Ser. No. 245,269
Int. Cl.[6] G01K *1/08;7/00*
U.S. Cl. 374—164 **8 Claims**



1. A thermoelectric potential probe comprising:
a rotatable rolling-ball probe head for contacting a surface of a test object, said probe head being substantially spherical and having a plurality of internal thermocouples;
wherein said probe head is solely supported by a rotatable tubular axle having a first end fixedly attached to said probe head and a second end rotatably attached to a support base for said probe, and
wherein said probe head has a plurality of holes, and said holes each of said plurality of thermocouples is disposed adjacent an outer surface of the probe head in a distal end of a respective one of said holes each having a proximate end adjacent the first end of the tubular axle, wherein each of the proximate ends are disposed at the outer surface of the probe head.

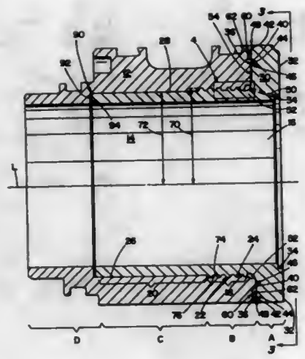
5,544,954
BALL RETAINERS IN A LINEAR GUIDE APPARATUS
Nobuyuki Osawa, Gunma, Japan, assignor to NSK Ltd., Tokyo, Japan
Filed Sep. 22, 1995, Ser. No. 532,499
Claims priority, application Japan, Sep. 22, 1994, 6-228125
Int. Cl.[6] F16C *29/06*
U.S. Cl. 384—45 **5 Claims**



1. A linear guide apparatus comprising:
a guide rail including a first ball rolling groove which extends axially in a side surface of the guide rail, the first ball rolling groove having in its bottom an escaping groove which extends axially;
a slider mounted over the guide rail, the slider being axially movable with respect to the guide rail, and including in an inner surface of the slider a second ball rolling groove which confronts the first ball rolling groove and a ball returning path which has a through hole in a wing of the slider, the through hole extending in parallel with the second ball rolling groove;
an end cap joined to an end face of the slider, the end cap including in its inner junction surface a half-ring-shaped curved path which communicates the ball returning path with the second ball rolling groove,
the first ball rolling groove and the second ball rolling groove comprising a loaded-ball rolling path which forms an endless ball rolling path with the ball returning path and the curved path;
a plurality of balls installed in the endless ball rolling path; and
a ball retainer secured to the slider to prevent the balls from falling away from the slider, the ball retainer being made of a wire material which is formed in a circular shape in section, and comprising a linear part fitted in the escaping groove, and a locking part which extends from an end of the linear part and is curved arcuately,
wherein the end cap includes in its outer surface an outer peripheral groove which is curved arcuately, the ball retainer being secured to the slider with the locking part engaged with the outer peripheral groove.

5,544,955
LIGHT WEIGHT BEARING APPARATUS AND ASSEMBLY METHOD
David L. Wakefield, Penfield Township, Lorain County, Ohio, assignor to Argo-Tech Corporation, Cleveland, Ohio
Filed Dec. 8, 1994, Ser. No. 351,942
Int. Cl.[6] F16C *33/04*
U.S. Cl. 384—295 **15 Claims**

1. A bearing apparatus comprising:
a sleeve having a first sleeve surface defining an elongate substantially cylindrical aperture along a first longitudinal axis and a second sleeve surface defining a groove in said substantially cylindrical aperture;
a substantially cylindrical liner disposed in said sleeve along said first longitudinal axis and having a first liner surface interference fit connected to said first sleeve surface and a second liner surface interference fit connected to said groove; and,



said groove in said second sleeve surface being a helical groove and said second liner surface including a helical formation received in said groove.

5,544,956

ANTI-LOCK BRAKE SYSTEM AND/OR TRACTION CONTROL SYSTEM

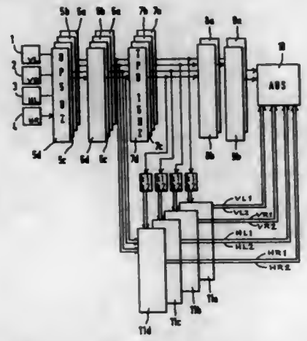
Elmar Mueller, Markgroeningen, and Dieter Kunz, Ditzingen, both of, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 23, 1994, Ser. No. 344,074

Claims priority, application Germany, Nov. 27, 1993, 43 40 442.1

Int. Cl.[6] B60T *8/32*

U.S. Cl. 303—196 **12 Claims**



1. Brake pressure control system for a vehicle having four wheels in contact with a roadway exhibiting unevenness, said system comprising

means for generating a first signal representing the unevenness of the roadway for at least one wheel,

means for generating a second signal representing the degree of unevenness of the roadway for said at least one wheel,

means for generating control parameters for said at least one wheel based on said second signal,

means for controlling brake pressure at each said wheel based on at least said control parameters,

means for generating a first threshold for said at least one wheel which is dependent on said second signal for said wheel,

means for comparing said first signal to said first threshold,

means for generating a first extreme value signal when said first signal exceeds said first threshold, and

means for varying said control parameters so that said means for controlling brake pressure is less sensitive when said first extreme value signal for said wheel is generated.

5,544,957

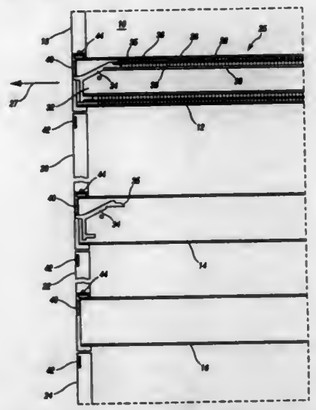
LOCKING MECHANISM FOR MULTIPLE VERTICAL DRAWERS

Clayton C. Schmidt, Wilton; Chris Zorich, Muscatine, both of Iowa; Arthur E. Lammens, Fullerton, and Jackie Don Parvin, Pomona, both of Calif., assignors to Hon Industries Inc., Muscatine, Iowa

Continuation of Ser. No. 175,952, Dec. 30, 1993, abandoned. This application Oct. 5, 1995, Ser. No. 539,773

Int. Cl.[6] E05C *7/06*

U.S. Cl. 312—221 **3 Claims**



1. A locking assembly for a housing having multiple vertically aligned drawers, the assembly allowing only one drawer to be opened at one time, comprising:

a slide mechanism attachable to at least one side of each drawer in said housing, said slide mechanism having at least an outer slide section and an inner slide section telescopingly mated within said outer slide section for normal sequential extension and retraction of the inner section with respect to the outer section wherein said outer and inner sections first extend together in mated relation before telescopingly sliding relative to each other when the drawer is opened and wherein said inner and outer sections first move relative to each other before together sliding in mated relation when the drawer is closed, said inner slide section having an end directable outwardly of said housing;

at least one locking member slidably attachable to the housing for reciprocal vertical movement;

a slide ramp on said outwardly directable end of the inner slide section except the inner slide section of the slide mechanism attachable to an uppermost drawer;

a first projection on the at least one locking member for association with the slide ramp on the outwardly directable end of said inner section except of the slide mechanism attachable to the uppermost drawer in a manner such that when said inner slide section is extended outwardly as a drawer is opened, the slide ramp engages the locking member first projection so as to force the at least one locking member vertically upward; and

a second projection on the at least one locking member adjacent the slide mechanism for each of the corresponding drawers such that as the at least one locking member moves upwardly as any one of said drawers except the uppermost drawer is opened, the corresponding second projection is positioned in blocking relationship with its corresponding next upper adjacent slide mechanism so as to prevent any one of said drawers above the open drawer from being opened;

said slide ramp including a first section sloping inwardly and upwardly from the outwardly directable end of the inner slide section, and an uppermost section integrally formed with the upwardly sloping section and extending above the inner slide section, and a second section sloping inwardly and downwardly of said outwardly directable end from the uppermost section to the inner slide section such that if the normal slide sequence fails the at least one locking member can function properly by riding up the first sloping section and down the second sloping section when the slide is extended and then riding up the second sloping section and down the first sloping section when the slide is retracted.

5,544,958

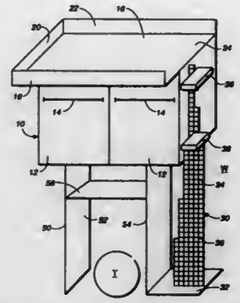
ELEVATED CABINET APPARATUS FOR CAT OWNER

Lynley A. McAfee, 7 George St., Cotati, Calif. 94931

Filed Oct. 6, 1994, Ser. No. 319,273

Int. Cl.[6] A47B *83/00*

U.S. Cl. 312—237 **3 Claims**



1. An elevated cabinet apparatus for cat owner, said cabinet apparatus comprising:

a storage cabinet adapted to be secured to a building wall by at least one bracket, said storage cabinet having at least one door on its front side, said cabinet having a top surface;

a cat box shelf for support of a cat box attached to said cabinet top surface, said cat box shelf having a hinged front wall or door for cat box removal, a fixed side and back wall, and one open side for cat access;

a climbing tree positioned adjacent said storage cabinet and having a base supporting a plurality of joined vertical poles, said poles supporting at least one climbing platform, with said poles adapted to be secured to a building wall by at least one bracket; and

a cabinet support stand connected to said storage cabinet and having a pair of sides adapted for placement on opposite sides of a toilet fixture.

5,544,959

REMOVABLE KEYPAD FOR AN ELECTRONIC CIRCUIT BREAKER

Edwin J. Collin, Southington, and Robert C. Turton, Burlington, both of Conn., assignors to General Electric Company, New York, N.Y.

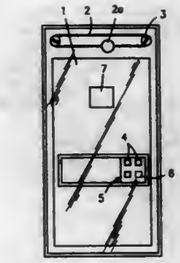
Filed Jan. 30, 1995, Ser. No. 380,773

Int. Cl.[6] H01H *9/02*

U.S. Cl. 335—202 **4 Claims**

1. An electronic circuit breaker removable keypad and display unit comprising:

a keypad enclosure including a plurality of function keys and an "ENTER" key;



a display arranged within said enclosure and electronically connected with an electronic trip unit;

a keypad shield having first holes corresponding to said function keys;

a plurality of push-buttons extending through said first holes into contact with said function keys; and

a second hole corresponding to said "ENTER" key, said second hole having a blocking means preventing access to said "ENTER" key.

5,544,960

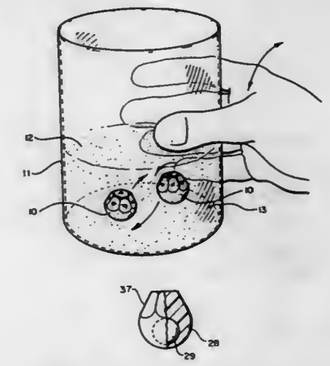
V FACETED STIRRING OBJECT FOR SOLID AND LIQUID FOOD SUBSTANCES

Christopher V. Sommovigo, 322 W. 25th St., #11, Miami Beach, Fla. 33140, and Ray L. Kimber, 2752 S., 1900 W., Ogden, Utah 84401

Filed Aug. 11, 1995, Ser. No. 514,021

Int. Cl.[6] B01F *15/00*

U.S. Cl. 366—130 **18 Claims**



1. A stirring and agitating member for placement along with liquid and finely divided solid foodstuffs into a container to be manually shaken to thoroughly mix said foodstuffs together, said member comprising:

a body contained within a spherical envelope, said body having a portion with an unaltered spherical hemispherical outer surface and a portion the outer surface of which comprises at least one planar facet; wherein

the portion comprising said at least one planar facet is carried by a hemisphere of the body contained within the spherical envelope.

5,544,961
TWO-PHASE SUPERSONIC FLOW SYSTEM

Efim Fuks; Vadim Fuks, both of Herzlia, Israel; Vladimir Lunev, and Sergey Lunev, both of Odessa, Ukraine, assignors to April Dynamics Industries Ltd., Israel

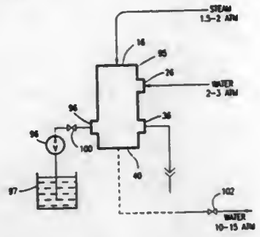
PCT No. PCT/UA93/00001, § 371 Date Sep. 15, 1994, § 102(e) Date Sep. 15, 1994, PCT Pub. No. WO93/16791, PCT Pub. Date Sep. 2, 1993

PCT Filed Feb. 8, 1993, Ser. No. 256,910

Claims priority, application European Pat. Off., Feb. 11, 1992, 92102259; Israel, Feb. 11, 1992, 100918; Nov. 12, 1992, 103735; Jan. 24, 1993, 104495

Int. Cl.[6] B01F *15/02*

U.S. Cl. 366—163.2 **47 Claims**



1. An injector comprising:
a flow generator having a first inlet for gas or vapor at a first pressure and an outlet for gas or vapor having a supersonic velocity;
a mixing region having an inlet for the gas or vapor leaving the flow generator and a second inlet for a liquid at a second pressure, wherein liquid is incorporated into the flow of gas and vapor, the flow remaining at supersonic velocity; and
a primary flow tube section aligned with an outlet of the mixing region and having an inlet and an injector outlet, the inlet of the flow tube being preceded by a gap surrounded by a cavity,
wherein the flow velocity of the mixture is supersonic at the inlet of the primary flow tube section and the supersonic flow changes to subsonic flow within the primary flow tube section.

5,544,962
WHEEL BEARING UNIT WITH SPEED OF ROTATION SENSOR

Heinrich Hofmann, Schweinfurt; Johannes Schottdorf, Hammelburg, both of, Germany, and Andre F. L. Goosens, Ruinst, Belgium, assignors to FAG Kugelfischer Georg Schafer AG, Germany

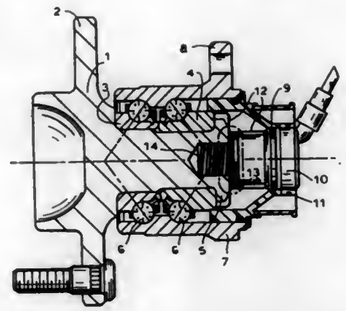
Filed Jan. 13, 1995, Ser. No. 372,283

Claims priority, application Germany, Jan. 13, 1994, 44 00 773.6

Int. Cl.[6] F16C *19/28*

U.S. Cl. 384—448 **13 Claims**

1. A wheel bearing unit for an automotive vehicle, comprising:
a rotatable wheel hub;
a bearing disposed on the hub, the bearing including a rotatable part which rotates with the hub and including a non-rotating part with respect to which the hub rotates;
a pulse generating ring mounted to the rotatable part of the bearing and rotatable therewith and rotatable with the hub;
a sensor attached to the non-rotating part of the bearing to be fixed in rotation with reference to rotation of the pulse generating ring, and the pulse generating ring being mounted at and on the sensor and being rotatable with reference to the sensor;
an additional support bearing at the sensor for supporting and guiding the pulse generating ring for rotation around the sensor and for maintaining an air gap between the sensor and the pulse generating ring; and



a spring in the bearing and pressing on the additional support bearing and on the sensor for urging the sensor to move out of position with reference to the pulse generating ring while means hold the sensor in position against the pressing by the spring.

5,544,963
BEARING SEAL ASSEMBLY WITH SPECIALLY DIMENSIONED SEALING LIP

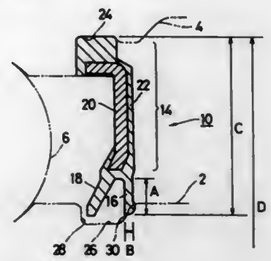
Kazuhisa Kajihara, Yao; Motoshi Kawamura, and Kunio Yanai, both of Nara, all of, Japan, assignors to Koyo Seiko Co., Ltd., Osaka, Japan

Filed Aug. 12, 1994, Ser. No. 290,306

Claims priority, application Japan, Nov. 19, 1993, 5-290333; Apr. 22, 1994, 6-084451

Int. Cl.[6] F16C *33/78;* **F16J** *15/32*

U.S. Cl. 384—482 **7 Claims**



1. A seal assembly for sealing an annular cavity formed between a first bearing ring and a second bearing ring disposed coaxially with the first bearing ring, and interposed annularly between the first bearing ring and the second bearing ring, said seal assembly comprising:
an annular seal member fitted onto the peripheral surface of said second bearing ring and extending toward said first bearing ring; and
an annular seal lip extending from said annular seal member to said first bearing ring and being in elastic-contact with a sidewall of an annular groove formed in the peripheral surface of said first bearing ring, said annular seal lip having a radial length and an axial thickness each satisfying a ratio (A/B) of said radial length (A) to said axial thickness (B), said ratio (A/B) being in the range of not less than 4.5 and not more than 7.0, and having an axial thickness being in the range of not less than 0.2 mm and not more than 0.4 mm.

5,544,964
DOT LINE PRINTER HAVING A BALANCE SHUTTLE

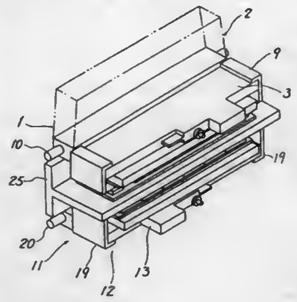
Yuichi Yoshida, and Hitoshi Moriyama, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 7, 1995, Ser. No. 487,911

Claims priority, application Japan, Sep. 6, 1994, 6-212231

Int. Cl.[6] B41J *19/02*

U.S. Cl. 400—322 **9 Claims**



1. A dot line printer comprising:
a printing shuttle unit making a reciprocating motion to perform dot printing; and
a balance shuttle unit making a motion in a direction opposite to the kinetic direction of said printing shuttle unit, said printing shuttle unit including:
a first magnetic circuit having a first magnet and a first yoke that are disposed in a face-to-face relationship;
a first coil base plate disposed in a magnetic gap of said first magnetic circuit and provided with first coils;
a printing unit having a plurality of dot printing elements;
a printing shuttle frame mounted with said printing unit; and
a pair of first connecting arms for connecting said first coil base plate to said printing shuttle frame,
said balance shuttle frame including:
a second magnetic circuit having a second magnet and a second yoke that are disposed in the face-to-face relationship;
a second coil base plate disposed in a magnetic gap of said second magnetic circuit and provided with second coils;
a balance unit for taking a balance with said printing unit;
a shuttle frame mounted with said balance unit; and
a pair of second connecting arms for connecting said second coil base plate to said shuttle frame.

5,544,965
PRINTER

Hitoshi Kamoda; Tomohiro Maekawa; Yasuji Yui, all of Kanagawa; Shin Iima, Tokyo, and Takashi Bunya, Kanagawa, all of, Japan, assignors to Sony Corporation, Japan

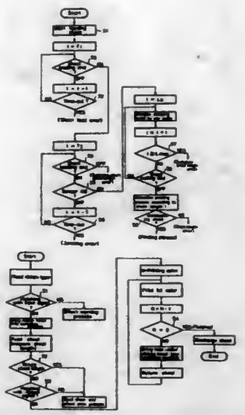
Filed May 18, 1994, Ser. No. 245,700

Claims priority, application Japan, Jun. 1, 1993, 5-130751

Int. Cl.[6] B41J *11/42*

U.S. Cl. 400—582 **8 Claims**

1. A printer comprising:
a roller for feeding a print sheet into a printer mechanism;
a first sensor for detecting a leading edge and a trailing edge of the print sheet fed into the printer mechanism, said first sensor being disposed at an upstream end of a print sheet feed path along which the print sheet is guided in said printer mechanism;
a second sensor disposed proximate a downstream end of said print sheet feed path, said first sensor and said second sensor being spaced from each other along said print sheet feed path by a predetermined distance which is shorter than a predetermined print sheet length;



feed distance detector means responsive to said first and second sensors for detecting the amount of printer feed operation which occurs following a detection of a leading edge of said print sheet by said second sensor and a subsequent detection of a trailing edge of said print sheet by said first sensor;
sheet length detector means responsive to said feed distance detector means for, based on the amount of printer feed operation detected by said feed distance detector means, calculating the length of the print sheet which is fed into said printer mechanism by adding the amount of printer feed operation to said predetermined distance, and for determining if the detected length is less than a predetermined print sheet length; and
a controller, responsive to said print sheet length detector for ejecting the print sheet when the calculated length of the print sheet is less than the predetermined print sheet length.

5,544,966
PRINTER WITH MULTIFUNCTIONAL PAPER HANDLING CAPABILITY

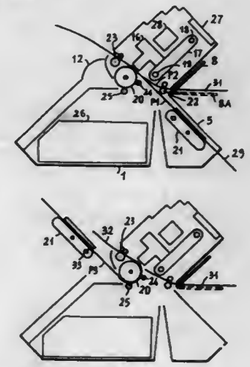
Vittorio Pagliaro; Paolo Urso, both of Milan, and Lorenzo Caro, Varese, all of, Italy, assignors to Bull HN Information Systems Italia S.p.A., Torino, Italy

Filed Mar. 7, 1995, Ser. No. 399,813

Claims priority, application European Pat. Off., Mar. 11, 1994, 94830106

Int. Cl.[6] B41J *11/30*

U.S. Cl. 400—616 **10 Claims**



1. A printer comprising:

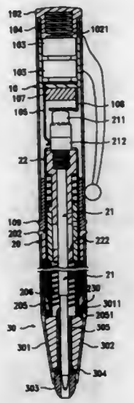
a printer frame having two side plates and rods coupling said side plates, a front and a rear,
a cabinet housing said printer frame and having a base plate, a front plate with an operator panel, a set of rear panels and two side faces,
a print head carried by said printer frame and movable in the direction of said rods,
a cylindrical rotating platen carried by said printer frame,
motor means driving said platen,
a removable tractor set releasably mounted in said printer frame,
a gearing coupling said tractor set to said motor means for driving said tractor set in a predetermined paper advancement direction,
first means for mounting said removable tractor set in a front position of said printer frame for advancing in push mode a continuous form to said platen from said front of said printer frame and said cabinet along a first paper path,
second means for mounting said removable tractor set in a rear position of said printer frame, for advancing in push mode a continuous form to said platen from said set of rear panels along a second paper path, and
pinch roller driving means, in said printer frame, coupled to said gearing and located between said print head and said first path for advancing a cut sheet to said platen from said front of said printer frame and said cabinet along a third paper path.

5,544,967

MULTIPURPOSE PEN WITH ILLUMINATOR MEANS

Lu Yao, 9F, No. 190, Chi Lung Rd. Sec. 3, Taipei, Taiwan

Filed Sep. 8, 1995, Ser. No. 525,132
Int. Cl.[6] B43K *29/10*
U.S. Cl. 401—195 **6 Claims**



1. A pen of the type comprising:
a metal upper barrel having a top end and a bottom end;
an insulative socket mounted inside said metal upper barrel;
a metal screw cap fastened to said insulative socket above the top end of said metal upper barrel and moved between a first position in contact with said metal upper barrel and a second position disconnected from said metal upper barrel;
a battery set mounted inside said insulative socket;
a metal compression spring mounted within said insulative socket and connected between a positive terminal of said insulative socket and said metal screw cap;
a metal lower barrel having a top end connected to the bottom end of said metal upper barrel, and a bottom end;
a metal tip socket connected to the bottom end of said metal lower barrel;
a conical insulator mounted inside said metal tip socket to hold a copper tube on the inside;
a fiber head made from optical fibers and fixedly secured to said metal tip socket at one end remote from said metal lower barrel;
a conductive writing element mounted inside said metal lower barrel and inserted into said copper tube inside said conical insulator;
a conductive propelling mechanism fixedly mounted inside said metal lower barrel and turned by said metal lower barrel to move said writing element in and out of said fiber head;
a tip socket cover for covering on said metal tip socket over said fiber head;
a first contact metal socket fixedly mounted inside the bottom end of said metal upper barrel;
a second contact metal socket fixedly mounted inside the top end of said metal lower barrel and disposed in contact with said first contact metal socket and turned by said metal lower barrel relative to said first contact metal socket; and
a light source mounted within said metal tip socket, said light source having one end connected to the positive terminal of said battery set through said metal tip socket, said metal lower barrel, said second contact metal socket, said first contact metal socket, said metal upper barrel, said metal screw cap, and said metal compression spring, and an opposite end connected to the negative terminal of said battery set;
the improvement comprising:
a flashing circuit mounted on said insulative socket inside said metal upper barrel and controlled to drive said light source, causing said light source to flash;
a first contact metal strip fixed to said insulative socket inside said metal upper barrel and connected to said flashing circuit;
a second contact metal strip fixed to said insulative socket inside said metal upper barrel and connected to the negative terminal of said battery set;
a telescopic metal tube mounted inside said metal lower barrel around said writing element, said telescopic metal tube having one end fixedly connected to said propelling mechanism and an opposite end fixedly connected to said metal tip socket and moved to extend said metal tip socket away from said metal lower barrel; and
a wire conductor mounted around said writing element within said telescopic metal tube, having one end connected to said propelling mechanism and an opposite end connected to said copper tube inside said conical insulator;
wherein when said metal screw cap is moved to said first position in contact with said metal upper barrel and said writing element is moved inside said metal tip socket, said writing element is disposed in contact with said flashing circuit through said second contact metal strip, and said first contact metal strip is disposed in contact with an insulative ring on said writing element, and therefore said light source is electrically connected to said battery set through said flashing circuit and driven by said flashing circuit to flash; when said metal screw cap is moved to said first position in contact with said metal upper barrel and said writing element is extended out of said metal tip socket and said fiber head for writing, said writing element is disconnected from said second contact metal strip and disposed in contact with said first contact metal strip, and therefore said light source is electrically connected to give off light without flashing.

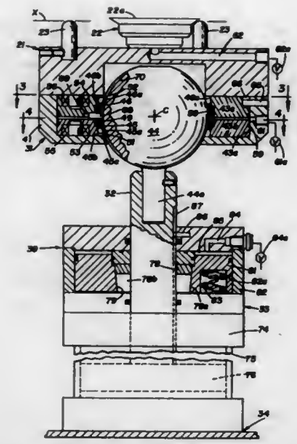
5,544,968

LOCKABLE BALL JOINT APPARATUS

Willy J. Goellner, Rockford, Ill., assignor to Advanced Machine & Engineering Co., Rockford, Ill.

Filed Jun. 2, 1995, Ser. No. 460,047
Int. Cl.[6] F16D *1/12;3/80;* **F16C** *11/00;* **F16M** *11/20*
U.S. Cl. 403—31 **15 Claims**

1. In a lockable ball joint apparatus including a ball and casing means having a ball receiving cavity, the improvement comprising: at least one annular clamp ring in the casing means extending around the ball, the clamp ring having a spherically concave inner clamping surface engaging an outer surface of the ball and a



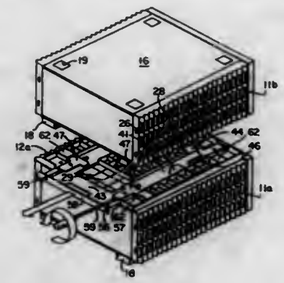
frusto-conical outer surface, annular cam means in the casing means extending around the clamp ring and having a frusto-conical inner surface engaging the frusto-conical outer surface of the clamp ring, means for moving the annular cam means axially in a first direction relative to the casing means to diametrically compress the clamp ring into clamping engagement with the ball, and means for moving the annular cam means axially in a second direction relative to the casing means to release the clamp ring from clamping engagement with the ball.

5,544,969

STACKED ENCLOSURE LOCKING MECHANISM

James G. Ammon, and John C. Nuttall, both of San Jose, Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Aug. 10, 1994, Ser. No. 288,464
Int. Cl.[6] H05K *5/00;* **B65D** *21/036*
U.S. Cl. 403—322 **28 Claims**



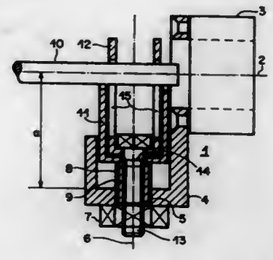
1. A module adapted to be sandwiched between an underlying member and a superimposed member wherein said underlying member comprises a first top and at least one fastener receptor in said first top and said superimposed member comprises a first bottom and a foot extending below said first bottom, said foot formed with a substantially horizontal aperture,
said module comprising a second top and a second bottom, a pocket in said second top shaped to locate said superimposed member relative to said module, said second top being dimensioned and shaped to rest adjacent said first bottom and said second bottom being dimensioned and shaped to rest adjacent said first top, at least one hole in said second bottom being aligned with said fastener receptor to receive a fastener extending through said hole to removably secure said module to said underlying member, a latch substantially horizontally slidable adjacent said foot, and a guide for said latch for guiding movement between a retracted position and a latching position, wherein a portion of said latch fits snugly in said aperture to secure said superimposed member to said module when said latch is in the latching position.

5,544,970

APPARATUS FOR THE ATTACHMENT OF AN AXLE

Werner Studer, Oberageri, Switzerland, assignor to Landis & Gyr Technology Innovation AG, Zug, Switzerland

Filed Apr. 28, 1995, Ser. No. 431,926
Claims priority, application Switzerland, May 6, 1994, 01426/94
Int. Cl.[6] F16B *9/02*
U.S. Cl. 403—399 **5 Claims**



1. Apparatus for detachable attachment of an axle (**10**) to a device (**1**) capable of rotating around a rotational axis (**2**), comprising:
a first thread (**5**) whose center axis (**6**) is not parallel with the rotational axis (**2**) located at a certain distance (a) from the rotational axis (**2**) of the device (**1**),
a displacement device (**7**) with a second thread (**8**), and a third thread (**9**) coaxial with the second thread (**8**), whereby the third thread (**9**) has twice the pitch of the second thread (**8**) and the second thread (**8**) can be screwed into the first thread (**5**) by rotating the displacement device (**7**),
a first part (**11**) of a clamping device which can be displaced axially with the displacement device (**7**) in the center axis (**6**) by rotating the displacement device (**7**),
a second part (**12**) of the clamping device provided with a fourth thread (**13**) into which the third thread (**9**) of the displacement device (**7**) can be screwed, whereby the second part (**12**) of the clamping device can be shifted in the opposite direction of the first part (**11**) of the clamping device by rotating the displacement device (**7**) axially on the center axis (**6**) of the first thread (**5**) and a clamping connection of the axle between the first part (**11**) and the second part (**12**) of the clamping device which can be fixed or detached by rotating the displacement device (**7**).

5,544,971

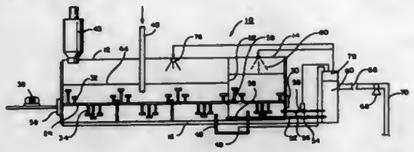
METHODS AND COMPOSITIONS FOR RECYCLING ASPHALT PAVEMENT

Fred R. Huege, Colleyville, and Patrick Shields, Scottsdale, both of Tex., assignors to Chemical Lime Company, Fort Worth, Tex.

Continuation-in-part of Ser. No. 329,436, Oct. 26, 1994, Pat. No. 5,512,093. This application Jan. 31, 1995, Ser. No. 380,945

Int. Cl.[6] F01C *21/00;23/12*

U.S. Cl. 404—72 12 Claims



1. A method of recycling asphalt pavement by utilizing a portion of a top surface of an old roadway, the method comprising the steps of:

mixing together in a slurry mixing tank a lime component selected from the group consisting of unslaked quicklime and dry, hydrated lime and an aqueous slaking medium to form a high solids lime slurry, the resulting high solids lime slurry having a lime solids content greater than about 30% by weight, based upon the total weight of the slurry;

scraping up a portion of the top surface of the old roadway and collecting the scraped up portion;

treating the scraped up portion with the high solids lime slurry to produce a treated aggregate; and

depositing the treated aggregate back onto the top surface of the old roadway.

5,544,972

METHOD AND APPARATUS FOR APPLYING HORIZONTAL MARKINGS TO ROADS OR OTHER TRAFFIC AREAS

Peter C. Boldt, Müllheim, Germany, assignor to Plastiroute S.A., Geneva, Switzerland

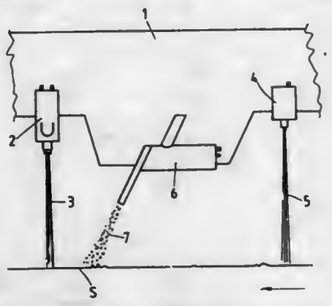
PCT No. PCT/EP94/01774, § 371 Date Jan. 17, 1995, § 102(e) Date Jan. 17, 1995, PCT Pub. No. WO94/29391, PCT Pub. Date Dec. 22, 1994

PCT Filed May 31, 1994, Ser. No. 374,651

Claims priority, application Switzerland, Jun. 10, 1993, 1 739/93

Int. Cl.[6] B05D *5/00;7/24*

U.S. Cl. 404—75 14 Claims



1. Methods of applying horizontal markings to roads or other traffic areas, which comprises;

applying to the area an aqueous, water-thinnable, acid-coagulable emulsion paint; and

contacting the applied paint with an acid.

5,544,973

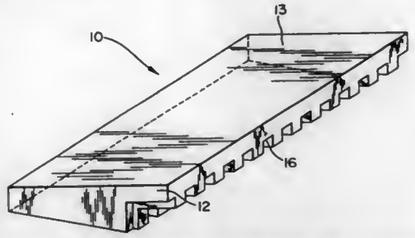
CONCRETE STEP EMBANKMENT PROTECTION

Kathleen H. Frizell, Arvada; Brent W. Mefford, Lakewood; Tracy B. Vermeyen, Denver, all of Colo., and Douglas L. Morris, Woodside, Calif., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Mar. 14, 1995, Ser. No. 403,606

Int. Cl.[6] E02B *3/12*

U.S. Cl. 405—16 11 Claims



1. A dam spillway system for embankment dam overtopping protection for a dam embankment, said system comprising:

a layer of free-draining, angular, gravel filter material, and

a plurality of rows of overlapping, tapered, concrete blocks assembled over said filter material in shingle-fashion to form steps, from the toe of the dam, up the slope, to the top of the dam, over which water from the top of the embankment flows, said blocks each comprising a projecting portion at the downslope end thereof overlapping an adjacent block and including an end surface defining a step height, a sloping top surface including a step offset area adjacent to the projecting portion of the adjacent upslope block and an impact area against which water flowing from the top of the embankment impacts and a plurality of vents formed in said projecting portion and extending between the undersurface of the block and said end surface of said projecting portion for providing aspiration of uplift pressure from under the block responsive to high velocity flow over the block.

5,544,974

SYSTEM FOR UNDERGROUND STORAGE AND DELIVERY OF LIQUID PRODUCT, AND RECOVERY OF LEAKAGE

Robin Berg, Hudson, Wis.; Lawrence Mohns, Media, and Richard Oswald, Elverson, both of Pa., assignors to Xerxes Corporation, Minneapolis, Minn., and Sun Refining and Marketing Company, Philadelphia, Pa.

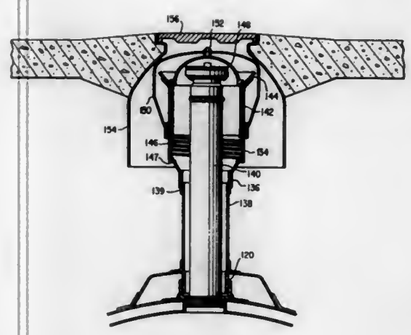
Continuation of Ser. No. 317,565, Mar. 1, 1989, Pat. No. 4,958,957. This application Sep. 21, 1990, Ser. No. 585,947

Int. Cl.[6] B65G *5/00;* B65D *88/76*

U.S. Cl. 405—53 12 Claims

11. A system for the underground storage of liquid products and delivery of said product to an above-ground dispensing device, comprising: an underground storage tank provided with at least first and second fittings, to receive a means for filling said storage tank and means for pumping product from said storage tank to said dispensing means, respectively, both said fittings being-entirely contained within a secondary containment chamber mounted on and sealed to said storage tank, fill means comprising an adapter in sealed communication with said first fitting, said adapter bearing an outer containment-pipe which, together with said containment chamber completely encloses a riser for attachment to a means for delivering a product to said riser, said riser being in fluid communication with said storage tank,

means for pumping product from said storage tank to said above-ground dispensing means, said means for pumping being in fluid communication with said above-ground dispensing means.



5,544,975

METHOD FOR THE REHABILITATION OF POLLUTED SOILS AND INSTALLATION FOR THE IMPLEMENTATION OF THIS METHOD

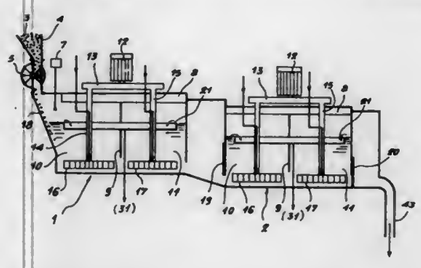
André Vigneron, Parc des roses, and Jean-Pierre Codaccioni, Impasse de la Sauge, both of, France, assignors to Sarp Industries, Limay, France

Filed Sep. 28, 1994, Ser. No. 314,509

Claims priority, application France, Sep. 28, 1993, 93 11516

Int. Cl.[6] B09B *3/00*

U.S. Cl. 405—128 24 Claims



1. A method for the rehabilitation of polluted soils, the method comprising:

introducing the polluted soils into a contacting cell;

the cell including lateral walls and a lower part, the lower part comprising approximately a lowest quarter of the cell;

injecting a liquid substance in a generally radial direction from within said cell outwardly towards the lateral walls of said cell;

forming a polluted solution of said liquid substance and pollutants from said soil;

collecting the polluted solution in an upper part of the cell;

such that soils from which said polluted solution has been removed are continuously separated from the polluted solution and are recovered at the lower part of said cell before being rinsed and dried.

5,544,976

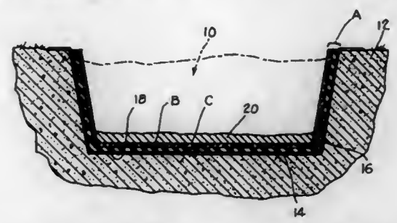
PUNCTURE PROTECTION GEO MAT FOR A LANDFILL SYSTEM

Charles W. Marchbanks, 209 Asheton Way, Simpsonville, S.C. 29681

Filed Jan. 3, 1994, Ser. No. 176,256

Int. Cl.[6] B09B *1/00*

U.S. Cl. 405—129 17 Claims



1. A composite geo mat for overlaying and protecting a geomembrane lining in a landfill system from puncture comprising:

a first layer including geotextile fabric;

an extruded composition forming a second layer, said composition of said second layer includes rubber compounded with a thermoplastic polymer, said second layer overlaying and bonding with said first layer to form an integral composite geomat having a total thickness in the range of 200–300 mils with said second layer having a thickness of about 30% to 60% of said total thickness;

said geomat having sufficient puncture resistance to independently protect said geomembrane from puncture.

5,544,977

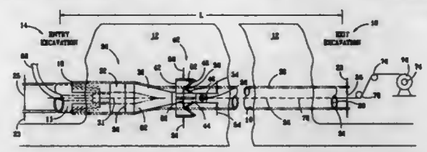
POLYMERIC PIPE SPLITTER, REPLACEMENT TOOL AND METHOD

Jerald A. Cravy, Balch Springs, and Clarence D. McCall, Arlington, both of Tex., assignors to Lone Star Gas Company, Dallas, Tex.

Filed Jun. 24, 1994, Ser. No. 265,091

Int. Cl.[6] F16L *55/18*

U.S. Cl. 405—154 15 Claims



1. A tool for use in the replacement of an existing underground polymeric pipe with a replacement pipe, said existing pipe having a central axis, a minimum inside diameter, a maximum outside diameter and a length extending in a forward direction from an entry excavation to an exit excavation and said replacement pipe having a longitudinal axis along a length corresponding to said length of said existing pipe and a maximum outside diameter larger than said minimum inside diameter of said existing pipe, said tool comprising:

(a) a mandrel having a frusto conical exterior surface radially expanding about a central axis, from a front diameter at least as small as said minimum diameter of said existing polymeric pipe to a back diameter at least as large as said maximum outside diameter of said replacement pipe;

(b) a blade unit attached to said mandrel ahead of said mandrel in said forward direction, said blade unit including a hub having a diameter smaller than said minimum diameter of said existing pipe and having a plurality of radially projecting blades, each of said blades having a front-opened "V" shaped

cutting edge forward of said frusto conical exterior surface of said mandrel, which front-opened "V" shaped cutting edge comprises a back-angled portion extending from a diameter at least as small as said minimum diameter of said existing polymeric pipe to an apex of said "V" shaped blade cutting edge and a forward-angled portion intersecting with said back-angled portion extending from said apex of said "V" shaped cutting edge forward and outward to an outside diameter at least as large as said maximum outside diameter of said existing polymeric pipe, so that said plurality of blades advantageously maintain engagement with said existing polymeric pipe to cut said existing polymeric pipe into strips; and

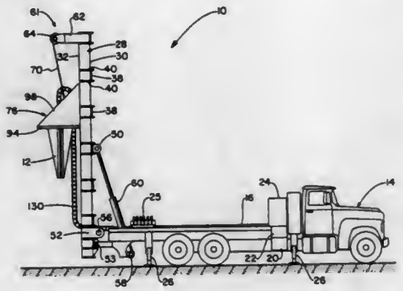
(c) means for moving said mandrel and said attached blade unit through said existing pipe with sufficient force for said plurality of blades with said front-opened "V" shaped cutting edges to cut said existing polymeric pipe into strips and for said frusto conical exterior surface of said mandrel to expand said strips to allow said replacement pipe to be inserted along said length of previous existing pipe.

5,544,978

COMBINED AUGER AND THRUSTER MACHINE

Michael W. Albers, Ashland, Ohio, assignor to BOR-IT MEG. Co., Inc., Ashland, Ohio

Filed Jul. 18, 1994, Ser. No. 276,433
Int. Cl.[6] E02D *7/00;17/02*
U.S. Cl. 405—232 **18 Claims**



1. A combined auger and thruster machine for driving anchors into the ground, comprising:

a thrust rail track maintainable in a stationary position, said thrust rail track having a top, said thrust rail track having a pair of spaced apart channel members interconnected by a plurality of cross-piece members, each said channel member having a plurality of dog receiving holes;

a platform movable upon said thrust rail track, said platform having a dog wall assembly received by said channel members, said dog wall assembly having a dog piston to selectively engage a plurality of dogs that are received by said dog receiving holes, said platform having a platform wall, wherein said platform wall and said dog wall assembly are slidably interconnected by a plurality of pistons, said platform wall adaptable to receive an anchor, the anchor having an axial bore; and

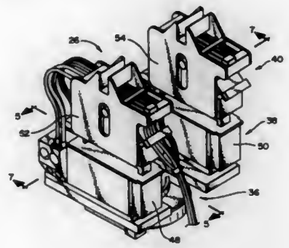
an auger carried by said platform and passing through the axial bore when the anchor is received by said platform, said plurality of pistons driving said platform with attached anchor and said auger when said plurality of dogs are received in said dog receiving holes.

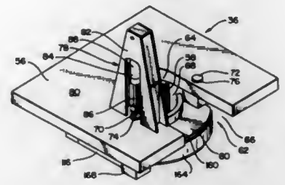
5,544,979

CLAMP ASSEMBLIES FOR DRIVING CAISSONS INTO THE EARTH

John L. White, Kent, Wash., assignor to American Piledriving Equipment, Inc., Kent, Wash.

Filed Mar. 21, 1995, Ser. No. 408,023
Int. Cl.[6] E21B *7/24;* **E02D** *7/18*
U.S. Cl. 405—232 **19 Claims**





8. A system for driving caissons into the earth, the system comprising:

means for supporting a lead structure above a desired location;

sled means movable along the lead structure, the sled means having first and second support projections extending therefrom;

a base plate, where a slot having an open end and a closed end is formed in the base plate;

first and second vibrating means for generating vibratory forces, the first and second vibrating means being rigidly mounted to the base plate on opposite sides of the slot;

first and second suppressing means connected between the first and second vibrating means and the first and second support projections, respectively, for inhibiting transmission of the vibratory forces generated by the first and second vibrating means to the first and second support projections;

a first gripping assembly slideably mounted on the base plate adjacent to the closed end of the slot;

a second gripping assembly;

locking means for fixing the second gripping assembly in a closed position relative to the base plate in which the second gripping assembly closes the open end of the slot; and

actuating means for displacing the first gripping assembly relative to the base plate between a relaxed position and a gripping position; wherein

the caisson is arranged within and removed from the slot when the first gripping assembly is in the relaxed position and the second gripping assembly is not in the closed position; and

the caisson is fixed to the attachment point when the first gripping assembly is in the gripping position and the second gripping assembly is in the closed position.

15. A method of driving into the earth at a desired location a caisson prepositioned above the desired location, the method comprising the steps of:

providing a driving device comprising (i) a base plate having a slot formed therein, (ii) a vibratory assembly rigidly mounted on the base plate, and (iii) a suppressor assembly rigidly connected to the vibratory assembly;

rigidly attaching the suppressor assembly to a sled movably mounted on a lead structure such that the suppressor assembly

inhibits transmission of vibratory forces from the vibratory assembly to the lead structure;

mounting a clamping jaw to the base plate adjacent to a closed end of the slot therein;

displacing the lead such that the caisson enters the slot in the base plate in a first direction generally radial to a lengthwise axis of the caisson;

rigidly attaching a gate jaw in a closed position relative to the base plate such that the gate jaw prevents removal of the caisson from the slot in the base plate in a second direction opposite to the first direction;

gripping the caisson between the clamping jaw and the gate jaw by displacing the clamping jaw towards the caisson;

operating the vibratory assembly while gripping the caisson to apply a vibratory force to the caisson, thereby driving the caisson into the earth.

5,544,980

ANCHOR STRUCTURE

Ben L. Seegmiller, 143 S. 400 East, Salt Lake City, Utah 84111

Filed Apr. 11, 1994, Ser. No. 225,627
Int. Cl.[6] E21D *20/02*
U.S. Cl. 405—259.6 **3 Claims**

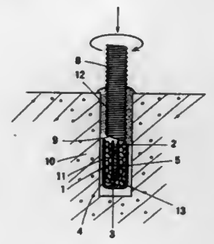
1. Securement structure for emplacement in a borehole provided a peripheral wall, including a one-piece, radially expandable anchor having an internal bore, a cartridge containing a setting-medium and disposed within said anchor, and a threaded elongated member means, transversely cross-sectionally oversized with respect to said internal bore, for spinning into said cartridge whereby to mix said setting-medium therein and also for threadedly engaging and thereby radially expanding said anchor, for immediately gripping into the wall of said borehole, said anchor including an essentially cylindrical wall surrounding said bore and provided with a plurality of elongated, longitudinal, mutually spaced, oppositely closed-ended, setting-medium-passage wall slots communication with said bore, said cylindrical wall bearing plural sets of outwardly radially projecting, rearwardly facing, mutually spaced teeth having opposite lateral extremities which are essentially defined by respective ones of said wall slots.

5,544,981

CAPSULE FOR USE IN FIXING AN ANCHOR BOLT

Seiji Nishida, and Shoichiro Kai, both of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP94/00323, § 371 Date Jul. 20, 1994, § 102(e) Date Jul. 20, 1994, PCT Pub. No. WO94/20731, PCT Pub. Date Sep. 15, 1994
PCT Filed Feb. 28, 1994, Ser. No. 256,548
Claims priority, application Japan, Mar. 1, 1993, 5-039184
Int. Cl.[6] E21D *20/02*
U.S. Cl. 405—259.6 **15 Claims**



1. A capsule for use in fixing an anchor bolt, comprising:

(1) a primary casing having a sealed construction, or having at least one opening which is closed by means of closure means to thereby provide a fluid-tight construction;

(2) a curable resin composition contained in said primary casing, said curable resin composition comprising an epoxy acrylate resin composed mainly of an ester of an epoxy resin with at least one organic acid selected from the group consisting of acrylic acid and methacrylic acid, and a reactive monomer, each of said epoxy acrylate resin and said reactive monomer having a specific gravity equal to or greater than the specific gravity of sea water;

(3) a curing agent for said curable resin composition, disposed in association with said primary casing and in isolation from said curable resin composition, said curing agent comprising an organic peroxide; and

(4) a surfactant contained in at least one member selected from the group consisting of said curable resin composition and said curing agent, or disposed in association with said primary casing and separately from said curable resin composition and said curing agent, said primary casing being breakable by the action of an anchor bolt when the anchor bolt is driven into the capsule.

5,544,982

MINE STRATA SUPPORT STRUCTURE

Ben L. Seegmiller, 143 S. 400 East, Salt Lake City, Utah 84111

Filed Nov. 25, 1994, Ser. No. 345,566
Int. Cl.[6] E21D *21/00*
U.S. Cl. 405—288 **19 Claims**

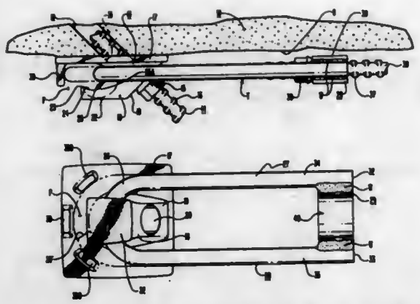
11. A method of providing trussing structure for stabilizing mine strata, comprising the steps of:

a. providing a mine bracket having a bearing plate portion and a body portion, providing a reaction surface indentation, extending laterally from said bearing plate;

b. mounting said mine bracket against desired mine strata;

c. providing and dimensioning a stirrup connector for encompassing said body portion and reactively engaging said body portion when in operative condition; and

d. providing a rigid stop projection rigidly depending from said mine bracket, and spaced from said reaction surface and said body portion, whereby to admit the installation of said stirrup connector about said body but abuttingly engage said stirrup



connector for delimiting rearward travel thereof, whereby to deter inadvertent disengagement of said stirrup with said bracket for operative conditions of said trussing structure.

17. A unitary, cast, mine bracket having a mounting aperture and comprising: a bearing plate; a body laterally extending from and fixedly disposed with respect to said bearing plate, said body being provided with a connector-engaging reaction surface; and a rigid, fixed stop projection means depending from said bearing plate and mutually spaced from said reaction surface for delimiting travel extent of any selected external connector disposed over said body.

5,544,983

METHOD OF TRANSFERRING MATERIAL FROM THE BOTTOM OF A BODY OF WATER

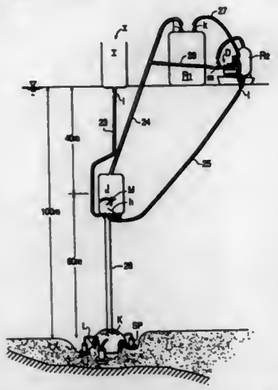
Akira Taguchi, Osaka, Japan, assignor to Mori-Gumi Co., Ltd., Osaka, Japan

Division of Ser. No. 55,790, May 3, 1993, Pat. No. 5,364,208, which is a continuation of Ser. No. 919,391, Jul. 29, 1992, abandoned, which is a continuation of Ser. No. 476,425, Jun. 6, 1990, abandoned. This application Jun. 30, 1994, Ser. No. 269,477

Claims priority, application Japan, Sep. 19, 1988, 63-234588

Int. Cl.[6] B65G *53/36*

U.S. Cl. 406—85 **14 Claims**



1. A method of transferring material from the bottom of a body of water, comprising:

a) providing a first tank submerged at a predetermined depth above the bottom and below the water surface;

b) providing a material source at the bottom subject to the ambient water pressure at the bottom and fluidly connected with said first tank;

c) transferring material from said material source at the bottom to said first tank by reducing the pressure in said first tank to a pressure lower than the ambient water pressure at said predetermined depth such that the ambient water pressure at the bottom forces the material up into said first tank; and

d) transferring material from said first tank to a second tank under the force of compressed air until said first tank is substantially empty of material and full of compressed air, wherein said first tank is connected to a third tank and an air compressor, and said step of transferring material from the first tank to the second tank comprises said compressor transferring compressed air to said first tank from said third tank with the air compressor; and

wherein said step of transferring material from said material source at the bottom comprises transferring the compressed air from said first tank to said third tank to reduce the pressure in said first tank.

5,544,984

CUTTING INSERT WITH TWISTED CHIP SURFACE

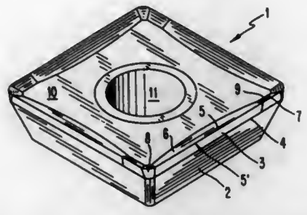
Göran Pantzar, Årsunda, Sweden, assignor to Sandvik AB, Sandviken, Sweden

Filed Jan. 24, 1994, Ser. No. 185,371

Claims priority, application Sweden, Jan. 27, 1993, 9300234

Int. Cl.[6] B23C *5/02*

U.S. Cl. 407—113 **9 Claims**



9. A milling cutting insert for chip forming milling cutters, comprising an upper surface, a lower, planar bottom surface which is adapted to be placed into abutment with a cooperating support surface of the machining tool, at least three side surfaces extending between the upper and lower surfaces, at least one of the side surfaces adjoining a rake surface along a line that forms a main cutting edge along one side of the insert, said at least one of the side surfaces adjoining the upper surface along a line that forms a secondary-cutting edge, the secondary cutting edge disposed adjacent said main cutting edge and being non-colinear therewith, the rake surface having a rake angle being largest most closely adjacent the two ends of the main cutting edge along the side and smallest at a point along the main cutting edge between the two ends of the main cutting edge, the upper surface comprising a planar central surface with rake surfaces located around the central surface, the rake surfaces rising above the plane of the central surface, at least one of the rake surfaces comprising said helically twisted rake surface.

5,544,985

DEEP BORE DRILLING APPARATUS WITH ROTATABLE SINGLE TUBE SYSTEM

Jerry A. Lane, Stanwood, Mich., assignor to Autodie International, Grand Rapids, Mich.

Filed Sep. 15, 1994, Ser. No. 306,817

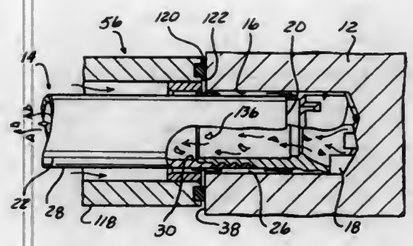
Int. Cl.[6] B23B *41/02*

U.S. Cl. 408—56 **20 Claims**

1. A horizontal gun drilling apparatus for penetrating material comprising:

elongated rotary tool means for boring an aperture in a workpiece by turning about a longitudinal axis and moving along said axis relative to said workpiece during a cutting operation, said tool means including a cutting head mounted on an end of an elongated, hollow shaft, said shaft having a constant diameter less than said cutting head along an entire longitudinal length of said elongated shaft; and

fluid circulation means for bringing a flowable substance temporarily into engagement with said workpiece during said cutting operation, said circulation means forcing said substance to flow in a passage defined by an external surface of said shaft and said workpiece toward said cutting head along an entire longitudinal length of said aperture being bored, said substance exiting said aperture through said hollow shaft after flushing cut material from said cutting head, said fluid circulation means including a sheath for receiving a portion of said constant diameter shaft therethrough while allowing rotation and axial shifting of said shaft, wherein a longitudinally extending portion of said shaft intermediate opposite ends of said shaft is sheathed therein by said fluid circulation means while said shaft is rotating and axially shifting during drilling operations, such that said constant diameter shaft extends beyond said sheathed portion in both longitudinally extending directions.



5,544,986

COOLING AND DUST COLLECTING APPARATUS FOR MACHINE TOOL

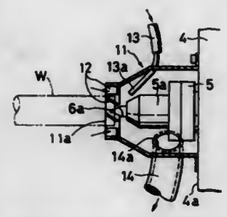
Shokiku Kudo, Tokyo-to; Masanori Hosoi, Mibu-Machi, and Michinobu Kawano, Nitta-Machi, all of, Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 9, 1994, Ser. No. 338,749

Claims priority, application Japan, Dec. 9, 1993, 5-065776

Int. Cl.[6] B23B *47/34;* **B23Q** *11/10*

U.S. Cl. 408—67 **9 Claims**



1. A cooling and dust collecting apparatus for a machine tool having, a headstock mounted on a feed table via a guide rail of said machine tool, a spindle protruded from said headstock for chucking a cutting tool, a pair of clamps attached on said headstock via a rail for supporting a workpiece, and a hood for covering said spindle and said cutting tool in order to prevent cutting chips from scattering therearound, comprising:

cold air injecting means penetrated into said hood and directed to a cutting portion of said workpiece for injecting cold air in a tangential and reverse rotational direction of said cutting tool so as to directly cool down said cutting portion;

air suction means connected to said hood adjacent to a connecting portion between said headstock and said hood for suction of and discharging said cutting chips away with said cold air to outside of said hood; and

a plurality of guide blades formed on an inside wall of an open portion of said hood in a spiral direction of said cold air for inducing a spiral flow from said opening portion to said connecting portion of said air suction means so as to effectively cool down said cutting tool and said workpiece and to keep a surrounding environment clean by forcibly eliminating said cutting chips with spiral flow from said cutting portion.

5,544,987

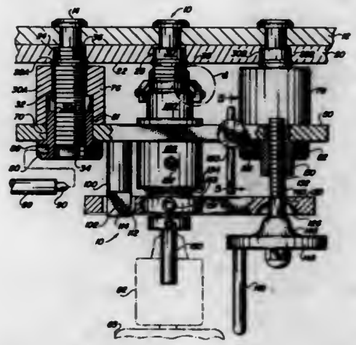
REMOVAL TOOL FOR BROKEN OR SEIZED INNER BUDD NUTS

Gregory L. Gipson, 4748 N. 28th Dr., Phoenix, Ariz. 85017

Filed Jul. 11, 1994, Ser. No. 272,938

Int. Cl.[6] B23B *45/14*

U.S. Cl. 408—72 R **16 Claims**



1. A tool for removing a seized or broken Budd nut from a wheel having a plurality of circumferentially arranged Budd nuts comprising:

(a) a base plate;

(b) mounting means for temporarily securing said base plate to at least one of said Budd nuts adjacent the broken Budd nut;

(c) a cutter member having a cutting body;

(d) power means for rotating said cutting body; and

(e) a pivot bar pivotally mounted with respect to said base plate and attached to said cutter member for manually advancing and retracting said cutting body.

5,544,988

WORKING TABLE ASSEMBLY FOR A DRILLING MACHINE

Chang H. Liu, No. 293 Shiang-Yang Road, Feng-Yuan City, Taichung Hsien, Taiwan

Filed Jun. 28, 1995, Ser. No. 495,899

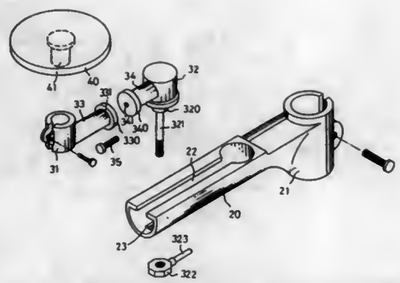
Int. Cl.[6] B23Q *1/04;* **B23B** *47/00*

U.S. Cl. 408—90 **3 Claims**

1. A working table assembly for a drilling machine comprising:

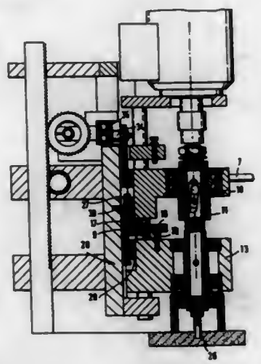
a lateral beam including a first end for securing to the drilling machine and including a channel means longitudinally formed therein,

a block including a bolt means extended downward therefrom and slidably engaged in said channel means, said block including an extension extended therefrom, said extension including a free end portion having a first disc secured thereto,



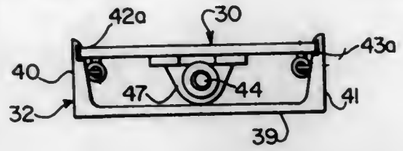
a first fastening means threadedly engaged with said bolt means so as to secure said block to said lateral beam,
a stud including a first end having a second disc secured thereto and engaged with said first disc, and including a second end having a sleeve secured thereto,
a second fastening means threadedly engaged with said first and second discs so as to secure said first and second discs together, and
a table including a shaft extended downward therefrom and engaging with said sleeve so as to be secured to said sleeve,
said table and said block being moved along said channel means and being rotated relative to said lateral beam about said bolt means when said first fastening means is unthreaded relative to said bolt means so as to adjust said table to a suitable position, and said table and said stud being rotated relative to said block when said second fastening means is unthreaded relative to said first and second discs.

5,544,989
APPARATUS FOR MAKING A DRILLED HOLE WITH AN UNDERCUT
Herbert Erath, Waladachtal, Germany, assignor to fischerwerke-Artur Fischer GmbH & Co. KG, Waladachtal, Germany
Filed Aug. 29, 1994, Ser. No. 298,322
Claims priority, application Germany, Sep. 6, 1993, 43 30 058.8
Int. Cl.[6] B23B *41/00*
U.S. Cl. 408—153 **9 Claims**



1. Drilling apparatus for making a drilled hole with an undercut, said drilling apparatus comprising
a drive device (2) providing means for rotating a hollow drilling shaft (3);
a drill bit holder (23,38) beld in the bollow drilling shaft (3) so as to be rotatable with said hollow drilling shaft (3);
a drill bit (4,26) having a drilling head provided with laterally projecting cutting edges (25), said drill bit (4,26) being held in said drill bit holder (23,38) so as to project from the drill bit holder (23,38);
means for swivelling out the drill bit holder (23, 38) with the drill bit from a drilling center line (5), said means for swivelling out comprising at least one control element of said drill bit holder, a sliding sleeve (11) surrounding the drilling shaft (3) and a swivelling-out element (21,39) connected to said sliding sleeve and engaging said control element to swivel out the drill bit holder (23, 38); and
means (1) for raising and lowering said drive device (2) together with said drill bit holder (23,38) and said drill bit (4,26).

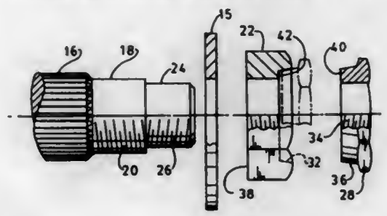
5,544,990
TOOLHEAD MOUNTING ASSEMBLY
Michael Hardesty, Dale, Ind., assignor to Thermwood Corporation, Dale, Ind.
Filed Aug. 24, 1994, Ser. No. 295,258
Int. Cl.[6] B23Q *1/26*
U.S. Cl. 409—183 **9 Claims**



1. A toolhead mounting assembly for a machine tool comprising:
a support plate member mountable on a component of said machine tool;
a mounting plate member having means for mounting a toolhead unit thereon;
one of said plate members having a pair of parallel guide slots each provided with a lining of a structural polymer material and the other of said plate members having edges received within said guide slots in sliding engagement with said lining to permit displacement of said mounting plate member relative to said support plate member;
means for displacing said mounting plate member relative to said support plate member along a line of travel parallel to said guide slots; and wherein each of said guide slots includes a bottom wall surface and a pair of opposed side wall surfaces provided with said lining of structural polymer material.

5,544,991
LOCKING FRUSTRUM NUT
John A. Richardson, Windsor, Canada, assignor to Ford Motor Company, Dearborn, Mich.
Filed Feb. 13, 1995, Ser. No. 387,696
Int. Cl.[6] F16B *39/12;39/16*
U.S. Cl. 411—237 **17 Claims**

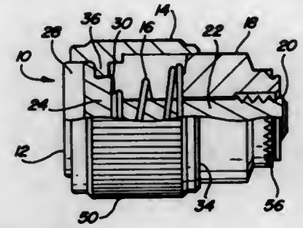
1. A locking nut to prevent axial displacement of a workpiece,



comprising:

a first nut having a first internal thread, a frusto-conical cavity at a first axial end of said first nut, a second surface at a second axial end of said first nut, wherein said second surface of said first nut is positioned adjacent the workpiece to prevent axial displacement thereof;
a second nut having a second internal thread of opposite hand as said first thread of said first nut, a second frusto-conical surface at an axial end of said second nut, wherein said second frusto-conical surface of said second nut is complimentary to and positioned adjacent said cavity of said first nut to prevent relative movement therebetween.

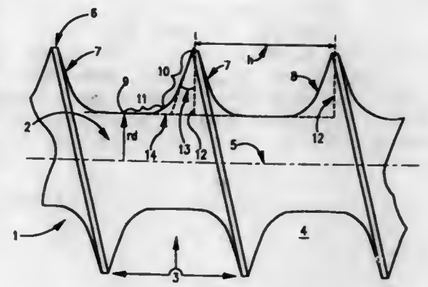
5,544,992
PANEL FASTENER HAVING COMPOSITE TURNING KNOB
Dan A. Ciobanu, Buena Park, and Karl Mladinich, San Pedro, both of Calif., assignors to Huck International, Inc., Irvine, Calif.
Filed Aug. 11, 1994, Ser. No. 288,822
Int. Cl.[6] F16B *21/18;39/00*
U.S. Cl. 411—353 **13 Claims**



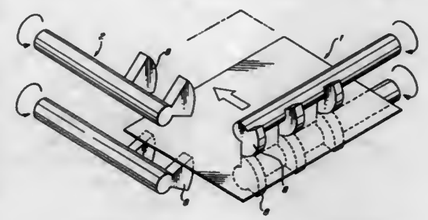
1. A fastener, comprising:
a hollow cylindrical turning knob having an axial length between a top opening and a bottom opening, and an interior ridge extending radially inwardly from an inside surface, of said knob at a location axially spaced from said top opening and said bottom opening, the interior ridge having a top surface generally facing in the direction of the top opening, a bottom surface generally facing in the direction of the bottom opening, and an interior edge that defines an opening through said ridge;
a stud having a shank with a central axis and with an enlarged stud head at one end, said shank extending through said knob with said stud head being engageable with said top surface of said ridge, said stud head having a deformable lip which extends axially from said stud head in a direction generally parallel to said central axis of said shank and which extends axially past said ridge, said lip being deformed radially outwardly to overengage said bottom surface of said ridge and to locate said lip radially beyond said ridge opening and thereby axially retain said stud and said knob together; and
rotational restraining means on said stud and said knob for preventing relative rotational movement between said knob and said stud about the central axis of said shank.

5,544,993
THREADED FASTENER
Anton Härle, Drechslerweg 40, D-48161 Münster, Germany
Filed Dec. 5, 1994, Ser. No. 349,715
Claims priority, application Germany, Dec. 13, 1993, 43 42 415.5
Int. Cl.[6] F16B *35/04;37/16*
U.S. Cl. 411—414 **29 Claims**

1. A fastener for tensional and dynamic stressing, comprising a thread having a longitudinal axis, a pitch diameter, a root, a crest and two flanks each extending between said root and said crest and each having a first section disposed between said crest and an imaginary cylinder having said pitch diameter and an axis at least substantially coinciding with said longitudinal axis, each first section making an angle of less than approximately 40° with a plane which is normal to said longitudinal axis and each of said flanks further having an arcuate second section disposed between said root and said imaginary cylinder, said second sections jointly including at least four portions having different radii of curvature.



5,544,994
FEED DEFLECTION APPARATUS FOR AT LEAST PARTIALLY FOLDED NEWSPAPERS OR MAGAZINES
Jussi Similä, Järvenpää, Finland, assignor to Oy GMA Printing Systems Ab, Jarvenpaa, Finland
Filed Dec. 7, 1994, Ser. No. 350,651
Int. Cl.[6] B42B *5/00*
U.S. Cl. 412—9 **10 Claims**

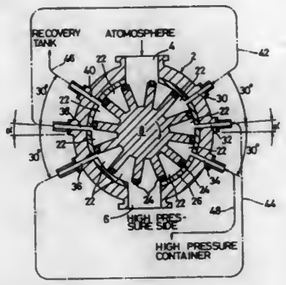


1. A feed deflection apparatus for at least partially folded newspapers or magazines, whereby the feeding direction of papers is deflected by 90° and which includes at least two pairs of cylinders (1, 2) through which the feeding of papers is effected, characterized in that the apparatus includes a pair of arrester cylinders (1) and a pair of acceleration cylinders (2) which are substantially coplanar but at an angle of 90° relative to each other, whereby a paper being pressed by the tail between the pair of arrester cylinders is arrested or stopped by decelerating the cylinders controllably at such a rate of deceleration that there is no slipping of the paper between the pair of cylinders (1) and, at the moment the paper has stopped, the pair of acceleration cylinders (2) takes hold of the paper's edge and accelerates the paper to a new speed directed at an angle of 90° relative to the former direction.

5,544,995
ROTARY VALVE APPARATUS

Takashi Ogawa; Kazuo Yoshimoto; Kensuke Uchiyama, all of Hiratsuka; Harushige Ibe, Yokohama; Yoshiharu Arai, Yokohama; Taketoshi Shiraishi, Yokohama, and Yoshinori Gotoh, Yokohama, all of, Japan, assignors to Japan Tobacco Inc., and Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 21, 1994, Ser. No. 183,758
Claims priority, application Japan, Jan. 22, 1993, 5-009080
Int. Cl.[6] A24B *3/18*
U.S. Cl. 414—219 28 Claims



1. A rotary valve apparatus comprising:

a rotor housing including a tapered rotor bore defined therein, an inlet to be connected to a low-pressure side, an outlet separated from the inlet in the circumferential direction of the rotor bore and adapted to be connected to a high-pressure side, a pair of side chambers defined at axially opposed ends of the rotor bore, each of the side chambers being subjected to a predetermined pressure, a first communication port arranged in a first region extending from the inlet to the outlet and a second communication port arranged in a second region extending from the outlet to the inlet, with respect to the circumferential direction of the rotor bore, each communication port having a first end opening into the rotor bore and a second end;

connecting means for connecting the second ends of the first and second communication ports to each other;

a tapered rotor supported for axial displacement and rotation in the rotor bore of the rotor housing, the rotor including an axis, an outer peripheral surface, a small-diameter end face exposed to the pressure in one of the side chambers, a large-diameter end face exposed to the pressure in the other side chamber, and a plurality of pockets arranged at regular intervals in the circumferential direction on the outer peripheral surface, the pockets being adapted to move to be connected to the inlet, the outlet, and the first end of each communication port, individually, as the rotor rotates, wherein each pocket moving from the inlet to the outlet is successively connected by the connecting means and the first and second communication ports to each of a pair of adjacent pockets moving from the outlet to the inlet as the rotor rotates;

seal means for gastightly separating the pockets of the rotor from each other;

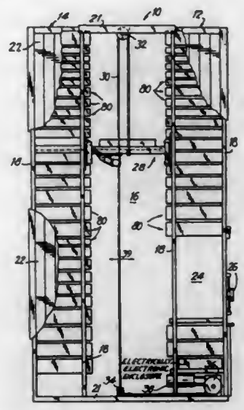
first supply means for supplying each pocket with a pressure equal to a pressure in the inlet immediately before the pocket is connected to the inlet as the rotor rotates; and

second supply means for supplying each pocket with a pressure equal to a pressure in the outlet immediately before the pocket is connected to the outlet as the rotor rotates.

5,544,996
AUTOMATED STORAGE AND RETRIEVAL SYSTEM

John Castaldi, Brooklyn, and Fred Greenzang, Dix Hills, both of N.Y., assignors to White Consolidated Industries, Inc., Cleveland, Ohio

Continuation of Ser. No. 42,537, Apr. 5, 1993, abandoned, which is a continuation of Ser. No. 561,112, Aug. 1, 1990, Pat. No. 5,199,840. This application Mar. 22, 1995, Ser. No. 407,988
Int. Cl.[6] B65G *1/04*
U.S. Cl. 414—280 8 Claims



1. A storage and retrieval system, comprising:

(a) an extraction means, carried on a platform means, for withdrawing a selected tray selected from at least one tray, from one of a plurality of tray locations and for inserting said selected tray on said platform means into said tray location;

(b) each said selected tray having a length with two opposed ends along said tray length, and including, at each opposed end, a handle means engageable by said extraction means for longitudinally withdrawing said selected tray from said tray location and for longitudinally inserting said selected tray into said tray location, said handle means including a vertically-oriented opening through which said handle means is engageable by said extraction means;

(c) said extraction means comprising:

(1) a first member and a second member concurrently movable along said platform means at a predetermined spaced apart relation to each other toward and away from said tray location, each said member being elongated in a direction substantially perpendicular to said direction of member movement;

(2) a drive means operable for concurrently moving said first member and said second member so that, with said platform means in registration with said selected tray location containing said selected tray, said first member is moved initially toward said selected tray location and vertically into said handle means at said one end of said selected tray and is then moved away from said selected tray location with said first member in engagement with said handle means to thereby longitudinally withdraw said selected tray from said selected tray location onto said platform means until said selected tray is fully withdrawn whereupon said second member is moved vertically into said handle means opening at said opposite end of said selected tray and is then moved away from said selected tray location until said selected tray is fully supported on said platform means with both said first member and said second member engaged with said handle means; and

(d) a sensing means for determining each tray location, comprising:

(1) a plurality of sensible members, each of said sensible members being located adjacent a respective one of said tray locations;

(2) a sensor responsive to each of said sensible members, said sensor being mounted on said extraction means and producing a sensor output signal indicating registration of the platform with said tray location;

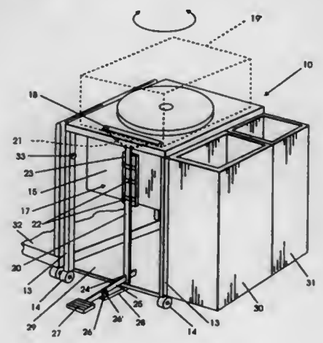
(3) a linear displacement encoder for determining linear displacement of said extraction means, said encoder producing an encoder output signal;

(4) a control means for receiving said encoder output signal and said sensor output signal and determining said linear displacement of said extraction means in relationship to said at least one tray.

5,544,997
DEVICE FOR EXPEDITING THE CUTTING OF BOXES

Joe W. Raynor, 216 Church View Dr., Rocky Mount, N.C. 27804

Continuation of Ser. No. 174,346, Dec. 28, 1993, abandoned. This application Aug. 7, 1995, Ser. No. 511,631
Int. Cl.[6] B26D *5/20*
U.S. Cl. 414—412 12 Claims



1. A box cutting expediter comprising:

a support means having a rectangular planar surface;

a free-wheeling turntable rotatively mounted on said support means for receiving said box;

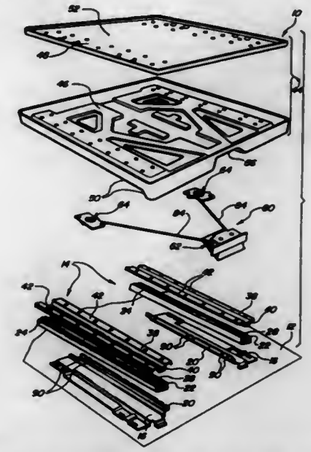
moveable means for engaging said box while the same is on said turntable to at least partially lift said box off said turntable, said moveable means being positioned horizontally intermediate the periphery of said turntable and a lateral edge of said support means, said moveable means being positioned at a vertical elevation below the surface of said turntable when not in use and being arranged for upward movement for engaging said box as required; and

means for selectively operating said moveable means whereby a box to be opened can be placed on said turntable, one edge lifted up to allow easy cutting and can then be lowered and said turntable used to rotate the box 90 degrees for a repeat of the cutting process.

5,544,998
SELECTIVELY RETRACTABLE VEHICLE LOAD FLOOR

Leo Maunowski, Detroit, Mich., assignor to MascoTech Automotive Systems Group, Inc., Auburn Hills, Mich.

Filed Mar. 31, 1994, Ser. No. 221,129
Int. Cl.[6] B60P *1/00*
U.S. Cl. 414—522 17 Claims



1. A selectively deployable load floor for a cargo compartment of a vehicle, said load floor reciprocally movable within the vehicle cargo compartment, said load floor comprising:

at least one rail assembly mounted to a floor of the cargo compartment, said at least one rail assembly including a stationary track housing having interior walls and a rail reciprocatingly matingly received within said track housing, said rail being supported in spaced apart relation from said interior walls of said track housing by bearing means engaging said rail and said interior walls of said track housing to facilitate reciprocating movement of said rail within said track housing;

a load platform connected directly to said rail of said at least one rail assembly for reciprocating movement therewith while maintaining a low profile for said load platform within the cargo compartment; and

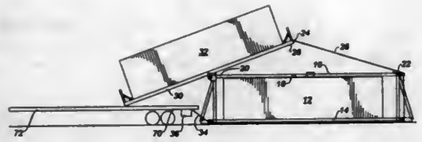
means for latching said load platform against movement within the cargo compartment, said latching means including a latching mechanism mounted proximate said at least one rail assembly and biased into locking engagement with said at least one rail assembly preventing movement of said platform, said latching mechanism associated with said at least one rail assembly being operatively connected to a control handle for disengaging said latching means to facilitate reciprocal movement of said load platform, said latching mechanism including a rotatable drum rotatably biased in a first direction, said drum having a circumferential wall selectively engageable with said stationary track housing to prevent movement of said platform, said latching means selectively locking said load platform at any one of a plurality of discrete positions along said at least one rail assembly.

5,544,999
METHOD AND APPARATUS FOR STACKING MODULAR HOUSING UNITS

Troy E. Ducharme, and Jeffrey A. Grusie, both of Calgary, Canada, assignors to Ducharme Oilfield Rentals Ltd., Calgary, Canada

Filed Dec. 8, 1994, Ser. No. 351,944
Int. Cl.[6] B65G *57/03;67/24*
U.S. Cl. 414—786 5 Claims

1. A method for stacking modular housing units, comprising the steps of:



firstly, positioning a first modular housing unit on a skid assembly having an upper support frame that overlies a top of the first modular housing unit, the upper support frame having a first end and a second end;

secondly, securing a first end of a tow line to an end of a skid assembly for a second modular housing unit, extending the tow line over the upper support frame from the first end across to the second end and securing a second end of the tow line to a winch;

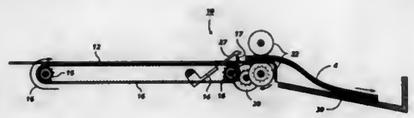
thirdly, activating the winch to raise the skid assembly of the second modular housing unit to the height of upper support frame and then draw the skid assembly of the second modular housing unit from the first end of the upper support frame across the upper support frame until the end of the skid assembly of the second modular housing unit to which the tow line is attached is positioned at the second end of the upper support frame.

5,545,000

AUTOMATIC EJECT FINGER RETRACTOR FOR DOCUMENT SET EJECT SYSTEM

John T. Gorsky, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 20, 1995, Ser. No. 562,546
Int. Cl.[6] B65H *31/28*
U.S. Cl. 414—790.3 **6 Claims**



4. An electrostatographic printing machine including a document set delivery apparatus for transporting a document set from a support surface to an output tray, said document set delivery apparatus, comprising:

a transport belt system including at least one movable belt for being selectively driven along a curvilinear path defined by a pair of rotatable roll members, said belt having a portion situated along a substantially common plane with the support surface;

an eject finger extending from said belt for contacting the document set along a trail edge thereof as the belt travels along the curvilinear path defined by the pair of rotatable roll members; and

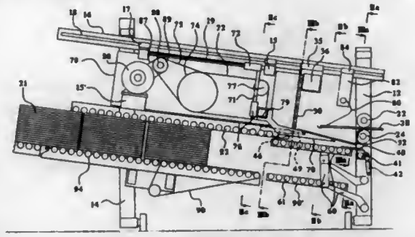
a restraint arm coupled between said belt and said eject finger for exerting a force on said eject finger in a direction toward a point of contact between said belt and said restraint arm.

5,545,001

STATION FOR PILING, SEPARATING AND EJECTING BATCHES OF PLATE-LIKE WORKPIECES AT AN OUTLET OF A PROCESSING MACHINE

Bernard Capdebosco, St. Just-Chaleyssin, France, assignor to SA Martin, Villeurbanne, France

Filed Feb. 6, 1995, Ser. No. 383,861
Claims priority, application France, Feb. 7, 1994, 94 01546
Int. Cl.[6] B65G *57/03*
U.S. Cl. 414—790.8 **12 Claims**



1. A station for piling, separating and ejecting batches of workpieces which have a shape of a plate and are piled at an outlet of a machine that processes said workpieces, said station including a main frame containing means for carrying the workpieces against a front stop, with the workpieces dropping on top of a pile growing on a hoisting table which descends as the pile grows, said table having a top surface with means for conveying, separating means having separator arms connected to a horizontal separator-carrying crossbar movable in translation parallel and perpendicular to a plane of the top surface of the table, said separator arms reaching a position from a front side of the pile and on top of a batch of workpieces in the pile in order to receive the next workpiece as soon as the batch includes a predetermined number of the workpieces, an outlet conveyor means for removing of the batch being positioned at a level to which the table descends, the station including temporary front and rear holders for the workpieces, said holders being arranged to extend almost parallel to the plane of the top surface of the table and located at a level of a lower edge of the front stop, means for driving the separator-carrying crossbar including at both lateral ends of the crossbar a drive extending downstream of the station behind the front stop with the separator-carrying crossbar moving in a continuous circular path and said path being defined by a return wheel and at least two idler wheels, said station including means for guiding the separator-carrying crossbar in order to maintain the separator arms permanently parallel to the plane of the table.

5,545,002

STATOR VANE MOUNTING PLATFORM

Anne-Elisabeth F. Bourguignon, Saint Sauveur Sur Ecole; Pascal Fortunier, Vaux le Penil, both of, and Guy R. E. Hebrandi, Vaux Le Penil, all of, France, assignors to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation S.N.E.C.M.A. 2 boulevard du General Martial, Paris Cedex, France

Filed Nov. 29, 1985, Ser. No. 820,269
Claims priority, application France, Nov. 29, 1984, 84 18152
Int. Cl.[6] F01D *5/14*
U.S. Cl. 415—115 **17 Claims**

1. In a turbine engine having a plurality of stator vanes located in a passage for high-temperature gas, the stator vanes being oriented generally radially about a central axis of the turbine engine and having radially inner and outer mounting platforms interconnecting the radially inner and outer ends of the stator vanes, the improvement wherein at least one of the mounting platforms comprises:

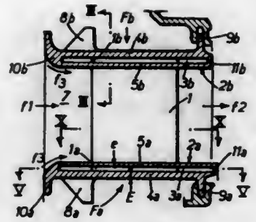
a) an internal chamber defined by: a first wall extending generally parallel to the central axis of the turbine and having a first thickness, the first wall being attached to an end of the stator vanes; a second wall extending generally parallel to the first wall and having a second thickness such that the first thickness is substantially greater than the second thickness, the second wall being in contact with high-temperature gases; and, upstream and downstream radial walls interconnecting upstream ends of the first and second walls, and downstream ends of the first and second walls;

b) a source of cooling air;

c) cooling openings defined by the first wall to allow cooling air to pass into the internal chamber;

d) means to allow cooling air to exit from the internal chamber so as to form a cooling film on the second wall; and,

e) mounting means on the first wall for mounting the stator vanes to the turbine engine structure such that mechanical stresses are transmitted between the engine structure and the first wall.

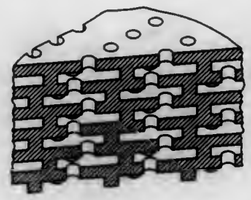


5,545,003

SINGLE-CAST, HIGH-TEMPERATURE THIN WALL GAS TURBINE COMPONENT

Kurt F. O'Connor, Carmel; James P. Hoff, Greenfield; Donald J. Frasier, Greenwood; Ralph E. Peeler, Reelsville; Heidi Mueller-Largent, Indianapolis; Floyd F. Trees, Bloomington; James R. Whetstone, Indianapolis; John H. Lane, Indianapolis, and Ralph E. Jeffries, Indianapolis, all of Ind., assignors to Allison Engine Company, Inc, Indianapolis, Ind.

Division of Ser. No. 838,154, Feb. 18, 1992, Pat. No. 5,295,530. This application Feb. 25, 1994, Ser. No. 201,899
Int. Cl.[6] F01D *5/14*
U.S. Cl. 415—115 **5 Claims**



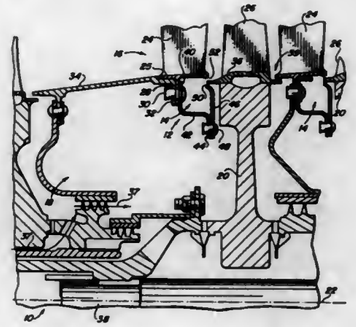
1. A gas-turbine blade comprising a single piece, single-cast, multi-wall structure having at least one very thin wall having a thickness of less than 0.03 inches.

5,545,004

GAS TURBINE ENGINE WITH HOT GAS RECIRCULATION POCKET

Kuo-San Ho; William J. Howe, both of Chandler, and Jeffrey E. May, Phoenix, all of Ariz., assignors to AlliedSignal Inc., Morris Township, N.J.

Filed Dec. 23, 1994, Ser. No. 363,157
Int. Cl.[6] F01D *11/02*
U.S. Cl. 415—115 **17 Claims**



1. A gas turbine engine, comprising:

housing means defining a generally annular and axially elongated hot gas flow path for passage of combustion gas, said hot gas flow path being formed radially about and separated by a duct wall having an annular space formed therein;

turbine rotor means including a rotor disk rotatably supported within said internal engine cavity with a periphery of said rotor disk disposed generally within the annular space formed in said duct wall, and a plurality of rotor blades on said disk periphery and disposed generally within said hot gas flow path, said turbine rotor means and said housing means cooperatively defining a narrow clearance throat therebetween on one side of said turbine rotor means; and

a contoured shroud mounted within said internal engine cavity in close running clearance with said rotor disk at said disk periphery, said shroud defining a radially outwardly open and circumferentially extending hot gas recirculation pocket for receiving hot gas ingested said hot gas flow path through said clearance throat and for recirculating the ingested hot gas back through said clearance throat to said hot gas flow path, said pocket having an axial dimension and a radial dimension substantially greater than the dimension of said clearance throat, said contoured shroud comprising a base wall extending radially inwardly from said duct wall, an inboard wall extending from said base wall in an axial direction toward said rotor disk, and an end wall extending from said inboard wall in a radially outward direction and in close running clearance with said rotor disk, said end wall terminating in a circumferentially extending free edge disposed in close proximity to said clearance throat, whereby said recirculation pocket substantially directly receives hot gas ingested through said clearance throat for recirculation back through said clearance throat to said hot gas flow path.

5,545,005

CENTRIFUGAL PUMP

Martin Stähle, Gigeweg 393, 8213 Neunkirch, Switzerland

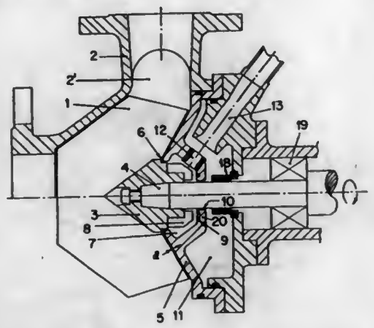
PCT No. PCT/CH94/00129, § 371 Date Feb. 24, 1995, § 102(e) Date Feb. 24, 1995, PCT Pub. No. WO95/02768, PCT Pub. Date Jan. 26, 1995

PCT Filed Jun. 24, 1994, Ser. No. 392,774

Claims priority, application Switzerland, Jul. 16, 1993, 2169/93

Int. Cl.[6] F01D 1/10

U.S. Cl. 415—169.100 9 Claims



1. A centrifugal pump for conveying suspended solids with a content of gas, comprising

an open impeller which has an impeller hub and is seated, fixed for rotation, on a shaft and at least one drive-side vane edge of which turns with slight clearance over a pump housing rear wall which, at an inner diameter thereof forms with the impeller a labyrinth slot which connects a pump chamber with a hub chamber separated on a drive side by a hub housing wall and permits gas collecting in a region of a center of the impeller to emerge as a liquid-gas mixture into the hub chamber while retaining coarse solid particles, and

wherein within the hub chamber there is arranged a coaxial vane wheel, which is connected fixed for rotation with the impeller imparting to the liquid in the hub chamber a movement of rotation, and

the hub chamber is provided with a peripheral opening for emergence of the liquid and the gas collecting in a region of the shaft escapes on the drive side through a second slot formed by the hub housing wall and the shaft,

the peripheral opening is arranged in the hub housing wall and is formed as a drive nozzle;

the opening debouches into a space which adjoins the hub chamber on the drive side and is connected therewith by the second slot;

a diffuser pipe, and wherein the opening is directed against said diffuser pipe constituting therewith a liquid jet pump, through which the liquid coming from the hub chamber flows and entrains and discharges the gas coming from the second slot.

5,545,006

MULTI-STAGE ROTARY FLUID HANDLING APPARATUS

Reza R. Agahi, Granada Hills, and Behrooz Ershagi, Irvine, both of Calif., assignors to Rotoflow Corporation, Gardena, Calif.

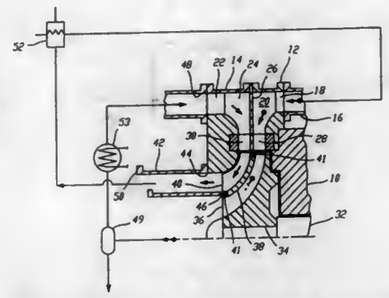
Filed May 12, 1995, Ser. No. 440,045

Int. Cl.[6] F04D 17/12

U.S. Cl. 415—169.2 8 Claims

1. A rotary fluid handling machine comprising

a wheel including a hub, first vanes extending from the hub on a first side thereof, a shroud on the first vanes at a first side of the shroud and second vanes extending from the shroud on a second side of the shroud, the wheel defining a first set of



channels between the first vanes and a second set of channels between the second vanes;

a housing about the wheel, the housing including a first inlet to one of the first and the second channels, a second inlet to the other of the first and the second channels, a first outlet to one of the first and the second channels, a second outlet to the other of the first and the second channels;

a transfer passage between the first outlet and the second inlet, the first and the second inlets being to the first and the second channels, respectively, the inlets being about the periphery of the wheel and the outlets being axially of the wheel.

5,545,007

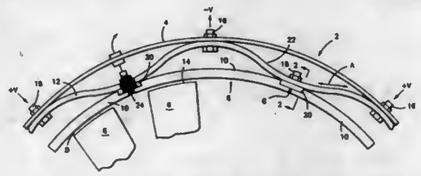
ENGINE BLADE CLEARANCE CONTROL SYSTEM WITH PIEZOELECTRIC ACTUATOR

Anthony N. Martin, Simsbury, Conn., assignor to United Technologies Corp., Hartford, Conn.

Filed Nov. 25, 1994, Ser. No. 345,653

Int. Cl.[6] F01D 11/22

U.S. Cl. 415—173.2 6 Claims



1. In combination with a turbine assembly which has a fixed casing, a plurality of rotating blades with radially outward blade tips, and a movable seal shroud; a blade tip seal shroud radial clearance control system which comprises:

a) a plurality of proximity sensors mounted on said turbine assembly and operable to sense ongoing radial clearance between said blade tips and said seal shroud during operation of the turbine assembly;

b) a corrugated connector operable to secure said seal shroud to said turbine casing, said connector including a corrugated piezoelectric component which serves to alter its circumferential dimension upon application of selected voltages to said connector, alternating corrugations on said connector being secured to said turbine casing, and intermediate corrugations on said connector being secured to said seal shroud;

c) DC voltage supply means for selectively applying variable DC voltage to said connector; and

d) microprocessor controller means operably connected to said proximity sensors and to said voltage supply means, said controller means being programmed with a table of optimal blade tip-seal shroud clearance values, and said controller means being operable: to receive ongoing actual blade tip-seal shroud clearance signals from said proximity sensors; to compare said ongoing signals with optimal clearance values; and to actuate said voltage supply means to apply a voltage to said connector sufficient to adjust the ongoing blade tip-seal shroud clearance so as to optimize the latter.

5,545,008

METHOD AND APPARATUS FOR CONVEYING A FLUID

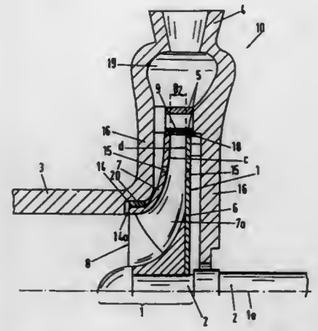
Johann Guelich, Winterthur, Switzerland, assignor to Sulzer Pumpen AG, Winterthur, Switzerland

Filed Apr. 5, 1995, Ser. No. 417,289

Claims priority, application European Pat. Off., Apr. 25, 1994, 94810225.6

Int. Cl.[6] F04D 29/44

U.S. Cl. 415—206 18 Claims



1. A method of configuring a rotordynamic pump which, in operation, has a stable HQ curve with a negative gradient at fluid flow rates below an optimal flow rate, the pump including an impeller defining an inlet and an outlet and spaced-apart surfaces which guide the fluid as it flows between the inlet to the outlet, the method comprising the steps of determining a velocity profile for the fluid comprising flow rates and flow directionality for the fluid flowing between the surfaces, and shaping components of the pump which come into contact with the fluid flowing through the pump so that abrupt changes in the velocity profile are prevented over the range of flow rates to which the pump will be exposed in use, whereby the formation of a positive gradient or a flat portion in the HQ curve is prevented and a stable HQ curve for the pump with a negative gradient only is attained.

5,545,009

HOT AIR/COLD AIR DUAL-MODE ELECTRIC FAN

Chin-Fu Ke, 4F, No. 71-1, Chung Yang Rd. Sec. 3, To Cheng, Taipei, Taiwan

Filed Sep. 8, 1995, Ser. No. 525,130

Int. Cl.[6] F04D 29/58

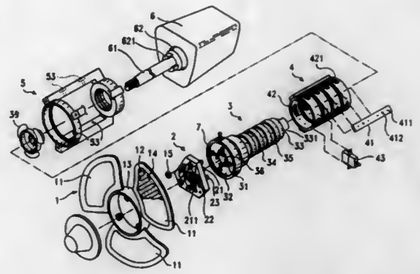
U.S. Cl. 416—95 8 Claims

1. A hot air and cold air dual-mode electric fan comprising:

a vane assembly having a hub and a plurality of vanes mounted around said hub, each vane comprising layers of mica sheets, at least one electric heating coil mounted in said layers of mica sheets, and a plurality of vent holes through said mica sheets;

a bakelite mount fixedly secured to said vane assembly, said bakelite mount comprising a circuit board at one side adjacent to said vane assembly, and a plurality of female contacts longitudinally disposed at an opposite side and respectively connected to said electric heating coils on said vane assembly by said circuit board;

a shaft having a bakelite plate at one end adjacent to said bakelite mount, a plurality of male contacts raised from said bakelite plate and respectively connected to said female contacts, a bakelite sleeve mounted around a periphery of said bakelite plate, a plurality of copper rings mounted around said bakelite sleeve and separated from one another by bakelite rings and respectively connected to said female contacts by a respective conductor;



a barrel mounted around said shaft, said barrel comprising a plurality of longitudinally spaced copper rings joined by bakelite connecting bars, each copper ring of said barrel having a plurality of slots and a carbon brush mounted in one slot and disposed in contact with one respective copper ring on said shaft for transmitting electric power supply to said electric heating coils of said vane assembly;

a bolder fixedly fastened in front of a motor and mounted around said barrel to hold said shaft inside said barrel for permitting said shaft and said bakelite mount and said vane assembly to be simultaneously turned by said motor; and

a control circuit connected to said copper rings of said barrel for controlling power supply to said electric heating coils on said vane assembly so that said vane assembly produces currents of cold air when said motor is started and said control circuit is controlled to cut off power supply from the electric heating coils on said vane assembly, or currents of hot air when said motor is started and said control circuit is controlled to provide power supply to the electric heating coils on said vane assembly.

5,545,010

METHOD AND APPARATUS FOR TRIM BALANCING A GAS TURBINE ENGINE

Philip J. Cederwall; Garrett P. Prins, and Vern V. Leuven, all of San Diego, Calif., assignors to Solar Turbines Incorporated, San Diego, Calif.

Filed May 13, 1993, Ser. No. 60,625

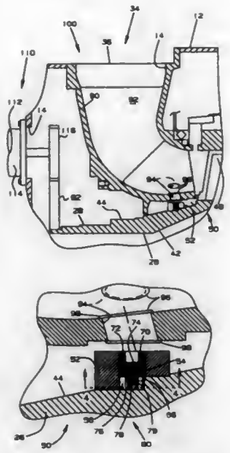
Int. Cl.[6] F01D 25/04

U.S. Cl. 416—145 10 Claims

1. A trim balancing system adapted for use with a mechanism including an outer case having an opening therein and a rotating component, said case being positioned about a rotating component, said rotating component needing to be balanced and defining an inlet end portion, an outlet end portion and an outer surface positioned therebetween; said trim balancing system comprising:

means for balancing excessive vibrations caused by the rotating component, said means for balancing including a band being positioned about the outer surface and having a plurality of threaded holes evenly spaced thereabout and a plurality of balance weights positioned in preestablished ones of the plurality of holes; and

means for accessing the balancing means wherein said outer case is in situ, said means including the opening being radially positioned about the plurality of balance weights and aligned therewith.



5,545,011

ANGLE ADJUSTABLE VANE SUSPENSION

Jan Molin, Växjö, and Sören Grönfors, Rottne, both of, Sweden, assignors to ABB Flakt AB, Stockholm, Sweden

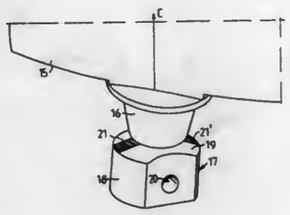
PCT No. PCT/SE93/00771, § 371 Date Mar. 27, 1995, § 102(e) Date Mar. 27, 1995, PCT Pub. No. WO94/09264, PCT Pub. Date Apr. 28, 1994

PCT Filed Sep. 24, 1993, Ser. No. 406,877

Claims priority, application Sweden, Oct. 14, 1992, 9203017

Int. Cl.[6] F01D *5/30*

U.S. Cl. 416—207 20 Claims



1. A vane suspension for angle adjustable mounting of a vane, comprising a vane and a hub having a center, a seat in the hub which receives a portion of the vane, said vane including a vane blade, a stud and a vane shoulder provided at an end of the stud, said vane shoulder having a partly spherical contact surface facing the vane blade, the seat of the hub having a hub shoulder with a partly cylindrical contact surface radially facing toward the center of the hub, the partly spherical contact surface of the vane shoulder and the partly cylindrical contact surface of the hub shoulder being arranged to mutually cooperate along a pair of linear contact regions, whereby the position of the linear contact regions is constant irrespective of an angular position of the vane in relation to the hub.

5,545,012

SOFT-START PUMP CONTROL SYSTEM

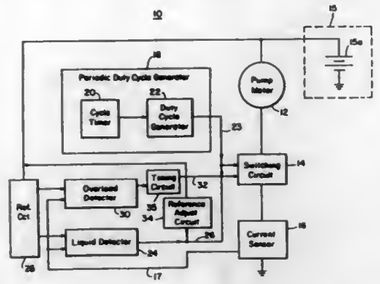
William N. Anastos, Belmont, and Stephen B. Boyd, Newburyport,both of, Mass., assignors to Rule Industries, Inc., Burlington, Mass.

PCT No. PCT/US93/09415, § 371 Date Jan. 27, 1994, § 102(e) Date Jan. 27, 1994, PCT Pub. No. W095/09981, PCT Pub. Date Apr. 13, 1995

PCT Filed Oct. 4, 1993, Ser. No. 204,193

Int. Cl.[6] F04B *49/06*

U.S. Cl. 417—44.11 8 Claims



1. A soft-start pump control system for controlling a pump motor comprising:

switching means for supplying power to a pump motor;

a periodic duty cycle generator for periodically actuating said switching means at a fraction of the full duty cycle, to operate the pump motor at reduced power for quieter operation;

sensor means for sensing the current drawn by the pump motor;

a reference circuit; and

liquid detector means for detecting the presence of liquid to be pumped, responsive to said sensor means, and said reference circuit, for overriding said periodic duty cycle generator and actuating said switching means to operate said pump motor continuously at full power when the motor current exceeds a predetermined level indicating liquid is present.

5,545,013

HYDROSTATIC MACHINE WITH LEAKAGE OIL DISCHARGE

Jochen Beck, D-Ulm, and Werner Hormann, Illertissen, both of, Germany, assignors to Brueninghaus Hydromatik GmbH, Elchingen, Germany

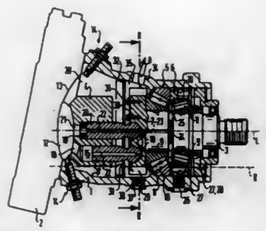
Filed Jan. 25, 1995, Ser. No. 335,818

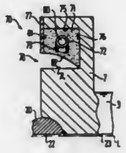
Claims priority, application Germany, May 14, 1992, 42 15 869.9

Int. Cl.[6] F04B *23/04*

U.S. Cl. 417—201 23 Claims

1. A hydrostatic machine comprising an axial piston pump having a machine housing surrounding an internal housing chamber which accommodates a drive mechanism rotatably mounted by means having at least one bearing and having a leakage oil chamber which opens to a region outside of said machine housing via at least one leakage oil connection, and a pump device (**29**; **50**; **60**; **70**) arranged in the internal housing chamber and in driving connection with the drive mechanism (**3**, **4**, **7**), said pump device is provided to pump leakage oil out of the leakage oil chamber (**28**) through the leakage oil connection (**8**; **38**; **72**) to the outside of said machine housing.





5,545,014

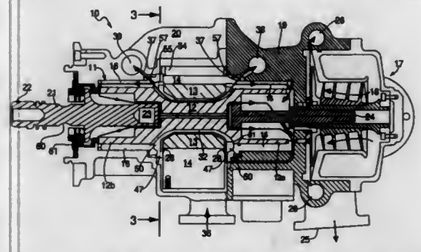
VARIABLE DISPLACEMENT VANE PUMP, COMPONENT PARTS AND METHOD

Jack G. Sundberg, Meriden; Bernard J. Bisson, Winsted; Mihir C. Desai, West Hartford, and Martin T. Books, New Britain, all of Conn., assignors to Coltec Industries Inc., New York, N.Y.

Filed Aug. 30, 1993, Ser. No. 114,253

Int. Cl.[6] F04B *23/10*

U.S. Cl. 417—204 19 Claims



1. A durable, single action, variable displacement vane pump capable of undervane pumping comprising:

(a) a cylindrical rotor member having journal ends and a central vane section comprising a plurality of radial vane slots uniformly spaced around the central circumference thereof, said vane slots being elongate in the axial direction and each having a central vane-supporting portion surrounded at each end by slot extension portions;

(b) a plurality of vane elements, each slidably-engaged within the central vane-supporting portion of a said vane slot for radial movement therewithin;

(c) a unitary cam member having opposed faces and a circular bore therethrough forming a cam chamber having a continuous interior cam surface, the central vane section of said rotor member being supported axially and non-concentrically within said cam chamber so that the outer tip surfaces of all of the vane elements make continuous contact with said continuous interior cam surface during rotation of said rotor member, and said vane slot extensions project axially-outwardly beyond the faces of said cam member;

(d) an opposed pair of manifold bearings rotatably supporting the journal ends of said rotor member and overlying said vane slot extensions, each said bearing having a bearing face surface which contacts a face surface of said cam member and encloses the central vane-supporting portion of said rotor member within said cam chamber, each manifold bearing comprising an inlet arc segment containing means for admitting fluid to expanding vane bucket areas of the rotating vaned rotor, and means for admitting fluid into said vane slot extensions and undervane areas, and a discharge arc segment containing means for discharging pressurized fluid from contracting vane bucket areas of the rotating vaned rotor and from undervane areas as the vanes are depressed into the vane slots during rotation through the discharge arc,

said cam member being adjustable relative to said vaned rotor to vary the extent of eccentricity therebetween for varying the displacement capacity of said vane pump.

5,545,015

SELF-COOLED AND REMOVABLE INTEGRATED CRYOGENIC LIQUID PUMP

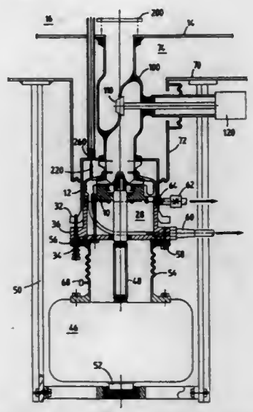
Norbert Scherrer, St. Just, France, assignor to Societe Europeene de Propulsion, Suresnes, France

Filed Jun. 3, 1994, Ser. No. 253,356

Claims priority, application France, Jun. 11, 1993, 93 07088

Int. Cl.[6] F17C *13/02*

U.S. Cl. 417—360 9 Claims



1. A cryogenic liquid pump provided with a pump body driven by a motor assembly and integrated in a cryogenic liquid tank, wherein said pump body is removable and can be put selectively in communication with the tank by sliding in a well, a first non-return valve making it possible when in the open position to transfer liquid from the tank to the pump body prior to evacuation thereof in the form of a liquid or a gas via an outlet orifice, and a second non-return valve making it possible, when in the open position, to establish a flow of cold gas from a gas overhead of the tank towards a rear end of the pump body from which it is exhausted to the outside via a sweeping/venting orifice.

5,545,016

PLURAL CHAMBER PNEUMATIC PUMP HAVING A MOTIVE FLUID EXHAUST VALVE

Yushan Wang, Howell, N.J., assignor to Standard-Keil Industries, Inc., Allenwood, N.J.

Filed Jan. 31, 1995, Ser. No. 381,538

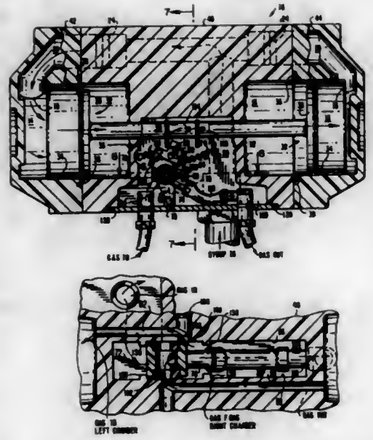
Int. Cl.[6] F04B *9/135*

U.S. Cl. 417—393 11 Claims

1. A pneumatically-operated pump, comprising:

a housing;

a pair of opposed pump chambers in said housing, each of said pump chambers having a reciprocating diaphragm dividing



the pump chamber into a variable volume pumped-fluid receiving chamber and a variable volume pressurization chamber;

a shaft connecting said diaphragms;

a valve chamber in said housing, said chamber including a pair of opposed walls extending parallel to the shaft;

first and second bores connected respectively to one of said pressurization chambers and terminating in an offset manner in a pair of ports in said opposed walls;

a valve body having a hollow interior portion vented to the exterior of said housing and mounted for reciprocation in a plane parallel to the Shaft between said walls between alternate end positions whereby said interior is alternately aligned with one of said ports, the other of said ports being exposed to said valve chamber, said valve body being coupled to said shaft for reciprocation therewith; and

means for introducing a source of pressurized gas into said valve chamber.

5,545,017

UNIT FOR DELIVERING FUEL FROM A SUPPLY TANK TO THE INTERNAL COMBUSTION ENGINE OF A MOTOR VEHICLE

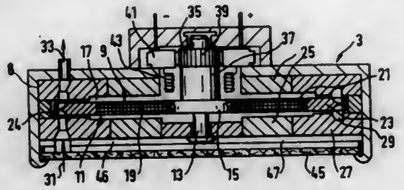
Willi Strohl, Beilstein, and Rainer Lust, Sindelfingen, both of, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 10, 1994, Ser. No. 339,164

Claims priority, application Germany, Dec. 7, 1993, 43 41 564.4

Int. Cl.[6] F04B *17/03*

U.S. Cl. 417—423.7 **9 Claims**



1. A unit for delivering fuel from a supply tank (1) to an internal combustion engine (7) of a motor vehicle, having an electric drive motor (9), which is embodied as an axial field motor, having permanent magnets (25) disposed axially in a circle around a rotational axis of a disk-shaped rotor part (19), said disk-shaped rotor part is provided on at least one face end with rotor windings (21) and at the same time forms a part of an impeller (15) of a feed pump (11), said impeller revolves in a pump chamber (17); feed elements of this feed pump (11) are disposed on the impeller (15) and hydraulically connect an inlet opening (31) into the pump chamber (17) to an outlet opening (33) leading out of the pump chamber, the feed elements are embodied on the impeller (15) by a ring of blades (23), which are disposed spaced apart from one another along a circumference of the impeller (15) and are disposed in a supply conduit provided between pump chamber walls that axially define the pump chamber (17), said supply conduit extends from the inlet opening (31) to the outlet opening (33) in a partial ring around the rotational axis of the impeller (15), the supply conduit together with the impeller (15) forms one supply conduit (29).

5,545,018

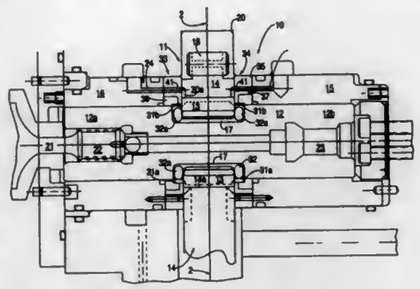
VARIABLE DISPLACEMENT VANE PUMP HAVING FLOATING RING SEAL

Jack G. Sundberg, Meriden, Conn., assignor to Coltec Industries Inc., New York, N.Y.

Filed Apr. 25, 1995, Ser. No. 427,774

Int. Cl.[6] F01C *21/16*

U.S. Cl. 418—30 **14 Claims**



1. A durable vane pump comprising:

(a) a cylindrical rotor member having journal ends and a central vane section comprising a plurality of radial vane slots uniformly spaced around the central circumference thereof, said vane slots being elongate in the axial direction and each having a vane-supporting portion;

(b) a plurality of vane elements each having a pair of substantially parallel axially spaced-apart edges, and each slidably-engaged within the vane-supporting portion of a said vane slot for radial movement therewithin;

(c) a unitary cam member having opposed faces and a bore therethrough forming a cam chamber having a continuous interior cam surface, the central vane section of said rotor member being supported axially and non-concentrically within said cam chamber so that the outer tip surfaces of all of the vane elements make contact with said continuous interior cam surface during rotation of said rotor member between a low pressure fuel inlet arc segment and a high pressure fuel outlet arc segment of said cam chamber;

(d) an opposed pair of bearings rotatably supporting the journal ends of said rotor member; and

(e) an opposed pair of cylindrical floating ring seal elements, one each between a face of a said bearing and a face of said cam member, each said seal element having an annular outer support housing having a radial face surface which engages a face surface of said cam member, and encloses the central vane-supporting portion of said rotor member within said cam chamber, and an inner annular ring seal assembly movably supported within said support housing adjacent the said edges of said vanes, and having an inner bearing surface for the

journals of the rotor member, each seal assembly comprising an inlet arc segment communicating with a fuel inlet for admitting fuel to expanded vane bucket areas of the rotating vaned rotor, and a discharge arc segment containing outlet means for discharging pressurized fuel from contracting vane rotor areas as the vanes are depressed into the vane slots during rotation through the discharge arc, the discharge arc segment of said ring seal assembly comprising a fuel outlet passage at the interface of said outer support housing and said inner ring seal assembly responsive to the high discharge are pressure, for urging the inner ring seal assembly radially inwardly against the surface of the rotor journal to prevent axial fuel leakage along the surface of the rotor journals and balance the pressures acting upon the rotor.

5,545,019

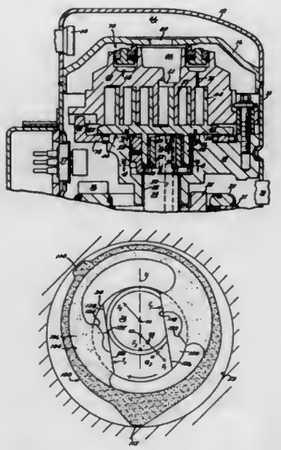
SCROLL COMPRESSOR DRIVE HAVING A BRAKE

Norman G. Beck; Gary J. Anderson, both of Sidney, and Richard S. Tucker, Quincy, all of Ohio, assignors to Copeland Corporation, Sidney, Ohio

Continuation-in-part of Ser. No. 970,485, Nov. 2, 1992, abandoned. This application Mar. 9, 1995, Ser. No. 401,174

Int. Cl.[6] F01C *1/04*

U.S. Cl. 418—55.1 **102 Claims**



1. A scroll compressor comprising:

(a) a first scroll member having a spiral wrap thereon;

(b) a second scroll member having a spiral wrap thereon;

(c) fixed mounting means for mounting said scroll members so that said second scroll member orbits with regard to said first scroll member with the respective spiral wraps of each scroll member engaging one another in such a way that pockets of progressively changing volume are created between said scroll members in response to said orbital movement in a forward direction;

(d) a powered rotatable shaft normally rotating in a forward direction to cause said orbital movement in a forward direction;

(e) a braking surface defined on said mounting means; and

(f) stop means adapted to engage said braking surface in response to sensed initial operation of said compressor in a reverse direction to stop said reverse operation.

5,545,020

SCROLL TYPE COMPRESSOR WITH SPIRAL SEALS

Tetsuhiko Fukanuma; Kunifumi Goto; Shinya Yamamoto, and Masao Iguchi, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

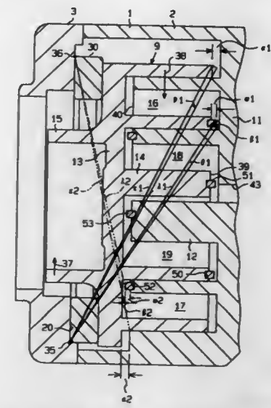
PCT No. PCT/JP94/01438, § 371 Date May 1, 1995, § 102(e) Date May 1, 1995, PCT Pub. No. WO95/06820, PCT Pub. Date Mar. 9, 1995

PCT Filed Aug. 31, 1994, Ser. No. 433,497

Claims priority, application Japan, Sep. 2, 1993, 5-218860

Int. Cl.[6] F01C *1/04*

U.S. Cl. 418—55.4 **30 Claims**



1. A scroll type compressor comprising a fixed scroll in a housing and a movable scroll opposed to the fixed scroll to define a compression chamber with the fixed scroll, said fixed scroll having a fixed spiral element with an adjacent integral fixed end plate and a fixed spiral end face, said movable scroll having a movable spiral element with an adjacent integral movable end plate and a movable spiral end face, a drive shaft, said movable scroll being mounted for orbital motion about an axis of said drive shaft with said fixed and movable scrolls defining between their respective spiral elements a plurality of pockets that decrease in volume with the orbital motion of said movable scroll to compress any gas within the pockets with accompanying development of reaction force acting upon the scrolls, said end face of each spiral element facing the end plate of the opposite scroll with a clearance space therebetween, each of said spiral elements extending from a respective radially inner termination to a respective radially outer termination, a first spiral seal mounted on said movable spiral end face extending from near said radially inner termination of said movable spiral element to an intermediate point along said movable spiral element and constructed to bridge said clearance space between said movable spiral end face and said fixed end plate, and a second spiral seal mounted on said fixed spiral end face extending from near said radially inner termination of said fixed spiral element to an intermediate point along said fixed spiral element and constructed to bridge said clearance space between said fixed spiral end face and said movable end plate, the mounting of said movable scroll permitting said movable scroll to incline relative to said fixed scroll, said first seal having a height (ω1) which is defined by a first formula:

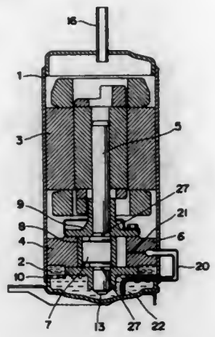
$$\alpha 1>\omega 1>\alpha 1\{1-(\lambda 1/\kappa 1)\}$$

where α1 represents the clearance defined between said movable spiral end face and said fixed end plate, where λ1 is the radius of an arc locus of the rotational movement of a tip of said first spiral seal about a first point that supports said movable scroll when said movable scroll is inclined relative to said shaft, and where κ1 is the radius of an arc locus of the rotational movement of a tip of said movable spiral element about said first point.

5,545,021
HERMETICALLY SEALED ROTARY COMPRESSOR HAVING AN OIL SUPPLY CAPILLARY PASSAGE

Hirotsugu Fukuoka, Kusatsu; Keisuke Morita, Otsu; Hiroshi Matsunaga, and Shigeru Muramatsu, both of Kusatsu, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed Dec. 20, 1994, Ser. No. 359,656
Claims priority, application Japan, Dec. 21, 1993, 5-321648; Oct. 17, 1994, 6-250416
Int. Cl.[6] F04C *18/356;29/02*
U.S. Cl. 418—63 **36 Claims**

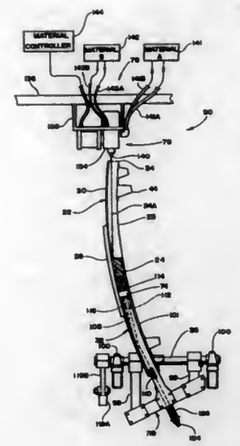


1. A hermetically sealed rotary compressor comprising:
a generally cylindrical sealed vessel having an oil reservoir defined therein;
a drive unit housed within said sealed vessel and including a drive motor and a crankshaft operably coupled with said drive motor;
a compressor mechanism housed within said sealed vessel, said compressor mechanism comprising a cylinder having a compression compartment defined therein and also having upper and lower openings, an eccentric cam fixed for rotation with said crankshaft, and a ring-shaped piston encircling said eccentric cam and capable of undergoing a planetary motion in contact with said eccentric cam during rotation of said eccentric cam, said cylinder also having a refrigerant intake port defined therein in communication with said compression compartment;
upper and lower bearing plates closing said upper and lower openings of said cylinder, respectively;
a radial vane radially slidably accommodated in said cylinder, said radial vane having a radial inner end held in sliding contact with an outer peripheral surface of said ring-shaped piston;
an oil supply passage communicating between said oil reservoir and said compression compartment;
wherein said oil supply passage comprises a capillary passage having first and second ends, said first end of said capillary passage being fluid-connected to said oil reservoir, and said capillary passage being disposed immediately adjacent said compression compartment such that said second end of said capillary passage opens directly into said compression compartment.

5,545,022
APPARATUS FOR MANUFACTURING A VEHICLE BUMPER

James J. Rosseco, Grand Haven, Mich., assignor to Shape Corporation, Grand Haven, Mich.

Filed Feb. 10, 1994, Ser. No. 194,728
Int. Cl.[6] B23B *31/40;* **B29C** *39/10*
U.S. Cl. 425—110 **24 Claims**



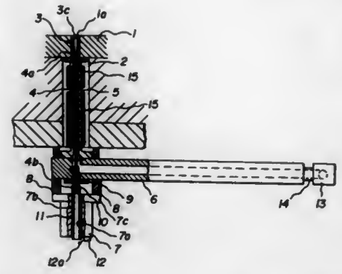
1. An apparatus for manufacturing a bumper construction for vehicles, said vehicles having sides, a front end and a rear end with a longitudinal central axis centrally located between said ends, said bumper construction being constructed of a single strip of metal roll-formed into a completely enclosed tubular member and having means for mounting on the front end of said vehicle to extend between said sides, said bumper construction including a center section and end sections, comprising:
a bolder for holding said bumper construction;
means extending into one end of a bumper for containing a foam-in-place material in the bumper construction in the center section; and
a dispenser positioned for dispensing a measured quantity of the foam-in-place material into the enclosed central area of said tubular member through another end of the bumper so that the foam-in-place material completely fills only the center section of said tubular member a relatively short distance on each side of said central axis, said means for containing including a plug positioned on said holder and positionable in said tubular member, said plug being configured to engage an inside of said tubular member and contain the foam-in-place material to said center section.

5,545,023
PRESSURE MOLDING APPARATUS FOR MOLTEN RESIN

Toshihiro Hosokawa; Kiyoshi Nakahara; Ryuichi Ishitsubo, and Toshiyuki Okuda, all of Osaka, Japan, assignors to Hosokawa Seisakusho Co. Ltd., Izumi, Japan

Continuation of Ser. No. 214,148, Mar. 16, 1994, abandoned, which is a continuation of Ser. No. 858,421, Mar. 24, 1992, Pat. No. 5,338,182, which is a continuation of Ser. No. 536,869, Jun. 12, 1990, abandoned. This application Jun. 5, 1995, Ser. No. 462,538
Claims priority, application Japan, Jun. 13, 1989, 1-69155; Jun. 13, 1989, 1-69157
Int. Cl.[6] B29C *45/23*
U.S. Cl. 425—171 **2 Claims**

1. A pressure molding apparatus for introducing a molten resin into a molding unit having an upper mold, a lower mold and a gate aperture for pressing and molding the molten resin, the apparatus comprising:
a manifold pipe;
a gate pipe having a tapered end hole adjacent the gate aperture, the gate pipe connected to said manifold pipe at an end opposite said tapered end hole and being located under the molding unit;

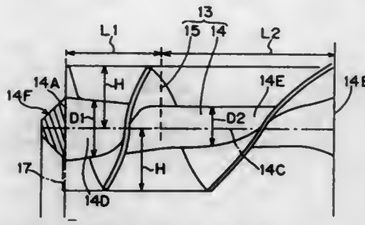


a gate pin inserted in said gate pipe and having a first end and second end, the first end of said gate pin for preventing the gate aperture from being blocked by resin, and;
an oil-pressurized cylinder having an upper flange which is connected directly to the manifold pipe via a fixing block and having a piston rod which is hollow throughout its entire length, said oil-pressurized cylinder being operably connected to the gate pin by the second end of the gate pin being fixed within a top portion of the hollow piston rod,
wherein an inner lateral surface of said gate aperture on the side of said gate pin is formed with an obtuse angle wider than the tip angle of said gate pin, and further including a tapered hole in said molding unit which has an adequate length and tapered diameter and which expands from said gate aperture to the inner surface of said molding unit.

5,545,024
SCREW FOR DOUBLE-SHAFT EXTRUDING DEVICE AND DOUBLE-SHAFT EXTRUDING DEVICE

Toshiro Iwata; Iwami Nagata; Akira Hatakeyama, and Kazuhisa Nishigai, all of Saitama-ken, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Division of Ser. No. 141,022, Oct. 26, 1993, Pat. No. 5,464,282. This application May 2, 1995, Ser. No. 433,209
Claims priority, application Japan, Oct. 26, 1992, 4-287785; Nov. 16, 1992, 4-328995
Int. Cl.[6] B29C *47/40;47/60*
U.S. Cl. 425—204 **3 Claims**

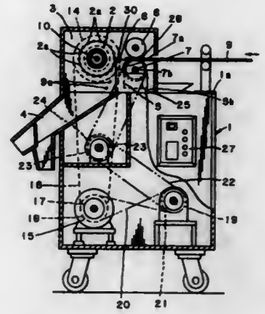


1. A double-shaft extruding device comprising:
two screws disposed such that respective axes of said screws are parallel, each of said screws being formed by a shaft whose distal end portion is tapered such that an axial radius of the distal end portion becomes larger toward a distal end, and by a spiral flight provided at an outer periphery of said shaft, a height of said flight from an axis of said shaft being substantially constant, an angle of torsion of a spiral of said flight becoming smaller toward a shaft distal end, a cross-sectional area of extrusion formed by said shaft and said flight continuously increasing from the shaft distal end to a shaft proximal end; and
a roller die disposed adjacent to a discharge opening provided in a vicinity of a distal end portion of said screw.

5,545,025
COOLED PELLET MAKING MACHINE

Masaru Tanaka, Higashi Katsushi-gun, Japan, assignor to Katsu Manufacturing Co., Ltd., Chiba, Japan

Filed Oct. 3, 1994, Ser. No. 317,586
Int. Cl.[6] B29B *9/06*
U.S. Cl. 425—315 **3 Claims**

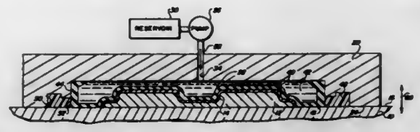


1. A pellet making machine comprising:
a housing;
a motor provided in said housing;
a rotary cutter provided in said housing and operatively connected to said motor;
a fixed support table mounted in said housing and having an internal cooling chamber formed therein;
a fixed blade mounted on said support table adjacent said rotary cutter, said fixed blade having an internal cooling chamber formed therein in fluid flow communication with said internal cooling chamber formed in said fixed support table;
an inflow port formed in said fixed blade and communicating with said fixed blade internal cooling chamber; and
an outflow port formed in said support table and communicating with said support table internal cooling chamber, whereby water may circulate through said fixed blade into said fixed support table via said internal cooling chambers.

5,545,026
HYDROFORMING PLATEN AND SEAL

Michael L. Fritz, 2440 E. Dahlia, Phoenix, Ariz. 85032, and Alton L. Fritz, 12121 N. 83rd Ave., Peoral, Ariz. 85345

Continuation of Ser. No. 239,258, May 6, 1994, Pat. No. 5,466,146, which is a continuation of Ser. No. 905,766, Jun. 29, 1992, abandoned. This application May 26, 1995, Ser. No. 451,549
Int. Cl.[6] B29C *59/00*
U.S. Cl. 425—389 **7 Claims**



1. Apparatus for hydroforming sheet material in response to hydraulic pressure exerted by hydraulic fluid within a cavity in a platen in conformance with a contoured mold placed upon a table, said apparatus comprising in combination:
a) a diaphragm responsive to the hydraulic pressure present within the platen for forming the sheet material into conformance with the contours of the mold;
b) a cast sealing member circumscribing said diaphragm for inhibiting seepage of hydraulic fluid from within the platen

and for preventing lateral migration of said diaphragm intermediate the platen and the table; and

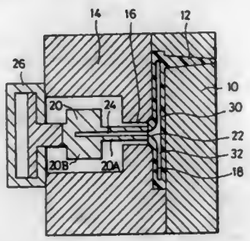
c) means for locating said sealing member, said sealing member being cast within said locating means.

5,545,027

GAS-FEEDING DEVICE FOR INJECTION MOLDING

Akimasa Kaneishi, and Kenzi Kono, both of Hiratsuka, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed May 17, 1994, Ser. No. 243,801
Claims priority, application Japan, Jun. 2, 1993, 5-132895
Int. Cl.[6] B29C *45/03;45/34*
U.S. Cl. 425—546 **5 Claims**



1. A gas-feeding device, for use in a mold attached to an injection molding machine for producing a molded article having a hollow portion and provided with a guide portion communicating with a cavity of the mold and an outside of the mold, and for feeding a pressurized gas into a molten resin injected into the cavity, comprising:

(A) a gas-feeding nozzle, provided with a gas flow path for feeding the pressurized gas into a molten resin injected into the cavity, and having a clearance between its top portion and the guide portion such that at least part of its top portion is out of contact with the guide portion when injecting the molten resin into the cavity, and its top portion being constantly encased in the guide portion; and

(B) gas-feeding nozzle shifting means for putting the top portion of the gas-feeding nozzle in forward and backward linear movement in the guide portion in parallel with an axial line of the gas-feeding nozzle,

wherein the clearance is in a range where flowing of the molten resin into the clearance is prevented and where the pressurized gas in the hollow portion formed in the molded article obtained by cooling the molten resin to the solid state is released to atmosphere through the clearance when the top portion of the gas-feeding nozzle is moved backward by the gas-feeding nozzle shifting means.

5,545,028

BUSHING TIP FOR INJECTION MOLDING APPARATUS

William J. Hume, Amesbury; Paul M. Swenson, Hamilton, and Michael L. Vasapoli, Magnolia, all of Mass., assignors to Kona Corporation, Gloucester, Mass.

Filed Aug. 16, 1994, Ser. No. 291,297
Int. Cl.[6] B29C *45/20*
U.S. Cl. 425—549 **36 Claims**

1. A bushing for use in conveying melt material from a manifold to a gate area in an injection molding apparatus, said bushing comprising:

a longitudinal axis;

an elongate, hollow shaft, said shaft being centered on said longitudinal axis, and including an open proximal end, an open distal end and an internal, longitudinal lumen connecting said open proximal end to said open distal end, said lumen having a first cross-section transverse to said longitudinal axis;

means for heating said bushing; and

a tip centered on said longitudinal axis and extending axially and distally from said open distal end of said shaft, said tip comprising:

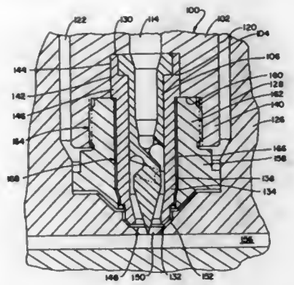
(a) an internal, blind, axial bore extending axially and distally from said lumen to a closed distal bore end, said closed distal bore end having a second cross-section transverse to said longitudinal axis smaller than said first cross-section transverse to said longitudinal axis;

(b) an outer wall having an inner surface and defining an axial volume located in closely distally spaced relation to said closed distal bore end;

(c) inner walls defining a proximal contoured surface and a distal conically shaped surface terminating at a distal pointed end, said proximal contoured surface being located within said axial volume and being adapted to create a substantially uniform, homogeneous, and totally distally directed annular flow of a melt material and to deliver said flow of said melt material to said distal conically shaped surface; and,

(d) at least one portal connecting said closed distal bore end to said proximal contoured surface defined by said inner walls;

wherein said outer wall and said inner walls together define a distally facing annular cavity having a contoured proximal cavity end and an open distal cavity end, and wherein said pointed distal end of said distal conically shaped surface is located in distally spaced relation to said open cavity end.



5,545,029

EQUIPMENT FOR FILLING ONE OR MORE CASTING MOLDS WITH CASTABLE, LIQUID MATERIALS

Erhard Hauser, Schoffengrund, Germany, assignor to Wilhelm Hedrich Vakuumanlagen GmbH & Co. KG, Ehringshausen-Katzenfurt, Germany

Filed Jun. 20, 1994, Ser. No. 262,187
Claims priority, application Germany, Jun. 18, 1993, 43 20 121.0; Dec. 30, 1993, 43 44 922.0
Int. Cl.[6] B29C *45/02*
U.S. Cl. 425—557 **19 Claims**

1. Equipment for filling at least one casting mold with a castable liquid material, said equipment comprising:

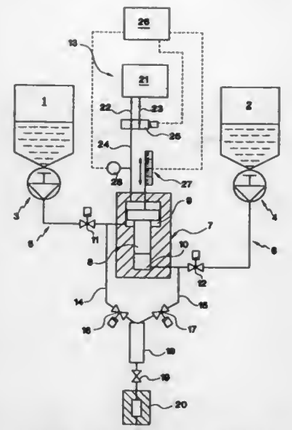
storage means for storing casting components of said castable liquid material,

pumping means for pumping said casting components through conduit means from said storage means,

at least one plunger-cylinder system for receiving said casting components from said storage means, said at least one plunger-cylinder system comprising a plunger means sliding disposed within a cylinder, said plunger means defining a drive plunger upon which a pressurizing medium acts to move said drive plunger, and an output plunger which moves in response to a movement the drive plunger, and

a mixing chamber for receiving and mixing said casting components delivered from said at least one plunger-cylinder system to form said castable liquid material, the castable liquid material being delivered to at least one casting mold,

wherein the plunger means of said at least one plunger-cylinder system divides said cylinder into a pump chamber filled by said casting components, and an operating chamber in fluid communication with a drive fluid driving said drive plunger, operating surfaces of the plunger means which contact said casting components and said drive fluid having substantially equal surface areas, and wherein said at least one plunger-cylinder system is designed for a substantially higher operational pressure than an operational pressure of said pumping means.

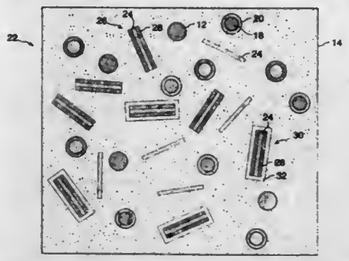


5,545,030

DIAMOND FILM AND SOLID NON-DIAMOND PARTICLE COMPOSITE COMPOSITIONS

John M. Pinneo, Redwood City, Calif., assignor to Crystallume, Santa Clara, Calif.

Division of Ser. No. 704,997, May 24, 1991, abandoned, which is a continuation-in-part of Ser. No. 413,114, Sep. 27, 1989, Pat. No. 5,075,095, which is a continuation of Ser. No. 204,058, Jun. 7, 1988, Pat. No. 4,882,138, which is a continuation of Ser. No. 132,069, Dec. 11, 1987, abandoned. This application Oct. 20, 1994, Ser. No. 327,353
Int. Cl.[6] B29F *5/00*
U.S. Cl. 428—408 **4 Claims**



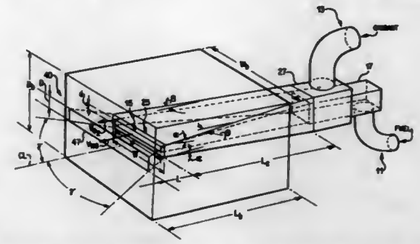
1. An article comprising a preform of at least one kind of particles chosen from the group of diamond, silicon nitride, tungsten, tungsten carbide, molybdenum, silicon, silicon carbide and aluminum, said preform consolidated with polycrystalline diamond, said polycrystalline diamond formed on regions of said particles not in contact with one another.

5,545,031

METHOD AND APPARATUS FOR INJECTING FUEL AND OXIDANT INTO A COMBUSTION BURNER

Mahendra L. Joshi, Altamonte Springs; Lee Broadway, Eustis, and Patrick J. Mohr, Mims, all of Fla., assignors to Combustion Tec, Inc., Apopka, Fla.

Filed Dec. 30, 1994, Ser. No. 366,621
Int. Cl.[6] F23C *5/00*
U.S. Cl. 431—8 **4 Claims**



1. A method of dispersing fuel and oxidant from a burner, the method including the steps of: dispersing the fuel from an inner nozzle in a generally planar fuel layer, the inner nozzle having upper and lower substantially planar walls converging with respect to each other and side walls diverging with respect to each other;

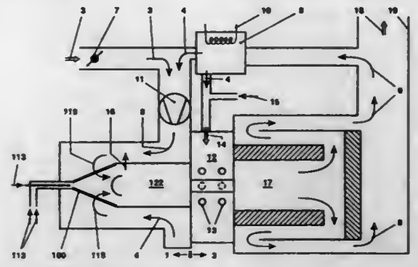
an outer nozzle spaced about said inner nozzle and having upper and lower substantially planar walls converging with respect to each other and side walls diverging with respect to each other passing an oxidant through the outer nozzle, about said inner nozzle and in contact with the fuel dispersed from the inner nozzle.

5,545,032

METHOD OF OPERATING A FIRING INSTALLATION

Peter Jansohn, Küssaberg; Tino-Martin Marling, Uhlingen-Birkendorf, both of, Germany, and Thomas Sattelmayer, Mandach, Switzerland, assignors to ABB Research Ltd., Zurich, Switzerland

Filed May 11, 1995, Ser. No. 439,241
Claims priority, application Germany, Jun. 28, 1994, 44 22 535.0
Int. Cl.[6] F23M *3/00*
U.S. Cl. 431—9 **9 Claims**



1. A method of operating a firing installation, which includes a first combustion stage having at least a burner and a second combustion stage arranged downstream of the first combustion stage, the method comprising the steps of:

forming a mixture of air and recycled flue gas for combustion air for the first combustion stage and introducing the mixture into the burner;

cooling hot gases from the first combustion stage before the hot gases flow into the second combustion stage, the cooled gases retaining a temperature greater than an ignition temperature of a fuel for the second combustion stage;

forming a mixture of fuel and recycled flue gas and introducing the mixture to a head side of the second combustion stage into the hot gases from the first combustion stage;

wherein combustion is initiated in the second combustion stage by self-ignition; and,

recycling a portion of flue gases from the second stage and cooling the recycled flue gases before mixing in the first and second stages.

5,545,033

ASYMMETRIC OXYGEN/FUEL BURNER

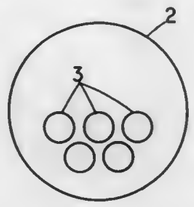
Sami Dick, Le Chesnay; Patrick Recourt, Marcoussis, and Serge Laurenceau, Versailles, all of, France, assignors to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation Des Procedes Georges Claude, Paris, France

Filed Nov. 28, 1994, Ser. No. 345,844

Claims priority, application France, Nov. 30, 1993, 93 14305

Int. Cl.[6] F23C *5/08*

U.S. Cl. 431—181 **5 Claims**



1. An oxygen/fuel burner, comprising an oxygen conduit for supplying oxygen and having an axis, and a fuel conduit disposed within and surrounded by the oxygen conduit and having an outlet for ejecting fuel into the oxygen supplied by the oxygen conduit, the outlet being offset from the axis of the oxygen conduit, whereby a mixing region is established downstream of the outlet of the fuel conduit in which the oxygen/fuel ratio is less than stoichiometric.

5,545,034

ELECTRICAL HARNESS FOR WIRING THE ELECTRICAL IGNITION CIRCUIT OF A COOKING APPLIANCE WITH GAS BURNERS

Jean-Bernard Le Monnier De Gouville, Joue les Tours, France, assignor to Sourdillon, Veigne, France

Filed Oct. 6, 1994, Ser. No. 318,995

Claims priority, application France, Oct. 7, 1993, 93 11960

Int. Cl.[6] F23Q *7/12*

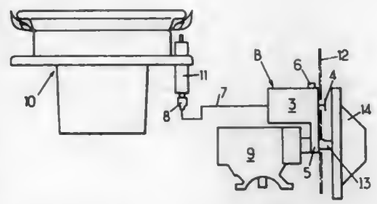
U.S. Cl. 431—255 **6 Claims**

1. An electrical harness for wiring the electrical ignition circuit of a cooking appliance equipped with a plurality of gas burners (**10**) each provided with a remote-controlled controlled electrical ignition element (**11**),

characterised in that it comprises:

a low-voltage electrical power supply line (**1**), one of the ends of which is provided with respective terminals (**2**) for its electrical connection to a low-voltage electrical power supply,

a plurality of high-voltage generating units (**3**), the number thereof being equal to the number of gas burners (**10**), and



being electrically connected to the said power supply line, each unit (**3**) comprising a switch (**4**) to control the power supply and being provided with means (**5**) for fast mechanical connection for connecting the same to a gas tap body (**9**) controlling the supply of gas to the respective burner,

mechanical connecting means (**6**) for mechanically connecting each of the high-voltage generating units to the electrical power supply line,

and respective high voltage output lines (**7**) from the high-voltage generating units, the free ends of said lines being provided with a terminal (**8**) for connection to the respective ignition element.

5,545,035

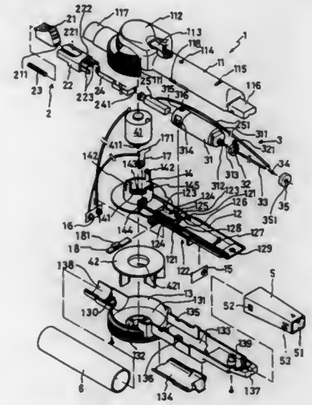
IGNITION DEVICE WITH AN AIR FAN

Chin-Lin Tsai, 3F, No. 94, Sec. 4, Chung Hsin Rd., San Chung City, Taipei Hsien, Taiwan

Filed May 22, 1995, Ser. No. 445,773

Int. Cl.[6] F23Q *7/12*

U.S. Cl. 431—255 **12 Claims**



1. An ignition device comprising:

a housing, said housing comprising an upper shell, a bottom shell fastened to said upper shell, and a partition plate longitudinally connected between said upper shell and said bottom shell;

a gas release device mounted within said housing controlled to release a fuel gas for burning, said gas release device comprising a fuel gas container having a gas nozzle, a flame nozzle, and a gas tube connected between said flame nozzle and said gas nozzle;

a sliding control key device mounted on said housing and controlled to drive said gas release device, causing said gas release device to release said fuel gas, and to produce static sparks for burning said fuel gas, said sliding control key device comprising a push knob, a sliding key coupled to said push knob and moved to drive said gas release device and having a longitudinal chamber, an actuating rod mounted in said longitudinal chamber, a piezoelectric device mounted in said longitudinal chamber and controlled by said actuating rod to release static sparks through a conductor for burning said fuel gas to make a flame; and

a fan device mounted within an upright endless wall on said partition plate between said upper shell and said bottom shell, said fan device comprising a motor controlled by said sliding control key device and having an output shaft, and a fan blade coupled to said output shaft and driven to draw a flow of air into said housing, permitting said flow of air to be further guided out of said housing for accelerating the burning of the article which is burnt by said flame.

5,545,036

GASEOUS FUEL BURNER AND METHOD OF MAKING SAME

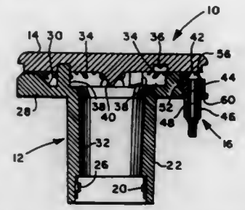
David J. Kwiatek, LaGrange, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Division of Ser. No. 282,359, Jul. 29, 1994, Pat. No. 5,464,345.

This application May 11, 1995, Ser. No. 439,237

Int. Cl.[6] F23Q *3/00*

U.S. Cl. 431—266 **1 Claim**



1. An igniter for a gaseous fuel burner comprising: P1 (a) a hollow generally tubular holder formed of refractory material and having an enlarged diameter portion formed at one end thereof, said enlarged portion having a generally flat end face;

(b) a hollow electrode formed of electrically conductive material, said electrode comprising a roll-pin received in and frictionally engaging said hollow of said holder with an end of said electrode substantially coincident with said flat end face; and,

(c) a connector terminal formed integrally with an end of said electrode distal said flat end face, wherein said hollow electrode is adapted to provide an air passage.

5,545,037

INTERARCH ORTHODONTIC COIL SPRING

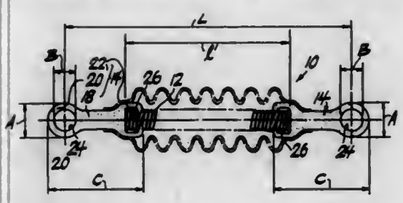
Watanabe Takeshi, Ohkuma-machi, Japan, assignor to GAC International, Inc., Central Islip, N.Y.

Filed Nov. 8, 1994, Ser. No. 335,607

Int. Cl.[6] A61C *3/00*

U.S. Cl. 433—21 **33 Claims**

1. An interarch orthodontic coil spring assembly for use with an orthodontic bracket adapted to support an orthodontic arch wire, said coil spring assembly comprising:



a coil spring having opposite ends; and

a deformable attachment plate attached to each end of said coil spring, each of said plates having a first end secured to one end of said coil spring and an opposite second end connectable with an orthodontic bracket,

each of said deformable attachment plates including an elongated neck portion between said first and second ends, said neck portion having smaller exterior dimensions than said first and second ends to facilitate deformation of said plate, and

wherein the distance between the first and second ends of each plate is sufficiently long to limit contact between the coil spring and the arch wire when the coil spring assembly has been installed on said bracket.

5,545,038

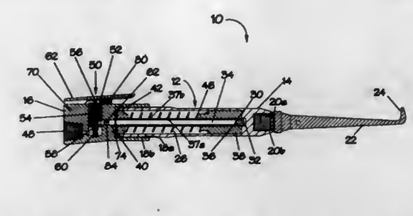
PERCUSSIVE DENTAL EXTRACTOR

Deborah V. Beebe, Jupiter, Fla., assignor to Sidney Horowitz, Jupiter, Fla.

Filed Jul. 27, 1995, Ser. No. 508,205

Int. Cl.[6] A61C *1/07;3/08*

U.S. Cl. 433—120 **7 Claims**



1. A pneumatically operated percussive dental extractor comprising:

a main body having a longitudinal axis, a central longitudinal chamber, a proximal end and a distal end;

a hook member attached to the distal end of said main body;

an anvil mounted in said longitudinal chamber at a proximal end thereof;

a piston reciprocally mounted in said longitudinal chamber for movement from a distal end thereof to engagement with said anvil;

a driving means for selectively driving said piston pneumatically from the distal end of said chamber into percussive engagement with said anvil, said driving means including a coupling for connecting the driving means to a source of pneumatic pressure located at the proximal end of said main body and a trigger means for selectively connecting the source of pneumatic pressure to the distal end of said chamber, said trigger means including an actuator which is radially moved to connect the pneumatic source to the distal end of said chamber; and

a return means for automatically returning said piston from engagement with said anvil to the distal end of said chamber.

5,545,039

METHOD AND APPARATUS FOR PREPARING TOOTH OR MODIFYING DENTAL RESTORATION

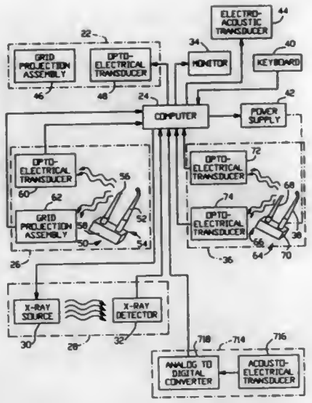
David R. Mushabac, 919 Ocean Ave., Brooklyn, N.Y. 11226

Continuation-in-part of Ser. No. 507,162, Apr. 10, 1990, and Ser. No. 613,354, Nov. 14, 1990, Pat. No. 5,448,472, which is a continuation-in-part of Ser. No. 507,162, Apr. 10, 1990. This application May 1, 1991, Ser. No. 694,444

Int. Cl.[6] A61C *5/00;5/08*

U.S. Cl. 433—215 **13 Claims**

1. A method for preparing tooth and tooth restorations, comprising the steps of:



projecting a visible point of light onto a predetermined location on an object, thereby serving as an indicator to an operator that material is to be removed from said object at said location;

guiding a material removal means to said location, upon projection of said visible point of light onto said location; and

operating material removal means to remove material from the object at said location.

5,545,040

MULTI-TIER JACK MOTION SYSTEM

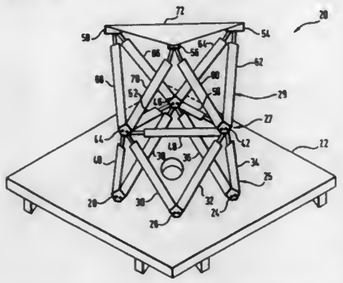
Youyi Lu, Singapore, Singapore, assignor to Compacific Engineering Pte Ltd., Singapore, Singapore

Filed Jun. 8, 1994, Ser. No. 254,648

Claims priority, application United Kingdom, Jun. 8, 1993, 9311848

Int. Cl.[6] G09B *9/08*

U.S. Cl. 434—58 **9 Claims**



1. A system for generating motion for a simulator having a floor and a platform, said system comprising:

a first tier of jacks;

at least three mounting joints on said floor, each mounting joint coupling one end of two of said first tier of jacks;

a second tier of jacks;

at least three intermediate joints, each intermediate joint coupling the other end of two of said first tier of jacks and two of said second tier of jacks, each of said intermediate joints being coupled to at least two of said mounting joints by said first tier of jacks;

a plurality of intermediate jacks, each of said intermediate joints being further interconnected with each other via one of said intermediate jacks; and

at least three platform mounting joints on said platform for coupling to said intermediate joints by said second tier of jacks, each of said platform mounting joints being coupled to at least two intermediate joints by said second tier of jacks, such that the platform and equipment attached on an upper surface of said platform moves in six degrees of freedom.

5,545,041

EARTH GLOBE

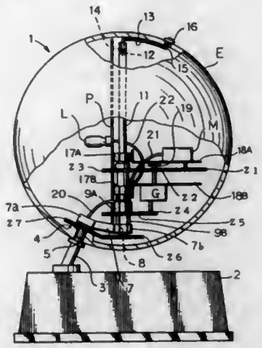
Mikihisa Tsuzuki, Tajimi, Japan, assignor to Kazuyuki Katsuno, Tajimi, Japan

Filed Nov. 10, 1994, Ser. No. 339,181

Claims priority, application Japan, Nov. 11, 1993, 5-307280

Int. Cl.[6] G09B *27/08*

U.S. Cl. 434—136 **15 Claims**



1. An earth globe comprising:

a base;

a hollow globe body made of translucent material and having a spherical configuration corresponding substantially to the earth;

first support means for supporting said globe body relative to said base said globe body being rotatable around a first axis corresponding substantially to the earth axis;

illumination means disposed within said globe body for illuminating the interior thereof;

shading means also disposed within said globe body for shading light from said illumination means over a substantially half region of said globe body;

second support means for rotatably supporting said shading means relative to said globe body around a second axis corresponding substantially to an axis which is perpendicular to the orbital plane of revolution of the earth;

first drive means for rotating said globe body around said first axis at a first rotational speed;

second drive means for rotating said shading means around said second axis at a second rotational speed different from said first rotational speed; and

motor means positioned within said globe body and for activating said first and said second drive means.

5,545,042

LEARNING BOARD IN COMBINATION WITH SOLUTION LISTS

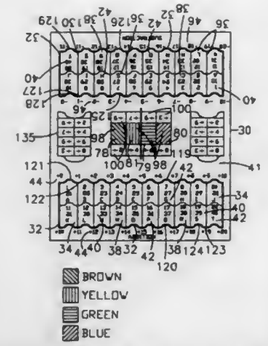
Irvin R. Barrows, P.O. Box 1234, St. Ann, Mo. 63074-5234

Filed Oct. 20, 1992, Ser. No. 965,669

Int. Cl.[6] G09B *1/16*

U.S. Cl. 434—207 **62 Claims**

1. A learning board for performing addition and subtraction exercises comprising:



a playing surface including at least two receiving areas located within the same horizontal plane, and a plurality of constant/confirmation indicia, the receiving areas including a plurality of answer/orientation indicia, the plurality of answer/orientation indicia including a plurality of board positions; and

a plurality of board pieces having a top and a bottom, the top of the board pieces including a plurality of verification indicia, the bottom of the board pieces including a plurality of question/orientation indicia, the plurality of board pieces positionable on the board positions of the receiving areas.

5,545,043

Patent Not Issued For This Number

5,545,044

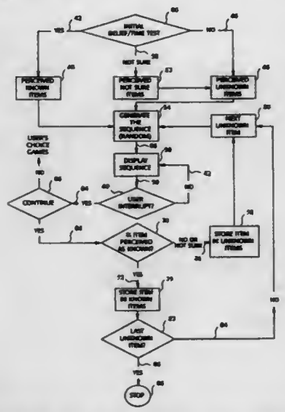
METHOD AND APPARATUS FOR AUTOMATED LEARNING AND PERFORMANCE EVALUATION

Deborah L. Collins, P.O. Box 9050, Woodland Park, Colo. 80866, and Anne S. Blocker, 1244 Harbor View, Galveston, Tex. 77550

Division of Ser. No. 682,428, Apr. 8, 1991, Pat. No. 5,154,689. This application Apr. 25, 1995, Ser. No. 428,890

Int. Cl.[6] G09B *5/00*

U.S. Cl. 434—322 **15 Claims**



1. An apparatus for teaching items to a user comprising:

memory means for storing a file of said items;

display means for presenting each item to said user;

input means for receiving a response from said user for each item; and

processor means, responsive to said user's response, for sorting said items into groups of subjectively known items and subjectively unknown items and for generating a sequence of one subjectively unknown item and a plurality of subjectively known items.

5,545,045

IC CONTACTOR

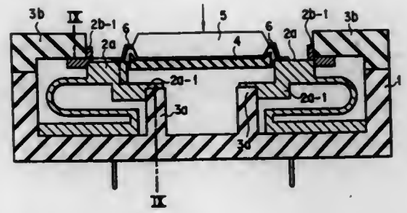
Hideki Wakamatsu, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 31, 1994, Ser. No. 296,914

Claims priority, application Japan, Sep. 1, 1993, 5-217730

Int. Cl.[6] H01R *9/09*

U.S. Cl. 439—70 **6 Claims**



1. An IC contactor comprising:

receiving means for receiving an IC to be tested, said IC to be tested having a plurality of external lead pins arranged in a line;

a plurality of contact pins arranged near a periphery of said receiving means and in a line so as to correspond in position to the plurality of external lead pins arranged in a line of the IC to be tested, said plurality of contact pins including a plurality of first contact pins and a plurality of second contact pins, the first contact pins and the second contact pins being arranged alternately and having respective contacting portions arranged in a line for contacting the external lead pins of the IC to be tested, the first contact pins each having a projecting portion projected from a first portion thereof and the second contact pins each having a projecting portion projected from a second portion of thereof different than the first portion of the first contact pins;

first separators each interposed between the projecting portions of consecutive first contact pins; and

second separators each interposed between the projecting portions of consecutive second contact pins.

5,545,046

CHARGING CONNECTOR FOR ELECTRIC VEHICLE

Satoki Masuda, and Toshiaki Hasegawa, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, and Toyota Jidosha Kabushiki Kaisha, Aichi, both of, Japan

Filed Dec. 27, 1994, Ser. No. 364,488

Claims priority, application Japan, Dec. 27, 1993, 5-347136

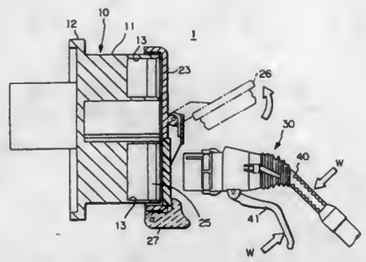
Int. Cl.[6] H01R *13/44*

U.S. Cl. 439—142 **3 Claims**

1. A power receiving connector comprising:

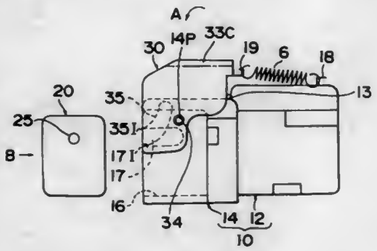
a DC power receiving portion and an AC power receiving portion arranged in a recess portion of the power receiving connector, the DC power receiving portion and the AC power receiving portion separated from each other;

a first cap provided for openably closing an entire open end of the recess; and



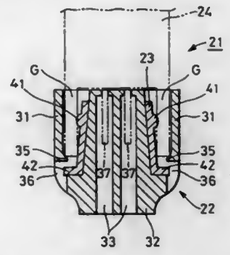
a second cap pivotally, mounted on an outer surface of the first cap, for openably closing a through hole formed through a portion of the first cap corresponding to the AC power receiving portion.

5,545,047
CONNECTOR
Hajime Okada, and Masashi Saito, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan
Continuation of Ser. No. 51,857, Apr. 26, 1993, abandoned. This application Jul. 25, 1994, Ser. No. 281,806
Claims priority, application Japan, Apr. 28, 1992, 4-028456 U
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—157 **3 Claims**



1. A connector used to connect one pair of first and second terminals comprising:
a first connector member for accommodating said first terminal therein and provided with a first engaging means;
a second connector member for accommodating said second terminal therein and provided with a second engaging means engageable to said first engaging means, said second connector member provided with a first positioning means;
a lever means pivotally provided on said second connector member and provided with a third engaging means engageable to said first engaging means, said third engaging means being a continuously curved groove having a first inner surface and a second opposed outer surface, said inner surface being shorter than said outer surface to form a substantially convex curved shape, and first and second ends, said first end being open for reception of said first engaging means, the distance between said first and second opposed surfaces being substantially constant, said lever means having an axis for pivoting, said outer surface being closer than said inner surface to said axis; and
a biasing means provided between said second connector member and said lever means for holding said lever means at a first predetermined position such that said lever means is held in contact with said first positioning means and said second and third engaging means are aligned with each other to form an inlet for said first engaging means, whereby when said lever means initially pivots apart from said first predetermined position, said first engaging means is captured by said second engaging means and between said first and second opposed surfaces of said curved groove, and is then pressed by said curved groove to move along said second engaging means by further pivoting of said lever means by an angle of substantially 90°, so that said first connector member is firmly engaged with said second connector member when said lever means is located at a second predetermined position.

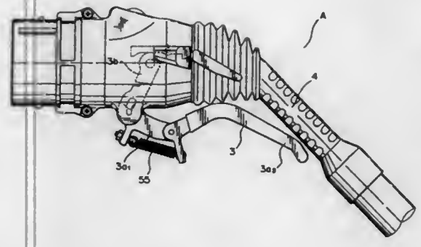
5,545,048
WATERPROOF CONNECTOR
Akira Maeda, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan
Filed Oct. 21, 1994, Ser. No. 326,927
Claims priority, application Japan, Oct. 21, 1993, 5-285545
Int. Cl.[6] H01R *13/52*
U.S. Cl. 439—273 **21 Claims**



1. A waterproof connector comprising:
a first connector housing having an inner tubular portion and an outer tubular portion formed around said inner tubular portion to form a gap therebetween, wherein said inner tubular portion has a plurality of terminal receiving chambers formed therein; and
a tubular waterproof packing fitted and secured on an outer surface of said inner tubular portion, wherein an outer diameter of at least a front end of said inner tubular portion is smaller than a rear inner diameter of a rear end of said tubular waterproof packing, and wherein an inner surface of said tubular waterproof packing is tapered such that said rear inner diameter is greater than a front inner diameter of a front end of said tubular waterproof packing.

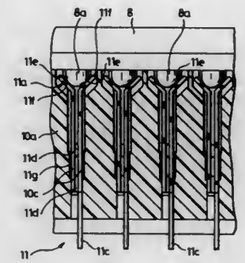
5,545,049
CONNECTOR
Toshiaki Hasegawa, and Satoki Masuda, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan
Filed Dec. 20, 1994, Ser. No. 359,422
Claims priority, application Japan, Dec. 28, 1993, 5-337552
Int. Cl.[6] H01R *13/62*
U.S. Cl. 9—310 **2 Claims**

1. A connector comprising:
an elongated hollow case;
a connector body slidably housed in an front half of said case, and having a plurality of terminals therein;
a handle mounted to a rear half of said case, and adapted to advance and retract with said connector body longitudinally within said case;
a lever having a first portion and a second portion and journaled at an intermediate portion thereof within the case, said first portion being pivotally connected to any one of said handle and said connector body, and said second portion projecting outwardly of said case; whereby pivoting said lever about the



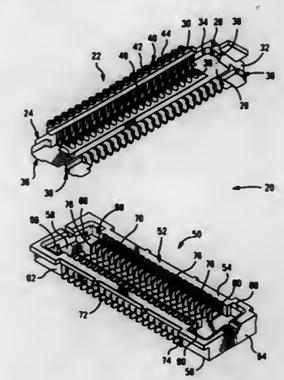
intermediate portion journaled within the case causes said connector body to advance into a fitting engagement with a mating connector body, wherein said lever includes:
said second portion integrally continuous with said first portion;
a handlebar pivotally connected to said second portion; and
a tension spring mounted between said handlebar and said second portion so that said spring yieldably stretches if a force applied to said handlebar exceeds a predetermined value when said handlebar is operated.

5,545,050
IC SOCKET
Kazumasa Sato, and Akihiko Kokubu, both of Yokohama, Japan, assignors to Wells Japan Limited, Kanagawa-ken, Japan
Filed Oct. 7, 1994, Ser. No. 319,731
Claims priority, application Japan, Jun. 7, 1994, 6-125004
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—331 **7 Claims**



1. An electrical IC socket comprising:
a body having a plurality of through holes, each hole made at a regular interval and a corresponding plurality of contact pieces inserted in said through holes wherein each of the contact pieces comprises a first body half with a leg, a first trunk half and a first inclined head half and a second body half with a second trunk half and a second inclined head half, wherein said first and second trunk halves are disposed substantially adjacent and parallel to each other and said first and second trunk halves are integrally connected by at least one joint and wherein the first and second inclined head halves diverge upwardly;
a lid to cover an open top of said body and said lid being capable of lifting up;
and lock means on said lid to hold said lid in a closed position with said body, thereby the lid pushes lead conductors of an IC package against heads of said contact pieces for testing the IC package.

5,545,051
BOARD TO BOARD MATABLE ASSEMBLY
Donald J. Summers, Shiremanstown; Robert S. Correll, Jr., Harrisburg, and Donald E. Dellinger, Hellan, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.
Filed Jun. 28, 1995, Ser. No. 495,951
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—350 **18 Claims**



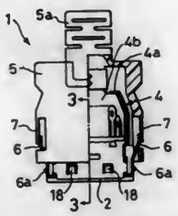
1. A surface mountable connector assembly for interconnecting circuits of respective circuit boards comprising:
a plug connector having a housing with opposed mating and mounting faces and an array of first contacts extending therebetween, said first contacts having mating portions exposed at said mating face for mating with complementary contacts of a mating connector, said mating face being defined on a plug portion of said housing extending between opposed sides and opposed ends;
a receptacle connector having a housing with opposed mating and mounting faces, a bottom wall and a receptacle portion having opposed sides and opposed ends defining a cavity adjacent said bottom wall for receiving said complementary plug connector and a corresponding array of second contacts extending between said mating and mounting faces, said plug portion and receptacle portion being shaped and dimensioned to interfit snugly upon connector mating;
one of said plug portion and said receptacle portion includes at least two spaced apart latch projections extending laterally from at least both of said opposed sides or both of said opposed ends, and including outwardly facing bearing surfaces adjacent bearing surfaces of the other of said plug portion and receptacle portion; and
the other of said plug portion and said receptacle portion includes at least two spaced apart latch receiving recesses alongside at least both of said sides or both of said ends corresponding to said opposed sides or ends of one of said plug portion and said receptacle portion having said projections, said latch receiving recesses being adapted to receive said latch projections upon full mating thereto;
whereby during mating said plug connector to said receptacle connector, said latch projections bear against and create an interference fit with said adjacent bearing surfaces during initial entry of said plug portion into said receptacle portion, thereby holding fixed the centered position of the plug and receptacle connectors to resist lateral forces thereon during mating and upon full mating of said plug and receptacle connectors, said latch projections release said walls upon their being received in said cavity recesses.

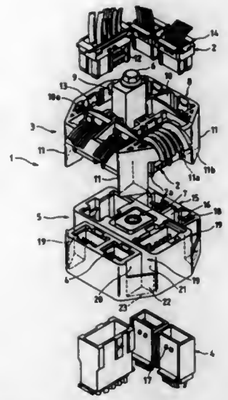
5,545,052

ELECTRICAL CONNECTOR

Yuji Hirai, Tokyo, Japan, assignor to Honda Tsushin Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 103,106, Aug. 9, 1993, abandoned. This application Jun. 24, 1994, Ser. No. 265,842
Claims priority, application Japan, Aug. 19, 1992, 4-058160
Int. Cl.[6] H01R *13/627*
U.S. Cl. 439—354 **4 Claims**





1. An electrical connector comprising:
an electrically insulating member for holding therein a plurality of laterally arranged longitudinally elongated electrical contacts;
a metallic shell arranged in a pair of split halves to be fitted together to contain therebetween said electrically insulating member; and
a resinous cover to cover said metallic shell;
one of said split halves of said metallic shell having a pair of resilient means provided on a front end of said metallic shell, each of said resilient means having an outwardly projecting engaging piece which is disposed in such a portion as is outside said resinous cover;
wherein said resinous cover has a pair of flexible portions which are so arranged as to urge said resilient means inwards when pressed towards each other, whereby said engaging pieces are also moved towards each other;
wherein proximate each of said resilient means said one of said split halves has a projecting piece which extends from a front side wall portion thereof towards said electrically insulating member;
wherein said electrically insulating member has a pair of slits for receiving therein said respective projecting pieces of said resilient means; and
wherein each said front side wall portion extends in the direction away from a base of said one of said split halves, said resilient means each comprises a J-shaped piece extending from a front of the respective front side wall portion and turning oppositely toward the rear direction, and said projecting piece proximate each said resilient means comprises said front side wall portions extending beyond the width of the resilient means so as to form said protecting piece on top of the front side wall portions.

5,545,053

MULTI-POLE CONNECTOR

Takashi Ishii; Tamio Watanabe, and Toru Nagano, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Continuation of Ser. No. 186,147, Jan. 25, 1994, Pat. No. 5,480,322. This application Jul. 18, 1995, Ser. No. 503,491
Claims priority, application Japan, Jan. 25, 1993, 5-9824
Int. Cl.[6] H01R *13/629*
U.S. Cl. 439—364 **4 Claims**

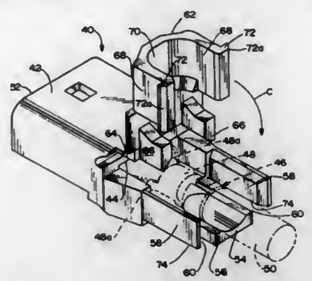
1. A multi-pole connector assembly, comprising:
a first frame accommodating a plurality of first connectors projecting in a forward direction, each of said first connectors including a discrete housing retaining therein a plurality of first terminals, said first connectors being arranged in a cross-shaped arrangement including a first group arranged in a first lateral direction and a second group arranged in a second lateral direction perpendicular to said first lateral direction and combining to define four separate quadrants, said first frame including an alignment rib provided in each of said quadrants which projects in said forward direction;
a second frame accommodating a plurality of second connectors each including a discrete housing and a plurality of second terminals which are engageable with said first terminals therein, said second connectors also being arranged in a cross-shaped arrangement including a first group extending in said first lateral direction and a second group extending in said second lateral direction and combining to define four separate quadrants, said second frame having a rib reception guide provided in each of said quadrants for receiving an associated alignment rib of said first frame.

5,545,054

ELECTRICAL CONNECTOR WITH HINGED COVER

Kevin C. Benes, Willowbrook; Fred L. Krehbiel, Chicago, and Russell L. Mackowiak, Wheaton, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Aug. 26, 1994, Ser. No. 296,766
Int. Cl.[6] H01R *13/58*
U.S. Cl. 439—467 **10 Claims**



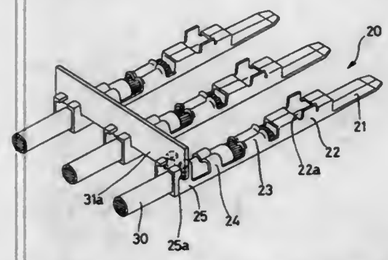
1. In an electrical connector which includes a dielectric housing having a through axial passage for receiving therein electrical terminal means, a cover hingedly connected to the housing for movement from an open position to a closed position with the cover and the housing having respective juxtaposed walls bounding at least one lateral side of the passage when the cover is in its closed position, said juxtaposed walls each having a top edge and a bottom edge, and complementary laterally interengaging latch means between the juxtaposed walls to hold the cover in its closed position, wherein the improvement comprises the wall of the cover being juxtaposed inside the wall of the housing in a lateral direction and said latch means interengaging between said respective bottom edges of said juxtaposed walls when the cover is in its closed position, whereby lateral forces on the terminal means biases the wall of the cover outwardly toward the wall of the housing to ensure engagement of the laterally engaging latch means.

5,545,055

METHOD AND APPARATUS FOR MECHANICALLY AND ELECTRICALLY COUPLING METAL TERMINALS IN A HOUSING

Seiji Tanaka; Shuji Kosuge, and Kazuhiko Fuse, all of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Mie, Japan

Filed Jul. 13, 1994, Ser. No. 274,278
Claims priority, application Japan, Jul. 16, 1993, 5-199256
Int. Cl.[6] H01R *31/08*
U.S. Cl. 439—507 **11 Claims**



1. A connector terminal-joint structure for connecting metal terminals that are received in a plurality of respective terminal receiving chambers formed in a connector housing comprising:
a through-hole formed in said connector housing and extending in a direction intersecting a direction of a length of said terminal receiving chambers in said connector housing, said through-hole communicating with each of said terminal receiving chambers;
a reception portion on each of said metal terminals, said reception portion being registrable with said through-hole and being formed along said through-hole, said metal terminals each being connected to a wire, the reception portion being located over an insulated portion of the wire; and
a short-circuiting piece abutted against said reception portions through said through-hole to electrically short-circuit the metal terminals together.

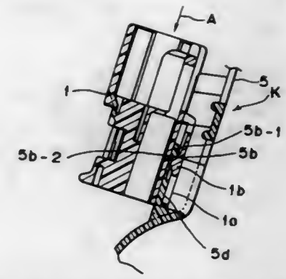
5,545,056

ELECTRICAL CONNECTOR MOUNTING CONSTRUCTION OF ELECTRICAL CONNECTOR HOLDER

Jun Yamaguchi, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd, Yokkaichi, Japan

Filed Jan. 18, 1995, Ser. No. 374,097
Claims priority, application Japan, Mar. 11, 1994, 6-041549
Int. Cl.[6] H01R *13/73*
U.S. Cl. 439—532 **2 Claims**

1. An electrical connector mounting construction of an electrical connector holder including a holder body, comprising:
a vertical wall portion for inserting a slide shoe of an electrical connector in a connector inserting direction, which is provided on the holder body;
a locking portion which is engageable with a locking claw of the electrical connector at a predetermined insertion position of the electrical connector and is provided at an upper portion of the vertical wall portion in the connector inserting direction;
a pair of main ribs which are, respectively, provided at opposite sides of the locking portion on a rear face of the vertical wall portion and extend in the connector inserting direction so as to be coupled with the holder body; and
a pair of auxiliary ribs which each have one end coupled with an outer side of each of the main ribs so as to be spaced from the rear face of the vertical wall portion by a gap for allowing insertion of the slide shoe of the electrical connector thereinto and extend in a direction perpendicular to the connector inserting direction such that the other end of each of the auxiliary ribs is coupled with the holder body;
the vertical wall portion being formed, at its opposite sides, with a pair of slits for drawing towards a front face of the vertical wall portion a molding die for forming the auxiliary ribs, respectively.

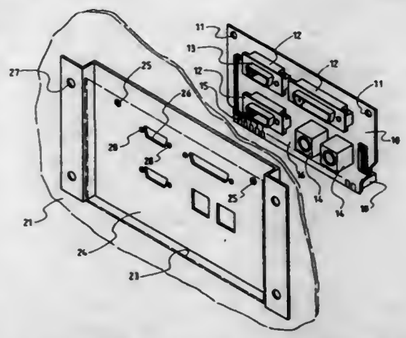


5,545,057

INTERCONNECTION SYSTEM WITH I/O CONNECTOR MODULE BOARD

Haw-Chan Tan, Diamond Bar, and Tim S. L. Chang, Chino Hills, both of Calif., assignors to Hon Hai Precision Ind. Co., Ltd., Taiwan

Filed May 27, 1994, Ser. No. 250,366
Int. Cl.[6] H05K *1/14*
U.S. Cl. 439—540.1 **4 Claims**



1. An interconnection system for use with I/O ports in a computer case, comprising:
a pre-assembled I/O assembly unit including a first I/O module board having I/O circuits and components thereof, a plurality of I/O connectors mounted on said first board, and a metal panel to which the first board is attached so that said connectors are generally sandwiched between the panel and the first board;
a second main board comprising CPUs thereon;

connection means positioned proximate the first board and the second board for interconnecting the first board and the second board with each other; and

a frame positionable on a backpanel of the computer case wherein said pre-assembled I/O assembly unit is securely located adjacent to said frame and communicates with an exterior, and wherein said frame includes two sets of spaced legs for sandwiching said I/O assembly unit therebetween.

5,545,058

SOCKET FOR SMALL INCANDESCENT LAMP

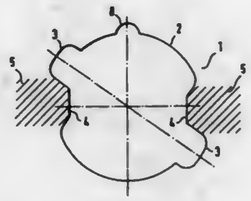
Paul Albrecht, Stauffenbergstrasse 43, 96052 Bamberg, Germany

Filed Jan. 23, 1995, Ser. No. 376,990

Claims priority, application Germany, Jan. 21, 1994, 44 01 487.2

Int. Cl.[6] H01R *13/74*

U.S. Cl. 439—547 **25 Claims**



1. A socket for an incandescent lamp in which the socket is detachably mounted in an opening of a printed circuit board comprising:

a socket having an incandescent lamp;

first mounting means on said socket enabling mounting and removal of said socket from said circuit board opening from one side of said circuit board;

said socket comprising a housing, said first mounting means comprising locking arms flexibly disposed on said housing for movement between an engaging position and a retracted position, said locking arms contacting said circuit board when in said engaging position, said locking arms when in said retracted position enabling said socket to pass through said opening;

second mounting means on said socket enabling mounting and removal of the socket from said circuit board opening from the other side of said circuit board;

said second mounting means comprising rotative support means supporting said socket for rotative movement between an operative rotative position and a displaced rotative position, said second mounting means being operable to enable rotation of said socket from said operative rotative position to said displaced rotative position and to thereafter enable removal of said socket from said other side of said circuit board when in said displaced rotative position;

said second mounting means being operable to effect removal of said socket from said other side of said circuit board which was initially mounted from said one side of said circuit board by said first mounting means.

5,545,059

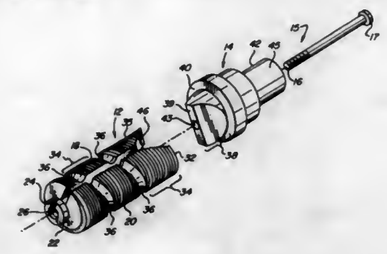
CONNECTOR FOR A HOLLOW CENTER CONDUCTOR OF A RADIO FREQUENCY CABLE

James W. Nelson, Cheshire, Conn., assignor to Radio Frequency Systems, Inc., Marlboro, N.J.

Filed Mar. 30, 1995, Ser. No. 413,963

Int. Cl.[6] H01R *17/18*

U.S. Cl. 439—583 **12 Claims**



1. A center conductor connector assembly (**10**) for use with hollow center conductors having smooth walls and for use with hollow center conductors having corrugated walls, the center conductor connector assembly comprising:

an expandable plug (**12**) further comprising:

a shoulder (**24**) having a threaded bore (**26**) therein,

a plurality of cylindrical segments attached to the shoulder, each of the segments further including an inwardly tapering surface (**46,48**) at a second end (**32**), an outer surface (**35**) having means (**34**) for gripping a smooth wall center conductor and means (**36**) for receiving a helical corrugation;

a plug-expanding-conductor-coupler (**14**) having, at a first end (**39**), a means for expanding the diameter of the expandable plug when the coupler and plug are drawn together, a hollow cylindrical coupling (**42**) extending from a second end (**45**) towards the means for expanding the plug at the first end; and

means (**15**) for drawing the plug-expanding-conductor-coupler (**14**) and expandable plug (**12**) together so as to cause a diametric expansion of the expandable plug when the means for expanding the diameter of the plug is positioned adjacent to the inwardly tapering surfaces at the second end of the expandable plug.

5,545,060

CLAMPING TERMINAL UNIT

Neil Gow, Gloucestershire, United Kingdom, assignor to Krone Aktiengesellschaft, Berlin-Zehlendorf, Germany

Filed Sep. 2, 1994, Ser. No. 300,729

Claims priority, application Germany, Sep. 10, 1993, 43 31 212.8

Int. Cl.[6] H01R *9/22*

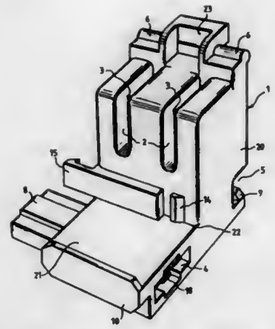
U.S. Cl. 439—747 **11 Claims**

1. A clamping terminal unit comprising:

a housing defining a plurality of wire receiving openings, said housing having a first lateral side, a second lateral side, a first end side and a second end;

a plurality of electrical contacts, each of said plurality of electrical contacts being positioned in one of said plurality of wire receiving openings, said each of said plurality of electrical contacts having wire contact means for electrically connecting with a wire, each of said wire contact means including an insulation displacement contact element;

lateral mechanical connection means positioned on said first and second lateral sides of said housing and for being connectable to a first lateral housing substantially similar to said housing on said first lateral side of said housing and for being connectable to a second lateral housing substantially similar to said housing on said second lateral side of said housing, said



lateral mechanical connection means includes a first latch device positioned on said first lateral side of said housing said lateral mechanical connection means also includes a second latch device extending from said second lateral side of said housing;

lateral electrical connection means positioned in said first and second lateral sides of said housing and for being electrically connectable with said first lateral housing on said first lateral side of said housing and for being electrically connectable to said second lateral housing on said second lateral side of said housing, said lateral electrical connection means being electrically connected to said plurality of electrical contacts;

end mechanical connection means positioned on said first and second end sides of said housing and for being connectable to a first end housing substantially similar to said housing on said first end side of said housing and for being connectable to a second end housing substantially similar to said housing on said second end side of said housing.

5,545,061

PANEL LOCK CONNECTOR

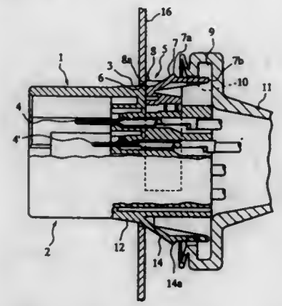
Masahiro Sawayanagi, Shizuoka-ken, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Aug. 29, 1994, Ser. No. 294,864

Claims priority, application Japan, Aug. 30, 1993, 5-214390

Int. Cl.[6] H01R *13/514*

U.S. Cl. 439—752 **6 Claims**



1. A panel lock connector fitted into a hole formed in a panel, said connector comprising:

a connector housing having chambers formed therein for accommodating electrical terminals, said connector housing being provided in a peripheral wall thereof with an opening and flexible lock arms, each said flexible lock arm having an engagement projection to be engaged with said hole; and

a spacer inserted into said connector housing through said opening in a direction perpendicular to a direction along which said terminals are inserted into said chambers to thereby support predetermined portions of said inserted terminals, said spacer having a base;

wherein, under condition that said spacer is inserted into said opening and said connector housing is fitted into said panel incompletely, an axial end of said spacer is positioned close to said panel in comparison with said engagement projection;

wherein, under condition that said spacer is inserted into said connector housing completely, a top of said base is arranged within said peripheral wall of said connector housing; and

wherein, under condition that said spacer is inserted into said connector housing incompletely, said top of said base projects from said peripheral wall and such incomplete insertion of said spacer prevents said connector from being fitted completely into said hole in said panel.

5,545,062

TERMINAL FOR PASSING THROUGH WATERPROOF RUBBER PLUG AND METHOD OF PRODUCING TERMINAL

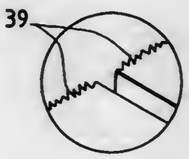
Takashi Takagishi, and Toshihiko Makita, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Nov. 30, 1994, Ser. No. 352,107

Claims priority, application Japan, Nov. 30, 1993, 5-299884

Int. Cl.[6] H01R *4/10*

U.S. Cl. 439—877 **4 Claims**



1. A terminal for passing through a waterproof rubber plug comprising:

an electrical contact portion for receiving a mating terminal;

a conductor-clamping portion for compressively clamping a conductor of a wire;

a covering-clamping portion for compressively clamping a covering of the wire; and

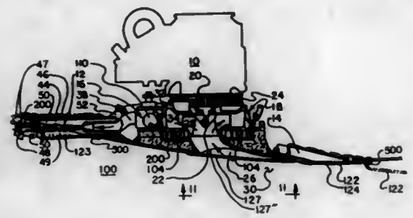
waterproof rubber insertion means for smoothly communicating the terminal with a waterproof rubber plug without damage to the waterproof rubber plug, the waterproof rubber insertion means comprises a generally semi-annular projection for preventing an inverted insertion of the terminal provided at a bottom plate portion of the terminal and an arch-like curve portion, extending in a direction of the width of the terminal, is formed at an apex portion of the projection, and at least one of beveled and chamfered portions which are formed on at least one edge of at least one of the electrical contact portion, the conductor-clamping portion and covering-clamping portion which oppose the rubber plug in an insertion direction of the terminal into the rubber plug.

5,545,063

CHAMBERED ANTI-COANDA JET MARINE PROPULSION DEVICE WITH GASEOUS BOUNDARY LAYER FOR A THRUST JET FLOW STREAM EXHIBITING STAGED CONTROLLED BOUNDARY LAYER SEPARATION PROPERTIES, VESSEL TRIM ADJUSTMENT, AND MOVABLE THRUST VECTOR APPLICATION POINTS(S)

Hendrick W. Haynes, 17427-195th Pl. SE., Renton, Wash. 98058

Filed Jan. 21, 1993, Ser. No. 6,958
Int. Cl.[6] B63H *11/04*
U.S. Cl. 440—47 **15 Claims**



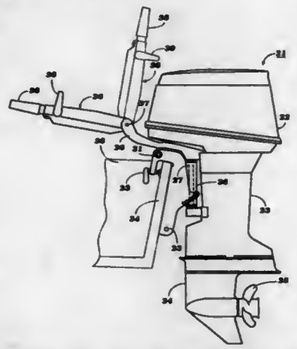
1. In combination with a marine craft including a hull having a submerged surface portion within which a discharge opening is formed, including a displaceable jacket means having a predetermined passage width and length in enclosing relation to the gas flow stream, a source of gas, and means for introducing gas into the jacket to form a gaseous boundary layer in a sheet surface relation to the hull plate downstream of said displaceable jacket means, comprising means for pressurizing the gas within the jacket, and means mounting the jacket in operative relation to the hull and the discharge opening for the formation of the gaseous boundary layer against-the-hull.

5,545,064

CONTROL FOR OUTBOARD MOTOR

Hiroyuki Tsunekawa, and Kouji Abe, both of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Sep. 9, 1994, Ser. No. 304,097
Claims priority, application Japan, Sep. 9, 1993, 5-224664
Int. Cl.[6] B63H *5/12*
U.S. Cl. 440—53 **39 Claims**



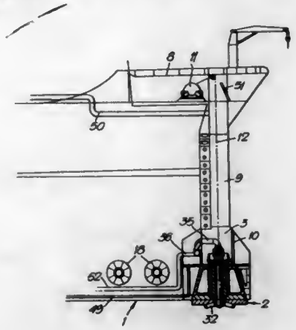
1. An outboard motor control incorporated into a unit adapted to be affixed to a longitudinally extending tiller of an outboard motor for controlling the transmission and throttle of the outboard motor, said control comprising a housing assembly adapted to be affixed to the tiller in aligned relation therewith, an operator actuated throttle control journaled by said housing assembly for rotation about a generally longitudinally extending first axis, a first motion translator for translating rotary motion of said throttle control into reciprocation of a throttle actuating element contained within said housing assembly along a longitudinal axis, an operator actuated shift control independent of said throttle control and supported for pivotal movement by said housing assembly about a transversely extending second axis, and a second motion translator comprised of a plurality of interconnected links for transmitting pivotal movement of said shift control about said second axis into longitudinal movement of a shift actuator element within said housing assembly.

5,545,065

ARRANGEMENT IN A SHIP FOR LOADING/UNLOADING OF A FLOWABLE MEDIUM IN OPEN SEA

Kare Breivik, Tau; Arne Smedal, Farvik, and Kare Syvertsen, Arenda, all of, Norway, assignors to Den Norske Stats Oljeselskap A.S., Stavanger, Norway

PCT No. PCT/NO92/00055, § 371 Date Aug. 15, 1994, § 102(e) Date Aug. 15, 1994, PCT Pub. No. WO93/11032, PCT Pub. Date Jun. 10, 1993
PCT Filed Mar. 30, 1992, Ser. No. 244,431
Claims priority, application Norway, Nov. 27, 1991, 914652
Int. Cl.[6] B63B *22/02*
U.S. Cl. 441—5 **18 Claims**



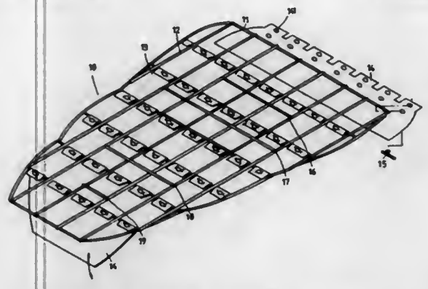
1. An arrangement, in a vessel having a hull, for transfer of a flowable medium between said vessel and a transfer line for the medium which is coupled to a buoy anchored to the sea bed, the buoy having a central member, and an outer member rotatably mounted on said central member, the outer member of said buoy having a conical shape, said arrangement comprising:
- a module of said vessel in the bow of said vessel providing a submerged downwardly open receiving space, said receiving space having an at least partly conical shape substantially corresponding to the conical shape of the outer member of the buoy, for mating with the buoy,
- means for releasable locking of the outer member of the buoy in said receiving space,
- a deck on said vessel,
- a service shaft having a lower end communicating with said receiving space and an upper end communicating with said deck,
- hoisting means on said deck for hoisting the buoy into said receiving space, and
- a sink line extending through said service shaft for connection with said hoisting means and with the buoy, and
- a first sealing means provided on said module in said receiving space for cooperating with a second sealing means on the buoy, for sealing off said lower end of said service shaft from the surrounding sea when the buoy is secured in said receiving space.

5,545,066

SWIMMING AID ASSEMBLY

Yen-Wen Tsai, 144, Lane 509, Pei Tun Road, Taichung, Taiwan

Filed Aug. 7, 1995, Ser. No. 511,734
Int. Cl.[6] A63B *31/11*
U.S. Cl. 441—61 **6 Claims**



1. A swimming aid assembly comprising:
- a generally grid-shaped frame which has a plurality of spaced transverse bars and a plurality of spaced longitudinal rods to form a plurality of meshes thereon;
- each of said transverse bar connecting a transverse leaf thereon;
- at least a first and second reinforced ribs disposed spacedly and transversely on said generally grid-shaped frame;
- a hook and loop type toe strap disposed adjacent to said second reinforced rib;
- a first fastener member disposed at an end of said hook and loop type toe strap;
- a longitudinal hook and loop type instep strap and a longitudinal first hook and loop type heel strap being crossed by a first hook and loop type cross strap;
- said first heel strap disposed at an end portion of said first cross strap;
- said longitudinal hook and loop type instep strap and a longitudinal second hook and loop type heel strap being crossed by a second hook and loop type cross strap;
- said second heel strap disposed at approximately a middle portion of said second cross strap;
- said first cross strap disposed at an end portion of said instep strap;
- said second cross strap disposed approximately at a center portion of said instep strap;
- a second fastener member disposed at an end of said instep strap;
- a third fastener member disposed at an end of said first cross strap;
- said instep strap disposed adjacent to said first reinforced rib;
- said first and second heel straps being positioned by said corresponding longitudinal rods, respectively.

5,545,067

SWIMMING FIN WITH BUCKLE FOR FASTENING THE HEEL STRAP

Giovanni Garofalo, Rapallo, Italy, assignor to HTM Sport S.p.A, Italy

Filed May 10, 1995, Ser. No. 438,920
Claims priority, application Italy, Jun. 16, 1994, GE94A000079
Int. Cl.[6] A63B *31/11*
U.S. Cl. 441—64 **9 Claims**

1. A swim fin comprising: an open-shoe type fin with a socket for the foot of a user, and provided with a heel strap for securing the fin to the heel of the foot of the user and further comprising at least one buckle for securing said heel strap to the open-shoe type fin, in which said buckle comprises a generally flat base piece, said base piece comprising a wall piece and two lateral flanges perpendicular thereto; means for securing said base piece on the side of the fin next to the socket for the foot; an intermediate lever hinged at one end in said base piece; and an end piece bearing at one end a means for connection to said strap, while its other end is hinged at a point on said intermediate lever between the end hinged to the base piece and the free end.

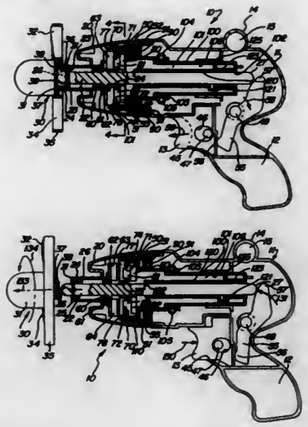


5,545,068

PROPELLER LAUNCHING TOY

Ahmed A. Asbaghi, Hawthorne, Calif., assignor to Mattel, Inc., El Segundo, Calif.

Filed Aug. 15, 1995, Ser. No. 515,722
Int. Cl.[6] A63H *27/127*
U.S. Cl. 446—39 **6 Claims**



1. A propeller launching toy comprising:
- a housing;
- a trigger movable supported by said housing;
- a main shaft supported within said housing and having a forward end extending from said housing and interior end, said main shaft being both rotatably and slidably supported by said housing;
- a main spring coupled to said main shaft to be wound when said main shaft is rotated in a first rotational direction and unwound when said main shaft is rotated in an opposite second rotational direction;
- a propeller toy having a center portion engageable with said forward end of said main shaft and a plurality of radially extending propeller blades;
- a winding collar rotatably supported upon said housing;
- a ratchet collar coupled to and rotatable with said winding collar having a plurality of first engagement members;
- a disk joined to said main shaft having a plurality of second engaging members; and
- a trigger spring coupled to said main shaft urging said mainshaft slidably toward a position in which said first and second engaging members engage;
- ratchet means coupled to said ratchet collar preventing rotation of said ratchet collar in said second rotational direction; and

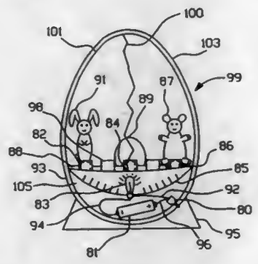
release means responsive to movement of said trigger to overcome said urging of said trigger spring and moving said main shaft toward a position in which said first and second engaging members disengage thereby allowing said main spring to rotate said mainshaft and said propeller toy.

5,545,069

ILLUMINABLE TOYS AND SIMULATIONS WITH REPLACEABLE ILLUMINABLE EDIBLES

Kenneth P. Glynn, Raritan Township, Hunterdon County, and James R. Blair, II, Town of Phillipsburg, both of N.J., assignors to Ideal Ideas, Inc., Flemington, N.J.

Filed Mar. 24, 1995, Ser. No. 410,055
Int. Cl.[6] A63H *3/00*
U.S. Cl. 446—73 **6 Claims**



1. An illuminable toy comprising:
(a) at least one light source;
(b) at least one battery, said battery being electrically connected to said at least one light source;
(c) a switch, said switch being electrically connected to said at least one light source and said at least one battery, said switch providing an on/off adjustment for energizing and de-energizing said at least one light source with said at least one battery;
(d) a base, said base containing said at least one light source and said at least one battery and said switch, said base having at least one light permeating portion for allowing passage of light emitted from said at least one light source, said switch being adjustable from an exterior of said base;
(e) at least one holder, said at least one holder being attached to said base;
(f) at least one replaceable, illuminable edible having a three dimensional form, being attached to said at least one holder, and being illuminated by light emitted from said at least one light source; and
(g) a cover attached to said base and covering said at least one, replaceable, illuminable edible and having a three dimensional configuration, wherein said cover and said base simulate an eggsbell, said cover being divided longitudinally into two portions at a joint extending from a top of said cover to just above a top support surface of said base, said division at said joint simulating a crack line.

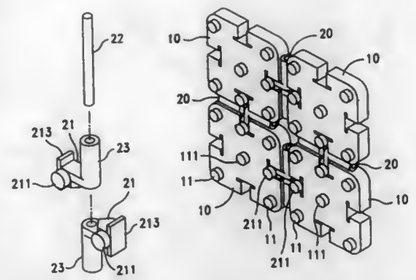
5,545,070

CONSTRUCTION TOY SET OF PLANAR BLOCKS WITH APERTURES AND HINGED CONNECTORS

Jin-Su Liu, No. 148, Chien Hsin Rd. Sec. 1, Lin 7, Yuan San Hsiang, Hsin Feng Hsiang, Hsin Chu Hsien, Taiwan

Filed May 8, 1995, Ser. No. 436,530
Int. Cl.[6] A63H *33/10;33/08*
U.S. Cl. 446—104 **10 Claims**

1. A construction toy set of planar blocks with edge apertures and hinged connectors comprising a plurality of block elements for connection with one another, and a plurality of swivel connectors



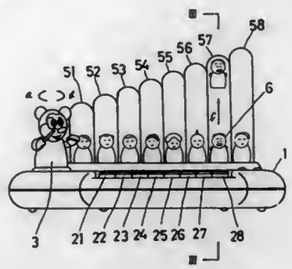
for connecting said block elements together for allowing them to be turned relative to one another, wherein:
each block element is made of a flat shape having a top side, a bottom side, and a plurality of peripheral sides, comprising a plurality of pins at the top side, a plurality of pin holes at the bottom side corresponding to said pins, a plurality of first retaining grooves equiangularly spaced from one another and respectively disposed in parallel with the peripheral sides, and a plurality of second retaining slots respectively and perpendicularly extended from said first retaining slots to said peripheral sides, the pins on one flat block element being for fitting into the pin holes on another flat block element for allowing said flat blocks to be connected with one another;
said swivel connectors each comprises two reversed based elements and an axle, each base element being approximately equal to said second retaining slots in width, having an axle housing at one end mounted around said axle, a retainer plate at an opposite end for fitting into one first retaining slot on one block element, a pin at one side for fitting into one pin hole on one block element, and a pin hole at an opposite side for receiving one pin of one block element or one pin of another swivel connector.

5,545,071

EDUCATIONAL TOY KEYBOARD

Masami Shiraishi, Tiba, Japan, assignor to Stuff Co., Ltd., and Works Co., Ltd., both of Tokyo, Japan

Filed Mar. 14, 1995, Ser. No. 403,947
Claims priority, application Japan, Mar. 15, 1994, 6-004186 U
Int. Cl.[6] A63H *33/30;33/40*
U.S. Cl. 446—143 **4 Claims**



1. An educational toy keyboard comprising:
a main body;
keys arranged on said main body;
transparent cylinders corresponding to said keys, said transparent cylinders being mounted on said main body;
tone-indicating characterful figures fitted for flotation within the respective cylinders, said tone-indicating characterful figures being floated by buoyancy of compressed air;

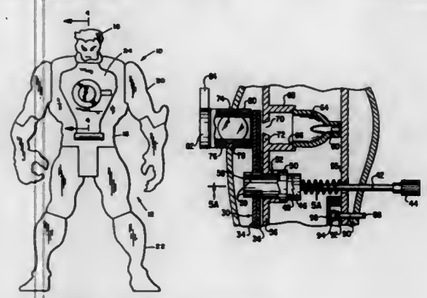
feeding means for feeding the compressed air; and
a sound-generating circuit capable of sounding a scale or melody in response to depression of the individual keys;
wherein a depression of one of said keys substantially simultaneously causes the sound-generating circuit to sound the scale or melody and permits the feeding means to feed compressed air to a corresponding one of said transparent cylinders so as to cause the tone-indicating characterful figures to float in the corresponding transparent cylinders.

5,545,072

IMAGE PROJECTIVE TOY

Avi Arad, Westport, Conn., and Melvin Kennedy, Lantana, Fla., assignors to Toy Biz, Inc., New York, N.Y.

Filed Jul. 27, 1994, Ser. No. 281,010
Int. Cl.[6] A63H *3/00;33/22;33/26*
U.S. Cl. 446—268 **12 Claims**



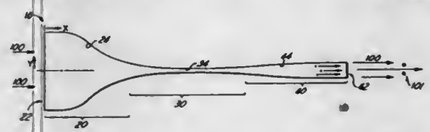
1. An image projective toy, comprising:
a toy figure having a head member, a partially hollow body member and a plurality of appendage members extending from said body member, said body member further having a chest portion and a back portion; and
a projection system wherein said projection system is housed substantially within said body member, said projection system comprising means for illuminating, film element means having more one image to be projected, rearwardly projecting control means for said film element means and lens means comprising a manipulable forwardly projecting focusing element for focusing at least one of said image to a variety of distances outside of said toy figure and further wherein said lens means is positioned through said chest portion of said toy figure and projects at least one of said image perpendicular relative said chest portion.

5,545,073

SILICON MICROMACHINED CO_2 CLEANING NOZZLE AND METHOD

Lawrence L. Kneisel, Novi; Jay D. Baker, Dearborn, and Lakhi N. Goenka, Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 5, 1993, Ser. No. 43,943
Int. Cl.[6] B24C *1/00;5/04*
U.S. Cl. 451—39 **19 Claims**



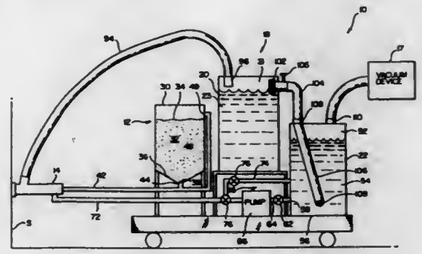
11. A method for cleaning a workpiece with abrasive CO_2 snow, comprising:
receiving CO_2 in a gaseous form in an upstream section of a nozzle having a first contour shaped for subsonic flow of the CO_2 gas,
passing the CO_2 gas through a throat section of the nozzle shaped for delaying the phase change of the CO_2 from the gaseous phase along a constant entropy line into a mixture of CO_2 gas and snow within a downstream section spaced from the throat section,
passing the CO_2 gas through the downstream section of the nozzle having a second contour for directing the flow of the CO_2 gas and snow toward the workpiece at a speed greater than Mach 1.1,
whereby increased kinetic energy is imparted to the snow by delaying the conversion into the solid phase until the gaseous CO_2 reaches supersonic speeds in the downstream section of the nozzle.

5,545,074

ABRASIVE BLASTING SYSTEM WITH WASTE WATER RECYCLING

Patrick T. Jacobs, 27304 - 227th Pl. SE., Maple Valley, Wash. 98038

Filed Dec. 28, 1994, Ser. No. 365,306
Int. Cl.[6] B24C *3/06;5/04;7/00;9/00*
U.S. Cl. 451—40 **10 Claims**



1. A method for recovering and re-using water in a wet abrasive blasting system, the system comprising:
a pressurized canister for holding abrasive particulate;
a water holding tank;
a blast head for receiving abrasive particulate under pressure from the pressurized cannister and water under pressure from the water holding tank, the blast head defining a work volume into which abrasive particulate and water are ejected;
a waste recovery tank for receiving a waste stream of water, abrasive particulate, and surface debris from the blast head;
filter means at the waste recovery tank for filtering the waste stream to pass water from the waste recovery tank into the water holding tank; and
means generating a vacuuming force for pulling water, abrasive particulate and surface debris from the blast head into the waste recovery tank;
the method comprising the steps of:
forcing abrasive particulate from the pressurized canister into the blast head with the vacuum generating means;
pumping water from the water holding tank into the blast head, the ejected water and forced abrasive particulate defining a blast stream impacting onto a surface to create surface debris;
sucking the water, abrasive particulate and surface debris from the blast head into the waste recovery tank under the vacuuming force generated by the vacuum force generating means;
accumulating water, abrasive particulate and surface debris in the waste recovery tank to a level at which the water flows to the filter; and
passing water through the filter into the water holding tank.

5,545,075

PROCESS FOR THE PRODUCTION OF AN EDGED OPTHALMIC LENS

Lutz Gottschald, Meerbusch, Germany, assignor to Wernicke & Co., Dusseldorf, Germany

PCT No. PCT/DE92/00550, § 371 Date Dec. 30, 1993, § 102(e) Date Dec. 30, 1993, PCT Pub. No. WO93/01024, PCT Pub. Date Jan. 21, 1994

PCT Filed Jul. 1, 1992, Ser. No. 170,328

Claims priority, application Germany, Jul. 1, 1991, 41 21 714.4

Int. Cl.[6] B24B *1/00*

U.S. Cl. 451—42 **12 Claims**

1. A process for the production of an edged ophthalmic lens wherein an ophthalmic lens which initially is finished on one side and not yet edged according to a prescribed disk shape, i.e., a so-called blank having only one finished effective surface, is produced and the so-called prescription surface is produced in another manufacturing step,

comprising calculating a position of the prescription surface in relation to the finished effective surface from the prescribed disk shape stored as a set of data, from a stored set of data of the prescription surface and from a contour of the finished effective surface;

producing the prescription surface and at least preliminarily edging the blank, without renewed gripping of the blank, in a single processing apparatus utilizing the calculated data; and

final edging, facetting and polishing a perimeter of the blank utilizing the calculated data, wherein said lens is held by a block following production of said effective surface, said block remaining on said effective surface during the further course of the production operation.

5,545,076

APPARATUS FOR GRINGING A SEMICONDUCTOR WAFER WHILE REMOVING DUST THEREFROM

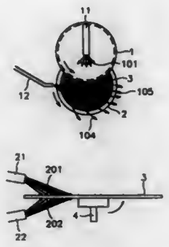
Tae-Jin Yun; Dong-Pyo Hong, both of Yongin, and Byung-Suk Park, Suwon, all of, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed May 15, 1995, Ser. No. 440,920

Claims priority, application Rep. of Korea, May 16, 1994, 94-10655

Int. Cl.[6] B24B *5/00*

U.S. Cl. 451—287 **8 Claims**



1. A polishing apparatus comprising:

a wafer-polishing device for polishing a semiconductor wafer, said wafer-polishing device including at least two fluid supply paths for providing at least two fluid flows having different directions to the semiconductor wafer;

a wafer-cleaning device for providing a fluid flow to each of an upper surface and a lower surface of the semiconductor wafer; and

a wafer-conveying device for conveying a semiconductor wafer from said wafer-grinding device to said cleaning device.

5,545,077

BELT GRINDER WITH A PLATE TENSIONING MEANS

Cornelius Boeck, Leinfelden-Echterdingen, and Rudolf Fuchs, Neuhausen, both of, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

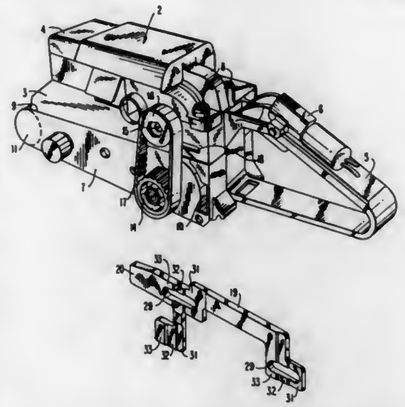
PCT No. PCT/DE93/00609, § 371 Date Feb. 7, 1995, § 102(e) Date Feb. 7, 1995, PCT Pub. No. WO94/03308, PCT Pub. Date Feb. 17, 1994

PCT Filed Aug. 7, 1993, Ser. No. 381,995

Claims priority, application Germany, Aug. 8, 1992, 9210599 U

Int. Cl.[6] B24B *21/00*

U.S. Cl. 451—311 **8 Claims**



1. A band sander, comprising a band running case; band rollers arranged in said band running case and adapted for guiding an abrasive band; a motor housing connected with said band running case; a belt drive including belt wheels having axes of rotation and a belt and transmitting a motor torque to one of said band rollers; means for adjusting a distance between said belt wheels which determines a tension of said belt, said means including an insert plate having a longitudinal axis which is parallel to said axes of rotation of said belt wheels when in operating position, said plate having steps of varying height along said longitudinal axis.

5,545,078

QUICK-ACTION CLAMPING DEVICE FOR AXIALLY SECURING A DISK SHAPED TOOL

Manfred Schulz, Nurtingen; Gerhard Waldner, Neckarhausen, and Alfred Wagemann, Nurtingen, all of, Germany, assignors to Metabowerke GmbH & Co., Germany

Filed Nov. 16, 1993, Ser. No. 152,167

Claims priority, application Germany, Nov. 16, 1992, 42 38 466.4; Dec. 19, 1992, 42 43 328.2

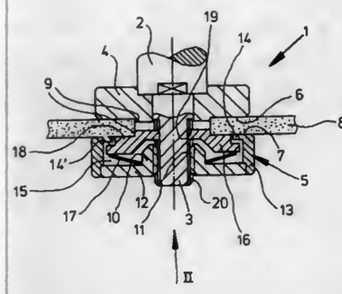
Int. Cl.[6] B24B *41/00*

U.S. Cl. 451—342 **26 Claims**

1. A quick-action clamping device for axially securing a disk-shaped tool on a flange of a driven, threaded spindle, the flange defining a contact surface, comprising:

a clamping part defining a contact surface and having a thread which engages the thread of the spindle, the tool being clamped between said contact surface of the flange and said contact surface of said clamping part, the spacing between the contact surface of the flange and said contact surface of said clamping part being changeable;

a clamping and friction part defining a holding surface in contact with said disk-shaped tool, said clamping and friction part being connected to said spindle such that relative rotation between said clamping and friction part and said spindle is prevented; and



spring means for exerting a spring force such that the tool is pressed by said clamping and friction part against the contact surface of the flange.

5,545,079

APPARATUS FORMING A CUTTING MACHINE OR CIRCULAR SAW

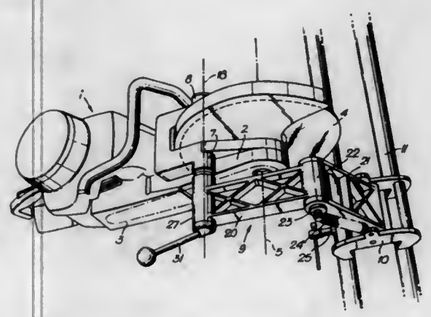
Håkan Larsson, Mölndal, and Ove Donnerdal, Partille, both of, Sweden, assignors to Aktiebolaget Electrolux, Sweden

Filed Apr. 22, 1994, Ser. No. 231,467

Claims priority, application Sweden, May 3, 1993, 9301506

Int. Cl.[6] B24B *41/00*; B28D *1/04*

U.S. Cl. 451—342 **11 Claims**



1. Apparatus forming a portable, hand-operated machine (1, 1', 1"), having a circular cutting wheel (4) or saw blade (4") which is rotatable about a center of rotation (5,5"), comprising:

a double-armed holder (9) with a rear arm (20) and a front arm (21), the rear arm having a rear, free end (27) connected to the machine at a first hinge, the rear arm being rotatable about a first axis of rotation (18, 18*a*, 18*b*, 18") parallel to the center of rotation of the cutting wheel or the saw blade, and the rear arm having a front end connected rotatably, by means of a toggle joint (22), to a rear end of said front arm (21), the front arm having a front, free end connected rotatably to a securing device about a second axis of rotation at a second hinge, for rotatable anchoring of the holder and, thus, of the machine on an object which is to be cut or sawn, whereby the machine with the cutting wheel or the saw blade is displaceable relative to the said object at right angles to the first axis of rotation during turning of the arms at the said first and second hinges and at the said toggle joint;

wherein a center line (18, 18*a*, 18*b*, 18") of the said first axis of rotation intersects a plane of rotation of the cutting wheel or the saw blade at a point between the center of rotation of the cutting wheel or saw blade and a periphery of the cutting wheel or saw blade.

5,545,080

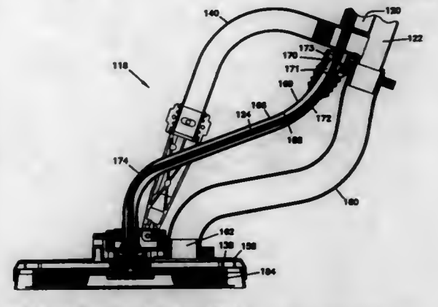
MOTORIZED SANDER HAVING A SANDING HEAD MOUNTED BY A PIVOTAL JOINT

Earl R. Clowers, Jackson; Steve H. Plume, Humboldt, and John C. Smith, Jackson, all of Tenn., assignors to Porter-Cable Corporation, Jackson, Tenn.

Filed Feb. 16, 1995, Ser. No. 389,800

Int. Cl.[6] B24B *27/027*

U.S. Cl. 451—359 **40 Claims**



1. A motorized sander comprising:

(a) a drive motor mounted on a distal end of a tubular wand;

(b) a flexible drive shaft operatively coupled to the drive motor and extending along the length of the tubular wand; and

(c) a sanding head mounted by a pivotal joint to a proximal end of the tubular wand, the sanding head including a sanding pad operatively coupled to the flexible drive shaft, the pivotal joint comprising a first and a second flexible joint, the first joint being configured to pivot about a first axis which is different from a second axis about which the second joint pivots.

5,545,081

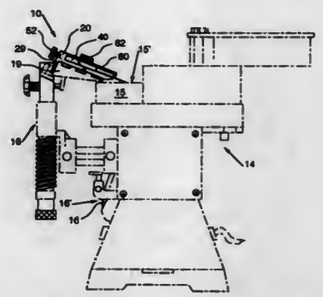
TOOL FIXTURE FOR ABRADING APPARATUS

Jeffrey L. Haffely, Gibsonia; Xun Lei, Cheswick, and Louis C. Brickner, Pittsburgh, all of Pa., assignors to Delta International Machinery Corp., Pittsburgh, Pa.

Filed Aug. 9, 1994, Ser. No. 286,358

Int. Cl.[6] B24B *19/00*

U.S. Cl. 451—367 **12 Claims**



12. Apparatus for holding a tool having a cutting edge in a predetermined abrading orientation with respect to a tool abrading apparatus, comprising:

base means for supporting the tool thereon, said base means having a tab member formed thereon for slidably retaining said base means on the tool abrading apparatus such that said base means can be laterally slidably displaced on said tool abrading apparatus while retaining the tool in the predetermined abrading orientation, said base means further having a groove therein;

an advanceable and retractable positioning member movably attached to said base means for selective abutting contact with the tool, said positioning member having an alignment member sized to be slidably received in said groove to restrict the advancement and retraction of said positioning member to a predetermined path of travel to enable said positioning member to orient the tool in the predetermined abrading orientation;

adjustment means attached to said base means for selectively advancing and retracting said positioning member relative to said base means to move the tool into the predetermined abrading orientation; and

tool retaining means removably attached to said base member for selectively retaining the tool on said base member such that the tool is retained in the predetermined abrading orientation.

5,545,082

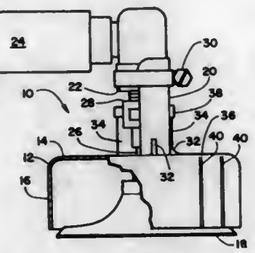
DUST CONTROL SYSTEM FOR ROTARY HAND TOOLS

Michael W. Courson, 1088 Thunderbird, El Paso, Tex. 79912; Daniel C. Courson, 12806 Traviata, Houston, Tex. 77024, and William H. Courson, 1088 Thunderbird, El Paso, Tex. 79912

Filed May 2, 1994, Ser. No. 240,971

Int. Cl.[6] B24B *55/06*

U.S. Cl. 451—456 **21 Claims**



1. A dust control system for rotary hand tools which comprises:

a shroud having an interior and comprising a base secured to a peripheral skirt adapted to surround a rotatable abrasive means;

a central opening in said base for passage of a rotatable tool shaft extending from a substantially cylindrical housing said tool shaft and housing being coaxial;

a partially tubular collar secured in a substantially perpendicular relationship to said base opposite said skirt for contact with said housing, said collar contacting less than the full circumference of said housing and capable of engaging housings of different diameters;

said collar having a partial circular cross section and leaving at least about a 120° segment of the circumference of said housing open and accessible from outside said collar;

means for securely fastening said collar to said housing;

an exhaust tube communicating with the interior of said shroud through an exhaust port.

5,545,083

APPARATUS FOR PROCESSING SLAUGHTERED POULTRY

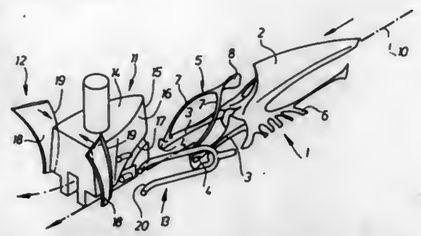
Norbert Bargelé, Stockelsdorf; Manfred Brandt, Lübeck, and Helmut Kunig, Bad Scwartau, all of, Germany, assignors to Nordischer Maschineinbau Rud. Baader GmbH & Co., KG, Lubeck, Germany

Filed Apr. 19, 1995, Ser. No. 424,613

Claims priority, application Germany, Apr. 20, 1994, 44 13 683.8

Int. Cl.[6] A22C *17/04*

U.S. Cl. 452—136 **7 Claims**



1. An apparatus for processing at least part of a slaughtered poultry body defining a plane of symmetry, said part comprising at least a breast portion having a clavicle (wishbone, lat. clavicula) with left and right branches, said apparatus comprising

a) means for holding said poultry part aligned with respect to its plane of symmetry with said left and right clavicle branches extending out of said plane,

b) means for advancing said poultry part in a predetermined direction with said clavicle leading,

c) a supporting element defining lateral flanks for entering between the branches of the clavicle, each flank having a recess for receiving a branch of said clavicle,

d) scraping means for removing meat from said clavicle, said scraping means being adapted for controlled movement along said supporting element flanks, and

e) pressing means associated with said scraping means, said pressing means having fork-shaped free ends and being arranged with respect to said advancing direction to operate directly upstream of said scraping means and further being adapted to act on said poultry body at approximately a height of said clavicle to urge said clavicle branches into said recesses to cause said branches to lie flush with said flanks.

5,545,084

METHOD AND APPARATUS FOR AIR CONDITIONING TWO PASSENGER DECKS OF AN AIRCRAFT

Heinz Fischer, Henstedt-Ulzburg; Thomas Scherer, Hamburg; Michael Markwart, Halstenbek, and Klaus Petry, Hamburg, all of, Germany, assignors to Daimler-Benz Aerospace Airbus GmbH, Hamburg, Germany

Filed Jul. 20, 1995, Ser. No. 504,906

Claims priority, application Germany, Jul. 21, 1994, 44 25 871.2

Int. Cl.[6] B64D *13/08*

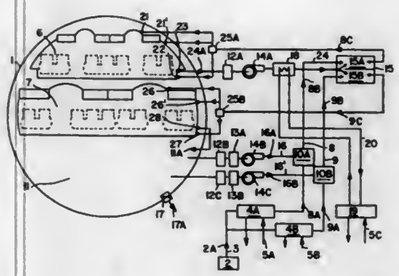
U.S. Cl. 454—76 **21 Claims**

1. A method of air conditioning an upper deck passenger cabin and a lower deck passenger cabin in a two passenger deck aircraft, comprising:

a) providing at least one compressed air stream;

b) cooling said compressed air stream in at least one air conditioning plant;

c) extracting a lower cabin exhaust air stream from said lower deck passenger cabin and mixing a recirculation portion of said lower cabin exhaust air stream into said compressed air stream to result in at least one first and one second supply air stream;



d) extracting an upper cabin recirculation air stream from said upper deck passenger cabin and mixing said upper cabin recirculation air stream into said first and second supply air streams;

e) directing said first supply air stream into said upper deck passenger cabin with a flow rate substantially equivalent to a flow rate of said upper cabin recirculation air stream;

f) directing said second supply air stream into said lower deck passenger cabin; and

g) ejecting an exhaust portion of said lower cabin exhaust air stream outside said aircraft.

5,545,085

HEATING-VENTILATION AND/OR AIR CONDITIONING APPARATUS FOR THE PASSENGER SPACE IN A MOTOR VEHICLE.

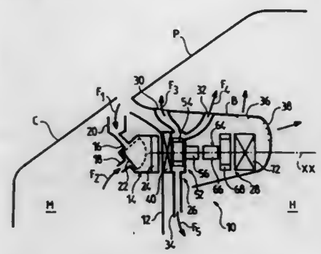
Jacques Danleau, Noisy Le Roi, France, assignor to Valeo Climatisation

Filed Apr. 7, 1994, Ser. No. 224,034

Claims priority, application France, Apr. 9, 1993, 93 04272

Int. Cl.[6] B60H *1/04*

U.S. Cl. 454—124 **5 Claims**



1. An apparatus for one or more of heating, ventilation and air conditioning of the passenger space of a motor vehicle, characterized in that said apparatus comprises components disposed on both sides of a transverse partition separating the passenger space from the front engine compartment, wherein the components disposed on the side of the passenger space are placed one after the other in a substantially horizontal direction along the longitudinal axis of the vehicle and are mounted centrally in a dashboard, and wherein the components disposed on the side of the passenger space are grouped in a central module of the dashboard which comprises a heating device for the production of warm air, said heating device comprising a housing, at least one radiator, an impeller, at least one air inlet and at least one air outlet; a ventilation device for the production of cool or conditioned air, said ventilation device comprising a housing, an impeller, at least one evaporator, at least one air inlet and at least one air outlet; and vents connected to the heating device and vents connected to the ventilation device.

5,545,086

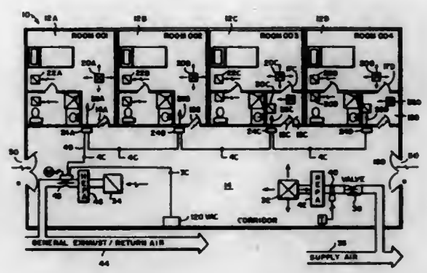
AIR FLOW CONTROL FOR PRESSURIZED ROOM FACILITY

Gordon Sharp, Newton, Mass.; Jerome Dean, Rochester, N.Y., and Eric Desrechers, Nashua, N.H., assignors to Phoenix Controls Corporation, Newton, Mass.

Filed Aug. 18, 1994, Ser. No. 292,783

Int. Cl.[6] F24F *11/047*

U.S. Cl. 454—238 **18 Claims**



1. A control for maintaining a desired air flow balance between at least one pressurized room and an external space connected to such room, there normally being a selected air flow offset between each room and the external space, the control comprising:

an element which generates a signal indicative of a selected offset changing condition for at least one of said air flow offsets; and

an air flow control for said external space which control is responsive to said signal for changing the air flow in at least said external space to achieve the selected changed offset while maintaining said desired air flow balance.

5,545,087

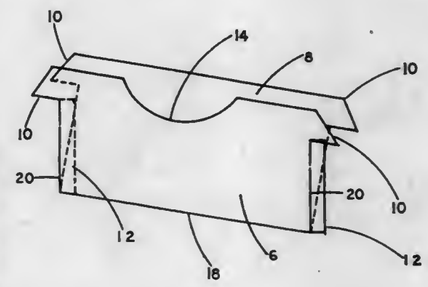
STORAGE POCKETS FOR FILE FOLDERS

Eric Seward, 1528 Walnut #3, Berkeley, Calif. 94709

Filed Apr. 26, 1994, Ser. No. 233,063

Int. Cl.[6] B41L *1/26*

U.S. Cl. 462—6 **9 Claims**



1. A pocket assembly to hang from an upper portion of a file folder and hold a flat, card-like object, comprising:

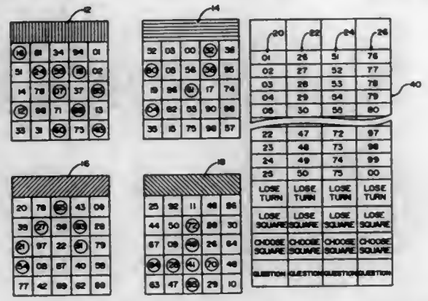
a sheet of semi-flexible material folded to form opposed front and back walls joined by the fold at their lower edges,

said back wall having an upper portion including means for attachment to the upper portion of said file folder and said edges, and said front wall having side edges.

5,545,088
TELEVISION GAME INTERACTIVELY PLAYED BY TELEPHONE WITH TELEVISION-VIEWING HOME AUDIENCE

Edward A. Kravitz, 8700 25th Ave., Brooklyn, N.Y. 11214, and Jerome H. Kravitz, 6600 Hillandale Rd., Chevy Chase, Md. 20815

Filed May 8, 1995, Ser. No. 436,733
Int. Cl.[6] A63F 9/22;9/00; H04M 11/00
U.S. Cl. 463—40 **20 Claims**



1. A method of playing a game on a television show comprising:
preparing a set of numbers corresponding to a specified portion of telephone numbers of a television-viewing home audience;
preparing a predetermined number of game boards, each game board including a matrix having an equal number of rows and columns to provide an arrangement of squares with each square containing a numbers, assigned by chance, corresponding to a numbers from said set;
displaying the game boards on television for viewing by the home audience;
selecting numbers from said set and indicating each selected numbers in the square of the game board having the selected numbers thereon;
finishing the game when one of the game boards registers a win by having a consecutive horizontal, vertical or diagonal line of squares containing selected numbers therein;
determining which members of the home audience are eligible to win by having any one of the selected numbers in a winning line of squares; and
making interactive telephone contact between a portion of eligible to win members of the home audience and staff members of the television show to award all winning members of the home audience.

5,545,089
SHAFT COUPLING

Gerhard Kirschey, Wuppertal, Germany, assignor to Centa-Antriebe Kirschey GmbH, Haan, Germany

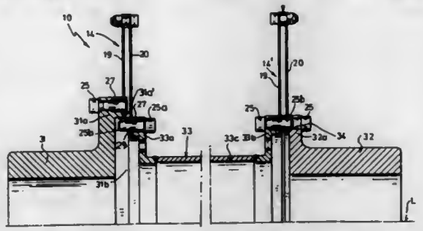
Filed Mar. 25, 1994, Ser. No. 218,326
Claims priority, application Germany, Mar. 26, 1993, 43 09 745.6
Int. Cl.[6] F16D 3/68
U.S. Cl. 464—83 **16 Claims**

1. A two-stage elastic shaft coupling comprising:
a drive-side body rotatable about an axis and formed with
a radial projecting flange,
a central polygonal-section opening centered on the axis and having radially inwardly directed surfaces, and
a plurality of angularly spaced and angularly elongated windows having end flanks and located radially outward of the opening;
a driven-side body having
a hub having a polygonal outer configuration received with clearance in said opening and having radially outwardly directed surfaces disposed within the inwardly directed surfaces of the drive-side body, the inwardly and outwardly directed surfaces being offset with respect to each other to define pockets therebetween, and
respective projections reaching into the windows and located with clearance from the end flanks of the windows in low load torque transmission of the coupling;
an inner group of solid elastomeric coupling elements received in the pockets, angularly spaced about the axis, and compressible upon relative angular displacement of said bodies about said axis to transmit torque from said drive-side body to said driven-side body; and
an outer group of elastomeric coupling elements angularly disposed between said projections and leading ones of said flanks of said windows and elastically stiffer than the elements of said inner group, the outer group of elements axially overlapping the inner group of elements, whereby at low load torque transmission the torque transmission is effected between said bodies exclusively by said inner group of elements and, upon higher load torque transmission, said outer group of elements automatically engage between said leading flanks and said projections and transmit torque between said bodies along with the inner group.

5,545,090
SHAFT COUPLING WITH RING-SHAPED PARALLEL MEMBRANES

Gerhard Kirschey, Wuppertal, Germany, assignor to Centa-Antriebe Kirschey GmbH, Haan, Germany

Filed Feb. 15, 1994, Ser. No. 196,969
Claims priority, application Germany, Feb. 16, 1993, 43 04 611.8
Int. Cl.[6] F16D 3/02;3/06;3/74
U.S. Cl. 464—96 **15 Claims**



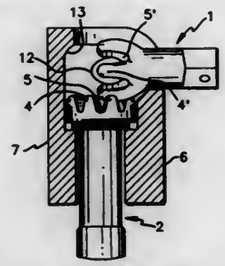
1. A shaft coupling for compensating radial, axial and angular relative movements between a pair of shafts extending generally along an axis, the coupling comprising:

a first member connectable to and rotatable about the axis with one of the shafts and a second member connectable to and rotatable about the axis with the other shaft with relative radial, axial and angular movement between said shafts;
at least one tandem-membrane assembly forming an elastically bendable connection between said members, said tandem-membrane assembly comprising:
two substantially parallel annular membranes lying generally transverse to the axis of the shaft coupling and having respective inner peripheries each formed with an annular array of holes, respective outer peripheries, inner faces directed toward each other and outer faces directed away from each other, and
means for fixedly connecting the outer peripheries of said membranes together; and
respective connecting means for operatively connecting each of said inner peripheries to a respective one of said members, at least one of said connecting means including:
an annular clamping formation engaging the outer face of one of said membranes and connected to the respective member and provided with bores axially aligned with the holes in said one of said membranes along said inner periphery thereof,
respective clamping screws traversing said bores and the respective holes, and
respective internally threaded clamping bushes directly threadedly engaged by said screws, each of said clamping bushes having
a sleeve portion extending through the respective hole into a respective bore of said clamping formation and formed with an internal screwthread, and
a respective shoulder formed on an end of the respective sleeve portion turned toward the other of said membranes and directly engaging against the inner face of said one of said membranes for clamping said one of said membranes between said shoulder and said formation;
respective clamping screws connecting said other of said membranes to the other of said members, the screws of each of said membranes being angularly spaced around respective pitch circles of different radii.

5,545,091
UNIVERSAL JOINT COMPRISING A PAIR OF CROWN GEAR ELEMENTS CONFINED WITHIN A SLOTTED CASING

Hugh Hoskins, 7141 Butterfly Dr., Memphis, Tenn. 38133, and Gary Hoskins, 716 Saddlebrook South, Bedford, Tex. 76021

Filed Aug. 26, 1994, Ser. No. 295,042
Int. Cl.[6] F16D 3/18
U.S. Cl. 464—157 **6 Claims**

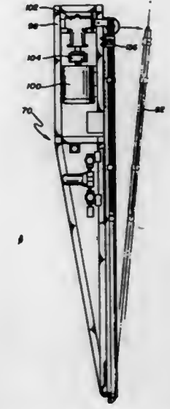


1. In a universal joint comprising a driving gear and a driven gear each provided with a respective crown gear cluster, and a slotted casing confining said driving gear and said driven gear in meshing engagement, said casing comprising a slot through which said driven gear projects and along which said driven gear is angularly movable from a first position in which said driving gear and driven gear are in-line, and a second position in which said driving gear and driven gear are substantially at right angles to one another, the improvement in combination therewith comprising:
a compression spring surrounding a drive shaft of said driving gear within said casing, and acting between a first bearing surface of said casing and a base of the crown gear cluster of said driving gear, said casing further comprising second bearing surfaces contacting the base of the crown gear of said driven gear, said second bearing surfaces being shaped such that movement of said driven gear from said first position to said second position produces a camming action whereby said driving gear is forced downwardly relative to said casing against the action of said compression spring, and whereby said compression spring is in a relatively more relaxed state in said first position of said driven gear, and in a relatively more compressed state in said second position of said driven gear, and wherein said second bearing surfaces include an in-line bearing surface and a right-angle bearing surface, both of said in-line and right-angle bearing surfaces being interrupted by said slot, said in-line and right-angle bearing surfaces being interconnected by an intermediate bearing surface forming a smooth and continuous transition between said right-angle and in-line bearing surfaces, and producing said camming action, said compression spring having multiple coils and imparting to said drive gear a range of axial travel such that said driven gear is maintained against said second bearing surfaces throughout its range of angular movement.

5,545,092
SPECIAL EFFECTS SPARK GENERATING SYSTEM

Steven A. Johnson, Valencia, and Christian P. Bodden, Glendale, both of Calif., assignors to The Walt Disney Company, Burbank, Calif.

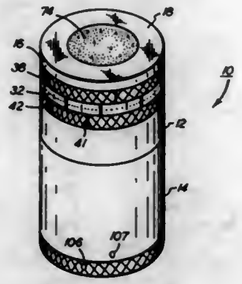
Filed Jun. 16, 1994, Ser. No. 260,541
Int. Cl.[6] A63G 31/00; A63J 23/00
U.S. Cl. 472—66 **26 Claims**



1. A special effects spark generating system, comprising:
a cutting wheel;
a constant motor;
clutch means for drivingly engaging, for a brief predetermined time period, said motor to said cutting wheel, to thereby rotate said cutting wheel for the time period;
a flint rod axially biased against said cutting wheel such that when said cutting wheel is rotated, for the time period by said motor, said cutting wheel cuts, ignites and discharges portions of said flint rod away therefrom in a stream of sparks; and
pneumatics means for directing the stream of sparks out as a special effects shower of sparks.

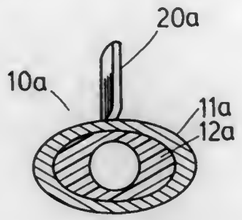
170-652 O.G.-96-10: QL3

5,545,093
BILLIARD ACCESSORY
Kevin D. Contestabile, 99 Barcrest Dr., Rochester, N.Y. 14616, and Richard A. Jackson, 4122 Canal Rd., Spencerport, N.Y. 14559
Filed Sep. 1, 1994, Ser. No. 299,577
Int. Cl.[6] A63D *15/00*
U.S. Cl. 473—36 19 Claims



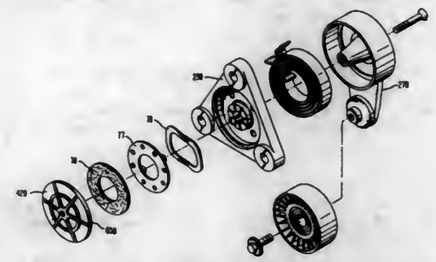
1. A billiard accessory, comprising:
a first, generally cylindrical housing and a second, generally cylindrical housing coaxially aligned with and releasably connected to the first housing;
a first concave, abrasive surface adjacent a first end surface of the first housing, and a second concave, abrasive surface adjacent a second end surface of the first housing, in which the centers of curvature of the first and second concave surfaces are collinear and coaxial with the housings;
a cue chalk holder disposed in a first end of the second housing;
a talc chamber located within the second housing; and
means for dispensing talc from the talc chamber located at a second end of the second housing.

5,545,094
GOLF CLUB SHAFT
Young-chen Hsu, 121, Sec. 1, Shen Lin Road, Taya Hsiang, Taichung Hsien, Taiwan
Filed Aug. 24, 1995, Ser. No. 518,250
Int. Cl.[6] A63B *53/10;53/12*
U.S. Cl. 473—317 8 Claims



1. A hollow golf club shaft comprising:
a tapered shaft which has a first section and a second section;
said first section having an inner layer which is made of viscoelastic foam material and an outer layer which is made of carbon fiber reinforced plastic composite;
said outer layer enclosing said inner layer;
said second section being made of carbon fiber reinforced plastic composite;
said first section having a non-circular cross-section; and
said second section having a circular cross-section.

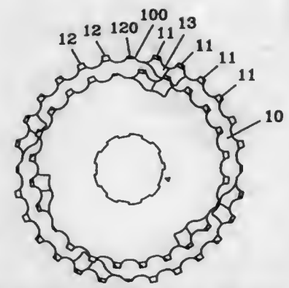
5,545,095
BELT TENSIONER AND METHOD OF MAKING THE SAME
Dewey D. Henderson, Springfield, Mo., assignor to Dayco Products, Inc., Dayton, Ohio
Division of Ser. No. 326,559, Oct. 20, 1994, Pat. No. 5,443,424.
This application May 26, 1995, Ser. No. 451,879
Int. Cl.[6] F16H *7/12*
U.S. Cl. 474—135 20 Claims



1. In a tensioner for a power transmission belt that is adapted to be operated in an endless path, said tensioner comprising a one-piece support member for being fixed relative to said belt, a belt engaging arm movably carried by said support member, and mechanical spring means operatively interconnected to said support member and to said belt engaging arm for urging said belt engaging arm relative to said support member and against said belt with a force to tension said belt, said support member having a pivot opening passing therethrough and having an annular surface disposed substantially concentrically about the longitudinal axis of said pivot opening thereof, said pivot opening defining an internal annular peripheral surface means of said support member, said belt engaging arm having a pivot part thereof rotatably disposed in said pivot opening so as to rotate therein, said pivot part of said belt engaging arm having an external annular peripheral surface means disposed in sliding engagement with said internal annular peripheral surface means of said support member, the improvement wherein said support member is formed of polymeric material and wherein said belt engaging arm has an annular surface directly disposed in sliding engagement with said annular surface of said support member, said internal annular peripheral surface means of said support member having a plurality of spaced apart longitudinal grooves formed therein and having lubricant means disposed therein.

5,545,096
SPROCKET MECHANISM FOR A MULTISTAGE BICYCLE
Bor-Lin Su, No. 70, Sec. 1, Tian-Shin Road, Feng-Yuan City, Taichung Hsien, Taiwan
Filed Aug. 29, 1995, Ser. No. 520,598
Int. Cl.[6] F16H *55/30*
U.S. Cl. 474—160 2 Claims

1. A sprocket mechanism for engagement with a driving chain of a bicycle, said sprocket mechanism comprising:
at least two sprockets, each of said sprockets having a peripheral portion on which is formed at least one set of teeth defined by (1) a first group of teeth, said first group of teeth being defined by a plurality of sequentially arranged teeth of a first style, (2) a second group of teeth, said second group of teeth being defined by a plurality of sequentially arranged teeth of a second style, and (3) a tooth of a third style disposed between said first and second groups, each said sprocket having at least one recess formed in a side surface thereof adjacent said peripheral portion, said recess being disposed adjacent said first group of teeth and extending for a distance substantially equal to a width dimension of two consecutive teeth of said first group of teeth, said tooth of said third style having a height dimension less than a height dimension of both said teeth of said first style and said teeth of said second style for facilitating shifting of the driving of a bicycle between said at least two sprockets.

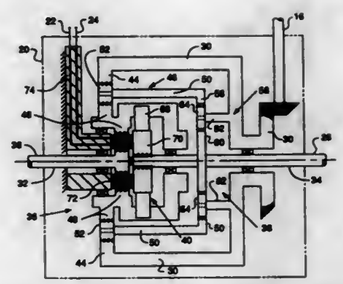


5,545,097
POWER TRANSMISSION BELT WITH FACING FABRIC AND METHOD OF FORMING THE BELT
Masato Kitazumi, Izumiootsu, and Motonobu Yasufuku, Kobe, both of, Japan, assignors to Mitsuboshi Belting Ltd., Kobe, Japan
Filed Nov. 18, 1994, Ser. No. 342,224
Claims priority, application Japan, Nov. 19, 1993, 5-314082
Int. Cl.[6] F16G *1/00*
U.S. Cl. 474—266 12 Claims

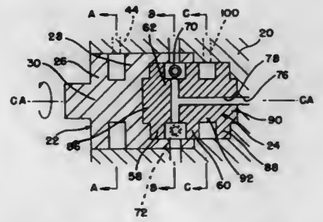
1. A rubber belt comprising:
a belt body having inner and outer surfaces with laterally facing side surfaces extending therebetween; and
a facing fabric covering at least one of the surfaces to form a surface for contact with a pulley, the facing fabric being treated only with a resorcinol-formalin-latex (RFL) solution to adhere thereto at least about 30 weight percent solid RFL based on the total weight of the facing fabric.

5,545,098
COMPACT STEERING APPARATUS
Joshua Zulu, Chillicothe, Ill., assignor to Caterpillar Inc., Peoria, Ill.
Filed Apr. 13, 1995, Ser. No. 422,367
Int. Cl.[6] F16H *47/04*
U.S. Cl. 475—23 4 Claims

1. A hydro-mechanical steering differential adapted for use in a machine having a source of motive power, a transmission operative to direct the motive power through an output shaft to the hydro-mechanical steering differential, a source of pressurized fluid fluidly connected to the hydro-mechanical steering differential, and right and left output drive members operatively connected to the hydro-mechanical steering differential, the hydro-mechanical steering differential comprising:
an input member adapted for connection to the transmission output shaft, first and second output members adapted for integral connection with the respective first and second output drive members, a first planetary gear arrangement connected between the input member and the first output member, a second planetary gear arrangement connected between the input member and the second output member, and a rotatable fluid motor floatingly disposed between the first and second planetary gear arrangements and adapted for fluid connection to the source of pressurized fluid, each of the first and second planetary gear arrangements has a ring gear, a planet gear assembly and a sun gear, each of the planet gear assemblies has a planet carrier and a set of planet gears, the input member being integrally connected with both the ring gear of the first planetary gear arrangement and the planet carrier of the second planetary gear arrangement.



5,545,099
SHIFT CONTROL VALVE OF A HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION
Jaeduk Jang, Kyungki-do, Rep. of Korea, assignor to Hyundai Motor Company, Seoul, Rep. of Korea
PCT No. PCT/KR93/00120, § 371 Date Nov. 29, 1994, § 102(e) Date Nov. 29, 1994, PCT Pub. No. WO95/18321, PCT Pub. Date Jul. 6, 1995
PCT Filed Dec. 29, 1993, Ser. No. 343,498
Claims priority, application Rep. of Korea, Jul. 27, 1992, 92-13462
Int. Cl.[6] F16H *61/26*
U.S. Cl. 475—135 7 Claims



1. A hydraulic control system for an automatic transmission, the system comprising:
a fluid pump;
a proportional control valve for reducing a hydraulic pressure in accordance with a vehicle speed;
a valve body comprising:
a line pressure inlet port for receiving the hydraulic pressure compressed by said fluid pump;
a line pressure outlet port for flowing out the hydraulic pressure to be used as a driving pressure in a "D" range;

a reverse pressure port for flowing out the hydraulic pressure to be used as the driving pressure in an "R" range; and

a first, a second, a third and a fourth speed ports for receiving the hydraulic pressure from said line pressure outlet port and for flowing out the hydraulic pressure to shift a speed stage in accordance with a vehicle speed;

a manual valve rotatably disposed in said valve body and rotates in accordance with a movement of a shift lever; and

a shift control valve rotatably disposed in a same concentric axis with said manual valve in said valve body;

said manual valve including a neck portion, the neck portion integrally forming a first, a second and a third blades thereon for selectively supplying the line pressure to the line pressure inlet port, the line pressure outlet port, and the reverse pressure port;

said manual valve further including a fourth, a fifth, and a sixth blade;

said shift control valve including a first, a second and a third blades, elastic members being disposed between each first, second and third blades of said shift control valve and each fourth, fifth and sixth blades of the manual valve;

said shift control valve further including a fourth blade for selectively opening or closing the first, second, third and fourth speed ports of said valve body; and

said shift control valve further including an axial passage and a plurality of radial passages to supply the hydraulic pressure between the first, second and third blades of the shift control valve and the fourth, fifth and sixth blades of the manual valve.

5,545,100

CONTINUOUSLY VARIABLE TRANSMISSION

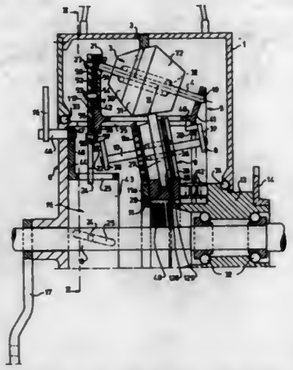
Gijsbertus C. F. Roovers, Goirle, and Bastiaan A. D'Herripon, Tilburg, both of, Netherlands, assignors to Van Doorne's Transmissie B.V., Tilburg, Netherlands

Filed Sep. 22, 1994, Ser. No. 311,025

Claims priority, application Netherlands, Sep. 23, 1993, 9301646

Int. Cl.[6] F16H *15/48*

U.S. Cl. 475—185 **32 Claims**



1. Continuously variable transmission, comprising a sun wheel (**11**, **66**), at least one planet wheel (**3**, **65**) having a double, essentially conical surface (**30**, **31**, **64**, **71**, **72**), which planet wheel (**3**, **65**) interacts on one side with an annulus wheel (**2**, **73**), as well as adjusting means (**5**, **6**, **16**) for changing the transmission ratio, characterized in that each planet wheel (**3**, **65**) is provided with an intermediate wheel (**9**, **59**) which interacts on one side with the sun wheel (**11**, **66**) and on the other side with said planet wheel (**3**, **65**) on the other side of the planet wheel (**3**, **65**) from said annulus wheel (**2**, **73**), wherein each planet wheel (**3**, **65**) and, where appropriate, intermediate wheel (**9**, **59**) is adjustable about an imaginary axis which runs transversely to the center line of the sun wheel (**11**, **66**), such that each planet wheel (**3**, **65**) can be brought into positions with respect to the annulus wheel (**2**, **59**) in which they can roll with respect to one another so as to describe a helical path.

5,545,101

FRICTION TYPE CONTINUOUSLY VARIABLE TRANSMISSION

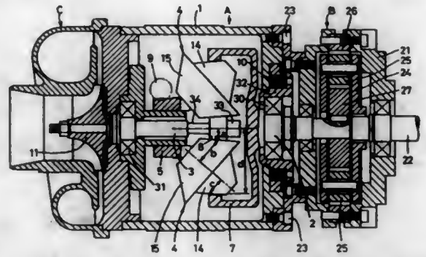
Tatsuo Kawase, and Naoshi Hatteri, both of Iwata, Japan, assignors to NTN Corporation, Osaka, Japan

Filed Jul. 19, 1994, Ser. No. 275,712

Claims priority, application Japan, Jul. 20, 1993, 5-178853; Jul. 20, 1993, 5-178863; Aug. 31, 1993, 5-215502

Int. Cl.[6] F16H *15/16*

U.S. Cl. 475—193 **5 Claims**



1. A friction type continuously variable transmission comprising a friction type continuously variable transmission unit comprising an input shaft, an output shaft, and a transmission means coupled to said input shaft at one end thereof and said output shaft at the other end thereof for rotating said output shaft at a speed higher than the rotating speed of said input shaft, and a planetary gear unit comprising a drive shaft, a carrier coupled to said drive shaft, a plurality of planetary gears supported on said carrier, an internal gear unrotatably fixed and meshing with said planetary gears, and a sun gear fixedly mounted on said input shaft of said friction type continuously variable transmission unit and meshing with said planetary gears.

5,545,102

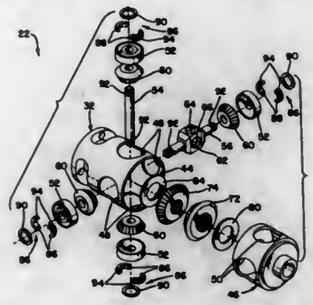
DIFFERENTIAL GEAR ASSEMBLY

Boris I. Burgman, Oak Park, and Robert J. Gonzales, Canton, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 20, 1994, Ser. No. 277,853

Int. Cl.[6] F16H *48/06;57/08*

U.S. Cl. 475—230 **2 Claims**



1. A differential gear assembly comprising:

housing means directing input torque to said assembly comprising first and second telescoping portions, and radially aligned openings in said telescoping portions;

first pinion support means slidably disposed in a diametrically opposed pair of said radially aligned openings for preventing telescoping of said telescoping portions and rotatably supporting first and second radially spaced pinion gear means;

second pinion support means slidably disposed in a diametrically opposed pair of said radially aligned openings for preventing telescoping of said telescoping portions and rotatably supporting third and fourth radially spaced pinion gear means;

output gear means simultaneously meshing with said first, second, third and fourth pinion gear means for receiving power therefrom; and

output shaft means drivingly connected with said output gear means for delivering torque from said assembly;

said first pinion support means being operable to balance gear tooth loads generated in response to torque loads between the first and second radially spaced pinion gear means and said output gear means, and said second pinion support means being operable to balance gear tooth loads generated in response to torque loads between said third and fourth radially spaced pinion gear means and said output gear means independently of said first pinion support means.

5,545,103

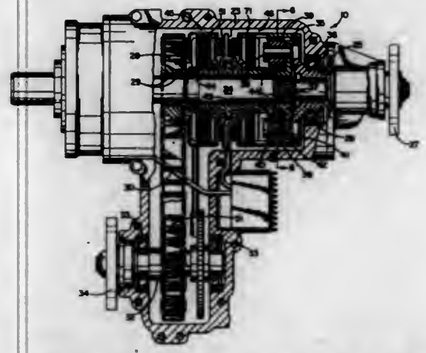
VEHICLE TRANSFER CASE WITH DUAL ELECTRICALLY-ACTUATED MAGNETIC CLUTCHES

David C. Gustin, Winnebago, Ill., assignor to Dana Corporation, Toledo, Ohio

Filed Aug. 1, 1994, Ser. No. 283,410

Int. Cl.[6] B60K *17/346;* **F16H** *48/24*

U.S. Cl. 475—223 **6 Claims**



1. A transfer case for a vehicle having front and rear axles, said transfer case having a rotary input member and having first and second rotary output members, said first output member being connected to rotate one of said axles, said second output member being connected to rotate the other of said axles, a differential having an input connected to be rotated by said input member, having a first output for rotating said first output member and having a second output for rotating said second output member, and first and second selectively operable clutch means for:

(a) causing the outputs of said differential to rotate as a unit and causing the input of said differential to transmit torque to said first output member without transmitting torque to said second output member when said first clutch means is fully disengaged and said second clutch means is fully engaged whereby torque is transmitted only to said first output member to drive only said one axle; and

(b) allowing the outputs of said differential to rotate independently of one another and causing the input of said differential to transmit torque from said input member to both outputs of said differential and to both of said output members when said first clutch is fully engaged and said second clutch is fully disengaged, thereby to drive both of said axles;

said first and second clutch means comprising first and second field shells, respectively, disposed in back-to-back relation, each of said field shells having a selectively energizable electric coil, the coil of said first field shell being operable when energized to effect engagement of said first clutch means, said second field shell including a permanent magnet which normally effects engagement of said second clutch means, the coil of said second field shell being operable when energized to negate said permanent magnet and effect disengagement of said second clutch means.

5,545,104

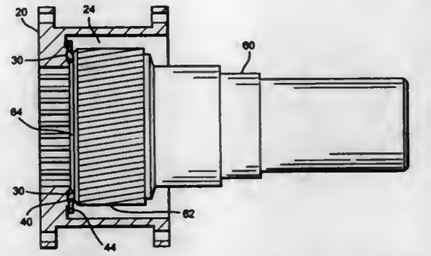
AUTOMOTIVE SUN GEAR/PLANETARY HOUSING ASSEMBLY

Michael J. Tilley, 14213 N. 37th Way, Phoenix, Ariz. 85032

Filed Feb. 6, 1995, Ser. No. 384,512

Int. Cl.[6] F16H *57/08*

U.S. Cl. 475—331 **16 Claims**



1. An apparatus for use in a vehicle transfer case assembly comprising:

a planetary housing assembly having

a body,

a gear cavity formed within said body,

a gear supporting ridge located within said gear cavity, and

a washer accepting groove located on said gear supporting ridge;

a washer having at least one oil carrying channel formed therein, wherein said washer mates with said washer accepting groove; and

a sun gear assembly having

a gear end, and

a bearing surface located on said gear end, wherein said bearing surface bears against said washer when said vehicle transfer case is assembled.

5,545,105

METHOD FOR INFLUENCING THE DRIVING BEHAVIOUR OF A VEHICLE WITH A CONTINUOUSLY VARIABLE TRANSMISSION

Wilhelmus C. W. M. Roovers, Prinsenbeek; Bastiaan A. d'Herripon, Tilburg, and Chi C. Choi, Eindhoven, all of, Netherlands, assignors to Van Doorne's Transmissie B.V., Tilburg, Netherlands

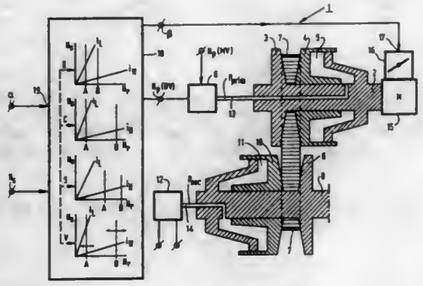
Filed Jun. 14, 1993, Ser. No. 76,611

Claims priority, application Netherlands, Jun. 15, 1992, 9201051

Int. Cl.[6] B60K *41/14*

U.S. Cl. 477—43 **3 Claims**

1. A method for controlling a continuously variable transmission system having at least a power source controllable by an accelerator pedal, a primary axle connected to said power source and



operable over a range of primary axle rates of revolution, and a secondary axle connected to the primary axle, the method comprising the steps of:

selecting one from among a plurality of predetermined sub-ranges of primary axle rates of revolution, each said sub-range having a lower limit and an upper limit within said range;

measuring a current position of the accelerator pedal and a current rate of revolution of the secondary axle;

determining, within the selected sub-range, a desired rate of revolution of the primary axle based on the current position of the accelerator pedal and the current rate of revolution of the secondary axle; and

controlling a transmission ratio of the continuously variable transmission system using said desired rate of revolution of the primary axle.

5,545,106

METHOD FOR ADJUSTING THE TRANSMISSION RATIO OF A TRANSMISSION

Karl-Heinz Senger, Löchgau; Gerhard Keuper, Leonberg, and Peter Bäuerle, Ludwigsburg, all of, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

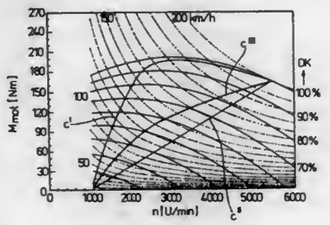
PCT No. PCT/DE94/00401, § 371 Date Dec. 16, 1994, § 102(e) Date Dec. 16, 1994, PCT Pub. No. WO94/24465, PCT Pub. Date Oct. 27, 1994

PCT Filed Apr. 13, 1994, Ser. No. 356,177

Claims priority, application Germany, Apr. 16, 1993, 43 12 415.1

Int. Cl.[6] B60K *41/12;* **F16H** *59/06;* **F02D** *41/04*

U.S. Cl. 477—43 **4 Claims**



1. A method of inputting an actual transmission ratio of a continuously variable transmission of a vehicle such as a passenger motor vehicle, the method comprising the steps of:

assuming operating points of a shift characteristic field which lie on a characteristic line (c') of optimized consumption of a motor characteristic field of a motor of a vehicle;

assuming operating points of said shift characteristic field which lie on a characteristic line (c°) of optimized power of said motor characteristic field;

said characteristic lines of said shift characteristic field defining respective traces resulting from the respective characteristic lines of said motor characteristic field selected in each case; and,

assuming these operating points of said shift characteristic field which lie on a dynamic characteristic line (c") of said motor characteristic field with said dynamic characteristic line (c"') lying between said first characteristic line (c') and said second characteristic line (c°) with the position of said dynamic characteristic line (c°') being dependent upon the magnitude of the rate of change of the power demand.

5,545,107

LOCKUP CLUTCH CONTROL RELEASE INHIBITING DURING SHIFTING FOR AUTOMATIC TRANSMISSIONS

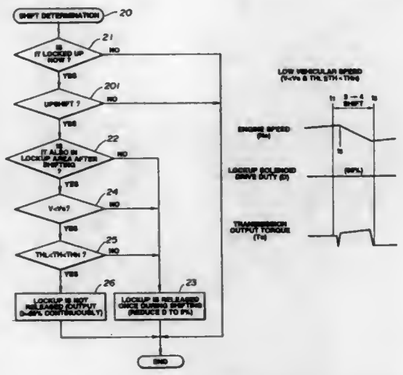
Tatsuo Ochiai, Fujisawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 15, 1994, Ser. No. 356,735

Claims priority, application Japan, Dec. 27, 1993, 5-332959

Int. Cl.[6] F16H *47/06*

U.S. Cl. 477—63 **6 Claims**



1. A system for carrying out lockup control of an automatic transmission for a motor vehicle, which automatic transmission being provided with a torque converter operable in a lockup state when the vehicle is cruising in a lockup area, wherein input and output elements thereof are directly coupled, and operable in a converter state when the vehicle is moving in a converter area, wherein direct coupling of the input and output elements is released, the system comprising:

means for interruptedly releasing the torque converter from the lockup state during shifting when the vehicle is cruising in the lockup area;

means for detecting whether the vehicle is cruising in the lockup area, where a difference between an engine speed before and after shifting is smaller than a predetermined value and generating a cruising state signal when the vehicle cruising in the lockup area is detected; and

means for prohibiting operation of said interruptedly releasing means when said cruising state signal is generated.

5,545,108

ARRANGEMENT AND METHOD FOR CONTROLLING AN AUTOMATIC SHIFT DEVICE O A GEAR-CHANGE TRANSMISSION OF A MOTOR VEHICLE

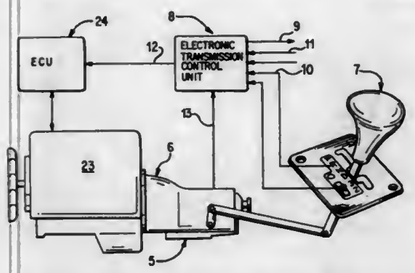
Gerhard Wagner, Remseck, and Rainer Wuest, Stuttgart, both of, Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed Jun. 16, 1995, Ser. No. 490,896

Claims priority, applicatiou Germany, Jun. 16, 1994, 44 20 930.4

Int. Cl.[6] F16H *59/10;61/18*

U.S. Cl. 477—125 **4 Claims**



1. An arrangement for controlling an automatic shift device of a gear-change transmission of a motor vehicle, comprising:

a selector device connected to the shift device by a manual selection member;

an electronic control unit which receives and processes input signals containing information with respect to a position of the manual selection member, a transmission output speed, an engine load, and a current gear, said electronic control unit transmitting a gear-shift signal to the automatic shift device in each case as a function of stored shift-line characteristic diagrams;

a first device which checks whether the position of the manual selection member limits an upshift into a gear which is lower than the current gear;

a second device which forms a reference signal which is either identical to said position of the manual selection member or said current gear;

a third device which checks whether the reference signal corresponds to a gear which is lower than the current gear;

a storage stage which stores at least one of the shift-line characteristic diagrams;

a computing stage which checks, at a current driving speed, after a gear shift whether the engine speed would reach a value higher than a maximum value;

a change-over stage which is changeable between a first switching state, in which its input is connected to one of its two outputs, and a second switching state, in which its input is connected to its other output;

at least one shift stage for triggering the gear-shift signal;

wherein one output of the first device is connected both to a control input for setting the reference signal to the position of the manual selection member of the second device and to a control input of the change-over stage for changing over to the first switching state, as well as to one input of the storage stage;

wherein another output of the first device is connected to one input of the third device;

wherein one output of the third device and one output of the computing stage, as well as an output of the storage stage are connected to a shift stage and, if appropriate, in each case to the shift stage;

wherein another output of the third device is connected to an input of the change-over stage, said output of the change-over stage, which is connected to an input of the change-over stage in the first switching state, is connected to one input of the computing stage, the other output of the change-over stage is connected to the input of the storage stage; and

wherein another output of the computing stage is connected both to a control input of the change-over stage for changing over the latter into the second switching state and to a control input of the second device, the control input being used to set the reference signal to the value of the current gear.

5,545,109

TORQUE LIMITER

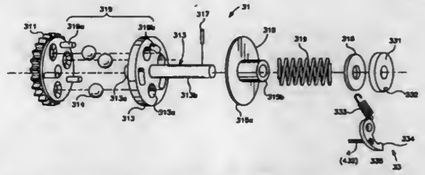
Toshio Hayakawa, 1-go, 50-ban, Yamanoue 5-chome, Hirakata, Japan

Continuation-in-part of Ser. No. 880,846, May 11, 1992, Pat. No. 5,339,869. This application May 25, 1994, Ser. No. 248,976

Claims priority, application Japan, May 11, 1991, 3-167356

Int. Cl.[6] F16D *7/08*

U.S. Cl. 477—178 **7 Claims**



1. A torque limiter comprising an input member for providing a driving force, an output member including a shaft which rotates in cooperation with the input member and receives a load, and a torque limiter main body between the input member and the output member for cutting off torque transmission when the load torque exceeds a specific value,

said torque limiter body including a rotary plate (311) comprising ball receiving holes (311*b*) equally disposed about a central hole (311*a*), each of said ball receiving holes comprising a cylindrical portion having a diameter smaller than a diameter of a ball to be received and a countersink portion that continues from the cylindrical portion outwardly to a surface of said rotary plate, said countersink portion has a diameter that increases as the ball receiving hole becomes closer to the surface of said rotary plate such that the countersink at the surface of the plate is larger than the diameter of the ball, a ball holding plate (312) juxtaposed said rotary plate, said ball holding plate having a thickness less than a diameter of the ball and including ball receiving holes that correspond with said ball receiving holes in said rotary plate, each of said ball receiving holes in said ball. holding plate having a diameter which is slightly larger than the diameter of the balls, and

a ball pressing mechanism including a holding plate (315) juxtaposed said ball holding plate which seats upon said balls in said ball receiving holes in said ball holding plate, and a spring which is provided for pressing upon said holding plate which presses said balls into said circular holes in said rotary plate having a smaller diameter than the balls.

5,545,110

TRAMPOLINE

Hua-Lu Hsiang, No. 520-1, Sec. 2, Hai-Shan Rd., Hai-Hu Tsun, Lu-Chu Hsiang, Tao-Yuan Hsien, Taiwan

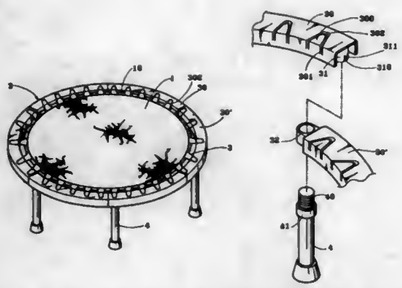
Filed Jan. 25, 1995, Ser. No. 377,994

Int. Cl.[6] A63B *5/08*

U.S. Cl. 482—27 **2 Claims**

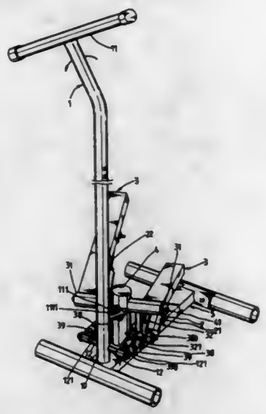
1. A trampoline comprising:

a) an open frame formed by a plurality of pairs of frame rails matingly engaged together and a plurality of retainer rods spaced around the frame, each pair of frame rails including a male frame rail and a female frame rail, and each retainer rod including a projecting portion;



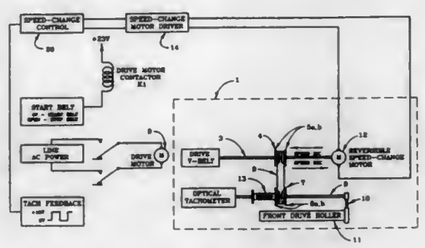
b) each male frame rail having a pair of opposite ends, each opposite end including a male connector defined by an internally threaded split socket having a plurality of hooked portions;
c) each female frame rail having a pair of opposite ends, each opposite end including a female connector having a bottom edge, with each male connector being fitted within each female connector and secured thereto by the hooked portions engaging the bottom edge of the female connector;
d) a plurality of legs supporting the open frame, each leg including a threaded top portion threadedly engaged within the internally threaded split socket of a male connector;
e) a jumping bed including a plurality of channels spaced around the periphery of the bed; and
f) an elastic cord extending through the channels, with portions of the cord between adjacent channels being pulled outwardly to define a plurality of loops, and each loop being engaged on a retainer rod and maintained thereon by the projecting portion for stretching and attaching the jumping bed on the open frame.

5,545,111
STEPPING MACHINE
Mei-San Wang, No. 27-3, Lane 31, Sec. 1, San Ming Rd., and Lee-Hwei Hsu, No. 67, Lane 6, Tsui Hwa Street, both of Panchiao City, Taipei Hsien, Taiwan
Filed Dec. 15, 1995, Ser. No. 573,151
Int. Cl.[6] A63B *22/04*
U.S. Cl. 482—53 **1 Claim**



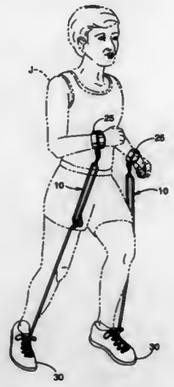
1. A stepping machine comprising:
a base frame having an upright stub tube and an upright shaft adjacent to said upright stub tube, said upright stub tube having two horizontal axles bilaterally disposed at the same elevation and two connecting plates respectively turned about said horizontal axles;
an upright post longitudinally connected to said upright stub tube and turned on its longitudinal center axis, said upright post having a lug adjacent to said upright stub tube, the lug of said upright post defining an elongated sliding slot;
a hollow upright pedal support revolvably sleeved onto the upright shaft of said base frame, said upright pedal support comprising a horizontal lug coupled to the elongated sliding slot of the lug of said upright post by fastening means, two horizontal axles bilaterally disposed at the same elevation near a top end thereof, and a transverse bar disposed near a bottom end thereof;
two pedals, each pedal having a fixed end turned about one horizontal axle of said pedal support, and a free end, the fixed end of each pedal having a downward rod terminating in a barrel;
two hydraulic cylinders, each hydraulic cylinder comprising a casing turned about one end of the transverse bar of said pedal support, and a piston rod having one end sliding in said casing and an opposite end pivoted to the free end of one pedals;
two first links respectively pivoted to said connecting plates; and
two second links respectively pivotably connected between said first links and the barrels of the downward rods of said pedals.

5,545,112
D.C. TREADMILL SPEED CHANGE MOTOR CONTROLLER SYSTEM
Bruce D. Densmore, Seattle; Lester A. Hass, Duvall; John T. Rotunda, Renton, and Gregory W. Fissel, Seattle, all of Wash., assignors to Quinton Instrument Company, Bothell, Wash.
Division of Ser. No. 790,750, Nov. 8, 1991, Pat. No. 5,290,205.
This application Feb. 28, 1994, Ser. No. 203,219
Int. Cl.[6] A63B *22/02;24/00*
U.S. Cl. 482—54 **27 Claims**



1. A treadmill comprising:
a) an A.C. drive motor having a rotating member;
b) a treadmill belt;
c) means for connecting said rotating member to said treadmill belt to cause said treadmill belt to move in response to rotation of said rotating member, said means for connecting including means for varying the speed of said treadmill belt when said rotating member is rotating at a constant speed;
d) a D.C. speed change motor connected to said means for varying to cause said means for varying to vary the speed of said treadmill belt in response to operation of said D.C. speed change motor; and,
e) means for controlling said D.C. speed change motor including means for sending which sends a varying voltage signal to said D.C. speed change motor for varying the rate of rotation of said D.C. speed change motor, said D.C. speed change motor operating in response to said means for sending to cause a controlled change of speed of said treadmill belt.

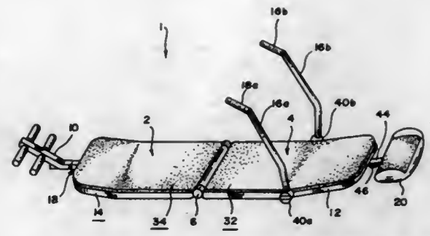
5,545,113
COMBINATION ATHLETIC SHOE AND RESILIENT EXERCISE DEVICE
John L. Bobich, 3500 Magnums Way, No. 1, Redding, Calif. 96003
Filed Apr. 3, 1995, Ser. No. 415,844
Int. Cl.[6] A63B *21/02*
U.S. Cl. 482—125 **4 Claims**



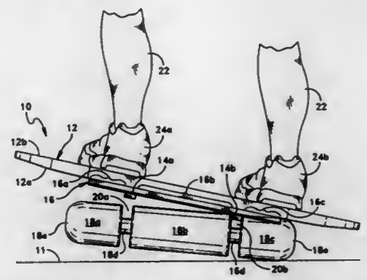
1. An exercise device to be employed by a user in combination with an athletic shoe, comprising:
a) an athletic shoe configured and structured to have at least one coupling point;
b) a coupling region on said athletic shoe;
c) an elongated resilient element having a first end and a second end, wherein said elongated resilient element further comprises a clamping buckle associated with said first elongated resilient element end for adjusting said elongated resilient element's length, wherein said clamping buckle comprises:
a first ring linked to said elongated resilient element first end and
a second ring secured to said first ring and through which said elongated resilient element passes, whereby said first and said second rings cooperate to pinch said elongated resilient element thereby locking its overall length to a selected span;
d) a wrist attachment strap associated with said elongated resilient element that is configured and structured to attach to a wrist of the user;
e) means for securing said wrist attachment strap to said elongated resilient element; and
f) shoe attachment means associated with said second end of said elongated resilient element that is configured and structured to releasably attach to said athletic shoe coupling region.

5,545,114
ABDOMINAL EXERCISE DEVICE
Ned Gvoich, Beamsville, Canada, assignor to Kor-One, Ltd., Tempe, Ariz.
Filed Apr. 25, 1995, Ser. No. 428,027
Int. Cl.[6] A63B *23/02*
U.S. Cl. 482—140 **12 Claims**

1. A device for exercising the abdomen and back of a user, comprising:
a) a rigid frame having a head end and a foot end;
b) a lower back support having a head end and a foot end affixed intermedially to said rigid frame with the head end of said lower back support oriented in the same direction as the head end of said rigid frame;
c) an upper back support having a head end and a foot end further including two leverage arms each comprising a free end and an attached end, wherein said attached ends are affixed to said upper back support and said free ends include handles suitable for grasping, said upper back support further including means for supporting the head and neck of a user;
d) a pivot attaching the foot end of said upper back support to said head end of said lower back support, said pivot positioned such that the location of said pivot coincides with the T10-L1 region of said user's spinal column; and
e) a foot restraint having-an attached end and a free end, said attached end being intermedially and pivotally attached proximately to the foot end of said rigid frame.



5,545,115
SNOWBOARD SIMULATOR APPARATUS
Andrew E. Corcoran, 55 Ruggles Ave., Newport, R.I. 02840
Filed Apr. 14, 1995, Ser. No. 422,243
Int. Cl.[6] A63G *3/00*
U.S. Cl. 482—146 **1 Claim**



1. A snowboard simulator balancing board apparatus, comprising:
an elongate board member having an upper surface adapted to allow a user to stand thereon, a lower surface and two longitudinal edges, said elongate board member having a length substantially greater that its width;
a pair of stop members located on the lower surface of said elongate board member, said stop members being positioned proximal to and running along said longitudinal edges, respectively; and being substantially parallel to one another;
a pair of cross-rails located on the lower surface of said elongate board member, said cross-rails being positioned between and perpendicular to said stop members;
a cylindrical roller positioned on the lower surface of said elongate board member with its central axis being parallel to the length of the elongate board member; said cylindrical roller having a pair of spaced apart guide slots engageable with said cross-rails; said guide slots being spaced apart from one another to divide said cylindrical roller into a central roller region, a first extension roller region and a second extension roller region; said cross-rails being positioned relative to said stop members to divide said each stop member into a central stop portion, a first extension stop portion and a second extension stop portion; movement of said central roller

region being limited by said central stop portion of each stop member; movement of said first extension roller region being limited by said first extension stop portion of each stop member; and movement of said second extension roller region being limited by said second extension stop portion of each stop member; said cylindrical roller including a first opposing end proximal to a first cross-rail and a corresponding first guide slot and a second opposing end proximal to a second cross-rail and a corresponding second guide slot; said first opposing end and said opposing end of said cylindrical roller being closed and of a convex shape; said first opposing end providing a first pivot surface and said second opposing end providing a second pivot surface;

said cylindrical roller being capable of lateral movement on said lower surface of said elongate board member in a direction perpendicular to the length of said elongate board member to closely simulate actual snowboard movement;

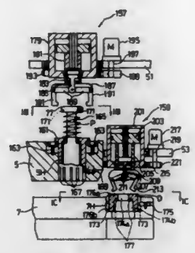
wherein said lower surface of said elongate board member is convex, running between said longitudinal edges, to thereby urge said roller toward one of said stop members when a user exerts a downward force to said upper surface of said elongate board member.

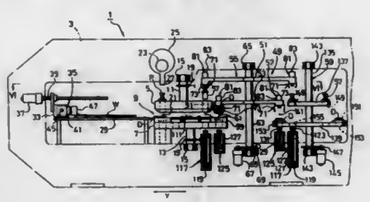
5,545,116

TURRET PUNCH PRESS

Yoshiharu Seto, La Mirada, Calif., assignor to Amada MFG America Inc., La Mirada, Calif.

Filed Jan. 13, 1994, Ser. No. 181,256
Int. Cl.[6] B23Q *3/155*
U.S. Cl. 483—29 **3 Claims**





1. A turret punch press comprising:

an upper rotatable turret having a plurality of punch set holes and a punch received in a punch set hole;

a lower rotatable turret having a plurality of die set holes and a die received in a die set hole, wherein a diameter of the lower turret is larger than that of the upper turret, rotational centers of the upper and lower turrets are eccentric from each other so that one of the punch set holes is overlapped over one of the die set holes, a position where one of the punch set holes is overlapped over one of the die set holes is a punching position where a work piece is punched, and a position which is opposite to the punching position and at which one of the punch set holes is not overlapped with any of the die set holes is an indexing position where the punch and die are indexed;

upper support devices for a punch provided over the indexing position, for gripping the punch in the punch set hole, extracting the gripped punch from the punch set hole vertically, rotating the extracted punch through a predetermined angle about an axis of the punch in order to index the punch, inserting the rotated punch into the punch set hole vertically, and releasing the inserted punch; and

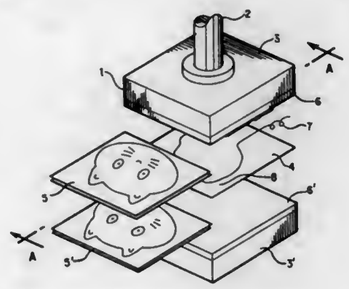
lower support devices for a die provided at a location selected from the group of locations consisting of a location over the indexing position and a location under the indexing position, for gripping the die in the die set hole, extracting the gripped die from the die set hole vertically, rotating the extracted die through a predetermined angle about an axis of the die in order to index the die, inserting the rotated die into the die set hole vertically, and releasing the inserted die.

5,545,117

FUSE BONDING AND FUSE CUTTING MACHINE FOR A PLASTIC BALLOON AND THE LIKE

Atsunobu Sakamoto, 3-10-15 Minamiyama, Shiroimachi,Inba-gun Chiba-ken, 270-14, and Chieko Sekiguchi, Laionzuman-shon Matsudo-Nijusseikigaoka 404 20-1, Hagimachi Nijusseikigaoka Matsudo-shi, Chiba-ken, 271, both of, Japan

PCT No. PCT/JP93/01721, § 371 Date Sep. 8, 1994, § 102(e) Date Sep. 8, 1994, PCT Pub. No. WO94/12337, PCT Pub. Date Jun. 9, 1994
PCT Filed Nov. 24, 1993, Ser. No. 256,781
Claims priority, application Japan, Nov. 26, 1992, 4-353815
Int. Cl.[6] B31B *19/60*
U.S. Cl. 493—203 **8 Claims**



1. A method of forming a plastic bag, comprising:

preparing a plane shape heater having a resistant wire for providing heat and bent in a predetermined desired shape, and two heat resistant cloths for holding the wire therein, said resistant wire having a circular cross section and being sandwiched between said heat resistant cloths; at least one heat resisting elastic plane member situated near the heater; and a press mechanism for pressing said elastic plane member against said heater,

inserting sheets to be worked between the heater and the elastic plane member,

pressing the sheets between the heater and the elastic plane member by the press mechanism, and

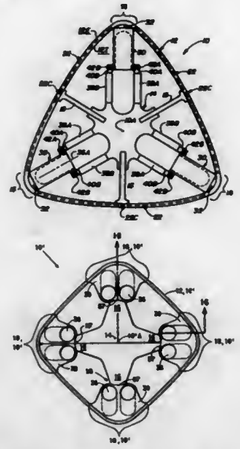
applying electric current momentarily to the resistant wire for at least fuse-bonding the sheets along the resistant wire.

5,545,118

TENSION BAND CENTRIFUGE ROTOR

William Romanauskas, 185 Main St. North, Southbury, Conn. 06488

Continuation of Ser. No. 324,854, Oct. 18, 1994, abandoned, which is a continuation of Ser. No. 79,225, Jun. 18, 1993, abandoned, which is a continuation of Ser. No. 664,174, Mar. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 389,085, Aug. 2, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 475,921
Int. Cl.[6] B04B *5/02*
U.S. Cl. 494—20 **6 Claims**



1. A continuous band adaptable for use as an applied load accepting band in a centrifuge rotor, the band having a central rotational axis extending therethrough and at least a first and a second applied load accepting region defined thereon,

characterized in that the band has an equilibrium curve defined between the applied load accepting regions, the equilibrium curve having a midpoint therealong, the distance in the plane perpendicular to the axis between the axis and the midpoint being defined by a predetermined reference line R_o,

such that, in the plane perpendicular to the axis, at any angular position Θ from the reference line R_o, each point on the equilibrium curve between the midpoint thereof and a point adjacent to one of the applied load accepting regions lies a predetermined distance R from the axis, the distance R at the corresponding angular position Θ being defined by the relationship:

$$d(R/R_0)/d\Theta=(R/R_0)\ \mathrm{RAD}[(R/R_0)^2]\ (\exp\{-K[(R/R_0)^2-1]\}-1) \quad (1A)$$

$$K=[(\gamma\omega^2 R_0^2)(1/g)(1/\sigma_0)] \quad (2A)$$

$$(A/A_0)=\exp\{-(K/2)[(R/R_0)^2-1]\} \quad (3A)$$

where ω is the angular speed,

γ is the density of the band,

g is the acceleration due to gravity,

σ_0 is the stress per unit area in the band,

A is the cross sectional area of the band,

A_0 is the cross sectional area of the band at the radius R_o, and

where $0<K<1$,

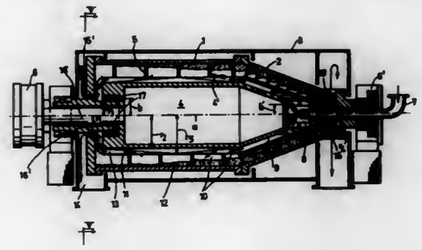
the cross sectional area of the band varying at each point therealong intermediate the applied load accepting regions such that, when the band is rotated, it is loaded only by a tensile stress.

5,545,119

SOLID BOWL WORM CENTRIFUGE

Reinhold Schilp, Woerthsee, and Wolfgang Epper, Bergheim-Kenten, both of, Germany, assignors to Kloeckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Germany

Continuation of Ser. No. 47,778, Apr. 15, 1993, abandoned, which is a continuation of Ser. No. 594,705, Oct. 9, 1990, abandoned. This application Dec. 22, 1994, Ser. No. 362,756
Claims priority, application Germany, Oct. 17, 1989, 39 34 612.9; Feb. 23, 1990, 40 05 755.0
Int. Cl.[6] B04B *1/10;11/08*
U.S. Cl. 494—56 **8 Claims**



1. A solid bowl worm centrifuge for the continuous separating of a solids/liquid mixture, including an elongate centrifuge bowl, having a face wall at one end, that is rotatably seated around its longitudinal axis, by means of a centrifuge drum shaft, and that surrounds a coaxially arranged, generally cylindrical, conveyor worm drum rotating with a divergent speed, worm helices thereof being secured to a circumference of the worm drum, whereby a product admission conduit means for delivering to be separated in the drum are provided along the axis thereof, as well as light and heavy discharge openings for the discharge of the separated light and heavy substances, comprising:

a plurality of baffle elements provided on the outside of the conveyor worm drum uniformly distributed over the circumference thereof and fashioned as flow channels,

a) the baffle elements comprising axially extending walls to deflect the solids/liquid mixture emerging radially pressureless from the product admission conduit into an axial flow,

b) said baffle elements, by means of said axially extending walls, convey the liquid and light substances separated from the solids parallel to the conveyor worm drum in the direction of the discharge opening for the light substances,

c) said baffle elements extending along a length of said conveyor worm and continuing into a radial passage leading to said discharge opening for the light substances in order to deflect the light substances radially inward to the discharge opening for the light substances,

d) the flow channels formed by said baffle elements are in fluid communication with one another, and

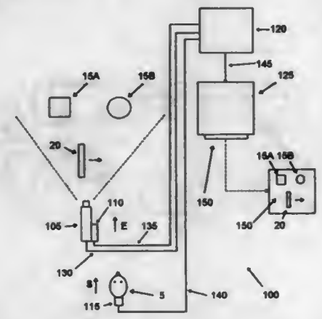
discharge openings for the light substances are arranged outside the centrifuge drum shaft at the face wall of the centrifuge and have a smaller radial spacing from the centrifuge axis than the greatest radial spacing of an outside surface of the worm drum from the centrifuge axis.

5,545,120

ENDOSCOPIC VIEWING SYSTEM FOR MAINTAINING A SURGEON'S NORMAL SENSE OF KINESTHESIA DURING ENDOSCOPIC SURGERY REGARDLESS OF THE ORIENTATION OF THE ENDOSCOPE VIS-A-VIS THE SURGEON

David T. Chen, Somerville, Mass.; Steven D. Pieper, Thetford Center, Vt., and Michael McKenna, Cambridge, Mass., assignors to Medical Media Systems, West Lebanon, N.H.

Filed Jan. 18, 1995, Ser. No. 374,126
Int. Cl.[6] A61B *1/04*; H04N *7/18*;*9/74*
U.S. Cl. 600—117 **12 Claims**



1. An endoscopic viewing system comprising:
an endoscope for capturing a first image of an object and for generating first video signals representative of said first image;
tracking means for determining the relative orientation between said endoscope and a surgeon and for generating tracking signals representative of the relative orientation between said endoscope and said surgeon;
signal processing means connected to said endoscope and said tracking means, said signal processing means being adapted to receive said first video signals from said endoscope and to modify the same as required based on said tracking signals received from said tracking means so as to provide second video signals representative of a second image of said object, wherein said second image of said object is arranged so as to maintain the surgeon's normal sense of kinesthesia during endoscopic surgery regardless of the orientation of said endoscope vis-a-vis said surgeon; and
display means connected to said signal processing means for receiving said second video signals from said signal processing means and displaying said second image for viewing by said surgeon.

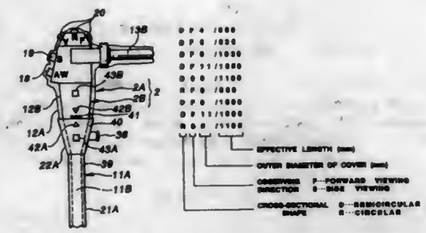
5,545,121

COVER-TYPE ENDOSCOPE APPARATUS

Hisao Yabe, Hachioji; Yoshihiro Iida, Tama; Akira Suzuki; Hideo Ito, both of Hachioji; Yoshio Tashiro, Hino; Minoru Yamazaki, Hachioji; Osamu Tamada, Hachioji, and Shigeru Nakajima, Hachioji, all of, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 4, 1993, Ser. No. 26,567
Claims priority, application Japan, Feb. 2, 1993, 5-2366; Feb. 2, 1993, 5-2367; Feb. 2, 1993, 5-2370
Int. Cl.[6] A61B *1/04*
U.S. Cl. 600—121 **7 Claims**

1. A cover-type endoscope apparatus comprising:
an endoscope cover; and
a covering endoscope used by inserting said covering endoscope into the endoscope cover,
wherein there is provided a two-part display means for indicating a fit among a plurality of corresponding parameters of said endoscope cover and said covering endoscope, said two-part display means having a first part located on an operation portion of the covering endoscope and a second part at a side surface of an inserting-portion covering portion of said endoscope cover.

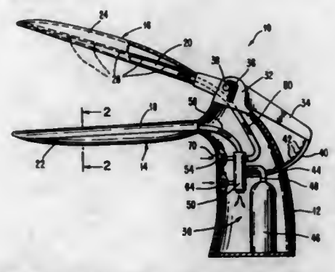


5,545,122

INFLATABLE SPECULUM

Theresa Spruill, 326 N. Broadway, Nyack, N.Y. 10960

Filed Oct. 12, 1994, Ser. No. 320,958
Int. Cl.[6] A61B *1/32*
U.S. Cl. 600—222 **11 Claims**



1. A speculum for examining a vagina comprising:
upper and lower elongated blades for insertion into the vagina;
means for movably mounting the upper and lower blades to each other;
each blade including a rigid bill with an outer surface for facing a wall of the vagina when the blades are inserted, and a flexible bladder at least partly covering the outer surface of said rigid bill;
each bill being hollow and including at least one port communicating between an interior of the bill and an interior of the bladder; and
inflation means connected to each bill for inflating each bladder so that each inflated bladder pushes outwardly against walls of the vagina when the blades are inserted and the bladders are inflated.

5,545,123

SURGICAL LIFT METHOD AND APPARATUS

Mark S. Ortiz, Milford; Stephen J. Failla, both of Cincinnati, Ohio; Jean-Pierre Kinet, Ulzburg, Germany, and Frederic Marie, Guise, France, assignors to Ethicon, Inc., Cincinnati, Ohio

Continuation of Ser. No. 213,145, Mar. 15, 1994, Pat. No. 5,415,160. This application Dec. 19, 1994, Ser. No. 358,822
Int. Cl.[6] A61B *17/02*
U.S. Cl. 600—235 **13 Claims**

1. A surgical lift device for lifting and holding an abdominal wall portion of a human body in an elevated position to perform a diagnostic or surgical procedure in an abdominal cavity, comprising:



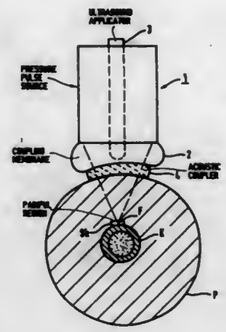
a gripping portion for contacting and holding an external skin surface adjacent the abdominal wall of a human body, said gripping portion having a gripping force sufficient to permit lifting of said abdominal wall to an elevated position and to hold said abdominal wall in said elevated position to permit diagnostic or surgical procedures to be performed in an abdominal cavity, said gripping portion being selectively detachable from said skin surface said gripping portion having at least one access hole that extends therethrough; and
a lifting portion extending upwardly from said gripping portion for elevating the gripping portion and moving said abdominal wall into its elevated position.

5,545,124

METHOD FOR ALLEVIATING THE SENSATION OF PAIN

Hartmut Krause, Erlangen; Georg P. Dahmen, and Ludwig Meiss, both of Hamburg, all of, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed May 5, 1994, Ser. No. 238,464
Claims priority, application Germany, May 7, 1993, 43 15 282.1
Int. Cl.[6] A61B *17/00*
U.S. Cl. 601—2 **24 Claims**



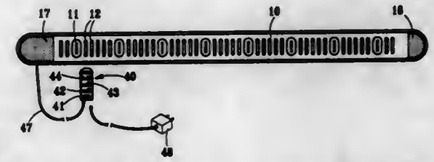
1. A method for alleviating the sensation of pain in a body region in which said sensation of pain originates, comprising the step of:
charging said body region with acoustic shockwaves and thereby causing said sensation of pain in said body region to be reduced after said charging.

5,545,125

AUTO CYCLING MULTI-FUNCTIONAL MASSAGING DEVICE

Chin C. Tseng, No. 13, Lane 380, Sec. 2, Chung-Shan Rd., Chung-Ho City, Taipei, Taiwan

Filed Mar. 28, 1995, Ser. No. 411,511
Int. Cl.[6] A61H *1/00*
U.S. Cl. 601—71 **3 Claims**



1. An auto cycling multi-functional massaging device comprising: a belt-shaped soft pad having opposite ends, a plurality of spaced apart protrusions opening outward on one side and a plurality of protruding strips between adjacent spaced apart protrusions; a plurality of motor assemblies, each including a motor driven eccentric wheel to produce a vibration when rotated, a motor assembly attached to the belt shaped soft pad in each spaced apart protrusion; a sponge tape having the same size as the belt-shaped soft pad attached to the belt shaped soft pad on a side opposite of the plurality of spaced apart protrusions; a latching band at each opposite end of the belt shaped pad thereby enabling the belt-shaped soft pad to be attached to the body of a user and function as a massager; an electrical circuit means connecting each of the plurality of motor assemblies to a circuit board of a control box having an integrated circuit and a plurality of control switches for controlling the operation of all the motors whereby the motors may be actuated in a predetermined sequence or simultaneously and whereby the time of operation of the motors may be controlled by the user.

5,545,126

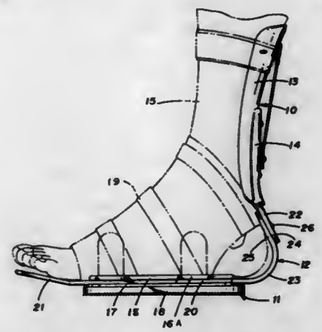
Patent Not Issued For This Number

5,545,127

LATERALLY ADJUSTABLE ANKLE AND FOOT ORTHOSIS

William DeToro, 930 Trailwood Dr., Boardman, Ohio 44512

Filed Apr. 24, 1995, Ser. No. 427,557
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—27 **6 Claims**



1. A laterally adjustable leg and foot brace for use on a patient, said brace comprised of:

a. a foot portion connected to a substantially rigid leg portion by a resilient interconnecting heel portion, the interconnecting heel portion positioned behind the patient's heel, said interconnecting heel portion being curved to provide a gap between the patient's heel and the interconnecting heel portion to permit lateral visibility of the gap and the patient's heel;

b. said interconnecting heel portion having a first element and a second element, each element having a pivotal end, the pivotal end portions overlapping and being adjustably secured to each other, the pivotal end portion of the first element is secured to the pivotal end of the second element by a pivot pin, the overlapping of the pivotal end portions being aligned substantially lateral to the patient's ankle when the posterior region of the lower leg and the sole of the patient's foot are in supporting contact with said leg portion and said foot portion, respectively;

c. the pivotal end of the first element having an arcuate slot therethrough;

d. the pivotal end of the second element having a stop fastener secured thereto, the stop fastener being aligned with the arcuate slot through the pivotal end of the first element, so that when the stop fastener is tightened through the arcuate slot against the first element to the second element, the interconnecting heel portion is prevented from laterally rotating; and

e. the pivotal end of the first element having an indicator groove and the pivotal end of the second element having a plurality of incrementally spaced indicator grooves for measuring the degree of pivotal rotation between the first element and the second element.

5,545,128

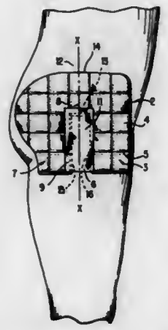
BONE FRACTURE PREVENTION METHOD

Wilson C. Hayes, Lincoln; Stephen N. Robinovitch, Cambridge, and Thomas A. McMahon, Wellesley, all of Mass., assignors to Beth Israel Hospital and President and Fellows of Harvard College, Boston, Mass.

Division of Ser. No. 979,154, Nov. 20, 1992. This application Jun. 5, 1995, Ser. No. 461,414

Int. Cl.[6] A61F *13/00*; **A41D** *13/00*

U.S. Cl. 602—61 **22 Claims**



1. A method of reducing the risk of bone injury of a human or animal subject due to impact forces on a vulnerable region having a bone part near the skin surface, the method comprising:

providing shear thickening material disposed in at least one compliant enclosure; and

mounting the at least one compliant enclosure on the subject so as to overlie a soft tissue region, lacking a bone part near the skin surface, proximate to the vulnerable region in a manner to permit the shunting of impact energy away from the vulnerable region to the soft tissue region.

5,545,129

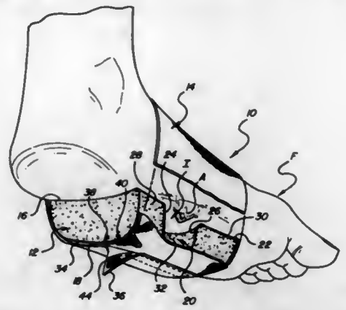
SUPPORTIVE FOOT CUSHION DEVICE

Kim C. Snook, 3067 Badger Pl., Saginaw, Mich. 48603

Filed Feb. 13, 1995, Ser. No. 387,473

Int. Cl.[6] A61F *5/00*

U.S. Cl. 602—66 **14 Claims**



1. A foot cushion device for relieving pressure and discomfort on an afflicted region of the sole of a person's foot, said device comprising:

a foam pad having an elastic memory enabling said pad to deform under the weight of a person and recover its shape after each of repeated deformations, said pad being of substantially uniform thickness and having a lateral width approximating the width of such person's foot, an upper foot-engaging surface adapted to occupy a position against the sole of such person's foot in the vicinity of the afflicted region, a lower surface spaced from said upper surface by the thickness of said pad, said pad having a notch extending laterally inwardly into said pad from one side thereof and spanning said upper and lower surfaces, thereby providing a recess for the accommodation of the afflicted region;

a non-adhesive band of elastic material having opposite ends and of sufficient length and elasticity as to enable said band to encircle both such person's foot and said pad so as to bold said pad in said position against such person's foot; and

attaching means for securing said ends of said band to one another.

5,545,130

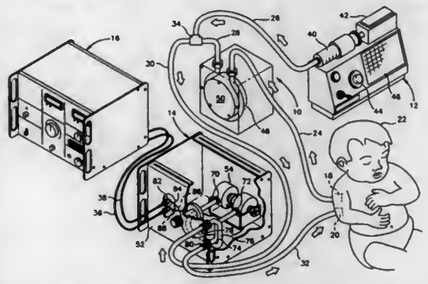
FLOW THROUGH ELECTROPORATION METHOD

Gunter A. Hofmann, and Henry R. Kent, both of San Diego, Calif., assignors to Genetronics, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 865,347, Apr. 8, 1992, abandoned. This applicatioo Oct. 12, 1994, Ser. No. 320,966

Int. Cl.[6] A61M *35/00*

U.S. Cl. 604—4 **10 Claims**



1. A continuous flow process for implanting molecules into living blood cells of a patient, comprising the steps of:

providing an elongated flow through chamber having an inlet and an outlet at opposite ends thereof and a pair of elongated spaced apart parallel electrodes disposed between the inlet and the outlet for fluid to flow between;

selecting and connecting continuous flow shunt means to a patient;

withdrawing a continuous stream of blood from the patient;

passing the blood through said flow through chamber between said electrodes and returning it to the patient;

injecting a predetermined quantity of fluid medium carrying preselected molecules into the blood after it has been drawn from the patient and before it passes through said chamber; and

applying a predetermined electric signal of a predetermined amplitude and duration to said electrodes for generating and repeatedly applying electric fields of a predetermined amplitude and duration to the flow of the mixture of blood and fluid medium in order to make the walls of preselected cells in the blood transiently permeable to permit said preselected molecules to enter said preselected cells without killing said cells.

5,545,131

ARTIFICIAL KIDNEY

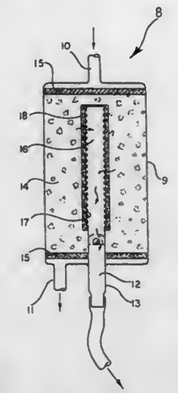
Vadim A. Davankov, Moscow, Russian Federation, assignor to White Eagle International Technologies, LP, New York, N.Y.

Filed Nov. 30, 1994, Ser. No. 346,871

Claims priority, application Russian Federation, Apr. 28, 1994, 4013703

Int. Cl.[6] A61M *37/00*

U.S. Cl. 604—5 **14 Claims**



1. An artificial kidney system, comprising an artificial kidney forming container having an inlet blood port connectable with a patient's artery and an outlet blood port connectable with a patient's vein so that blood from the patient's artery can flow through said inlet port into said container, then through an inner space of said container and then through said outlet blood port into the patient's vein, said inner space of said container being filled with an adsorbent for removing harmful and toxic compounds from a stream of blood flowing in said inner space from said inlet blood port to said outlet blood port, said container being provided with a separate chamber formed inside said inner space and limited by a semi-permeable polymeric ultrafiltration-type membrane which allows water and dissolved small molecules to be transported from blood into said chamber; suction means connected with said separate chamber so that the water and the dissolved small molecules are transported from blood into said separate chamber and further outside of said container under the action of suction of said suction means, said container having a urine outlet communicated with said separate chamber; and artificial ureter forming tube means connecting said urine outlet of said container with said suction means so that urine with the water and dissolved small molecules is withdrawn from said separate chamber through said artificial ureter forming tube means, said suction means including a vacuum providing vessel, said artificial ureter tube means having one end connected with said urine outlet port and another end introduced into an interior of said vacuum vessel, said vacuum vessel being formed as an elastic vessel which is squeezable by a patient and restorable under elastic action of said vessel so as to form vacuum in its interior.

5,545,132

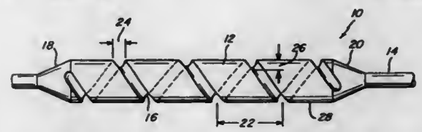
HELICALLY GROOVED BALLOON FOR DILATATION CATHETER AND METHOD OF USING

John R. Fagan, Pepperill, and Jeffrey Kling, Tewksbury, both of Mass., assignors to C. R. Bard, Inc., Murray Hill, N.J.

Filed Dec. 21, 1993, Ser. No. 171,061

Int. Cl.[6] A61M *29/00*

U.S. Cl. 604—96 **70 Claims**



1. A method of dilating a blood vessel with a dilatation catheter comprising the steps of:

positioning in the blood vessel a dilatation catheter having a limited compliance dilatation balloon dimensioned to dilate the lumen of the blood vessel when inflated, the balloon having a dilating surface and including at least one helical groove disposed in at least a portion of the dilating surface, the portion of the balloon that defines the groove being constructed to deflect and cause the groove to diminish in depth with increased inflation pressure to enable the effective dilating diameter of the balloon to increase within a limited range of diameters; and

inflating the limited compliance dilatation balloon to dilate the blood vessel.

5,545,133

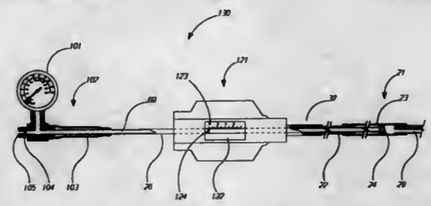
BALLOON CATHETER WITH IMPROVED PRESSURE SOURCE

Matthew M. Burns, Orono, and Daniel M. Lafontaine, Plymouth, both of Minn., assignors to SCIMED Life Systems, Inc., Maple Grove, Minn.

Filed Sep. 16, 1994, Ser. No. 308,025

Int. Cl.[6] A61M *29/00*

U.S. Cl. 604—96 **37 Claims**



1. A balloon catheter insertable into a living body, comprising:

(a) an elongate shaft having a proximal end, a distal end and a distal portion, the distal portion sized to be inserted into a lumen of a living body;

(b) an inflatable balloon having a proximal end and a distal end, the proximal end of the balloon connected to the distal end of the shaft; and

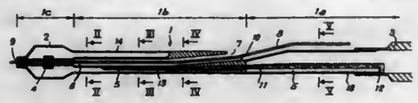
(c) a pressure source connected to the distal portion of the shaft and sized to be inserted into said lumen.

5,545,134

RAPID-EXCHANGE DILATATION CATHETER

Pierre Hilaire, and Vincent Lagarde, both of Paris, France, assignors to Laboratoire Nycomed SA, Paris, France

Filed Oct. 27, 1994, Ser. No. 330,028
Claims priority, application France, Apr. 15, 1994, 94 04497
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—96 **16 Claims**



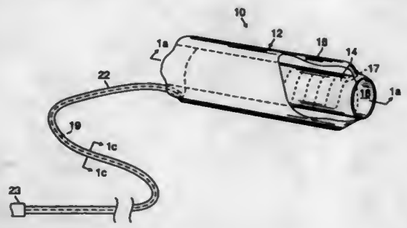
9. A rapid-exchange dilation catheter comprising:
a flexible tubular body having a distal part, an intermediate part and a proximal part;
an expandable dilation balloon mounted on said distal part of said flexible tubular body;
a first inner duct within said flexible tubular body, said first inner duct having a distal end in fluid communication with an interior space of said dilation balloon and a proximal end having means for connecting said first inner duct to a fluid supply source in order to enable inflating and deflating of said dilation balloon;
a second inner duct within said flexible tubular body having a lumen adapted to allow the passage of a guide-wire, said second inner duct traversing said distal part of said flexible tubular body and communicating with a guide-wire port on an exterior surface of said intermediate part of said flexible tubular body, said second inner duct being defined by a substantially tubular wall; and
a core having a high modulus of elasticity, said core having a proximal end permanently joined to the proximal part of said flexible tubular body and a distal end embedded in said wall defining said second inner duct.

5,545,135

PERFUSION BALLOON STENT

Mihai Iacob, Bucharest, Romania, and Erik C. Andersen, Roskilde, Denmark, assignors to Boston Scientific Corporation, Natick, Mass.

Filed Oct. 31, 1994, Ser. No. 331,999
Int. Cl.[6] A61M *31/00;29/00*
U.S. Cl. 604—96 **26 Claims**



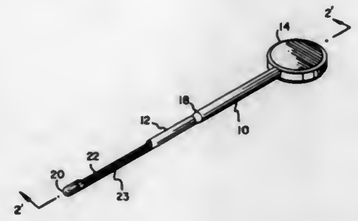
1. An assembly comprising:
a balloon stent device constructed to reside for a prolonged period in a blood vessel for engagement with the vessel wall while enabling blood flow therethrough, and
a removable transfer element for depositing said balloon stent device in said blood vessel,
said balloon stent device comprising:
an elongated stent structure comprised of an inner tubular structural member and an outer flexible inflatable element, said stent structure being of limited length, sized to wholly reside in the vessel, said inner tubular structural member defining an inner passage to enable perfusing blood flow therethrough, said inner passage sized to fit over said removable transfer element for delivery of the device to a desired site within the vessel, said outer flexible inflatable element secured about the outer side of said inner tubular structural member and constructed to be inflated to removably engage the vessel wall at sub-dilation pressure, said inner tubular structural member having sufficient radial stiffness to resist collapse when exposed to said inflation pressure whereby said inner passage remains open for said blood flow when said inflatable element is inflated, and
a relatively small cross-section, elongated, flexible inflation-deflation element secured to said inflatable element, said inflation-deflation element having an interior lumen sized to permit passage of inflation fluid while having an exterior cross-section sufficiently small to permit prolonged residence of said inflation-deflation element in the vascular system without substantial adverse effect upon blood flow in the vessel, said inflation-deflation element extending to an inflation-deflation site outside the body, from which site said inflatable element in inflated state may be deflated when desired.

5,545,136

GROOVED CATHETER DIRECTOR APPARATUS

J. Lee Berger, 895 Mohawk Rd., Franklin Lakes, N.J. 07417

Continuation of Ser. No. 120,518, Sep. 14, 1993, abandoned.
This application Jan. 5, 1995, Ser. No. 369,869
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—96 **27 Claims**



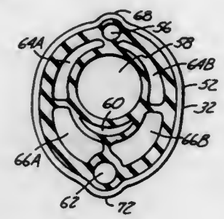
1. A director device to assist in insertion of a balloon catheter, comprising an elongated substantially rigid tubular member dimensioned to be inserted through tissue and defining a longitudinal axis, said tubular member having a proximal end portion and a distal end portion with a distalmost closed tip, said tubular member defining a lumen extending therethrough dimensioned to accommodate a balloon catheter inserted therein, said lumen terminating at said distalmost closed tip, said tubular member including a single opening in an outer wall portion thereof in communication with said lumen and being disposed intermediate said proximal and distal end portions of said tubular member such that a distalmost portion of said lumen is disposed beyond said opening, said single opening dimensioned to permit expansion of a balloon of the balloon catheter therethrough upon inflation of the balloon to permit the expanded balloon to engage and dilate tissue, wherein surface edges of said outer wall portion defining and surrounding said single opening are substantially blunt to avoid penetration of the balloon upon expansion thereof through said single opening and, wherein said distalmost portion of said lumen is dimensioned to receive and accommodate a distal end of a balloon catheter and further wherein distal axial movement of the catheter relative to said tubular member is limited by engagement of the catheter distal end with said distalmost closed tip of said tubular member.

5,545,137

DEVICE FOR ASYMMETRICAL THERMAL THERAPY WITH HELICAL DIPOLE MICROWAVE ANTENNA

Eric N. Rudie, Plymouth; Bruce H. Neilson, Brooklyn Park, and James V. Kanphusman, Champlin, all of Minn., assignors to Urologix, Inc., Minneapolis, Minn.

Division of Ser. No. 288,642, Mar. 9, 1994, Pat. No. 5,464,445, which is a continuation of Ser. No. 847,718, Mar. 6, 1992, Pat. No. 5,413,588. This application Mar. 30, 1995, Ser. No. 413,392
Int. Cl.[6] A61M *25/00;* **A61N** *5/02*
U.S. Cl. 604—96 **17 Claims**



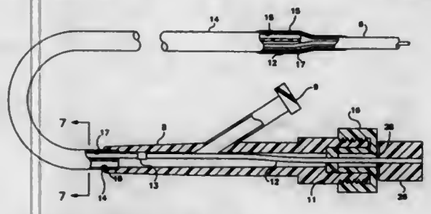
1. A catheter comprising:
an elongate shaft having a first end, a second end, a first outer surface, a second outer surface, the shaft further comprising:
a plurality of lumens which extend between the first end and the second end including:
a first lumen which is oriented nearer the first outer surface than the second outer surface; and
a pair of second lumens and a pair of third lumens, the pair of second lumens and the pair of third lumens being configured to at least partially surround the first lumen, wherein the pair of second lumens has a transverse cross-sectional area which is less than that of the pair of third lumens, the pair of second lumens being unobstructed to permit the free passage of fluids therethrough.

5,545,138

ADJUSTABLE STIFFNESS DILATION CATHETER

Mauricio L. Fugoso, Chula Vista, and Don H. Tran, Westminster, both of Calif., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Feb. 28, 1994, Ser. No. 202,526
Int. Cl.[6] A61M *29/00;25/00*
U.S. Cl. 604—102 **8 Claims**



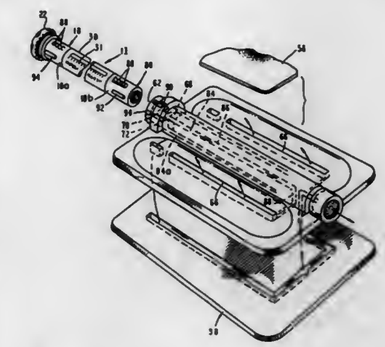
1. A dilatation catheter comprising:
a balloon having a distal end and a proximal end;
a balloon inflation shaft having a distal end and a proximal end, the balloon inflation shaft defining a balloon inflation lumen, the balloon inflation lumen being in fluid communication with the balloon, the proximal end of the balloon encircling and being sealingly affixed to the balloon inflation shaft;
a stiffening wire extending longitudinally through the balloon inflation shaft, the stiffening wire defining an inflation lumen in fluid communication with the balloon, the stiffening wire having a proximal end and a distal end;
the stiffening wire having a first opening distal to the proximal end of the stiffening wire, the first opening being in fluid communication with the balloon; and
the stiffening wire having a second opening proximal to the distal end of the stiffening wire and distal to the first opening, the second opening being in fluid communication with the balloon.

5,545,139

FLUID CONTAINER FOR USE WITH A FLUID DELIVERY APPARATUS

Marshall S. Kriesel, St. Paul, Minn., assignor to Science Incorporated, Bloomington, Minn.

Continuation of Ser. No. 129,470, Sep. 29, 1993, Pat. No. 5,374,256, which is a continuation-in-part of Ser. No. 129,693, Sep. 29, 1993, Pat. No. 5,419,771, which is a continuation-in-part of Ser. No. 069,937, May 28, 1993, Pat. No. 5,336,188, which is a continuation-in-part of Ser. No. 046,438, May 18, 1993, Pat. No. 5,411,480, which is a continuation-in-part of Ser. No. 987,021, Dec. 7, 1992, Pat. No. 5,279,558, which is a continuation of Ser. No. 870,269, Apr. 17, 1992, Pat. No. 5,205,820, which is a continuation-in-part of Ser. No. 642,208, Jan. 16, 1991, Pat. No. 5,169,389, which is a continuation-in-part of Ser. No. 367,304, Jun. 16, 1989, Pat. No. 5,019,047.
This application Dec. 2, 1994, Ser. No. 349,404
Int. Cl.[6] A61M *37/00*
U.S. Cl. 604—132 **15 Claims**



1. An apparatus for use in infusing fluids into an ambulatory patient at a controlled rate comprising:
(a) a base having a fluid inlet and fluid outlet interconnected by a fluid flow path;
(b) filling means operably associated with said base for introducing fluid into said fluid inlet of said base, said filling means comprising:
(i) a container having a fluid chamber with first and second open ends;
(ii) piercable means for sealably closing one of said first and second open ends of said container, said piercable means being piercable by a cannula; and
(iii) a plunger telescopically movable within said container by fluid pressure from a first location proximate said piercable means to a second, spaced-apart location; and
(c) a distendable membrane constructed of an elastic material which is fitted over said base to define a chamber in communication with said fluid inlet and said fluid outlet of said base, said membrane being distendable by fluid introduced into said chamber under pressure through said fluid inlet by said filling means, said membrane having a tendency to return to a substantially nondistended configuration whereby fluid within said chamber will be expelled through said fluid outlet.

5,545,140

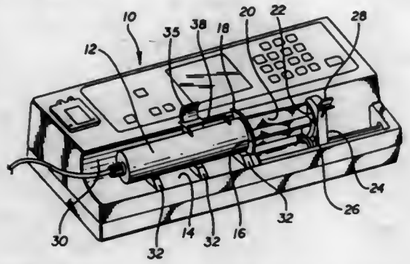
SYRINGE PLUNGER DRIVER

Ronald S. Conero, San Diego, and Stephen H. O'Leary, Encinitas, both of Calif., assignors to IVAC Corporation, San Diego, Calif.

Continuation of Ser. No. 97,575, Jul. 26, 1993, abandoned, which is a continuation of Ser. No. 704,322, May 23, 1991, abandoned. This application Jul. 5, 1994, Ser. No. 270,393

Int. Cl.[6] A61M *5/20*

U.S. Cl. 604—154 **25 Claims**



1. A plunger driver system for engaging selected plungers of syringes of different sizes, each plunger moveable in a syringe barrel and each plunger having a plunger flange with an inner side facing the syringe barrel and an outer side, the plunger driver system moving the plunger into the syringe barrel in an operation mode, the plunger driver system comprising:

a pushing surface adapted to press against the outer side of the plunger flange to move the plunger into the barrel of the syringe during the operation mode;

a plunger retainer adapted to engage the inner side of the plunger flange and physically retain the flange within a predetermined distance from the pushing surface;

a detector coupled to the pushing surface to detect the presence of the plunger flange within the predetermined distance between the pushing surface and the plunger retainer during the operation mode and to provide a detector signal indicating the presence of the plunger, the detector having a detection range large enough to detect the presence of all of the plunger flanges of the different sizes when located between the pushing surface and the plunger retainer;

a spring coupled to the plunger retainer to bias the plunger retainer into contact with the plunger flange; and

a processor which receives the detector signal and monitors the detector signal during the operation mode and provides an alarm in the event that the detector signal indicates a syringe plunger not present during the operation mode.

5,545,141

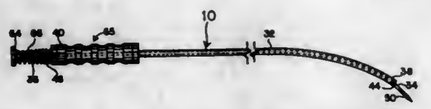
PERCUTANEOUS GASTROSTOMY FEEDING TUBE APPLICATOR AND METHOD.

Larry A. Eld, 3435 N. Cole Rd., Boise, Id. 83704

Continuation-in-part of Ser. No. 68,906, May 28, 1993, abandoned. This application Jul. 1, 1994, Ser. No. 270,229

Int. Cl.[6] A61M *5/178*

U.S. Cl. 604—164 **19 Claims**



1. A gastrostomy method for making a channel through a patient's stomach wall and abdomen wall for receiving a suture strand with first and second ends and for receiving a feeding tube, the gastrostomy method comprising the steps of:

directing an elongated gastrostomy device through the patient's esophagus and into the stomach, the device having a proximal region and a distal region, lying at an obtuse angle within the range of 130° to 150° to the proximal region for placement in the stomach, an opposing proximal region for placement outside the esophagus for access by the surgeon, a removable needle near the distal region for piercing the channel, and a shield means for covering the needle when it is being directed through the esophagus,

placing the needle in a desired location near the stomach wall by manipulating the proximal region of the device,

remotely actuating the shield means to unshield the needle,

remotely actuating the needle to move forward to make the channel by piercing through the stomach wall and abdomen wall to extend outside the patient's body.

5,545,142

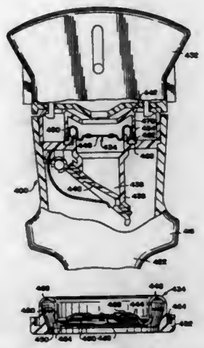
SEAL MEMBERS FOR SURGICAL TROCARS

Randy R. Stephens, Fairfield; Michael S. Banik, Cincinnati; Leslie R. Ashmore, Maineville; C. Daniel Rowe, Batavia, all of Ohio, and George E. Selecman, Salem, Mass., assignors to Ethicon, Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 779,040, Oct. 18, 1991, Pat. No. 5,209,736. This application Apr. 12, 1993, Ser. No. 46,587

Int. Cl.[6] A61M *39/26*

U.S. Cl. 604—167 **19 Claims**



1. A trocar assembly for providing communication into an anatomical cavity, comprising:

(a) a trocar tube defining an interior lumen having an open distal end portion and an open proximal end portion for accommodating axial movement of an elongate instrument of lesser cross-sectional dimension therethrough;

(b) a housing adjoining said proximal end portion of said trocar tube defining a chamber having open distal and proximal end portions that communicate with said lumen and permit axial movement of an elongate instrument therethrough; and

(c) an elastomeric seal member positioned in said chamber for sealing said proximal end portion of said chamber, said seal member having an inner section and an outer section, said inner section having an opening formed therein for permitting an elongate instrument to pass therethrough in sealing engagement therewith, said inner section having a plurality of spaced apart projections extending outwardly from a proximally facing surface of said inner section to reduce surface contact with an elongate instrument inserted into said housing means through said opening in said seal member, said seal member having a corrugated portion formed in said outer section in surrounding relationship with said opening so as to maintain the sealing engagement with an elongate instrument during off-centering of an instrument with respect to said seal member.

5,545,143

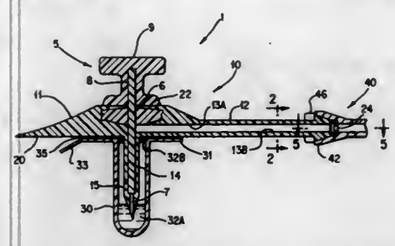
DEVICE FOR SUBCUTANEOUS MEDICATION DELIVERY

David R. Fischell, Fair Haven, N.J., assignor to T.S.I. Medical, Grapevine, Tex.

Continuation-in-part of Ser. No. 6,722, Jan. 21, 1993, abandoned. This application Jan. 7, 1994, Ser. No. 173,983

Int. Cl.[6] A61M *5/178;5/32*

U.S. Cl. 604—180 **25 Claims**



1. A device for delivery of medication from an external source through a patient's skin comprising:

a needle assembly consisting of a needle having proximal and distal sections, the proximal section having proximal and distal ends and further having a greater outside diameter as compared to the distal section thus forming an exterior shoulder at the junction of the distal section with the distal end of the proximal section, the needle assembly also having a handle fixedly attached onto the needle's proximal section; and,

an injection port assembly consisting of a main body having a bottom surface and a top surface and an outer perimeter situated at the intersection of the top and bottom surfaces and a flexible cannula that protrudes in a generally downward direction from the main body, the flexible cannula having an interior shoulder which is adapted to mate with the exterior shoulder of the needle so that the cannula resists bucking when the needle and cannula are pushed together through the patient's skin.

5,545,144

METHOD AND DEVICE FOR DOSING A LIQUID PREPARATION

Linda Fryklund, Sollentuna; Birger Hjertman, Vällingby; Marie-Louise Gustavsson, Stockholm; Jacob Kaluski, SaltsjöBoo; Gustav Levander, Bromma; Olle Ljungquist, Täby; Anders Ström, Enskede, and Jonas Virding, Lidingö, all of, Sweden, assignors to Pharmacia AB, Sweden

PCT No. PCT/SE92/00654, § 371 Date Sep. 26, 1994, § 102(e) Date Sep. 26, 1994, PCT Pub. No. WO93/08854, PCT Pub. Date May 13, 1993

PCT Filed Sep. 23, 1992, Ser. No. 232,109

Claims priority, application Sweden, Nov. 1, 1991, 9103215

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—187 **16 Claims**

1. A method for the repeated dosing of a liquid preparation of a pharmaceutically active agent to provide doses of a desired magnitude, by administration from a multi-dose container having a defined volume, said container having a fixed front wall through which is arranged an outlet for said preparation and a rear movable wall acting as a piston for expelling said preparation through said outlet by means of the movement of a piston rod connected to a dosing mechanism, and comprising the steps of:

a) defining a dose level of the pharmaceutically active agent adapted for unchanged but repeated administration to a patient;

b) selecting combination of (i) a concentration of the pharmaceutically active agent in the liquid preparation contained in the multi-dose container and (ii) a partial volume of said liquid preparation, which partial volume is 1/N of said defined volume of the multi-dose container, N being an integer having a value of 2 or higher, the combination of (i) and (ii) giving the dose level defined under a);

c) connecting a multi-dose container, containing the defined volume of liquid preparation of said concentration, to the piston rod and dosing mechanism; and

d) performing exactly N individual and successive administration strokes with the piston rod, each stroke affecting the rear movable wall to expel an equal volume of the liquid preparation in each stroke, said volume being said partial volume; whereby the container is emptied after the N successive administration strokes.

5,545,145

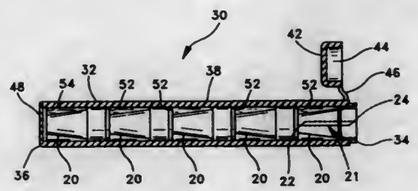
PEN NEEDLE DESPENSER

Mary B. Clinton, Suffern, N.Y., and John B. Wilson, Wanaque, N.J., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Filed Aug. 16, 1994, Ser. No. 291,269

Int. Cl.[6] A61M *5/32*

U.S. Cl. 604—192 **20 Claims**



1. An apparatus for storing a plurality of needle assemblies and for selectively dispensing said needle assemblies therefrom, said apparatus comprising:

a plurality of sterile needle assemblies;

an elongate tubular holder having a passageway extending therethrough and being dimensioned for holding said plurality of said sterile needle assemblies in substantially end-to-end alignment, said holder having a dispensing end for selectively accessing said sterile needle assemblies for use and an insertion end for selectively inserting used needle assemblies for storage;

a lid releasably engaged over said dispensing end of said holder and hingedly connected to said dispensing end of said holder; and

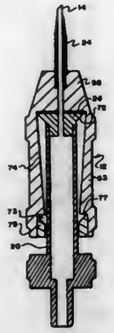
a guard mounted to said insertion end of said holder for preventing inadvertent contact with one of said sterile needle assemblies therein.

5,545,146

CATHETER APPARATUS HAVING A RETRACTABLE INTRAVENOUS NEEDLE ASSEMBLY

Noshi A. Ishak, 87 Spring St., Laconia, N.H. 03246

Filed Jun. 22, 1994, Ser. No. 264,017
Int. Cl.[6] A61M *5/32*
U.S. Cl. 604—198 **1 Claim**



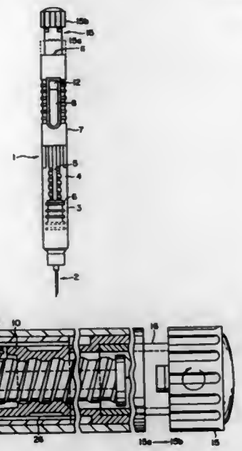
1. An apparatus for intravenous medical procedures comprising:
a cylindrical housing having a barrel with an interior cross-section and an interior tapered wall and having a tip at one end and a plunger opening at the other end, and with the tip of said housing having a tip bore with a diameter and with the tip bore extending into the barrel of said housing, said barrel being substantially translucent such that blood flashback is detectable;
a cylindrical plunger having a needle opening, an inserted position, a retracted position, and an intravenous tubing line opening, said plunger having an exterior cross-section corresponding to the interior cross-section of the barrel of said housing;
an introducing needle having a point and a gauge size corresponding to the diameter of the tip bore, said needle being rigidly connected to the needle opening of said plunger, such that when said plunger is fully inserted into the barrel of said housing, said needle extends through said tip bore;
locking means, connected between said plunger and said housing, for holding said plunger in a fixed retracted position relative to said housing such that when said plunger is in the fixed retracted position, the point of said introducing needle is held within the tip bore of said housing;
a compliant head attached adjacent to the needle opening of said plunger and a recess within the interior tapered wall of said barrel, with said recess adjacent to the plunger opening of said housing such that when said plunger is retracted, said head is compressed by the tapered wall of said barrel until said head engages said recess thus locking said plunger in a fixed position with the point of said needle within the tip bore;
at least one collar on said housing and at least one collar on said plunger, said collars having a plurality of grips that facilitate the insertion and retraction of said plunger into said barrel;
a flexible catheter, having a venous end and an attachment end, with the attachment end of said catheter permanently attached to the tip of said housing, said catheter having a gauge size corresponding to the gauge of said needle, such that when said plunger is fully inserted into said housing, said introducing needle extends through said flexible catheter with the point of said needle extending beyond the venous end of said catheter and such that when said plunger is in the fixed retracted position, a continuous path for conducting the flow of fluids is provided extending from the venous end of the catheter through the catheter, through a portion of the tip, through said introducing needle, through the plunger and exiting the intravenous tubing line opening of said plunger.

5,545,147

ANTI-BACKUP IMPROVEMENT FOR HYPODERMIC SYRINGES

Dale C. Harris, Fairland, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 20, 1992, Ser. No. 963,815
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—209 **3 Claims**



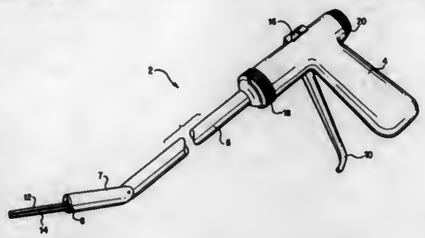
1. An improved device for preventing the backing up of a nut on a threaded piston rod in a barrel of a hypodermic syringe at the end of a dose comprising a pawl means on the nut which cooperates with a rachet means within the barrel and a means on the nut which cooperates with a means in the barrel for forcing the pawl means into the rachet means at the end of the dose to prevent rotation of the nut in the opposite direction to the dose setting direction.

5,545,148

ENDOSCOPIC SEWING INSTRUMENT

Helmut Wurster, Mozartstrasse 20, 75038 Oberderdingen, Germany

Filed Oct. 22, 1993, Ser. No. 139,809
Claims priority, application Germany, Oct. 24, 1992, 43 04 353.4
Int. Cl.[6] A61M *5/315*; A61B *17/12*
U.S. Cl. 604—223 **35 Claims**



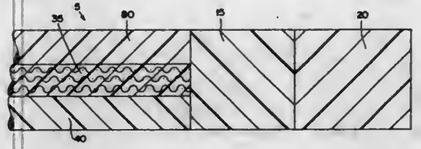
1. An endoscopic sewing instrument comprising:
a plurality of rolls, with at least one of the rolls being drivable;
a helical needle connectable to a thread and having at least one winding, the needle being positionable between at least two of the rolls so as to be rotatably driven by rotation of the rolls, and
a controllable motor drivingly coupled to the rolls to selectively rotate the needle in one of complete or partial rotations.

5,545,149

METHOD OF CATHETER SEGMENT ATTACHMENT

David S. Brin, West Newbury; Peter A. Luan, Beverly, and Stuart R. MacDonald, Danvers, all of Mass., assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 083,840, Jun. 25, 1993, abandoned. This application May 2, 1994, Ser. No. 236,766
Int. Cl.[6] A61M *5/32*
U.S. Cl. 604—265 **24 Claims**



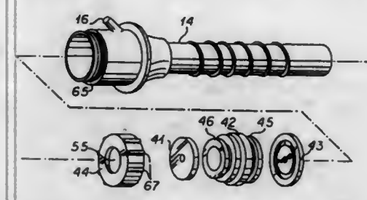
1. A catheter comprising:
(a) an elongated shaft having an inner diameter, a proximal end and a distal end, the shaft defining at least one lumen, the shaft having a lubricous liner coating the inner diameter of the shaft;
(b) an elongated transition tube having a proximal end and a distal end, the transition tube defining at least one lumen, the proximal end of the transition tubing being affixed to the distal end of the shaft, the transition tube being generally free of the lubricous liner;
(c) an elongated tip tube having a proximal end and a distal end, the tip tube defining at least one lumen, the proximal end of the tip tube being affixed to the distal end of the transition tube and the tip tube being made of materials having a lower melt temperature than the transition tube, the tip tube being free of the lubricous liner; and
(d) the elongated transition tube being formed of materials having a tensile strength of at least 150% of the materials comprising the elongated tip tube.

5,545,150

TROCAR

John K. Danks, Boca Raton, Fla.; Richard V. Mazzola, Bloomfield, N.J., and Thomas R. Johnson, Milford, N.H., assignors to Endoscopic Concepts, Inc., Delray Beach, Fla.

Filed May 6, 1994, Ser. No. 238,959
Int. Cl.[6] A61M *5/00*; *5/14*
U.S. Cl. 604—256 **14 Claims**



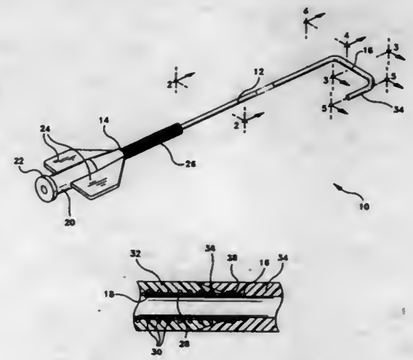
1. A cannula comprising:
(a) a cannula tube with an outer surface and an interior lumen, and having a distal end and a proximate end, said proximate end forming a cannula handle;
(b) a gland retainer fitted adjacent to the proximate end of said cannula tube and substantially within the cannula handle, said gland retainer having a distal end and a proximate end;
(c) a flapper valve mounted on said gland retainer distal end, wherein the flapper valve comprises an outer casing, a hinge, and a flapper and wherein at least the outer casing and the hinge of said flapper valve are integrally fabricated from an elastomeric material; and
(d) a cap releasably fastened to the cannula handle thereby confining said gland retainer.

5,545,151

CATHETER HAVING HYDROPHOBIC PROPERTIES

Michael G. O'Connor, Blaine, and Eric M. Lovgren, Buffalo, both of Minn., assignors to Schneider (USA) Inc, Plymouth, Minn.

Filed Nov. 22, 1994, Ser. No. 343,153
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—282 **21 Claims**



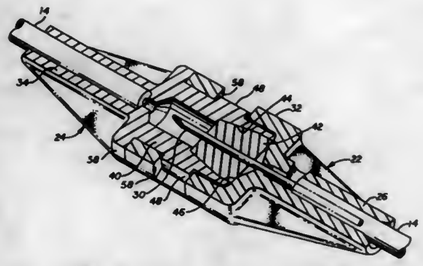
1. An intravascular catheter comprising an elongated tubular body having a proximal portion, a distal portion and a lumen extending therebetween, said tubular body comprising:
(a) an inner layer comprising a blend of (i) about 10–25 weight percent of a polyester-polyurethane having a durometer of from about 45D–55D, and (ii) about 38–53 weight percent of a polyester polyurethane having a durometer of from about 65D–75D;
(b) a reinforcing means at least partially surrounding said inner layer; and
(c) an outer layer comprising a blend of (i) about 10–25 weight percent of a polyester-polyurethane having a durometer of from about 4.D–55D, and (ii) about 38–53 weight percent of a polyester-polyurethane having a durometer of from about 65D–75D, said outer layer at least partially covering said reinforcing means.

5,545,152

QUICK-CONNECT COUPLING FOR A MEDICATION INFUSION SYSTEM

Jeffery V. Funderburk, Granada Hills, and Deborah C. McIntyre, Agoura Hills, both of Calif., assignors to MiniMed Inc., Sylmar, Calif.

Filed Oct. 28, 1994, Ser. No. 328,782
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—283 **17 Claims**



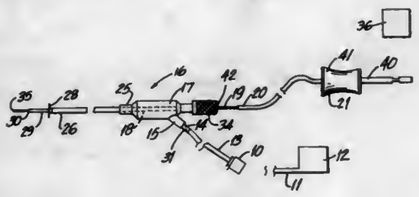
1. A quick-connect coupling for a medication infusion system, comprising:
a female component having an open-ended, generally cylindrical fitting; and
a male component having a nose for slide-fit reception into said cylindrical fitting of said female component;
said male component having a radially raised tab on said nose with a size and shape for substantially free slide-fit reception into a longitudinally open entry slot formed within said cylindrical fitting of said female component;
said male component being rotatable with said nose received within said fitting to displace said tab substantially with an interference fit past an undercut cam surface formed within said fitting and into seated alignment with a radially open lock port formed in said fitting, whereby said male and female components are effectively locked against longitudinal separation.

5,545,153

ADJUSTABLE MINIATURE PANORAMIC ILLUMINATION AND INFUSION SYSTEM FOR RETINAL SURGERY

Avi Grinblat, New York, and Stanley Chang, Scarsdale, N.Y., assignors to A.V.I. - Advanced Visual Instruments, Inc., New York, N.Y.

Filed Aug. 15, 1994, Ser. No. 290,554
Int. Cl.[6] A61N *1/30;* **A61M** *35/00*
U.S. Cl. 604—294 **6 Claims**



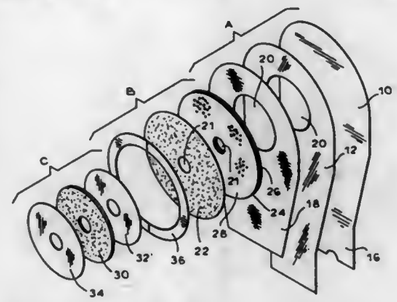
1. A miniature illuminating and infusion system for eye surgery, comprising:
(a) a fluid conduction tube adapted to be connected to a source of infusion fluid;
(b) a single optical fiber having an outer diameter and a proximal end and adapted to be connected to a source of light at the proximal end and having a free opposite distal end, said distal end adapted to provide illumination within an eyeball during an eye operation;
(c) a juncture device having a bore therethrough with an inner diameter, wherein the juncture device includes an "O" ring having a bore therein with the optical fiber extending through the bore of the "O" ring to prevent leakage of the infusion fluid, the fluid conduction tube being connected to the juncture device to conduct infusion fluid to the junction device bore;
(d) a plate adapted to be removably attached to the eyeball during surgery and a needle cannula fixed to the plate, the needle cannula having a bore with an inner diameter and having a free distal end;
(e) a connecting tube having a bore and connected to the needle cannula and the juncture device;
(f) the optical fiber being within the bores of the juncture device, the connecting tube and the needle cannula and the distal end of the optical fiber adapted to illuminate beyond the free distal end of the needle cannula, the outer diameter of the optical fiber being smaller than the inner diameter of the juncture device bore, connecting the tube bore and needle cannula bore thereby permitting infusing fluid to flow around the optical fiber within the bores.

5,545,154

OSTOMY DEVICE

Gary E. Oberholtzer, Feasterville, Pa., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Dec. 28, 1994, Ser. No. 365,714
Int. Cl.[6] A61F *5/44*
U.S. Cl. 604—336 **25 Claims**



1. An ostomy device comprising:
a pouch with an inlet in a sidewall;
a faceplate proximate to said inlet attachable to said sidewall, said faceplate including a collar with a central opening adapted to align with said pouch inlet, said collar including a perforated EVA/polyethylene film between a non-woven polyethylene layer and an adhesive layer, and a hydrocolloid member having substantially an entire surface secured to said adhesive layer so as to securely join said hydrocolloid member to said collar; and
attaching means for attaching said faceplate to said pouch by welding said collar to said pouch.

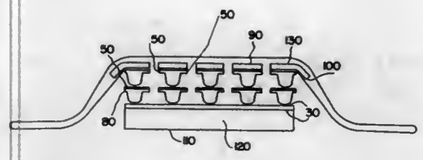
5,545,155

ABSORBENT ARTICLE WITH PLATES

Tong-Ho Hseih, Marlboro; Theodore A. Foley, East Brunswick, and Anthony N. Marascio, New Brunswick, all of N.J., assignors to McNeil-PPC, Inc., Milltown, N.J.

Filed Mar. 30, 1994, Ser. No. 220,073
Int. Cl.[6] A61F *13/15;13/20*
U.S. Cl. 604—378 **19 Claims**

1. An absorbent product comprising an upper plate and a lower plate which are spaced apart from each other, and wherein a plurality of openings extend through the upper plate and further comprising an intermediate plate positioned between and spaced apart from the upper and lower plates by means of spacer elements to maintain an open area therebetween, wherein the intermediate plate has a plurality of openings extending through said intermediate plate.

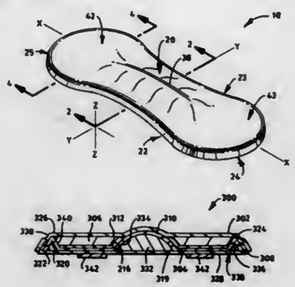


5,545,156

ABSORBENT ARTICLE HAVING A PREFORMED MEMBER

Joseph DiPalma, Neenah, and Sowmya S. Anjur, Appleton, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Dec. 22, 1994, Ser. No. 362,705
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—385.1 **23 Claims**



1. An absorbent article having an outer perimeter and adapted to be worn adjacent to a wearer's body, said absorbent article comprising:
a) a liquid-impermeable preformed member; and
b) an absorbent core secured to and superposed over a portion of said preformed member, said absorbent core having a bodyfacing surface and said preformed member having a bulge with an apex extending above said bodyfacing surface, said preformed member further having barrier means for intercepting body fluid migrating toward said outer perimeter, said barrier means encircling said absorbent core.

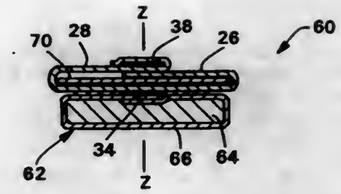
5,545,157

PANTY SHIELD

Thomas P. Van Iten, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 230,938, Apr. 20, 1994. This application May 2, 1995, Ser. No. 432,753
Int. Cl.[6] A61F *13/15;* **A44B** *1/04;* **A41D** *27/12*
U.S. Cl. 604—385.1 **10 Claims**

1. A panty shield comprising:
a) a baffle having a central portion with first and second longitudinal side edges, and first and second appendages extending laterally outward from said first and second longitudinal side edges respectively, each of said first and second appendages having a sufficient length to be folded inward and overlap one another; and



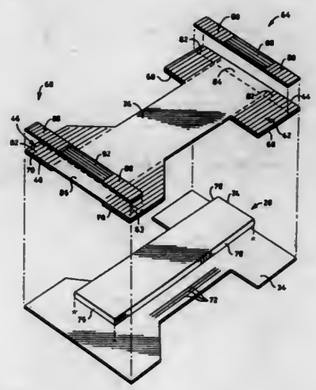
b) means for holding said panty shield to an undergarment, said means including a first attachment magnet designed to be superimposed relative to and mate with a second magnet when said first and second appendages are folded around the undergarment, said first magnet being secured to said central portion of said baffle by an adhesive and said second magnet being secured to one of said appendages.

5,545,158

DISPOSABLE ABSORBENT GARMENT AND A CONTINUOUS, SELECTIVELY ELASTICIZED BAND JOINED THERE TO

James L. Jessup, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jun. 23, 1994, Ser. No. 264,539
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—385.2 **18 Claims**



1. A disposable garment, comprising:
a pant body defining a waist opening and a pair of leg openings,
a partially elastic, continuous waistborder comprising a pair of elastic side segments and at least one non-elastic segment, and
a continuous, elastic waistband joined to said partially elastic, continuous waistborder; said waistband comprising a pair of side portions, a front portion, and a back portion,
said pair of side portions being respectively joined to said pair of elastic side segments of said waistborder,
one of said front portion and said back portion being operatively elastically joined to said non-elastic segment, said one portion and said non-elastic segment having an elasticity different from the elasticity of said elastic side segments.

5,545,159

DISPOSABLE DIAPER WITH REFASTENABLE MECHANICAL FASTENING SYSTEM

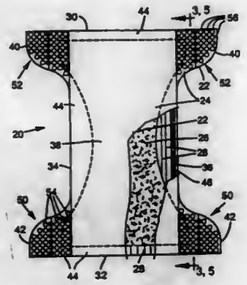
E. Peter Lancaster, 4024 32nd Ave. Ct. NW., Gig Harbor, Wash. 98335, and Richard H. Young, 23165 SE. 249 Ct., Maple Valley, Wash. 98038

Continuation of Ser. No. 918,279, Jul. 22, 1992, Pat. No. 5,324,279, which is a continuation of Ser. No. 677,606, Mar. 27, 1991, Pat. No. 5,269,776, which is a continuation of Ser. No. 328,493, Mar. 24, 1989, abandoned. This application Apr. 28, 1994, Ser. No. 236,561

The portion of the term of this patent subsequent to Dec. 14, 2010, has been disclaimed.

Int. Cl.[6] A61F *13/15*

U.S. Cl. 604—391 **6 Claims**



1. A disposable absorbent garment comprising:

an outer layer of a liquid impervious material;

a nonwoven liquid pervious inner layer;

an absorbent layer sandwiched and encased between the inner and outer layers, the sandwiched layers having opposed front and back laterally extending waist edges with a crotch region therebetween, and two opposed side margins extending generally in an axial direction between the front and back waist edges, the front and back waist edges for extending along the respective front and back waist portions of a wearer;

resiliently deformable gripping connectors extending from each of the side margins along the back waist edge; and

target connectors located along the front waist edge of the outer layer, the target connectors integrally formed within the liquid impervious material of the outer layer and adapted to engage the gripping connectors, said target connectors projecting outwardly from the outer layer and adapted each to receive at least one of said gripping connectors by pressing the gripping connectors substantially perpendicularly toward the outer layer adjacent said front waist edge to interengage the gripping and target connectors, said gripping and target connectors being sized such that upon interengagement, at least one of said gripping and target connectors are deformed and said gripping and target connectors resiliently grip one another to maintain interconnection;

wherein each of the gripping connectors comprises a throat having a first cross-sectional dimension; and

wherein each of the target connectors comprises a projection having a second cross-sectional dimension, the second cross-sectional dimension being slightly larger than said first cross-sectional dimension, the target and gripping connectors being alignable such that the first and second cross-sectional dimensions substantially coincide upon interengagement of the gripping and target connectors, whereby upon interconnection of a gripping connector with a target connector, said throat deforms by expansion of the first cross-sectional dimension to admit the target connector, and thereafter the gripping connector throat contracts resiliently to grip the admitted target connector and secure the interconnection.

5,545,160

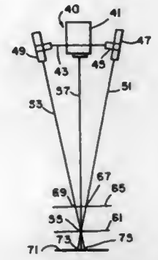
COMPUTER ORIENTED STEREOTACTIC MICRONEUROLOGICAL SURGERY

Daniel K. O'Rourke, 1815 Beulah Rd., Vienna, Va. 22180

Filed Aug. 14, 1990, Ser. No. 566,822

Int. Cl.[6] A61B *5/06*

U.S. Cl. 606—10 **16 Claims**



1. A computer oriented stereotactic microneurological surgery apparatus, comprising an operating instrument, first and second extensions having proximal ends attached to the operating instrument and having distal ends, first and second energy sources connected to distal ends of the first and second extensions respectively and having first and second energy beams, the first and second energy sources being positioned on the distal ends of the extensions so as to direct the first and second energy beams to intersect at a point spaced from the operating instrument, wherein the first and second energy sources are positioned so that the first and second energy beams intersect on an operating axis of the operating instrument, wherein the operating instrument is an operating microscope and the operating axis is an optical axis and a focal point is along the optical axis, and wherein the first and second energy sources are positioned so that the energy beams intersect at the focal point of the operating microscope, wherein the first and second energy sources are first and second neon lasers which produce narrow beams along the optical axis, and which produce spots upon contacting tissue along the optical axis.

5,545,161

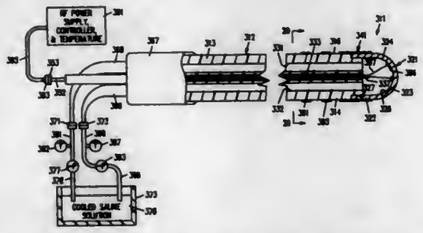
CATHETER FOR RF ABLATION HAVING COOLED ELECTRODE WITH ELECTRICALLY INSULATED SLEEVE

Mir A. Imran, Palo Alto, Calif., assignor to Cardiac Pathways Corporation, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 210,032, Mar. 16, 1994, which is a continuation of Ser. No. 983,732, Dec. 1, 1992, Pat. No. 5,348,554. This application Oct. 7, 1994, Ser. No. 319,739

Int. Cl.[6] A61B *17/39;* **A61N** *1/05*

U.S. Cl. 606—41 **16 Claims**



1. A catheter for use with a liquid cooling to perform radio frequency ablation of tissue comprising a flexible elongate member having proximal and distal extremities and an outer surface, the flexible elongate member being provided with liquid supply and liquid withdrawal lumens extending between the proximal and distal extremities, a conducting metal tip electrode secured to the distal extremity of the flexible elongate member and having an outer surface which adjoins the outer surface of the flexible elongate member, the tip electrode having a chamber therein which is in communication with the liquid supply and liquid withdrawal lumens, conductor means extending through the flexible elongate member for supplying radio frequency energy to the tip electrode and a layer of insulating material extending over the outer surface of the flexible elongate member and the outer surface of the tip electrode in the region where the outer surfaces adjoin each other for inhibiting the formation of hot spots in the vicinity of the adjoining outer surfaces.

5,545,162

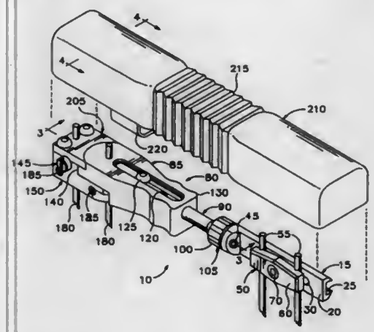
EXTERNAL FIXATOR FOR REPAIRING FRACTURES OF DISTAL RADIUS AND WRIST

Randall J. Huebner, 18560 S.W. Hart Rd., Aloha, Oreg. 97005

Filed Feb. 15, 1995, Ser. No. 389,056

Int. Cl.[6] A61B *17/66;17/60*

U.S. Cl. 606—57 **15 Claims**



1. A bone fixator for repairing fractures of a distal radius and wrist, comprising:

at least two generally parallel spaced-apart elongate distal mounting pins with lower ends for mounting in the metacarpal bone and having elongate axes;

at least two generally parallel spaced-apart elongate radial mounting pins with lower ends for mounting in the radius and having elongate axes;

an elongate distal member having an elongate axis;

a distal pin clamp assembly for securing the distal pins relative to the distal member and movably coupled to the distal member for translational movement along the elongate axis of the distal member and pivotal motion about a pivot axis generally perpendicular to the elongate axis of the distal member and the elongate axes of the distal pins;

a proximal pin mounting block for securing the radial pins; and

an elongate medial assemble having an adjustable length and having a first and second end, the assembly connected at the first end to the pin mounting block for independent pivotal motion about a pivot axis generally parallel to the elongate axes of the proximal mounting pins and coupled at the second end through a ball joint to the distal member.

5,545,163

SPINAL FIXATION SYSTEM

David F. Miller; Robert A. Farris, both of Memphis, Tenn., and John P. Barrett, Jackson, Miss., assignors to Danek Medical, Inc., Memphis, Tenn.

PCT No. PCT/US92/05905, § 371 Date Sep. 19, 1994, § 102(e) Date Sep. 19, 1994, PCT Pub. No. WO93/01772, PCT Pub. Date Feb. 4, 1993

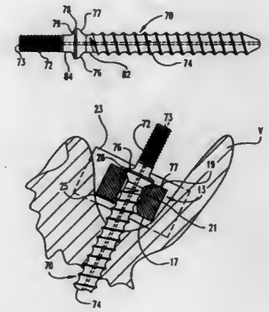
Continuation-in-part of Ser. No. 730,115, Jul. 15, 1991, abandoned. This PCT application Jul. 15, 1992, Ser. No. 178,304

Claims priority, application U.S., Jul. 15, 1991, 07/730,115

Int. Cl.[6] A61F *5/04*

U.S. Cl. 606—61 **14 Claims**

1. A spinal fixation system for maintaining vertebrae in a desired



relationship comprising:

an elongated plate having;

a bottom side for facing the vertebrae;

an opposite top side extending generally parallel to said bottom side;

an elongated slot defined therethrough between said bottom side and said top side and extending substantially along the length of said plate, said slot having a lower edge at the intersection of said slot and said bottom surface and an upper edge at the intersection of said slot and said top surface, and

a number of first concave depressions formed at said lower edge of said slot and a number of second concave depressions formed at said upper edge of said slot; and load transmitting means for engagement between the vertebrae and said elongated plate for transmitting forces therebetween, said load transmitting means including;

pedicle screw means having a first threaded portion, a second threaded portion and an intermediate portion between and integral with said first and said second threaded portions, said second threaded portion including a number of threads adapted to engage the bone of the vertebrae, said intermediate portion having a rigid upper arcuate surface facing toward said first threaded portion, said upper arcuate surface being substantially complementary to said number of first concave depressions to be received therein; and

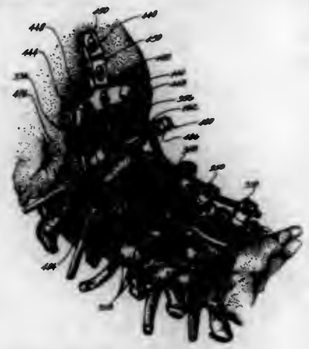
a nut having a threaded head portion for engaging said first threaded portion and a rigid lower arcuate surface which is substantially complementary to said number of second concave depressions to be received therein when said nut is tightened down along said first threaded portion;

wherein said first and second Concave depressions and said upper and lower arcuate surfaces are configured to permit angulation of said pedicle screw means relative to said elongated plate when said second threaded portion is engaging the bone of the vertebrae while said upper arcuate surface is in contact with said number of first concave depressions and said lower arcuate surface is in contact with said number of second concave depressions.

5,545,164
OCCIPITAL CLAMP ASSEMBLY FOR CERVICAL SPINE ROD FIXATION

Robert S. Howland, Seal Beach, Calif., assignor to Advanced Spine Fixation Systems, Incorporated, Cypress, Calif.

Continuation-in-part of Ser. No. 998,116, Dec. 28, 1992, abandoned. This application May 12, 1994, Ser. No. 241,768
Int. Cl.[6] A61B *17/70*
U.S. Cl. 606—61 **4 Claims**

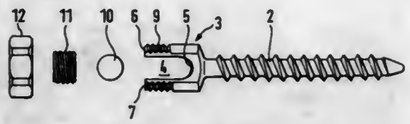


1. An occipital clamp assembly comprising:
a lower occipital plate having a plurality of apertures for receiving means for directly securing the lower occipital plate to the skull;
an upper occipital plate;
a plurality of plate studs for attaching the lower plate to the upper plate;
means of securing the upper plate to the lower plate; and
a plurality of means for directly securing the lower occipital plate to the skull wherein each one of the securing means is located in each one of the lower occipital plate apertures;
wherein the lower occipital plate comprises:
a T-shaped plate wherein the plurality of apertures for receiving means for directly securing the lower occipital plate to the skull are located on the center bar of the T;
plate stud apertures at each end of the cross-bar of the T for receiving the plate studs; and
grooves adjacent to each of the plate stud apertures for attachment of rods.

5,545,165
ANCHORING MEMBER

Lutz Biedermann, VS-Villingen, Germany; Harry L. Shufflebarger, Miami, Fla., and Jürgen Harms, Karlsruhe, Germany, assignors to Biedermann Motech GmbH, Berta-Suttner-Strasse, Germany

PCT No. PCT/EP93/02756, § 371 Date May 20, 1994, § 102(e) Date May 20, 1994, PCT Pub. No. WO94/08527, PCT Pub. Date Apr. 28, 1994
PCT Filed Oct. 8, 1992, Ser. No. 244,397
Claims priority, application Germany, Oct. 9, 1992, 42 34 118.3
Int. Cl.[6] A61B *17/70;17/86*
U.S. Cl. 606—61 **7 Claims**

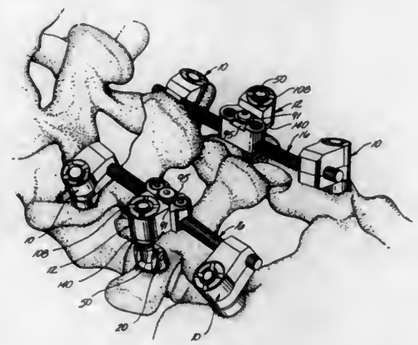


1. A system for spinal correction, comprising an anchoring member, for attachment to a vertebra, the anchoring member having a head having a U-shaped channel with two legs and an open end, the system further comprising a rod being positioned into the U-shaped channel, said legs having an internal thread and an external thread, a fastening member having an external thread engaging the internal thread of said legs, a spigot open at the top and bottom and having an internal thread engaging the outer thread of the legs, the fastening member and the spigot engaging the surface of the rod, the internal and external threads of the head having a length to permit the fastening member and spigot to engage the rod whereby the tightening of the fastening member and the spigot fixes the rod in place and the exertion of a force by the fastening member on the rod causes an expanding force on the legs against the spigot to fix the head, the fastening member, and the spigot together.

5,545,166
SPINAL SEGMENTAL REDUCTION DEROTATIONAL FIXATION SYSTEM

Robert S. Howland, Seal Beach, Calif., assignor to Advanced Spine Fixation Systems, Incorporated, Cypress, Calif.

Filed Jul. 14, 1994, Ser. No. 274,971
Int. Cl.[6] A61B *17/70;17/86*
U.S. Cl. 606—61 **18 Claims**



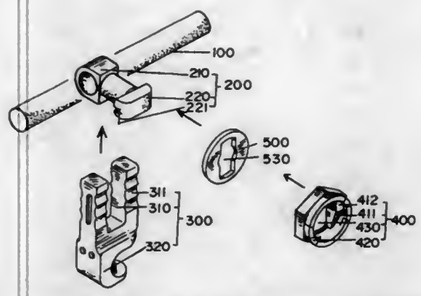
6. A spinal fixation apparatus comprising:
a bolt capable of being pivotally attached to a vertebra to be treated;
bracing means for attaching vertebrae on either side of the vertebra to be treated wherein the bracing means comprises a rod clamped by a clamp capable of being attached to vertebrae on either side of the vertebra to be treated; and
means for pivotally and movably attaching the bolt to the bracing means to thereby be capable of pushing, pulling and rotating the vertebra as required to move the vertebra into correct alignment with the spine wherein the means for pivotally and movably attaching the bolt to the bracing means comprises:
a clamp block attached to the rod; and
a pivot block movably attached to the bolt and pivotally attached to the clamp block.

5,545,167
RETAINING MECHANISM OF VERTEBRAL FIXATION ROD

Chih-I Lin, 14292 Spring Vista La., Chino Hills, Calif. 91709

Filed Apr. 11, 1995, Ser. No. 419,698
Int. Cl.[6] A61B *17/70*
U.S. Cl. 606—61 **15 Claims**

1. A retaining mechanism of a vertebral fixation rod comprising:

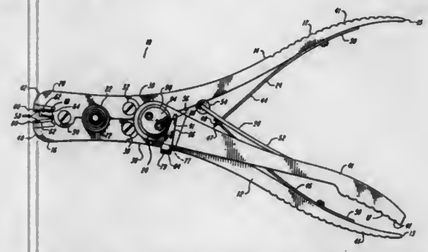


a retaining bolt provided at one end thereof with a retaining ring for holding a rod body, said retaining bolt further provided at another end thereof with a bolt portion having a rectangular head;
a U-shaped connection element provided at one end thereof with a U-shaped fitting portion dimensioned to fit over said bolt portion of said retaining bolt, said U-shaped connection element further provided at another end thereof with a connecting portion engageable with a vertebra to be fixed or with a vertebral fixation device; and
a fastening nut engageable with said rectangular head of said bolt portion of said retaining bolt, said fastening nut provided therein with a plurality of bevel slide blocks for enabling said retaining bolt to slide along said bevel slide blocks when said fastening nut is rotated, and said fastening nut further provided with at least one stop element adapted to stop said fastening nut when it is rotated to a predetermined degree by engaging the at least one stop element with the rectangular head of the retaining bolt.

5,545,168
APPARATUS FOR BOTH TENSIONING AND CRIMPING A SURGICAL WIRE

Dennis W. Burke, 245 Highland Ave., Milton, Mass. 02186

Filed Mar. 11, 1994, Ser. No. 212,038
Int. Cl.[6] A61B *17/82*
U.S. Cl. 606—74 **6 Claims**

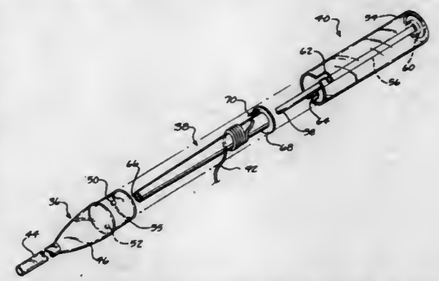


1. Apparatus for tightening a surgical wire and for crimping together two different portions of the wire with a desired tractive force, said apparatus comprising:
a pair of pivotally connected operating handles, each of said handles having a distal end and a proximal end;
a pair of opposed jaws operatively connected to said distal ends of said operating handles, said jaws being opened and closed in response to movement of said operating handles, said jaws defining a recess therebetween for holding a crimp member;
a pair of mechanisms disposed intermediate said jaws and said proximal ends of said operating handles for applying the tractive force to the wire, said mechanisms each being adapted to receive one of the two portions of the wire;
a pivotally mounted ratchet handle coupled to both of said mechanisms for simultaneously activating both of said mechanisms; and
apparatus for retaining said jaws in a partially closed position for holding a crimp member tightly in a non-deformed condition, said retaining apparatus comprising a spring for biasing said jaws into an open position, and a stop for preventing said jaws from opening under the influence of said spring, the position of said stop being adjustable to allow positioning of said laws with a desired spacing, a slot disposed in said jaws adapted to receive said stop, said jaws being fully openable when said stop resides in said slot, and a second spring for urging said stop into said slot when said jaws are closed sufficiently to deform the crimp member.

5,545,169
LAPAROSCOPIC DELIVERY DEVICE

Richard J. Yarger, 4908 Douglas Dr., Yakima, Wash. 98908

Continuation of Ser. No. 41,504, Apr. 1, 1993, abandoned. This application Aug. 19, 1994, Ser. No. 292,567
Int. Cl.[6] A61F *11/00*
U.S. Cl. 606—108 **6 Claims**



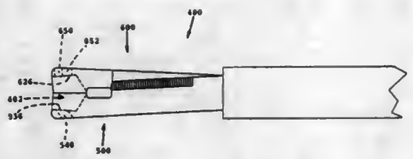
1. An apparatus for introducing a solid object into the intra-abdominal cavity of a patient during a medical procedure through an access port previously inserted into the intra-abdominal cavity, comprising:
(a) magazine means having opposite first and second ends, the first end being substantially sealed, and the second end being open, for substantially containing the object prior to introduction of the object into the intra-abdominal cavity, wherein the magazine means contains a spool mounted within the magazine means for wrapping the object around the spool prior to introduction of the object into the intra-abdominal cavity of the patient, and thereafter for unwrapping the object from the spool during introduction of the object into the intra-abdominal cavity of the patient, wherein the spool is engageable over a spindle forming an axis for the spool and wherein the spindle is mounted within the magazine means; and
(b) connection means connected to the magazine means for connecting the magazine means to the access port to permit withdrawal of the object from the magazine means and delivery into the intra-abdominal cavity, the connection means including a first, forward end insertable into the access port.

5,545,170
SURGICAL INSTRUMENT

Rickey D. Hart, Plainville, Mass., assignor to Innovasive Devices, Inc., Marlborough, Mass.

Continuation-in-part of Ser. No. 959,121, Oct. 9, 1992, Pat. No. 5,334,198. This application Apr. 28, 1994, Ser. No. 234,642
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—148 **26 Claims**

1. A surgical instrument comprising:
a handle assembly;
a tool head comprising first and second cooperating tool members movable between a first position wherein said tool members are spaced from one another and a second position



wherein said tool members are proximate to one another, said first and second tool members comprising first means for running surgical suture throws toward a surgical site to form a knot, and second means for severing excess lengths of suture adjacent to said knot; and

drive means attached to said handle assembly and connected to said tool head for moving said first and second cooperating tool members between said first position and said second position;

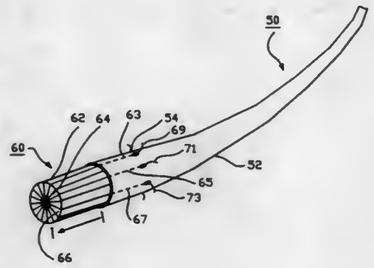
wherein said first means comprise a substantially semi-cylindrical portion on each of said first and second cooperating tool members, said substantially cylindrical portions being configured to substantially abut one another in mating relationship when said first and second tool members are located in said second position so as to form a cavity having an open distal end and a sidewall, said sidewall comprising a first bore extending at an angle therethrough and a second bore extending substantially radially through an opposing portion of said sidewall, said second bore being connected to the distal end of said cavity sidewall by a slot, and said first bore, said second bore, and said slot all being substantially aligned.

5,545,171

ANASTOMOSIS CATHETER

Hugh R. Sharkey, Redwood City, Calif.; Benad Goldwasser, Tel Aviv, Israel, and Stuart D. Edwards, Los Altos, Calif., assignors to Vidamed, Inc., Menlo Park, Calif.

Filed Sep. 22, 1994, Ser. No. 310,684
Int. Cl.[6] A61B *17/04*
U.S. Cl. 606—148 **31 Claims**



1. A medical probe device comprising;

a hollow catheter including at least one needle aperture in a side thereof for directing a suture needle outward through at least said one needle aperture and through adjacent tissue;

a suture needle positioned in at least one of said apertures;

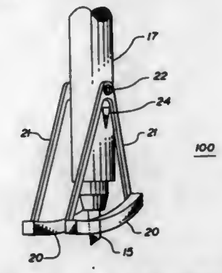
a deployment apparatus for deploying said at least one suture needle outward through at least one of said apertures, said deployment apparatus including a cam section device, said cam section device positioned in said hollow catheter to permit longitudinal movement of said cam section device in said hollow catheter, said cam device including a cam surface, wherein said cam surface of said cam section device contacts said suture needle upon activation, said cam surface operating to urge said needle outward of said needle aperture upon longitudinal movement of said cam section device.

5,545,172

ROCKING FOOT PLATE FOR SURGICAL KNIFE

William R. Knepshield, Malvern; Kristen K. Fay, Glen Mills, and William Knepshield, Jr., West Chester, all of Pa., assignors to Malvern Technologies, Inc., Malvern, Pa.

Filed Jun. 7, 1994, Ser. No. 255,035
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—166 **17 Claims**



1. A surgical knife for making radial keratotomy incisions in a cornea, comprising:

(a) an elongated diamond blade having at least one cutting surface capable of making said incisions;

(b) a blade holder for securing said blade at a distal portion of said blade holder, said blade holder sized to fit into a surgeon's hand; and

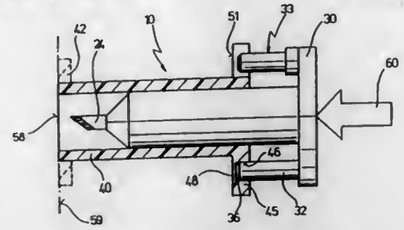
(c) rocking foot plate means pivotally attached to said blade holder, said foot plate means having an upper and lower surface, said lower surface contacting and rocking over a superficial portion of the cornea during said incisions.

5,545,173

APPARATUS FOR TAKING BLOOD SAMPLES

Richard Herbst, Freisinger Strasse 3 b, D-85386 Eching, Germany

Filed Jun. 1, 1994, Ser. No. 252,111
Claims priority, application Germany, Jun. 2, 1993, 43 18 142.2
Int. Cl.[6] A61B *5/14*
U.S. Cl. 606—181 **16 Claims**



1. An apparatus for taking blood samples comprising:

an elongate lancet portion defining an axis and having a first and a second terminal end, said first lancet portion terminal end being provided with a knob section and said second lancet portion terminal end being provided with a protruding lancet cutting edge section;

an elongate sleeve portion for receiving and axially guiding said lancet portion, said sleeve portion having a first and a second terminal end, said first sleeve portion terminal end being provided with a flange; and

present breaking point means,

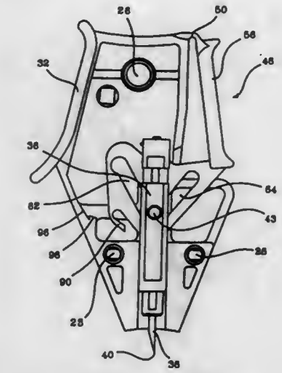
wherein said lancet portion, in a first operational position, is axially held within said sleeve portion with said knob section being at a first axial distance from said flange and said protruding lancet cutting edge section being entirely enclosed by said second sleeve portion terminal end, whereas, in a second operational position, said lancet portion is axially held within said sleeve portion with said knob section being at a second axial distance from said flange and said protruding lancet cutting edge section protruding from said second sleeve portion terminal end, said present breaking point means acting, in an unbroken state, as axial stop means between said lancet portion and said sleeve portion, whereas upon application of a predetermined amount of axial force between said lancet portion and said sleeve portion said present breaking force means is broken, resulting in an abrupt transition from said first to said second operational position.

5,545,174

FINGER STICK DEVICE

Robert W. Schenk, Ballwin; Alan B. Ranford, St. Louis; Shawn C. Ray; Richard A. Sunderland, both of St. Charles, and Curtis D. Kinghorn, Florissant, all of Mo., assignors to Sherwood Medical Company, St. Louis, Mo.

Filed Jan. 11, 1994, Ser. No. 179,864
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—182 **31 Claims**



1. A lancet type device having a distal or patient contacting end and an opposed proximal end comprising:

an elongated lancet body having a central axis;

a lancet that is substantially encased in the lancet body, the lancet having a sharp distal tip that extends beyond the distal end of the lancet body;

a case having a chamber contoured to the shape of the lancet body so that the lancet body is slidably encased in the chamber and moves in the chamber along the central axis of the lancet body, the chamber having an axis;

an actuating mechanism that moves and retracts the sharp distal lancet tip linearly out of and into the chamber as the actuating mechanism moves and then retracts, respectively, the lancet tip, the actuating mechanism including:

a cam follower protruding from the lancet body at substantially a right angle to the central axis of the lancet body; and,

a substantially planar movable arm with a substantially "V" shaped groove, the arm constrained to move in a direction contained within the plane of the arm;

wherein the cam follower protrudes into the groove at approximately a right angle to the plane of the groove whereby the cam follower is constrained to movement along the groove;

whereby, as the arm moves, contact between the groove and the cam follower moves the cam follower, and consequently the lancet body, in a linear direction along the axis of the lancet body;

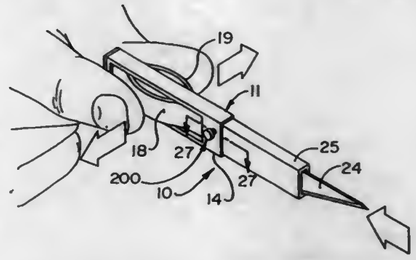
whereby the lancet tip moves into and out of contact with a patient's skin.

5,545,175

DISPOSABLE QUARDED FINGER SCALPEL FOR INSERTING A LINE IN A PATENT AND LOCK OFF THEREFOR

Micheal R. Abidin, Tampa, Fla., and Steven P. Lehmbeck, Baltimore, Md., assignors to Leonard Bloom, Towson, Md.

Continuation-in-part of Ser. No. 079,985, Jun. 18, 1993, Pat. No. 5,370,654. This application Aug. 8, 1994, Ser. No. 287,123
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—182 **14 Claims**



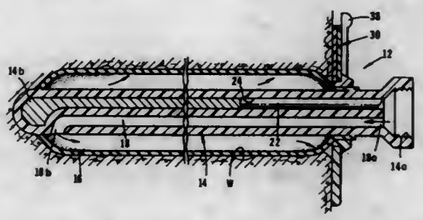
1. A disposable guarded finger scalpel, wherein the disposable guarded finger scalpel is used while inserting a line in a patient, comprising a frame normally grasped between a thumb and forefinger, the frame including a blade guard forwardly thereof and having an opening therein, an inner member nested within the frame and including at least one spring arm disposed rearwardly of the frame and extending laterally therefrom, the inner member including a forward portion having a longitudinal lug formed thereon, a blade having a longitudinal slot receiving the lug on the forward portion of the inner member, thereby mounting the blade on the inner member, the blade normally being retracted within the blade guard, the inner member having a cap means rearwardly thereof, and the frame having a rear end wall abutting against the cap means on the inner member, thereby securing the inner member within the frame, wherein the at least one spring arm is manually squeezed laterally inwardly of the frame, thereby advancing the blade outwardly through the opening in the blade guard and thereby automatically retracting the blade within the guard when the at least one spring arm is manually released, and means for locking the blade in a retracted position of the blade on the frame.

5,545,176

WOUND DILATATION DEVICE

Robert L. Murtfeldt, 1102 Olive La., La Canada, Calif. 91011

Filed May 31, 1994, Ser. No. 251,406
Int. Cl.[6] A61M *29/00*
U.S. Cl. 606—192 **9 Claims**



1. A wound dilation device for insertion into a deep wound, said device being interconnectable with a source of fluid under pressure comprising:

(a) an elongated body having a length greater than the depth of the wound and including an internal fluid passageway having

a fluid inlet in communication with the source of fluid under pressure and a fluid outlet;

(b) a generally cylindrically shaped, elongated elastomeric bladder having a first diameter in a relaxed state and surrounding at least a portion of said tubular body, said bladder overlaying said fluid outlet of said internal passageway and having first and second ends sealably connected to said tubular body, said bladder being distendable from a first position to a second expanded position; and

(c) a clamp means for clamping said bladder against said tubular body at a plurality of locations intermediate said first and second ends of said bladder, said clamp means comprising:

(i) a clamp assembly having first and second relatively movable segments, said segments being movable between a first position and a second position, said clamp assembly being provided with a central opening of a first size larger than said first diameter of said bladder whereby when said segments are in said first position, said clamp assembly can be moved along said bladder between the first and second ends thereof; and

(ii) closure means for moving said first and second segments into said second position to reduce the size of said central opening to a second size slightly smaller than said first diameter of said bladder, whereby said bladder will be sealably clamped against said elongated body.

5,545,177

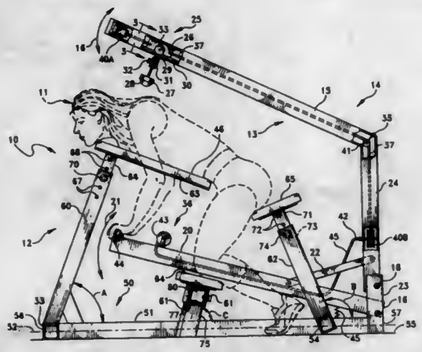
APPARATUS FOR APPLYING ACUPRESSURE

Marc C. Coseo, 1 Harbor St., Manchester, Mass. 01944

Filed Aug. 24, 1994, Ser. No. 294,998

Int. Cl.[6] A61F *5/32;5/00;* **A61H** *39/00;* **A61B** *17/54*

U.S. Cl. 606—204 **22 Claims**



1. Acupressure apparatus for applying acupressure to an individual at a predetermined acupressure point, said apparatus comprising:

(A) acupressure means for engaging the individual at the acupressure point,

(B) frame means for supporting an individual in a predetermined position wherein the individual is spaced from said acupressure means when said acupressure means is in a first position,

(C) pressure arm means supported on said frame means and attached to said acupressure means for moving said acupressure means between the first position spaced from the individual and a second position wherein said acupressure means contacts and applies acupressure at the acupressure point, and

(D) actuation arm means supported on said frame means and connected to said pressure arm means for urging, responsive to a force applied to said actuation arm means by the individual, said pressure arm means to move said acupressure means from the first position to the second position and for transferring a force, proportional to the force applied by the individual, through said pressure arm means and said accpressure arm means to the individual when said acupressure means contacts the acupressure point.

5,545,178

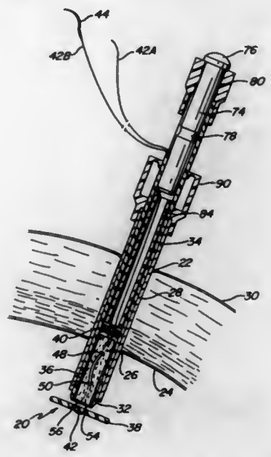
SYSTEM FOR CLOSING A PERCUTANEOUS PUNCTURE FORMED BY A TROCAR TO PREVENT TISSUE AT THE PUNCTURE FROM HERNIATING

Kenneth Kensey, Chester Springs; John E. Nash, Downington, and Douglas Evans, Devon, all of Pa., assignors to Kensey Nash Corporation, Exton, Pa.

Continuation-in-part of Ser. No. 235,825, Apr. 29, 1994. This application Oct. 21, 1994, Ser. No. 327,262

Int. Cl.[6] A61B *17/04*

U.S. Cl. 606—213 **75 Claims**



1. A device arranged for introduction through a percutaneous puncture into the body of a living being formed during a minimally invasive surgical procedure to prevent the egress of tissue into the puncture, the puncture comprising an opening in internal tissue in the body of the being and a tract extending from the skin of the being to the opening in the tissue, said device comprising anchoring means, filament means, and suturing means, said anchoring means being an elongated substantially rigid member arranged to be extended through the tract and the opening and being orientable for engaging the interior of the tissue adjacent the opening to render said anchoring means resistant to passage back through the opening, said filament means including a first portion and a second portion, said first portion extending between said anchoring means and said second portion and being coupled to said anchoring means for location within the tract, said second portion of said filament means extending out of the tract, said suturing means being coupled to said second portion of said filament means and being operative to cause said second portion of said filament means to penetrate tissue contiguous with the tract for holding said anchoring means permanently in place with respect to the puncture, with said anchoring means blocking at least a portion of the opening to prevent tissue from gaining egress into the puncture.

5,545,179

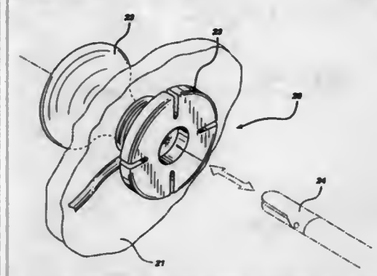
ENDOSCOPIC ACCESS ASSEMBLY

Warren P. Williamson, IV, Loveland, Ohio, assignor to Ethicon Endo-Surgery, Inc., Cincinnati, Ohio

Filed Jul. 21, 1995, Ser. No. 505,504

Int. Cl.[6] A01B *17/00*

U.S. Cl. 606—213 **11 Claims**



1. An access assembly for providing a passage for a surgical instrument and maintaining insufflation of a body cavity during an endoscopic surgical procedure, said assembly comprising:

a) a base having a flange and a neck extending from said flange, said flange having a flange opening therein, and said neck having a longitudinal lumen extending therethrough in communication with said flange opening;

b) an elastomeric sealing element having an elongated central channel and an outer inflatable sleeve, said channel having proximal and distal ends, said proximal end affixed to said flange and extending through said flange opening and neck lumen, said channel defining a passageway from said flange opening into said body cavity for receiving an endoscopic surgical instrument therethrough, said outer inflatable sleeve having a proximal tubular portion affixed to said neck and a distal balloon portion coterminous with said channel distal end, said inner channel and said outer sleeve defining an inflation space between said inner channel and said outer sleeve; and

c) a conduit in fluid communication with said inflation space, wherein when an inflation fluid is delivered through said conduit into said inflation space, said distal balloon portion is inflated and said inner channel is compressed so as to constrict said channel passageway.

5,545,180

UMBRELLA-SHAPED SUTURE ANCHOR DEVICE WITH ACTUATING RING MEMBER

Thu A. Le, Matawan; Sung S. Yi, Princeton; William Zwaskis, Fanwood; Jack S. Pedlick, Butler; Brian H. Luscombe, Warren; Dennis D. Jamiolkowski, Long Valley; John Di Giovanni, Woodbridge; Keith A. Seritella, South Brunswick, all of N.J.; Mark G. Steckel, Mainville, Ohio, and Steven F. Harwin, New York, N.Y., assignors to Ethicon, Inc., New Brunswick, N.J.

Continuation-in-part of Ser. No. 166,493, Dec. 13, 1993. This application Apr. 28, 1994, Ser. No. 235,024

Int. Cl.[6] A61B *17/04*

U.S. Cl. 606—232 **26 Claims**

1. A suture anchor assembly, comprising

an elongated anchor member having

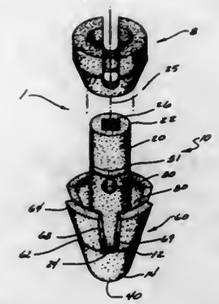
a distal end and a proximal end,

a shaft extending proximally away from said anchor member proximal end, and

a plurality of wing members extending proximally and radially outward from said anchor member proximal end and terminating in a free end, said wing members being spaced from said shaft;

an operating member slidably mounted on said shaft for sliding movement relative to said anchor member from a first normal position remote from said anchor member to an operative position in which said operating member is lodged between said shaft and said wing members to thereby restrain said wing members from moving inwardly toward said shaft from the radially outward extending position; and

suture retaining means in said shaft.



5,545,181

IMPLANTABLE DEFIBRILLATOR/PACER USING NEGATIVE VOLTAGE SUPPLIES

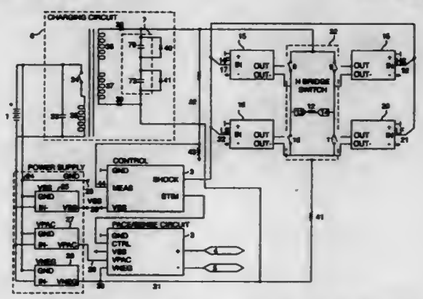
Peter Jacobson, Haguenau; Daniel Kroiss, Schweighouse-Moder, and Alan Ostroff, Preuschdorf, all of, France, assignors to Ela Medical, S.A., Montrouge, France

Filed Oct. 11, 1994, Ser. No. 320,854

Claims priority, application France, Oct. 15, 1993, 93 12265

Int. Cl.[6] A61N *1/39;1/36*

U.S. Cl. 607—4 **43 Claims**



1. A multiphasic defibrillator shock generator for an implantable device, comprising:

a battery to supply energy, having a positive and a negative terminal;

control circuits having a supply input and output control signals to control pacing and shock events;

a pace circuit to provide pacing pulses to the heart in response to a first output control signal, the pace circuit having a supply input;

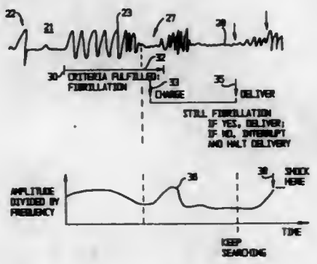
a shock charging circuit coupled to the battery and operable to convert battery energy to shock energy, the shock charging circuit having an output;

a capacitor coupled to the shock charging circuit output to store shock energy, having a positive terminal and a negative terminal;

two high side electronic switches and two low side electronic switches connected in an H-bridge switch configuration, the H-bridge switch being coupled to said capacitor to connect said capacitor with selective polarity to a load, the H-bridge switch configuration having a positive terminal coupled to the capacitor positive terminal, a negative terminal coupled to the

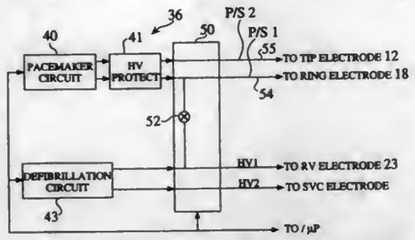
capacitor negative terminal, and two shock electrodes located respectively between the high and low side switches;
two isolated high side drivers selectively operating each high side switch in response to a corresponding output control signal from said control circuits;
two low side drivers for selectively operating each low side switch in response to a corresponding output control signal from said control circuits; and
a circuit supplying power from said battery to said control circuit, pace circuit, and low side drivers, wherein the improvement comprises:
a connection from the positive terminal of said battery to a ground;
first means for deriving a first negative supply voltage, the first negative supply being input to said control circuit supply input wherein said control circuit operates between said first negative supply voltage and ground;
second means for deriving a second negative supply voltage, the second negative supply being input to said pace circuit supply input wherein said pace circuit operates between said second supply voltage and ground;
third means for deriving a third negative supply voltage, the third negative supply voltage being input to the low side drivers input wherein said low side drivers operate between said third negative supply voltage and ground; and
a connection from said third negative supply voltage to the negative terminal of said capacitor and H-bridge switch.

5,545,182
CARDIOVERTER/DEFIBRILLATOR SHOCK TIMING FUNCTION
Lawrence J. Stotts, Lake Jackson, Tex., and Eckhard Alt, Ottobrunn, Germany, assignors to Intermedics, Inc., Angleton, Tex.
Filed Sep. 21, 1994, Ser. No. 310,281
Int. Cl.[6] A61N *1/39;1/36*
U.S. Cl. 607—5 **11 Claims**



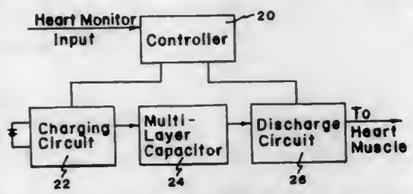
1. An implantable defibrillator for automatic timing of shock wave therapy in response to sensing an intracardiac intrinsic ECG signal of the patient's heart indicative of fibrillation, comprising:
therapy delivery means responsive to detection of fibrillation for developing a prescribed electrical shock waveform therapy to be applied to the heart to terminate the fibrillation for reversion of the heart to sinus rhythm,
detection means for detecting fibrillation from a predetermined set of detection criteria, and
timing function means further responsive to detection of fibrillation and observation of a fibrillation cycle of the intrinsic ECG signal for timing delivery of said shock waveform therapy to the heart at a point in time in said fibrillation cycle which is synchronous with a sensed intracardiac potential of substantially highest amplitude and relatively low frequency of occurrence of sensed discrete intracardiac events in the intrinsic ECG signal, said sensed intracardiac potential being selected from a multiplicity of intracardiac sensed events in said fibrillation cycle of the intrinsic ECG signal, whereby to enhance the probability of successful termination of the fibrillation at a low energy level of said shock waveform therapy.

5,545,183
METHOD AND APPARATUS FOR DELIVERING DEFIBRILLATION THERAPY THROUGH A SENSING ELECTRODE
Peter A. Altman, San Francisco, Calif., assignor to Ventritex, Inc., Sunnyvale, Calif.
Filed Dec. 7, 1994, Ser. No. 351,864
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—5 **17 Claims**



1. A method for delivering high voltage therapy to a patient's heart using a defibrillator connected to one or more leads having at least a first defibrillation electrode coupled to the defibrillator via a first high voltage conductor, a first sense electrode coupled to the defibrillator via a first sense conductor, and a second sense electrode coupled to the defibrillator via a second sense conductor, the method comprising the steps of:
(a) sensing electrical signals in a true bipolar sensing mode between the first and second sense electrodes:
(b) when required, delivering a first high voltage therapy between at least the first defibrillation electrode and a second defibrillation electrode;
(c) determining whether said first high voltage therapy was successful;
(d) if said first high voltage therapy was not successful then electrically connecting the first sense conductor to the first high voltage conductor; and
(e) delivering a second high voltage therapy between at least the first sense electrode/first defibrillation electrode and the second defibrillation electrode.

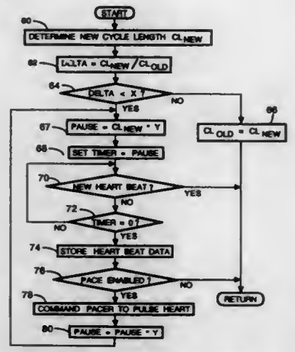
5,545,184
CARDIAC DEFIBRILLATOR WITH HIGH ENERGY STORAGE ANTIFERROELECTRIC CAPACITOR
Joseph P. Dougherty, State College, Pa., assignor to The Penn State Research Foundation, University Park, Pa.
Filed Apr. 19, 1995, Ser. No. 423,500
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—5 **8 Claims**



1. A cardiac defibrillator for applying a high energy, short duration electrical pulse to the heart muscle, said defibrillator comprising:

capacitor means comprising plural dielectric layers, each layer composed of constituents which exhibit both an antiferroelectric phase and a ferroelectric phase in dependence upon an applied electric field; and
charging circuit means for applying to said capacitor means, a voltage which causes an electric field at least equal to E_f to appear across said dielectric layers, where E_f is a field value which causes said dielectric layers to transition at least partially from said anti-ferroelectric phase to said ferroelectric phase; and
discharge means for applying energy stored in said capacitor means to a heart muscle.

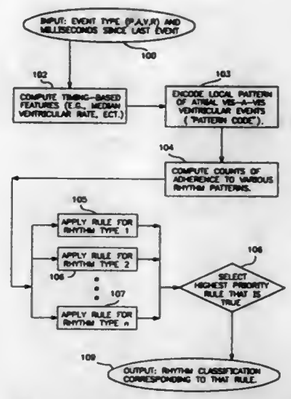
5,545,185
CARDIAC PACER WHICH COMPENSATES FOR EFFECTS OF ABRUPT CHANGES IN HEART RATE
Stephen Denker, 5240 N. Lake Dr., Whitefish Bay, Wis. 53217, assignor to Stephen Denker, Mequon, Wis.
Filed Dec. 23, 1994, Ser. No. 363,139
Int. Cl.[6] A61N *1/365*
U.S. Cl. 607—14 **19 Claims**



13. An apparatus for preventing tachycardia in a heart of an animal, said apparatus comprising:
a cardiac pacer which responds to a control signal by applying an electrical pulse to the animal to contract the heart;
a mechanism that measures the cardiac cycle length;
a detector coupled to said mechanism to produce a first indication when the cardiac cycle length decreases more than a predefined amount from one cycle to a subsequent cycle;
a processor which responds to the first indication by producing a second indication when a new heart beat fails to occur within a predefined time period after the subsequent cycle, where the predefined time period is longer than the subsequent cycle; and
an evaluator that responds to the second indication by sending the control signals to the cardiac pacer to perform a cardiac pacing technique to prevent tachycardia from occurring.

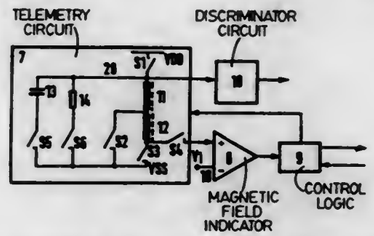
5,545,186
PRIORITIZED RULE BASED METHOD AND APPARATUS FOR DIAGNOSIS AND TREATMENT OF ARRHYTHMIAS
Walter H. Olson, North Oaks, and William F. Kaemmerer, Edina, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.
Filed Mar. 30, 1995, Ser. No. 413,570
Int. Cl.[6] A61N *1/368*
U.S. Cl. 607—14 **4 Claims**

1. An antiarrhythmia device comprising:
means for sensing depolarizations of heart tissue;



means for defining a plurality of prioritized rules capable of being simultaneously met, each of said rules defining at least one criterion based upon characteristics of sensed depolarizations of heart tissue, each said rule being met when the said at least one criterion of said rule is met, at least a first one of said rules when met indicating need for delivery of an antiarrhythmia therapy, at least a second one or said rules when met indicating that antiarrhythmia therapy should not be delivered;
means for analyzing said characteristics of said sensed polarizations to determine which of said rules are met;
means for determining the highest priority one of said rules which are met;
means responsive to at least said first one of said rules being the highest priority rule met, for delivering an antiarrhythmia therapy; and
means responsive to at least said second one of said rules being the highest priority rule met, for preventing delivery of an antiarrhythmia therapy.

5,545,187
MEDICAL FIELD DETECTOR AND TELEMETRY UNIT FOR IMPLANTS
Inga-Maria Bergström; Mats-Johan M. Bergström, both of Stockholm, and Kenth Nilsson, Akersberga, all of, Sweden, assignors to Pacesetter AB, Solna, Sweden
Filed Feb. 21, 1995, Ser. No. 391,957
Claims priority, application Sweden, Feb. 23, 1994, 9400622
Int. Cl.[6] A61N *1/37*
U.S. Cl. 607—32 **12 Claims**



1. A combination magnetic field detector and threshold unit for use in a medical implant, comprising:
a telemetry circuit connected to a voltage source;
control logic which generates control signals respectively for telemetry and magnetic field detection;
a coil unit including a plurality of coil unit parts;

switch means, controlled by said control logic for, when said control logic generates a control signal for telemetry, electrically connecting said coil unit into said telemetry circuit for forming means for receiving and transmitting telemetry signals and for, when said control logic generates a control signal for magnetic field detection, electrically connecting said coil unit parts for forming a primary side and a secondary side of a pulse transformer which generates an output signal having a characteristic which varies dependent on the presence of a magnetic field; and

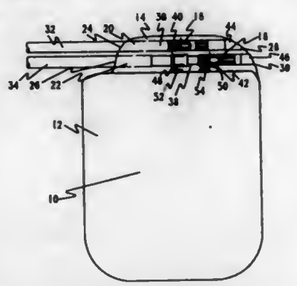
magnetic field indicator means, connected to said secondary side of said pulse transformer, for generating a signal indicating the presence of a magnetic field when said characteristic satisfies a predetermined condition.

5,545,188

CARDIAC PACEMAKER WITH COLLET-TYPE LEAD CONNECTOR

James L. Bradshaw, Surfside, and Terry D. Daglow, Lake Jackson, both of Tex., assignors to Intermedics, Inc., Angleton, Tex.

Filed Jun. 5, 1995, Ser. No. 461,667
Int. Cl.[6] A61N *1/375*
U.S. Cl. 607—37 **15 Claims**



1. An implantable medical device comprising

therapy producing means for producing at least one electrical therapy for treatment of a patient;

a container housing at least some of said therapy producing means;

a connector external to said housing and in electrical communication with said therapy producing means for electrically connecting said implantable medical device to a lead, said connector having

bolt means mounted on said container, said bolt means having a threaded shank and means for gripping said lead in said bolt means,

means for locking said bolt means in a predetermined position with respect to said container and

nut means having a threaded bore, said nut means threadedly received on said shank and movable longitudinally and rotatably on said shank for selectively engaging and disengaging said gripping means from said lead.

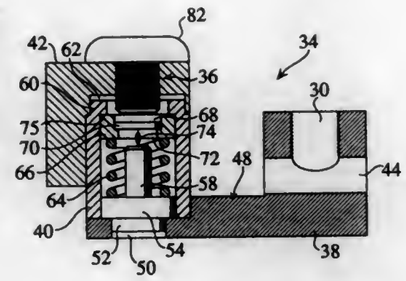
5,545,189

CASE-ACTIVATING SWITCH ASSEMBLY FOR AN IMPLANTABLE CARDIAC STIMULATION DEVICE

Timothy A. Fayram, Gilroy, Calif., assignor to Ventritex, Inc., Sunnyvale, Calif.

Filed Nov. 2, 1995, Ser. No. 552,039
Int. Cl.[6] A61N *1/00*
U.S. Cl. 607—37 **30 Claims**

1. A switch assembly for an implantable cardiac stimulation device, said switch assembly comprising:



a first electrically conductive connector block having a first portion and a second portion, said first portion having a bore and a first hole transverse to and connected to said bore;

an electrically insulative housing extending outwardly from said second portion of said first connector block;

an electrically conductive element disposed within said housing and electrically coupled to said first connector block;

a push block disposed within said housing, at least a portion of said push block being electrically conductive, wherein said push block is movable from a first position in which said electrically conductive portion is not in contact with said electrically conductive element, and a second position in which said electrically conductive portion is in contact with said electrically conductive element;

a second electrically conductive connector block having a second hole in communication with said push block; and,

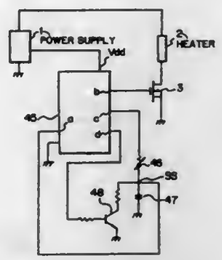
wherein said first and second connector blocks are electrically insulated from each other when said push block is in said first position, and are electrically coupled to each other when said push block is in said second position.

5,545,190

SUPER-COMPACT ELECTRIC THERMAL TREATMENT DEVICE

Yasuo Meguro, Hino, and Hiroshi Yabu, Fuchu, both of, Japan, assignors to Kabushiki Kaisya Advance, Tokyo, Japan

Continuation of Ser. No. 996,437, Dec. 24, 1992, abandoned.
This application Dec. 13, 1994, Ser. No. 356,797
Claims priority, application Japan, Dec. 26, 1991, 3-112154 U
Int. Cl.[6] A61F *7/00*
U.S. Cl. 607—96 **3 Claims**



1. A super-compact electric thermal treatment device, comprising:

a small-capacity compact battery;

a heating element for performing electrothermal conversion electrically connected to the battery and having a conducting adhesive material thereon for adhering the device to a user thereof;

a switching means for intermittently switching current flowing from said battery through said heating element;

a pulse supplying means electrically connected to the battery for generating output pulses of a given width and for supplying said output pulses to said switching means to control the intermittent switching of the switching means; and

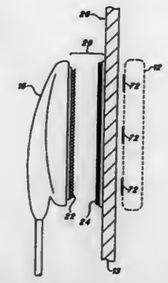
an adjusting means for manually adjusting the pulse width of the output pulses generated by the pulse supplying means to vary the amount of current intermittently supplied from the battery to the heating element and thereby the amount of heat generated by said heating element.

5,545,191

METHOD FOR OPTIMALLY POSITIONING AND SECURING THE EXTERNAL UNIT OF A TRANSCUTANEOUS TRANSDUCER OF THE SKIN OF A LIVING BODY

Alfred E. Mann, Beverly Hills, and Joseph H. Schulman, Santa Clarita, both of Calif., assignors to Alfred E. Mann Foundation for Scientific Research, Sylmar, Calif.

Filed May 6, 1994, Ser. No. 239,183
Int. Cl.[6] A61F *2/18*
U.S. Cl. 607—57 **17 Claims**



1. A transcutaneous coupling apparatus comprising:

a first means for subcutaneous implantation;

a second means for supercutaneous placement; and

means for hook and loop fastening and aligning of said second means in the appropriate vicinity of said first means to facilitate coupling of said first and second means.

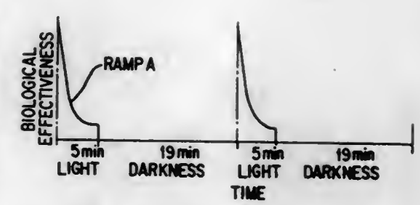
5,545,192

INTERMITTENT USE OF BRIGHT LIGHT TO MODIFY THE CIRCADIAN PHASE

Charles A. Czeisler, and Richard E. Kronauer, both of Cambridge, Mass., assignors to Brigham and Women's Hospital, Boston, Mass.

Continuation-in-part of Ser. No. 218,886, Mar. 28, 1994, abandoned, which is a continuation of Ser. No. 97,618, Jul. 27, 1993, abandoned, which is a continuation of Ser. No. 882,172, May 8, 1992, abandoned, which is a continuation-in-part of Ser. No. 819,403, Jan. 10, 1992, Pat. No. 5,304,212, which is a continuation of Ser. No. 521,041, May 9, 1990, Pat. No. 5,167,228, and a continuation of Ser. No. 365,949, Jun. 15, 1989, Pat. No. 5,176,133, which is a continuation-in-part of Ser. No. 66,677, Jun. 26, 1987, Pat. No. 5,163,426, said Ser. No. 521,041is a continuation-in-part of Ser. No. 365,949, Jun. 15, 1989, Pat. No. 5,176,133, which is a continuation-in-part of Ser. No. 66,677, Jun. 26, 1987, Pat. No. 5,163,426. This application Nov. 28, 1994, Ser. No. 348,257
Int. Cl.[6] A61N *5/06*
U.S. Cl. 607—88 **13 Claims**

1. A method of modifying a human subject's endogenous circadian cycle to a desired state, comprising the steps of:



determining the characteristics of a desired endogenous circadian cycle for said subject;

selecting an appropriate time with respect to the presumed phase of physiological markers of the subject's present endogenous circadian cycle during which to apply a light stimulus to effect a desired modification of said present endogenous circadian cycle of said subject, wherein said stimulus comprises an episode of intermittent light consisting of at least two pulses of light of enhanced intensity separated by at least one pulse of light of reduced intensity and

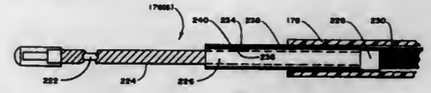
applying said stimulus at said selected appropriate time to achieve said desired endogenous circadian cycle for said subject.

5,545,193

HELICALLY WOUND RADIO-FREQUENCY EMITTING ELECTRODES FOR CREATING LESIONS IN BODY TISSUE

Sidney D. Fleischman, Sunnyvale; Thomas M. Bourne, Mountain View, and Russell A. Houser, Livermore, all of Calif., assignors to EP Technologies, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 137,576, Oct. 15, 1993, abandoned.
This application Aug. 22, 1995, Ser. No. 517,808
Int. Cl.[6] A61F *7/12*
U.S. Cl. 607—99 **7 Claims**



1. A device for ablating tissue within the body comprising

an element having an axis,

a winding comprising spaced turns of energy emitting material wrapped about and along the axis of the element, and

a sheath of a non-energy emitting material movable about the winding in one direction to expose more turns of the winding beyond the sheath and in another direction to cover more turns of the winding within the sheath,

wherein the sheath carries an energy conveying contact touching at least one turn of the winding for conveying ablating energy from a source to the winding, the touching contact being advanced along successive turns of the winding during movement of the sheath to maintain the energy conveying contact.

5,545,194

CONVERTIBLE THERMAL BLANKET

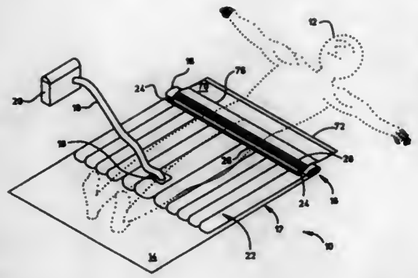
Scott D. Augustine, Bloomington, Minn., assignor to Augustine Medical, Inc., Eden Prairie, Minn.

Filed Sep. 30, 1994, Ser. No. 315,960
Int. Cl.[6] A61F *7/00*
U.S. Cl. 607—104 **34 Claims**

1. An inflatable thermal blanket for convectively controlling the temperature of a body, the blanket comprising:

an inflatable covering, having top and bottom surfaces;

an inflation inlet for conducting an inflating medium into the inflatable covering;



apertures opening through the bottom surface into the inflatable covering;

a closure that maintains a gathered portion of the inflatable covering in a non-inflated condition adjacent a primary portion of the inflatable covering such that the inflating medium is prevented from being admitted into the gathered portion from the primary portion; and

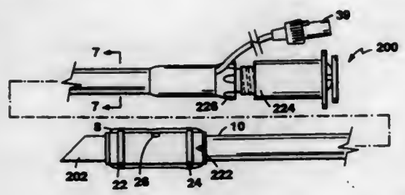
means for releasing the closure to permit the inflating medium to be admitted into the gathered portion such that the gathered portion assumes an inflated condition.

5,545,195

INTERSTITIAL HEATING OF TISSUE

Charles D. Lennox, Hudson, N.H., and Troy W. Roberts, Arlington, Mass., assignors to Boston Scientific Corporation, Watertown, Mass.

Filed Aug. 1, 1994, Ser. No. 283,986
Int. Cl.[6] A61F 7/12
U.S. Cl. 607—105 **20 Claims**



1. A medical system for interstitial heating of a solid mass within a body of a living being, comprising:

an elongated, rigid implement having a sharp distal end and constructed for insertion into said solid mass through a puncture site in said solid mass created by said sharp distal end,

an elongated sleeve constructed to engage said elongated, rigid implement and constructed to enter said solid mass through said puncture site in said solid mass and to extend into said solid mass,

an expandable chamber located in the vicinity of a distal end of said elongated sleeve,

at least one channel located within said elongated sleeve to provide a fluid to said expandable chamber for inflation of said chamber while said chamber is positioned interstitially within said solid mass,

a heating device located within said expandable chamber for heating said fluid within said chamber while said chamber is filled with said fluid, and

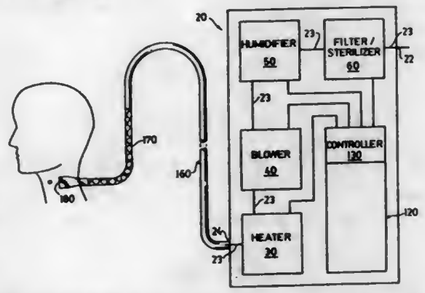
at least one elongated conductor located within said elongated sleeve and connected to said heating device to power said heating device while said chamber is positioned interstitially within said solid mass and is filled with said fluid.

5,545,196

AN APPARATUS FOR LOCALIZED TEMPERATURE REGULATION OF AN OPEN SURGICAL FIELD DURING AN OPERATIVE PROCEDURE

Stephen A. Falk, 231 Parrish St., Canandaigua, N.Y. 14424

Division of Ser. No. 183,067, Jan. 18, 1994, Pat. No. 5,456,702.
This application May 5, 1995, Ser. No. 435,864
Int. Cl.[6] A61F 7/00;7/12
U.S. Cl. 607—105 **20 Claims**



1. An apparatus for substantially precluding pathology of an exposed body cavity and adjacent tissue, wherein the body cavity is exposed during an open surgical procedure to a temperature less than body temperature, comprising:

(a) a non ionizing radiative energy source;

(b) a directing mechanism for directing the non ionizing radiative energy to intersect a portion of the exposed body cavity and substantially preclude intersection of the non ionizing radiation energy beyond the exposed body cavity, the directing mechanism adapted to substantially preclude blocking of and contact with the exposed body cavity;

(c) a temperature measuring device for contacting a portion of the exposed body cavity and measuring a temperature of the portion of the exposed body cavity; and

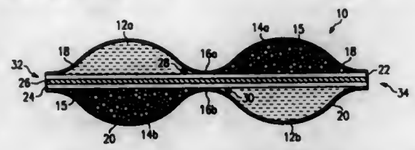
(d) a control system for regulating an amount of radiative energy intersecting the portion of the exposed body cavity in response to a measured temperature to substantially preclude pathology of the exposed body cavity and the adjacent tissue.

5,545,197

REUSABLE HEAT OR COLD CHEMICAL THERAPY PACK

Michael L. Bowen, Arlington, Tex., assignor to Tecnol Medical Products, Inc., Fort Worth, Tex.

Filed Mar. 14, 1995, Ser. No. 403,295
Int. Cl.[6] A61F 7/00
U.S. Cl. 607—108 **14 Claims**



1. A reusable heat or cold chemical therapy pack, comprising:

a first compartment containing a first reactant;

a second compartment containing a second reactant, said first and second compartments separated by a predictably rupturable first barrier, said first and second compartments located on a top of said pack;

a third compartment containing a third reactant; and

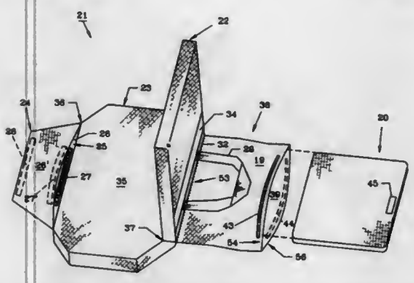
a fourth compartment containing a fourth reactant, said third and fourth compartments separated by a predictably rupturable second barrier, said third and fourth compartments located on a bottom side of said pack said first and second reactants reacting exothermically or endothermically upon contact and said third and fourth reactants reacting exothermically or endothermically upon contact.

5,545,198

METHOD OF HEATING SEAT CUSHION WITH REMOVABLE HEATING PAD

Bryon C. Owens, Asheboro, N.C., assignor to Vesture Corporation, Asheboro, N.C.

Continuation of Ser. No. 224,552, Apr. 7, 1994, abandoned, which is a continuation-in-part of Ser. No. 136,021, Oct. 14, 1993, Pat. No. 5,500,010, which is a continuation of Ser. No. 85,570, Jun. 30, 1993, Pat. No. 5,300,105, which is a continuation of Ser. No. 871,826, Apr. 21, 1992, abandoned, which is a continuation of Ser. No. 643,344, Jan. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 486,806, Feb. 26, 1990, abandoned. This application Sep. 25, 1995, Ser. No. 533,180
Int. Cl.[6] A61F 7/00
U.S. Cl. 607—108 **21 Claims**



1. A method of applying heat therapy to a person using a heated seat cushion containing a microwavable therapeutic pad within an insulated compartment, the method comprising the steps of:

(a) introducing a liquid and a liquid absorbing means into an envelope;

(b) applying a vacuum to said envelope to compress the contents thereof;

(c) sealing said envelope while said liquid absorbing means remains compressed to form a pad;

(d) subjecting said pad to microwave radiation;

(e) opening said insulated compartment;

(f) inserting the heated microwavable pad into the insulated compartment; and

(g) sitting on the heated seat cushion to receive heat therefrom.

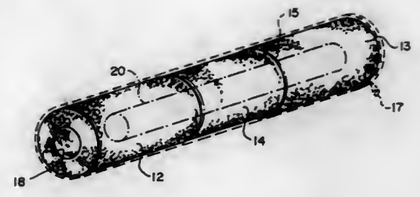
5,545,199

HOT AND COLD THERAPEUTIC PILLOW

Gary C. Hudson, 4601 Sulgrave Rd., Richmond, Va. 23220

Filed Jul. 3, 1995, Ser. No. 497,876
Int. Cl.[6] A61F 7/00
U.S. Cl. 607—109 **7 Claims**

1. A hot and cold therapeutic pillow comprising a cervical roll having a cylindrical container made of fabric and having a zippered opening formed in at least one end, a toroidal length of plastic material having two similar relatively firm end portions and a relatively soft central portion disposed in said cylindrical container, a cylindrical gel pack removably disposed within the axial opening of said toroidal length of plastic, said gel pack being capable of reaching and maintaining an elevated temperature upon being subjected to microwave radiation and capable of reaching and maintaining a reduced temperature upon being subjected to freezing.

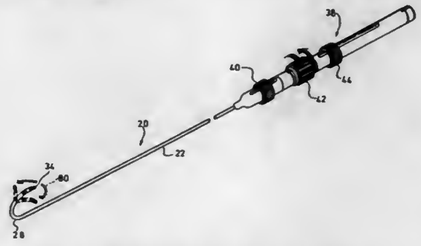


5,545,200

STEERABLE ELECTROPHYSIOLOGY CATHETER

Scott H. West, Tracy, and Frank Nguyen, San Jose, both of Calif., assignors to Medtronic Cardiorhythm, San Jose, Calif.

Continuation-in-part of Ser. No. 95,447, Jul. 20, 1993, abandoned. This application Nov. 22, 1994, Ser. No. 343,310
Int. Cl.[6] A61M 1/00; A61B 17/38
U.S. Cl. 607—122 **32 Claims**



19. A steerable electrophysiology catheter comprising:

a handle;

a shaft having a proximal end extending from the handle, a distal end, and an axial lumen therebetween;

a deflectable tip having a proximal end secured to the distal end of the shaft, a distal end and an axial tip lumen in communication with the axial lumen of the shaft;

at least one electrode secured to the deflectable tip;

an electrical current path between the handle and the electrode;

a manipulator wire extending through the axial lumen of the shaft and the tip lumen, the manipulator wire having a distal end secured to the distal end of the deflectable tip and a proximal end at the handle; and

the handle comprising a manipulator wire driver axially drivingly coupled to the proximal end of the manipulator wire to apply an axial force to the manipulator wire to deflect the deflectable tip into a first curvature; and

a tubular strain relief member acting as an interface between the shaft and the handle, the strain relief member having an inside surface and the shaft having an outside surface, the inside surface of the strain relief and the outside surface of the shaft made of heat weld compatible materials so the strain relief and the tube can be heat weldable to one another without the use of an adhesive.

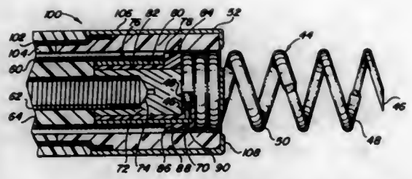
5,545,201

BIPOLAR ACTIVE FIXATION LEAD FOR SENSING AND PACING THE HEART

John R. Helland, Redmond, Wash., and Hong Li, Arcadia, Calif., assignors to Pacesetter, Inc., Sylmar, Calif.

Filed Mar. 29, 1995, Ser. No. 412,649
Int. Cl.[6] A61N 1/05
U.S. Cl. 607—127 **27 Claims**

15. An implantable lead for use with an implantable medical device, the implantable lead comprising:



at least two electrical conductors encased in an insulation sheath, said electrical conductors and said insulation sheath extending from a proximal end to a distal end of said implantable lead;
a connector, affixed to said proximal end of said implantable lead, comprising at least two terminals electrically connected to respective ones of said at least two electrical conductors;
a cylindrical sheath attached to said distal end of said implantable lead;
a sleeve electrode affixed to said cylindrical sheath and adapted to make electrical contact with cardiac tissue;
an active fixation electrode assembly comprising a single means for penetrating the myocardium of a heart, said penetrating means having a distal end and a proximal end, said penetrating means comprising a tip electrode formed at said distal end thereof; an outer electrode coaxial with said tip electrode; and an intermediate insulator separating said outer electrode and said tip electrode, said active fixation electrode assembly positioned at said distal end of said implantable lead and electrically insulated from said sleeve electrode; and
means for electrically interconnecting said tip electrode of said active fixation electrode assembly and said sleeve electrode to respective ones of said at least two electrical conductors of said implantable lead.

5,545,202

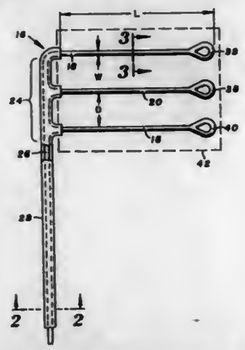
BODY IMPLANTABLE DEFIBRILLATION SYSTEM

Roger W. Dahl, Andover; David K. Swanson; Stephen J. Hahn, both of Roseville; Douglas J. Lang, Arden Hills, and John E. Heil, St. Paul, all of Minn., assignors to Cardiac Pacemakers, Inc., St. Paul, Minn.

Continuation of Ser. No. 967,361, Jan. 4, 1993, Pat. No. 5,360,442, which is a continuation of Ser. No. 533,886, Jun. 6, 1990, Pat. No. 5,203,348. This application Aug. 4, 1994, Ser. No. 285,802

Int. Cl.[6] A61N *1/05*

U.S. Cl. 607—129 **9 Claims**



1. A body implantable defibrillation system, including:
a defibrillation pulse generator;
a first defibrillation electrode implanted at least proximate the thoracic region, said first electrode including a plurality of compliant, electrically conductive electrode segments, each segment having a nominal width and a length exceeding the nominal width; a connecting means for electrically coupling the electrode segments for substantially simultaneous reception of defibrillation pulses from the defibrillation pulse generator; said electrode segments being arranged in spaced apart and side-by-side relation such that each of the electrode segments, over most of its length, is spaced apart from each of the other electrode segments by a distance of at least 1.5 cm; each of the electrode segments being free of electrically insulative material at and along its periphery over the entire length and periphery of the electrode segment; said electrode segments when receiving the defibrillation pulses cooperating to define an effective electrode area incorporating all of the electrode segments;
a first coupling means electrically coupling the first defibrillation electrode and the defibrillation pulse generator;
a second defibrillation electrode implanted at least proximate the thoracic region and spaced apart from the first defibrillation electrode; and
a second coupling means electrically coupling the defibrillation pulse generator and the second electrode.

5,545,203

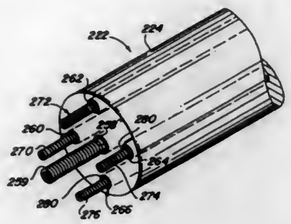
CRUSH RESISTANT MULTI-CONDUCTOR LEAD BODY

Phong D. Doan, Stevenson Ranch, Calif., assignor to Pacesetter, Inc., Sylmar, Calif.

Continuation-in-part of Ser. No. 54,571, Apr. 27, 1993, Pat. No. 5,466,253. This application Feb. 16, 1995, Ser. No. 390,321

Int. Cl.[6] A61N *1/05*

U.S. Cl. 607—122 **24 Claims**



1. A pacemaker lead for use with a pacemaker adapted to receive an end of said pacemaker lead therein to form a pacing system, said pacemaker lead having a proximal end and a distal end, said pacemaker lead comprising:
a connector for insertion into the pacemaker to electrically connect said pacemaker lead to the pacemaker, said connector being located at said proximal end of said pacemaker lead;
a first electrode located at said distal end of said pacemaker lead;
an outer insulation tubing having a first lumen extending therethrough;
a first electrical conductor electrically connecting said connector to said first electrode, said first electrical conductor extending through said first lumen of said outer insulation tubing; and
a first structural support means for inhibiting crushing of said first electrical conductor by external forces placed on said pacemaker lead, said structural support means being disposed within a portion of said first lumen of said outer insulation tubing extending between about ten percent and about thirty-five percent of the length of said pacemaker lead and surrounding a corresponding portion of said first electrical conductor, said structural support means being spaced away from said distal end of said pacemaker lead.

5,545,204

SEQUENTIAL CARDIOSTIMULATION SYSTEM (DDD) USING A SINGLE ELECTROCATHETER INSERTED THROUGH THE CORONARY SINUS

Leonardo Cammilli, Via Caselli, 11, 50100 Firenze, Italy, and Gino Grassi, Via F. Pasqui, 31, 50019 Sesto Fiorentino (Firenze), Italy

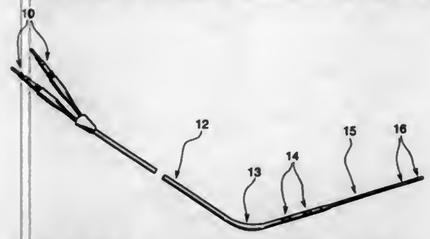
Filed Mar. 7, 1994, Ser. No. 207,571

Claims priority, application Italy, Mar. 8, 1993, F193A0041

Int. Cl.[6] A61N *1/05*

U.S. Cl. 607—123 **20 Claims**

1. Electrocatheter for sequential cardiostimulation, comprising



one or more atrial electrodes and one or more ventricular electrodes connectable to a dual-chamber pacemaker, said electrocatheter being suitably shaped to allow the insertion thereof into the coronary sinus so as to position the atrial electrode within the coronary sinus in correspondence of the left atrium of the heart, and the ventricular electrode within the great cardiac vein where the anterior interventricular begins, in correspondence of the left ventricle, wherein said ventricular electrode is located in proximity of the distal end of the catheter to allow for ventricular stimulation and sensing, and wherein the atrial electrode is suitably spaced from the ventricular electrode and shaped for atrial stimulation and sensing.

5,545,205

UNITARY INTRAVASCULAR DEFIBRILLATING CATHETER WITH BIPOLAR SENSING

Theodore J. Schulte, Plymouth; Roger W. Dahl, Andover; Stanley M. Bach, Jr.; J. Edward Shapland, both of Shoreview, and Douglas J. Lang, Arden Hills, all of Minn., assignors to Cardiac Pacemakers, Inc., St. Paul, Minn.

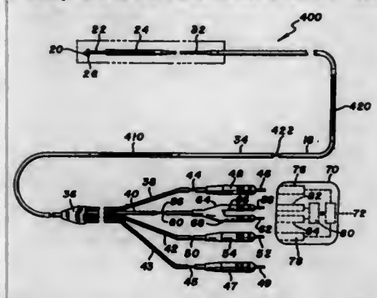
Continuation of Ser. No. 120,188, Oct. 19, 1993, abandoned, which is a division of Ser. No. 753,115, Aug. 30, 1991, Pat. No. 5,269,319, which is a continuation-in-part of Ser. No. 447,908, Dec. 8, 1989, Pat. No. 5,044,375. This application Feb. 9, 1995, Ser. No. 386,210

The portion of the term of this patent subsequent to Aug. 30, 2011, has been disclaimed.

Int. Cl.[6] A61N *1/05*

U.S. Cl. 607—123 **38 Claims**

1. A unitary intravascular cardioversion device for conducting



electrical pulses generated by a cardioversion pulse generator, including:
an elongate, flexible and dielectric catheter body having a proximal end region and a distal end region;
a cardioversion circuit including a first cardioversion electrode mounted on said catheter body along said distal end region; a first flexible conductor means connected to said first cardioversion electrode for conducting electrical pulses between said first cardioversion electrode and said proximal end region; a second cardioversion electrode mounted on said catheter body proximally of said first cardioversion electrode, spaced apart from said first cardioversion electrode a distance selected to permit placement of the second cardioversion electrode subcutaneously within the region of the third through seventh intercostal space when the first cardioversion electrode is disposed within the right ventricular cavity; a second flexible conductor means connected to said second cardioversion electrode for transmitting electrical pulses between said second cardioversion electrode and said proximal end region; and a cardioversion connector means near said proximal end region adapted for electrically coupling said first and second conductor means with a cardioversion pulse generator to utilize said first and second cardioversion electrodes as a cardioversion electrode pair.

5,545,206

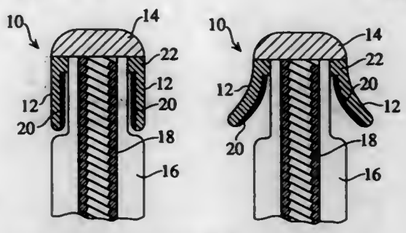
LOW PROFILE LEAD WITH AUTOMATIC TINE ACTIVATION

Dean F. Carson, Mountain View, Calif., assignor to Ventritex, Inc., Sunnyvale, Calif.

Filed Dec. 22, 1994, Ser. No. 362,835

Int. Cl.[6] A61N *1/05*

U.S. Cl. 607—126 **12 Claims**



1. A transvenous cardiac stimulation lead comprising:
an insulative lead body having proximal and distal ends;
at least one electrical conductor within said lead body;
a connector at said proximal end coupled to said conductor for connection to a pulse generator;
a plurality of flexible tines at said distal end extending substantially parallel to said lead body in a first position and extending away from said lead body in a second position; and
a hydrophilic material positioned at an under side of each of said tines;
whereby, when said lead is transvenously implanted with said tines in said first position, after exposure to body fluids said hydrophilic material expands to force said tines to said second position.

5,545,207

MEDICAL ELECTRICAL LEAD HAVING STABLE FIXATION SYSTEM

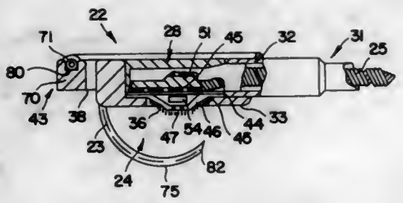
Karel F. A. A. Smits, Oirsbeek, Netherlands, and Ivan M. P. G. Bourgeois, Heusy, Belgium, assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Aug. 24, 1994, Ser. No. 295,334

Int. Cl.[6] A61N *1/05*

U.S. Cl. 607—130 **12 Claims**

1. An epicardial lead adapted for attaching to a heart comprising:



a lead body, said lead body having a conductor and an insulating sheath, said lead body having a distal end and a proximal end;

a mounting attached to said distal end of said lead body;

an electrode attached to said mounting, said electrode further connected to said conductor, said electrode configured to contact said heart;

a flexible member connected to said mounting at a hinge point, said flexible member having a pair of fixation members mounted thereto, each said fixation member having a fixation member distal end and a fixation member root, said fixation member distal end and said root located at a point more distal along the lead body than said hinge point, said flexible member moveable between a first position and a second position wherein in said first position said distal ends of said fixation members are positioned below said electrode and in said second position said distal ends of said fixation members are positioned above said electrode.

5,545,208

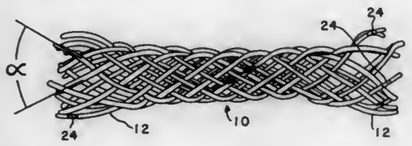
INTRALUMENAL DRUG ELUTING PROSTHESIS

Rodney G. Wolff, Minnetonka Beach, and Vincent W. Hull, Ham Lake, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 815,560, Dec. 27, 1991, abandoned, which is a continuation of Ser. No. 486,580, Feb. 28, 1990, abandoned. This application Dec. 21, 1993, Ser. No. 171,361

Int. Cl.[6] A61F 2/06; A61M 29/00; A61K 9/22

U.S. Cl. 623—1 **10 Claims**



1. A device for local intralumenal administration of drugs comprising:

(a) a catheter having proximal and distal ends;

(b) a body including a plurality of support elements forming a open-ended, radially expandable, self-supporting tubular structure having an interior surface and an exterior surface;

(c) at least one flexible, polymeric filament attached to the support elements of the body, at least a portion of the filament exposed at the exterior surface of the tubular body, said body mounted on the catheter at the distal end thereof;

(d) means at the proximal end of the catheter to provide sufficient radial expansion of the tubular body to bring the tubular body and polymeric filament into contact with a body lumen at an interior portion of the body lumen to be treated and for releasing the tubular body from the catheter; and

(e) a drug compounded into the polymeric filament such that the drug is delivered to the body lumen when the tubular body is radially expanded into contact with the portion of the body lumen to be treated.

5,545,209

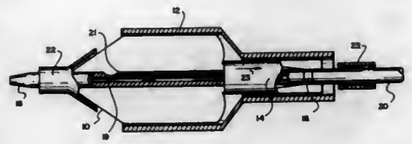
CONTROLLED DEPLOYMENT OF A MEDICAL DEVICE

George T. Roberts, Weston; Kathleen L. Hess, Lynn; Sepideh H. Nott, Canton; Michael S. H. Chu, Brookline, and Yem Chin, Burlington, all of Mass., assignors to Texas Petrodet, Inc., Kenney, Tex.

Continuation-in-part of Ser. No. 130,020, Sep. 30, 1993. This application Jun. 30, 1994, Ser. No. 269,064

Int. Cl.[6] A61F 2/06;11/00; A61M 29/00

U.S. Cl. 623—1 **16 Claims**



1. A prosthesis delivery system comprising:

a ballon catheter extending over a length and having an inflatable balloon on its exterior, said balloon being inflatable by injection of fluid through a lumen in said catheter, and said balloon being initially partially constrained against inflation by a slidable constraint surrounding a portion of said balloon, said constraint configured such that the injection of fluid into said balloon causes said constraint to slide axially along said balloon, permitting inflation of further portions of said balloon, and

a tubular prosthesis disposed on said catheter over at least a portion of said balloon and a portion of said constraint, said tubular prosthesis having a contracted condition and an expanded condition, said tubular prosthesis being initially disposed on said catheter in said contracted condition.

5,545,210

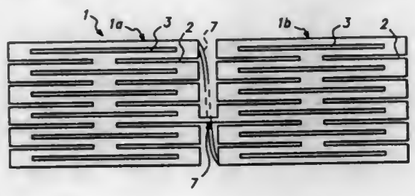
METHOD OF IMPLANTING A PERMANENT SHAPE MEMORY ALLOY STENT

Robert L. Hess, Portola Valley, and John E. Bramfitt, Woodside, both of Calif., assignors to Advanced Coronary Technology, Inc., Menlo Park, Calif.

Filed Sep. 22, 1994, Ser. No. 310,100

Int. Cl.[6] A61F 2/06

U.S. Cl. 623—1 **7 Claims**



1. A method of implanting a permanent tissue supporting device comprising a stent-like member of a shape-memory alloy having martensitic and austenitic metallurgical states and a transition temperature A_f therebetween, the method comprising sequential steps of (i) positioning the stent-like member in a tubular organ of a living body, (ii) mechanically expanding the stent-like member in its martensitic state to form a mechanically expanded shape, (iii) further expanding the stent-like member by heating the mechanically expanded shape above A_f so that the stent-like member is transformed into the austenitic state and recovers a memorized configuration larger than the mechanically expanded shape, and (iv) cooling the stent-like member to body temperature.

5,545,211

STENT FOR EXPANDING A LUMEN

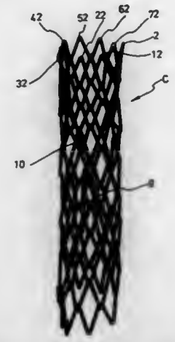
Sung-soon An, Seoul, and Suk-jae Lee, Kyungki-do, both of, Rep. of Korea, assignors to Soobo Medi-Tech Co., Ltd., Seoul, Rep. of Korea

Filed Sep. 22, 1994, Ser. No. 310,878

Claims priority, application Rep. of Korea, Sep. 27, 1993, 93-19771

Int. Cl.[6] A61F 2/06

U.S. Cl. 623—1 **10 Claims**



1. A stent comprising a length of wire formed into a cylindrical configuration having a plurality of turns of a zigzag configuration consisting of a series of first and second straight sections joined by a plurality of bends consisting of lower and upper bends, wherein each of the first and second straight sections is defined between each of the upper and lower bends, the first straight section is longer than the second section and the upper bends of one turn are hooked with corresponding lower bends of an adjacent turn, and wherein the stent is resiliently compressible into a smaller first shape in which all of the straight sections are arranged side by side and closely adjacent one another for insertion into a passageway with the bends having a stress therein, the stent being resiliently expandable by release of said stress into a second shape in which all of the straight sections define a generally circular or cylindrical configuration for pressing against a wall of the passageway to maintain it open.

5,545,212

ARTIFICIAL BLOOD VESSEL

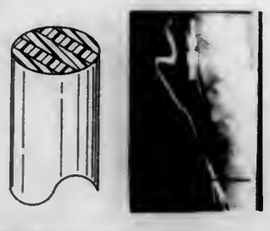
Sobei Wakabayashi; Tomoko Hashimukai, both of Fukui; Takeo Katakura, and Yoshihito Takano, both of Kanagawa, all of, Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, and Seiren Co., Ltd., Fukui, both of, Japan

Continuation of Ser. No. 992,103, Dec. 17, 1992, abandoned. This application Nov. 21, 1994, Ser. No. 345,323

Claims priority, application Japan, Dec. 18, 1991, 3-353569

Int. Cl.[6] A61F 2/06

U.S. Cl. 623—1 **20 Claims**



1. An artificial blood vessel comprising a tubular body made of composite fibers composed of a polyethylene terephthalate and a polyester elastic body, said composite fiber being a conjugated fiber in which at least two components are alternately fused in the longitudinal direction with each component forming a layer and wherein said respective components form a part of the outer surface along said longitudinal direction of said fiber, wherein said polyethylene terephthalate and said polyester elastic body are compatible with the tissue of an organism.

5,545,213

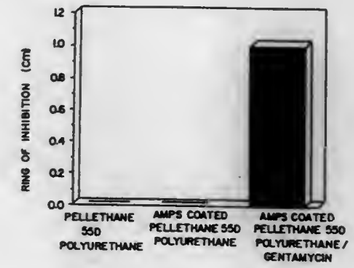
METHOD FOR ADMINISTERING A BIOACTIVE AGENT

James R. Keogh, Maplewood; Christopher M. Hobot, Tonka Bay, both of Minn.; John W. Eaton, Troy, N.Y.; Allan H. Jevne, Anoka, and Matthew A. Bergan, Brooklyn Park, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Division of Ser. No. 255,632, Jun. 9, 1994, Pat. No. 5,476,509, which is a division of Ser. No. 969,692, Oct. 30, 1992, Pat. No. 5,344,455. This application Apr. 27, 1995, Ser. No. 430,063

Int. Cl.[6] A61F 2/06

U.S. Cl. 623—1 **8 Claims**



1. A method for administering a bioactive agent having a net ionic charge to a patient comprising the steps of:

(a) providing an implantable article having a polymeric surface;

(b) preparing an aqueous solution comprising as a first monomer, a water soluble monomer which includes pendant groups selected from the group consisting of amine groups and acid groups, said groups capable of imparting a net ionic charge in a graft polymer, and as a second monomer, a neutral, hydrophilic monomer;

(c) contacting the polymeric surface of the implantable article with the monomer solution for a period of time effective to provide a copolymer of the first and second monomers grafted to the surface, said copolymer having a net ionic charge;

(d) placing the bioactive agent having a net charge onto the grafted surface; and

(e) implanting the article and bioactive agent into the patient's body in blood contact.

5,545,214

ENDOVASCULAR AORTIC VALVE REPLACEMENT

John H. Stevens, Palo Alto, Calif., assignor to Heartport, Inc., Redwood City, Calif.

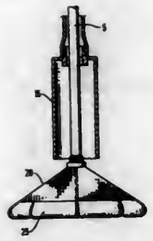
Division of Ser. No. 730,559, Jul. 16, 1991, Pat. No. 5,370,685. This application Mar. 4, 1994, Ser. No. 206,419

Int. Cl.[6] A61F 2/24

U.S. Cl. 623—2 **8 Claims**

1. A method for the endovascular delivery of a replacement heart valve to an implantation site, comprising:

a) advancing though the patient's arterial system an elongated delivery catheter having proximal and distal ends, at least one inner lumen extending therein and expandable means on the distal end thereof until the distal end of the delivery catheter is near the implantation site;



b) expanding the expandable means provided on the distal end of the delivery catheter to position the distal end thereof within the patient's aorta downstream from the implantation site; and

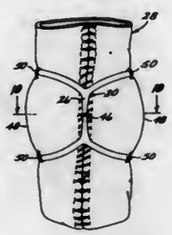
c) delivering a replacement heart valve to the implantation site through the delivery catheter.

5,545,215

EXTERNAL SIGMOID VALVE COMPLEX FRAME AND VALVED CONDUIT SUPPORTED BY THE SAME

Carlos G. Duran, Wellington Court 116 Knightsbridge, London SW1, United Kingdom

Filed Sep. 14, 1994, Ser. No. 306,202
Int. Cl.[6] A61F 2/24
U.S. Cl. 623—2 17 Claims



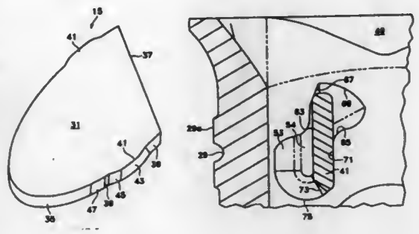
1. A frame to be used to support a sigmoid valved conduit during surgical implantation and thereafter, and to be affixed to the exterior of the valved conduit, the frame essentially consisting of biocompatible plastics or metals, and having the configuration of an open cage which is substantially circular when viewed from the top and the bottom, and having a side view which is that of a cylinder open in its top and bottom and is formed on its top of three convex curvatures which are joined at equidistant points at the upper circumference of said cylinder, and on its bottom of three convex curvatures which are joined at equidistant points at the bottom circumference of said cylinder, the equidistant joining points of said top and bottom curvatures being connected to one another by three substantially vertically disposed struts, whereby three lateral saddle-shaped substantially paraboloid openings are formed in the cage.

5,545,216

PROSTHETIC HEART VALVE

Jack C. Bokros; John L. Ely; Michael R. Emken, all of Austin; Axel D. Haubold, Liberty Hill; T. Scott Peters, Georgetown; Jonathan C. Stupka, Austin, and C. Thomas Waits, Pflugerville, all of Tex., assignors to Medical Carbon Research Institute, LLC, Austin, Tex.

Filed May 16, 1995, Ser. No. 441,791
Int. Cl.[6] A61F 2/24
U.S. Cl. 623—2 19 Claims



1. A prosthetic heart valve including

a generally annular valve body having an interior, generally arcuate wall surface which defines a central passageway for blood flow therethrough which is generally symmetrical about a longitudinal centerline,

a pair of cooperating leaflets, each having an inflow surface and an outflow surface, said leaflets being mounted in said valve body to alternate between an open position where the flow of blood in a downstream direction is permitted and a closed position where the flow of blood in the reverse direction is blocked, and

a pivot arrangement by which said leaflets are guided in moving between said open and closed positions,

said pivot arrangement permitting said pair of leaflets to assume an orientation substantially parallel to said longitudinal axis in a full open position at a high rate of downstream flow of blood,

said pivot arrangement comprising two ears respectively projecting laterally from opposite side edges of each said leaflet and two pairs of diametrically opposed cavities in said interior surface of said valve body for receiving said ears,

said ears each being elongated in an upstream-downstream direction when said leaflets are in the open position so as to have an upstream lateral edge surface and a downstream lateral edge surface,

said leaflets being axially displaceable upstream, relative to said valve body, upon the reversal of blood flow, and

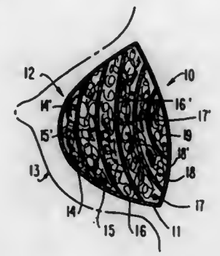
said cavities each being formed with an upstream lobe and a downstream lobe which are separated by a throat section defined by convex outward and inward fulcrums, said upstream lobe having formed therein a straight camming wall oriented at an angle of between about 5° and about 30° to a plane containing said centerline and said downstream lobe having formed therein a flat wall section substantially parallel to said centerline so that, upon upstream axial displacement of said leaflets, a camming action is exerted upon said upstream lateral edge surface of each of said leaflet ears as a result of its engagement with said camming walls in said cavities, which camming action is effective to cause each said leaflet to immediately begin to swing toward its closed position orientation.

5,545,217

BREAST IMPLANT

Denise A. Offray, Gillette; Durmus Koch, St. Demarest, and John Mortensen, Little Silver, all of N.J., assignors to C.M. Offray & Son, Inc., Chester, N.J.

Filed Apr. 20, 1995, Ser. No. 425,607
Int. Cl.[6] A61F 2/12
U.S. Cl. 623—8 9 Claims



1. A breast prosthesis implant comprising a bio-compatible tissue and body fluid pervious fabric shell in the general configuration of a cone, a plurality of pervious partitions extending transversely within said shell and dividing said shell into a series of chambers, and bio-compatible fibrous masses disposed within said chambers.

5,545,218

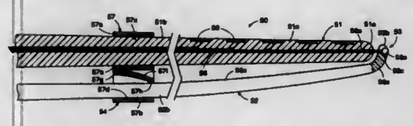
Patent Not Issued For This Number

5,545,219

COCHLEAR ELECTRODE IMPLANT ASSEMBLIES WITH POSITIONING SYSTEM THEREFOR

Janusz A. Kuzma, Englewood, Colo., assignor to Cochlear, Ltd., Lane Cove N.S.W., Australia

Filed Mar. 30, 1995, Ser. No. 414,656
Int. Cl.[6] A61F 2/18; A61N 1/00
U.S. Cl. 623—10 25 Claims



1. A self-positioning cochlear electrode implant assembly adapted to be implanted in the scala tympani of the spirally curved cochlea of a human ear for stimulating cells of the spiral ganglion, said assembly comprising:

a rod-shaped cochlear electrode carrier made of a biocompatible plastic material and sufficiently flexible to be able to assume the spiral curvature of the cochlea, said electrode carrier having leading and trailing end regions and tapering in cross-section from said trailing end region to said leading end region; an array of cochlear electrode elements supported by said electrode carrier at respective longitudinally spaced locations thereon in a medial region of said electrode carrier between said leading and trailing end regions thereof, said electrode elements having respective contact faces exposed along a first longitudinal side region of said electrode carrier;

a rod-shaped electrode carrier-positioning member made of a biocompatible plastic material and sufficiently flexible to be able to assume the spiral curvature of the cochlea, said positioning member having leading and trailing end regions and being juxtaposed to and extending lengthwise of said electrode carrier along a second longitudinal side region of the latter opposite said first longitudinal side region thereof so as to have said leading and trailing end regions of said positioning member located adjacent said leading and trailing end regions, respectively, of said electrode carrier; and means connecting said leading and trailing end regions of said positioning member to said leading and trailing end regions, respectively, of said electrode carrier so as to leave a medial region of said positioning member separated from said medial region of said electrode carrier and adapted to assume an arched configuration relative to said medial region of said electrode carrier upon insertion of the assembly into the cochlea;

whereby, upon insertion of said assembly into the scala tympani with said positioning member engaging and closely following the curvature of the radially outer wall of the cochlea and with said electrode carrier juxtaposed to and closely following the curvature of said positioning member, said positioning member when assuming said arched configuration against the constraint of the radially outer wall of the cochlea exerts a force on said electrode carrier at said leading and trailing end regions thereof to shift said electrode carrier into engagement of said first longitudinal side region thereof with the radially inner wall of the cochlea so as to position said contact faces of said array of electrode elements in close proximity to the spiral ganglion cells of the cochlea; and said means connecting said trailing end region of said electrode carrier and said trailing end region of said positioning member further serves, when the insertion of said assembly into the cochlea has been completed and said positioning member is in said arched configuration thereof, to stabilize said assembly in and lock the same against inadvertent reverse movement out of the cochlea.

5,545,220

IMPLANTABLE PROSTHESIS WITH OPEN CELL TEXTURED SURFACE AND METHOD FOR FORMING SAME

Winston A. Andrews, Danville; David Nelson, San Jose, and Richard W. Novy, Sunnyvale, all of Calif., assignors to Lipomatrix Incorporated, Palo Alto, Calif.

Filed Nov. 4, 1993, Ser. No. 147,737
Int. Cl.[6] A61F 2/02
U.S. Cl. 623—11 27 Claims



1. A method for forming a layer of silicone elastomer with an open cell structure, said method comprising the steps of:

forming a layer of silicone elastomer, said layer having a tacky surface;

applying a coating of particles to said surface; and

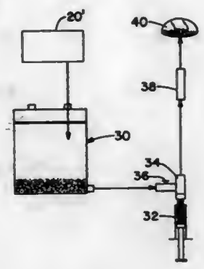
volatilizing said particles as said layer is cured, said particles thereby producing products of volatilization which render said surface into an open cell structure as said layer is cured.

5,545,221

APPARATUS AND METHOD FOR IMPLANT PROSTHESES

Lee Hang-Fu, 753 Firestone Dr., Avon Lake, Ohio 44012

Continuation-in-part of Ser. No. 5,637, Jan. 19, 1993, abandoned. This application Jun. 27, 1994, Ser. No. 266,601
Int. Cl.[6] A61F 2/12;2/02
U.S. Cl. 623—11 19 Claims



1. An autologous implant prosthesis for insertion into a living being, comprising:

a flexible envelope;

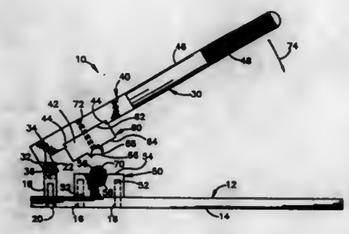
a volume of mammalian adipose tissue obtained from said living being, said mammalian adipose tissue containing a high percentage of triglycerides, retained within said flexible envelope, said adipose tissue being incapable of vascularized contact with adjacent tissue upon insertion of said adipose-filled envelope into said living being from which the volume of adipose tissue was obtained.

5,545,222

METHOD USING HUMAN TISSUE

Peter M. Bonutti, 1303 W. Evergreen Plz., Effingham, Ill. 62401

Division of Ser. No. 728,247, Aug. 12, 1991, Pat. No. 5,329,846. This application Jul. 8, 1994, Ser. No. 273,028
Int. Cl.[6] A61F 2/02
U.S. Cl. 623—11 41 Claims



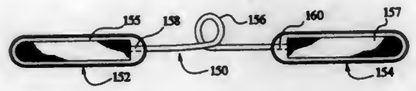
1. A method of using human tissue, said method comprising the steps of removing tissue from a human body, placing the tissue removed from the human body in a press, operating the press to apply pressure against the human tissue in the press, thereafter, removing the human tissue from the press and, inserting the human tissue removed from the press into a human body, the tissue removed from a human body being maintained in a viable living condition during performance of said steps of operating the press and inserting the tissue into a human body.

5,545,223

PORTED TISSUE IMPLANT SYSTEMS AND METHODS OF USING SAME

Steven Neuenfeldt, Vernon Hills; James Brauker, Lake Ville, and Robert Clarke, Libertyville, all of Ill., assignors to Baxter International, Inc., Deerfield, Ill.

Division of Ser. No. 179,860, Jan. 11, 1994, which is a continuation-in-part of Ser. No. 933,871, Aug. 21, 1992, abandoned, which is a continuation-in-part of Ser. No. 735,401, Jul. 24, 1991, abandoned, which is a continuation-in-part of Ser. No. 606,791, Oct. 30, 1990, abandoned. This application Mar. 30, 1995, Ser. No. 413,588
Int. Cl.[6] A61F 2/02; C12N 5/00
U.S. Cl. 623—11 9 Claims



1. A method of implanting cells comprising the steps of:

providing a device including a first implant assembly and a second implant assembly each having a chamber for holding cells defined by wall means including means for forming a porous boundary between the host tissue and the implanted cells in the chamber, the pore size of the boundary being sufficient to isolate the implanted cells from the immune response of the host tissue;

providing a tube member including a first and a second end, the first end being coupled to the first implant assembly and a second end being coupled to the second implant assembly;

implanting the device;

accessing the tube and severing the tube to provide access to the chambers of the first and second implant assemblies; and

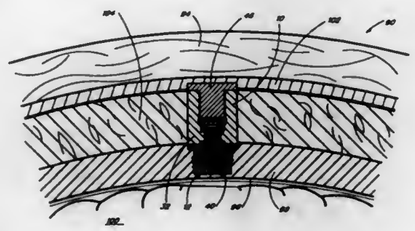
adding cells through the severed tube to a first chamber of the first implant assembly and a second chamber of the second implant assembly.

5,545,224

CRANIAL IMPLANT HAIRPIECE RETAINER SYSTEM

L. Douglas Israelsen, 3907 Alta Approach, Sandy, Utah 84092

Filed Jul. 20, 1995, Ser. No. 504,535
Int. Cl.[6] A61F 2/10
U.S. Cl. 623—15 7 Claims



1. A method for attaching a hairpiece to a human head, comprising the steps of:

implanting a plurality of threaded cranial implants into the skull;

connecting to each of said implants a removable attachment adapter extending from the cranial implant through the scalp; and

releasably attaching a hairpiece to said attachment adapters.

5,545,225

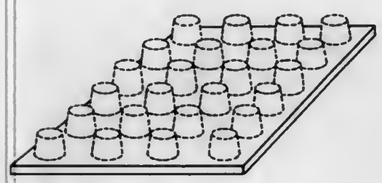
Patent Not Issued For This Number

5,545,226

IMPLANTS FOR CRANIOPLASTY

James P. Wingo, Stone Mountain, and John R. Miller, Woodstock, both of Ga., assignors to Porex Technologies Corp., Fairburn, Ga.

Continuation of Ser. No. 889,905, May 29, 1992, abandoned. This application Apr. 8, 1994, Ser. No. 225,345
Int. Cl.[6] A61F 2/28
U.S. Cl. 623—16 16 Claims



1. A bone implant comprising a substrate with a flat smooth continuous planar upper surface, and a lower surface having a plurality of projections extending transversely to the plane of said upper surface evenly and uniformly distributed over the entire said lower surface, said projections being porous and having pores capable of supporting tissue ingrowth and being spaced from each other in two dimensions over said lower surface, the spacing between the projections permitting said implant to be flexed about an axis extending in any direction parallel with said upper surface with the flexing occurring in said substrate between said projections.

5,545,227

BIOCOMPATIBLE LOW MODULUS MEDICAL IMPLANTS

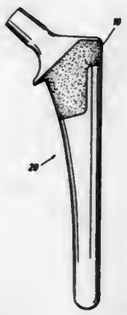
James A. Davidson, and Paul Kovacs, both of Germantown, Tenn., assignors to Smith & Nephew Richards, Inc., Memphis, Tenn.

Continuation-in-part of Ser. No. 36,414, Mar. 24, 1993, which is a continuation-in-part of Ser. No. 986,280, Dec. 7, 1992, abandoned, which is a continuation-in-part of Ser. No. 647,453, Jan. 28, 1991, Pat. No. 5,169,597, which is a continuation of Ser. No. 454,181, Dec. 21, 1989, abandoned. This application Jun. 20, 1994, Ser. No. 262,226
Int. Cl.[6] A61F 2/28;2/30
U.S. Cl. 623—16 14 Claims

1. A biocompatible metallic implant, the implant at least partially fabricated from an alloy consisting essentially of the following alloying components:

(a) titanium;

(b) from about 10 to about 20 wt. % as the sum of metals selected from the group consisting of niobium and tantalum; and



(c) an amount of zirconium sufficient to act as a beta stabilizer by slowing the transformation of beta;

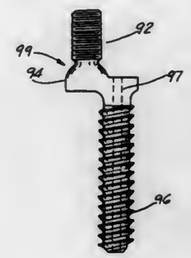
wherein toxic elements are excluded except for those trace amounts of impurities and interstitials present in the alloying components or picked up during fabrication of the implant.

5,545,228

OFFSET BONE BOLT

Parviz Kambin, Devon, Pa., assignor to Smith & Nephew Richards Inc., Memphis, Tenn.

Filed Feb. 11, 1993, Ser. No. 16,681
Int. Cl.[6] A61F 2/44; A61B 17/56
U.S. Cl. 623—17 7 Claims



1. A bone bolt for internal fixation of bones through the use of a spinal fixation system comprising:

a) a lower threaded shank portion generally cylindrical in shape having bone threads configured to be surgically implanted into a patient's bone, said lower portion having a central longitudinal axis;

b) a middle non-threaded portion monolithic with said lower threaded shank portion having a load transfer surface that includes an offset portion radially extending from the lower

portion, the offset portion allowing for adjustability in the alignment of the implanted bone bolt in relation to other component parts of a spinal fixation system;

c) an upper threaded shank portion generally cylindrical in shape monolithic with the middle portion and having a second longitudinal axis spaced laterally away from the first longitudinal axis at the load transfer surface; and

d) the upper shank portion having cooperating means configured to cooperate with a clamping means and means for engagement with a driver means.

5,545,229

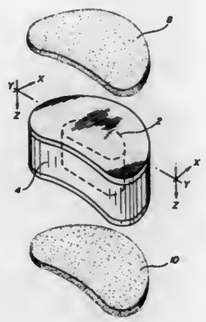
FUNCTIONAL AND BIOCOMPATIBLE INTERVERTEBRAL DISC SPACER CONTAINING ELASTOMERIC MATERIAL OF VARYING HARDNESS

John R. Parsons, Perth Amboy; Casey K. Lee, Short Hills; Noshir A. Langrana, Robbinsville, all of N.J.; Alastair J. Clemow, North Smithfield, R.I.; Elizabeth H. Chen, Sharon, Mass., and Monica V. Hawkins, Parsippany, N.J., assignors to University of Medicine and Dentistry of NJ, Newark, and Rutgers University, Piscataway, both of N.J.

Continuation of Ser. No. 832,364, Feb. 7, 1992, abandoned, which is a continuation-in-part of Ser. No. 776,708, Oct. 9, 1991, Pat. No. 5,171,281, which is a continuation of Ser. No. 382,207, Jul. 24, 1989, abandoned, which is a continuation-in-part of Ser. No. 233,617, Aug. 18, 1988, abandoned. This application Jul. 28, 1993, Ser. No. 98,698

Int. Cl.[6] A61F *2/44*

U.S. Cl. 623—17 **6 Claims**



1. A biocompatible intervertebral spacer comprising:

a central core of an unreinforced soft biocompatible elastomeric material shaped and sized so as to approximate the nucleus pulposus of a natural intervertebral disc;

an outer ring of unreinforced stiffer elastomeric material surrounding said central core to approximate a natural annulus fibrosus, said outer ring and said central core forming a disc having upper and lower surfaces; and

endplates comprised of a suitably stiff biocompatible material and affixed on one surface with additional elastomeric material, one to each end, to the upper and lower surfaces said endplates having a design modification on their outer surfaces which interdigitates with the adjacent bone;

said spacer having a mean torsional stiffness of from 0.8 Nm/degree to 3.0 Nm degree and a mean axial stiffness of from 1000 newtons/mm to about 3000 newtons/mm.

5,545,230

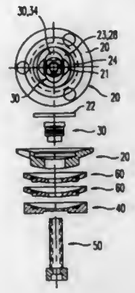
PROSTHESIS MOUNTING ADAPTER AND METHOD

Jay H. Kinsinger, Cedarville; Robert E. Arbogast; James W. Capper, both of Mount Sterling, and James M. Colvin, Hilliard, all of Ohio, assignors to Ohio Willow Wood Company, Mount Sterling, Ohio

Filed Oct. 11, 1994, Ser. No. 320,641

Int. Cl.[6] A61F *2/80;2/62;* F16B *37/08*

U.S. Cl. 623—38 **40 Claims**



1. An adapter for mounting a prosthesis comprising:

an interface member having an opening which extends into a cavity; and

a nut having a first end extending outside of said interface member and a second end including a head disposed inside of said cavity, said nut extending through said opening of said interface member;

wherein said head of said nut is sized with respect to a size of said cavity such that said head is movable within said cavity; and

wherein a cross-section of said cavity includes a first cavity width and a second cavity width, and wherein said first cavity width is larger than said second cavity width;

said head of said nut includes a first head width and a second head width, and wherein said first head width is larger than said second head width, and wherein said first head width is larger than said second cavity width.

5,545,231

ANGULAR ADJUSTMENT SYSTEM FOR PYLON/ PROSTHETIC FOOT INTERFACE

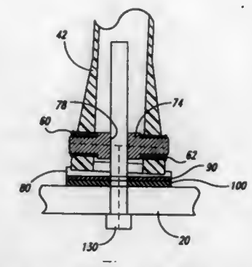
Guy M. Houser, Bainbridge Island, Wash., assignor to Model & Instrument Development Corporation, Poulsbo, Wash.

Filed Oct. 11, 1994, Ser. No. 321,254

Int. Cl.[6] A61F *2/66*

U.S. Cl. 623—38 **7 Claims**

1. A system for adjusting the angle between an elongated pylon and a prosthetic foot, said prosthetic foot having a bottom, a pylon attachment surface that is generally parallel to said bottom and is adapted to abut the lower end of said pylon, and a bolt hole extending through said pylon attachment surface, said bolt hole being surrounded by a bolt head surface that is parallel to said pylon attachment surface so that when said prosthetic foot is fastening to said pylon with a bolt extending through said hole into



said pylon, a bolt head of said bolt rests against said bolt head surface, said system comprising:

a wedge having a pair of wedge surfaces intersecting each other at a wedge angle, said wedge being positioned between said pylon attachment surface and said pylon so as to impart a cant to said pylon, said wedge having a bolt hole extending therethrough in alignment with the bolt hole through said pylon attachment surface; and

a generally cylindrical barrel nut assembly mounted in said pylon adjacent the lower end thereof, said assembly including:

a cylindrical barrel nut member having a threaded bore extending therethrough adapted to receive said bolt;

a pair of axles extending in opposite directions from opposite end faces of said cylindrical barrel nut member along the axis of said cylindrical barrel nut member; and

a pair of cylindrical bearings each slidably engaging one of said axles with the centers of said bearings being radially offset in opposite directions from the axis of said cylindrical barrel nut member, said bearings being supported in said pylon at the lower end thereof so that the radial position of said barrel nut member is such that the axis of said threaded bore of said barrel nut member intersects the bolt hole through said pylon attachment surface, said barrel nut member being rotatable in said bearings to vary the angle of the axis of said threaded bore so that said threaded bore axis angle corresponds to said wedge angle.

5,545,232

DEVICE FOR MUTUAL PIVOTING CONNECTION OF PARTS OF AN ORTHOPAEDIC APPARATUS

Paul G. Van de Veen, Enschede, Netherlands, assignor to Otto Bock Orthopadische Industrie Besitz-und Verwaltungs-Kommanditgeseslischaft, Duderstadt, Germany

Filed Feb. 21, 1995, Ser. No. 392,355

Claims priority, application Netherlands, Feb. 22, 1994, 9400269

Int. Cl.[6] A61F *2/64*

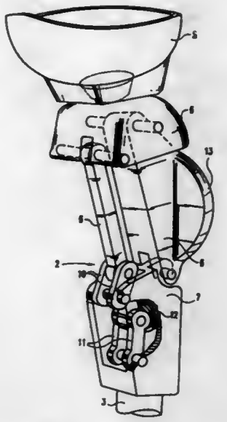
U.S. Cl. 623—39 **19 Claims**

1. A device for connecting and mutually pivoting parts of an orthopaedic apparatus having an extension side and a flexion side opposite said extension side, said device comprising:

a kinematic multiple linkage system with at least four linkages, adjoining linkages of said at least four linkages having a common pivot axis, wherein the pivot axes extend substantially mutually parallel;

an extension side linkage of said at least four linkages located on said extension side, directly pivotally connected only to an upper output linkage of said at least four linkages and to a lower output linkage of said at least four linkages; and

a flexion side linkage of said at least four linkages, located on said flexion side, pivotally connected on one side to the upper output linkage of said at least four linkages and connected on another side to the lower output linkage of said at least four linkages such that said flexion side linkage performs a constrained movement relative to the lower output linkage which comprises translation as well as rotation,



said flexion side linkage being connected to said lower output linkage at two points by two means for connecting, and

both said two means for connecting being pivotally connected to both said flexion side linkage and said lower output linkage.

5,545,233

SWING PHASE CONTROL DEVICE

Gerhard Fitzlaff, VS-Villingen, Germany, assignor to Biedermann Motech GmbH, VS-Schwenningen, Germany

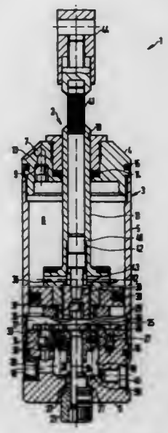
PCT No. PCT/EP93/02627, § 371 Date May 24, 1994, § 102(e) Date May 24, 1994, PCT Pub. No. WO94/07442, PCT Pub. Date Apr. 14, 1994

PCT Filed Sep. 28, 1993, Ser. No. 244,411

Claims priority, application Germany, Oct. 2, 1992, 42 33 247.8

Int. Cl.[6] A61F *2/64*

U.S. Cl. 623—43 **11 Claims**



1. In an artificial knee joint swing phase control device, said device comprising

a piston and cylinder arrangement having a piston movable within a cylinder,

a first chamber in said piston and cylinder arrangement on one side of said piston,

a second chamber in said piston and cylinder arrangement on the other side of said piston opposite to said first chamber,
means including a first throttle means for providing a communication between said first and second chambers,
a fluid reservoir,
means including a second throttle means for providing a communication between said second chamber and said reservoir,
means for closing said second throttle means when said piston reaches a predetermined speed to cause said second chamber to act as a pneumatic spring, said second chamber acting as a pneumatic spring causing the piston motion to reverse and be pushed outwardly with respect to said cylinder, and
means for connection to an artificial knee joint.

5,545,234

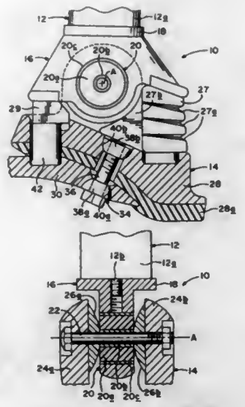
LOWER EXTREMITY PROSTHETIC DEVICE

Milo S. Collier, Jr., 1152 Douglas Street, Longview, Wash. 98632

Continuation of Ser. No. 74,101, Jun. 8, 1993, abandoned, which is a continuation-in-part of Ser. No. 680,310, Apr. 4, 1991, Pat. No. 5,314,499. This application Nov. 1, 1994, Ser. No. 332,655

Int. Cl.[6] A61F *2/66*

U.S. Cl. 623—49 **10 Claims**



1. A lower extremity prosthetic device comprising:
a modular foot member which includes a molded heel section formed substantially from a structural material of a first predetermined modulus of elasticity and an elongate molded midfoot section which extends, in cantilever fashion, forwardly from said heel section in an arc, said midfoot section being formed substantially from a structural material having a second predetermined modulus of elasticity different from said first predetermined modulus of elasticity to provide for differentiated longitudinal flexure of the foot member upon application of walking pressure, said heel and midfoot sections being configured for detachable combination via a coupling joint to provide for selected modular adaption of the foot member, said coupling joint including a generally vertical rigid pin defining a generally vertical axis about which said midfoot section pivots relative to said heel section and a generally vertical resilient pin interconnecting said midfoot and heel sections to resiliently limit pivot about said generally vertical axis of said midfoot section relative to said heel section; and
an ankle member coupled with said foot member, said ankle member being capable of rotation about an axis which is substantially perpendicular to a longitudinal line connecting said midfoot and heel sections of said foot member.

5,545,235

THERMAL TRANSFER OF PYRIDONE DYES

Rüdiger Sens, Mannheim, and Karl-Heinz Etzbach, Frankenthal, both of, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

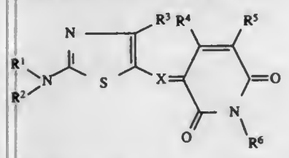
Filed Apr. 19, 1995, Ser. No. 424,098

Claims priority, application Germany, May 2, 1994, 44 15 358.9

Int. Cl.[6] B41M *5/035;* **C07D** *417/06;417/12*

U.S. Cl. 8—471 **11 Claims**

1. A process for transferring dyes from a transfer to plastic-coated paper by diffusion or sublimation with the aid of an energy source, which comprises using a transfer on which there is or are one or more pyridone dyes of the formula I



(I)

where
X is nitrogen or CH,
R^1 and R^2 are identical or different and each is independently of the other C_1–C_{10}-alkyl with or without substitution by C_1–C_4-alkoxycarbonyl, C_1–C_4-alkoxycarbonyloxy or phenyl and with or without interruption by from 1 to 4 oxygen atoms in ether function, C_5–C_7-cycloalkyl, C_3–C_4-alkenyl, unsubstituted or C_1–C_4-alkyl-, C_1–C_4-alkoxy- or halogen-substituted phenyl, or R^1 and R^2 are together with the nitrogen atom joining them together a 5- or 6-membered saturated heterocyclic radical with or without further hetero atoms,
R^3 is C_3–C_{10}-alkyl or C_5–C_7-cycloalkyl,
R^4 is hydrogen, C_1–C_4-alkyl or unsubstituted or C_1–C_4-alkyl-, C_1–C_4-alkoxy- or halogen-substituted phenyl,
R^5 is cyano, carbamoyl, mono- or di(C_1–C_8-alkyl)carbamoyl, carboxyl, C_1–C_8-alkoxycarbonyl or benzimidazolyl, and
R^6 is C_1–C_{10}-alkyl with or without substitution by phenyl, phenoxy, cyclohexyloxy or pyrazolyl and with or without interruption by from 1 to 4 oxygen atoms in ether function, C_5–C_7-cycloalkyl or unsubstituted or C_1–C_4-alkyl-, C_1–C_4-alkoxy- or halogen-substituted phenyl.

5,545,236

RED REACTIVE DYES, THEIR COMPOSITIONS AND DYEING METHOD EMPLOYING THEM

Toshio Hihara, and Yousuke Takahashi, both of Kitakyushu, Japan, assignors to DyStar Japan Ltd., Osaka, Japan

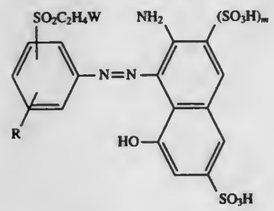
Division of Ser. No. 279,006, Jul. 22, 1994, abandoned. This application Mar. 9, 1995, Ser. No. 400,934

Claims priority, application Japan, Aug. 2, 1993, 5-209914; Aug. 23, 1993, 5-229439; Sep. 30, 1993, 5-267887; Oct. 25, 1993, 5-288670; Oct. 25, 1993, 5-288671; Nov. 19, 1993, 5-314281; Dec. 2, 1993, 5-338885; Dec. 16, 1993, 5-343721

Int. Cl.[6] D06P *1/38;* **C09B** *67/22*

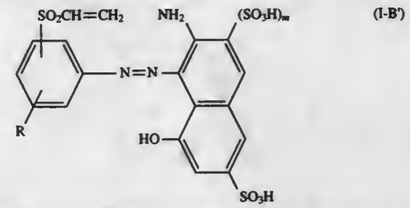
U.S. Cl. 8—549 **5 Claims**

1. A red reactive dye composition comprising 100 parts by weight of a dye having the following formula (I-A') in its free acid form:



(I-A')

and from 1 to 50 parts by weight of a dye having the following formula (I-B') in its free acid form:



(I-B')

wherein W is a group splittable by alkali, R is a hydrogen atom or —SO_3H and m is 0 or 1.

5,545,237

SMOKE REDUCING ADDITIVE FOR TWO-CYCLE ENGINE FUEL MIXTURE

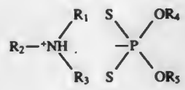
Jacob J. Habeeb, Westfield, N.J., and Christopher J. May, Sarnia, Canada, assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation of Ser. No. 272,707, Jul. 8, 1994, abandoned. This application Sep. 19, 1995, Ser. No. 530,491

Int. Cl.[6] C10L *1/26*

U.S. Cl. 44—380 **17 Claims**

1. A fuel mixture for two-cycle engines having reduced smoke emission properties consisting essentially of
(a) a mineral lubricating oil basestock,
(b) a motor gasoline and
(c) an ionic complex of an oil and fuel-soluble hydrocarbyl substituted amine salt of a dithiophosphoric acid having the formula:



wherein,
R_1, R_2 and R_3 are the same or different and are selected from the group consisting of hydrogen, a hydrocarbyl group and a hydrocarbyl substituted group, with R_1, R_2 and R_3 each having a total of from 2 to 30 carbon atoms,
R_4 and R_5 are selected from hydrogen and a hydrocarbyl group containing from 1 to 28 carbon atoms, and at least one of the radicals R_4 or R_5 is a hydrocarbyl group containing from 3 to 18 carbon atoms.

5,545,238

METHOD OF MONITORING SLAG REMOVAL DURING CONTROLLED OXIDATION OF A PARTIAL OXIDATION REACTOR

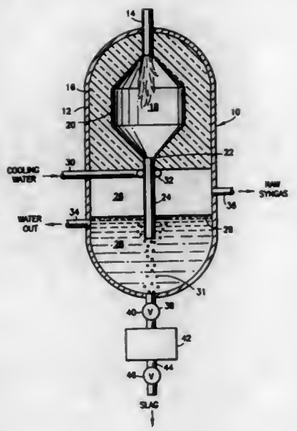
Donald D. Brooker, Hopewell Junction, N.Y.; James S. Falsetti, New Fairfield, Conn.; James K. Wolfenbarger, Torrance, Calif., and Dinh-Cuong Vuong, Nederland, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 29, 1994, Ser. No. 365,783

Int. Cl.[6] C10J *3/08*

U.S. Cl. 48—197 R **10 Claims**

1. A method for monitoring the removal of accumulated slag during controlled oxidation conditions for deslagging a partial oxidation reactor, said reactor having a quench chamber containing quench water wherein said slag accumulates during partial oxidation conditions, comprising:



(i) establishing controlled oxidation conditions in the reactor and removing accumulated slag;

(ii) measuring at least one quench chamber water parameter selected from the group consisting of pH, conductivity, total dissolved solids and sulfate concentration of the quench water, wherein the change in the measured value of each of the above identified parameters independently corresponds to the removal of accumulated slag;

(iii) collecting and recording data from measuring at least one of the selected quench chamber water parameters;

(iv) monitoring the recorded data during controlled oxidation conditions to determine when maximum value is recorded for at least one parameter selected from the group consisting of conductivity, total dissolved solids, and sulfide concentration, or when a minimum value is recorded for the pH parameter, wherein a consistent and steady decrease in recorded measured values after a the maximum value or a consistent and steady increase in recorded measured values after a minimum value of the selected quench chamber water parameter is an indication that most of the slag has been removed from the reactor; and

(v) wherein after the maximum or minimum value of the selected quench chamber water parameter occurs and most of the slag has been removed from the reactor, controlled oxidation conditions are stopped and partial oxidation conditions are restored to the reactor.

5,545,239

PAINTING INSTALLATION

AndréCordier, Clamart, France, assignor to Air Industrie Systems - A.I.S., Courbevoie, France

Continuation of Ser. No. 181,034, Jan. 14, 1994, abandoned. This application Jun. 23, 1995, Ser. No. 494,169

Claims priority, application France, Jan. 18, 1993, 93 00410

Int. Cl.[6] B01D *47/12*

U.S. Cl. 55—223 **10 Claims**

1. A painting installation comprising an enclosure having an inside portion, a perforated floor, a device for causing air flow within the inside portion of the enclosure so that it becomes charged with excess paint and passes downwards inside the enclosure and through the perforated floor, first collecting means and second collecting means disposed below the perforated floor, a source of washing water for providing washing water to at least said perforated floor and means for providing an extracting liquid, said first collecting means being structured with wall surfaces, said wall surfaces providing a first fluid path for washing water from said source of washing water and being operative to collect waste resulting from a cleaning of the inside portion of the enclosure and the perforated floor with washing water and defining a first air path for said air flow, said first collecting means further comprising waste collecting means for collecting a waste water consisting of the washing water with waste therein, and

said second collecting means being structured to provide a second fluid path separate and distinct from said first fluid path as well as a second air path connected to said first air path of said first collecting means for a continuation of said air flow, said first and second air paths being operative to collect excess paint suspended in air, said second collecting means comprising:

an opening at the connection of said first and second air paths, said opening being protected against an admission of said waste and washing water,

means for catching in said extracting liquid the excess paint suspended in the air, and

means for collecting said extracting liquid and the caught excess paint.

5,545,240

DEODORANTS AND GAS FILTERS THEREFOR

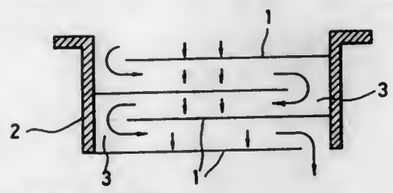
Sumiaki Tsuru; Akihiko Yokoo, both of Tokyo; Takeshi Sakurai, Saitama-ken, and Tetsuro Ogawa, Tokyo, all of, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 197,173, Feb. 16, 1994, abandoned, which is a continuation of Ser. No. 840,586, Feb. 26, 1992, Pat. No. 5,310,548, which is a continuation of Ser. No. 512,323, Apr. 23, 1990, abandoned. This application Feb. 14, 1995, Ser. No. 388,903

Claims priority, application Japan, Apr. 21, 1989, 1-102355; Apr. 28, 1989, 1-110993; Nov. 2, 1989, 1-286120; Jan. 10, 1990, 2-3198

Int. Cl.[6] B01D *45/00*

U.S. Cl. 55—479 **7 Claims**



1. A gas filter, comprising:

a body and at least two plates of a filtering medium comprising a ceramic material containing 5 to 100% by weight of a calcium phosphate compound having a molar ratio of calcium to phosphorus of 0.8 to 2.0, said ceramic material being selected from the group consisting of powders, granules, porous granules and porous blocks, and said ceramic material being carried on a supporting material or incorporated into a supporting material, so that said ceramic material is capable of performing as a deodorant;

said ceramic material being positioned in a hollow portion of said body, wherein said hollow portion has a height and each plate of said at least two plates of the filtering medium has a length which is shorter than the height of the hollow portion, said plates being alternately attached to upper and lower walls of said body, so that a curved and extended flow route of a gas is created in the hollow portion.

5,545,241

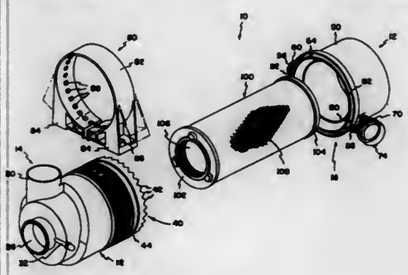
AIR CLEANER

Raymond Vanderauwera, St-Pieters-Leeuw, and Paul Coulonvaux, Brussels, Belgium, assignors to Donaldson Company, Inc., Minneapolis, Minn.

Filed Jan. 17, 1995, Ser. No. 373,000

Int. Cl.[6] B01D *35/30*

U.S. Cl. 55—490 **20 Claims**



1. An air cleaner apparatus, comprising:

a filter element;

a generally cylindrical housing;

an inlet;

an outlet; and

a rotatably adjustable mounting bracket adjustably attached about a periphery of the housing including means for indexed locking the mounting bracket against the housing.

5,545,242

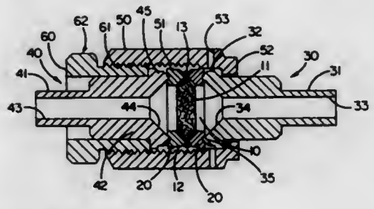
IN-LINE FILTER FOR TUBING

Michael Whitlock, Cortland, and William Murphy, Homer, both of N.Y., assignors to Pall Corporation, East Hills, N.Y.

Filed Jul. 19, 1994, Ser. No. 277,071

Int. Cl.[6] B01D *35/02;46/10*

U.S. Cl. 55—502 **22 Claims**



1. An in-line filter comprising:

first and second gaskets;

a filter element sandwiched between the gaskets; and

a sealing portion disposed between the gaskets and forming a seal around a periphery of the filter element.

5,545,243

POROUS CERAMIC HONEYCOMB FILTER

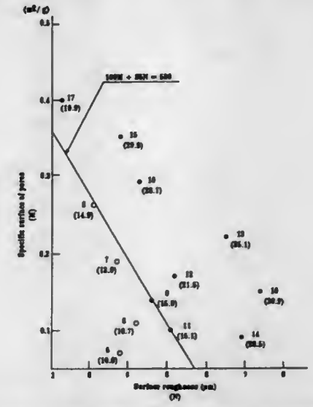
Wataru Kotani, Kasugai; Yoshiro Ono, and Kazuhiko Kumazawa, both of Nagoya, all of, Japan, assignors to NGK Insulators, Ltd., Japan

Filed Dec. 12, 1994, Ser. No. 354,414

Claims priority, application Japan, Dec. 15, 1993, 5-315199

Int. Cl.[6] B01D *39/20;* **C04B** *38/00*

U.S. Cl. 55—523 **6 Claims**



1. A porous ceramic honeycomb filter used for separating a solid phase and a gas phase from a mixture phase including the solid phase and gas phase, wherein (i) a porosity of said filter is about 45% to 60%; (ii) a volume of pores having a pore size of more than 100 μm is less than 10% of the total volume of pores in said ceramic filter; (iii) a thermal expansion coefficient of said ceramic filter is less than 0.5×10^{-6}/°C. within a temperature range of 40°–800° C. in a direction parallel to a flow passage of said ceramic filter; and (iv) an inequality of $1000M+85N\geq530$ is satisfied, wherein M, measured in units of m^2/g is a specific surface area of total pores continued from a surface to an inner portion of said filter and N, measured in units of μm, is a surface roughness of a surface of said filter.

5,545,244

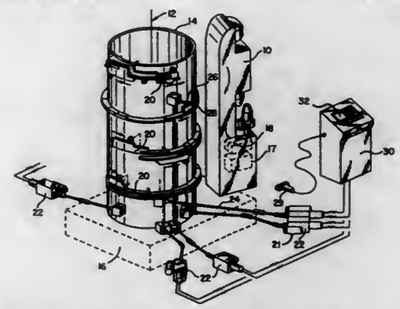
CONTROL FOR GLASS FORMING MACHINE

David K. Hwang, Storrs, Conn., assignor to Emhart Inc., Newark, Del.

Filed Dec. 13, 1994, Ser. No. 355,394

Int. Cl.[6] C03B *9/40;* **G06F** *15/46*

U.S. Cl. 65—160 **6 Claims**



1. A control for a glass forming machine having at least one displaceable mechanism which will generate position feedback signals representative of its actual position, comprising

control profile means for generaging a profile for controlling the displacement of said displaceable mechanism,

means for transforming said profile either into control signals for said mechanism whereby said mechanism will be displaced or into simulated position feedback signals with said mechanism not being displaced,

a screen, and

display means for receiving either the position feedback signals or the simulated position feedback signals and for generating mechanism position display signals for said screen, and

means for commanding operation either in a machine mode wherein said transforming means will transform said profile into said control signals and said display means will receive feedback position signals from the displaced mechanism or in a simulation mode wherein said transforming means will transform said profile into said simulated feedback position signals and said display means will receive said simulated position feedback signals.

5,545,245

PROGRESSIVELY ANGLED AND ADJUSTABLE CONVEYOR ROLL DEVICE FOR PRELIMINARILY BENDING SHEET GLASS

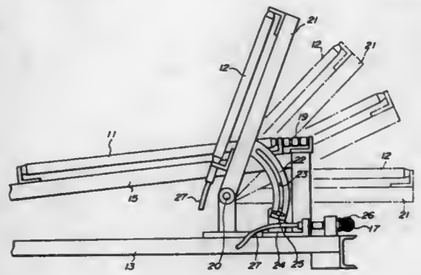
Tetsuya Mizusugi, Tokyo, Japan, assignor to Nippon Sheet Glass Co., Ltd., Japan

Division of Ser. No. 14,129, Feb. 5, 1994, Pat. No. 5,368,625. This application Oct. 25, 1994, Ser. No. 296,690

Claims priority, application Japan, Feb. 6, 1992, 4-56168

Int. Cl.[6] C03B *23/02*

U.S. Cl. 65—273 **7 Claims**



1. A glass bending apparatus, comprising:

a press for bending a glass sheet; and

a conveyor roll device for feeding a glass sheet which has been heated to a temperature near its softening point along a direction to said press and for preliminarily bending the glass sheet prior to bending the glass sheet by said press;

said conveyor roll device comprising a sequence of rolls which are rectilinear where they contact the glass sheet and arranged with their axes at different angles of inclination to a horizontal plane so as to give the glass sheet a required preliminary bend until the glass sheet is fed to said press; and

drive means for rotating the rolls in said sequence of rolls, said drive means comprising a main shaft, rotating means for rotating said main shaft, bevel gears selectively positioned on said main shaft, and a plurality of transmission shafts, each of said transmission shafts extending between One of said bevel gears and one of the rolls of said sequence of rolls.

5,545,246

METHOD AND DEVICE FOR MANUFACTURING AN OPTICAL FIBER

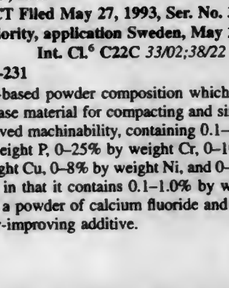
Hans-Jürgen Lysson, Korschenbroich; Frank Lisse, Cologne; Manuela Hahn, Monchen-Gladbach; Hans-Detlef Leppert, Mönchengladbach, all of, Germany, and Philippe Darbon, Saint Michel sur Orge, France, assignors to Kabel Rheydt Aktiengesellschaft, Monchen-Gladbach, Germany

Filed Nov. 8, 1994, Ser. No. 336,190

Claims priority, application Germany, Nov. 16, 1993, 43 39 077.3

Int. Cl.[6] C03B *37/025;37/02*

U.S. Cl. 65—435 **21 Claims**



1. A method for manufacturing an optical fiber comprising the steps of:

providing a preform;

heating an end of said preform to above a glass softening temperature;

drawing an optical fiber in a fiber drawing direction from said heated end of said preform, wherein a cross-section of said preform decreases in a drawing area where said optical fiber is drawn from said heated end of said preform;

providing a protective gas flow around said preform, said protective gas flow having a laminar flow around said preform in a protective gas flow direction corresponding to said fiber drawing direction; and

stabilizing said laminar flow of said protective gas flow in said drawing area with an additional flushing gas flow, wherein said additional flushing gas flow is introduced in said drawing area.

5,545,247

PARTICULATE CaF_2 AND BaF_2 AGENT FOR IMPROVING THE MACHINABILITY OF SINTERED IRON-BASED POWDER

Owe Andersson, Viken, Sweden, assignor to Höganäs AB, Höganäs, Sweden

PCT No. PCT/SE93/00469, § 371 Date Nov. 23, 1994, § 102(e) Date Nov. 23, 1994, PCT Pub. No. WO93/24261, PCT Pub. Date Dec. 9, 1993

PCT Filed May 27, 1993, Ser. No. 338,595

Claims priority, application Sweden, May 27, 1992, 9201678

Int. Cl.[6] C22C *33/02;38/22*

U.S. Cl. 75—231 **6 Claims**

1. An iron-based powder composition which is essentially free from hard phase material for compacting and sintering to products having improved machinability, containing 0.1–1.2% by weight C, 0–0.6% by weight P, 0–25% by weight Cr, 0–10% by weight Mn, 0–5% by weight Cu, 0–8% by weight Ni, and 0–2% by weight Mo, characterised in that it contains 0.1–1.0% by weight of a eutectic composite of a powder of calcium fluoride and barium fluoride as machinability-improving additive.

5,545,248

TITANIUM-BASE HARD SINTERED ALLOY

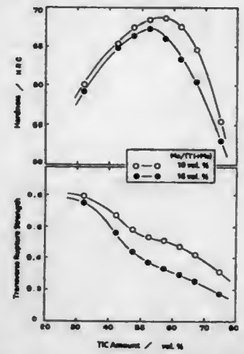
Kei Tokumoto; Tetsunori Kitada; Hironobu Shinoaki, and Shigeya Sakaguchi, all of Fukuoka, Japan, assignors to Nippon Tungsten Co., Ltd., Fukuoka-ken, Japan

Continuation-in-part of Ser. No. 67,370, May 26, 1993, abandoned. This application Feb. 14, 1995, Ser. No. 388,325

Claims priority, application Japan, Jun. 8, 1992, 4-147626

Int. Cl.[6] C22C *29/04*

U.S. Cl. 75—238 **3 Claims**



1. A corrosion-resisting and wear-resisting titanium-base hard sintered alloy consisting of TiC solid solution accounting for 42 to 67 vol %, with the remainder being composed of two components, the first component being at least one species selected from the group consisting of Groups Va and VIa metallic elements except Cr, the second component being titanium, the first component accounting for 1 to 30 vol % and the second component accounting for 70 to 99 vol % of the total amount of the first and second components.

5,545,249

SINTERED BEARING ALLOY FOR HIGH-TEMPERATURE APPLICATION AND METHOD OF MANUFACTURING AN ARTICLE OF THE ALLOY

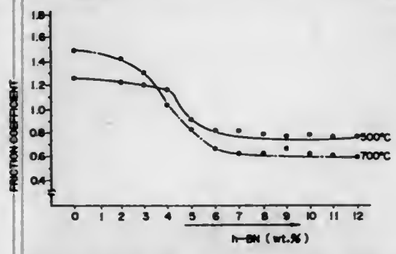
Tadashi Tanaka; Masaaki Sakamoto; Koichi Yamamoto, and Kouki Ozaki, all of Nagoya, Japan, assignors to Daido Metal Company Ltd., Nagoya, Japan

Filed Apr. 28, 1995, Ser. No. 431,036

Claims priority, application Japan, Apr. 30, 1994, 6-113504

Int. Cl.[6] B22F *3/12;5/00;7/04*

U.S. Cl. 75—246 **7 Claims**



1. A sintered bearing alloy for high-temperature application, wherein the matrix of said alloy is austenitic stainless steel, and from more than 5 weight percent and up to and including 10 weight percent particles of h-BN, based on the total weight of said alloy, is dispersed in the matrix, wherein the h-BN particles have particles sizes in the range of 100 to 500 μm.

2. A method of manufacturing a sintered bearing alloy for high-temperature application, comprising the steps of:

mixing from more than 5 weight percent and up to and including 10 weight percent granulated h-BN powder based on the total weight of said alloy with a stainless steel powder and thus forming a blended powder;

forming a green compact by compressing the blended powder; and

sintering the green compact, whereby the sintered bearing alloy article is produced, which contains h-BN particles having particle sizes in the range of 100 to 500 μm and being dispersed in the matrix of stainless steel.

5,545,250

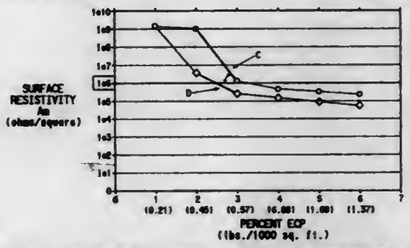
POLYTYPE ELECTROCONDUCTIVE POWDERS

Oswald R. Bergmann, Wilmington; Carl Chen, Newark, and Howard W. Jacobson, Wilmington, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 100,875, Jul. 30, 1993, abandoned. This application Oct. 12, 1994, Ser. No. 322,028

Int. Cl.[6] B22F *1/00*

U.S. Cl. 75—252 **11 Claims**



1. An electroconductive composition consisting essentially of an intimate mixture of at least two components wherein at least one of the components consist of an electroconductive powder and another component comprises at least one non-conductive filler wherein the composition possesses a dry powder resistivity which is lower than the weighted average of said components.

5,545,251

METHOD OF AND DEVICE FOR DIRECTLY REDUCING FINE-PARTICLE ORES AND CONCENTRATES THEREOF

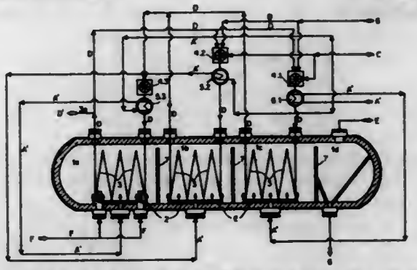
Ing. Klaus Knop, Bottrop, Germany, assignor to MAN Gutehoffnungshütte Aktiengesellschaft, Oberhausen, Germany

Filed Aug. 5, 1994, Ser. No. 286,164

Claims priority, application Germany, Aug. 7, 1993, 43 26 562.6

Int. Cl.[6] C21B *11/00*

U.S. Cl. 75—444 **40 Claims**



1. Method of directly reducing fine-particle ores and concentrates thereof in a horizontal reactor by means of an ore-reducing

gas and a heat-vehicle gas in a fluidized bed, characterized in that the ore or ore concentrate (F) is blown into one section (1*a*) of the reactor (1), in that it is heated and partly reduced in that section, extensively further reduced in another section (1*b*) of the reactor, and terminally reduced in a third section (1*c*), in that oncoming fluid in the form of a compressed ore-reducing gas (A or A') heated to 450° to 800° C. is blown into the reactor from below to create a fluidized bed and reduce the ore, in that a heat vehicle D in the form of gas heated to 500° to 850° C. indirectly adds heat to the bed through heat exchangers (3), in that a circulating gas (E') in the form of filtered and compressed throat gas (E) is mixed with the ore-reducing gas, heated, and returned to the reactor, and in that the dust (F') entrained by the throat gas is precipitated in flue-gas cyclones 17 and 18, mixed with the ore or ore concentrate, and returned to the ore-reducing system.

5,545,252

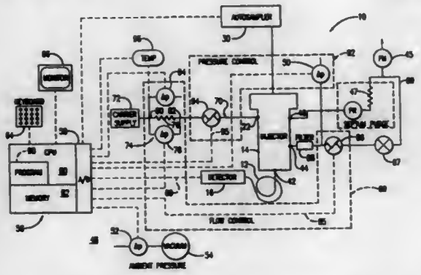
FLOW REGULATION IN GAS CHROMATOGRAPH

John V. Hinshaw, New Fairfield, and Paul E. Schallis, Ridgefield, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Mar. 1, 1995, Ser. No. 397,707

Int. Cl.[6] B01D *15/08*

U.S. Cl. 95—15 **43 Claims**



1. A method of operating a gas chromatographic system, the system including a gas chromatographic column and an injector, the injector having an inlet passage receptive of a carrier gas, a sample inlet selectively receptive of a test sample, a mixing chamber for receiving the sample to form a mixture in a continuing flow of the carrier gas, a column passage communicating with the column for delivering into the column a test portion of the continuing flow, and an exit passage for discharging a split portion of the continuing flow from the mixing chamber, the system further including a gas inlet line for conveying the carrier gas from a source thereof into the inlet passage at a regulated inlet flow rate, a variable outlet restrictor connected between the exit passage and an ambient space, a fixed inlet restrictor disposed in the inlet line, and a detector of differential pressure (P) connected across the fixed inlet restrictor; wherein the method comprises:

calibrating the differential pressure as a function of mass flow rate of carrier gas through the fixed inlet restrictor, selecting a set mass flow rate (F_s) as the inlet flow rate, calculating with the function a set differential pressure (P_s) from the set mass flow rate, effecting operation of the system by conveying carrier gas therethrough, generating a difference signal representative of the difference between the differential pressure and the set pressure during operation of the system, and utilizing the difference signal to regulate the variable outlet restrictor so as to maintain the differential pressure substantially equal to the set pressure during operation of the system, whereby the inlet flow rate is maintained substantially constant at the set mass flow rate.

5,545,253

BINDER FOR STORABLE COATING COMPOSITIONS

Roland Edelmann, Niederkassel; Friedhelm Schnippering, Siegburg; Christine Fliedner, Bonn, and Reinhard Matthes, Bergisch Gladbach, all of, Germany, assignors to Hüls Aktiengesellschaft, Marl, Germany

Filed Jan. 26, 1995, Ser. No. 401,636

Claims priority, application Germany, Feb. 10, 1994, 44 04 090.3

Int. Cl.[6] C09D *5/10*

U.S. Cl. 106—122 **3 Claims**

1. In a binder composition for zinc dust paints, said binder composition comprising a silicic acid ester, curing agent and an antideposition agent, said binder composition having a flashpoint higher than 21° C., the improvement which resides in that said binder composition further contains 40–70% by weight, based on the total weight of said binder composition, of a mixture of aliphatic and aromatic solvents in a weight ratio of 1:6 to 6:1, and 6–60% by weight, based on the total weight of said binder composition, of a dearomatized aliphatic hydrocarbon mixture having an average molecular weight of 133.

5,545,254

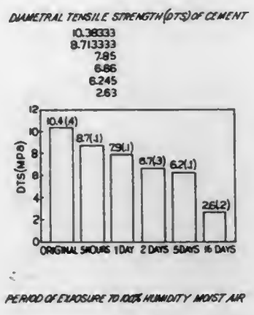
CALCIUM PHOSPHATE HYDROXYAPATITE PRECURSOR AND METHODS FOR MAKING AND USING THE SAME

Laurence C. Chow, Potomac, and Shozo Takagi, Gaithersburg, both of Md., assignors to The American Dental Association Health Foundation, Gaithersburg, Md.

Continuation of Ser. No. 30,709, Mar. 12, 1993. This application Dec. 9, 1994, Ser. No. 353,076

Int. Cl.[6] C09K *3/00*

U.S. Cl. 106—35 **2 Claims**



1. An improved method for preparing a tetracalcium phosphate based calcium phosphate-containing composition comprising combining tetracalcium phosphate and at least one other sparingly soluble calcium phosphate, wherein the improvement comprises employing tetracalcium phosphate which is substantially free of calcium oxide.

2. An improved method for preparing a tetracalcium phosphate based calcium phosphate-containing composition comprising combining tetracalcium phosphate and at least one other sparingly soluble calcium phosphate compound wherein the improvement comprises employing tetracalcium phosphate which is substantially free of surface hydroxyapatite prior to use.

5,545,255

FINISHING AGENT AND METHOD OF USING THE SAME

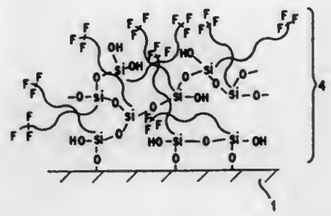
Kazufumi Ogawa, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 68,661, May 27, 1993, abandoned. This application Apr. 21, 1995, Ser. No. 427,720

Claims priority, application Japan, May 27, 1992, 4-135382; Sep. 14, 1992, 4-244534

Int. Cl.[6] C09G *1/02*

U.S. Cl. 106—272 **14 Claims**



1. A finishing agent comprising a chemically adsorptive compound with a chlorosilyl group, and a nonaqueous liquid or solid medium having a boiling point of 100° C. or above.

5,545,256

COATING APPARATUS

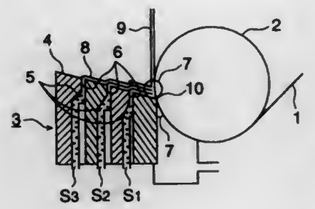
Kazuhiro Fukuda, and Atsushi Saito, both of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Oct. 11, 1994, Ser. No. 321,313

Claims priority, application Japan, Oct. 15, 1993, 5-258394

Int. Cl.[6] B05C *3/12*

U.S. Cl. 118—410 **4 Claims**



1. An apparatus for coating a web with a coating solution supplied to a coating head, the coating head comprising:

a coating section to coat the web with the coating solution; and

a feed section including slit wall members forming a slit therebetween, the slit wall members having an inside surface to form an inside of the slit and an exit end to form an exit of the slit, wherein the coating solution is fed from the inside of the slit through the exit of the slit to the coating section, and wherein the inside surface of the slit wall members is finished at least 1 mm to 5 mm in distance from the exit end of the slit wall members so as to have a center line mean roughness not larger than 0.1 μm.

5,545,257

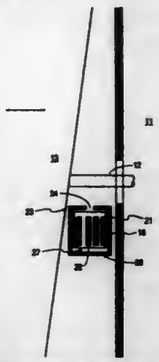
MAGNETIC FILTER APPARATUS AND METHOD FOR GENERATING COLD PLASMA IN SEMICODUCTOR PROCESSING

Michael C. Vella, San Leandro, Calif., assignor to Electro-Graph, Inc., Carlsbad, Calif.

Filed Jun. 13, 1994, Ser. No. 258,958

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—723 R **15 Claims**



1. A plasma generator apparatus used in performing charge particle processing on a substrate comprising:

a plasma generator for generating plasma;

a magnetic filter in communication with said generator;

said generator having a passage through which said plasma can pass;

a substrate carrying arrangement which positions a substrate in close enough proximity to said passage to provide that plasma is dispersed through said passage in the vicinity of the substrate on said substrate carrying arrangement.

5,545,258

MICROWAVE PLASMA PROCESSING SYSTEM

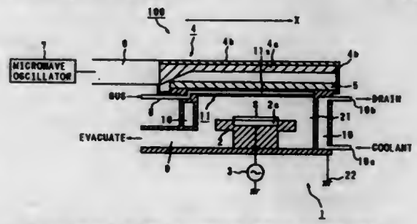
Katsuo Katayama; Kyoichi Komachi; Hiroshi Mabuchi, all of Osaka, and Takeshi Akimoto, Tokyo, all of, Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, and NEC Corporation, Tokyo, both of, Japan

Filed Jun. 13, 1995, Ser. No. 490,068

Claims priority, application Japan, Jun. 14, 1994, 6-132031; Jun. 14, 1994, 6-132032; Jun. 14, 1994, 6-132033

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—723 M P **8 Claims**



1. A microwave plasma processing system comprising:

a microwave oscillator;

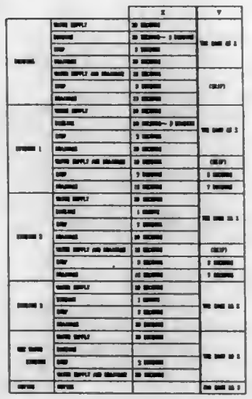
a reactor to which a microwave oscillated by said microwave oscillator and a reactant gas are introduced;
a waveguide for guiding the microwave to said reactor;
a dielectric passage formed on one face of said reactor and connected to said waveguide;
a microwave introduction window disposed in a manner that said reactor is partitioned into said dielectric passage and a reaction chamber;
a sample holder disposed in said reaction chamber;
means for applying an electric field to said sample holder;
gas supplying means for supplying the reactant gas to said reaction chamber; and
a conductor disposed between said microwave introduction window and said sample holder, the conductor having microwave transmission holes, a flow path communicated with said gas supplying means, and holes through which the reactant gas is to be blown toward a sample.

5,545,259

DISH WASHING MACHINE

Hajime Suzuki, Otsu, and Tetsuo Harada, Shiga, both of, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Jan. 24, 1995, Ser. No. 377,356
Claims priority, application Japan, Jan. 31, 1994, 6-009900
Int. Cl.[6] A47L *15/46*
U.S. Cl. 134—18 **12 Claims**



7. A dish washing machine for spraying water on dishes contained in a cavity having a washing process for washing the dishes in the cavity and a rinsing process for rinsing the dishes in the cavity, each washing process and rinsing process having a drainage process for draining wash water in the cavity, comprising:
storing means storing a first sequence having a first drainage operation and a second sequence having a second drainage operation, the first drainage operation being different from the second drainage operation;
means for outputting a signal representing a degree of dirt on the dishes; and
control means for controlling the drainage processes in the washing process and the rinsing process on the basis of the first sequence stored in the storing means in response to the application of a signal indicating that the degree of dirt on the dishes is relatively high from the outputting means, while controlling drainage processes in the washing process and the rinsing process on the basis of the second sequence stored in the storing means in response to the application of a signal indicating that the degree of dirt on the dishes is relatively low from the outputting means.

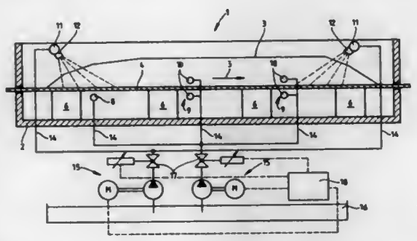
11. A method for cleaning dishes in a dish washing machine having a cavity to contain dishes and having a washing process for washing the dishes in the cavity and a rinsing process for rinsing the dishes in the cavity, each washing process and rinsing process having a drainage process for draining wash water in the cavity, and the dish washing machine further including means for storing both a first sequence having a first drainage operation and a second sequence having a second drainage operation with the first drainage operation being different from the second drainage operation, the method comprising:
activating a means for outputting a signal representing the degree of dirt on the dishes as well as a means for controlling, which means for controlling controls the drainage processes in the washing process and the rinsing process on the basis of the first sequence stored in the storing means in response to the application of a signal indicating that the degree of dirt on the dishes is relatively high from the outputting means, and controls drainage processes in the washing process and the rinsing process on the basis of the second sequence stored in the storing means in response to the application of a signal indicating that the degree of dirt on the dishes is relatively low from the outputting means.

5,545,260

PICKLING INSTALLATION AND METHOD FOR OPERATING THIS PICKLING INSTALLATION

Horst Gärtner, Düsseldorf; Fredrich Hollmann, Grevenbroich; Rafael Rituper, Ötzingen, and Bodo Block, Rösrath, all of, Germany, assignors to SMS Schloemann-Siemag AG, Düsseldorf, and Keramchemie GmbH, Siershahn, both of, Germany

Filed Dec. 3, 1993, Ser. No. 161,838
Claims priority, application Germany, Dec. 3, 1992, 42 40 572.6
Int. Cl.[6] C23G *1/02*
U.S. Cl. 134—41 **6 Claims**



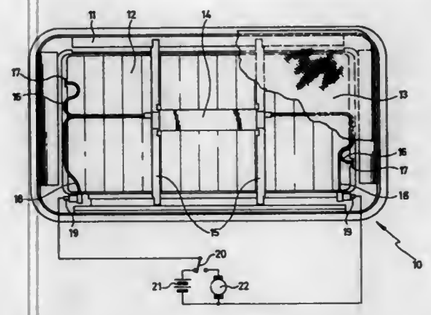
1. A method of operating a pickling installation for pickling rolled strips, comprising the steps of:
providing several consecutively arranged basins filled with pickling agent containing acid;
passing said strip through said basins;
providing injection nozzles at, at least, side of said basin;
injecting a pickling agent containing acid through said injection nozzles; and
variably actuating said injection nozzles for varying a quantity of the pickling agent and a nozzle exit velocity of the pickling agent, in order to achieve an optimum swirling on upper and lower sides of a strip to be pickled.

5,545,261

SOLAR ROOF FOR MOTOR VEHICLES

Thomas Ganz, Stockdorf; Berthold Lutz, Unterbachern; Bernhard Liedl, Munich, and Alfons Weissbrich, Gauting, all of, Germany, assignors to Webasto Karosseriesysteme GmbH, Germany

Filed May 31, 1995, Ser. No. 455,854
Claims priority, application Germany, Jun. 1, 1994, 44 19 177.4
Int. Cl.[6] H01L *31/048*; B60J *7/043*
U.S. Cl. 136—251 **8 Claims**



1. A solar roof for motor vehicles comprising a movable roof panel, solar generator carried by said roof panel and composed of solar cells for supplying power to at least one of a power consumer and a battery, and a D.C. converter for impedance matching between the solar generator and the at least one of the power consumer and the battery; wherein the D.C. converter is a flat module and is integrated into the movable roof panel.

5,545,262

METHOD OF PREPARING A METAL SUBSTRATE OF IMPROVED SURFACE MORPHOLOGY

Kenneth L. Hardee, Middlefield; Lyne M. Ernes, Willoughby; Richard C. Carlson, Euclid, all of Ohio, and David E. Thomas, Northbridge, Mass., assignors to ELTECH Systems Corporation, Chardon, Ohio

Division of Ser. No. 132,975, Oct. 7, 1993, Pat. No. 5,366,598, which is a continuation of Ser. No. 686,963, Apr. 18, 1991, Pat. No. 5,262,040, which is a continuation-in-part of Ser. No. 374,429, Jun. 30, 1989, abandoned. This application Nov. 16, 1994, Ser. No. 341,981
Int. Cl.[6] C21D *1/26*; C22F *1/02*
U.S. Cl. 148—527 **7 Claims**

1. The method of preparing an electrode having a coating adhered to a metal substrate surface of an impure metal that has enhanced adhesion for said coating on said surface, which method consists essentially of:
subjecting said metal substrate surface to air, vacuum or inert gas elevated temperature annealing at a temperature within the range from at least about 500° C. to about 800° C. for a time from about 15 minutes to four hours to provide intergranular impurities in said metal, including intergranular impurities at said surface of said metal;
cooling the resulting annealed surface;
etching intergranularly said surface at an elevated temperature and with a strong acid or strong caustic etchant to an average roughened surface of at least about 250 microinches and an average surface peaks per inch of at least about 40, both as measured by profilometer with said peaks per inch being basis a lower profilometer threshold limit of 300 microinches and an upper profilometer threshold limit of 400 microinches;
while maintaining said surface at least substantially free from deleterious effects of mechanical surface treatment; and
coating said surface following intergranular etching.

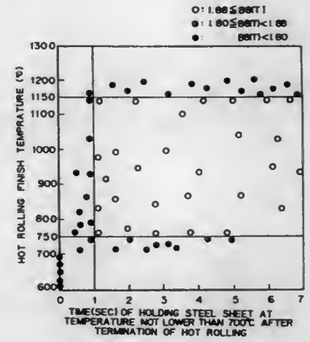
5,545,263

PROCESS FOR PRODUCTION OF GRAIN ORIENTED ELECTRICAL STEEL SHEET HAVING SUPERIOR MAGNETIC PROPERTIES

Yasunari Yoshitomi, Kitakyushu; Takehide Senuma, Sagamihara; Yozo Suga, and Nobuyuki Takahashi, both of Kitakyushu, all of, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 13,129, Feb. 3, 1993, abandoned, which is a continuation of Ser. No. 833,805, Feb. 10, 1992, abandoned, which is a continuation of Ser. No. 503,733, Apr. 3, 1990, abandoned. This application May 20, 1994, Ser. No. 246,918
Claims priority, application Japan, Apr. 4, 1989, 1-85540; Apr. 4, 1989, 1-85541
Int. Cl.[6] C21D *8/12*
U.S. Cl. 148—111 **4 Claims**

1. A process for the production of a grain oriented electrical steel sheet having superior magnetic properties, which comprises hot-rolling a slab of a silicon steel comprising 0.021 to 0.100% by weight of C, 2.5 to 4.5% by weight of Si and an inhibitor component, with the balance consisting of Fe and unavoidable impurities, wherein said hot rolling comprises a rough rolling and a finish rolling having at least three passes with a hot rolling finish temperature of 750° to 1150° C., holding the hot rolled sheet at a holding temperature which is lower than the hot rolling finish temperature but which is not lower than a temperature of about 35° C. lower than the hot rolling finish temperature for at least 1 second after termination of the hot rolling, wherein recrystallization takes place during said holding step, followed by winding of the hot rolled sheet at a winding temperature of less than 700° C., and successively subjecting the hot rolled steel sheet, without an annealing step of the hot rolled sheet after said winding step and prior to cold rolling, to cold rolling at a reduction ratio of at least 80%, decarburization annealing and final finish annealing to result in an electrical steel sheet having a magnetic flux density of 1.88 T or more.



5,545,264
METHOD OF AND APPARATUS FOR PROCESSING METAL MATERIAL

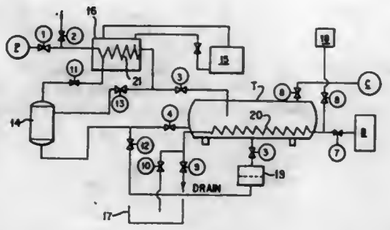
Yotaro Hashimoto, Shiga-ken, Japan, assignor to Eiwa Co., Ltd., Kurita-gun, Japan

Filed Feb. 2, 1995, Ser. No. 383,484

Claims priority, application Japan, Apr. 26, 1994, 6-088915; Dec. 9, 1994, 6-306236; Dec. 15, 1994, 6-311923; Jan. 10, 1995, 7-001624

Int. Cl.[6] C23C *8/18*

U.S. Cl. 148—283 **20 Claims**



1. A method of processing a metal, comprising the steps of:

disposing said metal in a hermetically sealed processing tank, wherein said metal has a surface and said metal comprises crystal cells having open areas;

disposing a mixture solution including a chlorine hydrocarbon solution and a water solution in said hermetically sealed processing tank; and

generating a gas including a chlorine hydrocarbon gas and steam from said mixture solution such that said gas permeates into said open areas of said crystal cells of said metal so as to dissolve and remove impurities in said open areas, whereby an indissoluble film of highly anticorrosive rust is formed on said surface of said metal.

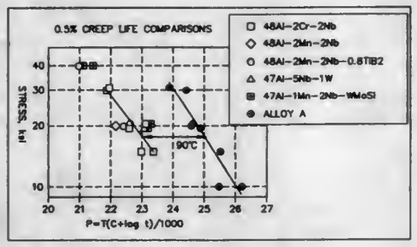
5,545,265
TITANIUM ALUMINIDE ALLOY WITH IMPROVED TEMPERATURE CAPABILITY

Curtiss M. Austin, Loveland; Thomas J. Kelly, Cincinnati, both of Ohio, and Shyh-Chin Huang, Lapham, N.Y., assignors to General Electric Company, Cincinnati, Ohio

Filed Mar. 16, 1995, Ser. No. 405,318

Int. Cl.[6] C22C *14/00*

U.S. Cl. 148—421 **15 Claims**



1. A gamma titanium aluminide intermetallic alloy consisting essentially of, in atomic percent:

about 45 to about 49 percent aluminum;

about 1.2 to about 2.3 percent chromium;

about 0.5 to 0.9 percent niobium; and

about 1 to about 2.3 percent tantalum;

the balance being essentially titanium and incidental impurities;

wherein (Cr+Nb+Ta) is at least about 3.5 percent but not more than about 4.9 percent.

5,545,266
RARE EARTH MAGNETS AND ALLOY POWDER FOR RARE EARTH MAGNETS AND THEIR MANUFACTURING METHODS

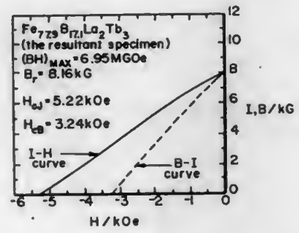
Satoshi Hirosawa, Otsu, and Hirokazu Kanekiyo, Muko, both of, Japan, assignors to Sumitomo Special Metals Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 974,235, Nov. 10, 1992, abandoned. This application Nov. 30, 1994, Ser. No. 351,184

Claims priority, application Japan, Nov. 11, 1991, 3-323779; Mar. 19, 1992, 4-93780; Apr. 16, 1992, 4-124180; Jun. 8, 1992, 4-174767; Jun. 9, 1992, 4-176199

Int. Cl.[6] H01F *1/04*

U.S. Cl. 148—302 **12 Claims**



3. A rare earth bonded magnet comprising a mixture of a rare earth magnet alloy powder and a bonding resin, said rare earth magnet alloy powder having a compositional formula of

$$Fe_{100-x-y-z}Co_xB_yR_zM_w$$

wherein R is at least one of Pr and Nd, M is one or two of Al, Si, Cu, Ga, Ag, and Au, symbols x, y, z and w each indicating a limit of composition range and falling within the ranges of $0.05 \leqq x \leqq 15$ at. %, $16 \leqq y \leqq 22$ at. % $3 \leqq z \leqq 6$ at. %, and $0.1 \leqq w \leqq 3$ at. %, and said rare earth magnet alloy powder including an iron rich boron compound phase having a body-centered tetragonal Fe_3b crystalline structure and a phase of $Nd_2Fe_{14}B$ crystalline structure and said rare earth powder comprising a crystalline aggregate having an average crystalline particle diameter of 5 nm to 100 nm, said crystallite aggregate having been formed by rapidly solidifying a molten alloy by a melt quenching or gas atomizing method to cause substantially more than 90% of the solidified alloy to be amorphous, and heat-treating the rapidly solidifying alloy by raising its temperature from 500° C. at a heating rate of 1°–15° C./min and maintaining a temperature of from 550° C. to 700° C. for a period of from 5 minutes to 360 minutes, the rare earth magnet of which displays magnetic properties of iHc≧3 kOe, Br≧9 kG and (BH) Max≧10 MGOe.

5,545,267
STEEL PRODUCT FOR INDUCTION-HARDENED SHAFT COMPONENT AND SHAFT COMPONENT USING THE SAME

Tatsuro Ochi, and Yoshiro Koyasu, both of Muroran, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

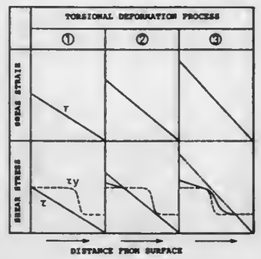
PCT No. PCT/JP94/00403, § 371 Date Nov. 10, 1994, § 102(e) Date Nov. 10, 1994, PCT Pub. No. WO94/20645, PCT Pub. Date Sep. 15, 1994

PCT Filed Mar. 14, 1994, Ser. No. 335,773

Claims priority, application Japan, Mar. 12, 1993, 5-052598; Apr. 20, 1993, 5-093397

Int. Cl.[6] C22C *38/22*

U.S. Cl. 148—335 **12 Claims**



1. A steel product for an induction-hardened shaft component having an excellent torsional strength of not less than 160 kqf/mm^2, having a chemical composition comprising, by weight:

C: 0.35 to 0.70%,

Si: not less than 0.72 and up to 2.5%,

Mn: 0.2 to 1.5%,

Cr: 0.20 to 1.5%,

Mo: 0.05 to 0.5%,

S: more than 0.01 to 0.15%,

Al: 0.015 to 0.05%, and

N: 0.002 to 0.020%,

and further comprising P, Cu and O in respective contents limited to

P: not more than 0.015%,

Cu: not more than 0.05%, and

O: not more than 0 002%,

with the balance consisting of iron and unavoidable impurities.

5,545,268
SURFACE TREATED METAL MEMBER EXCELLENT IN WEAR RESISTANCE AND ITS MANUFACTURING METHOD

Takashi Yashiki; Yasunori Wada; Hidenori Nishimoto, all of Kobe; Yoshinori Terada, Tokyo; Takenori Nakayama, Kobe, and Tadashi Abumiya, Tokyo, all of, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

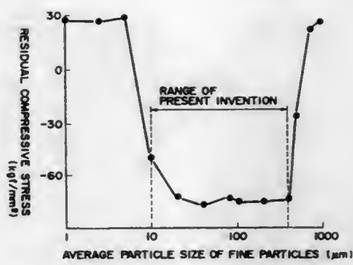
Filed May 23, 1995, Ser. No. 448,026

Claims priority, application Japan, May 25, 1994, 6-111395; Dec. 28, 1994, 6-328540

Int. Cl.[6] C25D *5/50*

U.S. Cl. 148—518 **3 Claims**

1. A method of manufacturing a surface treated metal member wherein said surface treated metal member has an excellent resistance against sliding wear, rolling wear, line wear and wear fatigue, comprising the steps of: applying Ni—P electroplating on the surface of a metal base member to form an electroplate surface and heat-treating said metal base member for 0.1–1 hr at 500°–600° C.; and



shot peening, on said electroplated surface of said metal base member, fine particles without sharp corners and having an average particle size of 10–400 μm.

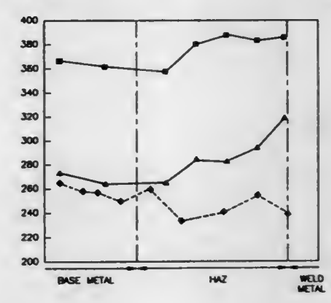
5,545,269
METHOD FOR PRODUCING ULTRA HIGH STRENGTH, SECONDARY HARDENING STEELS WITH SUPERIOR TOUGHNESS AND WELDABILITY

Jayoung Koo, and Michael J. Luton, both of Bridgewater, N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Dec. 6, 1994, Ser. No. 349,857

Int. Cl.[6] C21D *8/02;8/10*

U.S. Cl. 148—654 **10 Claims**



1. A method for producing high strength, low alloy steel of comprising primary martensite/bainite microstructure which comprises:

(a) beating a steel billet to a temperature sufficient to dissolve substantially all vanadium carbonitrides and niobium carbonitrides,

(b) reducing the billet to form plate in one or more passes in a first temperature range in which austenite recrystallizes,

(c) finish rolling the plate in one or more passes in a second temperature range below the austenite recrystallization temperature and above the A_{r3} transformation point,

(d) water cooling the finished rolled plate at a rate of at least 30° C./second from a temperature above the A_{r3} to a temperature ≦400° C., and

(e) tempering the water cooled plate at a temperature no higher than the A_{c1} transformation point for a period of time sufficient to cause precipitation of ϵ-copper and the carbides or carbonitrides of vanadium, niobium and molybdenum.

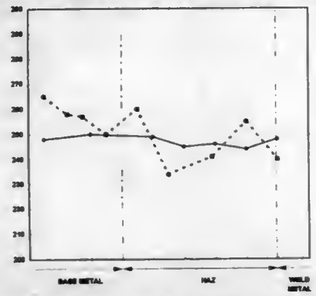
5,545,270

METHOD OF PRODUCING HIGH STRENGTH DUAL PHASE STEEL PLATE WITH SUPERIOR TOUGHNESS AND WELDABILITY

Jayoung Koo, and Michael J. Luton, both of Bridgewater, N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Dec. 6, 1994, Ser. No. 349,860
Int. Cl.[6] C21D *8/02;8/10*
U.S. Cl. 148—654 **15 Claims**

1. A method for preparing a high strength dual phase steel



comprising a ferrite phase and about 40–80% of a martensite/bainite phase of which bainite is no more than 50 vol % which comprises:

(a) heating a steel billet to a temperature sufficient to dissolve substantially all vanadium carbonitrides and niobium carbonitrides;

(b) rolling the billet, and forming plate, in one or more passes to a first reduction in a temperature range in which austenite recrystallizes;

(c) rolling the plate in one or more passes to a second reduction in a temperature range below the austenite recrystallization temperature and above the Ar_3 transformation point;

(d) cooling the further reduced plate to a temperature between the Ar_3 and Ar_1 transformation points;

(e) finish rolling the cooled plate in one or more passes in a third rolling reduction at a temperature between the Ar_1 and Ar_3 transformation points;

(f) water cooling at a rate of at least 25° C. per second the finished rolled plate to a temperature ≦400° C. so as to produce retained austenite at the lath boundaries of the martensite.

5,545,271

METHOD OF FABRICATING A TITANIUM ALLOY PART, A TITANIUM ALLOY PART FABRICATED IN THIS WAY, AND A SEMI-FINISHED TITANIUM ALLOY PRODUCT

André Coulon, Bessoncourt, France, assignor to GEC Alsthom Electromecanique SA, Paris, France

Filed Jan. 24, 1995, Ser. No. 377,433
Claims priority, application France, Jan. 25, 1994, 94 00766
Int. Cl.[6] C22F *1/18*
U.S. Cl. 148—671 **4 Claims**

1. A method of fabricating a titanium alloy part, in which method a semi-finished product made of a metastable beta titanium alloy is taken, and

it is subjected to solution treatment at a temperature in the range 800° C. to 900° C.;

it is then cooled; and

ageing treatment is then applied so as to stabilize its structure;

and in which method, prior to the solution treatment, or between the solution treatment and the ageing treatment, or else after the ageing treatment, the product is forged, stamped, or machined so as to give it the final shape for the part;

wherein the semi-finished product contains oxygen in the range 0.4% to 0.7% by weight, and nitrogen in the range 0.1% to 0.2% by weight, the total content of oxygen plus nitrogen not exceeding 0.8% by weight, and the cooling is very rapid, taking place at a speed of at least 200° C. per hour, the ageing treatment being performed at a temperature in the range 550° C. to 650° C. for a time, in the range 10 minutes to 2 hours, that is long enough to transform substantially half of the beta titanium into alpha prime titanium.

5,545,272

THERMALLY STABLE GAS GENERATING COMPOSITION

Donald R. Poole, South Colby; Gary F. Holland, Snohomish; Nicholas A. Wolf, Renton, and Michael A. Wilson, Bothell, all of Wash., assignors to Olin Corporation, Redmond, Wash.

Continuation of Ser. No. 398,020, Mar. 3, 1995, abandoned. This application Aug. 21, 1995, Ser. No. 517,564
Int. Cl.[6] C06B *31/56*
U.S. Cl. 149—48 **14 Claims**

1. A gas generating composition consisting essentially of:

from about 35% to about 55% by weight nitroguanidine; and

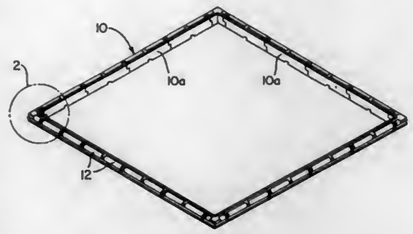
from about 45% to about 65% by weight phase stabilized ammonium nitrate, said gas generating composition having a melting point in excess of 100° C. and capable of deflagration when ignited.

5,545,273

HYBRID FLEXIBLE AND RIGID CERAMIC INSULATION

Daniel J. Rasky, Palo Alto, and Demetrius A. Kourtides, Gilroy, both of Calif., assignors to The United States of America as Represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 18, 1995, Ser. No. 516,842
Int. Cl.[6] B31B *1/60*
U.S. Cl. 156—60 **19 Claims**



1. A method for sealing the edges of a flexible ceramic insulation member, said insulation member comprising inner and outer covering layers and an intermediate insulation layer wherein the covering layers extend beyond the edges of the insulation layer, said method comprising the steps of:

providing a rigid, segmented, ceramic frame having top, bottom and outer edge surfaces;

positioning the frame around the edges of the insulation layer such that the portion of the outer covering layer which extends beyond the insulation layer overlaps the top surface of the frame and the portion of the inner covering layer which extends beyond the insulation layer overlaps the bottom surface of the frame; and

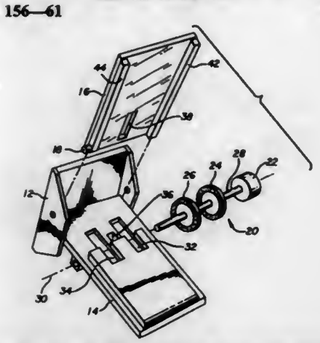
affixing the portions of the covering layers of the insulation member which overlap the frame to the rigid ceramic frame.

5,545,274

ARTIFICIAL FLOWER MAKING APPARATUS, METHOD OF MAKING THE SAME AND ARTIFICIAL FLOWER MADE THEREBY

Susannah Rosenthal, 606 Ardmore, Manhattan Beach, Calif. 90266

Filed Apr. 29, 1994, Ser. No. 236,363
Int. Cl.[6] A41G *1/02*
U.S. Cl. 156—61 **9 Claims**



1. A method of making an artificial flower comprising the steps of:

providing a sheet of colorful plastic material;

compressing the sheet in one direction;

looping a tie around the middle of the compressed sheet;

tightening the tie to securely hold the compressed plastic sheet at or near the middle; and

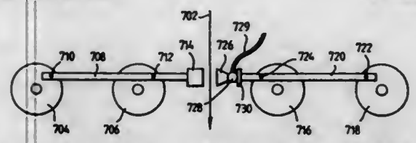
spreading out the ends of the plastic sheet to form a generally circular flower petal appearance.

5,545,275

METHOD FOR WELDING SEAMS IN DISPOSABLE GARMENTS

Robert M. Herrin, 5935 Groveline Dr., Orlando, Fla. 32810, and John M. Tharpe, 2606 Northgate, Albany, Ga. 31707

Continuation-in-part of Ser. No. 884,804, May 19, 1992, abandoned, which is a continuation-in-part of Ser. No. 442,215, Nov. 28, 1989, Pat. No. 5,308,345. This application Jun. 9, 1994, Ser. No. 257,768
Int. Cl.[6] A61F *13/15;* B29C *65/08*
U.S. Cl. 156—731 **6 Claims**



1. A method for welding together with a movable ultrasonic welder opposing moving panels which are to be joined together to form a disposable garment in a direction of manufacture, at least one of which panels contains a plastic material capable of being rendered amorphous with heat, the welding method comprising the steps of:

providing an ultrasonic welder movable along a portion of the direction of manufacture;

bringing the two panels together and pressurizing at least a portion of each panel into contact with the other panel using the ultrasonic welder during a predetermined period of time;

carrying out the pressurizing step during the predetermined period of time while the panels and the ultrasonic welder are moving continuously together along the direction of manufacture;

heating the two panel portions using the moving ultrasonic welder to heat the plastic material with ultrasonic energy during a first segment of the predetermined period of time with sufficient heat and for a sufficient duration to render the plastic amorphous;

maintaining pressurization using the ultrasonic welder while the ultrasonic welder continues to move together with the panels during a second segment of the predetermined period of time without heat sufficient to permit the plastic material to solidify; then

withdrawing the pressurization of the ultrasonic welder from the welded panels; and wherein

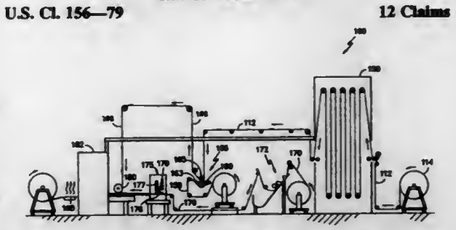
the second segment of the predetermined period of time is substantially greater than the first segment.

5,545,276

PROCESS FOR FORMING CUSHION BACKED CARPET

Kenneth B. Higgins, LaGrange, Ga., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Mar. 3, 1994, Ser. No. 205,834
Int. Cl.[6] B32B *5/18*
U.S. Cl. 156—79 **12 Claims**



1. A process for the formation of a floor carpet tile including in situ formation of a cushioned composite within such floor carpet tile whereby the tile produced is suitable for disposition as discret modular units across a flooring surface, the process comprising the steps of:

(a) adhesively bonding a layer of glass reinforcement material to the base of a primary carpet fabric to form a laminate composite;

(b) placing a layer of wet polyurethane-forming composition into direct contacting relation with a layer of nonwoven backing material;

(c) placing the laminate composite formed in step "a" into direct contacting relation with said layer of wet polyurethane-forming composition on the side of said layer of wet polyurethane-forming composition not contacted by said nonwoven backing;

(d) heat curing said wet polyurethane-forming composition subsequent to performance of steps "a", "b", and "c" such that a layer of polyurethane foam is bonded between said laminate composite and said nonwoven backing to form a stable carpet construction; and

(e) cutting carpet tiles from the carpet construction formed in step "d".

5,545,277

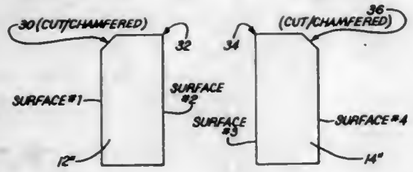
PLATE GLASS EDGE STRENGTH

Amin H. Hashemi, Farmington Hills, and David N. Heilman, Monroe, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 3, 1994, Ser. No. 317,046
Int. Cl.[6] B32B *17/10;31/12;33/00;* C03B *23/025*
U.S. Cl. 156—106 **10 Claims**

1. A process of forming a first plate glass template and a second plate glass template each having a smooth major surface and a rough major surface, said process comprising the steps of:

forming a first plate glass template by: scribing an indentation into the smooth major surface of a glass sheet in a desired pattern, removing the glass outside said scribed pattern to



obtain said first plate glass template having a peripheral edge, machining the peripheral edge of said first plate glass template to define a chamfer coextensive with and removing said indentation;

forming a second plate glass template by: scribing an indentation into the smooth major surface of a glass sheet in a pattern substantially identical to that of said first template, removing the glass outside said scribed pattern to obtain said second plate glass template having a peripheral edge, machining the peripheral edge of said second plate glass template to define a chamfer coextensive with and removing said indentation; and

joining said first and second plate glass templates with said rough surfaces in facing retention.

5,545,278

METHOD FOR INCREASING FIBER STRENGTH TRANSLATION IN COMPOSITION PRESSURE VESSELS USING MATRIX RESIN FORMULATIONS CONTAINING ANHYDRIDE CURING AGENTS AND SURFACE-ACTIVE AGENTS

Cheng-Chi Chen, Arlington, Tex.; Ben A. Lloyd, Brigham City, Utah; Neal A. Mumford, Brigham City, Utah, and Rolf M. Johns, Brigham City, Utah, assignors to Thiokol Corporation, Ogden, Utah

Continuation of Ser. No. 81,839, Jun. 23, 1993, Pat. No. 5,356,499, which is a continuation of Ser. No. 426,890, Oct. 25, 1989, abandoned. This application Feb. 18, 1994, Ser. No. 198,615

Int. Cl.[6] B65H *81/00*

U.S. Cl. 156—175 **14 Claims**

1. A method for improving composite pressure vessel strength comprising:

(a) providing a chemorheologically viscosity tailored resin formulation comprising a curable matrix resin and an effective amount of a reactive curing agent reactive at room temperature and a latent curing agent substantially nonreactive at room temperature but activated upon heating or radiation, said reactive curing agent including at least one anhydride functional group;

(b) adding to said resin formulation an amount of surface-active agent sufficient to permit interaction between a fiber or filament and the resin formulation such that the pressure vessel tensile strength is enhanced and variation in performance is reduced;

(c) impregnating a fiber or filament strand or tow with the mixture of resin formulation and surface-active agent;

(d) allowing the reactive curing agent to partially cure the resin formulation and increase its viscosity, thereby forming a prepreg composition;

(e) winding a pressure vessel from said strand or tow prepreg composition; and

(f) activating the latent curing agent to further cure the resin formulation and form a composite pressure vessel.

5,545,279

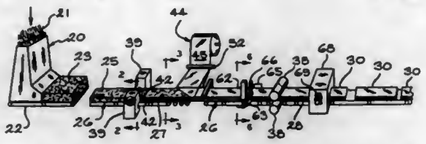
METHOD OF MAKING AN INSULATION ASSEMBLY

Herbert L. Hall, 1371 Pleasant Valley Rd., and James W. Scott, 1738 Stonewall Dr., both of Newark, Ohio 43055

Continuation of Ser. No. 998,340, Dec. 30, 1992, abandoned. This application Dec. 2, 1994, Ser. No. 348,678

Int. Cl.[6] B32B *31/08;31/18*

U.S. Cl. 156—201 **8 Claims**



1. A method for making mineral fiber insulation assemblies comprising:

moving a mineral fiber pack along a predetermined pathway, said mineral fiber pack having opposed major surfaces and opposed side surfaces,

folding a continuous sheet of polymer film into a C fold having a first leg including a first edge and a second leg including a second edge,

moving said continuous C folded polymer sheet in a direction generally perpendicular to said predetermined path,

inverting said first and second legs of said continuous C folded polymer sheet,

supplying said continuous C folded polymer sheet along said predetermined pathway wherein said mineral fiber pack is received between the inverted first and second legs of said continuous C folded polymer sheet,

covering said opposed major surfaces and said opposed side surfaces of said mineral fiber pack with said continuous C folded polymer sheet,

attaching said continuous C folded polymer sheet to said mineral fiber pack,

providing a plurality of openings from the group consisting of vertically oriented slits, C shaped openings and triangular openings in said continuous C folded polymer sheet adjacent at least one of said side surfaces, and

cutting said mineral fiber pack covered with said continuous C folded polymer sheet in a direction generally perpendicular to said predetermined pathway to form said insulation assemblies.

5,545,280

METHOD OF SELECTIVELY APPLYING ADHESIVE TO PROTRUSIONS ON A SUBSTRATE

Robert P. Wenz, Cottage Grove, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 121,044, Sep. 13, 1993, abandoned, which is a division of Ser. No. 821,630, Jan. 16, 1992, Pat. No. 5,268,782. This application Jun. 7, 1995, Ser. No. 485,649

Int. Cl.[6] B05D *5/10;* **B32B** *7/14*

U.S. Cl. 156—234 **7 Claims**

1. A method of selectively applying adhesive to a polymeric substrate having a microstructure profile on at least one major surface of the substrate, said profile comprising a plurality of protrusions having tops which define a plane above and parallel to said substrate, the method comprising the steps of:

applying a layer of transferable adhesive to a flexible, polyimide carrier;

drying said adhesive layer;

pressing said microstructure profile on said substrate onto said adhesive layer so that said adhesive layer contacts said tops of said protrusions but does not contact portions of said substrate between said protrusions; and

separating said carrier and said substrate, thereby tacking off those portions of said adhesive layer that contact said protrusions from said carrier and adhering said portions of said adhesive layer to said tops of said protrusions.

5,545,281

METHOD OF BONDING CIRCUIT BOARDS

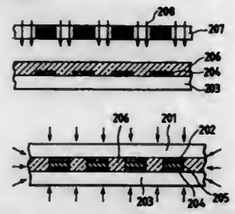
Koji Matsui, Tokyo; Mitsuru Kimura, Tokyo; Kazuaki Utsumi, Tokyo; Eiichi Ogawa, Kanagawa; Hiroshi Komano, Kanagawa, and Toshimi Aoyama, Kanagawa, all of, Japan, assignors to NEC Corporation, Tokyo, and Tokyo Ohka Kogyo Co., Ltd., Kanagawa, both of, Japan

Continuation of Ser. No. 978,720, Nov. 19, 1992, Pat. No. 5,318,651. This application Mar. 25, 1994, Ser. No. 217,973

Claims priority, application Japan, Nov. 27, 1991, 3-355398; Jun. 29, 1992, 4-196255

Int. Cl.[6] B32B *31/12;31/20;31/28;* **H05K** *3/30*

U.S. Cl. 156—273.7 **11 Claims**



1. An integrated circuit connecting method that comprises connecting electrode pads on an integrated circuit device to electrode terminals on a base with metal bumps interposed, said electrode terminals being formed in registry with said electrode pads, the method comprising the steps of:

forming metal bumps on a surface of at least one of the electrode pads and the electrode terminals;

covering the surface on at least one of the integrated circuit device side and the base side with a resin that cures upon exposure to active energy rays;

patterning said resin to strip selectively the coating of said resin over one of the electrode pads and the electrode terminals;

bringing the electrode pads and the electrode terminals into a face-to-face relationship, allowing the metal bumps to contact one of the opposing electrode pads and electrode terminals, performing thermocompressing so that the resin coating will adhere closely to one of the integrated circuit device and the base while, at the same time, the electrode pads are connected to the electrode terminals with the metal bumps interposed; and

performing at least one of heat treatment and exposure to active energy rays.

5,545,282

METHOD AND A DEVICE OF STRIPPING FOIL CUTTINGS

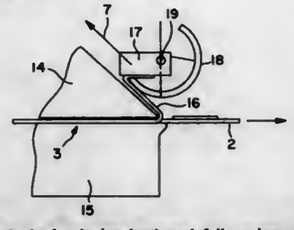
Peter Bechmann, Malensteinweg 2, D-82487, Oberammergau, Germany

Filed Sep. 21, 1994, Ser. No. 309,768

Claims priority, application Germany, Sep. 24, 1993, 43 32 564.5

Int. Cl.[6] B32B *35/00*

U.S. Cl. 156—344 **11 Claims**



1. A method of stripping laminated foil cuttings formed with incisions in a cover foil which is adhered to a carrier paper by means of a self-adhesive bottom layer, said incisions forming an advertising print designed for being applied in a self-adhesive manner to an advertising space, said advertising print remaining on an upper surface of said carrier paper when a foil remainder of said cover foil is removed from said carrier paper of said foil cuttings, the method comprising the steps of:

transporting said foil cuttings in a predetermined transportation direction;

providing a severance cut extending at right angles to the transportation direction, said severance cut being formed a) from the lower surface of said carrier paper with a depth of cut reaching at a maximum a scratching of the lower surface of said cover foil and b) into said carrier paper at a forward edge portion of each foil cutting at a predetermined distance from the forward edge thereof;

clamping with transfer means said forward edge portion of each foil cutting, which is provided with said severance cut on said carrier paper and arranging for further transportation of said transfer means at a deflection edge cooperating with said cover foil along a transfer direction which is branched off from the transportation direction;

pulling off from said carrier paper the foil remainder at said deflection edge for being transferred to a remainder roller arranged downstream in the transfer direction, while said carrier paper with the advertising print remaining on its upper surface is removed in the predetermined transportation direction.

5,545,283

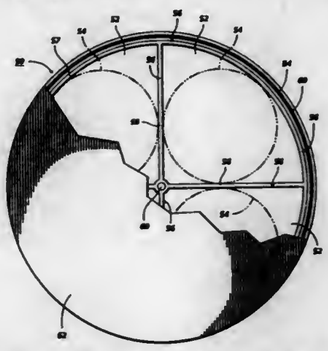
APPARATUS FOR BONDING WAFER PAIRS

David J. Collins; Daniel E. Kuhman, both of Fairport, N.Y., and Herman A. Hermanson, Penfield, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 118,532, Sep. 9, 1993, abandoned. This application Feb. 8, 1995, Ser. No. 385,234

Int. Cl.[6] B32B *31/20*

U.S. Cl. 156—382 **16 Claims**



1. An apparatus for bonding a plurality of component pairs, comprising:

a support member including at least one channel, adapted to form a vacuum and dividing said support member into a plurality of substantially planar surface regions, each of said plurality of regions being adapted to support at least one of the plurality of component pairs;

a flexible member having a first surface and a second surface, defining with said support member a plurality of vacuum chambers, each of the vacuum chambers being defined with one of said plurality of substantially planar regions, said first surface cooperating with said support member to form means for holding the plurality of component pairs in position without the application of a mechanical holding means to said second surface;

a heater for heating the plurality of component pairs; and

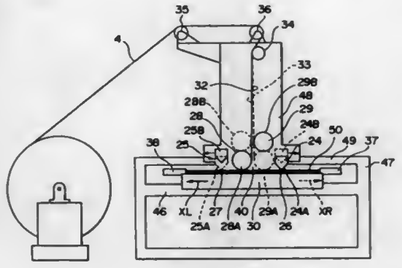
a positive gas pressure member defining a positive gas pressure chamber having at least said support member and said flexible member disposed therein, said positive gas pressure member increasing the pressure in the positive gas pressure chamber to effect bonding of the plurality of component pairs.

5,545,284

APPARATUS FOR MANUFACTURING LAMINATE FOR HONEYCOMB STRUCTURE

Noriyasu Miura, Tomakomai, Japan, assignor to Oji Kenzai Kogyo Co., Ltd., Hokkaido, Japan

Division of Ser. No. 072,395, Jun. 7, 1993, Pat. No. 5,395,465.
This application Oct. 28, 1994, Ser. No. 330,556
Claims priority, application Japan, Jun. 9, 1992, 4-174855
Int. Cl.[6] B32B 31/00
U.S. Cl. 156—474 3 Claims



1. An apparatus for manufacturing laminate for honeycomb structure, comprising:

a roll of a material strip, a unit for continuously feeding the material strip, said unit being capable of being reciprocated by a predetermined stroke, and a layering table capable of being reciprocated in a direction opposite of said unit by the predetermined stroke,

said unit including a material strip feeding orifice, first and second adhesive agent applying units for applying a plurality of first stripes of an adhesive agent and second stripes of an adhesive agent displaced transversely by a half pitch from the first stripes of the adhesive agent to either an uppermost surface of a layered strip on said layering table or a lower surface of the material strip being fed, and first and second pressing rolls corresponding to each of said adhesive agent applying units,

said first adhesive applying unit and said first pressing roll positioned at one side of the material strip being fed through the material strip feeding orifice and said second adhesive applying unit and said second pressing roll positioned at the opposite side of the material strip being fed through the material strip feeding orifice,

said pressing rolls being disposed in the unit so as to press down the material strip on the layering table, and

said first adhesive agent applying unit and said first pressing roll being capable of movement between an operating position and an inoperative position, said second adhesive agent applying unit and said second pressing roll being capable of movement between an operating position and an inoperative position,

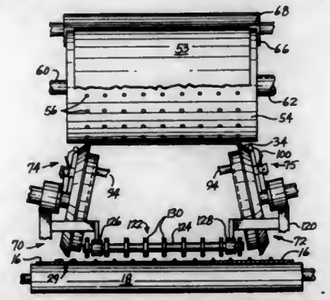
when said layering table is moved forwardly, said second adhesive agent applying unit is capable of positioning at the operating position so as to apply the plurality of second stripes, said second pressing roll being capable of positioning so as to press the material strip being fed, and said first adhesive agent applying unit and said first pressing roll being capable of positioning at the inoperative position.

5,545,285

WAIST ELASTIC APPLICATOR FOR DIAPER OR SIMILAR ARTICLE

Nordahl K. Johnson, 13812-112th Ave. Ct. East, Puyallup, Wash. 98374

Continuation of Ser. No. 41,889, Apr. 2, 1993, abandoned, which is a continuation of Ser. No. 164,752, Mar. 7, 1988, abandoned. This application Nov. 16, 1994, Ser. No. 341,304
Int. Cl.[6] B32B 31/00
U.S. Cl. 156—496 8 Claims



1. Apparatus for applying strips of tensioned elastic material transversely to a moving sheet or web which comprises:

a pair of spaced-apart opposed rotary elastic transfer mechanisms located in mirror image relationship transversely across the moving web so as to straddle the web, said transfer mechanisms having rotational axes and distal portions spaced substantially equal distances outwardly from said axes, with the distal portions of the opposed transfer mechanisms positioned in mirror image to each other, said transfer mechanisms lying in planes which, when projected onto the plane of the web, describe lines parallel to the longitudinal axis of the web, with the axes of the transfer mechanisms being located so that the distal portions at one point of rotation are adjacent and essentially tangent to the plane of the web,

said transfer mechanisms being inclined relative to each other so that the distance between their distal portions is greatest where they pass in rotation adjacent the web and is least where they are spaced the greatest distance from the web,

each transfer mechanism having an outer rim surface sloping radially toward its center of rotation and away from the other transfer mechanism,

supply means operable to provide an untensioned elastic strip to the transfer mechanisms adjacent the point of least distance therebetween, comprising a drum having its longitudinal axis normal to the longitudinal axis of the moving web and located so as to be in peripheral proximity to the transfer mechanisms at the point where the distance between them is least,

elastic strip supply means to provide a strip of elastic to the periphery of the drum at a region spaced from the transfer mechanisms,

holding means to retain the strip on the drum from the region of supply to the region of closest proximity to the transfer mechanisms and then release the strip to the transfer mechanisms,

drive means for rotating the drum at a speed essentially identical to that of the circumferential speed of the transfer mechanism and the linear speed of the moving web,

elastic strip retaining means associated with each transfer mechanism including clamping mechanism having a gripping portion spaced radially inwardly from the outer extremity of the distal portion of the transfer mechanism to grip a strip of elastic at the point of application and release it at the plane of the web after angular rotation of the mechanism, and

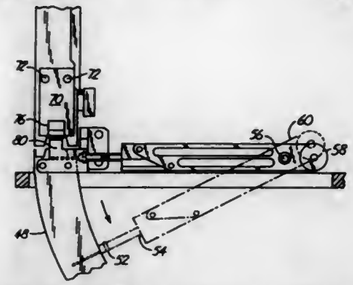
drive means for the transfer mechanisms to rotate them at a circumferential speed essentially equal to the linear speed of the moving web, so that a strip of elastic is stretched and tensioned between the point of application to the transfer mechanisms and the point of release at the point of the web.

5,545,286

ROTARY MAGAZINE SYSTEM FOR LABELER

Richard E. Schaupp, Modesto, Calif., assignor to Smyth Systems Company, St. Paul, Minn.

Filed Nov. 10, 1994, Ser. No. 377,297
Int. Cl.[6] B65C 9/00
U.S. Cl. 156—570 20 Claims



1. A device for supplying stacked labels to a labeling machine, comprising:

a cartridge for carrying a stack of labels;

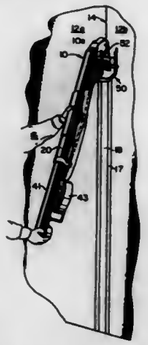
a chute, located below the cartridge, for receiving the stack of labels from the cartridge; and guide means comprising a lever arm assembly, comprising a lever arm pivot and counter balance weight for controlling a lower most label of the stack of labels while the stack is lowered from the cartridge into the chute.

5,545,287

FINISHING TOOL FOR COMPLETING A TAPED WALLBOARD JOINT

Carl A. Carlson, 2839 Eddington Ave., Bensalem, Pa. 19020, assignor to Carl A. Carlson, Bensalem, Pa.

Filed Jul. 27, 1994, Ser. No. 281,404
Int. Cl.[6] B44C 7/08
U.S. Cl. 156—575 10 Claims



1. An attachment tool for use with a tape applying tool for applying adhesive followed by tape over a joint in wallboard, and the like, so that the attachment tool will immediately cover the tape and finish the joint before the tape absorbs moisture from the adhesive and becomes wet, comprising:

a frame structure, including trowel means;

linkage means rotatably connected at one end of the linkage means to the frame structures and at the other end connectable to the tape applying tool by connection means permitting rotation about an axis parallel to the axis of the rotatable connection to the frame structure;

a roller for embedding tape into the adhesive rotatably supported on the frame to rotate about an axis parallel to the axis of the linkage means connection and positioned so that the trowel means is generally tangential to the roller where it embeds the tape, the roller projecting beyond the trowel into the tape, and so that the trowel immediately follows the roller relative to a direction of movement of the tape applying tool during application of tape and adhesive, for spreading the adhesive over the embedded tape; and

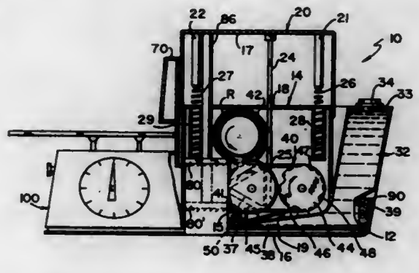
finishing means connected to the frame structure by flexible sheet means to follow the trowel means relative to a direction of movement of the tape applying tool during application of tape and adhesive, for further spreading the adhesive over the tape and leaving a smooth surface generally in the plane of the wallboard, whereby the flexible sheet means allows the finishing means to float relative to the frame structure.

5,545,288

STAMP DISPENSING AND ENVELOPE HANDLING DEVICE

Heriberto Canela, and Giovanni R. Rodriguez, both of 8027 W. 14th Ave., Hialeah, Fla. 33014

Filed Oct. 19, 1995, Ser. No. 545,474
Int. Cl.[6] B32B 31/00
U.S. Cl. 156—578 4 Claims



1. A device for dispensing moistened stamps from a web wherein contiguous individual stamps are separated by a plurality of perforations and individually affixed to an envelope that includes a flap, comprising:

a) housing means;

b) spring biased cover means mounted to said housing means and said spring biased cover means includes an internal surface and a first elongated member having first and second ends, said first end being mounted to said internal surface and said first elongated member adapted to move linearly and reciprocally inside said housing means;

c) driving wheel means rotatably mounted within said housing means and cooperatively engaged to said second end for transforming the reciprocal linear movement into rotational movement, and said driving wheel means further including cooperative surfaces with protrusions for cooperatively engaging said web;

d) belt member trained over said driving wheel means;

e) driven wheel means rotatably mounted within said housing means and driven by said driving wheel through said belt member;

f) blade means including a second elongated member rigidly mounted to said internal surface causing said blade means to move linearly and reciprocally in response to a user's action on said spring biased cover means; and

g) moistening pad means mounted within said housing means and including linkage means connected to said driven wheel means so that said moistening pad means moves linearly and reciprocally towards and away said web thereby bringing said moistening pad means in contact with said web as the latter advances.

5,545,289

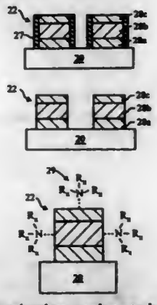
PASSIVATING, STRIPPING AND CORROSION INHIBITION OF SEMICONDUCTOR SUBSTRATES

Jian Chen, Santa Clara; James S. Papanu, San Rafael; Steve S. Y. Mak, Pleasanton, all of Calif.; Carmel Ish-Shalom, Kiriat Motzkin, Israel; Peter Hsieh, Sunnyvale, Calif.; Wesley G. Lau, San Jose, Calif.; Charles S. Rhoades, Simi Valley, Calif.; Brian Shieh, Hualien, Taiwan; Ian S. Latchford, Sunnyvale, Calif.; Karen A. Williams, Santa Clara, and Victoria Yu-Wang, Los Altos, both of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 191,828, Feb. 3, 1994. This application Jun. 29, 1994, Ser. No. 268,377

Int. Cl.[6] H01L *21/00*

U.S. Cl. 156—643.1 91 Claims



1. A process for passivating a substrate having etchant byproducts thereon, the process comprising the steps of:

(a) placing the substrate into a vacuum chamber;

(b) introducing a passivating gas into the vacuum chamber and forming a plasma from the passivating gas;

(c) stopping the flow of passivating gas and extinguishing the plasma;

(d) repeating step (b) and (c) at least once to passivate the etchant byproducts on the substrate; and

(e) removing the passivated substrate from the chamber.

5,545,290

ETCHING METHOD

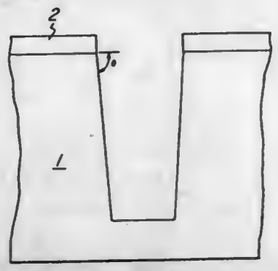
Monte A. Douglas, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 540,395, Jun. 19, 1990, abandoned, which is a continuation of Ser. No. 296,400, Jan. 9, 1989, abandoned, which is a continuation of Ser. No. 71,512, Jul. 9, 1987, abandoned. This application Dec. 12, 1991, Ser. No. 807,790

The portion of the term of this patent subsequent to Nov. 15, 2005, has been disclaimed.

Int. Cl.[6] H01L *21/00*

U.S. Cl. 156—646.1 8 Claims



1. A method of etching comprising:

forming an etch mask on a surface of a crystalline substrate;

introducing an etchant and a passivating material to said substrate to etch a sidewall into said substrate wherein said etchant comprises a mixture of HBr and $SiCl_4$; and

adductively bonding a monolayer of said passivating material to said sidewall, wherein the amount of said passivating material introduced is selected to control the slope of said sidewall wherein said passivating material is selected from the group consisting of CO, H_2O, NO_2, NOCl, COS, CS_2 and combinations thereof.

5,545,291

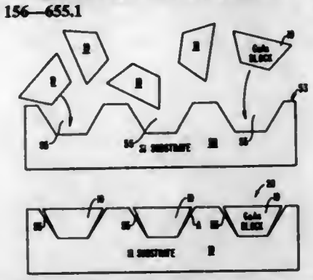
METHOD FOR FABRICATING SELF-ASSEMBLING MICROSTRUCTURES

John S. Smith, Berkeley, and Hsi-Jen J. Yeh, Covina, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Dec. 17, 1993, Ser. No. 169,298

Int. Cl.[6] H01L *21/3065*; B44C *1/22*

U.S. Cl. 156—655.1 26 Claims



1. A method of assembling a microstructure on a substrate, said substrate comprising a top surface with at least one recessed region thereon, comprising the steps of:

providing a plurality of shaped blocks, said shaped block comprising an integrated circuit device thereon;

transferring said shaped blocks into a fluid to form a slurry; and

dispensing said slurry over said substrate at a rate where at least one of said shaped blocks is disposed into a recessed region.

5,545,292

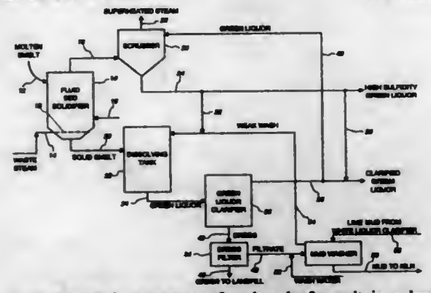
KRAFT SMELT SOLIDIFICATION IN A FLUIDIZED BED REACTOR

H. Jeff Empie, Acworth, Ga., assignor to Institute of Paper Science and Technology, Inc., Atlanta, Ga.

Filed Sep. 9, 1994, Ser. No. 303,614

Int. Cl.[6] D21C *11/04*

U.S. Cl. 162—30.11 26 Claims



1. A process for treatment of molten kraft smelt in a kraft recovery process, said process comprising

(1) feeding molten kraft smelt from a black liquor recovery system to a fluidized bed reactor containing particulate solids fluidized with a non-oxidizing fluidizing gas, wherein the fluidized bed reactor is operated at a temperature of about 600° to 900° F.;

(2) solidifying the molten kraft smelt within the fluidized bed reactor to form solid kraft smelt particles;

(3) removing the solid kraft smelt particles from the fluidized bed reactor; and

(4) feeding the solid kraft smelt particles to a dissolving tank containing an aqueous solution whereby a kraft green liquor is formed.

5,545,293

METHOD AND DEVICE IN THE REGULATION OF A HEADBOX

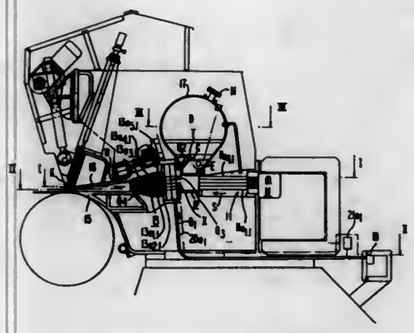
Jyrki Huovila; Ari Linsuri, both of Muurame; Petri Nyberg, and Michael Odell, both of Jyväskylä, all of, Finland, assignors to Valmet Corporation, Helsinki, Finland

Filed Jul. 1, 1994, Ser. No. 269,566

Claims priority, application Finland, Jan. 7, 1993, 933027; Jun. 13, 1994, 942780

Int. Cl.[6] D21F *1/08*

U.S. Cl. 162—212 44 Claims



1. A method for regulating a total pulp flow from a headbox, said headbox comprising a pulp inlet header, a distributor manifold coupled to and arranged after said inlet header in a flow direction of the pulp, means defining an intermediate chamber, said distributor manifold having distribution pipes opening into said intermediate chamber, means defining an attenuation chamber arranged in connection with said intermediate chamber and a turbulence generator arranged after said intermediate chamber in the pulp flow direction, said turbulence generator including turbulence tubes having respective inlet ends opening into said intermediate chamber and respective outlet ends opening into a discharge duct, said total headbox pulp flow comprising a plurality of component flows through respective ones of said turbulence tubes, the method comprising the steps of:

forming at least one of said plurality of component flows from component subflows arranged at different locations in a direction transverse to a direction of flow of said at least one component flow,

forming each of said component subflows from at least first and second subcomponent flows,

directing each of said second subcomponent flows from said inlet header into a respective one of said turbulence tubes in said turbulence generator,

introducing each of said first subcomponent flows into one of said second subcomponent flows at a point within one of said turbulence tubes in said turbulence generator at a certain mixing ratio, said introducing step comprising the steps of arranging a mixing chamber in each of said turbulence tubes, passing one of said second subcomponent flows from said intermediate chamber through a separate pipe arranged in each of said mixing chambers, an inlet end of each of said pipes opening into said intermediate chamber and an outlet end of each of said pipes opening into a respective one of said mixing chambers, passing a respective one of said first subcomponent flows annularly from around said pipe into an end of the respective one of said mixing chambers, and

regulating the concentration of each of said subflows by adjusting the flow rates of said first subcomponent flow and said second subcomponent flow, which constitute said subflow, relative to one another.

20. In a headbox comprising a pulp inlet header, a distributor manifold coupled to and arranged after said inlet header in a direction of pulp flow, said distributor manifold having distributor pipes opening into an intermediate chamber, and said intermediate chamber being coupled to an attenuation chamber for regulating the pressure of pulp in said intermediate chamber, said intermediate chamber being followed by a turbulence generator in the pulp flow direction, said turbulence generator having turbulence tubes opening into a discharge duct, the improvement comprising;

a device for regulating a total pulp flow from the headbox, said device comprising

means for directing at least one pulp component flow from said turbulence generator to provide said total headbox pulp flow,

means for forming component subflows of said at least one component flow arranged at different locations in a direction transverse to a direction of flow of said at least one component flow, each of said component subflows being formed from at least first and second subcomponent flows,

means for regulating the flow of each of said first subcomponent flows relative to the flow of a respective one of said second subcomponent flows to thereby regulate the concentration of said component subflows and thus said at least one component flow so as to adjust the grammage of a web formed from said total headbox pulp flow to a desired level in said transverse direction, said regulation means comprising;

means for passing each of said second subcomponent flow from said inlet header to a respective one of said turbulence tubes in said turbulence generator,

additional-flow duct means for directing each of said first subcomponent flows into one of said second subcomponent flows within one of said turbulence tubes in said turbulence generator, said additional-flow duct means communicating with said turbulence tubes of said turbulence generator such that said first subcomponent flows are carried into different positions in the transverse direction of said turbulence generator,

means for regulating the flow of said first subcomponent flows through said additional-flow duct means, and

means defining a mixing chamber arranged in said turbulence tubes of said turbulence generator, said additional-flow duct means being connected to said mixing chamber.

5,545,294

MULTILAYER HEADBOX

Anders T. Lindén, and Bo L. H. Örtenø, both of Karlstad, Sweden, assignors to Valmet-Karlstad AB, Karlstad, Sweden

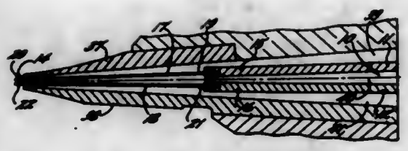
Filed Aug. 15, 1994, Ser. No. 290,696

Claims priority, application Sweden, Sep. 13, 1993, 93 02980

Int. Cl.[6] D21F *1/02*

U.S. Cl. 162—343 9 Claims

1. A multilayer headbox comprising a slice chamber, a rigid separator vane mounted in the slice chamber for keeping stock flow streams on each side of the vane separated from each other, said slice chamber having a downstream portion converging in the direction of the stock flow and ending in a slice opening, said vane having an upstream end and a square downstream end, said vane being securely fixed in cantilever fashion at said upstream end and



having its downstream end unattached and tree, said vane being sufficiently rigid to be capable of supporting unequal pressures and velocities in the stock flow streams, said headbox further having a rigid vane extension consisting of material having modulus of elasticity of at least 20-10^9 newtons per square meter and further having an upstream end and a downstream end, the upstream end of the vane extension being thinner than and anchored to the square downstream end of the separator vane to form an extended vane assembly having a step on each side of the assembly, the downstream end of the vane extension being unattached and free and located downstream of the slice opening, both of the vane and the vane extension having a portion located in the converging portion of the slice chamber, and said steps being located midway between an upstream start of the converging portion of the slice chamber and the slice opening at the downstream end of the converging portion.

5,545,295

WEB TRANSFER DEVICE

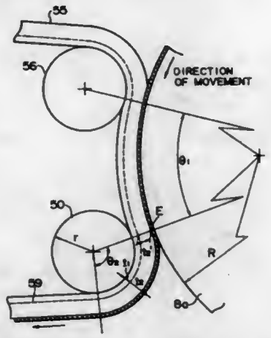
Norio Fujita, Mihara; Hiroshi Iwata, Hiroshima, and Haruyoshi Fujiwara, Mihara, all of, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 939,784, Sep. 3, 1992, abandoned. This application Mar. 25, 1994, Ser. No. 218,043

Claims priority, application Japan, Sep. 4, 1991, 3-250258

Int. Cl.^{6} D21F *3/00*

U.S. Cl. 162—358.1 **6 Claims**



1. A web transfer system in a press section of a paper machine, comprising:

an endless belt having a first surface which is elastic and which is structured and arranged to come into direct contact with a web in said press section, and a second surface which is not in contact with said web, wherein said endless belt has an inner core which is located between said first surface and said second surface, which inner core is made from a material which is less elastic than said first surface;

a hard roll for supporting the web; and

two pressure rolls which press said endless belt into direct contact with the web and against said hard roll around a sector of said hard roll,

wherein when said endless belt is pressed against said hard roll, said endless belt is deformed so as to doff said web from said hard roll directly and convey said web with said endless belt.

5,545,296

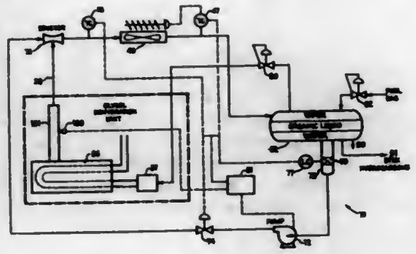
WATER AND ORGANIC CONSTITUENT SEPARATOR SYSTEM AND METHOD

Vijay K. Pathak, Edmonton, Canada, and Dennis Leppin, Chicago, Ill., assignors to Gas Research Institute, Chicago, Ill.

Division of Ser. No. 349,951, Dec. 6, 1994. This application Apr. 27, 1995, Ser. No. 433,257

Int. Cl.^{6} B01D *3/42*

U.S. Cl. 203—1 **3 Claims**



1. A method for separating water, recovered during the dehydration of gas, from a dehydrating solution, the method comprising the steps of:

a) distilling the water and various organic constituent vapors from the dehydrating solution; and

b) positively sucking the distilled, predominantly vaporous water and various organic constituent vapors through and away from the distilling device by

c) introducing a pressurized stream of fluid, from a source of fluid wherein the fluid has been collected and maintained within a range of volumes, into intersecting relationship with the distilled, predominantly vaporous, water and organic constituent vapor and

d) exposing the distilled, predominantly vaporous, water to a partial vacuum associated with the pressurized stream so as to positively draw the water and organic constituent vapor from the distilling device into the pressurized stream;

e) sensing the temperature of the flow of the distilled, predominantly vaporous, water and organic constituent vapors and pressurized stream of fluid mixture;

f) controlling the flow of pressurized fluid, so as to increase the flow, if the sensed temperature is higher than a predetermined temperature, and so as to decrease the flow, if the sensed temperature is lower than a predetermined temperature.

5,545,297

METHODS FOR CONTINUOUSLY PLACING FILAMENTS WITHIN HYDRAULICALLY SETTABLE COMPOSITIONS BEING EXTRUDED INTO ARTICLES OF MANUFACTURE

Per J. Andersen, and Simon K. Hodson, both of Santa Barbara, Calif., assignors to E. Khashoggi Industries, Santa Barbara, Calif.

Continuation-in-part of Ser. No. 255,344, Jun. 7, 1994, Ser. No. 19,151, Feb. 17, 1993, Pat. No. 5,453,310, Ser. No. 95,662, Jul. 21, 1993, Pat. No. 5,385,764, Ser. No. 101,500, Aug. 3, 1993, and Ser. No. 109,100, Aug. 18, 1993, abandoned, each which is a continuation-in-part of Ser. No. 929,898, Aug. 11, 1992, abandoned. This application Oct. 4, 1994, Ser. No. 318,913

Int. Cl.^{6} B28B *1/00;21/52;* B29C *47/00;65/00*

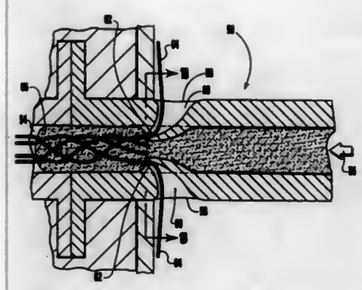
U.S. Cl. 264—102 **100 Claims**

1. A method for continuously placing filaments within a hydraulically settable mixture being extruded into an article of manufacture having a cured hydraulically settable matrix, the method comprising the steps of:

combining together a hydraulically settable binder, an aggregate material, a rheology-modifying agent, and water in relative concentrations to form a hydraulically settable mixture that flows when extruded under pressure through a die and that is immediately form stable upon exiting the die;

extruding the hydraulically settable mixture under pressure through a die while continuously placing at least one filament within the hydraulically settable mixture as the mixture is extruded through the die to form an extruded article having a hydraulically settable matrix that is immediately form stable upon exiting the die and which includes at least one filament placed therein; and

allowing the hydraulically settable matrix of the extruded article to cure to form the article of manufacture having the cured hydraulically settable matrix containing at least one filament.



5,545,298

PROCESS FOR PREPARING POLYFLUOROCARBOXYLIC ACID CHLORIDES AND PERFLUOROCARBOXYLIC ACID CHLORIDES

Max Braun, Burgwedel; Werner Rudolph, Hannover, and Kerstin Eichholz, Langenhagen, all of, Germany, assignors to Solvay Fluor und Derivate GmbH, Hannover, Germany

Filed Aug. 10, 1994, Ser. No. 288,070

Claims priority, application Germany, Aug. 13, 1993, 43 27 195.2; Dec. 14, 1993, 43 42 601.8

Int. Cl.^{6} C07B *33/00*

U.S. Cl. 204—157.6 **8 Claims**

1. A process for preparing a compound corresponding to the formula

RCFXC(O)Cl

wherein X is fluorine or chlorine, and R is fluorine or a perfluorinated C1- C10-alkyl group, said process comprising reacting a starting compound corresponding to the formula

RCFXCHCl$_2$

wherein R and X have the meanings defined above, with oxygen at a starting compound:oxygen molar ratio of 1:1.1 to 1:3 in the gaseous phase under activating irradiation, with the proviso that said reacting step is carried out without addition of elemental chlorine and without pressurization.

5,545,299

VAPOR PHASE SENSOR

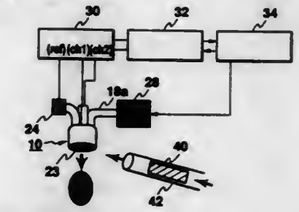
Akifumi Iwama; Masahiro Iseki, and Azusa Nakagawa, all of Tsukuba, Japan, assignors to Sanyo Electric Co., Inc., Osaka, Japan

Division of Ser. No. 305,157, Sep. 13, 1994, Pat. No. 5,496,451. This application Nov. 21, 1995, Ser. No. 551,865

Claims priority, application Japan, Sep. 13, 1993, 5-228611; Sep. 14, 1993, 5-228612; Sep. 14, 1993, 5-228613; Jun. 29, 1994, 6-148013

Int. Cl.^{6} G01N *27/26*

U.S. Cl. 204—412 **8 Claims**



1. A vapor phase sensor comprising:

(A) measurement electrodes;

(B) a reference electrode;

(C) an electrolytic solution holding surface comprising at least said measurement electrodes and said reference electrode for holding an electrolytic solution having an outer surface exposed directly to a vapor phase on surfaces of said measurement electrodes and said reference electrode by using surface tension thereof;

(D) a source for supplying an electrolytic solution onto said electrolytic solution holding surface; and

(E) a section for detecting an electric state change between said measuring electrodes and said reference electrode caused by a chemical substance in a vapor phase diffusing into the electrolytic solution, wherein

the electrolytic solution beld on said electrolytic solution holding surface is replaced with a fresh electrolytic solution from said source for supplying an electrolytic solution for detecting a further substance in a vapor phase.

5,545,300

LOW POWER CONSUMPTION TYPE THIN FILM GAS SENSOR

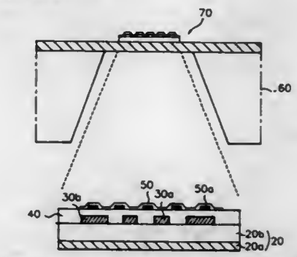
Dong H. Yun, Kwancheon-si; Kyu C. Lee, Seoul; Hyung K. Hong, Kwacheon-si; Hyeon S. Park; Chul H. Kwon, both of Seoul, and Hyun W. Shin, Kwacheon-si, all of, Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Aug. 29, 1994, Ser. No. 297,606

Claims priority, application Rep. of Korea, Dec. 4, 1993, 1993-26474

Int. Cl.^{6} G01N *27/12;27/407*

U.S. Cl. 204—424 **17 Claims**



1. A low power consumption type thin film gas sensor comprising:

a silicon substrate having a window in the central part of one side thereof:

masking material formed on the one side thereof except the window;

a supporting film formed of an etch stop layer and a glass film on the other side of the substrate;

heaters and temperature sensors arranged in parallel on the supporting film facing the window, said heaters and temperature sensors having a fixed length of heat generation part;

an interlayer insulation film formed on the supporting film to cover the beaters and the temperature sensors, sensing film electrodes formed on the interlayer insulation film; and,

a sensing film formed on the interlayer insulation film so as to cover the sensing film electrodes for sensing a particular gas.

5,545,301

SENSOR ELEMENT FOR THE DETERMINATION OF CONCENTRATION OF GAS CONSTITUENT(S) CONCENTRATION

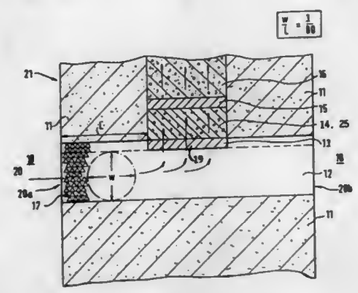
Karl-Hermann Friese, Leonberg; Werner Gruenwald, Gerlingen; Roland Stahl, Freiberg a. Neckar; Claudio de la Prieta, Stuttgart; Gerhard Schneider, Vaihingen/Enz, and Harald Neumann, Vaihingen/Enzweihingen, all of, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Dec. 23, 1994, Ser. No. 360,737

Claims priority, application Germany, Apr. 23, 1993, 43 13 251.0

Int. Cl.[6] G01N *27/26*

U.S. Cl. 204—425 **16 Claims**



1. A sensor element for determining concentration of at least one constituent of a gas mixture and which operates on an electrochemical measuring process, the sensor element comprising:

a gas measuring chamber;

a pair of electrodes and an electrode chamber located between the pair of electrodes; and

a diffusion conduit adjoining the electrode chamber and having a gas input which connects with the gas measuring chamber, having a gas output which connects with the electrode chamber, and having at least one cross-sectional area including a height, w, and a length, L, which height, w, has a preselected minimum value, and which length, L, has a value which is equal to or greater than the preselected minimum value of the height, w,

wherein the at least one constituent of the gas mixture has a mean free path length through the sensor element,

wherein the gas measuring chamber has a cross-sectional area including a height and a length each of which are at least as large as the minimum height, w, of the diffusion conduit, and

wherein the height, w, of respective ones of the at least one cross-sectional area of the diffusion conduit is at least a multiple of the mean free path length of the constituent of the gas mixture to be measured.

5,545,302

SUPPRESSION OF ELECTROENDOSMOSIS DURING ELECTROPHORESIS IN GEL-FREE POLYMER MEDIA BY USE OF CHARGED POLYMERS

Ming-De Zhu, and Christopher J. Siebert, both of Berkeley, Calif., assignors to Bio-Rad Laboratories, Inc., Hercules, Calif.

Continuation-in-part of Ser. No. 136,689, Oct. 14, 1993, abandoned. This application Apr. 5, 1995, Ser. No. 411,613

Int. Cl.[6] G01N *27/26;27/447*

U.S. Cl. 204—454 **24 Claims**

1. A method of suppressing electroendosmotic flow in an electrophoretic separation of a mixture of sample ions in a separation medium consisting essentially of a gel-free aqueous solution, said method comprising including in said gel-free aqueous solution a hydrophilic polymer derivatized by the bonding thereto of an amine at about 0.05 or more equivalents of amine per 100 grams of said polymer.

5,545,303

SYSTEM FOR ANALYZING THE CONCENTRATION OF A NUMBER OF DIFFERENT IONS IN A WATERY SOLUTION

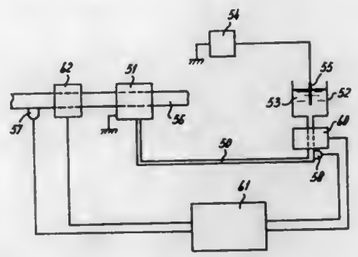
Richardus B. M. Schasfoort, Amersfoort, and Jan O. Voogt, Maasdijk, both of, Netherlands, assignors to Innocom (I.T.) B.V., 'S-Gravenzande, Netherlands

Filed Mar. 17, 1994, Ser. No. 214,293

Claims priority, application Netherlands, Mar. 17, 1993, 9300475

Int. Cl.[6] G01N *27/26;27/447*

U.S. Cl. 204—601 **13 Claims**



1. System for analyzing the concentration of a number of different ions in a watery solution, using a capillary zone electrophoresis apparatus comprising:

at least one capillary tube extending between an input opening and a detection area and filled with an electrolyte,

an input device for injecting a sample of the solution to be analyzed in the input opening of the capillary tube,

a voltage source for establishing a voltage gradient along the capillary tube between the input opening and the detection area to evoke a migration of the ions in said sample through the capillary tube,

a detector circuit for detecting the ions passing through the capillary tube by measuring the conductivity of the passing fluid,

a processor receiving data from said detector circuit representing momentary peak levels in the measured conductivity as well as moments in time at which the respective peaks appear,

a further conductivity sensor providing to said processor data representing the total conductivity of the solution from which the sample was taken,

said processor being programmed to determine for each detected peak in the measured conductivity level, the kind of ion and the concentration of the respective ion based on the data received from said detector circuit, and

means for calculating the total conductivity, and means for comparing the calculated total conductivity with the total conductivity data provided by said further conductivity sensor to calibrate calculation parameters such that both the measured total conductivity and the calculated total conductivity will be equal.

5,545,304

ION CURRENT DETECTOR FOR HIGH PRESSURE ION SOURCES FOR MONITORING SEPARATIONS

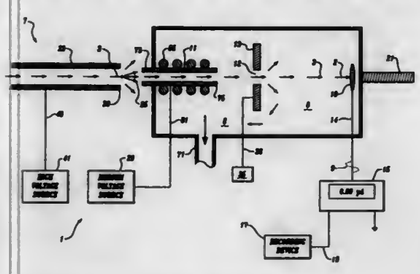
Richard D. Smith; Jon H. Wahl, and Steven A. Hofstadler, all of Richland, Wash., assignors to Battelle Memorial Institute, Richland, Wash.

Filed May 15, 1995, Ser. No. 441,319

Int. Cl.[6] H01J *49/04;* **B01D** *59/44;* **G01N** *27/26;27/447*

U.S. Cl. 204—603 **9 Claims**

1. An apparatus for detection of ions resulting from the separation of components in solution comprising:



(a) a high pressure ion source;

(b) a desolvation capillary having a receiving tip attached to a medium voltage source;

(c) at least one collimating aperture through a collimating plate connected to a voltage source;

(d) at least one vacuum chamber housing said collimating aperture and said desolvation capillary wherein;

(i) said ions originate from said high pressure ion source, and proceed through said desolvation capillary, then through said collimating aperture, and impinge upon an ion collector plate;

(ii) said impingement producing a signal that is transmitted to;

(e) an ammeter;

whereby said ammeter indicates a temporal distribution that is proportional to a relative analyte abundance.

5,545,305

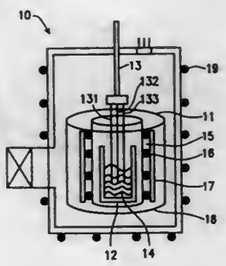
METHOD FOR THE ELECTROCHEMICAL DEPOSITION OF $REBa_2Cu_3O_{7-x}$ SUPERCONDUCTORS

Horng-Yi Tang, Feng-Yuan; Maw-Kuen Wu, Hsinchu; Chuen-Sheng Lee, Kaohsiung, and Huei-Ying Hsu, Pingtung Hsien, all of, Taiwan, assignors to National Science Council, Taipei, Taiwan

Filed May 4, 1995, Ser. No. 434,652

Int. Cl.[6] C25D *7/00;3/66;9/00;11/00*

U.S. Cl. 205—51 **24 Claims**



1. A method for the electrochemical deposition of $REBa_2Cu_3O_{7-x}$ superconductors, wherein RE is a rare earth element, said method using molten salt electrocrystallization and comprising the following steps:

(a) providing a melt solution comprising a copper-based component, a barium-based component, a rare earth element-based component, and an alkaline hydroxide;

(b) maintaining said melt solution at a temperature which sustains said melt solution in a molten state below about 500° C.;

(c) providing an anode and a cathode and a reference electrode and suspending said anode, said cathode, and said reference electrode within said melt solution; and

(d) electrodepositing a $REBa_2Cu_3O_{7-x}$ superconductor onto said anode while maintaining a substantially constant potential or constant current density at the anode with reference to said reference electrode.

5,545,306

METHOD OF PRODUCING AN ELECTROLYTIC ELECTRODE

Takayuki Shimamune, and Yasuo Nakajima, both of Tokyo, Japan, assignors to Permelec Electrode Co. Ltd., Kanagawa, Japan

Division of Ser. No. 92,437, Jul. 14, 1993, Pat. No. 5,391,280. This application Dec. 6, 1994, Ser. No. 353,973

Claims priority, application Japan, Jul. 17, 1992, 4-213481

Int. Cl.[6] C25D *15/00*

U.S. Cl. 205—109 **5 Claims**

1. A method of producing an electrolytic electrode, which comprises the steps of:

forming a lead plating layer on a surface of a metallic core material by using a lead electrolytic plating bath where the metallic core material is a cathode;

forming an α-lead dioxide layer on the lead plating layer by electrolysis using an alkaline bath containing a lead ion and using the core material as an anode; and

forming a β-lead dioxide layer on the α-lead dioxide layer by electrolysis using an aqueous lead nitrate solution and using the core material as an anode.

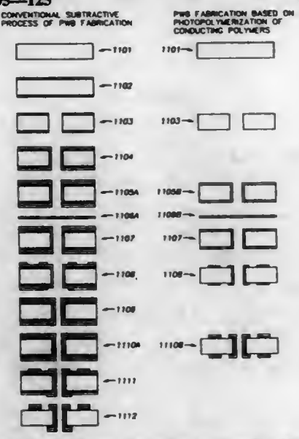
3. The method of claim 1, wherein a ceramic powder, a fluorine resin powder, or a mixture thereof is dispersed in the aqueous lead nitrate solution.

5,545,307
PROCESS FOR PATTERNED ELECTROPLATING
Sanat K. Deas, Gilroy; Dennis R. McKean; Alfred F. Renaldo, both of San Jose, and Robert J. Wilson, Cupertino, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 6, 1995, Ser. No. 417,621
Int. Cl.[6] C25D 5/02
U.S. Cl. 205—122 **10 Claims**



1. A process for patterned electroplating onto a substrate comprising:
(i) forming a first layer of aminoalkylpyridine on the substrate;
(ii) coating the first layer with a radiation sensitive polymeric film;
(iii) patternwise exposing the film to radiation;
(iv) developing the film to patternwise expose the substrate;
(v) electroplating metal onto the exposed portions of the substrate; and
(vi) removing the remaining polymeric film from the substrate.

5,545,308
METHOD OF USING CONDUCTIVE POLYMERS TO MANUFACTURE PRINTED CIRCUIT BOARDS
Oliver J. Murphy; G. Duncan Hitchens, both of Bryan; Dalibor Hodko, College Station; Eric T. Clarke, Bryan; David L. Miller, Austin, and Donald L. Parker, Bryan, all of Tex., assignors to Lynntech, Inc., College Station, Tex.
Filed Jun. 19, 1995, Ser. No. 491,625
Int. Cl.[6] C25D 5/02;5/54; C23C 28/00
U.S. Cl. 205—125 **19 Claims**

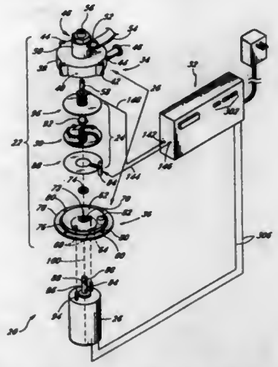


1. A method of forming an electronic circuit on a substrate comprising the steps of:
forming a solution comprising a pyrrole monomer and an electron acceptor;
applying a film of the solution onto the substrate;
photopolymerizing portions of the film to form electronically conducting polypyrrole;
washing an unpolymerized portion of the film from the substrate;
activating the polypyrrole with aqueous palladium bromide; and
electrodepositing a metal onto the activated polypyrrole.

5,545,309
METHOD OF PROCESSING ORGANIC QUATERNARY AMMONIUM HYDROXIDE-CONTAINING WASTE LIQUID
Shumpei Shimizu; Toshitsura Cho, both of Tokyo, and Shigeo Iiri, Kawasaki, all of, Japan, assignors to Tama Chemicals Co., LTD., Tokyo, Japan
Division of Ser. No. 149,827, Nov. 10, 1993, Pat. No. 5,439,564. This application May 11, 1995, Ser. No. 438,962
Claims priority, application Japan, Nov. 10, 1992, 323814; Nov. 26, 1992, 337835
Int. Cl.[6] C02F 1/461
U.S. Cl. 205—437 **20 Claims**

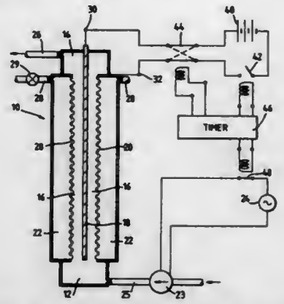
1. A method of processing an organic quaternary ammonium hydroxide-containing waste liquid comprising contacting a waste liquid containing at least an organic quaternary ammonium hydroxide having four substituents bound to the quaternary nitrogen atom thereof with a cation-exchanging material, wherein the organic quaternary ammonium ions are adsorbed from said organic quaternary ammonium hydroxide having four substituents bound to the quaternary nitrogen atom thereof by the cation-exchanging material.

5,545,310
METHOD OF INHIBITING SCALE FORMATION IN SPA HALOGEN GENERATOR
Michael A. Silveri, 483 Skylake Ct., Incline Village, Nev. 89451
Filed Mar. 30, 1995, Ser. No. 413,514
Int. Cl.[6] C02F 1/461
U.S. Cl. 205—537 **31 Claims**



1. In an electrolytic cell, a method of removing scale buildup between two spaced electrodes comprising the steps of:
positioning at least one abrading member between said electrodes, said abrading member being spaced from a first electrode of said electrodes by a first distance;
rotating said abrading member with respect to said first electrode; and
decreasing the space between said abrading member and said first electrode while maintaining a gap between the abrading member and the first electrode, whereby the abrading member contacts and dislodges scale formation on the first electrode without contacting the first electrode.

5,545,311
FILTER CLEANING
Mark D. Neville, Stanford-in-the-Vale, United Kingdom, assignor to United Kingdom Atomic Energy Authority, Didcot, United Kingdom
Filed May 22, 1995, Ser. No. 445,868
Claims priority, application United Kingdom, Jun. 9, 1994, 9411580
Int. Cl.[6] C25F 1/00
U.S. Cl. 205—712 **14 Claims**

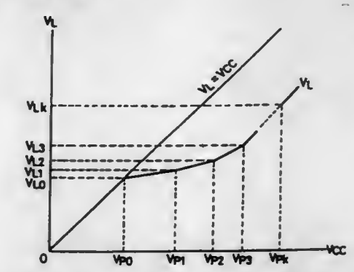


9. A method of cleaning a porous electrically conducting filter during use of the filter in the filtration of an aqueous process liquid, the method comprising arranging a counter electrode in contact with the process liquid so that the filter, the process liquid and the counter electrode together constitute an electrochemical cell, periodically and briefly applying a d.c. potential difference between the filter and the counter electrode so as to generate by electrolysis a gaseous product at the filter and so to clean the filter, and applying a potential difference of opposite polarity to the periodically-applied potential difference at least occasionally between the filter and the counter electrode, the applications of the periodically-applied potential difference and those of opposite polarity differing in respect of at least one characteristic selected from the group consisting of magnitude of the potential difference, duration of application, and frequency of application, wherein during at least some of the applications of the periodically-applied potential difference, there is included the step of applying a reverse pressure difference across the filter, so the process liquid is of lower pressure than the filtrate.

5,545,312
REPLACEMENT OF PARTICLES IN A MOVING BED PROCESS
Roger R. Lawrence, Elmhurst; Frank T. Micklich, Joliet; Charles T. Ressl, Mount Prospect, and Paul A. Sechrist, Des Plaines, all of Ill., assignors to UOP, Des Plaines, Ill.
Filed May 6, 1994, Ser. No. 239,002
Int. Cl.[6] C10G 35/10
U.S. Cl. 208—152 **18 Claims**

1. A method for the replacement of particles in a process, said method comprising:
(a) withdrawing a first stream comprising particles from a first zone and rejecting said first stream from said process;
(b) introducing a second stream comprising particles and a first fluid to a second zone, and passing particles through said second zone;
(c) passing a third stream comprising a second fluid to said second zone at a rate that is sufficient to purge said first fluid from the total void volume in said second zone;
(d) withdrawing a fourth stream comprising said first fluid and said second fluid from said second zone and passing said fourth stream to said first zone; and
(e) withdrawing a fifth stream comprising particles and said second fluid from said second zone and passing said fifth stream to a third zone that is in uninterrupted communication with said second zone, said fifth stream comprising sufficient second fluid to inhibit passing fluid from said third zone to said second zone.

5,545,313
DESALTING PROCESS FOR PRIMARY FRACTIONATOR
Constante P. Tagamolila, Arlington Heights, Ill., assignor to UOP, Des Plaines, Ill.
Filed Jun. 20, 1994, Ser. No. 262,721
Int. Cl.[6] B01D 3/34
U.S. Cl. 208—348 **11 Claims**



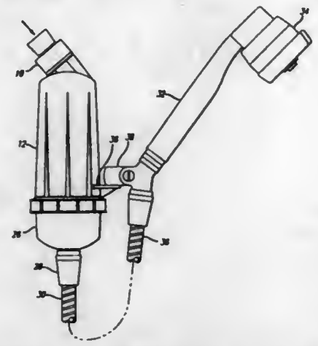
1. A process for the production and separation of a fluidized catalytic cracking (FCC) product stream wherein said product stream contains disassociated salt forming ions, said process comprising:
a) passing an FCC feedstock containing ionizable compounds and active catalyst particles to a reaction zone to convert said feedstock and produce a stream of gaseous hydrocarbons and catalyst particles;
b) separating catalyst particles from gaseous hydrocarbons and recovering an FCC product stream containing dissociated salt;
c) passing said FCC product stream to a primary fractionation zone;
d) separating said FCC product stream in said primary fractionation zone into fractions comprising a heavy hydrocarbon stream, a first naphtha boiling range stream containing dissociated salt and a gasoline stream;
e) cooling at least a portion of said first naphtha stream;
f) contacting a cooled portion of said first naphtha stream with a wash water stream to absorb dissociated salt in said wash water to produce a mixture of naphtha and wash water;
g) separating an aqueous phase from said mixture of naphtha and wash water stream to produce a second naphtha stream having a reduced concentration of dissociated salt relative to said first naphtha stream; and
h) returning at least a portion of said second naphtha stream to said primary fractionation zone.

5,545,314

SHOWER WATER FILTER ASSEMBLY

Michael C. Parise, 320 Coney Island Dr., Sparks, Nev. 89431, and Myrl J. Searem, 2057 W. Washington, Carson City, Nev. 89703

Filed Jan. 3, 1995, Ser. No. 367,701
Int. Cl.[6] B01D 35/02;27/10
U.S. Cl. 210—100 10 Claims



1. A shower filter assembly including: a housing having an elongated cylindrical configuration; a cylindrical cartridge containing filter media removably mounted in said housing in coaxial relationship therewith; a coupling member mounted at one end of the housing for attaching the housing to a water outlet; a flexible hose member having a first end connected to the other end of said housing for receiving filtered water from said housing; a tubular elongated wand connected to the other end of said flexible hose member; a shower head connected to the distal end of said wand; and bracket means mounted on the housing for removably supporting said tubular elongated wand and said shower head during the operation of the filter assembly with said wand extending upwardly from the lower end of the housing and inclined outwardly from the housing.

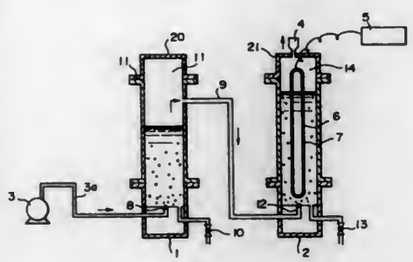
4. The shower filter assembly defined in claim 1, in which said coupling member includes a valve having a movable member therein and a seat for receiving the movable member, said movable member engaging said seat to prevent water flow through said coupling member when said cartridge is removed from said housing, and in which said cartridge includes a projecting member positioned to engage said movable member in said valve and lift said movable member off said seat when said cartridge is in place in said housing.

5,545,316

APPARATUS FOR TREATING WATER CONTAINING ORGANIC CHLORINE COMPOUNDS

Masahiro Kazama, and Shigekazu Haginoya, both of Tokyo, Japan, assignors to NEC Environment Engineering Ltd., Tokyo, Japan

Division of Ser. No. 226,837, Apr. 11, 1994, Pat. No. 5,478,481.
This application Jun. 16, 1995, Ser. No. 491,452
Claims priority, application Japan, Sep. 21, 1993, 5-234967
Int. Cl.[6] C02F 1/20; B01D 19/00
U.S. Cl. 210—188 3 Claims



1. An apparatus for treating a liquid containing organic chlorine compounds comprising,

an aeration tank for retaining a liquid containing organic chlorine compounds to be treated,

means for supplying a gas into the liquid retained in the aeration tank while aerating so that the organic chlorine compounds contained in the liquid is caught into the gas,

a decomposition-treatment tank for retaining a treatment solution containing an oxidizing agent,

means for collecting the gas containing the organic chlorine compounds in the aeration tank and providing the gas to the decomposition-treatment tank while aerating to collect the organic chlorine compounds contained in the gas into the treatment solution, and

an ultraviolet lamp situated in the decomposition-treatment tank for irradiating ultraviolet rays to the treatment solution to activate the oxidizing agent in the treatment solution so that the oxidizing agent decomposes the organic chlorine compounds in the treatment solution.

5,545,315

WATER FILTERING AND PURIFYING APPARATUS

Alan Lonneman, Plymouth, Minn., assignor to WTC Industries, Inc., Plymouth, Minn.

Filed Aug. 5, 1994, Ser. No. 286,774
Int. Cl.[6] C02F 9/00
U.S. Cl. 210—120 17 Claims

17. A water filtering apparatus for filtering water at low pressures generated by manually squeezing a container, the apparatus comprising:

a flexibly resilient walled container having an open end;

a removable cover for covering the open end of the container wherein the cover has a pressure responsive venting means for allowing air into the container while substantially preventing fluids contained in the container from escaping therefrom; and

a water filtration system contained within the container;

an outlet tube, the outlet tube connected to the filtration system and extending through the cover to a point outside the container; and

a flow restricting device positioned within the outlet tube, the flow restricting device and the venting means sized to create a predetermined back-wash through the filtration system when air enters the container.

5,548,317

LIQUID COLUMN PACKING MATERIALS AND METHOD FOR MAKING THE SAME

Dwight E. Williams, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 998,466, Dec. 30, 1992. This application Apr. 17, 1995, Ser. No. 422,803
Int. Cl.[6] B01D 15/8
U.S. Cl. 210—198.2 13 Claims

1. A method for making a packing material for liquid chromatographic or catalytic columns which comprises:

a) providing a porous protein-adsorptive support,

b) providing an aqueous solution into which a protein has been dissolved,

c) contacting said porous protein-adsorptive support with said aqueous solution into which a protein has been dissolved for a sufficient period of time to form, and under conditions which form, a saturated coating of protein on the external surfaces of said porous protein-adsorptive support,

d) removing excess protein that remains in solution, and,

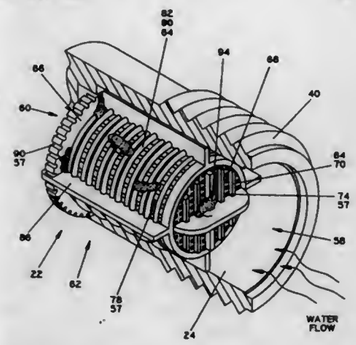
e) crosslinking said saturated coating of protein in situ to form a relatively thin but saturated coating of crosslinked protein on the external surfaces of said porous protein-adsorptive support wherein said relatively thin but saturated coating of crosslinked protein gives a signal obtained by at least one surface selective analytical method for nitrogen which does not exceed 67 percent of that for a bulk amount of the crosslinked protein.

5,545,318

CLOG RESISTANT WATER VALVE INLET SCREEN WITH RIBS

James W. Richmond, Carmel, Ind., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Nov. 1, 1994, Ser. No. 332,679
Int. Cl.[6] B01D 35/02
U.S. Cl. 210—232 25 Claims



1. A clog resistant water valve, comprising:

(a) an inlet channel for receiving water from a water source pipe and a valving cavity for controlling water flow into an appliance; and,

(b) an inlet screen carried in the water valve inlet channel having an upstream end, a downstream end and a sidewall, the inlet screen comprising:

(1) a mesh network, having openings formed on the upstream end and its sidewall, for screening contaminates received through the water source pipe from entering the water valve, and,

(2) ribs of differing height formed on the mesh network that extend outwardly from the mesh network.

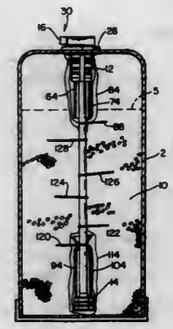
10. The clog resistant water valve as in claim 1 wherein installation tabs extend from the inlet screen sidewall to stabilize the inlet screen in the inlet channel.

5,545,319

SIEVE SYSTEM FOR AN ION EXCHANGE COLUMN

Robert G. Hart, Bay Village, Ohio; Bashir M. Ahmed, Utica; Carlos Gonzales, Troy, both of Mich., and William G. Kozak, Hatfield, Pa., assignors to Henkel Corporation, Plymouth Meeting, Mass.

Filed Sep. 8, 1994, Ser. No. 302,156
Int. Cl.[6] B01D 24/10
U.S. Cl. 210—279 9 Claims



1. Apparatus for use in an ion exchange unit comprising:

a riser pipe;

a port assembly connected to a top portion of said riser pipe, said port assembly including both an outlet port having a fluid passageway opening into an opening of the top portion of said riser pipe, and an inlet port having a fluid passageway opening proximate to the outside diameter of said riser pipe where it connects to said port assembly;

a hollow cylindrical rigid first distributor screen including an upper open end rigidly secured to a bottom portion of said port assembly, said first distributor screen also being concentric with an upper portion of said riser pipe, the fluid passageway of said inlet port opening into an interior portion of said first distributor screen, the latter also including a lower end, and a plurality of successive openings along side portions thereof for the passage of fluid;

a rigid cylinder slideably mounted upon and coaxial with said riser pipe, said rigid cylinder having an upper end located below the lower end of said first distributor screen;

means defining apertures extending through said rigid cylinder;

a mesh cylinder coaxial with and outside of said first distributor screen and said rigid cylinder;

means for securing one end of said mesh cylinder to the upper end of said first distributor screen below said port assembly;

means for securing the other end of said mesh cylinder to said riser pipe at a point adjacent a lower end of said rigid cylinder for locating the upper end of said rigid cylinder proximate to the lower end of said first distributor screen, while permitting axial movement of said rigid cylinder with longitudinal flexture of said mesh;

a flexible sieve sleeve surrounding said mesh cylinder, said sieve sleeve having substantially smaller pores than said mesh for passage of fluid;

means for securing one end of said sieve sleeve to said riser pipe at a point adjacent said lower end of said rigid cylinder;

means for securing the other end of said sieve sleeve to the upper end of said first distributor screen below said port assembly; and

means for conducting fluid from said first distributor screen into said rigid cylinder.

VOL 1189 ISS 2 AUG 13 1996 UMI

5,545,320

DEVICE FOR FILTERING AND SEPARATING FLOW MEDIA WITH FILTER ELEMENTS THAT ARE IN THE FORM OF MEMBRANE CUSHIONS

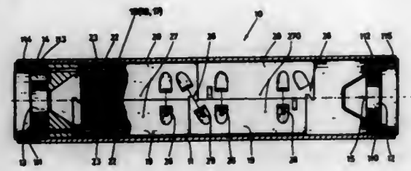
Wilhelm Heine, Hamburg, and Jürgen Mohn, Reinbek, both of, Germany, assignors to DT Membranfilter Vertriebs GmbH, Hamburg, Germany

Filed Feb. 17, 1995, Ser. No. 390,537

Claims priority, application Germany, Feb. 18, 1994, 44 05 175.1

Int. Cl.[6] B01D *63/00*

U.S. Cl. 210—321.6 18 Claims



1. A device for filtering and separating a flow medium by one of the methods selected from the group consisting of reverse osmosis, micro filtration, ultra filtration, and nano filtration, said device comprising:

a pressure-tight housing having an inlet for the flow medium and a first outlet for the retentate and a second outlet for the permeate;

a plurality of stacked units comprised of spacer elements and membrane filter elements, wherein said spacer elements and said membrane filter elements are stacked alternatingly atop one another to form a stack;

said stacked units sequentially arranged in said housing, wherein the flow medium flows in sequence through said stacked units; and

wherein said stacked units further comprise two receptacle parts forming a receptacle for enclosing said stack of said spacer elements and said membrane filter elements, said receptacle parts having a substantially semi-circular cross-section.

5,545,321

FILTER APPARATUS

Mordeki Drori, P.O. Box 21538, Tel Aviv, Israel

Continuation of Ser. No. 150,582, Nov. 9, 1993, abandoned, which is a continuation of Ser. No. 943,132, Sep. 19, 1992, abandoned, which is a continuation of Ser. No. 479,057, Feb. 12, 1990, abandoned, which is a continuation of Ser. No. 13,248, Feb. 10, 1987, Pat. No. 4,935,126. This application Jan. 30, 1995, Ser. No. 381,014

Claims priority, application Israel, Feb. 11, 1986, 77866; Jun. 3, 1986, 79012; Sep. 21, 1986, 80098; Sep. 21, 1986, 80104; Nov. 7, 1986, 80551; Nov. 7, 1986, 80552

Int. Cl.[6] B01D *29/46;29/68*

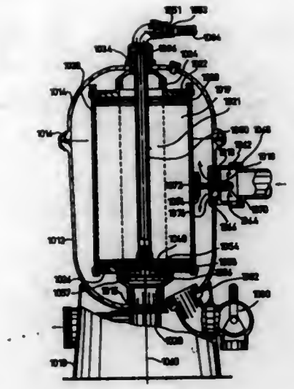
U.S. Cl. 210—411 15 Claims

1. A fluid filter comprising:

a housing defining a fluid inlet and a fluid outlet;

a filter element defining an upstream surface communicating with the fluid inlet and downstream cylindrical surface communicating with the fluid outlet, the filter element comprising a stack of filter disks defining a hollow volume interior thereof, and

backflushing means for removing filtered out sediment from the filter element, said backflushing means comprising an axially displaceable backflushing nozzle assembly disposed within the hollow volume including a rotating head coupled to the fluid inlet and having fluid outlet means, arranged to provide a generally radially directed pressurized jet and a jet which provides rotational motion of the rotating head.



5,545,322

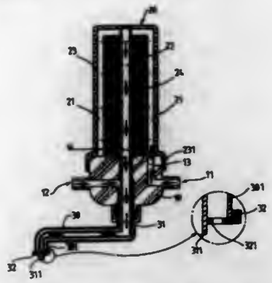
COLD AND HOT WATER COMBINATION FILTERING FAUCET

Ting K. Cheng, 15445 Proctor Ave., City of Industry, Calif. 91745

Filed Dec. 16, 1994, Ser. No. 357,692

Int. Cl.[6] B01D *35/02;* E03C *1/04*

U.S. Cl. 210—440 3 Claims



1. A cold and hot water combination filtering faucet comprising a main body, a filter unit integrally disposed on said main body, and a water discharging tube; wherein

said main body includes a cold raw water inlet and a hot raw water inlet on lateral sides, said cold raw water inlet extending to form a cold raw water passage which is open to said filter unit, said hot raw water inlet extending through the main body to communicate with said water discharging tube; and

said filter unit comprises a filter housing and a cylindrical filter cartridge, said filter housing having a base portion for engaging with the main body and an interior for receiving said filter cartridge, said filter cartridge being formed with an inner hollow clear water area, a raw water area being defined between said filter housing and said filter cartridge, said clear water area communicating with a filtered water outlet of said main body which is connected with said water discharging tube, said cold raw water passage communicating with said raw water area, and wherein,

said filtered water outlet is connected with a cold water discharge tube which is contained within said water discharging tube and coaxially extends therewith outside said main body said discharge tube and said discharging tube being constructed and arranged to maintain isolation between hot water passing through the discharging tube and cold filtered water passing through said discharge tube.

5,545,323

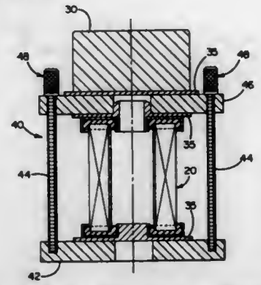
FILTER ASSEMBLY AND METHOD OF MAKING A FILTER ASSEMBLY

Paul C. Koehler; Michael B. Whitlock, both of Cortland, N.Y.; Lawrence J. Noble, Hayling Island, and George C. Jenkins, Middleton-On-Sea, both of, England, assignors to Pall Corporation, East Hills, N.Y.

Continuation-in-part of Ser. No. 127,556, Sep. 28, 1993, Pat. No. 5,395,039. This application Jan. 17, 1995, Ser. No. 373,951

Int. Cl.[6] B01D *29/07*

U.S. Cl. 210—493.2 69 Claims



1. A method of making a filter assembly comprising:

contacting a filter pack and an end cap with a bonding mixture comprising a particulate material to form a filter assemblage; and

heat treating the filter assemblage to sinter the particulate material and bond the end cap to the filter pack including forming a sinter bond having a pore structure sufficiently fine to prevent bypass around the filter pack.

12. A method of making a filter assembly as claimed in claim 1 wherein the step of contacting a filter pack and an end cap includes contacting a pleated filter pack having pleats greater than ⅛ inch in height.

5,545,324

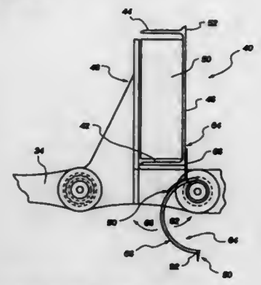
SKIMMER MECHANISM FOR RECTANGULAR BASIN CHAIN AND FLIGHT

Steven G. Workman, Holladay, Utah, assignor to Baker Hughes Incorporated, Houston, Tex.

Filed Jun. 29, 1994, Ser. No. 268,308

Int. Cl.[6] B01D *21/18*

U.S. Cl. 210—525 15 Claims



1. A fluid treatment tank comprising:

a tank for receiving fluid;

a skimmer mechanism comprising:

a set of chains associated with said tank and aligned with each other in spaced-apart orientation, said set of chains being positioned to rotate in a common direction;

at least one flight comprising an elongated structure extending between said set of chains;

a flexible hinge member connected to said flight;

a skimmer attached to said hinge member and extending away from said flight, said skimmer being an elongated member, having a three-dimensional configuration and having an interior space;

a driving mechanism engaging said set of chains; and

a scum trough positioned in said tank proximate said skimmer mechanism.

5,545,325

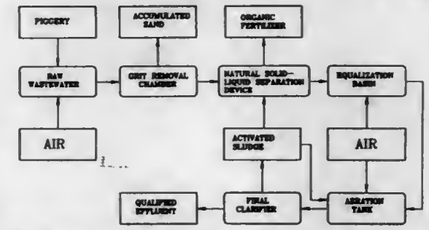
COMBINED AEROBIC & ANAEROBIC TREATING METHOD & FACILITY FOR HOG WASTEWATER

Robert J. Hsu, and Bao-Lin Sun, No. 16, Alley 45, Lane 30, 1st Section, Liu-Chiao West Road, Kangsan District, both of Kaohsiung County, Taiwan, assignors to Bao-Lin Sun, Kaohsiung County, Taiwan

Filed Aug. 23, 1994, Ser. No. 294,508

Int. Cl.[6] C02F *3/30*

U.S. Cl. 210—605 10 Claims



8. A combined aerobic and anaerobic method for treating hog wastewater, comprising:

a) a mixing treatment in a raw wastewater tank which utilizes a mixing device operated by air from an air blower to mix collected excreta and wastewater in the raw wastewater tank to prevent solid excreta from sedimentation and accumulating at the bottom of the tank to ensure good flow conditions;

b) a chunk-breaking and accumulated sand treatment in which wastewater in the raw wastewater tank is drawn into a perforated pipe located at approximately ⅓ of the height of a grit removal chamber above the bottom of the grit removal chamber and then solid excreta together with wastewater are distributed through holes at the end of the perforated pipe under air pressure from the air blower so as to settle accumulated sand to the bottom of the grit removal chamber and make excreta and wastewater mix homogenously and ready for an anaerobic fermentation;

c) a natural solid-liquid separation by excreta wherein wastewater flowing into an anaerobic digester is fermented after passing through the grit removal chamber, in which, the flow rate of inlet wastewater into the anaerobic digester is controlled by a level-sensing control valve with the air of flow-guiding plate to increase the flow pattern and treating time to ensure that the fermented excreta is completely decomposed to a lighter product and floats on an upper surface to form a natural shield layer to prevent air from dissolving into the wastewater and create an active bed for anaerobic fermentation beneath the surface so as to ensure the complete fermentation of the excreta and convert it into a valuable organic fertilizer for direct use and skimming an upper layer of fermented excreta off by an automatic skimmer, leaving a predetermined certain thickness layer of fermented excreta on the surface to keep air out for maintaining further fermentation, wherein the fermented excreta passes into an equalization basin under a flow rate and level control by a timing electrically-driven control valve;

d) equalization treatment step for wastewater which utilizes an equalization basin to buffer the water flow rate into an aeration tank, in which oxygen-enriched fermented wastewater is pumped into the aeration tank by a submerged pump so as to adjust water volume in the aeration tank;

e) an aerobic biodegrading treatment step by activated sludge in the aeration tank proceeded by an aerobic biodegrading reaction by mass-incubated activated sludge to biodegrade organic suspended solid, and which continuously provides oxygen demanded for wastewater by the aeration device so as to decompose organics and inorganic suspended matter in wastewater, thereby reducing the biochemical oxygen demand and suspended solids values; and,

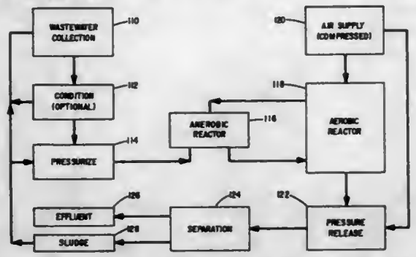
f) recovering activated sludge by a clarification process which separates clear water generated by complete biodegradation with activated sludge treatment from activated sludge in the final clarifier, then discharging reacted clear water through an overflow levee while the activated sludge settles to the bottom of the clarifier and is pumped out such that ¼ of sludge is fed back to the aeration tank and the other ¾ is delivered to the anaerobic digester and mixed with fermented excreta as organic fertilizer.

5,545,326

METHOD AND APPARATUS FOR THE TREATMENT OF CONCENTRATED WASTEWATER

John L. Petering, 804 S. Broad St., Mankato, Minn. 56001

Filed Dec. 27, 1994, Ser. No. 364,259
Int. Cl.[6] C02F *3/30*
U.S. Cl. 210—605 **13 Claims**



1. A relatively high pressure process for the treatment of low-volume, high-solids wastewater having generally high BOD and phosphorus concentration comprising the steps of:

(a) introducing high-solids wastewater feed having a water fraction and a solids fraction at a predetermined elevated process pressure of from about 3 atmospheres to about 10 atmospheres;

(b) subjecting said wastewater to an anaerobic treatment step under said elevated process pressure for reducing the phosphorus content in the water fraction and transferring phosphorus to the solids fraction;

(c) subjecting said wastewater to an aerobic treatment step under said elevated process pressure including added aeration oxidant wherein said added aeration oxidant is in the form of ambient air compressed to the predetermined elevated process pressure;

(d) maintaining pressurized aerobic condition in said wastewater during agitation thereof to produce related wastewater in which the BOD is reduced to a predetermined value; and

(e) discharging treated wastewater liquid and solid effluent.

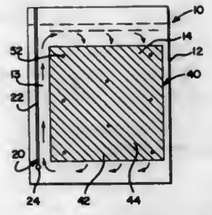
5,545,327

WASTEWATER TREATMENT METHOD AND APPARATUS

Craig S. Volland, Kansas City, Kans., assignor to Smith & Loveless, Inc., Lenexa, Kans.

Filed Jun. 15, 1994, Ser. No. 259,907
Int. Cl.[6] C02F *3/06*
U.S. Cl. 210—615 **13 Claims**

13. A method for treating a wastewater influent containing biodegradable waste products, comprising:



introducing the wastewater influent into a treatment tank having a reactor zone disposed therein that contains a fixed media assembly located therein, said fixed media assembly including a plurality of substantially vertical parallel sheets, said sheets having a plurality of parallel corrugations formed therein that are defined by obliquely inclined peaks and valleys, said corrugations of immediately adjacent sheets being oriented with respect to one another so that the peaks and valleys of one sheet intermate with the respective peaks and valleys of the adjacent sheets so as to define an inclined open sluffing channel at each corrugation that provides a substantially unobstructed pathway for the passage of solids toward the bottom of the treatment tank;

aerating the wastewater within the treatment tank;

circulating the wastewater through the fixed media assembly to promote intimate contact with the sheets to cause microbial growth on the sheets; and

directing said particles that dislodge from the surfaces of the sheets through the sluffing channels toward the bottom of the treatment tank.

5,545,328

PURIFICATION OF HEMOGLOBIN BY DISPLACEMENT CHROMATOGRAPHY

Diana H. Pliura, Mississauga; Diane E. Wiffen, Georgetown, both of, Canada; Salman Ashraf, Raleigh, N.C., and Anthony A. Magnin, Willowdale, Canada, assignors to Hemosol Inc., Etobicoke, Canada

Continuation-in-part of Ser. No. 308,838, Sep. 21, 1994, which is a continuation-in-part of Ser. No. 187,316, Jan. 27, 1994, Pat. No. 5,439,591. This application Mar. 20, 1995, Ser. No. 406,148
Claims priority, application Canada, Sep. 21, 1993, 2106612
The portion of the term of this patent subsequent to Aug. 8, 2012, has been disclaimed.
Int. Cl.[6] B01D *15/08*
U.S. Cl. 210—635 **12 Claims**



1. A chromatographic process of separating at least one preselected hemoglobin species from contaminants which have a different acidity from that of said hemoglobin species, which comprises:

selecting a solid chromatographic separation column medium and conditions of use thereof in which both said contaminants and the hemoglobin species have affinity for the column but in which said contaminants have a greater degree of affinity than the hemoglobin species;

feeding a liquid solution comprising a mixture of the hemoglobin species and said contaminants to the column under the selected conditions until the column is substantially fully loaded with hemoglobin species and said contaminants;

further continuing the feed of the liquid solution to cause column overload and subsequent displacement of the hemoglobin species therefrom by said contaminants of greater affinity; and

recovering as eluant from the column a solution of the preselected hemoglobin species substantially free from said contaminants, with the contaminants remaining bound to the column.

5,545,329

METHOD OF REFINING OIL

David A. LaMonica, Hermosa Beach, Calif., assignor to Rochem Separation Systems, Torrance, Calif.

Filed May 8, 1995, Ser. No. 436,916
Int. Cl.[6] B01D *69/02*
U.S. Cl. 210—651 **3 Claims**



1. A method of refining an oil comprising:

providing an oil composition containing impurities and an organic solvent;

tangentially contacting, in parallel, the oil composition with each of one side of a plurality of first semipermeable membrane filter elements to produce a plurality of first permeate streams on each of the other sides of the first filter elements and a plurality of first retentate streams on each of the one sides of the plurality of first filter elements,

removing and collecting the plurality of first retentate streams from the one sides of the first filter elements to form a first collected retentate;

removing the plurality of first permeate streams from the other sides of the first filter elements to form a first collected permeate;

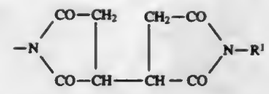
tangentially contacting, in parallel, the first collected retentate with each of one side of a plurality of second semipermeable membrane filter elements to produce a plurality of second permeate streams on each of the other sides of the second filter elements and a plurality of second retentate streams on each of the one sides of the plurality of second filter elements;

removing and collecting the plurality of second retentate streams from the one sides of the second filter elements to form a second collected retentate;

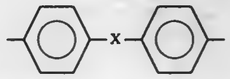
removing the plurality of second permeate streams from the other sides of the first filter elements to form a second collected permeate;

wherein the semipermeable membrane comprises:

a polyimide consisting of a repeating unit of the general formula



wherein R^1 represents a divalent organic group of the general formula



wherein x represents a divalent leeching group selected from the group consisting of $—CH_2—$, $—CH(CH_3)_2—$, —O—, and $—SO_2$.

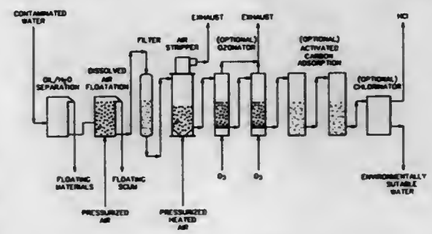
whereby the collected permeates contain the refined oil substantially free of impurities and organic solvent.

5,545,330

WATER TREATMENT SYSTEM

Robert T. Ehrlich, Edison, N.J., assignor to Amerada Hess Corporation, Woodbridge, N.J.

Filed Dec. 1, 1994, Ser. No. 347,856
Int. Cl.[6] C02F *9/00;1/24;1/28*
U.S. Cl. 210—703 **24 Claims**



1. A process for transforming contaminated water to an environmentally suitable state comprising the steps of:

separating free-phase hydrocarbons and other floating contaminants from the contaminated water by using the difference in density of the free-phase hydrocarbons, the other floating contaminants and the contaminated water;

subjecting the contaminated water from which free-phase hydrocarbons have been substantially removed to a second step by separating dispersed hydrocarbons, fine solids and dissolved impurities from the contaminated water by bubbling gas through the contaminated water to form a floating scum of dispersed hydrocarbons, fine solids and dissolved impurities and then removing said floating scum;

subjecting the contaminated water from which dispersed hydrocarbons have been substantially removed to a third step by separating solid and liquid impurities from the contaminated water by filtration; and

subjecting the contaminated water from which solid and liquid impurities have been substantially removed to a fourth step by separating dissolved volatile organic impurities from the contaminated water by a gas stripping process.

5,545,331

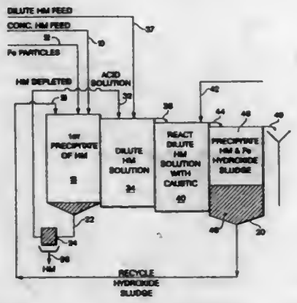
RECYCLE PROCESS FOR REMOVING DISSOLVED HEAVY METALS FROM WATER WITH IRON PARTICLES

Robert G. Guess, Manchester, Mass., assignor to Romar Technologies, Inc., Danvers, Mass.

Continuation-in-part of Ser. No. 218,891, Mar. 28, 1994, Pat. No. 5,462,270, which is a continuation-in-part of Ser. No. 160,240, Dec. 2, 1993, abandoned, which is a division of Ser. No. 893,978, Jun. 3, 1992, Pat. No. 5,298,168, which is a continuation-in-part of Ser. No. 682,129, Apr. 8, 1991, Pat. No. 5,122,279. This application Feb. 10, 1995, Ser. No. 386,700

Int. Cl.[6] C02F *1/62;1/70*

U.S. Cl. 210—713 28 Claims



1. The process for removing dissolved heavy metals from aqueous solutions containing said heavy metal which comprises (a) in a first reaction step, admixing and reacting a first aqueous solution with iron particles at a pH between about 0.1 and 4 to effect precipitation of said heavy metals from said first solution, separating said precipitated heavy metals from said first solution to form a first liquid effluent from said first reaction step, (b) in a second step, admixing said first liquid effluent with an acidic aqueous solution containing chelated or complexed heavy metals to produce a second liquid effluent containing dissolved heavy metals and dissolved ferrous ions, wherein at least a portion of said dissolved heavy metals are produced by replacement with ferrous ions of said chelated or complexed heavy metals, (c) in a third reaction step, admixing and reacting said second liquid effluent with a water soluble alkali composition to produce a metal hydroxide slurry containing heavy metal hydroxides and ferrous hydroxide and a third liquid effluent, (d) separating said metal hydroxide slurry from said third effluent and (e) recycling said slurry to at least one of said first reaction step, said second step, or said third reaction step.

5,545,332

PROCESS FOR DEWATERING FINE-PARTICLE SOLIDS SUSPENSIONS

Rita Koester, Duesseldorf; Gerhard Stoll, Korschenbroich, and Peter Daute, Essen, all of, Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP93/01297, § 371 Date Dec. 1, 1994, § 102(e) Date Dec. 1, 1994, PCT Pub. No. WO93/24798, PCT Pub. Date Dec. 9, 1993

PCT Filed May 24, 1993, Ser. No. 347,324

Claims priority, application Germany, Jun. 1, 1992, 42 18 050.3

Int. Cl.[6] C02F *11/14;1/54*

U.S. Cl. 210—729 18 Claims

1. A process for dewatering a fine-particle solids suspension, which comprises: adding to the suspension from 10 to 500 grams per metric ton of solid an internal hydroxy mixed ether of the formula

(I)

in which

R^1 represents a linear hydroxy alkyl group containinq from 2 to 16 carbon atoms with the hydroxyl group bonded to the carbon atom adjacent to the carbon atom with the ether linkage and R^2 represents a linear alkyl group containing 1 to 15 carbon atoms, with the proviso that the sum of the total number of carbon atoms in R^1 and R^2 is 5 to 17,

R^3 is hydrogen or a linear or branched alkyl group containing 1 to 12 carbon atoms and

n is a number of 1 to 20,

and separating water from the suspension.

5,545,333

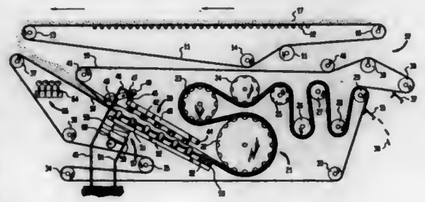
METHOD FOR PREPARING A MATERIAL FOR HIGH PRESSURE DELIQUIFICATION

James A. Louden, Chester; Brian F. Hawkins, Hillsborough, and Wayne D. Hann, Sr., deceased, late of Pattenburg, all of N.J., assignors to Komline-Sanderson Engineering Corp., Peapack, N.J.

Division of Ser. No. 174,837, Dec. 28, 1993, Pat. No. 5,456,832. This application May 26, 1995, Ser. No. 450,474

Int. Cl.[6] B01D *33/04*

U.S. Cl. 210—739 9 Claims



1. A method of deliquifying a material in a belt filter press having an upper belt and a lower belt which converge towards one another in a wedge zone, the angle of convergence between the upper and lower belts defining a wedge angle which corresponds to the degree of pressure exerted on the material in the wedge zone said method comprising:

a. providing upper and lower belt supports in the area of the wedge zone, said upper and lower belt supports having upper and lower belt support members;

b. arranging said upper and lower belt support members alternately and oppositely throughout at least a portion of the wedge zone;

c. introducing material between said upper and lower belts prior to the wedge zone;

d. moving said upper and lower belts and the material therebetween through the wedge zone, as supported by the upper and lower belt supports, such that the upper and lower belts and material therebetween move through the wedge zone in a shear-inducing serpentine manner, whereby the material between the upper and lower belts is massaged in addition to being compressed in the wedge zone; and

e. adjusting, in response to material thickness and consistency in or after the wedge zone, the wedge angle during movement of the upper and lower belts by moving at least one of said upper or lower belt supports to narrow or widen the wedge angle the adjustment being made while the upper and lower belts and the material therebetween is being moved through the wedge zone so that such adjustment is made without stopping the movement of the material in the wedge zone.

5,545,334

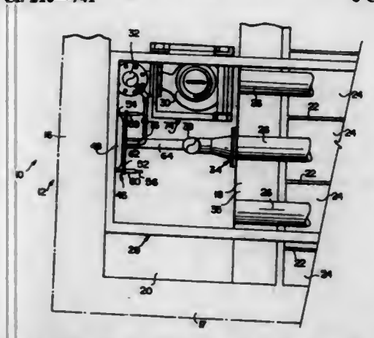
METHOD FOR SEALING A TRAVELING BRIDGE FILTER BACKWASH SHOE

Mack McDougald, Ochlocknee, Ga., assignor to Davis Water & Waste Industries, Inc., Thomasville, Ga.

Division of Ser. No. 179,693, Jan. 11, 1994, Pat. No. 5,431,809. This application Feb. 27, 1995, Ser. No. 395,082

Int. Cl.[6] B01D *24/46*

U.S. Cl. 210—741 6 Claims



1. A method of effecting sealing engagement between a backwash shoe and a filter cell outlet port in a traveling bridge filtration system which includes a tank configured to include a plurality of side-by-side filter cells all extending longitudinally in a first direction, and a common filtrate channel extending longitudinally in a second direction perpendicular to said first direction; each filter cell having an outlet extending through an interior wall of the tank thereby establishing fluid communication with said filtrate channel; a traveling bridge mounted atop said tank and movable from cell to cell in said second direction; a backwash pump having an inlet and a discharge pipe, the discharge pipe connected to a backwash shoe which is movable toward and away from each cell, the backwash pump and backwash shoe suspended from the bridge and located within the filtrate channel, and wherein pressure developed by said backwash pump is communicated to said backwash shoe by a pressure connector; the method comprising:

(a) moving the bridge into alignment with a filter cell to be backwashed;

(b) moving said backwash shoe into sealing engagement with a tank wall surface surrounding an outlet of said filter cell as a direct function of pressure developed in said backwash pump and;

(c) backwashing the filter cell;

(d) relieving the pressure in the pump and disengaging said backwash shoe from said tank wall surface; and

(e) moving the bridge to the next adjacent cell.

5,545,335

WATER PURIFIER

Adrian P. Sween, 205 Maryknoll Dr., Stillwater, Minn. 55082, and Raymond D. Nass, Stevens Point, Wis., assignors to Adrian P. Sween, Stillwater, Minn.

Filed Sep. 26, 1994, Ser. No. 312,328

Int. Cl.[6] C02F *1/32;1/50;* A61H *33/00*

U.S. Cl. 210—748 8 Claims

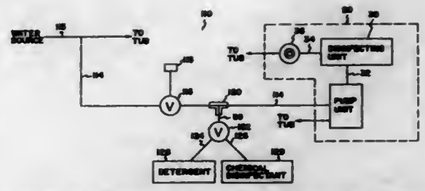
1. A bathing system comprising:

a. a bathtub including means for filling before each bathing use and means for draining after each bathing use, said bathtub including an outlet jet;

b. a pump;

c. a suction port in communication with the pump;

d. a disinfecting unit having a first end and a second end, the first end in communication with the pump, the disinfecting unit including at least one chamber, the chamber including means for disinfecting the water with ultraviolet radiation;



e. means in communication with the second end of the disinfecting unit for delivering purified water to the outlet jet;

f. a detergent storage tank; and

g. a detergent injection system in communication with the pump for injecting detergent from the detergent storage tank for cleansing the bathtub after each bathing use.

8. A method for using a bathing system, said bathing system including a bathtub for an individual person, a disinfecting unit having an ultraviolet bulb, a pump, means for communicating water from said bathtub through said pump and said disinfecting unit and back to said bathtub, means for filling and draining said bathtub, and a detergent storage tank, comprising the steps of:

with bath water in the bathtub, cycling said bath water a plurality of times from said bathtub through said water communicating means and said disinfecting unit and back to said bathtub; and

after draining said bath water, flowing fresh water from said bathtub filling means past said detergent storage tank to mix detergent with said fresh water and through said bathtub and said water communicating means to cleanse said bathtub and said water communicating means.

5,545,336

METHOD OF NEUTRALIZING ALDEHYDE-CONTAINING WASTE WATERS AND THE LIKE

Steven P. Wheeler, 1821 Valleta Dr., Torrance, Calif. 90275, and Theodore R. Bryan, 125 N. Starflower St., Brea, Calif. 92621

Filed Oct. 3, 1995, Ser. No. 538,530

Int. Cl.[6] C02F *1/70*

U.S. Cl. 210—757 7 Claims

1. An improved method of neutralizing aldehyde-containing liquid waste streams, said method consisting of the steps of:

a) as a first step, contacting an aqueous aldehyde-containing body of waste liquid with a treating agent which consists only of sufficient sodium pyrosulfite having the formula $Na_2S_2O_5$ to substantially completely neutralize the aldehyde in said body, said body and said treating agent being devoid of sodium sulfite and sodium bisulfite, the latter having the formula $NaHSO_3$;

b) maintaining said contact until said substantially complete neutralization is effected; and,

c) thereafter disposing of said neutralized detoxified body of waste liquid.

5,545,337

CERAMIC COATING SYSTEM OR WATER OXIDATION ENVIRONMENTS

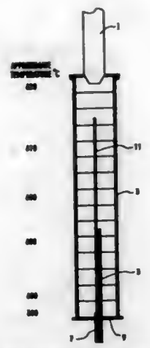
Glenn T. Hong, Tewksbury, Mass., assignor to Modar, Inc., Natick, Mass.

Filed Nov. 29, 1994, Ser. No. 346,144

Int. Cl.[6] C02F *1/72*

U.S. Cl. 210—761 20 Claims

1. A process for high temperature water oxidation of combustible material in a high temperature water oxidation apparatus, in which during at least part of the oxidation, corrosive material is present and contacts the apparatus over a contact area on the apparatus, the process comprising contacting in an aqueous phase the combustible material and an oxidizing agent under conditions suitable to cause oxidation of the combustible material, wherein



the oxidation is at a temperature in the range of about 300° C. to about 700° C. and at pressures from about 27.5 bar (400 psi) to about 1000 bar (15,000 psi) and the contact area contains a ceramic composite comprising titanium base metal overlaid with a titania coating, to provide corrosion resistance from said corrosive material in said contact area.

5,545,338

METHOD FOR FILTERING MINERAL SLURRIES

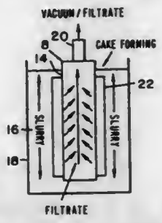
Michael W. Ginn, Wrightsville; Gary L. Cobb, Davisboro; Lawrence E. Broxton, Sandersville, and Kelly R. McNeely, Mitchell, all of Ga., assignors to ECC International Inc., Atlanta, Ga.

PCT No. PCT/US93/00562, § 371 Date Jul. 21, 1994, § 102(e) Date Jul. 21, 1994, PCT Pub. No. WO92/14205, PCT Pub. Date Aug. 20, 1992

Continuation-in-part of Ser. No. 823,996, Jan. 22, 1992, Pat. No. 5,213,687, and a continuation-in-part of Ser. No. 824,032, Jan. 22, 1992, Pat. No. 5,223,155. This PCT application Jan. 19, 1993, Ser. No. 256,716

Int. Cl.[6] B01D *29/68;29/72;33/48;33/54*

U.S. Cl. 210—791 **14 Claims**



1. A method for filtering an aqueous mineral slurry and collection of the mineral as product, comprising:

flowing said slurry through a filter plate which is characterized by a porous support layer and an overlying microporous metal filtration layer, the pore sizes in said filtration layer being substantially all less than about 5 μm, said flow through said filter plate being from said filtration layer side toward said support layer, and being effected by positioning said plate in a container for said slurry and establishing a fluid pressure differential across the said filter plate by applying suction to the said porous support layer, thereby accumulating a filter cake of said mineral or the said porous filtration layer;

removing said filter plate from said slurry and positioning said plate for cake discharge and collection at a zone underlying said filter plate, the plate surface carrying the cake being oriented at an angle of from 0° to 45° with respect to the vertical;

extinguishing said suction and subjecting the support layer side of said plate to one or more positive water pressure pulses to effect a transient reverse flow through said plate and via the uniform pore structure generate a uniform back pressure and a lubricating film of water at the interface between said filtration layer and said filter cake; and

applying oscillations or vibrations to the surface of said porous filtration layer to facilitate separation of the said filter cake, said separated cake thereby sliding from the plate surface under the influence of gravity and being collected as product at said underlying zone.

5,545,339

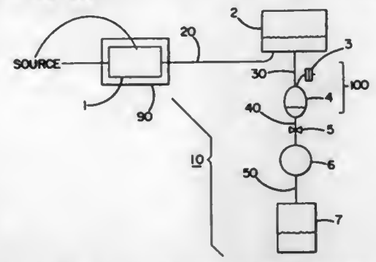
METHOD FOR PROCESSING BIOLOGICAL FLUID AND TREATING SEPARATED COMPONENT

Thomas J. Bormann, Melville; Frank R. Pascale, and Thomas C. Gsell, both of Glen Cove, all of N.Y., assignors to Pall Corporation, East Hills, N.Y.

Filed Feb. 25, 1994, Ser. No. 202,111

Int. Cl.[6] B01D *37/00;21/26;36/00;* **A61M** *1/00*

U.S. Cl. 210—806 **13 Claims**



1. A method for processing a biological fluid comprising:

obtaining a biological fluid comprising red blood cells and platelets from a source;

separating red blood cells from the biological fluid to deplete the biological fluid of red blood cells;

returning red blood cell-depleted platelet-containing biological fluid to the source while:

separating gas from a flow path of the separated red blood cells; and,

passing a portion of the separated red blood cells along the flow path and through a leukocyte depletion medium to deplete leukocytes from the red blood cells.

5,545,340

CONCENTRATED BIODEGRADABLE QUATERNARY AMMONIUM FABRIC SOFTENER COMPOSITIONS AND COMPOUNDS CONTAINING INTERMEDIATE IODINE VALUE UNSATURATED FATTY ACID CHAINS

Errol H. Wahl, Cincinnati; Dennis R. Bacon, Milford; Ellen S. Baker, Cincinnati, all of Ohio; Jean-Francois Bodet, Newcastle Upon Tyne, Great Britain; Michael E. Burns, West Chester, Ohio; Hugo J. M. Demeyere, Merchtem, Belgium; Charles A. Hensley; Robert Mermelstein, both of Cincinnati, Ohio; John C. Severns, West Chester, Ohio; John H. Shaw, Jr.; Michael P. Siklosi, both of Cincinnati, Ohio; Alice M. Vogel, West Chester, Ohio, and Jeffrey W. Watson, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 142,739, Oct. 25, 1993, abandoned, which is a continuation-in-part of Ser. No. 24,541, Mar. 1, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 461,207

Int. Cl.[6] D06M *13/46*

U.S. Cl. 510—517 **35 Claims**

1. A stable, homogeneous fabric softening composition selected from the group consisting of:

I. a solid particulate composition comprising:

(A) from about 50% to about 95% of biodegradable quaternary ammonium fabric softening compound; and

(B) from about 0% to about 30% of dispersibility modifier selected from the group consisting of:

1. single-long-chain C_{10}–C_{22} alkyl, cationic surfactant;
2. nonionic surfactant with at least 8 ethoxy moieties;
3. amine oxide;
4. C_{12}–C_{25} fatty acid; and
5. mixtures thereof; and

(C) from about 0% to about 2% of a stabilizer; and

II. a liquid composition comprising:

(A) from about 5% to about 50% of biodegradable quaternary ammonium fabric softening compound;

(B) from about 0% to about 5% of dispersibility modifier selected from the group consisting of:

1. single-long-chain C_{10}–C_{22} alkyl, cationic surfactant;
2. nonionic surfactant with at least 8 ethoxy moieties;
3. amine oxide;
4. C_{12}–C_{25} fatty acid; and
5. mixtures thereof;

(C) from about 0% to about 2% of a stabilizer; and

(D) aqueous liquid carrier;

wherein the quaternary ammonium fabric softening compound has the formula:

$$(R)_{4-m}—N^+—[(CH_2)_n—Y—R^2]_m X^-$$

wherein

each Y is —O—(O)C—, or —C(O)—O—;

m is 2 or 3;

n is 1 to 4;

each R is a C_1–C_6 alkyl group, benzyl group, or mixtures thereof;

each R^2 is a C_{11}–C_{21} hydrocarbyl or substituted hydrocarbyl substituent; and

X^- is any softener-compatible anion;

wherein the compound is derived from C_{12}–C_{22} fatty acyl groups having an Iodine Value of from greater than about 5 to less than about 100, a cis/trans isomer weight ratio of greater than about 30/70 when the Iodine Value is less than about 25, the level of unsaturation of the fatty acyl groups is less than about 65% by weight, the liquid compositions being stable without nonionic viscosity modifiers when the concentration of said quaternary ammonium fabric softening compound is less than or equal to 13%; and wherein the dispersibility modifier affects the composition's viscosity, dispersibility, or both.

5,545,341

PROCESS FOR PREPARING FERROMAGNETIC MATERIAL

Yo Shimizu; Masaru Miya, and Akira Nagata, all of Ikeda, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

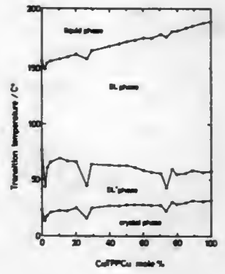
Filed Mar. 23, 1995, Ser. No. 408,777

Claims priority, application Japan, Apr. 8, 1994, 6-095764

Int. Cl.[6] C09K *19/02;* **H01F** *1/42*

U.S. Cl. 252—62.5 R **6 Claims**

1. A process for preparing a ferromagnetic material, comprising mixing at least 2 kinds of organic paramagnetic compounds capable of organic manifesting a mesophase with each other in a liquid phase to mesophase state thereof.



5,545,342

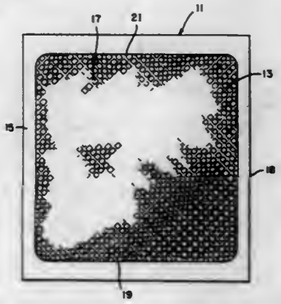
ANTISTATIC COMPOSITIONS AND ANTISTATIC DETERGENT COMPOSITIONS AND ARTICLES

Charles A. Beagle, South Plainfield; Richard P. Adams, Monmouth Jct., and Harold E. Wixon, New Brunswick, all of N.J., assignors to Colgate-Palmolive Co., New York, N.Y.

Continuation of Ser. No. 83,416, Jun. 28, 1993, abandoned, which is a continuation of Ser. No. 792,314, Nov. 14, 1991, abandoned, which is a continuation of Ser. No. 644,728, Jan. 23, 1991, abandoned, which is a continuation of Ser. No. 346,053, May 2, 1989, abandoned. This application Dec. 21, 1994, Ser. No. 361,028

Int. Cl.[6] C11D *3/37;1/83*

U.S. Cl. 510—299 **23 Claims**



1. An antistatic and soil release promoting, softener composition which, when added to a nonionic detergent composition or to wash water containing such a detergent composition or its components, significantly improves the antistatic action and softening properties on washed laundry of the detergent composition or the wash water, which comprises 20 to 200 parts by weight of a cationic fabric softener (CFS); 2 to 30 parts by weight of an antistatic silicone polymer (Silicone X) of the formula:

$$ZO—\left[\begin{matrix}R^2\\—SiO—\\R^3\end{matrix}\right]_z\left[\begin{matrix}R^4\\—SiO—\\H\end{matrix}\right]_p\left[\begin{matrix}R^5\\—SiO—\\Z^1\end{matrix}\right]_y—Z^2$$

wherein R^2 and R^3 are each independently alkyl or aryl, which may be substituted with lower alkyl; R^4 is hydrogen or R^2; Z^1 is $—CH_2CHA—(CH_2)_rSi(R^1)_3$; Z and Z^2 are each independently $(R^6)_nSiH_{(3-n)}$ or $—CH_2CHA—(CH_2)_rSi(R^1)_3$; n is 0 to 3; R^6 is alkyl, alkoxy, phenoxy or aryl, which may be substituted with lower alkyl; R^5 is R^2 or Z^1; x is 2 to 1000; y is 1 to 200; p is 0 to about 50% of y; A is hydrogen, alkyl or phenyl; r is 0 to 12; and R^1 is hydroxy, acyloxy, halogen, amino, alkoxy, aryloxy or aryloxy substituted with lower alkyl, halogen or acyloxy; and 40 to 95 parts by weight of a soil release promoting polyethylene terephthalate-polyoxyethylene terephthalate copolymer (PET-POET).

5,545,343

PERACID COMPOSITIONS FOR MEDICAL DISINFECTION

Paul Brougham, Rainhill, and Robert A. Simms, Woolston, both of, United Kingdom, assignors to Solvay Interox Limited, Cheshire, United Kingdom

PCT No. PCT/GB92/01830, § 371 Date Jun. 21, 1994, § 102(e) Date Jun. 21, 1994, PCT Pub. No. WO93/07909, PCT Pub. Date Apr. 29, 1993

PCT Filed Oct. 8, 1992, Ser. No. 211,659

Claims priority, application United Kingdom, Oct. 17, 1991, 9122048

Int. Cl.[6] A01N *59/00*

U.S. Cl. 514—557 **30 Claims**

1. A process for the preparation of an aqueous disinfectant composition comprising mixing a first aqueous solution comprising a lower aliphatic peracid with a second aqueous solution comprising a phosphate corrosion inhibitor and at least one hydrogen peroxide stabilizer selected from the group consisting of phosphonic acids and salts thereof.

5,545,344

NONAQUEOUS LIQUID, IMPROVED AUTOMATIC DISHWASHING COMPOSITION CONTAINING ENZYMES

Patrick Durbut, Verviers, Belgium; Fahim Ahmed, Greensboro, N.C., and Julien Drapier, Seraing, Belgium, assignors to Colgate-Palmolive Co., Piscataway, N.J.

Continuation-in-part of Ser. No. 106,969, Aug. 16, 1993, abandoned, Ser. No. 837,316, Feb. 10, 1992, abandoned, and Ser. No. 833,472, Feb. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 708,321, May 31, 1991, Pat. No. 5,169,553, said Ser. No. 106,969is a continuation-in-part of Ser. No. 928,621, Aug. 11, 1992, abandoned, which is a continuation-in-part of Ser. No. 797,605, Nov. 25, 1991, abandoned, which is a continuation-in-part of Ser. No. 708,568, May 31, 1991, abandoned, said Ser. No. 837,316is a continuation-in-part of Ser. No. 708,320, May 31, 1991, abandoned. This application Oct. 17, 1994, Ser. No. 324,321

Int. Cl.[6] C11D *3/386;3/37;3/08;1/66*

U.S. Cl. 510—223 **8 Claims**

1. A nonaqueous liquid detergent composition comprising approximately by weight:

(a) 1 to 12 percent of a liquid nonionic surfactant;

(b) 35 to 65 percent of a nonaqueous liquid carrier material selected from the group consisting of polyethylene glycol, polypropylene glycol, diethylene glycol monoethyl ether, diethylene glycol monopropylether, diethylene glycol monobutyl ether, tripropylene glycol methyl ether, propylene glycol methyl ether, dipropylene glycol methyl ether, propylene glycol methyl acetate, dipropylene glycol methyl ether acetate, ethylene glycol n-butyl ether and ethylene glycol n-propyl ether;

(c) 2 to 50 percent of at least one alkali metal detergent builder salt;

(d) 0.1 to 1.5 percent of an antifoaming agent;

(e) 1.5 to 12 percent of at least one protease enzyme;

(f) 0.1 to 6.0 percent of an amylase enzyme;

(g) 1 to 8 percent a low molecular weight non crosslinked polyacrylate homopolymer;

(h) 3 to 20 percent of an alkali metal silicate;

(i) 0.1 to 15 percent of a clay gel stabilizing system said clay gel comprising 5 wt. % to 25% of a clay, 2 wt. % to 4 wt. % of propylene carbonate and 80 wt. % to 90 wt. % of tripropylene glycol monomethyl ether; and

(j) 1 to 12 percent a low noncrosslinked copolymer selected from the group consisting of a copolymer of acrylate/olefin and a copolymer of acrylate/maleic anhydride and a copolymer of methyl vinyl ether/maleic anhydride, said composition being free of a chlorine bleach containing compound.

5,545,345

LIQUID CRYSTAL MIXTURE AND LIQUID CRYSTAL ELEMENT COMPRSING THE SAME

Sekine Chizu; Tani Takeshi; Ueda Kayoko; Fujisawa Koichi, all of Tsukuba; Higashii Takayuki, Yokohama; Fujimoto Yukari, Takatsuki; Toda Shoji, Takatsuki, and Minai Masayoshi, Moriyama, all of, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jul. 29, 1994, Ser. No. 282,022

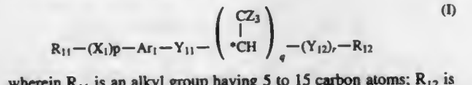
Claims priority, application Japan, Jul. 30, 1993, 5-208667; Aug. 10, 1993, 5-198219

Int. Cl.[6] C09K *19/34;19/20;* **G02F** *1/13*

U.S. Cl. 252—299.61 **8 Claims**

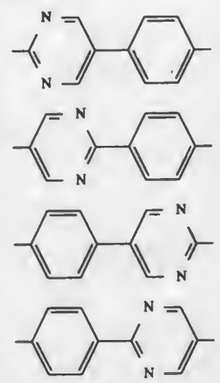
1. A ferroelectric chiral smectic liquid crystal mixture comprising:

at least one compound of the formula (I):



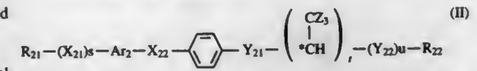
(I)

wherein R_{11} is an alkyl group having 5 to 15 carbon atoms; R_{12} is an alkyl group having 1 to 10 carbon atoms or an alkoxyalkyl group having 2 to 10 carbon atoms, which may be substituted by at least one halogen atom; X_1 is —O—, —COO— or —OCO—; Ar_1 is one of the groups:



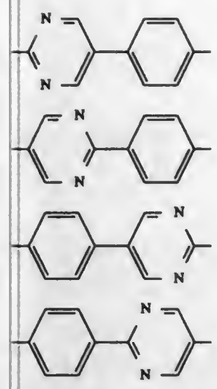
Y_{11} is $—(CH_2)_m—$ or $—CH═CH—(CH_2)_n—$ in which m is an integer of 0 to 10 and n is an integer of 0 to 8; Z is a hydrogen atom or a fluorine atom; Y_{12} is —O—, —COO— or —OCO—; p and r are each 0 or 1; q is 1; and the asterisk * indicates an asymmetric carbon atom, and

at least one compound selected from the group consisting of a compound of the formula (II):

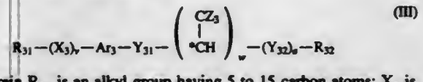


(II)

wherein R_{21} is an alkyl group having 5 to 15 carbon atoms; R_{22} is an alkyl group having 1 to 20 carbon atoms or an alkoxyalkyl group having 2 to 20 carbon atoms; X_{21} is —O—, —COO— or —OCO—; X_{22} is —COO— or —OCO—; t is 0 or 1; Ar_2 is one of the groups:

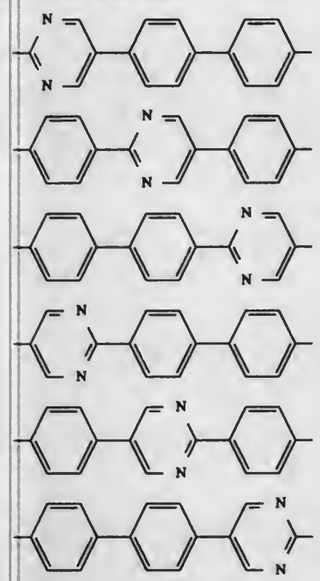


Z is a hydrogen atom or a fluorine atom; Y_{21} is $—(CH_2)_k—$ in which k is an integer of 0 to 10 when t is 1 or an integer of 0 to 11 when t is 0; Y_{22} is —O— or —OCO—; s, t and u are each 0 or 1; and the asterisk * indicates an asymmetric carbon atom and a compound of the formula (III):



(III)

wherein R_{31} is an alkyl group having 5 to 15 carbon atoms; X_3 is —O—, —COO— or —OCO—; R_{32} is an alkyl group having 1 to 20 carbon atoms or an alkoxyalkyl group having 2 to 20 carbon atoms; Ar_3 is one of the groups:



Z is a hydrogen atom or a fluorine atom; Y_{31} is $—(CH_2)_j—$ in which j is an integer of 0 to 10 when w is 1 or an integer of 0 to 11 when w is 0; Y_{32} is —O— or —OCO—; v, w and a are each 0 or 1; and the asterisk * indicates an asymmetric carbon atom, where a molar ratio of the compound (I) to at least one compound selected from the group consisting of the compound (II) and the compound (III) is from 80:20 to 20:80.

5,545,346

RINSING COMPOSITIONS

Fiona S. Macbeath, Gosforth, and John S. Park, Whitley Bay, both of, England, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 6, 1994, Ser. No. 349,845

Claims priority, application United Kingdom, Dec. 23, 1993, 9326318

Int. Cl.[6] C11D *1/66;3/26;3/36;3/37*

U.S. Cl. 510—514 **7 Claims**

1. A rinse aid composition in liquid or gel form which is especially suitable for preventing or reducing formation of deposits on tableware during the rinse cycle of an automatic dishwashing process, said composition comprising:

A) from 0.5% to 40% by weight of the composition of a nonionic surfactant;

B) from 0.5 to 20% by weight of the composition of a hydrotrope selected from xylene sulfonate and cumene sulfonate;

C) from 35% to 94% by weight of the composition of a liquid carrier selected from water and mixtures of water and organic solvents; and

D) from 0.5% to 10% by weight of the composition of an organo aminophosphonic acid or its salts or complexes selected from the group consisting of amino alkylene poly(alkylene phosphonic acid) or nitrilo trimethylene phosphonic acid or mixtures thereof; E) from 0.0005% to 20% by weight of the composition of an organic polymer containing acrylic acid or its salts, having an average molecular weight of less than 15,000;

said composition providing a pH of from 1.0 to 5.0 in a 1% solution with distilled water at 20° C.

5,545,347

LOW PHOSPHOROUS, LOW ETCH CLEANER AND METHOD

Jiangbo Ouyang, Bensalem; Edward A. Rodzewich, Flourtown, and William L. Harpel, Langhorne, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Division of Ser. No. 217,040, Mar. 24, 1994, Pat. No. 5,472,630. This application Jul. 18, 1995, Ser. No. 503,665

Int. Cl.[6] C11D *1/34;1/72;3/37*

U.S. Cl. 510—254 **4 Claims**

1. A low etch, low phosphate containing aluminum cleaning composition comprising an aqueous solution of by volume percent, 5 to 50% alkali metal hydroxide and 0.5 to 10% gluconic acid, the improvement further comprising a stable combination of 0.2 to 5% of a detergent selected from the group consisting of trimethylnonanol polyethyleneglycol ether with 6 moles ethylene oxide, 0.5 to 10% of an aluminum sequestrant selected from the group consisting of poly(acrylic) acid, 0.5 to 10% of an oil emulsifier selected from the group consisting of potassium C_5 to C_{18} alkoxy phenoxy carboxy phosphate, 0.05 to 5% of a defoamer, and 0.4 to 20% of a hydrotrope.

5,545,348

NON-PHOSPHATE HIGH CARBONATE MACHINE DISHWASHING DETERGENTS CONTAINING MALEIC ACID HOMOPOLYMER

Lenore E. Savio, Belle Mead, N.J., assignor to Church & Dwight Co., Inc., Princeton, N.J.

Filed Nov. 2, 1994, Ser. No. 333,251

Int. Cl.[6] C11D *3/10;3/37*

U.S. Cl. 510—230 **12 Claims**

1. A non-phosphate machine dishwashing detergent composition comprising at least about 80 wt. % of a combination of an alkaline

carbonate and an alkaline bicarbonate having a weight ratio of carbonate to bicarbonate of about 1:1 to 1:5, about 0.5 to 8.0 wt. % of a polycarboxylate polymer consisting of a homopolymer of maleic acid as dispersant, said homopolymer of maleic acid being the only polycarboxylate polymer present in the composition, and about 0.5 to 8.0 wt. % of a nonionic surfactant.

5,545,349
BLEACHING COMPOSITION

Jun Kurii; Noboru Nomura; Masami Itoh; Kozo Ohira; Masaki Tsumadori, all of Tochigi; Akira Matsunaga, Wakayama; Akio Kimura, Wakayama, and Shigetoshi Suzue, Wakayama, all of, Japan, assignors to Kao Corporation, Tokyo, Japan

Continuation of Ser. No. 598,631, Oct. 23, 1990, abandoned. This application Mar. 18, 1994, Ser. No. 210,418

Claims priority, application Japan, Sep. 11, 1989, 1-235362; Oct. 3, 1989, 1-258318; Jan. 24, 1990, 2-15660; Apr. 24, 1990, 2-108235

Int. Cl.[6] C09K *3/00;* **C01B** *15/10*

U.S. Cl. 252—186.38 **14 Claims**

1. A bleaching composition comprising:

(a) hydrogen peroxide or a peroxide that produces hydrogen peroxide in aqueous solution, and

(b) an organic acid peroxide precursor that produces an organic acid peroxide by reacting with said hydrogen peroxide or peroxide that produces hydrogen peroxide in aqueous solution, wherein said organic acid peroxide is represented by formula (I):

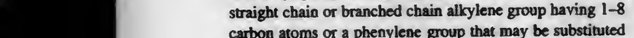


(I)

wherein R^1 represents a straight chain or branched chain alkyl or alkenyl group having 1–5 carbon atoms, R^2 represents a straight chain or branched chain alkylene group having 1–8 carbon atoms or a phenylene group that may be substituted with a straight chain or branched chain alkyl group having 1–5 carbon atoms, A represents identical or different alkylene groups having from 2 to 4 carbon atoms, and n represents an integer from 1–100, and

wherein said organic acid peroxide precursor is selected from the group consisting of:

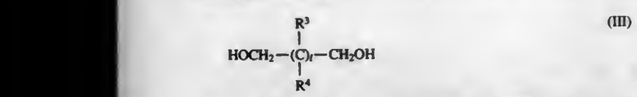
(1) an acid anhydride of an organic acid represented by the formula (II)



(II)

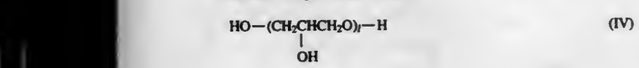
wherein R^1, R^1, A, and n have the same meanings as set forth above;

(2) an ester or an acid amide of said organic acid of formula (II) above and one of the compounds represented by formulae (III) through (VIII) below:



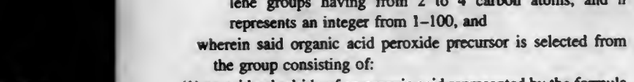
(III)

wherein R^3 and R^4 represent identical or different hydrogen atoms, methyl groups, ethyl groups, hydroxyl groups, or hydroxyalkyl groups having 1–3 carbon atoms and l represents an integer from 1–10;



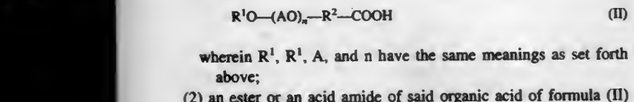
(IV)

wherein l has the same meaning as set forth above;



(V)

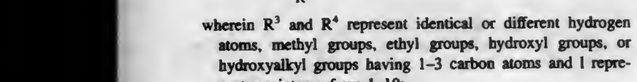
wherein R^3, R^4 and l have the same meanings as set forth above;



(VI)

wherein R^5, R^6, R^7, and R^8 represent identical or different hydrogen atoms, straight chain or branched chain alkyl groups or alkenyl groups having 1–22 carbon atoms, or hydroxyalkyl groups having 1–3 carbon atoms, with at least one group being a hydroxyalkyl group having 1–3 carbon atoms, and X represents a halogen atom;

cyclic alcohol or cyclic polyhydroxyalcohol (VII); and



(VIII)

wherein R^9 and R^{10} represent either identical or different hydrogen atoms, straight chain or branched chain alkyl or alkenyl groups having 1–22 carbon atoms or hydroxyalkyl groups having 1–3 carbon atoms, or R^9 and R^{10} may form a saturated or unsaturated ring by bonding with each other; at least one of the groups from among R^9 and p number of R^{10} represents a hydrogen atom; and R^{11} represents an alkylene group having 1–3 carbon atoms or an oxyalkylene group having 1–3 carbon atoms, while p represents an integer from 1 to 3.

5,545,350
CONCENTRATED FABRIC SOFTENER COMPOSITIONS CONTAINING BIODEGRADABLE FABRIC SOFTENERS

Ellen S. Baker, Cincinnati, Ohio; Jean-Francois Bodet, Newcastle Upon Tyne, Great Britain; Hugo J. M. Demeyere, Merchtem, Belgium; Frederick A. Hartman, Cincinnati, Ohio; Bruno A. Hubesch, Tervuren-Vossem, Belgium; Robert Mermelstein, Cincinnati, Ohio; Lucille F. Taylor, Middletown, Ohio, and Errol H. Wahl, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 101,130, Aug. 2, 1993, abandoned, which is a continuation of Ser. No. 881,979, May 12, 1992, abandoned. This application Nov. 3, 1994, Ser. No. 333,902

Int. Cl.[6] D06M *13/46*

U.S. Cl. 510—517 **56 Claims**

1. A concentrated fabric softening composition selected from the group consisting of:

I. a solid particulate composition comprising:

(A) from about 50% to about 95% of biodegradable diester quaternary ammonium fabric softening compound; and

(B) from about 3% to about 30% of viscosity or dispersibility modifier selected from the group consisting of:

1. single-long-chain, C_{12}–C_{22}, alkyl, cationic surfactant;

2. nonionic surfactant with at least about 8 ethoxy moieties; and

3. mixtures thereof; and

II. a concentrated liquid composition comprising:

(A) from about 15% to about 50% of biodegradable diester quaternary ammonium fabric softening compound; and

(B) from about 0.1% to about 30% of viscosity or dispersibility modifier selected from the group consisting of:

1. single-long-chain, C_{12}–C_{22}, alkyl, cationic surfactant;

2. nonionic surfactant with at least about 10 ethoxy moieties; and

3. mixtures thereof; and

(C) liquid carrier;

wherein the biodegradable diester quaternary ammonium fabric softening compound has a formula selected from the group consisting of:

(I) $(R)_{4-m}$—N^+-$[(CH_2)_n$-Y-$R^2]_m$ X^- (Formula I); (II) $[R^2C(O)OCH_2][R^2C(O)O]CHCH_2N^+R_3$ X^- (Formula II); and (III) mixtures thereof

wherein each Y is —O-(O)C—, or —C(O)-O—; m is 2 or 3; n is 1 to 4; each R is a C_1–C_6 alkyl, hydroxyalkyl group, benzyl group, and mixtures thereof; each R^2 is a C_{11}–C_{22} hydrocarbyl or substituted hydrocarbyl substituent; and X^- is any softener-compatible anion;

wherein more than 50% of said liquid carrier is water; wherein said diester quaternary ammonium fabric softening compound is at least about 80% diester; wherein the single-long-chain alkyl, cationic surfactant has a single C_{12}–C_{22} alkyl chain and is selected from the group consisting of quaternary ammonium compounds, non-quaternary amines, alkyl imidazoline, imidazolinum, pyridine and pyridine salts; wherein said viscosity or dispersibility modifier affects the composition's viscosity, dispersibility, or both; wherein when said diester quaternary ammonium fabric softening compound has Formula (II), said viscosity or dispersibility modifier is single-long-chain, C_{12}–C_{22}, alkyl, cationic surfactant; and wherein said composition is essentially free of compositions having the Formula $(R)_{4-m}$-N^+-$[(CH_2)_n$-O-C(O)-O-$R^2]_m$ X^-.

5,545,351
USE OF STEARIC ACID ESTERS OF POLYPROPYLENE GLYCOL TO CONTROL FOAM

William F. Riggs, Humble, and Thomas A. Wheeler, Houston, both of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Sep. 19, 1995, Ser. No. 530,528

Int. Cl.[6] B01D *43/00;* **B03D** *1/06*

U.S. Cl. 252—321 **20 Claims**

1. A method of reducing foam in a mineral separation process stream comprising adding to the mineral separation process stream a defoaming composition having:

a stearic acid monoester or diester of polypropylene glycol (PPG); and

a hydrocarbon diluent.

5,545,352
RINSING COMPOSITIONS

Christopher G. Pike, Gosforth, England, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 6, 1994, Ser. No. 349,775

Claims priority, application United Kingdom, Dec. 23, 1993, 9326272; May 9, 1994, 9409136

Int. Cl.[6] C11D *1/66;3/37;3/26*

U.S. Cl. 510—514 **9 Claims**

1. A rinse aid composition in liquid or gel form which is especially suitable for completing removal of tea stains on tableware during the rinse cycle of an automatic dishwashing process, said composition comprising:

A) from 0.5% to 40% by weight of the composition of a nonionic surfactant;

B) from 0.5 to 20% by weight of the composition of a hydrotrope selected from xylene sulfonate and cumene sulfonates;

C) from 35% to 94% by weight of the composition of a liquid carrier selected from water and mixtures of water and organic solvents; and

D) from 0.005% to 20% by weight of the composition of a chelant component selected from ethylenediamine disuccinic acid, ethylenediamine diglutaric acid, 2 hydroxypropylenediamine-disuccinic acid and the salts or complexes of said chelant compounds

E) from 0.005% to 20% by weight of the composition of an organic polymer containing acrylic acid or its salts, having an average molecular weight of less than 15,000;

said composition providing a pH of from 1.0 to 5.0 in a 1% solution with distilled water at 20° C.

5,545,353
NON-CORROSIVE PHOTORESIST STRIPPER COMPOSITION

Kenji Honda, Barrington, and Talbih Maw, Cumberland, both of R.I., assignors to OCG Microelectronic Materials, Inc., Norwalk, Conn.

Filed May 8, 1995, Ser. No. 436,548

Int. Cl.[6] C11D *7/32;7/50;* **G03C** *5/00;11/12*

U.S. Cl. 510—176 **7 Claims**

1. A photoresist stripper composition comprising:

(a) from about 20 to about 70% by weight of an organic polar solvent having a dipole moment of more than 3.5;

(b) from about 70 to about 20% by weight of an amine compound selected from the group consisting of an alkanolamine compound within the formula (I):



(I)

wherein n and m are each independently an integer ranging from 0–5, inclusive; X is hydrogen, alkyl, or alkoxy group; Y is either —O— or —NH—; and Z is hydrogen, —OH, or $—NH_2$;

(c) from about 0.1 to about 10% by weight of (2-benzothiozolylthio)succinic acid; all percents based on the weight of the stripper composition.

5,545,354
LIQUID OR GEL DISHWASHING DETERGENT CONTAINING A POLYHYDROXY FATTY ACID AMIDE, CALCIUM IONS AND AN ALKYLPOLYETHOXYPOLYCARBOXYLATE

Kofi Ofosu-Asante, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 1, 1992, Ser. No. 938,978

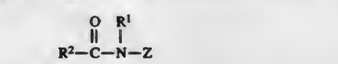
The portion of the term of this patent subsequent to Oct. 31, 2014, has been disclaimed.

Int. Cl.[6] C11D *1/08;1/52;3/04;17/08*

U.S. Cl. 510—237 **22 Claims**

1. An aqueous liquid or gel dishwashing detergent composition comprising, by weight:

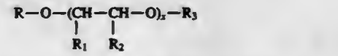
(a) from about 8% to about 40% of polyhydroxy fatty acid amide having the formula:



wherein R^1 is hydrogen, C_{1-4} hydrocarbyl, 2-hydroxyethyl, 2-hydroxypropyl, and mixtures thereof; R^2 is $—C_5$–C_{31} hydrocarbyl; and Z is a polyhydroxy-hydrocarbyl having a linear hydrocarbyl chain with at least three hydroxyl groups directly connected to the chain, or an alkoxylated derivative there, of;

(b) from about 0.3% to about 4% calcium ions;

(c) from about 0.1% to about 15% alkylpolyethoxypolycarboxylate surfactant having from about 60% to about 90% hydrophilicity and the general formula:



wherein R is a C_6 to C_{18} alkyl group, x is from 1 to about 25, R_1 and R_2 are selected from the group consisting of hydrogen, methyl radical, succinic acid radical, hydroxy succinic acid radical, and mixtures thereof, wherein at least one R_1 or R_2 is a succinic acid radical or a hydroxy succinic acid radical, and R_3 is selected from

the group consisting of hydrogen, substituted or unsubstituted hydrocarbon having between 1 and 8 carbon atoms and mixtures thereof; and

(d) from about 5% to about 40% of anionic surfactant;

where, in said composition has a pH in a 10% solution in water of between 7 and 11.

5,545,355

DIELECTRIC COMPOSITIONS COMPRISING BENZYLTOLUENE/(METHYLBENZYL) XYLENE ISOMERS

Raymond Commandeur, Vizille; Noelie Berger, Ecully, and Pierre Jay, Saint-Didier Au Mont D'Or, all of, France, assignors to Atochem, Puteaux, France

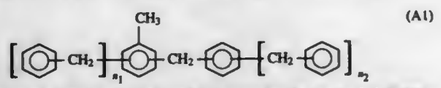
Continuation of Ser. No. 264,194, Jun. 22, 1994, abandoned, which is a continuation of Ser. No. 943,155, Sep. 10, 1992, abandoned, which is a continuation of Ser. No. 661,175, Feb. 27, 1991, abandoned. This application May 15, 1995, Ser. No. 441,314

Claims priority, application France, Feb. 27, 1990, 90 02420

Int. Cl.[6] C10M *3/10*

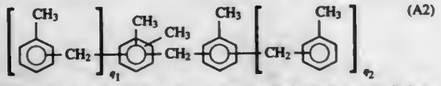
U.S. Cl. 252—570 **16 Claims**

1. A composition of matter adopted for dielectric applications, comprising a mixture of (a) a dielectrically effective amount of at least one isomer of benzyltoluene having the formula (A1):



(A1)

wherein n_1 and n_2=0, 1 or 2, with the proviso that n_1+n_2 is less than or equal to 3; and (b) a dielectrically effective amount of at least one isomer of (methylbenzyl)xylene having the formula (A2):



(A2)

wherein q_1 and q_2=0, 1 or 2, with the proviso that q_1+q_2 is less than or equal to 3, wherein said isomers A1 and A2 are present in proportions ranging from about 90/10 to about 70/30.

5,545,356

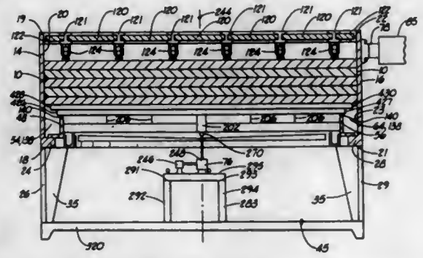
INDUSTRIAL COOLING TOWER

Harold D. Curtis, and Randal K. Oberlag, both of Chickasha, Okla., assignors to Tower Tech, Inc., Chickasha, Okla.

Filed Nov. 30, 1994, Ser. No. 352,023

Int. Cl.[6] B01F *3/04*

U.S. Cl. 261—23.1 **40 Claims**



1. A cooling tower apparatus comprising:

an enclosure defined by a pair of upstanding longitudinal side walls and a pair of upstanding transverse end walls, said side walls being concrete side walls;

a body of fill material disposed in said enclosure;

a liquid distribution system disposed in said enclosure positioned above said fill material for distributing liquid on top of said fill material, so that said liquid gravitates downward through said fill material;

a drainage collection system located below said fill material for collecting said liquid gravitating through said fill material;

at least one trough parallel to said side walls spanning the distance between said end walls, wherein said at least one trough receives said liquid from said drainage collection system; and

a fan located below said drainage collection system for blowing air upward through said fill material.

5,545,357

CARBURETOR

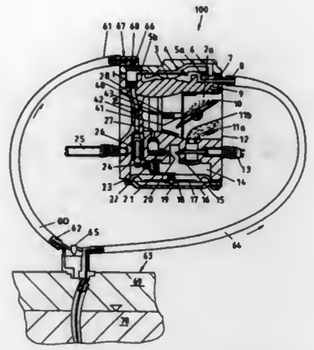
Harry Radel, Geesthacht, and Christian Vick, Stelle, both of, Germany, assignors to Dolmar GmbH, Hamburg, Germany

Filed Feb. 22, 1995, Ser. No. 392,446

Claims priority, application Germany, Feb. 22, 1994, 94 02 870.2

Int. Cl.[6] F02M *17/04*

U.S. Cl. 261—35 **4 Claims**



1. A carburetor for an engine having a fuel tank and a fuel line comprising:

a main housing defining a Venturi tube, a dosing chamber, a main exit port, an idle exit port and a throttling port, the main housing having an air intake side and an engine exit side;

a fuel pump disposed within the main housing;

a fuel intake feed channel for supplying fuel from the fuel pump to the dosing chamber, the dosing chamber being coupled to the Venturi tube via the main exit port and the idle exit port;

a throttle valve disposed in the throttling port between the air intake and engine exit sides of the main bousing, the main exit port at the air intake side of the throttle valve ending in the Venturi tube;

a throttle supply passage having an inlet port in fluid communication with the intake feed channel and an outlet port in fluid communication with the throttling port and the inlet port, the outlet port ending in an upstream direction from the throttle valve;

a valve for selectively opening and closing the throttle supply passage;

a fuel intake adapted for coupling to the fuel line of the fuel tank for supplying fuel to the fuel pump;

a vent line having a first end coupled to the fuel intake feed channel and a second end adapted for coupling to the fuel tank; and

a check valve disposed along the vent line between the first and second ends for at least inhibiting fluid flow from the vent line into the intake feed channel.

5,545,358

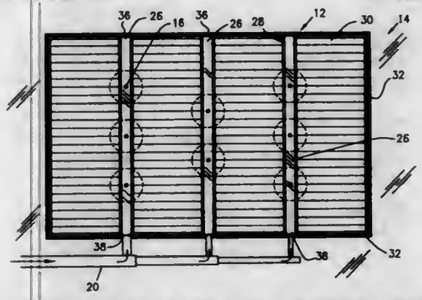
TANK COVER STRUCTURE WITH AERATION DISTRIBUTION

Jeffrey A. Hallsten, Sacramento, Calif., and Elena Bailey, Austin, Tex., assignors to Hallsten Corporation, Sacramento, Calif., and Enviroquip, Inc., Austin, Tex.

Filed Apr. 20, 1995, Ser. No. 425,930

Int. Cl.[6] B01F *3/04*

U.S. Cl. 261—123 **12 Claims**



1. A tank cover structure spanning over a tank adapted to contain a liquid, the tank cover structure forming a substantially gas tight cover over the tank and including a gas distribution system for delivering gas to be bubbled up through liquid in the tank at multiple locations, comprising:

at least one tank cover having one or more structural beams spanning across at least a portion of the distance spanned by the tank cover and supporting at least a portion of the tank cover, the beam having a closed, generally tubular cross section,

gas delivery means connected to at least some of said beams so as to establish fluid communication with the interior of the beam,

and gas bubbling means connected to the beam at selected spacings, each gas bubbling means including a substantially gas tight connection with the beam, a drop pipe extending downwardly into the tank, and a gas bubbler outlet on the drop pipe at a position lower than the beam, positioned to be submerged in the liquid in the tank.

5,545,359

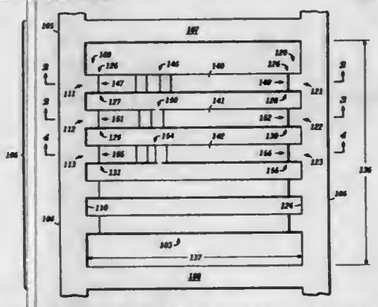
METHOD OF MAKING A PLASTIC MOLDED OPTOELECTRONIC INTERFACE

Donald E. Ackley, Lambertville, N.J., and Michael S. Lebby, Apache Junction, Ariz., assignors to Motorola, Schaumburg, Ill.

Filed Aug. 11, 1994, Ser. No. 288,854

Int. Cl.[6] B29D *11/00*

U.S. Cl. 264—1.24 **16 Claims**



1. A method for making a plastic molded optoelectronic interface comprising the steps of:

providing a leadframe having a first segment and a second segment with the first segment having a first tab extending away from the first segment and the second segment having a second tab extending away from the second segment, the first segment and the second segment being positioned in a parallel configuration with the first and second tabs pointing toward each other;

forming an optical waveguide core portion of light conductive material with a first index of refraction, the optical waveguide core portion having a reflective surface with an angle, and the optical waveguide core portion extending from the first tab of the first segment to the second tab of the second segment; and

forming an optical waveguide cladding portion surrounding the optical waveguide core portion, the optical waveguide cladding portion having a second index of refraction at least 0.01 less than the first index of refraction.

5,545,360

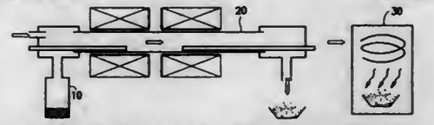
PROCESS FOR PREPARING POWDERS WITH SUPERIOR HOMOGENEITY FROM AQUEOUS SOLUTIONS OF METAL NITRATES

Ning Yang, Hsinchu, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jun. 8, 1993, Ser. No. 74,119

Int. Cl.[6] B29B *9/00*

U.S. Cl. 264—9 **11 Claims**



1. A process for preparing homogeneous binary oxide particles, comprising the steps of:

(a) preparing a mixture of an aqueous solution of magnesium nitrate and an aqueous solution of aluminum nitrate;

(b) adding 0.1–2.0 percent by weight of an additive selected from the group consisting of glycerol, glycerol nitrate, polyglycerols, glycols and polyglycols to the mixture to form a precursor solution;

(c) atomizing the precursor solution into droplets; and

(d) subjecting the droplets to pyrolysis with the introduction of gases at a temperature above 400° C. to obtain a powdered product of hollow binary oxide particles.

5,545,361

METHOD OF MAKING A VEHICLE BUMPER WITH FOAM THEREIN USING A DEFORMABLE PLUG

James J. Rosasco, Grand Haven, Mich., assignor to Shape Corporation, Grand Haven, Mich.

Division of Ser. No. 194,728, Feb. 10, 1994. This application May 30, 1995, Ser. No. 453,234

Int. Cl.[6] B29C *44/06*

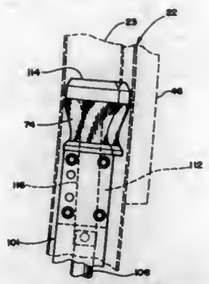
U.S. Cl. 264—45.2 **8 Claims**

1. A process for forming a bumper construction for a vehicle, said vehicle having sides and from and rear ends with a longitudinal central axis centrally located between said ends, said bumper construction constructed of a single strip of metal roll-formed into a completely enclosed tubular member and having means for mounting on the front end of said vehicle to extend between said sides, comprising:

providing the roll-formed tubular member;

providing an elongated arm configured to be extended partially into the tubular member, the arm including a plug of resilient material adapted to sealingly engage and plug the tubular member;

positioning the tubular member on the arm with the plug located at a predetermined location in the tubular member proximate but spaced from the central axis;



plugging the tubular member by compressing the plug in a longitudinal direction to thus cause the plug to bulge and sealingly engage the tubular member;

injecting one of foamable or foaming material into the enclosed central area of said tubular member against the plug with the plug acting as a dam to contain the injected material in the tubular member so that the injected material, after foaming, completely fills the enclosed central area, but so that the injected material only fills the enclosed central area of said tubular member a relatively short distance on each side of said central axis; and

removing the tubular member from the arm by longitudinally decompressing the plug and removing the tubular member including the plug longitudinally from the arm.

5,545,362

PRODUCTION METHOD OF SINTERED SILICON NITRIDE

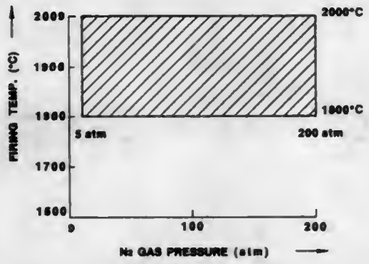
Naoto Hirosaki; Akira Okada, and Yoshio Akimune, all of Yokohama, Japan, assignors to Nissan Motor Company, Yokohama, Japan

Continuation of Ser. No. 610,638, Nov. 8, 1990, abandoned. This application Oct. 29, 1993, Ser. No. 143,233

Claims priority, application Japan, Dec. 8, 1989, 1-320047

Int. Cl.[6] C04B *35/584;35/594*

U.S. Cl. 264—65 **4 Claims**



1. A method of producing a sintered silicon nitride, comprising the following steps in the sequence set forth:

mixing silicon nitride powder and oxide of at least one element selected from elements in the group IIIb of the periodic table of the elements to obtain a mixture, said silicon nitride powder containing silicon oxide in an amount ranging from 0.5 to 40% by weight of said silicon nitride, of said periodic table group IIIb element being in an amount ranging from 0.1% by weight of said silicon nitride powder to a value less than or equal to the content of said silicon oxide;

compacting said mixture to form a compact; and

firing said compact in atmosphere of nitrogen at a pressure ranging from 5 to 200 atmosphere (atm) and at a temperature ranging from 1800° to 2000° C. to obtain the sintered silicon nitride having a bulk density not less than 95% of a theoretical density of said sintered silicon nitride.

5,545,363

PROCESS FOR FORMING MELT-SPUN CARPET FIBER

Matthew B. Hoyt, Arden, N.C.; Andrew M. Coons, III, Anderson, S.C., and David N. Dickson, Charlotte, N.C., assignors to BASF Corporation, Mt. Olive, N.J.

Division of Ser. No. 71,035, Jun. 2, 1993, Pat. No. 5,340,886, which is a continuation of Ser. No. 711,238, Jun. 6, 1991, abandoned. This application Apr. 15, 1994, Ser. No. 228,358

Int. Cl.[6] B29C *41/22*

U.S. Cl. 264—78 **8 Claims**

1. A process for forming carpet fiber made from a melt-spun fiber-forming polymer produced from polymerized amide monomers having relatively permanent color yet resisting anionic dyes, said process comprising the steps of:

incorporating within the polymer sufficient SO_3H groups or salts thereof to give the polymer a sulphur content of between about 10 and about 160 equivalents per 10^6 grams polymer, and after said incorporating pigmenting the polymer;

chemically blocking amino end groups present in the sulphonated polymer with an amount of chemical blocking agent sufficient to provide an amino end group content of less than 25 equivalents per 10^6 grams polymer, and

spinning the polymer into carpet fiber.

2. A process for forming a melt-spun polyamide fiber which resists dyeing with anionic dyes comprising the steps of:

incorporating within a polyamide sufficient SO_3H groups or salts thereof to give said polyamide a sulphur content of between about 10 and about 160 equivalents per 10^6 grams polymer;

pigmenting said polyamide;

chemically blocking amino end groups in said sulphonated polyamide, the blocking occurring before or during melt spinning, in an amount sufficient to provide an amino end group content of less than 25 equivalents per 10^6 grams polymer; and

melt spinning said polyamide into fiber.

5,545,364

PROCESS FOR THE PREPARATION OF HEAT RESISTANT POLYESTER FILM

Il-Cheon Song, Kunpo-si; Sang-Il Kim, Suwon-si, and Young-Jin Lee, Anyang-si, all of, Rep. of Korea, assignors to SKC, Limited, Kyungki-do, Rep. of Korea

Filed Oct. 4, 1995, Ser. No. 539,282

Claims priority, application Rep. of Korea, Oct. 6, 1994, 94-25498; Oct. 6, 1994, 94-25499

Int. Cl.[6] D01D *5/12*

U.S. Cl. 264—210.5 **5 Claims**

1. A process for preparing a polyester film which comprises melt-extruding a polyester resin to produce a polyester sheet, extending the polyester sheet to shape it into a film and treating the film thermally to heat-set, wherein the polyester resin has an intrinsic viscosity of 0.7 to 0.75 dl/g, the melt-extrusion is carried out using a polyester resin which satisfies-formula (1) and the thermal treatment is carried out so that formula (2) is satisfied:

$$[COOH][IV]<50 \quad (1)$$

$$1.0<S/D<1.2 \quad (2)$$

wherein:

[COOH] represents the content (meq/10^6) of terminal carboxyl groups in the polyester resin;

[IV] represents the intrinsic viscosity (dl/g) of the polyester resin;

S represents the X-ray crystal size (Å) of the heat-set polyester film; and

D represents the degree of crystallinity (%) of the heat-set polyester film.

5,545,365

METHOD FOR MOLDING A DISC WITH A CENTRAL APERTURE

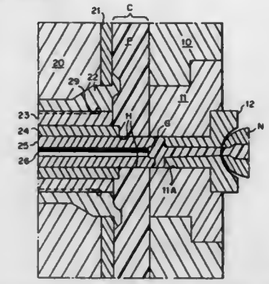
Asai Ikuo, Nagoya, Japan, assignor to Meiki Co., Ltd., Ohbu, Japan

Filed Nov. 1, 1994, Ser. No. 332,034

Claims priority, application Japan, Nov. 15, 1993, 5-309825

Int. Cl.[6] B29C *45/00*

U.S. Cl. 264—328.7 **4 Claims**



1. A method for molding a disc with a central aperture which comprises:

injecting molten resin into the cavity formed by closing a movable mold half to a stationary mold half, through a sprue gate from a nozzle,

keeping a gate cutter and an ejector sleeve in which the gate cutter is inserted coaxially and moveably, in respective retracted limit positions until completion of the injection,

protruding the gate cutter into the hole of a female cutter after completion of injection and before solidifying of molten resin in order to form a central aperture of a molded disc and a severed sprue within said sprue gate,

commencing a first protrusion of the ejector sleeve after commencement of the protrusion of the gate cutter for pressing the molten resin with which the protruded gate cutter is surrounded, and thus preventing formation of a round corner formed along an edge of the central aperture;

cooling the molded disc;

releasing and ejecting a solidified molded disc from the cavity after opening of mold halves and ejecting a severed sprue.

5,545,366

MOLDING ARRANGEMENT TO ACHIEVE SHORT MOLD CYCLE TIME AND METHOD OF MOLDING

Victor Lust, 2808 Scott Mill Estates Dr., Jacksonville, Fla. 32257; W. Anthony Martin, 2603 Sandlewood Ct., Orange Park, Fla. 32065; Kornelis Renkema, 12412 Autumnbrook Trail West, Jacksonville, Fla. 32258, and Wybren Van Der Meulen, Breembosq, Nuenen, Netherlands

Filed Jun. 10, 1994, Ser. No. 257,794

Int. Cl.[6] B29C *33/38;45/20;45/73*

U.S. Cl. 264—225 **46 Claims**

31. A method of molding a mold half which is used for subsequent molding of a soft contact lens, with the mold half defining a convex curved surface and a concave curved surface spaced from the convex surface, with one of the convex and concave surfaces defining an optical quality curved surface for the soft contact lens, comprising introducing a molten mold material through a hot runner system to at least one mold cavity, defining in the at least one mold cavity an optical quality curved surface for the mold half and a second curved surface for the mold half, positioning the optical quality surface of the mold cavity further away from the heated hot runner system than the second surface of the mold cavity, and cooling the at least one mold cavity, whereby the positioning of the optical quality curved surface further away from the heated hot runner system allows faster cooling of the optical quality surface of the mold cavity than the second surface of the mold cavity to allow quicker setting and locking of temperature residual stresses on the optical quality side of the mold half and a faster molding and cycling time for the molding arrangement.

5,545,367

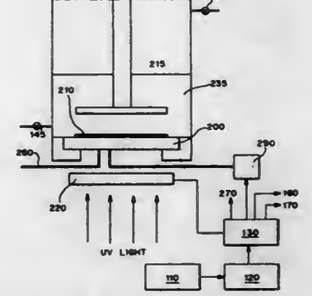
RAPID PROTOTYPE THREE DIMENSIONAL STEREOLITHOGRAPHY

Young C. Bae, Pleasanton; David S. Soane, Piedmont, and Charles Crocker, San Francisco, all of Calif., assignors to Soane Technologies, Inc., Hayward, Calif.

Continuation-in-part of Ser. No. 59,128, May 7, 1993, and a continuation-in-part of Ser. No. 869,480, Apr. 15, 1992, abandoned. This application May 27, 1993, Ser. No. 68,692

Int. Cl.[6] B29C *35/08;41/08*

U.S. Cl. 264—401 **7 Claims**



1. In the method for producing a three-dimensional project stereolithographically in a vat from a polymer precursor fluid capable of solidification in a desired pattern on exposure to a polymerization initiating source, the improvement which comprises exposing the polymer precursor fluid to the polymerization initiating source in a sequential manner,

further comprising effectively closing the vat to the outside environment,

imposing an elevated pressure above ambient pressure in the vat, and

imposing an elevated temperature above ambient temperature in the vat,

wherein the sequential polymerization is carried out with a sequentially moving slit system.

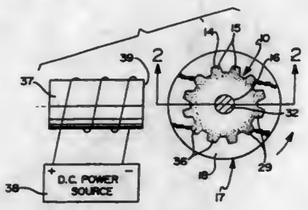
VOL 1189 ISS 2 AUG 13 1996

5,545,368

METHOD OF MAGNETICALLY REINFORCING COMPOSITE COMPONENTS

Edward J. Vinarcik, Ypsilanti, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 375,875, Jan. 20, 1995. This application Apr. 18, 1995, Ser. No. 423,200
Int. Cl.[6] B28B *1/02*
U.S. Cl. 264—437 **10 Claims**



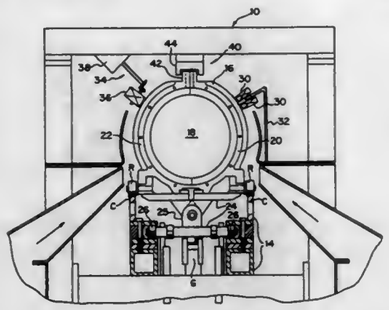
1. A method of magnetically reinforcing a composite component, said method comprising the steps of:
adding a composite mixture of a solidifyable material and magnetically attractable reinforcing particles to a mold having a circumferential radial edge;
selectively applying a non-uniform magnetic field to predetermined location of the mold by placing not more than one magnetic pole of a magnet adjacent to, but spaced from, the circumferential radial edge of the mold;
migrating translationally the magnetically attractable reinforcing particles by the magnetic field to the predetermined location of the mold; and
solidifying the composite mixture after the magnetically attractable reinforcing particles have migrated to the predetermined location of the mold.

5,545,369

CLAMSHELL CORRUGATORS AND THE LIKE

Manfred A. A. Lupke, Thornhill, Canada, assignor to Corma, Inc., Concord, Canada

Filed Sep. 8, 1993, Ser. No. 117,946
Int. Cl.[6] B29C *33/26;49/04*
U.S. Cl. 264—508 **13 Claims**



1. A thermoplastic tubing profiling apparatus for receiving plastic from an extruder to form profile thermoplastic tubing, comprising: a frame having a forward trackway defining a mold tunnel; a plurality of independent clamshell mold assemblies, each having a front face, a rear face, and a first and second ends, each disposed on said trackway, each of said mold assemblies pivotally opening and closing a pair of mating mold blocks connected at the first end thereof by a hinge which when closed define a segment of the mold tunnel; means for driving said mold assemblies along said trackway, alignment means for maintaining the alignment of each of said hingedly connected mold blocks substantially orthogonal relative to its mate and relative to contiguous mold blocks in said tunnel, said alignment means is associated with the exterior of the mold blocks and includes a matching set of projecting lugs from the second end of each of said mold block pairs and a keyway dimensioned to correspond to said lugs, said means to maintain alignment being established by the cooperation of said keyway and lug assembly and said mold assemblies are each rollably disposed on said trackway and said mold assemblies are driven to rollably circulate about said trackway and a vacuum communication channel for communicating vacuum through said lugs and into said hingedly connected mold blocks.

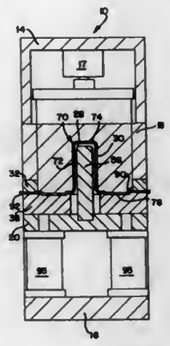
11. The method of forming thermoplastic tubing using a travelling mold tunnel formed from at least two individual clamshell mold half portions, comprising the steps of:
a) positioning a pair of individual clamshell mold half portions about the beginning of a mold tunnel,
b) causing the clamshell half portions to pivot to a closed position and mate to thereby establish a first section of the mold tunnel;
c) causing the first section of the mold tunnel to abut a second section of the mold tunnel;
d) providing an alignment element with a vacuum communication channel for aligning the first section of the mold tunnel and providing vacuum to the mold tunnel sections through said alignment element;
e) maintaining each clamshell half portion in substantial orthogonal alignment relative to its mate; and
f) compressively contacting the exterior of the mold tunnel section with a roller member to thereby substantially maintain alignment of the mold tunnel section normal to the direction of mold tunnel travel.

5,545,370

PROCESS FOR PRODUCING THERMOFORMED ARTICLE EMPLOYING SELECTIVE COOLING

Mike Moren, Wheaton; Todd Buck, Elburn, and Pat Kizziah, West Chicago, all of Ill., assignors to Plastofilm Industries, Inc., Wheaton, Ill.

Filed Apr. 11, 1994, Ser. No. 225,666
Int. Cl.[6] B29C *51/42;51/10*
U.S. Cl. 264—522 **3 Claims**



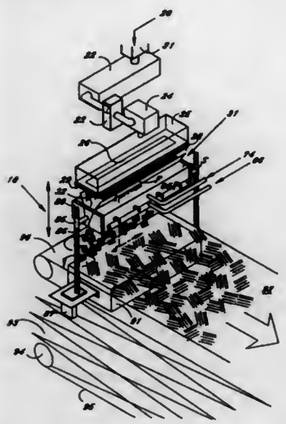
1. A process for producing a thermoformed article from a sheet of thermoformable material, said article having a first portion with a first wall thickness, and a second portion with a second wall thickness, said first portion having a thicker wall thickness than said second portion, said first portion and second portion separated along a boundary, said process comprising:
heating said sheet of material until said sheet is malleable;
selectively cooling said first portion so that said thermoformable material from said first portion is prevented from migrating to said second portion;
forming a pinched area defined by a groove in said sheet along said boundary between said first portion and said second portion, said pinched area further preventing migration of said material between said first and second portions; and
thermoforming said second portion into a thermoformed article.

5,545,371

PROCESS FOR PRODUCING NON-WOVEN WEBS

Fumin Lu, Tamarac, Fla., assignor to Ason Engineering, Inc., Fort Lauderdale, Fla.

Filed Dec. 15, 1994, Ser. No. 356,738
Int. Cl.[6] D01D *5/12; D04H 3/03*
U.S. Cl. 264—555 **3 Claims**



1. A process for forming a spunbound, non-woven polymeric fabric from a plurality of polymeric extruded filaments, comprising the steps of:
(a) extruding a plurality of vertically oriented filaments by melt spinning through a spinneret from a thermoplastic polymer;
(b) drawing said filaments by a drawing means positioned below said spinneret using air pressure, applying said drawing means a predetermined distance away from said spinneret; and
(c) forming a spunbound, non-woven polymeric fabric on a web forming means, said drawing means positioned less than 50 centimeters below said spinneret, whereby the diametric size of each of the filaments can be controlled by the distance of the drawing means from the spinneret.

5,545,372

IRON BASE ALLOYS FOR INTERNAL COMBUSTION ENGINE VALVE SEAT INSERTS, AND THE LIKE

Xuecheng Liang, Marinette, Wis., and Gary R. Strong, Menominee, Mich., assignors to Winsert, Inc., Marinette, Wis.

Filed May 25, 1995, Ser. No. 450,262
Int. Cl.[6] C22C *38/24;38/22*
U.S. Cl. 420—12 **17 Claims**

1. A high temperature iron base alloy possessing excellent wear resistance combined with good hot hardness and oxidation resistance comprising:

Element	Wt. %
C	1.2–2
Cr	6–9
W	0.0–14.0
Mo	0.0–14.0
V	1.0–8.0
Nb	0.5–5.0
Co	0.0–12.0
Fe	56.0–88.5

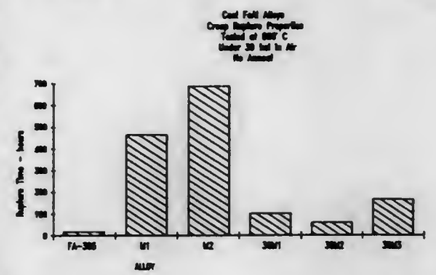
where W and Mo combined comprise 6–14% of the alloy.

5,545,373

HIGH-TEMPERATURE CORROSION-RESISTANT IRON-ALUMINIDE (FEAL) ALLOYS EXHIBITING IMPROVED WELDABILITY

Philip J. Maziasz, Oak Ridge; Gene M. Goodwin, Lenoir City, and Chain T. Liu, Oak Ridge, all of Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Continuation-in-part of Ser. No. 199,116, Feb. 22, 1994, abandoned, which is a continuation of Ser. No. 884,530, May 15, 1992, Pat. No. 5,320,802. This application Sep. 6, 1994, Ser. No. 301,238
Int. Cl.[6] C22C *38/06*
U.S. Cl. 420—81 **26 Claims**



1. A corrosion resistant intermetallic alloy comprising, in atomic percent, an FeAl iron aluminide containing more than about 30% up to about 40% aluminum alloyed with from about 0.1% to about 0.5% carbon, from about 0.01% to about 3.5% of one or more

transition metals selected from Group IVB, VB, and VIB elements and the balance iron, wherein the alloy exhibits improved resistance to hot cracking.

5,545,374

MICROBICIDAL COMPOSITIONS

Madeline S. French, Runcorn, and Anita J. Harvey, Warrington, both of, United Kingdom, assignors to Solvay Interox Limited, Warrington, England

PCT No. PCT/GB93/02520, § 371 Date Jun. 21, 1995, § 102(e) Date Jun. 21, 1995, PCT Pub. No. WO94/14321, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 9, 1993, Ser. No. 464,743

Claims priority, application United Kingdom, Dec. 24, 1992, 9227020

Int. Cl.[6] A61L *2/18;* **A01N** *37/16*

U.S. Cl. 422—28 **17 Claims**

8. In a process for disinfection of a substrate, in which the substrate is contacted with a disinfectant solution, the improvement wherein the disinfectant solution comprises an aqueous solution comprising an amount effective for disinfection of an aliphatic peracid containing up to 9 carbon atoms and an ethoxylated and propoxylated alcohol nonionic surfactant according to the general formula:

$$R\text{-}(OCH_2CH_2)_n\text{-}(OCH_2CHCH_3)_p\text{-}OH$$

wherein R represents an alkyl group of at least 6 carbon atoms and n and p each represent an integer.

5,545,375

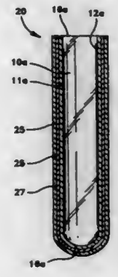
BLOOD COLLECTION TUBE ASSEMBLY

Yelena G. Tropsha, Carrboro, and Mitchell K. Antoon, Raleigh, both of N.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Oct. 3, 1994, Ser. No. 317,152

Int. Cl.[6] B01L *3/00;* **B32B** *15/16*

U.S. Cl. 422—102 **12 Claims**



1. A sample assembly comprising:
a plastic container comprising polyethylene terephthalate, polypropylene or polyethylene napthalate, having an open end, a closed end, an inner surface and an outer surface; and
a multi-layer barrier coating associated over the outer surface of said container, said coating having a first layer comprising an acrylate primer coating material and a second layer adjacent on said first layer comprising a silicon oxide or an aluminum oxide.

5,545,376

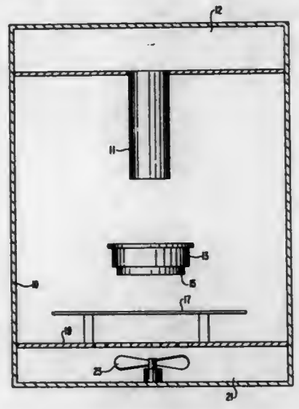
DRYING METHOD AND APPARATUS FOR INFRARED ANALYSIS OF AQUEOUS SAMPLES

David E. Honigs, Laurel, and Donald Lynch, Germantown, both of Md., assignors to Perstorp Analytical, Inc., Silver Spring, Md.

Filed Aug. 1, 1990, Ser. No. 561,418

Int. Cl.[6] B01L *9/00;* **F26B** *19/00*

U.S. Cl. 422—104 **5 Claims**



1. In an apparatus for drying concentrate in filter paper for purposes of analyzing a liquid sample comprising means to generate a heated gas stream, a sheet of porous paper, and holder means to support said sheet of porous paper in the path of said heated gas stream, the improvement wherein said holder means comprises filter holder means to clamp the edges of said sheet of said porous paper between opposed surfaces around the periphery of said porous paper and wherein said apparatus further comprises means for causing said heated gas stream to flow through said sheet of porous paper and around said sheet of porous paper.

5,545,377

CATALYST DEGRADATION DETECTING APPARATUS

Kenji Fukaya, Chiryu; Kazuo Hayashi, Chita-gun; Makoto Hori, Ogaki; Masahiro Hamaya, Anjo, and Minoru Ohta, Okazaki, all of, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

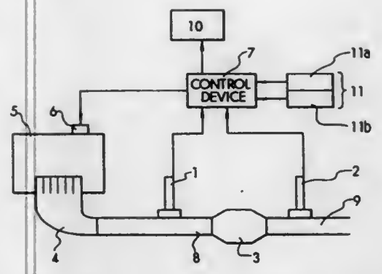
Filed Feb. 17, 1995, Ser. No. 391,652

Claims priority, application Japan, Feb. 18, 1994, 6-020909; Nov. 8, 1994, 6-273509; Dec. 27, 1994, 6-324693

Int. Cl.[6] G05D *9/00;* **F01N** *3/00*

U.S. Cl. 422—108 **22 Claims**

1. A catalyst degradation detecting apparatus comprising:
at least a catalytic converter provided for purifying exhaust gas;
an upstream side air-fuel ratio sensor provided on an upstream side of said catalytic converter for detecting a concentration of specific components within the exhaust gas and generating a first output waveform;
a downstream side air-fuel ratio sensor provided on a downstream side of said catalytic converter for detecting a concen



tration of specific components within the exhaust gas and generating a second output waveform, said downstream side air-fuel ratio sensor being slower to change output than said upstream side air-fuel ratio in response to a change of the concentration of specific components of the exhaust gas;
a control device for comparing said first and second output waveforms from said upstream and downstream side air-fuel ratio sensors to detect a catalyst degradation and issuing a signal in response thereto; and
a catalyst degradation warning means which operates according to the signal received from said control device for generating a warning.

5,545,378

FLUIDIZED BED REACTOR WITH POLYMER RECYCLE LINE

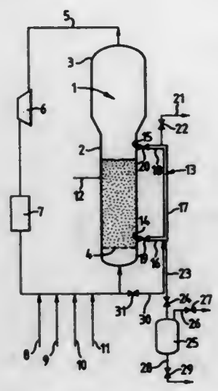
Frederic R. M. M. Morterol, Sausset-les-Pins, and Charles Raufast, Martigues, all of, France, assignors to BP Chemicals Limited, London, England

Division of Ser. No. 92,809, Jul. 16, 1993, Pat. No. 5,434,228. This application Apr. 4, 1995, Ser. No. 416,285

Claims priority, application France, Jul. 16, 1992, 92 09063; Jul. 16, 1992, 92 09064

Int. Cl.[6] C08F *2/34*

U.S. Cl. 422—132 **6 Claims**



1. A gas phase fluidized bed reactor, comprising:
an upright tubular portion;
a fluidization grid provided in a lower part of said tubular portion;
a lower orifice and an upper orifice in said upright tubular portion, said lower orifice being above said fluidization grid, said upper orifice being above said lower orifice; and
external conduit means connecting said lower and upper orifices for circulating polymer exiting said tubular portion through said lower orifice and entering said tubular portion through said upper orifice.

5,545,379

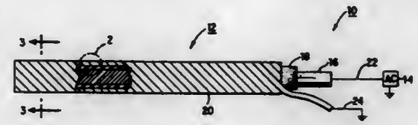
CORONA DISCHARGE SYSTEM WITH INSULATED WIRE

Buddy Don Gray, Giles County, Tenn., assignor to Teledyne Industries, Inc., Huntsville, Ala.

Filed Feb. 5, 1993, Ser. No. 16,146

Int. Cl.[6] B01J *19/12*

U.S. Cl. 422—186.04 **19 Claims**



1. A system for generating ozone, comprising:
a conductive wire;
a flexible dielectric material surrounding said wire; and
a conductive layer surrounding said dielectric material, said conductive layer including interstices for receiving fluid to be ozonated.

5,545,380

CORONA DISCHARGE SYSTEM WITH CONDUIT STRUCTURE

Buddy D. Gray, Dellrose, Tenn., assignor to Teledyne Industries, Inc., Huntsville, Ala.

Filed Feb. 5, 1993, Ser. No. 16,145

Int. Cl.[6] B01J *19/08*

U.S. Cl. 422—186.07 **17 Claims**



1. A corona discharge system, comprising:
a conduit for containing a fluid, said conduit including an outer wall and a spacer member located within said outer wall;
a wire located within said conduit between said outer wall and said spacer member;
a dielectric material surrounding said wire; and
a source of alternating current connected to said wire for generating a corona discharge within said conduit; and
wherein said dielectric material is in contact with said spacer member and said outer wall.

5,545,381

DEVICE FOR REGENERATING PRINTED SHEET-LIKE RECORDING MEDIUM

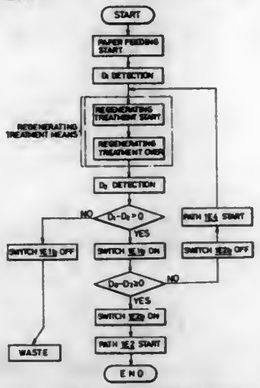
Toru Iida, Tokyo; Michihito Ohashi, Kawasaki; Yoshihiro Sakai, Tokyo; Shin-ichi Kuramoto, Numazu; Shunichi Chiba, Kawasaki; Yasuo Asahina, Numazu, and Junko Tomita, Tokyo, all of, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 31, 1992, Ser. No. 828,710

Claims priority, application Japan, Jan. 31, 1991, 3-032489; Jan. 31, 1991, 3-032490; Jan. 31, 1991, 3-032491; Jan. 31, 1991, 3-032493; Jan. 31, 1991, 3-032495; Aug. 26, 1991, 3-213936

Int. Cl.[6] G01J *1/10*

U.S. Cl. 422—186 **17 Claims**



1. A device, connected to a regeneration device, for selectively separating recording medium, comprising:

means for discriminating whether a regenerated recording medium is reusable; and

means for selectively separating the regenerated recording medium into reusable recording medium.

5,545,382

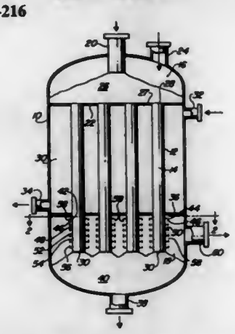
PROCESS AND APPARATUS FOR DISCHARGING PARTICLES AND FLUIDS FROM FLOW CHANNELS

Paul A. Sechrist, Des Plaines, Ill., assignor to UOP, Des Plaines, Ill.

Filed Nov. 25, 1994, Ser. No. 345,058

Int. Cl.[6] B01J *8/12*

U.S. Cl. 422—216 **18 Claims**



1. An apparatus for contacting a fluid stream with particulate solids, said apparatus comprising:

a first plurality of partitions defining a plurality of flow channels;

a flow channel inlet defined by said partitions at an upper end of each of said flow channels;

means for communicating particulate material and reactants to said flow channel inlets;

a flow channel outlet defined by said partitions at a lower end of each of said flow channels;

a vessel containing said plurality of flow channel outlets and defining a collection chamber;

means for withdrawing particulate material from said flow channel outlets for collection in said collection chamber;

a first baffle defining at least a portion of a first fluid chamber above said outlets;

a second baffle defining at least a portion of a second fluid chamber above said outlet and below said first baffle;

a first perforated portion of said partition communicating said first chamber with a first vertical section of said flow channels;

a second perforated portioo of said partition communicating said second chamber with a second vertical section of said flow channels;

means for withdrawing fluid and regulating fluid flow out of said first and second chambers.

5,545,383

PRESSURE HOUSING FOR A STERILIZATION CHAMBER FOR STEAM STERILIZATION OF MEDICAL INSTRUMENTS, IMPLANTS AND THE LIKE

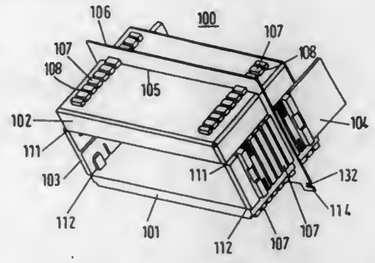
Arthur Zwingenberger, Toronto, Canada, and Martin Saupe, Offenbach am Main, Germany, assignors to Sci-Can, Toronto, Canada

Filed Jan. 10, 1995, Ser. No. 371,532

Claims priority, application European Pat. Off., Jan. 18, 1994, 94100657

Int. Cl.[6] A61L *2/06*

U.S. Cl. 422—295 **7 Claims**



1. A pressure containment system for receiving a sterilization vessel, said pressure containment system comprising:

a sterilization chamber having top, side and bottom walls, said walls being individual thermally insulating plates with grooves which are formed by projections arranged on outward facing surfaces of the plates;

a carrier; and

at least two identically constructed frame parts held in engagement with said carrier, said frame parts having central openings defined therein; wherein,

said plates are arranged in said central openings and secured by inner edges of said central openings which engage said grooves;

an outer edge of said frame parts includes hook-shaped projections,

said carrier includes

(i) a first set of openings to receive said hook-shaped projections, where each of said first set of openings consists of a first width and a second width, said first width being larger than said second width, and a length of said first set of openings is greater than a length of said hook-shaped projections, and

(ii) a second set of openings

said hook-shaped projections are inserted in said first width of the first set of openings and displaced transversely into said second width of the first set of openings and,

said frame parts are held in position by continuations which project from said bottom wall of the sterilization chamber into said second set of openings defined in the carrier.

5,545,384

PROCESS FOR PRODUCTION OF ALUMINUM HYDROXIDE FROM ORE CONTAINING ALUMINA

Takuo Harato; Takahiro Ishida, both of Niihama; Yoshio Kumagae, Osaka; Michikazu Inami, Niihama; Kazuhisa Ishibashi, Niihama, and Mitsuaki Murakami, Niihama, all of, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

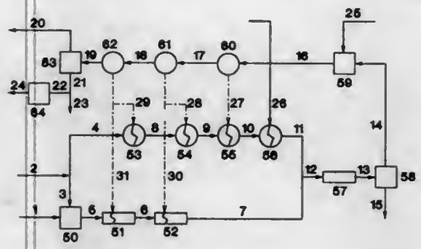
Continuation of Ser. No. 78,299, Jun. 25, 1993, abandoned.

This application Jun. 5, 1995, Ser. No. 465,620

Claims priority, application Japan, Oct. 30, 1991, 3-284648

Int. Cl.[6] C01F *7/00;7/02;* **C22B** *21/00*

U.S. Cl. 423—121 **13 Claims**



1. A process for producing aluminum hydroxide from an alumina-containing and reactive silica-containing ore which comprises the steps of:

(a) (1) mixing said alumina-containing and reactive silica-containing ore with an alkaline solution to obtain a slurry having a solids content higher than 20% by weight, or (2) mixing said alumina-containing and reactive silica-containing ore with an alkaline solution to obtain a slurry having a solids content higher than 20% by weight and preheating said slurry of (2) at a temperature of 70°–120° C.,

(b) supplying an alkaline slurry mixture of an aqueous alkaline solution that is preheated to a temperature of 120°–160° C. and said slurry obtained in step (a) to a tube reactor,

(c) extracting alumina as sodium aluminate from said alkaline slurry mixture obtained in step (b) in said tube reactor at a temperature of 120°–160° C. and for an extraction time of no more than 10 minutes, at an extraction ratio of alumina of not less than about 70% and at a dissolution ratio of reactive silica of not greater than about 70%, to obtain a mixture of an extract solution of sodium aluminate and dissolution residues of reactive silica,

(d) separating said dissolution residues from said mixture obtained in step (c), to obtain the extract solution,

(e) desilicating said extract solution obtained in step (d) to obtain a mixture of a desilication product and a clear extract solution of sodium aluminate,

(f) separating said desilication product from said mixture obtained in step (e), to obtain the clear extract solution, and

(g) adding seeds of aluminum hydroxide to said clear extract solution to precipitate aluminum hydroxide.

5,545,385

PROCESS FOR RECOVERING ALKALI METAL HYDROXIDE FROM ORGANIC LIQUORS

Heiko Wunder; Robert E. Scott-Young; Kenneth N. Maddern, and Mark C. Corrigan, all of Tasmania, Australia, assignors to Amcor Limited, South Melbourne, Australia

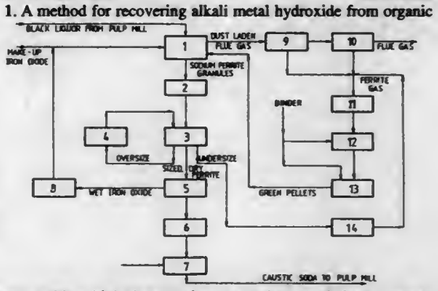
PCT No. PCT/AU93/00499, § 371 Date May 3, 1995, § 102(e) Date May 3, 1995, PCT Pub. No. WO94/07797, PCT Pub. Date Apr. 14, 1994

PCT Filed Sep. 30, 1993, Ser. No. 403,809

Claims priority, application Australia, Sep. 30, 1992, PL5206

Int. Cl.[6] C22B *26/10;* **C01D** *1/32*

U.S. Cl. 423—183 **10 Claims**



1. A method for recovering alkali metal hydroxide from organic liquors with a high degree of accuracy in mass balance, energy balance, and their transfer, which method comprises the following steps:

(i) fluidising particles of a mixed oxide compound of alkali metal and iron in a fluidised bed furnace;

(ii) burning an organic liquor containing organic chemicals and an alkali metal compound in the fluidised bed furnace, to produce particles of alkali metal ferrite;

(iii) recovering the particles of the alkali metal ferrite from the fluidised bed furnace and cooling them to produce cooled particles of the alkali metal ferrite;

(iv) mixing the cooled particles of the alkali metal ferrite with an aqueous solution of an alkali metal hydroxide at a temperature in excess of 80° C., with the aqueous solution having a hydroxide concentration sufficient to control the reaction between the alkali metal ferrite and the aqueous solution of the alkali metal hydroxide at said temperature, to thereby increase the concentration of alkali metal hydroxide in the aqueous solution and to form a precipitate of the mixed oxide compound of alkali metal and iron;

(v) recovering the aqueous solution of alkali metal hydroxide; and

(vi) recovering the mixed oxide compound precipitate and feeding it to the fluidised bed furnace.

5,545,386

METHOD FOR THE PREPARATION OF GLOBULAR PARTICLES OF A RARE EARTH OXIDE

Masami Kaneyoshi, and Shigeru Sakai, both of Fukui-ken, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Sep. 18, 1995, Ser. No. 529,640

Claims priority, application Japan, Oct. 21, 1994, 6-256434

Int. Cl.[6] C01F *17/00*

U.S. Cl. 423—263 **10 Claims**

1. A method for the preparation of a rare earth oxide powder having a globular particle configuration which comprises the steps of:

(a) preparing an aqueous solution of a water-soluble salt of a rare earth element;

(b) mixing the aqueous solution prepared in step (a) with ammonia water, in which the concentration of ammonia in the ammonia water is in a range of from 0.9 to 16 moles/liter, to form precipitates of a rare earth hydroxide in an aqueous

medium in the presence of a chelating agent having at least one nitrogen atom in a molecule capable of forming a coordinate bond with the ion of the rare earth element;

(c) separating the precipitates of the rare earth hydroxide from the aqueous medium by means of filtration; and

(d) calcining the precipitates of the rare earth hydroxide at a temperature in the range from 600° C. to 1500° C.

5,545,387

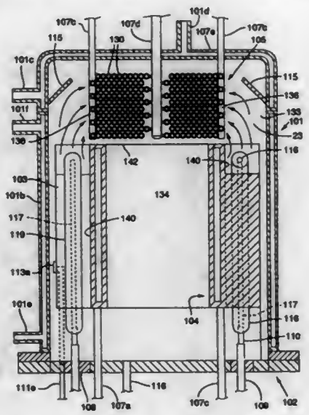
PRODUCTION OF HIGH-PURITY POLYCRYSTALLINE SILICON ROD FOR SEMICONDUCTOR APPLICATIONS

David W. Keck; Kenichi Nagai; Yoshifumi Yatsurugi, all of Moses Lake; Hiroshi Morihara, Vancouver, all of Wash., and Junji Izawa, Kanagawa, Japan, assignors to Advanced Silicon Materials, Inc., Moses Lake, Wash.

Continuation of Ser. No. 296,964, Aug. 26, 1994, which is a continuation-in-part of Ser. No. 953,480, Sep. 28, 1992, Pat. No. 5,382,419. This application Jun. 7, 1995, Ser. No. 488,103

Int. Cl.[6] C01B *33/02*

U.S. Cl. 423—348 **15 Claims**



1. A process for the production of polycrystalline silicon rods from a silicon-bearing gas, the process comprising:

providing a reactor vessel having an interior surface including a floor, a wall and a ceiling, the vessel containing a cooled partition with a wall which defines multiple reaction chambers and containing a powder catcher which is displaced from the reaction chambers, has a cooled wall, and is in the form of a heat exchange tube array;

positioning a starter filament in each reaction chamber where a polycrystalline silicon rod is to be grown;

heating the starter filaments;

passing a silicon-bearing reactant gas through the reaction chambers such that polycrystalline silicon deposits on the starter filaments and forms silicon powder due to the thermal decomposition of a silicon compound in the reactant gas; and

passing the reactant gas, with entrained silicon powder, from the reaction chambers into contact with the cooled wall of the powder catcher.

15. A process for the production of polycrystalline silicon rods from a silicon-bearing gas, the process comprising:

providing a reactor vessel having an interior surface including a floor, a wall, and a ceiling, the vessel containing (a) a cooled partition with a wall which defines multiple reaction chambers, and (b) a powder catcher which comprises a cooled wall provided by a heat exchange tube array in the shape of disk that defines a vertical passageway and which is displaced from and located at an elevation above the reaction chambers;

positioning a starter filament in each reaction chamber where a polycrystalline silicon rod is to be grown;

heating the starter filaments;

passing a silicon-bearing reactant gas through the reaction chambers such that polycrystalline silicon deposits on the starter filaments and forms silicon powder due to the thermal decomposition of a silane gas in the reactant gas, the silane gas being selected from the group consisting of monosilane, disilane, and mixtures thereof;

passing the reactant gas, with entrained silicon powder, from the reaction chambers into the tube array where the silicon powder deposits the cooled wall;

passing the reactant gas from the tube array into the passageway; and

recirculating at least a portion of the reactant gas from the passageway into the reaction chambers.

5,545,388

METHODS FOR THE SYNTHESIS OF CHEMICAL COMPOUNDS

Charles J. Rogers, 4191 Miami Trail La., Cincinnati, Ohio 45252, and Alfred Kornel, 3640 Erie Ave., Cincinnati, Ohio 45208

Division of Ser. No. 191,504, Feb. 4, 1994, Pat. No. 5,478,548. This application Mar. 29, 1995, Ser. No. 412,790

Int. Cl.[6] C01B *17/16;* **C01C** *1/00;* **C07C** *37/00;211/00*

U.S. Cl. 423—352 **11 Claims**

1. A method for the synthesis of a chemical compound selected from the group consisting of hydrocarbons, phenols, arylamines, heterocyclics, ammonia and hydrogen sulfide by catalytic transfer hydrogenation, comprising (a) providing a mixture of a polymeric starting material, a hydrogen donor material, and a catalyst selected from the group consisting of a catalytic form of carbon, a polyethylene glycol phase transfer agent, and mixtures thereof; and (b) heating the mixture at a temperature of from 30° to 400° C. in the presence of at least one alkali or alkaline earth metal compound to cause reduction of the starting material by catalytic transfer hydrogenation and form the chemical compound.

5,545,389

PROCESS FOR THE PRODUCTION OF CHLORINE DIOXIDE

John R. Winters, Marietta; John M. Gray, Roswell, and Joel D. Tenney, Atlanta, all of Ga., assignors to Eka Nobel AB, Bohus, Sweden

Continuation of Ser. No. 81,202, Jun. 25, 1993, abandoned, which is a continuation of Ser. No. 895,720, Jun. 9, 1992, Pat. No. 5,273,733, which is a continuation-in-part of Ser. No. 868,223, Apr. 14, 1992, abandoned. This application Sep. 12, 1994, Ser. No. 304,430

Int. Cl.[6] C01B *11/02*

U.S. Cl. 423—478 **18 Claims**

1. A process for the production of chloride dioxide, comprising reacting at least one of chloric acid and an alkali metal chlorate, with hydrogen peroxide as the reducing agent, to produce chlorine dioxide in a reaction medium maintained at a temperature of from about 30° C. to about 100° C. and at an acidity within the range of from about 0.5 to about 12N, thereby producing a mixture com

prising chlorine dioxide and oxygen, the process including the step of adding to said reaction medium a compound selected from the group consisting of urea, a phosphonic acid based complexing agent, and mixtures thereof, said compound being added in an amount sufficient to increase the rate of chlorine dioxide production in said process compared to said process in which said compound is not added.

5,545,390

PROCESS FOR THE DESTRUCTION OF HALOCARBONS

Frederick G. Drakesmith, Mold, and Andrew R. Jones, Wrexham, both of, United Kingdom, assignors to EA Technology Limited, and Manweb PLC, both of Chester, United Kingdom

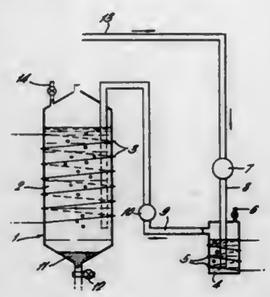
PCT No. PCT/GB93/01656, § 371 Date Mar. 30, 1995, § 102(e) Date Mar. 30, 1995, PCT Pub. No. WO94/03237, PCT Pub. Date Feb. 17, 1994

PCT Filed Aug. 5, 1993, Ser. No. 379,458

Claims priority, application United Kingdom, Aug. 6, 1992, 9216666

Int. Cl.[6] C01D *3/16*

U.S. Cl. 423—499.1 **8 Claims**



1. A process for the destruction of a halocarbon, which process comprises reacting the halocarbon with sodium characterised in that the halocarbon in gaseous form is bubbled through a bath formed of molten sodium at a temperature in the range from 98° to 500° C. to produce the corresponding sodium halide or halides in a sludge in the molten sodium and separating the sludge from the molten sodium.

5,545,391

REMOVAL OF HYDROGEN SULPHIDE

Phillip A. Clapp, Kingswood, Great Britain; Dennis F. Evans, deceased, late of London, England, and Antonia F. E. McKenna, executrix, County Derry, Northern Ireland, assignors to Solvay Interox Limited, Warrington, England

PCT No. PCT/GB92/01328, § 371 Date Apr. 14, 1994, § 102(e) Date Apr. 14, 1994, PCT Pub. No. WO93/02961, PCT Pub. Date Feb. 18, 1993

PCT Filed Jul. 20, 1992, Ser. No. 185,896

Claims priority, application United Kingdom, Jul. 27, 1991, 9116258

Int. Cl.[6] C01B *17/02;15/022*

U.S. Cl. 423—573.1 **18 Claims**

1. A process for the production of elemental sulphur from hydrogen sulphide in which hydrogen sulphide is brought into contact with a reducible quinone compound dissolved in a non-aqueous solvent system in the presence of an organic amine catalyst and maintained in contact until at least some sulphur precipitates out of solution characterised in that the reducible quinone compound comprises a 2,3-dialkyl substituted naphthaquinone.

5,545,392

PROCESS FOR PRODUCING NICKEL HYDROXIDE FROM ELEMENTAL NICKEL

Juraj Babjak, and Victor A. Ettel, both of Mississauga, Canada, assignors to Inco Limited, Toronto, Canada

Continuation-in-part of Ser. No. 392,302, Feb. 21, 1995, abandoned, which is a continuation of Ser. No. 216,036, Mar. 22, 1994, abandoned. This application Mar. 13, 1995, Ser. No. 402,368

Int. Cl.[6] C01B *13/14;* **C01G** *53/04*

U.S. Cl. 423—592 **19 Claims**

1. A method of producing nickel hydroxide from elemental nickel comprising the steps of:

a) introducing the elemental nickel into an aqueous solution to form a mixture, said aqueous solution containing aqueous ammonia and the elemental nickel of said mixture being activated for dissolution into said aqueous solution;

b) dissolving said activated elemental nickel to provide dissolved nickel in said aqueous solution and to provide a negative potential for said mixture of said activated elemental nickel and said aqueous solution;

c) adding oxygen to said aqueous solution at a rate that maintains said negative potential of said mixture of said activated elemental nickel and said aqueous solution to convert said dissolved nickel to nickel hydroxide; and

d) precipitating said nickel hydroxide from said aqueous solution on a seed for nickel hydroxide precipitation.

5,545,393

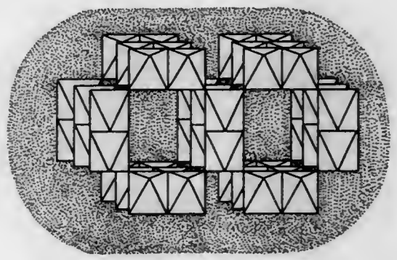
METHOD OF PREPARING MANGANESE OXIDE OCTAHEDRAL MOLECULAR SIEVE

Chi-Lin O'Young, Poughkeepsie, and Robert A. Sawicki, Stormville, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Nov. 7, 1994, Ser. No. 335,154

Int. Cl.[6] C01G *45/02*

U.S. Cl. 423—605 **17 Claims**



1. A method for producing a manganese oxide octahedral molecular sieve which comprises:

a) forming an aqueous reaction medium containing manganese

cation and permanganate anion and having a pH of not greater than about 4.5;

b) refluxing the aqueous reaction medium to produce solid crystalline manganese oxide octahedral molecular sieve product; and,

c) recovering the solid crystalline product.

5,545,394

COMPLEXATION-MEDIATED CRYSTAL-FORMING REACTIONS USING COMPLEXING AGENTS

Kenneth M. Doxsee, Eugene, Oreg., assignor to The State of Oregon Acting by and through the State Board of Higher Education on Behalf of the University of Oregon, Eugene, Oreg.

Filed Aug. 10, 1993, Ser. No. 104,863

Int. Cl.[6] C01B *1/00*; B01D *9/00*; C01F *7/34*; C22B *13/00*

U.S. Cl. 423—659 **12 Claims**



1. A method for forming a crystallite product, comprising:

(a) providing a first reactant salt that is substantially soluble in water but is poorly soluble to insoluble in an organic solvent;

(b) providing a second reactant salt that can react with the first reactant salt in water to form a first crystallite of a product compound, the first and second reactant salts being selected from a group consisting of acetates of Group-IB, group-IIB, group-IVA, group-VIIB, and group-VIII elements of the periodic table, sulfides of group-IA elements of the periodic table, halides of group-IA, group-IIA, group-IIB, and group-VIII elements of the periodic table, chromates of group-IA elements of the periodic table, silver nitrate, ammonium molybdate, ammonium carbonate, and dipotassium tartrate;

(c) providing a complexing agent that is soluble in the organic solvent and that can form molecular complexes with the first reactant salt so as to facilitate dissolution of the first reactant salt in the organic solvents, the complexing agent selected from a group consisting of crown ethers and tris(methoxyethoxyethyl)amine;

(d) adding relative amounts of the first and second reactant salts along with the complexing agent to the organic solvent, the relative amounts being sufficient for reaction of the first and second reactant salts with each other to form a desired amount of the product compound; and

(e) allowing the first and second reactant salts to react with each other in the organic solvent to form a second crystallite that is insoluble in the oganic solvent and that comprises crystals of the product compound that have a different habit or morphology from crystals of the product compound in the first crystallite that would otherwise be formable in water by reaction of similar relative amounts of the first and second reactant salts in water without the complexing agent.

5,545,395

METHOD OF IMAGING USING ENCAPSULATED MAGNETITE PARTICLES

Hervé Tournier, Valleiry; Roland Hyacinthe, Douvaine, both of, France, and Michel Schneider, Troinex, Switzerland, assignors to Bracco Research, S.A., Switzerland

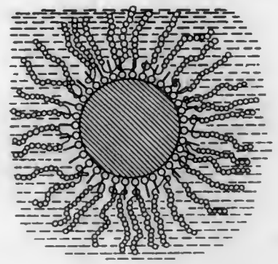
Division of Ser. No. 96,414, Jul. 26, 1993. This application Apr. 13, 1995, Ser. No. 421,330

Claims priority, application European Pat. Off., Aug. 13, 1992, 92810618; May 25, 1993, 93810380

Int. Cl.[6] A61B *5/055*

U.S. Cl. 424—932 **12 Claims**

1. A method of imaging organs in a living body, said method



comprising the steps off

(a) administering to said body particles comprising a magnetite iron oxide core and a layer of at least one amphipatic compound having a negatively charged phosphorus containing head moiety bonded to a hydrophobic tail moiety and one or more surfactants, said amphipatic compound being an alkyl, alkenyl or cycloalkyl mono ester of phosphoric acid or a phospholipid in micellar form, and the layer being in the shape of a three dimensional shell having at least one non-ionic surfactant which causes the amphipatic compound to be in said micellar form, wherein the molecules of the amphipatic compound being organized relative to the iron oxide core so that the phosphorus containing head moiety of the amphipatic compound is pointing towards the iron oxide core whereas the hydrophobic tail moiety protrudes therefrom the negatively charged head moiety having the negative charges of two oxygen atoms available for interaction with the core and the hydrophobic tail moiety having at least eight carbon atoms (b) subjecting the living body to an imaging procedure.

5,545,396

MAGNETIC RESONANCE IMAGING USING HYPERPOLARIZED NOBLE GASES

Mitchell S. Albert; Dilip Balamore, both of Shoreham, N.Y.; Gordon D. Cates, Jr., Skillman, N.J.; Bastiaan Driehuys, Bristol, Pa.; William Happer; Brian Saam, both of Princeton, N.J., and Arnold Wishnia, Setanket, N.Y., assignors to The Research Foundation of State University of New York, Albany, N.Y., and The Trustees of Princeton University Office of Research and Project Administration, Princeton, N.J.

Filed Apr. 8, 1994, Ser. No. 225,243

Int. Cl.[6] A61B *5/055*

U.S. Cl. 424—93 **46 Claims**

1. A method of nuclear magnetic resonance (NMR) imaging, which comprises the steps of:

a) administering hyperpolarized noble gas to a human or animal subject;

b) detecting a spatial distribution of said hyperpolarized noble gas in said subject by NMR; and

c) generating a representation of said spatial distribution of said hyperpolarized noble gas.

5,545,397

CONTRAST AGENTS AND COMPOSITIONS FOR RADIOLOGICAL IMAGING, AND RADIOLOGICAL IMAGING METHOD UTILIZING SAME

Bernard F. Spielvogel, Cary, N.C., and Dominique Meyer, Saint-Maur-Des-Fosses, France, assignors to Boron Biologicals, Inc., Raleigh, N.C., and Guerbet S.A., Cedex, France

Division of Ser. No. 55,715, Apr. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 965,216, Oct. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 781,812, Oct. 23, 1991, Pat. No. 5,256,394. This application Nov. 18, 1994, Ser. No. 341,767

Int. Cl.[6] A61K *33/18*

U.S. Cl. 424—9.4 **3 Claims**

1. A method of imaging a corporeal situs using x-ray imaging means, comprising delivering to the corporeal situs an imagingly effective amount of a physiologically acceptable contrast medium formulation containing a radiopacity-imparting boron compound, and thereafter visualizing the corporeal situr with said x-ray imaging means, wherein the boron compound comprises a compound selected from the group consisting of iodinated boron salts of the formula:

$$M_xB_nH_{n-}I_y$$

wherein:

M is a monovalent or divalent cation;

x is 1 when M is divalent and 2 when M is monovalent;

n is 3 to 14; and

y is 1 to 14,

and derivatives thereof.

5,545,398

METHOD AND COMPOSITIONS FOR TOPICAL APPLICATION TO THE SKIN OF TOCOTRIENOL FOR PREVENTION AND/OR TREATMENT OF SKIN DAMAGE

Nicholas V. Perricone, 35 Pleasant St., Meriden, Conn. 06450

Continuation-in-part of Ser. No. 3,603, Jan. 13, 1993, Pat. No. 5,376,361. This application Dec. 21, 1994, Ser. No. 361,737

Int. Cl.[6] A61K *7/42*

U.S. Cl. 424—59 **20 Claims**

1. A method for treating or preventing skin damage, said method comprising topically applying to skin areas subject to such damage an effective amount of an active compound selected from the group consisting of tocotrienols in the substantial absence of tocopherols, vitamin E preparations enriched with tocotrienols, and mixtures thereof.

5,545,399

COSMETIC COMPOSITION

Caroline M. Lee, Surrey; Martin R. Green, Cambridge, both of, Great Britain, and Giuseppe Prota, Naples, Italy, assignors to Chesebrough-Pond's USA Co., Greenwich, Conn.

Filed Oct. 24, 1994, Ser. No. 327,727

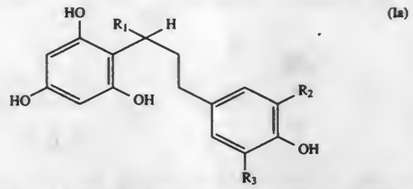
Claims priority, application United Kingdom, Oct. 26, 1993, 9322007

Int. Cl.[6] A61K *7/42;31/21;31/12;31/075*

U.S. Cl. 424—59 **7 Claims**

1. A composition for topical application to human skin comprising

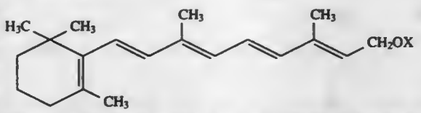
(i) from 0.001 to 20% of a hydrochalcone of formula (Ia):



(Ia)

wherein R_1, R_2 and R_3, which may be the same or different, represent H, OH, —OR or —COR; where R is a C_{1-20} alkyl group;

(ii) from 0.001% to 10% of retinol or a derivative thereof having the structure (IV):



(IV)

wherein X represents H or COR_{11}, R_{11} represents a branched or unbranched, alkyl or alkenyl group having up to 20 carbon atoms; and

(iii) a cosmetically acceptable vehicle in an amount of from 10 to 99.999%.

5,545,400

DEODORANT METHOD

Masakazu Sakata, Hirakata; Hiroyuki Fujii, Katano; Yuji Hamada, Kadoma; Kenichi Shibata, Hashimoto, and Yoshitaka Nishio, Neyagawa, all of, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

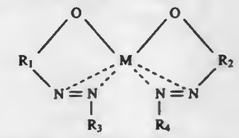
Continuation of Ser. No. 188,700, Jan. 31, 1994, abandoned. This application Jun. 1, 1995, Ser. No. 458,031

Claims priority, application Japan, Feb. 2, 1993, 5-015486; Dec. 14, 1993, 5-313514; Dec. 17, 1993, 5-318070

Int. Cl.[6] B61L *9/01*

U.S. Cl. 424—76.21 **11 Claims**

1. A method for deodorizing an odorous material which comprises oxidizing the odorous material to an odorless material in the presence of a catalyst of the formula



wherein M represents a transition metal element, R_1 and R_2 each represent a divalent aromatic radical, and R_3 and R_4 each represent a monovalent aromatic or heterocyclic radical.

5,545,401

ANTIVIRAL, SPERMICIDAL VAGINAL GEL AND FOAM CONTAINING LOW MOLECULAR WEIGHT POVIDONE-IODINE

Edward Shanbrom, 2252 Liane La., Santa Ana, Calif. 92705

Filed Jun. 2, 1994, Ser. No. 254,025

Int. Cl.[6] A61K *31/79;33/18*

U.S. Cl. 424—78.07 **4 Claims**

1. A virucidal, spermicidal vaginal gel consisting essentially of water, povidone and iodine wherein the weight ratio of povidone to iodine is at least 15 to 1 and wherein the povidone contains between 1 and 25 percent povidone having a molecular weight at least as low as 20 kd, said gel having a viscosity such that a conical

body drawn from said gel does not visibly slump for a period of about one minute at 37 degrees celsius.

5,545,402

SKIN CARE METHOD AND COMPOSITION

Allan Watkinson, Bedford, Great Britain, assignor to Elizabeth Arden Co., Division of Conopco, Inc., New York, N.Y.

Filed Sep. 12, 1994, Ser. No. 304,722

Claims priority, application United Kingdom, Sep. 15, 1993, 9319104

Int. Cl.[6] A61K *38/00;38/01;38/02;38/43*

U.S. Cl. 424—94.63 **8 Claims**

1. A topical composition comprising

(i) a stratum corneum thiol cysteine protease which in its active form is inhibited by E64 and has an apparent molecular weight of 34 or 35 kDa when determined by sodium dodecyl sulphate polyacrylamide gel electrophoresis as herein described; and

(ii) a mild reducing agent selected from the group consisting .Of sulphides, thiol-containing compositions including dithiothreitol, trithiohexitol, cysteine or protein hydrolysates rich in cysteine, N-acetyl-cysteine, mercaptoethanol, thioglycerol. mercaptosuccinic acid, thiolactic acid and their salts, thioglycollic acid and salts of thioglycollic acid and mixtures thereof.

5,545,403

METHOD FOR TREATING A MAMMAL BY ADMINISTERING A CHO-GLYCOSYLATED ANTIBODY

Martin J. Page, Beckenham, United Kingdom, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Continuation of Ser. No. 46,893, Apr. 15, 1993, abandoned, which is a continuation of Ser. No. 943,146, Sep. 10, 1992, abandoned, which is a continuation of Ser. No. 777,730, Oct. 16, 1991, abandoned. This application Nov. 23, 1993, Ser. No. 155,864

Claims priority, application United Kingdom, Oct. 17, 1990, 9022543

Int. Cl.[6] A61K *35/16;39/00;39/395;* **C07K** *16/00*

U.S. Cl. 424—133.1 **7 Claims**

1. In a method for treating a human suffering from a disease or disorder comprising administering a therapeutically effective amount of a whole glycosylated recombinant human chimeric or CDR-grafted or bispecific antibody effective in treating said disease or disorder in said human, wherein the improvement comprises an antibody glycosylated by a chinese hamster ovary cell.

5,545,404

METHOD FOR TREATING A MAMMAL SUFFERING FROM A T-CELL MEDICATED DISORDER WITH A CHO-GLYCOSYLATED ANTIBODY

Martin J. Page, Kent, United Kingdom, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Division of Ser. No. 155,864, Nov. 23, 1993, which is a continuation of Ser. No. 46,893, Apr. 15, 1993, abandoned, which is a continuation of Ser. No. 943,146, Sep. 10, 1992, abandoned, which is a continuation of Ser. No. 777,730, Oct. 16, 1991, abandoned. This application Nov. 3, 1994, Ser. No. 335,400

Claims priority, application United Kingdom, Oct. 17, 1990, 9022543

The portion of the term of this patent subsequent to Oct. 16, 2011, has been disclaimed.

Int. Cl.[6] A61K *35/16;39/00;39/395;;* **C04K** *16/00*

U.S. Cl. 424—133.1 **7 Claims**

1. In a method for treating a human suffering from a T-cell mediated disorder comprising administering a therapeutically effective amount of a whole glycosylated recombinant human, chimeric, CDR-grafted or bispecific antibody effective in treating said disorder, wherein the improvement comprises an antibody glycosylated by a Chinese hamster ovary cell.

5,545,405

METHOD FOR TREATING A MAMMAL SUFFERING FROM CANCER WITH A CHO-GLYCOSYLATED ANTIBODY

Martin J. Page, Beckenham, United Kingdom, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Division of Ser. No. 155,864, Nov. 23, 1993, which is a continuation of Ser. No. 46,893, Apr. 15, 1993, abandoned, which is a continuation of Ser. No. 943,146, Sep. 10, 1992, abandoned, which is a continuation of Ser. No. 777,730, Oct. 16, 1991, abandoned. This application Nov. 3, 1994, Ser. No. 335,401

Claims priority, application United Kingdom, Oct. 17, 1990, 9022543

Int. Cl.[6] A61K *35/16;39/00;39/395;* **C07K** *16/00*

U.S. Cl. 424—133.1 **9 Claims**

1. In a method for treating a human suffering from cancer by administering a therapeutically effective amount of a whole glycosylated recombinant human, chimeric, CDR grafted or bispecific antibody effective in treating said cancer, wherein the improvement comprises an antibody glycosylated by a Chinese hamster ovary cell.

5,545,406

Patent Not Issued For This Number

5,545,407

DERMATOLOGICAL COMPOSITIONS AND METHOD OF TREATMENT OF SKIN LESIONS THEREWITH USING BENZOYL PEROXIDE AND TOCOPHEROL ESTERS

Bonnie J. Hall, Mason; Julie A. Baur, Fairfield, and George E. Deckner, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 326,446, Oct. 20, 1994, Pat. No. 5,445,823. This application Jun. 1, 1995, Ser. No. 457,545

Int. Cl.[6] A61K *7/48*

U.S. Cl. 424—401 **8 Claims**

1. A dermatological composition for treating skin lesions comprising:

(a) from about 0.1% to about 20% of benzoyl peroxide,

(b) from about 0.05% to about 20% of a compound for reducing the skin irritation associated with the benzoyl peroxide selected from the group consisting of tocopherol acetate, tocopherol propionate, tocopherol butyrate, tocopherol sorbate, tocopherol stearate, tocopherol 2-cyclohexyl acetate, tocopherol isobutyrate, tocopherol linoleate, and mixtures thereof, and

(c) a topical carrier.

4. A method of treating skin lesions in humans comprising topically applying to a human in need of treatment a safe and effective amount of a composition comprising:

(a) from about 0.1% to about 20% of benzoyl peroxide,

(b) from about 0.05% to about 20% of a compound for reducing the skin irritation associated with the benzoyl peroxide selected from the group consisting of tocopherol acetate, tocopherol propionate, tocopherol butyrate, tocopherol sorbate, tocopherol stearate, tocopherol 2-cyclohexyl acetate, tocopherol isobutyrate, tocopherol linoleate, and mixtures thereof, and

(c) a topical carrier.

7. A dermatological composition for treating skin lesions comprising:

(a) from about 0.1% to about 20% of benzoyl peroxide,

(b) from about 0.05% to about 20% of a compound for reducing the skin irritation associated with the benzoyl peroxide wherein said compound is selected from the group consisting of tocopheryl acid succinate, tocopheryl polyethylene glycol 1000 succinate, 6-hydroxy-2,5,7,8-tetramethylchroman-2-carboxylic acid, and mixtures thereof, and

(c) a topical carrier.

8. A method for treating skin lesions in humans comprising topically applying to a human in need of treatment a safe and effective amount of a composition comprising:

(a) from about 0.1% to about 20% of benzoyl peroxide,

(b) from about 0.05% to about 20% of a compound for reducing the skin irritation associated with the benzoyl peroxide wherein said compound is selected from the group consisting of tocopheryl acid succinate, tocopheryl polyethylene glycol 1000 succinate, 6-hydroxy-2,5,7,8-tetramethylchroman-2-carboxylic acid, and mixtures thereof, and

(c) a topical carrier.

5,545,408

BIOCOMPATIBLE IMPLANT FOR THE TIMING OF OVULATION IN MARES

Timothy E. Trigg, Warrawee, Australia; Edward L. Souires, Fort Collins, Colo., and Wolfgang Jochle, Denville, N.J., assignors to Peptide Technology Limited, Australia

PCT No. PCT/AU92/00557, § 371 Date Jun. 15, 1994, § 102(e) Date Jun. 15, 1994, PCT Pub. No. WO93/07833, PCT Pub. Date Apr. 29, 1993

PCT Filed Oct. 19, 1992, Ser. No. 211,794

Claims priority, application Australia, Oct. 21, 1991, PK9037

Int. Cl.[6] A61D *19/00;7/00*

U.S. Cl. 424—422 **15 Claims**

1. A method for the controlled induction of ovulation in mares comprising implanting into a mare which already has an ovarian follicle approaching maturation a solid biocompatible implant comprising a solid carrier and an effective amount of an agonist of LHRH so as to increase the level of LHRH agonist in the mare above that prevailing immediately before that implantation.

5,545,409

DELIVERY SYSTEM FOR CONTROLLED RELEASE OF BIOACTIVE FACTORS

Cato T. Laurencin, Somerville, Mass.; Paul A. Lucas, Macon, Ga.; Glenn T. Syftestad, Sacramento, Calif.; Abraham Domb, Baltimore, Md., and Julie Glowacki, Jamaica Plan, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 59,516, May 7, 1993, Pat. No. 5,356,630, which is a continuation of Ser. No. 742,264, Aug. 7, 1991, abandoned, which is a continuation of Ser. No. 313,953, Feb. 22, 1989, abandoned. This application Apr. 5, 1994, Ser. No. 222,880

Int. Cl.[6] A61F *2/28;* **A61K** *38/39;* **C07K** *14/485;14/51*

U.S. Cl. 424—426 **10 Claims**

1. A composition for the controlled release of a bioactive substance for inducing formation of cartilage or bone in an animal or wound healing comprising:

a. a shaped matrix sized and adapted for administration of the bioactive substance to an animal and formed of a polymer selected from the group consisting of polyanhydride and polyorthoester; and

b. a therapeutically effective amount of a bioactive substance selected from the group consisting of water soluble chondrogenic or osteogenic proteins derived from demineralized bone matrix, TGF-beta, EGF, FGF and PDGF, wherein the bioactive substance is present in an amount of between about 10 and 90 percent by weight of matrix;

wherein the composition erodes at a controlled rate over a period of time, thereby administering the bioactive substance to the animal in an amount effective to induce formation of cartilage and bone or wound healing.

5,545,410

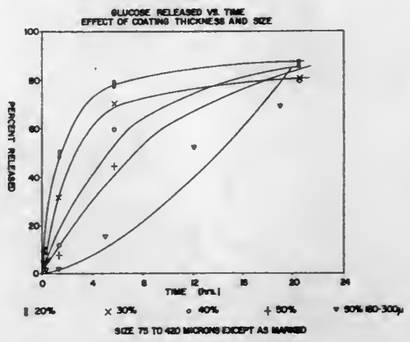
METHOD OF CONTROLLING THE RELEASE OF CARBOHYDRATES BY ENCAPSULATION AND COMPOSITION THEREFOR

J. Gary Fox, Princeton Junction, and Darlene Allen, Berkeley Heights, both of N.J., assignors to The Estee Corporation, Parsippany, N.J.

Continuation-in-part of Ser. No. 53,944, Apr. 26, 1993, Pat. No. 5,360,614. This application Oct. 31, 1994, Ser. No. 331,671

Int. Cl.[6] A61K *9/14;9/28;9/68;47/36*

U.S. Cl. 424—439 **9 Claims**



1. An edible ingredient for use in foods and beverages selected from the group consisting of hot and cold breakfast cereals, baked goods, field and combat rations, instant breakfast powders and enteral solutions, said ingredient comprising:

a) a core formed of a metabolizable carbohydrate throughout;

b) said core having a time delay release coating for slowly degrading said coating in the digestive tract and releasing said metabolizable carbohydrate substantially only into the digestive tract of the body;

c) whereby said coated core has a particle size from 30–1000 µm and is shelf stable.

5,545,411

METHOD FOR LOWERING VISCOSITY BY USE OF GUM ACACIA

Cindy L. Chancellor, Evansville, Ind., assignor to Bristol-Myers Squibb Company, Princeton, N.J.

Filed Dec. 16, 1994, Ser. No. 356,996

Int. Cl.[6] A61K *47/26*

U.S. Cl. 424—439 **11 Claims**

1. A nutritional composition comprising:

(a) about 0.2 to about 3 weight % soy fiber;

(b) 0 to about 8 weight % protein,

(c) 0 to about 17 weight % non-fiber, carbohydrate;

(d) about 60 to about 98 weight % water, and

(e) an effective viscosity lowering amount of gum acacia.

5,545,412

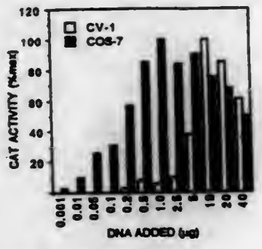
N-[1, (1-1)-DIALKYLOXY]-AND N-[1, (1-1)-DIALKENYLOXY]-ALK-1-YL-N,N,N-TETRASUBSTITUTED AMMONIUM LIPIDS AND USES THEREFOR

Deborah A. Eppstein, Menlo Park; Philip L. Felgner, Los Altos; Thomas R. Gadek, Oakland; Gordon H. Jones, Cupertino, all of Calif., and Richard B. Roman, Fairhope, Ala., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 237,807, May 4, 1994, which is a division of Ser. No. 15,738, Feb. 10, 1993, Pat. No. 5,366,737, which is a division of Ser. No. 614,412, Nov. 16, 1990, Pat. No. 5,208,036, which is a division of Ser. No. 524,257, May 15, 1990, Pat. No. 5,049,386, which is a division of Ser. No. 428,815, Oct. 27, 1989, Pat. No. 4,946,787, which is a division of Ser. No. 114,809, Oct. 29, 1987, Pat. No. 4,897,355, which is a continuation-in-part of Ser. No. 877,916, Jun. 24, 1986, abandoned, which is a continuation-in-part of Ser. No. 689,407, Jan. 7, 1985, abandoned. This application Apr. 3, 1995, Ser. No. 415,962

Int. Cl.[6] A61K *9/127;9/70;* **A61F** *2/02;* **B01J** *13/02*

U.S. Cl. 424—450 **4 Claims**



1. An antigenic formulation, comprising:
an antigen; and
a compound of Formula I:



or an optical isomer thereof wherein R^1 and R^2 are the same or different and are an alkyl or alkenyl group of 6 to 24 carbon atoms; R^3, R^4 and R^5 are the same or different and are alkyl of 1 to 8 carbon atoms, aryl, aralkyl of 7 to 11 carbon atoms, or when two or three of R^3, R^4, and R^5 are taken together to form quinuclidino, pyrrolidino, piperidino, or morpholino; n is 1 to 8; and X is a pharmaceutically acceptable anion.

5,545,413

DOSAGE FORM FOR ADMINISTERING ORAL HYPOGLYCEMIC GLIPIZIDE

Anthony L. Kuczynski; Atul D. Ayer, and Patrick S. Wong, all of Palo Alto, Calif., assignors to Alza Corporation, Palo Alto, Calif.

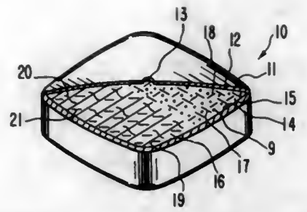
Division of Ser. No. 402,314, Sep. 5, 1989, Pat. No. 5,024,843. This application Jan. 22, 1991, Ser. No. 650,822

The portion of the term of this patent subsequent to Jul. 2, 2008, has been disclaimed.

Int. Cl.[6] A61K *9/20;47/38;47/32;9/16*

U.S. Cl. 424—473 **7 Claims**

1. A method for controlling hyperglycemia and its associated symptomatology in a patient in need of glipizide therapy for controlling same, wherein the method comprises:
(a) admitting orally into the patient a dosage form comprising:
(1) a wall comprising at least at part a composition permeable to the passage of fluid, which wall surrounds;
(2) a compartment;



(3) a lamina in the compartment comprising about 2.0 mg to 50 mg of glipizide and a polyethylene oxide comprising an 80,000 to 350,000 molecular weight;
(4) a displacement lamina in the compartment comprising a polyethylene oxide comprising a 4,000,000 to 8,000,000 molecular weight, which displacement lamina imbides fluid, expands and displaces the lamina comprising the glipizide from the compartment;
(5) at least one exit means in the wall for delivering glipizide from the dosage form;
(b) imbibing fluid into the dosage form for contacting the displacement lamina comprising the polyethylene oxide causing it to expand and displace the lamina comprising the glipizide; thereby,
(c) delivering a therapeutically effective amount of glipizide to the patient to produce the intended effects.

5,545,414

CHOLESTEROL LOWERING FOOD PRODUCT

Stephen R. Behr, Westerville; Jeffrey K. Seeds, Pickerington; Catherine S. Lamb, Westerville; Keith A. Garleb, Powell, and Joseph E. Walton, Westerville, all of Ohio, assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Mar. 22, 1995, Ser. No. 408,467

Int. Cl.[6] A61K *9/32;9/14;9/16;9/50*

U.S. Cl. 424—484 **19 Claims**

1. A nutritional product comprising a solid matrix comprising fat, carbohydrate, and at least one protein selected from the group consisting of vegetable proteins and milk proteins, said solid matrix having dispersed therein particles comprising a dietary fiber which lowers Serum cholesterol in humans encapsulated in zein.

5,545,415

LOW MOISTURE CHEWING GUM COMPOSITIONS CONTAINING ERYTHRITOL

Henry T. Tyrpin, Midlothian; Kevin B. Broderick, Berwyn, and David W. Record, River Forest, all of Ill., assignors to Wm. Wrigley Jr. Company, Chicago, Ill.

Filed Dec. 30, 1993, Ser. No. 175,588

Int. Cl.[6] A23G *3/30*

U.S. Cl. 426—3 **18 Claims**

1. A chewing gum composition with improved shelf life comprising:
a) from about 5% to about 95%, by weight of the gum, of gum base;
b) from about 4.9% to about 94%, by weight of the gum, of powdered erythritol; and
c) from about 0.1% to about 10%, by weight of the gum, of flavor;
d) the gum composition containing less than 2% of water.

5,545,416

GUM BASE MADE WITH REDUCED ANTIOXIDANT AND METHOD OF PREPARATION

Kevin B. Broderick, Berwyn; Joo H. Song, Northbrook; Donald J. Townsend, Chicago; David W. Record, River Forest, and Henry T. Tyrpin, Midlothian, all of Ill., assignors to Wm. Wrigley Jr. Company, Chicago, Ill.

Continuation-in-part of Ser. No. 305,363, Sep. 13, 1994, abandoned. This application Dec. 22, 1994, Ser. No. 361,776

Int. Cl.[6] A23G *3/30*

U.S. Cl. 426—3 **43 Claims**

16. A method of making a chewing gum base, comprising the steps of:
adding, to a continuous mixer, about 5–95% by weight elastomer, 0 to about 45% by weight elastomer plasticizer, 0 to about 30% by weight wax, about 1–60% by weight filler, about 0.5–40% by weight softener/emulsifier, and about 10–2000 ppm antioxidant; and
blending the ingredients together in the continuous mixer to form a gum base;
whereby the amount of antioxidant remaining in the gum base is at least about two-thirds of the amount of antioxidant initially added to the continuous mixer thereby reflecting minimal degradation of the antioxidant and resulting by-products.

5,545,417

NATURAL CARBOHYDRATE GUM HYDROLYZATE COATED CHEWING GUM

Lindell C. Richey, Lake Zurich; Jeffrey S. Hook, Berwyn; Michael A. Reed, Naperville, and Robert J. Yatka, Orland Park, all of Ill., assignors to Wm. Wrigley Jr. Company, Chicago., Ill.

Filed Jun. 22, 1995, Ser. No. 491,849

Int. Cl.[6] A23G *3/30*

U.S. Cl. 426—5 **19 Claims**

1. A coated chewing gum product comprising a gum pellet coated with a coating comprising a natural carbohydrate gum hydrolyzate.

5,545,418

ALKALI-TREATED BAGASSE, AND ITS PREPARATION AND USES

Satoshi Iritani; Masakazu Mitsuhashi; Hiroto Chaen, and Toshio Miyake, all of Okayama, Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Filed Dec. 27, 1994, Ser. No. 364,489

Claims priority, application Japan, Dec. 27, 1993, 5-346818

Int. Cl.[6] A23K *1/12;3/03;* **A23B** *7/157;7/10*

U.S. Cl. 426—53 **21 Claims**

1. An alkali-treated bagasse, which is prepared by softening a bagasse with calcium oxide or with a mixture of calcium oxide and sodium hydroxide while preventing the substantial decomposition of cellulose and hemicellulose.

5,545,419

PATCH BAG HAVING SUPPLEMENTAL SEAL

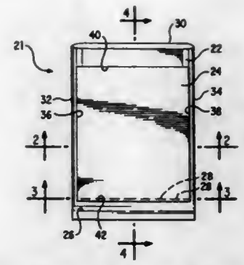
Sean A. Brady, Greer, and Henry W. Stockley, III, Spartanburg, both of S.C., assignors to W. R. Grace & Co.-Conn., Duncan, S.C.

Filed Jul. 21, 1994, Ser. No. 278,367

Int. Cl.[6] B65D *30/08;30/14;85/00*

U.S. Cl. 426—129 **23 Claims**

1. A patch bag, comprising a bag and a patch adhered to the bag and coveting a portion of a surface of the bag, and a primary seal across an uncovered portion of the bag, the patch bag further comprising a supplemental seal inward of the primary seal,



wherein the primary seal is of a first lay-flat side of the bag, to a second lay-flat side of the bag, and the supplemental seal is of the first lay-flat side of the bag to the second lay-flat side of the bag.

5,545,420

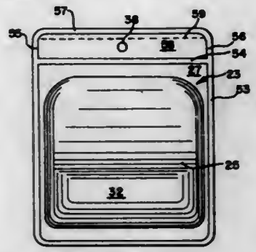
PEELABLE AND RESEALABLE PACKAGE FOR THINLY SLICED MEATS AND THE LIKE

Jeffrey M. Lipinski, Waunakee, and Brian P. Lawless, Madison, both of Wis., assignors to Kraft Foods, Inc., Madison, Wis.

Continuation of Ser. No. 95,806, Jul. 21, 1993, Pat. No. 5,445,838, which is a continuation of Ser. No. 876,594, Apr. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 696,327, Apr. 30, 1991, Pat. No. 5,395,632, which is a continuation of Ser. No. 505,329, Apr. 5, 1990, abandoned. This application May 31, 1995, Ser. No. 455,964

Int. Cl.[6] B65D *85/00*

U.S. Cl. 426—129 **29 Claims**



1. A packaged food product wherein thin proteinaceous products are hermetically sealed between generally opposing panels, comprising:
a non-planar panel member having a generally bulbous-shaped enclosure cavity and a peripheral flange area which peripherally defines an access opening of said generally bulbous-shaped enclosure cavity;
a substantially planar panel member overlying said peripheral flange area and said access opening of the generally bulbous-shaped enclosure cavity in order to thereby close said cavity;
means for sealing said substantially planar panel member to said peripheral flange of the non-planar panel member, said sealing means including a peelable and resealable system having a thin contact layer generally enclosing a pressure sensitive adhesive, said thin contact layer being an inside surface of said non-planar panel, said substantially planar panel or both, said inside surface being in engagement with an inside surface of another of said panels;
a stack of thin slices of proteinaceous products hermetically sealed within a compartment defined by said generally bulbous-shaped enclosure cavity and said substantially planar panel member, said slices in said stack each having substantially the same width and length, at least some of said slices being offset so as to be shingled relative to other slices in the stack and along a longitudinal axis whereby the stack is

longer in a direction parallel to said axis than transverse to said axis, an entire face of the outermost slice on each side of the stack is exposed and an edge face of each of the shingled slices on each longitudinal end is also exposed, and the edge faces at one longitudinal end of said stack are folded over onto the shingled stack toward the edge faces at the other longitudinal end and in a direction parallel to said longitudinal axis to present a bulbous configuration and to shorten the length of and support the stack in said cavity, but to still simultaneously present the exposed edge faces at at least one longitudinal end and one side of the shingled stack together with a large portion of the exposed face of the outermost slice on said one side;

wherein said compartment having said generally bulbous-shaped enclosure cavity is larger in size than and engages both of said sides of said folded-over shingled stack of thin slices of proteinaceous products, one of said stack sides being in engagement with said substantially planar panel member, the other of said stack sides being in engagement with said non-planar panel member, at least a portion of at least one of said panel members being transparent to permit viewing simultaneously of said presented edge faces and large portion of the exposed face on said one side of the stack, whereby at least a portion of the proteinaceous product is displayed and whereby the slices are supported between the substantially planar panel member and the non-planar panel member so as to not shift uncontrollably during commercial handling; and

said package compartment is gas flushed and hermetically sealed.

5,545,421

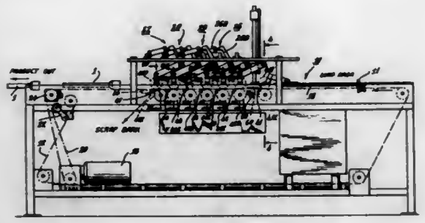
METHODS FOR REMOVING OUTER LAYERS OF PALM STALKS FROM PALM HEART

Ronald S. Rainey, Easton; Lan P. Cambbell, Rowayton, both of Conn.; Pablo M. A. Fallas, San Jose, and Edgar N. Solano, Cartago, both of, Costa Rica, assignors to Roberto Gonzales Barrera, Lomas de Chapultapec, Mexico

Division of Ser. No. 112,970, Aug. 30, 1993, Pat. No. 5,454,300. This application Apr. 19, 1995, Ser. No. 424,801

Int. Cl.[6] A23L *1/00*

U.S. Cl. 426—481 **6 Claims**



1. A method for processing a stalk of palm which includes throughout a palmheart core surrounded by an intermediate layer and an outer bark layer, and has a tapered section that is positioned between and is continuous with a larger diameter meristem section and a smaller diameter section which it joins at an annular ring, to remove a palmheart from the center of said smaller diameter section of said stalk, said method comprising the steps of

propelling said stalk longitudinally, smaller diameter section first, and, sequentially, while said stalk is supported by underlying support means,

bringing the bark layer of said smaller diameter section into contact with a cutter/spreader structure whereby said bark layer is longitudinally cut and the cut edges of said layer are spread apart along the cut line of said cut,

spreading said cut edges of said bark layer progressively increasingly apart and, from the region of said cut, progressively increasingly separating it from the intermediate layer which underlies said bark layer until said bark layer is substantially completely disengaged from said intermediate layer, and

deflecting said bark layer away from said intermediate layer until said bark layer breaks at said annular ring,

cutting the debarked smaller diameter section from the remainder of said stalk,

longitudinally propelling said debarked small diameter section of said stalk and, sequentially,

while said stalk is supported by underlying support means, longitudinally cutting the bottom of said intermediate layer of said smaller diameter section and spreading the cut edges of said intermediate layer along the cut line,

transferring the support of said smaller diameter section to said intermediate layer in the region of said cut edges and,

progressively from the region of said cut, separating said intermediate layer from the palmheart core which underlies said intermediate layer until said palmheart core disengages from the the interior of said intermediate layer and is free to drop by gravity therefrom.

5,545,422

PEELING APPARATUS AND METHOD

Peter O. Davies; Nicholas C. Dromgool; Graeme L. Collinson, and Alan P. Fish, all of Auckland, New Zealand, assignors to International Fruit Peelers Limited, New Zealand

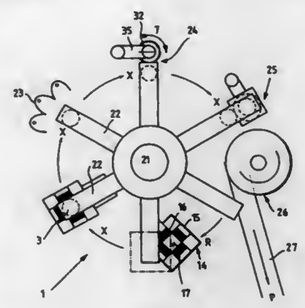
PCT No. PCT/NZ93/00113, § 371 Date May 15, 1995, § 102(e) Date May 15, 1995, PCT Pub. No. WO94/10863, PCT Pub. Date May 26, 1994

PCT Filed Nov. 15, 1993, Ser. No. 436,218

Claims priority, application New Zealand, Nov. 16, 1992, 245144; Jnn. 3, 1993, 247777

Int. Cl.[6] A23L *1/00;* A23N *7/00*

U.S. Cl. 426—482 **12 Claims**



1. A method of peeling a fruit or vegetable comprising the steps of:

(i) heating the fruit or vegetable to at least partially separate the skin from the flesh;

(ii) ripping the skin about at least one peripheral portion thereof so that at least a partial lifting of the skin at or about the rip occurs; and

(iii) applying a vacuum to said skin at or about said rip to lift said skin from said flesh.

5,545,423

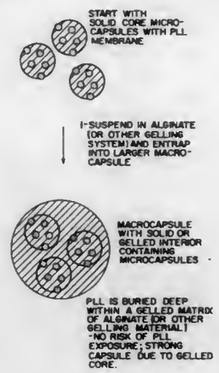
CYTOPROTECTIVE, BIOCOMPATIBLE, RETRIEVABLE MACROCAPSULE CONTAINMENT SYSTEMS FOR BIOLOGICALLY ACTIVE MATERIALS

Patrick Soon-Shiong; Neil P. Desai, and Roswitha E. Heintz, all of Los Angeles, Calif., assignors to VivoRx, Inc., Santa Monica, Calif.

Continuation of Ser. No. 981,852, Nov. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 797,704, Nov. 25, 1991, abandoned. This application Mar. 6, 1995, Ser. No. 400,442

Int. Cl.[6] A61K *9/48;9/50;* C12N *11/00*

U.S. Cl. 424—484 **10 Claims**



1. A macrocapsule for encapsulating biologically active materials, said macrocapsule comprising a first biocompatible gel selected from the group consisting of:

covalently crosslinkable alginate;

ionically crosslinkable alginate;

covalently and ionically crosslinkable alginate;

covalently crosslinkable linear PEG;

covalently crosslinkable branched chain PEG;

mixtures of different molecular weight covalently crosslinkable linear or branched chain PEG;

combinations of alginate and PEG; and

mixtures of any two or more thereof,

wherein said macrocapsule further comprises:

a plurality of microcapsules,

i) wherein said microcapsules contain said biologically active materials therein;

ii) wherein said microcapsules are formed of a second biocompatible gel selected from the group consisting of:

covalently crosslinkable alginate;

ionically crosslinkable alginate;

covalently and ionically crosslinkable alginate;

covalently crosslinkable linear PEG;

covalently crosslinkable branched chain PEG;

mixtures of different molecular weight covalently crosslinkable linear or branched chain PEG;

combinations of alginate and PEG; and

mixtures of any two or more thereof;

iii) wherein said microcapsules are each individually treated with an immunoprotective coating, wherein said immunoprotective coating is a polycation; and

iv) wherein said second biocompatible gel may be the same or different from said first biocompatible gel.

5,545,424

4-(1-MENTHOXYMETHYL)-2-PHENYL-1,3-DIOXOLANE OR ITS DERIVATIVES AND FLAVOR COMPOSITION CONTAINING THE SAME

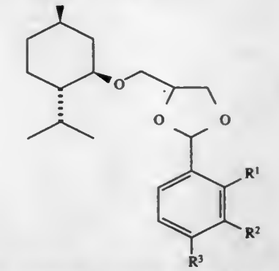
Tetsuo Nakatsu; Carter B. Green; Gary A. Reitz, and Raphael K. L. Kang, all of Walnut Creek, Calif., assignors to Takasago International Corporation, Tokyo, Japan, and Takasago Institute For Interdisciplinary Science Inc., Walnut Creek, Calif.

Filed Oct. 12, 1994, Ser. No. 321,976

Int. Cl.[6] A23L *1/22*

U.S. Cl. 426—536 **7 Claims**

4. A flavor composition comprising a flavorant effective amount of 4-(1-menthoxymethyl)-2-phenyl-1,3-dioxolane or a derivative thereof represented by formula (I):



(I)

wherein R^1 represents a hydrogen atom, a hydroxy group or a lower alkoxy group; R^2 and R^3, which may be the same or different, each represents a hydrogen atom, a hydroxy group, a lower alkoxy group, or, when taken together, R^2 and R^3 represent a methylene dioxy group with an acceptable carrier.

5,545,425

PROCESS FOR PREPARING A SHELF-STABLE, PACKAGED, BEAN-CONTAINING PRODUCT

Rei Young A. Wu, Palatine, Ill., assignor to Hunt-Wesson, Inc., Fullerton, Calif.

Filed Jul. 28, 1994, Ser. No. 282,140

Int. Cl.[6] A23B *9/00;* A23L *1/20;3/00*

U.S. Cl. 426—634 **17 Claims**

1. A process for preparing a shelf-stable, packaged, legume-containing product, said process comprising:

(a) preconditioning dry legumes by contacting said dry legumes with a sufficient amount of an initial water source and for a sufficient period of time to produce pretreated legumes having a moisture content in the range of from about 15 wt. % to about 35 wt. %;

(b) hydrating said pretreated legumes by contacting said pretreated legumes with a sufficient amount of a secondary water source for a sufficient period of time to produce hydrated legumes having a moisture content in the range of from about 35 wt. % to about 55 wt. %, wherein said secondary water source is at a temperature in the range of from about 60° C. to about 95° C.;

(c) combining said hydrated legumes with a vehicle, thereby producing a legume-containing mixture comprising from about 10 wt. % to about 55 wt. % of said hydrated legumes and a balance of said vehicle;

(d) charging said legume-containing mixture into a retortable vessel;

(e) sealing said retortable vessel; and

(f) heating said legume-containing mixture in said sealed retort

able vessel in a retort operation carried out at a temperature in the range of from about 110° C. to about 130° C. for a period of time in the range of from about 20 minutes to about 150 minutes, thereby producing a shelf-stable, packaged legume-containing product.

5,545,426

PRODUCTION OF PRODUCT SHEETS HAVING WAVED MARGINAL PORTIONS

Jan Y. Hsu, Brookfield, and Thomas S. Orzech, New Milford, both of Conn., assignors to Nestec S.A., Vevey, Switzerland

Division of Ser. No. 250,039, May 27, 1994, Pat. No. 5,443,379, which is a continuation-in-part of Ser. No. 852,996, Mar. 13, 1992, abandoned. This application Mar. 20, 1995, Ser. No. 408,141

Int. Cl.[6] A21C *11/00*

U.S. Cl. 426—496 **15 Claims**



1. A process for production of a product sheet having a waved marginal portion comprising the steps of passing a sheet of a plastic material to and between two counter-rotating surfaces shaped so that there are a plurality of differing nip clearance gaps therebetween and during passage between the counter-rotating surfaces, compressing at least a marginal portion of the sheet with the counter-rotating surfaces to displace material from the marginal portion to form sheet portions which comprise a compressed marginal portion, a second portion and an intermediate portion, which is flanked by the compressed marginal portion and the second portion, so that the intermediate portion has a thickness greater than the marginal and second portions and the second portion has a thickness greater than the marginal portion for, upon passage from between the counter-rotating surfaces, forming a waved marginal portion.

5,545,427

PROCESS FOR THE PREPARATION OF LITHIUM ALUMINOSILICATE OR GAMMA LITHIUM ALUMINATE CERAMICS HAVING A CONTROLLED STOICHIOMETRY AND MICROSTRUCTURE

Jean-Pierre Bollot, Meudon La Foret; Marcel Boncoeur, Paris; Bernard Rasneur, Le Mesnil St Denis, and Olivier Renoult, Allonnes, all of, France, assignors to Commissariat A L'Energie Atomique, Paris, France

Continuation of Ser. No. 9,792, Jan. 27, 1993, abandoned. This application Mar. 6, 1995, Ser. No. 398,813

Claims priority, application France, Feb. 7, 1992, 92 01394

Int. Cl.[6] G21C *3/06*

U.S. Cl. 427—6 **18 Claims**

1. A method of covering controlled thermonuclear fusion reactors comprising the steps of preparing a lithium aluminosilicate of the formula $Li_{4+x}Al_{4-3x}Si_{2x}O_8$ with $0<x<0.28$ and depositing said lithium aluminosilicate as a covering material on said reactor.

5,545,428

METHOD OF PREPARING A SUSPENSION OF PARTICLES AND RELATED METHODS

Melissa J. Crimp, Haslett; Brett A. Wilson, East Lansing; Christopher J. Suydam, Royal Oak, and Martin A. Crimp, Haslett, all of Mich., assignors to The Board of Trustees Operating Michigan State University, East Lansing, Mich.

Continuation of Ser. No. 131,708, Oct. 5, 1993, abandoned. This application Mar. 15, 1995, Ser. No. 405,390

Int. Cl.[6] B05D *5/12*

U.S. Cl. 427—8 **16 Claims**

1. A method for preparing a suspension for coating a substrate with intermetallic particles, comprising:

determining a pH range in which (i) the heterostability ratio (W_{12}) of the substrate and the intermetallic particles in an aqueous medium is defined by the equation:

$$W_{12} = (a_1 + a_2) \int_{(a_1+a_2)}^{\infty} \exp(V_T/kT)\,(dr/r^2)$$

is less than 10^{10}, (ii) the homostability ratio (W_{11}) of the substrate in the aqueous medium is defined by the equation:

$$W_{11} = 2a_1 \int_{2a_1}^{\infty} \exp(V_T/kT)\,(dr/r^2)$$

greater than 10^{10}, and (iii) the homostability ratio (W_{22}) of the intermetallic particles in the aqueous medium, defined by the equation:

$$W_{22} = 2a_2 \int_{2a_2}^{\infty} \exp(V_T/kT)\,(dr/r^2)$$

is greater than 10^{10}, wherein subscript "1" represents the substrate, subscript "2" represents the intermetallic particles, a_1 is the radius of the substrate, a_2 is the radius of the intermetallic particles, $V_T=V_A+V_R$ wherein V_A is the attractive energy between component i and component j and V_A is not a function of the zeta potentials of the components, wherein i and j are the consecutive subscripts of the stability ratio being considered,

$$V_R = \epsilon_o \epsilon_R \pi \left(\frac{(a_i a_j)}{(a_i + a_j)} \right) (\zeta_i^2 + \zeta_j^2) \cdot \left[\frac{2\zeta_i \zeta_j}{\zeta_i^2 + \zeta_j} \ln \left(\frac{1+\exp(-KH)}{1-\exp(-KH)} \right) + \ln(1-\exp(-2KH)) \right]$$

$[2\zeta_i\zeta_j/\zeta_i^2+\zeta_j \ln(1+exp(-KH)/1-exp\ (-KH))+1n(1-exp(-2KH))]$

wherein ϵ_o is permitivity in a vacuum, ϵ_R is relative permitivity of the aqueous medium, a_i is the radius of component i, a_j is the radius of component j, zeta is the zeta potential of the specified component, K is the Debye-Huckel parameter for the indifferent electrolyte, H is the intercomponent separation distance which has a value from zero to infinity, T is the temperature at which the method is to be performed, k is Boltzmann's constant, and r is distance which varies from a_i+a_j to infinity; and

preparing a suspension of the intermetallic particles in the aqueous medium having a pH in the determined pH range.

5,545,429

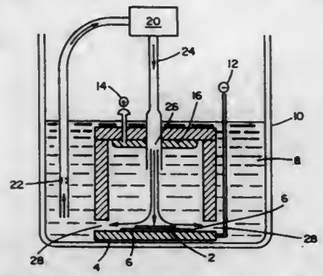
FABRICATION OF DOUBLE SIDE FULLY METALLIZED PLATED THRU-HOLES, IN POLYMER STRUCTURES, WITHOUT SEEDING OR PHOTOPROCESS

Richard B. Booth, Pflugerville, Tex.; Emanuel I. Cooper, Riverdale, N.Y.; Edward A. Gless, Mooresville; Mark R. Kordus, Ninety-Six, both of N.C.; Sol Krongelb, Katonah, N.Y.; Steven P. Ostrander, Scotia, N.Y.; Judith M. Roldan, Ossining, N.Y.; Carlos J. Sambucetti, Croton-on-Hudson, N.Y., and Ravi Saraf, Briarcliff Manor, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 1, 1994, Ser. No. 270,086

Int. Cl.[6] B05D *5/12; C25D 5/02*

U.S. Cl. 427—97 **47 Claims**



1. A method for fully metallizing thru-holes in a patterned polymer structure comprising the steps of:

(a) applying a temporary removable cathode to a metal cathode to form a cathode assembly;

(b) bonding said patterned polymer structure to said temporary removable cathode;

(c) subjecting said patterned polymer structure to an electrolytic plating bath for a time sufficient to fully metallize thru-hole surfaces in said patterned polymer structure;

(d) removing said patterned polymer structure from said electrolytic plating bath; and

(e) removing said patterned polymer structure from said cathode assembly.

5,545,430

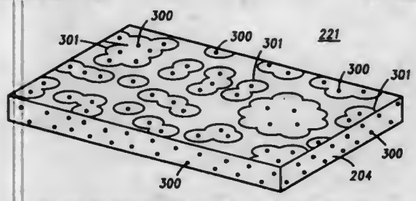
METHOD AND REDUCTION SOLUTION FOR METALLIZING A SURFACE

Yaroslaw A. Magera, Palatine; Jovica Savic, Downers Grove, and Vernon L. Brown, Barrington, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 2, 1994, Ser. No. 348,697

Int. Cl.[6] B05D *5/12;3/09;3/10;1/18*

U.S. Cl. 427—98 **6 Claims**



1. A process for metallizing a surface of a substrate, said process comprising the steps of:

forming a circuitry layer on the surface;

coating the surface and circuitry layer with a first resin, wherein the first resin includes a plurality of small metal oxide particles;

photo-patterning and developing the first resin to form a first set of openings in the first resin to expose a portion of the circuitry layer;

coating the first resin and the exposed portion of the circuitry layer with a second resin;

photo-patterning and developing the second resin to form a second set of openings in the second resin to re-expose the portion of the circuitry layer and expose a portion of the first resin;

uncovering the small metal oxide particles near the exposed portion of the first resin;

applying an aqueous reducing solution including,

a borohydride capable of reducing the metal oxide particles in their plus one oxidation state;

an iodide capable of reducing the metal oxide particles from their plus two to plus one oxidation state, and

EDTA,

to the exposed portion of the first resin for converting the uncovered metal oxide particles to island areas of catalytic film; and

electrolessly metallizing the re-exposed portion of the circuitry layer and the exposed portion of the first resin.

5,545,431

METHOD FOR MAKING A ROTARY SEAL MEMBRANE

Jogender Singh, Westchester; Jerry D. Schell, and William R. Young, both of Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 685,110, Apr. 15, 1991, Pat. No. 5,484,665. This application Jun. 7, 1995, Ser. No. 473,389

Int. Cl.[6] B05D *3/00;5/00*

U.S. Cl. 427—205 **9 Claims**

1. A method for providing a metallic substrate for a member of a rotary seal with an improved metallic surface layer, the substrate having a first elastic modulus, comprising the steps of:

selecting a metallic layer material which has:

i) a second elastic modulus matched with the first elastic modulus, and

ii) a solid solubility with the substrate which does not form with the substrate at any time including as-applied as well as at an intended operating temperature in the range of about 500°–1400° F. an intermetallic, as defined by a relative solid solubility and phase relationship between the metallic layer material and the metallic substrate, and which is sufficiently brittle to result in loss of resistance to high cycle fatigue of the metallic substrate at room temperature of greater than about 25% as compared with a base line high cycle fatigue strength for bare substrate; and

metallurgically bonding the metallic layer material directly to the substrate.

5,545,432

SYNTHESIS OF METAL OXIDE THIN FILMS

Mark R. DeGuire, Cleveland Heights; Arthur H. Heuer, Cleveland, and Chaim N. Sukenik, Cleveland Heights, all of Ohio, assignors to Case Western Reserve University, Cleveland, Ohio

PCT No. PCT/US94/03865, § 371 Date Oct. 5, 1994, § 102(e) Date Oct. 5, 1994, PCT Pub. No. WO94/23846, PCT Pub. Date Oct. 27, 1994

Continuation-in-part of Ser. No. 28,594, Apr. 8, 1993, Pat. No. 5,352,485. This PCT application Apr. 8, 1994, Ser. No. 256,016

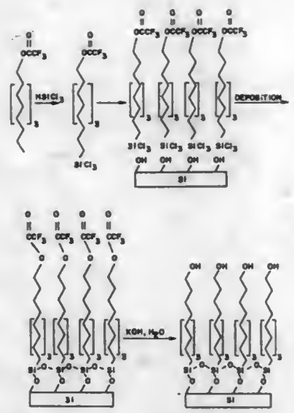
Int. Cl.[6] B05D *1/36*

U.S. Cl. 427—226 **50 Claims**

1. A method for synthesizing a metal oxide thin film, comprising the steps of:

providing a substrate;

covalently bonding a self-assembled monolayer to a surface of the substrate, the self-assembled monolayer including a plurality of terminating moieties which provide bonding sites for metal oxides; and



bonding metal oxide on the terminating moieties.

5,545,433

METHOD FOR PRECIPITATION COATING OF INTERNAL SURFACES IN TANKS AND PIPE SYSTEMS

Leif I. Aanestad, Hanabakken 14, N-4300 Sandnes, Norway

PCT No. PCT/NO93/00073, § 371 Date Nov. 15, 1994, § 102(e) Date Nov. 15, 1994, PCT Pub. No. WO93/23588, PCT Pub. Date Nov. 25, 1993

PCT Filed May 10, 1993, Ser. No. 338,593

Claims priority, application Norway, May 18, 1992, 921956

Int. Cl.[6] B05D *7/22*

U.S. Cl. 427—230 **10 Claims**

1. A method for applying a metal coating to the internal, cleaned surfaces of tanks and pipe systems comprising the steps of

(a) filling the tank or pipe system with an aqueous solution of an acid;

(b) cleaning the surfaces to be coated by heating the acid solution, circulating it throughout the tank or pipe system and removing particulates from the hot acid solution;

(c) neutralizing the acid solution at the end of the cleaning step;

(d) removing about one-fifth of the volume of neutralized solution and replacing it with a concentrated metal plating solution;

(e) circulating the resultant solution to coat the internal surfaces of the tank or pipe system with metal.

5,545,434

METHOD OF MAKING IRREGULARLY POROUS CLOTH

Hermes Huarng, No. 23, Lane 398, Yluan-Ping Rd., Chang-Hua City, Taiwan

Continuation-in-part of Ser. No. 221,584, Apr. 1, 1994, abandoned. This application Nov. 8, 1994, Ser. No. 337,486

Int. Cl.[6] B05D *5/06*

U.S. Cl. 427—243 **4 Claims**

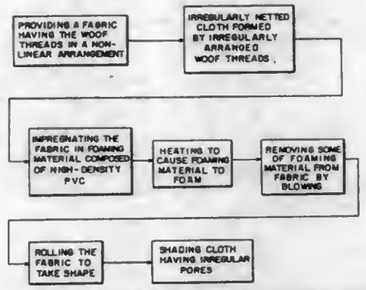
1. A method of making an irregularly porous cloth comprising the steps of:

(a) providing an irregular fabric having warp threads and woof threads, with said woof threads being arranged in a nonlinear manner with openings of different size between adjacent woof threads;

(b) impregnating said fabric with a foaming material;

(c) heating said impregnated fabric to cause said foaming material to foam;

(d) removing a portion of said foaming material from the surface of said impregnated and heated fabric by pressurized air



emitted from a nozzle so as to form a number of irregular pores of varying size between said warp threads and said woof threads; and

(e) pressing said fabric, obtained in said step of removing a portion of said foaming material, with a roller, whereby a residue of said foaming material forms an irregular pattern on said fabric.

5,545,435

METHOD OF MAKING A TOUGHENED CERAMIC COMPOSITE COMPRISING CHEMICAL VAPOR DEPOSITED CARBON AND CERAMIC LAYERS ON A FIBROUS PREFORM

Wayne S. Steffier, Huntington Beach, Calif., assignor to Hyper-Therm High Temperature Composites, Inc., Huntington Beach, Calif.

Division of Ser. No. 132,524, Oct. 6, 1993, Pat. No. 5,455,106. This application Sep. 8, 1995, Ser. No. 525,847

Int. Cl.[6] C23C *16/00*

U.S. Cl. 427—249 **8 Claims**

1. A method of fabricating a ceramic composite material product comprising:

(a) forming a fibrous reinforcing preform and placing the preform into a chemical vapor deposition (CVD) reactor;

(b) depositing a multilayer fiber coating system onto the preform to fully encapsulate the reinforcing fibers of the preform, said multilayer coating system comprising alternating layers of fugitive carbon and ceramic material, said multilayer coating system comprising at least the following layers:

(i) a first coating of fugitive carbon having a thickness of 50–500 angstroms,

(ii) a second coating of a ceramic material having a thickness of 0.5–5.0 microns, and

(iii) a third coating of fugitive carbon having a thickness of 50–500 angstroms; and

(c) depositing a ceramic matrix material onto the coated preform to fully encapsulate the multilayer fiber coating system and consolidates the fibrous preform.

5,545,436

CVD METHOD AND APPARATUS FOR MAKING SILICON OXIDE FILMS

Masaki Saito, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 4, 1994, Ser. No. 336,054

Claims priority, application Japan, Nov. 12, 1993, 5-282998

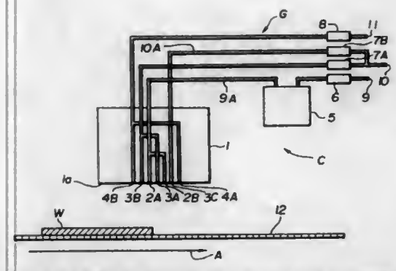
Int. Cl.[6] C23C *16/00*

U.S. Cl. 427—255.3 **6 Claims**

1. A thermal CVD method for depositing a silicon oxide film on a substrate comprising the steps of:

providing a gas injector for injecting gases toward a surface of a substrate;

moving a substrate in a predetermined direction adjacent the gas injector; and



ejecting the following gases in the order named to a surface of the substrate:

a first gas containing O_3;

a second gas which is inert to a reaction between an organic Si source and O_3;

a third gas containing the organic Si source;

a fourth gas which is inert to the reaction;

a fifth gas containing the organic Si source;

a sixth gas which is inert to the reaction; and

a seventh gas containing O_3, the flow rate of the second gas being higher than the flow rate of the sixth gas such that deposition of the silicon oxide film proceeds by a postmixing method and thereafter by a pre-mixing method as the substrate is moved in said predetermined direction past said gas injector.

5,545,437

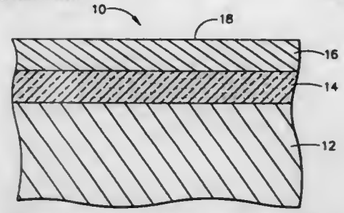
METHOD FOR FORMING A NON-DEGRADING REFECTIVE COATING SYSTEM FOR HIGH TEMPERATURE HEAT SHIELDS

Bangalore A. Nagaraj, West Chester; Antoinette E. Weil, Cincinnati, and John W. Devitt, Loveland, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 324,303, Oct. 17, 1994, Pat. No. 5,484,263. This application Jun. 23, 1995, Ser. No. 493,950

Int. Cl.[6] B05D *1/36;7/00*

U.S. Cl. 427—404 **9 Claims**



1. A method for forming a heat shield on a superalloy article so as to lower the operating temperature of the article when exposed to thermal radiation while at an elevated service temperature, the method comprising the steps of:

forming a barrier layer having a thickness of up to about 25 micrometers on a surface of the article, the barrier layer being formed from a material that inhibits diffusion therethrough of elemental constituents of the article; and

forming a reflective layer on the barrier layer such that the reflective layer reflects most of the thermal radiation incident on a surface thereof, the reflective layer being formed from a material which is selected from the group consisting of the noble metals, noble metal alloys and aluminum, wherein the barrier layer is sufficiently thick so as to substantially prevent diffusion of the elemental constituents into the reflective layer and thereby prevent degradation of the reflective layer at the elevated service temperature, such that the reflectivity of the reflective layer is not degraded at the elevated service temperature.

5,545,438

HYDROPHILIC TREATMENT FOR ALUMINUM

Jiangbo Ouyang, Media, and Jeffrey I. Melzer, Lansdale, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Mar. 22, 1995, Ser. No. 408,766

Int. Cl.[6] B05D *3/00;1/18;* **C23C** *22/07;* **F28F** *13/18*

U.S. Cl. 427—299 **1 Claim**

1. A method of forming a persistent hydrophilic surface on aluminum comprising contacting an aluminum surface with a substantially chromium-free aqueous treatment solution comprising from about 0.5 to 50% by weight phosphoric acid, from about 0.1 to 5% by weight boric acid and optionally from about 0.1 to 0.5% by weight molybdic acid for a period of time sufficient to form a persistent hydrophilic surface which retains its hydrophilic properties after exposure to air and/or water.

5,545,439

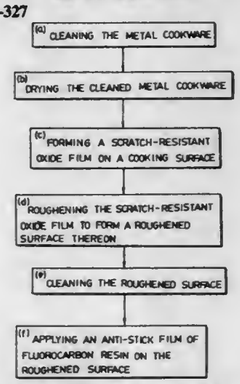
METHOD FOR COATING A METAL COOKWARE

Chih-Chiang Deng, No. 86, Lane 267, Sec. 3, Chien-Kuo Rd., Feng-Shan City, Koahsiung Hsien, and Tung-Hung Tsai, No. 20, Lane 104, Ta-Liao Rd., Ta-Liao Hsiang, Koahsiung Hsien, both of, Taiwan

Filed Dec. 2, 1994, Ser. No. 349,079

Int. Cl.[6] B05D *3/00*

U.S. Cl. 427—327 **7 Claims**



1. A method of coating an article of metal cookware having a cooking surface, comprising the steps of:

(A) cleaning said article of metal cookware;

(B) forming a scratch-resistant oxide film on said cooking surface by anodic oxidation;

(C) roughening said scratch-resistant oxide film by blasting to form a roughened surface thereon, said roughened surface having valleys extending into said cooking surface; and

(D) applying an anti-stick film of fluorocarbon resin on said roughened surface.

5,545,440

METHOD AND APPARATUS FOR POLYMER COATING OF SUBSTRATES

Gary R. Thornberg, Colorado Springs, Colo., assignor to AT&T Global Information Solutions Company (aka NCR Corporation), Dayton, Ohio; Hyundai Electronics America, Milpitas, Calif., and Symbios Logic Inc., Fort Collins, Colo.

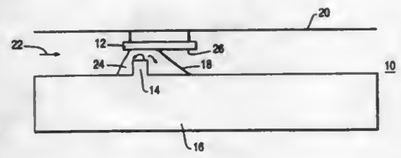
Filed Dec. 5, 1994, Ser. No. 349,640

Int. Cl.[6] B05D *1/40;3/12*

U.S. Cl. 427—345 **14 Claims**

1. A method for coating a wafer substrate with a polymer material, the method comprising:

heating a polymer solution to a temperature below a flashpoint of the polymer solution;



creating a stationary wave using a polymer solution; and

moving a wafer substrate having a lower surface over the stationary wave, wherein the stationary wave contacts the lower surface of the wafer substrate and a uniform film of polymer is formed on the lower surface of the wafer substrate.

5,545,441

METHOD OF MAKING A TEXTURED GLASS YARN FABRIC FOR USE IN WALLCOVERINGS ACOUSTICAL PANELS AND CEILING TILES

Frank J. Land, 725 Miller Ave., Suite 241, Freeport, N.Y. 11520

Division of Ser. No. 092812, Jul. 16, 1993, Pat. No. 5,433,997. This application Jul. 14, 1995, Ser. No. 502,540

Int. Cl.[6] B05D *3/02*

U.S. Cl. 427—389.8 **7 Claims**



1. A method of making a glass yarn fabric for wallcoverings, acoustical wall panels and acoustical ceiling tiles comprising the steps of:

weaving a pigment dyed glass fiber yarn to form a glass yarn layer;

applying a stain resistant polymeric fluorocarbon face coating to a first surface of said glass yarn layer; and

applying an opaque back coating layer comprising an acrylic resin to a second surface of said glass yarn layer, wherein said steps form a flame retardant fabric having a flame time of two seconds or less and a char length of less than 5.5 inches.

5,545,442

METHOD FOR USING A RADIATION CURED DRUG RELEASE CONTROLLING MEMBRANE

Gary Van Savage, Bridgewater, and James M. Clevenger, Glen Gardner, both of N.J., assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Division of Ser. No. 238,115, May 4, 1994. This application Jnn. 5, 1995, Ser. No. 463,473

Int. Cl.[6] C08J *7/04*

U.S. Cl. 427—513 **8 Claims**

1. A method of coating a pharmaceutical dosage form with a hydrophilic cross-linked polymer which comprises

admixing a water-soluble polymer consisting of hydroxyethyl cellulose or hydroxypropyl methyl cellulose and an effective amount of a photosensitive or light degradable catalyst to form a mixture;

compression coating said mixture over a pharmaceutical dosage form; and

exposing the coated dosage form to an electromagnetic energy source.

5,545,443

METHOD FOR PRODUCING A TRANSPARENT CONDUCTIVE ZNO FILM BY INCORPORATING A BORON OR ALUMINUM CONTAINING MATERIAL

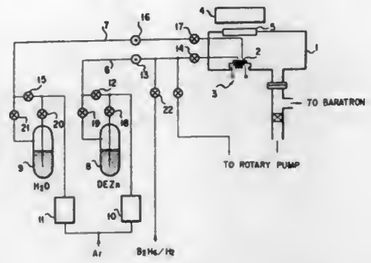
Akira Yamada, Tokyo; Shinichiro Yoshida; Masahiro Yoshino, both of Kurobe; Kiyoshi Takahashi, Tokyo; Akira Omura, Kurobe, and Makoto Konagai, Tokyo, all of, Japan, assignors to Yoshida Kogyo K.K., and Makoto Konagai, both of Tokyo, Japan

Continuation of Ser. No. 53,819, Apr. 29, 1993, abandoned, which is a continuation of Ser. No. 850,951, Mar. 11, 1992, abandoned. This application Apr. 4, 1995, Ser. No. 416,486

Claims priority, application Japan, Mar. 11, 1991, 3-069455

Int. Cl.[6] C23C *16/48*

U.S. Cl. 427—584 **4 Claims**



1. A method for the production of a transparent conductive ZnO film having a textured surface, the method comprising the preparatory steps of reducing a pressure in a vacuum chamber, heating a substrate disposed inside said vacuum chamber to a temperature in the range of from about 120° C. to about 270° C., feeding purified water as entrained by an inert carrier gas into said vacuum chamber, and adjusting the gas pressure inside said chamber to a level in the range of from 1 to 30 Torrs and the film-forming steps of supplying an organozinc compound as entrained by a carrier gas in conjunction with at least one compound selected from the group consisting of diborane, trimethyl boron, triethyl boron, triethyl aluminum, triisobutyl aluminum and dimethyl aluminum hydride into said vacuum chamber, irradiating the substrate with ultraviolet light having a wavelength of not more than 254 nm so as to be consumed at a rate of at least 1 mW/cm^2, and continuing the ensuing formation of said ZnO film having a textured surface under the adjusted gas pressure mentioned above.

5,545,444

DIAMINO COMPOUNDS AND LIQUID CRYSTAL ALIGNING FILMS

Minoru Nakayama, Minamata; Toshiya Sawai, and Shizuo Murata, both of Ichihara, all of, Japan, assignors to Chisso Corporation, Osaka, Japan

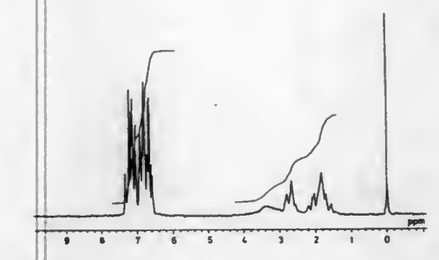
Division of Ser. No. 413,435, Mar. 30, 1995, abandoned, which is a division of Ser. No. 328,463, Oct. 25, 1994, Pat. No. 5,430,195, which is a division of Ser. No. 141,600, Oct. 27, 1993, Pat. No. 5,414,126. This application Jun. 6, 1995, Ser. No. 471,184

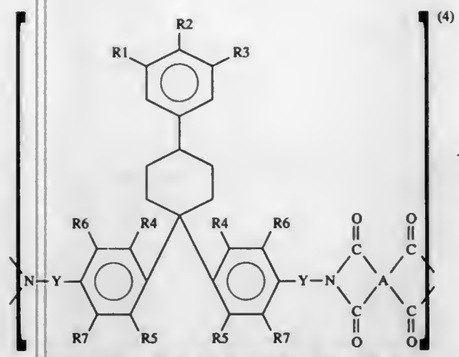
Claims priority, application Japan, Oct. 29, 1992, 4-313995; Nov. 24, 1992, 4-336728

Int. Cl.[6] G02F *1/1337*

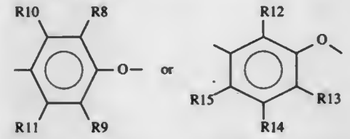
U.S. Cl. 428—1 **9 Claims**

1. A liquid crystal aligning film of polyimide having as a principal constituent a structure unit represented by the general formula (4):





wherein R1 to R3 are hydrogen or an alkyl group having 1 to 8 carbon atoms, respectively, and a part or all of them may be the same or different,



and R4 to R15 are hydrogen, fluorine, trifluoromethyl or an alkyl group having 1 to 3 carbon atoms, respectively, and a part or all of them may be the same or different, and

A indicates an aliphatic or aromatic group having a valence of 4.

5,545,445

DECORATIVE THREE-DIMENSIONAL, CURLED BOW AND METHOD OF MAKING SAME

Peter S. C. Cheng, 99 Glencairn Street, Toronto, Ontario, Canada

Filed Sep. 8, 1994, Ser. No. 302,499

Int. Cl.[6] D04D *7/10*

U.S. Cl. 428—4 **4 Claims**



1. Method of making a three-dimensional, curled bow, comprising the steps of:

a) stretching a first, generally planar, narrow strip of an elastic, stretchable ribbon from a relaxed state to a stretched state;

b) bonding the first ribbon in the stretched state to a second, generally planar, narrow strip of a non-elastic material by applying an adhesive between the strips;

c) forming a laminated curl having a central region and two, opposite, curled end regions spaced apart of each other by allowing the first ribbon to return to the relaxed state;

d) making additional laminated curls identical to the laminated curl formed in step c);

e) juxtaposing the central region of each curl, and equi-angularly arranging the curled end regions about an upright axis that extends through the juxtaposed central regions to form a fan-shaped pattern; and

connecting the juxtaposed central regions together to form the bow.

5,545,446

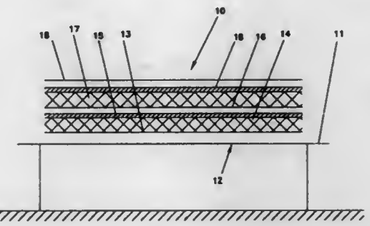
BATH OR SHOWER PANEL

Hon Y. Looi, and Phuay E. Teo, both of Block 5403, Ang Mo Kio Ind Park 2, Singapore, Singapore

Continuation-in-part of Ser. No. 427,232, Oct. 24, 1989, Pat. No. 5,336,354. This application Jun. 23, 1994, Ser. No. 264,318

Int. Cl.[6] B32B *31/00*

U.S. Cl. 428—13 **9 Claims**



1. A transparent or translucent panel for mounting along at least one edge of a bath or shower tray which forms an at least partial enclosure for retaining water splashes generated in use of a bath or shower, comprising:

a laminate of first and second layers of resin-impregnated fiberglass which are transparent or translucent;

the first layer of resin-impregnated fiberglass including a first transparent plastics film layer, a first fiberglass layer on the first transparent plastics film layer, and a first resin layer on the first fiberglass layer;

the second layer of resin-impregnated fiberglass including a second transparent plastics film layer, a second fiberglass layer on the second transparent plastics film layer, and a second resin layer on the second fiberglass layer; and

a non-woven tissue arranged between said first and second resin-impregnated fiberglass layers, wherein said laminate protects said tissue from deterioration caused by water splashes.

5,545,447

CUP HOLDER

Robert A. DeMars, 23221 Ladrillo Ave., Woodland Hills, Calif. 91367

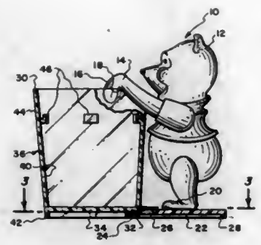
Filed May 26, 1995, Ser. No. 452,378

Int. Cl.[6] B65D *25/28*

U.S. Cl. 428—16 **8 Claims**

1. A cup holder comprising:

a base, said base having engagement means;



a figurine mounted on said base, said figurine having a pair of spaced apart appendages located in a spaced relationship from said base, each said appendage having an outer end defining a hook member; and

a cup having a sidewall extending between an open top and a closed bottom, an interlocking device mounted on said cup directly adjacent said closed bottom, said cup having a rim circumferencing said open top, said figurine to removably connect in a cup holding position with said cup with said hook members connecting with said rim, said interlocking device connecting with said engagement means thereby permitting said figurine to be used as a handle for said cup.

5,545,448

COLOURED EXTRUDED STRIPS

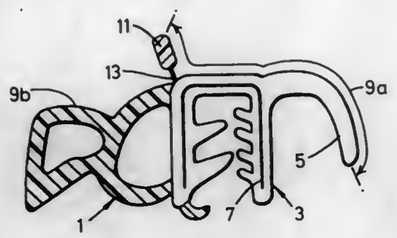
Peter R. Ford, Midway; Neil Thorley, Sileby, and Martin J. Foy, Ashby-De-La-Zouch, all of, United Kingdom, assignors to Schlegel (UK) Holdings Limited, Leicester, United Kingdom

Filed Feb. 24, 1994, Ser. No. 201,173

Claims priority, application United Kingdom, Feb. 24, 1993, 9303678

Int. Cl.[6] E06B *7/16*

U.S. Cl. 428—31 **22 Claims**



1. A motor vehicle, weather sealing strip formed at least partly of elastomeric material comprising:

a first portion for sealing with a surface of the vehicle;

a second carrier portion attached to the first portion for attaching the strip to the vehicle;

an integral tear-off bead projecting outwardly from a surface of one of the first portion and the second carrier portion; and

a flexible surface layer of a selected color spray coated on at least a part of the one of said first and said second portions of the strip from which the tear-off bead projects, the bead providing a boundary line between the flexible surface layer of the strip and a remaining surface area of the strip.

5,545,449

POLYETHER-REINFORCED FIBER-BASED MATERIALS

George T. Tiedeman, Seattle, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Continuation-in-part of Ser. No. 770,587, Oct. 2, 1991. This application Mar. 12, 1992, Ser. No. 850,980

Int. Cl.[6] D21H *17/52;* **B32B** *27/10;29/08*

U.S. Cl. 428—34.2 **23 Claims**

1. A reinforced fibrous material, comprising a first fibrous sheet having an obverse face, a reverse face parallel to the obverse face, a sheet thickness dimension extending between the obverse and reverse faces, and a polyether-impregnated stratum extending parallel to the obverse and reverse faces and located within the sheet thickness dimension, the stratum having a stratum thickness dimension controlled to be no greater than about one-half the sheet thickness dimension such that a portion of the sheet thickness dimension is unimpregnated with polyether so as to confer an increased combination of ring crush strength and flexibility to the fibrous material compared to an otherwise similar material lacking the polyether-impregnated stratum, the polyether being formed by a polymerization reactioD involving an epoxy resin comprising molecules having a terminal glycidyl group and a hardening or curing agent, the resin mixture having a viscosity of less than 500 centipoise and the first fibrous sheet containing the polyether is formed into corrugated medium.

5,545,450

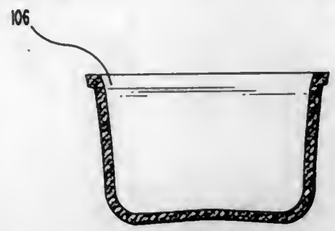
MOLDED ARTICLES HAVING AN INORGANICALLY FILLED ORGANIC POLYMER MATRIX

Per J. Andersen, and Simon K. Hodson, both of Santa Barbara, Calif., assignors to E. Khashoggi Industries, Santa Barbara, Calif.

Continuation-in-part of Ser. No. 95,662, Jul. 21, 1993, Pat. No. 5,385,764, Ser. No. 982,383, Nov. 25, 1992, abandoned, Ser. No. 105,741, Aug. 10, 1993, Ser. No. 105,352, Aug. 10, 1993, Ser. No. 152,354, Nov. 19, 1993, each which is a continuation-in-part of Ser. No. 929,898, Aug. 11, 1992, abandoned. This application Mar. 25, 1994, Ser. No. 218,967

Int. Cl.[6] B32B *3/26;* **B65D** *13/00;85/30*

U.S. Cl. 428—34.5 **106 Claims**



1. An article of manufacture comprising a matrix reinforced with fibers, the matrix comprising a substantially homogeneous mixture of aggregate and organic binder, the article being foraged by removing a substantial quantity of water by evaporation from an inorganically filled mixture including:

water;

a water-dispersible organic polymer binder selected from the group consisting of polysaccharides, proteins, and mixtures or derivatives thereof;

an inorganic aggregate having a concentration in a range from about 30% to about 98% by volume of total solids in the inorganically filled mixture; and

a fibrous material,

the fibrous material being substantially homogeneously dispersed throughout the matrix of aggregate and organic binder, wherein the matrix of aggregate and organic binder has a thickness in a range from about 0.01 mm to about 1 cm and degrades after prolonged exposure to water.

5,545,451

FLEXIBLE RUBBER ARTICLE AND METHOD OF MAKING

Wu-Nan Haung, Greer; Niles R. Manwill, Belton; Adana Muschelewicz, Easley, and Fung-Bor Chen, Greer, all of S.C., assignors to Maxxim Medical, Inc., Sugar Land, Tex.

Continuation of Ser. No. 896,642, Jun. 10, 1992, abandoned. This application Jun. 23, 1994, Ser. No. 264,588

Int. Cl.[6] A41D *19/00*

U.S. Cl. 428—36.8 **10 Claims**

1. A multi-layer glove for use in medical procedures comprising:

a patient contacting layer formed as a film from an aqueous natural rubber latex emulsion;

a wearer contacting layer formed as a film from an aqueous emulsion comprising an acrylic copolymer and a fluorocarbon telomer resin; and

a layer, intermediate said patient contacting layer and said wearer contacting layer, formed as a film from an aqueous emulsion comprising natural rubber latex, polyurethane latex, poly(acrylamide/acrylic acid), sodium salt, and polyethylene oxide.

5,545,452

AQUEOUS PRECIOUS METAL PREPARATIONS AND THEIR USE FOR MANUFACTURING PRECIOUS METAL DECORATIONS

Andreas Schulz, Neu-Isenburg, and Marco Höfler, Freigericht, both of, Germany, assignors to Cerdec Aktiengesellschaft Keramische Farben, Frankfurt, Germany

Filed Feb. 22, 1995, Ser. No. 392,219

Claims priority, application Germany, Feb. 24, 1994, 44 05 932.9

Int. Cl.[6] A61F *13/02;* **E04F** *15/16*

U.S. Cl. 428—41.7 **18 Claims**

1. A precious metal preparation for manufacturing precious metal decorations which comprises

a decorative effective amount of at least one precious metal thiolate wherein the precious metal is selected from the group consisting of gold, silver, platinum and palladium, said thiolate having at least one functional group capable of salt formation and being in the form of a water-soluble salt,

an effective amount of a water-soluble organic polymer binder,

an effective amount of an aqueous solvent system which comprises water and less than 2% by weight, based on the preparation, of organic solvents, and

an effective amount of a surfactant.

5,545,453

CONFORMABLE INSULATION ASSEMBLY

Larry J. Grant, Westerville, Ohio, assignor to Owens Corning Fiberglas Technology, Inc., Summit, Ill.

Continuation-in-part of Ser. No. 290,053, Aug. 15, 1994. This application Sep. 20, 1994, Ser. No. 309,237

Int. Cl.[6] B32B *3/02;3/10;* **E04B** *1/78;* **E04C** *2/30*

U.S. Cl. 428—43 **19 Claims**



1. A conformable insulation assembly comprising:

at least two interconnected mineral fiber batts spaced apart by a defined distance, said mineral fiber batts being comprised of a binderless fibrous material of substantially long fibers, each of said batts adapted to expand and conform its shape to an area into which said mineral fiber batt is installed, wherein said long fibers are oriented within each of said mineral fiber batts in a generally spiral relationship when viewed from an end of said batt.

5,545,454

OPTICAL INFORMATION RECORDING MEDIUM AND METHOD OF DESIGNING ITS STRUCTURE

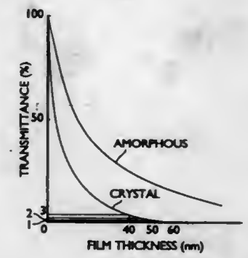
Noboru Yamada, Hirakata; Nobuo Akahira, Yawata; Kenichi Nishiuchi, Moriguchi; Kenichi Nagata, Nishinomiya; Eiji Ohno, Hirakata, and Shigeaki Furukawa, Shiki-gun, all of, Japan, assignors to Matsushita Electric Industrial Inc., Ltd., Kadoma, Japan

Continuation of Ser. No. 45,876, Apr. 15, 1993, Pat. No. 5,424,106. This application Mar. 6, 1995, Ser. No. 399,215

Claims priority, application Japan, Apr. 17, 1992, 4-097606; Apr. 17, 1992, 4-097607; Jun. 17, 1992, 4-157730

Int. Cl.[6] B32B *3/00*

U.S. Cl. 428—64.1 **2 Claims**



1. A method of designing the structure of an erasable optical information recording medium made by laminating at least four layers on a substrate, the first being a first dielectric thin film layer, the second being a recording layer consisting of a thin film of a phase change material that, by irradiation with a laser beam of wavelength λ, makes a reversible change of the optical characteristics between the crystal state in which the optical constants, that is, the refractive index n and the extinction coefficient k, are relatively large and the amorphous state in which the optical constants are relatively small, the third being a second dielectric thin film layer, and the fourth being a reflecting layer consisting of metal thin film, said optical information recording medium being applied to an optical recording apparatus having a light source of wavelength λ for recording and playback, said method comprising the following steps of:

investigating the optical constants of each of said at least four layers,

determining the upper limit of the thickness of said recording layer sandwiched between said first and second dielectric thin film layers when said recording layer is in the crystal state,

calculating, when said recording medium is irradiated with a laser beam of a wavelength λ, a rate R of a light amount reflected from said recording medium to the light amount of said laser beam and a rate A of a light amount absorbed by said recording layer to the light amount of said laser beam in both cases where said recording layer is in the amorphous state and in the crystal state while varying the thickness d1 of said first dielectric film layer and the thickness d2 of said second dielectric film layer over a predetermined range at intervals of a constant length after setting the thickness of said reflecting layer at a certain value,

calculating a difference ΔA between the rates A(cry) and A(amo) (Δa=A(cry)−A(amo)) calculated when said recording layer is in the crystal state and in the amorphous state, respectively, and a difference ΔR between the rates R(cry) and R(amo) (ΔR=R(cry)−R(amo)) calculated when said recording layer is in the crystal state and in the amorphous state, respectively; and

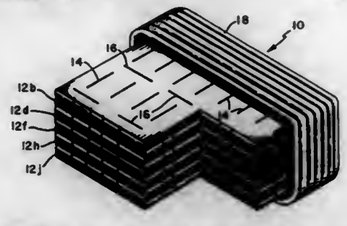
extracting the range of values of d1 and d2 which satisfies conditions: $\Delta R+\Delta A=R(cry)-R(amo)+A(cry)-A(amo)\geqq 20\%$ and $\Delta A\geqq 5\%$.

5,545,455

CONSTRUCTIONS HAVING IMPROVED PENETRATION RESISTANCE

Dusan C. Prevorsek, Morristown; Kwok W. Lem, Randolph; Hsin L. Li, Parsippany, and Young D. Kwon, Mendham, all of N.J., assignors to AlliedSignal Inc., Morristown, N.J.

Continuation of Ser. No. 41,363, Apr. 1, 1993, abandoned.
This application Jan. 24, 1995, Ser. No. 378,983
Int. Cl.[6] F41H *1/02;* **B32B** *1/04;3/06;5/12*
U.S. Cl. 428—76 **26 Claims**



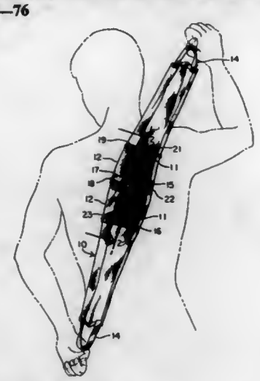
1. An improved rigid penetration resistant composite comprising a plurality of fibrous layers comprising fiber in a matrix, at least two layers of which are secured together by at least two means, each of which extends along a different path and through at least two of said fibrous layers to separately secure the same together, said at least two means comprising a plurality of first stitches at least two of which extend along at least a portion of two adjacent paths, said composite further comprising a fibrous girdle comprising a fibrous network in a matrix substantially continuously encircling said secured fibrous layers about an axis thereof.

5,545,456

WASH-CLOTH THAT CLEANS AND MASSAGES

Teresa Suida, 459 Woodward Ave., Ridgewood, N.Y. 11385

Filed Apr. 20, 1995, Ser. No. 425,382
Int. Cl.[6] A47K *7/02;* **A61H** *15/00;* **B32B** *1/04;3/02*
U.S. Cl. 428—76 **4 Claims**



1. A wash-cloth comprising
a main body of rectangular shape comprising two sheets of flexible material of differing porosity, coarseness and abrasiveness, said sheets being integrally secured together to form the main body;
a plurality of retaining pockets, said pockets being integrally attached onto one sheet of the main body and centrally located along the length of the main body;
a securing flap integrally attached to one end of each of the retaining pockets;
securing means attached to each flap for securing the flap on the pocket and retaining a bar of soap and a massaging utensil inside the pockets; and
two handles, said handles being integrally attached to opposing ends of the main body of the wash-cloth.

5,545,457

SELF-ADHESIVE LIDDING FILM FOR PACKAGING ELECTRONIC COMPONENTS

Christian Harder, Hamburg; Bernd Höwe, Schenefeld, and Karl Kuhlmann, Hamburg, all of, Germany, assignors to Beiersdorf Aktiengesellschaft, Hamburg, Germany

Filed Feb. 25, 1994, Ser. No. 201,585
Claims priority, application Germany, Feb. 26, 1993, 43 05 910.4
Int. Cl.[6] B65D *73/02;* **B32B** *7/12;27/08;* **C08L** *33/02*
U.S. Cl. 428—77 **13 Claims**

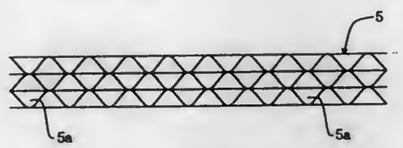
1. A self-adhesive lidding film for packaging electronic components, comprising
(a) a thermoplastic film,
(b) an adhesion promoter on one side of the thermoplastic film,
(c) an adhesive layer on the adhesion promoter, and
(d) a nonadhesive covering spaced from the edges of said adhesive layer,
the adhesive layer (c) comprising a mixture of 80 parts by weight of a first acrylate polymer and about 20 parts by weight of a second acrylate polymer adhesive of different polarity from said first, said first acrylate polymer adhesive being polar and containing from about 1 to 20% by weight of acrylic acid monomer, the second acrylate polymer adhesive being substantially non-polar and containing from about 5 to 50% by weight of stearyl acrylate monomer.

5,545,458

FOAMED PHENOLIC COMPOSITE MOLDING

Saburo Fukushima; Masaharu Yagi, both of Hyogo-ken; Kiyozi Morita; Masami Ando, both of Gunma-ken, and Tokuo Saito, Hyogo-ken, all of, Japan, assignors to Kawasaki Heavy Industries, Ltd., Hyogo-ken; Gun-Ei Chemical Industry Co., Ltd., Gunma-ken, and Nippon Techma Engineering Corp., Hyogo-ken, all of, Japan

Continuation of Ser. No. 869,509, Apr. 16, 1992, abandoned.
This application Aug. 29, 1994, Ser. No. 297,512
Claims priority, application Japan, Apr. 18, 1991, 3-114100
Int. Cl.[6] B32B *3/12*
U.S. Cl. 428—117 **4 Claims**



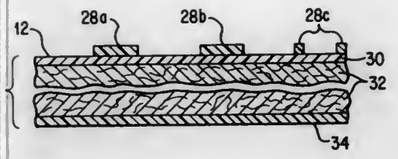
1. A foamed phenolic molding having thermal insulating and sound insulating properties consisting essentially of a core comprising a kraft-paper corrugated core structure consisting of corrugated members and flat sheets between the corrugated members, defining cells of the corrugated core structure, said core impregnated with a phenolic resin, and expandable phenolic composites laminated to said core, said expandable phenolic composites each consisting of a matted fiber material formed in the shape of a sheet to which expandable phenolic resin is bonded to at least one surface thereof, said expandable phenolic composites and core being molded such that the expandable phenolic material fills the cells of the kraft paper corrugated core structure.

5,545,459

BUSINESS FORMS HAVING DUAL-FUNCTIONAL COATING

John C. H. Chang, Naperville, Ill., assignor to Wallace Computer Services, Inc., Hillside, Ill.

Filed Jan. 20, 1995, Ser. No. 375,706
Int. Cl.[6] B32B *3/04;* **B65D** *27/18*
U.S. Cl. 428—121 **25 Claims**



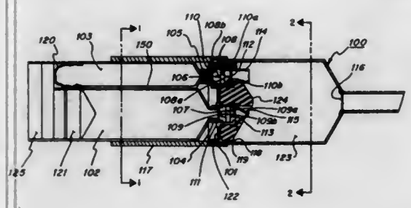
1. A business form comprising a substrate with at least one surface bearing a dual-functional coating which comprises a copolymer of ethylene and vinyl acetate, said copolymer containing at least 40 weight percent ethylene and having a softening point of at least 60° C., said dual-functional coating capable of enhancing adhesion of toner particles and being self-adhering under application of heat and pressure.

5,545,460

METHODS AND APPARATUS FOR PREPARING AND DELIVERING BONE CEMENT

Kazuna Tanaka, Cos Cob, and Jeffrey Kapec, Westport, both of Conn., assignors to HowMedica, Inc., New York, N.Y.

Continuation of Ser. No. 76,557, Jun. 11, 1993, Pat. No. 5,443,182. This application Jun. 7, 1995, Ser. No. 480,687
Int. Cl.[6] A61M *5/145*
U.S. Cl. 428—137 **15 Claims**



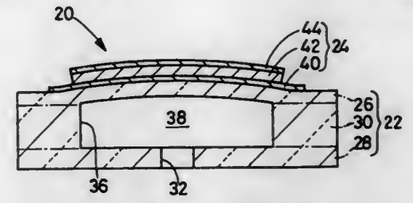
1. A method for preparing and delivering a self curing bone cement formed as a polymeric reaction product when a powdered polymer component is mixed with a liquid monomer component, comprising the steps of:
(a) storing said powdered polymer component and said liquid monomer component in separate component chambers;
(b) simultaneously injecting said powdered polymer component and said liquid monomer component into an evacuated mixing chamber; and
(c) uniformly mixing the components in said mixing chamber saturating said powdered polymer component with said liquid monomer component at a predetermined distance within the mixing chamber.

5,545,461

CERAMIC DIAPHRAGM STRUCTURE HAVING CONVEX DIAPHRAGM PORTION AND METHOD OF PRODUCING THE SAME

Yukihisa Takeuchi, Aichi-ken; Tsutomu Nanataki, Toyoake; Hideo Masumori, Anjo; Katsuyuki Takeuchi, Nagoya, and Takahiro Maeda, Ichinomiya, all of, Japan, assignors to NGK Insulators, Ltd., Japan

Filed Feb. 10, 1995, Ser. No. 386,677
Claims priority, application Japan, Feb. 14, 1994, 6-017697; Feb. 22, 1994, 6-024174; Jun. 3, 1994, 6-122733; Aug. 11, 1994, 6-189203; Oct. 5, 1994, 6-241172; Oct. 7, 1994, 6-244317
Int. Cl.[6] B32B *3/10;* **C03B** *29/00*
U.S. Cl. 428—138 **13 Claims**



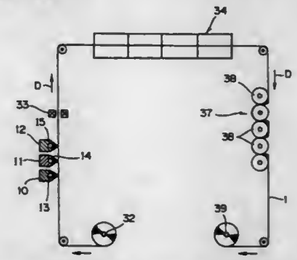
1. A ceramic diaphragm structure comprising:
a ceramic substrate having at least one window; and
a ceramic diaphragm plate which is superposed on said ceramic substrate to close said at least one window, said diaphragm plate being fired with said ceramic substrate to form an integral sintered body, said diaphragm plate including at least one diaphragm portion which is aligned with said at least one window, respectively, each of said at least one diaphragm portion protruding outwards, in a direction away from a corresponding one of said at least one window, to form a convex shape.

5,545,462

MAGNETIC RECORDING MEDIUM

Narito Goto, Hino; Masanori Isshiki, Yokohama; Kunitsuna Sasaki, Hino; Nobuyuki Sekiguchi, Hino; Katsuyuki Takeda, Hino, and Hideki Takahashi, Hino, all of, Japan, assignors to Konica Corporation, Japan, and Kabushiki Kaisha Toshiba, Japan

Continuation of Ser. No. 804,841, Dec. 6, 1991, abandoned.
This application Jul. 8, 1994, Ser. No. 272,278
Claims priority, application Japan, Dec. 12, 1990, 2-401516
Int. Cl.[6] B32B *3/10;7/02;5/16;* **G11B** *5/66*
U.S. Cl. 428—141 **11 Claims**



1. A magnetic recording medium characterized in that plural magnetic layers are provided on a non-magnetic support, the uppermost layer of the magnetic layers contains a binder and a material selected from the group consisting of a ferromagnetic metallic powder, a hexagonal system magnetic powder and mixtures thereof, at least one layer other than the uppermost-layer contains Co-containing iron oxide and a binder, the film thickness of the uppermost layer is 0.5 μm or less, and the surface of the

uppermost layer of the magnetic layers has an R_{1oz} value of the magnetic layer defined below of 50 nm or less,

wherein R_{1oz} refers to a value obtained by measuring, in a long axis magnification direction of a surface outline curve, a distance between two straight lines which are a line passing the 10th peak from the highest and a line passing the 10th ravine from the lowest selected from lines parallel to a horizontal line cutting an upper surface outline curve contour lines at a cut surface, when a magnetic recording medium is cut to a longer direction vertically within an area of ±2 mm from the middle point of a width direction with a standard length of 0.5 mm.

5,545,463

HEEL/METATARSAL STRUCTURE HAVING PREMOLDED BULGES

Karl M. Schmidt, Woodside; Michelle R. Schmidt, Palo Alto; George S. Cole, Pebble Beach; Stuart E. Jenkins, Thousand Oaks, all of Calif., and Harry W. Edwards, Barrington, Ill., assignors to Energaire Corporation, Pebble Beach, Calif.

Continuation-in-part of Ser. No. 993,099, Dec. 18, 1992, Pat. No. 5,395,674. This application Mar. 6, 1995, Ser. No. 398,919

Int. Cl.[6] B32B *1/00;* **A43B** *13/20*

U.S. Cl. 428—178 **8 Claims**



1. A molded, one-piece resilient outer member having a heel portion and/or a metatarsal portion, the outer member having interior and exterior surfaces and having a construction to be highly wear resistant to enable said exterior surface to contact a support surface during use, a plurality of bulges molded into one of said portions and projecting from said exterior surface, said bulges respectively defining cavities opening at said interior surface, said bulges projecting from said exterior surface without the application of any elevated fluid pressure in said cavities, at least one restricted passageway molded into said outer member between said cavities and opening to said interior surface, a sealing member having a shape that matches the shape of said outer member, said sealing member being impermeable to air and having a sealing surface, and adhesive means between said sealing surface and said interior surface and said interior surface for hermetically attaching said sealing member to said outer member, whereby air at atmospheric pressure is permanently located in the space jointly defined by said passageway and said cavities, there being no passageways between said cavities and a portion other than said one portion.

5,545,464

CONJUGATE FIBER NONWOVEN FABRIC

Ty J. Stokes, Suwanee, Ga., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Mar. 22, 1995, Ser. No. 408,458

Int. Cl.[6] D04H *3/14;3/16*

U.S. Cl. 428—198 **20 Claims**

1. A pattern bonded nonwoven fabric comprising conjugate fibers, said conjugate fibers comprising a higher melting point component polymer and a lower melting point component polymer, wherein said higher melting component polymer envelops said lower melting component polymer and forms the peripheral surface along the length of said fibers.

5,545,465

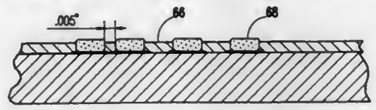
CIRCUIT BOARD HAVING A DEFINED VOLUME OF SOLDER OR CONDUCTIVE ADHESIVE DEPOSITED AT INTERCONNECTION SITES FOR ELECTRICAL CIRCUITS

Michael A. Gaynes, Vestal; George D. Oxx, Endicott; Mark V. Pierson, Binghamton, all of N.Y., and Jerzy Zalesinski, Essex Jet, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 171,898, Dec. 21, 1993, Pat. No. 5,478,700. This application May 24, 1995, Ser. No. 449,029

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—209 **17 Claims**



1. A circuit board, comprising:

a carrier substrate;

a wiring layer located on a surface of said carrier substrate, said wiring layer including electrical contacts;

a permanent mask located on said wiring layer and said surface, wherein said mask includes a plurality of cavities exposing said contacts, said cavities each defining a cavity volume; and

electrically-conductive joining material located on each of said contacts and at least partly filling each of said cavities, said joining material located on each of said contacts having a joining material volume equal to a uniform proportion of said cavity volume.

5,545,466

COPPER-CLAD LAMINATE AND PRINTED WIRING BOARD

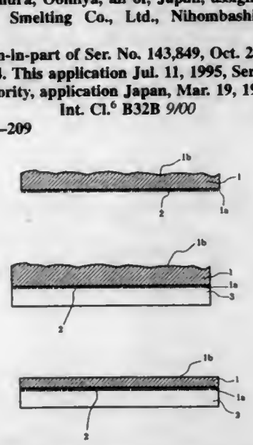
Muneo Saida, Tokyo; Yutaka Hirasawa, Okegawa, and Katsuhiro Yoshimura, Oomiya, all of, Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Nihombashi-Muromachi, Japan

Continuation-in-part of Ser. No. 143,849, Oct. 26, 1993, Pat. No. 5,437,914. This application Jul. 11, 1995, Ser. No. 500,540

Claims priority, application Japan, Mar. 19, 1993, 5-85765

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—209 **4 Claims**



1. In a copper clad laminate which consists essentially of an electrolytic copper foil (1) and a substrate (3), said substrate (3) having two sides, said electrolytic copper foil (1) having a glossy surface side (1*a*) and a matte surface side (1*b*), a granular copper layer (2) being electrodeposited on said glossy surface side (1*a*), said glossy surface side (*ia*) being bonded through said granular copper layer (2) to at least one side of said substrate (3), the improvement comprising using an electrolytic copper foil (1) having a matte surface roughness Rz as made of about 2.0 to 7.5 μm.

5,545,467

PAPER ADDITIVE FOR HOT-PRESSED FORMS AND HOT-PRESSED FORMS USING IT

Isao Suzuki; Sunao Matsushima; Yoshikazu Kubota, and Masayasu Kamijyou, all of Fuji, Japan, assignors to Kohjin Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 117,207, Sep. 16, 1993, abandoned. This application Dec. 23, 1994, Ser. No. 364,396

Claims priority, application Japan, Jan. 16, 1992, 4-024355; Sep. 9, 1992, 4-265572; WIPO, Jan. 14, 1993, PCT/JP93/00046

Int. Cl.[6] B32B *3/00;7/00;29/00*

U.S. Cl. 428—211 **5 Claims**

1. An artificial laminate produced by impregnating a colored paper with from 20–80% by weight of a first thermosetting resin; thermosetting said first thermosetting resin cutting or grinding said impregnated colored paper into chips; preparing sheets of paper which incorporate said chips, wherein said chips create a granite pattern on the surfaces of said sheets of paper; impregnating said patterned sheets of paper with a second thermosetting resin; drying said impregnated patterned sheets of paper; and hot-pressing at least two of said dried sheets of patterned paper.

5,545,468

RECHARGEABLE LITHIUM CELL AND PROCESS FOR MAKING AN ANODE FOR USE IN THE CELL

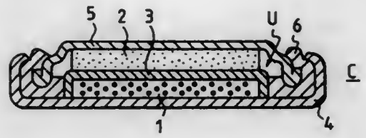
Nobuharu Koshiba, Nara-ken; Kenichi Takata, Osaka; Emi Asaka, Osaka, and Makoto Nakanishi, Osaka, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 16, 1994, Ser. No. 213,900

Claims priority, application Japan, Mar. 17, 1993, 5-057243

Int. Cl.[6] H01M *4/02*

U.S. Cl. 429—218 **13 Claims**



1. A rechargeable lithium cell which comprises a cathode which has a discharge potential not less than 2 V relative to a Li/Li^+ anode, an anode capable of doping and un-doping lithium comprising a lithium titanate which has a spinel structure and is a final product having the general formula, $Li_xTi_yO_4$, wherein $0.8 \leqq x \leqq 1.4$ and $1.6 \leqq y \leqq 2.2$, a separator separating the cathode and the anode from each other, and an electrolytic solution impregnated at least in the separator and containing a lithium salt dissolved in a non-aqueous solvent, wherein when subject to X-ray diffraction analysis using a Cu target, said reaction product has diffraction peaks at least at 4.84±0.02 angstroms, 2.53±0.02 angstroms, 2.09±0.02 angstroms and 1.48±0.02 angstroms and a ratio of a peak intensity at 4.84±0.02 angstroms and a peak intensity at 1.48±0.02 angstroms of 100:30±10.

5,545,469

Patent Not Issued For This Number

5,545,470

ANTI-VANDALISM LAYER

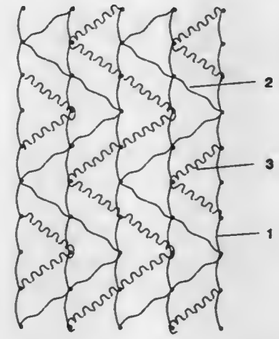
Dieter H. P. Schuster; Achim G. Fels, and Herbert Spors, all of Wuppertal, Germany, assignors to Akzo Nobel Faser AG, and H.A. Schmitz GmbH, Wuppertal, Germany

Filed Mar. 30, 1995, Ser. No. 423,610

Claims priority, application Germany, Mar. 31, 1994, 44 11 346.3

Int. Cl.[6] D03D *3/00*

U.S. Cl. 428—229 **21 Claims**



1. A wire-containing knit fabric anti-vandalism layer, said knit fabric anti-vandalism layer comprising cut-resistant fibers, wherein at least one thread system of said knit fabric contains a wire; wherein said wire is present in at least one thread system projecting from the surface of the knit fabric; and wherein said wire-containing thread system projects from the surface of the knit fabric in a manner such that during subsequent gluing of the anti-vandalism layer to an exterior layer the gluing occurs on the projecting wire-containing thread system.

5,545,471

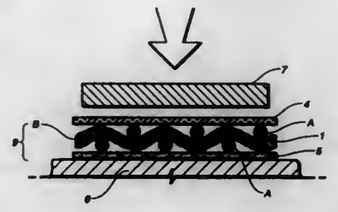
ELECTROCONDUCTIVE ADHESIVE TAPE

Yong I. Lee, 188-3, Seocho-Dong, Seocho-Ku, Seoul, Rep. of Korea

Continuation-in-part of Ser. No. 11,607, Aug. 25, 1993, abandoned. This application Aug. 21, 1995, Ser. No. 517,726

Int. Cl.[6] B32B *7/00*

U.S. Cl. 428—251 **3 Claims**



1. An electroconductive adhesive tape used for fixing an explosion protective band to a Braun tube comprising:

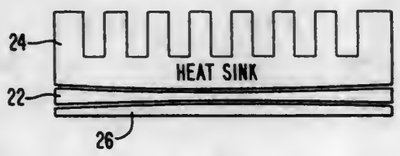
a base formed of woven fabrics having a network structure, said woven fabrics comprising a glass fiber twisted with at least one piece of electroconductive fine fiber as a warp and a cotton yarn as a weft;

a non-adhesive thermoplastic resin layer applied on one side of said base; and
an adhesive layer applied on another side of the base.

5,545,472
WATER-BORNE, WATER REDISPERSIBLE, LAMINATING ADHESIVES FOR NONWOVEN APPLICATIONS
Timothy C. Koubek, Clinton; Paul P. Puletti, Pittstown, and Joseph Wleczorek, Jr., Flemington, all of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.
Division of Ser. No. 289,601, Aug. 12, 1994. This application Feb. 22, 1995, Ser. No. 392,637
Int. Cl.[6] B32B *5/02*
U.S. Cl. 428—261 **10 Claims**

1. A disposable, absorbent article of manufacture, comprising:
a first nonwoven substrate bonded to a second substrate via a water-borne, water redispersible laminating adhesive, said laminating adhesive comprising an aqueous polymer dispersion prepared by radical-initiated emulsion polymerization of a mixture of unsaturated monomers in the presence of starch degradation products having a weight average molecular weight range of from 2500 to 25,000 and which are obtainable by hydrolysis in an aqueous phase; and 2 to 30 weight percent of a plasticizer, wherein the first nonwoven substrate and the second substrate comprises polymeric materials selected from the group consisting of natural and synthetic polymeric materials and wherein, at a water-temperature of greater than about 15° C., the adhesive exhibits water redispersibility of at least about 90 percent.

5,545,473
THERMALLY CONDUCTIVE INTERFACE
Joseph G. Ameen, Bear, Del.; William P. Mortimer, Jr., Conowingo, Md., and Victor P. Yokimcus, Newark, Del., assignors to W. L. Gore & Associates, Inc., Newark, Del.
Filed Feb. 14, 1994, Ser. No. 196,048
Int. Cl.[6] B32B *5/16*
U.S. Cl. 428—283 **21 Claims**

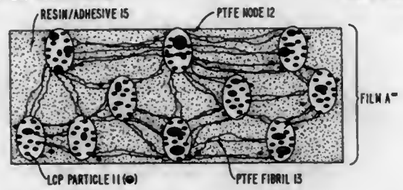


1. A thermally conductive interface for mounting between electronic component parts which comprises:
a porous fluoropolymer material having a first surface and a second surface, the fluoropolymer material comprising a network of nodes interconnected by fibrils;
thermally conductive particles embedded within the fluoropolymer material between the first and second surfaces at least some of the thermally conductive particles are attached to the nodes;
wherein when the interface is mounted between the component parts, it conforms to provide a tight thermally conductive interface between the component parts and to place thermally conductive particles in direct contact with each of the component parts.

5,545,474
ELECTROMAGNETIC-ATTENUATING COATING MATERIALS
Stanley Podiaseck; Gene P. Shumaker, and Paul D. Rimer, all of Orlando, Fla., assignors to Martin Marietta Corporation, Bethesda, Md.
Filed Mar. 1, 1994, Ser. No. 203,625
Int. Cl.[6] B32B *5/16*
U.S. Cl. 428—288 **10 Claims**

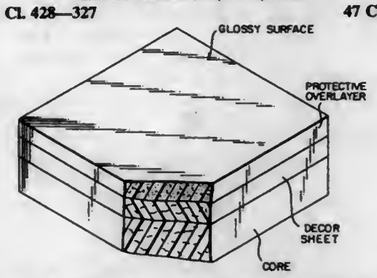
1. An electromagnetic-attenuating coating on a substrate, the coating comprising fibers uniformly dispersed in a dielectric thermosetting polymer matrix material, the fibers being present in an amount of less than 0.2 wt % of the coating and being effective to provide electromagnetic attenuation, said fibers comprising metal-coated dielectric or semiconductive fibers.

5,545,475
MICROFIBER-REINFORCED POROUS POLYMER FILM AND A METHOD FOR MANUFACTURING THE SAME AND COMPOSITES MADE THEREOF
Joseph E. Korleski, Newark, Del., assignor to W. L. Gore & Associates, Newark, Del.
Continuation-in-part of Ser. No. 309,374, Sep. 20, 1994, abandoned. This application Jul. 5, 1995, Ser. No. 498,488
Int. Cl.[6] C08L *67/00*
U.S. Cl. 428—306.6 **10 Claims**



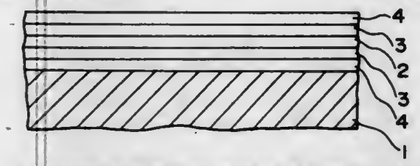
1. A porous composite sheet comprising:
(a) polytetrafluoroethylene; and
(b) liquid crystal polymer;
said sheet formed from a mixture of polytetrafluoroethylene particulate and liquid crystal polymer particulate;
said sheet having a concentration of liquid crystal polymer in the range 2 to 85 volume percent.

5,545,476
WEAR RESISTANT GLOSSY LAMINATES
Robin D. O'Dell; Joseph A. Lex, both of Pasadena; Alice M. Simon, and Jayesh Shah, both of Glen Burnie, all of Md., assignors to International Paper Company, Odenton, Md.
Continuation-in-part of Ser. No. 43,906, Apr. 7, 1993, Pat. No. 5,344,704. This application May 2, 1994, Ser. No. 236,044
Int. Cl.[6] B32B *5/16;27/10;27/20*
U.S. Cl. 428—327 **47 Claims**



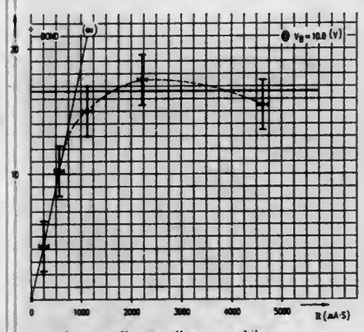
1. In a glossy decorative laminate meeting NEMA abrasion resistant standards comprising a substrate having a decorative upper layer, and a protective overlayer on top of said decorative layer, the improvement wherein:
said protective overlayer is transparent and consists essentially of a cured thermoset resin formed of pre-cured resin particles and optionally mineral particles having a Moh hardness of at least 7 and a mean particle size no greater than 50 μm in a thermoset resin matrix, the resin of the pre-cured particles and the resin of the matrix being the same whereby the index of refraction of said pre-cured resin particles is substantially the same as the index of refraction of said thermoset matrix, said decorative laminate having a gloss meter reading of above 105 to 115 units.

5,545,477
MAGNETO-OPTICAL RECORDING MEDIUM
Nobuhiro Saito, and Masaki Takenouchi, both of Miyagi, Japan, assignors to Sony Corporation, Tokyo, Japan
Continuation of Ser. No. 275,756, Nov. 23, 1988, abandoned. This application Feb. 25, 1991, Ser. No. 659,477
Claims priority, application Japan, Nov. 25, 1987, 62-296779
Int. Cl.[6] G11B *5/66;* **B32B** *5/16*
U.S. Cl. 428—332 **10 Claims**



1. A magneto-optical recording medium on a base comprising:
a magneto-optical recording layer being formed on the base and being formed of a TbFeCo amorphous alloy;
a first layer of a FeCoCr alloy being formed on said magneto-optical recording layer;
a second layer of Tb being formed on said first layer; and
both the first layer and the second layer each having a thickness of between 10 Å and 50Å.

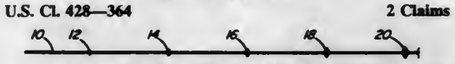
5,545,478
PROCESS FOR BONDING LUBRICANTS TO A THIN FILM STORAGE MEDIA
Li-Ju J. Lin, San Jose; John S. Foster, Morgan Hill; Christopher S. Gudeman, Los Gatos, and Gerard H. Vurens, Berkeley, all of Calif., assignors to International Business Machine Corporation, Armonk, N.Y.
Continuation of Ser. No. 996,244, Dec. 23, 1992, abandoned, which is a division of Ser. No. 681,272, Apr. 8, 1991, abandoned. This application Jun. 6, 1994, Ser. No. 255,307
Int. Cl.[6] B32B *5/16;* **G11B** *5/66*
U.S. Cl. 428—332 **2 Claims**



1. A magnetic recording media, comprising:
a substrate;
a magnetic film formed over said substrate;
a protective film, consisting essentially of carbon, formed over the magnetic film; and
a layer of lubricant, consisting essentially of perfluoropolyethers, bonded to said magnetic film by exposure to a dose of approximately 500 to 1000 microcoulombs per square centimeter from an electron beam having an energy less than approximately 100 electron volts, said bonded lubricant having a thickness of at least 5 Angstroms and less than 300 Angstroms.

5,545,479
Patent Not Issued For This Number

5,545,480
DENTAL FLOSS
Abdul H. Lalani, Richmond Centre Dental Clinic, Richmond Centre Mall, North Wing 1940-6060 Minoru Blvd., Richmond, B.C., Canada
Filed Mar. 13, 1995, Ser. No. 403,152
Int. Cl.[6] D02G *3/00*
U.S. Cl. 428—364 **2 Claims**



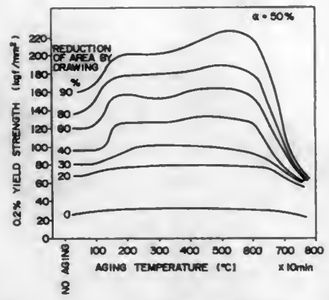
1. A length of dental floss having first and second ends and having a series of spaced members along its length, said spaced members being of the same material as the reminder of the dental floss and increasing in size with distance from the first end of the length of dental floss.

5,545,481
POLYOLEFIN FIBER
James H. Harrington, Gwinnett County, Ga., assignor to Hercules Incorporated, Wilmington, Del.
Continuation-in-part of Ser. No. 835,895, Feb. 14, 1992, abandoned. This application Feb. 11, 1993, Ser. No. 16,346
Int. Cl.[6] B32B *27/02*
U.S. Cl. 428—378 **145 Claims**

1. A fiber comprising a polyolefin fiber having a finish comprising an antistatic composition which comprises:
(a) at least one neutralized C_3–C_{12} alkyl or alkenyl phosphate alkali metal or alkali earth metal salt; and
(b) a solubilizer, wherein the fiber having the finish is hydrophobic.

5,545,482
TWO-PHASE STAINLESS STEEL WIRE ROPE HAVING HIGH FATIGUE RESISTANCE AND CORROSION RESISTANCE
Yukio Yamaoka, Sakai; Kishio Tamai, Amagasaki, and Hiroshi Masutani, Izumisano, all of, Japan, assignors to Shinko Kosen Kogyo Kabushiki Kaisha, Amagasaki, Japan
Continuation of Ser. No. 34,893, Mar. 19, 1993, abandoned. This application Dec. 16, 1994, Ser. No. 357,994
Claims priority, application Japan, Jul. 1, 1992, 4-174459; Feb. 17, 1993, 5-027729
Int. Cl.[6] B32B *15/00*
U.S. Cl. 428—379 **2 Claims**

1. A two-phase stainless steel wire rope having a high fatigue resistance and a high corrosion resistance, comprising two-phase stainless steel wires of 0.03 to 0.1% by weight of C, 0.33 to 1.0% by weight of Si, 0.65 to 1.5% by weight of Mn, 0.019 to 0.04% by weight of P, 0.004 to 0.03% by weight of S, 18.21 to 30% by



weight of Cr, 3.10 to 8.0% by weight of Ni, 0.1 to 3.0% by weight of Mo, with the balance being Fe, and 30.0 to 80.0% by volume of ferrite, which wire rope has a mean slenderness ratio, M_R, of 4 to 20 by wire drawing.

5,545,483

POLYAMIDE MICROCAPSULES REACTED WITH ISOCYANATE EMULSION

John R. Bohland, Millbury, Ohio, assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Jun. 1, 1993, Ser. No. 69,398
Int. Cl.[6] A01N *25/34;* **B01J** *13/02*
U.S. Cl. 428—402.21 **53 Claims**

1. A process for producing highly impermeable, reduced-yellowing, pressure rupturable microcapsules for use in carbonless copying systems, comprising:

providing a slurry of pressure rupturable microcapsules, each microcapsule including a core material and at least one generally continuous polyamide wall encapsulating said core material; and

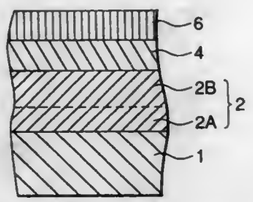
contacting said slurry of microcapsules with an isocyanate emulsion.

5,545,484

HEAT AND OXIDATION RESISTIVE HIGH STRENGTH MATERIAL AND ITS PRODUCTION METHOD

Shizuka Yamaguchi, Hitachinaka; Yoshitaka Kojima, Hitachi; Sai Ogawa, Ibaraki-ken; Hideyuki Arikawa, Hitachi; Mitsuo Haginoya, Ibaraki-ken; Yukihiko Wada, and Kyozo Iwao, both of Hitachi, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 8, 1994, Ser. No. 351,705
Claims priority, application Japan, Dec. 8, 1993, 5-308026
Int. Cl.[6] C23C *14/08;14/22;* **C04B** *41/90*
U.S. Cl. 428—408 **41 Claims**



1. A heat and oxidation resistant high strength material comprising a heat and oxidation resistive coating layer on top of a carbon substrate; wherein said heat and oxidation resistive coating layer comprises a SiC type coating fixed on top of said carbon substrate, a ZrO_2 type ceramic coating placed on top of said SiC type coating, and an Ir type coating placed on top of said ZrO_2 type ceramic coating.

5,545,485

BIODEGRADABLE RESIN MOLDED ARTICLE

Takafumi Hashitani; Shozo Fujita; Makoto Iijima, and Koji Asano, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 402,568, Mar. 13, 1995, which is a continuation of Ser. No. 250,437, May 27, 1994, abandoned. This application May 17, 1995, Ser. No. 443,573
Claims priority, application Japan, Sep. 14, 1993, 5-229265; Dec. 27, 1993, 5-332493; Dec. 28, 1993, 5-336070
Int. Cl.[6] B32B *27/34;27/36;27/40;23/08*
U.S. Cl. 428—423.1 **4 Claims**

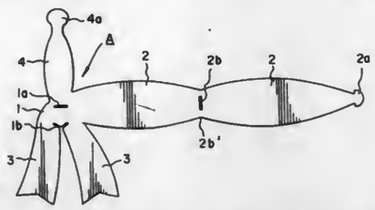
1. A resin molded article containing a layer of a biodegradable resin and a layer of a photolytic resin containing an antibiotic substance and covering said biodegradable resin layer.

5,545,486

ORNAMENTAL TAPE OR RIBBON

Eiji Asano, 5-28, Nijigahama, Hiratsuka-shi, Kanagawa-ken 254, and Yoshiko Iwaki, 8-17-302, Minami Kugahara 2-chome, Oota-ku, Tokyo 144, both of, Japan

Continuation of Ser. No. 131,875, Oct. 5, 1993, abandoned, which is a continuation of Ser. No. 721,534, Jul. 12, 1991, abandoned. This application Dec. 20, 1994, Ser. No. 359,842
Claims priority, application Japan, Nov. 13, 1989, 1-131053
Int. Cl.[6] D04D *7/10*
U.S. Cl. 428—542.8 **5 Claims**



1. An ornamental tape foldable into a decorative ribbon comprising:

a base portion;

a slot passing through said base portion

a predetermined number of spindle-shaped tape portions integrally joined by neck portions and extending laterally from said base portion, a slot passing through said neck portion remotest from said base portion, said spindle-shaped portions being foldable, one spindle-shaped tape portion over the other, at said neck portions, the end portion of the spindle-shaped tape portion remotest from said base portion having a tab selectively engagable in either one of said slots passing through said neck portion remotest from said base portion or said slot passing through said base portion when said spindle-shaped portions are folded;

at least a pair of tape portions integrally formed with and vertically extending from one side of said base portion, each of said pair of tape portions having a slot extending inwardly from the opposing sides of said each of said pair of tape portions where said pair of tape portions extend integrally from said base portion; and

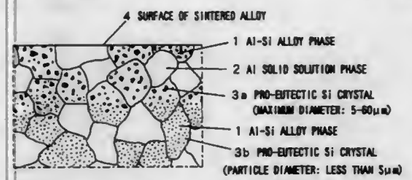
a fastening tape portion integrally formed with and vertically extending from the other side of said base portion and, at its end remotest from said base portion having a tab engagable with said slots extending inwardly from said opposite sides of each of said pair of tape portions, wherein, when said spindle-shaped portions are folded, one spindle-shaped portion over the other, said tab on said spindle-shaped tape portion is inserted into at least one of said slots passing through said neck portion and said base portion and said fastening tape is folded over said base portion and said tab at the end of said fastening tape portion is inserted in said slots extending inwardly from said opposing sides of said each of said pair of tape portions, said decorative ribbon is formed.

5,545,487

WEAR-RESISTANT SINTERED ALUMINUM ALLOY AND METHOD FOR PRODUCING THE SAME

Zenzo Ishijima; Jun-ichi Ichikawa; Shuji Sasaki; Hideo Shikata, all of Matsudo; Hideo Urata, Wako; Shoji Kawase, Wako, and Jun-ichi Ueda, Wako, all of, Japan, assignors to Hitachi Powdered Metals Co., Ltd., Chiba, and Honda Giken Kogyo Kabushiki Kaisha, Tokyo, both of, Japan

Filed Feb. 9, 1995, Ser. No. 385,988
Claims priority, application Japan, Feb. 12, 1994, 6-037606; Dec. 21, 1994, 6-335712
Int. Cl.[6] B22F *7/00*
U.S. Cl. 428—548 **8 Claims**



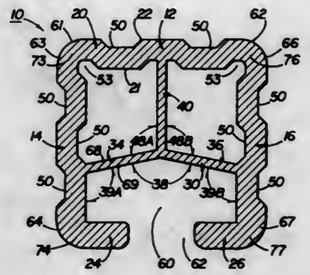
1. A wear-resistant sintered aluminum alloy which consists of, in terms of weight, 2.4–23.5% Si, 2–5% Cu, 0.2–1.5% Mg, 0.01–1% of one or more members selected from the group of transition metals consisting of Ti, V, Cr, Mn, Fe, Co, Ni, Zr and Nb, and the balance of aluminum and unavoidable impurities; which has a dapple grain structure of an Al solid solution phase having Si, Cu, Mg and said transition metal diffused therein and an Al-Si alloy phase containing dispersed pro-eutectic Si crystals having a maximum diameter of 5–60 μm, and the area of said Al solid solution phase is 21 to 80 percent in the cross-section of said dapple grain structure.

5,545,488

SELF-STABILIZING EXTRUSION FOR CLOSURE ASSEMBLIES

Ralph C. Burke, Acworth, Ga., assignor to Annex, Incorporated, Woodstock, Ga.

Filed Feb. 14, 1994, Ser. No. 195,938
Int. Cl.[6] E04H *15/32*
U.S. Cl. 428—586 **12 Claims**



1. A self-stabilizing extrusion for closure assemblies comprising:

a. an elongated hollow frame substantially rectangular in vertical cross-section having an outside surface and an inside surface, defined by a top wall having parallel opposed first and second edges, a first side wall having a first top end and a parallel opposed first bottom end, the first edge of the top wall being perpendicularly connected to the first top end of the first side wall, a second side wall having a second top end and a parallel opposed second bottom end, the second edge of the top wall being perpendicularly connected to the second top end of the second side wall, wherein the first and second side walls are in opposed parallel relationship, and wherein the bottom ends of the first and second side walls terminate in inwardly perpendicular first and second flange members which are parallel to the top wall;

b. a slot base having a top surface and a bottom surface extending between and affixed to the inside surface of the first and second side walls;

c. a base support extending between and affixed to the inside surface of the top wall and the top surface of the slot base, wherein the base support is centrally disposed between and affixed to the middle of the inside surface of the top wall and the middle of the top surface of the slot base, and;

d. a longitudinal slot in the bottom of the elongated hollow frame defined by a slot opening between the flange members, the inside surfaces of the first and second side walls below the slot base, and the bottom surface of the slot base; and,

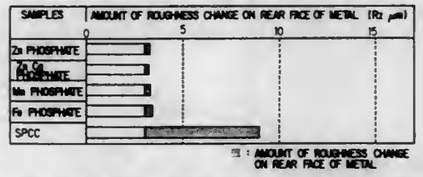
wherein the slot base further comprises a first slot base portion extending from the first slot wall to the base support and a second slot base portion extending from the first slot wall to the base support, wherein the juncture of the first and second portions of the slot base forms an angle of less than 180° in cross-section in the direction of the slot.

5,545,489

MULTI-LAYER SLIDING BEARING HAVING EXCELLENT FRETTING PROPERTY

Tadashi Tanaka, Konan; Masaaki Sakamoto, Nagoya; Koichi Yamamoto, Komaki; Tohru Kato, Seto, and Mitsuru Sugita, Inuyama, all of, Japan, assignors to Daido Metal Company Ltd., Nagoya, Japan

Continuation of Ser. No. 114,186, Sep. 1, 1993, abandoned. This application Oct. 20, 1994, Ser. No. 326,351
Claims priority, application Japan, Sep. 11, 1992, 4-243255
Int. Cl.[6] F16C *33/02;* **B32B** *15/04*
U.S. Cl. 428—629 **4 Claims**



1. A multi-layer sliding bearing having an excellent anti-fretting property, consisting of:

a steel backing layer having a back surface with a single film of phosphate bonded onto said back surface of said steel backing layer, said phosphate film being composed of zinc phosphate, calcium zinc phosphate, manganese phosphate or iron phosphate and having a thickness of 0.1 to 15 μm;

a bearing alloy layer formed on the other surface of the steel backing layer, said bearing alloy layer being composed of an aluminum alloy which is an Al—Sn alloy, an Al—Si—Sn alloy, an Al—Pb alloy, an Al—Si—Sb alloy, an Al—Zn alloy or an Al—Si—Zn alloy, or a copper alloy which is a Cu—Pb alloy or a Cu—Pb—Sn alloy;

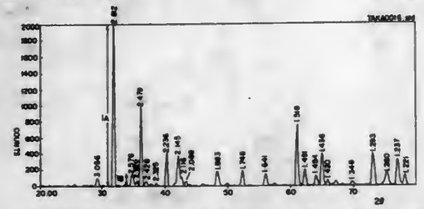
and an overlay layer formed on the bearing alloy layer, said overlay being made of aluminum alloy or lead alloy.

5,545,490

SURFACE COATED CUTTING TOOL

Takatoshi Oshika, Ibaraqi-ken, Japan, assignor to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Jun. 21, 1994, Ser. No. 262,829
Int. Cl.[6] G32B *15/04*
U.S. Cl. 428—701 9 Claims



1. A cutting tool comprising a substrate whose surface is coated with a composite hard layer including an inner layer having at least one layer selected from the group consisting of titanium carbide, titanium nitride, titanium carbonitride, titanium carboxide, and titanium oxicarbonitride, and an outer layer having at least one alumina layer,

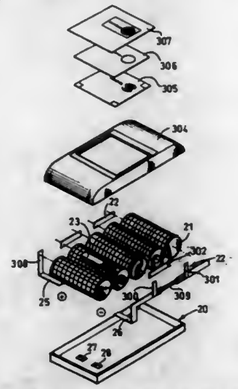
wherein the alumina layer contains a K-type alumina such that an X-ray intensity ratio I_A/I_B of two specific crystal faces A and B in X-ray diffraction is not smaller than 2, where the faces A and B denote faces of K-type alumina defined as those whose interfacial distances are 2.79Å in ASTM4-0878, and I_A and I_B denote X-ray intensities of the faces A and B in X-ray diffraction.

5,545,491

RELATING TO BATTERY PACK ARRANGEMENTS

Joseph Farley, Villeneuve-Loubet, France, assignor to Texas Instruments Incorporated, Dallas, Tex..

Filed Jun. 1, 1994, Ser. No. 251,868
Claims priority, application France, Jun. 2, 1993, 93 06592
Int. Cl.[6] H01M *14/00*
U.S. Cl. 429—7 1 Claim



1. In a battery pack having first and second pack terminals, a battery cell having first and second cell terminals respectively coupled by conductors to the first and second pack terminals, and a housing enclosing the battery cell and conductors, the improvement comprising:

a measuring-resistor strap having first and second projecting measuring contacts (**300**, **301**), forming at least a portion of the conductors; and

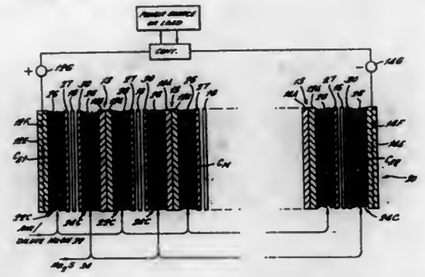
a separate current-measuring circuit mounted in the housing so as to couple to the first and second projecting measuring contacts.

5,545,492

ELECTROCHEMICAL APPARATUS FOR POWER DELIVERY UTILIZING AN AIR ELECTRODE

Ralph Zito, Chapel Hill, N.C., assignor to National Power PLC, Wiltshire, United Kingdom

Continuation-in-part of Ser. No. 961,009, Oct. 14, 1992, abandoned. This application Sep. 29, 1993, Ser. No. 128,127
Int. Cl.[6] H01M *8/06*
U.S. Cl. 429—29 21 Claims



1. An array of electrochemical cells forming an electrochemical apparatus for energy storage and power delivery which comprises

a) an end $+^{ve}$ electrode and an end $-^{ve}$ electrode separated by one or more of bipolar mid-electrodes each of which has a $+^{ve}$ side and a $-^{ve}$ side which each face a respective $+^{ve}$ chamber and $-^{ve}$ chamber, the $+^{ve}$ side of each bipolar electrode comprising an electrically conductive substrate having a porous conductive surface, the bipolar electrodes being separated from one another by cation exchange membranes,

b) means to form an intimate mixture of air/oxygen with an electrolyte to produce a dispersion of bubbles in the electrolyte, and

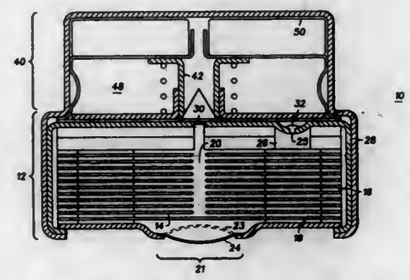
c) means to circulate the electrolyte produced in step b) through the $+^{ve}$ chambers of the cell array.

5,545,493

VACUUM BATTERY INDICATOR

Monty W. Bai, Scottsdale; Thomas M. Kerns, Tempe, and Edward L. Brannon, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 3, 1995, Ser. No. 552,406
Int. Cl.[6] H01M *10/48;6/38*
U.S. Cl. 429—90 15 Claims



1. In a vacuum battery including a battery cell assembly having a plurality of battery cells and a fill hole therethrough, a bibulous material filling said plurality of said battery cells, and a hermetically sealable enclosure having a puncturable diaphragm on a surface of said hermetically sealable enclosure; an ampule assembly coupled to said surface of said hermetically sealable enclosure and coupled to said puncturable diaphragm, said ampule assembly including an ampule enclosing an electrolyte, and a cutter for puncturing said puncturable diaphragm and allowing said electrolyte to enter said battery cell assembly; the improvement comprising:

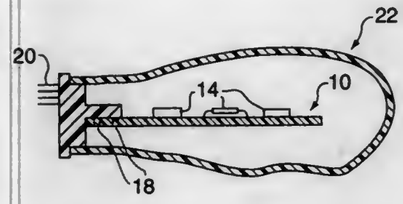
a vacuum indicator forming an area of an external surface of said hermetically sealable enclosure, said vacuum indicator deflecting to a first position when a sufficient vacuum is drawn within said hermetically sealable enclosure.

5,545,494

ENVIRONMENTAL PROTECTORS FOR ELECTRONICS DEVICES

William P. Trumble, Kanata; Mark R. Harris, Woodlawn, and Adrianus P. Van Gaal, Kanata, all of, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Aug. 10, 1995, Ser. No. 513,735
Int. Cl.[6] H01M *2/02*
U.S. Cl. 429—163 25 Claims



1. An environmental protector comprising a container comprising a laminate wall to provide a moisture barrier, a penetration resistant outer surface, and a shield to electromagnetic radiation, the container provided to house an electronic device and having an opening for insertion of the device into the container with the opening shaped so as to fit around and be sealed around a peripheral surface of an electrical connector unit mounted upon the device whereby the protector and connector unit together form an enclosure for the device.

5,545,495

MAGNESIA-BASED BETA ALUMINA SINTERED BODIES AND A PROCESS FOR PRODUCING THE SAME

Makoto Kato, Nagoya, Japan, assignor to NGK Insulators, Ltd., Japan

Continuation-in-part of Ser. No. 247,460, May 23, 1994, abandoned, which is a continuation of Ser. No. 925,857, Aug. 7, 1992, abandoned. This application Feb. 27, 1995, Ser. No. 395,526
Claims priority, application Japan, Aug. 12, 1991, 3-226551; Feb. 2, 1995, 7-15861
Int. Cl.[6] H01M *10/39*
U.S. Cl. 429—193 12 Claims

1. A magnesia-based beta alumina sintered body, comprising beta alumina crystals and sodium aluminate crystals, wherein:

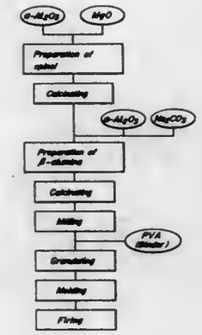
(1) the average crystalline particle diameter of beta alumina crystals, calculated assuming that the beta alumina crystals are of a circular cross-section, is in a range of 1–4 μm;

(2) the amount of beta alumina crystals having particle diameters not more than 5 μm, when measured in a cross-sectional area of the sintered body, is 85% to 98%;

(3) the maximum crystalline particle diameter is not more than 300 μm;

(4) the number of coarse particles having diameters falling in a range of 100 μm to 300 μm is not more than 1, when counted in a 10 mm×10 mm cross-sectional area of the sintered body; and

(5) the content of crystals of sodium aluminate is 0.5 wt % to 6.0 wt %.

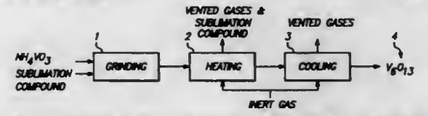


5,545,496

PROCESS FOR PRODUCING FILAMENT-LIKE VANADIUM OXIDE FOR USE IN SOLID STATE RECHARGEABLE ELECTROCHEMICAL CELLS AND THE USE THEREOF AS A CATHODE IN ELECTROCHEMICAL CELLS

On-Kok Chang, 1031 Belvedere Ln., San Jose, Calif. 95129, and M. Yazid Saidi, 492 Capitol Village Cir., San Jose, Calif. 95136

Filed Jul. 6, 1994, Ser. No. 271,341
Int. Cl.[6] H01M *4/22;4/48*
U.S. Cl. 429—218 21 Claims



19. A rechargeable electrochemical cell containing a cathode and an anode wherein a cathode active material is a vanadium oxide which is characterized by a fiber structure having a composition V_6O_x wherein X is between 13.35 and 14.05, which is prepared by a method comprising the steps of: preparing a mixture of an ammonium vanadate and a sublimation compound which sublimes upon heating; heating the mixture in an inert gas flow, to a temperature to sublime said compound and to thermally decompose the ammonium vanadate, to form a vanadium oxide product; and cooling the product to ambient temperature in an inert gas atmosphere.

5,545,497

CATHODE MATERIAL FOR NONAQUEOUS ELECTROCHEMICAL CELLS

Ester S. Takeuchi, East Amherst, and Randolph A. Leising, Williamsville, both of N.Y., assignors to Wilson Greatbatch Ltd., Clarence, N.Y.

Filed Jun. 21, 1994, Ser. No. 263,130
Int. Cl.[6] H01M *4/54*
U.S. Cl. 429—219 46 Claims

1. A nonaqueous electrochemical cell, which comprises:

a) an alkali metal anode;

b) a liquid nonaqueous electrolyte; and

c) a cathode component comprising silver vanadium oxide of the general formula $Ag_xV_2O_y$, wherein the silver vanadium oxide is either a β-phase silver vanadium oxide that has in the general formula x=0.35 and y=5.18 or a mixture of a γ-phase silver vanadium oxide that has in the general formula x=0.74 and y=5.37 and the β-phase silver vanadium oxide such that the mixture of the β- and the γ-phases of silver vanadium oxide has in the general formula $0.36 \leqq x \leqq 0.49$ and $5.19 \leqq y \leqq 5.25$ and wherein the cell is dischargeable under

pulse discharge applications with the β-phase silver vanadium oxide and the mixture of the β- and γ-phases exhibiting decreased voltage delay.

5,545,498

METHOD OF PRODUCING SEMICONDUCTOR DEVICE AND PHOTOMASK THEREFOR

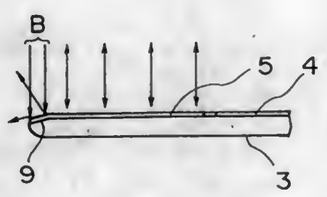
Tsuguimi Konno, Nagano-ken, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 730,698, Jul. 16, 1991, Pat. No. 5,403,681. This application Jan. 30, 1995, Ser. No. 380,060

Claims priority, application Japan, Jul. 26, 1990, 2-198818; Aug. 7, 1990, 2-208937; Nov. 29, 1990, 2-331696; Jun. 13, 1991, 3-141774

Int. Cl.[6] G03F 9/00

U.S. Cl. 430—18 **9 Claims**



1. A semiconductor wafer having semiconductor chip patterns on the entire extent of a surface bounded by a peripheral edge of said wafer, wherein said semiconductor chip patterns comprises a first array of a preselected number of complete semiconductor chip patterns on portions of said surface spaced from said wafer edge and a peripheral array of incomplete semiconductor chip patterns on portions of said surface overlying said wafer edge, and said first array and peripheral array are made by steps comprising exposures to radiation through a necessary number of photomasks to give a complete function to each of semiconductor chips formed in said first array, said photomasks comprising photomasks each having a pattern consisting of chip patterns for both said first array and peripheral array and one or more photomasks each having a pattern consisting of chip patterns for said first array and some or none of chip patterns for said peripheral array.

5,545,499

ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR HAVING IMPROVED CYCLING STABILITY AND OIL RESISTANCE

Vernon M. Balthis, Longmont; Ronald A. Merten, Boulder; Robert J. Rumery, Longmont, and Robert L. Vollmer, Boulder, all of Colo., assignors to Lexmark International, Inc., Greenwich, Conn.

Filed Jul. 7, 1995, Ser. No. 499,147

Int. Cl.[6] G03G 5/47

U.S. Cl. 430—59 **12 Claims**

1. A photoconductive member consisting essentially of:

(a) a ground plane member;

(b) a charge generating layer carried by said ground plane member comprising from about 10 to about 50 parts by weight X-form metal-free phthalocyanine and from about 50 to about 90 parts by weight polyvinyl chloride binder having a molecular weight of from about 25,000 to about 300,000, the phthalocyanine being present as fine particles in a dispersion in said polyvinyl chloride; and

(c) a charge transport layer carried by said charge generating layer comprising from about 30 to about 70 parts by weight of a charge transport molecule and from about 30 to about 70 parts by weight of a polyestercarbonate having a molecular weight of from about 40,000 to about 100,000.

2. A photoconductive member according to claim 1 wherein the thickness of the charge generating layer is from about 0.1 to about 2.0 microns.

3. A photoconductive member according to claim 2 wherein the thickness of the charge transport layer is from about 10 to about 25 microns.

4. A photoconductive member according to claim 3 wherein the charge transport molecule is selected from the group consisting of butadienes, hydrazones, pyrazolines, and mixtures thereof.

5,545,500

ELECTROPHOTOGRAPHIC LAYERED LIGHT RECEIVING MEMBER CONTAINING A-SI AND GE

Shigeru Shirai, Nagahama, and Shigeru Ohno, Yokohama, both of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 946,149, Sep. 17, 1992, abandoned, which is a continuation of Ser. No. 759,819, Sep. 5, 1991, abandoned, which is a continuation of Ser. No. 459,288, Dec. 29, 1989, abandoned, which is a division of Ser. No. 210,223, Jun. 23, 1988, Pat. No. 4,911,998, which is a division of Ser. No. 11,505, Feb. 5, 1987, Pat. No. 4,818,651. This application May 19, 1994, Ser. No. 246,556

Claims priority, application Japan, Feb. 7, 1986, 61-23691; Feb. 13, 1986, 61-27900; Feb. 13, 1986, 61-27901; Feb. 13, 1986, 61-27902; Feb. 20, 1986, 61-33923; Feb. 20, 1986, 61-33924; Feb. 24, 1986, 61-37357

Int. Cl.[6] G03G 5/82;5/147

U.S. Cl. 430—67 **13 Claims**

1. A light receiving member comprising a substrate and a light receiving layer disposed on said substrate; said light receiving layer comprising:

(a) a 1 to 100 μm thick first layer having photoconductivity formed directly on said substrate; and

(b) a 0.003 to 30 μm thick second layer having an insulating property in sequence from the side of the substrate, said second layer having a free surface;

said first layer (a) consisting essentially of (i) an amorphous material containing silicon atoms, (ii) 1 to 6×10^5 atomic ppm of germanium atoms, (iii) at least one kind of atom selected from the group consisting of hydrogen atoms and halogen atoms in a total amount of 0.01 to 40 atomic %, and (iv) a conductivity controlling element selected from the group consisting of Al, Ga, In and Tl belonging to Group III or selected from the group consisting of P, As, Sb and Bi belonging to Group V of the Periodic Table, wherein said germanium atoms being so distributed in the thickness direction that the concentration thereof is enhanced at the position adjacent to the substrate and the concentration thereof is reduced or made substantially zero at the position adjacent to the interface with said second layer (b); wherein said second layer (b) comprises a second amorphous material containing (b-i) silicon atoms, (b-11) 0.001 to 90 atomic % of carbon atoms, (b-iii) at least one kind of atom selected from the group consisting of oxygen atoms and nitrogen atoms, said at least one kind of atom being uniformly distributed in the direction of thickness of said second layer and (b-iv) 1.0 to 1×10^4 atomic ppm of an atom selected from the group consisting of B, Al, Ga, In and Tl belonging to Group III or an atom selected from the group consisting of P, As, Sb and Bi belonging to Group V of the Periodic Table.

5,545,501

ELECTROSTATOGRAPHIC DEVELOPER COMPOSITION

Serge Tavernier, Lint; Frank Ruttens, Overijse; André Verhecken, Mortsel; Jozef Mampaey, Kontich, and Ludovicus Joly, Hove, all of, Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

PCT No. PCT/EP94/01855, § 371 Date Dec. 6, 1994, § 102(e) Date Dec. 6, 1994, PCT Pub. No. WO95/00884, PCT Pub. Date Jan. 5, 1995

PCT Filed Jun. 7, 1994, Ser. No. 347,346

Claims priority, application European Pat. Off., Jun. 22, 1993, 93201795

Int. Cl.[6] G03G 9/107;9/08

U.S. Cl. 430—106.6 **13 Claims**

1. An electrostatographic developer composition comprising carrier particles and toner particles with a toner particle size distribution having a volume average particle size (T) such that 4 μm≦T≦12 μm and an average charge (absolute value) pro diameter in femtocoulomb/10 μm (C_T) after triboelectric contact with said carrier particles such that 1 fC/10 μm≦C_T≦10 fC/10 μm characterised in that

(i) said carrier particles have a saturation magnetization value, M_{sat}, expressed in Tesla (T) such that M_{sat}≧0.30 T

(ii) said carrier particles have a volume average particle size (C_{avg}) such that 30 μm≦C_{avg}≦60 μm

(iii) said volume based particle size distribution of said carrier particles has at least 90% of the particles having a particle diameter C such that 0.5 C_{avg}≦C≦2C_{avg}

(iv) said volume based particles size distribution of said carrier particles comprises less than b % particles smaller than 25 μm wherein $b=0.35\times(M_{sat})^2\times P$ with

M_{sat}: saturation magnetization value, M_{sat}, expressed in T

P: the maximal field strength of the magnetic developing pole expressed in kA/m

(v) said carrier particles comprise a core particle coated with a resin coating in an amount (RC) such that 0.2% w/w≦RC≦2% w/w.

5,545,502

ELECTROSTATIC IMAGE-DEVELOPING TONER

Hitoshi Ono; Noriaki Takahashi, both of Yokohama; Osamu Ando, Kawasaki; Masako Takeuchi, Yokohama, and Hirofumi Oda, Chigasaki, all of, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

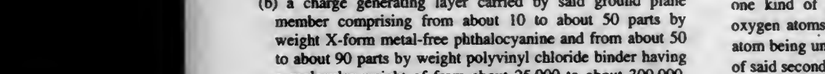
Continuation of Ser. No. 165,890, Dec. 14, 1993, abandoned. This application May 9, 1995, Ser. No. 437,052

Claims priority, application Japan, Dec. 14, 1992, 4-333181; Jul. 14, 1993, 5-174294

Int. Cl.[6] G03G 9/097

U.S. Cl. 430—110 **9 Claims**

1. An electrostatic image-developing toner comprising at least a resin and a colorant, which further contains at least one compound of the following formula (I):



wherein R_1 is a substituted or unsubstituted aralkyl group, each of R_2, R_3 and R_4 is a $C_{2\text{-}24}$ substituted or unsubstituted alkyl group, and A is an aromatic ring residue which may have substituents.

5,545,503

METHOD OF MAKING PRINTING MEMBER FOR ELECTROSTATIC PHOTOCOPYING

Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Division of Ser. No. 124,474, Sep. 22, 1993, abandoned, which is a continuation of Ser. No. 891,049, Jun. 1, 1992, abandoned, which is a division of Ser. No. 606,187, Oct. 31, 1990, Pat. No. 5,143,808, which is a division of Ser. No. 577,006, Sep. 4, 1990, Pat. No. 5,070,364, which is a division of Ser. No. 452,355, Dec. 19, 1989, Pat. No. 4,999,270, which is a division of Ser. No. 116,337, Nov. 2, 1987, Pat. No. 4,889,783, which is a division of Ser. No. 814,083, Dec. 24, 1985, abandoned, which is a continuation of Ser. No. 502,583, Jul. 21, 1983, abandoned, which is a division of Ser. No. 276,503, Jun. 23, 1981, Pat. No. 4,418,132. This application Sep. 12, 1994, Ser. No. 304,217

Claims priority, application Japan, Jun. 25, 1980, 55-86801

Int. Cl.[6] G03G 5/082

U.S. Cl. 430—128 **32 Claims**

1. A method for manufacturing a light-sensitive electric member comprising the steps:

preparing a substrate having a cylindrical shape and having a center axis in a reaction chamber;

preparing at least one electrode in said reaction chamber adjacent to a surface of said substrate;

introducing a first starting gas into said reaction chamber;

activating said starting gas into a plasma by supplying an electrical energy to said gas through said electrode;

rotating said substrate around the center axis of said substrate; and

plasma depositing a film comprising a material selected from the group consisting of silicon, silicon with carbon, silicon with nitrogen, and silicon with oxygen on the surface of said substrate.

5,545,504

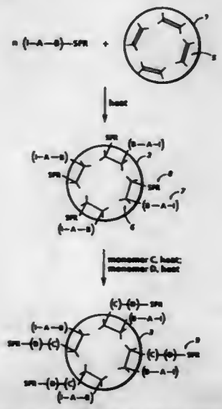
INK JETTABLE TONER COMPOSITIONS AND PROCESSES FOR MAKING AND USING

Barkev Keoshkerian, Thornhill; Michael K. Georges, Guelph, and Stephan V. Drappel, Toronto, all of, Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 3, 1994, Ser. No. 317,044

Int. Cl.[6] G03G 9/13;9/08

U.S. Cl. 430—137 **21 Claims**



1. A process for the preparation of toner compositions comprising: forming a mixture comprised of at least one free radical reactive monomer, a colorant, a polymeric stabilizer compound containing a covalently bonded stable free radical reactive group, and a liquid vehicle; and heating the mixture from about 75° to

about 200° C. to effect polymerization of said monomer, wherein there results stabilized core resin particles containing said colorant and wherein said stabilized core particles are stabilized by said polymeric stabilizer compounds being bonded directly to the core particles.

5,545,505

AMINE COMPOUNDS AS CONTRAST ENHANCERS FOR BLACK-AND-WHITE PHOTOTHERMOGRAPHIC AND THERMOGRAPHIC ELEMENTS

Sharon M. Simpson, Lake Elmo, Minn., assignor to Minnesota Mining and manufacturing Company, St. Paul, Minn.

Filed Sep. 19, 1995, Ser. No. 530,024
Int. Cl.[6] G03C *1/498*
U.S. Cl. 430—250 **37 Claims**

1. A black-and-white photothermographic element comprising a support bearing at least one photosensitive, black-and-white image-forming, photothermographic emulsion layer comprising:
(a) a photosensitive silver halide;
(b) a non-photosensitive, reducible silver source;
(c) a reducing agent system for said non-photosensitive, reducible silver source; and
(d) a binder;
wherein said reducing agent system comprises:
(i) at least one hindered phenol;
(ii) at least one co-developer of the formula

$$R^1—(C=O)—NHNH—R^2$$

wherein:
R^1 represents hydrogen and R^2 represents an aryl or substituted aryl group; or,
R^1 represents hydrogen, alkyl, or alkenyl groups of 1 to 20 carbon atoms; alkoxy, alkylthio, or amido groups of 1 and 20 carbon atoms; aryl, alkaryl, or aralkyl groups of up to 20 carbon atoms; aryloxy, arylthio, or anilino groups of up to 20 carbon atoms; aliphatic or aromatic heterocyclic ring groups containing up to 6 ring atoms; carbocyclic ring groups comprising up to 6 ring carbon atoms; and R^2 represents a trityl group; and
(iii) a hydroxylamine, an alkanolamine, or an ammonium phthalamate compound.

5,545,506

[METHOD OF PRODUCING AN IMAGE USING A] NEGATIVE WORKING, PEEL DEVELOPABLE, SINGLE SHEET COLOR PROOFING SYSTEM

Wojciech A. Wilczak, Jersey City, N.J.; Stephan J. Platzer, Eltville, Germany, and David L. Siegfried, Langhorne, Pa., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Continuation-in-part of Ser. No. 827,189, Jan. 28, 1992, abandoned. This application Jun. 24, 1992, Ser. No. 903,701
Int. Cl.[6] G03C *3/00*
U.S. Cl. 430—253 **18 Claims**

1. A method for producing a negative image which comprises providing a photosensitive element comprising, in order:
(a) a strippable, transparent cover sheet;
(b) coating a color layer on the cover sheet, the color layer comprises an organic binder, a polymerizable monomer and a colorant, wherein the binder is present in sufficient amount to bind the color layer components into a uniform film, wherein the polymerizable monomer is present in sufficient amount to provide image differentiation when the photosensitive element is imagewise exposed to actinic radiation and wherein the colorant is present in an amount sufficient to uniformly color the color layer;
(c) overcoating an adhesive layer directly on the color layer, which adhesive layer comprises a photosensitive polymer or oligomer having ethylenically unsaturated, photocrosslinkable groups and a Tg from about 20° to about 120° C., wherein the photosensitive polymer or oligomer is present in an amount from 60 to 100%, and wherein at least one of said color layer and said adhesive layer contains a photoinitiator; and
(d) laminating a receiver sheet directly to said adhesive layer;
(e) imagewise exposing said color layer and said adhesive layer to actinic radiation through said transparent cover sheet;
(f) peeling apart said receiver sheet and said transparent cover sheet, leaving exposed areas of said color layer on said adhesive layer and unexposed areas being removed with said cover sheet, thereby forming a negative image on said adhesive layer on said receiver sheet; and
g) optionally repeating steps a) through f) at least once wherein another second photosensitive element having at least one different colorant, according to step b), is transferred via its adhesive layer to the negative image previously produced on said receiver sheet.

5,545,507

HYDROXAMIC ACID COMPOUNDS AS CONTRAST ENHANCERS FOR BLACK-AND-WHITE PHOTOTHERMOGRAPHIC AND THERMOGRAPHIC ELEMENTS

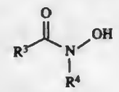
Sharon M. Simpson, Lake Elmo, Minn., and Francis H. Sansbury, Sawbridgeworth, United Kingdom, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 19, 1995, Ser. No. 530,694
Int. Cl.[6] G03C *1/498*
U.S. Cl. 430—264 **35 Claims**

1. A black-and-white photothermographic element comprising a support bearing at least one photosensitive, image-forming, photothermographic emulsion layer comprising:
(a) a photosensitive silver halide;
(b) a non-photosensitive, reducible silver source;
(c) a reducing agent system for said non-photosensitive, reducible silver source; and
(d) a binder;
wherein said reducing agent system consists essentially of:
(i) at least one hindered phenol;
(ii) at least one co-developer of the formula:

$$R^1—(C=O)—NHNH—R^2$$

wherein:
R^1 represents hydrogen and R^2 represents an aryl group; or,
R^1 represents hydrogen, alkyl, or alkenyl groups of up to 20 carbon atoms; alkoxy, alkylthio, or amido groups of up to 20 carbon atoms; aryl, alkaryl, or aralkyl groups of up to 20 carbon atoms; aryloxy, arylthio, or anilino groups of up to 20 carbon atoms; aliphatic or aromatic heterocyclic ring groups containing up to 6 ring atoms; carbocyclic ring groups of up to 6 ring carbon atoms; and R^2 represents a trityl group; and
(iii) at least one hydroxamic acid compound having the formula:



wherein:
R^3 represents alkyl or alkenyl groups of up to 20 carbon atoms; alkoxy, alkylthio, or amido groups of up to 20 carbon atoms; aryl, alkaryl, or aralkyl groups of up to 20 carbon atoms; aryloxy, arylthio, or anilino groups of up to 20 carbon atoms; aliphatic or aromatic heterocyclic ring groups containing up to 6 ring atoms; carbocyclic ring groups of up to 6 ring carbon atoms; and
R^4 represents hydrogen, alkyl or alkenyl groups of up to 20 carbon atoms; alkoxy, alkylthio, or amido groups of up to 20 carbon atoms; aryl, alkaryl, or aralkyl groups of up to 20 carbon atoms; aryloxy, arylthio, or anilino groups of up to 20 carbon atoms; aliphatic or aromatic heterocyclic ring groups containing up to 6 ring atoms; carbocyclic ring groups of up to 6 ring carbon atoms; aryloxy, arylthio, or anilino groups of up to 20 carbon atoms; aliphatic or aromatic heterocyclic ring groups containing up to 6 ring atoms; carbocyclic ring groups of up to 6 ring carbon atoms.

5,545,508

PHOTOGRAPHIC SILVER HALIDE DEVELOPER COMPOSITIONS AND PROCESS FOR FORMING PHOTOGRAPHIC SILVER IMAGES

Carlo Marchesano, Savona; Elda Moizo, Monesiglio, and Filippo Faranda, Savona, all of, Italy, assignors to Minnesota Mining and Manufacturing, St. Paul, Minn.

Continuation of Ser. No. 253,413, Jun. 3, 1994, abandoned. This application Feb. 13, 1996, Ser. No. 605,248
Claims priority, application European Pat. Off., Jul. 2, 1993, 93110591
Int. Cl.[6] G03C *5/305*
U.S. Cl. 430—265 **20 Claims**

1. A process for forming a black-and-white high contrast negative photographic silver image comprising developing a silver halide photographic element, said developing being effected with an aqueous alkaline photographic developer composition comprising a dihydroxybenzene developing agent, an auxiliary superadditive developing agent, an antifogging agent, an antioxidant compound, a combination of buffering agents and a sequestering agent, characterized by the fact that:
a) the auxiliary developing agent is an aminophenol compound,
b) the combination of buffering agents comprises at least a first buffering agent represented by carbonate compounds in an amount of 0.07 to 1 moles per liter and at least a second buffering agent represented by phosphate compounds present in an amount of from 0.07 to 1 moles per liter, the total amount of said first buffering agent and said second buffering agent being at least 35 grams per liter, and
c) the pH of said aqueous alkaline photographic developer composition is in the range of 9.0 to 11.0.

5,545,509

PHOTORESIST COMPOSITION WITH PHOTOSENSITIVE BASE GENERATOR

James F. Cameron, Palo Alto, Calif.; Jean M. J. Frechet; Man-Kit Leung, both of Ithaca, N.Y.; Claus-Peter Niesert, San Jose, Calif.; Scott A MacDonald, San Jose, Calif., and Carlton G. Wilson, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 981,033, Nov. 24, 1992, abandoned. This application Feb. 1, 1994, Ser. No. 190,716
Int. Cl.[6] G30C *1/492*
U.S. Cl. 430—270.1 **7 Claims**

1. A photosenstive resist composition comprising (i) a photosensitive base generator, (ii) a polymer and (iii) a base labile compound having a base cleavable substituent which is bonded to the base labile compound through a base-cleavable carbon-carbon, bond.

5,545,510

PHOTODEFINABLE DIELECTRIC COMPOSITION USEFUL IN THE MANUFACTURE OF PRINTED CIRCUITS

Peter Kukanskis, Woodbury; Peter Gabriele, Bristol; Raymond Letize, West Haven, and William Adams, Woodbury, all of Conn., assignors to Mac Dermid, Inc., Waterbury, Conn.

Filed Mar. 28, 1995, Ser. No. 412,286
Int. Cl.[6] G03F *7/028;7/30*
U.S. Cl. 430—312 **12 Claims**

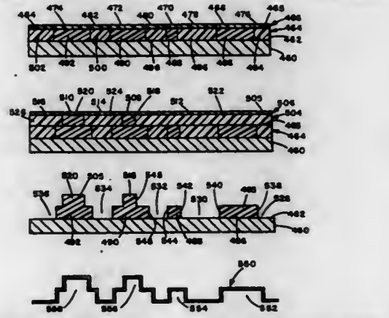
1. A process for fabricating a circuitry package comprising:
(a) Coating the surface of a substrate with a composition comprising;
(1) at least one carboxy functional resin;
(2) at least one acrylate oligomer;
(3) at least one epoxy functional resin;
(4) at least one elastomer selected from the group consisting of copolymers of butadiene with acrylonitrile, carboxy terminated copolymers of butadiene with acrylonitrile and epoxy terminated copolymers of butadiene with acrylonitrile;
(5) at least one photoinitiator; and
(6) at least one reactive monomer;
(b) exposing the coating to an imagewise pattern of radiation, to which the composition is responsive, in an amount sufficient to at least partially cure the exposed areas of the composition;
(c) developing the exposed composition with a solution which will selectively remove the non-exposed areas of the coating.
(d) optionally, further curing the coating which remains on the surface;
(e) optionally repeating Steps (a)–(d);
(f) depositing a conductive material onto the entire surface;
(g) subsequently defining circuitry and interconnects by etching away defined portions of the conductive material;
(h) optionally, repeating steps (a) through (g) so as to build more than one layer of circuitry.

5,545,511

MILLIMETER WAVE DEVICE AND METHOD OF MAKING

Garry N. Hulderman, Riverside; Eugene Phillips, Diamond Bar, and Richard J. Swanson, Pomona, all of Calif., assignors to Hughes Missile Systems Company, Los Angeles, Calif.

Division of Ser. No. 42,449, Apr. 1, 1993, Pat. No. 5,503,960, which is a continuation of Ser. No. 739,205, Jul. 30, 1991, abandoned, which is a division of Ser. No. 112,330, Oct. 23, 1987, Pat. No. 5,062,149. This application Feb. 27, 1995, Ser. No. 394,517
Int. Cl.[6] G03F *7/20*
U.S. Cl. 430—315 **15 Claims**



1. A method of fabricating a millimeter wave device housing comprising the steps of:
providing a base having a substantially planar work surface;
placing a layer of photoresist material of a predetermined uniform thickness upon said work surface, said photoresist layer having a top surface;
exposing predetermined portions of said photoresist layer to ultraviolet light;
developing said photoresist layer so as to form a plurality of discrete openings in portions of said photoresist layer unexposed to ultraviolet light, the openings extending through the entire thickness of said photoresist layer in each unexposed portion to expose portions of said work surface, said openings forming side surfaces in said photoresist layer extending between said photoresist layer top surface and said work surface;

forming a metal layer of a predetermined thickness upon said photoresist top and side surfaces and upon exposed portions of said work surface; and

separating said metal layer from said photoresist layer top and side surfaces and said work surface.

5,545,512

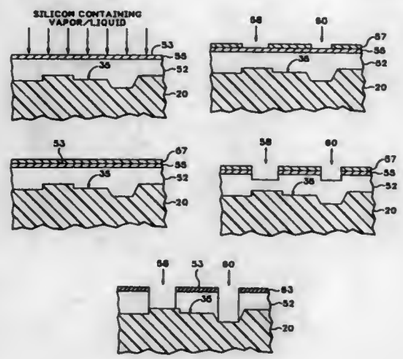
METHOD OF FORMING A PATTERN OF SILYLATED PLANARIZING PHOTORESIST

Tatsuo Nakato, Vancouver, Wash., assignor to Sharp Microelectronics Technology, Inc., Camas, Wash., and Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 154,790, Nov. 12, 1993, abandoned, which is a continuation-in-part of Ser. No. 893,702, Jun. 5, 1992, abandoned. This application May 9, 1995, Ser. No. 437,559

Int. Cl.[6] G03F *7/26;* **G03C** *5/16*

U.S. Cl. 430—323 **15 Claims**



1. A method of forming a mask pattern of silicon dioxide on the surface of a layer of photoresist, the method comprising the steps of:

(a) forming a uniform, unpatterned, silicon-reactive region in a surface region of the photoresist by irradiating the surface of the photoresist with uniform, unpatterned, radiation that reaches the surface without passing through a mask and which penetrates not more than 3,000 Å below the surface of the photoresist;

(b) softbaking the irradiated photoresist in a silicon-containing environment to convert said silicon-reactive region to a silicon e enriched region which extends below the surface of the photoresist to a depth determined by the penetration of the radiation in step (a);

(c) applying a second photoresist layer over the softbaked irradiated photoresist from step (b);

(d) forming a desired photolithographic pattern of imaging resist on the surface of the second photoresist layer

(e) forming said photolithographic pattern in said siliconenriched region of the photoresist using the imaging resist as a mask; and

(f) etching the resultant structure using an oxygen plasma to remove the imaging resist and convert the remaining portions of said silicon-enriched region to silicon dioxide.

5,545,513

PHOTOGRAPHIC MATERIAL WITH IMPROVED GRANULARITY

Larry D. Edwards, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 886,278, May 20, 1992, abandoned. This application Jun. 11, 1993, Ser. No. 75,968

The portion of the term of this patent subsequent to Apr. 28, 2009, has been disclaimed.

Int. Cl.[6] G03C *7/30;7/32;7/333*

U.S. Cl. 430—506 **20 Claims**

1. A multilayered color photographic element comprising a support having coated thereon photographic silver halide emulsion layers said layers including at least three layers each having the same spectral sensitivity but having, respectively, the most, mid, and least light sensitivity wherein the most and mid sensitive layers are contiguous and the most sensitive layer is substantially free of image dye-forming coupler.

5,545,514

SILVER HALIDE LIGHT-SENSITIVE COLOR PHOTOGRAPHIC MATERIAL

Hiroshi Kita; Hirokazu Sato, and Koji Daifuku, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jul. 11, 1995, Ser. No. 500,822

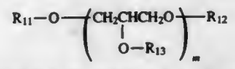
Claims priority, application Japan, Jul. 14, 1994, 6-162230

Int. Cl.[6] G03C *7/388*

U.S. Cl. 430—546 **5 Claims**

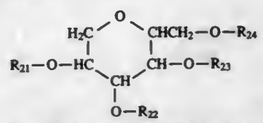
1. A silver halide color photographic light-sensitive material comprising a support and a silver halide emulsion layer provided on said support wherein said silver halide emulsion layer contains oleophilic fine particles dispersed therein which comprises a water-insoluble monohydric alcohol represented by the following Formula I, II or III and a color-forming coupler in a ratio of said water-insoluble monohydric alcohol to said color-forming coupler of 50% or more by weight;

Formula I



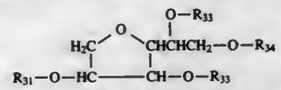
wherein m is an integer of 1 to 20; one of R_{11}, R_{12} and R_{13} in number of m is a hydrogen atom and other groups represented by R_{11}, R_{12} and R_{13} are each an acyl group; and the total number of carbon atoms contained in the acyl groups represented by R_{11}, R_{12} and R_{13} are not less than 8;

Formula II



wherein one of R_{21}, R_{22}, R_{23} and R_{24} is a hydrogen atom and other groups represented by R_{21}, R_{22}, R_{23} and R_{24} are each an acyl group and the total number of carbon atoms contained in the acyl groups represented by R_{21}, R_{22}, R_{23} and R_{24} is not less than 12;

Formula III



wherein one of R_{31}, R_{32}, R_{33} and R_{34} is a hydrogen atom and other groups represented by R_{31}, R_{32}, R_{33} and R_{34} are each an acyl group and the total number of carbon atoms contained in the acyl groups represented by R_{31}, R_{32}, R_{33} and R_{34} is not less than 12.

5,545,515

ACRYLONITRILE COMPOUNDS AS CO-DEVELOPERS FOR BLACK-AND-WHITE PHOTOTHERMOGRAPHIC AND THERMOGRAPHIC ELEMENTS

Thomas J. Murray, St. Paul, and Sharon M. Simpson, Lake Elmo, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 19, 1995, Ser. No. 529,982

Int. Cl.[6] G03L *1/498*

U.S. Cl. 430—617 **36 Claims**

1. A black-and-white photothermographic element comprising a support bearing at least one photosensitive, image-forming, black-and-white photothermographic emulsion layer comprising:

(a) a photosensitive silver halide;

(b) a non-photosensitive, reducible silver source;

(c) a reducing agent system for silver ion; and

(d) a binder,

wherein the reducing agent system comprises:

(i) at least one hindered phenol;

(ii) at least one acrylonitrile compound of the formula



wherein:

R represents a halogen atom, a hydroxy group, a thiohydrocarbyl group, a oxyhydrocarbyl group, or a metal salt of a hydroxy group; and

X represents an electron withdrawing group.

5,545,516

INACTIVATION OF EXTRACELLULAR ENVELOPED VIRUSES IN BLOOD AND BLOOD COMPONENTS BY PHENTHIAZIN-5-IUM DYES PLUS LIGHT

Stephen J. Wagner, Columbia, Md., assignor to The American National Red Cross, Washington, D.C.

Continuation-in-part of Ser. No. 964,116, Oct. 21, 1992, abandoned, which is a continuation-in-part of Ser. No. 517,664, May 1, 1990, abandoned. This application Feb. 18, 1994, Ser. No. 199,344

Int. Cl.[6] A01N *1/02;* **A61K** *35/14;35/16;35/18*

U.S. Cl. 435—2 **33 Claims**

1. A method for inactivating extracellular enveloped viruses which are present in a leukocyte-containing transfusible composition, comprising:

(a) leukodepleting said composition by a factor of at least 5 $\log_{10}$;

(b) adding an adequate amount of at least one phenothiazin-5-ium dye to said leukodepleted composition of step (a), to produce therein an effective concentration of said dye(s), wherein said concentration is acceptable for transfusion and wherein said concentration in conjunction with light is effective to inactivate extracellular enveloped viruses contained in said composition; and

(c) irradiating said phenothiazin-5-ium dye-containing composition of step (b) for an effective length of time, with light of effective intensity and wavelengths which are absorbed by said dye(s), whereby said irradiation in conjunction with said dye(s) inactivate extracellular enveloped viruses in said composition.

5,545,517

SELECTIVE METAL ION DETECTION USING A PHOTOLUMINESCENT INDICATOR BINDING TO A MACROMOLECULE-METAL ION COMPLEX

Richard B. Thompson, Baltimore, Md., and Eric R. Jones, Honolulu, Hi., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 15, 1994, Ser. No. 213,409

Int. Cl.[6] C12Q *1/00;* **G01N** *21/00*

U.S. Cl. 435—4 **6 Claims**

1. A method for detecting a selected metal ion species in an analyte medium, comprising the steps of:

disposing a carbonic anhydrase for selective complexation with said metal ion species in said analyte medium;

disposing a photoluminescent indicator species in said analyte medium, wherein said photoluminescent indicator species binds to a complex of said carbonic anhydrase and said metal ion wherein said photoluminescent indicator species exhibits a measurably different photoluminescent response bound to said complex compared to a photoluminescent response exhibited by said photoluminescent indicator species unbound to said complex;

exciting said photoluminescent indicator species with excitation radiation; and

monitoring the photoluminescence of said photoluminescent indicator species to detect said measurably different photoluminescent response.

5,545,518

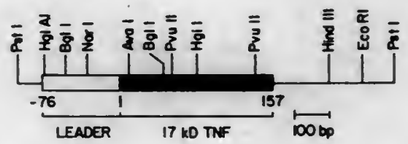
ASSAY FOR DETERMINIG TNF OR IL-1 CONVERTASE ACTIVITY

Michael Kriegler, San Francisco, and Danute E. Nitecki, Berkeley, both of Calif., assignors to Cetus Oncology Corporation, Emeryville, Calif.

Division of Ser. No. 53,558, Apr. 26, 1993, Pat. No. 5,422,425, which is a continuation of Ser. No. 562,720, Aug. 6, 1990, abandoned. This application Feb. 8, 1995, Ser. No. 385,434

Int. Cl.[6] C12Q *1/37;* **C07K** *7/02;14/81*

U.S. Cl. 435—4 **12 Claims**



1. A method for measuring TNF convertase activity in a liquid phase sample containing or suspected of containing such activity, said method comprising the steps of:

a) providing a Biotin labelled peptide substrate for said TNF convertase, said Biotin labelled peptide substrate being a member selected from the group consisting of:

Biotin-Pro-Leu-Ala-Gln-Ala-Val-Arg-Ser-Ser-Ser-Arg-Thr-Pro-Ser-Asp-Lys-Pro-Val-Ala-His-Val-Val-Ala-(beta-ala)$_3$-cys-gly (SEQ ID NO: 8);

Biotin-Arg-Thr-Pro-Ser-Asp-Lys-Pro-Val-Ala-His-Val-Val-Ala-(beta-ala)$_5$-cys-gly (SEQ ID NO: 9); and

Biotin-Pro-Leu-Ala-Gln-Ala-Val-Arg-Ser-Ser-Ser-Arg-Thr-Pro-(beta-ala)$_5$-cys-gly SEQ ID NO: 10);

said Biotin labelled peptide substrate having a terminus for binding to a solid phase and upon binding to said solid phase, forming a solid phase substrate, said biotin labelled peptide further having a cleavable site comprising a sequence of amino acid residues between the Biotin label and said terminus for binding, whereby when said solid phase substrate is cleaved by any TNF convertase in a liquid phase, a fragment of said solid phase substrate having said Biotin label bound thereto is released into said liquid phase;

b) contacting said solid phase substrate with a liquid phase and a sample containing or suspected of containing TNF convertase dissolved therein to form a liquid phase/solid phase reaction mixture;
c) allowing sufficient time for said TNF convertase in said liquid phase/solid phase reaction mixture to cleave said cleavable site of said solid phase substrate such that a Biotin labelled fragment of said solid phase substrate is released from said solid phase substrate into said liquid phase in proportion to the activity of TNF convertase in said sample; and
d) determining the activity of TNF convertase in said sample, said activity being directly proportional to the amount of Biotin released into said liquid phase or inversely proportional to the amount of Biotin remaining on said solid phase.

5,545,519

ELECTROLYTIC ANALYTICAL METHODS

Pankaj M. Vadgama; Mark F. Rosenberg, both of Manchester, and Malcolm N. Jones, Sale, all of, United Kingdom, assignors to Victoria University of Manchester, Manchester, England

Continuation of Ser. No. 30,113, Jun. 4, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 465,601
Claims priority, application United Kingdom, Sep. 13, 1990, 9020046
Int. Cl.[6] C12Q *1/00*; G01N *33/92*; C12N *9/00*
U.S. Cl. 435—4 **15 Claims**

1. Enzyme electrodes, having at least one active electrode component appropriate for the performance of an electrolytic measuring function, in association with an enzyme, wherein the enzyme is enclosed within liposomes and the liposomes, within which the enzyme is enclosed, are incorporated on or in a supporting carrier.

5,545,520

NUCLEIC ACID FRAGMENTS AND DIAGNOSTIC REAGENTS DERIVED FROM THE HHV6/SIE GENOME AND PROCEDURES FOR DIAGNOSING HHV6 INFECTIONS

Helene Collandre, Paris; Luc Montagnier, Le Plessis Robinson; Henri Agut, and Jean-Marie Bechet, both of Paris, all of, France, assignors to Institute Pasteur, and University Paris - VI, both of Paris, France

Continuation of Ser. No. 678,256, May 24, 1991, abandoned. This application Sep. 7, 1993, Ser. No. 161,339
Claims priority, application France, Aug. 18, 1989, 89 11016
Int. Cl.[6] C12Q *1/70*
U.S. Cl. 435—5 **9 Claims**

1. Oligonucleotide, characterized in that it consists of the following sequence, in which X=T or U, or its complementary sequence:

5'-GAXCCGACGCCXACAAACAC-3' SEQ ID NOS: 2–3.

5,545,521

METHOD FOR DETECTING BIOINDIVIDUALS BY USE OF NONNATURAL TYPE NUCLEIC ACID PROBE

Tadashi Okamoto, Yokohama; Yoshinori Tomida, Atsugi; Nobuko Yamamoto, Isehara, and Masahiro Kawaguchi, Atsugi, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 9, 1993, Ser. No. 163,725
Claims priority, application Japan, Dec. 11, 1992, 4-331862
Int. Cl.[6] C12Q *1/70;1/68*; C07H *21/04*; C12N *15/00*
U.S. Cl. 435—5 **13 Claims**

1. A method for detecting live target individuals which comprises a step of reacting a sample with a probe having a nonnatural type nucleic acid and a label substance linked with said nucleic acid, said nonnatural type nucleic acid containing a base sequence complementary to a base sequence of a target nucleic acid in the live target individuals to be detected and said probe being able to be incorporated into said live target individuals wherein said labeled probe is harmless to said live target individuals; and detecting said labeled probe incorporated into said live target individuals by the utilizations of said label substance of said probe when said live target individuals are present in said sample.

5,545,522

PROCESS FOR AMPLIFYING A TARGET POLYNUCLEOTIDE SEQUENCE USING A SINGLE PRIMER-PROMOTER COMPLEX

Russell N. Van Gelder, 2200 Divot Dr., Crystal Lake, Md. 63131; Mark E. Von Zastrow, 11570 Buena Vista Dr., Los Altos, Calif. 94022; Jack D. Barchas, 669 Mirada Ave., Stanford, Calif. 94305, and James H. Eberwine, 4436 Perkins Cir., Belcamp, Md. 21017

Continuation of Ser. No. 411,370, Sep. 22, 1989, abandoned. This application Oct. 5, 1992, Ser. No. 957,647
Int. Cl.[6] C12P *19/34*; C12Q *1/68*
U.S. Cl. 435—6 **14 Claims**

1. A process for amplifying at least one target nucleic acid sequence using a single species of primer complex, consisting essentially of:
(a) synthesizing a nucleic acid by hybridizing said single species of primer complex to the target sequence and extending the primer complex to form a first strand complementary to the target sequence and synthesizing a second strand complementary to the first strand, said second strand synthesis primed by a hairpin loop formed spontaneously at the 3' end of said first strand, wherein the primer complex comprises a primer complementary to the target sequence and a promoter region; and
(b) transcribing copies of RNA initiated from the promoter region of the primer complex, wherein said copies of RNA are complementary to the second strand.

5,545,523

METHODS OF DETECTING BOVINE HERPESVIRUS 1 (BHV-1) IN SEMEN BY NUCLEIC ACID AMPLIFICATION

Carl Batt, Groton; Martin Wiedmann, Ithaca, and Richard Brandon, Dryden, all of N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed May 28, 1993, Ser. No. 70,156
Int. Cl.[6] C12Q *1/68;1/70*; C12P *19/34*
U.S. Cl. 435—6 **8 Claims**



1. A method for detecting the presence or absence of BHV-1 in semen, wherein the method comprises the steps of:
(a) centrifuging the semen to remove cells, and harvesting the supernatant;

(b) lysing BHV-1 particles, if present in the supernatant, and extracting nucleic acid molecules, by contacting and incubating the supernatant with an ion exchange resin and a protease;
(c) inactivating the protease, such as by heating the mixture from step (b);
(d) contacting the nucleic acid molecules, if present, with oligonucleotides SEQ ID No:1 and SEQ ID No:2 under suitable conditions permitting hybridization of oligonucleotides SEQ ID No:1 and SEQ ID No:2 to the nucleic acid molecules by first denaturing the nucleic acid molecules at a temperature of from about 85° C. to about 95° C., and then annealing oligonucleotides SEQ ID No:1 and SEQ ID No:2 to the denatured nucleic acid molecules at a temperature of from about 60° C. to about 63° C.;
(e) enzymatically amplifying a specific region of nucleic acid molecules comprising target sequences of BHV-1 in a first stage of nucleic acid amplification using oligonucleotides SEQ ID No:1 and SEQ ID No:2 as primers;
(f) contacting amplified nucleic acid molecules, if present from the first stage of nucleic acid amplification, with oligonucleotides SEQ ID No:3 and SEQ ID No:4 under suitable conditions permitting hybridization of oligonucleotides SEQ ID No:3 and SEQ ID No:4 to the amplified nucleic acid molecules by first denaturing the nucleic acid molecules at a temperature of from about 85° C. to about 95° C., and then annealing oligonucleotides SEQ ID No:3 and SEQ ID No:4 to the denatured nucleic acid molecules at a temperature of from about 65° C. to about 70° C.;
(g) enzymatically amplifying a specific region of amplified nucleic acid molecules, if present, in a second stage of nucleic acid amplification using oligonucleotides SEQ ID No:3 and SEQ ID No:4 as primers;
(h) contacting from the second stage of amplification amplified nucleic acid molecules present with oligonucleotide SEQ ID No:5 as a probe under suitable conditions permitting hybridization of complementary single-stranded molecules; and
(i) detecting the presence of hybridized molecules so formed, whereby the presence of BHV-1 in the semen is detected with a sensitivity of at least 5×10^3 $TCID_{50}$ to 5×10^4 $TCID_{50}$ BHV-1 per 0.5 ml of semen.

5,545,524

COMPOSITIONS AND METHODS FOR CHROMOSOME REGION-SPECIFIC PROBES

Jeffrey M. Trent, and Paul S. Meltzer, both of Ann Arbor, Mich., assignors to The Regents of the University of Michigan, Ann Arbor, Mich.

Continuation-in-part of Ser. No. 821,954, Jan. 16, 1992, abandoned, which is a continuation-in-part of Ser. No. 802,364, Dec. 4, 1991, abandoned. This application Aug. 3, 1993, Ser. No. 101,600
Int. Cl.[6] C12Q *1/68*; C12P *19/34*
U.S. Cl. 435—6 **18 Claims**



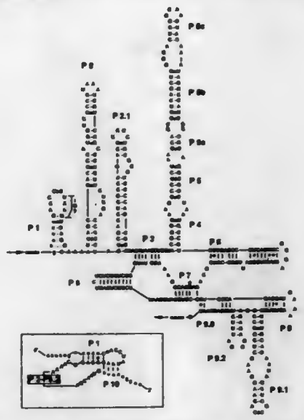
1. A method of generating a chromosome region-specific nucleic acid probe for a chromosomal region of interest comprising the steps of:
(a) microdissecting the chromosomal region of interest to provide a microdissected chromosome fragment;
(b) treating the microdissected chromosome fragment with topoisomerase I; and
(c) amplifying the treated microdissected chromosome fragment.

5,545,525

DETECTION OF CANDIDA ALBICANS

Serge Montplaisir, Lanorale; Stéphane Mercure, Laval, and Guy Lemay, Outremont, all of, Canada, assignors to Universite de Montreal, Montreal, Canada

Filed Mar. 7, 1994, Ser. No. 207,402
Int. Cl.[6] C07H *21/02;21/04*; C12P *15/34*; C12Q *1/68*
U.S. Cl. 435—6 **3 Claims**



1. A DNA probe for the detection of the presence of Candida strains in a biological sample, which consists of the following nucleic acid sequence:

CAACCTATAA GGGAGGCAAA AGTAGGGACG

CCATGGTTTC CAGAAATGGG 50

CCGCGGTGTT TTTGACCTGC TAGTCGATCT

GGCCAGACGT ATCTGTGGGT 100

GGCCAGCGGC GACATAACCT GGTACGGGGA

AGGCCTCGAA GCAGTGTTCA 150

CCTTGGGAGT GCGCAAGCAC AAAGAGGTGA

GTGGTGTATG GGGTTAATCC 200

CGTGGCGAGC CGTCAGGGCG CGAGTTCTGG

CAGTGGCCGT CGTAGAGCAC 250

GGAAAGGTAT GGGCTGGCTC TCTGAGTCGG

CTTAAGGTAC GTGCCGTCCC 300

ACAGCATGAA AAGTGTGCGG TGCAGAATAG

-continued

TTCCCACAGA ACGAAGCTGC 350

GCCGGAGAAA GCGATTTCTT GGAGCAATG

379

SEQ ID NO: 1,

or DNA molecules having homology thereto to specifically hybridize to the 25S rRNA gene of Candida detected with said probe.

5,545,526

METHOD FOR HLA TYPING

Lee Ann Baxter-Lowe, New Berlin, Wis., assignor to Blood Center Research Foundation, Inc., The, Milwaukee, Wis.

Continuation-in-part of Ser. No. 544,218, Jun. 27, 1990, abandoned. This application Mar. 1, 1993, Ser. No. 25,038

Int. Cl.[6] C12Q *1/68;* C07H *21/04*

U.S. Cl. 435—6 **11 Claims**

1. A method of HLA typing a sample for an unknown pair of alleles, which unknown pair is one of a first or second pair of alleles of a known basic HLA allele type, wherein the second pair of alleles contains a set of HLA polymorphisms which are the same as the first pair, the polymorphisms of the set being divided between each of the first and second pairs of alleles such that the polymorphisms of the set found in the first member of each pair are not found in the second member of each pair, and the polymorphisms of the set found in the second member of each pair are not found in the first member of each pair, but some of which polymorphisms are located on a different allele of the second pair compared to the first pair so that the second pair of alleles is different from the first pair, which method comprises:

selectively amplifying one of the unknown pair of alleles such that DNA of the other allele of the unknown pair is not amplified;

analyzing the amplified DNA to determine which polymorphisms of the set common to the first and second pairs are present; and

determining whether the first or second pair of alleles is present in the sample.

5,545,527

METHOD FOR TESTING FOR MUTATIONS IN DNA FROM A PATIENT SAMPLE

John K. Stevens, Mississauga, and James M. Dunn, Scarborough, both of, Canada, assignors to Visible Genetics Inc., Toronto, Canada

Filed Jul. 8, 1994, Ser. No. 271,946

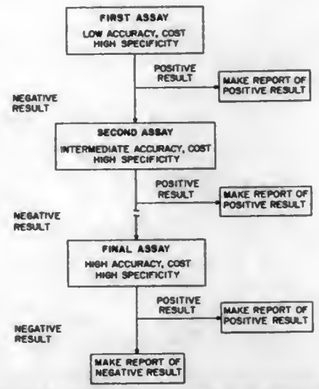
Int. Cl.[6] C12Q *1/68;1/70;* C12P *19/34;* C07H *21/04*

U.S. Cl. 435—6 **44 Claims**

1. A method for testing a plurality of patients for a disease-associated mutation in a gene of interest comprising the steps of:

(a) performing an immunoassay on samples obtained from each of the plurality of patients by combining a portion of each sample with an antibody which forms an immunological reaction product by binding to a protein gene product of the gene of interest and monitoring for formation of the immunological reaction product, said antibody being selected to provide fewer than 1% false results indicating the presence of a mutation when combined with the protein gene product of the gene of interest, whereby the formation of an immunological product is indicative of the presence or absence of a mutation in the gene of interest;

(b) performing a probe-based assay on each patient sample for which the results of the immunoassay did not indicate the presence of the mutation, but not on those samples for which the immunoassay indicated the presence of the mutation by combining a second portion of each patient sample with a nucleic acid probe which specifically and selectively hybridizes with the gene of interest in either its mutated or wild-type form, whereby the formation of a duplex nucleic acid hybrid containing the nucleic acid probe is indicative of the presence or absence, respectively, of the mutation in the gene of interest; and



(c) determining the sequence of DNA in at least one selected region of the gene of interest on each patient sample for which the results of the probe-based assay did not indicate the presence of the mutation and comparing the sequence determined with known sequences of normal or mutant forms of the gene of interest.

5,545,528

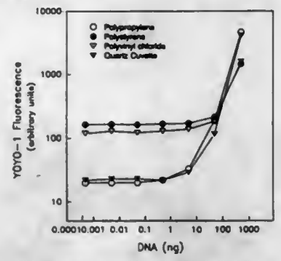
RAPID SCREENING METHOD OF GENE AMPLIFICATION PRODUCTS IN POLYPROPYLENE PLATES

Masato Mitsuhashi, and Mieko Ogura, both of Irvine, Calif., assignors to Hitachi Chemical Research Center, Irvine, Calif.

Continuation of Ser. No. 48,980, Apr. 15, 1993, abandoned. This application Jan. 26, 1995, Ser. No. 379,077

Int. Cl.[6] C12Q *1/68;* C12P *19/34*

U.S. Cl. 435—6 **26 Claims**



1. A method for rapid screening and analysis of positive gene amplification samples, comprising:

providing a polypropylene reaction vessel having a plurality of wells;

adding a sample containing a nucleic acid having a sequence to be amplified to one or more of said wells;

adding reactants for amplification of said sequence to one or more of said wells containing said nucleic acid;

amplifying said sequence in said sample in said well;

adding a dye to the sample in said well, said dye selectively and quantitatively complexing with the amplified nucleic acid sequence to form a nucleic acid/dye complex, said dye in said complex emitting light energy in response to excitation thereof by light in the visible spectrum, said dye having a DNA partition coefficient in a 10% ethanol/water solution of greater than 1×10^7;

optically exciting said sample with said light in the visible spectrum;

detecting and measuring light energy emitted from said dye in said complex without transferring said sample from said well in order to determine the presence of amplified nucleic acid sequence in the well.

5,545,529

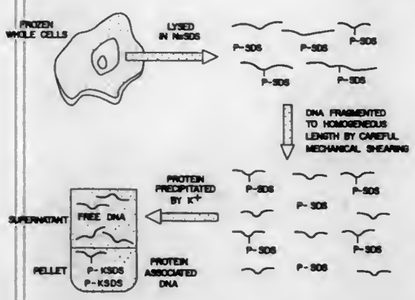
ASSAY FOR DETECTING COVALENT DNA-PROTEIN COMPLEXES

Max Costa, Ramsey, N.J., and Anatoly V. Zhitkovich, Greenwood, N.Y., assignors to New York University, New York, N.Y.

Continuation of Ser. No. 8,794, Jan. 27, 1993, abandoned. This application Mar. 27, 1995, Ser. No. 410,389

Int. Cl.[6] C12Q *1/48;1/68;1/533*

U.S. Cl. 435—6 **26 Claims**



1. A method for preparing a sample of cells, nuclei or mitochondria for the detection or quantitation of covalently bound DNA-protein complexes contained therein, comprising:

(a) preparing a lysate of the cells, nuclei or mitochondria of said sample in a lysing solution containing at least about 0.5% (v/v) sodium dodecyl sulfate such that said lysate contains DNA at a concentration between about 0.5 μg/ml and 40 μg/ml;

(b) adding to said lysate, before or after step (c), below, an effective volume of a precipitating solution comprising about 200 mM KCl in about 20 mM Tris-HCl, pH 7.5;

(c) subjecting the mixture to a shearing force which shears said DNA to fragments of homogeneous size;

(d) forming a sodium dodecyl sulfate-potassium precipitate by cooling the samples to about 4° C. for about 5 minutes, and collecting the precipitate;

(e) dispersing said precipitate in a solution of about 100 mM KCl and about 20 mM Tris-HCl, at a pH of about 7.5;

(f) heating said dispersed precipitate to about 65° C. for about 10 minutes followed by cooling to about 4° C. for at least about 5 minutes;

(g) washing said precipitate at least once more in the solution of step (e); and

(h) resuspending said precipitate in a solution for detecting or quantitating DNA, thereby preparing said sample.

5,545,530

PROCESS FOR MEASURING ANALYTE IN SAMPLE

Shinji Satomura, Osaka; Kenji Nakamura, Ibaraki; Tokuji Ikenaka, Sakai, and Kaoru Omichi, Toyonaka, all of, Japan, assignors to Wako Pure Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 860,616, Mar. 30, 1992, abandoned, which is a continuation of Ser. No. 342,044, Apr. 24, 1989, abandoned. This application May 17, 1995, Ser. No. 442,986

Claims priority, application Japan, Apr. 25, 1988, 63-101798

Int. Cl.[6] G01N *33/53;33/537*

U.S. Cl. 435—6 **19 Claims**

1. A process for measuring the amount of analyte in a sample device from a living body which comprises:

mixing the sample with an affinity substance capable of binding the analyte, wherein the affinity substance is present at a concentration 5 or more times as high the concentration of the analyte corresponding to the upper limit of measurement of the analyte, and wherein the affinity substance is either labeled or unlabeled;

reacting the analyte with the affinity substance to form an analyte-affinity substance complex;

separating the analyte-affinity substance complex from free affinity substance using high pressure liquid chromatography;

directly measuring the amount of affinity substance in a fraction eluted during the high pressure liquid chromatography; and

determining the amount of the analyte based upon the amount of affinity substance measured using a linear calibration curve, wherein the linear calibration curve is generated by associating known amounts of analyte with peak area values.

5,545,531

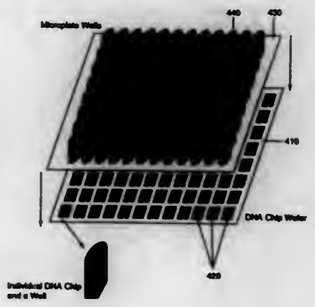
METHODS FOR MAKING A DEVICE FOR CONCURRENTLY PROCESSING MULTIPLE BIOLOGICAL CHIP ASSAYS

Richard P. Rava, San Jose; Stephen P. A. Fodor, Palo Alto, and Mark Trulson, San Jose, all of Calif., assignors to Affymax Technologies N.V., Palo Alto, Calif.

Filed Jun. 7, 1995, Ser. No. 476,850

Int. Cl.[6] C12Q *1/68*

U.S. Cl. 435—6 **4 Claims**



1. A method for making a biological chip plate comprising the steps of:

(a) providing a body comprising a plurality of wells defining spaces;

(b) providing a wafer comprising on its surface a plurality of probe arrays, each probe array comprising a collection of probes, at least two of which are different, arranged in a

spacially defined and physically addressable manner;
(c) attaching the wafer to the body so that the probe arrays are exposed to the spaces of the wells.

5,545,532

HUMAN CARCINOMA ANTIGEN (HCA), HCA ANTIBODIES, HCA IMMUNOASSAYS AND METHODS OF IMAGING

John F. Codington, W. Newton, Mass., and Svein Haavik, Drobak, Norway, assignors to Epigen, Inc., Wellesley, Mass.

Continuation-in-part of Ser. No. 14,450, Feb. 5, 1993, abandoned. This application Feb. 7, 1994, Ser. No. 192,840

Int. Cl.[6] G01N *33/53;33/574*

U.S. Cl. 435—7.23 **21 Claims**

6. An assay to determine the presence of human carcinoma antigen (HCA) in a biological sample, said assay comprising the following steps:
providing said sample;
reacting said sample with an antibody that binds to HCA for a time and under conditions allowing the formation of an immunocomplex between said antibody and HCA; and
determining formation of said immunocomplex by a sandwich immunoassay procedure in which said antibody that binds HCA is a first antibody and said immunocomplex is determined by reaction with a second antibody that is labeled and that binds to HCA.

5,545,533

MONOCLONAL ANTIBODIES AGAINST C-KIT AND METHOD OF DETECTING A MALIGNANCY USING C-KIT SPECIFIC ANTIBODIES

Ilse Bartke, Tutzing; Gunter Kostka, Munich; Kurt Naujoks, Penzberg, and Axel Ullrich, Munich, all of, Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Continuation of Ser. No. 142,330, Nov. 26, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 469,778

Claims priority, application Germany, May 25, 1991, 41 17 090.3; Feb. 20, 1992, 42 05 148.7

Int. Cl.[6] G01N *33/53;* **C07K** *16/32;* **C12N** *5/20*

U.S. Cl. 435—723 **4 Claims**

1. A hybridoma cell line which produces a monoclonal antibody against the human c-kit receptor wherein the cell line is DSM ACC 2007.

5,545,534

METHOD FOR SCREENING FOR OSTEOPOROSIS

Mikio Akita, Kawagoe; Koichi Enomoto, Sayama; Shigeaki Tanaka, Tsurugashima, and Yoko Otawara-Hamamoto, Kamifukuoka, all of, Japan, assignors to Hoechst Japan Limited, Tokyo, Japan

Filed Sep. 19, 1994, Ser. No. 305,996

Claims priority, application Japan, Sep. 21, 1993, 5-234648

Int. Cl.[6] G01N *33/53;33/543*

U.S. Cl. 435—4.92 **4 Claims**

1. A method for screening for osteoporosis which comprises the steps of:
(1) bringing a body fluid sample collected from a living body into contact with a diagnostic agent which comprises a mammalian bone sialoprotein; and
(2) detecting the amount of antibody which specifically binds to said diagnostic agent.

5,545,535

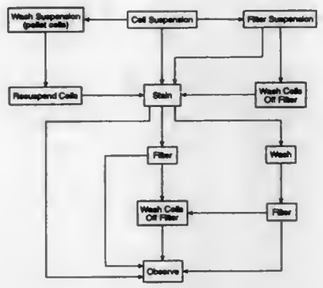
FLUORESCENT ASSAY FOR BACTERIAL GRAM REACTION

Bruce L. Roth, Corvallis; Paul J. Millard; Stephen T. Yue, both of Eugene; K. Sam Wells, Veneta, and Richard P. Haugland, Eugene, all of Oreg., assignors to Molecular Probes, Inc., Eugene, Oreg.

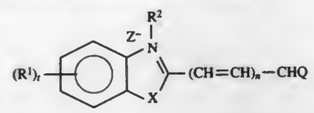
Continuation-in-part of Ser. No. 90,890, Jul. 12, 1993, Pat. No. 5,436,134, which is a continuation-in-part of Ser. No. 47,683, Apr. 13, 1993, abandoned. This application Nov. 1, 1993, Ser. No. 146,328

Int. Cl.[6] C12Q *1/04;1/68;* **G01N** *33/00;* **C07H** *1/00*

U.S. Cl. 435—34 **21 Claims**

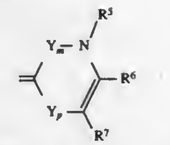


1. A method of analyzing bacteria for Gram reaction, comprising:
a) combining a bacteria sample, simultaneously or sequentially, with an aqueous dye solution comprising a fluorescent dye of formula I, in combination with an aqueous dye solution comprising a fluorescent dye of formula II or an aqueous dye solution comprising a fluorescent dye IV or both, where each dye is present in solution in an amount sufficient to give a detectable fluorescent response and where each dye present in solution is selected such that its detectable fluorescent response, after staining and illumination of the sample, is different from the fluorescent response of any other dye being combined;
wherein said dye of formula I has the formula

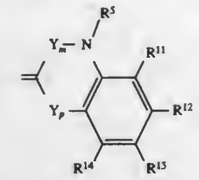


wherein
each R^1 is independently H; or an alkyl group having from 1–6 carbons; or a trifluoromethyl; or a halogen; or —OR^8, —SR^8 or —(NR^8R^9) where R^8 and R^9, which can be the same or different, are independently H; or alkyl groups having 1–6 carbons; or 1–2 alicyclic, heteroalicyclic, aromatic or heteroaromatic rings, containing 1–4 heteroatoms, wherein the hetero atoms are O, N or S: or R^8 and R^9 taken in combination are —$(CH_2)_2$—L—$(CH_2)_2$— where L=a single bond, —O—, —CH_2—, or —NR^{10}— where R^{10} is H or an alkyl group having 1–6 carbons; and t=1–4;
R^2 is an alkyl group having 1–6 carbons;
X is O, S, Se or NR^{15}, where R^{15} is H or an alkyl group having 1–6 carbons; or X is $CR^{16}R^{17}$ where R^{16} and R^{17}, which may be the same or different, are independently alkyl groups having 1–6 carbons, or R^{16} and R^{17} taken in combination complete a five or six membered saturated ring:.
n=0, 1 or 2;
Z^- is a biologically compatible counterion;

O has the formula Q1 or Q2

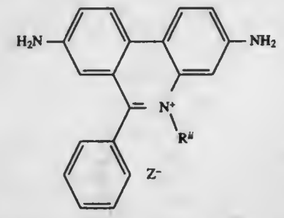


(Q1)



(Q2)

wherein
Y is —CR^3=CR^4—;
p and m=0 or 1, such that p+m=1;
R^5 is an alkyl, alkenyl, polyalkenyl, alkynyl or polyalkynyl group having 1–6 carbons; or R^5 is an OMEGA;
R^3, R^4, R^6 and R^7, which may be the same or different, are independently H; or an alkyl, alkenyl, polyalkenyl, alkynyl or polyalkynyl group having 1–6 carbons; or a halogen; or —OH, —OR^8, —SR^8, —(NR^8R^9); or —OSO_2R^{19} where R^{19} is alkyl having 1–6 carbons, or perfluoroalkyl having 1–6 carbons, or aryl; or an OMEGA;
or R^6 and R^7, taken in combination are —$(CH_2)_v$— where v=3 or 4, or R^6 and R^7 form a fused aromatic ring according to formula Q2;
R^{11}, R^{12}, R^{13}, and R^{14}, which may be the same or different, are independently H; or an alkyl, alkenyl, polyalkenyl, alkynyl or polyalkynyl group having 1–6 carbons; or a halogen; or an OMEGA; or —OH, —OR^8, —SR^8, or —(NR^8R^9);
OMEGA is a saturated or unsaturated, substituted or unsubstituted, cyclic substituent that has a total of 2–16 ring carbon atoms in 1–2 alicyclic, beteroalicyclic, aromatic, or heteroaromatic rings, containing 1–4 heteroatoms wherein the heteroatoms are O, N or S, that is unsubstituted or optionally substituted one or more times, independently, by halogen, alkyl, perfluoroalkyl, alkoxy or carboxyalkyl, having 1–6 carbons, and that is attached as R^3, R^4, R^5, R^6, R^7, R^{11}, R^{12}, R^{13}, or R^{14} by a single O bond;
such that at least one of R^3, R^4, R^5, R^6, R^7, R^{11}, R^{12}, R^{13}, and R^{14} is an OMEGA, and, where more than one of R^3, R^4, R^5, R^6, R^7, R^{11}, R^{12}, R^{13}, and R^{14} is an OMEGA, each OMEGA is optionally the same or different;
said dye of formula II has the formula



wherein $R^{\#}$ is a C_4–C_8 alkyl; and Z^- is a biologically compatible counterion; and
said dye IV is a fluorescent reagent that preferentially binds to an exterior component of Gram-positive bacterium;
b) allowing sufficient time for each dye in solution to combine with one or more bacterium in the sample to give a dyed bacteria mixture;
c) illuminating the dyed bacteria mixture at a suitable absorption wavelength that results in one or more illuminated bacterium;
d) observing the illuminated bacterium with means for detecting the fluorescent response resulting from illumination; and
e) analyzing the fluorescent response of said illuminated bacterium, wherein the fluorescent dye of formula I stains intracellular nucleic acids for all bacteria in the sample;
the fluorescent dye of formula II stains intracellular nucleic acids for all Gram positive bacteria in the sample; and
the fluorescent dye IV stains the external surface of all Gram positive bacteria in the sample.

5,545,536

COLONY-STIMULATING FACTOR DERIVATIVES

Kenneth Kaushansky, Bothell, and Frederick S. Hagen, Seattle, both of Wash., assignors to University of Washington, and ZymoGenetics, Inc., both of Seattle, Wash.

Continuation-in-part of Ser. No. 8,698, Jan. 29, 1987, abandoned. This application Apr. 27, 1988, Ser. No. 186,832

Int. Cl.[6] C12P *21/02*

U.S. Cl. 435—69.1 **6 Claims**

1. A method for producing a human GM-CSF protein having higher specific activity than native human GM-CSF, comprising:
introducing into a eucaryotic host cell an expression unit comprising a promoter followed downstream by a DNA sequence encoding a human GM-CSF protein lacking N-linked glycosylation but having O-linked glycosylation, said protein having higher specific activity than native human GM-CSF;
growing said eucaryotic host cell in an appropriate medium; and
isolating the protein product encoded by said DNA sequence and produced by said eucaryotic host cell.

5,545,537

METHOD OF MAKING CYSTEINE DEPLETED IL-6 MUTEINS

Susan M. Skelly, Dunellen, N.J.; Charles T. Tackney, Brooklyn, N.Y.; John N. Snouwaert, Carrboro, and Dana M. Fowlkes, Chapel Hill, both of N.C., assignors to The Trustees of Princeton University, Princeton, N.J.

Division of Ser. No. 907,710, Jul. 2, 1992, Pat. No. 5,359,034, which is a continuation-in-part of Ser. No. 724,698, Jul. 2, 1991, abandoned. This application Mar. 10, 1994, Ser. No. 209,182

Int. Cl.[6] C12N *15/24;* **C07K** *14/54*

U.S. Cl. 435—69.52 **52 Claims**

1. A method of converting a nucleic acid molecule encoding native, full length IL-6 into a nucleic acid molecule encoding a mutein with activity at least comparable to that of native IL-6 comprising the step of replacing the codon for the cysteine residues at positions, or at positions corresponding to positions, 45 and 51 of native human IL-6 with codons for other amino acid residues and retaining the codons for the cysteine residues at positions, or at positions corresponding to positions, 74 and 84.

5,545,538

METHOD OF PRODUCING VITAMIN B12 USING RHIZOBIUM COBALAMINOGENUM FERM BP-4429

Satoru Asahi, Takatsuki; Takahiko Yano, Ikeda, and Muneharu Doi, Takarazuka, all of, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Oct. 5, 1994, Ser. No. 318,555

Claims priority, application Japan, Oct. 6, 1993, 5-250603

Int. Cl.[6] C12N *1/00;1/20;* **C12P** *1/04;19/42*

U.S. Cl. 435—86 **5 Claims**

1. A method of producing vitamin B_{12} which comprises cultivating a biologically pure culture of a microorganism belonging to *Rhizobium cobalaminogenum* FERM BP-4429 which is capable of producing vitamin B_{12} in a culture medium and recovering the produced vitamin B_{12} from a culture broth.

5,545,539
METHOD FOR NUCLEOTIDE SEQUENCE AMPLIFICATION

Glenn A. Miller, Hopkinton, Mass., assignor to Genzyme Corporation, Cambridge, Mass.

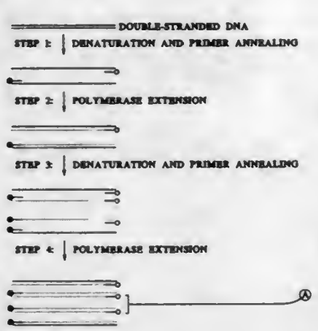
Filed Oct. 18, 1994, Ser. No. 326,432
Int. Cl.[6] C12P *19/34*; C07H *21/00*
U.S. Cl. 435—91.2 **6 Claims**

1. In the procedure for amplifying a target nucleotide sequence containing trinucleotide repeats, the improvement comprising adding an effective amount of a trimethylglycine to the reaction mixture of a Taq polymerase chain reaction procedure wherein fewer amplification products which do not correspond to the target nucleotide sequence are produced than would be produced in the absence of trimethylglycine.

5,545,540
ISOTHERMAL, MAGNETIC PARTICLE-MEDIATED ACID AMPLIFICATION

Alec Mian, Cambridge, Mass., assignor to Gamera Bioscience Corporation, Cambridge, Mass.

Continuation of Ser. No. 74,345, Jun. 9, 1993, abandoned. This application Jan. 19, 1995, Ser. No. 375,226
Int. Cl.[6] C12P *19/34*; C12Q *1/68*
U.S. Cl. 435—91.2 **15 Claims**



1. A method of amplifying a specific single-stranded target nucleic acid, the method comprising the steps of:

(a) incorporating into a nucleic acid strand complementary to the target nucleic acid a solid phase primer to create a solid phase strand bound to the target nucleic acid;

(b) separating the solid phase strand and the target nucleic acid;

(c) incorporating into a nueleic acid strand complementary to the solid phase strand a magnetic primer to yield a duplex having one solid phase strand and one magnetic strand;

(d) separating the solid phase strand from the magnetic strand by applying an electromagnetic field, wherein application of the electromagnetic field provides a motive force on the magnetic strand of sufficient strength to physically separate the two strands, resulting in dissociation of the duplex;

(e) allowing magnetic primers complementary to the solid phase strand to anneal to the solid phase strand and allowing solid phase primers complementary to the magnetic strand to anneal to the magnetic strand;

(f) extending the annealed primers with a suitable DNA polymerase; and

(g) repeating steps (d) through (f) as many times as necessary to obtain a desired quantity of amplified DNA.

5,545,541
STABILIZATION OF UNSTABLY INHERITED REPLICONS

Søren Molin, Holte; Kenn Ax øGerdes, Virum; Poul B. Rasmussen, and Poul K. Andersson, both of Copenhagen, all of, Denmark, assignors to Benzon Pharma A/S, Hvidovre, Denmark

Continuation of Ser. No. 29,760, Feb. 13, 1987, abandoned. This application Sep. 13, 1989, Ser. No. 406,880
Claims priority, application Denmark, Jun. 18, 1985, 2756/85
Int. Cl.[6] C12N *15/68;15/69;15/74*
U.S. Cl. 435—172.3 **14 Claims**

1. A living bacterial cell of a gram-negative bacterial species other than *E. coli*, said cell harbouring a recombinant replicon capable of replicating in said cell which comprises:

(a) a first mRNA-encoding DNA sequence which comprises a peptide coding sequence which has essentially the same sequence and function as the peptide coding sequence of the R1 par hok gene as set forth in FIG. 3 or the relB-orf3 gene of the *E. coli* operon as set forth in FIG. 7, in any case operably linked to a first promoter functional in said cell so as to control transcription of a first RNA molecule which codes for a first peptide product capable of killing the cell or its progeny; and

(b) a second mRNA-encoding DNA sequence which has essentially the same sequence and function as the coding sequence of the R1 parB sok gene as set forth in FIG. 3, operably linked to a second promoter functional in said cell so as to control transcription of a second RNA molecule which inhibits the translation of the first mRNA molecule in cells harbouring the replicon,

whereby the inhibiting RNA molecule decays and the inhibiting molecule is no longer expressed when the replicon is lost from the cell, whereby translation of the killing product present in the new replicon-free cell is no longer suppressed by the inhibiting molecule, resulting in cell death,

wherein at least one of said first and second DNA sequences is operably linked to a promoter with which it is not natively associated or joined directly to flanking DNA with which it is not natively associated.

5,545,542
WB2663 SUBSTANCES AND METHOD FOR THEIR PRODUCTION

Hidenori Nakajima, Tsukuba; Yasuhiro Hori, Tokyo; Toshio Goto, Kobe; Shigehiro Takase, Ishioka, all of, Japan; Koen Verhaeghe, Antwerpen, Belgium; Hiroshi Terano, Tuchiura, and Masakuni Okuhara, Tsukuba, both of, Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation of Ser. No. 150,207, Mar. 31, 1994, abandoned. This application Mar. 31, 1995, Ser. No. 415,160
Claims priority, application Japan, Jun. 14, 1991, 169104
Int. Cl.[6] C12P *13/00*
U.S. Cl. 435—128 **4 Claims**

1. A method for producing a WB2663 compound comprising: culturing Pseudomonas sp. No. 2663, FERM BP-3421, or a mutant thereof capable of producing a WB2663 compound in a medium containing assimilable sources of carbon and nitrogen and collecting a WB2663 compound having the formula $C_{27}H_{42}ClNO_8$, $C_{27}H_{41}NO_8$ or $C27H_{41}NO_9$.

5,545,543
PROCESS FOR THE CONTINUOUS PRODUCTION OF ETHANOL FROM CEREALS

Francesco Zinnamosca, and Massimo Berruti, both of Rome, Italy, assignors to Technipetrol S.p.A., Rome, Italy

Continuation of Ser. No. 881,307, May 7, 1992, abandoned, which is a continuation of Ser. No. 353,641, Apr. 11, 1989, abandoned. This application Feb. 3, 1995, Ser. No. 384,372
Claims priority, application Italy, Aug. 12, 1987, 48298A/87
Int. Cl.[6] C12C *1/00*; C12P *7/06;7/14;7/08*
U.S. Cl. 435—162 **18 Claims**

1. A method of producing ethyl alcohol comprising the steps of:

heating a slurry of water and milled cereals to a temperature of between approximately 50° C. and 60° C.;

adding a salt to the slurry and cooking the slurry of water and milled cereals at a boiling temperature of between approximately 110° C. and 120° C.;

stirring the cooked slurry for a period of time to allow the cooked slurry to cool to a temperature of between approximately 80° C. and 95° C.;

acidifying the cooked slurry to create a slurry of liquefied and acidified product containing non-fermentable dextrines;

supplying said slurry at a temperature of between approximately 70° C. and approximately 85° C. to an inlet to a stationary screen having a mesh size of between 150 and 300 microns;

screening said slurry with the stationary screen to obtain an overscreen phase and a filtered limpid phase;

vacuum filtering and mechanically squeezing the overscreen phase to obtain a filtration panel having approximately 40% to solid content and a turbid filtrate;

mixing the turbid filtrate with the slurry of liquefied and acidified product to obtain a mixed slurry having a temperature of between approximately 70° C. and 85° C. and then returning the mixed slurry to the inlet to the stationary screen;

supplying the limpid phase to a saccharification stage;

supplying an output from the saccharification stage to a fermentation stage containing yeast to obtain a fermentation product containing ethyl alcohol;

centrifuging the fermentation product containing ethyl alcohol to separate a limpid ethyl alcohol solution from yeast, supplying the yeast to an acidifying vessel, and then returning the resulting acidified yeast to the fermentation stage; and,

supplying the limpid ethyl alcohol solution to a distillation stage to obtain ethyl alcohol.

5,545,544
PROCESS FOR TREATMENT OF WASTE STREAM USING *SCYTINOSTROMA GALACTINUM* FUNGUS ATCC 20966

Robert A. Blanchette, Shoreview, Minn.; Theresa S. Brush, Lexington, Mass.; Roberta L. Farrell, Danvers, Mass.; Keith A. Krisa, Somerville, Mass., and Chittra Mishra, Lexington, Mass., assignors to Sandoz Ltd., Basel, Switzerland, and The Regents of the Univ. of Minnesota, Minneapolis, Minn.

Division of Ser. No. 330,874, Oct. 28, 1994, which is a continuation of Ser. No. 198,459, Feb. 18, 1994, Pat. No. 5,427,945, which is a continuation of Ser. No. 276,081, Nov. 23, 1988, abandoned. This application Jun. 6, 1995, Ser. No. 471,126
Int. Cl.[6] C12N *1//14*; C12P *1/02*; D12C *1/00;3/00*
U.S. Cl. 435—171 **8 Claims**

1. A process of treating an aqueous waste stream containing a modified lignin component comprising contacting the waste stream with a biologically pure culture of *Scytinostroma galactinum* fungus strain ATCC 20966 or mutant thereof possessing all of the identifying characteristics of strain ATCC 20966, for a time sufficient to degrade the modified lignin component in the aqueous waste stream.

5,545,545
LYSINE-INSENSITIVE MAIZE DIHYDRODIPICOLINIC ACID SYNTHASE

Burle G. Gengenbach; David A. Somers, both of St. Paul; Douglas C. Bittel, Cannon Falls; Jonathan M. Shaver, St. Paul, all of Minn., and Juantia M. Sellner, deceased, late of Earlville, Iowa, assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Filed Apr. 27, 1993, Ser. No. 53,867
Int. Cl.[6] C12N *15/29;15/82*; C07K *14/415*; A01H *5/00*
U.S. Cl. 435—172.3 **27 Claims**

1. A method of increasing the level of free L-lysine in a plant comprising:

(a) introducing a recombinant DNA sequence into the cells of a plant tissue source; wherein said recombinant DNA sequence comprises a first DNA sequence encoding an altered mature *Zea mays* dihydrodipicolinic acid synthase which is substantially resistant to feedback inhibition by endogenously produced free L-lysine, wherein the alteration is at least one amino acid change in amino acid residues 100 to 125 of a mature dihydrodipicolinic acid synthase operably linked to a second DNA sequence attached to the 5' -terminus of the first DNA sequence wherein said second DNA sequence encodes a chloroplast transit sequence that localizes the altered mature dihydrodipicolinic acid synthase in the chloroplasts of said cells and to a promoter functional in a plant cell; and

(b) regenerating plants from said cells, wherein said recombinant DNA sequence is expressed in the cells of the plant.

5,545,546
POLLEN-SPECIFIC PROMOTER FROM MAIZE

Rebecca L. Allen, and David M. Lonsdale, both of Norfolk, United Kingdom, assignors to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Continuation of Ser. No. 149,695, Nov. 9, 1993, Pat. No. 5,412,085, which is a continuation of Ser. No. 911,532, Jul. 9, 1992, abandoned. This application Jan. 24, 1995, Ser. No. 377,228
Int. Cl.[6] C12N *15/00;5/14*; A01H *1/04*
U.S. Cl. 435—172.3 **8 Claims**

1. A method of producing a transformed plant that expresses an exogenous gene in a pollen-specific manner comprising the step of:

(a) constructing a transfer vector comprising a pollen-specific promoter and an exogenous gene, wherein said pollen-specific promoter comprises a nucleotide sequence which is selected from the group consisting of SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6, SEQ ID NO: 7 and SEQ ID NO: 8, and wherein said pollen-specific promoter controls the expression of said exogenous gene.

5,545,547
ENZYMES AS AGRICULTURAL CHEMICAL ADJUVANTS

Pappachan Kolattukudy, 2301 Hoxton Ct., Columbus, Ohio 43220, and Ayrookaran J. Poulose, 2540 Carmel Dr., San Bruno, Calif. 94066

Continuation of Ser. No. 589,524, Sep. 28, 1990, abandoned, which is a division of Ser. No. 411,084, Sep. 22, 1989, abandoned, which is a continuation of Ser. No. 297,224, Jan. 13, 1989, abandoned, which is a continuation of Ser. No. 112,108, Oct. 19, 1987, abandoned, which is a continuation-in-part of Ser. No. 932,958, Nov. 19, 1986, abandoned. This application Apr. 10, 1992, Ser. No. 865,760
Int. Cl.[6] C12N *1/00*; D21C *1/00*; A61K *38/43;38/47*
U.S. Cl. 435—183 **10 Claims**

1. A composition comprising a herbicide which is not inhibitory of enzyme action and a cutinase enzyme capable of degrading at least a portion of the plant cell polymer of a plant.

5,545,548

THERMALLY STABLE CYTOSINE DEAMINASE FROM SACCHAROMYCES

Peter D. Senter, Seattle; Peter C. D. Su; Hans Marquardt, both of Mercer Island; Martha S. Hayden, and Peter Linsley, both of Seattle, all of Wash., assignors to Oncogen, Seattle, Wash.

Division of Ser. No. 531,646, Jun. 1, 1990, Pat. No. 5,338,678, which is a continuation-in-part of Ser. No. 365,020, Jun. 9, 1989, abandoned. This application Jun. 20, 1994, Ser. No. 262,238

Int. Cl.[6] C12N *9/78*

U.S. Cl. 435—227 4 Claims

1. A purified, thermally stable, *Saccharomyces cerevisiae* yeast cytosine deaminase, wherein said cytosine deaminase remains at least 50% active in the free, nonimmobilized state for more than 12 hours at 37° C., as determined by monitoring the converseion of 5-fluorocytosine to 5-fluorouracil in the presence of said cytosine deaminase.

5,545,549

DNA ENCODING A HUMAN NEUROPEPTIDE Y/PEPTIDE YY (Y2) RECEPTOR AND USES THEREOF

Christophe Gerald, Ridgewood; Mary W. Walker, Elmwood Park; Theresa Branchek, Teaneck, all of N.J., and Richard L. Weinshank, New York, N.Y., assignors to Synaptic Pharmaceutical Corporation, Paramus, N.J.

Filed Feb. 3, 1994, Ser. No. 192,288

Int. Cl.[6] C07H *21/04;* C12N *5/10;15/12;15/63*

U.S. Cl. 435—240.2 16 Claims

1. An isolated nucleic acid molecule encoding a human Y2 receptor, wherein the human Y2 receptor has the amino acid sequence shown in FIG. 2 (Seq. I.D. No. 2).

5,545,550

HUMAN VIRUS ASSOCIATED WITH CHRONIC FATIGUE IMMUNE DEFICIENCY SYNDROME AND ASSAY THEREFORE

Sidney E. Grossberg; Vladimir M. Kushnaryov, both of Milwaukee; L. William Cashdollar, Brookfield; Donald R. Carrigan, Wauwatosa, and Konstance K. Knox, East Troy, all of Wis., assignors to Medical College of Wisconsin, Inc., Milwaukee, Wis.

Continuation of Ser. No. 891,452, May 28, 1992, abandoned. This application May 27, 1994, Ser. No. 250,314

Int. Cl.[6] C12N *5/08;5/10;7/00*

U.S. Cl. 435—240.2 2 Claims

1. The isolated cell line ATCC No. CRL10991 which produces an NMA virus wherein the NMA virus is between 80 nanometers and 85 nanometers in size.

5,545,551

CLONING AND EXPRESSION OF PUR PROTEIN

Edward M. Johnson, New York, and Andrew D. Bergmann, Astoria, both of N.Y., assignors to Mt. Sinai School of Medicine of the City University of New York, New York, N.Y.

Continuation-in-part of Ser. No. 938,189, Aug. 28, 1992, abandoned. This application Feb. 2, 1993, Ser. No. 14,943

Int. Cl.[6] C07H *21/02;21/04;* C12N *5/10;15/70*

U.S. Cl. 435—252.3 12 Claims

1. A purified and isolated nucleotide sequence which hybridizes under stringent conditions to the PURα sequence of FIG. **10**A and **10**B (SEQ ID NO: 1) and encodes a protein that binds to a PUR element (SEQ. ID NO.:3).

5,545,552

PURIFIED THERMOSTABLE PYROCOCCUS FURIOSUS DNA POLYMERASE I

Eric J. Mathur, Solana Beach, Calif., assignor to Stratagene, La Jolla, Calif.

Continuation of Ser. No. 803,627, Dec. 2, 1991, which is a continuation-in-part of Ser. No. 776,552, Oct. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 657,073, Feb. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 620,568, Dec. 3, 1990, abandoned. This application Apr. 19, 1995, Ser. No. 424,921

Int. Cl.[6] C12N *15/54;1/21;15/63;9/12*

U.S. Cl. 435—252.3 16 Claims

1. An isolated polynucleotide encoding *Pyrococcus furiosus* DNA polymerass I having an amino acid residue sequence represented by the formula shown in SEQ ID NO:1 from residue 1 to residue 775.

5,545,553

GLYCOSYLTRANSFERASES FOR BIOSYNTHESIS OF OLIGOSACCHARIDES, AND GENES ENCODING THEM

Emil C. Gotschlich, New York, N.Y., assignor to The Rockefeller University, New York, N.Y.

Filed Sep. 26, 1994, Ser. No. 312,387

Int. Cl.[6] C12P *19/00*

U.S. Cl. 435—252.33 25 Claims

1. A purified nucleic acid having a nucleotide sequence corresponding to or complementary to at least 20 nucleotides in sequence from the nucleotide sequence shown in SEQ ID NO:1.

5,545,554

LACTOBACILLUS BULGARICUS HAVING DECREASED ACID PRODUCTION AND/OR IMPROVED AROMA AND FLAVOR PRODUCTION

Jacques E. Germond, Crissier; Herbert Hottinger; Olivier Mignot, both of Bionay; Beat Mollet, Mollie-Margot, all of, Switzerland, and Koichiro Tsuda, Nishiakashikita-Machi, Japan, assignors to Nestec S.A., Switzerland

Filed Aug. 5, 1994, Ser. No. 286,880

Claims priority, application European Pat. Off., Aug. 6, 1993, 93202320

Int. Cl.[6] C12N *1/20*

U.S. Cl. 435—252.9 9 Claims

1. A mutagenized *Lactobacillus Bulgaricus* having a lactate dehydrogenase activity to β-galactosidase activity ratio lower than 0.3 and lactate dehydrogenase activity lower than 150 units of enzyme activity/10 ml culture.

5,545,555

MICROBIAL TRANSPORT MEDIA

Stephen G. Racioppi, Norcross, Ga., assignor to Microtest, Inc., Snellville, Ga.

Filed Jul. 25, 1994, Ser. No. 279,589

Int. Cl.[6] C12N *1/20;1/12;1/00*

U.S. Cl. 435—253.6 2 Claims

1. An aqueous microbial transport medium capable of maintaining viability of a plurality of microorganisms selected from the group consisting of Chlamydia, Mycoplasma, Ureaplasma, and viruses, said medium having physiological pH and consisting essentially of:

H_2O	24.89 liters
sucrose	1711.43 g
HEPES	148.99 g
KCl	10.0 g

-continued

L-glutamic acid	18.0 g
phenol red	13.0 ml
NaOH	36.0 ml
$CaCl_2$	6.63 g
$MgSO_4.7H_2O$	5.0 g
BSA	250 g
vancomycin	0.62 g
colistin	0.35 g
amphotericin	60.0 ml

5,545,556

MICROORGANISMS AND METHODS FOR THEIR USE

Michael C. Gustin, Houston, Tex., assignor to William Marsh Rice University, Houston, Tex.

Continuation-in-part of Ser. No. 704,943, May 23, 1991, abandoned. This application Mar. 18, 1993, Ser. No. 32,382

Int. Cl.[6] C12P *21/06;* C12N *1/20;15/00;* C07H *19/00*

U.S. Cl. 435—254.2 35 Claims

1. A biologically pure culture of a mutated microorganism of the genus Saccharomyces or Torulaspora comprising: A deletion disruption mutated microorganism produced by alteration of a gene DNA sequence selected from the group consisting of HOG1, HOG2 and HOG4.

5,545,557

WATER INSOLUBLE COLORING AGENT

John C. Hobson, Burton-on-Trent, England, and Roderick N. Greenshields, Swansea, Wales, assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Apr. 15, 1993, Ser. No. 47,726

Int. Cl.[6] C09B *67/00;* A23L *1/27;* C12P *1/00;* C12N *1/16*

U.S. Cl. 435—255.1 4 Claims

1. A water insoluble coloring agent consisting essentially of yeast cell ghosts and a water soluble color source, said yeast cell ghosts having the in vivo morphology of yeast cell walls containing yeast beta-glucan.

5,545,558

SELECTION OF CHIRAL ALPHA-HYDROXYKETONES AND DERIVATIVES USING LIPASE

Dinesh Gala, East Brunswick, N.J., assignor to Schering Corporation, Kenilworth, N.J.

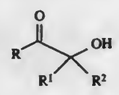
PCT No. PCT/US92/08168, § 371 Date Mar. 29, 1994, § 102(e) Date Mar. 29, 1994

Continuation-in-part of Ser. No. 771,260, Oct. 4, 1991, abandoned. This PCT application Oct. 1, 1992, Ser. No. 211,336

Int. Cl.[6] C12P *41/00*

U.S. Cl. 435—280 12 Claims

1. A process for the preparation of a chiral α-hydroxyketone of the formula



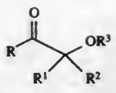
wherein:

R is selected from the group consisting of phenyl and substituted phenyl; and

R^1 is hydrogen and R^2 is alkyl;

which comprises:

selectively hydrolyzing an ester of a racemic α-hydroxyketone having the formula



wherein R^3 is a carboxylic acyl group of the formula R^4—C(O)— and R^4 is alkyl or substituted alkyl, with an enzyme that has a specificity for one enantiomer, wherein the enzyme is selected from the group consisting of porcine pancreatic lipase, Lipase from Pseudomonas, Lipase from *Aspergillus niger*, Lipase Type II from porcine pancreas, Esterase Type I from Porcine liver, β-Glucuronidase from Bovine liver, Enterokinase from Bovine intestine, Urease Type from *Bacillus pasteurii*, and Ple-A from Porcine liver; and isolating said chiral α-hydroxyketone.

5,545,559

COMPOST MAKER

Pekka Kariniemi, Kauttua, Finland, assignor to Favorit Oy, Finland

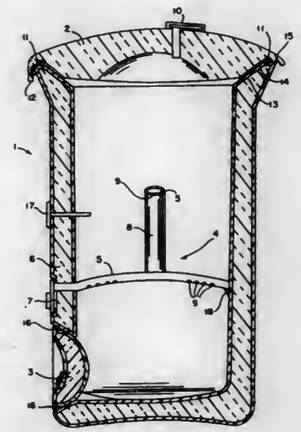
PCT No. PCT/FI93/00053, § 371 Date Aug. 11, 1994, § 102(e) Date Aug. 11, 1994, PCT Pub. No. WO93/16018, PCT Pub. Date Aug. 19, 1993

PCT Filed Feb. 17, 1993, Ser. No. 284,620

Claims priority, application Finland, Feb. 18, 1992, FI-U920149; Oct. 7, 1992, FI-924534

Int. Cl.[6] C12M *1/04*

U.S. Cl. 435—290.1 15 Claims



1. A compost maker comprising:

an upright container (1) having on its top end an openable cover (2) for introducing material to be composted in the container, said container having in its lower part an openable hatch (3) for removing composted material from the container;

an air tube system (4) contained in said container for guiding air into the material to be composted in the container, said air tube system (4) comprising at least two pairs of side-by-side, transverse tubes (5) on different heights, extending substantially in horizontal direction and extending substantially from side to side of the container the tubes of each of said pairs being located substantially in the same plane, the lowermost of said pairs of tubes being connected through the wall (6) of the container with an air intake aperture (7), said pairs of

tubes (5) being interconnected with a connecting tube (8), and the lower parts of said tubes being provided with air flow holes (9); and

an exit duct (10) fitted in the cover (2),

whereby air flows through the air flow holes (9) of the tubes (5) and through the material to be composted upwardly and through the exit duct (10) out from the container, while the material to be composted moves, supported by the transverse tubes, in controlled manner downward as the combustion of the material progresses.

5,545,560

APPARATUS FOR COMPOSTING AND TREATING WASTE, PARTICULARLY DUNG

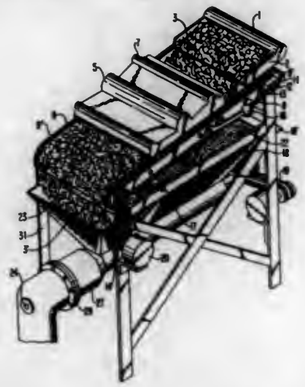
Dao-Pin Chang, 55, Hou Hu, Hu Pei Tsun, Lin Kou Ksiang, Taipei Hsien, Taiwan

Continuation of Ser. No. 141,595, Oct. 27, 1993, abandoned. This application Dec. 4, 1995, Ser. No. 566,594

Claims priority, application Denmark, Jun. 15, 1993, 0712/93

Int. Cl.[6] B01D *33/04;* **C02F** *3/08;* **C12M** *1/02;1/10*

U.S. Cl. 435—290.2 **18 Claims**



1. Apparatus for composting waste material having solid and liquid contents, said apparatus comprising:

a framework;

an endless conveyor supported by said framework, said endless conveyor including a filter of flexible material in the form of an endless loop having upper and lower runs;

a liquid-collection receptacle interposed between said upper and said lower runs of the filter so as to collect liquid filtrate from waste material conveyed along the upper run of the filter;

a first hopper located beneath one end of said endless loop at a transition between said upper and said lower runs of the filter so as to collect solid content of the waste material conveyed along the upper run of said filter;

a second hopper for accommodating material to be added to the solid content of the waste material;

a mixing chamber communicating with said first and said second hoppers so as to receive therein both the solid content of the waste material and the material to be added to the solid content; and

a mixer disposed in said mixing chamber so as to mix the materials received in the mixing chamber from said first and said second hoppers.

5,545,561

CONTRAST CHAMBER FOR SPOTLIGHTING BACTERIAL COLONIES WITH RESPECT TO THE CULTURE MEDIUM THEREOF

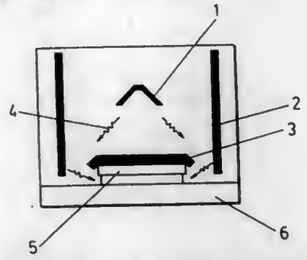
Miguel Lleonart Aliberas, Barcelona, Spain, assignor to IUL, S.A., Barcelona, Spain

Filed Apr. 25, 1994, Ser. No. 252,581

Claims priority, application Spain, Aug. 27, 1992, 9201779; Feb. 3, 1993, 9300196; Jun. 7, 1993, 9301241

Int. Cl.[6] C12M *1/00;1/34;1/16*

U.S. Cl. 439—287.3 **15 Claims**



1. A device including a contrast chamber to spotlight optically bacterial colonies grown in a plurality of dishes which contains a culture medium in which the bacterial colonies are disposed to permit an automatic count of said colonies by means of an automatic processing means and a reading head connected to said automatic processing means, said device comprising:

a contrast chamber including a first supporting means for supporting a dish;

second supporting means for supporting said reading head in a position under said dish, said reading bead being separated from said dish by a transparent member, said reading head being positioned and movable in a horizontal plane with respect to said dish;

illumination means for illuminating said dish supported in the contrast chamber, said illumination means emitting light rays disposed at an angle with respect to the horizontal plane; said angle being other than 90°; and

a dark opaque disk element being disposed above said dish that is supported in the contrast chamber, said disk element being disposed in a horizonal plane.

5,545,562

DEVICE FOR IDENTIFYING STRAWS FOR CRYOGENIC STORAGE OF BIOLOGICAL LIQUIDS

Robert Cassou, Sainte Montaine; Maurice Cassou, and Bertrand Cassou, both of L'Aigle, all of, France, assignors to Instruments de Medecine Veterinaire, L'Aigle, France

Continuation of Ser. No. 251,354, May 31, 1994, abandoned. This application Jun. 2, 1995, Ser. No. 460,391

Int. Cl.[6] C12M *1/24*

U.S. Cl. 435—307.1 **10 Claims**



1. A straw for cryogenic storage of biological liquids comprising a tubular envelope of transparent material having a main part of substantially uniform diameter and flattened welded ends having a width greater than the diameter of the main tube section, an identification sheath of polymer material for carrying identification markings relative to the biological liquid received on said main part, said sheath having an end portion elastically gripping the main tube section with an inside diameter less than the diameter of said main tube section whereby said welded ends prevent removal of said sheath from said straw prior to severing of one of said welded ends to extract the biological liquid, said sheath also having a longitudinally extending portion having a minimum transverse dimension greater than the diameter of the outer diameter of the main tube section so as to be loosely received around said main tube section.

5,545,563

HUMAN C/EBP GENE AND VECTORS FOR ITS EXPRESSION

Gretchen J. Darlington; Deborah R. Wilson, both of Houston, and Margaret Wilde, Missouri City, all of Tex., assignors to Baylor College of Medicine, Houston, Tex.

Continuation-in-part of Ser. No. 29,325, Mar. 4, 1993, abandoned. This application Mar. 4, 1994, Ser. No. 205,506

Int. Cl.[6] C12N *15/11;15/12;15/85*

U.S. Cl. 435—320.1 **8 Claims**

1. An isolated DNA molecule that encodes human CCAAT/Enhancer Binding Protein C/EBPα.

5,545,564

VECTOR FOR EXPRESSION AND SECRETION OF POLYPEPTIDE MICROORGANISM TRANSFORMED BY THE VECTOR AND PRODUCTION OF POLYPEPTIDE WITH THE SAME MICROORGANISM

Hideo Ohgai; Hiroshi Momota; Takeshi Kumakura; Noriyuki Kajifusa; Toshiki Kitazawa, all of Ako; Kazuhide Oshiden, Ibusuki, and Aizo Matsushiro, Suita, all of, Japan, assignors to Earth Chemical Company, Ltd., Hyogo, Japan

Continuation of Ser. No. 247,604, May 23, 1994, abandoned, which is a continuation of Ser. No. 9,390, Jan. 27, 1993, abandoned, which is a continuation of Ser. No. 656,025, Feb. 15, 1991, abandoned, which is a continuation of Ser. No. 899,383, Aug. 14, 1986, abandoned. This application Feb. 24, 1995, Ser. No. 396,282

Claims priority, application Japan, Dec. 21, 1984, 271206

Int. Cl.[6] C12N *15/70;15/62;15/18*

U.S. Cl. 435—320.1 **1 Claim**

1. A vector for expression and secretion of β-urogastrone which is pUG201.

5,545,565

TRANSFORMATION VECTORS ALLOWING EXPRESSION OF FOREIGN POLYPEPTIDE ENDOXINS FROM *BACILLUS THURINGIENSIS* IN PLANTS

Henri M. J. De Greve, Brussels, Belgium; Maria B. L. F. Salgado, Guerrero, Mexico; Marc C. E. Van Montagu, Brussels, Belgium; Mark A. Vaeck, Zemst, Belgium; Marcus F. O. Zabean, Gent, Belgium; Jan J. A. Leemans, Heusden, Belgium, and Hermanus F. P. Hofte, Gent, Belgium, assignors to Plant Genetic Systems, N.V., Gent, Belgium

Continuation of Ser. No. 133,965, Oct. 8, 1993, abandoned, which is a division of Ser. No. 14,148, Feb. 5, 1993, Pat. No. 5,317,096, which is a division of Ser. No. 555,828, Jul. 23, 1990, Pat. No. 5,254,799, which is a continuation of Ser. No. 821,582, Jan. 22, 1986, abandoned, which is a continuation-in-part of Ser. No. 692,759, Jan. 18, 1985, abandoned. This application May 22, 1995, Ser. No. 446,486

Int. Cl.[6] C12N *15/82*

U.S. Cl. 435—320.1 **15 Claims**

1. A chimeric gene comprising:

(1) a DNA fragment encoding an insecticidal *Bacillus thuringiensis* Bt2 toxin of about 60 to about 80 kD, wherein said Bt2 toxin comprises the amino acid sequence of SEQ ID No. 1 from amino acid position 29 to amino acid position 607; and

(2) a promoter region of a gene naturally expressed in plant cells, wherein said DNA fragment is under the control of said promoter region.

5,545,566

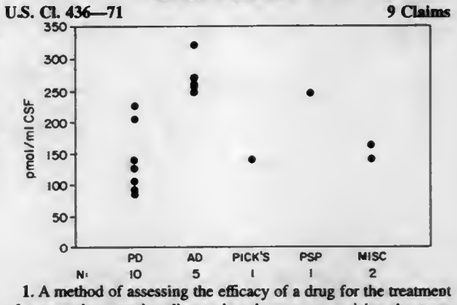
ANTEMORTEM DIAGNOSTIC TEST FOR ALZHEIMER'S DISEASE

John H. Growden, Chestnut Hill; Roger M. Nitsch, and Richard J. Wurtman, both of Boston, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 353,960, Dec. 12, 1994, abandoned, which is a continuation of Ser. No. 959,084, Oct. 9, 1992. This application Jun. 5, 1995, Ser. No. 461,648

Int. Cl.[6] G01N *33/92*

U.S. Cl. 436—71 **9 Claims**



1. A method of assessing the efficacy of a drug for the treatment of a neurodegenerative disease in a human, comprising the steps of:

(a) determining the concentration of a neuronal membrane phospholipid in a sample of bodily fluid from the human before administration of the drug, thereby obtaining a pre-administration concentration;

(b) administering the drug to the human;

(c) determining the concentration of the neuronal membrane phospholipid in a second sample of the bodily fluid from the human, thereby obtaining a post-administration concentration; and

(d) comparing the pre-administration concentration to the post-administration concentration and to a control concentration, wherein the control concentration is the concentration of the neuronal phospholipid in the sample of bodily fluid from a human who does not currently demonstrate clinical manifestation of neurodegenerative disease,

wherein a post-administration concentration that is closer to the control concentration than to the preadministration concentration is indicative of the efficacy of the drug for the treatment of the neurodegenerative disease.

5,545,567

LUMINOSCOPIC ANALYTIC DEVICE AND METHOD

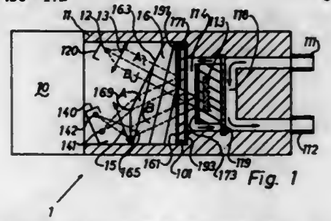
François Gretillat, Neuchâtel; Jean-Paul Pellaux; John M. Hale, both of Geneva, and Eugen Weber, Hinwil, all of, Switzerland, assignors to Orbisphere Laboratories Neuchatel S.A., Neuchatel, Switzerland

Filed May 18, 1995, Ser. No. 443,421

Claims priority, application European Pat. Off., Jun. 4, 1994, 94810331

Int. Cl.[6] G01N *21/64*

U.S. Cl. 436—172 **8 Claims**



1. An analytic device for reflective luminoscopy comprising within an enclosure:

a light source;
a pair of spaced light detectors;
a refractor body;
said refractor body comprising a from surface which forms an entry plane and an exit plane, said entry and exit planes enclosing an angle of less than 180° and not less than 90°, and a rear surface which forms a base plane, said light source and light detectors being positioned adjacent the front surface of said refractor body,
a light-collimating means between said light source and said entry plane,
a light-collecting means between said light detectors and said exit plane,
a first light-reflecting layer positioned adjacent said base plane, a first luminoscopic layer positioned between said base plane and said first light-reflecting layer, said first light-reflecting layer being constructed and positioned so as to reflect only a portion of light emanating from said light source which is passed through said refractor body and said first luminscopic layer, said first luminoscopic layer serving as a reference layer,
a second light-reflecting surface constructed and positioned so as to reflect light emanating from said light source which is passed through said refractor body, said first luminoscopic layer, and is not reflect by said first light-reflecting layer,
a second luminoscopic layer positioned between said first and second light-reflecting layers, said second luminosopic layer serving as a measuring area for reaction with a species of analytic interest which is in contact with said second luminoscopic layer, wherein light from said first reflecting layer is directed by said refractor body to a first of said light detectors and light from said second reflecting layer is directed by said refractor body to a second of said light detectors.

5,545,568

SOLID PHASE AND COMBINATORIAL SYNTHESIS OF COMPOUNDS ON A SOLID SUPPORT

Jonathan A. Ellman, Berkeley, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 944,469, Sep. 14, 1992, Pat. No. 5,288,514. This application Dec. 2, 1993, Ser. No. 161,677
Int. Cl.[6] G01N *33/543*
U.S. Cl. 436—518 **9 Claims**

1. An array comprising a plurality of benzodiazapines at selected, known positions on a substrate wherein each of said benzodiazapines is substantially pure within each of said selected locations and has a composition different than selected other benzodiazapines on said substrate.

5,545,569

PREVENTION AND TREATMENT OF PATHOLOGIES ASSOCIATED WITH ABNORMALLY PROLIFERATIVE SMOOTH MUSCLE CELLS

David J. Grainger; James C. Metcalfe, and Peter L. Weissberg, all of Cambridge, United Kingdom, assignors to NeoRx Corporation, Seattle, Wash.

Division of Ser. No. 242,161, May 12, 1994, which is a continuation-in-part of Ser. No. 61,714, May 13, 1993, abandoned. This application May 25, 1995, Ser. No. 450,520
Int. Cl.[6] G01N *33/543*
U.S. Cl. 436—518 **12 Claims**

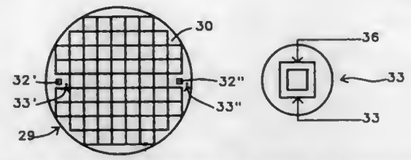
1. A method for determining TGF-beta in vitro, thereby identifying a patient at risk for atherosclerosis or for monitoring a recipient that has received one or more administrations of a therapeutic agent that increases the level of TGF-beta, which method comprises:
(a) immobilizing a capture moiety that binds TGF-beta;
(b) combining serum from the patient or the recipient with the immobilized capture moiety, forming a capture complex comprising the capture moiety and TGF-beta;
(c) combining the capture complex with a signal moiety that binds TGF-beta and has a detectable label, forming a signal complex;
and
(d) determining the presence of a detectable label in the signal complex, thereby determining the presence of TGF-beta in the serum.

5,545,570

METHOD OF INSPECTING FIRST LAYER OVERLAY SHIFT IN GLOBAL ALIGNMENT PROCESS

Wen-Jye Chung, Hsin-Chu, and Chu-Mei Lee, Chu-Dung, both of, Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Hsinchu, Taiwan

Filed Sep. 29, 1995, Ser. No. 536,478
Int. Cl.[6] H01L *21/66*
U.S. Cl. 437—8 **2 Claims**



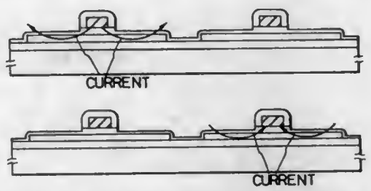
1. A method of forming an inspection pattern on a semiconductor wafer for inspecting to determine the degree of alignment of a first device layer during manufacture of integrated circuits on a semiconductor substrate, including the steps comprising
forming a zeroth layer on said substrate,
patterning alignment marks and zeroth layer mother overlay inspection patterns simultaneously in said zeroth layer aligning to alignment marks formed in said zeroth layer,
forming a first layer on said substrate,
patterning said first layer simultaneously with formation of child overlay inspection patterns patterned in the same position as said zeroth layer mother inspection patterns to determine the overlay shift of the first layer.

5,545,571

METHOD OF MAKING TFT WITH ANODIC OXIDATION PROCESS USING POSITIVE AND NEGATIVE VOLTAGES

Shunpei Yamazaki, Tokyo; Hongyong Zhang, Kanagawa; Hideki Uochi, Kanagawa; Hiroki Adachi, Kanagawa, and Yasuhiko Takemura, Kanagawa, all of, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Continuation-in-part of Ser. No. 933,810, Aug. 24, 1992, Pat. No. 5,308,998. This application Apr. 6, 1993, Ser. No. 43,782
Claims priority, application Japan, Apr. 7, 1992, 4-115503; Mar. 24, 1993, 5-089117
Int. Cl.[6] H01L *21/84*
U.S. Cl. 437—21 **18 Claims**



1. A method of manufacturing an insulated gate field effect transistor comprising a step of forming a semiconductor region on an insulating substrate;

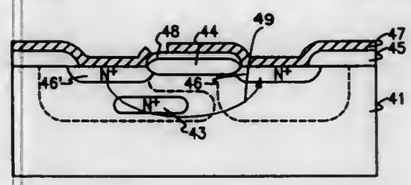
a step of forming an insulating film functioning as a gate insulating film on said semiconductor region:
a step of forming on said insulating film a conductive film made of one of aluminum, chromium, titanium, tantalum and silicon or an alloy of at least one of these metals or a multi-layer thereof;
a step of forming an oxide film covering a surface of said conductive film by applying a positive voltage to said conductive film in an electrolyte: and
a step of applying a negative or positive voltage to said conductive film after said positive voltage application step to reform said semiconductor region or an interface of said semiconductor region and said insulating film, wherein an electric current is passed through said semiconductor region at the same time as said negative or positive voltage applying step.

5,545,572

METHOD FOR FABRICATING ELECTROSTATIC DISCHARGE PROTECTING TRANSISTOR

Woo B. Lee; Se J. Oh; Tae J. Yeo; Jae W. Ko, and Yung M. Koo, all of Bubaleub, Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Rep. of Korea

Filed Oct. 21, 1994, Ser. No. 326,880
Claims priority, application Rep. of Korea, Oct. 21, 1993, 1993-21959
Int. Cl.[6] H01L *21/74*
U.S. Cl. 437—26 **4 Claims**



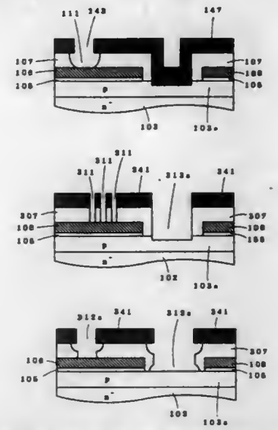
1. A method for fabricating a transistor of an electrostatic discharge protecting circuit for a semiconductor device, comprising the steps of:
implanting an impurity in at least a portion of a semiconductor substrate, forming a buried layer in the substrate;
sequentially forming a gate having a gate oxide film, forming an insulating film over the entire exposed upper surface of the resulting structure, and selectively etching the insulating film to expose a first portion of the semiconductor substrate to correspond to a source region, the first portion proximate to the buried layer, and to expose a second portion of the semiconductor substrate to correspond to a drain region, the buried layer disposed asymmetric with respect to the first portion, the buried layer extending partially below the first portion and at least partially below the gate oxide film;
implanting an impurity in each of the exposed first and second portions of the semiconductor substrate, thereby forming the source in the first portion and the drain in the second portion, the buried layer separated from the source by a portion of the substrate; and
forming a conductive film over at least a portion of the exposed upper surface of the resulting structure, thereby electrically coupling the drain with the gate.

5,545,573

METHOD OF FABRICATING INSULATED GATE SEMICONDUCTOR DEVICE

Atsushi Narazaki, and Yoshiaki Hisamoto, both of Fukuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 25, 1995, Ser. No. 450,778
Claims priority, application Japan, Jun. 1, 1994, 6-120150
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—40 **25 Claims**



1. A method of fabricating an insulated gate semiconductor device, comprising:
(a) a step of preparing a semiconductor substrate having a major surface and a p-n junction;
(b) a step of forming a gate electrode having a first opening on said major surface through an insulating film;
(c) a step of forming an electrical insulating protective film to cover said gate electrode and said first opening;
(d) a step of selectively carrying out dry etching on said protective film, thereby providing said protective film with a second opening being defined on said major surface inside said first opening;
(e) a step of selectively carrying out wet etching on said protective film with an etchant having substantially no etching action on said gate electrode, thereby providing said protective film with a third opening being defined on said gate electrode;
(f) a step of connecting a main electrode to said major surface through said second opening; and.
(g) a step of connecting a gate wire to said gate electrode through said third opening.

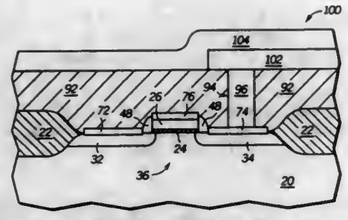
5,545,574

PROCESS FOR FORMING A SEMICONDUCTOR DEVICE HAVING A METAL-SEMICONDUCTOR COMPOUND

Wei-Ming Chen; Shih-Wei Sun, and Paul G. Y. Tsui, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 19, 1995, Ser. No. 444,980
Int. Cl.[6] H01L *21/283*
U.S. Cl. 437—40 **28 Claims**

1. A process for forming a semiconductor device comprising the steps of:
providing a substrate having a first portion and a second portion, wherein the first and second portions:
include a semiconductor material; and
each have a surface and those surfaces are laterally separated from each other by no more than 0.2 microns;
introducing a nitrogen-containing material near the surfaces of the first and second portions;



forming a titanium layer over the first and second portions after the step of introducing; and

reacting the titanium layer with the first and second portions to form a titanium-semiconductor material, wherein:

most of each of the first and second portions are covered by the titanium-semiconductor material;

the titanium-semiconductor material includes titanium, oxygen, and nitrogen;

this step is performed as a single step at a temperature of at least 700° C.; and

no other thermal step is performed to change a composition or phase of the titanium-semiconductor material; and

removing unreacted portions of the titanium layer after the step of reacting, wherein the first and second portions are not electrically shorted to each other by the titanium-semiconductor material.

5,545,575

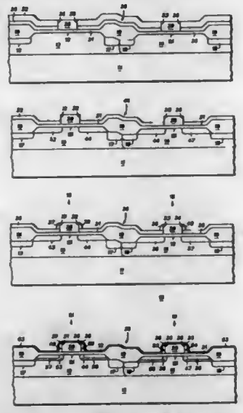
METHOD FOR MANUFACTURING AN INSULATED GATE SEMICONDUCTOR

Shih K. Cheng, Scottsdale, Ariz., and Marius Orlowski, Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 24, 1994, Ser. No. 328,312

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—40 **13 Claims**



1. A method for manufacturing an insulated gate semiconductor device, comprising the steps of:

providing a semiconductor substrate of a first conductivity type and having a major surface;

forming a first layer of dielectric material on a portion of the major surface;

forming a gate electrode on a portion of the first layer of dielectric material by:

forming a gate extension layer on the first layer of dielectric material;

forming a second layer of dielectric material on the gate extension layer;

forming an opening in the second layer of dielectric material and the gate extension layer;

filling the opening with a conductive material, wherein a portion of the conductive material filling the opening serves as a first portion of the gate electrode;

removing the second layer of dielectric material;

forming a first spacer adjacent a first side of the first portion of the gate electrode and a second spacer adjacent a second side of the first portion of the gate electrode, wherein the first spacer covers a first portion of the gate extension layer and the second spacer covers a second portion of the gate extension layer, the first and second portions of the gate extension material serving as second and third portions of the gate electrode, respectively; and

removing uncovered portions of the gate extension layer to form the second portion of gate electrode adjacent a first side of the first portion of the gate electrode and the third portion of the gate electrode adjacent a second side of the first portion of the gate electrode;

forming at least one dopant region of the first conductivity type after the step of removing the second layer of dielectric material wherein the at least one dopant region of the first conductivity type is aligned to the first side of the first portion of the gate electrode and extends into the semiconductor substrate;

forming first and second dopant regions of a second conductivity type, wherein the first dopant region of the second conductivity type is aligned to a side of the second portion of the gate electrode and extends into the semiconductor substrate and the second dopant region of the second conductivity type is aligned to a side of the third portion of the gate electrode and extends into the semiconductor substrate;

forming first and second electrodes, the first electrode in contact with the first dopant region of the second conductivity type and the second electrode in contact with the second dopant region of the second conductivity type; and

forming a contact to the gate electrode.

5,545,576

METHOD FOR MANUFACTURING A THIN FILM TRANSISTOR PANEL

Hiroshi Matsumoto, Hachioji; Haruo Wakai, Tokyo, and Hiroyasu Joubettou, Hachioji, all of, Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

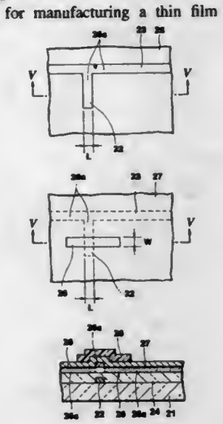
Filed Apr. 21, 1995, Ser. No. 425,894

Claims priority, application Japan, Apr. 28, 1994, 6-111881; Apr. 28, 1994, 6-111882

Int. Cl.[6] H01L *21/786*

U.S. Cl. 437—41 **4 Claims**

1. A method for manufacturing a thin film transistor panel



comprising:

a first step of forming a gate electrode and a gate line on a transparent insulating substrate;

a second step of successively forming a gate insulating film, a semiconductor thin film and an insulating film on the gate electrode, the gate line and the transparent insulating substrate;

a third step of patterning the insulating film into a shape which is self-aligned with the gate electrode and the gate line by means of exposure through the transparent substrate;

a fourth step of forming, on the insulating film, a mask having a length which extends across the gate electrode at right angles;

a fifth step of etching at least the insulating film and the semiconductor thin film using the mask; and

a sixth step of removing the mask, thereby forming a source electrode and a drain electrode.

5,545,577

METHOD OF PRODUCING A SEMICONDUCTOR DEVICE HAVING TWO MIS TRANSISTOR CIRCUITS

Gen Tada, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kanagawa, Japan

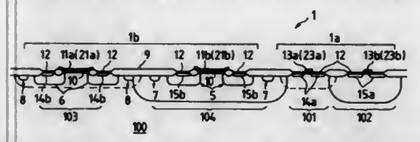
Division of Ser. No. 53,273, Apr. 28, 1993, abandoned. This application Nov. 24, 1993, Ser. No. 156,847

Claims priority, application Japan, Apr. 30, 1992, 4-111330

Int. Cl.[6] H01L *21/70*

U.S. Cl. 437—41 **3 Claims**

1. A method of producing a semiconductor device including, on



a surface side of a semiconductor substrate, a first MIS transistor circuit portion with a first-conducting-type first MIS portion and a second-conducting-type second MIS portion, and a second MIS transistor circuit portion with a first-conducting-type third MIS portion and a second-conducting-type fourth MIS portion, comprising:

a first step of, after forming a first insulating film on said surface side of said semiconductor substrate, forming a first polycrystalline silicon layer on a surface side of said first insulating film without being in contact with any resist layer;

a second step of leaving portions of said first polycrystalline silicon layer, in which impurities have not been injected, in respective gate electrode formation regions of said first conducting-type third MIS portion and said second-conducting-type fourth MIS portion of said second MIS transistor circuit portion by etching said first polycrystalline silicon layer;

a third step of removing portions of said first insulating film in gate insulating film formation regions of said first-conducting-type first MIS portion and said second-conducting-type second MIS portion of said first MIS transistor circuit portion;

a fourth step of, after forming a second insulating film on a surface side of said substrate, forming a second polycrystalline silicon layer on a Surface side of said second insulating film; and

a fifth step of leaving portions of said second polycrystalline silicon layer in respective gate electrode formation regions of said first-conducting-type first MIS portion and said second-conducting-type second MIS portion of said first MIS transistor circuit portion by etching said second polycrystalline silicon layer,

wherein impurities are introduced at the same time and for the first time as a step of introducing impurities for forming a source diffusion region and a drain diffusion region of said third MIS portion, into said first polycrystalline silicon layer left in the second step in said gate electrode formation region of said first-conducting-type third MIS portion of said second MIS transistor circuit portion, and impurities are introduced at the same time and for the first time as a step for introducing impurities for forming a source diffusion legion and a drain diffusion region of said fourth MIS portion, into said polycrystalline silicon layer left in the second step in said gate electrode formation region of said second-conducting-type fourth MIS portion.

5,545,578

METHOD OF MAUFACTURING A SEMICONDUCTOR DEVICE HAVING A LOW RESISTANCE GATE ELECTRODE

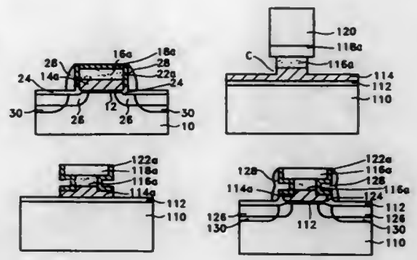
Young-hoon Park; Young-woo Seo, both of Kyungki-do, and Yong-hee Lee, Seoul, all of, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed May 15, 1995, Ser. No. 440,954

Claims priority, application Rep. of Korea, Jun. 8, 1994, 94-12853

Int. Cl.[6] H01L *21/8234*

U.S. Cl. 437—44 **33 Claims**



28. A method for manufacturing a semiconductor device, comprising the steps of:

forming a gate insulating layer on a semiconductor substrate;

forming a polysilicon layer on said gate insulating layer;

forming a silicide layer on said polysilicon layer;

forming an insulating layer on said silicide layer;

etching said insulating layer and said silicide layer, to form a gate-patterned insulating layer;

undercut-etching said silicide layer to form a gate-patterned silicide layer having a lesser width than that of said gate-patterned insulating layer, and over-etching said silicide layer to partially etch said polysilicon layer, to thereby form a step in said polysilicon layer;

forming an oxidation-prevention spacer on sidewalls of said gate-patterned insulating layer, sidewalls of said gate-patterned silicide layer, and sidewalls of said polysilicon layer exposed by said step;

etching said polysilicon layer, using said oxidation-prevention spacer as an etching mask, to thereby form a gate-patterned polysilicon layer, said gate-patterned silicide layer and said gate-patterned polysilicon layer together comprising a gate electrode;

thermally oxidizing exposed portions of said gate insulating layer and exposed portions of said polysilicon layer, to thereby form an oxide layer; and,

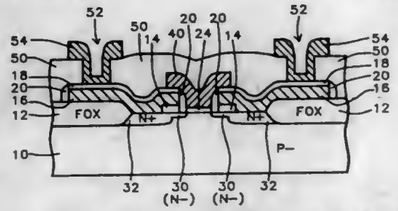
ion-implanting first impurities into said semiconductor substrate, using the resultant structure from the previously-recited steps as an ion-implantation mask, to thereby form source/drain regions in said semiconductor substrate, on opposite sides of said gate electrode.

5,545,579

METHOD OF FABRICATING A SUB-QUARTER MICROMETER CHANNEL FIELD EFFECT TRANSISTOR HAVING ELEVATED SOURCE / DRAIN AREAS AND LIGHTLY DOPED DRAINS

Moog-Song Liang, and Charles C.-H. Hsu, both of Hsin-Chu, Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Hsin-Chu, Taiwan

Filed Apr. 4, 1995, Ser. No. 416,167
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—44 **11 Claims**



1. A method of fabricating reverse self-aligned field effect transistors with lightly doped drains, comprising the steps of:

providing a semiconductor substrate doped with a first conductive type dopant;

forming field oxide areas on said semiconductor substrate surrounding and electrically isolating device areas;

depositing a doped pad oxide layer on said substrate with a second conductive type dopant;

patterning by photoresist masking and etching said doped pad oxide layer leaving a portions over an area of each said device areas and leaving portions of each said device areas open for source/drain junctioo openings, said patterned doped pad oxide layer extending also over portions of said field oxide areas on opposite sides of said device areas;

depositing a first polysilicon layer over said patterned doped pad oxide layer and said source/drain junction openings, said first polysilicon layer doped with a second conductive type dopant;

depositing a first insulating layer on said first polysilicon layer;

patterning said first insulating layer and said first polysilicon layer, by photoresist masking and etching, leaving portions over said source/drain junction openings, and said patterning of said first insulating and polysilicon layers also forming channel openings with vertical sidewalls in said first insulating and first polysilicon layer over said patterned doped pad oxide layer;

etching selectively said patterned doped pad oxide layer in said channel openings with vertical sidewalls to said device areas, providing openings for overlapping FET gate electrodes;

depositing a conformal second insulating layer on said substrate;

blanket etching back said second insulating layer to said first insulating layer, and thereby forming sidewall spacers on said vertical sidewalls of said channel openings, and thereby reducing a width of said channel openings;

implanting in said channel openings a channel ion implant dopant of said first conductive dopant type;

forming a gate oxide on a surface of said device areas in said channel openings by thermal oxidation;

heating said substrate and forming doped source/drain areas in portions of said device areas, by out diffusion of said second conductive type dopant from said first polysilicon layer into said source/drain junction openings; and

simultaneously forming lightly doped source/drain areas adjacent to said channel openings by out diffusing said second conductive type dopant from said patterned doped pad oxide layer to said substrate;

depositing a conformal second polysilicon layer on said first insulating layer and in said channel openings, said second polysilicon layer doped with said second conductive type dopant;

patterning said second polysilicon layer leaving portions over said channel openings, and thereby forming said overlapping FET gate electrodes;

depositing a third insulating layer over said overlapping gate electrodes and over said first insulating layer;

forming contact openings in said third and first insulating layers to said first polysilicon layer, and thereby providing contact to said source/drain areas;

depositing a conducting layer on said third insulating layer and in said contact openings;

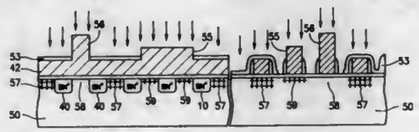
patterning said conducting layer, leaving portions over said contact openings, and thereby completing said reverse self-aligned field effect transistors with said overlapping FET gate electrodes and source/drain areas having patterned conducting layer contacts.

5,545,580

MULTI-STATE READ-ONLY MEMORY USING MULTIPLE POLYSILICON SELECTIVE DEPOSITIONS

Yi-Chung Sheng, Taichung; Chen-Hui Chung, Hsinchu Hsien, and Kuan-Cheng Su, Taipei, all of, Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Sep. 19, 1995, Ser. No. 530,746
Int. Cl.[6] H01L *21/8246*
U.S. Cl. 437—48 **10 Claims**



1. A method for fabricating a multi-state read-only memory device on a semiconductor substrate, comprising:

(a) defining a first direction and a second direction above said substrate;

(b) forming a plurality of bit lines spaced apart in said substrate along said first direction;

(c) forming a dielectric layer overlying said substrate;

(d) forming a plurality of word lines on said dielectric layer along said second direction whereby channel regions are disposed between each pair of bit lines below said word lines striding thereover, wherein each said word line above each said corresponding channel region has a thickness selected from a series of thicknesses through a plurality of selective deposition steps; and

(e) implanting impurities into said substrate for programming said channel regions into multiple states.

5,545,581

PLUG STRAP PROCESS UTILIZING SELECTIVE NITRIDE AND OXIDE ETCHES

Michael D. Armacost, Wallkill, N.Y.; John H. Givens, Essex Junction, Vt.; Charles W. Koburger, III, Essex Junction, Vt., and Jerome B. Lasky, Essex Junction, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

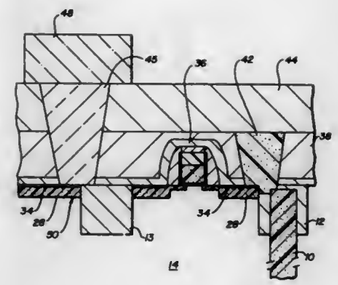
Filed Dec. 6, 1994, Ser. No. 350,445
Int. Cl.[6] H01L *21/8242*
U.S. Cl. 437—52 **31 Claims**

1. A method of electrically connecting a first electronic element and a second electronic element separated by a dielectric, comprising:

applying a nitride layer over both of said elements and said dielectric;

applying a first insulation layer over said nitride layer;

etching an aperture over said first and second elements by application of a highly selective etch that preferentially etches said insulation layer relative to the nitride layer and application of a selective nitride etch that preferably etches said nitride layer relative to said dielectric layer, thereby forming a first hole through said first insulation layer and said nitride layer; and



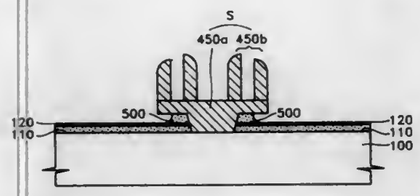
depositing an electrical conductor in said first hole, thereby forming a strap wherein said first and second electrical elements are electrically connected.

5,545,582

METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICE CAPACITOR

Jun-yong Roh, Kyungki, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 28, 1994, Ser. No. 365,446
Claims priority, application Rep. of Korea, Dec. 31, 1993, 93-32282
Int. Cl.[6] H01L *21/8242*
U.S. Cl. 437—52 **14 Claims**



1. A method for manufacturing a semiconductor device capacitor comprising the steps of:

(a) forming a first conductive layer over a major surface of a semiconductor substrate;

(b) forming a first material layer over the first conductive layer;

(c) patterning the first material layer to form a storage node pattern;

(d) forming first conductive sidewalls within the storage node pattern, each first conductive sidewall having an interior surface and an exterior surface and formed in electrical contact with the first conductive layer;

(e) removing the first material layer;

(f) forming material sidewalls on the interior and exterior surfaces of the first conductive sidewalls;

(g) forming a second conductive sidewall on a side surface of the material sidewalls;

(h) removing portions of the first conductive layer not covered by the combination of the first and second conductive sidewalls and the material sidewalls; and

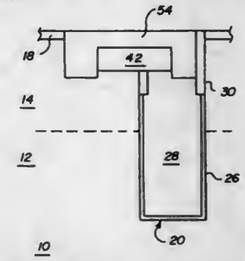
(i) etching away the second material sidewalls using a surfactant-buffered oxide etchant.

5,545,583

METHOD OF MAKING SEMICONDUCTOR TRENCH CAPACITOR CELL HAVING A BURIED STRAP

Chung H. Lam, Williston; David K. Lord, Colchester, and Judith A. Wright, Essex Junction, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 13, 1995, Ser. No. 421,115
Int. Cl.[6] H01L *21/8242*
U.S. Cl. 437—52 **11 Claims**



1. A process for producing a semiconductor device having a buried strap, comprising:

forming a first trench in a semiconductor substrate, said trench lined with an insulation layer and having a conductive material therein;

forming a shallow trench extending into said first trench and extending into said semiconductor substrate;

depositing an insulating material within said shallow trench;

removing a region of said insulating material whereby said region defines a strap trench extending over said first trench and said semiconductor substrate;

forming a contiguous layer of conductive material within said strap trench wherein the conductive material lies below the surface of the semiconductor substrate, thereby forming a strap; and

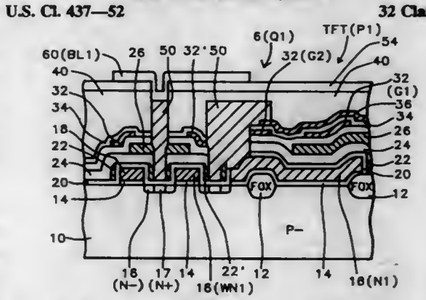
forming an insulation layer over said conductive material within said first trench and over said strap.

5,545,584

UNIFIED CONTACT PLUG PROCESS FOR STATIC RANDOM ACCESS MEMORY (SRAM) HAVING THIN FILM TRANSISTORS

Shou-Gwo Wuu, Chu-Tong; Moog-Song Liang, Hsin-Chu; Chen-Jong Wang, Hsin-Chu, and Chung-Hui Su, Hsin-Chu, all of, Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Hsinchu, Taiwan

Filed Jul. 3, 1995, Ser. No. 498,677
Int. Cl.[6] H01L *21/70;27/00*
U.S. Cl. 437—52 **32 Claims**



1. A method of making unified contact plugs on static random access memory (SRAM) semiconductor devices, comprising the steps of:

providing a semiconductor substrate having field effect transistors (FETs) formed on a substrate surface, said FETs having

gate electrodes formed from a first polysilicon layer, and further having a cap oxide and polysilicon sidewall spacers on said FET gate electrodes and source/drain contact areas on said substrate surface;

depositing a blanket first insulating layer on said FETs on said substrate;

forming over said first insulating layer a multilayer structure comprising in increasing distance from said substrate surface a patterned second, third and fourth polysilicon layers that include openings aligned over source/drain contact areas for contacts, and having between said patterned second, third and fourth polysilicon layers, in increasing distance from said substrate surface a second, third and fourth insulating layers, and furthermore portions of said patterned second, third and fourth polysilicon layers forming device elements and interconnecting portions for said SRAM device;

anisotropically and selectively etching contact openings in said first, second, third and fourth insulating layers using a photoresist mask, said selective etching stopping at and exposing portions of said fourth, third and second polysilicon layers and also stopping at said polysilicon sidewall spacers in said contact openings, and furthermore said exposed portions of said fourth, third and second polysilicon layers in said contact openings providing a masking effect in said contact openings for subsequent etching of said first, second, third and fourth insulating layers;

removing said photoresist mask;

forming metal plugs in said contact openings, and thereby concurrently interconnecting said exposed portions of said fourth, third and second polysilicon layers and said FET source/drain contact areas, and thereby forming said unified contact plugs for said SRAM devices;

depositing a fifth insulating layer and etching openings in said fifth insulating layer to expose said metal plugs; and

depositing a first metal layer and patterning said metal layer forming an interconnecting metal layer, and thereby completing said SRAM devices to a first metal interconnect level.

depositing and patterning a second polysilicon layer with a silicide on a top surface, thereby forming bit-lines over said bit line contact openings, and electrically insulating said bit lines by depositing a second insulating layer, and thereafter forming the stacked capacitors by;

depositing a conformal third insulating layer on said device areas, word lines and elsewhere on said second insulating layer,

planarizing a top surface of said third insulating layer,

depositing sequentially fourth, fifth and sixth insulating layers on said planar top surface of said third insulating layer, and thereby said fourth, fifth and sixth insulating layers also having planar surfaces,

anisotropically plasma etching contact openings in said sixth, fifth, fourth, third, secood and first insulating layers to expose said second source/drain area of each said transistors,

selectively and isotropically etching and recessing said third and fifth insulating layers in said contact openings while leaving unetched said first, second, fourth and sixth insulating layers, and thereby forming a fin-shaped sidewall profile in said contact openings,

depositing a conformal third polysilicon layer on said fin-shaped sidewall profile in said contact openings and elsewhere on said sixth insulating layer,

patterning said third polysilicon layer, by photoresist masking and anisotropic plasma etching, leaving portions of said third polysilicon layer over and in said contact openings, and thereby forming polysilicon bottom electrodes replicating said fin-shaped sidewall profile,

etching and removing completely remaining sixth, fifth, fourth and third insulating layers, and thereby leaving free standing said fin-shaped bottom electrodes,

depositing an inter-electrode dielectric layer on said bottom electrodes,

depositing and patterning a fourth polysilicon layer, and forming top electrodes, and thereby completing said stacked capacitors.

5,545,585

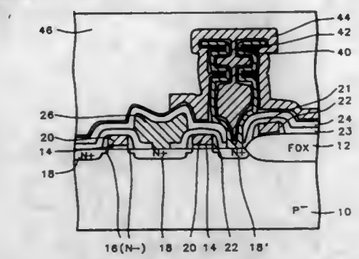
METHOD OF MAKING A DRAM CIRCUIT WITH FIN-SHAPED STACKED CAPACITORS

Chen-jong Wang; Mong-song Liang; Shou-gwo Wuu, and Chung-Hui Su, all of Hsin-chu, Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Hsin-chu, Taiwan

Filed Jan. 29, 1996, Ser. No. 593,767

Int. Cl.[6] H01L *21/70;27/00*

U.S. Cl. 437—52 **24 Claims**



1. A method of fabricating DRAM fin-shaped stacked capacitors on a semiconductor substrate having device areas and bit line formed thereon, comprising the steps of:

providing said semiconductor substrate having field effect transistors (FETs) in said device areas, each of said transistors having a gate electrode formed from a first polysilicon layer and having first and second source/drain contact areas, and electrically insulated by depositing a conformal first insulating layer thereon; and

providing bit line contact openings in said first insulating layer to said first source / drain area of each of said FETs, and then

---

5,545,586

METHOD OF MAKING A TRANSISTOR HAVING EASILY CONTROLLABLE IMPURITY PROFILE

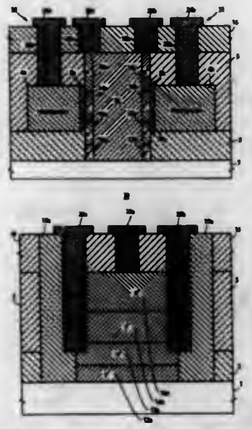
Risho Koh, Tokyo, Japan, assignor to NEC Corporation, Japan

Division of Ser. No. 800,581, Nov. 27, 1991, abandoned. This application May 13, 1994, Ser. No. 242,147

Claims priority, application Japan, Nov. 27, 1990, 2-324799

Int. Cl.[6] H01L *21/20*

U.S. Cl. 437—89 **4 Claims**



1. A method of fabricating a transistor, comprising the steps of:

providing a substrate of a first conductivity type;

forming a first insulating layer on the substrate;

forming a conductive region on the first insulating layer;

forming a second insulating layer on the conductive region:

successively removing portions of the second insulating layer, said conductive region and said first insulating layer and forming an opening extending to the substrate, and forming a sidewall of the conductive region;

forming a sidewall insulator on the sidewall of the conductive region;

forming a region of easily removable material on a sidewall of said opening, said easily removable region being adjacent said first insulating layer, said sidewall insulator and said second insulating layer and leaving a portion of said opening exposed;

filling the exposed portion of said opening with an insulating material;

removing the easily removable region and forming a slit; and

forming a semiconductor region within the opening, the semiconductor region having a first portion of a second conductivity the opposite to the first conductivity type, the first portion being adjacent the first insulating layer, the semiconductor region having a second portion of the first conductivity type, the second portion being adjacent the sidewall insulator and overlying the first portion, and the semiconductor region having a third portion of the second conductivity type, the third portion being adjacent the second insulating layer and overlying the second portion.

recovering the accumulated polypeptide; and

subjecting an amylaceous substance to the action of said recovered polypeptide possessing cyclomaltodextrin glucanotransferase activity to produce a saccharide-transferred product.

5,545,588

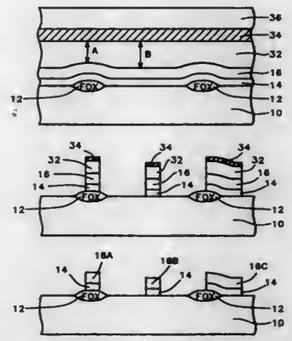
METHOD OF USING DISPOSABLE HARD MASK FOR GATE CRITICAL DIMENSION CONTROL

Chue-San Yoo, Ta-chi Tseng, Taiwan, assignor to Taiwan Semiconductor Manufacturing Company, Hsin-chu, Taiwan

Filed May 5, 1995, Ser. No. 435,189

Int. Cl.[6] H01L *21/28*

U.S. Cl. 437—187 **45 Claims**



5,545,587

POLYPEPTIDE POSSESING CYCLOMALTODEXTRIN GLUCANOTRANSFERASE ACTIVITY

Toshiyuki Sugimoto; Michio Kubota, and Shuzo Sakia, all of Okayama, Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyilio, Okayama, Japan

Division of Ser. No. 794,347, Nov. 12, 1991, Pat. No. 5,278,059, which is a continuation of Ser. No. 438,993, Nov. 22, 1989, abandoned, which is a continuation of Ser. No. 804,487, Dec. 4, 1985, abandoned. This application Nov. 4, 1993, Ser. No. 145,514

Int. Cl.[6] C12P *19/18*

U.S. Cl. 435—97 **14 Claims**

1. A process for producing a saccharide-transferred product, comprising the steps of:

introducing a recombinant DNA carrying isolated promoter and structural gene sequences coding for the expression of a polypeptide possessing cyclomaltodextrin glucanotransferase (CGTase) activity and comprising one or more partial amino acid sequences selected from the group consisting of:

(a) Asn-Lys-Ile-Asn-Asp-Gly-Tyr-Leu-Thr,

(b) Pro-Val-Phe-Thr-Phe-Gly-Glu-Trp-Phe-Leu,

(c) Val-Thr-Phe-Ile-Asp-Asn-His-Asp-Met-Asp-Arg-Phe,

(d) Ile-Tyr-Tyr-Gly-Thr-Glu-Gln-Tyr-Met-Thr-Gly-Asn-Gly-Asp-Pro-Asn-Asn-Arg, and

(e) Asn-Pro-Ala-Leu-Ala-Tyr-Gly, into a host microorganism to obtain a recombinant microorganism;

culturing with a nutrient culture medium said recombinant microorganism having said recombinant DNA for the expression of said polypeptide;

1. A method of providing a uniform critical dimension of gate electrodes and interconnection lines during photoetching in the fabrication of an integrated circuit comprising:

providing field oxide isolation areas surrounding bare active areas in and on a semiconductor substrate wherein the surface of said substrate has an uneven topography;

growing a gate silicon oxide layer on the surface of said field oxide areas and said active areas of said semiconductor substrate;

depositing a conducting layer over said gate silicon oxide layer;

covering said conducting layer with a planarization layer wherein said planarization layer planarizes the surface of said substrate;

depositing an anti-reflection layer over the surface of said planarization layer wherein said anti-reflection layer forms a hard mask which is opaque to actinic light;

covering said hard mask with a uniform thickness layer of photoresist;

exposing said photoresist layer to actinic light wherein said hard mask prevents reflection of said actinic light from its surface and developing and patterning said photoresist layer to form a photoresist mask for said conducting layer;

anisotropically etching away said hard mask, said planarization layer, and said conducting layer not covered by said photoresist mask to form said gate electrodes and interconnection lines wherein the width of said gate electrodes and interconnection lines is said critical dimension; and

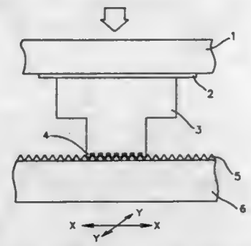
removing said photoresist mask, remaining said hard mask, and remaining said planarization layer to complete the formation of said gate electrodes and interconnection lines having said uniform critical dimension in the fabrication of said integrated circuit.

5,545,589

METHOD OF FORMING A BUMP HAVING A RUGGED SIDE, A SEMICONDUCTOR DEVICE HAVING THE BUMP, AND A METHOD OF MOUNTING A SEMICONDUCTOR UNIT AND A SEMICONDUCTOR DEVICE

Yoshihiro Tomura, Hirakata, and Yoshihiro Bessho, Higashiosaka, both of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 27, 1994, Ser. No. 188,144
Claims priority, application Japan, Jan. 28, 1993, 5-012559
Int. Cl.[6] H01L *21/44*
U.S. Cl. 437—183 **13 Claims**



1. A method for forming bumps for electrically connecting electrode pads of a semiconductor device to terminal electrodes formed on a surface of a circuit board respectively, said semiconductor device being mounted facedown on said surface of said circuit board, comprising:

step a of forming said bumps on said electrode pad of said semiconductor device;

step b of placing facedown said semiconductor device on a flat foundation so that said bumps contact with a grind sheet which is fixed to said flat foundation and which has abrasive grind; and

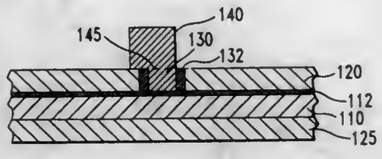
step c of conducting ultrasonic vibration on said flat foundation while pressing said semiconductor device against said flat foundation, thereby forming a plurality of irregularities in a front end portion of each of said bumps.

5,545,590

CONDUCTIVE RIE-RESISTANT COLLARS FOR STUDS BENEATH RIE-DEFINED WIRES

Thomas J. Licata, LaGrangeville, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 29, 1994, Ser. No. 298,481
Int. Cl.[6] H01L *21/44*
U.S. Cl. 437—189 **8 Claims**



1. A method of forming an interconnection member in an integrated circuit containing at least one lower conductive member covered by a first interlayer dielectric having a dielectric top surface, comprising the steps of:

forming an aperture having aperture sidewalls in said first interlayer dielectric;

forming an interlayer aperture collar of Cu on said aperture sidewalls, said interlayer collar having a collar thickness greater than or equal to a nominal wire stud misalignment, being substantially constant vertically through said aperture, having a conductivity greater than about 75 μΩ-cm and having etch resistance to an upper etching process;

forming a first layer of an upper conductive material on said dielectric top surface and extending in said aperture in contact with said interlayer collar; and

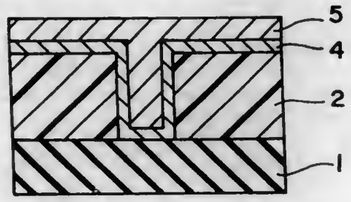
patterning said upper conductive material with said upper etching process, whereby exposed portions of said interlayer collar resist etching during said patterning.

5,545,591

METHOD FOR FORMING AN ALUMINUM FILM USED AS AN INTERCONNECT IN A SEMICONDUCTOR DEVICE

Kazumi Sugai; Hidekazu Okabayashi, and Shunji Kishida, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 182,472, Jan. 28, 1994, abandoned. This application Nov. 6, 1995, Ser. No. 554,029
Claims priority, application Japan, Jan. 29, 1993, 5-012979
Int. Cl.[6] H01L *21/283*
U.S. Cl. 437—192 **7 Claims**



1. A method for forming an interconnect which includes an interconnect hole having a depth/diameter aspect ratio α larger than 1, said method comprising the steps of:

providing said interconnect hole on a surface of a semiconductor substrate;

covering a surface including a surface of said interconnect hole with a film of one of refractory metal and refractory metal compound; and

depositing on the covered surface an aluminum film grown by a chemical vapor deposition process using dimethylaluminum hydride as a source material at a substrate temperature selected such that a ratio between a rate of deposition and a maximum deposition rate becomes $1/(1+4\alpha)$, said maximum deposition rate being a maximum rate of deposition obtained when all film formation conditions other than said substrate temperature are unchanged.

5,545,592

NITROGEN TREATMENT FOR METAL-SILICIDE CONTACT

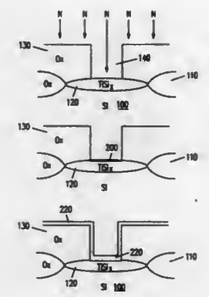
John A. Iacoponi, San Jose, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Feb. 24, 1995, Ser. No. 393,635
Int. Cl.[6] H01L *21/28*
U.S. Cl. 437—200 **9 Claims**

1. A method for forming a contact to a semiconductor body, said method comprising the steps of:

forming a metal silicide layer on said body;

exposing said metal silicide layer to nitrogen ionized in a plasma, thereby converting a portion of said metal silicide layer to a first metal nitride layer;



depositing a layer of a second metal nitride over said metal silicide layer, such that said second metal nitride layer overlays and engages said first metal nitride layer; and

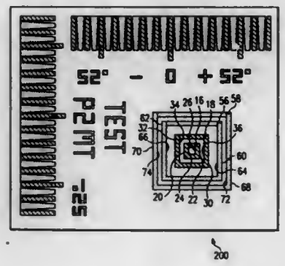
depositing a layer of a second metal over said second metal nitride layer.

5,545,593

METHOD OF ALIGNING LAYERS IN AN INTEGRATED CIRCUIT DEVICE

David C. Watkins; Lowell M. Bramer, and Christopher F. Gerling, all of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 30, 1993, Ser. No. 129,812
Int. Cl.[6] H01L *21/463*
U.S. Cl. 437—225 **12 Claims**



1. A method of aligning multiple layers in an integrated circuit device, the method comprising the steps of:

associating each layer with at least one of a first and a second alignment target, each alignment target having at least four edges on a single plane, wherein the first and the second alignment targets are concentric and have the same structure with different dimensions;

forming on a first layer first alignment targets associated with layers above said first layer and second alignment targets associated with layers below said first layer onto a semiconductor material such that a first alignment target on said first layer is concentrically aligned with a second alignment target on one other layer when the first and the other layer are aligned; and

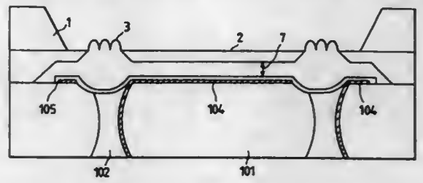
measuring the edges of a first alignment target and a second alignment target to determine when the first and the the second alignment targets are concentrically aligned.

5,545,594

SEMICONDUCTOR SENSOR ANODIC-BONDING PROCESS, WHEREIN BONDING OF CORRUGATION IS PREVENTED

Sean S. Cahill, Menlo Park, Calif., assignor to Yazaki Meter Co., Ltd., Tokyo, Japan

Filed Oct. 26, 1993, Ser. No. 141,054
Int. Cl.[6] H01L *21/46;* **G01L** *9/12;* **H01G** *7/00*
U.S. Cl. 437—228 **2 Claims**



1. A method for bonding a silicon substrate (**1**) and a glass substrate (**101**) through an anodic-bonding process, the method comprising steps of:

forming a hole (**102**) in the glass substrate;

forming a recess (**103**) in a surface of the glass substrate;

depositing a metal layer (**104**) on the surface of the glass substrate;

depositing a dielectric layer (**105**) on the metal layer; and

anodic-bonding the glass substrate and the silicon substrate so as to form a gap (**7**) therebetween, wherein the silicon substrate includes a corrugation (**3**) which flexibly supports a diaphragm (**2**), and wherein

in said step of forming the recess, the recess is formed so as to confront the corrugation to prevent the corrugation from bonding with the glass substrate, the recess extending over only a portion of the surface of the glass substrate substantially confronting the corrugation.

5,545,595

WAVELENGTH UP-CONVERSION TRANSPARENT GLASS CERAMICS AND A PROCESS FOR THE PRODUCTION OF THE SAME

Yuhu Wang, and Junichi Ohwaki, both of Chiyoda-ku, Japan, assignors to Sumita Optical Glass, Inc., and Nippon Telegraph and Telephone Corporation, both of Tokyo, Japan

Division of Ser. No. 295,463, Aug. 25, 1994, Pat. No. 5,420,080. This application Mar. 8, 1995, Ser. No. 400,959
Claims priority, application Japan, Aug. 27, 1993, 5-212572
Int. Cl.[6] C03C *3/112*
U.S. Cl. 501—3 **4 Claims**

1. A method for producing a transparent glass containing rare earth fluoride crystals, said transparent glass having the following composition:

SiO_2	10–60 mol %
$AlO_{1.5}$	0–40 mol %
$GaO_{1.5}$	0–40 mol %
PbF_2	5–60 mol %
CdF_2	0–60 mol %
GeO_2	0–30 mol %
TiO_2	0–10 mol %
ZrO_2	0–10 mol %
ReF_3 or $ReO_{1.5}$	0.05–30 mol %

wherein Re is one or more rare earth elements selected from the group consisting of Er, Tm, Ho, Yb and Pr, said method comprising:

(a) combining powders of each component of said composition to form a mixture thereof;

(b) charging said mixture into a platinum crucible;

(c) uniformly solubilizing said mixture in air at a temperature of about 1000° C.;

(d) casting the solubilized mixture in a carbon mold and annealing said solubilized mixture in a furnace to remove strain therein;

(e) subjecting the annealed product to a temperature greater than the glass transition temperature thereof at which no devitrification occurs; and

(f) cooling the resulting product thereby precipitating said rare earth fluoride crystals containing 0.05 to 30 mol % of rare earth ions and said rare earth fluoride crystals having a grain diameter less than a visible light wavelength.

5,545,596

COMPOSITION FOR COLOURED GLASS INTENDED FOR THE MANUFACTURE OF GLAZING PANES

Pedro Alvarez Casariego, Salinas, Spain, and Jean-Jacques Massol, Asnieres, France, assignors to Saint-Gobain Vitrage International, Courbevoie, France

Division of Ser. No. 969,836, Aug. 5, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 487,393

Claims priority, application France, Oct. 3, 1991, 91 12164

Int. Cl.[6] C03C *3/087*

U.S. Cl. 501—71 **3 Claims**

1. A coloured glass composition comprising the following oxides within the following limits by weight:

SiO_2	64 to 75%
Al_2O_3	0 to 5%
B_2O_3	0 to 5%
CaO	5 to 15%
MgO	0 to 5%
Na_2O	10 to 18%
K_2O	0 to 5%

and consisting essentially of as colouring agents:

Fe_2O_3 (total iron) with FeO content representing from of the total iron content expressed in the form of Fe_2O_3	0.5 to 1.5% 16 to 55%
CoO	0.003 to 0.015%
Cr_2O_3	0.025 to 0.09%
Se	0 to 0.0025%

wherein the glasses have a total energy transmission factor (T_E) less than the light transmission factor under illuminant A (TL_A), the factor T_E being from 10 to 48% and the factor TL_A from 20 to 60% for a thickness of 3.85 millimetres.

5,545,597

SILICON NITRIDE CERAMIC HAVING HIGH FATIGUE LIFE AND HIGH TOUGHNESS

Russell L. Yeckley, Oakham, Mass., assignor to Saint-Gobain/Norton Industrial Ceramics Corp., Worcester, Mass.

Division of Ser. No. 136,691, Oct. 14, 1993. This application Mar. 10, 1995, Ser. No. 402,086

Int. Cl.[6] C04B *35/58*

U.S. Cl. 501—98 **18 Claims**

1. A sintered silicon nitride ceramic comprising:

a) a crystalline phase comprising between about 85 w/o and about 95 w/o beta silicon nitride grains, and

b) a grain boundary phase consisting essentially of

i) between about 0.6 mol % and about 3.2 mol % rare earth, as rare earth oxide, and

ii) no more than 2.0 w/o excess oxygen, as silica,

wherein at least about 20% of the beta silicon nitride grains have a thickness of greater than 1 micron.

5,545,598

HIGH HEAT CONDUCTIVE BODY AND WIRING BASE SUBSTRATE FITTED WITH THE SAME

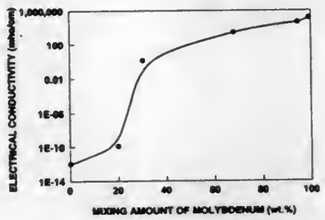
Kouki Ogawa; Kozo Yamasaki, and Naomiki Kato, all of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Feb. 14, 1994, Ser. No. 195,085

Claims priority, application Japan, Feb. 12, 1993, 5-047353; Feb. 12, 1993, 5-047354; Dec. 24, 1993, 5-347667

Int. Cl.[6] B32B *17/00*

U.S. Cl. 501—127 **8 Claims**



1. A high heat conductive body having a high heat radiation property and a low coefficient of thermal expansion, consisting of 60–99 wt. % of at least one of molybdenum or tungsten and 1 or more wt. % of alumina.

5,545,599

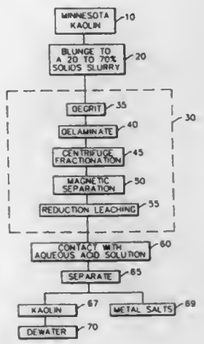
PROCESS FOR WHITENING KAOLIN

Samuel M. Pickering, Jr., Macon; J. Elmo Bloodworth, Milledgeville, and Donald G. Turner, Washington, all of Ga., assignors to U.S. Borax, Inc., Valencia, Calif.

Filed Sep. 23, 1994, Ser. No. 311,522

Int. Cl.[6] C04B *33/04*

U.S. Cl. 501—146 **15 Claims**



1. A process for whitening kaolin contaminated with chlorite/biotite micas, the process comprising the steps of contacting the kaolin contaminated with chlorite/biotite micas with an aqueous acid solution at a pH of less than about 2 to convert the chlorite/biotite micas into kaolin and one or more dissolved metal salts, and separating the kaolin from the dissolved metal salts.

5,545,600

PROCESS FOR THE PREPARATION OF DIALKYLTIN DIALKOXIDE

George A. Knudsen, 1932 Mary Ellen La., Scotch Plains, N.J. 07076; Elena N. Suciu, 417 Prospect, Ridgewood, N.J. 07450, and Robert C. Michaelson, One Glendale Terr., Kinnelon, N.J. 07405

Filed Dec. 21, 1994, Ser. No. 361,269

Int. Cl.[6] B01J *31/22*

U.S. Cl. 502—152 **27 Claims**

1. A process for making a catalyst product containing tin species which comprises reacting dialkyltin oxide with monohydric alcohol and a dialkyl carbonate having the same alkyl group as said dialkoxide at a temperature in the range between about 50° to 200° C. and at a pressure in the range between about 0.52 to 4.14 MPa, wherein said catalyst product comprises dialkyltin dialkoxide in the range between about 90 to 100 mole % based on the tin species of said catalyst product.

5,545,601

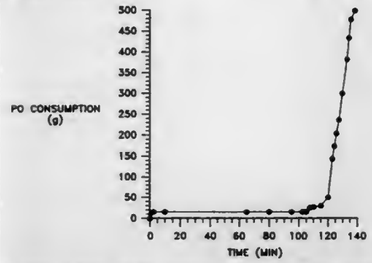
POLYETHER-CONTAINING DOUBLE METAL CYANIDE CATALYSTS

Bi Le-Khac, West Chester, Pa., assignor to Arco Chemical Technology, L.P., Greenville, Del.

Filed Aug. 22, 1995, Ser. No. 517,780

Int. Cl.[6] B01J *31/00*

U.S. Cl. 502—156 **14 Claims**



1. A solid double metal cyanide (DMC) catalyst useful for epoxide polymerizations, said catalyst comprising:

(a) a double metal cyanide compound;

(b) an organic complexing agent; and

(c) from about 5 to about 80 wt. % of a polyether polyol;

wherein some or all of the hydroxyl groups of the polyether polyol are tertiary hydroxyl groups.

5,545,602

CATALYST WITH SPECIFIED PORE SIZE DISTRIBUTION

Gerald V. Nelson, Nederland; Govanon Nongbri; Roy E. Pratt, both of Port Neches; David E. Sherwood, Jr., Beaumont, and Pei-Shing E. Dai, Port Arthur, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 242,995, May 16, 1994, Pat. No. 5,435,908, which is a continuation of Ser. No. 953,176, Sep. 29, 1992, abandoned, which is a continuation-in-part of Ser. No. 870,970, Apr. 20, 1992, Pat. No. 5,399,259. This application Apr. 20, 1995, Ser. No. 425,971

Int. Cl.[6] B01J *21/04;23/76*

U.S. Cl. 502—314 **10 Claims**

1. A catalyst characterized by its ability to hydrotreat a charge hydrocarbon feed containing components boiling above 1000° F., and sediment-formers, sulfur, metals, asphaltenes, carbon residue, and nitrogen which comprises

a porous alumina support bearing 2.2–6 wt % of a non-noble Group VIII metal oxide, 13–24 wt % of a Group VI-B metal oxide, and 0–2 wt % of a phosphorus oxide, said catalyst having a Total Surface Area of 150–240 m^2/g, a Total Pore Volume of 0.7–0.98 cc/g, and a Pore Diameter Distribution whereby less than about 20% of the Total Pore Volume is present as primary micropores of diameter less than about 100 Å, about 34%–74% of the Total Pore Volume is present as secondary micropores of diameter of about 100 Å–200 Å, about 26–46% of the Total Pore Volume is present as mesopores of diameter ≧200 Å, about 22–32% of the Total Pore Volume is in pores having diameters ≧250 Å, and macropores of diameters ≧1000 Å are present in an amount of about 14–22% of the Total Pore Volume.

5,545,603

ETHYLENE OXIDE CATALYST AND PROCESS

Richard A. Kemp, Stafford, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 1, 1994, Ser. No. 333,007

Int. Cl.[6] B01J *23/50*

U.S. Cl. 502—347 **49 Claims**

1. An ethylene oxide catalyst for the vapor phase production of ethylene oxide from ethylene and oxygen comprising a catalytically effective amount of silver, a promoting amount of alkali metal, a promoting amount of rhenium and a rhenium co-promoter selected from phosphorus, boron and mixtures thereof supported on a suitable support having a surface area in the range of from about 0.05 m^2/g to about 10 m^2/g.

5,545,604

PROCESSES FOR REACTING BASTNAESITE WITH ALKALINE-EARTH METALS

Edward J. Demmel, Newport Beach, Calif., assignor to Intercat, Inc., Manasquan, N.J.

Continuation-in-part of Ser. No. 99,828, Jul. 30, 1993, Pat. No. 5,422,332. This application Aug. 16, 1994, Ser. No. 291,298

Int. Cl.[6] B01J *20/04*

U.S. Cl. 502—414 **50 Claims**

1. A process for making a chemically reacted, bastnaesite/magnesium oxide/alumina compound, said process comprising: (1) dispersing alumina in a liquid medium that also contains between about 0.5 and about 10.0 milliequivalents of a monoprotonic acid per gram of alumina to create an alumina sol; (2) mixing a magnesium compound with bastnaesite to form a bastnaesite/magnesium compound and then mixing the bastnaesite/magnesium compound with the alumina sol and thereby creating a bastnaesite/magnesium/alumina total reaction composition; (3) spray drying the bastnaesite/magnesium/alumina total reaction composition to produce a solid solution material; and (4) calcining the solid solution material resulting from the spray drying to produce a bastnaesite/magnesium oxide/alumina compound.

5,545,605

THERMAL TRANSFER PRINTING METHOD AND IMAGE-FORMING LAYER TRANSFER MEDIUM

Akihiro Imai, Ikoma; Yasuo Fukui, and Hiroyuki Matsuo, both of Osaka, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

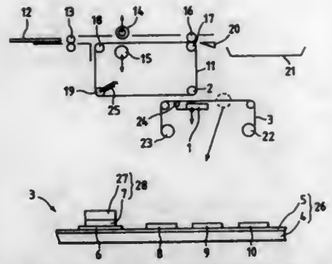
Filed Nov. 21, 1994, Ser. No. 345,686

Claims priority, application Japan, Nov. 22, 1993, 5-292050; Jun. 27, 1994, 6-144842

Int. Cl.[6] B41M *5/035;5/38*

U.S. Cl. 503—227 **13 Claims**

1. A thermal transfer printing method comprising the steps of: transferring a sequential laminate from a transfer medium onto an intermediate medium by applying at least one of heat and pressure, said transfer medium having a support on which said



sequential laminate is provided separately from a color layer which comprises a sublimable or diffusible dye, said sequential laminate consisting of a dyeing layer and a dye anti-diffusion layer, wherein said dye anti-diffusion layer has a glass transition point or a softening point higher than that of said dying layer by an amount not less than 200 g, thereby forming a laminate on the intermediate medium;

laying said color layer on the top of the laminate formed on the intermediate medium so that said color layer of the transfer medium is brought into contact with said dyeing layer of the laminate;

forming a thermal dye transfer image in said dying layer of the laminate formed on said intermediate medium by heating said transfer medium with a printing head; and

transferring said laminate carrying the thermal dye transfer image thereon from said intermediate medium onto an image-receiving medium by applying at least one of heat and pressure, thereby finally forming a print image on the image-receiving medium.

5,545,606

THERMAL TRANSFER IMAGE-RECIEVING SHEET

Ryohei Takiguchi; Hitoshi Saito, and Masumi Nishizawa, all of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Japan

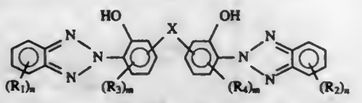
Division of Ser. No. 216,310, Mar. 23, 1994, Pat. No. 5,405,824, which is a division of Ser. No. 974,738, Nov. 13, 1992, Pat. No. 5,328,888. This application Jan. 17, 1995, Ser. No. 373,629

Claims priority, application Japan, Nov. 18, 1991, 3-328307; Dec. 16, 1991, 3-351811; Feb. 6, 1992, 4-54129; Mar. 4, 1992, 4-81456; Apr. 15, 1992, 4-119873; Sep. 25, 1992, 4-277247

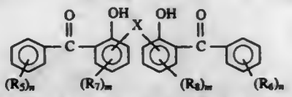
Int. Cl.[6] B41M *5/035;5/38*

U.S. Cl. 503—227 **1 Claim**

1. A thermal transfer image-receiving sheet comprising a substrate sheet and a dye-receiving layer formed on at least one surface of the substrate sheet, wherein the dye-receiving layer comprises a dye-receiving resin and at least one compound selected from the group consisting of compounds represented by the following general formulae (1) and (2):



(1)



(2)

wherein R_1 to R_8 each independently stand for a hydrogen atom, a halogen atom, a C_1–C_{12} alkoxy group, a C_7–C_{13} arylalkoxy group, a C_1–C_{10} alkyl group, a cycloalkyl group, an arylalkyl group, an aryl group, a thioalkoxy group, a thioaryloxy group, an alkylcarbonyl group, an alkyoxycarbonyl group, an alkylsulfonyl group, an alkylaminocarbonyl group, a nitro group, an amino group, an alkylamino group or a heterocyclic group, n is an integer of 0 to 4 and m is an integer of 1 to 3, provided that R_1 to R_8 may be the same or different, X stands for $=C(R_9)(R_{10})$, $—R_{11}—CO—Y—CO—R_{12}—$ or a straight-chain or branched alkylene group interrupted by at least one Z, Y stands for —O—R_{13}—O—, Z stands for —O—, —CO—, —CO—O—, —OC—O—, —S—, —SO—, —SO_2—, —NHCONH—, —NHCO— or —CONH—, R_9 to R_{12} each independently stand for a hydrogen atom, a C_1–C_{10} alkyl group, a cycloalkyl group, an arylalkyl group or an aryl group and R_{13} stands for a straight-chain or branched alkylene group.

5,545,607

HERBICIDAL COMPOSITIONS COMPRISING METOLACHLOR AND TRIKETONE HERBICIDES

Theo Quaghebeur, Symphorien, and Walter Van Loocke, Meetkerke, both of, Belgium, assignors to Sandoz Ltd., Basel, Switzerland

Division of Ser. No. 262,725, Jun. 20, 1994, Pat. No. 5,491,124. This application May 24, 1995, Ser. No. 448,931

Int. Cl.[6] A01N *35/06;37/22;43/56;43/72*

U.S. Cl. 504—130 **6 Claims**

1. A method of controlling undesired plant growth in maize crops which comprises post-emergence co-application to the maize crop locus of metolachlor and at least one triketone herbicide selected from sulcotrione, 2-(4-methylsulfonyloxy-2-nitrobenzoyl)-4,4,6,6-tetramethyl-1,3 -cyclohexandione; 3-(4-methylsufonyloxy-2-nitrobenzoyl)-bicyclo-[3,2,1]octane-2,4-dione; 3-(4-methylsulfonyl-2-nitrobenzoyl)-bicyclo-[3,2,1]octane-2,4-dione; 4-(4-chloro-2-nitrobenzoyl)-2,6,6-trimethyl-2H-1,2-oxazine-3,5(4H, 6H)-dione; 3 -(4-methylthio-2-nitrobenzoyl)-bicyclo[3,2,1]octane-2,4-dione; 4-(2-nitro-4-trifluoromethoxybenzoyl)-2,6,6-trimethyl-2H-1,2-oxazine-3,5(4H, 6H)dione in herbicidally effective aggregate amount.

5,545,608

PYRAZOLE-GLYCOLIC ACID AMIDE DERIVATIVES AS HERBICIDES

Katsushi Morimoto; Masatoshi Ohnari, both of Funabashi; Tsutomu Nawamaki, Minamisaitama-gun; Shigeomi Watanabe, Minamisaitama-gun, and Kimihiro Ishikawa, Minamisaitama-gun, all of, Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

PCT No. PCT/JP92/01476, § 371 Date Apr. 25, 1994, § 102(e) Date Apr. 25, 1994, PCT Pub. No. WO93/10099, PCT Pub. Date May 27, 1993

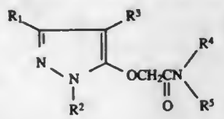
PCT Filed Nov. 12, 1992, Ser. No. 211,988

Claims priority, application Japan, Nov. 12, 1991, 3-295910; Mar. 17, 1992, 4-060078; Jun. 12, 1992, 4-153323; Oct. 19, 1992, 4-279929

Int. Cl.[6] A01N *43/56;* **C07D** *231/22;401/12;403/12*

U.S. Cl. 504—282 **3 Claims**

1. A pyrazole-glycolic acid amide of formula (1):



(1)

wherein

R^1 represents a C_{1-4} haloalkyl group, a cyano group, or a halogen atom;

R^2 represents an unsubstituted phenyl group or an unsubstituted pyridyl group;

R^3 represents a halogen atom;

R^4 and R^3 form, along with the nitrogen atom to which they bond, a 5-membered to 8-membered ring, wherein the ring may contain one or more nitrogen atoms and the ring may be substituted by a C_{1-4} alkyl group.

5,545,609

PESTICIDAL 3-PHENYLPYRAZOLE AQUEOUS SUSPENSION CONCENTRATE AND A PROCESS FOR PRODUCTION THEREOF

Minoru Higashimura, Ibaraki; Takashi Ootsuka, Tondabayashi, and Masakazu Shibayama, Takatsuki, all of, Japan, assignors to Nihon Nohyaku Co., Ltd., Tokyo, Japan

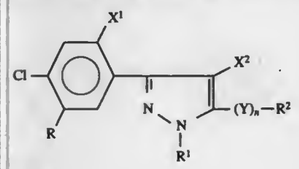
Filed Oct. 6, 1994, Ser. No. 319,028

Claims priority, application Japan, Oct. 12, 1993, 5-280081

Int. Cl.[6] A01N *43/56*

U.S. Cl. 504—282 **2 Claims**

1. A pesticidal composition in concentrate aqueous suspension containing as an active ingredient 3-substituted pyrazole derivative represented by the general formula (I):



(I)

wherein R is

$—Y^1R^3$

(wherein R^3 is a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_2-C_6 alkenyl group or a C_2-C_6 alkynyl group, and Y^1 is —O— or —S—),

$—Y^2CH(R^4)CO—OR^5$

(wherein R^4 is a hydrogen atom or a C_1-C_6 alkyl group, R^5 is a hydrogen atom, a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C_2-C_6 alkenyl group or a C_2a-C_6 alkynyl group, and Y^2 is —O—, —S— or —NH—),

$—COOCH(R^4)CO—Y^1R^3$

(wherein R^4, R^5 and Y^1 are as defined above), or

$—COOR^6$

(wherein R^6 is a C_1-C_6 alkyl group, a C_1-C_6 haloalkyl group, a C 2-C_6 alkenyl group or a C_2-C_6 alkynyl group), R^1 is a C_1-C_6 alkyl group, R^2 is a hydrogen atom, a C_1-C_6 alkyl group or a C_1-C_6 haloalkyl group, X^1 and X^2, which may be the same or different, are halogen atoms, Y is —O—, —S—, —SO— or —SO_2—, and n is zero or 1,

said composition comprising said active ingredient in particulate form wherein 90% of the particles are less than 2 μm in diameter, with 50% of the particles less than 1 μm in diameter; and

said particles being obtained by subjecting said active ingredient to a grinding step employing a hard grinding element having a density of larger than 4 g/cm^3 and a particle size of less than 1 mm.

5,545,610

OXIDE-BASED SUPERCONDUCTOR, A PROCESS FOR PREPARING THE SAME AND A WIRE MATERIAL OF COMPRISING THE SAME

Kazutoshi Higashiyama; Toshiya Doi; Takesi Ozawa, all of Hitachi; Seizi Takeuchi, Hitachiota; Tomoichi Kamo, Ibaraki-ken; Shinpei Matsuda, Tokyo, and Yutaka Yoshida, Hitachi, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 2, 1993, Ser. No. 115,056

Claims priority, application Japan, Sep. 4, 1992, 4-260491

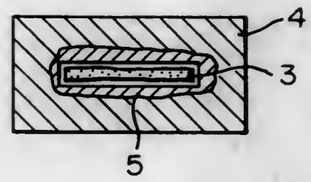
Int. Cl.[6] B32B *9/00;* **H01B** *12/00;* **H01L** *39/12*

U.S. Cl. 505—120 **5 Claims**

1. A superconducting material comprising an elongated body having a first portion of a solid low melting point composition, a second portion of a solid composition and an intermediate oxide-based superconductor arranged between the first and second portions, the solid low melting point composition containing Pb, Ca and Cu or Pb and Cu, and the solid composition containing Tl, Sr, Ca and Cu or Tl, Sr, Ba, Ca and Cu,

wherein the low melting point composition melts at a temperature below the melting point of the solid composition, and

wherein the oxide-based superconductor is a reaction product formed between the first portion and the second portion when the first portion is in contact with the second portion and is heated to a temperature which melts the low melting point composition but not the solid composition.



5,545,611

OXIDE SUPERCONDUCTOR THIN FILM PREPARED BY MBE

Takao Nakamura, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 152,385, Nov. 16, 1993, Pat. No. 5,403,819. This application Mar. 31, 1995, Ser. No. 414,423

Claims priority, application Japan, Nov. 17, 1992, 4-331041

Int. Cl.[6] B32B *9/00*

U.S. Cl. 505—238 **13 Claims**

1. An oxide superconductor thin film prepared by emitting under vacuum, a molecular beam of one of the constituent elements of the oxide superconductor to a substrate to form a first oxide thin film which has a smooth surface and a thickness of one or two units cells, and

emitting under vacuum, molecular beams of all of the constituent elements of the oxide superconductor to the first oxide thin film so as to form the oxide superconductor thin film on the first oxide thin film.

5,545,612

SUPERCONDUCTOR ELEMENT AND METHOD OF MANUFACTURING THE SAME

Koichi Mizushima, Kamakura; Jiro Yoshida, and Koh-ichi Kubo, both of Yokohama, all of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 234,626, Apr. 28, 1994, abandoned, which is a continuation of Ser. No. 998,759, Dec. 30, 1992, abandoned, which is a continuation of Ser. No. 263,374, Oct. 27, 1988, abandoned. This application May 1, 1995, Ser. No. 432,054

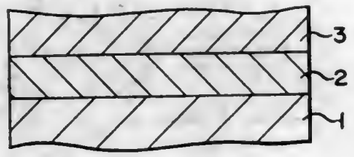
Claims priority, application Japan, Oct. 27, 1987, 62-271466; May 25, 1988, 63-127404; Jun. 21, 1988, 63-152830

Int. Cl.[6] B32B *09/00*

U.S. Cl. 505—239 **4 Claims**

1. A superconducting element structure comprising:

a first member of an oxide superconductor selected from the group consisting of (i) a defect perovskite material of the formula $ABa_2Cu_3O_{7-\delta}$ wherein A represents at least one element selected from the group consisting of Y, Yb, Ho, Dy, Eu,



Er, Tm, and Lu, and δ represents oxygen deficiency, (ii) a layered perovskite superconductor material of the formula Sr-La-Cu-O, (iii) a Bi oxide superconductor material of the formula Bi-Sr-Ca-Cu-O, and (iv) a Tl oxide superconductor material of the formula Tl-Sr-Cu-O;

a second member for forming a junction with said first member; and

an interlayer comprising ReO_3 interposed between said first and second members and formed of a conductive oxide.

5,545,613

PREPARATION OF SUPERCONDUCTING OXIDES AND OXIDE-METAL COMPOSITES

Gregory J. Yurek, Wellesley, and John B. VanderSande, Newbury, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 056,605, May 3, 1993, Pat. No. 5,439,880, which is a continuation of Ser. No. 794,962, Nov. 20, 1991, abandoned, which is a continuation of Ser. No. 061,233, Jun. 10, 1987, Pat. No. 5,204,318, which is a continuation-in-part of Ser. No. 031,407, Mar. 27, 1987, Pat. No. 4,826,808. This application Jul. 11, 1994, Ser. No. 273,408

Int. Cl.[6] H01L *39/12;* **B05D** *5/12;* **C04B** *35/45;35/653*

U.S. Cl. 505—430 **18 Claims**

1. A method for preparing a superconducting oxide, comprising the steps of:

combining metallic elements of a copper-based oxide superconductor to provide an alloy;

oxidizing the alloy for a first time period in an oxidizing atmosphere at a first temperature, whereby the alloy is almost completely oxidized; and

heating the oxidized alloy for a second time period in an oxidizing atmosphere at a second temperature, said second temperature being higher than said first temperature, whereby the oxidized alloy is formed into the oxide superconductor.

5,545,614

CONTROLLING NITROGEN OXIDE CONCENTRATIONS TO MODULATE SKELETAL MUSCLE CONTRACTION

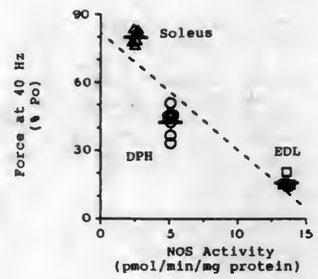
Jonathan Stamler, Chapel Hill, N.C., and Lester Kobzik, Needham, Mass., assignors to Duke Univ., Durham, N.C., and Harvard College, Cambridge, Mass.

Continuation-in-part of Ser. No. 276,105, Jul. 15, 1994. This application Dec. 5, 1994, Ser. No. 349,436

Int. Cl.[6] A61K *38/42;31/195;31/22;31/495*

U.S. Cl. 514—6 **7 Claims**

1. A method for treating a mammal by stimulating the contraction of skeletal muscle of said mammal comprising: treating a mammal in need of treatment for amyotrophic lateral sclerosis,



muscular dystrophies, congestive heart failure, or lung diseases by contraction of skeletal muscle by administering to said mammal a skeletal muscle contracting amount of a nitric oxide synthase inhibitor.

5,545,615

A METHOD OF INHIBITING FERTILIZATION BY ALPHA-1-ANTITRYPSIN OR ANTITHROMBIN III

John M. Maraganore, Waltham, Mass., assignor to ZymoGenetics, Inc., Seattle, Wash.

Continuation of Ser. No. 73,975, Jun. 8, 1993, abandoned, which is a continuation of Ser. No. 944,818, Sep. 14, 1992, abandoned, which is a continuation of Ser. No. 821,273, Jan. 10, 1992, abandoned, which is a continuation of Ser. No. 610,459, Nov. 8, 1990, abandoned, which is a continuation of Ser. No. 98,264, Sep. 18, 1987, abandoned. This application Sep. 22, 1994, Ser. No. 312,010

Int. Cl.[6] A61K *37/02*

U.S. Cl. 514—2 **6 Claims**

1. A method of inhibiting fertilization in warm-blooded animals, comprising:

administering intravaginally to the animal an effective amount of a composition comprising a protein selected from the group consisting of alpha-1-antitrypsin and antithrombin III, acrosin, and a physiologically acceptable carrier or diluent.

5,545,616

METHOD FOR PREDICTING AND/OR PREVENTING PRETERM LABOR

Teresa K. Woodruff, San Bruno, Calif., assignor to Genentech, Inc., South San Francisco, Calif.

Filed Sep. 22, 1994, Ser. No. 310,609

Int. Cl.[6] A61K *37/24*

U.S. Cl. 514—8 **16 Claims**

1. A method for avoiding premature labor in a pregnant mammal comprising administering to said mammal during labor, but before an infant is to be delivered, an effective amount of an activin antagonist.

5,545,617

THERAPEUTIC REGULATION OF ABNORMAL CONJUNCTIVAL GOBLET CELL MUCOUS SECRETION

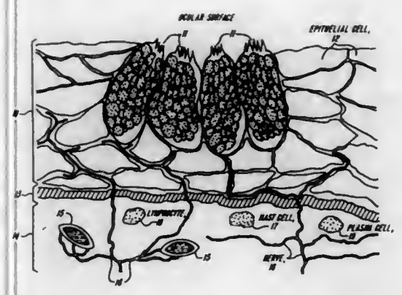
Darlene A. Dartt, Newton, and Timothy L. Kessler, Boston, both of Mass., assignors to The Schepens Eye Research Institute, Inc., Boston, Mass.

Filed Nov. 12, 1993, Ser. No. 152,175

Int. Cl.[6] A61K *38/16;49/00;* **C12Q** *1/02;* **G01N** *33/48*

U.S. Cl. 514—12 **7 Claims**

1. A method of treating a patient suffering from excess conjunc



tival goblet cell mucous secretion associated with a disorder of or injury to an eye, said method comprising the steps of:

identifying a patient suffering from excess conjunctival goblet cell mucous secretion associated with a disorder of or injury to an eye;

providing a therapeutic composition comprising a neural system inhibitor selected from the group consisting of adrenergics, cholinergics, dopaminergics, serotonergics, neuropeptides, neurotoxins, ion channel modulators and local anesthetics, in a pharmaceutically acceptable carrier substance; and

administering to an affected eye of said patient a therapeutically effective amount of said composition.

5,545,618

GLP-1 ANALOGS USEFUL FOR DIABETES TREATMENT

Douglas I. Buckley, 215 Brookward Rd., Woodside, Calif. 94062; Joel F. Habener, 217 Plymouth Rd., Newton Highlands, Mass. 02161; Joanne B. Mallory, 199 Acalanes, Apt. 3, Sunnyvale, Calif. 94086, and Mojsov Svetlana, 504 East 63rd St., New York, N.Y. 10021

Continuation of Ser. No. 762,768, Sep. 20, 1991, which is a continuation-in-part of Ser. No. 468,736, Jan. 24, 1990, abandoned. This application Dec. 10, 1993, Ser. No. 165,516

Int. Cl.[6] A61K *38/26;* **C07K** *14/605*

U.S. Cl. 514—12 **14 Claims**

1. A peptide which is more potent than glucagon in stimulating insulin release from islet cells, said peptide consisting of labeled or unlabeled GLP-1(7-34), GLP-1(7-35), GLP-1(7-36), or GLP-1(7-37) or the C-terminal amide form thereof, having at least one modification selected from the group consisting of:

(a) substitution of a neutral amino acid, arginine, or a D form of lysine for lysine at position 26 and/or 34 and/or a neutral amino acid, lysine, or a D form of arginine for arginine at position 36;

(b) substitution of an oxidation-resistant amino acid for tryptophan at position

(c) substitution according to at least one of:

Y for V at position 16;

K for S at position 18;

D for E at position 21;

S for G at position 22;

R for Q at position 23;

R for A at position 24; and

Q for K at position 26;

(d) a substitution consisting of at least one of:

an alternative small neutral amino acid for A at position 8;

an alternative acidic amino acid or neutral amino acid for E at position 9;

an alternative neutral amino acid for G at position 10; and

an alternative acidic amino acid for D at position 15; and

(e) substitution of an alternative neutral amino acid or the D or N-acylated or alkylated form of histidine for histidine at position 7

wherein for (a), (b), (d) and (e), the substituted amino acids can optionally be in the D form and the amino acids substituted at position 7 can optionally be in the N-acylated or N-alkylated form.

5,545,619

MODIFIED COMPLEMENT SYSTEM REGULATORS

John P. Atkinson, St. Louis; Dennis Hourcade, Creve Coeur, and Malgorzata Krych, St. Louis, all of Mo., assignors to Washington University, St. Louis, Mo.

Continuation of Ser. No. 695,514, May 3, 1991, abandoned. This application Mar. 18, 1994, Ser. No. 210,266

Int. Cl.[6] A61K *38/36;* **C07K** *14/705;14/745*

U.S. Cl. 514—12 **11 Claims**

1. An analog of a protein selected from the group consisting of complement receptor 1,

complement receptor 2,

decay accelerating factor,

membrane cofactor protein,

C4 binding protein, and

factor H, and

these complement regulating proteins wherein the carboxy terminus is removed to allow the protein to be secreted,

wherein said protein analog contains defined amino acid substitutions in the short consensus repeats selected from the group consisting of

the protein wherein amino acids corresponding to amino acids 114–121 of CR1 are modified in a short consensus repeat to comprise the amino acid sequence S-T-(K/R)-P-P-(I/L/V)-C-(Q/N) (SEQ ID NO:8);

the protein wherein the amino acids corresponding to amino acids 114–121 of CR1 are modified to contain the sequence S-T-K-P-P-I-C-Q (SEQ ID NO:1);

the protein wherein amino acids corresponding to positions 114–121 of CR1 are modified in a short consensus repeat to contain the sequence (D/E)-(N/Q)-(E/D)-T-P-(I/L/V)-C-(D/E) (SEQ ID NO:9);

the protein wherein amino acids corresponding to amino acids 114–121 of CR1 comprise the sequence D-N-E-T-P-I-C-D (SEQ ID NO:2);

the protein wherein an amino acid corresponding to an amino acid selected from the group consisting of 35, 64, 65, and 94 of CR1 is selected from the group consisting of (G/A) 35, (R/K) 64, (N/Q) 65, and (Y/F) 94;

the protein wherein an amino acid corresponding to an amino acid selected from the group consisting of 35, 64, 65, and 94 of CR1 is selected from the group consisting of G35, R64, N65, and Y94;

the protein wherein the amino acid corresponding to amino acid 92 of CR1 is T and;

the protein wherein an amino acid selected from the group consisting of 35, 64, 65, 92 and 94, of CR1 is substituted by a different amino acid residue than the corresponding amino acid of the naturally occurring CR1.

11. A pharmaceutical composition for modulation of complement activity which composition comprises an amount of the analog of claim 1 effective to obtain said modulation in admixture with at least one pharmaceutically acceptable excipient.

5,545,620

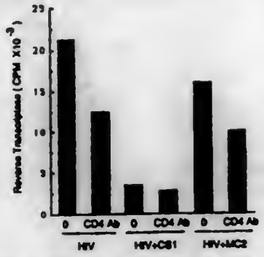
SYNTHETIC FIBRONECTIN FRAGMENTS AS INHIBITORS OF RETROVIRAL INFECTION

Sharon M. Wahl, Galthersburg, Md.; James B. McCarthy, and Leo T. Furcht, both of Minneapolis, Minn., assignors to United States of America as represented by Sec. Dept. HHS, Washington, D.C., and Reagents of the University of Minnesota, Minneapolis, Minn.

Continuation of Ser. No. 6,121, Jan. 19, 1993, abandoned. This application Aug. 16, 1994, Ser. No. 291,349

Int. Cl.[6] A61K *38/39;38/08;38/10;* **C07K** *17/02*

U.S. Cl. 514—12 **3 Claims**



1. A method for inhibiting HIV-1 virus infection of mammalian cells comprising contacting the cells with an effective inhibiting amount of a fibronectin fragment or carrier molecule conjugates thereof, where the fibronectin fragment amino acid sequence is selected from the group consisting of:

YEKPGSPPRE WPRPRPGV (FN1; SEQ ID NO:1), KNNQKSEPLI GRKKT (FN2; SEQ ID NO:2), YRVRVTPKEK TGPMKE (FN3; SEQ ID NO:3), SPPRRARVT (FN4; SEQ ID NO:4), and WQPPRARI (FN5; SEQ ID NO:5). D[P]ELPQLVTLP HPNLHGPEIL DVPST (FN6; SEQ ID NO:6), and ITVYAVTGRG DSPASSKPISI (FN7; SEQ ID NO:7).

5,545,621

GLUTATHIONE S-TRANSFERASE-ACTIVATED COMPOUNDS

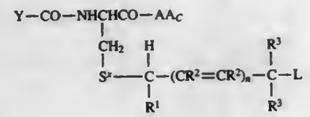
Lawrence M. Kauvar, San Francisco; Matthew H. Lyttle, Point Reyes Station, and Apparao Satyam, Fremont, all of Calif., assignors to Terrapin Technologies, Inc., South San Francisco, Calif.

Continuation-in-part of Ser. No. 863,564, Apr. 3, 1992, abandoned, which is a continuation-in-part of Ser. No. 693,245, Apr. 29, 1991, abandoned. This application Oct. 1, 1993, Ser. No. 130,736

Int. Cl.[6] A61K *38/00;* **C07K** *5/023*

U.S. Cl. 514—18 **27 Claims**

1. A compound of the formula:



(I)

5,545,622

PROCESS FOR PREPARING SURFACTANT MIXTURES HAVING HIGH SOLIDS CONTENT

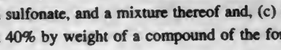
Thomas Casamassina, Totowa; Florencio Morales, Jr., Jersey City; Barry A. Salka, Fair Lawn, all of N.J., and John Fallon, Point Pleasant, Pa., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Filed Sep. 13, 1993, Ser. No. 120,624

Int. Cl.[6] A61K *31/70;* **C07G** *3/00;* **C11D** *9/00*

U.S. Cl. 252—353 **8 Claims**

1. A composition consisting essentially of: (a) water, (b) from about 25% to about 40% by weight of the sodium salt of an anionic surfactant selected from the group consisting of: an alkyl isethionate, an alkyl sarcosinate, a sulfosuccinate, an alkyl taurate, an olefin sulfonate, and a mixture thereof and, (c) from about 25% to about 40% by weight of a compound of the formula



(1)

wherein R_1 is a monovalent organic radical having from about 6 to about 30 carbon atoms; Z is a saccharide residue having 5 or 6 carbon atoms; a is a number having a value from 1 to about 6, wherein the composition is in the form of a concentrated solution.

5,545,623

METHOD OF INHIBITING SECRETION OF INFLAMMATORY CYTOKINES

Akira Matsumori, 16-22, Segawa 5-chome, Minoh-shi, Osaka, Japan, assignor to Akira Matsumori, Osaka, and Otsuka Pharmaceutical Co., Ltd., Tokyo, both of, Japan

Filed Jun. 7, 1995, Ser. No. 486,579

Claims priority, application Japan, Jun. 10, 1994, 6-128765

Int. Cl.[6] A61K *31/70*

U.S. Cl. 514—26 **16 Claims**

1. A method of inhibiting secretion of inflammatory cytokines in a host which comprises administering one or more digitalis compounds in an amount effective for inhibiting secretion of an inflammatory cytokine to the host in need of inhibition of secretion of the inflammatory cytokine.

5,545,624

DERIVATIVES OF 16-MEMBERED RING ANTIBIOTIC MACROLIDES

Scott J. Hecker, Palo Alto, Calif.; Martin R. Jefson, Stonington, and James W. McFarland, Lyme, both of Conn., assignors to Pfizer Inc., New York, N.Y.

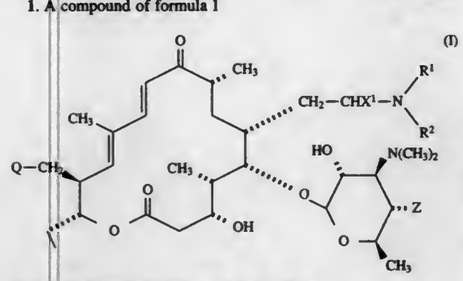
PCT No. PCT/US93/05210, § 371 Date Jan. 11, 1995, § 102(e) Date Jan. 11, 1995, PCT Pub. No. WO94/02496, PCT Pub. Date Feb. 3, 1994

Continuation-in-part of Ser. No. 996,243, Dec. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 914,242, Jul. 15, 1992, abandoned. This PCT application Jun. 7, 1993, Ser. No. 362,496

Int. Cl.[6] A61K *31/70;* **C07M** *17/08*

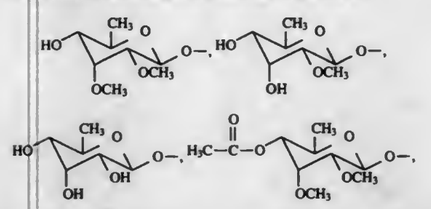
U.S. Cl. 514—30.000 **30 Claims**

1. A compound of formula I

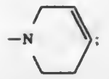


(I)

or a pharmaceutically acceptable salt thereof,
wherein X^1 is H or CN;
Z is H or OH;
Q is selected from the group consisting of hydrogen,



pyrrolidin-1-yl, piperidin-1-yl, homopiperidin-1-yl, N,N-diethylamino, N,N-dimethylamino, N,N-dipropylamino and



R^1 is selected from the group consisting of hydrogen, alkyl having 1 to 4 carbons, hydroxyalkyl having 2 to 4 carbons, and alkoxyalkyl having 2 to 4 carbons in the alkyl portion and 1 to 4 carbons in the alkoxy portion;
R^2 is substituted alkyl having 2 to 5 carbons,
wherein the substituted alkyl is substituted with 1 or 2 substituents independently selected from the group consisting of amino, N-alkylamino having 1 to 4 carbons and N,N-dialkylamino having a total of 2 to 6 carbons.

17. A method of treating a bacterial infection in an animal in need thereof which comprises administering to said animal a bacterial treating amount of a compound of claim 1 or a pharmaceutically acceptable salt thereof.

5,545,625

PREVENTING CONVERSION OF CITRULLINE TO ARGININOSUCCINATE TO LIMIT PATHOLOGICAL NITRIC OXIDE OVERPRODUCTION

Steven S. Gross, New York, N.Y., and Owen W. Griffith, Milwaukee, Wis., assignors to The Medical College of Wisconsin Research Foundation, Inc., Milwaukee, Wis.

Filed Dec. 12, 1994, Ser. No. 354,585

Int. Cl.[6] A61K *31/70;31/195*

U.S. Cl. 514—33 **35 Claims**

1. A method of prophylaxis or treatment of a subject for systemic hypotension caused by pathological overproduction of nitric oxide from arginine in vascular cells in said subject induced by therapy with a cytokine or by exposure to a bacterial endotoxin, said method comprising administering to a subject expected to develop or having such systemic hypotension a therapeutically effective amount of an argininosuccinate synthetase activity reducing agent.

5,545,626

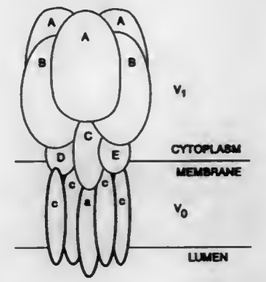
METHOD OF TREATING GLAUCOMA WITH OLIGONUCLEOTIDES

Cy A. Stein, New City, N.Y., and Martin B. Wax, Chesterfield, Mo., assignors to The Trustees of Columbia University in the City Of New York, New York, N.Y., and Washington University, St. Louis, Mo.

Filed Jan. 19, 1994, Ser. No. 184,223

Int. Cl.[6] A61K *31/735*

U.S. Cl. 514—44 **22 Claims**



1. A method of treating glaucoma which comprises administer

ing to a subject an effective amount of an oligonucleotide which may be substituted or modified in its phosphate, sugar, or base, so as to decrease intraocular pressure and thereby treat the glaucoma.

5,545,627

IRREVERSIBLE INHIBITORS OF ADENOSINE RECEPTORS

Kenneth A. Jacobson, Silver Spring, Md., and Gary Stiles, Chapel Hill, N.C., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C., and Duke University, Chapel Hill, N.C.

Division of Ser. No. 837,105, Feb. 18, 1992, Pat. No. 5,298,508, which is a continuation of Ser. No. 221,413, Feb. 19, 1988, abandoned. This application Mar. 28, 1994, Ser. No. 218,762

Int. Cl.[6] A61K *31/52;31/70;* **C07D** *473/34;* **C07H** *17/02*

U.S. Cl. 514—46 **22 Claims**

1. A ligand for adenosine receptors consisting of an N^6-substituted adenosine which binds adenosine receptors irreversibly and has been substituted with an electrophilic group selected from the group consisting of arylisothiocyanate and N-hydroxysuccinimide esters attached to the adenosine through a spacer chain, and wherein the spacer chain is selected from the group consisting of C_2–C_{10} alkyl, C_2–C_{10} alkylene, amide, phenyl, thioureas, ethers, esters, disulfide, alcohol, and combinations thereof in which the spacer chain may optionally be substituted by halogen.

5,545,628

PHARMACEUTICAL COMPOSITION CONTAINING FENOFIBRATE

Arthur Deboeck; Paul Maes, and Phillipe R. Baudier, all of Carolina, Puerto Rico, assignors to Galephar P.R. Inc., Carolina, Puerto Rico

Filed Jan. 10, 1995, Ser. No. 370,883

Int. Cl.[6] A01N *43/04*

U.S. Cl. 514—49 **15 Claims**

1. A pharmaceutical composition for treating hyperlipidemia or hypercholesterolemia or both in a mammal, which comprises an effective amount of each of fenofibrate and an excipient comprising one or more polyglycolyzed glycerides.

5,545,629

5-ETHOXY-2'-DEOXYURIDINES

Brian A. Otter, Harrison, and Edward L. Schwartz, White Plains, both of N.Y., assignors to Montefiore Medical Center, Bronx, N.Y.

Filed Apr. 12, 1994, Ser. No. 226,493

Int. Cl.[6] A61K *31/70*

U.S. Cl. 514—50 **2 Claims**

1. A pharmaceutical composition which comprises 5-ethoxy-2'-deoxyuridine and a pharmaceutical carrier.

5,545,630

VINYLCARBOXYLIC ACID DERIVATIVES

Peter Maienfisch, Rodersdorf; Manfred Böger, Weil am Rhein; Thomas Pitterna, Basle, and Henry Szczepanski, Wallbach, all of, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

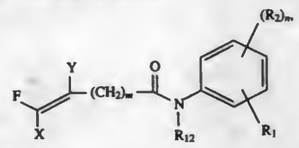
Continuation of Ser. No. 366,126, Dec. 29, 1994, abandoned. This application Jun. 5, 1995, Ser. No. 462,450

Claims priority, application Switzerland, Dec. 29, 1993, 3895/93

Int. Cl.[6] A01N *55/10;* **C07F** *7/10;7/18*

U.S. Cl. 514—63 **21 Claims**

1. A compound of formula



(I)

in which

R_1 is $—Si(R_3)_3$;

R_2 is halogen, C_1–C_4alkyl or CF_3, the substituents R_2 being identical or different when n is 2;

R_3 each independently of the others is C_1–C_6alkyl, halo-C_1–C_6alkyl, C_1–C_6alkoxy or phenyl;

R_{12} is hydrogen or unsubstituted or substituted C_1–C_{10}-alkyl;

m is 1, 3, 5, 7, 9 or 11;

n is 0, 1 or 2;

X is fluorine or chlorine; and

Y is hydrogen, fluorine or methyl,

in free form or in salt form.

5,545,631

N-SUBSTITUTED AMINOALKANEPHOSPHINIC ACID DERIVATIVES, COMPOSITIONS THEREOF, AND THEIR USE AS ANTI-EPILEPTICS

Christian Marescaux, Strasbourg, France; Raymond Bernasconi, Oberwil, Switzerland; Markus Schmutz, Schönenbuch, Switzerland; Wolfgang Frösti, Basel, Switzerland, and Stuart J. Mickel, Lausen, Switzerland, assignors to CIBA-GEIGY Corporation, Tarrytown, N.Y.

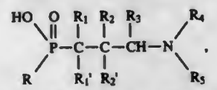
Division of Ser. No. 56,726, May 3, 1993, Pat. No. 5,407,922, which is a division of Ser. No. 718,503, Jun. 20, 1991, Pat. No. 5,229,379. This application Jan. 20, 1995, Ser. No. 375,878

Claims priority, application Switzerland, Jun. 22, 1990, 2092/90; Feb. 13, 1991, 440/91; Apr. 22, 1991, 1199/91

Int. Cl.[6] A61K *31/675;31/67;31/665;31/66*

U.S. Cl. 514—89 **13 Claims**

1. A method for the treatment of epilepsies of the petit mal type and for suppressing petit-mal type conditions which may arise in the case of treatment with known anti-epileptics, in a warm-blooded organism in need thereof which comprises administering to such warm-blooded organism at least one compound having $GABA_B$-antagonistic properties of formula I



(I)

wherein one of the radicals R_1, R_2 and R_3 is hydrogen or an aliphatic, cycloaliphatic, araliphatic or aromatic radical, another is hydrogen or, in the case of R_1 or R_2, hydroxy or, in the case of R_1, halogen or, in the case of R_2 together with R_2', oxo, and the remaining radical is hydrogen, R_1' is hydrogen or halogen, R_2' is hydrogen, hydroxy or, together with R_2, is oxo, R_4 and R_5 are hydrogen and R is an aliphatic, cycloaliphatic, cycloaliphatic-aliphatic, araliphatic, heteroarylaliphatic or aromatic radical having at least 2 carbon atoms or, when R_1 is hydrogen or hydroxy, R_2 is

an aromatic radical and R_1', R_2' and R_3 are hydrogen, R is methyl, or a pharmaceutically acceptable salt thereof.

5,545,632

METHOD OF TREATING RETROVIRAL DISEASE

Matti Sirén, Helsinki, Finland, assignor to Perstorp AB, S–284 80 Perstorp, Sweden

Continuation-in-part of Ser. No. 157,881, Nov. 24, 1993, abandoned, which is a continuation-in-part of Ser. No. 900,129, Jun. 18, 1992, Pat. No. 5,330,979, which is a continuation-in-part of Ser. No. 580,661, Sep. 11, 1990, Pat. No. 5,128,332, which is a continuation-in-part of Ser. No. 492,740, Mar. 13, 1990, Pat. No. 5,015,634, which is a continuation-in-part of Ser. No. 367,968, Jun. 19, 1989, Pat. No. 5,051,411, which is a continuation-in-part of Ser. No. 251,566, Sep. 30, 1988, Pat. No. 5,023,248, which is a continuation-in-part of Ser. No. 173,985, Mar. 28, 1988, Pat. No. 5,019,566, which is a continuation-in-part of Ser. No. 38,230, Apr. 14, 1987, abandoned, which is a continuation-in-part of Ser. No. 15,679, Feb. 17, 1987, Pat. No. 4,797,390, which is a continuation-in-part of Ser. No. 788,801, Oct. 18, 1985, Pat. No. 4,735,936. This application Nov. 22, 1994, Ser. No. 343,239

Claims priority, application Sweden, Oct. 23, 1984, 8405295; Apr. 16, 1986, 8601709

Int. Cl.[6] A61K *31/66*

U.S. Cl. 514—103 **6 Claims**

1. A method of treating retroviral disease comprising administering a treatment effective amount of a pharmaceutical composition comprising at least one isomer of inositol triphosphate to a human or other mammal having a retroviral disease.

5,545,633

17-ENE VITAMINE D ANALOGUES

Claus A. S. Bretting, Frederiksberg, Denmark, assignor to Leo Pharmaceutical Products Ltd. A/S (Lovens Kemiske / Fabrik Produktionsaktieselskab), Ballerup, Denmark

PCT No. PCT/DK93/00196, § 371 Date Sep. 1, 1994, § 102(e) Date Sep. 1, 1994, PCT Pub. No. WO94/01398, PCT Pub. Date Jan. 20, 1994

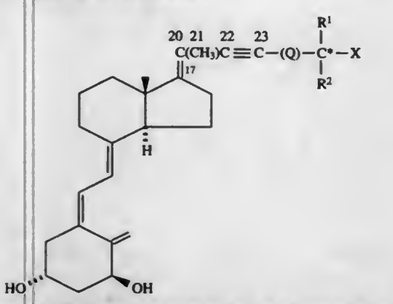
PCT Filed Jun. 7, 1993, Ser. No. 295,755

Claims priority, application United Kingdom, Jul. 3, 1992, 9214202

Int. Cl.[6] A61K *31/59;* **C07C** *401/00*

U.S. Cl. 514—167 **15 Claims**

1. A compound of the formula I



I

wherein X is hydrogen or hydroxy; R^1 and R^2 which may be the same or different, stand for hydrogen or a C_1–C_6 hydrocarbyl radical optionally substituted with one or more deuterium or fluorine atoms; or R^1 and R^2, taken together with the carbon atom (starred in formula I) bearing the group X, can form a C_3–C_8 carbocyclic ring; Q is a single bond or a C_1–C_8 hydrocarbylene diradical optionally substituted with one or more deuterium or fluorine atoms; or a prodrug of I in which one or more of the hydroxy groups are masked as groups which can be reconverted to hydroxy groups in vivo.

5,545,634

ACTIVATION OF ANDROGEN RECEPTORS WITH LOW DOSE NON-MASCULINIZING ANDROGENIC COMPOUNDS

Fernand Labrie, Quebec, Canada, assignor to Endorecherche, Inc., Quebec, Canada

Division of Ser. No. 15,083, Feb. 8, 1993, Pat. No. 5,362,720, which is a continuation of Ser. No. 724,532, Jun. 28, 1991, abandoned. This application Jul. 29, 1994, Ser. No. 282,964

Int. Cl.[6] A61K *31/56;* **A01N** *45/00*

U.S. Cl. 514—169 **11 Claims**

1. A method for activating androgen receptors in a human patient in need of such treatment, comprising administering to said patient at least one androgenic steroid having a Ki value of less than about 2×10^{-8}M for the androgen receptor, and a an androgen receptor-mediated inhibitory effect on the growth of human breast cancer ZR-75-1 cells which reaches half-maximal value at a concentration below 30 nanomoles per liter, and no visible masculinizing activity, wherein every such androgenic steroid is administered at a dosage sufficiently low to maintain a cumulative serum-concentration of androgenic steroid(s) below 50 nanomoles per liter of serum.

5,545,635

INHIBITING BONE LOSS WITH EQUILENIN

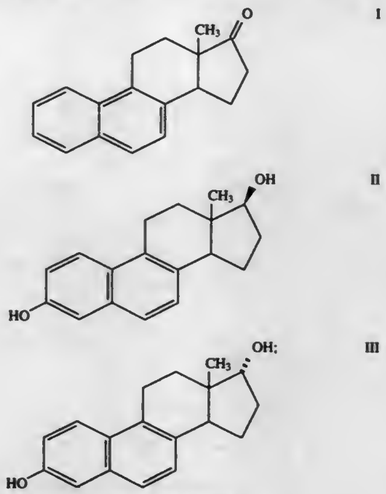
Henry U. Bryant; Jeffrey A. Dodge, both of Indianapolis; Masahiko Sato, Carmel, and Na N. Yang, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed May 23, 1995, Ser. No. 448,061

Int. Cl.[6] A61K *31/56*

U.S. Cl. 514—177 **7 Claims**

1. A method of inhibiting bone loss comprising administering to a patient in need of treatment an effective amount of a compound of formula I, II, or III



I

II

III

or a pharmaceutically acceptable salt thereof.

5,545,636

PROTEIN KINASE C INHIBITORS

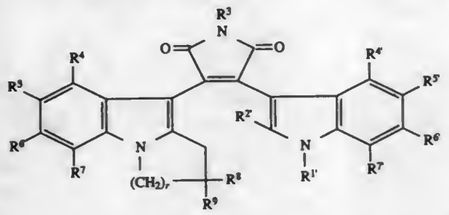
William F. Heath, Jr., Fishers; John H. McDonald III, Carmel, both of Ind.; Michael Paal; Gerd Rühter, both of Hamburg, Germany; Theo Schotten, Vierhöfen, and Wolfgang Stenzel, Reinbek, both of, Germany, assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 173,741, Dec. 23, 1993, abandoned. This application Oct. 18, 1994, Ser. No. 324,948

Int. Cl.[6] A61K *31/435;31/445;* **C07D** *463/00;403/14*

U.S. Cl. 514—214 **6 Claims**

1. A compound of the formula:



wherein:

$R^{1'}$ is hydrogen, C_1–C_4 alkyl, aminoalkyl, monoalkylaminoalkyl, or dialkylaminoalkyl;

$R^{2'}$ is hydrogen, alkyl, alkoxyalkyl, hydroxyalkyl, C_1–C_3 alkylthio, $S(O)C_1$–C_3 alkyl, or —CF_3;

R^3 is hydrogen or CH_3CO—;

R^4, $R^{4'}$, R^5, $R^{5'}$, R^6, $R^{6'}$, R^7 and $R^{7'}$ are independently hydrogen, halogen, alkyl, hydroxy, alkoxy, —$COO(C_1$–C_3 alkyl), CF_3, nitro, amino, acetylamino, monoalkylamino, dialkylamino, alkylthio, C_1–C_3 alkylthio, or $S(O)C_1$–C_3 alkyl;

R^8 is $(CH_2)_rR^{10}$;

R^9 is $(CH_2)_rR^{11}$;

R^{10} and R^{11} are independently hydroxy, alkoxy, carboxy, acyloxy, amino, monoalkylamino, dialkylamino, trialkylamino, azido, acylamino, alkoxycarbonyl, cyano, amidino, or aminocarbonyl;

r is 1, 2, or 3;

s is 0, 1, 2 or 3; or

a pharmaceutically acceptable salt or solvate thereof.

5,545,637

PROCESS FOR PREPARING PHARMACEUTICAL COMPOSITIONS CONTAINING CRYSTALLINE ANHYDROUS MYCOPHENOLATE MOFETIL SALTS

Roger C. Fu, Saratoga; De-Mei Leung, Los Altos, and Jeffrey S. Fleitman, Sunnyvale, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 349,236, Dec. 5, 1994, which is a continuation-in-part of Ser. No. 121,841, Sep. 15, 1993, abandoned. This application Jun. 2, 1995, Ser. No. 459,991

Int. Cl.[6] A61K *31/535*

U.S. Cl. 514—233.5 **9 Claims**

1. A process for preparing a pharmaceutical composition suitable for preparing an aqueous intravenous formulation of mycophenolate mofetil, the process comprising:

a) compounding mycophenolate mofetil, an acid selected from the group consisting of hydrochloric acid, sulfuric acid, phosphoric acid, and acetic acid, and a pharmaceutically acceptable excipient to form a bulking solution having a pH of about 3.2 to 3.6,

b) the bulking solution into a container for lyophilization, and

c) lyophilizing the loaded container.

5,545,638

METHOD OF TREATING GASTROINTESTINAL MOTILITY DISORDERS

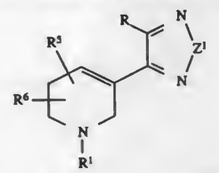
Beverley Greenwood, Fishers, Ind., assignor to Novo Nordisk A/S, Novo Alle, Denmark

Division of Ser. No. 350,871, Dec. 7, 1994, which is a continuation-in-part of Ser. No. 171,060, Dec. 21, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 468,272

Int. Cl.[6] A61K *31/535;31/435;31/445;31/44*

U.S. Cl. 514—235.8 **11 Claims**

1. A method of treating a gastrointestinal hypermofility disorder in a subject in need thereof comprising administering to said subject an effective amount of a compound of formula I



(I)

wherein

Z^1 is oxygen or sulphur;

R is X, —Z^2—R^2—X, or —Z^2—R^2—Z^3—X, wherein Z^2 and Z^3 independently are oxygen or sulphur, R^2 is straight or branched C_{1-15}-alkyl, straight or branched C_{2-15}-alkenyl, or straight or branched C_{2-15}-alkynyl, each of which is optionally substituted with halogen(s), —OH, —CN,—CF_3, —SH, —COOH, —NH—R^2, —NR^2R^3, C_{1-6}-alkyl ester, and one or two aromatic groups selected from the group consisting of phenyl, phenoxy, benzoyl and benzyloxycarbonyl wherein each aromatic group is optionally substituted with one or two halogen, —CN, C_{1-4}-alkyl or C_{1-4}-alkoxy, and X is a heterocyclic group selected from the group consisting of 1,3-dioxolanyl, pyridyl, thienyl, pyrrolidonyl, oxazolidonyl, thiazolidonyl, pyrrolidinyl, 1,2,5-thiadiazolyl, 1,3,4-thiadiazolyl, tetrazolyl, thiazolyl, oxazolyl, pyrrolidyl, piperidino, morpholino, and thiazolinyl wherein the heterocyclic group is optionally substituted at carbon or nitrogen atom(s) with straight or branched C_{1-6}-alkyl, phenyl, benzyl or pyridine, or at a carbon atom in the heterocyclic group together with an oxygen atom form a carbonyl group, or wherein the heterocyclic group is optionally fused with a phenyl group; and

R^5 and R^6 may be present at any appropriate position and independently are hydrogen, straight or branched C_{1-5}-alkyl, straight or branched C_{2-5}-alkenyl, straight or branched C_{2-5}-alkynyl, straight or branched C_{1-10}-alkoxy, —OH, halogen, —NH_2, carboxy, or straight or branched C_{1-5}-alkyl substituted with —OH;

R^1 is hydrogen, straight or branched C_{1-5}-alkyl, straight or branched C_{2-5}-alkenyl or straight or branched C_{2-5}-alkynyl; or

a pharmaceutically acceptable salt thereof.

5,545,639

METHOD OF INHIBITING TRANSFORMED CELLS

Marco Rabinovitz, and Joyce M. Fisher, both of Bethesda, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Feb. 18, 1994, Ser. No. 198,953

Int. Cl.[6] A61K *31/44*

U.S. Cl. 514—292 **27 Claims**

1. A method of inhibiting cancer cells, which method comprises contacting cancer cells with an inhibiting concentration or amount of at least one compound of the group consisting of 2,9-bis(halomethyl)- 1,10-phenanthrolines, wherein said cancer cells are sensitive to said compound.

5,545,640

PROTEASE INHIBITING SUCCINIC ACID DERIVATIVES

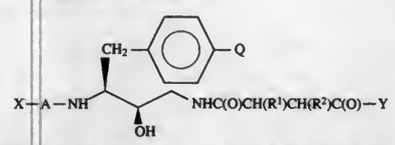
Pierre L. Beaulieu, Rosemère, and Ingrid Guse, Kirkland, both of, Canada, assignors to Bio-Mega/Boehringer Ingelheim Research Inc., Laval, Canada

Filed Apr. 4, 1995, Ser. No. 416,239

Int. Cl.[6] C07D *215/48;* **C07C** *271/20;* **A61K** *31/47*

U.S. Cl. 514—311 **10 Claims**

1. A compound of formula I



I

wherein X is $R^3OC(O)$, $R^3C(O)$ or $R^3NHC(O)$ wherein R^3 is

(i) lower alkyl,

(ii) lower cycloalkyl,

(iii) phenyl; phenyl monosubstituted with halo, hydroxy, amino, lower alkyl or lower alkoxy; or phenyl disubstituted or trisubstituted with the same or different substituent selected from the group consisting of halo, amino and lower alkyl;

(iv) phenyl(lower)alkyl or phenyl(lower)alkyl wherein the aromatic portion thereof is monosubstituted with halo, hydroxy, lower alkyl or lower alkoxy,

(v) phenyl(lower)alkenyl,

(vi) 1-naphthyl or 2-naphthyl,

(vii) Het or Het-(lower alkyl) wherein Het represents, a five- or six-membered monocyclic, or a nine- or ten-membered bicyclic, radical containing one or two heteroatoms selected from nitrogen, oxygen and sulfur, the heterocyclic radical being either unsubstituted or having one or two of the same or different substituents selected from the group consisting of halo, hydroxy, amino, lower alkyl or lower alkoxy; or

X is $R^{3A}NHCH_2C(O)$ wherein R^{3A} is lower alkyl or phenyl, or X is $R^{3B}OCH_2C(O)$ wherein R^{3B} is phenyl, phenyl monosubstituted with halo or lower alkyl, or phenyl disubstituted or trisubstituted with the same or different substituent selected from the group of halo and lower alkyl;

A is absent or A is a divalent radical $NR^4CHR^5C(O)$ wherein R^4 is hydrogen or lower alkyl, R^5 is lower alkyl, 1-carboxycyclobut-1-yl, 1-carboxycyclopent-1-yl, or lower alkyl monosubtituted with carboxy, carbamyl, (lower alkoxy)carbonyl, benzyloxycarbonyl, hydroxy, cyano or benzyloxy, and the carbon atom bearing R^5 has the (S) configuration.

R^1 is lower alkyl and R^2 is hydrogen, or R^1 is hydrogen and R^2 is lower alkyl, or R^1 and R^2 together with the carbon atoms to which they are attached form a 1,2-cyclohexanediyl;

Q is hydrogen, hydroxy, halo or lower alkoxy; and

Y is (1–8C)alkylamino, (1–8C)alkoxy, phenylamino or phenylamino having one or two of the same or different substituents on the phenyl portion thereof selected from the group consisting of lower alkyl, lower alkoxy, hydroxy, halo, amino or lower alkylamino; or a therapeutically acceptable acid addition salt thereof.

5,545,641

METHODS OF INHIBITING PHYSIOLOGICAL CONDITIONS ASSOCIATED WITH AN EXCESS OF BRADYKININ

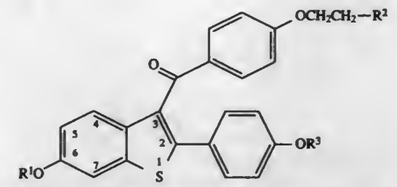
Robert F. Bruns, Jr., Carmel; Donald R. Gehlert, Indianapolis, both of Ind.; J. Jeffry Howbert, Bellevue, Wash., and William H. W. Lunn, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 20, 1994, Ser. No. 326,672

Int. Cl.[6] A61K *31/51*

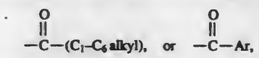
U.S. Cl. 514—317 **4 Claims**

1. A method of inhibiting a physiological condition associated with an excess of bradykinin comprising administering to a human in need thereof an effective amount of a compound having the formula



(I)

wherein R^1 and R^3 are independently hydrogen, —CH_3,



wherein Ar is optionally substituted phenyl;

R^2 is selected from the group consisting of pyrrolidino, hexamethyleneimino, and piperidino; or a pharmaceutically acceptable salt of solvate thereof, wherein said condition is pain or nociception, rhinitis, or asthma.

5,545,642

DERIVATIVES OF 1-(2-FLUOROCYCLOPROPYL)-QUINOLONECARBOXYLIC ACID AND 1-(2-FLUOROCYCLOPROPYL)-NAPHTHRIDONECARBOXYLIC ACID

Uwe Petersen, Leverkusen; Thomas Schenke, Bergisch Gladbach; Stefan Bö hm, Krefeld; Rolf Grosser, Leverkusen; Klaus D. Bremm, Recklinghausen; Rainer Endermann, and Karl G. Metzger, both of Wuppertal, all of, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

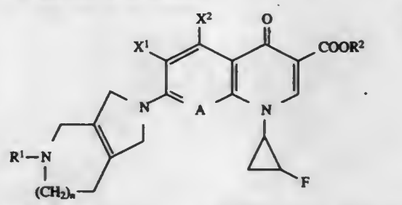
Filed Nov. 9, 1994, Ser. No. 336,638

Claims priority, application Germany, Nov. 16, 1993, 43 39 134.6

Int. Cl.[6] A61K *31/47;* **C07D** *215/20*

U.S. Cl. 514—312 **12 Claims**

1. A compound of the formula



(I)

in which

R^1 represents hydrogen, C_1–C_3-alkyl which is optionally substituted by hydroxyl, C_1–C_4-alkoxycarbonyl, acetyl which is optionally substituted by halogen, or (5-methyl-2-oxo-1,3-dioxol-4-yl)-methyl,

R^2 represents hydrogen, alkyl, having from 1 to 3 carbon atoms, which is optionally substituted by hydroxyl, methoxy, amino, methylamino or dimethylamino, or represents (5-methyl-2-oxo-1,3-dioxol-4-yl)-methyl, acetoxymethyl or pivaloyloxymethyl,

represents 0 or 1,

X^1 represents halogen or nitro,

X^2 represents hydrogen, halogen, amino or methyl,

A represents N, C—H, C—F, C—Cl, C—Br, C—CF_3, C—OCH_3, C—$OCHF_2$, C—CH_3 or C—C≡CH,

or its pharmaceutically utilizable hydrate or acid addition salt, alkali metal salt alkaline earth metal salt, silver salt or guanidinium salt of the underlying carboxylic acids.

5,545,643

NOVEL AZAHETEROCYCLYLMETHYL-CHROMANS

Hans-Georg Heine, Krefeld; Rudolf Schohe-Loop, Wuppertal; Thomas Glaser, Overath; Jean M. Viktor De Vry, Roesrath; Wolfgang Dompert, and Henning Sommermeyer, both of Koeln, all of, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

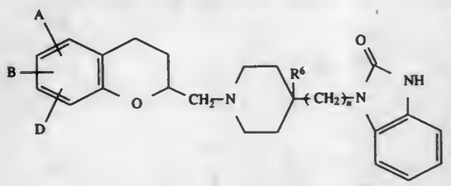
Division of Ser. No. 984,076, Nov. 30, 1992, Pat. No. 5,371,094. This application Aug. 18, 1994, Ser. No. 292,639

Claims priority, application Germany, Dec. 9, 1991, 41 40 540.4

Int. Cl.[6] A61K *31/445;* **C07D** *405/14*

U.S. Cl. 514—322 **5 Claims**

1. An azaheterocyclylmethyl-chroman of the formula:



in which

A, B and D independently of one another represent hydrogen, halogen, cyano, azido, nitro, difluoromethyl, trifluoromethyl, difluoromethoxy, trifluoromethoxy, hydroxyl or carboxyl; or represent straight-chain or branched alkyl, alkenyl, alkanoyl or alkoxycarbonyl having in each case up to 8 carbon atoms; or

represent a group of the formula —NR^1R^2, —NR^3—L—R^4 or —OR^5;

wherein

R^1, R^2 and R^3 are identical or different and represent hydrogen, straight-chain or branched alkyl having up to 8 carbon atoms, phenyl or benzyl;

L represents —CO— or —SO_2—;

R^4 represents straight-chain or branched alkyl having up to 8 carbon atoms or benzyl, or represents hydrocarbyl aryl having 6–10 carbon atoms, which is optionally substituted by halogen, hydroxyl, nitro, cyano, trifluoromethyl, trifluoromethoxy, or by straight-chain or branched alkyl or alkoxy having up to 6 carbon atoms;

R^5 represents straight-chain or branched alkyl or alkenyl having in each case up to 8 carbon atoms, which are optionally substituted by cycloalkyl having 3 to 6 carbon atoms or phenyl;

R^6 represents hydrogen, hydroxyl, halogen or phenyl; and

n represents an integer 1–8;

an optically isomeric form thereof or a salt thereof.

5,545,644

INDOLE DERIVATIVES

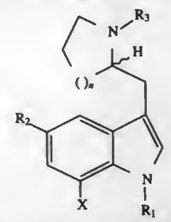
John E. Macor, and Martin J. Wythes, both of New York, N.Y., assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 401,647, Mar. 10, 1995, abandoned, which is a continuation of Ser. No. 53,930, Apr. 27, 1993, abandoned, which is a continuation-in-part of Ser. No. 39,244, Apr. 27, 1993, abandoned, which is a continuation-in-part of Ser. No. 597,928, Oct. 15, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 466,644

Int. Cl.[6] A61K *31/40;* **C07D** *401/06;403/06*

U.S. Cl. 514—323 **18 Claims**

1. A compound of the formula



wherein n is 0, 1, or 2; X is hydrogen, chlorine, bromine, or iodine; R_1 is hydrogen; R_2 is selected from hydrogen, halogen, cyano, —OR_4, —$(CH_2)_m$—(C=O)NR_5R_6, [—$(CH_2)_m$—$SO_2NR_5R_5$,]—$(CH_2)_m$—NR_7(C=O)R_8, —$(CH_2)_m$—$NR_7SO_2R_8$, —$(CH_2)_m$—S(O)$_xR_8$, —$(CH_2)_m$—NR_7(C=O)NR_5R_6, —$(CH_2)_m$—NR_7(C=O)OR_9, and —CH=$CH(CH_2)_yR_{10}$; R_3 is hydrogen, C_1 to C_6 linear or branched alkyl; R_4 is selected from hydrogen, C_1 to C_6 alkyl, and aryl; R_5 and R_6 are independently selected from hydrogen, C_1 to C_6 alkyl, aryl, and C_1, to C_3 alkyl-aryl or R_5 and R_6 taken together to form a 4, 5, or 6 membered ring; R_7 and R_8 are independently selected from hydrogen, C_1 to C_6 alkyl, aryl, and C_1 to C_3 alkyl-aryl; R_9 is selected from hydrogen, C_1 to C_6 alkyl, aryl, and C_1 to C_3 alkyl-aryl; R_{10} is selected from —(C=O)NR_5R_6 and —$SO_2NR_5R_6$, wherein R_5 and R_6 are defined as above, and —NR_7(C=O)R_8, —$NR_7SO_2R_8$, —NR_7(C=O)NR_5R_6, —S(O)$_xR_8$ and —NR_7(C=O)OR_9, wherein R_7, R_8, and R_9 are as defined above; y is 0, 1, or 2; x is 1 or 2; m is 0, 1, 2, or 3; and the above aryl groups and the aryl moieties of the above alkylaryl groups are independently selected from phenyl and substituted phenyl, wherein-said substituted phenyl may be substituted with one to three groups selected from C_1 to C_4 alkyl, halogen, hydroxy, cyano, carboxamido, nitro, and C_1 to C_4 alkoxy, with the proviso that when R_2 is hydrogen or —OR_4 and R_4 is hydrogen, n is 0 or 1, or the pharmaceutically acceptable salts thereof.

5,545,645

HETEROCYCLIC DERIVATIVES IN THE TREATMENT OF ISCHAEMIA AND RELATED DISEASES

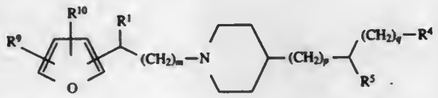
Jean-Claude Pascal, Cachan; Gary McCort; Dominique Blondet, both of Paris, and Francoise Gellibert, Cachan, all of, France, assignors to Syntex Pharmaceuticals, Limited, Maidenhead, England

Division of Ser. No. 45,568, Apr. 9, 1993, Pat. No. 5,428,037. This application Mar. 9, 1995, Ser. No. 401,486

Int. Cl.[6] A61K *31/435;* **C07D** *405/06;401/06;409/06*

U.S. Cl. 514—326 **10 Claims**

1. A compound of the formula



wherein

m is 0 or 1;

p is 0, 1, 2, or 3;

q is 0 or 1;

R^1 is hydrogen, hydroxy, or lower alkyl;

R^4 is hydrogen, lower alkyl, cycloalkyl, or optionally substituted phenyl;

R^5 is optionally substituted phenyl;

R^9 is lower alkyl or optionally substituted phenyl; and

R^{10} is hydrogen or lower alkyl;

with the proviso that R^9, R^{10}, and the sidechain cannot be attached to the oxygen atom;

or a pharmaceutically acceptable acid addition salt or N-oxide thereof.

5,545,646

4-BICYCLICALLY SUBSTITUTED DIHYDROPYRIDINES AND THEIR USE IN MEDICAMENTS

Alexander Straub; Siegfried Goldmann, both of Wuppertal; Jürgen Stoltefuss, Haan; Martin Bechem; Klaus Dembowsky, both of Wuppertal; Rainer Gross, Wuppertal; Siegbert Hebisch, Bottrop; Joachim Hütter, and Howard-Paul Rounding, both of Wuppertal, all of, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

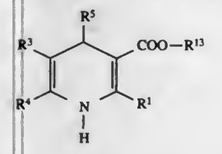
Filed Jun. 17, 1994, Ser. No. 261,585

Claims priority, application Germany, Jun. 24, 1993, 43 21 030.9

Int. Cl.[6] C07D *405/04;* **A61K** *31/44*

U.S. Cl. 514—337 **9 Claims**

1. A dihydropyridine of the formula



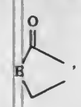
in which

R^1 and R^4 each independently is amino or alkyl having up to 3 carbon atoms,

R^{13} is a hydrocarbon radical having up to 8 carbon atoms, which is optionally interrupted by oxygen,

R^3 is cyano, nitro, formyl, or alkoxycarbonyl having up to 4 carbon atoms, which is optionally substituted by straight-chain or branched alkoxy having up to 4 carbon atoms, or

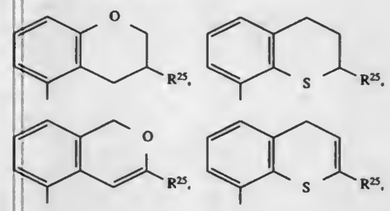
R^3 and R^4 together form a radical of the formula



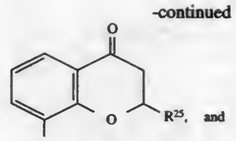
wherein

E is an oxygen or sulphur atom,

R^5 is a radical of the formula



-continued



R^{25} is phenyl, which is optionally and independently substituted up to twice by fluorine, chlorine or methyl,

or a pharmacologically acceptable salt thereof.

5,545,647

3-PHENYLPYRROLIDINE DERIVATIVES

Toshihiko Tanaka; Akihiro Yamamoto, and Akira Amenomori, all of Kanagawa-ken, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

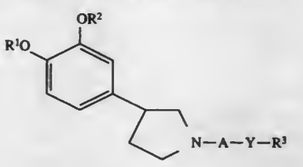
Filed Mar. 6, 1995, Ser. No. 399,341

Claims priority, application Japan, Mar. 8, 1994, 6-037187

Int. Cl.[6] A61K *31/395;* **C07D** *207/04*

U.S. Cl. 514—343 **8 Claims**

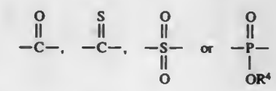
1. A 3-phenylpyrrolidine compound of the formula



wherein R^1 is C_1–C_4 alkyl;

R^2 is tetrahydrofuranyl, C_1–C_7 alkyl, C_1–C_7 haloalkyl, C_2–C_7 alkenyl, bicyclo [2.2.1]hept-2-yl or C_3–C_8 cycloalkyl;

A is

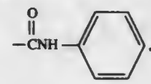


wherein R^4 is C_1–C_4 alkyl;

Y is —O—, —S—, —O—N=CH— or NR^5— wherein R^5 is hydrogen, C_1–C_4 alkyl, C_2–C_4 alkylcarbonyl or pyridylmethyl, or a single bond;

R^3 is (a) C_1–C_7 alkyl which is unsubstituted or substituted by one or more substituents, or (b) —$(CH_2)_n$—X wherein n is an integer of 0 to 4, and X is phenyl which is unsubstituted or substituted by one or more substituents, naphthyl which is unsubstituted or substituted by one or more substituents or a heterocyclic ring system which is unsubstituted or substituted by one or more substituents;

with the proviso that when —A—Y—R^3 is



R^1 and R^2 are not simultaneously methyl;

an optical isomer, a salt, an N-oxide compound, a hydrate or a solvate thereof.

5,545,648

USE OF 4-AMINOPYRIDINE IN THE REDUCTION OF CHRONIC PAIN AND SPASTICITY IN A SPINAL CORD INJURED PATIENT

Robert R. Hansebout, Hamilton, Canada, and Andrew R. Blight, Chapel Hill, N.C., assignors to Canadian Spinal Research Organization, Ontario, Canada

PCT No. PCT/CA93/00554, § 371 Date Sep. 13, 1994, § 102(e) Date Sep. 13, 1994, PCT Pub. No. WO94/14439, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 20, 1993, Ser. No. 290,757

Claims priority, application Canada, Dec. 18, 1992, 2085785

Int. Cl.[6] A61K *31/44*

U.S. Cl. 514—352 **5 Claims**

1. A method of reducing chronic pain and spasticity in a spinal cord injured patient in need of such treatment comprising administering an effective amount of 4 -aminopyridine to said patient.

5,545,649

ANTI-NEOPLASTIC, ANTI-VIRAL AND RIBONUCLEOTIDE REDUCTASE ACTIVITY AFFECTING PHARMACEUTICAL COMPOSITIONS AND METHODS OF TREATMENT

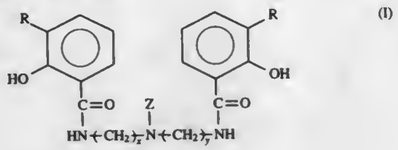
Raymond J. Bergeron, Gainesville, Fla., assignor to University of Florida Research Foundation, Inc., Gainesville, Fla.

Division of Ser. No. 376,889, Jan. 20, 1995, which is a division of Ser. No. 299,126, Sep. 2, 1994, Pat. No. 5,466,702, which is a division of Ser. No. 124,557, Sep. 22, 1993, Pat. No. 5,391,563, which is a division of Ser. No. 993,620, Dec. 21, 1992, Pat. No. 5,292,775, which is a division of Ser. No. 645,644, Jan. 25, 1991, Pat. No. 5,173,505, which is a division of Ser. No. 313,734, Feb. 22, 1989, Pat. No. 5,128,353, which is a continuation-in-part of Ser. No. 746,672, Jun. 20, 1985, abandoned. This application Jun. 7, 1995, Ser. No. 474,913

Int. Cl.[6] A61K *31/135;31/13*

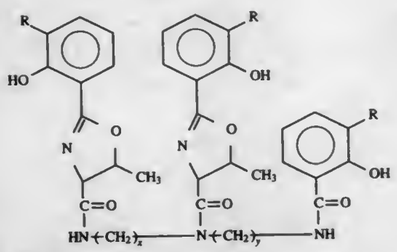
U.S. Cl. 514—374 **2 Claims**

1. A method for treating a human or non-human animal afflicted with malaria comprising administering to a human or non-human animal in need thereof an effective antimalarial amount of a compound of the formula



(I)

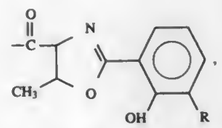
or



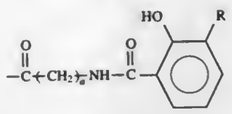
(II)

Wherein:

Z is



or



R is H or OH,
x is 3 or 4,
y is 3 or 4, and
a is 1, 2 or 3, or
a pharmaceutically acceptable salt or complex and b) a pharmaceutically acceptable carrier therefor.

5,545,650

ANTI-NEOPLASTIC, ANTI-VIRAL AND RIBONUCLEOTIDE REDUCTASE ACTIVITY AFFECTING PHARMACEUTICAL COMPOSITIONS AND METHODS OF TREATMENT

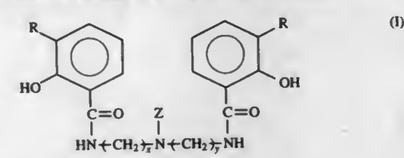
Raymond J. Bergeron, Gainesville, Fla., assignor to University of Florida Research Foundation, Inc., Gainesville, Fla.

Division of Ser. No. 299,126, Sep. 2, 1994, which is a division of Ser. No. 124,557, Sep. 22, 1993, Pat. No. 5,391,563, which is a division of Ser. No. 993,620, Dec. 21, 1992, Pat. No. 5,292,775, which is a division of Ser. No. 645,644, Jan. 25, 1991, Pat. No. 5,173,505, which is a division of Ser. No. 313,734, Feb. 22, 1989, Pat. No. 5,128,353, which is a continuation-in-part of Ser. No. 746,672, Jun. 20, 1985, abandoned. This application Jun. 7, 1995, Ser. No. 482,051

Int. Cl.[6] A01N *43/76;* **A61K** *31/42*

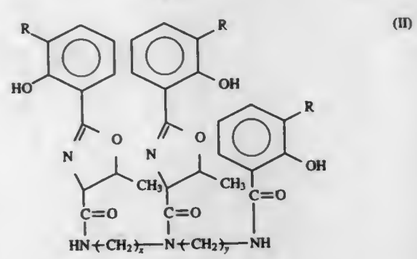
U.S. Cl. 514—374 **10 Claims**

1. A method for treating a human or non-human animal afflicted with malignant cells comprising administering thereto an antineoplastic effective amount of a compound of the formula:



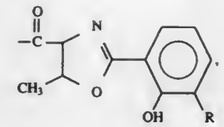
(I)

or

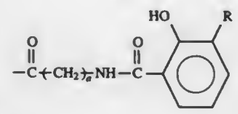


(II)

wherein: Z is



or



R is H or OH,
x is 3 or 4,
y is 3 or 4, and
a is 1, 2 or 3, or
a pharmaceutically acceptable salt or complex thereof.

5,545,651

IMIDAZOLE 5-POSITION SUBSTITUTED ANGIOTENSIN II ANTAGONISTS

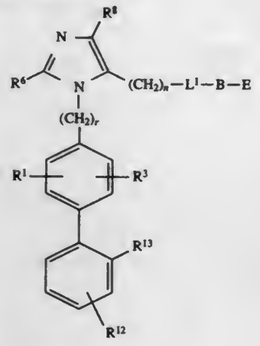
John J. V. Duncia, Wilmington; Carol L. Ensinger, Newark; Richard E. Olson, Wilmington; Mimi L. Quan, Newark, all of Del.; Joseph B. Santella, III, Springfield, Pa., and Mary K. Vanatten, Wilmington, Del., assignors to The DuPont Merck Pharmaceutical Company, Wilmington, Del.

Division of Ser. No. 72,977, Jun. 10, 1993, Pat. No. 5,395,844. This application Nov. 28, 1994, Ser. No. 348,843

Int. Cl.[6] C07D *401/14;* **A61K** *31/415*

U.S. Cl. 514—381 **5 Claims**

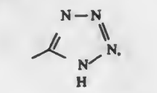
1. A compound of formula II:



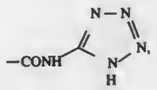
(II)

wherein:
R^2 is independently
(a) H,
(b) halo,
(c) C_1–C_4-alkyl;
R^3 is
(a) H, or
(b) halo;
R^6 is
(a) C_1–C_{10} alkyl,
(b) C_3–C_{10} alkenyl, or
(c) C_3–C_{10} alkynyl;
R^7 is
(a) C_1–C_6 -alkyl,
(b) C_3–C_6-cycloalkyl,
(c) aryl, or
(d) benzyl, optionally substituted on the phenyl ring with 1–2 substituents selected from the group consisting of halo, C_1–C_4-alkyl, C_1–C_4-alkoxy or —NO_2;
R^8 is
(a) H,
(b) halogen
(c) aryl
(d) C_1–C_6-alkyl, optionally substituted with
i) OR^{25},
ii) $S(O)_aR^{10}$,
iii) $NR^{23}R^{24}$,
iv) $NR^{26}COR^{11}$,
v) $NR^{26}CO_2R^7$,
vi) $NR^{26}CONR^{23}R^{24}$,
vii) $OCONR^{23}R^{24}$,
viii) $OCOR^{11}$,
ix) aryl
(e) C_2–C_6-alkenyl,
(f) —C_1–C_4-alkyl-aryl,
(h) C_1–C_4-alkoxy,
(i) C_vF_w where v=1 to 3 and w=1 to (2v+1),
(j) —$S(O)_aR^{10}$,
(k) —$S(O)_2NR^{23}R^{24}$,
(l) —$CONR^{23}R^{24}$,
(m) —COR^7, or
(n) —CO_2R^{12};
R^{25} is
(a) H,
(b) C_1–C_6 alkyl,
(c) aryl,
(d) —(C_1–C_4-alkyl)-aryl,
(e) C_3–C_6alkenyl, or
(f) —(C_3–C_6alkenyl)-aryl;
R^9 is
(a) H,
(b) C_1–C_5-alkyl,
(c) aryl
(d) —(C_1–C_4-alkyl)-aryl, or
(e) heteroaryl;
R^{10} is
(a) aryl,
(b) C_3–C_7-cycloalkyl,
(c) C_1–C_4-perfluoroalkyl,
(d) C_1–C_4-alkyl, optionally substituted with a substituent selected from the group consisting of aryl as defined below, heteroaryl as defined below, —OH, —SH, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, —CF_3, halo, —NO_2, —CO_2R^{12}, —NH_2, C_1–C_4-alkylamino, C_1–C_4-dialkylamino, —PO_3H_2, or
(e) heteroaryl;
R^{11}, R^{11a} and R^{11b} are independently
(a) H,
(b) C_1–C_6- alkyl,
(c) C_3–C_6-cycloalkyl,
(d) aryl,
(e) —(C_1–C_5-alkyl)-aryl, or
(f) heteroaryl;
R^{12} is
(a) H,
(b) methyl, or
(c) benzyl, optionally substituted on the phenyl ring with 1–2 substituents selected from the group consisting of halo, C_1–C_4-alkyl, C_1–C_4-alkoxy or —NO_2;

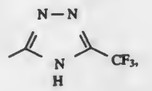
R^{13} is
(a) $—CO_2H$,
(b) $—CH_2CO_2H$,
(c) $—C(CF_3)_2OH$,
(d) $—CONHNHSO_2CF_3$,
(e) $—CONHOR^{12}$,
(f) $—CONHSO_2R^{10}$,
(g) $—CONHSO_2NHR^9$,
(h) $—C(OH)R^9PO_3H_2$,
(i) $—NHCOCF_3$,
(j) $—NHCONHSO_2R^{10}$,
(k) $—NHPO_3H_2$,
(l) $—NHSO_2R^{10}$,
(m) $—NHSO_2NHCOR^{10}$,
(n) $—OPO_3H_2$,
(o) $—OSO_3H$,
(p) $—PO(OH)R^9$,
(q) $—PO_3H_2$,
(r) $—SO_3H$,
(s) $—SO_2NHR^9$,
(t) $—SO_2NHCOR^{10}$,
(u) $—SO_2NHCONHR^9$,
(v) $—SO_2NHCO_2R^{10}$,



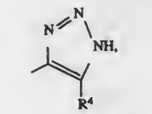
(w)



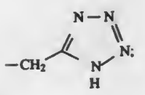
(x)



(y)



(z)



(aa)

R^4 is
(a) CN,
(b) NO_2, or
(c) C_2R^{11};
R^{16} is
(a) H,
(b) C_1–C_6-alkyl, or
(c) benzyl, optionally substituted on the phenyl ring with 1–2 substituents selected from the group consisting of halo, C_1–C_4-alkyl, C_1–C_4-alkoxy or $—NO_2$;
R^{23} and R^{24} are, independently
(a) H,
(b) C_1–C_6-alkyl,
(c) aryl, or
(d) $—(C_1$–C_4-alkyl)-aryl, or R^{23} and R^{24} when taken together constitute a pyrrolidine, piperidine or morpholine ring;
R^{26} is
(a) H,
(b) C_1–C_4-alkyl,
(c) aryl, or
(d) arylmethyl;
R^{28} is
(a) aryl, or
(b) heteroaryl;
R^{29} is
(a) —CHO,
(b) $—CONH_2$,
(c) —NHCHO,
(d) $—CO—(C_1$–C_6 perfluoroalkyl),
(e) $—S(O)_r—(C_1$–C_6 perfluoroalkyl),
(f) $—O—(C_1$–C_6 perfluoroalkyl), or
(g) $—NR^{11a}—(C_1$–C_6 perfluoroalkyl);
E is
(a) $—(T)_y—(B)_y—X^2—(B)_y—R^{28}$
(b) $—T—(B)_y—R^{28}$
(c) $—(T)_y—(B)_y—X^2—B$, or
(d) $—T—(B)_y—R^{29}—$
L^1 is
(a) $—CO_2—$
(b) $—CONR^{11a}—$
(c) $—NR^{11a}CO_2—$
(d) $—NR^{11a}CONR^{11b}—$;
B is C_1–C_6 alkyl;
T is arylene or heteroarylene;
X^2 is
(a) —CO—,
(b) —O—,
(c) $—S(O)_r—$,
(d) $—(C_1$–C_4-alkylene)—,
(e) $—NR^{11a}CONR^{11b}—$,
(f) $—CONR^{11a}—$,
(g) $—NR^{11a}CO—$,
(h) $—SO_2NR^{16}—$,
(i) $—NR^{16}SO_2—$,
(j) $—CONR^{11a}SO_2—$,
(k) $—SO_2NR^{11a}CO—$,
(l) $—SO_2NR^{11a}CO_2—$,
(m) $—OCONR^{11a}SO_2—$,
(n) $—SO_2NR^{11a}CONR^{11b}—$,
(o) $—NR^{11a}CONR^{11b}SO_2—$,
(p) $—SO_2NR^{11a}SO_2—$,
(q) $—CONR^{11a}SO_2NR^{11b}—$, or
(r) $—NR^{11a}SO_2NR^{11b}CO—$;
n is 0 to 2;
r is 0 to 2;
y is 0 or 1;
wherein aryl is phenyl, biphenyl, or fluorenyl optionally substituted with one to three substituents selected from the group consisting of —OH, —SH, C_1–C_4 alkyl, C_1–C_4 alkoxy, $—CF_3$, Cl, Br, F, $—NO_2$, $—CO_2H$, $—CO_2CH_3$, $—CO_2$-benzyl, $—NH_2$, $—NH(C_1$–C_4 alkyl), $—N(C_1$–C_4 alkyl)$_2$;
wherein heteroaryl is 2-, 3- or 4-pyridyl, 2- or 3-furyl, 2- or 3-thienyl, 2-, 3- or 4-quinolinyl, or 1-, 3- or 4-isoquinolinyl optionally substituted with one to three substituents selected from the group consisting of —OH, —SH, C_1–C_4 alkyl, C_1–C_4 alkoxy, $—CF_3$, halo, $—NO_2$, $—CO_2H$, $—CO_2CH_3$, $—CO_2—$ benzyl, $—NH_2$, $—NH(C_1$–C_4 alkyl), $—N(C_1$–C_4 alkyl)$_2$;
wherein arylene is 1,2-phenyl, 1,3-phenyl, 1,4-phenyl, 4,4'-biphenyl, 3,3'-biphenyl, and 2,2'-biphenyl optionally substituted with one to three substituents selected from the group consisting of —OH, —SH, C_1–C_4-alkyl, C_1–C_4-alkoxy, $—CF_3$, halo, $—NO_2$, $—CO_2H$, $—CO_2CH_3$, $—CO_2$-benzyl, $—NH_2$, $—NH(C_1$–C_4-alkyl), $—N(C_1$–C_4-alkyl)$_2$.

and wherein heteroarylene is 2,3-pyridyl, 3,4-pyridyl, 2,3-furyl, 3,4-furyl, 2,3-thiophenyl, 3,4-thiophenyl, 2,3-quinolinyl, 3,4-quinolinyl and 1,4-isoquinolinyl optionally substituted with one to three substituents selected from the group consisting of —OH, —SH, C_1–C_4-alkyl, C_1–C_4-alkoxy, $—CF_3$, halo, $—NO_2$, $—CO_2H$, $—CO_2CH_3$, $—CO_2$-benzyl, $—NH_2$, $—NH(C_1$–C_4-alkyl), $—N(C_1$–C_4-alkyl)$_2$;
or pharmaceutically acceptable salts of these compounds.

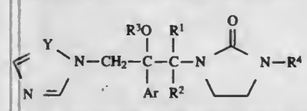
5,545,652

TRIAZOLE AND IMIDAZOLE COMPOUNDS AND THEIR USE AS ANTIFUNGAL THERAPEUTIC AGENTS

Katsumi Itoh, Toyono-gun; Kenji Okonogi, Mishima-gun, and Akihiro Tasaka, Suita, all of, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Sep. 23, 1994, Ser. No. 310,995
Claims priority, application Japan, Sep. 24, 1993, 5-238340; Aug. 12, 1994, 6-190766
Int. Cl.^{6} A61K *31/41;31/415;* **C07D** *249/08;403/10*
U.S. Cl. 514—383 **12 Claims**

1. A compound represented by the formula (I):



(I)

wherein Ar is an optionally-substituted phenyl group; R^1 and R^2 are, the same or different, a hydrogen atom or a lower alkyl group, or R^1 and R^2 may combine together to form a lower alkylene group; R^3 is a hydrogen atom or an acyl group; Y is a nitrogen atom or a methine group; and R^4 is a substituted phenyl group, or a salt thereof.

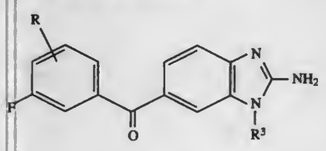
5,545,653

ANTI-VIRAL COMPOUNDS

Shawn C. Miller; Frantz Victor; Wayne A. Spitzer, all of Indianapolis; Thomas R. Sattelberg, Sr., Bloomington, and Mark J. Tebbe, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 7, 1995, Ser. No. 482,041
Int. Cl.^{6} A61K *31/415;31/425;* **C07D** *417/04;235/30*
U.S. Cl. 514—388 **19 Claims**

I. A compound of the formula:



I'

where:
R is independently hydrogen, fluoro, methyl, ethyl, methoxy, ethoxy, methylthio, methylsulfinyl, methylsulfonyl or dimethylamino;
R^3 is thiazol-2-yl, phenyl or $—SO_2—R_4$ wherein R_4 is C_1–C_4 alkyl, di(C_1–C_4)alkylamino or phenyl;
or a pharmaceutically acceptable salt thereof.

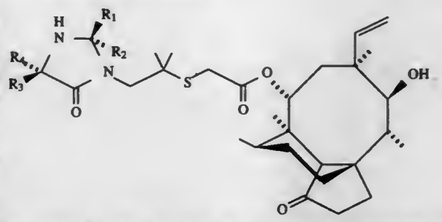
5,545,654

PLEUROMUTILIN DERIVATIVES

Ingolf Macher, Wörgl, Austria, assignor to Biochemie Gesellschaft m.b.H., Tyrol, Austria

PCT No. PCT/EP93/01033, § 371 Date Jan. 3, 1994, § 102(e) Date Jan. 3, 1994, PCT Pub. No. WO93/22288, PCT Pub. Date Nov. 11, 1993
PCT Filed Apr. 29, 1993, Ser. No. 178,317
Claims priority, application Austria, May 4, 1992, 897/92
Int. Cl.^{6} C07D *233/32;* **A61K** *31/415*
U.S. Cl. 514—392 **14 Claims**

1. A compound of formula I



I

in which R_1 and R_2 are each independently hydrogen or (C_{1-6})alkyl, or together with the carbon atom to which they are attached form a cycloalkyl ring of up to 6 carbon atoms; and R_3 and R_4 are each independently hydrogen or (C_{1-6}) alkyl.

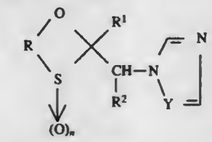
5,545,655

SUBSTITUTED OXATHIOLANES

Barry T. Friedlander, Guelph, Canada; Robert A. Davis; Allen R. Biem, both of Cheshire, Conn., and David L. Walker, Waterloo, Canada, assignors to Uniroyal Chemical Company, Inc., Middlebury, Conn., and Uniroyal Chemical Ltd./Ltee, Elmira, Canada

Continuation of Ser. No. 202,850, Feb. 25, 1994, abandoned, which is a continuation of Ser. No. 81,904, Jun. 23, 1993, abandoned, which is a continuation of Ser. No. 720,050, Jul. 16, 1991, abandoned, which is a division of Ser. No. 291,381, Dec. 23, 1988, Pat. No. 5,039,332, which is a continuation of Ser. No. 777,910, Sep. 19, 1985, abandoned. This application Nov. 23, 1994, Ser. No. 344,395
Int. Cl.^{6} A01N *43/50;43/28;* **C07D** *405/00;409/06*
U.S. Cl. 514—397 **14 Claims**

I. A compound of the formula:



(I)

wherein
R is C_2–C_4 alkylene unsubstituted or substituted with C_1–C_{10} alkyl, alkenyl, alkynyl or alkoxyalkyl;
R^1 is
(a) C_5–C_8 bridged or non-bridged cycloalkyl or cycloalkenyl;
(b) phenyl, methylenedioxyphenyl, pyridyl, furanyl or thienyl;
the (b) substituents being unsubstituted or substituted with: C_1–C_{10} alkyl, OH, SH, cyclohexyl, C_1–C_{10} haloalkyl,

C_1–C_{10} alkenyl, cyano, nitro, XR^3 or a single halogen wherein X is O, S, SO or SO_2 and R^3 is C_1–C_{10} alkyl, C_1–C_{10} alkenyl, C_1–C_{10} alkoxyalkyl, C_1–C_6 haloalkyl, C_1–C_6 haloalkenyl, C_5–C_6 cycloalkyl, C_7–C_9 aralkyl; C_1–C_4 alkylsulfonyloxy, phenylsulfonyloxy,



wherein R^4 is C_1–C_4 alkyl or phenyl;



wherein R^5 and R^6 are individually H, C_1–C_4 alkyl or phenyl with the proviso that R^5 and R^6 are not both H; NR^7R^8

wherein R^7 and R^8 are individually H or C_1–C_4 alkyl, R^7 is H, R^8 is COR^9, $COOR^9$ or SO_2R^9

wherein R^9 is C_1–C_4 alkyl or phenyl, or R^7 and R^8 together form C_4–C_6 alkylene, C_4–C_6 oxydialkylene or phenylmethylene;

R^2 is H or C_1–C_6 alkyl;

Y is CH; and

n is 0, 1 or 2; and the physiologically acceptable addition salts thereof.

5,545,656

2-OXIDOLE-1-CARBOXAMIDE PHARMACEUTICAL AGENTS FOR THE TREATMENT OF ALZHEIMER'S DISEASE

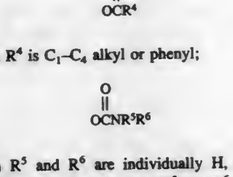
Leland D. Loose, Norwich; Joseph G. Lombardino, Niantic, and Ethan S. Weiner, East Lyme, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Apr. 5, 1995, Ser. No. 417,178

Int. Cl.[6] A61K *31/40;31/495;31/505;31/44*

U.S. Cl. 514—414 **12 Claims**

1. A method of treating or preventing Alzheimer's disease in a patient in need thereof comprising administering to said mammal an amount of a compound of the formula



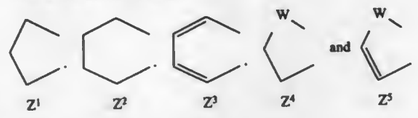
(I)

wherein X is selected from the group consisting of hydrogen, fluoro, chloro, bromo, alkyl having 1 to 4 carbons, cycloalkyl having 3 to 7 carbons, alkoxy having 1 to 4 carbons, alkylthio having 1 to 4 carbons, trifluoromethyl, alkylsulfonyl having 1 to 4 carbons, alkylsulfonyl having 1 to 4 carbons, nitro, phenyl, alkanoyl having 2 to 4 carbons, benzoyl, thenoyl, alkanamido having 2 to 4 carbons, benzamido and N,N-dialkylsulfamoyl having 1 to 3 carbons in each of said alkyls;

Y is selected from the group consisting of hydrogen, fluoro, chloro, bromo, alkyl having 1 to 4 carbons, cycloalkyl having 3 to 7 carbons, alkoxy having 1 to 4 carbons, alkylthio having 1 to 4 carbons and trifluoromethyl;

or X and Y, when taken together, are a 4,5-, 5,6- or 6,7-methylenedioxy group or a 4,5-, 5,6- or 6,7-ethylenedioxy group;

or X and Y, when taken together and attached to adjacent carbon atoms, form a divalent radical Z, wherein Z is selected from the group consisting of



wherein W is oxygen or sulfur;

R^1 is selected from the group consisting of alkyl having 1 to 6 carbons, cycloalkyl having 3 to 7 carbons, cycloalkenyl having 4 to 7 carbons, phenyl, substituted phenyl, phenylalkyl having 1 to 3 carbons in said alkyl, (substituted phenyl)alkyl having 1 to 3 carbons in said alkyl, phenoxyalkyl having 1 to 3 carbons in said alkyl, (substituted phenoxy)alkyl having 1 to 3 carbons in said alkyl, (thiophenoxy)alkyl having 1 to 3 carbons in said alkyl, naphthyl, bicyclo[2.2.1]heptan-2-yl, bicyclo[2.2.1]hept-5-en-2-yl and $—(CH_2)_n—Q—R^o$;

and wherein there are 1 or 2 substituents on said substituted phenyl, said (substituted phenyl)alkyl and said (substituted phenoxy)alkyl, said substituents being independently selected from the group consisting of fluoro, chloro, bromo, alkyl having 1 to 4 carbons, alkoxy having 1 to 4 carbons and trifluoromethyl;

n is zero, 1 or 2;

Q is a divalent radical derived from a compound selected from the group consisting of furan, thiophene, pyrrole, pyrazole, imidazole, thiazole, isothiazole, oxazole, isoxazole, 1,2,3-thiadiazole, 1,3,4-thiadiazole, 1,2,5-thiadiazole, tetrahydrofuran, tetrahydrothiophene, tetrahydropyran, tetrahydrothiopyran, pyridine, pyrimidine, pyrazine, benzo[b]furan and benzo[b]thiophene;

R^o is hydrogen, chloro, fluoro, bromo or alkyl having to 3 carbons; or a pharmaceutically acceptable salt of such compound, or a solvate of such compound or salt, that is effective in treating or preventing such disease.

5,545,657

HETEROCYCLIC COMPOUNDS

Masaaki Toda, Osaka; Shuichi Ohuchida, Kyoto, and Hiroyuki Ohno, Shiga, all of, Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

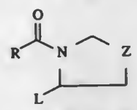
Division of Ser. No. 8,365, Jan. 22, 1993, Pat. No. 5,401,760, which is a division of Ser. No. 700,299, May 15, 1991, Pat. No. 5,212,191, which is a division of Ser. No. 333,227, Apr. 5, 1989, Pat. No. 5,053,414. This application Dec. 9, 1994, Ser. No. 354,899

Claims priority, application Japan, Apr. 8, 1988, 63-85288

Int. Cl.[6] C07D *207/416;* **A61K** *31/40*

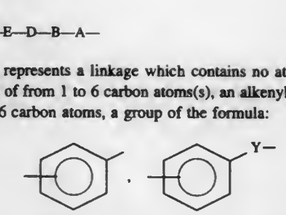
U.S. Cl. 514—422 **10 Claims**

1. A pyrrolidine derivative of the formula:



(I)

wherein Z represents a methylene group, R represents the general formula:

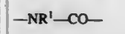


wherein A represents a linkage which contains no atom, an alkylene group of from 1 to 6 carbon atoms(s), an alkenylene group of from 2 to 6 carbon atoms, a group of the formula:

wherein Y represents an alkylene group of from 1 to 4 carbon atom(s) or an alkenylene group of from 2 to 4 carbon atoms, a saturated hydrocarbon ring of from 4 to 7 carbon atoms or a heterocyclic mono ring containing 3 to 7 ring members including 1 or 2 hetero atom(s) selected from N, O and S atoms which may be partially or fully saturated or aromatic,

B represents a linkage which contains no atom or an alkylene group of from 1 to 6 carbon atom(s),

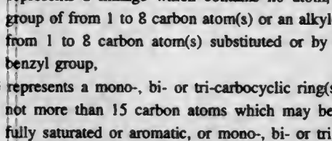
D represents a group of the formula:



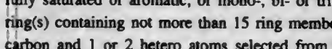
wherein R^1 represents a hydrogen atom, an alkyl group of from 1 to 6 carbon atom(s), a phenyl group or a benzyl group,

E represents a linkage which contains no atom, an alkylene group of from 1 to 8 carbon atom(s) or an alkylene group of from 1 to 8 carbon atom(s) substituted or by a phenyl or benzyl group,

G represents a mono-, bi- or tri-carbocyclic ring(s) containing not more than 15 carbon atoms which may be partially or fully saturated or aromatic, or mono-, bi- or tri-heterocyclic ring(s) containing not more than 15 ring members including carbon and 1 or 2 hetero atoms selected from N, O and S atoms which may be partially or fully saturated or aromatic wherein said carbocyclic or heterocyclic ring(s) represented by G is unsubstituted or substituted by 1–3 of an alkyl group of from 1 to 6 carbon atoms(s), an alkoxy group of from 1 to 6 carbon atom(s), a halogen atom, a trifluoromethyl group or a nitro group, and L represents a group of the formula:



or



wherein, R^2 represents a hydrogen atom, a hydroxy group, an alkyl group of from 1 to 6 carbon atom(s), an alkoxy group of from 1 to carbon atom(s), a phenyl group, an alkyl group of from 1 to 6 carbon atom(s) substituted by a phenyl group, or an alkoxy group of from 1 to 6 carbon atom(s) substituted by a phenyl group,

R^5 and R^6 independently represent a hydrogen atom, an alkyl group of from 1 to 6 carbon atom(s), a phenyl group, or an alkyl group of from 1 to 6 carbon atom(s) substituted by a phenyl group, with the proviso that the following compounds are excluded:

(i) compounds wherein both of A and B are a linkage which contains no atom

or a non-toxic salt or hydrate thereof..

5,545,658

AMINO ACID DERIVATIVES

Leo Alig, Kaiseraugst; Paul Hadvary, Biel-Benken; Marianne Hürzeler, Däniken; Marcel Müller, Frenkendorf; Beat Steiner, Bättwil, and Thomas Weller, Basle, all of, Switzerland, assignors to Hoffman-La Roche Inc., Nutley, N.J.

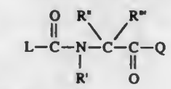
Division of Ser. No. 310,016, Sep. 21, 1994, which is a division of Ser. No. 854,135, Mar. 19, 1992, Pat. No. 5,378,712. This application May 25, 1995, Ser. No. 452,615

Claims priority, application Switzerland, Mar. 26, 1991, 910/91; Jan. 22, 1992, 176/92

Int. Cl.[6] A61K *31/40;* **C07D** *207/08;207/12*

U.S. Cl. 514—423 **16 Claims**

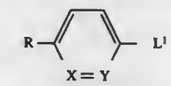
1. A compound of the formula



I

wherein

L is a group of the formula



or $R^o—NH(CH2)_t$ L^2

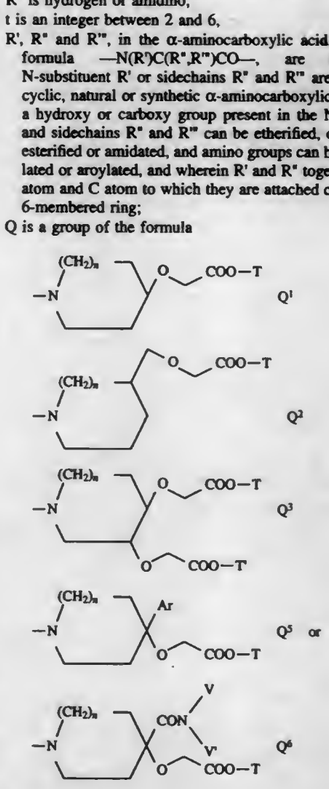
R is amidino or guanidino, both X and Y are CH,

R^0 is hydrogen or amidino,

t is an integer between 2 and 6,

R', R" and R'", in the α-aminocarboxylic acid residue of the formula $—N(R')C(R",R'")CO—$, are hydrogen or N-substituent R' or sidechains R" and R'" are open chain or cyclic, natural or synthetic α-aminocarboxylic acids, wherein a hydroxy or carboxy group present in the N-substituent R' and sidechains R" and R'" can be etherified, or, respectively, esterified or amidated, and amino groups can be C_{1-6} alkanoylated or aroylated, and wherein R' and R" together with the N atom and C atom to which they are attached can form a 4- to 6-membered ring;

Q is a group of the formula



n is the number 0,

v is an integer between 0 and 3,
T and T' are hydrogen or a lower-alkyl or phenyl-lower-alkyl group which is cleavable under physiological conditions,
V to V'" are hydrogen or lower-alkyl,
U and U' are hydrogen, C_{1-6}-alkanoyl or aroyl, and
Ar is aryl
as well as hydrates or solvates and physiologically usable salts thereof.

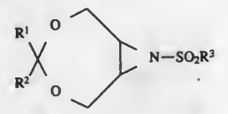
5,545,659

NOVEL HYDROXYLAMINES WITH HYPOGLYCEMIC ACTIVITY

Milienko Dumić; Darko Filić, both of Zagreb; Mladen Vinković, Čakovec; Blanka Jamnicky, and Mirela Eškinja, both of Zagreb, all of, Croatia, assignors to PLIVA farmaceutska, kemijska, prehrambena i kozmeticka industrija, dionicko drustvo, Croatia

Filed Feb. 21, 1995, Ser. No. 390,955
Claims priority, application Croatia, Feb. 21, 1994, P940123A
Int. Cl.[6] A61K *31/635;* **C07D** *491/56*
U.S. Cl. 514—450 **7 Claims**

1. Compound of the formula I



I

wherein
R^1 and R^2 represent a hydrogen atom, a straight-chain or branched alkyl with 1–4 C atoms or phenyl, or
R^1+ R^2together represent an alkylidene group with 4–6 atoms and
R^3 represents an o-, m-, or p-hydroxyaminophenyl group.

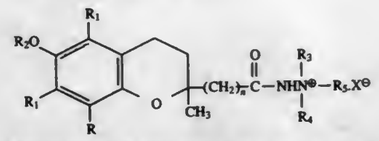
5,545,660

HYDRAZIDE DERIVATIVES OF 3,4-DIHYDRO-2H-1-BENZOPYRANS

J. Martin Grisar, Wissembourg; Margaret A. Petty, Strasbourg, both of, France, and Frank Bolkenius, Kehl, Germany, assignors to Merrell Pharmaceuticals Inc., Cincinnati, Ohio

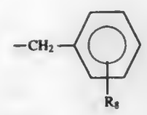
PCT No. PCT/US93/02311, § 371 Date Oct. 6, 1994, § 102(e) Date Oct. 6, 1994, PCT Pub. No. WO93/20059, PCT Pub. Date Oct. 14, 1993
PCT Filed Mar. 12, 1993, Ser. No. 318,670
Claims priority, application European Pat. Off., Apr. 7, 1992, 92400972
Int. Cl.[6] A61K *31/355;* **C07D** *311/72*
U.S. Cl. 514—458 **13 Claims**

1. A compound of the formula



(I)

the stereoisomer or mixture thereof, inner salt, or the pharmaceutically acceptable salt thereof wherein
R is H or C_{1-6} alkyl,
R_1 is C_{1-6} alkyl,
R_2 is H or —C(O)R, R_3 and R_4 are independently C_{1-6} alkyl;
R_5 is C_{1-6} alkyl, or



with R_8 being H or halogeno,
n is zero, 1, 2, or 3 and
X is a halide, $—S(O)_3R_6$, or nothing when the inner salt is formed
R_6 is H, C_{1-6} alkyl, phenyl or 4-methylphenyl.
12. A method of treating a patient for reperfusion damage by administering an effective amount of a compound of claim 1.

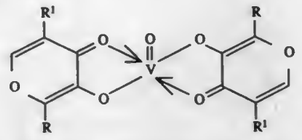
5,545,661

METHODS FOR INHIBITING BONE LOSS WITH BIS-PYRONE OXOVANADIUM COMPOUNDS

George J. Cullinan, Trafalgar, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed May 16, 1995, Ser. No. 442,456
Int. Cl.[6] A61K *31/35*
U.S. Cl. 514—460 **11 Claims**

1. A method for inhibiting bone loss comprising administering to a human in need of treatment an effective amount of a compound of formula I



I

wherein
each R is the same or different —H, $—C_1$-C_6 alkyl, $—CH_2OH$, or $—CH_2O(C_1$-$C_6)$ alkyl; and
each R^1 is the same or different —H, $—C_1$-C_6 alkyl, $—CH_2OH$, or $—CH_2O(C_1$-$C_6)$alkyl;
or a pharmaceutically acceptable solvate or hydrate thereof.

5,545,662

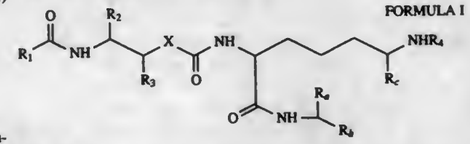
URETHANES AND UREAS THAT INDUCE CYTOKINE PRODUCTION

Semiramis Ayral-Kaloustian, Tarrytown; Steven R. Schow, Washingtonville; Mila T. Du, Suffern, all of N.Y., and James J. Gibbons, Jr, Westwood, N.J., assignors to American Cyanamid Company, Madison, N.J.

Division of Ser. No. 63,174, May 12, 1993, Pat. No. 5,312,831.
This application Mar. 14, 1994, Ser. No. 213,303
Int. Cl.[6] A61K *38/00;31/27;31/195*
U.S. Cl. 514—478 **3 Claims**

1. A method of increasing neutrophil counts in a mammal which comprises administering to said mammal an effective amount of a compound having the structure

FORMULA I



wherein:
R_1 is selected from the group consisting of hydrogen, a substituted or unsubstituted (C_1-C_{20}) alkyl group, a substituted or unsubstituted cycloalkyl group, a substituted or unsubstituted

cycloalkylalkyl group, a vinyl group, an acetylene group, a substituted or unsubstituted amino group, a substituted or unsubstituted acylamino group, a substituted or unsubstituted aryl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted aryloxy group, a substituted or unsubstituted alkoxyalkyl group, a substituted or unsubstituted alkoxyaralkyl group and a substituted or unsubstituted monocyclic or bicyclic heterocyclic group containing from 1 to 4 hetero atoms selected from the group consisting of nitrogen, sulfur and oxygen atoms; R_a and R_3 are independently selected from hydrogen, substituted or unsubstituted (C_1-C_6) alkyd, substituted or unsubstituted alkoxyalkyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted cycloalkylalkyl, substituted or unsubstituted aryl, substituted or unsubstituted aralykyl, substituted or unsubstituted alkoxyaralkyl, vinyl, acetylene and a substituted monocyclic or bicyclic heterocycle containing from 1 to 4 heteroatoms selected from the group consisting of nitrogen, sulfur and oxygen atoms provided that, in the case of R_3, the hereto atoms in said heterocycle are not directly bonded to the —CH— group of the —CH—X— moiety; and R_2, R_b and R_c are independently selected from carboxy or protected carboxy, carboxy or protected carboxyloweralkyl and carboxyamide; X is oxygen or nitrogen; and R_a is H or an amino protecting group; wherein the substituents in the aforementioned substituted alkyl, cycloalkyl, cycloalkylalkyl, amino, acylamino, aryl, aralkyl, aryloxy, alkoxyaryl, alkoxyaryalkyl and heterocyclic groups are selected from the group consisting of halogen, hydroxyl, lower alkyl, lower alkoxy, aryloxy, aralkyloxy amino, mono- or di-lower alkylamino, arylamino, aralkylamino, carboxyl, formyl, lower alkoxycarbonyl, aryloxycarbonyl, aralkyloxycarbonyl, lower alkylthio, arylthio, aralkylthio. arylsulfinyl, aralkylsulfinyl, lower alkylsulfonyl, arylsulfonyl, aralkylsulfonyl and a monocyclic or bicyclic heterocyclic group having 1–4 hereto atoms selected from nitrogen, sulfur and oxygen; and the pharmaceutically acceptable salts thereof.

5,545,663

COMPOSITIONS COMPRISING PARAESTHETIC AGROCHEMICALS

Sarangdhar S. Nakat, New Aurangabad, Ind., assignor to Sandoz Ltd., Basel, Switzerland

Division of Ser. No. 10,226, Jan. 27, 1993, Pat. No. 5,401,494.
This application Dec. 6, 1994, Ser. No. 349,861
Int. Cl.[6] A61K *31/215;49/00;* **A01N** *37/34;53/00*
U.S. Cl. 514—521 **3 Claims**

1. An agricultural composition exhibiting reduced paraesthesia wherein the active component consists essentially of a normally paraesthetic pyrethroid, in combination with an amount of urea capable of reducing the paraesthetic effect of said pyrethroid.

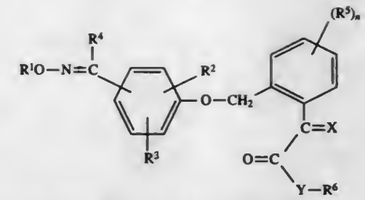
5,545,664

SUBSTITUTED PHENOXYMETHYLPHENYL DERIVATIVES, THEIR PREPARATION AND THEIR USE FOR CONTROLLING PEST AND FUNGI

Reinhard Kirstgen, Neustadt; Klaus Oberdorf, Heidelberg; Hubert Sauter; Herbert Bayer, both of Mannheim; Wassilios Grammenos, Ludwigshafen; Harald Rang, Altrip; Volker Harries, Frankenthal; Gisela Lorenz, Hambach, and Eberhard Ammermann, Heppenheim, all of, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Mar. 23, 1995, Ser. No. 409,039
Claims priority, application Germany, Mar. 25, 1994, 44 10 424.3
Int. Cl.[6] A01N *37/34;* **A61K** *31/275*
U.S. Cl. 514—521 **20 Claims**

1. A substituted phenoxymethylphenyl derivative of the formula I



I

where the variables have the following meanings:
X is =CH—CH_3 OR =N—OCH_3;
R^1 is
C_1–C_6-alkyl, C_2–C_6-alkenyl, C_3–C_6-alkynyl, C_1–C_6-haloalkyl, C_3–C_6-haloalkenyl, C_1–C_4-alkoxy-C_1–C_6-alkyl, cyano-C_1–C_6-alkyl, C_1–C_6 -alkoxycarbonyl-C_1–C_6-alkyl, a C_3–C_6-cycloalkyl or C_3–C_6-cycloalkyl-C_1 -C_4-alkyl group, phenyl-C_1–C_6-alkyl, naphthyl-C_1–C_6-alkyl, phenyl-C_3–C_6-alkenyl or phenoxy-C_1–C_6-alkyl group, a saturated or unsaturated 4- to 6-membered heterocyclyl or heterocyclyl-C_1–C_4-alkyl group or a heteroaryl-C_1–C_6-alkyl group, the heterocyclic rings in addition to C atoms in each case containing one or two ring members which are selected from the group consisting of an oxygen or sulfur atom and one or two nitrogen atoms and one or two groups —$N(CH_3)$—,
it being possible for the cycloalkyl and heterocyclic rings in each case in turn to carry one or more radicals selected from the group consisting of: halogen, C_1–C_4-alkyl, C_1–C_2-haloalkyl, C_3–C_6-cycloalkyl, C_1–C_4-alkoxy, C_1–C_2-haloalkoxy, halogen, aryl and aryloxy;
R^2 and R^3 are
hydrogen, halogen, cyano, nitro, C_1–C_4-alkyl, C_1–C_2-haloalkyl, C_1–C_4-alkoxy, C_1–C_2-haloalkoxy, or, if R^2 and R^3 are adjacent, together are an oxymethylidenoxy or oxyethylidenoxy bridge, it being possible for each C atom of these bridges if desired to carry one or two halogen atoms and/or methyl radicals;
R^1 is
cyano, chlorine, bromine, C_1–C_6-alkoxy, C_1–C_6-alkylthio, C_1–C_4-haloalkoxy, C_1–C_4-alkoxy-C_1–C_4-alkoxy, C_3–C_6-cycloalkyl-C_1–C_2-alkoxy, C_1–C_6-alkylamino, di-(C_1–C_6-alkyl)amino, C_3–C_6-alkenyloxy, C_3–C_6-alkynyloxy, aryloxy, arylthio, it being possible for the aromatic rings to carry one to three radicals selected from the group consisting of C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy and C_1 –C_4-alkylthio, and it being possible for the aromatic rings additionally to carry sufficient halogen atoms such that the total number of radicals is 4 or 5;
R^5 is
nitro, cyano, halogen, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1 –C_4-haloalkoxy, C_1–C_4-alkylthio, phenyl or phenoxy, it being possible for the phenyl or phenoxy rings to carry one to three radicals selected from the group consisting of C_1–C_4-alkyl, C_1–C_4 -haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy and C_1–C_4-alkylthio, and it being possible for the phenyl or phenoxy rings additionally to carry sufficient halogen atoms such that the total number of radicals is 4 or 5;
or, if n is 2, 3, or 4, is a 1,3-butadiene-1,4-diyl group or a mono- or dihalogenated 1,3-butadiene-1,4-diyl group fused to two adjacent C atoms of the parent substance, it being possible for these fused rings in turn to carry one or two radicals selected from the group consisting of nitro, cyano, halogen, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy and C_1–C_4-alkylthio;

n is 0, 1, 2, 3 or 4, it being possible for the radicals R^3 to be identical or different if n is 2, 3 or 4;
Y is oxygen, —NH— or —N(CH_3)—;
R^6 is hydrogen or C_1–C_4-alkyl.

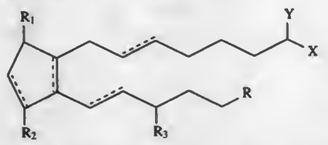
5,545,665

CYCLOPENTANE(ENE) HEPTENOIC OR HEPTANOIC ACIDS AND DERIVATIVES THEREOF USEFUL AS THERAPEUTIC AGENTS

Robert M. Burk, Laguna Beach, Calif., assignor to Allergan, Waco, Tex.

Filed Dec. 28, 1993, Ser. No. 174,535
Int. Cl.[6] A61K *31/25;31/557;* **C07C** *405/00;233/00*
U.S. Cl. 514—530 **29 Claims**

1. A method of treating ocular hypertension which comprises applying to the eye an amount sufficient to treat ocular hypertension of a compound of formula (I)



wherein either the cyclopentane(ene) radical or the α or ω chain may be unsaturated; R is a hydrocarbyl radical comprising up to ten carbon atoms, said hydrocarbyl radical may be substituted with nitro, amino, thiol, hydroxy, alkoxy or halogen; R_1, R_2 and R_3 are selected from the group consisting of hydroxy and hydrocarbyloxy wherein said hydrocarbyl radical comprises up to 20 carbon atoms; Y represents 2 hydrogen radicals or an oxo radical and X represents a hydroxyl a hydrocarbyloxy wherein the hydrocarbyl radical has up to 20 carbon atoms, an amino or a mono or dialkyl amino radical wherein the alkyl radical has from one to ten carbon atoms; provided, however, at least one of R_1, R_2 and R_3 is a hydrocarbyloxy.

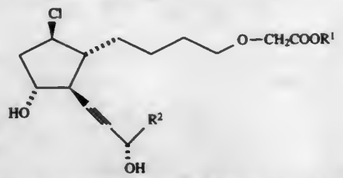
5,545,666

PROSTAGLANDIN DERIVATIVES

Fumie Sato, Fujisawa; Takehiro Amano, Tokyo; Kazuya Kameo, Tokyo; Tohru Tanami, Tokyo; Masaru Mutoh, Tokyo; Naoya Ono, Tokyo, and Jun Goto, Tokyo, all of, Japan, assignors to Taisho Pharmaceutical Co., Ltd., Japan

PCT No. PCT/JP93/01493, § 371 Date Apr. 19, 1995, § 102(e) Date Apr. 19, 1995, PCT Pub. No. WO94/08959, PCT Pub. Date Apr. 28, 1994
PCT Filed Oct. 18, 1993, Ser. No. 290,745
Claims priority, application Japan, Oct. 20, 1992, 4-282001
Int. Cl.[6] C01C *405/00;* **A61K** *31/557*
U.S. Cl. 514—530 **6 Claims**

1. A prostaglandin derivative represented by formula



(I)

(wherein R^1 represents a hydrogen atom or a C_1–C_6 alkyl group, and R^2 represents a cyclohexyl group or a cyclopentylmethyl group), and a salt thereof.

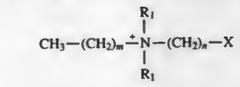
5,545,667

METHODS FOR TREATING NEOPLASMS WITH BETAINES

Richard J. Wiersema, Tracy, and Jurij J. Hostynek, Lafayette, both of Calif., assignors to The Clorox Company, Oakland, Calif.

Continuation of Ser. No. 692,146, Apr. 26, 1991, abandoned. This application Apr. 18, 1994, Ser. No. 228,912
Int. Cl.[6] A61K *31/205*
U.S. Cl. 514—556 **22 Claims**

1. A method for inhibiting the growth of melanoma, leukemia or adenocarcinoma cells which comprises administering to melanoma, leukemia or adenocarcinoma cell hosts a pharmaceutical composition containing an effective cellular growth inhibiting amount of a quaternary ammonium betaine of the formula:



wherein
R_1 is independently selected from the group consisting of lower alkyls and lower alkylaryls;
X is a carboxyl anion;
m is an integer from 11 to 15 inclusive; and
n is an integer from 1 to 5 inclusive; provided that the combination of X, m and n result in a compound having a Krafft point at or below 25° C. and a critical micelle concentration about or less than 50 uM.

5,545,668

ORAL GLUTAMINE TO REDUCE STOMATITIS

Keith M. Skubitz, 2915 W. 43rd St., Minneapolis, Minn. 55410, and Peter M. Anderson, 2809 Louisiana, St. Louis Park, Minn. 55426

Division of Ser. No. 39,905, Mar. 3, 1993, Pat. No. 5,438,075. This application Nov. 17, 1994, Ser. No. 341,348
Int. Cl.[6] A61K *31/195*
U.S. Cl. 514—561 **5 Claims**

1. In a method for treating a patient undergoing chemotherapy and/or radiotherapy, the improvement comprising administering glutamine or a glutamine analogue orally to the patient at a rate of about 0.30 to 4.50 g/m^2 per day in addition to the chemotherapy and/or radiotherapy.

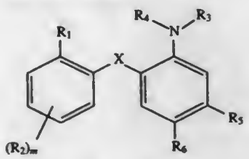
5,545,669

ANTI-INFLAMMATORY COMPOUNDS

Jerry L. Adams; Ralph F. Hall; Dennis Lee; Ruth J. Mayer, and George L. Seibel, all of SmithKline Beecham Corporation, Corporate Intellectual Property -U.S., UW2220, P.O. Box 1539, King of Prussia, Pa. 19406-0939

Filed Jun. 2, 1994, Ser. No. 252,717
Int. Cl.[6] A61K *31/195*
U.S. Cl. 514—562 **19 Claims**

1. A compound of the formula:



(I)

wherein
R_1 is $(CH_2)_nOH$ or $(CH_2)_nCO_2R_8$;
n is 0 or an integer having a value of 1;
X is oxygen or sulfur;

R_2 is hydrogen, halogen, optionally substituted C_{1-8} alkyl, or C_{1-8} alkoxy;
m is an integer having a value of 1 or 2;
R_3 is $S(O)_2R_7$;
R_4 is hydrogen or $S(O)_2R_7$;
R_5 is hydrogen, halogen, CF_3, CH_3, $(CH_2)_tC(O)_2R_9$, or $(CH_2)_tOH$;
t is 0 or an integer having a value of 1 or 2;
R_6 is hydrogen or halogen;
R_7 is optionally substituted aryl, optionally substituted aryl C_{1-2} alkyl, or an optionally substituted C_{1-8} alkyl;
R_8 is hydrogen or C_{1-4} alkyl;
R_9 is hydrogen or C_{1-4} alkyl;
or a pharmaceutically acceptable salt thereof.

5,545,670

COMPOSITION AND METHOD FOR THE TREATMENT OF CHRONIC FATIGUE SYNDROME

Siegbert H. Bissbort, 387 24th Avenue, Villieria, Pretoria, Transvaal Province, and Henry J. Davis, Plot 120, Swavelpoort, Pretoria, Transvaal Province, both of, South Africa

Continuation of Ser. No. 942,925, Sep. 10, 1992, abandoned. This application Jun. 8, 1994, Ser. No. 255,825
Claims priority, application South Africa, Sep. 13, 1991, 91/7333; Sep. 13, 1991, 91/7334; May 20, 1992, 92/3667
Int. Cl.[6] A61K *31/195;31/495;31/44;31/70;33/14;33/10*
U.S. Cl. 514—562 **6 Claims**

1. A method of treating myalgic encephalomyelitis known as chronic fatigue syndrome in a human subject, comprising administering to said subject a composition comprising:
(a) an active ingredient which is selected from the group consisting of L-methionine and its biologically acceptable salts, in a daily dosage to supply to the subject 20 mg–70 mg L-methionine per kilogram body mass;
(b) a biologically acceptable magnesium compound selected from the group consisting of biologically acceptable inorganic magnesium salts and magnesium chelates, the ratio by mass of the magnesium compound to L-methionine being 1:2–1:6;
(c) folic acid in a ratio by mass of folic acid to L-methionine of 1:75–1:8000;
(d) vitamin B_6 in a ratio by mass of vitamin B_6 to L-methionine of 1:60–1:3000; and
(e) vitamin B_{12} in a ratio by mass of vitamin B_{12} to L-methionine of 1:60,000–1:300,000.

5,545,671

ANTIMETASTICALLY ACTING AGENTS

Martin Schneider, and Ekkehard Schillinger, both of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

Continuation of Ser. No. 856,161, Apr. 2, 1992, abandoned. This application Apr. 28, 1994, Ser. No. 234,515
Claims priority, application Germany, Oct. 5, 1989, 39 33 523.2
Int. Cl.[6] A61K *31/19;31/557*
U.S. Cl. 514—573 **9 Claims**

1. A method of inhibiting, in a host, metastases of a malignant tumor sensitive to treatment with Eptaloprost or Cicaprost, comprising administering to said host an effective amount of Eptaloprost or a Cicaprost, an addition salt of Eptaloprost or Cicaprost with a physiologically compatible base, a cyclodextrin clathrate, or a mixture thereof.

5,545,672

TREATMENT OF INSULIN RESISTANCE AND TYPE 2 DIABETES MELLITUS WITH A THIOL PROTEASE INHIBITOR

Victoria P. Knutson, Houston, Tex., assignor to The University of Texas System, Houston, Tex.

Continuation of Ser. No. 16,689, Feb. 11, 1993, abandoned. This application Jul. 8, 1994, Ser. No. 272,292
Int. Cl.[6] A61K *31/18;38/00;38/55*
U.S. Cl. 514—603 **5 Claims**

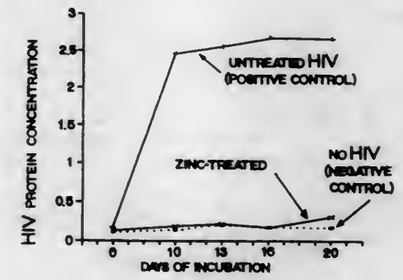
1. A method for treating Type II diabetes mellitus comprising administering to a subject suffering from Type II diabetes a therapeutically effective dose of a thiol protease inhibitor which inhibits the production of the β' fragment of the insulin receptor.

5,545,673

METHOD FOR REDUCING RISK OF INFECTION BY SEXUALLY TRANSMITTED VIRUSES

Patrick D. Kelly, 33 Berry Oaks, St. Louis, Mo. 63122

Continuation-in-part of Ser. No. 57,110, May 3, 1993, abandoned, which is a division of Ser. No. 737,169, Jul. 29, 1991, Pat. No. 5,208,031, said Ser. No. 57,110is a continuation-in-part of Ser. No. 737,169, which is a continuation-in-part of Ser. No. 528,495, May 25, 1990, abandoned, which is a continuation-in-part of Ser. No. 362,058, Jun. 6, 1989, abandoned. This application Jan. 3, 1995, Ser. No. 368,041
Int. Cl.[6] A61K *47/30;47/38;47/06;* **A01N** *25/04*
U.S. Cl. 514—772.3 **7 Claims**



1. A method of reducing the risk of infection by at least one sexually transmitted virus selected from the group consisting of genital herpes viruses and human immunodeficiency viruses, comprising the step of spreading a lubricant gel upon genital surfaces of a person previously uninfected by the sexually transmitted virus, in a manner which causes the lubricant gel to coat and remain in contact with the genital surfaces during sexual intercourse, wherein:
a. the lubricant gel comprises (1) water, (2) a thickening agent, (3) a lubricating agent which reduces genital friction during sexual intercourse, and (4) a selected water-soluble organic zinc salt at a concentration of about 0.5% to about 30% measured as weight per volume;
b. the selected zinc salt, when dissolved in water, ionically dissociates at a rate sufficient to release divalent zinc ions at a concentration which significantly inhibits genital herpes viruses;
c. the lubricant gel is physiologically acceptable, does not irritate any genital surfaces when used as a topical lubricant during intercourse, and is characterized by the absence of any anti-coagulant compound or other component at a concentration that would generate a significant adverse effect upon genital surfaces if the lubricant gel is used repeatedly as a genital lubricant over a period of months.

VOL 1189 155 2 AG 13 1996 UMI

5,545,674

SURFACE SUPPORTED COBALT CATALYSTS, PROCESS UTILIZING THESE CATALYSTS FOR THE PREPARATION OF HYDROCARBONS FROM SYNTHESIS GAS AND PROCESS FOR THE PREPARATION OF SAID CATALYSTS

William C. Behrmann; Kym B. Arcuri, and Charles H. Mauldin, all of Baton Rouge, La., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation of Ser. No. 243,436, May 13, 1994, abandoned, which is a continuation of Ser. No. 32,916, Mar. 18, 1993, abandoned, which is a continuation-in-part of Ser. No. 881,935, May 11, 1992, abandoned, which is a continuation of Ser. No. 667,993, Mar. 12, 1991, abandoned, which is a continuation-in-part of Ser. No. 310,258, Feb. 13, 1989, abandoned, which is a continuation-in-part of Ser. No. 72,517, Jul. 13, 1987, abandoned, which is a continuation-in-part of Ser. No. 46,649, May 7, 1987, abandoned. This application Jan. 24, 1995, Ser. No. 377,293

Int. Cl.[6] C07C *27/06*

U.S. Cl. 518—715 11 Claims

1. A process useful for the conversion of synthesis gas to liquid hydrocarbons and less than about 10 mole % methane which comprises contacting at reaction conditions a feed comprised of carbon monoxide and hydrogen, in H_2:CO molar ratio equal to or greater than about 0.5:1 at total pressure equal to or greater than about 80 psig, over a catalyst composition having a productivity of at least 150 hr^{-1} at 200° C. and which comprises cobalt dispersed as a catalytically active layer upon the outer surface of an inorganic oxide support of a thickness of less than about 200 microns, with the loading of cobalt at least about 0.04 g/cc in said catalytically active layer, calculated as metallic cobalt per packed bulk volume of catalyst.

5,545,675

PROCESS FOR THE PREPARATION OF POLYESTER-POLYURETHANE FLEXIBLE FOAMS WHICH DO NOT GIVE RISE TO THE FORMATION OF MISTING AND USE OF THE SAID FOAMS

Jean-Philippe Loy, Bourgtheroulde-Infreville; Denis Ghesquiere, Tourville la Campagne, and Line Fiquet, Rouen, all of, France, assignors to Witco, Paris, France

Filed Feb. 9, 1995, Ser. No. 386,083

Claims priority, application France, Dec. 28, 1994, 94 15776

Int. Cl.[6] C08G *18/34*

U.S. Cl. 521—172 7 Claims

1. Process for the preparation of polyester-polyurethane flexible foams which do not give rise to the formation of misting, in which:

a) at least one polyisocyanate is reacted with

b) at least one polyester pretreated by distillation with a short residence time, this polyester containing at least two hydroxyl groups per molecule and having a molecular mass of between 400 and 10 000,

c) water and/or highly volatile organic compounds as blowing agent,

optionally in the presence of one or more compound(s) containing at least two active hydrogen atoms, which have molecular masses of between 32 and 400, as chain-extending and crosslinking agent(s) and, optionally, in the presence of at least one additive known per se,

characterized in that, in order to obtain the pretreated polyester which is used in the reaction with the polyisocyanate, in a first stage a starting polyester is manufactured which has a hydroxyl value (HV) higher by 4 to 12 mg KOH/g in relation to the HV of the desired pretreated polyester and which has a viscosity, measured at 25° C. with a Brookfield RVT viscometer, lower by 2 to 5 Pa s in relation to that of the desired pretreated polyester and, in a second stage, the said starting polyester is subjected to a distillation for a treatment period of between 2 and 300 seconds, in temperature and pressure conditions making it possible to extract at least 85% of the cyclic diester present in the starting polyester.

5,545,676

TERNARY PHOTOINITIATOR SYSTEM FOR ADDITION POLYMERIZATION

Michael C. Palazzotto; F. Andrew Ubel, III; Joel D. Oxman, and M. Zaki Ali, all of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 840,880, Feb. 25, 1992, abandoned, which is a continuation of Ser. No. 34,065, Apr. 2, 1987, abandoned. This application Dec. 28, 1994, Ser. No. 365,494

Int. Cl.[6] C08F *2/46*

U.S. Cl. 522—15 35 Claims

1. An addition-polymerizable composition comprising:

a) free-radically-polymerizable monomer, and

b) photoinitiator system, soluble in said monomer, comprising photochemically effective amounts of

i) aryliodonium salt,

ii) sensitizing compound capable of absorbing light within the range of wavelengths between about 300 and about 1000 nanometers and capable of sensitizing 2-methyl-4,6-bis(trichloromethyl)-s-triazine, and

iii) electron donor compound, said donor being different from said sensitizing compound wherein the oxidation potential of said donor is greater than zero and less than or equal to p-dimethoxybenzene vs. a saturated calomel electrode.

5,545,677

PASSIFICATION OF OPTICALLY VARIABLE PIGMENT AND WATERBORNE COATING COMPOSITIONS CONTAINING THE SAME

Jon R. Hall, Howell; Clint W. Carpenter, Royal Oak, and Stuart K. Scott, Allen Park, all of Mich., assignors to BASF Corporation, Southfield, Mich.

Division of Ser. No. 247,803, May 23, 1994, Pat. No. 5,498,781. This application May 11, 1995, Ser. No. 439,529

Int. Cl.[6] C08K *9/06*

U.S. Cl. 523—212 11 Claims

1. A process for treating an optically variable pigment comprising the steps of a) combining optically variable pigment with solvent and a silane containing compound, having the formula

$$R^2\text{—}Si(R^1)(R^3)\text{—}A\text{—}X, \quad \text{(I)}$$

where R^1, R^2, and R^3 may be the same or different and are selected from alkyl of from one to ten carbon atoms, alkoxyl of from one to ten carbon atoms, alkoxyalkoxyl of from two to ten carbon atoms, alkanoyloxy of from two to ten carbon atoms, or halogen, with the proviso that R^1, R^2, and R^3 may not all be alkyl, the group "A" is a divalent radical selected from straight or branched alkylene of from one to twelve carbon atoms, phenylene or phenylene substituted with halogen, or alkyl or alkoxyl of from one to four carbon atoms, the group "X" is selected from the group consisting of —OH—, —SH, —NHR_4, —NCO—, epxoy, phenol, anhydride, carbonate and mixtures thereof, wherein R^4 is hydrogen or alkyl of from 1 to 12 carbon atoms,

b) separating the treated pigment from the solvent,

c) baking the treated pigment,

d) adding to the treated pigment a copolymer which is a polymeric backbone having a reactive functionality thereon, wherein the functionality is selected from the group consisting of isocyanate, epoxy, anhydride, primary or secondary amine, hydroxy or carbonate functionalities, and

e) drying the pigment.

5,545,678

POLYMER SYSTEMS, PROCESS FOR THEIR PREPARATION, AND THEIR USE FOR PRINTING INKS

Astrid Giencke, Hofheim; Uwe Neumann, Bad Schwalbach; Bernd Mergardt, Eltville, and Gerd Walz, Wiesbaden, all of, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Nov. 2, 1994, Ser. No. 335,419

Claims priority, application Germany, Nov. 2, 1993, 43 37 253.8; Jun. 30, 1994, 44 22 869.4

Int. Cl.[6] C08K *3/20;* C08L *63/02*

U.S. Cl. 523—404 11 Claims

1. An amino-containing polymer system comprising an amino-containing polymer or polymer mixture A having a glass transition temperature of at least 40° C., a weight-average molecular weight of 2,000–75,000 and an amine number of 50–300, said amino-containing polymer or polymer mixture being prepared by the reaction of

(a) at least one epoxide, carbonate, and epoxide-carbonate,

(b) at least one amine and

(c) at least one phenol,

in such a manner that the polymer or polymer mixture A is free of unreacted phenol groups, 1,2-epoxy groups, 2-oxo-1,3-dioxolane and free primary or secondary amino groups, and wherein the polymer or polymer mixture A is subsequently subjected to at least partial neutralizaiton and transfer to water.

5,545,679

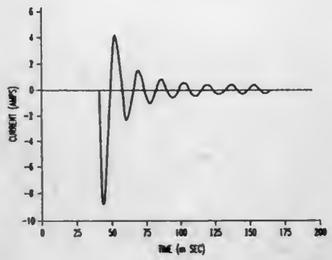
POSITIVE TEMPERATURE COEFFICIENT CONDUCTIVE POLYMER MADE FROM THERMOSETTING POLYESTER RESIN AND CONDUCTIVE FILLERS

Parker A. Bollinger, Jr., Arden; Denis A. Mueller, Asheville, both of N.C.; James D. B. Smith, and Henry A. Wehrli, III, both of Monroeville, Pa., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jan. 17, 1995, Ser. No. 375,071

Int. Cl.[6] C08K *3/04;* C08L *67/00*

U.S. Cl. 523—512 17 Claims



1. A current limiting composition which comprises:

a thermosetting polyester resin selected from the group consisting of polyethylene glycol fumarate, polypropylene glycol adipate fumarate, neopentyl glycol isophthalate fumarate, trimethylene glycol adipate fumarate, and neopentyl glycol phthalate fumarate, chemically cross-linked during polymerization with a vinyl monomer resin comprising an initiator and conductive additive particles dispersed therein.

5,545,680

HYDROPHILIC POLYMER COMPOSITE AND PRODUCT CONTAINING SAME

Filomeno G. Corvasce, Mertzig, and Tom D. Linster, Gilsdorf, both of, Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 17,894, Feb. 16, 1993, Pat. No. 5,374,671. This application Jun. 20, 1994, Ser. No. 262,672

Int. Cl.[6] C08L *9/00;* C08K *3/04;3/22;* B60C *1/00*

U.S. Cl. 524—47 17 Claims

1. A method of preparing an anisotropic elastomer comprising the steps of

(a) providing a hydrophilic polymer having a Tg which varies from about 150° C. to about 0° C. dependant on the amount of moisture therein,

(b) soaking said hydrophilic polymer in water providing a moisture laden hydrophilic polymer,

(c) mixing said moisture laden hydrophilic polymer with an elastomer, and

(d) curing said elastomer.

5,545,681

PH-MODIFIED POLYMER COMPOSITIONS WITH ENHANCED BIODEGRADABILITY

Robert S. Honkonen, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 168,434, Dec. 20, 1993. This application Apr. 27, 1995, Ser. No. 430,103

Int. Cl.[6] C08K *5/49*

U.S. Cl. 524—115 2 Claims

1. A polymer composition having enhanced biodegradability, comprising a blend of:

(i) a polycarbonate polymer containing base-hydrolyzable bonds, wherein said polycarbonate is a polyester comprising bisphenol-A and a carboxylic acid or a polyester comprising hydroquinone and a carboxylic acid;

and

(ii) at least about 1%, based on the weight of the polycarbonate polymer containing base-hydrolyzable bonds, of a substantially water-insoluble, pH-modifying basic compound having a 25° C. solubility product constant in water of from about 1×10^{-6} to about 1×10^{-13}.

5,545,682

SILICONE COMPOSITION FOR THE FORMATION OF CURED RELEASE COATINGS

Nobuo Kaiya, and Hideki Kobayashi, both of Chiba Prefecture, Japan, assignors to Dow Corning Silicone Co., Ltd., Tokyo, Japan

Filed May 23, 1995, Ser. No. 447,663

Claims priority, application Japan, May 31, 1994, 6-141209

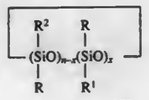
Int. Cl.[6] C08K *5/54*

U.S. Cl. 524—265 25 Claims

1. A silicone composition for the formation of cured release coatings, wherein said composition comprises

(A) 100 weight parts of a cured coating-forming silicone composition selected from the group consisting of addition reaction-curing cured coating-forming silicone compositions, condensation reaction-curing cured coating-forming silicone compositions, organoperoxide-curing cured coating-forming silicone compositions, and cured coating-forming silicone compositions that are cured by exposure to high-energy radiation into which there is admixed

(B) 0.5 to 500 weight parts organosilicon polymer having a viscosity of 10 to 10,000 centistokes with the following average unit formula



wherein each R is independently a C_1 to C_{10} monovalent hydrocarbon group that is free of aliphatic unsaturation;

R^1 is an organic group selected from the group consisting of C_2 to C_{20} alkylene groups, organic groups with the formula $—R^3(OR^3)_y—$ where each R^3 is independently a C_2 to C_{20} alkylene group and y is an integer with a value of 1 or more, and organic groups with the formula $—R^3—(R_2SiO)_zR_2Si—R^3—$ where R and R^3 are defined as above and z is an integer with a value of 1 or more;

R^2 is selected from the group consisting of C_1 to C_{10} monovalent hydrocarbon groups, the hydrogen atom, C_1 to C_{10} alkoxy groups, and the hydroxyl group;

n is an integer with a value of at least 3 but no greater than 20;

x is an integer with a value of at least 1 but no greater than 13; and

$n \geqq x$.

5,545,683

COATING SURFACE-LUSTERING AGENT

Kiyoshi Okamura, Fujisawa, and Seigo Shinohara, Kanagawa-ken, both of, Japan, assignors to Taiho Industries Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1994, Ser. No. 365,492

Claims priority, application Japan, Dec. 28, 1993, 5-335668

Int. Cl.[6] C08L *91/06*

U.S. Cl. 524—277 **16 Claims**

1. A coating surface-lustering agent containing at least one modified silicone resin selected from the group consisting of an acrylurethane-modified silicone resin and 1 to 20 wt % of an abrasive and fluoroacryl-modified silicone resin.

5,545,684

EMULSION ADHESIVES

Martin Jakob, Kelkheim, and Volker Matz, Frankfurt, both of, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Jun. 7, 1995, Ser. No. 487,513

Claims priority, application Germany, Jun. 11, 1994, 44 20 484.1

Int. Cl.[6] C08K *5/07;* **C08L** *29/04;* **C08G** *63/91;* **C08F** *8/42*

U.S. Cl. 524—354 **17 Claims**

1. An aqueous emulsion adhesive having a pH of from about 2 to about 6, comprising

at least one homo- or copolymeric polyvinyl ester;

at least one polymeric protective colloid,

at least one water-soluble compound which can be complexed with the polymeric protective colloid, and

at least one partially masked polyaldehyde having at least 3 carbon atoms from which aldehyde groups can be liberated in a controlled manner in acidic media.

5,545,685

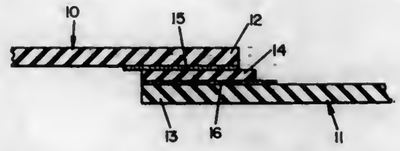
ADHESIVE TAPE COMPOSITIONS AND METHOD FOR COVERING ROOFS

James A. Davis, Indianapolis; Joseph R. Hoppert, Noblesville; Chester T. Chmiel, Granger, and Brian S. Alexander, Sheridan, all of Ind., assignors to Bridgestone/Firestone, Inc., Akron, Ohio

Division of Ser. No. 330,041, Oct. 27, 1994, Pat. No. 5,504,136. This application Apr. 28, 1995, Ser. No. 430,387

Int. Cl.[6] C08K *5/01;* **B32B** *7/12*

U.S. Cl. 524—490 **16 Claims**



1. A method for adhering together two layers of reinforced or unreinforced rubber sheet material having edge areas, comprising the steps of:

applying an adhesive tape composition to the edge area of one of the layers of rubber sheet material, said adhesive tape composition comprising:

a polymer blend comprising at least two EPDM rubbers and an adhesive-enhancing polymer selected from the group consisting of polyisoprene, polybutadiene, and ethylene-propylene copolymer and mixtures thereof, wherein at least one of said EPDM rubbers has a weight average molecular weight of at least about 150,000 and at least another of said EPDM rubbers has a weight average molecular weight of up to about 150,000;

at least one tackifying additive compatible with said polymer blend; and

a cure package containing a curing agent and at least one accelerator, for said polymer blend, said adhesive composition being devoid of butyl rubber;

applying the edge area of the other layer of rubber sheet material to the opposite side of said adhesive tape composition, thereby overlapping the edge areas of the layers of rubber sheet material; and

applying pressure to the overlapped edge areas to form a seam; said sheet material having a seam peel adhesion value of at least about 2 pounds/inch and a seam shear adhesion value of at least about 10 pounds/square inch, after aging for at least 24 hours.

5,545,686

RUBBER COMPOSITION

John D. Carter, Uniontown, and Richard R. Smith, Cuyahoga Falls, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 100,391, Aug. 2, 1993, abandoned, which is a continuation-in-part of Ser. No. 652,160, Feb. 7, 1991, Pat. No. 5,232,977, which is a continuation-in-part of Ser. No. 248,849, Sep. 26, 1988, abandoned. This application Oct. 3, 1994, Ser. No. 317,149

Int. Cl.[6] C08L *67/02*

U.S. Cl. 524—513 **16 Claims**

1. A rubber composition having a high modulus and excellent processability which is comprised of a blend of (1) at least one elastomer selected from the group consisting of polybutadiene rubber, styrene-butadiene rubber, synthetic polyisoprene rubber, natural rubber, isoprene-butadiene rubber, isoprene-butadiene-styrene rubber, nitrile rubber, carboxylated nitrile rubber, and EPDM rubber, (2) at least one thermotropic liquid crystalline polymer containing an aliphatic spacer, wherein the thermotropic liquid crystalline polymer exhibits no apparent crystalline to nematic transition, wherein the thermotropic liquid crystalline polymer exhibits nematic order above its glass transition temperature, wherein the glass transition temperature of the thermotropic liquid crystalline polymer is within the range of 20° C. to 180° C., and wherein the thermotropic liquid crystalline polymer is comprised of repeat units which are derived from a halogenated hydroquinone, para-hydroxybenzoic acid, and an aliphatic dicarboxylic acid having the structural formula $HOOC-(CH_2)_n-COOH$ wherein n represents an integer from about 4 to about 8, and (3) carbon black.

5,545,687

PREPARATION OF HIGH DENSITY BORON CARBIDE CERAMICS WITH PRECERAMIC POLYMER BINDERS

Gary T. Burns; Gregg A. Zank, both of Midland, and Jeffrey A. Ewald, Bay City, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Feb. 21, 1990, Ser. No. 482,601

Int. Cl.[6] C08K *3/02*

U.S. Cl. 524—701 **29 Claims**

1. A method of preparing a sintered boron carbide body comprising:

(a) blending components comprising boron carbide powder and a preceramic organosilicon polymer selected from the group consisting of polysiloxanes, polysilazanes, polysilanes, metallopolysiloxanes and metallopolysilanes to a uniform mixture, where the preceramic organosilicon polymer is present in an amount such that the free carbon value of the mixture is greater than 0.2 weight percent based on the total weight of the boron carbide powder and the char derived form the preceramic organosilicon polymer;

(b) forming the uniform mixture into the desired shape under pressure at a temperature less than about 500° C. to obtain a handleable green body; and

(c) sintering the handleable green body in an inert atmosphere at a temperature greater than about 2200° C. to obtain a sintered body with a density greater than about 2.0 g/cm^3.

5,545,688

PROCESS FOR MANUFACTURING ACRYLAMIDE MICROEMULSIFIED HOMOPOLYMER

Sun-Yi Huang, Fairfield, Conn., assignor to Cytec Technology Corp., Wilmington, Del.

Continuation of Ser. No. 752,810, Aug. 30, 1991, abandoned. This application May 24, 1995, Ser. No. 448,947

Int. Cl.[6] C08L *33/26*

U.S. Cl. 524—827 **2 Claims**

1. A method for the preparation of a stable microemulsion of a homopolymer of an acrylamide monomer at polymer solids concentrations of at least 15% in the absence of microemulsion stabilizing amounts of monocarboxylic acid salts which comprises forming an aqueous phase consisting essentially of an acrylamide monomer and an organic phase consisting essentially of a hydrocarbon oil and a nonionic surfactant having an HLB ranging from about 7.3 to about 9.3, the ratio of surfactant to acrylamide ranging from about 0.3–0.70 to 1, adding the organic phase to the aqueous phase at a ratio of aqueous phase to organic phase of about 0.5 to 1 to about 3 to 1 to form a microemulsion, polymerizing said monomer while maintaining the exotherm below about 100° C. and recovering the resultant clear, stable microemulsion.

5,545,689

POLYMER BLENDS

Robert M. Amici, Doylestown; Edward E. LaFleur, Warminster, and William J. Work, Huntington Valley, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 232,892, Apr. 25, 1994, Pat. No. 5,404,153, which is a division of Ser. No. 988,548, Dec. 10, 1992, Pat. No. 5,378,759, which is a continuation-in-part of Ser. No. 872,478, Apr. 23, 1992, abandoned. This application May 1, 1995, Ser. No. 431,875

Int. Cl.[6] C08L *29/02;29/04*

U.S. Cl. 525—057 **2 Claims**

1. A melt-processed polymeric blend consisting essentially of:

a) from about 80 to about 98 parts, per 100 parts by weight of the blend, of a first polymer containing at least about 50 mol % units of the structure

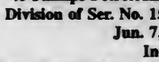
$—CH_2—$

and correspondingly

b) from about 2 to about 20 parts, per 100 parts by weight of the blend, of a second, core/shell, polymer comprising:

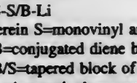
1. a rubbery cross-linked core polymer which contains greater than 75 weight percent, based on total weight of the first stage, of butadiene and/or one or more C_2–C_8 alkyl esters of acrylic acid;

2. a shell polymer containing from about 50 to about 98 weight percent of units of the structure



where Ar is aryl, halogen-substituted aryl, or alkyl-substituted aryl, where R_5 is —H or $—CH_3$, optionally up to about 30 weight percent of units derived from free-radical copolymerization of (meth)acrylonitrile, and about 2 to about 25 weight percent of units derived from free-radical copolymerization of at least one unsaturated copolymerizable carboxylic acid of the formula

$CHR_4=CR_1R_4$; $CHR_1=CR_1R_4$



$CH_2=CR_1-COO-CH_2-CH_2R_4$,

where R_1 is —H or $—CH_3$, and R_4 is —COOH, or at least one anhydride selected from maleic anhydride, itaconic anhydride, or citraconic anhydride.

5,545,690

TAPERED BLOCK COPOLYMERS OF MONOVINYLARENES AND CONJUGATED DIENES

William J. Trepka; George A. Moczygemba; Nathan E. Stacy, and Ralph C. Farrar, Jr., all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 153,408, Nov. 15, 1993. This application Jun. 7, 1995, Ser. No. 478,306

Int. Cl.[6] C08F *297/04*

U.S. Cl. 525—98 **5 Claims**

1. Blends of a polymer of styrene and a polymodal coupled resinous block copolymer of a monovinyl aromatic compound and a conjugated diene, said copolymer consisting essentially of polymer chains which result from coupling block copolymer chains

S-S-B/S-Li

S-S/B-Li

wherein S=monovinyl aromatic block

B=conjugated diene block

B/S=tapered block of conjugated diene/monovinyl aromatic compound

Li=living polymer cite or coupling site.

5,545,691

PROTECTED FUNCTIONAL INITIATED POLYMERS CAPPED WITH LOW SURFACE ENERGY FLUOROCARBONS

Robert C. Bening, Katy, and David J. St. Clair, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 359,805, Dec. 20, 1994, Pat. No. 5,486,568. This application Oct. 11, 1995, Ser. No. 540,996

Int. Cl.[6] C08F *8/20*

U.S. Cl. 525—102 7 Claims

1. A heterotelechelic polymer, comprising:
a polymer backbone comprising a saturated or unsaturated polymerized conjugated diene;
a protected or deprotected ether group on one end of the polymer backbone; and
a fluorocarbon group on another end of the polymer backbone.

5,545,692

NEW POLYESTERS OF DIMER FATTY ACID AND DIMER FATTY DIOL AND THEIR USE FOR THE PRODUCTION OF POLYESTER CARBONATES

Burkhard Köhler; Heinz Pudleiner, both of Krefeld, and Klaus Horn, Dormagen, all of, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen

Filed May 18, 1995, Ser. No. 443,446

Claims priority, application Germany, Jun. 1, 1994, 44 19 229.0

Int. Cl.[6] C08G *63/18;63/16;63/64*

U.S. Cl. 525—146 7 Claims

1. Acid-terminated polyesters with an acid value of 2 to 70 and an OH value of <10, the maximum OH value being 30% of the acid value, obtained from
A) hydrogenated dimer fatty acids containing 36 or 44 carbon atoms and
B) dimer fatty diols containing 36 or 44 carbon atoms.

5,545,693

NITRILE CONTAINING PERFLUOROPOLYETHER-PERFLUOROELASTOMER BLENDS

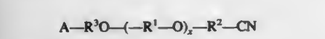
Ming-Hong Hung, Wilmington, Del.; Kaku Mureo, Kawasaki, Japan, and Anestis L. Logothetis, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 10, 1995, Ser. No. 401,830

Int. Cl.[6] C08L *27/18;27/12*

U.S. Cl. 525—187 21 Claims

1. A composition, comprising, a vinyl addition perfluoroelastomer containing a nitrile curesite monomer and a polyperfluoroether of the formula



wherein:
A is fluorine or nitrile;
each R^1 is independently perfluoroalkylene containing 1 to 3 carbon atoms;
R^2 is perfluoroalkylene containing 1 to 3 carbon atoms;
R^3 is perfluoroalkylene containing 1 to 3 carbon atoms; and
x is about 8 to about 75.

5,545,694

REACTIVE MICROGEL AND PHOTOSENSITIVE RESIN COMPOSITION CONTAINING THE REACTIVE MICROGEL FOR FLEXOGRAPHIC PRINTING PLATE

Sunao Satake; Yoshimi Yatsuyanagi; Masahiro Fujii, and Ippei Imagawa, all of Tokyo, Japan, assignors to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Filed Feb. 9, 1995, Ser. No. 386,087

Claims priority, application Japan, Feb. 10, 1994, 6-016486

Int. Cl.[6] C08F *269/00*

U.S. Cl. 525—286 9 Claims

1. A reactive microgel having an average particle diameter of 1 to 10 μm, formed of
microgel particles, as a core, synthesized from an acrylic monomer in an aqueous medium in the presence of an oil-soluble initiator and in the presence of a reactive polymer emulsifier which is an adduct of a neutralized product of an acrylic copolymer having a tertiary amino group with a compound having an epoxy group and an α,β-unsaturated double bond, and a nonionic emulsifier having an HLB of 12 to 16, and
a compound having an epoxy group and an α,β-unsaturated double bond, attached to surfaces of the microgel particles.

5,545,695

ENCAPSULATED HYDROPHILIC POLYMERS AND THEIR PREPARATION

Robert M. Blankenship, Harleysville, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 289,736, Aug. 12, 1994, Pat. No. 5,494,971. This application Jun. 6, 1995, Ser. No. 467,687

Int. Cl.[6] C08F *265/02;265/04*

U.S. Cl. 525—301 2 Claims

1. A multistaged polymer, comprising:
(a) a hydrophilic core polymer formed from about 5% by weight to about 100% by weight, based on the total weight of the core polymer, of a hydrophilic monoethylenically unsaturated monomer and from 0% by weight to about 95% by weight, based on the total weight of the core polymer, of at least one nonionic monoethylenically unsaturated monomer; and
(b) a hydrophobic shell polymer formed from about 90% by weight to about 99.9% by weight, based on the total weight of shell polymer, of styrene and from about 0.1% by weight to about 10% by weight, based on the total weight of the shell polymer, of an acid-functional monoethylenically unsaturated monomer,
wherein said shell polymer fully encapsulates said core polymer.

5,545,696

ETHERIFIED ALKYL OR ARYLCARBAMYLMETHYLATED AMINOTRIAZINES AND CURABLE COMPOSITIONS CONTAINING THE SAME

Daniel E. Rardon, Pittsburgh, and Gregory J. McCollum, Gibsonia, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 157,456, Nov. 26, 1993. This application May 31, 1995, Ser. No. 454,787

Int. Cl.[6] C08F *8/32*

U.S. Cl. 525—375 8 Claims

1. A curable composition comprising:
(a) the triazine compound selected from the group consisting of:
(i) a triaminotriazine compound of the formula $C_3N_6(CH_2OR)_{6-x}(CH_2NHCOOR')_x$;
ii) a benzoguanamine compound of the formula $C_3N_5(C_6H_5)(CH_2—OR)_{4-y}(CH_2NHCOOR')_y$;
(iii) an oligomer of (i) or (ii) including mixtures thereof wherein the R and R' are independently radicals derived from monoalkyl ethers of alkylene glycols having at least 4 carbon atoms and monoaryl ethers of alkylene glycols having at least 8 carbon atoms; alone or combined with hydrogen or alkyl groups having 1 to 20 carbon atoms; x is in the range of from about 2 to about 6 and y is in the range of from about 2 to about 4;
(b) an active hydrogen-containing polymeric material.

5,545,697

URETHANE MODIFIED EPOXY RESIN COMPOSITIONS

Hiroshi Uchida, Kurashiki, Japan, assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed Feb. 14, 1994, Ser. No. 196,347

Int. Cl.[6] C08L *71/02*

U.S. Cl. 525—403 10 Claims

1. An epoxy resin composition that may have a hydrolyzable chlorine content and an amount of α-glycol, which composition is characterized by comprising (A) an epoxy resin free of halogen substituents and containing an oxazolidone ring which is derived from a glycidyl compound selected from the glycidyl ethers, glycidyl esters, glycidyl amines, linear aliphatic epoxides or cycloaliphatic epoxides, (B) a halogen-containing epoxy resin and (C) a curing agent as its ingredients, wherein the ratio by weight of ingredients (A) to (B) is 5–95:95-5, the hydrolyzable chlorine content of a mixture of, ingredients (A) and (B) is not more than 500 ppm and the amount of α-glycol is not more than 100 meq/kg.

5,545,698

POLYETHYLENE GLYCOL DERIVATIVES FOR SOLID-PHASE APPLICATIONS

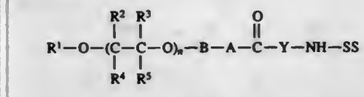
George Barany, Falcon Heights, Minn.; Fernando Albericio, Barcelona, Spain; Nuria A. Solé, Boston, Mass.; Jane Chang, Buffalo Grove, Ill., and Samuel Zalipsky, Fremont, Calif., assignors to University of Minnesota, Minneapolis, Minn.

Continuation-in-part of Ser. No. 59,626, May 19, 1993, abandoned, which is a division of Ser. No. 760,768, Sep. 16, 1991, Pat. No. 5,235,028, which is a continuation-in-part of Ser. No. 715,289, Jun. 14, 1991, abandoned, which is a continuation-in-part of Ser. No. 576,314, Aug. 31, 1990, abandoned. This application Nov. 10, 1993, Ser. No. 150,414

Int. Cl.[6] C08F *8/32;* C08G *69/26*

U.S. Cl. 525—420 8 Claims

1. A resin for solid-phasepeptide synthesis represented by the general formula:



wherein Y is a diamino monocarboxylate moiety that optionally can be protected by an N^{ω} protecting group; n is an integer from about 5 to about 150; SS is a solid support; A is a straight chain or branched C1–C10 alkyl group; B is a single bond or-$(CR_6R_7)_m$-N(H)C(O)- where m is 1 to 4; and R^1 to R^7 are independently selected from the group consisting of hydrogen, alkyl groups and aryl groups.

5,545,699

Patent Not Issued For This Number

5,545,700

MOISTURE-CURABLE SILICONE PRESSURE SENSITIVE ADHESIVES

Shawn K. Mealey; Randall G. Schmidt, both of Midland, and William P. Brady, Sanford, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jan. 10, 1994, Ser. No. 179,417

Int. Cl.[6] C08L *83/05;83/07*

U.S. Cl. 525—478 14 Claims

1. A pressure sensitive adhesive composition produced by thermally curing a composition comprising:
(A) 50 to 80 parts of a benzene soluble, capped, organopolysiloxane resin consisting essentially of $R_3SiO_{1/2}$ siloxane units and $SiO_{4/2}$ siloxane units, wherein R is selected from the group consisting of alkyl radicals having 1 to 10 carbon atoms and aryl radicals having from 6 to 10 carbon atoms; there being from 0.5 to 1.5 $R_3SiO_{1/2}$ units for every $SiO_{4/2}$ units and containing less than 1 weight percent silicon-bonded hydroxyl groups based on the total weight of (A),
(B) 20 to 50 parts of an alkenyl functional polydiorganosiloxane polymer having the general formula $R^1{}_2R^2SiO(R^2{}_2SiO)_nSiR^2R^1{}_2$ wherein each R^1 individually is a radical selected from the group consisting of methyl, ethyl, propyl and phenyl, each R^2 individually is selected from the group consisting of an alkenyl radical and R^1, as defined above, with the proviso that at least two R^2 radicals per molecule must be alkenyl; and n has a value such that the viscosity of (B) is from 100,000 centipoise to 10,000,000 centipoise at 25° C., the amount of (A) and (B) being 100 parts;
(C) a organohydrogenpolysiloxane compound having an average of at least 3 silicon-bonded hydrogen atoms per molecule; the amount of (C) present being sufficient to provide from 1 to 30 silicon bonded hydrogen atoms for every olefinically unsaturated radical in the total of (A) plus (B),
(D) 0.5 to 10 parts per 100 parts of (A) and (B) of an alkenetrialkoxysilane having the general formula $R^3Si(OR^4)_3$ wherein R^3 is an alkenyl group and R^4 is an alkyl group having from 1 to 4 carbon atoms;
(E) a platinum containing catalyst in sufficient quantity to provide at least 0.1 to 1,000 parts of platinum for every one million parts of (A) through (D), and
(F) 0.5 to 10 parts per 100 parts of (A) and (B) of a moisture curing catalyst in an amount suitable to promote a moisture-initiated reaction of the alkoxy radicals of (D)
wherein said pressure sensitive adhesive is capable of further curing in the presence of moisture.

5,545,701

Patent Not Issued For This Number

5,545,702

DIGUANAMINES AND PREPARATION PROCESS, DERIVATIVES AND USE THEREOF

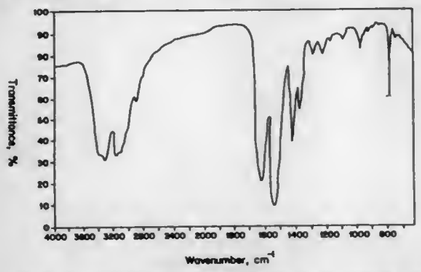
Tetsuya Oishi; Hiroshi Ozawa, both of Kanagawa-ken; Minato Karasawa, Chiba-ken; Masamitsu Inomata, Chiba-ken; Izumi Mega, Chiba-ken; Atsuyoshi Yamauchi; Kazunori Kamada, both of Kanagawa-ken; Shigeru Nakahata; Katsumi Sakamoto, both of Osaka; Tatsunobu Nakashima, Chiba-ken; Akito Watanabe, Osaka; Jin Suzuki, Tokyo; Koubei Ohkawa, Kanagawa-ken; Satoshi Furusawa, Chiba-ken; Hiroshi Ono, Osaka, and Kazuo Sugazaki, Kawagawa-ken, all of, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Division of Ser. No. 414,006, Mar. 30, 1995, which is a division of Ser. No. 201,391, Feb. 24, 1994, which is a continuation-in-part of Ser. No. 186,550, Jan. 26, 1994, abandoned, which is a continuation of Ser. No. 983,855, Mar. 2, 1993, abandoned. This application Oct. 3, 1995, Ser. No. 538,600

Claims priority, application Japan, Feb. 24, 1993, 5-035198; Feb. 24, 1993, 5-035199; Feb. 24, 1993, 5-035200; Mar. 3, 1993, 5-043048; Mar. 12, 1993, 5-051775; Apr. 14, 1993, 5-087499

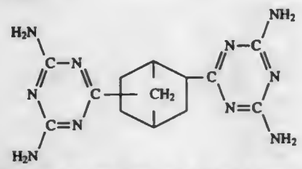
Int. Cl.[6] C08L *61/34*

U.S. Cl. 525—509 **6 Claims**

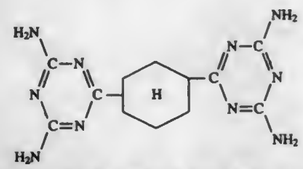


1. A thermosetting composition comprising, as an essential component, at least one compound selected from the group consisting of:

a) an N-methylol diguanamine obtained by subjecting at least one diguanamine and an aldehyde to addition reaction, wherein said diguanamine is represented by the following formula (1):


(1)

wherein the bonding sites of the 4,6-diamino-1,3,5-triazin-2-yl groups are the 2,5- or 2,6-positions, or by the following formula (2):


(2)

wherein the bonding sites of the 4,6-diamino-1,3,5-triazin-2-yl groups are the 1,2-, 1,3- or 1,4-positions;

b) an etherified diguanamine obtained by subjecting said N-methylol diguanamine and at least one alcohol selected from alcohols having 1–20 carbon atoms to etherification, said etherified diguanamine containing at least one R_1OCH_2 group wherein R_1 represents a residual group formed by removing a hydroxyl group from the alcohol;

c) a primary condensate of N-methylol diguanamine obtained by subjecting the diguanamine of formula (1) or (2) and an aldehyde to addition condensation, said primary condensate of the N-methylol diguanamine having an average addition condensation degree greater than 1 and containing at least one methylol group; and

d) a primary condensate of an etherified diguanamine obtained by subjecting the diguanamine of formula (1) or (2) and an aldehyde to an addition reaction or addition condensation reaction and then subjecting the reaction product and at least one alcohol selected from alcohols having 1–20 carbon atoms to etherification, having an average addition condensation degree greater than 1 and containing at least one R_1OCH_2 group wherein R_1 has the same meaning as defined above.

5,545,703

ELECTROCONDUCTIVE POLYMERS FROM UNSATURATED POLYMERIZABLE TTF, TCNQ AND DCQDI MONOMERS

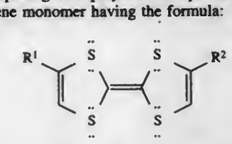
Nicholas T. Castellucci, San Pedro, Calif., assignor to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Nov. 1, 1994, Ser. No. 332,980

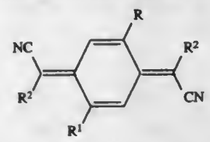
Int. Cl.[6] C08F *228/06*

U.S. Cl. 526—256 **5 Claims**

1. A thermoplastic copolymer having inherent electroconductive properties comprising a copolymer of equimolar amounts of a tetrathiafulvalene monomer having the formula:



in which R^1 is selected from the group consisting of hydrogen, $CH_2{=}CH{-}$, and $CH_2{=}CH{-}CH_2{-}$, R^2 is selected from the group consisting of $CH_2{=}CH{-}$, and $CH_2{=}CH{-}CH_2{-}$, and a polycyano-quinodimethane monomer having the formula:



in which R is selected from the group consisting of $CH{\equiv}C{-}$, $CH_2{=}CH{-}$, and $CH_2{=}CH{-}CH_2{-}$, R^1 is R or H, and R^2 is NC— or H.

5,545,704

METHOD FOR PRODUCING ALKOXYSILALKYLENE TERMINATED SILOXANE POLYMERS

Tara N. Estes, and Robert H. Krahnke, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jul. 24, 1995, Ser. No. 506,291

Int. Cl.[6] C08G *77/08*

U.S. Cl. 528—15 **16 Claims**

1. A process for forming alkoxysilalkylene terminated diorganosiloxane polymer from silanol terminated diorganosiloxane polymer, the process comprising:

A) forming a mixture of

1) a diorganosiloxane polymer having at least one silanol end-group,

2) a first capping agent comprising a silazane of the formula: $(HR_2Si)_2NH$

where R represents a saturated alkyl or aryl radical, and

3) an effective amount of an acid catalyst,

B) reacting the mixture of step A at 25°–150° C.,

C) after the silanol groups are capped by the first capping agent to form a polymer having SiH endgroups, adding to the mixture

1) from about 1 to 3.0 moles of a second capping agent for each mole of SiH endgroup, the second capping agent comprising an alkoxy functional alkenylsilane of the formula

$(R'O)_aR^e_{3-a}SiZ_bCH{=}CH_2$

R' is selected from the group consisting of alkyl radicals and haloalkyl radicals having no halogen alpha to the oxygen, both of less than 5 carbon atoms, R^e is free of aliphatic unsaturation, and is selected from the group consisting of monovalent hydrocarbon radicals and monovalent halohydrocarbon radicals both having 1 to 18, inclusive, carbon atoms, a has a value of 2 or 3, Z is a divalent hydrocarbon radical free of aliphatic unsaturation of from 0 to 8, inclusive, carbon atoms, and b has a value of 0 or 1; and

2) an effective amount of hydrosilylation catalyst; and

D) reacting by hydrosilylation to form diorganosiloxane polymer, having end-groups of the formula:

$(R'O)_aR^e_{3-a}SiZ_bCH_2CH_2SiR_2O.$

5,545,705

ALDIMINES BASED ON 2-METHYL-1,5-PENTANE DIAMINE AND THEIR USE FOR THE PRODUCTION OF POLYUREA COATINGS

Sharon D. Hicks, Pittsburgh; Douglas A. Wicks, Mt. Lebanon, and Scott A. Grace, Coraopolis, all of Pa., assignors to Bayer Corporation, Pittsburgh, Pa.

Filed Dec. 14, 1994, Ser. No. 355,590

Int. Cl.[6] C08G *18/00;* **C07C** *249/00;251/00;* **C09K** *3/00*

U.S. Cl. 528—44 **15 Claims**

4. A clear, solvent-containing coating composition comprising

a) an isocyanurate group-containing polyisocyanate which contains less than 5% by weight, based on the weight of component a), of allophanate and uretdione groups and

b) an aldimine corresponding to the formula

$X_1{-}[N{=}CHCH(R_1)(R_2)]_n$

wherein

X_1 represents the group obtained by the removal of the amino groups from 2-methyl-1,5-pentane diamine,

R_1 and R_2 may be the same or different and represent hydrocarbon radicals, or R_1 and R_2 together with the β-carbon atom form a cycloaliphatic or beterocyclic ring, and

c) 10 to 200% by weight, based on the weight of components a), b) and c), of a organic solvent containing only ester groups,

wherein components a) and b) are present in an amount sufficient to provide an equivalent ratio of isocyanate groups to aldimine groups of 0.5:1 to 20:1.

5,545,706

PTMEG POLYURETHANE ELASTOMERS EMPLOYING MONOFUNCTIONAL POLYETHERS

Nigel Barksby, Dunbar, and Stepben D. Seneker, Sissonville, both of W. Va., assignors to Arco Chemical Technology, L.P., Greenville, Del.

Filed May 9, 1995, Ser. No. 437,335

Int. Cl.[6] C08G *18/12*

U.S. Cl. 528—49 **20 Claims**

1. A polyurethane elastomer, comprising the reaction product of:

a) an isocyanate-terminated prepolymer having an NCO group content of from about 2 weight percent to about 20 weight percent, which is the reaction product of a di- or polyisocyanate having a functionality of about 2 to about 2.2; a polytetramethylene ether glycol having a molecular weight between about 600 Da and 6000 Da; and from 1 weight percent to about 10 weight percent, based on the weight of said polyoxytetramethylene ether glycol, of a hydroxyl-functional polyoxyalkylene monol containing in major part oxyalkylene moieties derived from propylene oxide, butylene oxide, and tetrahydrofuran or mixtures thereof, said polyoxyalkylene monol having a molecular weight of from about 500 Da to about 10,000 Da; and

b) a glycol chain extender at an isocyanate index of from about 70 to about 130.

5,545,707

MULTISTAGE PROCESS FOR PRODUCING THERMOPLASTIC POLYURETHANE ELASTOMERS

Herbert Heidingsfeld, Frechen; Wolfgang Bräuer, Leverkusen; Friedemann Müller, Neuss, and Willi Meister, Dormagen, all of, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 18, 1993, Ser. No. 63,374

Claims priority, application Germany, May 26, 1992, 42 17 365.5

Int. Cl.[6] C08G *18/10;18/40;18/30*

U.S. Cl. 528—60 **6 Claims**

1. A multistage process for the continuous production of thermoplastically processable polyurethane elastomers comprising:

A) continuously mixing one or more substantially linear polyols having molecular weights of 500 to 5000 with a diisocyanate corresponding to the formula OCN—Z—NCO, in which Z is a difunctional organic radical,

B) continuously reacting the mixture prepared in stage A) completely in a reactor at temperatures of from 100° C. to 250° C. to form a prepolymer, wherein stage A) and stage B) are carried out together in an intensively stirred tube reactor having length-to-diameter ratio of 4:1 to 15:1,

C) continuously mixing the prepolymer prepared in stage B) with low molecular weight diol chain extenders and, optionally, triol and/or diamine chain extenders, said chain extenders having molecular weights of 62 to 500, wherein triol is present in an amount of up to 15 percent relative to the weight of said diol chain extender, the amounts of components being such that the total NCO:active H ratio for all the components used in stages A), B) and C) is from 0.9 to 1.2:1,

D) applying the reaction mixture prepared in stage C) directly and continuously onto a conveyor belt, upon which said reaction mixture is allowed to react until it has solidified, and

E) optionally, continuously melting the solidified reaction mixture prepared in stage D)in an extruder and with auxiliaries and/or other components being incorporated therein.

5,545,708

THERMOPLASTIC POLYURETHANE METHOD OF MAKING SAME AND FORMING A MEDICAL ARTICLE THEREFROM

Theo O. Onwunaka, Midvale, Utah, and Mutlu Karakelle, Fort Worth, Tex., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Jul. 14, 1993, Ser. No. 91,702

Int. Cl.[6] A61M *25/00;* **C08G** *18/32;18/48;18/76*

U.S. Cl. 528—076 **5 Claims**

1. A catheter tubing formed from thermoplastic polyurethane consisting essentially of the reaction product of a diisocyanate, a polyetherglycol and a mixture of chain extenders, said mixture of chain extenders consisting essentially of butane diol and 2-butyl 2-ethyl propane 1,3-diol, said polyurethane having a hard segment to soft segment ratio (percent, weight/weight) between about 30:70 and 60:40.

5,545,709

Patent Not Issued For This Number

5,545,710

USE OF SPECIAL POLYCARBONATES FOR THE PRODUCTION OF OPTICAL ARTICLES

Wilfried Haese, Odenthal; Friedrich Bruder, Krefeld; Ralf Pakull, Pulheim; Jürgen Kirsch, Leverkusen, and Hartmut Löwer, Krefeld, all of, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

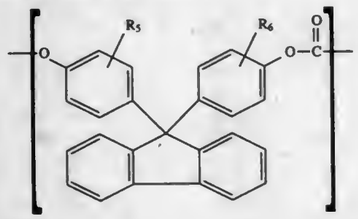
Continuation of Ser. No. 304,566, Sep. 12, 1994, abandoned. This application Jun. 28, 1995, Ser. No. 496,050

Claims priority, application Germany, May 9, 1994, 44 16 325.8; Sep. 12, 1994, 43 32 169.0

Int. Cl.[6] C08G *64/00*

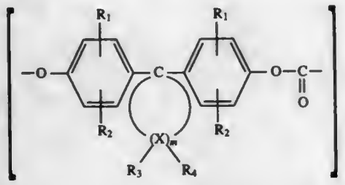
U.S. Cl. 528—201 **8 Claims**

1. Polycarbonates consisting essentially of difunctional carbonate structural units of the formula (I)



(I)

in quantities of 50 mol. % to 80 mol. %, based on the total molar quantity of difunctional carbonate structural units in the polycarbonate, in which R_5 and R_6 are identical or different and are H or C_1–C_{12} alkyl, and which contain structural units of the formula (V)



(V)

in which R_1 and R_2 are identical or different and are CH_3, Cl, Br or H, "m" is 4 or 5 and R_3 and R_4, independently for each X and also mutually independently, are H or CH_3 and in which X is a carbon atom, the structural units (V) being present in amounts of 50 mol. % to 20 mol. %, based on the total molar quantity of difunctional carbonate structural units in the polycarbonate, and wherein the sum of structural units (I) and (V) is 100%.

5,545,711

POLYAZOMETHINES CONTAINING TRIFLUOROMETHYLBENZENE UNITS

Robert G. Bryant, Poquoson, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 105,251, Jul. 30, 1993, Pat. No. 5,378,795. This application Sep. 29, 1994, Ser. No. 317,405

Int. Cl.[6] C08G *10/02*

U.S. Cl. 528—244 **5 Claims**

1. An amorphous, aromatic polyazomethine copolymer, soluble in non-destructive organic solvents, prepared by forming a mixture of two different diamine monomers containing a trifluoromethylbenzene unit at a mole ratio from about 5:95 to about 95:5 and reacting the mixture with a dialdehyde in a solvent selected from the group consisting of: N,N-dimethylacetamide, N-methylpyrrolidinone, m-cresol, and N,N-dimethylformamide; heating to reflux yielding a polyazomethine copolymer; and precipitating the polyazomethine copolymer.

5,545,712

PREPARATION PROCESS FOR POLYOXYALKYLENE POLYOL

Tomoki Tsutsui; Tsukuru Izukawa, both of Aichi-ken; Kazuhiko Ohkubo, Kanagawa-ken, and Yoshitsugu Sakaki, Aichi-ken, all of, Japan, assignors to Mitsu Toatsu Chemicals, Inc., Tokyo, Japan

Division of Ser. No. 296,604, Aug. 29, 1994, Pat. No. 5,468,840. This application Aug. 23, 1995, Ser. No. 518,279

Claims priority, application Japan, Sep. 7, 1993, 5-221914

Int. Cl.[6] C08G *59/68*

U.S. Cl. 528—408 **7 Claims**

1. A preparation process of polyoxyalkylene polyol comprising:

① a neutralization step for adding a neutralizing agent composed of water and a mineral acid or an organic acid to crude polyoxyalkylene polyol containing an alkali metal compound catalyst,

② a desalting step for dehydrating and drying the liquid obtained in ① and thereafter removing a deposited alkali metal salt by filtration,

③ a recovering step of an alkylene oxide polymerization catalyst used for preparing polyoxyalkylene polyol by bringing the alkali metal salt obtained in ② into contact with an OH-type anion exchange resin in the form of an aqueous alkali metal salt solution and conducting ion exchange by adsorption of a mineral acid anion or an organic acid anion, and

④ a preparing step of polyoxyalkylene polyol comprising conducting ring-opening addition polymerization of alkylene oxide on an active hydrogen compound initiator in the presence of the alkylene oxide polymerization catalyst which is recovered in ③.

5,545,713

PRIMER COATING, POLYESTER FILM HAVING A PRIMER COATING, AND A PROCESS FOR COATING FILM

James J. Krejci, Medina, Ohio, and John M. Heberger, Greer, S.C., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Continuation of Ser. No. 883,445, May 15, 1992, abandoned. This application Feb. 28, 1995, Ser. No. 396,081

Int. Cl.[6] C08G *63/68;75/00*

U.S. Cl. 528—295 **15 Claims**

1. A primer coating composition for photographic, reprographic and xerographic film which comprises, on a dry basis,

a) from about 85% to about 99% by weight of a water-dispersible copolyester comprising Yore about 80 to about 98 mol percent of at least one dicarboxylic acid or ester thereof, from about 2 to about 20 mol percent of at least one sulfomonomer containing a sulfonate group attached to a dicarboxylic nucleus, and about 100 mol percent of at least one glycol having from 2 to 11 carbon atoms, and

b) from about 1% to about 15% of an anionic surfactant.

5,545,714

OXIDATION OF DIMERCAPTANS TO ORGANIC DISULFIDE POLYMERS

James E. Shaw; William E. Sattich, and Howard F. Efner, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 290,666, Aug. 15, 1994, Pat. No. 5,464,931. This application May 25, 1995, Ser. No. 450,828

Int. Cl.[6] C08G *75/04*

U.S. Cl. 528—374 **23 Claims**

1. A process for oxidation of a dimercaptan having the formula of HSR^4SH comprising contacting said dimercaptan, in the presence of a catalyst, with sulfur wherein R^4 is a hydrocarbyl radical having 1 to about 20 carbon atoms and said catalyst comprises a base and an alkoxylated compound selected from the group consisting of an alkoxylated alcohol, an alkoxylated mercaptan, and mixtures thereof.

5,545,715

FLAME-RETARDANT RESIN COMPOSITION

Akira Kamiya, and Takeki Furuyama, both of Mie, Japan, assignors to Japan Synthetic Rubber Co. Ltd., Yokkaichi, Japan

Filed Jun. 26, 1992, Ser. No. 904,737

Claims priority, application Japan, Jun. 25, 1991, 3-180275

The portion of the term of this patent subsequent to Nov. 2, 2010, has been disclaimed.

Int. Cl.[6] C08J *5/10;* **C08K** *3/10*

U.S. Cl. 564—409 **23 Claims**

1. A flame-retardant resin composition comprising:

(A) 100 parts by weight of a bromine-containing copolymer composition containing 1 to 40% by weight of a bromine containing monomer and comprising at least one of A-1 and A-2 wherein A-1 comprises 0 to 100% by weight of a rubber reinforced resin obtained by the polymerization of (a) 5 to 70 parts by weight of rubbery polymer and (b) 95 to 30 parts by weight of a monomer mixture which comprises 0 to 50% by weight of bromostyrene and 50 to 100% by weight of at least one monomer selected from the group consisting of (i) aromatic vinyl monomers other than bromostyrene, (ii) cyanated vinyl monomers, (iii) (meth)acrylates, (iv) maleic anhydride, and (iv) malimide, provided that (a) plus (b) is 100 parts by weight, and A-2 comprises 0 to 100% by weight of a copolymer obtained by the polymerization of 5 to 50 parts by weight of bromostyrene and 95 to 50 parts by weight of at least one monomer selected from the group consisting of aromatic vinyl monomers other than bromostyrene, cyanated vinyl monomers, (meth)acrylates, maleic anhydride, and malimide, said bromine-containing copolymer further comprising 0 to 70% by weight of a copolymer A-3 obtained by copolymerization of 50 to 100 parts by weight of aromatic vinyl monomer other than bromostyrene and 0 to 50 parts by weight of at least one monomer selected from the group consisting of cyanated vinyl monomers, (meth)acrylates, maleic anhydride, and maleimide;

(B) 0 to 30 parts by weight of a flame-retarding adjuvant; and

(C) 0.05 to 30 parts by weight of an organopolysiloxane reinforced resin obtained by the polymerization of (c) 5 to 90 parts by weight of an organopolysiloxane polymer and (d) 10 to 95 parts by weight of a vinyl monomer, provided that (c) plus (d) is parts by weight.

5,545,716

SUPERANTIGEN AGONIST AND ANTAGONIST PEPTIDES

Howard M. Johnson, Gainesville, Fla.; Carol H. Pontzer, Silver Spring, Md., and Nathan D. Griggs, Charlottesville, Va., assignors to University of Florida, Gainesville, Fla.

Continuation-in-part of Ser. No. 941,497, Sep. 8, 1992, abandoned. This application Mar. 29, 1994, Ser. No. 220,378

Int. Cl.[6] A61K *38/16*

U.S. Cl. 530—324 **4 Claims**

1. A peptide which consists of an amino acid sequence selected from the group consisting of the amino acid sequences shown in SEQ ID NO. 2, SEQ ID NO. 4, and SEQ ID NO. 6.

5,545,717

PLASMILAR AND PLASMILAR ANTIBODY COMPOSITIONS AS MALIGNANT CELL MARKERS

Lawrence Weissbach, Boston, Mass., assignor to The General Hospital Corporation, Boston, Mass.

Continuation of Ser. No. 872,645, Apr. 21, 1992, abandoned. This application May 12, 1994, Ser. No. 242,035

Int. Cl.[6] C07K *14/00;* **C12Q** *1/68*

U.S. Cl. 530—324 **1 Claim**

1. Substantially pure plasmilar polypeptide, said polypeptide comprising the amino acid sequence shown in FIG. 1 (SEQ ID NO:4).

5,545,718

SYNTHETIC PEPTIDES OF THE CONJUGATE OF UBIQUITINE AND H2A HISTONE

Serge Plaue, Haguenau; Sylviane Muller, and Marc Van Regenmortel, both of Strasbourg, all of, France, assignors to Pasteur Sanofi Diagnostics, Marnes la Coquette, France

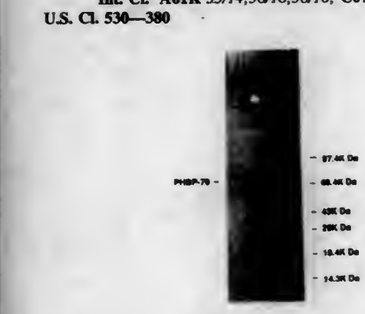
Division of Ser. No. 655,437, Feb. 26, 1991, Pat. No. 5,427,958. This application Apr. 7, 1995, Ser. No. 418,435

Claims priority, application France, Apr. 26, 1989, 89 05531

Int. Cl.[6] C07K *5/00;7/00;17/00;16/00*

U.S. Cl. 530—327 **5 Claims**

1. A peptide having the formula



Gly—Gly—Arg—Leu—Y (II)
|
X—Lys—Lys—Thr—Glu—Z

wherein X is NH_2, Cys, or Leu-Pro—, wherein NH_2 moieties are optionally substituted with hydrogen, C_{1-5} alkyl, acetyl, Y is NH_2, or Tyr, wherein NH_2 moieties are optionally substituted with C_{1-5} alkyl or acetyl, and Z is OH, or C_{1-5} alkoxy.

5,545,719
NERVE GROWTH PEPTIDES

Victor E. Shashoua, Brookline, Mass., assignor to Neuromedica, Inc., Cambridge, Mass.

Continuation of Ser. No. 700,653, May 14, 1991, abandoned, which is a continuation-in-part of Ser. No. 517,159, May 1, 1990, abandoned. This application Feb. 24, 1994, Ser. No. 201,046

Int. Cl.[6] C07K *7/00;7/06;7/08;9/00*

U.S. Cl. 530—345 **7 Claims**

1. An isolated peptide selected from the group consisting of Sequence I.D. Numbers 1–27 and 28.

5,545,720
PROTEIN PHBP-70

Masayoshi Koyama; Mikiko Takahashi, both of Saitama, and Kazuyuki Doi, Tokyo, all of, Japan, assignors to Hoechst Japan Limited, Tokyo, Japan

Filed Mar. 31, 1995, Ser. No. 414,427

Claims priority, application Japan, Mar. 31, 1994, 6-061905

Int. Cl.[6] A61K *35/14;38/18;38/16;* **C07K** *14/475*

U.S. Cl. 530—380 **4 Claims**

1. An isolated protein named plasma heparin binding protein-70 (PHBP-70) having a molecular weight of about 60–80 KDa by analysis with SDS-PAGE under reducing conditions and having the N-terminal amino acid sequence described in SEQ ID No.:1 of the Sequence Listing.

4. A wound healing agent comprising an effective amount of the isolated protein PHBP-70 of claim 1.

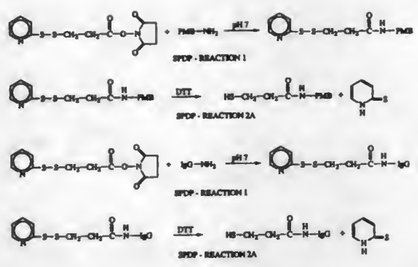
5,545,721
CONJUGATES FOR THE PREVENTION AND TREATMENT OF SEPSIS

Sean B. Carroll, Cottage Grove, Wis.; Joseph R. Firca, Vernon Hills, Ill.; Charles Pugh, and Nisha V. Padhye, both of Madison, Wis., assignors to Ophidian Pharmaceuticals, Inc., Madison, Wis.

Continuation-in-part of Ser. No. 995,388, Dec. 21, 1992, abandoned. This application Dec. 17, 1993, Ser. No. 169,701

Int. Cl.[6] C07K *16/00;17/00*

U.S. Cl. 530—391.7 **30 Claims**



1. A method of synthesizing a non-specific immunoglobulin-antibiotic conjugate comprising the steps of:

a) reacting an antibiotic that binds to the surface of microorganisms with a first bifunctional crosslinking agent, to form a crosslinker derivatized antibiotic;

b) reacting non-specific immunoglobulin with a second bifunctional crosslinking agent, to form a crosslinker derivatized non-specific immunoglobulin; and

c) reacting said crosslinker derivatized antibiotic with said crosslinker derivatized non-specific immunoglobulin to form a covalent bond between said first and second bifunctional crosslinking agents to form a non-specific immunoglobulin-antibiotic conjugate that binds to the surface of microorganisms via the antibiotic.

5,545,722
HEPATOCYTE-GROWTH AGENT

Daiji Naka, Yokohama, Japan, assignor to Mitsubishi Kasei Corporation, Tokyo, Japan

Continuation of Ser. No. 892,180, Jun. 2, 1992, abandoned. This application Aug. 19, 1994, Ser. No. 292,051

Claims priority, application Japan, Jun. 3, 1991, 3-131271; Feb. 25, 1992, 4-038122

Int. Cl.[6] A61K *38/24;38/27;31/715;31/725*

U.S. Cl. 530—399 **8 Claims**

1. A hepatocyte growth-stimulating agent which comprises a sulfated polysaccharide and a hepatocyte-growth factor, wherein said hepatocyte-growth factor targets hepatocyte cells in vivo, wherein said sulfated polysaccharide improves the growth activity of said hepatocyte growth factor and wherein said agent is in an injectable form that can be administered in vivo to stimulate hepatocyte growth.

5,545,723
MUTEINS OF IFN-β

Susan E. Goelz, Winchester; Richard L. Cate, Cambridge; E. Pingchang Chow, Charlestown, and R. Blake Pepinsky, Watertown, all of Mass., assignors to Biogen Inc., Cambridge, Mass.

Filed Mar. 15, 1994, Ser. No. 213,448

Int. Cl.[6] C12N *15/22;* **C07K** *14/565*

U.S. Cl. 424—85.6 **15 Claims**

1. An IFN-β mutein wherein the val (V) at position 101 in wild type IFN-β, numbered in accordance with wild type IFN-β, is substituted with phe (F), tyr (Y), trp (W), or his (H), said mutein displaying an antiviral activity that is at least partially neutralized by antibodies to wild type IFN-β.

5,545,724
CATIONICALLY BRIDGED TETRAKISAZO DYESTUFFS WITH VARIABLE COUPLERS, THEIR PRODUCTION AND USE

Helmut A. Moser, Oberwil, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

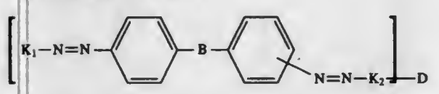
Continuation of Ser. No. 371,727, Jan. 12, 1995, abandoned. This application Oct. 10, 1995, Ser. No. 540,528

Claims priority, application Germany, Jan. 14, 1994, 44 00 855.4

Int. Cl.[6] C09B *44/08;* **D06P** *1/41;* **D21H** *21/28*

U.S. Cl. 534—604 **12 Claims**

1. A compound of formula I



(I)

2A⁻

wherein K_1 is any coupling component,

B is any bridging member,

K_2 is a cationic pyridone coupler or a pyridone coupler which carries a tertiary amino group,

A^- is an anion and

D is a divalent group which is a hydroxyalkylene, alkylene or xylylene;

whereby each chromophore must contain at least two water-solubilizing groups and coupling must be asymmetrical.

5,545,725
DISAZO DYES CONSISTING OF TWO MONOAZO DYES CONTANING A 1-PHENYL-5-AMINO PYRAZOLE COUPLING COMPONENT AND CONNECTED BY A BRIDGE MEMBER

Adolf Käser, Bottmingen, and Willy Stingelin, Reinach, both of, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

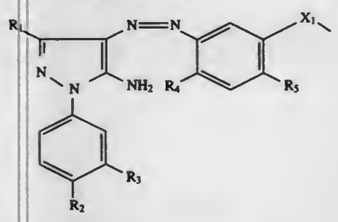
Continuation-in-part of Ser. No. 125,387, Sep. 22, 1993, abandoned. This application Nov. 10, 1994, Ser. No. 337,919

Claims priority, application Switzerland, Sep. 29, 1992, 3032/92

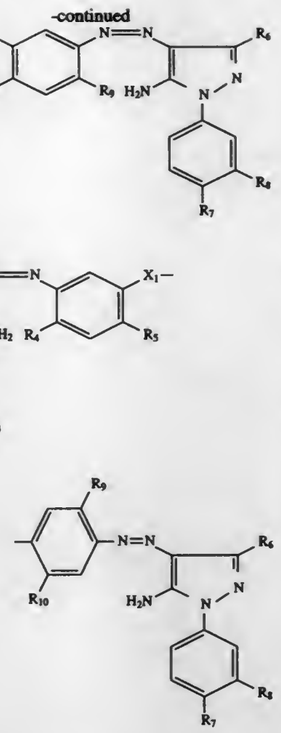
Int. Cl.[6] C09B *35/03;35/039;56/04*

U.S. Cl. 534—759 **22 Claims**

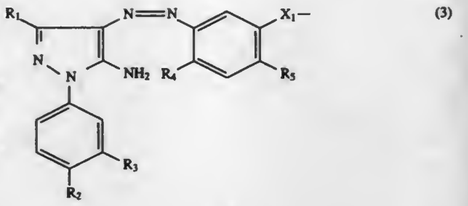
1. A dye of the formula



(2)



or



(3)

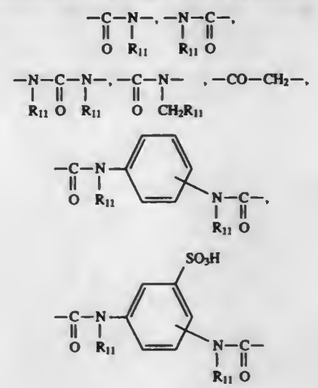
wherein

R_1 and R_6 are each independently of the other hydrogen, alkyl, alkenyl, acylamino, carbamoyl, carboxy or alkoxycarbonyl,

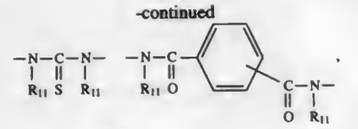
R_2, R_3, R_7 and R_8 are each independently of one another hydrogen, halogen, alkyl, sulfo or carboxy,

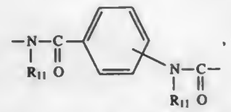
R_4, R_5, R_9 and R_{10} are each independently of one another hydrogen, halogen, alkyl, hydroxy, alkoxy, sulfo or carboxy-alkoxy,

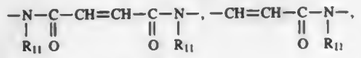
X_1 is a direct bond or a linking group of the formula

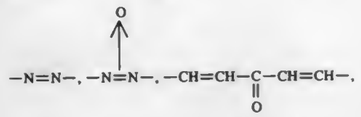


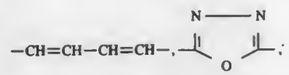
-continued

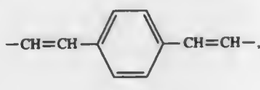


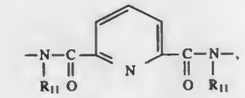


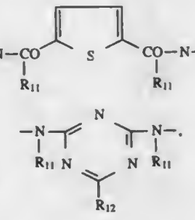


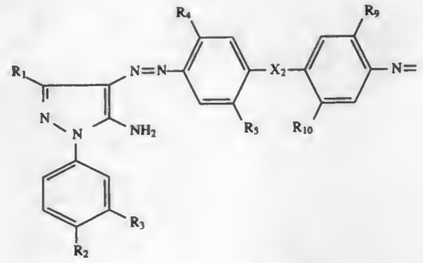












(10)

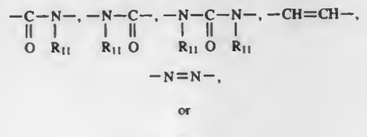
wherein

R_1 and R_6 are each independently of the other hydrogen or alkyl,

R_4, R_5, R_9 and R_{10} are each independently of one another hydrogen, C_1–C_4alkyl, C_1–C_4alkoxy or sulfo,

R_2, R_3, R_7 and R_8 are each independently of one another hydrogen, chloro, methyl or sulfo,

X_2 is a linking group of the formula



wherein R_{11} is hydrogen or unsubstituted or substituted C_1–C_6alkyl, and R_{12} is chloro, hydroxy, —NH_2 or

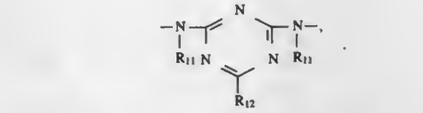


wherein

R_{11} is as defined above, and

R_{13} is hydrogen, unsubstituted or substituted C_1–C_6alkyl or unsubstituted or substituted phenyl, or wherein R_{11} and R_{13}, together with the linking nitrogen atom, form a 5- or 6-membered ring.

15. A dye containing at least two sulfo groups and having the formula



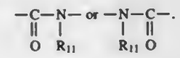
wherein R_{11} is hydrogen or unsubstituted or substituted C_1–C_6alkyl, and R_{12} is chloro, hydroxy, —NH_2 or



wherein

R_{11} is as defined above, and

R_{13} is hydrogen, unsubstituted or substituted C_1–C_6alkyl or unsubstituted or substituted phenyl, or wherein R_{11} and R_{13}, together with the linking nitrogen atom, form a 5- or 6-membered ring, with the proviso that the dye of the formula (10) contains at least three sulfo groups if X_2 is a linking group of formula



5,545,726

CLONED DNA SEQUENCES RELATED TO THE ENTIRE GENOMIC RNA OF HUMAN IMMUNODEFICIENCY VIRUS II (HIV-2), POLYPEPTIDES ENCODED BY THESE DNA SEQUENCES AND USE OF THESE DNA CLONES AND POLYPEPTIDES IN DIAGNOSTIC KITS

Marc Alizon, Paris; Luc Montagnier, Le Plessy Robinson; Denise Guetard; Francoise Brun-Vezinet, both of Paris, all of, France, and Francois Clavel, Rockville, Md., assignors to Institut Pasteur, Paris, France

Continuation of Ser. No. 756,998, Sep. 10, 1991, Pat. No. 5,310,651, and Ser. No. 604,323, Oct. 24, 1990, abandoned, which is a continuation of Ser. No. 933,184, Nov. 21, 1986, abandoned, which is a continuation-in-part of Ser. No. 916,080, Oct. 6, 1986, abandoned, which is a continuation-in-part of Ser. No. 835,228, Mar. 3, 1986, Pat. No. 4,839,288, said Ser. No. 756,998is a continuation of Ser. No. 602,383, Oct. 24, 1990, abandoned, which is a continuation of Ser. No. 916,080, Oct. 16, 1986, abandoned. This application Oct. 7, 1993, Ser. No. 132,919

Claims priority, application France, Jan. 22, 1986, 86 00910; Jan. 22, 1986, 86 00911; Feb. 6, 1986, 86 01635; Feb. 13, 1986, 86 01985

Int. Cl.[6] C07H *21/04*

U.S. Cl. 536—23.1 **1 Claim**

1. A purified DNA segment of HIV-2 consisting of the nucleotide sequence as shown in FIG. 1B.

5,545,727

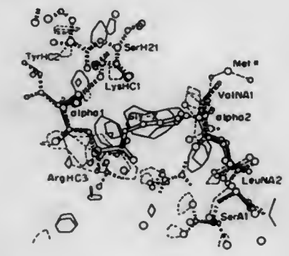
DNA ENCODING FUSED DI-ALPHA GLOBINS AND PRODUCTION OF PSEUDOTETRAMERIC HEMOGLOBIN

Stephen J. Hoffman, Denver; Douglas L. Looker, Lafayette; Mary S. Rosendahl, Broomfield; Gary L. Stetler, Denver, all of Colo.; Michael Wagenbach, Osaka, Japan; David C. Anderson, Lafayette; Antony J. Mathews, Louisville, both of Colo., and Kiyoshi Nagai, Cambridge, England, assignors to Somatogen, Inc., Boulder, Colo.

Continuation-in-part of Ser. No. 671,707, Apr. 1, 1991, abandoned, which is a continuation-in-part of Ser. No. 374,161, Jun. 30, 1989, abandoned, and a continuation-in-part of Ser. No. 379,116, Jul. 13, 1989, abandoned, and a continuation-in-part of Ser. No. 349,623, May 10, 1989, abandoned. This application Nov. 8, 1991, Ser. No. 789,179

Int. Cl.[6] C12N *15/12*; C07K *14/805*

U.S. Cl. 536—234 **40 Claims**



1. A DNA molecule comprising a DNA sequence coding on expression for non-naturally occurring, genetically fused, pseudodimeric di-alpha globin-like polypeptide consisting essentially of two and only two alpha globin-like domains, connected either directly by one peptide bond or by a peptide linker of 1–5 amino acids into a single unbranched polypeptide chain, said chain being capable of associating with beta globin and incorporating heme to form a pseudotetrameric hemoglobin-like protein with reversible oxygen binding activity.

5,545,728

Patent Not Issued For This Number

5,545,729

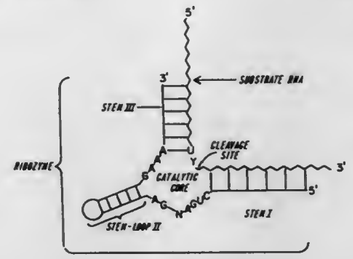
STABILIZED RIBOZYME ANALOGS

John Goodchild, Westborough, and Steven M. Nesbitt, Worcester, both of Mass., assignors to Hybridon, Inc., Worcester, Mass.

Filed Dec. 22, 1994, Ser. No. 361,687

Int. Cl.[6] C07H *21/04*; C12Q *1/68;1/70*; A61K *48/00*

U.S. Cl. 536—24.5 **28 Claims**



1. A stabilized ribozyme analog comprising:

(a) a helix II having a 3' terminus and a 5' terminus and comprising a stem region and a loop region,

the stem region having a 3' terminus and a 5' terminus and comprising two to twelve 3' to 5' covalently-linked, self-hybridized nucleotides, and

the loop region being covalently linked to the stem region at the 3' and 5' termini of the loop region, and comprising at least two 3' to 5' covalently-linked nucleotides including at least two modified nucleotides at Haseloff positions L2.2 and L2.3 which are purines, 2'-O-alkylated, or a combination thereof;

(b) first and second catalytic core regions, each having a 3' terminus and a 5' terminus, the first catalytic core region comprising seven 3' to 5' covalently-linked nucleotides and the second catalytic core region comprising three 3' to 5' covalently-linked nucleotides,

the first catalytic core region further comprising three to seven modified nucleotides, the modified nucleotides being at least at Haselhoff positions 3 and 4 which are 2'-O-alkylated and at at Haselhoff position 7 which is a purine or is 2'-O-alkylated,

the 3' terminus of the first catalytic core region being covalently linked to the 5' terminus of the stem region, and the 5' terminus of the second catalytic core region being covalently linked to the 3' terminus of the stem region; and

(c) first and second flanking regions, each comprising four to fifty 3' to 5' covalently-linked purine and pyrimidine nucle

otides, at least one of which is 2'-O-alkylated, and each having a 3' terminus and a 5' terminus, the first flanking region being complementary to a first target region of a substrate RNA molecule, and the second flanking region being complementary to a second target region of the substrate RNA molecule, the 3' terminus of the first flanking region being covalently linked to the 5' terminus of the first nucleotidic core region, and the 5' terminus of the second flanking region being covalently linked to the 3' terminus of the second nucleotidic core region.

5,545,730

MULTIFUNCTIONAL NUCLEIC ACID MONOMER

Michael S. Urdea, Alamo, and Thomas Horn, Berkeley, both of Calif., assignors to Chiron Corporation, Emeryville, Calif.

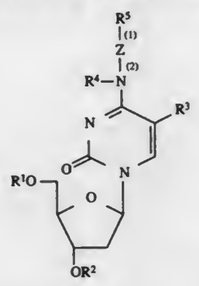
Division of Ser. No. 559,961, Jul. 27, 1990, Pat. No. 5,430,136, which is a continuation-in-part of Ser. No. 398,711, Aug. 25, 1989, Pat. No. 5,258,506, which is a continuation-in-part of Ser. No. 251,152, Sep. 29, 1988, Pat. No. 5,118,605, which is a continuation-in-part of Ser. No. 661,508, Oct. 16, 1984, Pat. No. 4,775,619. This application May 8, 1995, Ser. No. 436,125

Claims priority, application European Pat. Off., Oct. 3, 1988, 883092033; Canada, Oct. 4, 1988, 597369; Japan, Oct. 4, 1988, 63-250726

Int. Cl.[6] C07H *19/073;19/06*

U.S. Cl. 536—28.51 **1 Claim**

1. A multifunctional nucleic acid monomer having the structure



wherein

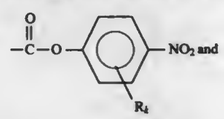
R^1 is a base,stable acid-sensitive blocking group;

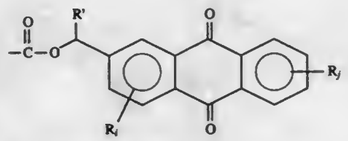
R^2 is a phosphorous derivative that enables addition of the nucleic acid to the 5'-position of an oligonucleotide chain during chemical synthesis;

R^3 is selected from the group consisting of hydrogen, methyl, I, Br and F;

R^4 is hydrogen or methyl; and

R^5 is selected from the group consisting of levulinyl,





in which R' is hydrogen, aryl or aralkyl;

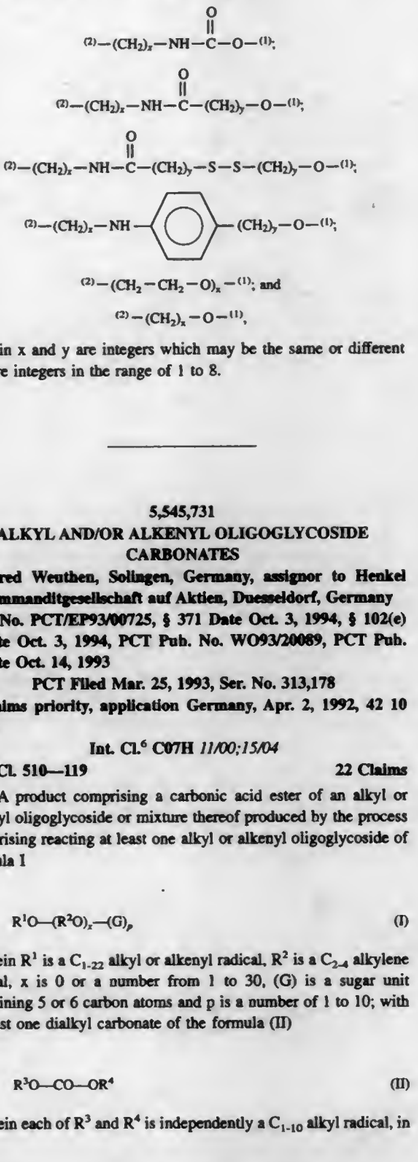
the R_i may be the same or different and are selected from the group consisting of amino, nitro, halogeno, hydroxyl, lower alkyl and lower alkoxy;

the Rj may be the same or different and are selected from the group consisting of amino, nitro, halogeno, hydroxyl, lower alkyl and lower alkoxy;

the R_k may be the same or different and are selected from the group consisting of amino, nitro, halogeno, hydroxyl, lower alkyl and lower alkoxy;

i is zero, 1, 2 or 3, j is zero, 1, 2, 3 or 4, and k is 0, 1, 2, 3 or 4; and

Z is selected from the group consisting of



wherein x and y are integers which may be the same or different and are integers in the range of 1 to 8.

5,545,731

ALKYL AND/OR ALKENYL OLIGOGLYCOSIDE CARBONATES

Manfred Weuthen, Solingen, Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP93/00725, § 371 Date Oct. 3, 1994, § 102(e) Date Oct. 3, 1994, PCT Pub. No. WO93/20089, PCT Pub. Date Oct. 14, 1993

PCT Filed Mar. 25, 1993, Ser. No. 313,178

Claims priority, application Germany, Apr. 2, 1992, 42 10 913.2

Int. Cl.[6] C07H *11/00;15/04*

U.S. Cl. 510—119 **22 Claims**

1. A product comprising a carbonic acid ester of an alkyl or alkenyl oligoglycoside or mixture thereof produced by the process comprising reacting at least one alkyl or alkenyl oligoglycoside of formula I

(I)

wherein R^1 is a C_{1-22} alkyl or alkenyl radical, R^2 is a C_{2-4} alkylene radical, x is 0 or a number from 1 to 30, (G) is a sugar unit containing 5 or 6 carbon atoms and p is a number of 1 to 10; with at least one dialkyl carbonate of the formula (II)

(II)

wherein each of R^3 and R^4 is independently a C_{1-10} alkyl radical, in the presence of from about 0.1 to about 5 mol percent, based on said oligoglycoside, of at least one basic catalyst, wherein the molar ratio of said oligoglycoside to said dialkyl carbonate is from about 1:1 to about 1:15.

5,545,732

1',2,3,3',4,4',6,6'-OCTA-O-CROTYLSUCROSE

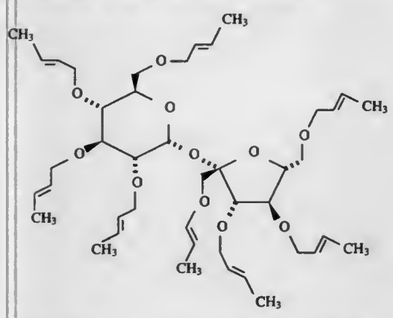
Navzer D. Sachinvala; Redford F. Ju, both of Aiea, Hi., and Morton H. Litt, Cleveland, Ohio, assignors to Hawaiian Sugar Planters' Association, Aiea, Hi.

Division of Ser. No. 199,695, Feb. 28, 1994, Pat. No. 5,470,931, which is a continuation-in-part of Ser. No. 28,545, Mar. 8, 1993, abandoned, which is a continuation-in-part of Ser. No. 877,813, May 4, 1992, Pat. No. 5,248,747, which is a continuation-in-part of Ser. No. 697,983, May 10, 1991, Pat. No. 5,116,961, which is a continuation-in-part of Ser. No. 623,548, Dec. 7, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 470,710

Int. Cl.[6] C07H *15/10*

U.S. Cl. 536—120 **2 Claims**

1. A compound having the following structure:



which compound is 1',2,3,3',4,4',6,6'-octa-O-crotylsucrose.

5,545,733

METHOD FOR PREPARING HYDROXYGALLIUM PHTHALOCYANINE CRYSTALS AND ELECTROPHOTOGRAPHIC PHOTORECEPTOR USING THE CRYSTALS

Katsumi Daimon; Katsumi Nukada; Yasuo Sakaguchi, and Ryosaku Igarashi, all of Minami-ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Aug. 10, 1994, Ser. No. 288,079

Claims priority, application Japan, Aug. 12, 1993, 5-219194

Int. Cl.[6] C09B *47/04*

U.S. Cl. 540—139 **14 Claims**

1. A method for preparing hydroxygallium phthalocyanine crystals comprising contacting starting material hydroxygallium phthalocyanine crystals having distinct diffraction peaks at 7.0°, 13.4°, 16.6°, 26.0° and 26.7° of the Bragg angle (2θ±0.2°) with respect to CuKα characteristic X-ray in the X-ray diffraction spectrum with a solvent to transfer said crystals into a different crystalline form.

5,545,734

ARYL AND HETEROARYL MACROLIDES HAVING IMMUNOSUPPRESSIVE ACTIVITY

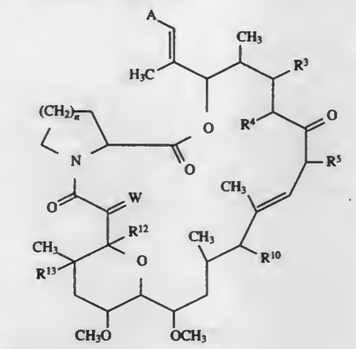
Robert K. Baker, Cranford; Gerard R. Kleczykowski, Westfield; Hyun O. Ok; William H. Parsons, both of Edison, and Kathleen M. Rupprecht, Cranford, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 25, 1994, Ser. No. 328,225

Int. Cl.[6] C07D *498/16*

U.S. Cl. 540—456 **9 Claims**

1. A compound of formula I:



I

wherein:

A is selected from the group consisting of:

(1) Ar—B—, and

(2) Ar—B—Ar'—;

Ar is selected from the group consisting of:

(1) phenyl,

(2) substituted phenyl in which the substituents are X, Y, and Z,

(3) heteroaryl, and

(4) substituted heteroaryl in which the substituents are X, Y, and Z;

Ar' is selected from the group consisting of:

(1) phenyl,

(2) substituted phenyl in which the substituents are X, Y, and Z,

(3) heteroaryl, and

(4) substituted heteroaryl in which the substituents are X, Y, and Z;

B is a bond or is selected from the group consisting of:

(1) —O—,

(2) —NR^6—, wherein R^6 is as defined below,

(3) —S(O)p—, wherein p is 0, 1 or 2,

(4) C_{1-10}alkyl,

(5) substituted C_{1-10}alkyl in which the alkyl portion may be substituted with one or more of the substituent(s) selected from:

(a) hydroxy,

(b) oxo,

(c) C_{1-6}alkoxy,

(d) phenyl-C_{1-3}alkoxy,

(e) substituted phenyl-C_{1-3}alkoxy, in which the substituents on phenyl are X, Y and Z,

(f) unsubstituted or substituted phenyloxy, in which the substituents on phenyl are X, Y and Z,

(g) —OCO—C_{1-6}alkyl,

(h) —NR^6R^7, wherein R^6 and R^7 are independently selected from:

(i) hydrogen,

(ii) C_{1-10}alkyl unsubstituted or substituted with

(a') phenyl, which is unsubstituted or substituted with X, Y and Z,

(b') —OH,

(c') C_{1-6}alkoxy,

(d') —CO_2H,

(e') —CO_2C_{1-6}alkyl,
(f') —C_{3-7}cycloalkyl,
(g') —OR^{11}

(iii) C_{3-10}alkenyl unsubstituted or substituted with one or more of the substituent(s) selected from:
(a') aryl, which is unsubstituted or substituted with X, Y and Z,
(b') heteroaryl, which is unsubstituted or substituted with X, Y and Z,
(c') —OH,
(d') C_{1-6}alkoxy,
(e') —CO_2H,
(f') —CO_2—C_{1-6}alkyl,
(g') —C_{3-7}cycloalkyl, and
(h') —OR^{11},

(iv) or where R^6 and R^7 and the N to which they are attached may form an unsubstituted or substituted 3–7-membered heterocyclic ring which may include one or two additional heteroatoms independently selected from the group consisting of O, $S(O)_p$, NR^{14}, wherein R^{14} is hydrogen or C_{1-6}alkyl unsubstituted or substituted by phenyl, and p is 0, 1 or 2, selected from: morpholine, thiomorpholine, piperidine, and piperizine,
(i) —NR^6CO—C_{1-6}alkyl-R^7 wherein R^6 and R^7 are as defined above,
(j) —NR^6CO_2—C_{1-6}alkyl-R^7,
(k) —$NR^6CONR^6R^7$,
(l) —$OCONR^6R^7$,
(m) —$COOR^6$,
(n) —CHO,
(o) phenyl,
(p) substituted phenyl in which the substituents are X, Y and Z
(q) —OR^{11} and
(r) —$S(O)_p$—C_{1-6}alkyl,

(6) C_{1-10}alkyl wherein one or more of the alkyl carbons is replaced by a group selected from: —NR^6—, —O—, —$S(O)_p$—, —CO_2—, —O_2C—, —$CONR^6$—, —NR^6CO—, —NR^6CONR^7—,

(7) substituted C_{1-10}alkyl wherein one or more of the alkyl carbons is replaced by a group selected from: —NR^6—, —O—, —$S(O)_p$—, —CO_2—, —O_2C—, —$CONR^6$—, —N^6CO— and —NR^6CONR^7—, and the alkyl group may be substituted by one or more of the substituent(s) selected from:
(a) hydroxy,
(b) oxo,
(c) C_{1-6}alkoxy,
(d) phenyl-C_{1-3}alkoxy,
(e) substituted phenyl-C_{1-3}alkoxy, in which the substituents on phenyl are X, Y and Z,
(f) unsubstituted or substituted phenyloxy, in which the substituents on phenyl are X, Y and Z,
(g) —OCO—C_{1-6}alkyl,
(h) —NR^6R^7, wherein R^6 and R^7 are as defined above,
(i) —NR^6CO—C_{1-6}alkyl-R^7,
(j) —$NR^6CO_2C_{1-6}$alkyl-R^6,
(k) —$NR^6CONR^6R^7$,
(l) —$OCONR^6R^7$,
(m) —$COOR^6$,
(n) —CHO,
(o) phenyl,
(p) substituted phenyl in which the substituents are X, Y and Z
(q) —OR^{11} and
(r) —$S(O)_p$—C_{1-6}alkyl,

(8) C_{3-10}alkenyl wherein alkenyl contains one to four double bonds,

(9) C_{3-10}alkenyl wherein alkenyl contains one to four double bonds and wherein one or more of the alkyl carbons is replaced by a group selected from: —NR^6—, —O—, —$S(O)_p$—, —CO_2—, —O_2C—, —$CONR^6$—, —NR^6CO—, —NR^6CONR^7—,

(10) substituted C_{3-10}alkenyl wherein alkenyl contains one to four double bonds and wherein one or more of the alkyl carbons may be replaced by a group selected from: —NR^6—, —O—, —$S(O)_p$—, —CO_2—, —O_2C—, —$CONR^6$—, —NR^6CO—, —NR^6CONR^7, and the alkyl group may be substituted by one or more of the substituent(s) selected from:
(a) hydroxy,
(b) oxo,
(c) C_{1-6}alkoxy,
(d) phenylC_{1-3}alkoxy,
(e) substituted phenylC_{1-3}alkoxy, in which the substituents on phenyl are X, Y and Z,
(f) unsubstituted or substituted phenyloxy, in which the substituents on phenyl are X, Y and Z,
(g) —OCO—C_{1-6}alkyl,
(h) —NR^6R^7, wherein R^6 and R^7 are as defined above,
(i) —NR^6CO—C_{1-6}alkyl,
(j) —NR^6CO_2—C_{1-6}alkyl,
(k) —$NR^6CONR^6R^7$,
(l) —$OCONR^6R^7$,
(m) —$COOR^6$,
(n) —CHO,
(o) phenyl,
(p) substituted phenyl in which the substituents are X, Y and Z
(q) —OR^{11}, and
(r) —$S(O)_p$—C_{1-6}alkyl;

R^3 is hydrogen, hydroxy, —OR^{11}, or C_{1-6}alkoxy;
R^4 is hydrogen, or R^3 and R^4 taken together form a double bond;
R^5 is methyl, ethyl, propyl, or allyl;
R^{10} is hydrogen, hydroxy, —OR^{11}, or fluoro;
R^{11} is selected from:
(a) —PO(OH)O—M+, wherein M+ is a positively charged inorganic or organic counterion selected from the group consisting of: ammonium, sodium, lithium, potassium, calcium, magnesium, dicyclohexylamino, N-methyl-D-glucamino, argininyl, and lysinyl,
(b) —SO_3—M+,
(c) —$CO(CH_2)_qCO_2$—M+, wherein q is 1–3, and
(d) —CO—C_{1-6}alkyl—NR^6R^7, wherein R^6 and R^7 are as defined above and the alkyl is unsubstituted or substituted with one or more substituents selected from:
(i) hydroxy,
(ii) C_{1-6}alkoxy,
(iii) —$NR^{17}R^{18}$, wherein R^{17} and R^{18} are independently selected from:
(a') hydrogen, and
(b') C_{1-6}alkyl,
(iv) —$COOR^6$, wherein R^6 is as defined above,
(v) phenyl,
(vi) substituted phenyl in which the substituents are X, Y and Z,
(vii) heteroaryl,
(viii) —SH, and
(ix) —S—C_{1-6}alkyl;

R^{12} is hydroxy, or hydrogen;
R^{13} is hydrogen, or R^{12} and R^{13} taken together form a double bond;
W is O or (H, OH);
X, Y and Z independently are selected from the group consisting of:
(a) hydrogen,
(b) C_{1-10}alkyl, unsubstituted or substituted with one or more substituents selected from:
(i) aryl,
(ii) substituted aryl in which the substituents are X', Y' and Z',
(iii) heteroaryl,
(iv) substituted heteroaryl in which the substituents are X', Y', and Z',
(v) unsubstituted or substituted aryloxy, in which the substituents on aryl are X', Y' and Z',
(vi) —OR^6,
(vii) —OR^{11},
(viii) —$OCOR^6$,
(ix) —OCO_2R^6,
(x) —NR^6R^7,
(xi) —CHO,
(xii) —NR^6COC_{1-6}alkyl—R^7,
(xiii) —$NR^6CO_2C_{1-6}$alkyl—R^7,
(xiv) —$NR^6CONR^6R^7$,
(xv) —$OCONR^6R^7$,
(xvi) —$CONR^6R^7$,
(c) C_{1-10}alkyl wherein one or more of the alkyl carbons is replaced by a group selected from —NR^6—, —O—, —$S(O)_p$—, —CO_2—, —O_2C—, —$CONR^6$—, —NR^6CO—, —NR^6CONR^7—, —CO—, —CH(OH)—, alkenyl or alkynyl and the alkyl may be unsubstituted or substituted with one or more substituents selected from:
(i) aryl,
(ii) substituted aryl in which the substituents are X', Y' and Z',
(iii) heteroaryl,
(iv) substituted heteroaryl in which the substituents are X', Y', and Z',
(v) unsubstituted or substituted aryloxy, in which the substituents on aryl are X', Y', and Z',
(vi) —OR^6,
(vii) —OR^{11},
(viii) —$OCOR^6$,
(ix) —OCO_2R^6,
(x) —NR^6R^7,
(xi) —CHO
(xii) —NR^6COC_{1-6}alkyl-R^7,
(xiii) —$NR^6CO_2C_{1-6}$alkyl-R^7,
(xiv) —$NR^6CONR^6R^7$,
(xv) —$OCONR^6R^7$,
(xvi) —$CONR^6R^7$,
(d) halogen,
(e) —NR^6R^7,
(f) —CN,
(g) —CHO,
(h) —CF_3,
(i) —SR^8, wherein R^8 is hydrogen, C_{1-6}alkyl, trifluoromethyl, or phenyl,
(j) —SOR^8,
(k) —SO_2R^8,
(l) —$CONR^6R^7$,
(m) $R^9O(CH_2)_m$— wherein R^9 is hydrogen, C_{1-6}alkyl, hydroxy-C_{2-3}alkyl, —CF_3, phenyl, R^{11} or naphthyl and m is 0, 1, 2, or 3,
(n) —$CH(OR^{15})(OR^{16})$, wherein R^{15} and R^{16} are C_{1-3}alkyl or taken together form an ethyl or propyl bridge,
(o)

wherein R^9 and m are as defined above,
(p)

wherein R^9 and m are as defined above, and
(q) —R^{11},
(r) aryl,
(s) substituted aryl in which the substituents are X', Y' and Z', or any two of X, Y and Z may be joined to form a saturated ring having 5, 6 or 7 ring atoms, said ring atoms comprising 1 or 2 oxygen atoms, the remaining ring atoms being carbon, selected from: dioxolanyl and dioxanyl;

X', Y' and Z' independently are selected from the group consisting of:
(a) hydrogen,
(b) C_{1-7}alkyl,
(c) C_{2-6}alkenyl,
(d) halogen,
(e) —$(CH_2)_m$—NR^6R^7, wherein R^6, R^7, and m are as defined above,
(f) —CN,
(g) —CHO,
(h) —CF_3,
(i) —SR^8, wherein R^8 is hydrogen, C_{1-6}alkyl, trifluoromethyl, or phenyl,
(j) —SOR^8, wherein R^8 is as defined above,
(k) —SO_2R^8, wherein R^8 is as defined above,
(l) —$CONR^6R^7$, wherein R^6 and R^7 are as defined above,
(m) $R^9O(CH_2)_m$— wherein R^9 and m are as defined above,
(n) —$CH(OR^{15})(OR^{16})$, wherein R^{15} and R^{16} are as defined above,
(o)

wherein R^9 and m are as defined above,
(p)

wherein R^9 and m are as defined above, and
(q) —R^{11};

n is 1 or 2; heteroaryl, as used herein in the claim is: acridine, carbazole, cinnoline, dibenzofuran, dibenzothiophene, quinoxa

line, pyrrazole, benzoxazole, indole, imidazole, thiazole, benzothiazole, benzotriazole, furan, benzofuran, benzimidazole, quinoline, isoquinoline, oxazole, pyrazine, pyridazine, pyridine, pyrimidine and pyrrole;

with the proviso that if: A is Ar—B—, Ar is substituted phenyl in which the substituents are X, Y and Z, B is a bond, X is hydrogen, and Y is HO—, then Z is other than CH_3O— or R^9CO_2, wherein R^9 is a defined above;

and pharmaceutically acceptable salts thereof.

5,545,735

BENZO-FUSED LACTAMS PROMOTE RELEASE OF GROWTH HORMONE

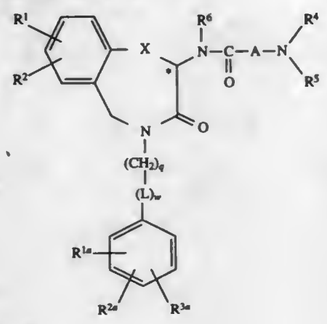
Richard J. Bochis, East Brunswick; Paul J. Hodges, Brick; William R. Schoen, Edison, and Matthew J. Wyvratt, Jr., Mountainside, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 4, 1993, Ser. No. 132,074

Int. Cl.[6] C07D *223/16;513/04*

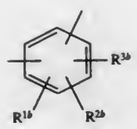
U.S. Cl. 540—490 **6 Claims**

1. A compound having the formula:



1

where L is:



q is 0 to 4;

w is 0 or 1;

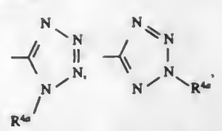
X is CH_2 or $S(O)_m$ where m is 0 to 2;

R^1, R^2, R^{1a}, R^{2a}, R^{1b} and R^{2b} are independently selected from: hydrogen, halogen, C_1-C_7 alkyl, C_1-C_3 perfluoroalkyl, C_1-C_3 perfluoroalkoxy, $—S(O)_mR^{7a}$, cyano, nitro, $R^{7b}O(CH_2)_v$—, $R^{7b}COO(CH_2)_v$—, $R^{7b}OCO(CH_2)_v$—, $R^{5b}R^{12b}N(CH_2)_v$—, $R^{7b}CON(R^{12b})(CH_2)_v$—, $R^{5b}R^{12b}NCO(CH_2)_v$—, phenyl, and substituted phenyl where the substituents on phenyl are selected from: 1 to 3 of halogen, C_1-C_6 alkyl, C_1-C_6 alkoxy, or hydroxy, wherein v is 0 to 3 and m is 0 to 2;

R^{7a} and R^{7b} are independently selected from: hydrogen, C_1-C_3 perfluoroalkyl, C_1-C_6 alkyl, phenyl or substituted phenyl, where the substitutents on phenyl are selected from: 1 to 3 of halogen, C_1-C_6 alkyl, C_1-C_6 alkoxy or hydroxy, substituted C_1-C_6 alkyl where the substitutents on alkyl are phenyl or substituted phenyl, where the substitutents on phenyl are selected from: 1 to 3 of halogen, C_1-C_6 alkyl, C_1-C_6 alkoxy or hydroxy;

R^{3a} and R^{3b} are independently selected from: hydrogen, R^9, C_1-C_6 alkyl substituted with R^9, phenyl substituted with R^9, or phenoxy substituted with R^9;

R^9 is selected from:



$R^{7b}O(CH_2)_v$—, $R^{7b}COO(CH_2)_v$—, $R^{7b}OCO(CH_2)_v$—, $R^{7b}CO(CH_2)_v$—, $R^{7b}O(CH_2)_vCO$—, $R_{5b}R^{12b}N(CH_2)_v$—, $R^{5b}R^{12b}NCO(CH_2)_v$—, $R^{5b}R^{12b}NCS(CH_2)_v$—, $R^{5b}R^{12a}NN(R^{12b})CO(CH_2)_v$—, $R^{5b}R^{12a}NN(R^{12b})CS(CH_2)_v$—, $R^{5b}R^{12b}NCON(R^{12a})(CH_2)_v$—, $R^{5b}R^{12b}NCSN(R^{12a})(CH_2)_v$—, $R^{5b}R^{12c}NN(R^{12b})CSN(R^{12a})(CH_2)_v$—, $R_{5b}R_{12c}NN(R^{12b})CON(R^{12a})(CH_2)_v$—, $R_{5b}R_{12c}NN(R^{12b})COO(CH_2)_v$—, $R^{5b}R^{12b}NCOO(CH_2)_v$— or $R^{13}OCON(R^{12a})(CH_2)_v$—, where v is 0 to 3;

R^{12a}, R^{12b} and R^{12c} are independently selected from: R^{5a}, OR^{5a} or COR^{5a}, wherein R^{12a} and R^{12b}, or R^{12b} and R^{12c}, or R^{12a} and R^{12c}, or R^{12b} and R^{5b}, or R^{12c} and R^{5b}, or R^{13} and R^{12a} can be taken together to form $—(CH_2)_r—B—(CH_2)_s—$ where B is CHR^1, O, $S(O)_m$ or NR^{10}, m is 0, 1 or 2, r and s are independently 0 to 3, and R^1 and R^{10} are as defined;

R^{13} is selected from: C_1-C_3 perfluoroalkyl, C_1-C_6 alkyl, phenyl, substituted phenyl where the substituents on phenyl are selected from: 1 to 3 of halogen, C_1-C_6 alkyl, C_1-C_6 alkoxy or hydroxy, and substituted C_1-C_6 alkyl, where the substitutents on alkyl are selected from: hydroxy, $—NR^{10}R^{11}$, carboxy, phenyl and substituted phenyl, wherein the substituents on phenyl are selected from: 1 to 3 of halogen, C_1-C_6 alkyl, C_1-C_6 alkoxy or hydroxy;

R^{10} and R^{11} are independently selected from: hydrogen, C_1-C_6 alkyl, phenyl, phenyl C_1-C_6 alkyl, C_1-C_5 alkoxycarbonyl or C_1-C_5 alkanoyl-C_1-C_6 alkyl;

R^4, R^{4a}, R^5, R^{5a} and R^{5b} are independently selected from:

hydrogen;

phenyl;

substituted phenyl where the substituents on phenyl are selected from: 1 to 5 of hydroxy, C_1-C_6 alkoxy, C_3-C_7 cycloalkyl, fluoro, phenyl independently disubstituted with R^1 and R^2, and phenyl(C_1-C_3 alkoxy) wherein the phenyl is independently disubstituted with R^1 and R^2;

C_1-C_{10} alkyl;

substituted C_1-C_{10} alkyl, where the substituents on the alkyl are selected from: 1 to 5 of hydroxy, C_1-C_6 alkoxy, C_3-C_7 cycloalkyl, fluoro, phenyl independently disubstituted with R^1 and R^2, phenyl(C_1-C_3 alkoxy) wherein the phenyl is independently disubstituted with R^1 and R^2, C_1-C_{20}-alkanoyloxy, C_1-C_5 alkoxycarbonyl, carboxy, formyl, and $—NR^{10}R^{11}$;

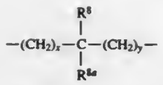
C_3-C_{10} alkenyl; substituted C_3-C_{10} alkenyl, where the substituents on the alkenyl are selected from: 1 to 5 of hydroxy, C_1-C_6 alkoxy, C_3-C_7 cycloalkyl, fluoro, phenyl independently disubstituted with R^1 and R^2, phenyl(C_1-C_3 alkoxy) wherein the phenyl is independently disubstituted with R^1 and R^2, C_1-C_{20}-alkanoyloxy, C_1-C_5 alkoxycarbonyl, carboxy, formyl, and $—NR^{10}R^{11}$;

C_3-C_{10} alkynyl; and

substituted C_3-C_{10} alkynyl where the substituents on the alkynyl are selected from: 1 to 5 of hydroxy, C_1-C_6 alkoxy, C_3-C_7 cycloalkyl, fluoro, phenyl independently disubstituted with R^1 and R^2, phenyl(C_1-C_3 alkoxy) wherein the phenyl is independently disubstituted with R^1 and R^2, C_1-C_{20}-alkanoyloxy, C_1-C_3 alkoxycarbonyl, carboxy, formyl, and $—NR^{10}R^{11}$; where R^1, R^2, R^{10} and R^{11} are as defined above; or where R^4 and R^5 can be taken together to form $—(CH_2)_r—B—(CH_2)_s—$ where B is CHR^1, O, $S(O)_m$ or N-R^{10}, r and s are independently 1 to 3, m is 0, 1 or 2 and R^1 and R^{10} are as defined above;

R^6 is selected from: hydrogen, C_1-C_{10} alkyl, phenyl or phenyl C_1-C_{10} alkyl;

A is:



where x and y are independently 0–3;

R^8 and R^{8a} are independently selected from: hydrogen, C_1-C_{10} alkyl, trifluoromethyl, phenyl, and substituted C_1-C_{10} alkyl, where the substitutents on alkyl are selected from: 1 to 3 of imidazolyl, indolyl, hydroxy, fluoro, $—S(O)_mR^{7a}$, C_1-C_6 alkoxy, C_3-C_7 cycloalkyl, phenyl independently disubstituted with R^1 and R^2, phenyl(C_1-C_3 alkoxy) wherein the phenyl is independently disubstituted with R^1 and R^2, C_1-C_5 alkanoyloxy, C_1-C_5 alkoxycarbonyl, carboxy, formyl, or $—NR^{10}R^{11}$ where R^1, R^2, R^{7a}, R^{10}, R^{11} and m are as defined above; or R^8 and R^{8a} can be taken together to form $—(CH_2)_t—$ where t is 2 to 6; and R^8 and R^{8a} can independently be joined to R^5 to form alkylene bridges between the terminal nitrogen and the alkyl portion of the A group wherein the bridge contains from one to five carbon atoms; and pharmaceutically acceptable salts thereof.

5,545,736

6-THIONO-5,6-DIHYDRO-DIBENZ[B,E] AZEPIN-11-ONE-11-OXIMES

Hanno Wild, Wuppertal; Wolfgang Roeben, Bergisch Gladbach; Arnold Paessens, Haan, and Jörg Petersen-von Gehr, Bochum, all of, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

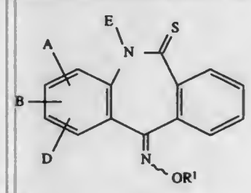
Continuation of Ser. No. 978,553, Nov. 19, 1992, abandoned. This application Jan. 9, 1995, Ser. No. 370,000

Claims priority, application Germany, Nov. 27, 1991, 41 38 908.5

Int. Cl.[6] C07D *223/20;* **A61F** *31/55*

U.S. Cl. 540—52.2 **3 Claims**

1. 6-Thiono-dibenz[b,e]azepines of the formula (I):



(I)

in which

A, B and D are identical or different and represent hydrogen, amino, nitro, halogen, cyano, hydroxyl, trifluoromethyl, trifluoromethoxy or straight-chain or branched alkyl or alkoxy each having up to 8 carbon atoms;

E represents hydrogen or straight-chain or branched alkyl having up to 6 carbon atoms;

R^1 represents cycloalkyl having 3 to 6 carbon atoms, or represents 2-tetrahydropyranyl, or represents straight-chain or branched carboxylic acid acyl having up to 8 carbon atoms, or represents C_{2-10}-alkenyl, or represents straight-chain or branched alkyl or alkenyl each having up to 10 carbon atoms, each of which is substituted by halogen, hydroxyl, carboxyl, or straight-chain or branched alkoxycarbonyl having up to 6 carbon atoms, or

alkyl or alkenyl are substituted by phenyl which in turn can be substituted up to 5 times by identical or different halogen,

and their physiologically acceptable salts.

5,545,737

PROCESS FOR SELECTIVELY PRODUCING AN (S)-9-FLUORO-3-METHYL-10-(4-METHYL-1-PIPERAZINYL)-7-OXO-2,3-DIHYDRO-7H-PYRIDO (1,2,3, -DE) (1,4) BENZOXAZINE-6-CARBOXYLIC ACID HEMIHYDRATE OR MONOHYDRATE

Yukio Sato; Atsushi Sato; Tatsuro Sumikawa, and Tazuo Uemura, all of Tokyo, Japan, assignors to Daiichi Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 662,695, Mar. 1, 1991, abandoned. This application Jan. 18, 1994, Ser. No. 182,364

Claims priority, application Japan, Mar. 1, 1990, 2-50454

Int. Cl.[6] C07D *498/06;498/16*

U.S. Cl. 544—101 **35 Claims**

1. A process for selectively producing an (S)-9-fluoro-3 -methyl-10-(4-methyl-1-piperazinyl)-7-oxo-2,3-dihydro-7H -pyrido[1,2,3-de][1,4]benzoxazine-6-carboxylic acid hemihydrate, comprising the step of controlling the water content of an aqueous solvent selected from the group consisting of methanol, ethanol, propanol and acetone having (S)-9-fluoro-3-methyl-10-(4-methyl -1-piperazinyl)-7-oxo-2,3-dihydro-7H-pyrido[1,2,3de][1,4]benzoxazine-6 -carboxylic acid dissolved therein during a crystallization reaction, wherein said water content of said solvent ranges from about 2 to about 10%.

19. A process for selectively producing an (S)-9-fluoro-3 -methyl-10-(4-methyl-1-piperazinyl)-7-oxo-2,3-dihydro-7H-pyrido[1,2,3-de][1,4]benzoxazine-6-carboxylic acid monohydrate, comprising the step of controlling the water content of an aqueous solvent having an (S)-9-fluoro-3-methyl-10-(4-methyl-1 -piperazinyl)-7-oxo-2,3-dihydro-7H-pyrido[1,2,3-de][1,4]benzoxazine -6-carboxylic acid dissolved therein during a crystallization reaction, wherein said water content is at least 10%.

5,545,738

ALFUZOSIN HYDROCHLORIDE DIHYDRATE

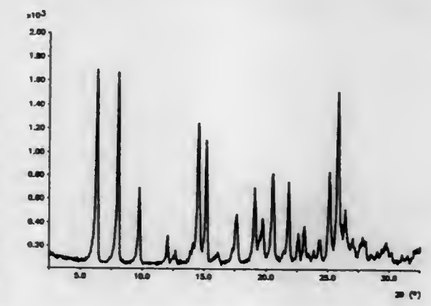
Regis Borrega, Le Plessis Robinson, France, and Satoshi Kitamura, Osaka, Japan, assignors to Synthelabo, Le Plessis-Robinson, France

Filed Dec. 27, 1994, Ser. No. 364,180

Claims priority, application Japan, Dec. 28, 1993, 5-353828

Int. Cl.[6] A61K *31/505;* **C07D** *405/12*

U.S. Cl. 544—291 **3 Claims**



1. Alfuzosin hydrochloride dihydrate.

2. A hydrate of alfuzosin hydrochloride having the X-ray powder diffraction pattern shown in FIG. 2.

3. A hydrate of alfuzosin hydrochloride having an X-ray powder diffraction pattern with characteristic diffractomeric peaks 2θ= 6.36°, 8.07°, 9.78°.

VOL 1189 ISS 2 AG 19 96 UMI

5,545,739

CHEMILUMINESCENT PHENANTHRIDINIUM SALTS

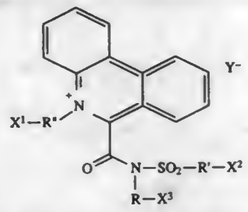
Phillip G. Mattingly, and Larry G. Bennett, both of Grayslake, Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 368,258, Jan. 3, 1995, Pat. No. 5,468,646, which is a continuation of Ser. No. 371,763, Jun. 23, 1989, abandoned, which is a continuation of Ser. No. 921,979, Oct. 22, 1986, abandoned. This application May 16, 1995, Ser. No. 442,275

Int. Cl.[6] C07D *221/12*

U.S. Cl. 546—108 **4 Claims**

1. A chemiluminescent compound identified by the formula:



wherein R, R', R*, X^1, X^2 X^3 are substituents which do not interfere with effective chemiluminescence with the proviso that R-X^3 R'-X^2 and R*-X^1 may independently be hydrogen.

5,545,740

NITROSATION PROCESS

Mark J. Hughes, Welwyn, Hertfordshire, and John Kitteringham, Hertford, Hertfordshire, both of, England, assignors to SmithKLine Beecham, p.l.c., England

Filed Aug. 11, 1994, Ser. No. 284,617

Claims priority, application United Kingdom, Feb. 20, 1992, 9203688

Int. Cl.[6] C07D *221/22;453/02;455/02*

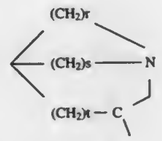
U.S. Cl. 546—112 **6 Claims**

1. A process for the preparation of a compound of formula (I) or a pharmaceutically acceptable salt thereof:



wherein

R_1 represents

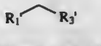


in which r represents an integer of 2 to 4, s represents 1 or 2 and t represents 0 or 1;

R_2 is a group OR_4, where R_4 is C_{1-4}alkyl, C_{2-4}alkenyl or C_{2-4}alkynyl or a group $OCOR_5$ where R_5 is hydrogen or R_4; and

R_3 is CN;

said process comprising nitrosating a compound of formula (II) with a nitrosating agent in the presence of a base:



(II)

wherein R_1' is R_1 or a group convertible thereto, and R_3' is an electron withdrawing group, and thereafter converting the resulting =NOH group to $=NR_2$ wherein R_2 is as defined in formula (I), converting R_1' and R_3' when other than R_1 and R_3 to R_1 and R_3, and thereafter optionally forming a pharmaceutically acceptable salt.

5,545,741

PROCESS FOR THE PREPERATION OF EPIBATIDINE

Csaba Szántay; Zsuzsanna B. Kardos; István Moldvai; Eszter T. Major; Csaba Szántay, Jr.; Attila Mándi; Gábor Blaskó; Gyula Simig; Györgyi Lax; Sándor Drabant; Tamas Szállási; Márton Fekete, and Gábor Gigler, all of Budapest, Hungary, assignors to Egis Gyogyszergyar Rt., Budapeset, Hungary

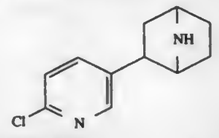
Filed Dec. 5, 1994, Ser. No. 341,221

Claims priority, application Hungary, Dec. 9, 1993, 93 03505; Dec. 9, 1993, 93 03505

Int. Cl.[6] C07D *401/04*

U.S. Cl. 546—276.7 **6 Claims**

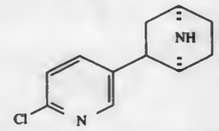
1. Process for the preparation of racemic or optically active epibatidine of the Formula XIV



(XIV)

which comprises

subjecting racemic or optically active epi-epibatidine of the Formula XIII



(XIII)

to epimerization in the presence of a base.

5,545,742

6-HETEROCYCLYL-1-(SUBSTITUTED PHENYL) BENZOTRIAZOLE HERBICIDAL AGENTS

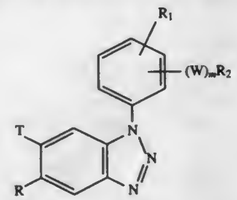
Michael E. Condon, Mercer; Alvin D. Crews, Jr., Camden, and Mark C. Manfredi, Mercer, all of N.J., assignors to American Cyanamid Co., Madison, N.J.

Continuation of Ser. No. 387,140, Feb. 10, 1995. This application May 5, 1995, Ser. No. 437,112

Int. Cl.[6] C07D *249/18;405/12*

U.S. Cl. 548—261 **2 Claims**

1. A compound having the structural formula



wherein

R is hydrogen, halogen, nitro, cyano, C_1– C_4alkyl, C_1–C_4-haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy or $R_3S(O)n$;

R_3 is C_1–C_4alkyl optionally substituted with one or more halogen atoms;

n is an integer of 0, 1 or 2;

R_1 is hydrogen, halogen, C_1–C_4alkyl or C_1–C_4haloalkyl;

R_2 is V or R_4V;

R_4 is C_1–C_5alkylene optionally substituted with one or more halogen, C_1–C_4alkyl, C_1– C_4haloalkyl or C_3–C_6cycloalkyl groups;

V is hydrogen, halogen, cyano, $C(O)R_5$, $C(Y)R_6$, $CH_2OC(O)R_7$, CH_2OR_6, $CH(OR_8)_2$, $N(R_6)SO_2R_9$, C_2–C_6alkenyl substituted with one CO_2R_7 group or C_2– C_6alkynyl substituted with one CO_2R_7 group;

R_5 is OH, OR_{10}, $NR_{11}R_{12}$ or $N(R_6)SO_2R_9$;

Y is O, $NOC(R_{13}R_{14})CO_2R_8$ or NOR_7;

R_6 is hydrogen or C_1–C_4alkyl optionally substituted with C_1–C_4alkoxy;

R_7 is hydrogen, C_1–C_4alkyl, benzyl or phenyl optionally substituted with one or more halogen, cyano, nitro, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy or C_1– C_4haloalkoxy groups;

R_8 is C_1–C_4alkyl, $—(CH_2)_3—$ or $—(CH_2)_4—$;

R_9 is C_1–C_4alkyl, C_1–C_4haloalkyl or phenyl optionally substituted with one or more halogen, cyano, nitro, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy or C_1–C_4haloalkoxy groups;

R_{10} is C_1–C_6alkyl optionally substituted with C_1–C_4alkoxy, C_1–C_4alkylthio, halogen, hydroxy, C_3–C_6cyclo-alkyl, furyl or phenyl optionally substituted with one or more halogen, cyano, nitro, C_1–C_4-alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy or C_1– C_4-haloalkoxy groups,

C_3–C_6alkenyl optionally substituted with C_1–C_4alkoxy, halogen, C_3–C_6cycloalkyl or phenyl optionally substituted with one or more halogen, cyano, nitro, C_1– C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy or C_1–C_4-haloalkoxy groups,

C_3–C_6alkynyl optionally substituted with C_1–C_4alkoxy or halogen,

C_3–C_6cycloalkyl,

$N{=}C(R_{13}R_{14})$,

$C(R_{13}R_{14})CO_2R_6$ or

an alkali metal, alkaline earth metal, manganese, copper, zinc, cobalt, silver, nickel, ammonium or organic ammonium cation;

R_{11} and R_{12} are each independently hydrogen, C_1–C_4alkyl or phenyl optionally substituted with one or more halogen, cyano, nitro, C_1–C_4alkyl, C_1–C_4halo-alkyl, C_1– C_4alkoxy or C_1–C_4haloalkoxy groups;

R_{13} and R_{14} are each independently hydrogen or C_1–C_4alkyl;

W is O, S or NR_{15};

R_{15} is hydrogen or C_1–C_4alkyl;

m is an integer of 0 or 1; and

T is NH_2 or



5,545,743

PROCESS FOR HEAT-PRACTIONATION OF ORGANOSILANES

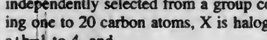
John P. Cannady; John M. Gohndrone, and Ming-Shin Tzou, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Nov. 2, 1995, Ser. No. 552,318

Int. Cl.[6] C07F *7/08*

U.S. Cl. 556—466 **18 Claims**

1. In a process for heat fractionation of a mixture comprising (A) an organosilane described by formula



where each R^1 is independently selected from a group consisting of cycloalkyls comprising 4 to 20 carbon atoms and aryls, each R^2 is independently selected from a group consisting of alkyls comprising one to 20 carbon atoms, X is halogen, a=1 or 2, b=0 to 3, and a+b=1 to 4, and

(B) a borane or borane forming compound; the improvement comprising: adding a tertiary amine or tertiary organophosphorus compound at a concentration sufficient to reduce modification of the organosilane during heat fractionation of the mixture.

5,545,744

CYANO NAPHTHALENE COMPOUNDS

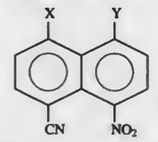
Michael D. Varney, Carlsbad; Cindy L. Palmer, La Mesa, and Judy G. Deal, Temecula, all of Calif., assignors to Agouron Pharmaceuticals, Inc., La Jolla, Calif.

Division of Ser. No. 276,929, Jul. 19, 1994, Pat. No. 5,498,727. This application May 25, 1995, Ser. No. 450,801

Int. Cl.[6] C07C *255/52*

U.S. Cl. 558—418 **3 Claims**

1. A compound of the Formula B:

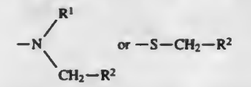


(B)

wherein:

X is a hydrogen atom or a C_{1-6} alkyl group; and

Y is a group of the formula



where R^1 is a hydrogen atom or a substituted or unsubstituted C_{1-6} alkyl group having from 0 to 3 carbon atoms replaced by a hetero atom, and R^2 is an aryl or heteroaryl ring that is unsubstituted or substituted with an electron-donating or electron-withdrawing moiety.

5,545,745

ENANTIOSELECTIVE PREPARATION OF OPTICALLY PURE ALBUTEROL

Yun Gao, Southborough, and Charles M. Zepp, Hardwick, both of Mass., assignors to Sepracor, Inc., Marlborough, Mass.

Continuation-in-part of Ser. No. 247,302, May 23, 1994, Pat. No. 5,399,765. This application Jan. 20, 1995, Ser. No. 376,072

Int. Cl.[6] C07C *209/68*

U.S. Cl. 560—42 **17 Claims**

1. A method for obtaining a single enantiomer of albuterol, comprising:

dissolving a mixture of enantiomers of methyl 5-[2-[(1,1-dimethylethyl)amino]-1-hydroxyethyl]-2-(phenylmethoxy)benzoate and a chiral acid in methanol, ethanol or a mixture of the two by heating to form a solution, said chiral acid being selected from the group consisting of (−)-di-toluoyl-L-tartaric acid, (+)-di-toluoyl-D-tartaric acid, (−)-di-benzoyl-L-tartaric acid and (+)-di-benzoyl-D-tartaric acid;

allowing said solution to cool, whereby a salt of primarily one enantiomer crystallizes;

separating said salt from said solution;

liberating the enantiomer from said salt by treatment with a base;

reducing said enantiomer;

debenzylating said enantiomer and recovering a single enantiomer of albuterol.

12. A method for obtaining a single enantiomer of methyl 5-[2-[(1,1-dimethylethyl)amino]-1-hydroxyethyl] -2-(phenylmethoxy)benzoate comprising:

(a) dissolving a mixture of enantiomers of methyl 5-[2-[(1,1-dimethylethyl)amino]-1-hydroxyethyl]
-2-(phenylmethoxy)benzoate and a chiral acid in methanol, ethanol or a mixture of the two by heating to form a solution, said chiral acid being selected from the group consisting of (−)-di-toluoyl-L-tartaric acid, (+)-di-toluoyl-D-tartaric acid, (−)-di-benzoyl-L-tartaric acid and (+)-di-benzoyl-D-tartaric acid by beating to form a solution;

(b) allowing said solution to cool, whereby a salt of primarily one stereoisomer crystallizes;

(c) separating said salt from said solution;

(d) recrystallizing said salt from the alcohol solvent, whereby a diastereomeric salt having greater than 90% ee of an enantiomer of methyl 5-[2-[(1,1-dimethylethyl)amino]-1-hydroxyethyl] -2-(phenylmethoxy)benzoate is obtained;

(e) separating said diastereomeric salt from the alcohol solvent; and

(f) liberating said enantiomer of methyl 5 -[2-[(1,1-dimethylethyl)amino]-1-hydroxyethyl]-2
-(phenylmethoxy)benzoate from said diastereomeric salt by treatment with base.

5,545,746

METHOD FOR RECOVERY OF ALKALI METAL OR ALKALINE-EARTH METAL TEREPHTHALATE AND OF ALKYLENE GLYCOL FROM POLYETHYLENE TEREPHTHALATES

Jacques Benzaria, Chambly; Francois Dawans, Bougival; Bruno Durif-Varambon, Vienne, and Jean-Bernard Gaillard, St. Martin D'Heres, all of, France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Continuation-in-part of Ser. No. 149,405, Nov. 9, 1993, abandoned. This application Jan. 3, 1995, Ser. No. 367,859

Int. Cl.[6] C07C *67/48*

U.S. Cl. 560—78 **24 Claims**

1. A method for recovering alkali metal or alkaline-earth metal terephthalate from an initial composition comprising a polyalkylene terephthalate, said method comprising:

a) mixing the initial composition with an anhydrous alkali metal or alkaline-earth metal hydroxide in the absence of a solvent to form a mixture;

b) heating the resultant mixture, said mixture being at least in part in a molten state, to a temperature effective to initiate saponification of the polyalkylene terephthalate and to sustain the reaction to completion without further heating;

c) removing in gaseous form the resultant alkylene glycol formed during the saponification reaction and;

d) recovering the resultant alkali-metal or alkaline-earth metal terephthalate from the saponification reaction in the form of a powdery product.

5,545,747

CYCLOBUTANECARBOXYLIC ACID DERIVATIVES AND LIQUID CRYSTALLINE COMPOSITIONS CONTAINING THEM

Megumi Kawaguchi; Hiromi Inoue; Atsushi Sugiura; Kenji Suzuki, and Tsunenori Fujii, all of Soka, Japan, assignors to Kanto Kagaku Kabushiki Kaisha, Tokyo, Japan

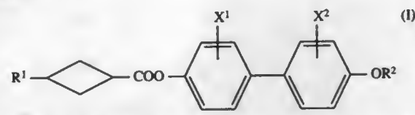
Continuation of Ser. No. 848,000, Apr. 16, 1992, abandoned. This application Aug. 1, 1994, Ser. No. 283,755

Claims priority, application Japan, Aug. 16, 1990, 2-215045

Int. Cl.[6] C07C *69/74*

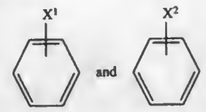
U.S. Cl. 560—123 **19 Claims**

1. An optically inactive cyclobutanecarboxylic acid derivative of formula (I)



(I)

wherein R^1 is a straight chain alkyl group having 1–14 carbon atoms, R^2 is a straight chain alkyl group having 1–14 carbon atoms, and



independently represent monofluoro-substituted 1,4-phenylene or difluoro-substituted 1,4 phenylene, wherein said optically inactive cyclobutanecarboxylic acid derivative exhibits a smectic C phase over a range of at least 24.8 degrees Centigrade.

5,545,748

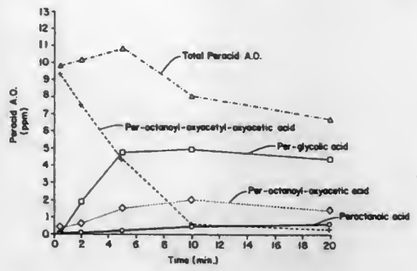
POLYGLYCOLATE PERACID PRECURSORS

Richard R. Rowland, Danville; Ronald A. Fong, Modesto; Richard J. Wiersema, Tracy, and Alfred G. Zielske, Pleasanton, all of Calif., assignors to The Clorox Company, Oakland, Calif.

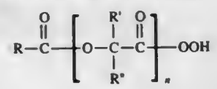
Division of Ser. No. 951,238, Sep. 25, 1992, Pat. No. 5,391,812, which is a division of Ser. No. 329,982, Mar. 29, 1989, Pat. No. 5,182,045. This application Oct. 18, 1994, Ser. No. 325,050

Int. Cl.[6] C07C *409/02;* **C01B** *15/10*

U.S. Cl. 562—2 **2 Claims**



1. A peracid having the structure



wherein n is an integer from 2 to 4, and R is C_{1-20} linear or branched alkyl, alkoxylated alkyl, cycloalkyl, aryl, alkylaryl, substituted aryl; R' and R" are independently H, C_{1-20} alkyl, aryl, C_{1-20} alkylaryl, substituted aryl, and $NR_3^{\alpha+}$, wherein R^{α} is C_{1-30} alkyl.

5,545,749

QUATERNARY AMMONIUM COMPOUNDS WITH HIGH FLASH POINTS AND METHOD OF MAKING THE SAME

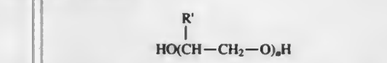
Kim R. Smith; Frederick M. Boyd, both of Huntington, and Samih S. Abouhalkah, Fort Wayne, all of Ind., assignors to Huntington Laboratories, Inc., Huntington, Ind.

Division of Ser. No. 5,731, Jan. 19, 1993, Pat. No. 5,414,124. This application Oct. 5, 1994, Ser. No. 318,377

Int. Cl.[6] C07C *211/63;211/64*

U.S. Cl. 564—282 **22 Claims**

1. A non-crystallizing quaternary ammonium compound solution having a flash point of at least 200° F. consisting essentially of about 50% to about 80% by weight quaternary ammonium compound, wherein said quaternary ammonium compound is selected from the group consisting of benzalkonium halides and combinations thereof with dialkyldimethylammonium halides, about 5.0% to about 50% by weight of an alkylene glycol or dialkylene glycol having the formula



where R' is either H or CH_3 and n is 1 or 2, and about 0% to about 45% by weight water.

5,545,750

RETROVIRAL PROTEASE INHIBITING COMPOUNDS

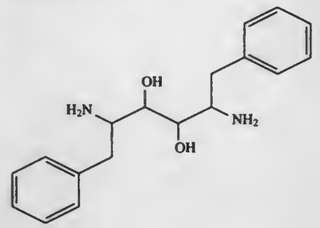
Dale J. Kempf, Lake Villa; Daniel W. Norbeck, Lindenhurst; John W. Erickson, Barrington; Hing Leung Sham, Gurnee; Lynn M. Codacovi, Antioch, and Jacob J. Plattner, Libertyville, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 358,648, Dec. 19, 1994, which is a continuation of Ser. No. 164,979, Dec. 7, 1993, abandoned, which is a continuation of Ser. No. 880,729, May 8, 1992, abandoned, which is a division of Ser. No. 518,730, May 9, 1990, Pat. No. 5,142,056, which is a continuation-in-part of Ser. No. 456,124, Dec. 22, 1989, abandoned, which is a continuation-in-part of Ser. No. 405,604, Sep. 8, 1989, abandoned, which is a continuation-in-part of Ser. No. 355,945, May 23, 1989, abandoned. This application Mar. 23, 1995, Ser. No. 409,391

Int. Cl.[6] G07C *215/18*

U.S. Cl. 564—360 **4 Claims**

1. A compound of the formula:



or an acid addition salt thereof or an N-protected derivative thereof wherein at each occurrence the N-protecting group is independently selected from the group consisting of formyl, acetyl, pivaloyl, t-butylacetyl, t-butyloxycarbonyl, benzyloxycarbonyl, benzyl and isopropylaminocarbonyl.

5,545,751

PROCESS FOR THE PREPARATION OF 4-METHOXY-2,2',6'-TRIMETHYLDIPHENYLAMINE

Chiyuki Kusuda, Kumamoto-ken; Masayuki Furuya, Fukuoka-ken; Masaru Wada, Fukuoka-ken; Yoshihiro Irizato, Fukuoka-ken; Hiroshi Naruse, Fukuoka-ken, and Teruyuki Nagata, Fukuoka-ken, all of, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Dec. 14, 1994, Ser. No. 358,566

Claims priority, application Japan, Dec. 27, 1993, 5-331981

Int. Cl.[6] C07C *209/22*

U.S. Cl. 564—398 **4 Claims**

1. In a process for the preparation of 4-methoxy-2,2'-6'-trimethyldiphenylamine by heating and reacting 2,6-dimethylcyclohexanone and 2-methyl4-methoxyaniline in the presence of a dehydrogenation catalyst, the improvement comprising dropwise addition of 2-methyl-4-methoxyaniline into the reaction system, while removing from the reaction system the resultant hydrogen and water.

5,545,752

PROCESS FOR THE PREPARATION OF DIPHENYLAMINE OR NUCLEUS-SUBSTITUTED DERIVATIVE THEREOF

Teruyuki Nagata, Fukuoka-ken; Chiyuki Kusuda, Kumamoto-ken, and Masaru Wada, Fukuoka-ken, all of, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

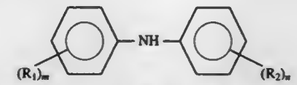
Continuation of Ser. No. 139,020, Oct 21, 1993, abandoned. This application Jun. 2, 1995, Ser. No. 458,294

Claims priority, application Japan, Oct. 28, 1992, 4-290132; Oct. 29, 1992, 4-291312

Int. Cl.[6] C07C *209/18*

U.S. Cl. 564—398 **22 Claims**

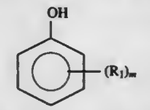
17. In a batch process for the preparation of diphenylamine or a nucleus-substituted derivative thereof represented by the following formula (1):



(1)

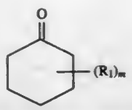
wherein R^1 is an alkyl or alkoxy group, m is an integer of 0 to 5, and where m is 2 or greater, the plural R_1s may be the same of different; and R_2 is an alkyl, alkoxy, carboxyl or an ester thereof, nitrile, aryl or hydroxyl group or a halogen atom, n is an integer of 0 to 5, and where n is 2 or greater, the plural R_2s may be the same or different, said process comprising:

converting, in the presence of a catalyst of a noble metal of Group VIII of the periodic table and at least one cocatalyst selected from the group consisting of hydroxide, carbonate or bicarbonate of an alkali metal and/or an alkaline earth metal under hydrogen pressure in a reaction system, a portion of phenol or a nucleus-substituted derivative thereof represented by the following formula (2):



(2)

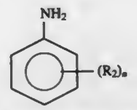
wherein R_1 and m have the same meanings as defined above to cyclohexanone or a nucleus-substituted derivative thereof represented by the following formula (3):



(3)

wherein R_1 and m have the same meanings as defined above and corresponding to the phenol or the nucleus-substituted derivative thereof and,

while using the phenol or the nucleus-substituted derivative thereof as a hydrogen acceptor and forming the cyclohexanone or the nucleus-substituted derivative thereof in the reaction system, reacting the cyclohexanone or the nucleus-substituted derivative thereof with aniline or a nucleus-substituted derivative thereof represented by the following formula (4):



(4)

wherein R_2 and n have the same meanings as defined above, wherein the catalyst is recovered and is used for a next batch of the reaction after adding new catalyst of the same noble metal of Group VIII of the periodic table and at least one cocatalyst selected from the group consisting of hydroxide, carbonate or bicarbonate of an alkali metal and/or an alkaline earth metal to the recovered catalyst wherein the amount of cocatalyst is about 2–30% by weight, in terms of the alkali metal and/or alkaline earth metal component based on the noble metal and wherein the amount of the new catalyst of the same noble metal of Group VIII is less than the amount of the new catalyst of the same noble metal of Group VIII in the absence of the addition of the cocatalyst to obtain the same selectivity of the diphenylamine or nucleus-substituted derivative thereof.

5,545,753

PROCESS FOR PREPARING ANILINES, CATALYSTS USED THEREFOR AND PROCESS FOR PREPARING SAME

Mitsuki Yasuhara; Yuuichirou Tatsuki; Mitsunori Nakamura, and Fujihisa Matsunaga, all of Ichihara, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

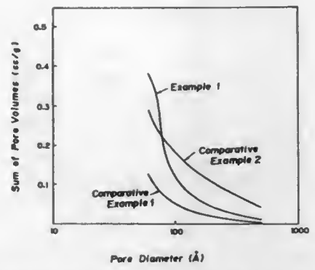
Continuation of Ser. No. 48,947, Apr. 12, 1993, which is a continuation of Ser. No. 660,269, Feb. 26, 1991, which is a continuation of Ser. No. 237,771, Jul. 6, 1988. This application Mar. 28, 1994, Ser. No. 218,694

Claims priority, application Japan, Nov. 17, 1986, 61-273497; Nov. 17, 1986, 61-273498

Int. Cl.[6] C07C *85/06*

U.S. Cl. 564—402 **14 Claims**

1. A process for preparing an aniline compound in improved yield by reaction of a phenol compound with an amination agent, characterized by reacting the phenol compound with the amination agent in the presence of low alkali and weakly acidic alumina catalyst having an alkali metal oxide content of less than 0.5% by weight, said alumina catalyst being obtained by firing an alumina



catalyst containing in a dry state more than 80% by weight of alumina and less than 20% by weight of silica at a temperature of 700°–900° C. following by acid treatment whereby the yield of aniline compound is improved as a result of said firing and acid treatment.

5,545,754

PROCESS FOR THE PREPARATION OF P-AMINO-PHENOLS

Alexander Klausener, Stolberg; Heinz Landscheidt, Duisburg, and Heinz-Ulrich Blank, Odenthal-Glöbusch, all of, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

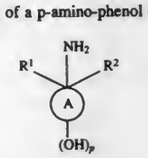
Filed Nov. 26, 1991, Ser. No. 798,681

Claims priority, application Germany, Dec. 13, 1990, 40 39 862.5

Int. Cl.[6] C07C *209/22*

U.S. Cl. 564—418 **1 Claim**

1. In the preparation of a p-amino-phenol of the formula

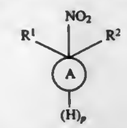


in which

A represents the benzene or naphthalene nucleus,

p indicates the p-position relative to the amino group and

R^1 and R^2 independently of one another denote hydrogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, carboxyl, CO—C_1–C_4-alkyl or halogen, by catalytic hydrogenation in an aqueous-acid reaction medium at a temperature from 50° to 160° C. of an aromatic nitro compound of the formula



in the presence of a catalyst comprising a noble metal of the platinum group or a compound thereof the improvement which comprises effecting the hydrogenation in the presence of a water-miscible organic solvent selected from the group consisting of polyols having 1 to 4 C atoms, the mono- and dimethyl and mono- and diethyl ethers of such polyols, water-soluble cyclic ethers, water-soluble ketones, and water-soluble lower carboxylic acid amides.

5,545,755

THERAPEUTICALLY USEFUL 2-AMINOTETRALIN DERIVATIVES

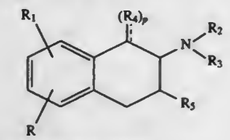
Chiu-Hong Lin; Susanne R. Haadsma-Svensson, both of Portage; Montford F. Piercey; Arthur G. Romero, both of Kalamazoo, and William H. Darlington, Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 196,688, Feb. 15, 1994, abandoned, which is a division of Ser. No. 850,136, Mar. 12, 1992, abandoned, which is a continuation-in-part of Ser. No. 596,923, Oct. 15, 1990, abandoned, which is a continuation-in-part of Ser. No. 360,190, May 31, 1989, abandoned. This application Jan. 18, 1995, Ser. No. 374,500

Int. Cl.[6] C07C *211/60*

U.S. Cl. 564—428 **6 Claims**

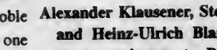
1. A compound having the formula I



I

wherein R is hydrogen or halogen,

wherein R_1 is



wherein R_2 and R_3 are independently

(a) —hydrogen,
(b) —(C_1–C_8) alkyl,
(c) —(C_2–C_8) alkenyl,
(d) —(C_2–C_8) alkynyl,
(e) —$(CH_2)_m$—(C_3–C_8)cycloalkyl,
(f) —$(CH_2)_m$—(C_3–C_8)cycloalkenyl,
(g) —$(CH_2)_m$-aryl,

with the proviso that one of R_2 and R_3 must be selected from (c), (d), (e), (f) or (g),

wherein R_4 and R_5 are independently

(a) —hydrogen,
(b) —(C_1–C_8)alkyl,
(c) —(C_2–C_8)alkenyl,
(d) —(C_2–C_8)alkynyl,
(e) —(CH_2—m—(C_3–C_8)cycloalkyl,
(f) —$(CH_2)_m$—(C_3–C_8)cycloalkenyl,
(g) —$(CH_2)_m$-aryl,
(h) —$(CH_2)_m$—CO_2R_6,
(i) —$(CH_2)_m$—OR_6,

wherein R_6, R_7 and R_8 are independently

(a) —hydrogen,
(b) —(C_1–C_4)alkyl,
(c) —(C_1–C_4)alkenyl,
(d) —(C_3–C_8)cycloalkyl

m is 0–4, and

p is 0–1.

5,545,756

HYDROGENATION OF AROMATIC AMINES USING MIXED METAL OXIDE SUPPORT

Gamini A. Vedage, Bethlehem, and John N. Armor, Orefield, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Sep. 14, 1994, Ser. No. 306,069

Int. Cl.[6] C09C *209/72*

U.S. Cl. 564—450 **20 Claims**

1. In a process for the catalytic hydrogenation of aromatic amines to their ring hydrogenated counterparts, by contacting the aromatic amine with hydrogen in the presence of a rhodium catalyst, the improvement which comprises effecting said hydrogenation utilizing a catalyst comprising rhodium carried on a mixed metal support selected from the group consisting of $TiAl_2O_5$, $TiSrO_3$ and $TiSiO_4$, wherein $TiSiO_4$ is formed by the reaction of a titanium alkoxide with a silicon alkoxide.

5,545,757

PRODUCTION OF ETHANOLAMINES

Hans Hammer, Mannheim, and Werner Reutemann, Bobenheim-Roxheim, both of, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Mar. 17, 1995, Ser. No. 413,128

Claims priority, application Germany, Mar. 26, 1994, 44 10 610.6

Int. Cl.[6] C07C *209/60*

U.S. Cl. 564—475 **10 Claims**

1. A process for producing mixtures of mono-, di- and triethanolamine by reacting ammonia and ethylene oxide in a cooled tubular reactor at temperatures from 110° to 160° C. and at pressures from 50 to 120 bar, the molar ratio of ammonia to ethylene oxide being from 1:1 to 100:1 while using ammonia in the form of a 60 to 99.99% strength aqueous solution, in which the reaction is carried out by the steps comprising:

initially introducing only part of the ethylene oxide mixed with ammonia at the upstream end of the reactor; and

subsequently adding from 1 to 80% of the total ethylene oxide in from one to ten aliquots over from 10 to 70% of the total length of the tubular reactor.

5,545,758

PROCESS FOR THE PREPARATION OF DIISOPINOCAMPHEYLCHLOROBORANE

Anthony O. King, Hillsborough; Robert D. Larsen, Bridgewater; Thomas R. Verhoeven, Cranford, and Mangzhu Zhao, Edison, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 11, 1994, Ser. No. 289,077

Int. Cl.[6] C07F *5/02*

U.S. Cl. 568—6 **3 Claims**

1. A process for the preparation of diisopinocampheylchloroborane which comprises:

contacting sodium borohydride and α-pinene with boron trichloride at a temperature of between about –40° and about 0° C., in a polyoxygenated ether solvent; and

subsequently warming the reaction mixture to a temperature of between about 40° to about 60° C. to provide a composition containing diisopinocampheylchloroborane.

5,545,759

METHOD OF PRODUCING TRIS(PENTAFLUOROPHENYL)BORANE USING PENTAFLUOROPHENYL ALKALI METAL SALT PREPARED FROM PENTAFLUOROBENZENE

Yoshihiko Ikeda, Shinnanyo; Takeo Yamane, Ogori-machi; Eiichi Kaji, and Kenji Ishimaru, both of Shinnanyo, all of, Japan, assignors to Tosoh Akzo Corporation, Tokyo, Japan

Continuation of Ser. No. 171,617, Dec. 22, 1993, abandoned. This application Jan. 27, 1995, Ser. No. 379,026

Claims priority, application Japan, Dec. 28, 1992, 4-361476

Int. Cl.[6] C07F *5/02*

U.S. Cl. 568—6 **5 Claims**

1. A process for preparing tris(pentafluorophenyl)borane represented by the formula

$$(C_6F_5)_3B \qquad \text{(VII)},$$

or a complex of tris(pentafluorophenyl)borane coordinated with an ether type solvent, selected from the group consisting of diethyl

ether, dipropyl ether, diisopropyl ether, dibutyl ether and diisoamyl ether comprising reacting 1 equivalent of pentafluorobenzene of the formula

C_6HF_5 (I),

and 0.5 to 1.5 equivalents of an organometallic compound of the formula

RM (II)

wherein M denotes an alkali metal ion, R denotes a hydrocarbon group with carbon atoms of 1 to 10 and the said hydrocarbon group may contain functional groups having no influence on the reaction, at a temperature range from −120° to 80° C. in an ether type solvent, a hydrocarbon type solvent or a mixed solvent containing both the ether type solvent and the hydrocarbon type solvent to generate a pentafluorophenyl alkali metal salt of the formula

C_6F_5M (III)

wherein M denotes an alkali metal ion; then reacting 2.1 to 3.9 equivalents of an alkali metal salt of the formula III at a temperature of from −120° to 80° C. with 1 equivalent of a boron compound or a 1:1 complex of a boron compound with an ether type solvent, said boron compound being of the formula

BX_3 (IV)

wherein X denotes a halogen atom, a substituent represented by a following general formula

OR (V)

wherein R denotes a hydrocarbon group with carbon atoms of 1 to 10 and said hydrocarbon may contain functional groups having no influence on the reaction, or a substituent represented by the formula

NR'R" (VI)

wherein R' and R" each denote a hydrocarbon group have 1 to 20 carbon atoms, or hydrocarbon groups of 1 to 20 carbon atoms substituted by functional groups having no influence on the reaction, or R' and R" link one another to form a ring structure.

5,545,760

PROCESS FOR MAKING FLUORENONES

Marlin E. Walters, West Columbia; Richard P. Kolonko, and Richard M. Wehmeyer, both of Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 7, 1995, Ser. No. 384,908

Int. Cl.[6] C07C *45/36*

U.S. Cl. 568—321 **31 Claims**

1. A process for the oxidation of a fluorene compound to a corresponding fluorenone compound, comprising treating the fluorene compound with an oxidizing gas in the presence of a solid alkali metal or alkaline earth metal oxide or hydroxide or a concentrated aqueous solution thereof, containing a maximum of 50% to 75% by weight of water, in a reaction mixture containing a heterocylic nitrogenous solvent, wherein the reaction mixture is free of a phase transfer agent, for a time sufficient and at a temperature sufficient to convert the fluorene compound to the fluorenone compound.

5,545,761

METHOD OF MAKING KETOISOPHORONE VIA OXIDATION OF ISOPHORONE WITH TERT-BUTYL HYDROPEROXIDE

Bryan T. Dawson, and Joseph Pugach, both of Monroeville Boro, Pa., assignors to Aristech Chemical Corporation, Pittsburgh, Pa.

Filed Nov. 14, 1994, Ser. No. 337,716

Int. Cl.[6] C07C *45/28;45/34*

U.S. Cl. 568—342 **13 Claims**

1. A method of making ketoisophorone which comprises reacting isophorone with a hydroperoxide in an oxidation resistant solvent and an consisting essentially of oxygen atmosphere, and in the presence of a catalyst selected from the group consisting of group IB, VB, VIB, and VIII metal catalysts.

5,545,762

PROCESS FOR PREPARING 1-CYCLOPROPYLALKANE-1,3-DIONES

Jürgen Muhr, Alfter, Germany, assignor to Huels Aktiengesellschaft, Marl, Germany

Filed Oct. 20, 1994, Ser. No. 326,371

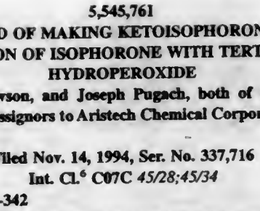
Claims priority, application Germany, Feb. 9, 1994, 44 04 059.8

Int. Cl.[6] C07C *45/45*

U.S. Cl. 568—346 **20 Claims**

1. A process for preparing a 1 -cyclopropylalkane-1,3-dione of formula IV, comprising reacting a cyclopropyl ketone of formula III, an alkali metal alcoholate of formula II and a carboxylic ester of the formula I as shown below





IV

wherein R^1, R^2 and R^4 to R^8 are, independently, hydrogen, an alkyl group having from 1 to 6 carbon atoms or an optionally substituted aryl group having from 6 to 10 carbon atoms,

R^3 is an alkyl group having from 1 to 10 carbon atoms,

M is an alkali metal, and

R^9 is hydrogen or an alkyl group having from 1 to 20 carbon atoms,

wherein said reacting step is conducted for about 1–4 hours and is carried out at a temperature of not more than 50° C. in a solvent selected from the group consisting of aromatic hydrocarbons, aliphatic hydrocarbons, araliphatic hydrocarbons, aromatic halohydrocarbons, ethers, polyethers, esters which are resistant to re-esterification and hydrolysis, amides, amines, said cyclopropyl ketone of formula III, said carboxylic ester of formula I and mixtures thereof which contains from 0 up to 0.7 mol of alcohol per mol of alkali metal of alcoholate.

5,545,763

1-OXO-SUBSTITUTED AND UNSUBSTITUTED ISOBUTYL-4-ETHOXY-BENZENES AND MIXTURES THEREOF WITH BICYCLOPENTADIENE DERIVATIVES, USES OF SAME IN PERFUMERY AND METHODS FOR PREPARING SAME

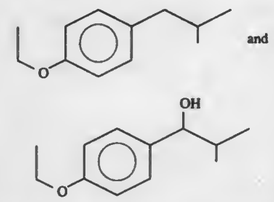
Michael G. Monteleone, Hazlet; Richard A. Weiss, Pine Brook; Mark D. Evans, Plainsboro, and Marie R. Hanna, Keyport, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 299,966, Sep. 2, 1994, Pat. No. 5,462,923. This application Apr. 25, 1995, Ser. No. 428,420

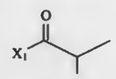
Int. Cl.[6] C07C *41/18*

U.S. Cl. 568—630 **3 Claims**

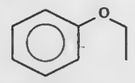
1. A process for preparing a mixture of compounds having the structures:



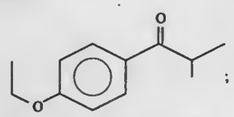
comprising the steps of first reacting a compound having the structure:



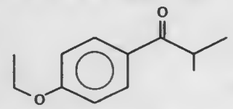
wherein X_1 represents chloro, bromo or hydroxy with the compound having the structure:



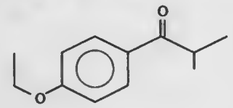
in the presence of a Lewis acid catalyst at a temperature of from 0° up to 40° C. in order to form the substantially pure compound having the structure:



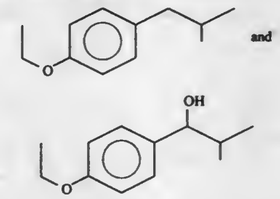
separating the compound having the structure:



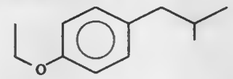
from the reaction mass; and then reacting via a reduction reaction the compound having the structure:



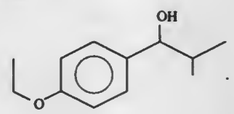
with hydrogen in the presence of a hydrogenation catalyst in an inert solvent at a temperature in the range of from about 105° up to about 140° C. and gauge pressure of from about 200 up to about 500 psig and in the presence of a proton donor whereby a mixture of compounds having the structures:



is formed with 85 mole percent of the reaction product being the compound having the structure:



and 15 mole percent of the reaction product being the compound having the structure:



5,545,764

PROCESS FOR THE CONTINUOUS PRODUCTION OF HIGH PURITY BISPHENOL A

Klaus Berg; Claus Wulff; Georg Malamet, all of Krefeld; Alfred Eitel, Dormagen, all of, Germany; Kurt P. Meurer, Antwerpen, Belgium; Tony van Osselaer, St: Niklaas/Belsele, Belgium, and Jürgen Hinz, Brasschaat, Belgium, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 1, 1995, Ser. No. 396,613

Claims priority, application Germany, Mar. 10, 1994, 44 08 008.5

Int. Cl.[6] C07C *37/68*

U.S. Cl. 568—724 **2 Claims**

1. A process for recovering bisphenol A of a purity of 99.75 to > 99.94 wt. % and with a Hazen color value of 5 to 10 from the reaction solution obtained on production of bisphenol A from acetone and phenol in the presence of sulphonic acid ion exchangers, wherein

1) the reaction solution is adjusted to a content of p,p-bisphenol A in phenol of 25 to 35 wt. % at a temperature of 65° to 75° C.; and

2) is then fed at this temperature into an n-stage cascade of crystallizers connected in series with a number of crystallization reactors of n>1; and

3) is circulated in each crystallization reactor at a circulation rate of at least 500 m^3/h with a residence time of the mixture in each crystallization reactor of at least three hours; and

4) a temperature gradient from 70° C. in the first crystallization reactor to 40° C. in the final crystallization reactor is arranged over the entire crystallization cascade; and

5) p,p-bisphenol A adduct crystallisate with a p,p-BPA content of approximately 60% and a phenol content of approximately 40% is precipitated inside the crystallization reactors, then filtered out, phenol is removed and p,p-bisphenol is recovered.

5,545,765

COBALT-CATALYZED PROCESS FOR PREPARING 1,3-PROPANEDIOL USING A LIPOPHILIC QUATERNARY ARSONIUM SALT PROMOTER

Lynn H. Slaugh; Joseph B. Powell, both of Houston; Thomas C. Forschner, Richmond; Thomas C. Semple, Friendswood, and Paul R. Welder, Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Sep. 30, 1994, Ser. No. 316,661
Int. Cl.[6] C07C 27/04;45/00
U.S. Cl. 568—862 16 Claims

1. A process for preparing 1,3-propanediol comprising the steps of:

(a) contacting, at a temperature within the range of about 50° to about 100° C. and a pressure within the range of about 500 to about 5000 psig, ethylene oxide with carbon monoxide and hydrogen in an essentially non-water-miscible solvent in the presence of a non-phosphine-ligated cobalt catalyst and an effective amount of a lipophilic arsonium salt promoter under reaction conditions effective to produce an intermediate product mixture comprising less than 15 wt % 3-hydroxypropanal;

(b) adding an aqueous liquid to said intermediate product mixture and extracting into said aqueous liquid a major portion of the 3-hydroxypropanal at a temperature less than about 100° C. to provide an aqueous phase comprising 3-hydroxypropanal in greater concentration than the concentration of 3-hydroxypropanal in the intermediate product mixture, and an organic phase comprising at least a portion of the cobalt catalyst or a cobalt-containing derivative thereof and at least a portion of the lipophilic arsonium salt;

(c) separating the aqueous phase from the organic phase;

(d) contacting the aqueous phase comprising 3-hydroxypropanal with hydrogen in the presence of a hydrogenation catalyst at a pressure of at least about 100 psig and a temperature during at least a portion of the hydrogenation step of at least about 40° C. to provide a hydrogenation product mixture comprising 1,3-propanediol;

(e) recovering 1,3-propanediol from the hydrogenation product mixture; and

(f) returning at least a portion of the organic phase comprising the cobalt compound and lipophilic arsonium salt to the process of step (a).

5,545,766

COBALT-CATALYZED PROCESS FOR PREPARING 1,3-PROPANEDIOL USING A LIPOPHILIC BIDENTATE PHOSPHINE PROMOTOR

Joseph B. Powell; Lynn H. Slaugh, both of Houston; Thomas C. Forschner, Richmond; Thomas C. Semple, Friendswood, and Paul R. Welder, Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Sep. 30, 1994, Ser. No. 316,668
Int. Cl.[6] C07C 29/36
U.S. Cl. 568—862 14 Claims

1. A process for preparing 1,3-propanediol comprising the steps of:

(a) contacting, at a temperature within the range of about 50° to about 100° C. and a pressure within the range of about 500 to about 5000 psig, ethylene oxide with carbon monoxide and hydrogen in an essentially non-water-miscible solvent in the presence of an effective amount of a non-phosphine-ligated cobalt catalyst and an effective amount of a lipophilic bidentate phosphine promoter under reaction conditions effective to produce an intermediate product mixture comprising less than 15 wt% 3-hydroxypropanal;

(b) adding an aqueous liquid to said intermediate product mixture and extracting into said aqueous liquid at least a portion of the 3-hydroxypropanal at a temperature less than about 100° to provide an aqueous phase comprising 3-hydroxypropanal in greater concentration than the concentration of 3-hydroxypropanal in the intermediate product mixture, and an organic phase comprising at least a portion of the cobalt catalyst or a cobalt-containing derivative thereof and a major portion of the lipophilic bidentate phosphine;

(c) separating the aqueous phase from the organic phase;

(d) contacting the aqueous phase comprising 3-hydroxypropanal with hydrogen in the presence of a hydrogenation catalyst at a temperature during at least a portion of the hydrogenation step of at least about 40° C. to provide a hydrogenation product mixture comprising 1,3-propanediol;

(e) recovering 1,3-propanediol from the hydrogenation product mixture; and

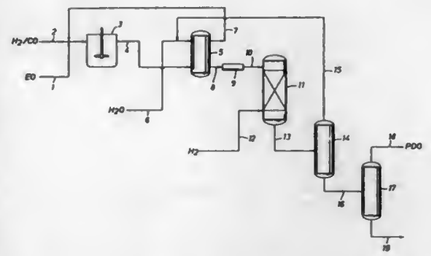
(f) returning at least a portion of the organic phase comprising the cobalt compound and lipophilic bidentate phosphine to the process of step (a).

5,545,767

PROCESS FOR PREPARING 1,3-PROPANEDIOL

Paul R. Welder; Joseph B. Powell; Lynn H. Slaugh, all of Houston; Thomas C. Forschner, Richmond, and Thomas C. Semple, Friendswood, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Sep. 30, 1994, Ser. No. 316,679
Int. Cl.[6] C07C 27/20;45/49;47/17
U.S. Cl. 568—867 16 Claims



1. A process for preparing 1,3-propanediol comprising the steps of:

(a) contacting, at a temperature within the range of about 50° to about 100° C. and a pressure within the range of about 500 to about 5000 psig, ethylene oxide with carbon monoxide and hydrogen in an essentially non-water-miscible solvent in the presence of an effective amount of a non-phosphine ligated cobalt hydroformylation catalyst and an effective amount of a lipophilic phenol promoter under reaction conditions effective to produce an intermediate product mixture comprising less than 15 wt % 3-hydroxypropanal;

(b) adding an aqueous liquid to said intermediate product mixture and extracting into said aqueous liquid a major portion of the 3-hydroxypropanal at a temperature less than about 100° C. to provide an aqueous phase comprising 3 -hydroxypropanal in greater concentration than the concentration of 3 -hydroxypropanal in the intermediate product mixture, and an organic phase comprising at least a portion of the cobalt catalyst or a cobalt-containing derivative thereof and at least a portion of the lipophilic phenol;

(c) separating the aqueous phase from the organic phase;

(d) contacting the aqueous phase comprising 3-hydroxypropanal with hydrogen in the presence of a hydrogenation catalyst at a pressure of at least about 100 psig and a temperature during at least a portion of the hydrogenation step of at least about 40° C. to provide a hydrogenation product mixture comprising 1,3-propanediol;

(e) recovering 1,3-propanediol from the hydrogenation product mixture; and

(f) returning at least a portion of the organic phase comprising the cobalt catalyst or a cobalt-containing derivative thereof and lipophilic phenol to the process of step (a).

5,545,768

PROCESS FOR THE PREPARATION OF CHLOROFLURONITROBENZENES AND DIFLUORONITROBENZENES

Theodor Papenfus, Frankfurt am Main; Andreas Kanschick-Conradsen, Gernsheim/Rhein, and Wilfried Pressler, Kelkheim/Taunus, all of, Germany, assignors to Hoechst AG, Germany

PCT No. PCT/EP91/01079, § 371 Date Dec. 22, 1992, § 102(e) Date Dec. 22, 1992, PCT Pub. No. WO91/00270, PCT Pub. Date Jan. 9, 1992
PCT Filed Jun. 8, 1991, Ser. No. 958,107
Claims priority, application Germany, Jun. 25, 1990, 40 20 130.9; Aug. 31, 1990, 40 27 591.4
The portion of the term of this patent subsequent to Oct. 31, 2012, has been disclaimed.
Int. Cl.[6] C07C 205/12
U.S. Cl. 568—938 13 Claims

1. A process for the preparation of a chlorofluorinitrobenzene or a difluoronitrobenzene which comprises:

heating a dichloronitrobenzene, in excess and in the essential absence of solvent, to a reaction temperature of not more than 200° C. with an alkali metal fluoride having a total water content of about 0.2 to about 2.5% by weight, in the presence of, as a catalyst, a quaternary ammonium or quaternary phosphonium salt or a crown ether or polyethylene glycol dimethyl ether or a mixture thereof.

5,545,769

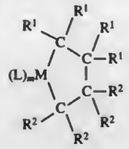
PROCESS FOR THE MANUFACTURE OF SELECTED HALOGENATED HYDROCARBONS CONTAINING FLUORINE AND HYDROGEN AND COMPOSITIONS PROVIDED THEREIN

Ralph T. Baker, Wilmington; Richard P. Beatty, Newark; William B. Farnham, Hockessin, all of Del., and Robert L. Wallace, Jr., Aston, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 29, 1994, Ser. No. 315,025
Int. Cl.[6] C07C 19/08;45/65;69/63;22/08
U.S. Cl. 570—134 18 Claims

1. A process for the manufacture of a product compound of the formula $HC(R^1)_2C(R^1)_2C(R^2)_2C(R^2)_2H$ wherein each R^1 and R^2 is independently selected from the group consisting of F, $—CF_3$, $—C_2F_5$ and $—CF_2CF_2CF_2CF_3$, provided that at least one R^1 is F, comprising:

reacting a metallacycle of the formula



wherein R^1 and R^2 are as defined above, and wherein M is a metal selected from the group consisting of Group 8 metals, Group 9 metals, and Group 10 metals, L is a ligand selected from the group consisting of Group 14 ligands, Group 15 ligands, and Group 16 ligands, and m is an integer from 1 to 4, in the liquid phase with hydrogen.

5,545,770

PROCESS FOR MANUFACTURE OF HIGH PURITY 1, 1-DICHLOROTETRAFLUOROETHANE

V. N. Mallikarjuna Rao, Wilmington, Del., assignor to E.I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 146,335, Nov. 1, 1993, abandoned.
This application May 8, 1995, Ser. No. 437,195
Int. Cl.[6] C07C 19/08;17/08
U.S. Cl. 570—151 19 Claims

1. A process for producing a product comprising 1,1-dichlorotetrafluoroethane substantially free of 1,2-dichlorotetrafluoroethane, comprising the steps of:

(i) contacting a mixture of perhalogenated hydrocarbons which is essentially free of 1,2-dichlorotetrafluoroethane and comprises from 20 to 80 mole percent 1,1,1-trichlorotrifluoroethane and from 5 to 80 mole percent of at least one compound selected from the group consisting of tetrachloroethylene, pentachlorofluoroethane, tetrachloro-1,2-difluoroethane and tetrachloro-1,1-difluoroethane with hydrogen fluoride and optionally chlorine, provided that when chlorine is present contact is in the vapor phase and when the mixture comprises tetrachloroethylene chlorine is supplied in a chlorine to tetrachloroethylene mole ratio of at least 1:2, over a fluorination catalyst at an elevated temperature no higher than 375° C., to provide a product mixture comprising 1,1,2-trichlorotrifluoroethane and dichlorotetrafluoroethane wherein the ratio of 1,2-dichlorotetrafluoroethane to 1,1-dichlorotetrafluoroethane is less than about 1:50;

(ii) recovering said dichlorotetrafluoroethane from the product mixture;

(iii) isomerizing 1,1,2-trichlorotrifluoroethane from the product mixture to 1,1,1-trichlorotrifluoroethane in the presence of an isomerization catalyst, said isomerization catalyst being an aluminum trihalide catalyst prepared by micropulverizing an anhydrous aluminum trichloride to provide a surface area of greater than about 0.8 m^2/g and activating by treatment under agitation with at least about 10 grams of CCl_2FCClF_2 per gram of aluminum trichloride; and

(iv) recycling the 1,1,1-trichlorotrifluoroethane produced by the isomerization of step (iii) to step (i).

5,545,771

PROCESS FOR PREPARATION OF GEM-DIFLUOROALKANES

Toshiro Yamada, Kawasaki; Yasuo Imai, Tokyo, and Yasuhiro Mitsuda, Kawasaki, all of, Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

PCT No. PCT/JP93/00301, § 371 Date Sep. 14, 1994, § 102(e) Date Sep. 14, 1994, PCT Pub. No. WO93/19027, PCT Pub. Date Sep. 30, 1993
PCT Filed Mar. 12, 1993, Ser. No. 302,871
Claims priority, application Japan, Mar. 16, 1992, 4-090234
Int. Cl.[6] C07C 17/08
U.S. Cl. 570—164 16 Claims

1. A process for preparation of a gem-difluoroalkane which comprises

(A) adding a fluorinated alkane having a boiling point of −30° to 30° C. to a crude mixture containing allene, 1,2-butadiene or alkyne having 3 or 4 carbon atoms and a polymerizable olefin as an impurity, and distilling the mixture to remove the polymerizable olefin,

(B) reacting hydrogen fluoride with the fluorinated alkane and the allene, 1,2-butadiene or alkyne having 3 or 4 carbon atoms obtained in the above step to synthesize the gem-difluoroalkane, and

(C) distilling the reaction solution of the above (B) to obtain the gem-difluoroalkane.

5,545,772
PROCESS FOR THE PREPARATION OF 1,1,1-TRIFLUOROETHANE
Pascal Pennetreau, Rixensart, and Dominique Balthasart, Brussels, both of, Belgium, assignors to Solvay (Société Anonyme), Brussels, Belgium
Filed Sep. 25, 1995, Ser. No. 533,308
Claims priority, application France, Sep. 26, 1994, 94 11563
Int. Cl.[6] C07C *17/08*
U.S. Cl. 570—164 **7 Claims**

1. A process for the preparation of 1,1,1-trifluoroethane by reaction of vinylidene fluoride with hydrogen fluoride in the liquid phase, characterized in that the reaction is performed in the absence of catalyst.

5,545,773
LIQUID PHASE FLUORINATION PROCESS AND FLUORINATED ORGANIC PRODUCTS RESULTING THEREFROM
Bernard Berthe, Marseilles, France, assignor to Elf Atochem S.A., Puteaux, France
Continuation of Ser. No. 988,525, Dec. 10, 1992, abandoned. This application Jul. 25, 1994, Ser. No. 279,617
Claims priority, application France, Dec. 17, 1991, 91 15630
Int. Cl.[6] C07C *17/08;19/08*
U.S. Cl. 570—167 **6 Claims**

1. A process for carrying out liquid phase fluorination in the presence of a catalyst, comprising the steps of:
(a) reacting hydrofluoric acid and an organic starting material in a reaction zone to obtain a reaction mixture;
(b) flowing the reaction mixture to a separation zone having top, median and bottom levels, the reaction mixture being introduced at the median level;
(c) separating this reaction mixture into a light fraction and a heavy fraction, wherein the light fraction obtained from the top level comprises the desired fluorinated organic products and a portion of the sub-fluorinated organic products, and wherein the heavy fraction comprises the remainder of the sub-fluorinated products and the catalyst;
(d) partially condensing said light fraction to obtain a gaseous phase and a liquid phase, wherein the gaseous phase contains the desired fluorinated organic products and the liquid phase being returned as a reflux to the top of the separation zone;
(e) regulating recovery of a portion of said heavy fraction provided in step (c) to maintain the level of heavy products in said reaction zone substantially constant; and
(f) recycling the remainder of said heavy fraction provided in step (c) to the reaction zone.

5,545,774
PROCESS FOR THE MANUFACTURE OF 1,1,1,3,3,3-HEXAFLUOROPROPANE
V. N. Mallikarjuna Rao, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 8, 1994, Ser. No. 352,004
Int. Cl.[6] C07C *17/08*
U.S. Cl. 570—168 **10 Claims**

1. A process for producing 1,1,1,3,3,3-hexafluoropropane, comprising
contacting 1,1,1,3,3,3-hexachloropropane with hydrogen fluoride in the vapor phase at a temperature of from about 250° C. to 400° C. in the presence of a catalyst of trivalent chromium supported on carbon, said carbon having an ash content sufficiently low to produce $CF_3CH_2CF_3$ with a selectivity of at least about 70 percent based upon the amount of 1,1,1,3,3,3-hexachloropropane reacted with HF.

5,545,775
LIQUID PHASE PROCESS FOR THE PREPARATION OF 1,1-DIFLUOROETHANE
Alagappan Thenappan, Cheektowaga; Charles F. Swain, Williamsville, and Matthew H. Luly, Lancaster, all of N.Y., assignors to AlliedSignal Inc., Morris Township, N.J.
Filed Aug. 25, 1995, Ser. No. 519,446
Int. Cl.[6] C07C *17/093;17/20;19/08*
U.S. Cl. 570—168 **23 Claims**

1. A process for the preparation of 1,1-difluoroethane which comprises reacting 1,2-dichloroethane with at least two equivalents of anhydrous hydrogen fluoride in a liquid phase in the presence of at least one Lewis acid catalyst.

19. The process of claim 1 wherein the Lewis acid is tin(IV) chloride and is present in an amount of from about 8% to about 15% based on the weight of 1,2-dichloroethane; wherein the reaction is conducted at a temperature of from about 140° C. to about 145° C.; wherein the reaction is conducted for from about 3 hours to about 6 hours; wherein the mole ratio of hydrogen fluoride to 1,2-dichloroethane ranges from about 10:1 to about 12:1.

5,545,776
SYNTHESIS OF N-PERFLUOROOCTYL BROMIDE
Gilles Drivon, Saint-Martin-En-Haut, and Jacques Kervennal, Lyons, both of, France, assignors to Elf Atochem S.A., Puteaux, France
Continuation of Ser. No. 257,217, Jun. 8, 1994, abandoned, which is a continuation of Ser. No. 986,392, Dec. 7, 1992, abandoned. This application May 30, 1995, Ser. No. 453,931
Claims priority, application France, Dec. 20, 1991, 91 15877
Int. Cl.[6] C07C *19/07*
U.S. Cl. 570—174 **8 Claims**

1. Continuous process for the selective preparation of n-perfluorooctyl bromide, comprising reacting bromine in the gaseous phase with 1-hydroheptadecafluoro-n-octane $C_8F_{17}H$ in a $Br_2/C_8F_{17}H$ mole ratio between 0.5 and 2.5, at a temperature between 470° and about 510° C., and with a contact time between 5 and 60 seconds.

5,545,777
PROCESS FOR PRODUCING A HYDROGEN-CONTAINING 2,2-DIFLUOROPROPANE
Shinsuke Morikawa, Yokohama; Shunichi Samejima, Tokyo; Masaru Yoshitake, Yokohama; Hidekazu Okamoto, Yokohama; Keiichi Ohnishi, Yokohama, and Toshihiro Tanuma, Yokohama, all of, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan
Continuation of Ser. No. 968,247, Oct. 30, 1992, abandoned, which is a continuation of Ser. No. 857,118, Mar. 25, 1992, abandoned, which is a continuation of Ser. No. 573,121, Sep. 13, 1990, abandoned. This application Jul. 11, 1994, Ser. No. 272,622
Claims priority, application Japan, Feb. 2, 1989, 1-22542; Feb. 2, 1989, 1-22624; Feb. 3, 1989, 1-23746; Feb. 3, 1989, 1-23747; Feb. 3, 1989, 1-23748; Feb. 3, 1989, 1-23749
Int. Cl.[6] C07C *19/08*
U.S. Cl. 570—176 **2 Claims**

1. A process for producing a hydrogen-containing 2,2-difluoropropane of the following formula (2), which comprises subjecting a 2,2-difluoropropane of the following formula (1) to hydrogen reduction at a temperature of from 100° to 450° C. wherein the hydrogen reduction is conducted in a gas phase by hydrogen in the presence of a platinum group metal catalyst which contains at least one metal selected from the group consisting of Pt, Pd, Rh and Ru,

$$C_3H_aCl_bF_c \quad (1)$$

$$C_3H_{a+x}Cl_{b-y}F_{c-z} \quad (2)$$

wherein a, b, c, x, y and z are integers satisfying the following conditions:
$a \geq 0$, $4 \geq b \geq 1$, $6 \geq c \geq 2$, $x \geq 1$, $y \geq 1$, $z \geq 0$, $a+b+c=8$, $x=y+z$ $b-y=0$, and $c-z \geq 2$.

5,545,778
SINGLE STAGE PROCESS FOR PRODUCING HYDROFLUOROCARBONS FROM PERCHLOROETHYLENE
Hsueh S. Tung, Getzville; Addison M. Smith, Amherst, and Charles F. Swain, Williamsville, all of N.Y., assignors to AlliedSignal Inc., Morris County, N.J.
Filed May 25, 1994, Ser. No. 248,981
Int. Cl.[6] C07C *17/38;17/08*
U.S. Cl. 570—178 **20 Claims**

1. A process for the preparation of one or more of $CHClFCF_3$, CHF_2CClF_2 and CHF_2CF_3 which comprises reacting perchloroethylene with hydrogen fluoride in a vapor phase in the presence of a fluorination catalyst in a reaction vessel; and then distilling the reaction product to thereby produce a distillate comprising HCl, $CHClFCF_3$, CHF_2CClF_2 and CHF_2CF_3 and a minor amount of HF, and a bottoms product comprising perchloroethylene, hydrogen fluoride and organic by-products; and then carrying out a phase separation of the bottoms product to thereby substantially separate the hydrogen fluoride from a mixture of perchloroethylene and organic by-products.

5,545,779
PROCESS FOR THE HYDRODEHALOGENATION OF HALOGENATED BENZENES
Michael Pies, Duisburg; Josef Käsbauer, Wermelskirchen, and Helmut Fiege, Leverkusen, all of, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Oct. 6, 1994, Ser. No. 319,397
Claims priority, application Germany, Oct. 13, 1993, 43 34 792.4
Int. Cl.[6] C07C *17/00*
U.S. Cl. 570—204 **10 Claims**

1. A process for the dechlorination of one or more chlorinated benzenes selected from the group consisting of 1,4-dichlorobenzene, 1,2,3-, 1,2,4- and 1,3,5-trichlorobenzene and 1,2,3,4- 1,2,3,5- and 1,2,4,5-tetrachlorobenzene to form one or more benzenes having a lower degree of chlorination than said one or more chlorinated benzenes, which comprises contacting said one or more chlorinated benzenes with hydrogen in the presence of a catalyst prepared by applying $PdCl_2$, $PtCl_2$, $PtCl_4$ or a combination thereof to an aluminum or titanium dioxide support, at a temperature of 100° to 250° C.

5,545,780
PROCESS FOR THE PREPARATION OF VINYL CHLORIDE
Peter Schwarzmaier; Peter Häckl, both of Kastl; Manfred Stöger, and Ingolf Mielke, both of Burgkirchen, all of, Germany, assignors to Hoechst Aktiengesellschaft, Germany
Filed Feb. 8, 1995, Ser. No. 385,280
Claims priority, application Germany, Feb. 12, 1994, 44 04 510.7
Int. Cl.[6] C07C *21/00*
U.S. Cl. 570—226 **7 Claims**

1. A process for the preparation of vinyl chloride by thermal cracking of 1,2-dichloroethane, which comprises passing the effluent from a 1,2-dichloroethane cracking furnace into a radiometric measurement zone and passing high-energy radiation through said effluent; measuring the adsorption of said radiation; determining the conversion to vinyl chloride in said cracking furnace by the degree of adsorption of said radiation; and maintaining a desired conversion to vinyl chloride in said cracking furnace based upon said adsorption.

5,545,781
PROCESS FOR DEHYDROCHLORINATING 3,4-DICHLORO-1-BUTENE TO YIELD CHLOROPRENE
Michel Bandouin, St Genis les Ollières, and Jean-Pierre Tassara, Villeurbanne, both of, France, assignors to Enichem Elastomeres France S.A., Courbevole, France
Filed Sep. 19, 1994, Ser. No. 308,308
Claims priority, application France, Sep. 17, 1993, 93 11302
Int. Cl.[6] C07C *17/34*
U.S. Cl. 570—229 **13 Claims**

1. A process for producing chloroprene by dehydrochlorination of 3,4-dichloro-1-butene (DCB) comprising conducting the dehydrochlorination reaction in the presence of lime and a primary amine having the formula $R—NH_2$, in which R is a monofunctional C_1–C_{15} hydrocarbyl radical selected from the group consisting of linear or branched alkyl, alkylaryl, cyclohexyl, alkylcyclohexyl, cyclopentyl, and alkylcyclopentyl radicals.

5,545,782
METHOD FOR INHIBITING PREMATURE POLYMERIZATION OF VINYL AROMATIC MONOMERS
Roland A. E. Winter, Armonk, and Volker H. von Ahn, Mahopac, both of N.Y., assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.
Division of Ser. No. 383,279, Feb. 3, 1995, which is a continuation-in-part of Ser. No. 345,097, Nov. 28, 1994, abandoned. This application May 17, 1995, Ser. No. 443,051
Int. Cl.[6] C07C *7/20*
U.S. Cl. 585—5 **11 Claims**

1. A composition which comprises
(a) a vinyl aromatic compound, and
(b) an effective inhibiting mount, sufficient to prevent premature polymerization during distillation or purification of said vinyl aromatic compound, of a stable hindered nitroxyl compound used together with an effective amount of oxygen or air to enhance the inhibiting activity of the nitroxyl compound.

5,545,783
VULCANIZABLE LIQUID COMPOSITIONS
Thomas S. Coolbaugh, Morrisville; Frederick C. Loveless, Yardley, both of Pa.; Demetreos N. Matthews, Ewing, and Leslie R. Rudnick, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.
Division of Ser. No. 179,051, Jan. 7, 1994, Pat. No. 5,387,730, which is a division of Ser. No. 992,341, Dec. 17, 1992, Pat. No. 5,288,937, which is a continuation of Ser. No. 907,959, Aug. 6, 1992, Pat. No. 5,210,359, which is a division of Ser. No. 466,135, Jan. 16, 1990, Pat. No. 5,149,895. This application Feb. 3, 1995, Ser. No. 382,814
Int. Cl.[6] C07C *2/40;* C08F *297/04*
U.S. Cl. 585—12 **23 Claims**

1. A liquid block copolymer comprising at least three alternating blocks

$$(A)_x\text{-}(D)_y\text{-}(A)_x$$

wherein:
A is a copolymer of about 30 to about 70% by mole of at least one aryl-substituted olefin and about 30 to about 70% by mole of at least one conjugated diene having at least five (5), carbon atoms and the following formula



(1)

wherein R^1 - R^6 are each hydrogen or a hydrocarbyl group, provided that at least one of R^1-R^6 is a hydrocarbyl group and provided that the structure of the residual double bond in the polymerized block I has the following formula



(2)

wherein R^I, R^{II}, R^{III} and R^{IV} are each hydrogen or a hydrocarbyl group, provided that either both R^I and R^{II} are hydrocarbyl groups or both R^{III} and R^{IV} are hydrocarbyl groups;

D is a block polymer of a conjugated diene, different from the diene used to polymerize the block A, having at least four (4) carbon atoms and the following formula



(3)

wherein R^7-R^{12} are each hydrogen or a hydrocarbyl group, provided that the structure of the residual double bond in the polymerized block D has the following formula



(4)

wherein R^a, R^b, R^c and R^d are each hydrogen (H) or a hydrocarbyl group, provided that one of R^a or R^b is hydrogen, one of R^c or R^d is hydrogen and at least one of R^a, R^b, R^c or R^d is a hydrocarbyl group;

x is about 2 to about 30% wt. of the block copolymer, and y is about 40 to about 96% wt. of the block copolymer.

5,545,784

METHOD OF MODIFYING MOLECULAR SIEVES BY MEANS OF SOLID STATE ION EXCHANGE, AND A METHOD FOR HYDROGENATING OLEFINIC COMPOUNDS

Jens Weitkamp, Horo am Neckar; Stefan Ernst; Thomas Bock, both of Stuttgart; Thomas Kromminga, Worms; Akos Kiss, and Peter Kleinschmit, both of Hanau, all of, Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Germany

Division of Ser. No. 197,481, Feb. 16, 1994, Pat. No. 5,434,114. This application Apr. 11, 1995, Ser. No. 419,896

Claims priority, application Germany, Feb. 17, 1993, 43 04 821.8

Int. Cl.[6] C07C *5/03;5/08*

U.S. Cl. 585—250 **1 Claim**

1. A method for hydrogenating olefinic compounds to form alkanes comprising hydrogenating an olefinic compound by contacting said olefinic compound with hydrogen in the presence of a hydrogenation catalyst comprising a modified molecular sieve produced by a method comprising mixing a calcined and activated zeolite with a sufficient amount of a metal compound to form a solids mixture, heating said solids mixture in a current of inert gas to form a heated solids mixture, cooling said heated solids mixture to form a cooled solids mixture and subsequently reducing said cooled solids mixture in a current of hydrogen to produce small metal clusters from the cationically introduced metal, wherein said zeolite is a small-pored zeolite selected from the group consisting of zeolite ZSM-58, zeolite SAPO-42, zeolite Rho, and zeolite ZK-5.

5,545,785

PROCESS FOR PREPARING BISCYCLOPENTADIENYL COMPOUNDS

Richard Lisowsky, Kamen, Germany, assignor to Witco GmbH, Bergkamen, Germany

Filed Jan. 25, 1995, Ser. No. 377,901

Claims priority, application Germany, Jan. 26, 1994, 44 02 192.5

Int. Cl.[6] C07C *02/54*

U.S. Cl. 585—375 **6 Claims**

1. A process for preparing a biscyclopentadienyl compound of the general formula (1)



(1)

in which each Cp is a cyclopentadienyl or an indenyl radical; each R is selected from the group consisting of alkyl, phosphine, amino, alkylamino, dialkylamino, alkoxy-alkyl, aryl-alkyl and aryl-oxy-alkyl groups; $0 \leq a \leq 4$; and Q is a single-membered or multi-membered structural bridge between the Cp rings, wherein Q has the formula



wherein R^1 and R^2 are identical or different and each is a hydrogen atom, a C_1–C_{10}-alkyl group or C_6–C_{10}-aryl group; Z is carbon, silicon or germanium; and b is 1, 2, or 3; wherein the process comprises (a) reacting a compound of the formula CpR_a with one or more magnesium compounds of the formula $(R^3R^4)_cMg$, wherein R^3 and R^4 are each bonded to the Mg and each is, independently of one another, H or a C_1–C_{12}-alkyl radical and wherein c is 0 or 1, under conditions effective to form a compound of the formula $(CpR_a)_2Mg$; and, in a second step, (b) reacting said compound of formula $(CpR_a)_2Mg$ with one or more compounds of the formula QXX^1, wherein X and X^1 are identical or different and each is Cl, Br, I or —O—SO_2R^5 wherein R^5 is an alkyl radical having 1 to 10 carbon atoms or an aryl radical having 6–10 carbon atoms, under conditions effective to form said compound of formula (1).

5,545,786

METHOD FOR INHIBITING PREMATURE POLYMERIZATION OF VINYL AROMATIC MONOMERS

Roland A. E. Winter, Armonk, and Volker H. von Ahn, Mahopac, both of N.Y., assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Continuation-in-part of Ser. No. 345,097, Nov. 28, 1994, abandoned. This application Feb. 3, 1995, Ser. No. 383,279

Int. Cl.[6] C07C *5/10;7/20*

U.S. Cl. 585—435 **15 Claims**

1. A process for inhibiting the premature polymerization of a vinyl aromatic compound during distillation or purification which comprises

incorporating therein an effective inhibiting amount, sufficient to prevent premature polymerization during distillation or purification of said vinyl aromatic compound, of a stable hindered nitroxyl compound used together with an effective amount of oxygen or air to enhance the inhibiting activity of the nitroxyl compound.

5,545,787

PROCESS FOR DEHYDROGENATING HYDROCARBONS AND OXYGENATED HYDROCARBONS

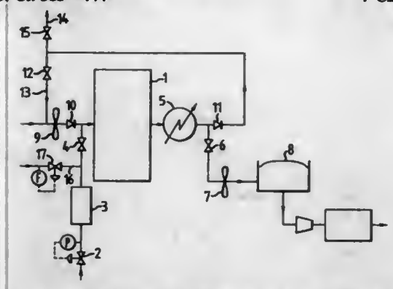
Jeremy B. Cooper, West Sussex; Jonathon C. Frost, Surrey, and Stephen R. Partington, Walton-on-Thames, all of, United Kingdom, assignors to BP Chemicals Limited, London, England

Continuation of Ser. No. 979,511, Nov. 20, 1992, abandoned. This application May 31, 1994, Ser. No. 252,051

Claims priority, application United Kingdom, Nov. 21, 1991, 9124874; Sep. 4, 1992, 9218821

Int. Cl.[6] C07C *5/333*

U.S. Cl. 585—444 **7 Claims**



1. A process for the dehydrogenation of a hydrocarbon feed, which process comprises the steps of:

(a) contacting the feed at elevated temperature in a reaction zone with a catalyst system comprising a dehydrogenation catalyst incapable of retaining hydrogen and a hydrogen retention agent, said catalyst system being selected from the group consisting of gold/ceria, silver/ceria, palladium/ceria, ruthenium/ceria, platinum/ceria, cobalt/ceria, copper/ceria, zinc/ceria, iron/ceria and nickel/ceria, to form a dehydrogenated product and hydrogen, wherein at least some of the hydrogen formed is at least one of adsorbed by the catalyst or hydrogen retention agent or reacted with the catalyst or hydrogen retention agent to reduce at least part of said catalyst or hydrogen retention agent;

(b) removing from the reaction zone the dehydrogenated product and any hydrogen which is not at least one of adsorbed by or reacted with the catalyst system;

(c) regenerating the catalyst system by at least one of removing at least some of the adsorbed hydrogen from the catalyst or hydrogen retention agent or oxidizing at least some of the reduced catalyst or hydrogen retention agent; and

(d) reusing the regenerated catalyst system from step (c) in step (a).

5,545,788

PROCESS FOR THE ALKYLATION OF BENZENE-RICH REFORMATE USING MCM-49

Jane C. Cheng, Clarksburg, and Tracy J. Huang, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 78,369, Jun. 16, 1993, Pat. No. 5,371,310, which is a continuation-in-part of Ser. No. 802,938, Dec. 6, 1991, Pat. No. 5,236,575, which is a continuation-in-part of Ser. No. 717,436, Jun. 19, 1991, abandoned. This application Dec. 6, 1994, Ser. No. 350,308

The portion of the term of this patent subsequent to Jun. 16, 2013, has been disclaimed.

Int. Cl.[6] C07C *2/66*

U.S. Cl. 585—467 **15 Claims**

1. A process for alkylating a reformate feedstream containing benzene, toluene, xylenes, and ethylbenzene, said process comprising:

1) contacting said reformate feedstream with a hydrocarbon stream comprising C_2–C_5 olefins in the presence of a catalyst comprising an active form of synthetic porous crystalline MCM-49 under benzene alkylation conditions whereby an effluent stream is produced having a benzene content at least 50 wt % less than that of said feedstream, an octane rating no less than that of said feedstream, and a total liquid product greater than that of said feedstream; and

2) collecting the gasoline boiling range fraction of said effluent stream.

5,545,789

PROCESS FOR THE DIMERIZATION OF A CONJUGATED DIENE

Henricus A. M. Duisters, Budel, Netherlands, and Johan G.D. Haenen, Hasselt, Belgium, assignors to DSM N.V., Heerlen, Netherlands

Filed May 5, 1995, Ser. No. 435,328

Claims priority, application Netherlands, Nov. 5, 1992, 9201931

Int. Cl.[6] C07C *2/52;2/20*

U.S. Cl. 585—508 **31 Claims**

1. A process for the dimerization of a conjugated diene using an iron triad metal nitrosyl halide, wherein the halide is either chlorine, bromine or iodine, in combination with a reducing agent, as catalyst, wherein the dimerization is carried out in the presence of added nitrogen monoxide (NO).

5,545,790

PROCESS FOR THE CATALYTIC CYCLODIMERIZATION OF CYCLIC OLEFINS

Margaret M. Wu, Skillman, N.J., and Yusheng Xiong, Newtown, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 9, 1993, Ser. No. 164,272

Int. Cl.[6] C07C *2/00*

U.S. Cl. 585—510 **9 Claims**

1. A process for the dimerization of norbornene to produce pentacyclo [8.2.1.$1^{4,7}$.$0^{2,9}$.$0^{3,8}$]-tetradecane with high stereoselectivity comprising:

contacting said norbornene with a reduced chromium oxide catalyst on a porous SiO_2 support under dimerization conditions whereby said [8.2.1.$1^{4,7}$.$0^{2,9}$.$0^{3,8}$]-tetradecane is produced comprising at least 90 weight percent of the exo-trans-exo isomer.

5,545,791

METHOD FOR THE CATALYTIC CONVERSION OF LOWER ALIPHATIC ALCOHOLS TO GASOLINE HYDROCARBONS

Shuji Sakuma; Kiminori Atsumi; Akira Inose, and Hideo Koyama, all of Tokyo, Japan, assignors to Kabushiki Kaisha Sangi, Tokyo, Japan

Division of Ser. No. 51,784, Apr. 26, 1993, abandoned. This application Apr. 15, 1994, Ser. No. 227,987

Claims priority, application Japan, Apr. 28, 1992, 4-134397; Jul. 24, 1992, 4-217498

Int. Cl.[6] C07C *1/00;1/20*

U.S. Cl. 585—639 **7 Claims**

1. In a method for cracking lower aliphatic alcohols having 1 to 4 carbon atoms to produce gasoline hydrocarbons wherein a lower aliphatic alcohol is contacted with a catalyst under suitable conversion conditions, the improvement comprising contacting the lower aliphatic alcohol with a catalyst composition comprising one or more metals or metal ions selected from the group consisting of Ti, Mn, Fe, Co, Ni, Cu, Pt, Ir, Rh, Ag, Zn, Al and Sn supported on at least one phosphate based compound selected from the group consisting of aluminium phosphate, zirconyl phosphate, magnesium phosphate, barium phosphate, zinc phosphate and calcium phosphate, wherein the metal or metal ion is present in the catalyst

composition in an amount of from 0.1 to 50% by weight of the phosphate based compound.

5,545,792

ISOMERIZATION CATALYST AND PROCESS

William L. Cox, Houston, Tex., assignor to Amoco Corporation, Chicago, Ill.

Filed Nov. 21, 1994, Ser. No. 342,509
Int. Cl.[6] C07C 5/25
U.S. Cl. 585—665 15 Claims

1. A process for producing an internal olefin of the formula



where R^1 is alkyl and R^2 is either a hydrogen atom or an alkyl and m is an integer of from 0 to 20 comprising contacting at a temperature of from about 100° C. to about 250° C., a vinyl or vinylidene olefin of the formula



where R^1, R^2 and m are as previously defined, with a catalytically effective amount of a catalyst mixture formed by controlled oxidation of aluminum trialkyl in an inert atmosphere in the presence of a cobalt salt of an organic carboxylic acid so that the aluminum trialkyl is converted by oxygen from the cobalt salt into an aluminum compound of the formula $R^3{}_nAl(OR^4)_p$ where R^3 arid R^4 are the same or different and are C_2–C_{20} alkyl, n is an integer from 0.75 to 2.25, and p is an integer from 0.75 to 2.25, the sum of n and p being 3, to produce said internal olefin.

5,545,793

SKELETAL ISOMERISATION PROCESS FOR OLEFINS USING AN ALUMINA-BASED COMPOUND

Christine Travers, Rueil Malmaison, and Jean-Pierre Burzynski, Sainte-Foy-Les-Lyons, both of, France, assignors to Institut Francais Du Petrole, Rueil Malmaison, France

Filed Dec. 21, 1994, Ser. No. 360,610
Claims priority, application France, Dec. 22, 1993, 93 15502
Int. Cl.[6] C07C 5/27
U.S. Cl. 585—671 26 Claims

1. A skeletal isomerisation process for olefins containing 4 to 20 carbon atoms, comprising passing a feedstock containing the olefins over a catalyst produced from an alumina-based compound, characterised in that said process is carried out at a temperature of between 300° C. and 570° C., a pressure of between 1 and 10 bars, a space velocity (volume of olefin feedstock per volume of catalyst per hour) of between 0.1 and 10 h^{-1}, in the presence of a quantity of water such that the water/olefinic hydrocarbon molar ratio is between 0 and 10, and in that the alumina-based compound is obtained by a process in which, in a first step, an alumina-based substance is treated with an aqueous emulsion of at least one polyorganosiloxane, the resulting product being heat treated in a second step.

5,545,794

METHOD FOR DECONTAMINATION OF RADIOACTIVE METAL SURFACES

Lane A. Bray, Richland, Wash., assignor to Battelle Memorial Institute, Richland, Wash.

Filed Jun. 19, 1995, Ser. No. 492,181
Int. Cl.[6] G21F 9/00
U.S. Cl. 588—1 17 Claims

1. A method for removing radioactive contaminants from a metal surface comprising:
(a) directing a stream of steam to said surface,
(b) introducing a solution of nitric acid and cerium in a plus four oxidation state into said stream,
(c) directing said stream and said solution to said surface.

5,545,795

METHOD FOR DECONTAMINATING RADIOACTIVE METAL SURFACES

Jozef Hanulik, Zürich, Switzerland, assignor to Deco-Hanulik AG, Switzerland

Continuation-in-part of Ser. No. 188,250, Jan. 28, 1994, Pat. No. 5,386,078. This application Aug. 2, 1994, Ser. No. 284,166
Int. Cl.[6] G21F 9/00
U.S. Cl. 588—2 12 Claims

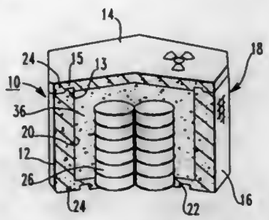
1. In a method for decontaminating radioactive metal surfaces with an aqueous solution containing acetic acid, the improvement comprising: contacting a radioactively contaminated metallic object with an aqueous solution comprising 0.05%–5.0% volume acetic acid until the acetic acid in contact with said radioactively contaminated metallic object is nearly completely stoichiometrically depleted thereby forming an aqueous, stoichiometrically depleted solution comprising radioactively charged metallic oxides and metallic hydroxides; repeating the contacting of the metallic object with an additional amount of the aqueous solution until the radioactively contaminated metallic object has a residual radioactivity level below a permissible threshold level; sedimenting out said radioactively charged metallic oxides and metallic hydroxides from the aqueous, stoichiometrically depleted solution, forming a radioactive sediment; separating the aqueous, stoichiometrically depleted solution from the radioactive sediment; and solidifying the radioactive sediment.

5,545,796

ARTICLE MADE OUT OF RADIOACTIVE OR HAZARDOUS WASTE AND A METHOD OF MAKING THE SAME

Bryan A. Roy, Lenoir City; Joseph D. Ingram, Farragit; Hubert W. Arrowsmith, and Timothy B. Ramsey, both of Knoxville, all of Tenn., assignors to Scientific Ecology Group, Oak Ridge, Tenn.

Filed Feb. 25, 1994, Ser. No. 201,946
Int. Cl.[6] G21F 9/00
U.S. Cl. 588—4 32 Claims



1. An article of manufacture, consisting essentially of:
(1) a waste material selected from the group consisting of radioactive waste, hazardous waste, and mixtures thereof, and

(2) concrete binder forming a matrix for the waste material, to provide the article, where the article is itself useful to isolate additional material selected from the group consisting of radioactive waste, hazardous waste, and mixtures thereof, where the article is made of different sized particles to provide high interior void volume filling, and the waste material used to make the article is fixed in the concrete matrix so that leaching of the waste material used to make the article is controlled.

5,545,797

METHOD OF IMMOBILIZING WEAPONS PLUTONIUM TO PROVIDE A DURABLE, DISPOSABLE WASTE PRODUCT

Rodney C. Ewing; Werner Lutze, both of Albuquerque, N.M., and William J. Weber, Richland, Wash., assignors to University of New Mexico, Albuquerque, N.M.

Filed Jan. 13, 1995, Ser. No. 372,204
Int. Cl.[6] G21F 9/00
U.S. Cl. 588—10 11 Claims

1. A method of atomic scale fixation and immobilization of plutonium to provide a durable, disposable waste product, said method including the steps of:
providing plutonium in the form of one of the group consisting of PuO_2 and $Pu(NO_3)_4$;
providing ZrO_2 and SiO_2;
mixing said PuO_2 or $Pu(NO_3)_4$, ZrO_2 and SiO_2 together to form a mixture;
cold pressing said mixture to form a pressed product; and
heating said pressed product under pressure to form said durable, disposable waste product in the form of $(Zr,Pu)SiO_4$.

5,545,798

PREPARATION OF RADIOACTIVE ION-EXCHANGE RESIN FOR ITS STORAGE OR DISPOSAL

Guy R. B. Elliott, 4515 Stockbridge Ave., NW., Albuquerque, N.M. 87120-5407

Continuation-in-part of Ser. No. 951,876, Sep. 28, 1992, abandoned. This application Oct. 24, 1994, Ser. No. 328,142
Int. Cl.[6] G21F 9/00
U.S. Cl. 588—15 20 Claims

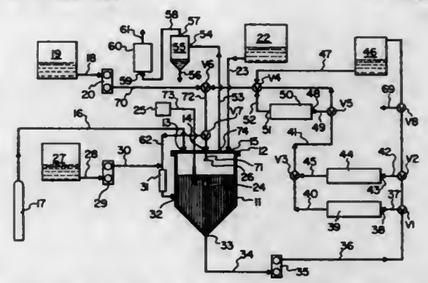
1. A method for use in preparation for disposal of radioactive ion-exchange resin that includes decaying atoms and cation exchange resin, comprising the steps of:
a) providing said radioactive ion-exchange resin,
b) providing anchor material that can supply anchoring ions that can react at least in part with both said decaying atoms and said cation-exchange resin,
c) providing a source of reactant water,
d) bringing together said radioactive ion-exchange resin, said anchor material, and said reactant water, thereby
e) allowing an initial portion from said anchoring ions to react at least in part with said cation-exchange resin that is included in said radioactive ion-exchange resin, thereby forming anchored cation-exchange groups on first-treated resin, and
f) allowing a second portion from said anchoring ions to react at least in part with said decaying atoms, whereby anchored decaying atoms are created,
g) supplying energy and a third portion of said anchoring ions at locations where organic/inorganic bonds join carbon atoms of said first-treated resin to said anchored cation-exchange groups on said first treated resin,
h) at said organic/inorganic bonds, allowing attachment of additional anchoring ions to said anchored cation-exchange groups, thereby forming firmly bonded radioactive inorganic material that is at least in part chemically freed from carbon atoms that had comprised said first treated resin, thereby
i) likewise, forming organic polymer residue that is at least in part chemically freed from said anchored cation-exchange groups, and
j) without oxidizing said organic polymer residue, and while supplying energy as needed, carrying out a bulk separation to create both physically separated organic material formed from said organic polymer residue and physically separated, largely inorganic, radioactive material, which may also include remnants of said organic polymer residue.

5,545,799

CHEMICAL DESTRUCTION OF TOXIC ORGANIC COMPOUNDS

Robert A. Ritter, 407–1274 Barclay Street, Vancouver, British Columbia, Canada

Filed Mar. 30, 1993, Ser. No. 39,889
Int. Cl.[6] A62D 3/00
U.S. Cl. 588—200 19 Claims



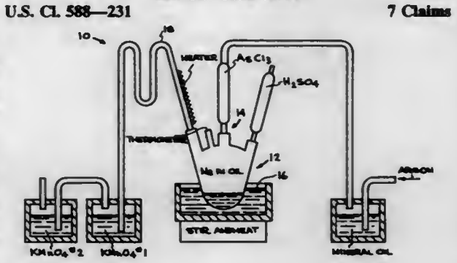
1. A sequential process for the destruction of a toxic organic chlorine-containing compound selected from the group consisting of the mustard gases, and the Lewisites, comprising the two sequential steps of: (A) first carrying out an oxidation reaction between said organic chlorine-containing compound and an oxidizing agent by adding said organic chlorine-containing compound to an aqueous solution of said oxidizing agent, while maintaining the temperature within the range of about 50° C. to about 90° C. and the pH starting at about 1 to 2 during said oxidation and terminating at about 5 to about 8, thereby to provide an oxidation reaction product solution; and (B) then converting said oxidation reaction product solution into inorganic compounds by carrying out a neutralization reaction by the addition of an aqueous solution of an alkali to a maximum final pH of about 11.

5,545,800

CLEAN PROCESS TO DESTROY ARSENIC-CONTAINING ORGANIC COMPOUNDS WITH RECOVERY OF ARSENIC

Ravindra S. Upadhye, Pleasanton, and Francis T. Wang, Danville, both of Calif., assignors to Regents of the University of California, Oakland, Calif.

Filed Jul. 21, 1994, Ser. No. 278,207
Int. Cl.[6] C22B 30/04
U.S. Cl. 588—231 7 Claims



1. A non-hazardous waste treatment process for recovering pure arsenic from arsenic-containing organic waste, comprising:

reducing arsenic-containing organic waste compounds to a solid metal arsenide in a nonaqueous organic solvent using excess amounts of a pure metal reducing agent selected from the group consisting of alkali metals, alkaline earth metals, aluminum, and iron, wherein the temperature for the reaction is limited by the boiling point of the solvent;

separating the arsenide from the solvent; reacting the arsenide with a strong acid to form arsine gas; and recovering pure arsenic product from the arsine gas.

5,545,801

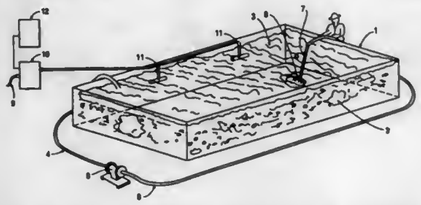
WAND INDUCTOR FOR REMEDIATION OF CONTAMINATED SOIL

A. Carl Fulton, Washington, Tex., assignor to Bio-Logical Solutions USA, Inc., Houston, Tex.

Filed Mar. 17, 1994, Ser. No. 214,473

Int. Cl.[6] A62D *3/00*

U.S. Cl. 588—249 **32 Claims**



11. A method of removing contamination from contaminated material, comprising:

(a) placing the contaminated material into a vessel;

(b) providing water to cover the contaminated material and produce a saturated solid phase with an overlying water column;

(c) injecting air into the water column to maintain the dissolved oxygen level at about the biological oxygen demand;

(d) periodically pumping liquid from the water column and discharging the liquid into the solid phase through a wand inductor outlet under pressure,

directing the discharge around the vessel to contact essentially the entire volume of material and produce a slurry, and allowing the slurry to separate; and

(e) repeating the pumping step and controlling conditions until essentially no contamination remains in the vessel.

5,545,802

APPARATUS AND PROCESS FOR TREATING MEDICAL FLUID WASTE CONTAINERS

Yves Narbonne, 6454 Beaucourt Street, Montreal-North Province of Quebec, Canada

PCT No. PCT/CA93/00351, § 371 Date Apr. 28, 1995, § 102(e) Date Apr. 28, 1995, PCT Pub. No. WO94/09830, PCT Pub. Date May 11, 1994

PCT Filed Aug. 27, 1993, Ser. No. 428,078

Claims priority, application United Kingdom, Oct. 30, 1992, 9222777

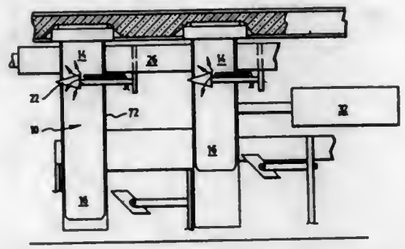
Int. Cl.[6] A62D *3/00*; A61L *2/18*

U.S. Cl. 588—249 **8 Claims**

1. Apparatus for treating a container containing a contaminated substance comprising a housing (**60**), means for holding the container, and means for severing the container to allow contents of the container to empty characterized in that:

said container is a medical fluid waste container;

said housing includes means (**64,68**) to seal said container in said housing;



said means for holding at least one said medical fluid waste container upright in said housing;

said means for severing comprise means for puncturing an upper portion of said at least one container thereby producing an upper puncture hole through which a disinfecting agent can be injected and means for cutting a lower portion of said at least one container thereby producing a lower hole through which both said agent and said medical fluid waste can drain; and in that the apparatus further comprises:

means for injecting said agent into said upper puncture hole; and

means for spraying an interior of said housing and an outside of said at least one container with said agent to prevent contamination of said housing interior and said container outside.

5,545,803

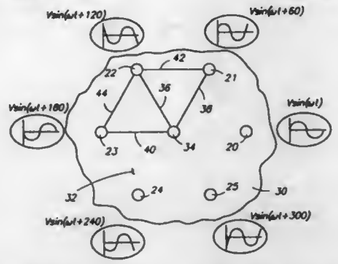
HEATING OF SOLID EARTHEN MATERIAL, MEASURING MOISTURE AND RESISTIVITY

William O. Heath; Phillip A. Gauglitz; Gautam Pillay; Theresa M. Bergsman; Eugene A. Eschbach; Steven C. Gobeen, all of Richland; Richard L. Richardson, West Richland; Janet S. Roberts, Pasco, and Ronald Schalla, Kennewick, all of Wash., assignors to Battelle Memorial Institute, Richland, Wash.

Continuation-in-part of Ser. No. 792,213, Nov. 13, 1991, Pat. No. 5,347,070. This application Jun. 30, 1994, Ser. No. 268,490

Int. Cl.[6] A62D *3/00*

U.S. Cl. 588—253 **64 Claims**



1. The method of treating waste sites and areas containing hazardous volatizable, semivolatizable, and non-volatizable contaminants, said method comprising:

inserting at least two electrodes through the soil surface into the ground proximate said waste site and at spaced points from one another in a substantially encompassing array to at least a portion of said waste site,

heating a region of ground adjacent the soil surface and therebelow to a temperature below the melting temperature thereof by applying at least one voltage to at least one of the electrodes, said temperature being greater than 100° and less than 1200° C., for an extended period of time in order to volatilize said material by applying a voltage between a pair of said electrodes adjacent the soil surface spanning said region for causing a current flow through said ground region therebetween of a value less than would melt the soil,

injecting conductive fluids into the earthen material;

adjusting the voltage within a selected range within the solid earthen material;

whereby said contaminants are treated within the waste site.

5,545,804

METAL FIXATION IN OILY WASTE CONTAMINATED SOIL USING MICROWAVE RADIATION ACTING ON IN-SITU PRODUCED COUPLING AGENT

Gary L. Archambeault, Sarnia; William J. Murphy, Brights Grove, both of, Canada, and Edmund M. Mackert, Baytown, Tex., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Feb. 28, 1995, Ser. No. 395,340

Int. Cl.[6] B09B *3/00*; E21B *36/00*

U.S. Cl. 588—253 **7 Claims**

1. A method for fixing heavy metal contaminants present in soil in the presence of hydrocarbons in the soil, said method comprising heating metal contaminated soil in the presence of hydrocarbons in the soil at elevated temperatures to convert at least a portion of the hydrocarbon in situ into carbon or coke and subjecting the heated soil containing in situ carbon or coke to microwave radiation at an energy level and for a time sufficient to at least partially fuse or melt vitrifiable material in the soil, thereby fixing the heavy metals present in the contaminated soil.

5,545,805

ENHANCED STABILIZATION OF LEAD IN SOLID RESIDUES USING ACID OXYANION AND ALKALI-METAL CARBONATE TREATMENT

Warren H. Chesner, Smithtown, N.Y., assignor to Chesner Engineering, PC, Commack, N.Y.

Filed Jun. 7, 1995, Ser. No. 485,634

Int. Cl.[6] B09B *3/00*

U.S. Cl. 588—256 **23 Claims**

1. A method of immobilizing leachable lead in a lead contaminated waste material containing hardness-producing elements selected from calcium and magnesium, wherein the method comprises the steps of contacting said waste material with an alkali-metal carbonate, in an amount sufficient to react with said hardness-producing elements, and a soluble polyprotic acid oxyanion in solution.

5,545,806

RANSGENIC NON-HUMAN ANIMALS FOR PRODUCING HETEROLOGOUS ANTIBODIES

Nils Lonberg, and Robert M. Kay, both of San Francisco, Calif., assignors to GenPharm International, Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 810,279, Dec. 17, 1991, and a continuation-in-part of Ser. No. 904,068, Jun. 23, 1992, which is a continuation-in-part of Ser. No. 853,408, Mar. 18, 1992, which is a continuation-in-part of Ser. No. 575,962, Aug. 31, 1990, abandoned, which is a continuation-in-part of Ser. No. 574,748, Aug. 29, 1990, abandoned. This application Dec. 16, 1992, Ser. No. 990,860

Int. Cl.[6] C12N *15/00*; C07H *21/64*; A61K *39/00*

U.S. Cl. 800—2 **14 Claims**

1. A method for producing heterologous immunoglobulins from a transgenic mouse, the method comprising:

contacting said transgenic mouse with a pre-selected antigen, said transgenic mouse having a genome comprising germline copies of at least one transgene having human sequences V_H segment genes, human D segment genes, and human J_H segment genes, wherein the transgene undergoes isotype switching from a transgene-encoded mu isotype to a transgene-encoded downstream human gamma isotype in vivo, wherein the number of nucleotides between the gene segments within the transgene that encode said mu and said human gamma isotypes is less than the number of nucleotides between the gene segments encoding human mu and said human gamma isotype in the human germline; and,

collecting heterologous human gamma immunoglobulins which bind to said preselected antigen.

5,545,807

PRODUCTION OF ANTIBODIES FROM TRANSGENIC ANIMALS

Azim M. Surani; Michael S. Neuberger, and Marianne Bruggemann, all of Cambridge, Great Britain, assignors to The Babraham Institute, Cambridge, United Kingdom, and Medical Research Council, London, United Kingdom

Continuation of Ser. No. 671,849, Jun. 12, 1991, abandoned. This application Aug. 5, 1994, Ser. No. 286,399

Claims priority, application United Kingdom, Oct. 12, 1988, 8823869

Int. Cl.[6] C12N *15/00*; A61K *39/00*; C07K *16/00*; C12P *21/08*

U.S. Cl. 800—2 **5 Claims**



1. A transgenic mouse which has had inserted into its genome DNA comprising human Vh, human Dh, human Jh segments and human mu segments of human immunoglobulins in germline configuration, such that said Vh, Dh, Jh and mu DNA segments in said germline configuration rearrange in said mouse to form a repertoire of immunoglobulins containing portions which correspond to said human DNA segments, and are expressed in said mouse to produce heavy chains, said heavy chains being capable of forming functional heavy chain-light chain immunoglobulins, said immunoglobulins being expressed in an amount allowing for recovery from suitable cells or body fluids of said mouse.

5,545,808

TRANSGENIC SALMONID FISH EXPRESSING EXOGENOUS SALMONID GROWTH HORMONE

Choy L. Hew, Thornhill, and Garth L. fletcher, St. John's, both of, Canada, assignors to HSC Research and Development Limited Partnership, Toronto, and Seabright Corporation, St. John's, both of, Canada

Continuation of Ser. No. 669,765, Mar. 15, 1991, abandoned. This application Mar. 10, 1994, Ser. No. 212,375

Int. Cl.[6] C12N *5/00;15/00*; C12P *21/06*

U.S. Cl. 800—2 **7 Claims**

4. A transgenic salmonid fish containing in its germline a salmonid growth hormone gene operably linked to a type 3 antifreeze protein promoter wherein said salmonid fish expresses said growth hormone gene at levels which increase the rate of its growth at least four times that of a salmonid fish lacking said growth hormone gene operably linked to said antifreeze protein promoter.

5,545,809

INBRED MAIZE LINE PHBG4

Gary L. Jensen, Hanapepe, Hi., assignor to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Jan. 31, 1995, Ser. No. 380,981
Int. Cl.[6] A01H *5/00;4/00;1/00;* C12N *5/04*
U.S. Cl. 800—200 13 Claims

1. Seed of maize inbred line designated PHBG4 and having ATCC Accession No. 97434.

5,545,810

Patent Not Issued For This Number

5,545,811

INBRED CORN LINE LH189

Richard J. Miller, Williamsburg, Iowa, assignor to Holden's Foundation Seeds Inc., Williamsburg, Iowa

Filed Dec. 2, 1994, Ser. No. 349,630
Int. Cl.[6] A01H *1/02;4/00;5/00;* C12N *5/04*
U.S. Cl. 800—200 10 Claims

1. Inbred corn seed designated LH189 having ATCC accession No. 75953.

2. A corn plant produced by growing the seed of claim 1.

5,545,812

INBRED MAIZE LINE PHNJ2

William B. Ambrose, Polk County, and Joseph K. Gogerty, Kossuth County, both of Iowa, assignors to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Jan. 31, 1995, Ser. No. 381,390
Int. Cl.[6] A01H *5/00;4/00;1/00;* C12N *5/04*
U.S. Cl. 800—200 13 Claims

1. Seed of maize inbred line designated PHNJ2 and having ATCC Accession No. 97485.

5,545,813

INBRED MAIZE LINE PHRF5

Todd E. Piper, Eau Claire County, Wis., assignor to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Jan. 31, 1995, Ser. No. 381,454
Int. Cl.[6] A01H *5/00;4/00;1/00;* C12H *5/04*
U.S. Cl. 800—200 13 Claims

1. Seed of maize inbred line designated PHRF5 and having ATCC Accession No. 97374.

5,545,814

INBRED MAIZE LINE PHFR8

Gerhart P. Weber, Moorhead, Minn., assignor to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Sep. 5, 1995, Ser. No. 523,571
Int. Cl.[6] A01H *5/00;4/00;1/00;* C12N *5/04*
U.S. Cl. 800—200 14 Claims

1. Seed of maize inbred line designated PHFR8 and having ATCC Accession No. 97436.

5,545,815

CONTROL OF FRUIT RIPENING IN PLANTS

Robert L. Fischer; Linda J. Margossian, both of El Cerrito, Calif., and Lola Penarrubia, Valencia, Spain, assignors to The Regents of the University of California, Oakland, Calif.

Filed Oct. 8, 1991, Ser. No. 772,032
Int. Cl.[6] A01H *5/00;* C12N *15/29;15/82;15/84*
U.S. Cl. 800—205 11 Claims

1. A tomato plant comprising a heterologous expression cassette comprising a plant promoter sequence operably linked to a nucleotide sequence comprising a substantially full length E8 gene, wherein the nucleotide sequence is linked to the promoter sequence in an antisense orientation.

5,545,816

PHYTOENE BIOSYNTHESIS IN GENETICALLY ENGINEERED HOSTS

Rodney L. Ausich, Glen Ellyn; Friedhelm L. Brinkhaus, Lisle; Indrani Mukharji, Evanston; John Proffitt, Oak Park; James Yarger, St. Charles, and Huei-Che B. Yen, Naperville, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Continuation of Ser. No. 785,569, Oct. 30, 1991, abandoned, and a continuation-in-part of Ser. No. 662,921, Feb. 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 562,674, Aug. 3, 1990, abandoned, which is a continuation-in-part of Ser. No. 525,551, May 18, 1990, abandoned, which is a continuation-in-part of Ser. No. 487,613, Mar. 2, 1990, abandoned. This application Jul. 19, 1993, Ser. No. 93,577
Int. Cl.[6] A01H *4/00;* C12N *15/31;15/82*
U.S. Cl. 800—205 15 Claims

4. A transformed higher plant whose genome contains

(i) a nucleotide sequence that encodes the structural gene for the *Erwinia herbicola* enzyme geranylgeranyl pyrophosphate synthase (E.C.2.5.1.29) present in a plasmid selected from the group consisting of pARC417BH having ATCC Accession No. 40755, pARC489B having ATCC Accession No. 40758 and pARC489D having ATCC Accession No. 40757 or a DNA variant that has at least 80 percent identity to said gene and hybridizes with said gene under high stringency conditions comprising hybridization at a temperature of 68° C. in 6XSSC and a final wash at a temperature of 68° C. in 0.1XSSC, said nucleotide sequence encoding an enzyme that converts isopentyl pyrophosphate and farnesyl pyrophosphate into geranylgeranyl pyrophosphate, and

(ii) a promoter that expresses said gene in said transformed plant.

9. A transformed higher plant whose genome contains

(i) a nucleotide sequence that encodes the structural gene for the *Erwinia herbicola* enzyme phytoene synthase present in plasmid pARC285 having ATCC Accession No. 40756 or plasmid pARC140N having ATCC Accession No. 40754, or a DNA variant that has at least 80 percent identity to said gene and hybridizes with said gene under high stringency conditions comprising hybridization at a temperature of about 68° C. in 6XSSC and a final wash at a temperature of 68° C. in 0.1XSSC, said nucleotide sequence encoding an enzyme that converts geranylgeranyl pyrophospbate into phytoene, and

(ii) a promoter that expresses said gene in said transformed plant.

5,545,817

ENHANCED EXPRESSION IN A PLANT PLASTID

Kevin E. McBride, and David M. Stalker, both of Davis, Calif., assignors to Calgene, Inc., Davis, Calif.

Filed Mar. 11, 1994, Ser. No. 209,649
Int. Cl.[6] A01H *4/00;* C12N *5/04;15/82*
U.S. Cl. 800—205 21 Claims

10. A method for enhancing production of a peptide of interest in a solanaceous plant cell, said method comprising expressing said peptide in chloroplasts of said solanaceous plant cell, wherein said peptide is expressed from a construct comprising the following as operably joined components in the 5' to 3' direction of transcription:

(a) a promoter functional in a plant plastid;

(b) a DNA sequence encoding said peptide of interest, wherein said encoding sequence has an adenine and thymine content of greater than 50%; and

(c) a transcription termination region capable of terminating transcription in a plant plastid, and

wherein said peptide of interest is not naturally encoded by a plant plastid genome.

5,545,818

EXPRESSION OF BACILLUS THURINGIENSIS CRY PROTEINS IN PLANT PLASTIDS

Kevin E. McBride, Davis, Calif., and Pal Maliga, East Brunswick, N.J., assignors to Calgene Inc., Davis, Calif.

Filed Mar. 14, 1994, Ser. No. 209,951
Int. Cl.[6] A01H *1/04;* C12N *5/14;15/00;* C07H *17/00*
U.S. Cl. 800—205 20 Claims

1. A construct comprising the following as operably joined components in the 5' to 3' direction of transcription:

(a) a promoter functional in a plant plastid;

(b) a DNA sequence encoding an insecticidal *Bacillus thuringiensis* toxin; and

(c) a transcription termination region capable of terminating transcription in a plant plastid.

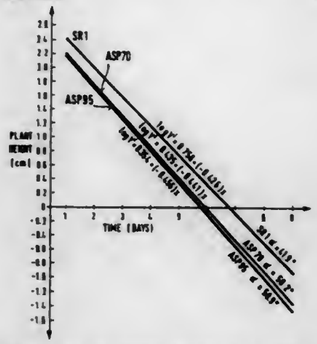
8. A plant, plant seed, plant cell or progeny thereof containing the construct according to claim 1.

5,545,819

TRANSGENIC PLANTS EXPRESSING A PROKARYOTIC AMMONIUM DEPENDENT ASPARAGINE SYNTHETASE

Dénes Dudits; Katalin Paulovics; Katalin Kalman; János Györgyey; Ferenc Nagy; László Bako; Gábor Horvath, all of Szeged, Hungary; Peter Eckes, Kelkheim/Taunus, and Günter Donn, Hofheim am Taunus, both of, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Continuation of Ser. No. 238,203, May 4, 1994, abandoned, which is a continuation of Ser. No. 116,045, Sep. 2, 1993, abandoned, which is a continuation of Ser. No. 910,262, Sep. 24, 1992, abandoned. This application Dec. 20, 1994, Ser. No. 360,176
Claims priority, application European Pat. Off., Jan. 26, 1990, 90101537
Int. Cl.[6] A01H *5/00;5/10;* C12N *15/52;15/82*
U.S. Cl. 800—205 24 Claims



14. A method for increasing growth of a plant comprising: transforming a plant cell so that the cell contains DNA coding for *E. coli* ammonium-specific asparagine synthetase, type A, wherein the cell expresses *E. coli* ammonium-specific asparagine synthetase, type A; regenerating the plant from the cell; and growing the plant; whereby the growth of the plant is increased relative to non-transformed plants.

5,545,820

INSECT CONTROL USING LECTINS HAVING SPECIFIC MANNOSE-BINDING ABILITY

Angharad Gatehouse; Vaughan Hilder, both of Durham, United Kingdom; Els Van Damme; Willy Peumans, both of Heverlee, Belgium; Christine Newell, and William Hamilton, both of Cambridge, assignors to Agricultural Genetics Company Limited, Cambridge, United Kingdom

Continuation of Ser. No. 969,841, Jan. 28, 1993, abandoned. This application Apr. 17, 1995, Ser. No. 425,315
Claims priority, application United Kingdom, Jul. 30, 1990, 9016687; May 24, 1992, 9111346
Int. Cl.[6] A01H *5/00;* A01C *1/06;* A01N *25/26;* C07H *21/04;* C07K *14/415;* C12N *15/29*
U.S. Cl. 800—205 15 Claims

7. A transgenic plant containing and capable of expressing a gene coding for a lectin having specific mannose-binding ability and derived from Amaryllidaceae or Alliaceae, or the progeny of such a plant.

5,545,821

PRODUCTION OF IMPROVED RAPESEED EXHIBITING A REDUCED SATURATED FATTY ACID CONTENT

Raymond S. C. Wong, Kowloon, Hong Kong; Ian Grant, Ontario, Canada; Jayantilal D. Patel, Ontario, Canada; Jeff P. K. Parker, Ontario, Canada, and Eric B. Swanson, Ontario, Canada, assignors to Pioneer Hi-Bred International. Inc., Des Moines, Iowa

Continuation of Ser. No. 013,184, Jan. 29, 1993, Pat. No. 5,387,758, which is a continuation of Ser. No. 672,135, Mar. 21, 1991, abandoned, which is a continuation-in-part of Ser. No. 504,302, Apr. 4, 1990, abandoned. This application Dec. 21, 1994, Ser. No. 360,580
Int. Cl.[6] A01H *5/00;5/10;* C12N *15/01;* C12P *7/64*
U.S. Cl. 800—230 33 Claims

17. A *Brassica napus* rape plant which upon self-pollination is capable of forming rapeseeds which yield an improved edible endogenous vegetable oil, said rapeseeds having an oil which exhibits following crushing and extraction of said rapeseeds (1) an unusually low palmitic and stearic saturated fatty acid content of 2 to 4 percent by weight based on the sum of stearic and palmitic acids in relation to the total fatty acid content wherein said saturated fatty acid content is controlled by genetic means for the expression of such trait obtainable by mutagenesis, and (2) an erucic acid content of no more than 2 percent by weight based on the total fatty acid content.

5,545,822

HERBICIDE RESISTANT RICE

Timothy P. Croughan, Crowley, La., assignor to Board of Supervisors of Louisiana State University and Agricultural and Mechanical College, Baton Rouge, La.

Continuation of Ser. No. 171,210, Dec. 21, 1993, abandoned, which is a continuation of Ser. No. 934,878, Aug. 21, 1992, abandoned. This application Nov. 28, 1994, Ser. No. 345,213
Int. Cl.[6] A01H *5/00*
U.S. Cl. 800—235 10 Claims

1. A rice plant wherein:

(a) the growth of said plant is resistant to inhibition by one or more of the following herbicides, at levels of herbicide which would normally inhibit the growth of a rice plant:

imazethapyr, imazaquin, primisulfuron, nicosulfuron, or a derivative of any of these herbicides; and

(b) said plant is the plant with ATCC accession number 75295; or is a mutant, recombinant, or genetically engineered derivative of the plant with ATCC accession number 75295 or of any progeny of the plant with ATCC accession number 75295; or is a plant which is the progeny of any of these plants; and

(c) said plant has the herbicide resistance characteristics of the plant with ATCC accession number 75295.

5,545,823

SELF-POLISHING TYPE ANTIFOULING COATING COMPOSITION CONTAINING FILM-FORMABLE METAL SOAP COMPOUND

Ping-Lin Kuo, Kaohsiung City, and Theng-Fu Chuang, Feng-Shan City, both of, Taiwan, assignors to Yung Chi Paint & Varnish Mfg. Co., Ltd., Kaohsiung City, Taiwan

Continuation-in-part of Ser. No. 112,427, Aug. 26, 1993; Pat. No. 5,382,281, which is a continuation of Ser. No. 713,759, Jun. 11, 1991, abandoned. This application Sep. 23, 1994, Ser. No. 311,603

Int. Cl.[6] C08L *43/04;* **C09D** *5/14*

U.S. Cl. 523—122 **10 Claims**

1. A hydrolyzable antifouling coating composition used in forming by crosslinking and polymerization, on the surface of a ship, an antifouling coating which is to be submerged in and gradually hydrolyzed in marine water to consecutively produce a smooth and fresh surface, said coating composition containing:

(a) a copolymer formed of a film-forming binder composition which comprises:

(i) one or more copolymerizable ethylenically unsaturated monomers or oligomers wherein at least one of said monomers or oligomers has a hydroxy group;

(ii) a copolymerizable silicone monomer or oligomer; and

(iii) a film formable metal soap compound which is prepared by reacting a metal compound containing a metal having a valency of at least 2 with a unsaturated fatty acid or alcohol;

wherein said copolymer has a group having a general formula

$$—(A1)_n—M—(A2—R1)_m$$

wherein R1 is a alkenyl group derived from an unsaturated fatty acid or alcohol, M is a metal having a valency of at least 2, A1 and A2 are independently a functional group of a carboxylic acid, a sulfonic acid or a phosphoric acid, and each of n and m=1 or 2, and n+m=2 or 3; and

(b) an effective amount of an antifouling agent which is a metallic compound other than said film-formable metal soap compound to prevent fouling of a coated surface of the ship submerged in marine water;

wherein the film forms upon polymerization of said copolymer moieties and crosslinking of the unsaturated fatty acid groups.

5,545,824

CURING COMPOSITION FOR ACRYLIC POLYOL COATINGS AND COATING PRODUCED THEREFROM

Sandra R. Stengel, Brunswick; George Eisenmann, Strongsville, and Sharon M. Friedrich, Cleveland, all of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 150,943, Nov. 12, 1993, abandoned, which is a continuation of Ser. No. 122,075, Sep. 14, 1993, abandoned. This application Jul. 20, 1995, Ser. No. 504,460

Int. Cl.[6] C08J *3/00;* **C08K** *3/20;* **C08L** *75/00;* **C08F** *8/30*

U.S. Cl. 524—590 **14 Claims**

1. A curing composition for use in curing a coating composition containing an acrylic polyol, the curing composition comprising:

a) from about 20 to about 70 percent of an aliphatic polyisocyanate free from urethane groups;

b) from about 20 to about 70 percent of an aliphatic polyisocyanate prepolymer which is the reaction product of a polyisocyanate with a polyol and contains urethane groups;

c) from about 0.01 to about 5.0 percent of an ultraviolet light stabilizer;

d) from about 0.25 to about 5.0 percent of a metal catalyst, the percentages of (a) to (d) based on the total weight of resin solids of the curing composition; and

e) from about 20 to about 70 percent of an organic diluent, the percentage based on the total weight of resin solids and diluent of the curing composition.

5,545,825

LOW VOC FURAN RESINS AND METHOD OF REDUCING VOCS IN FURAN RESINS

Thomas J. Taylor; William H. Kielmeyer, both of Englewood, Colo., and Carl A. Rude, Lafayette, Ind., assignors to Schuller International, Inc., Denver, Colo.

Continuation of Ser. No. 64,830, May 19, 1993, Pat. No. 5,459,183. This application Jan. 6, 1995, Ser. No. 369,827

Int. Cl.[6] C08K *5/17;5/21;5/31*

U.S. Cl. 524—195 **15 Claims**

1. An aqueous compatible furan resin having low levels of volatile organic compounds, comprising the reaction product of a source of ammonia and a first reaction product, said first reaction product comprising the reaction product of (a) an acidic furan resin, (b) a source of reactable formaldehyde, and (c) a formaldehyde scavenger.

5,545,826

POLYMER BLENDS

Robert M. Amici, Doylestown; Edward E. LaFleur, Warminster, and William J. Work, Huntington Valley, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 232,892, Apr. 25, 1994, Pat. No. 5,504,153, which is a division of Ser. No. 988,548, Dec. 10, 1992, Pat. No. 5,378,759, which is a continuation-in-part of Ser. No. 872,478, Apr. 23, 1992, abandoned. This application May 1, 1995, Ser. No. 431,811

Int. Cl.[6] C08L *29/04;33/02;25/04*

U.S. Cl. 525—57 **7 Claims**

1. A melt-processed polymeric blend comprising:

a) from about 80 to about 98 parts, per 100 parts by weight of the blend, of a first polymer containing at least about 50 mol % of units of the structure

$$—CH_2—\underset{\displaystyle OH}{\underset{|}{CH}}—$$

and

b) correspondingly, from about 2 to about 20 parts, per 100 parts by weight of the blend, of a second polymer containing from about 60 to about 98 weight percent of units of the structure

$$—CH_2—\underset{\displaystyle Ar}{\underset{|}{CR_5}}—$$

where Ar is aryl, halogen-substituted aryl, or alkyl-substituted aryl, and where R_5 is —H or $—CH_3$ and from about 2 to about 15 weight percent of units formed by free-radical copolymerization of at least one unsaturated copolymerizable carboxylic acid of the formula

$$CHR_4=CR_1R_4; \quad CHR_1=CR_1R_4$$

$$CH_2=\underset{\displaystyle R_4}{\underset{|}{C}}—CH_2R_4; \quad \text{or}$$

-continued

$$CH_2=CR_1—COO—CH_2—CH_2R_4,$$

where R_4 is —COOH.

5,545,827

Patent Not Issued For This Number

5,545,828

LOW YELLOW INDEX POLYMER COMPOSITIONS, POLYMERISABLE COMPOSITIONS AND LENSES USING SAID COMPOSITIONS

Gabriel Kelta, Courbevoie, and Joel Renaudineau, Creteil, both of, France, assignors to Essilor International Compagnie Generale D'Optique, France

Continuation-in-part of Ser. No. 172,137, Dec. 21, 1993, Pat. No. 5,442,022. This application Jan. 18, 1995, Ser. No. 374,378

Claims priority, application France, Dec. 22, 1992, 92 15533

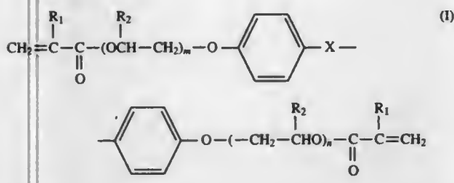
Int. Cl.[6] C08F *232/04;220/30*

U.S. Cl. 526—72 **20 Claims**

1. A polymer composition obtained by polymerisation of a composition comprising:

a composition A comprising:

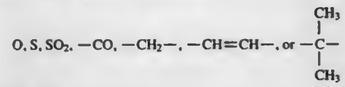
at least 50% by weight of a monomer or mixture of monomers having formula I:



(I)

wherein

R_1 and R_2, which may be identical or different, represent hydrogen or C_1–C_6 alkyl, X represents:



m and n are integers

and m+n is between 0 and 10;

0to 50% by weight or one or more mono- or poly-functional vinyl, acrylic or methacrylic comonomers (II); and

a component B comprising:

in a proportion of 0.5 to 15% by weight with respect to the weight of components (I) and (II), a monomer (III) comprising an ethylenic unsaturation which does not form part of an aromatic ring and containing, in position α of this unsaturation a carbon atom carrying a free hydroxy group.

5,545,829

PROCESS FOR PREPARING CYCLOOLEFIN COPOLYMERS

Michael-Joachim Brekner, Frankfurt, and Frank Osan, Kelkheim, both of, Germany, assignors to Hoechst Aktiengesellschaft, Germany

Continuation of Ser. No. 195,916, Feb. 10, 1994, abandoned. This application Jun. 1, 1995, Ser. No. 456,367

Claims priority, application Germany, Feb. 12, 1993, 43 04 287.2

Int. Cl.[6] C08F *2/04;232/08*

U.S. Cl. 526—160 **18 Claims**

1. A process for preparing cycloolefin polymers from cyclic and acyclic olefin monomers carried out in a suspension medium using a catalyst system in a reaction space, which comprises separating the residence time of the monomers in the reaction space from the residence time of the catalyst system in the reaction space in which process the polymer is taken from the reactor as a solution.

5,545,830

CURABLE FLUORESCENT ORGANOPOLYSILOXANE COMPOSITIONS

Maris J. Ziemelis, Midland, Mich.; Eng-Pi Chang, Arcardia, Calif., and Mitchell A. Winnik, Ontario, Canada, assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 30, 1994, Ser. No. 367,496

Int. Cl.[6] C08G *77/08*

U.S. Cl. 528—15 **16 Claims**

1. Organopolysiloxane polymers having the general formula selected from the group consisting of

(i) $RR^1{}_2SiO(R^1{}_2SiO)_x(R^1RSiO)_y(R^1LSiO)_zSiR^1{}_2R$,

(ii) $RR^1{}_2SiO(R^1RSiO)_x(R^1LSiO)_zSiR^1{}_2R$,

(iii) $RR^1{}_2SiO(R^1{}_2SiO)_x(R^1LSiO)_zSiR^1{}_2R$, and

(iv) $RR^1{}_2SiO(R^1{}_2SiO)_x(R^1RSiO)_ySiR^1{}_2R$;

wherein R^1 denotes a radical selected from the group consisting essentially of alkyl radicals having 1 to 4 carbon atoms and phenyl;

L is a silicon-bonded monovalent organic radical having the general formula $—R^2N=CHC_{16}H_9$ wherein R^2 is a divalent hydrocarbon radical and wherein $=CHC_{16}H_9$ is a pyrenylidene nucleus;

each R is selected from the group consisting essentially of monovalent hydrocarbon radicals, olefinic hydrocarbon radicals having 2 to 8 carbon atoms, hydroxyl radicals, and L radicals; there being at least 2 reactive olefinic sites on average per molecule of said polymers and at least one L radical on average per molecule of said polymers and the sum of x+ y+ z has a value of at least one.

5,545,831

SILICONE COMPOSITIONS FOR THE FORMATION OF CURED RELEASE COATINGS

Nobuo Kaiya; Hideki Kobayashi, and Wataru Nishiumi, all of Chiba Prefecture, Japan, assignors to Dow Corning Toray Silicone Co., LTD., Tokyo, Japan

Filed Oct. 19, 1994, Ser. No. 325,737

Claims priority, application Japan, Oct. 22, 1993, 5-287613

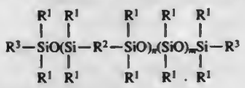
Int. Cl.[6] C08K *5/24*

U.S. Cl. 524—731 **22 Claims**

1. A composition comprising:

(A) a silicone release coating composition; and

(B) an organosilicon compound having the general formula:



wherein R^1 is selected from a monovalent hydrocarbon group having from 1 to 10 carbon atoms and free of aliphatic unsaturation or halogen-substituted alkyl groups, R^2 denotes an alkylene group having from 2 to 10 carbon atoms, R^3 is selected from the group consisting of a hydrogen atom, an alkenyl group having from 2 to 10 carbon atoms, and a hydroxyl group, m has a value of zero or greater than zero, and n has a value of greater than zero.

5,545,832

POLYMERIC PHTHALOCYANINES AND PRECURSORS THEREFOR

Allan S. Hay, 5015 Glencairn Avenue, Montreal, Quebec, Canada

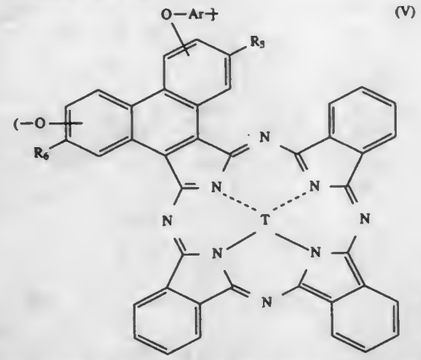
Division of Ser. No. 296,148, Jul. 26, 1994, Pat. No. 5,430,124, which is a division of Ser. No. 50,813, Apr. 21, 1993, Pat. No. 5,369,203. This application Feb. 28, 1995, Ser. No. 395,718

Int. Cl.[6] C08G *65/40;63/00;* **C08F** *20/42*

U.S. Cl. 528—211 **8 Claims**

1. A phthalocyanine group-containing homopolymer or copolymer containing units of formula (V)

(V)



wherein R_5 and R_6, which may be the same or different, are selected from hydrogen, chloro, bromo, cyano, lower alkyl of 1 to 6 carbon atoms, aryl of 6 to 10 carbon atoms or betaryl, Ar is a divalent aromatic linkage, and T represents a metal ion M or a pair of hydrogen atoms completing the valency of the non-imino N atoms.

5,545,833

PHOSPHORUS-CONTAINING POLYMERS AND FIBERS FORMED THEREFROM

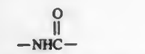
John W. Stoddard, Gulf Breeze, Fla., assignor to Monsanto Company, St. Louis, Mo.

Filed May 30, 1995, Ser. No. 453,938

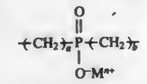
Int. Cl.[6] C08G *69/42;* **B32B** *27/34*

U.S. Cl. 528—337 **20 Claims**

1. A fiber comprising a synthetic polymer, said polymer including as integral parts of its polymer chain amide groups of the formula



and phosphinic acid-salt groups of the formula



wherein a and b are beth greater-than or equal to 2 and wherein M^{m+} is selected from the group consisting of monovalent (n=1) and divalent (n-2) cations.

5,545,834

CHEMILUMINESCENT COMPOUNDS AND METHODS OF USE

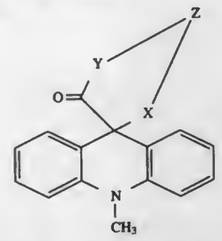
Sharat Singh, San Jose; Rajendra Singh, Mountain View, both of Calif.; Frank Meneghini, Keene, N.H., and Edwin F. Ullman, Atherton, Calif., assignors to Behringwerke AG, Marburg, Germany

Continuation of Ser. No. 916,453, Jul. 20, 1992, abandoned. This application Jan. 17, 1995, Ser. No. 373,678.

Int. Cl.[6] C07D *498/10;513/10;* **C09K** *11/06*

U.S. Cl. 544—6 **11 Claims**

1. A compound of the formula:



wherein: X is NH and Y is independently selected from the group consisting of O and S; and Z is a chain, 2 atoms in length, which atoms are part of a benzene ring; where 0 to 8 hydrogens of said compound may be replaced by a W where each W is an alkyl, alkylidine, aryl, aralkyl, or an alkyl, awl or aralkyl substituted with one or more radicals of functional groups, wherein said functional groups are independently selected from the group consisting of carboxylic acids, alcohols, thiols, carboxamides, carbamates, carboxylic acid esters, sulfonic acids, sulfonic acid esters, phosphoric acids, phosphoric acid esters, ureas, phosphoramides, sulfonamides, ethers, sulfides, thioethers, olefins, acetylenes, amines, ketones, aldehydes, nitriles, and halogens.

5,545,835

5,6-DISUBSTITUTED-3-PYRIDYLMETHYL AMMONIUM HALIDE COMPOUNDS USEFUL FOR THE PREPARATION OF 5-(SUBSTITUTED METHYL)-2,3-PYRIDINEDICARBOXYLIC ACIDS

Henry L. Strong, Somerset, N.J., assignor to American Cyanamid Company, Madison, N.J.

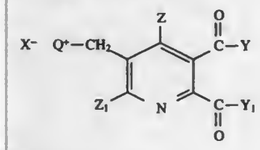
Division of Ser. No. 156,205, Nov. 22, 1993, Pat. No. 5,378,843, which is a division of Ser. No. 960,749, Oct. 14, 1992, Pat. No. 5,288,866, which is a continuation-in-part of Ser. No. 812,520, Dec. 20, 1991, abandoned. This application Nov. 4, 1994, Ser. No. 334,297

Int. Cl.[6] C07D *251/00;213/04;401/00*

U.S. Cl. 544—215 **1 Claim**

1. A 5,6-disubstituted-3-pyridylmethylammonium halide compound having the structural formula

(I)



wherein

Z is hydrogen or halogen;

Z_1 is hydrogen, halogen, cyano or nitro;

X is Cl, Br, I or R_3SO_3;

R_3 is C_1–C_4 alkyl or

phenyl optionally substituted with one to three C_1–C_4 alkoxy groups, C_1–C_4 alkyl groups, nitro groups, cyano groups or halogen atoms;

Y and Y_1 are taken together form a group YY which is —O—, —S— or —NR_6—;

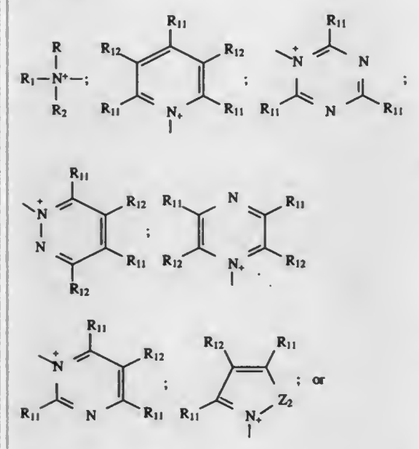
R_4 and R_5 are each independently hydrogen,

C_1–C_4 alkyl optionally substituted with C_1–C_4 alkoxy or phenyl optionally substituted with one to three C_1–C_4 alkyl groups, C_1–C_4 alkoxy groups or halogen atoms, or

phenyl optionally substituted with one to three C_1–C_4 alkyl groups, C_1–C_4 alkoxy groups or halogen atoms;

R_6 is hydrogen or C_1–C_4 alkyl;

Q is



R, R_1 and R_2 are each independently C_1–C_4 alkyl, and when taken together, R and R_1 may form a 5- or 6-membered ring in which RR_1 is represented by the structure: —$(CH_2)_n$—, optionally interrupted by O, S or NR_{10}, where n is an integer of 3, 4 or 5, provided R_2 is C_1–C_4 alkyl;

Z_2 is O, S or NR_{10};

R_{10} is C_1–C_4 alkyl; and

R_{11} and R_{12} are each independently hydrogen, halogen, C_1–C_4 alkyl or C_1–C_4 alkoxy, and when taken together, R_{11} and R_{12} may form a 5- or 6-membered saturated or unsaturated ring optionally interrupted by O, S, or NR_{10} and optionally substituted with one to three halogen atoms, C_1–C_4 alkyl groups or C_1–C_4 alkoxy groups.

5,545,836

PROCESS FOR THE PREPARATION OF 1,3,5-TRIAZINES

Dieter Reinehr, Kandern, Germany, and Elek Borsos, Birsfelden, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed Sep. 27, 1994, Ser. No. 312,597

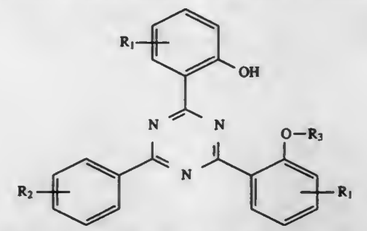
Claims priority, application Switzerland, Sep. 28, 1993, 2913/93

Int. Cl.[6] C07D *251/24*

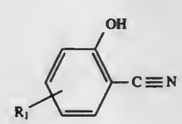
U.S. Cl. 544—216 **10 Claims**

1. A process for the preparation of a triazine of formula

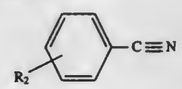
(1)



which comprises, in a first reaction step, reacting a benzonitrile of formula (I)

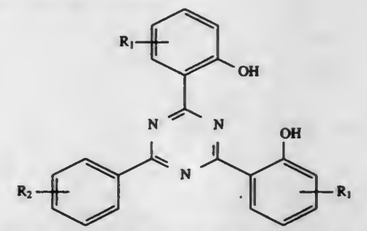


with a nitrile of formula (II)



to the compound of formula

(2)



and, in a second reaction step, reacting said compound by selective alkylation to the compound of formula (1),

in which formulae above

R_1 and R_2 are each independently of the other hydrogen, halogen, —C≡N, C_1–C_{18}alkyl or C_1–C_{18}alkoxy and
R_3 is C_1–C_{18}alkyl.

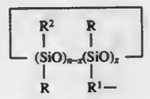
5,545,837

ORGANOSILICON COPOLYMERS AND METHODS FOR THE PREPARATION THEREOF

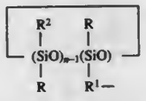
Hideki Kobayashi, Chiba Prefecture, Japan, assignor to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed May 16, 1995, Ser. No. 441,906
Claims priority, application Japan, May 17, 1994, 6-126916
Int. Cl.[6] C07F *7/08;7/18*
U.S. Cl. 556—460 **25 Claims**

1. An organosilicon compound having the average unit formula (A):



and having an end group having the average formula (B):



wherein R is a monovalent hydrocarbon group having 1 to 10 carbon atoms which is free of aliphatic unsaturation, R^1 is selected from an alkylene group having 1 to 10 carbon atoms or an organic group having the formula $—R^5(OR^5)_pO_{1/2}—$ wherein R^5 is an alkylene group having 2 to 20 carbon atoms and p is zero or greater than 0, R^2 is selected from a monovalent hydrocarbon group having 1 to 20 carbon atoms or a hydrogen atom, n is an integer having a value of 3 to 20, x is an integer having a value of 2 to 13, said compound having a degree of polymerization of 2,000–10,000, with the proviso that n has a value which is greater than or equal to x, provided that there is at least one unit (A) per molecule where x is at least 3, and with the proviso that at least one R^2 group per molecule is selected from hydrogen or a monovalent hydrocarbon group having 6 to 20 carbon atoms.

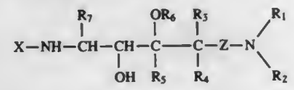
5,545,838

DIOL SULFONAMIDE AND SULFINYL RENIN INHIBITORS

Michael A. Poss, Lawrenceville, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 408,157, Sep. 15, 1989, Pat. No. 5,098,924.
This application Jan. 27, 1992, Ser. No. 826,586
Int. Cl.[6] C07D *233/64;277/30;209/34;209/10;211/82;237/00;403/00;* **C07C** *309/00*
U.S. Cl. 564—89 **50 Claims**

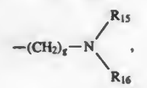
1. A compound of the formula:

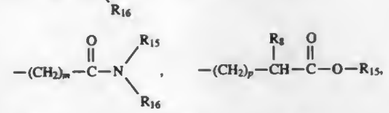


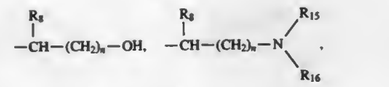
or a pharmaceutically acceptable salt thereof wherein:
Z is SO or SO_2;
R_1 and R_2 are independently selected from the group consisting of hydrogen, alkyl of 1 to 7 carbons, alkenyl or 2 to 7 carbons, $—(CH_2)_m$-aryl, $—(CH_2)_m$-cycloalkyl, $—(CH_2)_m$-heterocyclo, halo substituted alkyl of 1 to 7 carbons, $—(CH_2)_g—O—R_{15}$,

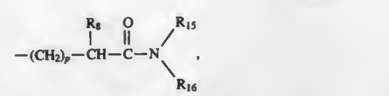


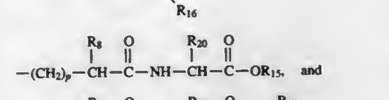
$—(CH_2)_g—S—R_{15}$,

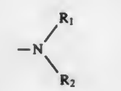




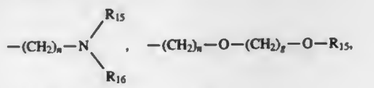


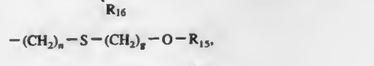


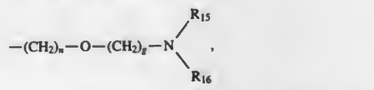


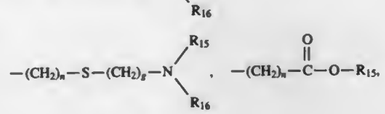


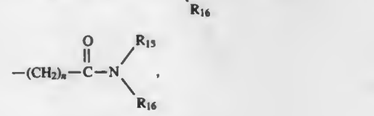
is a heterocyclic ring
R_3, R_7, R_8, R_{14} and R_{20} are independently selected from the group consisting of hydrogen, alkyl of 1 to 7 carbons, halo substituted alkyl of 1 to 7 carbons, $—(CH_2)_m$-aryl, $—(CH_2)_m$-heterocyclo, $—(CH_2)_m$-cycloalkyl, $—(CH_2)_n—O—R_{15}$, $—(CH_2)_n—S—R_{15}$,

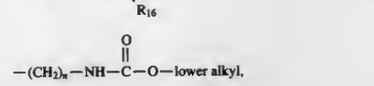




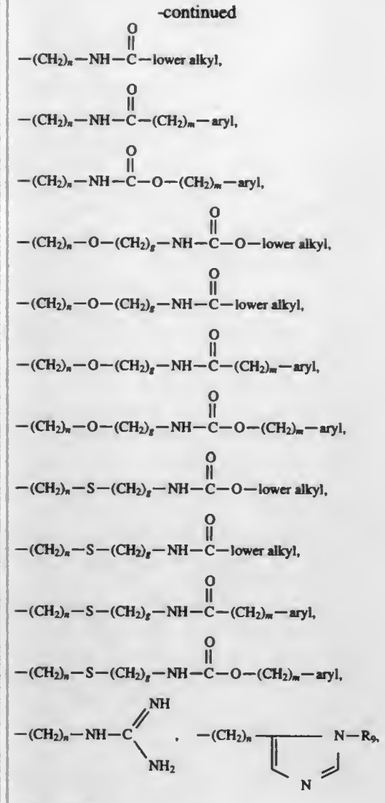


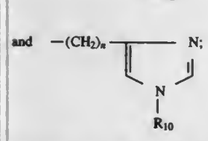




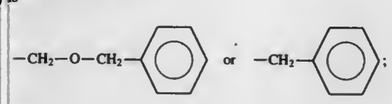


-continued

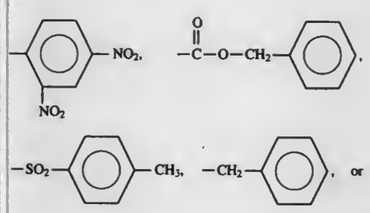


and 

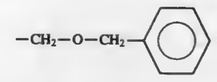
R_4 is hydrogen or alkyl of 1 to 7 carbons;
R_5 and R_6 are independently selected from the group consisting of hydrogen, alkyl of 1 to 7 carbons, halo substituted alkyl of 1 to 7 carbons, $—(CH_2)_m$-aryl, $—(CH_2)_m$-heterocyclo, and $—(CH_2)_m$-cycloalkyl;
R_9 is



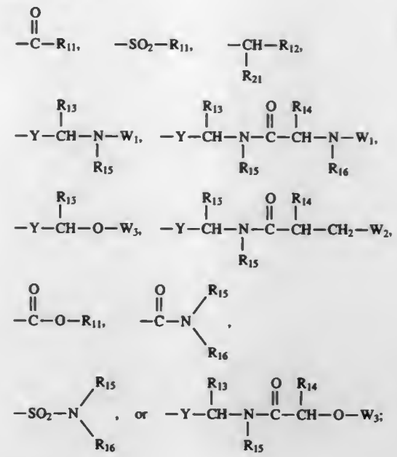
R_{10} is



-continued



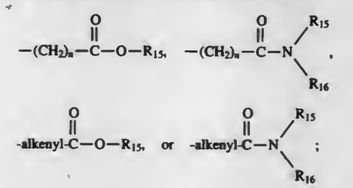
X is hydrogen,



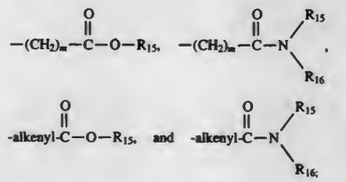
Y is $—CH_2—$ or



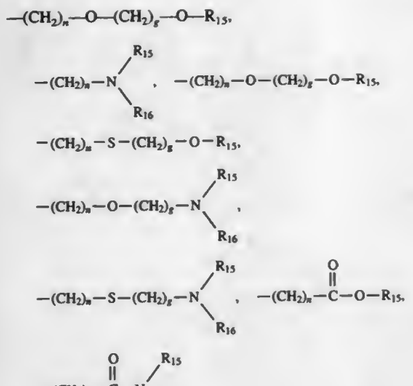
R_{11} is alkyl of 1 to 7 carbons, hydroxy substituted alkyl of 1 to 7 carbons, aryl, heterocyclo, cycloalkyl, -alkylene-aryl, -alkylene-heterocyclo, -alkylene-cycloalkyl,

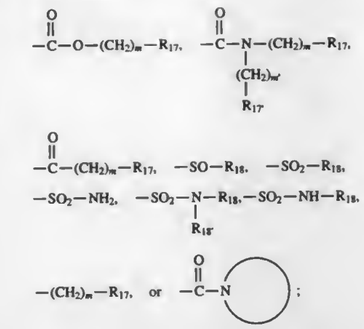


R_{12} and R_{21} are independently selected from the group consisting of hydrogen, alkyl of 1 to 7 carbons, aryl, heterocyclo, cycloalkyl, -alkylene-aryl, -alkylene-heterocyclo, -alkylene-cycloalkyl,

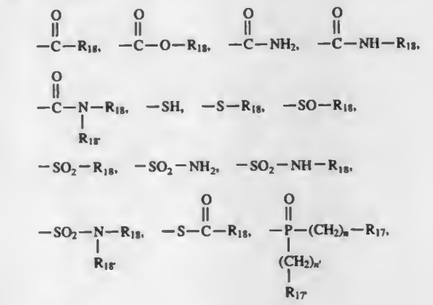


R_{13} is selected from the group consisting of hydrogen, alkyl of 1 to 7 carbons, halo substituted alkyl of 1 to 7 carbons, $—(CH_2)_m$-aryl, $—(CH_2)$—cycloalkyl, $—(CH_2)_n—O—R_{15}$, $—(CH_2)_n—S—R_{15}$,

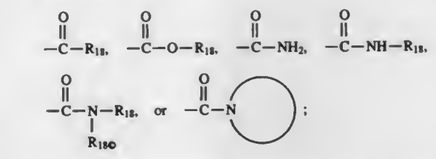




W_2 is hydrogen, $-R_{18}$,



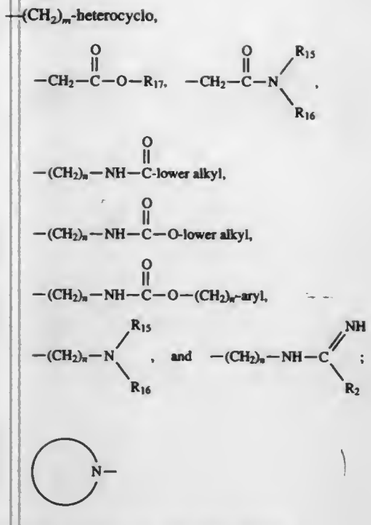
W_3 is hydrogen, $-R_{18}$,



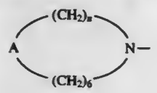
R_{15} and R_{16} are independently selected from the group consisting of hydrogen, alkyl of 1 to 7 carbons, $-(CH_2)_m$-cycloalkyl, $-(CH_2)_m$-aryl, and $-(CH_2)_m$-heterocyclo;

R_{17} and $R_{17'}$ are independently selected from the group consisting of hydrogen, alkyl of 1 to 7 carbons, aryl, heterocyclo, and cycloalkyl;

R_{18} and $R_{18'}$ are independently selected from the group consisting of alkyl of 1 to 7 carbons, $-(CH_2)_m$-aryl, $-(CH_2)_m$-cycloalkyl,



represents a heterocyclic ring of the formula



wherein A is $-CH_2$, O, S, or $N-R_{19}$, a is an integer from 1 to 4 and b is an integer from 1 to 4 provided that the sum of a+b is an integer from 2 to 5 and such heterocyclic rings wherein one available carbon has a lower alkyl substituent;

R_{19} is hydrogen, lower alkyl, $-(CH_2)_n$-phenyl, or $-(CH_2)_n$-cycloalkyl;

m and m' are independently selected from zero and an integer from 1 to 5;

n and n' are independently selected from an integer from 1 to 5;

p is zero or one;

g is an integer from 2 to 5;

the term "alkyl of 1 to 7 carbons" refers to straight or branched chain radicals having up to seven carbon atoms;

the term "lower alkyl" refers to straight or branched chain radicals having up to four carbon atoms;

the terms "lower alkoxy" and "lower alkylthio" refer to such lower alkyl groups as defined above attached to an oxygen or sulfur;

the term "alkenyl" refers to straight or branched chain radicals of 2 to 7 carbons containing at least one double bond;

the term "cycloalkyl" refers to saturated rings of 4 to 7 carbons;

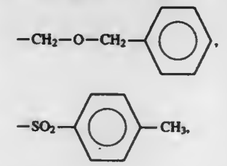
the term "alkylene" refers to straight chain bridge of 1 to 5 carbons connected by single bonds and such straight chain bridge of 1 to 5 carbons wherein one or more hydrogens have been replaced by a lower alkyl, hydroxy, amino, hydroxy substituted lower alkyl, or amino substituted lower alkyl;

the term "halo" refers to chloro, bromo, fluoro, and iodo;

the term "halo substituted alkyl" refers to such alkyl group in which one or more hydrogens have been replaced by chloro, bromo, or fluoro groups;

the term "aryl" refers to phenyl, diphenylmethyl, 1-naphthyl, 2-naphthyl, mono substituted phenyl, diphenylmethyl, 1-naphthyl, or 2-naphthyl wherein said substituent is lower alkyl of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, halogen, hydroxy, amino, —NH-alkyl wherein alkyl is of 1 to 4 carbons, or $-N(alkyl)_2$ wherein alkyl is of 1 to 4 carbons, di or tri substituted phenyl, diphenylmethyl, 1-naphthyl or 2-naphthyl wherein said substituents are selected from methyl, methoxy, methylthio, halogen, hydroxy and amino; and

the term "heterocyclo" refers to fully saturated, partially saturated, or unsaturated monocyclic rings of 5 or 6 atoms containing one or two O and S atoms and/or one to four N atoms provided that the total number of hetero atoms in the ring is 4 or less, bicyclic rings wherein the five or six membered ring containing O, S and N atoms as defined above is fused to a benzene or pyridyl ring, said monocyclic or bicyclic ring being attached by way of an available carbon atom, and substituted monocyclic and bicyclic rings as defined above wherein said substituent is on an available carbon atom and is lower alkyl of 1 to 4 carbons, halo substituted lower alkyl of 1 to 4 carbons, hydroxy, benzyl, or cyclohexylmethyl, and if said monocyclic or bicyclic ring has an available N atom such N atom can be substituted by



2,4-nitrophenyl, lower alkyl of 1 to 4 carbons, benzyl, or benzhydryl.

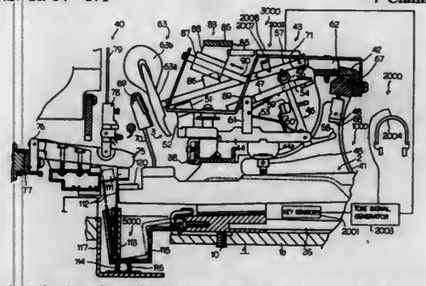
VOL
1189
ISS
?
AG
1
19 96
UMI

5,545,839

KEYBOARD MUSICAL INSTRUMENT WITH MOVABLE KEY BED FOR PERFORMING MUSIC WITHOUT ACOUSTIC SOUNDS

Kiyoshi Kawamura; Toshio Tajima, and Shinya Koseki, all of Shizuoka-ken, Japan, assignors to Yamaha Corporation, Japan

Filed Nov. 22, 1994, Ser. No. 343,130
Claims priority, application Japan, Nov. 30, 1993, 5-325808; Feb. 18, 1994, 6-043347
Int. Cl.[6] G10D *15/00;* **G10F** *1/22*
U.S. Cl. 84—171 **7 Claims**



1. A keyboard musical instrument having at least an acoustic sound mode and a silent mode comprising:

an acoustic piano comprising:

a key bed structure including a movable key bed and a stationary key bed, said movable key bed being movable with respect to said stationary key bed,

a keyboard including a plurality of swingable keys for being depressed by a player in both said acoustic sound mode and said silent mode, notes of a scale being assigned to each of said keys, respectively,

a plurality of hammer assemblies,

a plurality of key action means for functionally connecting respective ones of said plurality of hammer assemblies to respective ones of said keys and for selectively driving respective ones of said plurality of hammer assemblies along trajectories in response to respective ones of said keys being depressed,

a plurality of sets of strings respectively associated with respective ones of said plurality of hammer assemblies, wherein respective ones of said plurality of said hammer assemblies strike respective ones of said plurality of sets of strings while said keyboard musical instrument is in said acoustic sound mode in response to respective ones of said keys being depressed, and

a plurality of damper assemblies respectively associated with respective ones of said plurality of sets of strings and keys, each said damper assembly comprising a contact means for contacting a respective one of said plurality of sets of strings and a lever means for disengaging said contact means from contacting said respective one of said plurality of sets of strings in response to a respective one of said plurality of keys being depressed while said keyboard musical instrument is in at least said acoustic sound mode;

said keyboard musical instrument further including:

electronic sound generating means for producing electronic sounds in response to ones of said plurality of keys being depressed while said keyboard musical instrument is in said silent mode; and

change over means for selecting between said acoustic sound mode and said silent mode by positioning said movable key bed an upper position in said acoustic sound mode and in a lower position in said silent mode, said lower position creating a gap between said plurality of damper assemblies and said plurality of keys;

stopper means movable between a free position and a blocking position for permitting said plurality of hammer assemblies to strike said plurality of sets of strings while positioned in said free position and for blocking said plurality of hammer assemblies from striking said plurality of sets of strings while in said blocking position by moving into said trajectory of said hammer assemblies, said stopper means comprising:

a movable stopper,

an oblique guide extending toward a front and rear of said acoustic piano,

slider means connected to said movable stopper for reciprocally sliding along said oblique guide,

a plurality of cushion members attached to ones of said hammer assemblies, said movable stopper being in said trajectories of said plurality of hammer assemblies so as to contact said cushion members when said stopper means is in said blocking position, and

means for positioning said movable stopper while in said blocking position such that a distance between each of said plurality of hammer assemblies at a home position and said associated ones of said plurality of sets of strings when said keyboard instrument is in said acoustic sound mode is approximately equal to a distance between each of said plurality of hammer assemblies at said home position and said movable stopper when said keyboard instrument is in said silent mode; and

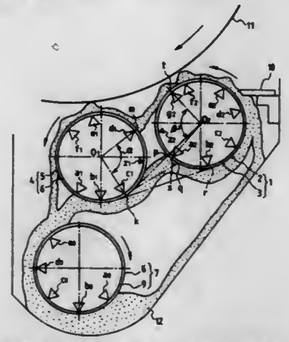
a plurality of dummy weight means respectively associated with ones of said plurality of keys for providing loads to depressed ones of said plurality of keys while said keyboard instrument is in said silent mode.

5,545,840

DEVELOPING DEVICE IN ELECTROPHOTOGRAPHIC APPARATUS INCLUDING DEVELOPING POLL CONFIGURATION WHILE STABLY CARRIES DEVELOPER

Koji Doi; Yasuyuki Tsuji; Shuuho Yokokawa; Kunitomo Takahashi; Youji Hirose; Hiroshi Ueno; Youichi Takeuchi; Koutara Yamada, and Hidenori Iwanaga, all of Hitachinaka, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan

Filed Jun. 9, 1995, Ser. No. 489,277
Claims priority, application Japan, Jun. 17, 1994, 6-135868
Int. Cl.[6] G03G *15/09*
U.S. Cl. 118—658 **2 Claims**



1. A developing device in an electrophotographic apparatus which includes a photosensitive member, comprising:

first and second developing rolls which rotate in the same direction, each of said first and second developing rolls including a fixed magnet having a plurality of magnetic poles, and a sleeve which is rotatable around said magnet;

a regulating plate arranged at a predetermined distance from the circumferential surface of said first developing roll, for regulating a developer;

wherein the developer is carried by a circumferential surface of said second developing roll not facing the photosensitive member so as to be delivered to a circumferential surface of said first developing roll not facing the photosensitive member, and regulated to a predetermined amount by said regulating plate, whereafter the photosensitive member is subjected

to development of a first time while the developer is carried by the circumferential surface of said first developing roll facing the photosensitive member, and the photosensitive member is subjected to development of a second time while the developer is carried by the circumferential surface of said second developing roll facing the photosensitive member;

wherein said second developing roll has a delivering magnetic pole c_1 for delivering the developer to said first developing roll,

whereas said first developing roll has a receiving magnetic pole a_2 for receiving the developer from said second developing roll;

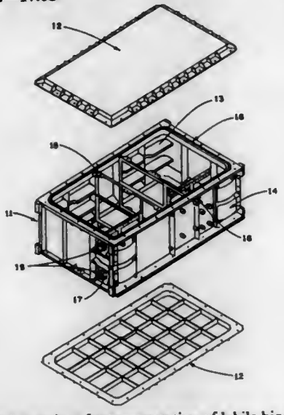
wherein the position of the pole c_1 is set so that a tangential line k-q which is drawn so as to touch the circumferential surface of said second developing roll at a point k corresponding to the pole c_1 is located between a line k-o_2 which is drawn from the point k to the center o_2 of said first developing roll and a tangential line k-r which is drawn from the point k so as to touch the circumferential surface of said first developing roll at a point r on the developer-receiving and carrying side of said first developing roll.

5,545,841

ACCLIMATIZED EXPERIMENT CONTAINER FOR CONTROLLED BIOCHEMICAL AND BIOLOGICAL INVESTIGATIONS

William W. Wilfinger, St. Bernard, Ohio, and Bruce Kendall, State College, Pa., assignors to The Penn State Research Foundation, University Park, Pa.

Filed Sep. 28, 1994, Ser. No. 314,024
Int. Cl.[6] H05K *5/06*
U.S. Cl. 174—17.08 **8 Claims**



1. A sealed container for transportation of labile biochemical and biological samples comprising:

a. a container equipped with one or more removable covers that provide direct access to the internal area of the container and a means for fastening said covers;

b. a means of sealing said container by using a set of double seals on all surfaces that provide seal integrity between the outside and interior of the container, wherein said sealing means has the ability to withstand pressure differentials between the internal and external surfaces of the container without loss of sealing integrity or alteration of the experimental environment within the container; and wherein said sealing means comprises said double seals circumscribing container openings, said double seals comprising two grooved channels containing two O-rings so as to form said double seals when said removable covers are fastened to the container;

c. a means of precisely controlling the pressure, humidity, gas composition and internal temperature in said container by using an external, internal or some combination of thermal environment control; and

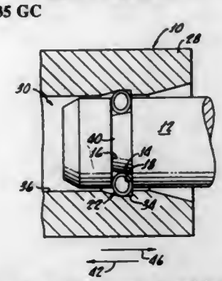
d. a means to apply a vacuum or pressure to an internal space between said double seals over a user defined period of time thereby providing an assessment of the integrity of a seal contact surface without altering or affecting internal contents of the container.

5,545,842

RADIALLY MOUNTED SPRING TO CONNECT, LOCK AND UNLOCK, AND FOR SNAP-ON FASTENING, AND FOR MECHANICAL, ELECTROMAGNETIC SHIELDING, ELECTRICAL CONDUCTIVITY, AND THERMAL DISSIPATION WITH ENVIRONMENTAL SEALING

Peter J. Balsells, Santa Ana, Calif., assignor to Bal Seal Engineering Company, Inc., Santa Ana, Calif.

Filed Oct. 26, 1993, Ser. No. 143,913
Int. Cl.[6] H05K *9/00*
U.S. Cl. 174—35 GC **36 Claims**



1. A connect/disconnect, lock/unlock and bold mechanism for mechanical, electromagnetic shielding, electrical conductivity, and thermal dissipation coupling with environmental sealing, the mechanism comprising:

a cylindrical body having a circumferential groove means therein with generally parallel side walls;

a continuous coil spring disposed in said circumferential groove means with a portion thereof protruding from said circumferential groove means;

a housing having a bore therein sized to accommodate said cylindrical body and groove means, disposed in an inside surface of said bore, for receiving the protruding spring portion and for enabling assembly of the cylindrical body within the bore when the cylindrical body and housing are moved in one direction with respect to one another; and

means, defining a tapered bottom in said circumferential groove means, for preventing the spring from turning past a vertical line when the cylindrical body and housing are moved in another direction with respect to one another in order to prevent disassembly of the cylindrical body and housing.

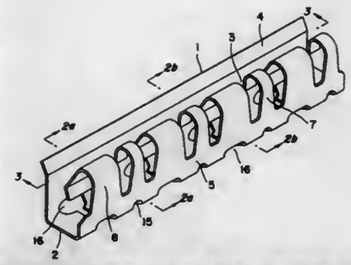
5,545,843

CONTACT SPRING

Stig A. Arvidsson, Tyresö , and Bo U. E. Henningsson, Nynäshamn, both of, Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Apr. 5, 1995, Ser. No. 417,011
Claims priority, application Sweden, Apr. 11, 1994, 9401202
Int. Cl.[6] H05K *9/00*
U.S. Cl. 174—35 GC **11 Claims**

1. A contact spring for securing to a substrate a component having a flange, comprising an elongated profiled part having a generally U-shaped cross section, wherein a first leg of the U-shaped profiled part is substantially straight and extends continuously along the contact spring; a second leg of the U-shape



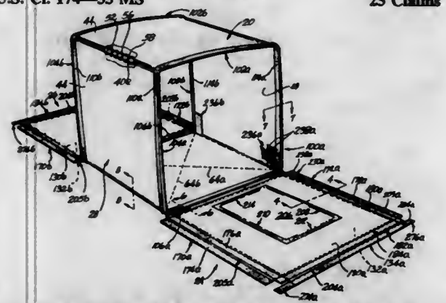
profiled part has tongues whose upper extremities are bent inwardly towards the first leg and downwardly towards the bottom of the profiled part; at least one of said tongues on the second leg is angled to form an acute angle with the first leg; and at least one other of said tongues on the second leg is semicircular and extends approximately half way above the bottom of the profiled part.

5,545,844

QUICK ACCESS ELECTRICAL SHIELDING CHAMBER

Walter A. Plummer, III, Santa Ana; Vernon L. Shrader, Laguna Hills, and Laurence R. Klein, Torrance, all of Calif., assignors to The Zippertubing Company, Los Angeles, Calif.

Filed Aug. 3, 1993, Ser. No. 101,902
Int. Cl.[6] H05K *9/00*
U.S. Cl. 174—35 MS **25 Claims**



1. An electrical shielding chamber comprising: first, second, third, fourth, fifth and sixth electrically conductive rigid walls in electrical contact with each other, wherein said first wall contains a first door and said second wall contains a second door and said first and second doors are each selectively attachable to at least three of said third, fourth, fifth and sixth walls;

wherein stitching through each of said walls is covered by a layer of metallized fabric on at least one side of the wall for preventing leakage of electromagnetic radiation; and

wherein the chamber is collapsible for forming a substantially flat package and expandable for forming a substantially electrically shielded compartment.

5,545,845

TRANSPORTABLE WEATHERTIGHT EMI SHIELDED CABINET STRUCTURE

Michael A. Flores, Plano, Tex., assignor to DSC Communications Corporation, Plano, Tex.

Filed Nov. 21, 1994, Ser. No. 342,753
Int. Cl.[6] H05K *9/00*
U.S. Cl. 174—35 R **25 Claims**

1. A weathertight and EMI shielded cabinet for housing electronic equipment, comprising:

a generally rectangular frame having four upper horizontal frame members, four lower horizontal frame members, and four vertical frame members bonded to one another, at least two of said vertical frame members defining at least one door opening;

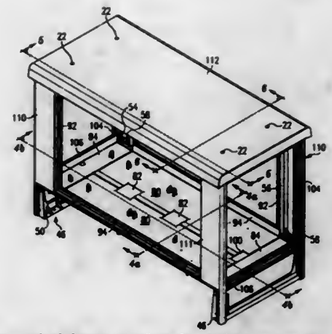
a plurality of outer skins welded to said rectangular frame and substantially enclosing it therein, said plurality of outer skins defining an upper side, four vertical sides, and a lower side of said cabinet, said outer skins further defining a door frame around said at least one door opening, said plurality of outer skins comprise:

at least one floor skin welded to said lower frame members and forming a floor;

four corner skins welded to said frame members, said corner skins substantially enclosing said vertical frame members; and

a roof welded to said four corner skins; and

at least one door hung in said at least one door opening, said at least one door having an exterior surface forming a substantially vertical plane with said respective vertical side of the cabinet.

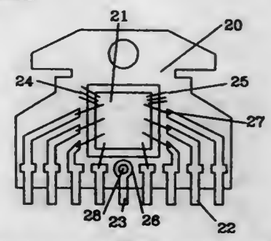


5,545,846

LASER BOND HEADER

Charles E. Williams, Dallas; Dennis D. Davis, Garland, and David Kee, Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 30, 1993, Ser. No. 129,836
Int. Cl.[6] H01L *21/58*
U.S. Cl. 174—51 **16 Claims**



1. A header for power semiconductor devices, comprising:

a header with a mounting base and leads;

a ground post on said mounting base;

at least one of said leads with an opening in one end to fit over said ground post; and

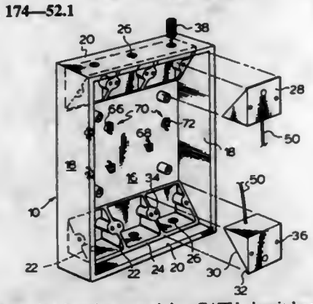
a bond between said at least one of said leads and said ground post.

5,545,847

AMPLIFIER HOUSING

Kenneth W. Lynes, and Zdenek Nepovim, both of Lindsay, Canada, assignors to J. E.Thomas Specialties Limited, Lindsay, Canada

Filed Aug. 26, 1992, Ser. No. 935,202
Int. Cl.[6] H02G 3/08
U.S. Cl. 174—52.1 22 Claims



1. Conducting housing containing CATV circuit board,
said housing defining at least two ports,
said CATV circuit board having at least two active circuit board terminals and a passive connection,
means for connecting an exterior coaxial cable having exterior inner and exterior outer conductors to each of said ports,
a first housing terminal location corresponding to each said active circuit board terminal,
a second housing terminal location corresponding to each said port location,
at least two flexible coaxial cables each having a flexible inner conductor and a flexible outer conductor,
each said flexible coaxial cable terminating at one end in means electrically connecting its said inner flexible conductor to one of said active circuit terminals at one of said first housing terminal locations and in means electrically connecting its flexible outer conductor to said passive connection,
each said flexible coaxial cable terminating at the other end in means for electrically connecting its flexible inner conductor to an exterior inner conductor associated with one of said ports at a second housing terminal location and means for electrically connecting its flexible outer conductor to the exterior outer conductor associated with the same port,
said flexible coaxial cables being of a length to connect a first terminal location to either of two said port locations,
whereby each said flexible outer conductor acts to provide shielding from the signals emanating from other said flexible coaxial cables.

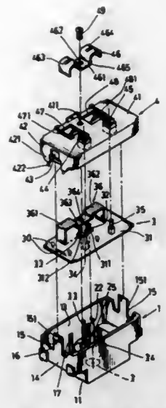
5,545,848

CASSETTE SPLITTER FOR TELEVISION ANTENNA SIGNALS

Hsin-Yi Lin, P.O. Box 55-1670, Taipei (104), Taiwan

Filed Oct. 25, 1993, Ser. No. 140,433
Int. Cl.[6] H02G 3/08
U.S. Cl. 174—52.1 11 Claims

1. A cassette splitter for television antenna signals comprising:
a housing (1) having a F connector (2) secured in a front portion of the housing and having a first engaging means formed on a first side wall of said housing:
an electrical circuit board (3) having an impedance matching circuit (30) and mounted in the housing; and
a rear cover (4) having a second engaging means formed on a side wall of the rear cover to be engaged with the first engaging means of said housing for a quick combination of said housing (1) and said rear cover (4), said rear cover (4) having an input terminal (5) electrically connected to a television antenna to lead said TV antenna signals inwardly through said impedance matching circuit (30) to be split into



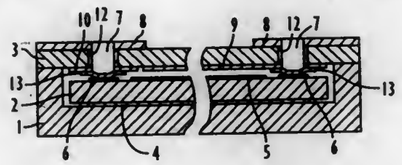
said F connector which is connected to an interior TV set and split into an output terminal (6) mounted on the rear cover (4) which is transmitted outwardly through said output terminal (6) secured on said rear cover (4).

5,545,849

ELECTRONIC COMPONENT DEVICE AND ITS MANUFACTURING METHOD

Shuji Kondo, Takarazuka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 20, 1994, Ser. No. 309,162
Claims priority, application Japan, Jan. 31, 1994, 6-009203
Int. Cl.[6] H01L 23/02
U.S. Cl. 174—52.4 22 Claims



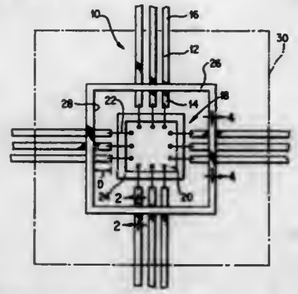
1. An electronic component device comprising:
an envelope having through holes at specified places thereof;
an electronic component element contained in said envelope and having internal electrodes formed thereon;
electric conductors surrounding each of said through holes on the upper and bottom surfaces of said envelope and also disposed on the inner surfaces of said through holes, with the respective electric conductors associated with each hole being electrically connected together, and with the electric conductors surrounding each of said through holes on the upper surface of said envelope forming external electrodes and the electric conductors surrounding each of said through holes on the bottom surface of said envelope forming connecting electrodes; and
metal foils disposed on one end of said respective through holes, which is situated towards the inside of said envelope to seal off the ends of said respective through holes, said metal foils electrically connected to said connecting electrodes and said internal electric conductors.

5,545,850

GUARD RING FOR INTEGRATED CIRCUIT PACKAGE

Deepak Mahulikar, Madison, Conn., and Paul R. Hoffman, Modesto, Calif., assignors to Olin Corporation, New Haven, Conn.

Filed Jan. 13, 1995, Ser. No. 373,138
Int. Cl.[6] H01L 23/02
U.S. Cl. 174—52.4 25 Claims



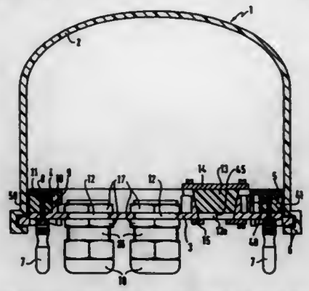
1. A leadframe structure, comprising:
a plurality of generally coplanar electrically conductive leads having an inner lead end and an outer lead end, said inner lead ends approaching a central aperture;
at least one metallic guard, having a metallic core, bonded to said electrically conductive leads, said at least one metallic guard having a first edge spaced from about 0.5 mm to about 5.0 mm from each of said inner lead ends; and
an adhesive layer disposed between said at least one metallic guard and said electrically conductive leads.

5,545,851

CAP SLEEVE

Hans-Juergen Meltsch, Schwerte; Franz-Fr Froehlich, Hagen; Rainer Zimmer, Schalksmuehle, and Wolf Kluwe, Hagen, all of, Germany, assignors to RXS Schrumpftechnik-Garnituren GmbH, Hagen, Germany

Filed Nov. 4, 1994, Ser. No. 336,057
Claims priority, application Germany, Nov. 5, 1993, 43 37 864.1
Int. Cl.[6] H02G 15/10
U.S. Cl. 174—74 R 22 Claims



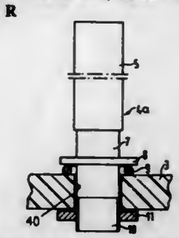
1. In a cap sleeve composed of a cap member with an open end, a face-end seal member having cable admissions and an annular seal system between the cap member and seal member, the improvements comprising holding means being provided for the mutual fixing of the seal member in the open end of the cap member, the seal system being circumferentially arranged in the seal member and being composed of a sealing channel having a volume which can be diminished, an elastic sealing ring disposed in said sealing channel and means for shifting at least one channel wall for reducing the channel volume so that the sealing ring is pressed in a sealing fashion against an inside wall surface of the cap member due to deformation of the sealing ring.

5,545,852

ARRANGEMENT FOR MULTIPLE CABLE INTRODUCTIONS IN CABLE SLEEVES

Georg Boscher; Klaus Amrhein, both of Hagen, and Dieter Sagemuehl, Herdecke, all of, Germany, assignors to RXS Schrumpftechnik-Garnituren GmbH, Hagen, Germany

Continuation of Ser. No. 103,029, Aug. 6, 1993, abandoned.
This application May 26, 1995, Ser. No. 451,748
Claims priority, application Germany, Aug. 19, 1992, 42 27 442.7
Int. Cl.[6] H01R 4/00; H02G 15/04;3/22
U.S. Cl. 174—84 R 23 Claims



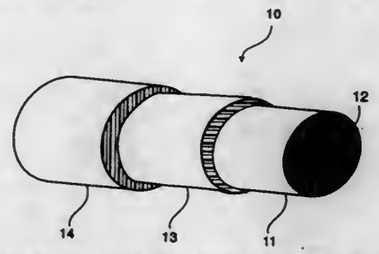
1. In an arrangement for multiple cable introductions in cable sleeves composed of a seal member having a plurality of cylindrical cable introduction nipples and shrink hose sections put in place thereon, the improvement comprising each introduction nipple receiving a cable and having the shrink hose section associated therewith shrunk onto the nipple and cable to form a pre-assembled unit, the seal member having a plurality of admission bores into which cable introduction nipples of the pre-assembled units can be placed, as needed, each of said cable introduction nipples comprising an all-around peripheral sealing flange, an insertion end being provided with threads, said introduction nipple being received in one of the admission bores with a sealing insert disposed between the flange and a sealing surface of the seal member, and a nut being threaded on the threads of the introduction nipple for clamping the sealing insert between the sealing surface and flange.

5,545,853

SURGE-PROTECTED CABLE

Nelson Hildreth, Colchester, Vt., assignor to Champlain Cable Corporation, Colchester, Vt.

Filed Jul. 19, 1993, Ser. No. 93,549
Int. Cl.[6] H01B 7/34
U.S. Cl. 174—120 R 9 Claims



1. A filter line type of cable having voltage surge protection capability and having special usefulness in the fabrication of electrical motors or coils, comprising:
a conductive core member;
a primary polymer layer comprising a cross-linked polymer material consisting of at least 20% by volume of ferrite or

magnetite disposed over said conductive core, said ferrite- or magnetite-filled primary polymer layer having the capability of attenuating high-frequency voltage peaks or dampening the high rate of rise voltages from square wave type signals traveling down a length of said filter line type of cable; and

an outer, flame-retardant insulation layer disposed over said primary polymer layer, said outer, flame-retardant insulation layer comprising a polyolefin material.

5,545,854

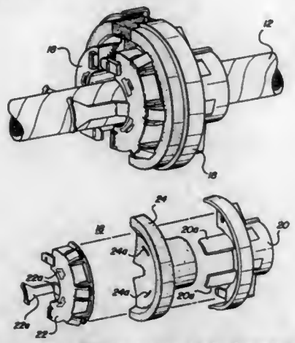
GROMMET FOR WIRE SEALING

Hidehito Ishida, Northville, Mich., assignor to Yazaki Corporation, Japan

Filed Dec. 29, 1993, Ser. No. 174,835

Int. Cl.[6] H01B *17/26*

U.S. Cl. 174—153 G **12 Claims**



1. A grommet assembly for sealing a wire harness or cable to a panel, for example an automotive dash panel, comprising:

two separate, radially-mating grommet halves, each half comprising a compressible seal half and two substantially rigid shell halves, the seal half and the shell halves axially assembled with the seal half compressively sandwiched between the shell halves, the seal half both axially and radially compressed by the shell halves in the assembled condition, each seal half including an elongated groove opening onto a radially-mating face of the seal half, such that when the grommet halves are assembled the grooves define an elongated seal channel which sealingly engages the cable, the grooves which define the seal channel flaring outwardly toward the face of each seal half.

5,545,855

ELECTRONIC FISH SCALE FOR CODING AND STORING WEIGHTS AND DISPLAYING SAME IN INVERSE ORDER

James R. Stanfield, Peoria; Robert A. Daquilante, and Bobby G. Lanham, Jr., both of Glendale, Ariz., assignors to Advanced Fishing Technologies, Inc., Peoria, Ariz.

Filed Nov. 22, 1994, Ser. No. 343,620

Int. Cl.[6] G01G *19/22*

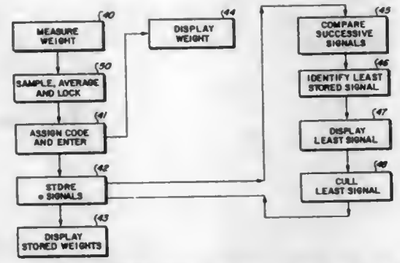
U.S. Cl. 177—25.13 **14 Claims**

1. An electronic scale and display device for weighing, coding and sequentially displaying data from a plurality of weighted units, said device comprising:

a) a hand-grippable case containing a passageway therein;

b) a load cell mounted within said case proximate to the passageway, said load cell providing an electrical signal in response to a weight applied thereto;

c) a load hook coupled to the load cell for receiving weighted units;



d) a signal processor circuit contained within said case and coupled to the load cell for receiving sequential electrical signals therefrom, each signal corresponding to a weight applied to the load cell, said processor circuit comparing sequential electrical signals and identifying the signal for the least weight;

e) a key pad located in the case for actuation and coupled to the signal processor comparing received weight signals and, the actuation of the keypad assigning a code to each signal in the signal processor;

f) a storage memory coupled to the signal processor for storing each signal and the code assigned thereto and responsive to actuation of the keypad, and

g) a display device located on the case and coupled to the signal processor for displaying the weight of a unit on the load hook and displaying stored codes and signals in accordance with the actuation of the keypad.

5,545,856

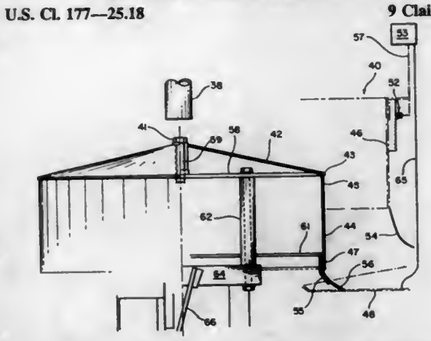
DISTRIBUTION SYSTEM FOR A COMBINATION WEIGHER OR THE LIKE

Richard E. Stapp, San Lorenzo, and Glenn A. Hayes, Hayward, both of Calif., assignors to The Paxall Group, Inc., Skokie, Ill.

Filed Jan. 7, 1994, Ser. No. 178,852

Int. Cl.[6] G01G *13/00;* **B65G** *37/00*

U.S. Cl. 177—25.18 **9 Claims**



1. A product distribution system for a combination weigher with a plurality of generally circularly arranged weigh hoppers comprising a cone shaped distribution member having an apex and a generally circular base at the bottom thereof disposed above a combination weigher, feed means for feeding a mass of loose solid product onto said cone shaped member and a coaxial cylindrical wall adjacent to said base of said cone shaped member and extending downwardly therefrom, a plurality of radially arranged feeders disposed below said first circular wall but in close proximity thereto and extending radially outwardly therefrom for moving product that falls from said cone shaped member toward the circularly arranged weigh hoppers, a second coaxial circular wall having a diameter which is greater than the diameter of said first cylindrical wall disposed above said feeders at a height which permits a limited amount of solid product to pass thereunder to thereby control the volume of product delivered to the weigh hoppers.

5,545,857

REMOTE CONTROL METHOD AND APPARATUS THEREOF

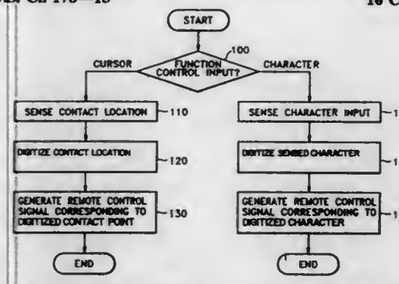
Sang-su Lee, Suwon, and Chang-wan Hong, Anyang, both of, Rep. of Korea, assignors to Samsung Electronics Co. Ltd., Kyungki-Do, Rep. of Korea

Filed Apr. 21, 1995, Ser. No. 426,618

Claims priority, application Rep. of Korea, Jul. 27, 1994, 94-18270; Jan. 20, 1995, 95-955

Int. Cl.[6] G08C *21/00;* **G09G** *3/02*

U.S. Cl. 178—18 **16 Claims**



1. A remote control method for performing a remote control operation of an image apparatus by using a remote controller having a touch panel and a contact means, said method comprising the steps of:

selecting one of a character and a cursor as a function control input means for selecting a function of the image apparatus;

sensing a location of a cootact point of the contact means on the touch panel if the cursor is selected in the selecting step;

digitizing the location on the touch panel of the sensed contact point;

generating a signal corresponding to the digitized location of the contact point and transmitting the generated signal to the image apparatus;

positioning the cursor displayed on the image apparatus at a location corresponding to the sensed location of the contact point of the contact means on the touch panel;

selecting a function displayed on the image apparatus according to the location of the cursor;

tracing a character onto the touch panel with the contact means if the character is selected in said step of selecting one of a character and a cursor as a function control input means;

sensing said character traced onto the touch panel in said tracing step;

digitizing the sensed character; and

generating a signal corresponding to the digitized character and transmitting the generated signal to the image apparatus in order to perform a function corresponding to the sensed character.

5,545,858

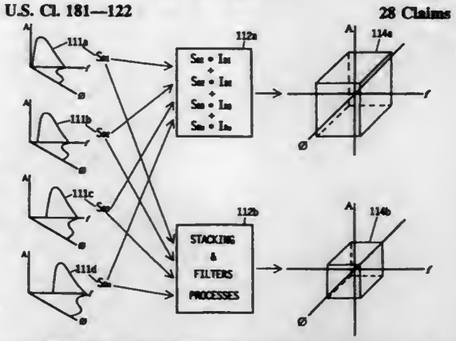
METHOD FOR PROCESSING AND INTERPRETING WIDE BAND FM SEISMIC SIGNALS

Stanley A. Sansone, 621-17th St., Suite 2630, Denver, Colo. 80293

Continuation-in-part of Ser. No. 51,560, Apr. 21, 1993, Pat. No. 5,335,208, which is a division of Ser. No. 901,517, Jun. 16, 1992, Pat. No. 5,231,252. This application Jun. 7, 1994, Ser. No. 255,048

Int. Cl.[6] G01V *1/16*

U.S. Cl. 181—122 **28 Claims**



1. A seismic survey method for receiving and processing a complex accoustical seismic signal that is produced in response to actuation of a seismic source, the method comprising the steps of:

positioning a plurality of seismic transducers, each of which has an associated different resonant frequency, for receiving the complex accoustical seismic signal, each of the transducers providing a different output signal having unique amplitude, phase, and frequency characteristics;

selectively combining the plurality of different output signals produced by the corresponding plurality of transducers to form a composite output signal exhibiting all of the amplitude, phase, and frequency characteristics of said complex accoustical seismic signal; and

recording values of amplitude, phase, and frequency of said complex accoustical seismic signal.

5,545,859

ANTI-VIRAL ACOUSTICALLY TRANSPARENT EARPHONE COVER

Kenneth A. Ullrich, 4369 Anna La., Wenatchee, Wash. 98801

Filed Mar. 7, 1994, Ser. No. 206,971

Int. Cl.[6] H04R *25/00*

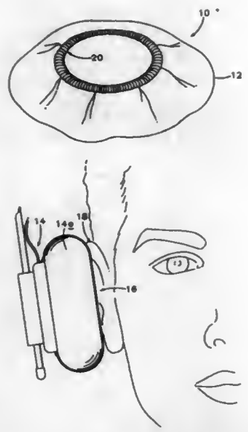
U.S. Cl. 181—129 **5 Claims**

1. An anti-viral, acoustically transparent audiometer headset system connectable to audiometric sound testing equipment, comprising:

an audiometer headset including opposing earphones, each centerable over the meatus of a patient's ear, and each being operable to transmit audiometric sounds into such patient's ear when connected to such audiometric-sound-testing equipment;

prophylactic structure formed as dual bodies each of a substantially acoustically-transparent material, and each constructed for covering one of the earphones; and

wherein each body exhibits the following approximate ranges of % distortion in total harmonic distortion (THD) at the following frequencies when the bodies are placed over the earphones, and wherein such audiometric-sound-testing equipment has a hearing level setting which is set at 100 dB:



FREQUENCY (KHz)	% DISTORTION (THD)
1	0.4–0.6
2	0.2–0.4
4	0.1–0.3.

5,545,860

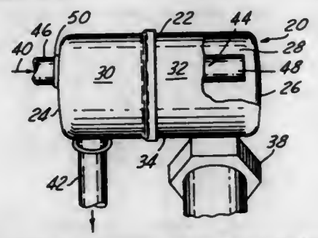
DISCHARGE MUFFLER FOR AN AUTOMOTIVE COMPRESSOR AND METHOD FOR MAKING SAME

Eugene Wilkes, Detroit, Mich.; Alejandro Mendez, Juarez, Mexico, and Bradley W. Bauer, Dearborn Heights, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Feb. 21, 1995, Ser. No. 391,800

Int. Cl.[6] F01N *1/00*

U.S. Cl. 181—255 **7 Claims**



1. An apparatus for attenuating noise produced by fluid pressure pulsations in a hydraulic system of an automotive vehicle, comprising:

a generally cylindrical housing having opposed axial ends and defining a chamber therebetween;

an inlet opening and an outlet opening both disposed at the same axial end of the housing; and

a tube extending through the inlet opening into the chamber a predetermined distance, said tube having a first portion fluidly connected to a fluid source, a second portion projecting through said inlet opening and into said chamber a predetermined distance and a circumferential bead formed between said first and second portions, said second portion being configured to form a press fit relationship with said inlet opening, said circumferential bead having a diameter greater than the diameter of said inlet opening, said circumferential bead being configured to limit the distance said second tube portion extends into said chamber and wherein the diameter of said first portion of said tube is greater than the diameter of said second portion of said tube.

5,545,861

MEMBRANOUS-VIBRATION SOUND ABSORBING MATERIALS

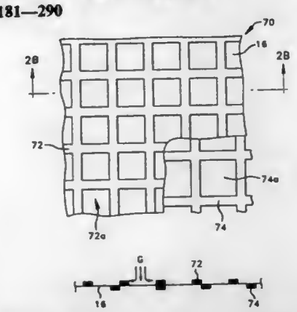
Toru Morimoto, 3-58-2, Wakamiya, Ichikawa-shi, Chiba, Japan, assignor to Toru Morimoto, Chiba, and Unix Corporation, Ltd., Tokyo, both of, Japan

Continuation of Ser. No. 28,979, Mar. 10, 1993, abandoned. This application Jun. 30, 1994, Ser. No. 268,671

Claims priority, application Japan, Mar. 13, 1992, 4-055135

Int. Cl.[6] E04B *1/82*

U.S. Cl. 181—290 **14 Claims**



1. An improved membranous-vibration sound absorbing material which comprises two perforated sheets having perforations of different sizes, for providing a sound absorbing effect, and a thin plastic film having a continuous non-perforated surface, wherein the thin plastic film is sandwiched between the two perforated sheets with a portion of the thin plastic film non-rigidly affixed between the two perforated sheets, to control the tension of the thin plastic film so that the thin plastic film vibrates upon the impact of sound waves and so that the vibrations of the thin plastic film combine with the sound absorbing effect of the two perforated sheets.

5,545,862

SLIDE SWITCH

Tsunesuke Takano, and Kouichi Sinzawa, both of Tokyo, Japan, assignors to Kabushiki Kaisha T an T, Japan

Filed Sep. 28, 1994, Ser. No. 314,500

Claims priority, application Japan, Oct. 18, 1993, 5-284002; Nov. 1, 1993, 5-296134; Jul. 5, 1994, 6-175923

Int. Cl.[6] H01H *15/00*

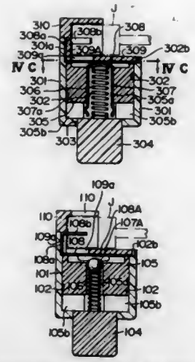
U.S. Cl. 200—16 R **15 Claims**

1. A slide switch comprising:

an electrically insulating housing defining a recess and an elongate slot which opens into said recess;

a slide body received within said recess of said housing so as to be slidably movable therewithin between at least first and second positions, wherein said slide body includes (i) a knob which protrudes outwardly from said housing through said defined slot so as to be moved manually from one end of the slot to another end and thereby slidably move the slide body between said at least first and second positions, and (ii) a movable electrical contact which is movable with said slide body between said at least first and second positions thereof;

a plurality of parallel fixed contacts extending substantially transverse to said slot such that said movable electrical contact of said slide body makes electrical contact with at least one of said fixed contacts when said slide body is moved into at least one of said first and second positions;



an electrically insulating cover plate attached to said housing in covering relationship to said recess so as to thereby cover said slide body and said fixed contacts;

said cover plate integrally including an open ended guide housing member which defines an interior space;

at least one of said fixed contacts having an end bent to form a contact plug which projects into said interior space of said guide housing member so as to be connectable to a plug-in jack inserted into said open end of said housing member.

5,545,863

Patent Not Issued For This Number

5,545,864

PUSH SWITCH

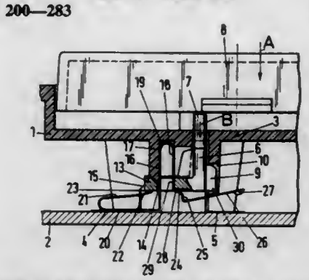
Karl-Heinz Bauer; Gerold Eckert; Edgar Maisch, all of Bad Neustadt a. d. Saale, and Anton Rüttiger, Wildflecken, all of, Germany, assignors to Preh-Werke GmbH & Co. KG, Bad Neustadt a.d. Saale, Germany

Filed Aug. 3, 1994, Ser. No. 283,899

Claims priority, application Germany, Sep. 9, 1993, 43 30 576.8

Int. Cl.[6] H01H *1/26*

U.S. Cl. 200—283 **14 Claims**



1. A push switch having a push rod whose movement stroke passes through a pressure point, a switching movement, and a return tension under effects of a one-piece spring element, comprising:

the push rod;

the one-piece spring element, forming on one side a spring-actuated contact arm for engaging the push rod and making contact with a conductor and on another side a spring return arm for engaging the push rod and returning the push rod to an initial position, said spring element having first and second spring guide legs formed thereon in the shape of a bent hairpin positioned between the contact arm and the return arm, the push rod being slidably mounted on said first and second spring guide legs, wherein at least the first spring guide leg adjacent the contact arm has a sloping step formed thereon against which the push rod engages during a stroke thereof causing a pivoting of the first spring guide leg and thereby the contact arm which is connected to the first and second guide leg.

5,545,865

PUSH-BUTTON SWITCH

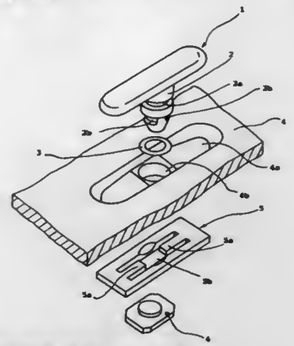
Seiitrou Gotou, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 11, 1994, Ser. No. 208,825

Claims priority, application Japan, Mar. 15, 1993, 5-080193

Int. Cl.[6] H01H *3/12*

U.S. Cl. 200—341 **4 Claims**



1. A push-button switch comprising:

a switch body;

a push-button having a head and a stub extending from said head for pressing said switch body at a tip thereof;

a casing having an opening through which said stud is passed, said head having a dimension such that an outer periphery of said head has a circumference greater than that of said opening;

a guide member fitted on said stub such that when said push button is pressed at a corner thereof, said guide member contacts a rear of said casing to form a fulcrum, whereby said push-button is inclined about said fulcrum; and

a recess formed in said casing contiguously with said opening of said casing and corresponding in contour to said push button, said recess having a bottom inclined outward at opposite sides thereof,

said push-button and said guide member being substantially symmetrical in shape for allowing said pressing of said switch body when downward pressure is applied to any part of said push-button.

5,545,866

NON-STICK PAINTED PUSHBUTTON ASSEMBLY

David S. Bulin, Greentown; Michael E. Fye, Kokomo, and Rick Stratman, Greentown, all of Ind., assignors to Delco Electronics Corp., Kokomo, Ind.

Filed Mar. 31, 1995, Ser. No. 414,830

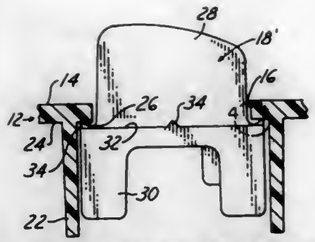
Int. Cl.[6] H01H *13/70*

U.S. Cl. 200—345 **8 Claims**

1. A control panel and pushbutton assembly comprising:

a panel having a surface and an aperture defined by a boundary;

a pushbutton having a button portion extending through the aperture and a peripheral ledge projecting in an outboard



direction beyond the boundary of the aperture, the ledge having a surface adjacent to the surface of the panel;

a film of paint on the pushbutton and on the surface of the ledge; and

a plurality of spacers between the surface of the ledge and the surface of the panel, the plurality of spacers being configured such that each spacer permits only single point contact between the surface of the ledge and the surface of the panel, whereby the plurality of spacers minimize contact of the film of paint with the surface of the panel.

5,545,867

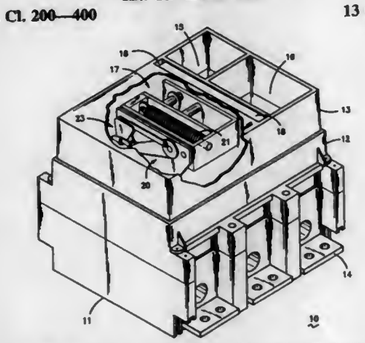
MOTOR OPERATOR INTERFACE UNIT FOR HIGH AMPERE-RATED CIRCUIT BREAKERS

Roger N. Castonguay, Terryville; James L. Rosen, West Hartford, and Mark A. Zaffetti, Windsor Locks, all of Conn., assignors to General Electric Company, New York, N.Y.

Filed Mar. 30, 1994, Ser. No. 220,382

Int. Cl.[6] H01H 5/00

U.S. Cl. 200—400 **13 Claims**



1. An industrial-rated circuit breaker for high level overcurrent protection comprising:

an insulative base (**11**):

an insulative cover (**13**) above said base, said cover enclosing a closing shaft (**26**) and a drive-shaft (**24**):

a closing spring (**21**) connecting with said closing shaft, said closing spring receiving forces for moving said spring into a charged condition:

a motor operator interface unit interfacing between said closing shaft and an electric motor (**58**) automatically providing said forces while said motor is operational: and

a handle (**18**) connecting with said closing shaft allowing an operator to manually provide said forces when said motor becomes inoperative;:

a motor drive plate (**35**) connecting with said closing shaft: and

a friction clutch (**37**) connecting with said drive plate, said friction clutch assuming a first position when said motor is operational to allow said motor to provide said forces, and said friction clutch assuming a second position when said motor is inoperative to allow said handle to provide said forces.

5,545,868

SUPERHIGH PURITY FLUID SUPPLY PIPE SYSTEM AND METHOD OF INSTALLING THE SAME

Tadahiro Ohmi, 1-17-301, Komegabukuro 2-chome, Aoba-ku Miyagi-ken Sendai-shi, and Masakazu Nakamura, Miyagi-ken, both of, Japan, assignors to Tadahiro Ohmi, Miyagi-ken, Japan

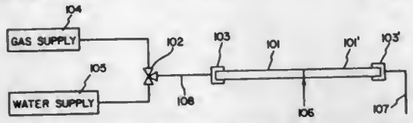
PCT No. PCT/JP92/01522, § 371 Date May 19, 1994, § 102(e) Date May 19, 1994, PCT Pub. No. WO93/09906, PCT Pub. Date May 27, 1993

PCT Filed Nov. 20, 1992, Ser. No. 244,127

Claims priority, application Japan, Nov. 20, 1991, 3-331351

Int. Cl.[6] B23K 9/00

U.S. Cl. 219—61 **18 Claims**



1. A method of interconnecting a plurality of pipe members by welding into a super high purity fluid supply pipe system, said method comprising:

welding two of said pipe members together while supplying an inert gas to one of said pipe members and discharging said inert gas from the other said pipe member;

after said welding operation supplying super pure water into said two pipe members and washing the interior of said two pipe members with said water, whereby metal particles deposited by fumes during said welding operation are removed.

5,545,869

ELECTRICAL APPARATUS FOR DESTROYING SURGICAL INSTRUMENTS

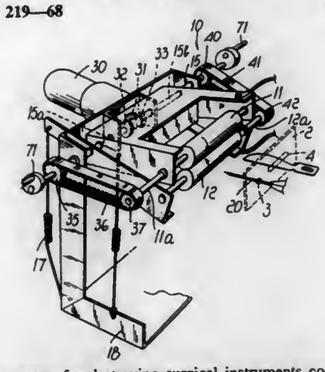
Maria T. Piva, 1, Avenue Henry Dunant, Montecarlo, Monaco

Filed Dec. 28, 1994, Ser. No. 356,404

Claims priority, application Italy, Jul. 1, 1992, MI92A1604

Int. Cl.[6] B23K 11/22

U.S. Cl. 219—68 **9 Claims**



1. Apparatus for destroying surgical instruments comprising a containment body which includes an insertion plate for the reception of the surgical instruments to be destroyed and a panel made of an electrically conducting material, said plate and said panel being respectively electrically connected to a first pole and to a second pole of an electric current generator, characterized in that said plate is arranged on a traction and removal unit adapted to receive said instruments, to remove said instruments from a holding means, and to push said instruments against said panel so as to provoke a melting current discharge through the instruments, and in that an insertion sensor is further provided for activating said traction and removal unit as soon as the instruments are inserted in said insertion plate.

5,545,870

ELECTRICAL DISCHARGE MACHINING METHOD AND APPARAUS WITH NON-LOAD TME CALCULATION

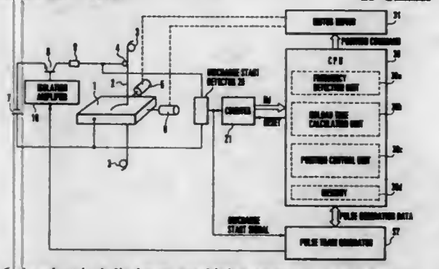
Akira Fujii, Tokyo, and Kiyoshi Kaneda, Kanagawa, both of, Japan, assignors to NEC Corporation, and Makino Milling Machine Co., Ltd., both of Tokyo, Japan

Filed Mar. 7, 1995, Ser. No. 399,507

Claims priority, application Japan, Mar. 9, 1994, 6-065732

Int. Cl.[6] B23H 1/02;7/18

U.S. Cl. 219—69.13 **15 Claims**



6. An electrical discharge machining apparatus comprising:

a discharge unit for intermittently applying a voltage pulse to an electrical discharge machining gap between a machining electrode and a workpiece in accordance with predetermined ON and OFF times to generate a discharge;

moving means moving said machining electrode and said workpiece relative to each other during generation of the discharge to perform electrical discharge machining of said workpiece;

frequency detecting means detecting a discharge frequency during electrical discharge machining;

calculating means calculating a nonload time by subtracting the predetermined ON and OFF times from a discharge repetition period based on a reciprocal of the discharge frequency from said frequency detecting means, the nonload time being a time from application of the voltage pulse to the start of the discharge, the ON time being a time from the start of discharge to the completion of discharge, the OFF time being a time from the completion of discharge to the next application of a voltage pulse; and

position control means controlling a relative position between said machining electrode and said workpiece by driving said moving means on the basis of the nonload time determined from said calculating means.

5,545,871

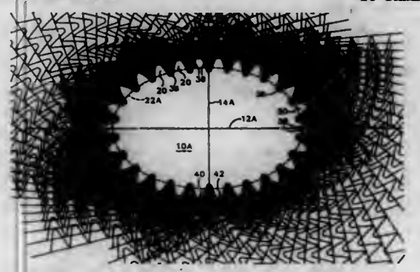
METHOD OF MAKING A MODIFIED ELLIPTICAL GEAR

Charles F. Carr, Antioch, Calif., assignor to Micropump, Inc., Northbrook, Ill.

Filed Jan. 11, 1994, Ser. No. 180,684

Int. Cl.[6] B23H 9/00;7/02

U.S. Cl. 219—69.17 **16 Claims**



1. A method for making a gear, comprising the steps of:

providing a modified elliptical shape having perpendicularly disposed major and minor axes and bulged portions projecting outwardly beyond the contour of a true elliptical shape in peripheral regions between the major and minor axes;

rotating a simulated hobbing rack about the modified elliptical shape;

tracing the outline of the simulated hobbing rack at selected positions during the rotation around the modified elliptical shape, the tracings defining the shape of a modified elliptical gear with projecting gear teeth; and

producing the modified elliptical gear using the shape of the modified elliptical gear defined by the tracing step.

5,545,872

PRESSURE CONTROLLER AND PRESSURE CONTROL METHOD FOR RESISTANCE WELDER

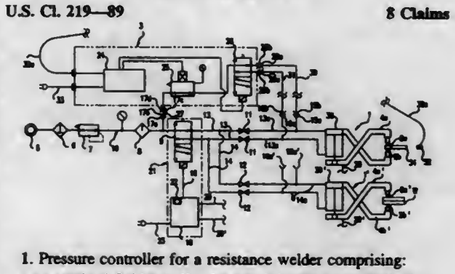
Toshiharu Nakajima, Yokkaichi; Satoru Machimura, Suzuka; Tadashi Goto, Mie-ken; Toshitaka Mochizuki, Suzuka; Shinji Hoshino, Suzuka, and Hiroshi Ohtani, Suzuka, all of, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 31, 1994, Ser. No. 331,701

Claims priority, application Japan, Mar. 14, 1994, 6-069047; Mar. 29, 1994, 6-058986

Int. Cl.[6] B23K 11/36

U.S. Cl. 219—89 **8 Claims**



1. Pressure controller for a resistance welder comprising:

a pressurized fluid supplier for supplying pressurized fluid;

a pressurizing mechanism for pressurizing a pair of electrode tips with said pressurized fluid;

an electromagnetic valve for controlling said pressurizing mechanism by switching the flow of said pressurized fluid;

a driving controller for controlling the operation of the resistance welder by controlling the electromagnetic valve;

a dressing pressure controller for controlling the pressure exerted by the electrode tips on a cutter of a tip dresser, by controlling said pressurizing mechanism to change the pressure of said pressurized fluid, at the time of dressing said electrode tip;

first connecting means for supplying, at the time of dressing said electrode tip, pressurized fluid from the pressurized fluid supplier to said dressing pressure controller;

second connecting means for supplying the pressurized fluid from the dressing pressure controller to said pressurizing mechanism;

a switching valve for regulating the flow of the pressurized fluid from said driving controller to the pressurizing mechanism at the time of dressing by said electrode tip; and

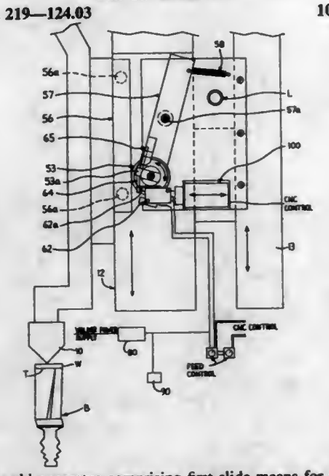
wherein said pressure of the electrode tips exerted on said dressing cutter is controlled during the dressing operation of a plurality of resistance welders each having a pair of electrodes.

5,545,873

VARIABLE CONTROL OF WELD TORCH PARAMETERS

Curtis R. Sauer, Claremore, Okla., assignor to Howmet Corporation, Greenwich, Conn.

Filed Nov. 9, 1994, Ser. No. 337,326
Int. Cl.[6] B23K *9/12*
U.S. Cl. 219—124.03 10 Claims



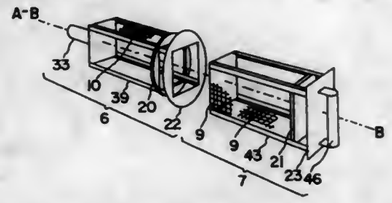
1. A weld apparatus comprising first slide means for moving a welding tool relative to a surface of a substrate to be welded, and a variable control system disposed on the first slide means, said control system comprising an arc voltage control second slide disposed on the first slide means for movement relative thereto in a direction parallel therewith, a welding tool disposed on said control second slide, said control second slide being movable relative to said first slide means in response to an irregularity on the substrate or on a previous weld bead being encountered by said welding tool, and a position detecting device disposed for detecting said relative movement between said first slide means and said control second slide in response to said welding tool encountering said irregularity to generate an electrical signal indicative that an irregularity has been encountered for adjusting a weld parameter.

5,545,874

HOT-AIR OVEN FOR COOKING FOOD IN HOT AIR

Bengt H. Hansson, SE-436 44, Askim, Sweden

PCT No. PCT/SE93/00204, § 371 Date Oct. 17, 1994, § 102(e) Date Oct. 17, 1994, PCT Pub. No. WO93/18349, PCT Pub. Date Sep. 16, 1993
PCT Filed Mar. 9, 1993, Ser. No. 295,850
Claims priority, application Sweden, Mar. 9, 1992, 9200717
Int. Cl.[6] F24C *15/00;* A47J *37/00*
U.S. Cl. 219—400 10 Claims



1. A hot air oven for preparing food, said oven comprising:

a generally rectangularly-shaped oven compartment having a top and a bottom wall, a back wall, and a first and a second side wall, each of said walls interconnecting so as to define an open, front end of said oven, and a generally rectangularly-shaped oven compartment in communication with said open, front end, said oven compartment defining an oven interior;

an air-cooled front panel comprised of a rotatably movable section and a stationary section, said stationary section enclosing said open, front end leading to said oven interior, said movable section removably insertable through a cut-out in said stationary section such that said movable section is generally centered within said interior of said oven, each of said sections comprised of a like first and second component, wherein said first component is a heat shield which coincides with and seals said open, front end of said oven, and said second component is a raised panel which envelopes said heat shield, said heat shield and said raised panel sealingly connected together such that a space exists therebetween which defines an air-cooling duct for communicating a stream of cooling air therethrough, said cooling air maintaining said front panel below a burn-causing temperature, said front panel including a discharge outlet formed in said raised panel for communicating said cooling air out of said cooling duct and into a surrounding atmosphere which exists about said oven,

said rotatable section forming a hot-air food processing compartment within said oven interior, said food processing compartment defined by a food-holding basket and a basket holder, said food-holding basket slidably insertable within said basket holder, thereby cooperating to retain said food within said food processing compartment during operable rotation thereof when said oven is cooking said food;

an air-tight outer housing comprised of a top and a bottom wall, a front and a back wall, and a pair of side walls interconnecting with said top, bottom, front, and back walls, said housing generally conforming to said oven compartment, said top, bottom, back, and side walls of said housing in a spaced confronting relationship to corresponding said walls of said oven compartment, such that a space exists therebetween, said front wall of said housing coextensive with said open, front end of said oven compartment and having an opening therein which is congruent with said oven compartment, said housing front wall including a filtered ambient-air inlet, a front opening indirectly communicating with said oven compartment interior, a plurality of cooling air passages located along said oven compartment bottom and side walls which are in communication with said air cooling duct of said front panel, and a plurality of discharge openings in communication with said discharge outlet of said front panel, said raised panel of said oven front panel enveloping said front opening, each of said cooling air passages, and each of said discharge openings;

means for providing a flow of said ambient air into said interior of said oven compartment, said air flow means disposed within said space between said housing and said oven compartment;

means for heating said air communicated into said oven compartment, said heating means disposed within said oven compartment interior;

means for directing said flow of heated ambient air to said food processing compartment, said directing means disposed close to said air heating means;

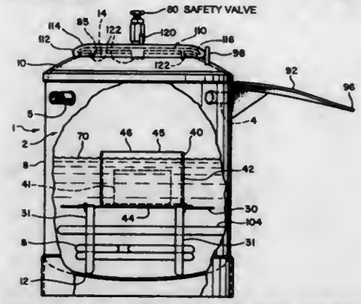
a ventilation device for controlling a water vapor content of said air circulated within said oven compartment interior, said device comprised of an elongate, a tube having an open end and a closed end, and a ventilating slide member inserted within said tube, and slidable therein between a first injector position and a second ejector position, said injector position corresponding to an oven operating condition wherein water vapor is added to the oven compartment interior, and said ejector position corresponds to an oven operating condition wherein water vapor is withdrawn from said oven compartment interior.

5,545,875

METHOD FOR HEAT CURING OF DENTAL PROSTHESES WITHOUT THE USE OF DENTAL FLASKS

Lilian Z. de Sternberg, and Alberto Sternberg, both of AV. Garibaldi 1969/603, Montevideo, CP 11800, Uruguay

Division of Ser. No. 960,860, Oct. 14, 1992, Pat. No. 5,444,218.
This application Jun. 1, 1995, Ser. No. 457,463
Claims priority, application Uruguay, Oct. 23, 1991, U-2974; Oct. 23, 1991, 23305
Int. Cl.[6] A61C *13/14*
U.S. Cl. 219—440 15 Claims



1. A method for heat curing of an acrylic dental prosthesis while the prosthesis is in a plaster chamber without a dental flask comprising:

a) providing a vessel for boiling or heating water, said vessel having an open top, a lid for sealing the top, an inlet for injection of comprised air into the vessel, an outlet for exhausting of compressed air, and valve means for closing and opening said inlet and said outlet,

b) heating water held in said vessel to a temperature sufficient for heat curing of said acrylic dental prosthesis,

c) placing said plaster chamber containing a heat curable acrylic dental prosthesis into a curing container without a dental flask, and filling said curing container with water to cover said plaster chamber, said curing container having an open top,

d) then placing the open curing container in said heated water such that the level of said heated water is below the open top of said curing container, and

e) pressurizing said vessel with compressed air, wherein said heated water held in said pressure vessel heats the water in said curing container to heat cure said acrylic dental prosthesis under pressure.

5,545,876

APPARATUS AND METHOD FOR MEASURING ELECTRIC POWER CONSUMED IN ELECTRICAL HEATERS

Joung I. Park, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Sep. 16, 1994, Ser. No. 307,211
Claims priority, application Rep. of Korea, Sep. 16, 1993, 1993-18621
Int. Cl.[6] H05B *1/02*
U.S. Cl. 219—492 14 Claims

1. A method of measuring electrical power consumption by an inverter cooker including a top heater, a side heater, first and second timers and a power consumption measuring key, said cooker sequentially performing rice-cooking, steam-settle-down and keep-warm functions, said method comprising the steps of:

(a) clearing said first and second timers;

(b) checking said power consumption measuring key for an input state;

(c) when a measuring key input is detected in step (b), heating the top heater for a first predetermined time, measuring power consumption by the top heater for the first predetermined time, and judging whether there is an abnormal state in the top heater;

(d) heating the top and side heaters for a second predetermined time, measuring power consumption by the top and side heaters during the second predetermined time, and judging whether there is an abnormal state in the side heater;

(e) at the end of said first and second predetermined times, putting said cooker in a keep-warm state, detecting the keep-warm temperature, and comparing said keep-warm temperature to a reference keep-warm temperature;

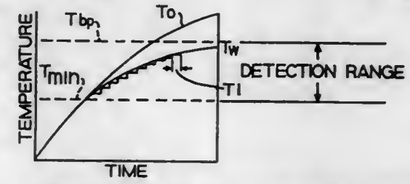
(f) heating the top and side heaters when said keep-warm temperature is lower than the reference temperature, and stop heating the top and side heaters when said keep-warm temperature is higher than the reference temperature.

5,545,877

COOKING VESSEL WITH WATER DETECTION MEANS

David B. Shelton, 11007 Tarrence Rd., Louisville, Ky. 40299

Filed Jun. 2, 1994, Ser. No. 253,074
Int. Cl.[6] H05B *1/02*
U.S. Cl. 219—497 2 Claims



1. A control means for use with a cooking to detect water in a cooking vessel including: cooking chamber means to receive liquid; heater means to supply heat to said liquid in said chamber; control means to measure the temperature of said liquid and control supply of heat of to said liquid to adjust temperature of said liquid; temperature signal retention means to receive said temperature signal and hold said temperature signal; timing means to periodically activate said signal retention means to receive and bold said temperature signal as a current retained signal; memory means to receive and bold said current retained signal and hold at least one previous retained signal and compare said previous retained signals with said current retained signal; calculator means to determine change of said liguid temperature between said previous retained signal and said current retained signal as a current time/temperature differential; second memory means to receive and hold said current time/temperature differential and at least one previous change time/temperature differential; comparator means to receive said current time/temperature differential and said previous time/temperature differential to compare said current time/temperature differential and second controller means to receive said comparator and generate comparator signal to operate said heater control means to restrict supply of heat to said liquid if said previous time/temperature differential said current time/temperature differential are in selected relationship; and switch

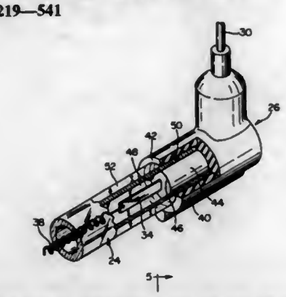
means to sense said liquid temperature and activate said second controller means when said liquid temperature is in selected temperature range.

5,545,878

DEFROST HEATER WITH SPIRAL VENT

William C. Jasper, II, Frankfort; Cheryl S. Middleton, Argos, and Ronald G. Prusinski, Plymouth, all of Ind., assignors to Wirekraft Industries, Inc., Mishawaka, Ind.

Filed Nov. 10, 1994, Ser. No. 337,997
Int. Cl.[6] H05B 3/08; F25B 47/00
U.S. Cl. 219—541 18 Claims



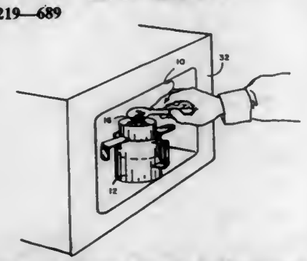
1. Defrost heater comprising a tube having opposite open ends and an inner circumferential surface defining a chamber extending between the open ends of said tubes, an electrical resistance heating element in said chamber extending through said tube between the ends thereof, a connector mounted on one end of the tube, said connector supporting an electrical conductor connected to said heating element for supplying electrical energy thereto, said connector including a circuitous path between the chamber through the open end of the tube and ambient atmosphere to vent a heated air enclosed within said chamber.

5,545,879

DEVICE AND METHOD FOR THE BREWING OF COFFEE IN A MICROWAVE OVEN ENVIRONMENT

Gregory R. Brotz, P. O. Box 1322, Sheboygan, Wis. 53081

Filed Jun. 22, 1994, Ser. No. 263,387
Int. Cl.[6] H05B 6/64
U.S. Cl. 219—689 1 Claim



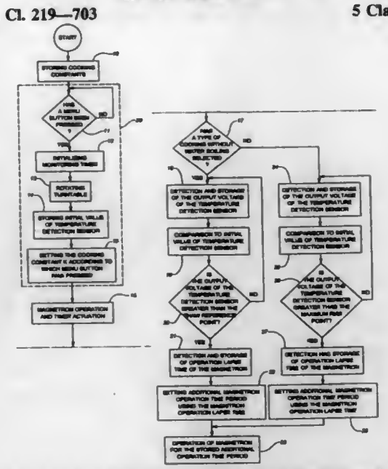
1. A method of brewing a serving of coffee from ground coffee in a microwave oven, comprising the steps of:
placing a container having side walls, and a sieve mesh bottom into a cup containing water;
suspending said sieve mesh below the surface of said water with said side walls extending from said sieve mesh bottom to above the surface of said water;
floating said ground coffee on said surface of said water within said container;
microwaving said container, ground coffee, water and cup in said microwave oven;
cooking said ground coffee floating in said water to further roast said ground coffee;
dissolving said ground coffee in said water by the action of beating by said microwave cooking;
brewing said ground coffee in said water to form a coffee beverage;
lifting said container completely out of said water in said cup; and
removing any undissolved ground coffee by said sieve mesh catching said undissolved grounds in said bottom of said container when said container is lifted out of said cup.

5,545,880

METHOD FOR AUTOMATIC CONTROL OF A MICROWAVE OVEN

Jong Uk Bu, Seoul, and Tae Yun Kim, Kyungki-do, both of, Rep. of Korea, assignors to Goldstar Co., Ltd., Rep. of Korea

Filed Mar. 20, 1995, Ser. No. 407,197
Int. Cl.[6] H05B 6/68
U.S. Cl. 219—703 5 Claims



1. A method for automatic control of a microwave oven having an automatic control unit with a memory and a cooking time period monitoring timer, a temperature detection sensor, a magnetron, and menu keys, comprising steps of:
storing in the memory cooking constants corresponding to different types of cooking;
initializing the microwave oven, including initializing the cooking time period monitoring timer;
storing an initial value of an output voltage of the temperature detection sensor corresponding to a measured temperature of a cooking object in the microwave oven;
selecting one of the cooking constants corresponding to a desired cooking type selected by a user actuating the menu keys;
operating the magnetron and starting the cooking time period monitoring timer for measuring an operating time period of the magnetron;
identifying whether the desired cooking type is one in which water boiling is desired;
setting a first cooking time period for a cooking course without water boiling based on a time period which it takes for the output voltage of the temperature detection sensor to reach a thaw reference point or for a cooking course with water boiling based on a time period which it takes for the output voltage of the temperature detection sensor to reach a maximum rise point;

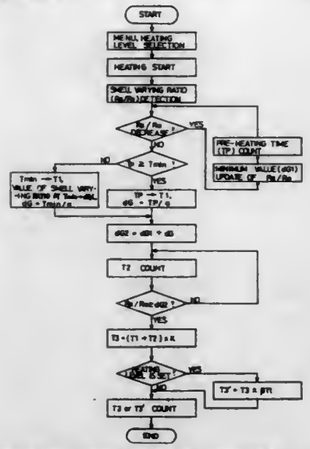
setting a total cooking time period based on the sum of the first cooking time period and the product of the first cooking time period and the selected cooking constant; and
continuing operation of the magnetron until it has been operating for the total cooking time period.

5,545,881

HEATING TIME CONTROL APPARATUS AND METHOD THEREOF FOR MICROWAVE OVEN

Eun S. Chai, and Kwan H. Lee, both of Kyungsangnam-Do, Rep. of Korea, assignors to LG Electronics Inc., Rep. of Korea

Filed Apr. 20, 1995, Ser. No. 425,594
Claims priority, application Rep. of Korea, Dec. 16, 1994, 34622/1994
Int. Cl.[6] H05B 6/68
U.S. Cl. 219—719 9 Claims



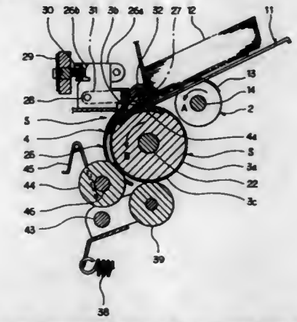
1. A heating time control apparatus, comprising:
sensor means for repeatedly detecting a predetermined parameter of a food as the food is being heated and for converting variations of the parameter into a predetermined electrical signal;
converting means for comparing the parameter to an initial value thereof and for converting the parameter into a varying ratio based on the initial value;
heating time detecting means for setting a first heating time based on the varying ratio reaching a minimum value and for setting a second heating time based on the varying ratio varying from the minimum value to a predetermined value;
storing means for storing a minimum value outputted from said heating time detecting means, said first heating time, and said second heating time;
coefficient storing means for storing a predetermined coefficient in accordance with kinds of food to be cooked;
operating means for outputting a quotient obtained by dividing the first heating time by a first coefficient from said coefficient storing means in order for the second heating time to be determined in said heating time detection means, and for calculating a third heating time by multiplying a sum of the first and the second heating times by a second coefficient from said coefficient storing means;
a counter for producing microwave drive signals based on the first and second heating times outputted from the heating time detecting means and the third heating time outputted from said operating means; and
output drive means for controlling a supply of a microwave energy to the food in accordance with the drive signals of said counter.

5,545,882

PAPER SHEET COUNTING MACHINE

Masaru Tanaka, Kanagawa-ken, Japan, assignor to Suzuyoshi Corporation, Kanagawa-ken, Japan

Filed Sep. 27, 1994, Ser. No. 312,652
Claims priority, application Japan, Sep. 28, 1993, 5-265903
Int. Cl.[6] B61L 1/16; G06M 7/00; B65H 3/52
U.S. Cl. 235—98 R 9 Claims



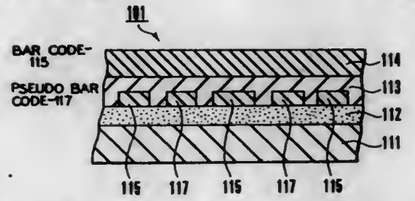
1. A machine for counting paper sheets comprising drive means; sheet separating roller means rotated by the drive means to wind the paper sheets therearound to transport the same one after another, said sheet separating roller means having a frictional elastic element attached partly to the outer circumference thereof and said frictional elastic element having a friction coefficient in connection with the paper sheets which is larger than a friction coefficient existing between the paper sheets themselves; and sheet separating plate means provided opposite to the sheet separating roller means with a predetermined clearance provided therebetween, said sheet separating plate means having a frictional element attached thereto at a position facing the sheet separating roller means and said frictional element having a friction coefficient in connection with the paper sheets which is larger than the friction coefficient existing between the paper sheets themselves, whereby said sheet separating roller means is rotated to transmit a transportation power to each of the paper sheets while said sheet separating plate means gives a braking power to each of the paper sheets so that the paper sheets may be transported separately one from another.

5,545,883

MAGNETIC CARD AND CARD READER APPARATUS UTILIZING A PSEUDO BAR CODE AND AN ADDRESS INFORMATION CODE

Hiroshi Sasou, and Takumi Kawashima, both of Tokyo, Japan, assignors to Tamura Electric Works, Ltd., Japan

Filed Jul. 12, 1994, Ser. No. 273,835
Claims priority, application Japan, Jul. 13, 1993, 5-195326
Int. Cl.[6] G06K 7/08
U.S. Cl. 235—449 11 Claims



1. A magnetic card comprising:
a magnetic layer formed on a substrate for recording magnetic information and for reflecting a light radiated on said magnetic card;

a bar code formed on a predetermined area of said magnetic layer, said bar code comprising a light absorption material, said bar code being detected by a lack of reflected light from said magnetic layer;

a protection layer formed on said predetermined area of said magnetic layer for protecting said bar code;

a pseudo bar code formed on said magnetic layer, said pseudo bar code being mixed with said bar code;

an address information code formed in said predetermined area, for indicating a specified position of said pseudo bar code, said address information code comprising a light absorption material, said address information code being arranged on the same read line as said bar code and said pseudo bar code; and

wherein said pseudo bar code is arranged with respect to said bar code in said specified position, and said bar code is detected on the basis of a presence or absence of reflected light from said magnetic layer and said specified position of said pseudo bar code; wherein said pseudo bar code has similar visual characteristics providing a camouflage against visual recognition of said bar code;

whereby said magnetic card is made more difficult to be counterfeited because said pseudo bar code can be separated from said bar code using said address information code.

5,545,884

CARD READER APPARATUS

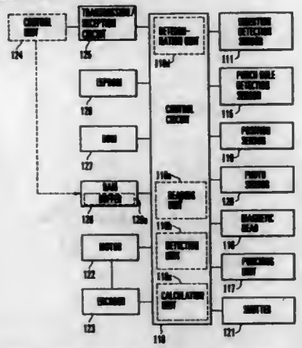
Yoshiaki Seto; Masayuki Miyauchi, and Takanobu Fujii, all of Tokyo, Japan, assignors to Tamura Electric Works, Ltd., Tokyo, Japan

Filed Jun. 13, 1995, Ser. No. 489,969

Claims priority, application Japan, Jun. 16, 1994, 6-134321

Int. Cl.[6] G06K *7/08*

U.S. Cl. 235—449 **9 Claims**



1. A magnetic card reader apparatus comprising:

convey means for conveying an inserted prepaid card at a predetermined speed, said prepaid card having a punch hole formed at a position corresponding to balance information;

sensor means for sampling the punch bole of said prepaid card during conveying of said prepaid card at a predetermined time interval from a leading end side of said prepaid card;

memory means for storing sampling data output from said sensor means;

reading means for sequentially reading out the sampling data stored in said memory means from sampling data corresponding to a trailing end portion of said prepaid card;

detection means for detecting data first representing a punch hole from the sampling data read out from said memory means; and

calculation means for calculating a position of the punch hole on the basis of a detection output from said detection means to detect the balance information of said prepaid card.

5,545,885

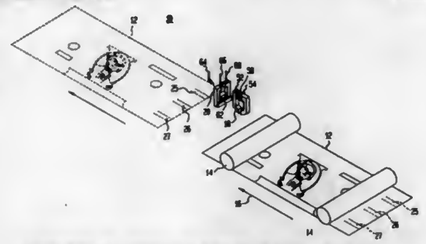
METHOD AND APPARATUS FOR DETECTING AND IDENTIFYING CODED MAGNETIC PATTERNS ON GENUINE ARTICLES SUCH AS BANK NOTES

Tomasz Jagielinski,. Carlsbad, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 891,006, Jun. 1, 1992, abandoned. This application Dec. 22, 1995, Ser. No. 577,760

Int. Cl.[6] G06K *7/08*

U.S. Cl. 235—449 **3 Claims**



1. Apparatus for identifying genuine articles comprising:

a magnetic write head;

a magnetoresistive read head located near said magnetic write head;

means for moving an article having magnetic regions printed in coded patterns on the face thereof with ink containing magnetic pigment past said read and write heads;

a drive circuit for energizing said write head with at least one pure tone high frequency recording signal for recording said at least one pure tone high frequency signal on said magnetic regions;

a detection circuit including a phase sensitive amplifier coupled to said magnetic read head for detecting the presence or absence of said pure tone high frequency signal in said magnetic regions and for producing a detection signal which is amplified by said phase sensitive amplifier; and

phase circuit means coupled to said drive circuit and said detection circuit for producing a phase reference signal proportional to the current and field phase of said at least one pure tone high frequency recording signal and for controlling said phase sensitive amplifier with said phase reference signal by comparing the instantaneous phase of said reference signal with that of said detection signal to improve the detection of low level signals from said magnetic regions.

5,545,886

BARCODE SCANNER USING AN ARRAY OF LIGHT EMITTING ELEMENTS WHICH ARE SELECTIVELY ACTIVATED

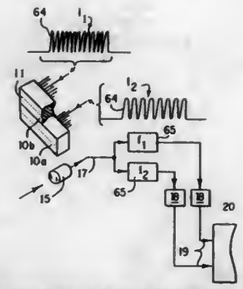
Boris Metlitsky; Joseph Katz, both of Stony Brook, N.Y.; Emanuel Marom, Tel Aviv, Italy, and Dean Gousgounis, Commack, N.Y., assignors to Symbol Technologies Inc., Holtsville, N.Y.

Division of Ser. No. 864,367, Apr. 6, 1992, Pat. No. 5 258,605, which is a continuation of Ser. No. 493,134, Mar. 13, 1990, abandoned. This application Jul. 29, 1993, Ser. No. 98,991

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—462 **14 Claims**

8. A scanner comprising:



a) a scanning light beam generator for simultaneously producing a plurality of scan lines modulated at different frequencies to impinge upon a symbol which encodes data using variations in light reflectivity, wherein said light beam generator includes an array of laser diodes which are activated in a predetermined seguential order;

(b) a sensor for receiving said light from said symbol and for producing an electrical signal representing data represented by said signal; and

(c) a filter for filtering the electrical signal to separate responses to said plurality of scan lines.

5,545,887

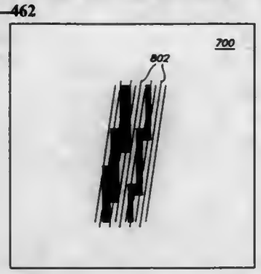
METHOD AND APPARATUS FOR DECODING BAR CODE SYMBOLS USING SUBPIXEL SCAN LINES

Christopher E. Smith, Newtown, and Earle Timothy, Clinton, both of Conn., assignors to United Parcel Service of America, Inc., Atlanta, Ga.

Division of Ser. No. 011,642, Jan. 29, 1993, Pat. No. 5,384,451. This application Oct. 25, 1994, Ser. No. 328,518

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—462 **8 Claims**



1. A method for reading a bar code symbol in a pixel image, comprising the steps of:

(a) selecting a first scan line substantially parallel to the bars and spaces of said symbol;

(b) scanning said symbol along said first scan line to generate a first value based on intensity values of two or more pixels of the pixel image that are crossed by the first scan line;

(c) selecting a second scan line substantially parallel to the bars and spaces of said symbol, wherein the distance between said first and second scan lines is less than the width of a pixel of said image;

(d) scanning said symbol along said second scan line to generate a second value based on intensity values of two or more pixels of the pixel image that are crossed by the second scan line; and

(e) decoding said symbol in accordance with said first and second values.

5,545,888

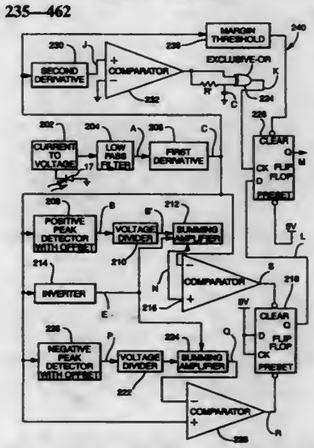
DIGITIZER CIRCUIT FOR A BAR CODE READER

Edward Barkan, Miller Place, and Raj Bridgelall, Mt. Sinar, both of N.Y., assignors to Symbol Technologies Inc., Holtsville, N.Y.

Division of Ser. No. 387,271, Feb. 13, 1995, which is a division of Ser. No. 28,107, Mar. 8, 1993, Pat. No. 5,408,081, which is a continuation-in-part of Ser. No. 721,951, Jun. 27, 1991, abandoned, which is a division of Ser. No. 510,074, Apr. 13, 1990, Pat. No. 5,059,779, which is a continuation-in-part of Ser. No. 367,335, Jun. 16, 1989, Pat. No. 5,124,539. This application May 22, 1995, Ser. No. 445,546

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—462 **27 Claims**



1. A circuit for digitizing an analog signal generated from a photoelectric conversion of reflected light when scanning indicia having spatially-separated, light-reflective portions bounded by edges, comprising:

differentiating means for differentiating the analog signal to generate a differentiated signal;

inverter means for inverting the differentiated signal to generate an inverted signal;

a positive and negative peak detecting means for detecting positive and negative amplitude peaks of the differentiated signal to generate peak signals;

summing means for summing each of the peak signals with the inverted signal to generate sum signals;

comparator means for comparing sum signals with the differentiated signal, the comparator means generating pulse signals indicative of the edges of the analog signal; and

control means responsive to the pulse signals for constructing a digital signal corresponding to the indicia being scanned.

5,545,889

PORTABLE LASER DIODE SCANNING HEAD

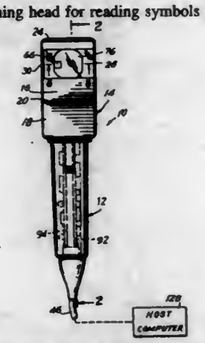
Edward Barkan, 19 Crane Neck Rd., Old Field, N.Y. 11733; Howard M. Shepard, 18 Provost Ave., Great River, N.Y. 11739; Mark J. Krichever, 26 Carlton La., Hauppauge, N.Y. 11788; Boris Metlitsky, 18 Millstream La., Stony Brook, N.Y. 11790, and Edward Barkan, 8 Lynn St., Setauket, N.Y. 11720

Continuation of Ser. No. 784,619, Oct. 30, 1991, abandoned, which is a continuation of Ser. No. 562,037, Aug. 2, 1990, abandoned, which is a continuation-in-part of Ser. No. 454,144, Dec. 21, 1989, Pat. No. 5,021,641, which is a division of Ser. No. 295,151, Jan. 9, 1989, Pat. No. 4,897,532, which is a division of Ser. No. 148,669, Jan. 26, 1988, Pat. No. 4,825,057, which is a division of Ser. No. 706,502, Feb. 28, 1985, abandoned. This application Dec. 7, 1993, Ser. No. 163,580

Int. Cl.[6] G06K 7/10

U.S. Cl. 235—472 18 Claims

1. A laser scanning head for reading symbols comprising:



(a) an actuatable laser light source mounted in the head and operative, when actuated, for generating an incident laser beam;

(b) a stationary folding mirror for reflecting the incident laser beam along a first optical path;

(c) a movable scanning mirror positioned in the first optical path so as to reflect the incident laser beam directly to a reference plane located exteriorly of the head, and to a symbol located in a working distance range in the vicinity of the reference plane, thereby reflecting off the symbol reflected laser light, at least a returning portion of which travels along a second optical path away from the symbol directly back to the scanning mirror;

(d) a stationary, curved collecting mirror having the folding mirror mounted in a central area thereof, the collecting mirror being larger than the folding mirror;

(e) a scan drive means mounted in the head for moving the scanning mirror and for sweeping the incident laser beam in a scan across the symbol, the returning portion of the reflected laser light having a variable intensity over the scan;

(f) a sensor mounted in the head for detecting the variable intensity of the returning portion of the reflected laser light over a field of view, and for generating an electrical analog signal indicative of the detected variable light intensity, the curved collecting mirror positioned to collect the returning portion of the reflected laser light over the field of view and to direct the collected returning portion to the sensor;

(g) a signal processor mounted in the head for processing the analog electrical signal, and for generating a processed signal indicative of the symbol; and

(h) a manually-actuatable trigger on the head and operatively connected to and operative for actuating, the scanning mirror, the laser light source, the scan drive means, the sensor, and the signal processor, to initiate a reading of the symbol upon manual actuation of the trigger by the user.

5,545,890

APPARATUS AND METHOD FOR STORING AND READING DATA

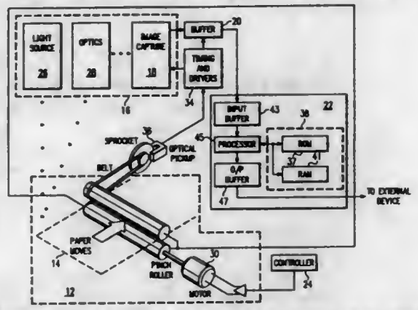
Richard A. Houghton, Brevard, Fla., and Steven L. Ruzic, Garland, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 54, Jan. 4, 1993, Pat. No. 5,451,764. This application Jan. 18, 1995, Ser. No. 374,318

Int. Cl.[6] G06K 7/10

U.S. Cl. 235—494 10 Claims

1. An interpreter for interpreting pixel data generated by a



scanner while scanning a storage format printed on a media, comprising:

a processor for executing instructions for converting the pixel data to binary data;

a program memory programmed for instructing said processor to:

locate a vertical edge of a column of the storage format,

locate a horizontal edge of a row,

count a first predetermined number of pixels from said horizontal edge, and

count a second predetermined number of said pixels from said vertical edge.

5,545,891

CIRCUIT FOR INCREASING THE SENSITIVITY OF A PHOTODIODE TO RECEIVED INFRARED SIGNALS IN RESPONSE TO CHANGES IN AMBIENT LIGHT

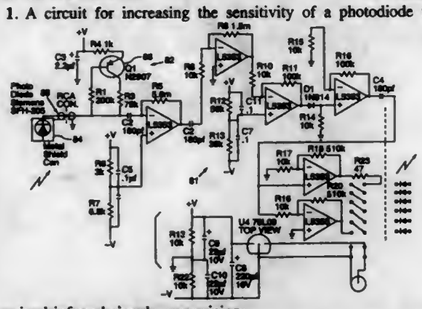
Marcus R. Smith, 496 Cullen Dr., Pacifica, Calif. 94044

Continuation-in-part of Ser. No. 48,908, Apr. 20, 1993, abandoned. This application May 1, 1995, Ser. No. 431,454

Int. Cl.[6] H04B 10/00; H01J 40/14

U.S. Cl. 250—214 AL 2 Claims

1. A circuit for increasing the sensitivity of a photodiode to



received infrared signals, comprising:

a transistor and a photodiode positioned in the circuit to act with each other in a current mirror relationship in which changes in ambient light at the photodiode cause the transistor to change accordingly the level of bias current through the photodiode, thereby increasing the photodiode's sensitivity to said infrared signals by keeping the photodiode at its minimum necessary bias current.

5,545,892

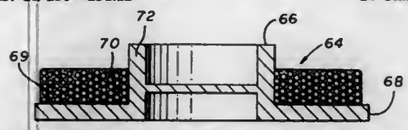
GYRO SENSOR COIL WITH LOW-FRICTION HUB INTERFACE

Donald J. Bilinski, Northridge; Gene H. Chin, Los Angeles; Amado Cordova, West Hills, and Samuel N. Fersht, Studio City, all of Calif., assignors to Litton Systems, Inc., Woodland Hills, Calif.

Filed Sep. 1, 1994, Ser. No. 299,585

Int. Cl.[6] G01D 5/34; G01B 9/02

U.S. Cl. 250—231.12 14 Claims



1. A rotation sensor for use in a fiber optic gyroscope comprising, in combination:

a) a spool comprising a substantially-planar mounting flange and a centrally-located substantially cylindrical hub having an outer surface and whose axis of rotation is orthogonal to the plane of said flange;

b) a continuous optical fiber, said fiber being wound upon said hub in a coil comprising a plurality of layers of coaxial turns embedded in a potting material of preselected composition and including an inner surface whereby said outer surface of said hub is in contact with said inner surface of said coil;

c) one end of said coil being fixed to a surface of said mounting flange; and

d) said outer surface of said hub being including a coating layer of material selected so that the coefficient of friction of said outer surface of said hub with respect to said inner surface of said coil is less than or equal to 0.12.

5,545,893

OPTOCOUPLER PACKAGE AND METHOD FOR MAKING

Clem H. Brown, Scottsdale, and John E. Salina, Phoenix, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 23, 1994, Ser. No. 363,483

Int. Cl.[6] H01J 40/14; G02B 27/00

U.S. Cl. 250—239 23 Claims

1. A method for making an optocoupler package comprising the steps of:

providing a first premolded half, the first premolded half including an emitter;

providing a second premolded half, the second premolded half including a detector;

mating the first premolded half and the second premolded half such that the emitter faces the detector; and providing a relief vent in the optocoupler package.

5,545,894

COMPACT HYDROGEN/HELIUM ISOTOPE MASS SPECTROMETER

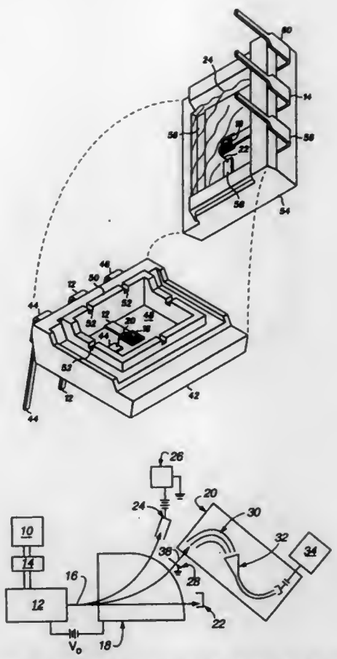
Herbert O. Funsten; David J. McComas, both of Los Alamos, N.M., and Earl E. Scime, Morgantown, W. Va., assignors to The Regents of the University of California, Alameda, Calif.

Filed May 4, 1995, Ser. No. 434,738

Int. Cl.[6] H01J 49/26

U.S. Cl. 250—281 24 Claims

1. An apparatus for detecting and quantifying isotopes of hydrogen and helium in a sample, which comprises in combination:



a. means for ionizing a portion of the sample and accelerating the ions generated thereby to form a substantially monoenergetic ion beam thereof;

b. means for separating said ions having atomic masses between two and six amu from both heavier and lighter ions, and further separating said ions having atomic masses between two and six amu into ion beams having a chosen q/m ratio and a chosen direction, where q is the charge of the ion, and m is the mass thereof;

c. thin foil means, placed in the chosen direction and adapted for receiving said ions separated by said ion separating means having a chosen q/m ratio, for converting a portion of the ions of hydrogen into negative ions, and for dissociating a portion of positive hydrogen molecular ions present in the ion beam into negative atomic hydrogen ions, while preventing the emergence of isotopes of helium as negative ions;

d. electrostatic means for separating the negative hydrogen ion isotopes derived from molecular hydrogen isotopes which are derived from atomic hydrogen isotopes according to the energy/q thereof;

e. means for detecting ions; and

f. means for counting the number of ions having a given energy/q.

5,545,895

METHOD OF STANDARDIZING DATA OBTAINED THROUGH MASS SPECTROMETRY

Larry G. Wright; Mark A. LaPack; Wayne W. Blaser; Kenneth R. Beebe, and Mary A. Leugers, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

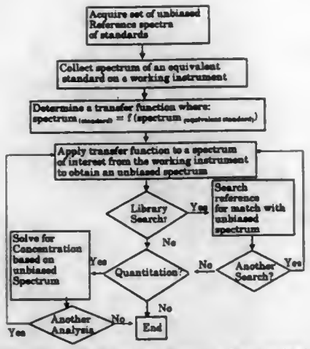
Filed Mar. 20, 1995, Ser. No. 407,338

Int. Cl.[6] H01J 49/00

U.S. Cl. 250—282 31 Claims

1. A method of determining relative instrument bias from mass spectrometric data, said method comprising the steps of:

(a) acquiring a mass spectrometric reference spectrum over a spectral region of interest wherein the reference spectrum is



representative of the mass spectrum of a standard, the reference spectrum being referred to as an unbiased reference spectrum, said unbiased reference spectrum being stored and retrievable;

(b) acquiring a mass spectrometric working spectrum of an equivalent standard over a corresponding spectral region on a working mass spectrometer, said working spectrum being referred to as a biased working spectrum; and

(c) deriving a transfer function from the unbiased reference spectrum and the biased working spectrum, the transfer function comprising an expression which mathematically equates the biased working spectrum to the unbiased reference spectrum.

5,545,896

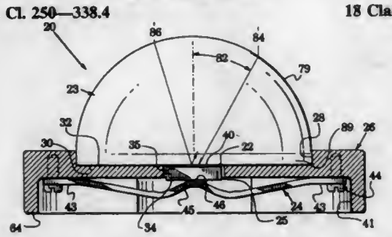
OPTICALLY IMMERSED SEMICONDUCTOR PHOTODETECTORS

Peter R. Bratt, Goleta, and David R. Nelson, Santa Barbara, both of Calif., assignors to Santa Barbara Research Center, Goleta, Calif.

Filed Jun. 28, 1994, Ser. No. 267,335

Int. Cl.[6] G01J *5/08*

U.S. Cl. 250—338.4 **18 Claims**



1. An optically-immersed, semiconductor photodetector system, comprising:

a semiconductor photodetector;

a substrate carrying said photodetector;

a lens;

a resilient spring defining a convex surface, said spring being arranged to act against said substrate with said convex surface; and

a support structure supporting said spring to urge said photodetector and said lens into optical contact with each other.

5,545,897

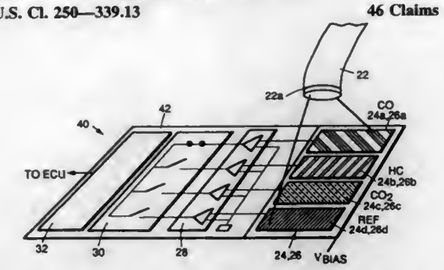
OPTICALLY-BASED CHEMICAL DETECTION SYSTEM

Michael D. Jack, Goleta, Calif., assignor to Santa Barbara Research Center, Goleta, Calif.

Filed Oct. 4, 1994, Ser. No. 322,447

Int. Cl.[6] G01N *21/25;21/31*

U.S. Cl. 250—339.13 **46 Claims**



1. A vehicle that generates a gas comprised of a plurality of different chemical species, the vehicle comprising:

means for sampling at least a portion of the gas, said sampling means having an optical input port and an optical output port;

an optical source having an output coupled to said optical input port of said sampling means, said optical source generating electromagnetic radiation having wavelengths that are absorbed by predetermined ones of the chemical species; and

a plurality of radiation detector means individual ones of which have an input coupled to said optical output port of said sampling means, individual ones of said radiation detector means comprising an integral input filter for passing wavelengths within a band of wavelengths and being responsive to the band of wavelengths, that includes wavelengths that are absorbed by at least one of the predetermined ones of the chemical species, for determining an amount of the electromagnetic radiation, within the band of wavelengths, that is transmitted through the gas within said sampling means, wherein individual ones of said input filters are deposited upon a radiation receiving surface of an associated one of said radiation detector devices.

5,545,898

SCINTILLATION CAMERA POSITION CALCULATION WITH UNIFORM RESOLUTION USING VARIANCE INJECTION

Daniel Gagnon, Blainville; Nicole Pouliot, St. Laurent; Michel Therrien, LaSalle, and Luc Laperrière, Montreal, all of, Canada, assignors to Park Medical Systems, Inc., Lachine, Canada

Filed Dec. 13, 1994, Ser. No. 354,596

Int. Cl.[6] G01T *1/161;1/208*

U.S. Cl. 250—369 **7 Claims**

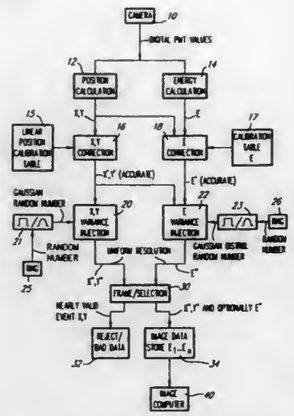
1. A scintillation position calculation apparatus for calculating positions of scintillation events in a scintillation camera having a scintillator and a plurality of photodetectors optically coupled to a planar surface of said scintillator, said apparatus comprising:

means for obtaining an accurate position value representing a position on said surface from scintillation event light intensity signals from said photodetectors;

means for determining a variance value constant corresponding to said position;

means for generating a non-uniform distribution random number; and

means for adding as a variance to said position value a product of said constant and said number to obtain a variance injected position value, whereby said constant and said non-uniform distribution are selected to yield variance injected position values for generating scintillation camera images with reduced artifact characteristics.



5,545,899

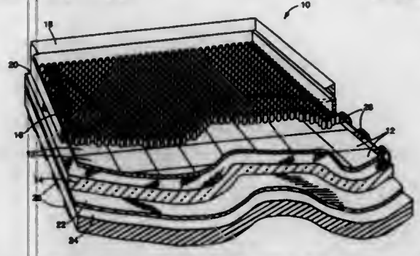
SOLID STATE RADIATION DETECTION PANEL HAVING TILED PHOTOSENSITIVE DETECTORS ARRANGED TO MINIMIZE EDGE EFFECTS BETWEEN TILES

Nang T. Tran, Lake Elmo; Joseph Y. Pai, and Choon-Woo Kim, both of Woodbury, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 163,147, Dec. 6, 1993, Pat. No. 5,436,458. This application Mar. 27, 1995, Ser. No. 410,773

Int. Cl.[6] G01T *1/24;* H01L *31/09*

U.S. Cl. 250—370.09 **6 Claims**



1. A solid state radiation detection panel adapted to receive radiation on a first surface, comprising:

a common substrate;

a plurality of modules, each of said plurality of modules formed on a silicon wafer comprising:

an array of photosensitive detectors arranged in a plurality of rows and a plurality of columns, each of said photosensitive detectors having a radiation sensitive area and producing an output; and

circuit means distributed within each of said plurality of modules for selective addressing one of said photosensitive detectors by addressing one of said plurality of rows and one of said plurality of columns and reading said output of said one of said array of photosensitive detectors;

each of said plurality of modules being arranged in a three dimensional structure in which said array of photosensitive detectors are arranged on a first surface of each of said plurality of modules covering substantially the entire area of said first surface, in which said circuit means is located within said module in an area away from said first surface opposite from said received radiation and wherein said plurality of modules of said solid state radiation detection panel are positioned immediately adjacent each other resulting in a near contiguous radiation sensitive area over the entire surface of said solid state radiation detection panel receiving said radiation;

panel addressing means for selectively addressing one of said photosensitive detectors in each of said plurality of modules by addressing said circuit means within each of said plurality of modules;

panel reading means for selectively reading the output of said one of said array of photosensitive detectors in each of said modules; and

interconnection means positioned between said plurality of modules and said common substrate for connecting said circuit means of each of said plurality of modules to said panel addressing means and to said panel reading means, respectively.

5,545,900

RADIATION ANALYSIS APPARATUS

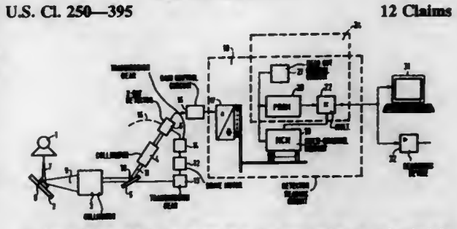
Hendrik Bolk, and Georges Zieltjens, both of Almelo, Netherlands, assignors to U.S. Philips Corporation, N.Y.

Filed Mar. 22, 1994, Ser. No. 216,563

Claims priority, application European Pat. Off., Mar. 24, 1993, 93200850

Int. Cl.[6] G01T *1/17*

U.S. Cl. 250—395 **12 Claims**



1. A radiation analysis apparatus for producing a pulse-height distribution comprising:

a radiation detector for generating an analog detector signal in the form of detector pulses,

an analog-to-digital converter for converting said analog detector signal into a digital signal having signal amplitudes indicative of the heights of the detector pulses,

a memory means provided with individual channels corresponding to different ranges of signal amplitudes of the digital signal, and each time a detector pulse occurs a content of the channel corresponding to the range in which the signal amplitude of the digital signal lies is increased by one incremental unit, thereby generating a stored count for each channel, and

a correction means to calculate per channel a corrected count on the basis of a correction signal having an individual signal amplitude for each channel which is representative of conversion-errors of the analog-to-digital converter applicable to the channel.

5,545,901

AUTOMATED OPTICAL ALIGNMENT USING A GALVOMETRIC SCANNER

Stephen L. Pentoney, Jr., Yorba Linda; Clarence Y. Lew, Anaheim, and David Rakestraw, Fremont, all of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Aug. 23, 1995, Ser. No. 518,283

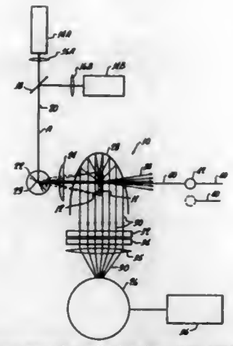
Int. Cl.[6] G01N *21/64*

U.S. Cl. 250—458.1 **16 Claims**

1. An apparatus for aligning each of a plurality of capillaries in an array comprising:

generating means for generating electromagnetic radiation;

electromagnetic radiation directing means for directing said electromagnetic radiation to each of said capillaries, whereby



said electromagnetic radiation interacts separately with each of said capillaries to produce a variable intensity radiation pattern; and

detector means for detecting said variable radiation intensity pattern to determine the position of each capillary center.

5,545,902

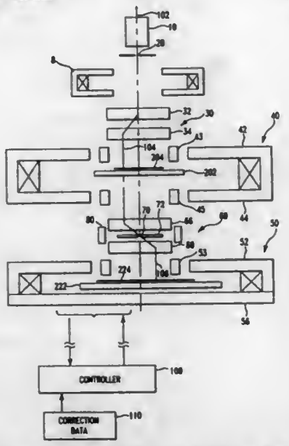
ELECTRON BEAM LITHOGRAPHY SYSTEM

Hans Christian Pfeiffer, and Werner Stickel, both of Ridgefield, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 173,305, Dec. 23, 1993, Pat. No. 5,466,904. This application Aug. 15, 1995, Ser. No. 515,437

Int. Cl.[6] H01J *37/30*

U.S. Cl. 250—492.2 **37 Claims**



1. An E-beam system for writing a pattern on a wafer comprising:

an electron source and means for accelerating an electron beam along a system axis and through an illuminating aperture;

first magnetic focus means, having a first focal length, disposed along said system axis, having a first magnetic symmetry axis, and intercepting said electron beam for focussing said electron beam to form an image of said illuminating aperture on a reticle, said image of said illuminating aperture covering an nth reticle subfield of a plurality of N noncontiguous reticle subfields of said reticle that are separated from one another by a subfield separation distance, said nth subfield containing at least 10^4 pixels, whereby all of said pixels of said nth subfield are exposed to said beam simultaneously;

first and second deflection means disposed along said system axis between said first magnetic focus means and said reticle for displacing said electron beam so that said electron beam travels along a reticle axis parallel to said system axis and intersecting said nth reticle subfield;

second magnetic focus means having a second focal length and disposed along said system axis having a second magnetic symmetry axis and intercepting said electron beam for said electron beam from said subfield;

third deflection means disposed along said system axis and intercepting said electron beam along said reticle axis for deflecting said electron beam back toward said system axis and through a pivot point on said system axis;

fourth deflection means disposed along said system axis and intercepting said electron beam for deflecting said electron beam to a wafer axis parallel to said system axis and on the opposite side of said system axis from said reticle axis;

third magnetic focus means, having a third focal length, disposed along said system axis, having a third magnetic symmetry axis and intercepting said electron beam, for focusing an image of said reticle subfield carried by said electron beam on a corresponding nth wafer subfield of a plurality of N contiguous wafer subfields on a wafer, each of said second and third magnetic focus means including magnetic axis-shifting means for controllably translating magnetic fields of said magnetic focus means such that said magnetic fields are substantially parallel to and azimuthally symmetric about said reticle axis and said wafer axis, respectively, whereby said second magnetic symmetry axis is coincident with said reticle axis and said third magnetic symmetry axis is coincident with said wafer axis; and

a controller connected to said source, said second magnetic focus means, and said third magnetic focus means for controlling the electron beam duration, said first, second, third, and fourth beam deflection means and said magnetic fields of said second and third magnetic focus means and said magnetic axis-shifting means.

5,545,903

RADIATION-EMITTING SEMICONDUCTOR DIODE AND METHOD OF MANUFACTURING SAME

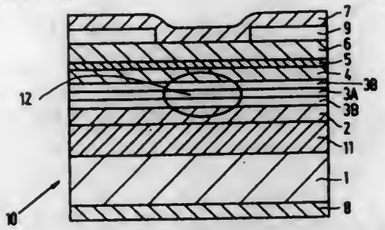
Carolus J. Van Der Poel; Adriaan Valster, and Hubertus P. M. M. Ambrosius, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 27, 1994, Ser. No. 266,043

Claims priority, application Belgium, Jun. 28, 1993, 09300664

Int. Cl.[6] H01L *33/00*

U.S. Cl. 257—14 **12 Claims**



1. A radiation-emitting semiconductor diode comprising a semiconductor body with a semiconductor substrate (1) of a first conductivity type on which a semiconductor layer structure is present which comprises in that order at least a first cladding layer (2) of the first conductivity type, an active layer (3A) which emits in the visible range of the spectrum, and a second cladding layer (4) of a second conductivity type opposite to the first, while the first and the second cladding layer (2, 4) are provided with means (5, 6, 7, 8) for electrical connection, characterized in that the active layer (3A) comprises $Al_xGa_{1-x}As$, the cladding layers (2, 4) comprise $Al_yGa_{w}In_{1-y-w}P$, and the active layer (3A) has an aluminium content (x) and a thickness (d) such that the wavelength of the photoluminescence emission lies between approximately 770 and 690 nm.

5,545,904

PERSONALIZABLE GATE ARRAY DEVICES

Zvi Orbach, Haifa, Israel, assignor to Quick Technologies Ltd., Haifa, Israel

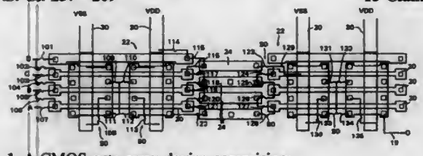
Continuation of Ser. No. 626,199, Dec. 7, 1990, abandoned, which is a continuation-in-part of Ser. No. 344,582, Apr. 28, 1989, Pat. No. 5,049,969, which is a continuation-in-part of Ser. No. 222,514, Jul. 21, 1988, Pat. No. 4,933,738, and a continuation of Ser. No. 449,063, Dec. 18, 1989, Pat. No. 4,924,287, which is a continuation of Ser. No. 311,397, Feb. 16, 1989, abandoned, and a continuation of Ser. No. 273,706, Nov. 15, 1988, abandoned, which is a continuation of Ser. No. 819,707, Jan. 17, 1986, abandoned. This application Jun. 23, 1993, Ser. No. 81,553

Claims priority, application Israel, Apr. 25, 1988, 86162

The portion of the term of this patent subsequent to May 8, 2007, has been disclaimed.

Int. Cl.[6] H01L *27/02;27/10;27/15*

U.S. Cl. 257—209 **15 Claims**



1. A CMOS gate array device comprising:

a substrate,

a collection of individual semiconductor elements formed on the substrate, and

a plurality of links interconnecting the collection of individual semiconductor elements into an inoperably connected CMOS gate array device, some of said plurality of links having designated fuse locations,

said collection of semiconductor elements being interconnected for converting the inoperable CMOS gate array device into a selected operable electronic function upon disconnection of predetermined ones of plurality of links at said designated fuse locations.

5,545,905

STATIC INDUCTION SEMICONDUCTOR DEVICE WITH A STATIC INDUCTION SCHOTTKY SHORTED STRUCTURE

Kimihiro Muraoka; Naohiro Shimizu, both of Kanagawa-Ken, and Takashige Tamamushi, 2-18-17, Shimoochiai, Shinjuku-ku, Tokyo, 161, all of, Japan, assignors to Toyo Denki Seizo Kabushiki Kaisha, and Takashige Tamamushi, both of Tokyo, Japan

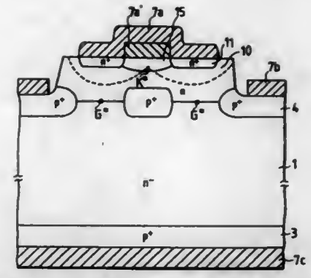
Filed Apr. 18, 1994, Ser. No. 229,328

Claims priority, application Japan, Apr. 19, 1993, 5-115293

Int. Cl.[6] H01L *29/80;29/74;31/112;27/095*

U.S. Cl. 257—268 **16 Claims**

1. A static induction semiconductor device with a static induction Schottky shorted structure, which has a first main region formed in a first main surface of a high resistivity layer, a second main region formed in one of said first main surface and a second main surface of said high resistivity layer, and a control region formed near said first main region and in which said control region forms a potential barrier in a channel region in said high resistivity layer and said control region controls the height of said potential barrier in said channel region to control a main current between said first main region and said second main region, characterized in: said first main region has a structure wherein regions of higher and lower impurity densities relative to each other are distributed; a main electrode formed in contact with said first main region and making ohmic contact with said higher impurity density region to form an ohmic junction therebetween and making a Schottky contact with said lower impurity density region to form a Schottky junction therebetween; said lower impurity density region between said control region and said main electrode being essentially depleted; and a potential barrier height at said Schottky junction being controllable by static induction according to a potential of said control region.



5,545,906

NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE WITH CONTAMINATION PROTECTION LAYERS

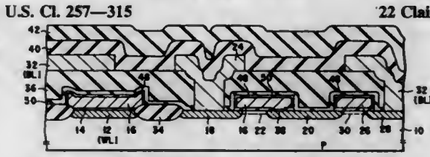
Hidemitsu Ogura, and Koichi Kanzaki, both of Kawasaki, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 979,216, Nov. 20, 1992, abandoned. This application Dec. 16, 1994, Ser. No. 357,766

Claims priority, application Japan, Nov. 21, 1991, 3-305186

Int. Cl.[6] H01L *29/788*

U.S. Cl. 257—315 **22 Claims**



1. A non-volatile semiconductor memory device comprising:

a semiconductor substrate of a first conductivity type;

a word line comprising a first semiconductor layer of a second conductivity type formed in said semiconductor substrate;

a memory cell arranged on said semiconductor substrate, said memory cell having a single polysilicon layer structure and including:

source and drain regions of the second conductivity type formed in said semiconductor substrate, and

a floating gate, insulatively spaced from said semiconductor substrate, for controlling conduction of a channel region formed between said source and drain regions in accordance with a potential of said word line;

a bit line extending linearly on said semiconductor substrate, said bit line including a first bit line portion and a second bit line portion which has a width greater than a width of said first bit line portion, said second bit line portion completely covering the region above the floating gate of said memory cell, thereby preventing at least one of movable ions and moisture from contaminating said floating gate; and

a passivation layer for protecting said memory cell.

VOL 1189 ISS 2 AG 13 1996 UMI

5,545,907

SEMICONDUCTOR DEVICE AND METHOD OF FORMING THE SAME

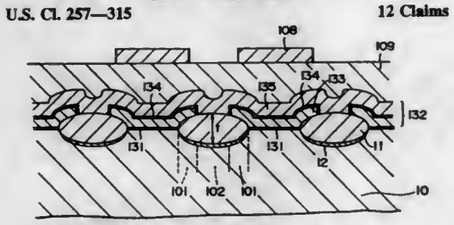
Koichi Maari, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. No. 327,718, Oct. 24, 1994. This application May 5, 1995, Ser. No. 435,653

Claims priority, application Japan, Oct. 28, 1993, 5-294065

Int. Cl.[6] H01L *29/788*

U.S. Cl. 257—315 **12 Claims**



1. A semiconductor device comprising:

a semiconductor substrate;

element isolation films formed on said semiconductor substrate;

a plurality of element isolation regions separated from each other by means of said element isolation films, at least one element isolation region bounded by said element isolation films comprising: source and drain regions formed on a surface portion of said semiconductor substrate in spaced apart relation from each other to define a channel region therebetween, a gate insulating film formed on said channel region, a floating gate disposed on said gate insulating film such that both ends thereof overlap end portions of said element isolation films bounding said surface portion, an insulating film formed to cover said floating gate, and a control gate disposed on said insulating film and on said element isolation films such that said control gate is formed in part directly on said element isolation films bounding said at least one element isolation region and in part on said insulating film covering said floating gate whose ends in turn are formed directly on said element isolation film; and

channel stop diffusion layers formed in said semiconductor substrate along lower surfaces of said element isolation films for preventing the inversion of channels in said element isolation regions, each of said channel stop diffusion layers being comprised of a single layer;

wherein said semiconductor substrate under each element isolation film bounding said at least one element isolation region has a first region which inverts and a second region that does not invert with respect to conductivity type when a potential is applied to the control gate, said first region being disposed at a position where the control gate is directly formed on the upper surface of the element isolation film, said second region being disposed at a position where the control gate is formed on the upper surface of the element isolation film via the floating gate.

5,545,908

VERTICAL TYPE INSULATED-GATE SEMICONDUCTOR DEVICE

Norihiro Tokura, Okazaki, and Naoto Okabe, Chita-gun, both of, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

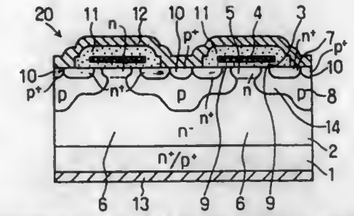
PCT No. PCT/JP92/01596, § 371 Date Jan. 27, 1994, § 102(e) Date Jan. 27, 1994, PCT Pub. No. WO93/12545, PCT Pub. Date Jun. 24, 1993

PCT Filed Dec. 7, 1992, Ser. No. 98,396

Claims priority, application Japan, Dec. 9, 1991, 3-324734

Int. Cl.[6] H01L *29/78;29/739*

U.S. Cl. 257—341 **30 Claims**



1. A vertical type insulated-gate semiconductor device comprising:

a semiconductor substrate having a first impurity concentration;

a semiconductor layer of a first conductivity type and having a second impurity concentration lower than said first impurity concentration of said semiconductor substrate, said semiconductor layer being located on said semiconductor substrate;

an insulated gate structure located on a main surface of said semiconductor layer, said insulated gate structure including a gate electrode;

a well region of a second conductivity type having a first vertical diffusion depth;

a source region of said first conductivity type formed within said well region, said well region and said source region being double-diffused laterally from an edge of said gate electrode into said main surface of said semiconductor layer below said gate electrode to thereby align a channel in a vicinity of said edge of said gate electrode, said channel being located at a surface of said well region below said gate electrode;

a diffusion layer of said first conductivity type formed at said main surface of said semiconductor layer so as to overlap said channel, said diffusion layer having a third impurity concentration higher than said second impurity concentration of said semiconductor layer and a second vertical diffusion depth shallower than said first vertical diffusion depth of said well region, a net amount of a first impurity density of said first conductivity type of said diffusion layer being higher than a net amount of a second impurity density of said second conductivity type of said surface of said well region where said channel is formed;

a compensated region of said first conductivity type formed below said gate electrode and at said main surface of said semiconductor layer proximate to said well region, said compensated region eroding a configuration of said well region at said main surface of said semiconductor layer and below said gate electrode; and

a length of said channel being determined by a distance between said source region and said compensated region.

5,545,909

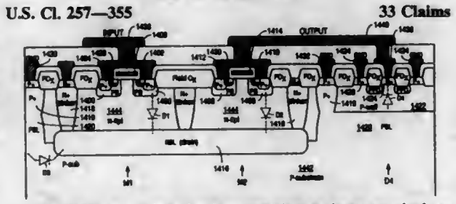
ELECTROSTATIC DISCHARGE PROTECTION DEVICE FOR INTEGRATED CIRCUIT

Richard K. Williams, Cupertino, Calif.; Peter Hille, Darmstadt, Germany, and Robert G. Wrathall, Scotts Valley, Calif., assignors to Siliconix incorporated, Santa Clara, Calif.

Filed Oct. 19, 1994, Ser. No. 326,172

Int. Cl.[6] H01L *23/62*

U.S. Cl. 257—355 **33 Claims**



1. An ESD protection circuit comprising an input terminal, an output terminal, two depletion mode MOSFETs connected in series between said input terminal and said output terminal, the source, body and gate of each of said MOSFETs being shorted together, the drains of said MOSFETs being connected together, a first diode having a cathode connected to said drains and an anode connected to ground, and a second diode having a cathode connected to the output terminal and an anode connected to ground.

5,545,910

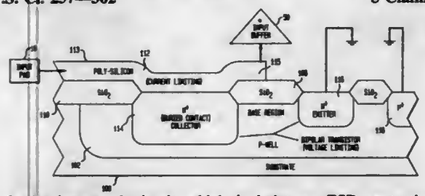
ESD PROCTECTION DEVICE

Wen-Yueh Jang, Hsin Chu, Taiwan, assignor to Winbond Electronics Corp., Hsinchu, Taiwan

Filed Apr. 13, 1994, Ser. No. 227,355

Int. Cl.[6] H01L *23/62*

U.S. Cl. 257—362 **8 Claims**



1. An integrated circuit which includes an ESD protection device, comprising

a first region of a first conductivity type,

an insulating region grown on a first portion of a surface of said first region,

a resistive conducting region containing impurities disposed on said insulating region and on a second portion of said surface of said first region adjacent to said first portion of said surface,

a second region, which is heavily doped, of a second conductivity type, formed under said resistive conducting region to a particular first depth from a surface of said first region by thermally diffusing impurities from said resistive conducting region through said second surface portion, and

a third region, which is heavily doped, of said second conductivity type, disposed in said first region and extending to a second depth, less than said particular first depth, from a third surface portion of said first region, which third surface portion is adjacent to said first portion of said surface and opposite to said second portion of said surface,

an input pad for receiving an external signal, said input pad being connected to one end of said resistive conducting region, and

an output pad for connecting to external circuits, said output pad being connected to another end of said resistive conducting region which overlies said insulating region.

5,545,911

SEMICONDUCTOR DEVICE HAVING MOSFETS FORMED IN INHERENT AND WELL REGIONS OF A SEMICONDUCTOR SUBSTRATE

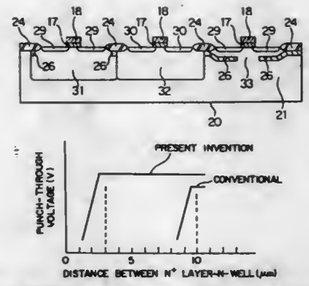
Kazutaka Otsuki, and Masaaki Yamada, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Dec. 7, 1994, Ser. No. 350,696

Claims priority, application Japan, Dec. 17, 1993, 5-317986

Int. Cl.[6] H01L *29/76;29/80;29/94*

U.S. Cl. 257—376 **9 Claims**



1. A semiconductor device comprising:

a semiconductor substrate having an inherent region of a first conductivity type and a well region of a second conductivity type opposite to said first conductivity type, said well region having an impurity concentration higher than the impurity concentration of said inherent region, said semiconductor substrate having a main surface at the surfaces of said inherent region and said well region;

an insulating film selectively formed on said main surface and separating said inherent region from said well region;

a first MOSFET having source and drain regions in said inherent region;

a second MOSFET having source and drain regions in said well region; and

a carrier stop layer having an impurity concentration higher than the impurity concentration of said inherent region and formed within said inherent region, said carrier stop layer extending from the vicinity of the bottom of said insulating film and underlying said source and drain regions of the first MOSFET in spaced relationship therewith, said carrier stop layer having an opening opposite to a channel region of said first MOSFET.

5,545,912

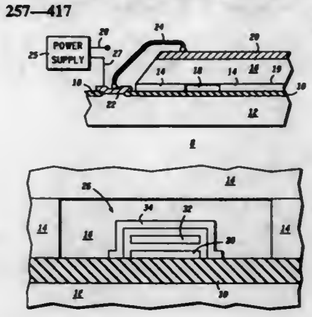
ELECTRONIC DEVICE ENCLOSURE INCLUDING A CONDUCTIVE CAP AND SUBSTRATE

Ljubisa Ristic, Paradise Valley; Daniel N. Koury, Mesa; John E. Schmiesing, Tempe; Ronald J. Gutteridge, Paradise Valley, and Henry G. Hughes, Scottsdale, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 27, 1994, Ser. No. 329,927

Int. Cl.[6] G01P *15/125;* **H01L** *23/14*

U.S. Cl. 257—417 **16 Claims**



1. An enclosure for an electronic device comprising:

a conductive semiconductor substrate underlying said electronic device;

a dielectric layer on said substrate;

a conductive cap overlying said electronic device and bonded to said dielectric layer using a bonding layer; and

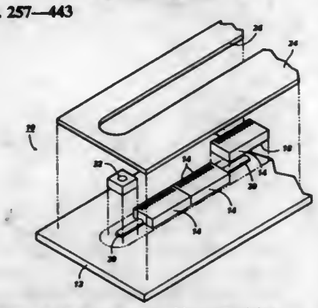
a power supply output having a substantially fixed potential, wherein said power supply output is electrically coupled to said conductive semiconductor substrate and to said conductive cap.

5,545,913

ASSEMBLY FOR MOUNTING SEMICONDUCTOR CHIPS IN A FULL-WIDTH-ARRAY IMAGE SCANNER

Kraig A. Quinn, Webster; Josef E. Jedlicka, Rochester, and Brian T. Ormond, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 17, 1994, Ser. No. 330,299
Int. Cl.[6] H01L *31/00*
U.S. Cl. 257—443 **13 Claims**



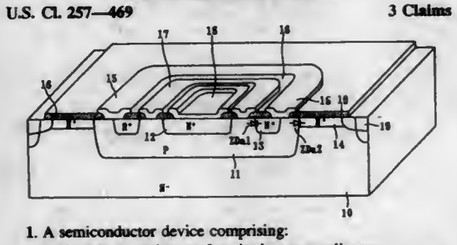
1. A semiconductor chip assembly, comprising:
a support substrate;
an elongated bead of electrically conductive adhesive, extending along a surface of the support substrate;
a semiconductor chip disposed along a first portion of the elongated bead, and attached to the support substrate by the elongated bead of electrically conductive adhesive; and
a connection block disposed along a second portion of the elongated bead, the connection block including a first surface contacting the elongated bead and a second surface, and a conductor extending from the first surface to the second surface.

5,545,914

SEMICONDUCTOR DEVICE HAVING ZENER DIODES WITH TEMPERATURE STABILITY BETWEEN BASE AND COLLECTOR REGIONS

Hiroshi Kumano, Kyoto, Japan, assignor to ROHM Co., Ltd, Kyoto, Japan

Filed Oct. 18, 1994, Ser. No. 324,611
Claims priority, application Japan, Oct. 27, 1993, 5-268541
Int. Cl.[6] H01L *29/732;29/866*
U.S. Cl. 257—469 **3 Claims**



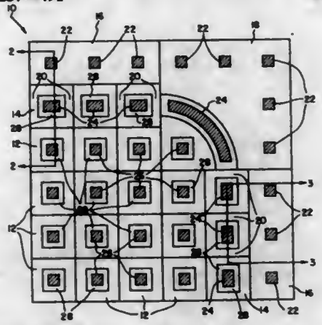
1. A semiconductor device comprising:
a semiconductor substrate functioning as a collector;
a base region of a conductivity type opposite to a conductivity type of the semiconductor substrate, the base region being formed in the semiconductor substrate;
an emitter region of a conductivity type a same as the conductivity type of the semiconductor substrate, the emitter region being formed in the base region;
a first region of a conductivity type a same as the conductivity type of the semiconductor substrate, the first region having a high impurity concentration and being formed in an upper part of the base region, the first region and the base region forming a first Zener diode;
a second region of a conductivity type a same as the conductivity type of the semiconductor substrate, the second region having a high impurity concentration and being formed in an upper part of the semiconductor substrate to surround the base region so as to adjoin the base region, the second region and the base region forming a second Zener diode; and
a metallic layer formed on the semiconductor substrate so as to be in contact both with the first region and with the base region forming the second Zener diode,
wherein the semiconductor substrate, the base region and the emitter region form a transistor, and wherein the first and second Zener diodes are formed in a ring to surround the transistor, and wherein the first and second Zener diodes each have a breakdown voltage in a range where both an avalanche effect and a tunnel effect exist in a same degree, and wherein by a sum of the breakdown voltages, a breakage which is caused between a collector and a base of the transistor due to an overvoltage is prevented.

5,545,915

SEMICONDUCTOR DEVICE HAVING FIELD LIMITING RING AND A PROCESS THEREFOR

Donald R. Disney, Kokomo; Wayne A. Sozansky, Greentown, and James M. Himelick, Kokomo, all of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Jan. 23, 1995, Ser. No. 376,566
Int. Cl.[6] H01L *23/58;29/76;29/94*
U.S. Cl. 257—491 **13 Claims**



1. A semiconductor device comprising:
a substrate;
a dielectric layer on a surface of the substrate;
a polysilicon layer on the dielectric layer so as to be electrically isolated from the substrate;
a first plurality of cells within an interior region of the surface of the semiconductor device, each of the first plurality of cells comprising a transistor having a source, a gate electrode formed by the polysilicon layer, and a drain formed by the substrate;
a second plurality of cells aligned on the substrate so as to circumscribe the first plurality of cells, thereby segregating the interior region from an exterior region on the surface of the substrate, each of the second plurality of cells comprising:
an opening extending through the dielectric and polysilicon layers to the surface of the substrate, the polysilicon layer forming a bridge between each adjacent pair of openings so as to interconnect the interior region and the exterior region, each bridge having a width;
a well of a first dopant type in the substrate beneath the opening, the well having a depth as measured from the surface of the substrate, the well laterally extending beneath each adjacent bridge so as to merge with the well of each adjacent cell of the second plurality of cells, such that the wells of the second plurality of cells form a continuous field limiting ring in the substrate of the semiconductor device; and
an island of a second dopant type in the well;

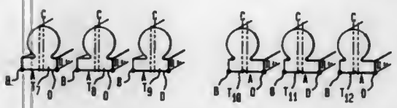
a gate contact in the exterior region of the semiconductor device and electrically interconnected with the polysilicon layer; and
a metallization layer having portions projecting through the openings and into the island and well of each of the second plurality of cells, the metallization layer being in electrical contact with the island of each of the second plurality of cells, the metallization layer being electrically isolated from the polysilicon layer;
wherein the second plurality of cells contribute to the current conduction of the semiconductor device in the on-state.

5,545,916

HIGH Q INTEGRATED INDUCTOR

Iconomos A. Koullias, Reading, Pa., assignor to AT&T Corp., Murray Hill, N.J.

Filed Dec. 6, 1994, Ser. No. 350,439
Int. Cl.[6] H01L *29/00*
U.S. Cl. 257—531 **14 Claims**



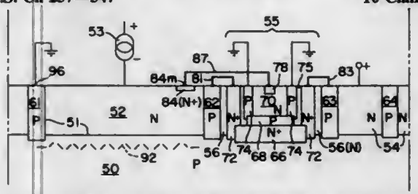
1. An inductive structure integrable with a semi-conductor integrated circuit, comprising:
an electrically continuous conductive path of depth D and width W, disposed in a spiral pattern upon a substrate conductive material of width W' and depth D', where W>W' been added to a surface corresponding to said width W of said conductive path whereby W's centerline is offset from Ws centerline such that a series resistance to current flowing through said structure is not substantially increased at any one frequency relative to said portion of conductive material not being added, during high frequency operation of at least 100 MHz.

5,545,917

SEPARATE PROTECTIVE TRANSISTOR

Roger C. Pepplette; Richard B. Cooper, both of Shrewsbury, and Robert J. Stoddard, Lincoln, all of Mass., assignors to Allegro Microsystems, Inc., Worcester, Mass.

Filed May 17, 1994, Ser. No. 245,127
Int. Cl.[6] H01L *29/00*
U.S. Cl. 257—547 **10 Claims**



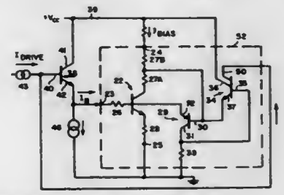
1. An integrated circuit chip of the type having a semiconductor substrate of one conductivity type, a first PN-junction isolated island of the opposite conductivity type formed in and surrounded by said substrate, which first island may momentarily become forward biased with respect to said surrounding substrate, at least a second PN-junction isolated island of said opposite conductivity type formed in said substrate and lying to one side of said first island, which second island tends to collect injected carriers from said first momentarily forward-biased island, wherein the improvement comprises:
a) a PN-junction isolated third island of the opposite conductivity type, a vertical protective bipolar transistor formed in said third island, said protective transistor having a base of one conductivity type and having a collector and an emitter of the opposite conductivity type;
b) circuit ground conductors connecting a ground point in said integrated circuit to said protective-transistor base region and to an isolation-wall portion of said substrate at a side opposite that of said one side of said first island;
c) one electrical conductor connecting said protective-transistor emitter to an opposite-conductivity-type portion of said first island; and
d) another electrical conductor connecting said protective-transistor collector to an isolation-wall portion of said substrate at said one side of said first island.

5,545,918

CIRCUIT CONSTRUCTION FOR CONTROLLING SATURATION OF A TRANSISTOR

Francisco Dos Santos, Jr., Nashua, N.H., and Larry M. DeVito, Tewksbury, Mass., assignors to Analog Devices, Inc., Norwood, Mass.

Continuation of Ser. No. 281,521, Jul. 25, 1994, Pat. No. 5,418,386, which is a continuation of Ser. No. 847,281, Mar. 10, 1992, abandoned. This application Mar. 15, 1995, Ser. No. 404,238
Int. Cl.[6] H01L *27/082;27/102;29/70;31/11*
U.S. Cl. 257—577 **13 Claims**



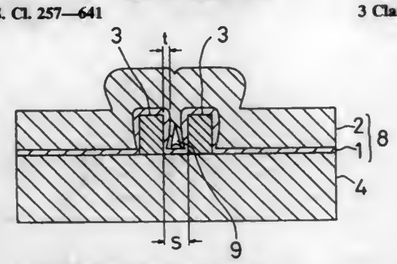
1. An integrated circuit comprising:
a semiconductor substrate of a first dopant type;
a semiconductor layer of a second dopant type formed on the substrate;
a desired bipolar transistor formed in the semiconductor layer and electrically isolated from the substrate and having an emitter of the first dopant type, a base of the second dopant type, and a collector of the first dopant type, wherein the base receives a drive current, and wherein a difference of a first voltage at the collector and a second voltage at the emitter defines a collector-to-emitter voltage;
the base, the collector, and the semiconductor layer defining a first parasitic transistor;
the collector, the semiconductor layer, and the semiconductor substrate defining a second parasitic transistor which becomes active after the first parasitic transistor has become active and when the drive current reaches a predetermined level; and
means, operative when the second parasitic transistor becomes active, for preventing an increase in the collector-to-emitter voltage in the desired bipolar transistor by preventing an increase in the drive current above the predetermined level.

5,545,919

SEMICONDUCTOR DEVICE AND METHOD OF FABRICATING THE SAME

Satoshi Ueda; Tetsuya Ueda, both of Osaka; Atsuhiro Yamano, Hyogo, and Kousaku Yano, Osaka, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 226,983, Apr. 13, 1994, abandoned. This application Jul. 3, 1995, Ser. No. 497,756
Claims priority, application Japan, Apr. 14, 1993, 5-087117
Int. Cl.[6] H01L *23/58*
U.S. Cl. 257—641 **3 Claims**



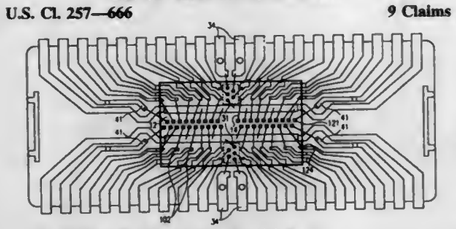
1. A semiconductor device comprising:
a plurality of metal interconnections, each having a width and side faces, formed side by side on a semiconductor substrate with a space S between said metal interconnections;
a silicon oxide film formed on said semiconductor substrate so as to cover said metal interconnections; and
a silicon nitride film formed on said silicon oxide film,
wherein said silicon oxide film and said silicon nitride film constitute a passivation film and the width of each of said metal interconnections and said space between said interconnections are 0.7 μm or less,
said silicon oxide is deposited so that the maximum thickness of portions of the silicon oxide film formed on the side faces of said metal interconnections is less than half of a minimum space between the metal interconnections, and
said silicon nitride film is deposited so as to be interposed between the portions of said silicon oxide film formed on the side faces of said metal interconnections.

5,545,920

LEADFRAME-OVER-CHIP HAVING OFF-CHIP CONDUCTING LEADS FOR INCREASED BOND PAD CONNECTIVITY

Ernest J. Russell, Richmond, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 13, 1994, Ser. No. 304,988
Int. Cl.[6] H01L *23/52;23/48;29/40*
U.S. Cl. 257—666 **9 Claims**



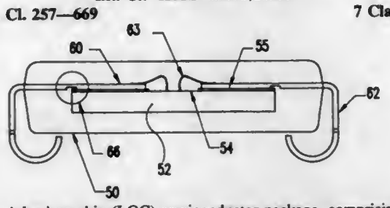
1. A semiconductor package comprising:
a semiconductor component, said semiconductor component having first plurality of bonding pads positioned on one rectangular surface of said semiconductor component and generally disposed in two rows along a center of and parallel to an edge of said rectangular surface, said bonding pads being electrically coupled to electrical elements of said semiconductor component;
a plurality of conducting wires, each conducting wire having a first end electrically coupled to a preselected bonding pad; and
a leadframe-over-chip, said leadframe-over-chip having a plurality of first conducting leads extending over said semiconductor component surface, each first conducting lead having a first bonding region to which a second end of a conducting wire coupled to a bonding pad is coupled, said leadframe-over-chip having at least one second conducting lead with second bonding region not extending over said semiconductor component surface and coplanar with said first conducting leads, said second bonding region coupled to a bonding pad by a conducting wire.

5,545,921

PERSONALIZED AREA LEADFRAME COINING OR HALF ETCHING FOR REDUCED MECHANICAL STRESS AT DEVICE EDGE

Harold W. Conru; Francis E. Froebel, both of Essex Junction; Albert J. Gregoritsch, Jr., South Burlington; Sheldon C. Rieley, Burlington; Stephen G. Starr, Essex Junction; Ronald R. Uttecht, Essex Junction; Eric J. White, Essex Junction, all of Vt., and Jens G. Pohl, Bernmardswald-Eribach, Germany, assignors to International Business Machines, Corporation, Armonk, N.Y., and Siemens Aktiengesellschaft, Munich, Germany

Filed Nov. 4, 1994, Ser. No. 334,478
Int. Cl.[6] H01L *23/495;23/48*
U.S. Cl. 257—669 **7 Claims**



1. A lead on chip (LOC) semiconductor package, comprising:
a semiconductor chip having an active face terminating at a peripheral edge;
an adhesive layer covering at least a portion of said active face of said semiconductor chip;
a plurality of lead-fingers having a first portion extending in a planar fashion over said active face of said semiconductor chip in contact with said adhesive layer, and a second portion extending beyond said peripheral edge, each of said plurality of lead-fingers having a notch located directly over said peripheral edge; and
an encapsulant for encasing said semiconductor chip, said plurality of lead-fingers projecting out from said encapsulant.

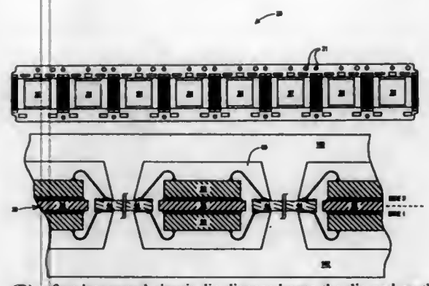
5,545,922

DUAL SIDED INTEGRATED CIRCUIT CHIP PACKAGE WITH OFFSET WIRE BONDS AND SUPPORT BLOCK CAVITIES

Suresh V. Golwalkar, Folsom; Richard Foehringer, Fair Oaks; Michael Wentling, Cameron Park, all of Calif.; Ryo Takatsuki, Ibaraki-ken; Shigeo Kawashima, Kitakyusyu; Keiichi Tsujimoto, Kitakyusyu, and Nobuaki Sato, Kitakyusyu, all of, Japan, assignors to Intel Corporation, Santa Clara, Calif.

Division of Ser. No. 267,878, Jun. 28, 1994. This application Mar. 15, 1995, Ser. No. 404,534
Int. Cl.[6] H01L *23/48*
U.S. Cl. 257—676 **3 Claims**

1. A dual-sided integrated circuit package, comprising:
(A) a leadframe having a die pad and a set of lead fingers corresponding to the die pad, wherein the leadframe has a first side and a second side;



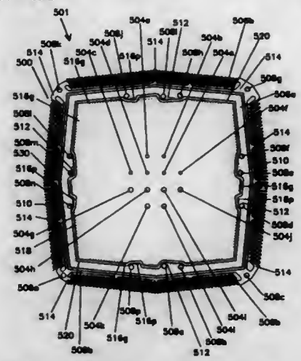
(B) a first integrated circuit die disposed onto the die pad on the first side of the leadframe;
(C) a second integrated circuit die disposed onto the die pad on the second side of the leadframe while the leadframe is supported by a support block having a cavity that accepts the first integrated circuit die;
(D) a first set of wire bonds that bond the first integrated circuit die to the lead fingers on the first side of the leadframe while the leadframe is supported by a support block having a cavity that accepts the second integrated circuit die and that supports an end of each of the lead fingers;
(E) a second set of wire bonds that bond the second integrated circuit die to the lead fingers on the second side of the leadframe while the leadframe is supported by a support block having a cavity that accepts the first integrated circuit die and the first set of wire bonds and that supports each of the lead fingers while providing clearance for a stitch bond of each of the first set of wire bonds on the first side of the leadframe, wherein each of the second set of wire bonds is offset away from an end of each of the lead fingers in relation to the first set of wire bonds.

5,545,923

SEMICONDUCTOR DEVICE ASSEMBLY WITH MINIMIZED BOND FINGER CONNECTIONS

Ivor Barber, San Jose, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Continuation of Ser. No. 142,251, Oct. 22, 1993, abandoned. This application Feb. 28, 1995, Ser. No. 396,084
Int. Cl.[6] H01L *23/52;23/04*
U.S. Cl. 257—691 **15 Claims**



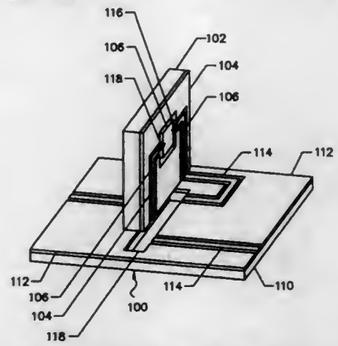
1. A semiconductor device assembly, comprising:
(a) a primed wiring board substrate;
(b) a planar conductive layer centrally disposed on one surface of said printed wiring board substrate, said planar conductive layer including one or more coplanar conductive segments electrically insulated from one another, each coplanar conductive segment adapted for connection thereto;
(c) a plurality of bond fingers substantially surrounding and coplanar with said planar conductive layer, each bond finger adapted for connection thereto; and
(d) a semiconductor die disposed above said planar conductive layer, said semiconductor die having bond pads thereon, each coplanar conductive segment of said planar conductive layer having portions substantially the same distance from the semiconductor die bond pads, wherein those portions of each of the coplanar conductive segments being connected directly to a respective bond pad with substantially the same length of connection, and one or more of said plurality of bond fingers being connected to other respective bond pads.

5,545,924

THREE DIMENSIONAL PACKAGE FOR MONOLITHIC MICROWAVE/MILLIMETERWAVE INTEGRATED CIRCUITS

Athanase Contolatis, Bloomington, and Vladimir Sokolov, Shakopee, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 5, 1993, Ser. No. 102,685
Int. Cl.[6] H01L *23/16;23/02;23/12*
U.S. Cl. 257—724 **17 Claims**

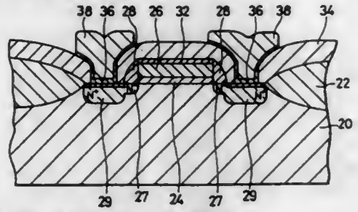


1. A three dimensional package for monolithic microwave/millimeter wave integrated circuits (MMIC's) comprising:
at least one mating substrate with first signal transmission means disposed thereon, for receiving at least one MMIC; and
a base substrate which receives and bolds each of said mating substrates at substantially right angles with respect to said base substrate, said base substrate has second signal transmission means disposed thereon which electrically contacts the first signal means and allows the transmission of microwave/millimeter wave signals between each of said mating substrates and said base substrate; and
wherein:
the first signal transmission means is comprised of first conductor line means in close proximity to a mating ground plane means and the second signal transmission means is comprised of a second conductor line means in close proximity to a base ground plane means; and
each of said mating substrates has first and second opposing sides and upper and lower edges, the mating ground plane means is disposed on the first side and lower edge of said mating substrate, and the first conductor line means is disposed on the second side of said mating substrate.

5,545,925
SEMICONDUCTOR DEVICE HAVING A METALLIC SILICIDE LAYER FOR IMPROVED OPERATIONAL RATES

Katsunari Hanaoka, Ono, Japan, assignor to Ricoh Co., Ltd., Tokyo, and Ricoh Research Institute of General Electronics Co., Ltd., Natori, both of, Japan

Filed Jun. 23, 1994, Ser. No. 264,447
Claims priority, application Japan, Apr. 19, 1993, 6-104438; Jun. 25, 1993, 5-180024
Int. Cl.[6] H01L *23/48;23/52;29/40*
U.S. Cl. 257—755 **4 Claims**

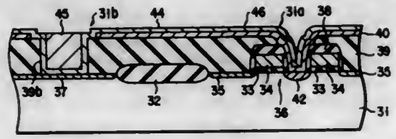


1. A semiconductor device comprising:
a monocrystal silicon substrate having an exposed circuit forming surface;
a polycrystal silicon film formed on a portion of the exposed circuit forming surface of the monocrystal silicon substrate through an insulating film; and
a metallic silicide film formed as a continuous thin film on at least a portion of a remaining portion of the exposed circuit forming surface of the monocrystal silicon substrate and the polycrystal silicon film;
wherein an average value of the diameter of a crystal particle in the metallic silicide film is equal to or greater than 0.5 μm and is less than 1.5 μm.

5,545,926
INTEGRATED MOSFET DEVICE WITH LOW RESISTANCE PERIPHERAL DIFFUSION REGION CONTACTS AND LOW PN-JUNCTION FAILURE MEMORY DIFFUSION CONTACTS

Yusuke Kohyama, Yokosuka, and Souichi Sugiura, Yamato, both of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 7, 1994, Ser. No. 319,633
Claims priority, application Japan, Oct. 12, 1993, 5-254217
Int. Cl.[6] H01L *23/48;23/52;29/40*
U.S. Cl. 257—755 **16 Claims**

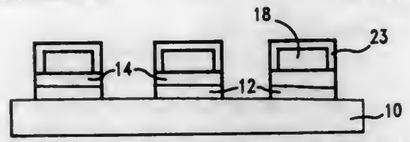


1. A semiconductor device, comprising:
a first diffusion layer formed in the surface of a semiconductor substrate;
an insulating film formed on said semiconductor substrate;
a first contact hole formed in said insulating film to expose a surface of said first diffusion layer;
a semiconductor film formed on an inner surface of said first contact hole, on the entire surface of said first diffusion layer exposed by said first contact hole, and on said insulating film;
a second diffusion layer formed in the surface of said semiconductor substrate;
a second contact hole formed in said semiconductor film and said insulating film to expose a surface of said second diffusion layer; and
a film containing at least a metal and which is formed on an inner surface of said second contact hole and on said semiconductor film.

5,545,927
CAPPED COPPER ELECTRICAL INTERCONNECTS

Mukta S. Farooq; Suryanarayana Kaja, both of Hopewell Junction; Eric D. Perfecto, Poughkeepsie, all of N.Y., and George E. White, Hoffman Estates, Ill., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 12, 1995, Ser. No. 440,414
Int. Cl.[6] H01L *23/48*
U.S. Cl. 257—762 **8 Claims**

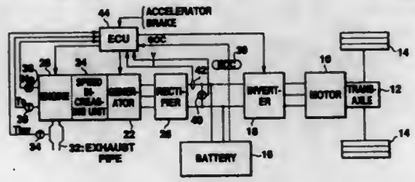


1. A capped electrical interconnect structure comprising a substrate, having at least one first seed layer, at least one second seed layer over said at least one first seed layer, a copper material on a portion of said at least one second seed layer and at least one capping material which completely envelopes said copper material, wherein a peripheral edge portion of said at least one capping material makes direct electrical contact with a portion of the upper surface of said at least one second seed layer and wherein the side walls of said at least one first seed layer and said at least one second seed layer do not have any capping material, and, wherein said at least one first seed layer comprises of a layer of chromium and said at least one second seed layer comprises of a layer of copper.

5,545,928
ELECTRIC POWER GENERATION CONTROL METHOD IN A HYBRID VEHICLE UTILIZING DETECTED GENERATOR OUTPUT AND ENGINE REVOLUTIONS

Takeshi Kotani, Mishima, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 8, 1994, Ser. No. 303,202
Claims priority, application Japan, Sep. 17, 1993, 5-231714
Int. Cl.[6] H02P *9/04;* **B60L** *11/02*
U.S. Cl. 290—40 C **14 Claims**

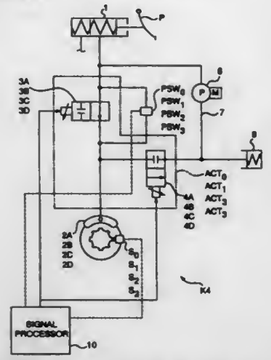


1. An electric power generation control method executed by control means in a hybrid vehicle equipped with a motor as a driving source of the vehicle; a generator for supplying a power generation output thereof to the motor; an engine for driving the generator for rotation; means for detecting the number of revolutions of the engine and a generator output of the generator; and the control means for controlling a field current of the generator and a run condition of the engine, said method comprising the steps of:
determining a control target range for the number of revolutions of said engine and a control target range for the generator output of said generator;
correcting the field current of said generator to a smaller value if the detected number of revolutions of said engine is lower than the control target range for the number of revolutions or correcting the field current of the generator to a larger value if the detected number of revolutions of said engine is higher than the control target range for the number of revolutions; and
correcting the run condition of said engine so that when the detected number of revolutions of said engine is within the control target range for the number of revolutions, a load of said engine is increased if the detected generator output of said generator is lower than the control target range for the generator output, or the load of said engine is decreased if the detected generator output of said generator is higher than the control target range for the generator output,
whereby the number of revolutions of said engine and the generator output of said generator are both controlled within their respective control target ranges.

5,545,929
ANTISKID CONTROL DEVICE

Hideaki Fijioka, and Kazumi Yasuzumi, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Nov. 3, 1995, Ser. No. 552,772
Claims priority, application Japan, Nov. 16, 1994, 6-281833
Int. Cl.[6] B60T *8/60*
U.S. Cl. 303—166 **7 Claims**

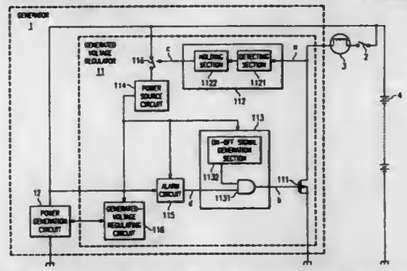


1. An antiskid control device which calculates an estimated fluid pressure of each of wheel cylinders under antiskid control in each control cycle so as to adjust a fluid pressure of each of the wheel cylinders on the basis of the estimated fluid pressure and behaviors of wheels, comprising:
a differential pressure detecting means which detects a difference between a fluid pressure of a master cylinder and the fluid pressure of each of the wheel cylinders so as to produce an output signal indicative of the difference between the fluid pressure of the master cylinder and the fluid pressure of each of the wheel cylinders;
wherein when on the basis of the output signal of the differential pressure detecting means the difference between the fluid pressure of the master cylinder and the fluid pressure of each of the wheel cylinders is found to be in the vicinity of zero, the estimated fluid pressure of each of the wheel cylinders is set to a predetermined value by stopping addition in calculation of the estimated fluid pressure.

5,545,930
GENERATED-VOLTAGE REGULATOR FOR AUTOMOBILE ENSURING CORRECT KEY SWITCH ON-STATE DETERMINATION

Kenichi Watanabe, Katsuta; Yuji Maeda, Hitachiohta, and Sakae Hikita, Katsuta, all of, Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Automotive Engineering, Co., Ltd., Ibaraki-ken, both of, Japan

Filed Aug. 25, 1994, Ser. No. 295,609
Claims priority, application Japan, Aug. 30, 1993, 5-214410
Int. Cl.[6] H02J *7/14*
U.S. Cl. 307—10.1 **5 Claims**



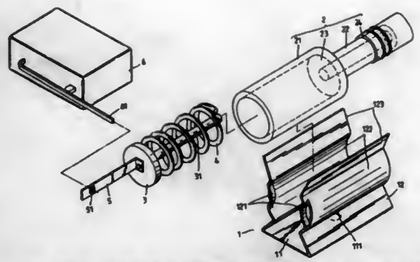
1. A generated-voltage regulator for an automobile, comprising:
a power generation circuit driven by a driving mechanism for the automobile to generate electric power;
a storage battery charged by said power generation circuit;
a charge alarm connected to said storage battery through a key switch;
a generated-voltage regulator controlling a generated-voltage of said power generation circuit;
a switch connected in series to said charge alarm to pass a signal through said charge alarm in a closed state of said switch;
a generation failure detection/driving means for detecting a generation failure in said power generation circuit and for intermittently opening and closing said switch at the time of detection of the generation failure;
a constant voltage generator supplying a constant voltage to said generated-voltage regulator and said generation failure detection/driving means; and a key switch on-detecting section for operating said constant voltage generator when a low voltage period in which a voltage at a connection point between said charge alarm and said switch is lower than a predetermined voltage is shorter than predetermined period, so that said key switch on detecting section operates said constant voltage generator when said key switch is closed and when said switch is opened and closed intermittently.

5,545,931
APPARATUS FOR TEMPORARILY SHUTTING OFF ELECTRIC POWER TO AN AIR CONDITIONING COMPRESSOR USING A PISTON AND MICROSWITCH

Chin-Li Wang, No. 1, Alley 88, Lane 150, Sec. 2, Hi-Dan Rd., Tainan City, Taiwan

Filed May 8, 1995, Ser. No. 437,464
Int. Cl.[6] B60C *1/00;* **B60H** *1/32*
U.S. Cl. 307—10.1 **1 Claim**

1. An apparatus for temporarily shutting off electric power to an air conditioning compressor of a vehicle, comprising:
a housing;
a tube having a large-sized first section, a small-sized second section adapted for coupling to a source of engine vacuum, and a shoulder disposed between said first section and said second section;
a fixture having a bottom surface secured to a bottom portion of said housing and two side surfaces, said two side surfaces each having a corresponding arcuate portion defining a seat therebetween to receive said tube therein, each of said two



side surfaces having a guiding rail portion for guiding said tube into sliding engagement with said seat, each of said side surfaces having a blocking end portion formed in said arcuate portion to block said tube from moving forward therefrom;

a piston slidingly disposed within said first section of said tube in a telescopic manner and having a rod member secured to a first side of said piston and extending into said second section of said tube, said piston having a linking rod secured to a second side thereof and extending therefrom;

a spring sleeved on said rod member of said piston with one end secured to said piston and an opposing other end of said spring disposed adjacent said shoulder of said tube for applying a bias force to said piston;

a microswitch having a spring plate extending therefrom for closing and opening said microswitch responsive to displacement of said spring plate, said spring plate having an end portion coupled to a distal end of said linking rod for displacing said spring plate responsive to a respective displacement of said piston; and,

a central processing unit electrically coupled to said microswitch and a vehicle's air conditioning compressor, said central processing unit including a counter for establishing a predetermined time period, said central processing unit removing electric power from the vehicle's air conditioning compressor for said predetermined time period responsive to said opening of said microswitch when said bias force of said spring displaces said piston, said piston being displaced by said spring responsive to a reduction in vacuum supplied to said second section of said tube, said central processing unit supplying said electric power signal responsive to closure of said microswitch when said piston is displaced against said spring by an increase in vacuum supplied to said second section of said tube.

5,545,932

SUPERCONDUCTING SWITCH AND APPLICATION TO A CHARGER FOR A SUPERCONDUCTING COIL

Pascal Estop, Vitry Sur Seine; Serge Poullain, Ste Genevieve Des Bois, and Thierry Verhaege, Saulx Les Chartreux, all of, France, assignors to GEC Alsthom Electromecanique Sa, Paris, France

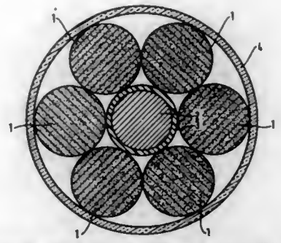
Filed Apr. 14, 1994, Ser. No. 227,335

Claims priority, application France, May 5, 1993, 93 05367

Int. Cl.[6] H01B *12/02*

U.S. Cl. 307—104 **5 Claims**

1. A superconducting switch comprising a portion of cable including a resistive central strand that is non-superconducting having twisted thereabout a plurality of one of superconducting strands or superconductors, and separated from the central strand by electrical insulation, the cable as a whole being insulated from an external cooling medium by thermal insulation, said central strand being electrically connected to said plurality of one of superconducting strands or superconductors at each end of said portion of cable, wherein a portion of the length of said resistive central strand extends outside said cable at a point along the length of said portion of said cable and is coupled to a control device disposed outside said cooling medium, said control device injecting an electrical current into the circuit formed by the resistive central strand that is connected at its ends to said plurality of one of superconducting strands or superconductors.



5,545,933

ELECTRIC POWER STORAGE APPARATUS

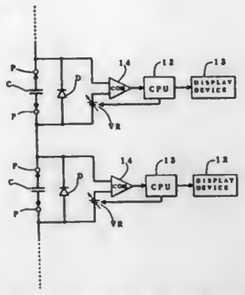
Michio Okamura; Takeshi Morimoto, and Kazuya Hiratsuka, all of Kanagawa-ken, Japan, assignors to Okamura Laboratory Inc., Yokohama; ELNA Company Ltd., Fujisawa, and Asahi Glass Company Ltd., Tokyo, all of, Japan

Filed Sep. 27, 1994, Ser. No. 312,871

Claims priority, application Japan, Sep. 28, 1993, 5-264153; Sep. 28, 1993, 5-264154

Int. Cl.[6] G08B *21/00;* **H01G** *5/019*

U.S. Cl. 307—109 **8 Claims**



1. An electric power storage apparatus for providing a predetermined working voltage, comprising:

a plurality of cells connected in series to form a power line, each of said cells being formed of at least one electric double-layer capacitor, said plurality of said cells connected in series having a combined withstanding voltage not lower than Vr+Vs, wherein Vr represents said predetermined working voltage of said apparatus and Vs represents a withstanding voltage of at least one cell,

connectors attached to the line for detachably holding each of said cells so that the cells can be attached to and detached from the line, and

a plurality of diodes, each being connected parallel to each cell so that when one of the cells situated parallel to one of the diodes breaks down, electricity passes through said one of the diodes to allow the apparatus to hold at least the predetermined working voltage of Vr and to allow the broken down cell to be replaced with a new cell without shutdown of the apparatus.

5,545,934

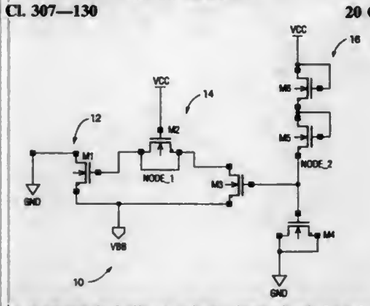
VOLTAGE CLAMP CIRCUIT

Chitranjan N. Reddy, Milpitas, and Kevin P. Quinn, Los Gatos, both of Calif., assignors to Alliance Semiconductor Corporation, San Jose, Calif.

Filed Dec. 22, 1994, Ser. No. 361,735

Int. Cl.[6] G05F *1/00*

U.S. Cl. 307—130 **20 Claims**



1. An apparatus including a voltage clamp circuit for selectively clamping a circuit node during a circuit powerup interval, said voltage clamp circuit comprising:

a first node for operating at a selectable voltage;

a second node for operating at a clamp voltage;

an activation circuit for receiving a supply voltage having an increasing magnitude with first and second values and a third value therebetween and in response thereto providing a switch signal in one of first and second signal states; and

a switch circuit, coupled to said activation circuit and between said first and second nodes, for receiving said switch signal, coupling said first node to said second node in response to said first signal state to clamp said selectable voltage at said clamp voltage and decoupling said first node from said second node in response to said second signal state.

5,545,935

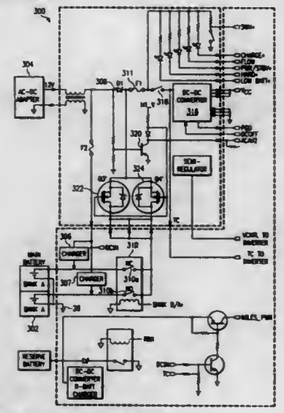
RECHARGEABLE SYSTEM WITH SEPARATE BATTERY CIRCUITS IN A COMMON MODULE

Gregory N. Stewart, Austin, Tex., assignor to Dell USA, L.P., Austin, Tex.

Continuation of Ser. No. 119,904, Sep. 10, 1993, abandoned, which is a continuation of Ser. No. 656,265, Feb. 14, 1991, abandoned. This application May 18, 1995, Ser. No. 443,610

Int. Cl.[6] H02J *7/00*

U.S. Cl. 307—150 **3 Claims**



1. A computer system comprising:

multiple electronic components connected together, including at least one microprocessor and one display;

a receptacle, within said computer system, electrically connected to said multiple electronic components, for receiving a removable battery pack, said battery pack containing at least two separate battery banks;

a switching unit, electrically connected to said multiple electronic components, and to said battery banks, to switch between said at least two separate battery banks such that a selected one of said at least two separate battery banks is coupled to provide power to said computer system at a given time;

control logic, connected to said switching unit and configured to cause said switching unit to switch repeatedly between said at least two separate battery banks at a predetermined set frequency; and

at least two charger circuits respectively coupled to said at least two separate battery banks;

wherein coupling said computer system to an external power source enables the simultaneous powering of said computer system and charging of both of said at least two separate battery banks via said at least two charger circuits.

5,545,936

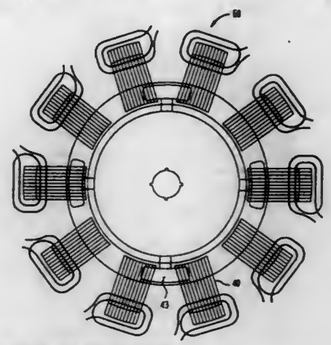
C-STATOR TYPE SEGMENTED ZONED FIELD DC-MOTOR

Norban E. Davenport, 1677 Alta Vista Dr., Bull Head City, Ariz. 86442

Filed Jul. 15, 1994, Ser. No. 275,436

Int. Cl.[6] H02K *41/00*

U.S. Cl. 310—12 **11 Claims**



1. An electric machine including:

at least two stators spaced at a stator pitch distance in a direction, each of said at least two stators providing an independent magnetic circuit arranged to carry flux generally orthogonal to said direction, each of said at least two stators having an air gap in said magnetic circuit and having an electrical coil wound thereon,

at least one pawn having a magnetically active portion comprising a magnetic element having a functional cross-section passing through said air gap for carrying flux in said magnetic circuit, said functional cross-section being sized in accordance with said air gap, said magnetically active portion of said pawn having a length passing through said air gap at least equal to said stator pitch distance and greater than a length of said air gap of said magnetic circuit of each said stator in said direction, and

means for applying a sequence of pulses to said at least two stators.

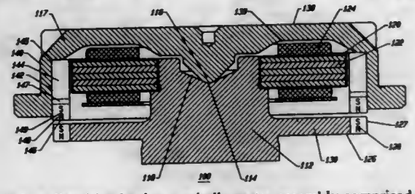
5,545,937
INTEGRATED PASSIVE MAGNETIC BEARING SYSTEM AND SPINDLE PERMANENT MAGNET FOR USE IN A SPINDLE MOTOR

John C. Dunfield, Santa Cruz, and Kamran Oveyssi, Aptos, both of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 201,798, Feb. 25, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 478,270

Int. Cl.[6] H02K *7/14;7/09*

U.S. Cl. 310—90.5 **32 Claims**



1. In a disc drive having a spindle motor assembly comprised of a spindle permanent magnet held in opposition to an electromagnet assembly, an apparatus for journaling a rotor about a stator of said spindle motor comprising:

a pivot, said pivot for pivotally displacing said rotor about said stator;

a first annular disc, said disc comprising an axially aligned magnetic pole, said disc radially extending from said stator; and

a spindle permanent magnet having a first and second end and non-magnetized region disposed there between, said first end comprising a plurality of magnetic poles disposed on said rotor in opposition to said spindle motor electromagnet assembly, said second end comprised of a like axially aligned magnetic pole disposed on said rotor and opposing said axially aligned magnetic pole on said first annular disc.

5,545,938
DOUBLY SALIENT RELUCTANCE MACHINES

Barrie C. Mecrow, Tyne & Wear, United Kingdom, assignor to British Technology Group Ltd, London, England

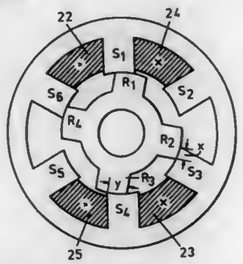
PCT No. PCT/GB92/02276, § 371 Date Jun. 9, 1994, § 102(e) Date Jun. 9, 1994, PCT Pub. No. WO93/12573, PCT Pub. Date Jun. 24, 1993

PCT Filed Dec. 9, 1992, Ser. No. 244,754

Claims priority, application United Kingdom, Dec. 10, 1991, 9126206; Oct. 2, 1992, 9220736

Int. Cl.[6] H02K *19/10*

U.S. Cl. 310—156 **11 Claims**



1. A reluctance machine comprising:

a stator having a core made from a highly permeable magnetic material; and

a rotor, freely rotatable to be drawn into a position of alignment with the stator to minimize the reluctance at any point in time, both the stator and said rotor being constructed to cause changes in the reluctance of the magnetic circuit as the relative position of said rotor and said stator changes during operation of the machine,

the stator carrying conductors arranged and terminated to allow currents to flow around a plurality of loops, the conductor loops capable of being energized from a multiphase current supply such that they may be sequentially energized for displacement of said rotor between successive positions of minimum reluctance, each of which loops has at least a pair of portions in which current flows in opposite directions with respect to that direction which is normal to the direction of movement of the rotor to form temporary magnetic poles within the stator, said magnetic poles being arranged in regularly spaced opposed pairs of poles, and wherein, for each loop, each portion of the loop carrying current in one direction is separated from each portion of the loop carrying current in the opposite direction by a peripheral distance equal to that separating adjacent magnetic poles of opposite sign.

5,545,939
WINDING END RESTRAINER FOR A ROTARY ELECTRICAL COMPONENT

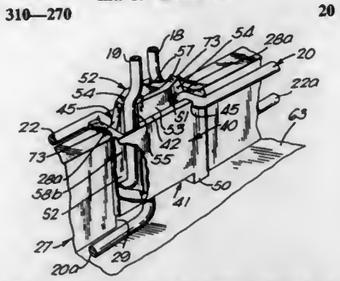
John Cooper, Hemel Hempstead, United Kingdom, assignor to Lucas Industries plc., West Midlands, England

Filed Dec. 14, 1993, Ser. No. 166,542

Claims priority, application United Kingdom, Dec. 19, 1992, 9226497

Int. Cl.[6] H02K *3/46*

U.S. Cl. 310—270 **20 Claims**



1. A winding end restrainer for a rotary electrical component comprising a hollow body, location means for locating the body against rotation relative to the component and an insert locatable in the body so as to be non-rotatable relative thereto, a chamber being defined between the insert and the body for receiving a section of the winding end.

5,545,940
MULTITRACK TRANSVERSELY FOLDED SURFACE ACOUSTIC WAVE STRUCTURE

Peter V. Wright, Dallas, Tex., assignor to RF Monolithics, Inc., Dallas, Tex.

Filed Nov. 7, 1994, Ser. No. 335,036

Int. Cl.[6] H01L *41/08*

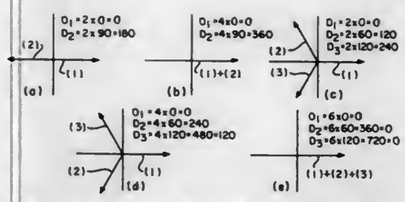
U.S. Cl. 310—313 D **5 Claims**

1. A multitrack transversely folded surface acoustic wave structure comprising:

N independent in-line surface acoustic wave devices where N≦2 and is an integer, each device including a transduction means and at least one reflecting means;

a common terminal coupled to each of the transduction means for applying input signals to the transduction means and receiving output signals from the transduction means;

first cavity means in one of said in-line surface acoustic wave devices having a length of Xλ where X is an arbitrary number; and



second cavity means in each of the N–1 remaining in-line surface acoustic wave devices having a length of

$$X\lambda + 180^{\circ}\left(\pm M_n + \frac{n-1}{N}\right)$$

where n=the individual track number and M is an arbitrary constant including zero such that the differential time delay, Δt, occurring between the application of an input signal to the common terminal and the detection of an output signal at the common terminal of said N in-line SAW devices is substantially N times the corresponding delay of the first cavity means alone.

5,545,941
CRYSTAL OSCILLATOR CIRCUIT

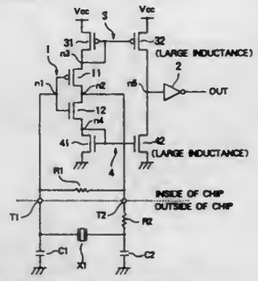
Mitsuo Soneda, and Takahiro Seki, both of Kanagawa, Japan, assignors to Sony Corporation, Japan

Filed Jan. 13, 1995, Ser. No. 489,714

Claims priority, application Japan, Jun. 30, 1994, 6-150055

Int. Cl.[6] H03B *5/36*

U.S. Cl. 310—318 **13 Claims**



1. A crystal oscillator circuit comprising:

a voltage amplification inverter circuit comprising a first PMOS transistor and a first NMOS transistor, each of which comprise a gate, drain and a source terminal, wherein the gate of the first PMOS transistor is connected to the gate of the first NMOS transistor at a first node and the drain of the first PMOS transistor is connected to the drain of the first NMOS transistor at a second node;

a quartz vibrator connected in parallel with the voltage amplification inverter circuit between the first and second nodes;

a first current mirror circuit comprising second and third PMOS transistors with their gates connected together, wherein a current input-output terminal of said first current mirror circuit is connected to the source terminal of said first PMOS transistor at a third node, and wherein the respective sources of the second and third PMOS transistors are connected to a power supply voltage potential; and

a second current mirror circuit comprising second and third NMOS transistors with their gates connected together, wherein a current input-output terminal of said second current mirror circuit is connected to the source terminal of said first NMOS transistor at a fourth node, and wherein the respective sources of the second and third NMOS transistors are connected to a ground terminal;

wherein an output node of said crystal oscillator circuit is formed at a connection between the drains of the third PMOS transistor and the third NMOS transistor.

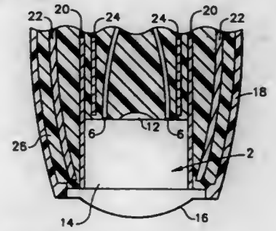
5,545,942
METHOD AND APPARATUS FOR DISSIPATING HEAT FROM A TRANSDUCER ELEMENT ARRAY OF AN ULTRASOUND PROBE

Heinz Jaster, Schenectady, N.Y., and Gregg W. Frey, East Wenatchee, Wash., assignors to General Electric Company, Milwaukee, Wis.

Filed Nov. 21, 1994, Ser. No. 343,063

Int. Cl.[6] H01L *41/08*

U.S. Cl. 310—341 **14 Claims**



1. An ultrasonic probe comprising:

a probe housing having an internal volume and a tip with an aperture formed therein, said aperture being in communication with said internal volume;

a plurality of transducer elements made of piezoelectric material and arranged in a planar array, said planar array being located in said internal volume of said probe housing and having a predetermined orientation relative to said aperture formed in said tip of said probe housing, each transducer element having an electrode formed on the piezoelectric material thereof;

means for securing said planar array relative to said probe housing, said securing means comprising thermally conductive potting material which fills a portion of said internal volume of said of said probe housing, said potting material having a heat conductivity in a predetermined range; and

heat conducting means embedded in said potting material and extending from a first location to a second location, said first location being a first distance away from a closest portion of said planar array and said second location being a second distance away from said closest portion of said planar array, said second distance being greater than said first distance,

wherein said heat conducting means are made of a material having a heat conductivity greater than the heat conductivity of said potting material,

further comprising a flexible electrical circuit means electrically connected to said electrodes of said transducer elements, and a coaxial cable electrically connected to said flexible electrical circuit means, said coaxial cable incorporating shielding braid, wherein said heat conducting means are thermally coupled to said shielding braid of said coaxial cable.

5,545,943
VARIABLE AIR-GAP TYPE DRIVING DEVICE

Akira Satake; Yoshitaka Onishi, and Setsuo Miyoshi, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

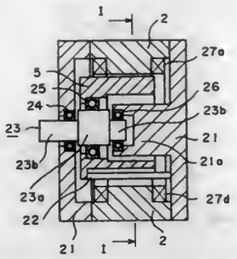
Filed Nov. 15, 1993, Ser. No. 153,338

Claims priority, application Japan, Nov. 17, 1992, 4-329891; Mar. 12, 1993, 5-77405; Sep. 30, 1993, 5-245646

Int. Cl.[6] H01L *41/04*

U.S. Cl. 310—350 **52 Claims**

1. A variable air-gap type driving device comprising:



a rotor to be revolved by electromagnetic attractive force generated by an armature, without undergoing autorotation, where autorotation in a motion of the rotor in which the rotor rotates about its own axis,

an elastic supporting means whose one end is supported on a base stand and which supports said rotor so as to restrain said rotor from undergoing autorotation, and

an eccentric supporting means having a rotation shaft supported on said base stand in a freely rotatable state and having an eccentric shaft rotatably supported inside said rotor and further whose rotation shaft rotates with the revolution of said rotor.

5,545,944

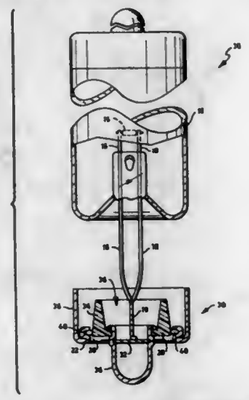
BASE FOR SINGLE PIN ELONGATED LAMP

Donald M. Cannon, Dover, Pa., assignor to OSRAM SYLVANIA, Inc., Danvers, Mass.

Filed Feb. 8, 1995, Ser. No. 385,416

Int. Cl.[6] H01J *5/48*

U.S. Cl. 313—318.01 **3 Claims**



1. A lamp comprising: an elongated, hermetically sealed translucent, glass envelope having a diameter of T8 or less and containing an electrode at each end thereof, each of said electrodes comprising an electron emitting portion and two lead-in wires, said lead-in wires extending outside of said envelope, said lead-in wires being connected together to form one lead-in wire; and a base at each end of said envelope, each of said bases comprising a cup-shaped, electrically conductive outer shell having a bottom and an upstanding peripheral wall; an opening in said bottom; an electrically insulating member fixed in said opening; an electrically conductive, depending pin affixed to said electrically insulating member substantially at the center thereof; and an electrically insulating, upstanding wall formed on said insulating member, opposite said pin and within the confines of said peripheral wall, said lead-in wire extending within said electrically insulating, upstanding wall and being electrically connected to said depending pin and said bases being affixed to said envelope.

5,545,945

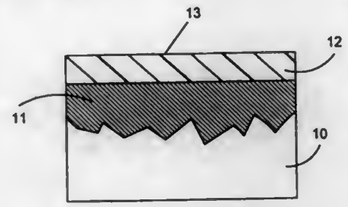
THERMIONIC CATHODE

Louis E. Branovich, Howell; Donald W. Eckart, Wall, and Paul Fischer, Oakhurst, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 29, 1995, Ser. No. 413,041

Int. Cl.[6] H01J *1/14*

U.S. Cl. 313—346 R **9 Claims**



1. An enhanced emission thermionic cathode having a predetermined mixture of Barium and Tungsten, comprising a predetermined mixture of Aluminum Tungstate and Scandium Tungstate that react with the Barium and Tungsten to provide the enhanced emission.

5,545,946

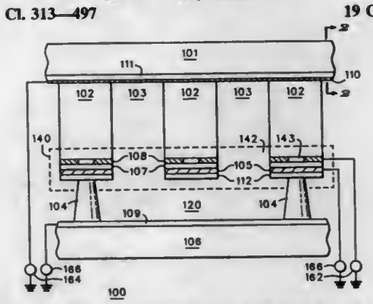
FIELD EMISSION DISPLAY WITH GETTER IN VACUUM CHAMBER

David A. Wiemann, Mesa; Lawrence N. Dworsky, Scottsdale; James E. Jaskie, Scottsdale; Robert C. Kane, Scottsdale, and Curtis D. Moyer, Phoenix, all of Ariz., assignors to Motorola, Schaumburg, Ill.

Filed Dec. 17, 1993, Ser. No. 168,301

Int. Cl.[6] H01J *1/66;21/10*

U.S. Cl. 313—497 **19 Claims**



1. A laminated field emission device with edge electron emitter comprising;

a substantially optically transparent faceplate assembly having a major surface and including a transparent faceplate and a layer of a cathodoluminescent material and a conductive anode positioned in overlying relationship to the faceplate;

an interspace insulating layer disposed on the major surface of the faceplate assembly and having an aperture defined therethrough which aperture further defines an interspace region;

an electron emitter substrate including

an electron emission material layer for emitting electrons,

a substrate insulating layer disposed in generally overlying relationship to the electron emission material layer,

a conductive gate layer disposed on the substrate insulating layer,

the electron emitter substrate having at least one aperture defined therethrough and the electron emitter substrate being disposed on the interspace insulating layer such that the conductive gate layer is interposed between the conductive anode and the electron emitter layer and further disposed such that the aperture defined through the electron emitter substrate is in substantial registration with the aperture defined through the interspace insulating layer; and

a backplane distally disposed with respect to the electron emitter substrate, the backplane being formed to define a vacuum chamber between the backplane and the electron emitter substrate, such that upon evacuation of the vacuum chamber, the aperture defined through the electron emitter substrate and the aperture defined through the interspace insulating layer, electrons emitted by the electron emission material layer, traverse the extent of the interspace region to excite photon emission from the cathodoluminescent material.

5,545,947

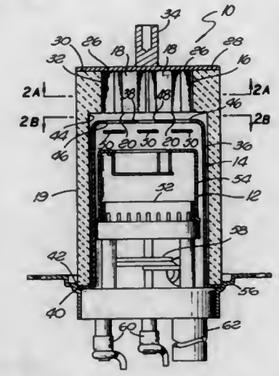
MULTIPLE SURFACE HIGH VOLTAGE STRUCTURE FOR A GAS DISCHARGE CLOSING SWITCH

Henry D. Navaroli, Williamsport, Pa., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Aug. 8, 1994, Ser. No. 287,089

Int. Cl.[6] H01J *17/04*

U.S. Cl. 313—589 **11 Claims**



11. A gas discharge closing switch comprising:

a housing for maintaining a gaseous discharge, said housing having upper and lower ends;

an anode structure adjacent the upper end of said housing, said anode structure comprising a plurality of surface elements connected electrically together and facing substantially toward the lower end of the housing, said surface elements being spaced from each other to define gaps therebetween and formed as terminal surfaces of discrete segments of the anode structure, said gaps comprising a plurality of secondary gaps and at least one primary gap;

a cathode structure adjacent the lower end of the housing; and

a control electrode structure disposed within the housing between the anode structure and the cathode structure, said control electrode structure comprising a surface defining a plurality of apertures each of which is disposed opposite one of said primary gaps.

5,545,948

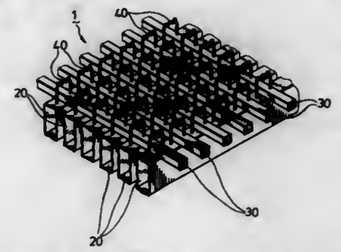
GLASS TUBE LAMP MATRIX DEVICE

Adam Mii, Taipei City, Taiwan, assignor to Chilong Data Products Corp., Taipei City, Taiwan

Filed Sep. 8, 1994, Ser. No. 303,180

Int. Cl.[6] H01J *61/30*

U.S. Cl. 313—634 **7 Claims**



1. A glass tube lamp matrix device, comprising:

a first set of working gas containers including a plurality of parallel first elongated containers in a plane and a plurality of parallel second elongated containers crossing said first elongated containers in a plane and forming an angle therewith, each of said first and second elongated containers containing a working gas therein;

a first glass tube matrix including a plurality of thin glass tubes, each of said glass tubes having two open ends which are fluidly and respectively communicated with one of said first elongated containers and one of said second elongated containers, thereby filling each of said glass tubes with said working gas, each of said glass tubes having a cross-sectional area much smaller than that of said first and second elongated containers; and

an electrode provided in each of said first and second elongated containers;

whereby, said working gas in said glass tubes discharge so as to emit light when a sufficient voltage drop is applied to said electrodes in said first and second elongated containers corresponding to said glass tubes.

5,545,949

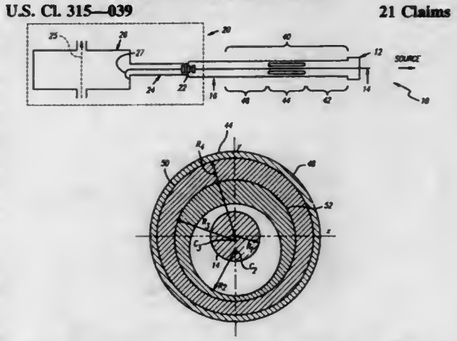
COAXIAL TRANSMISSIOIN LINE INPUT TRANSFORMER HAVING EXTERNALLY VARIABLE ECCENTRICITY AND POSITION

Helmut Bacher, Brookings, Oreg., assignor to Litton Industries, Inc., Woodland Hills, Calif.

Filed Jul. 29, 1994, Ser. No. 282,802

Int. Cl.[6] H01J *23/46;23/48*

U.S. Cl. 315—039 **21 Claims**



17. An input system for a microwave amplifier, comprising:

a resonant cavity having an electron beam projected therethrough, said cavity characterized by a first inductance, said electron beam providing a resistive load;

a coupling loop disposed within said cavity, said coupling loop characterized by a second inductance coupled to said first inductance;

a window electrically coupled to said coupling loop characterized by a vacuum barrier for said resonant cavity, said window further characterized by a capacitance in parallel with said second inductance;

a transmission line electrically coupled to said window and an input transformer disposed on said transmission line characterized by continuously variable input impedance and position, said input transformer comprising at least one rotatable sleeve; and

an RF source coupled to and providing an RF input signal to said transmission line;

wherein said first inductance, said second inductance, said capacitance and said input transformer collectively characterize a bandpass filter, and said RF source has an impedance matched to said resistive load by said bandpass filter, and rotation of said at least one sleeve changes an amplitude characteristic of said RF input signal.

5,545,950

ADAPTER; FITTING INTO AN INCANDESCENT SOCKET, FOR RECEIVING A COMPACT FLOURESCENT LAMP

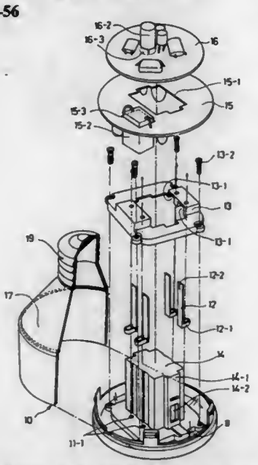
Sung Ho. Cho, 100-4 Onsu-dong, Seoul, Rep. of Korea

Filed May 31, 1994, Ser. No. 251,580

Claims priority, application Rep. of Korea, Nov. 5, 1993, 1993-23092

Int. Cl.[6] H01J *7/44*

U.S. Cl. 315—56 **9 Claims**



1. A ballast device for a compact fluorescent lamp comprising:

a ballast case having an outer case and a socket substrate, the outer case having a top portion at which an incandescent lamp base is situated, the socket substrate having a compact socket, adapted to accept a compact fluorescent lamp, formed thereon, wherein a bottom portion of the outer case is assembled with said socket substrate, wherein the ballast case further comprises first and second printed circuit boards mounted within the outer case and situated above the socket substrate, and wherein a top portion of the outer case is substantially cylindrical and a bottom portion of the outer case, between the top portion and a bulb base, is substantially frustoconical;

the first printed circuit board, onto which a first plurality of electronic components are mounted, having a first receiving cavity for inserting therethrough the fluorescent lamp socket; and

the second printed circuit board mounted above the first printed circuit board within the bottom portion of the outer case and having a second plurality of electronic components mounted thereon such that ones of said second plurality of electronic components having increased height over remaining electronic components thereof are centrally located on the second printed circuit board in order to extend into and occupy space within the incandescent lamp base,

wherein the first printed circuit board further comprises a second receiving cavity through which one of said first plurality of electronic components that has an increased height over other ones thereof is mounted such that the one of the first plurality of electronic components extends away from the second printed circuit board.

5,545,951

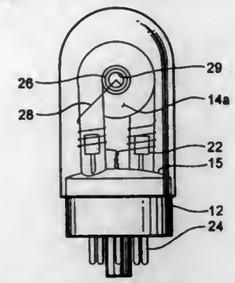
HIGH POWER STROBE LAMP

Byron J. Ziegler, Austin, and Mark E. Scurrah, San Marcos, both of Tex., assignors to High End Systems, Inc., Austin, Tex.

Filed Mar. 28, 1995, Ser. No. 411,900

Int. Cl.[6] H01J *7/44*

U.S. Cl. 315—58 **11 Claims**



1. A high power strobe lamp comprising:

a multi-pin base;

an elongated gas-filled tube having a loop formed therein, the tube having one end including an anode and another end including a cathode, the ends being mounted in the base and connected to the pins;

a heat dissipating member extending through the loop; and

a conductive wire having opposite ends connected to the pins, the wire being spirally wrapped around the tube, ends adjacent to the base and extending through the heat dissipating member.

5,545,952

SELF GROUNDING LAMP FOR SPECIAL USE IN AN UNDERWATER ENVIRONMENT

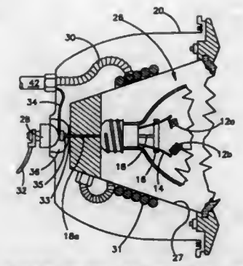
Dana Mortensen, Sanford, N.C., assignor to Essef Corporation, Chardon, Ohio

Continuation of Ser. No. 119,617, Sep. 13, 1993, abandoned. This application Dec. 16, 1994, Ser. No. 357,780

Int. Cl.[6] H01J *7/44*

U.S. Cl. 315—74 **19 Claims**

1. A bulb for use in a submerged swimming pool light fixture comprising a filament, at least one spring-biased filament support, and a grounding device connectable to a separate ground, wherein said filament support includes a current-conducting portion and is spring-biased for movement whereby said current conducting portion contacts said grounding device for diversion of an electrical current to the separate ground, and said filament is disposed to prevent said movement when said filament is intact, and to allow said movement when said filament is broken.



5,545,953

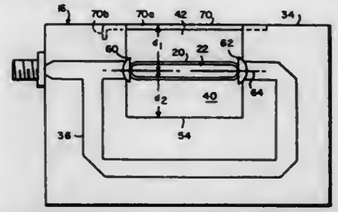
ELECTRODELESS HIGH INTENSITY DISCHARGE LAMP HAVING FIELD SYMMETRIZING

Walter P. Lapatovich, Marlborough, and Scott J. Butler, North Oxford, both of Mass., assignors to Osram Sylvania Inc., Danvers, Mass.

Filed Jun. 16, 1995, Ser. No. 491,434

Int. Cl.[6] H05B *41/16*

U.S. Cl. 315—248 **17 Claims**



1. An electrodeless high intensity discharge lamp comprising:

an electrodeless lamp capsule having an enclosed volume containing a mixture of starting gas and chemical dopant material excitable by high frequency power to a state of luminous emission, said lamp capsule having a longitudinal axis;

a first electric field applicator and a second electric field applicator positioned so that the enclosed volume of the lamp capsule is between the first and second electric field applicators;

a planar transmission line comprising a substrate having a patterned conductor on a first surface for coupling high frequency power from an input to said first and second electric field applicators and a ground plane on a second surface, said substrate and said ground plane having a gap with an open side for positioning said lamp capsule between said first and second electric field applicators; and

a field symmetrizing conductor located in the open side of said gap and electrically connected to the ground plane, said field symmetrizing conductor being positioned such that an electric field in said lamp capsule is substantially symmetrical with respect to said axis and is substantially colinear with said axis.

5,545,954

DRIVE CIRCUIT FOR ULTRASONIC MOTOR

Hiroyuki Furukoshi, Aichi-ken, Japan, assignor to Asmo Co., Ltd., Shizuoka-ken, Japan

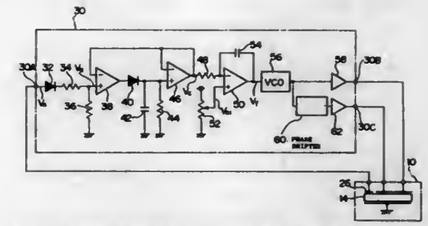
Filed Feb. 14, 1995, Ser. No. 388,406

Claims priority, application Japan, Feb. 18, 1994, 6-020952

Int. Cl.[6] H02N *10/00*

U.S. Cl. 318—116 **7 Claims**

1. A drive circuit for an ultrasonic motor comprising:



a drive signal generator for outputting ultrasonic motor drive signals of predetermined frequencies;

a detector for detecting vibration of a stator of said ultrasonic motor and for outputting a detection signal whose amplitude corresponds to said vibration;

a signal output device for outputting an output signal of a level which coincides with the level of the detection signal when the level of the detection signal exceeds the level of the output signal of said signal output device, and for outputting an output signal which decreases at a decrease rate smaller than a predetermined value when the level of the detection signal is smaller than the level of the output signal of said signal output device; and

a frequency controller for raising the frequencies of said drive signals when the average level of the signal output from said signal output device is greater than a first reference level and for lowering the frequencies of said drive signals when the average level of the signal output from said signal output device is smaller than the first reference level.

5,545,955

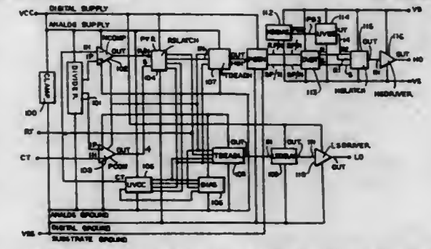
MOS GATE DRIVER FOR BALLAST CIRCUITS

Peter N. Wood, Rolling Hills Est., Calif., assignor to International Rectifier Corporation, El Segundo, Calif.

Filed Mar. 4, 1994, Ser. No. 206,123

Int. Cl.[6] H05B *37/02*

U.S. Cl. 315—224 **22 Claims**



1. An integrated circuit formed in a silicon substrate for driving first and second MOS gated power devices which are connected in a half bridge circuit which has first and second d-c terminals and a common terminal at the node between said first and second MOS gated power devices; said integrated circuit including timer circuit means having an input control terminal C_T which is connectable to a low logic level signal referenced to the potential of said substrate; latch circuit means coupled to said timer circuit means for controlling the frequency at which said first and second MOS devices are switched on and off and having an output which is switched in response to a predetermined signal applied to said input control terminal; a high side dead time delay circuit and a low side dead time delay circuit each coupled to said latch circuit means for delaying the transmission of a latch output signal for a predetermined time delay following the switching of the output of

said latch circuit means; a high side level shifting means and a high side driver circuit means and a low side driver circuit means; said high side driver circuit means, and said low side driver means coupled to said high side dead time circuit and said low side dead time circuit respectively and having high side and low side output pins respectively which produce outputs for turning on and off said first and second MOS gated power devices in response to control signals at said input control terminal C_T; said dead time delay circuits preventing the simultaneous conduction of said first and second MOS gated power devices.

5,545,956

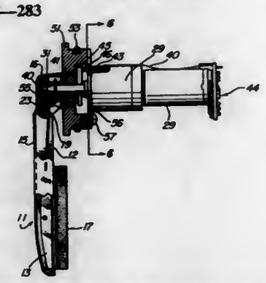
WINDOW WIPER SYSTEM FOR SMALL WINDOWS

Paul R. Salvio, Palos Verdes Estates; David M. Masarik, Laguna Beach, and Kevin J. Wasserstein, Manhattan Beach, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 263,272, Jun. 21, 1994, Pat. No. 5,479,077. This application Feb. 21, 1995, Ser. No. 391,738

Int. Cl.[6] B60S *1/08*

U.S. Cl. 318—283 **10 Claims**



1. A window wiper system for the window of an infrared camera, comprising:

a motor means having a shaft and responsive to an electrical drive signal to rotate said shaft;

a wiper having one end coupled to said shaft, said wiper having:

a wiper hub,

a wiper arm pivotally mounted to said hub, said wiper arm including a unitarily formed member having a top surface sweeping inwardly over half its length into an elongated front portion terminating in a rounded nose and having respective side skirts depending from said top surface, said side skirts each terminating in a linear edge,

a wiper blade holder pivotally mounted to said wiper arm,

a wiper blade mounted to said holder, and

torsion spring means applying downward force on said wiper arm to press said blade against said window; and

means for controlling the drive signal to said motor means such that said wiper moves in an oscillatory motion across said window between a first position and a second position, said means for controlling further causing said motor means to stop the motion of said wiper for a selected period of time at said second position before causing said wiper to move toward said first position, and for causing said motor means to stop the motion of said wiper for a selected period of time at said first position before causing said wiper to move toward said second position.

5,545,957

MOTOR SPEED CONTROLLER FOR SUPPRESSING SHAFT TORSION VIBRATION

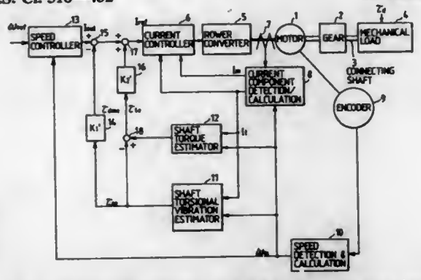
Kenji Kubo; Rached Dhaouadi, both of Hitachi; Masahiro Tobise, and Noboru Azusawa, both of Katsuta, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 24, 1994, Ser. No. 185,613

Claims priority, application Japan, Jan. 21, 1993, 5-008080

Int. Cl.[6] H02P *7/00*

U.S. Cl. 318—432 **12 Claims**



1. In a motor speed controller for a motor for driving a mechanical load, which includes means for detecting a motor torque current and a motor speed an improvement comprising:

a shaft torsion vibration estimator for estimating a shaft torsion torque between the motor and the mechanical load the detected motor torque current and motor speed by using a two-mass system vibration model; and

a shaft torque estimator for estimating a shaft torque acting on a motor shaft, said shaft torque estimator utilizing the detected motor torque current and motor speed;

wherein motor speed control is performed responsive to a speed command value, the detected motor speed and the estimated shaft torsion torque value calculated by the shaft torsion vibration estimator and the estimated shaft torque value calculated by the shaft torque estimator.

5,545,958

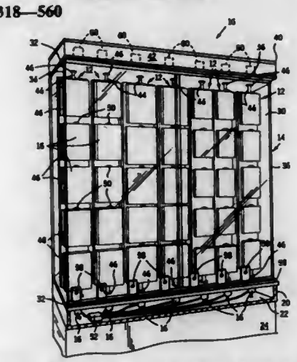
MERCHANDISE DISPLAY SYSTEM

Richard H. Kramer, Glendale, Wis., assignor to KCS Industries, Inc., Milwaukee, Wis.

Filed Oct. 13, 1994, Ser. No. 323,373

Int. Cl.[6] A47F *3/08*

U.S. Cl. 318—560 **11 Claims**



1. A merchandising system for holding items in adjacent columns, comprising:

a base;

a plurality of item holders rotatably mounted to the base, each item holder being configured to receive and hold at least one item;

a plurality of motors cooperating with the plurality of item holders to rotate each item holder;

a plurality of sensors, each sensor cooperating with a corresponding item holder to provide an output corresponding to the rotational position of that item holder relative to the other item holders; and

a controller coupled between the plurality of sensors and the plurality of motors, the controller being configured to receive the output signal and control the rotational position of the plurality of item holders.

5,545,959

SPEED CONTROL METHOD FOR A NUMERICAL CONTROL APPARATUS

Toshiaki Otsuki, Nishikatsura-machi; Haruhiko Kozai, and Seiji Ishii, both of Oshino-mura, all of, Japan, assignors to Fanuc Ltd., Japan

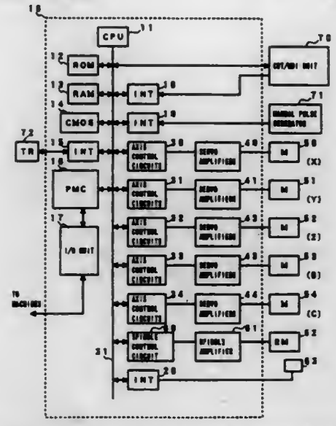
PCT No. PCT/JP94/00789, § 371 Date Jan. 19, 1995, § 102(e) Date Jan. 19, 1995, PCT Pub. No. WO94/28472, PCT Pub. Date Dec. 8, 1994

PCT Filed May 16, 1994, Ser. No. 373,208

Claims priority, application Japan, May 20, 1993, 5-139824

Int. Cl.[6] G05B *19/41*; G06G *7/64*

U.S. Cl. 318—568.15 **4 Claims**



1. A speed control method for a numerical control apparatus of a machine tool which includes a rotational axis or axes changing a tool angle relative to a workpiece, comprising the steps of:

obtaining a distributive shift amount of each said rotational axis of said machine tool, at every predetermined period, on the basis of positional data of each said rotational axis with respect to start and end points of a shift command and a commanded shift speed;

obtaining, at every said predetermined period, a positional deviation of a tip of said machine tool in a direction of each linear shift axis with reference to said rotational axis, based on a difference between a rotational position of the rotational axis in a next cycle and a rotational position of the rotational axis in a present cycle;

for each said linear shift axis, adding the positional deviation to the corresponding distributive shift amount, and outputting a resultant value as a corrected distributive shift amount for each said linear shift axis; and

for each said rotational axis, outputting said obtained distributive shift amount.

5,545,960

AUTONOMOUS MOBILE MACHINE, AND SYSTEM AND METHOD FOR CONTROLLING A MOBILE MACHINE

Shigeki Ishikawa, Tokyo, Japan, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 6, 1992, Ser. No. 865,576

Claims priority, application Japan, Apr. 9, 1991, 3-103463

Int. Cl.[6] G05B *19/42*

U.S. Cl. 318—587 **19 Claims**



1. An autonomous mobile machine comprising:

(a) a sensing unit for outputting signals related to a distance and an angle between the machine and a path to be traced the sensing unit further outputting signals related to an obstacle-free space, the obstacle-free space being the space in which the machine can move freely between a first and second sampling time;

(b) means for obtaining intermediate control outputs by using a navigation procedure for path tracing in accordance with signals related to the distance and angle;

(c) means for obtaining intermediate control outputs by using a navigation procedure for obstacle avoidance in accordance with signals related to the obstacle-free space;

(d) means for determining a first weighting coefficient for path tracing and a second weighting coefficient for obstacle avoidance by inference based on a set of fuzzy rules in accordance with the signals related to the distance and angle and the signals related the obstacle-free space;

(e) means for computing a set of computed control outputs from the intermediate outputs obtained by said means (c), those obtained by the means (d), a first coefficient, and a second coefficient; and

(f) a drive system for driving the machine in accordance with the set of computed control outputs.

5,545,961

ELECTRIC MOTOR DRIVE

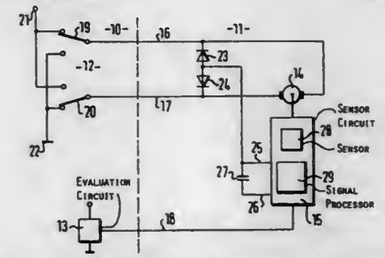
Cornelius Peter, Buehl-Neusatz; Hartmut Seiler, Baden-Baden; Volker AAB, Lichtenau-Ulm, and Guenter Haderer, Buehl, all of, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Apr. 21, 1995, Ser. No. 424,283

Claims priority, application Germany, Oct. 21, 1992, 42 35 472.2; Mar. 12, 1993, 43 07 866.4

Int. Cl.[6] B60R *16/02*

U.S. Cl. 318—647 **13 Claims**



1. An electric motor drive having a first section which contains a control circuit and an evaluation circuit; a second section which is offset with respect to the first section and contains an electric

motor and a sensor circuit; two power supply lines connecting the control circuit and the electric motor for supplying power to the electric motor; a circuit for supplying power to the sensor circuit via at least one of the two power supply lines leading to the electric motor and via a third line connecting the evaluation circuit and the sensor circuit; and wherein the third line further serves for the transmission to the evaluation circuit of an information signal provided by the sensor circuit.

5,545,962

POSITIONING SYSTEM

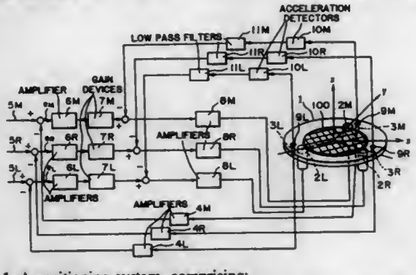
Shinji Wakui, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 107,613, Aug. 18, 1993, abandoned. This application Sep. 30, 1994, Ser. No. 312,932

Claims priority, application Japan, Aug. 18, 1992, 4-240088; Nov. 6, 1992, 4-321484

Int. Cl.[6] H01L *21/68;* **G05F** *1/00*

U.S. Cl. 318—677 **22 Claims**



1. A positioning system, comprising:

a plurality of piezoelectric actuators for moving an object to be positioned;

a plurality of current output type amplifiers for amplifying drive signals for said actuators and for producing drive currents corresponding to the drive signals;

a plurality of acceleration sensors disposed proximate to said actuators, for detecting acceleration of the object in the neighborhood of said actuators; and

a feedback circuit for negatively feeding back the outputs of said acceleration sensors to input sides of said amplifiers, such that said actuators are driven in response to the drive currents.

5,545,963

SEEK METHOD AND APPARATUS

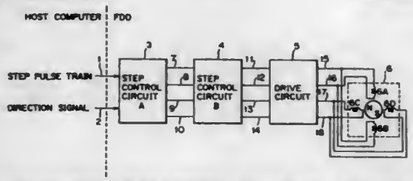
Nobuhiro Aizawa, Chichibu, Japan, assignor to Canon Denshi Kabushiki Kaisha, Chichibu, Japan

Filed Mar. 31, 1994, Ser. No. 220,485

Claims priority, application Japan, Apr. 1, 1993, 5-098505; Apr. 2, 1993, 5-100300

Int. Cl.[6] H02P *8/00*

U.S. Cl. 318—696 **18 Claims**



1. A seek method using a stepping motor driven in response to a step pulse train consisting of a plurality of step pulses, said seek method comprising the steps of:

generating a first two-phase excitation state in response to a first step pulse of the step pulse train;

generating a one-phase excitation state following the first two-phase excitation state in response to a second step pulse of the pulse train; and

generating a second two-phase excitation state following the one-phase excitation state until a third step pulse of the pulse train is produced, the duration of the one-phase excitation state plus that of the second two-phase excitation state being substantially equal to one period of the pulse train.

5,545,964

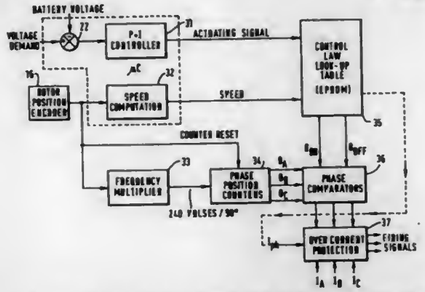
CONTROL OF SWITCHED RELUCTANCE MACHINES

John M. Stephenson, Leeds, and William F. Ray, Attenborough, both of, England, assignors to Switched Reluctance Drives Ltd., Leeds, England

Continuation of Ser. No. 950,599, Sep. 24, 1992, Pat. No. 5,469,039. This application Jun. 7, 1995, Ser. No. 486,320

Int. Cl.[6] H02K *19/24;* **G05B** *19/40*

U.S. Cl. 318—701 **34 Claims**



1. A control system for use with a switched reluctance machine having a rotor with rotor poles, a stator with at least one set of stator poles, and at least one phase winding associated with the at least one set of stator poles, wherein rotation of the rotor produces cyclic variations in the inductance of the at least one phase winding, and wherein each cyclic variation of the at least one phase winding's inductance defines a phase period, the control system comprising:

(a) a switch arrangement operatively coupled with the switched reluctance machine;

(b) a rotor signal derivation arrangement operatively coupled with the switched reluctance machine to derive a rotor signal indicative of orientation of the rotor with respect to the stator;

(c) an error signal generator to produce an error signal indicative of the difference between the output from the switched reluctance machine and a demanded output; and

(d) a controller operatively coupled with the switch arrangement, the rotor signal derivation arrangement and the error signal generator top generate switch arrangement turn-on and turn-off signals in response to at least one of the error signal and the rotor signal, to apply volt-seconds to the at least one phase winding such that the current in the at least one phase winding is non-zero throughout the at least one phase period and such that progressive flux growth in the at least one phase winding is stably controlled.

5,545,965

THREE PHASE MOTOR OPERATED FROM A SINGLE PHASE POWER SUPPLY AND PHASE CONVERTER

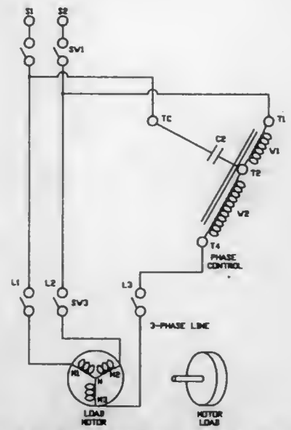
Otto J. M. Smith, 612 Euclid Ave., Berkeley, Calif. 94708-1332

Filed Jul. 25, 1994, Ser. No. 279,597

Int. Cl.[6] H02P *7/00*

U.S. Cl. 318—768 **26 Claims**

1. A 3-Winding induction motor with three electrical terminals, a



single phase power supply with two lines, and a transformer with at least three electrical terminals, a first motor terminal connected to a first supply line, a second motor terminal connected to a second supply line, a first terminal of said transformer also connected to said second supply line, means to connect a capacitor between a second terminal of said transformer which is intermediate said first and third terminals, and said first supply line, and means to connect a third terminal of said transformer to a third terminal of said motor.

5,545,966

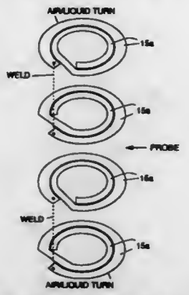
AIR/LIQUID COOLED METALLIC TURN FOR HIGH FREQUENCY HIGH POWER CHARGING TRANSFORMERS

Sergio Ramos, Wilmington; John T. Hall, Woodland Hills; Herbert J. Tanzer, Topanga, all of Calif., and Rudy Severns, Cottage Grove, Oreg., assignors to Delco Electronics Corp., Kokomo, Ind.

Filed Apr. 29, 1994, Ser. No. 237,492

Int. Cl.[6] H01M *10/46*

U.S. Cl. 320—2 **11 Claims**



1. In an inductive charging apparatus for use in charging a battery, which apparatus comprises a charging coupler that is insertable into a charge port that is coupled to the battery, and wherein the charging coupler comprising a housing, a primary magnetic core and a primary winding disposed in the housing, wherein said charge port comprises:

a housing;

an opening disposed in the housing into which the charging coupler is inserted;

spaced apart secondary cores disposed in the housing; and spaced apart secondary windings disposed around the respective secondary cores that each comprise an inner turn and an outer turn comprising a heat exchanger.

5,545,967

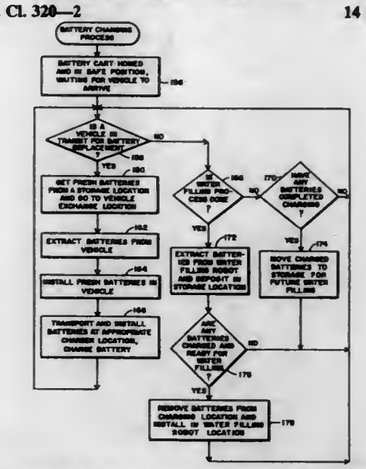
AUTOMATIC BATTERY MANAGEMENT SYSTEM

Robert E. Osborne, Coral Springs, and David A. Garlow, Boca Raton, both of Fla., assignors to Precision Automation Systems, Inc., Miami, Fla.

Filed Jul. 21, 1995, Ser. No. 505,110

Int. Cl.[6] H02J *7/00;* **B65G** *67/00*

U.S. Cl. 320—2 **14 Claims**



1. A system for automatic loading, unloading and charging of rechargeable batteries used in battery electric traction motor powered vehicles, the system comprising:

a battery recharge station;

a battery load and unload station adapted for positioning a battery powered vehicle in a preselected position therein;

a programmable battery transport apparatus programmed for automatically removing discharged batteries from the vehicle, transporting the discharged batteries to a battery recharge station, unloading the discharged batteries into the recharge station, retrieving charged batteries from the recharge station, transporting the charged batteries to the vehicle and loading the charged batteries onto the vehicle;

a battery water check station, the transport apparatus being programmed to transport batteries from the battery charging station to the water check station, load the charged batteries into the water check station and unload the batteries from the water check station upon completion of a check of the water level in each of the batteries; the water check station including means for checking the water level in each cell of each of the batteries, said checking means comprising an elongate probe adapted for insertion into each cell of the battery through a cap positioned on the cell; and

the water check station including a programmable robot arm operable for precisely positioning the probe in alignment with the cap, and effecting insertion and withdrawal of the probe into and from each battery cell.

5,545,968

MOTOR-POWERED APPLIANCE FOR PERSONAL USE

Peter Hilfinger, Bad Homburg; Gerhard Kressner, Altenstadt, and Michael Sauer, Bad Camberg, all of, Germany, assignors to Braun Aktiengesellschaft, Frankfurter, Germany

PCT No. PCT/DE93/00805, § 371 Date May 4, 1995, § 102(e) Date May 4, 1995, PCT Pub. No. WO94/05228, PCT Pub. Date Mar. 17, 1994

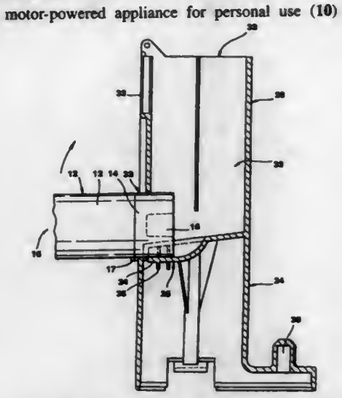
PCT Filed Sep. 3, 1993, Ser. No. 392,895

Claims priority, application Germany, Sep. 9, 1992, 42 30 159.9

Int. Cl.[6] H01M *10/42*

U.S. Cl. 320—2 **16 Claims**

1. A motor-powered appliance for personal use (**10**) as, for



example, an appliance for oral or dental hygiene, a shaver or the like, with a housing (**12**) for accommodating the drive means (**20**) as well as at least one rechargeable energy-storage cell (**18**), with the housing (**12**) comprising at least two housing sections (**13**, **14**) sealingly connectible with each other, and with the appliance (**10**) having an associated case structure (**22**) incorporating in particular means (**24**) for charging the energy-storage cells (**18**), or in particular means (**26**) for the storage of attachments for the appliance (**10**), characterized in that the case structure (**22**) includes in particular two abutment means which, in forming an integral part of the case structure (**22**), provide a tool for severing the housing sections (**13**, **14**).

5,545,969

BATTERY RESIDUAL CAPACITY DISPLAYING SYSTEM WITH DISCHARGED ELECTRICAL QUANTITY COMPUTATION SECTION

Hirokazu Hasegawa, Fujisawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 25, 1993, Ser. No. 140,501

Claims priority, application Japan, Dec. 2, 1992, 4-322968; Dec. 2, 1992, 322969; Dec. 2, 1992, 4-322970

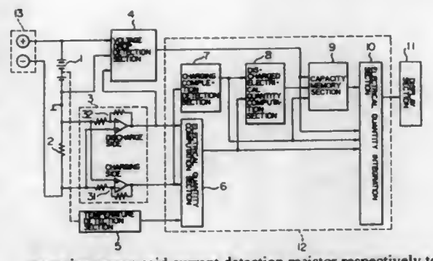
Int. Cl.[6] H01M *10/48*

U.S. Cl. 320—5 **7 Claims**

1. A system for displaying a residual capacity of a secondary battery, said system comprising:

a current detection resistor for converting a charging current and a discharge current of said secondary battery into very small voltages respectively;

charging and discharging current detection means, comprising a charging side operational amplifier and a discharge side operational amplifier, for amplifying the very small voltages



appearing across said current detection resistor respectively to generate resultant signals and outputting the resultant signals respectively;

voltage drop detection means for detecting a situation where a voltage of said secondary battery has dropped to a level lower than a predetermined setting and outputting a voltage drop signal when said situation is detected;

temperature detection means for detecting an ambient temperature of said secondary battery to generate a temperature signal and outputting the temperature signal;

electrical quantity computation means, receiving the resultant signals of said charging and discharge current detection means together with the temperature signal of said temperature detection means as its inputs, for deciding whether an operation mode of said system is a charging mode, a discharge mode or a stand-by mode and computing a quantity of electricity in that mode;

charging completion detection means for producing an output signal and setting its output signal when completion of charging said secondary battery is detected, but resetting its output signal when charging said secondary battery is started;

discharged electrical quantity integration means for integrating the quantity of electricity at time intervals of a predetermined period to derive a first integrated value when the output signal of said charging completion detection means is set and a decision of said electrical quantity computation means indicates the discharge mode, but, when the output signal of said charging completion detection means is reset, nullifying the first integrated value irrespective of the decision of said electrical quantity computation means;

capacity memory means for storing the first integrated value integrated by said discharged electrical quantity integration means as a newest battery capacity when the output signal of said charging completion detection means is set and the voltage drop signal is first outputted from said voltage drop detection means after the charging is started;

electrical quantity integration means for obtaining a second integrated value by integrating, at time intervals of the predetermined period, the quantity of electricity by addition when the decision of said electrical quantity computation means indicates the charging mode, but by subtraction when the decision of said electrical quantity computation means indicates the discharge mode, thereby determining the residual capacity on the basis of a ratio of the second integrated value to the first integrated value stored in said capacity memory means, said electrical quantity integration means setting the second integrated value to correspond to the value of the residual capacity at the predetermined voltage level when the voltage drop signal is first outputted from said voltage drop detection means after the charging is started, but setting the second integrated value to correspond to the residual capacity of 100% when the output signal of said charging completion detection means is set as a result of the charging; and

display means for displaying the residual capacity stepwise on the basis of the value of the residual capacity determined by said electrical quantity integration means.

5,545,970

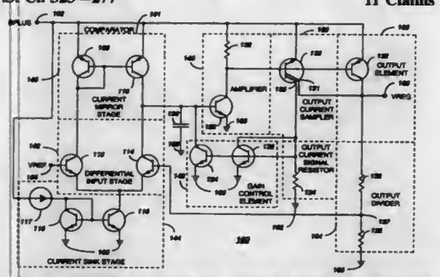
VOLTAGE REGULATOR CIRCUIT HAVING ADAPTIVE LOOP GAIN

John J. Parkes, Jr., Boynton Beach, and James G. Mittel, Lake Worth, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 1, 1994, Ser. No. 283,330

Int. Cl.[6] G05F *1/573*

U.S. Cl. 323—277 **11 Claims**



1. A voltage regulator circuit for coupling to a power supply that provides a power supply voltage at first and second power supply nodes, the voltage regulator circuit further for generating and regulating an output voltage, the voltage regulator circuit comprising:

comparator means coupled to the first and second power supply nodes and coupled to a reference voltage and to a divider voltage proportional to the output voltage for comparing the reference voltage with the divider voltage to generate an error signal;

amplifier means having a gain, the amplifier means coupled to the first and second power supply nodes and coupled to the comparator means for amplifying the error signal to produce an amplified error signal;

output means coupled to the first and second power supply nodes and coupled to the amplifier means for generating and regulating the output voltage in response to the amplified error signal;

output current sampler means coupled to the first and second power supply nodes and coupled to the output means for generating an output signal voltage responsive to an output current supplied by the output means; and

gain control means coupled to the second power supply node and coupled to the output current sampler means and to the amplifier means for controlling the gain of the amplifier means in response to the output signal voltage, wherein the gain control means functions to reduce the output voltage and the output current to avoid an overload that would pull the power supply voltage below a predetermined level.

5,545,971

AC VOLTAGE REGULATOR

Zaitter Gomez, Cra. 36, No. 70-35, A.A. 89871, Santafe de Bogota, D.C., and Mario A. Gongora, P.O. Box 25.0931, Bogota D.C., both of, Colombia

Filed Jun. 1, 1995, Ser. No. 456,672

Int. Cl.[6] G05F *1/24*

U.S. Cl. 323—259 **15 Claims**

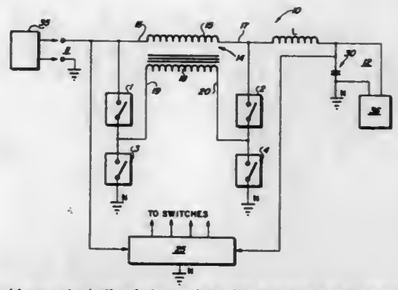
1. An AC voltage regulator comprising:

a regulator input, said regulator input being connected with an AC power source,

a regulator output, said regulator output being connected with a load,

a regulator transformer, said regulator transformer including a first winding and a second winding which are electrically isolated with one another,

said first winding being a power winding and being connected between said regulator input and said regulator output,



said second winding being an inducing winding which induces a low voltage on said power winding,

a plurality of high frequency switches connected with said inducing winding and structured to variably and selectively isolate said inducing winding, and

means to monitor an input voltage from said AC power source at said regulator input and an output voltage exiting said regulator output to the load, and to variably control a conductive posture of each of said high frequency AC switches in order to selectively vary conductive contact of said inducing winding and thereby selectively vary whether said inducing winding increases, decreases, or maintains voltage passing through said power winding.

5,545,972

CURRENT MIRROR

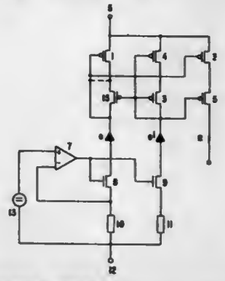
Oliver Kiehl, Munich, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sep. 6, 1994, Ser. No. 301,868

Claims priority, application Germany, Sep. 3, 1993, 43 29 867.2

Int. Cl.[6] G05F *3/16*

U.S. Cl. 323—315 **9 Claims**



1. A current mirror, comprising:

first and second transistors each having a control terminal and a load path with two terminals, the control terminals of said first and second transistors and one of the terminals of the load path of said first transistor receiving a first input current;

third, fourth and fifth transistors each having a control terminal and a load path with two terminals, the control terminals of said third, fourth and fifth transistors and one of the terminals of the load path of said third transistor receiving a second input current of equal magnitude to the first input current;

one of the terminals of the load path of said fifth transistor supplying an output current proportional to the two input currents;

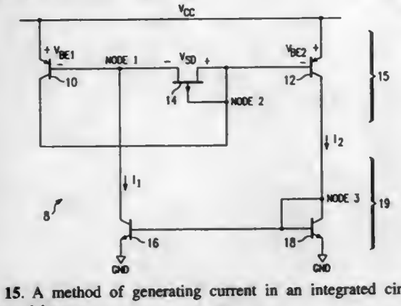
the other of the terminals of the load paths of said third and fifth transistors each being connected to one terminal of the load path of a respective one of said fourth and second transistors; and the other of the terminals of the load paths of said first, second and fourth transistors being connected to a common reference point.

VOI
1189
ISS
2
AG
19
19 96
UMI

5,545,973
CURRENT GENERATOR FOR INTEGRATED CIRCUITS AND METHOD OF CONSTRUCTION

Douglas R. Johnson, Cedar Rapids, Iowa, assignor to Texas Instrument Incorporated, Dallas, Tex.

Filed Apr. 4, 1994, Ser. No. 223,260
Int. Cl.[6] G05F *3/16*
U.S. Cl. 323—315 **15 Claims**



15. A method of generating current in an integrated circuit, comprising:

flowing current in a first current path comprising a series connection of current flow nodes of a first transistor; a junction field-effect transistor, and a second transistor;

flowing current in a second current path comprising a series connection of current flow nodes of a third transistor and fourth transistor;

controlling current flow through said first transistor by connection of one of said field-effect transistor current path nodes to a control node of said first transistor;

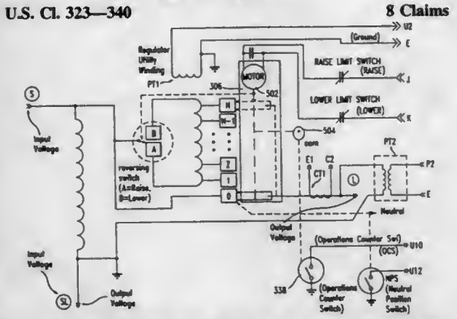
controlling current flow through said third transistor by connection of the other of said field-effect transistor current path nodes to a control node of said third transistor; and

mirroring current flow through said second and fourth transistors by common connection of control nodes of said second and fourth transistors.

5,545,974
VARIAMP OIL TEMPERATURE CONTROL

Jack Trainor, Wake Forest, and Carl J. LaPlace, Raleigh, both of N.C., assignors to Siemens Energy & Automation, Inc., Alpharetta, Ga.

Filed Sep. 29, 1994, Ser. No. 314,972
Int. Cl.[6] G05F *5/04*
U.S. Cl. 323—340 **8 Claims**



1. A voltage regulator controller for use with a multi-tap voltage regulator transformer having a plurality of tap positions for adjusting an output voltage in discrete tap position steps, comprising:

a memory having a tap movement control code stored therein for controlling the tap positions in accordance with a plurality of tap position control algorithms;

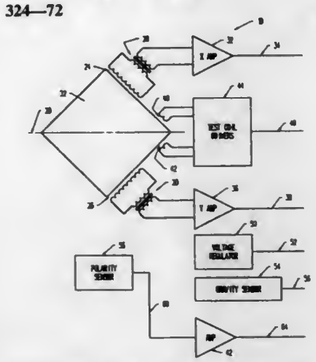
an operator interface for receiving configuration parameters from an operator; and,

selections controls, connected to receive the configuration parameters and connected to monitor oil temperature within the transformer, for selecting one of the tap position control algorithms as being active as a function of the configuration parameters and the oil temperature.

5,545,975
STORM MONITOR

John S. Youngquist, 899 Niagara Boulevard, Ft. Erie, Ontario, Canada

Division of Ser. No. 404,897, Mar. 15, 1995, Pat. No. 5,504,421, which is a division of Ser. No. 115,183, Aug. 31, 1993, Pat. No. 5,408,175, which is a division of Ser. No. 708,487, May 31, 1991, Pat. No. 5,245,274. This application May 11, 1995, Ser. No. 404,749
Int. Cl.[6] G01R *31/02*
U.S. Cl. 324—72 **4 Claims**



1. The method of locating the site of a lightning occurrence with respect to a heading axis, said lightning occurrence evoking an electromagnetic field including an H-field component and an E-field component, comprising the steps of:

providing a first H-field antenna including a first coil structure having a first array of windings oriented at a selected angle with respect to said heading axis and deriving a first current response to said H-field component;

providing a second H-field antenna including a second coil structure having a second array of windings orthogonally disposed with respect to said first array and deriving a second current response to said H-field component;

detecting said first current response in isolation from the response of said first H-field antenna to said E-field component and deriving a first output in correspondence therewith;

detecting said second current response in isolation from the response of said second H-field antenna to said E-field component and deriving a second output in correspondence therewith;

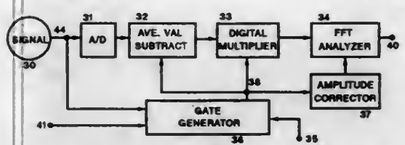
deriving lightning occurrence bearing and range information from said first and second outputs; and

publishing said bearing and range information as a visually perceptible readout.

5,545,976
GATED SPECTRUM ANALYZER

Robert T. Cutler, Everett, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 336,704, Nov. 8, 1994, abandoned, which is a continuation of Ser. No. 32,223, Mar. 17, 1993, abandoned. This application Sep. 11, 1995, Ser. No. 526,796
Int. Cl.[6] G01R *23/00*
U.S. Cl. 324—76.38 **9 Claims**



1. In an essentially periodic composite time function containing a periodic train of time segments which are samples of an underlying signal, a method for spectrum analysis of the underlying signal which achieves a desired frequency resolution smaller than the inverse of the time duration of a single segment, the method comprising the steps of:

a) converting the composite time function into a first sequence of samples having digitized values;

b) choosing a periodically repeating portion of the composite time function as a reference;

c) identifying, with respect to the reference in each period of the composite time function, those samples of the first sequence corresponding to segments of the periodic train;

d) constructing a second sequence of samples, coincident with the first sequence, having the digitized values of a predetermined window function over the sample range of each segment and the value zero elsewhere;

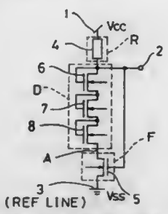
e) multiplying the sample values of the first sequence by the sample values of the second sequence; and

f) spectrally analyzing a length of the product sequence from step (e) sufficient to achieve the desired frequency resolution.

5,545,977
REFERENCE POTENTIAL GENERATING CIRCUIT AND SEMICONDUCTOR INTEGRATED CIRCUIT ARRANGEMENT USING THE SAME

Toshio Yamada; Akinori Shibayama; Shunichi Iwanari, all of Osaka, and Atsushi Fujiwara, Kyoto, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 9, 1993, Ser. No. 74,561
Claims priority, application Japan, Jun. 10, 1992, 4-150285; May 20, 1993, 5-118221
Int. Cl.[6] G05F *3/22*
U.S. Cl. 323—313 **57 Claims**



1. A reference potential generating circuit in which a predetermined difference in potential is generated between an output node thereof and a first voltage supply line thereof, serving as a reference potential line, out of first and second voltage supply lines thereof across which a DC voltage is applied, so that a predetermined potential is generated at said output node, comprising:

resistance means interposed between said second voltage supply line and said output node;

feedback means having a MOS transistor of which gate is connected to said output node, and of which source is connected to said first voltage supply line; and

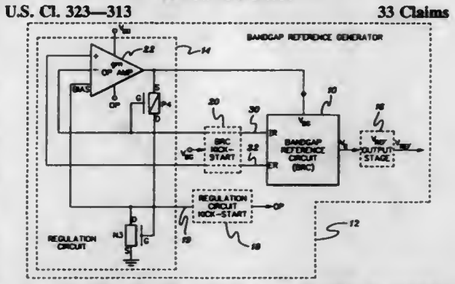
diode means having a plurality of MOS transistors which are connected in series to one another, each of said plurality of MOS transistors having its gate connected to its drain, said plurality of MOS transistors interposed between the drain of said MOS transistor of said feedback means and said output node,

wherein said difference in potential between said output node and first voltage supply line is determined according to the number of MOS transistors forming the diode means.

5,545,978
BANDGAP REFERENCE GENERATOR HAVING REGULATION AND KICK-START CIRCUITS

Dale E. Pontius, Colchester, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 27, 1994, Ser. No. 266,281
Int. Cl.[6] G05F *3/16*
U.S. Cl. 323—313 **33 Claims**



1. A bandgap reference generator for providing a reference voltage V_R from a supply voltage V_{DD}, said bandgap reference generator comprising:

a bandgap reference circuit (BRC) having an input for receiving supplied power and an output for providing said reference voltage V_R, said bandgap reference circuit also having a first internal node with a first voltage and a second internal node with a second voltage; and

a voltage regulation circuit coupled to the bandgap reference circuit and connected to receive said supply voltage V_{DD}, said voltage regulation circuit establishing said supplied power at the input to said bandgap reference circuit such that the first voltage at the first internal node of the BRC and the second voltage at the second internal node of the BRC are maintained equal, wherein maintaining the first voltage equal to the second voltage reduces device stress within the bandgap reference circuit.

5,545,979
POWER SOURCE DEVICE FOR WATTHOUR METER

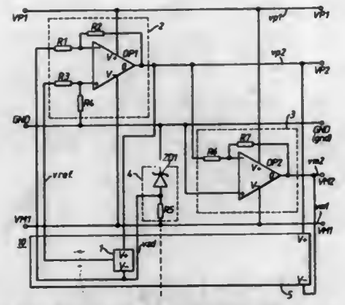
Tadashi Nukui, and Ken Tanabe, both of Kanagawa-ken, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 30, 1995, Ser. No. 521,586
Claims priority, application Japan, Sep. 2, 1994, 6-209534
Int. Cl.[6] G05F *3/16;* **G01R** *7/00*
U.S. Cl. 323—313 **6 Claims**

1. A power source device, comprising:

primary reference voltage generating means having a positive power source terminal connected to receive one of ground potential and a DC positive voltage and a negative power source terminal connected to receive a primary DC negative voltage for generating a primary reference voltage;

reference voltage generating means having a positive power source terminal connected to receive said DC positive voltage



and a negative power source terminal connected to receive said primary reference voltage for generating a reference voltage;

positive voltage generating means connected to receive said reference voltage and said primary reference voltage for obtaining a difference between said reference voltage and said primary reference voltage and amplifying said difference to generate said DC positive voltage;

negative voltage generating means connected to receive said DC positive voltage for inverting amplifying said DC positive voltage to generate a negative DC voltage; and

an integrated circuit having a positive power source terminal connected to receive said DC positive voltage and a negative power source terminal connected to receive said DC negative voltage;

said integrated circuit and said reference voltage generating means being integrated and formed on a n-type substrate; and

said negative power source terminal of said integrated circuit being isolated from said negative power source terminal of said reference voltage generating means.

5,545,980

OPTICAL SENSOR

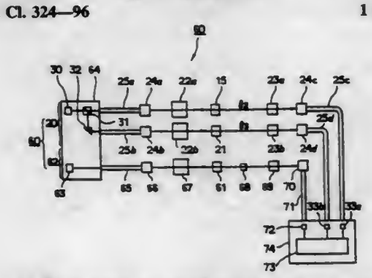
Masayuki Nakamoto, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 473,778, Jun. 6, 1995, Pat. No. 5,510,703, which is a division of Ser. No. 993,064, Dec. 18, 1992, Pat. No. 5,451,864. This application Oct. 24, 1995, Ser. No. 547,337

Claims priority, application Japan, Dec. 19, 1991, 3-337109

Int. Cl.[6] G01R *33/06*

U.S. Cl. 324—96 **1 Claim**



1. An optical sensor for measuring a magnetic field intensity, current intensity, electric field intensity and voltage, the optical sensor comprising:

a light irradiation means for irradiating a linearly polarized light having a wavelength of 740 to 890 nm;

a magneto-optical element having a composition of $Y_{3-x}Tb_xFe_5O_{12}$ ($0.3 \leqq x \leqq 0.8$) for Faraday rotating the linearly polarized light to output a rotated polarized light;

an electro-optical element (Pockels effect element) arranged in parallel to the magneto-optical element, for imparting phase difference equivalent to the electric field intensity to the polarized light so as to output a retarded polarized light; and

a detecting means for detecting light outputs of the rotated polarized light which has been Faraday rotated by the magneto-optical element and the retarded polarlized light which has been imparted with the phase difference by the electro-optical element.

5,545,981

DEVICE FOR MEASUREMENT OF ELECTRICAL ENERGY COMPRISING A MULTIPLEXER

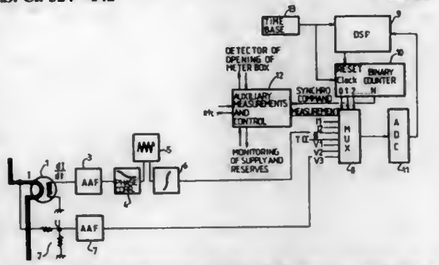
Michel Dubin, Poitiers; Jacques Talbot, Marigny-Brizay, and Pierre Decaux, Chasseneuil du Poitou, all of, France, assignors to Schlumberger Industries, S.A., Montrouge, France

Filed May 19, 1995, Ser. No. 444,500

Claims priority, application France, Jun. 1, 1994, 94 06674

Int. Cl.[6] G01R *21/06*

U.S. Cl. 324—142 **9 Claims**



1. Device for measurement of electrical energy comprising a current sensor and a voltage sensor which supply respectively current and voltage signals to a multiplexing circuit, the signals then being sent to an analogue to digital converter in a sequential cycle of signals, the device comprising electronic control means which calculate the instantaneous electrical energy at the time of measurement of a first signal, being either a current or voltage signal by (i) a first step of calculating a value representing the first signal taken from the value of the first signal sampled at this moment and by (ii) a second step of calculating a value representing the second signal taken from the values of the two samples of the second signal which are made before and after the moment in question, the electronic control means calculating the first or second step further using at least two other samples of the signal in question in order to calculate the value of that signal, such that either the first or the second signal is calculated using at least three samples of that signal.

5,545,982

CYCLE COMPUTER SYSTEM AND PROTECTIVE CABLE

Constant G. Vlakancic, 150 Jackson St., Los Gatos, Calif. 95032

Filed Mar. 1, 1993, Ser. No. 24,735

Int. Cl.[6] G01P *3/42;3/48;3/54;* **B62L** *3/00*

U.S. Cl. 324—174 **20 Claims**

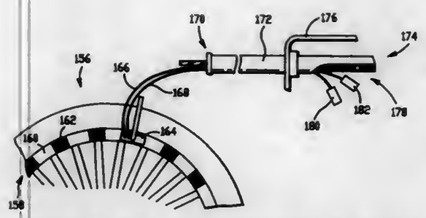
1. A cycle computer system for use on a bicycle having a brake of the type wherein a pair of opposing brake pads are pressed against a wheel rim when a brake lever is operated, the brake being connected to the brake lever via a cable assembly, the system comprising:

a magnetic sensor incorporated into one of the brake pads and producing an output signal proportional to a rate of change of a varying magnetic field;

at least one magnet being located within the wheel rim such that when the wheel rotates, the at least one magnet will pass between the brake pads thereby exposing the sensor to a varying magnetic field proportional to a rate of wheel rotation;

a pair of electrical conductors incorporated into the cable assembly, one end of the conductors being connected to receive the sensor output signal;

a cycle computer connected to the other end of the conductors for receiving the sensor output signal, the cycle computer converting the signal to a manually selected function of wheel rotation and time, the computer including means for displaying the result of the conversion and for selecting said function.



5,545,983

DISPLACEMENT SENSOR WITH TEMPERATURE COMPENSATION BY COMBINING OUTPUTS IN A PREDETERMINED RATIO

Makoto Okeya; Yasunori Ueki, and Norio Ito, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

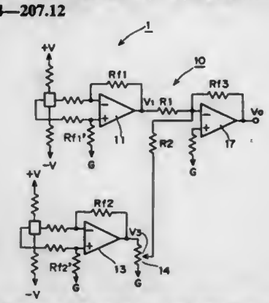
PCT No. PCT/JP93/00262, § 371 Date Sep. 16, 1994, § 102(e) Date Sep. 16, 1994, PCT Pub. No. WO93/18369, PCT Pub. Date Sep. 16, 1993

PCT Filed Mar. 2, 1993, Ser. No. 295,749

Claims priority, application Japan, Mar. 2, 1992, 4-044481; May 12, 1992, 4-119102; Nov. 27, 1992, 4-318568

Int. Cl.[6] G01B *7/04;7/30;* **H03K** *3/38*

U.S. Cl. 324—207.12 **13 Claims**



1. A displacement sensor for sensing displacement of a magnetic material to be measured, comprising:

first magnetoelectric conversion means located in a place where a magnetic flux density is varied by displacement of said magnetic material to be measured,

second magnetoelectric conversion means of the same type as that of said first magnetoelectric conversion means located in a place where a magnetic flux density is not varied by the displacement of said magnetic material to be measured, and

circuit means connected to said first and second magnetoelectric conversion means for adding outputs of said two magnetoelectric conversion means at a ratio of **V20/V10** to provide a result of **V2**–[**V1**×(**V20/V10**)], wherein

V1 and **V2** are outputs from said first and second magnetoelectric conversion means, respectively, and

V10 and **V20** are outputs from said first and second magnetoelectric conversion means, respectively, for a displacement of **0** at a reference temperature.

5,545,984

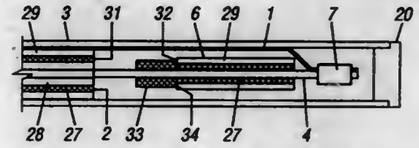
DAMPING DEVICE FOR SONIC WAVEGUIDES

Michael L. Gloden, Apex, and Arnold F. Sprecher, Jr., Raleigh, both of N.C., assignors to MTS Systems Corporation, Eden Prairie, Minn.

Filed May 11, 1995, Ser. No. 439,506

Int. Cl.[6] G01B *7/14;* **G01F** *23/30;* **H03H** *9/22;* **H04B** *11/00*

U.S. Cl. 324—207.13 **23 Claims**



1. A damping element for use with a waveguide having an end remote from electronics connected to the waveguide, comprising:

an inner, tubular sleeve coaxial with the waveguide and surrounding the waveguide;

pressure means including an outer tubular sleeve coaxial with and surrounding said inner tubular sleeve for causing said inner, tubular sleeve to apply pressure to the waveguide along the length of the inner tubular sleeve.

5,545,985

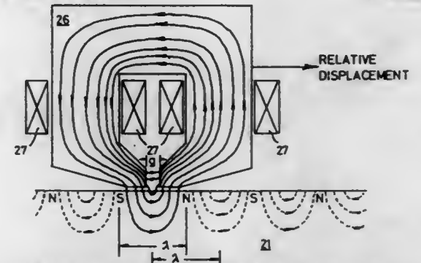
MAGNETORESISTIVE POSITION SENSOR INCLUDING AN ENCODER WHEREIN THE MAGNETIZATION EXTENDS GREATER THAN .5 TIMES THE POLE PITCH BELOW THE SURFACE

Peter Campbell, 7300 W. Camino Real, Suite 131, Boca Raton, Fla. 33433

Filed Mar. 16, 1994, Ser. No. 214,142

Int. Cl.[6] G01B *7/14;7/30*

U.S. Cl. 324—207.21 **5 Claims**



1. A magnetoresistive (MR) position sensor, comprising:

(a) a rotatable cylindrical encoder wheel having plurality of alternating N and S magnetic poles spaced a constant pole pitch around the circumferential surface of said encoder wheel, adjacent ones of said N and S poles having interfacing edges parallel to the axis of rotation of said encoder wheel, and material in which said N and S magnetic poles are formed extending a distance greater than about 0.5 times said pole pitch below said circumferential surface;

(b) a first MR sensing array disposed on an insulative substrate in proximity to said circumferential surface of said encoder wheel, at a distance less than about 0.4 times said pole pitch from said circumferential surface, such as to sense rotating magnetic fields produced by said N and S poles as they pass said first MR sensing array as said encoder wheel rotates, said first MR sensing array including at least a first section comprising at least two legs extending parallel to said interfacing edges, said at least two legs being joined in series so as to form a serpentine shape, and wherein all said legs of said first section are together periodically under the influence of a single one of said N and S magnetic poles as said encoder wheel rotates; and

(c) means to apply a constant DC voltage across terminal ends of said serpentine shape.

5,545,986

MAGNETIC SENSOR HAVING A FERROMAGNETIC RESISTIVE ELEMENT, A FRAME AND A BIAS MAGNET INTEGRALLY MOUNTED TO THE FRAME

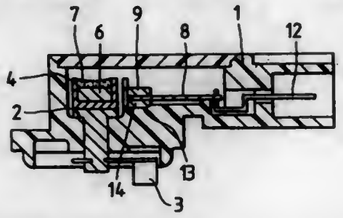
Akihiro Ariyoshi, and Masami Matsumura, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 899,850, Jun. 17, 1992, abandoned. This application Dec. 6, 1994, Ser. No. 354,156

Claims priority, application Japan, Jun. 18, 1991, 3-145977

Int. Cl.[6] G01B *7/30;* **G01R** *33/06*

U.S. Cl. 324—207.21 **4 Claims**



1. A magnetic sensor comprising:

a frame formed of resin, said frame having an internal cavity formed therein;

a rotating shaft rotatably disposed in a bottom part of said frame;

a magnet accommodated in said frame, said magnet being mounted on one end of said rotating shaft;

a ceramic substrate accommodated in the bottom part of said frame;

a ferromagnetic resistive (MR) element mounted on the ceramic substrate facing a top portion of the internal cavity, said ferromagnetic resistive element having a magnet-sensitive plane for detecting variation of the magnetic flux crossing said magnet-sensitive plane;

a bias magnet mounted opposite to the ferromagnetic resistive element and below the ceramic substrate as an integral part of the frame to bias said ferromagnetic resistive element; and

an output element connected to said ferromagnetic resistive element for outputting an output signal.

5,545,987

MONITORING DEVICE FOR TENSION MEMBERS OF SOIL OR ROCK ANCHORS, COMPRESSION MEMBERS OF POLES, PRESTRESSING ELEMENTS FOR PRESTRESSED CONCRETE STRUCTURES AND BRIDGE CABLES

Karl Schutt, Langenfeld; Johann H. Hinken, Holle; Martin Klinger, and Savtcho S. Tintchev, both of Bad Salzdetfurth, all of, Germany, assignors to Suspa Spannbeton GmbH, Langenfeld, Germany

Filed Dec. 21, 1993, Ser. No. 170,931

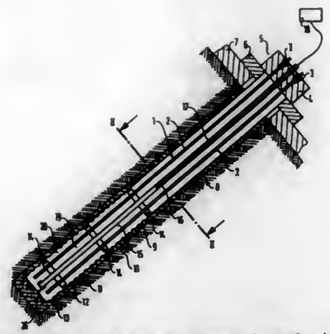
Claims priority, application Germany, Dec. 23, 1992, 42 43 878.0

Int. Cl.[6] G01N *27/72*

U.S. Cl. 324—219 **23 Claims**

1. A monitoring device for structural elements contained within an opening in an overall structural arrangement, said structural elements being for tension members of ground anchors, pole compression members, prestressing elements for prestressed concrete structures, and bridge cables comprising:

conduit means defining a bore, extending substantially parallel to said structural elements within the overall structural arrangement, said structural elements located within said opening, said bore including a sensor conduit;



sensor means for producing at least one sensor signal within said sensor conduit, said sensor means being movably mounted within said sensor conduit; and

evaluation means for receiving and processing said at least one sensor signal responsive to changes in said structural elements.

5,545,988

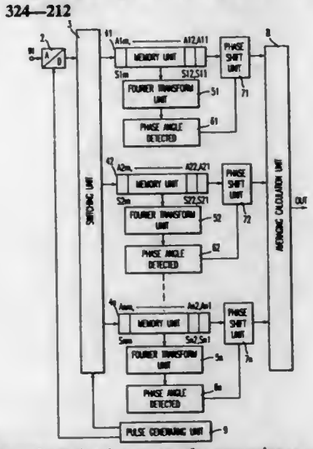
WAVEFORM SIGNAL PROCESSOR WITH SELECTIVE SAMPLING

Masanori Sakai; Katsuhiko Tomita; Joichiro Ezaki; Kazuo Suzuki; Seiji Fukuda, and Kouichi Hatakeyama, all of Tokyo, Japan, assignors to TDK Corporation, and Nihon Techno Bute Limited, both of Tokyo, Japan

Filed Sep. 13, 1994, Ser. No. 305,368

Int. Cl.[6] G11B *5/455;20/24;* **G01R** *23/16*

U.S. Cl. 324—212 **9 Claims**



4. A waveform signal processor for processing a cyclical input waveform and outputting a corresponding signal, comprising:

a first means for sampling plural cycles of said cyclical input waveform signal a plurality of times of each cycle;

a second means for performing a Fourier transform for each sampled cycle of said cyclical input waveform signal based upon the obtained sampling values;

a third means for obtaining for each cycle analog level values for a preselected frequency component in the Fourier series based upon said Fourier transform;

a fourth means for determining from the analog level values obtained by the third means, for each cycle, a characteristic sampling point corresponding to the same phase in each said frequency component; and

a fifth means for outputting averages of sampling values of corresponding sampling points of the input waveform signal at the same phase for all cycles obtained in relation to said characteristic sampling point.

5,545,989

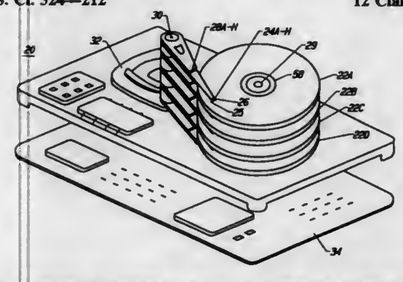
NON-DESTRUCTIVE IN-SITU LANDING VELOCITY DETERMINATION OF MAGNETIC RIGID DISK DRIVES USING BACK EMF FROM THE SPINDLE MOTOR DURING SHUTDOWN

Hong Tian, Milpitas, Calif.; Christopher H. W. Briggs, Colorado Springs, Colo.; Chisin Chiang, Santa Clara, and Jia-Kuen J. Lee, San Jose, both of Calif., assignors to Conner Peripherals, Inc., San Jose, Calif.

Filed Jan. 19, 1995, Ser. No. 375,087

Int. Cl.[6] G01R *33/12;* **G11B** *15/64*

U.S. Cl. 324—212 **12 Claims**



1. A method for testing for slider/disk contact in a disk drive comprising a rotating disk and a head mounted by an actuator for selective positioning of the head over the disk, the head having a slider, and a spindle motor for rotating the disk, comprising the steps of:

providing power to the spindle motor to cause rotation of the disk at a preselected rotational velocity corresponding to a rotational velocity designed for the disk during normal read/write operation;

thereafter withdrawing power from the spindle motor such that the disk spins down to zero rotational velocity;

while the disk spins down to zero rotational velocity, forming an acoustic coupling between an acoustic emission sensor having an electric output and the spindle motor to provide first electric signals representative of acoustic emissions from the spindle motor, including acoustic emissions caused by slider/disk contact;

while the disk spins down to zero rotational velocity, coupling an electric probe to the spindle motor to provide second electric signals representative of back EMF generated by the spindle motor as the disk spins down to zero velocity;

monitoring the first electric signals for a first indication of slider/disk contact; and

utilizing the second signals at the time of the first indication of slider/disk contact from the first electric signals, to calculate the rotational velocity of the disk at the time of the first indication of slider/disk contact.

5,545,990

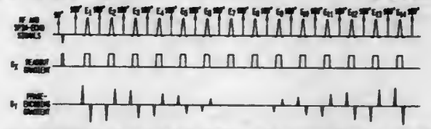
AVERAGING OF IDENTICALLY PHASE-ENCODED MR SIGNALS TO REDUCE IMAGE DEGRADATION CAUSED BY SPIN-SPIN RELAXATION

Berthold Kiefer, Erlangen, Germany, and David A. Feinberg, New York, N.Y., assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 25, 1994, Ser. No. 218,163

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—307 **10 Claims**



1. A method of processing MR data acquired from a sample using a pulse sequence having a train of echos, comprising the following steps:

acquiring from the sample a first set of MR data signals at predetermined phase-encoding gradients;

acquiring from the sample a second set of MR data signals at predetermined phase-encoding gradients; and

computing average MR data signals by averaging a first MR data signal from the first set of MR data signals and a second MR data signal from the second set of MR data signals, said first and second MR data signals having a like phase-encoding gradient and occupying different temporal positions within their corresponding sets of MR data signals.

5,545,991

LOW-NOISE NMR IMAGING METHOD WITH SINGLE POINT RECORDING (SPI)

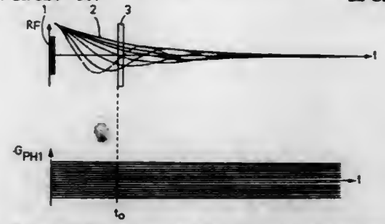
Arno Nauerth, Erlenbach, Germany, assignor to Bruker Medizintechnik Gmbh, Rheinstetten, Germany

Filed Oct. 4, 1994, Ser. No. 317,890

Claims priority, application Germany, Oct. 6, 1993, 43 34 038.5

Int. Cl.[6] G01V *03/00;03/14*

U.S. Cl. 324—307 **22 Claims**



1. A method for n-dimensional NMR imaging comprising the steps of:

a) positioning a measurement object within a measurement volume of a homogeneous magnetic field, the field having a direction parallel to a z-axis;

b) overlapping the homogeneous magnetic field with n gradient fields;

c) irradiating an RF excitation pulse into the measurement volume;

d) recording, following the RF excitation pulse, a measurement value of an NMR signal from the measurement volume within a detection time-window;

e) assigning the measurement value to a single point of an n-dimensional matrix in a k-space;

f) stepwise changing a first gradient strength of a first gradient field by an increment value which is small compared to a maximum value of the first field, the increment value corresponding to an integral multiple m=1, 2, 3, . . . of a phase encoding step corresponding to a separation between two

neighboring points in k-space, wherein the first gradient field is not switched-off between two successive recordings;

g) repeating steps c) through f) to sample the n-dimensional matrix in k-space; and

h) reconstructing an n-dimensional image from the n-dimensional matrix in k-space.

5,545,992

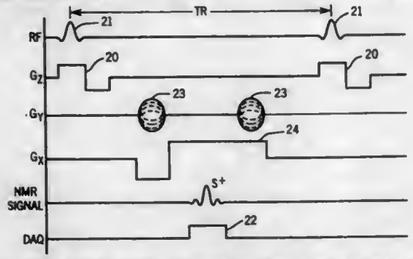
FAST CARDIAC GATED NMR ACQUISITION WITH IMPROVED T_1 CONTRAST

Thomas K. Foo, Waukesha, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Aug. 3, 1995, Ser. No. 510,683

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—309 **11 Claims**



1. A method for acquiring NMR data to produce an image of a subject with improved contrast, the step comprising:

a) subjecting the subject to a polarizing magnetic field;

b) applying an accelerator RF field to the subject having a flip-angle in the range of 60° to 140°;

c) performing a disdaq pulse sequence which includes applying an RF field to the subject having a flip-angle substantially less than the flip-angle of the accelerator RF field;

d) performing a series of NMR measurements in which transverse magnetization is produced by an excitation RF field and an NMR signal produced by the transverse magnetization is acquired; and

e) reconstructing an image from the acquired NMR signals.

5,545,993

METHOD OF MOTION TRACKING MEASUREMENT IN MR IMAGING SYSTEM

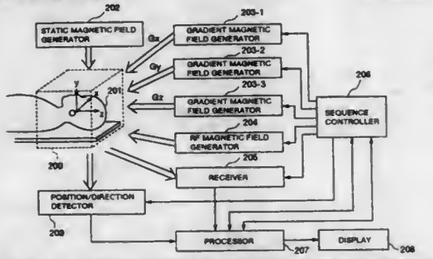
Jun'ichi Taguchi, Sagamihara; Kunihiko Kido, and Koichi Sano, both of Yokohama, all of, Japan, assignors to Hitachi Medical Corporation, Tokyo, Japan

Filed Jun. 7, 1994, Ser. No. 255,757

Claims priority, application Japan, Jun. 11, 1993, 5-140333; Dec. 27, 1993, 5-330516

Int. Cl.[6] G01V *3/00;3/14*

U.S. Cl. 324—309 **20 Claims**



1. In a magnetic resonance (MR) imaging system including means for generating a static magnetic field in an inspection space, means for generating gradient magnetic fields in three directions, respectively, means for generating a radio frequency (RF) magnetic field for exciting an inspection object, measurement means for measuring magnetic resonance signals from said inspection object, arithmetic means for executing various arithmetic operations inclusive of image reconstruction from detection signals for said detection signals, and control means for controlling execution of each of said means, a method of motion tracking measurement in MR imaging system comprising obtaining a plurality of sets of magnetic resonance signal data from a desired slice of said inspection object by repeating a plurality of times the following steps (a) to (c):

(a) a step of detecting physical quantities determining six kinds of freedom relating to parallel movement and rotation of a position/direction detection coordinate system defined on, and fixed to, said inspection object;

(b) a step of changing an intensity ratio of said gradient magnetic fields in said three directions with respect to intensity ratio of a prior step (b) for synthesizing a slice selection gradient magnetic field, and calculating a center frequency of an RF magnetic field to be simultaneously generated with a slice selection gradient magnetic field so that the position and the direction of an excitation slice follow the changes of the direction and the position of a desired slice to be imaged, said changes being caused by the movement of said inspection object; and

(c) a step of selectively exciting magnetization of said excitation slice by generating said gradient magnetic fields having the changed intensity ratio in said three directions and said RF magnetic field having the calculated center frequency, and measuring the resulting magnetic resonance signals.

5,545,994

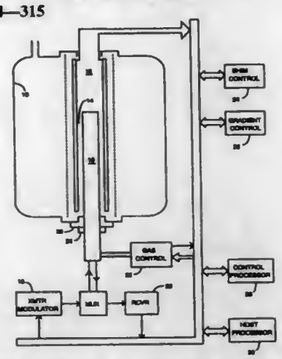
REDUCTION OF AMBIENT SUSCEPTIBILITY PERTURBATIONS OF AN NMR SPECTROMETER

Thomas M. Barbara, Cupertino, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed May 2, 1995, Ser. No. 433,637

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—315 **5 Claims**



1. An NMR apparatus for examining the constituents of an object, said object enclosed within a sensitive volume defined by rf probe apparatus, comprising

first fluid introduction regulator for maintaining a partial concentration of said first fluid at partial concentration P_1 within said sensitive volume,

second fluid introduction regulator for maintaining a partial concentration of said second fluid at partial concentration P_2 within said sensitive volume, said first and second fluids respectively having molar magnetic susceptibilities of x_1 and x_2 whereby the volume susceptibility of the resulting fluid mixture within said sensitive volume is a linear combination of said molar magnetic susceptibilities and exhibits a desired value.

5,545,995

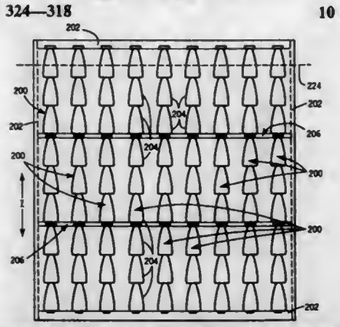
MEASUREMENT OF GEOMETRIC DISTORTION IN MRI IMAGES

Erika Schneider, Clifton Park, N.Y.; Anton M. Linz, Mukwonago, and Gregory A. Repinski, Waukesha, both of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Nov. 29, 1994, Ser. No. 346,599

Int. Cl.[6] G01R *33/20*

U.S. Cl. 324—318 **10 Claims**



1. A method for calibrating an NMR imaging system for warping errors due to gradient field nonlinearities, the steps comprising:

placing a calibration phantom in a bore of the NMR imaging system, the calibration phantom having an array of tapered rods which extend along one axis of the NMR imaging system and which fill the region in the bore from which image data is to be acquired,

performing a scan in which NMR data is acquired from the region;

reconstructing a set of slice images using the acquired NMR data, the slice images showing the location of each tapered rod and a cross sectional dimension thereof at a series of spaced locations along the rods and throughout the region;

analyzing the slice images and calculating a three-dimensional array of error values that indicate the warping errors produced by three orthogonal magnetic field gradients at points throughout the region; and

producing corrective coefficients from the array of error values that are employed to correct subsequent images produced on the NMR imaging system.

5,545,996

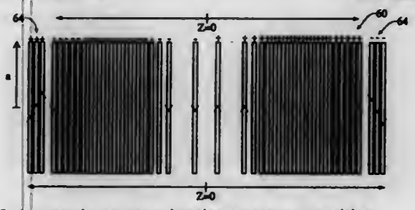
GRADIENT COIL WITH CANCELLED NET THRUST FORCE

Michael A. Morich, Mentor, and Labros S. Petropoulos, Solon, both of Ohio, assignors to Picker International, Inc., Highland Heights, Ohio

Continuation-in-part of Ser. No. 286,887, Aug. 5, 1994, Pat. No. 5,485,087, and a continuation-in-part of Ser. No. 269,393, Jun. 30, 1994, and a continuation-in-part of Ser. No. 213,099, Mar. 15, 1994, Pat. No. 5,497,089. This application Sep. 9, 1994, Ser. No. 303,620

Int. Cl.[6] G01V *3/00;3/14*

U.S. Cl. 324—318 **12 Claims**



2. A magnetic resonance imaging apparatus comprising:

a bore for receiving a subject to be imaged, the bore having a diameter and an axial length;

an annular magnet surrounding the bore to generate a temporally constant magnetic field axially through the bore, the temporally constant magnetic field having non-uniformities and radial components adjacent the bore;

a radio frequency coil disposed around the bore and positioned to broadcast radio frequency signals into the bore and receive radio frequency signals from the bore;

a symmetric gradient coil assembly disposed around the bore, the gradient coil assembly having a length less than the length of the bore and having an isocenter, the gradient coil assembly having gradient windings which carry current pulses to generate corresponding magnetic field gradients across the bore, the gradient windings being mirror image symmetric about the isocenter, the current pulses interacting with the temporally constant magnetic field non-uniformities and radial components to exert a net thrust force on the gradient coil assembly, thrust force correction windings disposed symmetrically adjacent opposite ends of the gradient coil assembly for carrying current pulses to generate an offsetting thrust force which offsets the thrust forces generated by interaction of the current pulses for generating the magnetic field gradients and the temporally constant magnetic field.

5,545,997

THERAPY TOMOGRAPH WITH HOMOGENEITY DEVICE

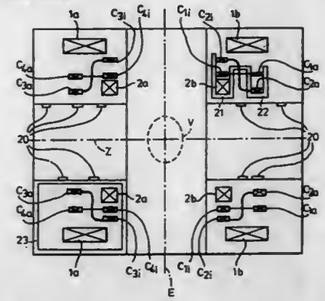
Michael Westphal, Offenbach, and Günther Laukien, Rheinstetten, both of, Germany, assignors to Bruker Analytische Messtechnik GmbH, Rheinstetten, Germany

Continuation-in-part of Ser. No. 437,598, May 9, 1995, Pat. No. 5,485,088. This application Jul. 13, 1995, Ser. No. 502,237

Claims priority, application Germany, May 13, 1994, 44 16 907.8; Jul. 12, 1995, 195 25 322.1

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—320 **9 Claims**



1. A superconducting magnetic resonance imaging apparatus having a homogeneous magnetic field directed along a z-coordinate axis and having a center at an origin of the z-coordinate axis, the apparatus comprising:

a pair of mutually similar outer coils coaxial with the z-axis at a first axial separation g_1 from each other and symmetric with respect to a middle plane perpendicular to the z-axis, the first axial separation being between ¼ and ¾ of an outer coil inner diameter, the outer coils having a first current flowing in a first current direction;

a pair of mutually similar inner coils, having an inner coil width b, coaxial with the outer coils at a second axial separation g_2 from each other and symmetric with respect to the middle plane, the second axial separation being within 15% of the first axial separation, the inner coils having a second current flowing in a second current direction opposite the first current direction;

a cryostat containing the outer and inner field coils and having an axial room temperature bore extending along the z-axis and having a transverse access opening transverse to the z-axis;

ferromagnetic homogeneity means, located at selected positions on a surface of the room temperature bore on both sides of the transverse access opening, the positions being selected to compensate at least one component of a tesseral field distortion of a type A_{nm} with n=1 through 6 and m=1 through n; and

at least one or more superconducting correction coils, each correction coil having separate current terminals and being coaxial with the outer and inner field coils, each correction coil comprising a first partial coil having a first partial current flowing in a first partial current direction and a second partial coil having a second partial current flowing in a second partial current direction opposite the first partial current direction, wherein the first and second partial coils are coaxial with the z-axis and have a first partial diameter and a second partial diameter which are less than the outer coil inner diameter, wherein the first partial coils are located at an axial distance z_1 from the center, with $g_z/2 \geq |z_1| \geq g_z/2+b$ and the second partial coils are located at an axial distance z_2 from the center, with $g_z/2+b<|z_2|$.

5,545,998

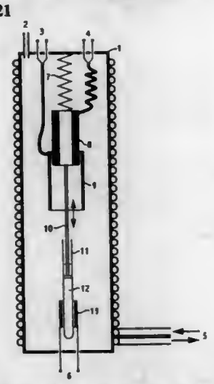
MIXING DEVICE FOR THE MIXING OF FLUIDS IN AN NMR APPARATUS INCLUDING A SPRING ATTACHED TO THE COIL AFFIXED TO A MIXING ROD

Patrick Favre; Urban Frey, both of Lausanne; Daniel Marek, Möriken, all of, Switzerland, and François Metz, Irigny, France, assignors to Spectrospin AG, Fallanden, Switzerland

Filed Sep. 20, 1994, Ser. No. 308,995

Int. Cl.[6] G01V *3/18*

U.S. Cl. 324—321 **11 Claims**



1. Mixing device for the mixing of a fluid and gas-phase measuring sample in a nuclear magnetic resonance (NMR) apparatus comprising:

a rod arranged coaxially to a main coil and movable along a central axis of the main coil;

a piston integral with a first end of the rod and adapted for immersion in the sample;

a spring attached to a housing of the main coil;

a movable drive coil arranged in an inhomogeneous field region of the main coil and integral with a second end of the rod such that the drive coil is movable therewith, the drive coil being attached to the spring for motion coaxial with the main coil, whereby when the drive coil is energized motion is imparted to the drive coil, rod, and piston concurrently thereby mixing the sample.

5,545,999

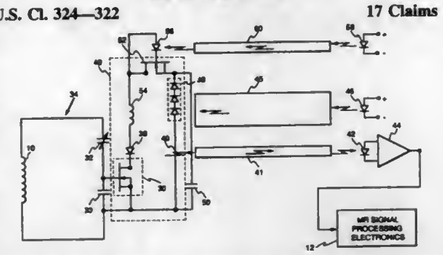
PREAMPLIFIER CIRCUIT FOR MAGNETIC RESONANCE SYSTEM

Otward M. Mueller, Ballston Lake, N.Y.; Christopher P. Yakymyshyn, Raleigh, N.C.; Peter B. Roemer, North Andover, Mass., and Ronald D. Watkins, Niskayuna, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 21, 1995, Ser. No. 407,825

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—322 **17 Claims**



1. A circuit for amplifying signals received by a receive coil in a magnetic resonance system and for coupling said signals to post-preamplification signal processing electronics, said preamplifier circuit comprising:

a preamplifier having an input and an output;

an input matching network coupled between said receive coil and the input of said preamplifier, said receive coil comprising an integral component of said matching network; and

means establishing an optically isolated signal transmission path between the output of said preamplifier and said processing electronics.

5,546,000

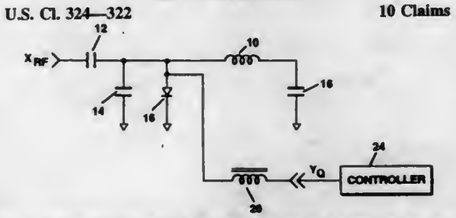
METHOD FOR THE REDUCTION OF RADIATION DAMPING DURING SIGNAL ACQUSITION IN NMR EXPERIMENTS

Werner E. Maas, Billerica; David G. Cory, Winchester, and Frank H. Laukien, Lincoln, all of Mass., assignors to Bruker Instruments, Inc., Billerica, Mass.

Filed Mar. 24, 1995, Ser. No. 409,641

Int. Cl.[6] G01R *33/20*

U.S. Cl. 324—322 **10 Claims**



1. A method of reducing the effect of radiation damping on free induction decay during an NMR measurement of a sample, the method comprising:

providing an NMR probe having a coil circuit for which the quality factor changes between a high-Q state and a low-Q state in response to the application of a Q signal;

exciting nuclei of interest in the sample;

detecting a resonance signal of the nuclei of interest at selected sampling times during free induction decay following the excitation pulse; and

applying the Q signal to the probe coil circuit such as to change the coil circuit to a high-Q state during the sampling times and change the coil circuit to a low-Q state in between the sampling times.

5,546,001

SWITCHING SIGNAL GENERATOR AND MAGNETIC RESONANCE IMAGING SYSTEM USING THE SAME

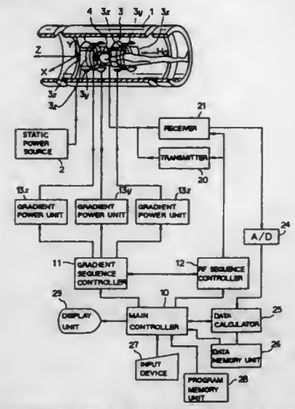
Motohiro Miura, Otawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 8, 1993, Ser. No. 134,273

Claims priority, application Japan, Oct. 8, 1992, 4-270339

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—322 **9 Claims**



1. A magnetic resonance imaging system characterized by an image frequency band having a center frequency which is a resonance frequency for reconstructing a magnetic resonance image:

an electric element;

a switching signal generator means for receiving an input switching signal having a first switching frequency with a harmonic frequency and for generating an output switching signal in response thereto, said output switching signal having a second switching frequency with another harmonic frequency, wherein said harmonic frequency of said input switching signal being within said image frequency band, and said another harmonic frequency of said output switching signal being outside of said image frequency band; and

a switching device for receiving said output switching signal and for driving said electric element.

5,546,002

CIRCUIT FOR TESTING TWO SWITCH OR RELAY CONTACTS SIMULTANEOUSLY IN AUTOMATIC CONTROL SYSTEMS

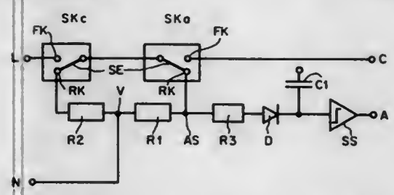
Erich Hickl, Malsch, Germany, assignor to Landis & Gyr Business Support AG, Zug, Switzerland

Filed Nov. 18, 1993, Ser. No. 154,295

Claims priority, application Switzerland, May 8, 1993, 695/93

Int. Cl.[6] G01R *31/02;31/327*

U.S. Cl. 324—418 **7 Claims**



1. A circuit arrangement for testing simultaneously two switches or relays, each having a switching element, said switching elements of said two switches or relays being interconnected, each of said two switches or relays having a respective rest contact, said circuit arrangement comprising:

(I) two electrical resistors, each connected between said rest contact of a respective one of said switches or relays and an electrical supply terminal, said electrical supply terminal being connectable to a voltage source;

(II) a charging capacitor connected to said rest contact of one of said switches or relays, whereby, when said two switches or relays are switched to said respective rest contacts, said charging capacitor is connected to receive charging current from said electrical supply terminal via a parallel circuit of said two electrical resistors; and

(III) a control device for controlling switching of said switches or relays in dependence on whether either an electrical charge held by said charging capacitor is at least a predetermined electrical charge or an electrical voltage across said charging capacitor is at least a predetermined electrical voltage after a predetermined time so that said two switches or relays are tested simultaneously.

5,546,003

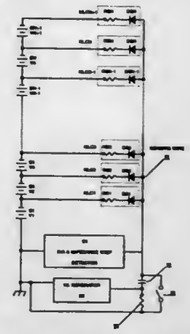
MULTI-CELL BATTERY MONITORING SYSTEM WITH SINGLE SENSOR WIRE

Zbigniew Noworolski, North York; Vlad Sterescu, Brampton; Albert Lee; Padraig Halton, both of Etobicoke, all of, Canada, and Jan M. Noworolski, Berkeley, Calif., assignors to Polytronics Engineering Ltd., Markham, Canada

Filed Mar. 7, 1994, Ser. No. 206,678

Int. Cl.[6] G01N *27/416*

U.S. Cl. 324—434 **17 Claims**



1. An apparatus for monitoring the condition of individual cells with within a serially connected multicell battery system comprising:

a battery assembly including a plurality of batteries connected in series;

a plurality of reference terminals including first and second reference terminals located at the beginning and end of the batteries assembly, respectively, and a plurality of intermediate reference terminals each interconnecting a plus (+) terminal of a respective one of said batteries to the negative (−) terminal of an adjacent one of said batteries;

a common sensing lead;

a plurality of voltage and/or current responsive non-linear component switching means, comprised of at most one active semiconductor device in conjunction with one or more passive elements each intermediate terminal and the second reference terminal being connected to said common sensing lead through a respective one of said non-linear component switching means, the non-linear component switching means cooperatively constructed to serially effect a change in the state once only of each of the respective non-linear component switching means in response to a predetermined voltage/current supplied to said common sensing wire;

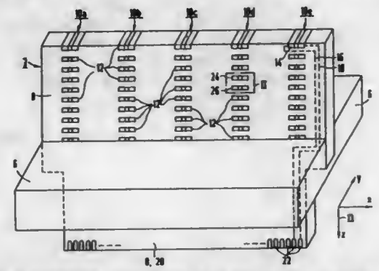
voltage/current generating means for supply to said common sensing wire a predetermined voltage/current;
means for detecting a rapid change in impedance of said common sensing wire;
means for instantaneously measuring the voltage and/or current and/or impedance of said common sensing wire upon detection of said rapid change of impedance;
means for providing output indicating the condition of at least a deteriorating one of said individual batteries based on the instantaneous voltages and/or currents and/or impedances measured.

5,546,004

SENSOR FOR DETERMINING THE COURSE OF CONCENTRATION OF AN ADSORBENT SUBSTANCE

Helmut Schmeiz, Prien, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Nov. 4, 1994, Ser. No. 334,860
Claims priority, application Germany, Nov. 4, 1993, 43 37 663.0
Int. Cl.[6] G01N *27/07;27/26*
U.S. Cl. 324—446 **16 Claims**



1. A sensor for determining a course of concentration of an adsorbent substance diffusing out of a flow medium through a surface of a sensor material into the sensor material as a function of a distance from the surface, the sensor comprising:
a sensor material having an electrical conductivity depending on a local concentration of an adsorbent substance adsorbed at said sensor material;
electric supply leads; and
individual pairs of contacts connected to said supply leads and disposed in the sensor material for determining the electrical conductivity of the sensor material between said contacts of said individual pairs of contacts.

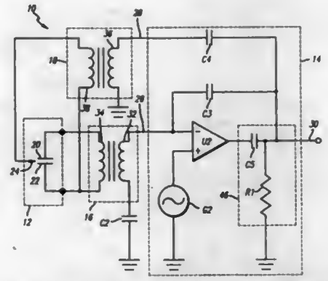
5,546,005

GUARDED CAPACITANCE PROBE AND RELATED MEASUREMENT CIRCUIT

George P. Ranchwerger, Sunnyvale, Calif., assignor to Flowline Inc., Seal Beach, Calif.

Filed Jan. 9, 1995, Ser. No. 370,306
Int. Cl.[6] G01R *27/26;* **G01F** *23/26*
U.S. Cl. 324—688 **20 Claims**

10. A circuit for measuring the capacitance of a capacitance probe, comprising:
an excitation circuit having a drive terminal and an output terminal, wherein the excitation circuit provides an excitation signal with respect to ground at the drive terminal for exciting the capacitance probe, and further provides an output signal at the output terminal based on the capacitance probe's effect on the excitation signal; and
a first isolation transformer having isolated primary and secondary windings, wherein the primary winding is coupled between the drive terminal and a ground terminal and the



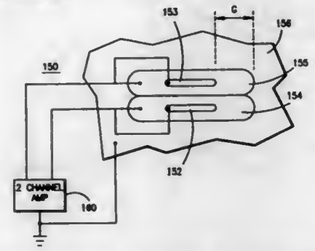
secondary winding is coupled across the capacitance probe, such that the capacitance probe is dc isolated from the drive terminal and the ground terminal.

5,546,006

GUARDED CAPACITANCE PROBES FOR MEASURING PARTICLE CONCENTRATION AND FLOW

Michel Y. Louge, Ithaca, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Division of Ser. No. 266,331, Jul. 1, 1994, Pat. No. 5,459,406.
This application Jul. 31, 1995, Ser. No. 509,056
Int. Cl.[6] G01R *27/26*
U.S. Cl. 324—688 **4 Claims**



1. A guarded capacitance probe structure comprising:
a first sensor electrode;
a first guard electrode means surrounding said first sensor electrode;
a second sensor electrode spaced from said first sensor electrode;
a second guard electrode means surrounding said second sensor electrode and having a side contiguous with a side of said first guard electrode means, said first and second guard electrode means being electrically insulated from one another; and
an electrically grounded surface contacting said first and second guard electrode means and electrically insulated therefrom.

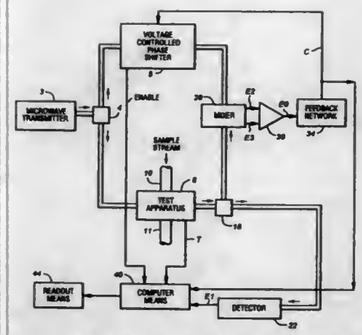
5,546,007

MICROWAVE WATER CUT MONITORING MEANS AND METHOD

John D. Marrelli, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 1,704, Jan. 7, 1993, abandoned. This application Nov. 29, 1994, Ser. No. 346,053
Int. Cl.[6] G01N *22/04*
U.S. Cl. 324—640 **5 Claims**

1. Apparatus which determines the water cut of a sample petroleum stream comprising:
means for irradiating the sample petroleum stream with microwave energy from first and second locations;



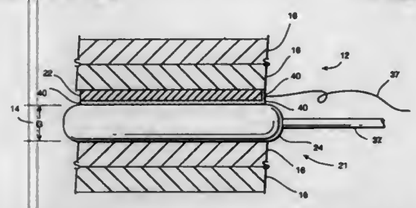
means defining first and second channels from said first and second locations, respectively, through which the microwave energy travels through the sample stream, said first and second channels being of different length;
means for receiving microwave energy from said first and second paths, respectively, after the microwave energies have passed through the sample stream, and providing first and second received signals corresponding thereto;
means for detecting the phase shifts of both the microwave energies after passage through the sample stream,
means for forming the phase difference between the respective detected phase shifts and providing a signal corresponding thereto, and
means for deriving the water cut from the derived phase differences signal.

5,546,008

INFLATABLE CAPACITANCE MEASURING DEVICE

Michael D. Sminchak, Clifton Park, and James M. Anderson, Cohoes, both of N.Y., assignors to General Electric Co., Schenectady, N.Y.

Filed Aug. 11, 1994, Ser. No. 289,488
Int. Cl.[6] G01R *27/26;31/06*
U.S. Cl. 324—690 **11 Claims**



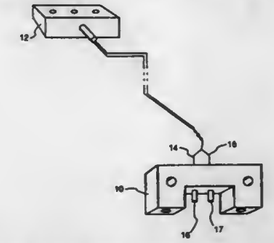
1. A test device for measuring a dielectric constant of a section of insulation in armature windings of motors or generators comprising:
a thin probe including a conductive electrode pad mounted on an expandable bladder, said pad having a flexible contact surface adapted to conform to a surface area of the section of insulation, and said pad adapted to be coupled to a voltage source;
a capacitance measuring instrument electrically coupled to the electrode pad and adapted to be coupled to a ground common to the armature windings, where said instrument measures local capacitance across a portion of the insulation adjacent the electrode pad;
a source of fluid under pressure coupled to the bladder such that said bladder expands under the pressure of the fluid when coupled to the source of fluid, and
a drain coupled to the bladder to drain fluid from the bladder to deflate the bladder.

5,546,009

DETECTOR SYSTEM USING EXTREMELY LOW POWER TO SENSE THE PRESENCE OR ABSENCE OF AN INERT OR HAZARDOUS FUILD

Ian P. Raphael, 112 Ross Creek Ct., Los Gatos, Calif. 95032

Filed Oct. 12, 1994, Ser. No. 321,800
Int. Cl.[6] G01R *27/08;* **G08B** *21/00*
U.S. Cl. 324—694 **26 Claims**



1. A detector system using extremely low power to sense the presence or absence of an inert or hazardous fluid comprising:
a sensing probe having a pair of electrically conductive, non-corrosive sensing electrodes disposed in a predetermined spaced relationship; and
an electronic control module electrically connected to said probe for applying a probe energizing potential to one of said sensing electrodes and for connecting the other sensing electrode to a circuit ground, including
power supply means for developing a regulated predetermined supply voltage of less than 10 volts,
voltage and current-limiting means for receiving the supply voltage and for developing a probe voltage that is at least an order of magnitude lower than said supply voltage, and for applying said probe voltage to said one sensing electrode, said voltage and current-limiting means limiting the power applied to said sensing electrodes to approximately 1 microwatt or less,
indicator means for indicating current flow or the lack thereof between said sensing electrodes, and
comparator means for comparing the voltage drop developed across said sensing electrodes to a reference voltage and for causing said indicator means to have one indicating state when a particular type of fluid is in contact with said sensing electrodes, and for having another indicating state when said particular type of fluid is not in contact with said sensing electrodes.

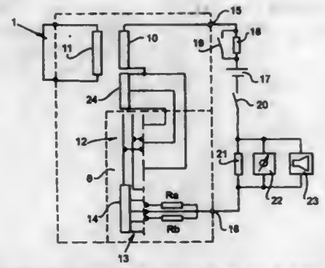
5,546,010

METHOD FOR MEASURING A RESISTANCE VALUE IN AN ELECTRICAL APPARATUS

Henricus F. A. Verhaart, Doorwerth, Netherlands, assignor to N.V. Kema, Arnhem, Netherlands

Filed Jan. 27, 1995, Ser. No. 379,338
Claims priority, application Netherlands, Feb. 11, 1994, 9400221
Int. Cl.[6] G01R *27/08*
U.S. Cl. 324—713 **11 Claims**

1. A method for measuring a resistance value in a network incorporated in an electrical apparatus, said network having at least two accessible terminals, and at least two time constants differing mutually by at least one order of magnitude, said resistance value being related to a current flowing through terminal clips that are in electrical communication with said terminals, the method comprising the steps of:
applying a step-like voltage change to the terminal clips;
measuring the current flowing through the terminal clips before the voltage change has taken place and after a transient



phenomenon related to the smallest of the at least two time constants and caused by applying the voltage change is damped; and

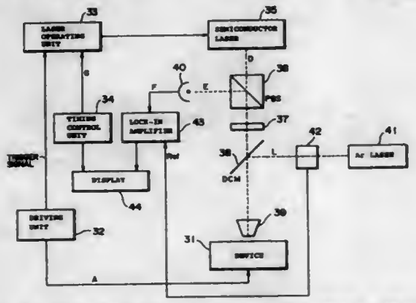
calculating the resistance value from the measured values of the current.

5,546,011

VOLTAGE MEASURING APPARATUS

Hironori Takahashi, and Shinichiro Aoshima, both of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Hamamatsu, Japan

Filed Aug. 10, 1995, Ser. No. 513,240
Claims priority, application Japan, Aug. 19, 1994, 6-195385
Int. Cl.[6] G01R *31/00*
U.S. Cl. 324—753 **9 Claims**



1. An apparatus for measuring a voltage of a sample, comprising:

(A) a first light source for emitting first light having a first wavelength at a first repetition frequency;

(B) a second light source for emitting second light having a second wavelength, the second wavelength being shorter than the first wavelength;

(C) a mechanical chopper, arranged in an optical passage along which the second light propagates, for shielding the second light at a second repetition frequency, the second repetition frequency being lower than the first repetition frequency;

(D) a probe arranged near the sample and irradiated with the first and second light,

such that a refractive index for the first light is changed by an electric field near the sample while the second light is not irradiated in said probe, and

the refractive index for the first light is not changed by the electric field near the sample while the second light is irradiated in said probe;

(E) a photodetector for detecting an intensity of a component in a predetermined polarization direction of the first light reflected by said probe; and

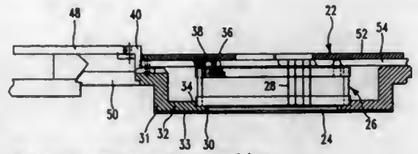
(F) a lock-in amplifier for picking up and amplifying a signal output from said photodetector synchronized with a light shielding timing of said mechanical chopper.

5,546,012

PROBE CARD ASSEMBLY HAVING A CERAMIC PROBE CARD

Charles H. Perry, Poughkeepsie; Tibor L. Bauer, Hopewell Junction; David C. Long; Bruce C. Pickering, both of Wappingers Falls, and Pierre C. Vittori, Cold Spring, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 15, 1994, Ser. No. 227,936
Int. Cl.[6] G01R *31/02;31/28*
U.S. Cl. 324—754 **19 Claims**



10. A probe card assembly comprising:

an interface card having a plurality of contact pads on at least one surface thereof; a probe card comprising a ring-shaped multilayer ceramic body having a plurality of contact pads on at least one surface thereof and having wiring metallization on a top layer, a second layer and a third layer, wherein said wiring metallizations on said top layer, second layer and third layer cooperate to provide an electrical wiring function for said probe card, and a plurality of probes, for making contact with a workpiece, positioned at the inner periphery of the ring-shaped body, said workpiece probes being electrically and physically connected to said ring-shaped body; and

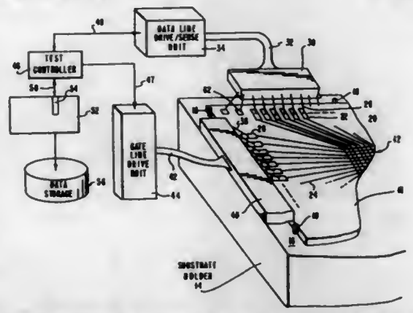
a carousel interposed between the interface card and the probe card having a plurality of means for making contact between said interface card contact pads and said probe contact pads.

5,546,013

AN ARRAY TESTER FOR DETERMINING CONTACT QUALITY AND LINE INTEGRITY IN A TFT/LCD

Yoshikazu Ichioka, Fujisawa-shi, Japan; Leslie C. Jenkins, Holmes, N.Y.; Shinichi Kimura, Sagamihara-shi, Japan; Robert J. Polastre, Ossining, N.Y.; Ronald R. Troutman, Ridgefield, Conn., and Robert L. Wisnieff, Yorktown, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 5, 1993, Ser. No. 26,897
Int. Cl.[6] G06F *7/02*
U.S. Cl. 324—770 **4 Claims**



1. An apparatus for testing for and classifying defects in a TFT/LCD array having ate liners and data lines comprising:

means for activating cells of the array by applying gate pulses to said gate lines and pulses to said data lines;

means for acquiring waveforms from data lines of said array;

means for sampling the waveforms at selected points in time; and

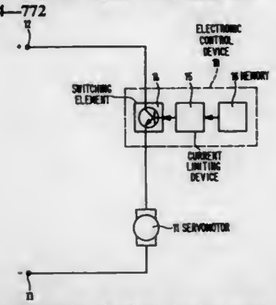
means for classifying the waveforms to indicate at least one of whether defects are present and the nature of said defects by comparing voltages of the waveform at said selected points in time.

5,546,014

METHOD AND DEVICE FOR SETTING THE SHORT CIRCUIT MOMENT IN ELECTRIC MOTORS, PARTICULARLY IN SERVOMOTORS

Walter Haussecker, Buehlertal, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Division of Ser. No. 941,930, Sep. 8, 1992, Pat. No. 5,347,214.
This application Jul. 6, 1994, Ser. No. 267,900
Claims priority, application Germany, Sep. 5, 1991, 41 29 495.5
Int. Cl.[6] G01R *31/02;* **H02P** *5/28*
U.S. Cl. 324—772 **15 Claims**



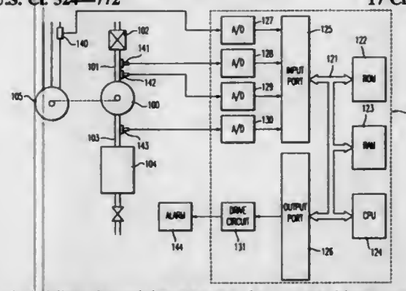
1. A device for setting the short circuit moment in an electric motor comprising: an electrical control device connected to the motor to control the current through the motor, and wherein the control device includes, and is controlled by, a memory storing a desired short circuit current setting that has been previously determined by at least one of measuring and calculations for setting a desired short circuit moment in the motor; and wherein the electrical control device is integrated into the electric motor.

5,546,015

DETERMINING DEVICE AND A METHOD FOR DETERMINING A FAILURE IN A MOTOR COMPRESSOR SYSTEM

Toyohiko Okabe, 36-2 Nagae, Hayama-cho, Miura-gun, Kanagawa 240-01, Japan

Filed Oct. 20, 1994, Ser. No. 326,516
Int. Cl.[6] G01R *31/34*
U.S. Cl. 324—772 **17 Claims**



1. A failure determining apparatus for a motor driven compressor system having a compressor and a motor for driving the compressor, comprising:

mass flow detecting means adapted to be coupled to said compressor for sensing fluid mass flow related to said compressor;

compression ratio detecting means adapted to be coupled to said compressor for detecting a compression ratio of said compressor;

reference value generating means coupled to at least one of said mass flow detecting means and said compression ratio detecting means, said reference value generating means generating at least one of variable upper and lower current reference values in response to an output of said at least one of mass flow detecting means and compression ratio detecting means, whereby said variable upper and lower current reference values are responsive to variable operating conditions of said compressor; and

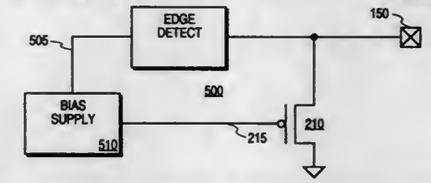
failure determining means coupled to said reference value generating means and adapted to be coupled to said motor for detecting motor current value above or below said variable upper or lower current reference value, whereby a failure in the compressor system is detected.

5,546,016

MOS TERMINATION FOR LOW POWER SIGNALING

Michael J. Allen, Rescue, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Jul. 3, 1995, Ser. No. 497,919
Int. Cl.[6] H03K *17/16;19/003*
U.S. Cl. 326—30 **23 Claims**



1. A termination circuit having an interface node for receiving an input voltage signal, comprising:

a first clamping device having a control terminal and a first threshold voltage, the first clamping device coupled to the interface node and coupled to receive a first clamping voltage; and

a first bias supply for providing a first bias voltage, the first bias supply having a first equilibrium voltage of approximately the first threshold voltage less than a termination voltage,

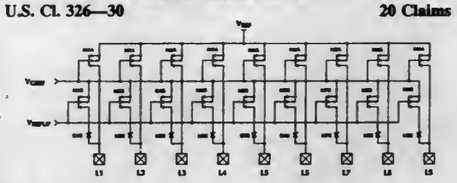
wherein the control terminal is coupled to receive the first bias voltage and the first clamping device clamps the interface node if the input voltage signal exceeds the first bias voltage by the first threshold voltage.

5,546,017

HOT INSERTABLE ACTIVE SCSI TERMINATOR

Mark R. Vitunic, San Jose, Calif., assignor to Micro Linear Corporation, San Jose, Calif.

Filed Mar. 23, 1995, Ser. No. 409,496
Int. Cl.[6] H03K *19/0185*
U.S. Cl. 326—30 **20 Claims**



Terminating/Bypass Circuit

1. A hot insertable SCSI terminator circuit capable of coupling to a SCSI signal line in a SCSI bus while the SCSI bus is powered, the terminator circuit comprising:

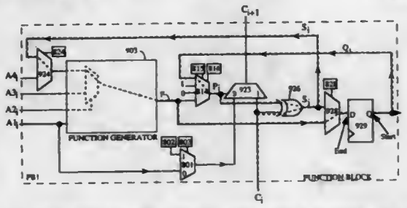
a. a reference node;
b. a signal line terminal;
c. a terminating element coupled between the reference node and the signal line terminal; and
d. a bypass device coupled to the signal line terminal for substantially limiting a current the terminating element may draw from a SCSI signal line through the signal line terminal during the time the SCSI terminator circuit is first hot inserted into the SCSI bus until the reference node has powered up to a first predetermined voltage level.

5,546,018

FAST CARRY STRUCTURE WITH SYNCHRONOUS INPUT

Bernard I. New, Los Gatos, and Steven P. Young, San Jose, both of Calif., assignors to Xilinx, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 310,113, Sep. 20, 1994, Pat. No. 5,481,206, which is a continuation-in-part of Ser. No. 116,659, Sep. 2, 1993, Pat. No. 5,349,250. This application Aug. 9, 1995, Ser. No. 513,365
Int. Cl.[6] H03K *19/20*
U.S. Cl. 326—38 **3 Claims**



1. A programmable logic device comprising a sequence of logic blocks, each logic block having
at least one circuit comprising:
an input terminal for providing an input signal (A_i or Al_i);
a ripple-in terminal (C_i) and a ripple-out terminal (C_{i+1});
a ripple-chain multiplexer (**923**) for connecting one of said input terminal and said ripple-in terminal to said ripple-out terminal;
a function generator (**903**) for generating a function generator output signal which is a function of said first input signal and at least one other input signal;
a flip flop (**929**) providing a Q output signal;
means (**928** or wire) for providing said function to said flip flop; and
means (**814** or wire) for providing a control signal (P_i) for controlling said ripple-chain multiplexer, said control signal being selected from at least said Q output signal.

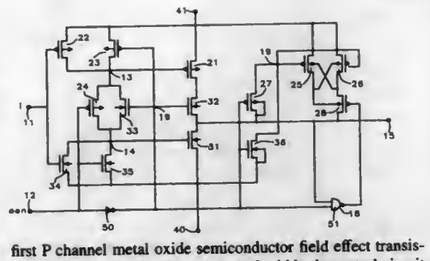
5,546,019

CMOS I/O CIRCUIT WITH 3.3 VOLT OUTPUT AND TOLERANCE OF 5 VOLT INPUT

Hung-jen Liao, Toulu, Taiwan, assignor to Taiwan Semiconductor Manufacture Company, Hsinchu, Taiwan

Filed Aug. 24, 1995, Ser. No. 518,700
Int. Cl.[6] H03R *19/0185*
U.S. Cl. 326—81 **16 Claims**

1. An output buffer circuit, comprising:
a first voltage supply node having a first voltage level;
a reference voltage supply node having a reference voltage level;
an output node having an output voltage level;
a logic control circuit having a tristate control input, a logic control input, a first output, a second output, and a third output;
a first P channel metal oxide semiconductor field effect transistor having a source, a drain, and a gate wherein said gate of said first P channel metal oxide semiconductor field effect transistor is connected to said first output of said logic control circuit and said source of said first P channel metal oxide semiconductor field effect transistor is connected to said first voltage supply node;



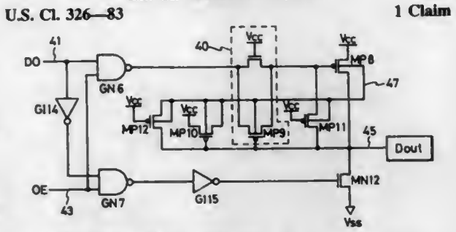
a first N channel metal oxide semiconductor field effect transistor having a source, a drain, and a gate wherein said gate of said first N channel metal oxide semiconductor field effect transistor is connected to said second output of said logic control circuit, said source of said first N channel metal oxide semiconductor field effect transistor is connected to said reference voltage supply node and said drain of said first N channel metal oxide semiconductor field effect transistor is connected to said output node;
means for preventing leakage current connected between said drain of said first P channel metal oxide semiconductor field effect transistor and said drain of said first N channel metal oxide semiconductor field effect transistor whereby leakage current flowing from said output node through said first P channel metal oxide semiconductor field effect transistor to said first voltage supply node is prevented; and
means for output voltage pull up wherein the voltage at said output node is pulled up to said first voltage level when said first P channel metal oxide semiconductor field effect transistor is turned on.

5,546,020

DATA OUTPUT BUFFER WITH LATCH UP PREVENTION

Dong M. Lee, and Hyeong S. Hong, both of Kyoungki-do, Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Kyoungki-do, Rep. of Korea

Filed Apr. 18, 1995, Ser. No. 423,860
Claims priority, application Rep. of Korea, Apr. 18, 1994, 94-8048
Int. Cl.[6] H03K *19/175;19/94*
U.S. Cl. 326—83 **1 Claim**



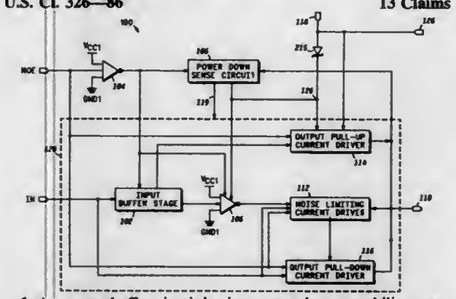
1. A data output buffer, comprising:
a pull-up transistor having an N-type well and transferring a supply voltage from a supply voltage source to an output line in response to a logic state of data from an input line;
switching means for switching the supply voltage from the supply voltage source to the N-type well of the pull-up transistor in response to a voltage on the output line; and
feedback means for feeding the voltage on the output line back to the N-type well of the pull-up transistor when the voltage on the output line is higher than the supply voltage from the supply voltage source;
wherein the feedback means includes a PMOS transistor having a gate connected to the supply voltage source, a drain connected to the N-type well of the pull-up transistor, and a source connected to the output line; and
the PMOS transistor has a threshold voltage lower than a voltage for turning on a junction between a drain and the N-type well of the pull-up transistor.

5,546,021

3-STATE BICMOS OUTPUT BUFFER HAVING POWER DOWN CAPABILITY

Daniel T. Bizuneh, Tempe; Carlos Obregón, Phoenix; Michael A. Wells, Chandler, and Eric D. Neely, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 14, 1994, Ser. No. 194,974
Int. Cl.[6] H03K *19/0175*
U.S. Cl. 326—86 **13 Claims**



1. An output buffer circuit having power down capability, comprising:
an input stage having an input and an output, said input of said input stage coupled for receiving an input signal;
a pull-up circuit having an input and an output, said input of said pull-up circuit coupled to said output of said input stage, said output of said pull-up circuit for sourcing current to an output of the output buffer circuit;
a pull-down circuit having an input and an output, said input of said pull-down circuit coupled to said input of said input stage, said output of said pull-down circuit directly connected to said output of said output buffer circuit for sinking current at said output of the output buffer circuit;
current driving means responsive to said output of said input stage for slowing down a transition rate of a signal appearing at said output of the output buffer circuit, said current driving means having an output coupled to said pull-down circuit; and
a power down sense circuit being responsive to a first voltage in response to a power down condition for disabling the output buffer circuit, said power down sense circuit coupled to said input stage, said pull-up circuit and said pull-down circuit.

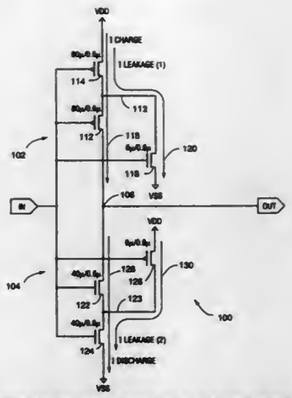
5,546,022

STATIC LOGIC CIRCUIT WITH IMPROVED OUTPUT SIGNAL LEVELS

Godfrey P. D'Souza, Santa Clara, and Douglas A. Laird, Los Gatos, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Dec. 16, 1994, Ser. No. 357,447
Int. Cl.[6] H03K *19/0175;19/094*
U.S. Cl. 326—87 **27 Claims**

1. An apparatus including a low powered static logic circuit with improved output signal levels, said low powered static logic circuit comprising:
a first supply node for operating at a first voltage level;
a second supply node for operating at a second voltage level;
an output signal node intermediate said first and second supply nodes;
a first input circuit, coupled between said output signal node and said first supply node, for receiving a first input signal and in response thereto coupling said output signal node to said first supply node at said first voltage level; and
a first bias circuit, coupled between said output signal node and said second supply node, for receiving said first input signal and in response thereto substantially maintaining said first voltage level at said output signal node when said output signal node is coupled to said first supply node by said first input circuit.

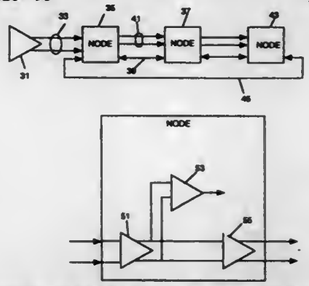


5,546,023

DAISY CHAINED CLOCK DISTRIBUTION SCHEME

Shekhar Borkar, Portland, and Stephen R. Mooney, Beaverton, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jun. 26, 1995, Ser. No. 494,486
Int. Cl.[6] H03K *19/00*
U.S. Cl. 326—93 **13 Claims**



1. A system including a network of nodes utilizing a clock driver which provides a clock signal comprising:
a) clock means for generating a differential clock signal, having a waveform, from said clock driver clock signal;
b) a plurality of nodes coupled to each other by a data bus and lines for receiving and transmitting said differential clock signal, one of said plurality of nodes having one pair of said lines coupled to said clock means;
c) each of said nodes including means for receiving the differential clock signal, first means, coupled to said means for receiving, for generating a node internal clock signal and second means, coupled to said means for receiving, for generating a node differential clock signal for output to an adja-

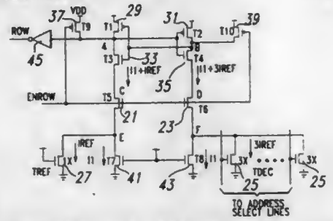
cent node, whereby said differential clock signal is point-to-point distributed to each node within said network.

5,546,024

DYNAMIC NOR DECODER USING CURRENT MODE SENSING TECHNIQUES

Craig B. Greenberg, Rowlett, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 7, 1995, Ser. No. 475,453
Int. Cl.[6] H03K *19/084;19/096*
U.S. Cl. 326—106 **20 Claims**



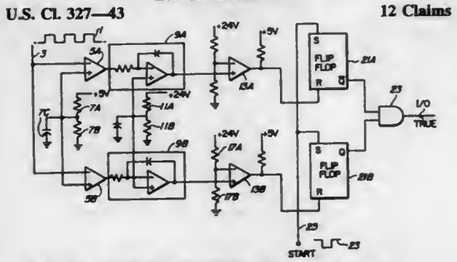
1. A dynamic NOR circuit comprising:
(a) a latch circuit having a first current path and a second current path and a NOR output terminal;
(b) an address select circuit coupled to said first current path having a first transistor of predetermined current carrying capacity and a second transistor of predetermined current carrying capacity, a control terminal of said first transistor is a first NOR input terminal, a control terminal of said second transistor is a second NOR input terminal;
(c) a reference circuit coupled to said second current path having a third transistor of current carrying capacity less than said first transistor; and
(d) pass circuitry for substantially simultaneously coupling said address select circuit and said reference circuit to said latch circuit in response to an enable signal.

5,546,025

LOW FREQUENCY DISCRIMATOR USING UPPER AND LOWER THRESHOLDS

Patrick H. Casselman, Ogdensburg, N.Y., assignor to Mitel, Inc., Canada

Filed Mar. 11, 1994, Ser. No. 212,598
Int. Cl.[6] H03D *13/00*
U.S. Cl. 327—43 **12 Claims**



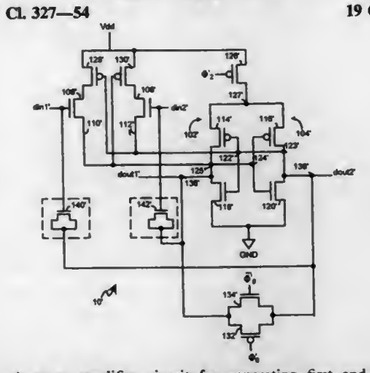
1. A low frequency discriminator circuit comprising:
(a) means for providing a rectangular wave input signal,
(b) means for integrating said input signal,
(c) means for detecting whether the integrated input signal falls between upper and lower thresholds respectively, and
(d) means for providing an output signal indicating when the integrated input signal falls between said thresholds,
whereby the frequency of the input signal may be determined to be between higher and lower limits related to said thresholds,
(e) said means for providing said input signal comprising means for splitting an input signal into two circuit paths,
(f) the integrating means comprising means for integrating the input signal in each of the circuit paths using different time constants respectively relating to said higher and lower frequency limits,
(e) said detecting means comprising a pair of comparators, each set to a threshold, for receiving a corresponding integrated input signal and for providing an output signal of one or another polarity depending on whether the corresponding integrated input signal is above or below its threshold, and
(f) said means for providing an output signal comprising a pair of flip flops each for receiving said output signal of one or another logic level and for providing a TRUE or FALSE output depending on said logic level input thereto.

5,546,026

LOW-VOLTAGE HIGH-PERFORMANCE DUAL-FEEDBACK DYNAMIC SENSE AMPLIFIER

Jyhfong Lin, Fremont, Calif., and Bruce Doyle, Richardson, Tex., assignors to Cirrus Logic, Inc., Fremont, Calif.

Continuation-in-part of Ser. No. 396,591, Mar. 1, 1995, Pat. No. 5,506,524. This application May 1, 1995, Ser. No. 432,959
Int. Cl.[6] G01R *19/00*
U.S. Cl. 327—54 **19 Claims**



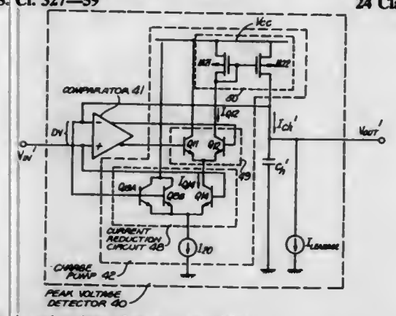
1. A sense amplifier circuit for generating first and second complementary latched data outputs indicative of a voltage difference between a first and a second data input, comprising:
a first transistor having a source, a drain, and a gate connected to said first data input,
a second transistor having a source, a drain, and a gate connected to said second data input,
output generating means connected to said sources of said first and said second transistor for generating a first and a second data output indicative of said first and second data input,
first switching means, responsive to said first data output of said output generating means being provided to a control terminal of said first switching means, for providing a first reference voltage to said drain of said first transistor,
second switching means, responsive to said second data output of said output generating means being provided to a control terminal of said second switching means, for providing said first reference voltage to said drain of said second transistor,
third switching means for providing, in response to a first control signal being provided to a control terminal of said third switching means while said first and second switching means are activated, said first reference voltage to said output generating means such that said first data output of said output generating means is latched to a first voltage level determined by said first reference voltage and said second data output of said output generating means is latched to a second voltage level complementary to said first voltage level thereby generating said first and second complementary latched data outputs indicative of said voltage difference between said first and second data inputs, and
equalizing means connected to said first and second data outputs of said output generating means for equalizing voltages respectively on said first and second data outputs in response to a second control signal being provided to at least one terminal of said equalizing means.

5,546,027

PEAK DETECTOR

Eiji Shinozaki; Kiyoshi Fukahori, both of Tokyo, and Masafumi Kurisu, Kanagawa, all of, Japan, assignors to Silicon Systems, Inc., Tustin, Calif.

Filed Dec. 12, 1994, Ser. No. 355,055
Int. Cl.[6] H03K *5/153*
U.S. Cl. 327—59 **24 Claims**



1. A peak voltage detector comprising:
an input terminal, an output terminal and a circuit ground;
a comparator for comparing the voltage of the input terminal and the voltage of the output terminal and for providing a comparator output responsive thereto;
a hold capacitor coupled between said output terminal and ground; and,
a charge pump coupled between said comparator output and said hold capacitor for directing a variable charge current to said hold capacitor when the voltage of the input terminal exceeds the voltage of the output terminal, said charge pump including a current reduction circuit coupled to said input and output terminals for reducing the variable charge current as the voltage of the output terminal approaches the voltage of the input terminal.

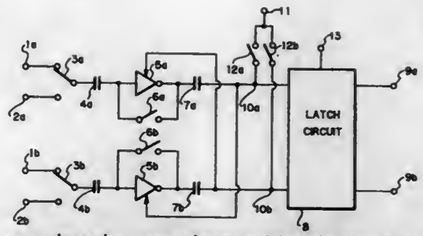
5,546,028

CHOPPER TYPE COMPARATOR FOR AN ANALOG-TO-DIGITAL CONVERTER

Motoi Yamaguchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 7, 1995, Ser. No. 524,805
Claims priority, application Japan, Sep. 7, 1994, 6-213776
Int. Cl.[6] H03K *19/0175*
U.S. Cl. 327—64 **7 Claims**

1. A comparator comprising:
a first input terminal to which a positive signal potential is applied;
a second input terminal to which a positive reference potential is applied;
a first selecting switch for selecting one of said first and second input terminals at a time;
a first capacitor connected at one end to a stationary terminal of said first selecting switch;
a first inverter amplifier having a control terminal and connected at an input thereof to the other end of said first capacitor;
a first switch connected to an input and an output of said first inverter amplifier;



a second capacitor connected at one end thereof to said output of said first inverter amplifier;
a third input terminal to which a negative signal voltage is applied;
a fourth input terminal to which a negative reference potential is applied;
a second selecting switch for selecting one of said third and fourth input terminals at a time;
a third capacitor connected at one end thereof to a stationary terminal of said second selecting switch;
a second inverter amplifier having a control terminal and connected at an input thereof to the other end of said third capacitor;
a second switch connected to said input and an output of said second inverter amplifier;
a fourth capacitor connected at one end thereof to said output of said second inverter amplifier;
a latch circuit connected at one input thereof to the other end of said second capacitor and at another input thereof to the other end of said fourth capacitor;
a third switch connected between a bias terminal and said control terminal of said second inverter amplifier;
a fourth switch connected between said bias terminal and said control terminal of said first inverter amplifier;
a first output terminal connected to one output terminal of said latch circuit; and
a second output terminal connected to the other output terminal of said latch circuit.

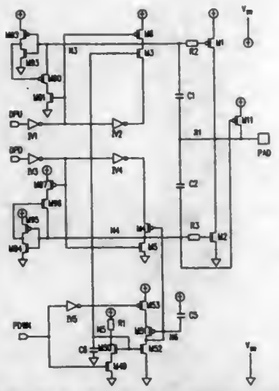
5,546,029

OUTPUT DRIVER CIRCUIT HAVING REDUCED ELECTROMAGNETIC INTERFERENCE

Andreas Koke, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 13, 1995, Ser. No. 372,529
Claims priority, application Germany, Jan. 14, 1994, 44 00 872.4
Int. Cl.[6] H03K *3/00*
U.S. Cl. 327—108 **9 Claims**

1. An output driver circuit, comprising a first MOSFET output transistor (M1) which is connected between a first, upper supply voltage (Vcc) and an output node (N1), a second MOSFET output transistor (M2) which is connected between the output node (N1) and a lower supply voltage (Vss), a first capacitor (C1) which is connected between the gate of the first MOSFET output transistor (M1) and the output node (N1), a second capacitor (C2) which is connected between the output node (N1) and the gate of the second MOSFET output transistor (M2), a first current source (**10**) which is connected to the first capacitor (C1) and the gate of the first output transistor at a first node (N3) in order to apply a first current to the first node (N3), a second current source (**20**) which is connected to the second capacitor (C2) and the gate of the second MOSFET output transistor (M2) at a second node (N4) in order to apply a second current to the second node (N4), a first acceleration circuit (**12**) whose input and output are coupled to the first node (N3) and a second acceleration circuit (**22**) whose input and output are coupled to the second node (N4) in order to charge the capacitors (C1, C2), when the MOSFET output transistors (M1, M2) are turned on, with a third current, which is larger than the



first current and the second current, respectively, until the turn-on threshold voltages of the MOSFET output transistors (M1, M2) are reached.

5,546,030

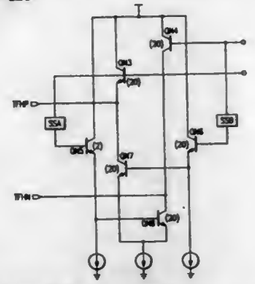
DIFFERENTIAL HIGH SPEED INDUCTIVE DRIVER WITH A BIDIRECTIONAL CURRENT LIMITING OUTPUT STAGE

Scott W. Cameron, Milpitas, Calif., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Dec. 30, 1994, Ser. No. 366,793

Int. Cl.[6] H03K *3/00;* **H03L** *5/00;* **G06G** *7/12;* **G11B** *5/09*

U.S. Cl. 327—110 **34 Claims**



1. An integrated circuit, comprising:

circuitry for buffering an input signal, and for providing a corresponding buffered differential signal;

a first pair of differentially connected NPN transistors, operatively connected to be driven by said buffered differential signal, and operatively connected to drive a respective pair of output terminals in a first direction;

shifting circuitry connected to shift and scale down the base voltages of said first pair of transistors, to provide differential current outputs corresponding to shifted and scaled copies of the base currents of said first pair of transistors; and

a second pair of differentially connected NPN transistors, operatively connected to be driven by said differential current outputs of said shifting circuitry, and operatively connected to drive said pair of output terminals in a second direction which is opposite to said first direction;

wherein said shifting circuitry is proportioned to produce said differential current outputs at a voltage which cannot drive said second pair of transistors into saturation.

5,546,031

FEED-BACK CIRCUIT FOR CMOS HIGH VOLTAGE GENERATOR TO PROGRAM (E) EPROM-MEMORY CELLS

Petrus H. Seesink, Eindhoven, Netherlands, assignor to Sierra Semiconductor B.V., 'S-Hertogenbosch, Netherlands

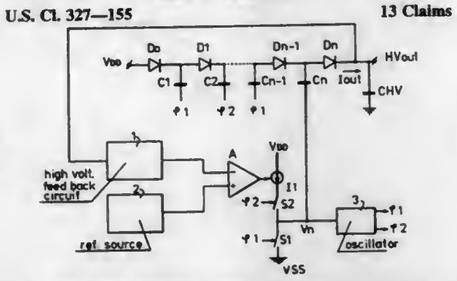
PCT No. PCT/NL92/00238, § 371 Date Oct. 11, 1994, § 102(e) Date Oct. 11, 1994, PCT Pub. No. WO93/14555, PCT Pub. Date Jul. 22, 1993

PCT Filed Dec. 29, 1992, Ser. No. 256,447

Claims priority, application Netherlands, Jan. 14, 1992, 9200057

Int. Cl.[6] H03L *7/06*

U.S. Cl. 327—155 **13 Claims**



1. High voltage feed-back controlled generator comprising several voltage multiplying stages connected in series, wherein an oscillator (3) generates first and second clock pulses (Φ1, Φ2) being 180° out of phase to one another and having a predetermined frequency, controlling alternately successive voltage multiplying stages to provide a high voltage pulse at an output of the high voltage generator, said output of the high voltage generator being connected to a high voltage feed-back circuit (1) comprising a capacitive input stage (CP, CR) and controlling the oscillator (3), so that the oscillator (3) produces an output modified in dependence on the output of the high voltage generator, said capacitive input stage (CP, CR) comprising at least a first capacitor (CP) comprising a first terminal and a second terminal, the first terminal being connected to the output of the high voltage generator and the second terminal being connected to a first terminal of a second capacitor (CR) at a first junction, wherein the second capacitor (CR) comprises a second terminal connected both to a point of common voltage (VSS) through a first current source (I_{dlock}) and to a first reference voltage (Vref1) through a first switch controlled by a control signal (RST), the first junction being connected to a second reference voltage (Vref2) through a second switch controlled by the control signal (RST), which junction provides an output signal (VCTRLHV) of the high voltage feed-back circuit, which control signal (RST) only then causes the first and second switches to be conductive when no programming pulse is to be generated.

5,546,032

CLOCK SIGNAL REGENERATION METHOD AND APPARATUS

Tetsuya Yatagai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

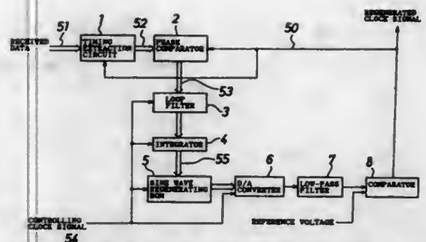
Filed Dec. 22, 1994, Ser. No. 361,568

Claims priority, application Japan, Dec. 25, 1993, 5-348154

Int. Cl.[6] H03L *7/00;* **H03K** *5/153*

U.S. Cl. 327—165 **15 Claims**

1. A clock signal regeneration method for producing a regenerated clock signal synchronized with digitally modulated received data, comprising the steps of:



extracting, from the digitally modulated received data, a timing signal corresponding to a rate of the digitally modulated received data;

comparing a phase of the timing signal with a phase of the regenerated clock signal to produce a phase difference signal corresponding to phase difference between the timing signal and the regenerated clock signal at each clock of the regenerated clock signal;

repetitively adding the phase difference signal at said each clock of the regenerated clock signal in a cycle equal to 1/N times a cycle of the timing signal with a controlling clock signal whose frequency is equal to N times that of the timing signal to produce a phase difference integrated value for each of such adding operation, wherein N is an integer;

converting the phase difference integrated value into amplitude information by which an amplitude of a sine waveform is represented by a digital value;

converting the amplitude information into an analog signal having a varying sine waveform; and

comparing the analog signal with a reference voltage to produce a new regenerated clock signal having a phase which varies by a step size smaller than the 1/N times the cycle of the timing signal, said new regenerated clock signal to be outputted as a the regenerated clock signal and to be used at the first comparing step in a next cycle.

5,546,033

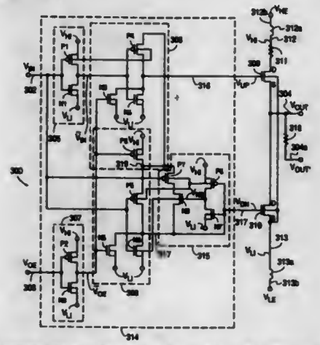
OUTPUT DRIVER CIRCUITS WITH ENHANCED SUPPLY-LINE BOUNCE CONTROL AND IMPROVED VOH CHARACTERISTIC

David L. Campbell, Sunnyvale, and James E. Fox, Jr., San Jose, both of Calif., assignors to Integrated Device Technology, Inc., Santa Clara, Calif.

Division of Ser. No. 404,403, Mar. 14, 1995, which is a continuation of Ser. No. 968,116, Oct. 28, 1992, Pat. No. 5,430,404. This application Jul. 14, 1995, Ser. No. 502,443

Int. Cl.[6] H03K *5/12;17/16*

U.S. Cl. 327—170 **7 Claims**



1. An output driver formed on a single integrated circuit die comprising:

a drive control circuit which generates first and second control signals responsive to at least one digital input signal;

a first output field effect transistor having a source, a drain, and a gate, said gate being coupled to receive said first control signal, said source being coupled to a data output terminal and said source and said drain having a first conductivity type; and

a second output field effect transistor having a source, a drain, and a gate, said gate of said second output field effect transistor being coupled to receive said second control signal, said drain of said second output field effect transistor being coupled to said source of said first output field effect transistor, said source and said drain of said second output field effect transistor having said first conductivity type,

wherein said drive control circuit monitors the voltage of said second control signal at said gate of said second output field effect transistor and charges said gate of said second output field effect transistor at a first rate and subsequently, in response to the gate voltage of said second output field effect transistor, charges said gate of said second output field effect transistor at a second rate when said voltage of said second control signal at said gate of said second output field effect transistor reaches a level substantially equal to a threshold voltage of said second output field effect transistor, said first rate being faster than said second rate.

5,546,034

PULSE GENERATOR CAPABLE OF VARIABLY CONTROLLING A PULSE LENGTH

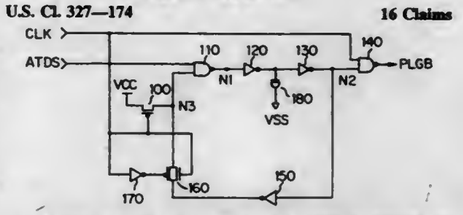
Tae H. Han, Seoul, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Choongchungbook, Rep. of Korea

Filed Jan. 6, 1995, Ser. No. 369,455

Claims priority, application Rep. of Korea, Nov. 23, 1994, 30890/1994

Int. Cl.[6] H03K *3/017*

U.S. Cl. 327—174 **16 Claims**



1. A pulse generator receiving an input signal to generate an output signal in response to a clock signal, comprising:

means for initializing the output signal to a first state in response to a first state of the clock signal;

feed-back means, coupled to said initializing means, for feeding back the input signal to a feed-back input terminal to generate a feed-back output pulse signal in response to a second state of the clock signal, a pulse length of the feed-back output pulse signal being extended each time the feed-back output pulse signal is fed back to the feed-back input terminal until there is a transition of the clock signal from the second state to the first state; and

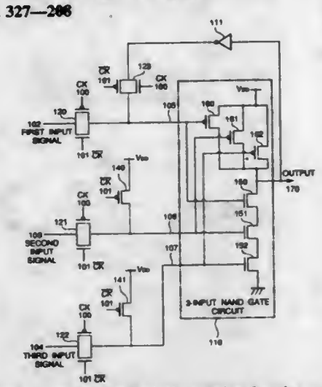
pulse output means, directly receiving the clock signal and coupled to said feed-back means, for outputting said feed-back output pulse signal as the output signal in response to the transition of the clock signal from the second state to the first state.

5,546,035

LATCH CIRCUIT HAVING A LOGICAL OPERATION FUNCTION

Fuyuki Okamoto, Tokyo, Japan, assignor to Nec Corporation, Tokyo, Japan

Filed Feb. 17, 1995, Ser. No. 390,044
Claims priority, application Japan, Feb. 17, 1994, 6-020049
Int. Cl.[6] H03K 3/037
U.S. Cl. 327—208 7 Claims



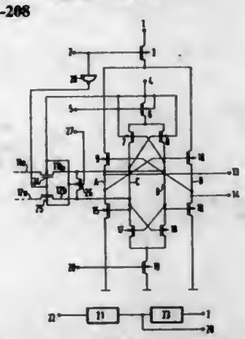
1. A latch circuit with a logical operation function, comprising:
a first input terminal for receiving a first input signal;
a second input terminal for receiving a second input signal;
a logical gate circuit having a first input and a second input and an output for outputting a negated logical combination of said first input and said second input;
a first transfer gate connected between said first input terminal and said first input of said logical gate circuit;
a second transfer gate connected between said second input terminal and said second input of said logical gate circuit;
an inverter having an input connected to said output of said logical gate circuit;
a third transfer gate connected between an output of said inverter and said first input of said logical gate circuit such that said output of said logical gate circuit is fed back to only said first input of said logical gate circuit when said third transfer gate is turned on; and
a fourth transfer gate connected between said second input of said logical gate circuit and a predetermined fixed logical level voltage such that said second input of said logical gate circuit is forcibly brought to said predetermined fixed logical level voltage, independently from said output of said logical gate circuit, when said fourth transfer gate is turned on,
said first, second, third and fourth transfer gates being controlled by a clock signal in such a manner that when said first and second transfer gates are on, said third and fourth transfer gates are off, and when said first and second transfer gates are off, said third and fourth transfer gates are on,
wherein when said first and second transfer gates are on and said third and fourth transfer gates are off, said logical gate circuit performs a predetermined logical operation in response to said first input signal applied to said first input terminal and said second input signal applied to said second input terminal, and when said first and second transfer gates are off and said third and fourth transfer gates are on, said output of said logical gate circuit is fed back to only said first input of said logical gate circuit through said inverter and said third transfer gate, and said second input of said logical gate circuit is forcibly brought to said predetermined fixed logical level voltage, regardless of a logic level of said output of said logical gate circuit, so that a latch operation is performed to maintain a logical value on said output of said logical gate circuit.

5,546,036

CIRCUIT ARRAY FOR AMPLIFYING AND HOLDING DATA WITH DIFFERENT SUPPLY

Diether Sommer, Munich; Dominique Savignac, Ismaning, and Dieter Gleis, Grosskarolinenfeld, all of, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 118,028, Sep. 8, 1993, abandoned.
This application Jan. 23, 1995, Ser. No. 376,683
Claims priority, application European Pat. Off., Aug. 27, 1992, 92114662
Int. Cl.[6] H03K 3/286
U.S. Cl. 327—208 7 Claims



1. A circuit array for amplifying and holding data, whereby the circuit array is connected to a low supply voltage and a high supply voltage, which voltages are different from one another and different from ground, the circuit array comprising:
a first flip-flop constructed in MOS technology for receiving the low supply voltage and data signals at input terminals with logical values varying within a range between the low supply voltage and ground, said first flip-flop having output terminals;
a second flip-flop constructed in MOS technology for receiving the high supply voltage, said second flip-flop having output terminals, and additional MOS transistors each connected between a respective one of the output terminals of said second flip-flop and ground;
said additional MOS transistors each having a gate terminal connected to a respective one of the output terminals of said first flip-flop; and
means for activating said first and second flip-flops, said activating means being triggered to activate said first flip-flop and to activate said second flip-flop after a time delay while said first flip-flop remains activated for amplifying and holding the data.

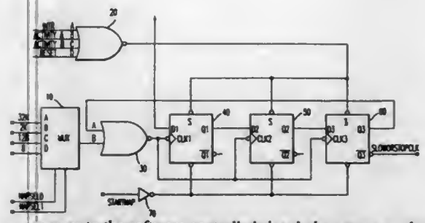
5,546,037

NAPNOP CIRCUIT FOR CONSERVING POWER IN COMPUTER SYSTEMS

John D. Kenny, and Min S. Ma, both of Sunnyvale, Calif., assignors to Cirrus Logic, Inc., Fremont, Calif.

Filed Nov. 15, 1993, Ser. No. 151,876
Int. Cl.[6] H03K 3/033;3/017;3/02
U.S. Cl. 327—230 11 Claims

1. In a computer system, a circuit for generating a signal for controlling a processor clock circuit, said circuit comprising:
first means for receiving a software controlled signal;
second means for receiving a plurality of different frequency clock signals and for receiving control signals for selecting one of the plurality of different frequency clock signals and outputting a selected one of the plurality of different frequency clock signals;
signal generating means coupled to said first means and said second means for receiving the selected one of the plurality of different frequency clock signals and generating a processor clock stopping signal to said processor clock circuit in response to the software controlled signal, the processor clock stopping signal having a duration proportional the selected one of the plurality of different frequency clock signals; and
third means, coupled to said signal generating means, for inhibiting the processor clock stopping signal being output from said signal generating means in response to a second software controlled signal whereby the processor clock circuit is to be re-started.



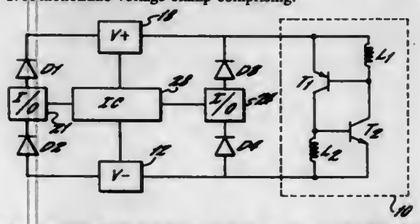
5,546,038

SCR INDUCTOR TRANSIENT CLAMP

Gregg D. Croft, Palm Bay, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Jun. 30, 1995, Ser. No. 497,124
Int. Cl.[6] H03K 5/08
U.S. Cl. 327—310 15 Claims

1. A monolithic voltage clamp comprising:



first, second, third, and fourth regions of semiconducting material, said first and third regions being of a first type conductivity and said second and fourth regions being of a second type conductivity, such that p-n junctions are formed between said first and second regions, said second and third regions, and said third and fourth regions;
a first inductor electrically connecting said first and second regions; and
a second inductor electrically connecting said third and fourth regions.

5,546,039

CHARGE DISSIPATION IN CAPACITIVELY LOADED PORTS

Larry D. Hewitt, and Ryan Feemster, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 333,451, Nov. 2, 1994. This application Apr. 17, 1995, Ser. No. 423,059
Int. Cl.[6] H03K 17/16;5/12
U.S. Cl. 327—379 28 Claims

18. A method for regulating peak currents during a HIGH to LOW transition on a capacitively loaded port in a monolithic integrated circuit having an analog-to-digital and digital-to-analog signal conversion module and a digital audio signal synthesizer module, said method comprising the steps of:
providing a load signal;
linking said load signal to the integrated circuit ground through first, second, third, and fourth parallel paths, each path characterized by a gated transistor;
providing first, second, third, and fourth triggering networks, each selected one of said triggering networks having an output signal and an input signal clockable to appear as said output signal of said selected triggering network, said triggering networks arranged in a sequential cascade characterized by said output signal of said first triggering network providing said input signal for said second triggering network and said output signal of said second triggering network providing said input signal for said third triggering network and said output signal of said third triggering network providing said input signal for said fourth triggering network;
generating a digitally selected threshold signal;
comparing said load signal and said threshold signal to derive a pull-down signal;
supplying said pull-down signal as said input signal of said first triggering network of said sequential cascade;
clocking said first, second, third, and fourth triggering networks with a common clocking signal; and
sequentially enabling said first, second, third, and fourth parallel paths by supplying said gated transistors of said first, second, third, and fourth parallel paths with the corresponding said output signals from said first, second, third, and fourth triggering networks respectively, said output signals derived as said input signal of said first triggering network sequentially propagates through said cascade in substantial correspondence with sequential state changes of said common clocking signal.

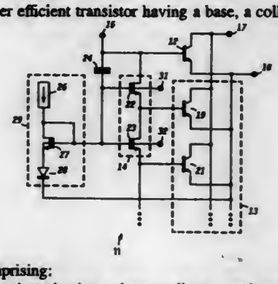
5,546,040

POWER EFFICIENT TRANSISTOR AND METHOD THEREFOR

Scott D. McCall, Gilbert, and Gary W. Hoshizaki, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 22, 1993, Ser. No. 7,230
Int. Cl.[6] H03K 5/153;5/22
U.S. Cl. 327—479 17 Claims

1. A power efficient transistor having a base, a collector, and an emitter comprising:



a first transistor having a base, collector, and emitter coupled respectively to the base, collector and emitter of the power efficient transistor;
a plurality of transistors for increasing the current handling capability of the power efficient transistor, each transistor of said plurality of transistors having a base, collector coupled to

the collector of the power efficient transistor and an emitter coupled to the emitter of the power efficient transistor; and

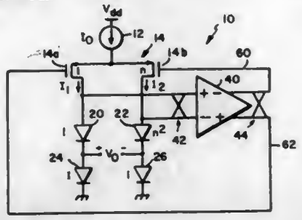
driving means coupled to each base of said plurality of transistors, said driving means being responsive to a signal applied to the base of the power efficient transistor for incrementally enabling and disabling said plurality transistors to maintain the power efficient transistor in or near saturation.

5,546,041

FEEDBACK SENSOR CIRCUIT

Kenneth S. Szajda, Arlington, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Aug. 5, 1993, Ser. No. 102,620
Int. Cl.[6] H03K *17/00*
U.S. Cl. 327—512 **37 Claims**



1. A circuit comprising:

two sensor;

an excitation source having a separate excitation control element for providing an excitation signal to each sensor, said excitation signals being at a fixed ratio for at least one of their characteristics;

a control circuit coupled to the sensors for maintaining the excitation signals at the fixed ratio regardless of temperature changes, said control circuit including a feedback network for providing a separate feedback signal to each of said excitation control elements,; and

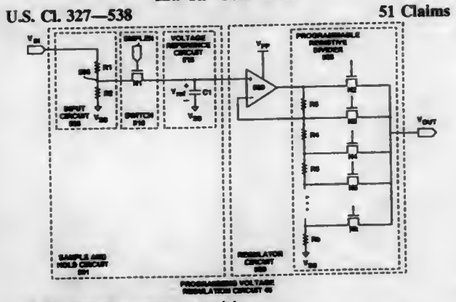
output terminals for obtaining a signal from said sensors indicative of a selected sensed parameter.

5,546,042

HIGH PRECISION VOLTAGE REGULATION CIRCUIT FOR PROGRAMMING MULTIPLE BIT FLASH MEMORY

Kerry D. Tedrow, Orangevale; Stephen N. Keeney, Sunnyvale; Albert Fazio, Los Gatos; Gregory E. Atwood, San Jose; Johnny Javanifard, Sacramento, and Kenneth Wojciechowski, Folsom, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Division of Ser. No. 252,585, Jun. 1, 1994. This application Apr. 17, 1995, Ser. No. 423,558
Int. Cl.[6] G05F *1/613*
U.S. Cl. 327—538 **51 Claims**



1. A computer system comprising:

a power supply for providing an operating voltage;

a DC-to-DC converter coupled to receive the operating voltage, the DC-to-DC converter for outputting a programming voltage level;

a nonvolatile memory device coupled to receive the programming voltage level, the nonvolatile memory device including a programming voltage regulation circuit for supplying a gate voltage to program a nonvolatile memory cell, the programming voltage regulation circuit comprising:

a sample and hold circuit coupled to the programming voltage level, the sample and hold circuit for sampling the programming voltage level and for holding a reference voltage generated in response to the programming voltage level, the sample and hold circuit including a capacitor that holds the reference voltage; and

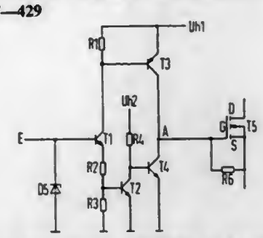
a regulator circuit coupled to the capacitor of the sample and hold circuit, the regulator circuit for outputting the gate voltage using the reference voltage supplied by the capacitor.

5,546,043

CIRCUIT ARRANGEMENT FOR DRIVING AN MOS FIELD-EFFECT TRANSISTOR

Werner Pollmeier, Bundesrepublik, Germany, assignor to Siemens Nixdorf Informationssystems Aktiengesellschaft, Paderborn, Germany

PCT No. PCT/DE93/00386, § 371 Date Nov. 7, 1994, § 102(e) Date Nov. 7, 1994, PCT Pub. No. WO93/22835, PCT Pub. Date Nov. 11, 1993
PCT Filed May 3, 1993, Ser. No. 325,301
Claims priority, application Germany, Mar. 7, 1992, 42 15 042.6
Int. Cl.[6] H03K *17/687;17/60;3/00*
U.S. Cl. 327—429 **10 Claims**



1. A circuit arrangement connectable to a power supply for driving an MOS field-effect transistor as a power switching element in a DC/DC voltage converter operating on a chopper principle, comprising:

an input transistor;

a pair of complementary transistors formed of two further transistors whose bases are driven with in-phase control signals originating from said input transistor,

a current limiter circuit,

a base of a first of said further transistors connected to a collector of said input transistor,

first means for setting a current switching threshold value for said first of said further transistors, said means for setting being connected to said collector of said input transistor;

a matched means;

a phase reversing transistor having a collector connected to a base of said second of said further transistor, said collector being connected to the supply voltage via said matched means, a base of said phase reversing transistor connected to an emitter of said input transistor,

second means connected to said emitter of said input transistors for setting a current switching threshold value for said phase reversing transistor, and

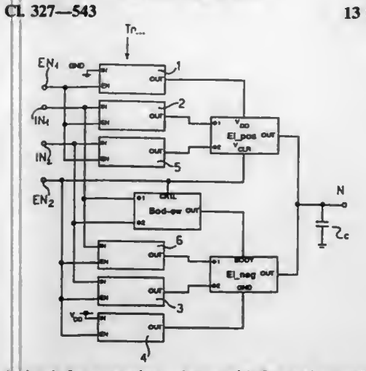
a capacitor arranged between said base of said second of said further transistors and a reference potential of the circuit arrangement for a switching-on delay of said second said further transistor, said switching-on delay being additional to a switching-on delay which is governed by a storage time occurring in said phase reversing transistor.

5,546,044

VOLTAGE GENERATOR CIRCUIT PROVIDING POTENTIALS OF OPPOSITE POLARITY

Cristiano Calligaro, Pavia; Roberto Gastaldi, Milan; Piero Malcovati, and Guido Torelli, both of Pavia, all of, Italy, assignors to SGS-Thomson Microelectronics S.r.l., Milano, Italy

Filed Sep. 26, 1994, Ser. No. 311,941
Claims priority, application European Pat. Off., Sep. 30, 1993, 93830403
Int. Cl.[6] G05F *1/10*
U.S. Cl. 327—543 **13 Claims**



1. A circuit for generating voltages with first and second polarities relative to a reference potential, which voltages are boosted in absolute value over the reference potential, characterized in that the circuit comprises:

first, second, third, fourth, fifth, and sixth switching circuits each having an input terminal, an output terminal, and an enable terminal, the input terminals of the first and the fourth switching circuits respectively connected to a first terminal and a second terminal of a supply voltage generator, the input terminals of the second and sixth switching circuits connected to a first input signal, the input terminals of the third and fifth switching circuits coupled to a second input signal, the enable terminals of the first, second, and fifth switching circuits connected to a first enable signal, and the enable terminals of the third, fourth, and sixth switching circuits connected to a second enable signal;

first and second voltage booster circuits for respectively generating voltages of the first polarity and voltages of the second polarity, each booster circuit having first and second command terminals, a supply terminal, and an output terminal, the second booster circuit having a bias terminal the output terminals of the first and the second voltage booster circuits being connected together at a common output node, the supply terminal, the first command terminal, and the second command terminal of the first voltage booster circuit respectively connected to the output terminals of the first, second, and fifth switching circuits, the supply terminal, the first command terminal, and the second command terminal of the second voltage booster circuit respectively connected to the output terminals of the fourth, sixth, and third switching circuits; and

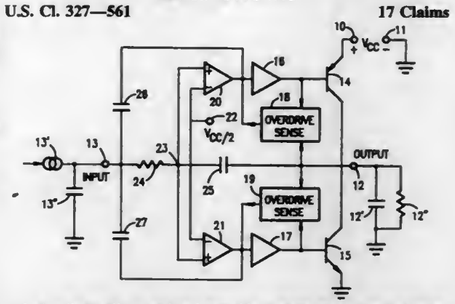
a third voltage booster circuit for generating voltages of the first polarity type which can be set at predetermined levels, the third booster circuit having first and second command terminals respectively connected to the first and second input signals, a control terminal connected to the second enable signal, and an output terminal connected to the bias terminal of the second voltage booster circuit.

5,546,045

RAIL TO RAIL OPERATIONAL AMPLIFIER OUTPUT STAGE

Don R. Saner, San Jose, Calif., assignor to National Semiconductor Corp., Del.

Continuation of Ser. No. 148,121, Nov. 5, 1993, abandoned. This application Apr. 19, 1995, Ser. No. 424,220
Int. Cl.[6] G06G *7/12*
U.S. Cl. 327—561 **17 Claims**



1. A rail-to-rail operational amplifier output stage circuit having input and output terminals, positive and negative power supply rails connectable to a source of operating power and first and second complementary common-emitter output transistors coupled between said power supply rails without any intervening circuit components, whereby the collectors of said first and second output transistors comprise said output terminal, said circuit comprising:

first and second emitter follower buffer drivers respectively coupled to drive the bases of said first and second output transistors, respectively, said first emitter follower buffer driver having a structure complementary to the structure of said second emitter follower buffer driver;

a first and second differential amplifiers having outputs respectively coupled to drive said first and second buffer drivers, respectively, said first differential amplifier having a structure complementary to the structure of said second differential amplifier;

means for coupling the inverting inputs of said first and second differential amplifiers to a source of bias potential;

means for coupling the noninverting inputs of said first and second differential amplifiers together to comprise an input node; and

means for coupling said input node to said circuit input terminal, wherein said means for coupling said input node to said circuit input terminal comprises a resistor and said output stage circuit further includes a compensation capacitor connected between said output terminal and said input node.

5,546,046

OUTPUT TUBE BIAS SELECTION APPARATUS FOR TONE ALTERATION IN A TUBE-TYPE AUDIO AMPLIFIER

Salvatore J. Trentino, 800 Sir Francis Drake Blvd. Suite A, San Anselmo, Calif. 94960

Filed Jan. 9, 1995, Ser. No. 371,022
Int. Cl.[6] H03F *3/28*
U.S. Cl. 330—127 **2 Claims**

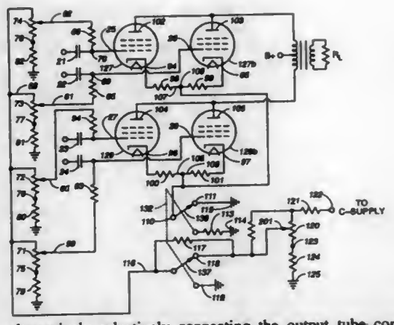
1. An output tube bias selection apparatus for tone alteration in a tube-type audio amplifier comprising:

at least one output tube having an output tube control grid and an output tube cathode;

a C– power supply, said C– power supply having a plus side which is grounded;

a B+ power supply, said B+ power supply having a minus side which is grounded; and

bias switch means for selectively connecting the output tube control grid through a bias resistor to said C– power supply, and the output tube cathode to ground for fixed bias, or



alternatively selectively connecting the output tube control grid to ground through a bias resistor, and the output tube cathode to ground through a resistor for cathode (self) bias.

5,546,047

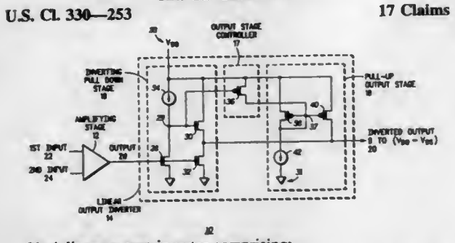
METHOD AND APPARATUS OF AN OPERATIONAL AMPLIFIER WITH WIDE DYNAMIC RANGE

Joseph Y. Chan, and Mathew A Rybicki, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 27, 1995, Ser. No. 395,126

Int. Cl.[6] H03F *3/45*

U.S. Cl. 330—253 **17 Claims**



11. A linear output inverter comprising:

an inverting stage having an input terminal for receiving an input signal, and a first output terminal coupled to an output terminal of the linear output inverter;

a rail output stage having a first terminal coupled to a first power supply voltage terminal, an enable input terminal, and an output terminal coupled to an output terminal of the linear output inverter; and

an output stage controller having an input terminal coupled to said inverting stage, and an output terminal coupled to said enable input terminal of said rail output stage, said output stage controller gradually enabling said rail output stage as a voltage provided by said inverting stage approaches a voltage of said first power supply voltage terminal.

5,546,048

AMPLIFIER AND DISPLAY APPARATUS EMPLOYING THE SAME

Yuji Sano, Zushi; Sadao Tsuruga; Kouji Kitou, both of Yokohama, and Michitaka Ohsawa, Fujisawa, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

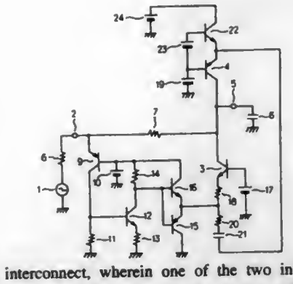
Filed Aug. 31, 1993, Ser. No. 114,612

Claims priority, application Japan, Sep. 4, 1992, 4-236696; Sep. 9, 1992, 4-240257; Feb. 22, 1993, 5-031060

Int. Cl.[6] H03F *3/26;* **H04N** *5/14*

U.S. Cl. 330—263 **32 Claims**

1. An amplifier including a push-pull circuit having two active elements and two points at which electrodes of said two active elements interconnect, wherein one of the two interconnection points is made an input end, the other interconnection point is connected to one terminal of a peaking capacitor for use in setting a gain, another terminal of said peaking capacitor being connected to an AC ground point and one of remaining non-interconnected electrodes of said two active elements is made an output end of the amplifier.



5,546,049

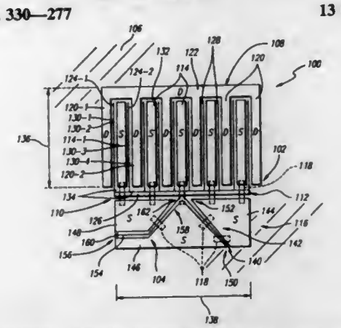
FREQUENCY SCALABLE PRE-MATCHED TRANSISTOR

Cheng P. Wen, Mission Viejo, and Cheng-Keng Pao, Torrance, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 31, 1995, Ser. No. 414,829

Int. Cl.[6] H03F *3/193*

U.S. Cl. 330—277 **13 Claims**



1. A frequency scalable pre-matched amplifier comprising:

an active gain device comprising a transistor including an input electrode comprising a gate feed electrode for receiving an input signal with a predetermined center frequency and at least one source finger portion; and

a matching element including an input end and a termination said input end being electrically coupled to said input electrode providing a signal feed region, said termination being at a predetermined distance from said signal feed region, said predetermined distance being selected to optimize a power transfer of the input signal at said signal feed region, and a plurality of source feed portions electrically connected to said at least one source finger portion providing a distributed source electrode wherein said plurality of source feed portions provide an input waveguide for receiving the input signal and a termination waveguide between said signal feed region and said termination wherein said input waveguide is disposed substantially orthogonally to said termination waveguide.

5,546,050

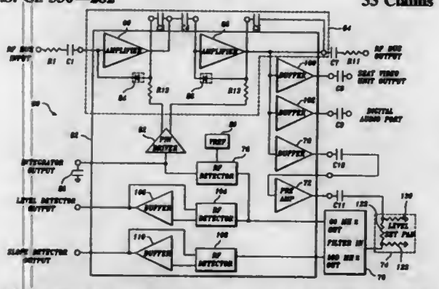
RADIO FREQUENCY BUS LEVELING SYSTEM

Michael H. Florian, Bellevue; Harold J. Redd, Seattle; David R. Hogue, Renton, and Rodney K. Bonebright, Milton, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Mar. 14, 1995, Ser. No. 403,408

Int. Cl.[6] H03G *3/30*

U.S. Cl. 330—282 **33 Claims**



25. A system for maintaining the amplitude of a signal carded on a bus, the signal including at least one carrier modulated with data and a component indicative of the amplitude of the signal, the system comprising:

(a) a PIN diode; and

(b) a leveler incorporated in an Application Specific Integrated Circuit (ASIC) comprising:

(i) a variable gain amplifier having an input and an output that are connected in series with the bus, the variable gain amplifier comprising an amplifier with the PIN diode connected in a feedback path from the output of the amplifier to the input of the amplifier, and a control input coupled to the feedback path, wherein a control signal provided to the control input varies the resistance of the PIN diode to adjust the gain produced by the variable gain amplifier;

(ii) a voltage reference for producing a reference voltage level; and

(iii) a control circuit coupled to the output of the variable gain amplifier, the voltage reference, and the control input of the feedback path, the control circuit comparing the amplitude of a component of the signal carried on the bus with the reference voltage level and adjusting the gain of the variable gain amplifier to maintain the component of the signal at a desired amplitude.

5,546,051

POWER AMPLIFIER AND POWER AMPLIFICATION METHOD

Haruhiko Koizumi; Akihisa Sugimura; Kazuki Tateoka, all of Osaka, and Kunihiko Kanazawa, Kyoto, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 10, 1995, Ser. No. 402,490

Claims priority, application Japan, Mar. 14, 1994, 6-042112

Int. Cl.[6] H03F *3/04;* **H04B** *1/04*

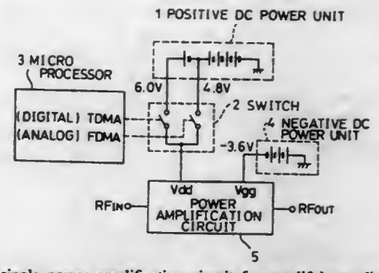
U.S. Cl. 330—297 **3 Claims**

1. A power amplifier operative in both an analog modulation mode and a digital modulation mode comprising:

a power unit circuit for producing two DC voltage levels:

a switch circuit for selecting either of said two DC voltage levels produced from said power unit circuit:

a control circuit for controlling said switch circuit in accordance with a type of modulation mode:



a single power amplification circuit for amplifying radio frequency signals using the DC voltage level selected by said switch circuit: and

wherein said switch circuit is operable to select a lower of said DC voltage levels as a voltage to be applied to the power amplification circuit in the digital modulation mode and to select a higher of said DC voltage levels in the analog modulation mode.

5,546,052

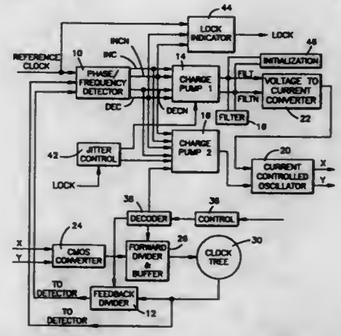
PHASE LOCKED LOOP CIRCUIT WITH PHASE/FREQUENCY DETECTOR WHICH ELIMINATES DEAD ZONES

John S. Austin; Ilya L Novof, both of Essex Junction, Vt.; Donald E. Strayer, Owego, N.Y., and Stephen D. Wyatt, Jericho, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 298,695, Aug. 31, 1994. This application Nov. 10, 1994, Ser. No. 298,639

Int. Cl.[6] H03L *7/089;7/095*

U.S. Cl. 331—1 A **9 Claims**



7. In a phase locked loop circuit having a phase/frequency detector which receives as input reference clock signals and a circuit output signal, and which compares the phase/frequency of input clock signals to the circuit output signal, and which phase/frequency detector outputs increment and decrement pulses the widths of which are responsive to a difference in the phases of the reference clock signal and the circuit output signal,

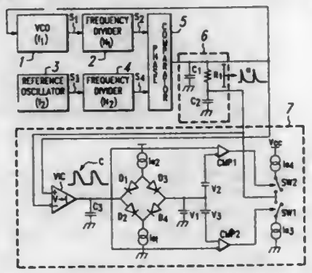
a method of providing the increment and decrement pulses from said phase/frequency detector comprising the step of:

generating said increment and decrement pulses each with predetermined equal incremental value of said widths, irrespective of the phase difference of the input signals and nonconjunctioning a feedback divider output signal with said circuit output signal to form a masked circuit output signal.

5,546,053
PHASE LOCKED LOOP HAVING BOOSTER CIRCUIT FOR RAPID LOCKUP

Kouzou Ichimaru, Higashikunisaki-gun, Japan, assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 281,049, Jul. 27, 1994, abandoned. This application Apr. 24, 1995, Ser. No. 427,466
Int. Cl.[6] H03L *7/093*
U.S. Cl. 331—11 **6 Claims**



1. A frequency adjusting circuit for adjusting the oscillation frequency of a voltage-controlled oscillator in accordance with a reference frequency signal, said frequency adjusting circuit comprising:

a phase comparator having first and second inputs for respectively receiving an output frequency signal of the voltage-controlled oscillator and the reference frequency signal and detecting the phase difference therebetween;

filter means having first and second capacitors, the first capacitor of said filter means being connected between the output of said phase comparator and a reference potential, a resistor having one terminal connected to the output of said phase comparator and the other terminal connected to said second capacitor, and said second capacitor being connected between the other terminal of said resistor and the reference potential, and

said filter means being connectable to the input of the voltage-controlled oscillator via a feedback line from the output of said filter means to feedback a DC component signal corresponding to the output signal of said phase comparator; and

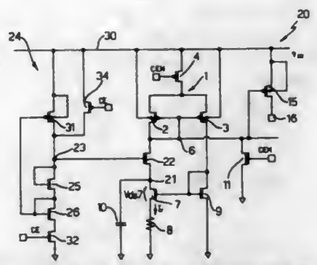
a booster circuit interconnected between said resistor and said second capacitor for deriving the integration value of the voltage waveform at the two terminals of said resistor and storing a charge proportional to the integration value in said second capacitor.

5,546,054
CURRENT SOURCE HAVING VOLTAGE STABILIZING ELEMENT

Marco Maccarrone, Palestro; Marco Olivo, Bergamo, and Carla M. Golla, Sesto San Giovanni, all of, Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Filed Jan. 20, 1995, Ser. No. 377,524
Claims priority, application European Pat. Off., Jan. 21, 1994, 94830022
Int. Cl.[6] H03B *5/24;* **G05F** *3/16;* **H03K** *3/011;3/03*
U.S. Cl. 331—111 **19 Claims**

1. A current source comprising a current mirror circuit and an active load circuit which define a reference branch for setting a reference current value, and a mirroring branch for defining an output current value; said reference branch and said mirroring branch being connected between a first and second reference potential line; characterized by the fact that said reference branch presents a voltage stabilizing element located along said reference branch and presenting a first terminal connected to said current mirror circuit, and a second terminal connected to said active load

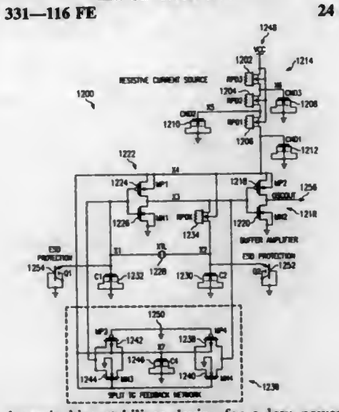


circuit; said voltage stabilizing element maintaining the potential of said second terminal with respect to said second reference potential line.

5,546,055
CRYSTAL OSCILLATOR BIAS STABILIZER

Kevin M. Klughart, Addison, Tex., assignor to Dallas Semiconductor Corp., Dallas, Tex.

Filed Aug. 24, 1995, Ser. No. 518,906
Int. Cl.[6] H03B *5/36*
U.S. Cl. 331—116 FE **24 Claims**



5. A dynamic bias stabilizer device for a low power crystal oscillator, comprising:

a. a means for amplifying for providing the output of the crystal oscillator;

b. means connected in a feedback loop for controlling the gain of said amplifying means; and

c. means connected to a power supply for controlling the operating bias point of said amplifying means.

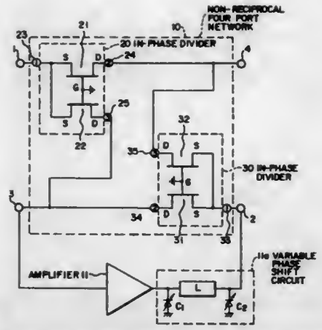
5,546,056
INJECTION-LOCKED OSCILLATOR HAVING NON-RECIPROCAL FOUR PORT NETWORK

Tsuneo Tokumitsu, Kanagawa, Japan, assignor to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Jan. 27, 1995, Ser. No. 378,952
Claims priority, application Japan, Jan. 28, 1994, 6-024908
Int. Cl.[6] H03B *5/00;5/24*
U.S. Cl. 331—172 **7 Claims**

1. An injection-locked oscillator comprising;

a non-reciprocal four-port network having a first and a second input ports and a first and a second output ports so that signal transfer path from the first input port to the first output port is non-reciprocal, signal transfer path from the second input port to the second output port is non-reciprocal and signal transfer



path from the second input port to the first output port is non-reciprocal, and circuits between the first input port and the second input port and between the first output port and the second output port are isolated,

an amplifier with an input of the same coupled with said first output port and an output of the same coupled with said second input port, having operation frequency band in at least a part of operation frequency band of said four-port network,

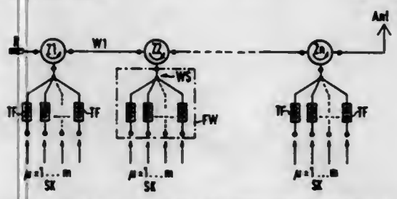
an injection signal input port coupled with said first input port of said four-port network,

an oscillation output port coupled with said second output port of said four-port network.

5,546,057
ANTENNA/FILTER COMBINER

Gerhard Pfitzenmaier, Groebenzell, Germany, assignor to Aktiengesellschaft Siemens, Munich, Germany

Continuation of Ser. No. 271,760, Jul. 7, 1994, abandoned. This application Mar. 16, 1995, Ser. No. 405,445
Claims priority, application Germany, Jul. 8, 1993, 43 22 843.7
Int. Cl.[6] H04B *1/04;* **H01P** *1/213*
U.S. Cl. 333—134 **10 Claims**



1. An antenna/filter combiner for connecting a plurality of frequency channels to a transmission antenna, comprising:

a waveguide connected to the antenna;

a plurality n of circulators connected in-line in the waveguide;

a plurality n of combining networks connected to the circulators, each dividing network coupled to a respective circulator, each combining network comprising an apex to which are connected a plurality μ of sub-filters, a signal flow direction of the circulators being such that signals forwarded by the combining networks are received by their respective circulators and then operatively forwarded down the waveguide to the transmission antenna, the sub-filters of each combining network comprising high-Q resonators operated in at least two modes, the apex of at least one combining network comprising a second waveguide coupled to its respective circulator and filters having resonators physically arranged concentrically about the second waveguide and having resonator axes positioned axially parallel to an axis of the second waveguide, filter outputs of the filter resonators being coupled to the second waveguide, the second waveguide being a coaxial cable;

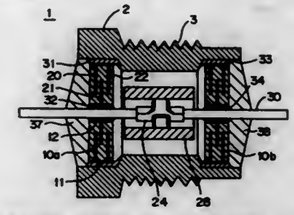
a plurality μ of transmission channels connected to the sub-filters of the combining networks, the signal flow direction of the circulators being such that frequency channels already fed into the waveguide at topically preceding circulators 1 to (β−1) in the course of the waveguide are at least approximately totally reflected at the combining network of the βth circulator and are forwarded in the direction of the transmission antenna via further circulators (β+1) to n; and

compensation means in a transmission channel for compensating disturbances caused by reflecting combining networks, which compensation means are provided in the second waveguide at a side thereof facing away from the circulator, and which disturbances are caused by undesirable transmissions at high impedance inputs of the reflecting combining networks.

5,546,058
FEEDTHROUGH LC FILTER WITH A DEFORMATION PREVENTING SPRING

Takahiro Azuma; Hiromichi Tokuda, and Toshimi Kaneko, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

Filed Dec. 22, 1994, Ser. No. 361,492
Claims priority, application Japan, Dec. 24, 1993, 5-328170
Int. Cl.[6] H03H *7/01*
U.S. Cl. 333—183 **11 Claims**



1. A feedthrough electronic device comprising:

an electronic element which has a feedthrough hole; and

a center conductor which penetrates the electronic element, the center conductor comprising a lead line portion and a spring portion which has an extended portion protruding from the lead line portion and contacting an inner periphery of the electronic element with pressure;

wherein a width of the extended portion of the spring portion is substantially uniform and a wide portion for preventing deformation is provided at a bottom of the extended portion.

5,546,059
DIELECTRIC FILTER HAVING A NON-CONDUCTIVE REGION IN EACH RESONATOR HOLE

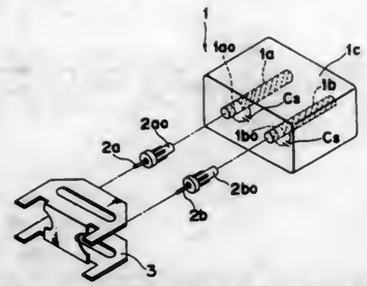
Tadahiro Yorita; Yasuo Yamada, and Hirokuni Miyamoto, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Oct. 13, 1993, Ser. No. 135,686
Claims priority, application Japan, Oct. 16, 1992, 4-72386 U
Int. Cl.[6] H01P *1/201*
U.S. Cl. 333—202 **21 Claims**

1. A dielectric filter which comprises:

a dielectric block having an outer surface including a first surface and a second surface, and a plurality of through-holes defined in the dielectric block so as to extend from the first surface to the second surface generally parallel to each other and spaced a predetermined distance from each other,

each through-hole having a respective peripheral wall lined with a corresponding lining of electroconductive material to provide a respective hole electrode, each said hole electrode



having a respective isolation region, said respective isolation region being flush with said corresponding peripheral wall and comprising a region of said peripheral wall of each of said through-holes without said lining of electroconductive material, thereby dividing each said hole electrode into two separate electrode components, wherein each said hole electrode has one of said separate electrode components functioning as a quarter-wavelength resonator with an open end thereof at said isolation region and a short-circuit end thereof at said outer surface of said dielectric block;

said outer surface of the dielectric block being covered by an electroconductive material, said two separate electrode components of each said hole electrode being electrically connected with said electroconductive material on the outer surface of the dielectric block; and

at least two terminal members for input and output, provided within respective ones of said plurality of through-holes and coupled to said corresponding hole electrodes through a respective dielectric element separate from the dielectric block.

5,546,060

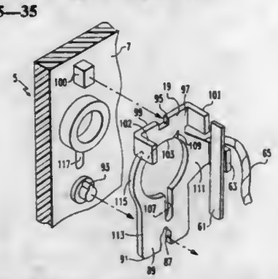
SUPPORT PLATE FOR A CIRCUIT BREAKER

Stephen A. Mrenna, Beaver, Pa., assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 22, 1994, Ser. No. 362,402

Int. Cl.[6] H01H *75/12*

U.S. Cl. 335—35 **10 Claims**



1. A circuit interrupter, comprising:

an electrically insulating housing including a base having a planar wall and edge walls forming a cavity and a cover enclosing said cavity,

a circuit breaker assembly within said cavity in said housing and comprising electrical contacts movable between open and closed positions,

an operating mechanism for said circuit breaker assembly including a cradle with a latch ledge latchable in a latched position and operating when unlatched to automatically move said electrical contacts to said open position,

a trip assembly including an elongated bimetal which latches said latch ledge of said cradle in the latched position and which flexes to unlatch said latch ledge of said cradle in response to predetermined persistent current overload conditions, and

a support plate mounted in said cavity along said planar wall of said base of said housing, and having a free end with tab means to which said elongated bimetal of said trip assembly is attached and longitudinal slot means centrally located in said support plate through which a tool is inserted to rotate said free end of said support plate and said bimetal therewith to calibrate the unlatching of said latch ledge of said cradle at said selected persistent current overload conditions,

said support plate partially extending along said planar wall of said base, having a longitudinal edge disposed opposite to said free end of said support plate, and terminating in proximity to said latch ledge of said cradle of said operating mechanism and including opening means in close proximity to said longitudinal slot means of said support plate,

said planar wall of said base of said housing including molded pin means in said planar wall for receiving said opening means of said support plate for obtaining a fixed position of said support plate to said planar wall in said cavity of said base.

5,546,061

PLUNGER TYPE ELECTROMAGNETIC RELAY WITH ARC EXTINGUISHING STRUCTURE

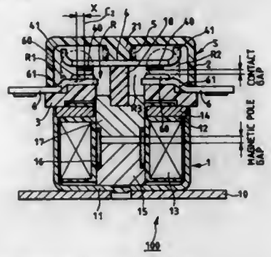
Athuo Okabayashi, Toyota; Kimikazu Nakamura, Kariya, and Toshihiko Sugiura, Anjo, all of, Japan, assignors to Nippoudenso Co., Ltd., Kariya, Japan

Filed Feb. 22, 1995, Ser. No. 393,314

Claims priority, application Japan, Feb. 22, 1994, 6-024010

Int. Cl.[6] H01H *51/22*

U.S. Cl. 335—78 **27 Claims**



1. An electromagnetic relay comprising:

a housing;

a movable contact retainer having disposed thereon a pair of movable contacts;

a stationary contact retainer disposed within said housing, having disposed thereon a pair of stationary contacts at a given interval away from the movable contacts;

a solenoid assembly connected to said housing, said solenoid assembly moving a plunger connected to said movable contact retainer for selectively driving said movable contact: retainer to bring the movable contacts into engagement with and disengagement from the stationary contacts; and

a pair of permanent magnets disposed within said housing diametrically opposite each other across the pair of movable contacts, said pair of permanent magnets having magnetic poles oriented opposite each other.

5,546,062

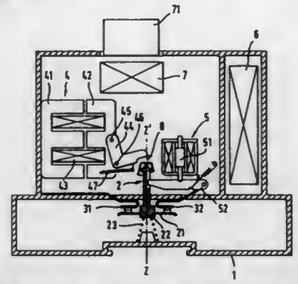
PROTECTION SWITCH

Pierre Duchemin, Fourqueux, France, assignor to Schneider Electric SA, Boulogne-Billancourt, France

Filed Oct. 4, 1994, Ser. No. 317,740

Int. Cl.[6] H01H *67/02*

U.S. Cl. 335—132 **5 Claims**



1. A contactor/protector relay type protection switch comprising at least one power pole, said power pole comprising a mobile contact holder cooperating with fixed contacts, said mobile contact holder including a plunger; a solenoid comprising a fixed part and a movable part movable in directions toward and away from said fixed part; an operating lever coupled to said movable part of said solenoid, a portion of said lever arranged to engage said plunger to move said mobile contact holder with respect to said fixed contacts upon movement of said movable part of said solenoid in one of said directions; and an elastic device disposed between said portion of said lever and said plunger.

5,546,063

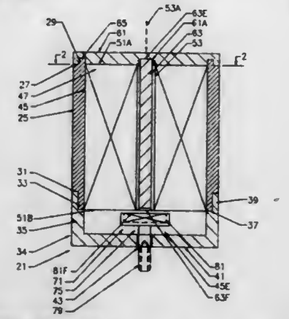
MAGNETIC FIELD SOLENOID

Jerzy Hoffman, Las Vegas, Nev., assignor to United States Defense Research, Inc., Carson City, Nev.

Filed Jun. 17, 1994, Ser. No. 261,833

Int. Cl.[6] H01F *7/00;7/08*

U.S. Cl. 335—229 **19 Claims**



1. A solenoid, comprising:

a housing comprising a surrounding wall forming an opening extending between first and second ends with first and second end walls coupled to said first and second ends of said surrounding wall respectively forming an enclosed cavity,

an electrical coil fixedly located in said enclosed cavity of said housing,

said electrical coil having a central opening extending therethrough with said central opening having a central axis,

said electrical coil having first and second ends with said first end located near said first end of said surrounding wall of said housing,

said second end wall of said housing being spaced from said second end of said coil,

a rod formed of a material capable of being magnetized when located in a magnetic field,

said rod being fixedly located in said central opening of said electrical coil and having an end extending to a position near said second end of said electrical coil,

a plunger comprising a permanent magnet and support means for supporting said permanent magnet for movement in the space between said second end of said coil and said second end wall of said housing along a path in line with said central axis in opposite directions within said enclosed cavity to locate said permanent magnet in first and second positions wherein said end of said rod will be located in the magnetic field of said permanent magnet and in the magnetic field produced by said coil when energized such that when electrical power is applied to said coil, a magnetic field is produced by said coil which moves said plunger in a direction along said path to locate said permanent magnet in said second position spaced away from said second end of said coil and when the electrical power to said coil is terminated, the magnetic field produced by said permanent magnet moves said plunger along said path in a direction to locate said permanent magnet in said first position near said second end of said coil,

said second end wall of said housing comprises an opening formed therethrough,

said support means being moveably supported in said opening of said second end wall of said housing,

said plunger comprises means for engaging said second end wall of said housing when said permanent magnet is moved to said second position for preventing movement of said permanent magnet beyond said second position,

said plunger being the only movable means of said solenoid.

5,546,064

SOLENOID WITH PLUNGER ROD

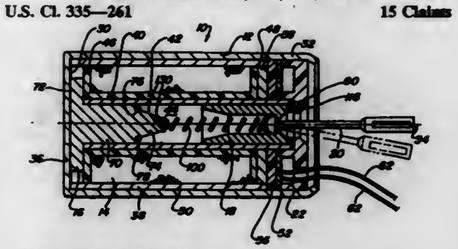
Faisal K. Sallam, Dearborn, and Gilbert Gardecki, Dearborn Heights, both of Mich., assignors to United Technologies Automotive, Inc., Dearborn, Mich.

Continuation of Ser. No. 167,738, Dec. 19, 1993, abandoned.

This application Apr. 6, 1996, Ser. No. 418,891

Int. Cl.[6] H01F *3/00;7/12;7/10;7/08*

U.S. Cl. 335—261 **15 Claims**



1. A solenoid comprising:

a housing having a closed rearward wall and a forward wall;

cylindrical guide tube defining a longitudinal axis;

a solenoid coil arranged around said guide tube;

a generally cylindrical plunger having an internal cavity, a forward end including a generally conical forward aperture and a rearward end having a general conical rearward aperture, said plunger disposed within said guide tube and axially slidable therein;

a plunger rod disposed within said internal cavity of said cylindrical plunger, and extending through said aperture;

means for seating said plunger rod, said seating means being positioned within said internal cavity to provide said plunger rod with conical angular movement as well as axial movement in said internal cavity with respect to said longitudinal axis of said guide tube; and

a stop adjacent said housing rearward wall having an extension mateable with said plunger rearward aperture.

5,546,065

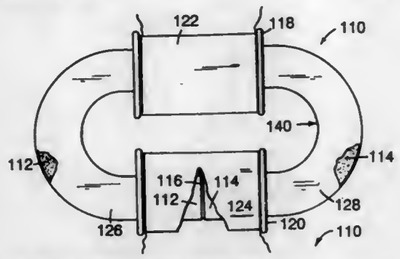
HIGH FREQUENCY CIRCUIT HAVING A TRANSFORMER WITH CONTROLLED INTERWINDING COUPLING AND CONTROLLED LEAKAGE INDUCTANCES

Patrizio Vinciarelli, Boston, and Jay M. Prager, Tyngsboro, both of Mass., assignors to VLT Corporation, San Antonio, Tex.

Continuation of Ser. No. 328,531, Oct. 25, 1994, abandoned, which is a continuation of Ser. No. 759,511, Sep. 13, 1991, abandoned. This application Sep. 7, 1995, Ser. No. 524,885

Int. Cl.[6] H01F *15/04*

U.S. Cl. 336—84 C **44 Claims**



1. A high frequency circuit comprising

a transformer comprising

an electromagnetic coupler having

a magnetic medium providing flux paths within the medium, and

windings enclosing said flux paths at separated locations along said flux paths, and

an electrically conductive medium arranged in the vicinity of said electromagnetic coupler, said electrically conductive medium defining a boundary within which flux emanating from said electromagnetic coupler is confined and suppressed, said conductive medium thereby reducing the leakage inductance of one of said windings by at least 25%,

circuitry connected to one of said windings to cause current in said one of said windings to vary at an operating frequency above 100 KHz, and

electrically conductive bands, said bands being configured to cover essentially all of the surface of said magnetic domain at locations which are not covered by said first conductive medium, said bands being configured to preclude forming a shorted turn with respect to flux which couples said windings, said bands also being configured to restrict the emanation of flux from said surfaces which are covered by said bands at said operating frequency.

5,546,066

DELAYED-FUSION FUSE

Hiroki Kondo; Mitsuhiko Totsuka; Toshiharu Kudo, and Hisashi Hanazaki, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Aug. 25, 1994, Ser. No. 296,582

Claims priority, application Japan, Aug. 27, 1993, 5-234291

Int. Cl.[6] H01H *85/04;71/20;69/02*

U.S. Cl. 337—163 **5 Claims**

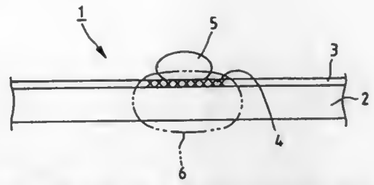
1. A delayed-fusion fuse comprising:

a fusible section having a narrow fusion portion made of electrically conductive metal;

a pair of electric connecting sections provided on both sides of said fusible section;

a metallic chip made of low fusing point metal for absorbing heat generated in said fusible section;

a covering and adhering section for holding said metallic chip; and



a thin metallic layer, disposed between a surface of said covering and adhering section made of said electrically conductive metal and a surface of said metallic chip, for increasing the energy of formation of a solid solution, said thin metallic layer including a nickel-plating layer having a thickness between 1 and 10 μm,

wherein the energy of formation of a solid solution of said nickel-plating layer and said low fusing point metal of which said metallic chip is made is higher than the energy of formation of a solid solution of said low fusing point metal and said electrically conductive metal of which said fusible section is made.

5,546,067

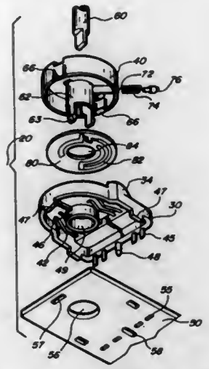
ROTARY POTENTIOMETER ASSEMBLY FOR A PUSH-PULL SWITCH

Robert M. Schmidt, Livonia, and Mark Feldman, Farmington Hills, both of Mich., assignors to United Technologies Automotive, Inc., Dearborn, Mich.

Filed Dec. 14, 1994, Ser. No. 355,994

Int. Cl.[6] H01C *10/36;10/26*

U.S. Cl. 338—172 **19 Claims**



1. A rotary dimmer switch assembly to be incorporated into a push-pull switch, comprising:

a contact holder having an orifice, and a plurality of contact arms disposed in said cam contact assembly and electrically connected to a circuit board, and having an opposed free end;

a carrier assembly having a central cylindrical shaft, said shaft defining a rotational orifice, said shaft disposed in said contact holder orifice, said contact holder orifice guiding said carrier assembly for relative rotary movement, and a push-pull switching component extending along an axis and received in said rotational orifice;

a circuit element having an exposed circuit trace and rotating with said carrier assembly, said circuit element disposed with said circuit trace facing and contacting said contact arm free ends; and

wherein rotation of said switching component about said axis rotates said carrier assembly and said circuit element, sweeping said circuit trace over said contact arm free ends.

5,546,068

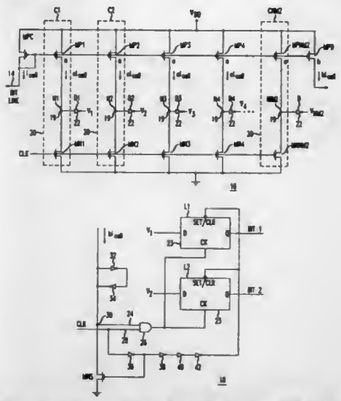
SENSE AMPLIFIER

Aaron L. Fisher, Allentown, Pa., assignor to AT&T Corp., Murray Hill, N.J.

Filed Dec. 22, 1994, Ser. No. 362,688

Int. Cl.[6] H03F *3/45*

U.S. Cl. 340—146.2 **11 Claims**



1. An integrated circuit including a sense amplifier, the sense amplifier for encoding 2^n levels of output characteristic into n corresponding bit patterns, the sense amplier comprising:

a non-zero detect circuit for detecting when the output characteristic is zero, the non-zero detect circuit providing an output;

2^n-2 comparators for comparing an output characteristic to 2^n-2 reference levels when the output characteristic is non-zero, the 2^n-2 reference levels constructed from 2^n-2 non-zero levels of the 2^n possible levels of output characteristic, each of the comparators providing an output; and

an encoder coupled to the non-zero detect circuit and the comparators for encoding the output from the non-zero detect circuit and the output from the comparators to a corresponding one of the n bit patterns, the corresponding bit pattern providing an output from the sense amplifier, the bit pattern being a predetermined default bit pattern when the output characteristic is determined to be zero by the non-zero detect circuit, when the output characteristic is non-zero the bit pattern taking on predetermined values determined by which pair of reference levels the output falls between, or whether the output characteristic is greater than the largest reference level or is less than the smallest reference level, whereby only 2^n-2 reference levels are required to encode 2^n levels of an output characteristic.

5,546,069

TAUT ARMATURE RESONANT IMPULSE TRANSDUCER

Irving H. Holden, Boca Raton; Charles W. Mooney, Lake Worth; Gerald E. Brinkley, West Palm Beach, and John M. McKee, Hillsboro Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 17, 1994, Ser. No. 341,242

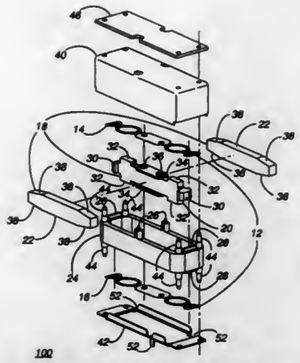
Int. Cl.[6] H04B *3/36;* **G08B** *5/22*

U.S. Cl. 340—407.1 **30 Claims**

1. A taut armature, resonant impulse transducer, comprising:

an armature, including upper and lower non-linear resonant suspension members, each comprising a pair of juxtaposed planar compound beams connected symmetrically about a contiguous planar central region, and further connected to a pair of contiguous planar perimeter regions;

an electromagnetic driver, coupled to said upper and lower non-linear resonant suspension members about said pair of contiguous planar perimeter regions, said electromagnetic



driver for effecting an alternating electromagnetic field in response to an input signal; and

a magnetic motional mass suspended between said upper and lower non-linear resonant suspension members about said contiguous planar central region, and coupled to said alternating electromagnetic field for generating an alternating movement of said magnetic motional mass in response thereto, the alternating movement of said magnetic motional mass being transformed through said upper and lower non-linear resonant suspension members and said electromagnetic driver into motional energy.

5,546,070

DEVICE FOR MONITORING THE AIR PRESSURE OF A TIRE IN MOTOR VEHICLES WITH A SENSOR

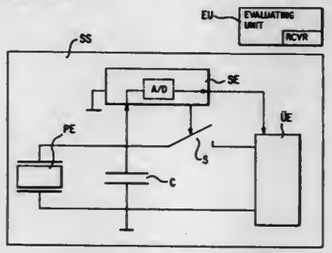
Manfred Ellmann, Buch am Erlbach, and Hans-Rudolf Hein, Groebenzell, both of, Germany, assignors to Bayerische Motoren Werke AG, Munich, Germany

Filed Sep. 2, 1994, Ser. No. 300,317

Claims priority, application Germany, Sep. 2, 1993, 43 29 591.6

Int. Cl.[6] B60C *23/00*

U.S. Cl. 340—442 **20 Claims**



1. A device for monitoring a tire air pressure in a tire on a motor vehicle, comprising:

a sensor operatively arranged with respect to the tire for delivering a signal corresponding to a deformation of the tire;

an evaluating unit arranged in the motor vehicle for receiving said signal from the sensor;

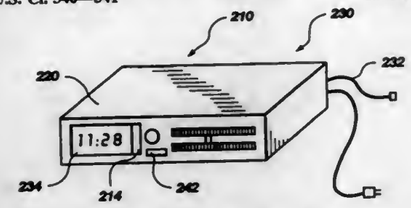
wherein said sensor delivers an electrical pulse corresponding to a degree of the deformation of a tire during a footprint pass;

wherein the evaluating unit continuously determines various degrees of deformation as a function of said electrical pulse.

5,546,071
CONCEALED SECURITY SYSTEM

Gordon L. Zdunich, 4474 S. 4515 West, West Valley City, Utah 84120

Filed Mar. 6, 1995, Ser. No. 398,984
Int. Cl.[6] G08B *13/00*
U.S. Cl. 340—541 **19 Claims**

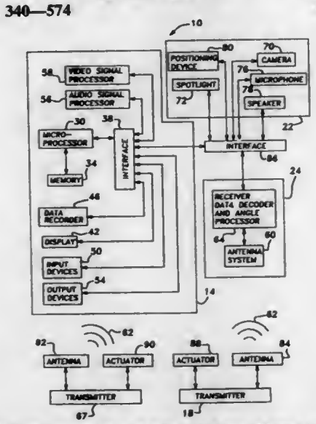


17. A concealed security system comprising:
a telephone including a housing with an outer wall and a control panel forming a portion of the outer wall, the control panel being in communication with a processing means;
security sensing means for monitoring an area and detecting the presence of a person within the area, the security sensing means being disposed in the outer wall of the housing so as to have an appearance indistinguishable from the outer wall, and electronically connected to the control panel, said sensing means being responsive to a control signal generated by the control panel, for activating and deactivating the security sensing means, the security sensing means comprising a motion detector means for detecting movement within the area, wherein the telephone comprises a cordless telephone handset, and a base unit, and wherein said motion detector means is disposed within the cordless handset; and
wherein the telephone further comprises an answering machine, and wherein the answering machine comprises a means for conveying a recorded message via a phone line responsive to an indication from the security sensing means that a person is in the area.

5,546,072
ALERT LOCATOR

Melville C. Creuseremee, Danville, and Jack L. May, Foster City, both of Calif., assignors to IRW Inc., Redondo Beach, Calif.

Filed Jul. 22, 1994, Ser. No. 279,760
Int. Cl.[6] G08B *13/00*
U.S. Cl. 340—574 **41 Claims**

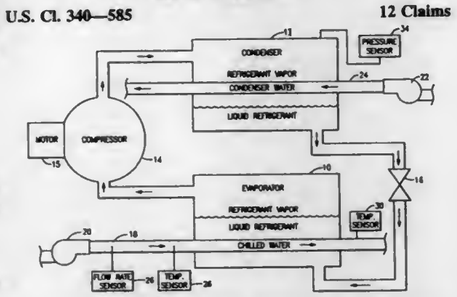


1. A security system for monitoring a surveillance area comprising:
transmitting means, including a transmitter and an actuator for actuating said transmitter and generating a given radio frequency (RF) signal when actuated;
a plurality of sensing means for receiving said RF signal from said transmitting means;
monitoring means for generating video signals of a field of view (FOV) of said surveillance area;
positioning means for adjusting said FOV of said monitoring means;
control means, coupled to said plurality of sensing means, said monitoring means and said positioning means, for actuating said positioning means and said monitoring means when said RF signal is sensed by said sensing means to position said FOV of said monitoring means to include an area in which said transmitter is located; and
display means, coupled to said control means, for displaying said video signals.

5,546,073
SYSTEM FOR MONITORING THE OPERATION OF A COMPRESSOR UNIT

Paul J. Duff, Lebanon; John P. Larson, Burlington, both of Conn., and Joseph B. Lechtanski, Castle Rock, Colo., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Apr. 21, 1995, Ser. No. 426,828
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—585 **12 Claims**

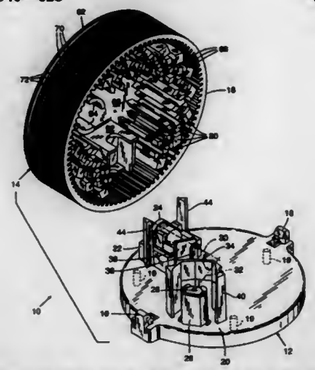


1. A system for monitoring the electrical current drawn by a drive motor for a compressor unit of a chiller that includes an evaporator unit with a heat exchange medium passing therethrough, said system comprising:
an electrical current sensor for sensing the electrical current drawn by the drive motor for the compressor unit;
means for computing a real time alarm limit for the electrical current drawn by the drive motor for the compressor unit based upon the flow rate of the heat exchange medium passing through the evaporator unit, the temperature of the heat exchange medium entering the evaporator unit and the temperature of the heat exchange medium leaving the evaporator unit under a real time cooling load condition being experienced by the chiller;
means for comparing the sensed electrical current drawn by the drive motor unit with the computed real time alarm limit for the electrical current drawn by the drive motor; and
means for generating a warning when the sensed electrical current drawn by the drive motor exceeds the computed real time alarm limit.

5,546,074
SMOKE DETECTOR SYSTEM WITH SELF-DIAGNOSTIC CAPABILITIES AND REPLACEABLE SMOKE INTAKE CANOPY

Brian A. Bernal; Robert G. Fischette, both of Portland, Oreg.; Kirk R. Johnson, Vancouver, and Douglas H. Marman, Ridgefield, both of Wash., assignors to Sentrol, Inc., Tualatin, Oreg.

Filed Aug. 19, 1993, Ser. No. 110,131
Int. Cl.[6] G08B *17/107*
U.S. Cl. 340—628 **43 Claims**

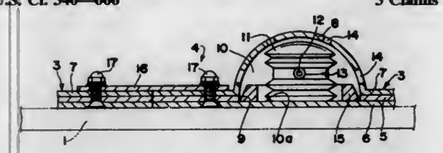


1. A field-replaceable smoke intake canopy for a smoke detector system housing, the canopy having an interior and a periphery, comprising:
multiple openings of sufficient size to admit smoke particles into the interior of the canopy; and
first and second groups of pegs supported in the interior and spaced along the periphery of the canopy, the pegs cooperating with the openings and being arranged relative to one another to provide for smoke particles entering the openings low impedance passageways from the openings to the interior, the first group of pegs being positioned farther from the periphery than is the second group of pegs, the pegs in the first group having first surfaces with first surface areas and the pegs in the second group having second surfaces with second surface areas, the second surfaces positioned adjacent but not parallel to the periphery, and the aggregate of the second surface areas being greater than the aggregate of the first surface areas so as to block light entering the openings from passing to the interior and to permit internally reflected light to propagate in a direction outward of the interior.

5,546,075
WARNING APPARATUS

Tamotsu Shimoji, Kyoto-gun, Japan, assignor to Daifuku Co., Ltd., Osaka, Japan

Continuation of Ser. No. 249,946, May 27, 1994, abandoned. This application Jul. 11, 1995, Ser. No. 501,154
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—666 **3 Claims**

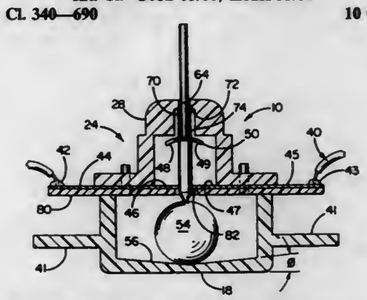


1. A warning apparatus comprising a plurality of warning mat units interconnected and arranged side by side in such a manner as to surround a dangerous area, wherein the warning mat units each comprise a base plate, a flexible cover sheet secured to an upper side of the base plate, the cover sheet being provided with a plurality of upwardly expanded shells having an inside hollow room and air circulation apertures, and a warning sound generator accommodated in the inside room of the shell, wherein the warning sound generator comprises a closed elastic tube fastened to the base plate and a whistle affixed to a wall aperture of the closed elastic tube so as to give forth sound by the effect of air flow passing between an inside and an outside of the closed elastic tube, and wherein a plurality of the warning mat units are connected adjacent one another by detachable tie means so as to be formed into one integrated body and a protective frame is set around a bottom of the closed elastic tube and said protective frame has a top portion extending higher than those parts of the cover sheet which are secured to the base plate, whereby excessive depression of the closed tube when the warning mat units are stepped on is prevented.

5,546,076
EARTH-TREMOR-RESPONSIVE LIGHT

Roy P. Foerster, Thousand Oaks, Calif., assignor to Kalidon Technology, Inc., Camarillo, Calif.

Filed Jun. 6, 1995, Ser. No. 467,312
Int. Cl.[6] G08B *13/00;* **H01H** *35/14*
U.S. Cl. 340—690 **10 Claims**



1. An earth-tremor-responsive light comprising:
a housing having a back member for mounting against a vertical wall and a light transmitting front cover,
a stand-by battery in the housing,
a light emitter in the housing, and
electrical circuit elements in the housing connecting the battery to the light emitter through an inertial switch which is actuated by acceleration resulting from earth tremors, the inertial switch including
a switch chamber in the housing having a generally horizontal shallow upwardly-facing conical surface with a central apex at a lower point thereof;
a spherical ball urged by gravity to rest in a central disposition on said conical surface,
a vertical shaft projecting externally of the housing and disposed in the chamber aligned with the central apex and above the ball, the shaft being guided for vertical movement in the chamber and having a lower end resting on top of the ball,
a spring urging the shaft downwardly to a set position against the ball at rest in its central disposition,
whereby a peak acceleration resulting from an earth tremor shaking the housing and exceeding a predetermined magnitude will displace the ball and conical surface relatively horizontally to an extent that the shaft will be urged to drop downwardly from its set position by the spring toward the central apex and thus hold the ball displaced in an offset disposition relative to the central apex of the conical surface, and
electrical contact elements manifesting a first state when the ball is in the central disposition and shifted to a second state thereby actuating the switch and energizing the light emitter when the ball is displaced to the offset disposition,

the contact elements being resettable to the first state and deenergizing the light emitter by externally lifting the shaft against the spring and allowing the ball to return by gravity to the central disposition, and returning the shaft to its set position.

5,546,077

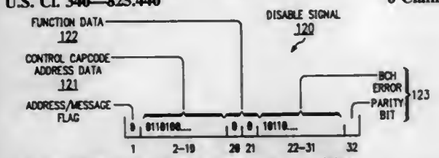
REMOTELY PROGRAMMABLE PAGER

Ronald L. Lipp, Snellville, Ga.; David Rodriguez, Arlington, Tex.; Michio Toriya, Ichikawa, Japan; Junji Kanjo, San Diego, Calif., and Shizuo Otsuka, Tokyo, Japan, assignors to Uniden America Corporation, Fort Worth, Tex.

Continuation of Ser. No. 830,380, Jan. 31, 1992, abandoned. This application Aug. 9, 1994, Ser. No. 287,765

Int. Cl.[6] H04Q *7/14*

U.S. Cl. 340—825.440 **6 Claims**



1. A POCSAG coding protocol pager comprising:

a selectively activated receiver for receiving a radio signal organized into frames of information and demodulating the radio signal into a data stream comprised of address data, function data and message data,

a capcode memory for storing a plurality of capcodes,

a message memory for storing message data, and

a controller for activating the receiver during a frame assigned to the pager under the POCSAG protocol and comparing the address data in the assigned frame to the capcodes and, upon detection of a match between the address data and a capcode, for reading the function data and message data from the assigned frame,

said controller being programmed to disable the pager upon reception of address data corresponding to a control capcode and function data having a first state, said address data and function data being contained in the assigned frame.

5,546,078

PAGING RECEIVER CAPABLE OF REPORTING THE TIME OF PAGING CONNECTION

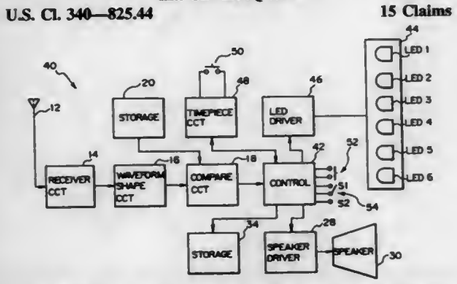
Teruyuki Motohashi, Tokyo, and Tomoshi Sone, Shizuoka, both of, Japan, assignors to NEC Corporation, Japan

Continuation of Ser. No. 964,462, Oct. 15, 1992, abandoned, which is a continuation of Ser. No. 675,511, Mar. 27, 1991, abandoned. This application Nov. 3, 1994, Ser. No. 333,744

Claims priority, application Japan, Mar. 29, 1990, 2-33063 U

Int. Cl.[6] H04Q *7/14*

U.S. Cl. 340—825.44 **15 Claims**



1. A selective call receiver having alerting means for reporting paging when a paging signal is received, said receiver comprising:

timepiece means (**48**) for outputting time information;

storing means (**34**) for storing predetermined time information in response to said timepiece means;

control means (**42**) for storing said time information supplied by said timepiece means in said storing means in response to detection of a paging call;

switch means (**52**) connected to said control means for resetting and starting a sequence in response to an access thereto, said sequence relating to a display of said time information stored in said storing means;

drive means (**46**) connected to said control means for converting said information stored in said storing means and outputting the converted information;

display means (**44**) connected to said control means, said display means including a plurality of substantially identical individual one spot light emitting display elements for giving a data readout in uniform on/off light signals, said display elements operating in a coded combination responsive to a signal from said drive means for selectively causing said plurality of display elements to provide a coded visible display; and

time information display means (TID) adjoining said display means for providing said coded display relating to said time information;

said drive means comprising first selecting means (**60**) for converting said time information received from said control means to a signal for selecting any coded combination of said plurality of one spot light emitting display elements, and comprising alert signal drive means (**64**) for feeding a timing signal representative of paging to the selected light emitting display element.

5,546,079

OUTPUT CIRCUIT ARRANGEMENT INTEGRATED IN AN INTEGRATED ELECTRIC CIRCUIT FOR SUPPLYING AN OUTPUT SIGNAL DETERMINED BY USER SELECTABLE PARAMETERS

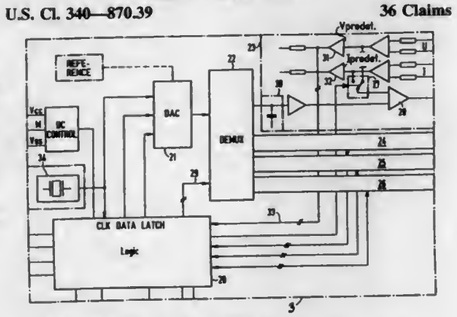
Roman Wagner, Kümmersbruck, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Nov. 4, 1992, Ser. No. 971,745

Claims priority, application European Pat. Off., Nov. 19, 1991, 91119773

Int. Cl.[6] G08C *19/04*

U.S. Cl. 340—870.39 **36 Claims**



1. An integrated circuit comprising

an electronic output circuit, said electronic output circuit adapted to output electric signals, and

having a signal-level range based on user input parameters, wherein said output signals include at least one of current values and voltage values and further including:

an output signal line, said output signal line adapted to carry said output signals;

a feedback circuit, said feedback circuit i) adapted to accept said output signals and a desired value of said output signals, and ii) adapted to stabilize said output signals with respect to said desired value; and

an evaluation circuit, said evaluation circuit i) adapted to accept at least said current values when said output values are voltages and at least said voltage values when said output values are currents, and ii) adapted to monitor said output signal line for line faults.

5,546,080

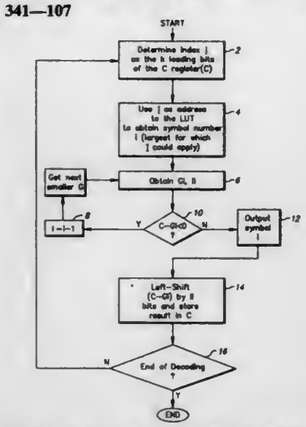
ORDER-PRESERVING, FAST-DECODING ARITHMETIC CODING ARITHMETIC CODING AND COMPRESSION METHOD AND APPARATUS

Glen G. Langdon, Jr., Aptos, and Ahmad Zandi, Cupertino, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 3, 1994, Ser. No. 176,636

Int. Cl.[6] H03M *7/30*

U.S. Cl. 341—107 **9 Claims**



1. An apparatus for coding and decoding symbols of an alphabet, the alphabet having a predetermined order for the symbols, the apparatus comprising:

an augend table containing, for each respective symbol, a respective augend having a value related to a cumulative probability of all symbols of the alphabet which precede the respective symbol in the predetermined order, the cumulative probability being based on approximations, to negative powers of 2, of probabilities of the symbols of the alphabet which precede the respective symbol;

means for encoding a symbol, the means for encoding including:

(i) means for producing a numerical representation of the symbol,

(ii) means for adding the numerical representation to the augend whose value is related to the cumulative probability of the symbols which precede the symbol to be encoded, to produce a sum, and

(iii) means for left-shifting the sum to renormalize; and

means for decoding a symbol from a code string, the means for decoding including:

(i) means for identifying a coded symbol from at least one most significant bit of the code string,

(ii) means for determining which of the augends of the augend table was added to the symbol to produce the coded symbol, and

(iii) means for obtaining the decoded symbol from the code string by means of the augend determined by the means for determining.

5,546,081

ANALOG-TO-DIGITAL CONVERTER CIRCUIT HAVING HIGH DYNAMICS

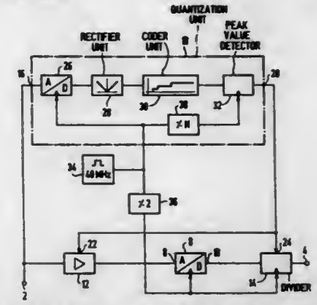
Rudi Baumgartl, Dormitz, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed May 31, 1994, Ser. No. 250,532

Claims priority, application Germany, Jun. 9, 1993, 43 19 256.4

Int. Cl.[6] H03M *1/18*

U.S. Cl. 341—139 **4 Claims**



1. A circuit for digitizing a high-frequency analog signal modulated by a modulation signal, said analog signal having amplitudes and said modulation signal having a Nyquist frequency associated therewith, said circuit comprising:

an analog input to which said analog signal is supplied;

an amplifier unit connected to said analog input, said amplifier unit having a controllable gain, settable among a plurality of gains by a control signal;

first analog-to-digital means, having an input connected to an output of said amplifier unit, for sampling said analog signal, amplified by said amplifier unit, at a sampling rate for converting said analog signal amplified by said amplifier unit into a corresponding first digital signal;

controllable divider means, supplied with said first digital signal, for digitally dividing said first digital signal by a divisors set from among a plurality of divisors which are respectively reciprocals of said gains in said plurality of gains, said controllable divider being supplied with said control signal for setting said divisor; and

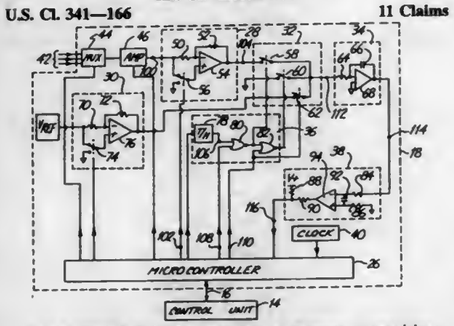
quantizer means, connected to said analog input, for generating said control signal dependent on the amplitude of said analog signal, said quantizer means including second analog-to-digital converter means, supplied with said analog signal, for sampling said analog signal at a rate approximating said sampling rate of said first analog-to-digital converter means, for converting said analog signal into a second digital signal, means for digitally rectifying said second digital signal to produce a rectified signal, said rectified signal exhibiting rectified corresponding to said amplitudes of said analog signal, coder means supplied with said rectified signal for generating a coder output having an amplitude from among a plurality of discrete amplitudes, each having an amplitude range associated therewith, dependent on which of said amplitude ranges said amplitude of said rectified signal falls within, and peak value detector means, reset at a rate which is above said Nyquist frequency of said modulation signal, said reset rate defining a reset period, for supplying said control signal to said amplifier unit and said divider for respectively setting a gain and a divisor therein which are reciprocal, said coder means supplying said control signal for a reset period and supplying a control signal allocated to a higher amplitude range upon a resetting of said peak value detector if said output of said coder means increases.

5,546,082

MEASUREMENT PROBE WITH IMPROVED ANALOG-TO-DIGITAL CONVERSION

Brian LaRocca, Little Falls, N.J., and Gregory T. O'Brien, Mission Viejo, Calif., assignors to Rosemount Analytical Inc., Eden Prairie, Minn.

Filed Apr. 22, 1994, Ser. No. 231,274
Int. Cl.[6] H03M *1/50*
U.S. Cl. 341—166 **11 Claims**



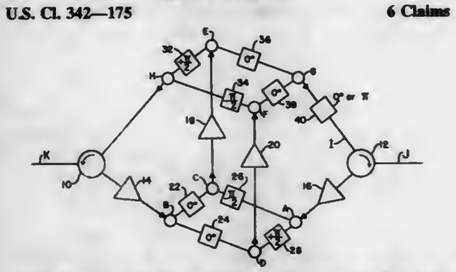
1. A measuring probe for measuring a parameter, comprising:
a sensor providing a sensor output related to a measured value of the parameter;
an amplifier section receiving the sensor output and providing an amplifier output;
an integrator having an input and an integrator output related to an integration of the input;
switching circuitry receiving the amplifier output, a first reference input, and a second reference input, and having a switch output coupled to the input of the integrator, the switching circuitry adapted to selectively couple the switch output to the amplifier output, the first reference input and the second reference input;
controller circuitry coupled to the switching circuitry and operable to alternately couple the integrator input to the amplifier output and the first reference during a sampling time and to the second reference input during a conversion time, the conversion time related to the measured value;
wherein the controller circuitry provides a controller output as a function of the conversion time; and
wherein the coupling of the integrator to the amplifier output during the sampling time is an intermittent coupling.

5,546,083

BIDIRECTIONAL REPEATER AMPLIFIER

Carl M. Elam, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 14, 1981, Ser. No. 285,176
Int. Cl.[6] H04B *3/36*
U.S. Cl. 342—175 **6 Claims**



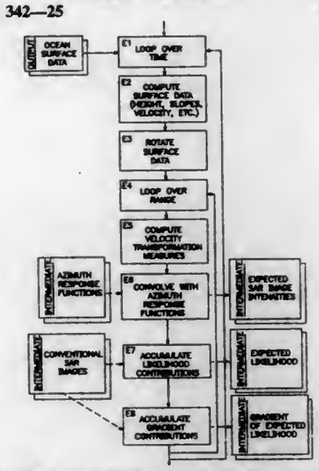
1. A bidirectional amplifier arrangement between first and second two-way transmission lines, said arrangement comprising:
first and second diamond configurations, each having four phase shift devices and four nodes, with each phase shift device connected between two nodes to form a ring, each diamond configuration having two power dividers at opposite nodes each to receive signal power at an input port and devide it equally to two of the phase shift devices, and two power combiners at the other two nodes each to receive signal power from two of the phase shift devices and sum it to an output port;
first and second coupling means connected respectively to said first and second transmission lines, each coupling means having an input port, an output port, and a two-way port, each operative to couple signal power from the two-way port to the output port, from the input port to the two-way port, and to provide isolation from the input port to the output port, each connected to its transmission line at its two-way port;
a first preamplifier coupled between the output port of the first coupling means and one power divider of the first diamond configuration, a second preamplifier coupled between the output port of the second coupling means and the other power divider of the first diamond configuration;
first and second power amplifiers, each coupled between the output port of one power combiner of the first diamond configuration and the input port of one power divider of the second diamond configuration;
the output ports of the two power combiners of the second diamood configuration being coupled respectively to the input ports of said first and second coupling means; and
the phase shift provided by each of the phase shift devices being precisely determined so that a signal entering one of said coupling means from one transmission line is transmitted via the other coupling means to the other transmission line unchanged except for amplification, and signals are prevented from returning back to the transmission line from which they originate because of a 180 degree phase shift between the signal components.

5,546,084

SYNTHETIC APERTURE RADAR CLUTTER REDUCTION SYSTEM

Carlton L. Hindman, Rancho Palos Verdes, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Jul. 17, 1992, Ser. No. 917,632
Int. Cl.[6] G01S *13/90*
U.S. Cl. 342—25 **16 Claims**



1. A method for reducing clutter in synthetic aperture radar (SAR) images of the ocean surface, the method comprising the steps of:

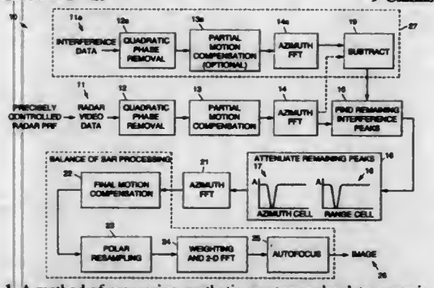
obtaining spotlight mode SAR images of a selected patch of the ocean surface;
computing an estimate of the ocean surface parameters of the patch of the ocean surface as it was at the time that the spotlight mode SAR images were obtained; and
modifying the spotlight mode SAR images, based on the ocean surface parameters, to remove distortion effects caused by movements in the ocean surface, and to produce clutter-reduced SAR images.

5,546,085

SEPARATING COHERENT RADIO-FREQUENCY INTERFERENCE FROM SYNTHETIC APERTURE DATA

John A. Garnaat, Phoenix; Bruce H. Ferrell, Litchfield Park, and William C. Woody, Phoenix, all of Ariz., assignors to Loral Corporation, New York, N.Y.

Filed Dec. 5, 1994, Ser. No. 349,449
Int. Cl.[6] G01S *13/90*
U.S. Cl. 342—25 **9 Claims**



1. A method of processing synthetic aperture radar data comprising desired data and radio frequency interference derived from a synthetic aperture radar to remove the radio frequency interference therefrom without disturbing the desired data, said method comprising the steps of:
processing the radar data using a quadratic phase removal process to remove quadratic phase variations contained in the interference to compress the interference to its narrowest extent in a range frequency dimension;
processing the radar data using an azimuth Fourier transform to compress the interference to its narrowest extent in an azimuth dimension to localize the interference into peaks while leaving the desired data dispersed throughout the radar data in one or both dimensions;
processing the radar data using a thresholding process to find interference peaks in the radar data;
attenuating the found peaks so as to attenuate azimuth cells and range cells;
processing the radar data using a second azimuth Fourier transform to restore the radar data to its original format; and
processing the radar data to produce an image for display.

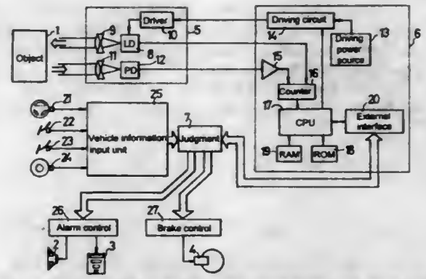
5,546,086

RANGING SENSOR SYSTEM FOR VEHICLE

Kenji Akuzawa; Hiroki Matsui, and Yasuhiko Fujita, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 4, 1994, Ser. No. 237,908
Claims priority, application Japan, May 12, 1993, 5-110638
Int. Cl.[6] G01S *13/00*
U.S. Cl. 342—70 **2 Claims**

1. A ranging sensor system for a vehicle for calculating a physical data between a subject vehicle and an object on the basis of the time between the transmission of a signal toward the object and the reception of a signal reflected from the object, comprising:



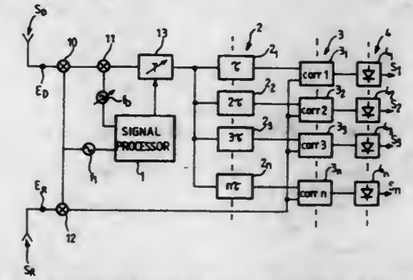
detection means for detecting data representing a physical relationship between the subject vehicle and the object;
offset value setting means for setting an initial value of detection data output from the detection means as an offset value;
subtracting means for subtracting the offset value from a non-initial value of detection data;
filter means for filtering an output from said subtracting means; and
adding means for adding the offset value to an output from said filter means to provide a filtered value of physical data.

5,546,087

ALTIMETRY METHOD

Manuel Martin Neira, VN Voorhout, Netherlands, assignor to Agence Spatiale Europeene, Paris, France

Filed Oct. 25, 1994, Ser. No. 329,647
Claims priority, application France, Nov. 5, 1993, 93 13192
Int. Cl.[6] G01S *5/02*
U.S. Cl. 342—120 **15 Claims**



1. An altimetry method using sources of opportunity with signals transmitted by at least one transmitter on board a platform in terrestrial orbit with particular characteristics; the method comprising; at least a stage of receiving and combining, in a receiver on board a platform in terrestrial orbit with particular specifications or on board an aircraft, signals received direct from the transmitter and signals reflected from the surface of the terrestrial sphere, and a stage of measuring the coordinates of the point of specular reflection of the signals transmitted from the surface of the terrestrial sphere by measuring the propagation delay of the reflected signals, a stage of comparing the theoretical model of the geometrical properties of the terrestrial surface relative to said model, and in which method said combination stage, to obtain the, echo waveform entails multiple correlation of the received reflected signal with a particular number of replicas delayed by a constant amount of the reflected signal, said waveform having an upstream noise floor and a downstream pulse of entirely reflected power amplitude bracketing a median range representing the delay associated with said point of specular reflection.

5,546,088

HIGH-PRECISION RADAR RANGE FINDER

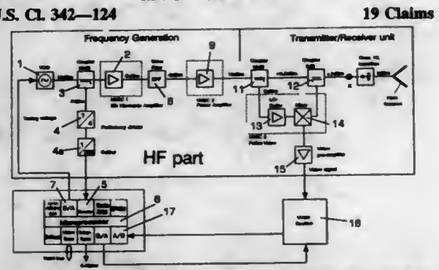
Günther Trummer, Baiersdorf, and Richard Körber, Putzbrunn, both of, Germany, assignors to Deutsche Aerospace AG, München, Germany

Filed Oct. 5, 1994, Ser. No. 317,680

Claims priority, application Germany, Oct. 6, 1993, 43 34 079.2

Int. Cl.[6] G01S 13/18

U.S. Cl. 342—124 19 Claims



1. Radar range finder using the FMCW principle and operating in a frequency range of 24.125 GHz±125 MHz, comprising:

high frequency signal generating means for emitting a high frequency signal for range determination including a transmitter/receiver unit generating range gates and means for approximately determining a range between said transmitter/receiver unit and a reflection surface by determining a maximum allowable frequency shift;

means for successively decreasing the frequency shift until an integer multiple of range gates generated corresponds to an exact distance between the transmitting element and the reflection surface and for using the maximum amplitude of the spectrum of the measurement sequence as an indicator of an optimal frequency shift; and

control loop means including an oscillator, a directional coupler, a divider chain, a counter as well as a microprocessor and a digital analog converter for forming a frequency whose integer multiple is the actual transmitted frequency.

5,546,089

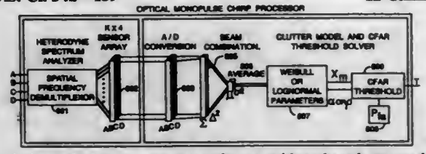
OPTICAL MONOPULSE CHIRP PROCESSOR

Pierre J. Talbot, Alder Creek, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 10, 1995, Ser. No. 513,369

Int. Cl.[6] G01S 7/292;7/34

U.S. Cl. 342—159 12 Claims



1. An optical processor system for use with a phased array radar system for calculating a detection threshold using radar echo return signals which contain clutter components from at least four antenna elements of said phased array radar system, wherein said optical processor system comprises:

a power spectrum analyzer unit which receives and processes the radar echo return signals of said antenna elements of said phased array radar system to output thereby a set of transverse electric signals that represent a square of the clutter components of the radar echo return signals; and

a means for digitally calculating a detection threshold from the set of transverse electric signals produced by the power spectrum analyzer.

5,546,090

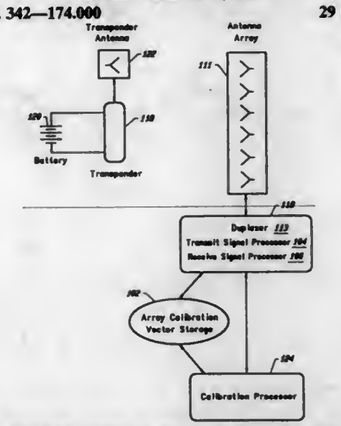
METHOD AND APPARATUS FOR CALIBRATING ANTENNA ARRAYS

Richard H. Roy, III, Cupertino, Calif.; David M. Parish, Amherst, N.Y.; Craig H. Barratt, Redwood City, Calif.; Chinping Q. Yang, and John T. Orchard, both of Palo Alto, Calif., assignors to Arraycomm, Inc, Santa Clara, Calif.

Continuation-in-part of Ser. No. 806,695, Dec. 12, 1991. This application Apr. 28, 1994, Ser. No. 234,747

Int. Cl.[6] G01S 13/74;7/40

U.S. Cl. 342—174.000 29 Claims



1. A calibration system for an RF signal transceiving system including an antenna array comprising

an antenna array including a plurality of antennas for transmitting a first plurality of signals including individually identifiable signals and for receiving a second plurality of signals from a transponder signal,

signal processing means for generating said first plurality of signals and for processing said second plurality of signals,

means for applying said first plurality of signals to said antenna array,

transponder means for receiving said first plurality of signals and in response thereto retransmitting said transponder signal to said antenna array,

means for applying said second plurality of signals received from said antenna array to said signal processing means, said signal processing means comparing said second plurality of signals to determine receive calibration vectors,

said signal processing means determining transmit calibration vectors by comparing said first plurality of signals and said second plurality of signals.

5,546,091

PSUEDO-COLOR DISPLAY FOR ENHANCED VISUAL TARGET DETECTION

Marc D. Haugen, Rosamond, and Robin L. Morelock, Torrance, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 23, 1994, Ser. No. 344,767

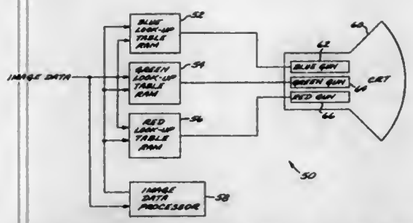
Int. Cl.[6] G01S 13/00;7/06

U.S. Cl. 342—181 19 Claims

1. Apparatus for display of input image data employing pseudo-color remapping to enhance image interpretation, comprising:

a color display apparatus responsive to red, green and blue intensity control signals;

means responsive to the input image data for remapping the respective input data for each pixel comprising the input image into respective red, blue and green intensity control signals in accordance with respective nonlinear red, blue and green intensity functions dependent on a single threshold



value, and wherein said means responsive to the input image data remaps the input intensity data values x into corresponding output intensity values y in accordance with the following relationships:

for values of x greater than zero but less than the threshold value T

$$y_{blue}=0$$

$$y_{green}=x$$

$$y_{red}=-((x-T)(-T)^{2M-1})^{(1/2M)}+T,$$

and for values of x greater than or equal to the threshold value T

$$y_{blue}=S((x-T)/(S-T))$$

$$y_{green}=((x-T)(S-T)^{2M-1})^{1/(2M)}+T$$

$$y_{red}=((x-T)(S-T)^{2M-1})^{1/(2M)}+T$$

where S represents the maximum saturation intensity value and M is related to the order of the polynomial function defining remapping functions;

said color display apparatus responsive to said red, green and blue display control signals to display the image in pseudo-color.

5,546,092

GPS RECEIVER

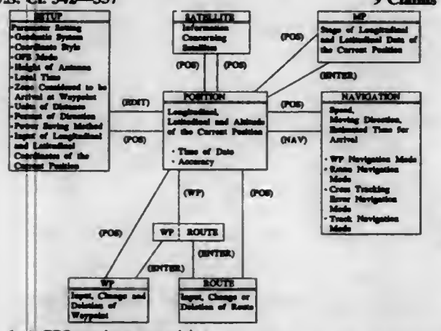
Takayuki Kurokawa; Atsushi Saitoh; Shigemasa Matsubara; Masayoshi Nawa, and Kazuo Kobayashi, all of Atsugi, Japan, assignors to Mitsumi Electric Co., Ltd., Kanagawa, Japan

Filed Mar. 15, 1995, Ser. No. 404,363

Claims priority, application Japan, Mar. 16, 1994, 6-046095

Int. Cl.[6] H04B 7/185; G01S 5/02

U.S. Cl. 342—357 9 Claims



1. A GPS receiver comprising:

memory means storing data of different operating conditions corresponding to a plurality of operation modes including at least first and second modes, said operating conditions comprising parameters including at least units for representing a distance using a nautical indication or a kilometer or mile indication in which the unit for representing a distance used in said second mode is different from that used in said second mode;

mode selection means for selecting an operation mode suitable for an actual using condition of the GPS receiver from said plurality of operation modes; and

display means for displaying various information including information relating to navigation on the basis of the data of the operating condition of the selected operation mode which is read out from said memory means.

5,546,093

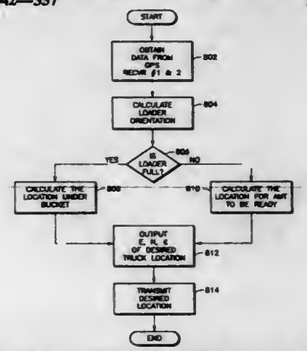
SYSTEM AND METHOD FOR PROVIDING NAVIGATION SIGNALS TO AN EARTHMOVING OR CONSTRUCTION MACHINE

Adam J. Gudat, Edelstein, and Gregory R. Harrod, Peoria, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Continuation of Ser. No. 177,040, Jan. 4, 1994, abandoned. This application Nov. 13, 1995, Ser. No. 558,037

Int. Cl.[6] H04B 7/185; G01S 5/02

U.S. Cl. 342—357 18 Claims



1. A system for providing navigation signals for a second machine relative to a first machine operating at a work site, comprising:

first positioning means located at the first machine for determining the position of the first machine and responsively producing a first position signal;

first processing means located at the first machine for receiving said first position signal, determining a desired location of the second machine as a function of the first position signal and a predetermined path, and responsively producing a first desired location signal;

transmitting means for receiving said first desired location signal and responsively transmitting a first desired location transmitted signal; and

navigation means located at the second machine for receiving said first desired location transmitted signal.

5,546,094

TELESCOPIC ANTENNA FOR PORTABLE TELEPHONES

Yoshimi Egashira, Kanagawa, Japan, assignor to Harada Kogyo Kabushiki Kaisha, Tokyo, Japan

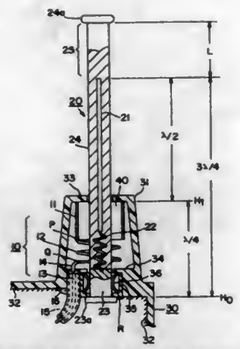
Filed Jul. 26, 1994, Ser. No. 280,837

Claims priority, application Japan, Jul. 26, 1993, 5-183837

Int. Cl.[6] H01Q 1/24

U.S. Cl. 343—702 2 Claims

1. A telescopic antenna for portable telephones characterized in that said antenna comprises:



an antenna mount consisting of a hollow bulging member which is installed so as to protrude locally from a top of a portable telephone housing;

a first antenna which is provided inside said antenna mount with a base end of said first antenna connected to a feeder cable, said first antenna having an electrical length set at λ/4, where λ is a wavelength of electromagnetic waves in a frequency band used; and

a second antenna which is set parallel to said first antenna at a prescribed distance from said first antenna and is provided in said housing so as to be extended from and retracted into said housing through said antenna mount, a base end of said second antenna being connected to an earthing means provided in said housing when said second antenna is extended from said housing, and said second antenna having an electrical length set at 3 λ/4,

wherein when said second antenna is extended from said housing, a J-form antenna is formed by said first and second antennas, and when said second antenna is retracted into said housing, an internal antenna which is used for incoming calls is formed by said first antenna alone.

5,546,095

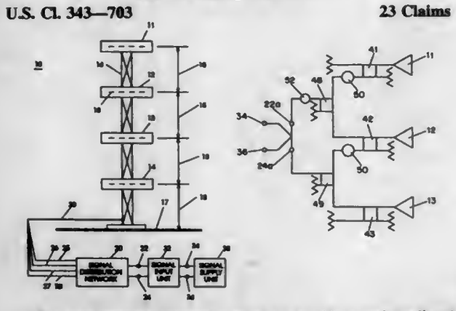
NON-IMAGING GLIDESLOPE ANTENNA SYSTEMS

Alfred R. Lopez, Four Sarina Dr., Commack, N.Y. 11725

Filed Jun. 2, 1994, Ser. No. 252,756

Int. Cl.[6] H01Q *3/30;21/10*

U.S. Cl. 343—703 **23 Claims**



20. A non-imaging antenna system, to provide a main radiated signal at a positive angle and a low signal effect at a negative angle relative to a horizontal reference, comprising:

a plurality of radiating elements arranged for use in overlapping first and second vertical arrays, said plurality consisting of three radiating elements, said first vertical array consisting of the upper two radiating elements and said second vertical array consisting of the lower two radiating elements, with one of said radiating elements common to each vertical array;

a signal distribution network coupled between first and second feed ports and said radiating elements, said network comprising

a first group of three directional couplers, individually coupled to said radiating elements; and

a second group of two directional couplers, individually coupled between adjacent pairs of directional couplers of said first group and each also connected to one of said first and second feed ports, and said network thereby arranged:

(A) to couple an upper array signal from said first feed port to the radiating elements of said first vertical array with signal amplitudes and phases effective to provide said low signal effect at said negative angle; and

(B) to couple a lower array signal from said second feed port to the radiating elements of said second vertical array with signal amplitudes and phases effective to provide said low signal effect at said negative angle; and

a signal input unit including a junction device having sum and difference input ports and first and second output ports coupled to said first and second feed ports, respectively.

5,546,096

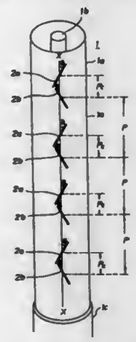
TRAVELING-WAVE FEEDER TYPE COAXIAL SLOT ANTENNA

Koichi Wada, Saku, Japan, assignor to Beam Company Limited, Minamisaku-gun, Japan

Continuation of Ser. No. 952,143, Sep. 28, 1992, abandoned, which is a continuation of Ser. No. 774,172, Oct. 15, 1991, abandoned, which is a continuation of Ser. No. 579,192, Sep. 7, 1990, abandoned, which is a continuation of Ser. No. 406,592, Sep. 13, 1989, abandoned. This application Mar. 9, 1995, Ser. No. 401,293

Int. Cl.[6] H01Q *13/12*

U.S. Cl. 343—771 **15 Claims**



1. A travelling-wave feeder type coaxial slot antenna, comprising:

a central conductor;

a cylindrical outer conductor coaxially surrounding the central conductor;

an insulator separating the central conductor from the outer conductor; and

a plurality of slots provided in the outer conductor, each of the slots extending at an angle relative to a longitudinal axis of the outer conductor so as to obtain a desired directivity and wave polarizations;

wherein the inner diameter D of the outer conductor satisfies the following conditions:

$$\frac{\lambda_0}{2\pi}\sin\theta_{max} < D < \frac{2}{\pi\left(1+e^{\frac{-Z_0\sqrt{\epsilon_r}}{60}}\right)} \times \frac{V_0}{\sqrt{\epsilon_r}\, f}$$

wherein ϵ r is the relative dielectric constant of the insulator separating said central conductor from said outer conductor, f is the transmission frequency and is greater than 1 GHz, Z_0 is a characteristic impedance of the antenna, V_0 is the free space velocity of a radio wave generated from the slots, λ_0 is the wave length in free space of the radio wave generated from the slots, and θ_{MAX} is the maximum angle of said slots relative to the longitudinal axis of said outer conductor.

5,546,097

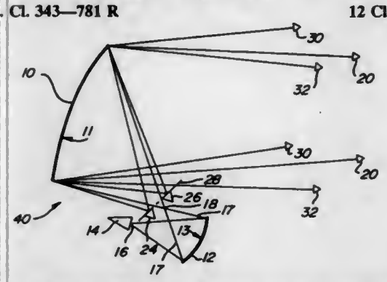
SHAPED DUAL REFLECTOR ANTENNA SYSTEM FOR GENERATING A PLURALITY OF BEAM COVERAGES

Parthasarathy Ramanujam, Redondo Beach; Charlie C. Shin, Torrance; Louis R. Fermelia, Jr., Westminster, and Andrew J. Stambaugh, Inglewood, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 22, 1992, Ser. No. 994,834

Int. Cl.[6] H01Q *19/14*

U.S. Cl. 343—781 R **12 Claims**



1. An offset fed dual-reflector antenna system for providing a main beam coverage and at least one spot beam coverage, said system comprising:

a main reflector having a first shaped reflective surface for reflecting energy within a shaped main beam radiation pattern having a given coverage;

a subreflector having an ellipsoidal surface for communicating with said first reflective surface of said main reflector via an inverted beam path having a converging focal point;

a first feed horn for directly communicating with the ellipsoidal reflective surface of said subreflector so as to transmit and/or receive energy reflected from said main reflector within a main beam pattern; and

an auxiliary feed horn operatively coupled directly to said first shaped reflective surface of said main reflector for transmitting and/or receiving energy within a secondary beam radiation pattern without passing through the subreflector, said secondary beam radiation pattern having a coverage different from the primary beam pattern, and said auxiliary feed horn being spaced from said inverted beam path.

5,546,098

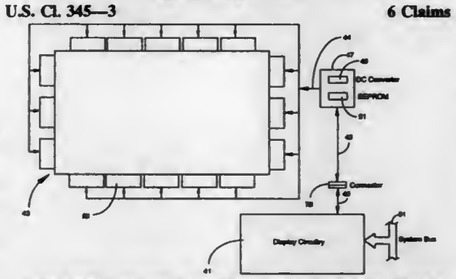
REMOVABLE COMPUTER DISPLAY INTERFACE

David P. Moriconi, Ben Lomond, Calif., assignor to Cordata, Inc., Tortola, Virgin Islands (Br.)

Division of Ser. No. 918,966, Jul. 27, 1992, Pat. No. 5,262,759. This application Jul. 26, 1993, Ser. No. 97,768

Int. Cl.[6] G09G *3/00*

U.S. Cl. 345—3 **6 Claims**



1. A portable computer having a computer module and a detachable flat panel display comprising:

engagement apparatus including mechanical apparatus for attaching said detachable flat panel display to said computer module and a first multi-pin electrical connector for providing electrical data and command signals between the detachable flat panel display and the computer module; and

control circuitry including a memory device in the portable computer;

wherein the control circuitry signals the detachable flat panel display through one or more pins of the first multi-pin electrical connector to return a code word through one or more pins of the multi-pin electrical connector, the code word identifying the display type being stored in a memory in the flat panel display, and wherein the control circuitry selects a driver routine associated with the code word and stored in said memory device, and utilizes the driver routine to operate said detachable flat panel display.

5,546,099

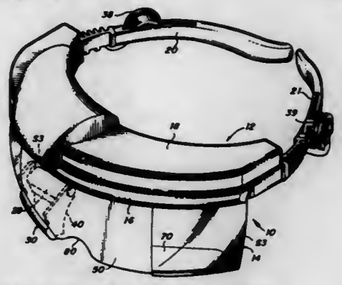
HEAD MOUNTED DISPLAY SYSTEM WITH LIGHT BLOCKING STRUCTURE

Jessica L. Quint, Seattle, and Joel W. Robinson, Bothell, both of Wash., assignors to Virtual Vision, Redmond, Wash.

Continuation of Ser. No. 101553, Aug. 2, 1993, abandoned. This application Nov. 14, 1994, Ser. No. 339,634

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—8 **31 Claims**



1. A head mounted display system comprising:

a frame to be worn on a user's head;

a video display for depicting video information mounted on said frame; and

an eyeshade mounted on said frame, said eyeshade having an opaque central portion for blocking light from a central field of view of both of the user's eyes, said eyeshade maintaining

the side peripheral vision of each of the user's eyes substantially unobstructed so that the user's eyes may be viewed by an outside observer; and

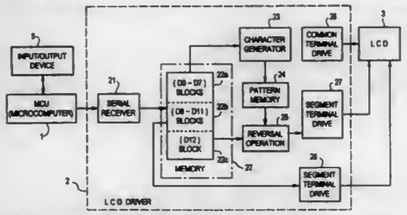
optics supported by said frame, said optics positioned relative to said display to provide an enlarged image of said video information that is perceived by a user to be at a distance from the user and said optics including at least one optical element viewable by a user to perceive said image, said viewing optical element being mounted on said eyeshade so as to be positioned between said eyeshade and the user's face.

5,546,100

FLASHING LCD DISPLAY SYSTEM

Takashi Saegusa, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Dec. 22, 1994, Ser. No. 361,540
Claims priority, application Japan, Dec. 22, 1993, 5-345578
Int. Cl.[6] G09G *3/36*
U.S. Cl. 345—51 **28 Claims**



1. A dot matrix LCD display system comprising:

an LCD display unit having a plurality of display dots forming at least one display region;

a character generator to generate a pattern of dots needed to display a symbol in the at least one display region;

a pattern memory unit connected to said character generator to store the pattern of dots;

a memory unit connected to said character generator to store an indication of the symbol that is to be displayed in the at least one display region and an associated reversal control signal;

a reversal operation unit connected to said pattern memory and said memory unit to reverse the pattern of dots in response to a reversal control signal; and

a drive unit connected to said reversal operation unit to cause the plurality of display dots to light up corresponding to the pattern of dots.

5,546,101

COLOR DISPLAY UNIT WITH PLASMA DISPLAY PANEL

Motoo Sugawara, Kawasaki, Japan, assignor to Fujitsu General Limited, Kawasaki, Japan

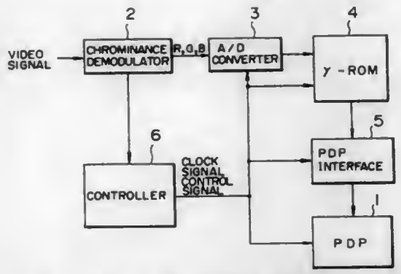
Filed Feb. 24, 1994, Ser. No. 201,376
Claims priority, application Japan, Mar. 2, 1993, 5-066094
Int. Cl.[6] G09G *3/28;* **H04N** *5/202*
U.S. Cl. 345—63 **6 Claims**

1. A color display unit comprising:

a plasma display panel,

an analog-to-digital converter for converting input R, G and B signals constituting a picture image to digital signals,

means for providing gamma correction to said digital-converted R, G and B signals, said means correcting a gamma characteristic curve having a middle portion and white and black foot portions such that said middle portion has a gamma value of more than 2.2; the middle portion with the gamma value of more than 2.2 is shifted substantially as it is to a position having a higher luminance level; and the white and black foot portions extend smoothly from the shifted middle portion along a biquadratic curve so that the white foot portion is greater than the black foot portion,



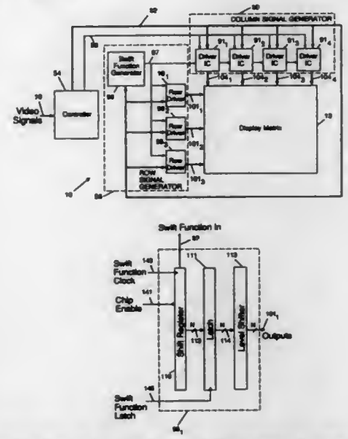
driving means for driving said plasma display panel on the basis of said R, G and B signals subject to the gamma correction so that a picture composed of the input R, G and B signals is improved in a contrast ratio of a middle level and an average luminance level, and is displayed on the plasma display panel.

5,546,102

INTEGRATED DRIVER FOR DISPLAY IMPLEMENTED WITH ACTIVE ADDRESSING TECHNIQUE

Terry J. Scheffer, Portland, and Benjamin R. Clifton, Oregon City, both of Oreg., assignors to In Focus Systems, Inc., Wilsonville, Oreg.

Division of Ser. No. 678,736, Apr. 1, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 484,433
Int. Cl.[6] G09G *3/36*
U.S. Cl. 345—100 **23 Claims**



1. Integrated driver circuitry for addressing a video display system in which overlapping row and column electrodes positioned on opposite sides of an rms-responding material form an array of pixels that display pixel information states in response to video signal control and pixel input data provided by a video signal controller, the integrated driver circuitry, comprising:

a row signal generator including a row signal function generator and row driver circuitry,

the row signal function generator generating a set of row signals for driving corresponding row electrodes during a frame period that is divided into time intervals, the row signal function generator responsive to video signal control data provided by the video signal controller to provide for each row electrode during each time interval a row signal value representing a row function at the time interval, the row function characterized in that each one of the row signals in the set causes multiple selections of the corresponding row

electrode, the multiple selections take place during different ones of the time intervals and being distributed over the frame period, and each of the row signals provides a number of the time intervals over the frame period that is less than an exponential function of the number of row electrodes, and

the row driver circuitry including a level shifter that delivers to each of the row electrodes a signal level corresponding to the row signal value at the time interval; and

a column signal generator responsive to the video signal control and pixel input data and the row signal values representing the row function to generate for each time interval a column signal for driving each of the column electrodes, each column signal having an amplitude that is derived from a transformation of the values of row signals causing selections and the video pixel input data related to the corresponding pixels;

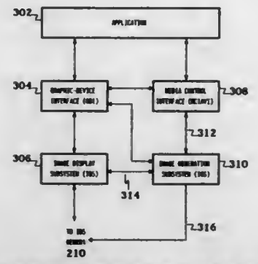
the amplitudes of multiple column signals being derived by contributions of the multiple selections by each one of the row signals in the set that are distributed over the frame period so as to reduce a frame response of the display.

5,546,103

METHOD AND APPARATUS FOR DISPLAYING AN IMAGE IN A WINDOWED ENVIRONMENT

Ken Rhodes, Portland; Rohan Coelho, Hillsboro; Davis Frank, and Blake Bender, both of Beaverton, all or, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Aug. 6, 1993, Ser. No. 103,256
Int. Cl.[6] G09G *5/14*
U.S. Cl. 345—119 **18 Claims**



1. A computer-implemented process for processing image signals, comprising the steps of:

(a) generating pre-managed image signals with an image generation subsystem of a computer system, wherein:

the computer system comprises the image generation subsystem, a media control interface, a graphic-device interface, and an image display subsystem;

the image generation subsystem is electrically connected directly to each of the media control interface, the graphic-device interface, and the image display subsystem;

the media control interface is electrically connected to the graphic-device interface;

the graphic-device interface is electrically connected to the image display subsystem;

the image generation subsystem is capable of transmitting the premanaged image signals to the media control interface;

the media control interface is capable of transmitting the pre-managed image signals to the graphic-device interface;

the graphic-device interface is capable of performing window management on the pre-managed image signals to generate GDI-managed image signals, wherein window management comprises at least one of clipping, alpha blending, and chromakeying;

the graphic-device interface is capable of transmitting the GDI-managed image signals to a memory of the image display subsystem; and

the image display subsystem is capable of displaying the GDI-managed image signals;

(b) transmitting the pre-managed image signals from the image generation subsystem to the image display subsystem memory;

(c) performing window management on the pre-managed image signals with the image display subsystem to generate IDS-managed image signals; and

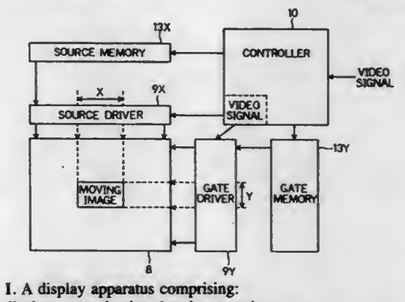
(d) displaying the IDS-managed image signals with the image display subsystem.

5,546,104

DISPLAY APPARATUS

Kaeko Kuga, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Nov. 30, 1994, Ser. No. 350,179
Claims priority, application Japan, Nov. 30, 1993, 5-299794
Int. Cl.[6] G09G *5/34*
U.S. Cl. 345—125 **6 Claims**



1. A display apparatus comprising:

display means having dots in a matrix;

driving means for scanning the display means;

a memory for storing therein a video signal supplied to the display means;

determining means for determining whether a present input video signal corresponds to a stationary image portion or a moving image portion by comparing an input video signal of a last field stored in the memory and the present input video signal; and

controlling means for reducing a speed of scanning by the driving means to be lower than a speed of scanning of the moving image portion when it is determined by the determining means that the present video signal corresponds to the stationary image portion.

5,546,105

GRAPHIC SYSTEM FOR DISPLAYING IMAGES IN GRAY-SCALE

Bruce A. Leak, Palo Alto, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

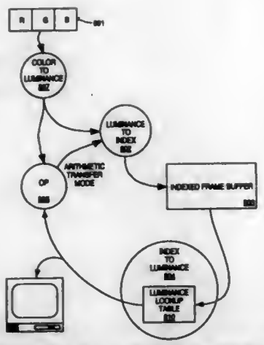
Continuation of Ser. No. 732,603, Jul. 19, 1991, abandoned. This application Aug. 25, 1994, Ser. No. 296,092
Int. Cl.[6] G09G *5/04*
U.S. Cl. 345—155 **31 Claims**

5. A computer graphics system including a display, said graphics system further having:

a first transformation circuit translating a first color information to a first luminance value, said first color information being associated with a display position;

a first memory coupled to said first transformation circuit and storing a first table, the first table providing a first index value in response to receiving said first luminance value from said first transformation circuit;

a second memory coupled to said first memory and having a plurality of storage locations corresponding to a plurality of



display positions, said second memory storing the first index value at a location associated with said display position; and

a third memory coupled to said second memory and storing a second table, the second table providing luminance information in response to receiving the first index value corresponding with a storage location of the first index value.

5,546,106

INTERACTIVE IMAGE DISPLAY DEVICE WITH CURSOR CONTROL

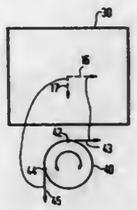
Erik J. Walgers, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 18, 1994, Ser. No. 293,633

Claims priority, application Belgium, Aug. 20, 1993, 09300849

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—184 **10 Claims**



1. An interactive image display device, comprising a display screen and a single cursor control means for controlling a movement of the cursor on the screen, the single cursor control means being adapted to move in a first direction and a second opposite direction to realize the movement of the cursor in a direction of a first coordinate axis or a second coordinate axis intersecting with the first coordinate axis on the screen, movement of the single cursor control means in the first direction causing the cursor to move in the direction of the first coordinate axis and movement of the single cursor control means in the second opposite direction causing the cursor to move in the direction of the second coordinate axis.

5,546,107

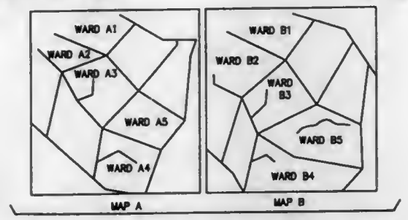
AUTOMATIC CHAIN-BASED CONFLATION OF DIGITAL MAPS

Zachary Y. Deretsky, San Jose; Uri Rodny, Palo Alto, and Marvin S. White, Jr., San Carlos, all of Calif., assignors to Etak, Inc., Menlo Park, Calif.

Filed Apr. 5, 1994, Ser. No. 222,965

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—600 **40 Claims**



1. A method of making a third digital map C from first and second digital maps A and B comprising the steps of:

a. creating an initial version of map C by importing into map C all cells present in map A together with their attributes;

b. matching chains of 1-cells in the map A and chains of 1-cells in the map B so as to create a corresponding pair of isomorphic factor-graphs;

c. importing unmatched 0-cells belonging to matched chains of 1-cells from map B into map C;

d. importing non-interfering unmatched 1-cells from map B into map C;

e. importing attributes of matched 0-cells and 1-cells from map B into map C according to user supplied criteria;

f. importing attributes into map C of said 1-cells from map B which were imported into map C in step d; and

g. importing attributes for 2-cells according to said user supplied criteria.

5,546,108

INK-JET TYPE RECORDER HAVING AN INK CARRIER AND LETTING INK BY COMBINED HEAT AND ELETROSTATIC FORCE

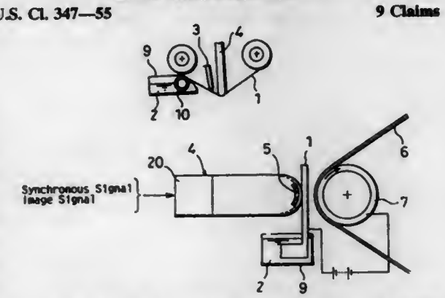
Hideo Hotomi, Ibaragi; Osamu Ebisu, Toyonaka, and Kazuo Ota, Nishinomiya, all of, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 975,873, Nov. 12, 1992, abandoned. This application Mar. 9, 1995, Ser. No. 402,153

Claims priority, application Japan, Nov. 13, 1991, 3-296797

Int. Cl.[6] B41J *2/06;2/05;2/175*

U.S. Cl. 347—55 **9 Claims**



1. An ink-jet recorder which forms an ink image on a recording medium, comprising:

a porous ink carrier which has a plurality of pores;

an ink tank which holds ink, said porous ink carrier being soaked with said ink held in said ink tank at a soaking position, so that ink is withheld in said pores of said porous ink carrier;

a transferring mechanism which transfer said porous ink carrier from said soaking position to a recording position where the porous ink carrier faces the recording medium;

a contact heater which is in contact with said porous ink carrier at the recording position so as to heat the withheld ink to a certain temperature, the certain temperature being sufficiently high to lower a viscosity of the ink but insufficiently high to boil the ink;

a feeding mechanism which feeds the recording medium to the recording position;

a first electrode which is in contact with said porous ink carrier at a contact position which is between said soaking position and said recording position, said first electrode regulating a quantity of ink withheld in said pores;

a second electrode which opposes the contact heater with said recording medium in between said second electrode and said contact heater; and

an electric power source which is connected with said first electrode and said second electrode for generating an electric field between said first electrode and said second electrode so that the heated ink spouts out toward the recording medium.

5,546,109

FILTER DEVICE FOR INK JET PRINTER

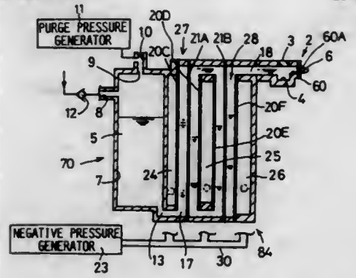
Hiroshi Nakano, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jun. 24, 1994, Ser. No. 264,995

Claims priority, application Japan, Jul. 2, 1993, 5-164786

Int. Cl.[6] B41J *2/175;2/19*

U.S. Cl. 347—93 **18 Claims**



1. A filter device disposed on the way of an ink supply passage toward ink ejecting nozzles in an ink jet printer, comprising:

a filter member disposed substantially along an ink flowing direction from an inlet of a filter chamber toward an outlet thereof;

permeable members substantially juxtaposed and spaced from a wide surface of said filter member; and

a first negative pressure chamber disposed on an upstream side and a second negative pressure chamber on a downstream side, with respect to the ink flowing direction, of said filter member, said first and second negative pressure chambers separated from the ink supply passage by the permeable members and applying negative pressure to the ink supply passage.

5,546,110

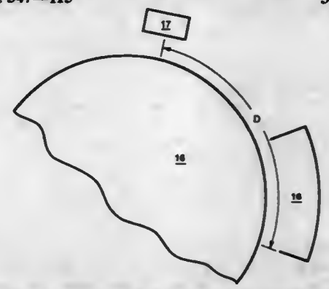
ELECTROGRAPHIC PRINTING

Walter J. Lewicki, Jr., Lancaster, Pa., and John H. Bowers, Clarksburg, N.J., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Continuation-in-part of Ser. No. 14,744, Feb. 8, 1993, Pat. No. 5,347,296. This application Nov. 15, 1993, Ser. No. 151,881

Int. Cl.[6] G03G *15/01;* **G01D** *15/06;* **B41J** *2/415*

U.S. Cl. 347—115 **34 Claims**



1. A process for imaging in an electrographic system comprising depositing at an image station a charge in imagewise configuration directly on a charge retentive substrate to be developed, developing said substrate within a distance in said system from said image station, said distance determined from the formula

$$D=TC\times S\times QF$$

Wherein:

D is equal to a distance between latent image deposition and development in arbitrary units;

TC is a time constant of the charge retentive substrate in seconds;

S is a speed in said system of the substrate in said units as D per second; and

QF is equal to a number of time constants of the substrate used in the process.

5,546,111

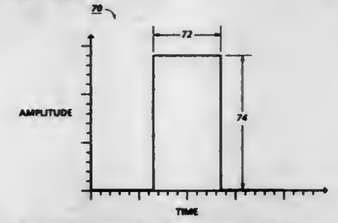
IMAGE CONTRAST IMPROVEMENT TECHNIQUE FOR OUTPUT SCANNING SYSTEMS

Patrick Y. Maeda, Redondo Beach, Calif., assignor to Xerox Coporation, Stamford, Conn.

Filed Dec. 6, 1993, Ser. No. 161,565

Int. Cl.[6] H04N *1/21*

U.S. Cl. 347—144 **5 Claims**



1. A raster output scanning system, comprising:

a light source for emitting a light beam;

a medium;

scanning means located in the path of said light beam from said light source and being so constructed and arranged to scan said light beam across said medium;

means for providing a train of pixel information;

means for modulating the light beam in accordance with the train of pixel information;

the improvement comprising the train of pixel information having the following characteristics:

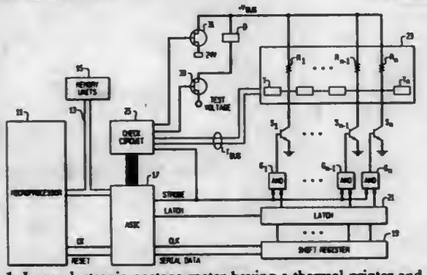
a. a plurality of groups of On pixels and a plurality of Off pixels;
b. each of said plurality of groups of On pixels comprising two transitional type On pixels one at each end and at least one second type On pixel therebetween;
c. one of said transitional type On pixels being preceded by an Off pixel and the other of said transitional type On pixels being followed by an Off pixel;
d. each of said plurality of second type On pixels having a width and an amplitude in such a manner that the product of the width and the amplitude of said plurality of second type On pixels is equal to a given value; and
e. each of said transitional type On pixels having a width shorter than the width of each said second type On pixel and having an amplitude higher than the amplitude of each said second type On pixel in such a manner that the product of the width and the amplitude of each said transitional type On pixel is substantially equal to said given value.

5,546,112

EPM HAVING A SYSTEM FOR DETECTING FAULT CONDITIONS OF THE THERMAL PRINTHEAD

Kevin D. Hunter, Stratford, and Arno Muller, Westport, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 28, 1994, Ser. No. 331,259
Int. Cl.[6] B41J *2/35*
U.S. Cl. 347—171 **5 Claims**



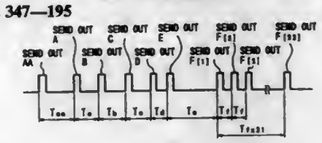
1. In an electronic postage meter having a thermal printer and a control system for causing the thermal printer to print a postage indicia, said thermal printer including a linear array of thermal elements, said electronic postage meter control system comprising:
means for producing lengthwise and serially, during a first mode of operation, a composite image comprised of alphanumeric characters and graphic data, said image being divided into a plurality of widthwise sections,
at least a first of said widthwise sections of said image having highly critical alphanumeric character information, and
at least a second of said widthwise sections of said image having less critical alphanumeric character information,
and for producing during a second mode of operation serial test data;
means coupled to said thermal elements being selectively responsive to said serial test data for developing for each of said thermal elements an associated test signal during each second mode of operation;
means for selectively comparing each test signal for each of said thermal elements against an associated predetermined reference signal in order to automatically generate an associated failure signal when a defective thermal element is detected during a second mode of operation; and,
means responsive to a failure signal associated with said defective thermal element and for relating said failure signal to said first or second widthwise sections
if, said failure signal is associated with the first of said widthwise sections and no failure are associated with said second widthwise section, for causing said image to be shifted to avoid said failure signal, otherwise stop,
if said failure signals is associated with the second of said widthwise sections and said failure signals are less that a predetermined number for causing said thermal printer to continue to print, otherwise stop.

5,546,113

METHOD OF CONTROLLING THE PRINTING CONDITION OF A THERMAL PRINT HEAD

Hiroshi Izumi, Morioka, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Dec. 10, 1993, Ser. No. 165,222
Claims priority, application Japan, Dec. 14, 1992, 4-333135
Int. Cl.[6] B41J *2/36*
U.S. Cl. 347—195 **3 Claims**



Too	16msec
To	38msec
Tb	27msec
Tc	22msec
Td	22msec
Te	64msec
Tf	5msec

1. A method for controlling a plurality of heating elements sequentially arranged on a thermal print head of a thermal transfer printer, each of the plurality of heating elements generating an amount of heat determined by controlling an energizing time of a supply power applied during each of a plurality of printing cycles, each of the plurality of printing cycles including a preceding condition correction period and an area correction period, each preceding condition correction period including a plurality of sub-periods, the thermal transfer printer including a memory for storing activation information for each of said plurality of heating elements indicating whether supply power was applied to said heating element during each of a predetermined number of said printing cycles, the method comprising:
during each sub-period of the preceding condition correction period:
retrieving the stored activation information associated with a target heating element and for one or more heating elements located adjacent the target heating element on the thermal print head,
comparing the retrieved activation information with one or more activation patterns associated with said sub-period of the preceding condition correction period, and
when the retrieved activation information matches the one or more predetermined patterns associated with the sub-period, activating the heating element during the sub-period and
after said preceding condition correction period, performing area condition correction wherein an area condition energization time is determined by a location of said target heating element on said thermal print head.

5,546,114

SYSTEMS AND METHODS FOR MAKING PRINTED PRODUCTS

David B. Tait, West Linn, Oreg.; B. Jay Burreson, Vancouver, Wash., and Thomas J. Brandt, Canby, Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Continuation-in-part of Ser. No. 762,537, Sep. 18, 1991. This application Aug. 17, 1992, Ser. No. 930,572
Int. Cl.[6] B41J *2/325*
U.S. Cl. 347—212 **83 Claims**

1. A method of thermal transfer printing on a substrate of the type which is characterized by a rough surface having peaks and valleys, comprising the following steps:



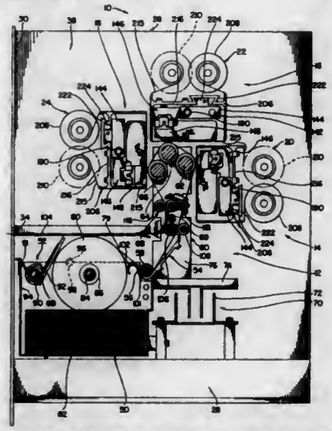
(a) applying an image enhancing precoat to the rough surface by application means employing heat locally to induce deposition of the image enhancing precoat so as to form complete bridges across the valleys of said rough surface between adjacent peaks while leaving voids in said valleys between said adjacent peaks so as to create a colorant receiving surface more uniform than said rough surface; and
(b) subsequently depositing a colorant on the colorant receiving surface of the applied image enhancing precoat.

5,546,115

CASSETTE ASSEMBLY FOR MOUNTING THERMAL TRANSFER RIBBON IN A THERMAL PRINTER

Edward A. Nardone; Paul S. Follett, both of Wakefield; Harry D. Schofield, Narragansett; Paul R. Caron, Tiverton, and Chris S. Rothwell, North Kingstown, all of R.I., assignors to Atlantek, Inc., Wakefield, R.I.

Division of Ser. No. 956,791, Oct. 5, 1992, Pat. No. 5,440,328. This application Jun. 7, 1995, Ser. No. 475,424
Int. Cl.[6] B41J *32/00*
U.S. Cl. 347—214 **4 Claims**



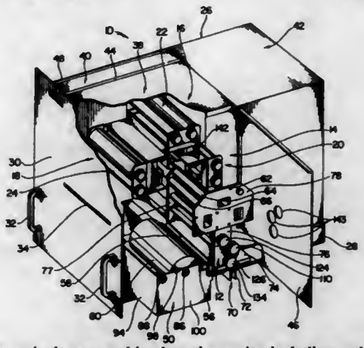
1. In a thermal print engine including a platen roller, a length of receptor media passing around said platen roller, a thermal printhead, cantilever support means for mounting said printhead in corresponding relation to said platen roller so that said printhead makes tangential contact with said receptor media at said platen roller, a thermal transfer ribbon, means for mounting said ribbon so that it is received around said printhead, said ribbon being sandwiched between said printhead and said receptor media during a printing process, said ribbon being advanced through said printhead by said receptor media during said printing process, and drive means associated with said means for mounting said ribbon for taking up said ribbon as it is advanced through said printhead, the improvement comprising cassette means for mounting said ribbon, said cassette means comprising:
a cassette body;
a supply roll for storing unused ribbon;
a take-up roll for taking up used ribbon; and
means for rotatably mounting said supply roll and said take-up roll on said cassette body, means for mounting said cassette body on said cantilever support means, said supply roll and said take-up roll being coupled to said drive means when said cassette body is mounted on said cantilever support means.

5,546,116

SLIDABLE MEDIA TRANSPORT SYSTEM FOR A SINGLE-PASS MULTI-COLOR THERMAL PRINTER

Edward A. Nardone; Paul S. Follett, both of Wakefield; Harry D. Schofield, Narragansett; Paul R. Caron, Tiverton, and Chris S. Rothwell, North Kingstown, all of R.I., assignors to Atlantek, Inc., Wakefield, R.I.

Division of Ser. No. 956,791, Oct. 5, 1992, Pat. No. 5,440,328. This application Jun. 7, 1995, Ser. No. 475,423
Int. Cl.[6] B41J *15/00*
U.S. Cl. 347—218 **2 Claims**



1. In a single-pass multi-color print engine including a plurality of platen rollers mounted in spaced relation, an uninterrupted length of receptor media received around said platen rollers, a plurality of printheads each mounted in corresponding relation to a respective platen roller, and a pair of pinch drive rollers for drawing said receptor media over said platen rollers, the improvement comprising a slidable media transport system comprising:
frame means having a pair of spaced walls, said plurality of platen rollers and said pinch drive rollers being rotatably mounted between said walls;
base means supporting said frame means;
tray means for holding said receptor media, said tray means being mounted to said base means; and
slide rail means slidably supporting said base means,
said transport system being slidably movable between a printing position wherein said platen rollers are positioned beneath said printheads for printing, and a withdrawn position wherein said platen rollers are slidably withdrawn from beneath said printheads for receptor loading.

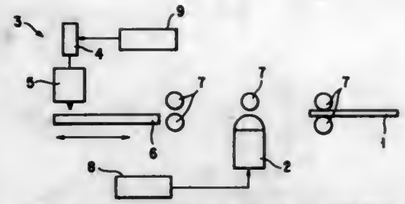
5,546,117

PORTABLE STORAGE MEDIUM AND APPARATUS FOR PROCESSING THE SAME

Tadayoshi Ohno; Takashi Yamaguchi, and Shinichi Itoh, all of Kawasaki, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 9, 1994, Ser. No. 207,659
Claims priority, application Japan, Mar. 11, 1993, 5-050668
Int. Cl.[6] B41J *2/435*
U.S. Cl. 347—224 **3 Claims**

1. An apparatus for recording predetermined information on a portable recording medium having a visible image recording portion, said apparatus comprising:
a portable recording medium having a first recording layer on which invisible information is recorded, a second recording layer on which visible information is recorded via heat gen-



erated by converting light to heat, and a transparent pre-printed pattern layer formed on said second recording layer;

first recording means for recording said invisible information on said first recording layer of said portable recording medium; and

second recording means for recording said visible information on said second recording layer of said portable recording medium as a visible image by light.

5,546,118

DATA RECORDING/REPRODUCING METHOD AND DATA SEND-OUT METHOD

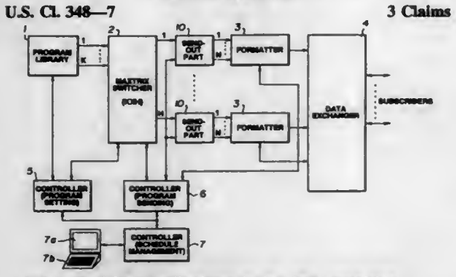
Yasuo Ido, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 19, 1995, Ser. No. 492,284

Claims priority, application Japan, Jun. 20, 1994, 6-137018

Int. Cl.[6] N04N *5/92*

U.S. Cl. 348—7 **3 Claims**



2. A method for recording/reproducing data comprising:

splitting continuous data into N portions to form large-block data D_i, where i=0 to N−1;

splitting the large-block data D_i into M portions to form small-block data d_{ij} consisting of $d_{00}, d_{01} \ldots d_{0M-1}, d_{10}, d_{11}, \ldots d_{N-1M-1}$, where i=0 to N−1 and j=0 to M−1;

re-arraying corresponding small-block data d_{ij} of the large-block data in a unifying manner to form re-arrayed blocks BL_j (j= 0 to M−1) consisting of a re-arrayed block BL_0 made up of small-block data d_{i0} (i=0 to N−1), a re-arrayed block BL_1 made up of small-block data d_{i1} (i=0 to N−1), . . . and a re-arrayed block BL_{M-1} made up of small-block data d_{iM-1} (i=0 to N−1);

recording said re-arrayed blocks BL_j (j=0 to M−1) on the recording medium so that the re-arrayed blocks will be arrayed in the sequence of $BL_0, BL_{M-1}, BL_1, BL_{M-2}, BL_2, BL_{M-3}, \ldots$;

reproducing every two re-arrayed blocks BL_j (j=0 to M−1) from said recording medium in the forward direction, reproducing, after reproducing said re-arrayed block $BL_{M/2}$, every two re-arrayed blocks BL_j (j=0 to M−1) in the reverse direction;

writing the reproduced re-arrayed blocks BL_j (j=0 to M−1) in N of said memories so that data d_{ij} (i=0 to N−1, j=0 to M− 1) of the small-blocks constituting the large-block data D_i (i= 0 to N−1) will be stored in the same memory; and

reading and sending out the small-block data d_{ij} (i=0 to N−1, j=0 to M−1) from said N memories.

5,546,119

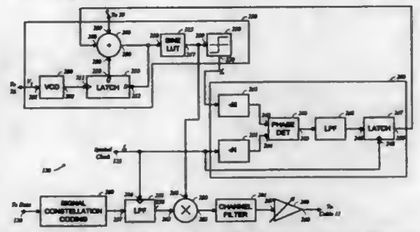
TRANSMISSION MODULATOR FOR CABLE TELEVISION UPSTREAM DATA TRANSMISSION

Caitlin B. Bestler, 1325 W. Fargo, Chicago, Ill. 60626, and Khosro M. Rabii, 3827 Galena Ct., Arlington Heights, Ill. 60004

Filed Nov. 14, 1994, Ser. No. 337,709

Int. Cl.[6] H04N *7/10*

U.S. Cl. 348—10 **15 Claims**



1. A method of subscriber terminal upstream data transmission for use in a cable television system in which a plurality of subscriber terminals are coupled to a headend by a network and in which a common network reference signal is regenerated at each subscriber terminal, said method comprising the steps of:

generating an upstream carrier signal having a carrier frequency;

receiving said network reference signal having a reference signal frequency;

first frequency dividing said upstream carrier by a divisor M to provide a frequency divided upstream carrier signal;

second frequency dividing said network reference signal by a divisor N to provide a frequency divided network reference signal;

phase and frequency comparing said frequency divided upstream carrier and network reference signals to produce an error signal;

controlling the frequency and phase of said upstream carrier signal in response to said error signal;

modulating upstream transmission data upon said upstream carrier signal to produce a modulated upstream carrier signal;

applying said modulated upstream carrier signal to said network.

5,546,120

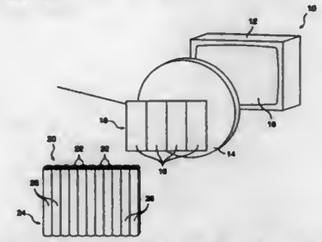
AUTOSTEREOSCOPIC DISPLAY SYSTEM USING SHUTTER AND BACK-TO-BACK LENTICULAR SCREEN

John L. Miller, Campbell, and Douglas F. Winnek, Carmel, both of Calif., assignors to Perceptual Images, Los Gatos, Calif.

Continuation of Ser. No. 972,190, Nov. 5, 1992, abandoned. This application Jan. 17, 1995, Ser. No. 374,409

Int. Cl.[6] H04N *13/04*

U.S. Cl. 348—59 **11 Claims**



1. A system for use in displaying three-dimensional images comprising:

a source for generating and displaying optical images, said source having a single optical path for all said optical images;

a focussing lens system projecting the optical images from said source along the optical path to a three-dimensional viewing surface;

a back-to-back lenticular screen unit aligned with the optical path of the images, said back-to-back lenticular screen unit forming the three-dimensional viewing surface, said unit including a first lenticular assembly and a second lenticular assembly; and

a shutter array of linear design having a plurality of consecutively configurable aperture-based shutter arrangements and located between the lenticular unit and the lens system, the shutter arrangement being adjacent the lens system and being synchronized to individual images from the source, whereby the source has an aspect view for every image displayed on the source, each aspect view from the image source being relayed from the source to the lenticular screen unit at a specific angle based upon the corresponding shutter arrangement, whereby composite images are formed on the front side of the lenticular unit.

5,546,121

SYSTEM FOR AND METHOD OF TAKING PICTURE

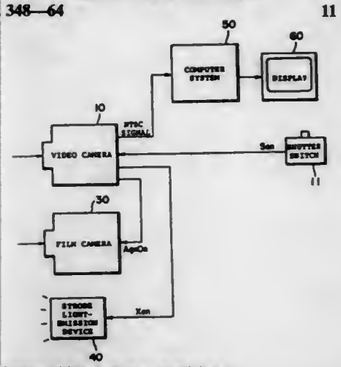
Yoshiharu Gotanda; Minoru Arai, and Izumi Miyake, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 29, 1994, Ser. No. 235,518

Claims priority, application Japan, Apr. 30, 1993, 5-124754

Int. Cl.[6] G03B *29/00;15/02*

U.S. Cl. 348—64 **11 Claims**



1. A picture-taking system comprising:

a video camera having a solid-state electronic image sensing device, vertical synchronizing signal generating means for generating a vertical synchronizing signal that defines one field period in said video camera, and field-shift signal generating means responsive to an electronic-shutter control signal for generating a field-shift signal that defines an exposure time of said solid-state electronic image sensing device using the vertical synchronizing signal as a reference, wherein a video signal representing a photographic image of a subject is output by said solid-state electronic image sensing device in response to the field-shift signal;

a film camera, which has a shutter, for capturing on photographic film the photographic image of the subject incident thereon when the shutter is released in response to a shutter release signal;

a shutter switch for entering a photographic trigger signal; and

a strobe light-emission device for firing a strobe flash in response to a strobe-fire permitting signal,

said video camera having synchronous control means for generating the shutter release signal in synchronism with the vertical synchronizing signal in response to the photographic trigger signal that enters said video camera from said shutter switch, for generating an electronic-shutter control signal in synchronism with the vertical synchronizing signal in such a manner that said solid-state electronic image sensing device is exposed to light in a time zone when said shutter, which is released in response to the shutter release signal, is fully open, and for generating the strobe-fire permitting signal in such a manner that said strobe light-emission device fires the strobe flash during exposure of said solid-state electronic image sensing device to light.

5,546,122

FILM IMAGE INPUT SYSTEM

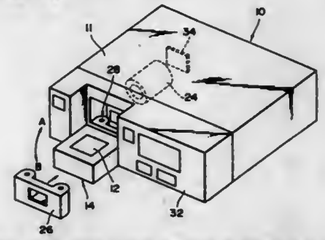
Katuo Asami, and Hitoshi Yozawa, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 755,210, Sep. 5, 1991, Pat. No. 5,309,242. This application Dec. 13, 1993, Ser. No. 165,711

Claims priority, application Japan, Sep. 14, 1990, 2-245114; Sep. 14, 1990, 2-245115; Sep. 14, 1990, 2-245116; Sep. 14, 1990, 2-245117; May 24, 1991, 3-120067; Jun. 13, 1991, 3-142137; Jun. 13, 1991, 3-142138; Aug. 5, 1991, 3-195493

Int. Cl.[6] H04N *5/253*

U.S. Cl. 348—96 **5 Claims**



1. A film image input system wherein an image of a developed still photo film is illuminated, passed through a taking lens and focused at an image sensing plane of a charge coupled device where the image is converted into electrical signals and the electrical signals are input into a video monitor, to thereby reproduce the image on a screen of the video monitor, said film image input system comprising:

a cartridge housing for housing therein a film cartridge containing the developed still photo film and for disposing the film cartridge at a predetermined position in a main body of said film image input system;

a lid movably secured to a front surface of the main body, wherein said lid is displaced for insertion and removal of the film cartridge from said cartridge housing; and

a lighting unit provided in said lid, for illuminating the film, wherein said cartridge housing is provided on a rear surface of said lid.

5,546,123

AUTOMATIC STEERING DEVICE FOR ASPHALT FINISHER

Hachiro Ikeda; Noriaki Miyamoto, both of Tagajo; Ryoei Umeda, Tokyo; Hidenori Yasu, Kadoma; Mitsuo Fukukawa; Yukiei Masuyama, both of Tokyo; Shoji Kinoshita, Koumou; Yukio Takagi, Tokyo; Tomohiro Gocho, Omiya; Fumio Goto, Gunma; Akio Ishii, Gunma-gun; Tetsuo Ogawa, Gunma-gun; Yoshun Hasegawa, Yokohama; Keitaro Hironaka, Yokohama, and Yasuhiro Ogoshi, Yokohama, all of, Japan, assignors to Niigata Engineering Co. Ltd., Tokyo, Japan

Filed Apr. 6, 1994, Ser. No. 223,746

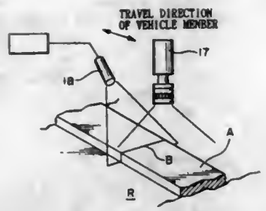
Claims priority, application Japan, Apr. 9, 1993, 5-018062 U

Int. Cl.[6] H04N *7/18*

U.S. Cl. 348—119 **9 Claims**

1. A device for automatically controlling steering operation of an asphalt finisher (1) comprising:

(a) steering wheels for governing a direction of travel of said asphalt finisher (1);



(b) an actuator (**11**) for changing the direction of travel of said steering wheels;

(c) an image recording and outputting device (**17**) for recording and outputting an image of a reference line (A) formed in relation to a roadside line;

(d) a master controller (**22**) for controlling operation of said actuator (**11**) in accordance with output data from said image recording and outputting device (**17**);

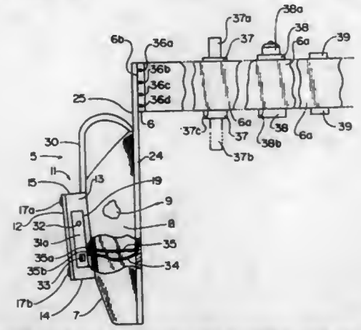
wherein said image recording and outputting device (**17**) is provided with a light generator (**18**) which projects a slit shaped beam whose beam width extends in a direction of width of said reference line (A) on said reference line (A) at an angle to vertical direction; said image recording and outputting device (**17**) records an image (Ba) generated by said beam projected on the reference line (A).

5,546,124

SIDEARM HANDGUN HOLSTER-MOUNTED SURVEILLANCE RECORDER CARRIER VESSEL

Frank C. Scerbo, III, P.O. Box 5274, Parsippany, N.J. 07054

Filed Jun. 12, 1995, Ser. No. 489,380
Int. Cl.[6] H04N *7/18*
U.S. Cl. 348—158 **34 Claims**



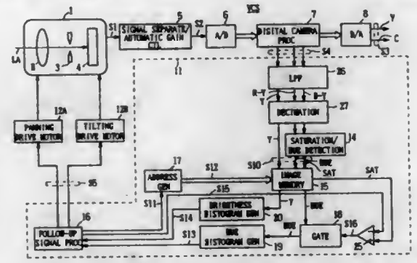
1. A surveillance and recording unit-mountable handgun-holster device adaptable for ready access and exposure to surrounding evidentiary recordable data when mounted on a body-worn sidearm weapon-mounting support structure and concurrently extending through a substantially vertical side-slit of a police-like jacket or coat when the coat or jacket is concurrently worn, comprising in combination: 1) a sidearm handgun-holster including a) a first side-face portion with a first outer surface thereof positioned to face substantially inwardly toward a first location of a side of a trunk of a person when wearing a sidearm weapon-mounting support structure for mounting a handgun-holster, the first outer surface having oppositely-directed first forward and first trailing portions, b) a second side-face portion with a second outer surface thereof positioned to face substantially outwardly toward a second location away from the side of the trunk of the person wearing a sidearm weapon-mounting support structure, the second outer surface having oppositely-directed second forward and second trailing portions, c) a forwardly-facing portion with a third outer surface thereof positioned to face substantially forwardly of the trunk of the person wearing a sidearm weapon-mounting support structure, the forwardly-facing portion being intermediate between and continuous with and interconnecting said first forward portion and said second forward portion, and d) said first trailing portion and said second trailing portion being connected to one another forming (i) a handgun-receivable receptacle and handgun mounting-space thereof and (ii) a handgun access-port to and from the handgun-receivable receptacle, of a access-port size and shape for alternately mounting and withdrawing therethrough a handgun, the handgun-receivable receptacle, mounting space thereof and the handgun access-port jointly forming a handgun-holster alternately mountably-receivable and withdrawable of a handgun, and e) holster-mounting structure mountable of the handgun-holster onto a sidearm weapon-mounting support structure; 2) a surveillance and recording unit-mountable vessel-forming structure a) mounted on said sidearm handgun-holster and b) forming a surveillance and recording means retainer-unit and a retainer unit first port thereof adapted for alternately mounting and withdrawal of a surveillance and recording means and providing associated mounting space for a portable surveillance and recording means, said associated mounting space being of a first size and shape receivable of and transportable of a portable surveillance and recording means for alternately turning on and off recording mechanism thereof of evidentiary events occuring within detectable distances of the recording means, c) a port closure means for alternately non-access and access to and from said associated mounting space, and d) the surveillance and recording means retainer-unit including a retainer unit second port of a second size and shape i) insufficiently large for insertion therethrough of a portable surveillance and recording means for alternately turning on and off recording mechanism thereof of evidentiary events occuring within detectable distances and sufficient for detection therethrough of recordable evidentiary events occuring within detectable distances thereof, and ii) sufficiently large for detection therethrough of recordable evidentiary events occuring within detectable distances thereof by a portable surveillance and recording means for alternately turning on and off recording mechanism thereof of evidentiary events.

5,546,125

VIDEO SIGNAL FOLLOW-UP PROCESSING SYSTEM

Tadafusa Tomitaka, Chiba, and Tsuneo Sekiya, Tokyo, both of, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 6, 1994, Ser. No. 268,125
Claims priority, application Japan, Jul. 14, 1993, 5-196954
Int. Cl.[6] H04N *7/18*
U.S. Cl. 348—169 **39 Claims**



1. A camera apparatus comprising:

pixel information forming means for forming pixel information constituting a display screen based on pickup output signal obtained through a lens block;

reference measurement frame setting means for setting a reference measurement frame with a predetermined size on a predetermined position on said display screen;

detection measurement frame setting means for setting a detection measurement frame with a predetermined size on said display screen;

standard frequency characteristic data forming means for forming standard frequency characteristic data for a brightness level and/or hue angle based on brightness and/or hue information on an image in said reference measurement frame;

detection frequency characteristic data forming means for forming detection frequency characteristic data for a brightness level and/or hue angle based on brightness and/or hue information on an image in said detection measurement frame;

similarity calculating means for calculating the similarity of said standard frequency characteristic data and/or said detection frequency characteristic data by several methods;

effective similarity calculation method selection means for selecting the most effective similarity data on the screen among a plurality of similarities obtained from said similarity calculation;

detection measurement frame determination means for determining said detection measurement frame with a higher similarity by using the similarity calculation method selected by said effective similarity calculation method selection means; and

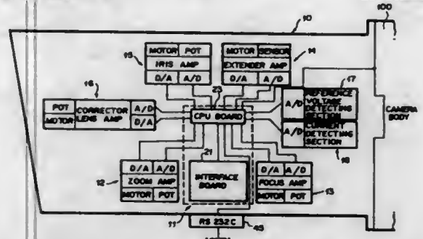
pixel information modification control means for controlling said pixel information forming means so as to match the position of said pixel information on the determined detection measurement frame with the position of said reference measurement frame.

5,546,126

TELEVISION CAMERA LENS DIAGNOSTIC SYSTEM

Shinya Yajima, and Nobuharu Nagashima, both of Saitama, Japan, assignors to Fuji Photo Optical Co., Ltd., Saitama-ken, Japan

Filed Apr. 15, 1994, Ser. No. 228,278
Claims priority, application Japan, Apr. 16, 1993, 5-089640; Mar. 18, 1994, 6-049290; Mar. 18, 1994, 6-49291
Int. Cl.[6] H04N *17/00;5/225*
U.S. Cl. 348—175 **13 Claims**



1. A television camera lens diagnostic system for diagnosing the state of operation of a movable mechanism in a lens unit for a television camera, comprising:

start signal generating means for generating a start signal for initiating a diagnosis;

diagnostic action commanding means connected to the start signal generating means and the movable mechanism for receiving the start signal and in response automatically commanding the movable mechanism to make a predetermined test movement;

detecting means associated with the movable mechanism for detecting said test movement of the movable mechanism and generating a detection signal containing information about the detected test movement;

determining means connected to said detecting means and said diagnostic action commanding means for receiving said detection signal, storing reference data defining the test movement, comparing the detected test movement to said reference data defining the test movement, determining whether there is an operational problem in the movable mechanism based on said comparison, and generating an output signal when there is an operational problem in the movable mechanism; and

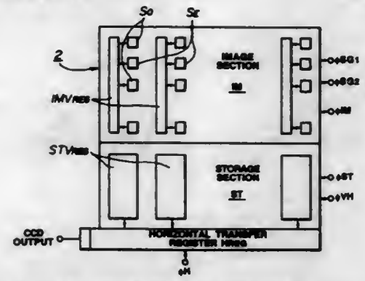
indicating means connected to the determining means for receiving said output signal and identifying the movable mechanism having an operational problem.

5,546,127

SOLID-STATE IMAGING APPARATUS

Masahiro Yamashita; Norihiko Kawada, and Satoshi Nakamura, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 340,802, Nov. 16, 1994, Pat. No. 5,438,365, which is a continuation of Ser. No. 29,070, Mar. 10, 1993, abandoned. This application Apr. 24, 1995, Ser. No. 427,455
Claims priority, application Japan, Mar. 18, 1992, 4-091420; Mar. 26, 1992, 4-098576
Int. Cl.[6] H04N *5/335*
U.S. Cl. 348—297 **12 Claims**



1. A solid-state imaging apparatus comprising:

a solid-state image sensor in which a plurality of photoelectric conversion elements for storing charge in response to illumination by image light are arranged in a matrix form having odd and even lines; and

image sensor drive control means for applying read-out pulses to the plurality of photoelectric conversion elements for every video field and to add, for every video field, image pickup charges obtained from pairs of the plurality of photoelectric conversion elements, the pairs comprising a photoelectric conversion element from each of an adjacent odd and even line, and to output an image signal,

wherein the image sensor drive control means changes effective charge storage periods of the plurality of photoelectric conversion elements in respective odd and even lines independently to vary the respective contributions of the odd and even lines of the plurality of photoelectric conversion elements to the image signal,

wherein the image sensor drive control means varies the effective charge storage periods by applying to the plurality of photoelectric conversion elements additional read-out pulses in between the aforementioned read-out pulses, and

wherein the additional read-out pulses are applied to each field alternately to the odd and even lines of the plurality of photoelectric conversion elements.

5,546,128

EXPOSURE CONTROL APPARATUS INCLUDING A SPATIAL LIGHT MODULATOR

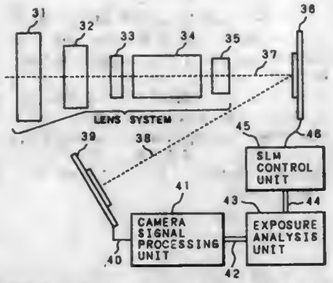
Susumu Nakagakiuchi, and Shinobu Ueda, both of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 925,880, Aug. 7, 1992, Pat. No. 5,418,546. This application Mar. 10, 1995, Ser. No. 402,057
Claims priority, application Japan, Aug. 20, 1991, 3-208185; Sep. 17, 1991, 3-236202
Int. Cl.[6] H04N *5/232*
U.S. Cl. 348 –362 **20 Claims**

1. An exposure control apparatus comprising:

a lens system;

a spatial light modulator receiving light passing through said lens system and having a plurality of controllable elements;



a photoelectric conversion device for converting said received light reflected from said spatial light modulator into an electrical signal; and

control means for controlling, individually and simultaneously, the plurality of controllable elements of said spatial light modulator on the basis of the output from said photoelectric conversion device, in order to switch the states of the controllable elements between a first state, in which at least a portion of said received light is guided to said photoelectric conversion device, and a second state in which said received light is not guided to said photoelectric conversion device.

5,546,129

METHOD FOR ENCODING A VIDEO SIGNAL USING FEATURE POINT BASED MOTION ESTIMATION

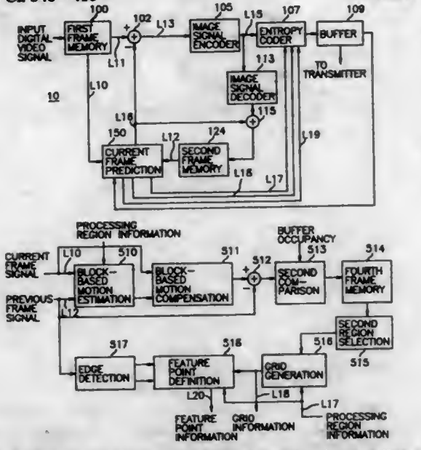
Min-Sup Lee, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Jul. 5, 1995, Ser. No. 498,554

Claims priority, application Rep. of Korea, Apr. 29, 1995, 95-10586

Int. Cl.[6] H04N *7/133;7/137*

U.S. Cl. 348—416 **3 Claims**



1. A method, for use in a video signal encoder, for encoding a digital video signal based on a feature point-based motion estimation technique, said digital video signal having a plurality of frames including a current frame and a previous frame, by adaptively selecting feature points according to motions of objects between the current frame and the previous frame, comprising the steps of:

(a) subtracting on a pixel-by-pixel basis a pixel value of the previous frame from a pixel value of the current frame to thereby provide a differential pixel value between pixels at the same locations in the current frame and the previous frame;

(b) comparing on a pixel-by-pixel basis the differential pixel value with a first threshold value TH1 and selecting one or more processing regions, each of the processing regions consisting of the pixels having their respective differential pixel values larger than the first threshold value TH1;

(c) detecting a motion vector between the current frame and the previous frame for each pixel of the processing region in the previous frame;

(d) providing a pixel value of the current frame based on the motion vector for each pixel of the processing region in the previous frame;

(e) subtracting on a pixel-by-pixel basis a pixel value of said each pixel of the processing region in the previous frame from the pixel value of the current frame to thereby provide an error pixel value;

(f) comparing the error pixel value with a second threshold value TH2 and selecting one or more grid regions, each of the grid regions consisting of the pixels having their respective error pixel value larger than the second threshold value TH2;

(g) generating a first grid for each of the processing regions in the previous frame and generating a second grid for said each of the grid regions, wherein the second grid is formed by a portion of the grid points of the first grid and newly added grid points, each of the newly added grid points being positioned at the center of a pair of neighboring grid points of the first grid in a horizontal or a vertical direction;

(h) detecting edge points from the previous frame; and

(i) selecting, as the feature points, a multiplicity of pixels in the previous frame based on the first and the second grids and the edge points.

5,546,130

METHOD AND APPARATUS FOR FORMING A VIDEO SIGNAL USING MOTION ESTIMATION AND SIGNAL PATHS WITH DIFFERENT INTERPOLATION PROCESSING

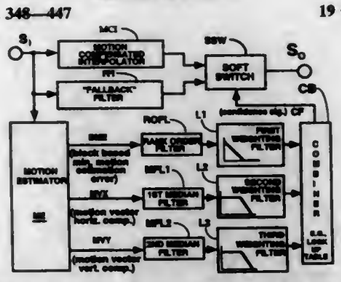
Andrew Hackett, Klingenthal, France; Michael Knee, Petersfield, United Kingdom; Michel Kerdranvat, Bischoffsheim, and Nadine Bolender, Strasbourg, both of, France, assignors to Thomson Consumer Electronics S.A., Courbevoie, France

Filed Sep. 30, 1994, Ser. No. 316,138

Claims priority, application European Pat. Off., Oct. 11, 1993, 93402506; Nov. 2, 1993, 93117671

Int. Cl.[6] H04N *7/01*

U.S. Cl. 348—447 **19 Claims**



1. A method for forming a video output signal (So) from a video input signal (Si) using motion estimation (ME) and signal paths with different interpolation processing comprising motion compensated interpolation (MCI) in one signal path and fallback interpolation (FFI) in the other path, comprising the steps of:

combining the output signals of the different signal paths (SSW) in relation to a measure of confidence (CF);

forming the measure of confidence from a block based, minimum motion estimation error (BME) of the video input signal (Si).

5,546,131

TELEVISION RECEIVER HAVING AN ARRANGEMENT FOR VERTICALLY SHIFTING SUBTITLES

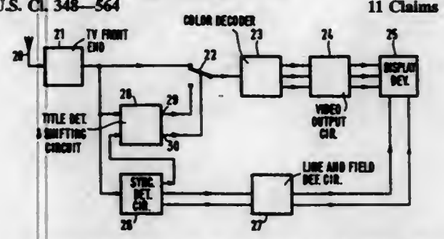
Alan J. Terry, London, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 20, 1994, Ser. No. 262,727

Claims priority, application United Kingdom, Jun. 18, 1993, 9312690

Int. Cl.[6] H04N *5/445*

U.S. Cl. 348—564 **11 Claims**



1. A television receiver having a display screen aspect ratio wider than the aspect ratio of a received picture and including means for expanding the received picture to fill the width of the display screen, said expansion taking place both horizontally and vertically and as a consequence causing part of the received picture to be undisplayed; wherein said receiver further includes means for detecting the presence of subtitles, comprising at least one row of characters, within the undisplayed part and means for shifting said subtitles so detected to a displayed part of the received picture, wherein said received picture includes television scan lines, and in which said subtitle detection means comprises:

means for detecting each time a signal level of the received picture in one of said television scan lines passes predetermined signal levels; and

means for counting the number of transitions of given signal levels in said television scan line detected by said detecting means.

5,546,132

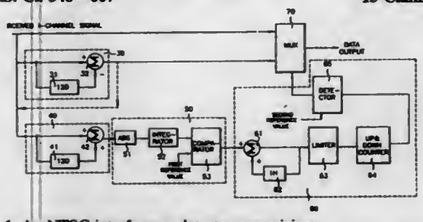
NTSC INTERFERENCE DETECTOR

Kyeong S. Kim, and Jong K. Kim, both of Seoul, Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 7, 1994, Ser. No. 351,581

Int. Cl.[6] H04N *7/00*

U.S. Cl. 348—607 **15 Claims**



1. An NTSC interference detector comprising:

an NTSC extracting filter for extracting an NTSC signal component from a received I-channel signal;

a comparing portion for integrating said NTSC signal output from said NTSC extracting filter for a predetermined period and deciding whether said NTSC signal component is above a first reference value or not; and

a control signal generator for adding the signal output from said comparing portion for every horizontal sync, deciding the presence or absence of NTSC interference according to a second reference value, and outputting a control signal according to the presence or absence of NTSC interference.

5,546,133

IMAGE SIGNAL PROCESSING APPARATUS USING SIMPLIFIED D/A CONVERSION

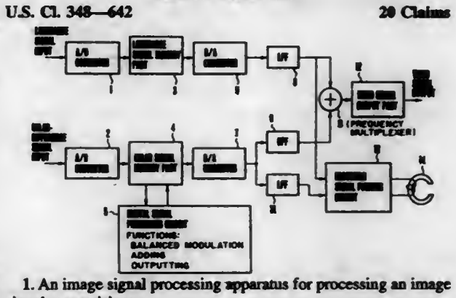
Yoshihiro Homma, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 898,839, Jun. 15, 1992. This application May 15, 1995, Ser. No. 440,888

Claims priority, application Japan, Jun. 19, 1991, 3-147389

Int. Cl.[6] H04N *9/65*

U.S. Cl. 348—642 **20 Claims**



1. An image signal processing apparatus for processing an image signal, comprising:

(A) analog-to-digital converting means for converting an analog color difference signal into digital color difference signal and outputting the digital color difference signal;

(B) digital signal processing means for receiving the digital color difference signal outputted from said analog-to-digital converting means, forming a digital color signal by using the received digital color difference signal, multiplexing the formed digital color signal onto the received digital color difference signal, and outputting a multiplexed digital signal;

(C) digital-to-analog converting means for converting the digital signal outputted from said digital signal processing means into an analog signal and outputting the analog signal; and

(D) separating means for separating the analog signal outputted from said digital-to-analog converting means into an analog color signal and an analog color difference signal and outputting the analog color difference signal and the analog color signal.

5,546,134

VIDEO BRIGHTNESS/CONTRAST ENHANCEMENT METHOD ADAPTIVE TO A SCENE AND CIRCUIT THEREFOR

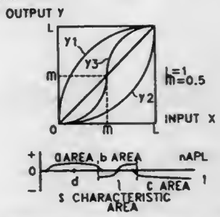
Myeong-hwan Lee, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Nov. 25, 1994, Ser. No. 348,926

Claims priority, application Rep. of Korea, Nov. 24, 1993, 93-25127

Int. Cl.[6] H04N *5/14*

U.S. Cl. 348—673 **17 Claims**



1. An image enhancement method which is adaptive to a scene and which controls brightness and contrast of a video signal using an average brightness level, the method comprising the steps:

dividing a range of the average brightness level in a video input signal into a plurality of areas;

setting an individually different brightness correction characteristic to each of said divided areas;

calculating the average brightness level with respect to the video input signal; and

controlling the brightness and contrast of the video input signal according to the brightness correction characteristic corresponding to said calculated average brightness level, wherein said video input signal is corrected by the following expression for contrast enhancement when the calculated average brightness level is at or near '0.5':

$OUT=y3(x)$

$y3(x)=X_L^{2}\ y3(x)=X_H^{0.5}$

where, said OUT is a corrected video signal, x_L represents an area where an nAPL value of the video signal is in a range of 0 to 0.5, and x_H represents an area where the nAPL valve of the video signal is in a range of 0.5 to 1.

5,546,135

CONTOUR RESTORATION APPARATUS

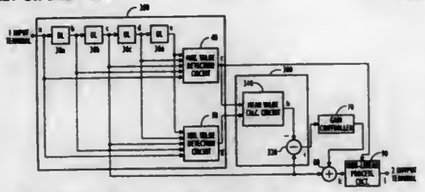
Takuji Okamoto; Masanori Hamada; Kenta Sokawa; Kazuya Uyeda, and Hideaki Yamauchi, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 25, 1993, Ser. No. 22,303

Claims priority, application Japan, Feb. 28, 1992, 4-042557; May 14, 1992, 4-121669; Aug. 12, 1992, 4-214875; Aug. 14, 1992, 4-216755

Int. Cl.[6] H04N *5/57*

U.S. Cl. 348—674 **1 Claim**



1. A contour restoration apparatus comprising:

an input terminal for video signals;

a plurality of delay circuits connected in series to said input terminal, each of said plurality of delay circuits having a predetermined delay time for a signal input thereto;

a maximum value detection circuit for detecting a maximum value among an input video signal and output signals of said plurality of delay circuits;

a minimum value detection circuit for detecting a minimum value among signals same as those input to said maximum value detection circuit;

a mean value circuit for calculating a mean value of output signals of said maximum and minimum value detection circuits;

a subtraction means for subtracting said mean value from a delayed signal output from one of said plurality of delay circuits, wherein said delayed signal has a delay time of one-half of a delay time obtained by a total of said plurality of said delay circuits;

a gain controller for amplifying the output of said subtraction means with a predetermined gain;

an adder for adding the output of said gain controller and said delayed signal input to said subtraction means;

a non-linear processing circuit to which the output of said adder and the maximum and minimum values output by said maximum and minimum detection circuits are input, said non-linear processing circuit outputting the maximum value if the output signal of said adder is larger than the maximum value, outputting the minimum value if the output signal of said adder is smaller than the minimum value, and outputting the output signal of said adder if the output signal of said adder is between the maximum value and the minimum value; and

an output terminal for outputting the output of said non-linear processing circuit as a contour restored signal.

5,546,136

INFORMATION PROCESSING UNIT FOR MODIFYING GAIN IN A FREQUENCY BAND OF A VIDEO SIGNAL

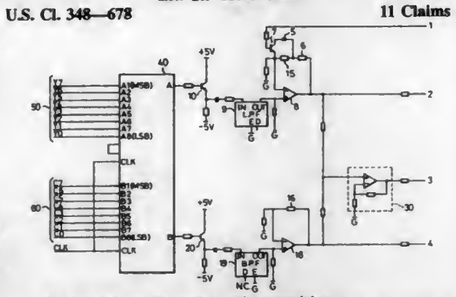
Makoto Nakamoto, and Yoshihide Yamazaki, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 197,818, Feb. 17, 1994, abandoned. This application Nov. 20, 1995, Ser. No. 561,109

Claims priority, application Japan, Feb. 19, 1993, 5-030326

Int. Cl.[6] H04N *5/52*

U.S. Cl. 348—678 **11 Claims**



1. An information processing unit comprising:

generation means for generating, and producing as an output, a video signal having specific frequency components and non-specific frequency components to be applied to a home use television set or a television monitor:

amplifying means for receiving the video signal output from the generation means and selectively operable in a first state for amplifying the specific frequency components and the non-specific frequency components in the received video signal with a first gain and in a second state for amplifying the nonspecific frequency components in the received video signal with the first gain and for amplifying the specific frequency components in the received video signal with a second gain less than the first gain; and

switching means for switching the amplifying means to a selected one of the first and second states and wherein, when the switching means is turned ON, the amplifying means operates in the second state and, when the switching means is turned OFF, the amplifying means operates in the first state.

5,546,137

APPARATUS AND METHOD OF TRANSFERRING VIDEO DATA OF A MOVING PICTURE

Kesatoshi Takeuchi, Tokyo-to, Japan, assignor to Seiko Epson Corporation, Tokyo-to, Japan

Continuation of Ser. No. 80,501, Jun. 24, 1993, Pat. No. 5,444,497. This application Feb. 16, 1995, Ser. No. 389,488

Claims priority, application Japan, Jun. 24, 1992, 4-166031; Mar. 25, 1993, 5-66833; Jun. 14, 1993, 5-168744

Int. Cl.[6] G06F *13/28*

U.S. Cl. 348—714 **16 Claims**

1. An apparatus, for use in a computer system having a processor for performing a logical operation and a video memory controlled by said processor for storing video data, and for transferring moving-picture video data representing a moving picture to a desirable memory area in said video memory, comprising:

a first memory for storing an offset address indicating a start position of said desirable memory area in said video memory;

a second memory for storing an adding address indicating a number of bytes corresponding to a predetermined number of scanning lines in said video memory;

first operation means for calculating a vertical address as a function of vertical and horizontal synchronizing signals synchronous with said moving-picture video data, said vertical address being equal to a value of said adding address multiplied by a scanning line number indicating an ordinal number of a scanning line in said moving picture, said scanning line number being specified by a number of pulses of said horizontal synchronizing signal given to said first operation means;

a horizontal counter for generating a horizontal address indicating a difference of an address between an initial position of each scanning line in said moving picture and each pixel on said each scanning line;

second operation means for adding said vertical address, said horizontal address, and said offset address to obtain a transfer address indicating an address in said video memory corresponding to a position of said each pixel on said each scanning line in said moving picture, and outputting said transfer address onto an address bus connected to said video memory; and

data output means for outputting said moving picture video data to be transferred to said video memory according to said transfer address, onto a data bus connected with said video memory.

5,546,138

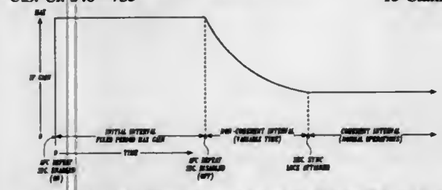
AGC SYSTEM WITH OVERRIDING, MAXIMUM GAIN DURING AN INITIAL INTERNAL TO ENHANCE SIGNAL ACQUISITION

Gopalan Krishnamurthy, Wheeling; Victor G. Mycynek, Des Plaines, and Gary J. Sgrignoli, Mount Prospect, all of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Continuation-in-part of Ser. No. 174,902, Dec. 29, 1993, abandoned. This application Oct. 11, 1994, Ser. No. 320,362

Int. Cl.[6] H04N *5/50;5/52*

U.S. Cl. 348—735 **15 Claims**



1. A method of controlling the gain of an IF amplifier in a data receiver comprising:

operating said IF amplifier at maximum gain during an initial interval;

reducing the gain of said-IF amplifier at a first rate, during a non-coherent operating mode; and

controlling the gain of said amplifier, at a second rate slower than said first rate during a coherent operating mode, in response to the signal output of said IF amplifier.

5,546,139

MOVING IMAGERY PROJECTION SYSTEM

Aron Bacs, Jr., 5828 Wye Oak Commons Ct., Burke, Va. 22015; Ward H. Davis, 5950 Bent Pine Dr. #248, and Douglas A. McCullough, 5964 Bent Pine Dr. #264, both of Orlando, Fla. 32822

Filed Jun. 28, 1993, Ser. No. 82,415

Int. Cl.[6] H04N *5/74*

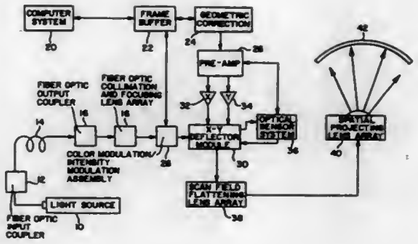
U.S. Cl. 348—754 **38 Claims**

1. A projection system for projecting an image, wherein said image is defined in vector coordinates, onto a geometric viewing surface located at a predetermined distance from and positioned at a predetermined orientation relative to said system comprising:

a source of an intense light beam;

a vector scanning deflector module for deflecting said light beam to said vector coordinates in a pair of cartesian axes at an exit angle of deflection of said light beam; and

a wide angle lens array for increasing said exit angle of deflection by a predetermined factor and projecting said image on said viewing surface.



5,546,140

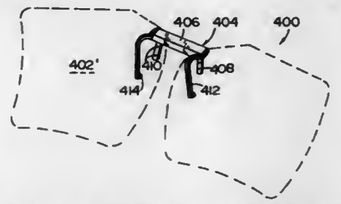
CLIP-ON SUNGLASSES

Ronald L. Underwood, 4242 DeFeyter Ave., Holland, Mich. 49424

Continuation-in-part of Ser. No. 121,211, Sep. 14, 1993, Pat. No. 5,431,595, which is a continuation-in-part of Ser. No. 105,339, Aug. 11, 1993, Pat. No. 5,423,712. This application Jun. 9, 1994, Ser. No. 237,063

Int. Cl.[6] G02C *9/00;5/02*

U.S. Cl. 351—47 **10 Claims**



1. A pair of clip-on sunglasses to be custom cut to conform to a frame and lenses of a wearer's eyeglasses, comprising:

a pair of lenses spaced with respect to each other; and

a molded polymeric bridge interconnecting said pair of lenses and having a pair of integrally molded legs, each leg projecting angularly downward from opposite ends of said bridge, in an arc to be received over a brow portion of the eyeglasses frame and to engage each lens on a side opposite said pair of lenses.

5,546,141

ADJUSTABLE GLASSES

Charles E. Wheatley, 1220 Rambling Hills Dr., Cincinnati, Ohio 45230

Filed Dec. 13, 1993, Ser. No. 165,977

Int. Cl.[6] G02C *7/12*

U.S. Cl. 351—49 **17 Claims**

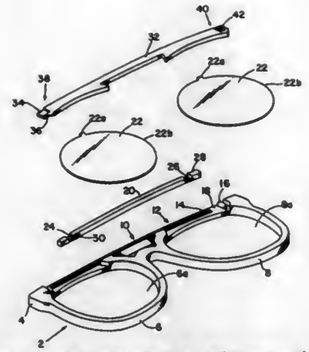
1. Eyeglasses comprising:

(A) a frame having two rims, each rim defining a corresponding lens opening, each of said rims having at least one respective groove disposed adjacent said corresponding lens opening;

(B) each respective lens opening having a pair of first and second lenses disposed therein, each said second lens being rotatable with respect to the corresponding first lens, each said second lens being slidably carried about at least a portion of its respective peripheral edge by said at least one respective groove of said respective rim, each said second lens being an outer lens;

(C) a slide carried by said frame, said slide being moveable between a first and a second position, said slide remaining outside of said lens openings throughout all positions of movement; and

(D) respective releasable connections between said slide and each of said second lenses, such that movement of said slide causes said second lenses to rotate;



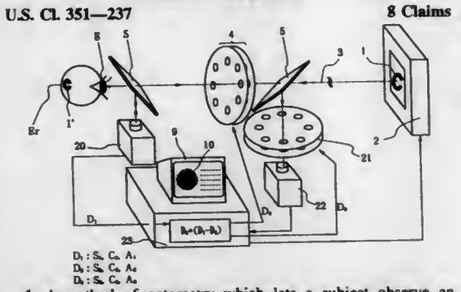
whereby said second lenses may be easily removed from said eyeglasses to facilitate cleaning or replacing said first or second lenses.

5,546,142

METHOD AND APPARATUS OF OPTOMETRY

Katsuhiko Kobayashi, Tokyo, Japan, assignor to Kabushiki Kaisha Topcon, Tokyo, Japan

Filed Oct. 3, 1994, Ser. No. 317,592
Claims priority, application Japan, Oct. 4, 1993, 5-269505
Int. Cl.[6] A61B *3/02*
U.S. Cl. 351—237 **8 Claims**



1. A method of optometry which lets a subject observe an optometrical target through a correcting optical system having a variable refractive power, said method comprising the steps of:

measuring optical characteristics of the subject; and

simulating a target image as it would be observed by the subject based on the measured optical characteristics.

5,546,143

RECORDING DEVICE AND PROJECTING DEVICE FOR MOTION PICTURE FILM

Takashi Nakatsuyama, Chiba, and Takahiko Saito, Kanagawa, both of, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 14, 1994, Ser. No. 260,267
Claims priority, application Japan, Jun. 21, 1993, 5-149596
Int. Cl.[6] G03B *1/00;21/48*
U.S. Cl. 352—184 **6 Claims**

1. A recording device for a motion picture film comprising:

film feed means for transferring a motion picture film by a frictional force, said film feed means including a first friction wheel rotated at a pre-set speed and a second friction wheel which can be moved into and out of contact with said first friction wheel by means of a voice coil wherein film feed occurs as the motion picture film is clamped between said first and second friction wheels and film feed is halted as said second friction wheel is moved away from said first friction wheel by means of said voice coil,

feed control means for intermittently controlling the frictional force of said film feed means by stopping driving of said voice coil only for a pre-set time interval each time the motion picture film is fed a pre-set amount by said film feed means, and

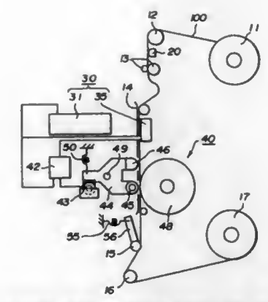
recording means for recording a frame picture of said motion picture film each time film fed by said film feed means is interrupted.

5,546,144

TRANSPARENCY HOLDER

Kai Y. Lam, Torraance, and Loi Han, Alhambra, both of Calif., assignors to Microtek Lab, Inc., Redondo Beach, Calif.

Filed Apr. 18, 1994, Ser. No. 228,736
Int. Cl.[6] G03B *21/00*
U.S. Cl. 353—120 **17 Claims**



12. A securing apparatus for securing a variety of articles to be scanned in an image scanner having a light source and image sensor comprising:

a top cover having a top window for receiving light from a light source through said top window;

a bottom cover underlying said top cover;

means for securing said top and bottom cover; and

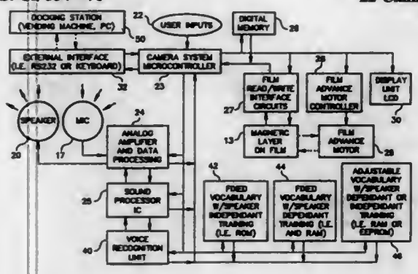
a holder selectively mounted between said top and bottom covers and having an article window, said holder adapted to secure at least one of said variety of articles to be scanned over said article window such that light from said light source passes through said article and intercepts said image sensor, said holder includes a plurality of platforms, each platform being adapted to support at least one of said variety of articles whereby when one of said variety articles is to be scanned a platform configured to hold said article is positioned between said top and bottom cover.

5,546,145

CAMERA ON-BOARD VOICE RECOGNITION

Bryan D. Bernardi, Rochester; Dale F. McIntyre, Honeoye Falls; Clay A. Dunsmore, Fairport, and Dana W. Wolcott, Honeoye Falls, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 30, 1994, Ser. No. 298,014
Int. Cl.[6] G03B *29/00;17/24*
U.S. Cl. 354—76 **22 Claims**



1. In a photographic camera including an optical lens, a photographic filmstrip transport mechanism for advancing the filmstrip in a path of travel to and through an image frame exposure gate with respect to said optical lens, and an exposure system for making an exposure of the filmstrip image frame in the exposure gate, apparatus for recording a voice message composed by the camera user related to the exposure made or to be made for playback in conjunction with making prints from the photographic images captured in the image frames of the filmstrip to provide for the printing of the voice message therewith comprising:

speech input means into which a camera user may speak words of the message to be stored with respect to the filmstrip image frames;

sound processing means for processing the words spoken into the speech input means as voice digital data;

means for providing reference voice digital data corresponding to a reference word vocabulary;

speech recognition means for comparing the processed voice digital data to the reference voice digital data and recognizing processed voice digital data corresponding to the reference voice digital data while rejecting voice digital data not finding correspondence with the reference voice digital data;

message memory means having memory locations related to each image frame of the filmstrip for storing recognized voice digital data; and

means for storing the recognized voice digital data in said message memory means, wherein said means for providing reference voice digital data corresponding to a word vocabulary further comprises:

first vocabulary memory means for storing a fixed vocabulary of words that cannot be altered by the user; and

second vocabulary memory means for storing a adjustable vocabulary of words selected by the user, wherein said first vocabulary memory means comprises a read only memory stored with said fixed vocabulary from which said fixed vocabulary may be read by said speech recognition means; and

said second vocabulary memory means comprises a read and write memory into which said adjustable vocabulary may be written in and from which said adjustable vocabulary may be read by said speech recognition means;

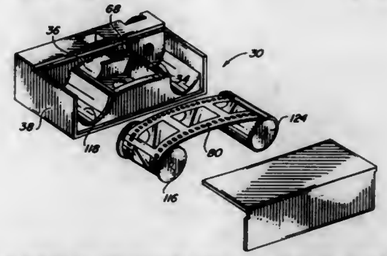
and further comprising interface mean for receiving said adjustable vocabulary from an external source and for writing said adjustable vocabulary into said second vocabulary memory means.

5,546,146

SINGLE USE CAMERA FILM PRE-EXPOSURE METHOD

Gregg T. Dobbs; Loura L. Dobbs, both of Windemere, and John M. Dobbs, Winter Garden, all of Fla., assignors to Keepsake, Inc., Windermere, Fla.

Filed Apr. 19, 1994, Ser. No. 229,689
Int. Cl.[6] G03B *1/00;27/52*
U.S. Cl. 354—120 **36 Claims**



1. A method for pre-exposing film to an image in registration with a single use camera frame opening, the method comprising the steps of:

providing a single use camera having an exposure frame opening;

forming the opening for shielding a portion of a filmstrip frame from exposure to image bearing light, the opening providing a camera exposure film frame shielded portion sufficient for receiving an artwork image;

providing an unexposed alignment filmstrip dimensioned for use in the single use camera, the alignment filmstrip for aligning artwork within a portion of the filmstrip;

mounting the alignment filmstrip within the single use camera for exposing the filmstrip to image bearing light;

exposing the alignment filmstrip to light sufficiently bright to form a latent image of the exposure frame opening onto the alignment filmstrip;

developing the alignment filmstrip for forming a frame opening image on the alignment filmstrip wherein the developed frame has a clear portion for viewing artwork therethrough and an opaque portion;

providing artwork for exposing a first portion of a film frame to the artwork;

affixing the artwork within an artwork portion as viewed through the alignment film frame clear portion, the artwork portion corresponding to the shielded portion of the covered exposure frame;

removing the alignment filmstrip;

mounting an imaging filmstrip within the copy camera for photographing the artwork within the artwork portion, the imaging filmstrip having first and second surfaces, and sprocket holes along edge portions;

placing the artwork within the artwork portion;

exposing the imaging filmstrip to imaging light from the artwork thereby forming a frame on the imaging filmstrip having a latent image of the artwork within a portion of the frame shielded by the shield portion of the single use camera exposure frame opening;

developing the imaging filmstrip;

providing an unexposed filmstrip having first and second surfaces, the unexposed filmstrip dimensioned to communicate with the imaging filmstrip, the unexposed filmstrip having a multiplicity of sprocket holes along edge portions of the unexposed filmstrip;

placing the imaging filmstrip in contact with the unexposed filmstrip; and

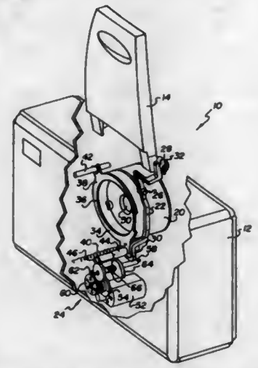
exposing the imaging film second surface to light for pre-exposing the unexposed filmstrip thereby placing a latent image onto the unexposed filmstrip and forming a pre-exposed filmstrip, the latent image representative of the imaging filmstrip artwork image, the latent image positioned within a portion of the unexposed filmstrip for shielding by the single use camera exposure frame opening shield portion.

5,546,147

LENS DEPLOYMENT MECHANISM FOR COMPACT CAMERA

Dennis E. Baxter, East Rochester, and Leonard Richiuso, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 30, 1994, Ser. No. 347,550
Int. Cl.[6] G03B *17/04;5/02;15/03*
U.S. Cl. 354—187 **9 Claims**



1. An improved photographic camera having a camera body and a flip open lens cover that can be manually movable between a closed position covering and protecting a camera taking lens and an open position exposing the taking lens for photographing scenes further comprising:

a movable objective lens carrier for supporting said taking lens;

means for guiding said lens carrier for movement between a parked position when said lens cover is in said closed position and a home position deployed outward from said camera body when said lens cover is in said open position and a range of further in-focus positions;

lens deployment means interconnected between said lens cover and said lens carrier for effecting movement of said lens carrier along said lens carrier guiding means between said parked position and said home position in response to movement of said lens cover; and

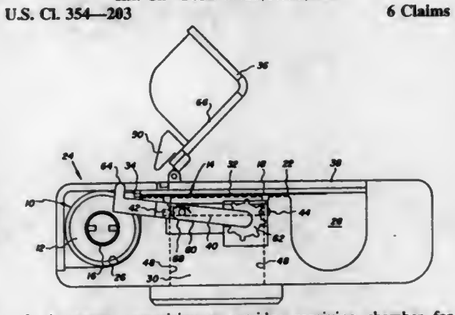
lens focus drive means operable by the user upon opening said lens cover to said open position for engaging with said lens carrier and moving said lens carrier on said guiding means from said home position to one of said in-focus positions prior to taking a picture, wherein said lens focus drive means further includes means for moving said lens carrier on said guiding means to said home position and for disengaging from said lens carrier immediately after a picture has been taken.

5,546,148

DEPLOYABLE SUPPORT FOR FILM THREADING IN CAMERA

Wilbert F. Janson, Jr., Shortsville, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 15, 1995, Ser. No. 388,763
Int. Cl.[6] G03B *17/26;17/28;1/20*
U.S. Cl. 354—203 **6 Claims**



1. A camera comprising a cartridge receiving chamber for receiving a film cartridge with a filmstrip having a film leader, a backframe opening at which the filmstrip is to be substantially exposed, and a film support for supporting the film leader over the backframe opening when the film cartridge in loaded into said cartridge receiving chamber, is characterized in that:

said film support is movable to a leader supporting position within said backframe opening to prevent the film leader from falling into and becoming jammed in the backframe opening and to a retracted position substantially removed from the backframe opening to permit the filmstrip to be exposed; and

a rear door is supported to be closed to cover said cartridge receiving chamber and includes an actuator for moving said film support from its leader supporting position to its retracted position when said rear door is closed.

5,546,149

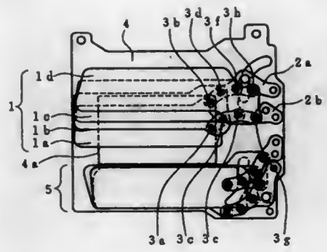
FOCAL PLANE SHUTTER

Ichiro Nemoto; Hiroyuki Izumi; Nobuyuki Fukui, and Kunioki Takahashi, all of Yotsukaido, Japan, assignors to Seiko Precision Inc., Japan

Filed May 27, 1994, Ser. No. 250,477
Claims priority, application Japan, May 28, 1993, 5-028261
Int. Cl.[6] G03B *9/20*
U.S. Cl. 354—265 **10 Claims**

1. A focal plane shutter for a camera, comprising:

at least one blade unit displaceable to cover and uncover a shutter opening, the blade unit having a leading blade and a plurality of trailing blades arranged in superposed relation to the leading blade; a plurality of arm members connected to the leading blade and the trailing blades to effect displacement of the leading blade and the trailing blades relative to the shutter opening; and a plurality of first pins pivotally connecting the arm members to the leading blade and the trailing blades, each of the trailing blades being disposed over and covering the first pins which connect the arm members to the leading blade.

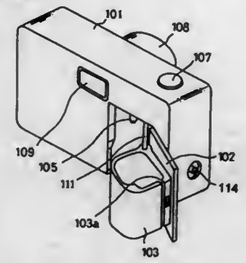


5,546,150

APPARATUS PROVIDED WITH A MOVABLE CARTRIDGE CASING

Shigeru Wada, Kishiwada; Ikushi Nakamura, Sakai; Takuya Ueno, Hashimoto; Ken Tanino, Kobe; Yoshito Konishi, Sakai, and Nobuharu Murashima, Nara, all of, Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Sep. 13, 1994, Ser. No. 304,842
Claims priority, application Japan, Sep. 14, 1993, 5-250990; Oct. 19, 1993, 5-283885
Int. Cl.[6] G03B *17/02;17/26;1/04*
U.S. Cl. 354—288 **13 Claims**



1. An apparatus having a body provided with a movable cartridge casing capable of being moved between a cartridge receiving position, where a film cartridge is inserted into or taken out from said cartridge casing, outside the body and a film feeding position inside the body, said apparatus comprising:

a spool driving shaft provided in the body and capable of engaging the film spool of a film cartridge contained in said cartridge casing to drive the film spool for rotation when said cartridge casing is positioned at the film feeding position;

a first cartridge casing moving mechanism which moves said cartridge casing between the film feeding position and an intermediate position, where the film spool is separated from said spool driving shaft, along a line parallel to a first direction; and

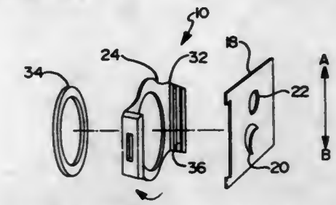
a second cartridge casing moving mechanism which moves said cartridge casing between the intermediate position and the cartridge receiving position in a second direction different from the first direction.

5,546,151

MASKING DEVICE FOR CREATING MULTIPLE IMAGE IN PHOTOGRAPHS

Raymond A. Fortson, 7650 Linden, West Bloomfield, Mich. 48234

Filed Mar. 25, 1994, Ser. No. 218,718
Int. Cl.[6] G03B *11/00*
U.S. Cl. 354—296 **3 Claims**



1. A masking apparatus universally attachable to a lens of a camera for creating multiple image photographs, the apparatus comprising:

(a) a masking device for masking a portion of an exposure area of the camera lens which exposes light to film within the camera, the masking device having a first aperture and a second aperture formed therein, a first end and an opposing second end, an elongated first side and an opposing elongated second side, an elongated slot formed in one of the two opposing elongated sides of the masking device, the slot bracketed by a first stop proximate the first end and an opposing second stop proximate the second end and wherein the first stop and second stop coorperate with a means for mounting to align the first aperture and the second aperture with the first portion and the second portion respectively of the exposure area of the lens of the camera to enable double exposure photographs;

(b) means for mounting the masking device to the lens of the camera and wherein the masking device is slidable within the means for mounting to enable the first aperture to access a first portion of the exposure area of the camera lens and the second aperture to access a second portion of the exposure area of the cameras lens, the first aperture is defined as being within the parameters of the exposure area of the camera lens when a first exposure is made and the second aperture is defined as being within the parameters of the exposure area of the camera lens when a second exposure is made.

5,546,152

MASKING DEVICE FOR CREATING MULTIPLE IMAGE PHOTOGRAPHS

Raymond A. Fortson, 7650 Linden, West Bloomfield, Mich. 48324

Continuation-in-part of Ser. No. 218,718, Mar. 25, 1994. This application Aug. 10, 1994, Ser. No. 288,493
Int. Cl.[6] G03B *11/00*
U.S. Cl. 354—296 **10 Claims**

1. An apparatus attachable to a camera for use with a camera lens for creating multiple image and single image photographs, the apparatus comprising:

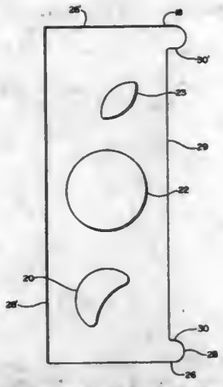
(a) a masking device for masking a portion of the camera lens, the masking device comprising:

(i) a first end and an opposing second end;

(ii) an elongated first side and an opposing elongated second side connecting the first end and the opposing second end;

(iii) an elongated notch formed in one of the opposing elongated sides of the masking device, the elongated notch being bracketed by a first stop proximate the first end and an opposing second stop proximate the opposing second end;

(iv) a first aperture which reveals a first portion of a camera lens;



(v) a second aperture which reveals a second portion of a camera lens; and

(vi) a third aperture which reveals a third portion of a camera lens;

(b) means for mounting the masking device to a camera, the masking device being slidably mounted to the means for mounting; and

wherein the masking device is slidable between a first position which enables the first aperture to reveal a first portion of a camera lens, a second position which enables the second aperture to reveal a second portion of a camera lens, a third position which enables the third aperture to reveal a third portion of a camera lens, the first aperture revealing a first partial exposure area, the second aperture revealing a full exposure area and the third aperture revealing a second partial exposure area and wherein the first stop and the second stop cooperate with the means for mounting to align the apertures.

5,546,153

LIQUID TRANSFER SYSTEM AND METHOD

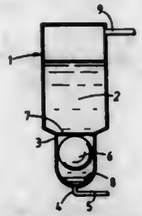
Anthony Earle, Harrow Weald; Edward C. T. S. Glover, London, and Michael Ridgway, Tring, all of, England, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 12, 1995, Ser. No. 372,070

Claims priority, application United Kingdom, Jan. 14, 1994, 9400667

Int. Cl.[6] G03D *3/02;13/00*

U.S. Cl. 354—298 **15 Claims**



1. A liquid transfer system for transferring liquid between a reservoir and a tank in a processing apparatus, the system comprising a liquid reservoir, the reservoir having an outlet, means for connecting the reservoir outlet to a tank in a processing apparatus, means for pressurizing the reservoir to transfer liquid from the reservoir to the tank, the outlet of the reservoir being provided with a valve arrangement, the valve arrangement closing the reservoir outlet when the liquid level in the reservoir drops below a predetermined level.

5,546,154

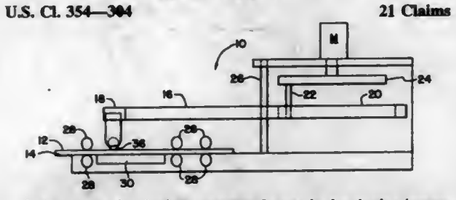
PRESSURE DEVELOPER APPARATUS

Tommy Raney, Germantown, and Julius D. King, Jr., Huber Heights, both of Ohio, assignors to Cycolor Imaging, Inc., Dayton, Ohio

Filed Jan. 30, 1995, Ser. No. 380,385

Int. Cl.[6] G03D *9/02*

U.S. Cl. 354—304 **21 Claims**



1. A pressure developing apparatus for use in developing images in the image area of a photosensitive imaging sheet containing microcapsules, said apparatus comprising:

a developer head comprising at least one point contact element, said point contract element being biased into contact with a surface of said imaging sheet;

a drive mechanism coupled to said developer head to oscillate said developer head across the surface of said imaging sheet; and

means for establishing longitudinal movement between said developer head and said imaging sheet,

wherein said developer head oscillates across the surface of said imaging sheet and said at least one point contact element applies uniform pressure along a plurality of paths across the surface of said imaging sheet sufficient to rupture said microcapsules in substantially the entire image area,

said at least one point contact element being a spherical element having a diameter of about 1/32 inch to about 1/2 inch, and said uniform pressure corresponding to a load of about 0.5 to 3 pounds.

5,546,155

DP BAG

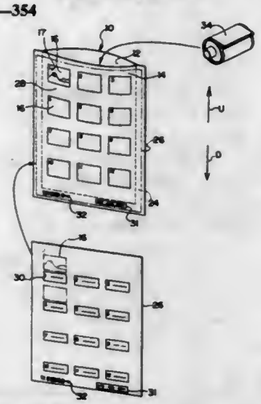
Shohei Yamamoto, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 30, 1995, Ser. No. 380,574

Claims priority, application Japan, Feb. 23, 1994, 6-025200

Int. Cl.[6] G03B *13/10*

U.S. Cl. 354—354 **42 Claims**



1. A DP bag comprising:

a DP bag main body which accommodates a developed film, said main body comprising two paper sheets that are bonded together at edges thereof to form a bag; and

wherein one of said paper sheets comprises an image display member onto which all of the images of the developed film are recorded together with image specifying marks.

5,546,156

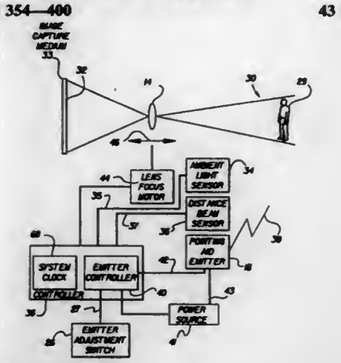
CAMERA WITH POINTING AID

Dale F. McIntyre, Honeoye Falls, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 25, 1994, Ser. No. 201,827

Int. Cl.[6] G03B *7/08*

U.S. Cl. 354—400 **43 Claims**



1. A camera comprising:

a camera body;

an objective lens that receives light from a scene and directs it to an objective lens focal plane in the camera body;

a pointing aid emitter that receives power and produces a visible beam oriented generally along the optical axis of the objective lens such that the visible beam illuminates an object in the scene;

a scene measurement system that measures an aspect of the scene; and

an emitter controller that adjusts the output power of the pointing aid emitter in accordance with the scene aspect measured by the scene measurement system to minimize power consumed by the emitter.

5,546,157

FOCUS STATE DETECTION DEVICE

Keiji Ohsawa, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 363,819

Claims priority, application Japan, Dec. 27, 1993, 5-330454

Int. Cl.[6] G03B *13/36*

U.S. Cl. 354—406 **16 Claims**

1. A focus detection device having a sensor for detecting focus in at least two regions of an image field, the device comprising:

a photographic lens for receiving light from a source in the image field; and

field lens means for receiving light from the photographic lens and for deflecting stray light away from the sensor, the field lens means being-disposed between the photographic lens and the sensor, the field lens means comprising adjacent field lens elements for receiving light from the regions of the image field, the adjacent field lens elements being separated by a space to deflect the stray light, each adjacent field lens element having at least one exterior surface to deflect the stray light away from the sensor.

5,546,158

VIEW POINT DETECTING APPARATUS WHEREIN FIRST AND SUBSEQUENT VIEW POINT DATA ARE COMPARED

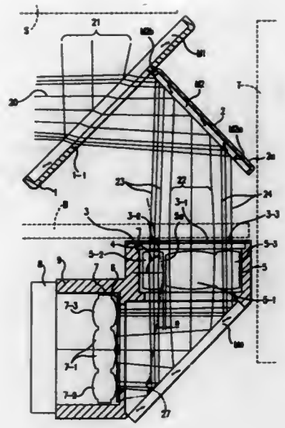
Kazuki Konishi, Tokyo, and Akihiko Nagano, Ichihara, both of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

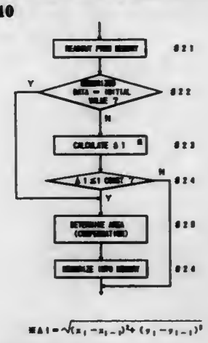
Continuation of Ser. No. 161,523, Dec. 6, 1993, abandoned, which is a continuation of Ser. No. 881,775, May 12, 1992, abandoned. This application May 22, 1995, Ser. No. 445,718

Claims priority, application Japan, May 13, 1991, 3-107311; May 13, 1991, 3-107316; May 13, 1991, 3-107317

Int. Cl.[6] G03B *7/00*

U.S. Cl. 354—410 **23 Claims**





1. A view point detecting apparatus comprising:

first detecting means for detecting a view point information; and

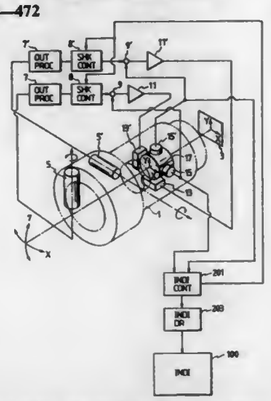
second detecting means for detecting an amount of variation in a first view point information and a subsequent second view point information detected by said first detecting means and for determining said first view point information as an effective view point information when said amount of variation exceeds a standard value.

5,546,159

CAMERA FOR PREVENTING CAMERA SHAKE

Yoshio Imura, Kawasaki; Hiroshi Okano, Tokyo, and Akira Katayama, Koganei, all of, Japan, assignors to Nikon Corporation, Tokyo, Japan

Division of Ser. No. 321,466, Oct. 11, 1994, Pat. No. 5,463,443, which is a continuation of Ser. No. 24,760, Mar. 2, 1993, abandoned. This application Feb. 16, 1995, Ser. No. 389,408
Claims priority, application Japan, Mar. 6, 1992, 4-84434; May 13, 1992, 4-146997; Jul. 3, 1992, 4-200704
Int. Cl.[6] G03B 17/18
U.S. Cl. 354—472 15 Claims



1. A camera shake indication device for a camera, comprising:
camera shake detection means for detecting a camera shake amount of the camera based on an output from a camera shake detection sensor, and generating a shake signal corresponding to the detected camera shake amount;
information signal generation means for generating an information signal corresponding to a value associated with photographing information of the camera;
conversion means for calculating, based on the value associated with the photographing information, a limit photographing condition under which image quality of a photographed picture is not substantially deteriorated by a camera shake during a photographing operation, and converting the calculated photographing condition into a limit value associated with the photographing information; and
indication means for indicating an amount corresponding to the detected amount of camera shake relative to an indicated amount corresponding to the limit value.

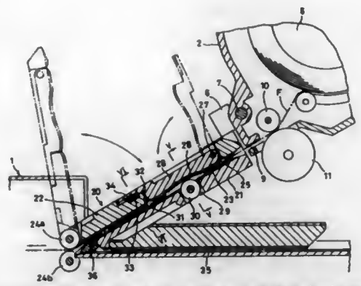
5,546,160

AUTOMATIC FILM FEEDER

Takuji Kishi, and Kimiharu Ohtani, both of Wakayama, Japan, assignors to Noritsu Koki Co., Ltd., Wakayama, Japan

Filed Mar. 15, 1995, Ser. No. 404,767
Claims priority, application Japan, Mar. 16, 1994, 6-045872
Int. Cl.[6] G03B 27/48;27/50;27/32;27/52
U.S. Cl. 355—50 19 Claims

1. An automatic film feeder comprising a film magazine detachably mounted on an outer case of a printing machine and having a core around which a plurality of films are to be wound, a feed roller for feeding the plurality of films out of said film magazine one by one, a film guide for guiding films fed out of said film magazine into a film feed path provided inside said outer case, and



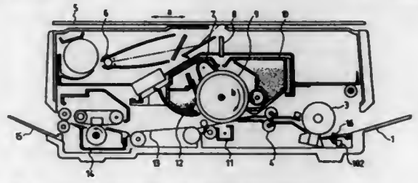
carrier rollers for feeding films fed into said film feed path to a scanner unit and then to an exposure unit, said film guide having a loop guide adapted to be opened by being pushed by a slackened portion of a film which is formed when the film is fed backward.

5,546,161

IMAGE FORMING SYSTEM HAVING MAIN POWER SOURCE

Akihiro Sakai, Kawasaki; Yoshio Mizuno, Ichikawa, and Takehito Utsunomiya, Yokohama, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 868,638, Apr. 15, 1992, abandoned. This application Nov. 3, 1993, Ser. No. 145,319
Claims priority, application Japan, Apr. 17, 1991, 3-112578; May 15, 1991, 3-110456; Jun. 26, 1991, 3-154578; Mar. 31, 1992, 4-077444
Int. Cl.[6] G03G 15/20
U.S. Cl. 355—200 15 Claims



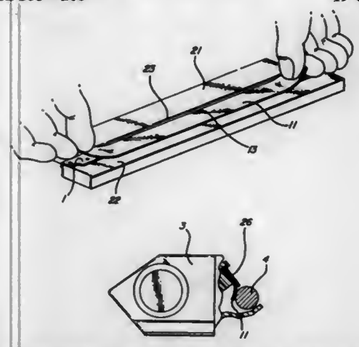
10. An image forming apparatus, comprising:
image forming means for forming a non-fixed image on a recording sheet;
fixing means for thermally fixing the non-fixed image onto the recording sheet, said fixing means having a fixing heater for generating heat when energized;
power supply control means for controlling a power supply to said fixing heater, said power supply control means causing power to be supplied to the fixing heater in response to reception of an image formation signal to cause the fixing heater to reach a predetermined temperature before the recording sheet arrives at the fixing means;
a main power source; and
main power source switching means for automatically controlling said main power source,
wherein said main power source is turned ON only in response to the reception of the image formation signal such that image formation can be performed without manual control of the main power source.

5,546,162

CONVERSION DEVICE AND KIT FOR CONVERTING A DOCTOR BLADE TO A SPREADER BLADE

Steven B. Michlin, 5310 Bentley Ste. 105, West Bloomfield, Mich. 48322, and Michael F. Gaylord, Lakewood, Colo., assignors to Steven Bruce Michlin, Bloomfield, Mich.

Filed Jun. 2, 1995, Ser. No. 460,096
Int. Cl.[6] G03G 21/00
U.S. Cl. 355—200 19 Claims



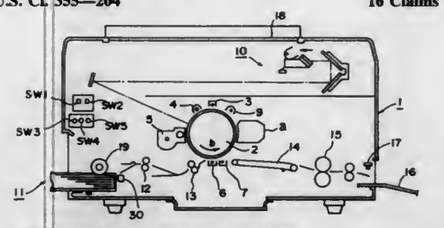
1.) A conversion kit for converting a doctor blade of a toner hopper of an imaging machine to a spreader blade, said conversion kit comprising an elastic strip with attachment means for securing said elastic strip to said doctor blade, further comprising an assembly jig with holding means for supporting said doctor blade and allowing said elastic strip to be accurately positioned on said doctor blade prior to mounting in operating position.

5,546,163

IMAGE FORMING APPARATUS HAVING COUNTERS FOR COUNTING FREQUENCY OF USE OF PARTS

Hiroyuki Asai, Toyokawa, and Kazuhiro Araki, Okazaki, both of, Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Sep. 27, 1994, Ser. No. 310,780
Claims priority, application Japan, Sep. 30, 1993, 5-245157
Int. Cl.[6] G03G 21/00
U.S. Cl. 355—204 16 Claims



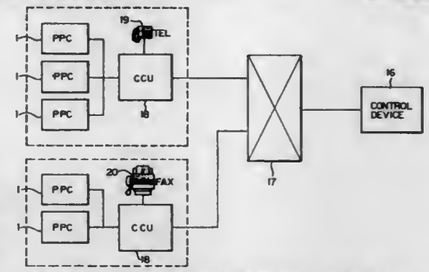
1. An image forming apparatus comprising:
a detector which outputs a signal in response to operation of a part included in the image forming apparatus;
a first switch which outputs a first signal when operated;
a second switch which outputs a second signal when operated;
a first counter which increments each time the signal is output by said detector, and is reset in response to said first signal; and
a second counter which increments each time the signal is output by said detector, and is reset in response to both said first signal and said second signal.

5,546,164

COMMUNICATION CONTROL DEVICE CONNECTED TO A PLURALITY OF IMAGE FORMING APPARATUSES AND TO A CONTROL DEVICE BY PUBLIC TELEPHONE NETWORK

Masayuki Hayashi; Yoshihiro Mitekura; Koichi Kanaya, all of Yokohama; Masato Terao, Tokyo; Toshiya Tagawa, Ichikawa; Nobuaki Tomidokoro, Sagamihara; Masahiro Kitayama, Kawasaki; Osamu Kizaki, Asaka; Yasuo Kawada, Kawasaki; Kazuyuki Nakahara, Tokyo; Tomofumi Harada, Yokohama, and Yasunari Hashimoto, Tokyo, all of, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 69,350, May 28, 1993. This application Oct. 21, 1994, Ser. No. 327,418
Claims priority, application Japan, May 28, 1992, 4-137128; May 28, 1992, 4-137130; Nov. 30, 1992, 4-321045; Dec. 18, 1992, 4-339147; Mar. 15, 1993, 5-53542
Int. Cl.[6] G03G 21/00
U.S. Cl. 355—204 25 Claims



1. A system for controlling image formation, comprising:
a plurality of image forming apparatuses each having storing means for storing data relating to image formation;
a communication control unit to which said plurality of image forming apparatuses are connectable;
a control device connectable to said communication control unit over a public network and for interchanging the data relating to image formation and stored in said storing means with said image forming apparatuses;
parameter storing means included in said communication control unit and for storing a control parameter for interchanging data designating any one of said image forming apparatuses to be connected to said communication control unit, and the data relating to image formation and including an indicator of a destination of said control device which is to be connected to said communication control unit; and
control means for controlling communication between said one designated image forming apparatus and said control device on the basis of the parameter stored in said parameter storing means.

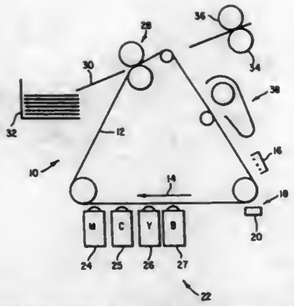
5,546,165

SCANNER AS TEST PRINT DENSITOMETER FOR COMPENSATING OVERALL PROCESS DRIFT AND NONUNIFORMITY

Allen J. Rushing, Webster, and Yee S. Ng, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 5, 1994, Ser. No. 318,396
Int. Cl.[6] G03G 21/00
U.S. Cl. 355—208 17 Claims

1. An electrostatographic reproduction apparatus comprising:
scanner means for scanning an original document to be copied and for generating first signals representing a density characteristic of images on said document;
an electrostatic recording member movable in a process direction;
writer means responsive to said first signals for modulating charge on said member to form by use of pixels latent electrostatic images, said writer means also including means



for generating using superpixels latent images of a series of halftone step patterns of different grey levels;

means for developing the latent images of the series of halftone step patterns;

means for transferring the developed images of the series of halftone step patterns to a record member;

means responsive to rescanning of the record member by the scanner means for generating adjustment signals for response to scanning by said scanner means of the series of halftone step patterns on said record member; and

means responsive to said adjustment signals for generating adjustments in halftone rendering of superpixels by said writer means of first signals generated by said scanning means.

5,546,166

IMAGE FORMING APPARATUS WITH AUTO-CLEAR FUNCTION

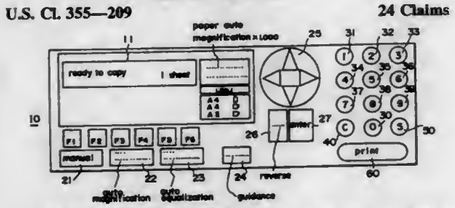
Masaya Hirota; Hiroyuki Ideyama; Toru Okatani; Toshiyuki Yamashita; Hideo Ito, and HYoichi Kawabuchi, all of Osaka, Japan, assignors to Minolta Camea Kabushiki Kaisha, Osaka, Japan

Filed Jan. 12, 1993, Ser. No. 3,142

Claims priority, application Japan, Jan. 13, 1992, 4-003811

Int. Cl.[6] G03G *15/00*

U.S. Cl. 355—209 **24 Claims**



1. An image forming apparatus capable of making copies under either predetermined standard copy conditions or copy conditions optionally set by an operator, said image forming apparatus comprising:

first setting means for setting copy conditions other than the standard copy conditions;

first counting means for counting a first predetermined time period after the completion of a copying operation or after copy conditions have been set by the first setting means;

return means for automatically returning the copy conditions to the standard copy conditions when any operation has not been performed by the operator before the first counting means finishes counting;

second setting means for setting a guidance mode for providing an explanation of copy condition setting methods and operating methods to the operator;

display means for displaying the copy condition setting methods and operating methods in accordance with the set guidance mode;

second counting means for counting a second predetermined time period after the guidance mode is set by said second setting means, and wherein said second time period counted by the second counting means is different than the first time period counted by said first counting means; and

cancel means for cancelling the guidance mode only when the second counting means finishes counting.

5,546,167

CHARGING DEVICE, PROCESS CARTRIDGE AND IMAGE FORMING APPARATUS

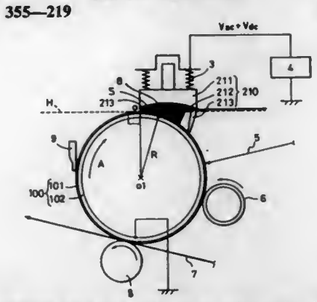
Hiroaki Ogata, Kawasaki; Hiroki Kisu, Fujisawa; Michihito Yamazaki, Tokyo, and Erika Asano, Utsunomiya, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 1, 1994, Ser. No. 265,273

Claims priority, application Japan, Jul. 7, 1993, 5-193098

Int. Cl.[6] G03G *15/02*

U.S. Cl. 355—219 **14 Claims**



1. A charging device for charging an object to be charged, said charging device comprising:

a non-rotatable charging member having a section positioned in contact with or in close proximity to the object to be charged for the purpose of charging the object,

said charging member having a concave charging surface located downstream from a downstream end point on the object to be charged that corresponds to the contact section or the closest-proximity section between said charging member and the object to be charged, the concave charging surface being positioned in its entirety on a side of a line H that is opposite from a side at which the object to be charged is disposed in its entirety, wherein line H is a line that (i) is tangent to a surface of the object to be charged at a point at the downstream end point of the contact section or the closest-proximity section between said charging member and the object to be charged, (ii) is parallel to the direction of movement of the surface of the object to be charged at the end point, and (iii) extends downstream from the point of tangency, where the downstream direction is determined with respect to the direction of movement of the object to be charged.

5,546,168

IMAGE FORMING APPARATUS WITH SELECTIVE OPERATION IN DOCUMENT-FIX READING MODE AND DOCUMENT-MOVE READING MODE

Seiichiro Adachi, Yokohama; Masataka Naito, Kawasaki, and Masakazu Hirai, Yokohama, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 23, 1993, Ser. No. 172,054

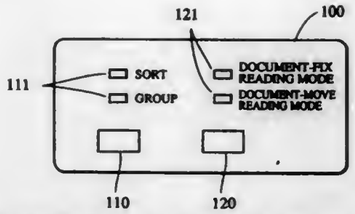
Claims priority, application Japan, Dec. 28, 1992, 4-358854

Int. Cl.[6] G03G *15/28*

U.S. Cl. 355—233 **10 Claims**

1. An image forming apparatus comprising:

document sheet recirculating means for separating document sheets from a stack of document sheets, feeding the separated



document sheets onto a document table, and returning the document sheets from the document table to the stack, thereby recirculating the document sheets;

exposure means for scanning and exposing the document sheets fed onto the document table by said document recirculating means, said exposure means operating in one of a first exposure mode in which said document recirculating means temporarily stations each document sheet on the document table while said exposure means is moved to scan and expose the stationary document sheet and a second exposure mode in which said exposure means remains stationary while said document recirculating means moves each document sheet across the document table to cause the document to be scanned and exposed;

image forming means for forming images on recording sheets from the document sheets that have been scanned and exposed by said exposure means;

sheet receiving means for receiving and storing the recording sheets carrying images formed by said image forming means, said receiving means having a plurality of sheet receiving portions;

first selecting means for selecting one of the first exposure mode and the second exposure mode;

second selecting means for selecting one of a first receiving mode in which a set of recording medium sheets having images corresponding to those on the stack of document sheets are received and stored in each of a plurality of sheet receiving portions of said sheet receiving means and a second receiving mode in which each sheet receiving portion of said sheet receiving means receives and stores a plurality of recording medium sheets having images corresponding to that on one of said document sheets; and

control means for controlling said sheet receiving means so that the sheet receiving portion into which sheets are received is in accordance with the modes selected by said first and second selecting means, wherein said first selecting means and said second selecting means can perform the selecting operation independently.

5,546,169

CAPABILITY COPIER WITH IMAGE SUPERPOSITION CAPABILITY

Takasumi Wada; Hirokazu Fujita, both of Nara, and Koichi Inui, Higashiosaka, all of, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 28, 1995, Ser. No. 412,057

Claims priority, application Japan, Apr. 21, 1994, 6-083123

Int. Cl.[6] G03G *15/00*

U.S. Cl. 355—244 **20 Claims**

1. An image forming apparatus, comprising:

a photoreceptor which is capable of moving in a prescribed direction, said photoreceptor being provided with a light-transmitting base material, a light-transmitting electrically conductive layer and a photoconductive layer, in this order;

charging means charging a surface of the photoconductive layer so as to have a prescribed polarity;

first exposing means directing light onto a first position of the photoconductive layer on a downstream side of said charging means, defined with respect to said prescribed direction of movement of said photoreceptor, so as to form a first electrostatic latent image in which a light-exposed portion thereof has a surface voltage which is substantially zero;

developing means developing said first electrostatic latent image by bringing a developer, which is charged so as to have a polarity opposite to the polarity of the surface of the photoconductive layer, into contact with the photoconductive layer, said developing means being provided on a downstream side of said first exposing means; and

second exposing means irradiating a contact portion of the developer and of the photoconductive layer by interlocking with the developing operation of said developing means so as to form a second electrostatic latent image with the second electrostatic latent image superimposed on the developed first electrostatic latent image.

5,546,170

PRINTER WITH PRINT DENSITY SWITCHING MEANS

Hiroki Ohba, Fuchu; Yoshihiro Tonomoto, Kawasaki; Kiyohisa Yanagita, Kawasaki; Yoji Houki, Kawasaki; Tomokazu Akuta, Kawasaki, and Akihiro Komuro, Kawasaki, all of, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

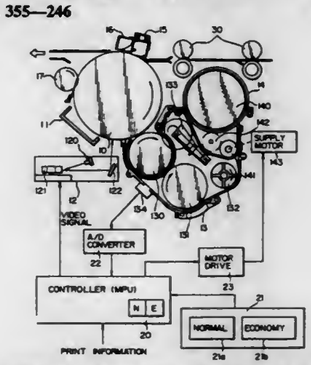
Division of Ser. No. 956,868, Oct. 2, 1992, Pat. No. 5,355,200.

This application Jun. 21, 1994, Ser. No. 262,872

Claims priority, application Japan, Oct. 3, 1991, 3-256291

Int. Cl.[6] G03G *15/06*

U.S. Cl. 355—246 **10 Claims**



1. An image forming apparatus connected to a host computer issuing a normal mode instruction and an economy mode instruction to the image forming apparatus, comprising:

an image forming mechanism for forming an image by applying toner particles onto a medium; and

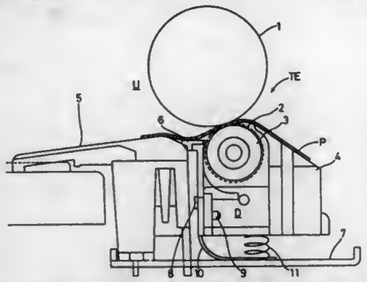
a print controller responsive to the normal mode instruction and the economy mode instruction issued from the host computer, said print controller controlling a toner consumption level at a first level in forming the image by said image forming mechanism when the normal mode instruction is received and controlling the toner consuming level at a second level lower than the first level when the economy mode instruction is received.

5,546,171

DISPLACEABLE TRANSFER APPARATUS HAVING A POST-TRANSFER GUIDE

Shigeki Hayashi; Hiroyuki Ueda, and Hirotsugu Ogawa, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Feb. 6, 1995, Ser. No. 384,252
Claims priority, application Japan, Mar. 14, 1994, 6-041675
Int. Cl.[6] G03G *15/14*
U.S. Cl. 355—271 **15 Claims**



1. A transfer apparatus in which a transfer roller and a pre-transfer guide are pushed to be displaceable so that a predetermined gap is maintained between a photoreceptor and the transfer roller and that a position of the transfer roller and a position of the pre-transfer guide depend on a position of the photoreceptor such that a displacement in position of the photoreceptor is conformed to by a conforming displacement in the position of the transfer roller and position of the pre-transfer guide, and a recording sheet on which an image has been transferred by the transfer roller is conveyed to a conveying guide, said transfer roller transferring a toner image to the recording sheet fed in the gap between the photoreceptor drum and the transfer roller, said pre-transfer guide guiding the recording sheet,

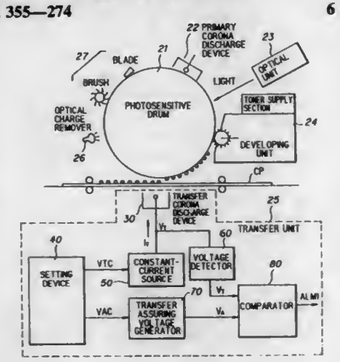
wherein a post-transfer guide which receives an abutment of an end of the recording sheet is provided to be displaceable integrally with the transfer roller and the pre-transfer guide, said post-transfer guide guiding the recording sheet to the conveying guide.

5,546,172

TRANSFER OMISSION DETECTOR IN TRANFER UNIT FOR IMAGE FORMING APPARATUS

Fumiaki Seto, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Aug. 12, 1994, Ser. No. 289,854
Claims priority, application Japan, Nov. 19, 1993, 5-290306
Int. Cl.[6] G03G *15/00*
U.S. Cl. 355—274 **6 Claims**



1. A transfer unit for forming an image on a recording carrier by a transfer material, charging a transfer medium to a polarity opposite that of a charge on the transfer material by a corona discharge and transferring the transfer material to the transfer medium, comprising:

a transfer corona discharge device for generating a corona discharge;

a setting device for setting one of a transfer voltage and transfer current and a transfer assuring voltage for assuring transfer, the transfer assuring voltage being lower than the transfer voltage;

a high-voltage generator including a constant-current source, for applying a transfer voltage, which has a value conforming to the set transfer voltage or transfer current, to said transfer corona discharge device;

a voltage detector for detecting the voltage applied to said transfer corona discharge device; and

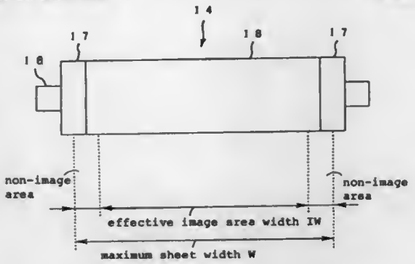
a comparator for comparing the detected voltage and the transfer assuring voltage, said comparing determining, in order to avoid a transfer omission, whether or not the transfer voltage applied to the transfer corona discharge device is lowered and generating an alarm when the detected voltage has become less than the transfer assuring voltage.

5,546,173

FIXING DEVICE

Hiroaki Hinotani, and Yasuhiro Matsuura, both of Toyokawa, Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Dec. 8, 1994, Ser. No. 355,196
Claims priority, application Japan, Dec. 14, 1993, 5-313437
Int. Cl.[6] G03G *15/20*
U.S. Cl. 355—282 **9 Claims**



1. A fixing device comprising:

a rotatable first roller; and

a second roller rotatably contacting with a surface of the first roller with pressure so as to fix an unfixed toner image onto a sheet when passing the sheet between the first and second rollers;

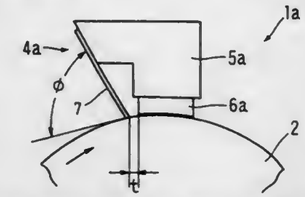
the second roller having a first portion provided on a peripheral surface thereof and including an image forming area and a second portion provided at each end of the first portion on the peripheral surface of the second roller, said second portions having a coefficient of friction greater than that of said first portion, the second roller including a sheet transport portion for contacting a transported sheet, the sheet transport portion including a part of the second portions.

5,546,174

CLEANING MECHANISM OF A FIXING DEVICE IN AN IMAGE FORMING APPARATUS

Masahiro Hashizume; Susumu Taniguchi, and Shinji Kameyama, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Oct. 25, 1994, Ser. No. 329,653
Claims priority, application Japan, Nov. 8, 1993, 5-278017
Int. Cl.[6] G03G *15/20*
U.S. Cl. 355—283 **4 Claims**



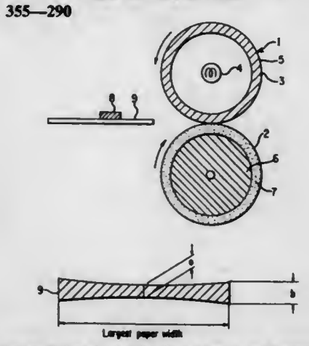
1. An image forming apparatus in which a sheet of paper with a latent image is caused to pass between a heating roller and pressure roller to fix the image, being characterized in that a heat resisting sheet-like material, a top of which is brought into contact with a surface of the heating roller at a contacting angle of less than 90 degrees with an appointed space secured with a fixing felt, is provided upstream in the rotation direction of the heating roller of said fixing felt.

5,546,175

IMAGE FIXING DEVICE AND METHOD THEREOF

Yasuhiro Uehara; Yasuhiro Kusumoto; Yoshio Kanesawa, all of Nakai-machi, and Toru Inoue, Ebina, all of, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Sep. 14, 1995, Ser. No. 528,012
Int. Cl.[6] G03G *15/20*
U.S. Cl. 355—290 **12 Claims**



1. An image fixing device for fixing toner on a transfer member, comprising:

a heat roller which is a hollow cylindrical member rotatably supported at both end portions and having heating means inside thereof;

pressure means press-contacted to said heat roller for pressing said transfer member passing between said heat roller and said pressure means against to a peripheral surface of said heat roller;

said pressure means being a pressure roller disposed approximately parallel to said heat roller and supported rotatably,

at least one of said heat roller and said pressure roller having a layer of elastic material on its peripheral surface; and

a value A/B being set to be within a range from 0.7 to 0.8,

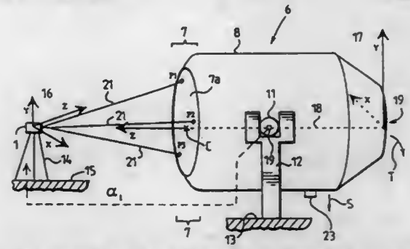
wherein A represents a nip width at an approximate central portion of an area between said heat roller and said pressure roller where said transfer member passes through and B represents a nip width at end portions of said area.

5,546,176

METHOD FOR MEASURING WEAR IN THE LINING OF A CONTAINER PROVIDED WITH A PIVOTED AXLE AND AN OPENING, AND A CONTAINER

Hannu Jokinen, Oulunsalo, Finland, assignor to Spectra-Physics Visiontech OY, Oulu, Finland

Filed May 11, 1994, Ser. No. 241,417
Claims priority, application Finland, May 21, 1993, 932339
Int. Cl.[6] G01B *11/03;11/00*
U.S. Cl. 356—5.1 **7 Claims**



1. A method for measuring wear in the lining of a container provided with a pivoted axle and an opening, in which method fixing of the coordinate systems (**16**, **17**) set for a measuring device (**1**) and the container (**6**) is performed by the measuring device (**1**) emitting and receiving optical radiation, said fixing comprising mathematically combining the coordinate systems (**16**, **17**) of the measuring device (**1**) and the container (**6**) by measuring the position of specific fixing points (P1, P2, P3) in the coordinate system (**16**) of the measuring device (**1**) and by measuring angle data (α_1, α_2) on the inclined position of the container (**6**), and after the fixing the lining (**10**) on the inner surface of the container (**6**) is measured by directing optical radiation to the lining (**10**) and receiving the radiation reflected from the lining (**10**), characterized in that the fixing is performed by measuring the position of the fixing points (P1, P2, P3) mounted in connection with the container in the coordinate system (**16**) of the measuring device (**1**) in a situation where the container opening faces away from the measuring device while the measuring device is directed towards the bottom of the container, whereafter the container (**6**) is rotated around its pivoted axle (**11**) to a position in which the opening (**9**) of the container (**6**) faces the measuring device (**1**), and that the fixing is performed utilizing the angle difference between angle data (α_1) obtained during the measurement of the fixing points (P1, P2, P3) and angle data (α_2) obtained after the rotation of the container, said angle difference being obtained by angle measurement known per se, measuring the inclination of the container (**6**).

5,546,177

ELECTROSTATIC BRUSH CLEANER PERFORMANCE MONITOR

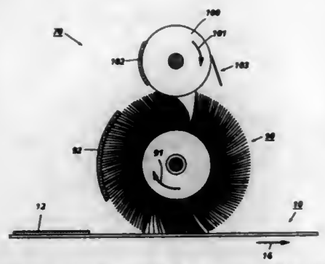
Bruce E. Thayer, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 5, 1995, Ser. No. 524,096
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—301 **17 Claims**

1. A method for monitoring brush cleaner performance on an imaging surface having a first length of a toner patch thereon, the brush cleaner removing the first length of the toner patch from the imaging surface, comprising:

developing the first length of the toner patch of a known length on the imaging surface;

removing the first length of the toner patch from the imaging surface with the brush cleaner;



accumulating a second length of the toner patch on a brush cleaner surface; and

measuring the second length of the toner patch on the brush cleaner surface.

5,546,178

PRINTER DEVICE FOR PRINTING WEB-SHAPED RECORDING MEDIA HAVING DIFFERENT WEB WIDTHS

Manzer Hans, Seeefeld, and Manfred Viechter, Walpertskirchen, both of, Germany, assignors to Siemens Nixdorf Informationssysteme Aktiengesellschaft, Paderborn, Germany

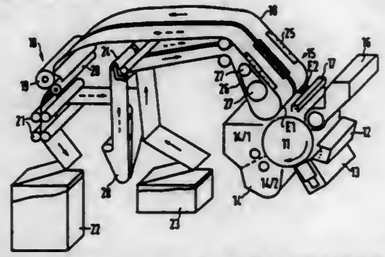
PCT No. PCT/EP94/01493, § 371 Date Apr. 20, 1995, § 102(e) Date Apr. 20, 1995, PCT Pub. No. WO94/27193, PCT Pub. Date Nov. 24, 1994

PCT Filed May 9, 1994, Ser. No. 428,160

Claims priority, application Germany, May 19, 1993, 93108219.2

Int. Cl.[6] G03G *15/00*

U.S. Cl. 355—319 **3 Claims**



1. An electrographic printer device for printing web-shaped recording media having different web widths: comprising:

an image printer including an intermediate carrier of a usable width of at least twice a web width of a narrow recording medium: an image-generating means for generating a latent image on said intermediate carrier, a developer station for developing the latent image as toner image on said intermediate carrier, a charging station for charging said intermediate carrier, and a cleaning station for cleaning unused toner from said intermediate carrier;

a transfer printing station that is allocated to said intermediate carrier and accepts the recording medium: and that is of a usable width of at least twice the web width of the narrow recording medium;

a single fixing station means following said transfer printing station in a conveying direction of the recording medium for fixing the toner image on the recording medium; said single fixing station means being of a usable width of at least twice the web width of the narrow recording medium; and

a deflection means that follows said single fixing station means for selectively redirecting the recording medium to said image printer depending on operating mode for the narrow recording medium: said deflection means having an allocated return channel to said transfer printing station; whereby

in a first operating mode of said electrographic printer device for multiple printing of a single, narrow recording medium: the recording medium is conducted to a use area of said single fixing station means via said transfer printing station proceeding from a delivery region and is resupplied to said transfer printing station and a use area of said single fixing station means neighboring said use area via said deflection means proceeding from said use area of said single fixing station means; and

in a second operating mode of said electrographic printer device for single-sided printing of at least one recording media having different web width, the at least one recording media are conducted to said single fixing station means only via said transfer printing station proceeding from the delivery region;

a conveyor means allocated to said transfer printing station and for conveying the recording medium through said electrographic printer device by engaging into margin perforations of the recording medium, said conveyor means being selectively adjustable dependent on the operating mode of the printer device.

5,546,179

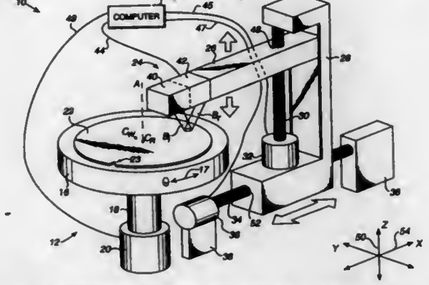
METHOD AND APPARATUS FOR MAPPING THE EDGE AND OTHER CHARACTERISTICS OF A WORKPIECE

David Cheng, 711 Hibernia Ct., Sunnyvale, Calif. 94087

Filed Oct. 7, 1994, Ser. No. 319,531

Int. Cl.[6] G01B *11/24*

U.S. Cl. 356—73 **17 Claims**



1. A method for mapping the edge of a wafer, the method comprising:

(a) positioning a wafer on a platform, said wafer having a surface and an edge;

(b) providing a sensor device over said surface of said wafer such that a beam of electromagnetic energy emitted by said sensor device is reflected from said surface of said wafer, wherein an intensity of said reflected beam is measured;

(c) providing relative movement between said sensor device and said wafer such that said sensor device is positioned at said edge of said wafer, wherein said intensity of said reflected beam is measured during said relative movement and is utilized to position said sensor device at said edge; and

(d) providing relative rotational movement between said wafer and said sensor device and measuring said intensity of said reflected beam at a plurality of locations on the edge of said wafer as datapoints, said datapoints being utilized in mapping said edge of said wafer.

5,546,180

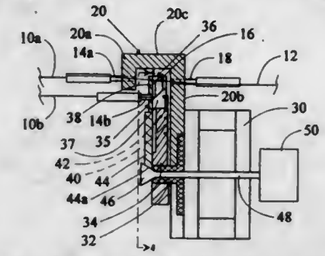
APPARATUS FOR INSERTING LIGHT SIGNALS INTO, OR RECEIVING LIGHT SIGNALS FROM, ONE OF A SERIES OF OPTICAL PATHS AND USUABLE AS OPTICAL TIME DOMAIN REFLECTOMETRY APPARATUS

Philip M. Garel-Jones, Nepean, and Timothy P. Cutts, Ottawa, both of, Canada, assignors to JDS Fitel Inc., Ottawa, Canada

Filed Jul. 6, 1995, Ser. No. 498,878

Int. Cl.[6] G01N *21/84; G02B 6/34;26/08*

U.S. Cl. 356—73.1 **13 Claims**



1. A device for inserting light signals into, or receiving light signals from, a selected one of a series of optical paths, comprising:

a series of pairs of first and second lenses each pair connected to a corresponding pair of first and second waveguides, the lenses of each pair being optically aligned so that normally a light signal can pass through a lens pair between the first and second waveguides and so that each pair of aligned lenses and the corresponding waveguides can constitute one of said optical paths, the lenses of each pair being separated by a gap, said first lenses being spaced apart along the circumference of a first circle, and the second lenses being spaced apart along the circumference of a second circle which is adjacent to the first circle and has the same axis,

a movable optical element optically connected to a monitor waveguide; and

means for moving said movable optical element between an operative position, in which the optical element is within a selected one of said gaps and in which a light signal can be transmitted between the monitor waveguide and the second lens via the optical element, and an inoperative position in which a light signal can pass without interference between the lenses of a pair;

wherein said means for moving said optical element comprises a rotary member carrying said movable optical element and rotatable about said axis, and wherein means are provided for rotating said rotary member for precisely aligning the movable optical element with one of said gaps.

5,546,181

OPTICAL DETECTOR EMPLOYING AN OPTICALLY-ADDRESSED SPATIAL LIGHT MODULATOR

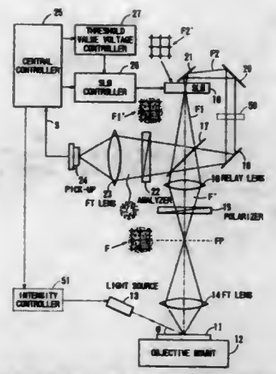
Yaji Kobayashi; Narihiro Yoshida; Naohisa Mukohzaka; Haruyoshi Toyoda, and Tsutomu Hara, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Shizuoka-ken, Japan

Filed Oct. 3, 1994, Ser. No. 316,478

Claims priority, application Japan, Oct. 1, 1993, 5-246902

Int. Cl.[6] G01N *21/00;* G02B *27/42*

U.S. Cl. 356—237 **9 Claims**



1. An optical detector for detecting an abnormal portion in a periodic pattern in an objective, the optical detector comprising:

a light source for irradiating coherent light onto an objective;

a Fourier transform lens for receiving light diffracted and scattered at the objective and for Fourier transforming the light to generate a Fourier image, the Fourier image having a high intensity spectral component corresponding to the periodic pattern on the objective and a low intensity spectral component corresponding to the abnormal portion;

a polarizer for transmitting a predetermined polarization component of the Fourier image;

an optically-addressed spatial light modulator having an optically-addressing part and a light modulating part, the optically-addressing part and the light modulating part respectively receiving a write part and a read part of the predetermined polarization component of the Fourier image transmitted through the polarizer, at corresponding portions thereof;

threshold driving control means for controlling the spatial light modulator in its threshold operation so as to induce birefringence in the light modulating part at a region corresponding to an area in the optically-addressing part where the high intensity spectral component of the write part is incident while preventing birefringence from being induced in the light modulating part at a region corresponding to an area in the optically-addressing part where the low intensity spectral component of the write part is incident, the induced birefringence rotating the polarization plane of the high intensity spectral component of the read part incident in the light modulating part;

a analyzer for receiving the read part of the Fourier image outputted from the light modulating part of the optically-addressed type spatial light modulator and for blocking the high intensity spectral component thereof with its polarization plane having been rotated; and

another Fourier transform lens for inverse Fourier transforming the low intensity spectral component into an real spatial image of the abnormal portion on the objective.

5,546,182

METHOD FOR DETERMINATION OF TRACE METAL IMPURITY IN FLUORINE-CONTAINING POLYMER AND PROCESS FOR PRODUCTION OF FLUORINE-CONTAINING POLYMER USING THE METHOD

Tomizo Sota, Osaka, Japan, assignor to Daikin Industries Ltd., Osaka, Japan

PCT No. PCT/JP94/00009, § 371 Date Mar. 9, 1995, § 102(e) Date Mar. 9, 1995, PCT Pub. No. WO94/28394, PCT Pub. Date Dec. 8, 1994

PCT Filed May 20, 1994, Ser. No. 374,634

Claims priority, application Japan, May 21, 1993, 5-119456

Int. Cl.[6] G01N *21/31;21/74*

U.S. Cl. 356—312 **5 Claims**

1. A method for the quantitative determination of a trace amount of a metal impurity contained in a fluorine-containing polymer using a flameless atomic absorption spectrophotometer wherein, depending on a kind of a metal to be quantitatively determined, a predetermined amount of a sample of the polymer is incinerated under incineration conditions including an incineration temperature in the range of about 400° to 1200° C. and an incineration period

of at least about 100 seconds, and then an absorbance of the incinerated sample is measured using the flameless atomic absorption spectrophotometer.

5,546,183

LIDAR DROPLET SIZE MONITOR FOR IN-FLIGHT MEASUREMENT OF AIRCRAFT ENGINE EXHAUST CONTRAILS, DROPLETS AND AEROSOLS

Ronald W. Fegley, Whittier, and Darrell A. Terry, Huntington Beach, both of Calif., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Oct. 12, 1994, Ser. No. 321,715
Int. Cl.[6] G01C *3/00*
U.S. Cl. 356—336 **8 Claims**



1. A lidar system that is aboard a flying vehicle to monitor a particle size of particles contained in an exhaust plume produced by the vehicle, said system comprising:

means for propagating a beam that travels through the exhaust plume;

means for detecting the propagated beam after the propagated beam is reflected by the particles contained in the exhaust plume; and

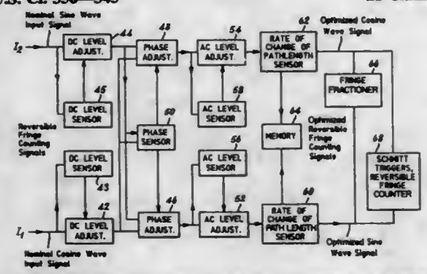
means coupled to said detecting means for calculating the particle size of the particles contained in the exhaust plume.

5,546,184

SINGLE-FREQUENCY BIDIRECTIONAL FRINGE-COUNTING INTERFEROMETER

Michael J. Downs, Liphook, England, assignor to British Technology Group Ltd., London, England

PCT No. PCT/GB92/02042, § 371 Date May 6, 1994, § 102(e) Date May 6, 1994, PCT Pub. No. WO93/09394, PCT Pub. Date May 13, 1993
PCT Filed Nov. 5, 1992, Ser. No. 232,280
Claims priority, application United Kingdom, Nov. 8, 1991, 9123785; Oct. 15, 1992, 9221698
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—345 **21 Claims**



1. A single-frequency bidirectional fringe-counting interferometer system comprising:

an optical source to provide a single-frequency optical beam;

beamsplitter means for dividing said optical beam into a reference beam and a measuring beam, a first phase difference between said optical beam and said reference beam being substantially 90°;

optical means for providing two interfering beams from said reference beam and said measuring beam, a difference in respective path lengths of said two interfering beams being related to a displacement to be measured;

two light sensing means, arranged to receive said two interfering beams, for providing two electrical signals related to said two interfering beams, each of said two electrical signals having an AC component and a DC component, a second phase difference between said two electrical signals being substantially equal to said first phase difference;

signal processing means for processing said two electrical signals, said signal processing means including:

means for continuously sensing said second phase difference between said two electrical signals, and for adjusting a phase of at least one of said two electrical signals by a first adjusted phase shift when required so that said second phase difference equals 90°,

means for continuously sensing a rate of change of said difference in said respective path lengths, for comparing said sensed rate of change with a preset rate of change, and for subtracting said respective DC components from said two electrical signals when said sensed rate of change exceeds said preset rate,

means for continuously comparing magnitudes of said respective AC components of said two electrical signals, and for normalizing said respective AC components of said two electrical signals when said compared magnitudes are not equal, and

means for storing said first adjusted phase shift,

said DC components of said two electrical signals, and

said AC components of said two electrical signals; and

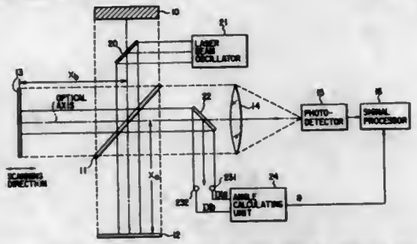
fringe counting and fractioning means for fractioning fringes and for counting said fringes formed by said two interfering beams.

5,546,185

ANGLE DETECTING APPARATUS FOR DETECTING ANGLE OF INCLINATION OF SCANNING MIRROR PROVIDED ON MICHELSON INTERFEROMETER

Eisuke Okumura, Kawasaki, and Katsuhiko Tsuno, Yokohama, both of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 23, 1994, Ser. No. 311,323
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—345 **7 Claims**



1. An angle detecting apparatus for detecting an angle of inclination of a scanning mirror of a Michelson interferometer, said apparatus comprising:

a fixed mirror situated on one of a transmission light path and a reflection light path of a beam splitter to which an incident light beam is guided;

a scanning mirror situated on the other of the transmission light path and the reflection light path of the beam splitter so as to be movable along an optical axis of the scanning mirror, said incident light beam being guided to the scanning mirror;

photodetector means for receiving an interference light beam emanating from said beam splitter, said incident light beam being guided via the beam splitter to the fixed mirror and the scanning mirror, reflected by the fixed mirror and the scanning mirror and returned to and interfered by the beam splitter, said photodetector means detecting a variation in intensity of the interference beam;

laser beam oscillation means for oscillating a laser beam;

optical means for guiding the laser beam from said laser beam oscillation means to the light paths of the beam splitter and receiving an interference laser beam from said beam splitter;

laser beam detector means for detecting variations in light intensity of the interference laser beam obtained by said optical means at at least two points in one of an azimuth direction and an elevation direction of the scanning mirror;

angle calculating means for calculating an angle of inclination of the scanning mirror in one of the azimuth direction and the elevation direction of the scanning mirror on the basis of the light intensities of said interference laser beam detected by said laser beam detector means at said at least two points; and

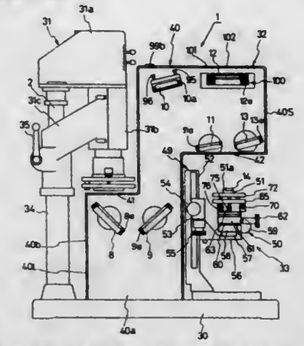
signal processor means for arithmetically calculating a wavelength of said incident light beam on the basis of the variation in intensity of the interference beam which is detected by said photodetector means, and arithmetically adjusting the calculated wavelength of said incident light beam on the basis of the angle of inclination of the scanning mirror which is calculated by said angle calculating means.

5,546,186

APPARATUS FOR HOLOGRAPHIC INTERFEROMETRY SUITABLE FOR INSPECTION OF CYLINDRICAL OPTICAL SURFACES

Shigenori Ohi, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya, Japan

Continuation of Ser. No. 255,760, Jun. 7, 1994, abandoned. This application Oct. 17, 1995, Ser. No. 544,112
Claims priority, application Japan, Jun. 8, 1991, 5-163351; Jun. 8, 1993, 5-163348; Jun. 8, 1993, 5-163349; Jun. 8, 1993, 5-163350
Int. Cl.[6] G01B *9/021;11/00*
U.S. Cl. 356—348 **11 Claims**



1. An apparatus for holographic interferometry suitable for inspection of cylindrical optic surfaces, said apparatus comprising in combination:

a light projection/observation unit including a source section having a laser light source and a collimator lens to project laser light from said laser light source in the form of parallel light rays, and an interference fringe observation section;

an interferometer unit having a holographic optical element for splitting laser light rays from said light source section into regular reflection light and diffraction light, and a reference reflector plate located in position for reflecting said regular reflection light from said optical element; and

a specimen holder unit located in a laterally open space beneath an overhanging portion of said interferometer unit, and having a specimen bolder table adjustably supported on a multiple axis adjustment mechanism to hold a specimen of cylindrical optical element horizontally thereon with a cylindrical surface of said specimen in a correct position for reception of said diffraction light from said holographic optical element;

said light projection/observation unit being enclosed in a substantially closed housing except for an aperture opened at a position forward of said collimator lens and providing light passage to and from said interferometer unit;

said interferometer unit being enclosed in a substantially closed housing except for a first aperture opened in vertical alignment with said aperture in said light projection observation unit housing and providing a light passage to and from the latter, and a second aperture opened in said overhanging portion in vertical alignment with said specimen holder unit and providing a light passage to and from the latter; and

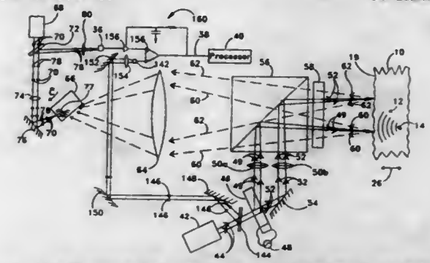
said multiple axis adjustment mechanism including at least a Z-axis adjustment stage having a lift member for lifting said specimen holder table up and down in a vertical direction, and X-axis adjustment stage provided on said lift member of said Z-axis stage for shifting a position of said specimen in a direction perpendicular to a generator cylindrical surface within a horizontal plane, a θ-angle adjustment stage provided on said X-axis stage for adjusting the position of said specimen in an angular direction within a horizontal plane, and a tilt angle adjustment stage provided on said θ-angle stage for adjustably tilting said specimen holder table to either side thereof in a direction parallel with said generator of said cylindrical surface of said specimen.

5,546,187

SELF-REFERENCING LASER-BASED ULTRASONIC WAVE RECEIVER

David M. Pepper; Thomas R. O'Meara, both of Malibu, and Phillip V. Mitchell, Simi Valley, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 15, 1995, Ser. No. 404,778
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—357 **36 Claims**



1. A self-referencing, non-contacting, laser-based ultrasonic wave receiver for detecting ultrasonic waves that vibrate a portion of a workpiece surface, comprising:

an optical beam generator for generating and directing signal and reference beams having a predetermined mutual frequency relationship to said surface, so that said signal and reference beams reflect off said surface with at least said signal beam reflecting of said vibrating surface portion and being phase modulated by said ultrasonic wave vibrations, and so that noise induced vibrations phase modulate said signal and reference beams, with said noise induced phase modulations on said signal and reference beams being in phase with respect to each other,

a photorefractive crystal,

a beam director for directing said reflected signal and reference beams to one side of said crystal,

a second optical beam generator for generating and directing a compensator reference beam to another side of said crystal so that said compensator reference beam optically interferes with said reflected signal and reference beams in said crystal, thereby writing photorefractive refractive index gratings in said crystal that diffract said reflected signal and reference beams, substantially overlap and match their wavefronts, and remove said wavefront distortions without altering their respective optical phases, so that said signal and reference beams optically interfere and generate a beat frequency, with

noise induced phase modulations that are common to said signal and reference beams substantially canceling as a result of destructive interference between them, and

a signal monitor for extracting information about said ultrasonic waves from said beat frequency.

5,546,188

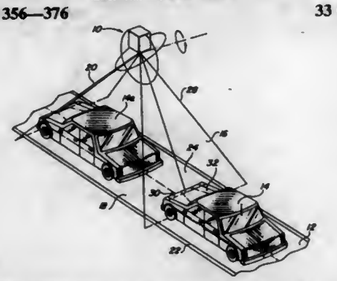
INTELLIGENT VEHICLE HIGHWAY SYSTEM SENSOR AND METHOD

Richard J. Wangler, Maitland; Robert L. Gustavson, Winter Springs; Robert E. McConnell, II, Longwood, and Keith L. Fowler, Orlando, all of Fla., assignors to Schwartz Electro-Optics, Inc., Orlando, Fla.

Continuation-in-part of Ser. No. 980,273, Nov. 23, 1992, Pat. No. 5,321,490, and Ser. No. 997,737, Dec. 30, 1992, Pat. No. 5,278,423. This application Jan. 10, 1994, Ser. No. 179,568

Int. Cl.[6] G01B *11/24*

U.S. Cl. 356—376 **33 Claims**



1. A laser sensor useful in determining the shape of a vehicle, the sensor comprising:

laser means for determining a range from the sensor to points on a vehicle when the vehicle travels within a sensing zone of the sensor and for providing range data outputs corresponding to sensor angles for ranges from the sensor to the points on the vehicle;

means for scanning the laser means within a plane across the vehicle for determining the range for the points on two dimensions of the vehicle, the scanning means having a scanning direction generally orthogonal to a direction of travel for the vehicle the scanning means providing means for determining the range and a corresponding sensor angle for each point within the scanning plane;

means for determining a vehicle speed; and

means for processing the ranges, angles and vehicle speed for providing a multiplicity of two dimensional cross-sectional profiles of the vehicle, the processing means positioning the profiles based on the vehicle speed for providing a three dimensional image representative of the vehicle, the image useful in classifying the vehicle.

5,546,189

TRIANGULATION-BASED 3D IMAGING AND PROCESSING METHOD AND SYSTEM

Ronald J. Svetkoff, Ann Arbor; Donald K. Rohrer, Whitmore Lake, and Robert W. Kelley, Ann Arbor, all of Mich., assignors to View Engineering, Inc., Simi Valley, Calif.

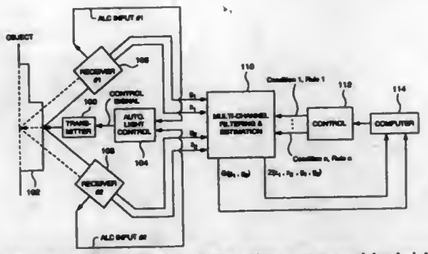
Filed May 19, 1994, Ser. No. 245,864

Int. Cl.[6] G01B *11/24*

U.S. Cl. 356—376 **33 Claims**

1. A triangulation-based 3D processing method for generating transformed height and gray scale values, the method comprising the steps of:

generating a first pair of data values represented by height data and intensity data obtained from a first direction with respect to an object;



generating a second pair of data values represented by height data and intensity data obtained from a second direction with respect to the object;

controllably selecting at least one control algorithm adapted to process the height and intensity data;

processing the intensity data from the first and second directions to obtain transformed intensity data;

processing the height data from the first and second directions and the intensity data from the first and second directions with the at least one control algorithm to obtain transformed height data; and

transmitting the transformed height and intensity data which are adapted to be processed by an image processing computer, the transformed height data representing at least one transformed height value and the transformed intensity data representing at least one transformed gray scale value.

5,546,190

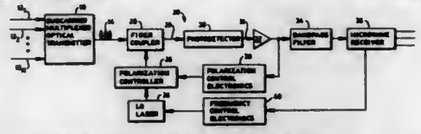
CARRIER AND CLOCK RECOVERY FOR LIGHTWAVE SYSTEMS

Paul M. Hill, 28 Walnut St., Millis, Mass. 02054, and Robert Olshansky, 8 Old Farm Rd., Wayland, Mass. 01778

Filed Sep. 9, 1992, Ser. No. 942,251

Int. Cl.[6] H04B *10/00*

U.S. Cl. 359—158 **6 Claims**



1. An optical communication system comprising:

transmitter means including means for generating an optical carrier and means for modulating the optical carrier with a composite modulation signal comprising a pilot tone and a plurality of modulated subcarrier frequencies generated from said pilot tone to provide an optical signal; and

receiver means remotely located from said transmitter means and means for coupling said optical signal from said transmitter means to said receiver means, said receiver means including

local oscillator means controlled by an automatic frequency control signal for generating a local light beam, said local oscillator means being tunable over a prescribed frequency range,

detector means responsive to the received optical signal and said local light beam for providing a detected signal at an intermediate frequency which carries said composite modulation signal, and

electrical receiver means responsive to the composite modulation signal from said detector means for simultaneously generating from said pilot tone of the detected signal a clock signal for demodulating said subcarriers from said composite modulation signal, said automatic frequency control signal for controlling said local oscillator means.

5,546,191

RECORDING AND REPRODUCING APPARATUS

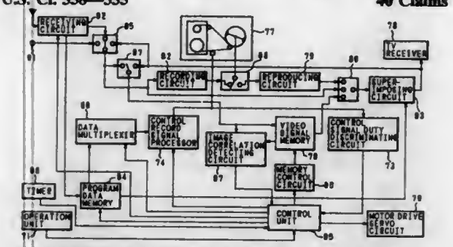
Taketoshi Hibi; Kenji Maeno; Kihei Ido; Ken Onishi; Shinobu Ueda; Akiyoshi Hirano; Keiji Hatanaka, and Takashi Shiroshita, all of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 22, 1993, Ser. No. 20,593

Claims priority, application Japan, Feb. 25, 1992, 4-037601; Aug. 6, 1992, 4-232878; Aug. 25, 1992, 4-225899; Oct. 1, 1992, 4-289664

Int. Cl.[6] H04N *5/76;9/79;5/445*

U.S. Cl. 358—335 **40 Claims**



3. An apparatus for preparing a multi-screen, comprising:

a video input,

a video data head for writing to and reading from a tape,

a record selecting switch selecting a signal to be recorded from a plurality of recording input signals,

a recording circuit inputting a signal from said record selecting switch and supplying a record signal to said video data head,

a reproducing circuit receiving a signal from said video data head and outputting reproduced video data,

a recording/reproducing switch switching the video data head between said recording circuit and said reproducing circuit,

a memory receiving reproduced video data from said reproducing circuit,

a memory controller thinning video data frames in said memory and writing thinned video data frames to said memory to prepare the multi-screen,

an image correlation circuit correlating video data from said reproducing circuit and video data already stored in said memory, and

a control unit storing the video data from said reproducing circuit in said memory as part of the multi-screen if said correlation is not more than a predetermined value.

5,546,192

DEVICE FOR RECORDING AN IMAGE SIGNAL SO THAT THE RESULTING RECORDED SIGNAL HAS A SMALLER NUMBER OF HORIZONTAL SCANNING LINES IN A FIELD

Koichi Sato, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 68,088, May 28, 1993, abandoned. This application Jun. 8, 1994, Ser. No. 257,442

Claims priority, application Japan, Jun. 1, 1992, 4-165310

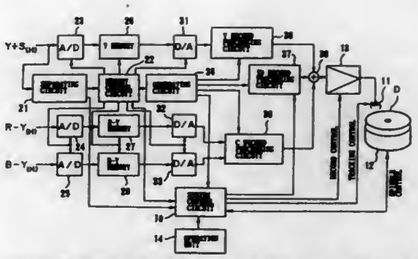
Int. Cl.[6] H04N *5/76;9/79*

U.S. Cl. 358—335 **25 Claims**

1. A device for processing an image signal, said device comprising:

means for reading a first mode image signal, which comprises said image signal processed in accordance with a first mode to have K horizontal scanning lines per field; and

means for recording a second mode image signal onto a recording medium, said second mode image signal being formed by processing said first mode image signal to have L horizontal scanning lines per field, L being smaller than K, an integer M being equal to the integer component of K+L, a number N being the remainder of K+L, said recording means comprising means for recording a part of N of said K horizontal scanning lines of said first mode image signal in a part of a vertical blanking period of said second mode image signal, whereby the number of horizontal scanning lines recorded on said recording medium is increased in comparison with a device in which said vertical blanking period is not used for recording said second mode image signal.



5,546,193

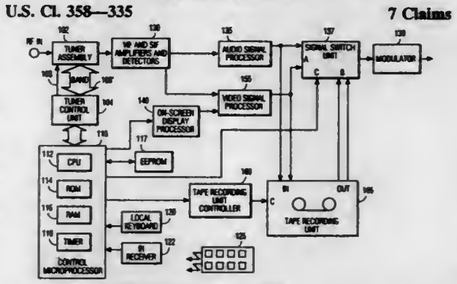
AUTOPROGRAMMED, CHANNEL MAPPING FOR A VIDEO CASSETTE RECORDER

James E. Hailey, Indianapolis; Foy E. Wilkey, Fishers, and Randall D. Staggs, Carmel, all of Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Continuation of Ser. No. 695,026, May 2, 1991, abandoned. This application Sep. 15, 1994, Ser. No. 306,848

Int. Cl.[6] H04N *5/76*

U.S. Cl. 358—335 **7 Claims**



1. A videocassette recorder, comprising:

tuner means for selecting a particular RF signal from a group of RF signals in response to a control signal, said RF signals corresponding to television channels;

control means for generating said control signal for causing said tuner means to select said particular RF signal;

means, coupled to said control means, for entering data in response to operation by a user; and

memory means for storing channel related data;

said control means in response to said data entered by said user causes said tuner means to automatically tune to each of said television channels, said control means storing in said memory means autoprogramming data indicative of each active channel detected;

said control means including programming means for receiving an entry of a numeric code for programming said videocassette recorder to tune to a specific channel on a specific time and date and record a received television signal for a specific duration of time, said control means decoding said numeric code to produce a specific channel guide number of a plurality of channel guide numbers;

said control means using said autoprogramming data in a first mode for skipping inactive channels in response to a channel up or channel down command, and in a second mode for storing said active channel data for channel remapping during a set-up mode for said programming means;

said control means using said autoprogramming data for generating a display of a first list of only said active channels and a second list of said channel guide channel numbers, said first and second lists having an equal number of entries, and in response to said data entered by said user, performing said remapping of channels by changing one of said channel guide channel numbers to a predetermined channel number in order to associate it with one of said displayed active channel numbers; and

in response to said decoded particular channel guide channel number, said control means retrieves said associated active channel number;

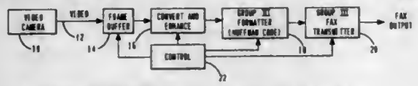
said control means causing said tuner means to tune to said associated active channel on said specific time and date and causing the recording of a television signal for said specific duration of time.

5,546,194

METHOD AND APPARATUS FOR CONVERTING A VIDEO IMAGE FORMAT TO A GROUP III FAX FORMAT

Jay B. Ross, Pennington, N.J., assignor to Videofaxx, Inc., Lambertville, N.J.

Filed Mar. 23, 1994, Ser. No. 216,666
Int. Cl.[6] H04N *1/40;1/00;1/32;1/04*
U.S. Cl. 358—445 **18 Claims**



1. A video-to-Group III FAX converter, comprising:

an video input for receiving a video input signal having sequential lines of video information;

a first conversion device for converting said lines of video information to an array of analog pixels in a frame buffer, each of said analog pixels having a digital value that represents an analog sampled value within an associated one of said lines of video information;

a mapping device for mapping said array of said analog pixels in said frame buffer to a binary image space associated with a Group III FAX format as binary image pixels, said binary image space comprising a larger number of binary image pixels than said analog pixels stored in said frame buffer, and wherein said mapping device is operable to expand each of said analog pixels stored in said frame buffer to provide an expanded array of analog pixels having an aspect ratio corresponding to the aspect ratio of said binary image pixels, said mapping device mapping said analog pixels in said frame buffer to said expanded array of analog pixels by mapping said analog pixels to virtual pixels in a virtual frame buffer as intermediate values and having an associated virtual image space substantially similar to the image space of said expanded array of analog pixels such that less than the total number of said virtual pixels corresponding to said binary image pixels are generated and stored at a given time in said virtual frame buffer, said mapping device having a spatial filter for filtering said intermediate mapped pixels in said virtual frame buffer to provide filtered virtual pixels which form said expanded array of analog pixels, said mapping device operable to map said expanded array of analog pixels to said binary image space; and

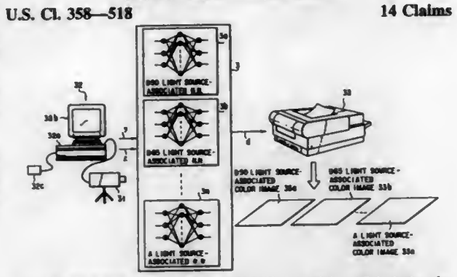
a FAX transmission device for transmitting said binary image pixels in said binary image space via a Group III FAX protocol over a FAX transmission medium.

5,546,195

APPARATUS FOR REPRODUCING COLOR IMAGES

Yoshifumi Arai, Tokyo, Japan, assignor to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Filed Aug. 11, 1994, Ser. No. 289,085
Int. Cl.[6] H04N *1/46;1/56;1/60*
U.S. Cl. 358—518 **14 Claims**



1. An apparatus for converting X,Y,Z; L*a*b*; or L*u*v* colorimetric values of an original color image to R,G,B; C,M,Y; or C,M,Y,K, color separation values, the apparatus comprising:

a plurality of converting means for converting the colorimetric values of the original color image which has been obtained under a specific illuminant to the color separation values under a plurality of observation illuminants differing in types;

means for selecting one of said plurality of converting means; and

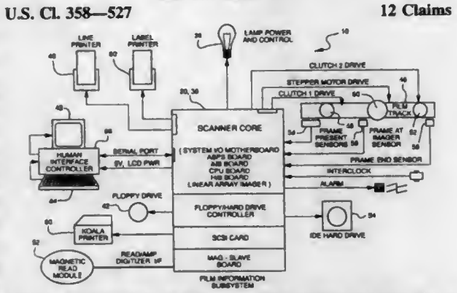
means for outputting the color image based on the color separation value obtained by said converting means selected by said selecting means, each of said plurality of converting means converting colorimetric values such that observed colors of the color image output by said outputting means under the corresponding illuminant match with colors of the original color image.

5,546,196

SUPPLEMENTAL PHOTOFINISHING DATA SYSTEM

Robert D. Huot, Pittsford, and John J. Acello, E. Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 17, 1995, Ser. No. 394,531
Int. Cl.[6] H04N *1/27*
U.S. Cl. 358—527 **12 Claims**



1. A supplemental photofinishing data system for use with a photofinishing station wherein photographic prints from photographic film frame images are generated, said system enabling said station to process a filmstrip including a magnetic strip and characterized by:

a stand along integral unit for supplemental data collection and distribution to a photofinishing station, said unit having:

a digital scanner for generating scanned film frame image signals;

a magnetic reader module for generating read magnetic strip information signals;

a processing device in communication with said digital scanner and magnetic reader module for adapting said image and information signals for use in said photofinishing station; and

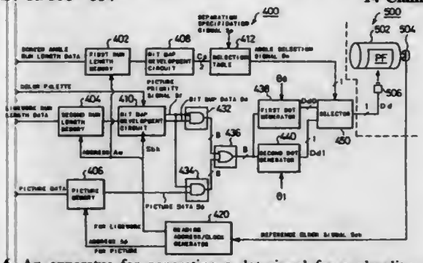
an output for communication said image and information signals to said photofinishing station.

5,546,197

METHOD AND APPARATUS FOR GENERATING HALFTONE IMAGES WITH ADJUSTED SCREEN ANGLES

Hiroshi Shibazaki, and Masayuki Sasahara, both of Kamikyo-ku, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 216,384, Mar. 23, 1994, abandoned. This application Jan. 5, 1996, Ser. No. 583,583
Claims priority, application Japan, Mar. 26, 1993, 5-092244
Int. Cl.[6] H04N *1/21;1/40;1/46;1/23*
U.S. Cl. 358—534 **14 Claims**



6. An apparatus for generating a dot signal for a plurality of color separations to record a halftone image of each color separation, comprising:

area dividing means for dividing a whole image area into a plurality of image areas;

screen angle assigning means for assigning a set of screen angles for said plurality of color separations with respect to each of said plurality of image areas;

a first memory for storing a plurality of color-separated image signals for said plurality of color separations, said plurality of color-separated image signals representing a color image in said whole image area;

a second memory for storing a plurality of screen pattern data for said plurality of color separations;

selection means for selecting one of said plurality of screen pattern data for each color separation in each of said plurality of image areas according to said assigned set of screen angles assigned to each of said plurality of image areas; and

a dot signal generator for comparing the selected screen pattern data with the color-separated image data for each separation, to thereby generate a dot signal for recording a halftone image of each color separation, wherein said plurality of color separations include four color separations for yellow, magenta, cyan and black inks and said apparatus, further comprising:

a third memory for storing mode data assigned to each of the plurality of image areas, the mode data representing a first mode where screen angles of the four color separations are set at predetermined standard values, and a second mode where the screen angles of the four color separations are adjusted from the predetermined standard values; and

screen angle data generating means for producing the screen angle data representing screen angles θ(Y), θ(M), θ(C), and θ(K) for yellow, magenta, cyan, and black, respectively, according to the following Table A with respect to pixels to which the mode data indicating the second mode is assigned:

TABLE A

COLOR SEPARATION	RELATIONS OF DOT %	SCREEN ANGLES			
NEITHER 100%/0%	D(Y), D(M), D(C), D(K)	θ (Y)	θ (M)	θ (C)	θ (K)
Y	N/A	45	—	—	—
M	N/A	—	45	—	—
C	N/A	—	—	45	—
K	N/A	—	—	—	45
Y and M	N/A	0	45	—	—
Y and C	N/A	0	—	45	—
Y and K	N/A	0	—	—	45
M and C	D(M) > D(C)	—	45	0	—
M and C	D(M) ≦ D(C)	—	0	45	—
M and K	D(M) > D(K)	—	45	—	0
M and K	D(M) ≦ D(K)	—	0	—	45
C and K	D(C) > D(K)	—	—	45	0
C and K	D(C) ≦ D(K)	—	—	0	45
Y, M and C	D(M) > D(C)	75	45	15	—
Y, M and C	D(M) ≦ D(C)	75	15	45	—
Y, M and K	D(M) > D(K)	75	45	—	15
Y, M and K	D(M) ≦ D(K)	75	15	—	45
Y, C and K	D(C) > D(K)	75	—	45	15
Y, C and K	D(C) ≦ D(K)	75	—	15	45
M, C and K	D(M) > D(C) & D(M) > D(K)	—	45	15	75
M, C and k	D(C) ≧ D(M) & D(C) > D(K)	—	15	45	75
M, C and k	D(K) ≧ D(M) & D(K) ≧ D(C)	—	15	75	45
Y, M, C and K	D(M) > D(C) & D(M) > D(K)	0	45	15	75
Y, M, C and k	D(C) ≧ D(M) & D(C) > D(K)	0	15	45	75
Y, M, C and k	D(K) ≧ D(M) & D(K) ≧ D(C)	0	15	75	45

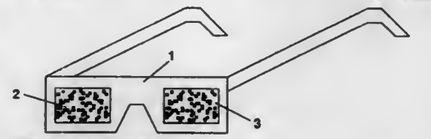
where D(Y), D(M), D(C), and D(K) denote dot percentages of yellow, magenta, cyan, and black, respectively, "N/A" means that there are no conditions for the relations among the dot percentages D(Y), D(M), D(C), and D(K).

5,546,198

GENERATION OF SELECTIVE VISUAL EFFECTS

Joseph van der Gracht, 10941 Kathleen Ct., Columbia, Md. 21044, and Ravindra Athale, 5311 Dunleigh Dr., Burke, Va. 22015

Filed Sep. 30, 1994, Ser. No. 316,492
Int. Cl.[6] G03H *1/00*
U.S. Cl. 359—1 **30 Claims**



2. An eyeglass comprising:

a frame having an aperture; and

a far field transmission hologram provided in said aperture of said frame, said far field transmission hologram having a graphic image encoded therein, wherein, when said eyeglass is superimposed on a natural scene as viewed by said user through said hologram.

5,546,199

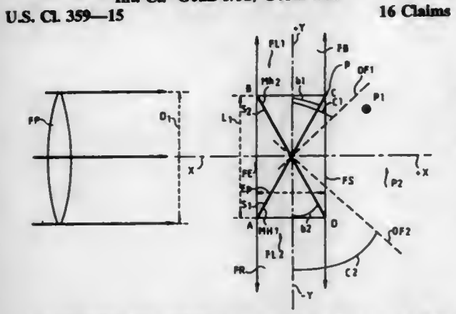
Patent Not Issued For This Number

5,546,200

CHROMATIC LIGHT SEPARATOR AND PICTURE PROJECTOR USING A CHROMATIC LIGHT SEPARATOR

Christophe Nicolas, Bicetre; Brigitte Loiseaux, Villebon Sur Yvette; Cécile Joubert, and Jean-Pierre Huignard, both of Paris, all of, France, assignors to Thomson-CSF, Puteaux, France

Filed May 20, 1993, Ser. No. 63,741
Claims priority, application France, May 22, 1992, 92 06272
Int. Cl.[6] G02B 5/32; G03H 1/10
U.S. Cl. 359—15 16 Claims



1. A chromatic light separator for illumination by a primary light beam, said separator comprising:

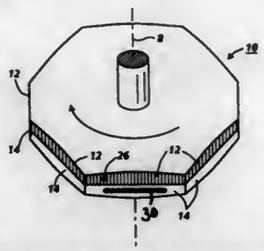
at least two holographic mirrors for reflecting first and second wavelengths of light, respectively, and thereby producing first and second monochrome beams from said primary light beam, said two mirrors intersecting each other within a prism, wherein said prism is a rectangular parallelepiped having two opposing square shaped faces and four non-square rectangular faces, said two square shaped faces serving as entry and exit faces, respectively, for said primary light beam which passes through said prism, wherein each of said holographic mirrors has a planar general orientation at an angle from said entry face not equal to 45° and comprises holographic index fringes; said fringes being at a non-zero angle from said general orientation, so that a square portion of an incident beam undergoes anamorphosis from a square shape to a rectangular shape while being reflected by said mirror.

5,546,201

DOUBLE BOUNCE PASSIVE FACET TRACKING WITH A REFLECTIVE DIFFRACTION GRATING ON A FLAT FACET

Jean-Michel Guerin, Glendale, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 20, 1994, Ser. No. 359,503
Int. Cl.[6] G02B 5/18;26/10;26/12
U.S. Cl. 359—17 15 Claims



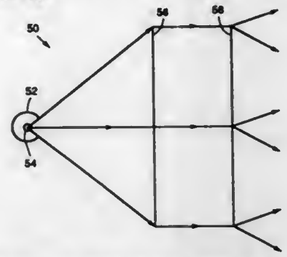
1. A rotating polygon having an axis of rotation and at least one reflective facet wherein the improvement comprises each facet having two reflective portions extending across the facet in a direction generally transverse to the axis of rotation, and one portion being a reflective mode diffraction grating wherein the reflective mode diffraction grating is comprised of a plurality of grooves, each groove generally parallel to the axis of rotation, each groove having a pitch distance which separates it from each adjacent groove, and each groove having a blazing angle which defines a depth of each groove.

5,546,202

REAR PROJECTION SCREEN FOR HIGH AMBIENT LIGHT ENVIRONMENTS HAVING A PINHOLE AREA SUBSTANTIALLY EQUAL TO LUMINOUS AREA OF THE LIGHT SOURCE

David A. Ansley, Sterling, Va., assignor to Hughes Training, Inc., Los Angeles, Calif.

Filed Jun. 17, 1994, Ser. No. 261,520
Int. Cl.[6] G02F 1/1335
U.S. Cl. 359—40 26 Claims



1. A rear projection display system, comprising:

a light source;

means for directing light generated by said light source toward a display screen;

said display screen comprising a matrix of small cells, each cell representing a display pixel which is selectively illuminated, each cell comprising:

an electrically activated cell light scattering element, said element when a first operating mode for scattering light incident thereon from the light source, said element passing light therethrough without scattering when in a second operating mode;

a cell lens element for focussing non-scattered light passing through said light scattering element at a focus point within a focal plane;

a cell opaque screen portion having a pinhole aperture located at said focus point of said lens element;

each cell having individual ones of said cell light scattering elements, cell lens elements and cell opaque screen portions; and

wherein said pinhole aperture covers a pinhole area, said lamp defines a luminous area, and wherein said pinhole area is substantially equal to said luminous area of said lamp; and

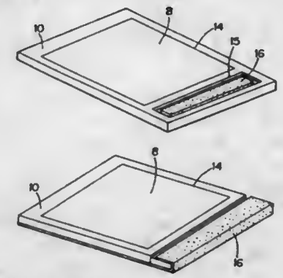
a driver system for selectively electrically activating said light scattering elements of said matrix of cells to selectively operate the respective cells in said first or second operating mode to modulate the intensity of light passing through said cells, wherein light passing through light scattering elements operating in said first mode is scattered in many directions and very little light passes through the pinhole to a viewer, and light passing through light scattering elements operating in said second operating mode is not scattered and focused through the pinhole, so as to form a desired image defined by said display pixels represented by the cells of the matrix.

5,546,203

LIQUID CRYSTAL DISPLAY HAVING A FRAME WHICH DOES NOT TRANSMIT LIGHT SOURCE HEAT TO THE DISPLAY

Yasunori Takao, Kyoto, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 13, 1993, Ser. No. 134,898
Claims priority, application Japan, Oct. 16, 1992, 4-278333
Int. Cl.[6] F21V 7/04; G02F 1/1333;1/1335
U.S. Cl. 359—49 8 Claims



1. A liquid crystal display device comprising:

a liquid crystal display board;

an illuminating device for illuminating said liquid crystal board from the backside thereof; and

a frame for fixing said liquid crystal display board in front of said illuminating device,

said illuminating device comprising a light-introducing plate disposed on the backside of said liquid crystal display board in parallel therewith, a light source disposed adjacent to an end face of said light-introducing plate, and a holding member for holding said light source and said light-introducing plate, wherein said holding member is made of a material that blocks light, and said frame has a cutout formed in a position corresponding to said light source in order to expose said holding member for releasing heat.

5,546,204

TFT MATRIX LIQUID CRYSTAL DEVICE HAVING DATA SOURCE LINES AND DRAIN MEANS OF ETCHED AND DOPED SINGLE CRYSTAL SILICON

Roger K. Ellis, Glendale, Ariz., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 26, 1994, Ser. No. 249,408
Int. Cl.[6] G02F 1/136;1/1343
U.S. Cl. 359—59 20 Claims

1. An active matrix for a liquid crystal display comprising:

a substrate;

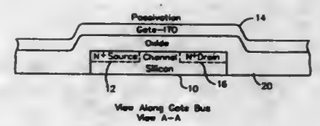
a plurality of parallel data source lines disposed on said substrate;

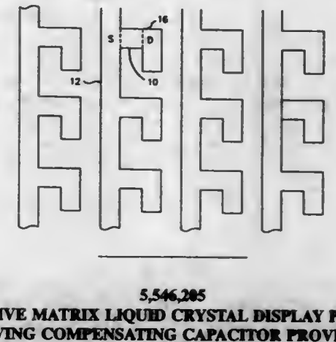
a plurality of drain means disposed proximate to said data source lines, wherein the plurality of data source lines and drain means are formed from a layer of single crystal silicon which has been etched and selectively doped;

a transparent insulating layer disposed over said data source lines, said substrate and a portion of said drain means;

a plurality of parallel gate lines disposed over the insulating layer so as to intersect said data source lines and said drain means to form a plurality of contactless thin film transistors (TFT's); and

a plurality of transparent electrodes disposed over the insulating layer, each of the transparent electrodes in electrical contact with one of the plurality of drain means.



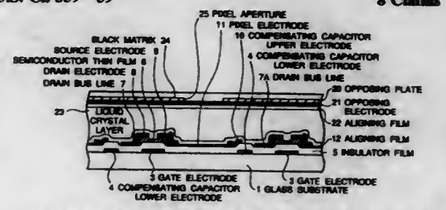


5,546,205

ACTIVE MATRIX LIQUID CRYSTAL DISPLAY PANEL HAVING COMPENSATING CAPACITOR PROVIDED WITHOUT LOWERING PIXEL APERTURE RATIO

Osamu Sukegawa, and Hirofumi Ihara, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed May 25, 1994, Ser. No. 249,624
Claims priority, application Japan, May 25, 1993, 5-122238
Int. Cl.[6] G02F 1/133
U.S. Cl. 359—59 8 Claims



1. An active matrix liquid crystal display panel at least including:

an insulating substrate;

a gate bus line formed on said insulating substrate;

a gate electrode formed on said insulating substrate to extend from one side of said gate bus line;

an insulating film covering said gate bus line and said gate electrode;

a semiconductor thin film formed on said insulating film above said gate electrode;

first and second drain bus lines formed apart from each other on said insulating film, to extend so as to intersect said gate bus line and so as to form a pixel region between said first and second drain bus lines;

a drain electrode formed on said insulating film to extend from said first drain bus line so as to overlie one end portion of said semiconductor thin film;

a source electrode formed on said insulating film to extend so as to overlie the other end portion of said semiconductor thin film, so that one thin film transistor is formed of said gate electrode, said semiconductor thin film, said drain electrode and said source electrode;

a pixel electrode formed on said insulating film, in a region defined by said gate bus line and said first and second drain bus lines, said pixel electrode being electrically connected to said source electrode;

a compensating capacitor lower electrode formed between said insulating substrate and said insulating film, to extend from

said one side of said gate bus line, along but apart from said second drain bus line; and

a compensating capacitor upper electrode formed on said insulating film to extend from said source electrode along a side of said pixel electrode in a direction of said gate bus line, so as to overlie said compensating capacitor lower electrode in proximity of said second drain bus line;

so that one compensating capacitor consists of said compensating capacitor lower electrode, said insulating film and said compensating capacitor upper electrode,

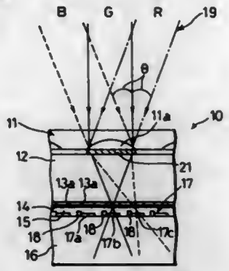
whereby a change in a gate-source capacitance of said one thin film transistor caused by a positional deviation in alignment between said gate electrode and said source electrode can be compensated by an inverse change in a capacitance of said compensating capacitor, without decreasing the aperture ratio of a pixel.

5,546,206

CONCEALING A BRIGHT DEFECT USING LIGHT BLOCKING MEANS TO BLOCK ONLY THE WAVELENGTH BAND SHED ONTO THE DEFECTIVE PIXEL

Hiroshi Nakanishi, Sakurai, and Hiroshi Hamada, Nara, both of, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 24, 1995, Ser. No. 518,826
Claims priority, application Japan, Aug. 29, 1994, 6-204036
Int. Cl.[6] G02F *1/1335;1/136;1/1333*
U.S. Cl. 359—67 **16 Claims**



1. A method of concealing a bright defect of a defective luminance point pixel in a transmission display device which displays by selectively transmitting plural beams of different wavelength bands, each band being shed onto corresponding pixels of a transmission display element through microlenses, according to a voltage applied to each pixel, comprising the step of:

selectively blocking only a beam of a wavelength band shed onto the defective luminance point pixel.

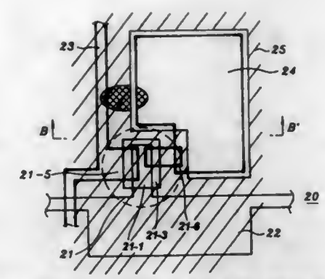
5,546,207

LIQUID CRYSTAL DISPLAY DEVICE AND METHOD FOR FABRICATING THE SAME

Man S. Kim, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 21, 1994, Ser. No. 361,140
Claims priority, application Rep. of Korea, Dec. 22, 1993, 29110/1993
Int. Cl.[6] G02F *1/136;1/13*
U.S. Cl. 359—74 **1 Claim**

1. A method for fabricating a liquid crystal display device which comprises a substrate; a plurality of thin film transistors arranged in matrix, each of the thin film transistors including a gate electrode, a gate insulating layer, a semiconductor layer, an ohmic



layer and a source/drain electrode which are formed on the substrate; a plurality of pixel electrodes arranged alternatively with respect to the thin film transistors; a plurality of gate bus lines extended between the pixel electrodes arranged in two adjacent rows and commonly connected with gates of the thin film transistors arranged in the same row; a plurality of data bus lines extended between the pixel electrodes arranged in two adjacent columns and commonly connected with the source electrodes of the thin film transistors arranged in the same column; and a passivation layer thereon, the method comprising the steps of:

forming the gate bus lines and the gate electrodes on the substrate;

sequentially depositing an insulating layer which forms each gate insulating layer, an amorphous silicon layer and an impurity-doped amorphous silicon layer on the substrate including the gate electrodes and the gate bus lines;

sequentially etching back the amorphous silicon layers to form each ohmic layer and each semiconductor layer on the insulating layer corresponding to each gate electrode;

removing a portion of each ohmic layer to expose a surface portion of each semiconductor layer;

coating an ITO film thereon and patterning it to form the pixel electrodes on each gate insulating layer at an outside of each gate electrode;

depositing the passivation layer having an opening pattern wider than each pixel electrode to expose an entire surface of each pixel electrode and expose a portion of each gate insulating layer between each pixel electrode and the passivation layer; and

re-etching a short portion between a pixel electrode and a bus line using the passivation layer as a mask to repair the short portion.

5,546,208

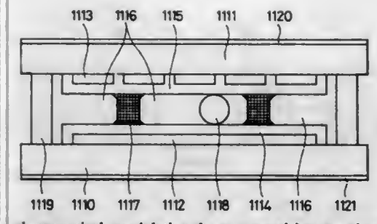
ELECTROOPTICAL DEVICE INVOLVING A MIXTURE OF LIQUID CRYSTAL, PHOTO CURABLE RESIN AND REACTION INITIOTING MATERIAL FOR FORMING RESENEOUS COLUMNS

Michio Shimizu; Toshimitsu Konuma, and Kouji Moriya, all of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Filed Feb. 18, 1994, Ser. No. 198,277
Claims priority, application Japan, Feb. 19, 1993, 5-055237; Mar. 26, 1993, 5-092606; Apr. 13, 1993, 5-110071
Int. Cl.[6] G02F *1/1335;1/13;1/1337;1/1339*
U.S. Cl. 359—81 **25 Claims**

1. An electrooptical device comprising:

a pair of substrates assembled in such a manner that a surface of one of said substrates having an electrode thereon may face against a surface of the other of said substrates having an electrode thereon;



an electrooptical modulating layer comprising a mixture of liquid crystal material, cured resin and reaction initiator provided between said pair of substrates;

an orienting means provided on at least one of the surfaces of said substrates to obtain one-direction oriented liquid crystal; and

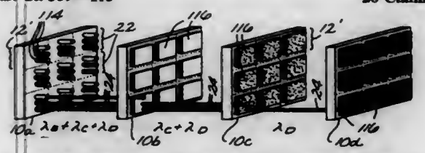
wherein the cured resin is an adhesive resin precipitated inside the said mixture and solidified into a column to adhere said orienting means or said substrates with the adhesive resin.

5,546,209

ONE-TO-MANY SIMULTANEOUS AND RECONFIGURABLE OPTICAL TWO-DIMENSIONAL PLANE INTERCONNECTIONS USING MULTIPLE WAVELENGTH, VERTICAL CAVITY, SURFACE-EMITTING LASERS AND WAVELENGTH-DEPENDENT DETECTOR PLANES

Alan E. Willner, Los Angeles; Constance J. Chang-Hasnain, Stanford, and James E. Leight, Pasadena, all of Calif., assignors to University of Southern California, Los Angeles, and Board of Trustees of the Leland Stanford University, Stanford, both of Calif.

Filed Mar. 11, 1994, Ser. No. 209,866
Int. Cl.[6] H04J *14/00;* **G02B** *27/00*
U.S. Cl. 359—115 **26 Claims**



1. Optical communication apparatus for simultaneously and reconfigurably establishing optical communication channels, comprising a plurality of light sources and a plurality of wavelength-selective detectors optically associated with said plurality light sources, wherein each of said light sources emits at a different wavelength and each of said wavelength-selective detectors has a different spectral response, said plurality of wavelength-selective detectors arranged one behind another such that each subsequent wavelength-selective detector will absorb and detect the shortest wavelength and be transparent to other longer wavelengths.

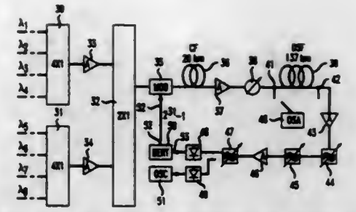
5,546,210

MULTI-CHANNEL OPTICAL FIBER COMMUNICATION SYSTEM

Andrew R. Chraplyvy, Matawan; Fabrizio Forghieri, Princeton, and Robert W. Tkach, Little Silver, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Continuation of Ser. No. 199,364, Feb. 18, 1994, abandoned.
This application Jul. 13, 1995, Ser. No. 501,887
Int. Cl.[6] H04J *14/02*
U.S. Cl. 359—124 **19 Claims**

1. Wavelength division multiplexed optical communication system including: transmitter means containing generator means and



modulator means for generating, modulating, and introducing a set of multiplexed channel carries into an optical transmission line, the carries having "carrier wavelengths" within a "total bandwidth" distributed about a "system wavelength"; receiver means including de-multiplexer means for de-multiplexing channel carries; optical amplifiers; and a transmission line of optical fiber including at least one fiber span defined at one end by such transmitter means and at the other end by such receiver means, in which the span includes at least one optical amplifier; wherein the set includes at least 4 channels of wavelengths, λ_1, λ_2, λ_3, λ_4, with a total bandwidth sufficiently narrow that channel carriers produce four-wave-mixing (4WM) products which limit attainable system capacity

CHARACTERIZED IN THAT

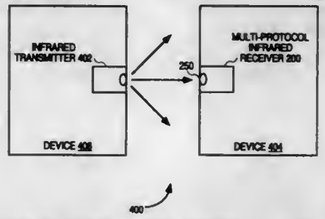
channel-to-channel frequency spacings are unequal and in that spacing are of such magnitudes as to assure substantial non-coincidence of wavelength of any 4WM product with any channel carrier wavelength, whereby the 4WM limit on capacity is lessened.

5,546,211

METHOD AND APPARATUS FOR MULTI-PROTOCOL INFRARED DATA TRANSMISSION

Mark D. Devon, San Jose, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Jun. 13, 1995, Ser. No. 490,063
Int. Cl.[6] H04B *10/00*
U.S. Cl. 359—154 **23 Claims**



16. A computer system in which a plurality of devices communicate with each other using infrared light, the computer system comprising:

a first device having an infrared transmitter, said infrared transmitter transmitting an infrared signal that encodes information according to a particular protocol;

a second device containing an apparatus for decoding said infrared signal, the apparatus comprising:

a signal reception unit for detecting said infrared signal and generating an input signal based on said infrared signal;

a plurality of filters, wherein each filter of said plurality of filters corresponds to a protocol of a plurality of protocols, said plurality of protocols including said particular protocol;

a protocol selection unit for selecting as a selected protocol said particular protocol from said plurality of protocols;

a filter selection unit coupled to said protocol selection unit and to said plurality of filters;

wherein said filter selection unit activates the filter of said plurality of filters that corresponds to said selected protocol;

wherein said filter that corresponds to said selected protocol filters said input signal to produce a filtered signal; and

a signal decoder for decoding said filtered signal.

5,546,212

OPTICAL MODULE FOR TWO-WAY TRANSMISSION

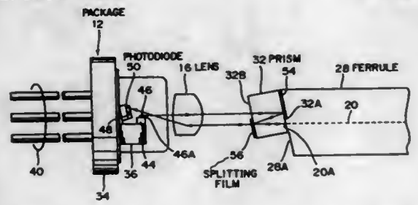
Tatsuro Kunikane; Akira Okamoto; Tetsuo Watanabe; Sadayuki Miyata, all of Kawasaki; Hiroyuki Furukawa, and Yoshimitsu Sakai, both of Sapporo, all of, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 18, 1994, Ser. No. 323,716

Claims priority, application Japan, Nov. 18, 1993, 5-289300; Jul. 29, 1994, 6-178862

Int. Cl.[6] G02B *6/42;6/34*

U.S. Cl. 359—163 **18 Claims**



1. An optical module for two-way transmission to be connected to an optical fiber having an excitation end said optical module comprising:

a lens for converging a received light output from said excitation end;

optical/electrical conversion means for converting said converged received light into a reception signal;

electrical/optical conversion means for converting a transmitting signal input thereto into a transmitted light, said electrical/optical conversion means being disposed in the vicinity of said optical/electrical conversion means, said transmitted light from said electrical/optical conversion means being converged by said lens; and

optical path shifting means for shifting the optical path of said converged transmitted light so as to be input to the excitation end, said optical path shifting means including a prism having a first surface and a second surface through which said received light and said transmitted light pass, wherein said received light passes through said first surface and said second surface in order of mention, said transmitted light passes through said second surface, reflects from said first surface and said second surface in order of mention, and passes through said first surface, and wherein said first surface and said second surface are substantially parallel to each other.

5,546,213

OPTICAL AMPLIFIER AND OPTICAL COMMUNICATION SYSTEM PROVIDED WITH THE OPTICAL AMPLIFIER

Masuo Suyama, Sagamihara, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

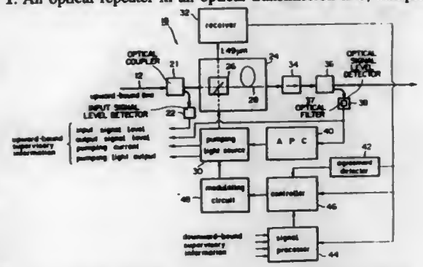
Continuation of Ser. No. 987,568, Dec. 8, 1992, Pat. No. 5,299,048, which is a continuation of Ser. No. 574,097, Aug. 29, 1990, abandoned. This application Feb. 1, 1994, Ser. No. 189,841

Claims priority, application Japan, Aug. 31, 1989, 1-223172

Int. Cl.[6] H04B *10/16;10/00*

U.S. Cl. 359—179 **5 Claims**

1. An optical repeater in an optical transmission line, comprising:



an optical fiber amplifier including a rare-earth-doped fiber;

means for receiving a signal light beam, modulated by a first information signal, from the optical transmission line and inputting the signal light beam to said optical fiber amplifier;

a pumping light source emitting a pumping light beam;

means for modulating the pumping light beam with a second information signal;

means for inputting the modulated pumping light beam to said optical fiber amplifier; and

means for inputting the signal light beam propagated through said optical fiber amplifier to the optical transmission line.

5,546,214

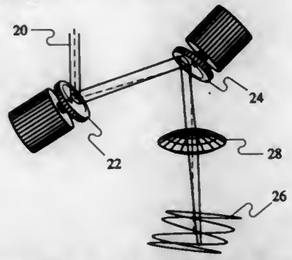
METHOD AND APPARATUS FOR TREATING A SURFACE WITH A SCANNING LASER BEAM HAVING AN IMPROVED INTENSITY CROSS-SECTION

Michael Black, Foster City, and Vladimir Lemberg, Belmont, both of Calif., assignors to Reliant Technologies, Inc., Foster City, Calif.

Filed Sep. 13, 1995, Ser. No. 527,576

Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—203 **16 Claims**



1. An apparatus for focusing and delivering a beam of light along a predetermined path on a surface, and for improving the intensity cross-section of the beam, the apparatus comprising:

a concave mirror having a central bole through which the beam passes, the concave mirror rotatably mounted about a first rotational axis;

a convex mirror rotatably mounted about a second rotational axis, the convex mirror positioned to face the concave mirror and reflect the beam back toward the concave mirror, the concave mirror positioned to reflect the beam forward toward the convex mirror in a converging manner to a focal point beyond the convex mirror so that a central portion of the beam is obscured by the convex mirror;

a rotational means for controlling the rotational positions of the concave mirror and the convex mirror so that the focal point is directed to a point on a predetermined path on the surface; and

a control means for controlling the rotational means to move the focal point along the predetermined path on the surface.

5,546,215

OPTICAL SCANNING APPARATUS

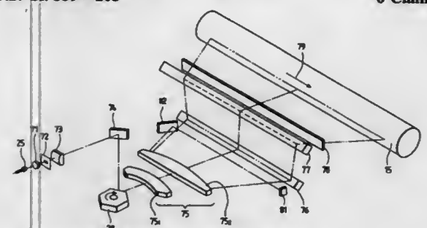
Akira Ota, Saitama, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed May 5, 1993, Ser. No. 56,892

Claims priority, application Japan, May 8, 1992, 4-116106; May 8, 1992, 4-116107

Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—208 **6 Claims**



1. An optical scanning apparatus comprising:

a deflecting means for receiving a laser beam modulated by an image signal and for repetitively deflecting the laser beam by every line of the image signal;

a single lens made of plastic and having a refractive power for receiving the deflected laser beam by said deflection means;

a planoconvex cylindrical lens made of glass and having a refractive power, which is greater than that of said single lens, only in a deflection direction of the laser beam with a convex surface of said planoconvex cylindrical lens being directed toward a plane to be scanned for receiving the laser beam which has passed through said single lens; and

a concave cylindrical mirror having a refractive power only in a direction perpendicular to the deflection direction of said laser beam for reflecting the laser beam, which has passed through said planoconvex cylindrical lens, toward the plane to be scanned for forming an image.

5,546,216

OPTICAL SCANNING SYSTEM

Seizo Suzuki, Yokohama, Japan, assignor to Ricoh Company Ltd., Tokyo, Japan

Filed Aug. 26, 1994, Ser. No. 296,433

Claims priority, application Japan, Aug. 26, 1993, 5-211868

Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—216 **5 Claims**

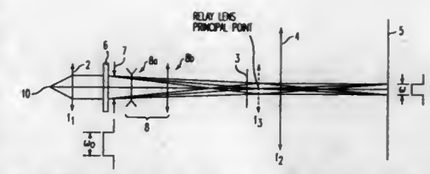
1. An optical scanning system comprising:

a point light source;

a coupling lens which couples light flux from said point light source;

an optical scanning lens which converges the light flux on a photoconductive member via a polygonal mirror after said coupling lens couples said light flux;

a diffusion board; and



an aperture which is provided near said diffusion board, the diffusion board being formed between the aperture and the coupling lens, wherein after said coupling lens couples light flux from said point light source, the light flux is directed through said diffusion board, and wherein said aperture and said photoconductive member are provided to have substantially geometrically-optically conjugate relations, thereby a shape of the light flux converged on the photoconductive member is in a shape of the aperture.

5,546,217

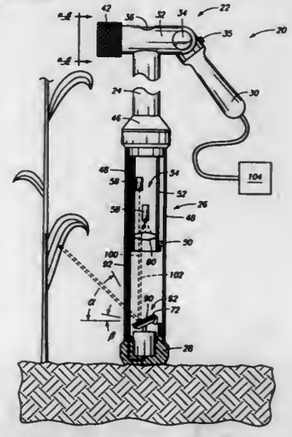
LASER SCANNING APPARATUS

Warren C. Greenway, Cambridge, Id., assignor to Decagon Devices, Inc., Pullman, Wash.

Filed Nov. 5, 1993, Ser. No. 147,399

Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—223 **33 Claims**



1. A laser scanning apparatus, comprising:

a laser optic assembly transmitting a beam of laser light and detecting return diffuse light;

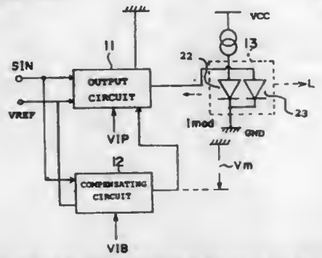
a scanner assembly including a housing and a reflector mounted within the housing, the reflector being positioned at an angle of inclination relative to the housing to reflect the beam of laser light toward objects located in a conical scan section and to reflect return diffuse light from the objects back to the laser optic assembly, the scanner assembly configured to move the reflector through complete rotations while simultaneously changing the angle of inclination of the reflector relative to the housing to reflect the beam of laser light in a spiralling path to scan an area within the conical section.

VOL 1189 ISS 2 AUG 13 1996 UMI

5,546,218
DRIVE CIRCUIT OF A SIMICONDUCTOR OPTICAL MODULATOR

Shigeo Komatsubara; Satoru Sueyoshi, and Hiroshi Kanbayashi, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Mar. 16, 1995, Ser. No. 405,026
Claims priority, application Japan, Mar. 18, 1994, 6-048846; Jun. 6, 1994, 6-122915
Int. Cl.[6] G02B *26/00*
U.S. Cl. 359—237 **29 Claims**

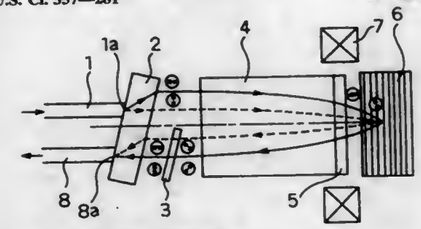


1. A circuit for driving a semiconductor optical modulator which has a first semiconductor layer having a first conduction type, a second semiconductor layer having a second conduction type, and a modulation active layer sandwiched with said first and second semiconductor layers, wherein said semiconductor optical modulator modulates light emission from a semiconductor laser diode having at least a third semiconductor layer having the first conduction type, the third semiconductor layer being electrically connected to the first semiconductor layer of said semiconductor optical modulator, the driving circuit comprising:
an output circuit for outputting a drive signal to said semiconductor optical modulator based on a signal for optical modulation inputted from the outside; and
a compensation circuit for regulating a resistance of a bypass channel for the current passing through said semiconductor optical modulator caused by the drive signal of said output circuit based on said signal for optical modulation and compensating the voltage level of said drive signal to be constant.

5,546,219
OPTICAL CIRCUIT AND LIGHT TRANSMISSION SYSTEM AND METHOD USING THE SAME

Masanori Iida, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 3, 1995, Ser. No. 397,961
Claims priority, application Japan, Mar. 3, 1994, 6-033913
Int. Cl.[6] G02F *1/09*
U.S. Cl. 357—281 **20 Claims**

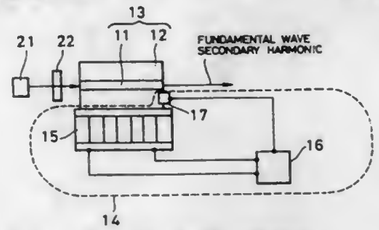


1. An optical circuit comprising:
a plurality of light input and output units for at least one of receiving and emitting light,
a polarized light separating and combining element for separating an incident light from at least one light input and output unit of the plurality of light input and output units into two separated polarized lights, and for combining the two separated polarized lights into a combined light to be emitted into at least another of the plurality of light input and output units,
polarized light rotating means for rotating the two separated polarized lights at a plurality of specific different angles, and
a wavelength dispersing element for dispersing polarized light of a specific wavelength, wherein
each one of the plurality of specific angles rotated by the polarized light rotating means is such an angle as to emit the incident light incoming from the one light input and output unit to the other light input and output unit, and to prevent an emission of further light incoming from the other light input and output unit to the one light input and output unit.

5,546,220
OPTICAL WAVELENGTH CONVERTER WITH TEMPERATURE TUNING

Tetsuro Endo, and Kiichiro Shinokura, both of Tendo, Japan, assignors to Tohoku Pioneer Electronic Corporation, Tendo, Japan

Filed Feb. 10, 1995, Ser. No. 386,494
Claims priority, application Japan, Feb. 14, 1994, 6-017451
Int. Cl.[6] G02F *1/37*
U.S. Cl. 359—332 **6 Claims**



3. An optical wavelength converter comprising:
an optical wavelength converting element having a multimode waveguide core of a nonlinear optical material having a plurality of guided modes and a clad surrounding the core for converting a wavelength of a fundamental wave entering the core to a ½ wavelength of a secondary harmonic;
a light source for emitting a light beam as a fundamental wave;
a converging optical system for providing said fundamental wave to said multimode waveguide and adjusting a coupling mode of said fundamental wave to a single mode in such a manner that the converging optical system converges the fundamental wave to an input end surface of said multimode waveguide; and
a temperature tuning device for changing a temperature of said clad and said multimode waveguide within a predetermined temperature range to maintain a phase matching temperature of said fundamental wave and said secondary harmonic in said optical wavelength converting element;
wherein said converging optical system and said temperature tuning device allow selection of one from a plurality of secondary harmonics as an output of the multimode waveguide; and
wherein said multimode waveguide has a temperature coefficient difference K between a temperature coefficient of an effective refractive index for a fundamental wave and a temperature coefficient of an effective refractive index for a secondary harmonic within said predetermined temperature range represented by the following formula,

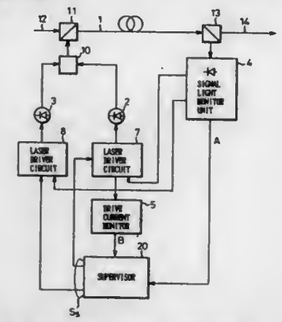
$$1\times10^{-5}>K=\partial N_F/\partial T-\partial N_{SF}/\partial T>5\times10^{-5}$$

wherein $\partial N_F/\partial T$ denotes a temperature coefficient of an effective refractive index for a fundamental wave in said multimode waveguide, and $\partial N_{SF}/\partial T$ denotes a temperature coefficient of an effective refractive index for a secondary harmonic in said multimode waveguide.

5,546,221
OPTICAL AMPLIFIER APPARATUS

Shinichiro Harasawa, Kawasaki, Japan, assignor to Fujitsu Limited, Japan

Continuation of Ser. No. 26,443, Mar. 4, 1993. This application Apr. 18, 1995, Ser. No. 425,342
Claims priority, application Japan, Mar. 6, 1992, 4-049464
Int. Cl.[6] G02F *1/39*; H04B *10/06*; H01S *3/06*
U.S. Cl. 359—341 **7 Claims**



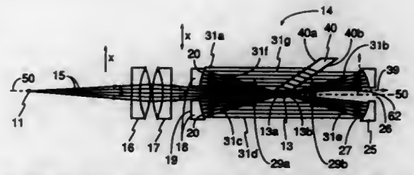
1. An optical amplifier apparatus comprising
an optical amplifying fiber,
means for coupling pumping light with input signal light in the optical amplifying fiber, to amplify the input signal light, the apparatus further comprising:
a working laser which outputs said pumping light;
one or more stand-by lasers for use in place of the working laser;
a signal light monitor unit which splits part of output signal light optically amplified by the optical amplifying fiber and monitors the intensity of the same;
a drive current monitor unit which monitors the magnitude of a drive current for driving the working laser; and
supervisory means which receive a first monitor output from said signal light monitor unit and a second monitor output from the drive current monitor unit and produces a working/stand-by switching command signal to switch between the working laser and the stand-by laser in accordance with the first and second monitor outputs;
wherein said supervisory means produce said working/stand-by switching command signal when it detects that the first monitor output falls below a first threshold (TH_1) and the second monitor output becomes larger than a second threshold (TH_2) or smaller than a third threshold (TH_1: $TH_2>TH_3$); and
said supervisory means comprises a first comparator circuit which receives as one input said first threshold (TH_1) and as another input said first monitor output, a second comparator circuit which receives as one input said second threshold (TH_2) and said third threshold (TH_3) and receives as another input said second monitor output, and a decision circuit which receives as input information the results of comparison from the first and second comparator circuits and issues said working/stand-by switching command signal under said input information.

5,546,222
MULTI-PASS LIGHT AMPLIFIER

Henry Plaessmann, Pacifica; William M. Grossman, Los Altos, and Todd E. Olson, Palo Alto, all of Calif., assignors to Lightwave Electronics Corporation, Mountain View, Calif.

Continuation-in-part of Ser. No. 979,576, Nov. 18, 1992. This application Jun. 18, 1993, Ser. No. 79,640
Int. Cl.[6] H01S *3/091;3/08*
U.S. Cl. 359—346 **84 Claims**

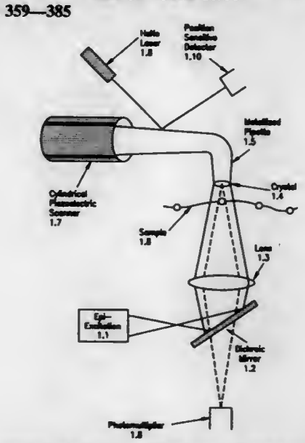
1. A multiple pass light amplifier comprising:
an optical gain medium to amplify a light beam having a selected wavelength that passes through the gain medium;
an optical cavity, having a cavity axis, containing the gain medium in one or more segments, and including N reflective surfaces or mirrors ($N\geq2$), consecutively numbered i=1, 2, . . . , N and positioned so that a light beam introduced into the cavity will pass through the gain medium at least one and will be reflected in consecutive order from each mirror once before the light beam is reflected from any one of the mirrors a second time and so that the light beam will execute two or more approximately closed path cycles within the cavity, where the light beam has approximately the same beam diameter each time the beam passes through the gain medium;
beams translation means, positioned between two of the N reflective surfaces so that the translation means does not lie on the cavity axis, for receiving and translating a light beam by a small, controllable amount in a direction approximately perpendicular to the immediately preceding direction of travel of the light beam immediately before the light beam is received by the translation means, so that when the light beam issues from the translation means, the light beam tralvels substantially parallel to the immediately preceding direction;
light beam insertion means for introducing a light beam produced by a light source into the cavity so that the beam propagates toward one of the mirrors; and
light beam removal means for removing a light beam from the cavity.



5,546,223
METHOD FOR EXTERNAL EXCITATION OF SUBWAVELENGTH LIGHT SOURCES THAT IS INTEGRATED INTO FEEDBACK METHODOLOGIES

Aaron Lewis, Neve Shanan, 18/14 Jerusalem, Israel

Filed Feb. 26, 1992, Ser. No. 840,892
Claims priority, application Israel, Feb. 26, 1991, 9732
Int. Cl.[6] G02B *21/06*
U.S. Cl. 359—385 **32 Claims**



1. A method of external excitation of subwavelength light source, comprising:
mounting a material capable of excitation to produce light in a subwavelength aperture;

directing light from a source external of said aperture at a first wavelength onto said material to excite said material to produce point source light at a second wavelength; and

directing said second wavelength light to a sample having a surface in a near field of said subwavelength source.

5,546,224

VIEWFINDER DEVICE WHEREIN THE SPACING BETWEEN THE DISPLAY AND THE OPTICAL SYSTEM IS VARIABLE TO EFFECT DIOPTER ADJUSTMENT

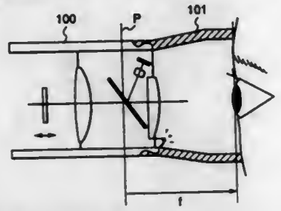
Hideo Yokota, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 28, 1994, Ser. No. 348,220

Claims priority, application Japan, Nov. 29, 1993, 5-298197

Int. Cl.[6] G02B *23/00; G03B 13/36*

U.S. Cl. 359—425 **6 Claims**



1. A finder device including:

display means for displaying an image; and

a finder optical system for observing said image therethrough, a spacing between said display means and said finder optical system being variable to effect diopter adjustment,

said display means and said finder optical system being disposed to satisfy the following condition:

$$H/f>0.37,$$

where H is the length of said display means in a horizontal direction, and f is the focal length of said finder optical system.

5,546,225

HIGH RESOLUTION PRINTING TECHNIQUE BY USING IMPROVED MASK PATTERN AND IMPROVED ILLUMINATION SYSTEM

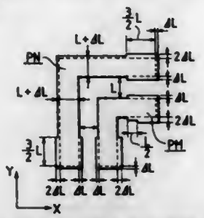
Naomasa Shiraishi, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 136,048, Oct. 14, 1993, abandoned, which is a continuation of Ser. No. 932,216, Aug. 19, 1992, abandoned. This application May 31, 1995, Ser. No. 455,141

Claims priority, application Japan, Aug. 22, 1991, 3-210891; Aug. 22, 1991, 3-210892; Aug. 23, 1991, 3-211282

Int. Cl.[6] G02B *27/46; G03B 27/42; G21K 5/00;* **G03F** *9/00*

U.S. Cl. 359—559 **23 Claims**



1. A lithographic mask serving as an original plate for exposing and transferring a micropattern onto a photosensitive substrate, said lithographic mask being obtained such that a plurality of transparent or light-shielding pattern elements complementary with a transparent or light-shielding background substrate with respect to exposure light are two-dimensionally arranged on said transparent or light-shielding background substrate,

wherein a portion of a pattern element line width is increased or decreased from design data by a small amount in accordance with two geometrical conditions of said pattern element,

one said condition being whether a target edge portion of said pattern element is an isolated edge portion;

the other said condition being whether a cross-dimension of said pattern element from said target edge portion is smaller than a predetermined value.

5,546,226

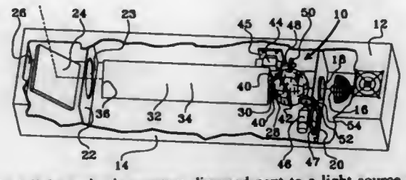
THREE DIMENSIONAL PATTERN DEVICE USED WITH LIGHT PROJECTOR

Charles E. Herington, 3890 S. Skyline Dr., Evergreen, Colo. 80439

Filed Apr. 7, 1995, Ser. No. 418,455

Int. Cl.[6] G02B *27/08*

U.S. Cl. 359—616 **14 Claims**



1. A light projection system disposed next to a light source for projecting light images having kaleidoscopic images, the system comprising:

spherical means for receiving light from the light source therethrough; and

means for producing kaleidoscopic images, said means for producing kaleidoscopic images having a light entrance end and a light exit end, said spherical means being disposed next to the light entrance end so that light directed through said spherical means is passed into said means for producing kaleidoscopic images, whereby kaleidoscopic projections are produced from said means for producing kaleidoscopic images when leaving the light exit end; and

support means for retaining said spherical means thereon and rotation means for rotating said spherical means in a universal manner in front of the light entrance end of said means for producing kaleidoscopic images.

5,546,227

IMAGE DISPLAY APPARATUS

Masato Yasugaki; Osamu Konuma, and Yoichi Iba, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 24, 1994, Ser. No. 201,384

Claims priority, application Japan, Feb. 24, 1993, 5-035211; Feb. 24, 1993, 5-035212

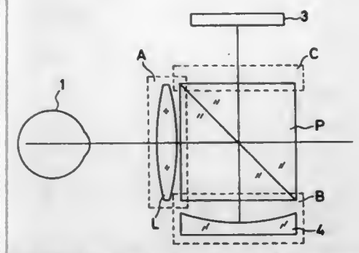
Int. Cl.[6] G02B *27/14*

U.S. Cl. 359—630 **30 Claims**

9. An image display apparatus including a face-mounted unit which has an image display device, a semitransparent reflecting member, and a magnifying reflecting mirror, and a support member for retaining said face-mounted unit on an observer's head;

said semitransparent reflecting member being provided in a direction of propagation of rays emitted from said image display device so that an optical path is formed to extend from said image display device to said semitransparent reflecting member; and

said magnifying reflecting mirror being disposed so that a complete optical path for forward and backward travel of rays is



provided between said semitransparent reflecting member and said magnifying reflecting mirror;

wherein an optical member of positive power is provided on an optical path, including said complete optical path, between said semitransparent reflecting member and an eye point that is determined by said image display device, said semitransparent reflecting member and said magnifying reflecting mirror;

wherein said magnifying reflecting mirror is a surface reflecting mirror that reflects rays at an entrance-side surface thereof; and

wherein said image display apparatus satisfies the following condition:

$$0.5<|n_{2d}/\phi_2|<4$$

where ϕ_1 is the power of said surface reflecting mirror; ϕ_2 is the power of said optical member having positive power; and n_2 is the refractive index for the spectral d-line of said optical member having positive power.

5,546,228

RE-IMAGING OPTICAL SYSTEM

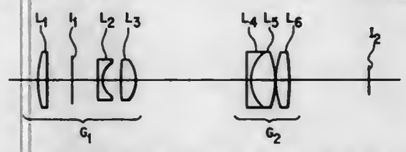
Yumiko Ouchi, Chiba-Ken, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Feb. 17, 1995, Ser. No. 390,787

Claims priority, application Japan, Feb. 18, 1994, 6-021321

Int. Cl.[6] G02B *25/00;21/02;3/08*

U.S. Cl. 359—644 **22 Claims**



1. A re-imaging optical lens system which forms a secondary image of a spatial image under a specific magnification, the secondary image positioned on an object side of the optical lens system facing the spatial image formed by the optical lens system, the re-imaging optical lens system comprising:

a front lens group and a back lens group;

the front lens group comprising, in order from the object side of the optical lens system,

a first lens group having a positive lens component, a second lens group having a negative biconcave lens component with a highly concave surface facing the secondary image, and a third lens group having a positive lens component;

the back lens group comprising a cemented double lens element with a negative lens component facing the front lens group, and the back lens group also comprises a positive lens component,

wherein the spatial image is formed on an optical path between the first lens group and the second lens group.

5,546,229

OPTICAL SYSTEM COMPRISING GRADED REFRACTIVE INDEX LENS ELEMENT

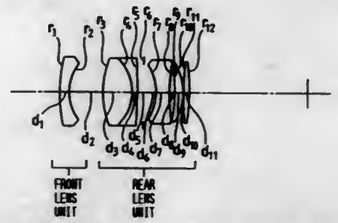
Norihiko Aoki, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo-to, Japan

Division of Ser. No. 882,254, May 8, 1992, Pat. No. 5,313,328, which is a continuation of Ser. No. 514,546, Apr. 26, 1990, abandoned. This application Mar. 15, 1994, Ser. No. 212,782

Claims priority, application Japan, Apr. 27, 1989, 1-105940

Int. Cl.[6] G02B *3/00*

U.S. Cl. 359—654 **4 Claims**



1. An optical system comprising, in order from the object side, a first lens unit having a negative refractive power and a second lens unit having a positive refractive power,

wherein a graded refractive lens element is disposed in said first lens unit, and

wherein said graded refractive index lens element has a negative refractive power of surface, a positive refractive power of medium and a negative refractive power as a whole, and has a refractive index distribution profile expressed by the following formula (1) in a direction perpendicular to an optical axis of said optical system and satisfying the following condition (2):

$$n(r)=n_0+\Sigma n_i r^{2i} \quad (1)$$

$$0<\nu_1 d \quad (2)$$

wherein the reference symbol n_0 represents refractive index of said graded refractive index lens element as measured on the optical axis, the reference symbol r designates distance as measured from the optical axis in the radial direction, the reference symbol n(r) denotes refractive index of said graded refractive index lens element as measured at the distance r from the optical axis, the reference symbol n_i represents the refractive index distribution coefficient of the 2ith order, and the reference symbol ν_{1d} designates a value determined by the following formula when the values of the coefficient of the second order for the d-line, F-line and C-line are represented by n_{1d}, n_{1F} and n_{1C}, respectively:

$$\nu_1 d=\frac{n_1 d}{n_1 F-n_1 C}.$$

5,546,230

ZOOM LENS

Hiroshi Sato, Tokyo, and Hiroyuki Hamano, Kanagawa-ken, both of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

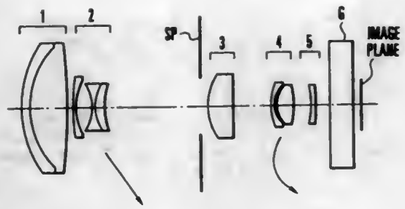
Filed Nov. 30, 1993, Ser. No. 158,987

Claims priority, application Japan, Dec. 2, 1992, 4-350359

Int. Cl.[6] G02B *15/14;13/18*

U.S. Cl. 359—684 **6 Claims**

1. A zoom lens comprising, from front to rear, a first lens unit of positive refractive power, a second lens unit of negative refractive power, a third lens unit of positive refractive power, a fourth lens unit of positive refractive power and a fifth lens unit of negative refractive power, zooming being performed by moving said second lens unit and said fourth lens unit, wherein said first lens unit consists of a negative first lens and a positive second lens.

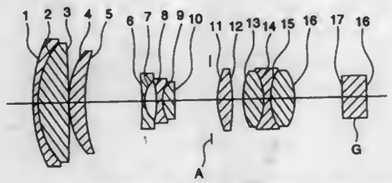


5,546,231

ZOOM LENS EMPLOYING PLASTIC LENSES

Hiroshi Sato, Hachioji, Japan, assignor to Konica Corporation, Tokyo, Japan

Filed Dec. 30, 1994, Ser. No. 366,908
Claims priority, application Japan, Jan. 18, 1994, 6-003689
Int. Cl.[6] G02B 15/14
U.S. Cl. 359—687 6 Claims



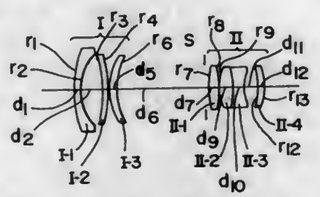
1. A zoom lens comprising, in the order named from an object side:
(a) a first lens group having a positive refractive power;
(b) a second lens group having a negative refractive power, being movable along an optical axis of said zoom lens in accordance with a change of magnification;
(c) a third lens group having a positive refractive power provided at a fixed position; and
(d) a fourth lens group having a positive refractive power, being movable along the optical axis, for compensating for a positional change of an image plane according to said change of magnification,
wherein said fourth lens group includes at least two positive lenses and at least one negative lens, and
wherein at least two lenses constituting said fourth lens group are made of plastic lenses which are cemented together.

5,546,232

TWO-GROUP ZOOM LENS

Jun Hirakawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 13, 1994, Ser. No. 258,992
Claims priority, application Japan, Jun. 14, 1993, 5-141961
Int. Cl.[6] G02B 15/14
U.S. Cl. 359—691 8 Claims



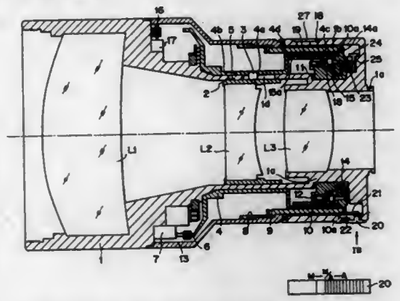
1. A zoom lens comprising a first lens group of negative power and a second lens group of positive power, located in this order from an object to be photographed, said first and second lens groups being moved relative to one another to provide various degrees of magnification, wherein;
said second lens group comprises a first lens of positive power, a second lens of positive power, a third lens of negative power, and a fourth lens of positive power, said second lens being cemented to said third lens;
wherein, distances between the lenses of said second lens group are maintained constant during a zooming operation of said zoom lens; and
wherein said second and third lenses of said second lens group satisfy the following relationships:
(a) $0.1<n_N-n_P<0.4$
(b) $-1.3<r_c/f_2<-0.5$
(c) $0.6<d_{1\text{-}2}/f_w<1.2$
wherein,
n_P represents a refractive index of said second lens,
n_N represents a refractive index of said third lens,
r_c represents a radius of curvature of a cementing surface of said second and third lenses,
f_2 represents a focal length of said second lens group,
$d_{1\text{-}2}$ represents a distance between a surface of a lens of said first lens group furthest the object to be photographed and a surface of said first lens of said second lens groups closest to the object, at a wide angle extremity, and
f_w represents a focal length of said zoom lens at the wide angle extremity.

5,546,233

LENS BARREL USING A SURFACE WAVE MOTOR

Hitoshi Imanari, Kawasaki; Hideo Kanno, Chiba, and Hiroshi Tanioka, Kashiwa, all of, Japan, assignors to Nikon Corporation, Tokyo, Japan

Division of Ser. No. 77,861, Jun. 18, 1993, Pat. No. 5,418,650, which is a division of Ser. No. 794,971, Nov. 20, 1991, Pat. No. 5,239,415. This application May 12, 1995, Ser. No. 439,774
Claims priority, application Japan, Nov. 27, 1990, 2-324748
Int. Cl.[6] G02B 15/14
U.S. Cl. 359—696 4 Claims



1. A photographing apparatus comprising:
a) a photographing device having a plurality of focus adjustment modes, including an automatic focus mode and a manual focus mode, having a focus lens and an autofocus drive motor mechanically connected to said focus lens in both of said autofocus and manual focus modes, and having a release switch operable to control said photographing apparatus;
b) a selector which selects one of the plurality of focus adjustment modes;
c) an operation device operable to set a specific one of the plurality of focus adjustment modes; and

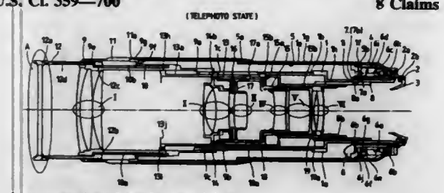
d) a control device which, when said operation device is not operated, enables the focus adjustment mode selected by said selector, and which, when said operation device is operated, enables the specific focus adjustment mode regardless of the state of said selector;
wherein said control device returns to enabling the focus adjustment mode selected by said selector before the operation of said operation device, in response to a re-operation of said release switch.

5,546,234

ZOOM LENS BARREL IN WHICH A MOVING STROKE OF THE FRONT LENS GROUP IS LONG

Haruhiko Yamanouchi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 793,609, Nov. 18, 1991. This application Feb. 22, 1995, Ser. No. 392,082
Int. Cl.[6] G02B 15/14
U.S. Cl. 359—700 8 Claims



1. A zoom lens barrel comprising:
a fixed ring;
a holding ring for holding a lens, said holding ring being mated with said fixed ring at an outside position on said fixed ring and moving in a direction of an optical axis by zooming operation; and
a cam ring, said cam ring being mated with said fixed ring at an inside position on said fixed ring, a front portion of said cam ring being protruded from said fixed ring and being mated with said holding ring at an inside position on said holding ring;
wherein said cam ring moves, by zooming operation, in the same direction as the moving direction of said holding ring.

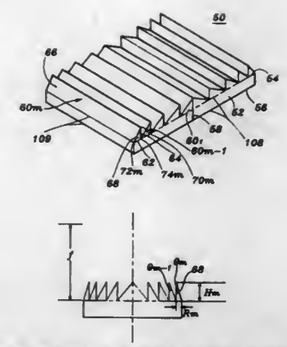
5,546,235

ASTIGMATIC LENS FOR USE IN DETECTING A FOCUSSING ERROR IN AN OPTICAL PICKUP SYSTEM

Chan-Kyu Park, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 4, 1994, Ser. No. 334,288
Claims priority, application Rep. of Korea, Nov. 5, 1993, 1993-23461
Int. Cl.[6] G02B 3/08;5/18
U.S. Cl. 359—742 5 Claims

1. A convex astigmatic lens for use in an optical pickup system comprising:
an orthorhombic base, made of a refractive material, having a first and a second surfaces, and provided with a vertically directional centerplane, wherein the first and second surfaces are parallel to each other, each of the surfaces being provided with a pair of aerie sides and a pair of lengthwise sides, and the centerplane is perpendicular to the first and second surfaces; and
two sets of M pentahedrons placed on the first surface of said orthorhombic base, each of the pentahedrons in each set being made of said refractive material and having a rectangular base surface, a rectangular inclined surface, a rectangular normal surface and a pair of right angled triangular parallel side surfaces, each of the three rectangular surfaces being provided with a pair of lengthwise sides and a pair of aerie sides and each of the triangular side surfaces having a base R_m, a height



H_m, and an inclination, m being a natural number indicating the number of the order, said base, height and inclination of the pair of triangular side surfaces of each pentahedron being defined by the pair of aerie sides of the rectangular base, rectangular normal and rectangular inclined surfaces of the corresponding pentahedron, respectively, the height H_m of the triangular side surfaces in each of the M pentahedrons being equal, each of the pentahedrons being formed by joining one of the lengthwise sides of the rectangular inclined surface with one of the lengthwise sides of the rectangular normal surface at an angle Θ_m, thereby forming a first edge, one of the lengthwise sides of the rectangular base surface with the remaining lengthwise side of the rectangular inclined surface at a right angle to thereby form a second edge, and the remaining lengthwise side of the rectangular base surface with the remaining lengthwise side of the rectangular inclined surface at an angle ($\Theta_m<90°$), thereby forming a third edge, the first, second and third edges of the M pentahedrons being parallel to each other, the second edge of each of the M pentahedrons being collinear to the third edge of a neighboring pentahedron with the exception of the pentahedrons having the triangular side surfaces with the largest R_m and shortest R_m, the rectangular surfaces of the pentahedron having the triangular side surfaces with the largest base R_m from each set sharing the same rectangular surface, the third edge of the pentahedrons having the triangular side surfaces with the shortest R_m from each set being collinear to the lengthwise sides of the first surface, respectively, and the rectangular base surfaces of the M pentahedrons from the two sets and the first surface of the orthorhombic base being also coplanar, thereby allowing the two sets of M pentahedrons to be symmetrical with respect to the centerplane, the angle Θ_m for each of the M pentahedrons being further determined by the R_m of the triangular side surfaces of the corresponding pentahedron, the base R_m being mathematically expressed as

$$R_m = \sqrt{2mf\lambda - 2(m-1)f\lambda}$$

wherein f represents the focus length and λ, the wavelength of the light source.

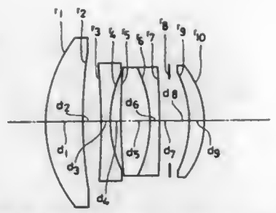
5,546,236

WIDE-ANGLE PHOTOGRAPHIC LENS SYSTEM

Yasuji Ogata, and Toshiro Baba, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 11, 1994, Ser. No. 208,836
Claims priority, application Japan, Mar. 12, 1993, 5-077420; Mar. 12, 1993, 5-077456; Jul. 16, 1993, 5-197704
Int. Cl.[6] G02B 15/02
U.S. Cl. 359—794 28 Claims

1. A wide-angle photographic lens system comprising, in order from object to image side:



a front lens unit having a positive refractive power, an aperture stop and a rear lens unit;

wherein a distance between said front lens unit and said aperture stop and a distance between said aperture stop and said rear lens unit are substantially constant,

wherein said front lens unit comprises at least one positive lens component and at least one negative lens component,

wherein said rear lens unit consists of a positive meniscus lens component having a convex surface on the image side, and

wherein a relative distance between lens components included in said front lens unit and a relative distance between lens components included in said rear lens unit are substantially constant.

5,546,237

EYEPIECE

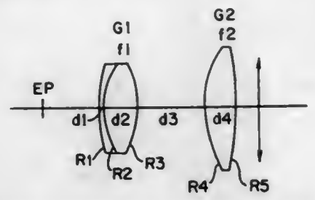
Satoshi Fukumoto, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jul. 1, 1994, Ser. No. 269,673

Claims priority, application Japan, Jul. 2, 1993, 5-188688

Int. Cl.[6] G02B *9/06*

U.S. Cl. 359—794 **5 Claims**



1. An eyepiece consisting of, in the order from an eyepoint side:

a first lens group having a positive refractive power; and

a second lens group having a positive refractive power;

said first lens group being composed of a cemented lens formed by cementing a negative lens and a positive lens together,

said second lens group being composed of another positive lens,

said positive lens of said second lens group having at least one lens surface composed of an aspherical surface,

said lens construction further satisfying the following conditions,

$$1.05<f_1/f<2.5$$

$$D/f<0.9$$

where

f=the focal length of the eyepiece,

f_1=the focal length of the first lens group,

D=the spacing between the first and second lens groups.

5,546,238

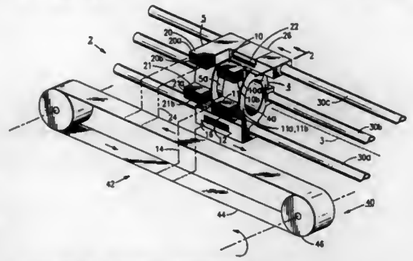
ZOOM LENS HAVING HIGH SPEED MULTI-LENS DRIVE

Gabor Devenyi, Ontario, Canada, assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 11, 1993, Ser. No. 105,698

Int. Cl.[6] G02B *7/02;15/14*

U.S. Cl. 359—823 **20 Claims**



1. An optical apparatus, comprising:

a plurality of discrete optical elements, each optical element being disposed along a common optical path;

a single drive member and

an engagable member associated with each discrete optical element to selectively connect to said single drive member,

said plurality of discrete optical elements being movable along said common optical path of the optical apparatus; and

said engagable member including at least one piezoelectric transmission clamp for coupling a respective one of said plurality of discrete optical elements to said single drive member.

5,546,239

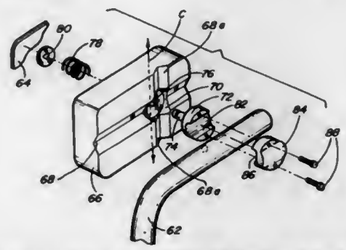
EXTENDABLE REARVIEW MIRROR

Jimmie Lewis, 523 Indian Lake Rd., Oxford, Mich. 48371

Filed Feb. 8, 1995, Ser. No. 389,272

Int. Cl.[6] G02B *5/08;7/00;5/10*

U.S. Cl. 359—855 **14 Claims**



1. An extendable rearview mirror assembly for a vehicle comprising:

a mirror housing;

a mirror disposed in said mirror housing, said mirror defining a plane; and

structure for allowing rotation of said mirror about a longitudinal pivot axis which extends through the plane of said mirror and non-parallel to the plane of the mirror, said axis being offset from a central axis of said mirror such that rotation of said mirror about said pivot axis moves said mirror between inboard and outboard positions, said inboard and outboard positions are disposed 180° apart from each other around said pivot axis.

5,546,240

POWER PACK FOR AN AUTOMOTIVE EXTERIOR MIRROR ASSEMBLY

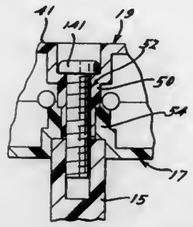
William M. Perry, Palestine, and Kerry L. Helmer, Hollansburg, both of Ohio, assignors to United Technologies Automotive, Inc., Dearborn, Mich.

Division of Ser. No. 60,268, May 12, 1993, Pat. No. 5,363,246.

This application Oct. 4, 1994, Ser. No. 317,720

Int. Cl.[6] B60R *1/06*

U.S. Cl. 359—871 **17 Claims**



10. An automotive exterior mirror comprising:

an upper housing having a plurality of fastening bores, said upper housing having a plurality of bosses extending therefrom, said bosses being hollow and located substantially coaxial with each of said plurality of fastening bores;

a lower housing having a plurality of second fastening bores for receiving said bosses of said upper housing;

a bracket for positioning said housings away from an automotive vehicle; and

all threaded fasteners fastening said upper housing to said lower housing also simultaneously fastening both to said bracket.

5,546,241

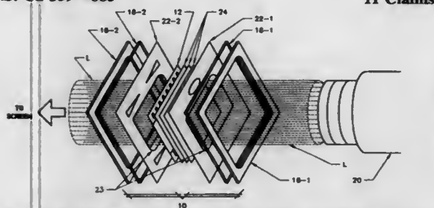
PROJECTOR SLIDES FOR NIGHT VISION TRAINING

Michael H. Mittelman; David L. Still, and Leonard A. Temme, all of Pensacola, Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 25, 1994, Ser. No. 295,581

Int. Cl.[6] G02B *5/22*

U.S. Cl. 359—885 **11 Claims**



1. A projector slide for night vision training comprising:

a film having an image containing portion for receiving light from a source on one face thereof to project the image;

at least one filter opposite the light receiving face of the film to produce a low level of light simulating available light in night viewing situations and at a spectral sensitivity compatible with night vision goggles by controlling at least one characteristic of the light that the film receives from the source selected from the group consisting of attenuating the light and modifying the spectrum of the light;

a mat of opaque material with an opening corresponding to and aligned with the film image portion adjacent the light receiving side of the film for reducing the amount of stray light reaching said film image portion; and

means for bolding together an assembly of said film, said at least one filter and said mat.

5,546,242

DEVICE FOR WRITING ON A CARD-SHAPED DATA MEMORY HAVING SENSORS FOR DETECTING MAGNETIC STRIPS AND FOR SWITCHING OFF THE MAGNETIC HEAD WHEN NO MAGNETIC STRIP IS PRESENT

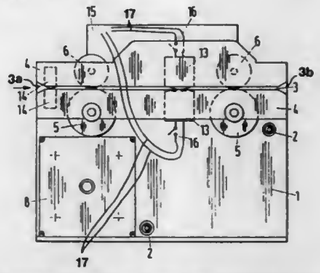
Gert Miller, Mönchengladbach, Germany, assignor to Scheidt & Bachmann GmbH, Mönchengladbach, Germany

Filed Dec. 23, 1994, Ser. No. 362,832

Claims priority, application Germany, May 7, 1994, 94107176.3

Int. Cl.[6] G11B *25/04;* **G06K** *7/08;7/00*

U.S. Cl. 360—2 **4 Claims**



1. A device for writing on a card-shaped data memory with at least one magnetic strip provided on the card-shaped data memory, said device comprising:

a card slot through which the card-shaped data memory is guided, said card slot having an inlet and an outlet;

one pair of write heads and at least one sensor provided for each one of the magnetic strips on the card-shaped data memory;

said write heads arranged on opposite sides of said card slot for writing on the magnetic strip coordinated therewith;

said at least one sensor positioned at said inlet of said card slot for detecting the presence or absence of the magnetic strip coordinated therewith;

said at least one sensor, when detecting the presence of the magnetic strip coordinated therewith, activating a switching means for switching to an inactive state that one of said write heads that is positioned on a side of said card slot remote from the magnetic strip.

5,546,243

DATA AND SYNCHRONIZATION SIGNAL OUTPUTTING APPARATUS FOR RECOVERING MISSING DATA AND SYNCHRONIZATION SIGNALS

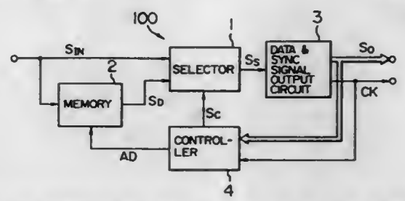
Tohru Setoyama, Kokubunji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 19, 1993, Ser. No. 137,993

Claims priority, application Japan, Oct. 22, 1992, 4-284190

Int. Cl.[6] G11B *5/09;15/12*

U.S. Cl. 360—51 **7 Claims**



1. An apparatus for producing a sync signal and a parallel data signal from a serial signal representing a data segment which

includes a plurality of blocks, each block comprising a data section, a sync pattern section and an ID section, said apparatus comprising:

storage means for receiving a serial signal input as a first reference serial signal, storing a predetermined number of latest blocks, sequentially reading each block in response to an input read instruction and outputting read blocks as a second reference serial signal;

selecting means for selecting one of the first reference serial signal and the second reference serial signal in response to an input switching signal;

output circuit means for receiving the selected signal, generating a sync pulse of a sync signal from a sync pattern of a sync pattern section of each block, generating a data signal by parallel conversion of blocks, wherein said output circuit means generates said sync pulse from a predetermined period between sync pulses generated by said output circuit means upon failure to generate the sync pulse from a sync pattern; and

control means for first outputting the switching signal to said selecting means such that said selecting means selects the first reference serial signal, determining based on the data signal and said sync pulse generated by said output circuit means, whether or not said output circuit means has successfully extracted a sync pattern for each block, and outputting the read instruction to said storage means based on the received sync signal and the switching signal to said selecting means such that said selecting means selects the second reference serial signal when the failure is determined.

5,546,244

METHOD OF RECORDING/REPRODUCING ATV SIGNAL DIVIDED INTO TRICK PLAY DATA AND NORMAL PLAY DATA

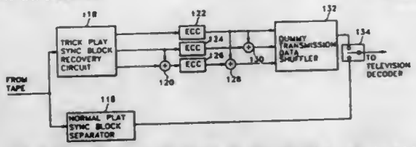
Goo-man Park, Seoul; Sei-hyun Baik, and Taek-soo Han, both of Kyungki, all of, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Aug. 11, 1994, Ser. No. 289,364

Claims priority, application Rep. of Korea, Jun. 30, 1994, 94-15674

Int. Cl.[6] G11B *5/09;* **H04N** *5/76;5/78*

U.S. Cl. 360—53 **14 Claims**



1. A digital video tape recording method for trick play in which advanced television signals containing frame data supplied at predetermined intervals and independently decodable are divided into normal play data and trick play data and are recorded on a digital video tape, said method comprising the steps of:

dividing a data area of a video sector of respective tracks of said digital video tape into first, second and third regions; and

interspersely recording a first portion of said normal play data and said trick play data in said first region and said third region, and recording a second portion of said normal play data in said second region, said trick play data recorded in said first region and in said third region being frame data corresponding to a maximum odd-fold speed of a plurality of given odd-fold speeds; and

repeatedly recording said trick play data for a number of tracks equal to twice a number of said maximum odd-fold speed.

5,546,245

DATA STORAGE APPARATUS WITH AN A/D CONVERTER HAVING A REFERENCE VOLTAGE CONTROL BASED UPON A SIGNAL BEFORE AND AFTER DISCRIMINATION

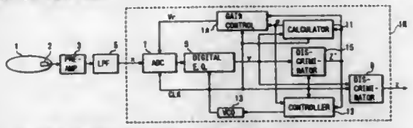
Naoki Sato, Kokubunji, Japan, assignor to Hitachi, Ltd, Tokyo, Japan

Filed Jun. 9, 1993, Ser. No. 74,297

Claims priority, application Japan, Jun. 9, 1992, 4-149255

Int. Cl.[6] G11B *5/035;* **H03M** *1/62;1/84;1/88*

U.S. Cl. 360—65 **16 Claims**



1. A data storage apparatus comprising:

a reproducing head that reproduces information stored on a recording medium and has an output,

a preamplifier coupled to the output of the reproducing head that amplifies the output of the reproducing head,

a low-pass filter coupled to the preamplifier and having an output,

an A/D converter that converts the output of the low-pass filter to a digital signal and has a reference voltage,

a discriminator coupled to an output of the A/D converter that discriminates the digital signal, and

a circuit, coupled to the discriminator, which negative feedback controls the reference voltage of the A/D converter as a function of the digital signal before discrimination by the discriminator and the digital signal that has been discriminated by the discriminator.

5,546,246

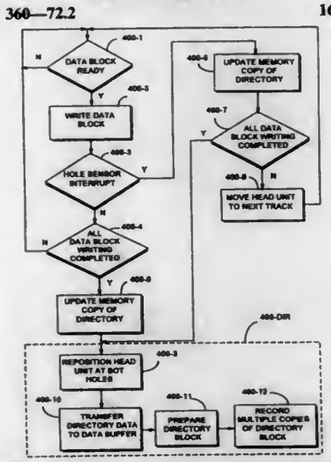
MAGNETIC TAPE DRIVE WITH END-OF-TRACK BLOCK DIRECTORY

Charles B. Klomp, Saline; Mark R. Ayers, Whitmore lake, and Daniel J. Canterbury, Howell, all of Mich., assignors to Exabyte Corporation, Boulder, Colo.

Filed Jan. 13, 1994, Ser. No. 181,317

Int. Cl.[6] G11B *15/18*

U.S. Cl. 360—72.2 **16 Claims**



1. Apparatus for recording information on a storage medium; the apparatus comprising:

a write element for at least recording information on the storage medium;

a medium transport for transporting the storage medium horizontally past the write element;

an element positioner for positioning the write element relative to a width of the medium;

a formatter for preparing data blocks for recording on the storage medium by the write element, each data block having an associated data block number;

a memory for storing a directory;

a transport controller for controlling the medium transport and the positioner for recording a plurality of horizontal tracks on the medium and for detecting an end of a track on the medium;

a processor connected to the transport controller and to the formatter updating the directory to include a block number of a track at an end of a track responsive to the end of track detection and wherein the processor causes the write element to record the directory at a predetermined position on the medium.

5,546,247

TRACKING CONTROL APPARATUS

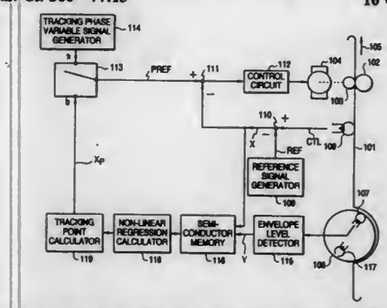
Souichirou Fujioka, Sakai; Masafumi Nishida, Ibaraki, and Michifumi Inai, Hirakata, all of, Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Jan. 26, 1994, Ser. No. 186,623

Claims priority, application Japan, Jan. 27, 1993, 5-011399; Jun. 28, 1993, 5-156673; Oct. 15, 1993, 5-258169

Int. Cl.[6] G11B *5/584*

U.S. Cl. 360—77.13 **10 Claims**



1. In a magnetic reproduction system for reproducing with a rotary head an information signal recorded on a magnetic tape which is controlled to run so as to have a predetermined relative phase with respect to a rotation phase of the rotary head, a tracking control apparatus comprising:

an envelope level detector, said envelope level detector detecting an envelope level of a reproduced information signal obtained by the rotary head;

a relative phase changer, said relative phase changer changing a relative phase of the running magnetic tape with respect to the rotation phase of the rotary cylinder;

a memory, said memory storing therein values of said relative phase changed by said relative phase changer and values of said envelope level detected by said envelope level detector respectively at the values of said relative phase whereby the values stored therein represent a characteristic curve showing a characteristic relationship between said envelope level and said relative phase;

a non-linear regression calculator, said non-linear regression calculator calculating a regression curve with respect to said characteristic curve by using the values stored in said memory; and

a controller, said controller controlling a running phase of the magnetic tape so that said relative phase becomes a value corresponding to a maximum value point of said regression curve.

5,546,248

REPRODUCING APPARATUS THAT PERFORMS TRACKING CONTROL AND PHASE CONTROL FOR A SIGNAL RECORDED IN PLURAL TRACKS OF A TAPE MEDIUM

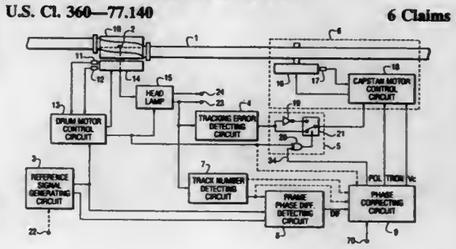
Yoshio Sakakibara, Neyagawa; Makoto Gotou, Nishinomiya; Kazuhiko Kobayashi, Moriguchi; Haruo Isaka, Yawata, and Akihiko Nakamura, Osaka, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 31, 1993, Ser. No. 40,983

Claims priority, application Japan, Apr. 3, 1992, 4-81774

Int. Cl.[6] G11B *5/584*

U.S. Cl. 360—77.140 **6 Claims**



1. A reproducing apparatus for reproducing a signal recorded on a recording tape on which a signal of one frame is segmentally recorded on n oblique tracks (n is an integer satisfying $n \geqq 4$), each track of the n oblique tracks containing therein a track number indicating a position of the track in the n oblique tracks, and at least a part of the n oblique tracks containing therein a pilot signal used for a tracking control, comprising:

a tracking control loop which performs a tracking control and comprises (a) tape transporting means for transporting said recording tape in a lengthwise direction thereof, (b) m heads (m is an integer satisfying $n > m \geqq 1$) which are disposed on a drum having said tape wound peripherally therearound for scanning the tracks on said tape by a rotation of the drum to obtain a reproduced signal, and (c) tracking error detecting means for detecting a positional deviation of said heads from the tracks from the pilot signal contained in said reproduced signal to output a tracking error signal indicative of the positional deviation, said tape transporting means being responsive to the tracking error signal for transporting said recording tape so as to eliminate the positional deviation;

reference signal generating means for generating a reference frame signal;

track number detecting means for detecting the track number contained in said reproduced signal to obtain a reproduced track identifying signal indicative of the track number;

frame phase difference detecting means which receives said reproduced track identifying signal and said reference frame signal for detecting a frame phase difference therebetween to obtain a frame phase difference signal indicative of the frame phase difference; and

phase correcting means which receives said frame phase difference signal for controlling said tape transporting means to correct a tracking position so as to eliminate said frame phase difference;

wherein the number of tracks in the n oblique tracks forming one frame is such that a signal period of the one frame is not equal to an integral multiple of a control period of the tracking control by said pilot signal.

5,546,249

TAPE LOADING APPARATUS WITH LOADING POST DRIVING DEVICE

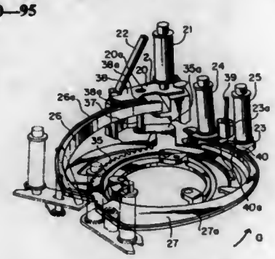
Akio Konishi, Hirakata; Yoshiyuki Saito, Kadoma; Shuzo Takeda, Hirakata; Hideaki Yoshio, Moriguchi, and Hiroshi Kurumatani, Osaka, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

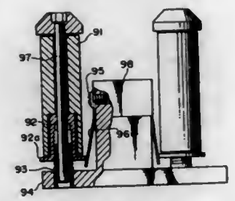
Continuation of Ser. No. 867,059, Apr. 10, 1992, Pat. No. 5,365,386. This application May 31, 1994, Ser. No. 251,275

Claims priority, application Japan, Apr. 16, 1991, 3-083887; Apr. 17, 1991, 3-085062; Apr. 17, 1991, 3-085064; Apr. 17, 1991, 3-085071

Int. Cl.[6] G11B *15/665*

U.S. Cl. 360—95 9 Claims





8. A loading post device comprising:

(a) a loading post driving device for withdrawing a magnetic tape out of a tape cassette and winding said magnetic tape around a cylindrical rotary head cylinder having a rotary head built therein, said driving device comprising:

(i) a loading boat having a through-hole;

(ii) a loading post, for withdrawing said magnetic tape, mounted on said loading boat in a position of extending upwards,

(iii) a substantially arc shaped loading guide for guiding said loading boat along the circumference of said rotary head cylinder, said loading guide having a side edge provided with a stepped portion, wherein said loading boat is movable along said loading guide,

(iv) a drive ring for transmitting driving force from a drive source to said loading boat, and

(v) a drive shaft, mounted in a position of extending upwards on said drive ring, wherein said drive shaft is inserted through said through-hole in said loading boat and said loading boat has an engagement portion engaging with said stepped portion of said loading guide, such that said loading boat is held in such a manner as to be vertically moveable as said drive ring turns; and

(b) a loading post holding device comprising:

(i) a shaft,

(ii) a rotatable roller into which said shaft is inserted,

(iii) a pipe having a hole to receive said shaft inserted through said pipe and being fixed on said loading boat in a position of extending upwardly,

(iv) a roller holder tube for retaining an axial position of said roller and holding said shaft which is tightly fitted in said roller holder tube, said roller holder tube having a flange at a lower end thereof and being screwed at an inner peripheral surface thereof in its lower portion with an upper end portion of said pipe; and

(v) an urging member fixed to said loading boat and functioning to push a peripheral edge of said flange toward said shaft so that said shaft is pressed against an inner peripheral surface of said pipe at one side.

5,546,250

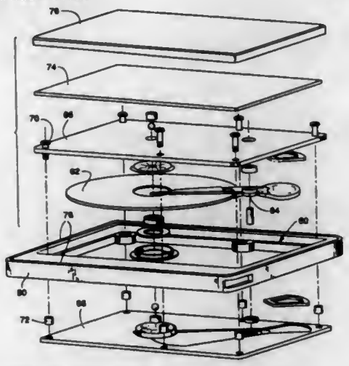
ELASTOMER GASKET THAT EXTENDS AROUND THE OUTER EDGE OF A HARD DRIVE

Mark Diel, Boulder, Colo., assignor to Maxtor Corporation, San Jose, Calif.

Continuation of Ser. No. 83,007, Jun. 24, 1993, abandoned. This application Dec. 13, 1994, Ser. No. 354,938

Int. Cl.[6] G11B *33/08;33/14*

U.S. Cl. 360—97.02 8 Claims



1. A hard disk drive assembly, comprising:

a frame that has a first side, a second opposite side and an outer edge;

a cover plate attached adjacent to said first side of said frame, said cover plate having an outer edge;

a base plate attached adjacent to said second side of said frame, said base plate having an outer edge;

a magnetic disk that has a radial axis and is located within said frame;

an actuator arm assembly coupled to said magnetic disk; and,

a dampening member that is attached to and extends from said outer edge of said frame, said cover plate and said base plate in a direction that is essentially parallel with the radial axis of said magnetic disk, and which absorbs energy applied to said housing and seals said magnetic disk, wherein:

(i) said dampening member is distinct from said cover plate, said base plate and said frame;

(ii) said dampening member has height measured in a direction parallel to said outer edge and width measured in a direction parallel to said radial axis of said magnetic disk;

(iii) said beight of said dampening member is substantially equal to the height of said disk drive assembly;

(iv) said dampening member extends in a direction parallel to said radial axis of said magnetic disk in an outward direction away from the center of said housing beyond said outer edges of said frame, of said cover plate and said plate; and

(v) said dampening member contacts the outer edge of at least one of said frame, said cover plate and said base plate on at least three sides of said assembly.

5,546,251

FLOATING MAGNETIC HEAD HAVING A MAGNETIC HEAD CORE WITH A BALANCED WINDING BONDED TO A SLIDER SIDE SURFACE

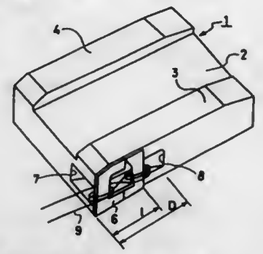
Motoji Egawa; Kazutoshi Takayanagi; Akio Takayama; Tetsuji Fujita, and Akinobu Sano, all of Shizuoka-ken, Japan, assignors to Minebea Co., Ltd., Nagano-ken, Japan

Division of Ser. No. 59,297, May 11, 1993, abandoned. This application Feb. 15, 1995, Ser. No. 389,055

Claims priority, application Japan, May 28, 1992, 4-162005; Aug. 27, 1992, 4-252147; Aug. 28, 1992, 4-254169; Nov. 11, 1992, 4-326060

Int. Cl.[6] G11B *5/60*

U.S. Cl. 360—103 3 Claims



1. A floating magnetic head comprising:

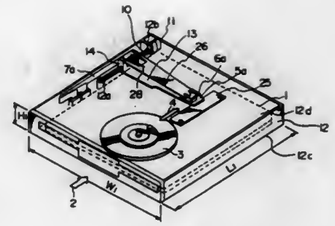
a substantially rectangular alider having a top surface and a bottom surface having a floating surface, the slider made of a non-magnetic material and having leading and trailing ends said slider having side surfaces located between the top and bottom surfaces extending from the leading end to the trailing end, the slider being provided with a groove in one of said side surfaces which gradually increases in depth along one side of the slider extending toward the trailing end and has an opening at the trailing end;

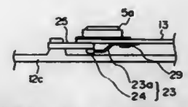
rails mounted on the floating surface of the slider which is opposite to a magnetic recording medium to produce a floating force;

a magnetic head core being bonded to said one of the side surfaces of the slider external to the rails with a glass film which is formed on said one of the side surfaces of the slider;

the magnetic head core having first and second legs, the second leg being located at the trailing end of the slider without protruding from the trailing end such that the first leg is located between the second leg and the leading end of the slider, the magnetic head core having a read/write gap; and

a first coil wound around the first leg in a first sense and a second coil wound around the second leg in a second sense opposite to the first sense, the first coil and second coil being connected in series, the first coil and the second coil being at least partially in the groove, wherein the length of the groove measured in the longitudinal direction of the slider is greater than the length of the magnetic head core measured in the longitudinal direction of the slider.





therein said insertion slot, a rear side opposing the front side, left and right sides on opposite sides of the front side and also having a chassis incorporated into said housing so as to define a bottom surface in said accommodation space;

a rotatable lead screw laid along and rotatably supported on one of said left and right sides, said lead screw extending in a cartridge loading and unloading direction in which said cartridge is loaded in and unloaded from said accommodation space through said insertion slot;

a guide block having bearing holes through which the lead screw pierces and adapted to be moved in said cartridge loading and unloading direction;

a pair of upper and lower carriage arms extending into said accommodation space from said guide block and adapted to interpose said loaded disc cartridge between said upper and lower carriage arms;

upper and lower reading heads mounted respectively on said upper and lower carriage arms, for picking up signals from upper and lower surfaces of said disc, respectively;

a guide plate extending in said cartridge loading and unloading direction and fixed to protrusions formed on said chassis so as to define a gap between said guide plate and the chassis, said guide plate being slidably engaged with a distal end of said lower carriage arm;

a means for resiliently holding said distal end of said lower carriage arm against said guide plate so that said distal end of said lower carriage arm slides along said guide plate at a substantially uniform height from the chassis;

a lead pin fixed to said guide block and engaged with said lead screw; and

a stepping motor located adjacent to said one of said left and right sides, and adjacent to said rear side of said housing, having a drive shaft integrally incorporated with one end of said lead screw for rotating said lead screw so as to feed said guide block through said lead pin, whereby said reading heads are fed radially with respect to said disc in said cartridge loading and unloading direction.

5,546,252

THIN AND SMALL-SIZED FLEXIBLE DISC UNIT

Saburo Hasegawa, Hanamaki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 22, 1994, Ser. No. 263,685

Claims priority, application Japan, Jun. 25, 1993, 5-154773; Jun. 30, 1993, 5-162122

Int. Cl.[6] G11B *5/55;21/08;5/48;5/54*

U.S. Cl. 360—106 12 Claims

1. A flexible disc apparatus comprising:

a housing having an insertion slot through which a disc cartridge is inserted and an accommodation space wherein said thus inserted disc cartridge is loaded and a disc in said disc cartridge is rotated, said housing having a front side defining

5,546,253

DIGITIAL OUTPUT MAGNETORESISTIVE (DOMR) HEAD AND METHODS ASSOCIATED THEREWITH

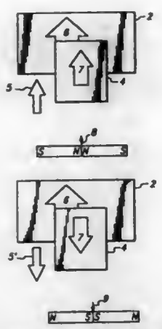
Xiaodong Che, Sunnyvale, Calif., assignor to Quantum Corporation, Milpitas, Calif.

Filed May 6, 1994, Ser. No. 239,243

Int. Cl.[6] G11B *5/39;* G01R *33/02*

U.S. Cl. 360—113 10 Claims

1. A digital output magnetoresistive head for reading a serial sequence of magnetic transitions stored on a magnetic recording surface comprising a layered structure formed on a substrate, said layered structure comprising a pinned layer of magnetic material and a free layer of magnetic material separated from the pinned layer by a thin layer of nonmagnetic material, the pinned layer having a magnetic easy axis, the free layer of magnetic material



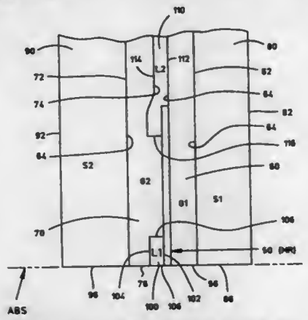
having a first stable magnetization direction substantially parallel to a magnetization direction of the pinned layer and a second stable magnetization direction substantially antiparallel to the magnetization direction of the pinned layer, wherein when said easy axis of the pinned layer is positioned substantially perpendicular to a plane of a magnetic recording surface a resistance of the layered structure manifests a first value when influenced by a first magnetic field defined on the magnetic recording surface and wherein the resistance of the layered structure manifests a second value when influenced by a second magnetic field defined on the magnetic recording surface having a magnetic field polarity reversed from that of the first magnetic field.

5,546,254

ORTHOGONAL MR READ HEAD WITH SINGLE HARD BIASED MR STRIPE

Hardayal S. Gill, Portola Valley, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 7, 1994, Ser. No. 271,924
Int. Cl.[6] G11B *5/127*
U.S. Cl. 360—113 **18 Claims**



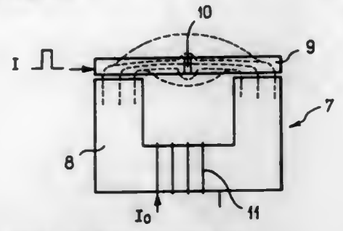
1. A magnetoresistive (MR) read head with an air bearing surface (ABS), the MR read head comprising:
a single orthogonal MR stripe extending perpendicular to the ABS, the MR stripe having an easy axis which extends parallel to the ABS;
high resistivity longitudinal biasing means magnetically coupled to the MR stripe for biasing the MR stripe parallel to the ABS;
the longitudinal biasing means being substantially co-planar with the MR stripe and having a thickness which is substantially the same as a thickness of the MR stripe;
first and second leads connected to the MR stripe in a spaced apart relationship for conducting a sense current through the MR stripe perpendicular to the ABS, the first lead being connected to the MR stripe at the ABS;
each of the first and second leads having a planar extension which extends parallel to the ABS across the MR stripe to make the connection therewith and which extends parallel to the ABS across at least a portion of the longitudinal biasing means so that the planar extension of each of the first and second leads extends from both sides of and is longer than a width of the MR stripe along the ABS; and
transverse biasing means magnetically coupled to the MR stripe for exerting a field on the MR stripe which is perpendicular to the ABS.

5,546,255

INTEGRATED RECORDING MAGNETIC HEAD

Joseph Colineau, Bures Sur Yvette, France, assignor to Thomson-CSF, Puteaux, France

Continuation of Ser. No. 651,350, Feb. 14, 1992, abandoned.
This application Apr. 1, 1994, Ser. No. 221,997
Claims priority, application France, Jun. 15, 1989, 89 08015
Int. Cl.[6] G11B *5/127*
U.S. Cl. 360—115 **11 Claims**



1. A magnetic recording head comprising:
a substantially U-shaped magnetic circuit;
a flux-closing pole piece having a permeability which is variable by applying a variable electric current to the flux-closing pole piece; and
a stationary fixed gap formed as a physical discontinuity in the flux-crossing pole piece for generating a magnetic flux for magnetically writing on a magnetic recording medium;
wherein when the variable electric current applied to the flux-closing pole piece exceeds a predetermined positive value to decrease a permeability of the pole piece, no magnetic flux is generated by the stationary fixed gap.

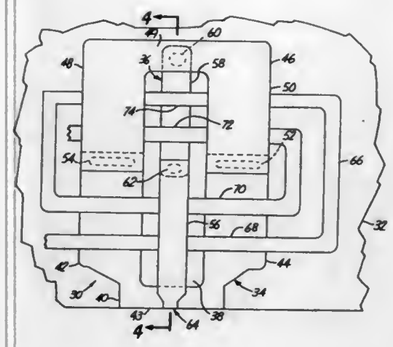
5,546,256

INDUCTING TRANSDUCER WITH CLOSED-LOOP POLE CIRCUMSCRIBING I-SHAPED POLL TO REDUCE LEAKAGE FLUX

Charles H. Tolman, Bloomington, Minn., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Oct. 21, 1994, Ser. No. 327,182
Int. Cl.[6] G11B *5/197*
U.S. Cl. 360—126 **19 Claims**

1. A magnetic pole assembly for a transducer, comprising:
a first magnetic pole piece having first and second arms, each arm having front and back ends, the back ends of the first and second arms being joined to form a back region and the front ends of the first and second arms being joined to form a front region, the front region of the first pole piece defining a first surface, the first and second arms being spaced apart between the front and back regions to form a region of low leakage-flux density; and
a second magnetic pole piece having a portion in the region of low leakage-flux density between the first and second arms, the second pole piece having front and back regions, the back region of the second pole piece being joined to the back region of the first pole piece and the front region defining a second surface, the second surface confronting the first surface to form a transducing gap region.

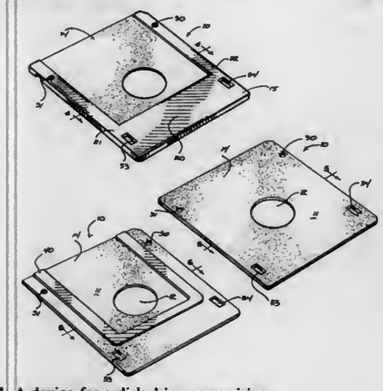


5,546,257

PROTECTION AND CLEANING DEVICE FOR A DISK DRIVE

Gordon Jennings, 2562 E. Glade Ave., Mesa, Ariz. 85204-6208

Filed Aug. 24, 1994, Ser. No. 295,524
Int. Cl.[6] G11B *5/41*
U.S. Cl. 360—128 **10 Claims**



1. A device for a disk drive, comprising:
a member,
a) the member adapted for insertion into and removal from the disk drive,
b) the member adapted to substantially fill the disk drive,
c) the member having an aperture to avoid contact with a drive spindle of the disk drive when seated within the disk drive,
d) the member being stationary when seated within the disk drive,
e) the member constructed substantially entirely of material to clean and cushion at least one head of the disk drive and filter substantially all air entering the disk drive;
f) the member having notches positioned to defeat disk sensors; and
whereby the device automatically cleans at least one head of the disk drive each time at least one head is drawn across the member when the drive tests if a disk is present; the device cushions and protects at least one head of the disk drive; and the device filters substantially all air entering the disk drive.

5,546,258

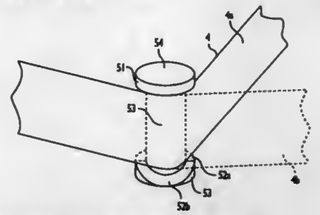
Patent Not Issued For This Number

5,546,259

TAPE TRANSPORTING APPARATUS INCLUDING A TAPE GUIDE WITH VARIABLE RESTRICTING FORCE REGIONS, EACH USED DEPENDING UPON THE AMOUNT OF TAPE TENSION

Noriya Iwata, Osaka; Kenji Matuura, and Shigeki Murata, both of Nara, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 156,821, Nov. 24, 1993, abandoned.
This application Jul. 10, 1995, Ser. No. 500,139
Claims priority, application Japan, Nov. 25, 1992, 4-314833; Nov. 25, 1992, 4-314834
Int. Cl.[6] G11B *15/60;5/027*
U.S. Cl. 360—130.220 **1 Claim**



1. A tape transporting apparatus comprising:
a tape guide having a flange for setting a travelling height of a tape and for exerting a restricting force on said tape, wherein said flange has a strong restricting force region for intensifying said restricting force exerted on said tape and a weak restricting force region for weakening said restricting force exerted on said tape, wherein said strong restricting force region and said weak restricting force region are selectively used for defining a running route of said tape on said flange depending on a winding state of said tape on said tape guide; and
a post for varying the winding state of said tape on said tape guide depending on a tension of said tape such that said running route of said tape on said flange includes said weak restricting force region when said tension of said tape is high, and said running route of said tape on said flange includes at least a portion of said strong restricting force region when said tension of said tape is low.

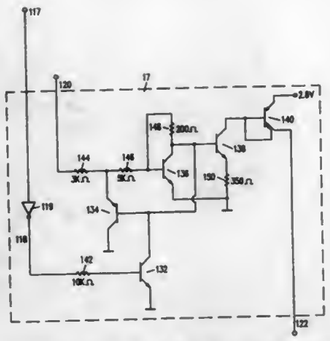
5,546,260

PROTECTION CIRCUIT USED FOR DEACTIVATING A TRANSISTOR DURING A SHORT-CIRCUIT HAVING AN INDUCTIVE COMPONENT

Robert A. Pease, San Francisco, Calif., and Robin Shields, Inverclyde, Scotland, assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 281,346, Jul. 27, 1994, abandoned, which is a continuation of Ser. No. 2,044, Jan. 8, 1993, abandoned. This application Oct. 30, 1995, Ser. No. 550,523
Int. Cl.[6] H02H *7/00*
U.S. Cl. 361—18 **13 Claims**

1. A protection circuit for a semiconductor switch utilizable for switching a load, the protection circuit comprising:
control circuitry connected to the semiconductor switch for switching the semiconductor switch on in response to a switching signal and for switching the semiconductor switch off in response to a deactivation signal;
a deactivation circuit for generating the deactivation signal;



an overvoltage detector circuit that responds to a voltage at an output of the semiconductor switch that exceeds a predetermined value by generating an overvoltage signal, the overvoltage detector circuit including,

a resistor,

a diode connected transistor, and

a Zener diode having its cathode coupled through the resistor to the output of the semiconductor switch and its anode coupled to the collector of the diode-connected transistor, the overvoltage signal being generated at the emitter of the diode-connected transistor; and

a first logic circuit for causing the deactivation circuit to generate the deactivation signal in response to the switching signal and the overvoltage signal, the first logic circuit including,

a first npn transistor having its emitter connected to ground and that receives an inversion of the switching signal at its base through a resistor,

a second npn transistor having its collector coupled to its base through a resistor, its emitter connected to ground, and that receives the overvoltage signal at its base through a resistor, the collector of the first npn transistor being coupled to the collector of the second npn transistor,

a third npn transistor having its emitter coupled to ground through a resistor, the collector of the second npn transistor being coupled to the base of the third npn transistor,

a first pnp transistor having two collectors, the collector of the third npn transistor being coupled to the base of the first pnp transistor, the emitter of the first pnp transistor being coupled to a positive voltage supply, a first of the two collectors being coupled to the base of the first pnp transistor, and a second of the two collectors being coupled to the deactivation circuit.

5,546,261

SUPERCONDUCTING FAULT CURRENT LIMITER

Shinji Yoshida, Inuyama; Shuichiro Motoyama, Komaki; Takashi Ohashi, Kasugai, and Masamichi Ishihara, Amagun, all of, Japan, assignors to NGK Insulators, Ltd., Japan

Filed Mar. 28, 1994, Ser. No. 218,809

Claims priority, application Japan, Mar. 26, 1993, 5-068758; May 11, 1993, 5-109585; Jun. 15, 1993, 5-144004; Jun. 21, 1993, 5-149589; Nov. 26, 1993, 5-297032

Int. Cl.[6] H02H *9/02*

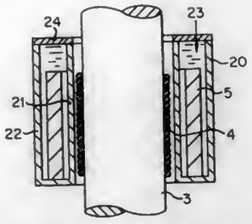
U.S. Cl. 361—19 **7 Claims**

1. A superconducting fault current limiter, comprising:

a columnar core of a high resistance magnetic material carried by a support structure forming a closed magnetic circuit;

a tubular induction coil arranged in surrounding relationship with said columnar core for connection in series with an electric power transport line;

a tubular superconductive body arranged in surrounding relationship with said induction coil, and being adjacent to and



co-axial with said induction coil, said superconductive body comprising a ceramic high-temperature superconducting material; and

a cooling device containing cooling liquid therein, said cooling device being arranged to immerse only said tubular superconductive body therein.

5,546,262

ELECTRONIC PROTECTION DEVICE

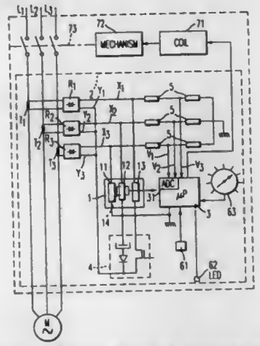
Gilles Baurand, Montesson La Borde, and Antoine Stentz, Rueil Malmaison, both of, France, assignors to Schneider Electric SA, Boulogne-Billancourt, France

Filed Aug. 30, 1994, Ser. No. 297,860

Claims priority, application France, Sep. 1, 1993, 93 10490

Int. Cl.[6] H02H *5/04*

U.S. Cl. 361—31 **6 Claims**



1. An electronic protection device for providing thermal protection of a load by cutting off a multiphase supply of power to said load, said device comprising:

a plurality of current sensors each formed on respective phase wires which supply power to said load;

a thermal sensor having at least one resistive element silkscreen-printed onto a thermal coupling plate formed of an electrically insulative heat-resistant material to which a temperature sensor is thermally coupled, each resistive element receiving a current from at least one of said current sensors which represents a current on a respective phase wire, and said temperature sensor measures temperatures of each resistive element;

an electronic processor circuit which is connected to said temperature sensor and receives, from said current sensors, signals representive of voltages and generates a tripping instruction when the signal from said temperature sensor exceeds a threshold or when the voltages indicate a phase imbalance or absence of any phase.

5,546,263

SHOCK HAZARD PROTECTION SYSTEM

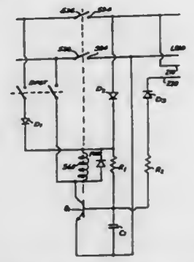
Richard C. Doyle, Greenlawn, and Lester Rivera, Glendale, both of N.Y., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.

Continuation of Ser. No. 190,720, Feb. 1, 1994, Pat. No. 5,406,436, which is a continuation of Ser. No. 977,304, Nov. 16, 1992, abandoned, which is a continuation of Ser. No. 814,304, Dec. 23, 1991, Pat. No. 5,184,271, which is a continuation of Ser. No. 654,715, Apr. 1, 1991, abandoned, which is a continuation of Ser. No. 544,769, Jun. 27, 1990, abandoned, which is a continuation of Ser. No. 416,618, Oct. 3, 1989, abandoned, which is a continuation of Ser. No. 323,451, Mar. 14, 1989, abandoned, which is a continuation of Ser. No. 177,726, Apr. 5, 1988, abandoned, which is a continuation of Ser. No. 2,833, Jan. 9, 1987, abandoned, which is a continuation of Ser. No. 885,114, Jul. 14, 1986, abandoned, which is a continuation of Ser. No. 558,262, Dec. 5, 1983, abandoned.

This application Apr. 10, 1995, Ser. No. 419,582

Int. Cl.[6] H02H *3/16*

U.S. Cl. 361—50 **8 Claims**



1. A protective device for interrupting the flow of current to an electrical device in the presence of a water-related shock hazard condition comprising:

a) housing means for supporting and protecting the device components, said housing having base means, and cover and a cavity therebetween;

b) two flexible, resilient arms having a first end and a second end, mounted to said base means adjacent a first end and having a moveable electrical contact adjacent to said second end;

c) two blade means anchored to said base means and extending therethrough to permit said device to be connected to a source of AC power;

d) two fixed electrical contacts, one coupled to each of said blade means;

e) plunger means having cross-bar means having a first end to engage a first of said arms and a second end to engage the second of said arms, said plunger means selectively operable from a first position where said cross-bar means ends do not engage said arms to a second position where said arms are engaged;

f) a phase line of an AC power source connected to one of said fixed electrical contacts to apply current to said electrical device when said movable contact is made to engage its associated fixed contact;

g) a neutral line of an AC power source connected to the other of said fixed electrical contacts to apply current to said electrical device when said movable contact is made to engage engages its associated fixed contact;

h) coil means surrounding said plunger means to move said plunger means from said first position to said second position;

i) a first selectively operable switch means coupled between said phase line and said coil means to provide current to said coil when said first switch is in the closed position;

j) a second selectively operable switch means coupled between said neutral line and said coil means to provide current to said coil when said second switch is in the closed position;

k) set means coupled to said first and second switch means, said set means when depressed causes said first and second switch means to close and apply AC power to said coil means;

l) said set means further coupled to said plunger means to move said plunger means to said second position, said cross-bar means first end to engage a first of said arms and close its associated moveable contact to said fixed contact and said second end to engage the other of said arms and close its associated moveable contact to said fixed contact thereby applying AC power to said electrical device; and

m) the flow of AC power in said phase line and said neutral line is applied to said coil means to retain said plunger means in said second position.

5,546,264

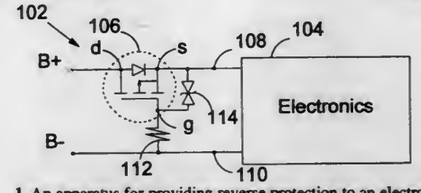
REVERSE VOLTAGE PROTECTION CIRCUIT

Gregory L. Williamson, Metamora, and John P. Hoffman, Peoria, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Dec. 22, 1994, Ser. No. 362,335

Int. Cl.[6] H02H *3/18*

U.S. Cl. 361—84 **5 Claims**



1. An apparatus for providing reverse protection to an electronic circuit, the electronic circuit having a positive input terminal and a negative input terminal, the positive input terminal being coupled to a positive battery terminal via the apparatus and the negative input terminal being connected to a negative battery terminal, comprising:

a MOSFET transistor having a gate terminal, a drain terminal and a source terminal, said MOSFET operating in reverse mode, one of said drain terminal and said source terminal being connected to said positive battery terminal and an other of said drain terminal and said source terminal being connected to said positive input terminal;

a resistor having one end connected to said gate terminal; and

a pair of Zener diodes having one end connected to said gate terminal and another end connected to said source terminal.

5,546,265

DIGITAL CIRCUIT INTERRUPTER SHUNT TRIP CONTROL CIRCUIT

Esteban Santos, and George R. Ribar, Jr., both of Windsor, Conn., assignors to General Electric Company, New York, N.Y.

Filed May 20, 1994, Ser. No. 247,159

Int. Cl.[6] H02H *3/00*

U.S. Cl. 361—93 **6 Claims**

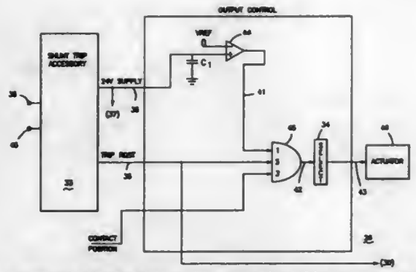
1. An electronic trip unit within a circuit breaker having overcurrent and shunt trip unit circuit interruption comprising:

transformer means arranged for connection with an electrical distribution system;

a processor circuit connecting with said transformer means receiving sample current signals from said distribution system to determine the occurrence of an overcurrent condition;

trip initiating means connecting with said processor circuit connecting with said transformer means and providing operational power to said processor circuit;

power supply means within said processor circuit connecting with said transformer means and providing operational power to said processor circuit;



a shunt trip signal source connecting with said processor circuit for providing auxiliary power to said processor circuit and to input a shunt trip signal to said processor circuit upon command; and

an output control circuit connecting with said processor circuit and said trip initiating means and arranged for determining the presence of operating power to said processor circuit and providing a control signal to said trip initiating means to separate contacts contained within an associated breaker;

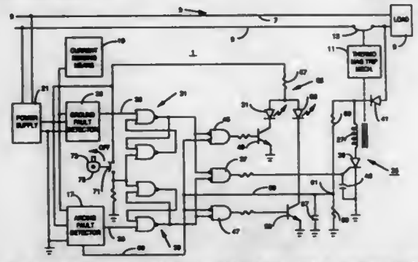
said output control circuit includes a comparator having a first input connecting with said shunt trip signal source and a second input connecting with a reference voltage to determine whether power voltage supplied hy said shunt trip signal source exceeds said reference voltage and providing an output signal on an output thereof when said power voltage signal exceeds said reference voltage.

5,546,266

CIRCUIT INTERRUPTER WITH CAUSE FOR TRIP INDICATION

Raymond W. Mackenzie, Pittsburgh, and John A. Wafer, Beaver, both of Pa., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jun. 24, 1994, Ser. No. 265,540
Int. Cl.[6] H02H *3/33*
U.S. Cl. 361—93 **14 Claims**



1. A circuit interrupting device for connecting a protected electrical system to an ac power supply, said device comprising:

separable contact means, having a line side connected to said ac power supply and a load side connected to said protected electrical system;

sensing means sensing current supplied to said protected electrical system through said separable contact means;

first electronic trip signal generating means responsive to said sensing means for generating a trip signal in response to first current conditions in said protected electrical system;

second electronic trip signal generating means responsive to said sensing means for generating a second trip signal in response to second current conditions indicating a sputtering arc fault in said protected electrical system; and

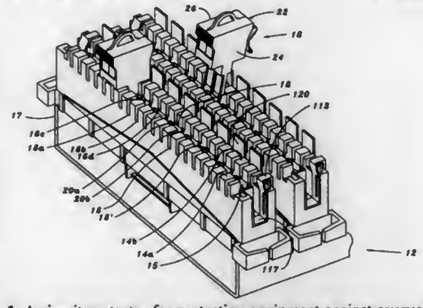
response means responsive to said first and second trip signals for opening said separable contact means to interrupt current to said protected electrical system and for providing an indication of which trip signal opened said separable contact means, said response means comprising inhibiting said indication of which trip signal opened said separable contact means until after said separable contacts open in response to a trip signal.

5,546,267

COMMUNICATION CIRCUIT PROTECTOR

Bjarne Frederiksen, Lombard, and Mohammad Masghati, Addison, both of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Filed Dec. 8, 1994, Ser. No. 351,938
Int. Cl.[6] H02H *1/00*
U.S. Cl. 361—119 **20 Claims**



1. A circuit protector for protecting equipment against overvoltage and overcurrent conditions, comprising:

a housing comprising an upper body portion and a lower body portion;

voltage limiting means and current limiting means for disposition within said upper body portion of said housing for protecting equipment against overvoltage and overcurrent conditions, respectively;

first contact means for disposition within said housing for establishing electrical contact with said current limiting means and said voltage limiting means when overvoltage and overcurrent protection is to be provided in connection with said equipment, and for establishing electrical contact with said current limiting means when only overcurrent protection is to be provided in connection with said equipment; and

second contact means for disposition within said housing for establishing electrical contact with said voltage limiting means when only overvoltage protection is to be provided in connection with said equipment.

5,546,268

ELECTROMAGNETIC DEVICE WITH CURRENT REGULATED CLOSURE CHARACTERISTIC

Rick A. Hurley, Fletcher; Mark E. Innes, and Nelson R. Palmer, both of Asheville, all of N.C., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jul. 28, 1994, Ser. No. 281,953
Int. Cl.[6] H01H *47/04*
U.S. Cl. 361—154 **18 Claims**

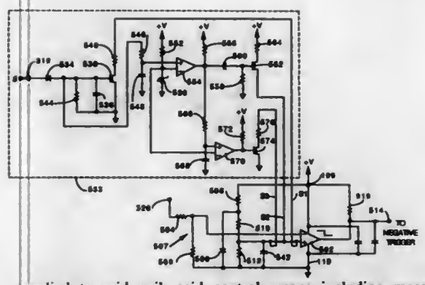
1. An electromagnetic switch comprising:

separable contacts;

electromagnetic means having a coil which is energized during a contact closure cycle to close said separable contacts and to hold said separable contacts closed, and which is deenergized to open said separable contacts;

power supply means for applying current to energize said coil; and

control means for sensing said current applied to said coil and regulating, throughout said contact closure cycle, said current



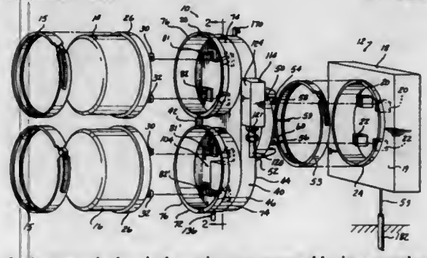
applied to said coil, said control means including means regulating a closing current to a plurality of different closing current references during a period of time about as long as required for said separable contacts to seal closed and a holding current to a holding current reference for holding said separable contacts closed.

5,546,269

METERED ELECTRICAL SERVICE TAP

Darrell Robinson, Highland Township; Allen V. Pruehs, Howell, and John Williams, Holly, all of Mich., assignors to Ekstrom Industries, Inc., Farmington Hills, Mich.

Filed Jul. 13, 1994, Ser. No. 274,486
Int. Cl.[6] H02B *9/00*
U.S. Cl. 361—660 **23 Claims**



1. A metered electrical service tap mountable in a watthour meter socket having a plurality of socket line jaw contacts connected to electric utility power distribution network conductors and a plurality of socket load jaw contacts connected to load distribution network conductors, the socket line and load jaw contacts adapted to normally receive meter blade terminals of a watthour meter, the metered electrical service tap comprising:

a housing having a hollow interior chamber;

a plurality of electrical line and load blade terminals mounted in and extending outward from the housing for releasible insertion into socket line and load jaw contacts of a watthour meter socket;

first and second watthour meter receiving means mounted on the housing, each adapted for receiving a separate watthour meter therein having meter blade terminals;

a plurality of line and load jaw contacts mounted in each of the first and second watthour meter receiving means for electrically receiving meter blade terminals of a watthour meter therein in a plug-in connection;

first electrical conductors disposed in the housing and electrically connecting the line jaw contacts in the first and second watthour meter receiving means in parallel to each other and to the electrical line blade terminals in the housing;

second electrical conductors connected at one end to the load jaw contacts in the second watthour meter receiving means, an other end of the second electrical conductors being connectible to an external electrical conductor separate from the load distribution network conductors to provide metered electrical power to the external electrical conductor; and

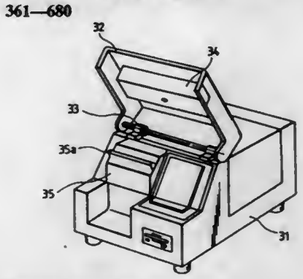
third electrical conductors connecting the load jaw contacts of the first watthour receiving means to the load blade terminals in the housing.

5,546,270

APPARATUS FOR SUPPORTING A DISPLAY DEVICE IN A PLURALITY OF POSITIONS

Masaki Konno, and Shuji Ito, all of Yokohama, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 18, 1994, Ser. No. 291,908
Claims priority, application Japan, Sep. 14, 1993, 5-228832
Int. Cl.[6] B41J *3/20*
U.S. Cl. 361—680 **5 Claims**



5. An electronic apparatus comprising:

a main body;

a front panel;

a hinge for rotatably connecting the front panel to the main body:

a display;

means for connecting the display to a recess within the front panel which enables rotation of the display in all directions relative to the front panel;

a printer; and

means for movably connecting the printer to the main body;

wherein the front panel is rotatable between a closed position and an open position; the front panel blocks and unblocks a path of movement of the printer when the front panel assumes the closed position and the open position respectively; and the printer is movable into and from a retracted position within the main body in cases where the front panel is in the open position.

5,546,271

DEVICE FOR ADJUSTING THE ANGLE OF A KEYBOARD

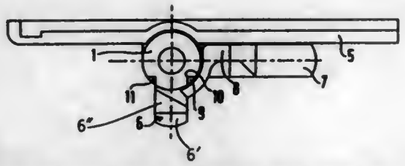
Bernhard Gut, Aichach, and Franz Wandinger, Münich, both of, Germany, assignors to Siemens Nixdorf Informationssysteme Aktiengesellschaft, Paderborn, Germany

PCT No. PCT/DE93/00872, § 371 Date Mar. 28, 1995, § 102(e) Date Mar. 28, 1995, PCT Pub. No. WO94/07701, PCT Pub. Date Apr. 14, 1994
PCT Filed Sep. 16, 1993, Ser. No. 407,010
Claims priority, application Germany, Sep. 28, 1992, 42 32 483.1
Int. Cl.[6] G06F *1/16;* **H05K** *5/02*
U.S. Cl. 361—680 **10 Claims**

1. A device for the variable adjustment of the inclination angle of a keyboard housing supported on a flat surface, the device comprising:

a tubular bearing element having two opposite, open ends, the tubular bearing element being secured to the housing bottom proximal to a rear corner of said housing; and

a stand having two U-brackets of different lengths, the U-brackets being arranged at an angle from each other so that the stand is generally L-shaped, the U-brackets meeting at a



pair of inwardly-directed bearing pins, each bearing pin rotatably residing in a respective end of said tubular bearing element, securing the stand to the bearing element, the stand further having a locking element extending from at least one of said U-brackets, the locking element engaging in the bearing element to adjustably retain the housing in one of at least two inclination angle settings.

5,546,272

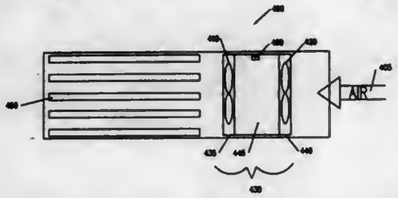
SERIAL FAN COOLING SUBSYSTEM FOR COMPUTER SYSTEMS

David L. Moss, and Richard S. Mills, both of Austin, Tex., assignors to Dell USA, L.P., Austin, Tex.

Filed Jan. 18, 1995, Ser. No. 374,441

Int. Cl.[6] H05K *5/00*

U.S. Cl. 361—687 **20 Claims**



1. A cooling subsystem for a chassis of a computer system, said computer system having at least one specified device to be cooled, said cooling subsystem comprising:

first and second cooling fans having first and second motors associated therewith for driving said first and second cooling fans, respectively; and

a common plenum substantially shrouding and providing a pathway for air communication between said first and second cooling fans, said first and second fans cooperating to provide an optimum rate of air flow from without said chassis to within said chassis to provide air exchange within said chassis, said air flow within said chassis being in a predetermined direction to provide directed cooling of said specified device within said chassis, said common plenum free of said specified device, said common plenum allowing said first and second fans to continue to cooperate to provide a minimum air flow to provide a minimum air exchange within said chassis, said air flow remaining in said predetermined direction to continue said directed cooling of said specified device when a selected one of said first and second motors fails.

5,546,273

AUTOMOTIVE AUDIO SYSTEM

Wayne Harris, Higley, Ariz., assignor to Rockford Corporation, Tempe, Ariz.

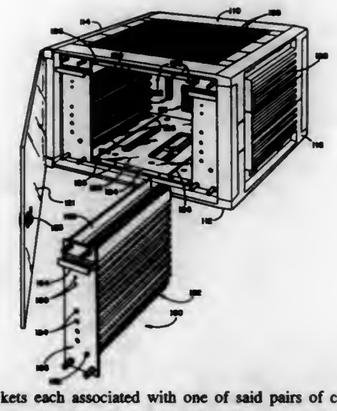
Division of Ser. No. 819,365, Jan. 7, 1992, Pat. No. 5,339,362. This application May 23, 1994, Ser. No. 247,848

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—697 **4 Claims**

1. An audio amplifier system comprising:

an amplifier housing, said housing including a plurality of pairs of channels opening toward one another and a plurality of



sockets each associated with one of said pairs of channels, said housing further including an interior chamber, fan means for moving air through said chamber, and a plurality of air vents permitting air to flow through said chamber when said fan means is operated; and

a plurality of amplifier modules within said housing, each of said modules being uniquely associated with and positioned adjacent one of said air vents, whereby air is moved individually over each of said amplifier modules from one of said air vents when said fan means is actuated, each amplifier module including a one-piece heat sink having a pair of opposed flanges, said opposed flanges on each amplifier module slidably interfitting within a pair of channels in said amplifier housing, whereby said modules may be slid into and out of said housing, each of said amplifier modules further including a circuit card supported solely by the associated heat sink, each circuit card including a plug portion connecting with the associated socket as said component is slid into said housing.

5,546,274

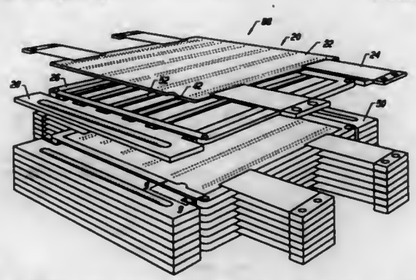
THREE-DIMENSIONAL COMPACT ARRAY OF ELECTRONIC CIRCUITRY

Howard L. Davidson, San Calos, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Mar. 10, 1995, Ser. No. 401,964

Int. Cl.[6] A05K *7/20*

U.S. Cl. 361—701 **8 Claims**



1. A three-dimensional compact array of electronic circuitry, comprising:

a plurality of stacked modular compact arrays of electronic circuitry, each modular compact array of electronic circuitry including

a multi-chip module including a plurality of integrated circuits and interconnect, which electrically connects said plurality of integrated circuits, embedded within a polymer insulator, and

an integrated heat exchanger and stacking connector directly attached to said multi-chip module, said integrated heat exchanger and stacking connector including

a transverse connector region including a plurality of connector vias for connection to said interconnect, and

a transverse flow region including channels for circulating a coolant to remove heat from said multi-chip module.

5,546,275

ELECTRICAL MODULE MOUNTING APPARATUS

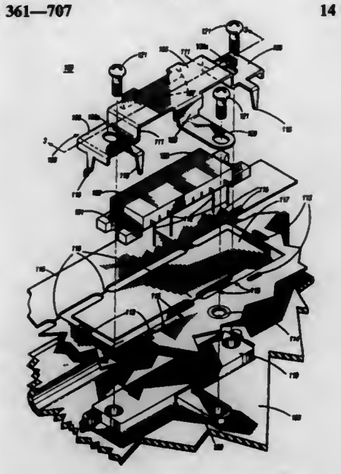
Michael F. Moutrie, Buffalo Grove; Andrew Whitmore, III, Arlington Heights; David M. Hess, Elgin; John C. Laugal, South Barrington; Steven M. Mina, Vernon Hills, and Matthew J. Boler, Inverness, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 311,336, Sep. 23, 1994, Pat. No. 5,459,640. This application Jun. 14, 1995, Ser. No. 490,257

The portion of the term of this patent subsequent to Sep. 23, 2014, has been disclaimed.

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—707 **14 Claims**



1. A circuit board assembly adapted to be supported in a housing, the circuit board assembly comprising:

a circuit board having a permanent portion and a breakaway portion;

an electrical module having at least two leads for coupling to the circuit board; and

a bracket assembly for coupling to the electrical module and to said permanent portion of the circuit board to align the electrical module at a predetermined location on the circuit board, said breakaway portion of the circuit board extending under the electrical module and the bracket assembly for supporting the electrical module during assembly, said breakaway portion being removable to permit coupling of the electrical module to the housing for maximum heat transfer.

5,546,276

HOUSING FOR ELECTRICAL APPARATUS

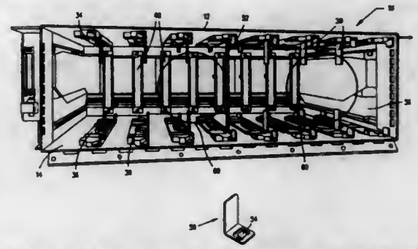
Stanley J. Cutts, Winchester, and Ian Golledge, Romsey, both of, United Kingdom, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 26, 1994, Ser. No. 312,726

Claims priority, application United Kingdom, Sep. 24, 1994, 9319752

Int. Cl.[6] H05K *5/00*

U.S. Cl. 361—724 **10 Claims**



5. A housing having a cavity and an opening at one of its ends, said housing being used for accommodating a plurality of electrical devices each having a connector and each removably mountable in the cavity within said housing via the opening, said housing comprising:

a power source;

a plurality of internally mounted power connectors each having an exposed portion for connecting each of said electrical devices to said power source, said power connectors being positioned at a side of the housing cavity opposite said opening to mate with a corresponding connector on each of said electrical devices; and

finger access prevention means mounted fixedly within said housing cavity for preventing an operator from accessing the exposed portion of said power connectors.

5,546,277

COMPUTER COMPONENT TORSIONAL LATCHING MECHANISM AND METHOD

Russ E. Zandbergen, San Jose, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed May 24, 1994, Ser. No. 248,023

Int. Cl.[6] H05K *7/12*; E05C *3/04*

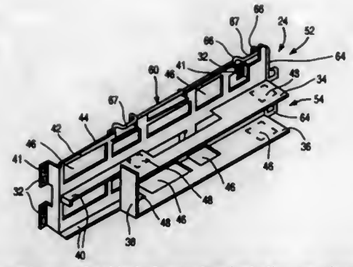
U.S. Cl. 361—726 **20 Claims**

1. A latching mechanism for latching a computer component to a restraining member, comprising:

a torsion shaft member rotatably mounted on a support, said support receivable by said restraining member,

an arm comprising a first part of said shaft member,

said arm including a portion constructed to function as a latching member,



a second part of said shaft member including an element for rotating said shaft member to bring said portion of said arm into and out of a latching position, and

a third part of said shaft member including a second element for creating a latching force on said portion when in said latching position.

5,546,278

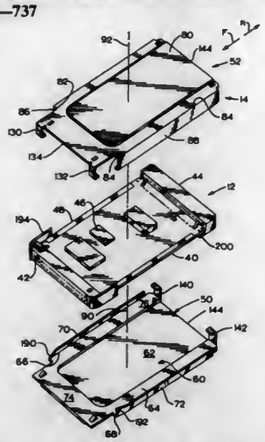
IC CARD PROTECTIVE COVER

Gary C. Bethurum, Laguna Niguel, Calif., assignor to ITT Corporation, New York, N.Y.

Filed Dec. 15, 1993, Ser. No. 168,101

Int. Cl.[6] H05K *1/14;9/00;* **G06K** *5/00*

U.S. Cl. 361—737 **5 Claims**



1. An IC card that includes a circuit board assembly which comprises a circuit board that has front and rear end portions and laterally spaced opposite sides and upper and lower surfaces, front and rear connectors that lie respectively at said front and rear end portions of said circuit board with each of said connectors having laterally spaced opposite sides and with each connector having a row of contacts, and a cover that includes upper and lower sheet-like parts that lie respectively above and below said circuit board, characterized by:

said front and rear end portions of said circuit board are mounted respectively on said front and rear connectors at locations spaced from the row of contacts of the corresponding connector;

said front and rear connectors each have upper and lower faces, and said cover is mounted directly on both of said faces of each of said front and rear connectors, and said cover is substantially free of rigid connection to said circuit board independently of said connectors.

5,546,279

FLEXIBLE WIRING BOARD HAVING A TERMINAL ARRAY EXTENDING ALONG A WHOLE EDGE OF ITS SUBSTRATE AND A CONNECTION STRUCTURE OF THE FLEXIBLE WIRING BOARD WITH A CIRCUIT BOARD

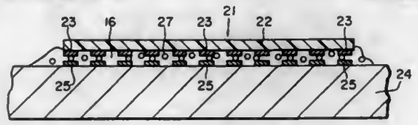
Keiji Aota, Osaka; Masaaki Ooga, Tenri, and Yasunobu Tagusa, Ikoma, all of, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 10, 1994, Ser. No. 338,013

Claims priority, application Japan, Nov. 10, 1993, 5-281051

Int. Cl.[6] H05K *1/00;1/11;* **H01R** *4/58;13/40*

U.S. Cl. 361—749 **12 Claims**



1. A flexible wiring board, comprising:

a flexible substrate mounted with an integrated circuit and having a generally rectangular connection portion including a first edge of the substrate and parts of second and third edges adjoining said first edge of the substrate;

a plurality of connection terminals provided in said connection portion of the substrate, said connection terminals extending perpendicular to and arranged along said first edge of the substrate,

alignment marks formed in the connection terminals positioned in opposite end parts of said connection portion of the substrate, and

wherein said opposite end parts of said connection portion which include said parts of the second and third edges do not extend outside beyond the connection terminals located closest to said second and third edges, respectively.

5,546,280

ELECTRONIC COMPONENT WITH SOLDERING-LESS TERMINAL STRUCTURE

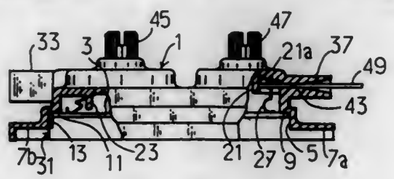
Hironobu Hasebe, Takaoka; Takashi Kanayama, and Shinichi Kamata, both of Toyama-ken, all of, Japan, assignors to Hokuriku Electric Industry Co., Ltd., Kami-Niikawagun, Japan

Filed Dec. 28, 1994, Ser. No. 365,497

Claims priority, application Japan, Dec. 28, 1993, 5-336906; Dec. 21, 1994, 6-318669

Int. Cl.[6] H05K *5/00*

U.S. Cl. 361—752 **25 Claims**



1. An electronic component comprising:

an insulating casing provided therein with a board receiving section of which one end is open;

a circuit board having a circuit pattern including a plurality of connection electrodes formed on a front surface thereof and received in said board receiving section of said insulating casing to define a space between an inner surface of said insulating casing and said front surface of said circuit board; and

at least one terminal fitment arranged between said front surface of said circuit board and said inner surface of said insulating casing and electrically connected to at lease one of said connection electrodes on said circuit board without soldering;

said insulating casing being provided therein with at least one terminal fitment fit portion in which said terminal fitment is fitted;

said terminal fitment including a connection conductor holding section for holding an end of a connection conductor inserted into said board receiving section and a contact terminal section exhibiting elasticity;

said contact terminal section including a contact portion pressed against said connection electrodes on said circuit board by said elasticity of said contact terminal section.

5,546,281

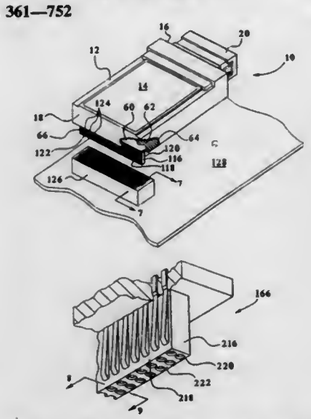
REMOVABLE OPTOELECTRONIC TRANSCEIVER MODULE WITH POTTING BOX

Daniel S. Poplawski, Montgomery, and James W. McGinley, Schaumburg, both of Ill., assignors to Methode Electronics, Inc., Chicago, Ill.

Filed Jan. 13, 1995, Ser. No. 372,780

Int. Cl.[6] H05K *5/00*

U.S. Cl. 361—752 **17 Claims**



4. A robust optoelectronic transceiver module which is quick, easy, and inexpensive to manufacture, said module comprising:

a) a main housing comprising a potting box and potting material contained within said potting box, said potting box having a bottom and a recess;

b) a circuit board encased within said potting material and having an optical subassembly mounted onto said circuit board, through said recess, and outside of said potting box;

c) a male ribbon style connector connected to said circuit board and protruding from said bottom of said main housing for quickly installing and replacing said module; and

d) a recess cover for forming a liquid tight seal between said recess cover, said potting box, and said optical subassembly.

5,546,282

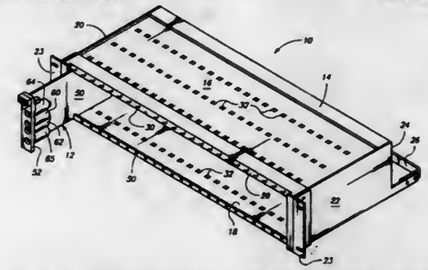
TELECOMMUNICATION NETWORK DIGITAL CROSS-CONNECT PANELS HAVING INSERTABLE MODULES WITH PRINTED CIRCUIT BOARD MOUNTED COAXIAL JACK SWITCHES

Timothy L. Hill; Brian J. Allen, both of Spokane, Wash.; William P. Jonas, Athol, Id., and James P. Kennedy, Spokane, Wash., assignors to Telect, Inc., Liberty Lake, Wash.

Filed May 2, 1995, Ser. No. 432,903

Int. Cl.[6] H05K *7/14*

U.S. Cl. 361—796 **9 Claims**



1. In a telecommunication network digital cross-connect module panel for providing front panel access for monitoring, testing, or temporarily reconnecting various digital telecommunication apparatus,

an elongated, normally horizontally mounted, panel chassis having a bottom wall, side walls, a backplane wall and an interior that is divided into a plurality of adjacent vertical slots;

said backplane wall includes a backplane printed circuit board having a front facing side and a back facing side;

a plurality of backplane coaxial cable connectors mounted on the back facing side of the backplane printed circuit board;

wherein the backplane coaxial cable connectors are arranged in a matrix of horizontally spaced vertical columns of coaxial cable connectors, in which each column of coaxial cable connectors are associated with a corresponding vertical slot, and wherein each column of backplane coaxial cable connectors comprises:

1) an input coaxial cable connector mounted to the back facing side of the backplane printed circuit board in which the input coaxial connector has a rear input digital signal central conductor for normally connecting through a coaxial cable to a digital signal input portion of one telecommunication apparatus;

2) an output coaxial cable connector mounted to the back facing side of the backplane printed circuit board in which the rear output coaxial cable connector has a output digital signal central conductor fox normally connecting through a coaxial cable to a digital signal output portion of the one telecommunication apparatus;

3) an input cross-connect coaxial cable connector mounted to the back facing side of the backplane printed circuit board in which the input cross-connect coaxial connector has a input cross-connect digital signal central conductor for normally connecting through a coaxial cable to a digital signal input portion of another telecommunication apparatus;

4) an output cross-connect coaxial cable connector mounted to the back facing side of the backplane printed circuit board in which the rear output cross-connect coaxial connector has a output cross-connect central conductor for normally connecting through a coaxial cable to a digital signal output portion of the other telecommunication apparatus;

a plurality of first mating elongated printed circuit board connectors mounted in vertical orientations on the front facing side of the backplane printed circuit board communicating with corresponding slots and wherein each first mating printed circuit board connector is electrically connected to a corresponding column of the backplane coaxial cable connectors;

a digital cross-connect module insertable into one of the slots for provide front panel access to monitor, test or temporarily reconnect the two of the digital telecommunication apparatus;

said cross-connect module having (1) a module printed circuit board extending between a front end and a rear end, (2) a front face plate with jack apertures mounted to the front end of the module printed circuit board, and (3) a second mating elongated printed circuit board connector on the rear end of the module printed circuit board for mating with the first mating elongated printed circuit board when the module is inserted into the one slot;

an input jack mounted on the module printed circuit board and having a forward open end positioned in one of the jack apertures for selectively receiving a coaxial electrical plug at the front face plate to electrically connect with an input jack central coaxial conductor;

an output jack mounted on the module printed circuit board and having a forward open end positioned in another of the jack apertures for selectively receiving a coaxial electrical plug at the front face plate to electrically connect with an output jack central coaxial conductor;

said input jack having an input jack switch responsive to the insertion of a plug into the input jack for (1) normally operatively electrically cross-connecting the input portion of the one telecommunication apparatuses with the input portion of the other telecommunication apparatus to transmit a digital input signal between the telecommunication apparatus when a plug is not inserted into the input jack, and (2) for discontinuing the cross-connecting of the one telecommunication apparatus with the input portion of the other telecommunication apparatus to interrupt transmission of the digital input signal between the telecommunication apparatus and permit electrical connection of the plug with the digital signal input portion of the one telecommunication apparatus when the plug is inserted into the input jack;

said output jack having an output jack switch responsive to the insertion of a plug into the output jack for (1) normally operatively electrically cross-connecting the output portion of the one telecommunication apparatus with the output portion of the other telecommunication apparatus to transmit a digital output signal between the telecommunication apparatuses when a plug is not inserted into the output jack, and (2) for operatively discontinuing the cross-connecting of the output portion of the one telecommunication apparatus with the output portion of the other telecommunication apparatus to interrupt transmission of the digital output signal between the telecommunication apparatus and permit electrical connection of the plug with the digital signal output portion of the one telecommunication apparatus when the plug is inserted into the output jack;

wherein each of the jack switches has (1) a first printed circuit board terminal operatively electrically connected to its respective central coaxial conductor, and (2) a second printed circuit board terminal;

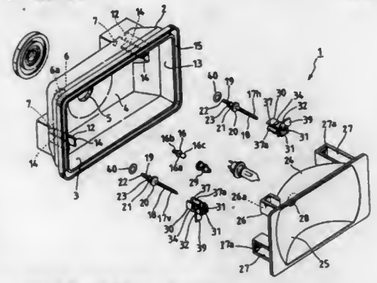
said module printed circuit board having printed circuit conductors electrically interconnecting the second mating printed circuit board connector with (1) the first and second printed circuit board terminals of the input jack switch, and (2) the first and second printed circuit board terminals of the output jack switch.

5,546,283

VEHICULAR HEADLAMP HAVING IMPROVED ASSEMBLY EFFICIENCY

Yasushi Ohtsuka; Katutada Shirai; Ken Matsuoka; Yoshio Suehiro, and Hideki Ohashi, all of Shizuoka, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Dec. 21, 1994, Ser. No. 360,955
Claims priority, application Japan, Dec. 21, 1993, 5-344708
Int. Cl.[6] B60Q *1/06*
U.S. Cl. 362—61 **14 Claims**



1. A vehicular headlamp comprising:

a stationary member:

a tiltable member pivotally moving laterally and vertically with respect to said stationary member about a pivot point, said tiltable member having a mount member;

means for pivotally connecting said stationary member to said tiltable member, said connecting means performing as said pivot point;

means for pivotally moving said tiltable member, said moving member comprising:

an adjusting shaft having a shaft part and a threaded part, said shaft part being rotatably supported by said stationary member; and

a resilient nut means fixedly engaging with said mount member of said tiltable member, said nut means having a threaded hole extending in a longitudinal direction with a notch through which said adjusting shaft is laterally inserted into said nut in a direction transverse to said longitudinal direction, said threaded part of said adjusting shaft engaging said threaded hole of said nut means, said nut means moving back and forth in said longitudinal direction by rotating said adjusting shaft.

5,546,284

AUTOMOBILE HEADLAMP WITH EXTENSION REFLECTOR MOUNTED ON THE FRONT LENSE

Tatsuhiko Harada, Shizuoka, Japan, assignor to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Apr. 12, 1995, Ser. No. 420,817
Claims priority, application Japan, Apr. 19, 1994, 6-081173
Int. Cl.[6] B60Q *1/04*
U.S. Cl. 362—61 **14 Claims**

1. An automobile headlamp comprising:

a lamp body having a front opening;

a headlamp body provided inside said lamp body, said headlamp body having a light source and a reflector;

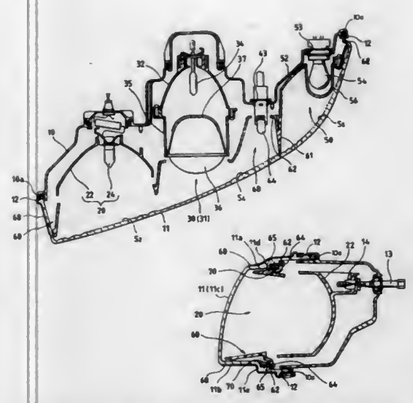
an extension reflector provided around said headlamp body for hiding the inside of said lamp body, said extension reflector having a mirror surface;

a front lens engaging with said front opening of said lamp body, said front lens comprising,

side walls including an upper wall and a lower wall,

a step formed on at least one of said upper wall and said lower wall of said front lens so as to decrease the distance between the front edges of said upper wall and said lower wall, and

a plurality of thick portions formed behind said step on an inner surface of said corresponding ode of said upper wall and said lower wall of said front lens; and mounting means for mounting said extension reflector inside said thick portions of said front lens.

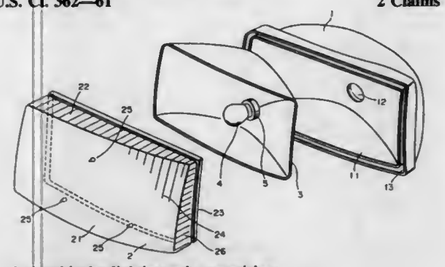


5,546,285

VEHICULAR LIGHTING UNIT, APPARATUS AND METHOD FOR PRODUCING THE SAME

Osami Takikawa, and Tutomu Naito, both of Shizuoka, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Apr. 13, 1995, Ser. No. 421,254
Claims priority, application Japan, Apr. 19, 1994, 6-103205
Int. Cl.[6] B60Q *1/02*
U.S. Cl. 362—61 **2 Claims**



1. A vehicular lighting unit comprising:

a lighting unit body having a front opening;

a resin-made lens coupled to said front opening of said lighting unit body; and

at least one aiming pad to be used for an optical-axis inspection, said aiming pad protruding integrally from a front surface of said lens, said aiming pad having a recessed part formed in a rear face thereof.

5,546,286

LIGHT HOUSING FOR SKID STEER LOADERS

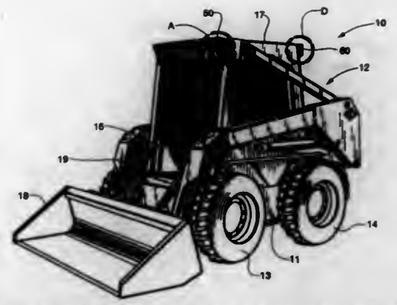
Douglas G. Branham, Leola, Pa., assignor to New Holland North America, Inc., New Holland, Pa.

Division of Ser. No. 339,054, Nov. 14, 1994. This application Jun. 7, 1995, Ser. No. 480,990
Int. Cl.[6] B60Q *1/00*
U.S. Cl. 362—61 **5 Claims**

1. In an off-road ground engaging vehicle having a wheeled frame adapted for movement over the ground; and lights mounted on said frame to illuminate an area adjacent said vehicle, said lights including a light housing fastened to said frame and a light bulb operatively supported in said light housing, an improved light housing comprising:

a molded double-walled polymer body formed from a rotational molding process and defining at least one hollow light chamber, said body being adapted to be supported from said frame at an exterior corner of said off-road vehicle to provide damage protection for said frame; and

said light bulb being operatively supported within said at least one light chamber and being retained within said at least one light chamber by a bezel detachably connected to said housing.

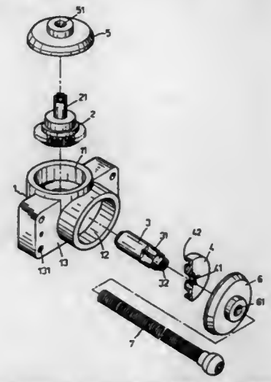


5,546,287

SETTING ANGLE ADJUSTER FOR THE CAR HEADLAMP

Lin Yu C., No. 477, Chung Shan N. Rd., Yung Kang City, Tainan Hsien, Taiwan

Filed Jul. 25, 1995, Ser. No. 506,475
Int. Cl.[6] B60Q *1/06*
U.S. Cl. 362—66 **1 Claim**



1. An angle adjuster for a vehicle headlamp, comprising:

an adjuster stand having a pair of mounting blocks disposed on opposing sides thereof, each of said mounting blocks having a plurality of holes formed therethrough, said adjuster stand having a first circular recess formed in an upper surface thereof to define a vertical gear holder and a second circular recess formed in a frontal surface thereof to define a crosswise gear holder, said crosswise gear holder having a portion thereof disposed in open communication with a portion of said vertical gear holder, said adjuster stand having a first through bore extending therethrough coaxial said second circular recess;

a driving gear rotatably disposed within said vertical gear holder, said driving gear having an adjusting rod integrally

formed therewith and extending from one end thereof, said driving gear having teeth disposed about a perimeter edge thereof;

a first cap member coupled to said vertical gear holder and overlying said driving gear, said first cap member having a centrally disposed through opening formed therein for passage of said adjusting rod therethrough;

a longitudinally extended sleeve member rotatively disposed within said first through bore, said sleeve member having an externally splined surface formed on one end thereof and a second through bore formed longitudinally therein, said second through bore being internally threaded;

an active gear rotatably disposed within said crosswise gear holder, said active gear having a toothed recess formed adjacent a circumferential edge thereof for engagement with said teeth of said driving gear, said active gear having a centrally disposed splined through opening for receiving said splined end of said sleeve member therein;

a longitudinally extended bolt member threadedly engaged within said sleeve member second through bore for linear displacement thereof responsive to rotative displacement of said adjusting rod; and,

a second cap member coupled to said crosswise gear holder and overlying said active gear, said second cap member having a centrally disposed through opening formed therein for passage of said bolt member therethrough.

5,546,288

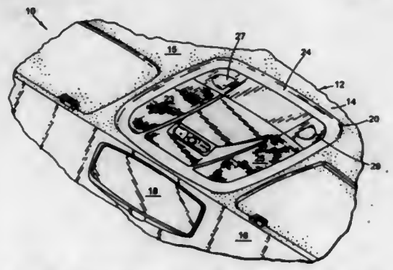
SNAP-IN ELECTRICAL VEHICLE ACCESSORY

Kim L. Van Order, Hamilton, and Nels R. Smith, Holland, both of Mich., assignors to Prince Corporation, Holland, Mich.

Filed May 11, 1995, Ser. No. 439,238

Int. Cl.[6] B60Q *1/00*

U.S. Cl. 362—74 **20 Claims**



1. A snap-in electrical accessory for a vehicle comprising:

an electrical socket including electrical terminals mounted therein for receiving an electrical plug, said socket further including locking structure for mechanically locking a plug to said socket;

a fastener having one end snap-fitted to said socket and legs shaped to be snap-fitted within an aperture of a support structure of a vehicle for snap-in mounting of said socket to the support structure; and

an electrical assembly including a housing having a plug extending therefrom, said plug including electrical contacts for engaging said terminals of said socket and locking structure for engaging said locking structure of said socket such that said assembly can be electrically and mechanically coupled to said socket by the insertion of said plug into said socket, thereby mounting said housing to a vehicle.

5,546,289

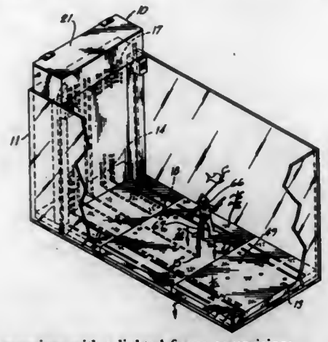
LIGHTING SYSTEM FOR USE IN AN AQUARIUM

Michael D. Gordon, 2643 7th St., Apartment A, Santa Monica, Calif. 90405

Filed Oct. 4, 1993, Ser. No. 131,882

Int. Cl.[6] F21V *8/00*

U.S. Cl. 362—101 **5 Claims**



1. An aquarium with a lighted figure comprising:

a. a light system fixedly coupled to said aquarium, said light system generating an output of light;

b. a cylinder concentrically aligned with said light system, said cylinder being hollow, transparent and having an outer sidewall through which said output of light passes, said cylinder being rotatably coupled to said aquarium;

c. a drive system fixedly coupled to said aquarium and mechanically coupled to said cylinder in order to rotate said cylinder;

d. a plurality of optical fibers, each of which has a first end and a second end, optically coupled to said light system at said first ends thereof;

e. a floor plate having a surface with a plurality of holes to at least one of which one of said optical fibers is mechanically and optically coupled, said floor plate being coupled to said aquarium;

f. a figure coupled to said floor plate and optically coupled to said optical fiber at said second end thereof.

5,546,290

NEON ILLUMINATION APPARATUS AND METHOD OF USING SAME

Jaime D. Gonzalez, 9390 Suva, Downey, Calif. 90240, and Michael J. Talbert, Huntington Beach, Calif., assignors to Jaime D. Gonzalez, Huntington Park, Calif.

Continuation-in-part of Ser. No. 839,814, Feb. 21, 1992, Pat. No. 5,192,125, which is a continuation of Ser. No. 741,784, Aug. 6, 1991, Pat. No. 5,150,961. This application Jan. 19, 1993, Ser. No. 5,643

The portion of the term of this patent subsequent to Sep. 29, 2009, has been disclaimed.

Int. Cl.[6] F21V *31/00*

U.S. Cl. 362—223 **16 Claims**



1. An illumination apparatus, comprising:

elongated tube means for illuminating a desired area with bright glowing light;

elongated hollow tube member means for receiving said elongated tube means therewithin;

high voltage, high frequency transformer means mounted within said tube member means for supplying said tube means with sufficient high voltage, high frequency electrical power to cause it to radiate bright glowing light;

power converter means mounted within said tube member means for supplying said high voltage, high frequency transformer means with low voltage, high frequency electrical power;

said tube member means including end cap means for helping to seal said tube means, said high voltage, high frequency transformer means, and said power converter means within said tube member means;

said end cap means including means for coupling said power converter means to a source of low voltage, direct current electrical power.

5,546,291

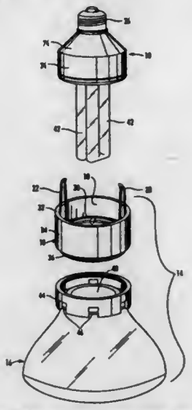
CONVERSION KIT ASSEMBLY FOR A LIGHT BULB

David P. Simes, 19046 Vicci St., Santa Clarita, Calif. 91351

Filed Dec. 22, 1994, Ser. No. 362,817

Int. Cl.[6] F21S *3/00*

U.S. Cl. 362—223 **9 Claims**



9. A conversion kit assembly comprising the combination of:

a hollow glass envelope having a base member at an open end thereof; and

a collar releasably coupled to the base member of the glass envelope and having a hollow interior for receiving a light bulb to position the light bulb within the glass envelope, the collar being disposed outside of the glass envelope and extending from the base member opposite the glass envelope and including means engaging a light bulb to mount the collar on the light bulb and resilient means for engaging a light bulb to adjustably mount the collar on a light bulb along a length of the light bulb.

5,546,292

HOSPITAL CORRIDOR LIGHTING/INFORMATION UNIT AND SYSTEM

Sylvan R. Shemitz, Woodbridge, Conn., assignor to Sylvan R. Shemitz Designs, Inc., West Haven, Conn.

Filed Aug. 12, 1994, Ser. No. 289,217

Int. Cl.[6] F21V *33/00*

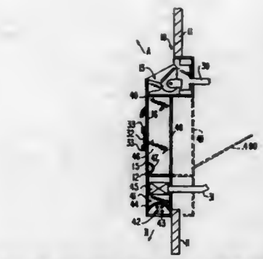
U.S. Cl. 362—234 **26 Claims**

1. A lighting/information unit for mounting at a location on a wall of a building interior space, said unit comprising:

a body for mounting on said wall;

a first light source within said body for projecting light substantially upward and illuminating said space;

a second light source within said body for projecting light substantially downward and illuminating said space



indicia on said unit, said indicia containing additional information related to said location.

5,546,293

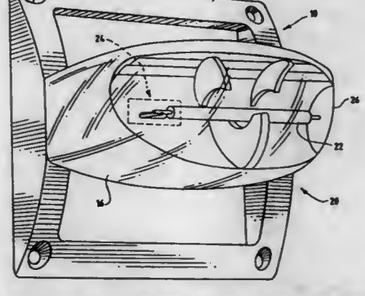
STROBE FOR DETECTOR

Walter J. Moran, III, Batavia, Ill., assignor to Pittway Corporation, Chicago, Ill.

Continuation of Ser. No. 065,624, May 21, 1993, Pat. No. 5,448,462. This application Jun. 1, 1995, Ser. No. 457,532

Int. Cl.[6] F21V *07/12*

U.S. Cl. 362—301 **5 Claims**



1. A strobe unit energizable with electrical energy for illuminating a first field and a second field generally perpendicular to the first field, relative to a light source oriented parallel to the second field comprising:

a housing;

a concave multi-element reflector carried by said housing, said reflector defining an interior region and having first and second open ends, said concave reflector having at least one transverse reflecting member positioned within said interior region and generally transverse to said concave reflector; and

an elongated high intensity source of visible radiant energy defining a longitudinal axis therethrough and disposed at least in part within said interior region, wherein said axis is generally transverse to said at least one transverse reflecting member, wherein at least a portion of said transverse reflecting member is positioned between said source and said concave reflector, and wherein radiant energy from said source in part impinges on said at least one transverse member and is reflected therefrom to, in part, illuminate a field which extends parallel to said longitudinal axis of said source, beyond said open ends of said concave reflector.

5,546,294

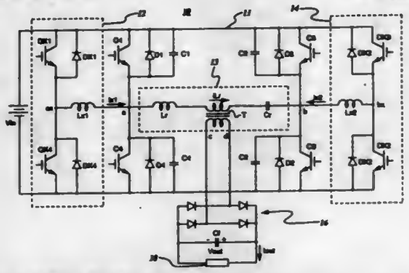
RESONANT CONVERTER WITH WIDE LOAD RANGE

Michael J. Schutten, Schenectady; Vlatko Vlatkovic, Niskayuna, and Robert L. Steigerwald, Burnt Hills, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 24, 1995, Ser. No. 506,312

Int. Cl.[6] H02M *3/335*

U.S. Cl. 363—17 **8 Claims**



1. A power converter, comprising:

a resonant converter comprising a bridge connection of main switching devices and a resonant circuit comprising a main resonant inductance and a main resonant capacitance coupled to said main switching devices; and

an auxiliary circuit corresponding to each half-bridge of said bridge connection of main switching devices, each of said auxiliary circuits comprising a half-bridge connection of auxiliary switching devices with a junction therebetween coupled to the junction between the main switching devices of the corresponding half-bridge, each of said auxiliary circuits further comprising an auxiliary resonant inductance coupled between the junction between the auxiliary switching devices and the junction between the main switching devices of the corresponding half-bridge.

5,546,295

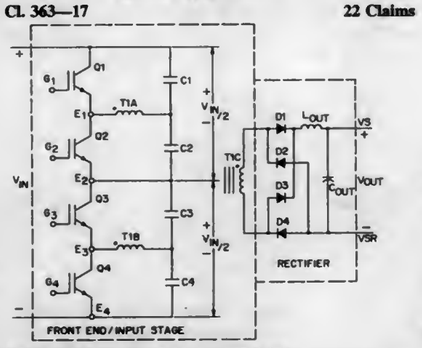
ELECTRICAL POWER CONVERTER, POWER SUPPLY, AND INVERTER WITH SERIES-CONNECTED SWITCHING CIRCUITS

Ralph Prete, West Haven, Conn.; Vladimir Brunstein, New Milford, N.J., and Todd J. Kazmirski, Port Ewen, N.Y., assignors to Rotron Incorporated, Woodstock, N.Y.

Continuation of Ser. No. 201,002, Feb. 24, 1994, abandoned. This application Aug. 28, 1995, Ser. No. 520,302

Int. Cl.[6] H02M *3/335*

U.S. Cl. 363—17 **22 Claims**



1. An electrical power converter, comprising:

an input circuit comprising at least two bridge-topology switching converter circuits connected in series between DC power input voltage means;

an output circuit for producing a desired AC or DC output voltage, operatively coupled to the input circuit;

whereby, in electrical power converter operation, input-voltage transients have minimized influence on the output voltage.

5,546,296

CHARGE PUMP

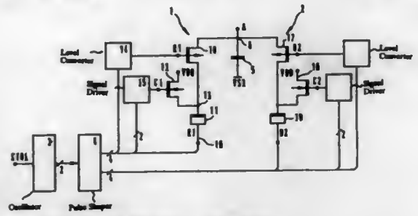
Dominique Savignac, Ismaning; Dieter Gleis, Grosskarolinenfeld, and Manfred Menke, Munich, all of, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jul. 25, 1994, Ser. No. 279,919

Claims priority, application Germany, Jul. 23, 1993, 43 24 855.1

Int. Cl.[6] H03K *19/00*

U.S. Cl. 363—60 **11 Claims**



1. A charge pump assembly, comprising:

a storage capacitor having one terminal for a first supply potential and another terminal for pickup of an output potential, and a charge pump including:

(a) a p-channel MOS transistor having a gate terminal being controlled by a first signal and having a drain-to-source path with two terminals, one terminal of the drain-to-source path of said p-channel MOS transistor being connected to the other terminal of said storage capacitor;

(b) a sliding capacitor having two terminals, one terminal of said sliding capacitor being connected to the other terminal of the drain-to-source path of said p-channel MOS transistor and the other terminal of said sliding capacitor being controlled by a second signal;

(c) an n-channel MOS transistor having a gate terminal being controlled by a third signal and having a drain-to-source path being connected between a second supply potential and the one terminal of said sliding capacitor; and

(d) an oscillator device and a pulse shaper device being supplied by said oscillator device for generating the first, second and third signals, said p-channel MOS transistor being conducting only whenever the second signal is at a high level, and said n-channel MOS transistor being conducting only whenever the second signal is at a low level.

5,546,297

APPARATUS FOR MODIFYING AN ELECTRICAL SIGNAL

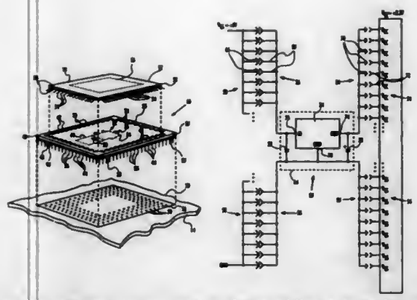
Raymond S. Duley, Buda, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 114,469, Mar. 31, 1993, abandoned. This application Jun. 2, 1995, Ser. No. 459,539

Int. Cl.[6] H02M *3/06*

U.S. Cl. 363—62 **20 Claims**

1. An interconnection member for use in an electrical circuit including an integrated circuit package and a circuit board, the integrated circuit package including a plurality of package contacts arranged in a first pattern, the circuit board including a plurality of board contacts arranged in a second pattern, the package contacts including a plurality of package power contacts for receiving a first power signal at a first voltage level, the board contacts including a plurality of board power contacts for providing a second power signal at a second voltage level, the interconnection member comprising:



a first surface having a plurality of first member contacts disposed to be electrically and mechanically coupled to the package contacts, the first member contacts being arranged in the first pattern;

a second surface opposite the first surface having a plurality of second member contacts disposed to be electrically and mechanically coupled to the package contacts, the second member contacts being arranged in the second pattern; and

a semiconductor, active voltage regulator electrically coupled between the first member contacts and the second member contacts for changing the second power signal at the second voltage level from the board power contacts to the first power signal at the first voltage level and providing the first power signal to the package power contacts.

5,546,298

METHOD FOR THE PARALLEL CONNECTION OF INVERTERS BY REFERENCE TO EXTREME CURRENT VALUES

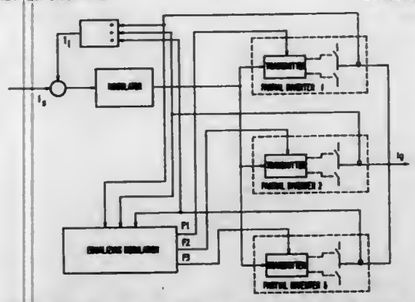
Ronald Rohner, Baden, Switzerland, assignor to Inventio AG, Hergiswil NW., Switzerland

Filed Dec. 2, 1993, Ser. No. 160,163

Claims priority, application Switzerland, Dec. 3, 1992, 03714/92

Int. Cl.[6] H02M *7/00*

U.S. Cl. 363—71 **16 Claims**



1. A method for the parallel connection of a plurality of pulse-modulated inverters, wherein outputs of said inverters are connected by one of directly and via chokes, and wherein times of switching-on and switching-off of the parallelly connected plurality of inverters are determined by a control circuit, said method comprising the steps of:

switching, when the current is rising, a one of said plurality of inverters which carries the greatest current;

switching, when the current is falling, a one of said plurality of said inverters which carries the least current; and

determining a time of switching of each of said plurality of inverters to be switched, wherein a first of said one of said plurality of inverters which is switched depends on an initial time at which the current of at least one of said plurality of inverters is switched before fulfilling a preset condition.

5,546,299

POWER SUPPLY FOR PREDOMINANTLY INDUCTIVE LOADS

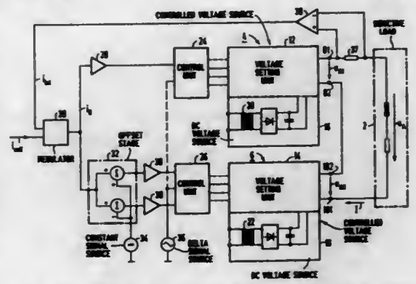
Helmut Lenz, Oberasbach, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Feb. 15, 1994, Ser. No. 196,544

Claims priority, application Germany, Feb. 15, 1993, 43 04 517.0

Int. Cl.[6] H02M *7/00*

U.S. Cl. 363—71 **18 Claims**



1. A power supply for predominantly inductive loads comprising:

first controllable voltage source means for basic load operation for supplying a basic output voltage, and including a first voltage-setting unit having an input side connected to a first d.c. voltage source, said first voltage-setting unit having output terminals at which said basic output voltage is present;

second controllable voltage source means for peak load operation for supplying peak output voltages which exceed said basic output voltage, including a second voltage-setting unit having an input side connected to a second d.c. voltage source, said second voltage-setting unit having output terminals at which said peak output voltages are present; and

said first and second d.c. voltage sources being connected separated in potential and the respective output terminals of said first and second voltage-setting units being connected in series.

5,546,300

ZERO VOLTAGE SWITCHING CONTROLLER OF RESONANCE MODE CONVERTER AND ELECTRONIC BALLAST USING THE SAME

Young-sik Lee, Anyang; Hyun-min Jo, Seoul; Kyung-ha Jee, and Nak-choon Choi, both of Bucheon, all of, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

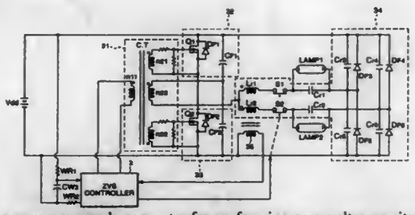
Filed Aug. 16, 1994, Ser. No. 291,594

Claims priority, application Rep. of Korea, Aug. 17, 1993, 1993-15908

Int. Cl.[6] H02M *7/5387;* **H05B** *37/02*

U.S. Cl. 363—132 **10 Claims**

1. An electronic ballast adopting a zero voltage switching system which decreases power consumption caused by the switching operation and efficiently provides power in a resonance mode power supply (RMPS) for switching the direct voltage provided by rectifying an alternating current power source so as to provide a DC voltage source to a load via a resonator, said electronic ballast comprising:



a resonance mode converter for performing zero voltage switching on the DC voltage source according to a drive signal by using a predetermined frequency so that electricity can be supplied to the load, said resonance mode converter including first switching means connected to the positive terminal of the DC voltage source so as to perform a switching at zero voltage according to said drive signal, second switching means connected to the negative terminal of the DC voltage source and said first switching means so as to perform a switching at zero voltage according to said drive signal, a control transformer having a primary winding and a secondary winding, said secondary winding being connected to said first switching means, said second switching means and the load, respectively, and a serial resonance circuit being connected to said control transformer for delivering electricity to the load; and

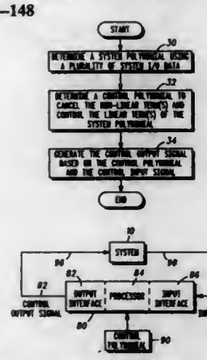
a zero voltage switching (ZVS) circuit for receiving outputs of the DC voltage source and said resonance mode converter and in response thereto outputting said drive signal according to the state of the load so that said resonance mode converter can be controlled so as to perform zero voltage switching, said ZVS circuit including a drive signal generator for generating a sawtooth wave signal according to a control current and comparing the result with a reference voltage so as to generate said drive signal and a zero voltage switching enable signal, a power controller for controlling a control current produced by said resonance mode converter, the DC voltage source and said control current depending on the state of the load, and a zero voltage switching ensuring circuit for receiving said control current and said zero voltage switching enable signal so as to ensure that said resonance mode converter performs a zero voltage switching, wherein said zero voltage switching circuit is connected to said primary winding of said control transformer.

5,546,302

POLYNOMIAL CONTROLLER FOR NONLINEAR SYSTEMS

Shay-Ping T. Wang, Long Grove; Dan Teng, Wheeling; Bruce E. Stuckman, Algonquin, and David A. Hayner, Arlington Heights, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 19, 1994, Ser. No. 358,426
Int. Cl.[6] G05B *13/04*
U.S. Cl. 364—148 **6 Claims**



1. A controller for controlling a system having a system input and a system output, the controller comprising:

an input interface, that receives a control input signal based on the system output;

an output interface, for generating a control output signal in response to a control output value, the control output signal coupled to the system input; and

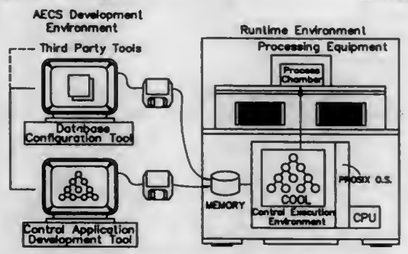
a processor, responsive to the control input signal, for generating the control output value based on a control polynomial and the control input signal, the control polynomial having a plurality of cancellation terms and a plurality of control terms, the plurality of cancellation terms calculated to cancel a plurality of nonlinear terms of a system polynomial, and the plurality of control terms calculated to control a plurality of linear terms of the system polynomial, wherein the system polynomial expresses the system output in terms of the system input and wherein the system polynomial is determined using a plurality of system I/O data, the system polynomial having r' terms, the r' terms found using a regression subsets technique.

5,546,301

ADVANCED EQUIPMENT CONTROL SYSTEM

Mukul Agrawal, Plymouth; James E. Orrock, Eden Prairie; Pradip K. Patiath, and Lloyd A. Rachor, both of Brooklyn Park, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 19, 1994, Ser. No. 277,385
Int. Cl.[6] G06F *19/00*
U.S. Cl. 364—140 **12 Claims**



1. An advanced equipment control system, comprising:

a development environment further comprising a database configuration tool and a control application development tool, said database configuration tool and said control application development tool each including a processor means for defining and then subsequently generating an inherent output composed of a plurality of inherent relationships of a plurality of remote control devices associated with a system to be controlled via an object lattice space and a configuration output composed of at least one practical configuration of functional relationships among said plurality of remote control devices wherein each processor means also includes display means;

a runtime environment including memory means for receiving the inherent output and the configuration output wherein said runtime environment further comprises a control execution environment further comprising:

a logical processor coupled to the processor means;

an operating system resident within the logical processor;

a control-oriented object lattice bearing a logical synthesis output generated by said logical processor in cooperation with the processor means of the respective outputs from the development environment and the runtime environment; and,

a plurality of output signals responsive to the logical synthesis output; and

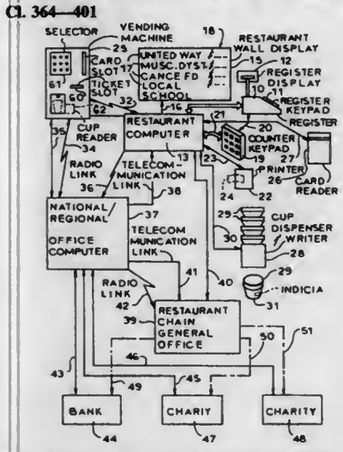
wherein the remote control devices are continuously coupled to the control execution environment and operated in response to the logical synthesis.

5,546,303

METHOD OF AND SYSTEM FOR CORRELATING CHARITABLE CONTRIBUTIONS

Edward Heibling, 47 Annandale Rd., Commack, N.Y. 11725

Continuation-in-part of Ser. No. 12,743, Feb. 3, 1993. This application Mar. 21, 1994, Ser. No. 215,372
Int. Cl.[6] G06F *17/60;7/04;* **B42D** *15/00;* **G06G** *7/52*
U.S. Cl. 364—401 **5 Claims**



1. A method of correlating charitable contributions, comprising the steps of:

(a) collecting a charitable contribution from a donor at a vending station;

(b) enabling a donor-responsive register and, upon actuation of said register by said donor, recording a selection of a donee to which said charitable contribution is to be assigned,

(c) transmitting data representing said selection and an amount of said charitable contribution to a central location remote from said vending station;

(d) collecting said data from said vending station and a multiplicity of other vending stations at said central location, recording said data at said location and processing the recorded data to total sums due to a multiplicity of donees selectable at said register;

(e) distributing to said multiplicity of donees respective sums determined by the processing of the recorded data,

(f) issuing to each donor at the respective vending station an information carrier; and

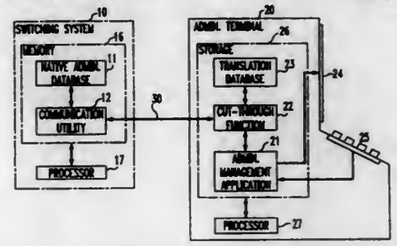
(g) providing in a vicinity of said vending station a dispensing station operable by said information carrier to dispense a product in response to said information carrier, said information carrier being a cup and said dispensing station being a beverage vending machine operable by said information carrier.

5,546,304

REAL-TIME ADMINISTRATION-TRANSLATION ARRAGEMENT

Jamie J. Marschner, Northglenn, and Stephanie L. Renquist, Brighton, both of Colo., assignors to AT&T Corp., Murray Hill, N.J.

Continuation of Ser. No. 205,916, Mar. 3, 1994, abandoned. This application Jun. 23, 1995, Ser. No. 495,197
Int. Cl.[6] G06F *17/28;* **H04M** *3/00;5/00*
U.S. Cl. 364—419.04 **9 Claims**



6. A method of producing a translation database that serves to administer in a foreign language an administrable telecommunications entity having an administration database constructed from administration patterns expressed in a native language that are selectively filled in with administration data expressed in the native language, the administration patterns having corresponding indexes for identifying the administration patterns, the entity being administered by the administration database when the administration database stores the administration data expressed in the native language, and the entity further having an administration terminal that obtains an administration pattern including any filled-in administration data expressed in the native language and the index of said administration pattern from the administration database, effects translation of the obtained pattern including any filled-in administration data through the translation database into a translated pattern expressed in the foreign language by using the index of the obtained administration pattern to find in the translation database the equivalent of the obtained administration pattern, finding among the administrator-enterable information in the translation database information in the foreign language that corresponds to any translatable said administration data in the obtained administration pattern, and filling in the found equivalent of the obtained administration pattern with the found information and any non-translatable said administration data from the obtained administration pattern, presents the translation pattern including the filled-in information and data to an administrator, receives from the administrator administration data indicated by the presented pattern and expressed in the foreign language, effects translation of the received data through the translation database into translated data expressed in the native language by finding among the information in the translation database information in the native language that corresponds to any translatable said received data, and stores the translated data and any non-translatable said data as administration data in the administration database, comprising the steps of:

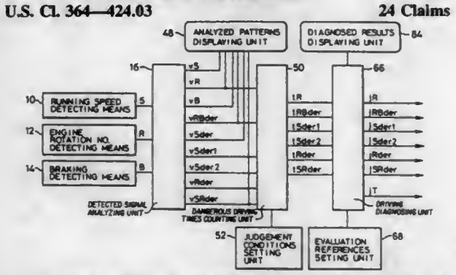
constructing the translation database from equivalents of the administration patterns expressed in a foreign language such that the equivalent of art administration pattern is able to be found in the translation database by using the index of said administration pattern, the equivalents not being populated with any administration data, so that the translation database is devoid of the administration data; and

including with the translation database information that is enterable by an administrator as administration data and expressed in both the native and the foreign languages so that information in either language that corresponds to translatable administration data in either language is able to be found in the information included with the translation database for populating the administration database and the equivalents of the administration patterns.

5,546,305
MOTOR VEHICLE DRIVING ANALYTICALLY DIAGNOSING METHOD AND DEVICE

Shigeru Kondo, Niizuru-danchi, 1-16-204, Minami-machi 2-chome, Tsurugashima, Saitama-ken 350-02, Japan

Continuation of Ser. No. 958,055, Oct. 7, 1992, abandoned. This application Jun. 15, 1994, Ser. No. 267,264
Claims priority, application Japan, Nov. 11, 1991, 3-294610
Int. Cl.[6] B60K *31/00*
U.S. Cl. 364—424.03 **24 Claims**



17. A motor vehicle driving analytically diagnosing method for analyzing the driving state of a driver of the motor vehicle comprising the steps of:

detecting a running speed, an engine rotation number, and a braking of a motor vehicle;

outputting a running speed signal, an engine rotation number signal, and a braking signal representative of the detected running speed, engine rotation number, and braking of the motor vehicle, respectively;

generating analyzed signals indicative of a driving state of a driver from the running speed signal, the engine rotation number signal, and the braking signal;

counting dangerous driving times during which the analyzed signals satisfy predetermined danger judging conditions;

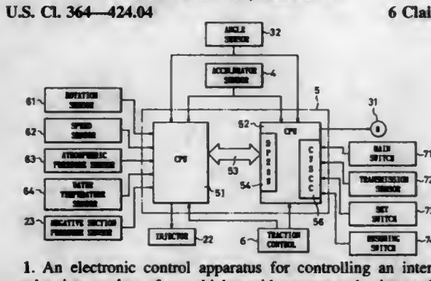
evaluating the dangerous driving times with respect to respective evaluation thresholds to produce evaluation signals; and

combining the evaluation signals to produce at least one signal representing an evaluation of the driving history of the driver in a certain period of time.

5,546,306
MULTIPLE PROCESSOR THROTTLE CONTROL APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Kazuo Hirabayashi; Norio Suzuki, and Yosuke Tachibana, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 12, 1993, Ser. No. 134,700
Claims priority, application Japan, Oct. 27, 1992, 4-289023; Oct. 27, 1992, 4-289037
Int. Cl.[6] F02D *9/02;* **B60K** *31/02*
U.S. Cl. 364—424.04 **6 Claims**



1. An electronic control apparatus for controlling an internal combustion engine of a vehicle, said apparatus having a first central processing unit (CPU) for fuel control which controls an amount of fuel to be supplied to the internal combustion engine and a second CPU for throttle valve control which outputs a driving signal to an actuator which operates to open and close a throttle valve disposed in an intake pipe to the internal combustion engine, said apparatus comprising:

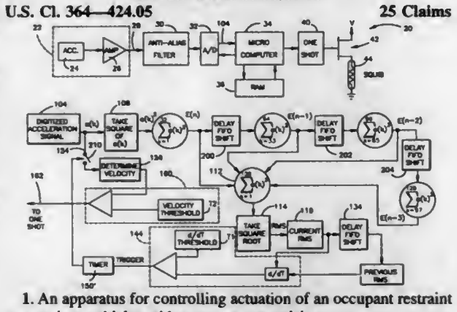
an opening degree computing member which is provided in said first CPU to compute an opening degree of the throttle valve based at least on an amount of depression of an accelerator and then to output a result thereof as an opening degree signal;

said first CPU and said second CPU being connected together by a communication line which transfers said opening degree signal from said opening degree computing member from said first CPU to said second CPU, thereby providing the driving signal which opens and closes the throttle valve, thereby controlling the internal combustion engine.

5,546,307
METHOD AND APPARATUS FOR DISCRIMINATING VEHICLE CRASH CONDITIONS

Joseph F. Mazur, Washington; Brian K. Blackburn, Rochester, and Scott B. Gentry, Shelby Township, all of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Continuation-in-part of Ser. No. 520,417, May 11, 1990, Pat. No. 5,216,607, which is a continuation-in-part of Ser. No. 358,875, May 30, 1989, Pat. No. 4,979,763. This application Jan. 8, 1992, Ser. No. 818,280
Int. Cl.[6] B60R *21/32;21/12*
U.S. Cl. 364—424.05 **25 Claims**



1. An apparatus for controlling actuation of an occupant restraint system in a vehicle, said apparatus comprising:

means for determining an instantaneous power value of said vehicle when involved in a crash condition;

means for determining a vehicle delta velocity value of said vehicle when involved in said crash condition; and

means for actuating the occupant restraint system when both said determined vehicle delta velocity value and said determined instantaneous power value indicate a predetermined type of vehicle crash condition is occurring.

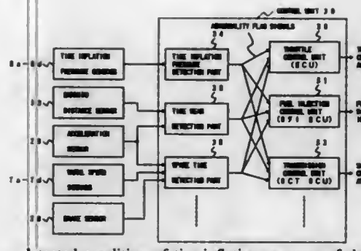
5,546,308
APPARATUS FOR CONTROLLING VEHICLE SPEED IN RESPONSE TO A ROAD HOLDING ABILITY CHANGE

Masaki Yamamoto, Kakegawa, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 186,553, Jan. 26, 1994, abandoned. This application Jan. 13, 1995, Ser. No. 375,654
Claims priority, application Japan, Feb. 19, 1993, 5-030889
Int. Cl.[6] B60K *41/00*
U.S. Cl. 364—426.04 **10 Claims**

1. A safety apparatus for controlling vehicle speed in response to a change in a road holding ability related to tires of an automotive vehicle, comprising:

detecting means for detecting a tire condition that degrades road holding ability from a plurality of conditions including tire inflation pressure, tire wear and tire size, when at least one



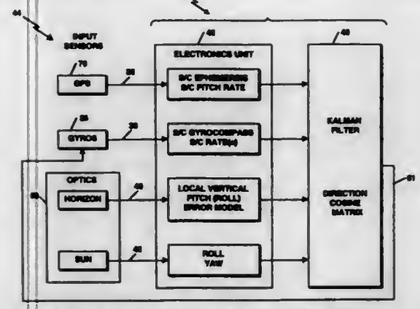
detected condition of tire inflation pressure of the tires, tire wear of the tires and tire sizes has changed to be below a reference value appropriate to the detected condition indicates a decrease in the road holding ability of affected tires; and

control means for performing at least one vehicle speed control process to prevent the vehicle speed from being increased beyond a preset threshold when the decrease in the road holding ability is detected by said detecting means, said at least one control process being selected from a throttle control process, a fuel injection control process and a transmission control process.

5,546,309
APPARATUS AND METHOD FOR AUTONOMOUS SATELLITE ATTITUDE SENSING

William M. Johnson, Sudbury, and Howard Musoff, Brookline, both of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Oct. 20, 1993, Ser. No. 139,935
Int. Cl.[6] G06F *165/00*
U.S. Cl. 364—434 **13 Claims**



1. An attitude sensing system for a spacecraft comprising:

a satellite receiver for providing a receiver output signal in response to satellite generated signals;

an inertial measurement unit for providing a direction cosine matrix representing the attitude of said spacecraft in inertial space with respect to a yaw axis, a pitch axis, and a roll axis defining a frame of reference of said system;

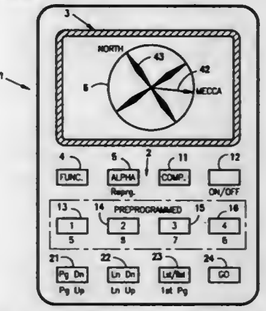
an optical assembly providing an optical assembly output signal, said optical assembly including a sensor array for providing a representation of an image focused on said sensor array; and

a digital filter, responsive to said receiver output signal, said direction cosine matrix, and said optical assembly output signal, for providing an output vector for correcting the attitude of said spacecraft.

5,546,310
GHEBLEH BEARING INDICATOR

Seyf-Ollah Ehdaie, 6315 Mecca St., and Firooz Khosraviyani, 6401 Opal Dr., both of Odessa, Tex. 79762

Filed Apr. 23, 1992, Ser. No. 872,412
Int. Cl.[6] G01C *21/00*
U.S. Cl. 364—449 **13 Claims**



1. A bearing indicator apparatus for indicating a bearing and orientation between the location of the apparatus and a desired location, the apparatus comprising:

a portable housing;

a keyboard mounted in said housing for inputting positional information;

a display mounted on said housing;

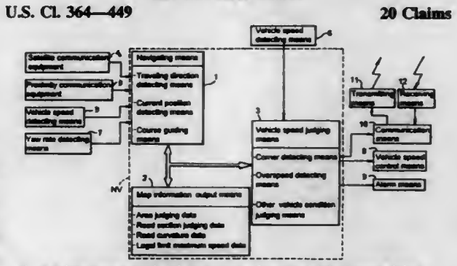
an electronic compass contained within said housing to provide information concerning the current orientation of said apparatus relative to the magnetic North pole;

a microprocessor contained within said housing and connected to said keyboard, said display and said electronic compass, for calculating the bearing to and orientation of the desired location from positional information input from said keyboard, orientation information from said compass and the location of a desired location and displays the bearing on said display.

5,546,311
INTERCOMMUNICATION SYSTEM FOR VEHICLE

Hiroshi Sekine, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 27, 1994, Ser. No. 329,901
Claims priority, application Japan, Oct. 28, 1993, 5-269361
Int. Cl.[6] G06F *165/00*
U.S. Cl. 364—449 **20 Claims**



1. An intercommunication system for a vehicle, comprising:

map information outputting means for outputting a map of a road on which a subject vehicle travels;

navigating means for outputting a traveling direction and a current position of the subject vehicle on the map;

judging means for judging on the basis of outputs from said map information outputting means and said navigating means whether a vehicle speed of the subject vehicle is suitable for passing a shape of a road ahead of the subject vehicle;

communication means for transmitting a traveling condition of the subject vehicle to another vehicle when said judging means judges that the vehicle speed of the subject vehicle is unsuitable based on an output from said judging means and for receiving a traveling condition of the another vehicle transmitted from the another vehicle; and

alarm means for giving an alarm to a driver of the vehicle based on the received traveling condition of the another vehicle.

5,546,312

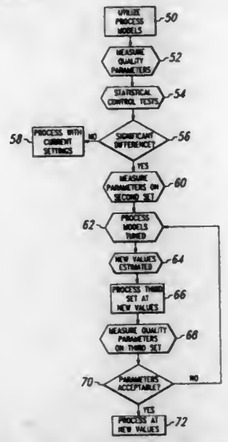
USE OF SPATIAL MODELS FOR SIMULTANEOUS CONTROL OF VARIOUS NON-UNIFORMITY METRICS

Purnendu K. Mozumder, Plano, and Sharad Saxena, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 124,086, Sep. 20, 1993, abandoned. This application Feb. 24, 1994, Ser. No. 201,302

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—468.03 **17 Claims**



1. A method of simultaneously controlling a plurality of non-uniformity metrics in processing a discrete product, said method comprising:

utilizing process models of said discrete product relating a plurality of product quality parameters to a plurality of process control variables, wherein said process models include spatial models of said discrete product;

measuring said plurality of product quality parameters on a first plurality of products;

exercising statistical quality control tests on said plurality of product quality parameters of said first plurality of products;

continuing processing if statistical quality control tests do not indicate significant difference from model prediction and observables; otherwise

measuring said plurality of product quality parameters on a second plurality of products;

tuning said process models to create tuned process models using said plurality of product quality parameters from said first and said second plurality of products, wherein said tuning estimates a changed state of said processing with the use of process models;

estimating new values for said plurality of process control variables from said tuned models;

processing a third plurality of products at said new values of said plurality of process control variables;

measuring said plurality of product quality parameters on said third plurality of products;

repeating said tuning of said process models and said estimating new values for said plurality of process control variables if said product quality parameters from said third plurality of products are not acceptable; otherwise

continuing processing products with said new values of said plurality of process control variables if said product quality parameters from said third plurality of products are acceptable.

5,546,313

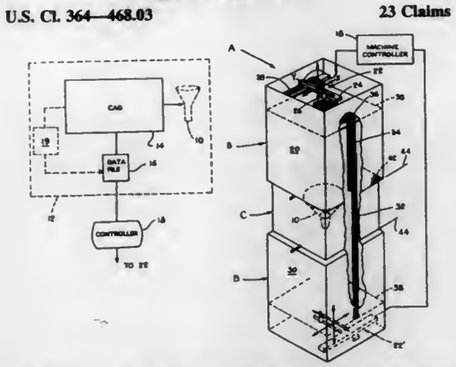
METHOD AND APPARATUS FOR PRODUCING THREE-DIMENSIONAL ARTICLES FROM A COMPUTER GENERATED DESIGN

William E. Masters, 100 Bentcreek Dr., Easley, S.C. 29642

Filed Sep. 12, 1994, Ser. No. 304,352

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—468.03 **23 Claims**



1. A method of rapidly reproducing a three-dimensional article according to a three-dimensional design generated on a computer aided design (CAD) machine using a data file containing coordinate records of three-dimensional coordinates corresponding to said design of said three-dimensional article generated on said CAD machine, said three-dimensional coordinates having a prescribed coordinates resolution, said method comprising:

providing a mold for molding said article having a work chamber with a plurality of interface positions at which from one to six mold units having mold unit faces may be interfaced, each said mold unit including an array of pin elements having a pin array resolution corresponding to said coordinate resolution, and said pin elements having terminal ends defining a mold shape;

selecting the number of mold units interfaced with said work chamber depending on the complexity and shape of the article being molded;

controlling the position of said pin elements in said mold unit in response to said coordinate records in said data file to position said terminal ends of said pin elements generally at said three-dimensional coordinates to form a mold shape corresponding to said article;

introducing a material from which said three-dimensional article is formed into said mold, and forming said three-dimensional article in accordance with said mold shape.

5,546,314

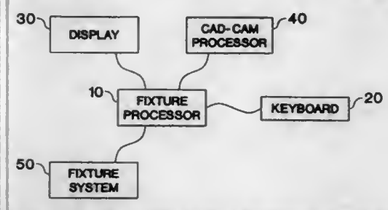
PROCESSOR AND METHOD FOR DEVELOPING A SET OF ADMISSIBLE FIXTURE DESIGNS FOR A WORKPIECE

Randolph C. Brost, 4204 Landau NE, Albuquerque, N.M. 87111; Kenneth Y. Goldberg, 1006 W. Edgeware Rd., Los Angeles, Calif. 90026; Aaron S. Wallack, 244 Wilson Way, Albany, Calif. 94710, and John Canny, Computer Science Division, 529 Soda Hall, Berkeley, Calif. 94720-1776

Continuation of Ser. No. 239,382, May 6, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 466,112

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—474.01 **42 Claims**



20. A method for developing a set of admissible fixture designs on a fixture plate for a workpiece with first, second and third locators and a translating clamp, comprising the steps of:

(a) developing a geometric representation of the workpiece;

(b) inputting geometric access constraints of the workpiece; and

(c) generating the set of admissible fixture designs for said geometric representation of the workpiece which defines positions for said translating claim and said first, second, and third locators and which provides form closure based on said geometric access constraints of the workpiece inputted at said step (b).

5,546,315

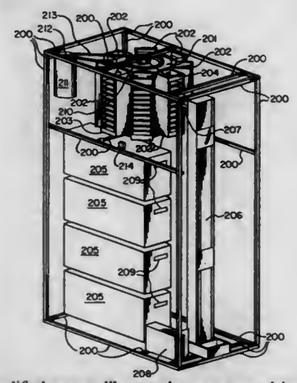
SIMPLIFIED STORAGE MEDIA LIBRARY SUBSYSTEM

Donald J. Kleinschnitz, Louisville, Colo., assignor to Storage Technology Corporation, Louisville, Colo.

Filed Mar. 4, 1994, Ser. No. 206,537

Int. Cl.[6] G06F *13/00*

U.S. Cl. 364—478.06 **19 Claims**



1. A simplified storage library subsystem comprising:

magazine means having a plurality of slots for storing storage media cartridges, each of said slots being adapted to receive one of said storage media cartridges;

carousel means for rotatably holding a plurality of said magazine means wherein said magazine means includes a plurality of active magazine means and at least one reserve magazine means, each of said plurality of said magazine means being positioned parallel to a first plane, said carousel means having a storage media selection position aligned with said first plane;

non-rotatable robotic gripper means for seeking said storage media cartridges along said first plane, and gripping and releasing said storage media cartridges along an intersect line of a second plane and said first plane, said first plane being substantially perpendicular to said second plane;

at least one read/write device means for recording and retrieving information on said storage media cartridges, each of said at least one read/write device means being aligned in said first plane;

carousel control means for controllably rotating said carousel means to align one of said plurality of said magazine means at a time with said storage media selection position;

robot control means for controllably moving said robotic gripper means along said first plane;

gripper control means for controllably moving said robotic gripper means along said second plane and causing said robotic gripper means to grip one of said storage media cartridges and release one of said storage media cartridges;

access means to permit controlled access by an operator to one of said at least one reserve magazine means at a time for adding or removing said storage media cartridges therefrom by way of an access port; and

processing means cooperatively engaged with said carousel control means, with said robot control means, with said access means, and with said gripper control means for controllably gripping, releasing, and moving said storage media cartridges from a first position within said storage library subsystem to a second position within said storage library subsystem.

5,546,316

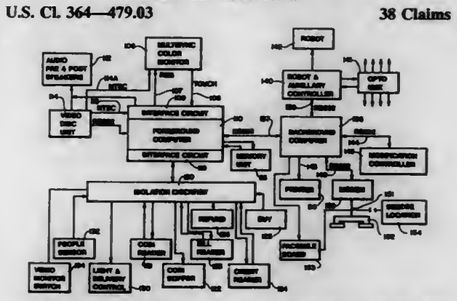
COMPUTER CONTROLLED SYSTEM FOR VENDING PERSONALIZED PRODUCTS

Stephen P. Buckley, Kansas City, Mo., and Thomas B. Banks, Prairie Village, Kans., assignors to Hallmark Cards, Incorporated, Kansas City, Mo.

Continuation-in-part of Ser. No. 602,439, Oct. 22, 1990. This application Apr. 6, 1992, Ser. No. 864,418

Int. Cl.[6] G06F *17/00*

U.S. Cl. 364—479.03 **38 Claims**



1. A machine for delivering a social occasion product which may be automatically personalized by the customer at the time of purchase, said machine comprising: storage means for storing base product, delivery receptacle means, product handling means for effecting a series of operations and including electrically controllable transfer means for effecting transfer of base product from said storage means, electrically controllable printing means for printing graphics and text on said base product transferred by said transfer means and for effecting printing of both high quality graphics and text on said transferred base product for production of a personalized social occasion product, and electrically controllable delivery means for effecting delivery of said personalized social occasion product from said printing means to said delivery receptacle means, an enclosure containing said storage, receptacle and printing means therewithin, selection means operable by a customer on

the outside of said enclosure to effect entry of control data to select graphics and text to be provided on the personalized greeting card to be delivered to the customer, computer means within said enclosure and coupled to said payment and selection means and to said electrically controllable transfer, printing and delivery means of said product handling means, said computer means controlling said transfer, printing, and delivery means of said product handling means following payment by a customer to perform a series of operations in accordance with said control data, said series of operations being performed within said enclosure without operator intervention and including transfer of base product from said storage means, printing of a sheet of base product transferred from said storage means and delivery of the desired final form of personalized greeting card from said printing means to said delivery receptacle means, said computer means monitering status and malfunction conditions of said machine during at least a portion of said operations, and generating a status report therefrom; and communication means coupling said computer means with a remote location, said computer means transmitting said status report to said remote location via said communication means.

5,546,317

SYSTEM FOR RECOGNIZING AND MANAGING ELECTROCHEMICAL CELLS

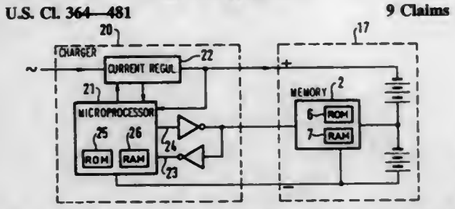
Xavier Andrieu, Bretigny sur Orge, France, assignor to Alcatel Alsthom Compagnie Generale D'Electricite, Paris, France

Filed May 5, 1994, Ser. No. 238,621

Claims priority, application France, May 6, 1993, 93 05446

Int. Cl.[6] H02J *7/00*

U.S. Cl. 364—481 **9 Claims**



1. A system for managing the use of a battery connected to a device, said battery including at least one electrochemical cell, said system comprising:

an electronic memory incorporated in said battery, said electronic memory comprising a non-erasable first portion containing information identifying said battery, with at least some of said information being written by a user of said battery, and a second portion which may be modified or erased and which contains information about the operation and the state of said battery,

read means for reading from said memory and write means for writing in said memory, and

circuitry in said device for managing the use of said battery in accordance with information about said cell read from said cell, and said system.

5,546,318

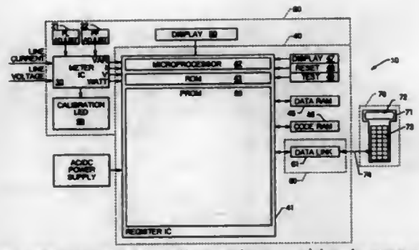
METHOD OF GENERATING ELECTRICAL ENERGY METERING QUANTITIES IN A MULTI-CHANNEL LOAD PROFILE RECORDER

Robert E. Lee, Jr., Ocala, Fla., assignor to General Electric Company, New York, N.Y.

Filed Dec. 16, 1994, Ser. No. 357,583

Int. Cl.[6] G01R *11/54*

U.S. Cl. 364—483 **18 Claims**



1. A method of generating electrical energy metering quantities in a multi-channel load profile recorder, comprising the steps of:

sensing a line current and a line voltage transferred from a line to a load during a first load profile time interval;

generating at least one first electrical energy metering quantity based on the sensed line current and the sensed line voltage, upon completion of the first load profile time interval;

storing the first electrical energy metering quantity in a programmable memory portion of the multi-channel load profile recorder;

transferring the first electrical energy metering quantity from the programmable memory portion of the multi-channel load profile recorder to a storage unit located external to the multi-channel load profile recorder;

contemporaneously with said first electrical energy metering quantity transferring step, generating, internal to the multi-channel load profile recorder, at least one second electrical energy metering quantity corresponding to the first load profile time interval from the first electrical energy metering quantity; and then

transferring the second electrical energy metering quantity from the multi-channel load profile recorder to the storage unit.

5,546,319

METHOD OF AND SYSTEM FOR CHARGED PARTICLE BEAM EXPOSURE

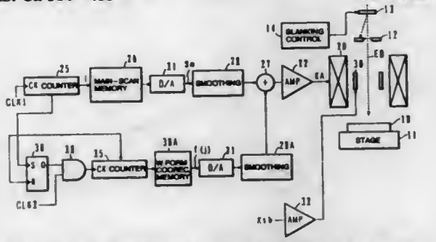
Takamasa Satoh; Hiroshi Yasuda; Junichi Kai; Yoshihisa Oae; Hisayasu Nishino; Kiichi Sakamoto; Hidefumi Yabara; Isamu Seto; Masami Takigawa; Akio Yamada; Soichiro Arai; Tomohiko Abe; Takashi Kiuchi, and Kenichi Miyazawa, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 27, 1995, Ser. No. 379,712

Claims priority, application Japan, Jan. 28, 1994, 6-008849; Mar. 15, 1994, 6-044473; Mar. 18, 1994, 6-048301; Apr. 11, 1994, 6-072286; Apr. 28, 1994, 6-092065; May 18, 1994, 6-103998; Jul. 26, 1994, 6-174642; Oct. 19, 1994, 6-253952; Nov. 14, 1994, 6-279474

Int. Cl.[6] H01J *37/00*

U.S. Cl. 364—488 **34 Claims**



7. A method of charged particle exposure for exposing an object with a charged particle beam by deflecting said charged particle beam with a main deflector and a sub deflector whose scanning area is narrower than that of said main deflector, in order to scan said charged particle beam onto said object, said method comprising the steps of:

supplying a drive signal to said main deflector or said sub deflector based upon an output of a D/A converter, and

including a correction signal in said drive signal in order to cancel out an effect on said charged particle beam of a transient waveform included in said drive signal when said outputs of said D/A converters change.

5,546,320

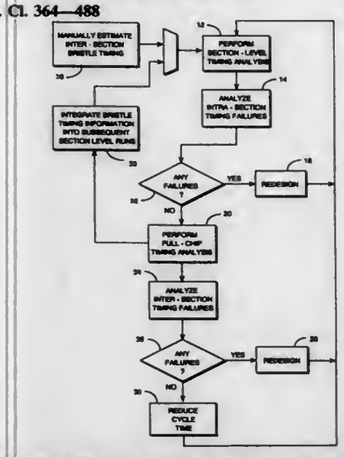
METHOD FOR PERFORMING INTEGRATED SECTION-LEVEL AND FULL-CHIP TIMING VERIFICATION FOR CUSTOM MICROPROCESSOR DESIGNS

Larry L. Biro, 210 Bullard Rd., Oakham, Mass. 01068, and Jengwei Pan, 6 Marylou Cir., Westboro, Mass. 01581

Continuation of Ser. No. 965,213, Oct. 23, 1992, abandoned. This application Jan. 18, 1996, Ser. No. 588,161

Int. Cl.[6] G06F *17/50*

U.S. Cl. 364—488 **16 Claims**



9. A method for performing integrated section-level timing and full-chip timing verification for an integrated circuit design having a plurality of section designs and a plurality of bristle timing parameters that define timing relationships between said sections to determine whether the performance of each of said plurality of section designs conforms with predetermined intra-section timing constraints and to determine whether the performance of said integrated circuit design conforms to a plurality of predetermined inter-section timing constraints, said method comprising the steps of:

performing a section-level timing verification procedure for each of said plurality of section designs of said integrated circuit design to determine whether each of said section designs conforms with said predetermined intra-section timing constraints;

performing a full-chip timing verification procedure for said integrated circuit design to determine said bristle timing parameters and to determine whether said integrated circuit design conforms with said predetermined inter-section timing constraints.

5,546,321

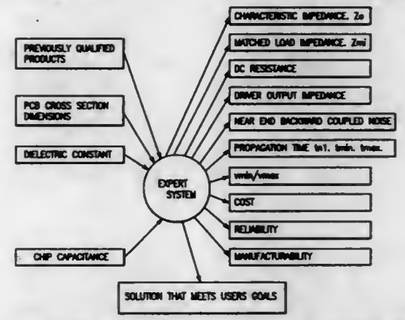
METHOD AND APPARATUS FOR THE CROSS-SECTIONAL DESIGN OF MULTI-LAYER PRINTED CIRCUIT BOARDS

Chi S. Chang, Endicott; Subahu D. Desai, Vestal; Debra A. Gernhart, Johnson City; Phillip A. Hartley, Vestal; Robert J. Haskins, Jr., Endwell; Keith K. T. Ho; Robert A. Martone, both of Endicott; Roy T. Mukahy, Vestal; Louis J. Shaffer; Robert D. Schoening, both of Endicott, and Scott A. Versprille, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 28,098, Mar. 8, 1993. This application Aug. 23, 1995, Ser. No. 518,514

Int. Cl.[6] G06F *17/50;17/18*

U.S. Cl. 364—491 **2 Claims**



1. An article of manufacture comprising a computer usable medium having computer readable program code means embodied therein for generating cross section designs and build up test sequences for a multi-layer printed circuit board, and having a computer readable input/output means, a computer readable knowledge base means, and a computer readable inference engine means, said computer readable knowledge base means comprising (i) computer readable regression analysis data base means relating transmission line parameters to printed circuit board geometric parameters, and (ii) computer readable "IF . . . THEN . . . " production rules for lamination, registration, circuitization, testability, and test methodologies, for manufacturability, cost, test development, second level packaging and printed circuit board cross sectional design, said computer readable input/output means, computer readable knowledge base means, and said computer readable inference engine means being capable of working together to carry out the steps of:

a. receiving the printed circuit board design parameters and performance parameters through the computer readable input/output means; and

b. applying, in the computer readable inference engine means, the computer readable knowledge base production rules and the computer readable geometric parameter to transmission line parameter data base means to the computer readable printed circuit board design and performance parameters to generate a set of cross section designs meeting the user specified performance parameters.

5,546,322

METHOD AND SYSTEM FOR ANALYZING PLASMA DATA

George G. Gifford, Poughkeepsie, and Brock E. Osborn, Hyde Park, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

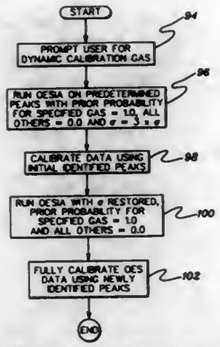
Filed Apr. 12, 1994, Ser. No. 226,781

Int. Cl.[6] G01N *31/00*

U.S. Cl. 364—497 **39 Claims**

1. A method for analyzing data derived from a plasma including a plurality of gaseous species, said method comprising:

inputting said data into a computer;



indicating to said computer a gaseous specie to be assumed present in said plasma;

automatically calibrating via said computer said data based on said indicated gaseous specie; and

identifying at least one of said plurality of gaseous species.

5,546,323

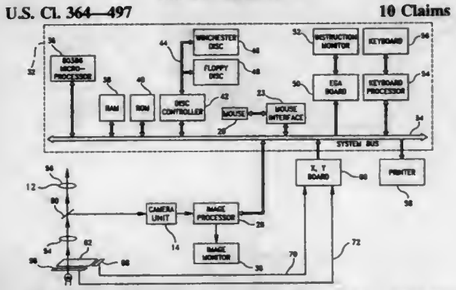
METHODS AND APPARATUS FOR MEASURING TISSUE SECTION THICKNESS

James W. Bacus, Hinsdale, and James V. Bacus, Lombard, both of Ill., assignors to Cell Analysis Systems, Inc., Franklin Lakes, N.J.

Continuation of Ser. No. 961,782, Oct. 16, 1992, abandoned, which is a continuation-in-part of Ser. No. 595,117, Oct. 10, 1990, Pat. No. 5,235,522. This application Oct. 12, 1995, Ser. No. 542,102

Int. Cl.[6] G01N *1/02*

U.S. Cl. 364—497 **10 Claims**



1. A method of analyzing a specimen cell sample in an automatic analyzing apparatus comprising the steps of:

providing a measurement cell sample and a specimen cell sample;

measuring, by said automatic analyzing apparatus, attributes of individual cell objects of said measurement cell sample and said specimen cell sample and selecting a plurality of said cell objects from said measurement cell sample and said specimen cell sample;

comparing by said automatic analyzing apparatus said measured attributes to predetermined parameters distinctive of said cell objects;

determining a thickness of the measurement cell sample from a distribution of said cell objects of said measurement cell sample;

utilizing the determined thickness of said measurement cell sample in analyzing said specimen cell sample by said automatic analyzing apparatus; and

identifying ones of said cell objects which are to have their DNA mass values corrected and correcting the DNA mass value of said identified ones of said cell objects by an amount computed from said determined thickness of said measured cell sample.

5,546,324

VIDEO TELECONFERENCING FOR NETWORKED WORKSTATIONS

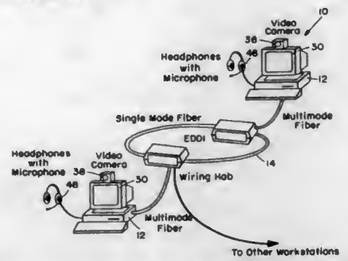
Ricky S. Palmer, and Larry G. Palmer, both of Nashua, N.H., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 893,074, Jun. 3, 1992, Pat. No. 5,375,068. This application Nov. 22, 1994, Ser. No. 343,657

The portion of the term of this patent subsequent to Dec. 20, 2011, has been disclaimed.

Int. Cl.[6] H04L *12/18*

U.S. Cl. 364—514 R **43 Claims**



1. Video teleconferencing apparatus for a distributed data processing system having a plurality of computer workstations connected by a digital data local area network, the computer workstations comprising:

a) source means for a local workstation to send audio and video data across the digital data local area network connecting the computer workstations as digital data packets to a remote workstation;

b) receiver means for the local workstation to receive audio and video data from across the digital data local area network as digital data packets sent from source means of the remote workstation;

wherein the source means of the local workstation sends audio and video data to the receiver means of the remote workstation over one variable bandwidth digital data connection, and the source means of the remote workstation sends audio and video data to the receiver means of the local workstation over another variable bandwidth digital data connection.

5,546,325

AUTOMATED SYSTEM, AND CORRESPONDING METHOD, FOR TESTING ELECTRO-OPTIC MODULES

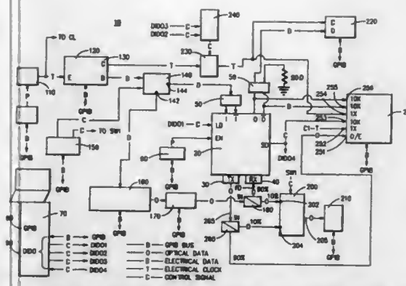
Nancy R. Aulet, Austin, Tex.; David C. Bogdan, Vestal, N.Y.; Muhammed I. Hussain, Hopewell Junction, N.Y.; George W. Hutt, Hyde Park, N.Y.; Donald L. Pearl, Endwell, N.Y., and David T. Pribula, Port Crane, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 4, 1993, Ser. No. 13,460

Int. Cl.[6] H04B *10/06;10/08*

U.S. Cl. 364—525 **8 Claims**

1. A method for testing an electro-optic module which includes an electro-optic receiver, comprising the steps of:



providing an automated test system for testing electro-optic modules which include electro-optic receivers;

connecting an electro-optic module which includes an electro-optic receiver to said automated test system; and

automatically measuring a receiver sensitivity associated with said electro-optic receiver, which receiver sensitivity is defined as the average optical power (P) of the weakest digital optical signal detectable by said electro-optic receiver at a specified bit error rate (BER).

5,546,326

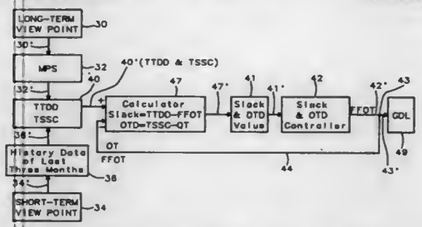
DYNAMIC DISPATCHING RULE THAT USES LONG TERM DUE DATE AND SHORT TERM QUEUE TIME TO IMPROVE DELIVERY PERFORMANCE

Wei-Heng Tai, Hsin-Chu, and Yi-Chin Hsu, Taipei, both of, Taiwan, assignors to Taiwan Semiconductor Manufacturing Company Ltd, Hsih-Chu, Taiwan

Filed Apr. 4, 1995, Ser. No. 416,165

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—552 **32 Claims**



1. A method of manufacturing control system by computer control of work flow in automatic control of a manufacturing production line,

providing comparison from positive data and negative feedback data,

providing input TTDD data and TSSC data as a positive input,

providing comparison output from said TTDD data, said TSSC data and from said negative feedback data,

providing a SLACK & OTD control processing in response to the output from said comparison output, said SLACK & OTD control processing providing FFOT and QT output data,

said FFOT and QT output data being provided to said feedback input for said comparison,

whereby automation of production control of a manufacturing process is provided by improved automation of work scheduling.

5,546,327

APPARATUS FOR CALCULATING GEOMETRICAL VIEW FACTOR

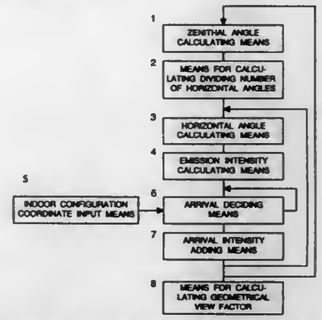
Yoshihiro Hattori, Osaka; Sachio Nagamitsu, Kyoto; Yoichi Nagata, Neyagawa, and Hisashi Kodama, Ikoma, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 810,511, Dec. 19, 1991, abandoned. This application Jul. 11, 1994, Ser. No. 273,212

Claims priority, application Japan, Dec. 27, 1990, 2-416226; Mar. 15, 1991, 3-51000; Mar. 15, 1991, 3-51001

Int. Cl.[6] G01N *21/00*

U.S. Cl. 364—556 **4 Claims**



1. An apparatus for analyzing energy distribution in a room using a model of an energy system to be installed in the room, said energy system having an energy source, said room having at least one desired three dimensional object therein and being defined by three dimensional coordinates, said apparatus comprising:

input means for inputting three dimensional coordinates relating to the room to be analyzed including position coordinates of an energy source which causes energy to be transferred, position coordinates of a surface within the room, position coordinates and a value of heat physical property of a solid body existing within the room;

memory for storing the inputted three dimensional coordinates relating to the room, for storing information relating to meshes generated by a mesh generating means, for storing the energy source data, and for storing the position and heat physical property value;

processing means, coupled to the memory, for calculating the geometrical view factor based on the controlled numerical values including:

mesh generating means for generating and defining meshes within the room using three dimensional coordinates;

mesh re-constructing means for re-constructing the three dimensional coordinates of the meshes generated by the mesh generating part, in consideration of physical property for each mesh;

emission point calculating means for determining a coordinate of an emission point for emitting energy from the energy source based on the energy source data;

emission control means for determining zenithal and horizontal angles and intensities of energy lines so as to simulate uniform emission of energy lines on a hemispherical surface for each emission point, said angles being stored in said memory;

arrival surface detecting means for detecting, based on the simulated emission of the energy lines, a solid surface reached by the emitted energy lines from the emission point, said arrival surface detecting means including:

moving point determining means for determining the emission point as a moving point;

moving point-to-mesh boundary distance calculating means for determining distances between the moving point in three-dimension and subsequent mesh boundaries in three-dimensional directions;

moving point-to-mesh boundary arrival point distance calculating means for calculating a distance between the moving point and an arrival point where the energy lines from the moving point arrive at each mesh boundary in each of the three directions determined by the calculated zenithal and horizontal angles stored in the memory;

distance comparing and deciding means for comparing the distances in the three directions calculated by the moving point-to-mesh boundary arrival point distance calculating means with each other and then selecting a minimum distance from the compared distances;

arrival point coordinate calculating means for calculating a coordinate of the arrival point relating to the minimum distance; and

surface deciding means for deciding whether or not the mesh coordinate calculated by the arrival point coordinate calculating part is included in the solid surface based on the physical properties for each mesh stored in the memory, such that if the surface deciding means decides that the mesh coordinate calculated by the arrival point coordinate calculating means is not included in the solid surface, the moving point determining determines the arrival point as a moving point so as to repeatedly operate the moving point-to-mesh boundary distance calculating means, the moving point-to-mesh boundary arrival point distance calculating means, the distance comparing and deciding means, the arrival point coordinate calculating means, and the surface deciding means decides that the mesh coordinate calculated by the arrival point coordinate calculating means is included in the solid surface;

intensity adding means for adding to each other the intensity of energy of the energy line for each of the solid surfaces at which the energy line arrived arrives; and

geometrical view factor determining means for determining a ratio of the entire emitted energy from the energy source and arrival intensity after simulated emission of all energy lines, and then setting the ratio as a geometrical factor and storing it in memory.

5,546,328

METHOD AND SYSTEM FOR AUTOMATED ALIGNMENT OF FREE-FORM GEOMETRIES

Vijitha S. Kiridena, Inkster; Samuel E. Ebenstein, Southfield, and Gregory H. Smith, Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 252,813, Jun. 2, 1994, Pat. No. 5,442,572. This application Apr. 13, 1995, Ser. No. 421,725

Int. Cl.[6] G06K *9/32*

U.S. Cl. 364—552 **13 Claims**

1. A method for automatically aligning a first geometry with respect to a second geometry, the method comprising:

(a) providing a computer work station;

(b) providing a first HDPDM describing the first geometry and a second HDPDM describing the second geometry, the first HDPDM being in crude alignment with the second HDPDM within a coordinate frame;

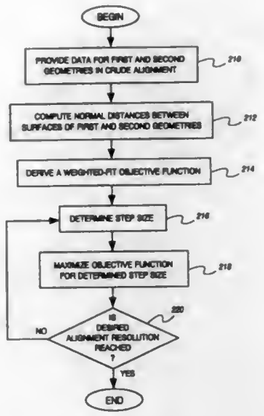
(c) computing a plurality of normal distances from the first geometry to the second geometry;

(d) deriving a weighted-fit objective function based on the plurality of normal distances;

(e) determining a step size;

(f) iteratively translating the second HDPDM based on the step size until the objective function is maximized; and

(g) repeating (d)–(f) until the step size is less than or equal to a desired alignment resolution.



5,546,329

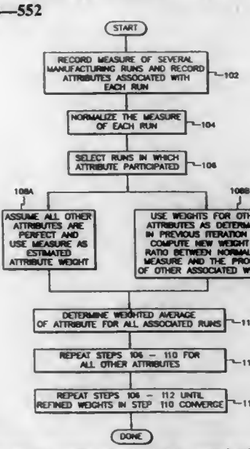
EVALUATION AND RANKING OF MANUFACTURING LINE NON-NUMERIC INFORMATION

Jerome M. Kurtzberg, and Menachem Levanoni, both of Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 217,272, Mar. 24, 1994, Pat. No. 5,479,361, which is a continuation of Ser. No. 843,048, Feb. 27, 1992, Pat. No. 5,351,202. This application Jun. 1, 1995, Ser. No. 456,816

Int. Cl.[6] G01D *7/02;9/28;* **G06F** *17/10*

U.S. Cl. 364—552 **11 Claims**



1. A computer operated method for quantitatively determining the performance of a plurality of non-numeric attributes of a manufacturing line, comprising the steps of:

(a) recording in a computer processor database a measure signal for each of a plurality of manufacturing runs on the manufacturing line, wherein each said measure signal comprises a data signal representing an output measure of the manufacturing line, and said data signals are obtained by operating the manufacturing line to produce a product;

(b) recording in said computer processor database attribute ID signals associated with each of said plurality of manufacturing runs, wherein each of said attribute ID signals identifies a non-numeric attribute that contributed to the manufacturing run;

(c) normalizing said recorded measure signal for each of said plurality of manufacturing runs; and

(d) using a convergent iterative process to deconvolute said normalized recorded measure signals and said attribute ID signals to generate a quantitative numeric measure signal for the non-numeric attributes.

5,546,330

METHOD AND DEVICE FOR DETERMINING OVERLAPPING LENGTH OF A WOUND STRIP OF MATERIAL

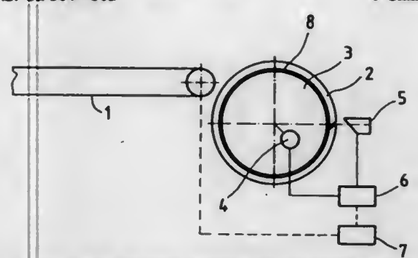
Horst Sergel, Hannover, and Friedrich Bartsch, Neustadt, both of, Germany, assignors to Continental Aktiengesellschaft, Hannover, Germany

Filed Sep. 4, 1992, Ser. No. 942,173

Claims priority, application Germany, Sep. 5, 1991, 41 29 465.3

Int. Cl.[6] G01B *7/04*

U.S. Cl. 364—562 **8 Claims**



5. A device for performing a method for determining a length of a strip of material wound onto a winding drum, said device comprising:

a feeding device for feeding the strip of material;

a winding drum coordinated with said feeding device for winding the strip of material;

a detector, coordinated with the circumference of said winding drum, for detecting the forward end and the rearward end of the strip of material;

a measuring device connected to said winding drum for measuring a first and a second angular position of said winding drum corresponding to the forward end and the rearward end of the strip of material; and

a computing unit, connected to said measuring device and said detector, for acquiring signals from said detector and said measuring device and computing the length of the strip of material based on a difference between said first and said second angular positions of said winding drum.

5,546,331

AC LINE VOLTAGE MEASUREMENT AND CONTROL

Mark R. Mathews, Wheaton, Ill., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Mar. 10, 1994, Ser. No. 208,566

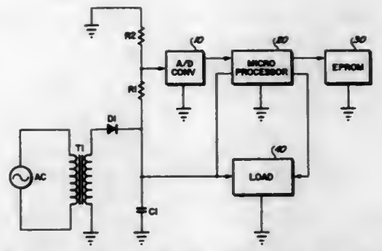
Int. Cl.[6] G01D *18/00*

U.S. Cl. 364—571.01 **8 Claims**

1. A circuit for measuring variations in voltage from a connected alternating current source and for controlling an associated load connected to said source, in response to said measurement variations, said circuit comprising:

an analog to digital converter;

a conditioning circuit connected between said source of alternating current and said analog to digital converter, said conditioning circuit operated to modify voltage from said alternating current source and connect said modified voltage to said analog to digital converter;



a microprocessor connected to said load operable to control operations of said load, said microprocessor including circuit connections to said analog to digital converter and to an associated memory;

said analog to digital converter operated to connect digital signal representations of said modified voltages to said microprocessor;

said memory programmed by measuring the voltage at a plurality of predetermined different load operations to store therein digital information related to alternating current voltage measurements at said plurality of different load operations;

said microprocessor operated to compare said digital information stored in said memory with said digital signal representation of said modified voltage values received from said analog to digital converter and in response to said comparison, said microprocessor further operated to control said load.

5,546,332

PROCESS FOR COMPENSATING FOR QUASI-PERIODIC DISTURBANCES OF MEASUREMENT SIGNALS

Peter Strobach, Röhrnbach, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

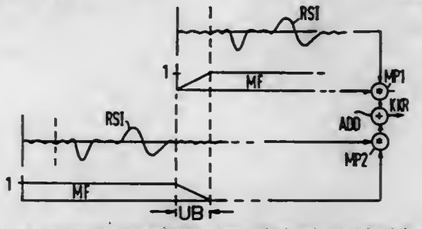
PCT No. PCT/DE92/00539, § 371 Date Feb. 7, 1994, § 102(e) Date Feb. 7, 1994, PCT Pub. No. WO93/03544, PCT Pub. Date Feb. 18, 1993

PCT Filed Jun. 30, 1992, Ser. No. 190,160

Claims priority, application Germany, Aug. 9, 1991, 41 26 463.0

Int. Cl.[6] G06F *15/31*

U.S. Cl. 364—572 **11 Claims**



1. A process for separating a wanted signal, contained in a measurement signal, from a quasi-periodic disturbing signal, likewise contained in a measurement signal, comprising the steps of:

a) determining a series of trigger instants from an auxiliary signal,

b) estimating a disturbing signal template by trigger-synchronous averaging of the measurement signal with respect to said trigger instants, whereby the measurement signal is repeatedly superimposed on itself and temporal progression thereof is averaged to obtain a characteristic representative of the measurement signal in order to estimate the disturbing signal template,

c) generating a trigger-synchronous reference signal from the disturbing signal template with respect to said trigger instants,

d) filtering the measurement signal with the aid of the trigger-synchronous reference signal to thereby separate the wanted signal from the disturbing signal.

5,546,333

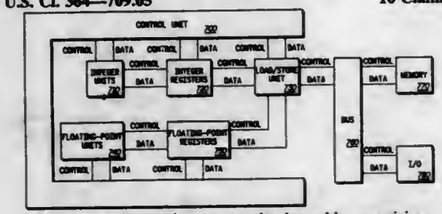
DATA PROCESSOR HAVING A DATA TABLE FOR PERFORMING A DUAL FUNCTION OF A ALPHANUMERIC NOTICE AND NUMERICAL CALCULATION

Roger A. Smith, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 349,571, Dec. 5, 1994. This application Oct. 20, 1995, Ser. No. 546,260

Int. Cl.[6] G06F *12/14;* **H04L** *9/00*

U.S. Cl. 364—709.05 **16 Claims**



1. A data table stored in memory, the data table comprising:

a plurality of data values used by a central processing unit (CPU) for a first purpose, the first purpose being that the plurality of data values are selectively provided to the CPU as data operands to enable at least one mathematical operation, the plurality of data values being stored as binary bits in memory coupled to the CPU, several of the binary bits of each of the data values in the plurality of data values being used collectively to encode a message for a purpose other than the first purpose.

5,546,334

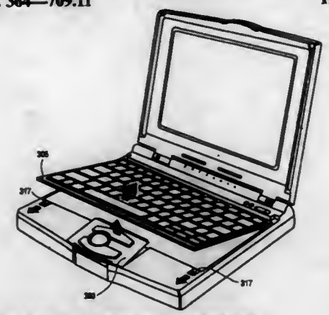
NOTEBOOK COMPUTER SYSTEM WITH A SEPARABLE TRACKBALL

Rong-Ya Hsieh, Chang-Hwa County; Jinn-Maw Lin, Taipei, and Chun-Yen Hong, Taipei County, all of, Taiwan, assignors to Acer Incorporated, Taipei, Taiwan

Filed Mar. 29, 1993, Ser. No. 38,937

Int. Cl.[6] G06F *3/00;* **H05K** *5/00;7/00;* **G09G** *5/08*

U.S. Cl. 364—709.11 **19 Claims**



1. A notebook computer system comprising:

a body formed with a socket;

a keyboard rotatably engaged with the body, the keyboard being rotatable between a first position that is fully engaged with the body and a second position wherein at least a portion of the keyboard is separated from the body; and

a trackball module having a locking element that engages the keyboard so that the trackball module is captured by the keyboard when the trackball is installed in the socket and the keyboard is in the first position;

wherein the trackball is removable from the socket and separable from the body and the keyboard when the keyboard is in the second position.

5,546,335

ABSOLUTE VALUE CALCULATION METHOD AND CIRCUIT

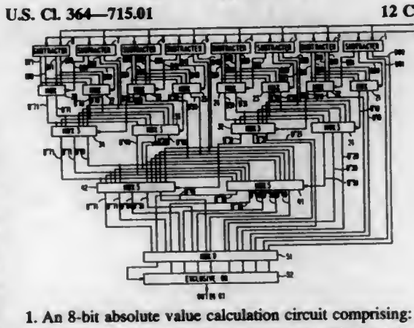
Yong H. Lee, Seoul, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Choongchungbook-Do, Rep. of Korea

Filed Dec. 16, 1994, Ser. No. 357,009

Claims priority, application Rep. of Korea, Oct. 18, 1994, 26615/1994

Int. Cl.[6] G06F *7/00;7/50*

U.S. Cl. 364—715.01 **12 Claims**



1. An 8-bit absolute value calculation circuit comprising:

first to eighth subtraction means for subtracting a subtrahend from a minuend in the unit of bit,

wherein each of said first to eighth subtraction means outputs first and second differences and first and second borrows, said first and second differences being "1" and "0", respectively, if the subtrahend and the minuend are the same, whereas "0" and "1", respectively, if the subtrahend and the minuend are not the same, said first and second borrows being both "0" if the minuend is larger than the subtrahend, "1" and "0" respectively, if the subtrahend and the minuend are the same and both "1" if the minuend is smaller than the subtrahend;

first to fourth signal selection means for selecting differences and borrows from said second, fourth, sixth and eighth subtraction means, respectively, according to borrows from said first, third, fifth and seventh subtraction means;

fifth and sixth signal selection means for selecting differences and borrows from said second and fourth signal selection means, respectively, and differences from said third and seventh subtraction means, respectively, according to borrows from said first and third signal selection means;

seventh signal selection means for selecting differences and borrows from said sixth signal selection means and differences from said fifth subtraction means, respectively, according to borrows from said first and third signal selection means;

eighth signal selection means for selecting differences from said first subtraction means, differences from said first signal selection means, differences from said fifth signal selection means and differences and borrows from said seventh signal selection means according to a higher-order one of the borrows from said seventh signal selection means; and

signal calculation means for calculating a difference from said eighth signal selection means according to a most significant bit thereof to output an absolute value.

5,546,336

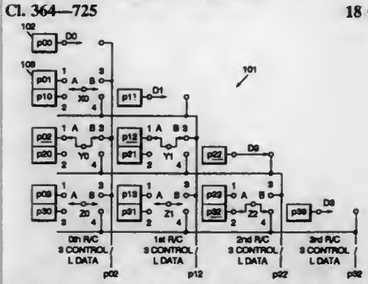
PROCESSOR USING FOLDED ARRAY STRUCTURES FOR TRANSPOSITION MEMORY AND FAST COSINE TRANSFORM COMPUTATION

Gerald G. Pechanek, Cary, N.C., and Stamatis Vassiliadis, Zoetermeer, Netherlands, assignors to International Business Machine Corporation, Armonk, N.Y.

Filed Jan. 19, 1995, Ser. No. 373,735

Int. Cl.[6] G06F *7/38*

U.S. Cl. 364—725 **18 Claims**



1. A folded array having a number of nodes formed by logically folding an N by N element square memory array along a diagonal, the folded array comprising:

$(N^2-N)/2$ general nodes each having 2 interconnected memory elements, the $(N^2-N)/2$ general nodes arranged to form a triangular array having a diagonal fold;

N diagonal nodes each having a single memory element, the N diagonal nodes disposed along the diagonal fold of the folded array;

N memory buses interconnecting the nodes of the folded array, each bus having a control line and a data line; and

a number of switches equal to the number of nodes, each switch connected to one node and disposed between the one node and a memory bus so that rows and columns of data are read and written.

5,546,337

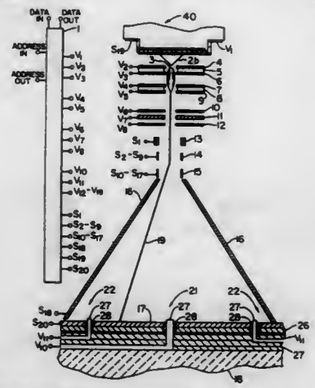
METHOD AND APPARATUS FOR STORING DATA USING SPIN-POLARIZED ELECTRONS

Thomas D. Hurt, Chantilly, Va., and Scott A. Halpine, Gaithersburg, Md., assignors to Terastore, Inc., College Park, Md.

Continuation-in-part of Ser. No. 188,828, Jan. 31, 1994, Pat. No. 5,446,687. This application Sep. 23, 1994, Ser. No. 311,738

Int. Cl.[6] G11C *13/04*

U.S. Cl. 365—121 **20 Claims**



1. A data storage device comprising:

a member including a magnetic material;

means for generating a beam of electrons, the beam electrons having a common magnetic polarization in one of a first direction and a second direction, the beam being directable at one of a plurality of portions of the member;

means, responsive to an address signal, for directing the beam to a portion of the member corresponding to the address signal, and for controlling the wavelength of the beam electrons such that the portion of the member assumes a magnetic polarization corresponding to the magnetic polarization of the beam electrons; and

means, responsive to the address signal, for detecting the polarization of a portion of the member corresponding to the address signal, by directing the beam at the portion.

5,546,338

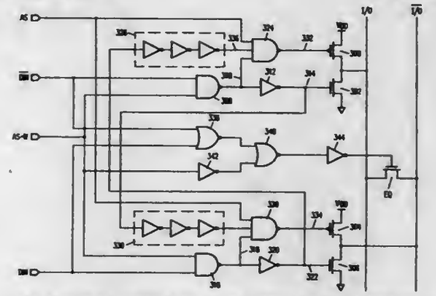
FAST VOLTAGE EQUILIBRATION OF DIFFERENTIAL DATA LINES

Robert J. Proebsting, Los Altos Hills, Calif., assignor to Townsend and Townsend Khourie and Crew, San Francisco, Calif.

Continuation of Ser. No. 297,723, Aug. 26, 1994. This application May 9, 1995, Ser. No. 438,148

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—181 **19 Claims**

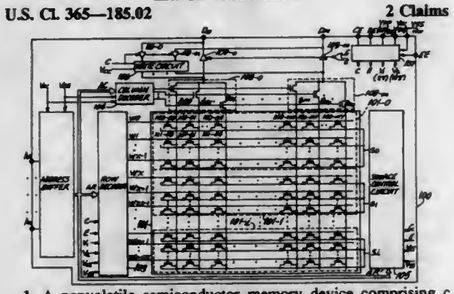


VOL 1189 ISS 2 AG 13 1996 UMI

5,546,339
NONVOLATILE SEMICONDUCTOR MEMORY DEVICE EQUIPPED WITH MEANS FOR SUPPRESSING DRAIN DISTURBANCE PHENOMENON

Ken-Ichi Oyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Division of Ser. No. 331,374, Oct. 28, 1994. This application May 11, 1995, Ser. No. 439,458
Claims priority, application Japan, Oct. 29, 1993, 5-271108
Int. Cl.[6] G11C *11/34*
U.S. Cl. 365—185.02 **2 Claims**



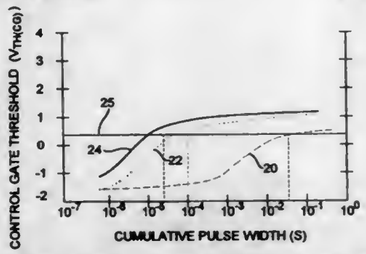
1. A nonvolatile semiconductor memory device comprising c sets of memory blocks each including a word lines, b bit lines, and a x b memory cell transistors arranged at intersections of said word lines and said bit lines; a plurality of source lines; a row decoder which selects one word line based on a row address; a column decoder which selects one bit line based on a column address; and a source line control circuit which selects one source line of said plurality of source lines, based on a part of said row address, wherein:

each of said memory cell transistors comprises a floating gate, a control gate electrode connected to a corresponding one of said word lines, a drain electrode connected to a corresponding one of said bit lines and a source electrode connected to a corresponding one of said source lines, said row decoder supplies a first voltage to said selected one word line, based on the row address and a second voltage lower than said first voltage to other word lines, and said source line control circuit supplies a third voltage lower than said second voltage to the selected one source line and sets voltages of other source lines to be equal to the voltage of said bit line selected by said column decoder at writing operation.

5,546,340
NON-VOLATILE MEMORY ARRAY WITH OVER-ERASE CORRECTION

Chung-Yon Hu; Robert B. Richart; Shyam G. Garg, and Sanjay K. Banerjee, all of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jun. 13, 1995, Ser. No. 487,252
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—185.3 **23 Claims**



1. A method for correcting an over-erase condition within a non-volatile memory array, comprising:

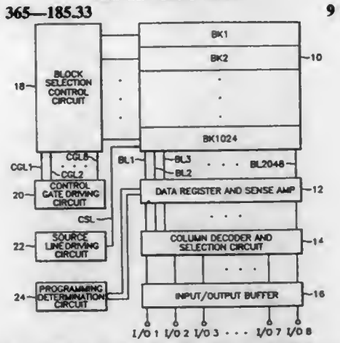
providing a non-volatile memory array having a plurality of single transistor memory cells, each memory cell comprising a stacked pair of control and floating gates spaced above a channel region interposed between a source and drain region; and

applying a non-negative voltage to the control gate, a ground voltage to the source region, a negative voltage to the channel region, and a positive voltage to the drain region.

5,546,341
NONVOLATILE SEMICONDUCTOR MEMORY

Kang D. Suh, Ahnyang; Jin K. Kim, Seoul, and Jeong H. Choi, Kwacheon, all of, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Division of Ser. No. 171,300, Dec. 22, 1993, Pat. No. 5,473,563. This application May 15, 1995, Ser. No. 441,477
Claims priority, application Rep. of Korea, Jan. 13, 1993, 390/1993
Int. Cl.[6] G11C *16/00*
U.S. Cl. 365—185.33 **9 Claims**



1. A nonvolatile semiconductor memory comprising:

word lines formed over a surface of a semiconductor substrate;

cell units arranged on said surface to form an array, each said unit including at least one memory transistor which has source and drain regions formed in said substrate and separated by a channel region; a floating gate formed over said channel region, and a control gate formed over said floating gate and coupled to a corresponding one of said word lines, said array being divided into a plurality of memory blocks each having a plurality of cell units; and

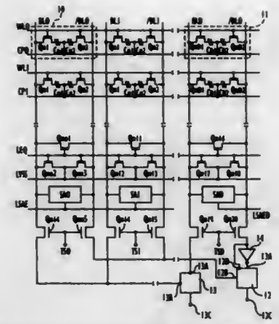
a control circuit, responsive to an address, in a data erase mode, for applying an erase voltage to said substrate, and for floating word lines of memory blocks unselected by said address so that erasure of data in memory transistors of said unselected memory blocks is prevented by capacitive coupling of a predetermined amount of said erase voltage to said word lines of said unselected memory blocks.

5,546,342
SEMICONDUCTOR MEMORY DEVICE INCLUDING REVERSE AND REWRITE MEANS

George Nakane, Nara; Toshio Mukunoki, Takatsuki; Nobuyuki Moriwaki, Kyoto; Tatsumi Sumi, Mishima-gun; Hiroshige Hirano, Nara, and Tetsuji Nakakuma, Takatsuki, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 13, 1994, Ser. No. 322,543
Claims priority, application Japan, Feb. 15, 1994, 6-018269
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—189.01 **14 Claims**

1. A semiconductor memory device comprising: a plurality of memory cells for storing data;



a memory means for memorizing a signal for judging whether said data are stored in a reversed state;

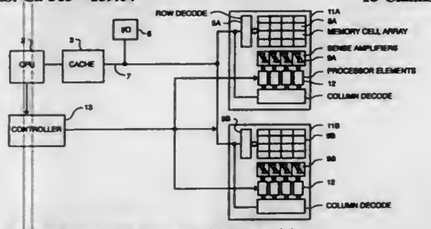
a judging means for judging whether said data should be reversed when output, based on said signal memorized by said memory means; and

a reverse and rewrite means for reversing said data after said data is output, and rewriting said reversed data into said memory cells.

5,546,343
METHOD AND APPARATUS FOR A SINGLE INSTRUCTION OPERATING MULTIPLE PROCESSORS ON A MEMORY CHIP

Duncan G. Elliott, 58 Carsbrooke Rd., Etobicoke, Ontario, Canada, and W. Martin Snelgrove, 245 Beatrice St., Toronto, Ontario, Canada

Continuation of Ser. No. 599,510, Oct. 18, 1990, abandoned. This application Apr. 7, 1994, Ser. No. 224,998
Int. Cl.[6] G11C *15/00;19/00*
U.S. Cl. 365—189.04 **18 Claims**



1. A random access memory chip comprising:

(a) static random access storage elements,

(b) word lines and bit lines connected to the storage elements,

(c) plural sense amplifiers, each one connected to corresponding bit lines,

(d) a separate processor connected to each of the sense amplifiers,

(e) means for addressing a word line,

(f) means for providing the same single instruction at the same time to each processor of a plurality of said processors,

whereby the single instruction enables the processors to carry out said single instruction in parallel on separate bits stored in the storage elements of the addressed word line,

(g) each processor being comprised of a dynamic logic multiplexer having an output bus and first and second register means,

(h) means for receiving an operand from a bit line of storage elements and for applying it to an input of the multiplexer,

(i) means for receiving data bits from a first bus external to the processor and for applying them to respective inputs of the register means,

(j) means for receiving data bits from the output bus of the processor, and for applying them to respective inputs of the register means,

(k) means for applying outputs of the register means to the multiplexer,

(l) means for receiving opcode instruction data from the bus external to the processor and for applying it to the multiplexer,

whereby the multiplexer is enabled to perform an instruction on said operand and data output from the register means and to apply the result to the output bus of the multiplexer,

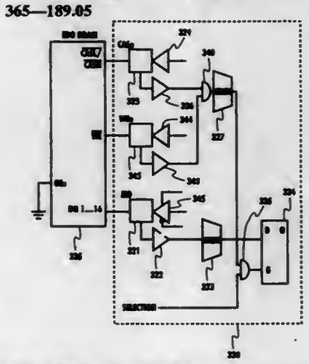
(m) means in each processor for writing a data bit from the bus external to the multiplexer, and

(n) a second data bus external to the processor for carrying data bits, and means for coupling the second data bus to the bus external to the multiplexer, for application to one or both of a column of memory elements and the register means.

5,546,344
EXTENDED DATA OUTPUT DRAM INTERFACE

Andrew R. Fawcett, Los Altos Hills, Calif., assignor to Cirrus Logic, Inc., Fremont, Calif.

Filed Jun. 6, 1995, Ser. No. 466,629
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—189.05 **17 Claims**



1. A memory interface comprising:

a first output means for outputting a column select signal to a memory;

a second output means for outputting a write enable signal to the memory;

data input means, for receiving data from the memory in response to at least said column select signal and said write enable signal; and

data latching means, coupled to said data input means, said first output means and said second output means, for latching said data in response to a latching signal;

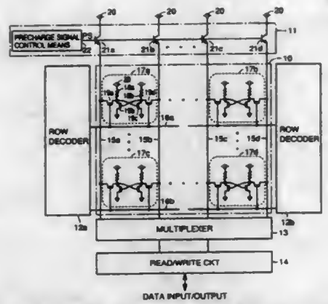
wherein said latching signal comprises said column select signal combined with said write enable signal.

5,546,345
SEMICONDUCTOR MEMORY DEVICE HAVING BIPOLAR TRANSISTOR

Tomohisa Wada, and Motomu Ukita, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1995, Ser. No. 460,941
Claims priority, application Japan, Nov. 24, 1994, 6-289347
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—190 **12 Claims**

1. A semiconductor memory device having a bipolar transistor, comprising:



a semiconductor substrate of a first conductivity type having a main surface;

a memory cell formed on the main surface of said semiconductor substrate;

a bit line formed on the main surface of said semiconductor substrate and electrically connected to said memory cell;

a bipolar transistor for precharging said bit line, electrically connected to said bit line and having a collector region of a second conductivity type including an upper region having an impurity of the second conductivity type of relatively low concentration formed at the main surface of said semiconductor substrate and a lower region including the impurity of the second conductivity type at relatively high concentration, a base region of the first conductivity type formed at the upper region of said collector region by introducing an impurity of the first conductivity type entirely to the main surface of said semiconductor substrate, and an emitter region of the second conductivity type formed at the surface of said base region, impurity concentration of the second conductivity type included in said collector region immediately below said base region being at most 5×10^{18} cm^{-3}; and

precharge signal control means connected to said base region for controlling a precharge signal applied to said base region for precharging said bit line.

5,546,346

SEMICONDUCTOR MEMORY DEVICE

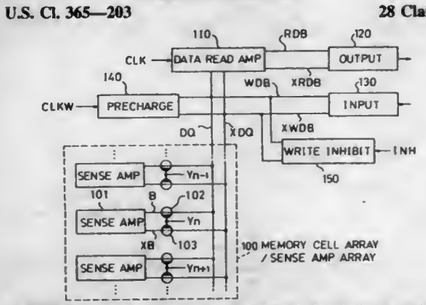
Masashi Agata; Kazuhiro Matsuyama; Hironori Akamatsu; Hirohito Kikukawa; Akihiro Sawada, and Shunichi Iwanari, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 6, 1994, Ser. No. 354,124

Claims priority, application Japan, Dec. 6, 1993, 5-305328; May 12, 1994, 6-098300

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—203 **28 Claims**



1. A differential transmission method of signals in a semiconductor memory device, said differential transmission method comprising:

a first step of voltage-equalizing a pair of complementary input signal lines while voltage-equalizing a pair of complementary output signal lines;

a second step of receiving data on said complementary input signal lines while continuously performing voltage equalization on said complementary output signal lines only;

a third step of establishing connections between said complementary input signal lines and said complementary output signal lines in order that said data on said complementary input signal lines are transmitted to said complementary output signal lines; and

a fourth step of breaking said established connections between said complementary input signal lines and said complementary output signal lines so as to perform voltage equalization on said complementary input signal lines only while holding said data on said complementary output signal lines.

5,546,347

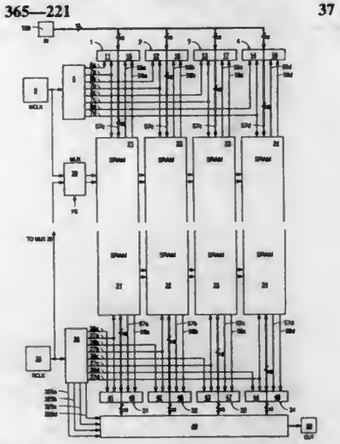
INTERLEAVING ARCHITECTURE AND METHOD FOR A HIGH DENSITY FIFO

Ray-Jane Ko, Saratoga; Fu L. Au, Fremont, and Joseph P. Chiang, Cupertino, all of Calif., assignors to Integrated Device Technology, Inc., Santa Clara, Calif.

Filed Jul. 22, 1994, Ser. No. 279,091

Int. Cl.[6] G11C *11/40;8/00*

U.S. Cl. 365—221 **37 Claims**



1. A first in, first out memory device comprising a plurality of parallel memory paths coupled between an input port and an output port, wherein each memory path comprises:

an input FIFO set having a plurality of input FIFOs, said input FIFO set being coupled to said input port and being responsive to a write clock signal;

an output FIFO set having a plurality of output FIFOs, said output FIFO set being coupled to said output port and being responsive to a read clock signal; and

a single port memory array coupled between said input FIFO set and said output FIFO set, said single port memory array being responsive to the faster of said read clock signal and said write clock signal.

5,546,348

SEMICONDUCTOR DISC STORAGE

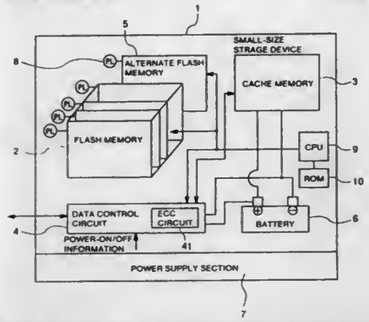
Hisao Honma; Kazuo Nakagoshi, both of Odawara; Naoya Takahashi, Yokohama; Mokoto Kogai, and Kenichi Takamoto, both of Odawara, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 20, 1994, Ser. No. 359,787

Claims priority, application Japan, Mar. 14, 1994, 6-042581

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—230.03 **15 Claims**



1. A semiconductor storage device connected to at least one magnetic storage device, the input and output of data being made between the semiconductor storage device and an information processing device, the semiconductor storage device comprising:

a non-volatile semiconductor memory in which data is electrically rewritable and which stores directory information of data stored in said at least one magnetic storage device;

a volatile semiconductor memory which has a storage capacity smaller than that of said non-volatile semiconductor memory and the storage contents of which are updated to store a part of said directory information having a higher frequency of access from said information processing device;

a CPU connected to said volatile semiconductor memory and said non-volatile semiconductor memory for making access to said volatile semiconductor memory and said non-volatile semiconductor memory in accordance with an access request from said information processing device; and

wherein when access to said volatile semiconductor memory made for access from said information processing device to said at least one magnetic storage device hits on said part of said directory information, said CPU transfers said part of said directory information to said information processing device without making access to said non-volatile semiconductor memory and said information processing device makes access to said at least one magnetic storage device on the basis of said part of said directory information.

5,546,349

EXCHANGEABLE HIERARCHICAL DATA LINE STRUCTURE

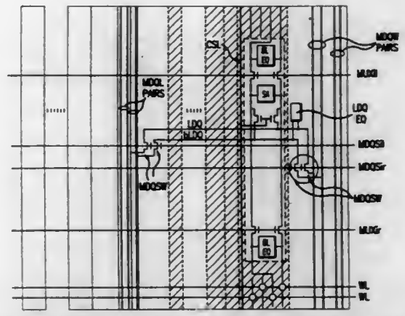
Yohji Watanabe, Fishkill, N.Y., and John K. DeBrosse, Burlington, Vt., assignors to Kabushiki Kaisha Toshiba, Japan, and International Business Machines, Armonk, N.Y.

Filed Mar. 13, 1995, Ser. No. 403,265

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—230.04 **7 Claims**

4. In a memory having a master data bus, a first half memory unit, a second half memory unit and a common plurality of sense amplifier disposed therebetween, the common plurality of sense amplifiers including a common local data bus extending therethrough, the master data bus including first and second master data lines, the common local data bus including a common local data line, the master data bus further including third and fourth master data lines, including a first plurality of spare sense amplifiers, a second plurality of spare sense amplifiers and a spare cell array



disposed therebetween to form a plurality of double sided spare sense amplifiers about the spare cell array, the first plurality of spare sense amplifiers including a first spare local data bus extending therethrough, the first spare local data bus including a first spare local data line, the second plurality of spare sense amplifiers including a second spare local data bus extending therethrough, the second spare local data bus including a second spare local data line, a circuit comprising:

first switch circuitry to selectively couple signals between the common local data line and the first master data line;

second switch circuitry to selectively couple signals between the common local data line and the second master data line, a signal on the common local data line being coupleable to the first master data line when the signal on the common local data line is not coupled to the second master data line, the signal on the common local data line being coupleable to the second master data line when the signal on the common local data line is not coupled to the first master data line;

third switch circuitry to selectively couple signals between the first spare local data line and the first master data line;

fourth switch circuitry to selectively couple signals between the first spare local data line and the second master data line, a signal on the first spare local data line being coupleable to the first master data line when the signal on the first spare local data line is not coupled to the second master data line, the signal on the first spare local data line being coupleable to the second master data line when the signal on the first spare local data line is not coupled to the first master data line;

fifth switch circuitry to selectively couple signals between the second spare local data line and the third master data line; and

sixth switch circuitry to selectively couple signals between the second spare local data line and the fourth master data line, a signal on the second spare local data line being coupleable to the third master data line when the signal on the second spare local data line is not coupled to the fourth master data line, the signal on the second spare local data line being coupleable to the fourth master data line when the signal on the second spare local data line is not coupled to the third master data line.

5,546,350

RAM VARIABLE SIZE BLOCK WRITE

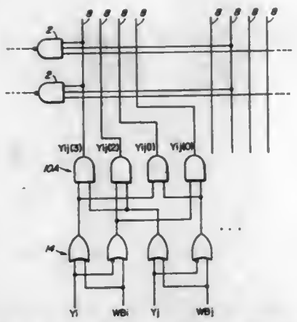
Peter B. Gillingham, Kanata, Canada, assignor to Mosaid Technologies Incorporated, Kanata, Canada

Filed Apr. 11, 1994, Ser. No. 226,035

Int. Cl.[6] G11C *7/00;8/00*

U.S. Cl. 365—230.06 **10 Claims**

1. A method of enabling a controllable and variable number of bits to be written to a group of cells of a DRAM or SRAM simultaneously in a block, comprising decoding a predecoded column address signal for enabling writing to cells of said DRAM or SRAM, and block overwriting said predecoded column address signal by means of a block address signal, whereby plural decoders



are enabled simultaneously for simultaneous writing to a column of cells notwithstanding logic levels of the predecoded column address signal.

5,546,351

NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE AND MEMORY SYSTEM USING THE SAME

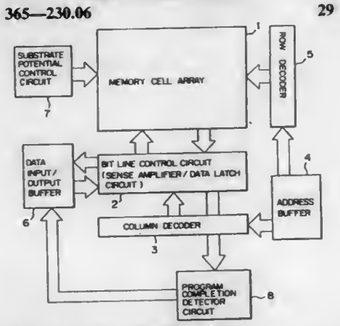
Tomoharu Tanaka; Masaki Momodomi, both of Yokohama; Hideo Kato, Kawasaki; Hiroto Nakai; Yoshiyuki Tanaka, both of Yokohama; Riichiro Shirota, Fujisawa; Seiichi Aritome; Yasuo Itoh, both of Kawasaki; Yoshihisa Iwata, Yokohama; Hiroshi Nakamura, Kawasaki; Hideko Odaira, Machida; Yutaka Okamoto, Kawasaki; Masamichi Asano, Ota-ku, and Kaoru Tokushige, Yokohama, all of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 992,653, Dec. 18, 1992, Pat. No. 5,361,227. This application Oct. 20, 1994, Ser. No. 326,281

Claims priority, application Japan, Dec. 19, 1991, 3-354871; Dec. 25, 1991, 3-343200; Mar. 10, 1992, 4-086082; Mar. 31, 1992, 4-077946; Mar. 31, 1992, 4-105831; Jul. 2, 1992, 4-175693

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—230.06 **29 Claims**



1. A memory system, comprising:

a memory means having a plurality of memory cells, for latching a data group composed of data of a predetermined number of bits transferred from a data register, for writing the latched data group in the memory cells, and for outputting a collective verify signal when all the data of the data group have been written; and

a control circuit which includes the data register for storing write data, said control circuit controlling a write operation of the memory system, wherein whenever the collective verify signal is outputted by said memory means, said control circuit transfers a new data group to said memory means to allow said memory means to latch and write the transferred new data group therein and further to transfer the collective verify signal to said control circuit whenever the new latched data group has been written, and wherein the write operation is repeated in sequence.

5,546,352

SEMICONDUCTOR MEMORY DEVICE HAVING DECODER

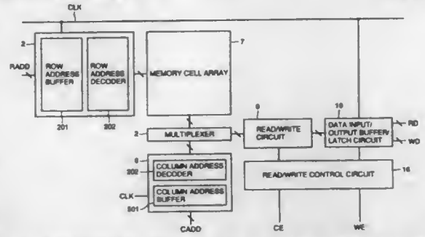
Hirotoshi Sato, and Tomohisa Wada, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 12, 1994, Ser. No. 354,760

Claims priority, application Japan, Dec. 28, 1993, 5-336936

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—230.06 **23 Claims**



1. A semiconductor memory device from which data can be read out in a non-destructive manner, said semiconductor memory device receiving an external input signal and a synchronous signal and decoding said external input signal in synchronism with said synchronous signal, comprising:

input processing means for processing said external input signal in synchronism with said synchronous signal, said

input processing means including:

buffer means for amplifying and inverting and amplifying said external input signal for output, and

decoding means for decoding an output signal from said buffer means, wherein

said buffer means or said decoding means generates an output signal in synchronism with said synchronous signal.

5,546,353

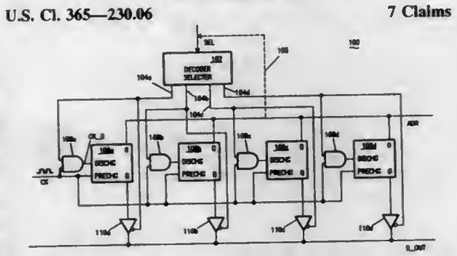
PARTITIONED DECODE CIRCUIT FOR LOW POWER OPERATION

Christopher E. Phillips, San Jose, and Narendra Sankar, Sunnyvale, both of Calif., assignors to National Semiconductor Corporation, Del.

Filed May 26, 1995, Ser. No. 450,153

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—230.06 **7 Claims**



1. A partitioned decoder circuit that provides, at a decoder circuit output, a result data signal corresponding to an address signal supplied at a decoder circuit input, the partitioned decoder circuit comprising:

selection signal decoder circuitry that asserts one or more of a plurality of decoder enable signals based upon the value of a decoder selection signal; and

a plurality of decoder circuit elements, each decoder circuit element being connected to receive a separate one of the asserted decoder enable signals, each decoder circuit element including

a first clock input coupled to receive a precharge clock signal,

an address input coupled to receive the address signal;

address latching circuitry that latches the address signal in response to a polarity transition of the precharge clock signal,

a second clock input;

gated discharge clock signal generation circuitry that generates a gated discharge clock signal in response to the asserted decoder enable signal and provides the gated discharge clock signal to the second clock input; and

a data output that responds the gated discharge clock signal being provided to the second clock input by providing an evaluation signal that corresponds to the latched address signal such that the result data signal includes the evaluation signal.

5,546,354

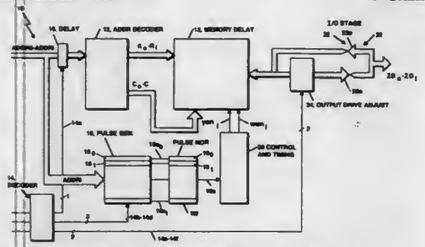
STATIC RANDOM ACCESS MEMORY HAVING TUNABLE-SELF-TIMED CONTROL LOGIC CIRCUITS

Hamid Partovi, Sunnyvale, Calif.; Steven Butler, Marlboro, Mass., and Luan Tran, San Jose, Calif., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jul. 1, 1994, Ser. No. 270,190

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—233 **5 Claims**



1. A static random access memory comprising:

an array of memory cells arranged in a plurality of columns and rows;

a control and timing logic circuit to provide control signals to said memory array in response to a pulse signal;

an address decoder responsive to address signals provided to said memory device to produce row and column signals for said memory array;

a pulse generator circuit responsive to address signals provided to said memory device for providing a pulse signal to said control and said timing logic; and

means for selectively changing timing characteristics of said memory in response to external tuning signals fed to the memory.

5,546,355

INTEGRATED CIRCUIT MEMORY HAVING A SELF-TIMED WRITE PULSE INDEPENDENT OF CLOCK FREQUENCY AND DUTY CYCLE

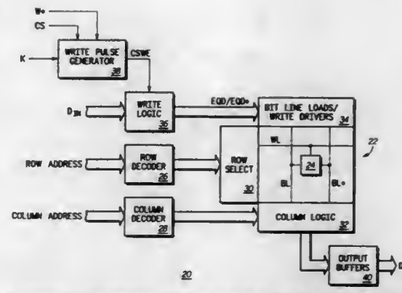
Donovan L. Raatz, and Taisheng Feng, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 24, 1995, Ser. No. 393,790

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—233 **20 Claims**

1. An integrated circuit memory, comprising:



a plurality of memory cells, a memory cell of the plurality of memory cells coupled to a bit line and to a word line;

a write logic circuit, coupled to the plurality of memory cells, for providing a data signal to the bit line in response to a write pulse, the data signal corresponding to input data; and

a write pulse circuit, coupled to the write logic circuit, for providing the write pulse during a write cycle of the integrated circuit memory, the write pulse being triggered by an edge of an input clock signal, and the write pulse having a duration determined by a predetermined delay, wherein the duration of the write pulse is independent of the input clock signal duty cycle and frequency.

5,546,356

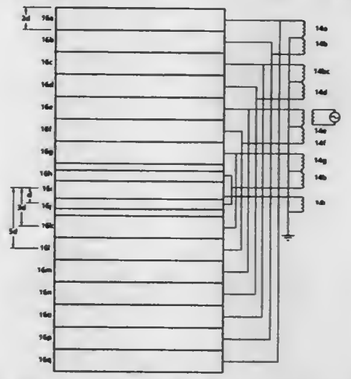
WIDE BEAM ACOUSTIC PROJECTOR WITH SHARP CUTOFF AND LOW SIDE LOBES

William J. Zehner, Lynn Haven, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 30, 1993, Ser. No. 83,607

Int. Cl.[6] G01S *15/00*

U.S. Cl. 367—88 **5 Claims**



1. A pulsed-transmission, single frequency echo-ranging sonar system comprising an antenna having a segmented array of transducer elements, wherein the total array length is L_A, and

$L_A=(N-1)d=4$ Kd

wbere N= the number of array elements (an odd mumber),

d= the spacing between the midpoints of the middle three array elements and

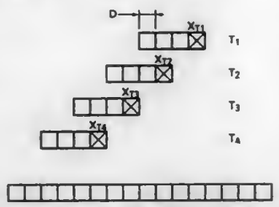
K= a number directly proportional to the number of lobes included in the sin(x)/x function,

and an electrical power source connected to the array.

5,546,357
MONOSTATIC PROJECTOR SYNTHETIC APERTURE SONAR

William J. Zehner, Lynn Haven, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation of Ser. No. 83,609, Jun. 30, 1993, abandoned. This application Dec. 27, 1994, Ser. No. 363,990
Int. Cl.[6] G01S *15/89;13/90*
U.S. Cl. 367—88 **6 Claims**



1. A pulsed transmission, echo-ranging system comprising a body to be towed in a predetermined direction, a first array of transmitting elements having a length of $L_A(N_p-1)$ mounted on the towed body, and a second array of receiver elements having a length L_A mounted on the towed body, wherein the towed body moves a distance L_A between transmissions and wherein:

$$L_A=L_H+L_p$$

where L_H is the distance traveled by the receiver array between transmissions,

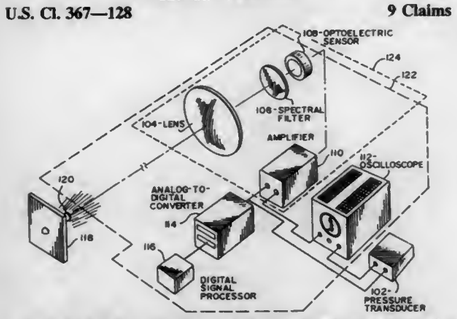
L_p is the distance traveled by the transmitter array between transmissions and

N_p is the number of array elements.

5,546,358
DEVICE FOR ASSESSING AN IMPACT OF A PROJECTILE WITH A TARGET USING OPTICAL RADIATION

George M. Thomson, Churchville, Md., assignor to The United States of America as represented by the Secretary of The Army, Washington, D.C.

Filed Mar. 7, 1995, Ser. No. 406,215
Int. Cl.[6] G01S *3/80*
U.S. Cl. 367—128 **9 Claims**



1. A device for detecting optical radiation from a flash of a projectile impact with a target, comprising:

a lens for collecting the optical radiation from the impact;

a spectral filter for focusing an image collected by said lens;

an optoelectronic sensor for converting the image focused by said spectral filter to an electrical signal;

an amplifier connected to said optoelectronic sensor for amplifying the electrical signal;

display means connected to said amplifying means for displaying the electrical signal for visual analysis; means connected to said amplifier, for converting an analog electrical signal to a digital electrical signal and processing the digital electrical signal;

further comprising a pressure transducer connected to said display means, for converting sound energy from a fired projectile into electrical energy to mark a start of a flight time of the projectile to determine a distance to a target.

5,546,359
METHOD AND TRANSMITTER/RECEIVER FOR TRANSFERRING SIGNALS THROUGH A MEDIUM IN PIPES AND HOSES

Finn Aarseth, Hvalstad, Norway, assignor to Aker Engineering AS, Norway

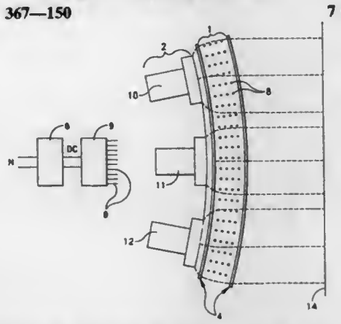
Filed Mar. 15, 1995, Ser. No. 404,316
Claims priority, application Norway, Mar. 16, 1994, 940952
Int. Cl.[6] H04B *11/00;* **G01V** *1/40*
U.S. Cl. 367—134 **15 Claims**

1. A method for transferring signals through a medium in a system comprising pipes, hoses and drilling holes, including the steps of generating signals comprising complex frequency modulated pressure pulses at a transmitter side, wherein said pressure pulses are mainly fully defined sinusoidal pressure changes that symbolize an organized and defined bit-pattern, and decompiling the signals at a receiver side in order thereby to achieve alphanumeric communication.

5,546,360
ELECTRICALLY STEERED ACOUSTIC LENS

Thierry Deegan, 39 Porter La., Portsmouth, R.I. 02871

Filed Nov. 14, 1994, Ser. No. 337,721
Int. Cl.[6] H04R *23/00;17/00*
U.S. Cl. 367—150 **7 Claims**

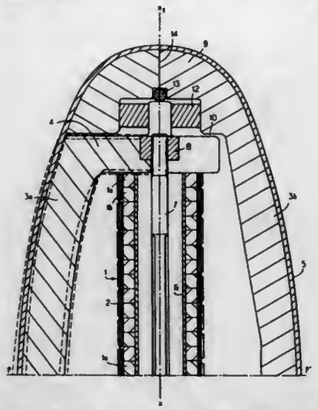


1. An electrically steerable acoustic lens, comprising a mass of electro-rheological fluid, an array of electrodes within said mass, means of confining said mass of fluid around said array of electrodes, and means for applying electrical potential to said electrodes, the electrodes arranged such that when electrified, said electrified electrodes change the bulk modulus of said fluid so as to establish a gradient of the bulk modules in said mass.

5,546,361
DIRECTIONAL ELECTRO-ACOUSTIC TRANSDUCERS COMPRISING A SEALED SELL CONSISTING OF TWO PORTIONS

Didier Boucher, and Charles Pohlenz, both of Six-Fours-Les-Plages, France, assignors to Etat Francais as represented by the Delegue General pour l'Armement, Paris, France

Filed Apr. 28, 1989, Ser. No. 360,944
Claims priority, application France, Apr. 28, 1988, 88.05660
Int. Cl.[6] H04R *17/00*
U.S. Cl. 367—158 **8 Claims**



1. An electro-acoustic transducer of the type comprising at least one electro-acoustic driver, located inside a sealed shell, which is in contact with a liquid, characterized in that said shell comprises a first portion of flexible shell fitted with two flanges at its axial ends, which are coupled mechanically and acoustically with the axial ends of said piezoelectric drivers, said first portion of shell constituting a surface which transmits acoustic waves and including a second portion of shell which supplements the first portion with which it forms said sealed shell, said second portion being acoustically uncoupled from said first portion and said electro-acoustic drivers.

5,546,362
DEPTH FINDER TRANSDUCER SYSTEM

Steven E. Baumann, Richfield, Minn., and Richard E. Christman, deceased, late of Eden Prairie, Minn., assignors to Vexilar, Inc., Minneapolis, Minn.

Filed May 15, 1995, Ser. No. 441,530
Int. Cl.[6] H04R *1/44*
U.S. Cl. 367—173 **20 Claims**

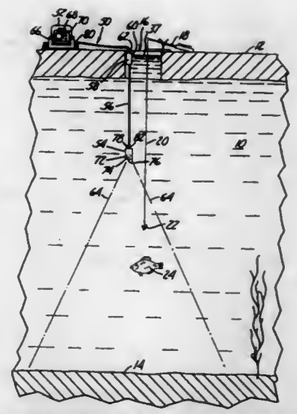
1. An ice fishing depth finder system for use in detecting the presence of objects within a body of water located below a body of ice, the system comprising:

a display unit locatable on the body of ice adjacent a hole in the body of ice;

an electrically conductive flexible cable having a length extending between a first end and a second end, the first end capable of being electrically connected to the display unit;

a transducer electrically connected to the second end of the conductive cable and capable of transmitting a sonar wave sensing cone through a body of water to detect the presence of objects within the body of water; and

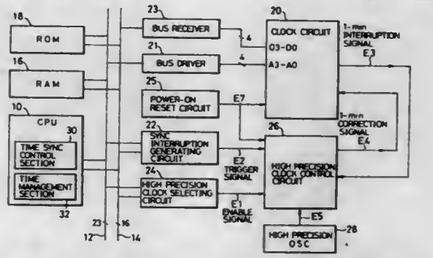
positioning means cooperable with the conductive cable for allowing selective positioning of the positioning means along the length of the conductive cable, the positioning means being locatable adjacent the hole in the body of ice so that a portion of the cable length can extend from the positioning means through the hole in the body of ice to position the transducer within the body of water in substantial vertical alignment below and spaced from the positioning means.



5,546,363
CLOCK APPARATUS FOR FORMING TIME INFORMATION FOR USE IN COMPUTER SYSTEM

Jun Funaki, and Shoji Tenma, both of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

Filed Dec. 19, 1994, Ser. No. 358,725
Claims priority, application Japan, Mar. 3, 1994, 6-033374
Int. Cl.[6] G04B *17/12*
U.S. Cl. 368—200 **8 Claims**



1. A clock apparatus for forming time information, comprising:

a clock circuit to generate time information based on a clock signal of a first oscillator and to correct said time information based on an externally supplied and received correction signal including correcting a value of a second in said time information to 0 when said value of said second in said time information is equal to or larger than 0 seconds and less then 30 seconds and correcting said value to 0 when said value of said second in said time information is equal to or larger than 30 seconds and less than 59 seconds by carrying a value of one minute based on said received correction signal;

a second oscillator to generate a second clock signal of a frequency which is stable during a change in ambient temperature; and

a high precision clock control circuit to repeat a measurement of a predetermined unit time based on said second clock signal from said second oscillator and to output said correction signal to said clock circuit each time the measurement of said predetermined unit time is completed, thereby correcting said time information.

5,546,364

MAGNETO-OPTICAL MEMORY APPARATUS UTILIZING EDGES OR RECORDING MARK TO MANAGE DATA

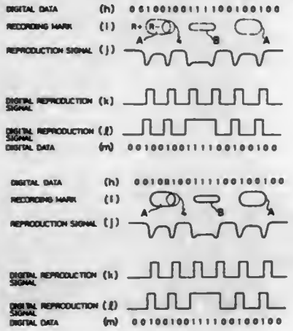
Hiroshi Fuji, Nara-ken; Toshihisa Deguchi, Nara; Kunio Kojima, Nara; Takeshi Yamaguchi, Nara; Shigeo Terashima, Tenri; Akira Takahashi, Nara, and Kenji Ohta, Nara-ken, all of, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 924,587, Aug. 6, 1992, abandoned, which is a continuation of Ser. No. 381,772, Jul. 18, 1989, abandoned. This application Sep. 26, 1994, Ser. No. 311,452

Claims priority, application Japan, Jul. 20, 1988, 63-180708; Jul. 20, 1988, 63-180709; Aug. 8, 1988, 63-198523; Aug. 8, 1988, 63-198524; Aug. 10, 1988, 63-200847; Aug. 10, 1988, 63-200848

Int. Cl.[6] G11B *13/04;11/12;7/12*

U.S. Cl. 369—13 **22 Claims**



1. A magneto-optical memory apparatus for recording to and reproducing from a magneto-optical recording medium a digital information signal the that includes a sequence of first and second codes, the apparatus comprising:

an optical head being arranged for recording the digital information signal by forming in the recording medium elongated recording marks which are mutually separated by non-marked portions in a track direction,

the recording marks having a different magnetization direction to the magnetization direction of surrounding non-marked portions of the recording medium,

the ends of each recording mark in the track direction representing respective second codes of the digital information signal, the non-marked portions representing respective the first codes of the digital information, and for reproducing the recorded information signal by scanning of a spot of a beam of light having a predetermined polarization plane over the recording medium in the track direction, and detecting the beam of light transmitted through or reflected by the recording medium; and

detection means for detecting, from said detected transmitted or reflected beam of light, the second codes represented by ends of each recording mark and interaction of respective polarization components of light (Rα+, Rα−) arising from a part of said spot of a beam of light which impinges on a non-marked portion of the recording medium adjacent an end of the recording mark and a part of said spot of a beam of light which impinges on an end portion of the recording mark, said light components having opposing directions.

5,546,365

RECORD CARRIERS CONTAINING A USER'S PREFERRED ORDER OF REPRODUCTION OF ITEMS OF INFORMATION INCLUDED THEREIN, AND APPARATUS FOR USE WITH AND/OR FOR CREATING SUCH RECORD CARRIERS

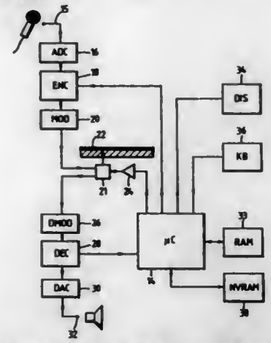
Rudolf Roth, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 174,633, Dec. 28, 1993, abandoned, which is a continuation of Ser. No. 914,483, Jul. 15, 1992, abandoned, which is a continuation of Ser. No. 366,807, Jun. 14, 1989, abandoned. This application Oct. 31, 1994, Ser. No. 332,619

Claims priority, application United Kingdom, Jun. 15, 1988, 8814236; May 22, 1989, 8911756

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—032 **105 Claims**



1. An apparatus for reproducing items of information included on a record carrier having a pre-mastered region and a user writable region which are separate from each other, the user writable region including a user writable lead-in part, the apparatus comprising:

reproduction means for reproducing items of information included on the record carrier in accordance with a user's preferred order of reproduction of items of information included on the record carrier; and

read means for reading

from the pre-mastered region pointer information which identifies a location in the user writable lead-in part in which at least a portion of a user table of contents which identifies in a particular order locations on the record carrier of items of information recorded on the record carrier by a user is located, and

from the user writable

lead-in part (a), on the basis of the pointer information, the user table of contents,

and (b) user preferred order information which identifies the user's preferred order of reproduction.

5,546,366

CARTRIDGE PICKER ASSEMBLY AND MODULAR LIBRARY SYSTEM

Chi H. Dang, Tucson, Ariz., assignor to International Business Machines Corporation, Armonk, N.Y.

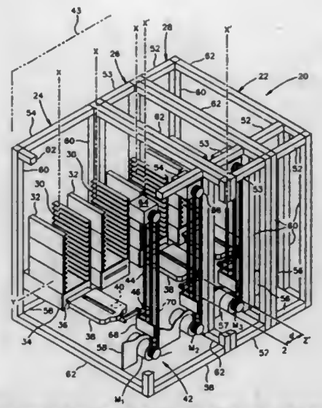
Continuation of Ser. No. 48,436, Apr. 16, 1993, abandoned. This application Jun. 16, 1994, Ser. No. 260,614

Int. Cl.[6] G11B *17/22;15/68*

U.S. Cl. 369—36 **8 Claims**

1. A recordable media cartridge picker assembly and library, the library having a vertically extending height and a horizontally extending length, comprising:

library means having a plurality of cartridge receptacles arranged in first and second adjacent columns and second and third adjacent columns, the first, second and third columns



being consecutive in a side by side adjacent relationship so as to provide vertically stacked rows of cartridge receptacles;

first and second cartridge pickers, each cartridge picker being capable of removing and inserting a cartridge with respect to a cartridge receptacle when aligned therewith;

first means for selectively swinging the first cartridge picker back and forth between only one pair of adjacent columns of said first, second and third columns for aligning the cartridge picker with cartridge receptacles in one or the other of said pair of adjacent columns and for transporting cartridges therebetween;

second means for selectively swinging the second cartridge picker back and forth between only one pair of adjacent columns of said first, second and third columns for aligning the cartridge picker with cartridge receptacles in one or the other of said pair of adjacent columns and for transporting cartridges therebetween; and

means fixedly interconnecting the first and second means with respect to the columns along the length of the library for restricting alignment of the first cartridge picker with cartridge receptacles in only said first and second adjacent columns and for restricting alignment of the second cartridge picker with cartridge receptacles in only said second and third adjacent columns.

5,546,367

METHOD AND DISC APPARATUS FOR REPRODUCING INFORMATION SIGNALS AND INCLUDING COMPENSATION FOR DISK TILT-BASED PLAYBACK DETERIORATION

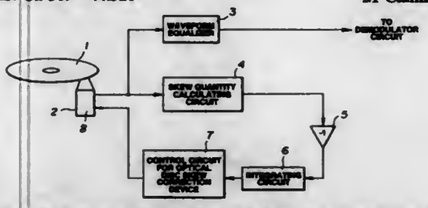
Shuaji Yoshimura, and Toru Okazaki, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 5, 1995, Ser. No. 368,873

Claims priority, application Japan, Jan. 10, 1994, 6-001015

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—44.320 **21 Claims**



1. A disc apparatus for reproducing information signal recorded on a disc-shaped recording medium comprising;

(a) information readout means for reading out the information signal from said disc-shaped recording medium,

(b) skew calculating means for calculating the quantity of skew of said disc-shaped recording medium by calculating the correlation between said information signal read out from said disc-shaped recording medium and a signal obtained on shifting said information signal a pre-set time, the skew calculating means including

first delay means for delaying said information signal by said pre-set time,

second delay means for further delaying an output of said first delay means by said pre-set time,

means for converting an output signal of said first delay means into a bi-level signal and outputting said bi-level signal,

first correlation calculating means for calculating the correlation between the information signal and the bi-level signal,

second correlation calculating means for calculating the correlation between an output signal of the second delay means and the bi-level signal, and

difference means for calculating a difference between a correlation value obtained by said first correlation means and a correlation value obtained by said second correlation means to obtain said quantity of skew, and

(c) means for correcting the skew of said disc-shaped recording medium in accordance with the quantity of skew obtained by said skew calculating means.

5,546,368

DISK RECORDING MEDIUM AND REPRODUCTION METHOD AND APPARATUS THEREOF

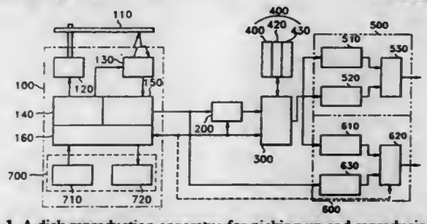
Rae-hwan Lee; Hwa-jin Jeon, both of Suwon; Kwang-sik Choi, Seoul; Hong-soon Park; Sang-hwa Yun, both of Suwon; Kwang-lyeol Song, Seoul; Hae-min Choi, Kwacheon; Deok-hyun Lee, Seoul; Bong-hun Song, Suwon; Deug-jin Park, Incheon, and Seong-jin Byeon, Seoul, all of, Rep. of Korea, assignors to Samsung Electronics Co. Ltd., Kyungki-do, Rep. of Korea

Division of Ser. No. 211,558, Apr. 4, 1994. This application May 31, 1995, Ser. No. 454,715

Claims priority, application Rep. of Korea, Dec. 17, 1992, 92-24627; Jan. 14, 1993, 93-417

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—47 **9 Claims**



1. A disk reproduction apparatus for picking up and reproducing data signals from a disk recording medium, said disk reproduction apparatus comprising:

compact disk (CD) reproduction means for decoding a picked-up signal while servo-controlling tracking of a disk with respect to a pickup and according to address information to thereby produce a CD reproduction signal, for outputting the decoded CD reproduction signal, and for generating a program selection signal according to a key input;

decoding means for receiving, de-scrambling and error-correcting the CD reproduction signal and outputting the decoded data;

memory means for storing a data index table, a program index table and a data index sequence signal in a first, second and third memory area of said memory means, respectively;

control processor means receiving the decoded data output from said decoding means, for supplying the data and the program

index table signals and the data index sequence signal to said first, second and third memory areas, for outputting a reproduction data signal, and for supplying initial address information of the corresponding program and the data track to said CD reproduction means with reference to the data and program index table signals and the data index sequence signal according to the program selection signal of said CD reproduction means; and

signal converter means receiving the reproduction data signal of the control processor for converting the received reproduction data signal into a predetermined signal to thereby generate a reproduction output signal.

5,546,369

OPTICAL DISK SYSTEM FOR RECORDING AND REPRODUCING A MINI DISK AND STANDARD COMPACT DISCS

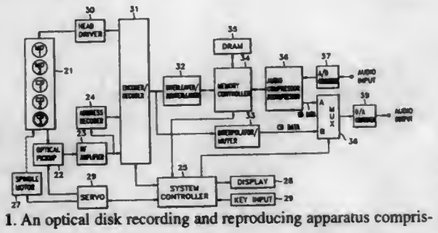
Hyung-hee Lee, Kyungki-do, and Jung-kwon Heo, Kyungsangnam-do, both of, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Mar. 30, 1995, Ser. No. 413,887

Claims priority, application Rep. of Korea, Mar. 31, 1994, 94-6805

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—58 **2 Claims**



1. An optical disk recording and reproducing apparatus comprising:

an analog-to digital (A/D) converter for converting an input audio signal into a digital signal, in a recording mode;

an audio compressor/decompressor for compressing the audio data output from said A/D converter into MD format, in the recording mode, and for decompressing deinterleaved audio data into MD format, in a reproducing mode;

a memory for storing audio data output from said audio compressor/decompressor, in the recording mode, and for storing the deinterleaved audio data, in the reproducing mode;

a memory controller for controlling the data quantity to be stored in said memory;

an interleaver/deinterleaver for interleaving the audio data stored in said memory, in the recording mode, and for deinterleaving decoded audio data, in the reproducing mode;

an encoder/decoder for encoding the audio data output from said interleaver/deinterleaver, in the recording mode, and for decoding the audio data reproduced from a recording medium, using a predetermined modulation/demodulation method;

a recording portion for recording the audio data compressed as the MD format, output from said encoder/decoder after being encoded, on a recording medium in the form of a compact disk size or a magneto-optical disk of a mini disk size;

a reproducing portion for reproducing the audio data recorded on an MD-formatted or a CD-formatted recording medium;

an interpolator/muter for interpolating or muting error-uncorrected audio data according to the error size included in the audio data output from said encoder/decoder, in the reproducing mode;

a system controller for controlling so as to output the audio data output from said encoder/decoder to said interleaver/deinterleaver when the recording medium is for the MD format and to said interpolator/muter when the recording medium is for the CD format, in the reproducing mode;

a multiplexer for selectively outputting the audio data output from said audio compressor/decompressor and the audio data output from said interpolator/muter, under the control of said system controller, in the reproducing mode; and

a digital-to-analog (D/A) converter for converting the audio data output from said multiplexer into an analog audio signal, in the reproducing mode.

5,546,370

COMPACT APPARATUS HAVING BIDIRECTIONAL MOTION FOR LOADING/UNLOADING AN INFORMATION RECORDING MEDIUM

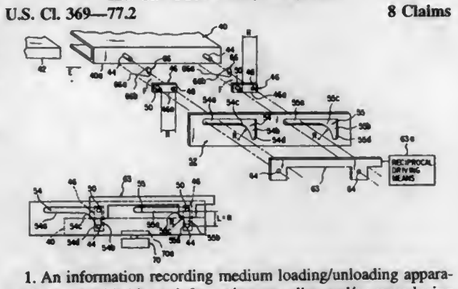
Kazumasa Ishikawa, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Japan

Filed Jul. 29, 1994, Ser. No. 282,885

Claims priority, application Japan, Jul. 30, 1993, 5-189816

Int. Cl.[6] G11B *33/02;5/008;15/675*

U.S. Cl. 369—77.2 **8 Claims**



1. An information recording medium loading/unloading apparatus being provided in an information recording and/or reproducing apparatus for recording and/or reproducing information on an information recording medium contained in a casing, for loading the information recording medium to, and unloading the casing from, a predetermined loading position in the information recording and/or reproducing apparatus, said information recording medium loading/unloading apparatus comprising:

a holder for detachably holding the casing containing the information recording medium;

a pair of first rotational center members projecting outwards from each of both opposed side surfaces of the holder at two locations spaced apart from each other along a movement locus of the casing when the casing is mounted in and removed from the holder;

a pair of rocking members associated with the pair of first rotational center members provided on each of both side surfaces of the holder, the associated first rotational center members being passed through the rocking members, the rocking members being rotatably coupled to the associated first rotational center members;

a second rotational center member projecting from each of the rocking members in the same direction as that in which the associated first rotational center member projects, at a position spaced apart from the first rotational center member;

two guide members provided to face both side surfaces of the holder, and each guide member including

first linear guide means and second linear guide means, the first linear guide means linearly guiding one of the pair of first rotational center members provided on the associated side surface of the holder and the second rotational center member provided on one of the paired rocking members associated with the one of the pair of first rotational center members being associated with the first linear guide means, and the second linear guide means linearly guiding the other of the pair of first rotational center members provided on the associated side surface of the holder and the second rotational center member provided on the other of the paired rocking members associated with the other of the pair of first rotational center members being associated with the second linear guide means, each of the first and second linear guide means

having a first guide portion extending along the movement locus of the casing when the casing is mounted in and removed from the holder and a second guide portion extending from an end of the first guide portion in a direction crossing the first guide portion, an intersection region between the first guide portion and the second guide portion changes a direction of its extension gradually from the extending direction of the first guide portion to the extending direction of the second guide portion, and the first rotational center member and the second rotational center member both to be linearly guided by each of the first and second linear guide means are arranged such that the first rotational center member is located closer to the second guide portion than the second rotational center member in the first guide portion of the associated one of the first and second linear guide means; and

driving means, arranged at least one of the side surfaces of the holder, for moving the second rotational center members provided on the side of the one of the side surfaces of the holder, along the first guide portions of the first and second linear guide means.

5,546,371

OPTICAL HEAD

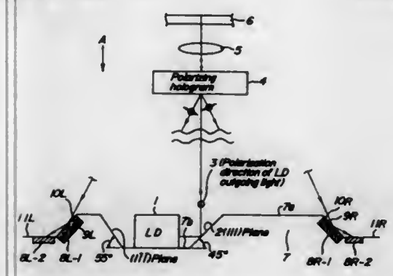
Yasuhiro Miyazaki, Akigawa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 6, 1995, Ser. No. 469,813

Claims priority, application Japan, Jul. 28, 1994, 6-176781

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—112 **17 Claims**



1. An optical head comprising:

a light source for emitting a light flux;

a reflection mirror for bending the light flux from the light source to form an outward path light beam;

an objective lens, receiving the outward path light beam, for focusing the outward path light beam into an information recording medium;

an outward and inward path light separating element for separating the outward path light beam from an inward path light beam reflected from the recording medium;

a semiconductor substrate having a semiconductor crystal layer with at least one inclined surface and at least one horizontal surface adjacent to the at least one inclined surface; and

at least one pair of photodiodes including a first photodiode embedded in the at least one inclined surface and a second photodiode embedded in the at least one horizontal surface, said at least one pair of photodiodes being disposed with respect to the outward and inward path light separating element such that at least a portion of the inward path light beam emanating from the outward and inward path light separating element is incident on one of the first and second photodiodes photo-electrically converting the incident light into electrical and a portion of the inward path light beam reflected from said one of the first and second photodiodes is incident on the other one of the first and second photodiodes.

5,546,372

INFORMATION DETECTION LIGHT INTENSITY CONTROL APPARATUS IN OPTICAL DISC RECORDED-INFORMATION REPRODUCING APPARATUS

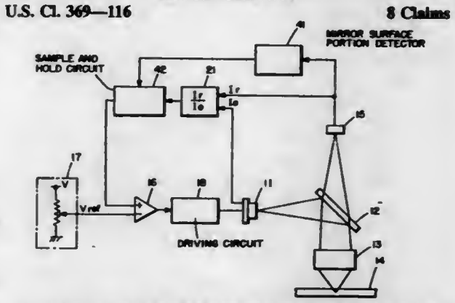
Seiichi Ohsawa, and Takuma Yanagisawa, Tsurugashima, both of, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 7, 1994, Ser. No. 255,173

Claims priority, application Japan, Jun. 8, 1993, 5-137664

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—116 **8 Claims**



1. An information detection light intensity control apparatus in a recorded-information reproducing apparatus of an optical disc in which a reflectance has a dependency on an incident light intensity, comprising:

an optical reading system having a light source for emitting an information detection light which enters said optical disc; and

control means for controlling an intensity of the information detection light which enters said optical disc so that a ratio of the intensity of the information detection light which enters said optical disc and an intensity of the information detection light reflected from said optical disc is set to a predetermined value.

5,546,373

OPTICAL RECORDING AND/OR REPRODUCING APPARATUS INCLUDING A TWO PRISM BEAM SPLITTEER FOR SIZE REDUCTION

Osamu Koyama, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 4, 1994, Ser. No. 317,538

Claims priority, application Japan, Oct. 6, 1993, 5-250640

Int. Cl.[6] G11B *7/135;11/10*

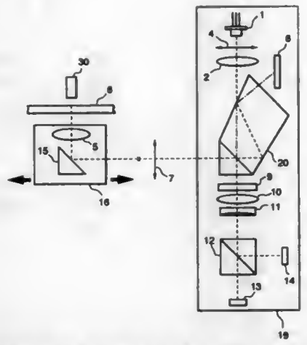
U.S. Cl. 369—120 **16 Claims**

1. An optical recording and/or reproducing apparatus comprising:

a light source;

a beam splitter located between said light source and an optical recording medium, said beam splitter comprising a first prism and a second prism, said first prism having a first face, a second face, a third face, and a fourth face and said second prism having a fifth face, a sixth face, and a seventh face, wherein said fourth face and said seventh face of said first and second prisms are bonded to each other;

a first photosensor for controlling a quantity of light from said light source by receiving a beam emitted from said light source, entering said first face, reflected by said third face,



reflected by said fourth face, reflected by said first face, and then outgoing from said second face to said first photosensor; and

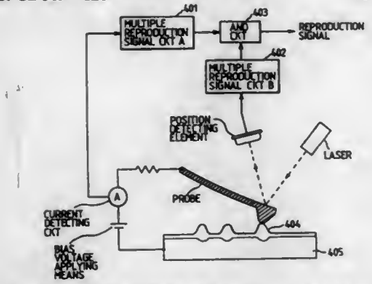
a second photosensor for reproducing information from the optical recording medium by receiving a beam emitted from said light source, entering said first face, reflected by said third face, passing through said fourth face, outgoing from said fifth face toward said optical recording medium, reflected by said optical recording medium to enter said fifth face, reflected by said seventh face, and then outgoing from said sixth face to said second photosensor.

5,546,374

INFORMATION RECORDING AND/OR REPRODUCING APPARATUS USING PROBE

Ryo Kuroda, Kawasaki, and Takahiro Oguchi, Yamato, both of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 26, 1994, Ser. No. 311,856
Claims priority, application Japan, Sep. 29, 1993, 5-242582
Int. Cl.[6] G11B *9/00*
U.S. Cl. 369—126 **23 Claims**



1. An information recording and/or reproducing apparatus which records and reproduces information with a probe, said apparatus comprising:

a probe made of an elastic body;

a recording medium which oxidizes in a portion where an electric current flows in the atmosphere to form a recording bit;

means for moving said probe relative to said recording medium;

means for applying a recording voltage between said probe and said recording medium for forming the recording bit; and

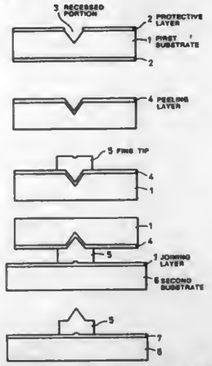
means for detecting an amount of deformation of said probe during the relative movement in order to reproduce the recording bit.

5,546,375

METHOD OF MANUFACTURING A TIP FOR SCANNING TUNNELING MICROSCOPE USING PEELING LAYER

Yasuhiro Shimada, Atsugi; Yoshimasa Okamura, Tokyo; Osamu Takamatsu; Masaru Nakayama, both of Atsugi, and Yoshihiro Yanagisawa, Isehara, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 75,382, Jun. 14, 1993, abandoned.
This application Nov. 8, 1995, Ser. No. 555,503
Claims priority, application Japan, Jul. 15, 1992, 4-209426; Nov. 11, 1992, 4-324605
Int. Cl.[6] G11B *9/00*
U.S. Cl. 369—126 **23 Claims**



1. A method of manufacturing a fine tip for detecting a fine current or force, said method comprising at least the following steps of:

(a) forming a recessed portion in a surface of a first substrate;

(b) forming a peeling layer on said first substrate;

(c) laminating a fine tip material on said peeling layer;

(d) joining said fine tip on said peeling layer to a second substrate; and

(e) performing a peeling on an interface between said peeling layer and said first substrate or between said peeling layer and said fine tip to transfer said fine tip onto said second substrate.

5,546,376

SHUTTER LOCKING MECHANISM FOR A MINIATURE COMPACT DISK CARTRIDGE OR THE LIKE AND A METHOD OF MANUFACTURING THE SAME

Yoshihiko Taniyama, 9380 Old Southwick Pass, Alpharetta, Ga. 30202

Filed Oct. 3, 1994, Ser. No. 316,880
Int. Cl.[6] G11B *23/03*
U.S. Cl. 369—291 **10 Claims**

1. A protective cartridge for housing an information storage disk comprising:

a protective shell adapted to enclose the disk;

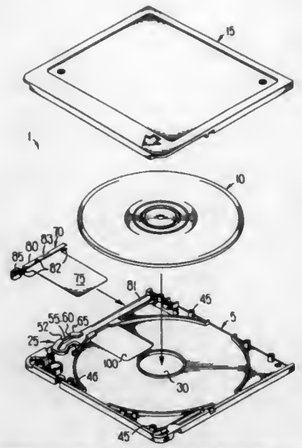
at least one read/write port incorporated into said shell for allowing a read/write device access to the disk;

a shutter slidably coupled to said shell and adapted to move into a closed position to cover said read/write port, and move into an open position to allow access to said read/write port; and

a shutter-lock integrally formed with said shell and adapted to releasably lock said shutter into the closed position, wherein said shutter-lock includes

a first elongated portion including first and second ends, means for releasably engaging said shutter into the closed position, and a first stiffness associated with said first elongated portion,

a second elongated portion including a first end connected to said second end of said first elongated portion, a second end, and a second stiffness associated with said second



elongated portion, wherein said second stiffness is substantially less than said first stiffness, and

a third portion formed on said second end of said second elongated portion of said shutter lock, wherein said third portion of said shutter-lock is integrally formed with said lower shell, wherein said first, second and third portions of said shutter-lock and said shell comprise a single unitary piece, and

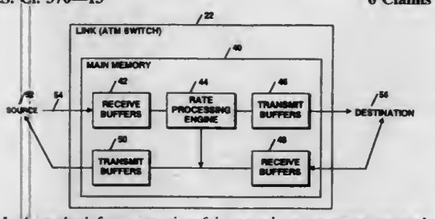
wherein said second portion of said shutter-lock is adapted to bend for allowing said first portion of said shutter-lock to rigidly translate and disengage from said shutter and to allow said shutter to slide into the open position.

5,546,377

EFFICIENT DISTRIBUTED METHOD FOR COMPUTING MAX-MIN FAIR RATES OF A LIMITED RESOURCE IN ATM NETWORKS

Cuneyt M. Ozveren, Somerville, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Oct. 31, 1995, Ser. No. 558,566
Int. Cl.[6] H04L *12/56;12/02*
U.S. Cl. 370—13 **6 Claims**



1. A method for computing fair rates in a computer network comprising the steps of:

providing a plurality of source nodes;

providing a plurality of destination nodes;

providing a plurality of switches to connect each one of the plurality of source nodes to each one of the plurality of destination nodes;

selecting a first switch, the first switch having an associated allocated bandwidth;

selecting a first source node, the first source node establishing a first connection to the first switch;

selecting a first destination node, the first destination node establishing a second connection to the first switch;

sending a plurality of data cells from the first source node via the first connection to the first switch, one of the data cells being a forward resource management cell containing a forward rate request value;

reading the forward rate request value;

computing a computed fair rate request value from the forward rate request value;

sending a plurality of data cells from the first destination via the second connection to the first switch, one of the data cells being a reverse resource management cell having a reverse rate request value;

reading the reverse rate request value;

comparing the computed rate request value and the reverse rate request value;

inserting the computed rate request value into the reverse resource management cell if the computed rate request value is less than the reverse rate request value; and

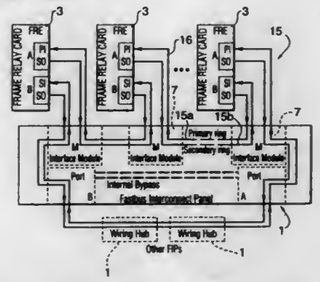
adjusting a rate at which said plurality of cells are sent from said first source node acceding to the rate request value in the reverse resource management cell.

5,546,378

FAULT TOLERANT FDDI WIRING HUB

Brian Wirth, Ottawa, and Tom Duxbury, Kanata, both of, Canada, assignors to Newbridge Networks Corporation, Kanata, Canada

Filed Jul. 21, 1994, Ser. No. 278,328
Int. Cl.[6] H04J *3/02;3/14*
U.S. Cl. 370—16.1 **8 Claims**



1. A wiring hub for providing interconnection at a physical medium dependent layer only in an FDDI network of a plurality of external FDDI stations, comprising:

a common chassis;

a plurality of internal interface modules on said common chassis for connection to respective external FDDI stations in a dual-attached connection;

internal transmission paths in said wiring bub forming a primary ring and a secondary ring and interconnecting said interface modules in a manner consistent with FDDI ring topology to permit a dual-attached FDDI ring to be established through said external FDDI stations and said internal transmission paths; and

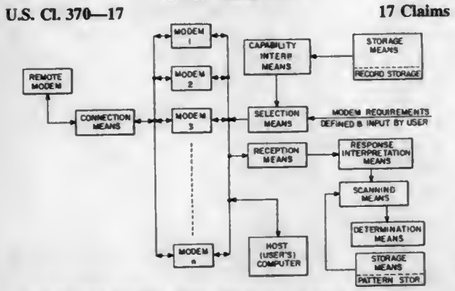
said interface modules including a switching element operable to bypass each external FDDI station or insert it on said dual-attached FDDI ring in a dual-attached connection, said switching element automatically switching its interface module to a bypass state when a said external FDDI station is disconnected from the wiring hub.

VOL 1189 ISS 2 AUG 13 1996

5,546,379
BANDWIDTH-ON-DEMAND REMOTE OFFICE NETWORK APPARATUS AND METHOD

Ladavan Thaweethai, Milpitas, and Tien-Jan A. Moon, Cupertine, both of Calif., assignors to Nec America, Melville, N.Y.

Division of Ser. No. 130,456, Oct. 1, 1993. This application Aug. 26, 1994, Ser. No. 295,051
Int. Cl.[6] H04B *1/38*
U.S. Cl. 370—17 **17 Claims**



1. A modem pooling control apparatus for automatically selecting a modem from among a number of modems according to a plurality of modem requirements defined by a user, the apparatus comprising:

storage means for storing a plurality of modem capability parameters associated with a plurality of different types of modems with different command sets;

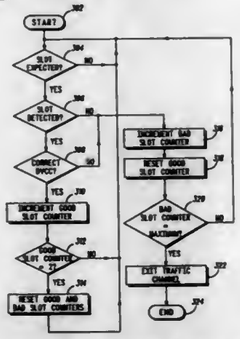
selection means for automatically selecting, on the basis of the stored plurality of modem capability parameters, a selected modem from the plurality of modems, such that the selected modem meets the plurality of modem requirements defined by the user; and

means for interconnecting the selected modem with a remote modem.

5,546,380
METHOD FOR SUPERVISING TDMA RADIO FREQUENCY COMMUNICATIONS

Peter A. Tomasi, Buffalo Grove; Mark E. Prill, Lake Zurich, and Stephen V. Cahill, Palatine, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 72,791, Jun. 4, 1993, abandoned. This application Jan. 24, 1995, Ser. No. 378,987
Int. Cl.[6] H04J *3/14*
U.S. Cl. 370—17 **4 Claims**



1. In a radio communications system in which digitally-encoded information is transmitted between a base station and subscriber stations in bursts over radio channels, each burst including a plurality of time slots, and at least some of the bursts including digital verification color codes DVCCs, a subscriber station being assigned a time slot and a DVCC for each communication, a method for supervising the communication between the base station and a subscriber station comprising the steps of:

determining that the assigned time slot is expected to be received within a predetermined amount of time;

detecting the presence of the assigned time slot within the predetermined amount of time;

detecting the presence of the assigned DVCC when the assigned time slot is detected;

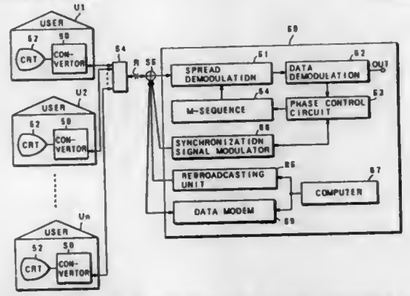
incrementing a first counter responsive to the assigned time slot not being detected within the predetermined amount of time or responsive to the assigned DVCC not being detected; and

terminating the communication when the first counter reaches a predetermined maximum count.

5,546,381
SPREAD SPECTRUM COMMUNICATION SYSTEM AND METHOD, USING SEQUENTIALLY PHASE SHIFTED IN-SEQUENCE CODES

Akio Fukushima, Tokyo-to, Japan, assignor to Pioneer Electronic Corporation, Tokyo-to, Japan

Filed Mar. 2, 1995, Ser. No. 397,872
Claims priority, application Japan, Mar. 2, 1994, 6-032614
Int. Cl.[6] H04J *13/04*
U.S. Cl. 370—18 **13 Claims**



1. A spread spectrum communication method comprising the steps of:

spread-spectrum-modulating each of a plurality of data signals to be transmitted at transmitting units on the basis of a plurality of coding signals respectively assigned to the data signals, said coding signals comprising M-sequence codes, which have code patterns same to each other and which phases are sequentially shifted from each other;

multiplexing the spread-spectrum-modulated signals at the transmitting units;

transmitting the multiplexed spread-spectrum modulated signals through a transmission path from the transmitting units;

receiving the transmitted spread-spectrum-modulated signals at a receiving apparatus;

generating a synchronization signal at the receiving apparatus by a phase lock loop to be in synchronization with the phase of a desired one of the received spread-spectrum-modulated signals;

selectively demodulating the desired one of the received spread-spectrum-modulated signals at the receiving apparatus by spread-spectrum-demodulating the received spread-spectrum-modulated signals on the basis of a decoding signal comprising a M-sequence code, which has a code pattern same as that of the coding signals and which phase is variable, and by controlling the phase of the decoding signal to be in synchronization with the phase of the coding signal assigned to the desired one of the received spread-spectrum-modulated signals on the basis of the generated synchronization signal;

transmitting the generated synchronization signal from the receiving apparatus to the transmitting units through the transmission path;

receiving the transmitted synchronization signal at each of the transmitting units;

branching the received synchronization signal by a branch filter at each of the transmitting units;

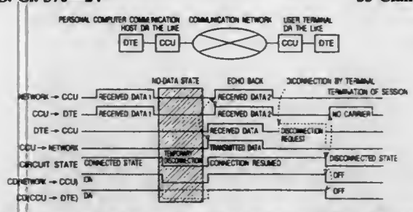
generating a common standard signal on the basis of the branched synchronization signal by a phase lock loop at each of the transmitting units; and

generating the M-sequence code at each of the transmitting units by a shift register such that the phases of the M-sequence codes are shifted from each other on the basis of the generated common standard signal.

5,546,382
COMMUNICATION METHOD AND COMMUNICATIONS CONTROL APPARATUS IN CIRCUIT SWITCHING NETWORK

Nobutsugu Fujino, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Aug. 23, 1994, Ser. No. 294,748
Claims priority, application Japan, Oct. 21, 1993, 5-285622
Int. Cl.[6] H04L *12/64*
U.S. Cl. 370—24 **35 Claims**



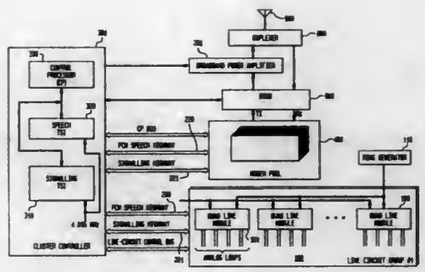
1. A communication method of a circuit switching network, comprising the steps of temporarily disconnecting a circuit of the network, without ending a session, by a first communication control unit connecting a first terminal locally and a second communication control unit with a network, when no data is received from the network or when no data is to be transmitted to the network, and re-connecting by said first communication control unit the circuit that had been temporarily disconnected so that the session is resumed, when data to be transmitted is produced in the first terminal or when there is a request from a second terminal connected to said second communication control unit for a connection of the circuit.

5,546,383
MODULARLY CLUSTERED RADIOTELEPHONE SYSTEM

David M. Cooley, 547 Beverly Blvd., Upper Darby, Pa. 19082; Joseph J. DiGiovanni, 891 W. King Rd., Malvern, Pa. 19355; John D. Kaewell, 2295 Rittenhouse Square, Bensalem, Pa. 19020; Scott D. Kurtz, 104 W. Bluebell La., Mt. Laurel, N.J. 08054; Mark A. Lemmo, 3972 Longfellow Rd., Huntington Valley, Pa. 19006; Michael W. Regensburg, 305 Windsor La., Marlton, N.J. 08053; David Vessal, 314 Dudley Ave., Narberth, Pa. 19072, and Eric Johns, 1255 E. Evergreen Dr., Phoenixville, Pa. 19460

Filed Sep. 30, 1993, Ser. No. 129,444
Int. Cl.[6] H04J *4/00*
U.S. Cl. 370—50 **13 Claims**

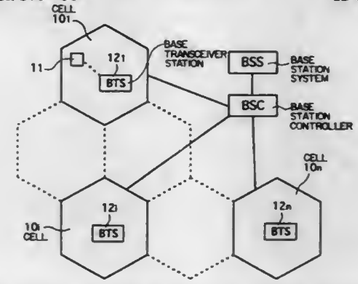
1. A radio telephone system comprising a base station, a plurality of remote subscriber stations, means defining a repetitive set of time slots for supporting radio communications between said subscriber stations and said base station, and a group of modems, each of said modems being capable of directly digitally synthesizing any of a plurality of channel-identifying frequencies on successive ones of said time slots to support communications between different ones of said subscriber stations and said base station on successive ones of said time slots.



5,546,384
STEP BY STEP METHOD OF CONTROLLING FREQUENCY REDEFINITION IN A CELLULAR MOBILE RADIO SYSTEM

Pierre Dupuy, and Anne Freulon, both of Paris, France, assignors to Alcatel Mobile Communications, Paris, France

Filed Jun. 8, 1994, Ser. No. 257,054
Claims priority, application France, Jun. 9, 1993, 93 06938
Int. Cl.[6] H04J *4/00*
U.S. Cl. 370—50 **12 Claims**



1. A frequency redefinition method for a cellular mobile radio system with mobiles moving in a geographical network of cells, wherein communication with a mobile is established on an available communication channel in a celi in which said mobile is located,

wherein calls are conveyed in a time-division multiplex whose successive frames are formed of time slots each containing at least one communication channel, each call being routed in segments in the same time slot on a plurality of multiplex flames, and

wherein each communication channel is further defined by a list of frequencies usable for said communication, said list of frequencies being redefinable, under the control of a mobile radio network management module, in order to replace a first list of N frequencies with a second list of M frequencies, where M can be equal to or different from N;

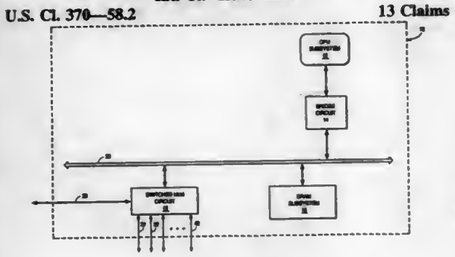
said method comprising the steps of effecting replacement of the first list of frequencies by the second list time slot by time slot, freeing each time slot step by step by eliminating all calls in said each time slot, then effecting frequency redefinition of said freed time slot by assigning it said second list of M frequencies, and, finally, making said time slot available again for traffic.

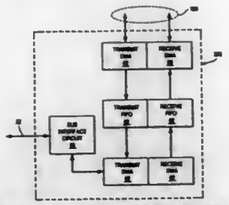
VOL 1189 ISS 2 AG 13 1996 UMI

5,546,385
FLEXIBLE SWITCHING HUB FOR A COMMUNICATION NETWORK

Rami Caspi, Haifa, Israel, and Robert Galin, Cupertino, Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jan. 19, 1995, Ser. No. 375,803
Int. Cl.[6] H04L *12/54*
U.S. Cl. 370—58.2 **13 Claims**





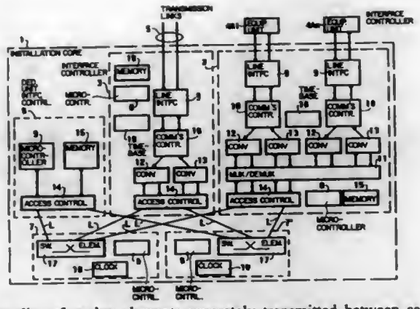
6. A communication method comprising the steps of:
(A) receiving a communication frame in a receive first-in-first-out buffer (FIFO) of a source port;
(B) determining a destination port for the communication frame received;
(C) transferring the communication frame received to a virtual transmit FIFO (VTF) corresponding to the destination port using a receive direct memory access (DMA) circuit, the communication frame being stored in frame buffers of the VTF in order of arrival with respect to communication frames from different source ports being sent to the destination port, the communication frame and the communication frames from different source ports being interleaved in the VTF; and
(D) transferring a topmost frame buffer of the VTF to a transmit FIFO in the destination port using a transmit DMA circuit.

5,546,386
COMMUNICATION INSTALLATION CORE ASYNCHRONOUS SWITCHING NETWORK

Raymond Gass, Boisenheim, France, assignor to Alcatel N.V., Amsterdam, Netherlands

Filed Feb. 22, 1994, Ser. No. 199,871
Claims priority, application France, Feb. 26, 1993, 93 02221
Int. Cl.[6] H04L *12/56*
U.S. Cl. 370—60 **8 Claims**

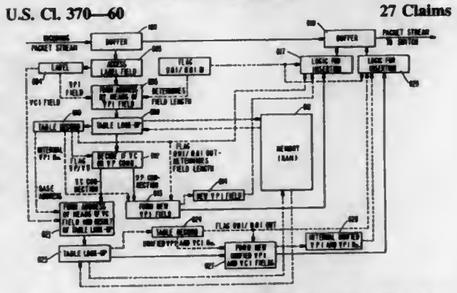
1. An asynchronous switching network for a communication installation core including a plurality of packet mode units interconnected by point-to-point links identically designed and operated, said network comprising a traffic control system including access control means in each of said packet mode units for setting the communication order of data packets sent to a receiving one of said packet mode units from others of said packet mode units, each of said data packets containing a plurality of packet elements, transmission of one of said data packets from a sending one of said packet mode units to said receiving one of said packet mode units requiring the sending in one direction of a request by said sending one of said packet mode units to said receiving one of said packet mode units with which said sending one of said packet mode units is required to communicate, and the sending of an acquiescence in the reverse direction from said one direction for each of said plurality of packet elements separately transmitted between said sending one and said receiving one of said packet mode units.



5,546,387
LABEL HANDLING IN PACKET NETWORKS

Leif M. Larsson, Stockholm, and Hans A. P. Berghager, Älvsjö, both of, Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Mar. 10, 1994, Ser. No. 208,386
Claims priority, application Sweden, Mar. 10, 1993, 9300793
Int. Cl.[6] H04L *12/56*
U.S. Cl. 370—60 **27 Claims**

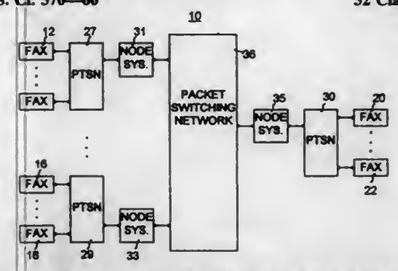


1. A switch for transferring data packets, each data packet having a label including a first part and a second part, comprising:
pluralities of input ports and output ports, wherein each input port has a list of internal labels including a first sublist and a second sublist; and
a switch core for transferring data packets that have arrived at an input port to a selected output port;
wherein each input port performs, for a data packet that has arrived at the input port, a first table look-up in the first sublist based on the first part of the label of the arrived data packet, whereby an internal label is obtained, to determine whether a second table look-up should be performed; when the second table look-up should not be performed, the input port substitutes the internal, label obtained by the first table look-up for the first part of the label of the arrived data packet; and when the second table look-up should be performed, the input port performs the second table look-up in the second sublist based on the second part of the label of the arrived data packet, whereby an internal label is obtained, and substitutes the internal label obtained by the second table look-up for the label of the arrived data packet.

5,546,388
PACKET-SWITCHED FACSIMILE NETWORK AND METHOD OF OPERATION

Feng Lin, Blk 39, Upper Boon Keng Road, No. 12-2410, Singapore 1438, Singapore

Filed Mar. 18, 1994, Ser. No. 210,889
Int. Cl.[6] H04L *12/56*
U.S. Cl. 370—60 **32 Claims**



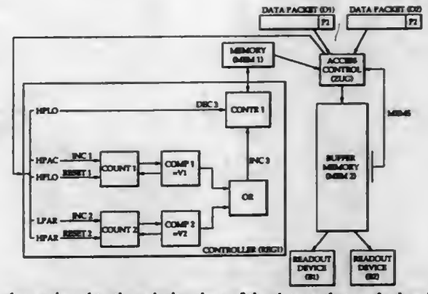
1. A method of transmitting image data from a plurality of source data communication devices to a plurality of destination data communication devices, through a plurality of node systems including a plurality of source and destination node systems, the method comprising the steps of:
a. the plurality of source data communication devices transmitting at least part of the image data to a source node system of the plurality of source node systems;
b. said source node system processing said part of the image data, and generating data packets therefrom;
c. said source node system, transmitting said generated data packets to the plurality of destination node systems with minimal delay over at least one transmission channel;
d. the plurality of destination node systems receiving said data packets, and recovering said at least part of the image data from said data packets;
e. the plurality of destination node systems selectively inserting fill codes between said converted at least part of the image data; and
f. the plurality of destination node systems transmitting said converted at least part of the image data and fill codes to the data communication devices with minimal delay;
such that said step of selectively inserting fill codes prevents service interruption between the plurality of source data communication devices and the plurality of destination data communication devices by correcting a temporary inability to receive additional data, and by maintaining real time communication between the plurality of source data communication devices and destination data communication devices.

5,546,389
METHOD OF CONTROLLING ACCESS TO A BUFFER AND A DEVICE FOR TEMPORARY STORAGE OF DATA PACKETS AND AN EXCHANGE WITH SUCH A DEVICE

Matthias Wippenbeck; Gert Willmann, both of Stuttgart, and Karl Schrodi, Heimsheim, all of, Germany, assignors to Alcatel N.V., Rijswijk, Netherlands

Filed Jul. 12, 1994, Ser. No. 273,716
Claims priority, application Germany, Jul. 13, 1993, 43 23 405.4
Int. Cl.[6] H04Q *11/04*
U.S. Cl. 370—60 **8 Claims**

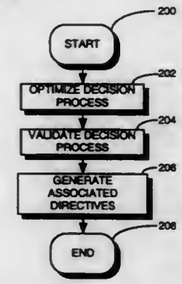
1. An improved method of controlling access to a buffer in which data packets each assigned to one of at least two priority classes are stored together, comprising the steps of assigning each priority class a threshold value, the threshold value of a higher priority class being greater than or equal to that of a lower one, determining the priority class of a data packet arriving at the buffer and an occupancy level of the buffer at the time of arrival of the data packet, comparing the occupancy level with the threshold value assigned to the priority class of the data packet, and wherein based on this comparison, deciding as to whether the data packet is written into the buffer or discarded, wherein the improved method further comprises the step of determining traffic data and dynamically regulating a threshold value of at least one priority class based on a determination of traffic data.



5,546,390
METHOD AND APPARATUS FOR RADIX DECISION PACKET PROCESSING

Geoffrey C. Stone, Minneapolis, Minn., assignor to Storage Technology Corporation, Louisville, Colo.

Filed Dec. 29, 1994, Ser. No. 366,222
Int. Cl.[6] H04L *12/56*; **G06F** *9/28*
U.S. Cl. 370—60 **31 Claims**



1. A method of processing a protocol data unit in a communication network, comprising the device-implemented steps of:
(a) optimizing a decision process by selectively examining only those significant bits of a protocol data unit received from the communication network which affect the decision process, these decision-significant bits comprising at least two non-contiguous bits of the protocol data unit;
(b) validating the decision process by comparing a portion of the received protocol data unit with a predetermined tuple, the predetermined tuple consisting of known values for a specific portion of the protocol data unit including the at least two non-contiguous decision-significant bits; and
(c) generating at least one associated directive for the protocol data unit based upon the validated decision process, the at least one associated directive specifying subsequent processing requirements of the protocol data unit.

5,546,391

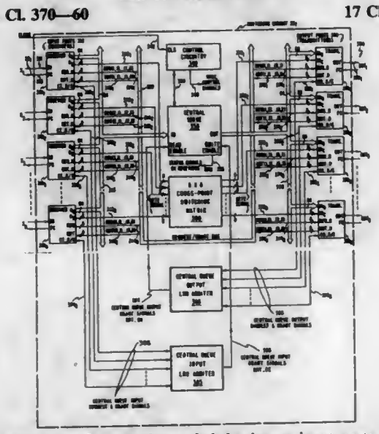
CENTRAL SHARED QUEUE BASED TIME MULTIPLEXED PACKET SWITCH WITH DEADLOCK AVOIDANCE

Peter H. Hochschild, New York, and Monty M. Denneau, Brewster, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 27,906, Mar. 4, 1993, abandoned. This application Apr. 19, 1995, Ser. No. 424,824

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—60 **17 Claims**



1. Apparatus for a packet switch having m input ports and n output ports (m and n being pre-defined positive integers) and for routing packets therebetween, said apparatus comprising:

a queue means formed of a predefined number x (where x is a pre-defined integer) of storage locations each of sufficient size to completely store a pre-defined portion of a message from an input port;

m separate receiver means for directing such pre-defined portions of a message from corresponding input ports of said packet switch to said queue means, each of said receiver means being connected to a corresponding one of said input ports;

n separate transmitter means for obtaining said message portions from said queue means and for applying messages formed of the portions so obtained to corresponding output ports of said switch, each of said transmitter means being connected to a corresponding one of the output ports;

wherein said queue means is connected to each of both said m receiver means and said n transmitter means, for storing a current one of said message portions, emanating from one of said receiver means and destined to one of said transmitter means, in the event said one transmitter means is then unavailable to accept said current message portion, said queue means having n dedicated storage locations and x-n shared locations wherein each shared location is capable of being shared among all of said transmitter means so as to store a message portion destined for any one of said transmitter means and each said dedicated location is associated with a different one of said transmitter means so that it is dedicated to storing a message portion destined to only a particular corresponding one of said transmitter means, and wherein said current message portion is selectively placed into either said shared or dedicated location based upon a pre-defined classification of said current message portion;

by-pass switching means, connected to each of both said m separate receiver means and said n transmitter means, for routing selected ones of said message portions between each of said receiver means and each of said transmitter means so as to by-pass said selected message portions around the queue means, said switching means having a lower latency than said queue means;

selecting means in each of said receiver means which are responsive to each of said transmitter means, for selectively applying a given one of said message portions to either said by-pass switching means or said queue means for subsequent application therethrough to a destination one of said transmitter means, wherein the given one message portion is applied to said by-pass switching means if output contention does not then exist for the destination transmitter means, otherwise the given one message portion is stored within queue means;

queue access control arbiter means, connected to said queue means and each of said receiver means and transmitter means, for granting access to any one of said receiver means to write one of said message portions within said queue means and for granting access to any one of said transmitter means to extract one of said message portions stored within said queue means;

wherein said selecting means comprises:

means for classifying the given one message portion so as to generate the classification therefor and, in the event said classification indicates that said one incoming message portion should be routed through said queue means, generating a queue write access request signal to said queue access control arbiter means to write said one incoming message into said queue means; and

means, responsive to a queue write access grant signal generated by said queue access control arbiter means, for selectively applying said given one message portion to an input of said queue means in the event said grant signal signifies that write access to the queue means has then been awarded by said queue access control arbiter means to said each receiver means to transfer said one message portion into said queue means;

wherein said classifying means comprises:

means for signifying said given one message as critical in the event said given one message portion is either a first message portion in a corresponding message and the destination one transmitter means is then available to handle said given one message portion, or a continuation message portion with all prior message portions in the message having reached the destination one transmitted means, or otherwise as non-critical if a shared location then exists to store said given one message portion; and

means for producing the queue write access request signal for said given one message if said given one message is critical; and

wherein said queue means comprises means, responsive to said queue write access grant signals, for writing said given one message portion into a corresponding dedicated location or an available shared location if the given one message is critical or non-critical, respectively.

5,546,392

COMMUNICATIONS BUS AND CONTROLLER

John H. Boal, Winchester, and Mark K. Newton, Reading, both of, United Kingdom, assignors to Racal-Datacom, Limited, United Kingdom

PCT No. PCT/GB93/00494, § 371 Date Sep. 9, 1994, § 102(e) Date Sep. 9, 1994, PCT Pub. No. WO93/18599, PCT Pub. Date Sep. 16, 1993

PCT Filed Mar. 9, 1993, Ser. No. 302,721

Claims priority, application United Kingdom, Mar. 9, 1992, 9205098

Int. Cl.[6] H04L *12/40;12/64*

U.S. Cl. 370—60.1 **21 Claims**

1. A communications network, comprising:

a framed, time-division-multiplexed, synchronous bus, including:

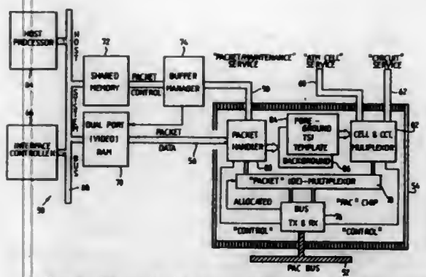
an information channel on which communication in a first mode and communication in a second mode can be selectively effected; and

an allocate channel;

said information channel having a bandwidth and being preallocated for communication in said second mode, and said allocate channel having asserted thereon an allocated signal if said bandwidth of said information channel is being used for communication in said second mode; and

a controller coupled to the framed, time-division-multiplexed, synchronous bus, wherein

said controller is a state machine switchable between states corresponding respectively to said first and second modes of communication on said bus; and said controller is responsive to said allocated signal to inhibit communication in said first mode using said bandwidth of said information channel when said allocated signal is asserted and not to inhibit communication in said first mode using said bandwidth of said information channel when said allocated signal is not asserted.



5,546,393

ASYNCHRONOUS TRANSFER MODE DATA CELL ROUTING DEVICE FOR A REVERSE OMEGA NETWORK

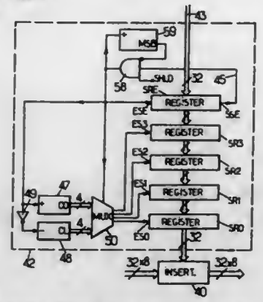
Charles Minc, Paris, France, assignor to M E T, Massy, France

Filed Jun. 19, 1995, Ser. No. 491,075

Claims priority, application France, Jun. 20, 1994, 94 07526

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—60.1 **4 Claims**



1. Asynchronous transfer mode data cell routing device comprising at least one reverse Omega network with L stages and 2^N ordered inputs respectively receiving 2^N synchronized data cells, L and N being two integers such that $L \leq N$, and a routing bits generator, wherein the routing bits generator comprises:

a parallel input for receiving 2^N state bits respectively assigned to said 2^N synchronized cells for indicating marked and unmarked cells among said 2^N synchronized cells;

a state register of 2^N bits, having a serial shift mode and a parallel transfer mode in which it receives said 2^N state bits received on the parallel input;

a first counter on L bits, incremented by one unit when a state bit obtained from a serial output of the state register in serial shift mode indicates a marked cell, said first counter having a first initialization value;

a second counter on L bits, decremented by one unit when the state bit obtained from the serial output of the state register in serial shift mode indicates an unmarked cell, said second-counter having a second initialization value which is less than said first initialization value;

L addressing registers of 2^N bits each, having a serial shift mode and a parallel transfer mode, cascaded so that the (i+1)-th addressing register receives the contents of the i-th addressing register in parallel transfer mode for $1 \leq i \leq L$; and

a multiplexer having L output bits addressed respectively to serial inputs of the L addressing registers, a first L-bit input connected to the output of the first counter on L bits and selected when the state bit obtained from the serial output of the state register in serial shift mode indicates a marked cell, and a second L-bit input connected to the output of the second counter on L bits and selected when the state bit obtained from the serial output of the state register in serial shift mode indicates an unmarked cell,

the routing device further comprising routing bits insertion means successively receiving L sets of 2^N address bits from the L-th addressing register in parallel transfer mode, in order to insert, at the head of each one of said 2^N cells respectively addressed to the 2^N ordered inputs of the network, routing bits comprising L address bits corresponding to said cell, received in succession from a respective location of the L-th addressing register in parallel transfer mode.

5,546,394

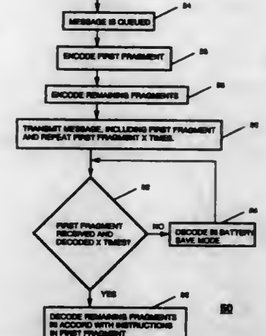
MESSAGE FRAGMENTING IN A TIME DIVERSITY RADIO SYSTEM

Eric T. Eaton, Lake Worth; Ronald H. Evoy, West Palm Beach; David J. Hayes, Lake Worth; David F. Willard, Plantation, all of Fla.; Shogo Ito, and Yasushi Yamao, both of Kanagawa-ken, Japan, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 9, 1994, Ser. No. 352,647

Int. Cl.[6] H04Q *7/08*

U.S. Cl. 370—79 **25 Claims**



1. In a time diversity paging system, having at least one transmitter and at least one of a plurality of selective call receivers operating in a first mode where each of the plurality of selective call receivers actively decode on preassigned time slots, a method for encoding and transmitting at a base station a message longer than a predetermined time slot, comprising the steps of:

receiving the message from a caller at the base station;

queuing the message;

encoding a first fragment of the message and remaining fragments of the message;

repeatedly transmitting the first fragment in a plurality of time slots, the number of time slots equaling a desired number of repeat transmissions and wherein the first fragment contains instructions for decoding the remaining fragments in a second mode by at least one of the plurality of selective call receivers; and

repeatedly transmitting remaining portions of the message in subsequent time slots, wherein the at least one of a plurality of selective call receivers decodes the remaining portions of the message in accordance with instructions in the first fragment.

5,546,395

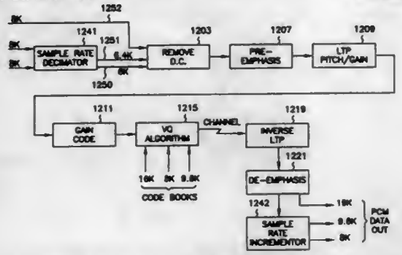
DYNAMIC SELECTION OF COMPRESSION RATE FOR A VOICE COMPRESSION ALGORITHM IN A VOICE OVER DATA MODEM

Raghu N. Sharma, North Oaks; Jeffrey P. Davis, Ham Lake; Timothy D. Gunn, Mounds View; Ping Li, New Brighton, all of Minn.; Sidhartha Maitra, and Ashish A. Thanawala, both of Saratoga, Calif., assignors to Multi-Tech Systems, Inc., Mounds View, Minn.

Continuation-in-part of Ser. No. 271,496, Jul. 7, 1994, and a continuation-in-part of Ser. No. 2,467, Jan. 8, 1993, Pat. No. 5,452,289. This application Nov. 29, 1994, Ser. No. 346,421

Int. Cl.[6] H04J *3/22*; **G10L** *5/00*

U.S. Cl. 370—84 **4 Claims**



1. A communication module for use with a personal computer, comprising:

communications interface means connected for communicating to the personal computer for transferring data between the personal computer and the communications module;

telephone line interface means for connection to a telephone line;

voice interface means for receiving local voice signals from a local user and for conveying remote voice signals from a remote user to the local user;

full-duplex conversion means connected to the voice interface means for converting the local voice signals into outgoing digital voice data and for converting incoming digital voice data into the remote voice signals;

digital signal processor means connected to the full-duplex conversion means for compressing the outgoing digital voice data into compressed outgoing digital voice data having one of a plurality of selectable compression rates and for decompressing compressed incoming digital voice data into the incoming digital voice data at one of said plurality of said selectable compression rates;

main control means connected for receiving the compressed outgoing digital voice data from the digital signal processor means, connected for receiving outgoing conventional digital data from the personal computer through the communications interface means, and operable for multiplexing the compressed outgoing digital voice data and the conventional digital data to produce multiplexed outgoing data; and

the main control means further operable for receiving multiplexed incoming data which contains incoming conventional digital data multiplexed with the compressed incoming digital voice data, for demultiplexing the incoming conventional digital data and the compressed incoming digital voice data, and for sending the incoming conventional digital data to the personal computer through the communications interface means and for sending the compressed incoming digital voice data to the digital signal processor means; and

the main control means further operable for negotiating the compression rate at various times during the transmission of conventional digital data multiplexed with the compressed digital voice data to change the compression rate.

5,546,396

METHOD AND APPARATUS FOR COMMUNICATING BETWEEN A PLURALITY OF SUBCOMPONENTS

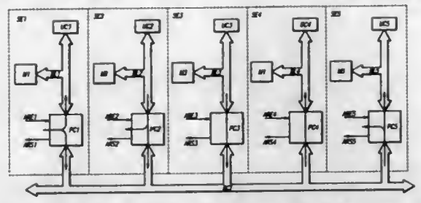
Yves Clauzel, Montelimar, and Christian Jaeger, Valence, both of, France, assignors to Sextant Avionique, Meudon La Foret, France

Filed Feb. 5, 1993, Ser. No. 14,429

Claims priority, application France, Feb. 5, 1992, 92.01288

Int. Cl.[6] H04J *3/00*

U.S. Cl. 370—85.1 **27 Claims**



1. A process for the transmission of information data between a plurality of sub-components, in which each sub-component is associated with at least one logical channel, wherein each logical channel is associated with at least one physical channel, each sub-component addressing said logical channel with which it is associated, wherein different physical channels are time multiplexed on an internal communication bus, wherein at least one sub-component is further coupled with at least one input/output line, wherein said information data generated by a sub-component on said input/output line is re-transmitted on said internal communication bus to other sub-components, and said information data received by said sub-component on said input/output line is re-transmitted on said internal communication bus to said other sub-components.

5,546,397

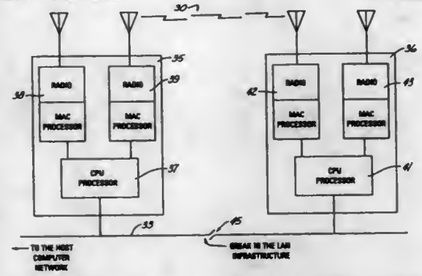
HIGH RELIABILITY ACCESS POINT FOR WIRELESS LOCAL AREA NETWORK

Ronald L. Mahany, Cedar Rapids, Iowa, assignor to Norand Corporation, Cedar Rapids, Iowa

Continuation-in-part of Ser. No. 197,392, Feb. 16, 1994, abandoned, which is a continuation-in-part of Ser. No. 170,121, Dec. 20, 1993, abandoned. This application May 4, 1994, Ser. No. 238,180

Int. Cl.[6] H04B *7/04*

U.S. Cl. 370—85.1 **21 Claims**



1. A high reliability access point for use in a wireless local area network, comprising:

at least two wireless adapters wherein each adapter includes an RF radio, control processor means for handling low level protocol for said wireless adapter and antenna means operably connected to said adapter for transceiving radio signals; and

central processing unit means operably connected to each of said wireless adapters for controlling high level communication protocol for said high reliability access point.

5,546,398

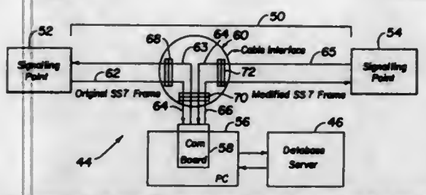
SIGNAL INTERCEPT SYSTEM AND METHOD

Michel H. Tucker; Gary Sams; Kathleen Hennessey; Ramakhrisna Pattikonda, and Mario Condit, all of Lubbock, Tex., assignors to NTS Communications, Inc., Lubbock, Tex.

Filed Jul. 23, 1993, Ser. No. 96,665

Int. Cl.[6] H04J *3/12*

U.S. Cl. 370—94.1 **11 Claims**



5. A method for modifying selected data transmitted as signals on a signaling link between a first signal point and a second signal point in real time, comprising in combination the steps of:

intercepting the data signals transmitted from the first signal point;

converting the intercepted selected data signals into data of a form acceptable for data processing;

processing converted selected data wherein the selected data is modified;

converting the modified selected data into data signals in a form acceptable by the signalling link; and

transmitting the converted modified selected data signals along with any data signals which were not selected to the second signal point.

5,546,399

PACKET CONVERSION APPARATUS AND SYSTEM

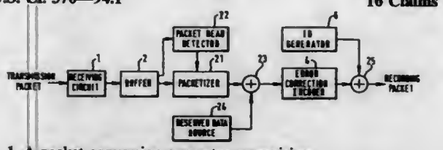
Kenji Shimoda, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 29, 1994, Ser. No. 314,642

Claims priority, application Japan, Sep. 30, 1993, 5-245430; Sep. 29, 1994, 6-234695

Int. Cl.[6] H04J *3/26*

U.S. Cl. 370—94.1 **16 Claims**



1. A packet conversion apparatus comprising:

means for detecting heads of transmission packet signals;

means responsive to the detecting means for packetizing the transmission packet signals by sequentially arranging them into one or more recording packets so that a prescribed number of transmission packet signals are placed at specific positions within one or more recording packets;

a source for supplying reserved data; and means for inserting the reserved data into portions of the recording packets where no transmission packet signals are present to maintain positional relationships of the transmission packet signals packed in the recording packets.

5,546,400

DEMAND ASSIGN COMMUNICATION CONTROL SYSTEM

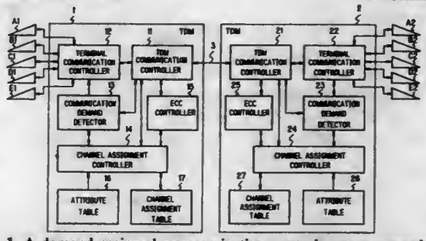
Ken Hironaka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 3, 1995, Ser. No. 497,892

Claims priority, application Japan, Jul. 6, 1994, 6-154385

Int. Cl.[6] H04J *3/16*

U.S. Cl. 370—95.1 **12 Claims**



1. A demand assigned communication control system comprising a first and a second communication controllers connected to each other via a communication line, and each covering a plurality of terminals and assigning vacant channel in response to a communication demand for communication of the terminals, wherein:

the first communication controller includes means for setting in advance attribute information necessary for communication of each of the plurality of terminals, means for making the channel assignment according to the attribute information, means for generating ECC of the channel assignment information, and means for transmitting the ECC to the second communication controller; and

the second communication controller includes means for setting in advance attribute information necessary for communication of each of the plurality of terminals, means for making the channel assignment according to the attribute information, means for generating ECC of the channel assignment information, and means for comparing own ECC and the received ECC of the first communication controller and transmitting the comparison result to the first communication controller.

5,546,401

FRAME PHASE ALIGNER

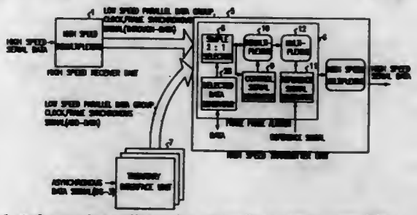
Sang H. Lee; Jung H. Ko; Tae H. Lee, and Chang S. Shim, all of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Seoul, DPR of Korea

Filed Dec. 20, 1994, Ser. No. 360,032

Claims priority, application Rep. of Korea, Dec. 21, 1993, 1993-28932

Int. Cl.[6] H04J *3/06*

U.S. Cl. 370—105.1 **9 Claims**



1. A frame phase aligner for a transfer system, comprising:

selection means for selecting one of a plurality of input signal groups, which include data, a clock signal, an inverse clock signal and a frame synchronous signal, received from outside of said frame phase aligner;

selection signal generating means for providing said selection means with a selection signal according to write data input

from outside of said frame phase aligner, so that said selection means selects one of the plurality of input signal groups according to the selection signal indicative of the setup environment of the transfer system;

control signal generating means for generating control clock signals and a retiming control signal in order to demultiplex selected data of the input signal group selected by said selection means;

demultiplexing means for demultiplexing data selected by said selection means to form parallel data, retiming the parallel data, and controlling the phase of the parallel data according to the control retiming signal and the control clock signals output from said control signal generating means, respectively;

multiplexing means for synchronizing the demultiplexed data output from said demultiplexing means to a reference frame synchronous signal and reference control signals; and

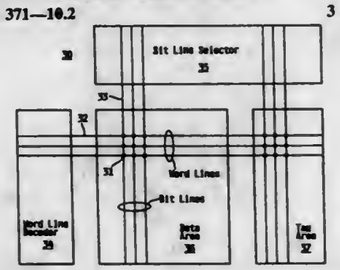
reference control signal generating means for providing the reference frame synchronous signal and the reference control signals for said multiplexing means.

5,546,402

FLASH-ERASE-TYPE NONVOLATILE SEMICONDUCTOR STORAGE DEVICE

Hideto Niijima, Tokyo; Takashi Toyooka, Sayama; Akashi Satoh, Kamifukuoka, and Yoshinori Sakane, Tokyo, all of, Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 119,916, Sep. 10, 1993, Pat. No. 5,509,018.
This application Jun. 7, 1995, Ser. No. 475,524
Claims priority, application Japan, Sep. 11, 1992, 4-243118
Int. Cl.[6] G11C *29/00;11/34*
U.S. Cl. 371—10.2 **3 Claims**



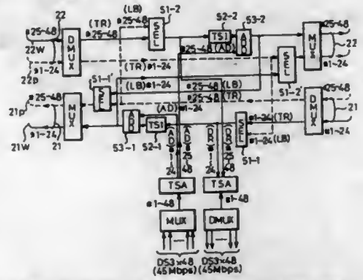
1. A nonvolatile semiconductor storage device with a flash erase capability comprising at least one array of memory cells whose operating voltages are supplied by means of word lines and bit lines, wherein memory cells sharing a word line are grouped into a first set and a second set such that particular contents of data stored in the memory cells of said second set are maintained when data stored in the memory cells of said first set are erased en block by applying an electric field between the word line and the memory cells of the first set as a single voltage charge pulse to the memory cells of the first set, the memory cells of said first set are logically grouped into a plurality of blocks each consisting of a plurality of memory cells, those blocks include regular blocks that are usually employed for the storage of data and redundant blocks that are employed for block replacement, and the memory cells of said second set are employed to store data used for identifying defective regular blocks and redundant blocks that are employed as replacements thereof, and said second set is also employed to store error correction codes (ECCs) generated for said data used for identifying said defective blocks and said redundant blocks.

5,546,403

BIDIRECTIONAL LINE SWITCH RING NETWORK

Chiyoko Yamamoto; Daisuke Maruhashi, and Masahiro Shioda, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Feb. 14, 1994, Ser. No. 195,586
Claims priority, application Japan, Mar. 29, 1993, 5-070053
Int. Cl.[6] G06F *11/00*
U.S. Cl. 371—20.5 **9 Claims**



1. A bidirectional line switch ring network comprising:

a ring transmission line including a first transmission line and a second transmission line which are laid in a ring in parallel with each other and which are each divided into working line time slots and line protection time slots for transmission of data and

a plurality of nodes of which are inserted in the ring transmission line and perform through, addition, and drop operations on the transmission data,

in which network, when a fault occurs in said ring transmission line, a loopback is formed by means of line protection selectors and working line selectors at the node adjoining the fault so as to loop back the ring transmission line between the first transmission line and the second transmission line and thereby protect the line, wherein

the time slot numbers of the working line time slots and the time slot numbers of the line protection time slots allotted in the first transmission line and the time slot numbers of the line protection time slots and the time slot numbers of the working line time slots allotted in the second transmission line are set to be respectively the same, the time slot numbers being unchanged during formation of said loopback.

5,546,404

INPUT/OUTPUT PORT FAULT DIAGNOSING DEVICE

Kenichi Takahashi, Toyohashi, and Yoshikazu Naito, Toyokawa, both of, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

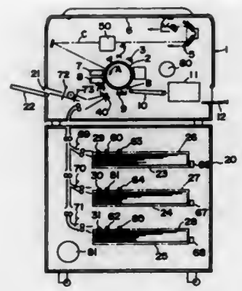
Filed Nov. 22, 1993, Ser. No. 155,928
Claims priority, application Japan, Nov. 27, 1992, 4-318768
Int. Cl.[6] G01R *31/28*
U.S. Cl. 371—22.1 **9 Claims**

1. A port diagnosing device capable of diagnosing normal or abnormal ports, said ports being provided with a single input terminal and a plurality of output terminals, said port diagnosing device comprising:

a signal generating means for outputting a predetermined signal to one of said plurality of output terminals;

a feedback means for feeding back to said single input terminal the predetermined signal output from said signal generating means; and

determination means for detecting changes in the level of the predetermined signal as fed back to said single input terminal in correspondence to changes in the level of said predetermined signal as output from said signal generating means, and determining the normal or abnormal operation of said one of said plurality of output terminals.

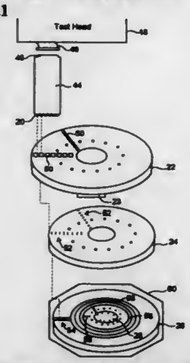


5,546,405

DEBUG APPARATUS FOR AN AUTOMATED SEMICONDUCTOR TESTING SYSTEM

Naidu G. Golla, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jul. 17, 1995, Ser. No. 502,924
Int. Cl.[6] G01R *31/28*
U.S. Cl. 371—22.1 **23 Claims**



1. An integrated circuit debug apparatus comprising:

a test head;

a device signal panel connected to a side panel of said test head, wherein said device signal panel includes a plurality of electrical connectors dimensioned to receive a debug device electrically connectable thereto; and

a plurality of channel cards coupled within said test head, each said channel card includes a plurality of conductors switchably connected between a respective integrated circuit bonding pad and a respective electrical connectors of said device signal panel.

5,546,406

CELL ARCHITECTURE FOR BUILT-IN SELF-TEST OF APPLICATION SPECIFIC INTEGRATED CIRCUITS

Russell L. Gillenwater; Davoud Safari, both of Round Rock, and Gary D. Owens, Austin, all of Tex., assignors to Tandem Computers, Inc., Cupertino, Calif.

Continuation of Ser. No. 905,973, Jun. 29, 1992, abandoned.
This application Jul. 26, 1995, Ser. No. 507,737
Int. Cl.[6] G01R *31/28;* **H04B** *17/00*
U.S. Cl. 371—22.5 **25 Claims**

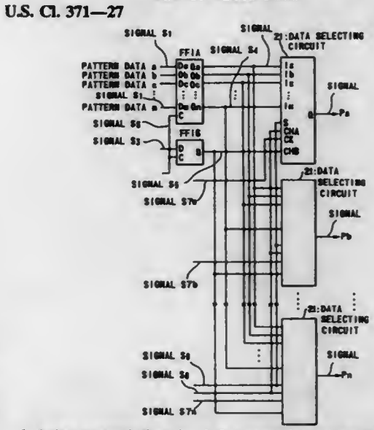
1. A device comprising a cell including boundary scan testing circuit means and built-in self test circuit means, said cell having a boundary scan testing mode, a built-in self testing mode and a data pass through mode, each mode introducing a signal propagation time delay through said cell, the signal propagation time delay through said cell in said data pass through mode being substantially equal to the signal propagation time delay of a 2:1 multiplexer.

5,546,407

DATA TRANSMISSION CIRCUIT FOR CHECKING OF MEMORY DEVICE

Ryogo Komatsu, Tokyo, Japan, assignor to Ando Electric Co., Ltd., Tokyo, Japan

Filed Nov. 29, 1993, Ser. No. 158,514
Claims priority, application Japan, Nov. 30, 1992, 4-343323
Int. Cl.[6] G06F *11/00*
U.S. Cl. 371—27 **5 Claims**



1. A data transmission circuit for outputting selected pattern data from a plurality of pattern data to testing pins attached to a terminal of a semiconductor device, said data transmission circuit comprising:

selecting means for each said testing pin for selecting at least two pattern data from said plurality of pattern data, and;

alternating means for controlling said selection means to alternatively output said two pattern data to said testing pin.

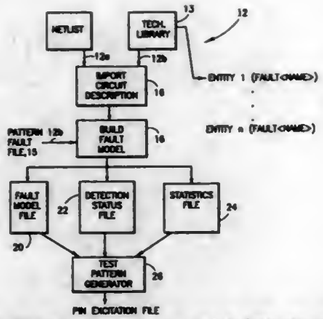
5,546,408

HIERARCHICAL PATTERN FAULTS FOR DESCRIBING LOGIC CIRCUIT FAILURE MECHANISMS

Brion L. Keller, Conklin, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 9, 1994, Ser. No. 257,594
Int. Cl.[6] G06F *11/263;* **G01R** *31/3183*
U.S. Cl. 371—27 **20 Claims**

1. A method for specifying a test sequence for a circuit, the circuit being modelled to have a plurality of external contact



nodes, a plurality of internal nets, and at least one sub-circuit having input/output nodes connected to the internal nets, comprising the steps of:

modelling possible first faults associated with the external contact nodes, the plurality of internal nets, and the input/output nodes of the at least one sub-circuit;

modelling only specified ones of possible second faults associated with at least one of one or more of the internal nets and one or more nets that are internal to the at least one sub-circuit; and

generating a specification of a sequence of test pin excitations that are predetermined to detect the presence of the possible first and second faults.

5,546,409

ERROR CORRECTION ENCODING AND DECODING SYSTEM

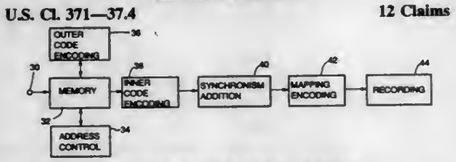
Katsumi Karasawa, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 913,019, Jul. 14, 1992, abandoned. This application Jan. 25, 1995, Ser. No. 378,089

Claims priority, application Japan, Jul. 18, 1991, 3-178442; Jul. 18, 1991, 3-178443; Aug. 28, 1991, 3-217234

Int. Cl.[6] H03M *13/00*

U.S. Cl. 371—37.4 **12 Claims**



1. An error correction encoding device comprising:

a memory for storing information codes in a form of a data matrix having row addresses and column addresses;

first correction encoding means for reading the information codes from the memory and producing a first error-correcting code word composed of the information codes extracted from the data matrix and first parity check codes generated by using the information codes, said first error correction encoding means extracting the information codes from addresses which have different column addresses and only one of every adjacent n row addresses (where n is 2 or a larger integer) on the data matrix; and

second error correction encoding means for extracting the information codes from the data matrix in the row direction thereof and producing a second error-correcting code word composed of the information codes extracted from the data matrix and second parity check codes generated by using the information codes, said second error correction encoding means extracting the information codes from addresses which have the same column address on the data matrix.

5,546,410

SEMICONDUCTOR MEMORY DEVICE WITH ERROR SELF-CORRECTION SYSTEM STARTING PARITY BIT GENERATION/ERROR CORRECTION SEQUENCES ONLY WHEN INCREASE OF ERROR RATE IS FORECASTED

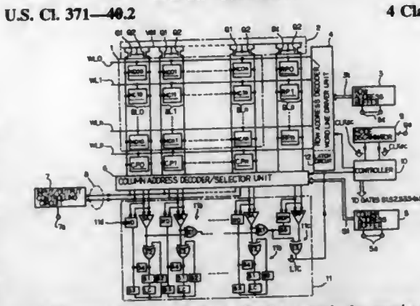
Manabu Ando, and Junji Monden, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Aug. 2, 1994, Ser. No. 284,204

Claims priority, application Japan, Aug. 3, 1993, 5-209958

Int. Cl.[6] G11C *29/00*

U.S. Cl. 371—40.2 **4 Claims**



1. A semiconductor memory device for selectively entering into a standard mode, an error correcting mode and an inspection bit generating mode, comprising:

a) a memory cell array having a plurality of addressable memory cells for respectively storing data bits, and forming a plurality of memory cell groups, said data bits being repeatedly rewritable and accessible externally of said semiconductor memory device without an error correction in said standard mode;

b) a plurality of addressable status cells selectively associated with said plurality of memory cell groups for respectively storing inspection bits indicative of correct states of said data bits stored in said plurality of memory cell groups;

c) an addressing system selectively making said plurality of addressable memory cells writable and readable in said standard mode, selectively making said plurality of memory cell groups and said plurality of addressable status cells readable and said plurality of addressable memory cells writable in said error correcting mode, and selectively making said plurality of memory cell groups readable and said plurality of addressable status cells writable in said inspection bit generating mode;

d) an interface unit enabled in said standard mode, and operative to receive new data bits from externally and to externally deliver the data bits read out from said memory cell array;

e) an inspecting and correcting system operative to check whether or not at least one data bit is inverted in the memory cells through comparison of the correct states with current states of said data bits respectively stored in said plurality of memory cell groups in said error correcting mode, said inspecting and correcting system being further operative to correct said at least one data bit in said error correcting mode, said inspecting and correcting system further being operative to generate said inspection bits through an inspection of the data bits stored in the associated memory cell groups in said inspection bit generating mode; and

f) a mode discriminator coupled to a port changeable in status externally of said semiconductor memory device, and operative to discriminate the status of said port to check whether to cause said semiconductor memory device to enter into said error correcting mode, said mode discriminator further discriminating another status of said port for causing said semiconductor memory device to enter into said inspection bit generating mode,

said mode discriminator being coupled to signal pins exclusively assigned to an instruction for entry into said inspection bit generating mode and an instruction for entry into said error correcting mode, said mode discriminator being responsive to said instruction for entry into said inspection bit generating mode for producing a first request signal for an inspection bit generating sequence, said mode discriminator being further responsive to said instruction for said entry into said error correcting mode for producing a second request signal for an error correcting sequence.

5,546,411

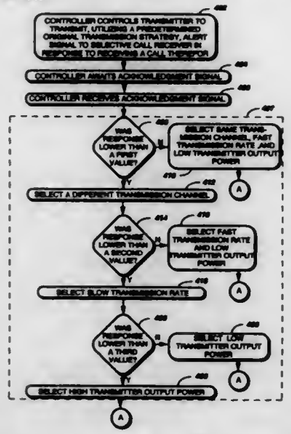
METHOD AND APPARATUS FOR ADAPTIVELY SELECTING A COMMUNICATION STRATEGY IN A SELECTIVE CALL RADIO COMMUNICATION SYSTEM

Clifford D. Leitch, Coral Springs; Robert J. Schwendeman, Pompano Beach, and Philip P. Macnak, West Palm Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 28, 1995, Ser. No. 396,304

Int. Cl.[6] H04B *7/0005;7/26*

U.S. Cl. 371—5.5 **16 Claims**



1. A method of adaptively selecting a communication strategy for communicating a message in a selective call radio communication system comprising a fixed portion and a portable portion, the method comprising:

in the fixed portion the steps of:

transmitting, by utilizing a predetermined original transmission strategy, an alert signal to the portable portion;

thereafter awaiting an acknowledgment signal comprising a signal quality estimate from the portable portion; and

selecting, in response to receiving the acknowledgment signal, a transmission strategy for sending the message from a plurality of predetermined transmission strategies corresponding to a plurality of ranges of value of the signal quality estimate, wherein the transmission strategy is selected in accordance with the signal quality estimate, and wherein the transmission strategy requires a matching reception strategy in the portable portion for compatibility; and

in the portable portion the steps of:

receiving the alert signal by utilizing a predetermined original reception strategy;

computing the signal quality estimate based at least in part upon the alert signal as received;

sending the acknowledgment signal to the fixed portion after computing the signal quality estimate; and

thereafter selecting the matching reception strategy for receiving the message from a plurality of predetermined reception strategies corresponding to the plurality of ranges of value of the signal quality estimate, wherein the matching reception strategy is selected in accordance with the signal quality estimate sent in the acknowledgment signal without requiring further communication with the fixed portion.

5,546,412

Patent Not Issued For This Number

5,546,413

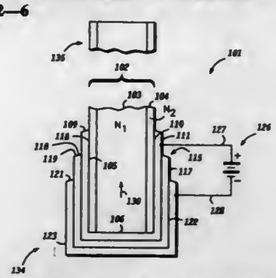
INTEGRATED LIGHT EMITTING DEVICE

Michael S. Lebby, Apache Junction; Christopher K. Y. Chun, Gilbert, and Gary F. Witting, Scottsdale, all of Ariz., assignors to Motorola, Schaumburg, Ill.

Filed Sep. 1, 1994, Ser. No. 299,877

Int. Cl.[6] H01S *3/00;* **G02B** *6/30*

U.S. Cl. 372—6 **24 Claims**



1. An integrated light emitting device and optical fiber comprising:

an optical fiber having an external surface including an end surface and a side surface adjacent to the end surface, the end surface defining an optical surface for light input/output;

a first conductive layer formed on the external surface of the optical fiber including at least the side surface;

a light emitting layer formed on the first conductive layer of the optical fiber, the first conductive layer and light emitting layer being positioned so that a portion of the light emitting layer overlies the optical surface; and

a second conductive layer formed on the light emitting layer.

5,546,414

MODE-LOCKED FIBER RING LASER

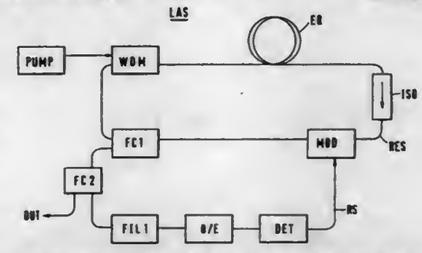
Thomas Pfeiffer, Stuttgart, Germany, assignor to Alcatel N. V., Rijswijk, Netherlands

Filed Jun. 7, 1995, Ser. No. 483,545

Claims priority, application Germany, Jul. 21, 1994, 44 25 809.7

Int. Cl.[6] H01S *3/098*

U.S. Cl. 372—18 **12 Claims**



1. A mode-locked fiber ring laser for generating optical pulses having a repetition frequency, comprising:

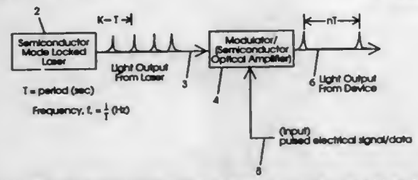
a pump-light source;
a ring resonator connected to the pump-light source, said ring resonator having components connected in series including an active laser medium, an optical modulator, and a coupling device for coupling out signal light;
a feedback loop for receiving a portion of the signal light and for deriving a driving signal from the portion of the signal light via the feedback loop; and
wherein the driving signal is applied via the feedback loop to the optical modulator for modulating the signal light in the ring resonator at a desired pulse repetition frequency to thereby provide stability of the repetition frequency of the optical pulses.

5,546,415

HIGH SPEED PULSE SLICER/DEMULTIPLEXER WITH GAIN FOR USE IN SOLID STATE REGENERATIVE AMPLIFIER SYSTEMS

Peter J. Delfyett, Oviedo; A. Yusim, and S. Gee, both of Orlando, all of Fla., assignors to University of Central Florida, Orlando, Fla.

Filed Jan. 6, 1995, Ser. No. 369,737
Int. Cl.[6] H01S *3/10*
U.S. Cl. 372—25 **18 Claims**



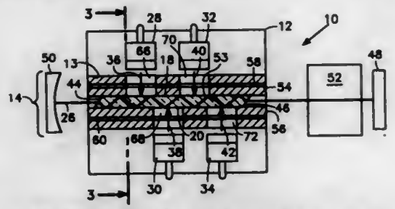
1. A method for generating an adjustable pulse repetition frequency from a fixed repetition rate compact ultrafast mode-locked laser to provide ultrasbort pulses comprising the steps of:
generating a continuous optical pulse train from a mode-locked diode laser source;
providing a variable bias signal to the mode-locked diode laser and to a single semiconductor; and
modulating and amplifying the optical pulse train from the single semiconductor to provide a single optical pulse output signal, wherein varying the rate of the biasing signal varies the repetition rate of the generated optical pulse train.

5,546,416

COOLING SYSTEM AND MOUNTING FOR SLAB LASERS AND OTHER OPTICAL DEVICES

Santann Basu, Rancho Palos Verdes, Calif., assignor to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Apr. 10, 1995, Ser. No. 419,589
Int. Cl.[6] H01S *3/04*
U.S. Cl. 372—34 **12 Claims**



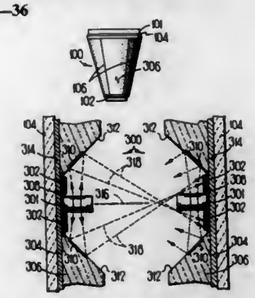
1. A slab laser and cooling system therefor, comprising:
an elongate slab of generally rectangular cross-section and made of a material for serving as a lasing medium, said slab having a pair of opposed end faces from which laser energy is extracted and further generally establishing an optical axis through said slab from one end face to the other,
an optical cavity formed about said slab and in alignment with said axis,
said slab further having a pair of opposed, flat side walls generally in alignment with, parallel to and alongside said optical axis,
a pumping laser positioned alongside said slab and having an output directed into said slab transversely thereof from one side and through one of the side walls of said slab,
the energy of said pumping laser causing both optical excitation and lasing action in said optical cavity and the generation of heat in said slab,
a flat strip of solid material of good thermal conductivity,
means for mounting said strip in spaced relation and adjacent to said side wall of said slab on the side opposite from said pump laser to form a gap with said slab of uniform thickness along the length thereof said slab in the region opposite to that exposed to said laser pump output,
a gas filling said gap,
said gap thickness being sufficiently small that said gas serves as an effective heat transfer medium between said slab and said strip, and
means forming a thermal transfer medium mounted in thermal contact with said strip for removing heat therefrom.

5,546,417

SEMICONDUCTOR ARCHITECTURE AND APPLICATION THEREOF

Vladimir Gorelik, Savannah, Ga., assignor to Integrated Data Systems, Inc. Stephen Krissman, Savannah, Ga.

Continuation of Ser. No. 947,410, Sep. 18, 1992, Pat. No. 5,361,272. This application Oct. 27, 1994, Ser. No. 330,309
Int. Cl.[6] H01S *3/19;3/045*
U.S. Cl. 372—36 **24 Claims**



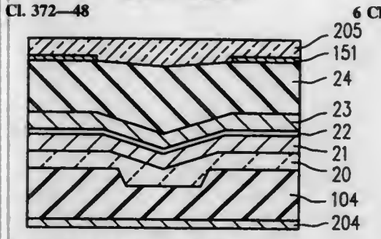
1. A semiconductor element assembly comprising:
(a) a non-planar substrate including a plurality of substrata, wherein said plurality of substrata are interconnected to form a cavity;
(b) a semiconductor material coupled to said non-planar substrate, said semiconductor material including a plurality of integrated circuits interconnected for communication; and
(c) an operation supporting means for supporting the operation of the semiconductor element assembly, wherein said operation supporting means is disposed within said cavity.

5,546,418

A SEMICONDUCTOR LASER, HAVING A FLAT GROOVE FOR SELECTED CRYSTAL PLANES

Akihiko Ishibashi, Sakai; Isao Kidoguchi, Mino; Kiyoshi Ohnaka, Moriguchi, and Masaya Mannou, Hirakati, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 27, 1994, Ser. No. 280,936
Claims priority, application Japan, Jul. 28, 1993, 5-186023; Aug. 23, 1993, 5-207689
Int. Cl.[6] H01S *3/19*
U.S. Cl. 372—48 **6 Claims**



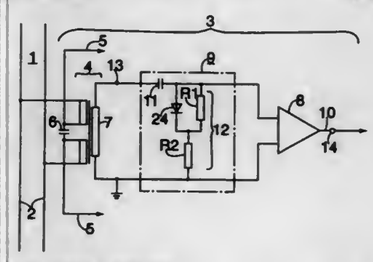
1. A semiconductor laser comprising:
a (100) GaAs substrate having at least one stripe groove formed on an upper face thereof, and
a semiconductor multilayer structure formed on the substrate,
wherein the stripe groove extends along a <1–10> direction and has a flat portion at a bottom thereof, and the semiconductor multilayer structure includes:
an $Al_xGa_{1-x}As$ layer ($0 \leq x \leq 1$) including a portion having a V-shaped top surface which is made of two adjoining (a11) crystal planes. (a>1), the portion being positioned on the stripe groove and having a flat bottom face on the flat portion of the stripe groove;
a pair of AlGaInP cladding layers provided on the $Al_xGa_{1-x}As$ layer ($0 \leq x \leq 1$); and
an active layer sandwiched between the pair of AlGaInP cladding layers.

5,546,419

BUS COUPLER

Hermann Zierhut, Munich, Germany, assignor to Siemens Aktiengesellschuft, Munich, Germany

PCT No. PCT/EP91/02331, § 371 Date Jul. 28, 1993, § 102(e) Date Jul. 28, 1993, PCT Pub. No. WO92/13411, PCT Pub. Date Jun. 8, 1992
PCT Filed Dec. 5, 1991, Ser. No. 94,064
Claims priority, application European Pat. Off., Jan. 29, 1991, 91101162
Int. Cl.[6] H04B *3/00;* **H04L** *25/00*
U.S. Cl. 375—257 **6 Claims**



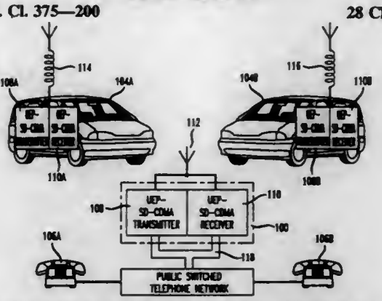
1. A bus coupler comprising:
an input circuit with an input for coupling to a signal-carrying bus; and
a comparator with inputs coupled across an output of the input circuit,
wherein:
the input circuit attenuates a signal at its input as a function of the signal's amplitude so that the attenuation increases as the signal's amplitude increases; and
the input circuit includes:
a resistance branch coupled across the inputs of the comparator, the resistance branch being partially bridged by a valve, the valve conducting for an input signal with an amplitude at least as large as a predetermined thresbold and the valve being blocked for an input signal with an amplitude less than the predetermined threshold, and
a control capacitor coupled between the input of the input circuit and one of the inputs of the comparator.

5,546,420

METHODS OF AND DEVICES FOR ENHANCING COMMUNICATIONS THAT USE SPREAD SPECTRUM TECHNOLOGY BY USING VARIABLE CODE TECHNIQUES

Nambirajan Seshadri, and Carl-Erik W. Sundberg, both of Chatham, N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Apr. 29, 1994, Ser. No. 235,752
Int. Cl.[6] H04B *1/69*
U.S. Cl. 375—200 **28 Claims**



1. In a method of processing a signal, comprising the steps of applying a spread spectrum coding process, the signal being a function of time, the improvement comprising:
(a) encoding a first segment of the signal with a first channel encoder operating at a first rate to generate a first encoded segment having more significant bits using a first error protection process; and
(b) encoding a second segment of the signal with a second channel encoder operating at a second rate to generate a second encoded segment having less significant bits using a second error protection process, the second rate being different from the first rate and the first error protection process providing a greater amount of error protection than the second error protection process.

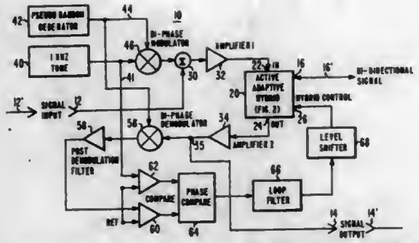
5,546,421

SELF COMPENSATING SPREAD-SPECTRUM HYBRID

Philip C. Basile, Turnersville, N.J.; James E. Thompson, Jr., Lansdale, Pa.; David Kline, Maple Shade, and Gary E. Toner, Collingswood, both of N.J., assignors to Martin Marietta Corp., Camden, N.J.

Filed Aug. 22, 1994, Ser. No. 293,979
Int. Cl.[6] H04B *15/00*
U.S. Cl. 375—200 **5 Claims**

1. A communication station for converting between a single bidirectional transmission path and first and second unidirectional transmission paths, said station comprising:
a controllable hybrid including a bidirectional port coupled to said bidirectional transmission path, a signal input port for receiving signal to be coupled to said bidirectional port, a



signal output port to which signal received at said bidirectional port from said bidirectional transmission path is coupled as received signals, and a control input port for receiving a control signal, for controlling the isolation between signals flowing among said bidirectional, input and output ports;

a source of pilot signals;

spread-spectrum signal generating means for generating spread-spectrum signals;

spread-spectrum modulation means coupled to said source of pilot signals and to said spread-spectrum signal generating means for distributing said pilot signals across a spectrum by means of said spread-spectrum signals, to thereby generate spread-spectrum pilot signals;

summing means coupled to said spread-spectrum modulation means, to said first unidirectional transmission path, and to said signal input port of said hybrid, for summing together transmit signals received from said first unidirectional transmission path with said spread-spectrum pilot signals, and for applying the signals so combined to said signal input port of said hybrid, whereby said spread-spectrum pilot signals are coupled to said bidirectional port of said hybrid, and may appear at said signal output port of said hybrid;

spread-spectrum demodulation means coupled to said spread-spectrum signal generating means and to said signal output port of said hybrid, for decoding, with the aid of said spread-spectrum signal, that component of said spread-spectrum pilot signals which appear at said signal output port of said hybrid, to thereby regenerate said pilot signals; and

phase comparison means coupled to said source of pilot signals and to said spread-spectrum demodulation means for generating said control signal, and for closing a degenerative feedback loop which maximizes the isolation of said hybrid.

5,546,422

METHOD OF TRANSMITTING LOW-POWER FREQUENCY HOPPED SPREAD SPECTRUM DATA

Hanoch Yokev, Ramat-Gan; Haim Harel, Herzelia, and Yehouda Meiman, Rishon Letzian, all of, Israel, assignors to Nexus 1994 Limited, London, United Kingdom

Division of Ser. No. 158,441, Nov. 24, 1993, Pat. No. 5,430,759, which is a continuation-in-part of Ser. No. 961,776, Oct. 15, 1992, Pat. No. 5,335,246, which is a continuation-in-part of Ser. No. 932,610, Aug. 20, 1992, abandoned. This application Dec. 22, 1994, Ser. No. 362,114

Int. Cl.[6] H04B *1/713*

U.S. Cl. 375—202 **2 Claims**

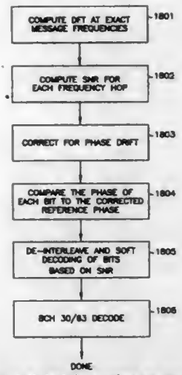
1. A method of transmitting frequency-hopped spread spectrum data from a remote unit of a reverse paging system, comprising the steps of:

receiving periodic synchronization information;

continually monitoring a local repeating pseudo-random code sequence;

synchronizing the local repeating pseudo-random code sequence to the periodic synchronization information and for selecting a frequency hopping sequence based upon the repeating pseudo-random code sequence;

inputting the data to be transmitted as a plurality of bits of digital data;



encoding the bits of digital data using an error correction scheme to produce a larger number of encoded bits of digital data;

dividing the encoded bits of digital data into groups of encoded bits of digital data;

duplicating the groups of encoded bits of digital data to produce redundant groups of encoded bits of digital data;

interleaving the redundant groups of encoded bits of digital data to produce a plurality of interleaved redundant groups of encoded bits of digital data; and

modulating and serially transmitting each of the plurality of interleaved redundant groups of encoded bits of digital data onto a series of hop frequencies of a frequency-hopped carrier in synchrony with the repeating pseudo-random code sequence.

5,546,423

SPREAD SPECTRUM DIGITAL TRANSMISSION SYSTEM USING LOW-FREQUENCY PSEUDORANDOM ENCODING OF THE WANTED INFORMATION AND SPECTRUM SPREADING AND COMPRESSION METHOD USED IN A SYSTEM OF THIS KIND

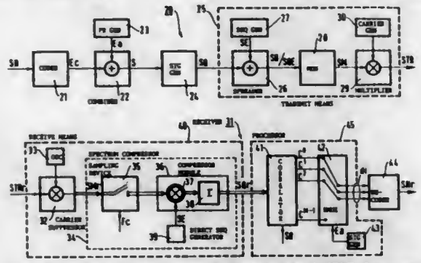
Philippe Sehier, Levallois-Perret, and Dominique Deprey, Courbevole, both of, France, assignors to Alcatel Telspace, Nanterre Cedex, France

Filed Jun. 8, 1994, Ser. No. 257,057

Claims priority, application France, Jun. 9, 1993, 93 06936

Int. Cl.[6] H04B *15/00*

U.S. Cl. 375—206 **8 Claims**



1. A system for transmitting a digital signal (SN) between a transmitter (**20**) and a receiver (**31**), said transmitter **20** including in succession:

coding means (**21**) receiving said digital signal (SN) supplying, for each block of k bits of said digital signal (SN), a coded sample (Ec) taking an integer value in the range (0, N−1), each integer value Ec being representative of the k bits of the block from which it is obtained;

combining means (**22**) for combining said coded samples (Ec) with samples (Ea) from a pseudorandom random phase generator (**23**), said combining means (**22**) supplying an integer (s) in the range (0, M−1) for each combination of a coded sample (Ec) and a random phase sample (Ea) from said pseudorandom random phase generator (**23**), M being greater than N;

signal generator means (**24**) supplying, for each integer (s) in the range (0, M−1), a sequence (SQ) of g integers corresponding to said integer (s), the various sequences (SQ) being orthogonal or quasi-orthogonal; and

transmit means (**15**) for transmitting said sequences (SQ) of g integers to said receiver (**31**), said transmit means (**25**) comprising a phase shift modulator using M states; and

said receiver (**31**) including in succession:

receive means (**40**) recovering said sequences (SQ) of g integers as recovered sequences (SQr);

processing means (**45**) receiving said received sequences (SQr) of g integers from said receive means (**40**) and random phase samples (Ea) from a random phase generator (**43**) synchronized with said pseudorandom random phase generator (**23**) of said transmitter (**20**), said processing means (**45**) demodulating said received sequences (SQr) of g integers and implementing an operation which is the inverse of that implemented by said combining means (**22**) to recover coded samples (di); and

decoding means (**44**) for recovering a digital signal (SNr) from said coded samples (di) supplied by said processing means (**45**).

5,546,424

SPREAD SPECTRUM COMMUNICATION SYSTEM

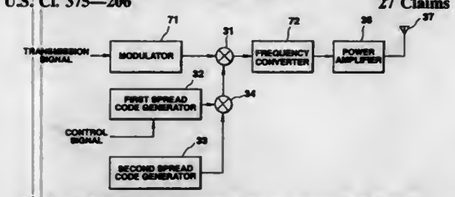
Masayasu Miyake, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Jun. 27, 1994, Ser. No. 266,235

Claims priority, application Japan, Jun. 30, 1993, 5-160741

Int. Cl.[6] H04B *1/707;1/69*

U.S. Cl. 375—206 **27 Claims**



22. A spread spectrum communication system comprising:

a transmission station having:

first spreading code output means for outputting a first spreading code assigned to each user of the communication system, said first spreading code being a personal code different from other spreading codes,

second spreading code output means for outputting a second spreading code assigned according to a service attribute of the communication system,

spreading means for spreading an information signal with at least one of said first and second spreading codes,

means for inhibiting spreading of said information signal based on said first spreading code, whereby said information signal is spread with only said second spreading code transmission means for transmitting said information signal spread by said spreading means; and

a receiving station having:

first despreading means for despreading said information signal transmitted from said transmission station with said second spreading code;

second despreading means for, when said inhibiting means did not inhibit spreading based on said first spreading code, despreading said information signal despread by said first despreading means with said first spreading code, and

demodulation means for demodulating said signals despread by said second despreading means.

5,546,425

TRANSMISSION SYSTEM FOR TRANSMITTING DATA BY A LINK COMPRISING INTERMEDIATE EQUIPMENTS AND AN INTERMEDIATE EQUIPMENT FOR SUCH A SYSTEM

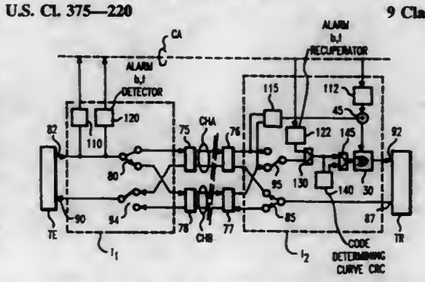
Jean-Yves Auclair, Trappes, and Jean-Marc Bonnet, Vanves, both of, France, assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jan. 30, 1995, Ser. No. 380,535

Claims priority, application France, Feb. 2, 1994, 9401129

Int. Cl.[6] H04B *1/38*

U.S. Cl. 375—220 **9 Claims**



1. A transmission system for transmitting data by a link, comprising:

a first user equipment for transmitting data in the form of blocks and check codes;

a second user equipment for receiving the data and the check codes from the first user equipment, the second user equipment coupled to the first user equipment via the link;

an intermediate equipment coupled between the first and the second user equipments on the link;

a most downstream equipment which is situated between the receiving side of the second user equipment and the intermediate equipment, and wherein the intermediate equipment includes i) a device for checking for errors in the check codes received by the intermediate equipment, ii) a device for providing a detected error signal to the most downstream intermediate equipment, and iii) a device for recalculating the check code from the received check code which includes errors and for providing the recalculated check code to the link, and wherein the most downstream equipment includes a device for receiving the detected error signals from the intermediate equipment and a device for providing the second user equipment with an error signal which is a function of the detected error signals received from the intermediate equipment.

5,546,426

METHOD FOR EXECUTING A CODING AND DECODING PROCESS COMPRISING SUBPROCESSES

Makio Tomiyori, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

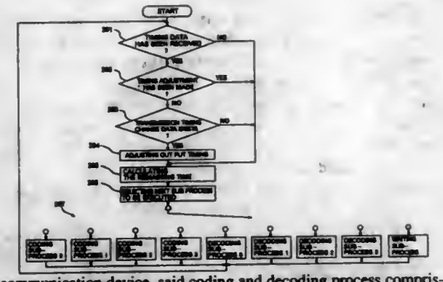
Filed Jun. 21, 1994, Ser. No. 267,554

Claims priority, application Japan, Jun. 21, 1993, 5-149498

Int. Cl.[6] H04B *14/04*

U.S. Cl. 375—242 **10 Claims**

1. A method for executing a coding and decoding process in frames, each frame comprising a plurality of subframes in a digital



communication device, said coding and decoding process comprising a plurality of coding subprocesses and a plurality of decoding subprocesses, each of said coding subprocesses coding input digital data into transmission data for each of said subframes on condition that said coded subprocesses are completed by a first time point for each frame, each of said decoding subprocess decoding reception data into output digital data for each of said subframes on condition that at least one decoding subprocess is completed by a second time point for each said frame, said first time point varying according to transmission timing data received from outside, and the reception timing of said reception data being fixed, the method comprising the steps, in said digital communication device, of:

a) storing, in a first memory in said digital communication device, predetermined processing time values each representing time required to perform one of said coding subprocesses and said decoding subprocesses;

b) executing a first subprocess selected from said coding subprocesses and said decoding subprocesses;

c) checking whether said transmission timing data indicates a change of transmission timing of said transmission data after executing said first subprocess;

d) adjusting said first time point according to said transmission timing data when said transmission timing data indicates said change of said transmission timing;

e) detecting a first time interval from a current time point to said first time point after adjusting said transmission timing, and storing said first time interval;

f) detecting a second time interval from said current time point to said second time point, and storing said second time interval;

g) calculating a total processing time value of a coding subprocess and a decoding subprocess represented by said predetermined processing time values, and storing said total processing time value, said coding subprocess and said decoding subprocess being both allowed to be subsequently executed according to respective predetermined sequences of said coding subprocesses and said decoding subprocesses;

h) comparing said stored total processing time value with a smaller one of said stored first time interval and said stored second time interval;

i) selecting a second subprocess to be subsequently executed from said coding subprocess and said decoding subprocess which are both allowed to be subsequently executed, said coding subprocess being selected when said stored total processing time value is not larger than said smaller one of said stored first time interval and said stored second time interval, and said decoding subprocess being selected when said stored total processing time value is larger than said smaller one of said stored first time interval and said stored second time interval; and

j) executing said second subprocess following said first subprocess.

5,546,427

METHOD AND APPARATUS FOR DIGITAL CODE RESYNCHRONIZATION IN DATA ENCODING/DECODING

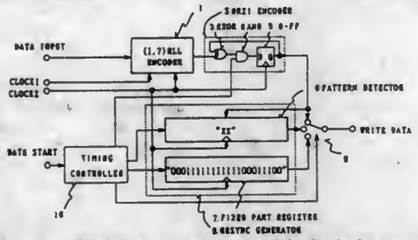
Toshiyuki Shimada, Kadoma, and Takeshi Nakajima, Osaka, both of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 14, 1994, Ser. No. 212,724

Claims priority, application Japan, Mar. 15, 1993, 5-054186

Int. Cl.[6] H04L *25/49*

U.S. Cl. 375—293 **20 Claims**



1. An apparatus for digital code resynchronization in data encoding according to a (d, k) conversion rule, said apparatus comprising:

a first encoding means for modulating digital data in a manner to satisfy the (d, k) conversion rule and providing modulated output data therefrom, and

a RESYNC BYTE adding means for periodically adding RESYNC BYTES to provided output of the first encoding means,

the RESYNC BYTES having:

a RESYNC detection part in which N, the number of "0's" which separates "1's" is N>k, and

a bit synchronization part which satisfies the (d, k) conversion rule and consists of at least a minimum of one "0" and a minimum of one "1".

5,546,428

DIFFERENTIALLY ENCODING QUADRATURE PHASE SHIFT KEYING MODULATION METHOD AND APPARATUS THEREOF

Il-hyun Nam, Seoul, and Kwan-seong Kim, Bucheon-city, both of, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Oct. 6, 1993, Ser. No. 132,262

Claims priority, application Rep. of Korea, Mar. 30, 1993, 93-5124

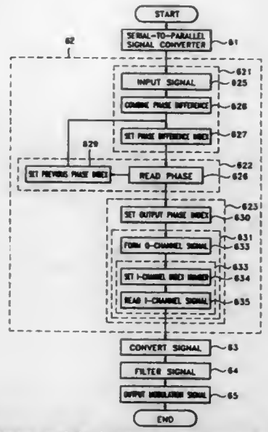
Int. Cl.[6] H04L *27/20;27/10;* **H03K** *7/06;* **H03C** *3/00*

U.S. Cl. 375—308 **12 Claims**

8. A π/4 DQPSK modulation apparatus comprising:

signal converting means for converting serially input binary data stream b_m into two separate binary streams X_k and Y_k;

signal forming means for determining an output phase index value corresponding to an output phase determined by a phase variation index value and a previous phase index value, and in-phase and quadrature channel signals I_k and Q_k from an output value decision table, in which either in-phase or quadrature projection value corresponding to the extended output phase index values are used, by using the output phase index value in storage unit means and control means, wherein the phase variation index value corresponds to the phase variation having of two separate binary streams X_k and Y_k from said signal converting means, the previous phase index value corresponds to the output phase index at the previous pulse time for using the output phase index value decision table, the projection values are sine or cosine value corresponding to the output phase values, the Q-channel based projection values represent sine values corresponding to the



output phases, and the I-channel based projection values represent cosine values corresponding to the output phases;

digital-to-analog converting means for converting said I- and Q-channel signals into analog signals;

baseband filtering means for baseband-filtering said analog-converted signals output from said digital-to-analog converting means;

phase shifting means for shifting the phase of a carrier by 90° (π/2) to provide an in-phase carrier signal and a quadrature carrier signal **90°** out of phase with carrier signal;

first and second multipliers for multiplying said two baseband-pass filtered signals by said carrier and the phase-shifted-by-90° signal, respectively; and

mixing means for combining said multiplied signals output from said multipliers and outputting a combined signal.

5,546,429

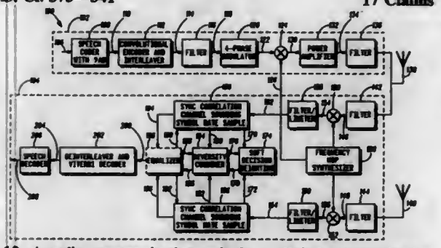
FREQUENCY HOPPING CODE DIVISION MULTIPLE ACCESS RADIO COMMUNICATION UNIT

Gregory M. Chiasson, Barrington; Phillip D. Rasky, Buffalo Grove, and Kevin L. Baum, Hoffman Estates, all of Ill., assignors to Motorola, Inc., Schamburg, Ill.

Filed Nov. 9, 1992, Ser. No. 973,352

Int. Cl.[6] H04L *27/06*

U.S. Cl. 375—341 **17 Claims**



13. A radio communication unit for a digital communication system, comprising:

(a) antenna means, comprising a first and a second antenna, for receiving a signal from over a radio communication channel;

(b) demodulating means, coupled to the antenna means, for generating a first and a second group of data samples of the received signal at an intermediate frequency corresponding to the signal received by the first and the second antenna, respectively, through the use of a radio communication channel selecting signal generated by a frequency hop synthesizer;

(c) hard limiting means, coupled to the demodulating means, for removing the magnitude of each sample in the first and the second group of data samples;

(d) frequency translation means, coupled to the limiting means, for translating a subset of the hard-limited data samples of the first and the second group to baseband frequencies by decimating the first and second group of samples in the time domain;

(e) correlation means, coupled to the frequency translation means, for correlating the subset of hard-limited data samples of the first and the second group to a known predetermined synchronization sequence to independently determine an optimal sampling point for the first and second group of data samples to generate symbol rate data samples of the first and second group and to determine channel sounding information;

(f) weighting coefficient generation means, coupled to the correlation means, for generating weighting coefficients of the symbol rate data samples of the first and the second group, the weighting coefficients being generated as a function of the following algorithm:

$$\lambda = \frac{p_o(k)}{\sigma_o^2(k)} = \frac{R_{rx}}{c\sigma_r^2(k) - R_{rx}^2}$$

where,

$p_o(k)$=a channel gain estimate,

$\sigma_n^2(k)$=a channel noise variance,

R_{rx}=a cross-correlation between the received data symbols and the known predetermined synchronization sequence wherein the cross-correlation is a part of the determined channel sounding information,

$\sigma_r^2(k)$=a received signal variance, and

c=an expectation of the square of the transmitted data bit;

(g) diversity combining means, coupled to the correlation means and the weighting coefficient generation means, for scaling the symbol rate data samples of the first and the second group and maximum ratio combining the first and the second scaled symbol rate data samples into a stream of combined data samples; and

(h) error control means, coupled to the diversity combining means, for deinterleaving and maximum-likelihood decoding the stream of combined data samples into estimated information samples.

5,546,430

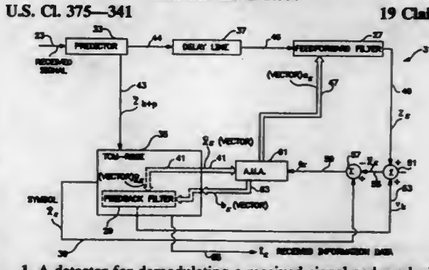
DETECTOR FOR DEMODULATING A RECEIVED SIGNAL AND PRODUCING AN INFORMATION DATA SIGNAL WITH REDUCED INTERSYMBOL INTERFERENCE

Ke-Qiang Liao, Hull, and Yonghai Gu, Nepean, both of, Canada, assignors to Université du Québecâ Hull, Hull, Canada

Filed May 1, 1995, Ser. No. 432,920

Int. Cl.[6] H04L *27/06*

U.S. Cl. 375—341 **19 Claims**



1. A detector for demodulating a received signal and producing an information data signal with reduced intersymbol interference, the received signal having been previously encoded by a trellis coded modulator, the detector comprising:

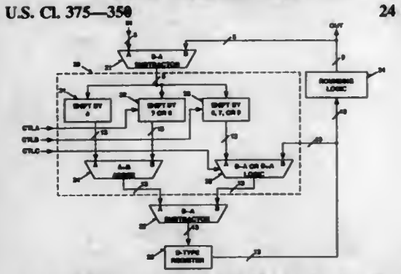
a predictor means for producing a predicted signal and a first delayed signal from the received signal;
a delay line for delaying the first delayed signal and generating a second delayed signal accordingly;
a feedforward filter means for filtering the second delayed signal with respect to an updated vector signal a, and generating a filtered signal z accordingly;
an adder for adding the filtered signal z to a filtered signal v and generating a resulting filtered signal;
a subtracting means for subtracting the resulting filtered signal from an estimated symbol signal to obtain an error signal;
updating means for calculating the updated vector signal a and an updated vector signal b with respect to the error signal and an estimated vector signal x; and
a trellis coded modulation estimating means corresponding to the trellis coded modulator, for generating the estimated symbol signal and the estimated vector signal x from the predicted signal, and for demodulating the predicted signal into said information data signal, the trellis coded modulator estimating means comprising a feedback filter means for filtering the estimated vector signal x with respect to the updated vector signal b and therefrom generating the filtered signal v, the feedback filter means being adjusted with respect to the feedforward filter means to form a decision-feedback equalizer.

5,546,431

PROGRAMMABLE DIGITAL FILTER WITH SUBSTANTIALLY EQUAL BANDWIDTH INCREMENTS

Mei Bazes, Haifa, Israel, assignor to Intel Corporation, Santa Clara, Calif.

Filed Apr. 11, 1994, Ser. No. 225,902
Int. Cl.[6] H04B *1/10;* **G06F** *17/17*
U.S. Cl. 375—350 **24 Claims**



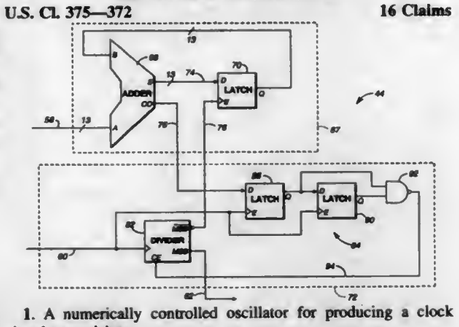
1. A shifter circuit of a digital filter circuit for providing an adjustable correction coefficient (β) for the digital filter, comprising:
(A) a first shifter for providing a first shift amount (S_1) to an input signal;
(B) a second shifter for providing a second shift amount (S_2) to the input signal;
(C) a third shifter for providing a third shift amount (S_3) to the input signal;
(D) logic circuitry coupled to the first, second and third shifters for combining outputs of the first, second and third shifters to generate an output signal of the shifter circuit with the adjustable correction coefficient (β) such that digital filter has an adjustable bandwidth (BW) that is adjusted at a fine and substantially equal bandwidth increment, wherein the correction coefficient (β) is derived from the first shift amount (S_1), second shift amount (S_2), and third shift amount (S_3), wherein the logic circuitry comprises:
(1) an adder under control of the for adding the output of the first and second shifters;
(2) logic for selectively adding the output signal of the third shifter to the output of the shifter circuit or subtracting the output signal of the third shifter from the output of the shifter under control of the first control signal; and
(3) a subtractor for subtracting the output of the adder from the output of the logic to generate the output signal of the shifter circuit.

5,546,432

METHOD AND APPARATUS FOR ATTENUATING JITTER IN A DIGITAL TRANSMISSION LINE

Michael R. Waters, Pleasanton, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Division of Ser. No. 113,574, Aug. 27, 1993. This application Jun. 7, 1995, Ser. No. 485,094
Int. Cl.[6] H04L *7/00;25/36;25/40*
U.S. Cl. 375—372 **16 Claims**



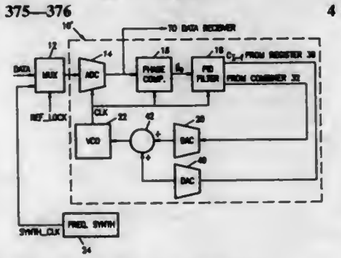
1. A numerically controlled oscillator for producing a clock signal comprising:
a low frequency portion receptive to a digital input representing the amount of jitter on a digital transmission line and operative to output a low frequency digital output that is related to said digital input, said low frequency portion including an adder operative to output a sum of the value of said digital input and a previous sum of said adder at a rate of an output clock; and
a high frequency portion coupled to said low frequency portion and receptive to said low frequency digital output, said high frequency portion being further receptive to a high frequency clock and operative to produce said output clock which varies from a desired clock frequency by an amount determined by said digital input to said low frequency portion, said output clock having a lower frequency than said high frequency clock.

5,546,433

DIGITAL PHASE LOCK LOOP HAVING FREQUENCY OFFSET CANCELLATION CIRCUITRY

Toan V. Tran, San Jose, and Richard Henderson, Sunnyvale, both of Calif., assignors to National Semiconductor Corporation, Del.

Filed Mar. 21, 1995, Ser. No. 408,027
Int. Cl.[6] H03D *3/24*
U.S. Cl. 375—376 **4 Claims**



I. A phase lock loop circuit, comprising:

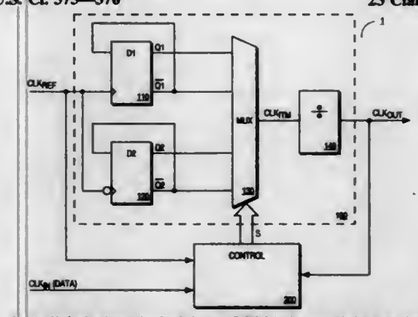
an analog-to-digital converter (ADC) that receives analog input signals and responds to a periodic clock signal by providing corresponding digital output signals;
a phase comparator coupled to receive the ADC digital output signals and which provides a phase error signal which is representative of a phase error in the digital output signals;
a filter, the filter including an integrator path that accumulates the value of the phase error signal into a first register to generate a primary frequency error value;
a second register for holding a secondary frequency error value;
a primary digital-to-analog converter (DAC) that converts a primary filter output value, which includes the primary frequency error value, to a corresponding primary analog output signal;
a secondary DAC, coupled to receive the secondary frequency error value from the secondary register and that converts the secondary frequency error value to a corresponding secondary analog output signal;
means for combining the primary analog output signal and the secondary analog output signal to generate an oscillator control signal;
an oscillator that provides the clock signal to the ADC, wherein the frequency of the clock signal is controlled by the oscillator control signal and
means for programming the secondary frequency error value to have a value equal to the primary frequency error value in the filter first register.

5,546,434

DUAL EDGE ADJUSTING DIGITAL PHASE-LOCKED LOOP HAVING ONE-HALF REFERENCE CLOCK JITTER

Stavros Kalafatis, Hillsboro, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed May 16, 1995, Ser. No. 441,933
Int. Cl.[6] H03D *3/24*
U.S. Cl. 375—376 **23 Claims**



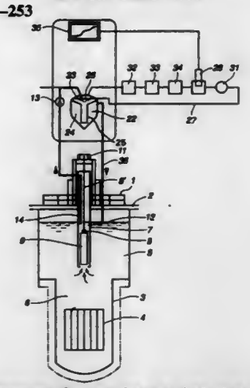
1. A digital phase-locked loop (DPLL) for receiving an input clock having a plurality of rising edges and falling edges and a frequency, the DPLL for generating an output clock having a frequency and a phase which are locked to the input clock, the DPLL comprising:
a generator circuit for receiving a reference clock and for generating the output clock, wherein the phase of the output clock is one of a plurality of selectable phases such that the difference in phases between the output clock and the input clock is limited to one-half of a period of the reference clock when the DPLL is in a locked state; and
a control circuit for receiving the input clock, the reference clock, and the output clock and for providing a selection input to the generator circuit such that the phase of the output clock is selectable at each rising edge and at each falling edge of the input clock.

5,546,435

FISSION PRODUCT LEAK DETECTION IN A PRESSURIZED-WATER REACTOR

Per Collin; Roland Deleryd, both of Västerås; Roland Ivars, Ransta; Fredrik Lundqvist, Västerås, all of, Sweden, and Norman R. Stolzenberg, West Suffield, Conn., assignors to ABB Atom AB, Västerås, Sweden

Continuation-in-part of Ser. No. 977,032, Nov. 16, 1992, Pat. No. 5,383,226. This application Nov. 16, 1994, Ser. No. 341,153
Int. Cl.[6] G21C *17/00*
U.S. Cl. 376—253 **6 Claims**



1. An arrangement for carrying out leak detection of a fuel assembly for a pressurized-water nuclear reactor, comprising:
a substantially vertical hollow mast means, in which said fuel assembly to be examined is housable;
means for drawing said fuel assembly to the inside of said mast means from its lower side;
means for lifting at least the part of said mast means housing said fuel assembly to a position in which said fuel assembly is provided near but below the water surface of water inside said nuclear reactor;
means for sucking water from a position inside said mast means above said fuel assembly;
gas separating means for separating gases present in said water sucked from the inside of said mast means; and
gas analyzing means for analyzing the amount of gaseous fission products in said separated gas.

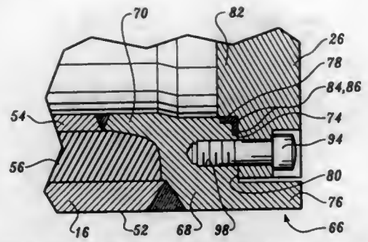
5,546,436

TRANSPORTATION AND STORAGE CASK FOR SPENT NUCLEAR FUELS

Kyle B. Jones, San Jose; Robert A. Lehnert, Milpitas; Ian D. McInnes, San Jose; Robert D. Quinn, Morgan Hill; Steven E. Sisley, Fremont, all of Calif., and Charles J. Temus, Puyallup, Wash., assignors to Pacific Nuclear Systems, Inc., Federal Way, Wash.

Division of Ser. No. 131,973, Oct. 8, 1993, Pat. No. 5,406,600. This application Apr. 10, 1995, Ser. No. 419,120
Int. Cl.[6] G21F *5/008*
U.S. Cl. 376—272 **4 Claims**

1. A container for containing and transporting spent nuclear fuel, comprising:
a tubular inner shell defining a cavity for receiving spent nuclear fuel and first and second ends;
a tubular outer shell having first and second ends, the outer shell being assembled coaxially over the inner shell to define an annular space therebetween;
a radiation absorbing material filling the annular space;
an annular member defining a central aperture and a first annular sealing surface, wherein the first annular sealing surface defined by the annular member comprises a hardened metal inlay, the annular member being secured proximate its perim-



eter to the first ends of the inner shell and the outer shell to create an airtight joint with at least one of the inner shell and the outer shell;

a first closure plate releasably securable to the annular member and defining a second annular sealing surface corresponding to the first annular sealing surface defined by the annular member;

a seal positionable between the second annular sealing surface of the first closure plate and the first annular sealing surface of the annular member to create an airtight seal between the first closure plate and the annular member; and

a second closure plate secured proximate its perimeter to the second ends of the inner shell and the outer shell to create airtight joints with both the inner shell and the outer shell.

5,546,437

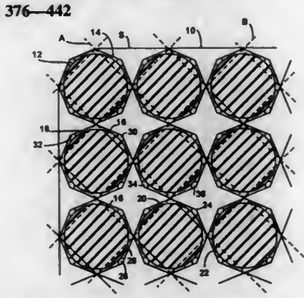
SPACER FOR NUCLEAR FUEL RODS

Bruce Matzner, San Jose, Calif.; Harold B. King, Wrightsville Beach, and David G. Smith, Leland, both of N.C., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 11, 1995, Ser. No. 371,389

Int. Cl.[6] G21C *3/34*

U.S. Cl. 376—442 **21 Claims**



1. A spacer for retaining nuclear fuel rods in laterally spaced relation relative to one another comprising:

a generally rectilinear peripherally extending spacer band;

first and second sets of spacer strips extending in first and second generally mutually perpendicular diagonal directions, respectively, relative to said spacer band;

the strips of said first and second sets thereof each having linearly extending sections with adjacent sections angularly related to one another and meeting at apices;

said sections of each strip alternately intersecting a diagonal line across said spacer with the apices alternately located on opposite sides of the diagonal line;

alternate apices of each strip having springs projecting to one side thereof for engaging fuel rods and apices of each strip between said alternate apices having stops projecting to an opposite side of said strip for engaging fuel rods;

the sections of the first and second sets of strips having slots intermediate adjacent apices thereof and opening through opposite edges thereof, respectively;

first and second sets of strips being intermeshed with one another with the slots of the first set of strips receiving portions of the sections of the second set of strips and the slots of the second set of strips receiving portions of the sections of said first set of strips.

5,546,438

BCD LOW NOISE HIGH SENSITIVITY CHARGE DETECTION AMPLIFIER FOR HIGH PERFORMANCE IMAGE SENSORS

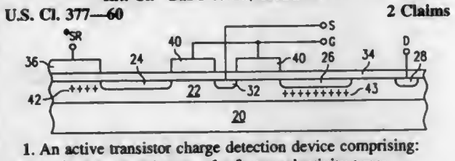
Jaroslav Hynecek, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 87,645, Jul. 2, 1993, Pat. No. 5,369,047.

This application Sep. 1, 1994, Ser. No. 299,686

Int. Cl.[6] G11C *19/28;* **H01L** *29/765*

U.S. Cl. 377—60 **2 Claims**



1. An active transistor charge detection device comprising:

a semiconductor substrate of a first conductivity type;

a semiconductor layer of a second conductivity type in the substrate;

virtual phase regions of the first conductivity type formed in the semiconductor layer, the virtual phase regions forming virtual phase potential areas for carriers of the second conductivity type;

a transistor source region of a first conductivity type formed in the semiconductor layer and spaced apart from the virtual phase regions;

a charge drain region of a second conductivity type formed in the semiconductor layer and spaced apart from the virtual phase regions;

an insulating layer on the semiconductor layer;

a transistor gate electrode formed on the insulating layer, the transistor gate electrode is located above a portion of the semiconductor layer that surrounds the transistor source region and is between virtual phase regions, the transistor gate electrode forming a transistor potential well for carriers of the second conductivity type in response to a voltage;

a transfer gate electrode formed on the insulating layer and separated from the transistor gate electrode by a virtual phase region, the transistor gate electrode located between the transfer gate electrode and the charge drain, the transfer gate electrode forming a transfer potential area for carriers of the second conductivity type in response to a voltage, wherein charge is transferred between potential areas by changing the voltages on the transfer gate electrode and the transistor gate electrode.

5,546,439

SYSTEMS, METHODS AND APPARATUS FOR INCREMENTALLY RECONSTRUCTING OVERLAPPED IMAGES IN A CT SYSTEM IMPLEMENTING A HELICAL SCAN

Jiang Hsieh, Waukesha, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Nov. 2, 1995, Ser. No. 552,264

Int. Cl.[6] A61B *6/03*

U.S. Cl. 378—15 **18 Claims**

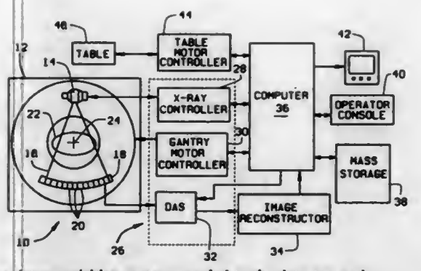
1. A system for producing incremental tomographic images of an object from projection data acquired in a helical scan, said tomographic image system configured to:

(a) create base image data arrays from the projection data; and

(b) generate overlapped image data, utilizing an interpolation algorithm, from the data in the base image data arrays.

14. A computed tomography apparatus, comprising:

a gantry having an x-ray source and a detector;



a data acquisition system coupled to the detector; and

a computer coupled to the data acquisition system, the computer configured to identify, for an object of interest, locations of base images, create base image data arrays for the identified locations, and generate overlapped images, utilizing an interpolation algorithm, from data stored in the base image data arrays.

5,546,440

X-RAY DIAGNOSTIC APPARATUS

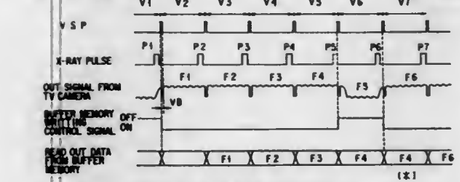
Yoshinori Nakatani; Toyomitsu Kanebako, both of Tochigi-ken; Kunio Aoki, Yaita, and Hiroshi Asahina, Tochigi-ken, all of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 2, 1994, Ser. No. 299,969

Claims priority, application Japan, Sep. 2, 1993, 5-218501

Int. Cl.[6] A61B *6/00*

U.S. Cl. 378—98.2 **24 Claims**



1. An X-ray diagnostic apparatus comprising:

X-ray radiating means for repeatedly radiating pulse-like X-rays during a fluoroscopic imaging operation;

imaging means for repeatedly imaging X-rays passing through an object to be examined at a predetermined frame period and successively outputting image signals representing X-ray images obtained by the X-rays repeatedly radiated in each frame period; and

display means for displaying X-ray fluoroscopic images on the basis of the image signals successively outputted by said imaging means; and

control means for controlling said X-ray radiating means such that said X-ray radiating means radiates no X-rays in a specific frame period during the fluoroscopic imaging operation.

5,546,441

X-RAY SYSTEM

Peter Stege, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

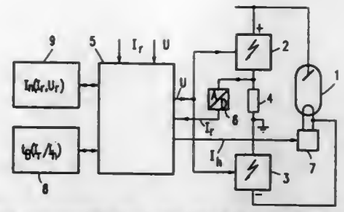
Filed May 11, 1995, Ser. No. 439,325

Claims priority, application Germany, May 11, 1994, 44 16 556.0

Int. Cl.[6] H05G *1/34*

U.S. Cl. 378—110 **2 Claims**

1. An X-ray system, comprising an X-ray tube and an X-ray generator for operating the X-ray tube which comprises a cathode which can be heated by a filament current, comprising means which are operative in an exposure mode so as to boost the filament current to a boost value, and means which are also operative in the exposure mode so as to decrease the filament current and to switch on tube voltage, characterized in that the X-ray generator has a special mode in which the filament current is boosted to the boost value while the tube voltage is switched on, means are provided for measuring the tube current flowing in the special mode, means a first memory is provided for storing the temporal variation of the measured tube current, or a value derived therefrom, and means are provided for deriving the boost time from the temporal variation stored in the first memory.



5,546,442

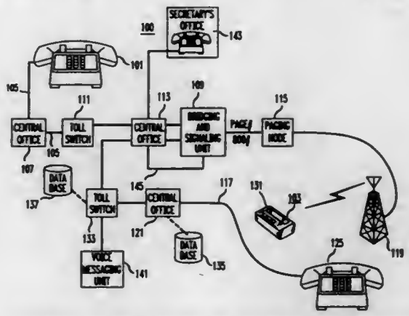
METHOD AND APPARATUS FOR USE IN COMPLETING TELEPHONE CALLS

Mark J. Foladare, Kendall Park; Shelley B. Goldman, East Brunswick; Nancy Murray, Morris Township; David P. Silverman, Somerville; Yao-Chung Tsao, Middletown, and Roy P. Weber, Bridgewater, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Jun. 23, 1994, Ser. No. 264,651

Int. Cl.[6] H04Q *7/06;* **H04M** *3/48;3/54*

U.S. Cl. 377—57 **4 Claims**



2. Apparatus for use in completing telephone calls comprising:

means for receiving a telephone call from a caller to a telephone number of a called party;

means responsive to receipt of said telephone call from said caller for forwarding to a paging node a pager code stored for said called party and an indication of a selected trunk;

means for receiving a telephone call from said called party at said selected trunk, said telephone call from said caller being originated in response to receipt of a page from said paging node by a pager of said called party;

means for causing said telephone call from said caller to be connected to a predetermined alternate destination when a determination is made that said telephone call from said called party is not received at said selected trunk; and

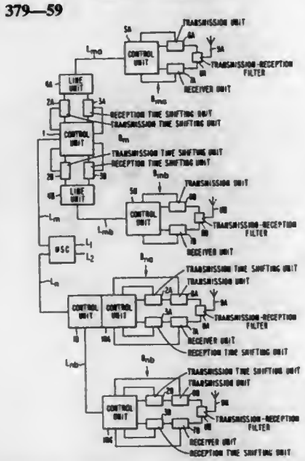
means responsive to receipt of said telephone call from said called party for (i) causing said telephone call from said caller to be disconnected from said alternate destination substantially contemporaneous with receipt of said telephone call from said called party and (ii) for connecting said telephone call from said caller with said telephone call from said called party substantially contemporaneous with receipt of said telephone call from said called party.

5,546,443

COMMUNICATION MANAGEMENT TECHNIQUE FOR A RADIOTELEPHONE SYSTEM INCLUDING MICROCELLS

Alex K. Raith, Kista, Sweden, assignor to Ericsson GE Mobile Communications, Inc., Research Triangle Park, N.C.

Filed Oct. 26, 1992, Ser. No. 966,461
Int. Cl.[6] H04Q *7/36*
U.S. Cl. 379—59 **2 Claims**



2. A system for establishing communications in a multi-layered radiotelephone system having a plurality of microcells and an umbrella cell and a mobile switching center, said system comprising:

means for receiving a call access request on a first control channel assigned to an umbrella cell, wherein the first control channel has at least one predetermined radio frequency;

means for receiving said call access request on a second control channel assigned to a microcell wherein said second control channel has the at least one predetermined radio frequency; and

means, included in the mobile switching center, for assigning a call associated with said call access request to one of said microcell and said umbrella cell;

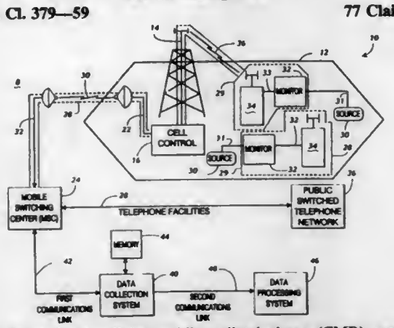
wherein each microcell has a respective additional control channel, at least two of said additional control channels having at least one common radio frequency, and control information is transmitted simultaneously on said additional control channels having the at least one common radio frequency.

5,546,444

METHODS AND APPARATUS FOR COMMUNICATING DATA VIA A CELLULAR NETWORK CONTROL CHANNEL

Peter O. Roach, Jr., Atlanta; Edward I. Comer, Marietta; Charles M. Link, II, Roswell, and Maurice S. Laster, Atlanta, all of Ga., assignors to BellSouth Corporation, Atlanta, Ga.

Filed Mar. 11, 1994, Ser. No. 212,039
Int. Cl.[6] H04Q *7/34*
U.S. Cl. 379—59 **77 Claims**



1. In or for a cellular mobile radiotelephone (CMR) system having an array of cells for communicating with cellular radiotelephones within coverage areas of said array of cells, a data message system for communicating selected data collected from a plurality of remote data sources, said data message system comprising:

a plurality of data reporting means, each of said data reporting means operative for monitoring a corresponding one of said remote data sources to obtain said selected data and for transmitting a data message containing said selected data, said data message formatted as an identification signal transmitted by one of said cellular radiotelephones when said cellular radiotelephone identifies itself to said CMR system;

at least one mobile switching center (MSC) for receiving said data message via a cellular network control channel from each of said data reporting means operating within said coverage areas of said array of cells; and

means for collecting said selected data in response to receiving said data message from said MSC via a first communications link.

5,546,445

CELLULAR TELEPHONE SYSTEM THAT USES POSITION OF A MOBILE UNIT TO MAKE CALL MANAGEMENT DECISIONS

Everett Dennison, 200 Glenview; Edwin L. Nass, P.O. Box 92, 231 W. Main St., both of Canfield, Ohio 44406; Timothy J. Duffy, 102 Elliot Rd., West Middlesex, Pa. 16159; Gregory T. Pauley, 99 Hilltop Blvd., Canfield, Ohio 44406; Scott L. Jones, 93 White Ave., Sharon, Pa. 16146, and Deborah J. Shale, 3020 Thunderbird Dr., Poland, Ohio 44514

Continuation of Ser. No. 402,976, Mar. 13, 1995, which is a continuation-in-part of Ser. No. 57,833, May 7, 1993, abandoned, which is a continuation-in-part of Ser. No. 813,494, Dec. 26, 1991, Pat. No. 5,235,633. This application Oct. 23, 1995, Ser. No. 555,884
Int. Cl.[6] H04Q *7/38*
U.S. Cl. 379—60 **20 Claims**

17. A cellular communications set up comprising:

A) a cellular communications system;

B) a system boundary defining an authorized area for said cellular communications system;

C) at least one intra-system cell site that provides service within said authorized area;

D) an MTSO for said cellular communications system;



E) a neighboring cellular carrier that provides service outside of said authorized area;

F) at least one inter-system cell site that provides service outside of said authorized area, said at least one inter-system cell site being associated with said neighboring cellular carrier;

G) said cellular communications system and said neighboring cellular carrier being subject to inter-system interference;

H) locating means for determining the exact geographic location of a mobile unit, said locating means including means using a satellite communication system for establishing an exact geographic location of the mobile unit and for emitting a position signal of said exact geographic location;

I) means for receiving said position signal and using that position signal to establish the exact geographic location of the mobile unit visa vis said at least one intra-system cell site in said cellular communications system; and

J) data storage and comparison means in said MTSO responsive to said means for receiving the position signal and storing cell site geographic data for each intra-system cell site in said cellular communications system and effecting a comparison between said position signal and the cell site geographic data and selecting a chosen cell site that services the geographic location of the mobile unit for use by the mobile unit based on such comparison and accepting the call from said mobile unit if the chosen cell site provides service within said authorized area for reducing provision of cellular service by said cellular communications system outside of said authorized area and reducing interference between said cellular communications system and said neighboring cellular carrier.

5,546,446

PUBLIC TELEPHONE SYSTEM USING A PREPAID CARD TO ENABLE COMMUNICATION

Kelichi Tsunokawa, and Nobuo Suzuki, both of Tokyo, Japan, assignors to Tamura Electric Works, Ltd., Tokyo, Japan

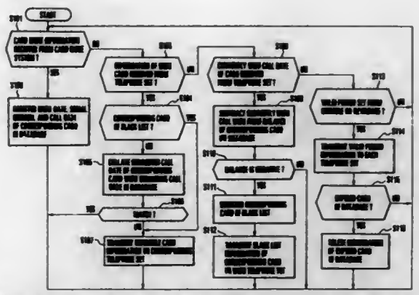
Filed Oct. 20, 1994, Ser. No. 326,280
Claims priority, application Japan, Oct. 21, 1993, 5-285563
Int. Cl.[6] H04M *15/00;17/00*
U.S. Cl. 379—114 **9 Claims**

1. A public telephone system comprising:

a plurality of public telephone sets for allowing speech communication upon insertion of a prepaid card, said prepaid card storing card information including an indentification number, value information, and an issue date; and

a center apparatus for determining whether speech communication is possible upon reception of information from said public telephone sets through a telephone line before start of speech communication by said prepaid card,

each of said public telephone sets comprising reading means for reading the card information recorded in said prepaid card upon insertion of said prepaid card, and



first transmitting means for transmitting the card information read by said reading means to said center apparatus through said telephone line, and

said center apparatus comprising

a database for storing the card information of said prepaid card,

collating means for collating the card information stored in said database with the card information from said first transmitting means upon insertion of said prepaid card into each public telephone set and allowing speech communication using said prepaid card on the basis of a collation result,

setting means for setting data for designating a valid period of said prepaid card from the issue date, and

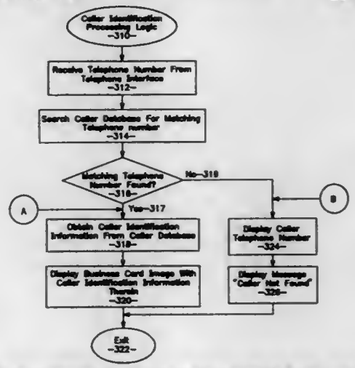
deleting means for deleting the card information related to said prepaid card which is expired in said database based on the date for designating the valid period of said card set by said setting means.

5,546,447

DISPLAYING CALLER IDENTIFICATION INFORMATION IN A COMPUTER SYSTEM

Rune A. Skarbo, Hillsboro, and John D. Elliott, Aloha, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jun. 29, 1994, Ser. No. 268,265
Int. Cl.[6] H04M *15/06;1/56*
U.S. Cl. 379—142 **28 Claims**



1. In a computer system, a caller identification system for displaying caller information comprising:

a telephone interface for receiving an incoming call from a caller, said telephone interface further receiving information indicating a caller telephone number corresponding to said caller;

means for searching a caller information database for caller information corresponding to said caller telephone number, said caller information including at least said caller telephone number and a caller name;

means for retrieving said caller information;

means for automatically displaying said caller information without user intervention before the incoming call is accepted, declined, or forwarded; and

means for directing said incoming call to allow said call to be accepted, declined, or forwarded by a user independently of a telephone hand set.

5,546,448

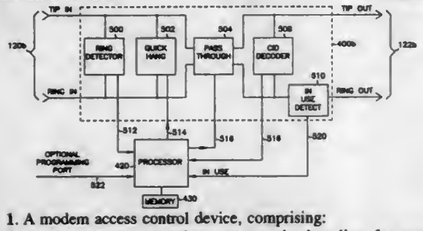
APPARATUS AND METHOD FOR A CALLER ID MODEM INTERFACE

Ty J. Caswell, Big Lake; Jeffrey P. Davis, Ham Lake; Gregory R. Johnson, New Brighton; Timothy J. Reinarts, Ramsey, and Ting Sun, Minneapolis, all of Minn., assignors to Multi-Tech Systems, Inc., Mounds View, Minn.

Filed Nov. 10, 1994, Ser. No. 337,292

Int. Cl.[6] H04M *1/56;15/00;11/00*

U.S. Cl. 379—142 **17 Claims**



1. A modem access control device, comprising:

first port means, connected to a communications line, for transceiving information between the access control device and the communications line;

processing means for processing access information;

data storage means, connected to the processing means, for access information storage;

caller identification decoding means, connected to the first port means and the processing means, for decoding caller identification information;

second port means, connected to a communications device and to the first port means, for transceiving information between the access control device and the communications device; and

quick hang up means, connected to the first port means and the processing means, for disconnecting an unwanted caller before communicating with the communications device upon command from the processing means.

5,546,449

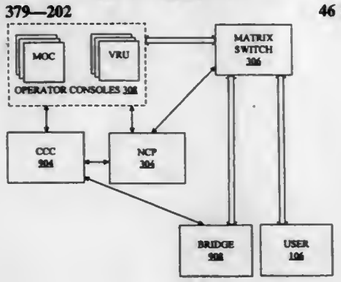
SYSTEM AND METHOD FOR CALL CONFERENCING

Steven J. Hogan; Kristi T. Feltz; Douglas R. Murdock, and Keith E. Smith, all of Cedar Rapids, Iowa, assignors to LinkUSA Corporation, Cedar Rapids, Iowa

Continuation of Ser. No. 257,622, Jun. 8, 1994, Pat. No. 5,483,587. This application Jun. 7, 1995, Ser. No. 487,978

Int. Cl.[6] H04M *3/56*

U.S. Cl. 379—202 **46 Claims**



14. A system for connecting a plurality of prospective participants in a conference call, comprising:

a bridge having a plurality of ports; and

a conference call controller coupled to said bridge, said conference call controller comprising:

means for allocating resources of said bridge to the conference call;

means for originating a call to a prospective conference participant, wherein an operator console is connected to a first port on said bridge and said prospective conference participant is connected to a second port on said bridge, said first and second ports being connected; and

means for connecting said prospective conference participant to an existing conference call on said bridge, if said prospective conference participant informs an operator at said operator console that said prospective conference participant desires to participate in said conference call.

5,546,450

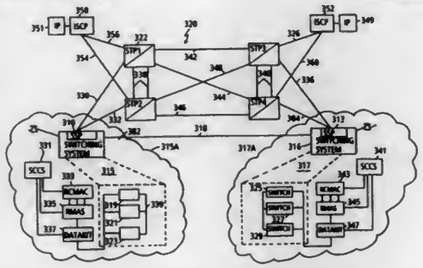
SYSTEM AND METHOD FOR PROVIDING SWITCH TRANSLATIONS

William L. Suthard, Huntingtown, Md., and Robert D. Farris, Sterling, Va., assignors to Bell Atlantic Network Services, Inc., Arlington, Va.

Filed Jun. 21, 1995, Ser. No. 493,076

Int. Cl.[6] H04M *3/26;7/06*

U.S. Cl. 379—207 **30 Claims**



1. In a switched communications network comprising:

a first central office switching system connected to subscriber lines including at least one service switching point for selectively providing switched communications between subscriber lines;

a second central office switching system connected to subscriber lines including at least one service switching point for selectively providing switched communications between subscriber lines;

a network controller arranged separately from said first and second central office switching systems and being connected to at least the service switching points connected to said central office switching systems through at least one service transfer point arranged to convey control data to effect communications, said network controller storing pre-programmed call processing data associated with subscribers who are associated with the subscriber lines connected to said first and second central office switching systems, a method comprising;

storing in said network controller information identifying recent change signal storages and controllers;

generating recent change signals and directing said signals to a recent change storage and controller;

upon the generation of said recent change signals encountering faulty processing of said recent change signals by said recent change storage and controller to which said signals were directed, sending an inquiry responsive to the faulty processing of said recent change signals to said network controller;

said network controller responding to said inquiry by causing said recent change signals to be forwarded to another recent change storage and controller identified by said network controller; and

executing said recent change signals.

5,546,451

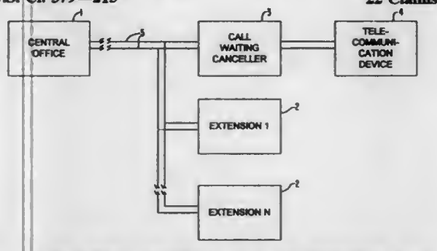
CALL WAITING CANCELLATION DEVICE

Anthony P. Shen, Ontario, Canada, assignor to Aastra Technologies Inc., Canada

Filed May 31, 1995, Ser. No. 455,517

Int. Cl.[6] H04N *1/32;* **H04M** *3/42*

U.S. Cl. 379—215 **22 Claims**



1. A call waiting cancellation device for suppressing a call waiting signal during an incoming call comprising:

a telephone line connected to at least one telecommunications device;

switching means selectively connecting said at least one telecommunications device with said telephone line, said switching means being responsive to said incoming call;

sensing means operatively connected to said at least one telecommunications device for detecting one of an off-hook condition and an on-hook condition of said at least one telecommunications device generated in response to the said incoming call, said sensing means generating one of an off-hook signal and an on-hook signal based on the detected on-hook condition or off-hook condition of said at least one telecommunications device;

dialer signal generation means operatively connected to said telephone line for producing and transmitting suppression signals corresponding to a predetermined code which suppresses said call waiting signal during said incoming call; and

controller means coupled to said switching means, said sensing means and said dialer signal generation means, wherein said controller means initiates a call waiting suppression operation upon receiving said off-hook signal from said sensing means, said call waiting suppression operation including said switching means disconnecting said at least one telecommunications device from said telephone line, and said controller means providing control signal to said dialer signal generation means instructing said dialer signal generation means to transmit said suppression signals corresponding to said predetermined code.

5,546,452

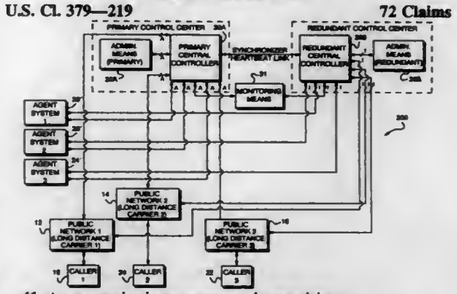
COMMUNICATIONS SYSTEM USING A CENTRAL CONTROLLER TO CONTROL AT LEAST ONE NETWORK AND AGENT SYSTEM

G. Wayne Andrews, Amherst, N.H.; Steven H. Webber, Groton, Mass.; James P. Kelly, Newbury, Mass.; Lawrence E. Johnson; Jerry A. Stern, both of Sudbury, Mass.; Vincent J. Milano, Jr., Westwood, Mass., and Charles R. Davis, Stow, Mass., assignors to GeoTel Communications Corp., Littleton, Mass.

Filed Mar. 2, 1995, Ser. No. 398,950

Int. Cl.[6] H04M *7/06*

U.S. Cl. 379—219 **72 Claims**



41. A communications system, and comprising:

a. a plurality of public networks for connecting a plurality of calls to a plurality of respective agent systems in response to control signals supplied to said public networks, each of said agent systems including a plurality of workgroups;

b. at least two central controllers for generating control signals for being supplied to said public networks and said agent systems to control said public networks and said agent systems so as to optimally route said calls through said networks and said agent systems to certain of said workgroups, said central controllers being adapted to generate said control signals based upon status messages received from said agent systems, requested service data from said networks, and optimization parameters stored within said central controllers, said central controllers including a primary central controller and a redundant central controller, said redundant central controller being for controlling said system in event of failure of said primary central controller, said central controllers being geographically separated from each other;

c. synchronizer means for virtually synchronizing respective internal states of said central controllers;

d. interfacing means for interfacing said central controllers to said public networks whereby to permit supply of control signals to each of said public networks; and

e. means for interfacing said central controllers to said plurality of agent systems.

5,546,453

TELECOMMUNICATION SWITCH HAVING PROGRAMMABLE NETWORK PROTOCOLS AND COMMUNICATIONS SERVICES

Mark P. Hebert, Kingston, Mass., assignor to Excel, Inc., Hyannis, Mass.

Division of Ser. No. 134,122, Oct. 8, 1983, Pat. No. 5,426,694. This application Jun. 7, 1995, Ser. No. 482,407

Int. Cl.[6] H04M *3/00*

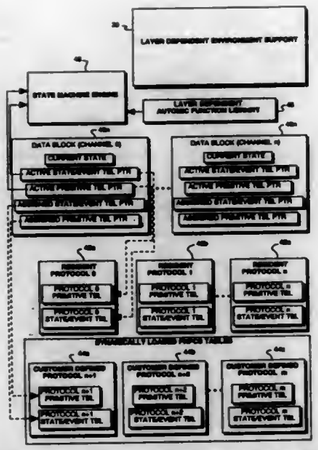
U.S. Cl. 379—242 **28 Claims**

21. A programmable telecommunication switch comprising:

controllable-switching means for dynamically connecting or disconnecting communication paths between various ones of a plurality of channels or ports in response to messages generated by a host device, including,

a time slot interchange for switching a plurality of time slots corresponding to said channels or ports, and

means for processing said messages;



one or more means, connected in communicating relationship with said switching means, for terminating either analog or digital lines or trunks, at least some of said lines or trunks representing some of said channels or ports;

means for storing one or more protocols in either said switch or said host device, each of said protocols for performing processing in response to one or more events;

means for detecting the occurrence of one or more predetermined events; and

means, responsive to said detecting means, for dynamically selecting alternative protocols from among said stored protocols, wherein said selected protocol is capable of processing said occurring event.

5,546,454

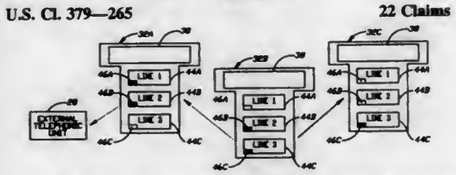
AUTOMATIC CALL DISTRIBUTOR WITH TELEPHONIC CALL HOLDING SYSTEM

Noreen A. Harrington, 1818 Appaloosa Dr., Naperville, Ill. 60565

Filed Mar. 21, 1994, Ser. No. 215,839

Int. Cl.[6] H04Q *3/64*

U.S. Cl. 379—265 **22 Claims**



1. In an automatic call distributor having a multiport switch controlled by a central control unit for interconnecting telephonic calls received from external telephonic units of an external telephonic public switching network with internal telephonic units and for interconnecting telephonic calls from other internal telephonic units coupled with the call distributor, the improvement being a telephonic call holding system, comprising:

means for establishing a voice path connection between an internal telephonic unit and another internal telephonic unit over one of a plurality of lines in which both the internal telephonic unit are at the automatic call distributor and are connected to the multiport switch;

means at the internal telephonic unit for placing on hold the one of a plurality of lines of the other internal telephonic unit having the voice path connection; and

means for enabling the other internal telephonic unit with the one of the plurality of lines being held to also put on hold the one of the plurality of lines being held by the internal telephonic unit.

5,546,455

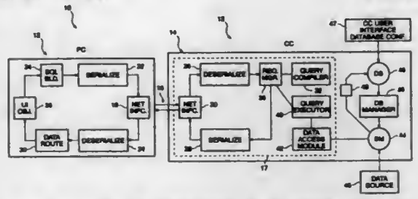
METHOD FOR ACCESSING REAL-TIME DATA IN AN AUTOMATIC CALL DISTRIBUTION SYSTEM

Robert Joyce, San Jose; Jeffrey Rosler, Milpitas; Jason Ehrlich, Fremont, and Jean-Luc Brouillet, Palo Alto, all of Calif., assignors to Aspect Telecommunications, San Jose, Calif.

Continuation of Ser. No. 110,902, Aug. 24, 1993, abandoned. This application Dec. 27, 1994, Ser. No. 364,063

Int. Cl.[6] H04M *3/22*

U.S. Cl. 379—265 **18 Claims**



16. An automatic call distribution (ACD) system comprising:

(a) a computer network;

(b) a plurality of client systems coupled to said computer network, each of said plurality of client systems comprising:

(i) user-interface means for providing an object-oriented user-interface allowing a user to identify user-specified live data to be reported to at least one of said plurality of client systems and analyzed, said user-interface means supplying a high-level output representing said user-specified data;

(ii) a query builder, coupled to said user-interface means, to prepare queries from said high-level output to retrieve said selected data, said query comprising data elements from shared memory or any combination of, aggregation of or value derived from a calculation based on said data element;

(iii) a network interface, coupled to said query builder and to said computer network, to transmit said queries from said plurality of client systems over said computer network; and

(c) a host server system for executing at least first and second sessions having access to a shared memory which receives real time data from external sources, said shared memory comprising a plurality of tables and said first and second sessions each comprising:

(i) a network interface, coupled to said computer network, to receive queries from said plurality of client systems;

(ii) a query processor to identify the data to be collected and analyzed to respond to the queries and to compile said queries into executable machine code in substantial real time;

(iii) a query executer to execute said compiled queries as request objects immediately accessing said shared memory to retrieve said selected data from said shared memory; and

(iv) a request manager, coupled to said network interface, said query compiler and said query executer, to route received queries to said query compiler for compiling and to control operation of said query executer.

5,546,456

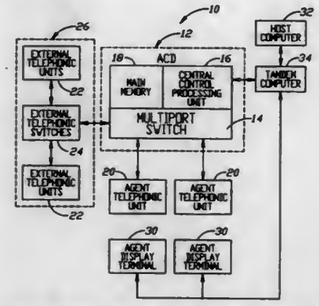
TELECOMMUNICATION SYSTEM WITH INBOUND CALL RESPONSIVE PREDICTIVE OUTDIALING SYSTEM AND METHOD

Robert W. Vilsoet, Streamwood, and Bernard J. McGourty, Westmont, both of Ill., assignors to Rockwell International Corporation, Seal Beach, Calif.

Continuation of Ser. No. 284,855, Aug. 2, 1994, abandoned. This application Nov. 15, 1995, Ser. No. 559,732

Int. Cl.[6] H04M *3/50*

U.S. Cl. 379—265 **20 Claims**



1. A telecommunication system having an automatic call distributor with a multiport switch controlled by a central control processing unit, said automatic call distributor coupled with an external telephonic network of external telephonic units comprising:

means for designating selected agent telephonic units for combined inbound and outdialed operation;

means for automatically distributing both outdialed calls and inbound calls to each of the agent telephonic units selected for combined inbound and outdialed operation including

means for automatically distributing outdialed calls to each of said selected agent telephonic units coupled with the call distributor, and

means for automatically distributing inbound calls to each of said selected agent telephonic units; and

means for coordinating the outdial call distributing means with the inbound call distributing means to reduce average incoming call waiting time due to excessive distribution of outdialed calls to the selected agent telephonic units including

means for monitoring the number of inbound calls received by the call distributor and distributed to the selected agent telephonic units and the number of outdialed calls initiated by the call distributor and distributed to the selected agent telephonic units,

means responsive to the monitoring means for calculating the rate of inbound calls of the selected agent telephonic units compared to the rate of outdialed calls of the selected agent telephonic units, and

means responsive to the calculating means to automatically control the rate of outdialed calls of the selected agent telephonic units compared to the rate of inbound calls distributed to the selected agent telephonic units.

5,546,457

TERMINAL APPARATUS

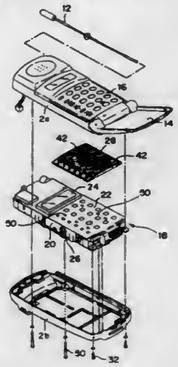
Masashi Tomura, and Hisamitsu Takagi, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 210,737, Mar. 18, 1994, abandoned, which is a continuation of Ser. No. 764,722, Sep. 24, 1991, abandoned. This application May 16, 1995, Ser. No. 442,996

Claims priority, application Japan, May 31, 1991, 3-129111

Int. Cl.[6] H04M *1/23*

U.S. Cl. 379—368 **5 Claims**



1. A terminal apparatus comprising:

a case;

a printed circuit board accommodated in said case and formed with a plurality of switch patterns;

a switch panel fixed to said case, said switch panel having a plurality of holes at positions corresponding to said plurality of switch patterns, said switch panel comprising:

a light conducting transparent portion having an outer surface; and

an opaque film formed on the outer surface of said transparent portion so as to be integrated with said transparent portion;

a key top sheet having a plurality of key tops operable by a human user, said key top sheet being mounted on said printed circuit board with said key tops respectively inserted through said holes of said switch panel so that said switch panel and said key tops form outer surface portions of the terminal apparatus when said key tops are being operated by the human user;

a plurality of conductive contacts provided on a lower surface of said key top sheet at positions corresponding to said key tops so as to respectively face said switch patterns with a predetermined distance defined; and

a plurality of light sources in visual communication with said switch panel for introducing light into said switch panel to thereby conduct the light to a region of the switch panel through which said key tops are inserted.

5,546,458

HANDSFREE COMMUNICATION APPARATUS

Akiko Iwami, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

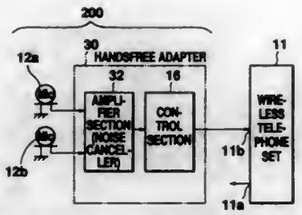
Filed Mar. 2, 1995, Ser. No. 397,835

Claims priority, application Japan, May 18, 1994, 6-104057

Int. Cl.[6] H04M *1/00*

U.S. Cl. 379—390 **8 Claims**

1. A handsfree communication apparatus intended to be connected to a wireless telephone set, comprising:



a plurality of microphones individually provided apart from one another and being spaced apart and positioned with respect to each other for receiving separate speech inputs from different persons for allowing a plurality of persons to take part in simultaneous handsfree communication;

a plurality of amplifiers each for amplifying output signals from said plurality of microphones; and

a speech extraction circuit for receiving output signals from said plurality of amplifiers to cancel out common signal components among the output signals.

5,546,459

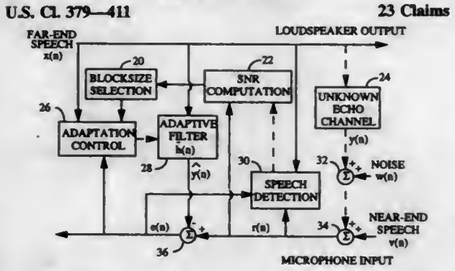
VARIABLE BLOCK SIZE ADAPTATION ALGORITHM FOR NOISE-ROBUST ACOUSTIC ECHO CANCELLATION

Gilbert C. Sih, San Diego, and Franklin P. Antonio, Del Mar, both of Calif., assignors to Qualcomm Incorporated, San Diego, Calif.

Filed Nov. 1, 1993, Ser. No. 146,644

Int. Cl.[6] H04M *9/08*

U.S. Cl. 379—411 **23 Claims**



14. An adaptive filter for filtering a signal present in a communications channel comprising:

averaging means for receiving the signal in the communications channel and for averaging a variable size block of samples of the signal to provide a sample average, wherein said bock size is varied as a function of noise content in the noise content in the communications channel;

filter coefficient computation means for receiving said sample average and for determining at least one filter tap correction value in response to said sample average; and

filter means for receiving said at least one filter tap correction value and for filtering the signal present in the communications channel in accordance with said at least one filter tap correction value.

5,546,460

ECHO COMPENSATION DEVICE AND 4/2-WIRE INTERFACE HAVING SUCH AN ECHO COMPENSATION DEVICE

Rolf Biedermann, Hamminkeln, and Burkhard Telges, Rhede, both of, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

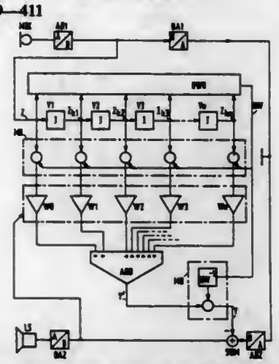
PCT No. PCT/DE93/00968, § 371 Date Jun. 12, 1995, § 102(e) Date Jun. 12, 1995, PCT Pub. No. WO94/10760, PCT Pub. Date May 11, 1994

PCT Filed Oct. 12, 1993, Ser. No. 428,103

Claims priority, application Germany, Oct. 27, 1992, 42 36 272.5

Int. Cl.[6] H04B *3/23*

U.S. Cl. 379—411 **8 Claims**



1. An echo compensation device for an information transmission system having a digital transverse filter for amplitude-discrete and time-discrete input signals, comprising:

a series circuit of identical delay elements, an instantaneous input signal value and time-delayed signal values of the instantaneous input signal respectively being weighted with respective coefficients in a weighting device and added in a summing device to form an output signal value;

a scale-value device for evaluating all respective signal values of the instantaneous input signal value and the time-delayed signal values and for outputting a scale value established as a function of this evaluation;

a scaling device for scaling all the respective signal values with said scale value; and,

a descaling device for descaling the output signal value of the summing device with said scale value.

5,546,461

SCRAMBLE SYSTEM FOR USE IN DIGITAL VIDEO SIGNAL RECORDING AND REPRODUCING SYSTEM OR TRANSMISSION AND RECEIVING SYSTEM, COMPRISING SCRAMBLE APPARATUS AND DESCRAMBLE APPARATUS

Susumu Ibaraki, Osaka; Noboru Katta, Itami; Seiji Nakamura, and Hiroki Murakami, both of Osaka, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaku, Japan

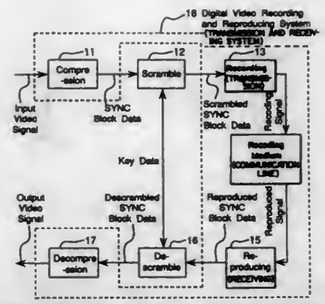
Filed Apr. 8, 1994, Ser. No. 225,330

Claims priority, application Japan, Apr. 9, 1993, 5-083081; Apr. 9, 1993, 5-083085; Apr. 15, 1993, 5-088394; Jan. 22, 1993, 5-150056; Oct. 12, 1993, 5-254184

Int. Cl.[6] H04N *7/167*; H04K *1/04*

U.S. Cl. 380—20 **23 Claims**

1. A scramble system for use in a recording and reproducing system or a transmission and receiving system wherein a frame of a digital video signal composed of a plurality of frames is divided into a plurality of predetermined macro blocks corresponding to recording and reproducing processes of said recording and reproducing system or a transmission and receiving processes of said



transmission and receiving system, either one of said recording and reproducing system and said transmission and receiving system executing a reconstruction process for reconstructing a further video signal by collecting said macro blocks from an inputted digital video signal composed of a plurality of frames without changing the positions of said macro blocks in each of the frames,

said scramble system comprising scramble means and descramble means,

said scramble means comprising at least one of a block replacing unit and an inverting unit,

said descramble means comprising at least one of a block inverse replacing unit and an inverting unit,

wherein said block replacing unit replaces positions of said macro blocks of each frame of said inputted digital video signal based on an inputted control signal;

wherein said inverting unit executes inversion in level of all pixel signals of said inputted digital video signal based on said control signal; and

wherein said block inverse replacing unit replaces the positions of said macro blocks of each frame of said inputted digital video signal based on said control signal in a reverse manner to that of said block replacing unit.

5,546,462

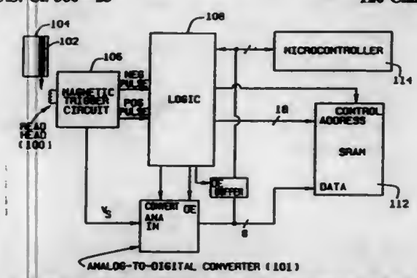
METHOD AND APPARATUS FOR FINGERPRINTING AND AUTHENTICATING VARIOUS MAGNETIC MEDIA

Ronald S. Indeck, Olivette; Marcel W. Muller, St. Louis; George Lawrence Engel, St. Louis, and Alan L. Hege, St. Louis, all of Mo., assignors to Washington University, St. Louis, Mo.

Continuation-in-part of Ser. No. 222,693, Apr. 4, 1994, Pat. No. 5,428,683, which is a continuation-in-part of Ser. No. 046,040, Apr. 9, 1993, Pat. No. 5,365,586. This application Sep. 9, 1994, Ser. No. 303,690

Int. Cl.[6] H04K *1/00*

U.S. Cl. 380—23 **120 Claims**



1. A device for fingerprinting an object for the later determination of its identity, said object including at least in part, a non-recording magnetic medium portion, said device having means for determining a remanent noise for said non-recording magnetic medium portion, said remanent noise comprising the fingerprint for said object, and means for recording said remanent noise for later comparison with the later determination of said remanent noise to thereby identify said object.

5,546,463

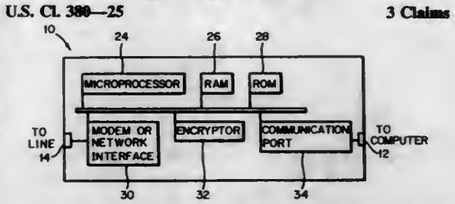
POCKET ENCRYPTING AND AUTHENTICATING COMMUNICATIONS DEVICE

Anthony A. Caputo, Coatesville, Pa., and Victor P. Amoruso, Cumberland, Md., assignors to Information Resource Engineering, Inc., Baltimore, Md.

Filed Jul. 12, 1994, Ser. No. 273,764

Int. Cl.[6] H04L *9/32;9/00*

U.S. Cl. 380—25 **3 Claims**



1. An authenticating and encrypting communications device for establishing a secure communications link between a remote computing site and a computing device of a user over a data transfer path, said communications device comprising:

an encryptor for encrypting transmit data to be transmitted to said remote computing site over said data transfer path, and for decrypting receive data received by said communications device from a source;

an authenticator for authenticating to said remote computing site that said communications device is authorized;

a modem for transmitting the transmit data and for receiving the receive data over said data transfer path; and

a compact, pocket-sized housing containing said encryptor, said authenticator and said modem, said encryptor, authenticator and modem being electrically interconnected and being electrically configured for interconnection with said data transfer path and said computing device of said user.

5,546,464

METHOD OF AND APPARATUS FOR SELECTIVE RE-SYNCHRONIZATION IN A DIGITAL CELLULAR COMMUNICATIONS SYSTEM

Krister A. Raith, Durham, N.C., and Paul W. Dent, Stehag, Sweden, assignors to Ericsson Inc., Research Triangle Park, N.C.

Filed Sep. 16, 1994, Ser. No. 307,220

Int. Cl.[6] H04L *9/18;9/12*

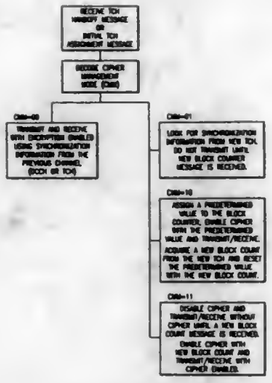
U.S. Cl. 380—48 **35 Claims**

1. In a digital communication system employing base stations and mobile stations exchanging ciphered digital data, a method for indicating cipher synchronization which comprises:

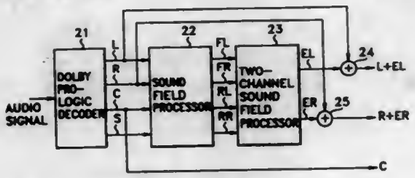
transmitting from a base station to a mobile station a message over an old channel being received by said mobile station instructing said mobile station to acquire a new channel, said message including an indication of whether or not to resynchronize its cipher upon acquiring the new channel;

receiving said message in said mobile station; and

acquiring said new channel in said mobile station and resynchronizing or not resynchronizing said cipher at said mobile station in accordance with said indication.



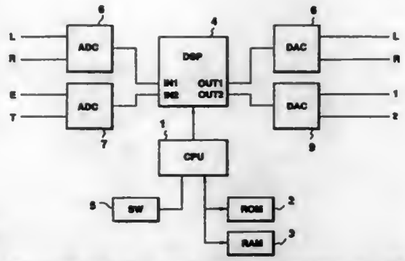
5,546,465
AUDIO PLAYBACK APPARATUS AND METHOD
Jae-young Kim, Suwon-city, Rep. of Korea, assignor to Samsung Electronics Co. Ltd., Kyungki-do, Rep. of Korea
Filed Nov. 16, 1994, Ser. No. 341,922
Claims priority, application Rep. of Korea, Nov. 18, 1993, 93-24617
Int. Cl.[6] H04S *5/02*
U.S. Cl. 381—18 **9 Claims**



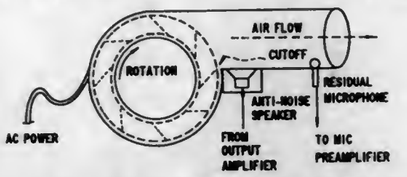
1. An audio playback apparatus comprising:
decoding means for converting a digital audio signal into a left signal, a right signal, a center signal, and a surround signal;
sound field processing means for converting said left, right, center and surround signals into a front left signal, a front right signal, a rear left signal, and a rear right signal; and
audio processing means for mixing said left, right, front left, front right, rear left and rear right signals according to a relationship equation and converting them into a two channel signal comprised of a left-speaker output signal and a right-speaker output signal.

5,546,466
EFFECT ADDING APPARATUS
Shiro Ishiguro; Masatoshi Watanuki, both of Fussa; Toshiaki Kawanishi, Hiroshima; Kohtaro Hanzawa, Iruma; Hiroyuki Sasaki, Fussa, and Jun Yoshino, Akishima, all of, Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 913,581, Jul. 14, 1992. This application Sep. 29, 1994, Ser. No. 315,066
Claims priority, application Japan, Jul. 19, 1991, 3-204871; Aug. 28, 1991, 3-216868
Int. Cl.[6] H03G *3/00*
U.S. Cl. 381—61 **14 Claims**

1. An effect adding apparatus comprising:
effect-algorithm memory means for storing a plurality of effect-algorithms, which are written in program form, for applying sound effects to an input audio signal;
combination-algorithm memory means for storing a plurality of combination-algorithms, which are written in program form, for combining in various states the plurality of effect-algorithms stored in said effect-algorithm memory means;
algorithm combining means for reading out a combination-algorithm from said combination-algorithm memory means, then selectively reading out effect-algorithms from said effect-algorithm memory means in accordance with the read out combination-algorithm, and for combining the read out effect-algorithms in accordance with the read out combination-algorithm to create another program representative of another effect-algorithm;
program memory means for storing said another program created by said algorithm combining means; and
a single effect adding means for applying relevant sound effects to the input audio signal based on said another program stored in said program memory means, whereby sound effects are applied to the input audio signal corresponding to the effect-algorithms combined into the another program.



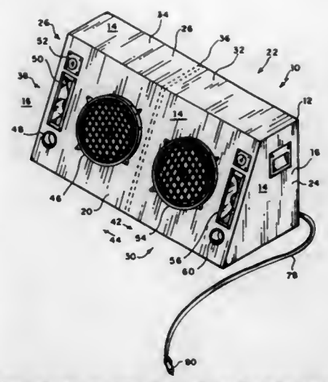
5,546,467
ACTIVE NOISE ATTENUATED DSP UNIT
Jeffrey N. Denenberg, Trumbull, Conn., assignor to Noise Cancellation Technologies, Inc., Linthicum, Md.
Filed Mar. 14, 1994, Ser. No. 212,580
Int. Cl.[6] A61F *11/06;* **H03B** *29/00*
U.S. Cl. 381—71 **8 Claims**



1. An active control system adapted to provide control to at least one house appliance to be quieted through the power connection, said system comprising
an active noise control means associated with a power distribution network,
at least one appliance means to be quieted, and
a power connection means comprising a dual frequency modulation means between said control means and said appliance means adapted to convey noise control signals from said control means to said appliance means and a residual noise signal from said appliance back to said control means.

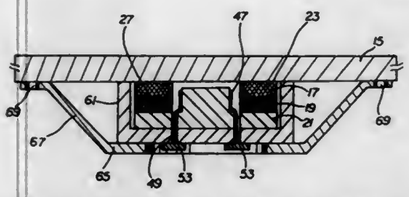
5,546,468
PORTABLE SPEAKER AND AMPLIFIER UNIT
Michael H. Beard, 3209 N. Tulsa Dr., Deltona, Fla. 32738
Filed May 4, 1994, Ser. No. 237,882
Int. Cl.[6] H04B *1/00*
U.S. Cl. 381—86 **8 Claims**

1. A portable speaker and amplifier unit for use in a vehicle comprising:



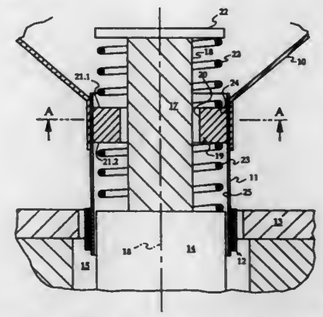
a cabinet having an outer housing for separating an interior section of said cabinet from an exterior thereof, said outer housing including an inclined front wall, a vertical back wall, a vertical left side wall, a vertical right side wall, a horizontal top cover, and a horizontal bottom base;
an interiorly disposed vertical wall located midway between said right side wall and said left side wall so as to divide said interior section of said cabinet completely into a left chamber located within a left side of said cabinet and a right chamber located within a right side of said cabinet;
three front wall cutout sections on said left side extending through said inclined front wall from the exterior of said cabinet to said left chamber, wherein an equal number of said three front wall cutout sections extend from the exterior of said cabinet into said right chamber;
three speakers consisting of a woofer, a midrange speaker and a tweeter positioned on each of said left and right sides of said cabinet, each speaker having a front side and a back side, and each speaker being mounted on said inclined front wall over each said front wall cutout section, so that said front side thereof is located on the exterior of said cabinet and the back side thereof is located within said interior section of said cabinet; and,
an audio power booster amplifier attached to said portable speaker and amplifier unit on said back wall.

5,546,469
SOUND TRANSDUCER
Danny T. Donahoe, 504 E. Mesquite, Crowley, Tex. 76036
Filed Aug. 15, 1994, Ser. No. 290,065
Int. Cl.[6] H04R *25/00*
U.S. Cl. 381—152 **4 Claims**



1. A sound transducer for converting electrical signals into mechanical motion, operating in conjunction with a flat support surface, the sound transducer comprising:
a yoke having a disk, a center pole, a rear face and a front face;
a resilient flat spacer having a rear face and a front face, the front face of the spacer being adhesively attached to the rear face of the yoke, the spacer having a hole passing through the spacer;
a permanent magnet having a rear face and a front face, the front face of the permanent magnet being attached to the rear face of the spacer, the permanent magnet having a hole passing through the magnet, the hole in the permanent magnet being aligned with the hole in the spacer;
the center pole of the yoke extending into the holes in the spacer and the permanent magnet, the center pole and the hole in the spacer forming a front portion of an air gap, the center pole and the hole in the permanent magnet forming a rear portion of an air gap;
a voice coil wound on the center pole and extending through the front portion of the air gap and partially into the rear portion of the air gap;
a frame member having a flat base and a side portion having a rear edge, the base being fixed to the front face of the yoke, the rear edge of the side portion of the frame member making contact with the flat support surface, the rear face of the permanent magnet being biased against the flat support surface when the rear edge of the side portion of the frame member makes contact with the flat support surface; and
a support bracket fixed to the frame member for affixing the frame member against the flat support surface.

5,546,470
LOUDSPEAKER
Stefan Geisenberger, Straubing, and Manfred Aigner, Schwarzach, both of, Germany, assignors to Nokia Technology GmbH, Pforzheim, Germany
Filed May 23, 1995, Ser. No. 447,558
Claims priority, application Germany, Jun. 1, 1994, 44 19 312.2
Int. Cl.[6] H04R *25/00*
U.S. Cl. 381—197 **7 Claims**



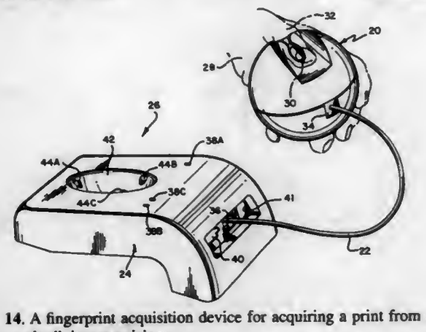
1. A loudspeaker with a loudspeaker diaphragm (**10**), with a voice coil support (**11**) that is connected to the loudspeaker diaphragm (**10**), and with a centering device comprising a rod (**17**), on which a bushing (**19**), which is connected to the loudspeaker diaphragm (**10**) or to the voice coil support (**11**), can slide along the loudspeaker axis (**16**) against the effect of a spring arrangement (**23**), characterized in that the rod (**17**) and the bushing (**19**) are at least partially made of magnetic material, that the magnetic material is magnetized radially to the loudspeaker axis (**16**), and that when the bushing (**19**) slides over the rod (**17**), the facing areas of the magnetic material of the bushing (**19**) and the rod (**17**) have the same polarity.

5,546,471

ERGONOMIC FINGERPRINT READER APPARATUS

John M. Merjanian, Burlington, Mass., assignor to The National Registry, Inc., St. Petersburg, Fla.

Filed Oct. 28, 1994, Ser. No. 331,212
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—124 **22 Claims**



14. A fingerprint acquisition device for acquiring a print from a person's digit, comprising:

a housing having first and second exterior surfaces, the housing enclosing:

a platen having a platen surface;

a light source for irradiating the platen surface and any digit thereon with light;

means for conducting light from the irradiated platen surface; and

image sensing means for sensing the conducted light,

the first exterior surface having an aperture therethrough, the platen surface being disposed in register with the aperture,

the second exterior surface being displaced from the first exterior surface to provide a grasping surface,

the housing being shaped to orient a digit relative to the platen to ensure a firm grip of the housing and substantially no lateral movement or shear of the digit as the print is being acquired, the housing also being shaped such that the second surface contacts four digits of the user's hand when a chosen, fifth digit is positioned on the platen in the first surface, whereby the natural grasp of the hand around the housing results in the chosen, fifth digit applying substantially even pressure to the platen and a broad print of the chosen, fifth digit can be acquired.

5,546,472

FEATURE GUIDED METHOD AND APPARATUS FOR OBTAINING AN IMAGE OF AN OBJECT

David N. Levin, Chicago, Ill., assignor to Arch Development Corp., Chicago, Ill.

Continuation-in-part of Ser. No. 927,352, Aug. 7, 1992, Pat. No. 5,390,258. This application Aug. 5, 1994, Ser. No. 286,571
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—131 **20 Claims**

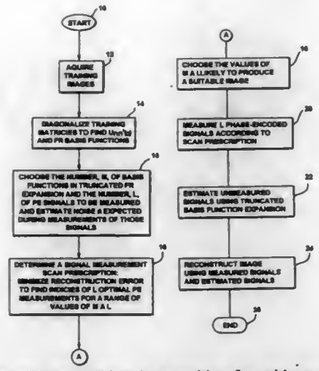
1. A method for obtaining a visual image of a target object, said target object having a predetermined feature, said method comprising the steps of:

creating synthetic training signals representing a training object, having the predetermined feature in common with the target object;

deriving, from said synthetic training signals, a set of basis functions that provide a convergent series expansion of said images of said training objects;

an operator selecting and inputting scanning system parameters including an estimated signal-to-noise level and number of said basis functions, into said scanning system, through a user input device;

determining a signal measurement prescription for the target object based on said basis functions;



placing said target object in a position for said predetermined feature to be scanned by said scanning system;

generating control signals based on said signal measurement prescription so as to control said scanning system to scan said predetermined feature of said target object;

acquiring target signals of the target object, said scanning system sampling multiple points to represent an image of said target object;

generating a truncated basis function expansion of the image from said acquired target signals;

estimating additional signal measurements based on said truncated basis function expansion; and

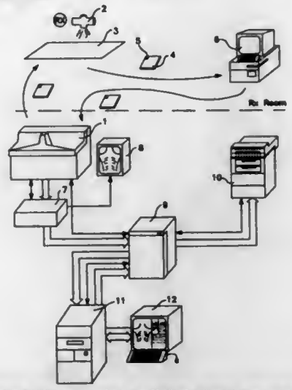
reconstructing the visual image of the target object using said acquired target signals and said estimated additional signal measurements wherein said visual image is displayed on a visual display device.

5,546,473

FAST INTERACTIVE OFF-LINE PROCESSING METHOD FOR RADIOGRAPHIC IMAGES

Tom G. Buytaert, Kontich; Stefan C. Van de Velde, Zaventem, and Pieter P. Vuylsteke, Mortsel, all of, Belgium, assignors to AGFA-Gevaert, Mortsel, Belgium

Filed Jun. 28, 1993, Ser. No. 83,914
Claims priority, application European Pat. Off., Feb. 11, 1993, 93200374
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—132 **4 Claims**



1. A method of processing a digital signal representation of a radiographic image comprising the steps of:

1) transforming said image into a decomposed image comprising a sequence of detail images at multiple resolution levels and a residual image, wherein the detail images at successively coarser resolution levels are obtained as the result of each of K iterations of the following steps:

a) computing an approximation image at a next coarser level by applying a low pass filter to the approximation image corresponding to the current iteration, and subsampling the result in proportion to the reduction in spatial frequency bandwidth, using however the original image as input to said low pass filter in the course of the first iteration; and

b) computing a detail image as the pixelwise difference between the approximation image corresponding to the current iteration and the approximation image at a next coarser resolution level computed according to step (a), both images being brought into register by proper interpolation of the latter image, and wherein the residual image is equal to the approximation image produced by the last iteration;

2) storing said detail images and said residual image into a memory;

3) retrieving from said memory detail images up to a predetermined resolution level among said multiple resolution levels, and said residual image;

4) processing retrieved detail images in accordance with a set of processing parameters;

5) generating a reconstructed image by applying the inverse of the decomposition transformation to the detail images processed in step 4 with the reconstructed image being the result of iterating K times the following procedure, starting from the coarsest processed detail image and the residual image, by computing an approximation image at a current resolution level by pixelwise adding a processed detail image at the same resolution level to the approximation image at a coarser resolution level corresponding to the previous iteration both images being brought into register by proper interpolation of the latter image, using said residual image instead of said coarser approximation image in the course of the first iteration;

6) displaying said reconstructed image and evaluating it; and,

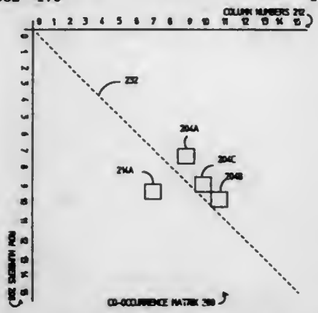
7) amending the numerical values of said processing parameters based on the result of the evaluation and repeating steps 3 to 6 until the result of the evaluation satisfies an operator.

5,546,474

DETECTION OF PHOTO REGIONS IN DIGITAL IMAGES

Oscar A. Zuniga, Fort Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 21, 1993, Ser. No. 171,551
Int. Cl.[6] G06K *9/34*
U.S. Cl. 382—176 **19 Claims**



1. A method for classifying a region in a digital image as either a photo region or a non-photo region, wherein each region comprises a plurality of cells, the method comprising the steps of:

(a) extracting one or more features about each of said plurality of cells, wherein said one or more features indicate a likelihood that said cell is a photo cell, including the step of:

(l) determining a moment of inertia about a main diagonal of a co-occurrence matrix of said cell, including the steps of:

(1) constructing a co-occurrence matrix for each of said cells, said co-occurrence matrix having elements representing a number of times a pixel having a first graylevel is adjacent to a pixel having a second graylevel, and

(2) determining a moment of inertia of said co-occurrence matrix, said moment of inertia indicating an amount of graylevel transitions;

(b) determining whether each of said cells is likely to be a photo cell based on said one or more features extracted in step (a);

(c) labeling each of said cells as either a photo cell or a non-photo cell, or an unclassified cell, said classification based on the result of said step (b); and

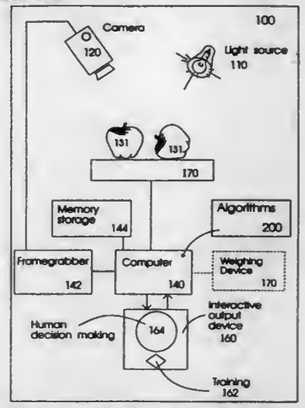
(d) growing region as either photo regions or non-photo regions using said cells.

5,546,475

PRODUCE RECOGNITION SYSTEM

Rudolf M. Bolle, Bedford Hills; Jonathan H. Connell, Cortlandt-Manor; Norman Haas, Mount Kisco, all of N.Y.; Rakesh Mohan, Stamford, Conn., and Gabriel Taubin, Hartsdale, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 29, 1994, Ser. No. 235,834
Int. Cl.[6] G06K *9/46;9/66*
U.S. Cl. 382—190 **32 Claims**



1. A system for recognizing objects comprising:

a. a light source for illuminating one or more of the objects, the illuminated objects being a target object, the light source having a non-monochromatic light frequency distribution that is constant over a period of time;

b. a computer system having a visual input device for creating one or more scene images, the scene images capable of including a target object image of the target object and a background image, and the computer system further having a memory storage;

c. a segmenter executing on the computer system that produces a segmented target object image by segmenting the target object image from background image by comparing a first scene image with a second scene image, the first and second scene images being in spatial registration and one or more respective positions in the first and second scene images having a difference being identified as the target object image;

d. a plurality of reference normalized characterizations, each reference normalized characterization being of a feature associated with a segmented reference object, the reference normalized characterizations being stored in the computer memory storage; and

e. a normalizer executing on the computer system that produces one or more target normalized characterizations, each target normalized characterization being of a feature of the segmented target object image,

whereby one or more of the target normalized characterizations, is compared with one or more reference normalized characterizations and the target object is recognized as the associated reference object if the compared target normalized characterizations and reference normalized characterizations match.

5,546,476

SHAPE RECOGNITION PROCESS

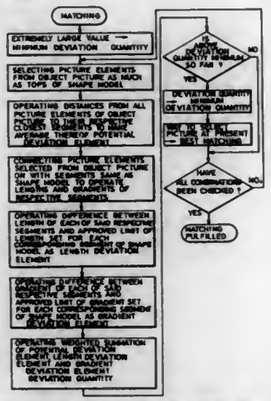
Ryosuke Mitaka; Yoshimasa Fujiwara, and Hiroyuki Ikebuchi, all of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed May 13, 1994, Ser. No. 242,669

Claims priority, application Japan, May 26, 1993, 5-124508; Jan. 26, 1994, 6-006842

Int. Cl.[6] G06K *9/46;9/50;9/68*

U.S. Cl. 382—201 **36 Claims**



1. In a process of recognizing an object by comparing an objective shape representative of said object with a shape model of the object, the process comprising the steps of:

A) representing a known shape model in a two dimensional plane as a plurality of first nodal points and a plurality of line segments interconnecting respective pairs of said first nodal points, each line segment including a length characteristic and gradient characteristic;

B) establishing standard values for the length and gradient characteristics, respectively, of each line segment;

C) establishing tolerance ranges for the length and gradient characteristics, respectively, of each line segment;

D) representing said object as a plurality of separate objective shapes each comprised of a row of dots disposed on a two-dimensional plane and having the same number of nodal points as said shape model, said row comprised of a plurality of second nodal points and a plurality of dot segments interconnecting respective pairs of said second nodal points,

E) separately evaluating each objective shape determined from step D by:

E1) determining an average spacing of all dots of said dot row from said line segments of said shape model,

E2) comparing lengths of said dot segments to said tolerance ranges of respective line segment lengths, to determine a length deviation of each dot segment outside of said tolerance range therefor, and summing said length deviations of all dot segments to establish a length deviation sum,

E3) comparing gradients of said dot segments to said tolerance ranges of respective line segment gradients, to determine a gradient deviation of each dot segment outside of said tolerance range therefor, and summing said gradient deviations of all dot segments to establish a gradient deviation sum,

E4) summing values of said average spacing, said length deviation sum, and said gradient deviation sum for defining a deviation quantity total, and

E5) selecting the objective shape having a lowest deviation quantity total for comparison with the shape model.

5,546,477

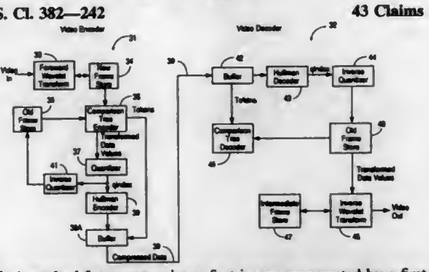
DATA COMPRESSION AND DECOMPRESSION

Gregory P. Knowles, and Adrian S. Lewis, both of Palma, Spain, assignors to Klics, Inc., and Media Vision, Inc., both of Fremont, Calif.

Filed Mar. 30, 1993, Ser. No. 40,301

Int. Cl.[6] G06K *9/36*

U.S. Cl. 382—242 **43 Claims**



1. A method for compressing a first image represented by a first matrix of pixels into an encoded data sequence for transmission and/or storage, where each of said pixels is represented by an input digital signal data point, and for decompressing the encoded data sequence into a plurality of output digital signal data points corresponding to a second matrix of pixels representing a second image, wherein said input digital signal data points at or near boundary of the image comprise a plurality of boundary subsequences and said input digital signal data points not at or near the boundary of the image comprise a plurality of non-boundary subsequences, comprising the steps of:

(a) identifying each boundary subsequence and each non-boundary subsequence of a first image represented by a first matrix of pixels, each of said pixels represented by an input digital signal data point, said input digital signal data points forming said first image having a first combined data length;

(b) filtering each said boundary subsequence using a low pass boundary forward quasi-perfect reconstruction filter and a high pass boundary forward quasi-perfect reconstruction filter to produce a plurality of filtered boundary subsequences including interleaved low and high frequency values at one or more octaves;

(c) filtering each said non-boundary subsequence using a low pass non-boundary forward quasi-perfect reconstructioa filter and a high pass non-boundary forward quasi-perfect reconstruction filter to produce a plurality of filtered nonboundary subsequences including interleaved low and high frequency values at one or more octaves, said interleaved low and high frequency values of said filtered boundary subsequences and said filtered non-boundary subsequences forming a filtered digital signal array having a plurality of filtered digital signal data points;

(d) selecting interleaved low and high frequency values at one or more octaves from said filtered digital signal array via a plurality of counters and predefined sub-indices;

(e) encoding said selected interleaved low and high frequency values at one or more octaves to produce encoded data values; and

(f) repeating steps (d) and (e) for all the interleaved low and high values at one or more octaves in said filtered digital signal array to accumulate the encoded data values to produce an encoded data sequence having a second combined data length where said second combined data length is smaller than said first combined data length.

5,546,478

PICTURE PRINT CONTROLLING DEVICE

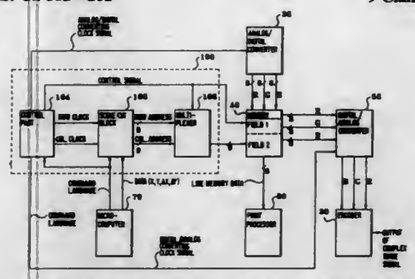
Choon K. Yoo, and Young G. Kim, both of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Aug. 1, 1994, Ser. No. 282,508

Claims priority, application Rep. of Korea, Jul. 30, 1993, 93-14673

Int. Cl.[6] G06K *9/20*

U.S. Cl. 382—282 **9 Claims**



1. A picture print controlling device for selecting a partial area of a picture displayed on a screen of a monitor to print on a photographic paper, comprising:

Y/C separating means for dividing input image signals into luminance signals and color signals;

decoding means for decoding said luminance signals and said color signals into input analog red, green, and blue matrix signals;

analog-digital converting means for converting said input analog red, green, and blue matrix signals into digital signals;

memory controlling means for controlling the generation of address data and for controlling a writing of said digital signals to or a reading of said digital signals from address locations of a memory cell, wherein said address, locations correspond to said address data;

a microcomputer for controlling at least one function of said memory controlling means, wherein said microcomputer outputs location data to said memory controlling means and wherein said location data defines said partial area of said picture to be printed;

digital-analog converting means for converting said digital signals read from said memory cell to output analog red, green, and blue matrix signals;

encoding means for converting said output analog red, green, and blue matrix signals into output image signals; and

picture print means for storing said digital signals in a print memory of a print processor and printing said digital signals on a photographic paper via a digital signal printing process.

5,546,479

METHOD FOR DETECTING INCLINATION OF AN IMAGE OF CHARACTERS

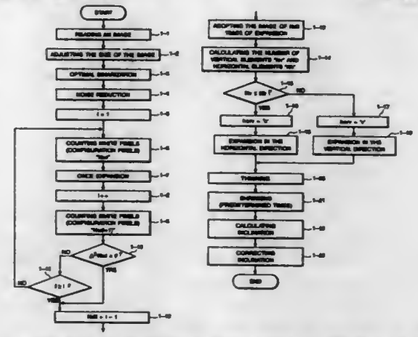
Seide Kawanaka; Mituo Yoshikawa, and Hiroyoshi Naito, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, and Ezel Inc., Tokyo, both of, Japan

Continuation of Ser. No. 391,476, Feb. 21, 1995, abandoned, which is a continuation of Ser. No. 913,460, Jul. 15, 1992, abandoned. This application Sep. 27, 1995, Ser. No. 535,322

Claims priority, application Japan, Jul. 16, 1991, 3-201244; Jul. 16, 1991, 3-201247; Jul. 16, 1991, 3-201268; Aug. 6, 1991, 3-220931

Int. Cl.[6] G06K *9/32*

U.S. Cl. 382—290 **24 Claims**



1. A method for producing a signal which is indicative of an inclination of an image of a physical object that contains information thereon, said method comprising the steps of:

(a) generating an image signal by using an electronic image generator to create said image of said physical object, wherein said information is stored in character lines, each character line containing characters therein;

(b) transforming said image signal into a first expanded image signal, which represents an expanded image of said physical object, by successively expanding said image of said physical object Ndil times in both a horizontal direction and a vertical direction, wherein Ndil is the minimum number of expansions required so as to cause said characters within said character lines to fuse with one another;

(c) determining, in accordance with the expanded image signal produced in step (b), whether said character lines are formed in a substantially vertical direction or a substantially horizontal direction;

(d) transforming, in accordance with the determination made in step (c), said image signal into a second expanded image signal, which represents a second expanded image of said physical object, by successively expanding said image of said physical object a predetermined number of times in one of a horizontal direction and a vertical direction, which depends on the determination made in step (c);

(e) determining inclination factors for predetermined zones within said second expanded image, wherein each said predetermined zone is a separate section of said second expanded image;

(f) determining, based upon said inclination factors, the inclination of said image of said physical object with reference to said determination made in step (c);

(g) transforming said second expanded image signal into an inclination signal, said inclination signal being based upon said determination made in step (f); and

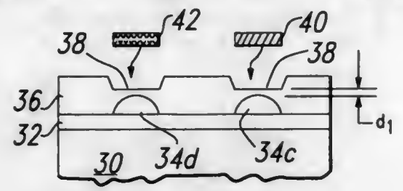
(h) reproducing, in a human readable format, said information contained on said physical object in accordance with said inclination signal produced in step (g), so as to produce the information in an aligned manner.

5,546,480

HYBRID ALL OPTICAL SILICA WAVEGUIDE MODULATOR USING NON-LINEAR ELECTRO-OPTIC COMPONENTS

Jerry Leonard, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 28, 1995, Ser. No. 430,998
Int. Cl.[6] G02F *1/01*
U.S. Cl. 385—3 **14 Claims**



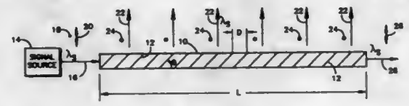
1. A non-linear optic waveguide circuit comprising:
(a) a substrate;
(b) at least one inorganic core waveguide core disposed within at least one cladding layer upon said substrate; and
(c) an active cladding drop-in component comprising a non-linear material placed adjacent to said core waveguide core, wherein the phase of an optical signal within said waveguide core may be modulated by controlling the index of refraction of said active cladding drop-in component by changing the intensity of the optical signal propagating in the optical core.

5,546,481

SINGLE POLARIZATION FIBER AND AMPLIFIER

Gerald Meltz, Avon, and Gary A. Ball, Simsbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 2, 1995, Ser. No. 397,467
Int. Cl.[6] G02B^6 *6/00*
U.S. Cl. 385—11 **6 Claims**



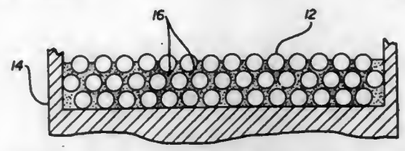
1. A single polarization device, comprising:
a non-polarization preserving solid optical waveguide which propagates light having polarization components along a first polarization mode and along a second polarization mode;
a grating tap oriented at a predetermined angle, and having a predetermined grating spacing, grating length, and grating strength so as to couple-out of said waveguide a predetermined amount of said first polarization over a predetermined wavelength range and pass said second polarization as an output light from said waveguide, said output light being polarized substantially along said second polarization; and
said grating length extending over substantially the entire length of said waveguide.

5,546,482

POTTED FIBER OPTIC GYRO SENSOR COIL FOR STRINGENT VIBRATION AND THERMAL ENVIROMENTS

Amado Cordova, and Glenn M. Surabian, both of West Hills, Calif., assignors to Litton Systems, Inc., Woodland Hills, Calif.

Continuation of Ser. No. 47,297, Apr. 19, 1993, abandoned. This application Jun. 27, 1994, Ser. No. 266,993
Int. Cl.[6] G02B *6/04*
U.S. Cl. 385—12 **3 Claims**



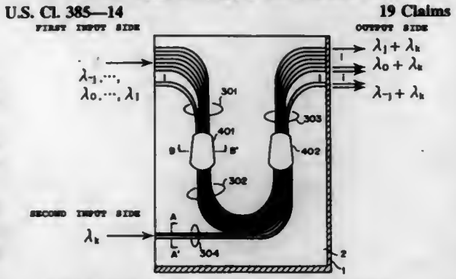
1. A sensor coil for a fiber optic gyroscope of the type that is characterized by a predetermined operating temperature range between a lower temperature limit and an upper temperature limit, said coil comprising in combination;
(a) an optical fiber;
(b) said fiber being arranged into a plurality of concentric cylindrical layers;
(c) each of said layers comprising a plurality of turns of said fiber;
(d) each of said turns being arranged into a predetermined winding pattern;
(e) each of said turns being encapsulated with potting material comprising a preselected polymer having a glass transition temperature that is less than said lower temperature limit; and
(f) said potting material including a filler material selected from the group consisting of carbon black, glass particles, quartz, silicon carbide, graphite and aluminum oxide powder.

5,546,483

INTEGRATED OPTICAL WAVEGUIDE CIRCUIT AND OPTICAL BRANCH LINE TEST SYSTEM USING THE SAME

Yasuyuki Inoue; Masao Kawachi; Katsunari Okamoto, all of Mito; Norio Takato, Katsuta; Fumihiko Yamamoto, Mito; Hiroyuki Suda, Mito; Shinichi Furukawa, Mito, and Akira Morinaka, Mito, all of, Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Aug. 1, 1994, Ser. No. 285,633
Claims priority, application Japan, Aug. 2, 1993, 5-191183; Sep. 16, 1993, 5-230266; Nov. 12, 1993, 5-283348
Int. Cl.[6] G02B *6/12*; H04B *10/24*; G01B *9/02*
U.S. Cl. 385—14 **19 Claims**



1. An integrated optical waveguide circuit comprising:
a substrate;

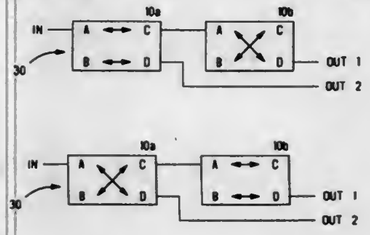
an optical wavelength multiplexer formed on a surface of said substrate and composed of a first slab optical waveguide, a second slab optical waveguide, a single or a plurality of input optical waveguides connected to said first slab optical waveguide at one end of the first slab optical waveguide, an array of optical waveguides arranged in parallel and having different lengths and connected to the first slab optical waveguide and the second slab optical waveguide, and a plurality of output optical waveguides arranged in parallel and connected to the second slab optical waveguide; and
an optical power splitter formed on said surface of the substrate and composed of said second slab optical waveguide, means for inputting light to said second slab optical waveguide, and said plurality of output optical waveguides arranged in parallel and connected to the second slab optical waveguide.

5,546,484

FIBER OPTIC SWITCH USING POLISHED-TYPE DIRECTIONAL COUPLER

John J. Fling, Gaviota; Herbert J. Shaw, Stanford; Michel J. Digonnet, Palo Alto, and Narinder S. Kapany, Woodside, all of Calif., assignors to Kaptron, Inc., Palo Alto, Calif.

Division of Ser. No. 323,222, Oct. 14, 1994. This application May 25, 1995, Ser. No. 453,540
Int. Cl.[6] G02B *6/26;6/42*
U.S. Cl. 385—16 **8 Claims**



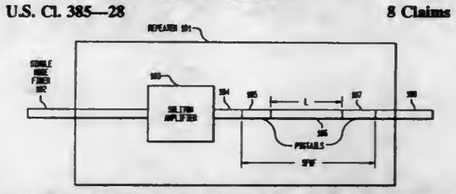
1. A 1×2 fiber optic switch having an input port and first and second output ports, comprising:
first and second 2×2 switch modules, each switch module having first, second, third, and fourth ports and having first and second states;
said first state coupling light from said first port to said third port with negligible crosstalk to said fourth port and light from said second port to said fourth port with negligible crosstalk to said third port;
said second state coupling light from said first port to said fourth port with non-negligible crosstalk to said third port and light from said second port to said third port with non-negligible crosstalk to said fourth port;
means for coupling said third port of said first switch module to said first port of said second switch module; and
means for constraining (a) said second switch module to be in one of said first and second states when said first switch module is in said first state and (b) said second switch module to be in the other of said first and second states when said first switch module is in said second state;
said first and second switch modules, said means for coupling, and said means for constraining together defining the 1×2 fiber optic switch with said first port of said first switch module defining the input port, said third port of said second switch module defining the first output port, and said fourth port of said first switch module defining the second output port.

5,546,485

REPEATER FOR SOLITON TRANSMISSION SYSTEM USING SLIDING-FREQUENCY GUIDING FILTER

Janet M. Darcie, Middletown, N.J., assignor to AT&T Corp., Murray Hill, N.J.

Filed Dec. 20, 1993, Ser. No. 170,624
Int. Cl.[6] G02B *6/28*
U.S. Cl. 385—28 **8 Claims**



1. An optical fiber modal filter having a ripple attenuation characteristic with a free spectral range (FSR) useful in a transmission system with a fundamental wavelength of λ, said filter comprising a first pigtail section of single mode optical fiber having a cutoff wavelength such that only the fundamental mode is propagated with minimal attenuation, a second section of optical fiber having one end connected by a fusion splice to said first section and having a length, L, which is approximately defined by the following equation:

$$L_{FSR}=(1/\Delta n)\ [(\lambda^2/FSR)-\lambda]$$

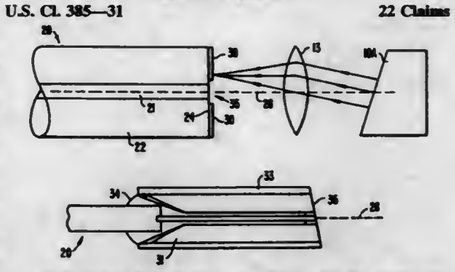
where Δn is equal to the difference between index of refraction of said fundamental mode and the index of refraction for a higher order mode in said second section, and a third pigtail section connected by a fusion splice to the other end of said second section and having a cutoff wavelength such that only the fundamental mode is propagated with minimal attenuation.

5,546,486

OPTICAL FIBER END FOR APPLICATION IN AN OPTICAL ISOLATOR AND A METHOD OF MANUFACTURE THEREOF

Ming Shih, Milpitas; Jingyu Xu; Weng-Herng Su, both of San Jose, and Jing-Joong Pan, Milpitas, all of Calif., assignors to E-Tek Dynamics, Inc., San Jose, Calif.

Filed Mar. 3, 1994, Ser. No. 205,919
Int. Cl.[6] G02B *6/25*
U.S. Cl. 385—31 **22 Claims**



1. In an optical fiber having a core and a cladding around said core parallel to a longitudinal axis of said fiber, said fiber having an end, said fiber end comprising

a flat end surface, said end surface intersecting said core and cladding and forming an angle of approximately 10° from the perpendicular to said longitudinal axis; and

an optical barrier layer on said end surface, said optical barrier layer, having an aperture so that said core is exposed and said cladding is covered;

whereby light transmission into said end is substantially reduced.

5,546,487

CYLINDRICAL FIBER COUPLING LENS WITH BIASPHERIC SURFACES

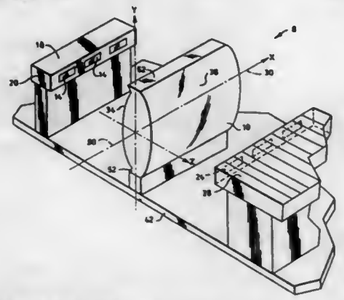
Stephen D. Fantone, Lynnfield, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 993,653, Dec. 18, 1992. This application Jun. 28, 1994, Ser. No. 266,982

The portion of the term of this patent subsequent to Dec. 7, 2010, has been disclaimed.

Int. Cl.[6] G02B *6/32*

U.S. Cl. 385—33 **15 Claims**



1. An apparatus comprising:

a linear laser diode array containing a plurality of laser diode light sources having respective emitting facets;

a plurality of optical fiber waveguides having respective receiving ends; and

optical means for directing light from said emitting facets onto or in said receiving ends, said optical means including a cylindrical lens having two refractive surfaces elongated in a given direction with said surfaces each having a continuous curvature in a plane transverse to said given direction, one of said curvatures being aspheric and following a path other than a path of a conic section.

5,546,488

WAVEGUIDE-TYPE OPTICAL PATH CONVERTER FOR CONVERTING A PROPAGATION DIRECTION OF A LIGHT

Naoki Kitamura, and Hiroshi Nishimoto, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Oct. 13, 1994, Ser. No. 322,532

Claims priority, application Japan, Oct. 14, 1993, 5-256214

Int. Cl.[6] G02B *6/26;6/42*

U.S. Cl. 385—45 **12 Claims**

1. A waveguide-type optical path converter, comprising:

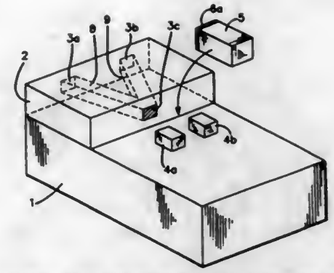
a substrate;

a cladding layer of quartz-based material covering at least part of a surface of the substrate;

two core layers of quartz-based material formed in said cladding layer and merging with each other near a vertical wall of said cladding layer;

wherein a merged head portion of said two core layers appears on said vertical wall of said cladding layer;

a reflective body having an end face coated with a reflective film; and



guide means located on the substrate for positioning the reflective body so that the reflective film adheres to said merged head portion of said two core layers.

5,546,489

OPTICAL LINK APPARATUS

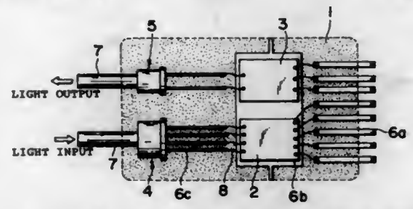
Goro Sasaki; Hiroshi Yano; Sosaku Sawada, and Kentaro Doguchi, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 280,859, Jul. 26, 1994, abandoned. This application Aug. 28, 1995, Ser. No. 520,007

Claims priority, application Japan, Aug. 2, 1993, 5-191425

Int. Cl.[6] G02B *6/36*

U.S. Cl. 385—88 **13 Claims**



1. An optical link apparatus comprising a link unit to be coupled to an optical fiber Cable, a light receiving device for converting an optical Signal entered from said optical fiber into an electrical signal, and a receiver circuit for processing the electrical signal from said light receiving device, said optical link apparatus being integrally molded with a plastic so that one end of said link unit is exposed to the outside;

wherein said light receiving device, and a bipolar transistor constituting at least a part of said receiver circuit are monolithically integrated on a semiconductor substrate and installed at one end of said optical link unit.

5,546,490

OPTICAL FIBER CONNECTOR

Kimihiro Kikuchi, Marumori-machi; Takashi Kihara, and Ken Okochi, both of Kakuda, all of, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Apr. 14, 1995, Ser. No. 422,718

Claims priority, application Japan, Apr. 28, 1994, 6-114017

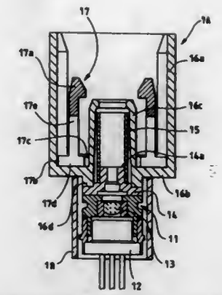
Int. Cl.[6] G02B *6/36*

U.S. Cl. 385—93 **4 Claims**

1. An optical fiber connector for connecting an optical element assembly to an optical plug, the optical element assembly including a sleeve, the optical plug including a ferrule, the optical fiber connector comprising:

a housing including:

a centrally-located cylindrical portion for receiving the sleeve of the optical element assembly,



a bottom portion extending from the cylindrical portion,

an outer wall extending from the bottom portion to an open end of the housing, the outer wall surrounding the cylindrical portion, and

engaging projections located adjacent the bottom portion; and

a clamper including:

first engaging portions for engaging with the ferrule of the plug,

second engaging portions for engaging with the housing, and

elastic leg portions extending between the first and second engaging portions;

wherein the second engaging portions of the clamper are pinched between the bottom portion and the engaging projections of the housing, thereby fixing the clamper to the housing.

5,546,491

METHOD FOR PRODUCING A SPLICED CONNECTION BETWEEN TWO GROUPS OF LIGHT WAVEGUIDES

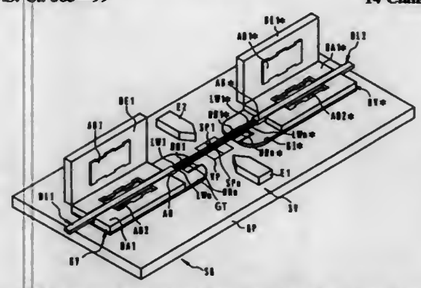
Manfred Loch, Munich, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Jun. 16, 1995, Ser. No. 491,606

Claims priority, application Germany, Jun. 27, 1994, 44 22 362.5

Int. Cl.[6] G02B *6/255*

U.S. Cl. 385—99 **14 Claims**



1. In a method for producing spliced connections between two groups of light waveguides, wherein the two groups are connected to one another by finish multiple connecting points upon employment of a splicing appliance at their multiple joint location and the two groups are removed from the splicing appliance and the finished multiple connecting points are surrounded with a splice protection, the improvement comprising applying a carrier element of the splice protection to reinforce the two groups in a longitudinal direction across the multiple connecting points before removing the two groups of light waveguides from the splicing appliance so that stresses on the multiple connecting points are largely avoided during the step of removing the joined groups from the splicing appliance.

5,546,492

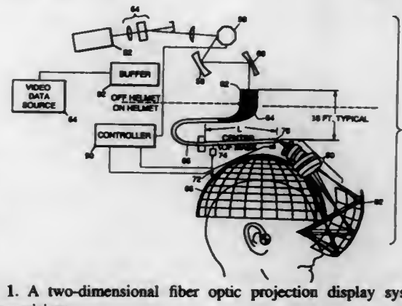
FIBER OPTIC RIBBON DISPLAY

David A. Ansley, Sterling, and Ashok Sisodia, Herndon, both of Va., assignors to Hughes Training, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 187,957, Jan. 28, 1994, Pat. No. 5,416,876. This application Dec. 15, 1994, Ser. No. 356,981

Int. Cl.[6] G02B *6/06*

U.S. Cl. 385—116 **50 Claims**



1. A two-dimensional fiber optic projection display system, comprising:

an array of flexible light conductors arranged in a ribbon having an input end and an output end, said array of flexible light conductors comprising a plurality of rows of optical fibers, wherein fibers in a given row are offset relative to corresponding fibers in an adjacent row to provide overlap of output ends of said light conductors and improve image quality;

means for injecting light into said input end of said ribbon to create a first dimension of said two-dimensional display;

means for moving said output end of said ribbon, said means comprising:

clamping means for clamping said ribbon at a location spaced from said output end to create a cantilevered ribbon section; and

driver means for vibrating said cantilevered ribbon section to deflect said output end of said ribbon;

a projection screen; and

means for imaging an image produced by said vibrating output end of said ribbon onto said projection screen for viewing by an observer.

5,546,493

OPTICAL WAVEGUIDE

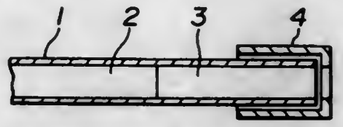
Tomoko Noguchi, Kodaira; Kazuo Naito, Kawasaki; Tasuku Saito, Tokorozawa; Ryo Sakurai, and Minoru Ishiharada, both of Kodaira, all of, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 364,495

Claims priority, application Japan, Dec. 27, 1993, 5-348623

Int. Cl.[6] G02B *6/20*

U.S. Cl. 385—125 **1 Claim**



1. An optical waveguide comprising a transparent liquid core having a higher refractive index than said cladding, wherein said core is a liquid selected from the group consisting of phosphazene oil HI-10, phosphazene oil HI-14, and phosphazene oil HI-21.

VOL 1189 ISS 2 AG 13 1996 UMI

5,546,494

OPTICAL WAVEGUIDE DEVICE AND MANUFACTURING METHOD OF THE SAME

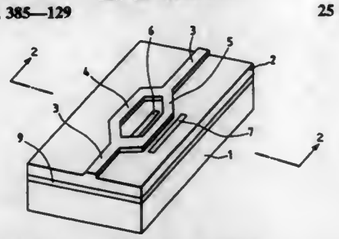
Kazuo Eda, Nara, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 296,383, Aug. 26, 1994, Pat. No. 5,418,883, which is a division of Ser. No. 87,436, Jul. 8, 1993. This application Dec. 15, 1994, Ser. No. 356,086

Claims priority, application Japan, Jul. 8, 1992, 4-180857; Sep. 1, 1992, 4-233391; Apr. 2, 1993, 5-76618

Int. Cl.[6] G02B *6/10*

U.S. Cl. 385—129 **25 Claims**



1. An optical waveguide device comprising:

a glass substrate having a predetermined index of refraction, said glass substrate having opposite first and second surfaces;

a transparent monocrystalline dielectric substrate having an index of refraction larger than said glass substrate, said transparent monocrystalline dielectric substrate having opposite first and second surfaces;

said first surface of said glass substrate being directly bonded onto said first surface of said transparent monocrystalline dielectric substrate with coupling of hydrogen or hydroxyl group; and

an optical waveguide path formed in said transparent monocrystalline dielectric substrate, wherein light is confined by the difference of refractive indexes between said glass substrate and said transparent monocrystalline dielectric substrate.

5,546,495

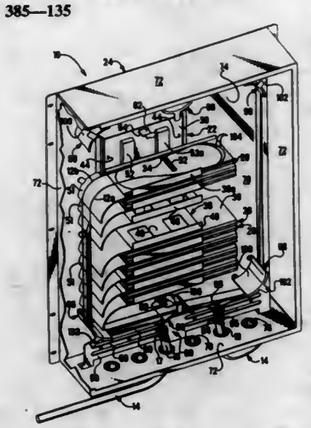
SPLICE TRAY RACK AND CABINET FOR FIBER OPTIC CABLES

Carl M. Bruckner; Edward E. Calhoun, III, both of Washington; Matthew J. Fasnacht, Mount Joy; Ronald R. Schaffer, Harrisburg, and Francis J. Shay, Palmyra, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Apr. 16, 1993, Ser. No. 49,055

Int. Cl.[6] G02B *6/00*

U.S. Cl. 385—135 **24 Claims**



1. A fiber optic splice cabinet for encasing the break-out ends of fiber optic cables, each of the fiber optic cables having a plurality of optical fibers within an inner jacket that correspond to optical fibers of another fiber optic cable and cable strength members surrounded by a protective outer jacket, wherein the corresponding optical fibers are spliced together and placed in a splice trays, the fiber optic splice cabinet comprising:

a box-like fiber optic cable management cabinet having

a plurality of connected sides defining a cabinet interior;

a plurality of access ports within at least one of the sides, each port constructed to pass the break-out end of one of the fiber optic cables into the cabinet interior;

a tie-down bar attached to the cabinet within the cabinet interior and located adjacent to the access port so the fiber optic cable can pass thereover, for individually securing the protective outer jacket, the inner jacket and the strength member thereto; and

an optical fiber splice tray rack for holding a plurality of optical fiber splice trays within the cabinet interior, having

a back panel attached to the cabinet;

a plurality of shelves attached to the back panel, each shelf having a support surface extending from the back panel to a lip that projects from the support surface opposite the back panel to define a tray receiving region for receiving one of the splice trays; and

a resilient member acting generally parallel to the support surface of each shelf for holding the splice tray within the tray receiving region.

5,546,496

LIGHT EMITTING DISPLAY DEVICE HAVING LIGHT RECEIVING ELEMENT FOR RECEIVING LIGHT FROM LIGHT EMITTING ELEMENT AND SELF-HOLDING AND OPTICAL PASSAGE FOR GUIDING DRIVE LIGHT TO THE LIGHT RECEIVING ELEMENT

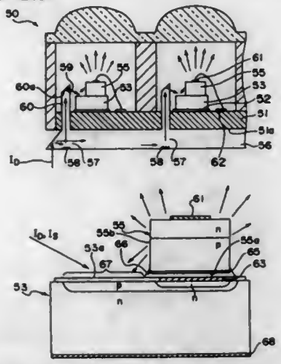
Masahiko Kimoto, Ikoma; Masumi Nakamichi, Tenri; Takahiro Funakoshi, Tenri; Yasuhiro Wada, Tenri; Takehiro Yamamoto, Hirakata, and Yoichi Tsuda, Tenri, all of, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 7, 1995, Ser. No. 418,756

Claims priority, application Japan, Apr. 8, 1994, 6-070518; Sep. 14, 1994, 6-219847

Int. Cl.[6] G02B *6/34*

U.S. Cl. 385—146 **30 Claims**



19. A light emitting display device comprising:

a light receiving element; and

a light emitting element which is mounted on a part of the light receiving element, and is electrically connected in series with the light receiving element and has a bottom surface fixed to the part of the light receiving element, wherein light emitted from a side surface of the light emitting element enters into an upper surface of another part of the light receiving element which is not facing the bottom surface of the light emitting element and is a light receiving surface to make the light receiving element conductive.

5,546,497

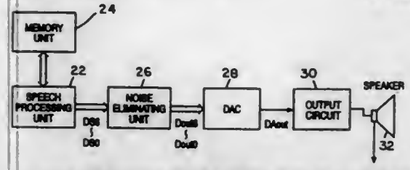
METHOD OF AND AN APPARATUS FOR ELIMINATING BACKGROUND NOISE IN DIGITAL SOUND RECORDING

Oliver C. K. Kao, Hsin-Chu, Taiwan, assignor to United Microelectronics Corp., Hsin-Chu City, Taiwan

Filed May 2, 1994, Ser. No. 236,925

Int. Cl.[6] G01L *3/02*

U.S. Cl. 395—2.35 **6 Claims**



1. A method of eliminating background noise in a digital sound recording and reproducing system comprising the steps of:

converting analog sound signals to digital sound signals in a speech processing unit and storing said digital sound signals in a memory means,

selecting a voltage amplitude range containing substantially all background noise digital sound signals,

changing said digital sound signals of said noise to digital signals that represent essentially a zero sound output within said voltage amplitude range in the course of reproducing, and converting said digital signals into an analog form, to thereby reproduce sound signals without said background noise,

said changing said digital sound signals of said noise is made through selecting a quiet sound benchmark voltage, defining a number of least significant bits of said digital sound signal confining said noise, defining voltages corresponding to said number of least significant bits, and replacing said voltages within said voltage range for both positive and negative most significant bits around said benchmark voltage with said benchmark voltage.

5,546,498

METHOD OF AND DEVICE FOR QUANTIZING SPECTRAL PARAMETERS IN DIGITAL SPEECH CODERS

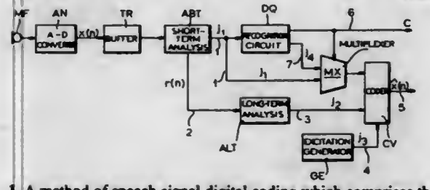
Daniele Sereno, Turin, Italy, assignor to Sip - Societa Italiana per l'esercizio Delle Telecomunicazioni S.p.A., Turin, Italy

Filed May 17, 1994, Ser. No. 243,297

Claims priority, application Italy, Jun. 10, 1993, 93A000420

Int. Cl.[6] G10L *3/02*

U.S. Cl. 395—2.38 **11 Claims**



1. A method of speech signal digital coding which comprises the steps of:

converting a speech signal into a sequence of digital samples divided into frames of a preset number of samples; and

submitting said digital samples to a spectral analysis for generating at least a group of spectral parameters which are quantized and transformed into a first set of indexes (j_1), wherein at each frame, during a coding phase, speech periods with a high correlation are recognized starting from the indexes of the first set and, for these periods, said first set of indexes (j_1) is converted into a second set of indexes (j_4) coded with a number of bits lower than that necessary for coding the first set, and the second set of indexes (j_4) is inserted into the coded signal, together with a signalling indicating that conversion has taken place, while for other periods the first set of indexes is inserted into the coded signal.

5,546,499

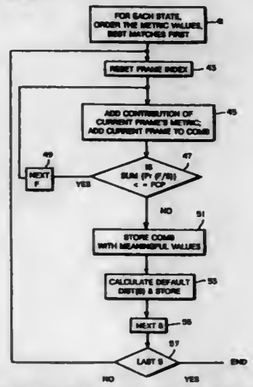
SPEECH RECOGNITION SYSTEM UTILIZING PRE-CALCULATED SIMILARITY MEASUREMENTS

Thomas E. Lynch, Brighton; Vladimir Sejnoha, Cambridge, and Thomas E. Dinger, Waltham, all of Mass., assignors to Kurzweil Applied Intelligence, Inc., Waltham, Mass.

Filed May 27, 1994, Ser. No. 250,696

Int. Cl.[6] G10L *5/06*

U.S. Cl. 395—2.49 **20 Claims**



1. A method of preparing a compressed matrix of precalculated distance metrics for comparing an input utterance which is represented by a sequence of prototype data frames selected from a preselected set of prototype data frames with at least some of a vocabulary of word models each of which is represented by a sequence of prototype states selected from a preselected set of prototype states, said method comprising:

generating an array of distance metrics for all combinations of prototype frames and prototype states;

for each state, identifying the frames for which the corresponding metric is meaningful;

for each state, determining a common default value for non-meaningful metrics;

for at least one group of frames corresponding to each state, determining the locations within said array containing meaningful metrics;

building a combined list of meaningful metrics by adding the meaningful metrics from successive groups of frames using an offset for each group which allows the meaningful metrics for each group to fit into currently unused positions in the list, the relative positions of meaningful metrics within each group being maintained in the list;

building an array of said offset values accessed by the corresponding state;

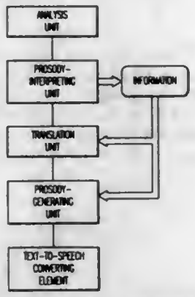
building an array distinguishing meaningful and non-meaningful entries in the original array of distance metrics;

whereby a measure of match between an input utterance and a vocabulary word model is obtainable by combining corresponding metrics using a default value for non-meaningful metrics and locating respective meaningful metrics in said combined list using said array of offset values.

5,546,500
ARRANGEMENT FOR INCREASING THE COMPREHENSION OF SPEECH WHEN TRANSLATING SPEECH FROM A FIRST LANGUAGE TO A SECOND LANGUAGE

Bertil Lyberg, Vagnhärad, Sweden, assignor to Telia AB, Farsta, Sweden

Filed May 5, 1994, Ser. No. 238,732
Claims priority, application Sweden, May 10, 1993, 9301596
Int. Cl.[6] G10L *3/00*
U.S. Cl. 395—2.86 **2 Claims**



1. Arrangement for increasing comprehension of speech when translating speech from a first language to a second language, comprising

elements for receiving speech in a first language, a translation unit for translating speech in the first language to a second language, and speech synthesis elements for generating speech in the second language, characterized in that the arrangement also comprises

an analysis unit which analyzes variations in fundamental tone and duration of the speech in the first language,

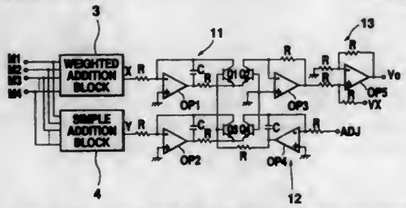
a prosody-interpreting unit which determines first prosody-dependent information in dependence on said analysis unit and on language-characteristic information which relates to the first language,

a prosody-generating unit which generates second prosody-dependent information with a starting point from the first prosody-dependent information and from language-characteristic information which relates to the second language, which second prosody-dependent information is used by the speech synthesis element for producing stresses in the second language corresponding to stresses in the speech in the first language.

5,546,501
DEFUZZIFICATION SYSTEM FOR SHIFTING AND SCALING CENTROID VALUES

Akio Yoshitake, and Masanari Oh, both of Fukuoka, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Jul. 6, 1993, Ser. No. 86,039
Claims priority, application Japan, Jul. 10, 1992, 4-184139
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—3 **6 Claims**



1. A defuzzification system for defuzzifying input signals to generate a scaled defuzzified output signal, comprising:

a plurality of inference blocks, each of the inference blocks receiving the input signals and generating a consequent defined by one of a plurality of fuzzy singletons,

calculating means for calculating maximum values of a membership characteristic function for each of said plurality of fuzzy singletons,

means for calculating an inference grade of each of said plurality of fuzzy singletons from the maximum values,

means for performing a weighted addition between the inference grade of each of said fuzzy singletons and the maximum membership characteristic function values to obtain a weighted addition value,

means for performing an addition of said inference grade of each of said plurality of fuzzy singletons to obtain an addition value,

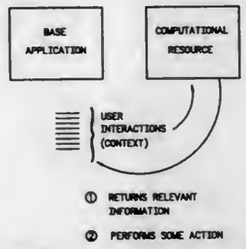
means for dividing said weighted addition value by said addition value to determine a defuzzified output signal, and

means for scaling the defuzzified output signal into a value having a predetermined range width.

5,546,502
AUTOMATIC INVOCATION OF COMPUTATIONAL RESOURCES WITHOUT USER INTERVENTION

Peter Hart, Menlo Park, Calif., and Jamey Graham, San Jose, Calif., assignors to Ricoh Company, Ltd., Tokyo, Japan, and Ricoh Corporation, Menlo Park, Calif.

Filed Mar. 19, 1993, Ser. No. 34,458
Int. Cl.[6] G06F *17/20*
U.S. Cl. 395—12 **22 Claims**



1. A system for dynamically invoking a computational resource for a user comprising:

means for operating for the user a base application such that the computational resource is external to the base application;

means for receiving into the base application a series of user interactions which establish a context; and

means for in response to the series of user interactions dynamically instructing, responsive to the context, the computational resource to perform selected computational operations.

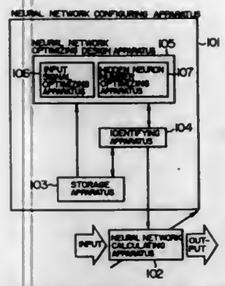
5,546,503
APPARATUS FOR CONFIGURING NEURAL NETWORK AND PATTERN RECOGNITION APPARATUS USING NEURAL NETWORK

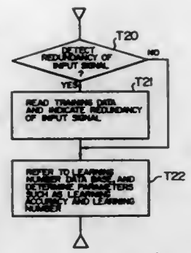
Shigeo Abe, Katsuta; Masahiro Kayama, Hitachi; Hiroshi Takenaga, Naka; Yasuo Morooka, Hitachi; Junzo Kawakami, Mito, and Masao Takatoo, Katsuta, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 13, 1991, Ser. No. 744,263
Claims priority, application Japan, Nov. 9, 1990, 2-302440
Int. Cl.[6] G06K *9/00*; G06F *15/46*
U.S. Cl. 395—23 **20 Claims**

1. An apparatus for configuring a multi-layered neural network comprising:

neurons in each layer of the multi-layered configuration and synapses connecting said neurons between the layers for





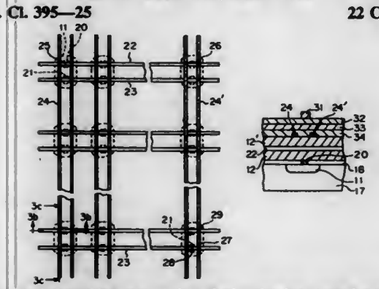
storing input/output training data sets, each including input data signals and corresponding desired output data signals; and

means for optimizing said neural network in accordance with said training data sets to satisfy given conditions which include a designated learning time period, an optimized neural network scale and minimized erroneous operations for input data other than said training data sets.

5,546,504
INFORMATION PROCESSING DEVICE CAPABLE OPTICALLY WRITING SYNAPSE STRENGTH MATRIX

Satoru Isoda, and Yoshio Hanazato, both of Hyogo-ken, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 9, 1994, Ser. No. 337,153
Claims priority, application Japan, Jul. 10, 1990, 2-184526
Int. Cl.[6] G06G *7/16*; H01L *31/08*
U.S. Cl. 395—25 **22 Claims**



1. An information processing device having neural network functions for performing information processing comprising:

a semiconductor integrated circuit section having a surface and including a plurality of neuronic circuit regions having a neuronic function which is one of said neural network functions formed in said surface;

first molecular film means on said integrated circuit section surface, said first molecular film means comprising at least one first wiring line, a photoelectric material contacting a first portion of said first wiring line, and at least one second wiring line having a first portion contacting said photoelectric material, said first portion of said first wiring line, said first portion of said second wiring line, and said photoelectric material defining a junction;

a transparent insulating film on said first molecular film means; and

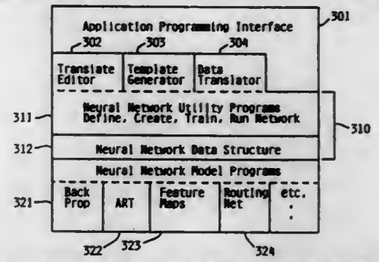
second molecular film means having a light-emitting function on said transparent insulating film, said second molecular film means positioned so as to illuminate at least one junction so as to electrically interconnect said first and second wiring lines;

wherein coupling between said plurality of neuronic circuit regions occurs through a combination of the light-emitting and photoelectric functions of said first and said second molecular film means.

5,546,505
PROGRAM PRODUCT FOR FACILITATING USE OF A NEURAL NETWORK

Shawn M. Austvold; Joseph P. Bigus; Jonathan D. Hesckel, and Paul A. Hoopers, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 986,889, Dec. 3, 1992, Pat. No. 5,317,676, which is a continuation of Ser. No. 687,364, Apr. 18, 1991, abandoned. This application May 27, 1994, Ser. No. 251,532
Int. Cl.[6] G06F *15/18*
U.S. Cl. 395—26 **7 Claims**



1. A program product for executing on a computer to enable an application program to run a neural network, said program product comprising a computer readable recording medium and a plurality of computer executable instructions recorded thereon, said computer executable instructions comprising:

means for identifying source data generated by said application program to be used by the neural network, said source data comprising a plurality of source data fields;

translation definition means for defining, with respect to each of said source data fields, a corresponding data transformation, wherein at least one of said data transformations is a transformation of data of one data type to data of another data type, and wherein said translation definition means comprises means for automatically generating a default data transformation definition with respect to each of said source data fields; and

means, responsive to said translation definition means, for translating source data contained in each said source data field according to the data transformation corresponding to said source data field, to produce a neural network input.

5,546,506
APPARATUS FOR AUTOMATICALLY GENERATING AND ADJUSTING FUZZY REASONING RULES BASED ON REASONING ERROR AND METHOD THEREFOR

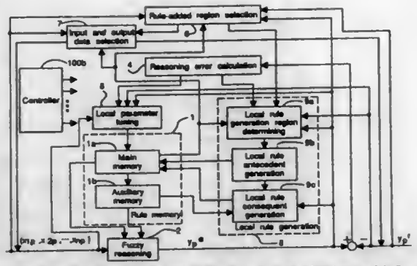
Shoichi Araki; Hiroyoshi Nomura; Isao Hayashi, and Noboru Wakami, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 897,359, Jun. 11, 1992, Pat. No. 5,440,672. This application Feb. 6, 1995, Ser. No. 386,526
Claims priority, application Japan, Jun. 12, 1991, 3-140158
Int. Cl.[6] G06F *17/00;15/18*
U.S. Cl. 395—75 **8 Claims**

1. An apparatus for automatically generating fuzzy reasoning rules, comprising a controller, said controller comprising:

rule memory for storing rule parameters of membership functions constituting fuzzy reasoning rules representing relationships between input data and output data, each of said fuzzy reasoning rules being composed of antecedents and consequents;

fuzzy reasoning means, connected to said rule memory, for performing a fuzzy reasoning process based on said rule



parameters of membership functions constituting said fuzzy reasoning rules stored in said rule memory and outputting results of said fuzzy reasoning process;

reasoning error calculation means, connected to said fuzzy reasoning means, for calculating a reasoning error and a change in the reasoning error to obtain a calculated reasoning error and a calculated change based on the results of said fuzzy reasoning process outputted from said fuzzy reasoning means and said plurality of pairs of predetermined input and output data;

parameter tuning means, connected to said rule memory, said fuzzy reasoning means and said reasoning error calculation means, for adjusting said rule parameters of membership functions constituting said fuzzy reasoning rules stored in said rule memory, based on the results of said fuzzy reasoning process outputted from said fuzzy reasoning means and a plurality of pairs of predetermined input and output data for said fuzzy reasoning process which are previously determined by a rule designer, said parameter tuning means being enabled to operate when said change in the reasoning error calculated by said reasoning error calculation means is larger than a predetermined second threshold value; and

rule generation means, connected to said rule memory and said reasoning error calculation means, for newly generating rule parameters of membership functions constituting said fuzzy reasoning rules and storing said newly generated rule parameters of membership functions constituting the fuzzy reasoning rules in said rule memory, said rule generation means being enabled to operate when said change in the reasoning error calculated by said reasoning error calculation means is equal to or smaller than said predetermined second threshold value,

wherein said reasoning error calculation means alternately enables said parameter tuning means and said rule generation means repeatedly to operate until said reasoning error calculated by said reasoning error calculation means is equal to or smaller than a predetermined first threshold value.

5,546,507

APPARATUS AND METHOD FOR GENERATING A KNOWLEDGE BASE

Wendy C. Staub, Strafford, Pa., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Aug. 20, 1993, Ser. No. 111,251

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—76 **24 Claims**

4. A method for automatically generating a knowledge base in a computer from a graphical representation of a logical tree having at least one non-disjunctive branch, comprising the steps of:

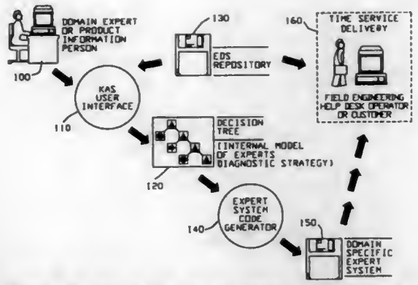
a) verifying the organization of said logical tree;

b) verifying the content of said logical tree;

c) generating a plurality of global attributes;

d) creating a plurality of classes; and

e) creating a plurality of rules as defined by said tree using said plurality of global attributes and said plurality of classes, wherein said rules are executable by an inference engine in a backward chaining mode;



wherein said step of verifying the content of said tree comprises the steps of:

b1) verifying that a valid formula is associated with each said leg;

b2) verifying that a valid test is associated with each said test node;

b3) verifying that a valid solution is associated with each solution node; and

b4) verifying that each link node in said logical tree is linked to either a procedure or to a domain.

5,546,508

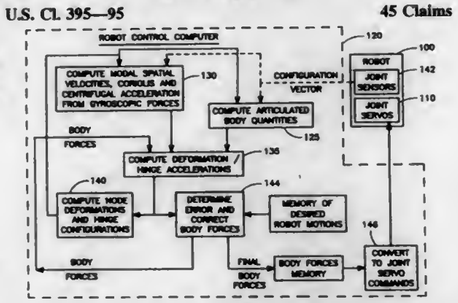
CONTROLLING FLEXIBLE ROBOT ARMS USING HIGH SPEED DYNAMICS PROCESS

Abhinandan Jain, Altadena, and Guillermo Rodriguez, La Canada, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 3, 1992, Ser. No. 862,861

Int. Cl.[6] G05B *19/40*

U.S. Cl. 395—95 **45 Claims**



1. A method for controlling a manipulator relative to a desired manipulator motion, said manipulator comprising plural bodies including an outermost body, and a relatively stationary innermost body, said plural bodies being sequentially connected together by movable hinges disposed between each plural body so connected and servos controlling said movable hinges in accordance with servo command signals corresponding to specified body forces of respective ones of said plural bodies, at least some of said plural bodies being flexible in plural deformation modes corresponding to respective modal spatial influence vectors relating deformations of plural spaced nodes of respective plural bodies to said plural deformation modes, said method comprising the steps of:

computing articulated body quantities for each of said plural bodies from respective modal spatial influence vectors;

computing modal deformation accelerations of said plural spaced nodes of respective plural bodies and hinge accelerations of said movable hinges from said specified body forces, from said articulated body quantities and from said modal spatial influence vectors;

comprising said modal deformation and hinge accelerations with said desired manipulator motion to determine an error, and correcting said specified body forces so as to reduce said error thereby producing corrected specified body forces;

generating said servo command signals by converting in a processor means said corrected specified body forces to servo commands to correct manipulator motion to said desired manipulator motion, and transmitting said servo command signals to said servos.

5,546,509

Patent Not Issued For This Number

5,546,510

Patent Not Issued For This Number

5,546,511

HIGH SPEED VIDEO IMAGE PRINTING METHOD AND AN APPARATUS THEREFOR

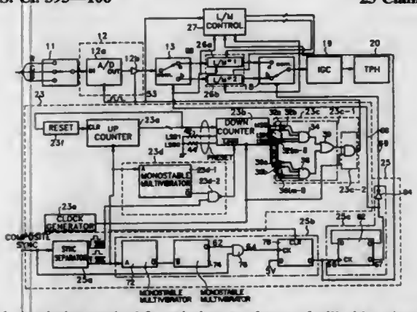
Heui-kuk Kwak, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co. Ltd., Kyungki-Do, Rep. of Korea

Filed Dec. 30, 1992, Ser. No. 998,845

Claims priority, application Rep. of Korea, Dec. 30, 1991, 91-25453

Int. Cl.[6] G06K *9/00*

U.S. Cl. 395—106 **23 Claims**



1. A printing method for printing one frame of still video signals having horizontal and vertical pixel arrangement by vertical lines, comprising the steps of:

sampling a video signal twice for one period of horizontal scanning in one frame to generate digitized pixel data;

alternately writing said digital pixel data in two line memories by frames; and

alternately reading out said digital pixel data written in said two line memories by frames, so as to print the read data.

5,546,512

Patent Not Issued For This Number

5,546,513

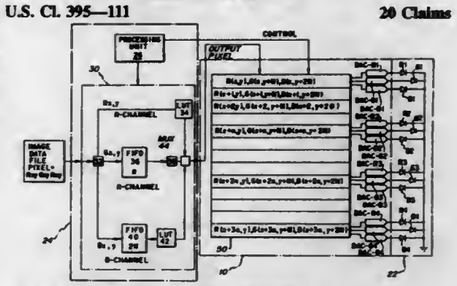
DATA TRANSMISSION SYSTEM FOR SPARSE ARRAY PRINT HEAD

David Orlicki; James Larrabee, both of Rochester, and Karen L. Herczeg, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 20, 1993, Ser. No. 123,833

Int. Cl.[6] G06K *15/00*

U.S. Cl. 395—111 **20 Claims**



1. A data transmission system comprising:

a subpixel data accessing means for receiving input lines of image data comprising a plurality of input pixel data words, wherein each input pixel data word includes a set of contiguous data bytes corresponding to color subpixel components of the input pixel data word, and for serially transmitting output lines of image data comprising a plurality of output pixel data words, wherein each output pixel data word includes a set of non-contiguous data bytes corresponding to subpixel color components from different input pixel data words from offset input lines; and

column correction means for receiving the serially transmitted output lines of image data and transmitting the output pixel data words of the serially transmitted output lines in parallel as column corrected output data lines, wherein the column correction means transmits a column corrected output data line for each received output pixel data word and each output pixel data word is included in a plurality of column correct output data lines.

5,546,514

PRINTING METHOD AND APPARATUS

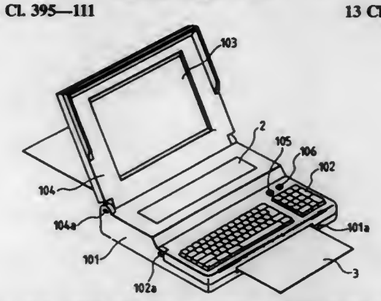
Masaki Nishiyama, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 994,982, Dec. 22, 1992. This application May 25, 1995, Ser. No. 450,625

Claims priority, application Japan, Dec. 25, 1991, 3-343284

Int. Cl.[6] G06K *15/00*

U.S. Cl. 395—111 **13 Claims**



1. A print control apparatus for controlling print means which receives data from a host computer and executes printing, said apparatus comprising:

determining means for determining whether key input means for supplying a paper feed instruction to the print means has been actuated longer than a predetermined time period; and

control means for controlling the print means to execute a paper feed operation by a predetermined amount in the event that said determining means determines that the key input means has been actuated shorter than the predetermined time period, controlling the print means to execute a paper feed operation continuously in the event that said determining means determines that the key input means has been actuated longer than the predetermined time period, and controlling the print means to stop the continuous paper feed operation in response to the key input means being actuated during the continuous paper feed operation.

5,546,515

IMAGE PROCESSING APPARATUS

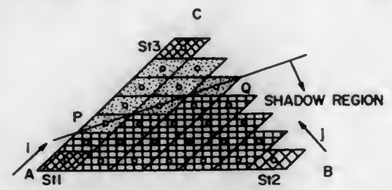
Yoshiyuki Mochizuki, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 86,861, Jul. 7, 1993, abandoned. This application Oct. 13, 1995, Ser. No. 542,874

Claims priority, application Japan, Jul. 8, 1992, 4-180840

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—133 **22 Claims**



1. An image producing apparatus for generating images using the distribution of illumination intensity values on a surface of an object consisting of quadrangle polygons, triangle polygons, or parallelogram polygons in a three dimensional space, said apparatus comprising:

a patch producing apparatus for producing two pairs of the same size parallelogram patches and the same size quadrangle patches from a quadrangle polygon, the same size triangle patches from a triangle polygon, or the same size parallelogram patches from a parallelogram polygon;

an element producing apparatus for producing two pairs of the same size parallelogram elements and the same size quadrangle elements from a quadrangle patch, the same size triangle elements and the same size parallelogram elements from a triangle patch, or the same size parallelogram elements from a parallelogram patch;

an illumination intensity interpolation domain deciding apparatus which selects sample elements in a patch and decides whether an element in the patch belongs to the interpolation domain which can be gotten the illumination intensity or the domain of shadows which can not be gotten the illumination intensity in accordance with the results of intersection decisions for said sample elements;

an illumination intensity interpolation calculating apparatus which calculates two radiosity values, B_1 and B_3 obtained from a light source for two elements in said interpolation domain with calculation representative points R_1 and R_3, decides whether a condition of

$$(\text{Min-threshold}) \leqq \frac{\min(\|\overline{R_1L}\|,\|\overline{R_3L}\|)}{\overline{R_1R_3}} \qquad (1)$$

is satisfied or not, where "||-||" represents the length of a vector, and calculates a radiosity value B_2 obtained from the light source for a element with a calculation representative point R_2 which has the relation of

$$R_2L=tR_1L+(1-t)R_3L$$

with using the roughly approximate interpolation equation if said condition is satisfied, or with using the accurately approximate interpolation equation if said condition is not satisfied;

a radiation method deciding apparatus which selects the patch with the maximum unshot energy, calculates the distance between the calculation representative point of the patch with the maximum unshot energy and the calculation representative point of a patch receiving the unshot energy from the patch with the maximum unshot energy and area values of the patch with the maximum unshot energy and the patch receiving the unshot energy, decides whether the condition that the ratio of said distance to the larger area value of said two area values is smaller than the threshold value is satisfied or not, and decides whether the radiation from the patch with the maximum unshot energy to the patch receiving the unshot energy is carried out with dividing the patch with the maximum unshot energy into elements or not dividing according to the consequence of the decision for said condition;

a form-factor interpolation domain deciding apparatus which selects sample elements in a patch receiving the unshot energy and decides whether an element in the patch belongs to the interpolation domain for form-factor calculation which can be gotten the unshot energy or the shadow domain for form-factor calculation which can not be gotten the unshot energy in accordance with the results of the intersection decisions for said sample elements;

a form-factor interpolation calculating apparatus which calculates two form-factor values, F_{ij1} and F_{ij3} for two elements in said interpolation domain for form-factor calculation, j_1 and j_3, with calculation representative points R_1 and R_3 that are obtained from the relation with patch (element) i with the calculation representative point S and the normal vector N_i, decides whether two conditions of

$$(\text{Min-threshold1}) \leqq \frac{N_i \cdot \overline{R_3S}}{N_i \cdot \overline{R_1S}} \leqq (\text{Max-threshold1}) \qquad (2)$$

and

$$(\text{Min-threshold2}) \leqq \frac{\min(\|\overline{R_1S}\|,\|\overline{R_3S}\|)}{\overline{R_1R_3}} \qquad (3)$$

are satisfied or not, where "·" represents inner product, calculates a form-factor value F_{ij2} for a element j_2 with a calculation representative point R_2 which has the relation of

$$R_2S=tR_1S+(1-t)R_3S$$

with using one of 4 interpolation equations classified by approximation levels according to the consequence of the satisfactions for said conditions, and calculates the radiosity value for an element obtained from the patch with the maximum unshot energy with using the form-factor value for the element;

an illumination intensity mapping apparatus which calculates a coordinates value at a point on the illumination intensity distribution space that is the direct product space consisting of a position on a surface and a illumination intensity at the position obtained from the calculation on said illumination intensity interpolation calculating apparatus and said radiosity calculating apparatus from coordinates values of the point and vertices of the polygon including the point on the 3 dimensional space, and outputs the illumination intensity value of the coordinates value at the point on the illumination intensity distribution space to the displaying apparatus.

5,546,516

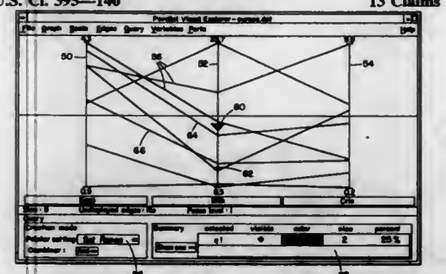
SYSTEM AND METHOD FOR VISUALLY QUERYING A DATA SET EXHIBITED IN A PARALLEL COORDINATE SYSTEM

Vernon Austel, Ossining; Avijit Chatterjee, Croton-On-Hudson, both of N.Y., and Alfred Inselberg, Ra'Anana, Israel, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 14, 1994, Ser. No. 355,848

Int. Cl.[6] G06T *11/00*

U.S. Cl. 395—140 **13 Claims**



1. A method for visualizing a multi-variate data set in a plurality of multi-dimensional presentations, said data set comprising a plurality of independent variables and for each independent variable, a plurality of dependent variables, said method performed by a computer having a graphical interface and user input means, said method comprising the steps of:

displaying said data set in parallel coordinate form on said graphical interface, so that each dependent variable of said data set is presented as a series of values along an axis, plural axes arranged in parallel, a polygonal line connecting values on said axes illustrating a relationship between said dependent variables and an independent variable;

superimposing on said graphical interface, through use of said user input means, graphical delimiters positioned on or between either of two adjacent parallel axes, said graphical delimiters identifying a data subset comprising at least one independent variable and dependent variables related thereto that are connected by a polygonal line extending between said adjacent parallel axes;

modifying a presentation of said polygonal line representing said data subset to differentiate said polygonal line from other polygonal lines representing remaining data subsets of said data set; and

displaying said data subset identified by said graphical delimiters in an alternate coordinate form on said graphical interface, so that each dependent variable value of said data subset, connected by a differentiated polygonal line between adjacent axes of said parallel coordinate form, is represented by a point on a pair of orthogonally intersecting axes, and said independent variable is represented by a point in space that is an intersection of projections of said dependent variable values, and further displaying boundaries representative of a limit or limits established by said graphical delimiters.

5,546,517

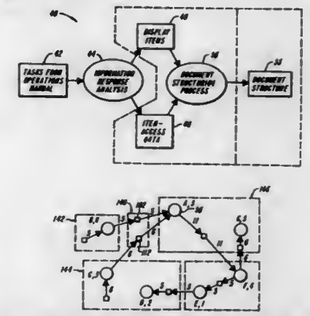
APPARATUS FOR DETERMINING THE STRUCTURE OF A HYPERMEDIA DOCUMENT USING GRAPH PARTITIONING

Joseph W. Marks, Belmont; Stuart M. Shieber, and Rebecca P. Hwa, both of Cambridge, all of Mass., assignors to Mitsubishi Electric Information Technology Center America, Inc., Cambridge, Mass.

Filed Dec. 7, 1994, Ser. No. 350,656

Int. Cl.[6] G06F *17/27;17/30*

U.S. Cl. 395—145 **8 Claims**



1. Apparatus for allocating display items to each page of a hypermedia document containing display items that are to be laid out on several linked pages, comprising:

means for automatically allocating said display items of said document to said pages by automatically specifying the assignment of said display items to each page by using a reduction to graph partitioning and an optimization technique for said graph partitioning and for automatically creating linkages between said pages including means for reducing said assigned display items and linkages to a graph partition to provide an optimized graph partition specifying assignments of display items and linkages, whereby a convenient document structure is automatically provided in which linkages and page content are automatically created, thus eliminating the necessity for the author to prespecify page content or linkage structure.

5,546,518

SYSTEM AND METHOD FOR COMPOSING A DISPLAY FRAME OF MULTIPLE LAYERED GRAPHIC SPRITES

Jon Blossom, Oakland, Calif., and Michael Edwards, Woodinville, Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Jan. 6, 1995, Ser. No. 369,649

Int. Cl.[6] G11B *27/02*

U.S. Cl. 395—152 **26 Claims**

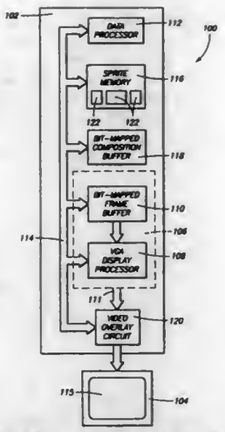
1. In a data processing apparatus having a graphics display device for displaying a display frame comprising a plurality of display frame pixels, the data processing apparatus having a display frame composition buffer with mapped locations corresponding to the individual display frame pixels, a method of displaying graphic sprites represented by sprite pixels and having specified depths relative to each other, the method comprising the following steps:

designating at least one of the graphic sprites to be a video sprite;

setting non-transparent pixels of the designated graphic sprite to a pre-selected key value;

writing at least the non-transparent pixels of the graphic sprites to the display frame composition buffer;

beginning said writing step with the pixels of the graphic sprite having the greatest depth and proceeding with the pixels of the remaining graphic sprites in order of decreasing depth, wherein each sprite pixel written to a particular display frame



composition buffer location replaces any sprite pixel previously written to that same particular display frame composition buffer location;

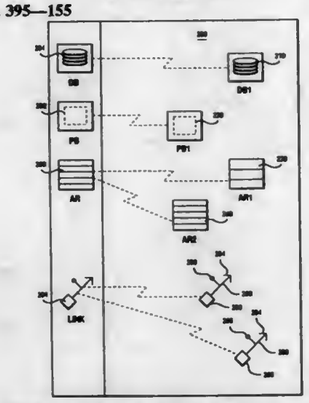
overlaying a video image on the display frame, said overlaying being performed only over those display frame pixels contained in the display frame composition buffer which equal the pre-selected key value, the designated graphic sprite and its video image thereby appearing layered among the other graphic sprites in accordance with the respective depths of the graphic sprites.

5,546,519

SYSTEM AND METHOD FOR VISUALLY PROGRAMMING ITERATION

Richard E. Berry, Georgetown, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 28, 1994, Ser. No. 203,142
Int. Cl.[6] G06F *3/14*
U.S. Cl. 395—155 **18 Claims**



1. A system for visually linking computer objects on a display in an object-oriented environment, comprising:

a link object represented by an icon on said display;

means for removably connecting said link object to a first system object having at least two elements and a second system object;

means for receiving an action request from a user input device; and

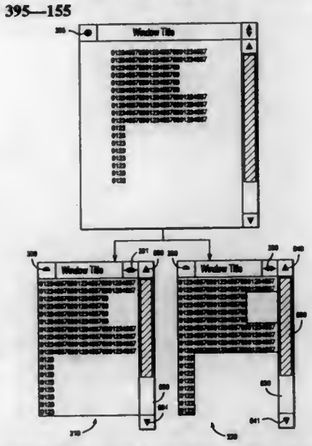
means for iterating said action request on each of said elements of said first system object and targeting said action at said second system object.

5,546,520

METHOD, SYSTEM, AND MEMORY FOR RESHAPING THE FRAME EDGES OF A WINDOW AROUND INFORMATION DISPLAYED IN THE WINDOW

Troy L. Cline, Cedar Park; Scott H. Isensee, Georgetown; Ricky L. Poston, and Jon H. Werner, both of Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 30, 1994, Ser. No. 315,644
Int. Cl.[6] G06F *3/14*
U.S. Cl. 395—155 **16 Claims**



1. A method for directing a computer system, having at least a display and user controls, to reshape at least a first portion of at least one frame edge of at least one window displayed on the display, comprising the steps of:

displaying information in the window, the information being arranged in a shape within the window, wherein a first number of empty spaces reside between at least a portion of the information and the at least first portion of the at least one frame edge; and

reshaping the at least first portion of the at least one frame edge around the shape of the information such that a second number of empty spaces reside between the at least a portion of the information and the at least one first portion of the at least one frame edge, wherein the second number is less than the first number.

5,546,521

DYNAMIC PRESENTATION OF CONTEXTUAL HELP AND STATUS INFORMATION

Anthony E. Martinez, Ramsey, N.J., assignor to International Business Machines Corporation, Armonk, N.Y.

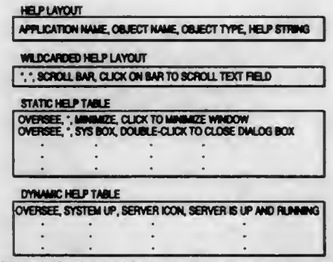
Continuation of Ser. No. 776,958, Oct. 15, 1991, abandoned.
This application Oct. 17, 1994, Ser. No. 324,294
Int. Cl.[6] G06F *3/14;17/30*
U.S. Cl. 395—155 **8 Claims**

1. In a data processor, a method of displaying contextual help to a user thereof comprising the steps of:

initializing a help program;

automatically determining whether a pointer in a graphical user interface in the processor is located over a first data object;

responsive to determining that said first data object is present under the pointer and determining that said help program is



initialized, finding information stored in the processor corresponding to the first object, wherein said finding step includes the steps of:

referring to a first table in which corresponding information correlated to the objects in the graphical user interface is dynamically updated to account for changes in the objects;

responsive to not finding corresponding information in said first table, referring to a second table in which corresponding information correlated to the objects in the graphical user interface is stored longer than in said first table;

responsive to not finding corresponding information in said second table, referring to a third table in which corresponding information correlated to the type of objects generally found in the graphical user interface is stored; and

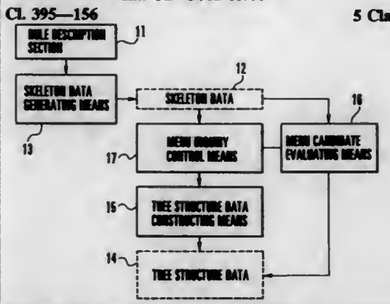
responsive solely to finding information corresponding to the first data object, displaying the information to the user proximate to the location of the pointer.

5,546,522

OPTIMAL MENU INQUIRY SYSTEM AND SYSTEM FOR EDITING STRUCTURE DATA BY HIERARCHICAL MENU INQUIRY PROCESSING

Tetsuro Nishida, and Takashi Shinoda, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Feb. 16, 1994, Ser. No. 197,194
Claims priority, application Japan, Feb. 18, 1993, 5-051326; Dec. 3, 1993, 5-339029
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—156 **5 Claims**



1. An optimal menu inquiry system for displaying inquiries with a hierarchical structure as menu items comprising:

skeleton data generating means for generating inquiries from a rule description describing a context of a plurality of inquiries as skeleton data by sequentially linking the plurality of inquiries, from a first inquiry to at least one subsequent inquiry in a form of a tree structure;

tree structure data constructing means for constructing and changing tree structure data by sequentially retracing the skeleton data from the first inquiry, the skeleton data being sequentially generated by said skeleton data generating means in correspondence with each of the inquiries from the first inquiry to the at least one subsequent inquiry;

menu display means for displaying a plurality of menu items corresponding to constructed/changed tree structure data;

control means for controlling said tree structure data constructing means to change the tree structure data when one of the menu items displayed by said menu display means is selected by a user; and

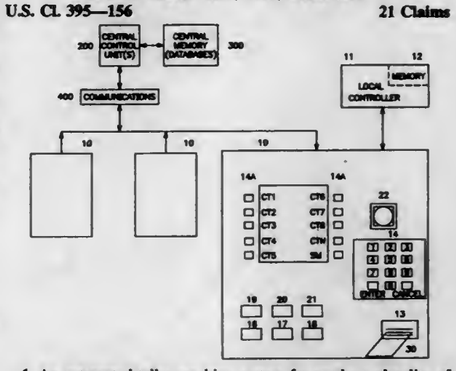
menu candidate determining means, when the skeleton data includes an evaluable expression, for evaluating the evaluable expression in the skeleton data using the constructed/changed tree structure data, and determining at least one of the menu items to be displayed by said menu display means.

5,546,523

ELECTRONIC FUND TRANSFER SYSTEM

James G. Gatto, 3102 Sutherland Hill Ct., Fairfax, Va. 22031

Filed Apr. 13, 1995, Ser. No. 421,486
Int. Cl.[6] G06F *15/00;17/60;* G06K *5/00*
U.S. Cl. 395—156 **21 Claims**



1. An automated teller machine system for use by a plurality of users comprising:

user identification cards unique to each user and having information stored thereon including transaction information corresponding to custom transactions predefined by the user of the identification card;

at least one user accessible transaction terminal comprising:

card reader means for reading information stored on the user's identification card;

display means for displaying a user customized menu comprising one or more of the custom transactions based on information read from the user's identification card;

input means for enabling the user to select a custom transaction from the customized menu for execution; and

control means for executing a selected transaction.

5,546,524

METHOD AND APPARATUS FOR INTERLOCKING GRAPHICAL OBJECTS

Alex C. Chow, and John S.-Y. Wang, both of Austin, Tex., assignors to International Business Machines Corp., Armonk, N.Y.

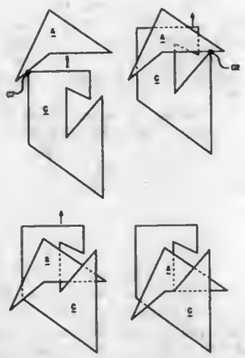
Filed Dec. 15, 1993, Ser. No. 167,754
Int. Cl.[6] G06F *3/14*
U.S. Cl. 395—157 **16 Claims**

1. An apparatus for moving graphical objects comprising:

a display for displaying a plurality of graphical objects according to a display priority;

means for moving, responsive to a user input, a first displayed graphical object; and

means for modifying, responsive to a user input, a display priority of the moved graphical object as the graphical object is moved such that the moved graphical object is displayed



under a first portion and above a second portion of a second displayed graphical object.

5,546,525

COMPUTER USER INTERFACE WITH MULTIMODE SELECTION OF DISPLAYED CONTROLS

Richard J. Wolf, Sherborn; Donald J. Fossgreen, Worcester; Robert Rosen, Cambridge; Christopher M. Vento, North Andover, all of Mass., and Doris Wells-Papanek, Menlo Park, Calif., assignors to Lotus Development Corporation, Cambridge, Mass.

Filed Nov. 13, 1989, Ser. No. 436,517
Int. Cl.[6] G06F *3/14*
U.S. Cl. 395—159 **12 Claims**



1. A method of implementing a screen comprising a plurality of data objects and a dialog box comprising a plurality of controls and a plurality of operations comprising the steps of:

generating said dialog box on said screen, having at least one control corresponding to an operation requiring selection among data objects currently displayed on the screen outside of said dialog box;

in response to user input for selection of data objects on the screen, altering display of said dialog box to reduce obstruction of the portion of the screen where the data objects undergoing selection are displayed;

enabling selection of said data objects within said screen; and

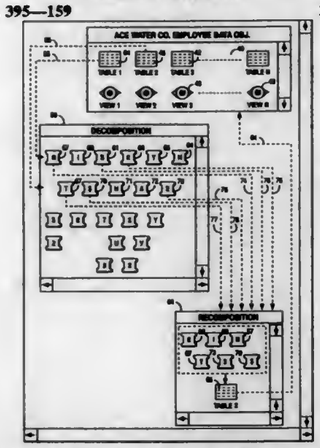
executing said operation on said selected data objects.

5,546,526

RECONFIGURATION OF DATABASE BY INTERACTIVE MANIPULATION OF ICONS

Shih-Gong Li, and Theodore J. L. Shrader, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 10, 1993, Ser. No. 164,864
Int. Cl.[6] G06F *3/14*
U.S. Cl. 395—159 **29 Claims**



1. A system for restructuring, by a user, on a user-interactive display, tables of databases in which data of said databases is stored in a structure of said tables made of columns, comprising:

means for graphically representing said columns as icons on said display,

means for graphically representing tables as combinations of said column icons,

means for graphically decomposing and displaying said column icons associated with at least one of said tables into discrete column icons in a displayed pool area, and

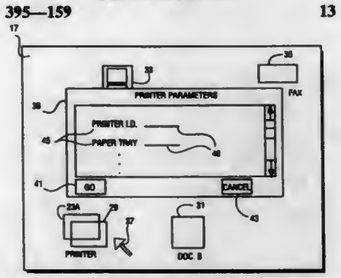
means for permitting the user to select column icons from said displayed pool area and combining said column icons in a displayed recomposition area to form a new table.

5,546,527

OVERRIDING ACTION DEFAULTS IN DIRECT MANIPULATION OF OBJECTS ON A USER INTERFACE BY HOVERING A SOURCE OBJECT

Greg P. Fitzpatrick, Keller, and Thom R. Haynes, Euless, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 23, 1994, Ser. No. 247,384
Int. Cl.[6] G06F *3/14*
U.S. Cl. 395—159 **13 Claims**



1. A method of directly manipulating a source object on a user interface of a data processing system so as to perform an action,

said action having at least one parameter for implementing said action, said parameter having a default, comprising the steps of:

a) determining if said source object is being directly manipulated;

b) determining if said source object is located over a target that is suitable for a drop in of said source object;

c) if said target is suitable for a drop of said source object, then determining if said source object is located on said target without being dropped for a predetermined amount of time; and

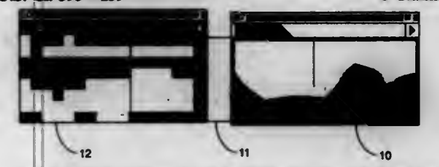
d) if said source object is located on said target without being dropped for said amount of time, then prompting a user for an override of said default.

5,546,528

METHOD OF DISPLAYING MULTIPLE SETS OF INFORMATION IN THE SAME AREA OF A COMPUTER SCREEN

Kevin R. Johnston, Mountain View, Calif., assignor to Adobe Systems Incorporated, Mountain View, Calif.

Filed Jun. 23, 1994, Ser. No. 265,653
Int. Cl.[6] G06F *3/00*
U.S. Cl. 395—159 **8 Claims**



1. A method for combining on a computer display an additional set of information into a group of multiple sets of information needed on a recurring basis, comprising the steps of:

establishing an area on the computer display in which the group of multiple sets of information is to be displayed, the area having a size which is less than the entire area of the computer display;

providing within the area a plurality of selection indicators, one associated with a corresponding one of the multiple sets of information; and

selecting a second of the multiple sets of information from the group for display within the area by activating a selection indicator associated with a corresponding one of the multiple sets of information, whereby the second of the multiple sets of information is substituted within the area of the display for the first set of information; and

combining the additional set of information, displayed in a different area of the display from the established area, into the group of multiple sets of information so that the additional sets of information may be selected in the same manner as the other sets of information in the group.

5,546,529

METHOD AND APPARATUS FOR VISUALIZATION OF DATABASE SEARCH RESULTS

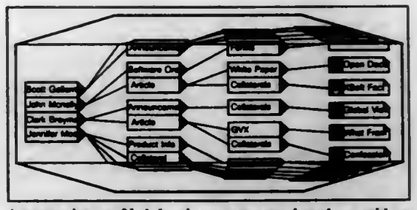
Frank H. Bowers, Mountain View, and Stuart K. Card, Los Altos Hills, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 28, 1994, Ser. No. 283,004
Int. Cl.[6] G06F *15/72*
U.S. Cl. 395—159 **9 Claims**

1. A method for generating hierarchically related information for the results of a query to a database, said database for storing documents, said method comprising the steps of:

a) executing a search on a database to obtain a set of documents;

b) receiving a set of N ordered user specified view preferences, each of said user specified view preferences defining a property of information stored in said database;



c) generating an N+1 level tree structure based on said set of documents and said set of N ordered user specified view preferences;

d) displaying a reference surface on which said tree structure is displayed, said reference surface having a first area for showing a first portion of the tree structure in detail and a second area for showing second portions of said tree structure lacking detail;

e) determining a layout of said tree structure relative to said reference surface;

f) mapping said tree structure to said reference surface based on said layout to create tree display data; and

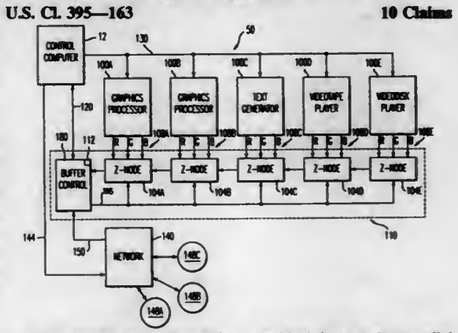
g) displaying said tree structure on said reference surface.

5,546,530

METHOD AND APPARATUS FOR RENDERING GRAPHICAL IMAGE USING PARALLEL PROCESSING

Jean-Jacques G. Grimaud, Portola Valley; Jaron Z. Lanier, Palo Alto; Arthur Abraham, Oakland, and Young Harvill, San Mateo, all of Calif., assignors to VPL Research, Inc., Redwood City, Calif.

Continuation of Ser. No. 170,566, Oct. 6, 1993, abandoned, and a continuation of Ser. No. 621,450, Nov. 30, 1990, abandoned. This application Oct. 25, 1994, Ser. No. 328,505
Int. Cl.[6] G06F *15/16*
U.S. Cl. 395—163 **10 Claims**



1. An apparatus for rendering graphical images by parallel processing, comprising:

a plurality of processors, each processor comprising:

model receiving means for receiving a model of an image, the model comprising a plurality of linked nodes, each node having associated therewith data representing an attribute of the image;

node data receiving means for receiving node data corresponding to a change in the image;

rendering means, coupled to the model receiving means, for rendering only a portion of the image corresponding to a subset of the plurality of linked nodes, the portion of the image comprising a plurality of pixels;

a buffer comprising a plurality of buffer elements, each buffer element comprising:

a first input terminal for receiving pixel data from a corresponding processor;

an output terminal for outputting pixel data;

a second input terminal for receiving pixel data from the output terminal of another buffer element; and

multiplexing means, coupled to the first and second input terminals and to the output terminal, for selecting the pixel data from one of the first or second input terminals and for communicating the selected pixel data to the output terminal;

wherein each of said processors renders only a portion of said image corresponding to the subset of the plurality of linked nodes thereof, and said processors operate simultaneously on different portions of the image.

5,546,531

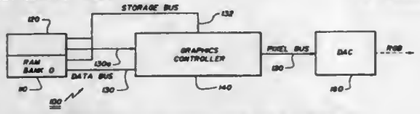
VISUAL FRAME BUFFER ARCHITECTURE

Louis A. Lippincott, Roebling, N.J., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 275,644, Jul. 15, 1994, abandoned, which is a continuation of Ser. No. 870,564, Apr. 17, 1992, abandoned. This application Apr. 20, 1995, Ser. No. 425,785

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—164 **56 Claims**



1. An apparatus for processing visual data, comprising:

(a) a first storage means;

(b) a second storage means; and

(c) a graphics controller coupled to the first and second storage means, wherein:

the first storage means stores visual data in a first data format;

the second storage means stores visual data in a second data format;

the graphics controller receives m bits of the visual data in the first data format from the first storage means concurrently with n bits of the visual data in the second data format from the second storage means and merges the visual data in the first data format with the visual data in the second data format to generate a merged pixel stream for display;

the visual data in the second data format is in a subsampled data format; and

the graphics controller upsamples the visual data in the second data format to generate the merged pixel stream.

5,546,532

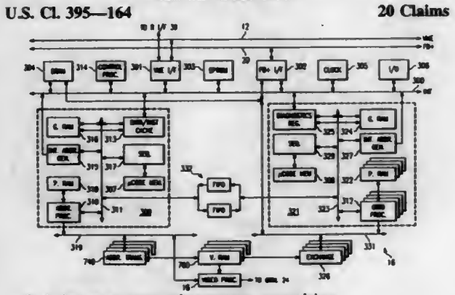
DATA-ARRAY PROCESSING SYSTEM

Neil F. Trevett, Kingston-upon-Thames, United Kingdom, assignor to 3DLabs Limited, London, United Kingdom

Filed Feb. 1, 1993, Ser. No. 12,483

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—164 **20 Claims**



1. A data-array processing system, comprising:

a first memory for storing an array of data elements;

a processor configured and connected to perform a series of processing operations on data-elements stored in a first section of said first memory and to perform a copying operation after each processing operation in which data-elements are copied from said first section to a second section of said first memory; and

output hardware configured to output the data-elements in said second section of said first memory;

wherein said processor sets, during said processing operation, a respective flag indicative of each of a plurality of portions of said first section which is modified during said processing operation, and copies, during said copying operation, only each flagged portion.

5,546,533

DYNAMIC DEVICE RECONFIGURATION HAVING RESTRICTED MAIN STORAGE ACCESS FOR SUBSYSTEM EMPLOYING MAGNETIC UNITS

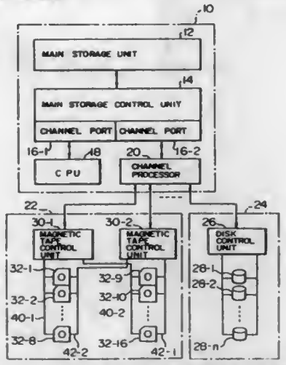
Susumu Koyama, Kawasaki, Japan, assignor to Fujitsu Limited, Japan

Continuation of Ser. No. 162,214, Dec. 2, 1993, abandoned. This application Oct. 16, 1995, Ser. No. 543,771

Claims priority, application Japan, Dec. 10, 1992, 4-330274

Int. Cl.[6] G06F *11/00;11/30*

U.S. Cl. 395—182.03 **24 Claims**



1. An error recovering apparatus for subsystems which employ magnetic tape units, said apparatus comprising:

a subsystem including magnetic tape units; and

a host device having a main storage area for executing input/output commands to transfer data between said host device and said subsystem by writing data to said subsystem or reading data from said magnetic tape units; said subsystem including:

a plurality of input and output control units for receiving the commands from said host device and controlling execution of the commands;

a subsystem data compressor/expander corresponding to each input and output control unit for compressing and expanding data transferred between said host and said subsystem;

a buffer memory for storing data compressed by said subsystem data compressor/expander and data read from said magnetic tape units;

said input and output control units executing a process on one of said magnetic tape units having a tape medium mounted therein by writing data transferred from said host device from said buffer memory to said one of said magnetic tape units after it has been compressed by said data compressor/expander, or by transferring data read from said one of said magnetic tape units and expanded by said data compressor/expander to said host device, after it has been stored in said buffer memory and expanded by said data compressor/expander; and

error detection means for detecting any data writing errors generated by said one of said magnetic tape units while data from said host device is being written to said one of said tape units based on the commands from said host device and for informing said host device of detected errors, said host device including:

save means for reserving a save area in said main storage area and for writing data remaining in said buffer memory to said save area when an error is detected by said error detection means;

tape shift instruction means for making said one of said magnetic tape units discharge which has generated an error the tape medium when an error is detected by said error detecting means, and for designating another magnetic tape unit in said subsystem to shift the discharged tape medium into;

rewriting means for rewriting data from said save area into said another magnetic tape unit; and

compression/expansion means performing data compression before data is written in said save area by said save means and for performing expansion before compressed data read from said save area is rewritten in said another magnetic tape unit by said rewriting means.

2. An apparatus according to claim 1, wherein said save means reserves, in said main storage area, a save area having a size sufficiently large to store said data remaining in said buffer memory.

5,546,534

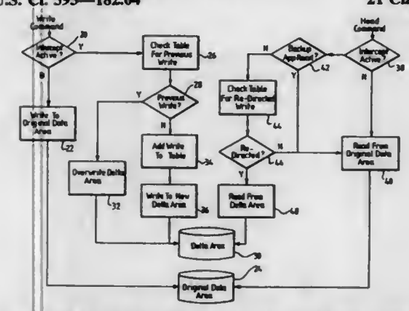
METHOD OF OPERATING A COMPUTER SYSTEM

Peter B. Malcolm, Devon, United Kingdom, assignor to Intelligence Quotient International Ltd., United Kingdom

Continuation of Ser. No. 93,386, Jul. 19, 1993, abandoned. This application Jun. 1, 1995, Ser. No. 456,370

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—182.04 **21 Claims**



1. A method of operating a microprocessor-based computer system including a random access memory, a central processing unit and storage means, the method comprising the steps of:

providing a backup process running on the computer system and which is operable to issue a start signal and a stop signal and to perform at least one backup read operation to read original data from the storage means,

providing first instructions stored in said memory to said central processing unit to cause said central processing unit to perform at least one normal write operation to write data periodically to a primary area of said storage means, and at least one normal read operation to read data from said storage means,

after receiving said start signal, performing an interception operation to intercept said write operation, and to write data to a secondary storage area of the storage means so as to preserve the original data which would otherwise be overwritten by said write operation, maintaining a first record of said writing to the secondary area and, on performing one of said backup and normal read operations, interrogating said first record to read data from one of the primary and the secondary storage areas according to the first record, whereby the backup process is provided with preserved original data in the state it was in before said start signal was issued and including, after said start signal, keeping a second record indicative of the extent to which said backup process has progressed, and, on receipt of instructions for a write operation of said storage means, determining from said second record whether the portion of said primary area of said storage means that is to be written to has been backed up by said backup process, and, if said portion has been backed up, allowing said write operation to write to said primary area of said storage means without said write operation being intercepted.

5,546,535

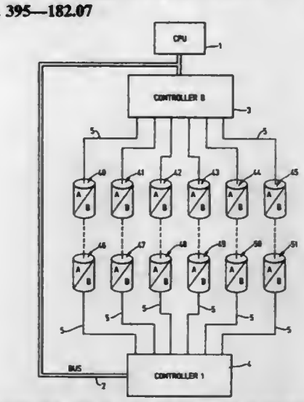
MULTIPLE CONTROLLER SHARING IN A REDUNDANT STORAGE ARRAY

David C. Stallmo; Anthony Andrews, and Candace Brinkman, all of Boulder, Colo., assignors to EMC Corporation, Hopkinton, Mass.

Continuation of Ser. No. 852,374, Mar. 13, 1992, abandoned. This application Jan. 13, 1995, Ser. No. 372,874

Int. Cl.[6] G11C *29/00*

U.S. Cl. 395—182.07 **14 Claims**



1. A redundant data storage array system including:

a. a multiplicity of physical data storage units, each physical data storage unit comprising at least one logical data storage unit;

b. at least two logical arrays, each comprising at least one logical data storage unit;

c. at least two redundant array controllers, each corresponding to a logical array, at least one redundant array controller actively coupled to at least one physical data storage unit to which at least one other array controller is actively coupled, and each capable of accessing only the corresponding logical array unless another array controller has failed, whereupon an array controller other than the failed array controller is granted access to the logical array corresponding to the failed array controller; and

d. means in each redundant array controller for activating a secondary event management means corresponding to a failed controller after the switch management means determines that such a failure has occurred;

wherein each redundant array controller further includes a normally active primary event management means for controlling data flowing into and out of only the logical array corresponding to that array controller, and at least one normally dormant secondary event management means for controlling the flow of data into and out of only a logical array corresponding to another controller only after the failure of such other controller, the at least one secondary event management means becoming active only when the other controller fails, such that the primary event management means and the at least one secondary event management means share the redundant

array controller that includes the primary event management means and the at least one secondary event management means;
wherein the primary event management means is capable of accessing only the logical array corresponding to the redundant array controller, and the secondary event management means is capable of accessing only the logical array corresponding to the failed controller; wherein each redundant array controller includes a switch management means for determining that another array controller within the system has failed;
wherein the switch management means receives messages from other array controllers on a periodic basis and includes a resetable timer for determining when the time between receipt of each message has exceeded a specified duration.

5,546,536

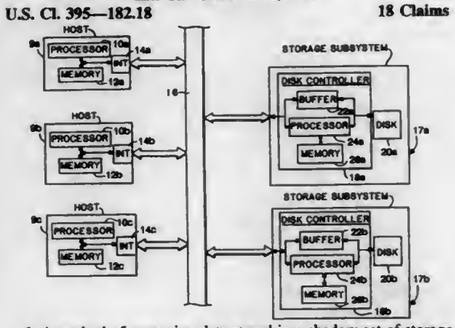
LOG FOR SELECTIVE MANAGEMENT OF SPECIFIC ADDRESS IN A SHADOW STORAGE SYSTEM

Scott H. Davis, Merrimack; William L. Goleman, Nashua; David W. Thiel, Amherst, all of N.H.; Robert G. Bean, and James A. Zahrobsky, both of Colorado Springs, Colo., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 171,189, Dec. 21, 1993, abandoned, which is a continuation of Ser. No. 32,831, Mar. 10, 1993, abandoned, which is a continuation of Ser. No. 374,251, Jun. 30, 1989, abandoned. This application Mar. 23, 1995, Ser. No. 409,905

Int. Cl.[6] G06F *11/08;11/14*

U.S. Cl. 395—182.18 **18 Claims**



1. A method of managing data stored in a shadow set of storage media comprising a first storage medium and a second storage medium each accessible by a plurality of data processing devices, said method comprising the steps of:

A. maintaining a log of information associated with write commands received from the data processing devices, comprising the steps of:

1. receiving a first write command from one of the data processing devices directed to said first storage medium, said first write command including data and first address information;
2. writing said data to a location in said first storage medium determined by said first address information;
3. issuing an end message indicative of whether the step of writing to said first storage medium was completed successfully;
4. writing said first address information to said log;
5. receiving a second write command from said one of the data processing devices directed to said second storage medium, said second write command including said data and second address information;
6. writing said data to a location in said second storage medium determined by said second address information;
7. issuing an end message indicating whether the step of writing to said second storage medium was completed successfully; and
8. writing said second address information to said log; and

B. implementing a management operation on only locations in the shadow set of said storage media indicated by address information in said log to make data in said first storage medium identical to data stored in corresponding locations in said second storage medium when an end message is issued indicating a write operation to one of the first and second storage media was not completed successfully.

5,546,537

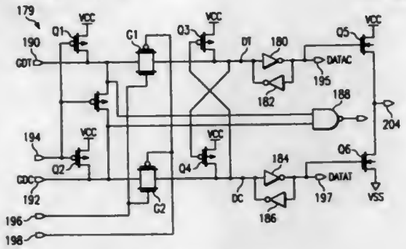
METHOD AND APPARATUS FOR PARALLEL TESTING OF MEMORY

David C. McClure, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation of Ser. No. 85,980, Jun. 30, 1993, abandoned. This application Mar. 27, 1995, Ser. No. 410,383

Int. Cl.[6] G06F *11/00;* G11C *7/00*

U.S. Cl. 395—183.21 **25 Claims**



14. A memory testing apparatus comprising:

a plurality of data bus drivers, each data bus driver having a true input and a complement input connected to a set of memory cells and having a true output and a complement output, wherein the true outputs are connected together at a first point and the complement outputs are connected together at a second point;

a data bus circuit, wherein the data bus circuit has a pair of inputs, a true input connected to the first point and a complement input connected to the second point, and a pair of outputs, a true output and a complement output;

testing means for simultaneously addressing a plurality of memory cells in a memory, wherein each of the memory cells has the same data written into it for given output; and

simultaneously reading data form the plurality of memory cells into a data bus circuit having a pair of inputs, a true input connected to the first point and a complement input connected to the second point, and a pair of output connected to a sensing circuit, the sensing circuit having an output, wherein an absence of error is indicated if the data from all of the memory cells accessed for a given output are identical; wherein data is read from the plurality of memory cells by simultaneously addressing the plurality of memory cells and, wherein the data bus circuit includes a true output and a complement output and the first circuit includes a first transistor and a second transistor, the first transistor having a gate connected to the true output of the data bus circuit and the second transistor having a gate connected to the complement output of the data bus circuit, the first transistor having a drain connected to an upper power supply voltage, the second transistor having a source connected to the lower power supply voltage, and the source of the first transistor and the drain of the second transistors being connected to an output of the first circuit.

5,546,538

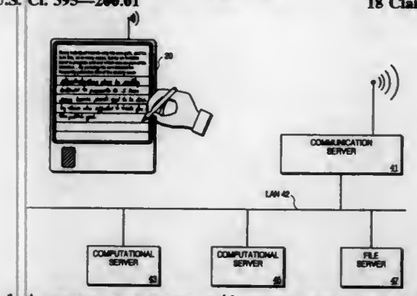
SYSTEM FOR PROCESSING HANDWRITING WRITTEN BY USER OF PORTABLE COMPUTER BY SERVER OR PROCESSING BY THE COMPUTER WHEN THE COMPUTER NO LONGER COMMUNICATE WITH SERVER

David A. Cobbley; James A. Valerio, and Frederick J. Pollack, All of Portland, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 14, 1993, Ser. No. 167,523

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.01 **18 Claims**



1. A computer arrangement, said computer arrangement comprising the elements of:

a portable computer device, said portable computer device comprising:

an input device comprising a stylus and a flat panel display, said input device accepting input data on said flat panel display from a user, said input data comprises handwriting written by said user; and

a wireless communication subsystem, said wireless communication subsystem transmitting said input data, said wireless communication subsystem operating concurrently with said input device; and

a server, said server receiving said transmitted input data, said server processing said input data to generate encoded text interpreted from said handwriting written by said user, said server transmitting processed data to said portable computer device for subsequent use by said portable computer device;

wherein, when said input data is not transmitted over said wireless communication subsystem to said server since the portable computer device can no longer communicate with the server, then said input data is processed on said portable computer device to generate said processed data.

5,546,539

METHOD AND SYSTEM FOR UPDATING FILES OF A PLURALITY OF STORAGE DEVICES THROUGH PROPOGATION OF FILES OVER A NEWORK

William F. Poling, Beaverton, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 174,836, Dec. 29, 1993, abandoned. This application Oct. 12, 1995, Ser. No. 542,039

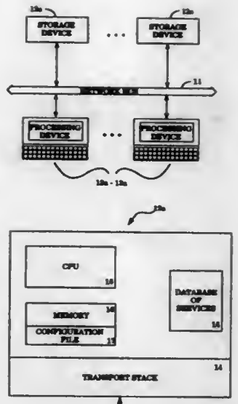
Int. Cl.[6] G06F *15/16*

U.S. Cl. 395—200.05 **18 Claims**

1. A method for supporting parallel distribution of a file between a plurality of storage devices coupled to a network bus, the method comprising the steps of:

configuring at least two storage devices of the plurality of storage devices, wherein a first storage device contains a first master file and a second storage device contains a sub-master file, said sub-master file being a copy of said first master file which can be distributed over the network bus;

configuring at least two storage devices of the plurality of storage devices to receive and contain a first clone file, said first clone file of a third storage device of said at least two



storage devices is a non-transferable copy of said first master file obtained from said first storage device and said first clone file of a fourth storage device of said at least two storage devices is a non-transferable copy of said sub-master file based on said first master file;

advertising over the network bus that the plurality of storage devices are coupled to the network bus;

periodically ascertaining by at least said fourth storage device as to whether said first clone file differs from said sub-master file; and

updating said first clone file contained in said fourth storage device by overwriting said first clone file with contents of said first master file after determining that said first clone file differs from said sub-master file contained in said second storage device.

5,546,540

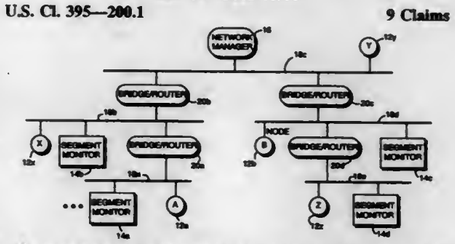
AUTOMATIC TOPOLOGY MONITOR FOR MULTI-SEGMENT LOCAL AREA NETWORK

Gerard White, Tyngsboro, Mass., assignor to Concord Communications, Inc., Marlboro, Mass.

Filed Jan. 14, 1991, Ser. No. 641,156

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.1 **9 Claims**



9. A monitor for determining the topology of a local area network (LAN), where the LAN includes a plurality of end nodes arranged into one or more segments interconnected by segment interconnection devices, the topology monitor comprising:

network manager means, including:

means for receiving a new-node message which indicates the presence of a new end node connected to the LAN;

means for transmitting a test-request message in response to receipt of the new-node message, the test-request message requesting that a test message be sent to the new end node; and

means for receiving a test-seen message in response to the test-request message; and

a plurality of segment monitor means, connected via the LAN to the network manager means, wherein each segment monitor includes:

means for detecting the presence of the new end node, and in response thereto, transmitting the new-node message to the network manager means;

means for receiving the test-request message from the network manager means;

means for transmitting a test-node message to the new end node if the test-request message from the network manager means is intended for this particular segment monitor; and

means for transmitting the test-seen message to the network manager if the test-request message is intended for another segment monitor.

5,546,541

SYSTEM FOR ROUTING TRANSACTION COMMANDS TO AN EXTERNAL RESOURCE MANAGER WHEN THE TARGET RESOURCE IS NOT MANAGED BY THE LOCAL TRANSACTION MANAGING COMPUTER PROGRAM

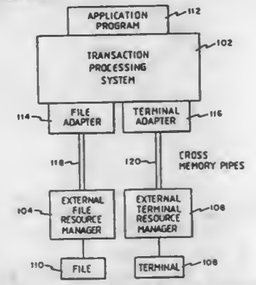
Robert M. Drew, Cary, N.C.; Dennis L. Plum, and Graham M. Walmsley, both of Hampshire, United Kingdom, assignors to International Business Machines Corporation, Armonk, N.Y.

PCT No. PCT/GB91/00170, § 371 Date Sep. 24, 1993, § 102(e) Date Sep. 24, 1993, PCT Pub. No. WO93/14856, PCT Pub. Date Aug. 5, 1993

PCT Filed Feb. 5, 1991, Ser. No. 917,016

Int. Cl.[6] G06F *15/16;15/76;13/38*

U.S. Cl. 395—200.15 **13 Claims**



1. A computer implemented method of routing a transaction command within a transaction driven data processing apparatus from a transaction managing computer program to a target resource manager coupled to said transaction managing computer program, comprising the steps of:

generating said transaction command by an application program running on said transaction driven data processing apparatus,

determining an identifier of a target resource from said transaction command by the transaction managing computer program,

comparing said determined identifier with identifiers of resources managed by said transaction managing computer program, and either

(i) if said target resource is managed by said transaction managing computer program, said transaction managing computer program passing said transaction command to said target resource manager within said transaction managing computer program for processing, or

(ii) if said target resource is not managed by said transaction managing computer program, said transaction managing computer program identifying an external resource manager responsible for said target resource, and passing said transaction command to said responsible external resource manager for processing by said responsible external resource manager, and

wherein when an external resource manager is coupled to said transaction managing computer program, said external resource manager sends said transaction managing computer program a priority message, and said transaction managing computer program uses said priority message to determine in what order said external resource managers will be sent query messages.

5,546,542

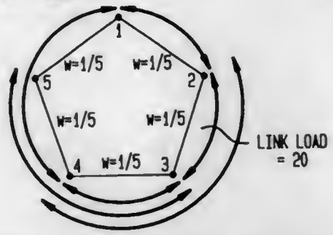
METHOD FOR EFFICIENTLY DETERMINING THE DIRECTION FOR ROUTING A SET OF ANTICIPATED DEMANDS BETWEEN SELECTED NODES ON A RING COMMUNICATION NETWORK

Steven T. Cosares, Huntington, N.Y.; Iraj Saniee, Berkeley Heights, and Ondria J. Wasem, Plainsboro, both of N.J., assignors to Bell Communications Research, Inc., Morristown, N.J.

Filed Nov. 29, 1993, Ser. No. 158,665

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.21 **7 Claims**



1. A method for operating a computer system to determine the direction of routing of communication demands between source and destination node pairs on a bidirectional ring network having a plurality of nodes to minimize the capacity required for the communication demands, said computer system having a processor and a memory device, the method comprising the steps of:

retrieving the anticipated demands from the memory device;

calculating a plurality of weighting constants, each weighting constant corresponding to a respective link in the ring network;

assigning a routing for each anticipated demand based upon a comparison of a sum of the weighting constants for the links which comprise a counterclockwise routing of the anticipated demand and a sum of the weighting constants for the links which comprise a clockwise routing of the anticipated demand;

calculating a link load for each link based upon the magnitudes of the demands which use each link;

calculating a dual objective function value based upon a product of the link load and the respective weighting constant for each respective link; and

incrementing the weighting constant corresponding to a first link connected to a selected node by an incremental constant, the first link having a higher sum of the anticipated demands which originate or terminate from the selected node as compared with the sum of the demands for a second link which originate or terminate at the selected node, and decrementing the weighting constant of the second link by a decremental constant.

5,546,543

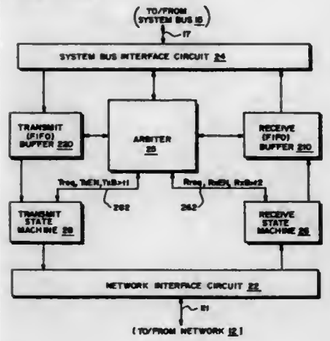
METHOD FOR ASSIGNING PRIORITY TO RECEIVE AND TRANSMIT REQUESTS IN RESPONSE TO OCCUPANCY OF RECEIVE AND TRANSMIT BUFFERS WHEN TRANSMISSION AND RECEPTION ARE IN PROGRESS

Henry S. Yang, Andover; Kadangode K. Ramakrishnan, Maynard, both of Mass.; Gady Daniely, and Aviad Wertheimer, both of Jerusalem, Israel, assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Mar. 26, 1993, Ser. No. 37,287

Int. Cl.[6] G06F *13/14*

U.S. Cl. 395—250 **17 Claims**



1. A method for accessing a shared resource of a computer to enable bi-directional data flow through a controller connected between a subsystem and said shared resource, the subsystem configured to operate on a large packet of data and said shared resource configured to operate on a small burst of data, said method comprising the steps of:

receiving a packet of inbound data from the subsystem at a receive buffer of said controller;

transmitting a packet of outbound data to the subsystem from a transmit buffer of said controller;

assigning priority access to said shared resource to one of a receive request for initiating an inbound burst of data from said receive buffer to said shared resource and a transmit request for initiating an outbound burst of data from said shared resource to said transmit buffer in response to status inquiries of said controller; and

accessing said shared resource in response to said step of assigning priority so as to initiate one of said inbound burst and said outbound burst,

wherein the step of assigning priority comprises the steps of:

determining whether both transmission and reception are in progress;

determining whether the number of empty data byte locations in said receive buffer is not greater than a first threshold level;

determining whether the amount of data resident in said transmit buffer is greater than a second threshold level; and

assigning priority to said transmit request for initiating said outbound burst from said shared resource to said transmit buffer;

whereby said method increases the efficiency of data flow through said controller by minimizing overflow of said receive buffer and underflow of said transmit buffer, and preventing transmission starvation.

5,546,544

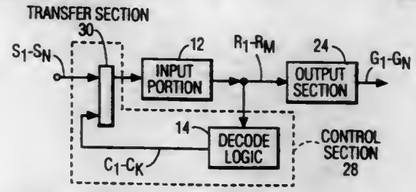
ARBITER WITH A DIRECT SIGNAL PATH THAT IS MODIFIABLE UNDER PRIORITY-CONFLICT CONTROL

Charles E. Dike, Pleasant Grove, and Farrell L. Ostler, Provo, both of Utah, assignors to North American Philips Corporation, New York, N.Y.

Continuation of Ser. No. 117,966, Sep. 7, 1993, abandoned, which is a continuation of Ser. No. 804,254, Dec. 4, 1991, abandoned. This application Nov. 21, 1994, Ser. No. 342,685

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—287 **7 Claims**



1. An arbiter having:

an arbiter input for receiving a plurality of input signals;

an arbiter output for providing an absolute priority signal associated with a particular one of the plurality of input signals, the particular one of the input signals gaining priority over all other ones among the input signals;

a single main signal processing path between the arbiter input and the arbiter output operative to directly determine the absolute priority signal in the absence of a conflict stemming from contesting ones among the input signals; and

control means outside the main path and coupled to the main path for, upon detecting the conflict, modifying the main path in order to resolve the conflict and to enable the main path to determine the absolute priority signal, said control means being operative to modify the main path by generating control signals for, upon logic combination with the input signals, forcing the main path into a conflict-free state.

5,546,545

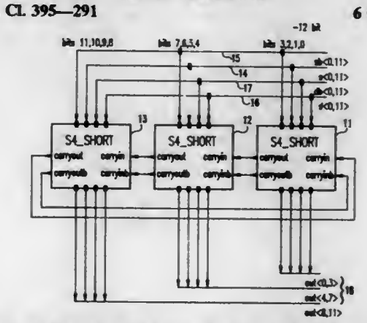
ROTATING PRIORITY SELECTION LOGIC CIRCUIT

Stephen E. Rich, Chittenden County, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 9, 1994, Ser. No. 352,642

Int. Cl.[6] G06F *13/14*

U.S. Cl. 395—291 **6 Claims**



1. A rotating priority selection logic circuit to select a next instruction to be executed in a microprocessor having an architecture to execute out of sequence instructions, comprising:

carry generate means connected to a first input bus supplying data that identifies instructions with a priority according to age and further connected to a data bus supplying data that defines if instructions are ready for execution for producing output signals including local carry, select local and select global signals;

logic means responsive to said local carry, select local and select global signals from said carry generate means for generating a carry out signal and first and second selection signals respectively based on a global carry being zero and a global carry being one;

first priority selection means connected to said first input bus and connected to said data bus, said first priority selection means wired for a carry input signal of zero to generate first candidate output signals;

second priority selection means connected to said first input bus and connected to said data bus, said second priority selection means wired for a carry input signal of one to generate second candidate output signals; and

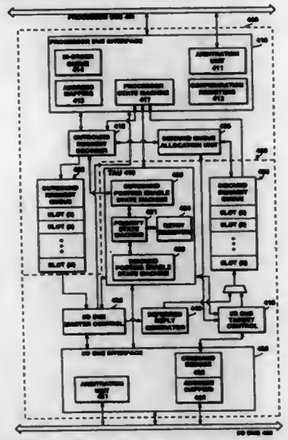
selection means connected to receive said first and second candidate output signals from said first and second priority selection means respectively and responsive to a carry input signal and said first and second selection signals from said logic means for selecting one of said first and second candidate output signals to an output pointer bus, carry signals being rotated in a loop from carry out signals to carry in signals to cause instructions which are lower in priority to be suppressed, the loop being broken, so as not to feed back on itself, to point to a highest priority instruction with valid operands identifying a next instructioo to be executed by said microprocessor.

5,546,546

METHOD AND APPARATUS FOR MAINTAINING TRANSACTION ORDERING AND ARBITRATING IN A BUS BRIDGE

D. Michael Bell, Beaverton; Mark A. Gonzales, Portland, and Susan S. Meredith, Hillsboro, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed May 20, 1994, Ser. No. 246,776
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—292 **28 Claims**



1. A transaction arbitration unit (TAU) in a bus bridge, wherein the bridge has an inbound queue and an outbound queue, wherein the bridge is coupled to a first bus and a second bus, and wherein a first requesting agent is coupled to the first bus and a second requesting agent is coupled to the second bus, the TAU comprising:

(a) an outbound posting enable state machine coupled to the first bus for determining whether a first transaction is to be committed to the outbound queue and an indication given to the first requesting agent that the bridge has committed to the first transaction;

(b) an inbound posting enable state machine coupled to the second bus for determining whether a second transaction is to be committed to the inbound queue and an indication given to the second requesting agent that the bridge has committed to the second transaction; and

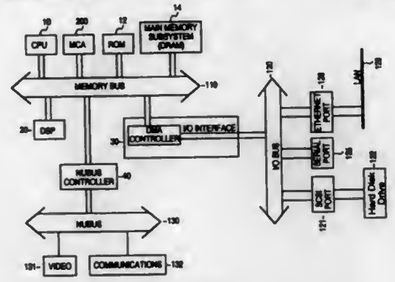
(c) a priority state machine coupled to the first bus and the second bus for determining whether a transaction in the inbound queue is to be executed on the first bus or a transaction in the outbound queue is to be executed on the second bus.

5,546,547

MEMORY BUS ARBITER FOR A COMPUTER SYSTEM HAVING A DSP CO-PROCESSOR

Michael J. Bowes, Cupertino, and Farid A. Yazdy, Belmont, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Jan. 28, 1994, Ser. No. 189,138
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—294 **8 Claims**



1. A Computer system comprising:

a processing unit;

a system bus coupled to said processing unit;

a main memory system coupled to said system bus;

a digital signal processor coupled to said system bus for utilizing said main memory system as an external memory over said system bus in conjunction with said processing unit using said main memory system over said system bus;

an arbiter in communication with said processing unit and said digital signal processor for processing system bus access requests, said arbiter for providing said digital signal processor with sufficient system bus bandwidth for access to said main memory system so as to facilitate real-time data processing without starving said processing unit from access to said main memory system over said system bus;

an I/O bus interface coupled to said system bus;

an I/O bus in communication with said system bus through said I/O bus interface;

wherein said arbiter is further in communication with said I/O bus interface, said arbiter further arbitrating said system bus to provide sufficient system bus bandwidth to support resources coupled to said I/O bus;

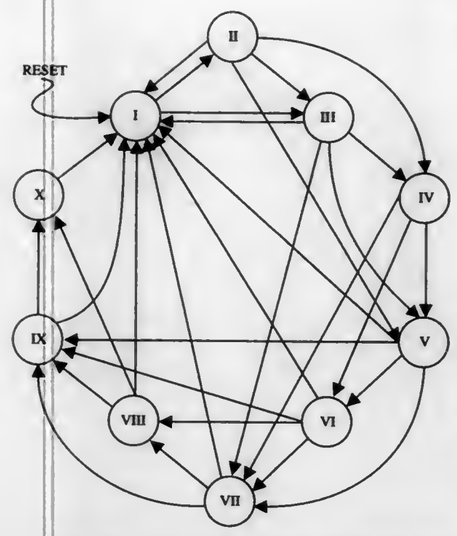
an network port coupled to said I/O bus for connecting said computer system to a local area network;

an expansion card peripheral bus;

an expansion card peripheral bus controller for coupling said peripheral bus to said system bus;

wherein said arbiter is further in communication with said peripheral bus controller, said arbiter further arbitrating said system bus to provide sufficient system bus bandwidth to support resources coupled to said peripheral bus; and

wherein said arbiter designates any one of said processing unit, said digital signal processor, said I/O interface or said peripheral bus controller as the master on said system bus, said arbiter making said designation according to the following state diagram:



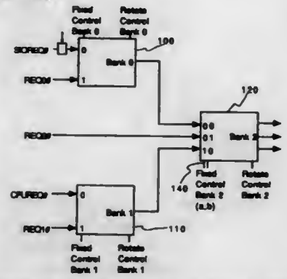
wherein state I corresponds to the state where said processing unit is assigned ownership of said system bus, states II, IV, VI and VIII correspond to the state where said digital signal processor is assigned ownership of said system bus, states III and VII correspond to the state where said peripheral bus controller is assigned ownership of said system bus, and states V and IX correspond to the state where said I/O bus interface is assigned ownership of said system bus.

5,546,548

ARBITER AND ARBITRATION PROCESS FOR A DYNAMIC AND FLEXIBLE PRIORITIZATION

Ray Chen, Folsom, and Jeffrey L. Rabe, Gold River, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Mar. 31, 1993, Ser. No. 40,518
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—296 **33 Claims**



1. In a system comprising a plurality of devices coupled to a bus, a bus arbiter for determining priority for access to the bus based upon the receipt of at least one bus request issued by a device, said arbiter comprising:

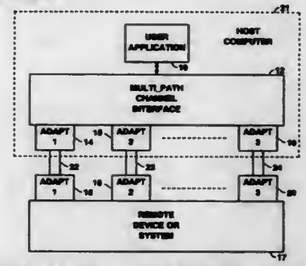
at least one arbiter bank, each bank comprising a plurality of bus request inputs and outputting a signal identifying the bus request which is granted priority, each bank comprising a fixed control input and rotating control input, said rotating control input controlling the bank to operate in a rotating priority scheme when the rotating control input is in a first state and in a fixed priority scheme when the rotating control input is in a second state, said fixed control input comprising n input bits wherein 2^n is greater than or equal to the number of bus request inputs, said fixed control input identifying one of a plurality of fixed priority schemes for the bus request inputs when the rotating control input is in the second state, said rotating and fixed control inputs being programmable to configure the arbiter to operate according to different prioritization schemes, each of said prioritization schemes determining priority for each combination of bus request inputs.

5,546,549

MULTI-PATH CHANNEL (MPC) INTERFACE WITH USER TRANSPARENT, UNBALANCED, DYNAMICALLY ALTERABLE COMPUTER INPUT/OUTPUT CHANNELS

Linda Barrett, Raleigh; Lynn D. Long, Chapel Hill; Louis F. Menditto; Arthur J. Stagg, both of Raleigh, and Raymond E. Ward, Durham, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 1, 1994, Ser. No. 252,020
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—309 **2 Claims**



1. An input and output communications subsystem for general purpose digital computer system comprising

at least one user application operating in said computer system according to a predetermined communications protocol to communicate blocks of data to a remote data utilization system over a communications channel capable of supporting multipath groups of sub-channels of limited transmission capacity;

means for dynamically allocating and activating each said group of sub-channels for transmission of said blocks of data in only one direction on each of said sub-channels prior to the transmission of said blocks of data, said means for dynamically allocating and activating said groups of sub-channels comprising:

means for transmitting identification exchange messages between the two ends of said communications channel, said identification exchange messages including fields specifying the size and direction of transmission of each said sub-channel, the protocol of said user application, and a message extension field specifying the maximum capacity of a local data handling facility;

means responsive to the contents of said fields for activating a sub-channel having the specified size and direction;

means responsive to the contents of said extension field for segmenting data blocks from said user application into segments conforming to said maximum capacity;

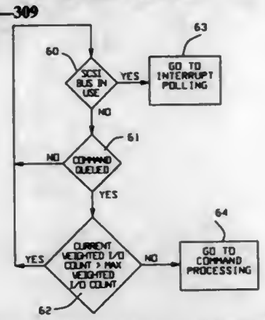
means for comparing the contents of said message fields to determine the ability of said computer system and said utilization system to conform to the contents of said extension field; and

means for disabling said means for allocating and activating said sub-channels when either said computer system or said utilization system is unable to conform to the contents of said extension field.

5,546,550
METHOD FOR ASSURING EQUAL ACCESS TO ALL INPUT/OUTPUT DEVICES COUPLED TO A SCSI BUS

Wilmer G. Carter, Mission Viejo, Calif., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Nov. 21, 1994, Ser. No. 344,204
Int. Cl.[6] G06F *13/14*
U.S. Cl. 395—309 **10 Claims**



1. A method for assuring equal access to all peripheral devices connected to a SCSI channel having established therefor a maximum weighted value representative of the saturation level of said SCSI channel, said method comprising the steps of:

a. examining the SCSI channel to determine if it is in use, and if not;

b. determining if commands are queued for said SCSI channel, and if yes;

c. reading a command from said SCSI channel to determine the length of data to be transferred;

d. setting a weighted value representative of the data length to be transferred; and,

e. transmitting said command to said SCSI channel only when said weighted value is less than or equal to said maximum weighted value.

5,546,551
METHOD AND CIRCUITRY FOR SAVING AND RESTORING STATUS INFORMATION IN A PIPELINED COMPUTER

Leslie D. Kohn, San Jose, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 939,956, Sep. 3, 1992, abandoned, which is a continuation of Ser. No. 480,076, Feb. 14, 1990, abandoned. This application Dec. 5, 1994, Ser. No. 350,376
Int. Cl.[6] G06F *9/38*
U.S. Cl. 395—375 **10 Claims**

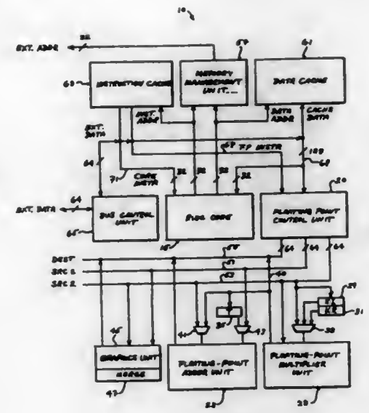
1. In a pipelined processor having a plurality of stages including a first stage that receives an instruction and a last stage that provides pipeline-generated normal result status data responsive to execution of said instruction by previous stages, a method for updating a processor state with said normal result status data or saved result status data previously saved responsive to an interruption in normal processing, comprising the steps of:

(a) supplying an update bit to an update memory element associated with said last stage;

(b) supplying said update bit from the last stage to a selector circuit;

(c) responsive to said update bit, in said selector circuit selecting said normal result status data or said saved result status data; and

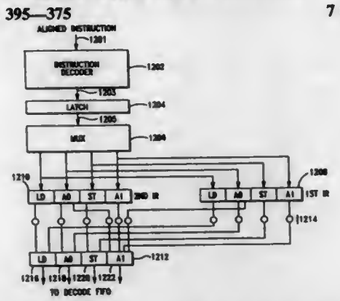
(d) supplying said data selected in said step (c) to update the processor state.



5,546,552
METHOD FOR TRANSLATING NON-NATIVE INSTRUCTIONS TO NATIVE INSTRUCTIONS AND COMBINING THEM INTO A FINAL BUCKET FOR PROCESSING ON A HOST PROCESSOR

Brett Coon, San Jose; Yoshiyuki Miyayama, Santa Clara; Le T. Nguyen, Monte Sereno, and Johannes Wang, Redwood City, all of Calif., assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 857,599, Mar. 31, 1992, Pat. No. 5,438,668. This application May 12, 1995, Ser. No. 440,225
Int. Cl.[6] G06F *9/30;9/312;9/315;9/318*
U.S. Cl. 395—375 **7 Claims**



1. A method of translating a stream of non-native instructions for processing on a host processor, comprising the steps of:

(1) translating the stream of non-native instructions into native instructions, wherein non-native instructions are converted into less than a predetermined number of native instructions;

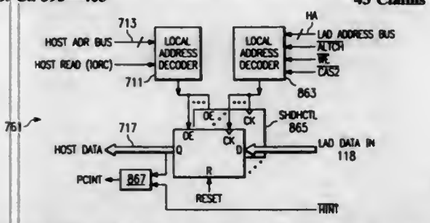
(2) storing in at least two intermediate buckets, at least two groups of said native instructions, wherein said at least two intermediate buckets can store up to said predetermined number of native instructions; and

(3) combining into a final bucket, a subset of said at least two groups of said native instructions so as to allow issuing of said subset of said native instructions of said final bucket on the host processor, wherein said final bucket has a maximum capacity of said predetermined number of native instructions.

5,546,553
MULTIFUNCTIONAL ACCESS DEVICES, SYSTEMS AND METHODS

Iain C. Robertson, Cople, England; Jeffrey L. Nye, Houston; Michael D. Asal, Sugar Land, both of Tex.; Graham B. Short; Richard D. Simpson, both of Bedford, England, and James G. Littleton, Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 586,914, Sep. 24, 1990, abandoned. This application Dec. 15, 1994, Ser. No. 359,324
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—405 **43 Claims**



12. A multifunction access circuit for use with first and second digital computers each having an address bus for supplying addresses and a data bus for supplying data, the access circuit comprising:

a first address decoder having inputs for the address bus and a read line from the first computer;

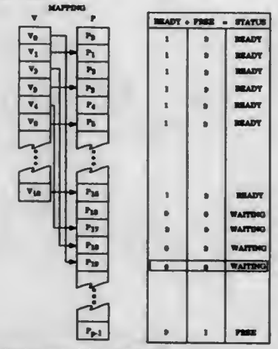
a second address decoder having inputs for the address bus and a write line from the second computer; and

a logic circuit including a register selectable by either of the first address decoder and the second address decoder and having data outputs for connection to the data bus from the first computer, and having data inputs for connection to the data bus from the second computer.

5,546,554
APPARATUS FOR DYNAMIC REGISTER MANAGEMENT IN A FLOATING POINT UNIT

Robert Yung, Fremont; Greg Williams, and Huoy-Ming Yeh, both of Palo Alto, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Feb. 2, 1994, Ser. No. 190,872
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—413 **25 Claims**



24. A method comprising the steps of:

providing a map that maintains a mapping between each of a plurality of virtual register addresses and a corresponding one of a subset of a plurality of physical register addresses, wherein a new mapping is provided for a particular virtual register address whenever the particular virtual register address is specified as a destination for a result of an instruction;

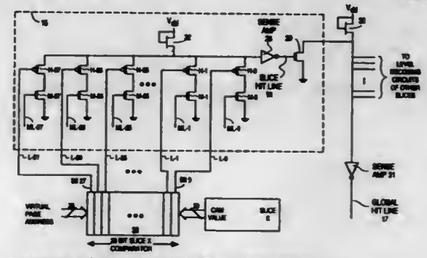
dispatching a sequence of instructions that include arithmetic instructions that specify virtual register addresses as destinations for results;

generating a sequence of mapped instructions including mapped arithmetic instructions in response to receiving the sequence of instructions, wherein each mapped arithmetic instruction includes a destination register address that specifies a first physical register address indicated by a new mapping of a corresponding virtual register address and an old destination register address that specifies a second physical register address indicated by a previous mapping of the corresponding virtual register address.

5,546,555
OPTIMIZED TRANSLATION LOOKASIDE BUFFER SLICE HAVING STORED MASK BITS

Jens Horstmann, Sunnyvale, and Yoon Kim, Danville, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Continuation of Ser. No. 543,936, Jun. 26, 1990, Pat. No. 5,491,806. This application Oct. 28, 1994, Ser. No. 330,756
Int. Cl.[6] G06F *12/10*
U.S. Cl. 395—417 **25 Claims**



1. A translation lookaside buffer, comprising:

a plurality of slices, each of said slices comprising:

a virtual address storage location storing a plurality of virtual address bits;

a physical address storage location;

a mask bit storage location storing a plurality of mask bits; and

means for causing a slice hit signal to be asserted when a first set of said plurality of virtual address bits matches a corresponding set of bits of an incoming virtual address, said slice hit signal being asserted regardless of whether a second set of said plurality of virtual address bits matches a corresponding set of bits of said incoming virtual address, said mask bits determining which ones, if any, of said virtual address bits comprise said second set.

5,546,556
DISK STORAGE SYSTEM HAVE A DEFECT MAP OF THE DISK STORED IN A MEMORY WHICH IS DIFFERENT FROM THE DISK

Toyohiko Matsushita, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

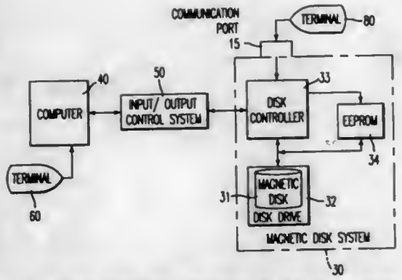
Filed Jun. 10, 1991, Ser. No. 712,412
Claims priority, application Japan, Jun. 11, 1990, 2-149760
Int. Cl.[6] G06F *11/00;12/00*
U.S. Cl. 395—427 **3 Claims**

1. A disk storage system, for use with a disk, comprising:

disk drive means for driving the disk;

means for detecting defect-related information of the disk;

memory means, different from the disk and off of the disk, for storing defect-related information of the disk;



disk controller means for controlling the disk drive means, for writing the detected defect-related information of the disk into the memory means, and for reading the stored defect-related information from the memory means;

control means for instructing the disk controller means to virtually access the defect-related information in the memory means which is an off-disk storage area as if said defect-related information was stored on the disk.

5,546,557

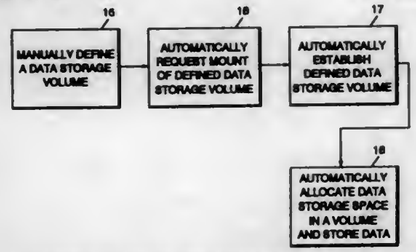
SYSTEM FOR STORING AND MANAGING PLURAL LOGICAL VOLUMES IN EACH OF SEVERAL PHYSICAL VOLUMES INCLUDING AUTOMATICALLY CREATING LOGICAL VOLUMES IN PERIPHERAL DATA STORAGE SUBSYSTEM

Vincent K. Allen; Robert S. Goncharsky, and Richard A. Ripberger, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 14, 1993, Ser. No. 75,936

Int. Cl.[6] G06F *13/24*

U.S. Cl. 395—438 **65 Claims**



1. Apparatus for storing data peripherally to a host processor, including, in combination:

attachment means for attaching the apparatus to one or more host processors for receiving commands from an attached host processor, exchanging data with the attached host processor and for supplying status information to the attached host processor;

a plurality of host-processor-addressable media drives in said apparatus, each said media drive for removably mounting for reading and writing to and from a physical volume having a record medium;

a plurality of said physical volumes in said apparatus, each of said physical volumes for storing data therein in one or more host-processor-addressable logical data-storage volumes;

volume moving means for inserting and removing said physical volumes into and from said media drives;

volume manager means connected to the attachment means for receiving mount commands from the attached host processor, said mount commands including an address of one of said media drives and a volume serial number of a mount command addressed one of said host-processor-addressable logical data-storage volume to be mounted on said addressed media drive;

peripheral controller means having data flow means connected to the attachment means and to the media drives for processing digital signals between said attachment means and said media drives;

volume map means connected to the volume manager means for storing identifications of said volume serial numbers and indications of which of said physical volumes contain said host-processor-addressable logical data-storage volumes, respectively, as a volume mapping of said host-processor-addressable logical data-storage volumes to said physical volumes;

said volume manager means responding to each of said received mount commands for examining said volume map means for identifying one of said physical volumes storing said mount command addressed one of said host-processor-addressable logical data-storage volumes,

first means in the volume manager means for responding to identification of one of said physical volumes storing said mount command addressed one of said host-processor-addressable logical data-storage volumes for effecting mounting of said one physical volume on said addressed media drive; and

second means in the volume manager means for responding to identification of none of said physical volumes storing said mount command addressed one of said host-processor-addressable logical data-storage volumes for selecting a second physical volume, volume initialization means in the second means for automatically establishing a new host-processor-addressable logical data-storage volume in said second physical volume to be said mount command addressed one of said host-processor-addressable logical data-storage volumes and for actuating said first means to mount said second physical volume in said addressed media drive.

5,546,558

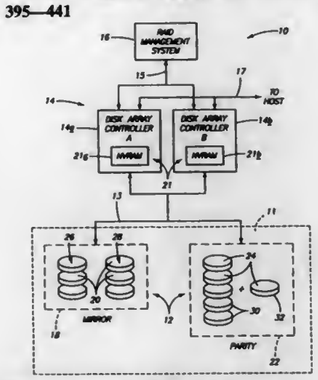
MEMORY SYSTEM WITH HIERARCHIC DISK ARRAY AND MEMORY MAP STORE FOR PERSISTENT STORAGE OF VIRTUAL MAPPING INFORMATION

Michael B. Jacobson; Douglas L. Voigt; Marvin D. Nelson, all of Boise, and Theresa A. Burkes, Meridian, all of Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 7, 1994, Ser. No. 253,442

Int. Cl.[6] G06F *13/10*

U.S. Cl. 395—441 **13 Claims**



1. A data memory system comprising:

a disk array having a plurality of disks;

a disk array controller coupled to the disk array for coordinating data transfer to and from the disks;

a RAID management system operatively coupled to the disk array controller for mapping mirror and parity RAID areas onto the disks, the RAID management system storing data in the mirror RAID area according to mirror redundancy and storing data in the parity RAID area according to parity redundancy, the RAID management system shifting data between the mirror and parity RAID areas on the disks in accordance with a defined performance protocol; and

a memory map store external to the disk array and operatively coupled to the RAID management system for persistently storing mapping information used by the RAID management system to map the mirror and parity RAID areas onto the disks within the disk array.

5,546,559

CACHE REUSE CONTROL SYSTEM HAVING REUSE INFORMATION FIELD IN EACH CACHE ENTRY TO INDICATE WHETHER DATA IN THE PARTICULAR ENTRY HAS HIGHER OR LOWER PROBABILITY OF REUSE

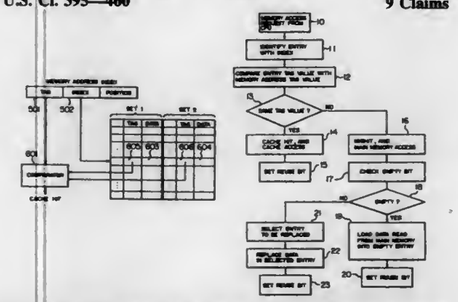
Ichiro Kyushima, and Masahiro Kainaga, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 1, 1994, Ser. No. 252,413

Claims priority, application Japan, Jun. 7, 1993, 5-163148

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—460 **9 Claims**



1. A control system for a cache provided between a central processing unit and main storage means, comprising:

a plurality of entries provided in said cache each having a data area and a control information area;

a reuse information field, set by a compiler or a programmer during a data load/store instruction, in each said control information area representative of whether data in said data area of each entry of said plurality of entries is preferentially maintained;

reuse information, contained in an instruction from said central processing unit which is set by the compiler or the programmer, and stored in said reuse information field, for indicating whether data in said data area of each entry has either a high probability of reuse or a low probability of reuse; and

means for selecting one of said plurality of entries for replacement, when said one of said plurality of entries is to be replaced by a second data in said main storage, said one entry having said reuse information indicating said one entry has said low probability of reuse.

5,546,560

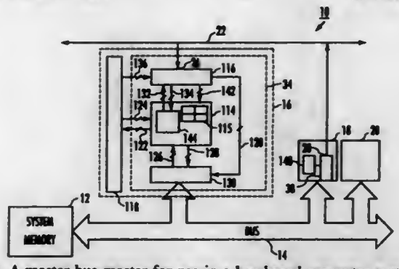
DEVICE AND METHOD FOR REDUCING BUS ACTIVITY IN A COMPUTER SYSTEM HAVING MULTIPLE BUS-MASTERS

Uwe Kranich, Munich, Germany, assignor to Advance Micro Devices, Inc., Sunnyvale, Calif.

Filed Jun. 22, 1993, Ser. No. 81,080

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—468 **20 Claims**



1. A master bus-master for use in a bus-based computer system having a system memory, the master bus-master being configured for caching data and for operation alone or in association with at least one other bus-master capable of caching data, said master bus-master comprising:

a processing unit;

a local cache arrangement coupled to said system memory by a bus and coupled to said processing unit, said local cache arrangement including a cache memory for caching data between said processing unit and said system memory;

a control line being set to a first initial state, said control line being capable of being set to a second state;

input means coupled to the control line for detecting whether the control line is in the first state or the second state, the control line being set to the second state by said at least one other bus-master when said at least one other bus-master capable of caching data is present in said computer system and is presently caching data, said local cache arrangement including control means for controlling transmission of data between said bus and said cache memory in response to whether said control line is in said first state or said second state,

wherein said at least one other bus-master sets the control line to the first state when said at least one other bus-master is not presently caching data.

5,546,561

CIRCUITRY AND METHOD FOR SELECTIVELY PROTECTING THE INTEGRITY OF DATA STORED WITHIN A RANGE OF ADDRESSES WITHIN A NON-VOLATILE SEMICONDUCTOR MEMORY

Virgil N. Kynett, El Dorado Hills, and Mickey L. Fandrich, Placerville, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 197,364, Feb. 15, 1994, abandoned, which is a continuation of Ser. No. 698,721, May 10, 1991, abandoned, which is a continuation-in-part of Ser. No. 654,375, Feb. 11, 1991, abandoned. This application Jan. 13, 1995, Ser. No. 372,891

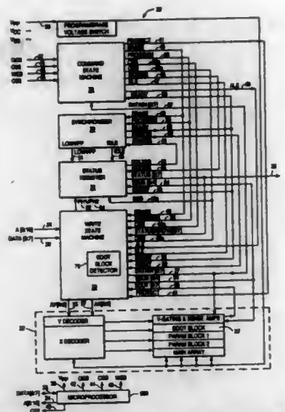
Int. Cl.[6] G06F *12/14*; G11C *7/00*

U.S. Cl. 395—490 **8 Claims**

1. A memory system comprising:

a memory array comprising a plurality of addressable locations; and

a write state machine coupled to the memory array, said write state machine controlling operations to be performed on the memory array, receiving control signals indicative of an operation or sequence of operations to be performed at at least one block of at least one address in the array, receiving predetermined bits of an identification of a block of addresses



and further receiving a protect signal, generating an active lock signal if the predetermined bits of the identification of the block of addresses and the protect signal are in predetermined states, responding to said lock signal by failing to perform the operation identified, and responding to an absence of said lock signal by performing each operation identified on every address within the block;

a command state machine, coupled to receive data including commands, and generating control signals to control said write state machine, said command state machine further .generating the protect signal.

5,546,562

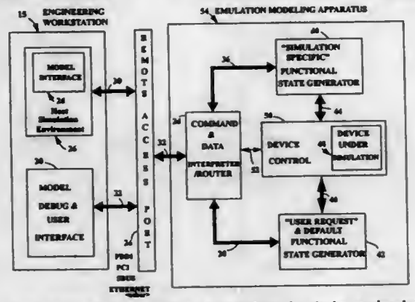
METHOD AND APPARATUS TO EMULATE VLSI CIRCUITS WITHIN A LOGIC SIMULATOR

Chandresh Patel, 3480 Granada Ave., #249, Santa Clara, Calif. 95051

Filed Feb. 28, 1995, Ser. No. 395,324

Int. Cl.[6] G06F *3/00*; G06G *7/48*

U.S. Cl. 395—500 **15 Claims**



1. A method of emulating a complex circuit in a simulated system on a logic simulator with no upper simulation time limit, comprising the following steps:

a) providing a simulator interface to control and accumulate any functionally complete architecturally visible update from said logic simulator to said complex circuit,

b) providing a model debug and user interface to manipulate any architecturally visible registers and status within said complex circuit,

c) providing a control mechanism to keep said complex circuit in an architecturally unaltered state by providing necessary clocks and data signals to keep said complex circuit operating in a quiescent state,

d) providing a control and routing mechanism to accept and to submit simulator updates and user interface debug updates to said complex circuit after bringing said complex circuit out of said quiescent state,

e) providing a control and routing mechanism for monitoring responses from said complex circuit, putting said complex circuit back into quiescent state, and routing said responses to said logic simulator and to said model debug and user interface,

whereby the complex circuit is continually emulated within the simulated system with the ability to view or to alter or to set breakpoints on architecturally visible internal state of the complex circuit so as to provide a powerful debugging environment prior to building a real prototype of the system under development.

5,546,563

SINGLE CHIP REPLACEMENT UPGRADEABLE COMPUTER MOTHERBOARD WITH ENABLEMENT OF INSERTED UPGRADE CPU CHIP

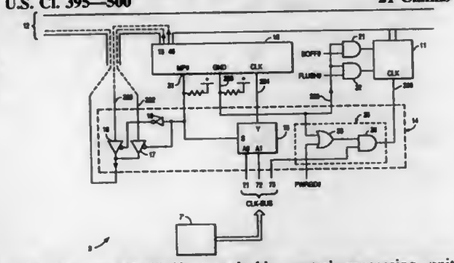
Te-Chih Chuang, Shyuan, Taiwan, assignor to Acer Incorporated, Industrial Park, Taiwan

Continuation of Ser. No. 689,317, Apr. 22, 1991, abandoned.

This application Jan. 4, 1994, Ser. No. 177,648

Int. Cl.[6] G06F *15/76*

U.S. Cl. 395—500 **21 Claims**



16. An upgradeable/downgradeable central processing unit (CPU) chip computer system for driving by more than one type of CPU chip, said computer system including a circuit board, the circuit board comprising:

a first socket, disposed on the circuit board, for receiving different types of CPU chips, wherein at least first and second of said different types of CPU chips drive a particular output signal on different first and second respective output pins, depending on the type of CPU chip;

a second socket, disposed on the circuit board, for receiving a second CPU chip different from the type of CPU chip for which said first socket is adapted;

an identifying circuit, disposed on the circuit board and coupled to said first and second sockets, for identifying the types of CPU chips inserted in said first and second sockets and for generating identification signals in response to the identifications;

a clock signal generator, disposed on the circuit board and coupled to said identifying circuit and to said first and second sockets, responsive to said identification signals for generating clock signals compatible either with the type of CPU chip in said first socket or, when a CPU chip has been inserted in said second socket, with the type of chip in said second socket; and

an enabling circuit, disposed on the circuit board and coupled to said identifying circuit and said first socket, responsive to said identification signal for (a) enabling signals on said first output pin to be transmitted when a CPU chip of said first type is in said first socket and (b) enabling signals on said second output pin to be transmitted when a CPU chip of said second type is in said first socket, thereby allowing said particular output signal to be transmitted regardless of which one of said first and second types of CPU chips is in said first socket.

5,546,564

COST ESTIMATING SYSTEM

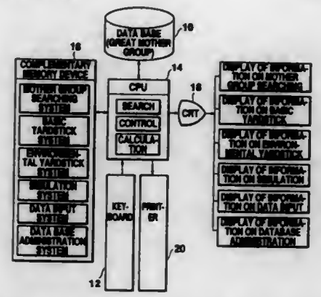
Kazuhiko Horie, 771-15, Yabe-cho, Totsuka-ku, Yokohama-shi Kanagawa, Japan

Filed Feb. 9, 1994, Ser. No. 194,154

Claims priority, application Japan, Feb. 9, 1993, 5-020867; May 14, 1993, 5-113094

Int. Cl.[6] G06F *17/18*

U.S. Cl. 395—500 **14 Claims**



1. A data estimating system for estimating a data value corresponding to a desired factor by statistically processing data, the values of which are determined by environmental factors and basic factors, said system comprising:

memory means for storing said data;

classifying means for classifying said data stored in said memory means into classes by discriminating the basic factors and the environmental factors and further classifying the basic factors and the environmental factors into a predetermined grades;

average value calculating means for calculating a weighed average value of data in each class of the basic factors, a weighed average value of data in each class of the environmental factors, and a weighed average value of a total data that includes data in the environmental and basic factors;

input means for inputting a desired basic factor and a desired environmental factor; and

calculating means for estimating the data value corresponding to the desired basic and environmental factors based on a ratio of a weighed average value of a specific class corresponding to the input desired basic factor and a weighed average value of a specific class corresponding to the input desired environmental factor to the weighed average value of the total data.

5,546,565

INPUT/OUTPUT APPARATUS HAVING A PEN, AND METHOD OF ASSOCIATING AND PROCESSING HANDWRITTEN IMAGE DATA AND VOICE DATA

Hideo Suzuki, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Jun. 1, 1994, Ser. No. 252,280

Claims priority, application Japan, Jun. 21, 1993, 5-172117; Jun. 25, 1993, 5-177519

Int. Cl.[6] G06K *9/18;9/22*; G10L *5/02*

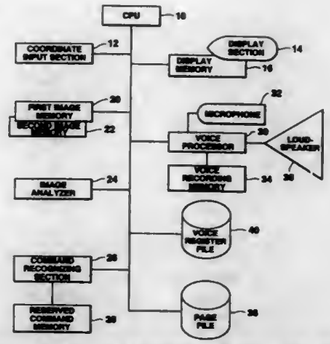
U.S. Cl. 395—500 **8 Claims**

1. An input/output apparatus for inputting and displaying a desired handwritten image using a pen on a display screen, said apparatus comprising:

first input means for inputting an image through an operation of said pen;

second input means for inputting voices;

memory means for storing said image, input through said first input means, as image data and storing said voices, input through said second input means, as voice data;



determining means for determining whether or not image data corresponding to a new image, when the new image is input through said first input means, is stored in said memory means; and

voice output means, in response to said determining means, for reading said voice data from said memory means, converting said voice data to voices and outputting said voices, when the determining means determines that the image data corresponding to a new image is stored in said memory means; and

said memory means including means for storing plural pieces of image data and plural pieces of voice data in one-to-one association; and

said voice output means including means for, when the image data corresponding to the new image is stored in said memory means, reading voice data stored in said memory means in association with said image data, and for outputting voices acquired by converting said voice data.

5,546,566

EMULATION SYSTEM FOR MICROCOMPUTER

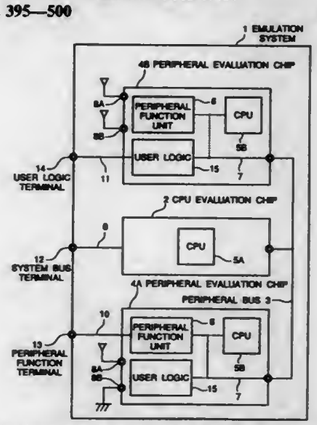
Hiroshi Katsuta, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 7, 1994, Ser. No. 271,506

Claims priority, application Japan, Jul. 7, 1993, 5-191790

Int. Cl.[6] G06F *9/455*

U.S. Cl. 395—500 **10 Claims**



1. An emulation system for emulating a microcomputer, the microcomputer comprising a central processing unit, a peripheral function unit, and a user specific logic circuit, integrated together on a single chip, the emulation system comprising:

a first integrated circuit for emulating said central processing unit;

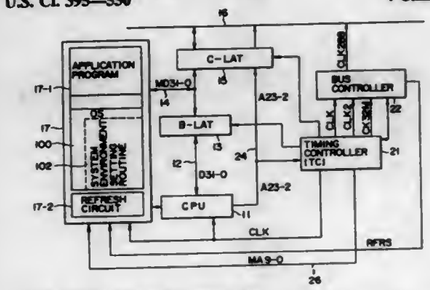
a second integrated circuit operating in a first operation mode for emulating said peripheral function unit; and
a third integrated circuit operating in a second operation mode for emulating said user specific logic circuit,
said first, second and third integrated circuits being interconnected, and each of said second and third integrated circuits having a mode designating means for switching between said first operation mode and said second operation mode.

5,546,567

SYSTEM FOR LIMITING CHANGE IN BUS CLOCK FREQUENCY TO DURATION OF I/O OPERATION UPON COMPLETION SIGNAL

Nobutaka Nakamura, Oome, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 921,612, Aug. 3, 1992, abandoned, which is a continuation of Ser. No. 405,887, Sep. 11, 1989, abandoned. This application May 13, 1994, Ser. No. 242,073
Claims priority, application Japan, Sep. 13, 1988, 63-229023
Int. Cl.[6] G06F *1/14*
U.S. Cl. 395—550 **4 Claims**



1. A computer system comprising:
a system bus operating at one of a first operation clock frequency and a second operation clock frequency, the first operation clock frequency being higher than the second operation
an input/output device connected to said system bus and operating only at the second operation clock frequency;
processor means, connected to said system bus, for supplying an input/output instruction;
access control means, connected to said system bus, for performing data transfer with said input/output device in response to the input/output instruction, and for supplying a completion notice to said processor means when the data transfer is completely performed; and
bus control means for operating said system bus to set the second operation clock frequency in response to the input/output instruction, and for operating said system bus to set the first operation clock frequency in response to the completion notice.

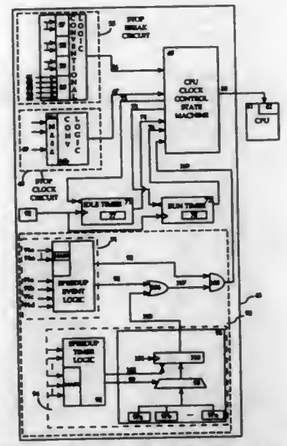
5,546,568

CPU CLOCK CONTROL UNIT

Patrick M. Bland, Delray Beach; Robert T. Jackson, Boynton Beach, both of Fla.; Jayesh Joshi, Santa Clara, and James Kardach, San Jose, both of Calif., assignors to Intel Corporation, Santa Clara, Calif., and International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1993, Ser. No. 176,944
Int. Cl.[6] G06F *1/08*
U.S. Cl. 395—550 **34 Claims**

1. An apparatus for controlling an internal clock of an electrical device, normally operating at a predetermined frequency, through a clock control output signal line coupled to the internal clock, the apparatus comprising:



clock control means for controlling a clocking frequency of the internal clock through activating and alternatively deactivating the clock control output signal line;
stop means for stopping the internal clock, said stop means being coupled to said clock control means;
restart means for restarting the internal clock, said restart means being coupled to said clock control means; and
emulation means for signaling the clock control means to reduce the clocking frequency of the internal clock to be equal to a modified clocking frequency which is less than the predetermined frequency; and
speedup means for increasing the clocking frequency of the internal clock upon detecting one speedup event of a plurality of speedup events in order to operate at the predetermined frequency until either said one speedup event is completed or a set time period has expired.

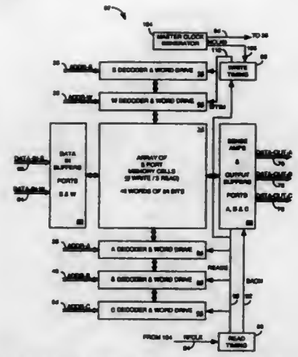
5,546,569

APPARATUS FOR WRITING DATA TO AND READING DATA FROM A MULTI-PORT RAM IN A SINGLE CLOCK CYCLE

Robert J. Proebsting, Los Altos Hills, and Raymond A. Heald, Los Altos, both of Calif., assignors to Intergraph Corporation, Huntsville, Ala.

Continuation-in-part of Ser. No. 23,797, Feb. 19, 1993, abandoned. This application Sep. 8, 1993, Ser. No. 118,378
Int. Cl.[6] G11C *7/00*
U.S. Cl. 395—550 **40 Claims**

1. An apparatus for writing a data bit and reading the data bit in a single clock cycle, the apparatus comprising:
a memory having a read enable terminal and a write enable terminal, for storing the data bit in response to a write signal on the write enable terminal, and for returning the data bit in response to a read signal on the read enable terminal;
a master clock circuit for generating a first and a second master clock pulse, the first and the second master clock pulses each having a leading edge and a trailing edge, wherein a time interval between the leading edge of the first master clock pulse and the leading edge of the second master clock pulse defines the single clock cycle;
a write signal circuit, coupled to the write enable terminal, for generating the write signal, the write signal having a leading edge and a trailing edge, the leading edge of the write signal being generated between the leading edge of the first master clock pulse and the leading edge of the second master clock pulse; and
a read signal circuit, coupled to the read enable terminal, for generating the read signal, the read signal having a leading



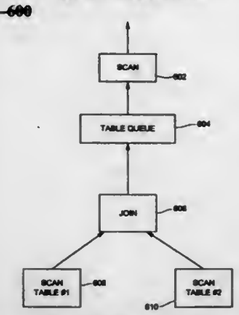
edge and a trailing edge, the leading edge of the read signal being generated after the leading edge of the write signal and before the leading edge of the second master clock pulse.

5,546,570

EVALUATION STRATEGY FOR EXECUTION OF SQL QUERIES INVOLVING RECURSION AND TABLE QUEUES

John A. McPherson, Jr.; Mir H. Pirahesh; Tuong C. Truong, all of San Jose, and Daniel J. Coyle, Jr., Sunnyvale, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 17, 1995, Ser. No. 390,112
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—600 **21 Claims**



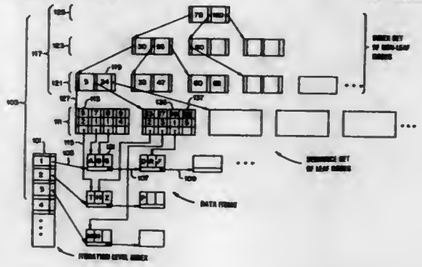
1. A method of executing an SQL query in a computer having a memory, the SQL query being executed by the computer to retrieve data from a relational database stored in a electronic storage device coupled to the computer, the method comprising the steps of:
(a) establishing a table queue for the query in the memory of the computer;
(b) retrieving desired tuples from the relational database stored in the electronic storage device coupled to the computer;
(c) storing the retrieved tuples into the table queue in the memory of the computer;
(d) retrieving the stored tuples from the table queue in the memory of the computer, wherein the retrieved tuples are operated on in accordance with the query;
(e) generating a first end-of-file indication in the memory of the computer when all of the tuples stored in the table queue have been retrieved; and
(f) generating a second end-of-file indication in the memory of the computer after the first end-of-file indication has been generated when all of the desired tuples stored in the relational database have been retrieved.

5,546,571

METHOD OF RECURSIVELY DERIVING AND STORING DATA IN, AND RETRIEVING RECURSIVELY-DERIVED DATA FROM, A COMPUTER DATABASE SYSTEM

Ming-Chien Shan, Saratoga, Calif., assignor to Hewlett-Packard, Palo Alto, Calif.

Continuation of Ser. No. 823,075, Jan. 14, 1992, abandoned, which is a continuation of Ser. No. 286,425, Dec. 19, 1988, abandoned. This application Feb. 16, 1993, Ser. No. 18,473
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—600 **18 Claims**

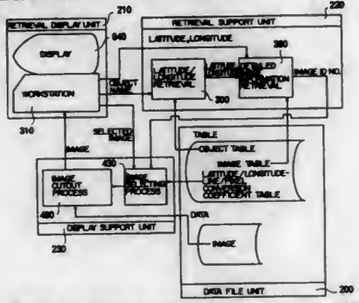


1. In a computerized database system, a method of deriving data and storing the derived data in a memory of the computer, the method comprising:
deriving new items of data for storage in the memory by iteratively evaluating a database query that receives itself as an argument a plurality of times according to a recursive relation;
associating storage locations in the memory with a plurality of hierarchical iteration levels, one such level corresponding with each iteration of the recursive relation performed by the computer to derive the new data items;
storing all data items derived during a given iteration in locations associated with the corresponding iteration level;
reserving a plurality of memory locations to form a sequence set having a plurality of leaf node locations arranged sequentially to define a bottom index level of an index structure;
for each newly derived data item, entering in a leaf node location of the sequence set a cross-reference between a pointer to that data item, a key value which uniquely identifies that data item, and the iteration level associated with that data item;
reserving a plurality of memory locations to form an index set having a plurality of non-leaf node locations arranged hierarchically to define a plurality of index levels above the bottom index level of the index structure, each level having fewer nodes than the level beneath it;
assigning each node a range of the key values of the sequence set such that all of the nodes on any level together encompass all of said key values, each range encompassed by a node is included in the range encompassed by a node on the next higher level, and each node provides for any key value within its range an access path to a node on the next lower level having said key value within its range;
reserving a plurality of memory locations to form an iteration level index to provide a reference between each iteration level and a data item associated with that level; and
linking the data items associated with each iteration level by storing references in the memory between the data items.

5,546,572
METHOD FOR RETRIEVING DATABASE OF IMAGE INFORMATION

Youichi Seto, Sagamihara; Masahiro Kikuchi, Yokohama; Takatoshi Kodaira, Ibaraki; Shu Tezuka, Hitachi; Fuminobu Komura, Yokohama, and Kuniaki Matsumoto, Tokyo, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 25, 1992, Ser. No. 934,336
Claims priority, application Japan, Aug. 28, 1991, 3-216890
Int. Cl.[6] G06T *17/00*
U.S. Cl. 395—600 **25 Claims**



7. A method of retrieving image information from a database, comprising the steps of:

entering a retrieving keyword representing the position of an object from a retrieval display unit for processing data input and output;

providing a data file unit storing image data of the object, reference image data, a relevant information table, an index approximately corresponding to said retrieving keyword, and a latitude/longitude conversion coefficient therein;

reading said index from said data file unit;

designating a macro object having a large size relative to a geometric distortion error of said image data, by using said index;

retrieving said image data including said macro object and said reference image data including said macro object;

displaying said retrieved image data and reference image data in a juxtaposed layout;

entering, from the retrieval display unit, positions of a same object for said retrieved image data and reference image data displayed in said juxtaposed layout;

measuring a retrieval error between said two entered positions;

correcting said latitude/longitude conversion coefficient registered in said relevant information table by using said retrieval error;

registering said corrected latitude/longitude conversion coefficient again in said data file unit;

correcting a local geometric distortion error of said image data by using said registered corrected latitude/longitude conversion coefficient; and

displaying said image data corrected for said local geometric distortion error on said retrieval display unit.

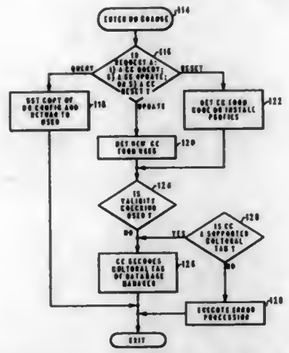
5,546,573
SPECIFICATION OF CULTURAL BIAS IN DATABASE MANAGER

David F. Obermann, and Mary K. Trumble, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 27, 1993, Ser. No. 143,941
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—600 **14 Claims**

1. A method of operating a database accessed over a distributed data processing system, comprising the steps of:

managing manipulation of a database;



specifying a creation of a database utilizing an application, wherein said application is associated with a first cultural tag;

determining if a user specified second cultural tag was provided by a user upon said specification of creation of the database;

providing a default third cultural tag if determined that no user specified second cultural tag is available;

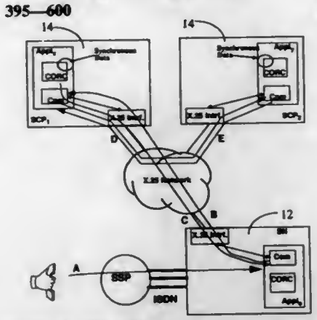
placing the user specified second cultural tag, or default third cultural tag if no user specified second cultural tag is available, in a configuration file for the database; and

creating the database utilizing said application in response to user selection, wherein the database includes either said second or third cultural tag which is different from said first cultural tag associated with said application.

5,546,574
PEER-TO-PEER DATA CONCURRENCE PROCESSES AND APPARATUS

Joseph R. Grosskopf, Park Ridge; Hasan S. Niaz, Naperville, both of Ill.; Carolyn K. Reuss, Atlanta, Ga.; Jerry C. Shih, Roswell, Ga., and Paul T. Watson, Alpharetta, Ga., assignors to AT&T Corporation, N.Y., and Bell South Corporation, Atlanta, Ga.

Filed Jun. 30, 1994, Ser. No. 268,623
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—600 **13 Claims**



1. A process for maintaining peer to peer data concurrence in a plurality of concurrent and redundant databases, each of which is contained at least in part in its corresponding telecommunications Network Element, comprising the steps of:

a. providing to a Service Node information relating to changes that are desired in data stored in the databases and corresponding to a particular subscriber;

b. communicating to a Source Network Element that contains at least one of the databases, from the Service Node, a First Request Message that contains information about the data in the concurrent and redundant databases that is desired to be changed;

c. attempting to change information in the database in the Source Network Element based on information in the First Request Message received by the Source Network Element;

d. communicating to the Service Node from the Source Network Element a First Result Message regarding level of success in changing the data in the Source Network Element database;

communicating to a Target Network Element that contains the database that is desired to be maintained as concurrent to said database in the Source Network Element, from the Source Network Element, a Synchronization Request Message that contains information about the data that is desired to be changed in said database in the Target Network Element in Order to cause said Target Network Element database to be concurrent to said Source Network Element database;

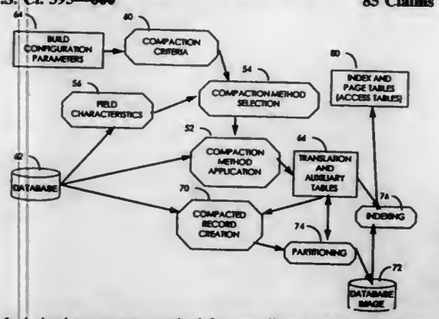
f. attempting to change information in the Target Network Element database based on information in the Synchronization Request Message received by the Target Network Element in order to cause said Target Network Element database to be concurrent and redundant with said Source Network Element database; and

g. communicating to the Source Network Element from the Target Network Element a Second Result Message regarding level of success in changing the data in the Target Network Element database and thus whether said Target Network Element database is concurrent and redundant to said Source Network Element database.

5,546,575
ENCODING METHOD FOR COMPRESSING A TABULAR DATABASE BY SELECTING EFFECTIVE COMPRESSION ROUTINES FOR EACH FIELD AND STRUCTURE OF PARTITIONS OF EQUAL SIZED RECORDS

Basil E. Potter, and Marc A. Potter, both of Diamond Bar, Calif., assignors to Basil E. Potter & Associates, Inc., Diamond Bar, Calif.

Filed May 23, 1994, Ser. No. 247,691
Int. Cl.[6] G06F *17/30;* **H03M** *7/30;7/42*
U.S. Cl. 395—600 **85 Claims**



1. A database storage method for encoding a database structure having a plurality of data records and a plurality of data fields, said method comprising the following steps:

selecting a field of the database structure from the plurality of data fields;

reading a plurality of data values from the selected field, each individual data value being read from a separate record;

determining a plurality of field characteristics and a plurality of compaction criteria, the field characteristics being dependent on the data values within the selected field and the compaction criteria corresponding to a plurality of compaction methods wherein each compaction method has a relative priority level;

identifying a first field characteristic from said plurality of field characteristics which satisfies a corresponding one of said compaction criteria, said first field characteristic corresponding to a first compaction method with the highest priority level of any remaining compaction methods which also have compaction criteria satisfied by a corresponding field characteristic;

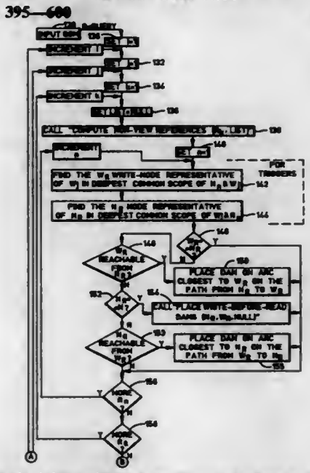
applying the first compaction method to the selected field to create a plurality of compacted data values, the compacted data values being reduced storage equivalents of the data values; and

storing the compacted data values in a plurality of compacted records.

5,546,576
QUERY OPTIMIZER SYSTEM THAT DETECTS AND PREVENTS MUTATING TABLE VIOLATIONS OF DATABASE INTEGRITY IN A QUERY BEFORE EXECUTION PLAN GENERATION

Roberta J. Cochrane, Los Gatos; Mir H. Pirahesh, San Jose, both of Calif., and Richard S. Sidle, Toronto, Canada, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 17, 1995, Ser. No. 390,196
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—600 **20 Claims**



1. A method for optimizing the execution plan of a query that enforces database integrity in a relational database processing system having a stored database including a plurality of base tables {T} and a data processor for processing queries represented by query graphs {G}, wherein each said query graph G includes a plurality of quantifier nodes $\{N_i\}$ each representing a relational operation, wherein each said quantifier node N_i receives from each of one or more other said quantifier nodes $\{N_j\}$ a flow of records represented by a directed data-flow arc A_{ji} forming part of a data-flow path and wherein i and j are positive integers, said method comprising the steps of:

(a) evaluating said query graph G for each said base table T_{each} to identify common-referencing pairs of said quantifier nodes for which said each base table T_{each} is the object;

(b) reforming said query graph G to restrict said data-flow path to sequence the execution of each said common-referencing pair of quantifier nodes to produce a query graph G_{MTI} that enforces database integrity during table mutation;

(c) generating a plurality of plans for executing said query graph G_{MTI}; and

(d) evaluating the execution cost of each said query execution plan and selecting said optimal execution plan.

5,546,577

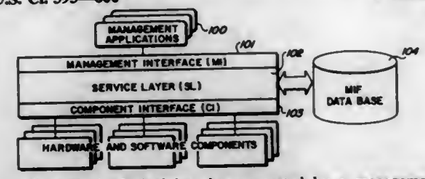
UTILIZING INSTRUMENTED COMPONENTS TO OBTAIN DATA IN A DESKTOP MANAGEMENT INTERFACE SYSTEM

James W. Marlin, Longmont; Raymond L. Knudson; Thomas M. Ruehle, both of Boulder; Anthony F. Stuart, Jamestown, and Edward T. Hughes, III, Arvada, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 4, 1994, Ser. No. 334,592

Int. Cl.[6] G06F *17/00;19/00*

U.S. Cl. 395—600 **9 Claims**



1. A method of obtaining data requested by a management application from a computing system in which a Desktop Management Interface (DMI) system is resident together with an object-oriented database, said DMI for managing hardware and software components, said DMI providing for component instrumentation to obtain data from components without searching said object-oriented database, said method comprising the steps of:

providing a management interface within said DMI to receive a request for data from said management application;

providing a service layer within said DMI to issue a DMI function call to address said object-oriented database with said request;

providing tracking agent instrumentation for obtaining data needed for a particular request;

providing a designation of said tracking agent instrumentation in said object-oriented database so that said request is returned to said service layer for passing the particular request to said tracking agent instrumentation;

providing a component interface within said DMI to pass said request to said tracking agent instrumentation as though it were component instrumentation and to receive data developed by said database instrumentation; and

providing said management interface within said DMI for passing said data developed by said tracking agent instrumentation to said management application.

5,546,578

DATA BASE RETRIEVAL SYSTEM UTILIZING STORED VICINITY FEATURE VALUES

Hiroshi Takada, Tokyo, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 873,130, Apr. 24, 1992, Pat. No. 5,450,580. This application Jun. 6, 1995, Ser. No. 471,459

Claims priority, application Japan, Apr. 25, 1991, 3-122766; Dec. 24, 1991, 3-356348; Dec. 26, 1991, 3-357900; Dec. 27, 1991, 3-359675; Feb. 7, 1992, 4-56964; Feb. 7, 1992, 4-56965

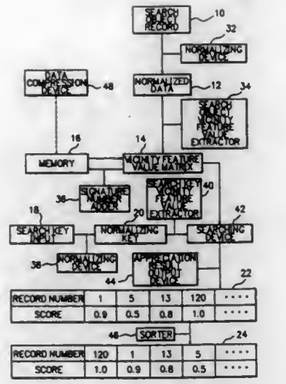
Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—600 **4 Claims**

1. A data base retrieval system for retrieving information from data records of a search object of a data base in response to an input search key, said system comprising;

first means for storing vicinity feature values of the data records, said vicinity feature values indicating a correspondence between data of the data records; and

second means for obtaining matching degrees for the data records indicating a degree of correspondence between the data record vicinity feature values stored in said first means and a vicinity feature value of the search key, said vicinity feature value of the search key indicating a correspondence between data of the search key, and for providing as search results of said data base retrieval system data record names and corresponding matching degrees for the data records.



5,546,579

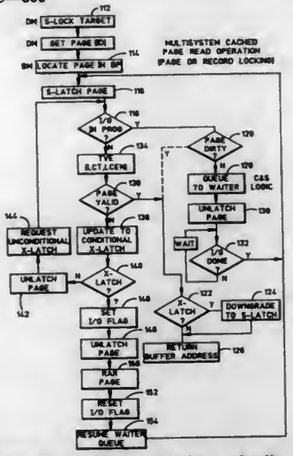
PAGE REFRESHING PROCEDURE USING TWO LOCKING GRANULARITIES TO ENSURE CACHE COHERENCY IN A MULTISYSTEM DATABASE PROCESSING ENVIRONMENT HAVING A HIGH-SPEED SHARED ELECTRONIC STORE

Jeffrey W. Josten, Morgan Hill; Tina Mukai, San Jose; Inderpal S. Narang, Saratoga, and James Z. Teng, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 2, 1994, Ser. No. 236,798

Int. Cl.[6] G06F *13/364*

U.S. Cl. 395—600 **15 Claims**



3. In a data processing system having a plurality of database management systems (DBMSs) each having a local cache buffer (LCB) for storing data pages each having a plurality of records for processing by transactions, said DBMS being coupled to a global locking manager (GLM) for locking said data pages and said records, and being coupled to a Shared Electronic Store (SES) and to a shared external store for stable storage of one or more databases, each said DBMS also having first means for storing a Local Validity Vector (LVV) containing validity information for each said data page in said LCB and having second means for storing a Buffer Control Block (BCB) for each said data page in LCB, each said BCB including an Input-Output-in-Progress (IOP) flag indicating when set that Input/Output (I/O) activity exists for the corresponding said data page and a Dirty Page (DP) flag

indicating when set that the corresponding said data page includes record modifications not yet written to stable storage, a method for maintaining database coherency during the reading by a transaction of at least one record in a first data page in one said LCB, said method comprising the steps of:

(a) locking said at least one record in said first data page in share (S) mode;

(b) latching said first data page with a share (S) mode latch;

(c) if said IOP flag for said first page is set, performing the steps of:

(c.1) if said DP flag for said first data page is set, skipping to and performing reading step (e), otherwise

(c.2) performing the steps of:

(c.2.1) unlatching said first data page, and

(c.2.2) responsive to reset of said IOP flag for said first data page, repeating said latching step (b) and said performing step (c);

otherwise

(d) performing the steps of:

(d.1) testing said LVV to determine validity of said first data page, and

(d.2) if said LVV shows said first data page to be valid, skipping to and performing reading step (e), otherwise performing the steps of:

(d.2.1) latching said first data page with an exclusive (X) mode latch,

(d.2.2) setting said IOP flag in said BCB for said first data page,

(d.2.3) unlatching said first data page,

(d.2.4) replacing said first data page in said LCB with a valid copy of said first data page from said SES,

(d.2.5) resetting said IOP flag in said BCB for said first data page, and

(d.2.6) repeating said steps (b) through (d); and

(e) reading said at least one record from said first data page in said LCB.

5,546,580

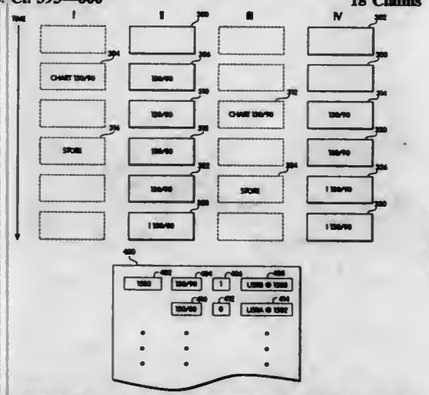
METHOD AND APPARATUS FOR COORDINATING CONCURRENT UPDATES TO A MEDICAL INFORMATION DATABASE

Robert Seliger, Winchester; Fred W. Ehrhardt, Lynnfield, and Andrew S. Braunstein, Chestnut Hill, all of Mass., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 15, 1994, Ser. No. 228,490

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—600 **18 Claims**



1. A method for coordinating updates to a medical database in a medical information system, the method comprising the steps of:

entering a first data value for a record in said medical database at a first workstation and a second data value for said record at a second workstation, each of the workstations including a display screen;

permitting said first workstation to access said record in said medical database during data entry into said record at said second workstation and permitting said second workstation to access said record in said medical database during data entry into said record at said first workstation;

storing said first data value in said record in said medical database after completion of data entry for said record at said first workstation and storing said second data value in said record in said medical database after completion of data entry for said record at said second workstation, said first and second data values being stored in said medical database in dependent of the order in which they are entered at said first and second workstations; and

recording a correction history for said record, said correction history containing information as to the update of said record with said first data value and information as to the update of said record with said second data value.

5,546,581

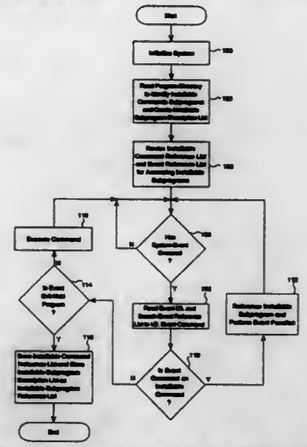
METHOD FOR INTEGRATING A DISCRETE SUBPROGRAM INTO A MAIN PROGRAM

David R. R. McKinnis; David L. Luebbert, both of Bellevue; Eric R. Berman, Redmond; Thomas W. Saxton, Bellevue, all of Wash., and Daniel H. Padwa, Stony Brook, N.Y., assignors to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 812,764, Dec. 23, 1991, abandoned. This application Mar. 8, 1994, Ser. No. 208,094

Int. Cl.[6] G06F *9/42*

U.S. Cl. 395—650 **25 Claims**



9. A method for calling a discrete subprogram with a main program wherein the discrete subprogram is responsive to a subprogram command for performing a subprogram function and wherein the main program is responsive to a system event for performing a function, said method comprising the steps of:

maintaining a cross reference array for associating the subprogram command with a particular system event and for associating the discrete subprogram with the subprogram command; and

using the cross reference array to perform a command in the subprogram in response to the occurrence of the particular system event so that the function of the subprogram can be performed.

VOL 1189 ISS 2 AUG 13 1996 UMI

5,546,582

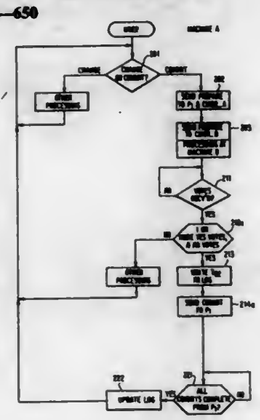
EXTENSION OF TWO PHASE COMMIT PROTOCOL TO DISTRIBUTED PARTICIPANTS

Roger L. Brockmeyer, San Jose; Richard Dievendorff, Mountain View, both of Calif.; Daniel E. House, Scarborough, Canada; Earle H. Jenner, San Jose, Calif.; Margaret K. LaBelle, Poughkeepsie; Michael G. Mall, LaGrangeville, both of N.Y., and Stuart L. Silen, Morgan Hill, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 932,835, Aug. 20, 1992, abandoned. This application Feb. 2, 1995, Ser. No. 384,484

Int. Cl.[6] H04L *29/08*

U.S. Cl. 395—650 **21 Claims**



1. A method for coordinating updates in a distributed data processing system comprising the steps of:

notifying, from an external source, a first coordinator on a first system in said distributed data processing system so as to enable said first coordinator to, at a predetermined time, invoke an end-phase-one exit processing, said end-phase-one exit processing comprising a function provided by said external source for performing processing after an end of a phase-one of a plurality of phases;

enabling said end-phase-one exit processing of said first coordinator so that said first coordinator on said first system becomes a sub-coordinator of a second coordinator on a second system in said distributed data processing system, wherein said sub-coordinator notifies participants to perform said phase-one, collects votes from participants within said first system and writes an end-phase-one record of a first system vote to a log when all of said votes are collected;

notifying, by said first coordinator, participants to perform said phase-one;

collecting, by said first coordinator, all votes from all participants on said first system in said distributed data processing system;

writing, by said first coordinator, said end-phase-one record of said first system vote to said log when all votes are collected from all participants on said first system; and

in response to said writing by said first coordinator of said first system, passing control, by said first coordinator, to said end-phase-one exit processing,

wherein said votes include an ABSTAIN vote when a participant wants to continue to be involved with a unit of work but does not want to influence a final decision of the unit of work.

5,546,583

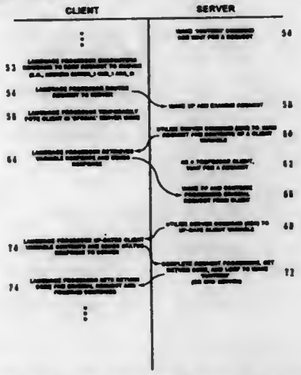
METHOD AND SYSTEM FOR PROVIDING A CLIENT/SERVER INTERFACE IN A PROGRAMMING LANGUAGE

David I. Shriver, Euless, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 5, 1994, Ser. No. 223,276

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—650 **8 Claims**



1. A method in a data processing system for providing client/server interaction capability in a programming language processor for executing program code, said method comprising the steps of:

providing a programming language processor within said data processing system;

providing a client program within said data processing system wherein said client program is comprised of program code for executing within said data processing system;

providing a server program within said data processing system wherein said server program is comprised of program code for executing within said data processing system;

invoking said client program;

invoking said server program;

from said client program, sending a request for a service to said server program;

within said server program, sending a request to said client program for a service that requires access to a variable within said client program, wherein said request to said client program by said server program is sent in response to program code within said server program;

within said client program, processing said request from said server program; and

within said server program, processing said request from said client program in response to said access to said variable in said client program.

5,546,584

SYSTEM AND METHOD FOR ESTABLISHING COMMUNICATION PROTOCOLS BETWEEN APPLICATION PROGRAMS

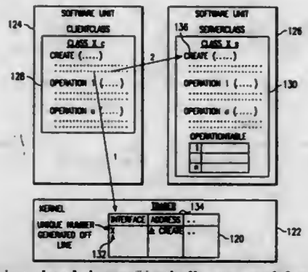
Kenneth Lundin, Skimmelvägen 4, 152 57 Södertälje; Lars-Erik Wiman, Förkottsvägen 7, S-126 44 Hägersten, and Mats Svensson, Vallhornsv 10V, 142 32 Trångsund, all of, Sweden

Continuation of Ser. No. 907,293, Jul. 1, 1992, abandoned. This application Apr. 13, 1995, Ser. No. 422,625

Int. Cl.[6] G06F *9/44*

U.S. Cl. 395—700 **34 Claims**

10. A system for generating and monitoring the interaction of a plurality of a dynamically varying set of software modules in a computing system having one or more processors, wherein each of said software modules is capable of interactively creating and manipulating objects belonging to one or more object classes, each



of said object class being automatically generated from an interface specification, said system comprising:

means for defining a computer-language-independent interface specification to govern the interaction of said plurality of software modules across one or more processors by the steps providing a unique name for said interface specification;

providing a list of one or more instance variables which define the characteristics of a class of objects;

providing zero or more interaction variables specifying the public or private interaction of a group of said objects; and

specifying constraints, if any, on the interaction of said software modules;

means for converting said computer-language-independent interface specification into a computer-language-specific interface implementation for a specific computing system using at least the following information;

a name of a communications protocol to be used for the interchange of data between said software modules:

an identification of the software modules that need to exchange data to interactively create and manipulate objects;

an operational command set for each such software module; and

the constraints, if any, on the interaction of said software modules;

means for creating a plurality of functional software modules that are capable of interacting or communicating with each other using said computer-language-specific interface implementation;

means for regulating the interaction of said software modules such that any of said plurality of software modules is permitted to initiate or respond to communications from any other software module; and

means for executing said plurality of software modules on said computing system using said computer-language-specific interface implementation for communicating data between said software modules.

5,546,585

PERSONAL COMPUTER SYSTEM WITH START-UP CAPABILITY FROM AN EXTERNAL MASS STORAGE DEVICE

Takumi Soga, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 6, 1993, Ser. No. 42,793

Claims priority, application Japan, Apr. 8, 1992, 4-086923

Int. Cl.[6] G06F *9/24*

U.S. Cl. 395—700 **10 Claims**

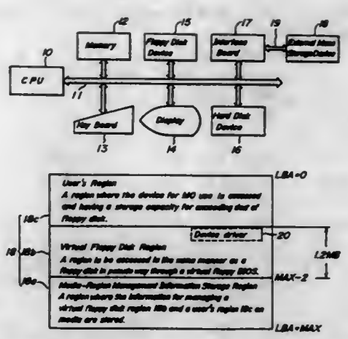
1. A personal computer system comprising:

a personal computer which is booted-up in accordance with a system boot-up program;

an external mass storage device, external to said personal computer, having a storage region including a virtual floppy disk region which (a) has a storage capacity substantially similar to a storage capacity of a floppy disk and (b) stores said system boot-up program therein;

interface means for enabling communication between said personal computer and said external mass storage device;

storage means storing an auxiliary program; and



read means for receiving said auxiliary program from said storage means and reading, in accordance with said auxiliary program, the system boot-up program from said virtual floppy disk region during system boot-up,

said personal computer comprising means for booting-up said personal computer responsive to said system boot-up program read by said read means from said virtual floppy disk region.

5,546,586

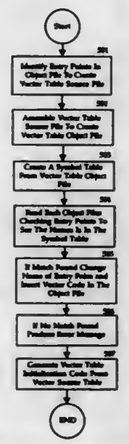
METHOD AND APPARATUS FOR VECTORIZING THE CONTENTS OF A READ ONLY MEMORY DEVICE WITHOUT MODIFYING UNDERLYING SOURCE CODE

Russ Wetmore, Santa Clara, and Philip Nguyen, Santa Cruz, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed May 6, 1993, Ser. No. 58,876

Int. Cl.[6] G06F *9/44*

U.S. Cl. 395—700 **4 Claims**



1. A method for generating a vectorized object file comprising the computer-implemented steps of:

a) compiling one or more source files to create one or more object files;

b) identifying entry points in said one or more object files, wherein each entry point is a location in said one or more object files which may be entered via a symbolic reference;

c) creating a vector table source file from said identified entry points, wherein said vector table source file is a file that contains entries that correspond to routines in said one or

more object files, wherein each entry contains information about a corresponding routine;

d) generating a vector table object file from said vector table source file, wherein said vector table object file is an object file that contains modules that correspond to routines in the one or more object files;

e) generating a vectorized object file from said one or more object files based on said vector table object file, wherein said vectorized object file is an object file in which entry points have been replaced by pointers into the vector table object file;

f) generating a vector table initialization file from said vector table source file, wherein said vector table initialization file is a file that contains routines that, when executed, initialize the vector table pointers; and

g) appending said vector table initialization file to said vectorized object file.

5,546,587

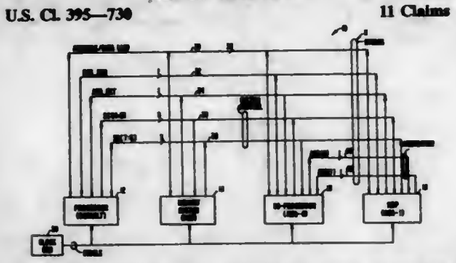
DECENTRALIZED BUS ARBITRATION SYSTEM WHICH CONTINUES TO ASSERT BUS REQUEST SIGNAL TO PRECLUDE OTHER FROM ASSERTING BUS REQUEST SIGNAL UNTIL INFORMATION TRANSFER ON THE BUS HAS BEEN COMPLETED

Jordan R. Silver, San Jose, Calif., assignor to Tandem Computers Incorporated, Cupertino, Calif.

Continuation of Ser. No. 707,714, May 30, 1991, abandoned. This application Oct. 31, 1994, Ser. No. 332,617

Int. Cl.[6] G06F *13/18*

U.S. Cl. 395—730 **11 Claims**



1. In a data processing system having a plurality of data handling units interconnected by a bus for communicating information therebetween, a method for sequentially granting access to the bus for transferring information thereon to each of two or more of the plurality of data handling units, the method comprising the steps of:

the two or more of the plurality of data handling units requesting access to the bus during a bus cycle by each asserting a bus request signal indicative of a request for information transfer on the bus, together with a separate arbitration signal uniquely identifying each of the two or more of the plurality of data handling units;

each of the two or more of the plurality of data handling units receiving the arbitration signals of the other of the two or more of the plurality of data handling units to determine therefrom, on a predetermined priority basis, whether the requested access is granted;

each of the two or more of the plurality of data handling units continuing to assert the bus request signal to preclude the other of the plurality of data handling units from asserting the bus request signal during the information transfer by the two or more of the plurality of data handling units and de-asserting the bus request signal before the information transfer on the bus has been completed.

5,546,588

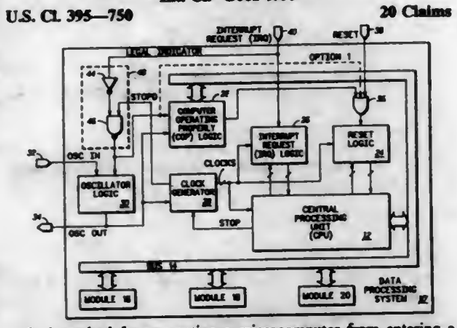
METHOD AND APPARATUS FOR PREVENTING A DATA PROCESSING SYSTEM FROM ENTERING A NON-RECOVERABLE STATE

Vincent B. Deems; Gregory A. Racine; James R. Feddeler, all of Austin, Tex., and Victor E. Shiff, Waterbury, Conn., assignors to Motorola Inc., Schaumburg, Ill.

Continuation of Ser. No. 880,620, May 8, 1992, abandoned. This application Dec. 5, 1994, Ser. No. 350,396

Int. Cl.[6] G06F *9/00*

U.S. Cl. 395—750 **20 Claims**



1. A method for preventing a microcomputer from entering a non-recoverable state, the microcomputer having a terminal for communicating external to the microcomputer, the method comprising steps of:

receiving a first instruction which, if fully executed, is capable of placing the microcomputer in the non-recoverable state;

receiving an input signal from external to the microcomputer at the terminal, the input signal having a logic state that is not software programmable by the microcomputer;

determining whether the logic state of the input signal is a first state or a second state;

after said step of determining, fully executing the first instruction if the logic state of the input signal is the first state; and

after said step of determining, preventing the microcomputer from entering the non-recoverable state if the logic state of the input signal is the second state.

5,546,589

SYSTEM HAVING CONTROLLED POWER SUPPLY FOR PROHIBITING THE POWER ON SWITCH FROM BEING TURNED ON AND ACCESSING MEMORY WHEN SUPPLY VOLTAGE FALLS BELOW SEC

Isao Odaira, Inagi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 786,604, Nov. 1, 1991, abandoned. This application Feb. 13, 1995, Ser. No. 387,621

Claims priority, application Japan, Nov. 9, 1990, 2-302675

Int. Cl.[6] G06F *1/30*

U.S. Cl. 395—750 **14 Claims**

1. An electronic apparatus having a controlled power supply comprising:

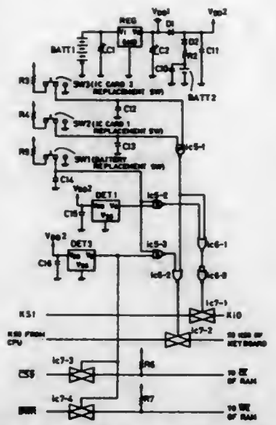
a plurality of keys including a power on switch for turning on the electronic apparatus and a power off switch for turning off the electronic apparatus;

first detection means for detecting that a supply voltage from the power supply falls below a first predetermined voltage in the first detection means and for producing a detection output;

second detection means for detecting that the supply voltage from the power supply falls below a second predetermined voltage in the second detection means lower than said first predetermined voltage and for producing a detection output;

an input circuit, in which at least said power on switch and said power off switch are arranged; and

control means for controlling said power supply in accordance with a state of said input circuit;



means for producing a state of said input circuit corresponding to an actuation of said power off switch in response to the detection output of said first detection means;

means for prohibiting said input circuit from having a state corresponding to an actuation of said power on switch in response to the detection output of the second detection means; and

means for prohibiting memory access in response to the detection output of said second detection means.

5,546,590

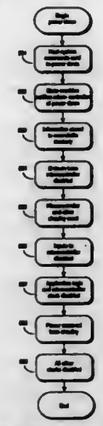
POWER DOWN STATE MACHINE FOR PCMCIA PC CARD APPLICATIONS

Michael E. Pierce, Orangevale, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Sep. 19, 1994, Ser. No. 308,835

Int. Cl.[6] G06F *1/32*

U.S. Cl. 395—750 **6 Claims**



1. A method for removing power to certain circuitry of a peripheral device, said certain circuitry comprising a microcontroller volatile and nonvolatile memory, application logic, and a microcontroller and application logic clock, said method for removing power to certain circuitry controlled by control logic of said peripheral device, said peripheral device coupled in communication with a computer system, comprising the steps of:

a) notifying said peripheral device to power down;

b) notifying said microcontroller of a pending power down event;

c) saving information in said volatile memory to said nonvolatile memory;

d) setting a flag in said nonvolatile memory indicating said information has been saved;

e) transferring said microcontroller to a halt state;

f) shutting off inputs driven by said microcontroller to circuitry including said control logic of said peripheral device other than said certain circuitry to which power is to be removed;

g) asserting and holding a reset signal to said microcontroller and said certain circuitry to which power is to be removed;

h) disabling inputs to said certain circuitry to which power is to be removed;

i) disabling and removing power from said microcontroller and application logic clock;

j) removing power from said certain circuitry excluding said microcontroller; and

k) removing power from said microcontroller.

5,546,591

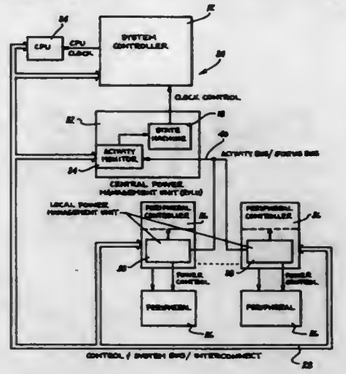
DISTRIBUTED POWER MANAGEMENT SYSTEM FOR BATTERY OPERATED PERSONAL COMPUTERS

Henry Wurzburg, Chandler, and Walter H. Potts, Tempe, both of Ariz., assignors to VLSI Technology, Inc., San Jose, Calif.

Continuation of Ser. No. 811,396, Dec. 20, 1991, abandoned. This application Feb. 1, 1994, Ser. No. 190,697

Int. Cl.[6] G06F *13/10;9/00*

U.S. Cl. 395—750 **8 Claims**



1. A system for supplying power to at least one peripheral component associated with a computer, said system comprising:

a central processing unit (CPU);

at least one peripheral component having a controller associated therewith, said controller being coupled to said CPU;

a central power management unit coupled to said CPU;

at least one local power management unit associated with said peripheral component and its associated peripheral controller, said local power management unit having means for disabling a clock signal into said associated peripheral controller and for disabling power input into said peripheral component; and

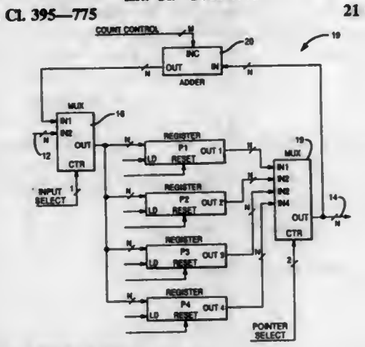
bus means for communicating between said local power management unit and said central power management unit.

5,546,592

SYSTEM AND METHOD FOR INCREMENTING MEMORY ADDRESSES IN A COMPUTER SYSTEM

David L. Simpson, West Columbia, S.C., assignor to NCR Corporation, Dayton, Ohio

Filed Jun. 26, 1989, Ser. No. 371,872
Int. Cl.[6] G06F 7/42
U.S. Cl. 395—775 21 Claims



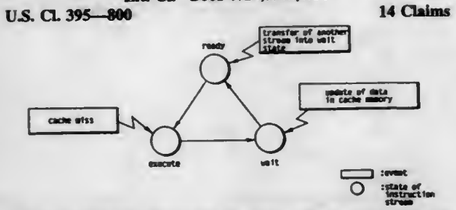
1. A counting system comprising:
first and second busses;
first and second registers, each having an input and output;
first and second multiplexers, each having first and second inputs and an output; and
combining means having an output and a first input;
wherein the inputs of said first and second registers are connected to the output of said first multiplexer, the outputs of said first and second registers are connected to respective first and second inputs of said second multiplexer, the output of said second multiplexer is connected to said second bus and to the input to said combining means, the output of said combining means is connected to the first input of said first multiplexer, and said first bus is connected to the second input of said first multiplexer.

5,546,593

MULTISTREAM INSTRUCTION PROCESSOR ABLE TO REDUCE INTERLOCKS BY HAVING A WAIT STATE FOR AN INSTRUCTION STREAM

Kozo Kimura, Osaka, and Hiroaki Hirata, Kyoto, both of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 17, 1993, Ser. No. 63,938
Claims priority, application Japan, May 18, 1992, 4-124910
Int. Cl.[6] G06F 9/24;9/38;9/30
U.S. Cl. 395—800 14 Claims



1. A multistream instruction processor issuing instruction from N instruction streams in parallel, and processing instruction streams interchangeably when the number of the instruction streams is N and larger than N, the processor comprising:
an instruction preparation unit comprised of thread slots each of which fetches and decodes instructions from the instruction stream assigned thereto as well as issues a decoding result one at a time, the number of the thread slots being N;
a functional unit comprised of instruction execution means each of which executes the instructions in accordance with the decoding result of the thread slot, the number of the instruction execution means being M, the functional unit including at least one delayable execution means;
an execution connection unit for directing connections between the instruction preparation unit and the functional unit so that the decoding result received from the thread slot will be provided to the instruction execution means which is ready to execute it; and
an instruction stream controller comprised of an event detector, a context backup memory, and an exchange controller,
the event detector detecting an execution delay in the delayable execution means that was caused by a delaying instruction in an instruction stream;
the context backup memory holding a context of the instruction stream which indicates how far execution of the instruction stream had been conducted prior to the execution delay, the context including thread slot context information indicating an operation state of the thread slot assigned to the instruction stream and execution means context information indicating an operation state of the delayable execution means so that the instruction stream may later be returned to a thread slot and the delaying instruction may be immediately re-executed in the delayable execution means; and
the exchange controller performing the following functions when the event detector detects an execution delay caused by a delaying instruction in a first instruction stream,
extracting the context of the first instruction stream, including the first instruction stream's thread slot context information and execution means context information, and temporarily storing it into the context backup memory,
putting a second instruction stream into the thread slot that was assigned to the first instruction stream by using the second instruction stream's thread slot context information, and
making the delayable execution means directly receive and immediately execute the second instruction stream's delaying instruction by using the second instruction stream's execution means context information if the second instruction stream is a previously executing instruction stream that included a delaying instruction that caused an execution delay in the delayable execution means but is now ready for immediate execution therein.

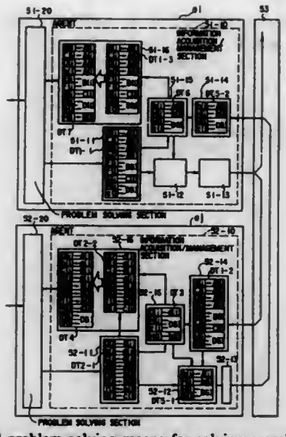
5,546,594

COOPERATIVE DISTRIBUTED PROBLEM SOLVER

Seiichiro Wazumi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

Continuation of Ser. No. 963,753, Oct. 20, 1992, abandoned.
This application Mar. 27, 1995, Ser. No. 412,226
Claims priority, application Japan, Nov. 26, 1991, 3-311030
Int. Cl.[6] G06F 15/16
U.S. Cl. 395—800 6 Claims

1. A distributed problem solving apparatus, comprising:
a communications network for passing messages between computers connected thereto; and
first and second computers, coupled to said communications network, said first computer comprising a first agent, said second computer comprising a second agent, wherein said first agent comprises:
first problem-solving means for solving a problem requiring execution of a first plurality of tasks;
first problem solving management means, coupled to said first problem-solving means, for managing information which defines dependencies among said first plurality of tasks;
first transmission means for transmitting to said second agent information regarding tasks which may be executed by said first agent; and
first receiving means for receiving from said second agent information regarding tasks which may be executed by said second agent; and
wherein said second agent comprises:



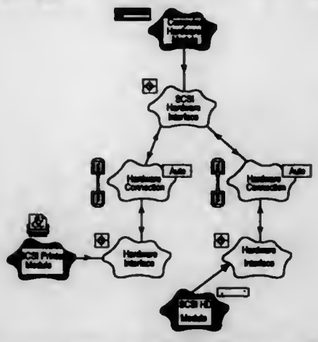
second problem-solving means for solving a problem requiring execution of a second plurality of tasks;
second problem solving management means, coupled to said second problem-solving means, for managing information which defines dependencies among said second plurality of tasks;
second transmission means for transmitting to said first agent information regarding tasks which may be executed by said second agent; and
second receiving means for receiving from said first agent information regarding tasks which may be executed by said first agent.

5,546,595

OBJECT-ORIENTED SYSTEM USING OBJECTS REPRESENTING HARDWARE DEVICES, PHYSICAL CONNECTORS AND CONNECTIONS BETWEEN THE PHYSICAL CONNECTORS FOR CONFIGURING A COMPUTER

George W. Norman, Fremont, and Glenn P. Andert, Cupertino, both of Calif., assignors to Taligent, Inc., Cupertino, Calif.

Filed Dec. 21, 1993, Ser. No. 171,722
Int. Cl.[6] G06F 9/00;9/445
U.S. Cl. 395—800 24 Claims



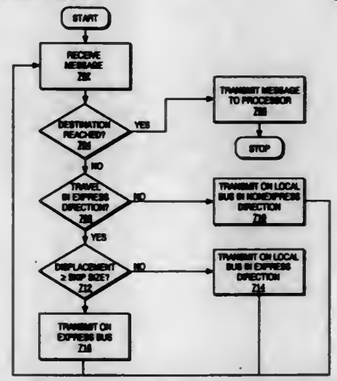
1. An object-oriented hardware configuration system for enabling centralized user configuration of hardware in a computer system, the hardware configuration system comprising:
a plurality of object-oriented hardware interface objects, each of the hardware interface objects representing a physical connector of a hardware device;
a plurality of object-oriented hardware module objects, each of the hardware module objects representing a hardware device that is user-configurable and has at least one physical connector and each of the plurality of object oriented hardware module objects including one of the plurality of hardware interface objects for each physical connector;
a plurality of connector objects, each of the connector objects representing a physical connection between two of the plurality of hardware interface objects;
an object-oriented hardware configuration object comprising a subset of the plurality of hardware module objects, representing hardware devices connected to a particular computer system, such that the hardware configuration object defines a particular hardware configuration of the particular computer system; and
means for enabling a user to access the hardware configuration object to configure the hardware devices connected to the particular computer system and to represent connections between hardware devices with the plurality of connector objects.

5,546,596

METHOD AND APPARATUS FOR INTEGRATED LOCAL AND EXPRESS ROUTING IN A MULTIPROCESSOR

Alan Geist, Hillsboro, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 111,199, Aug. 24, 1993, abandoned.
This application Mar. 30, 1995, Ser. No. 415,084
Int. Cl.[6] G06F 13/00
U.S. Cl. 395—200.02 8 Claims



1. An N dimensional network comprising a plurality of processor nodes, in which N is a value of at least one, the network further comprising a plurality of integrated routers for routing a message from a source processor node of the plurality of processor nodes to a destination processor node of the plurality of processor nodes in 2N orthogonal directions, said each integrated router coupled to a processor node of the plurality of processor nodes, said each integrated router further coupled to a plurality of adjacent routers, said each adjacent router located in an identified direction from the integrated router, and said each integrated router coupled to at least one non-adjacent router, said each non-adjacent router located in an identified direction from the integrated router, said each integrated router comprising:
a processor pen to communicate the message between the coupled processor node and the integrated router;
2N local ports to receive the message from and output the message to the adjacent routers in 2N orthogonal directions, each local port having an identified direction, said each local port further comprising a local input to receive the message from the identified direction and a local output to output the massage to the identified direction;

M express ports, 2N> M>=1, to receive the message from and output the message to the non-adjacent routers in less than 2N orthogonal directions, each express port having an identified direction, said each express port further including an express input to receive the message from the identified direction and an express output to output the message to the identified direction;

a message status unit coupled to said each local port and said each express input, said message status unit to select a direction to route the message, and if said direction to route the message is not equal to the directions identified by the express ports of the router, said message status unit to output the message through the local output having an identified direction equal to the direction to mute the message; and

a muting logic unit coupled to the message status unit, said routing logic unit further coupled to said each express port and said each local port having the same identified direction as said each express port, and if said direction to route the message is equal to the directions identified by the express ports of the router, said routing logic unit selectively outputting the message through the express output or the local output in said direction to route the massage, said muting logic unit further comprising logic to select the express output to output the received message if the remaining distance in said direction to route the message is greater than a value D, where D is indicative of a number of processor nodes between the router and the destination processor node in said direction to route the message, D having a value of at least one.

5,546,597

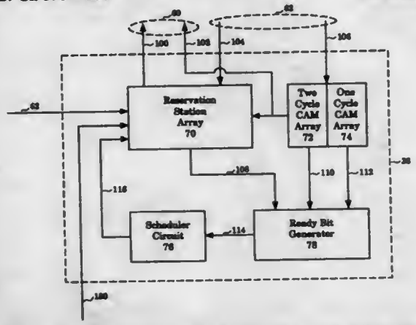
READY SELECTION OF DATA DEPENDENT INSTRUCTIONS USING MULTI-CYCLE CAMS IN A PROCESSOR PERFORMING OUT-OF-ORDER INSTRUCTION EXECUTION

Robert W. Martell, Hillsboro; Glenn J. Hinton, Portland; Michael A. Fetterman, Hillsboro; David B. Papworth, Beaverton; Robert P. Colwell, Portland, and Andrew F. Glew, Hillsboro, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Feb. 28, 1994, Ser. No. 203,050

Int. Cl.[6] G06F *9/345;9/38*

U.S. Cl. 395—800 **22 Claims**



9. A method for scheduling instructions in a computer system having processor, comprising the computer implemented steps of:

buffering a set of instructions in one and two cycle content addressable memory (CAM) array units;

receiving a result tag from an execution circuit over a result bus, and determining whether the result tag matches a source tag of one of said instructions buffered in said one and two cycle content addressable memory (CAM) array units;

selecting the instruction entry that matches the source tag for dispatch to the execution circuit.

5,546,598

WORKING SITUATION MANAGEMENT APPARATUS

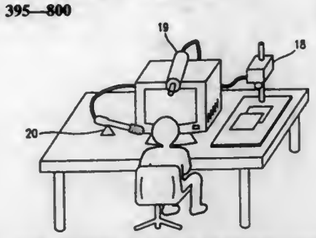
Takao Yamaguchi, and Masahiro Hamada, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Feb. 2, 1994, Ser. No. 190,982

Claims priority, application Japan, Feb. 4, 1993, 5-017250; Jun. 21, 1993, 5-148899; Jul. 30, 1993, 5-18998; Jul. 30, 1993, 5-189985

Int. Cl.[6] G06F *13/00;15/16*

U.S. Cl. 395—800 **27 Claims**



1. A working situation management apparatus comprising:

input means for inputting information relating to working;

detecting means for detecting an occurrence of predetermined change in the input information;

producing means for producing information indicating a time at which the predetermined change occurs and information specifying the predetermined change, in accordance with the detected predetermined change; and

storing means for storing the information indicating a time at which the predetermined change occurs and the information specifying the predetermined change, as working situation.

5,546,599

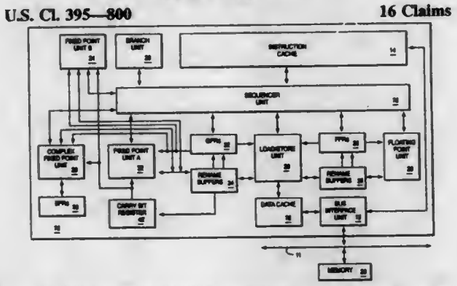
PROCESSING SYSTEM AND METHOD OF OPERATION FOR PROCESSING DISPATCHED INSTRUCTIONS WITH DETECTED EXCEPTIONS

Seungyoon P. Song, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 31, 1994, Ser. No. 221,438

Int. Cl.[6] G06F *9/38*

U.S. Cl. 395—800 **16 Claims**



1. A method of operating a processing system, comprising the steps of:

determining whether an exception condition exists for an instruction to be dispatched to circuitry for execution;

dispatching said instruction to said execution circuitry; and

in response to determining an exception condition exists for said instruction, inhibiting execution of said instruction by said execution circuitry so that said instruction is never executed by said execution circuitry.

5,546,600

DATA DRIVEN COMPUTER PRODUCING INHIBIT SIGNAL FOR INHIBITING MERGING EXTERNAL PROVIDED DATA PIECES WITH INTERNAL DATA PIECES WHEN NUMBER OF PROCESSING DATA EXCEEDS REFERENCE VALUE

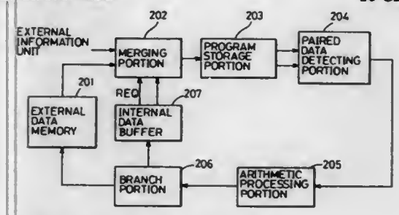
Futoshi Miyamae, Tenri, and Souichi Miyata, Nara, both of, Japan, assignors to Sharp Kabushiki Kaisha, Osaka-fu, Japan

Filed Dec. 14, 1992, Ser. No. 990,247

Claims priority, application Japan, Dec. 16, 1991, 3-331955

Int. Cl.[6] G06F *15/82*

U.S. Cl. 395—800 **10 Claims**



1. A data driven computer comprising:

merging means for merging externally provided data pieces with internal data pieces of the data driven computer to provide merged data;

processing means, coupled to said merging means, for processing the merged data pieces;

branching means, coupled to said processing means, for branching the processed data pieces to one of first and second data flow paths; and;

data transmission control means, coupled to the first data flow path to receive the processed data pieces, for providing the processed data pieces to said merging means as the internal data pieces, said data transmission control means comprising

buffer means for storing the processed data pieces,

counter means for counting a net number of processed data pieces stored in said buffer means,

comparator means for comparing a count of said counter means with a reference value, and

inhibit signal means, coupled to said comparator means, for autonomously generating a transmission inhibit signal in accordance with an output of said comparator,

said merging means inhibiting merging of the externally provided data pieces into the merged data in accordance with the transmission inhibit signal.

VOL
1189
ISS
2
AG
13
1996
UMI

DESIGN PATENTS

GRANTED August 13, 1996

ERRATA

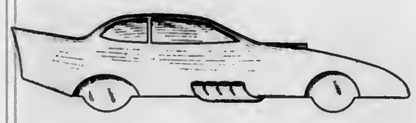
For CLASS	See PATENT NO.
D 14–102	D 372,700
D 01–099	D 372,738

VOL 1189 ISS 2 AG 13 1996 UMI

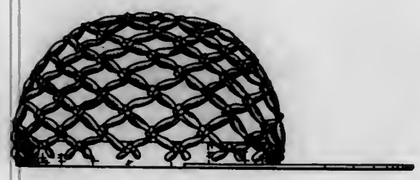
DESIGNS

AUGUST 13, 1996

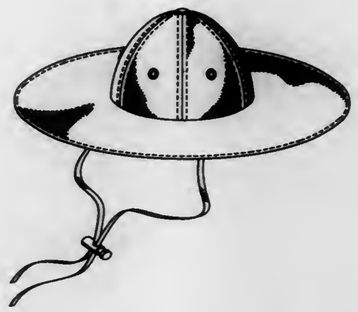
372,571
CAP
Rocco Venditto, Jr., 10 Leader Dr., Jacobus, Pa. 17407-1314
Filed Jul. 31, 1995, Ser. No. 42,013
Term of patent 14 years
U.S. Cl. D2—869



372,572
HEADGEAR
Eileen Conran, 816 Bay Ave., Somers Point, N.J. 08244
Filed Aug. 14, 1995, Ser. No. 42,685
Term of patent 14 years
U.S. Cl. D2—876



372,573
HAT
Tomima L. Edmark, P.O. Box 671269, Dallas, Tex. 75367
Filed Aug. 8, 1995, Ser. No. 42,344
Term of patent 14 years
U.S. Cl. D2—880

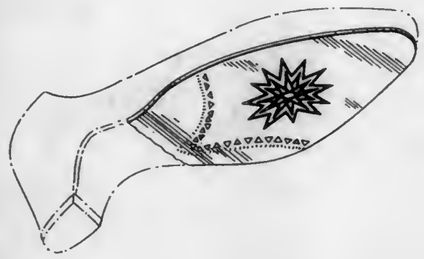


372,574
SHOE SOLE
Joseph Shea, Boston, Mass., assignor to SRL, Inc., Wilmington, Del.
Filed Sep. 9, 1994, Ser. No. 28,235
Term of patent 14 years
U.S. Cl. D2—953

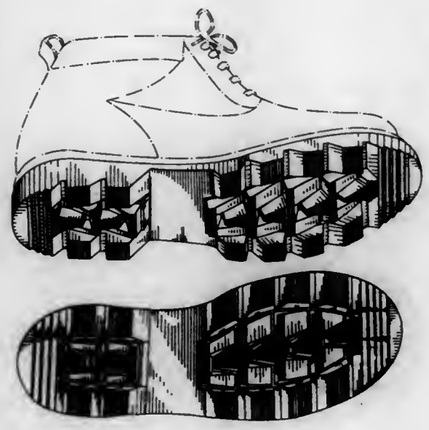


VOL 1189 ISS 2 AG 13 1996 UMI

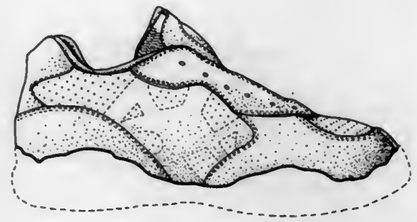
372,575
FRONT PORTION OF A SHOE SOLE
Norman H. Finn, Newton, Mass., assignor to AmAsia International, Ltd., Burlington, Mass.
Filed Jun. 29, 1994, Ser. No. 25,312
Term of patent 14 years
U.S. Cl. D2—959



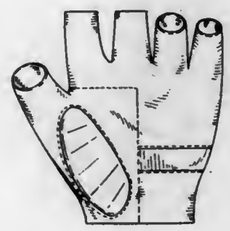
372,576
SOLE FOR A BOOT OR SHOE
John Mills, Troyuan, Taiwan, and Stephen M. Palmer, London, England, assignors to Wolverine World Wide, Inc., Rockford, Mich.
Filed Feb. 17, 1995, Ser. No. 35,040
Term of patent 14 years
U.S. Cl. D2—960



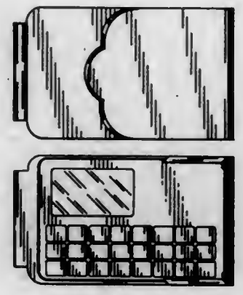
372,577
SHOE UPPER
Sergio G. Lozano, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Oct. 20, 1995, Ser. No. 45,467
Term of patent 14 years
U.S. Cl. D2—969



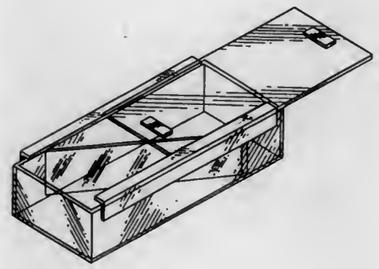
372,578
GLOVE
Daniel M. Chapman, 2207 Florence St., Kilgore, Tex. 75662-3601
Filed Jun. 8, 1995, Ser. No. 39,988
Term of patent 14 years
U.S. Cl. D2—617



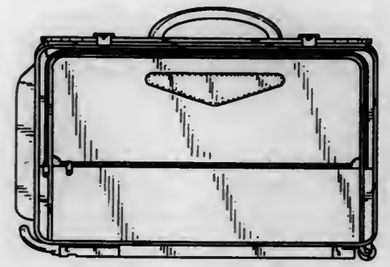
372,579
COMBINATION CARD DISPENSER AND CALCULATOR
Steven Lin, Arcadia, Calif., assignor to Concord Manufacturing Systems, Sam Dimas, Calif.
Filed Sep. 26, 1994, Ser. No. 28,933
Term of patent 14 years
U.S. Cl. D3—249



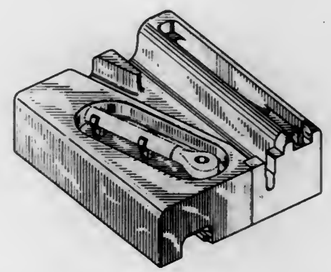
372,580
STORAGE CASE FOR GUN POWDER AND SHOT
Raymond R. Chipman, Sr., 204 4th St., Ingram, Tex. 78025
Filed Jan. 31, 1995, Ser. No. 34,268
Term of patent 14 years
U.S. Cl. D3—262



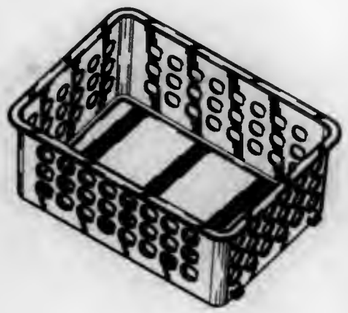
372,581
BUSINESS CASE
Michael S. Bernstein; Bruce B. Weiner; Thomas E. Bernstein, and David Nicholson, all of Pittsburgh, Pa., assignors to S J B Enterprises, Inc., Murrysville, Pa.
Filed Aug. 22, 1995, Ser. No. 42,999
Term of patent 14 years
U.S. Cl. D3—279



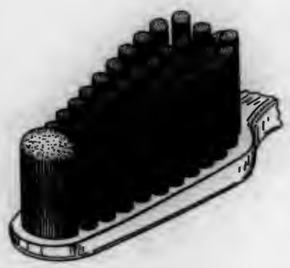
372,582
HANDPIECE ASSEMBLAGE CONTAINER
Michael A. Beaty, and Jon P. Page, both of Boulder, Colo., assignors to Valley Inc., Boulder, Colo.
Filed Feb. 8, 1995, Ser. No. 36,610
Term of patent 14 years
U.S. Cl. D3—313



372,583
STORAGE BASKET
Keith Brightbill, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Aug. 12, 1994, Ser. No. 27,053
Term of patent 14 years
U.S. Cl. D3—314



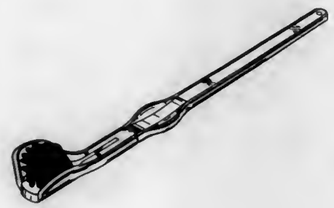
372,584
BRISTLED HEAD FOR A TOOTHBRUSH
Kevin G. Yost, Short Hills, and Alan G. Trojanowski, Monmouth Junction, both of N.J., assignors to Joihon & Johnson Consumer Products, Inc., Skillman, N.J.
Filed Mar. 22, 1995, Ser. No. 36,557
The portion of the term of this patent subsequent to Apr. 16, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D4—104



372,585
GOLF SHOE BRUSH
Ralph A. Zoccolillo, 26 Purdy St., Harrison, N.Y. 10528, and Dominic Trentadue, R.D. #5, Gage Rd., Brewster, N.Y. 10509
Filed Feb. 7, 1995, Ser. No. 34,538
Term of patent 14 years
U.S. Cl. D4—124



372,586
TOOTHBRUSH
Jorge Quintanilla, Mexico, Mexico, assignor to Benefit International Products, Ltd., George Town, Cayman Islands
Filed Nov. 30, 1992, Ser. No. 2,101
Term of patent 14 years
U.S. Cl. D4—105



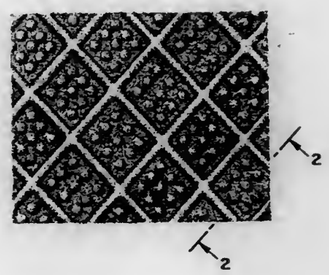
372,587
BATHROOM TISSUE WITH FLORAL DESIGN
Robert J. Arnone, Alameda; Tom McNulty, San Francisco, both of Calif., and Ed Giesler, Pulaski, Wis., assignors to Potlatch Corporation, San Francisco, Calif.
Filed Jan. 19, 1995, Ser. No. 33,769
Term of patent 14 years
U.S. Cl. D5—37



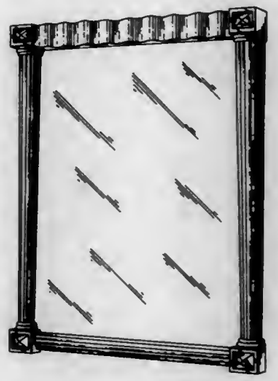
372,588
BATHROOM TISSUE WITH PRINT PATTERN
Rosie Welch, Oregon City, Oreg., assignor to Potlatch Corporation, San Francisco, Calif.
Filed Feb. 23, 1995, Ser. No. 35,434
Term of patent 14 years
U.S. Cl. D5—37



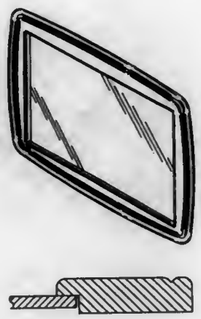
372,589
EMBOSSED PAPER TOWEL
William H. Burgess, Wallingford, and John P. Theiman, Downington, both of Pa., assignors to Kimberly-Clark Tissue Company, Neenah, Wis.
Filed Mar. 2, 1995, Ser. No. 35,594
Term of patent 14 years
U.S. Cl. D5—53



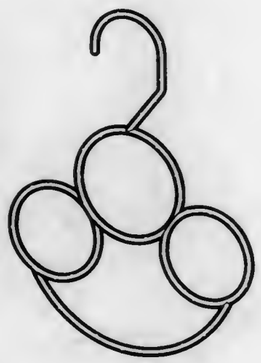
372,590
FRAME
Phylliss Mann, Los Angeles, and Lawrence Platt, Beverly Hills, both of Calif., assignors to Cal-Marble Furniture Mfg. Corp., El Monte, Calif.
Filed Nov. 22, 1994, Ser. No. 31,311
Term of patent 14 years
U.S. Cl. D6—300



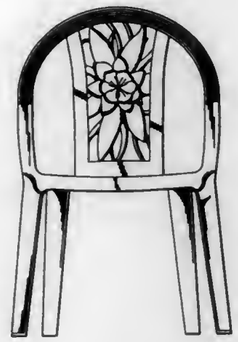
372,591
MIRROR
Merlin A. Brunner, Appleton, and Harvey J. Draheim, Weyauwega, both of Wis., assignors to Simmons Juvenile Products Company, Inc., New London, Wis.
Filed Apr. 6, 1995, Ser. No. 37,196
Term of patent 14 years
U.S. Cl. D6—300



372,592
HANGER FOR PANTY HOSE
Chi D. Tran, 8892 Montrose Ave., Westminster, Calif. 92683
Filed Mar. 22, 1995, Ser. No. 36,623
Term of patent 14 years
U.S. Cl. D6—317



372,593
CHAIR WITH ORNAMENTAL BACK
Drew Maple, Alexandria, Ind., assignor to Resin Partners, Inc., Alexandria, Ind.
Filed Sep. 26, 1995, Ser. No. 44,543
Term of patent 14 years
U.S. Cl. D6—358



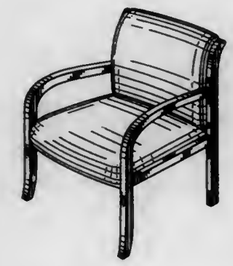
372,594
DINING ROOM CHAIR
Michael S. Reese, P.O. Box 163241, Austin, Tex. 78746
Filed Jul. 25, 1995, Ser. No. 41,801
Term of patent 14 years
U.S. Cl. D6—363



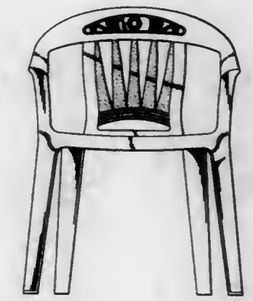
372,595
CHAIR
Craig H. Schultz; Bob L. Baillie, and Chad E. Wihlm, all of Muscatine, Iowa, assignors to Hon Industries Inc., Muscatine, Iowa
Filed Jun. 9, 1995, Ser. No. 40,122
Term of patent 14 years
U.S. Cl. D6—366



372,596
CHAIR
Kenneth E. Reinhard, Stevensville, Md., assignor to Hon Industries Inc., Muscatine, Iowa
Filed Jun. 9, 1994, Ser. No. 24,150
The portion of the term of this patent subsequent to Sep. 26, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—379



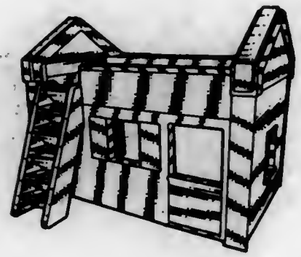
372,597
SEAT WITH ORNAMENTAL BACK
Drew Maple, Alexandria, Ind., assignor to Resin Partners, Inc., Alexandria, Ind.
Filed Sep. 26, 1995, Ser. No. 44,544
Term of patent 14 years
U.S. Cl. D6—379



372,598
CHAIR
Nicholas A. Ungaro, Louisville, Ky., assignor to LADD Furniture, Inc., High Point, N.C.
Filed Jul. 12, 1995, Ser. No. 41,388
Term of patent 14 years
U.S. Cl. D6—380



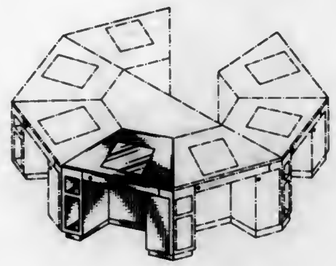
372,599
BED FRAME
Joseph C. Cacciola, and William K. Ford, both of Hudson, Ohio, assignors to The Little Tikes Company, Hudson, Ohio
Filed Jul. 10, 1995, Ser. No. 41,212
Term of patent 14 years
U.S. Cl. D6—388



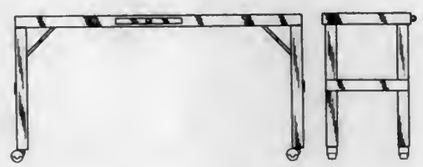
372,600
POST BED
Michael J. Paus, High Point, N.C., assignor to Universal Furniture Industries, Inc., High Point, N.C.
Filed Feb. 24, 1995, Ser. No. 35,296
Term of patent 14 years
U.S. Cl. D6—393



372,601
COMPUTER DESK MODULE
Fay D. Roberts, 1821 E. Winchcomb Dr., and Debra D. Williamson, 1909 E. Presidio Rd., both of Phoenix, Ariz. 85022
Filed Apr. 19, 1995, Ser. No. 37,701
Term of patent 14 years
U.S. Cl. D6—422



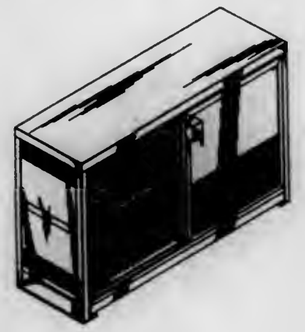
372,602
BED DESK
Willie F. Richardson, 16041 S. Emerald St., Harvey, Ill. 60426
Filed Apr. 5, 1994, Ser. No. 20,867
Term of patent 14 years
U.S. Cl. D6—429



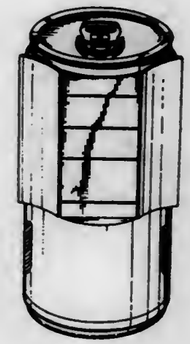
372,603
MODULAR CABINET
Amelia Sacchio Lodispoto, Piazza Carducci, 7, Bologna, Italy
Filed Apr. 12, 1994, Ser. No. 21,189
Claims priority, application Italy, Oct. 13, 1993, BO93000841
The portion of the term of this patent subsequent to Mar. 5, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—432



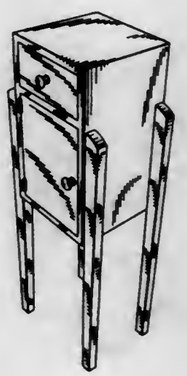
372,604
PROPANE CYLINDER STORAGE CABINET
Hank Frederiks, North York, Canada, assignor to Superior Propane Inc., Ontario, Canada
Filed Apr. 25, 1994, Ser. No. 21,844
Claims priority, application Canada, Oct. 25, 1993, 25-10-93-2
Term of patent 14 years
U.S. Cl. D6—432



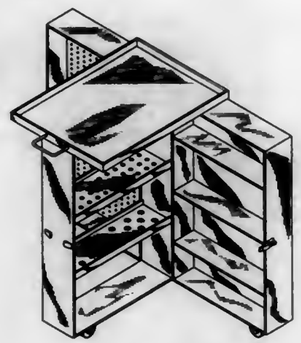
372,605
ENTERTAINMENT CABINET
Brian J. Palmer, Auchterarder, United Kingdom, assignor to Akura Electronics Ltd., Hong Kong, Hong Kong
Filed Feb. 3, 1995, Ser. No. 34,392
Claims priority, application United Kingdom, Aug. 6, 1994, 2040831
Term of patent 14 years
U.S. Cl. D6—434



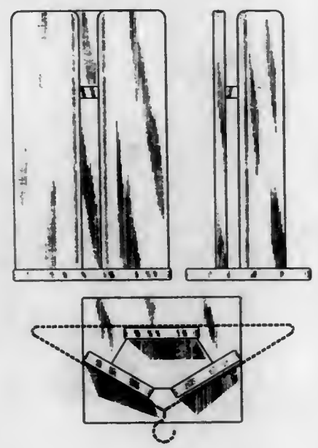
372,606
CABINET
Philip Stone, Woodbury, Conn., and Kathy Crouch, New Milford, N.J., assignors to Ethan Allen Inc., Danbury, Conn.
Filed Jun. 5, 1995, Ser. No. 39,748
Term of patent 14 years
U.S. Cl. D6—445



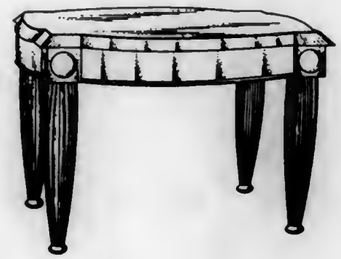
372,607
TOOL CABINET
Luis A. Pallas, Nahuel Hapi 3954PBB, Captial Federal, Argentina
Continuation-in-part of Ser. No. 731,893, Jul. 18, 1991, abandoned. This application Jan. 12, 1994, Ser. No. 17,383
Term of patent 14 years
U.S. Cl. D6—445



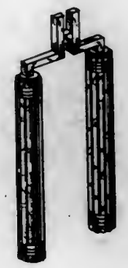
372,608
COAT HANGER ORGANIZER
Bruce F. Enman, 17 Elm St., North Grafton, Mass.
Filed Sep. 20, 1995, Ser. No. 44,198
Term of patent 14 years
U.S. Cl. D6—475



372,609
TABLE
Sally S. Lewis, 715 N. Canon Dr., Beverly Hills, Calif. 90210
Filed Feb. 21, 1995, Ser. No. 35,132
Term of patent 14 years
U.S. Cl. D6—480



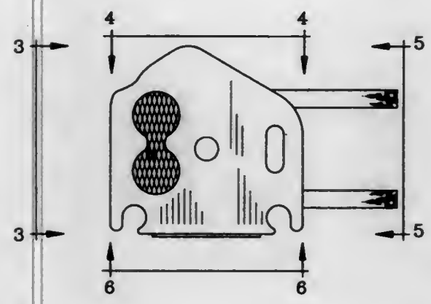
372,610
SUPPORT FOR FURNITURE
Richard C. Hannum, Ross, Calif., assignor to The McGuire Furniture Company, San Francisco, Calif.
Filed Mar. 7, 1995, Ser. No. 35,844
Term of patent 14 years
U.S. Cl. D6—495



372,611
CHAIR SEAT
David N. Hodge, The Sea Ranch, Calif.; Michael L. Deimen; David C. Jenkins, both of Grand Rapids; Michael L. Mercier, Grandville; Donald K. Sandberg, Ada, and David S. Teppo, East Grand Rapids, all of Mich., assignors to Steelcase, Inc., Grand Rapids, Mich.
Continuation-in-part of Ser. No. 15,411, Nov. 16, 1993, and Ser. No. 18,224, Feb. 1, 1994. This application Jun. 6, 1994, Ser. No. 24,007
Term of patent 14 years
U.S. Cl. D6—500



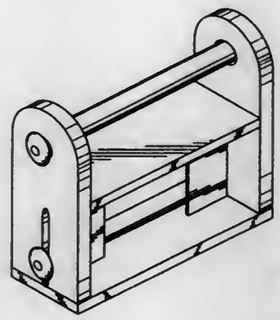
372,612
FISH-SHAPED TABLE TOP
Michael T. Credle, Sr., 1205 Wilson Rd., Smithfield, Va. 23430
Filed Dec. 7, 1994, Ser. No. 31,862
Term of patent 14 years
U.S. Cl. D6—511



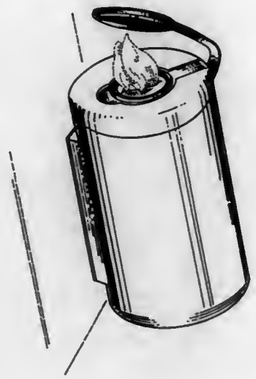
372,613
SOAP DISPENSER
William J. Nixon, II, 1105 Overbrook Dr., Ormond Beach, Fla. 32174
Filed May 22, 1995, Ser. No. 39,133
Term of patent 14 years
U.S. Cl. D6—545



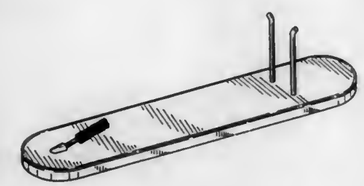
372,614
KITCHEN ORGANIZER
James Falke, and Shirley Falke, both of 3610 Bosart Rd., Springfield, Ohio 45503
Filed Aug. 25, 1995, Ser. No. 43,090
Term of patent 14 years
U.S. Cl. D6—520

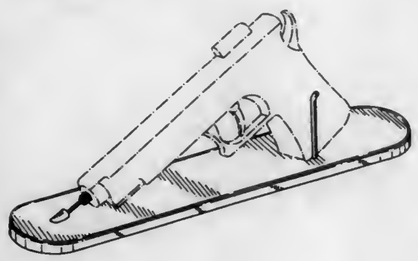


372,615
TOWEL DISPENSER WITH BUILT-IN WALL HOLDER
R. Larry Owens, 80 Trotters Walk, Covington, Ga. 30209
Filed Aug. 30, 1995, Ser. No. 43,283
Term of patent 14 years
U.S. Cl. D6—522



372,616
HANDGUN REST
M. Thomas Cute, R.D. 4, Rte. 90 7071, Cortland, N.Y. 13045
Filed May 17, 1995, Ser. No. 39,106
Term of patent 14 years
U.S. Cl. D6—552





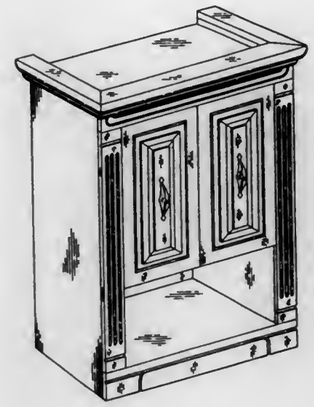
372,617
SPORTING GOODS STORAGE RACK
Tamara Lang, 4606 Greenbriar, Boulder, Colo. 80303, and Robert L. Bromley, Broomfield, Colo., assignors to Tamara Laug, and Jake Thamm, both of Boulder, Colo.
Filed Jul. 13, 1995, Ser. No. 41,418
Term of patent 14 years
U.S. Cl. D6—552



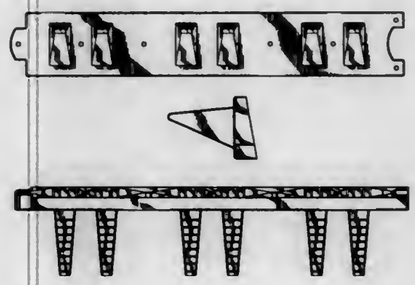
372,618
SEAT AND BACKREST FOR A MEDICAL STOOL
James H. Sulzer, Cedarburg, Wis., assignor to L&P Property Management Company, Chicago, Ill.
Filed Apr. 21, 1995, Ser. No. 37,838
Term of patent 14 years
U.S. Cl. D6—500



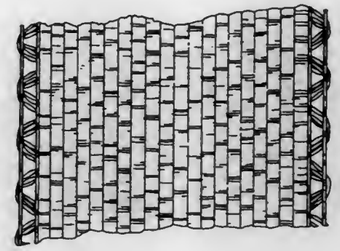
372,619
WALL LINEN CABINET
James J. Palka, 22351 W. Thornridge Dr., Kildeer, Ill. 60047
Filed Sep. 21, 1995, Ser. No. 44,232
Term of patent 14 years
U.S. Cl. D6—561



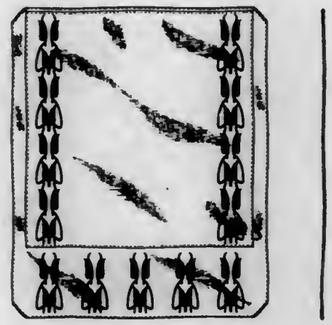
372,620
TOOL HANGER
Thomas A. Tisbo, Barrington Hills, Ill., assignor to Suncast Corporation, Batavia, Ill.
Filed Aug. 11, 1995, Ser. No. 42,515
Term of patent 14 years
U.S. Cl. D6—572



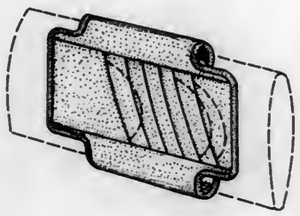
372,621
BLIND SLAT MATERIAL
Tass Zorbas, Silverwood, Lot 51, Canns Road, Bedfordale, Western Australia, 6112, Australia
Filed Apr. 12, 1994, Ser. No. 21,164
Term of patent 14 years
U.S. Cl. D6—580



372,622
COMBINED TOP AND BOTTOM BEDSHEET SET
Elwood H. Nickerson, P.O. Box 2, West Chatham, Mass. 02669
Continuation of Ser. No. 9,981, Jun. 28, 1993, abandoned.
This application Jun. 9, 1994, Ser. No. 24,182
Term of patent 14 years
U.S. Cl. D6—602



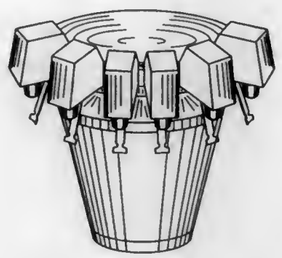
372,623
COMPACT DISC ORGANIZER
Roger J. Alves, Simi Valley, and Roy Nimpoeno, Monterey Park, both of Calif., assignors to Scosche Industries, Inc., Moorpark, Calif.
Filed Feb. 6, 1995, Ser. No. 34,514
Term of patent 14 years
U.S. Cl. D6—630



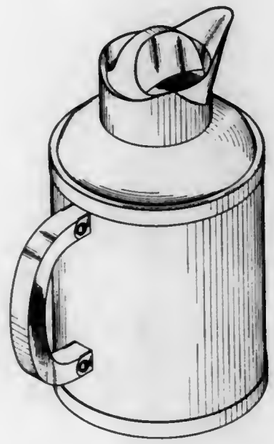
372,624
RETRACTABLE STRAW
Adam Chein, 1000 Conestoga Rd., Apartment A304, Bryn Mawr, Pa. 19010
Filed Sep. 20, 1995, Ser. No. 44,228
Term of patent 14 years
U.S. Cl. D7—300.2



372,625
DRINK DISPENSER
Kent Forsén, Kullavik, Sweden, assignor to Primulator AB, Sweden
Filed Aug. 14, 1995, Ser. No. 42,598
Claims priority, application Sweden, Feb. 14, 1995, SE 950291
Term of patent 14 years
U.S. Cl. D7—308



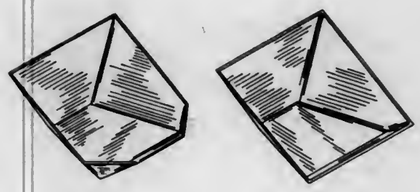
372,626
THERMOS POT
Carsten Joergensen, Kriens, Germany, assignor to PI-Design AG, Kantonsstrasse, Switzerland
Filed Feb. 24, 1995, Ser. No. 35,353
Term of patent 14 years
U.S. Cl. D7—319



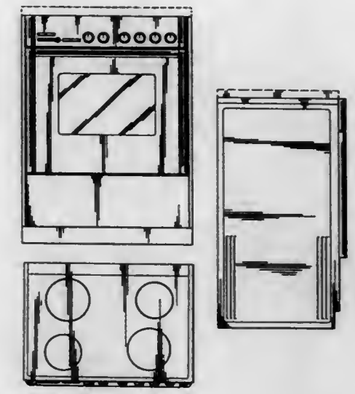
372,627
COFFEE POT
Keith N. Ireland, Sanderstead, England, assignor to Household Articles Limited, South Droydon, United Kingdom
Filed Jul. 26, 1995, Ser. No. 42,714
Term of patent 14 years
U.S. Cl. D7—319



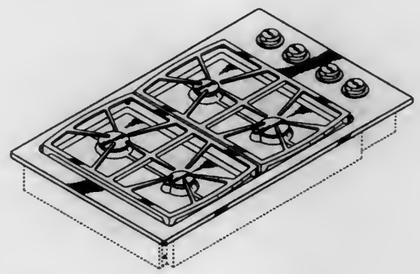
372,628
SOLAR COOKER REFLECTOR
Richard C. Wareham, 345 N. Elm Grove Rd., Brookfield, Wis. 53005
Filed Aug. 5, 1993, Ser. No. 11,481
Term of patent 14 years
U.S. Cl. D7—324



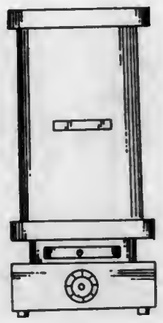
372,629
ELECTRIC RANGE
Gerd Wilsdorf, Oiching, Germany, assignor to Bosch-Siemens Hausgeraete GmbH, Munich, Germany
Filed Aug. 16, 1993, Ser. No. 11,856
Claims priority, application Germany, Feb. 15, 1993, M 9301278
The portion of the term of this patent subsequent to Jul. 2, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—340



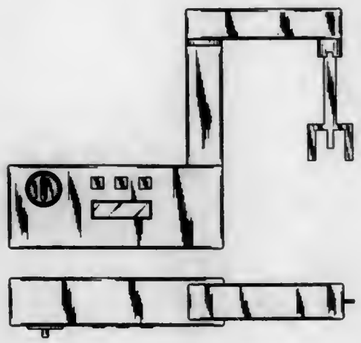
372,630
COOKTOP
Robert A. Lewis, Alta Loma; Harold Cole, Monterey Park; Alan Leukhardt, La Verne, and Ray G. Smith, Los Angeles, all of Calif., assignors to Dacor, Pasadena, Calif.
Filed May 13, 1994, Ser. No. 22,855
Term of patent 14 years
U.S. Cl. D7—346



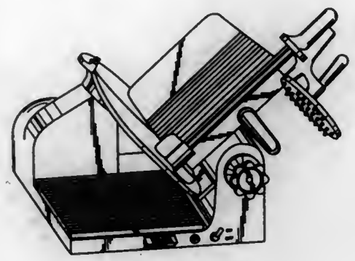
372,631
UPRIGHT ELECTRIC CHICKEN BARBECUER
Elias Athanasiadis, 150-12 Grand Central Pkwy., Jamaica, N.Y. 11432
Filed Oct. 11, 1994, Ser. No. 29,580
Term of patent 14 years
U.S. Cl. D7—347



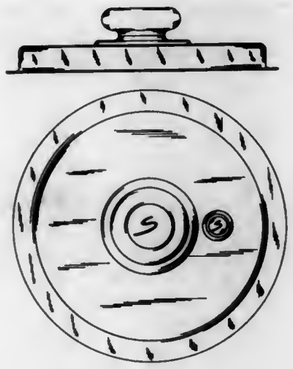
372,632
AUTOMATIC STIRRER
Matthew Riskin, 8033 Dover Shores Ave., Las Vegas, Nev. 89128
Filed May 30, 1995, Ser. No. 39,514
Term of patent 14 years
U.S. Cl. D7—379



372,633
SLICING AND WEIGHING MACHINE
Arnost Redl, Jr., 3907 Shady Glen La., Sarasota, Fla. 34241
Filed Apr. 17, 1995, Ser. No. 37,580
Term of patent 14 years
U.S. Cl. D7—383



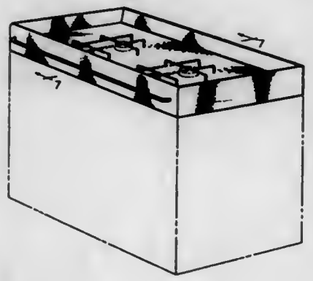
372,634
COOKING VESSEL LID
Jeffrey Rohrer, Kewaskum, Wis., assignor to Regal Ware, Inc., Kewaskum, Wis.
Division of Ser. No. 35,299, Feb. 24, 1995. This application Sep. 15, 1995, Ser. No. 44,038
Term of patent 14 years
U.S. Cl. D7—391



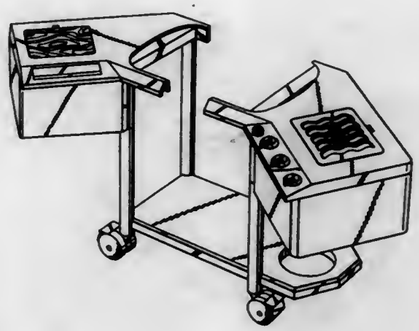
372,635
LARGE KNIFE HANDLE
Paul E. Gebhardt, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Jul. 17, 1995, Ser. No. 41,477
Term of patent 14 years
U.S. Cl. D7—401.2



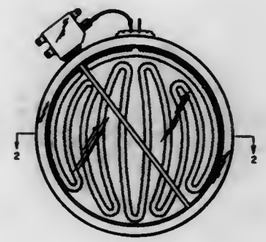
372,636
COOKTOP
Paul J. Neff, Mississauga, Canada, assignor to Neff Kitchen Manufacturers Limited, Brampton, Canada
Filed Jun. 8, 1995, Ser. No. 40,045
Term of patent 14 years
U.S. Cl. D7—402



372,637
GRILL CART
Devin Moore, Decatur, Ga., assignor to W. C. Bradley Company, Columbus, Ga.
Filed Aug. 12, 1994, Ser. No. 27,135
Term of patent 14 years
U.S. Cl. D7—403



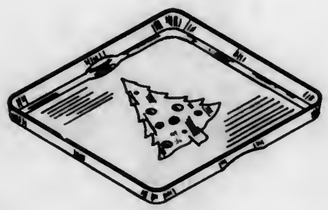
372,638
RADIANT STOVE HEATER
Kevin R. McWilliams, Stratford upon Avon, United Kingdom, assignor to Ceramaspeed Limited, United Kingdom
Filed Aug. 8, 1994, Ser. No. 26,837
Claims priority, application United Kingdom, Mar. 2, 1994, 2037434
Term of patent 14 years
U.S. Cl. D7—407



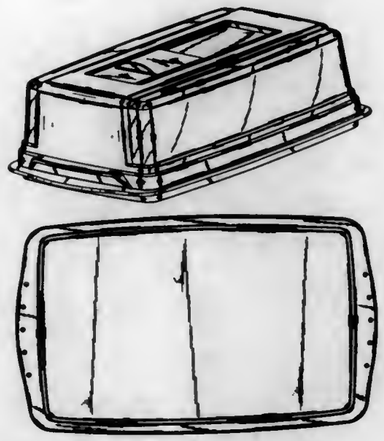
372,639
SPORTS/SQUEEZE BOTTLE
Elgin R. Kristinik, P.O. Box 402, Schulenburg, Tex.
Continuation-in-part of Ser. No. 24,556, Jun. 16, 1994. This application Jul. 7, 1995, Ser. No. 41,186
Term of patent 14 years
U.S. Cl. D7—511



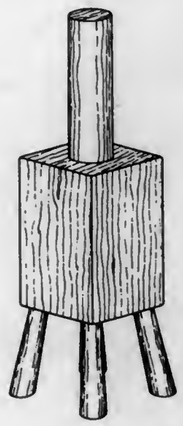
372,640
TRAY
George A. Sinner, Fargo, N. Dak., assignor to Design, Development & Marketing, Inc., Fargo, N. Dak.
Filed Dec. 15, 1994, Ser. No. 32,297
Term of patent 14 years
U.S. Cl. D7—551



372,641
FOOD STORAGE BOX
Alain Betend-Bon, Annecy, France, assignor to Tefa S.A., Rumilly, France
Filed Jul. 18, 1995, Ser. No. 41,586
Claims priority, application France, Jan. 18, 1995, 950 295
Term of patent 14 years
U.S. Cl. D7—629



372,642
GARLIC PRESS
Tom R. Baines, 1458 Glenwood Dr., Gardnerville, Nev. 89410
Filed Sep. 9, 1994, Ser. No. 28,278
Term of patent 14 years
U.S. Cl. D7—665



372,643
CONDIMENT DISPENSER WITH PEPPER AND SALT GRANULES
Yu-Wing Tang, Kowloon, Hong Kong, assignor to Dudley Kebow, Inc., Oceanside, Calif.
Continuation of Ser. No. 835,720, Feb. 12, 1992, abandoned. This application Sep. 23, 1994, Ser. No. 28,869
Claims priority, application United Kingdom, Aug. 19, 1991, 2016764
Term of patent 14 years
U.S. Cl. D7—679



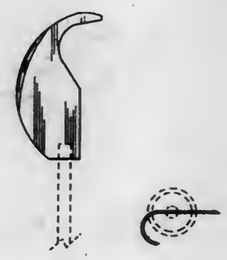
372,644
PEPPERMILL
Wayne Husted, 415 Main St., Sausalito, Calif. 94965
Filed Feb. 24, 1995, Ser. No. 35,287
Term of patent 14 years
U.S. Cl. D7—679



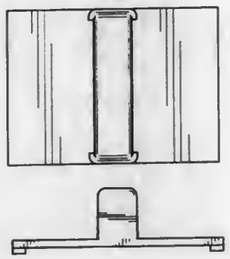
372,645
PEPPERMILL
Wayne Husted, 415 Main St., Sausalito, Calif. 94965
Filed Mar. 29, 1995, Ser. No. 35,288
Term of patent 14 years
U.S. Cl. D7—679



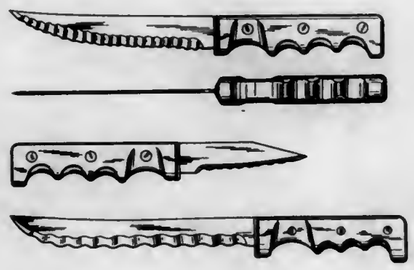
372,646
GRILLED FOOD UTENSIL
Henry D. Warda, 640 St. Mary Ave., San Leandro, Calif. 94577
Filed Sep. 18, 1995, Ser. No. 44,113
Term of patent 14 years
U.S. Cl. D7—683



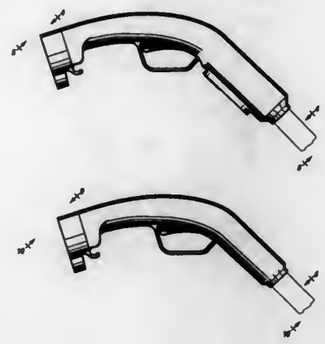
372,647
TAMALE MASA SPREADER
Sandra P. Vasquez, 1205 Sixth St., Corpus Christi, Tex. 78404
Filed Sep. 25, 1995, Ser. No. 44,490
Claims priority, application Mexico, Jul. 10, 1995, 952994
Term of patent 14 years
U.S. Cl. D7—688



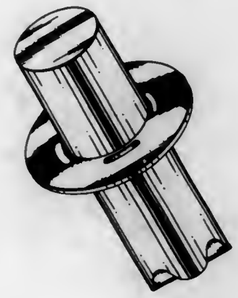
372,648
KNIFE
Milton L. Cohen, Hewlett Bay Park, and Jeff Siegel, Great Neck, both of N.Y., assignors to Lifetime Hoan Corporation, Westbury, N.Y.
Filed Apr. 18, 1994, Ser. No. 21,432
The portion of the term of this patent subsequent to Mar. 19, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—693



372,649
LAWN TRIMMER HANDLE
Lloyd H. Tuggle, Shreveport; Ron Brant, Haughton, and Michael S. Houge, Shreveport, all of La., assignors to WCI Outdoor Products, Inc., Cleveland, Ohio
Filed Mar. 2, 1995, Ser. No. 36,691
Term of patent 14 years
U.S. Cl. D8—8



372,650
GARBAGE DISPOSER PLUNGER
William C. Bundy, 507 S. Douglas St., El Segundo, Calif. 90245
Filed Jul. 28, 1994, Ser. No. 26,446
Term of patent 14 years
U.S. Cl. D8—14



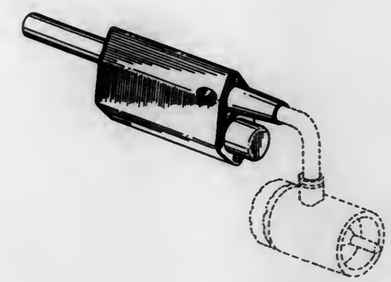
372,651
MODEL BUILDING IMPLEMENT
Joseph Bush, 5125 E. Lane Ave., Apt. 114, Fresno, Calif. 93727
Filed Oct. 7, 1994, Ser. No. 26,942
Term of patent 14 years
U.S. Cl. D8—14



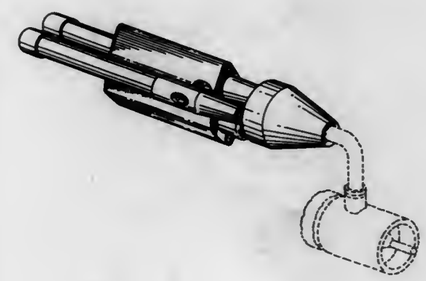
372,652
CRIMPING TOOL
David W. Coolman, Plymouth, and Eugene Sawyer, Shawano, both of Wis., assignors to Plyco Corporation, Elkhart Lake, Wis.
Filed Nov. 23, 1994, Ser. No. 31,338
Term of patent 14 years
U.S. Cl. D8—14



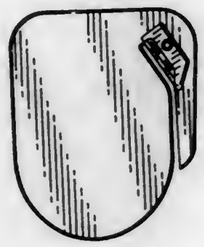
372,653
SINGLE-BARREL PROPANE TORCH
Frank Baranowski, Jr., Lynnfield, Mass., assignor to General Regulator, Inc., Lynnfield, Mass.
Filed Jan. 27, 1995, Ser. No. 34,094
Term of patent 14 years
U.S. Cl. D8—30



372,654
DOUBLE-BARREL PROPANE TORCH
Frank Baranowski, Jr., Lynnfield, Mass., assignor to General Regulator, Inc., Lynnfield, Mass.
Filed Jan. 27, 1995, Ser. No. 34,163
Term of patent 14 years
U.S. Cl. D8—30



372,655
LETTER OPENER
Steven Lin, Arcadia, Calif., assignor to Concord Manufacturing Systems, San Dimas, Calif.
Filed Sep. 26, 1994, Ser. No. 28,895
Term of patent 14 years
U.S. Cl. D8—102



372,656
HANDLEBAR GRIP FOR A BICYCLE
Toshiyuki Nagano, Takarazuka, Japan, assignor to Cateye Co., Ltd., Osaka, Japan
Filed Sep. 23, 1994, Ser. No. 28,870
Claims priority, application Japan, Sep. 6, 1994, 6-27117
Term of patent 14 years
U.S. Cl. D8—303



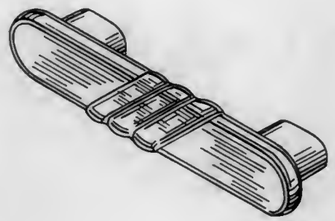
372,657
KNOB
Robert De'Armond, Celina, Ohio, assignor to Newell Operating Company, Freeport, Ill.
Filed Jul. 26, 1993, Ser. No. 41,913
Term of patent 14 years
U.S. Cl. D8—307



372,658
KNOB
Giorgio Decursu, and Alberto Bertani, both of Milan, Italy, assignors to Elesa S.P.A., Milan, Italy
Filed Oct. 3, 1994, Ser. No. 29,286
Claims priority, application Hague Agreement, Apr. 5, 1994, DM/029 270
Term of patent 14 years
U.S. Cl. D8—312



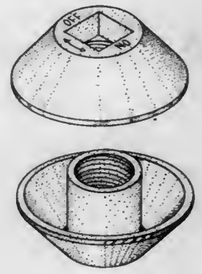
372,659
PULL
Robert De'Armond, Celina, Ohio, assignor to Newell Operating Company, Freeport, Ill.
Filed Jul. 26, 1995, Ser. No. 41,912
Term of patent 14 years
U.S. Cl. D8—317



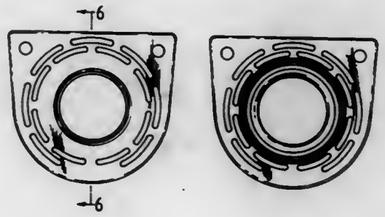
372,660
AUTOMOBILE BULLET DOOR-KNOB LOCK ACCESSORY
Odo O. Niessner, 9 Brownlea Avenue, Etobicoke, Ontario, Canada
Filed Oct. 4, 1995, Ser. No. 44,950
Term of patent 14 years
U.S. Cl. D8—343



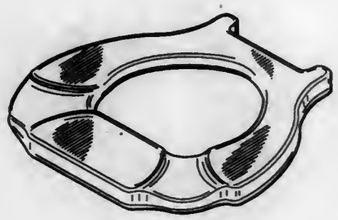
372,661
ESCUTCHEON FOR A KEY OPERATED GAS VALVE
Robert V. Lucas, Alpharetta, Ga., assignor to Delta Somoza, Inc., Atlanta, Ga.
Filed Feb. 13, 1995, Ser. No. 34,789
Term of patent 14 years
U.S. Cl. D8—352



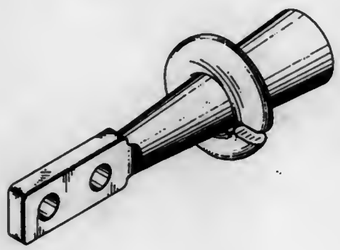
372,662
CENTER BEARING RUBBER INSULATOR
William A. Atkinson, Victoria, Australia, assignor to Unidrive Pty. Ltd., Victoria, Australia
Filed Mar. 4, 1994, Ser. No. 19,544
Term of patent 14 years
U.S. Cl. D8—354



372,663
KNOT TYING CLEAT
Kurt W. Dreger, and Leah N. Dreger, both of 2012 Carpinteria Dr., Antioch, Calif. 94509
Filed Jun. 14, 1995, Ser. No. 40,272
Term of patent 14 years
U.S. Cl. D8—356



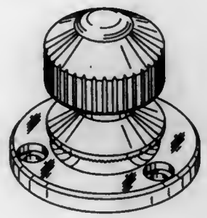
372,664
GRIPPING, WIRE FENCE STRETCHER CONNECTOR
Marvin D. Motley, 28818 SE. 216th Way, Maple Valley, Wash. 98038
Filed Jun. 2, 1995, Ser. No. 39,693
Term of patent 14 years
U.S. Cl. D8—382



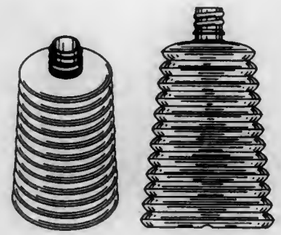
372,665
CABLE TIE
Sooki Kim, 222 Yangdung-Ri, Sangbuk-Myon, Ulsan-Kun, Kyung-Nam, Rep. of Korea
Filed Dec. 30, 1994, Ser. No. 32,867
Term of patent 14 years
U.S. Cl. D8—396



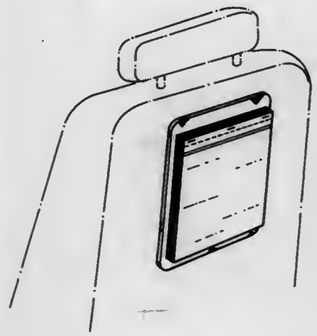
372,666
ROPE LOCK
Dean E. Longstreet, Lebanon, Oreg., assignor to August Company, Lebanon, Oreg.
Filed Mar. 8, 1995, Ser. No. 35,877
Term of patent 14 years
U.S. Cl. D8—383



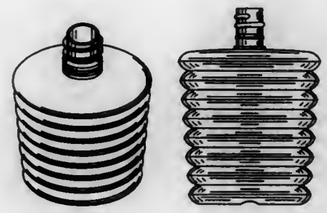
372,667
BELLOWS CONTAINER
Masayosi Mazda, No. 70, 3 Chome Ohno-Cho Kakamihara, Gifu 504, Japan
Filed Jun. 30, 1994, Ser. No. 25,816
Claims priority, application Japan, Apr. 26, 1994, 6-12316
Term of patent 14 years
U.S. Cl. D9—301



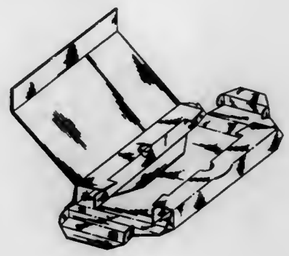
372,668
COMBINED STOMACH DISTRESS BAGS AND DISPENSER
Nathaniel Greene, 300 Wainani Way, Apt. 2308, Honolulu, Hi. 96815
Filed Oct. 13, 1994, Ser. No. 29,665
Term of patent 14 years
U.S. Cl. D9—305



372,669
BELLOWS CONTAINER
Masayosi Mazda, No. 70, 3 Chome Ohno-cho, Kakamihara Gifu 504, Japan
Filed Jun. 30, 1994, Ser. No. 25,444
Claims priority, application Japan, May 10, 1994, 6-13335
Term of patent 14 years
U.S. Cl. D9—301



372,670
PACKAGE
Frederick A. Healey, 618 Kellogg, Plymouth, Mich. 48170
Filed May 4, 1994, Ser. No. 22,387
Term of patent 14 years
U.S. Cl. D9—346



372,671

CORRECTION FLUID HOLDER

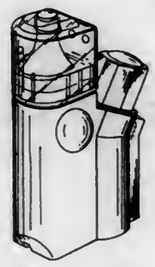
Marie C. Bossert, Erkrath, and Bernd Peters, Solingen, both of, Germany, assignors to Raycap B.V., Ca Nieuwkuyk, Netherlands, and Henkel KGaA, Dusseldorf, Germany

Filed Oct. 21, 1994, Ser. No. 30,058

Claims priority, application Hague Agreement, Apr. 21, 1994, DMA-002497

Term of patent 14 years

U.S. Cl. D9—347



372,673

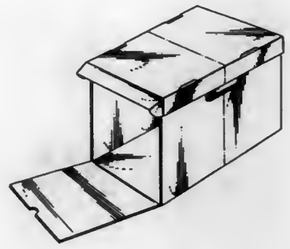
STORAGE BOX

William E. Turner, Stone Mountain, Ga., assignor to R.R. Foreman & Company, Stockton, Calif.

Filed Nov. 16, 1994, Ser. No. 31,028

Term of patent 14 years

U.S. Cl. D9—432



372,672

BEVERAGE PACKAGE

Mikio Ishimoto, Tokushima, Japan, assignor to Shikoku Kakoi Co., Ltd., Itano-gun, Japan

Filed Sep. 2, 1994, Ser. No. 27,951

The portion of the term of this patent subsequent to Nov. 28, 2009, has been disclaimed.

Term of patent 14 years

U.S. Cl. D9—431



372,674

BAG CLIP WITH MOLDED END

Desna V. Weber, and Thomas B. Oates, both of 2 Old Sound Rd., Joppa, Md. 21085

Filed Jan. 30, 1995, Ser. No. 34,211

Term of patent 14 years

U.S. Cl. D9—443



372,675

BOTTLE

Karen Pollard, Rye Brook; Carol Robbins, Chappaqua, both of N.Y., and Karen Terwilleger, Cos Cob, Conn., assignors to Benckiser Consumer Products, Inc., Danbury, Conn.

Filed Dec. 6, 1993, Ser. No. 14,585

Term of patent 14 years

U.S. Cl. D9—542



372,677

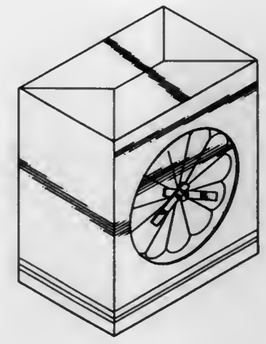
DESK CLOCK

Eric Albinson, P.O. Box 1111, Middlebury, Vt. 05753

Filed Feb. 21, 1995, Ser. No. 35,117

Term of patent 14 years

U.S. Cl. D10—25



372,676

COMBINED BOTTLE AND CAP

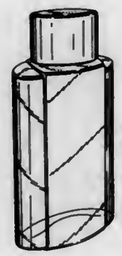
Joël Desgrippes, Paris, France, assignor to Cosmétique Sans Soucis GmbH, Baden-Baden, Germany

Filed Aug. 23, 1995, Ser. No. 43,040

Claims priority, application Germany, Feb. 24, 1995, M 95 01 880.8

Term of patent 14 years

U.S. Cl. D9—550



372,678

SKATE ODOMETER

Joel A. Dupzyk, 8400 Cassatt Way, Sacramento, Calif. 95828

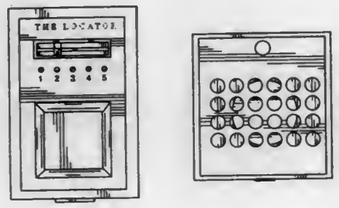
Filed Jul. 31, 1995, Ser. No. 42,051

Term of patent 14 years

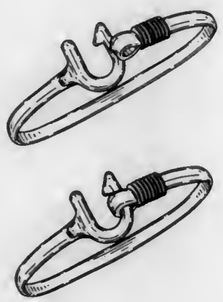
U.S. Cl. D10—98



372,679
SIGNAL GENERATING REMOTE DEVICE LOCATOR AND ACTIVATOR
Judy A. Giannini, 1512 Caribbean Dr., Sarasota, Fla. 34231
Filed Mar. 1, 1995, Ser. No. 35,524
Term of patent 14 years
U.S. Cl. D10—106



372,680
BRACELET WITH U-SHAPED LOCKING CLASP
Joseph A. Salva, 25 Davis St., Binghamton, N.Y. 13905, and Louis E. Turdo, Jr., 519 Front St., Vestal, N.Y. 13850
Filed Jan. 20, 1995, Ser. No. 33,832
Term of patent 14 years
U.S. Cl. D11—4



372,681
FINGER RING
Parke Davis, and Mike Goodwin, both of Austin, Tex., assignors to CJC Holdings, Inc., Austin, Tex.
Filed Jun. 23, 1995, Ser. No. 40,677
Term of patent 14 years
U.S. Cl. D11—26



372,682
FINGER RING
Thomas B. Roemer, 1163 First Capitol Dr., St. Chales, Mo. 63301
Filed Mar. 16, 1995, Ser. No. 36,295
Term of patent 14 years
U.S. Cl. D11—34



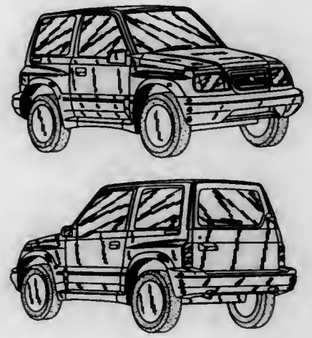
372,683
COWBY SANTA ON A ROCKING HORSE
Seymour Cohen, Jericho, N.Y., assignor to Telco Cretions, Inc., Hicksville, N.Y.
Filed Aug. 30, 1995, Ser. No. 43,278
Term of patent 14 years
U.S. Cl. D11—129



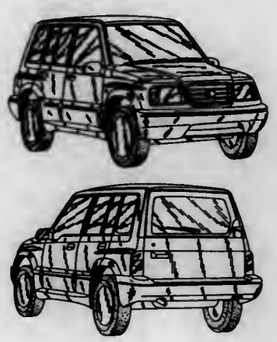
372,684
STRING TIE
Patrick Duncan, 4203 Jackson Ave., Culver City, Calif. 90232
Filed Aug. 31, 1995, Ser. No. 43,317
Term of patent 14 years
U.S. Cl. D11—204



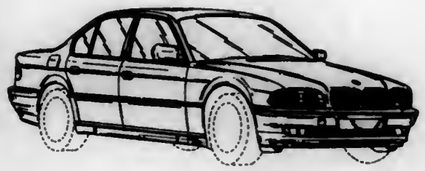
372,685
PASSENGER CAR
Moriyoshi Hattori, and Yutaka Yamamoto, both of Shizuoka-ken, Japan, assignors to Suzuki Motor Corporation, Shizuoka-ken, Japan
Filed Dec. 21, 1994, Ser. No. 32,568
Claims priority, application Japan, Jun. 24, 1994, 18815/1994
Term of patent 14 years
U.S. Cl. D12—91



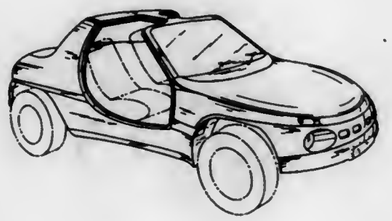
372,686
PASSENGER CAR
Moriyoshi Hattori, and Yutaka Yamamoto, both of Shizuoka-ken, Japan, assignors to Suzki Motor Corporation, Shizuoka-ken, Japan
Filed Dec. 21, 1994, Ser. No. 32,570
Claims priority, application Japan, Jun. 24, 1994, 6-18814
Term of patent 14 years
U.S. Cl. D12—91



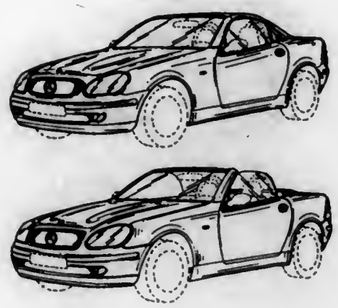
372,687
AUTOMOBILE EXTERIOR BODY
Boyke Boyer, Munich, Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Munich, Germany
Filed Oct. 27, 1993, Ser. No. 14,689
Claims priority, application Germany, Apr. 27, 1993, M 93 03 460.1
Term of patent 14 years
U.S. Cl. D12—92



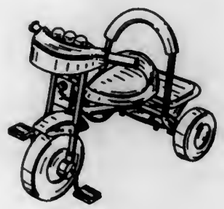
372,688
MOTOR VEHICLE
Nicolaas D. R. Loubser, 21 Herman Street, Meadowdale, South Africa
Filed Feb. 8, 1994, Ser. No. 18,507
Claims priority, application South Africa, Aug. 9, 1993, 93/0566
Term of patent 14 years
U.S. Cl. D12—92



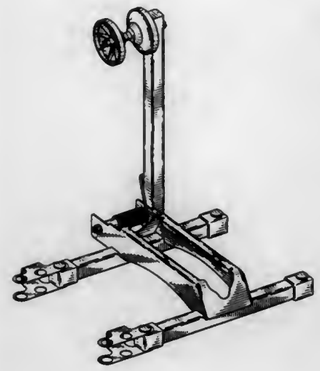
372,689
MOTOR VEHICLE EXTERIOR BODY
Bruno Sacco; Josef Gallitzendoerfer, both of Sindelfingen; Peter Pfeiffer, Boeblingen, and Murat Guenak, Ehningen, all of, Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany
Filed Mar. 30, 1994, Ser. No. 20,674
Claims priority, application Germany, Sep. 30, 1993, M93075723
Term of patent 14 years
U.S. Cl. D12—92



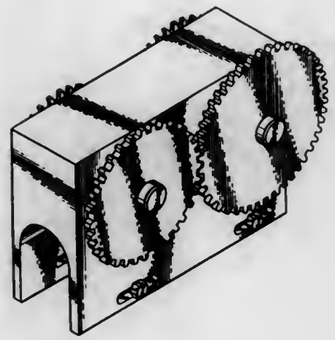
372,690
TRI-CYCLE FOR CHILD
Keiichi Nakai, Tokyo, Japan, assignor to Plus One Co., Ltd., Tokyo, Japan
Filed Dec. 1, 1994, Ser. No. 31,613
Claims priority, application Japan, May 31, 1994, 6-15917
Term of patent 14 years
U.S. Cl. D12—113



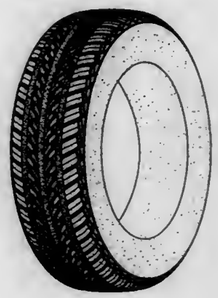
372,691
BICYCLE STAND
Donald H. Eason, Fort Collins, Colo., assignor to Ultimate Support Systems, Inc., Fort Colins, Colo.
Filed Sep. 29, 1995, Ser. No. 44,680
Term of patent 14 years
U.S. Cl. D12—115



372,692
BICYCLE GEAR ASSEMBLY
Lee Thomason, Rte. 2, Box 39, Marion, Ill. 62959
Filed Feb. 27, 1995, Ser. No. 36,422
Term of patent 14 years
U.S. Cl. D12—123



372,693
PNEUMATIC TIRE FOR VEHICLE
Nack-Hyun Lim, Kwangju, Rep. of Korea, assignor to Kumho & Co., Inc., Seoul, Rep. of Korea
Filed Dec. 19, 1994, Ser. No. 32,460
Claims priority, application Rep. of Korea, Jun. 22, 1994, 13449/1994
Term of patent 14 years
U.S. Cl. D12—147



372,694
MOTORCYCLE TIRE
Shigehiko Suzuki, Amagasaki, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan
Filed Sep. 8, 1994, Ser. No. 28,165
Claims priority, application Japan, Mar. 9, 1994, 6-6116
The portion of the term of this patent subsequent to Jul. 6, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D12—151



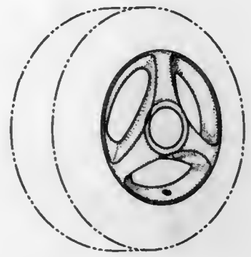
372,695
EXTERIOR SURFACE OF A FRONT BUMPER FOR AN AUTOMOBILE
Joji Nagashima, Munich, Germany, assignor to Bayerische Motoren Werke AG, Munich, Germany
Filed Sep. 27, 1994, Ser. No. 28,965
Claims priority, application Germany, Apr. 2, 1994, M9402969.5
Term of patent 14 years
U.S. Cl. D12—169



372,696
AUTOMOBILE WHEEL
Mitchell M. Tung, Arcadia, Calif., assignor to Prime Wheel, Harbor City, Calif.
Filed Mar. 21, 1995, Ser. No. 36,464
Term of patent 14 years
U.S. Cl. D12—209



372,697
FRONT FACE OF A VEHICLE WHEEL
Alberto Echazabal, Hialeah Gardens, Fla., and Claudio Bernoni, Albano Terma, Italy, assignors to Motoring Accessories, Inc., Miami, Fla.
Filed Apr. 28, 1995, Ser. No. 38,114
Term of patent 14 years
U.S. Cl. D12—209



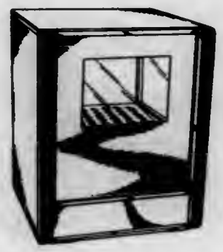
372,698
VEHICLE WHEEL FRONT FACE SEGMENT
James P. Mantua, Royal Oak, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.
Filed Jun. 5, 1995, Ser. No. 39,763
Term of patent 14 years
U.S. Cl. D12—209



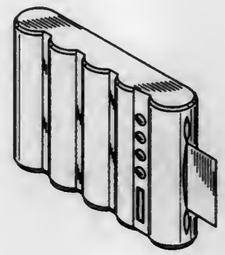
372,699
VEHICLE FRONT FACE SEGMENT
James P. Mantua, Royal Oak, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.
Filed Jun. 5, 1995, Ser. No. 39,764
Term of patent 14 years
U.S. Cl. D12—209



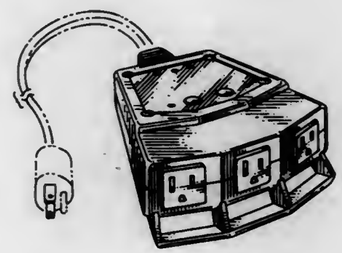
372,700
COMPUTER HOUSING
Uwe Schauwecker, Herborn-Hörbach, and Jörg Wirbelauer, Wellburg-Waldhsn, both of, Germany, assignors to Rittal-Werk Rudolf Loh GmbH & Co. KG, Germany
Filed Oct. 18, 1994, Ser. No. 29,921
Claims priority, application Germany, Apr. 18, 1994, M 94 03 150.9
Term of patent 14 years
U.S. Cl. D14—102



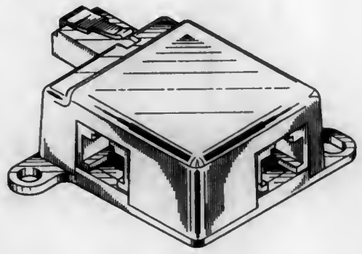
372,701
SHRINK WRAP BATTERY PACK
Mohammed Tahmaseebpur, Vancouver, Canada, assignor to Sierra Wireless, Inc., Richmond, Canada
Filed Jun. 29, 1995, Ser. No. 40,873
Term of patent 14 years
U.S. Cl. D13—103



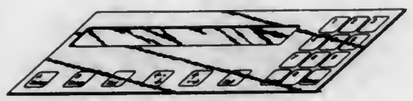
372,702
ELECTRICAL CORD SET WITH CONTINUITY POLARITY SAFETY SWITCH
Dennis Sanner, Indianapolis, Ind., assignor to Woods Industries, Inc., Carmel, Ind.
Filed May 1, 1995, Ser. No. 38,228
Term of patent 14 years
U.S. Cl. D13—142



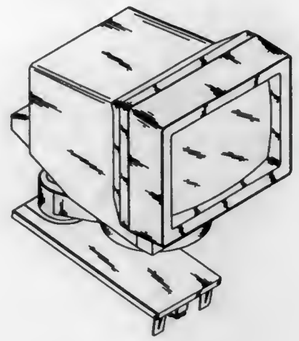
372,703
JUNCTION BOX
John F. Hannon, Gurnee; Robert J. Stinauer, II, Arlington Heights, and David E. Kallis, Morton Grove, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 16, 1994, Ser. No. 20,023
Term of patent 14 years
U.S. Cl. D13—152



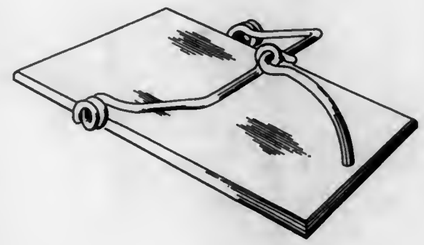
372,704
DISPLAY PANEL FOR A COMPACT PHOTOTHERMOGRAPHIC IMAGER
Bruce E. Nelson, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Nov. 23, 1994, Ser. No. 31,354
Term of patent 14 years
U.S. Cl. D14—113



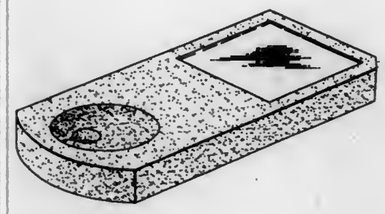
372,705
COMBINED COMPUTER MONITOR AND SUPPORT ARM
Robert C. Lynch, Cary; Kevin H. Myers, Durham; Ronald A. Smith, Apex; William L. Talley, Raleigh, all of N.C., and Edward R. Veals, Pawleys Island, S.C., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 8,863, May 27, 1993. This application May 30, 1995, Ser. No. 39,547
Term of patent 14 years
U.S. Cl. D14—113



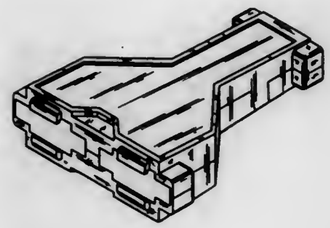
372,706
COMPUTER MOUSE HOLDER
Stephane Cyr, 106 5th St., Laval, Quebec, Canada
Filed May 17, 1993, Ser. No. 8,419
Term of patent 14 years
U.S. Cl. D14—114



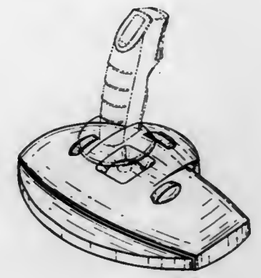
372,707
PACKAGING FOR MEMORY DEVICE
Anthony J. Grewe, Holmdel, N.J.; Charles R. Lewis, Jr., Palo Alto; Michael J. Nuttall, Portola Valley, both of Calif., and Howard M. Singer, Mariboro, N.J., assignors to AT&T Corp., Murray Hill, N.J.
Filed Dec. 30, 1994, Ser. No. 34,598
Term of patent 14 years
U.S. Cl. D14—114



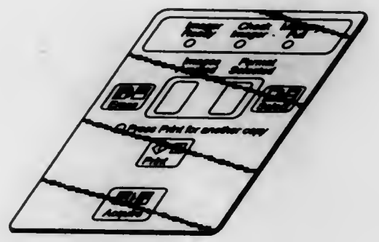
372,708
COMPUTER ADAPTOR HOUSING
Michael H. Hetherington, 2296 Williamston Rd., Williamston, Mich. 48895
Filed Mar. 6, 1995, Ser. No. 35,770
Term of patent 14 years
U.S. Cl. D14—114



372,709
BASE FOR A COMPUTER INPUT DEVICE
Russell Sanchez, and Christopher Alviar, both of Seattle, Wash., assignors to Microsoft Corporation, Redmond, Wash.
Filed Aug. 10, 1995, Ser. No. 42,464
Term of patent 14 years
U.S. Cl. D14—114



372,710
KEY PAD PANEL FOR A COMPACT PHOTOTHERMOGRAPHIC IMAGER
Bruce E. Nelson, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Nov. 23, 1994, Ser. No. 31,352
Term of patent 14 years
U.S. Cl. D14—115



372,711

VIDEO CASSETTE RECORDER

Kuninori Hyougo, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 19, 1994, Ser. No. 32,452

Term of patent 14 years

U.S. Cl. D14—135



372,712

VIDEO TAPE RECORDER

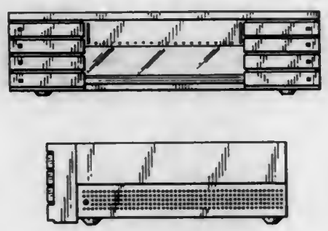
Philippe Starck, Issy-les-Moulineaux, France, assignor to Thomson Consumer Electronics (Societe Anonyme), Courbevoie, France

Filed Mar. 13, 1995, Ser. No. 36,106

Claims priority, application France, Oct. 14, 1994, 945626

Term of patent 14 years

U.S. Cl. D14—135



372,713

VIDEO TAPE RECORDER

Philippe Starck, Paris, France, assignor to Thomson Consumer Electronics (Societe Anonyme), Coubevoie, France

Division of Ser. No. 19,879, Mar. 11, 1994, Pat. No. Des. 365,816. This application Sep. 1, 1995, Ser. No. 43,417

Claims priority, application France, Jan. 10, 1994, 94 0089

Term of patent 14 years

U.S. Cl. D14—135



372,714

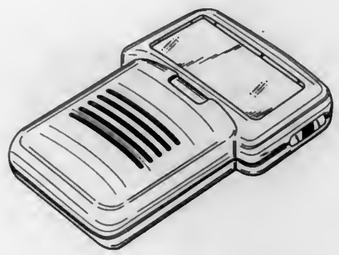
HAND HELD RECORDER WITH GRAPHICAL DISPLAY REPRESENTATION

Rene C. Pinchuk, Kennsington, Calif., assignor to Sharper Image Corporation, San Francisco, Calif.

Filed Sep. 12, 1995, Ser. No. 43,779

Term of patent 14 years

U.S. Cl. D14—168



372,715

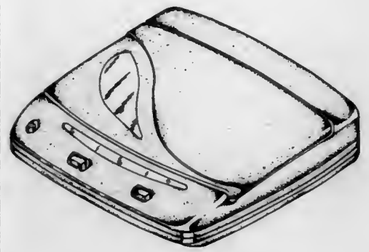
REWINDER

Hong-Kung Lin, No. 3, Lane 186, Tsu Hsiu Rd., Chang Hua, Taiwan

Filed Dec. 20, 1994, Ser. No. 32,513

Term of patent 14 years

U.S. Cl. D14—217



372,716

REMOTE CONTROL

Edwin Thorne, III, Seattle, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed Apr. 24, 1995, Ser. No. 37,910

Term of patent 14 years

U.S. Cl. D14—218



372,717

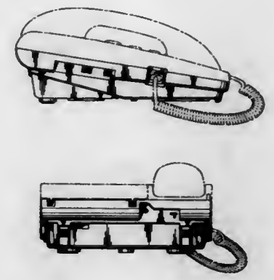
TELEPHONE ANSWERING DEVICE BASE UNIT

Alastair W. Jarrett, Fullerton; James W. Oblak, Redondo Beach; David A. Sharbaugh, Irvine, and Michinari Ueki, Hermosa Beach, all of Calif., assignors to PhoneMate, Inc., Torrance, Calif.

Division of Ser. No. 25,431, Jul. 1, 1994, Pat. No. Des. 356,087, which is a continuation of Ser. No. 9,549, Jun. 15, 1993, abandoned. This application Feb. 23, 1995, Ser. No. 35,243

Term of patent 14 years

U.S. Cl. D14—240



372,718

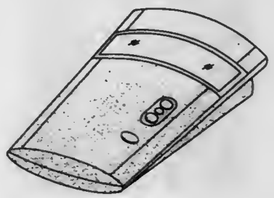
TELEPHONE CALLER-ID MODULE

Mark Biasotti, San Jose; Michael J. Nuttall, Portola Valley, both of Calif., and John H. Schaffeld, New Vernon, N.J., assignors to AT&T IPM Corp., Coral Gables, Fla.

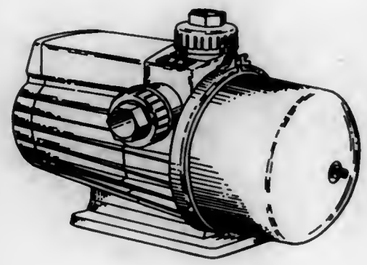
Filed Jan. 4, 1995, Ser. No. 33,043

Term of patent 14 years

U.S. Cl. D14—240



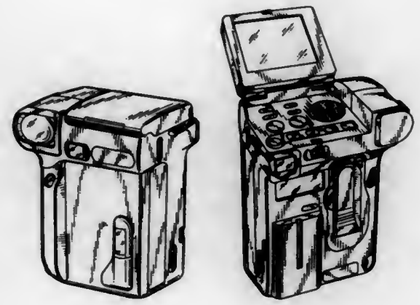
372,719
WATER PUMP
Niels D. Jensen, Bjerringbro, Denmark, assignor to Grundfos A/S, Bjerringbro, Denmark
Filed Dec. 2, 1994, Ser. No. 31,714
Claims priority, application Germany, Jun. 3, 1994, M9404424.4
Term of patent 14 years
U.S. Cl. D15—7



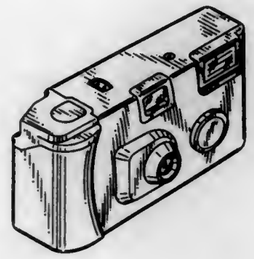
372,720
SEWING MACHINE
Mitsuharu Hattori, Nagoya, and Shigeharu Katayama, Kakamigahara, both of, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Mar. 28, 1995, Ser. No. 36,834
Claims priority, application Japan, Oct. 25, 1994, 6-32569
Term of patent 14 years
U.S. Cl. D15—69



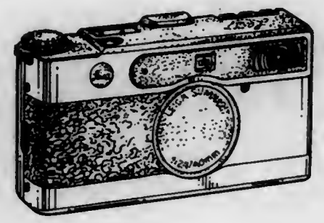
372,721
VIDEO CAMERA RECORDER
Kunihiko Tanaka, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Aug. 1, 1995, Ser. No. 42,128
Claims priority, application Japan, Feb. 1, 1995, 7-2515
Term of patent 14 years
U.S. Cl. D16—202



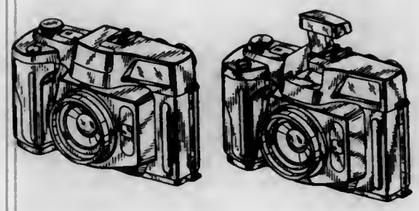
372,722
CAMERA
Makoto Isozaki, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Feb. 10, 1995, Ser. No. 34,742
Claims priority, application Japan, Aug. 11, 1994, 6-24294
Term of patent 14 years
U.S. Cl. D16—208



372,723
COMPACT CAMERA
Klaus-Dieter Schaefer, Braunfels, and Manfred Meinzer, Hemer, both of, Germany, assignors to Leica Camera GmbH, Solms, Germany
Filed Jun. 2, 1995, Ser. No. 39,680
Claims priority, application Hague Agreement, Dec. 2, 1994, DMA/002718
Term of patent 14 years
U.S. Cl. D16—209



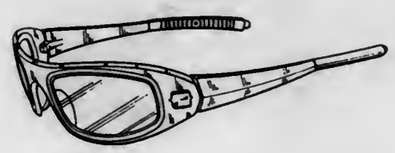
372,724
CAMERA
Kenichi Funato, and Makoto Isozaki, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Sep. 29, 1995, Ser. No. 44,711
Claims priority, application Japan, Mar. 31, 1995, 7-9032
Term of patent 14 years
U.S. Cl. D16—217



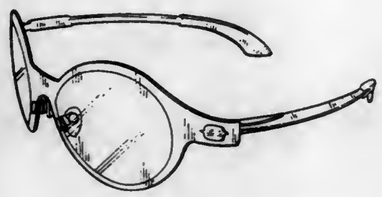
372,725
DIVING MASK
Emilien Vigneron, Le Bois St André, 85130 La Gaubretiere, France
Filed Feb. 9, 1995, Ser. No. 34,669
Claims priority, application France, Sep. 19, 1994, 94 5162
Term of patent 14 years
U.S. Cl. D16—311



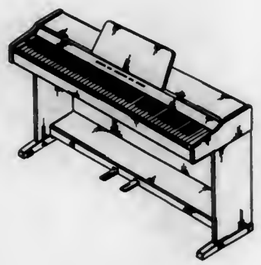
372,726
SUNGLASSES
Luciano Simioni, Montebelluna, Italy, assignor to Killer Loop S.p.A., Pederobba, Italy
Filed Oct. 23, 1995, Ser. No. 46,684
Claims priority, application Italy, Apr. 28, 1995, TV9500021
Term of patent 14 years
U.S. Cl. D16—326



372,727
SUNGLASSES
Luciano Simioni, and Sergio Menegon, both of Montebelluna, Italy, assignors to Killer Loop S.p.A., Pederobba, Italy
Filed Jan. 26, 1995, Ser. No. 34,071
Claims priority, application Italy, Aug. 1, 1994, TV9400045
Term of patent 14 years
U.S. Cl. D16—327



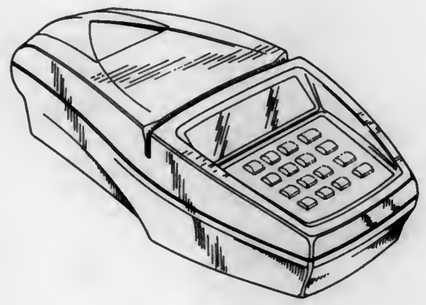
372,728
ELECTRONIC PIANO
Kazuyuki Mizushima, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan
Filed Jul. 7, 1995, Ser. No. 41,184
Claims priority, application Japan, Jan. 18, 1995, 7-798
Term of patent 14 years
U.S. Cl. D17—7



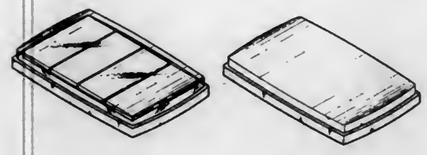
372,729
STAMP MOUNT
Stephen K. Hewitt, Oakview, Calif., assignor to Topstamp, Inc., Ojai, Calif.
Filed Sep. 6, 1995, Ser. No. 43,579
Term of patent 14 years
U.S. Cl. D18—18



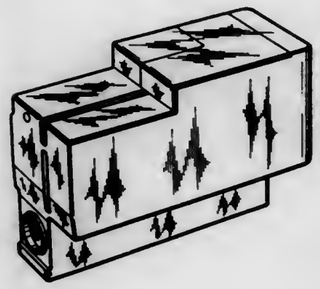
372,730
TRANSACTION TERMINAL CONSOLE
Jeffrey K. Sasaki, Redwood City, Calif., assignor to Verifone, Inc., Redwood City, Calif.
Filed Aug. 23, 1995, Ser. No. 43,018
Term of patent 14 years
U.S. Cl. D18—4



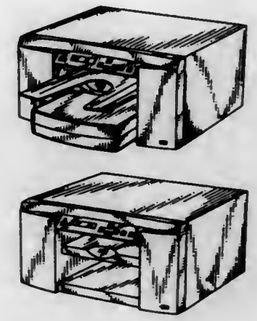
372,731
COMBINED STAMP PAD AND CONTAINER
Haruo Yasoshima, Tokyo, Japan, assignor to Tsukineko, Inc., Redmond, Wash.
Filed Mar. 30, 1994, Ser. No. 20,730
Term of patent 14 years
U.S. Cl. D18—17



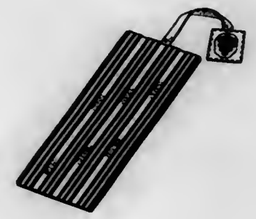
372,732
INK TANK FOR PRINTER
Yoichi Taneya, Yokohama; Hiroyuki Ishinaga, Tokyo; Hiroyuki Tokuda, Yokohama, and Tetsuya Sekine, Kawasaki, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 29, 1994, Ser. No. 32,825
Claims priority, application Japan, Jul. 5, 1994, 6-19894
The portion of the term of this patent subsequent to Mar. 12, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—56



372,733
THERMAL PRINTER
Koji Yoshida, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Mar. 9, 1995, Ser. No. 35,937
Claims priority, application Japan, Oct. 6, 1994, 6-38470
Term of patent 14 years
U.S. Cl. D18—55



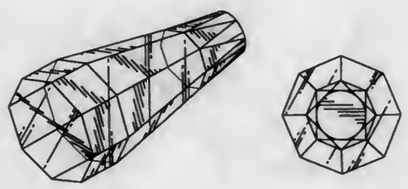
372,734
BOOKMARK
Marilyn A. Day, 4787 Gateshead Rd., Carlsbad, Calif. 92008
Filed Dec. 20, 1993, Ser. No. 16,515
Term of patent 14 years
U.S. Cl. D19—34



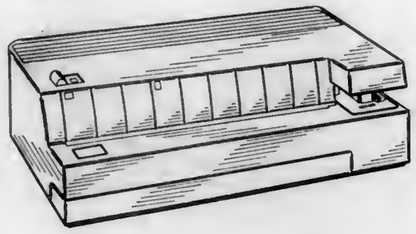
372,735
BALLPOINT PEN
Chen H. Tseng, San Bernardino, Calif., assignor to Sunmex Import Corporation, S. El Monte, Calif.
Continuation-in-part of Ser. No. 19,375, Mar. 1, 1994, Pat. No. Des. 358,420, and a continuation-in-part of Ser. No. 19,360, Mar. 1, 1994. This application Apr. 3, 1995, Ser. No. 37,501
The portion of the term of this patent subsequent to Dec. 19, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D19—51



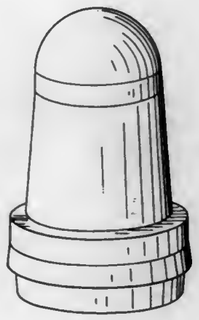
372,736
DECORATIVE CAP FOR A MECHANICAL PEN OR PENCIL
Faye B. Stabler, 111 S. Orange Grove Blvd. #105, Pasadena, Calif. 91105, assignor to Faye B. Stabler, Pasadena, Calif.
Filed Sep. 15, 1995, Ser. No. 44,051
Term of patent 14 years
U.S. Cl. D19—57



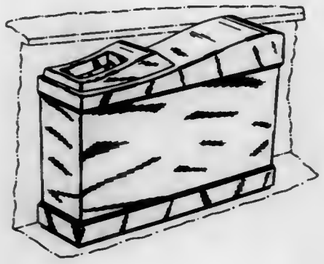
372,737
COMBINED ELECTRIC PAPER PUNCH AND STAPLER
Walter B. Herbst, Evanston, and Ralph Lazar, Skokie, both of Ill., assignors to General Binding Corporation, Northbrook, Ill.
Filed Jun. 27, 1994, Ser. No. 25,078
Term of patent 14 years
U.S. Cl. D19—72



372,738
INSTANT COFFEE CAPSULE
Jan Akerlind, Stockholm, Sweden, assignor to C-D Catering Development AB, Stockholm, Sweden
Filed Oct. 11, 1994, Ser. No. 30,041
Claims priority, application Sweden, Apr. 11, 1994, 94-0827
Term of patent 14 years
U.S. Cl. D1—199



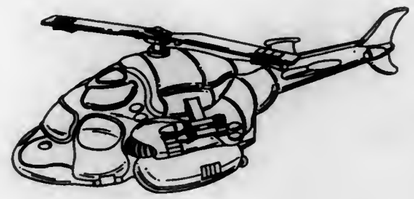
372,739
REFRIGERATED BEVERAGE MERCHANDISER
Rafael T. Bustos, Alpharetta, Ga., assignor to L&P Property Management Company, Chicago, Ill.
Filed Apr. 20, 1995, Ser. No. 37,789
Term of patent 14 years
U.S. Cl. D20—5



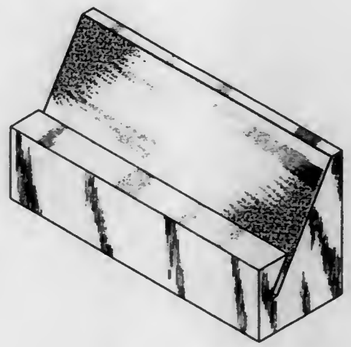
372,740
ARCADE GAME
Karl D. Lerch, and Michael Clarke, both of East Aurora, N.Y., assignors to Fisher-Price, Inc., East Aurora, N.Y.
Filed Feb. 10, 1994, Ser. No. 18,587
Term of patent 14 years
U.S. Cl. D21—10



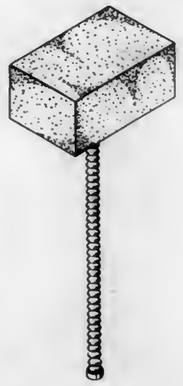
372,741
TOY HELICOPTER
Wen H. Tsai, 8Fl., No. 113, Yu Jen Rd., Taipei, Taiwan
Filed Sep. 26, 1995, Ser. No. 44,523
Term of patent 14 years
U.S. Cl. D21—87



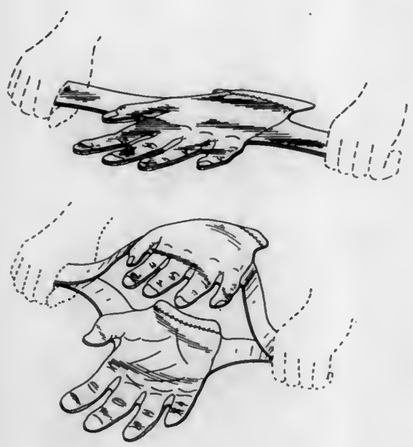
372,742
PLAYING CARD HOLDER
Shigekazu S. Kakudo, 7352 Tujunga Ave., Apt. #8, North Hollywood, Calif. 91605
Filed Feb. 2, 1995, Ser. No. 34,357
Term of patent 14 years
U.S. Cl. D21—54



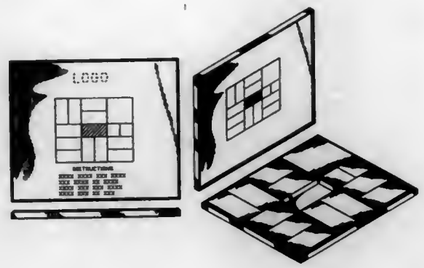
372,743
FOAM BRICK MOUNTED ON FLEXIBLE HANDLE
Ralph A. Ringo, 2144 Orange Ave., Unit C, Costa Mesa, Calif. 92627
Filed Aug. 28, 1995, Ser. No. 43,179
Term of patent 14 years
U.S. Cl. D21—59



372,744
CLAPPING NOVELTY
Stanley G. Potrzuski, 6608 Bonnie Ridge Dr., Baltimore, Md. 21209
Filed May 4, 1995, Ser. No. 38,365
Term of patent 14 years
U.S. Cl. D21—64



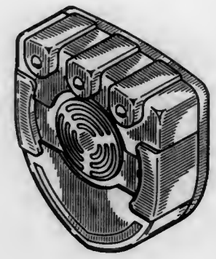
372,745
BLOCK SLIDING GAME
William W. Murphey, 12119 SE. 68th Pl., Bellevue, Wash. 98006
Filed Apr. 3, 1995, Ser. No. 37,073
Term of patent 14 years
U.S. Cl. D21—104



372,746
COMBINED TOY MIRROR AND MAGNIFIER
John G. Mathews, Providence, R.I., assignor to SRL, Inc., Wilmington, Del.
Filed Jan. 27, 1995, Ser. No. 34,102
Term of patent 14 years
U.S. Cl. D21—109



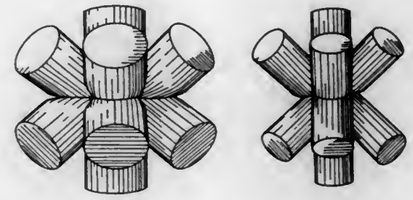
372,747
COMBINED TOY LIGHT AND SOUND FLASHER
John G. Mathews, Providence, R.I., assignor to SRL, Inc., Wilmington, Del.
Filed Jan. 27, 1995, Ser. No. 34,106
Term of patent 14 years
U.S. Cl. D21—109



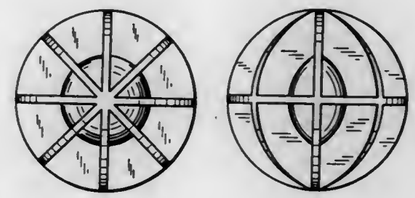
372,748
PHYSICAL EXERCISE IMPLEMENT
Karin R. Globus, 658 Columbus Dr. East, Tierra Verde, Fla. 33715
Filed Jul. 22, 1993, Ser. No. 10,927
Term of patent 14 years
U.S. Cl. D21—191



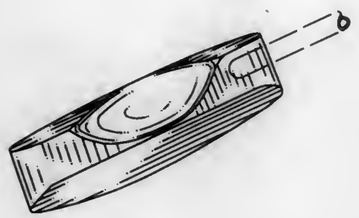
372,749
AMUSEMENT BALL
Kalvin K. Klundt, Lagrange, Ky., assignor to Aqua-Leisure Industries, Inc., Avon, Mass.
Filed Mar. 23, 1995, Ser. No. 36,648
Term of patent 14 years
U.S. Cl. D21—203



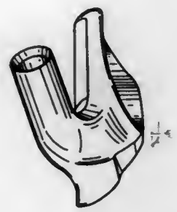
372,750
BALL
Andrew Schloss, 313 W. 17th St., 2W, New York, N.Y. 10011
Filed Jan. 25, 1995, Ser. No. 34,005
Term of patent 14 years
U.S. Cl. D21—204



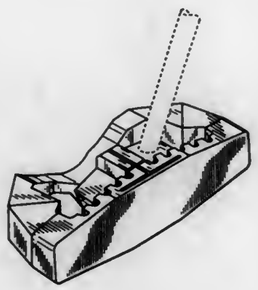
372,751
GOLF PUTTER HEAD
Arthur C. P. Chou, Bristol, R.I., assignor to Acushnet Company, Fairhaven, Mass.
Filed May 18, 1993, Ser. No. 8,511
Term of patent 14 years
U.S. Cl. D21—217



372,753
IRON CLUB HEAD
Robert J. Williams, Palm Desert, Calif., assignor to Confidence Golf, Inc., Palm Desert, Calif.
Filed Feb. 24, 1995, Ser. No. 35,497
Term of patent 14 years
U.S. Cl. D21—220



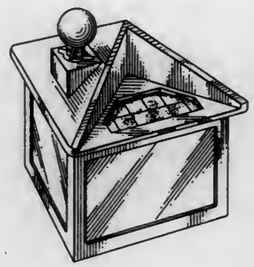
372,752
GOLF PUTTER HEAD
Charles J. Raudman, 4451 Caterpillar Rd., Redding, Calif. 96003
Filed Apr. 18, 1995, Ser. No. 37,716
Term of patent 14 years
U.S. Cl. D21—219



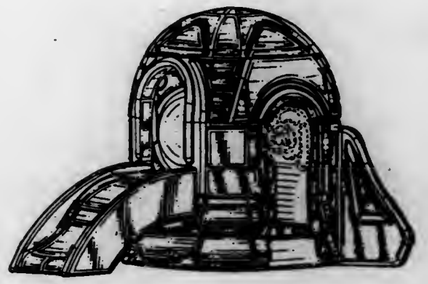
372,754
GOLF CLUB COVER
David Rapoza, 44 Stavola Rd., Middletown, N.J. 07748
Filed Feb. 14, 1995, Ser. No. 34,846
Term of patent 14 years
U.S. Cl. D21—221



372,755
GOLF BALL AND GOLF CLUB HEAD WASHER
Sam R. Nardi, 3965 Thornberry Way, Lake In The Hills, Ill. 60102
Filed Mar. 27, 1995, Ser. No. 36,714
Term of patent 14 years
U.S. Cl. D21—234



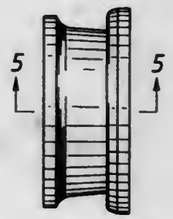
372,757
ACTIVITY GYM
Jeffery G. Martin, and Nancy M. Pipik, both of Hudson, Ohio, assignors to The Little Tikes Company, Hudson, Ohio
Filed Jun. 27, 1995, Ser. No. 40,829
Term of patent 14 years
U.S. Cl. D21—244



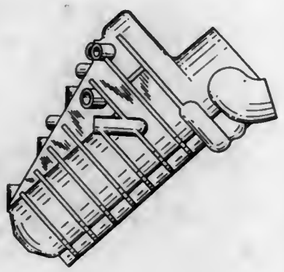
372,756
FLOATING TETHER CORD
David G. May, 28 Windsor Dr., Little Rock, Ark. 72209
Continuation-in-part of Ser. No. 103,185, Aug. 6, 1993. This application Jan. 31, 1995, Ser. No. 34,234
Term of patent 14 years
U.S. Cl. D21—237



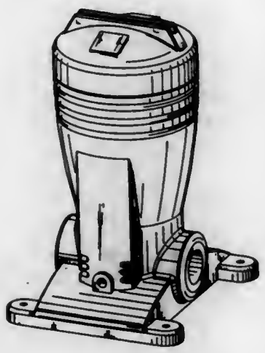
372,758
LINE ROLLER FOR A SPINNING FISHING REEL
Kyoichi Kaneko, and Eiji Shinohara, both of Higashikurume, Japan, assignors to Daiwa Seiko, Inc., Higashikurume, Japan
Filed Jun. 6, 1995, Ser. No. 39,878
Claims priority, application Japan, Dec. 6, 1994, 6-37277; Dec. 13, 1994, 6-38061
Term of patent 14 years
U.S. Cl. D22—137



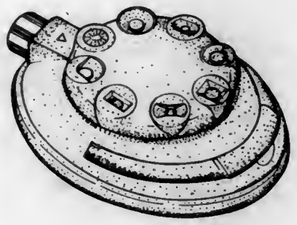
372,759
WATER DISTRIBUTION BOX FOR SNOW MAKING MACHINE
Lennart Nilsson, Box 3084, S-831 03, Östersund, Sweden
Filed Dec. 27, 1993, Ser. No. 16,789
Term of patent 14 years
U.S. Cl. D23—200



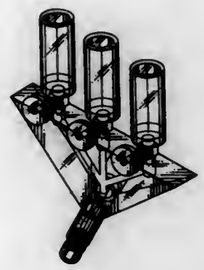
372,760
WATER PURIFIER
Diane M. Brancazio, Cambridge; Susannah E. Gardner, Brookline; Matthew D. Hern, Boston, all of Mass.; Francis M. Lubrano, Narragansett; David A. Snow, Barrington, both of R.I., and David M. Sykes, Cambridge, Mass., assignors to Fountainhead Technologies, Providence, R.I.
Continuation of Ser. No. 30,668, Nov. 4, 1994, abandoned.
This application Sep. 14, 1995, Ser. No. 44,002
Term of patent 14 years
U.S. Cl. D23—209



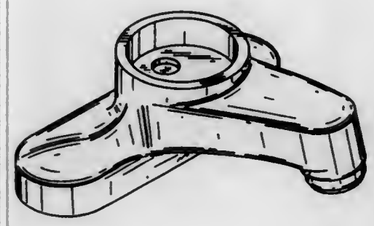
372,761
GARDEN SPRINKLER
I-Shun Chih, P.O. Box 1750, Taichung, Taiwan
Filed Apr. 24, 1995, Ser. No. 37,903
Term of patent 14 years
U.S. Cl. D23—214



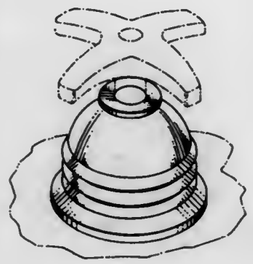
372,762
TOILETRY DISPENSER FOR A SHOWER HEAD
David Braswell, 121 Ocean Park La., Cape Canaveral, Fla. 32920
Filed Aug. 17, 1995, Ser. No. 42,788
Term of patent 14 years
U.S. Cl. D23—228



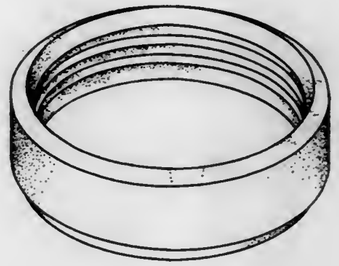
372,763
FAUCET BODY
In-Ho Moon, Seoul, Rep. of Korea, assignor to American Standard Inc., Piscataway, N.J.
Continuation of Ser. No. 18,869, Feb. 17, 1994, abandoned.
This application May 22, 1995, Ser. No. 39,457
Claims priority, application Rep. of Korea, Aug. 18, 1993, 1993-16695
Term of patent 14 years
U.S. Cl. D23—238



372,764
ESCUTCHEON
Alfred R. Dubin, Los Angeles, Calif., assignor to Phyirich International, Los Angeles, Calif.
Filed Feb. 16, 1995, Ser. No. 34,959
Term of patent 14 years
U.S. Cl. D23—254



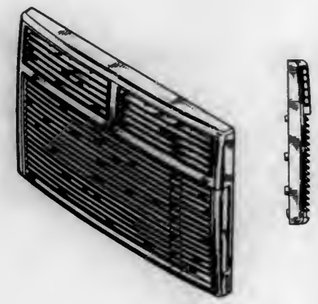
372,765
GASKET
David E. Sisk, 7353 Hillsboro Rd., Bonne Terre, Mo. 63628
Filed Aug. 1, 1994, Ser. No. 26,565
Term of patent 14 years
U.S. Cl. D23—269



372,766
RAISED TOILET SEAT
Kurt Francke, Huddinge, Sweden, assignor to RFSU Rehab AG, Stockholm, Sweden
Filed Jun. 17, 1994, Ser. No. 24,616
Claims priority, application Sweden, Dec. 22, 1993, 93-2884
Term of patent 14 years
U.S. Cl. D23—311



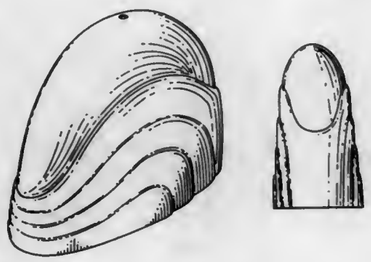
372,767
AIR CONDITIONER CABINET FRONT
Marcos Borges, Sao Paulo, Brazil, assignor to Goodman Company, L.P., Houston, Tex.
Filed May 8, 1995, Ser. No. 38,521
Term of patent 14 years
U.S. Cl. D23—354



372,769
ELECTRIC LIGHT AROMA UNIT
Michael Ganor, Kfar Saba, Israel, assignor to Amron Ltd., Tel Aviv, Israel
Filed Jan. 18, 1995, Ser. No. 33,668
Term of patent 14 years
U.S. Cl. D23—366



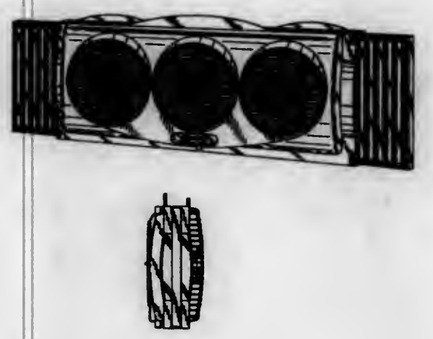
372,768
AIR TREATMENT DEVICE
Christopher J. Miller; Mark W. McElfresh, both of Scottsdale, Ariz.; Thomas B. Aldrich, III, Chestnut Ridge; Guy A. Williams, New York, both of N.Y., and Yeong C. Park, Palisades Park, N.J., assignors to The Dial Corp, Phoenix, Ariz.
Filed Sep. 12, 1994, Ser. No. 28,329
Term of patent 14 years
U.S. Cl. D23—366



372,770
REFRIGERATOR AIR DEODORIZER
Scott H. Foreman, Cazenovia, N.Y., assignor to Woodland Sales Inc., Manlius, N.Y.
Filed Oct. 13, 1994, Ser. No. 29,679
Term of patent 14 years
U.S. Cl. D23—368



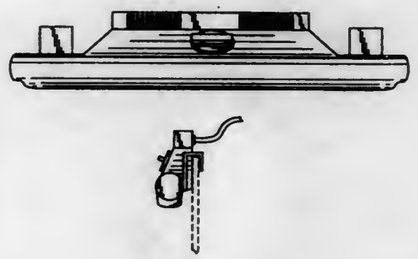
372,771
MULTIPLE BLADE WINDOW FAN
Jui-Shang Wang, Taipei, Taiwan; Rodney Jané, Westboro, and John Longan, Natick, both of Mass., assignors to Duracraft Corporation, Southborough, Mass.
Filed Mar. 27, 1995, Ser. No. 36,774
Term of patent 14 years
U.S. Cl. D23—380



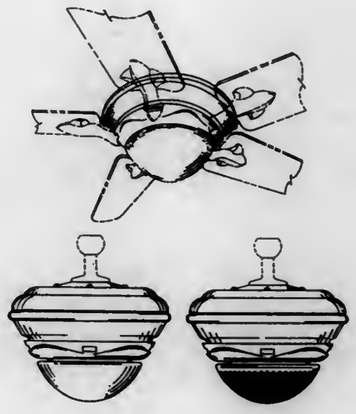
372,772
PORTABLE FAN
Craig A. Dubois, Trumbull, Conn.; Brian J. Matt, Wellesley, Mass.; Allan Ball, and Thomas Swyst, both of Arlington, Mass., assignors to Black & Decker Inc., Newark, Del.
Filed Sep. 25, 1995, Ser. No. 44,443
Term of patent 14 years
U.S. Cl. D23—382



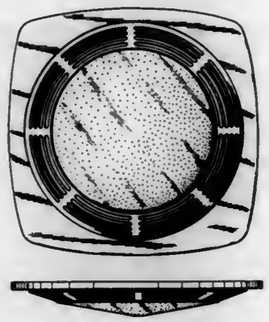
372,773
AIR BLOWING MIRROR DRIER
Edward L. Young, 141 Prairie Ave., Springfield, Ohio 45505
Filed Jan. 20, 1995, Ser. No. 33,794
Term of patent 14 years
U.S. Cl. D23—386



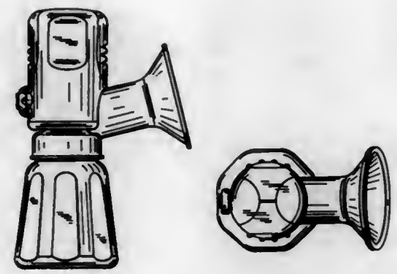
372,774
COMBINED HOUSING AND LIGHT FIXTURE FOR AN ELECTRIC CEILING FAN
Richard M. Holbrook, Pasadena, Calif., assignor to Hunter Fan Company, Memphis, Tenn.
Filed Jun. 15, 1995, Ser. No. 40,344
Term of patent 14 years
U.S. Cl. D23—411



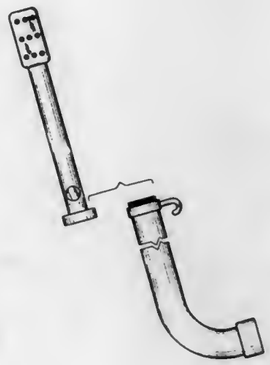
372,775
COMBINED LENS AND GRILL COVER FOR A BATHROOM EXHAUST FAN WITH INTEGRAL LIGHT FIXTURE
Norman F. Schuler, West Chester, Ohio, assignor to NuTone Inc., Cincinnati, Ohio
Filed Jun. 24, 1995, Ser. No. 40,268
Term of patent 14 years
U.S. Cl. D23—412



372,777
BREAST PUMP
Chi C. Kan, Kowloon, Hong Kong, assignor to Wealthy Way International Limited, Kowloon, Hong Kong
Filed Oct. 13, 1994, Ser. No. 29,695
Claims priority, application United Kingdom, Jul. 8, 1994, 2040219; Jul. 8, 1994, 2040220
Term of patent 14 years
U.S. Cl. D24—109



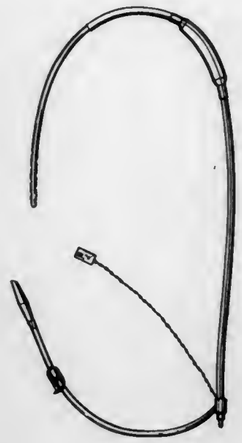
372,778
HYDROFLOSS WAND WITH REMOVABLE HEAD FOR ORAL CLEANSING
Wayne A. Brunson, 6292 S. 117th St., Seattle, Wash. 98178
Filed Jan. 5, 1995, Ser. No. 33,114
Term of patent 14 years
U.S. Cl. D24—112



372,776
MULTI-CONE EARPLUG
Howard S. Leight, 1330 Colorado Ave., Santa Monica, Calif. 90404
Filed Oct. 15, 1992, Ser. No. 490
Term of patent 14 years
U.S. Cl. D24—106



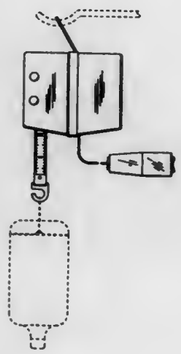
372,779
GASTRIC SUCTION SYSTEM
Douglas R. Mongeon, 2328 Maplewood St., Orange, Calif. 92665
Filed Feb. 17, 1995, Ser. No. 35,003
Term of patent 14 years
U.S. Cl. D24—112



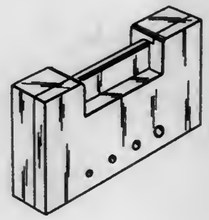
372,781
HEART VALVE ROTATOR
Thomas H. Reif, Vero Beach, Fla., assignor to TRI Technologies Inc., Belo Horizonte, Brazil
Filed Mar. 24, 1995, Ser. No. 36,665
Term of patent 14 years
U.S. Cl. D24—133



372,780
SOLUTION BOTTLE POSITIONER
John A. Krug, 2689 N. Galley St., Orange, Calif. 92665, and Frederick N. Delgado, 932 Mullaghboy Rd., Glendora, Calif. 91741
Filed Dec. 20, 1994, Ser. No. 32,508
Term of patent 14 years
U.S. Cl. D24—128



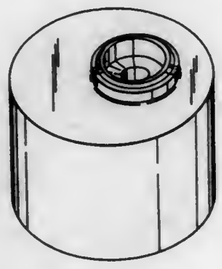
372,782
CATHETER FIELD TRIMMING DEVICE
Stephen R. Spehalski, Gurnee, Ill., assignor to Luther Medical Products, Inc., Tustin, Calif.
Filed May 12, 1995, Ser. No. 38,878
Term of patent 14 years
U.S. Cl. D24—133



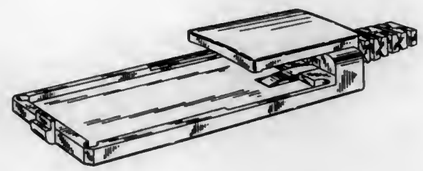
372,783
SCISSORS WITH HANGER CLIP
Steve Rollert, P.O. Box 65, Keenesburg, Colo. 80643
Filed Apr. 7, 1995, Ser. No. 37,232
Term of patent 14 years
U.S. Cl. D24—149



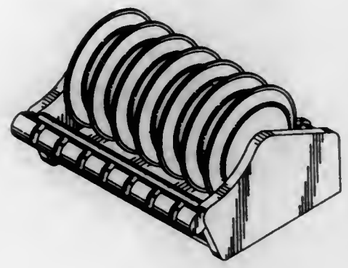
372,784
PROSTHETIC BRIDGE PART
Roony Sandberg, Kungsbacka, and Momo Vasilic, Partille, both of, Sweden, assignors to Nobelpharma AB, Sweden
Filed Apr. 18, 1994, Ser. No. 21,473
Claims priority, application Sweden, Oct. 21, 1993, 93-2346; Oct. 21, 1993, 93-2347; Oct. 21, 1993, 93-2348; Oct. 21, 1993, 93-2349
Term of patent 14 years
U.S. Cl. D24—155



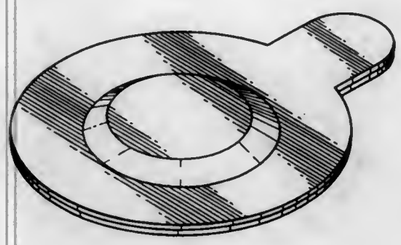
372,785
EXTERNAL LEAD ADAPTOR FOR WRIST-WORN CARDIAC MONITOR
Mohamed Sabri, Beaverton, and Colin M. Portnuff, Tualatin, both of Oreg., assignors to Instromedix, Inc., Hillsboro, Oreg.
Filed Jan. 12, 1995, Ser. No. 33,418
Term of patent 14 years
U.S. Cl. D24—167



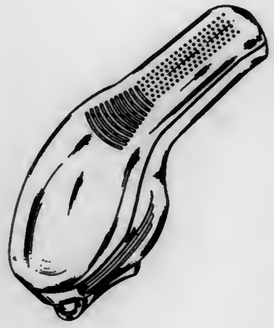
372,786
PLURAL BOBBIN DISPENSER
Robert H. Palmer, Oregon City, Oreg., assignor to Medcom, Inc., Canby, Oreg.
Filed Oct. 6, 1995, Ser. No. 45,073
Term of patent 14 years
U.S. Cl. D24—176



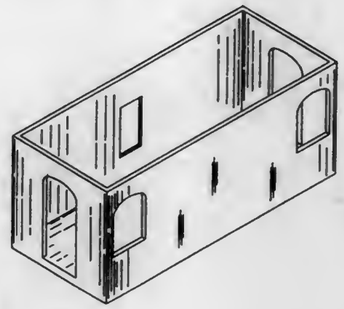
372,787
BANDAGE
Glenda S. Dozier, and Terrance D. Dozier, both of 2620 Lakeshore Dr., Macon, Ga. 31201
Filed Jan. 31, 1995, Ser. No. 34,271
Term of patent 14 years
U.S. Cl. D24—189



372,788
MASSAGER
Serge Brun, Lyons, France, assignor to Calor S.A., Lyons, France
Filed May 9, 1994, Ser. No. 22,594
Claims priority, application France, Nov. 10, 1993, 935840
Term of patent 14 years
U.S. Cl. D24—215



372,789
DUAL DOORWAY MODULAR HOUSING UNIT
Ernest J. DelMonte, 46 Harwood La., East Rochester, N.Y. 14445
Filed Jan. 4, 1995, Ser. No. 33,870
The portion of the term of this patent subsequent to Aug. 6, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D25—35



372,790
WINDOW HEADER
Domenic Colitto, Bolton, Canada, assignor to Royal Extrusions Limited, Woodbridge, Canada
Filed May 31, 1995, Ser. No. 39,449
Term of patent 14 years
U.S. Cl. D25—124



VOL
1189
1996
AG
UMI

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 13th DAY OF AUGUST, 1996

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. & D. Prevost Inc.: *See*—
Labrecque, Normand, 5,544,457, Cl. 52-204.690.

A.B. Dick Company: *See*—
Banike, Ronald A., 5,544,583, Cl. 101-240.000.

A.V.I. - Advanced Visual Instruments, Inc.: *See*—
Grinblat, Avi; and Chang, Stanley, 5,545,153, Cl. 604-294.000.

A. W. Chesterton Co.: *See*—
Di Pietro, Larry; and Azibert, Henri, 5,544,897, Cl. 277-81.00R.

AAB, Volker: *See*—
Peter, Cornelius; Seiler, Hartmut; AAB, Volker; and Haderer, Guenter, 5,545,961, Cl. 318-647.000.

Aanestad, Leif I. Method for precipitation coating of internal surfaces in tanks and pipe systems. 5,545,433, Cl. 427-230.000.

Aarseth, Finn, to Aker Engineering AS. Method and transmitter/receiver for transferring signals through a medium in pipes and hoses. 5,546,359, Cl. 367-134.000.

Aaseth, Allen; and Schmitt, Robert A., to Columbia Machine, Inc. Method for forming concrete products. 5,544,405, Cl. 29-467.000.

Aastra Technologies Inc.: *See*—
Shen, Anthony P., 5,546,451, Cl. 379-215.000.

ABB Atom AB: *See*—
Collin, Per; Deleryd, Roland; Ivars, Roland; Lundqvist, Fredrik; and Stolzenberg, Norman R., 5,546,435, Cl. 376-253.000.

ABB Flakt AB: *See*—
Molin, Jan; and Gränfors, Sören, 5,545,011, Cl. 416-207.000.

ABB Research Ltd.: *See*—
Jansohn, Peter; Marling, Tino-Martin; and Sattelmayer, Thomas, 5,545,032, Cl. 431-9.000.

ABB Stal AB: *See*—
Brännström, Roine, 5,544,596, Cl. 110-106.000.

Abbaticchio, Michael T. Rail support bracket. 5,544,865, Cl. 256-67.000.

Abbott Laboratories: *See*—
Behr, Stephen R.; Seeds, Jeffrey K.; Lamb, Catherine S.; Garleb, Keith A.; and Walton, Joseph E., 5,545,414, Cl. 424-484.000.
Kempf, Dale J.; Norbeck, Daniel W.; Erickson, John W.; Sham, Hing Leung; Codacovi, Lynn M.; and Plattner, Jacob J., 5,545,750, Cl. 564-360.000.
Mattingly, Phillip G.; and Bennett, Larry G., 5,545,739, Cl. 546-108.000.

ABC Rail Products Corporation: *See*—
Kuhn, Stephen R.; and Young, Keith, 5,544,848, Cl. 246-276.000.

Abe, Kouji: *See*—
Tsunekawa, Hiroyuki; and Abe, Kouji, 5,545,064, Cl. 440-53.000.

Abe, Shigeo; Kayama, Masahiro; Takenaga, Hiroshi; Morooka, Yasuo; Kawakami, Junzo; and Takatoo, Masao, to Hitachi, Ltd. Apparatus for configuring neural network and pattern recognition apparatus using neural network. 5,546,503, Cl. 395-23.000.

Abe, Tomohiko: *See*—
Satoh, Takamasa; Yasuda, Hiroshi; Kai, Junichi; Oae, Yoshihisa; Nishino, Hisayasu; Sakamoto, Kiichi; Yabara, Hidefumi; Seto, Isamu; Takigawa, Masami; Yamada, Akio; Arai, Soichiro; Abe, Tomohiko; Kiuchi, Takashi; and Miyazawa, Kenichi, 5,546,319, Cl. 364-488.000.

Abidin, Micheal R.; and Lehmbeck, Steven P., to Bloom, Leonard. Disposable guarded finger scalpel for inserting a line in a patent and lock off therefor. 5,545,175, Cl. 606-182.000.

Abloy Security Ltd. Oy: *See*—
Mielonen, Pekka, 5,544,509, Cl. 70-366.000.

Abouhalkah, Samih S.: *See*—
Smith, Kim R.; Boyd, Frederick M.; and Abouhalkah, Samih S., 5,545,749, Cl. 564-282.000.

Abraham, Arthur: *See*—
Grimaud, Jean-Jacques G.; Lanier, Jaron Z.; Abraham, Arthur; and Harvill, Young, 5,546,530, Cl. 395-163.000.

Abrams, Robert D.: *See*—
Horvath, Stephen R., Jr.; Abrams, Robert D.; and Helf, Thomas A., 5,544,810, Cl. 239-10.000.

Abt, Peter: *See*—
Tanner, Noel, 5,544,756, Cl. 209-458.000.

Abumiya, Tadashi: *See*—
Yashiki, Takashi; Wada, Yasunori; Nishimoto, Hidenori; Terada, Yoshinori; Nakayama, Takenori; and Abumiya, Tadashi, 5,545,268, Cl. 148-518.000.

Acello, John J.: *See*—
Hoot, Robert D.; and Acello, John J., 5,546,196, Cl. 358-527.000.

Acer Incorporated: *See*—
Chuang, Te-Chih, 5,546,563, Cl. 395-500.000.

Hsieh, Rong-Ya; Lin, Jinn-Maw; and Hong, Chun-Yen, 5,546,334, Cl. 364-709.110.

Ackley, Donald E.; and Lebby, Michael S., to Motorola. Method of making a plastic molded optoelectronic interface. 5,545,359, Cl. 264-1.240.

Acoatings, Inc.: *See*—
Tillery, Dean; Musgrave, Paul D.; McClusky, John; and Myers, Russell L., 5,544,811, Cl. 239-13.000.

Acuson Corporation: *See*—
Murphy, Sean; and Need, Daniel E., 5,544,654, Cl. 128-660.070.

Adachi, Hiroki: *See*—
Yamazaki, Shunpei; Zhang, Hongyong; Uochi, Hideki; Adachi, Hiroki; and Takemura, Yasuhiko, 5,545,571, Cl. 437-21.000.

Adachi, Seiichiro; Naito, Masataka; and Hiroi, Masakazu, to Canon Kabushiki Kaisha. Image forming apparatus with selective operation in document-fix reading mode and document-move reading mode. 5,546,168, Cl. 355-233.000.

Adams, Jerry L.; Hall, Ralph F.; Lee, Dennis; Mayer, Ruth J.; and Seibel, George L. Anti-inflammatory compounds. 5,545,669, Cl. 514-562.000.

Adams, Richard P.: *See*—
Beagle, Charles A.; Adams, Richard P.; and Wixon, Harold E., 5,545,342, Cl. 510-299.000.

Adams, William: *See*—
Kukanskis, Peter; Gabriele, Peter; Letize, Raymond; and Adams, William, 5,545,510, Cl. 430-312.000.

Adler, Michel, to Dubix De Souza SNC. Drying and ironing machine having a rotary cylinder equipped with an improved pipe burner. 5,544,644, Cl. 126-91.00R.

Adobe Systems Incorporated: *See*—
Johnston, Kevin R., 5,546,528, Cl. 395-159.000.

Adolf Hottinger Maschinenbau GmbH: *See*—
Landua, Werner; and Schimpf, Wolfgang, 5,544,667, Cl. 134-64.00R.
Landua, Werner; and Schimpf, Wolfgang, 5,544,694, Cl. 164-20.000.

Adrian, Willy; and Bruehl, Klaus, to Otis Elevator Company. Tension release for passenger conveyor. 5,544,730, Cl. 198-336.000.

Advance Micro Devices, Inc.: *See*—
Kranich, Uwe, 5,546,560, Cl. 395-468.000.

Advanced Coronary Technology, Inc.: *See*—
Hess, Robert L.; and Bramfitt, John E., 5,545,210, Cl. 623-1.000.

Advanced Fishing Technologies, Inc.: *See*—
Stanfield, James R.; Dasquilante, Robert A.; and Lanham, Bobby G., Jr., 5,545,855, Cl. 177-25.130.

Advanced Machine & Engineering Co.: *See*—
Goellner, Willy J., 5,544,968, Cl. 403-31.000.

Advanced Micro Devices, Inc.: *See*—
Duley, Raymond S., 5,546,297, Cl. 363-62.000.
Golla, Naidu G., 5,546,405, Cl. 371-22.100.
Hewitt, Larry D.; and Feemster, Ryan, 5,546,039, Cl. 327-379.000.
Hu, Chung-You; Richart, Robert B.; Garg, Shyam G.; and Banerjee, Sanjay K., 5,546,340, Cl. 365-185.300.
Iacoponi, John A., 5,545,592, Cl. 437-200.000.

Advanced Silicon Materials, Inc.: *See*—
Keck, David W.; Negai, Kenichi; Yatsurugi, Yoshifumi; Morihara, Hiroshi; and Izawa, Junji, 5,545,387, Cl. 423-348.000.

Advanced Spine Fixation Systems, Incorporated: *See*—
Howland, Robert S., 5,545,164, Cl. 606-61.000.
Howland, Robert S., 5,545,166, Cl. 606-61.000.

Aeroquip Corporation: *See*—
Rogers, Russell L.; and Marrison, William C., 5,544,858, Cl. 251-149.600.

Affymax Technologies N.V.: *See*—
Rava, Richard P.; Fodor, Stephen P. A.; and Trulson, Mark, 5,545,531, Cl. 435-6.000.

Agahi, Reza R.; and Ershagi, Behrooz, to Rotoflow Corporation. Multi-stage rotary fluid handling apparatus. 5,545,006, Cl. 415-169.200.

Agata, Masashi; Matsuyama, Kazuhiro; Akamatsu, Hironori; Kikukawa, Hirohito; Sawada, Akihiro; and Iwanari, Shunichi, to Matsushita Electric Industrial Co., Ltd. Semiconductor memory device. 5,546,346, Cl. 365-203.000.

Agence Spatiale Europeene: *See*—
Martin Neira, Manuel, 5,546,087, Cl. 342-120.000.

Agency of Industrial Science & Technology: *See*—
Shimizu, Yo; Miya, Masaru; and Nagata, Akira, 5,545,341, Cl. 252-62.50R.

AGFA-Gevaert: *See*—
Buytaert, Tom G.; Van de Velde, Stefan C.; and Vuylsteke, Pieter P., 5,546,473, Cl. 382-132.000.

AGFA-Gevaert, N.V.: *See*—

VOI
1189
ISS
2
AG
13
19 96
UMI

Tavernier, Serge; Ruttens, Frank; Verhecken, André; Mampaey, Jozef; and Joly, Ludovicus, 5,545,501, Cl. 430-106.600.
Agouron Pharmaceuticals, Inc.: *See*—
Varney, Michael D.; Palmer, Cindy L.; and Deal, Judy G., 5,545,744, Cl. 558-418.000.
Agrawal, Mukul; Orrock, James E.; Patiath, Pradip K.; and Rachor, Lloyd A., to Honeywell Inc. Advanced equipment control system. 5,546,301, Cl. 364-140.000.
Agricultural Building Holdings, Inc.: *See*—
Kearney, Ken, 5,544,686, Cl. 141-192.000.
Agricultural Genetics Company Limited: *See*—
Gatehouse, Angharad; Hilder, Vaughan; Van Damme, Els; Peumans, Willy; Newell, Christine; and Hamilton, William, 5,545,820, Cl. 800-205.000.
Agut, Henri: *See*—
Collandre, Helene; Montagnier, Luc; Agut, Henri; and Bechet, Jean-Marie, 5,545,520, Cl. 435-5.000.
Ahmed, Bashir M.: *See*—
Hart, Robert G.; Ahmed, Bashir M.; Gonzales, Carlos; and Kozak, William G., 5,545,319, Cl. 210-279.000.
Ahmed, Fahim: *See*—
Durbut, Patrick; Ahmed, Fahim; and Drapier, Julien, 5,545,344, Cl. 510-223.000.
Aigner, Manfred: *See*—
Geisenberger, Stefan; and Aigner, Manfred, 5,546,470, Cl. 381-197.000.
Air Industrie Systems - A.I.S.: *See*—
Cordier, André, 5,545,239, Cl. 55-223.000.
Air Products and Chemicals, Inc.: *See*—
Vedage, Gamini A.; and Armor, John N., 5,545,756, Cl. 564-450.000.
Aisin Seiki Kabushiki Kaisha: *See*—
Nakano, Toshihiro; Iijima, Hideaki; and Arakawa, Haruo, 5,544,485, Cl. 60-589.000.
Nishii, Michiharu; and Ishida, Satoshi, 5,544,947, Cl. 303-116.200.
Aitken, John; and Oria, Vittorio L., to Texas Petrodet, Inc. Multiphased through tubing stripgun. 5,544,711, Cl. 175-4.600.
AIWA Research and Development, Inc.: *See*—
Gray, G. Robert, 5,544,774, Cl. 216-22.000.
Aizawa, Nobuhiro, to Canon Denshi Kabushiki Kaisha. Seek method and apparatus. 5,545,963, Cl. 318-696.000.
Akahira, Nobuo: *See*—
Yamada, Noboru; Akahira, Nobuo; Nishiuchi, Kenichi; Nagata, Kenichi; Ohno, Eiji; and Furukawa, Shigeaki, 5,545,454, Cl. 428-64.100.
Akamatsu, Hironori: *See*—
Agata, Masashi; Matsuyama, Kazuhiro; Akamatsu, Hironori; Kikukawa, Hirohito; Sawada, Akihiro; and Iwanari, Shunichi, 5,546,346, Cl. 365-203.000.
Aker Engineering AS: *See*—
Aarseth, Finn, 5,546,359, Cl. 367-134.000.
Akimoto, Takeshi: *See*—
Katayama, Katsuo; Komachi, Kyoichi; Mabuchi, Hiroshi; and Akimoto, Takeshi, 5,545,258, Cl. 118-723.0MP.
Akimune, Yoshio: *See*—
Hirosaki, Naoto; Okada, Akira; and Akimune, Yoshio, 5,545,362, Cl. 264-65.000.
Akita, Mikio; Enomoto, Koichi; Tanaka, Shigeaki; and Otawara-Hamamoto, Yoko, to Hoechst Japan Limited. Method for screening for osteoporosis. 5,545,534, Cl. 435-4.920.
Aktiebolaget Electrolux: *See*—
Larsson, Håkan; and Donnerdal, Ove, 5,545,079, Cl. 451-342.000.
Akuta, Tomokazu: *See*—
Ohba, Hiroki; Tonomoto, Yoshihiro; Yanagita, Kiyohisa; Houki, Yoji; Akuta, Tomokazu; and Komuro, Akihiro, 5,546,170, Cl. 355-246.000.
Akuzawa, Kenji; Matsui, Hiroki; and Fujita, Yasuhiko, to Honda Giken Kogyo Kabushiki Kaisha. Ranging sensor system for vehicle. 5,546,086, Cl. 342-70.000.
Akzo Nobel Faser AG: *See*—
Schuster, Dieter H. P.; Fels, Achim G.; and Spors, Herbert, 5,545,470, Cl. 428-229.000.
Alack, Charles S., to Semi-Bulk Systems, Inc. Mixing module for mixing a fluent particulate material with a working fluid. 5,544,951, Cl. 366-163.200.
Alassoeur, Philippe L. A.; Collot, André C. F.; Guyonnet, Xavier J. M. A.; Klein, Gilles C. C.; and Molliex, Ludovic E. C., to Societe National d'Etude et de Construction de Moteurs d'Aviation "SNECMA". Method of producing a fibre-reinforced metallic circular part. 5,544,805, Cl. 228-190.000.
Albericio, Fernando: *See*—
Barany, George; Albericio, Fernando; Solé, Nuria A.; Chang, Jane; and Zalipsky, Samuel, 5,545,698, Cl. 525-420.000.
Albers, Michael W., to Bor-It Meg. Co., Inc. Combined auger and thruster machine. 5,544,978, Cl. 405-232.000.
Albert, Mitchell S.; Balamore, Dilip; Cates, Gordon D., Jr.; Driehuys, Bastiaan; Happer, William; Saam, Brian; and Wishnia, Arnold, to Research Foundation of State University of New York, The; and Trustees of Princeton University Office of Research and Project Administration, The. Magnetic resonance imaging using hyperpolarized noble gases. 5,545,396, Cl. 424-93.000.
Albrecht, Paul. Socket for small incandescent lamp. 5,545,058, Cl. 439-547.000.
Alcan International Limited: *See*—
Begin, Pierre; Choquette, Denis; and Tremblay, Rejean, 5,544,693, Cl. 164-4.100.
Alcatel Alsthom Compagnine Generale d'Electricite: *See*—
Andrieu, Xavier, 5,546,317, Cl. 364-481.000.
Alcatel Mobile Communications: *See*—
Dupuy, Pierre; and Freulon, Anne, 5,546,384, Cl. 370-50.000.
Alcatel N.V.: *See*—
Gass, Raymond, 5,546,386, Cl. 370-60.000.
Pfeiffer, Thomas, 5,546,414, Cl. 372-18.000.
Wippenbeck, Matthias; Willmann, Gert; and Schrodi, Karl, 5,546,389, Cl. 370-60.000.
Alcatel Telspace: *See*—
Sehier, Philippe; and Deprey, Dominique, 5,546,423, Cl. 375-206.000.
Alexander, Brian S.: *See*—
Davis, James A.; Hoppert, Joseph R.; Chmiel, Chester T.; and Alexander, Brian S., 5,545,685, Cl. 524-490.000.
Alexander, James C., to United Dominion Industries, Inc. Dock leveler hydraulic circuit. 5,544,381, Cl. 14-71.700.
Alfred E. Mann Foundation for Scientific Research: *See*—
Mann, Alfred E.; and Schulman, Joseph H., 5,545,191, Cl. 607-57.000.
Ali, M. Zaki: *See*—
Palazzotto, Michael C.; Ubel, F. Andrew, III; Oxman, Joel D.; and Ali, M. Zaki, 5,545,676, Cl. 522-15.000.
Alig, Leo; Hadvary, Paul; Hürzeler, Marianne; Müller, Marcel; Steiner, Beat; and Weller, Thomas, to Hoffman-La Roche Inc. Amino acid derivatives. 5,545,658, Cl. 514-423.000.
Alizon, Marc; Montagnier, Luc; Guetard, Denise; Brun-Vezinet, Francoise; and Clavel, Francois, to Institut Pasteur. Cloned DNA sequences related to the entire genomic RNA of human immunodeficiency virus II (HIV-2), polypeptides encoded by these DNA sequences and use of these DNA clones and polypeptides in diagnostic kits. 5,545,726, Cl. 536-23.100.
Allegro Microsystems, Inc.: *See*—
Peppiette, Roger C.; Cooper, Richard B.; and Stoddard, Robert J., 5,545,917, Cl. 257-547.000.
Allen, Brian J.: *See*—
Hill, Timothy L.; Allen, Brian J.; Jonas, William P.; and Kennedy, James P., 5,546,282, Cl. 361-796.000.
Allen, Darlene: *See*—
Fox, J. Gary; and Allen, Darlene, 5,545,410, Cl. 424-439.000.
Allen, Michael J., to Intel Corporation. MOS termination for low power signaling. 5,546,016, Cl. 326-30.000.
Allen, Rebecca L.; and Lonsdale, David M., to Pioneer Hi-Bred International, Inc. Pollen-specific promoter from maize. 5,545,546, Cl. 435-172.300.
Allen, Vincent K.; Goncharsky, Robert S.; and Ripberger, Richard A., to International Business Machines Corporation. System for storing and managing plural logical volumes in each of several physical volumes including automatically creating logical volumes in peripheral data storage subsystem. 5,546,557, Cl. 395-438.000.
Allergan: *See*—
Burk, Robert M., 5,545,665, Cl. 514-530.000.
Alliance Semiconductor Corporation: *See*—
Reddy, Chitranjan N.; and Quinn, Kevin P., 5,545,934, Cl. 307-130.000.
AlliedSignal Inc.: *See*—
Draskovich, Barry S.; and Ullah, M. Rifat, 5,544,896, Cl. 277-22.000.
Ho, Kuo-San; Howe, William J.; and May, Jeffrey E., 5,545,004, Cl. 415-115.000.
Prevorsek, Dusan C.; Lem, Kwok W.; Li, Hsin L.; and Kwon, Young D., 5,545,455, Cl. 428-76.000.
Thenappan, Alagappan; Swain, Charles F.; and Luly, Matthew H., 5,545,775, Cl. 570-168.000.
Tung, Hsueh S.; Smith, Addison M.; and Swain, Charles F., 5,545,778, Cl. 570-178.000.
Vickers, Thomas E.; and Sanger, James A., 5,544,873, Cl. 269-47.000.
Allison Engine Company, Inc: *See*—
O'Connor, Kurt P.; Hoff, James P.; Frasier, Donald J.; Peeler, Ralph E.; Mueller-Largent, Heidi; Trees, Floyd F.; Whetstone, James R.; Lane, John H.; and Jeffries, Ralph E., 5,545,003, Cl. 415-115.000.
Aloisi, Robert J.; Livingston, Arthur; and Huss, Brian S., to James River Corporation of Virginia. Preconditioned paperboard containers. 5,544,808, Cl. 229-400.000.
Alps Electric Co., Ltd.: *See*—
Izumi, Hiroshi, 5,546,113, Cl. 347-195.000.
Kikuchi, Kimihiro; Kihara, Takashi; and Okochi, Ken, 5,546,490, Cl. 385-93.000.
Alt, Eckhard: *See*—
Stotts, Lawrence J.; and Alt, Eckhard, 5,545,182, Cl. 607-5.000.
Altman, Peter A., to Ventritex, Inc. Method and apparatus for delivering defibrillation therapy through a sensing electrode. 5,545,183, Cl. 607-5.000.
Alvarez Casariego, Pedro; and Massol, Jean-Jacques, to Saint-Gobain Vitrage International. Composition for colored glass intended for the manufacture of glazing panes. 5,545,596, Cl. 501-71.000.
Alza Corporation: *See*—
Kuczynski, Anthony L.; Ayer, Atul D.; and Wong, Patrick S., 5,545,413, Cl. 424-473.000.
Amada MFG America Inc.: *See*—
Seto, Yoshiharu, 5,545,116, Cl. 483-29.000.
Amano, Takehiro: *See*—
Sato, Fumie; Amano, Takehiro; Kameo, Kazuya; Tanami, Tohru; Mutoh, Masaru; Ono, Naoya; and Goto, Jun, 5,545,666, Cl. 514-530.000.

Ambrose, William B.; and Gogerty, Joseph K., to Pioneer Hi-Bred International, Inc. Inbred maize line PHNJ2. 5,545,812, Cl. 800-200.000.
Ambrosius, Hubertus P. M. M.: *See*—
Van Der Poel, Carolus J.; Valster, Adriaan; and Ambrosius, Hubertus P. M. M., 5,545,903, Cl. 257-14.000.
Amcor Limited: *See*—
Wunder, Heiko; Scott-Young, Robert E.; Maddern, Kenneth N.; and Corrigan, Mark C., 5,545,385, Cl. 423-183.000.
Ameen, Joseph G.; Mortimer, William P., Jr.; and Yokimcus, Victor P., to W. L. Gore & Associates, Inc. Thermally conductive interface. 5,545,473, Cl. 428-283.000.
Amelio, Armand F.; and Susek, David N., to United Technologies Corporation. Aircraft duplex hinge assembly. 5,544,449, Cl. 49-383.000.
Amenomori, Akira: *See*—
Tanaka, Toshihiko; Yamamoto, Akihiro; and Amenomori, Akira, 5,545,647, Cl. 514-343.000.
Amerada Hess Corporation: *See*—
Ehrlich, Robert T., 5,545,330, Cl. 210-703.000.
American Cyanamid Company: *See*—
Ayral-Kaloustian, Semiramis; Schow, Steven R.; Du, Mila T.; and Gibbons, James J., Jr, 5,545,662, Cl. 514-478.000.
Condon, Michael E.; Crews, Alvin D., Jr.; and Manfredi, Mark C., 5,545,742, Cl. 548-261.000.
Strong, Henry L., 5,545,835, Cl. 544-215.000.
American Dental Association Health Foundation, The: *See*—
Chow, Laurence C.; and Takagi, Shozo, 5,545,254, Cl. 106-35.000.
American National Red Cross, The: *See*—
Wagner, Stephen J., 5,545,516, Cl. 435-2.000.
American Piledriving Equipment, Inc.: *See*—
White, John L., 5,544,979, Cl. 405-232.000.
American Sealcut Corporation: *See*—
Kollinek, Kurt, 5,544,748, Cl. 206-387.130.
Amersham International PLC: *See*—
Thomas, Nicholas, 5,544,535, Cl. 73-864.220.
Amici, Robert M.; LaFleur, Edward E.; and Work, William J., to Rohm and Haas Company. Polymer blends. 5,545,689, Cl. 525-057.000.
Amici, Robert M.; LaFleur, Edward E.; and Work, William J., to Rohm and Haas Company. Polymer blends. 5,545,826, Cl. 525-57.000.
Ammermann, Eberhard: *See*—
Kirstgen, Reinhard; Oberdorf, Klaus; Sauter, Hubert; Bayer, Herbert; Grammenos, Wassilios; Rang, Harald; Harries, Volker; Lorenz, Gisela; and Ammermann, Eberhard, 5,545,664, Cl. 514-521.000.
Ammon, James G.; and Nuttall, John C., to Sun Microsystems, Inc. Stacked enclosure locking mechanism. 5,544,969, Cl. 403-322.000.
Amoco Corporation: *See*—
Ausich, Rodney L.; Brinkhaus, Friedhelm L.; Mukharji, Indrani; Proffitt, John; Yarger, James; and Yen, Huei-Che B., 5,545,816, Cl. 800-205.000.
Cox, William L., 5,545,792, Cl. 585-665.000.
Amoruso, Victor P.: *See*—
Caputo, Anthony A.; and Amoruso, Victor P., 5,546,463, Cl. 380-25.000.
Amrhein, Klaus: *See*—
Boscher, Georg; Amrhein, Klaus; and Sagemuehl, Dieter, 5,545,852, Cl. 174-84.00R.
An, Sung-soon; and Lee, Suk-jae, to Sooho Medi-Tech Co., Ltd. Stent for expanding a lumen. 5,545,211, Cl. 623-1.000.
Analog Devices, Inc.: *See*—
Dos Santos, Francisco, Jr.; and DeVito, Larry M., 5,545,918, Cl. 257-577.000.
Anastos, William N.; and Boyd, Stephen B., to Rule Industries, Inc. Soft-start pump control system. 5,545,012, Cl. 417-44.110.
Andersen Corporation: *See*—
Schmidt, Melvin J.; Coach, Thomas P.; Hause, Glenn C.; Galowitz, Dennis A.; Wyman, James P.; Hendricks, Robert A.; Ver Steeg, Lawrence J.; and Evans, Harold H., 5,544,450, Cl. 49-419.000.
Andersen, Erik C.: *See*—
Iacob, Mihai; and Andersen, Erik C., 5,545,135, Cl. 604-96.000.
Andersen, Per J.; and Hodson, Simon K., to E. Khashoggi Industries. Methods for continuously placing filaments within hydraulically settable compositions being extruded into articles of manufacture. 5,545,297, Cl. 264-102.000.
Andersen, Per J.; and Hodson, Simon K., to E. Khashoggi Industries. Molded articles having an inorganically filled organic polymer matrix. 5,545,450, Cl. 428-34.500.
Anderson, Bruce; and Gipson, Philip, to Frigid-Rigid, Inc. Construction of refrigerated containers. 5,544,495, Cl. 62-457.700.
Anderson, David C.: *See*—
Hoffman, Stephen J.; Looker, Douglas L.; Rosendahl, Mary S.; Stetler, Gary L.; Wagenbach, Michael; Anderson, David C.; Mathews, Antony J.; and Nagai, Kiyoshi, 5,545,727, Cl. 536-234.000.
Anderson, Gary J.: *See*—
Beck, Norman G.; Anderson, Gary J.; and Tucker, Richard S., 5,545,019, Cl. 418-55.100.
Anderson, James M.: *See*—
Sminchak, Michael D.; and Anderson, James M., 5,546,008, Cl. 324-690.000.
Anderson, Peter M.: *See*—
Skubitz, Keith M.; and Anderson, Peter M., 5,545,668, Cl. 514-561.000.
Anderson, Thomas J.; and Walker, Hugh C. Box for carrying and protecting a painting. 5,544,806, Cl. 229-178.000.
Andersson, Owe, to Höganäs AB. Particulate CaF_2 and BaF_2 agent for improving the machinability of sintered iron-based powder. 5,545,247, Cl. 75-231.000.
Andersson, Poul K.: *See*—
Molin, Søren; Gerdes, Kenn A.; Rasmussen, Poul B.; and Andersson, Poul K., 5,545,541, Cl. 435-172.300.
Andert, Glenn P.: *See*—
Norman, George W.; and Andert, Glenn P., 5,546,595, Cl. 395-800.000.
Ando Electric Co., Ltd.: *See*—
Komatsu, Ryogo, 5,546,407, Cl. 371-27.000.
Ando, Manabu; and Monden, Junji, to NEC Corporation. Semiconductor memory device with error self-correction system starting parity bit generation/error correction sequences only when increase of error rate is forecasted. 5,546,410, Cl. 371-40.200.
Ando, Masaaki: *See*—
Manabe, Nobuyuki; and Ando, Masaaki, 5,544,669, Cl. 134-109.000.
Ando, Masami: *See*—
Fukushima, Saburo; Yagi, Masaharu; Morita, Kiyozi; Ando, Masami; and Saito, Tokuo, 5,545,458, Cl. 428-117.000.
Ando, Osamu: *See*—
Ono, Hitoshi; Takahashi, Noriaki; Ando, Osamu; Takeuchi, Masako; and Oda, Hirofumi, 5,545,502, Cl. 430-110.000.
Andrews, Anthony: *See*—
Stallmo, David C.; Andrews, Anthony; and Brinkman, Candace, 5,546,535, Cl. 395-182.070.
Andrews, G. Wayne; Webber, Steven H.; Kelly, James P.; Johnson, Lawrence E.; Stern, Jerry A.; Milano, Vincent J., Jr.; and Davis, Charles R., to GeoTel Communications Corp. Communications system using a central controller to control at least one network and agent system. 5,546,452, Cl. 379-219.000.
Andrews, Winston A.; Nelson, David; and Novy, Richard W., to Lipomatrix Incorporated. Implantable prosthesis with open cell textured surface and method for forming same. 5,545,220, Cl. 623-11.000.
Andrieu, Xavier, to Alcatel Alsthom Compagnine Generale d'Electricite. System for recognizing and managing electrochemical cells. 5,546,317, Cl. 364-481.000.
Andritz-Patentverwaltungs-Gesellschaft M.B.H.: *See*—
Geiger, Bertram; and Grabher, Rainer, 5,544,757, Cl. 209-518.000.
Anjur, Sowmya S.: *See*—
DiPalma, Joseph; and Anjur, Sowmya S., 5,545,156, Cl. 604-385.100.
Ansley, David A., to Hughes Training, Inc. Rear projection screen for high ambient light environments having a pinhole area substantially equal to luminous area of the light source. 5,546,202, Cl. 359-40.000.
Ansley, David A.; and Sisodia, Ashok, to Hughes Training, Inc. Fiber optic ribbon display. 5,546,492, Cl. 385-116.000.
Anthony's Manufacturing Company, Inc.: *See*—
Richardson, Richard J.; and Crown, Charles E., 5,544,454, Cl. 52-171.100.
Antonio, Franklin P.: *See*—
Sih, Gilbert C.; and Antonio, Franklin P., 5,546,459, Cl. 379-411.000.
Antoon, Mitchell K.: *See*—
Tropsha, Yelena G.; and Antoon, Mitchell K., 5,545,375, Cl. 422-102.000.
Aoki, Katsuji, to Ishikawa Gasket Co., Ltd. Manifold gasket with deformation absorbing mechanism. 5,544,900, Cl. 277-235.00B.
Aoki, Kunio: *See*—
Nakatani, Yoshinori; Kanebako, Toyomitsu; Aoki, Kunio; and Asahina, Hiroshi, 5,546,440, Cl. 378-98.200.
Aoki, Norihiko, to Olympus Optical Co., Ltd. Optical system comprising graded refractive index lens element. 5,546,229, Cl. 359-654.000.
Aoki, Takuya: *See*—
Matsumoto, Seiji; Aoki, Takuya; Shimasaki, Yuichi; Hatcho, Seiji; Oketani, Toshikazu; Miyashita, Yukio; Saito, Akihisa; Komatsuda, Takashi; and Kato, Hiroaki, 5,544,482, Cl. 60-279.000.
Aoki, Yoshiaki: *See*—
Kuroda, Koichi; Aoki, Yoshiaki; Fujikawa, Kiyokazu; Kawamura, Youzon; Hirota, Tatsuya; Kawamura, Tamotsu; Fukuda, Takashi; Kishi, Minoru; and Hirose, Hisanori, 5,544,428, Cl. 34-493.000.
Aoshima, Shinichiro: *See*—
Takahashi, Hironori; and Aoshima, Shinichiro, 5,546,011, Cl. 324-753.000.
Aota, Keiji; Ooga, Masaaki; and Tagusa, Yasunobu, to Sharp Kabushiki Kaisha. Flexible wiring board having a terminal array extending along a whole edge of its substrate and a connection structure of the flexible wiring board with a circuit board. 5,546,279, Cl. 361-749.000.
Aoyama, Toshimi: *See*—
Matsui, Koji; Kimura, Mitsuru; Utsumi, Kazuaki; Ogawa, Eiichi; Komano, Hiroshi; and Aoyama, Toshimi, 5,545,281, Cl. 156-273.700.
Apple Computer, Inc.: *See*—
Bowes, Michael J.; and Yazdy, Farid A., 5,546,547, Cl. 395-294.000.
Devon, Mark D., 5,546,211, Cl. 359-154.000.
Leak, Bruce A., 5,546,105, Cl. 345-155.000.
Wetmore, Russ; and Nguyen, Philip, 5,546,586, Cl. 395-700.000.
Applied Materials, Inc.: *See*—
Chen, Jian; Papanu, James S.; Mak, Steve S. Y.; Ish-Shalom, Carmel; Hsieh, Peter; Lau, Wesley G.; Rhoades, Charles S.; Shieh, Brian; Latchford, Ian S.; Williams, Karen A.; and Yu-Wang, Victoria, 5,545,289, Cl. 156-643.100.
April Dynamics Industries Ltd.: *See*—
Fuks, Efim; Fuks, Vadim; Lunev, Vladimir; and Lunev, Sergey, 5,544,961, Cl. 366-163.200.

VOL 1189 ISS 2 AUG 13 1996 UMI

Arad, Avi; and Kennedy, Melvin, to Toy Biz, Inc. Image projective toy. 5,545,072, Cl. 446-268.000.

Aradigm Corporation: *See*—
Lloyd, Lester J.; Lloyd, Peter M.; Rubsamen, Reid M.; and Schuster, Jeffrey A., 5,544,646, Cl. 128-200.140.

Arai, Minoru: *See*—
Gotanda, Yoshiharu; Arai, Minoru; and Miyake, Izumi, 5,546,121, Cl. 348-64.000.

Arai, Soichiro: *See*—
Satoh, Takamasa; Yasuda, Hiroshi; Kai, Junichi; Oae, Yoshihisa; Nishino, Hisayasu; Sakamoto, Kiichi; Yabara, Hidefumi; Seto, Isamu; Takigawa, Masami; Yamada, Akio; Arai, Soichiro; Abe, Tomohiko; Kiuchi, Takashi; and Miyazawa, Kenichi, 5,546,319, Cl. 364-488.000.

Arai, Yoshifumi, to Toyo Ink Manufacturing Co., Ltd. Apparatus for reproducing color images. 5,546,195, Cl. 358-518.000.

Arai, Yoshiharu: *See*—
Ogawa, Takashi; Yoshimoto, Kazuo; Uchiyama, Kensuke; Ibe, Harushige; Arai, Yoshiharu; Shiraishi, Taketoshi; and Gotoh, Yoshinori, 5,544,995, Cl. 414-219.000.

Arakawa, Haruo: *See*—
Nakano, Toshihiro; Iijima, Hideaki; and Arakawa, Haruo, 5,544,485, Cl. 60-589.000.

Araki, Kazuhiro: *See*—
Asai, Hiroyuki; and Araki, Kazuhiro, 5,546,163, Cl. 355-204.000.

Araki, Shoichi; Nomura, Hiroyoshi; Hayashi, Isao; and Wakami, Noboru, to Matsushita Electric Industrial Co., Ltd. Apparatus for automatically generating and adjusting fuzzy reasoning rules based on reasoning error and method therefor. 5,546,506, Cl. 395-75.000.

Arbogast, Robert E.: *See*—
Kinsinger, Jay H.; Arbogast, Robert E.; Capper, James W.; and Colvin, James M., 5,545,230, Cl. 623-38.000.

Arch Development Corp.: *See*—
Levin, David N., 5,546,472, Cl. 382-131.000.

Archambeault, Gary L.; Murphy, William J.; and Mackert, Edmund M., to Exxon Research and Engineering Company. Metal fixation in oily waste contaminated soil using microwave radiation acting on in-situ produced coupling agent. 5,545,804, Cl. 588-253.000.

Arco Chemical Technology, L.P.: *See*—
Barksby, Nigel; and Seneker, Stephen D., 5,545,706, Cl. 528-49.000.
Le-Khac, Bi, 5,545,601, Cl. 502-156.000.

Arcuri, Kym B.: *See*—
Behrmann, William C.; Arcuri, Kym B.; and Mauldin, Charles H., 5,545,674, Cl. 518-715.000.

Argo-Tech Corporation: *See*—
Wakefield, David L., 5,544,955, Cl. 384-295.000.

Arikawa, Hideyuki: *See*—
Yamaguchi, Shizuka; Kojima, Yoshitaka; Ogawa, Sai; Arikawa, Hideyuki; Haginoya, Mitsuo; Wada, Yukihiko; and Iwao, Kyozo, 5,545,484, Cl. 428-408.000.

Aristech Chemical Corporation: *See*—
Dawson, Bryan T.; and Pugach, Joseph, 5,545,761, Cl. 568-342.000.

Aritome, Seiichi: *See*—
Tanaka, Tomoharu; Momodomi, Masaki; Kato, Hideo; Nakai, Hiroto; Tanaka, Yoshiyuki; Shirota, Riichiro; Aritome, Seiichi; Itoh, Yasuo; Iwata, Yoshihisa; Nakamura, Hiroshi; Odaira, Hideko; Okamoto, Yutaka; Asano, Masamichi; and Tokushige, Kaoru, 5,546,351, Cl. 365-230.060.

Ariyoshi, Akihiro; and Matsumura, Masami, to Mitsubishi Denki Kabushiki Kaisha. Magnetic sensor having a ferromagnetic resistive element, a frame and a bias magnet integrally mounted to the frame. 5,545,986, Cl. 324-207.210.

Armacost, Michael D.; Givens, John H.; Koburger, Charles W., III; and Lasky, Jerome B., to International Business Machines Corporation. Plug strap process utilizing selective nitride and oxide etches. 5,545,581, Cl. 437-52.000.

Armijo, David L.; Baker, Tony R.; Cherington, Floyd E.; Christopher, Delbert S.; Moody, David J.; Mullen, James J.; Vinson, Hugh E.; Warren, John L.; Beilfuss, Robert C.; and Wiker, John H., to Lennox Industries Inc. Combination water heating and space heating apparatus. 5,544,645, Cl. 126-101.000.

Armington, Alton F.: *See*—
Harris, Meckie T.; Bliss, David F.; Armington, Alton F.; Higgins, William M.; and Bryant, George G., 5,544,615, Cl. 117-18.000.

Armock, Charles E.: *See*—
Stephenson, Orlando W., III; Terpstra, Lee M.; and Armock, Charles E., 5,544,595, Cl. 109-74.000.

Armor, John N.: *See*—
Vedage, Gamini A.; and Armor, John N., 5,545,756, Cl. 564-450.000.

Armstrong, William D., to Innovative Quality Products Corporation. Self-powered fastener system. 5,544,800, Cl. 227-009.000.

Armstrong World Industries, Inc.: *See*—
Lewicki, Walter J., Jr.; and Bowers, John H., 5,546,110, Cl. 347-115.000.

Arnwine, Billy C. Convertible student book bag. 5,544,792, Cl. 224-153.000.

Arraycomm, Inc: *See*—
Roy, Richard H., III; Parish, David M.; Barratt, Craig H.; Yang, Chinping Q.; and Orchard, John T., 5,546,090, Cl. 342-174.000.

Arrowsmith, Hubert W.: *See*—
Roy, Bryan A.; Ingram, Joseph D.; Arrowsmith, Hubert W.; and Ramsey, Timothy B., 5,545,796, Cl. 588-4.000.

Arvidsson, Stig A.; and Henningsson, Bo U. E., to Telefonaktiebolaget LM Ericsson. Contact spring. 5,545,843, Cl. 174-35.0GC.

Asahi Glass Company Ltd.: *See*—
Morikawa, Shinsuke; Samejima, Shunichi; Yoshitake, Masaru; Okamoto, Hidekazu; Ohnishi, Keiichi; and Tanuma, Toshihiro, 5,545,777, Cl. 570-176.000.
Okamura, Michio; Morimoto, Takeshi; and Hiratsuka, Kazuya, 5,545,933, Cl. 307-109.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Nishida, Seiji; and Kai, Shoichiro, 5,544,981, Cl. 405-259.600.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Hirakawa, Jun, 5,546,232, Cl. 359-691.000.
Sato, Koichi, 5,546,192, Cl. 358-335.000.
Tsuru, Sumiaki; Yokoo, Akihiko; Sakurai, Takeshi; and Ogawa, Tetsuro, 5,545,240, Cl. 55-479.000.

Asahi, Satoru; Yano, Takahiko; and Doi, Muneharu, to Takeda Chemical Industries, Ltd. Method of producing vitamin B12 using rhizobium cobalaminogenum ferm BP-4429. 5,545,538, Cl. 435-86.000.

Asahina, Hiroshi: *See*—
Nakatani, Yoshinori; Kanebako, Toyomitsu; Aoki, Kunio; and Asahina, Hiroshi, 5,546,440, Cl. 378-98.200.

Asahina, Yasuo: *See*—
Iida, Toru; Ohashi, Michihito; Sakai, Yoshihiro; Kuramoto, Shin-ichi; Chiba, Shunichi; Asahina, Yasuo; and Tomita, Junko, 5,545,381, Cl. 422-186.000.

Asai, Hiroyuki; and Araki, Kazuhiro, to Minolta Co., Ltd. Image forming apparatus having counters for counting frequency of use of parts. 5,546,163, Cl. 355-204.000.

Asai, Ikuo, to Meiki Co., Ltd. Method for molding a disc with a central aperture. 5,545,365, Cl. 264-328.700.

Asai, Koetsu: *See*—
Ozaki, Masahiko; Sonoda, Keisuke; Kikuchi, Hiroshi; Tsukamoto, Osamu; Komatsu, Masao; and Asai, Koetsu, 5,544,491, Cl. 62-53.100.

Asaka, Emi: *See*—
Koshiba, Nobuharu; Takata, Kenichi; Asaka, Emi; and Nakanishi, Makoto, 5,545,468, Cl. 429-218.000.

Asal, Michael D.: *See*—
Robertson, Iain C.; Nye, Jeffrey L.; Asal, Michael D.; Short, Graham B.; Simpson, Richard D.; and Littleton, James G., 5,546,553, Cl. 395-405.000.

Asami, Katuo; and Yozawa, Hitoshi, to Fuji Photo Film Co., Ltd. Film image input system. 5,546,122, Cl. 348-96.000.

Asano, Eiji; and Iwaki, Yoshiko. Ornamental tape or ribbon. 5,545,486, Cl. 428-542.800.

Asano, Erika: *See*—
Ogata, Hiroaki; Kisu, Hiroki; Yamazaki, Michihito; and Asano, Erika, 5,546,167, Cl. 355-219.000.

Asano, Koji: *See*—
Hashitani, Takafumi; Fujita, Shozo; Iijima, Makoto; and Asano, Koji, 5,545,485, Cl. 428-423.100.

Asano, Masamichi: *See*—
Tanaka, Tomoharu; Momodomi, Masaki; Kato, Hideo; Nakai, Hiroto; Tanaka, Yoshiyuki; Shirota, Riichiro; Aritome, Seiichi; Itoh, Yasuo; Iwata, Yoshihisa; Nakamura, Hiroshi; Odaira, Hideko; Okamoto, Yutaka; Asano, Masamichi; and Tokushige, Kaoru, 5,546,351, Cl. 365-230.060.

Asbaghi, Ahmed A., to Mattel, Inc. Propeller launching toy. 5,545,068, Cl. 446-39.000.

Ashmore, Leslie R.: *See*—
Stephens, Randy R.; Banik, Michael S.; Ashmore, Leslie R.; Rowe, C. Daniel; and Selecman, George E., 5,545,142, Cl. 604-167.000.

Ashraf, Salman: *See*—
Pliura, Diana H.; Wiffen, Diane E.; Ashraf, Salman; and Magnin, Anthony A., 5,545,328, Cl. 210-635.000.

Asmo Co., Ltd.: *See*—
Furukoshi, Hiroyuki, 5,545,954, Cl. 318-116.000.

Ason Engineering, Inc.: *See*—
Lu, Fumin, 5,545,371, Cl. 264-555.000.

Aspect Telecommunications: *See*—
Joyce, Robert; Rosler, Jeffrey; Ehrlich, Jason; and Brouillet, Jean-Luc, 5,546,455, Cl. 379-265.000.

AT&T Corp.: *See*—
Chraplyvy, Andrew R.; Forghieri, Fabrizio; and Tkach, Robert W., 5,546,210, Cl. 359-124.000.
Darcie, Janet M., 5,546,485, Cl. 385-28.000.
Fisher, Aaron L., 5,546,068, Cl. 340-146.200.
Foladare, Mark J.; Goldman, Shelley B.; Murray, Nancy; Silverman, David P.; Tsao, Yao-Chung; and Weber, Roy P., 5,546,442, Cl. 377-57.000.
Grosskopf, Joseph R.; Niaz, Hasan S.; Reuss, Carolyn K.; Shih, Jerry C.; and Watson, Paul T., 5,546,574, Cl. 395-600.000.
Koullias, Iconomos A., 5,545,916, Cl. 257-531.000.
Marschner, Jamie J.; and Renquist, Stephanie L., 5,546,304, Cl. 364-419.040.
Seshadri, Nambirajan; and Sundberg, Carl-Erik W., 5,546,420, Cl. 375-200.000.

AT&T Global Information Solutions Company (aka NCR Corporation): *See*—
Thornberg, Gary R., 5,545,440, Cl. 427-345.000.

Athale, Ravindra: *See*—
van der Gracht, Joseph; and Athale, Ravindra, 5,546,198, Cl. 359-1.000.

Atherton, Howard: *See*—

Richards, Edwin A.; Balch, David J.; and Atherton, Howard, 5,544,563, Cl. 89-24.000.

Atkinson, John F.; Hourcade, Dennis; and Krych, Malgorzata, to Washington University. Modified complement system regulators. 5,545,619, Cl. 514-12.000.

Atlantek, Inc.: *See*—
Nardone, Edward A.; Follett, Paul S.; Schofield, Harry D.; Caron, Paul R.; and Rothwell, Chris S., 5,546,115, Cl. 347-214.000.
Nardone, Edward A.; Follett, Paul S.; Schofield, Harry D.; Caron, Paul R.; and Rothwell, Chris S., 5,546,116, Cl. 347-218.000.

Atlantic Richfield Company: *See*—
Jones, Richard R.; and Wilson, William N., 5,544,705, Cl. 166-250.400.
Payne, Richard L.; Huff, Richard E.; and Ogren, Wayne E., 5,544,672, Cl. 137-1.000.

Atlantis Diagnostics International, LLC: *See*—
Daigle, Ronald E., 5,544,655, Cl. 128-661.010.

Atlas Pacific Engineering Company: *See*—
Ross, Edward E.; and Meissner, Konrad E., 5,544,731, Cl. 198-387.000.

Atochem: *See*—
Commandeur, Raymond; Berger, Noelle; and Jay, Pierre, 5,545,355, Cl. 252-570.000.

Atos, Sheldon; and Prosper, Jacob, to Black & Decker Inc. Multi-purpose motor mounting system for a string trimmer. 5,544,417, Cl. 30-276.000.

Atsumi, Kiminori: *See*—
Sakuma, Shuji; Atsumi, Kiminori; Inose, Akira; and Koyama, Hideo, 5,545,791, Cl. 585-639.000.

Attey, Graeme S.; Searls, Jesse H.; and Sargeant, Gary L., to Hydrocool Pty Ltd. Thermoelectric heat pump w/hot & cold liquid heat exchange circuits. 5,544,487, Cl. 62-3.700.

Atwood, Gregory E.: *See*—
Tedrow, Kerry D.; Keeney, Stephen N.; Fazio, Albert; Atwood, Gregory E.; Javanifard, Johnny; and Wojciechowski, Kenneth, 5,546,042, Cl. 327-538.000.

Au, Fu L.: *See*—
Ko, Ray-Jane; Au, Fu L.; and Chiang, Joseph P., 5,546,347, Cl. 365-221.000.

Auclair, Jean-Yves; and Bonnet, Jean-Marc, to Lucent Technologies Inc. Transmission system for transmitting data by a link comprising intermediate equipments and an intermediate equipment for such a system. 5,546,425, Cl. 375-220.000.

Augustine Medical, Inc.: *See*—
Augustine, Scott D., 5,545,194, Cl. 607-104.000.

Augustine, Scott D., to Augustine Medical, Inc. Convertible thermal blanket. 5,545,194, Cl. 607-104.000.

Aulet, Nancy R.; Bogdan, David C.; Hussain, Muhammed I.; Hutt, George W.; Pearl, Donald L.; and Pribula, David T., to International Business Machines Corporation. Automated system, and corresponding method, for testing electro-optic modules. 5,546,325, Cl. 364-525.000.

Ausich, Rodney L.; Brinkhaus, Friedhelm L.; Mukharji, Indrani; Proffitt, John; Yarger, James; and Yen, Huei-Che B., to Amoco Corporation. Phytoene biosynthesis in genetically engineered hosts. 5,545,816, Cl. 800-205.000.

Austel, Vernon; Chatterjee, Avijit; and Inselberg, Alfred, to International Business Machines Corporation. System and method for visually querying a data set exhibited in a parallel coordinate system. 5,546,516, Cl. 395-140.000.

Austin, Curtiss M.; Kelly, Thomas J.; and Huang, Shyh-Chin, to General Electric Company. Titanium aluminide alloy with improved temperature capability. 5,545,265, Cl. 148-421.000.

Austin, John S.; Novof, Ilya I.; Strayer, Donald E.; and Wyatt, Stephen D., to International Business Machines Corporation. Phase locked loop circuit with phase/frequency detector which eliminates dead zones. 5,546,052, Cl. 331-1.00A.

Austvold, Shawn M.; Bigus, Joseph P.; Henckel, Jonathan D.; and Hospers, Paul A., to International Business Machines Corporation. Program product for facilitating use of a neural network. 5,546,505, Cl. 395-26.000.

Autodie International: *See*—
Lane, Jerry A., 5,544,985, Cl. 408-56.000.

Automotive Systems Laboratory, Inc.: *See*—
White, Craig W., 5,544,716, Cl. 180-274.000.

Avionics Specialties, Inc.: *See*—
Baltins, Guntis U.; Boyle, Russell W.; Mason, Denis G.; Moore, Howard M.; Owen, A. DeBow; and Sharp, Joseph A., 5,544,526, Cl. 73-180.000.

AWNEX, Incorporated: *See*—
Burke, Ralph C., 5,545,488, Cl. 428-586.000.

Ayer, Atul D.: *See*—
Kaczynski, Anthony L.; Ayer, Atul D.; and Wong, Patrick S., 5,545,413, Cl. 424-473.000.

Ayers, Mark R.: *See*—
Klomp, Charles B.; Ayers, Mark R.; and Canterbury, Daniel J., 5,546,246, Cl. 360-72.200.

Ayral-Kaloustian, Semiramis; Schow, Steven R.; Du, Mila T.; and Gibbons, James J., Jr, to American Cyanamid Company. Urethanes and ureas that induce cytokine production. 5,545,662, Cl. 514-478.000.

Azibert, Henri: *See*—
Di Pietro, Larry; and Azibert, Henri, 5,544,897, Cl. 277-81.00R.

Azuma, Takahiro; Tokuda, Hiromichi; and Kaneko, Toshimi, to Murata Manufacturing Co., Ltd. Feedthrough LC filter with a deformation preventing spring. 5,546,058, Cl. 333-183.000.

Azusawa, Noboru: *See*—
Kubo, Kenji; Dhaouadi, Rached; Tobise, Masahiro; and Azusawa, Noboru, 5,545,957, Cl. 318-432.000.

B.F. Goodrich Company, The: *See*—
Giamati, Michael J.; Ray, Robert W., Jr.; and Sluss, Terry L., 5,544,845, Cl. 244-134.00E.

Baba, Toshiro: *See*—
Ogata, Yasuji; and Baba, Toshiro, 5,546,236, Cl. 359-794.000.

Baba, Yasushi, to Juki Corporation. Safety device for an overlock sewing machine. 5,544,601, Cl. 112-261.000.

Babjak, Juraj; and Ettel, Victor A., to Inco Limited. Process for producing nickel hydroxide from elemental nickel. 5,545,392, Cl. 423-592.000.

Babraham Institute, The: *See*—
Surani, Azim M.; Neuberger, Michael S.; and Bruggemann, Marianne, 5,545,807, Cl. 800-2.000.

Bach, Stanley M., Jr.: *See*—
Schulte, Theodore J.; Dahl, Roger W.; Bach, Stanley M., Jr.; Shapland, J. Edward; and Lang, Douglas J., 5,545,205, Cl. 607-123.000.

Bacher, Helmut, to Litton Industries, Inc. Coaxial transmissioin line input transformer having externally variable eccentricity and position. 5,545,949, Cl. 315-039.000.

Bacon, Dennis R.: *See*—
Wahl, Errol H.; Bacon, Dennis R.; Baker, Ellen S.; Bodet, Jean-Francois; Burns, Michael E.; Demeyere, Hugo J. M.; Hensley, Charles A.; Mermelstein, Robert; Severns, John C.; Shaw, John H., Jr.; Siklosi, Michael P.; Vogel, Alice M.; and Watson, Jeffrey W., 5,545,340, Cl. 510-517.000.

Bacs, Aron, Jr.; Davis, Ward H.; and McCullough, Douglas A. Moving imagery projection system. 5,546,139, Cl. 348-754.000.

Bacus, James V.: *See*—
Bacus, James W.; and Bacus, James V., 5,546,323, Cl. 364-497.000.

Bacus, James W.; and Bacus, James V., to Cell Analysis Systems, Inc. Methods and apparatus for measuring tissue section thickness. 5,546,323, Cl. 364-497.000.

Bae, Young C.; Soane, David S.; and Crocker, Charles, to Soane Technologies, Inc. Rapid prototype three dimensional stereolithography. 5,545,367, Cl. 264-401.000.

Bai, Monty W.; Kerns, Thomas M.; and Brannon, Edward L., to Motorola, Inc. Vacuum battery indicator. 5,545,493, Cl. 429-90.000.

Baik, Sei-hyun: *See*—
Park, Goo-man; Baik, Sei-hyun; and Han, Taek-soo, 5,546,244, Cl. 360-53.000.

Bailey, Elena: *See*—
Hallsten, Jeffrey A.; and Bailey, Elena, 5,545,358, Cl. 261-123.000.

Baker, Ellen S.; Bodet, Jean-Francois; Demeyere, Hugo J. M.; Hartman, Frederick A.; Hubesch, Bruno A.; Mermelstein, Robert; Taylor, Lucille F.; and Wahl, Errol H., to Procter & Gamble Company, The. Concentrated fabric softener compositions containing biodegradable fabric softeners. 5,545,350, Cl. 510-517.000.

Baker, Ellen S.: *See*—
Wahl, Errol H.; Bacon, Dennis R.; Baker, Ellen S.; Bodet, Jean-Francois; Burns, Michael E.; Demeyere, Hugo J. M.; Hensley, Charles A.; Mermelstein, Robert; Severns, John C.; Shaw, John H., Jr.; Siklosi, Michael P.; Vogel, Alice M.; and Watson, Jeffrey W., 5,545,340, Cl. 510-517.000.

Baker Hughes Incorporated: *See*—
Riggs, William F.; and Wheeler, Thomas A., 5,545,351, Cl. 252-321.000.
Smith, Redd H., 5,544,550, Cl. 76-108.200.
Workman, Steven G., 5,545,324, Cl. 210-525.000.

Baker, Jay D.: *See*—
Kneisel, Lawrence L.; Baker, Jay D.; and Goenka, Lakhi N., 5,545,073, Cl. 451-39.000.

Baker, Ralph T.; Beatty, Richard P.; Farnham, William B.; and Wallace, Robert L., Jr., to Du Pont de Nemours, E. I., and Company. Process for the manufacture of selected halogenated hydrocarbons containing fluorine and hydrogen and compositions provided therein. 5,545,769, Cl. 570-134.000.

Baker, Robert K.; Kieczykowski, Gerard R.; Ok, Hyun O.; Parsons, William H.; and Rupprecht, Kathleen M., to Merck & Co., Inc. Aryl and heteroaryl macrolides having immunosuppressive activity. 5,545,734, Cl. 540-456.000.

Baker, Tony R.: *See*—
Armijo, David L.; Baker, Tony R.; Cherington, Floyd E.; Christopher, Delbert S.; Moody, David J.; Mullen, James J.; Vinson, Hugh E.; Warren, John L.; Beilfuss, Robert C.; and Wiker, John H., 5,544,645, Cl. 126-101.000.

Bako, László: *See*—
Dudits, Dénes; Paulovics, Katalin; Kalman, Katalin; Györgyey, János; Nagy, Ferenc; Bako, László; Horvath, Gábor; Eckes, Peter; and Donn, Günter, 5,545,819, Cl. 800-205.000.

Bal Seal Engineering Company, Inc.: *See*—
Balsells, Peter J., 5,545,842, Cl. 174-35.0GC.

Balamore, Dilip: *See*—
Albert, Mitchell S.; Balamore, Dilip; Cates, Gordon D., Jr.; Driehuys, Bastiaan; Happer, William; Saam, Brian; and Wishnia, Arnold, 5,545,396, Cl. 424-93.000.

Balbo, Patrick; Grelat, Philippe; Malassenet, Guy; and Mandereau, Fabienne, to Giat Industries. Assembly for the removable fastening of the cradle to the breech of a weapon. 5,544,564, Cl. 89-37.010.

Balch, David J.: *See*—
Richards, Edwin A.; Balch, David J.; and Atherton, Howard, 5,544,563, Cl. 89-24.000.

Balderi, Nicola: *See*—

VOL 1189 ISS 2 AG 19 96 UMI

Campbell, James K.; Pfeiffer, Ned C.; Balderi, Nicola; and Schaefer, Doug G., 5,544,941, Cl. 297-423.450.

Ball, Gary A.: *See*—
Meltz, Gerald; and Ball, Gary A., 5,546,481, Cl. 385-11.000.

Balsells, Peter J., to Bal Seal Engineering Company, Inc. Radially mounted spring to connect, lock and unlock, and for snap-on fastening, and for mechanical, electromagnetic shielding, electrical conductivity, and thermal dissipation with environmental sealing. 5,545,842, Cl. 174-35.0GC.

Baltensperger, Werner; and Lippuner, Christian, to Buehler AG. Mill for the production of milled grain products and grain milling system. 5,544,823, Cl. 241-79.000.

Balthasart, Dominique: *See*—
Pennetreau, Pascal; and Balthasart, Dominique, 5,545,772, Cl. 570-164.000.

Balthis, Vernon M.; Merten, Ronald A.; Rumery, Robert J.; and Vollmer, Robert L., to Lexmark International, Inc. Electrophotographic photoconductor having improved cycling stability and oil resistance. 5,545,499, Cl. 430-59.000.

Baltins, Guntis U.; Boyle, Russell W.; Mason, Denis O.; Moore, Howard M.; Owen, A. DeBow; and Sharp, Joseph A., to Avionics Specialties, Inc. Combined aircraft angle of attack and dynamic/static pressure sensor assembly. 5,544,526, Cl. 73-180.000.

Banerjee, Sanjay K.: *See*—
Hu, Chung-You; Richart, Robert B.; Garg, Shyam G.; and Banerjee, Sanjay K., 5,546,340, Cl. 365-185.300.

Banik, Michael S.: *See*—
Stephens, Randy R.; Banik, Michael S.; Ashmore, Leslie R.; Rowe, C. Daniel; and Selecman, George E., 5,545,142, Cl. 604-167.000.

Banike, Ronald A., to A.B. Dick Company. Delivery interrupt mechanism for a printing machine. 5,544,583, Cl. 101-240.000.

Banjanin, Zoran B., to Siemens Medical Systems, Inc. Ultrasonic doppler imager having a reduced hardware adaptive tissue rejection filter arrangement. 5,544,659, Cl. 128-661.090.

Banks, Thomas B.: *See*—
Buckley, Stephen P.; and Banks, Thomas B., 5,546,316, Cl. 364-479.030.

Barany, George; Albericio, Fernando; Solé, Nuria A.; Chang, Jane; and Zalipsky, Samuel, to University of Minnesota. Polyethylene glycol derivatives for solid-phase applications. 5,545,698, Cl. 525-420.000.

Barbara, Thomas M., to Varian Associates, Inc. Reduction of ambient susceptibility perturbations of an NMR spectrometer. 5,545,994, Cl. 324-315.000.

Barber, Ivor, to LSI Logic Corporation. Semiconductor device assembly with minimized bond finger connections. 5,545,923, Cl. 257-691.000.

Barchas, Jack D.: *See*—
Van Gelder, Russell N.; Von Zastrow, Mark E.; Barchas, Jack D.; and Eberwine, James H., 5,545,522, Cl. 435-6.000.

Barclay, Marlene: *See*—
Gibson, Sandra J.; and Barclay, Marlene, 5,544,891, Cl. 273-244.000.

Baret, Frédéric; and Faurrey, François, to Cesa- Compagnie Europeenne de Sieges pour Automobiles. Bucket seat and its application to a land-based motor vehicle. 5,544,939, Cl. 297-340.000.

Bargelé, Norbert; Brandt, Manfred; and Kunig, Helmut, to Nordischer Maschinenbau Rud. Baader GmbH & Co., KG. Apparatus for processing slaughtered poultry. 5,545,083, Cl. 452-136.000.

Barkan, Edward; and Bridgelall, Raj, to Symbol Technologies Inc. Digitizer circuit for a bar code reader. 5,545,888, Cl. 235-462.000.

Barkan, Edward: *See*—
Swartz, Jerome; Shepard, Howard M.; Krichever, Mark J.; Metlitsky, Boris; and Barkan, Edward, 5,545,889, Cl. 235-472.000.

Barksby, Nigel; and Seneker, Stephen D., to Arco Chemical Technology, L.P. PTMEG polyurethane elastomers employing monofunctional polyethers. 5,545,706, Cl. 528-49.000.

Barnes, Michael W.; Deppert, Thomas M.; and Taylor, Robert D., to Morton International, Inc. Gas generant compositions using dicyanamide salts as fuel. 5,544,687, Cl. 149-83.000.

Barratt, Craig H.: *See*—
Roy, Richard H., III; Parish, David M.; Barratt, Craig H.; Yang, Chinping Q.; and Orchard, John T., 5,546,090, Cl. 342-174.000.

Barrera, Roberto Gonzales: *See*—
Rainey, Ronald S.; Cambbell, Ian P.; Fallas, Pablo M. A.; and Solano, Edgar N., 5,545,421, Cl. 426-481.000.

Barrett, John P.: *See*—
Miller, David F.; Farris, Robert A.; and Barrett, John P., 5,545,163, Cl. 606-61.000.

Barrett, Linda; Long, Lynn D.; Menditto, Louis P.; Stagg, Arthur J.; and Ward, Raymond E., to International Business Machines Corporation. Multi-path channel (MPC) interface with user transparent, unbalanced, dynamically alterable computer input/output channels. 5,546,549, Cl. 395-309.000.

Barrett, Rex, to JWI Ltd. Composite forming fabric woven with an Nx2N machine side layer. 5,544,678, Cl. 139-383.00A.

Barrows, Irvin R. Learning board in combination with solution lists. 5,545,042, Cl. 434-207.000.

Bartholomew, Donald D., to Proprietary Technology, Inc. Apparatus for attaching hoses and tubes to a fitting. 5,544,923, Cl. 285-242.000.

Bartke, Ilse; Kostka, Gunter; Nanjoks, Kurt; and Ullrich, Axel, to Boehringer Mannheim GmbH. Monoclonal antibodies against c-kit and method of detecting a malignancy using c-kit specific antibodies. 5,545,533, Cl. 435-723.000.

Bartsch, Friedrich: *See*—
Sergel, Horst; and Bartsch, Friedrich, 5,546,330, Cl. 364-562.000.

BASF Aktiengesellschaft: *See*—
Hammer, Hans; and Reutemann, Werner, 5,545,757, Cl. 564-475.000.
Kirstgen, Reinhard; Oberdorf, Klaus; Sauter, Hubert; Bayer, Herbert; Grammenos, Wassilios; Rang, Harald; Harries, Volker; Lorenz, Gisela; and Ammermann, Eberhard, 5,545,664, Cl. 514-521.000.
Sens, Rüdiger; and Etzbach, Karl-Heinz, 5,545,235, Cl. 8-471.000.

BASF Corporation: *See*—
Hall, Jon R.; Carpenter, Clint W.; and Scott, Stuart K., 5,545,677, Cl. 523-212.000.
Hoyt, Matthew B.; Coons, Andrew M., III; and Dickson, David N., 5,545,363, Cl. 264-78.000.

Basil E. Potter & Associates, Inc.: *See*—
Potter, Basil E.; and Potter, Marc A., 5,546,575, Cl. 395-600.000.

Basile, Philip C.; Thompson, James E., Jr.; Kline, David; and Toner, Gary E., to Martin Marietta Corp. Self compensating spread-spectrum hybrid. 5,546,421, Cl. 375-200.000.

Basu, Santanu, to Northrop Grumman Corporation. Cooling system and mounting for slab lasers and other optical devices. 5,546,416, Cl. 372-34.000.

Batt, Carl; Wiedmann, Martin; and Brandon, Richard, to Cornell Research Foundation, Inc. Methods of detecting bovine herpesvirus 1 (BHV-1) in semen by nucleic acid amplification. 5,545,523, Cl. 435-6.000.

Battelle Memorial Institute: *See*—
Bray, Lane A., 5,545,794, Cl. 588-1.000.
Heath, William O.; Gauglitz, Phillip A.; Pillay, Gautam; Bergsman, Theresa M.; Eschbach, Eugene A.; Goheen, Steven C.; Richardson, Richard L.; Roberts, Janet S.; and Schalla, Ronald, 5,545,803, Cl. 588-253.000.
Smith, Richard D.; Wahl, Jon H.; and Hofstadler, Steven A., 5,545,304, Cl. 204-603.000.

Baudier, Phillipe R.: *See*—
Deboeck, Arthur; Maes, Paul; and Baudier, Phillipe R., 5,545,628, Cl. 514-49.000.

Baudouin, Michel; and Tassara, Jean-Pierre, to Enichem Elastomeres France S.A. Process for dehydrochlorinating 3,4-dichloro-1-butene to yield chloroprene. 5,545,781, Cl. 570-229.000.

Bauer, Bradley W.: *See*—
Wilkes, Eugene; Mendez, Alejandro; and Bauer, Bradley W., 5,545,860, Cl. 181-255.000.

Bauer, Günter; and Breu, Rudolf, to C&E Fein, GmbH & Co. Method for saving ductile from material having a concrete lining. 5,544,643, Cl. 125-12.000.

Bauer, Karl-Heinz; Eckert, Gerold; Maisch, Edgar; and Rüttiger, Anton, to Preh-Werke GmbH & Co. KG. Push switch. 5,545,864, Cl. 200-283.000.

Bauer, Tibor L.: *See*—
Perry, Charles H.; Bauer, Tibor L.; Long, David C.; Pickering, Bruce C.; and Vittori, Pierre C., 5,546,012, Cl. 324-754.000.

Bäuerle, Peter: *See*—
Senger, Karl-Heinz; Keuper, Gerhard; and Bäuerle, Peter, 5,545,106, Cl. 477-43.000.

Baum, Engelbert: *See*—
Haas, Franz; Haas, Johann; and Baum, Engelbert, 5,544,570, Cl. 99-443.00C.

Baum, Kevin L.: *See*—
Chiasson, Gregory M.; Rasky, Phillip D.; and Baum, Kevin L., 5,546,429, Cl. 375-341.000.

Baumann, Steven E.; Christman, Richard E., deceased (by Steven E. Baumann, executor), to Vexilar, Inc. Depth finder transducer system. 5,546,362, Cl. 367-173.000.

Baumann, Steven E., executor: *See*—
Baumann, Steven E.; Christman, Richard E., deceased, 5,546,362, Cl. 367-173.000.

Baumgartl, Rudi, to Siemens Aktiengesellschaft. Analog-to-digital converter circuit having high dynamics. 5,546,081, Cl. 341-139.000.

Baur, Julie A.: *See*—
Hall, Bonnie J.; Baur, Julie A.; and Deckner, George E., 5,545,407, Cl. 424-401.000.

Baurand, Gilles; and Stentz, Antoine, to Schneider Electric SA. Electronic protection device. 5,546,262, Cl. 361-31.000.

Baxter, Dennis E.; and Richiuso, Leonard, to Eastman Kodak Company. Lens deployment mechanism for compact camera. 5,546,147, Cl. 354-187.000.

Baxter International, Inc.: *See*—
Neuenfeldt, Steven; Brauker, James; and Clarke, Robert, 5,545,223, Cl. 623-11.000.

Baxter-Lowe, Lee Ann, to Blood Center Research Foundation, Inc., The. Method for HLA Typing. 5,545,526, Cl. 435-6.000.

Bayer Aktiengesellschaft: *See*—
Berg, Klaus; Wulff, Claus; Malamet, Georg; Eitel, Alfred; Meurer, Kurt P.; van Osselaer, Tony; and Hinz, Jürgen, 5,545,764, Cl. 568-724.000.
Haese, Wilfried; Bruder, Friedrich; Pakull, Ralf; Kirsch, Jürgen; and Löwer, Hartmut, 5,545,710, Cl. 528-201.000.
Heidingsfeld, Herbert; Brüser, Wolfgang; Müller, Friedemann; and Meister, Willi, 5,545,707, Cl. 528-60.000.
Heine, Hans-Georg; Schobe-Loop, Rudolf; Glaser, Thomas; De Vry, Jean M. V.; Dompert, Wolfgang; and Sommermeyer, Henning, 5,545,643, Cl. 514-322.000.
Köhler, Burkhard; Pudleiner, Heinz; and Horn, Klaus, 5,545,692, Cl. 525-146.000.
Klansener, Alexander; Landscheidt, Heinz; and Blank, Heinz-Ulrich, 5,545,754, Cl. 564-418.000.

Petersen, Uwe; Schenke, Thomas; Böhm, Stefan; Grosser, Rolf; Bremm, Klaus D.; Endermann, Rainer; and Metzger, Karl G., 5,545,642, Cl. 514-312.000.
Pies, Michael; Käsbauer, Josef; and Fiege, Helmut, 5,545,779, Cl. 570-204.000.
Straub, Alexander; Goldmann, Siegfried; Stoltefuss, Jürgen; Bechem, Martin; Dembowsky, Klaus; Gross, Rainer; Hebisch, Siegbert; Hütter, Joachim; and Rounding, Howard-Paul, 5,545,646, Cl. 514-337.000.
Wild, Hanno; Roeben, Wolfgang; Paessens, Arnold; and Petersen-von Gehr, Jörg, 5,545,736, Cl. 540-522.000.

Bayer Corporation: *See*—
Hicks, Sharon D.; Wicks, Douglas A.; and Grace, Scott A., 5,545,705, Cl. 528-44.000.

Bayer, Herbert: *See*—
Kirstgen, Reinhard; Oberdorf, Klaus; Sauter, Hubert; Bayer, Herbert; Grammenos, Wassilios; Rang, Harald; Harries, Volker; Lorenz, Gisela; and Ammermann, Eberhard, 5,545,664, Cl. 514-521.000.

Bayer, Jürgen: *See*—
Murkett, Stephen; and Bayer, Jürgen, 5,544,934, Cl. 296-215.000.

Bayerische Motoren Werke AG: *See*—
Ellmann, Manfred; and Hein, Hans-Rudolf, 5,546,070, Cl. 340-442.000.

Baylor College of Medicine: *See*—
Darlington, Gretchen J.; Wilson, Deborah R.; and Wilde, Margaret, 5,545,563, Cl. 435-320.100.

Bazes, Mel, to Intel Corporation. Programmable digital filter with substantially equal bandwidth increments. 5,546,431, Cl. 375-350.000.

Beagle, Charles A.; Adams, Richard P.; and Wixon, Harold E., to Colgate-Palmolive Co. Antistatic compositions and antistatic detergent compositions and articles. 5,545,342, Cl. 510-299.000.

Beakes, John M.; and Zicht, E. Wayne, to Globe Products Inc. Method for manufacturing armatures. 5,544,409, Cl. 29-598.000.

Beam Company Limited: *See*—
Wada, Koichi, 5,546,096, Cl. 343-771.000.

Bean, Robert G.: *See*—
Davis, Scott H.; Goleman, William L.; Thiel, David W.; Bean, Robert G.; and Zahrobsky, James A., 5,546,536, Cl. 395-182.180.

Beard, Michael H. Portable speaker and amplifier unit. 5,546,468, Cl. 381-86.000.

Bears, James A. Air bag toy. 5,544,903, Cl. 280-18.000.

Beatty, Richard P.: *See*—
Baker, Ralph T.; Beatty, Richard P.; Farnham, William B.; and Wallace, Robert L., Jr., 5,545,769, Cl. 570-134.000.

Beaulieu, Pierre L.; and Guse, Ingrid, to Bio-Mega/Boehringer Ingelehein Research Inc. Protease inhibiting succinic acid derivatives. 5,545,640, Cl. 514-311.000.

Bechem, Martin: *See*—
Straub, Alexander; Goldmann, Siegfried; Stoltefuss, Jürgen; Bechem, Martin; Dembowsky, Klaus; Gross, Rainer; Hebisch, Siegbert; Hütter, Joachim; and Rounding, Howard-Paul, 5,545,646, Cl. 514-337.000.

Bechet, Jean-Marie: *See*—
Collandre, Helene; Montagnier, Luc; Agut, Henri; and Bechet, Jean-Marie, 5,545,520, Cl. 435-5.000.

Bechmann, Peter. Method and a device of stripping foil cuttings. 5,545,282, Cl. 156-344.000.

Beck, Jochen; and Hormann, Werner, to Brueninghaus Hydromatik GmbH. Hydrostatic machine with leakage oil discharge. 5,545,013, Cl. 417-201.000.

Beck, Norman G.; Anderson, Gary J.; and Tucker, Richard S., to Copeland Corporation. Scroll compressor drive having a brake. 5,545,019, Cl. 418-55.100.

Beck, Wilhelm: *See*—
Raehse, Wilfried; Beck, Wilhelm; Jung, Dieter; and Sonnemann, Dieter, 5,544,427, Cl. 34-372.000.

Beckers, Marc: *See*—
Paumen, Jacky M. G. N.; Hemming, Rowland; Hartmann, Kai; and Beckers, Marc, 5,544,755, Cl. 206-705.000.

Beckman Instruments, Inc.: *See*—
Pentoney, Stephen L., Jr.; Lew, Clarence Y.; and Rakestraw, David, 5,545,901, Cl. 250-458.100.

Becton Dickinson and Company: *See*—
Clinton, Mary B.; and Wilson, John B., 5,545,145, Cl. 604-192.000.
Onwunaka, Theo O.; and Karakelle, Mutlu, 5,545,708, Cl. 528-76.000.
Tropsha, Yelena G.; and Antoon, Mitchell K., 5,545,375, Cl. 422-102.000.

Beebe, Deborah V., to Horowitz, Sidney. Percussive dental extractor. 5,545,038, Cl. 433-120.000.

Beebe, Kenneth R.: *See*—
Wright, Larry G.; LaPack, Mark A.; Blaser, Wayne W.; Beebe, Kenneth R.; and Leugers, Mary A., 5,545,895, Cl. 250-282.000.

Begin, Pierre; Choquette, Denis; and Tremblay, Rejean, to Alcan International Limited. Process and apparatus for making solid samples of molten material for analysis or the like. 5,544,693, Cl. 164-4.100.

Behr, Stephen R.; Seeds, Jeffrey K.; Lamb, Catherine S.; Garleb, Keith A.; and Walton, Joseph E., to Abbott Laboratories. Cholesterol lowering food product. 5,545,414, Cl. 424-484.000.

Behringwerke AG: *See*—
Singh, Sharat; Singh, Rajendra; Meneghini, Frank; and Ullman, Edwin F., 5,545,834, Cl. 544-6.000.

Behrmann, William C.; Arcuri, Kym B.; and Mauldin, Charles H., to Exxon Research and Engineering Company. Surface supported cobalt catalysts, process utilizing these catalysts for the preparation of hydrocarbons from synthesis gas and process for the preparation of said catalysts. 5,545,674, Cl. 518-715.000.

Beiersdorf Aktiengesellschaft: *See*—
Harder, Christian; Höwe, Bernd; and Kuhlmann, Karl, 5,545,457, Cl. 428-77.000.

Beilfuss, Robert C.: *See*—
Armijo, David L.; Baker, Tony R.; Cherington, Floyd E.; Christopher, Delbert S.; Moody, David J.; Mullen, James J.; Vinson, Hugh E.; Warren, John L.; Beilfuss, Robert C.; and Wiker, John H., 5,544,645, Cl. 126-101.000.

Bell Atlantic Network Services, Inc.: *See*—
Suthard, William L.; and Farris, Robert D., 5,546,450, Cl. 379-207.000.

Bell, Cecil R.; Moyer, Charles R.; Poole, Gregory S.; and Silvers, Kenneth B., to Monarch Knitting Machinery Corporation. Apparatus for handling flexible objects. 5,544,603, Cl. 112-475.120.

Bell Communications Research, Inc.: *See*—
Cosares, Steven T.; Saniee, Iraj; and Wasem, Ondria J., 5,546,542, Cl. 395-200.210.

Bell, D. Michael; Gonzales, Mark A.; and Meredith, Susan S., to Intel Corporation. Method and apparatus for maintaining transaction ordering and arbitrating in a bus bridge. 5,546,546, Cl. 395-292.000.

Bell South Corporation: *See*—
Grosskopf, Joseph R.; Niaz, Hasan S.; Reuss, Carolyn K.; Shih, Jerry C.; and Watson, Paul T., 5,546,574, Cl. 395-600.000.

Belloni, Fortunato: *See*—
Manini, Paolo; and Belloni, Fortunato, 5,544,490, Cl. 62-46.100.

BellSouth Corporation: *See*—
Roach, Peter O., Jr.; Comer, Edward I.; Link, Charles M., II; and Laster, Maurice S., 5,546,444, Cl. 379-59.000.

Beloit Technologies, Inc.: *See*—
Didier, James J.; Lindstrand, Bruce L.; and Wight, Ernest W., 5,544,841, Cl. 242-541.100.

Belter, Jerome G., to Dana Corporation. Metal gasket with bolt retention feature. 5,544,902, Cl. 277-236.000.

Bender, Blake: *See*—
Rhodes, Ken; Coelho, Rohan; Frank, Davis; and Bender, Blake, 5,546,103, Cl. 345-119.000.

Benderev, Theodore V.; Naves, Neil H.; and Legome, Mark J. Method of advancing a suture through tissue. 5,544,664, Cl. 128-898.000.

Benedict, Olusegun O., to Valeo Thermique Habitacle. Efficieny cooling fluid circuit. 5,544,498, Cl. 62-513.000.

Benes, Kevin C.; Krehbiel, Fred L.; and Mackowiak, Russell L., to Molex Incorporated. Electrical connector with hinged cover. 5,545,054, Cl. 439-467.000.

Bening, Robert C.; and St. Clair, David J., to Shell Oil Company. Protected functional initiated polymers capped with low surface energy fluorocarbons. 5,545,691, Cl. 525-102.000.

Benn, Freddy W.; Dattilo, Marion; and Cornell, William L. Flotation of lead sulfides using rapeseed oil. 5,544,760, Cl. 209-166.000.

Bennett, Larry G.: *See*—
Mattingly, Phillip G.; and Bennett, Larry G., 5,545,739, Cl. 546-108.000.

Benson, Donald O., Jr. Collapsible and adjustable plant support and protector. 5,544,446, Cl. 47-45.000.

Benzaria, Jacques; Dawans, Francois; Durif-Varambon, Bruno; and Gaillard, Jean-Bernard, to Institut Francais du Petrole. Method for recovery of alkali metal or alkaline-earth metal terephthalate and of alkylene glycol from polyethylene terephthalates. 5,545,746, Cl. 560-78.000.

Benzon Pharma A/S: *See*—
Molin, Søren; Gerdes, Kenn A.; Rasmussen, Poul B.; and Andersson, Poul K., 5,545,541, Cl. 435-172.300.

Berg, Klaus; Wulff, Claus; Malamet, Georg; Eitel, Alfred; Meurer, Kurt P.; van Osselaer, Tony; and Hinz, Jürgen, to Bayer Aktiengesellschaft. Process for the continuous production of high purity bisphenol A. 5,545,764, Cl. 568-724.000.

Berg, Robin; Mohns, Lawrence; and Orwald, Richard, to Xerxes Corporation; and Sun Refining and Marketing Company. System for underground storage and delivery of liquid product, and recovery of leakage. 5,544,974, Cl. 405-53.000.

Bergan, Matthew A.: *See*—
Keogh, James R.; Hobot, Christopher M.; Eaton, John W.; Jevnc, Allan H.; and Bergan, Matthew A., 5,545,213, Cl. 623-1.000.

Berger, J. Lee. Grooved catheter director apparatus. 5,545,136, Cl. 604-96.000.

Berger, Noelle: *See*—
Commandeur, Raymond; Berger, Noelle; and Jay, Pierre, 5,545,355, Cl. 252-570.000.

Bergeron, Raymond J., to University of Florida Research Foundation, Inc. Anti-neoplastic, anti-viral and ribonucleotide reductase activity affecting pharmaceutical compositions and methods of treatment. 5,545,649, Cl. 514-374.000.

Bergeron, Raymond J., to University of Florida Research Foiundation, Inc. Anti-neoplastic, anti-viral and ribonucleotide reductase activity affecting pharmaceutical compositions and methods of treatment. 5,545,650, Cl. 514-374.000.

Berghager, Hans A. P.: *See*—
Larsson, Leif M.; and Berghager, Hans A. P., 5,546,387, Cl. 370-60.000.

Bergin, Blaine R. Prefinished corner bead. 5,544,463, Cl. 52-254.000.

Bergmann, Andrew D.: *See*—
Johnson, Edward M.; and Bergmann, Andrew D., 5,545,551, Cl. 435-252.300.

Bergmann, Oswald R.; Chen, Carl; and Jacobson, Howard W., to Du Pont de Nemours, E. I., and Company. Polytype electroconductive powders. 5,545,250, Cl. 75-252.000.

Bergsman, Theresa M.: *See*—
Heath, William O.; Gauglitz, Phillip A.; Pillay, Gautam; Bergsman, Theresa M.; Eschbach, Eugene A.; Goheen, Steven C.; Richardson, Richard L.; Roberts, Janet S.; and Schalla, Ronald, 5,545,803, Cl. 588-253.000.

Bergström, Inga-Maria; Bergström, Mats-Johan M.; and Nilsson, Kenth, to Pacesetter AB. Medical field detector and telemetry unit for implants. 5,545,187, Cl. 607-32.000.

Bergström, Mats-Johan M.: *See*—
Bergström, Inga-Maria; Bergström, Mats-Johan M.; and Nilsson, Kenth, 5,545,187, Cl. 607-32.000.

Berman, Eric R.: *See*—
McKinnis, David R. R.; Luebbert, David L.; Berman, Eric R.; Saxton, Thomas W.; and Padwa, Daniel H., 5,546,581, Cl. 395-650.000.

Bernal, Brian A.; Fischette, Robert G.; Johnson, Kirk R.; and Marman, Douglas H., to Sentrol, Inc. Smoke detector system with self-diagnostic capabilities and replaceable smoke intake canopy. 5,546,074, Cl. 340-628.000.

Bernardi, Bryan D.; McIntyre, Dale F.; Dunsmore, Clay A.; and Wolcott, Dana W., to Eastman Kodak Company. Camera on-board voice recognition. 5,546,145, Cl. 354-76.000.

Bernasconi, Raymond: *See*—
Marescaux, Christian; Bernasconi, Raymond; Schmutz, Markus; Frösti, Wolfgang; and Mickel, Stuart J., 5,545,631, Cl. 514-89.000.

Berner, Robert W.: *See*—
Thompson, Raymon F.; Berner, Robert W.; Curtis, Gary L.; Culliton, Stephen P.; and Wright, Blaine G., 5,544,421, Cl. 34-58.000.

Berruti, Massimo: *See*—
Zinnamosca, Francesco; and Berruti, Massimo, 5,545,543, Cl. 435-162.000.

Berry, Richard E., to International Business Machines Corporation. System and method for visually programming iteration. 5,546,519, Cl. 395-155.000.

Bersten, Ian J. Two stage coffee plunger. 5,544,566, Cl. 99-287.000.

Berthe, Bernard, to Elf Atochem S.A. Liquid phase fluorination process and fluorinated organic products resulting therefrom. 5,545,773, Cl. 570-167.000.

Bertrand Faure Automobile "BFA": *See*—
Vu Khac, Tham; Sabin, Michel; and Guerinot, Thierry, 5,544,942, Cl. 297-452.370.

Besnard, Philippe; Tang, Larry; Rugge, Richard L.; Sieleman, Jim; and Dumontier, Franck, to Taylor Made Golf Co., Inc. Iron with improved mass distribution. 5,544,885, Cl. 473-350.000.

Bessho, Mikio: *See*—
Mitani, Taeki; Ichihashi, Motomi; and Bessho, Mikio, 5,544,529, Cl. 73-716.000.

Bessho, Yoshihiro: *See*—
Tomura, Yoshihiro; and Bessho, Yoshihiro, 5,545,589, Cl. 437-183.000.

Bestler, Caitlin B.; and Rabii, Khosro M. Transmission modulator for cable television upstream data transmission. 5,546,119, Cl. 348-10.000.

Beth Israel Hospital: *See*—
Hayes, Wilson C.; Robinovitch, Stephen N.; and McMahon, Thomas A., 5,545,128, Cl. 602-61.000.

Bethurum, Gary C., to ITT Corporation. IC card protective cover. 5,546,278, Cl. 361-737.000.

Betz Laboratories, Inc.: *See*—
Ouyang, Jiangbo; Rodzewich, Edward A.; and Harpel, William L., 5,545,347, Cl. 510-254.000.
Ouyang, Jiangbo; and Melzer, Jeffrey I., 5,545,438, Cl. 427-299.000.

Biasini, Americole R. Wind instrument stand. 5,544,560, Cl. 84-387.00A.

Bicheler, James P.: *See*—
Garland, Thomas A.; Kolich, Robert A.; Paddock, Charles W.; and Bicheler, James P., 5,544,372, Cl. 5-99.100.

Biedermann, Lutz; Shufflebarger, Harry L.; and Harms, Jürgen, to Biedermann Motech GmbH. Anchoring member. 5,545,165, Cl. 606-61.000.

Biedermann Motech GmbH: *See*—
Biedermann, Lutz; Shufflebarger, Harry L.; and Harms, Jürgen, 5,545,165, Cl. 606-61.000.
Fitzlaff, Gerhard, 5,545,233, Cl. 623-43.000.

Biedermann, Rolf; and Telges, Burkhard, to Siemens Aktiengesellschaft. Echo compensation device and 4/2-wire interface having such an echo compensation device. 5,546,460, Cl. 379-411.000.

Bigolin, Giuseppe. Bicycle resilient saddle. 5,544,936, Cl. 297-195.100.

Bigus, Joseph P.: *See*—
Austvold, Shawn M.; Bigus, Joseph P.; Henckel, Jonathan D.; and Hospers, Paul A., 5,546,505, Cl. 395-26.000.

Bilinski, Donald J.; Chin, Gene H.; Cordova, Amado; and Fersht, Samuel N., to Litton Systems, Inc. Gyro sensor coil with low-friction hub interface. 5,545,892, Cl. 250-231.120.

Bio-Logical Solutions USA, Inc.: *See*—
Fulton, A. Carl, 5,545,801, Cl. 588-249.000.

Bio-Mega/Boehringer Ingelehein Research Inc.: *See*—
Beaulieu, Pierre L.; and Guse, Ingrid, 5,545,640, Cl. 514-311.000.

Bio-Rad Laboratories, Inc.: *See*—
Zhu, Ming-De; and Siebert, Christopher J., 5,545,302, Cl. 204-454.000.

Biochemie Gesellschaft m.b.H.: *See*—
Macher, Ingolf, 5,545,654, Cl. 514-392.000.

Biogen Inc.: *See*—
Goelz, Susan E.; Cate, Richard L.; Chow, E. Pingchang; and Pepinsky, R. Blake, 5,545,723, Cl. 424-85.600.

Biro, Larry L.; and Pan, Jengwei. Method for performing integrated section-level and full-chip timing verification for custom microprocessor designs. 5,546,320, Cl. 364-488.000.

Bishop, Robert P.; and Hainey, Paul L., to Texas Instruments Incorporated. Method for making a pressure transducer. 5,544,399, Cl. 29-25.410.

Bissbort, Siegbert H.; and Davis, Henry J. Composition and method for the treatment of chronic fatigue syndrome. 5,545,670, Cl. 514-562.000.

Bissell Inc.: *See*—
Jailor, John; Frederick, William H.; Umbach, Steven R.; Graham, Scott R.; Roberts, Kenneth L.; and Metzger, Eric R., 5,544,385, Cl. 15-350.000.

Bisson, Bernard J.: *See*—
Sundberg, Jack G.; Bisson, Bernard J.; Desai, Mihir C.; and Books, Martin T., 5,545,014, Cl. 417-204.000.

Bittel, Douglas C.: *See*—
Gengenbach, Burle G.; Somers, David A.; Bittel, Douglas C.; Shaver, Jonathan M.; Sellner, Juantia M., deceased, 5,545,545, Cl. 435-172.300.

Bizuneh, Daniel T.; Obregón, Carlos; Wells, Michael A.; and Neely, Eric D., to Motorola, Inc. 3-state bicmos output buffer having power down capability. 5,546,021, Cl. 326-86.000.

Black & Decker Inc.: *See*—
Atos, Sheldon; and Prosper, Jacob, 5,544,417, Cl. 30-276.000.

Black, Michael; and Lemberg, Vladimir, to Reliant Technologies, Inc. Method and apparatus for treating a surface with a scanning laser beam having an improved intensity cross-section. 5,546,214, Cl. 359-203.000.

Blackburn, Brian K.: *See*—
Mazur, Joseph F.; Blackburn, Brian K.; and Gentry, Scott B., 5,546,307, Cl. 364-424.050.

Blair, James R., II: *See*—
Glynn, Kenneth P.; and Blair, James R., II, 5,545,069, Cl. 446-73.000.

Blanchette, Robert A.; Brush, Theresa S.; Farrell, Roberta L.; Krisa, Keith A.; and Mishra, Chittra, to Sandoz Ltd.; and Univ. of Minnesota, The Regents of the. Process for treatment of waste stream using *Scytinostroma galactinum* fungus ATCC 20966. 5,545,544, Cl. 435-171.000.

Blanco GmbH & Co. KG: *See*—
Götter, Hans; Mück, Manfred; and Wilhelm, Thomas, 5,544,370, Cl. 4-619.000.

Bland, Patrick M.; Jackson, Robert T.; Joshi, Jayesh; and Kardach, James, to Intel Corporation; and International Business Machines Corporation. CPU clock control unit. 5,546,568, Cl. 395-550.000.

Blank, Heinz-Ulrich: *See*—
Klausener, Alexander; Landscheidt, Heinz; and Blank, Heinz-Ulrich, 5,545,754, Cl. 564-418.000.

Blankenship, Robert M., to Rohm and Haas Company. Encapsulated hydrophilic polymers and their preparation. 5,545,695, Cl. 525-301.000.

Blanz, Wolf-Ekkehard: *See*—
Kurowski, Lorenz V.; Blanz, Wolf-Ekkehard; and Delong, Wolf, 5,544,657, Cl. 128-661.080.

Blaser, Wayne W.: *See*—
Wright, Larry G.; LaPack, Mark A.; Blaser, Wayne W.; Beebe, Kenneth R.; and Leugers, Mary A., 5,545,895, Cl. 250-282.000.

Blaskó, Gábor: *See*—
Szántay, Csaba; Kardos, Zsuzsanna B.; Moldvai, István; Major, Eszter T.; Szántay, Csaba, Jr.; Mándi, Attila; Blaskó, Gábor; Simig, Gyula; Lax, Györgyi; Drabant, Sándor; Szállási, Tamas; Fekete, Márton; and Gigler, Gábor, 5,545,741, Cl. 546-276.700.

Blem, Allen R.: *See*—
Friedlander, Barry T.; Davis, Robert A.; Blem, Allen R.; and Walker, David L., 5,545,655, Cl. 514-397.000.

Bliesner, Wayne T., to Boeing Company, The. Leading edge slat/wing combination. 5,544,847, Cl. 244-214.000.

Blight, Andrew R.: *See*—
Hansebout, Robert R.; and Blight, Andrew R., 5,545,648, Cl. 514-352.000.

Bliss, David F.: *See*—
Harris, Meckie T.; Bliss, David F.; Armington, Alton P.; Higgins, William M.; and Bryant, George G., 5,544,615, Cl. 117-18.000.

Block, Bodo: *See*—
Gärtner, Horst; Hollmann, Friedrich; Rituper, Rafael; and Block, Bodo, 5,545,260, Cl. 134-41.000.

Blocker, Anne S.: *See*—
Collins, Deborah L.; and Blocker, Anne S., 5,545,044, Cl. 434-322.000.

Blondet, Dominique: *See*—
Pascal, Jean-Claude; McCort, Gary; Blondet, Dominique; and Gellibert, Françoise, 5,545,645, Cl. 514-326.000.

Blood Center Research Foundation, Inc., The: *See*—
Baxter-Lowe, Lee Ann, 5,545,526, Cl. 435-6.000.

Bloodworth, J. Elmo: *See*—
Pickering, Samuel M., Jr.; Bloodworth, J. Elmo; and Turner, Donald G., 5,545,599, Cl. 501-146.000.

Bloom, Leonard: *See*—
Abidin, Micheal R.; and Lehmbeck, Steven P., 5,545,175, Cl. 606-182.000.

Blossom, Jon; and Edwards, Michael, to Microsoft Corporation. System and method for composing a display frame of multiple layered graphic sprites. 5,546,518, Cl. 395-152.000.

Boal, John H.; and Newton, Mark K., to Racal-Datacom, Limited. Communications bus and controller. 5,546,392, Cl. 370-60.100.

Board of Supervisors of Louisiana State University and Agricultural and Mechanical College: *See*—
Croughan, Timothy P., 5,545,822, Cl. 800-235.000.

Board of Trustees Operating Michigan State University, The: *See*—
Crimp, Melissa J.; Wilson, Brett A.; Suydam, Christopher J.; and Crimp, Martin A., 5,545,428, Cl. 427-8.000.

Bobich, John L. Combination athletic shoe and resilient exercise device. 5,545,113, Cl. 482-125.000.

Bocbis, Richard J.; Hodges, Paul J.; Schoen, William R.; and Wyvratt, Matthew J., Jr., to Merck & Co., Inc. Benzo-Fused Lactams promote release of growth hormone. 5,545,735, Cl. 540-490.000.

Bock, Thomas: *See*—
Weitkamp, Jens; Ernst, Stefan; Bock, Thomas; Kromminga, Thomas; Kiss, Akos; and Kleinschmit, Peter, 5,545,784, Cl. 585-250.000.

Bocko, Peter L.; Eid, Bernard A.; Johnson, Ronald E.; Lock, William E.; Shoup, Robert D.; and Thernont, Jean-Pierre, to Corning Incorporated. Method for printing a color filter. 5,544,582, Cl. 101-211.000.

Bodden, Christian P.: *See*—
Johnson, Steven A.; and Bodden, Christian P., 5,545,092, Cl. 472-66.000.

Bodet, Jean-Francois: *See*—
Baker, Ellen S.; Bodet, Jean-Francois; Demeyere, Hugo J. M.; Hartman, Frederick A.; Hubesch, Bruno A.; Mermelstein, Robert; Taylor, Lucille F.; and Wahl, Errol H., 5,545,350, Cl. 510-517.000.
Wahl, Errol H.; Bacon, Dennis R.; Baker, Ellen S.; Bodet, Jean-Francois; Burns, Michael E.; Demeyere, Hugo J. M.; Hensley, Charles A.; Mermelstein, Robert; Severns, John C.; Shaw, John H., Jr.; Siklosi, Michael P.; Vogel, Alice M.; and Watson, Jeffrey W., 5,545,340, Cl. 510-517.000.

Boeck, Cornelius; and Fuchs, Rudolf, to Robert Bosch GmbH. Belt grinder with a plate tensioning means. 5,545,077, Cl. 451-311.000.

Boehringer Mannheim GmbH: *See*—
Bartke, Ilse; Kostka, Gunter; Naujoks, Kurt; and Ullrich, Axel, 5,545,533, Cl. 435-723.000.

Boeing Company, The: *See*—
Bliesner, Wayne T., 5,544,847, Cl. 244-214.000.
Florian, Michael H.; Redd, Harold J.; Hogue, David R.; and Bonebright, Rodney K., 5,546,050, Cl. 330-282.000.

Boelster, Richard; and Siev, Chhay S., to TRW Vehicle Safety Systems Inc. Seat belt retractor. 5,544,838, Cl. 242-384.200.

Bogdan, David C.: *See*—
Aulet, Nancy R.; Bogdan, David C.; Hussain, Muhammed I.; Hutt, George W.; Pearl, Donald L.; and Pribula, David T., 5,546,325, Cl. 364-525.000.

Böger, Manfred: *See*—
Maienfisch, Peter; Böger, Manfred; Pitterna, Thomas; and Szczepanski, Henry, 5,545,630, Cl. 514-63.000.

Boggavarapu, Rao L.; Goldstein, Yeshayahu S. A.; Keogh, Catherine M.; Sucbocki, Anthony J.; and Widner, Melvin M., to General Dynamics Land Systems, Inc. Electrical power feed assembly for electrothermal gun and cartridge. 5,544,588, Cl. 102-472.000.

Boggs, Linda W. Yarn organizer for keeping yarn separated when hand knitting. 5,544,499, Cl. 66-1.00A.

Bohland, John R., to Moore Business Forms, Inc. Polyamide microcapsules reacted with isocyanate emulsion. 5,545,483, Cl. 428-402.210.

Böhm, Stefan: *See*—
Petersen, Uwe; Schenke, Thomas; Böhm, Stefan; Grosser, Rolf; Bremm, Klaus D.; Endermann, Rainer; and Metzger, Karl G., 5,545,642, Cl. 514-312.000.

Boilot, Jean-Pierre; Boncoeur, Marcel; Rasneur, Bernard; and Renoult, Olivier, to Commissariat A L'Energie Atomique. Process for the preparation of lithium aluminosilicate or gamma lithium aluminate ceramics having a controlled stoichiometry and microstructure. 5,545,427, Cl. 427-6.000.

Bokros, Jack C.; Ely, John L.; Emken, Michael R.; Haubold, Axel D.; Peters, T. Scott; Stupka, Jonathan C.; and Waits, C. Thomas, to Medical Carbon Research Institute, LLC. Prosthetic heart valve. 5,545,216, Cl. 623-2.000.

Boldt, Peter C., to Plastiroute S.A. Method and apparatus for applying horizontal markings to roads or other traffic areas. 5,544,972, Cl. 404-75.000.

Bolender, Nadine: *See*—
Hackett, Andrew; Knee, Michael; Kerdranvat, Michel; and Bolender, Nadine, 5,546,130, Cl. 348-447.000.

Boler, Matthew J.: *See*—
Moutrie, Michael F.; Whitmore, Andrew, III; Hess, David M.; Laugal, John C.; Mina, Steven M.; and Boler, Matthew J., 5,546,275, Cl. 361-707.000.

Bolk, Hendrik J. J.; and Zieltjens, Georges C. P., to U.S. Philips Corporation. Radiation analysis apparatus. 5,545,900, Cl. 250-395.000.

Bolkenius, Frank: *See*—
Grisar, J. Martin; Petty, Margaret A.; and Bolkenius, Frank, 5,545,660, Cl. 514-458.000.

Bolle, Rudolf M.; Connell, Jonathan H.; Haas, Norman; Mohan, Rakesh; and Taubin, Gabriel, to International Business Machines Corporation. Produce recognition system. 5,546,475, Cl. 382-190.000.

Bollinger, Parker A., Jr.; Mueller, Denis A.; Smith, James D. B.; and Wehrli, Henry A., III, to Eaton Corporation. Positive temperature coefficient conductive polymer made from thermosetting polyester resin and conductive fillers. 5,545,679, Cl. 523-512.000.

Boncoeur, Marcel: *See*—
Boilot, Jean-Pierre; Boncoeur, Marcel; Rasneur, Bernard; and Renoult, Olivier, 5,545,427, Cl. 427-6.000.

Bondanza, James F.: *See*—
Frazer, James T.; Scott, David B.; and Bondanza, James F., 5,544,599, Cl. 112-118.000.

Bonebright, Rodney K.: *See*—
Florian, Michael H.; Redd, Harold J.; Hogue, David R.; and Bonebright, Rodney K., 5,546,050, Cl. 330-282.000.

Bonnet, Henri, to United Parcel Service of America, Inc. Method and apparatus for loading and closing a container. 5,544,466, Cl. 53-138.700.

Bonnet, Jean-Marc: *See*—
Auclair, Jean-Yves; and Bonnet, Jean-Marc, 5,546,425, Cl. 375-220.000.

Bonutti, Peter M. Method using human tissue. 5,545,222, Cl. 623-11.000.

Books, Martin T.: *See*—
Sundberg, Jack G.; Bisson, Bernard J.; Desai, Mihir C.; and Books, Martin T., 5,545,014, Cl. 417-204.000.

Boon, Mathilde E.; Kok, Lanbrecht P.; Mango, Laurie J.; Rutenberg, Akiva; and Rutenberg, Mark R., to Neuromedical Systems, Inc. Automated specimen classification system and method. 5,544,650, Cl. 128-632.000.

Booth, Richard B.; Cooper, Emanuel I.; Giess, Edward A.; Kordus, Mark R.; Krongelb, Sol; Ostrander, Steven P.; Roldan, Judith M.; Sambucetti, Carlos J.; and Saraf, Ravi, to International Business Machines Corporation. Fabrication of double side fully metallized plated thru-holes, in polymer structures, without seeding or photoprocess. 5,545,429, Cl. 427-97.000.

Bor-It Mfg. Co., Inc.: *See*—
Albers, Michael W., 5,544,978, Cl. 405-232.000.

Boran, Colm P.: *See*—
Borninski, Thomas E.; Boran, Colm P.; Simmons, Paul; and Nieslu-chowski, Matt A., 5,544,914, Cl. 280-735.000.

Borg, John D., to Sega Pinball, Inc. Pinball machine with ball throwing figure. 5,544,880, Cl. 273-119.00R.

Boriani, Silvano; and Minarelli, Alessandro, to G.D Societa' Per Azioni. Lift truck for transferring reels to a user machine. 5,544,719, Cl. 187-237.000.

Borkar, Shekhar; and Mooney, Stephen R., to Intel Corporation. Daisy chained clock distribution scheme. 5,546,023, Cl. 326-93.000.

Bormann, Thomas J.; Pascale, Frank R.; and Gsell, Thomas C., to Pall Corporation. Method for processing biological fluid and treating separated component. 5,545,339, Cl. 210-806.000.

Borninski, Thomas E.; Boran, Colm P.; Simmons, Paul; and Nieslu-chowski, Matt A., to Ford Motor Company. Air bag disabler control circuit. 5,544,914, Cl. 280-735.000.

Boron Biologicals, Inc.: *See*—
Spielvogel, Bernard F.; and Meyer, Dominique, 5,545,397, Cl. 424-9.400.

Borrega, Regis; and Kitamura, Satoshi, to Synthelabo. Alfuzosin hydrochloride dihydrate. 5,545,738, Cl. 544-291.000.

Borski, Mark A.: *See*—
Thompson, William L.; and Borski, Mark A., 5,544,584, Cl. 101-401.100.

Borsoi, Bruno; and Martinazzo, Ivan, to Nordica S.p.A. Innerboot for sports shoes. 5,544,433, Cl. 36-117.700.

Borsos, Elek: *See*—
Reinehr, Dieter; and Borsos, Elek, 5,545,836, Cl. 544-216.000.

Boscher, Georg; Amrhein, Klaus; and Sagemuehl, Dieter, to RXS Schrumpftechnik-Garnituren GmbH. Arrangement for multiple cable introductions in cable sleeves. 5,545,852, Cl. 174-84.00R.

Boston Scientific Corp.: *See*—
Crowley, Robert J., 5,544,660, Cl. 128-662.060.
Iacob, Mihai; and Andersen, Erik C., 5,545,135, Cl. 604-96.000.
Lennox, Charles D.; and Roberts, Troy W., 5,545,195, Cl. 607-105.000.

Botteon, Renato; and Chies, Ezio, to Silca S.P.A. Key and holder combination. 5,544,510, Cl. 70-456.00R.

Boucher, Didier; and Pohlenz, Charles, to Etat Francais as represented by the Delegue General pour l'Armement. Directional electro-acoustic transducers comprising a sealed sell consisting of two portions. 5,546,361, Cl. 367-158.000.

Bourgeois, Ivan M. P. G.: *See*—
Smits, Karel F. A. A.; and Bourgeois, Ivan M. P. G., 5,545,207, Cl. 607-130.000.

Bourguignon, Anne-Elisabeth F.; Fortunier, Pascal; and Hebraudl, Guy R. E., to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation S.N.E.C.M.A. Stator vane mounting platform. 5,545,002, Cl. 415-115.000.

Bourne, Thomas M.: *See*—
Fleischman, Sidney D.; Bourne, Thomas M.; and Houser, Russell A., 5,545,193, Cl. 607-99.000.

Boutet, Claude: *See*—
Grember, Eric; and Boutet, Claude, 5,544,439, Cl. 42-100.000.

Bowen, Michael L., to Tecaol Medical Products, Inc. Reusable heat or cold chemical therapy pack. 5,545,197, Cl. 607-108.000.

Bowers, Frank H.; and Card, Stuart K., to Xerox Corporation. Method and apparatus for visualization of database search results. 5,546,529, Cl. 395-159.000.

Bowers, John H.: *See*—

VOL 1189 ISS 2 AG 13 1996 UMI

Lewicki, Walter J., Jr.; and Bowers, John H., 5,546,110, Cl. 347-115.000.

Bowes, Michael J.; and Yazdy, Farid A., to Apple Computer, Inc. Memory bus arbiter for a computer system having a dsp co-processor. 5,546,547, Cl. 395-294.000.

Bowman, Gary: *See*—
Mahn, Gary; and Bowman, Gary, 5,544,441, Cl. 42-106.000.

Boyd, Frederick M.: *See*—
Smith, Kim R.; Boyd, Frederick M.; and Abouhalkah, Samih S., 5,545,749, Cl. 564-282.000.

Boyd, Stephen B.: *See*—
Anastos, William N.; and Boyd, Stephen B., 5,545,012, Cl. 417-44.110.

Boyle, Russell W.: *See*—
Baltins, Guntis U.; Boyle, Russell W.; Mason, Denis G.; Moore, Howard M.; Owen, A. DeBow; and Sharp, Joseph A., 5,544,526, Cl. 73-180.000.

BP Chemicals Limited: *See*—
Cooper, Jeremy B.; Frost, Jonathon C.; and Partington, Stephen R., 5,545,787, Cl. 585-444.000.
Morterol, Frederic R. M. M.; and Raufast, Charles, 5,545,378, Cl. 422-132.000.

Bracco Research, S.A.: *See*—
Tournier, Hervé; Hyacinthe, Roland; and Schneider, Michel, 5,545,395, Cl. 424-932.000.

Bradley, Jack: *See*—
Schmidt, Anthony, Jr., 5,544,606, Cl. 114-48.000.

Bradshaw, James I.; and Daglow, Terry D., to Intermedics, Inc. Cardiac pacemaker with collet-type lead connector. 5,545,188, Cl. 607-37.000.

Brady, Sean A.; and Stockley, Henry W., III, to W. R. Grace & Co.-Conn. Patch bag having supplemental seal. 5,545,419, Cl. 426-129.000.

Brady, William P.: *See*—
Mealey, Shawn K.; Schmidt, Randall G.; and Brady, William P., 5,545,700, Cl. 525-478.000.

Bramer, Lowell M.: *See*—
Watkins, David C.; Bramer, Lowell M.; and Gerling, Christopher F., 5,545,593, Cl. 437-225.000.

Bramfitt, John E.: *See*—
Hess, Robert L.; and Bramfitt, John E., 5,545,210, Cl. 623-1.000.

Branchek, Theresa: *See*—
Gerald, Christophe; Walker, Mary W.; Branchek, Theresa; and Weinshank, Richard L., 5,545,549, Cl. 435-240.200.

Brandon, Richard: *See*—
Batt, Carl; Wiedmann, Martin; and Brandon, Richard, 5,545,523, Cl. 435-6.000.

Brandt, Manfred: *See*—
Bargelé, Norbert; Brandt, Manfred; and Kunig, Helmut, 5,545,083, Cl. 452-136.000.

Brandt, Thomas J.: *See*—
Tait, David B.; Burreson, B. Jay; and Brandt, Thomas J., 5,546,114, Cl. 347-212.000.

Branham, Douglas G., to New Holland North America, Inc. Light housing for skid steer loaders. 5,546,286, Cl. 362-61.000.

Brannon, Edward L.: *See*—
Bai, Monty W.; Kerns, Thomas M.; and Brannon, Edward L., 5,545,493, Cl. 429-90.000.

Brännström, Roine, to ABB Stal AB. Method of supplying coal and sulphur absorbent to a combustor and a power plant in which the method is applied. 5,544,596, Cl. 110-106.000.

Branovich, Louis E.; Eckart, Donald W.; and Fischer, Paul, to United States of America, Army. Thermionic cathode. 5,545,945, Cl. 313-346.00R.

Bratt, Peter R.; and Nelson, David R., to Santa Barbara Research Center. Optically immersed semiconductor photodetectors. 5,545,896, Cl. 250-338.400.

Brauer, Daniel R.: *See*—
Liimatainen, William J.; and Brauer, Daniel R., 5,544,762, Cl. 209-675.000.

Bräuer, Wolfgang: *See*—
Heidingsfeld, Herbert; Bräuer, Wolfgang; Müller, Friedemann; and Meister, Willi, 5,545,707, Cl. 528-60.000.

Brauker, James: *See*—
Neuenfeldt, Steven; Brauker, James; and Clarke, Robert, 5,545,223, Cl. 623-11.000.

Braun Aktiengesellschaft: *See*—
Hilfinger, Peter; Kressner, Gerhard; and Sauer, Michael, 5,545,968, Cl. 320-2.000.

Braun, Eugene R., to Eaton Corporation. Synchronizer with self-energizing. 5,544,727, Cl. 192-48.910.

Braun, Hans, to Wagner & Keller GmbH & Co. Collapsible cage. 5,544,619, Cl. 119-474.000.

Braun, Kenneth L. Hitch apparatus for tractor lift arms. 5,544,708, Cl. 172-272.000.

Braun, Max; Rudolph, Werner; and Eichholz, Kerstin, to Solvay Fluor und Derivate GmbH. Process for preparing polyfluorocarboxylic acid chlorides and perfluorocarboxylic acid chlorides. 5,545,298, Cl. 204-157.600.

Braunstein, Andrew S.: *See*—
Seliger, Robert; Ehrhardt, Fred W.; and Braunstein, Andrew S., 5,546,580, Cl. 395-600.000.

Bray, Lane A., to Battelle Memorial Institute. Method for decontamination of radioactive metal surfaces. 5,545,794, Cl. 588-1.000.

Breed, Allen: *See*—
Thuen, Torbjorn; and Breed, Allen, 5,544,916, Cl. 280-741.000.

Breed Automotive Technology, Inc.: *See*—
Thuen, Torbjorn; and Breed, Allen, 5,544,916, Cl. 280-741.000.

Breeding, John G., to Shuffle Master, Inc. Multi-tiered wagering method and game. 5,544,892, Cl. 273-292.000.

Breivik, Kare; Smedal, Arne; and Syvertsen, Kare, to Den Norske Stats Oljeselskap A.S. Arrangement in a ship for loading/unloading of a flowable medium in open sea. 5,545,065, Cl. 441-5.000.

Brekner, Michael-Joachim; and Osan, Frank, to Hoechst Aktiengesellschaft. Process for preparing cycloolefin copolymers. 5,545,829, Cl. 526-160.000.

Bremm, Klaus D.: *See*—
Petersen, Uwe; Schenke, Thomas; Böhm, Stefan; Grosser, Rolf; Bremm, Klaus D.; Endermann, Rainer; and Metzger, Karl G., 5,545,642, Cl. 514-312.000.

Bretl, Richard A.: *See*—
Robers, Kevin J.; Bretl, Richard A.; Gabbey, Lawrence W.; Kerkman, William J.; and Kersher, Tod T., 5,544,699, Cl. 165-283.000.

Bretting, Claus A. S., to Leo Pharmaceutical Products Ltd. A/S (Lovens Kemiske / Fabrik Produktionsaktieselskab). 17-ene vitamine D analogues. 5,545,633, Cl. 514-167.000.

Breu, Rudolf: *See*—
Bauer, Günter; and Breu, Rudolf, 5,544,643, Cl. 125-12.000.

Brickner, Louis C.: *See*—
Haffely, Jeffrey L.; Lei, Xun; and Brickner, Louis C., 5,545,081, Cl. 451-367.000.

Bridgelall, Raj: *See*—
Barkan, Edward; and Bridgelall, Raj, 5,545,888, Cl. 235-462.000.

Bridgestone Corporation: *See*—
Iwata, Toshiro; Nagata, Iwami; Hatakeyama, Akira; and Nishigai, Kazuhisa, 5,545,024, Cl. 425-204.000.
Noguchi, Tomoko; Naito, Kazuo; Saito, Tasuku; Sakurai, Ryo; and Ishiharada, Minoru, 5,546,493, Cl. 385-125.000.

Bridgestone/Firestone, Inc.: *See*—
Davis, James A.; Hoppert, Joseph R.; Chmiel, Chester T.; and Alexander, Brian S., 5,545,685, Cl. 524-490.000.

Briggs, Christopher H. W.: *See*—
Tian, Hong; Briggs, Christopher H. W.; Chiang, Chisin; and Lee, Jia-Kuen J., 5,545,989, Cl. 324-212.000.

Brigham and Women's Hospital: *See*—
Czeisler, Charles A.; and Kronauer, Richard E., 5,545,192, Cl. 607-88.000.

Brightly, Todd J., to International Business Machines Corporation. Ergonomic torque wrench mounting. 5,544,554, Cl. 81-57.400.

Brin, David S.; Lunn, Peter A.; and MacDonald, Stuart R., to Medtronic, Inc. Method of catheter segment attachment. 5,545,149, Cl. 604-265.000.

Brinkhaus, Friedhelm L.: *See*—
Ausich, Rodney L.; Brinkhaus, Friedhelm L.; Mukharji, Indrani; Proffitt, John; Yarger, James; and Yen, Huei-Che B., 5,545,816, Cl. 800-205.000.

Brinkley, Gerald E.: *See*—
Holden, Irving H.; Mooney, Charles W.; Brinkley, Gerald E.; and McKee, John M., 5,546,069, Cl. 340-407.100.

Brinkman, Candace: *See*—
Stallmo, David C.; Andrews, Anthony; and Brinkman, Candace, 5,546,535, Cl. 395-182.070.

Bristol-Myers Squibb Company: *See*—
Chancellor, Cindy L., 5,545,411, Cl. 424-439.000.

British Technology Group Ltd.: *See*—
Downs, Michael J., 5,546,184, Cl. 356-345.000.
Mecrow, Barrie C., 5,545,938, Cl. 310-156.000.

Broadway, Lee: *See*—
Joshi, Mahendra L.; Broadway, Lee; and Mohr, Patrick J., 5,545,031, Cl. 431-8.000.

Brockmeyer, Roger L.; Dievendorff, Richard; House, Daniel E.; Jenner, Earle H.; LaBelle, Margaret K.; Mall, Michael G.; and Silen, Stuart L., to International Business Machines Corporation. Extension of two phase commit protocol to distributed participants. 5,546,582, Cl. 395-650.000.

Broderick, Kevin B.; Song, Joo H.; Townsend, Donald J.; Record, David W.; and Tyrpin, Henry T., to Wm. Wrigley Jr. Company. Gum base made with reduced antioxidant and method of preparation. 5,545,416, Cl. 426-3.000.

Broderick, Kevin B.: *See*—
Tyrpin, Henry T.; Broderick, Kevin B.; and Record, David W., 5,545,415, Cl. 426-3.000.

Brodie, James L.: *See*—
Fisher, Daniel J.; Crank, Douglas; Lovell, Marc A.; Houle, Sabina J.; and Brodie, James L., 5,544,458, Cl. 52-204.591.

Brooker, Donald D.; Falsetti, James S.; Wolfenbarger, James K.; and Vuong, Dinh-Cuong, to Texaco Inc. Method of monitoring slag removal during controlled oxidation of a partial oxidation reactor. 5,545,238, Cl. 48-197.00R.

Brost, Randolph C.; Goldberg, Kenneth Y.; Wallack, Aaron S.; and Canny, John. Processor and method for developing a set of admissible fixture designs for a workpiece. 5,546,314, Cl. 364-474.010.

Brother Kogyo Kabushiki Kaisha: *See*—
Nakano, Hiroshi, 5,546,109, Cl. 347-93.000.

Brotz, Gregory R. Device and method for the brewing of coffee in a microwave oven environment. 5,545,879, Cl. 219-689.000.

Brougham, Paul; and Simms, Robert A., to Solvay Interox Limited. Peracid compositions for medical disinfection. 5,545,343, Cl. 514-557.000.

Brouillet, Jean-Luc: *See*—
Joyce, Robert; Rosler, Jeffrey; Ehrlich, Jason; and Brouillet, Jean-Luc, 5,546,455, Cl. 379-265.000.

Brown, Christopher R., to Foxboro Company, The. Magnetic flowmeter with improved accuracy. 5,544,532, Cl. 73-861.160.

Brown, Clem H.; and Salina, John E., to Motorola, Inc. Optocoupler package and method for making. 5,545,893, Cl. 250-239.000.

Brown, Dale M.: *See*—
Shu, Emily Y.; and Brown, Dale M., 5,544,478, Cl. 60-39.030.

Brown, Vernon L.: *See*—
Magera, Yaroslaw A.; Savic, Jovica; and Brown, Vernon L., 5,545,430, Cl. 427-98.000.

Brownbridge, Thomas I.; and Story, Phillip M., to Kerr-McGee Chemical Corporation. Zirconium silicate grinding method and medium. 5,544,817, Cl. 241-21.000.

Brownell, Neal G. Basketball shooting training aid. 5,544,877, Cl. 273-1.50A.

Broxton, Lawrence E.: *See*—
Ginn, Michael W.; Cobb, Gary L.; Broxton, Lawrence E.; and McNeely, Kelly R., 5,545,338, Cl. 210-791.000.

Bruckner, Carl M.; Calhoun, Edward E., III; Fasnacht, Matthew J.; Schaffer, Ronald R.; and Shay, Francis J., to Whitaker Corporation, The. Splice tray rack and cabinet for fiber optic cables. 5,546,495, Cl. 385-135.000.

Bruder, Friedrich: *See*—
Haese, Wilfried; Bruder, Friedrich; Pakull, Ralf; Kirsch, Jürgen; and Löwer, Hartmut, 5,545,710, Cl. 528-201.000.

Bruehl, Klaus: *See*—
Adrian, Willy; and Bruehl, Klaus, 5,544,730, Cl. 198-336.000.

Brueninghaus Hydromatik GmbH: *See*—
Beck, Jochen; and Hormann, Werner, 5,545,013, Cl. 417-201.000.

Bruggemann, Marianne: *See*—
Surani, Azim M.; Neuberger, Michael S.; and Bruggemann, Marianne, 5,545,807, Cl. 800-2.000.

Bruker Analytische Messtechnik GmbH: *See*—
Guhl, Peter, 5,544,683, Cl. 141-65.000.
Westphal, Michael; and Laukien, Günther, 5,545,997, Cl. 324-320.000.

Bruker Instruments, Inc.: *See*—
Maas, Werner E.; Cory, David G.; and Laukien, Frank H., 5,546,000, Cl. 324-322.000.

Bruker Medizintechnik Gmbh: *See*—
Nauerth, Arno, 5,545,991, Cl. 324-307.000.

Bruns, Erik, to O&K Rolltreppen GmbH. Curved escalator. 5,544,729, Cl. 198-328.000.

Brunnhofer, Erwin, to Technoflow Tube-Systems GmbH. Method of installing a motor-vehicle tube assembly. 5,544,404, Cl. 29-430.000.

Bruns, Robert F., Jr.; Gehlert, Donald R.; Howbert, J. Jeffry; and Lunn, William H. W., to Eli Lilly and Company. Methods of inhibiting physiological conditions associated with an excess of bradykinin. 5,545,641, Cl. 514-317.000.

Brunstein, Vladimir: *See*—
Prete, Ralph; Brunstein, Vladimir; and Kazmirski, Todd J., 5,546,295, Cl. 363-17.000.

Brun-Vezinet, Francoise: *See*—
Alizon, Marc; Montagnier, Luc; Guetard, Denise; Brun-Vezinet, Francoise; and Clavel, Francois, 5,545,726, Cl. 536-23.100.

Brush, Theresa S.: *See*—
Blanchette, Robert A.; Brush, Theresa S.; Farrell, Roberta L.; Krisa, Keith A.; and Mishra, Chittra, 5,545,544, Cl. 435-171.000.

Bryan, Theodore R.: *See*—
Wheeler, Steven P.; and Bryan, Theodore R., 5,545,336, Cl. 210-757.000.

Bryant, George G.: *See*—
Harris, Meckie T.; Bliss, David F.; Armington, Alton F.; Higgins, William M.; and Bryant, George G., 5,544,615, Cl. 117-18.000.

Bryant, Henry U.; Dodge, Jeffrey A.; Sato, Masahiko; and Yang, Na N., to Eli Lilly and Company. Inhibiting bone loss with equilenin. 5,545,635, Cl. 514-177.000.

Bryant, Judy. Golf putter training device. 5,544,887, Cl. 473-230.000.

Bryant, Robert G., to United States of America, National Aeronautics and Space Administration. Polyazomethines containing trifluoromethylbenzene units. 5,545,711, Cl. 528-244.000.

Bu, Jong Uk; and Kim, Tae Yun, to Goldstar Co., Ltd. Method for automatic control of a microwave oven. 5,545,880, Cl. 219-703.000.

Buck, Todd: *See*—
Moren, Mike; Buck, Todd; and Kizziah, Pat, 5,545,370, Cl. 264-522.000.

Bucken, Rene; Consoir, Rudolf; Hermanns, Ferdinand-Josef; Kathke, Gregor; Schwalm, Hans-Werner; Schultz, Waldemar; Paulsen, Hedde-Christoph; and Kery, Michael, to W. Schlafhorst AG & Co. Pallet transport system for a cheese-producing textile machine. 5,544,829, Cl. 242-35.50R.

Buckley, Douglas I.; Habener, Joel F.; Mallory, Joanne B.; and Mojsov, Svetlana. GLP-1 analogs useful for diabetes treatment. 5,545,618, Cl. 514-12.000.

Buckley, Stephen P.; and Banks, Thomas B., to Hallmark Cards, Incorporated. Computer controlled system for vending personalized products. 5,546,316, Cl. 364-479.030.

Buehler AG: *See*—
Baltensperger, Werner; and Lippuner, Christian, 5,544,823, Cl. 241-79.000.

Bulin, David S.; Fye, Michael E.; and Stratman, Rick, to Delco Electronics Corp. Non-stick painted pushbutton assembly. 5,545,866, Cl. 200-345.000.

Bull HN Information Systems Italia S.p.A.: *See*—
Pagliaro, Vittorio; Urso, Paolo; and Caro, Lorenzo, 5,544,966, Cl. 400-616.000.

Bunya, Takashi: *See*—
Kamoda, Hitoshi; Maekawa, Tomohiro; Yui, Yasuji; Iima, Shin; and Bunya, Takashi, 5,544,965, Cl. 400-582.000.

Burch, Brad J. Spool holder for transferring line. 5,544,839, Cl. 242-396.600.

Burg, Andreas; and Schmitt, Johannes, to Robert Bosch GmbH. Drive slip control system. 5,544,950, Cl. 303-165.000.

Burg, Andreas: *See*—
Schmitt, Johannes; Burg, Andreas; and Donath, Ralf, 5,544,949, Cl. 303-140.000.

Burgman, Boris I.; and Gonzales, Robert J., to General Motors Corporation. Differential gear assembly. 5,545,102, Cl. 475-230.000.

Burk, Robert M., to Allergan. Cyclopentane(ene) heptenoic or heptanoic acids and derivatives thereof useful as therapeutic agents. 5,545,665, Cl. 514-530.000.

Burke, Dennis W. Apparatus for both tensioning and crimping a surgical wire. 5,545,168, Cl. 606-74.000.

Burke, Ralph C., to AWNEX, Incorporated. Self-stabilizing extrusion for closure assemblies. 5,545,488, Cl. 428-586.000.

Burkes, Theresa A.: *See*—
Jacobson, Michael B.; Voigt, Douglas L.; Nelson, Marvin D.; and Burkes, Theresa A., 5,546,558, Cl. 395-441.000.

Burns, Gary T.; Zank, Gregg A.; and Ewald, Jeffrey A., to Dow Corning Corporation. Preparation of high density boron carbide ceramics with preceramic polymer binders. 5,545,687, Cl. 524-701.000.

Burns, Matthew M.; and Lafontaine, Daniel M., to SCIMED Life Systems, Inc. Balloon catheter with improved pressure source. 5,545,133, Cl. 604-96.000.

Burns, Michael E.: *See*—
Wahl, Errol H.; Bacon, Dennis R.; Baker, Ellen S.; Bodet, Jean-Francois; Burns, Michael E.; Demeyere, Hugo J. M.; Hensley, Charles A.; Mermelstein, Robert; Severns, John C.; Shaw, John H., Jr.; Siklosi, Michael P.; Vogel, Alice M.; and Watson, Jeffrey W., 5,545,340, Cl. 510-517.000.

Burreson, B. Jay: *See*—
Tait, David B.; Burreson, B. Jay; and Brandt, Thomas J., 5,546,114, Cl. 347-212.000.

Burroughs Wellcome Co.: *See*—
Page, Martin J., 5,545,403, Cl. 424-133.100.
Page, Martin J., 5,545,404, Cl. 424-133.100.
Page, Martin J., 5,545,405, Cl. 424-133.100.

Burton Corporation, The: *See*—
Laughlin, James; and Dodge, David J., 5,544,909, Cl. 280-617.000.

Burzynski, Jean-Pierre: *See*—
Travers, Christine; and Burzynski, Jean-Pierre, 5,545,793, Cl. 585-671.000.

Butler, Scott J.: *See*—
Lapatovich, Walter P.; and Butler, Scott J., 5,545,953, Cl. 315-248.000.

Butler, Steven: *See*—
Partovi, Hamid; Butler, Steven; and Tran, Luan, 5,546,354, Cl. 365-233.000.

Buytaert, Tom G.; Van de Velde, Stefan C.; and Vuylsteke, Pieter P., to AGFA-Gevaert. Fast interactive off-line processing method for radiographic images. 5,546,473, Cl. 382-132.000.

Byeon, Seong-jin: *See*—
Lee, Rae-hwan; Jeon, Hwa-jin; Choi, Kwang-sik; Park, Hong-soon; Yun, Sang-hwa; Song, Kwang-lyeol; Choi, Hae-min; Lee, Deok-hyun; Song, Bong-hun; Park, Dong-jin; and Byeon, Seong-jin, 5,546,368, Cl. 369-47.000.

C&E Fein, GmbH & Co.: *See*—
Bauer, Günter; and Breu, Rudolf, 5,544,643, Cl. 125-12.000.

C.M. Offray & Son, Inc.: *See*—
Offray, Denise A.; Koch, Durmus; and Mortensen, John, 5,545,217, Cl. 623-8.000.

C. R. Bard, Inc.: *See*—
Fagan, John R.; and Kling, Jeffrey, 5,545,132, Cl. 604-96.000.

Cahill, Sean S., to Yazaki Meter Co., Ltd. Semiconductor sensor anodic-bonding process, wherein bonding of corrugation is prevented. 5,545,594, Cl. 437-228.000.

Cahill, Stephen V.: *See*—
Tomasi, Peter A.; Prill, Mark E.; and Cahill, Stephen V., 5,546,380, Cl. 370-17.000.

Calgene, Inc.: *See*—
McBride, Kevin E.; and Stalker, David M., 5,545,817, Cl. 800-205.000.
McBride, Kevin E.; and Maliga, Pal, 5,545,818, Cl. 800-205.000.

Calhoun, Edward E., III: *See*—
Bruckner, Carl M.; Calhoun, Edward E., III; Fasnacht, Matthew J.; Schaffer, Ronald R.; and Shay, Francis J., 5,546,495, Cl. 385-135.000.

Calligaro, Cristiano; Gastaldi, Roberto; Malcovati, Piero; and Torelli, Guido, to SGS-Thomson Microelectronics S.r.l. Voltage generator circuit providing potentials of opposite polarity. 5,546,044, Cl. 327-543.000.

Calmar Inc.: *See*—
Gillingham, James R., 5,544,789, Cl. 222-153.130.

Calvachio, John J., Jr. Air flow deflector for a snow plow. 5,544,434, Cl. 37-266.000.

Calvin, Gregory P.: *See*—
Randall, Guy; and Calvin, Gregory P., 5,544,868, Cl. 266-47.000.

Camacho, Salvador L., to Plasma Technology Corporation. Plasma pyrolysis and vitrification of municipal waste. 5,544,597, Cl. 110-223.000.

Cambbell, Ian P.: *See*—
Rainey, Ronald S.; Cambbell, Ian P.; Fallas, Pablo M. A.; and Solano, Edgar N., 5,545,421, Cl. 426-481.000.

Cameron, James F.; Frechet, Jean M. J.; Leung, Man-Kit; Niesert, Claus-Peter; MacDonald, Scott A; and Willson, Carlton G., to International Business Machines Corporation. Photoresist composition with photosensitive base generator. 5,545,509, Cl. 430-270.100.

Cameron, Scott W., to SGS-Thomson Microelectronics, Inc. Differential high speed inductive driver with a bidirectional current limiting output stage. 5,546,030, Cl. 327-110.000.

Cammilli, Leonardo; and Grassi, Gino. Sequential cardiostimulation system (DDD) using a single electrocatheter inserted through the coronary sinus. 5,545,204, Cl. 607-123.000.

Campbell, David L.; and Fox, James E., Jr., to Integrated Device Technology, Inc. Output driver circuits with enhanced supply-line bounce control and improved VOH characteristic. 5,546,033, Cl. 327-170.000.

Campbell, James K.; Pfeiffer, Ned C.; Balderi, Nicola; and Schaefer, Doug G., to Fellowes Manufacturing Company. Adjustable foot rest. 5,544,941, Cl. 297-423.450.

Campbell, Peter. Magnetoresistive position sensor including an encoder wherein the magnetization extends greater than 0.5 times the pole pitch below the surface. 5,545,985, Cl. 324-207.210.

Canadian Spinal Research Organization: *See*—
Hansebout, Robert R.; and Blight, Andrew R., 5,545,648, Cl. 514-352.000.

Canam Hambro: *See*—
Dutil, Marcel, 5,544,464, Cl. 52-330.000.

Canela, Heriberto; and Rodriguez, Giovanni R. Stamp dispensing and envelope handling device. 5,545,288, Cl. 156-578.000.

Canfield, Thomas F.; Mollenkopf, Lloyd C.; Rein, Russell J.; and Jilk, Larry M., to Rosemount Office Systems, Inc. Adjustable desk system. 5,544,593, Cl. 108-50.000.

Cannady, John P.; Gohndrone, John M.; and Tzou, Ming-Shin, to Dow Corning Corporation. Process for heat-fractionation of organosilanes. 5,545,743, Cl. 556-466.000.

Cannon, Donald M., to Osram Sylvania, Inc. Base for single pin elongated lamp. 5,545,944, Cl. 313-318.010.

Canny, John: *See*—
Brost, Randolph C.; Goldberg, Kenneth Y.; Wallack, Aaron S.; and Canny, John, 5,546,314, Cl. 364-474.010.

Canon Denshi Kabushiki Kaisha: *See*—
Aizawa, Nobuhiro, 5,545,963, Cl. 318-696.000.

Canon Kabushiki Kaisha: *See*—
Adachi, Seiichiro; Naito, Masataka; and Hirol, Masakazu, 5,546,168, Cl. 355-233.000.
Honma, Yoshihiro, 5,546,133, Cl. 348-642.000.
Karasawa, Katsumi, 5,546,409, Cl. 371-37.400.
Konishi, Kazuki; and Nagano, Akihiko, 5,546,158, Cl. 354-410.000.
Koyama, Osamu, 5,546,373, Cl. 369-120.000.
Kuroda, Ryo; and Oguchi, Takahiro, 5,546,374, Cl. 369-126.000.
Nishiyama, Masaki, 5,546,514, Cl. 395-111.000.
Odaira, Isao, 5,546,589, Cl. 395-750.000.
Ogata, Hiroaki; Kisu, Hiroki; Yamazaki, Michihito; and Asano, Erika, 5,546,167, Cl. 355-219.000.
Okamoto, Tadashi; Tomida, Yoshinori; Yamamoto, Nobuko; and Kawaguchi, Masahiro, 5,545,521, Cl. 435-5.000.
Sakai, Akihiro; Mizuno, Yoshio; and Utsunomiya, Takehito, 5,546,161, Cl. 355-200.000.
Sato, Hiroshi; and Hamano, Hiroyuki, 5,546,230, Cl. 359-684.000.
Shimada, Yasuhiro; Okamura, Yoshimasa; Takamatsu, Osamu; Nakayama, Masaru; and Yanagisawa, Yoshihiro, 5,546,375, Cl. 369-126.000.
Shirai, Shigeru; and Ohno, Shigeru, 5,545,500, Cl. 430-67.000.
Wakui, Shinji, 5,545,962, Cl. 318-677.000.
Yamanouchi, Haruhiko, 5,546,234, Cl. 359-700.000.
Yokota, Hideo, 5,546,224, Cl. 359-425.000.

Canterbury, Daniel J.: *See*—
Klomp, Charles B.; Ayers, Mark R.; and Canterbury, Daniel J., 5,546,246, Cl. 360-72.200.

Capdeboscq, Bernard, to SA Martin. Station for piling, separating and ejecting batches of plate-like workpieces at an outlet of a processing machine. 5,545,001, Cl. 414-790.800.

Cappel, Klaus L.: *See*—
Woyski, William B.; Tauscher, Robert C.; and Cappel, Klaus L., 5,544,528, Cl. 73-665.000.

Capper, James W.: *See*—
Kinsinger, Jay H.; Arbogast, Robert E.; Capper, James W.; and Colvin, James M., 5,545,230, Cl. 623-38.000.

Caputo, Anthony A.; and Amoruso, Victor P., to Information Resource Engineering, Inc. Pocket encrypting and authenticating communications device. 5,546,463, Cl. 380-25.000.

Card, Stuart K.: *See*—
Bowers, Frank H.; and Card, Stuart K., 5,546,529, Cl. 395-159.000.

Cardiac Pacemakers, Inc.: *See*—
Dahl, Roger W.; Swanson, David K.; Hahn, Stephen J.; Lang, Douglas J.; and Heil, John E., 5,545,202, Cl. 607-129.000.
Schulte, Theodore J.; Dahl, Roger W.; Bach, Stanley M., Jr.; Shapland, J. Edward; and Lang, Douglas J., 5,545,205, Cl. 607-123.000.

Cardiac Pathways Corporation: *See*—
Imran, Mir A., 5,545,161, Cl. 606-41.000.

Cardiomedix, Inc.: *See*—
David, Daniel; and David, Zipora, 5,544,649, Cl. 128-630.000.

Carlson, Carl A., to Carlson, Carl A. Finishing tool for completing a taped wallboard joint. 5,545,287, Cl. 156-575.000.

Carlson, Richard C.: *See*—
Hardee, Kenneth L.; Ernes, Lynne M.; Carlson, Richard C.; and Thomas, David E., 5,545,262, Cl. 148-527.000.

Caro, Lorenzo: *See*—
Pagliaro, Vittorio; Urso, Paolo; and Caro, Lorenzo, 5,544,966, Cl. 400-616.000.

Caron, Paul R.: *See*—
Nardone, Edward A.; Follett, Paul S.; Schofield, Harry D.; Caron, Paul R.; and Rothwell, Chris S., 5,546,115, Cl. 347-214.000.
Nardone, Edward A.; Follett, Paul S.; Schofield, Harry D.; Caron, Paul R.; and Rothwell, Chris S., 5,546,116, Cl. 347-218.000.

Carpenter, Clint W.: *See*—
Hall, Jon R.; Carpenter, Clint W.; and Scott, Stuart K., 5,545,677, Cl. 523-212.000.

Carr, Charles F., to Micropump, Inc. Method of making a modified elliptical gear. 5,545,871, Cl. 219-69.170.

Carrier Corporation: *See*—
Clark, William E., 5,544,697, Cl. 165-209.000.
Duff, Paul J.; Larson, John P.; and Lechtanski, Joseph B., 5,546,073, Cl. 340-585.000.

Carrigan, Donald R.: *See*—
Grossberg, Sidney E.; Kushnaryov, Vladimir M.; Cashdollar, L. William; Carrigan, Donald R.; and Knox, Konstance K., 5,545,550, Cl. 435-240.200.

Carroll, John B., to Westinghouse Air Brake Company. Remote control of cut-out cock. 5,544,854, Cl. 251-99.000.

Carroll, Sean B.; Firca, Joseph R.; Pugh, Charles; and Padhye, Nisha V., to Ophidian Pharmaceuticals, Inc. Conjugates for the prevention and treatment of sepsis. 5,545,721, Cl. 530-391.700.

Carson, Dean F., to Ventritex, Inc. Low profile lead with automatic tine activation. 5,545,206, Cl. 607-126.000.

Carter, John D.; and Smith, Richard R., to Goodyear Tire & Rubber Company, The. Rubber composition. 5,545,686, Cl. 524-513.000.

Carter, Wilmer G., to Unisys Corporation. Method for assuring equal access to all input/output devices coupled to a SCSI bus. 5,546,550, Cl. 395-309.000.

Cartotecnica Montebello, s.r.l.: *See*—
Lanzarin, Giuseppe, 5,544,920, Cl. 281-46.000.

Casamassina, Thomas; Morales, Florencio, Jr.; Salka, Barry A.; and Fallon, John, to Henkel Corporation. Process for preparing surfactant mixtures having high solids content. 5,545,622, Cl. 252-353.000.

Case Western Reserve University: *See*—
DeGuire, Mark R.; Heuer, Arthur H.; and Sukenik, Chaim N., 5,545,432, Cl. 427-226.000.

Cashdollar, L. William: *See*—
Grossberg, Sidney E.; Kushnaryov, Vladimir M.; Cashdollar, L. William; Carrigan, Donald R.; and Knox, Konstance K., 5,545,550, Cl. 435-240.200.

Casio Computer Co., Ltd.: *See*—
Ishiguro, Shiro; Watanuki, Masatoshi; Kawanishi, Toshiaki; Hanzawa, Kohtaro; Sasaki, Hiroyuki; and Yoshino, Jun, 5,546,466, Cl. 381-61.000.
Matsumoto, Hiroshi; Wakai, Haruo; and Joubettou, Hiroyasu, 5,545,576, Cl. 437-41.000.
Miyake, Masayasu, 5,546,424, Cl. 375-206.000.
Suzuki, Hideo, 5,546,565, Cl. 395-500.000.

Caspi, Rami; and Galin, Robert, to Intel Corporation. Flexible switching hub for a communication network. 5,546,385, Cl. 370-58.200.

Casselman, Patrick H., to Mitel, Inc. Low frequency discrimator using upper and lower thresholds. 5,546,025, Cl. 327-43.000.

Cassity, Thomas G.: *See*—
Hopper, Hans P.; and Cassity, Thomas G., 5,544,707, Cl. 166-382.000.

Cassou, Bertrand: *See*—
Cassou, Robert; Cassou, Maurice; and Cassou, Bertrand, 5,545,562, Cl. 435-307.100.

Cassou, Maurice: *See*—
Cassou, Robert; Cassou, Maurice; and Cassou, Bertrand, 5,545,562, Cl. 435-307.100.

Cassou, Robert; Cassou, Maurice; and Cassou, Bertrand, to Instruments de Medecine Veterinaire. Device for identifying straws for cryogenic storage of biological liquids. 5,545,562, Cl. 435-307.100.

Castaldi, John; and Greenzang, Fred, to White Consolidated Industries, Inc. Automated storage and retrieval system. 5,544,996, Cl. 414-280.000.

Castellucci, Nicholas T., to Northrop Grumman Corporation. Electroconductive polymers from unsaturated polymerizable TTF, TCNQ and DCQDI monomers. 5,545,703, Cl. 526-256.000.

Castonguay, Roger N.; Rosen, James L.; and Zaffetti, Mark A., to General Electric Company. Motor operator interface unit for high ampere-rated circuit breakers. 5,545,867, Cl. 200-400.000.

Caswell, Ty J.; Davis, Jeffrey P.; Johnson, Gregory R.; Reinarts, Timothy J.; and Sun, Ting, to Multi-Tech Systems, Inc. Apparatus and method for a caller ID modem interface. 5,546,448, Cl. 379-142.000.

Cate, Richard L.: *See*—
Goelz, Susan E.; Cate, Richard L.; Chow, E. Pingchang; and Pepinsky, R. Blake, 5,545,723, Cl. 424-85.600.

Caterpillar Inc.: *See*—
Gudat, Adam J.; and Harrod, Gregory R., 5,546,093, Cl. 342-357.000.
Williamson, Gregory L.; and Hoffman, John P., 5,546,264, Cl. 361-84.000.
Zulu, Joshua, 5,545,098, Cl. 475-23.000.

Cates, Gordon D., Jr.: *See*—

Albert, Mitchell S.; Balamore, Dilip; Cates, Gordon D., Jr.; Driebuys, Bastiaan; Happer, William; Saam, Brian; and Wishnia, Arnold, 5,545,396, Cl. 424-93.000.

Catholic University of America, The: *See*—
Litovitz, Theodore A.; and Penafiel, Luis M., 5,544,665, Cl. 128-897.000.

Cavaleri, Joseph. Openable ring with a locking means. 5,544,511, Cl. 70-457.000.

Cederwall, Philip J.; Prins, Garrett P.; and Leuven, Vern V., to Solar Turbines Incorporated. Method and apparatus for trim balancing a gas turbine engine. 5,545,010, Cl. 416-145.000.

Cell Analysis Systems, Inc.: *See*—
Bacus, James W.; and Bacus, James V., 5,546,323, Cl. 364-497.000.

Centa-Antriebe Kirschey GmbH: *See*—
Kirschey, Gerhard, 5,545,089, Cl. 464-83.000.
Kirschey, Gerhard, 5,545,090, Cl. 464-96.000.

Cerdec Aktiengesellschaft Keramische Farben: *See*—
Schulz, Andreas; and Höfler, Marco, 5,545,452, Cl. 428-41.700.

Cesa- Compagnie Europeenne de Sieges pour Automobiles: *See*—
Baret, Frédéric; and Faurrey, François, 5,544,939, Cl. 297-340.000.

Cetus Oncology Corporation: *See*—
Kriegler, Michael; and Nitecki, Danute E., 5,545,518, Cl. 435-4.000.

Chaen, Hiroto: *See*—
Initani, Satoshi; Mitsuhashi, Masakazu; Chaen, Hiroto; and Miyake, Toshio, 5,545,418, Cl. 426-53.000.

Chai, Eun S.; and Lee, Kwan H., to LG Electronics Inc. Heating time control apparatus and method thereof for microwave oven. 5,545,881, Cl. 219-719.000.

Champlain Cable Corporation: *See*—
Hildreth, Nelson, 5,545,853, Cl. 174-120.00R.

Chan, Joseph Y.; and Rybicki, Mathew A., to Motorola, Inc. Method and apparatus of an operational amplifier with wide dynamic range. 5,546,047, Cl. 330-253.000.

Chancellor, Cindy L., to Bristol-Myers Squibb Company. Method for lowering viscosity by use of gum acacia. 5,545,411, Cl. 424-439.000.

Chang, Chi S.; Desai, Subahu D.; Gernhart, Debra A.; Hartley, Phillip A.; Haskins, Robert J., Jr.; Ho, Keith K. T.; Martone, Robert A.; Mulcahy, Roy T.; Shaffer, Louis J.; Schoening, Robert D.; and Versprille, Scott A., to International Business Machines Corporation. Method and apparatus for the cross-sectional design of multi-layer printed circuit boards. 5,546,321, Cl. 364-491.000.

Chang, Dao-Pin. Apparatus for composting and treating waste, particularly dung. 5,545,560, Cl. 435-290.200.

Chang, Eng-Pi: *See*—
Ziemelis, Maris J.; Chang, Eng-Pi; and Winnik, Mitchell A., 5,545,830, Cl. 528-15.000.

Chang, Jane: *See*—
Barany, George; Albericio, Fernando; Solé, Nuria A.; Chang, Jane; and Zalipsky, Samuel, 5,545,698, Cl. 525-420.000.

Chang, John C. H., to Wallace Computer Services, Inc. Business forms having dual-functional coating. 5,545,459, Cl. 428-121.000.

Chang, On-Kok; and Saidi, M. Yazid. Process for producing filament-like vanadium oxide for use in solid state rechargeable electrochemical cells and the use thereof as a cathode in electrochemical cells. 5,545,496, Cl. 429-218.000.

Chang, Stanley: *See*—
Grinblat, Avi; and Chang, Stanley, 5,545,153, Cl. 604-294.000.

Chang, Tim S. L.: *See*—
Tan, Haw-Chan; and Chang, Tim S. L., 5,545,057, Cl. 439-540.100.

Chang, Yung-Yi. Air cushion for sleeping in a car. 5,544,373, Cl. 5-118.000.

Chang-Hasnain, Constance J.: *See*—
Willner, Alan E.; Chang-Hasnain, Constance J.; and Leight, James E., 5,546,209, Cl. 359-115.000.

Charles Machine Works, Inc., The: *See*—
McEwen, Richard; and Sparks, Darrel W., 5,544,712, Cl. 175-57.000.

Charles Stark Draper Laboratory, Inc., The: *See*—
Johnson, William M., 5,544,843, Cl. 244-3.110.
Johnson, William M.; and Musoff, Howard, 5,546,309, Cl. 364-434.000.

Chatterjee, Avijit: *See*—
Austel, Vernon; Chatterjee, Avijit; and Inselberg, Alfred, 5,546,516, Cl. 395-140.000.

Che, Xiaodong, to Quantum Corporation. Digitial output magnetoresistive (DOMR) head and methods associated therewith. 5,546,253, Cl. 360-113.000.

Chemical Lime Company: *See*—
Huege, Fred R.; and Shields, Patrick, 5,544,971, Cl. 404-72.000.

Chen, Carl: *See*—
Bergmann, Oswald R.; Chen, Carl; and Jacobson, Howard W., 5,545,250, Cl. 75-252.000.

Chen, Chao-Hu, to Kalloy Industrial Co., Ltd. Multifunctional quick release for a bicycle. 5,544,379, Cl. 7-138.000.

Chen, Cheng-Chi; Lloyd, Ben A.; Mumford, Neal A.; and Johns, Rolf M., to Thiokol Corporation. Method for increasing fiber strength translation in composition pressure vessels using matrix resin formulations containing anhydride curing agents and surface-active agents. 5,545,278, Cl. 156-175.000.

Chen, David T.; Pieper, Steven D.; and McKenna, Michael, to Medical Media Systems. Endoscopic viewing system for maintaining a surgeon's normal sense of kinesthesia during endoscopic surgery regardless of the orientation of the endoscope vis-a-vis the surgeon. 5,545,120, Cl. 600-117.000.

Chen, Elizabeth H.: *See*—
Parsons, John R.; Lee, Casey K.; Langrana, Noshir A.; Clemow, Alastair J.; Chen, Elizabeth H.; and Hawkins, Monica V., 5,545,229, Cl. 623-17.000.

Chen, Fung-Bor: *See*—
Haung, Wu-Nan; Manwill, Niles R.; Muschelewicz, Adana; and Chen, Fung-Bor, 5,545,451, Cl. 428-36.800.

Chen, Jian; Papanu, James S.; Mak, Steve S. Y.; Ish-Shalom, Carmel; Hsieh, Peter; Lau, Wesley G.; Rhoades, Charles S.; Shieh, Brian; Latchford, Ian S.; Williams, Karen A.; and Yu-Wang, Victoria, to Applied Materials, Inc. Passivating, stripping and corrosion inhibition of semiconductor substrates. 5,545,289, Cl. 156-643.100.

Chen, Ray; and Rabe, Jeffrey L., to Intel Corporation. Arbiter and arbitration process for a dynamic and flexible prioritization. 5,546,548, Cl. 395-296.000.

Chen, Sheng-Luen, to Dia-Compe, Taiwan Co., Ltd. Device for making microadjustment of bearing of bicycle head bowl. 5,544,905, Cl. 280-279.000.

Chen, Wei-Ming; Sun, Shih-Wei; and Tsui, Paul G. Y., to Motorola, Inc. Process for forming a semiconductor device having a metal-semiconductor compound. 5,545,574, Cl. 437-40.000.

Chen, Yu-Hsuan: *See*—
Lin, Chin-I; Chen, Yu-Hsuan; and Chu, Gou-Don, 5,544,907, Cl. 280-288.300.

Cheng, Chao-hsi; and Lee, Yuan-jyi, to Taichung Machinery Works, Co., Ltd. Vibration suppression device for a structure. 5,544,451, Cl. 52-167.200.

Cheng, David. Method and apparatus for mapping the edge and other characteristics of a workpiece. 5,546,179, Cl. 356-73.000.

Cheng, Jane C.; and Huang, Tracy J., to Mobil Oil Corporation. Process for the alkylation of benzene-rich reformate using MCM-49. 5,545,788, Cl. 585-467.000.

Cheng, Peter S. C. Decorative three-dimensional, curled bow and method of making same. 5,545,445, Cl. 428-4.000.

Cheng, Shih K.; and Orlowski, Marius, to Motorola, Inc. Method for manufacturing an insulated gate semiconductor device. 5,545,575, Cl. 437-40.000.

Cheng, Ting K. Cold and hot water combination filtering faucet. 5,545,322, Cl. 210-440.000.

Cherington, Floyd E.: *See*—
Armijo, David L.; Baker, Tony R.; Cherington, Floyd E.; Christopher, Delbert S.; Moody, David J.; Mullen, James J.; Vinson, Hugh E.; Warren, John L.; Beilfuss, Robert C.; and Wiker, John H., 5,544,645, Cl. 126-101.000.

Chesebrough-Pond's USA Co.: *See*—
Lee, Caroline M.; Green, Martin R.; and Prota, Giuseppe, 5,545,399, Cl. 424-59.000.

Chesner Engineering, PC: *See*—
Chesner, Warren H., 5,545,805, Cl. 588-256.000.

Chesner, Warren H., to Chesner Engineering, PC. Enhanced stabilization of lead in solid residues using acid oxyanion and alkali-metal carbonate treatment. 5,545,805, Cl. 588-256.000.

Chiang, Chisin: *See*—
Tian, Hong; Briggs, Christopher H. W.; Chiang, Chisin; and Lee, Jia-Kuen J., 5,545,989, Cl. 324-212.000.

Chiang, Joseph P.: *See*—
Ko, Ray-Jane; Au, Fu L.; and Chiang, Joseph P., 5,546,347, Cl. 365-221.000.

Chiasson, Gregory M.; Rasky, Phillip D.; and Baum, Kevin L., to Motorola, Inc. Frequency hopping code division multiple access radio communication unit. 5,546,429, Cl. 375-341.000.

Chiba, Shunichi: *See*—
Iida, Toru; Ohashi, Michihito; Sakai, Yoshihiro; Kuramoto, Shin-ichi; Chiba, Shunichi; Asahina, Yasuo; and Tomita, Junko, 5,545,381, Cl. 422-186.000.

Chicago Pneumatic Tool Company: *See*—
Groshans, Joseph R.; Spooner, Jeffrey; and Jones, Seth A., 5,544,710, Cl. 173-176.000.

Chies, Ezio: *See*—
Botteon, Renato; and Chies, Ezio, 5,544,510, Cl. 70-456.00R.

Chifo, Peter K. Apparatus for plating tubing and other shapes. 5,544,869, Cl. 266-88.000.

Chih, Chen-keng. Grease pumping assembly. 5,544,791, Cl. 222-262.000.

Chilong Data Products Corp.: *See*—
Mii, Adam, 5,545,948, Cl. 313-634.000.

Chin, Gene H.: *See*—
Bilinski, Donald J.; Chin, Gene H.; Cordova, Amado; and Fersht, Samuel N., 5,545,892, Cl. 250-231.120.

Chin, Yem: *See*—
Roberts, George T.; Hess, Kathleen L.; Nott, Sepideh H.; Chu, Michael S. H.; and Chin, Yem, 5,545,209, Cl. 623-1.000.

Chirehdast, Mehran: *See*—
Shahab, Syed A.; and Chirehdast, Mehran, 5,544,933, Cl. 296-189.000.

Chiron Corporation: *See*—
Urdea, Michael S.; and Horn, Thomas, 5,545,730, Cl. 536-28.510.

Chisso Corporation: *See*—
Nakayama, Minoru; Sawai, Toshiya; and Murata, Shizuo, 5,545,444, Cl. 428-1.000.

Chiura, Tatsuo, to Honda Giken Kogyo Kabushiki Kaisha. Stopper structure for a lid member. 5,544,388, Cl. 16-375.000.

Chmiel, Chester T.: *See*—
Davis, James A.; Hoppert, Joseph R.; Chmiel, Chester T.; and Alexander, Brian S., 5,545,685, Cl. 524-490.000.

Cho, Sung H. Adapter, fitting into an incandescent socket, for receiving a compact flourescent lamp. 5,545,950, Cl. 315-56.000.
Cho, Toshitsura: *See—*
Shimizu, Shumpei; Cho, Toshitsura; and Iiri, Shigeo, 5,545,309, Cl. 205-437.000.
Choate, Randall W. Removable engine plate and installation method therefor. 5,544,632, Cl. 123-195.00C.
Choi, Chi C.: *See—*
Ronvers, Wilhelmus C. W. M.; d'Herripon, Bastiaan A.; and Choi, Chi C., 5,545,105, Cl. 477-43.000.
Choi, Gil-heyun: *See—*
Lee, Jueng-gil; Park, Sun-hoo; and Choi, Gil-heyun, 5,544,771, Cl. 216-2.000.
Choi, Hae-min: *See—*
Lee, Rae-hwan; Jeon, Hwa-jin; Choi, Kwang-sik; Park, Hong-soon; Yun, Sang-hwa; Song, Kwang-lyeol; Choi, Hae-min; Lee, Deok-hyun; Song, Bong-hun; Park, Dong-jin; and Byeon, Seong-jin, 5,546,368, Cl. 369-47.000.
Choi, Jeong H.: *See—*
Suh, Kang D.; Kim, Jin K.; and Choi, Jeong H., 5,546,341, Cl. 365-185.330.
Choi, Jeong M., to Golstar Co., Ltd. Damper device. 5,544,853, Cl. 251-65.000.
Choi, Kwang-sik: *See—*
Lee, Rae-hwan; Jeon, Hwa-jin; Choi, Kwang-sik; Park, Hong-soon; Yun, Sang-hwa; Song, Kwang-lyeol; Choi, Hae-min; Lee, Deok-hyun; Song, Bong-hun; Park, Dong-jin; and Byeon, Seong-jin, 5,546,368, Cl. 369-47.000.
Choi, Nak-choon: *See—*
Lee, Young-sik; Jo, Hyun-min; Jee, Kyung-ha; and Choi, Nak-choon, 5,546,300, Cl. 363-132.000.
Choi, Young J. Combination tape measure and light bulb. 5,544,420, Cl. 33-760.000.
Choquette, Denis: *See—*
Begin, Pierre; Choquette, Denis; and Tremblay, Rejean, 5,544,693, Cl. 164-4.100.
Chow, Alex C.; and Wang, John S.-Y., to International Business Machines Corp. Method and apparatus for interlocking graphical objects. 5,546,524, Cl. 395-157.000.
Chow, E. Pingchang: *See—*
Goelz, Susan E.; Cate, Richard L.; Chow, E. Pingchang; and Pepinsky, R. Blake, 5,545,723, Cl. 424-85.600.
Chow, Laurence C.; and Takagi, Shozo, to American Dental Association Health Foundation, The. Calcium phosphate hydroxyapatite precursor and methods for making and using the same. 5,545,254, Cl. 106-35.000.
Chow, Pok Y. J. Inflatable pillow. 5,544,378, Cl. 5-644.000.
Chraplyvy, Andrew R.; Forghieri, Fabrizio; and Tkach, Robert W., to AT&T Corp. Multi-channel optical fiber communication system. 5,546,210, Cl. 359-124.000.
Christiaens B.V.: *See—*
Christiaens, Jozef P. M.; and Christiaens, Petrus G. A. M., 5,544,739, Cl. 198-750.600.
Christiaens, Jozef P. M.; and Christiaens, Petrus G. A. M., to Christiaens B.V. Installation for the temporary storage of bulk goods. 5,544,739, Cl. 198-750.600.
Christiaens, Petrus G. A. M.: *See—*
Christiaens, Jozef P. M.; and Christiaens, Petrus G. A. M., 5,544,739, Cl. 198-750.600.
Christman, Richard E., deceased (by Steven E. Baumann, executor): *See—*
Baumann, Steven E.; Christman, Richard E., deceased, 5,546,362, Cl. 367-173.000.
Christopher, Delbert S.: *See—*
Armijo, David L.; Baker, Tony R.; Cherington, Floyd E.; Christopher, Delbert S.; Moody, David J.; Mullen, James J.; Vinson, Hugh E.; Warren, John L.; Beilfuss, Robert C.; and Wiker, John H., 5,544,645, Cl. 126-101.000.
Chrysler Corporation: *See—*
May, Robert J.; Gabalis, Stephen E.; and Weakley, Todd S., 5,544,714, Cl. 180-68.400.
McCombie, Jay C., 5,544,521, Cl. 73-117.300.
Stedman, Dennis F., 5,544,930, Cl. 296-146.600.
Thomas, Christopher P.; Coatesworth, Timothy A.; DeGroot, Kenneth P.; Ehlers, Jeffery C.; and McMackin, Mark E., 5,544,640, Cl. 123-689.000.
Chu, Gou-Don: *See—*
Lin, Chin-I; Chen, Yu-Hsuan; and Chu, Gou-Don, 5,544,907, Cl. 280-288.300.
Chu, Michael S. H.: *See—*
Roberts, George T.; Hess, Kathleen L.; Nott, Sepideh H.; Chu, Michael S. H.; and Chin, Yem, 5,545,209, Cl. 623-1.000.
Chuang, Te-Chih, to Acer Incorporated. Single chip replacement upgradeable computer motherboard with enablement of inserted upgrade CPU chip. 5,546,563, Cl. 395-500.000.
Chuang, Theng-Fu: *See—*
Kuo, Ping-Lin; and Chuang, Theng-Fu, 5,545,823, Cl. 523-122.000.
Chun, Christopher K. Y.: *See—*
Lebby, Michael S.; Chun, Christopher K. Y.; and Witting, Gary F., 5,546,413, Cl. 372-6.000.
Chung, Chen-Hui: *See—*
Sheng, Yi-Chung; Chung, Chen-Hui; and Su, Kuan-Cheng, 5,545,580, Cl. 437-48.000.
Chung, Wen-Jye; and Lee, Chu-Mei, to Taiwan Semiconductor Manufacturing Company. Method of inspecting first layer overlay shift in global alignment process. 5,545,570, Cl. 437-8.000.
Church & Dwight Co., Inc.: *See—*
Savio, Lenore E., 5,545,348, Cl. 510-230.000.
Ciba-Geigy Corporation: *See—*
Käser, Adolf; and Stingelin, Willy, 5,545,725, Cl. 534-759.000.
Maienfisch, Peter; Böger, Manfred; Pitterna, Thomas; and Szczepanski, Henry, 5,545,630, Cl. 514-63.000.
Marescaux, Christian; Bernasconi, Raymond; Schmutz, Markus; Fröstl, Wolfgang; and Mickel, Stuart J., 5,545,631, Cl. 514-89.000.
Reinehr, Dieter; and Borsos, Elek, 5,545,836, Cl. 544-216.000.
Uchida, Hiroshi, 5,545,697, Cl. 525-403.000.
Van Savage, Gary; and Clevenger, James M., 5,545,442, Cl. 427-513.000.
Winter, Roland A. E.; and von Ahn, Volker H., 5,545,782, Cl. 585-5.000.
Winter, Roland A. E.; and von Ahn, Volker H., 5,545,786, Cl. 585-435.000.
Cima, Michael D. Holder for pens, pencils, tools, or the like. 5,544,764, Cl. 211-60.100.
Cincinnati Milacron Inc.: *See—*
Jones, Russell W., 5,544,556, Cl. 82-1.110.
Ciobanu, Dan A.; and Mladinich, Karl, to Huck International, Inc. Panel fastener having composite turning knob. 5,544,992, Cl. 411-353.000.
Cirrus Logic, Inc.: *See—*
Fawcett, Andrew R., 5,546,344, Cl. 365-189.050.
Kenny, John D.; and Ma, Min S., 5,546,037, Cl. 327-230.000.
Lin, Jyhfong; and Doyle, Bruce, 5,546,026, Cl. 327-54.000.
Ciszek, Theodore F.; and Wang, Tihu, to Midwest Research Institute. Crystallization from high temperature solutions of Si in Cu/Al solvent. 5,544,616, Cl. 117-60.000.
City University of New York, Mt. Sinai School of Medicine of the: *See—*
Johnson, Edward M.; and Bergmann, Andrew D., 5,545,551, Cl. 435-252.300.
Clapp, Phillip A.; Evans, Dennis F., deceased; and McKenna, Antonia F. E., executrix, to Solvay Interox Limited. Removal of hydrogen sulphide. 5,545,391, Cl. 423-573.100.
Clapper, Lawrence D. (Jake). Human powered recumbent vehicle. 5,544,906, Cl. 280-288.100.
Clark, Paul J.: *See—*
McIntosh, John D.; and Clark, Paul J., 5,544,505, Cl. 70-18.000.
Clark, William E., to Carrier Corporation. Differential temperature control. 5,544,697, Cl. 165-209.000.
Clarke, Eric T.: *See—*
Murphy, Oliver J.; Hitchens, G. Duncan; Hodko, Dalibor; Clarke, Eric T.; Miller, David L.; and Parker, Donald L., 5,545,308, Cl. 205-125.000.
Clarke, Robert: *See—*
Neuenfeldt, Steven; Brauker, James; and Clarke, Robert, 5,545,223, Cl. 623-11.000.
Claude, Roussel: *See—*
Joël, Richard; Nicolas, Robert; Claude, Roussel; and Fabrice, Chopard, 5,544,703, Cl. 165-167.000.
Clauzel, Yves; and Jaeger, Christian, to Sextant Avionique. Method and apparatus for communicating between a plurality of subcomponents. 5,546,396, Cl. 370-85.100.
Clavel, Francois: *See—*
Alizon, Marc; Montagnier, Luc; Guetard, Denise; Brun-Vezinet, Francoise; and Clavel, Francois, 5,545,726, Cl. 536-23.100.
Clemow, Alastair J.: *See—*
Parsons, John R.; Lee, Casey K.; Langrana, Noshir A.; Clemow, Alastair J.; Chen, Elizabeth H.; and Hawkins, Monica V., 5,545,229, Cl. 623-17.000.
Clevenger, James M.: *See—*
Van Savage, Gary; and Clevenger, James M., 5,545,442, Cl. 427-513.000.
Clifton, Benjamin R.: *See—*
Scheffer, Terry J.; and Clifton, Benjamin R., 5,546,102, Cl. 345-100.000.
Cline, Troy L.; Isensee, Scott H.; Poston, Ricky L.; and Werner, Jon H., to International Business Machines Corporation. Method, system, and memory for reshaping the frame edges of a window around information displayed in the window. 5,546,520, Cl. 395-155.000.
Clinton, Mary B.; and Wilson, John B., to Becton Dickinson and Company. Pen needle despenser. 5,545,145, Cl. 604-192.000.
Clorox Company, The: *See—*
Rowland, Richard R.; Fong, Ronald A.; Wiersema, Richard J.; and Zielske, Alfred G., 5,545,748, Cl. 562-2.000.
Wiersema, Richard J.; and Hostynek, Jurij J., 5,545,667, Cl. 514-556.000.
Clowers, Earl R.; Plume, Steve H.; and Smith, John C., to Porter-Cable Corporation. Motorized sander having a sanding head mounted by a pivotal joint. 5,545,080, Cl. 451-359.000.
Coach, Thomas P.: *See—*
Schmidt, Melvin J.; Coach, Thomas P.; Hause, Glenn C.; Galowitz, Dennis A.; Wyman, James P.; Hendricks, Robert A.; Ver Steeg, Lawrence J.; and Evans, Harold H., 5,544,450, Cl. 49-419.000.
Coatesworth, Timothy A.: *See—*
Thomas, Christopher P.; Coatesworth, Timothy A.; DeGroot, Kenneth P.; Ehlers, Jeffery C.; and McMackin, Mark E., 5,544,640, Cl. 123-689.000.
Cobb, Elliott G. Door stopper device. 5,544,386, Cl. 16-82.000.

Cobb, Gary L.: *See—*
Ginn, Michael W.; Cobb, Gary L.; Broxton, Lawrence E.; and McNeely, Kelly R., 5,545,338, Cl. 210-791.000.
Cobbley, David A.; Valerio, James A.; and Pollack, Frederick J., to Intel Corporation. System for processing handwriting written by user of portable computer by server or processing by the computer when the computer no longer communicate with server. 5,546,538, Cl. 395-200.010.
Coca-Cola (Japan) Co., Ltd.: *See—*
Yamamoto, Katsuya; and Inada, Norifumi, 5,544,779, Cl. 220-89.200.
Cochlear, Ltd.: *See—*
Kuzma, Janusz A., 5,545,219, Cl. 623-10.000.
Cochrane, Roberta J.; Pirahesh, Mir H.; and Sidle, Richard S., to International Business Machines Corporation. Query optimizer system that detects and prevents mutating table violations of database integrity in a query before execution plan generation. 5,546,576, Cl. 395-600.000.
Codaccioni, Jean-Pierre: *See—*
Vigneron, André; and Codaccioni, Jean-Pierre, 5,544,975, Cl. 405-128.000.
Codacovi, Lynn M.: *See—*
Kempf, Dale J.; Norbeck, Daniel W.; Erickson, John W.; Sham, Hing Leung; Codacovi, Lynn M.; and Plattner, Jacob J., 5,545,750, Cl. 564-360.000.
Codington, John F.; and Haavik, Svein, to Epigen, Inc. Human carcinoma antigen (HCA), HCA antibodies, HCA immunoassays and methods of imaging. 5,545,532, Cl. 435-7.230.
Coelho, Rohan: *See—*
Rhodes, Ken; Coelho, Rohan; Frank, Davis; and Bender, Blake, 5,546,103, Cl. 345-119.000.
Cole, George S.: *See—*
Schmidt, Karl M.; Schmidt, Michelle R.; Cole, George S.; Jenkins, Stuart E.; and Edwards, Harry W., 5,545,463, Cl. 428-178.000.
Colgate-Palmolive Co.: *See—*
Beagle, Charles A.; Adams, Richard P.; and Wixon, Harold E., 5,545,342, Cl. 510-299.000.
Durbut, Patrick; Ahmed, Fahim; and Drapier, Julien, 5,545,344, Cl. 510-223.000.
Colineau, Joseph, to Thomson-CSF. Integrated recording magnetic head. 5,546,255, Cl. 360-115.000.
Collandre, Helene; Montagnier, Luc; Agut, Henri; and Bechet, Jean-Marie, to Institute Pasteur; and University Paris - VI. Nucleic acid fragments and diagnostic reagents derived from the HHV6/SIE genome and procedures for diagnosing HHV6 infections. 5,545,520, Cl. 435-5.000.
Collier, Milo S., Jr. Lower extremity prosthetic device. 5,545,234, Cl. 623-49.000.
Collin, Edwin J.; and Turton, Robert C., to General Electric Company. Removable keypad for an electronic circuit breaker. 5,544,959, Cl. 335-202.000.
Collin, Per; Deleryd, Roland; Ivars, Roland; Lundqvist, Fredrik; and Stolzenberg, Norman R., to ABB Atom AB. Fission product leak detection in a pressurized-water reactor. 5,546,435, Cl. 376-253.000.
Collins, Clark E. Putter golf club. 5,544,879, Cl. 473-314.000.
Collins, David J.; Kuhman, Daniel E.; and Hermanson, Herman A., to Xerox Corporation. Apparatus for bonding wafer pairs. 5,545,283, Cl. 156-382.000.
Collins, Deborah L.; and Blocker, Anne S. Method and apparatus for automated learning and performance evaluation. 5,545,044, Cl. 434-322.000.
Collinson, Graeme L.: *See—*
Davies, Peter O.; Dromgool, Nicholas C.; Collinson, Graeme L.; and Fish, Alan P., 5,545,422, Cl. 426-482.000.
Collot, André C. F.: *See—*
Alassoeur, Philippe L. A.; Collot, André C. F.; Guyonnet, Xavier J. M. A.; Klein, Gilles C. C.; and Molliex, Ludovic E. C., 5,544,805, Cl. 228-190.000.
Coltec Industries Inc.: *See—*
Sundberg, Jack G.; Bisson, Bernard J.; Desai, Mihir C.; and Books, Martin T., 5,545,014, Cl. 417-204.000.
Sundberg, Jack G., 5,545,018, Cl. 418-30.000.
Coltrinari, Enzo L.; Downey, Jerome P.; Hazen, Wayne C.; and Queneau, Paul B., to Hazen Research, Inc. Apparatus and method for inhibiting the leaching of lead in water. 5,544,859, Cl. 251-368.000.
Columbia Machine, Inc.: *See—*
Aaseth, Allen; and Schmitt, Robert A., 5,544,405, Cl. 29-467.000.
Colvin, James M.: *See—*
Kinsinger, Jay H.; Arbogast, Robert E.; Capper, James W.; and Colvin, James M., 5,545,230, Cl. 623-38.000.
Colwell, Robert P.: *See—*
Martell, Robert W.; Hinton, Glenn J.; Fetterman, Michael A.; Papworth, David B.; Colwell, Robert P.; and Glew, Andrew F., 5,546,597, Cl. 395-800.000.
Comar Inc.: *See—*
Gargione, Frank V., 5,544,768, Cl. 215-209.000.
Combustion Tec, Inc.: *See—*
Joshi, Mahendra L.; Broadway, Lee; and Mohr, Patrick J., 5,545,031, Cl. 431-8.000.
Comer, Edward I.: *See—*
Roach, Peter O., Jr.; Comer, Edward I.; Link, Charles M., II; and Laster, Maurice S., 5,546,444, Cl. 379-59.000.
Commandeur, Raymond; Berger, Noelle; and Jay, Pierre, to Atochem. Dielectric compositions comprising benzyltoluene/(Methylbenzyl) xylene isomers. 5,545,355, Cl. 252-570.000.
Commissariat A L'Energie Atomique: *See—*
Boilot, Jean-Pierre; Boncoeur, Marcel; Rasneur, Bernard; and Renoult, Olivier, 5,545,427, Cl. 427-6.000.
Compacific Engineering Pte Ltd.: *See—*
Lu, Youyi, 5,545,040, Cl. 434-58.000.
Compaq Computer Corporation: *See—*
Ruch, Mark H., 5,544,876, Cl. 271-179.000.
Concord Communications, Inc.: *See—*
White, Gerard, 5,546,540, Cl. 395-200.100.
Condit, Mario: *See—*
Tucker, Michel H.; Sams, Gary; Hennessey, Kathleen; Pattikonda, Ramakhrisna; and Condit, Mario, 5,546,398, Cl. 370-94.100.
Condon, Michael E.; Crews, Alvin D., Jr.; and Manfredi, Mark C., to American Cyanamid Co. 6-heterocyclyl-1-(substituted phenyl) benzotriazole herbicidal agents. 5,545,742, Cl. 548-261.000.
Cone, Richard E., II; and Fowler, Alvin L., to Cosco, Inc. Carrier apparatus. 5,544,935, Cl. 297-183.200.
Conero, Ronald S.; and O'Leary, Stephen H., to IVAC Corporation. Syringe plunger driver. 5,545,140, Cl. 604-154.000.
Conigliaro, Charles. Spray can accessory holder. 5,544,783, Cl. 220-735.000.
Connell, Jonathan H.: *See—*
Bolle, Rudolf M.; Connell, Jonathan H.; Haas, Norman; Mohan, Rakesh; and Taubin, Gabriel, 5,546,475, Cl. 382-190.000.
Conner Peripherals, Inc.: *See—*
Tian, Hong; Briggs, Christopher H. W.; Chiang, Chisin; and Lee, Jia-Kuen J., 5,545,989, Cl. 324-212.000.
Connor, David. Conveyor devices. 5,544,737, Cl. 198-615.000.
Conroy, John: *See—*
Easey, Norman; and Conroy, John, 5,544,447, Cl. 47-66.000.
Conru, Harold W.; Froebel, Francis E.; Gregoritsch, Albert J., Jr.; Rieley, Sheldon C.; Starr, Stephen G.; Uttecht, Ronald R.; White, Eric J.; and Pohl, Jens G., to International Business Machines, Corporation; and Siemens Aktiengesellschaft. Personalized area leadframe coining or half etching for reduced mechanical stress at device edge. 5,545,921, Cl. 257-669.000.
Consoir, Rudolf: *See—*
Bucken, Rene; Consoir, Rudolf; Hermanns, Ferdinand-Josef; Kathke, Gregor; Schwalm, Hans-Werner; Schultz, Waldemar; Paulsen, Hedde-Christoph; and Kery, Michael, 5,544,829, Cl. 242-35.50R.
Contestabile, Kevin D.; and Jackson, Richard A. Billiard accessory. 5,545,093, Cl. 473-36.000.
Continental Aktiengesellschaft: *See—*
McKenzie, Ian A., 5,544,722, Cl. 187-410.000.
Sergel, Horst; and Bartsch, Friedrich, 5,546,330, Cl. 364-562.000.
Contolatis, Athanase; and Sokolov, Vladimir, to Honeywell Inc. Three dimensional package for monolithic microwave/millimeterwave integrated circuits. 5,545,924, Cl. 257-724.000.
Cook Incorporated: *See—*
Fischer, Frank J., Jr., 5,544,648, Cl. 128-207.140.
Cook, Raymond D.: *See—*
Saulnier, Gary J.; Gisser, David G.; Newell, Jonathan C.; Cook, Raymond D.; Goble, John C.; and Isaacson, David, 5,544,662, Cl. 128-734.000.
Cooke, Michael P.; and Felton, George N., to Lucas Industries public limited company. Fuel injection Nozzle. 5,544,815, Cl. 239-533.800.
Coolbaugh, Thomas S.; Loveless, Frederick C.; Matthews, Demetreos N.; and Rudnick, Leslie R., to Mobil Oil Corporation. Vulcanizable liquid compositions. 5,545,783, Cl. 585-12.000.
Cooley, David M.; DiGiovanni, Joseph J.; Kaewell, John D.; Kurtz, Scott D.; Lemmo, Mark A.; Regensburg, Michael W.; Vessal, David; and Johns, Eric. Modularly clustered radiotelephone system. 5,546,383, Cl. 370-50.000.
Coolworks, Inc.: *See—*
Moren, Ulf, 5,544,489, Cl. 62-3.640.
Coon, Brett; Miyayama, Yoshiyuki; Nguyen, Le T.; and Wang, Johannes, to Seiko Epson Corporation. Method for translating non-native instructions to native instructions and combining them into a final bucket for processing on a host processor. 5,546,552, Cl. 395-375.000.
Coons, Andrew M., III: *See—*
Hoyt, Matthew B.; Coons, Andrew M., III; and Dickson, David N., 5,545,363, Cl. 264-78.000.
Cooper Cameron Corporation: *See—*
Hopper, Hans P.; and Cassity, Thomas G., 5,544,707, Cl. 166-382.000.
Cooper, Emanuel I.: *See—*
Booth, Richard B.; Cooper, Emanuel I.; Giess, Edward A.; Kordus, Mark R.; Krongelb, Sol; Ostrander, Steven P.; Roldan, Judith M.; Sambucetti, Carlos J.; and Saraf, Ravi, 5,545,429, Cl. 427-97.000.
Cooper Industries, Inc.: *See—*
Jacks, David C., 5,544,803, Cl. 228-20.500.
Cooper, Jeremy B.; Frost, Jonathon C.; and Partington, Stephen R., to BP Chemicals Limited. Process for dehydrogenating hydrocarbons and oxygenated hydrocarbons. 5,545,787, Cl. 585-444.000.
Cooper, John, to Lucas Industries plc. Winding end restrainer for a rotary electrical component. 5,545,939, Cl. 310-270.000.
Cooper, Richard B.: *See—*
Peppiette, Roger C.; Cooper, Richard B.; and Stoddard, Robert J., 5,545,917, Cl. 257-547.000.
Copeland Corporation: *See—*
Beck, Norman G.; Anderson, Gary J.; and Tucker, Richard S., 5,545,019, Cl. 418-55.100.
Corcoran, Andrew E. Snowboard simulator apparatus. 5,545,115, Cl. 482-146.000.
Cordata, Inc.: *See—*

Moriconi, David P., 5,546,098, Cl. 345-3.000.
Cordier, André, to Air Industrie Systems - A.I.S. Painting installation. 5,545,239, Cl. 55-223.000.
Cordova, Amado; and Surabian, Glenn M., to Litton Systems, Inc. Potted fiber optic gyro sensor coil for stringent vibration and thermal enviroments. 5,546,482, Cl. 385-12.000.
Cordova, Amado: *See—*
Bilinski, Donald J.; Chin, Gene H.; Cordova, Amado; and Fersht, Samuel N., 5,545,892, Cl. 250-231.120.
Corley, Ronald E.; and Perry, Carol A. Wrench socket. 5,544,555, Cl. 81-125.000.
Corma, Inc.: *See—*
Lupke, Manfred A. A., 5,545,369, Cl. 264-508.000.
Cornell Research Foundation, Inc.: *See—*
Batt, Carl; Wiedmann, Martin; and Brandon, Richard, 5,545,523, Cl. 435-6.000.
Louge, Michel Y., 5,546,006, Cl. 324-688.000.
Cornell, William L.: *See—*
Benn, Freddy W.; Dattilo, Marion; and Cornell, William L., 5,544,760, Cl. 209-166.000.
Corning Incorporated: *See—*
Bocko, Peter L.; Eid, Bernard A.; Johnson, Ronald E.; Lock, William E.; Shoup, Robert D.; and Themont, Jean-Pierre, 5,544,582, Cl. 101-211.000.
Correll, Robert S., Jr.: *See—*
Summers, Donald J.; Correll, Robert S., Jr.; and Dellinger, Donald E., 5,545,051, Cl. 439-350.000.
Corrigan, Mark C.: *See—*
Wunder, Heiko; Scott-Young, Robert E.; Maddern, Kenneth N.; and Corrigan, Mark C., 5,545,385, Cl. 423-183.000.
Corvasce, Filomeno G.; and Linster, Tom D., to Goodyear Tire & Rubber Company, The. Hydrophilic polymer composite and product containing same. 5,545,680, Cl. 524-47.000.
Cory, David G.: *See—*
Maas, Werner E.; Cory, David G.; and Laukien, Frank H., 5,546,000, Cl. 324-322.000.
Corzine, Alan J.; Dippold, Jack D.; and Schluckebier, David K., to Olin Corporation. Method of making a coated bullet. 5,544,398, Cl. 29-1.230.
Cosares, Steven T.; Saniee, Iraj; and Wasem, Ondria J., to Bell Communications Research, Inc. Method for efficiently determining the direction for routing a set of anticipated demands between selected nodes on a ring communication network. 5,546,542, Cl. 395-200.210.
Cosco, Inc.: *See—*
Cone, Richard E., II; and Fowler, Alvin L., 5,544,935, Cl. 297-183.200.
Coseo, Marc C. Apparatus for applying acupressure. 5,545,177, Cl. 606-204.000.
Cosmo Oil Co., Ltd.: *See—*
Hara, Hiroaki; and Komoriya, Haruo, 5,544,635, Cl. 123-425.000.
Cosmo Research Institute: *See—*
Hara, Hiroaki; and Komoriya, Haruo, 5,544,635, Cl. 123-425.000.
Costa, Max; and Zhitkovich, Anatoly V., to New York University. Assay for detecting covalent DNA-protein complexes. 5,545,529, Cl. 435-6.000.
Costa, Ron: *See—*
Rorabaugh, Dale; and Costa, Ron, 5,544,607, Cl. 114-123.000.
Coulon, André, to GEC Alsthom Electromecanique SA. Method of fabricating a titanium alloy part, a titanium alloy part fabricated in this way, and a semi-finished titanium alloy product. 5,545,271, Cl. 148-671.000.
Coulonvaux, Paul: *See—*
Vanderauwera, Raymond; and Coulonvaux, Paul, 5,545,241, Cl. 55-490.000.
Courson, Daniel C.: *See—*
Courson, Michael W.; Courson, Daniel C.; and Courson, William H., 5,545,082, Cl. 451-456.000.
Courson, Michael W.; Courson, Daniel C.; and Courson, William H. Dust control system for rotary hand tools. 5,545,082, Cl. 451-456.000.
Courson, William H.: *See—*
Courson, Michael W.; Courson, Daniel C.; and Courson, William H., 5,545,082, Cl. 451-456.000.
Cox, Dean M. Evacuable storage bag. 5,544,752, Cl. 206-524.800.
Cox, William L., to Amoco Corporation. Isomerization catalyst and process. 5,545,792, Cl. 585-665.000.
Coyle, Daniel J., Jr.: *See—*
McPherson, John A., Jr.; Pirahesh, Mir H.; Truong, Tuong C.; and Coyle, Daniel J., Jr., 5,546,570, Cl. 395-600.000.
CPC International Inc.: *See—*
Hobson, John C.; and Greenshields, Roderick N., 5,545,557, Cl. 435-255.100.
Craig, Richard L., to R. L. Craig, Inc. Hoist and positioning apparatus. 5,544,860, Cl. 254-7.00R.
Crainich, Lawrence. Surgical staple and stapler device therefor. 5,544,802, Cl. 227-176.100.
Crank, Douglas: *See—*
Fisher, Daniel J.; Crank, Douglas; Lovell, Marc A.; Houle, Sabina J.; and Brodie, James L., 5,544,458, Cl. 52-204.591.
Cravy, Jerald A.; and McCall, Clarence D., to Lone Star Gas Company. Polymeric pipe splitter, replacement tool and method. 5,544,977, Cl. 405-154.000.
Creuseremee, Melville C.; and May, Jack L., to IRW Inc. Alert locator. 5,546,072, Cl. 340-574.000.
Crews, Alvin D., Jr.: *See—*
Condon, Michael E.; Crews, Alvin D., Jr.; and Manfredi, Mark C., 5,545,742, Cl. 548-261.000.
Cricket: *See—*
Frigiere, Rene, 5,544,785, Cl. 222-3.000.
Crimp, Martin A.: *See—*
Crimp, Melissa J.; Wilson, Brett A.; Suydam, Christopher J.; and Crimp, Martin A., 5,545,428, Cl. 427-8.000.
Crimp, Melissa J.; Wilson, Brett A.; Suydam, Christopher J.; and Crimp, Martin A., to Board of Trustees Operating Michigan State University, The. Method of preparing a suspension of particles and related methods. 5,545,428, Cl. 427-8.000.
Crocker, Charles: *See—*
Bae, Young C.; Soane, David S.; and Crocker, Charles, 5,545,367, Cl. 264-401.000.
Croft, Gregg D., to Harris Corporation. SCR inductor transient clamp. 5,546,038, Cl. 327-310.000.
Croughan, Timothy P., to Board of Supervisors of Louisiana State University and Agricultural and Mechanical College. Herbicide resistant rice. 5,545,822, Cl. 800-235.000.
Crowley, Robert J., to Boston Scientific Corp. Acoustic imaging catheter and method of operation. 5,544,660, Cl. 128-662.060.
Crown, Charles E.: *See—*
Richardson, Richard J.; and Crown, Charles E., 5,544,454, Cl. 52-171.100.
Crumpton, Samuel D.: *See—*
Shumate, Douglas S.; and Crumpton, Samuel D., 5,544,798, Cl. 224-402.000.
Crystallume: *See—*
Pinneo, John M., 5,545,030, Cl. 428-408.000.
Cullinan, George J., to Eli Lilly and Company. Methods for inhibiting bone loss with bis-pyrone oxovanadium compounds. 5,545,661, Cl. 514-460.000.
Culliton, Stephen P.: *See—*
Thompson, Raymon F.; Berner, Robert W.; Curtis, Gary L.; Culliton, Stephen P.; and Wright, Blaine G., 5,544,421, Cl. 34-58.000.
Cunningham, Neil P.: *See—*
Peterson, Ivan H.; Hoelle, James S.; Cunningham, Neil F.; and Umney, Michael A., 5,544,849, Cl. 248-74.100.
Curtis, Gary L.: *See—*
Thompson, Raymon F.; Berner, Robert W.; Curtis, Gary L.; Culliton, Stephen P.; and Wright, Blaine G., 5,544,421, Cl. 34-58.000.
Curtis, Harold D.; and Oberlag, Randal K., to Tower Tech, Inc. Industrial cooling tower. 5,545,356, Cl. 261-23.100.
Curtiss Wright Flight Systems Inc.: *See—*
Hickerson, William, 5,544,862, Cl. 254-124.000.
Cushman, Veronica B., to VBCO. Traffic barricade. 5,544,614, Cl. 116-63.00P.
Cutler, Robert T., to Hewlett-Packard Company. Gated spectrum analyzer. 5,545,976, Cl. 324-76.380.
Cutts, Stanley J.; and Golledge, Ian, to International Business Machines Corporation. Housing for electrical apparatus. 5,546,276, Cl. 361-724.000.
Cutts, Timothy P.: *See—*
Garel-Jones, Philip M.; and Cutts, Timothy P., 5,546,180, Cl. 356-73.100.
Cycolor Imaging, Inc.: *See—*
Raney, Tommy; and King, Julius D., Jr., 5,546,154, Cl. 354-304.000.
Cynan, T. P.; and Pollutro, Dennis C., to Moore Business Forms, Inc. Package verification method. 5,544,921, Cl. 283-70.000.
Cytec Technology Corp.: *See—*
Huang, Sun-Yi, 5,545,688, Cl. 524-827.000.
Czarnecki, Donald P.: *See—*
Loxton, Steven R.; and Czarnecki, Donald P., 5,544,917, Cl. 280-801.200.
Czeisler, Charles A.; and Kronauer, Richard E., to Brigham and Women's Hospital. Intermittent use of bright light to modify the circadian phase. 5,545,192, Cl. 607-88.000.
Dabrowski, Stanley P. Retrofit bill validator assembly. 5,544,728, Cl. 194-206.000.
Daewoo Electronics Co., Ltd.: *See—*
Lee, Min-Sup, 5,546,129, Cl. 348-416.000.
Park, Chan-Kyu, 5,546,235, Cl. 359-742.000.
Dagger Canoe Co., Inc.: *See—*
Scarborough, Charles S.; Kelly, Robert M.; Gaylor, Rodney W.; and Rogers, Patrick J., 5,544,613, Cl. 114-363.000.
Daglow, Terry D.: *See—*
Bradshaw, James I.; and Daglow, Terry D., 5,545,188, Cl. 607-37.000.
Dahl, Roger W.; Swanson, David K.; Hahn, Stephen J.; Lang, Douglas J.; and Heil, John E., to Cardiac Pacemakers, Inc. Body implantable defibrillation system. 5,545,202, Cl. 607-129.000.
Dahl, Roger W.: *See—*
Schulte, Theodore J.; Dahl, Roger W.; Bach, Stanley M., Jr.; Shapland, J. Edward; and Lang, Douglas J., 5,545,205, Cl. 607-123.000.
Dahmen, Georg P.: *See—*
Krause, Hartmut; Dahmen, Georg P.; and Meiss, Ludwig, 5,545,124, Cl. 601-2.000.
Dai Nippon Printing Co., Ltd.: *See—*
Takiguchi, Ryohei; Saito, Hitoshi; and Nishizawa, Masumi, 5,545,606, Cl. 503-227.000.
Dai, Pei-Shing E.: *See—*
Nelson, Gerald V.; Nongbri, Govanon; Pratt, Roy E.; Sherwood, David E., Jr.; and Dai, Pei-Shing E., 5,545,602, Cl. 502-314.000.

Daido Metal Company Ltd.: *See—*
Tanaka, Tadashi; Sakamoto, Masaaki; Yamamoto, Koichi; and Ozaki, Kouki, 5,545,249, Cl. 75-246.000.
Tanaka, Tadashi; Sakamoto, Masaaki; Yamamoto, Koichi; Kato, Tohru; and Sugita, Mitsuru, 5,545,489, Cl. 428-629.000.
Daifuku Co., Ltd.: *See—*
Shimoji, Tamotsu, 5,546,075, Cl. 340-666.000.
Daifuku, Koji: *See—*
Kita, Hiroshi; Sato, Hirokazu; and Daifuku, Koji, 5,545,514, Cl. 430-546.000.
Daigle, Ronald E., to Atlantis Diagnostics International, LLC. Ultrasonic multiline beamforming with interleaved sampling. 5,544,655, Cl. 128-661.010.
Daiichi Pharmaceutical Co., Ltd.: *See—*
Sato, Yukio; Sato, Atsushi; Sumikawa, Tatsuro; and Uemura, Tazuo, 5,545,737, Cl. 544-101.000.
Daikin Industries Ltd.: *See—*
Sota, Tomizo, 5,546,182, Cl. 356-312.000.
Daimler-Benz Aerospace Airbus GmbH: *See—*
Fischer, Heinz; Scherer, Thomas; Markwart, Michael; and Petry, Klaus, 5,545,084, Cl. 454-76.000.
Daimler-Benz Aerospace AG: *See—*
Held, Manfred, 5,544,589, Cl. 102-492.000.
Daimon, Katsumi; Nukada, Katsumi; Sakaguchi, Yasuo; and Igarashi, Ryosaku, to Fuji Xerox Co., Ltd. Method for preparing hydroxygallium phthalocyanine crystals and electrophotographic photoreceptor using the crystals. 5,545,733, Cl. 540-139.000.
Dainippon Screen Mfg. Co., Ltd.: *See—*
Shibazaki, Hiroshi; and Sasahara, Masayuki, 5,546,197, Cl. 358-534.000.
Daiwa Seiko, Inc.: *See—*
Okamoto, Naoki, 5,544,832, Cl. 242-245.000.
Dallas Semiconductor Corp.: *See—*
Klughart, Kevin M., 5,546,055, Cl. 331-116.0FE.
Dan Mamtirim, Israeli Limited Partnership: *See—*
Spenser, Benjamin, 5,544,814, Cl. 239-241.000.
Dana Corporation: *See—*
Belter, Jerome G., 5,544,902, Cl. 277-236.000.
Gustin, David C., 5,545,103, Cl. 475-223.000.
Holman, James L., 5,544,540, Cl. 74-467.000.
Danek Medical, Inc.: *See—*
Miller, David F.; Farris, Robert A.; and Barrett, John P., 5,545,163, Cl. 606-61.000.
Dang, Chi H., to International Business Machines Corporation. Cartridge picker assembly and modular library system. 5,546,366, Cl. 369-36.000.
Danieau, Jacques, to Valeo Climatisation. Heating-ventilation and/or air conditioning apparatus for the passenger space in a motor vehicle.. 5,545,085, Cl. 454-124.000.
Danieli & C. Officine Meccaniche SpA: *See—*
Robolini, Severo; and Picotti, Claudio, 5,544,516, Cl. 72-235.000.
Daniely, Gady: *See—*
Yang, Henry S.; Ramakrishnan, Kadangode K.; Daniely, Gady; and Wertheimer, Aviad, 5,546,543, Cl. 395-250.000.
Danino, Avraham. Riveting device. 5,544,401, Cl. 29-243.526.
Danks, John K.; Mazzola, Richard V.; and Johnson, Thomas R., to Endoscopic Concepts, Inc. Trocar. 5,545,150, Cl. 604-256.000.
Daquilante, Robert A.: *See—*
Stanfield, James R.; Daquilante, Robert A.; and Lanham, Bobby G., Jr., 5,545,855, Cl. 177-25.130.
Darbon, Philippe: *See—*
Lysson, Hans-Jürgen; Lisse, Frank; Hahn, Manuela; Leppert, Hans-Detlef; and Darbon, Philippe, 5,545,246, Cl. 65-435.000.
Darcie, Janet M., to AT&T Corp. Repeater for soliton transmission system using sliding-frequency guiding filter. 5,546,485, Cl. 385-28.000.
Darlington, Gretchen J.; Wilson, Deborah R.; and Wilde, Margaret, to Baylor College of Medicine. Human C/EBP gene and vectors for its expression. 5,545,563, Cl. 435-320.100.
Darlington, William H.: *See—*
Lin, Chiu-Hong; Haadsma-Svensson, Susanne R.; Piercey, Montford F.; Romero, Arthur G.; and Darlington, William H., 5,545,755, Cl. 564-428.000.
Dartt, Darlene A.; and Kessler, Timothy L., to Schepens Eye Research Institute, Inc., The. Therapeutic regulation of abnormal conjunctival goblet cell mucous secretion. 5,545,617, Cl. 514-12.000.
DASI Corporation: *See—*
Nahra, John E.; and Zimmer, Artur G., 5,544,571, Cl. 99-454.000.
Dattilo, Marion: *See—*
Benn, Freddy W.; Dattilo, Marion; and Cornell, William L., 5,544,760, Cl. 209-166.000.
Daudi, Anwar R., to Motor Wheel Corporation. Method and apparatus for making disc wheels and wheels made thereby. 5,544,945, Cl. 301-63.100.
Daugherty, David W., Jr., to Westinghouse Air Brake Company. Freight railway car slackless drawbar assembly. 5,544,767, Cl. 213-50.500.
Daugherty, Joe D. Pecan shucker. 5,544,574, Cl. 99-572.000.
Daute, Peter: *See—*
Koester, Rita; Stoll, Gerhard; and Daute, Peter, 5,545,332, Cl. 210-729.000.
Davankov, Vadim A., to White Eagle International Technologies, LP. Artificial kidney. 5,545,131, Cl. 604-5.000.
Davenport, Norban E. C-stator type segmented zoned field dc-motor. 5,545,936, Cl. 310-12.000.
Davey, Christopher K.; Dickison, Donald F.; and Jerger, Robert J., to Ford Motor Company. Engine air/fuel control system and catalytic converter monitoring. 5,544,481, Cl. 60-274.000.
David, Daniel; and David, Zipora, to Cardiomedix, Inc. Ambulatory patient health monitoring techniques utilizing interactive visual communication. 5,544,649, Cl. 128-630.000.
David, Zipora: *See—*
David, Daniel; and David, Zipora, 5,544,649, Cl. 128-630.000.
Davidson, Gary A.: *See—*
Fine, Wendy J.; Davidson, Gary A.; and Rykman, Alexander, 5,544,361, Cl. 2-10.000.
Davidson, Howard L., to Sun Microsystems, Inc. Three-dimensional compact array of electronic circuitry. 5,546,274, Cl. 361-701.000.
Davidson, James A.; and Kovacs, Paul, to Smith & Nephew Richards, Inc. Biocompatible low modulus medical implants. 5,545,227, Cl. 623-16.000.
Davies, Peter O.; Dromgool, Nicholas C.; Collinson, Graeme L.; and Fish, Alan P., to International Fruit Peelers Limited. Peeling apparatus and method. 5,545,422, Cl. 426-482.000.
Davis, Charles L.; and Long, Paul V., to Davis, Charles L. Real time ambulatory patient monitor. 5,544,661, Cl. 128-700.000.
Davis, Charles R.: *See—*
Andrews, G. Wayne; Webber, Steven H.; Kelly, James P.; Johnson, Lawreace E.; Stern, Jerry A.; Milano, Vincent J., Jr.; and Davis, Charles R., 5,546,452, Cl. 379-219.000.
Davis, Dennis D.: *See—*
Williams, Charles E.; Davis, Dennis D.; and Kee, David, 5,545,846, Cl. 174-51.000.
Davis, Henry J.: *See—*
Bissbort, Siegbert H.; and Davis, Henry J., 5,545,670, Cl. 514-562.000.
Davis, James A.; Hoppert, Joseph R.; Chmiel, Chester T.; and Alexander, Brian S., to Bridgestone/Firestone, Inc. Adhesive tape compositions and method for covering roofs. 5,545,685, Cl. 524-490.000.
Davis, Jeffrey P.: *See—*
Caswell, Ty J.; Davis, Jeffrey P.; Johnson, Gregory R.; Reinarts, Timothy J.; and Sun, Ting, 5,546,448, Cl. 379-142.000.
Sharma, Raghu N.; Davis, Jeffrey P.; Gunn, Timothy D.; Li, Ping; Maitra, Sidhartha; and Thanawala, Ashish A., 5,546,395, Cl. 370-84.000.
Davis, John; and Kinch, John, to Frymaster Corporation, The. Early product removal alarm. 5,544,567, Cl. 99-336.000.
Davis, Robert A.: *See—*
Friedlander, Barry T.; Davis, Robert A.; Blem, Allen R.; and Walker, David L., 5,545,655, Cl. 514-397.000.
Davis, Scott H.; Goleman, William L.; Thiel, David W.; Bean, Robert G.; and Zahrobsky, James A., to Digital Equipment Corporation. Log for selective management of specific address in a shadow storage system. 5,546,536, Cl. 395-182.180.
Davis, Ward H.: *See—*
Bacs, Aron, Jr.; Davis, Ward H.; and McCullough, Douglas A., 5,546,139, Cl. 348-754.000.
Davis Water & Waste Industries, Inc.: *See—*
McDougald, Mack, 5,545,334, Cl. 210-741.000.
Dawans, Francois: *See—*
Benzaria, Jacques; Dawans, Francois; Durif-Varambon, Bruno; and Gaillard, Jean-Bernard, 5,545,746, Cl. 560-78.000.
Dawson, Bryan T.; and Pugach, Joseph, to Aristech Chemical Corporation. Method of making ketoisophorone via oxidation of isophorone with tert-butyl hydroperoxide. 5,545,761, Cl. 568-342.000.
Dayco Products, Inc.: *See—*
Henderson, Dewey D., 5,545,095, Cl. 474-135.000.
DBH Limited, Inc.: *See—*
Hunt, Morris D., 5,544,600, Cl. 112-217.300.
Deal, Judy G.: *See—*
Varney, Michael D.; Palmer, Cindy L.; and Deal, Judy G., 5,545,744, Cl. 558-418.000.
Dean, Jerome: *See—*
Sharp, Gordon; Dean, Jerome; and Desrochers, Eric, 5,545,086, Cl. 454-238.000.
Dean, Robert H., to Midland Manufacturing Corp. Frangible valve handle. 5,544,675, Cl. 137-797.000.
DeBlock, David A., to ODL, Incorporated. Skylight with modular shaft. 5,544,455, Cl. 52-200.000.
Deboeck, Arthur; Maes, Paul; and Baudier, Phillipe R., to Galephar P.R. Inc. Pharmaceutical composition containing fenofibrate. 5,545,628, Cl. 514-49.000.
DeBrosse, John K.: *See—*
Watanabe, Yobji; and DeBrosse, John K., 5,546,349, Cl. 365-230.040.
Decagon Devices, Inc.: *See—*
Greenway, Warren C., 5,546,217, Cl. 359-223.000.
Decaux, Pierre: *See—*
Dubin, Michel; Talbot, Jacques; and Decaux, Pierre, 5,545,981, Cl. 324-142.000.
Deckner, George E.: *See—*
Hall, Bonnie J.; Baur, Julie A.; and Deckner, George E., 5,545,407, Cl. 424-401.000.
Deco-Hanulik AG: *See—*
Hanulik, Jozef, 5,545,795, Cl. 588-2.000.
Deegan, Thierry. Electrically steered acoustic lens. 5,546,360, Cl. 367-150.000.

Deems, Vincent B.; Racino, Gregory A.; Feddeler, James R.; and Shiff, Victor E., to Motorola Inc. Method and apparatus for preventing a data processing system from entering a non-recoverable state. 5,546,588, Cl. 395-750.000.
Deep Oil Technology, Inc.: *See*—
Horton, Edward E., III, 5,544,608, Cl. 114-230.000.
Deere & Company: *See*—
Klingler, Alban; and Leeb, Georg, 5,544,826, Cl. 241-242.000.
Lowe, Terry L.; and Noonan, James T., 5,544,709, Cl. 172-661.000.
DeFigueiredo, Carlos L., to Pitney Bowes Inc. Anti-skew device for envelope turner. 5,544,874, Cl. 271-2.000.
De Greve, Henri M. J.; Salgado, Maria B. L. F.; Van Montagu, Marc C. E.; Vaeck, Mark A.; Zabeau, Marcus F. O.; Leemans, Jan J. A.; and Hofte, Hermanus F. P., to Plant Genetic Systems, N.V. Transformation vectors allowing expression of foreign polypeptide endoxins from *Bacillus thuringiensis* in plants. 5,545,565, Cl. 435-320.100.
DeGroot, Kenneth P.: *See*—
Thomas, Christopher P.; Coatesworth, Timothy A.; DeGroot, Kenneth P.; Ehlers, Jeffery C.; and McMackin, Mark E., 5,544,640, Cl. 123-689.000.
Deguchi, Toshihisa: *See*—
Fuji, Hiroshi; Deguchi, Toshihisa; Kojima, Kunio; Yamaguchi, Takeshi; Terashima, Shigeo; Takahashi, Akira; and Ohta, Kenji, 5,546,364, Cl. 369-13.000.
DeGuire, Mark R.; Heuer, Arthur H.; and Sukenik, Chaim N., to Case Western Reserve University. Synthesis of metal oxide thin films. 5,545,432, Cl. 427-226.000.
Degussa Aktiengesellschaft: *See*—
Weitkamp, Jens; Ernst, Stefan; Bock, Thomas; Kromminga, Thomas; Kiss, Akos; and Kleinschmit, Peter, 5,545,784, Cl. 585-250.000.
Dekker, Jacobus N.; De Valk, Elwin; and Fraij, Fred, to U.S. Philips Corporation. Shaving apparatus having contoured heads. 5,544,414, Cl. 30-43.600.
de la Prieta, Claudio: *See*—
Priese, Karl-Hermann; Gruenwald, Werner; Stahl, Roland; de la Prieta, Claudio; Schneider, Gerhard; and Neumann, Harald, 5,545,301, Cl. 204-425.000.
Delaware Capital Formation, Inc.: *See*—
Stoll, Thomas D.; and Switek, Lawrence E., 5,544,496, Cl. 62-498.000.
Delco Electronics Corp.: *See*—
Bulin, David S.; Fye, Michael E.; and Stratman, Rick, 5,545,866, Cl. 200-345.000.
Disney, Donald R.; Sozansky, Wayne A.; and Himelick, James M., 5,545,915, Cl. 257-491.000.
Ramos, Sergio; Hall, John T.; Tanzer, Herbert J.; and Severns, Rudy, 5,545,966, Cl. 320-2.000.
Deleryd, Roland: *See*—
Collin, Per; Deleryd, Roland; Ivars, Roland; Lundqvist, Fredrik; and Stolzenberg, Norman R., 5,546,435, Cl. 376-253.000.
Delfyett, Peter J.; Yusim, A.; and Gee, S., to University of Central Florida. High speed pulse slicer/demultiplexer with gain for use in solid state regenerative amplifier systems. 5,546,415, Cl. 372-25.000.
Dell USA, L.P.: *See*—
Moss, David L.; and Mills, Richard S., 5,546,272, Cl. 361-687.000.
Stewart, Gregory N., 5,545,935, Cl. 307-150.000.
Dellinger, Donald E.: *See*—
Summers, Donald J.; Correll, Robert S., Jr.; and Dellinger, Donald E., 5,545,051, Cl. 439-350.000.
Delong, Wolf: *See*—
Kurowski, Lorenz V.; Blanz, Wolf-Ekkehard; and Delong, Wolf, 5,544,657, Cl. 128-661.080.
Delta International Machinery Corp.: *See*—
Haffely, Jeffrey L.; Lei, Xun; and Brickner, Louis C., 5,545,081, Cl. 451-367.000.
DeMars, Robert A. Cup holder. 5,545,447, Cl. 428-16.000.
Dembowsky, Klaus: *See*—
Straub, Alexander; Goldmann, Siegfried; Stoltefuss, Jürgen; Bechem, Martin; Dembowsky, Klaus; Gross, Rainer; Hebisch, Siegbert; Hütter, Joachim; and Rounding, Howard-Paul, 5,545,646, Cl. 514-337.000.
Demeyere, Hugo J. M.: *See*—
Baker, Ellen S.; Bodet, Jean-Francois; Demeyere, Hugo J. M.; Hartman, Frederick A.; Hubesch, Bruno A.; Mermelstein, Robert; Taylor, Lucille F.; and Wahl, Errol H., 5,545,350, Cl. 510-517.000.
Wahl, Errol H.; Bacon, Dennis R.; Baker, Ellen S.; Bodet, Jean-Francois; Burns, Michael E.; Demeyere, Hugo J. M.; Hensley, Charles A.; Mermelstein, Robert; Severns, John C.; Shaw, John H., Jr.; Siklosi, Michael P.; Vogel, Alice M.; and Watson, Jeffrey W., 5,545,340, Cl. 510-517.000.
Demmel, Edward J., to Intercat, Inc. Processes for reacting bastnaesite with alkaline-earth metals. 5,545,604, Cl. 502-414.000.
Den Norske Stats Oljeselskap A.S.: *See*—
Breivik, Kare; Smedal, Arne; and Syvertsen, Kare, 5,545,065, Cl. 441-5.000.
Denenberg, Jeffrey N., to Noise Cancellation Technologies, Inc. Active noise attenuated DSP Unit. 5,546,467, Cl. 381-71.000.
Deng, Chih-Chiang; and Tsai, Tung-Hung. Method for coating a metal cookware. 5,545,439, Cl. 427-327.000.
Denker, Stephen, to Denker, Stephen. Cardiac pacer which compensates for effects of abrupt changes in heart rate. 5,545,185, Cl. 607-14.000.
Denki Kagaku Kogyo Kabushiki Kaisha: *See*—
Terui, Yoshinori; and Terasaki, Ryuichi, 5,544,617, Cl. 117-87.000.
Denneau, Monty M.: *See*—
Hochschild, Peter H.; and Denneau, Monty M., 5,546,391, Cl. 370-60.000.
Dennis, Mahlon D., to Dennis Tool Company. Cutting element for drill bits. 5,544,713, Cl. 175-434.000.
Dennis Tool Company: *See*—
Dennis, Mahlon D., 5,544,713, Cl. 175-434.000.
Dennison, Everett; Nass, Edwin L.; Duffy, Timothy J.; Pauley, Gregory T.; Jones, Scott L.; and Shale, Deborah J. Cellular telephone system that uses position of a mobile unit to make call management decisions. 5,546,445, Cl. 379-60.000.
Densmore, Bruce D.; Hass, Lester A.; Rotunda, John T.; and Fissel, Gregory W., to Quinton Instrument Company. D.C. treadmill speed change motor controller system. 5,545,112, Cl. 482-54.000.
Dent, Paul W.: *See*—
Raith, Krister A.; and Dent, Paul W., 5,546,464, Cl. 380-48.000.
Deppert, Thomas M.: *See*—
Barnes, Michael W.; Deppert, Thomas M.; and Taylor, Robert D., 5,544,687, Cl. 149-83.000.
Deprey, Dominique: *See*—
Sehier, Philippe; and Deprey, Dominique, 5,546,423, Cl. 375-206.000.
Derafe, Ltd.: *See*—
Feldstein, Robert S., 5,544,681, Cl. 141-1.001.
Deretsky, Zachary Y.; Rodny, Uri; and White, Marvin S., Jr., to Etak, Inc. Automatic chain-based conflation of digital maps. 5,546,107, Cl. 395-600.000.
De Ro, Ignace, to Picanol N.V. Weft thread brake with rotary drive. 5,544,680, Cl. 139-450.000.
Derudder, Carlos, to N.V. Michel Van De Wiele. Loom reed with integral deflector heald frame. 5,544,676, Cl. 139-192.000.
Desai, Mihir C.: *See*—
Sundberg, Jack G.; Bisson, Bernard J.; Desai, Mihir C.; and Books, Martin T., 5,545,014, Cl. 417-204.000.
Desai, Neil P.: *See*—
Soon-Shiong, Patrick; Desai, Neil P.; and Heintz, Roswitha E., 5,545,423, Cl. 424-484.000.
Desai, Subahu D.: *See*—
Chang, Chi S.; Desai, Subahu D.; Gernhart, Debra A.; Hartley, Phillip A.; Haskins, Robert J., Jr.; Ho, Keith K. T.; Martone, Robert A.; Mulcahy, Roy T.; Shaffer, Louis J.; Schoening, Robert D.; and Versprille, Scott A., 5,546,321, Cl. 364-491.000.
Desrochers, Eric: *See*—
Sharp, Gordon; Dean, Jerome; and Desrochers, Eric, 5,545,086, Cl. 454-238.000.
de Sternberg, Lilian Z.; and Sternberg, Alberto. Method for heat curing of dental prostheses without the use of dental flasks. 5,545,875, Cl. 219-440.000.
DeToro, William. Laterally adjustable ankle and foot orthosis. 5,545,127, Cl. 602-27.000.
Deutsche Aerospace AG: *See*—
Trummer, Günther; and Körber, Richard, 5,546,088, Cl. 342-124.000.
De Valk, Elwin: *See*—
Dekker, Jacobus N.; De Valk, Elwin; and Fraij, Fred, 5,544,414, Cl. 30-43.600.
Devenyi, Gabor, to Hughes Aircraft Company. Zoom lens having high speed multi-lens drive. 5,546,238, Cl. 359-823.000.
DeVito, Larry M.: *See*—
Dos Santos, Francisco, Jr.; and DeVito, Larry M., 5,545,918, Cl. 257-577.000.
Devitt, John W.: *See*—
Nagaraj, Bangalore A.; Weil, Antoinette E.; and Devitt, John W., 5,545,437, Cl. 427-404.000.
Devon, Mark D., to Apple Computer, Inc. Method and apparatus for multi-protocol infrared data transmission. 5,546,211, Cl. 359-154.000.
De Vry, Jean M. V.: *See*—
Heine, Hans-Georg; Schohe-Loop, Rudolf; Glaser, Thomas; De Vry, Jean M. V.; Dompert, Wolfgang; and Sommermeyer, Henning, 5,545,643, Cl. 514-322.000.
Dhaouadi, Rached: *See*—
Kubo, Kenji; Dhaouadi, Rached; Tobise, Masahiro; and Azusawa, Noboru, 5,545,957, Cl. 318-432.000.
D'Herripon, Bastiaan A.: *See*—
Roovers, Gijsbertus C. F.; and D'Herripon, Bastiaan A., 5,545,100, Cl. 475-185.000.
Roovers, Wilhelmus C. W. M.; d'Herripon, Bastiaan A.; and Choi, Chi C., 5,545,105, Cl. 477-43.000.
Dia-Compe, Taiwan Co., Ltd.: *See*—
Chen, Sheng-Luen, 5,544,905, Cl. 280-279.000.
Dichtungstechnik G. Bruss GmbH & Co. KG: *See*—
Heine, Steffen; Schumacher, Heiko; and Johnen, Rolf, 5,544,895, Cl. 277-9.500.
Dick, Sami; Recourt, Patrick; and Laurenceau, Serge, to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation Des Procedes Georges Claude. Asymmetric oxygen/fuel burner. 5,545,033, Cl. 431-181.000.
Dickison, Donald F.: *See*—
Davey, Christopher K.; Dickison, Donald F.; and Jerger, Robert J., 5,544,481, Cl. 60-274.000.
Dickson, David N.: *See*—
Hoyt, Matthew B.; Coons, Andrew M., III; and Dickson, David N., 5,545,363, Cl. 264-78.000.

Didier, James J.; Lindstrand, Bruce L.; and Wight, Ernest W., to Beloit Technologies, Inc. Method and apparatus for reeling a traveling web into a wound web roll. 5,544,841, Cl. 242-541.100.
Didlake, Ralph L. Swing away cargo carrier assembly. 5,544,799, Cl. 224-502.000.
Diel, Mark, to Maxtor Corporation. Elastomer gasket that extends around the outer edge of a hard drive. 5,546,250, Cl. 360-97.020.
Dievendorff, Richard: *See*—
Brockmeyer, Roger L.; Dievendorff, Richard; House, Daniel E.; Jenner, Earle H.; LaBelle, Margaret K.; Mall, Michael G.; and Silen, Stuart L., 5,546,582, Cl. 395-650.000.
Diggs, Matthew B.; and Sweetnam, Gordon W., to Ford Motor Company. Finger follower rocker arm with engine valve deactivator. 5,544,626, Cl. 123-90.160.
Di Giovanni, John: *See*—
Le, Thu A.; Yi, Sung S.; Zwaskis, William; Pedlick, Jack S.; Luscombe, Brian H.; Jamiolkowski, Dennis D.; Di Giovanni, John; Seritella, Keith A.; Steckel, Mark G.; and Harwin, Steven F., 5,545,180, Cl. 606-232.000.
DiGiovanni, Joseph J.: *See*—
Cooley, David M.; DiGiovanni, Joseph J.; Kaewell, John D.; Kurtz, Scott D.; Lemmo, Mark A.; Regensburg, Michael W.; Vessal, David; and Johns, Eric, 5,546,383, Cl. 370-50.000.
Digital Equipment Corporation: *See*—
Davis, Scott H.; Goleman, William L.; Thiel, David W.; Bean, Robert G.; and Zahrobsky, James A., 5,546,536, Cl. 395-182.180.
Ozveren, Cuneyt M., 5,546,377, Cl. 370-13.000.
Palmer, Ricky S.; and Palmer, Larry G., 5,546,324, Cl. 364-514.00R.
Partovi, Hamid; Butler, Steven; and Tran, Luan, 5,546,354, Cl. 365-233.000.
Yang, Henry S.; Ramakrishnan, Kadangode K.; Daniely, Gady; and Wertheimer, Aviad, 5,546,543, Cl. 395-250.000.
Dignitti, Daniel M.: *See*—
Kelley, Miriam; and Dignitti, Daniel M., 5,544,870, Cl. 256-26.000.
Digonnet, Michel J.: *See*—
Fling, John J.; Shaw, Herbert J.; Digonnet, Michel J.; and Kapany, Narinder S., 5,546,484, Cl. 385-16.000.
Dike, Charles E.; and Ostler, Farrell L., to North American Philips Corporation. Arbiter with a direct signal path that is modifiable under priority-conflict control. 5,546,544, Cl. 395-287.000.
Dinger, Thomas E.: *See*—
Lynch, Thomas E.; Sejnoha, Vladimir; and Dinger, Thomas E., 5,546,499, Cl. 395-2.490.
DiPalma, Joseph; and Anjur, Sowmya S., to Kimberly-Clark Corporation. Absorbent article having a preformed member. 5,545,156, Cl. 604-385.100.
Di Pietro, Larry; and Azibert, Henri, to A. W. Chesterton Co. Cartridge seal having a high contact pressure seal and means for intersleeve adjustment including quench fluid delivery. 5,544,897, Cl. 277-81.00R.
Dippold, Jack D.: *See*—
Corzine, Alan J.; Dippold, Jack D.; and Schluckebier, David K., 5,544,398, Cl. 29-1.230.
Disney, Donald R.; Sozansky, Wayne A.; and Himelick, James M., to Delco Electronics Corporation. Semiconductor device having field limiting ring and a process therefor. 5,545,915, Cl. 257-491.000.
Display Products, Inc.: *See*—
Lightfoot, Jerry J., 5,544,393, Cl. 24-306.000.
Dixon, Roy. Shock absorbing shoe with adjustable insert. 5,544,431, Cl. 36-38.000.
Doan, Phong D., to Pacesetter, Inc. Crush resistant multi-conductor lead body. 5,545,203, Cl. 607-122.000.
Dobbs, Gregg T.; Dobbs, Loura L.; and Dobbs, John M., to Keepsake, Inc. Single use camera film pre-exposure method. 5,546,146, Cl. 354-120.000.
Dobbs, John M.: *See*—
Dobbs, Gregg T.; Dobbs, Loura L.; and Dobbs, John M., 5,546,146, Cl. 354-120.000.
Dobbs, Loura L.: *See*—
Dobbs, Gregg T.; Dobbs, Loura L.; and Dobbs, John M., 5,546,146, Cl. 354-120.000.
Dodge, David J.: *See*—
Laughlin, James; and Dodge, David J., 5,544,909, Cl. 280-617.000.
Dodge, Jeffrey A.: *See*—
Bryant, Henry U.; Dodge, Jeffrey A.; Sato, Masahiko; and Yang, Na N., 5,545,635, Cl. 514-177.000.
Doguchi, Kentaro: *See*—
Sasaki, Goro; Yano, Hiroshi; Sawada, Sosaku; and Doguchi, Kentaro, 5,546,489, Cl. 385-88.000.
Doiu, Yuji, to Japan Power Fastening Co. Ltd. Belt for holding a train of screws. 5,544,746, Cl. 206-346.000.
Doi, Kazuyuki: *See*—
Koyama, Masayoshi; Takahashi, Mikiko; and Doi, Kazuyuki, 5,545,720, Cl. 530-380.000.
Doi, Koji; Tsuji, Yasuyuki; Yokokawa, Shuuhei; Takahashi, Kunitomo; Hirose, Youji; Ueno, Hiroshi; Takeuchi, Youichi; Yamada, Koutaro; and Iwanaga, Hidenori, to Hitachi Koki Co., Ltd. Developing device in electrophotographic apparatus including developing poll configuration while stably carries developer. 5,545,840, Cl. 118-658.000.
Doi, Muneharu: *See*—
Asahi, Satoru; Yano, Takahiko; and Doi, Muneharu, 5,545,538, Cl. 435-86.000.
Doi, Toshiya: *See*—
Higashiyama, Kazutoshi; Doi, Toshiya; Ozawa, Takesi; Takeuchi, Seizi; Kamo, Tomoichi; Matsuda, Shinpei; and Yoshida, Yutaka, 5,545,610, Cl. 505-120.000.
Dollar, Arthur J. Apparatus for treating work objects. 5,544,668, Cl. 134-104.200.
Dolmar GmbH: *See*—
Radel, Harry; and Vick, Christian, 5,545,357, Cl. 261-35.000.
Domb, Abraham: *See*—
Laurencin, Cato T.; Lucas, Paul A.; Syftestad, Glenn T.; Domb, Abraham; Glowacki, Julianne; and Langer, Robert S., 5,545,409, Cl. 424-426.000.
Dompert, Wolfgang: *See*—
Heine, Hans-Georg; Schohe-Loop, Rudolf; Glaser, Thomas; De Vry, Jean M. V.; Dompert, Wolfgang; and Sommermeyer, Henning, 5,545,643, Cl. 514-322.000.
Donahoe, Danny T. Sound transducer. 5,546,469, Cl. 381-152.000.
Donaldson Company, Inc.: *See*—
Vanderauwera, Raymond; and Coulonvaux, Paul, 5,545,241, Cl. 55-490.000.
Donath, Ralf: *See*—
Schmitt, Johannes; Burg, Andreas; and Donath, Ralf, 5,544,949, Cl. 303-140.000.
Donn, Günter: *See*—
Dudits, Dénes; Paulovics, Katalin; Kalman, Katalin; Györgyey, János; Nagy, Ferenc; Bako, László; Horvath, Gábor; Eckes, Peter; and Donn, Günter, 5,545,819, Cl. 800-205.000.
Donnelly Corporation: *See*—
Fisher, Daniel J.; Crank, Douglas; Lovell, Marc A.; Houle, Sabina J.; and Brodie, James L., 5,544,458, Cl. 52-204.591.
Donnerdal, Ove: *See*—
Larsson, Håkan; and Donnerdal, Ove, 5,545,079, Cl. 451-342.000.
Döpke, Stefan, to Heidelberger Druckmaschinen AG. Transmission arrangement. 5,544,546, Cl. 74-569.000.
DORMA GmbH + Co. KG: *See*—
Kordes, Herbert, 5,544,462, Cl. 52-243.100.
Doss, Saad K.; McKean, Dennis R.; Renaldo, Alfred F.; and Wilson, Robert J., to International Business Machines Corporation. Process for patterned electroplating. 5,545,307, Cl. 205-122.000.
Dos Santos, Francisco, Jr.; and DeVito, Larry M., to Analog Devices, Inc. Circuit construction for controlling saturation of a transistor. 5,545,918, Cl. 257-577.000.
Dougherty, Joseph P., to Penn State Research Foundation, The. Cardiac defibrillator with high energy storage antiferroelectric capacitor. 5,545,184, Cl. 607-5.000.
Douglas, Monte A., to Texas Instruments Incorporated. Etching method. 5,545,290, Cl. 156-646.100.
Dow Chemical Company, The: *See*—
Robinette, Rex T., III, 5,544,684, Cl. 141-83.000.
Walters, Martin E.; Kolonko, Richard P.; and Wehmeyer, Richard M., 5,545,760, Cl. 568-321.000.
Wright, Larry G.; LaPack, Mark A.; Blaser, Wayne W.; Beebe, Kenneth R.; and Leugers, Mary A., 5,545,895, Cl. 250-282.000.
Dow Corning Corporation: *See*—
Burns, Gary T.; Zank, Gregg A.; and Ewald, Jeffrey A., 5,545,687, Cl. 524-701.000.
Cannady, John P.; Gohndrone, John M.; and Tzou, Ming-Shin, 5,545,743, Cl. 556-466.000.
Estes, Tara N.; and Krahnke, Robert H., 5,545,704, Cl. 528-15.000.
Mealey, Shawn K.; Schmidt, Randall G.; and Brady, William P., 5,545,700, Cl. 525-478.000.
Williams, Dwight E., 5,545,317, Cl. 210-198.200.
Ziemelis, Maris J.; Chang, Eng-Pi; and Winnik, Mitchell A., 5,545,830, Cl. 528-15.000.
Dow Corning Silicone Co., Ltd.: *See*—
Kaiya, Nobuo; and Kobayashi, Hideki, 5,545,682, Cl. 524-265.000.
Dow Corning Toray Silicone Co., LTD.: *See*—
Kaiya, Nobuo; Kobayashi, Hideki; and Nishiumi, Wataru, 5,545,831, Cl. 524-731.000.
Kobayashi, Hideki, 5,545,837, Cl. 556-460.000.
Dowbrands L.P.: *See*—
Smith, David A.; and Nestle, Robert J., 5,544,471, Cl. 53-447.000.
Dowler, Glyn W.; and Pruchniewicz, Edward I., to Mailway (UK) Limited. Package to be mounted on a bottle. 5,544,769, Cl. 215-227.000.
Downey, Jerome P.: *See*—
Coltrinari, Enzo L.; Downey, Jerome P.; Hazen, Wayne C.; and Quenean, Paul B., 5,544,859, Cl. 251-368.000.
Downs, Michael J., to British Technology Group Ltd. Single-frequency bidirectional fringe-counting interferometer. 5,546,184, Cl. 356-345.000.
Doxsee, Kenneth M., to University of Oregon, The State of Oregon Acting by and through the State Board of Higher Education on Behalf of the. Complexation-mediated crystal-forming reactions using complexing agents. 5,545,394, Cl. 423-659.000.
Doyle, Bruce: *See*—
Lin, Jyhfong; and Doyle, Bruce, 5,546,026, Cl. 327-54.000.
Doyle, Richard C.; and Rivera, Lester, to Leviton Manufacturing Co., Inc. Shock hazard protection system. 5,546,263, Cl. 361-50.000.
Dr. Ing. h.c.F. Porsche AG: *See*—
Murkett, Stephen; and Bayer, Jürgen, 5,544,934, Cl. 296-215.000.
Drabant, Sándor: *See*—

Szántay, Csaba; Kardos, Zsuzsanna B.; Moldvai, István; Major, Eszter T.; Szántay, Csaba, Jr.; Mándi, Attila; Blaskó, Gábor; Simig, Gyula; Lax, Györgyi; Drabant, Sándor; Szállási, Tamas; Fekete, Márton; and Gigler, Gábor, 5,545,741, Cl. 546-276.700.

Drakesmith, Frederick G.; and Jones, Andrew R., to EA Technology Limited; and Manweb PLC. Process for the destruction of halocarbons. 5,545,390, Cl. 423-499.100.

Drapier, Julien: *See*—
Durbut, Patrick; Ahmed, Pahim; and Drapier, Julien, 5,545,344, Cl. 510-223.000.

Drappel, Stephan V.: *See*—
Keoshkerian, Barkev; Georges, Michael K.; and Drappel, Stephan V., 5,545,504, Cl. 430-137.000.

Draskovich, Barry S.; and Ullah, M. Rifat, to AlliedSignal Inc. Composite face seal. 5,544,896, Cl. 277-22.000.

Drew, Robert M.; Plum, Dennis L.; and Walmsley, Graham M., to International Business Machines Corporation. System for routing transaction commands to an external resource manager when the target resource is not managed by the local transaction managing computer program. 5,546,541, Cl. 395-200.150.

Driehuys, Bastiaan: *See*—
Albert, Mitchell S.; Balamore, Dilip; Cates, Gordon D., Jr.; Driehuys, Bastiaan; Happer, William; Saam, Brian; and Wishnia, Arnold, 5,545,396, Cl. 424-93.000.

Dries, Rudi, to Liexco S.A. Door and jambs and jamb-linings pertaining thereto. 5,544,456, Cl. 52-204.100.

Drivon, Gilles; and Kervennal, Jacques, to Elf Atochem S.A. Synthesis of n-perfluorooctyl bromide. 5,545,776, Cl. 570-174.000.

Dromgool, Nicholas C.: *See*—
Davies, Peter O.; Dromgool, Nicholas C.; Collinson, Graeme L.; and Fish, Alan P., 5,545,422, Cl. 426-482.000.

Drori, Mordeki. Filter apparatus. 5,545,321, Cl. 210-411.000.

DSC Communications Corporation: *See*—
Flores, Michael A., 5,545,845, Cl. 174-35.00R.

DSM N.V.: *See*—
Duisters, Henricus A. M.; and Haenen, Johan G.D., 5,545,789, Cl. 585-508.000.

D'Souza, Godfrey P.; and Laird, Douglas A., to Sun Microsystems, Inc. Static logic circuit with improved output signal levels. 5,546,022, Cl. 326-87.000.

DT Membranfilter Vertriebs GmbH: *See*—
Heine, Wilhelm; and Mohn, Jürgen, 5,545,320, Cl. 210-321.600.

Du, Mila T.: *See*—
Ayral-Kaloustian, Semiramis; Schow, Steven R.; Du, Mila T.; and Gibbons, James J., Jr, 5,545,662, Cl. 514-478.000.

Du Pont de Nemours, E. I., and Company: *See*—
Baker, Ralph T.; Beatty, Richard P.; Farnham, William B.; and Wallace, Robert L., Jr., 5,545,769, Cl. 570-134.000.
Bergmann, Oswald R.; Chen, Carl; and Jacobson, Howard W., 5,545,250, Cl. 75-252.000.
Hung, Ming-Hong; Kaku, Mureo; and Logothetis, Anestis L., 5,545,693, Cl. 525-187.000.
Rao, V. N. Mallikarjuna, 5,545,774, Cl. 570-168.000.

Dubach, Fredi, to Milz Produkte AG. Roof rack for vehicles. 5,544,796, Cl. 224-310.000.

Duback, Jeffrey E., to Parker Medical Associates. Front-to-back and side-to-side custom-molded protective device. 5,544,663, Cl. 128-846.000.

Dubin, Michel; Talbot, Jacques; and Decaux, Pierre, to Schlumberger Industries, S.A. Device for measurement of electrical energy comprising a multiplexer. 5,545,981, Cl. 324-142.000.

Dubix De Souza SNC: *See*—
Adler, Michel, 5,544,644, Cl. 126-91.00R.

Ducharme Oilfield Rentals Ltd.: *See*—
Ducharme, Troy E.; and Grusie, Jeffrey A., 5,544,999, Cl. 414-786.000.

Ducharme, Troy E.; and Grusie, Jeffrey A., to Ducharme Oilfield Rentals Ltd. Method and apparatus for stacking modular housing units. 5,544,999, Cl. 414-786.000.

Duchemin, Pierre, to Schneider Electric SA. Protection switch. 5,546,062, Cl. 335-132.000.

Dudits, Dénes; Paulovics, Katalin; Kalman, Katalin; Györgyey, János; Nagy, Ferenc; Bako, László; Horvath, Gábor; Eckes, Peter; and Donn, Günter, to Hoechst Aktiengesellschaft. Transgenic plants expressing a prokaryotic ammonium dependent asparagine synthetase. 5,545,819, Cl. 800-205.000.

Duerr, Walter: *See*—
Kirsch, Axel; and Duerr, Walter, 5,544,552, Cl. 81-44.000.

Duff, Paul J.; Larson, John P.; and Lechtanski, Joseph B., to Carrier Corporation. System for monitoring the operation of a compressor unit. 5,546,073, Cl. 340-585.000.

Duffy, Timothy J.: *See*—
Dennison, Everett; Nass, Edwin L.; Duffy, Timothy J.; Pauley, Gregory T.; Jones, Scott L.; and Shale, Deborah J., 5,546,445, Cl. 379-60.000.

Duguet, Jean-Rene, to NCS Pyrotechnie et Technologies. Electropyrotechnical initiator. 5,544,585, Cl. 102-202.500.

Duisters, Henricus A. M.; and Haenen, Johan G.D., to DSM N.V. Process for the dimerization of a conjugated diene. 5,545,789, Cl. 585-508.000.

Duke Power Company: *See*—
White, George W.; Teague, Robert W.; Tennent, Antony D.; and Robinson, James A., Jr., 5,544,717, Cl. 182-90.000.

Duke Univ.: *See*—
Stamler, Jonathan; and Kobzik, Lester, 5,545,614, Cl. 514-6.000.

Duke University: *See*—
Jacobson, Kenneth A.; and Stiles, Gary, 5,545,627, Cl. 514-46.000.

Duley, Raymond S., to Advanced Micro Devices, Inc. Apparatus for modifying an electrical signal. 5,546,297, Cl. 363-62.000.

Dumić, Miljenko; Filić, Darko; Vinković, Mladen; Jamnicky, Blanka; and Eškinja, Mirela, to PLIVA farmaceutska, kemijska, prehrambena i kozmetička industrija, dionicko drustvo. Hydroxylamines with hypoglycemic activity. 5,545,659, Cl. 514-450.000.

Dumontier, Franck: *See*—
Besnard, Philippe; Tang, Larry; Rugge, Richard L.; Sieleman, Jim; and Dumontier, Franck, 5,544,885, Cl. 473-350.000.

Duncia, John J. V.; Ensinger, Carol L.; Olson, Richard E.; Quan, Mimi L.; Santella, Joseph B., III; and Vanatten, Mary K., to DuPont Merck Pharmaceutical Company, The. Imidazole 5-position substituted angiotensin II antagonists. 5,545,651, Cl. 514-381.000.

Dunfield, John C.; and Oveyssi, Kamran, to Seagate Technology, Inc. Integrated passive magnetic bearing system and spindle permanent magnet for use in a spindle motor. 5,545,937, Cl. 310-90.500.

Dunlop Limited: *See*—
Shaw, Michael; and Slater, Gary W., 5,544,890, Cl. 473-383.000.

Dunn, James M.: *See*—
Stevens, John K.; and Dunn, James M., 5,545,527, Cl. 435-6.000.

Dunn, Steven B.; and Suarez, Fernando, to Munchkin Bottling Inc. Coded two part nipple members for baby bottles and method of making. 5,544,766, Cl. 215-11.100.

Dunnington, Nedward B.: *See*—
McCue, Patrick O.; and Dunnington, Nedward B., 5,544,363, Cl. 2-102.000.

Dunsmore, Clay A.: *See*—
Bernardi, Bryan D.; McIntyre, Dale F.; Dunsmore, Clay A.; and Wolcott, Dana W., 5,546,145, Cl. 354-76.000.

DuPont Merck Pharmaceutical Company, The: *See*—
Duncia, John J. V.; Ensinger, Carol L.; Olson, Richard E.; Quan, Mimi L.; Santella, Joseph B., III; and Vanatten, Mary K., 5,545,651, Cl. 514-381.000.

Dupuy, Pierre; and Freulon, Anne, to Alcatel Mobile Communications. Step by step method of controlling frequency redefinition in a cellular mobile radio system. 5,546,384, Cl. 370-50.000.

Duracell Inc.: *See*—
Paumen, Jacky M. G. N.; Hemming, Rowland; Hartmann, Kai; and Beckers, Marc, 5,544,755, Cl. 206-705.000.

Duran, Carlos G. External sigmoid valve complex frame and valved conduit supported by the same. 5,545,215, Cl. 623-2.000.

Durbut, Patrick; Ahmed, Pahim; and Drapier, Julien, to Colgate-Palmolive Co. Nonaqueous liquid, improved automatic dishwashing composition containing enzymes. 5,545,344, Cl. 510-223.000.

Durif-Varambon, Bruno: *See*—
Benzaria, Jacques; Dawans, Francois; Durif-Varambon, Bruno; and Gaillard, Jean-Bernard, 5,545,746, Cl. 560-78.000.

Durling, Walter E., to Matrex Furniture Components, Inc. Seat construction and method. 5,544,943, Cl. 297-452.560.

Dutil, Marcel, to Canam Hambro. Composite steel and concrete floor system. 5,544,464, Cl. 52-330.000.

Duxbury, Tom: *See*—
Wirth, Brian; and Duxbury, Tom, 5,546,378, Cl. 370-16.100.

Duyn, Jozef H., to United States of America, Health and Human Services. Ultrafast burst imaging using shifting of excited regions. 5,544,652, Cl. 128-653.200.

Dworsky, Lawrence N.: *See*—
Wiemann, David A.; Dworsky, Lawrence N.; Jaskie, James E.; Kane, Robert C.; and Moyer, Curtis D., 5,545,946, Cl. 313-497.000.

Dye, Robert. Handrail assembly. 5,544,866, Cl. 256-69.000.

Dymetrol Company, Inc.: *See*—
Hoffman, Richard A., 5,544,391, Cl. 24-16.0PB.

DyStar Japan Ltd.: *See*—
Hihara, Toshio; and Takahashi, Yousuke, 5,545,236, Cl. 8-549.000.

E.I. Du Pont de Nemours and Company: *See*—
Rao, V. N. Mallikarjuna, 5,545,770, Cl. 570-151.000.

E. Khashoggi Industries: *See*—
Andersen, Per J.; and Hodson, Simon K., 5,545,297, Cl. 264-102.000.
Andersen, Per J.; and Hodson, Simon K., 5,545,450, Cl. 428-34.500.

E. R. Squibb & Sons, Inc.: *See*—
Oberholtzer, Gary E., 5,545,154, Cl. 604-336.000.
Poss, Michael A., 5,545,838, Cl. 564-89.000.

E-Tek Dynamics, Inc.: *See*—
Shih, Ming; Xu, Jingyu; Su, Weng-Herng; and Pan, Jing-Jong, 5,546,486, Cl. 385-31.000.

EA Technology Limited: *See*—
Drakesmith, Frederick G.; and Jones, Andrew R., 5,545,390, Cl. 423-499.100.

Earle, Anthony; Glover, Edward C. T. S.; and Ridgway, Michael, to Eastman Kodak Company. Liquid transfer system and method. 5,546,153, Cl. 354-298.000.

Earth Chemical Company, Ltd.: *See*—
Ohgai, Hideo; Momota, Hiroshi; Kumakura, Takeshi; Kajifusa, Noriyuki; Kitazawa, Toshiki; Oshiden, Kazuhide; and Matsushiro, Aizo, 5,545,564, Cl. 435-320.100.

Easey, Norman; and Conroy, John. Chemical grow bag for root growth control and containment. 5,544,447, Cl. 47-66.000.

Eastman Kodak Company: *See*—
Baxter, Dennis E.; and Richiuso, Leonard, 5,546,147, Cl. 354-187.000.
Bernardi, Bryan D.; McIntyre, Dale F.; Dunsmore, Clay A.; and Wolcott, Dana W., 5,546,145, Cl. 354-76.000.

Earle, Anthony; Glover, Edward C. T. S.; and Ridgway, Michael, 5,546,153, Cl. 354-298.000.

Edwards, Larry D., 5,545,513, Cl. 430-506.000.

Ehot, Robert D.; and Acello, John J., 5,546,196, Cl. 358-527.000.

Jagielinski, Tomasz, 5,545,885, Cl. 235-449.000.

Janson, Wilbert F., Jr., 5,546,148, Cl. 354-203.000.

McIntyre, Dale F., 5,546,156, Cl. 354-400.000.

Orlicki, David; Larrabee, James; and Herczeg, Karen L., 5,546,513, Cl. 395-111.000.

Rushing, Allen J.; and Ng, Yee S., 5,546,165, Cl. 355-208.000.

Zander, Dennis R., 5,544,833, Cl. 242-348.000.

Eaton Corporation: *See*—
Bollinger, Parker A., Jr.; Mueller, Denis A.; Smith, James D. B.; and Wehrli, Henry A., III, 5,545,679, Cl. 523-512.000.
Braun, Eugene R., 5,544,727, Cl. 192-48.910.
Freigang, Alan R.; Schultz, Gary R.; Runels, Thomas L.; and Gerlofs, Kurt R., 5,544,688, Cl. 152-415.000.
Hurley, Rick A.; Innes, Mark E.; and Palmer, Nelson R., 5,546,268, Cl. 361-154.000.
King, Todd L.; Mading, James E.; and Piber, Earl T., 5,544,856, Cl. 251-129.080.
Kruizenga, Kenneth J.; and Gluys, James D., 5,544,541, Cl. 74-473.00R.
Kwiatek, David J., 5,545,036, Cl. 431-266.000.
Mackenzie, Raymond W.; and Wafer, John A., 5,546,266, Cl. 361-93.000.
Mrenna, Stephen A., 5,546,060, Cl. 335-35.000.
Torrence, Robert J., 5,544,857, Cl. 251-129.150.

Eaton, Eric T.; Evoy, Ronald H.; Hayes, David J.; Willard, David F.; Ito, Shogo; and Yamao, Yasushi, to Motorola, Inc. Message fragmenting in a time diversity radio system. 5,546,394, Cl. 370-79.000.

Eaton, John W.: *See*—
Keogh, James R.; Hobot, Christopher M.; Eaton, John W.; Jevne, Allan H.; and Bergan, Matthew A., 5,545,213, Cl. 623-1.000.

EBAA Iron, Inc.: *See*—
Shumard, Dennis D.; and Lundstrom, Michael L., 5,544,922, Cl. 285-23.000.

Ebara Corporation: *See*—
Inoue, Naoyuki, 5,544,497, Cl. 62-497.000.

Ebeling, Frederick A.: *See*—
Jewett, Warren; and Ebeling, Frederick A., 5,544,647, Cl. 128-200.230.

Ebenstein, Samuel E.: *See*—
Kiridena, Vijitha S.; Ebenstein, Samuel E.; and Smith, Gregory H., 5,546,328, Cl. 364-552.000.

Eberle Medizintechnische Elemente GmbH: *See*—
Kirsch, Axel; and Duerr, Walter, 5,544,552, Cl. 81-44.000.

Eberwine, James H.: *See*—
Van Gelder, Russell N.; Von Zastrow, Mark E.; Barchas, Jack D.; and Eberwine, James H., 5,545,522, Cl. 435-6.000.

Ebisu, Osamu: *See*—
Hotomi, Hideo; Ebisu, Osamu; and Ota, Kazuo, 5,546,108, Cl. 347-55.000.

ECC International Inc.: *See*—
Ginn, Michael W.; Cobb, Gary L.; Broxton, Lawrence E.; and McNeely, Kelly R., 5,545,338, Cl. 210-791.000.

Eckart, Donald W.: *See*—
Branovich, Louis E.; Eckart, Donald W.; and Fischer, Paul, 5,545,945, Cl. 313-346.00R.

Eckert, Gerold: *See*—
Bauer, Karl-Heinz; Eckert, Gerold; Maisch, Edgar; and Rüttiger, Anton, 5,545,864, Cl. 200-283.000.

Eckes, Peter: *See*—
Dudits, Dénes; Paulovics, Katalin; Kalman, Katalin; Györgyey, János; Nagy, Ferenc; Bako, László; Horvath, Gábor; Eckes, Peter; and Donn, Günter, 5,545,819, Cl. 800-205.000.

Eda, Kazuo, to Matsushita Electric Industrial Co., Ltd. Optical waveguide device and manufacturing method of the same. 5,546,494, Cl. 385-129.000.

Edelmann, Roland; Schnippering, Friedhelm; Fliedner, Christine; and Mathes, Reinhard, to Hüls Aktiengesellschaft. Binder for storable coating compositions. 5,545,253, Cl. 106-122.000.

Edward H. Phillips-Techo Corp.: *See*—
Phillips, Edward H., 5,544,715, Cl. 180-417.000.

Edwards, Harry W.: *See*—
Schmidt, Karl M.; Schmidt, Michelle R.; Cole, George S.; Jenkins, Stuart E.; and Edwards, Harry W., 5,545,463, Cl. 428-178.000.

Edwards, Larry D., to Eastman Kodak Company. Photographic material with imptoved granularity. 5,545,513, Cl. 430-506.000.

Edwards, Michael: *See*—
Blossom, Jon; and Edwards, Michael, 5,546,518, Cl. 395-152.000.

Edwards, Stuart D.: *See*—
Sharkey, Hugh R.; Goldwasser, Benad; and Edwards, Stuart D., 5,545,171, Cl. 606-148.000.

Edwards, Thomas R., to United States of America, Air Force. Augmentor light-off improvement. 5,544,480, Cl. 60-243.000.

Efner, Howard F.: *See*—
Shaw, James E.; Sattich, William E.; and Efner, Howard F., 5,545,714, Cl. 528-374.000.

Egashira, Yoshimi, to Harada Kogyo Kabushiki Kaisha. Telescopic antenna for portable telephones. 5,546,094, Cl. 343-702.000.

Egawa, Motoji; Takayanagi, Kazutoshi; Takayama, Akio; Fujita, Tetsuji; and Sano, Akinobu, to Minebea Co., Ltd. Floating magnetic head having a magnetic head core with a balanced winding bonded to a slider side surface. 5,546,251, Cl. 360-103.000.

Egis Gyogyszergyar Rt.: *See*—
Szántay, Csaba; Kardos, Zsuzsanna B.; Moldvai, István; Major, Eszter T.; Szántay, Csaba, Jr.; Mándi, Attila; Blaskó, Gábor; Simig, Gyula; Lax, Györgyi; Drabant, Sándor; Szállási, Tamas; Fekete, Márton; and Gigler, Gábor, 5,545,741, Cl. 546-276.700.

Ehdaie, Seyf-Ollah; and Khosraviyani, Firooz. Ghebleh bearing indicator. 5,546,310, Cl. 364-449.000.

Ehlers, Jeffery C.: *See*—
Thomas, Christopher P.; Coatesworth, Timothy A.; DeGroot, Kenneth P.; Ehlers, Jeffery C.; and McMackin, Mark E., 5,544,640, Cl. 123-689.000.

Ehrhardt, Fred W.: *See*—
Seliger, Robert; Ehrhardt, Fred W.; and Braunstein, Andrew S., 5,546,580, Cl. 395-600.000.

Ehrlich, Jason: *See*—
Joyce, Robert; Rosler, Jeffrey; Ehrlich, Jason; and Brouillet, Jean-Luc, 5,546,455, Cl. 379-265.000.

Ehrlich, Robert T., to Amerada Hess Corporation. Water treatment system. 5,545,330, Cl. 210-703.000.

Eichholz, Kerstin: *See*—
Braun, Max; Rudolph, Werner; and Eichholz, Kerstin, 5,545,298, Cl. 204-157.600.

Eid, Bernard A.: *See*—
Bocko, Peter L.; Eid, Bernard A.; Johnson, Ronald E.; Lock, William E.; Shoup, Robert D.; and Themont, Jean-Pierre, 5,544,582, Cl. 101-211.000.

Eisenmann, George: *See*—
Stengel, Sandra R.; Eisenmann, George; and Friedrich, Sharon M., 5,545,824, Cl. 524-590.000.

Eitel, Alfred: *See*—
Berg, Klaus; Wulff, Claus; Malamet, Georg; Eitel, Alfred; Meurer, Kurt P.; van Osselaer, Tony; and Hinz, Jürgen, 5,545,764, Cl. 568-724.000.

Eiwa Co., Ltd.: *See*—
Hashimoto, Yotaro, 5,545,264, Cl. 148-283.000.

Eka Nobel AB: *See*—
Winters, John R.; Gray, John M.; and Tenney, Joel D., 5,545,389, Cl. 423-478.000.

Ekstrom Industries, Inc.: *See*—
Robinson, Darrell; Pruehs, Allen V.; and Williams, John, 5,546,269, Cl. 361-660.000.

Ela Medical, S.A.: *See*—
Jacobson, Peter; Kroiss, Daniel; and Ostroff, Alan, 5,545,181, Cl. 607-4.000.

Elam, Carl M., to United States of America, Air Force. Bidirectional repeater amplifier. 5,546,083, Cl. 342-175.000.

Eld, Larry A. Percutaneous gastrostomy feeding tube applicator and method.. 5,545,141, Cl. 604-164.000.

Elder, Roy W. Canister warming apparatus. 5,544,701, Cl. 165-80.500.

Electro-Graph, Inc.: *See*—
Vella, Michael C., 5,545,257, Cl. 118-723.00R.

Electronics and Telecommunications Research Institute: *See*—
Lee, Sang H.; Ko, Jung H.; Lee, Tae H.; and Shim, Chang S., 5,546,401, Cl. 370-105.100.

Elephant Chain Block Company Limited: *See*—
Ueno, Yoshio; and Wada, Yasuo, 5,544,863, Cl. 254-358.000.

Elf Atochem S.A.: *See*—
Berthe, Bernard, 5,545,773, Cl. 570-167.000.
Drivon, Gilles; and Kervennal, Jacques, 5,545,776, Cl. 570-174.000.

Eli Lilly and Company: *See*—
Bruns, Robert F., Jr.; Gehlert, Donald R.; Howbert, J. Jeffry; and Lunn, William H. W., 5,545,641, Cl. 514-317.000.
Bryant, Henry U.; Dodge, Jeffrey A.; Sato, Masahiko; and Yang, Na N., 5,545,635, Cl. 514-177.000.
Cullinan, George J., 5,545,661, Cl. 514-460.000.
Harris, Dale C., 5,545,147, Cl. 604-209.000.
Heath, William F., Jr.; McDonald, John H., III; Paal, Michael; Rühter, Gerd; Schotten, Theo; and Stenzel, Wolfgang, 5,545,636, Cl. 514-214.000.
Miller, Shawn C.; Victor, Frantz; Spitzer, Wayne A.; Sattelberg, Thomas R., Sr.; and Tebbe, Mark J., 5,545,653, Cl. 514-388.000.

Elizabeth Arden Co., Division of Conopco, Inc.: *See*—
Watkinson, Allan, 5,545,402, Cl. 424-94.630.

Elliott, Duncan G.; and Snelgrove, W. Martin. Method and apparatus for a single instruction operating multiple processors on a memory chip. 5,546,343, Cl. 365-189.040.

Elliott, Guy R. B. Preparation of radioactive ion-exchange resin for its storage or disposal. 5,545,798, Cl. 588-18.000.

Elliott, John D.: *See*—
Skarbo, Rune A.; and Elliott, John D., 5,546,447, Cl. 379-142.000.

Ellis, Frampton E., III. Shoe with naturally contoured sole. 5,544,429, Cl. 36-25.00R.

Ellis, Roger K., to Honeywell Inc. TFT matrix liquid crystal device having data source lines and drain means of etched and doped single crystal silicon. 5,546,204, Cl. 359-59.000.

Ellman, Jonathan A., to University of California, The Regents of the. Solid phase and combinatorial synthesis of compounds on a solid support. 5,545,568, Cl. 436-518.000.

Ellmann, Manfred; and Hein, Hans-Rudolf, to Bayerische Motoren Werke AG. Device for monitoring the air pressure of a tire in motor vehicles with a sensor. 5,546,070, Cl. 340-442.000.
ELNA Company Ltd.: *See—*
Okamura, Michio; Morimoto, Takeshi; and Hiratsuka, Kazuya, 5,545,933, Cl. 307-109.000.
ELTECH Systems Corporation: *See—*
Hardee, Kenneth L.; Ernes, Lynne M.; Carlson, Richard C.; and Thomas, David E., 5,545,262, Cl. 148-527.000.
Ely, John L.: *See—*
Bokros, Jack C.; Ely, John L.; Emken, Michael R.; Haubold, Axel D.; Peters, T. Scott; Stupka, Jonathan C.; and Waits, C. Thomas, 5,545,216, Cl. 623-2.000.
EMC Corporation: *See—*
Stallmo, David C.; Andrews, Anthony; and Brinkman, Candace, 5,546,535, Cl. 395-182.070.
Emerson Electric Co.: *See—*
Richmond, James W., 5,545,318, Cl. 210-232.000.
Emhart Inc.: *See—*
Hwang, David K., 5,545,244, Cl. 65-160.000.
Emken, Michael R.: *See—*
Bokros, Jack C.; Ely, John L.; Emken, Michael R.; Haubold, Axel D.; Peters, T. Scott; Stupka, Jonathan C.; and Waits, C. Thomas, 5,545,216, Cl. 623-2.000.
Empie, H. Jeff, to Institute of Paper Science and Technology, Inc. Kraft smelt solidification in a fluidized bed reactor. 5,545,292, Cl. 162-30.110.
Endermann, Rainer: *See—*
Petersen, Uwe; Schenke, Thomas; Böhm, Stefan; Grosser, Rolf; Bremm, Klaus D.; Endermann, Rainer; and Metzger, Karl G., 5,545,642, Cl. 514-312.000.
Endo, Tetsuro; and Shinokura, Kiichiro, to Tohoku Pioneer Electronic Corporation. Optical wavelength converter with temperature tuning. 5,546,220, Cl. 359-332.000.
Endorecherche, Inc.: *See—*
Labrie, Fernand, 5,545,634, Cl. 514-169.000.
Endoscopic Concepts, Inc.: *See—*
Danks, John K.; Mazzola, Richard V.; and Johnson, Thomas R., 5,545,150, Cl. 604-256.000.
Energaire Corporation: *See—*
Schmidt, Karl M.; Schmidt, Michelle R.; Cole, George S.; Jenkins, Stuart E.; and Edwards, Harry W., 5,545,463, Cl. 428-178.000.
Engel, David: *See—*
Giuliani, David; McMahon, Ryan W.; and Engel, David, 5,544,382, Cl. 15-22.100.
Engel, George Lawrence: *See—*
Indeck, Ronald S.; Muller, Marcel W.; Engel, George Lawrence; and Hege, Alan L., 5,546,462, Cl. 380-23.000.
Engwall, Sten, to System Teeg AB. Foundation for a building structure. 5,544,453, Cl. 52-169.500.
Enichem Elastomeres France S.A.: *See—*
Baudouin, Michel; and Tassara, Jean-Pierre, 5,545,781, Cl. 570-229.000.
Enomoto, Koichi: *See—*
Akita, Mikio; Enomoto, Koichi; Tanaka, Shigeaki; and Otawara-Hamamoto, Yoko, 5,545,534, Cl. 435-4.920.
Ensinger, Carol L.: *See—*
Duncia, John J. V.; Ensinger, Carol L.; Olson, Richard E.; Quan, Mimi L.; Santella, Joseph B., III; and Vanatten, Mary K., 5,545,651, Cl. 514-381.000.
Enviroquip, Inc.: *See—*
Hallsten, Jeffrey A.; and Bailey, Elena, 5,545,358, Cl. 261-123.000.
EP Technologies, Inc.: *See—*
Fleischman, Sidney D.; Bourne, Thomas M.; and Houser, Russell A., 5,545,193, Cl. 607-99.000.
Epigen, Inc.: *See—*
Codington, John F.; and Haavik, Svein, 5,545,532, Cl. 435-7.230.
Epper, Wolfgang: *See—*
Schilp, Reinhold; and Epper, Wolfgang, 5,545,119, Cl. 494-56.000.
Eppstein, Deborah A.; Felgner, Philip L.; Gadek, Thomas R.; Jones, Gordon H.; and Roman, Richard B., to Syntex (U.S.A.) Inc. N-[1, (1-1)-dialkyloxy]-and N-[1, (1-1)-dialkenyloxy]-alk-1-yl-n,n,n-tetrasubstituted ammonium lipids and uses therefor. 5,545,412, Cl. 424-450.000.
Erath, Herbert, to fischerwerke-Artur Fischer GmbH & Co. KG. Apparatus for making a drilled hole with an undercut. 5,544,989, Cl. 408-153.000.
Erickson, John W.: *See—*
Kempf, Dale J.; Norbeck, Daniel W.; Erickson, John W.; Sham, Hing Leung; Codacovi, Lynn M.; and Plattner, Jacob J., 5,545,750, Cl. 564-360.000.
Erickson, Randy: *See—*
Mottier, Bradley D.; MacLeod, J. Norman; Mechlowitz, Dean; and Erickson, Randy, 5,544,633, Cl. 123-310.000.
Ericsson GE Mobile Communications, Inc.: *See—*
Raith, Alex K., 5,546,443, Cl. 379-59.000.
Ericsson Inc.: *See—*
Raith, Krister A.; and Dent, Paul W., 5,546,464, Cl. 380-48.000.
Ernes, Lynne M.: *See—*
Hardee, Kenneth L.; Ernes, Lynne M.; Carlson, Richard C.; and Thomas, David E., 5,545,262, Cl. 148-527.000.
Ernst, Stefan: *See—*
Weitkamp, Jens; Ernst, Stefan; Bock, Thomas; Kromminga, Thomas; Kiss, Akos; and Kleinschmit, Peter, 5,545,784, Cl. 585-250.000.
Ershagi, Behrooz: *See—*
Agahi, Reza R.; and Ershagi, Behrooz, 5,545,006, Cl. 415-169.200.
Eschbach, Eugene A.: *See—*
Heath, William O.; Gauglitz, Phillip A.; Pillay, Gautam; Bergsman, Theresa M.; Eschbach, Eugene A.; Goheen, Steven C.; Richardson, Richard L.; Roberts, Janet S.; and Schalla, Ronald, 5,545,803, Cl. 588-253.000.
Esguerra, Alfonso; and Esguerra, George, to WTI International Corporation. Video tape cassette. 5,544,834, Cl. 242-347.100.
Esguerra, George: *See—*
Esguerra, Alfonso; and Esguerra, George, 5,544,834, Cl. 242-347.100.
Eškinja, Mirela: *See—*
Dumić, Miljenko; Filić, Darko; Vinković, Mladen; Jamnicky, Blanka; and Eškinja, Mirela, 5,545,659, Cl. 514-450.000.
Esposito, Patsy, to Products Finishing Corporation. Portable luggage cart. 5,544,910, Cl. 280-654.000.
Essef Corporation: *See—*
Mortensen, Dana, 5,545,952, Cl. 315-74.000.
Essilor International Compagnie Generale d'Optique: *See—*
Keita, Gabriel; and Renaudineau, Joel, 5,545,828, Cl. 526-72.000.
Estee Corporation, The: *See—*
Fox, J. Gary; and Allen, Darlene, 5,545,410, Cl. 424-439.000.
Estes, Tara N.; and Krahnke, Robert H., to Dow Corning Corporation. Method for producing alkoxysilalkylene terminated siloxane polymers. 5,545,704, Cl. 528-15.000.
Estop, Pascal; Poullain, Serge; and Verhaege, Thierry, to GEC Alsthom Electromecanique Sa. Superconducting switch and application to a charger for a superconducting coil. 5,545,932, Cl. 307-104.000.
Etak, Inc.: *See—*
Deretsky, Zachary Y.; Rodny, Uri; and White, Marvin S., Jr., 5,546,107, Cl. 395-600.000.
Etat Francais as represented by the Delegue General pour l'Armement: *See—*
Boucher, Didier; and Pohlenz, Charles, 5,546,361, Cl. 367-158.000.
Ethicon Endo-Surgery, Inc.: *See—*
Williamson, Warren P., IV, 5,545,179, Cl. 606-213.000.
Ethicon, Inc.: *See—*
Le, Thu A.; Yi, Sung S.; Zwaskis, William; Pedlick, Jack S.; Luscombe, Brian H.; Jamiolkowski, Dennis D.; Di Giovanni, John; Seritella, Keith A.; Steckel, Mark G.; and Harwin, Steven F., 5,545,180, Cl. 606-232.000.
Ortiz, Mark S.; Failla, Stephen J.; Kinet, Jean-Pierre; and Marie, Frederic, 5,545,123, Cl. 600-235.000.
Stephens, Randy R.; Banik, Michael S.; Ashmore, Leslie R.; Rowe, C. Daniel; and Selecman, George E., 5,545,142, Cl. 604-167.000.
Ettel, Victor A.: *See—*
Babjak, Juraj; and Ettel, Victor A., 5,545,392, Cl. 423-592.000.
Etzbach, Karl-Heinz: *See—*
Sens, Rüdiger; and Etzbach, Karl-Heinz, 5,545,235, Cl. 8-471.000.
Evans, Dennis F., deceased: *See—*
Clapp, Phillip A.; Evans, Dennis F., deceased; and McKenna, Antonia F. E., executrix, 5,545,391, Cl. 423-573.100.
Evans, Douglas: *See—*
Kensey, Kenneth; Nash, John E.; and Evans, Douglas, 5,545,178, Cl. 606-213.000.
Evans, Harold H.: *See—*
Schmidt, Melvin J.; Coach, Thomas P.; Hause, Glenn C.; Galowitz, Dennis A.; Wyman, James P.; Hendricks, Robert A.; Ver Steeg, Lawrence J.; and Evans, Harold H., 5,544,450, Cl. 49-419.000.
Evans, Mark D.: *See—*
Monteleone, Michael G.; Weiss, Richard A.; Evans, Mark D.; and Hanna, Marie R., 5,545,763, Cl. 568-630.000.
Evoy, Ronald H.: *See—*
Eaton, Eric T.; Evoy, Ronald H.; Hayes, David J.; Willard, David F.; Ito, Shogo; and Yamao, Yasushi, 5,546,394, Cl. 370-79.000.
EVV-Vermögensverwaltungs-GmbH: *See—*
Stehr, Norbert, 5,544,825, Cl. 241-171.000.
Ewald, Jeffrey A.: *See—*
Burns, Gary T.; Zank, Gregg A.; and Ewald, Jeffrey A., 5,545,687, Cl. 524-701.000.
Ewing, Rodney C.; Lutze, Werner; and Weber, William J., to University of New Mexico. Method of immobilizing weapons plutonium to provide a durable, disposable waste product. 5,545,797, Cl. 588-10.000.
Exabyte Corporation: *See—*
Klomp, Charles B.; Ayers, Mark R.; and Canterbury, Daniel J., 5,546,246, Cl. 360-72.200.
Excel, Inc.: *See—*
Hebert, Mark P., 5,546,453, Cl. 379-242.000.
Exner, Gregory F.: *See—*
Sanders, Fritz; and Exner, Gregory F., 5,544,545, Cl. 74-552.000.
Exxon Research and Engineering Company: *See—*
Archambeault, Gary L.; Murphy, William J.; and Mackert, Edmund M., 5,545,804, Cl. 588-253.000.
Behrmann, William C.; Arcuri, Kym B.; and Mauldin, Charles H., 5,545,674, Cl. 518-715.000.
Habeeb, Jacob J.; and May, Christopher J., 5,545,237, Cl. 44-380.000.
Koo, Jayoung; and Luton, Michael J., 5,545,269, Cl. 148-654.000.
Koo, Jayoung; and Luton, Michael J., 5,545,270, Cl. 148-654.000.
Eymard, Michel, to Zodiac International. Inflatable boat operating as a catamaran, and having improved stability. 5,544,612, Cl. 114-345.000.
Ezaki, Joichiro: *See—*
Sakai, Masanori; Tomita, Katsuhiko; Ezaki, Joichiro; Suzuki, Kazuo; Fukuda, Seiji; and Hatakeyama, Kouichi, 5,545,988, Cl. 324-212.000.

Ezel Inc.: *See—*
Kawanaka, Seido; Yoshikawa, Mituo; and Naito, Hiroyoshi, 5,546,479, Cl. 382-290.000.
Fabrice, Chopard: *See—*
Joël, Richard; Nicolas, Robert; Claude, Roussel; and Fabrice, Chopard, 5,544,703, Cl. 165-167.000.
FAG Kugelfischer Georg Schafer AG: *See—*
Hofmann, Heinrich; Schottdorf, Johannes; and Goosens, Andre F. L., 5,544,962, Cl. 384-448.000.
Fagan, John R.; and Kling, Jeffrey, to C. R. Bard, Inc. Helically grooved balloon for dilatation catheter and method of using. 5,545,132, Cl. 604-96.000.
Fahringer Enterprises: *See—*
Fahringer, Stephen, Sr.; and Fahringer, Stephen, Jr., 5,544,611, Cl. 114-343.000.
Fahringer, Stephen, Jr.: *See—*
Fahringer, Stephen, Sr.; and Fahringer, Stephen, Jr., 5,544,611, Cl. 114-343.000.
Fahringer, Stephen, Sr.; and Fahringer, Stephen, Jr., to Fahringer Enterprises. Boat to trailer proximity indicator. 5,544,611, Cl. 114-343.000.
Failla, Stephen J.: *See—*
Ortiz, Mark S.; Failla, Stephen J.; Kinet, Jean-Pierre; and Marie, Frederic, 5,545,123, Cl. 600-235.000.
Falk, Stephen A. An apparatus for localized temperature regulation of an open surgical field during an operative procedure. 5,545,196, Cl. 607-105.000.
Fallas, Pablo M. A.: *See—*
Rainey, Ronald S.; Cambbell, Ian P.; Fallas, Pablo M. A.; and Solano, Edgar N., 5,545,421, Cl. 426-481.000.
Fallon, John: *See—*
Casamassina, Thomas; Morales, Florencio, Jr.; Salka, Barry A.; and Fallon, John, 5,545,622, Cl. 252-353.000.
Falsetti, James S.: *See—*
Brooker, Donald D.; Falsetti, James S.; Wolfenbarger, James K.; and Vuong, Dinh-Cuong, 5,545,238, Cl. 48-197.00R.
Famorca, Judith R., to Famorca, Judith R. Case for exchanging audible and written messages. 5,544,745, Cl. 206-320.000.
Fandrich, Mickey L.: *See—*
Kynett, Virgil N.; and Fandrich, Mickey L., 5,546,561, Cl. 395-490.000.
Fankhauser, Alan. Banner holding device. 5,544,850, Cl. 248-164.000.
Fantone, Stephen D.; Gelardi, Anthony L.; and Gelardi, John A., to Insight, Inc. Flat box system with edge view optics. 5,544,741, Cl. 206-308.100.
Fantone, Stephen D., to Polaroid Corporation. Cylindrical fiber coupling lens with biaspheric surfaces. 5,546,487, Cl. 385-33.000.
Fanuc Ltd.: *See—*
Otsuki, Toshiaki; Kozai, Haruhiko; and Ishii, Seiji, 5,545,959, Cl. 318-568.150.
Faranda, Filippo: *See—*
Marchesano, Carlo; Moizo, Elda; and Faranda, Filippo, 5,545,508, Cl. 430-265.000.
Farbman, Edwin L. Collapsible garment support rack. 5,544,765, Cl. 211-189.000.
Farley, Joseph, to Texas Instruments Incorporated. Relating to battery pack arrangements. 5,545,491, Cl. 429-7.000.
Farnham, William B.: *See—*
Baker, Ralph T.; Beatty, Richard P.; Farnham, William B.; and Wallace, Robert L., Jr., 5,545,769, Cl. 570-134.000.
Farooq, Mukta S.; Kaja, Suryanarayana; Perfecto, Eric D.; and White, George E., to International Business Machines Corporation. Capped copper electrical interconnects. 5,545,927, Cl. 257-762.000.
Farrar, Ralph C., Jr.: *See—*
Trepka, William J.; Moczygemba, George A.; Stacy, Nathan E.; and Farrar, Ralph C., Jr., 5,545,690, Cl. 525-98.000.
Farrell, Roberta L.: *See—*
Blanchette, Robert A.; Brush, Theresa S.; Farrell, Roberta L.; Krisa, Keith A.; and Mishra, Chittra, 5,545,544, Cl. 435-171.000.
Farris, Robert A.: *See—*
Miller, David F.; Farris, Robert A.; and Barrett, John P., 5,545,163, Cl. 606-61.000.
Farris, Robert D.: *See—*
Suthard, William L.; and Farris, Robert D., 5,546,450, Cl. 379-207.000.
Fasnacht, Matthew J.: *See—*
Bruckner, Carl M.; Calhoun, Edward E., III; Fasnacht, Matthew J.; Schaffer, Ronald R.; and Shay, Francis J., 5,546,495, Cl. 385-135.000.
Faurrey, François: *See—*
Baret, Frédéric; and Faurrey, François, 5,544,939, Cl. 297-340.000.
Favorit Oy: *See—*
Kariniemi, Pekka, 5,545,559, Cl. 435-290.100.
Favre, Patrick; Frey, Urban; Marek, Daniel; and Metz, François, to Spectrospin AG. Mixing device for the mixing of fluids in an NMR apparatus including a spring attached to the coil affixed to a mixing rod. 5,545,998, Cl. 324-321.000.
Fawcett, Andrew R., to Cirrus Logic, Inc. Extended data output DRAM interface. 5,546,344, Cl. 365-189.050.
Fay, Kristen K.: *See—*
Knepshield, William R.; Fay, Kristen K.; and Knepshield, William, Jr., 5,545,172, Cl. 606-166.000.
Fayram, Timothy A., to Ventritex, Inc. Case-activating switch assembly for an implantable cardiac stimulation device. 5,545,189, Cl. 607-37.000.
Fazekas, James I. Card and picture holder. 5,544,438, Cl. 40-605.000.
Fazio, Albert: *See—*
Tedrow, Kerry D.; Keeney, Stephen N.; Fazio, Albert; Atwood, Gregory E.; Javanifard, Johnny; and Wojciechowski, Kenneth, 5,546,042, Cl. 327-538.000.
Feddeler, James R.: *See—*
Deems, Vincent B.; Racino, Gregory A.; Feddeler, James R.; and Shiff, Victor E., 5,546,588, Cl. 395-750.000.
Feemster, Ryan: *See—*
Hewitt, Larry D.; and Feemster, Ryan, 5,546,039, Cl. 327-379.000.
Fegley, Ronald W.; and Terry, Darrell A., to Northrop Grumman Corporation. Lidar droplet size monitor for in-flight measurement of aircraft engine exhaust contrails, droplets and aerosols. 5,546,183, Cl. 356-336.000.
Feinberg, David A.: *See—*
Kiefer, Berthold; and Feinberg, David A., 5,545,990, Cl. 324-307.000.
Fekete, Márton: *See—*
Szántay, Csaba; Kardos, Zsuzsanna B.; Moldvai, István; Major, Eszter T.; Szántay, Csaba, Jr.; Mándi, Attila; Blaskó, Gábor; Simig, Gyula; Lax, Györgyi; Drabant, Sándor; Szállási, Tamas; Fekete, Márton; and Gigler, Gábor, 5,545,741, Cl. 546-276.700.
Feldman, Mark: *See—*
Schmidt, Robert M.; and Feldman, Mark, 5,546,067, Cl. 338-172.000.
Feldstein, Robert S., to Derafe, Ltd. Cored battery plates for lead/acid batteries. 5,544,681, Cl. 141-1.001.
Felgner, Philip L.: *See—*
Eppstein, Deborah A.; Felgner, Philip L.; Gadek, Thomas R.; Jones, Gordon H.; and Roman, Richard B., 5,545,412, Cl. 424-450.000.
Fellowes Manufacturing Company: *See—*
Campbell, James K.; Pfeiffer, Ned C.; Balderi, Nicola; and Schaefer, Doug G., 5,544,941, Cl. 297-423.450.
Fels, Achim G.: *See—*
Schuster, Dieter H. P.; Fels, Achim G.; and Spors, Herbert, 5,545,470, Cl. 428-229.000.
Felton, George N.: *See—*
Cooke, Michael P.; and Felton, George N., 5,544,815, Cl. 239-533.800.
Feltz, Kristi T.: *See—*
Hogan, Steven J.; Feltz, Kristi T.; Murdock, Douglas R.; and Smith, Keith E., 5,546,449, Cl. 379-202.000.
Fendt, Günter; Hora, Peter; Spies, Hans; Steurer, Helmut; Watzka, Willibald; and Wetzel, Guido, to Temic Telefunken microelectronic GmbH. Process for triggering side airbags of a passive safety device for motor vehicles. 5,544,915, Cl. 280-735.000.
Feng, Taisheng: *See—*
Raatz, Donovan L.; and Feng, Taisheng, 5,546,355, Cl. 365-233.000.
Fermelia, Louis R., Jr.: *See—*
Ramanujam, Parthasarathy; Shin, Charlie C.; Fermelia, Louis R., Jr.; and Stambaugh, Andrew J., 5,546,097, Cl. 343-781.00R.
Ferrell, Bruce H.: *See—*
Garnaat, John A.; Ferrell, Bruce H.; and Woody, William C., 5,546,085, Cl. 342-25.000.
Fersht, Samuel N.: *See—*
Bilinski, Donald J.; Chin, Gene H.; Cordova, Amado; and Fersht, Samuel N., 5,545,892, Cl. 250-231.120.
Fetterman, Michael A.: *See—*
Martell, Robert W.; Hinton, Glenn J.; Fetterman, Michael A.; Papworth, David B.; Colwell, Robert P.; and Glew, Andrew F., 5,546,597, Cl. 395-800.000.
Fezio, Louis J., to K-2 Corporation. Thermoplastic composite ski and method of manufacture. 5,544,908, Cl. 280-610.000.
Fichtel & Sachs AG: *See—*
Handke, Günther; and Memmel, Georg, 5,544,725, Cl. 267-221.000.
Fiege, Helmut: *See—*
Pies, Michael; Käsbauer, Josef; and Fiege, Helmut, 5,545,779, Cl. 570-204.000.
Fife, Janice Faye: *See—*
Fife, Jerome J., 5,544,460, Cl. 52-223.300.
Fife, Jerome J., to Fife, Janice Faye. Multi-component fluid tank. 5,544,460, Cl. 52-223.300.
Fijioka, Hideaki; and Yasuzumi, Kazumi, to Sumitomo Electric Industries, Ltd. Antiskid control device. 5,545,929, Cl. 303-166.000.
Filić, Darko: *See—*
Dumić, Miljenko; Filić, Darko; Vinković, Mladen; Jamnicky, Blanka; and Eškinja, Mirela, 5,545,659, Cl. 514-450.000.
Fine, Wendy J.; Davidson, Gary A.; and Rykman, Alexander, to Davidson, Gary A.; and Rykman, Alexander. Headgear mountable protective face shield. 5,544,361, Cl. 2-10.000.
Finkelstein, Zvi. System for harvesting crop items and crop harvesting tools used therewith. 5,544,474, Cl. 56-10.20A.
Fiquet, Line: *See—*
Loy, Jean-Philippe; Ghesquiere, Denis; and Fiquet, Line, 5,545,675, Cl. 521-172.000.
Firca, Joseph R.: *See—*
Carroll, Sean B.; Firca, Joseph R.; Pugh, Charles; and Padhye, Nisha V., 5,545,721, Cl. 530-391.700.
Firma Carl Freudenberg: *See—*
Reinemuth, Otto; and Jäger, Kurt, 5,544,871, Cl. 267-293.000.
Fischell, David R., to T. S. I. Medical. Device for subcutaneous medication delivery. 5,545,143, Cl. 604-180.000.
Fischer, Frank J., Jr., to Cook Incorporated. Device for intratracheal ventilation and intratracheal pulmonary ventilation including reverse venturi. 5,544,648, Cl. 128-207.140.

VOL 1189 ISS 2 AG 13 1996 UMI

Fischer, Heinz; Scherer, Thomas; Markwart, Michael; and Petry, Klaus, to Daimler-Benz Aerospace Airbus GmbH. Method and apparatus for air conditioning two passenger decks of an aircraft. 5,545,084, Cl. 454-76.000.

Fischer, Paul: *See*—
Branovich, Louis E.; Eckart, Donald W.; and Fischer, Paul, 5,545,945, Cl. 313-346.00R.

Fischer, Robert L.; Margossian, Linda J.; and Penarrubia, Lola, to University of California, The Regents of the. Control of fruit ripening in plants. 5,545,815, Cl. 800-205.000.

fischerwerke-Artur Fischer GmbH & Co. KG: *See*—
Erath, Herbert, 5,544,989, Cl. 408-153.000.

Fischette, Robert G.: *See*—
Bernal, Brian A.; Fischette, Robert G.; Johnson, Kirk R.; and Marman, Douglas H., 5,546,074, Cl. 340-628.000.

Fish, Alan P.: *See*—
Davies, Peter O.; Dromgool, Nicholas C.; Collinson, Graeme L.; and Fish, Alan P., 5,545,422, Cl. 426-482.000.

Fisher, Aaron L., to AT&T Corp. Sense amplifier. 5,546,068, Cl. 340-146.200.

Fisher, Daniel J.; Crank, Douglas; Lovell, Marc A.; Houle, Sabina J.; and Brodie, James L., to Donnelly Corporation. Vehicle panel assembly. 5,544,458, Cl. 52-204.591.

Fisher, Joyce M.: *See*—
Rabinovitz, Marco; and Fisher, Joyce M., 5,545,639, Cl. 514-292.000.

Fisher-Price, Inc.: *See*—
Garland, Thomas A.; Kolich, Robert A.; Paddock, Charles W.; and Bicheler, James P., 5,544,372, Cl. 5-99.100.
Kelley, Miriam; and Dignitti, Daniel M., 5,544,870, Cl. 256-26.000.

Fissel, Gregory W.: *See*—
Densmore, Bruce D.; Hass, Lester A.; Rotunda, John T.; and Fissel, Gregory W., 5,545,112, Cl. 482-54.000.

Fitzlaff, Gerhard, to Biedermann Motech GmbH. Swing phase control device. 5,545,233, Cl. 623-43.000.

Fitzpatrick, Greg P.; and Haynes, Thom R., to International Business Machines Corporation. Overriding action defaults in direct manipulation of objects on a user interface by hovering a source object. 5,546,527, Cl. 395-159.000.

Flambeau Products Corp.: *See*—
Klodt, Gerald; and Killinger, Timothy D., 5,544,751, Cl. 206-509.000.

Fleischman, Sidney D.; Bourne, Thomas M.; and Houser, Russell A., to EP Technologies, Inc. Helically wound radio-frequency emitting electrodes for creating lesions in body tissue. 5,545,193, Cl. 607-99.000.

Fleitman, Jeffrey S.: *See*—
Fu, Roger C.; Leung, De-Mei; Fleitman, Jeffrey S.; Rizzolio, Michele C.; and Miksztal, Andrew R., 5,545,637, Cl. 514-233.500.

Fleming, William J.; and Steffens, Charles E., Jr., to TRW Vehicle Safety Systems Inc. Seat belt webbing energy management device. 5,544,918, Cl. 280-805.000.

Fletcher, Garth L.: *See*—
Hew, Choy L.; and Fletcher, Garth L., 5,545,808, Cl. 800-2.000.

Fliedner, Christine: *See*—
Edelmann, Roland; Schnippering, Friedhelm; Fliedner, Christine; and Matthes, Reinhard, 5,545,253, Cl. 106-122.000.

Fling, John J.; Shaw, Herbert J.; Digonnet, Michel J.; and Kapany, Narinder S., to Kaptron, Inc. Fiber optic switch using polished-type directional coupler. 5,546,484, Cl. 385-16.000.

Flores, Michael A., to DSC Communications Corporation. Transportable weathertight EMI shielded cabinet structure. 5,545,845, Cl. 174-35.00R.

Florian, Michael H.; Redd, Harold J.; Hogue, David R.; and Bonebright, Rodney K., to Boeing Company, The. Radio frequency bus leveling system. 5,546,050, Cl. 330-282.000.

Flowline Inc.: *See*—
Rauchwerger, George P., 5,546,005, Cl. 324-688.000.

Focke & Co. (GmbH & Co.): *See*—
Focke, Heinz, 5,544,467, Cl. 53-387.200.

Focke, Heinz, to Focke & Co. (GmbH & Co.). Apparatus for producing cigarette packs. 5,544,467, Cl. 53-387.200.

Fodor, Stephen P. A.: *See*—
Rava, Richard P.; Fodor, Stephen P. A.; and Trulson, Mark, 5,545,531, Cl. 435-6.000.

Foehringer, Richard: *See*—
Golwalkar, Suresh V.; Foehringer, Richard; Wentling, Michael; Takatsuki, Ryo; Kawashima, Shigeo; Tsujimoto, Keiichi; and Sato, Nobuaki, 5,545,922, Cl. 257-676.000.

Foerster, Roy P., to Kalidon Technology, Inc. Earth-tremor-responsive light. 5,546,076, Cl. 340-690.000.

Foladare, Mark J.; Goldman, Shelley B.; Murray, Nancy; Silverman, David P.; Tsao, Yao-Chung; and Weber, Roy P., to AT&T Corp. Method and apparatus for use in completing telephone calls. 5,546,442, Cl. 377-57.000.

Foley, Theodore A.: *See*—
Hseih, Tong-Ho; Foley, Theodore A.; and Marascio, Anthony N., 5,545,155, Cl. 604-378.000.

Follett, Paul S.: *See*—
Nardone, Edward A.; Follett, Paul S.; Schofield, Harry D.; Caron, Paul R.; and Rothwell, Chris S., 5,546,115, Cl. 347-214.000.
Nardone, Edward A.; Follett, Paul S.; Schofield, Harry D.; Caron, Paul R.; and Rothwell, Chris S., 5,546,116, Cl. 347-218.000.

Fong, Ronald A.: *See*—
Rowland, Richard R.; Fong, Ronald A.; Wiersema, Richard J.; and Zielske, Alfred G., 5,545,748, Cl. 562-2.000.

Foo, Thomas K., to General Electric Company. Fast cardiac gated NMR acquisition with improved T_1 contrast. 5,545,992, Cl. 324-309.000.

Ford Motor Company: *See*—
Borninski, Thomas E.; Boran, Colm P.; Simmons, Paul; and Niesluchowski, Matt A., 5,544,914, Cl. 280-735.000.
Davey, Christopher K.; Dickison, Donald P.; and Jerger, Robert J., 5,544,481, Cl. 60-274.000.
Diggs, Matthew B.; and Sweetnam, Gordon W., 5,544,626, Cl. 123-90.160.
Hashemi, Amin H.; and Heilman, David N., 5,545,277, Cl. 156-106.000.
Kiridena, Vijitha S.; Ebenstein, Samuel E.; and Smith, Gregory H., 5,546,328, Cl. 364-552.000.
Kneisel, Lawrence L.; Baker, Jay D.; and Goenka, Lakhi N., 5,545,073, Cl. 451-39.000.
Mass, Noah B., 5,544,448, Cl. 49-377.000.
Richardson, John A., 5,544,991, Cl. 411-237.000.
Shahab, Syed A.; and Chirehdast, Mehran, 5,544,933, Cl. 296-189.000.
Topouzian, Daron; and Riley, James E., 5,544,726, Cl. 188-264.00A.
Van Selous, Joseph S., 5,544,565, Cl. 92-130.00R.
Vinarcik, Edward J., 5,545,368, Cl. 264-437.000.
Wilkes, Eugene; Mendez, Alejandro; and Bauer, Bradley W., 5,545,860, Cl. 181-255.000.

Ford, Peter R.; Thorley, Neil; and Foy, Martin J., to Schlegel (UK) Holdings Limited. Colored extruded strips. 5,545,448, Cl. 428-31.000.

Forghieri, Fabrizio: *See*—
Chraplyvy, Andrew R.; Forghieri, Fabrizio; and Tkach, Robert W., 5,546,210, Cl. 359-124.000.

Forschner, Thomas C.: *See*—
Powell, Joseph B.; Slaugh, Lynn H.; Forschner, Thomas C.; Semple, Thomas C.; and Weider, Paul R., 5,545,766, Cl. 568-862.000.
Slaugh, Lynn H.; Powell, Joseph B.; Forschner, Thomas C.; Semple, Thomas C.; and Weider, Paul R., 5,545,765, Cl. 568-862.000.
Weider, Paul R.; Powell, Joseph B.; Slaugh, Lynn H.; Forschner, Thomas C.; and Semple, Thomas C., 5,545,767, Cl. 568-867.000.

Forselius, Frank E.; and Tarlow, Kenneth. Wall corner finishing tool. 5,544,384, Cl. 15-235.700.

Fortson, Raymond A. Masking device for creating multiple image in photographs. 5,546,151, Cl. 354-296.000.

Fortson, Raymond A. Masking device for creating multiple image photographs. 5,546,152, Cl. 354-296.000.

Fortunier, Pascal: *See*—
Bourguignon, Anne-Elisabeth F.; Fortunier, Pascal; and Hebraudl, Guy R. E., 5,545,002, Cl. 415-115.000.

Fossgreen, Donald J.: *See*—
Wolf, Richard J.; Fossgreen, Donald J.; Rosen, Robert; Vento, Christopher M.; and Wells-Papanek, Doris, 5,546,525, Cl. 395-159.000.

Foster, John S.: *See*—
Lin, Li-Ju J.; Foster, John S.; Gudeman, Christopher S.; and Vurens, Gerard H., 5,545,478, Cl. 428-332.000.

Fowler, Alvin L.: *See*—
Cone, Richard E., II; and Fowler, Alvin L., 5,544,935, Cl. 297-183.200.

Fowler, Keith L.: *See*—
Wangler, Richard J.; Gustavson, Robert L.; McConnell, Robert E., II; and Fowler, Keith L., 5,546,188, Cl. 356-376.000.

Fowlkes, Dana M.: *See*—
Skelly, Susan M.; Tackney, Charles T.; Snouwaert, John N.; and Fowlkes, Dana M., 5,545,537, Cl. 435-69.520.

Fox, James E., Jr.: *See*—
Campbell, David L.; and Fox, James E., Jr., 5,546,033, Cl. 327-170.000.

Fox, J. Gary; and Allen, Darlene, to Estee Corporation, The. Method of controlling the release of carbohydrates by encapsulation and composition therefor. 5,545,410, Cl. 424-439.000.

Foxboro Company, The: *See*—
Brown, Christopher R., 5,544,532, Cl. 73-861.160.

Foy, Martin J.: *See*—
Ford, Peter R.; Thorley, Neil; and Foy, Martin J., 5,545,448, Cl. 428-31.000.

Fraij, Fred: *See*—
Dekker, Jacobus N.; De Valk, Elwin; and Fraij, Fred, 5,544,414, Cl. 30-43.600.

Frank, Davis: *See*—
Rhodes, Ken; Coelho, Rohan; Frank, Davis; and Bender, Blake, 5,546,103, Cl. 345-119.000.

Franz Haas Waffelmaschinen Industriegesellschaft m.b.H.: *See*—
Haas, Franz; Haas, Johann; and Baum, Engelbert, 5,544,570, Cl. 99-443.00C.

Frasier, Donald J.: *See*—
O'Connor, Kurt F.; Hoff, James P.; Frasier, Donald J.; Peeler, Ralph E.; Mueller-Largent, Heidi; Trees, Floyd F.; Whetstone, James R.; Lane, John H.; and Jeffries, Ralph E., 5,545,003, Cl. 415-115.000.

Frazer, James T.; Scott, David B.; and Bondanza, James P., to L&P Property Management Company. Program controlled quilter and panel cutter system with automatic shrinkage compensation. 5,544,599, Cl. 112-118.000.

Frechet, Jean M. J.: *See*—
Cameron, James F.; Frechet, Jean M. J.; Leung, Man-Kit; Niesert, Claus-Peter; MacDonald, Scott A; and Willson, Carlton G., 5,545,509, Cl. 430-270.100.

Frederick, William H.: *See*—
Jailor, John; Frederick, William H.; Umbach, Steven R.; Graham, Scott R.; Roberts, Kenneth L.; and Metzger, Eric R., 5,544,385, Cl. 15-350.000.

Frederiksen, Bjarne; and Maghati, Mohammad, to Illinois Tool Works Inc. Communication circuit protector. 5,546,267, Cl. 361-119.000.

Freigang, Alan R.; Schultz, Gary R.; Runels, Thomas L.; and Gerlofs, Kurt R., to Eaton Corporation. Two stage kneeling valve. 5,544,688, Cl. 152-415.000.

French, Madeline S.; and Harvey, Anita J., to Solvay Interox Limited. Microbicidal compositions. 5,545,374, Cl. 422-28.000.

Freulon, Anne: *See*—
Dupuy, Pierre; and Freulon, Anne, 5,546,384, Cl. 370-50.000.

Frey, Gregg W.: *See*—
Jaster, Heinz; and Frey, Gregg W., 5,545,942, Cl. 310-341.000.

Frey, Urban: *See*—
Favre, Patrick; Frey, Urban; Marek, Daniel; and Metz, François, 5,545,998, Cl. 324-321.000.

Friedlander, Barry T.; Davis, Robert A.; Blem, Allen R.; and Walker, David L., to Uniroyal Chemical Company, Inc.; and Uniroyal Chemical Ltd./Ltee. Substituted oxathiolanes. 5,545,655, Cl. 514-397.000.

Friedrich, Sharon M.: *See*—
Stengel, Sandra R.; Eisenmann, George; and Friedrich, Sharon M., 5,545,824, Cl. 524-590.000.

Friese, Karl-Hermann; Gruenwald, Werner; Stahl, Roland; de la Prieta, Claudio; Schneider, Gerhard; and Neumann, Harald, to Robert Bosch GmbH. Sensor element for the determination of concentration of gas constituent(s). 5,545,301, Cl. 204-425.000.

Frigid-Rigid, Inc.: *See*—
Anderson, Bruce; and Gipson, Philip, 5,544,495, Cl. 62-457.700.

Frigiere, Rene, to Cricket. Reservoir of gaseous fuel in liquid phase. 5,544,785, Cl. 222-3.000.

Fritz, Alton L.: *See*—
Fritz, Michael L.; and Fritz, Alton L., 5,545,026, Cl. 425-389.000.

Fritz, Michael L.; and Fritz, Alton L. Hydroforming platen and seal. 5,545,026, Cl. 425-389.000.

Frizell, Kathleen H.; Mefford, Brent W.; Vermeyen, Tracy B.; and Morris, Douglas I., to United States of America, Interior. Concrete step embankment protection. 5,544,973, Cl. 405-16.000.

Froehel, Francis E.: *See*—
Conru, Harold W.; Froebel, Francis E.; Gregoritsch, Albert J., Jr.; Rieley, Sheldon C.; Starr, Stephen G.; Uttecht, Ronald R.; White, Eric J.; and Pohl, Jens G., 5,545,921, Cl. 257-669.000.

Froehlich, Franz-Fr: *See*—
Meltsch, Hans-Juergen; Froehlich, Franz-Fr; Zimmer, Rainer; and Kluwe, Wolf, 5,545,851, Cl. 174-74.00R.

Fromson, Leonard E., to Maxwell Products, Inc. Articulated bed with customizable remote control. 5,544,376, Cl. 5-618.000.

Frost, Jonathon C.: *See*—
Cooper, Jeremy B.; Frost, Jonathon C.; and Partington, Stephen R., 5,545,787, Cl. 585-444.000.

Frost, Steven L., to Tuftco Corporation. Auxiliary yarn feed module for tufting machine with pattern control yarn feed mechanism. 5,544,605, Cl. 112-475.230.

Fröstl, Wolfgang: *See*—
Marescaux, Christian; Bernasconi, Raymond; Schmutz, Markus; Fröstl, Wolfgang; and Mickel, Stuart J., 5,545,631, Cl. 514-89.000.

Fryklund, Linda; Hjertman, Birger; Gustavsson, Marie-Louise; Kaluski, Jacob; Levander, Gustav; Ljungquist, Olle; Ström, Anders; and Virding, Jonas, to Pharmacia AB. Method and device for dosing a liquid preparation. 5,545,144, Cl. 604-187.000.

Frymaster Corporation, The: *See*—
Davis, John; and Kinch, John, 5,544,567, Cl. 99-336.000.

Fu, Roger C.; Leung, De-Mei; Fleitman, Jeffrey S.; Rizzolio, Michele C.; and Miksztal, Andrew R., to Syntex (U.S.A.) Inc. Process for preparing pharmaceutical compositions containing crystalline anhydrous mycophenolate mofetil salts. 5,545,637, Cl. 514-233.500.

Fuchs, Rudolf: *See*—
Boeck, Cornelius; and Fuchs, Rudolf, 5,545,077, Cl. 451-311.000.

Fugoso, Mauricio L.; and Tran, Don H., to Medtronic, Inc. Adjustable stiffness dilatation catheter. 5,545,138, Cl. 604-102.000.

Fuji Electric Co., Ltd.: *See*—
Tada, Gen, 5,545,577, Cl. 437-41.000.

Fuji, Hiroshi; Deguchi, Toshihisa; Kojima, Kunio; Yamaguchi, Takeshi; Terashima, Shigeo; Takahashi, Akira; and Ohta, Kenji, to Sharp Kabushiki Kaisha. Magneto-optical memory apparatus utilizing edges or recording mark to manage data. 5,546,364, Cl. 369-13.000.

Fuji Jukogyo Kabushiki Kaisha: *See*—
Kudo, Shokiku; Hosoi, Masanori; and Kawano, Michinobu, 5,544,986, Cl. 408-67.000.

Fuji Paudal Kabushiki Kaisha: *See*—
Yoshida, Katunori; Koizumi, Ichirho; Kimura, Kohichi; and Moriya, Nobuharu, 5,544,426, Cl. 34-314.000.

Fuji Photo Film Co., Ltd.: *See*—
Asami, Katuo; and Yozawa, Hitoshi, 5,546,122, Cl. 348-96.000.
Gotanda, Yoshiharu; Arai, Minoru; and Miyake, Izumi, 5,546,121, Cl. 348-64.000.
Takahashi, Koichi; Takatori, Tetsuya; Ichikawa, Haruo; Kaya, Akimasa; and Takahashi, Tomoyuki, 5,544,835, Cl. 242-348.100.
Yamamoto, Shohei, 5,546,155, Cl. 354-354.000.

Fuji Photo Optical Co., Ltd.: *See*—
Ohi, Shigenori, 5,546,186, Cl. 356-348.000.
Yajima, Shinya; and Nagashima, Nobuharu, 5,546,126, Cl. 348-175.000.

Fuji Xerox Co., Ltd.: *See*—
Daimon, Katsumi; Nukada, Katsumi; Sakaguchi, Yasuo; and Igarashi, Ryosaku, 5,545,733, Cl. 540-139.000.
Obara, Noriyuki, 5,544,875, Cl. 271-176.000.
Ota, Akira, 5,546,215, Cl. 359-208.000.
Uehara, Yasuhiro; Kusumoto, Yasuhiro; Kanesawa, Yoshio; and Inoue, Toru, 5,546,175, Cl. 355-290.000.

Fujii, Akira; and Kaneda, Kiyoshi, to NEC Corporation; and Makino Milling Machine Co., Ltd. Electrical discharge machining method and apparaus with non-load time calculation. 5,545,870, Cl. 219-69.130.

Fujii, Hiroaki: *See*—
Yamanishi, Takahiro; Fujii, Hiroaki; and Osada, Nobuya, 5,544,913, Cl. 280-730.200.

Fujii, Hiroyuki: *See*—
Sakata, Masakazu; Fujii, Hiroyuki; Hamada, Yuji; Shibata, Kenichi; and Nishio, Yoshitaka, 5,545,400, Cl. 424-76.210.

Fujii, Masahiro: *See*—
Satake, Sunao; Yatsuyanagi, Yoshimi; Fujii, Masahiro; and Imagawa, Ippei, 5,545,694, Cl. 525-286.000.

Fujii, Takanobu: *See*—
Seto, Yoshiaki; Miyauchi, Masayuki; and Fujii, Takanobu, 5,545,884, Cl. 235-449.000.

Fujii, Tsunenori: *See*—
Kawaguchi, Megumi; Inoue, Hiromi; Sugiura, Atsushi; Suzuki, Kenji; and Fujii, Tsunenori, 5,545,747, Cl. 560-123.000.

Fujikawa, Kiyokazu: *See*—
Kuroda, Koichi; Aoki, Yoshiaki; Fujikawa, Kiyokazu; Kawamura, Youzon; Hirota, Tatsuya; Kawamura, Tamotsu; Fukuda, Takashi; Kishi, Minoru; and Hirose, Hisanori, 5,544,428, Cl. 34-493.000.

Fujimoto, Yukari: *See*—
Sekine, Chizu; Tani, Takeshi; Ueda, Kayoko; Fujisawa, Koichi; Higashii, Takayuki; Fujimoto, Yukari; Toda, Shoji; and Minai, Masayoshi, 5,545,345, Cl. 252-299.610.

Fujino, Nobutsugu, to Fujitsu Limited. Communication method and communications control apparatus in circuit switching network. 5,546,382, Cl. 370-24.000.

Fujioka, Souichirou; Nishida, Masafumi; and Inai, Michifumi, to Matsushita Electric Industrial Co. Ltd. Tracking control apparatus. 5,546,247, Cl. 360-77.130.

Fujisawa, Koichi: *See*—
Sekine, Chizu; Tani, Takeshi; Ueda, Kayoko; Fujisawa, Koichi; Higashii, Takayuki; Fujimoto, Yukari; Toda, Shoji; and Minai, Masayoshi, 5,545,345, Cl. 252-299.610.

Fujisawa Pharmaceutical Co., Ltd.: *See*—
Nakajima, Hidenori; Hori, Yasuhiro; Goto, Toshio; Takase, Shigehiro; Verhaeghe, Koen; Terano, Hiroshi; and Okuhara, Masakuni, 5,545,542, Cl. 435-128.000.

Fujita, Hirokazu: *See*—
Wada, Takasumi; Fujita, Hirokazu; and Inui, Koichi, 5,546,169, Cl. 355-244.000.

Fujita, Norio; Iwata, Hiroshi; and Fujiwara, Haruyoshi, to Mitsubishi Jukogyo Kabushiki Kaisha. Web transfer device. 5,545,295, Cl. 162-358.100.

Fujita, Shozo: *See*—
Hashitani, Takafumi; Fujita, Shozo; Iijima, Makoto; and Asano, Koji, 5,545,485, Cl. 428-423.100.

Fujita, Takafumi; Shimoda, Ikuo; Mochimaru, Masami; Otsuka, Susumu; Kawai, Nobuyasu; Kurimoto, Kurimoto; and Inaba, Kanemasa, to Oiles Corporation; and Okumura Corporation. Method of and apparatus for damping the vibration of a building. 5,544,452, Cl. 52-167.200.

Fujita, Tetsuji: *See*—
Egawa, Motoji; Takayanagi, Kazutoshi; Takayama, Akio; Fujita, Tetsuji; and Sano, Akinobu, 5,546,251, Cl. 360-103.000.

Fujita, Yasuhiko: *See*—
Akuzawa, Kenji; Matsui, Hiroki; and Fujita, Yasuhiko, 5,546,086, Cl. 342-70.000.

Fujitaka, Junichi, to Ricoh Company, Ltd. Rotary power tool. 5,544,534, Cl. 73-862.230.

Fujitsu General Limited: *See*—
Sogawara, Motoo, 5,546,101, Cl. 345-63.000.

Fujitsu Limited: *See*—
Fujino, Nobutsugu, 5,546,382, Cl. 370-24.000.
Funaki, Jun; and Tenma, Shoji, 5,546,363, Cl. 368-200.000.
Harasawa, Shinichiro, 5,546,221, Cl. 359-341.000.
Hashitani, Takafumi; Fujita, Shozo; Iijima, Makoto; and Asano, Koji, 5,545,485, Cl. 428-423.100.
Komatsubara, Shigeo; Sueyoshi, Satoru; and Kanbayashi, Hiroshi, 5,546,218, Cl. 359-237.000.
Koyama, Susumu, 5,546,533, Cl. 395-182.030.
Kunikane, Tatsuro; Okamoto, Akira; Watanabe, Tetsuo; Miyata, Sadayuki; Furukawa, Hiroyuki; and Sakai, Yoshimitsu, 5,546,212, Cl. 359-163.000.
Nakamoto, Makoto; and Yamazaki, Yoshihide, 5,546,136, Cl. 348-678.000.
Ohba, Hiroki; Tonomoto, Yoshihiro; Yanagita, Kiyohisa; Houki, Yoji; Akuta, Tomokazu; and Komuro, Akihiro, 5,546,170, Cl. 355-246.000.
Satoh, Takamasa; Yasuda, Hiroshi; Kai, Junichi; Oae, Yoshihisa; Nishino, Hisayasu; Sakamoto, Kiichi; Yabara, Hidefumi; Seto, Isamu; Takigawa, Masami; Yamada, Akio; Arai, Soichiro; Abe, Tomohiko; Kiuchi, Takashi; and Miyazawa, Kenichi, 5,546,319, Cl. 364-488.000.
Seto, Fumiaki, 5,546,172, Cl. 355-274.000.
Suyama, Masuo, 5,546,213, Cl. 359-179.000.
Tomura, Masashi; and Takagi, Hisamitsu, 5,546,457, Cl. 379-368.000.
Yamamoto, Chiyoko; Maruhashi, Daisuke; and Shioda, Masahiro, 5,546,403, Cl. 371-20.500.
Yoshida, Yuichi; and Moriyama, Hitoshi, 5,544,964, Cl. 400-322.000.

VOL 1189 ISS 2 AG 13 1996 UMI

Fujiwara, Atsushi: *See*—
Yamada, Toshio; Shibayama, Akinori; Iwanari, Shunichi; and Fujiwara, Atsushi, 5,545,977, Cl. 323-313.000.

Fujiwara, Haruyoshi: *See*—
Fujita, Norio; Iwata, Hiroshi; and Fujiwara, Haruyoshi, 5,545,295, Cl. 162-358.100.

Fujiwara, Yoshimasa: *See*—
Mitaka, Ryosuke; Fujiwara, Yoshimasa; and Ikebuchi, Hiroyuki, 5,546,476, Cl. 382-201.000.

Fujutsuna, Masami: *See*—
Takagi, Akira; Murakami, Fumiaki; Fujutsuna, Masami; Natsume, Kazuyuki; Suzuki, Masaru; and Takei, Toshihiro, 5,544,538, Cl. 74-335.000.

Fukahori, Kiyoshi: *See*—
Shinozaki, Eiji; Fukahori, Kiyoshi; and Kurisu, Masafumi, 5,546,027, Cl. 327-59.000.

Fukanuma, Tetsuhiko; Goto, Kunifumi; Yamamoto, Shinya; and Iguchi, Masao, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Scroll type compressor with spiral seals. 5,545,020, Cl. 418-55.400.

Fukaya, Kenji; Hayashi, Kazuo; Hori, Makoto; Hamaya, Masahiro; and Ohta, Minoru, to Nippondenso Co., Ltd. Catalyst degradation detecting apparatus. 5,545,377, Cl. 422-108.000.

Fuks, Efim; Fuks, Vadim; Lunev, Vladimir; and Lunev, Sergey, to April Dynamics Industries Ltd. Two-phase supersonic flow system. 5,544,961, Cl. 366-163.200.

Fuks, Vadim: *See*—
Fuks, Efim; Fuks, Vadim; Lunev, Vladimir; and Lunev, Sergey, 5,544,961, Cl. 366-163.200.

Fukuda, Kazuhiro; and Saito, Atsushi, to Konica Corporation. Coating apparatus. 5,545,256, Cl. 118-410.000.

Fukuda, Seiji: *See*—
Sakai, Masanori; Tomita, Katsuhiko; Ezaki, Joichiro; Suzuki, Kazuo; Fukuda, Seiji; and Hatakeyama, Kouichi, 5,545,988, Cl. 324-212.000.

Fukuda, Takashi: *See*—
Kuroda, Koichi; Aoki, Yoshiaki; Fujikawa, Kiyokazu; Kawamura, Youzon; Hirota, Tatsuya; Kawamura, Tamotsu; Fukuda, Takashi; Kishi, Minoru; and Hirose, Hisanori, 5,544,428, Cl. 34-493.000.

Fukui, Nobuyuki: *See*—
Nemoto, Ichiro; Izumi, Hiroyuki; Fukui, Nobuyuki; and Takahashi, Kunioki, 5,546,149, Cl. 354-265.000.

Fukui, Yasuo: *See*—
Imai, Akihiro; Fukui, Yasuo; and Matsuo, Hiroyuki, 5,545,605, Cl. 503-227.000.

Fukui, Yuji: *See*—
Kubouchi, Kenji; Fukui, Yuji; and Inoue, Kunitoshi, 5,544,901, Cl. 277-235.00B.

Fukukawa, Mitsuo: *See*—
Ikeda, Hachiro; Miyamoto, Noriaki; Umeda, Ryoei; Yasu, Hidenori; Fukukawa, Mitsuo; Masuyama, Yukiei; Kinoshita, Shoji; Takagi, Yukio; Gocho, Tomohiro; Goto, Fumio; Ishii, Akio; Ogawa, Tetsuo; Hasegawa, Yoshun; Hironaka, Keitaro; and Ogoshi, Yasuhiro, 5,546,123, Cl. 348-119.000.

Fukumoto, Satoshi, to Nikon Corporation. Eyepiece. 5,546,237, Cl. 359-794.000.

Fukuoka, Hirotsugu; Morita, Keisuke; Matsunaga, Hiroshi; and Muramatsu, Shigeru, to Matsushita Electric Industrial Co., Ltd. Hermetically sealed rotary compressor having an oil supply capillary passage. 5,545,021, Cl. 418-63.000.

Fukushima, Akio, to Pioneer Electronic Corporation. Spread spectrum communication system and method, using sequentially phase shifted M-sequence codes. 5,546,381, Cl. 370-18.000.

Fukushima, Saburo; Yagi, Masaharu; Morita, Kiyozi; Ando, Masami; and Saito, Tokuo, to Kawasaki Heavy Industries, Ltd.; Gun-Ei Chemical Industry Co., Ltd.; and Nippon Techma Engineering Corp. Foamed phenolic composite molding. 5,545,458, Cl. 428-117.000.

Fuller, Carmel U. Bed patient turning, lifting and transporting apparatus with mobile, folding and knockdown frame. 5,544,371, Cl. 5-85.100.

Fulton, A. Carl, to Bio-Logical Solutions USA, Inc. Wand inductor for remediation of contaminated soil. 5,545,801, Cl. 588-249.000.

Funaki, Jun; and Tenma, Shoji, to Fujitsu Limited. Clock apparatus for forming time information for use in computer system. 5,546,363, Cl. 368-200.000.

Funakoshi, Takahiro: *See*—
Kimoto, Masahiko; Nakamichi, Masumi; Funakoshi, Takahiro; Wada, Yasuhiro; Yamamoto, Takehiro; and Tsuda, Yoichi, 5,546,496, Cl. 385-146.000.

Funderburk, Jeffery V.; and McIntyre, Deborah C., to MiniMed Inc. Quick-connect coupling for a medication infusion system. 5,545,152, Cl. 604-283.000.

Funsten, Herbert O.; McComas, David J.; and Scime, Earl E., to University of California, The Regents of the. Compact hydrogen/helium isotope mass spectrometer. 5,545,894, Cl. 250-281.000.

Furcht, Leo T.: *See*—
Wahl, Sharon M.; McCarthy, James B.; and Furcht, Leo T., 5,545,620, Cl. 514-12.000.

Furukawa, Hiroyuki: *See*—
Kunikane, Tatsuro; Okamoto, Akira; Watanabe, Tetsuo; Miyata, Sadayuki; Furukawa, Hiroyuki; and Sakai, Yoshimitsu, 5,546,212, Cl. 359-163.000.

Furukawa, Shigeaki: *See*—
Yamada, Noboru; Akahira, Nobuo; Nishiuchi, Kenichi; Nagata, Kenichi; Ohno, Eiji; and Furukawa, Shigeaki, 5,545,454, Cl. 428-64.100.

Furukawa, Shinichi: *See*—
Inoue, Yasuyuki; Kawachi, Masao; Okamoto, Katsunari; Takato, Norio; Yamamoto, Fumihiko; Suda, Hiroyuki; Furukawa, Shinichi; and Morinaka, Akira, 5,546,483, Cl. 385-14.000.

Furukoshi, Hiroyuki, to Asmo Co., Ltd. Drive circuit for ultrasonic motor. 5,545,954, Cl. 318-116.000.

Furuno, Fumiya: *See*—
Sugi, Tokio; and Furuno, Fumiya, 5,544,533, Cl. 73-861.560.

Furusawa, Satoshi: *See*—
Oishi, Tetsuya; Ozawa, Hiroshi; Karasawa, Minato; Inomata, Masamitsu; Mega, Izumi; Yamauchi, Atsuyoshi; Kamada, Kazunori; Nakahata, Shigeru; Sakamoto, Katsumi; Nakashima, Tatsunobu; Watanabe, Akito; Suzuki, Jin; Ohkawa, Kouhei; Furusawa, Satoshi; Ono, Hiroshi; and Sugazaki, Kazuo, 5,545,702, Cl. 525-509.000.

Furuya, Masayuki: *See*—
Kusuda, Chiyuki; Furuya, Masayuki; Wada, Masaru; Irizato, Yoshihiro; Naruse, Hiroshi; and Nagata, Teruyuki, 5,545,751, Cl. 564-398.000.

Furuyama, Takeki: *See*—
Itoh, Hiroyuki; Suzuki, Masanori; Kamiya, Akira; and Furuyama, Takeki, 5,545,715, Cl. 564-409.000.

Fuse, Kazuhiko: *See*—
Tanaka, Seiji; Kosuge, Shuji; and Fuse, Kazuhiko, 5,545,055, Cl. 439-507.000.

Fye, Michael E.: *See*—
Bulin, David S.; Fye, Michael E.; and Stratman, Rick, 5,545,866, Cl. 200-345.000.

G.D Societa' Per Azioni: *See*—
Boriani, Silvano; and Minarelli, Alessandro, 5,544,719, Cl. 187-237.000.

G&G Innovations, Inc.: *See*—
Guthrie, Christopher L., 5,544,642, Cl. 124-62.000.

Gabalis, Stephen E.: *See*—
May, Robert J.; Gabalis, Stephen E.; and Weakley, Todd S., 5,544,714, Cl. 180-68.400.

Gabbey, Lawrence W.: *See*—
Robers, Kevin J.; Bretl, Richard A.; Gabbey, Lawrence W.; Kerkman, William J.; and Kersher, Tod T., 5,544,699, Cl. 165-283.000.

Gabriele, Peter: *See*—
Kukanskis, Peter; Gabriele, Peter; Letize, Raymond; and Adams, William, 5,545,510, Cl. 430-312.000.

Gabriel-Lacki, Chr.stopher; and Krysztofowicz, Andrzej, to Quinn Wise & Associates Inc. Collapsible portable child's play-pen. 5,544,864, Cl. 256-25.000.

GAC International, Inc.: *See*—
Takeshi, Watanabe, 5,545,037, Cl. 433-21.000.

Gadek, Thomas R.: *See*—
Eppstein, Deborah A.; Felgner, Philip L.; Gadek, Thomas R.; Jones, Gordon H.; and Roman, Richard B., 5,545,412, Cl. 424-450.000.

Gagnon, Daniel; Pouliot, Nicole; Therrien, Michel; and Laperrière, Luc, to Park Medical Systems, Inc. Scintillation camera position calculation with uniform resolution using variance injection. 5,545,898, Cl. 250-369.000.

Gaillard, Jean-Bernard: *See*—
Benzaria, Jacques; Dawans, Francois; Durif-Varambon, Bruno; and Gaillard, Jean-Bernard, 5,545,746, Cl. 560-78.000.

Gala, Dinesh, to Schering Corporation. Selection of chiral α-hydroxyketones and derivatives using lipase. 5,545,558, Cl. 435-280.000.

Galat, Donald E. Off-set geared nutrunner attachment. 5,544,553, Cl. 81-57.300.

Galephar P.R. Inc.: *See*—
Deboeck, Arthur; Maes, Paul; and Baudier, Phillipe R., 5,545,628, Cl. 514-49.000.

Galileo Electro-Optics Corporation: *See*—
Soave, Robert J.; Then, Alan M.; Shank, Steven M.; and Tasker, G. William, 5,544,772, Cl. 216-2.000.

Galin, Robert: *See*—
Caspi, Rami; and Galin, Robert, 5,546,385, Cl. 370-58.200.

Gallagher, Dennis M.; Pfeifer, Thomas M.; and Schoonmaker, Richard P., to Pitney Bowes Inc. Mailing machine including overrideable sheet length discriminating structure. 5,544,579, Cl. 101-91.000.

Galowitz, Dennis A.: *See*—
Schmidt, Melvin J.; Coach, Thomas P.; Hause, Glenn C.; Galowitz, Dennis A.; Wyman, James P.; Hendricks, Robert A.; Ver Steeg, Lawrence J.; and Evans, Harold H., 5,544,450, Cl. 49-419.000.

Gamble, John A. Toothbrush. 5,544,383, Cl. 15-106.000.

Gamera Bioscience Corporation: *See*—
Mian, Alec, 5,545,540, Cl. 435-91.200.

Gamilis, Emmanuel A.: *See*—
Gamilis, James; and Gamilis, Emmanuel A., 5,544,786, Cl. 222-59.000.

Gamilis, James; and Gamilis, Emmanuel A., to Technichem Pty. Ltd. Volume and flow measuring apparatus. 5,544,786, Cl. 222-59.000.

Ganz, Thomas; Lutz, Berthold; Liedl, Bernhard; and Weissbrich, Alfons, to Webasto Karosseriesysteme GmbH. Solar roof for motor vehicles. 5,545,261, Cl. 136-251.000.

Gao, Yun; and Zepp, Charles M., to Sepracor, Inc. Enantioselective preparation of optically pure albuterol. 5,545,745, Cl. 560-42.000.

Gardocki, Gilbert: *See*—
Sallam, Faisal K.; and Gardocki, Gilbert, 5,546,064, Cl. 335-261.000.

Garel-Jones, Philip M.; and Cutts, Timothy P., to JDS Fitel Inc. Apparatus for inserting light signals into, or receiving light signals from, one of a series of optical paths and usuable as optical time domain reflectometry apparatus. 5,546,180, Cl. 356-73.100.

Garg, Shyam G.: *See*—
Hu, Chung-You; Richart, Robert B.; Garg, Shyam G.; and Banerjee, Sanjay K., 5,546,340, Cl. 365-185.300.

Gargione, Frank V., to Comar Inc. Child resistant closure. 5,544,768, Cl. 215-209.000.

Garland, Thomas A.; Kolich, Robert A.; Paddock, Charles W.; and Bicheler, James P., to Fisher-Price, Inc. Ball and socket joint, useful with collapsible playpens. 5,544,372, Cl. 5-99.100.

Garleb, Keith A.: *See*—
Behr, Stephen R.; Seeds, Jeffrey K.; Lamb, Catherine S.; Garleb, Keith A.; and Walton, Joseph E., 5,545,414, Cl. 424-484.000.

Garlow, David A.: *See*—
Osborne, Robert E.; and Garlow, David A., 5,545,967, Cl. 320-2.000.

Garmendia, Jose L., to Zumatu, S.A. Machine for automatically preparing and dispensing fruit juice. 5,544,572, Cl. 99-489.000.

Garnaat, John A.; Ferrell, Bruce H.; and Woody, William C., to Loral Corporation. Separating coherent radio-frequency interference from synthetic aperture data. 5,546,085, Cl. 342-25.000.

Garofalo, Giovanni, to HTM Sport S.p.A. Swimming fin with buckle for fastening the heel strap. 5,545,067, Cl. 441-64.000.

Gärtner, Horst; Hollmann, Friedrich; Rituper, Rafael; and Block, Bodo, to SMS Schloemann-Siemag AG; and Keramchemie GmbH. Pickling installation and method for operating this pickling installation. 5,545,260, Cl. 134-41.000.

Gas Research Institute: *See*—
Pathak, Vijay K.; and Leppin, Dennis, 5,545,296, Cl. 203-1.000.

Gass, Raymond, to Alcatel N.V. Communication installation core asynchronous switching network. 5,546,386, Cl. 370-60.000.

Gastaldi, Roberto: *See*—
Calligaro, Cristiano; Gastaldi, Roberto; Malcovati, Piero; and Torelli, Guido, 5,546,044, Cl. 327-543.000.

Gateaud, Andre, to Robot-Coupe (S.N.C.). Device for locking a bowl on a motor support of a food processor. 5,544,573, Cl. 99-492.000.

Gatehouse, Angharad; Hilder, Vaughan; Van Damme, Els; Peumans, Willy; Newell, Christine; and Hamilton, William, to Agricultural Genetics Company Limited. Insect control using lectins having specific mannose-binding ability. 5,545,820, Cl. 800-205.000.

Gatto, James G. Electronic fund transfer system. 5,546,523, Cl. 395-156.000.

Gauglitz, Phillip A.: *See*—
Heath, William O.; Gauglitz, Phillip A.; Pillay, Gautam; Bergsman, Theresa M.; Eschbach, Eugene A.; Goheen, Steven C.; Richardson, Richard L.; Roberts, Janet S.; and Schalla, Ronald, 5,545,803, Cl. 588-253.000.

Gaylor, Rodney W.: *See*—
Scarborough, Charles S.; Kelly, Robert M.; Gaylor, Rodney W.; and Rogers, Patrick J., 5,544,613, Cl. 114-363.000.

Gaylord, Michael F.: *See*—
Michlin, Steven B.; and Gaylord, Michael F., 5,546,162, Cl. 355-200.000.

Gaynes, Michael A.; Oxx, George D.; Pierson, Mark V.; and Zalesinski, Jerzy, to International Business Machines Corporation. Circuit board having a defined volume of solder or conductive adhesive deposited at interconnection sites for electrical circuits. 5,545,465, Cl. 428-209.000.

GearTechnic Corporation: *See*—
Spridco, Dale R.; and Gruneberg, J. Marc, 5,544,539, Cl. 74-353.000.

Gebhardt Fördertechnick GmbH: *See*—
Gebhardt, Günter, 5,544,734, Cl. 198-412.000.

Gebhardt, Günter, to Gebhardt Fördertechnick GmbH. Assembly conveyor. 5,544,734, Cl. 198-412.000.

GEC Alsthom Electromecanique SA: *See*—
Coulon, André, 5,545,271, Cl. 148-671.000.
Estop, Pascal; Poullain, Serge; and Verhaege, Thierry, 5,545,932, Cl. 307-104.000.

Gee, S.: *See*—
Delfyett, Peter J.; Yusim, A.; and Gee, S., 5,546,415, Cl. 372-25.000.

Gehlert, Donald R.: *See*—
Bruns, Robert F., Jr.; Gehlert, Donald R.; Howbert, J. Jeffry; and Lunn, William H. W., 5,545,641, Cl. 514-317.000.

Geiger, Bertram; and Grabher, Rainer, to Andritz-Patentverwaltungs-Gesellschaft M.B.H. Method and device for seperating pieces of wood. 5,544,757, Cl. 209-518.000.

Geiger, Istvan; and Oppermann, Winfried, to Volkswagen AG. Method for obtaining trigger signals to regulate energy conversion in the combustion chamber of an internal combustion engine. 5,544,636, Cl. 123-478.000.

Geisenberger, Stefan; and Aigner, Manfred, to Nokia Technology GmbH. Loudspeaker. 5,546,470, Cl. 381-197.000.

Geist, Alan, to Intel Corporation. Method and apparatus for integrated local and express routing in a multiprocessor. 5,546,596, Cl. 395-200.020.

Gelardi, Anthony L.: *See*—
Fantone, Stephen D.; Gelardi, Anthony L.; and Gelardi, John A., 5,544,741, Cl. 206-308.100.

Gelardi, John A.: *See*—
Fantone, Stephen D.; Gelardi, Anthony L.; and Gelardi, John A., 5,544,741, Cl. 206-308.100.

Gellibert, Françoise: *See*—
Pascal, Jean-Claude; McCort, Gary; Blondet, Dominique; and Gellibert, Françoise, 5,545,645, Cl. 514-326.000.

Genentech, Inc.: *See*—
Woodruff, Teresa K., 5,545,616, Cl. 514-8.000.

General Dynamics Land Systems, Inc.: *See*—
Boggavarapu, Rao L.; Goldstein, Yeshayahu S. A.; Keogh, Catherine M.; Suchocki, Anthony J.; and Widner, Melvin M., 5,544,588, Cl. 102-472.000.

General Electric Company: *See*—
Austin, Curtiss M.; Kelly, Thomas J.; and Huang, Shyh-Chin, 5,545,265, Cl. 148-421.000.
Castonguay, Roger N.; Rosen, James L.; and Zaffetti, Mark A., 5,545,867, Cl. 200-400.000.
Collin, Edwin J.; and Turton, Robert C., 5,544,959, Cl. 335-202.000.
Foo, Thomas K., 5,545,992, Cl. 324-309.000.
Hsieh, Jiang, 5,546,439, Cl. 378-15.000.
Jaster, Heinz; and Frey, Gregg W., 5,545,942, Cl. 310-341.000.
Lee, Robert E., Jr., 5,546,318, Cl. 364-483.000.
Lu, Yao-Shun, 5,544,486, Cl. 60-599.000.
Matzner, Bruce; King, Harold B.; and Smith, David G., 5,546,437, Cl. 376-442.000.
Mueller, Otward M.; Yakymyshyn, Christopher P.; Roemer, Peter B.; and Watkins, Ronald D., 5,545,999, Cl. 324-322.000.
Nagaraj, Bangalore A.; Weil, Antoinette E.; and Devitt, John W., 5,545,437, Cl. 427-404.000.
Peterson, Ivan H.; Hoelle, James S.; Cunningham, Neil F.; and Umney, Michael A., 5,544,849, Cl. 248-74.100.
Santos, Esteban; and Ribar, George R., Jr., 5,546,265, Cl. 361-93.000.
Schneider, Erika; Linz, Anton M.; and Repinski, Gregory A., 5,545,995, Cl. 324-318.000.
Schutten, Michael J.; Vlatkovic, Vlatko; and Steigerwald, Robert L., 5,546,294, Cl. 363-17.000.
Shagoury, John G., 5,544,700, Cl. 165-139.000.
Shu, Emily Y.; and Brown, Dale M., 5,544,478, Cl. 60-39.030.
Singh, Jogender; Schell, Jerry D.; and Young, William R., 5,545,431, Cl. 427-205.000.
Sminchak, Michael D.; and Anderson, James M., 5,546,008, Cl. 324-690.000.
Viertl, John R. M., 5,544,953, Cl. 374-164.000.

General Hospital Corporation, The: *See*—
Weissbach, Lawrence, 5,545,717, Cl. 530-324.000.

General Motors Corporation: *See*—
Burgman, Boris L.; and Gonzalea, Robert J., 5,545,102, Cl. 475-230.000.
Sommer, James J., 5,544,912, Cl. 280-728.300.

Genetronics, Inc.: *See*—
Hofmann, Gunter A.; and Kent, Henry R., 5,545,130, Cl. 604-4.000.

Gengenbach, Burle G.; Somers, David A.; Bittel, Douglas C.; Shaver, Jonathan M.; Sellner, Juantia M., deceased (by James Sellner, Carlyn Sellner, executors), to University of Minnesota, Regents of the. Lysine-insensitive maize dihydrodipicolinic acid synthase. 5,545,545, Cl. 435-172.300.

GenPharm International, Inc.: *See*—
Lonberg, Nils; and Kay, Robert M., 5,545,806, Cl. 800-2.000.

Gentry, Scott B.: *See*—
Mazur, Joseph F.; Blackburn, Brian K.; and Gentry, Scott B., 5,546,307, Cl. 364-424.050.

Genzyme Corporation: *See*—
Miller, Glenn A., 5,545,539, Cl. 435-91.200.

Georges, Michael K.: *See*—
Keoshkerian, Barkev; Georges, Michael K.; and Drappel, Stephan V., 5,545,504, Cl. 430-137.000.

GeoTel Communications Corp.: *See*—
Andrews, G. Wayne; Webber, Steven H.; Kelly, James P.; Johnson, Lawrence E.; Stern, Jerry A.; Milano, Vincent J., Jr.; and Davis, Charles R., 5,546,452, Cl. 379-219.000.

Gerald, Christophe; Walker, Mary W.; Branchek, Theresa; and Weinshank, Richard L., to Synaptic Pharmaceutical Corporation. DNA encoding a human neuropeptide Y/peptide YY (Y2) receptor and uses thereof. 5,545,549, Cl. 435-240.200.

Gerdes, Kenn A.: *See*—
Molin, Søren; Gerdes, Kenn A.; Rasmussen, Poul B.; and Andersson, Poul K., 5,545,541, Cl. 435-172.300.

Gerling, Christopher F.: *See*—
Watkins, David C.; Bramer, Lowell M.; and Gerling, Christopher F., 5,545,593, Cl. 437-225.000.

Gerlofs, Kurt R.: *See*—
Freigang, Alan R.; Schultz, Gary R.; Runels, Thomas L.; and Gerlofs, Kurt R., 5,544,688, Cl. 152-415.000.

Germond, Jacques E.; Hottinger, Herbert; Mignot, Olivier; Mollet, Beat; and Tsuda, Koichiro, to Nestec S.A. *Lactobacillus bulgaricus* having decreased acid production and/or improved aroma and flavor production. 5,545,554, Cl. 435-252.900.

Gernhart, Debra A.: *See*—
Chang, Chi S.; Desai, Subabu D.; Gernhart, Debra A.; Hartley, Phillip A.; Haskins, Robert J., Jr.; Ho, Keith K. T.; Martone, Robert A.; Mulcahy, Roy T.; Shaffer, Louis J.; Schoening, Robert D.; and Versprille, Scott A., 5,546,321, Cl. 364-491.000.

Gettemy, Donald J. Self-belaying apparatus. 5,544,723, Cl. 188-65.400.

Ghesquiere, Denis: *See*—
Loy, Jean-Philippe; Ghesquiere, Denis; and Fiquet, Line, 5,545,675, Cl. 521-172.000.

Giamati, Michael J.; Ray, Robert W., Jr.; and Sluss, Terry L., to B.F. Goodrich Company, The. Polyurethane deicer. 5,544,845, Cl. 244-134.00E.

1189
AG
1996
UMI

Giant Factories Inc.: *See*—
Rivern, Louis, 5,544,625, Cl. 122-155.200.

Giat Industries: *See*—
Balbo, Patrick; Grelat, Philippe; Malassenet, Guy; and Mandereau, Fabienne, 5,544,564, Cl. 89-37.010.
Grember, Eric; and Boutet, Claude, 5,544,439, Cl. 42-100.000.

Gibbons, James J., Jr. *See*—
Ayral-Kaloustian, Semiramis; Schow, Steven R.; Du, Mila T.; and Gibbons, James J., Jr, 5,545,662, Cl. 514-478.000.

Gibson, Sandra J.; and Barclay, Marlene. Exercise and nutritional game and method of using same. 5,544,891, Cl. 273-244.000.

Giesecke, Astrid; Neumann, Uwe; Mergardt, Bernd; and Walz, Gerd, to Hoechst Aktiengaesellschaft. Polymer systems, process for their preparation, and their use for printing inks. 5,545,678, Cl. 523-404.000.

Giess, Edward A.: *See*—
Booth, Richard B.; Cooper, Emanuel I.; Giess, Edward A.; Kordus, Mark R.; Kroagelb, Sol; Ostrander, Steven P.; Roldan, Judith M.; Sambucetti, Carlos J.; and Saraf, Ravi, 5,545,429, Cl. 427-97.000.

Gifford, George G.; and Osborn, Brock E., to International Business Machines Corporation. Method and system for analyzing plasma data. 5,546,322, Cl. 364-497.000.

Gigler, Gábor: *See*—
Szántay, Csaba; Kardos, Zsuzsanna B.; Moldvai, István; Major, Eszter T.; Szántay, Csaba, Jr.; Mándi, Attila; Blaskó, Gábor; Simig, Gyula; Lax, Györgyi; Drabant, Sándor; Szállási, Tamas; Fekete, Márton; and Gigler, Gábor, 5,545,741, Cl. 546-276.700.

Giles, Durham K.; and Slaughter, David C., to University of California, Regents of the. Adjustable spray system and assembly method. 5,544,813, Cl. 239-71.000.

Gill, Hardayal S., to International Business Machines Corporation. Orthogonal MR Read head with single hard biased MR stripe. 5,546,254, Cl. 360-113.000.

Gillenwater, Russell L.; Safari, Davoud; and Owens, Gary D., to Tandem Computers, Inc. Cell architecture for built-in self-test of application specific integrated circuits. 5,546,406, Cl. 371-22.500.

Gillingham, James R., to Calmar Inc. Bellows pump dispenser. 5,544,789, Cl. 222-153.130.

Gillingham, Peter B., to Mosaid Technologies Incorporated. RAM variable size block write. 5,546,350, Cl. 365-230.060.

Ginn, Michael W.; Cobb, Gary L.; Broxton, Lawrence E.; and McNeely, Kelly R., to ECC International Inc. Method for filtering mineral slurries. 5,545,338, Cl. 210-791.000.

Gipson, Gregory L. Removal tool for broken or seized inner budd nuts. 5,544,987, Cl. 408-72.00R.

Gipson, Philip: *See*—
Anderson, Bruce; and Gipson, Philip, 5,544,495, Cl. 62-457.700.

Gisser, David G.: *See*—
Saulnier, Gary J.; Gisser, David G.; Newell, Jonathan C.; Cook, Raymond D.; Goble, John C.; and Isaacson, David, 5,544,662, Cl. 128-734.000.

Giuliani, David; McMahon, Ryan W.; and Engel, David, to Optiva Corp. Pacing toothbrush. 5,544,382, Cl. 15-22.100.

Givens, John H.: *See*—
Armacost, Michael D.; Givens, John H.; Koburger, Charles W., III; and Lasky, Jerome B., 5,545,581, Cl. 437-52.000.

Glaser, Thomas: *See*—
Heine, Hans-Georg; Schohe-Loop, Rudolf; Glaser, Thomas; De Vry, Jean M. V.; Dompert, Wolfgang; and Sommermeyer, Henning, 5,545,643, Cl. 514-322.000.

Gleis, Dieter: *See*—
Savignac, Dominique; Gleis, Dieter; and Menke, Manfred, 5,546,296, Cl. 363-60.000.
Sommer, Diether; Savignac, Dominique; and Gleis, Dieter, 5,546,036, Cl. 327-208.000.

Glew, Andrew P.: *See*—
Martell, Robert W.; Hinton, Glenn J.; Fetterman, Michael A.; Papworth, David B.; Colwell, Robert P.; and Glew, Andrew P., 5,546,597, Cl. 395-800.000.

Globe Products Inc.: *See*—
Beakes, John M.; and Zicht, E. Wayne, 5,544,409, Cl. 29-598.000.

Gloden, Michael L.; and Sprecher, Arnold F., Jr., to MTS Systems Corporation. Damping device for sonic waveguides. 5,545,984, Cl. 324-207.130.

Glover, Edward C. T. S.: *See*—
Earle, Anthony; Glover, Edward C. T. S.; and Ridgway, Michael, 5,546,153, Cl. 354-298.000.

Glowacki, Julianne: *See*—
Laurencin, Cato T.; Lucas, Paul A.; Syftestad, Glenn T.; Domb, Abraham; Glowacki, Julianne; and Langer, Robert S., 5,545,409, Cl. 424-426.000.

Gluys, James D.: *See*—
Kruizenga, Kenneth J.; and Gluys, James D., 5,544,541, Cl. 74-473.00R.

Glynn, Kenneth P.; and Blair, James R., II, to Ideal Ideas, Inc. Illuminable toys and simulations with replaceable illuminable edibles. 5,545,069, Cl. 446-73.000.

Goble, John C.: *See*—
Saulnier, Gary J.; Gisser, David G.; Newell, Jonathan C.; Cook, Raymond D.; Goble, John C.; and Isaacson, David, 5,544,662, Cl. 128-734.000.

Gocho, Tomohiro: *See*—
Ikeda, Hachiro; Miyamoto, Noriaki; Umeda, Ryoei; Yasu, Hidenori; Fukukawa, Mitsuo; Masuyama, Yukiei; Kinoshita, Shoji; Takagi, Yukio; Gocho, Tomohiro; Goto, Fumio; Ishii, Akio; Ogawa, Tetsuo; Hasegawa, Yoshun; Hironaka, Keitaro; and Ogoshi, Yasuhiro, 5,546,123, Cl. 348-119.000.

Goellner, Willy J., to Advanced Machine & Engineering Co. Lockable ball joint apparatus. 5,544,968, Cl. 403-31.000.

Goelz, Susan E.; Cate, Richard L.; Chow, E. Pingchang; and Pepinsky, R. Blake, to Biogen Inc. Muteins of IFN-β. 5,545,723, Cl. 424-85.600.

Goenka, Lakhi N.: *See*—
Kneisel, Lawrence L.; Baker, Jay D.; and Goenka, Lakhi N., 5,545,073, Cl. 451-39.000.

Gogerty, Joseph K.: *See*—
Ambrose, William B.; and Gogerty, Joseph K., 5,545,812, Cl. 800-200.000.

Goheen, Steven C.: *See*—
Heath, William O.; Gauglitz, Phillip A.; Pillay, Gautam; Bergsman, Theresa M.; Eschbach, Eugene A.; Goheen, Steven C.; Richardson, Richard L.; Roberts, Janet S.; and Schalla, Ronald, 5,545,803, Cl. 588-253.000.

Gohndrone, John M.: *See*—
Cannady, John P.; Gohndrone, John M.; and Tzou, Ming-Shin, 5,545,743, Cl. 556-466.000.

Goldberg, Kenneth Y.: *See*—
Brost, Randolph C.; Goldberg, Kenneth Y.; Wallack, Aaron S.; and Canny, John, 5,546,314, Cl. 364-474.010.

Goldman, Shelley B.: *See*—
Foladare, Mark J.; Goldman, Shelley B.; Murray, Nancy; Silverman, David P.; Tsao, Yao-Chung; and Weber, Roy P., 5,546,442, Cl. 377-57.000.

Goldmann, Siegfried: *See*—
Straub, Alexander; Goldmann, Siegfried; Stoltefuss, Jürgen; Bechem, Martin; Dembowsky, Klaus; Gross, Rainer; Hebisch, Siegbert; Hütter, Joachim; and Rounding, Howard-Paul, 5,545,646, Cl. 514-337.000.

Goldstar Co., Ltd.: *See*—
Bu, Jong Uk; and Kim, Tae Yun, 5,545,880, Cl. 219-703.000.
Jeon, Ik B., 5,544,562, Cl. 84-470.00R.
Kim, Kyeong S.; and Kim, Jong K., 5,546,132, Cl. 348-607.000.
Kim, Man S., 5,546,207, Cl. 359-74.000.
Park, Joung I., 5,545,876, Cl. 219-492.000.
Yun, Dong H.; Lee, Kyu C.; Hong, Hyung K.; Park, Hyeon S.; Kwon, Chul H.; and Shin, Hyun W., 5,545,300, Cl. 204-424.000.

Goldstar Electron Co., Ltd.: *See*—
Han, Tae H., 5,546,034, Cl. 327-174.000.
Lee, Yong H., 5,546,335, Cl. 364-715.010.

Goldstein, Yeshayahu S. A.: *See*—
Boggavarapu, Rao L.; Goldstein, Yeshayahu S. A.; Keogh, Catherine M.; Suchocki, Anthony J.; and Widner, Melvin M., 5,544,588, Cl. 102-472.000.

Goldwasser, Benad: *See*—
Sharkey, Hugh R.; Goldwasser, Benad; and Edwards, Stuart D., 5,545,171, Cl. 606-148.000.

Goleman, William L.: *See*—
Davis, Scott H.; Goleman, William L.; Thiel, David W.; Bean, Robert G.; and Zahrobsky, James A., 5,546,536, Cl. 395-182.180.

Golla, Carla M.: *See*—
Maccarrone, Marco; Olivo, Marco; and Golla, Carla M., 5,546,054, Cl. 331-111.000.

Golla, Naidu G., to Advanced Micro Devices, Inc. Debug apparatus for an automated semiconductor testing system. 5,546,405, Cl. 371-22.100.

Golledge, Ian: *See*—
Cutts, Stanley J.; and Golledge, Ian, 5,546,276, Cl. 361-724.000.

Golstar Co., Ltd.: *See*—
Choi, Jeong M., 5,544,853, Cl. 251-65.000.

Golwalkar, Suresh V.; Foehringer, Richard; Wentling, Michael; Takatsuki, Ryo; Kawashima, Shigeo; Tsujimoto, Keiichi; and Sato, Nobuaki, to Intel Corporation. Dual sided integrated circuit chip package with offset wire bonds and support block cavities. 5,545,922, Cl. 257-676.000.

Gomez, Zaitter; and Gongora, Mario A. AC voltage regulator. 5,545,971, Cl. 323-259.000.

Goncalves, Antonin, to L'Oreal. Combination of a row of containers and a strip of caps, and assembly of a container and cap. 5,544,778, Cl. 220-23.400.

Goncharsky, Robert S.: *See*—
Allen, Vincent K.; Goncharsky, Robert S.; and Ripberger, Richard A., 5,546,557, Cl. 395-438.000.

Gongora, Mario A.: *See*—
Gomez, Zaitter; and Gongora, Mario A., 5,545,971, Cl. 323-259.000.

Gonzales, Carlos: *See*—
Hart, Robert G.; Ahmed, Bashir M.; Gonzales, Carlos; and Kozak, William G., 5,545,319, Cl. 210-279.000.

Gonzales, Mark A.: *See*—
Bell, D. Michael; Gonzales, Mark A.; and Meredith, Susan S., 5,546,546, Cl. 395-292.000.

Gonzales, Robert J.: *See*—
Burgman, Boris I.; and Gonzales, Robert J., 5,545,102, Cl. 475-230.000.

Gonzalez, Jaime D.; and Talbert, Michael J., to Gonzalez, Jaime D. Neon illumination apparatus and method of using same. 5,546,290, Cl. 362-223.000.

Goodchild, John; and Nesbitt, Steven M., to Hybridon, Inc. Stabilized ribozyme analogs. 5,545,729, Cl. 536-24.500.

Goodwin, Gene M.: *See*—
Maziasz, Philip J.; Goodwin, Gene M.; and Liu, Chain T., 5,545,373, Cl. 420-81.000.

Goodyear Tire & Rubber Company, The: *See*—
Carter, John D.; and Smith, Richard R., 5,545,686, Cl. 524-513.000.
Corvasce, Filomeno G.; and Linster, Tom D., 5,545,680, Cl. 524-47.000.

Goosens, Andre F. L.: *See*—
Hofmann, Heinrich; Schottdorf, Johannes; and Goosens, Andre F. L., 5,544,962, Cl. 384-448.000.

Gordon, Michael D. Lighting system for use in an aquarium. 5,546,289, Cl. 362-101.000.

Gorelik, Vladimir, to Stephen Krissman, Integrated Data Systems, Inc. Semiconductor architecture and application thereof. 5,546,417, Cl. 372-36.000.

Goro S.A.: *See*—
Schick, Jean-François, 5,544,801, Cl. 227-110.000.

Gorsky, John T., to Xerox Corporation. Automatic eject finger retractor for document set eject system. 5,545,000, Cl. 414-790.300.

Gostine, Mark L. Therapeutic pillow for low back pain. 5,544,377, Cl. 5-630.000.

Gotanda, Yoshiharu; Arai, Minoru; and Miyake, Izumi, to Fuji Photo Film Co., Ltd. System for and method of taking picture. 5,546,121, Cl. 348-64.000.

Goto, Fumio: *See*—
Ikeda, Hachiro; Miyamoto, Noriaki; Umeda, Ryoei; Yasu, Hidenori; Fukukawa, Mitsuo; Masuyama, Yukiei; Kinoshita, Shoji; Takagi, Yukio; Gocho, Tomohiro; Goto, Fumio; Ishii, Akio; Ogawa, Tetsuo; Hasegawa, Yoshun; Hironaka, Keitaro; and Ogoshi, Yasuhiro, 5,546,123, Cl. 348-119.000.

Goto, Jun: *See*—
Sato, Fumie; Amano, Takehiro; Kameo, Kazuya; Tanami, Tohru; Mutoh, Masaru; Ono, Naoya; and Goto, Jun, 5,545,666, Cl. 514-530.000.

Goto, Kunifumi: *See*—
Fukanuma, Tetsuhiko; Goto, Kunifumi; Yamamoto, Shinya; and Iguchi, Masao, 5,545,020, Cl. 418-55.400.

Goto, Narito; Isshiki, Masanori; Sasaki, Kunitsuna; Sekiguchi, Nobuyuki; Takeda, Katsuyuki; and Takahashi, Hideki, to Konica Corporation; and Kabushiki Kaisha Toshiba. Magnetic recording medium. 5,545,462, Cl. 428-141.000.

Goto, Tadashi: *See*—
Nakajima, Toshiharu; Machimura, Satoru; Goto, Tadashi; Mochizuki, Toshitaka; Hoshino, Shinji; and Ohtani, Hiroshi, 5,545,872, Cl. 219-89.000.

Goto, Toshio: *See*—
Nakajima, Hidenori; Hori, Yasuhiro; Goto, Toshio; Takase, Shigehiro; Verhaeghe, Koen; Terano, Hiroshi; and Okuhara, Masakuni, 5,545,542, Cl. 435-128.000.

Gotoh, Yoshinori: *See*—
Ogawa, Takashi; Yoshimoto, Kazuo; Uchiyama, Kensuke; Ibe, Harushige; Arai, Yoshiharu; Shirnishi, Taketoshi; and Gotoh, Yoshinori, 5,544,995, Cl. 414-219.000.

Gotou, Makoto: *See*—
Sakakibara, Yoshio; Gotou, Makoto; Kobayashi, Kazuhiko; Isaka, Haruo; and Nakamura, Akihiko, 5,546,248, Cl. 360-77.140.

Gotou, Seiitirou, to NEC Corporation. Push-button switch. 5,545,865, Cl. 200-341.000.

Gotschlich, Emil C., to Rockefeller University, The. Glycosyltransferases for biosynthesis of oligosaccharides, and genes encoding them. 5,545,553, Cl. 435-252.330.

Götter, Hans; Mück, Manfred; and Wilhelm, Thomas, to Blanco GmbH & Co. KG. Built-in sink. 5,544,370, Cl. 4-619.000.

Gottschald, Lutz, to Wernicke & Co. Process for the production of an edged opthalmic lens. 5,545,075, Cl. 451-42.000.

Gousgounis, Dean: *See*—
Metlitsky, Boris; Katz, Joseph; Marom, Emanuel; and Gousgounis, Dean, 5,545,886, Cl. 235-462.000.

Gow, Neil, to Krone Aktiengesellschaft. Clamping terminal unit. 5,545,060, Cl. 439-747.000.

Grabher, Rainer: *See*—
Geiger, Bertram; and Grabher, Rainer, 5,544,757, Cl. 209-518.000.

Grace, Scott A.: *See*—
Hicks, Sharon D.; Wicks, Douglas A.; and Grace, Scott A., 5,545,705, Cl. 528-44.000.

Graf, Darin C.; and Warpinski, Norman R., to Sandia Corporation. Bridge permeameter. 5,544,520, Cl. 73-38.000.

Graham, James C.: *See*—
Wisner, Craig A.; Graham, James C.; and Mandery, Thomas F., 5,544,861, Cl. 254-88.000.

Graham, Jamey: *See*—
Hart, Peter; and Graham, Jamey, 5,546,502, Cl. 395-12.000.

Graham, Scott R.: *See*—
Jailor, John; Frederick, William H.; Umbach, Steven R.; Graham, Scott R.; Roberts, Kenneth L.; and Metzger, Eric R., 5,544,385, Cl. 15-350.000.

Grainger, David J.; Metcalfe, James C.; and Weissberg, Peter L., to NeoRx Corporation. Prevention and treatment of pathologies associated with abnormally proliferative smooth muscle cells. 5,545,569, Cl. 436-518.000.

Grammenos, Wassilios: *See*—
Kirstgen, Reinhard; Oberdorf, Klaus; Sauter, Hubert; Bayer, Herbert; Grammenos, Wassilios; Rang, Harald; Harries, Volker; Lorenz, Gisela; and Ammermann, Eberhard, 5,545,664, Cl. 514-521.000.

Gränfors, Sören: *See*—
Molin, Jan; and Gränfors, Sören, 5,545,011, Cl. 416-207.000.

Grant, Ian: *See*—
Wong, Raymond S. C.; Grant, Ian; Patel, Jayantilal D.; Parker, Jeff P. K.; and Swanson, Eric B., 5,545,821, Cl. 800-230.000.

Grant, John R.: *See*—
Huyer, Stephen A.; Grant, John R.; and Uhlman, James S., 5,544,524, Cl. 73-147.000.

Grant, Larry J., to Owens Corning Fiberglas Technology, Inc. Conformable insulation assembly. 5,545,453, Cl. 428-43.000.

Grassi, Gino: *See*—
Cammilli, Leonardo; and Grassi, Gino, 5,545,204, Cl. 607-123.000.

Gray, Buddy D., to Teledyne Industries, Inc. Corona discharge system with conduit structure. 5,545,380, Cl. 422-186.070.

Gray, Buddy Don, to Teledyne Industries, Inc. Corona discharge system with insulated wire. 5,545,379, Cl. 422-186.040.

Gray, G. Robert, to AIWA Research and Development, Inc. Method of eliminating pole recession in a thin film magnetic head. 5,544,774, Cl. 216-22.000.

Gray, John M.: *See*—
Winters, John R.; Gray, John M.; and Teaney, Joel D., 5,545,389, Cl. 423-478.000.

Green, Carter B.: *See*—
Nakatsu, Tetsuo; Green, Carter B.; Reitz, Gary A.; and Kang, Raphael K. L., 5,545,424, Cl. 426-536.000.

Green, Martin R.: *See*—
Lee, Caroline M.; Green, Martin R.; and Prota, Giuseppe, 5,545,399, Cl. 424-59.000.

Greenberg, Craig B., to Texas Instruments Incorporated. Dynamic NOR decoder using current mode sensing techniques. 5,546,024, Cl. 326-106.000.

Greenshields, Roderick N.: *See*—
Hobson, John C.; and Greenshields, Roderick N., 5,545,557, Cl. 435-255.100.

Greenway, Warren C., to Decagon Devices, Inc. Laser scanning apparatus. 5,546,217, Cl. 359-223.000.

Greenwood, Beverley, to Novo Nordisk A/S. Method of treating gastrointestinal motility disorders. 5,545,638, Cl. 514-235.800.

Greenzang, Fred: *See*—
Castaldi, John; and Greenzang, Fred, 5,544,996, Cl. 414-280.000.

Gregoritsch, Albert J., Jr.: *See*—
Conru, Harold W.; Froebel, Francis E.; Gregoritsch, Albert J., Jr.; Rieley, Sheldon C.; Starr, Stephen G.; Uttecht, Ronald R.; White, Eric J.; and Pohl, Jens G., 5,545,921, Cl. 257-669.000.

Greif Bros. Corporation: *See*—
Watson, Lowell G., 5,544,777, Cl. 220-4.130.

Grelat, Philippe: *See*—
Balbo, Patrick; Grelat, Philippe; Malassenet, Guy; and Mandereau, Fabienne, 5,544,564, Cl. 89-37.010.

Grember, Eric; and Boutet, Claude, to Giat Industries. Device for firing a firearm using an infrared detector. 5,544,439, Cl. 42-100.000.

Gretillat, François; Pellaux, Jean-Paul; Hale, John M.; and Weber, Eugen, to Orbisphere Laboratories Neuchatel S.A. Luminoscopic analytic device and method. 5,545,567, Cl. 436-172.000.

Griffith, Owen W.: *See*—
Gross, Steven S.; and Griffith, Owen W., 5,545,625, Cl. 514-33.000.

Griggs, Nathan D.: *See*—
Johnson, Howard M.; Pontzer, Carol H.; and Griggs, Nathan D., 5,545,716, Cl. 530-324.000.

Grimaud, Jean-Jacques G.; Lanier, Jaron Z.; Abraham, Arthur; and Harvill, Young, to VPL Research, Inc. Method and apparatus for rendering graphical images using parallel processing. 5,546,530, Cl. 395-163.000.

Grinblat, Avi; and Chang, Stanley, to A.V.I. - Advanced Visual Instruments, Inc. Adjustable miniature panoramic illumination and infusion system for retinal surgery. 5,545,153, Cl. 604-294.000.

Grisar, J. Martin; Petty, Margaret A.; and Bolkenius, Frank, to Merrell Pharmaceuticals Inc. Hydrazide derivatives of 3,4-dihydro-2H-1-benzopyrans. 5,545,660, Cl. 514-458.000.

Groen, David L.: *See*—
Groen, Henry J.; and Groen, David L., 5,544,844, Cl. 244-8.000.

Groen, Henry J.; and Groen, David L. Autogyro aircraft. 5,544,844, Cl. 244-8.000.

Groshans, Joseph R.; Spooner, Jeffrey; and Jones, Seth A., to Chicago Pneumatic Tool Company. Pulse tool. 5,544,710, Cl. 173-176.000.

Gross, Rainer: *See*—
Straub, Alexander; Goldmann, Siegfried; Stoltefuss, Jürgen; Bechem, Martin; Dembowsky, Klaus; Gross, Rainer; Hebisch, Siegbert; Hütter, Joachim; and Rounding, Howard-Paul, 5,545,646, Cl. 514-337.000.

Gross, Steven S.; and Griffith, Owen W., to Medical College of Wisconsin Research Foundation, Inc., The. Preventing conversion of citrulline to argininosuccinate to limit pathological nitric oxide overproduction. 5,545,625, Cl. 514-33.000.

Grossberg, Sidney B.; Kushnaryov, Vladimir M.; Cashdollar, L. William; Carrigan, Donald R.; and Knox, Konstance K., to Medical College of Wisconsin, Inc. Human virus associated with chronic fatigue immune deficiency syndrome and assay therefore. 5,545,550, Cl. 435-240.200.

Grosser, Rolf: *See*—
Petersen, Uwe; Schenke, Thomas; Böhm, Stefan; Grosser, Rolf; Bremm, Klaus D.; Endermann, Rainer; and Metzger, Karl G., 5,545,642, Cl. 514-312.000.

Groskopf, Joseph R.; Niaz, Hasan S.; Reuss, Carolyn K.; Shih, Jerry C.; and Watson, Paul T., to AT&T Corporation; and Bell South Corporation. Peer-to-peer data concurrence processes and apparatus. 5,546,574, Cl. 395-600.000.

Grossman, William M.: *See*—
Placssmann, Henry; Grossman, William M.; and Olson, Todd E., 5,546,222, Cl. 359-346.000.

Growden, John H.; Nitsch, Roger M.; and Wurtman, Richard J., to Massachusetts Institute of Technology. Antemortem diagnostic test for alzheimer's disease. 5,545,566, Cl. 436-71.000.

Gruenwald, Werner: *See*—
Friese, Karl-Hermann; Gruenwald, Werner; Stahl, Roland; de la Prieta, Claudio; Schneider, Gerhard; and Neumann, Harald, 5,545,301, Cl. 204-425.000.

Gruneberg, J. Marc: *See*—
Spridco, Dale R.; and Gruneberg, J. Marc, 5,544,539, Cl. 74-353.000.

Grusie, Jeffrey A.: *See*—
Ducharme, Troy E.; and Grusie, Jeffrey A., 5,544,999, Cl. 414-786.000.

Gsell, Thomas C.: *See*—
Bormann, Thomas J.; Pascale, Frank R.; and Gsell, Thomas C., 5,545,339, Cl. 210-806.000.

Gu, Yonghai: *See*—
Liao, Ke-Qiang; and Gu, Yonghai, 5,546,430, Cl. 375-341.000.

Gudat, Adam J.; and Harrod, Gregory R., to Caterpillar Inc. System and method for providing navigation signals to an earthmoving or construction machine. 5,546,093, Cl. 342-357.000.

Gudeman, Christopher S.: *See*—
Lin, Li-Ju J.; Foster, John S.; Gudeman, Christopher S.; and Vurens, Gerard H., 5,545,478, Cl. 428-332.000.

Guelich, Johann, to Sulzer Pumpen AG. Method and apparatus for conveying a fluid. 5,545,008, Cl. 415-206.000.

Guerbet S.A.: *See*—
Spielvogel, Bernard F.; and Meyer, Dominique, 5,545,397, Cl. 424-9,400.

Guerin, Jean-Michel, to Xerox Corporation. Double bounce passive facet tracking with a reflective diffraction grating on a flat facet. 5,546,201, Cl. 359-17.000.

Guerinot, Thierry: *See*—
Vu Khac, Tham; Sabin, Michel; and Guerinot, Thierry, 5,544,942, Cl. 297-452.370.

Guess, Robert G., to Romar Technologies, Inc. Recycle process for removing dissolved heavy metals from water with iron particles. 5,545,331, Cl. 210-713.000.

Guetard, Denise: *See*—
Alizon, Marc; Montagnier, Luc; Guetard, Denise; Brun-Vezinet, Francoise; and Clavel, Francois, 5,545,726, Cl. 536-23.100.

Guhl, Peter, to Bruker Analytische Messtechnik GmbH. Sample filling device. 5,544,683, Cl. 141-65.000.

Guibelin, Eric; and Valette, Yves, to OTV Omnium de Traitements et de Valorisation S.A. System for injecting slurry to be incinerated into an incineration furnace, corresponding operating procedure, use and furnace. 5,544,598, Cl. 110-238.000.

Gun-Ei Chemical Industry Co., Ltd.: *See*—
Fukushima, Saburo; Yagi, Masaharu; Morita, Kiyozi; Ando, Masami; and Saito, Tokuo, 5,545,458, Cl. 428-117.000.

Gunn, Timothy D.: *See*—
Sharma, Raghu N.; Davis, Jeffrey P.; Gunn, Timothy D.; Li, Ping; Maitra, Sidhartha; and Thanawala, Ashish A., 5,546,395, Cl. 370-84.000.

Gupta, Rajendra P.; and Wood, Grant W. Energy efficient centrifugal grinder. 5,544,821, Cl. 241-46.017.

Gurary, Alexander: *See*—
Stall, Richard A.; Tompa, Gary S.; Gurary, Alexander; and Nelson, Craig R., 5,544,618, Cl. 117-102.000.

Guse, Ingrid: *See*—
Beaulieu, Pierre L.; and Guse, Ingrid, 5,545,640, Cl. 514-311.000.

Gustavson, Robert L.: *See*—
Wangler, Richard J.; Gustavson, Robert L.; McConnell, Robert E., II; and Fowler, Keith L., 5,546,188, Cl. 356-376.000.

Gustavsson, Marie-Louise: *See*—
Fryklund, Linda; Hjertman, Birger; Gustavsson, Marie-Louise; Kaluski, Jacob; Levander, Gustav; Ljungquist, Olle; Ström, Anders; and Virding, Jonas, 5,545,144, Cl. 604-187.000.

Gustin, David C., to Dana Corporation. Vehicle transfer case with dual electrically-actuated magnetic clutches. 5,545,103, Cl. 475-223.000.

Gustin, Michael C., to William Marsh Rice University. Microorganisms and methods for their use. 5,545,556, Cl. 435-254.200.

Gut, Bernhard; and Wandinger, Franz, to Siemens Nixdorf Informationssysteme Aktiengesellschaft. Device for adjusting the angle of a keyboard. 5,546,271, Cl. 361-680.000.

Guthrie, Christopher L., to G&G Innovations, Inc. Multiple projectile blow gun magazine assembly. 5,544,642, Cl. 124-62.000.

Gutteridge, Ronald J.: *See*—
Ristic, Ljubisa; Koury, Daniel N.; Schmiesing, John E.; Gutteridge, Ronald J.; and Hughes, Henry G., 5,545,912, Cl. 257-417.000.

Guyonnet, Xavier J. M. A.: *See*—
Alassoeur, Philippe L. A.; Collot, André C. F.; Guyonnet, Xavier J. M. A.; Klein, Gilles C. C.; and Molliex, Ludovic E. C., 5,544,805, Cl. 228-190.000.

Gvoich, Ned, to Kor-One, Ltd. Abdominal exercise device. 5,545,114, Cl. 482-140.000.

Gyger, Jack D., to Roberts Sinto Corporation. Chain conveyor with frictionally driven recirculated pallets linked together in sub groupings. 5,544,735, Cl. 198-465.300.

Györgyey, János: *See*—
Dudits, Dénes; Paulovics, Katalin; Kalman, Katalin; Györgyey, János; Nagy, Ferenc; Bako, László; Horvath, Gábor; Eckes, Peter; and Donn, Günter, 5,545,819, Cl. 800-205.000.

H.A. Schmitz GmbH: *See*—
Schuster, Dieter H. P.; Fels, Achim G.; and Spors, Herbert, 5,545,470, Cl. 428-229.000.

Haadsma-Svensson, Susanne R.: *See*—
Lin, Chiu-Hong; Haadsma-Svensson, Susanne R.; Piercey, Montford F.; Romero, Arthur G.; and Darlington, William H., 5,545,755, Cl. 564-428.000.

Haas, Franz; Haas, Johann; and Baum, Engelbert, to Franz Haas Waffelmaschinen Industriegesellschaft m.b.H. Continuous oven for making baked ware. 5,544,570, Cl. 99-443.00C.

Haas, Johann: *See*—
Haas, Franz; Haas, Johann; and Baum, Engelbert, 5,544,570, Cl. 99-443.00C.

Haas, Norman: *See*—
Bolle, Rudolf M.; Connell, Jonathan H.; Haas, Norman; Mohan, Rakesh; and Taubin, Gabriel, 5,546,475, Cl. 382-190.000.

Haavik, Svein: *See*—
Codington, John F.; and Haavik, Svein, 5,545,532, Cl. 435-7.230.

Habeeb, Jacob J.; and May, Christopher J., to Exxon Research and Engineering Company. Smoke reducing additive for two-cycle engine fuel mixture. 5,545,237, Cl. 44-380.000.

Habener, Joel P.: *See*—
Buckley, Douglas I.; Habener, Joel F.; Mallory, Joanne B.; and Mojsov, Svetlana, 5,545,618, Cl. 514-12.000.

Hackett, Andrew; Knee, Michael; Kerdranvat, Michel; and Bolender, Nadine, to Thomson Consumer Electronics S.A. Method and apparatus for forming a video signal using motion estimation and signal paths with different interpolation processing. 5,546,130, Cl. 348-447.000.

Häckl, Peter: *See*—
Schwarzmaier, Peter; Häckl, Peter; Stöger, Manfred; and Mielke, Ingolf, 5,545,780, Cl. 570-226.000.

Haderer, Guenter: *See*—
Peter, Cornelius; Seiler, Hartmut; AAB, Volker; and Haderer, Guenter, 5,545,961, Cl. 318-647.000.

Hadvary, Paul: *See*—
Alig, Leo; Hadvary, Paul; Hürzeler, Marianne; Müller, Marcel; Steiner, Beat; and Weller, Thomas, 5,545,658, Cl. 514-423.000.

Haenen, Johan G.D.: *See*—
Duisters, Henricus A. M.; and Haenen, Johan G.D., 5,545,789, Cl. 585-508.000.

Haese, Wilfried; Bruder, Friedrich; Pakull, Ralf; Kirsch, Jürgen; and Löwer, Hartmut, to Bayer Aktiengesellschaft. Use of special polycarbonates for the production of optical articles. 5,545,710, Cl. 528-201.000.

Haffely, Jeffrey L.; Lei, Xun; and Brickner, Louis C., to Delta International Machinery Corp. Tool fixture for abrading apparatus. 5,545,081, Cl. 451-367.000.

Hägel, Adolf, to Liba Maschinenfabrik GmbH. Knitting needle for a chain-stitch knitting machine. 5,544,501, Cl. 66-124.000.

Hagen, Frederick S.: *See*—
Kaushansky, Kenneth; and Hagen, Frederick S., 5,545,536, Cl. 435-69.100.

Haginoya, Mitsuo: *See*—
Yamaguchi, Shizuka; Kojima, Yoshitaka; Ogawa, Sai; Arikawa, Hideyuki; Haginoya, Mitsuo; Wada, Yukihiko; and Iwao, Kyozo, 5,545,484, Cl. 428-408.000.

Haginoya, Shigekazu: *See*—
Kazama, Masahiro; and Haginoya, Shigekazu, 5,545,316, Cl. 210-188.000.

Hahn, Manuela: *See*—
Lysson, Hans-Jürgen; Lisse, Frank; Hahn, Manuela; Leppert, Hans-Detlef; and Darbon, Philippe, 5,545,246, Cl. 65-435.000.

Hahn, Stephen J.: *See*—
Dahl, Roger W.; Swanson, David K.; Hahn, Stephen J.; Lang, Douglas J.; and Heil, John E., 5,545,202, Cl. 607-129.000.

Haigh Engineering Company Ltd., The: *See*—
Shepherd, Nigel R. C, 5,544,819, Cl. 241-37.000.

Hailey, James E.; Wilkey, Foy E.; and Staggs, Randall D., to Thomson Consumer Electronics, Inc. Autoprogrammed, channel mapping for a video cassette recorder. 5,546,193, Cl. 358-335.000.

Hainey, Paul L.: *See*—
Bishop, Robert P.; and Hainey, Paul L., 5,544,399, Cl. 29-25.410.

Haji, Abudulcadir A. Garment silkscreening apparatus. 5,544,581, Cl. 101-126.000.

Hale, John M.: *See*—
Gretillat, François; Pellaux, Jean-Paul; Hale, John M.; and Weber, Eugen, 5,545,567, Cl. 436-172.000.

Haleen, Len W., to Mallinckrodt Medical, Inc. Aggressive convective drying in a conical screw type mixer/dryer. 5,544,424, Cl. 34-181.000.

Haleen, Len W., to Mallinckrodt Medical, Inc. Aggressive convective drying in a nutsche type filter/dryer. 5,544,425, Cl. 34-187.000.

Hall, Bonnie J.; Baur, Julie A.; and Deckner, George E., to Procter & Gamble Company, The. Dermatological compositions and method of treatment of skin lesions therewith using benzoyl peroxide and tocopherol esters. 5,545,407, Cl. 424-401.000.

Hall, Bryan C.: *See*—
Nally, Debora E.; and Hall, Bryan C., 5,544,816, Cl. 239-585.500.

Hall, Herbert L.; and Scott, James W. Method of making an insulation assembly. 5,545,279, Cl. 156-201.000.

Hall, John T.: *See*—
Ramos, Sergio; Hall, John T.; Tanzer, Herbert J.; and Severns, Rudy, 5,545,966, Cl. 320-2.000.

Hall, Jon R.; Carpenter, Clint W.; and Scott, Stuart K., to BASF Corporation. Passification of optically variable pigment and waterborne coating compositions containing the same. 5,545,677, Cl. 523-212.000.

Hall, Ralph F.: *See*—
Adams, Jerry L.; Hall, Ralph F.; Lee, Dennis; Mayer, Ruth J.; and Seibel, George L., 5,545,669, Cl. 514-562.000.

Halliburton Company: *See*—
Laurel, David F.; Heathman, James F.; and Marcel, Kenneth P., 5,544,704, Cl. 166-117.600.

Hallmark Cards, Incorporated: *See*—
Buckley, Stephen P.; and Banks, Thomas B., 5,546,316, Cl. 364-479.030.

Hallsten Corporation: *See*—
Hallsten, Jeffrey A.; and Bailey, Elena, 5,545,358, Cl. 261-123.000.

Hallsten, Jeffrey A.; and Bailey, Elena, to Hallsten Corporation; and Enviroquip, Inc. Tank cover structure with aeration distribution. 5,545,358, Cl. 261-123.000.

Halpine, Scott A.: *See*—
Hurt, Thomas D.; and Halpine, Scott A., 5,546,337, Cl. 365-121.000.

Halton, Padraig: *See*—
Noworolski, Zbigniew; Sterescu, Vlad; Lee, Albert; Halton, Padraig; and Noworolski, Jan M., 5,546,003, Cl. 324-434.000.

Hamada, Hiroshi: *See*—
Nakanishi, Hiroshi; and Hamada, Hiroshi, 5,546,206, Cl. 359-67.000.

Hamada, Masahiro: *See*—
Yamaguchi, Takao; and Hamada, Masahiro, 5,546,598, Cl. 395-800.000.

Hamada, Masanori: *See*—
Okamoto, Takuji; Hamada, Masanori; Sokawa, Kenta; Uyeda, Kazuya; and Yamauchi, Hideaki, 5,546,135, Cl. 348-674.000.

Hamada, Yuji: *See*—
Sakata, Masakazu; Fujii, Hiroyuki; Hamada, Yuji; Shibata, Kenichi; and Nishio, Yoshitaka, 5,545,400, Cl. 424-76.210.

Hamamatsu Photonics K.K.: *See*—
Kobayashi, Yuji; Yoshida, Narihiro; Mukohzaka, Naohisa; Toyoda, Haruyoshi; and Hara, Tsutomu, 5,546,181, Cl. 356-237.000.
Takahashi, Hironori; and Aoshima, Shinichiro, 5,546,011, Cl. 324-753.000.

Hamano, Hiroyuki: *See*—
Sato, Hiroshi; and Hamano, Hiroyuki, 5,546,230, Cl. 359-684.000.

Hamaya, Masahiro: *See*—
Fukaya, Kenji; Hayashi, Kazuo; Hori, Makoto; Hamaya, Masahiro; and Ohta, Minoru, 5,545,377, Cl. 422-108.000.

Hamilton, William: *See*—
Gatehouse, Angharad; Hilder, Vaughan; Van Damme, Els; Peumans, Willy; Newell, Christine; and Hamilton, William, 5,545,820, Cl. 800-205.000.

Hammarberg, Bjoern; Rosen, Jan; and Slettenmark, Bruno, to Siemens Elema AB. Method and apparatus for measuring the flow resistance of a catheter in an implanted medication infusion system. 5,544,519, Cl. 73-37.000.

Hammer, Hans; and Reutemann, Werner, to BASF Aktiengesellschaft. Production of ethanolamines. 5,545,757, Cl. 564-475.000.

Han, Loi: *See*—
Lam, Kai Y.; and Han, Loi, 5,546,144, Cl. 353-120.000.

Han, Tae H., to Goldstar Electron Co., Ltd. Pulse generator capable of variably controlling a pulse length. 5,546,034, Cl. 327-174.000.

Han, Taek-soo: *See*—
Park, Goo-man; Baik, Sei-hyun; and Han, Taek-soo, 5,546,244, Cl. 360-53.000.

Hanagan, Michael W. Motorcycle seat and method of making same. 5,544,937, Cl. 297-215.120.

Hanaoka, Katsunari, to Ricoh Co., Ltd.; and Ricoh Research Institute of General Electronics Co., Ltd. Semiconductor device having a metallic silicide layer for improved operational rates. 5,545,925, Cl. 257-755.000.

Hanazaki, Hisashi: *See*—
Kondo, Hiroki; Totsuka, Mitsuhiko; Kudo, Toshiharu; and Hanazaki, Hisashi, 5,546,066, Cl. 337-163.000.

Hanazato, Yoshio: *See*—
Isoda, Satoru; and Hanazato, Yoshio, 5,546,504, Cl. 395-25.000.

Handke, Günther; and Memmel, Georg, to Fichtel & Sachs AG. Vibration damper having a spring plate, tube and base which are joined by a weld. 5,544,725, Cl. 267-221.000.

Hang-Fu, Lee. Apparatus and method for implant prostheses. 5,545,221, Cl. 623-11.000.

Hann, Cheryl, executrix: *See*—
Louden, James A.; Hawkins, Brian F.; Hann, Wayne D., Sr., deceased, 5,545,333, Cl. 210-739.000.

Hann, Wayne D., Sr., deceased (by Cheryl Hann, executrix): *See*—
Louden, James A.; Hawkins, Brian F.; Hann, Wayne D., Sr., deceased, 5,545,333, Cl. 210-739.000.

Hanna, Marie R.: *See*—
Monteleone, Michael G.; Weiss, Richard A.; Evans, Mark D.; and Hanna, Marie R., 5,545,763, Cl. 568-630.000.

Hans Oetiker AG Maschinen -und Apparatefabrik: *See*—
Oetiker, Hans, 5,544,392, Cl. 24-20.0CW.

Hansebout, Robert R.; and Blight, Andrew R., to Canadian Spinal Research Organization. Use of 4-aminopyridine in the reduction of chronic pain and spasticity in a spinal cord injured patient. 5,545,648, Cl. 514-352.000.

Hansson, Bengt H. Hot-air oven for cooking food in hot air. 5,545,874, Cl. 219-400.000.

Hanulik, Jozef, to Deco-Hanulik AG. Method for decontaminating radioactive metal surfaces. 5,545,795, Cl. 588-2.000.

Hanzawa, Kobtaro: *See*—
Ishiguro, Shiro; Watanuki, Masatoshi; Kawanishi, Toshiaki; Hanzawa, Kobtaro; Sasaki, Hiroyuki; and Yoshino, Jun, 5,546,466, Cl. 381-61.000.

Happer, William: *See*—
Albert, Mitchell S.; Balamore, Dilip; Cates, Gordon D., Jr.; Driehuys, Bastiaan; Happer, William; Saam, Brian; and Wishnia, Arnold, 5,545,396, Cl. 424-93.000.

Hara, Hiroaki; and Komoriya, Haruo, to Cosmo Research Institute; and Cosmo Oil Co., Ltd. Spark-ignition engine and a method of adaptive control on the ignition timing thereof. 5,544,635, Cl. 123-425.000.

Hara, Tsutomu: *See*—
Kobayashi, Yuji; Yoshida, Narihiro; Mukohzaka, Naohisa; Toyoda, Haruyoshi; and Hara, Tsutomu, 5,546,181, Cl. 356-237.000.

Harada, Kazuo. Branch trimmer. 5,544,418, Cl. 30-392.000.

Harada Kogyo Kabushiki Kaisha: *See*—
Egashira, Yoshimi, 5,546,094, Cl. 343-702.000.

Harada, Tatsuhiko, to Koito Manufacturing Co., Ltd. Automobile headlamp with extension reflector mounted on the front lense. 5,546,284, Cl. 362-61.000.

Harada, Tetsuo: *See*—
Suzuki, Hajime; and Harada, Tetsuo, 5,545,259, Cl. 134-18.000.

Harada, Tomofumi: *See*—
Hayashi, Masayuki; Mitekura, Yoshihiro; Kanaya, Koichi; Terao, Masato; Tagawa, Toshiya; Tomidokoro, Nobuaki; Kitayama, Masahiro; Kizaki, Osamu; Kawada, Yasuo; Nakahara, Kazuyuki; Harada, Tomofumi; and Hashimoto, Yasunari, 5,546,164, Cl. 355-204.000.

Haraguchi, Hiroshi: *See*—
Shouda, Hirofumi; Hirata, Yoshihiko; Kawai, Katsuhiko; Kondo, Toshio; and Haraguchi, Hiroshi, 5,544,639, Cl. 123-676.000.

Harasawa, Shinichiro, to Fujitsu Limited. Optical amplifier apparatus. 5,546,221, Cl. 359-341.000.

Harasym, Michael. Antivortexing nozzle system for pouring molten metal. 5,544,695, Cl. 164-437.000.

Harato, Takuo; Ishida, Takahiro; Kumagae, Yoshio; Inami, Michikazu; Ishibashi, Kazuhisa; and Murakami, Mitsuaki, to Sumitomo Chemical Co., Ltd. Process for production of aluminum hydroxide from ore containing alumina. 5,545,384, Cl. 423-121.000.

Hardee, Kenneth L.; Erses, Lyane M.; Carlson, Richard C.; and Thomas, David E., to ELTECH Systems Corporation. Method of preparing a metal substrate of improved surface morphology. 5,545,262, Cl. 148-527.000.

Harder, Christian; Höwe, Bernd; and Kuhlmann, Karl, to Beiersdorf Aktiengesellschaft. Self-adhesive lidding film for packaging electronic components. 5,545,457, Cl. 428-77.000.

Hardesty, Michael P., to Thermwood Corporation. Toolhead mounting assembly. 5,544,990, Cl. 409-183.000.

Harding, David K. Cargo submarine. 5,544,610, Cl. 114-312.000.

Hardman, Thomas F., to Wilson Sporting Goods Co. Golf club with skewed sole. 5,544,884, Cl. 473-327.000.

Harel, Haim: *See*—
Yokev, Hanoch; Harel, Haim; and Meiman, Yehouda, 5,546,422, Cl. 375-202.000.

Härle, Anton. Threaded fastener. 5,544,993, Cl. 411-414.000.

Harlow, James: *See*—
Trainor, Jack; LaPlace, Carl J.; and Harlow, James, 5,545,974, Cl. 323-340.000.

Harms, Jürgen: *See*—
Biedermann, Lutz; Shuffleberger, Harry L.; and Harms, Jürgen, 5,545,165, Cl. 606-61.000.

Harpel, William L.: *See*—
Ouyang, Jiangbo; Rodzewich, Edward A.; and Harpel, William L., 5,545,347, Cl. 510-254.000.

Harries, Volker: *See*—
Kirstgen, Reinhard; Oberdorf, Klaus; Sauter, Hubert; Bayer, Herbert; Grammenos, Wassilios; Rang, Harald; Harries, Volker; Lorenz, Gisela; and Ammermann, Eberhard, 5,545,664, Cl. 514-521.000.

Harrington, James H., to Hercules Incorporated. Polyolefin fiber. 5,545,481, Cl. 428-378.000.

Harrington, Noreen A. Automatic call distributor with telephonic call holding system. 5,546,454, Cl. 379-265.000.

Harris Corporation: *See*—
Croft, Gregg D., 5,546,038, Cl. 327-310.000.

Harris, Dale C., to Eli Lilly and Company. Anti-backup improvement for hypodermic syringes. 5,545,147, Cl. 604-209.000.

Harris, Mark R.: *See*—
Trumble, William P.; Harris, Mark R.; and Van Gaal, Adrianus P., 5,545,494, Cl. 429-163.000.

Harris, Meckie T.; Bliss, David F.; Armington, Alton F.; Higgins, William M.; and Bryant, George G., to United States of America, Air Force. Synthesis and growth processes for zinc germanium diphosphide single crystals. 5,544,615, Cl. 117-18.000.

Harris, Wayne, to Rockford Corporation. Automotive audio system. 5,546,273, Cl. 361-697.000.

Harrison, Lewis I.; and Harrison, Marjorie S., to Preferred Packaging Systems, Inc. Portable shipping station. 5,544,468, Cl. 53-390.000.
Harrison, Marjorie S.: *See*—
Harrison, Lewis I.; and Harrison, Marjorie S., 5,544,468, Cl. 53-390.000.
Harrod, Gregory R.: *See*—
Gudat, Adam J.; and Harrod, Gregory R., 5,546,093, Cl. 342-357.000.
Harrop, Kathy L. Folding chair backpack. 5,544,793, Cl. 224-645.000.
Hart, Peter; and Graham, Jamey, to Ricoh Company, Ltd.; and Ricoh Corporation. Automatic invocation of computational resources without user intervention. 5,546,502, Cl. 395-12.000.
Hart, Rickey D., to Innovasive Devices, Inc. Surgical instrument. 5,545,170, Cl. 606-148.000.
Hart, Robert G.; Ahmed, Bashir M.; Gonzales, Carlos; and Kozak, William G., to Henkel Corporation. Sieve system for an ion exchange column. 5,545,319, Cl. 210-279.000.
Hart, Robert P.; and Malinin, Leonid M., to Veeder-Root Company. Apparatus and method for calibrating manifolded tanks. 5,544,518, Cl. 73-1.00H.
Hartley, Phillip A.: *See*—
Chang, Chi S.; Desai, Subahu D.; Gernhart, Debra A.; Hartley, Phillip A.; Haskins, Robert J., Jr.; Ho, Keith K. T.; Martone, Robert A.; Mulcahy, Roy T.; Shaffer, Louis J.; Schoening, Robert D.; and Versprille, Scott A., 5,546,321, Cl. 364-491.000.
Hartman, Frederick A.: *See*—
Baker, Ellen S.; Bodet, Jean-Francois; Demeyere, Hugo J. M.; Hartman, Frederick A.; Hubesch, Bruno A.; Mermelstein, Robert; Taylor, Lucille F.; and Wahl, Errol H., 5,545,350, Cl. 510-517.000.
Hartmann, Kai: *See*—
Paumen, Jacky M. G. N.; Hemming, Rowland; Hartmann, Kai; and Beckers, Marc, 5,544,755, Cl. 206-705.000.
Hartung, Reinhard; and Hösel, Fritz, to Trützschler GmbH & Co. KG. Regulating drawing unit for a sliver drawing frame and regulating method. 5,544,390, Cl. 19-240.000.
Haruta, Youichi; Kambayashi, Tomio; Kato, Hitoshi; and Taguchi, Hiromu. Method for making multilayer printed circuit board having blind holes and resin-coated copper foil used for the method. 5,544,773, Cl. 216-13.000.
Harvard College: *See*—
Stamler, Jonathan; and Kobzik, Lester, 5,545,614, Cl. 514-6.000.
Harvey, Anita J.: *See*—
French, Madeline S.; and Harvey, Anita J., 5,545,374, Cl. 422-28.000.
Harvey, William O.: *See*—
Voss, Mark G.; Peterson, Gregory E.; Harvey, William O.; and Perrin, Randall L., 5,544,484, Cl. 60-397.000.
Harvill, Young: *See*—
Grimaud, Jean-Jacques G.; Lanier, Jaron Z.; Abraham, Arthur; and Harvill, Young, 5,546,530, Cl. 395-163.000.
Harwin, Steven F.: *See*—
Le, Thu A.; Yi, Sung S.; Zwaskis, William; Pedlick, Jack S.; Luscombe, Brian H.; Jamiolkowski, Dennis D.; Di Giovanni, John; Seritella, Keith A.; Steckel, Mark G.; and Harwin, Steven F., 5,545,180, Cl. 606-232.000.
Hasebe, Hironobu; Kanayama, Takashi; and Kamata, Shinichi, to Hokuriku Electric Industry Co., Ltd. Electronic component with soldering-less terminal structure. 5,546,280, Cl. 361-752.000.
Hasegawa, Hirokazu, to Matsushita Electric Industrial Co., Ltd. Battery residual capacity displaying system with discharged electrical quantity computation section. 5,545,969, Cl. 320-5.000.
Hasegawa, Saburo, to Matsushita Electric Industrial Co., Ltd. Thin and small-sized flexible disc unit. 5,546,252, Cl. 360-106.000.
Hasegawa, Toshiaki; and Masuda, Satoki, to Yazaki Corporation. Connector. 5,545,049, Cl. 9-310.000.
Hasegawa, Toshiaki: *See*—
Masuda, Satoki; and Hasegawa, Toshiaki, 5,545,046, Cl. 439-142.000.
Hasegawa, Yoshua: *See*—
Ikeda, Hachiro; Miyamoto, Noriaki; Umeda, Ryoei; Yasu, Hidenori; Fukukawa, Mitsuo; Masuyama, Yukiei; Kinoshita, Shoji; Takagi, Yukio; Gocho, Tomohiro; Goto, Fumio; Ishii, Akio; Ogawa, Tetsuo; Hasegawa, Yoshun; Hironaka, Keitaro; and Ogoshi, Yasuhiro, 5,546,123, Cl. 348-119.000.
Hashemi, Amin H.; and Heilman, David N., to Ford Motor Company. Plate glass edge strength. 5,545,277, Cl. 156-106.000.
Hashimoto, Yasunari: *See*—
Hayashi, Masayuki; Mitekura, Yoshihiro; Kanaya, Koichi; Terao, Masato; Tagawa, Toshiya; Tomidokoro, Nobuaki; Kitayama, Masahiro; Kizaki, Osamu; Kawada, Yasuo; Nakahara, Kazuyuki; Harada, Tomofumi; and Hashimoto, Yasunari, 5,546,164, Cl. 355-204.000.
Hashimoto, Yotaro, to Eiwa Co., Ltd. Method of and apparatus for processing metal material. 5,545,264, Cl. 148-283.000.
Hashimukai, Tomoko: *See*—
Wakabayashi, Sobei; Hashimukai, Tomoko; Katakura, Takeo; and Takano, Yoshihito, 5,545,212, Cl. 623-1.000.
Hashitani, Takafumi; Fujita, Shozo; Iijima, Makoto; and Asano, Koji, to Fujitsu Limited. Biodegradable resin molded article. 5,545,485, Cl. 428-423.100.
Hashizume, Masahiro; Taniguchi, Susumu; and Kameyama, Shinji, to Mita Industrial Co., Ltd. Cleaning mechanism of a fixing device in an image forming apparatus. 5,546,174, Cl. 355-283.000.
Haskins, Robert J., Jr.: *See*—
Chang, Chi S.; Desai, Subahu D.; Gernhart, Debra A.; Hartley, Phillip A.; Haskins, Robert J., Jr.; Ho, Keith K. T.; Martone, Robert A.; Mulcahy, Roy T.; Shaffer, Louis J.; Schoening, Robert D.; and Versprille, Scott A., 5,546,321, Cl. 364-491.000.
Hass, Lester A.: *See*—
Densmore, Bruce D.; Hass, Lester A.; Rotunda, John T.; and Fissel, Gregory W., 5,545,112, Cl. 482-54.000.
Hatakeyama, Akira: *See*—
Iwata, Toshiro; Nagata, Iwami; Hatakeyama, Akira; and Nishigai, Kazuhisa, 5,545,024, Cl. 425-204.000.
Hatakeyama, Kouichi: *See*—
Sakai, Masanori; Tomita, Katsuhiko; Ezaki, Joichiro; Suzuki, Kazuo; Fukuda, Seiji; and Hatakeyama, Kouichi, 5,545,988, Cl. 324-212.000.
Hatanaka, Keiji: *See*—
Hibi, Taketoshi; Maeno, Kenji; Ido, Kihei; Onishi, Ken; Ueda, Shinobu; Hirano, Akiyoshi; Hatanaka, Keiji; and Shiroshita, Takashi, 5,546,191, Cl. 358-335.000.
Hatcho, Seiji: *See*—
Matsumoto, Seiji; Aoki, Takuya; Shimasaki, Yuichi; Hatcho, Seiji; Oketani, Toshikazu; Miyashita, Yukio; Saito, Akihisa; Komatsuda, Takashi; and Kato, Hiroaki, 5,544,482, Cl. 60-279.000.
Hattori, Naoshi: *See*—
Kawase, Tatsuo; and Hattori, Naoshi, 5,545,101, Cl. 475-193.000.
Hattori, Yoshihiro; Nagamitsu, Sachio; Nagata, Yoichi; and Kodama, Hisashi, to Matsushita Electric Industrial Co., Ltd. Apparatus for calculating geometrical view factor. 5,546,327, Cl. 364-556.000.
Haubold, Axel D.: *See*—
Bokros, Jack C.; Ely, John L.; Emken, Michael R.; Haubold, Axel D.; Peters, T. Scott; Stupka, Jonathan C.; and Waits, C. Thomas, 5,545,216, Cl. 623-2.000.
Haugen, Marc D.; and Morelock, Robin L., to Hughes Aircraft Company. Psuedo-color display for enhanced visual target detection. 5,546,091, Cl. 342-181.000.
Haugland, Richard P.: *See*—
Roth, Bruce L.; Millard, Paul J.; Yue, Stephen T.; Wells, K. Sam; and Haugland, Richard P., 5,545,535, Cl. 435-34.000.
Haung, Wu-Nan; Manwill, Niles R.; Muschelewicz, Adana; and Chen, Fung-Bor, to Maxxim Medical, Inc. Flexible rubber article and method of making. 5,545,451, Cl. 428-36.800.
Haurilesko, Paul. Method and device for feeding live insects to fish. 5,544,621, Cl. 119-230.000.
Hause, Glenn C.: *See*—
Schmidt, Melvin J.; Coach, Thomas P.; Hause, Glenn C.; Galowitz, Dennis A.; Wyman, James P.; Hendricks, Robert A.; Ver Steeg, Lawrence J.; and Evans, Harold H., 5,544,450, Cl. 49-419.000.
Hauser, Erhard, to Wilhelm Hedrich Vakuumanlagen GmbH & Co. KG. Equipment for filling one or more casting molds with castable, liquid materials. 5,545,029, Cl. 425-557.000.
Haussecker, Walter, to Robert Boecb GmbH. Method and device for setting the short circuit moment in electric motors, particularly in servomotors. 5,546,014, Cl. 324-772.000.
Hawaiian Sugar Planters' Association: *See*—
Sachinvala, Navzer D.; Ju, Redford F.; and Litt, Morton H., 5,545,732, Cl. 536-120.000.
Hawkins, Brian F.: *See*—
Louden, James A.; Hawkins, Brian F.; Hann, Wayne D., Sr., deceased, 5,545,333, Cl. 210-739.000.
Hawkins, Monica V.: *See*—
Parsons, John R.; Lee, Casey K.; Langrana, Noshir A.; Clemow, Alastair J.; Chen, Elizabeth H.; and Hawkins, Monica V., 5,545,229, Cl. 623-17.000.
Hay, Allan S. Polymeric phthalocyanines and precursors therefor. 5,545,832, Cl. 528-211.000.
Hayakawa, Toshio. Torque limiter. 5,545,109, Cl. 477-178.000.
Hayashi, Isao: *See*—
Araki, Shoichi; Nomura, Hiroyoshi; Hayashi, Isao; and Wakami, Noboru, 5,546,506, Cl. 395-75.000.
Hayashi, Kazuo: *See*—
Fukaya, Kenji; Hayashi, Kazuo; Hori, Makoto; Hamaya, Masahiro; and Ohta, Minoru, 5,545,377, Cl. 422-108.000.
Hayashi, Masayuki; Mitekura, Yoshihiro; Kanaya, Koichi; Terao, Masato; Tagawa, Toshiya; Tomidokoro, Nobuaki; Kitayama, Masahiro; Kizaki, Osamu; Kawada, Yasuo; Nakahara, Kazuyuki; Harada, Tomofumi; and Hashimoto, Yasunari, to Ricoh Company, Ltd. Communication control device connected to a plurality of image forming apparatuses and to a control device by public telephone network. 5,546,164, Cl. 355-204.000.
Hayashi, Shigeki; Ueda, Hiroyuki; and Ogawa, Hirotsugu, to Mita Industrial Co., Ltd. Displaceable transfer apparatus having a post-transfer guide. 5,546,171, Cl. 355-271.000.
Hayden, Martha S.: *See*—
Senter, Peter D.; Su, Peter C.; Marquardt, Hans; Hayden, Martha S.; and Linsley, Peter, 5,545,548, Cl. 435-227.000.
Hayes, David J.: *See*—
Eaton, Eric T.; Evoy, Ronald H.; Hayes, David J.; Willard, David F.; Ito, Shogo; and Yamao, Yasushi, 5,546,394, Cl. 370-79.000.
Hayes, Glenn A.: *See*—
Stapp, Richard E.; and Hayes, Glenn A., 5,545,856, Cl. 177-25.180.
Hayes, Wilson C.; Robinovitch, Stephen N.; and McMahon, Thomas A., to Beth Israel Hospital; and President and Fellows of Harvard College. Bone fracture prevention method. 5,545,128, Cl. 602-61.000.
Hayner, David A.: *See*—

Wang, Shay-Ping T.; Teng, Dan; Stuckman, Bruce E.; and Hayner, David A., 5,546,302, Cl. 364-148.000.
Haynes, Hendrick W. Chambered anti-Coanda jet marine propulsion device with gaseous boundary layer for a thrust jet flow stream exhibiting staged controlled boundary layer separation properties, vessel trim adjustment, and movable thrust vector application points(s). 5,545,063, Cl. 440-47.000.
Haynes, Thom R.: *See*—
Fitzpatrick, Greg P.; and Haynes, Thom R., 5,546,527, Cl. 395-159.000.
Hazen Research, Inc.: *See*—
Coltrinari, Enzo L.; Downey, Jerome P.; Hazen, Wayne C.; and Queneau, Paul B., 5,544,859, Cl. 251-368.000.
Hazen, Wayne C.: *See*—
Coltrinari, Enzo L.; Downey, Jerome P.; Hazen, Wayne C.; and Queneau, Paul B., 5,544,859, Cl. 251-368.000.
Heald, Raymond A.: *See*—
Proebsting, Robert J.; and Heald, Raymond A., 5,546,569, Cl. 395-550.000.
Heartport, Inc.: *See*—
Stevens, John H., 5,545,214, Cl. 623-2.000.
Heath, William F., Jr.; McDonald, John H., III; Paal, Michael; Rühter, Gerd; Schotten, Theo; and Stenzel, Wolfgang, to Eli Lilly and Company. Protein kinase C inhibitors. 5,545,636, Cl. 514-214.000.
Heath, William O.; Gauglitz, Phillip A.; Pillay, Gautam; Bergsman, Theresa M.; Eschbach, Eugene A.; Goheen, Steven C.; Richardson, Richard L.; Roberts, Janet S.; and Schalla, Ronald, to Battelle Memorial Institute. Heating of solid earthen material, measuring moisture and resistivity. 5,545,803, Cl. 588-253.000.
Heathman, James F.: *See*—
Laurel, David F.; Heathman, James F.; and Marcel, Kenneth P., 5,544,704, Cl. 166-117.600.
Heberger, John M.: *See*—
Krejci, James J.; and Heberger, John M., 5,545,713, Cl. 528-295.000.
Hebert, Mark P., to Excel, Inc. Telecommunication switch having programmable network protocols and communications services. 5,546,453, Cl. 379-242.000.
Hebisch, Siegbert: *See*—
Straub, Alexander; Goldmann, Siegfried; Stoltefuss, Jürgen; Bechem, Martin; Dembowsky, Klaus; Gross, Rainer; Hebisch, Siegbert; Hütter, Joachim; and Rounding, Howard-Paul, 5,545,646, Cl. 514-337.000.
Hebraudl, Guy R. E.: *See*—
Bourguignon, Anne-Elisabeth F.; Fortunier, Pascal; and Hebraudl, Guy R. E., 5,545,002, Cl. 415-115.000.
Hecker, Scott J.; Jefson, Martin R.; and McFarland, James W., to Pfizer Inc. Derivatives of 16-membered ring antibiotic macrolides. 5,545,624, Cl. 514-30.000.
Heckman, Donald B., to Marsh-McBirney, Inc. Flowmeter having active temperature compensation. 5,544,531, Cl. 73-861.010.
Hege, Alan L.: *See*—
Indeck, Ronald S.; Muller, Marcel W.; Engel, George Lawrence; and Hege, Alan L., 5,546,462, Cl. 380-23.000.
Heidelberger Druckmaschinen AG: *See*—
Döpke, Stefan, 5,544,546, Cl. 74-569.000.
Heidingsfeld, Herbert; Brläuer, Wolfgang; Müller, Friedemann; and Meister, Willi, to Bayer Aktiengesellschaft. Multistage process for producing thermoplastic polyurethane elastomers. 5,545,707, Cl. 528-60.000.
Heil, John E.: *See*—
Dahl, Roger W.; Swanson, David K.; Hahn, Stephen J.; Lang, Douglas J.; and Heil, John E., 5,545,202, Cl. 607-129.000.
Heilman, David N.: *See*—
Hashemi, Amin H.; and Heilman, David N., 5,545,277, Cl. 156-106.000.
Hein, Hans-Rudolf: *See*—
Ellmann, Manfred; and Hein, Hans-Rudolf, 5,546,070, Cl. 340-442.000.
Hein-Werner Corporation: *See*—
Wisner, Craig A.; Graham, James C.; and Mandery, Thomas F., 5,544,861, Cl. 254-88.000.
Heine, Hans-Georg; Schohe-Loop, Rudolf; Glaser, Thomas; De Vry, Jean M. V.; Dompert, Wolfgang; and Sommermeyer, Henning, to Bayer Aktiengesellschaft. Azaheterocyclylmethyl-chromans. 5,545,643, Cl. 514-322.000.
Heine, Steffen; Schumacher, Heiko; and Johnen, Rolf, to Dichtungstechnik G. Bruss GmbH & Co. KG. Shaft packing. 5,544,895, Cl. 277-9.500.
Heine, Wilhelm; and Mohn, Jürgen, to DT Membranfilter Vertriebs GmbH. Device for filtering and separating flow media with filter elements that are in the form of membrane cushions. 5,545,320, Cl. 210-321.600.
Heintz, Roswitha E.: *See*—
Soon-Shiong, Patrick; Desai, Neil P.; and Heintz, Roswitha E., 5,545,423, Cl. 424-484.000.
Helbling, Edward. Method of and system for correlating charitable contributions. 5,546,303, Cl. 364-401.000.
Held, Manfred, to Daimler-Benz Aerospace AG. Fragmentation warhead. 5,544,589, Cl. 102-492.000.
Helf, Thomas A.: *See*—
Horvath, Stephen R., Jr.; Abrams, Robert D.; and Helf, Thomas A., 5,544,810, Cl. 239-10.000.
Helferich, Fritz. Process for the production of a steel punching sheet. 5,544,549, Cl. 76-107.800.
Helland, John R.; and Li, Hong, to Pacesetter, Inc. Bipolar active fixation lead for sensing and pacing the heart. 5,545,201, Cl. 607-127.000.
Helmer, Kerry L.: *See*—
Perry, William M.; and Helmer, Kerry L., 5,546,240, Cl. 359-871.000.
Hemming, Rowland: *See*—
Paumen, Jacky M. G. N.; Hemming, Rowland; Hartmann, Kai; and Beckers, Marc, 5,544,755, Cl. 206-705.000.
Hemosol Inc.: *See*—
Pliura, Diana H.; Wiffen, Diane E.; Ashraf, Salman; and Magnin, Anthony A., 5,545,328, Cl. 210-635.000.
Henckel, Jonathan D.: *See*—
Austvold, Shawn M.; Bigus, Joseph P.; Henckel, Jonathan D.; and Hoopers, Paul A., 5,546,505, Cl. 395-26.000.
Henderson, Dewey D., to Dayco Products, Inc. Belt tensioner and method of making the same. 5,545,095, Cl. 474-135.000.
Henderson, Richard: *See*—
Tran, Toan V.; and Henderson, Richard, 5,546,433, Cl. 375-376.000.
Hendricks, Robert A.: *See*—
Schmidt, Melvin J.; Coach, Thomas P.; Hause, Glenn C.; Galowitz, Dennis A.; Wyman, James P.; Hendricks, Robert A.; Ver Steeg, Lawrence J.; and Evans, Harold H., 5,544,450, Cl. 49-419.000.
Henkel Corporation: *See*—
Casamassina, Thomas; Morales, Florencio, Jr.; Salka, Barry A.; and Fallon, John, 5,545,622, Cl. 252-353.000.
Hart, Robert G.; Ahmed, Bashir M.; Gonzales, Carlos; and Kozak, William G., 5,545,319, Cl. 210-279.000.
Henkel Kommanditgesellschaft auf Aktien: *See*—
Koester, Rita; Stoll, Gerhard; and Daute, Peter, 5,545,332, Cl. 210-729.000.
Raehse, Wilfried; Beck, Wilhelm; Jung, Dieter; and Sonnemann, Dieter, 5,544,427, Cl. 34-372.000.
Weuthea, Manfred, 5,545,731, Cl. 510-119.000.
Henken, Immanuel; and Langner, Horst, to WABCO Vermogensverwaltungs GmbH. Valve. 5,544,855, Cl. 251-121.000.
Hennessey, Kathleen: *See*—
Tucker, Michel H.; Sams, Gary; Hennessey, Kathleen; Pattikonda, Ramakhrisna; and Condit, Mario, 5,546,398, Cl. 370-94.100.
Henningsson, Bo U. E.: *See*—
Arvidsson, Stig A.; and Henningsson, Bo U. E., 5,545,843, Cl. 174-35.0GC.
Hensley, Charles A.: *See*—
Wahl, Errol H.; Bacon, Dennis R.; Baker, Ellen S.; Bodet, Jean-Francois; Burns, Michael E.; Demeyere, Hugo J. M.; Hensley, Charles A.; Mermelstein, Robert; Severns, John C.; Shaw, John H., Jr.; Siklosi, Michael P.; Vogel, Alice M.; and Watson, Jeffrey W., 5,545,340, Cl. 510-517.000.
Heo, Jung-kwon: *See*—
Lee, Hyung-hee; and Heo, Jung-kwon, 5,546,369, Cl. 369-58.000.
Herbst, Richard. Apparatus for taking blood samples. 5,545,173, Cl. 606-181.000.
Hercules Incorporated: *See*—
Harrington, James H., 5,545,481, Cl. 428-378.000.
Herczeg, Karen L.: *See*—
Orlicki, David; Larrabee, James; and Herczeg, Karen L., 5,546,513, Cl. 395-111.000.
Herington, Charles E. Three dimensional pattern device used with light projector. 5,546,226, Cl. 359-616.000.
Hermanns, Ferdinand-Josef: *See*—
Bucken, Rene; Consoir, Rudolf; Hermanns, Ferdinand-Josef; Kathke, Gregor; Schwalm, Hans-Werner; Schultz, Waldemar; Paulsen, Hedde-Christoph; and Kery, Michael, 5,544,829, Cl. 242-35.50R.
Hermanson, Herman A.: *See*—
Collins, David J.; Kuhman, Daniel E.; and Hermanson, Herman A., 5,545,283, Cl. 156-382.000.
Hermant, Jean-Jacques: *See*—
Piriou, Jean-Pierre; Hermant, Jean-Jacques; and Roussel, Hervé, 5,544,736, Cl. 198-493.000.
Herrin, Robert M.; and Tharpe, John M. Method for welding seams in disposable garments. 5,545,275, Cl. 156-731.000.
Hespe, Darrel: *See*—
Summa, Gareth D.; and Hespe, Darrel, 5,544,590, Cl. 104-130.090.
Hess, David M.: *See*—
Moutrie, Michael F.; Whitmore, Andrew, III; Hess, David M.; Laugal, John C.; Mina, Steven M.; and Boler, Matthew J., 5,546,275, Cl. 361-707.000.
Hess, Kathleen L.: *See*—
Roberts, George T.; Hess, Kathleen L.; Nott, Sepideh H.; Chu, Michael S. H.; and Chin, Yem, 5,545,209, Cl. 623-1.000.
Hess, Robert L.; and Bramfitt, John E., to Advanced Coronary Technology, Inc. Method of implanting a permanent shape memory alloy stent. 5,545,210, Cl. 623-1.000.
Heuer, Arthur H.: *See*—
DeGuire, Mark R.; Heuer, Arthur H.; and Sukenik, Chaim N., 5,545,432, Cl. 427-226.000.
Heuer, Karsten, to Volkswagen AG. Internal combustion engine with a secondary air-fuel supply. 5,544,483, Cl. 60-283.000.
Hew, Choy L.; and Fletcher, Garth L., to HSC Research and Development Limited Partnership; and Seabright Corporation. Transgenic salmonid fish expressing exogenous salmonid growth hormone. 5,545,808, Cl. 800-2.000.
Hewitt, Larry D.; and Feemster, Ryan, to Advanced Micro Devices, Inc. Charge dissipation in capacitively loaded ports. 5,546,039, Cl. 327-379.000.
Hewlett-Packard: *See*—
Shan, Ming-Chien, 5,546,571, Cl. 395-600.000.
Hewlett-Packard Company: *See*—

Cutler, Robert T., 5,545,976, Cl. 324-76.380.
Jacobson, Michael B.; Voigt, Douglas L.; Nelson, Marvin D.; and Burkes, Theresa A., 5,546,558, Cl. 395-441.000.
Seliger, Robert; Ehrhardt, Fred W.; and Braunstein, Andrew S., 5,546,580, Cl. 395-600.000.
Zuniga, Oscar A., 5,546,474, Cl. 382-176.000.

Hibi, Taketoshi; Maeno, Kenji; Ido, Kihei; Onishi, Ken; Ueda, Shinobu; Hirano, Akiyoshi; Hatanaka, Keiji; and Shiroshita, Takashi, to Mitsubishi Denki Kabushiki Kaisha. Recording and reproducing apparatus. 5,546,191, Cl. 358-335.000.

Hickerson, William, to Curtiss Wright Flight Systems Inc. Rescue tool. 5,544,862, Cl. 254-124.000.

Hickl, Erich, to Landis & Gyr Business Support AG. Circuit for testing two switch or relay contacts simultaneously in automatic control systems. 5,546,002, Cl. 324-418.000.

Hicks, Sharon D.; Wicks, Douglas A.; and Grace, Scott A., to Bayer Corporation. Aldimines based on 2-methyl-1,5-pentane diamine and their use for the production of polyurea coatings. 5,545,705, Cl. 528-44.000.

Higashii, Takayuki: *See—*
Sekine, Chizu; Tani, Takeshi; Ueda, Kayoko; Fujisawa, Koichi; Higashii, Takayuki; Fujimoto, Yukari; Toda, Shoji; and Minai, Masayoshi, 5,545,345, Cl. 252-299.610.

Higashimura, Minoru; Ootsuka, Takashi; and Shibayama, Masakazu, to Nihon Nohyaku Co., Ltd. Pesticidal 3-Phenylpyrazole aqueous suspension concentrate and a process for production thereof. 5,545,609, Cl. 504-282.000.

Higashiyama, Kazutoshi; Doi, Toshiya; Ozawa, Takesi; Takeuchi, Seizi; Kamo, Tomoichi; Matsuda, Shinpei; and Yoshida, Yutaka, to Hitachi, Ltd. Oxide-based superconductor, a process for preparing the same and a wire material of comprising the same. 5,545,610, Cl. 505-120.000.

Higgins, Keaneth B., to Milliken Research Corporation. Process for forming cushion backed carpet. 5,545,276, Cl. 156-79.000.

Higgins, William M.: *See—*
Harris, Meckie T.; Bliss, David F.; Armington, Alton F.; Higgins, William M.; and Bryant, George G., 5,544,615, Cl. 117-18.000.

High End Systems, Inc.: *See—*
Ziegler, Byron J.; and Scurrah, Mark E., 5,545,951, Cl. 315-58.000.

High Gear Inc.: *See—*
Phillips, Jeffrey O., 5,544,671, Cl. 135-88.140.

Hihara, Toshio; and Takahashi, Yousuke, to DyStar Japan Ltd. Red reactive dyes, their compositions and dyeing method employing them. 5,545,236, Cl. 8-549.000.

Hikita, Sakae: *See—*
Watanabe, Kenichi; Maeda, Yuji; and Hikita, Sakae, 5,545,930, Cl. 307-10.100.

Hilaire, Pierre; and Lagarde, Vincent, to Laboratoire Nycomed SA. Rapid-exchange dilatation catheter. 5,545,134, Cl. 604-96.000.

Hilder, Vaughan: *See—*
Gatehouse, Angharad; Hilder, Vaughan; Van Damme, Els; Peumans, Willy; Newell, Christine; and Hamilton, William, 5,545,820, Cl. 800-205.000.

Hildreth, Nelson, to Champlain Cable Corporation. Surge-protected cable. 5,545,853, Cl. 174-120.00R.

Hilfinger, Peter; Kressner, Gerhard; and Sauer, Michael, to Braun Aktiengesellschaft. Motor-powered appliance for personal use. 5,545,968, Cl. 320-2.000.

Hilgert, Gunter; and Medebach, Thomas, to Kuster & Co., GmbH. Device for adjusting the length of flexible, mechanical remote-controls with two mutually adjustable components that can be locked in different positions relative to each other. 5,544,543, Cl. 74-502.400.

Hill, Paul M.; and Olshansky, Robert. Carrier and clock recovery for lightwave systems. 5,546,190, Cl. 359-158.000.

Hill, Timothy L.; Allen, Brian J.; Jonas, William P.; and Kennedy, James P., to Telect, Inc. Telecommunication network digital cross-connect panels having insertable modules with printed circuit board mounted coaxial jack switches. 5,546,282, Cl. 361-796.000.

Hille, Peter: *See—*
Williams, Richard K.; Hille, Peter; and Wrathall, Robert G., 5,545,909, Cl. 257-355.000.

Himelick, James M.: *See—*
Disney, Donald R.; Sozansky, Wayne A.; and Himelick, James M., 5,545,915, Cl. 257-491.000.

Hindman, Carlton L., to TRW Inc. Synthetic aperture radar clutter reduction system. 5,546,084, Cl. 342-25.000.

Hinken, Johann H.: *See—*
Schutt, Karl; Hinken, Johann H.; Klinger, Martin; and Tintchev, Savtcho S., 5,545,987, Cl. 324-219.000.

Hinotani, Hiroaki; and Matsuura, Yasuhiro, to Minolta Co., Ltd. Fixing device. 5,546,173, Cl. 355-282.000.

Hinshaw, John V.; and Schallis, Paul E., to Perkin-Elmer Corporation, The. Flow regulation in gas chromatograph. 5,545,252, Cl. 95-15.000.

Hinton, Glenn J.: *See—*
Martell, Robert W.; Hinton, Glenn J.; Fetterman, Michael A.; Papworth, David B.; Colwell, Robert P.; and Glew, Andrew F., 5,546,597, Cl. 395-800.000.

Hinz, Jürgen: *See—*
Berg, Klaus; Wulff, Claus; Malamet, Georg; Eitel, Alfred; Meurer, Kurt P.; van Osselaer, Tony; and Hinz, Jürgen, 5,545,764, Cl. 568-724.000.

Hirabayashi, Kazuo; Suzuki, Norio; and Tachibana, Yosuke, to Honda Giken Kogyo Kabushiki Kaisha. Multiple processor throttle control apparatus for an internal combustion engine. 5,546,306, Cl. 364-424.040.

Hirai, Yuji, to Honda Tsushin Kogyo Kabushiki Kaisha. Electrical connector. 5,545,052, Cl. 439-354.000.

Hirakawa, Jun, to Asahi Kogaku Kogyo Kabushiki Kaisha. Two-group zoom lens. 5,546,232, Cl. 359-691.000.

Hirano, Akiyoshi: *See—*
Hibi, Taketoshi; Maeno, Kenji; Ido, Kihei; Onishi, Ken; Ueda, Shinobu; Hirano, Akiyoshi; Hatanaka, Keiji; and Shiroshita, Takashi, 5,546,191, Cl. 358-335.000.

Hirano, Hiroshige: *See—*
Nakane, George; Mukunoki, Toshio; Moriwaki, Nobuyuki; Sumi, Tatsumi; Hirano, Hiroshige; and Nakakuma, Tetsuji, 5,546,342, Cl. 365-189.010.

Hirasawa, Yutaka: *See—*
Saida, Muneo; Hirasawa, Yutaka; and Yoshimura, Katsuhiro, 5,545,466, Cl. 428-209.000.

Hirata, Hiroaki: *See—*
Kimura, Kozo; and Hirata, Hiroaki, 5,546,593, Cl. 395-800.000.

Hirata, Yoshihiko: *See—*
Shouda, Hirofumi; Hirata, Yoshihiko; Kawai, Katsuhiko; Kondo, Toshio; and Haraguchi, Hiroshi, 5,544,639, Cl. 123-676.000.

Hiratsuka, Kazuya: *See—*
Okamura, Michio; Morimoto, Takeshi; and Hiratsuka, Kazuya, 5,545,933, Cl. 307-109.000.

Hiroi, Masakazu: *See—*
Adachi, Seiichiro; Naito, Masataka; and Hiroi, Masakazu, 5,546,168, Cl. 355-233.000.

Hironaka, Keitaro: *See—*
Ikeda, Hachiro; Miyamoto, Noriaki; Umeda, Ryoei; Yasu, Hidenori; Fukukawa, Mitsuo; Masuyama, Yukiei; Kinoshita, Shoji; Takagi, Yukio; Gocho, Tomohiro; Goto, Fumio; Ishii, Akio; Ogawa, Tetsuo; Hasegawa, Yoshun; Hironaka, Keitaro; and Ogoshi, Yasuhiro, 5,546,123, Cl. 348-119.000.

Hironaka, Ken, to NEC Corporation. Demand assign communication control system. 5,546,400, Cl. 370-95.100.

Hirosaki, Naoto; Okada, Akira; and Akimune, Yoshio, to Nissan Motor Company. Production method of sintered silicon nitride. 5,545,362, Cl. 264-65.000.

Hirosawa, Satoshi; and Kanekiyo, Hirokazu, to Sumitomo Special Metals Co., Ltd. Rare earth magnets and alloy powder for rare earth magnets and their manufacturing methods. 5,545,266, Cl. 148-302.000.

Hirose, Hisanori: *See—*
Kuroda, Koichi; Aoki, Yoshiaki; Fujikawa, Kiyokazu; Kawamura, Youzon; Hirota, Tatsuya; Kawamura, Tamotsu; Fukuda, Takashi; Kishi, Minoru; and Hirose, Hisanori, 5,544,428, Cl. 34-493.000.

Hirose, Youji: *See—*
Doi, Koji; Tsuji, Yasuyuki; Yokokawa, Shuuho; Takahashi, Kunitomo; Hirose, Youji; Ueno, Hiroshi; Takeuchi, Youichi; Yamada, Koutara; and Iwanaga, Hidenori, 5,545,840, Cl. 118-658.000.

Hirota, Masaya; Ideyama, Hiroyuki; Okatani, Toru; Yamashita, Toshiyuki; Ito, Hideo; and Kawabuchi, Yoichi, to Minolta Camera Kabushiki Kaisha. Image forming apparatus with auto-clear function. 5,546,166, Cl. 355-209.000.

Hirota, Tatsuya: *See—*
Kuroda, Koichi; Aoki, Yoshiaki; Fujikawa, Kiyokazu; Kawamura, Youzon; Hirota, Tatsuya; Kawamura, Tamotsu; Fukuda, Takashi; Kishi, Minoru; and Hirose, Hisanori, 5,544,428, Cl. 34-493.000.

Hisamoto, Yoshiaki: *See—*
Narazaki, Atsushi; and Hisamoto, Yoshiaki, 5,545,573, Cl. 437-40.000.

Hisano, Akihiko: *See—*
Yamamoto, Toru; Hisano, Akihiko; and Takizawa, Toshiaki, 5,544,387, Cl. 16-87.40R.

Hitachi Automotive Engineering, Co., Ltd.: *See—*
Watanabe, Kenichi; Maeda, Yuji; and Hikita, Sakae, 5,545,930, Cl. 307-10.100.

Hitachi Chemical Research Center: *See—*
Mitsuhashi, Masato; and Ogura, Mieko, 5,545,528, Cl. 435-6.000.

Hitachi Koki Co., Ltd.: *See—*
Doi, Koji; Tsuji, Yasuyuki; Yokokawa, Shuuho; Takahashi, Kunitomo; Hirose, Youji; Ueno, Hiroshi; Takeuchi, Youichi; Yamada, Koutara; and Iwanaga, Hidenori, 5,545,840, Cl. 118-658.000.

Hitachi, Ltd.: *See—*
Abe, Shigeo; Kayama, Masahiro; Takenaga, Hiroshi; Morooka, Yasuo; Kawakami, Junzo; and Takatoo, Masao, 5,546,503, Cl. 395-23.000.
Higashiyama, Kazutoshi; Doi, Toshiya; Ozawa, Takesi; Takeuchi, Seizi; Kamo, Tomoichi; Matsuda, Shinpei; and Yoshida, Yutaka, 5,545,610, Cl. 505-120.000.
Honma, Hisao; Nakagoshi, Kazuo; Takahashi, Naoya; Kogai, Makoto; and Takamoto, Kenichi, 5,546,348, Cl. 365-230.030.
Kubo, Kenji; Dhaouadi, Rached; Tobise, Masahiro; and Azusawa, Noboru, 5,545,957, Cl. 318-432.000.
Kyushima, Ichiro; and Kainaga, Masahiro, 5,546,559, Cl. 395-460.000.
Sano, Yuji; Tsuruga, Sadao; Kitou, Kouji; and Ohsawa, Michitaka, 5,546,048, Cl. 330-263.000.
Sato, Naoki, 5,546,245, Cl. 360-65.000.
Seto, Youichi; Kikuchi, Masahiro; Kodaira, Takatoshi; Tezuka, Shu; Komura, Fuminobu; and Matsumoto, Kuniaki, 5,546,572, Cl. 395-600.000.
Setoyama, Tohru, 5,546,243, Cl. 360-51.000.
Uchiyama, Kaoru; Tsutsui, Mitsukuni; Naito, Shotaro; and Suda, Seiji, 5,544,523, Cl. 73-118.200.

Watanabe, Kenichi; Maeda, Yuji; and Hikita, Sakae, 5,545,930, Cl. 307-10.100.

Yamaguchi, Shizuka; Kojima, Yoshitaka; Ogawa, Sai; Arikawa, Hideyuki; Haginoya, Mitsuo; Wada, Yukihiko; and Iwao, Kyozo, 5,545,484, Cl. 428-408.000.

Hitachi Medical Corporation: *See—*
Taguchi, Jun'ichi; Kido, Kunihiko; and Sano, Koichi, 5,545,993, Cl. 324-309.000.
Takahashi, Tetsuhiko; Kawasaki, Shinji; and Nishimura, Hiroshi, 5,544,653, Cl. 128-653.200.

Hitachi Powdered Metals Co., Ltd.: *See—*
Ishijima, Zenzo; Ichikawa, Jun-ichi; Sasaki, Shuji; Shikata, Hideo; Urata, Hideo; Kawase, Shoji; and Ueda, Jun-ichi, 5,545,487, Cl. 428-548.000.

Hitchens, G. Duncan: *See—*
Murphy, Oliver J.; Hitchens, G. Duncan; Hodko, Dalibor; Clarke, Eric T.; Miller, David L.; and Parker, Donald L., 5,545,308, Cl. 205-125.000.

Hjertman, Birger: *See—*
Fryklund, Linda; Hjertman, Birger; Gustavsson, Marie-Louise; Kaluski, Jacob; Levander, Gustav; Ljungquist, Olle; Ström, Anders; and Virding, Jonas, 5,545,144, Cl. 604-187.000.

Ho, Keith K. T.: *See—*
Chang, Chi S.; Desai, Subahu D.; Gernhart, Debra A.; Hartley, Phillip A.; Haskins, Robert J., Jr.; Ho, Keith K. T.; Martone, Robert A.; Mulcahy, Roy T.; Shaffer, Louis J.; Schoening, Robert D.; and Versprille, Scott A., 5,546,321, Cl. 364-491.000.

Ho, Kuo-San; Howe, William J.; and May, Jeffrey E., to AlliedSignal Inc. Gas turbine engine with hot gas recirculation pocket. 5,545,004, Cl. 415-115.000.

Hobot, Christopher M.: *See—*
Keogh, James R.; Hobot, Christopher M.; Eaton, John W.; Jevne, Allan H.; and Bergan, Matthew A., 5,545,213, Cl. 623-1.000.

Hobson, John C.; and Greenshields, Roderick N., to CPC International Inc. Water insoluble coloring agent. 5,545,557, Cl. 435-255.100.

Hochschild, Peter H.; and Denneau, Monty M., to International Business Machines Corporation. Central shared queue based time multiplexed packet switch with deadlock avoidance. 5,546,391, Cl. 370-60.000.

Hodges, Paul J.: *See—*
Bochis, Richard J.; Hodges, Paul J.; Schoen, William R.; and Wyvratt, Matthew J., Jr., 5,545,735, Cl. 540-490.000.

Hodko, Dalibor: *See—*
Murphy, Oliver J.; Hitchens, G. Duncan; Hodko, Dalibor; Clarke, Eric T.; Miller, David L.; and Parker, Donald L., 5,545,308, Cl. 205-125.000.

Hodson, Simon K.: *See—*
Andersen, Per J.; and Hodson, Simon K., 5,545,297, Cl. 264-102.000.
Andersen, Per J.; and Hodson, Simon K., 5,545,450, Cl. 428-34.500.

Hoechst AG: *See—*
Papenfhus, Theodor; Kanschik-Conradsen, Andreas; and Pressler, Wilfried, 5,545,768, Cl. 568-938.000.

Hoechst Aktiengesellschaft: *See—*
Brekner, Michael-Joachim; and Osan, Frank, 5,545,829, Cl. 526-160.000.
Dudits, Dénes; Paulovics, Katalin; Kalman, Katalin; Györgyey, János; Nagy, Ferenc; Bako, László; Horvath, Gábor; Eckes, Peter; and Donn, Günter, 5,545,819, Cl. 800-205.000.
Giencke, Astrid; Neumann, Uwe; Mergardt, Bernd; and Walz, Gerd, 5,545,678, Cl. 523-404.000.
Jakob, Martin; and Matz, Volker, 5,545,684, Cl. 524-354.000.
Schwarzmaier, Peter; Häckl, Peter; Stöger, Manfred; and Mielke, Ingolf, 5,545,780, Cl. 570-226.000.

Hoechst Celanese Corporation: *See—*
Krejci, James J.; and Heberger, John M., 5,545,713, Cl. 528-295.000.
Wilczak, Wojciech A.; Platzer, Stephan J.; and Siegfried, David L., 5,545,506, Cl. 430-253.000.

Hoechst Japan Limited: *See—*
Akita, Mikio; Enomoto, Koichi; Tanaka, Shigeaki; and Otawara-Hamamoto, Yoko, 5,545,534, Cl. 435-4.920.
Koyama, Masayoshi; Takahashi, Mikiko; and Doi, Kazuyuki, 5,545,720, Cl. 530-380.000.

Hoelle, James S.: *See—*
Peterson, Ivan H.; Hoelle, James S.; Cunningham, Neil F.; and Umney, Michael A., 5,544,849, Cl. 248-74.100.

Hoff, James P.: *See—*
O'Connor, Kurt F.; Hoff, James P.; Frasier, Donald J.; Peeler, Ralph E.; Mueller-Largent, Heidi; Trees, Floyd F.; Whetstone, James R.; Lane, John H.; and Jeffries, Ralph E., 5,545,003, Cl. 415-115.000.

Hoffman, Jerzy, to United States Defense Research, Inc. Magnetic field solenoid. 5,546,063, Cl. 335-229.000.

Hoffman, John P.: *See—*
Williamson, Gregory L.; and Hoffman, John P., 5,546,264, Cl. 361-84.000.

Hoffman-La Roche Inc.: *See—*
Alig, Leo; Hadvary, Paul; Hürzeler, Marianne; Müller, Marcel; Steiner, Beat; and Weller, Thomas, 5,545,658, Cl. 514-423.000.

Hoffman, Paul R.: *See—*
Mahulikar, Deepak; and Hoffman, Paul R., 5,545,850, Cl. 174-52.400.

Hoffman, Richard A., to Dymetrol Company, Inc. Tie head and fastening system. 5,544,391, Cl. 24-16.0PB.

Hoffman, Stephen J.; Looker, Douglas L.; Rosendahl, Mary S.; Stetler, Gary L.; Wagenbach, Michael; Anderson, David C.; Mathews, Antony J.; and Nagai, Kiyoshi, to Somatogen, Inc. DNA encoding fused di-alpha globins and production of pseudotetrameric hemoglobin. 5,545,727, Cl. 536-234.000.

Höfler, Marco: *See—*
Scholz, Andreas; and Höfler, Marco, 5,545,452, Cl. 428-41.700.

Hofmann, Gunter A.; and Kent, Henry R., to Genetronics, Inc. Flow through electroporation method. 5,545,130, Cl. 604-4.000.

Hofmann, Heinrich; Schottdorf, Johannes; and Goosens, Andre F. L., to FAG Kugelfischer Georg Schafer AG. Wheel bearing unit with speed of rotation sensor. 5,544,962, Cl. 384-448.000.

Hofstadler, Steven A.: *See—*
Smith, Richard D.; Wahl, Jon H.; and Hofstadler, Steven A., 5,545,304, Cl. 204-603.000.

Hofte, Hermanus F. P.: *See—*
De Greve, Henri M. J.; Salgado, Maria B. L. F.; Van Montagu, Marc C. E.; Vaeck, Mark A.; Zabeau, Marcus F. O.; Leemans, Jan J. A.; and Hofte, Hermanus F. P., 5,545,565, Cl. 435-320.100.

Hogan, Steven J.; Feltz, Kristi T.; Murdock, Douglas R.; and Smith, Keith E., to LinkUSA Corporation. System and method for call conferencing. 5,546,449, Cl. 379-202.000.

Höganäs AB: *See—*
Andersson, Owe, 5,545,247, Cl. 75-231.000.

Hogue, David R.: *See—*
Florian, Michael H.; Redd, Harold J.; Hogue, David R.; and Bonebright, Rodney K., 5,546,050, Cl. 330-282.000.

Hokuriku Electric Industry Co., Ltd.: *See—*
Hasebe, Hironobu; Kanayama, Takashi; and Kamata, Shinichi, 5,546,280, Cl. 361-752.000.

Holden, Irving H.; Mooney, Charles W.; Brinkley, Gerald E.; and McKee, John M., to Motorola, Inc. Taut armature resonant impulse transducer. 5,546,069, Cl. 340-407.100.

Holden's Foundation Seeds Inc.: *See—*
Miller, Richard J., 5,545,811, Cl. 800-200.000.

Holland, Gary F.: *See—*
Poole, Donald R.; Holland, Gary F.; Wolf, Nicholas A.; and Wilson, Michael A., 5,545,272, Cl. 149-48.000.

Hollars, Anthony S.: *See—*
Phillips, Matthew L.; and Hollars, Anthony S., 5,544,670, Cl. 137-224.000.

Hollmann, Friedrich: *See—*
Gärtner, Horst; Hollmann, Friedrich; Rituper, Rafael; and Block, Bodo, 5,545,260, Cl. 134-41.000.

Holman, James L., to Dana Corporation. Gerotor pump for vehicle transmission lubrication system. 5,544,540, Cl. 74-467.000.

Hommel, Jochen: *See—*
Maier, Stefan; and Hommel, Jochen, 5,544,514, Cl. 72-75.000.

Hon Hai Precision Ind. Co., Ltd.: *See—*
Tan, Haw-Chan; and Chang, Tim S. L., 5,545,057, Cl. 439-540.100.

Hon Industries Inc.: *See—*
Schmidt, Clayton C.; Zorich, Chris; Lammens, Arthur E.; and Parvin, Jackie D., 5,544,957, Cl. 312-221.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Akuzawa, Kenji; Matsui, Hiroki; and Fujita, Yasuhiko, 5,546,086, Cl. 342-70.000.
Chiura, Tatsuo, 5,544,388, Cl. 16-375.000.
Hirabayashi, Kazuo; Suzuki, Norio; and Tachibana, Yosuke, 5,546,306, Cl. 364-424.040.
Ishijima, Zenzo; Ichikawa, Jun-ichi; Sasaki, Shuji; Shikata, Hideo; Urata, Hideo; Kawase, Shoji; and Ueda, Jun-ichi, 5,545,487, Cl. 428-548.000.
Matsumoto, Seiji; Aoki, Takuya; Shimasaki, Yuichi; Hatcho, Seiji; Oketani, Toshikazu; Miyashita, Yukio; Saito, Akihisa; Komatsuda, Takashi; and Kato, Hiroaki, 5,544,482, Cl. 60-279.000.
Nakajima, Toshiharu; Machimura, Satoru; Goto, Tadashi; Mochizuki, Toshitaka; Hoshino, Shinji; and Ohtani, Hiroshi, 5,545,872, Cl. 219-89.000.
Ohata, Satoru; and Iiboshi, Tomohiro, 5,544,629, Cl. 123-184.360.
Sekine, Hiroshi, 5,546,311, Cl. 364-449.000.
Toyoda, Hidetoshi; Tsuchida, Tetsuo; and Iwashita, Kanau, 5,544,946, Cl. 303-9.640.

Honda, Kenji; and Maw, Taishih, to OCG Microelectronic Materials, Inc. Non-corrosive photoresist stripper composition. 5,545,353, Cl. 510-176.000.

Honda Tsushin Kogyo Kabushiki Kaisha: *See—*
Hirai, Yuji, 5,545,052, Cl. 439-354.000.

Honeywell Inc.: *See—*
Agrawal, Mukul; Orrock, James E.; Patiath, Pradip K.; and Rachor, Lloyd A., 5,546,301, Cl. 364-140.000.
Contolatis, Athanase; and Sokolov, Vladimir, 5,545,924, Cl. 257-724.000.
Ellis, Roger K., 5,546,204, Cl. 359-59.000.

Hong, Bum-Ki. Golf bag. 5,544,743, Cl. 206-315.300.

Hong, Chang-wan: *See—*
Lee, Sang-su; and Hong, Chang-wan, 5,545,857, Cl. 178-18.000.

Hong, Chun-Yen: *See—*
Hsieh, Rong-Ya; Lin, Jinn-Maw; and Hong, Chun-Yen, 5,546,334, Cl. 364-709.110.

Hong, Dong-Pyo: *See—*

Yun, Tae-Jin; Hong, Dong-Pyo; and Park, Byung-Suk, 5,545,076, Cl. 451-287.000.

Hong, Glenn T., to Modar, Inc. Ceramic coating system or water oxidation environments. 5,545,337, Cl. 210-761.000.

Hong, Hyeong S.: *See*—
Lee, Dong M.; and Hong, Hyeong S., 5,546,020, Cl. 326-83.000.

Hong, Hyung K.: *See*—
Yun, Dong H.; Lee, Kyu C.; Hong, Hyung K.; Park, Hyeon S.; Kwon, Chul H.; and Shin, Hyun W., 5,545,300, Cl. 204-424.000.

Hönig, Günter: *See*—
Zeller, Thomas; Zieger, Detlev; and Hönig, Günter, 5,544,634, Cl. 123-399.000.

Honigs, David E.; and Lynch, Donald, to Perstorp Analytical, Inc. Drying method and apparatus for infrared analysis of aqueous samples. 5,545,376, Cl. 422-104.000.

Honkonen, Robert S., to Procter & Gamble Company, The. pH-Modified polymer compositions with enhanced biodegradability. 5,545,681, Cl. 524-115.000.

Honma, Hisao; Nakagoshi, Kazuo; Takahashi, Naoya; Kogai, Makoto; and Takamoto, Kenichi, to Hitachi, Ltd. Semiconductor disc storage. 5,546,348, Cl. 365-230.030.

Honma, Yoshihiro, to Canon Kabushiki Kaisha. Image signal processing apparatus using simplified D/A conversion. 5,546,133, Cl. 348-642.000.

Hood, Thomas G.; Iles, Roger F.; and Millar, Peter, to Southwall Technologies, Inc. Thermally insulating multipane glazing struture. 5,544,465, Cl. 52-786.130.

Hook, Jeffrey S.: *See*—
Richey, Lindell C.; Hook, Jeffrey S.; Reed, Michael A.; and Yatka, Robert J., 5,545,417, Cl. 426-5.000.

Hopper, Hans P.; and Cassity, Thomas G., to Cooper Cameron Corporation. Wellhead. 5,544,707, Cl. 166-382.000.

Hoppert, Joseph R.: *See*—
Davis, James A.; Hoppert, Joseph R.; Chmiel, Chester T.; and Alexander, Brian S., 5,545,685, Cl. 524-490.000.

Hoppmann Corporation: *See*—
Schmitt, Werner H., 5,544,732, Cl. 198-392.000.

Höppner, Klaus; and Kaiser, Bernd, to Stihl, Andreas. Throttle trigger device for an internal combustion engine of a working tool. 5,544,544, Cl. 74-526.000.

Hora, Peter: *See*—
Fendt, Günter; Hora, Peter; Spies, Hans; Steurer, Helmut; Watzka, Willibald; and Wetzel, Guido, 5,544,915, Cl. 280-735.000.

Hori, Makoto: *See*—
Fukaya, Kenji; Hayashi, Kazuo; Hori, Makoto; Hamaya, Masahiro; and Ohta, Minoru, 5,545,377, Cl. 422-108.000.

Hori, Yasuhiro: *See*—
Nakajima, Hidenori; Hori, Yasuhiro; Goto, Toshio; Takase, Shigehiro; Verhaeghe, Koen; Terano, Hiroshi; and Okuhara, Masakuni, 5,545,542, Cl. 435-128.000.

Horie, Kazuhiko. Cost estimating system. 5,546,564, Cl. 395-500.000.

Hormann, Werner: *See*—
Beck, Jochen; and Hormann, Werner, 5,545,013, Cl. 417-201.000.

Horn, Billy L. Magnetic holders for cylindrical objects. 5,544,747, Cl. 206-378.000.

Horn, Klaus: *See*—
Köhler, Burkhard; Pudleiner, Heinz; and Horn, Klaus, 5,545,692, Cl. 525-146.000.

Horn, Thomas: *See*—
Urdea, Michael S.; and Horn, Thomas, 5,545,730, Cl. 536-28.510.

Horndler, George-Michael: *See*—
Winkler, Helmut; and Horndler, George-Michael, 5,544,828, Cl. 242-35.50A.

Horowitz, Sidney: *See*—
Beebe, Deborah V., 5,545,038, Cl. 433-120.000.

Horstmann, Jens; and Kim, Yoon, to LSI Logic Corporation. Optimized translation lookaside buffer slice having stored mask bits. 5,546,555, Cl. 395-417.000.

Horton, Edward E., III, to Deep Oil Technology, Inc. Method of installing or retrieving mooring lines indeep water. 5,544,608, Cl. 114-230.000.

Horvath, Gábor: *See*—
Dudits, Dénes; Paulovics, Katalin; Kalman, Katalin; Györgyey, János; Nagy, Ferenc; Bako, László; Horvath, Gábor; Eckes, Peter; and Donn, Günter, 5,545,819, Cl. 800-205.000.

Horvath, Stephen R., Jr.; Abrams, Robert D.; and Helf, Thomas A., to S. C. Johnson & Son, Inc. Precision-ratioed fluid-mixing device and system. 5,544,810, Cl. 239-10.000.

Hösel, Fritz: *See*—
Hartung, Reinhard; and Hösel, Fritz, 5,544,390, Cl. 19-240.000.

Hoshino, Shinji: *See*—
Nakajima, Toshiharu; Machimura, Satoru; Goto, Tadashi; Mochizuki, Toshitaka; Hoshino, Shinji; and Ohtani, Hiroshi, 5,545,872, Cl. 219-89.000.

Hoshizaki, Gary W.: *See*—
McCall, Scott D.; and Hoshizaki, Gary W., 5,546,040, Cl. 327-479.000.

Hoskins, Gary: *See*—
Hoskins, Hugh; and Hoskins, Gary, 5,545,091, Cl. 464-157.000.

Hoskins, Hugh; and Hoskins, Gary. Universal joint comprising a pair of crown gear elements confined within a slotted casing. 5,545,091, Cl. 464-157.000.

Hosoi, Masanori: *See*—
Kudo, Shokiku; Hosoi, Masanori; and Kawano, Michinobu, 5,544,986, Cl. 408-67.000.

Hosokawa Micron Corporation: *See*—
Inoki, Masahiro, 5,544,824, Cl. 241-80.000.

Hosokawa Seisakusho Co. Ltd.: *See*—
Hosokawa, Toshihiro; Nakahara, Kiyoshi; Ishitsubo, Ryuichi; and Okuda, Toshiyuki, 5,545,023, Cl. 425-171.000.

Hosokawa, Toshihiro; Nakahara, Kiyoshi; Ishitsubo, Ryuichi; and Okuda, Toshiyuki, to Hosokawa Seisakusho Co. Ltd. Pressure molding apparatus for molten resin. 5,545,023, Cl. 425-171.000.

Hospers, Paul A.: *See*—
Austvold, Shawn M.; Bigus, Joseph P.; Henckel, Jonathan D.; and Hospers, Paul A., 5,546,505, Cl. 395-26.000.

Hostynek, Jurij J.: *See*—
Wiersema, Richard J.; and Hostynek, Jurij J., 5,545,667, Cl. 514-556.000.

Hotomi, Hideo; Ebisu, Osamu; and Ota, Kazuo, to Minolta Camera Kabushiki Kaisha. Ink-jet type recorder having an ink carrier and letting ink by combined heat and eletrostatic force. 5,546,108, Cl. 347-55.000.

Hottinger, Herbert: *See*—
Germond, Jacques E.; Hottinger, Herbert; Mignot, Olivier; Mollet, Beat; and Tsuda, Koichiro, 5,545,554, Cl. 435-252.900.

Houghton, Richard A.; and Ruzic, Steven L., to Texas Instruments Incorporated. Apparatus and method for storing and reading data. 5,545,890, Cl. 235-494.000.

Houki, Yoji: *See*—
Ohba, Hiroki; Tonomoto, Yoshihiro; Yanagita, Kiyohisa; Houki, Yoji; Akuta, Tomokazu; and Komuro, Akihiro, 5,546,170, Cl. 355-246.000.

Houle, Sabina J.: *See*—
Fisher, Daniel J.; Crank, Douglas; Lovell, Marc A.; Houle, Sabina J.; and Brodie, James L., 5,544,458, Cl. 52-204.591.

Hourcade, Dennis: *See*—
Atkinson, John P.; Hourcade, Dennis; and Krych, Malgorzata, 5,545,619, Cl. 514-12.000.

House, Daniel E.: *See*—
Brockmeyer, Roger L.; Dievendorff, Richard; House, Daniel E.; Jenner, Earle H.; LaBelle, Margaret K.; Mall, Michael G.; and Silen, Stuart L., 5,546,582, Cl. 395-650.000.

Houser, Guy M., to Model & Instrument Development Corporation. Angular adjustment system for pylon/prosthetic foot interface. 5,545,231, Cl. 623-38.000.

Houser, Russell A.: *See*—
Fleischman, Sidney D.; Bourne, Thomas M.; and Houser, Russell A., 5,545,193, Cl. 607-99.000.

Howard, Stanley B., to Howard, Stanley B. Tethered ball having facial features and sound output. 5,544,894, Cl. 273-414.000.

Howbert, J. Jeffry: *See*—
Bruns, Robert F., Jr.; Gehlert, Donald R.; Howbert, J. Jeffry; and Lunn, William H. W., 5,545,641, Cl. 514-317.000.

Höwe, Bernd: *See*—
Harder, Christian; Höwe, Bernd; and Kuhlmann, Karl, 5,545,457, Cl. 428-77.000.

Howe, William J.: *See*—
Ho, Kuo-San; Howe, William J.; and May, Jeffrey E., 5,545,004, Cl. 415-115.000.

Howland, Robert S., to Advanced Spine Fixation Systems, Incorporated. Occipital clamp assembly for cervical spine rod fixation. 5,545,164, Cl. 606-61.000.

Howland, Robert S., to Advanced Spine Fixation Systems, Incorporated. Spinal segmental reduction derotational fixation system. 5,545,166, Cl. 606-61.000.

HowMedica, Inc.: *See*—
Tanaka, Kazuna; and Kapec, Jeffrey, 5,545,460, Cl. 428-137.000.

Howmet Corporation: *See*—
Sauer, Curtis R., 5,545,873, Cl. 219-124.030.

Hoyt, Matthew B.; Coons, Andrew M., III; and Dickson, David N., to BASF Corporation. Process for forming melt-spun carpet fiber. 5,545,363, Cl. 264-78.000.

HSC Research and Development Limited Partnership: *See*—
Hew, Choy L.; and Fletcher, Garth L., 5,545,808, Cl. 800-2.000.

Hseih, Tong-Ho; Foley, Theodore A.; and Marascio, Anthony N., to McNeil-PPC, Inc. Absorbent article with plates. 5,545,155, Cl. 604-378.000.

Hsiang, Hua-Lu. Trampoline. 5,545,110, Cl. 482-27.000

Hsieh, Jiang, to General Electric Company. Systems, methods and apparatus for incrementally reconstructing overlapped images in a CT system implementing a helical scan. 5,546,439, Cl. 378-15.000.

Hsieh, Peter: *See*—
Chen, Jian; Papanu, James S.; Mak, Steve S. Y.; Ish-Shalom, Carmel; Hsieh, Peter; Lau, Wesley G.; Rhoades, Charles S.; Shieh, Brian; Latchford, Ian S.; Williams, Karen A.; and Yu-Wang, Victoria, 5,545,289, Cl. 156-643.100.

Hsieh, Rong-Ya; Lin, Jinn-Maw; and Hong, Chun-Yen, to Acer Incorporated. Notebook computer system with a separable trackball. 5,546,334, Cl. 364-709.110.

Hsu, Charles C.-H.: *See*—
Liang, Mong-Song; and Hsu, Charles C.-H., 5,545,579, Cl. 437-44.000.

Hsu, Henry. Racket. 5,544,878, Cl. 273-73.00C.

Hsu, Huei-Ying: *See*—
Tang, Horng-Yi; Wu, Maw-Kuen; Lee, Chuen-Sheng; and Hsu, Huei-Ying, 5,545,305, Cl. 205-51.000.

Hsu, Jau Y.; and Orzech, Thomas S., to Nestec S.A. Production of product sheets having waved marginal portions. 5,545,426, Cl. 426-496.000.

Hsu, Lee-Hwei: *See*—
Wang, Mei-San; and Hsu, Lee-Hwei, 5,545,111, Cl. 482-53.000.

Hsu, Robert J.; and Sun, Bao-Lin, to Sun, Bao-Lin. Combined aerobic & anaerobic treating method & facility for hog wastewater. 5,545,325, Cl. 210-605.000.

Hsu, Yi-Chin: *See*—
Tai, Wei-Heng; and Hsu, Yi-Chin, 5,546,326, Cl. 364-552.000.

Hsu, Young-chen. Golf club shaft. 5,545,094, Cl. 473-317.000.

HTM Sport S.p.A: *See*—
Garofalo, Giovanni, 5,545,067, Cl. 441-64.000.

Hu, Chung-You; Richart, Robert B.; Garg, Shyam G.; and Banerjee, Sanjay K., to Advanced Micro Devices, Inc. Non-volatile memory array with over-erase correction. 5,546,340, Cl. 365-185.300.

Huang, Joseph, to Kunnex Incorporated. Water-proof and washable electric razor. 5,544,415, Cl. 30-43.920.

Huang, Shyh-Chin: *See*—
Austin, Curtiss M.; Kelly, Thomas J.; and Huang, Shyh-Chin, 5,545,265, Cl. 148-421.000.

Huang, Sun-Yi, to Cytec Technology Corp. Process for manufacturing acrylamide microemulsified homopolymer. 5,545,688, Cl. 524-827.000.

Huang, Tracy J.: *See*—
Cheng, Jane C.; and Huang, Tracy J., 5,545,788, Cl. 585-467.000.

Huarng, Hermes. Method of making irregularly porous cloth. 5,545,434, Cl. 427-243.000.

Hubesch, Bruno A.: *See*—
Baker, Ellen S.; Bodet, Jean-Francois; Demeyere, Hugo J. M.; Hartman, Frederick A.; Hubesch, Bruno A.; Mermelstein, Robert; Taylor, Lucille F.; and Wahl, Errol H., 5,545,350, Cl. 510-517.000.

Huck International, Inc.: *See*—
Ciobanu, Dan A.; and Mladinich, Karl, 5,544,992, Cl. 411-353.000.

Hudson, Gary C. Hot and cold therapeutic pillow. 5,545,199, Cl. 607-109.000.

Huebner, Randall J. External fixator for repairing fractures of distal radius and wrist. 5,545,162, Cl. 606-57.000.

Huege, Fred R.; and Shields, Patrick, to Chemical Lime Company. Methods and compositions for recycling asphalt pavement. 5,544,971, Cl. 404-72.000.

Huels Aktiengesellschaft: *See*—
Muhr, Jürgen, 5,545,762, Cl. 568-346.000.

Huerta, Joseph, to United States of America, Army. Solid fuel ramjet tubular projectile. 5,544,586, Cl. 102-374.000.

Huff, Richard E.: *See*—
Payne, Richard L.; Huff, Richard E.; and Ogren, Wayne E., 5,544,672, Cl. 137-1.000.

Hughes Aircraft Company: *See*—
Devenyi, Gabor, 5,546,238, Cl. 359-823.000.
Haugen, Marc D.; and Morelock, Robin L., 5,546,091, Cl. 342-181.000.
Pepper, David M.; O'Meara, Thomas R.; and Mitchell, Phillip V., 5,546,187, Cl. 356-357.000.
Ramanujam, Parthasarathy; Shin, Charlie C.; Fermelia, Louis R., Jr.; and Stambaugh, Andrew J., 5,546,097, Cl. 343-781.00R.
Salvio, Paul R.; Masarik, David M.; and Wasserstein, Kevin J., 5,545,956, Cl. 318-283.000.
Wen, Cheng P.; and Pao, Cheng-Keng, 5,546,049, Cl. 330-277.000.

Hughes, Edward T., III: *See*—
Marlin, James W.; Knudson, Raymond L.; Ruehle, Thomas M.; Stuart, Anthony F.; and Hughes, Edward T., III, 5,546,577, Cl. 395-600.000.

Hughes, Henry G.: *See*—
Ristic, Ljubisa; Koury, Daniel N.; Schmiesing, John E.; Gutteridge, Ronald J.; and Hughes, Henry G., 5,545,912, Cl. 257-417.000.

Hughes, Mark J.; and Kitteringham, John, to SmithKLine Beecham, p.l.c. Nitrosation process. 5,545,740, Cl. 546-112.000.

Hughes, Michael, to Silvatech Corporation. Apparatus for detecting the position of an object along a secondary axis and scanning a profile of the object in a primary axis. 5,544,558, Cl. 83-75.500.

Hughes Missile Systems Company: *See*—
Hulderman, Garry N.; Phillips, Eugene; and Swanson, Richard J., 5,545,511, Cl. 430-315.000.

Hughes Training, Inc.: *See*—
Ansley, David A., 5,546,202, Cl. 359-40.000.
Ansley, David A.; and Sisodia, Ashok, 5,546,492, Cl. 385-116.000.

Huignard, Jean-Pierre: *See*—
Nicolas, Christophe; Loiseaux, Brigitte; Joubert, Cécile; and Huignard, Jean-Pierre, 5,546,200, Cl. 359-15.000.

Hulderman, Garry N.; Phillips, Eugene; and Swanson, Richard J., to Hughes Missile Systems Company. Millimeter wave device and method of making. 5,545,511, Cl. 430-315.000.

Hull, Vincent W.: *See*—
Wolff, Rodney G.; and Hull, Vincent W., 5,545,208, Cl. 623-1.000.

Hüls Aktiengesellschaft: *See*—
Edelmann, Roland; Schnippering, Friedhelm; Fliedner, Christine; and Matthes, Reinhard, 5,545,253, Cl. 106-122.000.

Hume, William J.; Swenson, Paul M.; and Vasapoli, Michael L., to Kona Corporation. Bushing tip for injection molding apparatus. 5,545,028, Cl. 425-549.000.

Hung, Ming-Hong; Kaku, Mureo; and Logothetis, Anestis L., to Du Pont de Nemours, E. I., and Company. Nitrile containing perfluoropolyether-perfluoroelastomer blends. 5,545,693, Cl. 525-187.000.

Hunt, Morris D., to DBH Limited, Inc. Knee control mechanism for industrial sewing machine. 5,544,600, Cl. 112-217.300.

Hunt-Wesson, Inc.: *See*—
Wu, Rei Young A., 5,545,425, Cl. 426-634.000.

Hunter, Kevin D.; and Muller, Arno, to Pitney Bowes Inc. Epm having a system for detecting fault conditions of the thermal printhead. 5,546,112, Cl. 347-171.000.

Huntington Laboratories, Inc.: *See*—
Smith, Kim R.; Boyd, Frederick M.; and Abouhalkah, Samih S., 5,545,749, Cl. 564-282.000.

Huot, Robert D.; and Acello, John J., to Eastman Kodak Company. Supplemental photofinishing data system. 5,546,196, Cl. 358-527.000.

Huovila, Jyrki; Linsuri, Ari; Nyberg, Petri; and Odell, Michael, to Valmet Corporation. Method and device in the regulation of a headbox. 5,545,293, Cl. 162-212.000.

Hurley, Rick A.; Innes, Mark E.; and Palmer, Nelson R., to Eaton Corporation. Electromagnetic device with current regulated closure characteristic. 5,546,268, Cl. 361-154.000.

Hurt, Thomas D.; and Halpine, Scott A., to Terastore, Inc. Method and apparatus for storing data using spin-polarized electrons. 5,546,337, Cl. 365-121.000.

Hürzeler, Marianne: *See*—
Alig, Leo; Hadvary, Paul; Hürzeler, Marianne; Müller, Marcel; Steiner, Beat; and Weller, Thomas, 5,545,658, Cl. 514-423.000.

Huss, Brian S.: *See*—
Aloisi, Robert J.; Livingston, Arthur; and Huss, Brian S., 5,544,808, Cl. 229-400.000.

Hussain, Muhammed I.: *See*—
Aulet, Nancy R.; Bogdan, David C.; Hussain, Muhammed I.; Hutt, George W.; Pearl, Donald L.; and Pribula, David T., 5,546,325, Cl. 364-525.000.

Hutt, George W.: *See*—
Aulet, Nancy R.; Bogdan, David C.; Hussain, Muhammed I.; Hutt, George W.; Pearl, Donald L.; and Pribula, David T., 5,546,325, Cl. 364-525.000.

Hütter, Joachim: *See*—
Straub, Alexander; Goldmann, Siegfried; Stoltefuss, Jürgen; Bechem, Martin; Dembowsky, Klaus; Gross, Rainer; Hebisch, Siegbert; Hütter, Joachim; and Rounding, Howard-Paul, 5,545,646, Cl. 514-337.000.

Huyer, Stephen A.; Grant, John R.; and Uhlman, James S., to United States of America, Navy. Apparatus and method for predicting flow characteristics. 5,544,524, Cl. 73-147.000.

Hwa, Rebecca P.: *See*—
Marks, Joseph W.; Shieber, Stuart M.; and Hwa, Rebecca P., 5,546,517, Cl. 395-145.000.

Hwang, David K., to Emhart Inc. Control for glass forming machine. 5,545,244, Cl. 65-160.000.

Hyacinthe, Roland: *See*—
Tournier, Hervé; Hyacinthe, Roland; and Schneider, Michel, 5,545,395, Cl. 424-932.000.

Hybridon, Inc.: *See*—
Goodchild, John; and Nesbitt, Steven M., 5,545,729, Cl. 536-24.500.

Hydrocool Pty Ltd: *See*—
Attey, Graeme S.; Searls, Jesse H.; and Sargeant, Gary L., 5,544,487, Cl. 62-3.700.

Hynecek, Jaroslav, to Texas Instruments Incorporated. BCD low noise high sensitivity charge detection amplifier for high performance image sensors. 5,546,438, Cl. 377-60.000.

Hyper-Therm High Temperature Composites, Inc.: *See*—
Steffier, Wayne S., 5,545,435, Cl. 427-249.000.

Hyundai Electronics America: *See*—
Thornberg, Gary R., 5,545,440, Cl. 427-345.000.

Hyundai Electronics Industries Co., Ltd.: *See*—
Lee, Dong M.; and Hong, Hyeong S., 5,546,020, Cl. 326-83.000.
Lee, Woo B.; Oh, Se J.; Yeo, Tae J.; Ko, Jae W.; and Koo, Yung M., 5,545,572, Cl. 437-26.000.

Hyundai Motor Company: *See*—
Jang, Jaeduk, 5,545,099, Cl. 475-135.000.

Iacob, Mihai; and Andersen, Erik C., to Boston Scientific Corporation. Perfusion balloon stent. 5,545,135, Cl. 604-96.000.

Iacoponi, John A., to Advanced Micro Devices, Inc. Nitrogen treatment for metal-silicide contact. 5,545,592, Cl. 437-200.000.

Iba, Yoichi: *See*—
Yasugaki, Masato; Konuma, Osamu; and Iba, Yoichi, 5,546,227, Cl. 359-630.000.

Ibaraki, Susumu; Katta, Noboru; Nakamura, Seiji; and Murakami, Hiroki, to Matsushita Electric Industrial Co., Ltd. Scramble system for use in digital video signal recording and reproducing system or transmission and receiving system, comprising scramble apparatus and descramble apparatus. 5,546,461, Cl. 380-20.000.

Ibe, Harushige: *See*—
Ogawa, Takashi; Yoshimoto, Kazuo; Uchiyama, Kensuke; Ibe, Harushige; Arai, Yoshiharu; Shiraishi, Taketoshi; and Gotoh, Yoshinori, 5,544,995, Cl. 414-219.000.

Ichihashi, Motomi: *See*—
Mitani, Tateki; Ichihashi, Motomi; and Bessho, Mikio, 5,544,529, Cl. 73-716.000.

Ichikawa, Haruo: *See*—
Takahashi, Koichi; Takatori, Tetsuya; Ichikawa, Haruo; Kaya, Akimasa; and Takahashi, Tomoyuki, 5,544,835, Cl. 242-348.100.

Ichikawa, Jun-ichi: *See*—

Ishijima, Zenzo; Ichikawa, Jun-ichi; Sasaki, Shuji; Shikata, Hideo; Urata, Hideo; Kawase, Shoji; and Ueda, Jun-ichi, 5,545,487, Cl. 428-548.000.
Ichimaru, Kouzou, to Texas Instruments Incorporated. Phase locked loop having booster circuit for rapid lockup. 5,546,053, Cl. 331-11.000.
Ichioka, Yoshikazu; Jenkins, Leslie C.; Kimura, Shinichi; Polastre, Robert J.; Troutman, Ronald R.; and Wisnieff, Robert L., to International Business Machines Corporation. Array tester for determining contact quality and line integrity in a TFT/LCD. 5,546,013, Cl. 324-770.000.
Ideal Ideas, Inc.: *See*—
Glynn, Kenneth P.; and Blair, James R., II, 5,545,069, Cl. 446-73.000.
Ideyama, Hiroyuki: *See*—
Hirota, Masaya; Ideyama, Hiroyuki; Okatani, Toru; Yamashita, Toshiyuki; Ito, Hideo; and Kawabuchi, Yoichi, 5,546,166, Cl. 355-209.000.
Ido, Kihei: *See*—
Hibi, Taketoshi; Maeno, Kenji; Ido, Kihei; Onishi, Ken; Ueda, Shinobu; Hirano, Akiyoshi; Hatanaka, Keiji; and Shiroshita, Takashi, 5,546,191, Cl. 358-335.000.
Ido, Yasuo, to Sony Corporation. Data recording/reproducing method and data send-out method. 5,546,118, Cl. 348-7.000.
IEP Group, Inc.: *See*—
Jewett, Warren; and Ebeling, Frederick A., 5,544,647, Cl. 128-200.230.
Igarashi, Ryosaku: *See*—
Daimon, Katsumi; Nukada, Katsumi; Sakaguchi, Yasuo; and Igarashi, Ryosaku, 5,545,733, Cl. 540-139.000.
Iguchi, Masao: *See*—
Fukanuma, Tetsuhiko; Goto, Kunifumi; Yamamoto, Shinya; and Iguchi, Masao, 5,545,020, Cl. 418-55.400.
Ihara, Hirofumi: *See*—
Sukegawa, Osamu; and Ihara, Hirofumi, 5,546,205, Cl. 359-59.000.
Iiboshi, Tomohiro: *See*—
Ohata, Satoru; and Iiboshi, Tomohiro, 5,544,629, Cl. 123-184.360.
Iida, Masanori, to Matsushita Electric Industrial Co., Ltd. Optical circuit and light transmission system and method using the same. 5,546,219, Cl. 359-281.000.
Iida, Toru; Ohashi, Michihito; Sakai, Yoshihiro; Kuramoto, Shin-ichi; Chiba, Shunichi; Asahina, Yasuo; and Tomita, Junko, to Ricoh Company, Ltd. Device for regenerating printed sheet-like recording medium. 5,545,381, Cl. 422-186.000.
Iida, Yoshihiro: *See*—
Yabe, Hisao; Iida, Yoshihiro; Suzuki, Akira; Ito, Hideo; Tashiro, Yoshio; Yamazaki, Minoru; Tamada, Osamu; and Nakajima, Shigeru, 5,545,121, Cl. 600-121.000.
Iihara, Michio; Shimizu, Osamu; and Sera, Akira, to NTN Corporation. Cold forming method of toothed ring-shaped products and forming apparatus for its use. 5,544,548, Cl. 76-107.100.
Iijima, Hideaki: *See*—
Nakano, Toshihiro; Iijima, Hideaki; and Arakawa, Haruo, 5,544,485, Cl. 60-589.000.
Iijima, Makoto: *See*—
Hashitani, Takafumi; Fujita, Shozo; Iijima, Makoto; and Asano, Koji, 5,545,485, Cl. 428-423.100.
Iima, Shin: *See*—
Kamoda, Hitoshi; Maekawa, Tomohiro; Yui, Yasuji; Iima, Shin; and Bunya, Takashi, 5,544,965, Cl. 400-582.000.
Iiri, Shigeo: *See*—
Shimizu, Shumpei; Cho, Toshitsura; and Iiri, Shigeo, 5,545,309, Cl. 205-437.000.
Ikebuchi, Hiroyuki: *See*—
Mitaka, Ryosuke; Fujiwara, Yoshimasa; and Ikebuchi, Hiroyuki, 5,546,476, Cl. 382-201.000.
Ikeda, Hachiro; Miyamoto, Noriaki; Umeda, Ryoei; Yasu, Hidenori; Fukukawa, Mitsuo; Masuyama, Yukiei; Kinoshita, Shoji; Takagi, Yukio; Gocho, Tomohiro; Goto, Fumio; Ishii, Akio; Ogawa, Tetsuo; Hasegawa, Yoshun; Hironaka, Keitaro; and Ogoshi, Yasuhiro, to Niigata Engineering Co. Ltd. Automatic steering device for asphalt finisher. 5,546,123, Cl. 348-119.000.
Ikeda, Takao, to Mitsui Kinzoku Kogyo Kabushiki Kaisha. Spring mounting device for automotive door lock apparatus. 5,544,925, Cl. 292-216.000.
Ikeda, Yoshihiko; Yamane, Takeo; Kaji, Eiichi; and Ishimaru, Kenji, to Tosoh Akzo Corporation. Method of producing tris(pentafluorophenyl)borane using pentafluorophenyl alkali metal salt prepared from pentafluorobenzene. 5,545,759, Cl. 568-6.000.
Ikenaka, Tokuji: *See*—
Satomura, Shinji; Nakamura, Kenji; Ikenaka, Tokuji; and Omichi, Kaoru, 5,545,530, Cl. 435-6.000.
Iles, Roger F.: *See*—
Hood, Thomas G.; Iles, Roger F.; and Millar, Peter, 5,544,465, Cl. 52-786.130.
Illinois Tool Works Inc.: *See*—
Frederiksen, Bjarne; and Masghati, Mohammad, 5,546,267, Cl. 361-119.000.
Watts, Leslie M., 5,544,749, Cl. 206-459.500.
Yarbrough, Harvey M., 5,544,470, Cl. 53-442.000.
Imagawa, Ippei: *See*—
Satake, Sunao; Yatsuyanagi, Yoshimi; Fujii, Masahiro; and Imagawa, Ippei, 5,545,694, Cl. 525-286.000.
Imai, Akihiro; Fukui, Yasuo; and Matsuo, Hiroyuki, to Matsushita Electric Industrial Co., Ltd. Thermal transfer printing method and image-forming layer transfer medium. 5,545,605, Cl. 503-227.000.
Imai, Takashi: *See*—
Onoue, Keiji; Saito, Yukio; and Imai, Takashi, 5,544,389, Cl. 19-157.000.
Imai, Yasuo: *See*—
Yamada, Toshiro; Imai, Yasuo; and Mitsuda, Yasuhiro, 5,545,771, Cl. 570-164.000.
Imanari, Hitoshi; Kanno, Hideo; and Tanioka, Hiroshi, to Nikon Corporation. Lens barrel using a surface wave motor. 5,546,233, Cl. 359-696.000.
Imran, Mir A., to Cardiac Pathways Corporation. Catheter for RF ablation having cooled electrode with electrically insulated sleeve. 5,545,161, Cl. 606-41.000.
Imura, Yoshio; Okano, Hiroshi; and Katayama, Akira, to Nikon Corporation. Camera for preventing camera shake. 5,546,159, Cl. 354-472.000.
In Focus Systems, Inc.: *See*—
Scheffer, Terry J.; and Clifton, Benjamin R., 5,546,102, Cl. 345-100.000.
Inaba, Kanemasa: *See*—
Fujita, Takafumi; Shimoda, Ikuo; Mochimaru, Masami; Otsuka, Susumu; Kawai, Nobuyasu; Kurimoto, Kurimoto; and Inaba, Kanemasa, 5,544,452, Cl. 52-167.200.
Inada, Norifumi: *See*—
Yamamoto, Katsuya; and Inada, Norifumi, 5,544,779, Cl. 220-89.200.
Inai, Michifumi: *See*—
Fujioka, Souichirou; Nishida, Masafumi; and Inai, Michifumi, 5,546,247, Cl. 360-77.130.
Inami, Michikazu: *See*—
Harato, Takuo; Ishida, Takahiro; Kumagae, Yoshio; Inami, Michikazu; Ishibashi, Kazuhisa; and Murakami, Mitsuaki, 5,545,384, Cl. 423-121.000.
Inco Limited: *See*—
Babjak, Juraj; and Ettel, Victor A., 5,545,392, Cl. 423-592.000.
Indeck, Ronald S.; Muller, Marcel W.; Engel, George Lawrence; and Hege, Alan L., to Washington University. Method and apparatus for fingerprinting and authenticating various magnetic media. 5,546,462, Cl. 380-23.000.
Industrial Technology Research Institute: *See*—
Lin, Chin-I; Chen, Yu-Hsuan; and Chu, Gou-Don, 5,544,907, Cl. 280-288.300.
Yang, Ning, 5,545,360, Cl. 264-9.000.
Information Resource Engineering, Inc.: *See*—
Caputo, Anthony A.; and Amoruso, Victor P., 5,546,463, Cl. 380-25.000.
Infrasonics, Inc.: *See*—
Kelly, Edmund F., 5,544,674, Cl. 137-98.000.
Ingram, Joseph D.: *See*—
Roy, Bryan A.; Ingram, Joseph D.; Arrowsmith, Hubert W.; and Ramsey, Timothy B., 5,545,796, Cl. 588-4.000.
Innes, Mark E.: *See*—
Hurley, Rick A.; Innes, Mark E.; and Palmer, Nelson R., 5,546,268, Cl. 361-154.000.
Innocom (I.T.) B.V.: *See*—
Schasfoort, Richardus B. M.; and Voogt, Jan O., 5,545,303, Cl. 204-601.000.
Innovasive Devices, Inc.: *See*—
Hart, Rickey D., 5,545,170, Cl. 606-148.000.
Innovations in Cycling: *See*—
Phillips, Matthew L.; and Hollars, Anthony S., 5,544,670, Cl. 137-224.000.
Innovative Quality Products Corporation: *See*—
Armstrong, William D., 5,544,800, Cl. 227-009.000.
Inoki, Masahiro, to Hosokawa Micron Corporation. Pulverizer. 5,544,824, Cl. 241-80.000.
Inomata, Masamitsu: *See*—
Oishi, Tetsuya; Ozawa, Hiroshi; Karasawa, Minato; Inomata, Masamitsu; Mega, Izumi; Yamauchi, Atsuyoshi; Kamada, Kazunori; Nakahata, Shigeru; Sakamoto, Katsumi; Nakashima, Tatsunobu; Watanabe, Akito; Suzuki, Jin; Ohkawa, Kouhei; Furusawa, Satoshi; Ono, Hiroshi; and Sugazaki, Kazuo, 5,545,702, Cl. 525-509.000.
Inose, Akira: *See*—
Sakuma, Shuji; Atsumi, Kiminori; Inose, Akira; and Koyama, Hideo, 5,545,791, Cl. 585-639.000.
Inoue, Hiromi: *See*—
Kawaguchi, Megumi; Inoue, Hiromi; Sugiura, Atsushi; Suzuki, Kenji; and Fujii, Tsunenori, 5,545,747, Cl. 560-123.000.
Inoue, Kunitoshi: *See*—
Kubouchi, Kenji; Fukui, Yuji; and Inoue, Kunitoshi, 5,544,901, Cl. 277-235.00B.
Inoue, Naoyuki, to Ebara Corporation. Regenerator for absorption refrigerating machine. 5,544,497, Cl. 62-497.000.
Inoue, Toru: *See*—
Uehara, Yasuhiro; Kusumoto, Yasuhiro; Kanesawa, Yoshio; and Inoue, Toru, 5,546,175, Cl. 355-290.000.
Inoue, Yasuyuki; Kawachi, Masao; Okamoto, Katsunari; Takato, Norio; Yamamoto, Fumihiko; Suda, Hiroyuki; Furukawa, Shinichi; and Morinaka, Akira, to Nippon Telegraph and Telephone Corporation. Integrated optical waveguide circuit and optical branch line test system using the same. 5,546,483, Cl. 385-14.000.
Inselberg, Alfred: *See*—
Austel, Vernon; Chatterjee, Avijit; and Inselberg, Alfred, 5,546,516, Cl. 395-140.000.
Insight, Inc.: *See*—
Fantone, Stephen D.; Gelardi, Anthony L.; and Gelardi, John A., 5,544,741, Cl. 206-308.100.
Institut Francais du Petrole: *See*—

Benzaria, Jacques; Dawans, Francois; Durif-Varambon, Bruno; and Gaillard, Jean-Bernard, 5,545,746, Cl. 560-78.000.
Travers, Christine; and Burzynski, Jean-Pierre, 5,545,793, Cl. 585-671.000.
Institut Pasteur: *See*—
Alizon, Marc; Montagnier, Luc; Guetard, Denise; Brun-Vezinet, Francoise; and Clavel, Francois, 5,545,726, Cl. 536-23.100.
Institute of Gas Technology: *See*—
Xiong, Tian-yu, 5,544,624, Cl. 122-4.00D.
Institute of Paper Science and Technology, Inc.: *See*—
Empie, H. Jeff, 5,545,292, Cl. 162-30.110.
Institute Pasteur: *See*—
Collandre, Helene; Montagnier, Luc; Agut, Henri; and Bechet, Jean-Marie, 5,545,520, Cl. 435-5.000.
Instruments de Medecine Veterinaire: *See*—
Cassou, Robert; Cassou, Maurice; and Cassou, Bertrand, 5,545,562, Cl. 435-307.100.
Integrated Device Technology, Inc.: *See*—
Campbell, David L.; and Fox, James E., Jr., 5,546,033, Cl. 327-170.000.
Ko, Ray-Jane; Au, Fu L.; and Chiang, Joseph P., 5,546,347, Cl. 365-221.000.
Intel Corporation: *See*—
Allen, Michael J., 5,546,016, Cl. 326-30.000.
Bazes, Mel, 5,546,431, Cl. 375-350.000.
Bell, D. Michael; Gonzales, Mark A.; and Meredith, Susan S., 5,546,546, Cl. 395-292.000.
Bland, Patrick M.; Jackson, Robert T.; Joshi, Jayesh; and Kardach, James, 5,546,568, Cl. 395-550.000.
Borkar, Shekhar; and Mooney, Stephen R., 5,546,023, Cl. 326-93.000.
Caspi, Rami; and Galin, Robert, 5,546,385, Cl. 370-58.200.
Chen, Ray; and Rabe, Jeffrey L., 5,546,548, Cl. 395-296.000.
Cobbley, David A.; Valerio, James A.; and Pollack, Frederick J., 5,546,538, Cl. 395-200.010.
Geist, Alan, 5,546,596, Cl. 395-200.020.
Golwalkar, Suresh V.; Foehringer, Richard; Wentling, Michael; Takatsuki, Ryo; Kawashima, Shigeo; Tsujimoto, Keiichi; and Sato, Nobuaki, 5,545,922, Cl. 257-676.000.
Kalafatis, Stavros, 5,546,434, Cl. 375-376.000.
Kohn, Leslie D., 5,546,551, Cl. 395-375.000.
Kynett, Virgil N.; and Fandrich, Mickey L., 5,546,561, Cl. 395-490.000.
Lippincott, Louis A., 5,546,531, Cl. 395-164.000.
Martell, Robert W.; Hinton, Glenn J.; Fetterman, Michael A.; Papworth, David B.; Colwell, Robert P.; and Glew, Andrew F., 5,546,597, Cl. 395-800.000.
Pierce, Michael E., 5,546,590, Cl. 395-750.000.
Poling, William F., 5,546,539, Cl. 395-200.050.
Rhodes, Ken; Coelho, Rohan; Frank, Davis; and Bender, Blake, 5,546,103, Cl. 345-119.000.
Skarbo, Rune A.; and Elliott, John D., 5,546,447, Cl. 379-142.000.
Tedrow, Kerry D.; Keeney, Stephen N.; Fazio, Albert; Atwood, Gregory E.; Javanifard, Johnny; and Wojciechowski, Kenneth, 5,546,042, Cl. 327-538.000.
Intelligence Quotient International Ltd.: *See*—
Malcolm, Peter B., 5,546,534, Cl. 395-182.040.
Intercat, Inc.: *See*—
Demmel, Edward J., 5,545,604, Cl. 502-414.000.
Intergraph Corporation: *See*—
Proebsting, Robert J.; and Heald, Raymond A., 5,546,569, Cl. 395-550.000.
Intermedics, Inc.: *See*—
Bradshaw, James I.; and Daglow, Terry D., 5,545,188, Cl. 607-37.000.
Stotts, Lawrence J.; and Alt, Eckhard, 5,545,182, Cl. 607-5.000.
International Business Machine Corporation: *See*—
Lin, Li-Ju J.; Foster, John S.; Gudeman, Christopher S.; and Vurens, Gerard H., 5,545,478, Cl. 428-332.000.
Pechanek, Gerald G.; and Vassiliadis, Stamatis, 5,546,336, Cl. 364-725.000.
International Business Machines: *See*—
Watanabe, Yohji; and DeBrosse, John K., 5,546,349, Cl. 365-230.040.
International Business Machines Corporation: *See*—
Allen, Vincent K.; Goncharsky, Robert S.; and Ripberger, Richard A., 5,546,557, Cl. 395-438.000.
Armacost, Michael D.; Givens, John H.; Koburger, Charles W., III; and Lasky, Jerome B., 5,545,581, Cl. 437-52.000.
Aulet, Nancy R.; Bogdan, David C.; Hussain, Muhammed I.; Hutt, George W.; Pearl, Donald L.; and Pribula, David T., 5,546,325, Cl. 364-525.000.
Austel, Vernon; Chatterjee, Avijit; and Inselberg, Alfred, 5,546,516, Cl. 395-140.000.
Austin, John S.; Novof, Ilya I.; Strayer, Donald E.; and Wyatt, Stephen D., 5,546,052, Cl. 331-1.00A.
Austvold, Shawn M.; Bigus, Joseph P.; Henckel, Jonathan D.; and Hospers, Paul A., 5,546,505, Cl. 395-26.000.
Barrett, Linda; Long, Lynn D.; Menditto, Louis F.; Stagg, Arthur J.; and Ward, Raymond E., 5,546,549, Cl. 395-309.000.
Berry, Richard E., 5,546,519, Cl. 395-155.000.
Bland, Patrick M.; Jackson, Robert T.; Joshi, Jayesh; and Kardach, James, 5,546,568, Cl. 395-550.000.
Bolle, Rudolf M.; Connell, Jonathan H.; Haas, Norman; Mohan, Rakesh; and Taubin, Gabriel, 5,546,475, Cl. 382-190.000.
Booth, Richard B.; Cooper, Emanuel I.; Giess, Edward A.; Kordus, Mark R.; Krongelb, Sol; Ostrander, Steven P.; Roldan, Judith M.; Sambucetti, Carlos J.; and Saraf, Ravi, 5,545,429, Cl. 427-97.000.
Brightly, Todd J., 5,544,554, Cl. 81-57.400.
Brockmeyer, Roger L.; Dievendorff, Richard; House, Daniel E.; Jenner, Earle H.; LaBelle, Margaret K.; Mall, Michael G.; and Silea, Stuart L., 5,546,582, Cl. 395-650.000.
Cameron, James F.; Frechet, Jean M. J.; Leung, Man-Kit; Niesert, Claus-Peter; MacDonald, Scott A; and Willson, Carlton G., 5,545,509, Cl. 430-270.100.
Chang, Chi S.; Desai, Subahu D.; Gernhart, Debra A.; Hartley, Phillip A.; Haskins, Robert J., Jr.; Ho, Keith K. T.; Martone, Robert A.; Mulcahy, Roy T.; Shaffer, Louis J.; Schoening, Robert D.; and Versprille, Scott A., 5,546,321, Cl. 364-491.000.
Chow, Alex C.; and Wang, John S.-Y., 5,546,524, Cl. 395-157.000.
Cline, Troy L.; Isensee, Scott H.; Poston, Ricky L.; and Werner, Jon H., 5,546,520, Cl. 395-155.000.
Cochrane, Roberta J.; Pirahesh, Mir H.; and Sidle, Richard S., 5,546,576, Cl. 395-600.000.
Conru, Harold W.; Froebel, Francis E.; Gregoritsch, Albert J., Jr.; Rieley, Sheldon C.; Starr, Stephen G.; Uttecht, Ronald R.; White, Eric J.; and Pohl, Jens G., 5,545,921, Cl. 257-669.000.
Cutts, Stanley J.; and Golledge, Ian, 5,546,276, Cl. 361-724.000.
Dang, Chi H., 5,546,366, Cl. 369-36.000.
Doss, Saad K.; McKean, Dennis R.; Renaldo, Alfred F.; and Wilson, Robert J., 5,545,307, Cl. 205-122.000.
Drew, Robert M.; Plum, Dennis L.; and Walmsley, Graham M., 5,546,541, Cl. 395-200.150.
Farooq, Mukta S.; Kaja, Suryanarayana; Perfecto, Eric D.; and White, George E., 5,545,927, Cl. 257-762.000.
Fitzpatrick, Greg P.; and Haynes, Thom R., 5,546,527, Cl. 395-159.000.
Gaynes, Michael A.; Oxx, George D.; Pierson, Mark V.; and Zalesinski, Jerzy, 5,545,465, Cl. 428-209.000.
Gifford, George G.; and Osborn, Brock E., 5,546,322, Cl. 364-497.000.
Gill, Hardayal S., 5,546,254, Cl. 360-113.000.
Hochschild, Peter H.; and Denneau, Monty M., 5,546,391, Cl. 370-60.000.
Ichioka, Yoshikazu; Jenkins, Leslie C.; Kimura, Shinichi; Polastre, Robert J.; Troutman, Ronald R.; and Wisnieff, Robert L., 5,546,013, Cl. 324-770.000.
Ishikawa, Shigeki, 5,545,960, Cl. 318-587.000.
Josten, Jeffrey W.; Mukai, Tina; Narang, Inderpal S.; and Teng, James Z., 5,546,579, Cl. 395-600.000.
Keller, Brion L., 5,546,408, Cl. 371-27.000.
Kerth, Randall T.; Krajnovich, Douglas J.; Kulkarni, Murlidhar V.; Leung, Wing P.; and Tam, Andrew C., 5,544,775, Cl. 216-65.000.
Kurtzberg, Jerome M.; and Levanoni, Menachem, 5,546,329, Cl. 364-552.000.
Lam, Chung H.; Lord, David K.; and Wright, Judith A., 5,545,583, Cl. 437-52.000.
Langdon, Glen G., Jr.; and Zandi, Ahmad, 5,546,080, Cl. 341-107.000.
Li, Shih-Gong; and Shrader, Theodore J. L., 5,546,526, Cl. 395-159.000.
Licata, Thomas J., 5,545,590, Cl. 437-189.000.
Marlin, James W.; Knudson, Raymond L.; Ruehle, Thomas M.; Stuart, Anthony F.; and Hughes, Edward T., III, 5,546,577, Cl. 395-600.000.
Martinez, Anthony E., 5,546,521, Cl. 395-155.000.
McPherson, John A., Jr.; Pirahesh, Mir H.; Truong, Tuong C.; and Coyle, Daniel J., Jr., 5,546,570, Cl. 395-600.000.
Niijima, Hideto; Toyooka, Takashi; Satoh, Akashi; and Sakaue, Yoshinori, 5,546,402, Cl. 371-10.200.
Obermann, David F.; and Trumble, Mary K., 5,546,573, Cl. 395-600.000.
Perry, Charles H.; Bauer, Tibor L.; Long, David C.; Pickering, Bruce C.; and Vittori, Pierre C., 5,546,012, Cl. 324-754.000.
Pfeiffer, Hans C.; and Stickel, Werner, 5,545,902, Cl. 250-492.200.
Pontius, Dale E., 5,545,978, Cl. 323-313.000.
Rich, Stephen E., 5,546,545, Cl. 395-291.000.
Rudisill, Charles A.; Rutledge, Joseph D.; and Selker, Edwin J., 5,544,530, Cl. 73-810.000.
Shriver, David I., 5,546,583, Cl. 395-650.000.
Song, Seungyoon P., 5,546,599, Cl. 395-800.000.
International Business Systems, Incorporated: *See*—
Kreider, Russell L., 5,544,807, Cl. 229-305.000.
International Flavors & Fragrances Inc.: *See*—
Monteleone, Michael G.; Weiss, Richard A.; Evans, Mark D.; and Hanna, Marie R., 5,545,763, Cl. 568-630.000.
International Fruit Peelers Limited: *See*—
Davies, Peter O.; Dromgool, Nicholas C.; Collinson, Graeme L.; and Fish, Alan P., 5,545,422, Cl. 426-482.000.
International Paper Company: *See*—
O'Dell, Robin D.; Lex, Joseph A.; Simon, Alice M.; and Shah, Jayesh, 5,545,476, Cl. 428-327.000.
International Rectifier Corporation: *See*—
Wood, Peter N., 5,545,955, Cl. 315-224.000.
International Shoe Machine Corporation: *See*—
Walega, William, 5,544,380, Cl. 12-14.400.
Inui, Koichi: *See*—
Wada, Takasumi; Fujita, Hirokazu; and Inui, Koichi, 5,546,169, Cl. 355-244.000.
Inventio AG: *See*—
Rohner, Ronald, 5,546,298, Cl. 363-71.000.

Spiess, Peter A., 5,544,720, Cl. 187-319.000.

Irgens, Christopher R., to Outboard Marine Corporation. Method and arrangement for assembling fuel injection nozzles. 5,544,673, Cl. 137-15.000.

Iritani, Kunio: *See*—
Suzuki, Takahisa; Iritani, Kunio; Ishikawa, Hiroshi; and Isaji, Akira, 5,544,493, Cl. 62-133.000.

Iritani, Satoshi; Mitsuhashi, Masakazu; Chaen, Hiroto; and Miyake, Toshio, to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo. Alkali-treated bagasse, and its preparation and uses. 5,545,418, Cl. 426-53.000.

Irizato, Yoshihiro: *See*—
Kusuda, Chiyuki; Furuya, Masayuki; Wada, Masaru; Irizato, Yoshihiro; Naruse, Hiroshi; and Nagata, Teruyuki, 5,545,751, Cl. 564-398.000.

IRW Inc.: *See*—
Creuseremee, Melville C.; and May, Jack L., 5,546,072, Cl. 340-574.000.

Isaacson, David: *See*—
Saulnier, Gary J.; Gisser, David G.; Newell, Jonathan C.; Cook, Raymond D.; Goble, John C.; and Isaacson, David, 5,544,662, Cl. 128-734.000.

Isaji, Akira: *See*—
Suzuki, Takahisa; Iritani, Kunio; Ishikawa, Hiroshi; and Isaji, Akira, 5,544,493, Cl. 62-133.000.

Isaka, Haruo: *See*—
Sakakibara, Yoshio; Gotou, Makoto; Kobayashi, Kazuhiko; Isaka, Haruo; and Nakamura, Akihiko, 5,546,248, Cl. 360-77.140.

Iseki, Masahiro: *See*—
Iwama, Akifumi; Iseki, Masahiro; and Nakagawa, Azusa, 5,545,299, Cl. 204-412.000.

Isensee, Scott H.: *See*—
Cline, Troy L.; Isensee, Scott H.; Poston, Ricky L.; and Werner, Jon H., 5,546,520, Cl. 395-155.000.

Ishak, Nouhi A. Catheter apparatus having a retractable intravenous needle assembly. 5,545,146, Cl. 604-198.000.

Ishibashi, Akihiko; Kidoguchi, Isao; Ohnaka, Kiyoshi; and Mannou, Masaya, to Matsushita Electric Industrial Co., Ltd. Semiconductor laser having a flat groove for selected crystal planes. 5,546,418, Cl. 372-48.000.

Ishibashi, Kazuhisa: *See*—
Harato, Takuo; Ishida, Takahiro; Kumagae, Yoshio; Inami, Michikazu; Ishibashi, Kazuhisa; and Murakami, Mitsuaki, 5,545,384, Cl. 423-121.000.

Ishida, Hidehito, to Yazaki Corporation. Grommet for wire sealing. 5,545,854, Cl. 174-153.00G.

Ishida, Satoshi: *See*—
Nishii, Michiharu; and Ishida, Satoshi, 5,544,947, Cl. 303-116.200.

Ishida, Takahiro: *See*—
Harato, Takuo; Ishida, Takahiro; Kumagae, Yoshio; Inami, Michikazu; Ishibashi, Kazuhisa; and Murakami, Mitsuaki, 5,545,384, Cl. 423-121.000.

Ishiguro, Shiro; Watanuki, Masatoshi; Kawanishi, Toshiaki; Hanzawa, Kohtaro; Sasaki, Hiroyuki; and Yoshino, Jun, to Casio Computer Co., Ltd. Effect adding apparatus. 5,546,466, Cl. 381-61.000.

Ishihara, Masamichi: *See*—
Yoshida, Shinji; Motoyama, Shuichiro; Ohashi, Takashi; and Ishihara, Masamichi, 5,546,261, Cl. 361-19.000.

Ishiharada, Minoru: *See*—
Noguchi, Tomoko; Naito, Kazuo; Saito, Tasuku; Sakurai, Ryo; and Ishiharada, Minoru, 5,546,493, Cl. 385-125.000.

Ishii, Akio: *See*—
Ikeda, Hachiro; Miyamoto, Noriaki; Umeda, Ryoei; Yasu, Hidenori; Fukukawa, Mitsuo; Masuyama, Yukiei; Kinoshita, Shoji; Takagi, Yukio; Gocho, Tomohiro; Goto, Fumio; Ishii, Akio; Ogawa, Tetsuo; Hasegawa, Yoshun; Hironaka, Keitaro; and Ogoshi, Yasuhiro, 5,546,123, Cl. 348-119.000.

Ishii, Seiji: *See*—
Otsuki, Toshiaki; Kozai, Haruhiko; and Ishii, Seiji, 5,545,959, Cl. 318-568.150.

Ishii, Takashi; Watanabe, Tamio; and Nagano, Toru, to Yazaki Corporation. Multi-pole connector. 5,545,053, Cl. 439-364.000.

Ishijima, Zenzo; Ichikawa, Jun-ichi; Sasaki, Shuji; Shikata, Hideo; Urata, Hideo; Kawase, Shoji; and Ueda, Jun-ichi, to Hitachi Powdered Metals Co., Ltd.; and Honda Giken Kogyo Kabushiki Kaisha. Wear-resistant sintered aluminum alloy and method for producing the same. 5,545,487, Cl. 428-548.000.

Ishikawa Gasket Co., Ltd.: *See*—
Aoki, Katsuji, 5,544,900, Cl. 277-235.00B.

Ishikawa, Hiroshi: *See*—
Suzuki, Takahisa; Iritani, Kunio; Ishikawa, Hiroshi; and Isaji, Akira, 5,544,493, Cl. 62-133.000.

Ishikawa, Kazumasa, to Olympus Optical Co., Ltd. Compact apparatus having bidirectional motion for loading/unloading an information recording medium. 5,546,370, Cl. 369-77.200.

Ishikawa, Kimihiro: *See*—
Morimoto, Katsushi; Ohnari, Masatoshi; Nawamaki, Tsutomu; Watanabe, Shigeomi; and Ishikawa, Kimihiro, 5,545,608, Cl. 504-282.000.

Ishikawa, Shigeki, to International Business Machines Corporation. Autonomous mobile machine, and system and method for controlling a mobile machine. 5,545,960, Cl. 318-587.000.

Ishimaru, Kenji: *See*—
Ikeda, Yoshihiko; Yamane, Takeo; Kaji, Eiichi; and Ishimaru, Kenji, 5,545,759, Cl. 568-6.000.

Ishimaru, Yoshitaka, to Kanzaki Kokyukoki Mfg. Co., Ltd. Transmission for a working vehicle. 5,544,547, Cl. 74-730.100.

Ishitsubo, Ryuichi: *See*—
Hosokawa, Toshihiro; Nakahara, Kiyoshi; Ishitsubo, Ryuichi; and Okuda, Toshiyuki, 5,545,023, Cl. 425-171.000.

Ish-Shalom, Carmel: *See*—
Chen, Jian; Papanu, James S.; Mak, Steve S. Y.; Ish-Shalom, Carmel; Hsieh, Peter; Lau, Wesley G.; Rhoades, Charles S.; Shieh, Brian; Latchford, Ian S.; Williams, Karen A.; and Yu-Wang, Victoria, 5,545,289, Cl. 156-643.100.

Isoda, Satoru; and Hanazato, Yoshio, to Mitsubishi Denki Kabushiki Kaisha. Information processing device capable optically writing synapse strength matrix. 5,546,504, Cl. 395-25.000.

Isomi, Takenori, to Pearl Musical Instrument Company. Intergrated mounting system for drums. 5,544,561, Cl. 84-421.000.

Israelsen, L. Douglas. Cranial implant hairpiece retainer system. 5,545,224, Cl. 623-15.000.

Isshiki, Masanori: *See*—
Goto, Narito; Isshiki, Masanori; Sasaki, Kunitsuna; Sekiguchi, Nobuyuki; Takeda, Katsuyuki; and Takahashi, Hideki, 5,545,462, Cl. 428-141.000.

Ito, Hideo: *See*—
Hirota, Masaya; Ideyama, Hiroyuki; Okatani, Toru; Yamashita, Toshiyuki; Ito, Hideo; and Kawabuchi, Yoichi, 5,546,166, Cl. 355-209.000.
Yabe, Hisao; Iida, Yoshihiro; Suzuki, Akira; Ito, Hideo; Tashiro, Yoshio; Yamazaki, Minoru; Tamada, Osamu; and Nakajima, Shigeru, 5,545,121, Cl. 600-121.000.

Ito, Norio: *See*—
Okeya, Makoto; Ueki, Yasunori; and Ito, Norio, 5,545,983, Cl. 324-207.120.

Ito, Shogo: *See*—
Eaton, Eric T.; Evoy, Ronald H.; Hayes, David J.; Willard, David F.; Ito, Shogo; and Yamao, Yasushi, 5,546,394, Cl. 370-79.000.

Ito, Shuji: *See*—
Konno, Masaki; and Ito, Shuji, 5,546,270, Cl. 361-680.000.

Itoh, Hiroyuki; Suzuki, Masanori; Kamiya, Akira; and Furuyama, Takeki, to Japan Synthetic Rubber Co. Ltd. Flame-retardant resin composition. 5,545,715, Cl. 564-409.000.

Itoh, Katsumi; Okonogi, Kenji; and Tasaka, Akihiro, to Takeda Chemical Industries, Ltd. Triazole and imidazole compounds and their use as antifungal therapeutic agents. 5,545,652, Cl. 514-383.000.

Itoh, Masami: *See*—
Kurii, Jun; Nomura, Noboru; Itoh, Masami; Ohira, Kozo; Tsumadori, Masaki; Matsunaga, Akira; Kimura, Akio; and Suzue, Shigetoshi, 5,545,349, Cl. 252-186.380.

Itoh, Shinichi: *See*—
Ohno, Tadayoshi; Yamaguchi, Takashi; and Itoh, Shinichi, 5,546,117, Cl. 347-224.000.

Itoh, Yasuo: *See*—
Tanaka, Tomoharu; Momodomi, Masaki; Kato, Hideo; Nakai, Hiroto; Tanaka, Yoshiyuki; Shirota, Riichiro; Aritome, Seiichi; Itoh, Yasuo; Iwata, Yoshihisa; Nakamura, Hiroshi; Odaira, Hideko; Okamoto, Yutaka; Asano, Masamichi; and Tokushige, Kaoru, 5,546,351, Cl. 365-230.060.

ITT Corporation: *See*—
Bethurum, Gary C., 5,546,278, Cl. 361-737.000.

IUL, S.A.: *See*—
Lleonart Aliberas, Miguel, 5,545,561, Cl. 439-287.300.

IVAC Corporation: *See*—
Conero, Ronald S.; and O'Leary, Stephen H., 5,545,140, Cl. 604-154.000.

Ivars, Roland: *See*—
Collin, Per; Deleryd, Roland; Ivars, Roland; Lundqvist, Fredrik; and Stolzenberg, Norman R., 5,546,435, Cl. 376-253.000.

Iwaki, Yoshiko: *See*—
Asano, Eiji; and Iwaki, Yoshiko, 5,545,486, Cl. 428-542.800.

Iwama, Akifumi; Iseki, Masahiro; and Nakagawa, Azusa, to Sanyo Electric Co., Inc. Vapor phase sensor. 5,545,299, Cl. 204-412.000.

Iwami, Akiko, to Mitsubishi Denki Kabushiki Kaisha. Handsfree communication apparatus. 5,546,458, Cl. 379-390.000.

Iwanaga, Hidenori: *See*—
Doi, Koji; Tsuji, Yasuyuki; Yokokawa, Shuubo; Takahashi, Kunitomo; Hirose, Youji; Ueno, Hiroshi; Takeuchi, Youichi; Yamada, Koutara; and Iwanaga, Hidenori, 5,545,840, Cl. 118-658.000.

Iwanari, Shunichi: *See*—
Agata, Masashi; Matsuyama, Kazuhiro; Akamatsu, Hironori; Kikukawa, Hirohito; Sawada, Akihiro; and Iwanari, Shunichi, 5,546,346, Cl. 365-203.000.
Yamada, Toshio; Shibayama, Akinori; Iwanari, Shunichi; and Fujiwara, Atsushi, 5,545,977, Cl. 323-313.000.

Iwao, Kyozo: *See*—
Yamaguchi, Shizuka; Kojima, Yoshitaka; Ogawa, Sai; Arikawa, Hideyuki; Haginoya, Mitsuo; Wada, Yukihiko; and Iwao, Kyozo, 5,545,484, Cl. 428-408.000.

Iwashita, Kanau: *See*—
Toyoda, Hidetoshi; Tsuchida, Tetsuo; and Iwashita, Kanau, 5,544,946, Cl. 303-9.640.

Iwata, Hiroshi: *See*—
Fujita, Norio; Iwata, Hiroshi; and Fujiwara, Haruyoshi, 5,545,295, Cl. 162-358.100.

Iwata, Noriya; Matuura, Kenji; and Murata, Shigeki, to Matsushita Electric Industrial Co., Ltd. Tape transporting apparatus including a tape guide with variable restricting force regions, each used depending upon the amount of tape tension. 5,546,259, Cl. 360-130.220.

Iwata, Toshiro; Nagata, Iwami; Hatakeyama, Akira; and Nishigai, Kazuhisa, to Bridgestone Corporation. Screw for double-shaft extruding device and double-shaft extruding device. 5,545,024, Cl. 425-204.000.

Iwata, Yoshihisa: *See*—
Tanaka, Tomoharu; Momodomi, Masaki; Kato, Hideo; Nakai, Hiroto; Tanaka, Yoshiyuki; Shirota, Riichiro; Aritome, Seiichi; Itoh, Yasuo; Iwata, Yoshihisa; Nakamura, Hiroshi; Odaira, Hideko; Okamoto, Yutaka; Asano, Masamichi; and Tokushige, Kaoru, 5,546,351, Cl. 365-230.060.

Izawa, Junji: *See*—
Keck, David W.; Nagai, Kenichi; Yatsurugi, Yoshifumi; Morihara, Hiroshi; and Izawa, Junji, 5,545,387, Cl. 423-348.000.

Izukawa, Tsukuru: *See*—
Tsutsui, Tomoki; Izukawa, Tsukuru; Ohkubo, Kazuhiko; and Sakaki, Yoshitsugu, 5,545,712, Cl. 528-408.000.

Izumi, Hiroshi, to Alps Electric Co., Ltd. Method of controlling the printing condition of a thermal print head. 5,546,113, Cl. 347-195.000.

Izumi, Hiroyuki: *See*—
Nemoto, Ichiro; Izumi, Hiroyuki; Fukui, Nobuyuki; and Takahashi, Kunioki, 5,546,149, Cl. 354-265.000.

J. E. Thomas Specialties Limited: *See*—
Lynes, Kenneth W.; and Nepovim, Zdenek, 5,545,847, Cl. 174-52.100.

Jack, Michael D., to Santa Barbara Research Center. Optically-based chemical detection system. 5,545,897, Cl. 250-339.130.

Jacko, Joseph G., to Jaggo, Inc. Athletic shoe cover and ankle support combination. 5,544,430, Cl. 36-7.10R.

Jacks, David C., to Cooper Industries, Inc. Portable electric desoldering tool. 5,544,803, Cl. 228-20.500.

Jackson, Richard A.: *See*—
Contestabile, Kevin D.; and Jackson, Richard A., 5,545,093, Cl. 473-36.000.

Jackson, Robert T.: *See*—
Bland, Patrick M.; Jackson, Robert T.; Joshi, Jayesh; and Kardach, James, 5,546,568, Cl. 395-550.000.

Jacobs, Patrick T. Abrasive blasting system with waste water recycling. 5,545,074, Cl. 451-40.000.

Jacobson, Howard W.: *See*—
Bergmann, Oswald R.; Chen, Carl; and Jacobson, Howard W., 5,545,250, Cl. 75-252.000.

Jacobson, Kenneth A.; and Stiles, Gary, to United States of America, Health and Human Services; and Duke University. Irreversible inhibitors of adenosine receptors. 5,545,627, Cl. 514-46.000.

Jacobson, Michael B.; Voigt, Douglas L.; Nelson, Marvin D.; and Burkes, Theresa A., to Hewlett-Packard Company. Memory system with hierarchic disk array and memory map store for persistent storage of virtual mapping information. 5,546,558, Cl. 395-441.000.

Jacobson, Peter; Kroiss, Daniel; and Ostroff, Alan, to Ela Medical, S.A. Implantable defibrillator/pacer using negative voltage supplies. 5,545,181, Cl. 607-4.000.

Jaeger, Christian: *See*—
Clauzel, Yves; and Jaeger, Christian, 5,546,396, Cl. 370-85.100.

Jäger, Kurt: *See*—
Reinemuth, Otto; and Jäger, Kurt, 5,544,871, Cl. 267-293.000.

Jaggo, Inc.: *See*—
Jacko, Joseph G., 5,544,430, Cl. 36-7.10R.

Jagielinski, Tomasz, to Eastman Kodak Company. Method and apparatus for detecting and identifying coded magnetic patterns on genuine articles such as bank notes. 5,545,885, Cl. 235-449.000.

Jailor, John; Frederick, William H.; Umbach, Steven R.; Graham, Scott R.; Roberts, Kenneth L.; and Metzger, Eric R., to Bissell Inc. Filter bag mounting assembly for a vacuum cleaner. 5,544,385, Cl. 15-350.000.

Jain, Abhinandan; and Rodriguez, Guillermo, to United States of America, National Aeronautics and Space Administration. Controlling flexible robot arms using high speed dynamics process. 5,546,508, Cl. 395-95.000.

Jakob, Martin; and Matz, Volker, to Hoechst Aktiengesellschaft. Emulsion adhesives. 5,545,684, Cl. 524-354.000.

James River Corporation of Virginia: *See*—
Aloisi, Robert J.; Livingston, Arthur; and Huss, Brian S., 5,544,808, Cl. 229-400.000.

Jamiolkowski, Dennis D.: *See*—
Le, Thu A.; Yi, Sung S.; Zwaskis, William; Pedlick, Jack S.; Luscombe, Brian H.; Jamiolkowski, Dennis D.; Di Giovanni, John; Seritella, Keith A.; Steckel, Mark G.; and Harwin, Steven F., 5,545,180, Cl. 606-232.000.

Jamnicky, Blanka: *See*—
Dumić, Miljenko; Filić, Darko; Vinković, Mladen; Jamnicky, Blanka; and Etkinja, Mirela, 5,545,659, Cl. 514-450.000.

Jang, Jaeduk, to Hyundai Motor Company. Shift control valve of a hydraulic control system for automatic transmission. 5,545,099, Cl. 475-135.000.

Jang, Wen-Yueh, to Winbond Electronics Corp. ESD proctection device. 5,545,910, Cl. 257-362.000.

Jansohn, Peter; Marting, Tino-Martin; and Sattelmayer, Thomas, to ABB Research Ltd. Method of operating a firing installation. 5,545,032, Cl. 431-9.000.

Janson, Wilbert F., Jr., to Eastman Kodak Company. Deployable support for film threading in camera. 5,546,148, Cl. 354-203.000.

Japan Metal Gasket Co., Ltd.: *See*—
Ueta, Kosaku, 5,544,899, Cl. 277-235.00B.

Japan Power Fastening Co. Ltd.: *See*—
Dohi, Yuji, 5,544,746, Cl. 206-346.000.

Japan Synthetic Rubber Co. Ltd.: *See*—
Itoh, Hiroyuki; Suzuki, Masanori; Kamiya, Akira; and Furuyama, Takeki, 5,545,715, Cl. 564-409.000.

Japan Tobacco Inc.: *See*—
Ogawa, Takashi; Yoshimoto, Kazuo; Uchiyama, Kensuke; Ibe, Harushige; Arai, Yoshiharu; Shiraishi, Taketoshi; and Gotoh, Yoshinori, 5,544,995, Cl. 414-219.000.

Jaskie, James E.: *See*—
Wiemann, David A.; Dworsky, Lawrence N.; Jaskie, James E.; Kane, Robert C.; and Moyer, Curtis D., 5,545,946, Cl. 313-497.000.

Jasper, William C., II; Middleton, Cheryl S.; and Prusinski, Ronald G., to Wirekraft Industries, Inc. Defrost heater with spiral vent. 5,545,878, Cl. 219-541.000.

Jaster, Heinz; and Frey, Gregg W., to General Electric Company. Method and apparatus for dissipating heat from a transducer element array of an ultrasound probe. 5,545,942, Cl. 310-341.000.

Javanifard, Johnny: *See*—
Tedrow, Kerry D.; Keeney, Stephen N.; Fazio, Albert; Atwood, Gregory E.; Javanifard, Johnny; and Wojciechowski, Kenneth, 5,546,042, Cl. 327-538.000.

Jay, Pierre: *See*—
Commandeur, Raymond; Berger, Noelle; and Jay, Pierre, 5,545,355, Cl. 252-570.000.

JDS Fitel Inc.: *See*—
Garel-Jones, Philip M.; and Cutts, Timothy P., 5,546,180, Cl. 356-73.100.

Jedlicka, Josef E.: *See*—
Quinn, Kraig A.; Jedlicka, Josef E.; and Ormond, Brian T., 5,545,913, Cl. 257-443.000.

Jee, Kyung-ha: *See*—
Lee, Young-sik; Jo, Hyun-min; Jee, Kyung-ha; and Choi, Nak-choon, 5,546,300, Cl. 363-132.000.

Jeffries, Ralph E.: *See*—
O'Connor, Kurt F.; Hoff, James P.; Frasier, Donald J.; Peeler, Ralph E.; Mueller-Largent, Heidi; Trees, Floyd F.; Whetstone, James R.; Lane, John H.; and Jeffries, Ralph E., 5,545,003, Cl. 415-115.000.

Jefson, Martin R.: *See*—
Hecker, Scott J.; Jefson, Martin R.; and McFarland, James W., 5,545,624, Cl. 514-30.000.

Jenkins, George C.: *See*—
Koehler, Paul C.; Whitlock, Michael B.; Noble, Lawrence J.; and Jenkins, George C., 5,545,323, Cl. 210-493.200.

Jenkins, Leslie C.: *See*—
Ichioka, Yoshikazu; Jenkins, Leslie C.; Kimura, Shinichi; Polastre, Robert J.; Troutman, Ronald R.; and Wismieff, Robert L., 5,546,013, Cl. 324-770.000.

Jenkins, Stuart E.: *See*—
Schmidt, Karl M.; Schmidt, Michelle R.; Cole, George S.; Jenkins, Stuart E.; and Edwards, Harry W., 5,545,463, Cl. 428-178.000.

Jenn, Chin S. Arrow storing means and aiming means for a crossbow. 5,544,641, Cl. 124-25.000.

Jenner, Earle H.: *See*—
Brockmeyer, Roger L.; Dievendorff, Richard; House, Daniel E.; Jenner, Earle H.; LaBelle, Margaret K.; Mall, Michael G.; and Silea, Stuart L., 5,546,582, Cl. 395-650.000.

Jennings, Gordon. Protection and cleaning device for a disk drive. 5,546,257, Cl. 360-128.000.

Jensen, Gary L., to Pioneer Hi-Bred International, Inc. Inbred maize line PHBG4. 5,545,809, Cl. 800-200.000.

Jeon, Hwa-jin: *See*—
Lee, Rae-hwan; Jeon, Hwa-jin; Choi, Kwang-sik; Park, Hong-soon; Yun, Sang-hwa; Song, Kwang-lyeol; Choi, Hae-min; Lee, Deok-hyun; Song, Bong-hun; Park, Dong-jin; and Byeon, Seong-jin, 5,546,368, Cl. 369-47.000.

Jeon, Ik B., to Goldstar Co., Ltd. Apparatus of a playing practice for electronic musical instrument and control method thereof. 5,544,562, Cl. 84-470.00R.

Jerger, Robert J.: *See*—
Davey, Christopher K.; Dickison, Donald F.; and Jerger, Robert J., 5,544,481, Cl. 60-274.000.

Jervis B. Webb Company: *See*—
Shaver, Robert, 5,544,733, Cl. 198-408.000.

Jessup, James L., to Kimberly-Clark Corporation. Disposable absorbent garment and a continuous, selectively elasticized band joined there to. 5,545,158, Cl. 604-385.200.

Jevne, Allan H.: *See*—
Keogh, James R.; Hobot, Christopher M.; Eaton, John W.; Jevne, Allan H.; and Bergan, Matthew A., 5,545,213, Cl. 623-1.000.

Jewett, Warren; and Ebeling, Frederick A., to IEP Group, Inc. Metered dose inhalator. 5,544,647, Cl. 128-200.230.

Jilk, Larry M.: *See*—
Canfield, Thomas F.; Mollenkopf, Lloyd C.; Rein, Russell J.; and Jilk, Larry M., 5,544,593, Cl. 108-50.000.

Jo, Hyun-min: *See*—
Lee, Young-sik; Jo, Hyun-min; Jee, Kyung-ha; and Choi, Nak-choon, 5,546,300, Cl. 363-132.000.

Jochle, Wolfgang: *See*—
Trigg, Timothy E.; Souires, Edward L.; and Jochle, Wolfgang, 5,545,408, Cl. 424-422.000.

VOL 1189 ISS 2 AG 13 1996 UMI

Joël, Richard; Nicolas, Robert; Claude, Roussel; and Fabrice, Chopard, to Vicarb. Plate heat exchanger. 5,544,703, Cl. 165-167.000.

Joerns Healthcare Inc.: *See—*
Urness, Randall J.; and Sheehan, John A., 5,544,375, Cl. 5-611.000.

Johnen, Rolf: *See—*
Heine, Steffen; Schumacher, Heiko; and Johnen, Rolf, 5,544,895, Cl. 277-9.500.

Johns, Eric: *See—*
Cooley, David M.; DiGiovanni, Joseph J.; Kaewell, John D.; Kurtz, Scott D.; Lemmo, Mark A.; Regensburg, Michael W.; Vessal, David; and Johns, Eric, 5,546,383, Cl. 370-50.000.

Johns, Rolf M.: *See—*
Chen, Cheng-Chi; Lloyd, Ben A.; Mumford, Neal A.; and Johns, Rolf M., 5,545,278, Cl. 156-175.000.

Johnson, Douglas R., to Texas Instrument Incorporated. Current generator for integrated circuits and method of construction. 5,545,973, Cl. 323-315.000.

Johnson, Edward M.; and Bergmann, Andrew D., to City University of New York, Mt. Sinai School of Medicine of the. Cloning and expression of pur protein. 5,545,551, Cl. 435-252.300.

Johnson, Gregory R.: *See—*
Caswell, Ty J.; Davis, Jeffrey P.; Johnson, Gregory R.; Reinarts, Timothy J.; and Sun, Ting, 5,546,448, Cl. 379-142.000.

Johnson, Howard M.; Pontzer, Carol H.; and Griggs, Nathan D., to University of Florida. Superantigen agonist and antagonist peptides. 5,545,716, Cl. 530-324.000.

Johnson, Kirk R.: *See—*
Bernal, Brian A.; Fischette, Robert G.; Johnson, Kirk R.; and Marman, Douglas H., 5,546,074, Cl. 340-628.000.

Johnson, Lawrence E.: *See—*
Andrews, G. Wayne; Webber, Steven H.; Kelly, James P.; Johnson, Lawrence E.; Stern, Jerry A.; Milano, Vincent J., Jr.; and Davis, Charles R., 5,546,452, Cl. 379-219.000.

Johnson, Nordahl K. Waist elastic applicator for diaper or similar article. 5,545,285, Cl. 156-496.000.

Johnson, Ronald E.: *See—*
Bocko, Peter L.; Eid, Bernard A.; Johnson, Ronald E.; Lock, William E.; Shoup, Robert D.; and Themont, Jean-Pierre, 5,544,582, Cl. 101-211.000.

Johnson, Steven A.; and Bodden, Christian P., to Walt Disney Company, The. Special effects spark generating system. 5,545,092, Cl. 472-66.000.

Johnson, Thomas R.: *See—*
Danks, John K.; Mazzola, Richard V.; and Johnson, Thomas R., 5,545,150, Cl. 604-256.000.

Johnson, William M., to Charles Stark Draper Laboratory, Inc., The. Ballistic missile remote targeting system and method. 5,544,843, Cl. 244-3.110.

Johnson, William M.; and Musoff, Howard, to Charles Stark Draper Laboratory, Inc., The. Apparatus and method for autonomous satellite attitude sensing. 5,546,309, Cl. 364-434.000.

Johnston, Kevin R., to Adobe Systems Incorporated. Method of displaying multiple sets of information in the same area of a computer screen. 5,546,528, Cl. 395-159.000.

Jokinen, Hannu, to Spectra-Physics Visiontech OY. Method for measuring wear in the lining of a container provided with a pivoted axle and an opening, and a container. 5,546,176, Cl. 356-5.100.

Joly, Ludovicus: *See—*
Tavernier, Serge; Ruttens, Frank; Verbecken, André; Mampaey, Jozef; and Joly, Ludovicus, 5,545,501, Cl. 430-106.600.

Jonas, William P.: *See—*
Hill, Timothy L.; Allen, Brian J.; Jonas, William P.; and Kennedy, James P., 5,546,282, Cl. 361-796.000.

Jones, Andrew R.: *See—*
Drakesmith, Frederick G.; and Jones, Andrew R., 5,545,390, Cl. 423-499.100.

Jones, Daniel A.; and Suttle, James P., to Progressive Games, Inc. Apparatus for progressive jackpot gaming. 5,544,893, Cl. 273-309.000.

Jones, Eric R.: *See—*
Thompson, Richard B.; and Jones, Eric R., 5,545,517, Cl. 435-4.000.

Jones, Gordon H.: *See—*
Eppstein, Deborah A.; Felgner, Philip L.; Gadek, Thomas R.; Jones, Gordon H.; and Roman, Richard B., 5,545,412, Cl. 424-450.000.

Jones, Kyle B.; Lehnert, Robert A.; McInnes, Ian D.; Quinn, Robert D.; Sisley, Steven E.; and Temus, Charles J., to Pacific Nuclear Systems, Inc. Transportation and storage cask for spent nuclear fuels. 5,546,436, Cl. 376-272.000.

Jones, Malcolm N.: *See—*
Vadgama, Pankaj M.; Rosenberg, Mark F.; and Jones, Malcolm N., 5,545,519, Cl. 435-4.000.

Jones, Richard R.; and Wilson, William N., to Atlantic Richfield Company. Method for injecting fluid into a wellbore. 5,544,705, Cl. 166-250.400.

Jones, Russell W., to Cincinnati Milacron Inc. Reversibly rotatable chuck with internal cam for shifting work axis. 5,544,556, Cl. 82-1.110.

Jones, Scott L.: *See—*
Dennison, Everett; Nass, Edwin L.; Duffy, Timothy J.; Pauley, Gregory T.; Jones, Scott L.; and Shale, Deborah J., 5,546,445, Cl. 379-60.000.

Jones, Seth A.: *See—*
Groshans, Joseph R.; Spooner, Jeffrey; and Jones, Seth A., 5,544,710, Cl. 173-176.000.

Joshi, Jayesh: *See—*
Bland, Patrick M.; Jackson, Robert T.; Joshi, Jayesh; and Kardach, James, 5,546,568, Cl. 395-550.000.

Joshi, Mahendra L.; Broadway, Lee; and Mohr, Patrick J., to Combustion Tec, Inc. Method and apparatus for injecting fuel and oxidant into a combustion burner. 5,545,031, Cl. 431-8.000.

Josten, Jeffrey W.; Mukai, Tina; Narang, Inderpal S.; and Teng, James Z., to International Business Machines Corporation. Page refreshing procedure using two locking granularities to ensure cache coherency in a multisystem database processing environment having a high-speed shared electronic store. 5,546,579, Cl. 395-600.000.

Joubert, Cécile: *See—*
Nicolas, Christophe; Loiseaux, Brigitte; Joubert, Cécile; and Huignard, Jean-Pierre, 5,546,200, Cl. 359-15.000.

Joubettou, Hiroyasu: *See—*
Matsumoto, Hiroshi; Wakai, Haruo; and Joubettou, Hiroyasu, 5,545,576, Cl. 437-41.000.

Joyce, Robert; Rosler, Jeffrey; Ehrlich, Jason; and Brouillet, Jean-Luc, to Aspect Telecommunications. Method for accessing real-time data in an antomatic call distribution system. 5,546,455, Cl. 379-265.000.

Ju, Redford F.: *See—*
Sachinvala, Navzer D.; Ju, Redford F.; and Litt, Morton H., 5,545,732, Cl. 536-120.000.

Juki Corporation: *See—*
Baba, Yasushi, 5,544,601, Cl. 112-261.000.

Jung, Dieter: *See—*
Raehse, Wilfried; Beck, Wilhelm; Jung, Dieter; and Sonnemann, Dieter, 5,544,427, Cl. 34-372.000.

Jurica, Joseph J.: *See—*
Walworth, Tom M., Jr.; Jurica, Joseph J.; Weilemann, Donald E.; and Turner, Joseph, 5,544,932, Cl. 296-183.000.

JWI Ltd.: *See—*
Barrett, Rex, 5,544,678, Cl. 139-383.00A.

Jye, Cherng B. Power gas tank cover. 5,544,780, Cl. 220-211.000.

K-2 Corporation: *See—*
Fezio, Louis J., 5,544,908, Cl. 280-610.000.

K & J Electronics, Inc.: *See—*
Kim, Jae H., 5,544,536, Cl. 73-866.500.

Kabel Rheydt Aktiengesellschaft: *See—*
Lysson, Hans-Jürgen; Lisse, Frank; Hahn, Manuela; Leppert, Hans-Detlef; and Darbon, Philippe, 5,545,246, Cl. 65-435.000.

Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo: *See—*
Iritani, Satoshi; Mitsuhashi, Masakazu; Chaen, Hiroto; and Miyake, Toshio, 5,545,418, Cl. 426-53.000.
Sugimoto, Toshiyuki; Kubota, Michio; and Sakia, Shuzo, 5,545,587, Cl. 435-97.000.

Kabushiki Kaisha Kobe Seiko Sho: *See—*
Yashiki, Takashi; Wada, Yasunori; Nishimoto, Hidenori; Terada, Yoshinori; Nakayama, Takenori; and Abumiya, Tadashi, 5,545,268, Cl. 148-518.000.

Kabushiki Kaisha Sangi: *See—*
Sakuma, Shuji; Atsumi, Kiminori; Inose, Akira; and Koyama, Hideo, 5,545,791, Cl. 585-639.000.

Kabushiki Kaisha T an T: *See—*
Takano, Tsunesuke; and Sinzawa, Kouichi, 5,545,862, Cl. 200-16.00R.

Kabushiki Kaisha Takehara Kikai Kenkyusho: *See—*
Takehara, Katsuomi, 5,544,397, Cl. 28-263.000.

Kabushiki Kaisha Topcon: *See—*
Kobayashi, Katsuhiko, 5,546,142, Cl. 351-237.000.

Kabushiki Kaisha Toshiba: *See—*
Goto, Narito; Isshiki, Masanori; Sasaki, Kunitsuna; Sekiguchi, Nobuyuki; Takeda, Katsuyuki; and Takahashi, Hideki, 5,545,462, Cl. 428-141.000.
Kohyama, Yusuke; and Sugiura, Souichi, 5,545,926, Cl. 257-755.000.
Matsushita, Toyohiko, 5,546,556, Cl. 395-427.000.
Miura, Motohiro, 5,546,001, Cl. 324-322.000.
Mizushima, Koichi; Yoshida, Jiro; and Kubo, Koh-ichi, 5,545,612, Cl. 505-239.000.
Nakamoto, Masayuki, 5,545,980, Cl. 324-96.000.
Nakamura, Nobutaka, 5,546,567, Cl. 395-550.000.
Nakatani, Yoshinori; Kanebako, Toyomitsu; Aoki, Kunio; and Asahina, Hiroshi, 5,546,440, Cl. 378-98.200.
Nukui, Tadashi; and Tanabe, Ken, 5,545,979, Cl. 323-313.000.
Ogura, Hidemitsu; and Kanzaki, Koichi, 5,545,906, Cl. 257-315.000.
Ohno, Tadayoshi; Yamaguchi, Takashi; and Itoh, Shinichi, 5,546,117, Cl. 347-224.000.
Okumura, Eisuke; and Tsuno, Katsuhiko, 5,546,185, Cl. 356-345.000.
Shimoda, Kenji, 5,546,399, Cl. 370-94.100.
Tanaka, Tomoharu; Momodomi, Masaki; Kato, Hideo; Nakai, Hiroto; Tanaka, Yoshiyuki; Shirota, Riichiro; Aritome, Seiichi; Itoh, Yasuo; Iwata, Yoshihisa; Nakamura, Hiroshi; Odaira, Hideko; Okamoto, Yutaka; Asano, Masamichi; and Tokushige, Kaoru, 5,546,351, Cl. 365-230.060.
Wakamatsu, Hideki, 5,545,045, Cl. 439-70.000.
Watanabe, Yohji; and DeBrosse, John K., 5,546,349, Cl. 365-230.040.
Wazumi, Seiichiro, 5,546,594, Cl. 395-800.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Fukanuma, Tetsuhiko; Goto, Kunifumi; Yamamoto, Shinya; and Iguchi, Masao, 5,545,020, Cl. 418-55.400.
Onoue, Keiji; Saito, Yukio; and Imai, Takashi, 5,544,389, Cl. 19-157.000.

Kabushiki Kaisya Advance: *See—*
Meguro, Yasuo; and Yabu, Hiroshi, 5,545,190, Cl. 607-96.000.

Kaemmerer, William F.: *See—*

Olson, Walter H.; and Kaemmerer, William F., 5,545,186, Cl. 607-14.000.

Kaewell, John D.: *See—*
Cooley, David M.; DiGiovanni, Joseph J.; Kaewell, John D.; Kurtz, Scott D.; Lemmo, Mark A.; Regensburg, Michael W.; Vessal, David; and Johns, Eric, 5,546,383, Cl. 370-50.000.

Kai, Junichi: *See—*
Satoh, Takamasa; Yasuda, Hiroshi; Kai, Junichi; Oae, Yoshihisa; Nishino, Hisayasu; Sakamoto, Kiichi; Yabara, Hidefumi; Seto, Isamu; Takigawa, Masami; Yamada, Akio; Arai, Soichiro; Abe, Tomohiko; Kiuchi, Takashi; and Miyazawa, Kenichi, 5,546,319, Cl. 364-488.000.

Kai, Shoichiro: *See—*
Nishida, Seiji; and Kai, Shoichiro, 5,544,981, Cl. 405-259.600.

Kainaga, Masahiro: *See—*
Kyushima, Ichiro; and Kainaga, Masahiro, 5,546,559, Cl. 395-460.000.

Kaiser, Bernd: *See—*
Höppner, Klaus; and Kaiser, Bernd, 5,544,544, Cl. 74-526.000.

Kaiya, Nobuo; and Kobayashi, Hideki, to Dow Corning Silicone Co., Ltd. Silicone compositions for the formation of cured release coatings. 5,545,682, Cl. 524-265.000.

Kaiya, Nobuo; Kobayashi, Hideki; and Nishiumi, Wataru, to Dow Corning Toray Silicone Co., LTD. Silicone compositions for the formation of cured release coatings. 5,545,831, Cl. 524-731.000.

Kaja, Suryanarayana: *See—*
Farooq, Mukta S.; Kaja, Suryanarayana; Perfecto, Eric D.; and White, George E., 5,545,927, Cl. 257-762.000.

Kaji, Eiichi: *See—*
Ikeda, Yoshihiko; Yamane, Takeo; Kaji, Eiichi; and Ishimaru, Kenji, 5,545,759, Cl. 568-6.000.

Kajifusa, Noriyuki: *See—*
Ohgai, Hideo; Momota, Hiroshi; Kumakura, Takeshi; Kajifusa, Noriyuki; Kitazawa, Toshiki; Oshiden, Kazuhide; and Matsushiro, Aizo, 5,545,564, Cl. 435-320.100.

Kajihara, Kazuhisa; Kawamura, Motoshi; and Yanai, Kunio, to Koyo Seiko Co., Ltd. Bearing seal assembly with specially dimensioned sealing lip. 5,544,963, Cl. 384-482.000.

Kaku, Mureo: *See—*
Hung, Ming-Hong; Kaku, Mureo; and Logothetis, Anestis L., 5,545,693, Cl. 525-187.000.

Kalafatis, Stavros, to Intel Corporation. Dual edge adjusting digital phase-locked loop having one-half reference clock jitter. 5,546,434, Cl. 375-376.000.

Kalidon Technology, Inc.: *See—*
Foerster, Roy P., 5,546,076, Cl. 340-690.000.

Kalkman, Jesse: *See—*
Snyder, Ronald P.; and Kalkman, Jesse, 5,544,927, Cl. 296-97.900.

Kalloy Industrial Co., Ltd.: *See—*
Chen, Chao-Hu, 5,544,379, Cl. 7-138.000.

Kalman, Katalin: *See—*
Dudits, Dénes; Paulovics, Katalin; Kalman, Katalin; Györgyey, János; Nagy, Ferenc; Bako, László; Horvath, Gábor; Eckes, Peter; and Donn, Günter, 5,545,819, Cl. 800-205.000.

Kaluski, Jacob: *See—*
Fryklund, Linda; Hjertman, Birger; Gustavsson, Marie-Louise; Kaluski, Jacob; Levander, Gustav; Ljungquist, Olle; Ström, Anders; and Virding, Jonas, 5,545,144, Cl. 604-187.000.

Kamada, Kazunori: *See—*
Oishi, Tetsuya; Ozawa, Hiroshi; Karasawa, Minato; Inomata, Masamitsu; Mega, Izumi; Yamauchi, Atsuyoshi; Kamada, Kazunori; Nakahata, Shigeru; Sakamoto, Katsumi; Nakashima, Tatsunobu; Watanabe, Akito; Suzuki, Jin; Ohkawa, Kouhei; Furusawa, Satoshi; Ono, Hiroshi; and Sugazaki, Kazuo, 5,545,702, Cl. 525-509.000.

Kamata, Shinichi: *See—*
Hasebe, Hironobu; Kanayama, Takashi; and Kamata, Shinichi, 5,546,280, Cl. 361-752.000.

Kambayashi, Tomio: *See—*
Haruta, Youichi; Kambayashi, Tomio; Kato, Hitoshi; and Taguchi, Hiromu, 5,544,773, Cl. 216-13.000.

Kambin, Parviz, to Smith & Nephew Richards Inc. Offset bone bolt. 5,545,228, Cl. 623-17.000.

Kameo, Kazuya: *See—*
Sato, Fumie; Amano, Takehiro; Kameo, Kazuya; Tanami, Tohru; Mutoh, Masaru; Ono, Naoya; and Goto, Jun, 5,545,666, Cl. 514-530.000.

Kameyama, Shinji: *See—*
Hashizume, Masahiro; Taniguchi, Susumu; and Kameyama, Shinji, 5,546,174, Cl. 355-283.000.

Kamijyou, Masayasu: *See—*
Suzuki, Isao; Matsushima, Sunao; Kubota, Yoshikazu; and Kamijyou, Masayasu, 5,545,467, Cl. 428-211.000.

Kamiya, Akira: *See—*
Itoh, Hiroyuki; Suzuki, Masanori; Kamiya, Akira; and Furuyama, Takeki, 5,545,715, Cl. 564-409.000.

Kamo, Tomoichi: *See—*
Higashiyama, Kazutoshi; Doi, Toshiya; Ozawa, Takesi; Takeuchi, Seizi; Kamo, Tomoichi; Matsuda, Shinpei; and Yoshida, Yutaka, 5,545,610, Cl. 505-120.000.

Kamoda, Hitoshi; Maekawa, Tomohiro; Yui, Yasuji; Iima, Shin; and Bunya, Takashi, to Sony Corporation. Printer. 5,544,965, Cl. 400-582.000.

Kanaya, Koichi: *See—*
Hayashi, Masayuki; Mitekura, Yoshihiro; Kanaya, Koichi; Terao, Masato; Tagawa, Toshiya; Tomidokoro, Nobuaki; Kitayama, Masahiro; Kizaki, Osamu; Kawada, Yasuo; Nakahara, Kazuyuki; Harada, Tomofumi; and Hashimoto, Yasunari, 5,546,164, Cl. 355-204.000.

Kanayama, Takashi: *See—*
Hasebe, Hironobu; Kanayama, Takashi; and Kamata, Shinichi, 5,546,280, Cl. 361-752.000.

Kanazawa, Kunihiko: *See—*
Koizumi, Haruhiko; Sugimura, Akihisa; Tateoka, Kazuki; and Kanazawa, Kunihiko, 5,546,051, Cl. 330-297.000.

Kanbayashi, Hiroshi: *See—*
Komatsubara, Shigeo; Sueyoshi, Satoru; and Kanbayashi, Hiroshi, 5,546,218, Cl. 359-237.000.

Kane, Robert C.: *See—*
Wiemann, David A.; Dworsky, Lawrence N.; Jaskie, James E.; Kane, Robert C.; and Moyer, Curtis D., 5,545,946, Cl. 313-497.000.

Kanebako, Toyomitsu: *See—*
Nakatani, Yoshinori; Kanebako, Toyomitsu; Aoki, Kunio; and Asahina, Hiroshi, 5,546,440, Cl. 378-98.200.

Kaneda, Kiyoshi: *See—*
Fujii, Akira; and Kaneda, Kiyoshi, 5,545,870, Cl. 219-69.130.

Kaneishi, Akimasa; and Kono, Kenzi, to Mitsubishi Gas Chemical Company, Inc. Gas-feeding device for injection molding. 5,545,027, Cl. 425-546.000.

Kanekiyo, Hirokazu: *See—*
Hirosawa, Satoshi; and Kanekiyo, Hirokazu, 5,545,266, Cl. 148-302.000.

Kaneko, Toshimi: *See—*
Azuma, Takahiro; Tokuda, Hiromichi; and Kaneko, Toshimi, 5,546,058, Cl. 333-183.000.

Kanesawa, Yoshio: *See—*
Uehara, Yasuhiro; Kusumoto, Yasuhiro; Kanesawa, Yoshio; and Inoue, Toru, 5,546,175, Cl. 355-290.000.

Kaneyoshi, Masami; and Sakai, Shigeru, to Shin-Etsu Chemical Co., Ltd. Method for the preparation of globular particles of a rare earth oxide. 5,545,386, Cl. 423-263.000.

Kang, Raphael K. L.: *See—*
Nakatsu, Tetsuo; Green, Carter B.; Reitz, Gary A.; and Kang, Raphael K. L., 5,545,424, Cl. 426-536.000.

Kanjo, Junji: *See—*
Lipp, Ronald L.; Rodriguez, David; Toriya, Michio; Kanjo, Junji; and Otsuka, Shizuo, 5,546,077, Cl. 340-825.440.

Kanno, Hideo: *See—*
Imanari, Hitoshi; Kanno, Hideo; and Tanioka, Hiroshi, 5,546,233, Cl. 359-696.000.

Kano, Yoshinori; and Mohara, Masayuki, to Sanyo Electric Co., Ltd. Automatic electronic parts-mounting apparatus. 5,544,411, Cl. 29-740.000.

Kanschik-Conradsen, Andreas: *See—*
Papenfhus, Theodor; Kanschik-Conradsen, Andreas; and Pressler, Wilfried, 5,545,768, Cl. 568-938.000.

Kanto Kagaku Kabushiki Kaisha: *See—*
Kawaguchi, Megumi; Inoue, Hiromi; Sugiura, Atsushi; Suzuki, Kenji; and Fujii, Tsunenori, 5,545,747, Cl. 560-123.000.

Kantola, James C.: *See—*
Westberg, Tom; Wagner, Jeffrey F.; Kantola, James C.; and Zdanowicz, Lawrence E., 5,544,631, Cl. 123-193.500.

Kanzaki, Koichi: *See—*
Ogura, Hidemitsu; and Kanzaki, Koichi, 5,545,906, Cl. 257-315.000.

Kanzaki Kokyukoki Mfg. Co., Ltd.: *See—*
Ishimaru, Yoshitaka, 5,544,547, Cl. 74-730.100.

Kao Corporation: *See—*
Kurii, Jun; Nomura, Noboru; Itoh, Masami; Ohira, Kozo; Tsumadori, Masaki; Matsunaga, Akira; Kimura, Akio; and Suzue, Shigetoshi, 5,545,349, Cl. 252-186.380.

Kao, Oliver C. K., to United Microelectronics Corp. Method of and an apparatus for eliminating background noise in digital sound recording. 5,546,497, Cl. 395-2.350.

Kapany, Narinder S.: *See—*
Fling, John J.; Shaw, Herbert J.; Digonnet, Michel J.; and Kapany, Narinder S., 5,546,484, Cl. 385-16.000.

Kapec, Jeffrey: *See—*
Tanaka, Kazuna; and Kapec, Jeffrey, 5,545,460, Cl. 428-137.000.

Kaptron, Inc.: *See—*
Fling, John J.; Shaw, Herbert J.; Digonnet, Michel J.; and Kapany, Narinder S., 5,546,484, Cl. 385-16.000.

Karakelle, Mutlu: *See—*
Onwunaka, Theo O.; and Karakelle, Mutlu, 5,545,708, Cl. 528-76.000.

Karasawa, Katsumi, to Canon Kabushiki Kaisha. Error correction encoding and decoding system. 5,546,409, Cl. 371-37.400.

Karasawa, Minato: *See—*
Oishi, Tetsuya; Ozawa, Hiroshi; Karasawa, Minato; Inomata, Masamitsu; Mega, Izumi; Yamauchi, Atsuyoshi; Kamada, Kazunori; Nakahata, Shigeru; Sakamoto, Katsumi; Nakashima, Tatsunobu; Watanabe, Akito; Suzuki, Jin; Ohkawa, Kouhei; Furusawa, Satoshi; Ono, Hiroshi; and Sugazaki, Kazuo, 5,545,702, Cl. 525-509.000.

Kardach, James: *See—*
Bland, Patrick M.; Jackson, Robert T.; Joshi, Jayesh; and Kardach, James, 5,546,568, Cl. 395-550.000.

Kardos, Zsuzsanna B.: *See—*

Szántay, Csaba; Kardos, Zsuzsanna B.; Moldvai, István; Major, Eszter T.; Szántay, Csaba, Jr.; Mándi, Attila; Blaskó, Gábor; Simig, Gyula; Lax, Györgyi; Drabant, Sándor; Szállási, Tamas; Fekete, Márton; and Gigler, Gábor, 5,545,741, Cl. 546-276.700.

Kariniemi, Pekka, to Favorit Oy. Compost maker. 5,545,559, Cl. 435-290.100.

Käsbauer, Josef: *See*—
Pies, Michael; Käsbauer, Josef; and Fiege, Helmut, 5,545,779, Cl. 570-204.000.

Käser, Adolf; and Stingelin, Willy, to Ciba-Geigy Corporation. Disazo dyes consisting of two monoazo dyes contaning a 1-phenyl-5-amino pyrazole coupling component and connected by a bridge member. 5,545,723, Cl. 534-759.000.

Katakura, Takeo: *See*—
Wakabayashi, Sobei; Hashimukai, Tomoko; Katakura, Takeo; and Takano, Yoshihito, 5,545,212, Cl. 623-1.000.

Katayama, Akira: *See*—
Imura, Yoshio; Okano, Hiroshi; and Katayama, Akira, 5,546,159, Cl. 354-472.000.

Katayama, Katsuo; Komachi, Kyoichi; Mabuchi, Hiroshi; and Akimoto, Takeshi, to Sumitomo Metal Industries, Ltd.; and NEC Corporation. Microwave plasma processing system. 5,545,258, Cl. 118-723.0MP.

Kathke, Gregor: *See*—
Bucken, Rene; Consoir, Rudolf; Hermanns, Ferdinand-Josef; Kathke, Gregor; Schwalm, Hans-Werner; Schultz, Waldemar; Paulsen, Hedde-Christoph; and Kery, Michael, 5,544,829, Cl. 242-35.50R.

Kato, Heizaburo, to Sankyo Seisakusho Co. Mechanical pressing machine baving a load fluctuating torque cancelling device. 5,544,576, Cl. 100-35.000.

Kato, Heizaburo, to Sankyo Seisakusho Co. Mechanical pressing machine with means for cancelling load fluctuation torque. 5,544,577, Cl. 100-35.000.

Kato, Hideo: *See*—
Tanaka, Tomoharu; Momodomi, Masaki; Kato, Hideo; Nakai, Hiroto; Tanaka, Yoshiyuki; Shirota, Riichiro; Aritome, Seiichi; Itoh, Yasuo; Iwata, Yoshihisa; Nakamura, Hiroshi; Odaira, Hideko; Okamoto, Yutaka; Asano, Masamichi; and Tokushige, Kaoru, 5,546,351, Cl. 365-230.060.

Kato, Hiroaki: *See*—
Matsumoto, Seiji; Aoki, Takuya; Shimasaki, Yuichi; Hatcho, Seiji; Oketani, Toshikazu; Miyashita, Yukio; Saito, Akihisa; Komatsuda, Takashi; and Kato, Hiroaki, 5,544,482, Cl. 60-279.000.

Kato, Hitoshi: *See*—
Haruta, Youichi; Kambayashi, Tomio; Kato, Hitoshi; and Taguchi, Hiromu, 5,544,773, Cl. 216-13.000.

Kato, Ikuo; and Nogi, Kenichiro. Method of manufacturing electronic parts. 5,544,410, Cl. 29-605.000.

Kato, Kohji. Elastic waist structure for trousers and skirts. 5,544,366, Cl. 2-237.000.

Kato, Makoto, to NGK Insulators, Ltd. Magnesia-based beta alumina sintered bodies and a process for producing the same. 5,545,495, Cl. 429-193.000.

Kato, Naomiki: *See*—
Ogawa, Kouki; Yamasaki, Kozo; and Kato, Naomiki, 5,545,598, Cl. 501-127.000.

Kato, Tohru: *See*—
Tanaka, Tadashi; Sakamoto, Masaaki; Yamamoto, Koichi; Kato, Tohru; and Sugita, Mitsuru, 5,545,489, Cl. 428-629.000.

Katsu Manufacturing Co., Ltd.: *See*—
Tanaka, Masaru, 5,545,025, Cl. 425-315.000.

Katsuta, Hiroshi, to NEC Corporation. Emulation system for microcomputer. 5,546,566, Cl. 395-500.000.

Katta, Noboru: *See*—
Ibaraki, Susumu; Katta, Noboru; Nakamura, Seiji; and Murakami, Hiroki, 5,546,461, Cl. 380-20.000.

Katz, Joseph: *See*—
Metlitsky, Boris; Katz, Joseph; Marom, Emanuel; and Gousgounis, Dean, 5,545,886, Cl. 235-462.000.

Kauphusman, James V.: *See*—
Rudie, Eric N.; Neilson, Bruce H.; and Kauphusman, James V., 5,545,137, Cl. 604-96.000.

Kaushansky, Kenneth; and Hagen, Frederick S., to University of Washington; and ZymoGenetics, Inc. Colony-stimulating factor derivatives. 5,545,536, Cl. 435-69.100.

Kauvar, Lawrence M.; Lyttle, Matthew H.; and Satyam, Apparao, to Terrapin Technologies, Inc. Glutathione S-transferase-activated compounds. 5,545,621, Cl. 514-18.000.

Kawabuchi, Yoichi: *See*—
Hirota, Masaya; Ideyama, Hiroyuki; Okatani, Toru; Yamashita, Toshiyuki; Ito, Hideo; and Kawabuchi, Yoichi, 5,546,166, Cl. 355-209.000.

Kawachi, Masao: *See*—
Inoue, Yasuyuki; Kawachi, Masao; Okamoto, Katsunari; Takato, Norio; Yamamoto, Pumihiko; Suda, Hiroyuki; Furukawa, Shinichi; and Morinaka, Akira, 5,546,483, Cl. 385-14.000.

Kawada, Norihiko: *See*—
Yamashita, Masahiro; Kawada, Norihiko; and Nakamura, Satoshi, 5,546,127, Cl. 348-297.000.

Kawada, Yasuo: *See*—
Hayashi, Masayuki; Mitekura, Yoshihiro; Kanaya, Koichi; Terao, Masato; Tagawa, Toshiya; Tomidokoro, Nobuaki; Kitayama, Masahiro; Kizaki, Osamu; Kawada, Yasuo; Nakahara, Kazuyuki; Harada, Tomofumi; and Hashimoto, Yasunari, 5,546,164, Cl. 355-204.000.

Kawaguchi, Masahiro: *See*—
Okamoto, Tadashi; Tomida, Yoshinori; Yamamoto, Nobuko; and Kawaguchi, Masahiro, 5,545,521, Cl. 435-5.000.

Kawaguchi, Megumi; Inoue, Hiromi; Sugiura, Atsushi; Suzuki, Kenji; and Fujii, Tsunenori, to Kanto Kagaku Kabushiki Kaisha. Cyclobutanecarboxylic acid derivatives and liquid crystalline compositions containing them. 5,545,747, Cl. 560-123.000.

Kawai, Katsuhiko: *See*—
Shouda, Hirofumi; Hirata, Yoshihiko; Kawai, Katsuhiko; Kondo, Toshio; and Haraguchi, Hiroshi, 5,544,639, Cl. 123-676.000.

Kawai, Nobuyasu: *See*—
Fujita, Takafumi; Shimoda, Ikuo; Mochimaru, Masami; Otsuka, Susumu; Kawai, Nobuyasu; Kurimoto, Kurimoto; and Inaba, Kanemasa, 5,544,452, Cl. 52-167.200.

Kawakami, Junzo: *See*—
Abe, Shigeo; Kayama, Masahiro; Takenaga, Hiroshi; Morooka, Yasuo; Kawakami, Junzo; and Takatoo, Masao, 5,546,503, Cl. 395-23.000.

Kawamura, Kiyoshi; Tajima, Toshio; and Koseki, Shinya, to Yamaha Corporation. Keyboard musical instrument with movable key bed for performing music without acoustic sounds. 5,545,839, Cl. 84-171.000.

Kawamura, Motoshi: *See*—
Kajihara, Kazuhisa; Kawamura, Motoshi; and Yanai, Kunio, 5,544,963, Cl. 384-482.000.

Kawamura, Tamotsu: *See*—
Kuroda, Koichi; Aoki, Yoshiaki; Fujikawa, Kiyokazu; Kawamura, Youzon; Hirota, Tatsuya; Kawamura, Tamotsu; Fukuda, Takashi; Kishi, Minoru; and Hirose, Hisanori, 5,544,428, Cl. 34-493.000.

Kawamura, Youzon: *See*—
Kuroda, Koichi; Aoki, Yoshiaki; Fujikawa, Kiyokazu; Kawamura, Youzon; Hirota, Tatsuya; Kawamura, Tamotsu; Fukuda, Takashi; Kishi, Minoru; and Hirose, Hisanori, 5,544,428, Cl. 34-493.000.

Kawanaka, Seido; Yoshikawa, Mituo; and Naito, Hiroyoshi, to Sharp Corporation; and Ezel Inc. Method for detecting inclination of an image of characters. 5,546,479, Cl. 382-290.000.

Kawanishi, Toshiaki: *See*—
Ishiguro, Shiro; Watanuki, Masatoshi; Kawanishi, Toshiaki; Hanzawa, Kohtaro; Sasaki, Hiroyuki; and Yoshino, Jun, 5,546,466, Cl. 381-61.000.

Kawano, Michinobu: *See*—
Kudo, Shokiku; Hosoi, Masanori; and Kawano, Michinobu, 5,544,986, Cl. 408-67.000.

Kawasaki Heavy Industries, Ltd.: *See*—
Fukushima, Saburo; Yagi, Masaharu; Morita, Kiyozi; Ando, Masami; and Saito, Tokuo, 5,545,458, Cl. 428-117.000.

Kawasaki, Kiyoshi, to Tachi-S Co., Ltd. Automated sewing device. 5,544,602, Cl. 112-470.090.

Kawasaki, Shinji: *See*—
Takahashi, Tetsuhiko; Kawasaki, Shinji; and Nishimura, Hiroshi, 5,544,653, Cl. 128-653.200.

Kawase, Shoji: *See*—
Ishijima, Zenzo; Ichikawa, Jun-ichi; Sasaki, Shuji; Shikata, Hideo; Urata, Hideo; Kawase, Shoji; and Ueda, Jun-ichi, 5,545,487, Cl. 428-548.000.

Kawase, Tatsuo; and Hattori, Naoshi, to NTN Corporation. Friction type continuously variable transmission. 5,545,101, Cl. 475-193.000.

Kawashima, Shigeo: *See*—
Golwalkar, Suresh V.; Foehringer, Richard; Wentling, Michael; Takatsuki, Ryo; Kawashima, Shigeo; Tsujimoto, Keiichi; and Sato, Nobuaki, 5,545,922, Cl. 257-676.000.

Kawashima, Takumi: *See*—
Sasou, Hiroshi; and Kawashima, Takumi, 5,545,883, Cl. 235-449.000.

Kay, Robert M.: *See*—
Lonberg, Nils; and Kay, Robert M., 5,545,806, Cl. 800-2.000.

Kaya, Akimasa: *See*—
Takahashi, Koichi; Takatori, Tetsuya; Ichikawa, Haruo; Kaya, Akimasa; and Takahashi, Tomoyuki, 5,544,835, Cl. 242-348.100.

Kayama, Masahiro: *See*—
Abe, Shigeo; Kayama, Masahiro; Takenaga, Hiroshi; Morooka, Yasuo; Kawakami, Junzo; and Takatoo, Masao, 5,546,503, Cl. 395-23.000.

Kazama, Masahiro; and Haginoya, Shigekazu, to NEC Environment Engineering Ltd. Apparatus for treating water containing organic chlorine compounds. 5,545,316, Cl. 210-188.000.

Kazmirski, Todd J.: *See*—
Prete, Ralph; Brunstein, Vladimir; and Kazmirski, Todd J., 5,546,295, Cl. 363-17.000.

Kazuyuki Katsuno: *See*—
Tsuzuki, Mikihisa, 5,545,041, Cl. 434-136.000.

KCS Industries, Inc.: *See*—
Kramer, Richard H., 5,545,958, Cl. 318-560.000.

Ke, Chin-Fu. Hot air/cold air dual-mode electric fan. 5,545,009, Cl. 416-95.000.

Kearney, Ken, to Agricultural Building Holdings, Inc. Dust control system. 5,544,686, Cl. 141-192.000.

Keating, Mark K.; and Staudt, Fredrick J., to Senercomm, Inc. Hvac control system and method. 5,544,809, Cl. 236-44.00C.

Keck, David W.; Nagai, Kenichi; Yatsurugi, Yoshifumi; Morihara, Hiroshi; and Izawa, Junji, to Advanced Silcon Materials, Inc. Production of high-purity polycrystalline silicon rod for semiconductor applications. 5,545,387, Cl. 423-348.000.

Kee, David: *See*—
Williams, Charles E.; Davis, Dennis D.; and Kee, David, 5,545,846, Cl. 174-51.000.

Keech, Charles R. Adjustable utility trailer. 5,544,944, Cl. 298-5.000.

Keeney, Stephen N.: *See*—
Tedrow, Kerry D.; Keeney, Stephen N.; Fazio, Albert; Atwood, Gregory E.; Javanifard, Johnny; and Wojciechowski, Kenneth, 5,546,042, Cl. 327-538.000.

Keepsake, Inc.: *See*—
Dobbs, Gregg T.; Dobbs, Loura L.; and Dobbs, John M., 5,546,146, Cl. 354-120.000.

Keifer Controls, Inc.: *See*—
Stieferman, Dale M., 5,544,685, Cl. 141-198.000.

Keita, Gabriel; and Renaudineau, Joel, to Essilor International Compagnie Generale d'Optique. Low yellow index polymer compositions, polymerizable compositions and lenses using said compositions. 5,545,828, Cl. 526-72.000.

Keller, Brion L., to International Business Machines Corporation. Hierarchical pattern faults for describing logic circuit failure mechanisms. 5,546,408, Cl. 371-27.000.

Keller, Michael; and Wheeler, Gerald. Tire load compressor. 5,544,578, Cl. 100-100.000.

Kelley, Miriam; and Dignitti, Daniel M., to Fisher-Price, Inc. Play enclosure apparatus. 5,544,870, Cl. 256-26.000.

Kelley, Robert W.: *See*—
Svetkoff, Ronald J.; Rohrer, Donald K.; and Kelley, Robert W., 5,546,189, Cl. 356-376.000.

Kelly, Edmund F., to Infrasonics, Inc. Gas mixing apparatus for respirator. 5,544,674, Cl. 137-98.000.

Kelly, James P.: *See*—
Andrews, G. Wayne; Webber, Steven H.; Kelly, James P.; Johnson, Lawrence E.; Stern, Jerry A.; Milano, Vincent J., Jr.; and Davis, Charles R., 5,546,452, Cl. 379-219.000.

Kelly, Patrick D. Method for reducing risk of infection by sexually transmitted viruses. 5,545,673, Cl. 514-772.300.

Kelly, Robert M.: *See*—
Scarborough, Charles S.; Kelly, Robert M.; Gaylor, Rodney W.; and Rogers, Patrick J., 5,544,613, Cl. 114-363.000.

Kelly, Thomas J.: *See*—
Austin, Curtiss M.; Kelly, Thomas J.; and Huang, Shyh-Chin, 5,545,265, Cl. 148-421.000.

Kemp, Richard A., to Shell Oil Company. Ethylene oxide catalyst and process. 5,545,603, Cl. 502-347.000.

Kempf, Dale J.; Norbeck, Daniel W.; Erickson, John W.; Sham, Hing Leung; Codacovi, Lynn M.; and Plattner, Jacob J., to Abbott Laboratories. Retroviral protease inhibiting compounds. 5,545,750, Cl. 564-360.000.

Kendall, Bruce: *See*—
Wilfinger, William W.; and Kendall, Bruce, 5,545,841, Cl. 174-17.080.

Kennedy, James P.: *See*—
Hill, Timothy L.; Allen, Brian J.; Jonas, William P.; and Kennedy, James P., 5,546,282, Cl. 361-796.000.

Kennedy, Melvin: *See*—
Arad, Avi; and Kennedy, Melvin, 5,545,072, Cl. 446-268.000.

Kenney Manufacturing Company: *See*—
McMichael, Dannie L., 5,544,692, Cl. 160-349.200.

Kenny, John D.; and Ma, Min S., to Cirrus Logic, Inc. NAPNOP circuit for conserving power in computer systems. 5,546,037, Cl. 327-230.000.

Kensey, Kenneth; Nash, John E.; and Evans, Douglas, to Kensey Nash Corporation. System for closing a percutaneous puncture formed by a trocar to prevent tissue at the puncture from herniating. 5,545,178, Cl. 606-213.000.

Kensey Nash Corporation: *See*—
Kensey, Kenneth; Nash, John E.; and Evans, Douglas, 5,545,178, Cl. 606-213.000.

Kent, Henry R.: *See*—
Hofmann, Gunter A.; and Kent, Henry R., 5,545,130, Cl. 604-4.000.

Keogh, Catherine M.: *See*—
Boggavarapu, Rao L.; Goldstein, Yeshayahu S. A.; Keogh, Catherine M.; Suchocki, Anthony J.; and Widner, Melvin M., 5,544,588, Cl. 102-472.000.

Keogh, James R.; Hobot, Christopher M.; Eaton, John W.; Jevne, Allan H.; and Bergan, Matthew A., to Medtronic, Inc. Method for administering a bioactive agent. 5,545,213, Cl. 623-1.000.

Keoshkerian, Barkev; Georges, Michael K.; and Drappel, Stephan V., to Xerox Corporation. Ink jettable toner compositions and processes for making and using. 5,545,504, Cl. 430-137.000.

Keramchemie GmbH: *See*—
Gärtner, Horst; Hollmann, Friedrich; Rituper, Rafael; and Block, Bodo, 5,545,260, Cl. 134-41.000.

Kerdranvat, Michel: *See*—
Hackett, Andrew; Knee, Michael; Kerdranvat, Michel; and Bolender, Nadine, 5,546,130, Cl. 348-447.000.

Kerkman, William J.: *See*—
Robers, Kevin J.; Bretl, Richard A.; Gabbey, Lawrence W.; Kerkman, William J.; and Kersher, Tod T., 5,544,699, Cl. 165-283.000.

Kerns, Thomas M.: *See*—
Bai, Monty W.; Kerns, Thomas M.; and Brannon, Edward L., 5,545,493, Cl. 429-90.000.

Kerr, Dennis W.: *See*—
Ridenour, Ralph G.; and Kerr, Dennis W., 5,544,406, Cl. 29-520.000.

Kerr-McGee Chemical Corporation: *See*—
Brownbridge, Thomas I.; and Story, Phillip M., 5,544,817, Cl. 241-21.000.

Kersher, Tod T.: *See*—
Robers, Kevin J.; Bretl, Richard A.; Gabbey, Lawrence W.; Kerkman, William J.; and Kersher, Tod T., 5,544,699, Cl. 165-283.000.

Kerth, Randall T.; Krajnovich, Douglas J.; Kulkarni, Murlidhar V.; Leung, Wing P.; and Tam, Andrew C., to International Business Machines Corporation. Laser machined slider. 5,544,775, Cl. 216-65.000.

Kervennal, Jacques: *See*—
Drivon, Gilles; and Kervennal, Jacques, 5,545,776, Cl. 570-174.000.

Kery, Michael: *See*—
Bucken, Rene; Consoir, Rudolf; Hermanns, Ferdinand-Josef; Kathke, Gregor; Schwalm, Hans-Werner; Schultz, Waldemar; Paulsen, Hedde-Christoph; and Kery, Michael, 5,544,829, Cl. 242-35.50R.

Kessler, Timothy L.: *See*—
Dartt, Darlene A.; and Kessler, Timothy L., 5,545,617, Cl. 514-12.000.

Keuper, Gerhard: *See*—
Senger, Karl-Heinz; Keuper, Gerhard; and Bäuerle, Peter, 5,545,106, Cl. 477-43.000.

Khosraviyani, Firooz: *See*—
Ehdaie, Seyf-Ollah; and Khosraviyani, Firooz, 5,546,310, Cl. 364-449.000.

Kido, Kunihiko: *See*—
Taguchi, Jun'ichi; Kido, Kunihiko; and Sano, Koichi, 5,545,993, Cl. 324-309.000.

Kidoguchi, Isao: *See*—
Ishibashi, Akihiko; Kidoguchi, Isao; Ohnaka, Kiyoshi; and Mannou, Masaya, 5,546,418, Cl. 372-48.000.

Kieczykowski, Gerard R.: *See*—
Baker, Robert K.; Kieczykowski, Gerard R.; Ok, Hyun O.; Parsons, William H.; and Rupprecht, Kathleen M., 5,545,734, Cl. 540-456.000.

Kiefer, Berthold; and Feinberg, David A., to Siemens Aktiengesellschaft. Averaging of identically phase-encoded MR signals to reduce image degradation caused by spin-spin relaxation. 5,545,990, Cl. 324-307.000.

Kiehl, Oliver, to Siemens Aktiengesellschaft. Current mirror. 5,545,972, Cl. 323-315.000.

Kiekert Aktiengesellschaft: *See*—
Torkowski, Thorsten, 5,544,508, Cl. 70-264.000.

Kielmeyer, William H.: *See*—
Taylor, Thomas J.; Kielmeyer, William H.; and Rude, Carl A., 5,545,825, Cl. 524-195.000.

Kihara, Takashi: *See*—
Kikuchi, Kimihiro; Kihara, Takashi; and Okochi, Ken, 5,546,490, Cl. 385-93.000.

Kikuchi, Hiroshi: *See*—
Ozaki, Masahiko; Sonoda, Keisuke; Kikuchi, Hiroshi; Tsukamoto, Osamu; Komatsu, Masao; and Asai, Koetsu, 5,544,491, Cl. 62-53.100.

Kikuchi, Kimihiro; Kihara, Takashi; and Okochi, Ken, to Alps Electric Co., Ltd. Optical fiber connector. 5,546,490, Cl. 385-93.000.

Kikuchi, Masahiro: *See*—
Seto, Youichi; Kikuchi, Masahiro; Kodaira, Takatoshi; Tezuka, Shu; Komura, Fuminobu; and Matsumoto, Kuniaki, 5,546,572, Cl. 395-600.000.

Kikukawa, Hirohito: *See*—
Agata, Masashi; Matsuyama, Kazuhiro; Akamatsu, Hironori; Kikukawa, Hirohito; Sawada, Akihiro; and Iwanari, Shunichi, 5,546,346, Cl. 365-203.000.

Killinger, Timothy D.: *See*—
Klodt, Gerald; and Killinger, Timothy D., 5,544,751, Cl. 206-509.000.

Kim, Choon-Woo: *See*—
Tran, Nang T.; Pai, Joseph Y.; and Kim, Choon-Woo, 5,545,899, Cl. 250-370.090.

Kim, Jae H., to K & J Electronics, Inc. Mounting adapter for magnetic reed switch. 5,544,536, Cl. 73-866.500.

Kim, Jae-young, to Samsung Electronics Co. Ltd. Audio playback apparatus and method. 5,546,465, Cl. 381-18.000.

Kim, Jin H.; and Liu, Dong-Chyuan, to Siemens Medical Systems, Inc. Doppler ultrasound velocity estimation. 5,544,658, Cl. 128-661.090.

Kim, Jin K.: *See*—
Suh, Kang D.; Kim, Jin K.; and Choi, Jeong H., 5,546,341, Cl. 365-185.330.

Kim, Jong K.: *See*—
Kim, Kyeong S.; and Kim, Jong K., 5,546,132, Cl. 348-607.000.

Kim, Kwan-seong: *See*—
Nam, Il-hyun; and Kim, Kwan-seong, 5,546,428, Cl. 375-308.000.

Kim, Kyeong S.; and Kim, Jong K., to Goldstar Co., Ltd. NTSC interference detector. 5,546,132, Cl. 348-607.000.

Kim, Man S., to Goldstar Co., Ltd. Liquid crystal display device and method for fabricating the same. 5,546,207, Cl. 359-74.000.

Kim, Sang-Il: *See*—
Song, Il-Cheon; Kim, Sang-Il; and Lee, Young-Jin, 5,545,364, Cl. 264-210.500.

Kim, Tae Yun: *See*—
Bu, Jong Uk; and Kim, Tae Yun, 5,545,880, Cl. 219-703.000.

Kim, Yoon: *See*—
Horstmann, Jens; and Kim, Yoon, 5,546,555, Cl. 395-417.000.

VOL 1189 ISS 2 AG 13 1996 UMI

Kim, Young G.: *See*—
Yoo, Choon K.; and Kim, Young G., 5,546,478, Cl. 382-282.000.

Kimber, Ray L.: *See*—
Sommovigo, Christopher V.; and Kimber, Ray L., 5,544,960, Cl. 366-130.000.

Kimberly-Clark Corporation: *See*—
DiPalma, Joseph; and Anjur, Sowmya S., 5,545,156, Cl. 604-385.100.
Jessup, James L., 5,545,158, Cl. 604-385.200.
Stokes, Ty J., 5,545,464, Cl. 428-198.000.
Van Iten, Thomas P., 5,545,157, Cl. 604-385.100.

Kimoto, Masahiko; Nakamichi, Masumi; Funakoshi, Takahiro; Wada, Yasuhiro; Yamamoto, Takehiro; and Tsuda, Yoichi, to Sharp Kabushiki Kaisha. Light emitting display device having light receiving element for receiving light from light emitting element and self-holding and optical passage for guiding drive light to the light receiving element. 5,546,496, Cl. 385-146.000.

Kimura, Akio: *See*—
Kurii, Jun; Nomura, Noboru; Itoh, Masami; Ohira, Kozo; Tsumadori, Masaki; Matsunaga, Akira; Kimura, Akio; and Suzue, Shigetoshi, 5,545,349, Cl. 252-186.380.

Kimura, Kohichi: *See*—
Yoshida, Katunori; Koizumi, Ichirho; Kimura, Kohichi; and Moriya, Nobuharu, 5,544,426, Cl. 34-314.000.

Kimura, Kozo; and Hirata, Hiroaki, to Matsushita Electric Industrial Co., Ltd. Multistream instruction processor able to reduce interlocks by having a wait state for an instruction stream. 5,546,593, Cl. 395-800.000.

Kimura, Mitsuru: *See*—
Matsui, Koji; Kimura, Mitsuru; Utsumi, Kazuaki; Ogawa, Eiichi; Komano, Hiroshi; and Aoyama, Toshimi, 5,545,281, Cl. 156-273.700.

Kimura, Shinichi: *See*—
Ichioka, Yoshikazu; Jenkins, Leslie C.; Kimura, Shinichi; Polastre, Robert J.; Troutman, Ronald R.; and Wisnieff, Robert L., 5,546,013, Cl. 324-770.000.

Kinch, John: *See*—
Davis, John; and Kinch, John, 5,544,567, Cl. 99-336.000.

Kinet, Jean-Pierre: *See*—
Ortiz, Mark S.; Failla, Stephen J.; Kinet, Jean-Pierre; and Marie, Frederic, 5,545,123, Cl. 600-235.000.

King, Anthony O.; Larsen, Robert D.; Verhoeven, Thomas R.; and Zhao, Mangzhu, to Merck & Co., Inc. Process for the preparation of diisopinocampheylchloroborane. 5,545,758, Cl. 568-6.000.

King, Harold B.: *See*—
Matzner, Bruce; King, Harold B.; and Smith, David G., 5,546,437, Cl. 376-442.000.

King, Julius D., Jr.: *See*—
Raney, Tommy; and King, Julius D., Jr., 5,546,154, Cl. 354-304.000.

King, Todd L.; Mading, James E.; and Piber, Earl T., to Eaton Corporation. Remotely controlling modulated flow to a fuel gas burner and valve therefor. 5,544,856, Cl. 251-129.080.

Kinghorn, Curtis D.: *See*—
Schenk, Robert W.; Ranford, Alan B.; Ray, Shawn C.; Sunderland, Richard A.; and Kinghorn, Curtis D., 5,545,174, Cl. 606-182.000.

Kinoshita, Shoji: *See*—
Ikeda, Hachiro; Miyamoto, Noriaki; Umeda, Ryoei; Yasu, Hidenori; Fukukawa, Mitsuo; Masuyama, Yukiei; Kinoshita, Shoji; Takagi, Yukio; Gocho, Tomohiro; Goto, Fumio; Ishii, Akio; Ogawa, Tetsuo; Hasegawa, Yoshun; Hironaka, Keitaro; and Ogoshi, Yasuhiro, 5,546,123, Cl. 348-119.000.

Kinsinger, Jay H.; Arbogast, Robert E.; Capper, James W.; and Colvin, James M., to Ohio Willow Wood Company. Prosthesis mounting adapter and method. 5,545,230, Cl. 623-38.000.

Kioritzt Corporation: *See*—
Koga, Hiroaki, 5,544,630, Cl. 123-185.300.

Kiridena, Vijitha S.; Ebenstein, Samuel E.; and Smith, Gregory H., to Ford Motor Company. Method and system for automated alignment of free-form geometries. 5,546,328, Cl. 364-552.000.

Kirsch, Axel; and Duerr, Walter, to Kirsch, Axel; and Eberle Medizintechnische Elemente GmbH. Tool for setting a fastening nail. 5,544,552, Cl. 81-44.000.

Kirsch, Jürgen: *See*—
Haese, Wilfried; Bruder, Friedrich; Pakull, Ralf; Kirsch, Jürgen; and Löwer, Hartmut, 5,545,710, Cl. 528-201.000.

Kirschey, Gerhard, to Centa-Antriebe Kirschey GmbH. Shaft coupling. 5,545,089, Cl. 464-83.000.

Kirschey, Gerhard, to Centa-Antriebe Kirschey GmbH. Shaft coupling with ring-shaped parallel membranes. 5,545,090, Cl. 464-96.000.

Kirstgen, Reinhard; Oberdorf, Klaus; Sauter, Hubert; Bayer, Herbert; Grammenos, Wassilios; Rang, Harald; Harries, Volker; Lorenz, Gisela; and Ammermann, Eberhard, to BASF Aktiengesellschaft. Substituted phenoxymethylphenyl derivatives, their preparation and their use for controlling pests and fungi. 5,545,664, Cl. 514-521.000.

Kishi, Minoru: *See*—
Kuroda, Koichi; Aoki, Yoshiaki; Fujikawa, Kiyokazu; Kawamura, Youzon; Hirota, Tatsuya; Kawamura, Tamotsu; Fukuda, Takashi; Kishi, Minoru; and Hirose, Hisanori, 5,544,428, Cl. 34-493.000.

Kishi, Takuji; and Ohtani, Kimiharu, to Noritsu Koki Co., Ltd. Automatic film feeder. 5,546,160, Cl. 355-50.000.

Kishida, Shunji: *See*—
Sugai, Kazumi; Okabayashi, Hidekazu; and Kishida, Shunji, 5,545,591, Cl. 437-192.000.

Kiss, Akos: *See*—
Weitkamp, Jens; Ernst, Stefan; Bock, Thomas; Kromminga, Thomas; Kiss, Akos; and Kleinschmit, Peter, 5,545,784, Cl. 585-250.000.

Kissee, Darrell E., to Laitram Corporation, The. Conveying apparatus. 5,544,740, Cl. 198-834.000.

Kisu, Hiroki: *See*—
Ogata, Hiroaki; Kisu, Hiroki; Yamazaki, Michihito; and Asano, Erika, 5,546,167, Cl. 355-219.000.

Kita, Hiroshi; Sato, Hirokazu; and Daifuku, Koji, to Konica Corporation. Silver halide light-sensitive color photographic material. 5,545,514, Cl. 430-546.000.

Kita, Kenjiro, to Mizuno Corporation. Insole for shoes providing heel stabilization. 5,544,432, Cl. 36-43.000.

Kitada, Tetsunori: *See*—
Tokumoto, Kei; Kitada, Tetsunori; Shinoaki, Hironobu; and Sakaguchi, Shigeya, 5,545,248, Cl. 75-238.000.

Kitahara, Noboru; Kondo, Minoru; and Sawada, Yukio, to Nippondenso Co., Ltd. Flow meter having a main passage and a branch passage partially partitioned into plural regions. 5,544,527, Cl. 73-204.210.

Kitamura, Naoki; and Nishimoto, Hiroshi, to NEC Corporation. Waveguide-type optical path converter for converting a propagation direction of a light. 5,546,488, Cl. 385-45.000.

Kitamura, Satoshi: *See*—
Borrega, Regis; and Kitamura, Satoshi, 5,545,738, Cl. 544-291.000.

Kitayama, Masahiro: *See*—
Hayashi, Masayuki; Mitekura, Yoshihiro; Kanaya, Koichi; Terao, Masato; Tagawa, Toshiya; Tomidokoro, Nobuaki; Kitayama, Masahiro; Kizaki, Osamu; Kawada, Yasuo; Nakahara, Kazuyuki; Harada, Tomofumi; and Hashimoto, Yasunari, 5,546,164, Cl. 355-204.000.

Kitazawa, Toshiki: *See*—
Ohgai, Hideo; Momota, Hiroshi; Kumakura, Takeshi; Kajifusa, Noriyuki; Kitazawa, Toshiki; Oshiden, Kazuhide; and Matsushiro, Aizo, 5,545,564, Cl. 435-320.100.

Kitazumi, Masato; and Yasufuku, Motonobu, to Mitsuboshi Belting Ltd. Power transmission belt with facing fabric and method of forming the belt. 5,545,097, Cl. 474-266.000.

Kitou, Kouji: *See*—
Sano, Yuji; Tsuruga, Sadao; Kitou, Kouji; and Ohsawa, Michitaka, 5,546,048, Cl. 330-263.000.

Kitteringham, John: *See*—
Hughes, Mark J.; and Kitteringham, John, 5,545,740, Cl. 546-112.000.

Kiuchi, Takashi: *See*—
Satoh, Takamasa; Yasuda, Hiroshi; Kai, Junichi; Oae, Yoshihisa; Nishino, Hisayasu; Sakamoto, Kiichi; Yabara, Hidefumi; Seto, Isamu; Takigawa, Masami; Yamada, Akio; Arai, Soichiro; Abe, Tomohiko; Kiuchi, Takashi; and Miyazawa, Kenichi, 5,546,319, Cl. 364-488.000.

Kizaki, Osamu: *See*—
Hayashi, Masayuki; Mitekura, Yoshihiro; Kanaya, Koichi; Terao, Masato; Tagawa, Toshiya; Tomidokoro, Nobuaki; Kitayama, Masahiro; Kizaki, Osamu; Kawada, Yasuo; Nakahara, Kazuyuki; Harada, Tomofumi; and Hashimoto, Yasunari, 5,546,164, Cl. 355-204.000.

Kizziah, Pat: *See*—
Moren, Mike; Buck, Todd; and Kizziah, Pat, 5,545,370, Cl. 264-522.000.

Klausener, Alexander; Landscheidt, Heinz; and Blank, Heinz-Ulrich, to Bayer Aktiengesellschaft. Process for the preparation of p-amino-phenols. 5,545,754, Cl. 564-418.000.

Klein, Gilles C. C.: *See*—
Alassoeur, Philippe L. A.; Collot, André C. F.; Guyonnet, Xavier J. M. A.; Klein, Gilles C. C.; and Molliex, Ludovic E. C., 5,544,805, Cl. 228-190.000.

Klein, Laurence R.: *See*—
Plummer, Walter A., III; Shrader, Vernon L.; and Klein, Laurence R., 5,545,844, Cl. 174-35.0MS.

Kleinschmit, Peter: *See*—
Weitkamp, Jens; Ernst, Stefan; Bock, Thomas; Kromminga, Thomas; Kiss, Akos; and Kleinschmit, Peter, 5,545,784, Cl. 585-250.000.

Kleinschnitz, Donald J., to Storage Technology Corporation. Simplified storage media library subsystem. 5,546,315, Cl. 364-478.060.

Klics, Inc.: *See*—
Knowles, Gregory P.; and Lewis, Adrian S., 5,546,477, Cl. 382-242.000.

Kline, David: *See*—
Basile, Philip C.; Thompson, James E., Jr.; Kline, David; and Toner, Gary E., 5,546,421, Cl. 375-200.000.

Kling, Jeffrey: *See*—
Fagan, John R.; and Kling, Jeffrey, 5,545,132, Cl. 604-96.000.

Klinger AG: *See*—
Nendzig, Gerhard; and Taus, Alfred, 5,544,898, Cl. 277-166.000.

Klinger, Martin: *See*—
Schutt, Karl; Hinken, Johann H.; Klinger, Martin; and Tintchev, Savtcho S., 5,545,987, Cl. 324-219.000.

Klingler, Alban; and Leeb, Georg, to Deere & Company. Cutter knife for ensilage harvester cutterhead. 5,544,826, Cl. 241-242.000.

Klodt, Gerald; and Killinger, Timothy D., to Flambeau Products Corp. Stacking connector for storage container. 5,544,751, Cl. 206-509.000.

Kloeckner-Humboldt-Deutz Aktiengesellschaft: *See*—
Schilp, Reinhold; and Epper, Wolfgang, 5,545,119, Cl. 494-56.000.

Klomp, Charles B.; Ayers, Mark R.; and Canterbury, Daniel J., to Exabyte Corporation. Magnetic tape drive with end-of-track block directory. 5,546,246, Cl. 360-72.200.

Klopfenstein, Kraig L., to Paxall Group, The. Adjustable pocket mechanism. 5,544,738, Cl. 198-626.500.

Klughart, Kevin M., to Dallas Semiconductor Corp. Crystal oscillator bias stabilizer. 5,546,055, Cl. 331-116.0FE.

Kluwe, Wolf: *See*—
Meltsch, Hans-Juergen; Froehlich, Franz-Fr; Zimmer, Rainer; and Kluwe, Wolf, 5,545,851, Cl. 174-74.00R.

Knee, Michael: *See*—
Hackett, Andrew; Knee, Michael; Kerdranvat, Micbel; and Bolender, Nadine, 5,546,130, Cl. 348-447.000.

Kneisel, Lawrence L.; Baker, Jay D.; and Goenka, Lakhi N., to Ford Motor Company. Silicon micromachined CO_2 cleaning nozzle and method. 5,545,073, Cl. 451-39.000.

Knepshield, William, Jr.: *See*—
Knepshield, William R.; Fay, Kristen K.; and Knepshield, William, Jr., 5,545,172, Cl. 606-166.000.

Knepshield, William R.; Fay, Kristen K.; and Knepshield, William, Jr., to Malvern Technologies, Inc. Rocking foot plate for surgical knife. 5,545,172, Cl. 606-166.000.

Knight Manufacturing Corp.: *See*—
Liimatainen, William J.; and Brauer, Daniel R., 5,544,762, Cl. 209-675.000.

Knop, Klaus, to MAN Gutehoffnungshütte Aktiengesellschaft. Method of and device for directly reducing fine-particle ores and concentrates thereof. 5,545,251, Cl. 75-444.000.

Knowles, Gregory P.; and Lewis, Adrian S., to Klics, Inc.; and Media Vision, Inc. Data compression and decompression. 5,546,477, Cl. 382-242.000.

Knox, Konstance K.: *See*—
Grossberg, Sidney E.; Kushnaryov, Vladimir M.; Cashdollar, L. William; Carrigan, Donald R.; and Knox, Konstance K., 5,545,550, Cl. 435-240.200.

Knudsen, George A.; Suciu, Elena N.; and Michaelson, Robert C. Process for the preparation of dialkyltin dialkoxide. 5,545,600, Cl. 502-152.000.

Knudson, Raymond L.: *See*—
Marlin, James W.; Knudson, Raymond L.; Ruehle, Thomas M.; Stuart, Anthony F.; and Hughes, Edward T., III, 5,546,577, Cl. 395-600.000.

Knutson, Victoria P., to University of Texas System, The. Treatment of insulin resistance and type 2 diabetes mellitus with a thiol protease inhibitor. 5,545,672, Cl. 514-603.000.

Ko, Jae W.: *See*—
Lee, Woo B.; Oh, Se J.; Yeo, Tae J.; Ko, Jae W.; and Koo, Yung M., 5,545,572, Cl. 437-26.000.

Ko, Jung H.: *See*—
Lee, Sang H.; Ko, Jung H.; Lee, Tae H.; and Shim, Chang S., 5,546,401, Cl. 370-105.100.

Ko, Ray-Jane; Au, Fu L.; and Chiang, Joseph P., to Integrated Device Technology, Inc. Interleaving architecture and method for a high density FIFO. 5,546,347, Cl. 365-221.000.

Kobayashi, Hideki, to Dow Corning Toray Silicone Co., Ltd. Organosilicon copolymers and methods for the preparation thereof. 5,545,837, Cl. 556-460.000.

Kobayashi, Hideki: *See*—
Kaiya, Nobuo; and Kobayashi, Hideki, 5,545,682, Cl. 524-265.000.
Kaiya, Nobuo; Kobayashi, Hideki; and Nishiumi, Wataru, 5,545,831, Cl. 524-731.000.

Kobayashi, Katsuhiko, to Kabushiki Kaisha Topcon. Method and apparatus of optometry. 5,546,142, Cl. 351-237.000.

Kobayashi, Kazuhiko: *See*—
Sakakibara, Yoshio; Gotou, Makoto; Kobayashi, Kazuhiko; Isaka, Haruo; and Nakamura, Akihiko, 5,546,248, Cl. 360-77.140.

Kobayashi, Kazuo: *See*—
Kurokawa, Takayuki; Saitoh, Atsushi; Matsubara, Shigemasa; Nawa, Masayoshi; and Kobayashi, Kazuo, 5,546,092, Cl. 342-357.000.

Kobayashi, Yuji; Yoshida, Narihiro; Mukohzaka, Naohisa; Toyoda, Haruyoshi; and Hara, Tsutomu, to Hamamatsu Photonics K.K. Optical detector employing an optically-addressed spatial light modulator. 5,546,181, Cl. 356-237.000.

Koburger, Charles W., III: *See*—
Armacost, Michael D.; Givens, John H.; Koburger, Charles W., III; and Lasky, Jerome B., 5,545,581, Cl. 437-52.000.

Kobzik, Lester: *See*—
Stamler, Jonathan; and Kobzik, Lester, 5,545,614, Cl. 514-6.000.

Koch, Durmus: *See*—
Offray, Denise A.; Koch, Durmus; and Mortensen, John, 5,545,217, Cl. 623-8.000.

Kodaira, Takatoshi: *See*—
Seto, Youichi; Kikuchi, Masahiro; Kodaira, Takatoshi; Tezuka, Sbu; Komura, Fuminobu; and Matsumoto, Kuniaki, 5,546,572, Cl. 395-600.000.

Kodama, Hisashi: *See*—
Hattori, Yoshihiro; Nagamitsu, Sachio; Nagata, Yoichi; and Kodama, Hisashi, 5,546,327, Cl. 364-556.000.

Koehler, Paul C.; Whitlock, Michael B.; Noble, Lawrence J.; and Jenkins, George C., to Pall Corporation. Filter assembly and method of making a filter assembly. 5,545,323, Cl. 210-493.200.

Koester, Rita; Stoll, Gerhard; and Daute, Peter, to Henkel Kommanditgesellschaft auf Aktien. Process for dewatering fine-particle solids suspensions. 5,545,332, Cl. 210-729.000.

Koga, Hiroaki, to Kioritzt Corporation. Alarm which may be used at the time of starting of engine for working machine. 5,544,630, Cl. 123-185.300.

Kogai, Makoto: *See*—
Honma, Hisao; Nakagoshi, Kazuo; Takahashi, Naoya; Kogai, Makoto; and Takamoto, Kenichi, 5,546,348, Cl. 365-230.030.

Koh, Risho, to NEC Corporation. Method of making a transistor having easily controllable impurity profile. 5,545,586, Cl. 437-89.000.

Kohjin Co., Ltd.: *See*—
Suzuki, Isao; Matsushima, Sunao; Kubota, Yoshikazu; and Kamijyou, Masayasu, 5,545,467, Cl. 428-211.000.

Köhler, Burkhard; Pudleiner, Heinz; and Horn, Klaus, to Bayer Aktiengesellschaft. Polyesters of dimer fatty acid and dimer fatty diol and their use for the production of polyester carbonates. 5,545,692, Cl. 525-146.000.

Köhler, Josef: *See*—
Thiesen, Stefan; Rahnenführer, Eckhard; and Köhler, Josef, 5,544,587, Cl. 102-431.000.

Kohn, Leslie D., to Intel Corporation. Method and circuitry for saving and restoring status information in a pipelined computer. 5,546,551, Cl. 395-375.000.

Kohyama, Yusuke; and Sugiura, Souichi, to Kabushiki Kaisha Toshiba. Integrated mosfet device with low resistance peripheral diffusion region contacts and low PN-junction failure memory diffusion contacts. 5,545,926, Cl. 257-755.000.

Koito Manufacturing Co., Ltd.: *See*—
Harada, Tatsuhiko, 5,546,284, Cl. 362-61.000.
Ohtsuka, Yasushi; Shirai, Katutada; Matsuoka, Ken; Suehiro, Yoshio; and Ohashi, Hideki, 5,546,283, Cl. 362-61.000.
Takikawa, Osami; and Naito, Tutomu, 5,546,285, Cl. 362-61.000.

Koizumi, Haruhiko; Sugimura, Akihisa; Tateoka, Kazuki; and Kanazawa, Kunihiko, to Matsushita Electric Industrial Co., Ltd. Power amplifier and power amplification method. 5,546,051, Cl. 330-297.000.

Koizumi, Ichirho: *See*—
Yoshida, Katunori; Koizumi, Ichirho; Kimura, Kohichi; and Moriya, Nobuharu, 5,544,426, Cl. 34-314.000.

Kojima, Kunio: *See*—
Fuji, Hiroshi; Deguchi, Toshihisa; Kojima, Kunio; Yamaguchi, Takeshi; Terashima, Shigeo; Takahashi, Akira; and Ohta, Kenji, 5,546,364, Cl. 369-13.000.

Kojima, Yoshitaka: *See*—
Yamaguchi, Shizuka; Kojima, Yoshitaka; Ogawa, Sai; Arikawa, Hideyuki; Haginoya, Mitsuo; Wada, Yukihiko; and Iwao, Kyozo, 5,545,484, Cl. 428-408.000.

Kok, Lanbrecht P.: *See*—
Boon, Mathilde E.; Kok, Lanbrecht P.; Mango, Laurie J.; Rutenberg, Akiva; and Rutenberg, Mark R., 5,544,650, Cl. 128-632.000.

Koke, Andreas, to U.S. Philips Corporation. Output driver circuit having reduced electromagnetic interference. 5,546,029, Cl. 327-108.000.

Kokubu, Akihiko: *See*—
Sato, Kazumasa; and Kokubu, Akihiko, 5,545,050, Cl. 439-331.000.

Kolattukudy, Pappachan; and Poulose, Ayrookaran J. Enzymes as agricultural chemical adjuvants. 5,545,547, Cl. 435-183.000.

Kolich, Robert A.: *See*—
Garland, Thomas A.; Kolich, Robert A.; Paddock, Charles W.; and Bicheler, James P., 5,544,372, Cl. 5-99.100.

Kollinek, Kurt, to American Sealcut Corporation. Video case and method of manufacturing. 5,544,748, Cl. 206-387.130.

Kolonko, Richard P.: *See*—
Walters, Marlin E.; Kolonko, Richard P.; and Wehmeyer, Richard M., 5,545,760, Cl. 568-321.000.

Komachi, Kyoichi: *See*—
Katayama, Katsuo; Komachi, Kyoichi; Mabuchi, Hiroshi; and Akimoto, Takeshi, 5,545,258, Cl. 118-723.0MP.

Komano, Hiroshi: *See*—
Matsui, Koji; Kimura, Mitsuru; Utsumi, Kazuaki; Ogawa, Eiichi; Komano, Hiroshi; and Aoyama, Toshimi, 5,545,281, Cl. 156-273.700.

Komatsu, Masao: *See*—
Ozaki, Masahiko; Sonoda, Keisuke; Kikuchi, Hiroshi; Tsukamoto, Osamu; Komatsu, Masao; and Asai, Koetsu, 5,544,491, Cl. 62-53.100.

Komatsu, Ryogo, to Ando Electric Co., Ltd. Data transmission circuit for checking of memory device. 5,546,407, Cl. 371-27.000.

Komatsubara, Shigeo; Sueyoshi, Satoru; and Kanbayashi, Hiroshi, to Fujitsu Limited. Drive circuit of a simiconductor optical modulator. 5,546,218, Cl. 359-237.000.

Komatsuda, Takashi: *See*—
Matsumoto, Seiji; Aoki, Takuya; Shimasaki, Yuichi; Hatcho, Seiji; Oketani, Toshikazu; Miyashita, Yukio; Saito, Akihisa; Komatsuda, Takashi; and Kato, Hiroaki, 5,544,482, Cl. 60-279.000.

Komline-Sanderson Engineering Corp.: *See*—
Louden, James A.; Hawkins, Brian F.; Hann, Wayne D., Sr., deceased, 5,545,333, Cl. 210-739.000.

Komoriya, Haruo: *See*—
Hara, Hiroaki; and Komoriya, Haruo, 5,544,635, Cl. 123-425.000.

Komura, Fuminobu: *See*—
Seto, Youichi; Kikuchi, Masahiro; Kodaira, Takatoshi; Tezuka, Sbu; Komura, Fuminobu; and Matsumoto, Kuniaki, 5,546,572, Cl. 395-600.000.

Komuro, Akihiro: *See*—
Obba, Hiroki; Tonomoto, Yoshihiro; Yanagita, Kiyohisa; Houki, Yoji; Akuta, Tomokazu; and Komuro, Akihiro, 5,546,170, Cl. 355-246.000.

Kona Corporation: *See*—
Hume, William J.; Swenson, Paul M.; and Vasapoli, Michael L., 5,545,028, Cl. 425-549.000.

Konagai, Makoto: *See*—
Yamada, Akira; Yoshida, Shinichiro; Yoshino, Masahiro; Takahashi, Kiyoshi; Omura, Akira; and Konagai, Makoto, 5,545,443, Cl. 427-584.000.

VOL 1189 ISS 2 AG 13 1996 UMI

Kondo, Hiroki; Totsuka, Mitsuhiko; Kudo, Toshiharu; and Hanazaki, Hisashi, to Yazaki Corporation. Delayed-fusion fuse. 5,546,066, Cl. 337-163.000.

Kondo, Minoru: *See—*
Kitahara, Noboru; Kondo, Minoru; and Sawada, Yukio, 5,544,527, Cl. 73-204.210.

Kondo, Shigeru. Motor vehicle driving analytically diagnosing method and device. 5,546,305, Cl. 364-424.030.

Kondo, Shuji, to Matsushita Electric Industrial Co., Ltd. Electronic component device and its manufacturing method. 5,545,849, Cl. 174-52.400.

Kondo, Toshio: *See—*
Shouda, Hirofumi; Hirata, Yoshihiko; Kawai, Katsuhiko; Kondo, Toshio; and Haraguchi, Hiroshi, 5,544,639, Cl. 123-676.000.

Konger, Raymond J. Duct chase frame for joists. 5,544,459, Cl. 52-220.300.

Konica Corporation: *See—*
Fukuda, Kazuhiro; and Saito, Atsushi, 5,545,256, Cl. 118-410.000.
Goto, Narito; Isshiki, Masanori; Sasaki, Kunitsuna; Sekiguchi, Nobuyuki; Takeda, Katsuyuki; and Takahashi, Hideki, 5,545,462, Cl. 428-141.000.
Kita, Hiroshi; Sato, Hirokazu; and Daifuku, Koji, 5,545,514, Cl. 430-546.000.
Sato, Hiroshi, 5,546,231, Cl. 359-687.000.

Konishi, Akio; Saito, Yoshiyuki; Takeda, Shuzo; Yoshio, Hideaki; and Kurumatani, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Tape loading apparatus with loading post driving device. 5,546,249, Cl. 360-95.000.

Konishi, Kazuki; and Nagano, Akihiko, to Canon Kabushiki Kaisha. View point detecting apparatus wherein first and subsequent view point data are compared. 5,546,158, Cl. 354-410.000.

Konishi, Yoshito: *See—*
Wada, Shigeru; Nakamura, Ikushi; Ueno, Takuya; Tanino, Ken; Konishi, Yoshito; and Murashima, Nobuharu, 5,546,150, Cl. 354-288.000.

Konno, Masaki; and Ito, Shuji, to Matsushita Electric Industrial Co., Ltd. Apparatus for supporting a display device in a plurality of positions. 5,546,270, Cl. 361-680.000.

Konno, Tsugimi, to Seiko Epson Corporation. Method of producing semiconductor device and photomask therefor. 5,545,498, Cl. 430-18.000.

Kono, Kenzi: *See—*
Kaneishi, Akimasa; and Kono, Kenzi, 5,545,027, Cl. 425-546.000.

Konuma, Osamu: *See—*
Yasugaki, Masato; Konuma, Osamu; and Iba, Yoichi, 5,546,227, Cl. 359-630.000.

Konuma, Toshimitsu: *See—*
Shimizu, Michio; Konuma, Toshimitsu; and Moriya, Kouji, 5,546,208, Cl. 359-81.000.

Konzal, Daryl R., to Paper Machinery Corporation. Energy balance system configured to compensate for the changes in energy absorbed by a rotating shaft. 5,544,537, Cl. 74-53.000.

Koo, Jayoung; and Luton, Michael J., to Exxon Research and Engineering Company. Method for producing ultra high strength, secondary hardening steels with superior toughness and weldability. 5,545,269, Cl. 148-654.000.

Koo, Jayoung; and Luton, Michael J., to Exxon Research and Engineering Company. Method of producing high strength dual phase steel plate with superior toughness and weldability. 5,545,270, Cl. 148-654.000.

Koo, Yung M.: *See—*
Lee, Woo B.; Oh, Se J.; Yeo, Tae J.; Ko, Jae W.; and Koo, Yung M., 5,545,572, Cl. 437-26.000.

Kor-One, Ltd.: *See—*
Gvoich, Ned, 5,545,114, Cl. 482-140.000.

Körber, Richard: *See—*
Trummer, Günther; and Körber, Richard, 5,546,088, Cl. 342-124.000.

Kordes, Herbert, to DORMA GmbH + Co. KG. Movable wall system. 5,544,462, Cl. 52-243.100.

Kordus, Mark R.: *See—*
Booth, Richard B.; Cooper, Emanuel I.; Giess, Edward A.; Kordus, Mark R.; Krongelb, Sol; Ostrander, Steven P.; Roldan, Judith M.; Sambucetti, Carlos J.; and Saraf, Ravi, 5,545,429, Cl. 427-97.000.

Korleski, Joseph E., to W. L. Gore & Associates. Microfiber-reinforced porous polymer film and a method for manufacturing the same and composites made thereof. 5,545,475, Cl. 428-306.600.

Kornel, Alfred: *See—*
Rogers, Charles J.; and Kornel, Alfred, 5,545,388, Cl. 423-352.000.

Koseki, Shinya: *See—*
Kawamura, Kiyoshi; Tajima, Toshio; and Koseki, Shinya, 5,545,839, Cl. 84-171.000.

Koshiba, Nobuharu; Takata, Kenichi; Asaka, Emi; and Nakanishi, Makoto, to Matsushita Electric Industrial Co., Ltd. Rechargeable lithium cell and process for making an anode for use in the cell. 5,545,468, Cl. 429-218.000.

Koskinen, Erkki; and Stenmark, Tom, to Oy W. Rosenlew AB. Method for packaging of bulk goods into a unit-load package and a unit-load package for bulk goods. 5,544,472, Cl. 53-449.000.

Kostka, Gunter: *See—*
Bartke, Ilse; Kostka, Gunter; Naujoks, Kurt; and Ullrich, Axel, 5,545,533, Cl. 435-723.000.

Kosuge, Shuji: *See—*
Tanaka, Seiji; Kosuge, Shuji; and Fuse, Kazuhiko, 5,545,055, Cl. 439-507.000.

Kotani, Takeshi, to Toyota Jidosha Kabushiki Kaisha. Electric power generation control method in a hybrid vehicle utilizing detected generator output and engine revolutions. 5,545,928, Cl. 290-40.00C.

Kotani, Wataru; Ono, Yoshiro; and Kumazawa, Kazuhiko, to NGK Insulators, Ltd. Porous ceramic honeycomb filter. 5,545,243, Cl. 55-523.000.

Koubek, Timothy C.; Puletti, Paul P.; and Wieczorek, Joseph, Jr., to National Starch and Chemical Investment Holding Corporation. Water-borne, water redispersible, laminating adhesives for nonwoven applications. 5,545,472, Cl. 428-261.000.

Koullias, Iconomos A., to AT&T Corp. High Q integrated inductor. 5,545,916, Cl. 257-531.000.

Kourtides, Demetrius A.: *See—*
Rasky, Daniel J.; and Kourtides, Demetrius A., 5,545,273, Cl. 156-60.000.

Koury, Daniel N.: *See—*
Ristic, Ljubisa; Koury, Daniel N.; Schmiesing, John E.; Gutteridge, Ronald J.; and Hughes, Henry G., 5,545,912, Cl. 257-417.000.

Kovacs, Paul: *See—*
Davidson, James A.; and Kovacs, Paul, 5,545,227, Cl. 623-16.000.

Koyama, Hideo: *See—*
Sakuma, Shuji; Atsumi, Kiminori; Inose, Akira; and Koyama, Hideo, 5,545,791, Cl. 585-639.000.

Koyama, Masayoshi; Takahashi, Mikiko; and Doi, Kazuyuki, to Hoechst Japan Limited. Protein PHBP-70. 5,545,720, Cl. 530-380.000.

Koyama, Osamu, to Canon Kabushiki Kaisha. Optical recording and/or reproducing apparatus including a two prism beam splitter for size reduction. 5,546,373, Cl. 369-120.000.

Koyama, Susumu, to Fujitsu Limited. Dynamic device reconfiguration having restricted main storage access for subsystem employing magnetic units. 5,546,533, Cl. 395-182.030.

Koyasu, Yoshiro: *See—*
Ochi, Tatsuro; and Koyasu, Yoshiro, 5,545,267, Cl. 148-335.000.

Koyo Seiko Co., Ltd.: *See—*
Kajihara, Kazuhisa; Kawamura, Motoshi; and Yanai, Kunio, 5,544,963, Cl. 384-482.000.
Nakajima, Terukazu, 5,544,542, Cl. 74-492.000.

Kozai, Haruhiko: *See—*
Otsuki, Toshiaki; Kozai, Haruhiko; and Ishii, Seiji, 5,545,959, Cl. 318-568.150.

Kozak, William G.: *See—*
Hart, Robert G.; Ahmed, Bashir M.; Gonzales, Carlos; and Kozak, William G., 5,545,319, Cl. 210-279.000.

Kraft Foods, Inc.: *See—*
Lipinski, Jeffrey M.; and Lawless, Brian P., 5,545,420, Cl. 426-129.000.

Krahnke, Robert H.: *See—*
Estes, Tara N.; and Krahnke, Robert H., 5,545,704, Cl. 528-15.000.

Krajnovich, Douglas J.: *See—*
Kerth, Randall T.; Krajnovich, Douglas J.; Kulkarni, Murlidhar V.; Leung, Wing P.; and Tam, Andrew C., 5,544,775, Cl. 216-65.000.

Kramer, Richard H., to KCS Industries, Inc. Merchandise display system. 5,545,958, Cl. 318-560.000.

Kranich, Uwe, to Advance Micro Devices, Inc. Device and method for reducing bus activity in a computer system having multiple bus-masters. 5,546,560, Cl. 395-468.000.

Krause, Hartmut; Dahmen, Georg P.; and Meiss, Ludwig, to Siemens Aktiengesellschaft. Method for alleviating the sensation of pain. 5,545,124, Cl. 601-2.000.

Kravitz, Edward A.; and Kravitz, Jerome H. Television game interactively played by telephone with television-viewing home audience. 5,545,088, Cl. 463-40.000.

Kravitz, Jerome H.: *See—*
Kravitz, Edward A.; and Kravitz, Jerome H., 5,545,088, Cl. 463-40.000.

Krehbiel, Fred L.: *See—*
Benes, Kevin C.; Krehbiel, Fred L.; and Mackowiak, Russell L., 5,545,054, Cl. 439-467.000.

Kreider, Russell L., to International Business Systems, Incorporated. Mailer assembly. 5,544,807, Cl. 229-305.000.

Krejci, James J.; and Heberger, John M., to Hoechst Celanese Corporation. Primer coating, polyester film having a primer coating, and a process for coating film. 5,545,713, Cl. 528-295.000.

Kressner, Gerhard: *See—*
Hilfinger, Peter; Kressner, Gerhard; and Sauer, Michael, 5,545,968, Cl. 320-2.000.

Krichever, Mark J.: *See—*
Swartz, Jerome; Shepard, Howard M.; Krichever, Mark J.; Metlitsky, Boris; and Barkan, Edward, 5,545,889, Cl. 235-472.000.

Kriegler, Michael; and Nitecki, Danute E., to Cetus Oncology Corporation. Assay for determinig TNF or IL–1 convertase activity. 5,545,518, Cl. 435-4.000.

Kriesel, Marshall S., to Science Incorporated. Fluid container for use with a fluid delivery apparatus. 5,545,139, Cl. 604-132.000.

Krisa, Keith A.: *See—*
Blanchette, Robert A.; Brush, Theresa S.; Farrell, Roberta L.; Krisa, Keith A.; and Mishra, Chittra, 5,545,544, Cl. 435-171.000.

Krishnamurthy, Gopalan; Mycynek, Victor G.; and Sgrignoli, Gary J., to Zenith Electronics Corporation. AGC system with overriding, maximum gain during an initial interval to enhance signal acquisition. 5,546,138, Cl. 348-735.000.

Kroiss, Daniel: *See—*
Jacobson, Peter; Kroiss, Daniel; and Ostroff, Alan, 5,545,181, Cl. 607-4.000.

Kromminga, Thomas: *See—*
Weitkamp, Jens; Ernst, Stefan; Bock, Thomas; Kromminga, Thomas; Kiss, Ákos; and Kleinschmit, Peter, 5,545,784, Cl. 585-250.000.

Kronauer, Richard E.: *See—*
Czeisler, Charles A.; and Kronauer, Richard E., 5,545,192, Cl. 607-88.000.

Krone Aktiengesellschaft: *See—*
Gow, Neil, 5,545,060, Cl. 439-747.000.

Krongelb, Sol: *See—*
Booth, Richard B.; Cooper, Emanuel I.; Giess, Edward A.; Kordus, Mark R.; Krongelb, Sol; Ostrander, Steven P.; Roldan, Judith M.; Sambucetti, Carlos J.; and Saraf, Ravi, 5,545,429, Cl. 427-97.000.

Kruizenga, Kenneth J.; and Gluys, James D., to Eaton Corporation. Shift shaft and shift block assembly. 5,544,541, Cl. 74-473.00R.

Krych, Malgorzata: *See—*
Atkinson, John P.; Hourcade, Dennis; and Krych, Malgorzata, 5,545,619, Cl. 514-12.000.

Krysztofowicz, Andrzej: *See—*
Gabriel-Lacki, Christopher; and Krysztofowicz, Andrzej, 5,544,864, Cl. 256-25.000.

Kubo, Kenji; Dhaouadi, Rached; Tobise, Masahiro; and Azusawa, Noboru, to Hitachi, Ltd. Motor speed controller for suppressing shaft torsion vibration. 5,545,957, Cl. 318-432.000.

Kubo, Koh-ichi: *See—*
Mizushima, Koichi; Yoshida, Jiro; and Kubo, Koh-ichi, 5,545,612, Cl. 505-239.000.

Kubota, Michio: *See—*
Sugimoto, Toshiyuki; Kubota, Michio; and Sakia, Shuzo, 5,545,587, Cl. 435-97.000.

Kubota, Yoshikazu: *See—*
Suzuki, Isao; Matsushima, Sunao; Kubota, Yoshikazu; and Kamijyou, Masayasu, 5,545,467, Cl. 428-211.000.

Kubouchi, Kenji; Fukui, Yuji; and Inoue, Kunitoshi, to Nippon Gasket Co., Ltd. Metal gasket for chain case-carrying engines. 5,544,901, Cl. 277-235.00B.

Kuckhahn, Albert H.: *See—*
Test, Howard R.; Vinson, Michael R.; and Kuckhahn, Albert H., 5,544,804, Cl. 228-180.500.

Kuczynski, Anthony L.; Ayer, Atul D.; and Wong, Patrick S., to Alza Corporation. Dosage form for administering oral hypoglycemic glipizide. 5,545,413, Cl. 424-473.000.

Kudo, Shokiku; Hosoi, Masanori; and Kawano, Michinobu, to Fuji Jukogyo Kabushiki Kaisha. Cooling and dust collecting apparatus for machine tool. 5,544,986, Cl. 408-67.000.

Kudo, Toshiharu: *See—*
Kondo, Hiroki; Totsuka, Mitsuhiko; Kudo, Toshiharu; and Hanazaki, Hisashi, 5,546,066, Cl. 337-163.000.

Kudrus, Heiner. Changing device for a machine for simultaneous spooling of several parallel threads. 5,544,830, Cl. 242-43.00A.

Kuga, Kaeko, to Rohm Co., Ltd. Display apparatus. 5,546,104, Cl. 345-125.000.

Kuhlmann, Karl: *See—*
Harder, Christian; Höwe, Bernd; and Kuhlmann, Karl, 5,545,457, Cl. 428-77.000.

Kuhman, Daniel E.: *See—*
Collins, David J.; Kuhman, Daniel E.; and Hermanson, Herman A., 5,545,283, Cl. 156-382.000.

Kuhn, Stephen R.; and Young, Keith, to ABC Rail Products Corporation. Railroad spring frog. 5,544,848, Cl. 246-276.000.

Kukanskis, Peter; Gabriele, Peter; Letize, Raymond; and Adams, William, to Mac Dermid, Inc. Photodefinable dielectric composition useful in the manufacture of printed circuits. 5,545,510, Cl. 430-312.000.

Kulkarni, Murlidhar V.: *See—*
Kerth, Randall T.; Krajnovich, Douglas J.; Kulkarni, Murlidhar V.; Leung, Wing P.; and Tam, Andrew C., 5,544,775, Cl. 216-65.000.

Kumagae, Yoshio: *See—*
Harato, Takuo; Ishida, Takahiro; Kumagae, Yoshio; Inami, Michikazu; Ishibashi, Kazuhisa; and Murakami, Mitsuaki, 5,545,384, Cl. 423-121.000.

Kumakura, Takeshi: *See—*
Ohgai, Hideo; Momota, Hiroshi; Kumakura, Takeshi; Kajifusa, Noriyuki; Kitazawa, Toshiki; Oshiden, Kazuhide; and Matsushiro, Aizo, 5,545,564, Cl. 435-320.100.

Kumano, Hiroshi, to Rohm Co., Ltd. Semiconductor device having zener diodes with temperature stability between base and collector regions. 5,545,914, Cl. 257-469.000.

Kumazawa, Kazuhiko: *See—*
Kotani, Wataru; Ono, Yoshiro; and Kumazawa, Kazuhiko, 5,545,243, Cl. 55-523.000.

Kumho & Co., Inc.: *See—*
Moon, Jae-Chang, 5,544,889, Cl. 473-383.000.

Kunig, Helmut: *See—*
Bargelé, Norbert; Brandt, Manfred; and Kunig, Helmut, 5,545,083, Cl. 452-136.000.

Kunikane, Tatsuro; Okamoto, Akira; Watanabe, Tetsuo; Miyata, Sadayuki; Furukawa, Hiroyuki; and Sakai, Yoshimitsu, to Fujitsu Limited. Optical module for two-way transmission. 5,546,212, Cl. 359-163.000.

Kunnex Incorporated: *See—*
Huang, Joseph, 5,544,415, Cl. 30-43.920.

Kunz, Dieter: *See—*
Mueller, Elmar; and Kunz, Dieter, 5,544,956, Cl. 303-196.000.

Kuo, Ping-Lin; and Chuang, Theng-Fu, to Yung Chi Paint & Varnish Mfg. Co., Ltd. Self-polishing type antifouling coating composition containing film-formable metal soap compound. 5,545,823, Cl. 523-122.000.

Kuramoto, Shin-ichi: *See—*
Iida, Toru; Ohashi, Michihito; Sakai, Yoshihiro; Kuramoto, Shin-ichi; Chiba, Shunichi; Asahina, Yasuo; and Tomita, Junko, 5,545,381, Cl. 422-186.000.

Kurasako, Ryoichi, to Toyota Jidosha Kabushiki Kaisha. Hydraulic brake system having servo pressure generator activated by movement of braking device due to torque transmitted from rotor to brake pad. 5,544,724, Cl. 188-72.200.

Kurii, Jun; Nomura, Noboru; Itoh, Masami; Ohira, Kozo; Tsumadori, Masaki; Matsunaga, Akira; Kimura, Akio; and Suzue, Shigetoshi, to Kao Corporation. Bleaching composition. 5,545,349, Cl. 252-186.380.

Kurimoto, Kurimoto: *See—*
Fujita, Takafumi; Shimoda, Ikuo; Mochimaru, Masami; Otsuka, Susumu; Kawai, Nobuyasu; Kurimoto, Kurimoto; and Inaba, Kanemasa, 5,544,452, Cl. 52-167.200.

Kurisu, Masafumi: *See—*
Shinozaki, Eiji; Fukahori, Kiyoshi; and Kurisu, Masafumi, 5,546,027, Cl. 327-59.000.

Kuroda, Koichi; Aoki, Yoshiaki; Fujikawa, Kiyokazu; Kawamura, Youzou; Hirota, Tatsuya; Kawamura, Tamotsu; Fukuda, Takashi; Kishi, Minoru; and Hirose, Hisanori, to Sanyo Electric Co., Ltd. Clothes drier with drying termination determining function. 5,544,428, Cl. 34-493.000.

Kuroda, Ryo; and Oguchi, Takahiro, to Canon Kabushiki Kaisha. Information recording and/or reproducing apparatus using probe. 5,546,374, Cl. 369-126.000.

Kurokawa, Takayuki; Saitoh, Atsushi; Matsubara, Shigemasa; Nawa, Masayoshi; and Kobayashi, Kazuo, to Mitsumi Electric Co., Ltd. GPS receiver. 5,546,092, Cl. 342-357.000.

Kurowski, Loreaz V.; Blanz, Wolf-Ekkehard; and Delong, Wolf, to Siemens Medical Systems, Inc. Ultrasound blood flow monitor of the non-doppler type. 5,544,657, Cl. 128-661.080.

Kurtz, Scott D.: *See—*
Cooley, David M.; DiGiovanni, Joseph J.; Kaewell, John D.; Kurtz, Scott D.; Lemmo, Mark A.; Regensburg, Michael W.; Vessal, David; and Johns, Eric, 5,546,383, Cl. 370-50.000.

Kurtzberg, Jerome M.; and Levanoni, Menachem, to International Business Machines Corporation. Evaluation and ranking of manufacturing line non-numeric information. 5,546,329, Cl. 364-552.000.

Kurumatani, Hiroshi: *See—*
Konishi, Akio; Saito, Yoshiyuki; Takeda, Shuzo; Yoshio, Hideaki; and Kurumatani, Hiroshi, 5,546,249, Cl. 360-95.000.

Kurzweil Applied Intelligence, Inc.: *See—*
Lynch, Thomas E.; Sejnoha, Vladimir; and Dinger, Thomas E., 5,546,499, Cl. 395-2.490.

Kushnaryov, Vladimir M.: *See—*
Grossberg, Sidney E.; Kushnaryov, Vladimir M.; Cashdollar, L. William; Carrigan, Donald R.; and Knox, Konstance K., 5,545,550, Cl. 435-240.200.

Kuster & Co., GmbH: *See—*
Hilgert, Gunter; and Medebach, Thomas, 5,544,543, Cl. 74-502.400.

Kusuda, Chiyuki; Furuya, Masayuki; Wada, Masaru; Irizato, Yoshihiro; Naruse, Hiroshi; and Nagata, Teruyuki, to Mitsui Toatsu Chemicals, Inc. Process for the preparation of 4-methoxy-2,2',6'-Trimethyldiphenylamine. 5,545,751, Cl. 564-398.000.

Kusuda, Chiyuki: *See—*
Nagata, Teruyuki; Kusuda, Chiyuki; and Wada, Masaru, 5,545,752, Cl. 564-398.000.

Kusumoto, Yasuhiro: *See—*
Uehara, Yasuhiro; Kusumoto, Yasuhiro; Kanesawa, Yoshio; and Inoue, Toru, 5,546,175, Cl. 355-290.000.

Kuzma, Janusz A., to Cochlear, Ltd. Cochlear electrode implant assemblies with positioning system therefor. 5,545,219, Cl. 623-10.000.

Kwak, Heui-kuk, to Samsung Electronics Co. Ltd. High speed video image printing method and an apparatus therefor. 5,546,511, Cl. 395-106.000.

Kwiatek, David J., to Eaton Corporation. Gaseous fuel burner and method of making same. 5,545,036, Cl. 431-266.000.

Kwon, Chul H.: *See—*
Yun, Dong H.; Lee, Kyu C.; Hong, Hyung K.; Park, Hyeon S.; Kwon, Chul H.; and Shin, Hyun W., 5,545,300, Cl. 204-424.000.

Kwon, Young D.: *See—*
Prevorsek, Dusan C.; Lem, Kwok W.; Li, Hsin L.; and Kwon, Young D., 5,545,455, Cl. 428-76.000.

Kynett, Virgil N.; and Fandrich, Mickey L., to Intel Corporation. Circuitry and method for selectively protecting the integrity of data stored within a range of addresses within a non-volatile semiconductor memory. 5,546,561, Cl. 395-490.000.

Kyushima, Ichiro; and Kainaga, Masahiro, to Hitachi, Ltd. Cache reuse control system having reuse information field in each cache entry to indicate whether data in the particular entry has higher or lower probability of reuse. 5,546,559, Cl. 395-460.000.

L&P Property Management Company: *See—*
Frazer, James T.; Scott, David B.; and Bondanza, James F., 5,544,599, Cl. 112-118.000.

La-Z-Boy Chair Company: *See—*
Saul, Jonathan R.; Marshall, Richard E.; and LaPointe, Larry P., 5,544,938, Cl. 297-248.000.

LaBelle, Margaret K.: *See—*
Brockmeyer, Roger L.; Dievendorff, Richard; House, Daniel E.; Jenner, Earle H.; LaBelle, Margaret K.; Mall, Michael G.; and Silen, Stuart L., 5,546,582, Cl. 395-650.000.

Laboratoire Nycomed SA: *See—*
Hilaire, Pierre; and Lagarde, Vincent, 5,545,134, Cl. 604-96.000.

Labrecque, Normand, to A. & D. Prevost Inc. Bead for retaining and air sealing a windowpane and window assembly therewith. 5,544,457, Cl. 52-204.690.

Labrie, Fernand, to Endorecherche, Inc. Activation of androgen receptors with low dose non-masculinizing androgenic compounds. 5,545,634, Cl. 514-169.000.

LaFleur, Edward E.: *See*—
Amici, Robert M.; LaFleur, Edward E.; and Work, William J., 5,545,689, Cl. 525-057.000.
Amici, Robert M.; LaFleur, Edward E.; and Work, William J., 5,545,826, Cl. 525-57.000.

Lafontaine, Daniel M.: *See*—
Burns, Matthew M.; and Lafontaine, Daniel M., 5,545,133, Cl. 604-96.000.

Lagarde, Vincent: *See*—
Hilaire, Pierre; and Lagarde, Vincent, 5,545,134, Cl. 604-96.000.

L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation Des Procedes Georges Claude: *See*—
Dick, Sami; Recourt, Patrick; and Laurenceau, Serge, 5,545,033, Cl. 431-181.000.

Laird, Douglas A.: *See*—
D'Souza, Godfrey P.; and Laird, Douglas A., 5,546,022, Cl. 326-87.000.

Laitram Corporation, The: *See*—
Kinsee, Darrell E., 5,544,740, Cl. 198-834.000.

Lalani, Abdul H. Dental floss. 5,545,480, Cl. 428-364.000.

Lam, Chung H.; Lord, David K.; and Wright, Judith A., to International Business Machines Corporation. Method of making semiconductor trench capacitor cell having a buried strap. 5,545,583, Cl. 437-52.000.

Lam, Kai Y.; and Han, Loi, to Microtek Lab, Inc. Transparency holder. 5,546,144, Cl. 353-120.000.

Lamb, Catherine S.: *See*—
Behr, Stephen R.; Seeds, Jeffrey K.; Lamb, Catherine S.; Garleb, Keith A.; and Walton, Joseph E., 5,545,414, Cl. 424-484.000.

Lammens, Arthur E.: *See*—
Schmidt, Clayton C.; Zorich, Chris; Lammens, Arthur E.; and Parvin, Jackie D., 5,544,957, Cl. 312-221.000.

LaMonica, David A., to Rochem Separation Systems. Method of refining oil. 5,545,329, Cl. 210-651.000.

Lancaster, E. Peter; and Young, Richard H. Disposable diaper with refastenable mechanical fastening system. 5,545,159, Cl. 604-391.000.

Land, Frank J. Method of making a textured glass yarn fabric for use in wallcoverings acoustical panels and ceiling tiles. 5,545,441, Cl. 427-389.800.

Landis & Gyr Business Support AG: *See*—
Hickl, Erich, 5,546,002, Cl. 324-418.000.

Landis & Gyr Technology Innovation AG: *See*—
Studer, Werner, 5,544,970, Cl. 403-399.000.

Landscheidt, Heinz: *See*—
Klausener, Alexander; Landscheidt, Heinz; and Blank, Heinz-Ulrich, 5,545,754, Cl. 564-418.000.

Landua, Werner; and Schimpf, Wolfgang, to Adolf Hottinger Maschinenbau GmbH. Apparatus and a procedure for cleaning tools during the manufacture of shells or core packets that are ready for casting. 5,544,667, Cl. 134-64.00R.

Landua, Werner; and Schimpf, Wolfgang, to Adolf Hottinger Maschinenbau GmbH. Apparatus and a procedure for shot-hood cleaning during the production of casting molds or core packets that are ready for casting. 5,544,694, Cl. 164-20.000.

Lane, Jerry A., to Autodie International. Deep bore drilling apparatus with rotatable single tube system. 5,544,985, Cl. 408-56.000.

Lane, John H.: *See*—
O'Connor, Kurt F.; Hoff, James P.; Frasier, Donald J.; Peeler, Ralph E.; Mueller-Largent, Heidi; Trees, Floyd F.; Whetstone, James R.; Lane, John H.; and Jeffries, Ralph E., 5,545,003, Cl. 415-115.000.

Lang, Douglas J.: *See*—
Dahl, Roger W.; Swanson, David K.; Hahn, Stephen J.; Lang, Douglas J.; and Heil, John E., 5,545,202, Cl. 607-129.000.
Schulte, Theodore J.; Dahl, Roger W.; Bach, Stanley M., Jr.; Shapland, J. Edward; and Lang, Douglas J., 5,545,205, Cl. 607-123.000.

Langdon, Glen G., Jr.; and Zandi, Ahmad, to International Business Machines Corporation. Order-preserving, fast-decoding arithmetic coding arithmetic coding and compression method and apparatus. 5,546,080, Cl. 341-107.000.

Langer, Robert S.: *See*—
Laureacin, Cato T.; Lucas, Paul A.; Syftestad, Glenn T.; Domb, Abraham; Glowacki, Julianne; and Langer, Robert S., 5,545,409, Cl. 424-426.000.

Langhammer, Jerome. Griddle and heater bag. 5,544,569, Cl. 99-422.000.

Langner, Horst: *See*—
Henken, Immanuel; and Langner, Horst, 5,544,855, Cl. 251-121.000.

Langrana, Noshir A.: *See*—
Parsons, John R.; Lee, Casey K.; Langrana, Noshir A.; Clemow, Alastair J.; Chen, Elizabeth H.; and Hawkins, Monica V., 5,545,229, Cl. 623-17.000.

Lanham, Bobby G., Jr.: *See*—
Stanfield, James R.; Daquilante, Robert A.; and Lanham, Bobby G., Jr., 5,545,855, Cl. 177-25.130.

Lanier, Jaron Z.: *See*—
Grimaud, Jean-Jacques G.; Lanier, Jaron Z.; Abraham, Arthur; and Harvill, Young, 5,546,530, Cl. 395-163.000.

Lanoie, Louis A., to Phenix Group, Inc. Instrument display cap with pivoting top. 5,544,437, Cl. 40-334.000.

Lanzarin, Giuseppe, to Cartotecnica Montebello, s.r.l. Device with shaped head for the introduction of springs capable of booking brochures and pamphlets within a container. 5,544,920, Cl. 281-46.000.

LaPack, Mark A.: *See*—
Wright, Larry G.; LaPack, Mark A.; Blaser, Wayne W.; Beebe, Kenneth R.; and Leugers, Mary A., 5,545,895, Cl. 250-282.000.

Lapatovich, Walter P.; and Butler, Scott J., to Osram Sylvania Inc. Electrodeless high intensity discharge lamp having field symmetrizing aid. 5,545,953, Cl. 315-248.000.

Laperrière, Luc: *See*—
Gagnon, Daniel; Pouliot, Nicole; Therrien, Michel; and Laperrière, Luc, 5,545,898, Cl. 250-369.000.

LaPlace, Carl J.: *See*—
Trainor, Jack; LaPlace, Carl J.; and Harlow, James, 5,545,974, Cl. 323-340.000.

LaPointe, Larry P.: *See*—
Saul, Jonathan R.; Marshall, Richard E.; and LaPointe, Larry P., 5,544,938, Cl. 297-248.000.

LaRocca, Brian; and O'Brien, Gregory T., to Rosemount Analytical Inc. Measurement probe with improved analog-to-digital conversion. 5,546,082, Cl. 341-166.000.

Larrabee, James: *See*—
Orlicki, David; Larrabee, James; and Herczeg, Karen L., 5,546,513, Cl. 395-111.000.

Larsen, Robert D.: *See*—
King, Anthony O.; Larsen, Robert D.; Verhoeven, Thomas R.; and Zhao, Mangzhu, 5,545,758, Cl. 568-6.000.

Larson, John P.: *See*—
Duff, Paul J.; Larson, John P.; and Lechtanski, Joseph B., 5,546,073, Cl. 340-585.000.

Larsson, Håkan; and Donnerdal, Ove, to Aktiebolaget Electrolux. Apparatus forming a cutting machine or circular saw. 5,545,079, Cl. 451-342.000.

Larsson, Leif M.; and Berghager, Hans A. P., to Telefonaktiebolaget LM Ericsson. Label handling in packet networks. 5,546,387, Cl. 370-60.000.

Lasky, Jerome B.: *See*—
Armacost, Michael D.; Givens, John H.; Koburger, Charles W., III; and Lasky, Jerome B., 5,545,581, Cl. 437-52.000.

Laster, Maurice S.: *See*—
Roach, Peter O., Jr.; Corner, Edward I.; Link, Charles M., II; and Laster, Maurice S., 5,546,444, Cl. 379-59.000.

Latchford, Ian S.: *See*—
Chen, Jian; Papanu, James S.; Mak, Steve S. Y.; Ish-Shalom, Carmel; Hsieh, Peter; Lau, Wesley G.; Rhoades, Charles S.; Shieh, Brian; Latchford, Ian S.; Williams, Karen A.; and Yu-Wang, Victoria, 5,545,289, Cl. 156-643.100.

Lau, Wesley G.: *See*—
Chen, Jian; Papanu, James S.; Mak, Steve S. Y.; Ish-Shalom, Carmel; Hsieh, Peter; Lau, Wesley G.; Rhoades, Charles S.; Shieh, Brian; Latchford, Ian S.; Williams, Karen A.; and Yu-Wang, Victoria, 5,545,289, Cl. 156-643.100.

Laugal, John C.: *See*—
Moutrie, Michael F.; Whitmore, Andrew, III; Hess, David M.; Laugal, John C.; Mina, Steven M.; and Boler, Matthew J., 5,546,275, Cl. 361-707.000.

Laughlin, James; and Dodge, David J., to Burton Corporation, The. Step-in boot binding. 5,544,909, Cl. 280-617.000.

Laukien, Frank H.: *See*—
Maas, Werner E.; Cory, David G.; and Laukien, Frank H., 5,546,000, Cl. 324-322.000.

Laukien, Günther: *See*—
Westphal, Michael; and Laukien, Günther, 5,545,997, Cl. 324-320.000.

Laurel, David F.; Heathman, James F.; and Marcel, Kenneth P., to Halliburton Company. Drillable whipstock. 5,544,704, Cl. 166-117.600.

Laurenceau, Serge: *See*—
Dick, Sami; Recourt, Patrick; and Laurenceau, Serge, 5,545,033, Cl. 431-181.000.

Laurencin, Cato T.; Lucas, Paul A.; Syftestad, Glenn T.; Domb, Abraham; Glowacki, Julianne; and Langer, Robert S., to Massachusetts Institute of Technology. Delivery system for controlled release of bioactive factors. 5,545,409, Cl. 424-426.000.

Lawless, Brian P.: *See*—
Lipinski, Jeffrey M.; and Lawless, Brian P., 5,545,420, Cl. 426-129.000.

Lawrence, Roger R.; Micklich, Frank T.; Ressl, Charles T.; and Sechrist, Paul A., to UOP. Replacement of particles in a moving bed process. 5,545,312, Cl. 208-152.000.

Lax, Györgyi: *See*—
Szántay, Csaba; Kardos, Zsuzsanna B.; Moldvai, István; Major, Eszter T.; Szántay, Csaba, Jr.; Mándi, Attila; Blaskó, Gábor; Simig, Gyula; Lax, Györgyi; Drabant, Sándor; Szállási, Tamas; Fekete, Márton; and Gigler, Gábor, 5,545,741, Cl. 546-276.700.

Le, Thu A.; Yi, Sung S.; Zwaskis, William; Pedlick, Jack S.; Luscombe, Brian H.; Jamiolkowski, Dennis D.; Di Giovanni, John; Seritella, Keith A.; Steckel, Mark G.; and Harwin, Steven F., to Ethicon, Inc. Umbrella-shaped suture anchor device with actuating ring member. 5,545,180, Cl. 606-232.000.

Leak, Bruce A., to Apple Computer, Inc. Graphic system for displaying images in gray-scale. 5,546,105, Cl. 345-155.000.

Lebby, Michael S.; Chun, Christopher K. Y.; and Witting, Gary F., to Motorola. Integrated light emitting device. 5,546,413, Cl. 372-6.000.

Lebby, Michael S.: *See*—
Ackley, Donald E.; and Lebby, Michael S., 5,545,359, Cl. 264-1.240.

Lechtanski, Joseph B.: *See*—
Duff, Paul J.; Larson, John P.; and Lechtanski, Joseph B., 5,546,073, Cl. 340-585.000.

Lee, Albert: *See*—
Noworolski, Zbigniew; Steresçu, Vlad; Lee, Albert; Halton, Padraig; and Noworolski, Jan M., 5,546,003, Cl. 324-434.000.

Lee, Caroline M.; Green, Martin R.; and Prota, Giuseppe, to Chesebrough-Pond's USA Co. Cosmetic composition. 5,545,399, Cl. 424-59.000.

Lee, Casey K.: *See*—
Parsons, John R.; Lee, Casey K.; Langrana, Noshir A.; Clemow, Alastair J.; Chen, Elizabeth H.; and Hawkins, Monica V., 5,545,229, Cl. 623-17.000.

Lee, Chuen-Sheng: *See*—
Tang, Horng-Yi; Wu, Maw-Kuen; Lee, Chuen-Sheng; and Hsu, Huei-Ying, 5,545,305, Cl. 205-51.000.

Lee, Chu-Mei: *See*—
Chung, Wen-Jye; and Lee, Chu-Mei, 5,545,570, Cl. 437-8.000.

Lee, Dennis: *See*—
Adams, Jerry L.; Hall, Ralph F.; Lee, Dennis; Mayer, Ruth J.; and Seibel, George L., 5,545,669, Cl. 514-562.000.

Lee, Deok-hyun: *See*—
Lee, Rae-hwan; Jeon, Hwa-jin; Choi, Kwang-sik; Park, Hong-soon; Yun, Sang-hwa; Song, Kwang-lyeol; Choi, Hae-min; Lee, Deok-hyun; Song, Bong-hun; Park, Dong-jin; and Byeon, Seong-jin, 5,546,368, Cl. 369-47.000.

Lee, Dong M.; and Hong, Hyeong S., to Hyundai Electronics Industries Co., Ltd. Data output buffer with latch up prevention. 5,546,020, Cl. 326-83.000.

Lee, Hyung-hee; and Heo, Jung-kwon, to Samsung Electronics Co., Ltd. Optical disk system for recording and reproducing a mini disk and standard compact discs. 5,546,369, Cl. 369-58.000.

Lee, Jia-Kuen J.: *See*—
Tian, Hong; Briggs, Christopher H. W.; Chiang, Chisin; and Lee, Jia-Kuen J., 5,545,989, Cl. 324-212.000.

Lee, Jueng-gil; Park, Sun-hoo; and Choi, Gil-heyun, to Samsung Electronics Co., Ltd. Method for manufacturing a collimator. 5,544,771, Cl. 216-2.000.

Lee, Kwan H.: *See*—
Chai, Eun S.; and Lee, Kwan H., 5,545,881, Cl. 219-719.000.

Lee, Kyu C.: *See*—
Yun, Dong H.; Lee, Kyu C.; Hong, Hyung K.; Park, Hyeon S.; Kwon, Chul H.; and Shin, Hyun W., 5,545,300, Cl. 204-424.000.

Lee, Min-Sup, to Daewoo Electronics Co., Ltd. Method for encoding a video signal using feature point based motion estimation. 5,546,129, Cl. 348-416.000.

Lee, Myeong-hwan, to Samsung Electronics Co., Ltd. Video brightness/contrast enhancement method adaptive to a scene and circuit therefor. 5,546,134, Cl. 348-673.000.

Lee, Rae-hwan; Jeon, Hwa-jin; Choi, Kwang-sik; Park, Hong-soon; Yun, Sang-hwa; Song, Kwang-lyeol; Choi, Hae-min; Lee, Deok-hyun; Song, Bong-hun; Park, Dong-jin; and Byeon, Seong-jin, to Samsung Electronics Co. Ltd. Disk recording medium and reproduction method and apparatus thereof. 5,546,368, Cl. 369-47.000.

Lee, Robert E., Jr., to General Electric Company. Method of generating electrical energy metering quantities in a multi-channel load profile recorder. 5,546,318, Cl. 364-483.000.

Lee, Sang H.; Ko, Jung H.; Lee, Tae H.; and Shim, Chang S., to Electronics and Telecommunications Research Institute. Frame phase aligner. 5,546,401, Cl. 370-105.100.

Lee, Sang-su; and Hong, Chang-wan, to Samsung Electronics Co. Ltd. Remote control method and apparatus thereof. 5,545,857, Cl. 178-18.000.

Lee, Suk-jae: *See*—
An, Sung-soon; and Lee, Suk-jae, 5,545,211, Cl. 623-1.000.

Lee, Tae H.: *See*—
Lee, Sang H.; Ko, Jung H.; Lee, Tae H.; and Shim, Chang S., 5,546,401, Cl. 370-105.100.

Lee, Wen-Yuan. Modular form assembly for concrete structure. 5,544,852, Cl. 249-192.000.

Lee, Woo B.; Oh, Se J.; Yeo, Tae J.; Ko, Jae W.; and Koo, Yung M., to Hyundai Electronics Industries Co., Ltd. Method for fabricating electrostatic discharge protecting transistor. 5,545,572, Cl. 437-26.000.

Lee, Yong H., to Goldstar Electron Co., Ltd. Absolute value calculation method and circuit. 5,546,335, Cl. 364-715.010.

Lee, Yong I. Electroconductive adhesive tape. 5,545,471, Cl. 428-251.000.

Lee, Yong-hee: *See*—
Park, Young-hoon; Seo, Young-woo; and Lee, Yong-hee, 5,545,578, Cl. 437-44.000.

Lee, Young-Jin: *See*—
Song, Il-Cheon; Kim, Sang-Il; and Lee, Young-Jin, 5,545,364, Cl. 264-210.500.

Lee, Young-sik; Jo, Hyun-min; Jee, Kyung-ha; and Choi, Nak-choon, to Samsung Electronics Co., Ltd. Zero voltage switching controller of resonance mode converter and electronic ballast using the same. 5,546,300, Cl. 363-132.000.

Lee, Yuan-jyi: *See*—
Cheng, Chao-hsi; and Lee, Yuan-jyi, 5,544,451, Cl. 52-167.200.

Leeb, Georg: *See*—
Klingler, Alban; and Leeb, Georg, 5,544,826, Cl. 241-242.000.

Leemans, Jan J. A.: *See*—
De Greve, Henri M. J.; Salgado, Maria B. L. F.; Van Montagu, Marc C. E.; Vaeck, Mark A.; Zabeau, Marcus F. O.; Leemans, Jan J. A.; and Hofte, Hermanus F. P., 5,545,565, Cl. 435-320.100.

Leezer, Matthew R. Foldable and extendable table for spray booths. 5,544,592, Cl. 108-48.000.

Lefkowitz, Jay. Multi-photo display apparatus. 5,544,436, Cl. 40-124.200.

Legome, Mark J.: *See*—
Benderev, Theodore V.; Naves, Neil H.; and Legome, Mark J., 5,544,664, Cl. 128-898.000.

Lehmbeck, Steven P.: *See*—
Abidin, Micheal R.; and Lehmbeck, Steven P., 5,545,175, Cl. 606-182.000.

Lehnert, Robert A.: *See*—
Jones, Kyle B.; Lehnert, Robert A.; McInnes, Ian D.; Quinn, Robert D.; Sisley, Steven E.; and Temus, Charles J., 5,546,436, Cl. 376-272.000.

Lei, Xun: *See*—
Haffely, Jeffrey L.; Lei, Xun; and Brickner, Louis C., 5,545,081, Cl. 451-367.000.

Leight, James E.: *See*—
Willner, Alan E.; Chang-Hasnain, Constance J.; and Leight, James E., 5,546,209, Cl. 359-115.000.

Leising, Randolph A.: *See*—
Takeuchi, Esther S.; and Leising, Randolph A., 5,545,497, Cl. 429-219.000.

Leitch, Clifford D.; Schwendeman, Robert J.; and Macnak, Philip P., to Motorola, Inc. Method and apparatus for adaptively selecting a communication strategy in a selective call radio communication system. 5,546,411, Cl. 371-5.500.

Leitenberger, Werner, to Voith Sulzer Papiermaschinen GmbH. Drying section. 5,544,422, Cl. 34-117.000.

Le-Khac, Bi, to Arco Chemical Technology, L.P. Polyether-containing double metal cyanide catalysts. 5,545,601, Cl. 502-156.000.

Leland, John E., to United States of America, Air Force. Enhanced nucleate boiling heat transfer for electronic cooling and thermal energy transfer. 5,544,696, Cl. 165-80.400.

Leland Stanford University, Board of Trustees of the: *See*—
Willner, Alan E.; Chang-Hasnain, Constance J.; and Leight, James E., 5,546,209, Cl. 359-115.000.

Lem, Kwok W.: *See*—
Prevorsek, Dusan C.; Lem, Kwok W.; Li, Hsin L.; and Kwon, Young D., 5,545,455, Cl. 428-76.000.

Lemay, Guy: *See*—
Montplaisir, Serge; Mercure, Stéphane; and Lemay, Guy, 5,545,525, Cl. 435-6.000.

Lemberg, Vladimir: *See*—
Black, Michael; and Lemberg, Vladimir, 5,546,214, Cl. 359-203.000.

Lemmo, Mark A.: *See*—
Cooley, David M.; DiGiovanni, Joseph J.; Kaewell, John D.; Kurtz, Scott D.; Lemmo, Mark A.; Regensburg, Michael W.; Vessal, David; and Johns, Eric, 5,546,383, Cl. 370-50.000.

Le Monnier De Gouville, Jean-Bernard, to Sourdillon. Electrical harness for wiring the electrical ignition circuit of a cooking appliance with gas burners. 5,545,034, Cl. 431-255.000.

Lennox, Charles D.; and Roberts, Troy W., to Boston Scientific Corporation. Interstitial heating of tissue. 5,545,195, Cl. 607-105.000.

Lennox Industries Inc.: *See*—
Armijo, David L.; Baker, Tony R.; Cherington, Floyd E.; Christopher, Delbert S.; Moody, David J.; Mullen, James J.; Vinson, Hugh E.; Warren, John L.; Beilfuss, Robert C.; and Wiker, John H., 5,544,645, Cl. 126-101.000.

Lenz, Helmut, to Siemens Aktiengesellschaft. Power supply for predominantly inductive loads. 5,546,299, Cl. 363-71.000.

Leo Pharmaceutical Products Ltd. A/S (Lovens Kemiske / Fabrik Produktionsaktieselskab): *See*—
Bretting, Claus A. S., 5,545,633, Cl. 514-167.000.

Leonard, Jerry, to Texas Instruments Incorporated. Hybrid all optical silica waveguide modulator using non-linear electro-optic components. 5,546,480, Cl. 385-3.000.

Leppert, Hans-Detlef: *See*—
Lysson, Hans-Jürgen; Lisse, Frank; Hahn, Manuela; Leppert, Hans-Detlef; and Darbon, Philippe, 5,545,246, Cl. 65-435.000.

Leppin, Dennis: *See*—
Pathak, Vijay K.; and Leppin, Dennis, 5,545,296, Cl. 203-1.000.

Letize, Raymond: *See*—
Kukanskis, Peter; Gabriele, Peter; Letize, Raymond; and Adams, William, 5,545,510, Cl. 430-312.000.

Leugers, Mary A.: *See*—
Wright, Larry G.; LaPack, Mark A.; Blaser, Wayne W.; Beebe, Kenneth R.; and Leugers, Mary A., 5,545,895, Cl. 250-282.000.

Leung, De-Mei: *See*—
Fu, Roger C.; Leung, De-Mei; Fleitman, Jeffrey S.; Rizzolio, Michele C.; and Miksztal, Andrew R., 5,545,637, Cl. 514-233.500.

Leung, Man-Kit: *See*—
Cameron, James F.; Frechet, Jean M. J.; Leung, Man-Kit; Niesert, Claus-Peter; MacDonald, Scott A; and Willson, Carlton G., 5,545,509, Cl. 430-270.100.

Leung, Wing P.: *See*—
Kerth, Randall T.; Krajnovich, Douglas J.; Kulkarni, Murlidhar V.; Leung, Wing P.; and Tam, Andrew C., 5,544,775, Cl. 216-65.000.

Leuven, Vern V.: *See*—

VOL 1189 ISS 2 AG 13

Cederwall, Philip J.; Prins, Garrett P.; and Leuven, Vern V., 5,545,010, Cl. 416-145.000.

Levander, Gustav: *See—*
Fryklund, Linda; Hjertman, Birger; Gustavsson, Marie-Louise; Kaluski, Jacob; Levander, Gustav; Ljungquist, Olle; Ström, Anders; and Virding, Jonas, 5,545,144, Cl. 604-187.000.

Levanoni, Menachem: *See—*
Kurtzberg, Jerome M.; and Levanoni, Menachem, 5,546,329, Cl. 364-552.000.

Levin, David N., to Arch Development Corp. Feature guided method and apparatus for obtaining an image of an object. 5,546,472, Cl. 382-131.000.

Leviton Manufacturing Co., Inc.: *See—*
Doyle, Richard C.; and Rivera, Lester, 5,546,263, Cl. 361-50.000.

Lew, Clarence Y.: *See—*
Pentoney, Stephen L., Jr.; Lew, Clarence Y.; and Rakestraw, David, 5,545,901, Cl. 250-458.100.

Lewicki, Walter J., Jr.; and Bowers, John H., to Armstrong World Industries, Inc. Electrographic printing. 5,546,110, Cl. 347-115.000.

Lewis, Aaron. Method for external excitation of subwavelength light sources that is integrated into feedback methodologies. 5,546,223, Cl. 359-385.000.

Lewis, Adrian S.: *See—*
Knowles, Gregory P.; and Lewis, Adrian S., 5,546,477, Cl. 382-242.000.

Lewis, Jimmie. Extendable rearview mirror. 5,546,239, Cl. 359-855.000.

Lex, Joseph A.: *See—*
O'Dell, Robin D.; Lex, Joseph A.; Simon, Alice M.; and Shah, Jayesh, 5,545,476, Cl. 428-327.000.

Lexmark International, Inc.: *See—*
Balthis, Vernon M.; Merten, Ronald A.; Rumery, Robert J.; and Vollmer, Robert L., 5,545,499, Cl. 430-59.000.

LG Electronics Inc.: *See—*
Chai, Eun S.; and Lee, Kwan H., 5,545,881, Cl. 219-719.000.

Li, Chin-Chu. Disk storage box. 5,544,742, Cl. 206-308.300.

Li, Hong: *See—*
Helland, John R.; and Li, Hong, 5,545,201, Cl. 607-127.000.

Li, Hsin L.: *See—*
Prevorsek, Dusan C.; Lem, Kwok W.; Li, Hsin L.; and Kwon, Young D., 5,545,455, Cl. 428-76.000.

Li, Ping: *See—*
Sharma, Raghu N.; Davis, Jeffrey P.; Gunn, Timothy D.; Li, Ping; Maitra, Sidhartha; and Thanawala, Ashish A., 5,546,395, Cl. 370-84.000.

Li, Shih-Gong; and Shrader, Theodore J. L., to International Business Machines Corporation. Reconfiguration of database by interactive manipulation of icons. 5,546,526, Cl. 395-159.000.

Liang, Mong-Song; and Hsu, Charles C.-H., to Taiwan Semiconductor Manufacturing Company. Method of fabricating a sub-quarter micrometer channel field effect transistor having elevated source/drain areas and lightly doped drains. 5,545,579, Cl. 437-44.000.

Liang, Mong-song: *See—*
Wang, Chen-jong; Liang, Mong-song; Wuu, Shou-gwo; and Su, Chung-Hui, 5,545,585, Cl. 437-52.000.
Wuu, Shou-Gwo; Liang, Mong-Song; Wang, Chen-Jong; and Su, Chung-Hui, 5,545,584, Cl. 437-52.000.

Liang, Xuecheng; and Strong, Gary R., to Winsert, Inc. Iron base alloys for internal combustion engine valve seat inserts, and the like. 5,545,372, Cl. 420-12.000.

Liao, Hung-jen, to Taiwan Semiconductor Manufacture Company. CMOS I/O circuit with 3.3 volt output and tolerance of 5 volt input. 5,546,019, Cl. 326-81.000.

Liao, Ke-Qiang; and Gu, Yonghai, to Université du Québecâ Hull. Detector for demodulating a received signal and producing an information data signal with reduced intersymbol interference. 5,546,430, Cl. 375-341.000.

Liba Maschinenfabrik GmbH: *See—*
Hägel, Adolf, 5,544,501, Cl. 66-124.000.

Licata, Thomas J., to International Business Machines Corporation. Conductive rie-resistant collars for studs beneath rie-defined wires. 5,545,590, Cl. 437-189.000.

Lidsky, Lawrence M.: *See—*
Yan, Xinglong; and Lidsky, Lawrence M., 5,544,479, Cl. 60-39.183.

Liedl, Bernhard: *See—*
Ganz, Thomas; Lutz, Berthold; Liedl, Bernhard; and Weissbrich, Alfons, 5,545,261, Cl. 136-251.000.

Liexco S.A.: *See—*
Dries, Rudi, 5,544,456, Cl. 52-204.100.

Lightfoot, Jerry J., to Display Products, Inc. Drapery clip. 5,544,393, Cl. 24-306.000.

Lightwave Electronics Corporation: *See—*
Plaessmann, Henry; Grossman, William M.; and Olson, Todd E., 5,546,222, Cl. 359-346.000.

Liimatainen, William J.; and Brauer, Daniel R., to Knight Manufacturing Corp. Separating apparatus. 5,544,762, Cl. 209-675.000.

Lin, Chih-I. Retaining mechanism of vertebral fixation rod. 5,545,167, Cl. 606-61.000.

Lin, Chin-I; Chen, Yu-Hsuan; and Chu, Gou-Don, to Industrial Technology Research Institute. Composite bicycle frame with y shaped tubular configuration. 5,544,907, Cl. 280-288.300.

Lin, Chiu-Hong; Haadsma-Svensson, Susanne R.; Piercey, Montford F.; Romero, Arthur G.; and Darlington, William H., to Upjohn Company, The. Therapeutically useful 2-aminotetralin derivatives. 5,545,755, Cl. 564-428.000.

Lin, Feng. Packet-switched facsimile network and method of operation. 5,546,388, Cl. 370-60.000.

Lin, Hsin-Yi. Cassette splitter for television antenna signals. 5,545,848, Cl. 174-52.100.

Lin, Jinn-Maw: *See—*
Hsieh, Rong-Ya; Lin, Jinn-Maw; and Hong, Chun-Yen, 5,546,334, Cl. 364-709.110.

Lin, Jui-Chang, to Taiwan Fu Hsing Industrial Co., Ltd. Door lock assembly. 5,544,507, Cl. 70-107.000.

Lin, Jyhfong; and Doyle, Bruce, to Cirrus Logic, Inc. Low-voltage high-performance dual-feedback dynamic sense amplifier. 5,546,026, Cl. 327-54.000.

Lin, Li-Ju J.; Foster, John S.; Gudeman, Christopher S.; and Vurens, Gerard H., to International Business Machine Corporation. Process for bonding lubricants to a thin film storage media. 5,545,478, Cl. 428-332.000.

Lin, Mao-Sen. Shears. 5,544,416, Cl. 30-193.000.

Lindén, Anders T.; and Örtemo, Bo L. H., to Valmet-Karlstad AB. Multilayer headbox. 5,545,294, Cl. 162-343.000.

Lindholm, Nels O. Precision investment casting pressure vessel. 5,544,782, Cl. 220-584.000.

Lindstrand, Bruce L.: *See—*
Didier, James J.; Lindstrand, Bruce L.; and Wight, Ernest W., 5,544,841, Cl. 242-541.100.

Link, Charles M., II: *See—*
Roach, Peter O., Jr.; Comer, Edward I.; Link, Charles M., II; and Laster, Maurice S., 5,546,444, Cl. 379-59.000.

LinkUSA Corporation: *See—*
Hogan, Steven J.; Feltz, Kristi T.; Murdock, Douglas R.; and Smith, Keith E., 5,546,449, Cl. 379-202.000.

Linsley, Peter: *See—*
Senter, Peter D.; Su, Peter C.; Marquardt, Hans; Hayden, Martha S.; and Linsley, Peter, 5,545,548, Cl. 435-227.000.

Linster, Tom D.: *See—*
Corvasce, Filomeno G.; and Linster, Tom D., 5,545,680, Cl. 524-47.000.

Linsuri, Ari: *See—*
Huovila, Jyrki; Linsuri, Ari; Nyberg, Petri; and Odell, Michael, 5,545,293, Cl. 162-212.000.

Linz, Anton M.: *See—*
Schneider, Erika; Linz, Anton M.; and Repinski, Gregory A., 5,545,995, Cl. 324-318.000.

Lipinski, Jeffrey M.; and Lawless, Brian P., to Kraft Foods, Inc. Peelable and resealable package for thinly sliced meats and the like. 5,545,420, Cl. 426-129.000.

Lipomatrix Incorporated: *See—*
Andrews, Winston A.; Nelson, David; and Novy, Richard W., 5,545,220, Cl. 623-11.000.

Lipp, Ronald L.; Rodriguez, David; Toriya, Michio; Kanjo, Junji; and Otsuka, Shizuo, to Uniden America Corporation. Remotely programmable pager. 5,546,077, Cl. 340-825.440.

Lippincott, Louis A., to Intel Corporation. Visual frame buffer architecture. 5,546,531, Cl. 395-164.000.

Lippuner, Christian: *See—*
Baltensperger, Werner; and Lippuner, Christian, 5,544,823, Cl. 241-79.000.

Lisowsky, Richard, to Witco GmbH. Process for preparing biscyclopentadienyl compounds. 5,545,785, Cl. 585-375.000.

Lisse, Frank: *See—*
Lysson, Hans-Jürgen; Lisse, Frank; Hahn, Manuela; Leppert, Hans-Detlef; and Darbon, Philippe, 5,545,246, Cl. 65-435.000.

Litovitz, Theodore A.; and Penafiel, Luis M., to Catholic University of America, The. Protection of living systems from adverse effects of electric, magnetic and electromagnetic fields. 5,544,665, Cl. 128-897.000.

Litt, Morton H.: *See—*
Sachinvala, Navzer D.; Jn, Redford F.; and Litt, Morton H., 5,545,732, Cl. 536-120.000.

Little, Scott C., to TRW Inc. Steering assembly and method. 5,544,522, Cl. 73-118.100.

Littleton, James G.: *See—*
Robertson, Iain C.; Nye, Jeffrey L.; Asal, Michael D.; Short, Graham B.; Simpson, Richard D.; and Littleton, James G., 5,546,553, Cl. 395-405.000.

Litton Industries, Inc.: *See—*
Bacher, Helmut, 5,545,949, Cl. 315-039.000.

Litton Systems, Inc.: *See—*
Bilinski, Donald J.; Chin, Gene H.; Cordova, Amado; and Fersht, Samuel N., 5,545,892, Cl. 250-231.120.
Cordova, Amado; and Surabian, Glenn M., 5,546,482, Cl. 385-12.000.
Navaroli, Henry D., 5,545,947, Cl. 313-589.000.

Liu, Chain T.: *See—*
Maziasz, Philip J.; Goodwin, Gene M.; and Liu, Chain T., 5,545,373, Cl. 420-81.000.

Liu, Chang H. Working table assembly for a drilling machine. 5,544,988, Cl. 408-90.000.

Liu, Dong-Chyuan: *See—*
Kim, Jin H.; and Liu, Dong-Chyuan, 5,544,658, Cl. 128-661.090.

Liu, Jin-Su. Construction toy set of planar blocks with apertures and hinged connectors. 5,545,070, Cl. 446-104.000.

Livingston, Arthur: *See—*
Aloisi, Robert J.; Livingston, Arthur; and Huss, Brian S., 5,544,808, Cl. 229-400.000.

Ljungquist, Olle: *See—*

Fryklund, Linda; Hjertman, Birger; Gustavsson, Marie-Louise; Kaluski, Jacob; Levander, Gustav; Ljungquist, Olle; Ström, Anders; and Virding, Jonas, 5,545,144, Cl. 604-187.000.

Lleonart Aliberas, Miguel, to IUL, S.A. Contrast chamber for spotlighting bacterial colonies with respect to the culture medium thereof. 5,545,561, Cl. 439-287.300.

Lloyd, Ben A.: *See—*
Chen, Cheng-Chi; Lloyd, Ben A.; Mumford, Neal A.; and Johns, Rolf M., 5,545,278, Cl. 156-175.000.

Lloyd, Lester J.; Lloyd, Peter M.; Rubsamen, Reid M.; and Schuster, Jeffrey A., to Aradigm Corporation. Systems for the intrapulmonary delivery of aerosolized aqueous formulations. 5,544,646, Cl. 128-200.140.

Lloyd, Peter M.: *See—*
Lloyd, Lester J.; Lloyd, Peter M.; Rubsamen, Reid M.; and Schuster, Jeffrey A., 5,544,646, Cl. 128-200.140.

Lloyds International Trust: *See—*
Pera, Ivo E., 5,544,836, Cl. 242-372.000.

Loch, Manfred, to Siemens Aktiengesellschaft. Method for producing a spliced connection between two groups of light waveguides. 5,546,491, Cl. 385-99.000.

Lock, William E.: *See—*
Bocko, Peter L.; Eid, Bernard A.; Johnson, Ronald E.; Lock, William E.; Shoup, Robert D.; and Themont, Jean-Pierre, 5,544,582, Cl. 101-211.000.

Loctite Corporation: *See—*
Malofsky, Bernard M., 5,544,787, Cl. 222-105.000.

Logothetis, Anestis L.: *See—*
Hung, Ming-Hong; Kaku, Mureo; and Logothetis, Anestis L., 5,545,693, Cl. 525-187.000.

Loiseaux, Brigitte: *See—*
Nicolas, Christophe; Loiseaux, Brigitte; Joubert, Cécile; and Huignard, Jean-Pierre, 5,546,200, Cl. 359-15.000.

Lombardino, Joseph G.: *See—*
Loose, Leland D.; Lombardino, Joseph G.; and Weiner, Ethan S., 5,545,656, Cl. 514-414.000.

Loeberg, Nils; and Kay, Robert M., to GenPharm International, Inc. Ransgenic non-human animals for producing heterologous antibodies. 5,545,806, Cl. 800-2.000.

Lone Star Gas Company: *See—*
Cravy, Jerald A.; and McCall, Clarence D., 5,544,977, Cl. 405-154.000.

Long, David C.: *See—*
Perry, Charles H.; Bauer, Tibor L.; Long, David C.; Pickering, Bruce C.; and Vittori, Pierre C., 5,546,012, Cl. 324-754.000.

Long, Lynn D.: *See—*
Barrett, Linda; Long, Lynn D.; Menditto, Louis F.; Stagg, Arthur J.; and Ward, Raymond E., 5,546,549, Cl. 395-309.000.

Long, Paul V.: *See—*
Davis, Charles L.; and Long, Paul V., 5,544,661, Cl. 128-700.000.

Longhurst, John C.: *See—*
Pitsillides, Koullis F.; and Longhurst, John C., 5,544,656, Cl. 128-661.040.

Longmark Power International, Inc.: *See—*
Yan, Xinglong; and Lidsky, Lawrence M., 5,544,479, Cl. 60-39.183.

Looneman, Alan, to WTC Industries, Inc. Water filtering and purifying apparatus. 5,545,315, Cl. 210-120.000.

Lonsdale, David M.: *See—*
Allen, Rebecca L.; and Lonsdale, David M., 5,545,546, Cl. 435-172.300.

Loocke, Walter Van: *See—*
Quaghebeur, Theo; and Loocke, Walter Van, 5,545,607, Cl. 504-130.000.

Looi, Hon Y.; and Teo, Phuay E. Bath or shower panel. 5,545,446, Cl. 428-13.000.

Looker, Douglas L.: *See—*
Hoffman, Stephen J.; Looker, Douglas L.; Rosendahl, Mary S.; Stetler, Gary L.; Wagenbach, Michael; Anderson, David C.; Mathews, Antony J.; and Nagai, Kiyoshi, 5,545,727, Cl. 536-234.000.

Loose, Leland D.; Lombardino, Joseph G.; and Weiner, Ethan S., to Pfizer Inc. 2-Oxidole-1-carboxamide pharmaceutical agents for the treatment of alzheimer's disease. 5,545,656, Cl. 514-414.000.

Lopez, Alfred R. Non-imaging glideslope antenna systems. 5,546,095, Cl. 343-703.000.

Loral Corporation: *See—*
Garnaat, John A.; Ferrell, Bruce H.; and Woody, William C., 5,546,085, Cl. 342-25.000.

Lord, David K.: *See—*
Lam, Chung H.; Lord, David K.; and Wright, Judith A., 5,545,583, Cl. 437-52.000.

L'Oreal: *See—*
Goncalves, Antonin, 5,544,778, Cl. 220-23.400.

Lorenz, Gisela: *See—*
Kirstgen, Reinhard; Oberdorf, Klaus; Sauter, Hubert; Bayer, Herbert; Grammenos, Wassilios; Rang, Harald; Harries, Volker; Lorenz, Gisela; and Ammermann, Eberhard, 5,545,664, Cl. 514-521.000.

Lotus Development Corporation: *See—*
Wolf, Richard J.; Fossgreen, Donald J.; Rosen, Robert; Vento, Christopher M.; and Wells-Papanek, Doris, 5,546,525, Cl. 395-159.000.

Louden, James A.; Hawkins, Brian F.; Hann, Wayne D., Sr., deceased (by Cheryl Hann, executrix), to Komline-Sanderson Engineering Corp. Method for preparing a material for high pressure deliquification. 5,545,333, Cl. 210-739.000.

Louge, Michel Y., to Cornell Research Foundation, Inc. Guarded capacitance probes for measuring particle concentration and flow. 5,546,006, Cl. 324-688.000.

Loveless, Frederick C.: *See—*
Coolbaugh, Thomas S.; Loveless, Frederick C.; Matthews, Demetreos N.; and Rudnick, Leslie R., 5,545,783, Cl. 585-12.000.

Lovell, Marc A.: *See—*
Fisher, Daniel J.; Crank, Douglas; Lovell, Marc A.; Houle, Sabina J.; and Brodie, James L., 5,544,458, Cl. 52-204.591.

Lovgren, Eric M.: *See—*
O'Connor, Michael G.; and Lovgren, Eric M., 5,545,151, Cl. 604-282.000.

Lowe, Terry L.; and Noonan, James T., to Deere & Company. Down pressure spring adjustment. 5,544,709, Cl. 172-661.000.

Löwer, Hartmut: *See—*
Haese, Wilfried; Bruder, Friedrich; Pakull, Ralf; Kirsch, Jürgen; and Löwer, Hartmut, 5,545,710, Cl. 528-201.000.

Loxton, Steven R.; and Czarnecki, Donald P., to TRW Vehicle Safety Systems Inc. Seat belt webbing guide assembly. 5,544,917, Cl. 280-801.200.

Loy, Jean-Philippe; Ghesquiere, Denis; and Fiquet, Linc, to Witco. Process for the preparation of polyester-polyurethane flexible foams which do not give rise to the formation of misting and use of the said foams. 5,545,675, Cl. 521-172.000.

LSI Logic Corporation: *See—*
Barber, Ivor, 5,545,923, Cl. 257-691.000.
Horstmann, Jens; and Kim, Yoon, 5,546,555, Cl. 395-417.000.

Lu, Fumin, to Ason Engineering, Inc. Process for producing non-woven webs. 5,545,371, Cl. 264-555.000.

Lu, Yao-Shun, to General Electric Company. Dual outlet turbocharger and twin aftercoolers for a diesel engine. 5,544,486, Cl. 60-599.000.

Lu, Yen-Ho. Plastic squeeze container. 5,544,790, Cl. 222-212.000.

Lu, Youyi, to Compacific Engineering Pte Ltd. Multi-tier jack motion system. 5,545,040, Cl. 434-58.000.

Lucas Industries plc.: *See—*
Cooper, John, 5,545,939, Cl. 310-270.000.

Lucas Industries public limited company: *See—*
Cooke, Michael P.; and Felton, George N., 5,544,815, Cl. 239-533.800.

Lucas, Paul A.: *See—*
Laurencin, Cato T.; Lucas, Paul A.; Syftestad, Glenn T.; Domb, Abraham; Glowacki, Julianne; and Langer, Robert S., 5,545,409, Cl. 424-426.000.

Lucent Technologies Inc.: *See—*
Auclair, Jean-Yves; and Bonnet, Jean-Marc, 5,546,425, Cl. 375-220.000.

Luebbert, David L.: *See—*
McKinnis, David R. R.; Luebbert, David L.; Berman, Eric R.; Saxton, Thomas W.; and Padwa, Daniel H., 5,546,581, Cl. 395-650.000.

Luly, Matthew H.: *See—*
Thenappan, Alagappan; Swain, Charles F.; and Luly, Matthew H., 5,545,775, Cl. 570-168.000.

Lundin, Kenneth; Wiman, Lars-Erik; and Svensson, Mats. System and method for establishing communication protocols between application programs. 5,546,584, Cl. 395-700.000.

Lundqvist, Fredrik: *See—*
Collin, Per; Deleryd, Roland; Ivars, Roland; Lundqvist, Fredrik; and Stolzenberg, Norman R., 5,546,435, Cl. 376-253.000.

Lundstrom, Michael L.: *See—*
Shumard, Dennis D.; and Lundstrom, Michael L., 5,544,922, Cl. 285-23.000.

Lunev, Sergey: *See—*
Fuks, Efim; Fuks, Vadim; Lunev, Vladimir; and Lunev, Sergey, 5,544,961, Cl. 366-163.200.

Lunev, Vladimir: *See—*
Fuks, Efim; Fuks, Vadim; Lunev, Vladimir; and Lunev, Sergey, 5,544,961, Cl. 366-163.200.

Lunn, Peter A.: *See—*
Brin, David S.; Lunn, Peter A.; and MacDonald, Stuart R., 5,545,149, Cl. 604-265.000.

Lunn, William H. W.: *See—*
Bruns, Robert F., Jr.; Gehlert, Donald R.; Howbert, J. Jeffry; and Lunn, William H. W., 5,545,641, Cl. 514-317.000.

Lupke, Manfred A. A., to Corma, Inc. Clamshell corrugators and the like. 5,545,369, Cl. 264-508.000.

Luscombe, Brian H.: *See—*
Le, Thu A.; Yi, Sung S.; Zwaskis, William; Pedlick, Jack S.; Luscombe, Brian H.; Jamiolkowski, Dennis D.; Di Giovanni, John; Seritella, Keith A.; Steckel, Mark G.; and Harwin, Steven F., 5,545,180, Cl. 606-232.000.

Lust, Rainer: *See—*
Strohl, Willi; and Lust, Rainer, 5,545,017, Cl. 417-423.700.

Lust, Victor; Martin, W. Anthony; Renkema, Kornelis; and Van Der Meulen, Wybren. Molding arrangement to achieve short mold cycle time and method of molding. 5,545,366, Cl. 264-225.000.

Luton, Michael J.: *See—*
Koo, Jayoung; and Luton, Michael J., 5,545,269, Cl. 148-654.000.
Koo, Jayoung; and Luton, Michael J., 5,545,270, Cl. 148-654.000.

Lutz, Berthold: *See—*
Ganz, Thomas; Lutz, Berthold; Liedl, Bernhard; and Weissbrich, Alfons, 5,545,261, Cl. 136-251.000.

Lutze, Werner: *See—*
Ewing, Rodney C.; Lutze, Werner; and Weber, William J., 5,545,797, Cl. 588-10.000.

1996 UMI

Lyberg, Bertil, to Telia AB. Arrangement for increasing the comprehension of speech when translating speech from a first language to a second language. 5,546,500, Cl. 395-2.860.

Lynch, Donald: *See—*
Honigs, David E.; and Lynch, Donald, 5,545,376, Cl. 422-104.000.

Lynch, Thomas E.; Sejnoha, Vladimir; and Dinger, Thomas E., to Kurzweil Applied Intelligence, Inc. Speech recognition system utilizing pre-calculated similarity measurements. 5,546,499, Cl. 395-2.490.

Lynes, Kenneth W.; and Nepovim, Zdenek, to J. E.Thomas Specialties Limited. Amplifier housing. 5,545,847, Cl. 174-52.100.

Lynntech, Inc.: *See—*
Murphy, Oliver J.; Hitchens, G. Duncan; Hodko, Dalibor; Clarke, Eric T.; Miller, David L.; and Parker, Donald L., 5,545,308, Cl. 205-125.000.

Lysson, Hans-Jürgen; Lisse, Frank; Hahn, Manuela; Leppert, Hans-Detlef; and Darbon, Philippe, to Kabel Rheydt Aktiengesellschaft. Method and device for manufacturing an optical fiber. 5,545,246, Cl. 65-435.000.

Lyttle, Matthew H.: *See—*
Kauvar, Lawrence M.; Lyttle, Matthew H.; and Satyam, Apparao, 5,545,621, Cl. 514-18.000.

M E T: *See—*
Minc, Charles, 5,546,393, Cl. 370-60.100.

Ma, Min S.: *See—*
Kenny, John D.; and Ma, Min S., 5,546,037, Cl. 327-230.000.

Maari, Koichi, to Sony Corporation. Semiconductor device and method of forming the same. 5,545,907, Cl. 257-315.000.

Maas, Werner E.; Cory, David G.; and Laukien, Frank H., to Bruker Instruments, Inc. Method for the reduction of radiation damping during signal acqusition in NMR experiments. 5,546,000, Cl. 324-322.000.

Mabuchi, Hiroshi: *See—*
Katayama, Katsuo; Komachi, Kyoichi; Mabuchi, Hiroshi; and Akimoto, Takeshi, 5,545,258, Cl. 118-723.0MP.

Mac Dermid, Inc.: *See—*
Kukanskis, Peter; Gabriele, Peter; Letize, Raymond; and Adams, William, 5,545,510, Cl. 430-312.000.

MacBeath, Fiona S.; and Park, John S., to Procter & Gamble Company, The. Rinsing compositions. 5,545,346, Cl. 510-514.000.

Maccarrone, Marco; Olivo, Marco; and Golla, Carla M., to SGS-Thomson Microelectronics S.r.l. Current source having voltage stabilizing element. 5,546,054, Cl. 331-111.000.

MacDonald, Scott A: *See—*
Cameron, James F.; Frechet, Jean M. J.; Leung, Man-Kit; Niesert, Claus-Peter; MacDonald, Scott A; and Willson, Carlton G., 5,545,509, Cl. 430-270.100.

MacDonald, Stuart R.: *See—*
Brin, David S.; Lunn, Peter A.; and MacDonald, Stuart R., 5,545,149, Cl. 604-265.000.

Macher, Ingolf, to Biochemie Gesellschaft m.b.H. Pleuromutilin derivatives. 5,545,654, Cl. 514-392.000.

Machimura, Satoru: *See—*
Nakajima, Toshiharu; Machimura, Satoru; Goto, Tadashi; Mochizuki, Toshitaka; Hoshino, Shinji; and Ohtani, Hiroshi, 5,545,872, Cl. 219-89.000.

Mackenzie, Raymond W.; and Wafer, John A., to Eaton Corporation. Circuit interrupter with cause for trip indication. 5,546,266, Cl. 361-93.000.

Mackert, Edmund M.: *See—*
Archambeault, Gary L.; Murphy, William J.; and Mackert, Edmund M., 5,545,804, Cl. 588-253.000.

Mackowiak, Russell L.: *See—*
Benes, Kevin C.; Krehbiel, Fred L.; and Mackowiak, Russell L., 5,545,054, Cl. 439-467.000.

MacLeod, J. Norman: *See—*
Mottier, Bradley D.; MacLeod, J. Norman; Mechlowitz, Dean; and Erickson, Randy, 5,544,633, Cl. 123-310.000.

Macnak, Philip P.: *See—*
Leitch, Clifford D.; Schwendeman, Robert J.; and Macnak, Philip P., 5,546,411, Cl. 371-5.500.

Macor, John E.; and Wythes, Martin J., to Pfizer Inc. Indole derivatives. 5,545,644, Cl. 514-323.000.

Maddern, Kenneth N.: *See—*
Wunder, Heiko; Scott-Young, Robert E.; Maddern, Kenneth N.; and Corrigan, Mark C., 5,545,385, Cl. 423-183.000.

Mading, James E.: *See—*
King, Todd L.; Mading, James E.; and Piber, Earl T., 5,544,856, Cl. 251-129.080.

Maeda, Akira, to Yazaki Corporation. Waterproof connector. 5,545,048, Cl. 439-273.000.

Maeda, Patrick Y., to Xerox Coporation. Image contrast improvement technique for output scanning systems. 5,546,111, Cl. 347-144.000.

Maeda, Takahiro: *See—*
Takeuchi, Yukihisa; Nanataki, Tsutomu; Masumori, Hideo; Takeuchi, Katsuyuki; and Maeda, Takahiro, 5,545,461, Cl. 428-138.000.

Maeda, Yuji: *See—*
Watanabe, Kenichi; Maeda, Yuji; and Hikita, Sakae, 5,545,930, Cl. 307-10.100.

Maekawa, Tomohiro: *See—*
Kamoda, Hitoshi; Maekawa, Tomohiro; Yui, Yasuji; Iima, Shin; and Bunya, Takashi, 5,544,965, Cl. 400-582.000.

Maeno, Kenji: *See—*
Hibi, Taketoshi; Maeno, Kenji; Ido, Kihei; Onishi, Ken; Ueda, Shinobu; Hirano, Akiyoshi; Hatanaka, Keiji; and Shiroshita, Takashi, 5,546,191, Cl. 358-335.000.

Maes, Paul: *See—*
Deboeck, Arthur; Maes, Paul; and Baudier, Phillipe R., 5,545,628, Cl. 514-49.000.

Magera, Yaroslaw A.; Savic, Jovica; and Brown, Vernon L., to Motorola, Inc. Method and reduction solution for metallizing a surface. 5,545,430, Cl. 427-98.000.

Magnin, Anthony A.: *See—*
Pliura, Diana H.; Wiffen, Diane E.; Ashraf, Salman; and Magnin, Anthony A., 5,545,328, Cl. 210-635.000.

Magro, Sebastian; and Magro, Vincent. Roll-up door provided with thermal protection means and a direct drive gearing arrangement. 5,544,690, Cl. 160-133.000.

Magro, Vincent: *See—*
Magro, Sebastian; and Magro, Vincent, 5,544,690, Cl. 160-133.000.

Mahany, Ronald L., to Norand Corporation. High reliability access point for wireless local area network. 5,546,397, Cl. 370-85.100.

Maher, Jay A., to Nelson-Whittaker, Ltd. Convertible stroller. 5,544,904, Cl. 280-47.350.

Mahn, Gary; and Bowman, Gary. Muzzle loading weapon ignition system. 5,544,441, Cl. 42-106.000.

Mahulikar, Deepak; and Hoffman, Paul R., to Olin Corporation. Guard ring for integrated circuit package. 5,545,850, Cl. 174-52.400.

Maida, Richard C.; and Sferlazza, Joseph, to Prompac Industries, Inc. Protective shipping or mailing envelopes and method of making. 5,544,473, Cl. 53-460.000.

Maienfisch, Peter; Böger, Manfred; Pitterna, Thomas; and Szczepanski, Henry, to Ciba-Geigy Corporation. Vinylcarboxylic acid derivatives. 5,545,630, Cl. 514-63.000.

Maier, Stefan; and Hommel, Jochen, to Robert Bosch GmbH. Method for producing a nozzle holder of an electromagnetically actuated injection valve. 5,544,514, Cl. 72-75.000.

Mailway (UK) Limited: *See—*
Dowler, Glyn W.; and Pruchniewicz, Edward I., 5,544,769, Cl. 215-227.000.

Maisch, Edgar: *See—*
Bauer, Karl-Heinz; Eckert, Gerold; Maisch, Edgar; and Rüttiger, Anton, 5,545,864, Cl. 200-283.000.

Maitra, Sidhartha: *See—*
Sharma, Raghu N.; Davis, Jeffrey P.; Gunn, Timothy D.; Li, Ping; Maitra, Sidhartha; and Thanawala, Ashish A., 5,546,395, Cl. 370-84.000.

Major, Eszter T.: *See—*
Szántay, Csaba; Kardos, Zsuzsanna B.; Moldvai, István; Major, Eszter T.; Szántay, Csaba, Jr.; Mándi, Attila; Blaskó, Gábor; Simig, Gyula; Lax, Györgyi; Drabant, Sándor; Szállási, Tamas; Fekete, Márton; and Gigler, Gábor, 5,545,741, Cl. 546-276.700.

Mak, Steve S. Y.: *See—*
Chen, Jian; Papanu, James S.; Mak, Steve S. Y.; Ish-Shalom, Carmel; Hsieh, Peter; Lau, Wesley G.; Rhoades, Charles S.; Shieh, Brian; Latchford, Ian S.; Williams, Karen A.; and Yu-Wang, Victoria, 5,545,289, Cl. 156-643.100.

Makino Milling Machine Co., Ltd.: *See—*
Fujii, Akira; and Kaneda, Kiyoshi, 5,545,870, Cl. 219-69.130.

Makita, Toshihiko: *See—*
Takagishi, Takashi; and Makita, Toshihiko, 5,545,062, Cl. 439-877.000.

Makoto Konagai: *See—*
Yamada, Akira; Yoshida, Shinichiro; Yoshino, Masahiro; Takahashi, Kiyoshi; Omura, Akira; and Konagai, Makoto, 5,545,443, Cl. 427-584.000.

Malamet, Georg: *See—*
Berg, Klaus; Wulff, Claus; Malamet, Georg; Eitel, Alfred; Meurer, Kurt P.; van Osselaer, Tony; and Hinz, Jürgen, 5,545,764, Cl. 568-724.000.

Malaspina, Francis P., to Motorola, Inc. Rechargeable battery vending machine. 5,544,784, Cl. 221-135.000.

Malassenet, Guy: *See—*
Balbo, Patrick; Grelat, Philippe; Malassenet, Guy; and Mandereau, Fabienne, 5,544,564, Cl. 89-37.010.

Malatesta, James; and Pohl, Marsha, to Promer, Inc. Mail aperture assembly for mail sorting system. 5,544,758, Cl. 209-584.000.

Malcolm, Peter B., to Intelligence Quotient International Ltd. Method of operating a computer system. 5,546,534, Cl. 395-182.040.

Malcovati, Piero: *See—*
Calligaro, Cristiano; Gastaldi, Roberto; Malcovati, Piero; and Torelli, Guido, 5,546,044, Cl. 327-543.000.

Maliga, Pal: *See—*
McBride, Kevin E.; and Maliga, Pal, 5,545,818, Cl. 800-205.000.

Malinin, Leonid M.: *See—*
Hart, Robert P.; and Malinin, Leonid M., 5,544,518, Cl. 73-1.00H.

Malinowski, Leo, to MascoTech Automotive Systems Group, Inc. Selectively retractable vehicle load floor. 5,544,998, Cl. 414-522.000.

Mall, Michael G.: *See—*
Brockmeyer, Roger L.; Dievendorff, Richard; House, Daniel E.; Jenner, Earle H.; LaBelle, Margaret K.; Mall, Michael G.; and Silen, Stuart L., 5,546,582, Cl. 395-650.000.

Mallinckrodt Medical, Inc.: *See—*
Haleen, Len W., 5,544,424, Cl. 34-181.000.
Haleen, Len W., 5,544,425, Cl. 34-187.000.

Mallory, Joanne B.: *See—*

Buckley, Douglas I.; Habener, Joel F.; Mallory, Joanne B.; and Mojsov, Svetlana, 5,545,618, Cl. 514-12.000.

Malofsky, Bernard M., to Loctite Corporation. Reusable dispensing assembly for susceptor-free microwaveable adhesive charge, and microwaveable adhesive charge therefor. 5,544,787, Cl. 222-105.000.

Malvern Technologies, Inc.: *See—*
Knepshield, William R.; Fay, Kristen K.; and Knepshield, William, Jr., 5,545,172, Cl. 606-166.000.

Mampaey, Jozef: *See—*
Tavernier, Serge; Ruttens, Frank; Verhecken, André; Mampaey, Jozef; and Joly, Ludovicus, 5,545,501, Cl. 430-106.600.

MAN Gutehoffnungshütte Aktiengesellschaft: *See—*
Knop, Klaus, 5,545,251, Cl. 75-444.000.

Manabe, Nobuyuki; and Ando, Masaaki, to Taiho Industries Co., Ltd. System for washing a tank and recovering and treating residual tank liquid. 5,544,669, Cl. 134-109.000.

Mandereau, Fabienne: *See—*
Balbo, Patrick; Grelat, Philippe; Malassenet, Guy; and Mandereau, Fabienne, 5,544,564, Cl. 89-37.010.

Mandery, Thomas F.: *See—*
Wisner, Craig A.; Graham, James C.; and Mandery, Thomas F., 5,544,861, Cl. 254-88.000.

Mándi, Attila: *See—*
Szántay, Csaba; Kardos, Zsuzsanna B.; Moldvai, István; Major, Eszter T.; Szántay, Csaba, Jr.; Mándi, Attila; Blaskó, Gábor; Simig, Gyula; Lax, Györgyi; Drabant, Sándor; Szállási, Tamas; Fekete, Márton; and Gigler, Gábor, 5,545,741, Cl. 546-276.700.

Manfredi, Mark C.: *See—*
Condon, Michael E.; Crews, Alvin D., Jr.; and Manfredi, Mark C., 5,545,742, Cl. 548-261.000.

Mango, Laurie J.: *See—*
Boon, Mathilde E.; Kok, Lanbrecht P.; Mango, Laurie J.; Rutenberg, Akiva; and Rutenberg, Mark R., 5,544,650, Cl. 128-632.000.

Manini, Paolo; and Belloni, Fortunato, to SAES Getters S.p.A. Device for maintaining a vacuum in a thermally insulating jacket and method of making such device. 5,544,490, Cl. 62-46.100.

Mann, Alfred E.; and Schulman, Joseph H., to Alfred E. Mann Foundation for Scientific Research. Method for optimally positioning and securing the external unit of a transcutaneous transducer of the skin of a living body. 5,545,191, Cl. 607-57.000.

Mannesmann Aktiengeselschaft: *See—*
Pehle, Hans J., 5,544,513, Cl. 72-12.200.

Mannou, Masaya: *See—*
Ishibashi, Akihiko; Kidoguchi, Isao; Ohnaka, Kiyoshi; and Mannou, Masaya, 5,546,418, Cl. 372-48.000.

Mantilla, Jose A. Landscape edging device. 5,544,445, Cl. 47-33.000.

Manweb PLC: *See—*
Drakesmith, Frederick G.; and Jones, Andrew R., 5,545,390, Cl. 423-499.100.

Manwill, Niles R.: *See—*
Haung, Wu-Nan; Manwill, Niles R.; Muschelewicz, Adana; and Chen, Fung-Bor, 5,545,451, Cl. 428-36.800.

Manz, Kenneth W., to SPX Corporation. Refrigerant handling system and method with air purge and multiple refrigerant capabilities. 5,544,492, Cl. 62-85.000.

Manz, Kenneth W.; and Olds, Daniel L., to SPX Corporation. Method and apparatus for refrigerant purification. 5,544,494, Cl. 62-292.000.

Manzer, Hans; and Viechter, Manfred, to Siemens Nixdorf Informationssysteme Aktiengesellschaft. Printer device for printing web-shaped recording media having different web widths. 5,546,178, Cl. 355-319.000.

Maraganore, John M., to ZymoGenetics, Inc. A method of inhibiting fertilization by alpha-1-antitrypsin or antithrombin III. 5,545,615, Cl. 514-2.000.

Marascio, Anthony N.: *See—*
Hseih, Tong-Ho; Foley, Theodore A.; and Marascio, Anthony N., 5,545,155, Cl. 604-378.000.

Marcel, Kenneth P.: *See—*
Laurel, David F.; Heathman, James F.; and Marcel, Kenneth P., 5,544,704, Cl. 166-117.600.

March, Richard W., II. Flexible helmet. 5,544,367, Cl. 2-410.000.

Marchbanks, Charles W. Puncture protection geo mat for a landfill system. 5,544,976, Cl. 405-129.000.

Marchesano, Carlo; Moizo, Elda; and Faranda, Filippo, to Minnesota Mining and Manufacturing. Photographic silver halide developer compositions and process for forming photographic silver images. 5,545,508, Cl. 430-265.000.

Marcorin, Franco; Tonel, Ivo S.; and Munini, Dino, to Microstamp SrL. Device to draw mushroom-shaped corks. 5,544,551, Cl. 81-3.290.

Marek, Daniel: *See—*
Favre, Patrick; Frey, Urban; Marek, Daniel; and Metz, François, 5,545,998, Cl. 324-321.000.

Marescaux, Christian; Bernasconi, Raymond; Schmutz, Markus; Frröstl, Wolfgang; and Mickel, Stuart J., to Ciba-Geigy Corporation. N-substituted aminoalkanephosphinic acid derivatives, compositions thereof, and their use as anti-epileptics. 5,545,631, Cl. 514-89.000.

Margossian, Linda J.: *See—*
Fischer, Robert L.; Margossian, Linda J.; and Penarrubia, Lola, 5,545,815, Cl. 800-205.000.

Marie, Frederic: *See—*
Ortiz, Mark S.; Failla, Stephen J.; Kinet, Jean-Pierre; and Marie, Frederic, 5,545,123, Cl. 600-235.000.

Marks, Joseph W.; Shieber, Stuart M.; and Hwa, Rebecca P., to Mitsubishi Electric Information Technology Center America, Inc. Apparatus for determining the structure of a hypermedia document using graph partitioning. 5,546,517, Cl. 395-145.000.

Markwart, Michael: *See—*
Fischer, Heinz; Scherer, Thomas; Markwart, Michael; and Petry, Klaus, 5,545,084, Cl. 454-76.000.

Marlin, James W.; Knudson, Raymond L.; Ruehle, Thomas M.; Stuart, Anthony F.; and Hughes, Edward T., III, to International Business Machines Corporation. Utilizing instrumented components to obtain data in a desktop management interface system. 5,546,577, Cl. 395-600.000.

Marling, Tino-Martin: *See—*
Jansohn, Peter; Marling, Tino-Martin; and Sattelmayer, Thomas, 5,545,032, Cl. 431-9.000.

Marman, Douglas H.: *See—*
Bernal, Brian A.; Fischette, Robert G.; Johnson, Kirk R.; and Marman, Douglas H., 5,546,074, Cl. 340-628.000.

Marom, Emanuel: *See—*
Metlitsky, Boris; Katz, Joseph; Marom, Emanuel; and Gousgounis, Dean, 5,545,886, Cl. 235-462.000.

Marquardt, Hans: *See—*
Senter, Peter D.; Su, Peter C.; Marquardt, Hans; Hayden, Martha S.; and Linsley, Peter, 5,545,548, Cl. 435-227.000.

Marrelli, John D., to Texaco Inc. Microwave water cut monitoring means and method. 5,546,007, Cl. 324-640.000.

Marrison, William C.: *See—*
Rogers, Russell L.; and Marrison, William C., 5,544,858, Cl. 251-149.600.

Marschner, Jamie J.; and Renquist, Stephanie L., to AT&T Corp. Real-time administration-translation arrangement. 5,546,304, Cl. 364-419.040.

Marsh-McBirney, Inc.: *See—*
Heckman, Donald B., 5,544,531, Cl. 73-861.010.

Marshall, Richard E.: *See—*
Saul, Jonathan R.; Marshall, Richard E.; and LaPointe, Larry P., 5,544,938, Cl. 297-248.000.

Martell, Robert W.; Hinton, Glenn J.; Fetterman, Michael A.; Papworth, David B.; Colwell, Robert P.; and Glew, Andrew F., to Intel Corporation. Ready selection of data dependent instructions using multi-cycle cams in a processor performing out-of-order instruction execution. 5,546,597, Cl. 395-800.000.

Martin, Anthony N., to United Technologies Corp. Engine blade clearance control system with piezoelectric actuator. 5,545,007, Cl. 415-173.200.

Martin Marietta Corp.: *See—*
Basile, Philip C.; Thompson, James E., Jr.; Kline, David; and Toner, Gary E., 5,546,421, Cl. 375-200.000.
Podlaseck, Stanley; Shumaker, Gene P.; and Rimer, Paul D., 5,545,474, Cl. 428-288.000.

Martin Marietta Energy Systems, Inc.: *See—*
Maziasz, Philip J.; Goodwin, Gene M.; and Liu, Chain T., 5,545,373, Cl. 420-81.000.

Martin, Stephen E.: *See—*
Rua, Louis, Jr.; and Martin, Stephen E., 5,544,881, Cl. 273-139.000.

Martin, W. Anthony: *See—*
Lust, Victor; Martin, W. Anthony; Renkema, Kornelis; and Van Der Meulen, Wybren, 5,545,366, Cl. 264-225.000.

Martinazzo, Ivan: *See—*
Borsoi, Bruno; and Martinazzo, Ivan, 5,544,433, Cl. 36-117.700.

Martinez, Anthony E., to International Business Machines Corporation. Dynamic presentation of contextual help and status information. 5,546,521, Cl. 395-155.000.

Martinez, Joe L., Jr.: *See—*
Romero, Guillermo L.; and Martinez, Joe L., Jr., 5,544,412, Cl. 29-832.000.

Martin Neira, Manuel, to Agence Spatiale Europeene. Altimetry method. 5,546,087, Cl. 342-120.000.

Martone, Robert A.: *See—*
Chang, Chi S.; Desai, Subahu D.; Gernhart, Debra A.; Hartley, Phillip A.; Haskins, Robert J., Jr.; Ho, Keith K. T.; Martone, Robert A.; Mulcahy, Roy T.; Shaffer, Louis J.; Schoening, Robert D.; and Versprille, Scott A., 5,546,321, Cl. 364-491.000.

Maruhashi, Daisuke: *See—*
Yamamoto, Chiyoko; Maruhashi, Daisuke; and Shioda, Masahiro, 5,546,403, Cl. 371-20.500.

Masarik, David M.: *See—*
Salvio, Paul R.; Masarik, David M.; and Wasserstein, Kevin J., 5,545,956, Cl. 318-283.000.

Maschinenfabrik Alfred Schmermund GmbH & Co.: *See—*
Zwiechowski, Jurgen, 5,544,515, Cl. 53-148.000.

Maschinenfabrik Niehoff GmbH & Co. KG: *See—*
Winkler, Helmut; and Horndler, George-Michael, 5,544,828, Cl. 242-35.50A.

MascoTech Automotive Systems Group, Inc.: *See—*
Malinowski, Leo, 5,544,998, Cl. 414-522.000.

Masghati, Mohammad: *See—*
Frederiksen, Bjarne; and Masghati, Mohammad, 5,546,267, Cl. 361-119.000.

Mason, Denis G.: *See—*
Baltins, Guntis U.; Boyle, Russell W.; Mason, Denis G.; Moore, Howard M.; Owen, A. DeBow; and Sharp, Joseph A., 5,544,526, Cl. 73-180.000.

Mass, Noah B., to Ford Motor Company. Structural door belt seal. 5,544,448, Cl. 49-377.000.

Massachusetts Institute of Technology: *See—*
Growden, John H.; Nitsch, Roger M.; and Wurtman, Richard J., 5,545,566, Cl. 436-71.000.
Laurencin, Cato T.; Lucas, Paul A.; Syftestad, Glenn T.; Domb, Abraham; Glowacki, Julianne; and Langer, Robert S., 5,545,409, Cl. 424-426.000.
Szajda, Kenneth S., 5,546,041, Cl. 327-512.000.
Yurek, Gregory J.; and VanderSande, John B., 5,545,613, Cl. 505-430.000.

Massol, Jean-Jacques: *See—*
Alvarez Casariego, Pedro; and Massol, Jean-Jacques, 5,545,596, Cl. 501-71.000.

Masters, William E. Method and apparatus for producing three-dimensional articles from a computer generated design. 5,546,313, Cl. 364-468.030.

Masuda, Satoki; and Hasegawa, Toshiaki, to Yazaki Corporation; and Toyota Jidosha Kabushiki Kaisha. Charging connector for electric vehicle. 5,545,046, Cl. 439-142.000.

Masuda, Satoki: *See—*
Hasegawa, Toshiaki; and Masuda, Satoki, 5,545,049, Cl. 9-310.000.

Masumori, Hideo: *See—*
Takeuchi, Yukihisa; Nanataki, Tsutomu; Masumori, Hideo; Takeuchi, Katsuyuki; and Maeda, Takahiro, 5,545,461, Cl. 428-138.000.

Masutani, Hiroshi: *See—*
Yamaoka, Yukio; Tamai, Kishio; and Masutani, Hiroshi, 5,545,482, Cl. 428-379.000.

Masuyama, Yukiei: *See—*
Ikeda, Hachiro; Miyamoto, Noriaki; Umeda, Ryoei; Yasu, Hidenori; Fukukawa, Mitsuo; Masuyama, Yukiei; Kinoshita, Shoji; Takagi, Yukio; Gocho, Tomohiro; Goto, Fumio; Ishii, Akio; Ogawa, Tetsuo; Hasegawa, Yoshun; Hironaka, Keitaro; and Ogoshi, Yasuhiro, 5,546,123, Cl. 348-119.000.

Mathews, Antony J.: *See—*
Hoffman, Stephen J.; Looker, Douglas L.; Rosendahl, Mary S.; Stetler, Gary L.; Wagenbach, Michael; Anderson, David C.; Mathews, Antony J.; and Nagai, Kiyoshi, 5,545,727, Cl. 536-234.000.

Mathews, Mark R., to Robertshaw Controls Company. AC line voltage measurement and control. 5,546,331, Cl. 364-571.010.

Mathur, Eric J., to Stratagene. Purified thermostable pyrococcus furiosus DNA polymerase I. 5,545,552, Cl. 435-252.300.

Matrex Furniture Components, Inc.: *See—*
Durling, Walter E., 5,544,943, Cl. 297-452.560.

Matsubara, Shigemasa: *See—*
Kurokawa, Takayuki; Saitoh, Atsushi; Matsubara, Shigemasa; Nawa, Masayoshi; and Kobayashi, Kazuo, 5,546,092, Cl. 342-357.000.

Matsuda, Shinpei: *See—*
Higashiyama, Kazutoshi; Doi, Toshiya; Ozawa, Takesi; Takeuchi, Seizi; Kamo, Tomoichi; Matsuda, Shinpei; and Yoshida, Yutaka, 5,545,610, Cl. 505-120.000.

Matsui, Hiroki: *See—*
Akuzawa, Kenji; Matsui, Hiroki; and Fujita, Yasuhiko, 5,546,086, Cl. 342-70.000.

Matsui, Koji; Kimura, Mitsuru; Utsumi, Kazuaki; Ogawa, Eiichi; Komano, Hiroshi; and Aoyama, Toshimi, to NEC Corporation; and Tokyo Ohka Kogyo Co., Ltd. Method of bonding circuit boards. 5,545,281, Cl. 156-273.700.

Matsumori, Akira, to Matsumori, Akira; and Otsuka Pharmaceutical Co., Ltd. Method of inhibiting secretion of inflammatory cytokines. 5,545,623, Cl. 514-26.000.

Matsumoto, Hiroshi; Wakai, Haruo; and Joubettou, Hiroyasu, to Casio Computer Co., Ltd. Method for manufacturing a thin film transistor panel. 5,545,576, Cl. 437-41.000.

Matsumoto, Kuniaki: *See—*
Seto, Youichi; Kikuchi, Masahiro; Kodaira, Takatoshi; Tezuka, Shu; Komura, Fuminobu; and Matsumoto, Kuniaki, 5,546,572, Cl. 395-600.000.

Matsumoto, Masaru: *See—*
Ohuchi, Masatoshi; and Matsumoto, Masaru, 5,544,407, Cl. 29-525.060.

Matsumoto, Seiji; Aoki, Takuya; Shimasaki, Yuichi; Hatcho, Seiji; Oketani, Toshikazu; Miyashita, Yukio; Saito, Akihisa; Komatsuda, Takashi; and Kato, Hiroaki, to Honda Giken Kogyo Kabushiki Kaisha. Exhaust gas-purifying system for internal combustion engines. 5,544,482, Cl. 60-279.000.

Matsumura, Masami: *See—*
Ariyoshi, Akihiro; and Matsumura, Masami, 5,545,986, Cl. 324-207.210.

Matsunaga, Akira: *See—*
Kurii, Jun; Nomura, Noboru; Itoh, Masami; Ohira, Kozo; Tsumadori, Masaki; Matsunaga, Akira; Kimura, Akio; and Suzue, Shigetoshi, 5,545,349, Cl. 252-186.380.

Matsunaga, Fujihisa: *See—*
Yasuhara, Mitsuki; Tatsuki, Yuuichirou; Nakamura, Mitsunori; and Matsunaga, Fujihisa, 5,545,753, Cl. 564-402.000.

Matsunaga, Hiroshi: *See—*
Fukuoka, Hirotsugu; Morita, Keisuke; Matsunaga, Hiroshi; and Muramatsu, Shigeru, 5,545,021, Cl. 418-63.000.

Matsuo, Hiroyuki: *See—*
Imai, Akihiro; Fukui, Yasuo; and Matsuo, Hiroyuki, 5,545,605, Cl. 503-227.000.

Matsuoka, Ken: *See—*
Ohtsuka, Yasushi; Shirai, Katutada; Matsuoka, Ken; Suehiro, Yoshio; and Ohashi, Hideki, 5,546,283, Cl. 362-61.000.

Matsushima, Sunao: *See—*
Suzuki, Isao; Matsushima, Sunao; Kubota, Yoshikazu; and Kamijyou, Masayasu, 5,545,467, Cl. 428-211.000.

Matsushiro, Aizo: *See—*
Ohgai, Hideo; Momota, Hiroshi; Kumakura, Takeshi; Kajifusa, Noriyuki; Kitazawa, Toshiki; Oshiden, Kazuhide; and Matsushiro, Aizo, 5,545,564, Cl. 435-320.100.

Matsushita Electric Industrial Co., Ltd.: *See—*
Agata, Masashi; Matsuyama, Kazuhiro; Akamatsu, Hironori; Kikukawa, Hirohito; Sawada, Akihiro; and Iwanari, Shunichi, 5,546,346, Cl. 365-203.000.
Araki, Shoichi; Nomura, Hiroyoshi; Hayashi, Isao; and Wakami, Noboru, 5,546,506, Cl. 395-75.000.
Eda, Kazuo, 5,546,494, Cl. 385-129.000.
Fujioka, Souichirou; Nishida, Masafumi; and Inai, Michifumi, 5,546,247, Cl. 360-77.130.
Fukuoka, Hirotsugu; Morita, Keisuke; Matsunaga, Hiroshi; and Muramatsu, Shigeru, 5,545,021, Cl. 418-63.000.
Hasegawa, Hirokazu, 5,545,969, Cl. 320-5.000.
Hasegawa, Saburo, 5,546,252, Cl. 360-106.000.
Hattori, Yoshihiro; Nagamitsu, Sachio; Nagata, Yoichi; and Kodama, Hisashi, 5,546,327, Cl. 364-556.000.
Ibaraki, Susumu; Katta, Noboru; Nakamura, Seiji; and Murakami, Hiroki, 5,546,461, Cl. 380-20.000.
Iida, Masanori, 5,546,219, Cl. 359-281.000.
Imai, Akihiro; Fukui, Yasuo; and Matsuo, Hiroyuki, 5,545,605, Cl. 503-227.000.
Ishibashi, Akihiko; Kidoguchi, Isao; Ohnaka, Kiyoshi; and Mannou, Masaya, 5,546,418, Cl. 372-48.000.
Iwata, Noriya; Matuura, Kenji; and Murata, Shigeki, 5,546,259, Cl. 360-130.220.
Kimura, Kozo; and Hirata, Hiroaki, 5,546,593, Cl. 395-800.000.
Koizumi, Haruhiko; Sugimura, Akihisa; Tateoka, Kazuki; and Kanazawa, Kunihiko, 5,546,051, Cl. 330-297.000.
Kondo, Shuji, 5,545,849, Cl. 174-52.400.
Konishi, Akio; Saito, Yoshiyuki; Takeda, Shuzo; Yoshio, Hideaki; and Kurumatani, Hiroshi, 5,546,249, Cl. 360-95.000.
Konno, Masaki; and Ito, Shuji, 5,546,270, Cl. 361-680.000.
Koshiba, Nobuharu; Takata, Kenichi; Asaka, Emi; and Nakanishi, Makoto, 5,545,468, Cl. 429-218.000.
Mochizuki, Yoshiyuki, 5,546,515, Cl. 395-133.000.
Nakane, George; Mukunoki, Toshio; Moriwaki, Nobuyuki; Sumi, Tatsumi; Hirano, Hiroshige; and Nakakuma, Tetsuji, 5,546,342, Cl. 365-189.010.
Ogawa, Kazufumi, 5,545,255, Cl. 106-272.000.
Okamoto, Takuji; Hamada, Masanori; Sokawa, Kenta; Uyeda, Kazuya; and Yamauchi, Hideaki, 5,546,135, Cl. 348-674.000.
Sakakibara, Yoshio; Gotou, Makoto; Kobayashi, Kazuhiko; Isaka, Haruo; and Nakamura, Akihiko, 5,546,248, Cl. 360-77.140.
Shimada, Toshiyuki; and Nakajima, Takeshi, 5,546,427, Cl. 375-293.000.
Tomura, Yoshihiro; and Bessho, Yoshihiro, 5,545,589, Cl. 437-183.000.
Ueda, Satoshi; Ueda, Tetsuya; Yamano, Atsuhiro; and Yano, Kousaku, 5,545,919, Cl. 257-641.000.
Yamada, Toshio; Shibayama, Akinori; Iwanari, Shunichi; and Fujiwara, Atsushi, 5,545,977, Cl. 323-313.000.
Yamaguchi, Takao; and Hamada, Masahiro, 5,546,598, Cl. 395-800.000.

Matsushita Electric Industrial Inc., Ltd.: *See—*
Yamada, Noboru; Akahira, Nobuo; Nishiuchi, Kenichi; Nagata, Kenichi; Ohno, Eiji; and Furukawa, Shigeaki, 5,545,454, Cl. 428-64.100.

Matsushita Electric Works, Ltd.: *See—*
Mitaka, Ryosuke; Fujiwara, Yoshimasa; and Ikebuchi, Hiroyuki, 5,546,476, Cl. 382-201.000.

Matsushita, Toyohiko, to Kabushiki Kaisha Toshiba. Disk storage system have a defect map of the disk stored in a memory which is different from the disk. 5,546,556, Cl. 395-427.000.

Matsuura, Yasuhiro: *See—*
Hinotani, Hiroaki; and Matsuura, Yasuhiro, 5,546,173, Cl. 355-282.000.

Matsuyama, Kazuhiro: *See—*
Agata, Masashi; Matsuyama, Kazuhiro; Akamatsu, Hironori; Kikukawa, Hirohito; Sawada, Akihiro; and Iwanari, Shunichi, 5,546,346, Cl. 365-203.000.

Mattel, Inc.: *See—*
Asbaghi, Ahmed A., 5,545,068, Cl. 446-39.000.

Mattesky, Henry, to Seymour Housewares Corporation. Receptacle construction for supporting a collapsible bag. 5,544,781, Cl. 220-404.000.

Matthes, Reinhard: *See—*
Edelmann, Roland; Schnippering, Friedhelm; Fliedner, Christine; and Matthes, Reinhard, 5,545,253, Cl. 106-122.000.

Matthews, Demetreos N.: *See—*
Coolbaugh, Thomas S.; Loveless, Frederick C.; Matthews, Demetreos N.; and Rudnick, Leslie R., 5,545,783, Cl. 585-12.000.

Mattingly, Phillip G.; and Bennett, Larry G., to Abbott Laboratories. Chemiluminescent phenanthridinium salts. 5,545,739, Cl. 546-108.000.

Matuura, Kenji: *See—*
Iwata, Noriya; Matuura, Kenji; and Murata, Shigeki, 5,546,259, Cl. 360-130.220.

Matz, Volker: *See—*
Jakob, Martin; and Matz, Volker, 5,545,684, Cl. 524-354.000.

Matzner, Bruce; King, Harold B.; and Smith, David G., to General Electric Company. Spacer for nuclear fuel rods. 5,546,437, Cl. 376-442.000.

Mauldin, Charles H.: *See—*
Behrmann, William C.; Arcuri, Kym B.; and Mauldin, Charles H., 5,545,674, Cl. 518-715.000.

Maw, Taishih: *See—*
Honda, Kenji; and Maw, Taishih, 5,545,353, Cl. 510-176.000.

Maxtor Corporation: *See—*
Diel, Mark, 5,546,250, Cl. 360-97.020.

Maxwell Products, Inc.: *See—*
Fromson, Leonard E., 5,544,376, Cl. 5-618.000.

Maxxim Medical, Inc.: *See—*
Haung, Wu-Nan; Manwill, Niles R.; Muschelewicz, Adana; and Chen, Pung-Bor, 5,545,451, Cl. 428-36.800.

May, Christopher J.: *See—*
Habeeb, Jacob J.; and May, Christopher J., 5,545,237, Cl. 44-380.000.

May, Jack L.: *See—*
Creuseremee, Melville C.; and May, Jack L., 5,546,072, Cl. 340-574.000.

May, Jeffrey E.: *See—*
Ho, Kuo-San; Howe, William J.; and May, Jeffrey E., 5,545,004, Cl. 415-115.000.

May, Robert J.; Gabalis, Stephen E.; and Weakley, Todd S., to Chrysler Corporation. Quick-connect fastener and vibration isolator unit for attachment of automotive components. 5,544,714, Cl. 180-68.400.

Mayer, Ruth J.: *See—*
Adams, Jerry L.; Hall, Ralph F.; Lee, Dennis; Mayer, Ruth J.; and Seibel, George L., 5,545,669, Cl. 514-562.000.

Maziasz, Philip J.; Goodwin, Gene M.; and Liu, Chain T., to Martin Marietta Energy Systems, Inc. High-temperature corrosion-resistant iron-aluminide (FeAl) alloys exhibiting improved weldability. 5,545,373, Cl. 420-81.000.

Mazur, Joseph F.; Blackburn, Brian K.; and Gentry, Scott B., to TRW Vehicle Safety Systems Inc. Method and apparatus for discriminating vehicle crash conditions. 5,546,307, Cl. 364-424.050.

Mazzola, Richard V.: *See—*
Danks, John K.; Mazzola, Richard V.; and Johnson, Thomas R., 5,545,150, Cl. 604-256.000.

McAfee, Lynley A. Elevated cabinet apparatus for cat owner. 5,544,958, Cl. 312-237.000.

McBride, Kevin E.; and Stalker, David M., to Calgene, Inc. Enhanced expression in a plant plastid. 5,545,817, Cl. 800-205.000.

McBride, Kevin E.; and Maliga, Pal, to Calgene Inc. Expression of *Bacillus thuringiensis* cry proteins in plant plastids. 5,545,818, Cl. 800-205.000.

McCall, Clarence D.: *See—*
Cravy, Jerald A.; and McCall, Clarence D., 5,544,977, Cl. 405-154.000.

McCall, Scott D.; and Hoshizaki, Gary W., to Motorola, Inc. Power efficient transistor and method therefor. 5,546,040, Cl. 327-479.000.

McCarthy, James B.: *See—*
Wahl, Sharon M.; McCarthy, James B.; and Furcht, Leo T., 5,545,620, Cl. 514-12.000.

McClain, David W. Vehicle stabilized support stand for bicycles. 5,544,763, Cl. 211-22.000.

McClure, David C., to SGS-Thomson Microelectronics, Inc. Method and apparatus for parallel testing of memory. 5,546,537, Cl. 395-183.210.

McClusky, John: *See—*
Tillery, Dean; Musgrave, Paul D.; McClusky, John; and Myers, Russell L., 5,544,811, Cl. 239-13.000.

McCollum, Gregory J.: *See—*
Rardon, Daniel E.; and McCollum, Gregory J., 5,545,696, Cl. 525-375.000.

McComas, David J.: *See—*
Funsten, Herbert O.; McComas, David J.; and Scime, Earl E., 5,545,894, Cl. 250-281.000.

McCombie, Jay C., to Chrysler Corporation. Engine misfire detection with rough road inhibit. 5,544,521, Cl. 73-117.300.

McConnell, Robert E., II: *See—*
Wangler, Richard J.; Gustavson, Robert L.; McConnell, Robert E., II; and Fowler, Keith L., 5,546,188, Cl. 356-376.000.

McCort, Gary: *See—*
Pascal, Jean-Claude; McCort, Gary; Blondet, Dominique; and Gellibert, Françoise, 5,545,645, Cl. 514-326.000.

McCue, Patrick O.; and Dunnington, Nedward B. Ambulance attendant's safety vest and harness. 5,544,363, Cl. 2-102.000.

McCullough, Douglas A.: *See—*
Bacs, Aron, Jr.; Davis, Ward H.; and McCullough, Douglas A., 5,546,139, Cl. 348-754.000.

McDaniel, Freddie B. Resolvation system for an active-ingredient-containing liquid solution. 5,544,682, Cl. 141-9.000.

McDonald, John H., III: *See—*
Heath, William P., Jr.; McDonald, John H., III; Paal, Michael; Rühter, Gerd; Schotten, Theo; and Stenzel, Wolfgang, 5,545,636, Cl. 514-214.000.

McDougald, Mack, to Davis Water & Waste Industries, Inc. Method for sealing a traveling bridge filter backwash shoe. 5,545,334, Cl. 210-741.000.

McEwen, Richard; and Sparks, Darrel W., to Charles Machine Works, Inc., The. Drill pipe breakout device. 5,544,712, Cl. 175-57.000.

McFarland, James W.: *See—*
Hecker, Scott J.; Jefson, Martin R.; and McFarland, James W., 5,545,624, Cl. 514-30.000.

McGinley, James W.: *See—*
Poplawski, Daniel S.; and McGinley, James W., 5,546,281, Cl. 361-752.000.

McGourty, Bernard J.: *See—*
Vilsoet, Robert W.; and McGourty, Bernard J., 5,546,456, Cl. 379-265.000.

McInnes, Ian D.: *See—*
Jones, Kyle B.; Lehnert, Robert A.; McInnes, Ian D.; Quinn, Robert D.; Sisley, Steven E.; and Temus, Charles J., 5,546,436, Cl. 376-272.000.

McIntosh, John D.; and Clark, Paul J., to McIntosh, John Dalwyn. Lock bracket. 5,544,505, Cl. 70-18.000.

McIntosh, John Dalwyn: *See—*
McIntosh, John D.; and Clark, Paul J., 5,544,505, Cl. 70-18.000.

McIntyre, Dale F., to Eastman Kodak Company. Camera with pointing aid. 5,546,156, Cl. 354-400.000.

McIntyre, Dale F.: *See—*
Bernardi, Bryan D.; McIntyre, Dale F.; Dunsmore, Clay A.; and Wolcott, Dana W., 5,546,145, Cl. 354-76.000.

McIntyre, Deborah C.: *See—*
Funderburk, Jeffery V.; and McIntyre, Deborah C., 5,545,152, Cl. 604-283.000.

McKean, Dennis R.: *See—*
Doss, Saad K.; McKean, Dennis R.; Renaldo, Alfred F.; and Wilson, Robert J., 5,545,307, Cl. 205-122.000.

McKee, John M.: *See—*
Holden, Irving H.; Mooney, Charles W.; Brinkley, Gerald E.; and McKee, John M., 5,546,069, Cl. 340-407.100.

McKenna, Antonia F. E., executrix: *See—*
Clapp, Phillip A.; Evans, Dennis F., deceased; and McKenna, Antonia F. E., executrix, 5,545,391, Cl. 423-573.100.

McKenna, Michael: *See—*
Chen, David T.; Pieper, Steven D.; and McKenna, Michael, 5,545,120, Cl. 600-117.000.

McKenzie, Ian A., to Continental Aktiengesellschaft. Guide assembly. 5,544,722, Cl. 187-410.000.

McKinnis, David R. R.; Luebbert, David L.; Berman, Eric R.; Saxton, Thomas W.; and Padwa, Daniel H., to Microsoft Corporation. Method for integrating a discrete subprogram into a main program. 5,546,581, Cl. 395-650.000.

McInerney, Terrance M.: *See—*
Stevens, Robert J.; and McInerney, Terrance M., 5,544,413, Cl. 29-888.092.

McMackin, Mark E.: *See—*
Thomas, Christopher P.; Coatesworth, Timothy A.; DeGroot, Kenneth P.; Ehlers, Jeffery C.; and McMackin, Mark E., 5,544,640, Cl. 123-689.000.

McMahon, Ryan W.: *See—*
Giuliani, David; McMahon, Ryan W.; and Engel, David, 5,544,382, Cl. 15-22.100.

McMahon, Thomas A.: *See—*
Hayes, Wilson C.; Robinovitch, Stephen N.; and McMahon, Thomas A., 5,545,128, Cl. 602-61.000.

McMichael, Dannie L., to Kenney Manufacturing Company. Curtain draping hardware and method for draping curtains. 5,544,692, Cl. 160-349.200.

McNeely, Kelly R.: *See—*
Ginn, Michael W.; Cobb, Gary L.; Broxton, Lawrence E.; and McNeely, Kelly R., 5,545,338, Cl. 210-791.000.

McNeil-PPC, Inc.: *See—*
Hseih, Tong-Ho; Foley, Theodore A.; and Marascio, Anthony N., 5,545,155, Cl. 604-378.000.

McPherson, John A., Jr.; Pirahesh, Mir H.; Truong, Tuong C.; and Coyle, Daniel J., Jr., to International Business Machines Corporation. Evaluation strategy for execution of SQL queries involving recursion and table queues. 5,546,570, Cl. 395-600.000.

Mealey, Shawn K.; Schmidt, Randall G.; and Brady, William P., to Dow Corning Corporation. Moisture-curable silicone pressure sensitive adhesives. 5,545,700, Cl. 525-478.000.

Mechlowitz, Dean: *See—*
Mottier, Bradley D.; MacLeod, J. Norman; Mechlowitz, Dean; and Erickson, Randy, 5,544,633, Cl. 123-310.000.

Mecrow, Barrie C., to British Technology Group Ltd. Doubly salient reluctance machines. 5,545,938, Cl. 310-156.000.

Medebach, Thomas: *See—*
Hilgert, Gunter; and Medebach, Thomas, 5,544,543, Cl. 74-502.400.

Media Vision, Inc.: *See—*
Knowles, Gregory P.; and Lewis, Adrian S., 5,546,477, Cl. 382-242.000.

Medical Carbon Research Institute, LLC: *See—*
Bokros, Jack C.; Ely, John L.; Emken, Michael R.; Haubold, Axel D.; Peters, T. Scott; Stupka, Jonathan C.; and Waits, C. Thomas, 5,545,216, Cl. 623-2.000.

Medical College of Wisconsin, Inc.: *See—*
Grossberg, Sidney E.; Kushnaryov, Vladimir M.; Cashdollar, L. William; Carrigan, Donald R.; and Knox, Konstance K., 5,545,550, Cl. 435-240.200.

Medical College of Wisconsin Research Foundation, Inc., The: *See—*
Gross, Steven S.; and Griffith, Owen W., 5,545,625, Cl. 514-33.000.

Medical Media Systems: *See—*
Chen, David T.; Pieper, Steven D.; and McKenna, Michael, 5,545,120, Cl. 600-117.000.

Medical Research Council: *See—*
Surani, Azim M.; Neuberger, Michael S.; and Bruggemann, Marianne, 5,545,807, Cl. 800-2.000.

Medtronic Cardiorhythm: *See—*
West, Scott H.; and Nguyen, Frank, 5,545,200, Cl. 607-122.000.
Medtronic, Inc.: *See—*
Brin, David S.; Luna, Peter A.; and MacDonald, Stuart R., 5,545,149, Cl. 604-265.000.
Pagoso, Mauricio L.; and Tran, Don H., 5,545,138, Cl. 604-102.000.
Keogh, James R.; Hobot, Christopher M.; Eaton, John W.; Jevne, Allan H.; and Bergan, Matthew A., 5,545,213, Cl. 623-1.000.
Olson, Walter H.; and Kaemmerer, William F., 5,545,186, Cl. 607-14.000.
Smits, Karel F. A. A.; and Bourgeois, Ivan M. P. G., 5,545,207, Cl. 607-130.000.
Wolff, Rodney G.; and Hull, Vincent W., 5,545,208, Cl. 623-1.000.
Mefford, Brent W.: *See—*
Frizell, Kathleen H.; Mefford, Brent W.; Vermeyen, Tracy B.; and Morris, Douglas L., 5,544,973, Cl. 405-16.000.
Mega, Izumi: *See—*
Oishi, Tetsuya; Ozawa, Hiroshi; Karasawa, Minato; Inomata, Masamitsu; Mega, Izumi; Yamauchi, Atsuyoshi; Kamada, Kazunori; Nakahata, Shigeru; Sakamoto, Katsumi; Nakashima, Tatsunobu; Watanabe, Akito; Suzuki, Jin; Ohkawa, Kouhei; Furusawa, Satoshi; Ono, Hiroshi; and Sugazaki, Kazuo, 5,545,702, Cl. 525-509.000.
Meguro, Yasuo; and Yabu, Hiroshi, to Kabushiki Kaisya Advance. Super-compact electric thermal treatment device. 5,545,190, Cl. 607-96.000.
Meiki Co., Ltd.: *See—*
Asai, Ikuo, 5,545,365, Cl. 264-328.700.
Meiman, Yehouda: *See—*
Yokev, Hanoch; Harel, Haim; and Meiman, Yehouda, 5,546,422, Cl. 375-202.000.
Meiss, Ludwig: *See—*
Krause, Hartmut; Dahmen, Georg P.; and Meiss, Ludwig, 5,545,124, Cl. 601-2.000.
Meissner, Konrad E.: *See—*
Ross, Edward E.; and Meissner, Konrad E., 5,544,731, Cl. 198-387.000.
Meister, Willi: *See—*
Heidingsfeld, Herbert; Brüuer, Wolfgang; Müller, Friedemann; and Meister, Willi, 5,545,707, Cl. 528-60.000.
Mekyska, Erich. Holder for securing objects. 5,544,396, Cl. 24-523.000.
Meltsch, Hans-Juergen; Froehlich, Franz-Fr; Zimmer, Rainer; and Kluwe, Wolf, to RXS Schrumpftechnik-Garnituren GmbH. Cap sleeve. 5,545,851, Cl. 174-74.00R.
Meltz, Gerald; and Ball, Gary A., to United Technologies Corporation. Single polarization fiber and amplifier. 5,546,481, Cl. 385-11.000.
Meltzer, Paul S.: *See—*
Trent, Jeffrey M.; and Meltzer, Paul S., 5,545,524, Cl. 435-6.000.
Melzer, Jeffrey I.: *See—*
Ouyang, Jiangbo; and Melzer, Jeffrey I., 5,545,438, Cl. 427-299.000.
Memmel, Georg: *See—*
Haedke, Günther; and Memmel, Georg, 5,544,725, Cl. 267-221.000.
Mendez, Alejandro: *See—*
Wilkes, Eugene; Mendez, Alejandro; and Bauer, Bradley W., 5,545,860, Cl. 181-255.000.
Menditto, Louis F.: *See—*
Barrett, Linda; Long, Lynn D.; Menditto, Louis F.; Stagg, Arthur J.; and Ward, Raymond E., 5,546,549, Cl. 395-309.000.
Menegatto, Carlo, to Menegatto S.r.l. Braking assembly for a reel-holder flange in textile machines. 5,544,837, Cl. 242-599.300.
Menegatto S.r.l.: *See—*
Menegatto, Carlo, 5,544,837, Cl. 242-599.300.
Meneghini, Frank: *See—*
Singh, Sharat; Singh, Rajendra; Meneghini, Frank; and Ullman, Edwin F., 5,545,834, Cl. 544-6.000.
Menke, Manfred: *See—*
Savignac, Dominique; Gleis, Dieter; and Menke, Manfred, 5,546,296, Cl. 363-60.000.
Mercedes-Benz AG: *See—*
Wagner, Gerhard; and Wuest, Rainer, 5,545,108, Cl. 477-125.000.
Merck & Co., Inc.: *See—*
Baker, Robert K.; Kieczykowski, Gerard R.; Ok, Hyun O.; Parsons, William H.; and Rupprecht, Kathleen M., 5,545,734, Cl. 540-456.000.
Bochis, Richard J.; Hodges, Paul J.; Schoen, William R.; and Wyvratt, Matthew J., Jr., 5,545,735, Cl. 540-490.000.
King, Anthony O.; Larsen, Robert D.; Verhoeven, Thomas R.; and Zhao, Mangzhu, 5,545,758, Cl. 568-6.000.
Mercure, Stéphane: *See—*
Montplaisir, Serge; Mercure, Stéphane; and Lemay, Guy, 5,545,525, Cl. 435-6.000.
Meredith, Susan S.: *See—*
Bell, D. Michael; Gonzales, Mark A.; and Meredith, Susan S., 5,546,546, Cl. 395-292.000.
Mergardt, Bernd: *See—*
Gieseke, Astrid; Neumann, Uwe; Mergardt, Bernd; and Walz, Gerd, 5,545,678, Cl. 523-404.000.
Merjanian, John M., to National Registry, Inc., The. Ergonomic fingerprint reader apparatus. 5,546,471, Cl. 382-124.000.
Mermelstein, Robert: *See—*
Baker, Ellen S.; Bodet, Jean-Francois; Demeyere, Hugo J. M.; Hartman, Frederick A.; Hubesch, Bruno A.; Mermelstein, Robert; Taylor, Lucille F.; and Wahl, Errol H., 5,545,350, Cl. 510-517.000.
Wahl, Errol H.; Bacon, Dennis R.; Baker, Ellen S.; Bodet, Jean-Francois; Burns, Michael E.; Demeyere, Hugo J. M.; Heasley, Charles A.; Mermelstein, Robert; Severns, John C.; Shaw, John H., Jr.; Siitlosi, Michael P.; Vogel, Alice M.; and Watson, Jeffrey W., 5,545,340, Cl. 510-517.000.
Merrell Pharmaceuticals Inc.: *See—*
Grisar, J. Martin; Petty, Margaret A.; and Bolkenius, Frank, 5,545,660, Cl. 514-458.000.
Merten, Ronald A.: *See—*
Balthis, Vernon M.; Merten, Ronald A.; Rumery, Robert J.; and Vollmer, Robert L., 5,545,499, Cl. 430-59.000.
Metabowerke GmbH & Co.: *See—*
Schulz, Manfred; Waldner, Gerhard; and Wagemann, Alfred, 5,545,078, Cl. 451-342.000.
Metcalfe, James C.: *See—*
Grainger, David J.; Metcalfe, James C.; and Weissberg, Peter L., 5,545,569, Cl. 436-518.000.
Methode Electronics, Inc.: *See—*
Poplawski, Daniel S.; and McGinley, James W., 5,546,281, Cl. 361-752.000.
Metlitsky, Boris; Katz, Joseph; Marom, Emanuel; and Gousgounis, Dean, to Symbol Technologies Inc. Barcode scanner using an array of light emitting elements which are selectively activated. 5,545,886, Cl. 235-462.000.
Metlitsky, Boris: *See—*
Swartz, Jerome; Shepard, Howard M.; Krichever, Mark J.; Metlitsky, Boris; and Barkan, Edward, 5,545,889, Cl. 235-472.000.
Metz, François: *See—*
Favre, Patrick; Frey, Urban; Marek, Daniel; and Metz, François, 5,545,998, Cl. 324-321.000.
Metzger, Eric R.: *See—*
Jailor, John; Frederick, William H.; Umbach, Steven R.; Graham, Scott R.; Roberts, Kenneth L.; and Metzger, Eric R., 5,544,385, Cl. 15-350.000.
Metzger, Karl G.: *See—*
Petersen, Uwe; Schenke, Thomas; Böhm, Stefan; Grosser, Rolf; Bremm, Klaus D.; Endermann, Rainer; and Metzger, Karl G., 5,545,642, Cl. 514-312.000.
Meurer, Kurt P.: *See—*
Berg, Klaus; Wulff, Claus; Malamet, Georg; Eitel, Alfred; Meurer, Kurt P.; van Osselaer, Tony; and Hinz, Jürgen, 5,545,764, Cl. 568-724.000.
Meyer, Dean E., to Wilson Sporting Goods Co. Face-balanced putter with offset hosel. 5,544,883, Cl. 473-313.000.
Meyer, Dominique: *See—*
Spielvogel, Bernard F.; and Meyer, Dominique, 5,545,397, Cl. 424-9.400.
Meyer, Paul, to Steiner Company, Inc. Method of and apparatus for dispensing batches of soap lather. 5,544,788, Cl. 222-110.000.
Mian, Alec, to Gamera Bioscience Corporation. Isothermal, magnetic particle-mediated acid amplification. 5,545,540, Cl. 435-91.200.
Michaelson, Robert C.: *See—*
Knudsen, George A.; Suciu, Elena N.; and Michaelson, Robert C., 5,545,600, Cl. 502-152.000.
Michlin, Steven B.; and Gaylord, Michael F., to Michlin, Steven Bruce. Conversion device and kit for converting a doctor blade to a spreader blade. 5,546,162, Cl. 355-200.000.
Michlin, Steven Bruce: *See—*
Michlin, Steven B.; and Gaylord, Michael F., 5,546,162, Cl. 355-200.000.
Mickel, Stuart J.: *See—*
Marescaux, Christian; Bernasconi, Raymond; Schmutz, Markus; Fröstl, Wolfgang; and Mickel, Stuart J., 5,545,631, Cl. 514-89.000.
Micklich, Frank T.: *See—*
Lawrence, Roger R.; Micklich, Frank T.; Ressl, Charles T.; and Sechrist, Paul A., 5,545,312, Cl. 208-152.000.
Micro Linear Corporation: *See—*
Vitunic, Mark R., 5,546,017, Cl. 326-30.000.
Micropump, Inc.: *See—*
Carr, Charles F., 5,545,871, Cl. 219-69.170.
Microsoft Corporation: *See—*
Blossom, Jon; and Edwards, Michael, 5,546,518, Cl. 395-152.000.
McKinnis, David R. R.; Luebbert, David L.; Berman, Eric R.; Saxton, Thomas W.; and Padwa, Daniel H., 5,546,581, Cl. 395-650.000.
Microstamp Srl.: *See—*
Marcorin, Franco; Tonel, Ivo S.; and Munini, Dino, 5,544,551, Cl. 81-3.290.
Microtek Lab, Inc.: *See—*
Lam, Kai Y.; and Han, Loi, 5,546,144, Cl. 353-120.000.
Microtest, Inc.: *See—*
Racioppi, Stephen G., 5,545,555, Cl. 435-253.600.
Mid-West Conveyor Company: *See—*
Summa, Gareth D.; and Hespe, Darrel, 5,544,590, Cl. 104-130.090.
Middleton, Cheryl S.: *See—*
Jasper, William C., II; Middleton, Cheryl S.; and Prusinski, Ronald G., 5,545,878, Cl. 219-541.000.
Midland Manufacturing Corp.: *See—*
Dean, Robert H., 5,544,675, Cl. 137-797.000.
Midwest Rake Co.: *See—*
South, Robert E.; and Petty, Steven J., 5,544,476, Cl. 56-400.070.
Midwest Research Institute: *See—*
Ciszek, Theodore F.; and Wang, Tihu, 5,544,616, Cl. 117-60.000.
Mielke, Ingolf: *See—*

Schwarzmaier, Peter; Häckl, Peter; Stöger, Manfred; and Mielke, Ingolf, 5,545,780, Cl. 570-226.000.
Mielonen, Pekka, to Abloy Security Ltd. Oy. Cylinder lock-key-combination. 5,544,509, Cl. 70-366.000.
Mignot, Olivier: *See—*
Germond, Jacques E.; Hottinger, Herbert; Mignot, Olivier; Mollet, Beat; and Tsuda, Koichiro, 5,545,554, Cl. 435-252.900.
Mii, Adam, to Chilong Data Products Corp. Glass tube lamp matrix device. 5,545,948, Cl. 313-634.000.
Miksztal, Andrew R.: *See—*
Fu, Roger C.; Leung, De-Mei; Fleitman, Jeffrey S.; Rizzolio, Michele C.; and Miksztal, Andrew R., 5,545,637, Cl. 514-233.500.
Milano, Vincent J., Jr.: *See—*
Andrews, G. Wayne; Webber, Steven H.; Kelly, James P.; Johnson, Lawrence E.; Stern, Jerry A.; Milano, Vincent J., Jr.; and Davis, Charles R., 5,546,452, Cl. 379-219.000.
Millar, Peter: *See—*
Hood, Thomas G.; Iles, Roger F.; and Millar, Peter, 5,544,465, Cl. 52-786.130.
Millard, Paul J.: *See—*
Roth, Bruce L.; Millard, Paul J.; Yue, Stephen T.; Wells, K. Sam; and Haugland, Richard P., 5,545,535, Cl. 435-34.000.
Miller, David F.; Farris, Robert A.; and Barrett, John P., to Danek Medical, Inc. Spinal fixation system. 5,545,163, Cl. 606-61.000.
Miller, David L.: *See—*
Murphy, Oliver J.; Hitchens, G. Duncan; Hodko, Dalibor; Clarke, Eric T.; Miller, David L.; and Parker, Donald L., 5,545,308, Cl. 205-125.000.
Miller, Gert, to Scheidt & Bachmann GmbH. Device for writing on a card-shaped data memory having sensors for detecting magnetic strips and for switching off the magnetic head when no magnetic strip is present. 5,546,242, Cl. 360-2.000.
Miller, Glenn A., to Genzyme Corporation. Method for nucleotide sequence amplification. 5,545,539, Cl. 435-91.200.
Miller, James D. Early planing boat hull. 5,544,609, Cl. 114-288.000.
Miller, John L.; and Winnek, Douglas F., to Perceptual Images. Autostereoscopic display system using shutter and back-to-back lenticular screen. 5,546,120, Cl. 348-59.000.
Miller, John R.: *See—*
Wingo, James P.; and Miller, John R., 5,545,226, Cl. 623-16.000.
Miller, Richard J., to Holden's Foundation Seeds Inc. Inbred corn line LH189. 5,545,811, Cl. 800-200.000.
Miller, Shawn C.; Victor, Frantz; Spitzer, Wayne A.; Sattelberg, Thomas R., Sr.; and Tebbe, Mark J., to Eli Lilly and Company. Anti-viral compounds. 5,545,653, Cl. 514-388.000.
Milliken Research Corporation: *See—*
Higgins, Kenneth B., 5,545,276, Cl. 156-79.000.
Milliman, James A. Method for removing elements from bore of cross-head die body. 5,544,403, Cl. 29-426.500.
Mills, Richard S.: *See—*
Moss, David L.; and Mills, Richard S., 5,546,272, Cl. 361-687.000.
Milz Produkte AG: *See—*
Dubach, Fredi, 5,544,796, Cl. 224-310.000.
Mina, Steven M.: *See—*
Moutrie, Michael F.; Whitmore, Andrew, III; Hess, David M.; Laugal, John C.; Mina, Steven M.; and Boler, Matthew J., 5,546,275, Cl. 361-707.000.
Minai, Masayoshi: *See—*
Sekine, Chizu; Tani, Takeshi; Ueda, Kayoko; Fujisawa, Koichi; Higashii, Takayuki; Fujimoto, Yukari; Toda, Shoji; and Minai, Masayoshi, 5,545,345, Cl. 252-299.610.
Minarelli, Alessandro: *See—*
Boriani, Silvano; and Minarelli, Alessandro, 5,544,719, Cl. 187-237.000.
Minc, Charles, to M E T. Asynchronous transfer mode data cell routing device for a reverse omega network. 5,546,393, Cl. 370-60.100.
Minebea Co., Ltd.: *See—*
Egawa, Motoji; Takayanagi, Kazutoshi; Takayama, Akio; Fujita, Tetsuji; and Sano, Akinobu, 5,546,251, Cl. 360-103.000.
MiniMed Inc.: *See—*
Funderburk, Jeffery V.; and McIntyre, Deborah C., 5,545,152, Cl. 604-283.000.
Minnesota Mining and Manufacturing: *See—*
Marchesano, Carlo; Moizo, Elda; and Faranda, Filippo, 5,545,508, Cl. 430-265.000.
Minnesota Mining and Manufacturing Company: *See—*
Murray, Thomas J.; and Simpson, Sharon M., 5,545,515, Cl. 430-617.000.
Palazzotto, Michael C.; Ubel, F. Andrew, III; Oxman, Joel D.; and Ali, M. Zaki, 5,545,676, Cl. 522-15.000.
Simpson, Sharon M., 5,545,505, Cl. 430-250.000.
Simpson, Sharon M.; and Sansbury, Francis H., 5,545,507, Cl. 430-264.000.
Tran, Nang T.; Pai, Joseph Y.; and Kim, Choon-Woo, 5,545,899, Cl. 250-370.090.
Wenz, Robert P., 5,545,280, Cl. 156-234.000.
Minolta Camera Kabushiki Kaisha: *See—*
Hirota, Masaya; Ideyama, Hiroyuki; Okatani, Toru; Yamashita, Toshiyuki; Ito, Hideo; and Kawabuchi, Yoichi, 5,546,166, Cl. 355-209.000.
Hotomi, Hideo; Ebisu, Osamu; and Ota, Kazuo, 5,546,108, Cl. 347-55.000.
Takahashi, Kenichi; and Naito, Yoshikazu, 5,546,404, Cl. 371-22.100.
Minolta Co., Ltd.: *See—*
Asai, Hiroyuki; and Araki, Kazuhiro, 5,546,163, Cl. 355-204.000.
Hinotani, Hiroaki; and Matsuura, Yasuhiro, 5,546,173, Cl. 355-282.000.
Wada, Shigeru; Nakamura, Ikushi; Ueno, Takuya; Tanino, Ken; Konishi, Yoshito; and Murashima, Nobuharu, 5,546,150, Cl. 354-288.000.
Mishra, Chittra: *See—*
Blanchette, Robert A.; Brush, Theresa S.; Farrell, Roberta L.; Krisa, Keith A.; and Mishra, Chittra, 5,545,544, Cl. 435-171.000.
Mita Industrial Co., Ltd.: *See—*
Hashizume, Masahiro; Taniguchi, Susumu; and Kameyama, Shinji, 5,546,174, Cl. 355-283.000.
Hayashi, Shigeki; Ueda, Hiroyuki; and Ogawa, Hirotsugu, 5,546,171, Cl. 355-271.000.
Mitaka, Ryosuke; Fujiwara, Yoshimasa; and Ikebuchi, Hiroyuki, to Matsushita Electric Works, Ltd. Shape recognition process. 5,546,476, Cl. 382-201.000.
Mitani, Tateki; Ichihashi, Motomi; and Bessho, Mikio, to Mitsubishi Denki Kabushiki Kaisha. Pressure sensor and chip therefor. 5,544,529, Cl. 73-716.000.
Mitchell, Phillip V.: *See—*
Pepper, David M.; O'Meara, Thomas R.; and Mitchell, Phillip V., 5,546,187, Cl. 356-357.000.
Mitekura, Yoshihiro: *See—*
Hayashi, Masayuki; Mitekura, Yoshihiro; Kanaya, Koichi; Terao, Masato; Tagawa, Toshiya; Tomidokoro, Nobuaki; Kitayama, Masshiro; Kizaki, Osamu; Kawada, Yasuo; Nakahara, Kazuyuki; Harada, Tomofumi; and Hashimoto, Yasunari, 5,546,164, Cl. 355-204.000.
Mitel, Inc.: *See—*
Casselman, Patrick H., 5,546,025, Cl. 327-43.000.
Mitsu Toatsu Chemicals, Inc.: *See—*
Tsutsui, Tomoki; Izukawa, Tsukuru; Ohkubo, Kazuhiko; and Sakaki, Yoshitsugu, 5,545,712, Cl. 528-408.000.
Mitsubishi Chemical Corporation: *See—*
Ono, Hitoshi; Takahashi, Noriaki; Ando, Osamu; Takeuchi, Masako; and Oda, Hirofumi, 5,545,502, Cl. 430-110.000.
Tanaka, Toshihiko; Yamamoto, Akihiro; and Amenomori, Akira, 5,545,647, Cl. 514-343.000.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Ariyoshi, Akihiro; and Matsumura, Masani, 5,545,986, Cl. 324-207.210.
Hibi, Taketoshi; Maeno, Kenji; Ido, Kihei; Onishi, Ken; Ueda, Shinobu; Hirano, Akiyoshi; Hatanaka, Keiji; and Shiroshita, Takashi, 5,546,191, Cl. 358-335.000.
Isoda, Satoru; and Hanazato, Yoshio, 5,546,504, Cl. 395-25.000.
Iwami, Akiko, 5,546,458, Cl. 379-390.000.
Mitani, Tateki; Ichihashi, Motomi; and Bessho, Mikio, 5,544,529, Cl. 73-716.000.
Nakagakiuchi, Susumu; and Ueda, Shinobu, 5,546,128, Cl. 348-362.000.
Narazaki, Atsushi; and Hisamoto, Yoshiaki, 5,545,573, Cl. 437-40.000.
Satake, Akira; Onishi, Yoshitaka; and Miyoshi, Sotsuo, 5,545,943, Cl. 310-350.000.
Sato, Hirotoshi; and Wada, Tomohisa, 5,546,352, Cl. 365-230.060.
Wada, Tomohisa; and Ukita, Motomu, 5,546,345, Cl. 365-190.000.
Mitsubishi Electric Information Technology Center America, Inc.: *See—*
Marks, Joseph W.; Shieber, Stuart M.; and Hwa, Rebecca P., 5,546,517, Cl. 395-145.000.
Mitsubishi Gas Chemical Company, Inc.: *See—*
Kaneishi, Akimasa; and Kono, Kenzi, 5,545,027, Cl. 425-546.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Fujita, Norio; Iwata, Hiroshi; and Fujiwara, Haruyoshi, 5,545,295, Cl. 162-358.100.
Ogawa, Takashi; Yoshimoto, Kazuo; Uchiyama, Kensuke; Ibe, Harushige; Arai, Yoshiharu; Shiraishi, Taketoshi; and Gotoh, Yoshinori, 5,544,995, Cl. 414-219.000.
Ozaki, Masahiko; Sonoda, Keisuke; Kikuchi, Hiroshi; Tsukamoto, Osamu; Komatsu, Masao; and Asai, Koetsu, 5,544,491, Cl. 62-53.100.
Yoshida, Hirohisa; and Ueda, Katsuyuki, 5,544,818, Cl. 241-29.000.
Mitsubishi Kasei Corporation: *See—*
Naka, Daiji, 5,545,722, Cl. 530-399.000.
Mitsubishi Materials Corporation: *See—*
Oshika, Takatoshi, 5,545,490, Cl. 428-701.000.
Mitsuboshi Belting Ltd.: *See—*
Kitazumi, Masato; and Yasufuku, Motonobu, 5,545,097, Cl. 474-266.000.
Mitsuda, Yasuhiro: *See—*
Yamada, Toshiro; Imai, Yasuo; and Mitsuda, Yasuhiro, 5,545,771, Cl. 570-164.000.
Mitsuhashi, Masakazu: *See—*
Iritani, Satoshi; Mitsuhashi, Masakazu; Chaen, Hiroto; and Miyake, Toshio, 5,545,418, Cl. 426-53.000.
Mitsuhashi, Masato; and Ogura, Mieko, to Hitachi Chemical Research Center. Rapid screening method of gene amplification products in polypropylene plates. 5,545,528, Cl. 435-6.000.
Mitsui Kinzoku Kogyo Kabushiki Kaisha: *See—*
Ikeda, Takao, 5,544,925, Cl. 292-216.000.
Mitsui Mining & Smelting Co., Ltd.: *See—*

Saida, Muneo; Hirasawa, Yutaka; and Yoshimura, Katsuhiro, 5,545,466, Cl. 428-209.000.

Mitsui Petrochemical Industries, Ltd.: *See*—
Yasuhara, Mitsuki; Tatsuki, Yuuichirou; Nakamura, Mitsunori; and Matsumaga, Fujihisa, 5,545,753, Cl. 564-402.000.

Mitsui Toatsu Chemicals, Inc.: *See*—
Kusuda, Chiyuki; Furuya, Masayuki; Wada, Masaru; Irizato, Yoshihiro; Naruse, Hiroshi; and Nagata, Teruyuki, 5,545,751, Cl. 564-398.000.
Nagata, Teruyuki; Kusuda, Chiyuki; and Wada, Masaru, 5,545,752, Cl. 564-398.000.
Oishi, Tetsuya; Ozawa, Hiroshi; Karasawa, Minato; Inomata, Masamitsu; Mega, Izumi; Yamauchi, Atsuyoshi; Kamada, Kazunori; Nakahata, Shigeru; Sakamoto, Katsumi; Nakashima, Tatsunobu; Watanabe, Akito; Suzuki, Jin; Ohkawa, Kouhei; Furusawa, Satoshi; Ono, Hiroshi; and Sugazaki, Kazuo, 5,545,702, Cl. 525-509.000.

Mitsumi Electric Co., Ltd.: *See*—
Kurokawa, Takayuki; Saitoh, Atsushi; Matsubara, Shigemasa; Nawa, Masayoshi; and Kobayashi, Kazuo, 5,546,092, Cl. 342-357.000.

Mittel, James G.: *See*—
Parkes, John J., Jr.; and Mittel, James G., 5,545,970, Cl. 323-277.000.

Mittelman, Michael H.; Still, David L.; and Temme, Leonard A., to United States of America, Navy. Projector slides for night vision training. 5,546,241, Cl. 359-885.000.

Miura, Motohiro, to Kabushiki Kaisha Toshiba. Switching signal generator and magnetic resonance imaging system using the same. 5,546,001, Cl. 324-322.000.

Miura, Noriyasu, to Oji Kenzai Kogyo Co., Ltd. Apparatus for manufacturing laminate for honeycomb structure. 5,545,284, Cl. 156-474.000.

Miya, Masaru: *See*—
Shimizu, Yo; Miya, Masaru; and Nagata, Akira, 5,545,341, Cl. 252-62.50R.

Miyake, Izumi: *See*—
Gotanda, Yoshiharu; Arai, Minoru; and Miyake, Izumi, 5,546,121, Cl. 348-64.000.

Miyake, Masayasu, to Casio Computer Co., Ltd. Spread spectrum communication system. 5,546,424, Cl. 375-206.000.

Miyake, Toshio: *See*—
Iritani, Satoshi; Mitsuhashi, Masakazu; Chaen, Hiroto; and Miyake, Toshio, 5,545,418, Cl. 426-53.000.

Miyamae, Futoshi; and Miyata, Souichi, to Sharp Kabushiki Kaisha. Data driven computer producing inhibit signal for inhibiting merging external provided data pieces with internal data pieces when number of processing data exceeds reference value. 5,546,600, Cl. 395-800.000.

Miyamoto, Hirobumi: *See*—
Yorita, Tadahiro; Yamada, Yasuo; and Miyamoto, Hirohumi, 5,546,059, Cl. 333-202.000.

Miyamoto, Masaki, to Shima Seiki Manufacturing Ltd. Tension switch assembly and yarn conductor of knitting machine. 5,544,503, Cl. 66-146.000.

Miyamoto, Noriaki: *See*—
Ikeda, Hachiro; Miyamoto, Noriaki; Umeda, Ryoei; Yasu, Hidenori; Fukukawa, Mitsuo; Masuyama, Yukiei; Kinoshita, Shoji; Takagi, Yukio; Gocho, Tomohiro; Goto, Fumio; Ishii, Akio; Ogawa, Tetsuo; Hasegawa, Yoshun; Hironaka, Keitaro; and Ogoshi, Yasuhiro, 5,546,123, Cl. 348-119.000.

Miyashita, Yukio: *See*—
Matsumoto, Seiji; Aoki, Takuya; Shimasaki, Yuichi; Hatcho, Seiji; Oketani, Toshikazu; Miyashita, Yukio; Saito, Akihisa; Komatsuda, Takashi; and Kato, Hiroaki, 5,544,482, Cl. 60-279.000.

Miyata, Sadayuki: *See*—
Kunikane, Tatsuro; Okamoto, Akira; Watanabe, Tetsuo; Miyata, Sadayuki; Furukawa, Hiroyuki; and Sakai, Yoshimitsu, 5,546,212, Cl. 359-163.000.

Miyata, Souichi: *See*—
Miyamae, Futoshi; and Miyata, Souichi, 5,546,600, Cl. 395-800.000.

Miyauchi, Masayuki: *See*—
Seto, Yoshiaki; Miyauchi, Masayuki; and Fujii, Takanobu, 5,545,884, Cl. 235-449.000.

Miyayama, Yoshiyuki: *See*—
Coon, Brett; Miyayama, Yoshiyuki; Nguyen, Le T.; and Wang, Johannes, 5,546,552, Cl. 395-375.000.

Miyazaki, Yasuhiro, to Olympus Optical Co., Ltd. Optical head. 5,546,371, Cl. 369-112.000.

Miyazawa, Kenichi: *See*—
Satoh, Takamasa; Yasuda, Hiroshi; Kai, Junichi; Oae, Yoshihisa; Nishino, Hisayasu; Sakamoto, Kiichi; Yabara, Hidefumi; Seto, Isamu; Takigawa, Masami; Yamada, Akio; Arai, Soichiro; Abe, Tomohiko; Kiuchi, Takashi; and Miyazawa, Kenichi, 5,546,319, Cl. 364-488.000.

Miyoshi, Sotsuo: *See*—
Satake, Akira; Onishi, Yoshitaka; and Miyoshi, Sotsuo, 5,545,943, Cl. 310-350.000.

Mizuno Corporation: *See*—
Kita, Kenjiro, 5,544,432, Cl. 36-43.000.

Mizuno, Yoshio: *See*—
Sakai, Akihiro; Mizuno, Yoshio; and Utsunomiya, Takehito, 5,546,161, Cl. 355-200.000.

Mizushima, Koichi; Yoshida, Jiro; and Kubo, Koh-ichi, to Kabushiki Kaisha Toshiba. Superconductor element and method of manufacturing the same. 5,545,612, Cl. 505-239.000.

Mizusugi, Tetsuya, to Nippon Sheet Glass Co., Ltd. Progressively angled and adjustable conveyor roll device for preliminarily bending sheet glass. 5,545,245, Cl. 65-273.000.

Mladinich, Karl: *See*—
Ciobanu, Dan A.; and Mladinich, Karl, 5,544,992, Cl. 411-353.000.

Mobil Oil Corporation: *See*—
Cheng, Jane C.; and Huang, Tracy J., 5,545,788, Cl. 585-467.000.
Coolbaugh, Thomas S.; Loveless, Frederick C.; Matthews, Demetreos N.; and Rudnick, Leslie R., 5,545,783, Cl. 585-12.000.
Wu, Margaret M.; and Xiong, Yusheng, 5,545,790, Cl. 585-510.000.

Mochimaru, Masami: *See*—
Fujita, Takafumi; Shimoda, Ikuo; Mochimaru, Masami; Otsuka, Susumu; Kawai, Nobuyasu; Kurimoto, Kurimoto; and Inaba, Kanemasa, 5,544,452, Cl. 52-167.200.

Mochizuki, Toshitaka: *See*—
Nakajima, Toshiharu; Machimura, Satoru; Goto, Tadashi; Mochizuki, Toshitaka; Hoshino, Shinji; and Ohtani, Hiroshi, 5,545,872, Cl. 219-89.000.

Mochizuki, Yoshiyuki, to Matsushita Electric Industrial Co., Ltd. Image processing apparatus. 5,546,515, Cl. 395-133.000.

Moczygemba, George A.: *See*—
Trepka, William J.; Moczygemba, George A.; Stacy, Nathan E.; and Farrar, Ralph C., Jr., 5,545,690, Cl. 525-98.000.

Modar, Inc.: *See*—
Hong, Glenn T., 5,545,337, Cl. 210-761.000.

Model & Instrument Development Corporation: *See*—
Houser, Guy M., 5,545,231, Cl. 623-38.000.

Modine Manufacturing Company: *See*—
Robers, Kevin J.; Bretl, Richard A.; Gabbey, Lawrence W.; Kerkman, William J.; and Kersher, Tod T., 5,544,699, Cl. 165-283.000.

Mohan, Rakesh: *See*—
Bolle, Rudolf M.; Connell, Jonathan H.; Haas, Norman; Mohan, Rakesh; and Taubin, Gabriel, 5,546,475, Cl. 382-190.000.

Mohara, Masayuki: *See*—
Kano, Yoshinori; and Mohara, Masayuki, 5,544,411, Cl. 29-740.000.

Mohn, Jürgen: *See*—
Heine, Wilhelm; and Mohn, Jürgen, 5,545,320, Cl. 210-321.600.

Mohns, Lawrence: *See*—
Berg, Robin; Mohns, Lawrence; and Oswald, Richard, 5,544,974, Cl. 405-53.000.

Mohr, Patrick J.: *See*—
Joshi, Mahendra L.; Broadway, Lee; and Mohr, Patrick J., 5,545,031, Cl. 431-8.000.

Moizo, Elda: *See*—
Marchesano, Carlo; Moizo, Elda; and Faranda, Filippo, 5,545,508, Cl. 430-265.000.

Mojsov, Svetlana: *See*—
Buckley, Douglas I.; Habener, Joel F.; Mallory, Joanne B.; and Mojsov, Svetlana, 5,545,618, Cl. 514-12.000.

Moldvai, István: *See*—
Szántay, Csaba; Kardos, Zsuzsanna B.; Moldvai, István; Major, Eszter T.; Szántay, Csaba, Jr.; Mándi, Attila; Blaskó, Gábor; Simig, Gyula; Lax, Györgyi; Drabant, Sándor; Szállási, Tamas; Fekete, Márton; and Gigler, Gábor, 5,545,741, Cl. 546-276.700.

Molecular Probes, Inc.: *See*—
Roth, Bruce L.; Millard, Paul J.; Yue, Stephen T.; Wells, K. Sam; and Haugland, Richard P., 5,545,535, Cl. 435-34.000.

Molex Incorporated: *See*—
Benes, Kevin C.; Krehbiel, Fred L.; and Mackowiak, Russell L., 5,545,054, Cl. 439-467.000.

Molin, Jan; and Grånfors, Sören, to ABB Flakt AB. Angle adjustable vane suspension. 5,545,011, Cl. 416-207.000.

Molin, Søren; Gerdes, Kenn A.; Rasmussen, Poul B.; and Andersson, Poul K., to Benzon Pharma A/S. Stabilization of unstably inherited replicons. 5,545,541, Cl. 435-172.300.

Mollenkopf, Lloyd C.: *See*—
Canfield, Thomas F.; Mollenkopf, Lloyd C.; Rein, Russell J.; and Jilk, Larry M., 5,544,593, Cl. 108-50.000.

Mollet, Beat: *See*—
Germond, Jacques E.; Hottinger, Herbert; Mignot, Olivier; Mollet, Beat; and Tsuda, Koichiro, 5,545,554, Cl. 435-252.900.

Molliex, Ludovic E. C.: *See*—
Alassoeur, Philippe L. A.; Collot, André C. F.; Guyonnet, Xavier J. M. A.; Klein, Gilles C. C.; and Molliex, Ludovic É. C., 5,544,805, Cl. 228-190.000.

Momodomi, Masaki: *See*—
Tanaka, Tomoharu; Momodomi, Masaki; Kato, Hideo; Nakai, Hiroto; Tanaka, Yoshiyuki; Shirota, Riichiro; Aritome, Seiichi; Itoh, Yasuo; Iwata, Yoshihisa; Nakamura, Hiroshi; Odaira, Hideko; Okamoto, Yutaka; Asano, Masamichi; and Tokushige, Kaoru, 5,546,351, Cl. 365-230.060.

Momota, Hiroshi: *See*—
Ohgai, Hideo; Momota, Hiroshi; Kumakura, Takeshi; Kajifusa, Noriyuki; Kitazawa, Toshiki; Oshiden, Kazuhide; and Matsushiro, Aizo, 5,545,564, Cl. 435-320.100.

Monarch Knitting Machinery Corporation: *See*—
Bell, Cecil R.; Moyer, Charles R.; Poole, Gregory S.; and Silvers, Kenneth B., 5,544,603, Cl. 112-475.120.

Monden, Junji: *See*—
Ando, Manabu; and Monden, Junji, 5,546,410, Cl. 371-40.200.

Mondy, Kertious. Clothing article having an extensible display. 5,544,365, Cl. 2-115.000.

Monica, Julianne H. Kit for the care of back ailments. 5,544,753, Cl. 206-570.000.

Monsanto Company: *See*—
Stoddard, John W., 5,545,833, Cl. 528-337.000.

Montagnier, Luc: *See*—
Alizon, Marc; Montagnier, Luc; Guetard, Denise; Brun-Vezinet, Francoise; and Clavel, Francois, 5,545,726, Cl. 536-23.100.
Collandre, Helene; Montagnier, Luc; Agut, Henri; and Bechet, Jean-Marie, 5,545,520, Cl. 435-5.000.

Montefiore Medical Center: *See*—
Otter, Brian A.; and Schwartz, Edward L., 5,545,629, Cl. 514-50.000.

Monteleone, Michael G.; Weiss, Richard A.; Evans, Mark D.; and Hanna, Marie R., to International Flavors & Fragrances Inc. 1-oxo-substituted and unsubstituted isobutyl-4-ethoxy-benzenes and mixtures thereof with bicyclopentadiene derivatives, uses of same in perfumery and methods for preparing same. 5,545,763, Cl. 568-630.000.

Montplaisir, Serge; Mercure, Stéphane; and Lemay, Guy, to Universite de Montreal. Detection of candida albicans. 5,545,525, Cl. 435-6.000.

Moody, David J.: *See*—
Armijo, David L.; Baker, Tony R.; Cherington, Floyd E.; Christopher, Delbert S.; Moody, David J.; Mullen, James J.; Vinson, Hugh E.; Warren, John L.; Beilfuss, Robert C.; and Wiker, John H., 5,544,645, Cl. 126-101.000.

Moon, Jae-Chang, to Kumho & Co., Inc. Golf ball. 5,544,889, Cl. 473-383.000.

Moon, Tien-Jan A.: *See*—
Thaweethai, Ladavan; and Moon, Tien-Jan A., 5,546,379, Cl. 370-17.000.

Mooney, Charles W.: *See*—
Holden, Irving H.; Mooney, Charles W.; Brinkley, Gerald E.; and McKee, John M., 5,546,069, Cl. 340-407.100.

Mooney, Stephen R.: *See*—
Borkar, Shekhar; and Mooney, Stephen R., 5,546,023, Cl. 326-93.000.

Moore Business Forms, Inc.: *See*—
Bohland, John R., 5,545,483, Cl. 428-402.210.
Cynar, T. F.; and Pollutro, Dennis C., 5,544,921, Cl. 283-70.000.

Moore, Howard M.: *See*—
Baltins, Guntis U.; Boyle, Russell W.; Mason, Denis G.; Moore, Howard M.; Owen, A. DeBow; and Sharp, Joseph A., 5,544,526, Cl. 73-180.000.

Moore, Steven A. Bracket for exterior mountings on buildings. 5,544,851, Cl. 248-544.000.

Morales, Florencio, Jr.: *See*—
Casamassina, Thomas; Morales, Florencio, Jr.; Salka, Barry A.; and Fallon, John, 5,545,622, Cl. 252-353.000.

Moran, Walter J., III, to Pittway Corporation. Strobe for detector. 5,546,293, Cl. 362-301.000.

Morelock, Robin L.: *See*—
Haugen, Marc D.; and Morelock, Robin L., 5,546,091, Cl. 342-181.000.

Moren, Mike; Buck, Todd; and Kizziah, Pat, to Plastofilm Industries, Inc. Process for producing thermoformed article employing selective cooling. 5,545,370, Cl. 264-522.000.

Moren, Ulf, to Coolworks, Inc. Dispensing apparatus for a cooled liquid with thermoelectric probe. 5,544,489, Cl. 62-3.640.

Mori-Gumi Co., Ltd.: *See*—
Taguchi, Akira, 5,544,983, Cl. 406-85.000.

Mori, Kazuhumi; Sugimori, Shigemi; and Suga, Hitoshi, to Toyota Jidosha Kabushiki Kaisha. Mounting structure of sun visor for automobile. 5,544,928, Cl. 296-97.900.

Morich, Michael A.; and Petropoulos, Labros S., to Picker International, Inc. Gradient coil with cancelled net thrust force. 5,545,996, Cl. 324-318.000.

Moriconi, David P., to Cordata, Inc. Removable computer display interface. 5,546,098, Cl. 345-3.000.

Morihara, Hiroshi: *See*—
Keck, David W.; Nagai, Kenichi; Yatsurugi, Yoshifumi; Morihara, Hiroshi; and Izawa, Junji, 5,545,387, Cl. 423-348.000.

Morikawa, Shinsuke; Samejima, Shunichi; Yoshitake, Masaru; Okamoto, Hidekazu; Ohnishi, Keiichi; and Tanuma, Toshihiro, to Asahi Glass Company Ltd. Process for producing a hydrogen-containing 2,2-difluoropropane. 5,545,777, Cl. 570-176.000.

Morimoto, Katsushi; Ohnari, Masatoshi; Nawamaki, Tsutomu; Watanabe, Shigeomi; and Ishikawa, Kimihiro, to Nissan Chemical Industries, Ltd. Pyrazole-glycolic acid amide derivatives as herbicides. 5,545,608, Cl. 504-282.000.

Morimoto, Takeshi: *See*—
Okamura, Michio; Morimoto, Takeshi; and Hiratsuka, Kazuya, 5,545,933, Cl. 307-109.000.

Morimoto, Toru, to Morimoto, Toru; and Unix Corporation, Ltd. Membranous-vibration sound absorbing materials. 5,545,861, Cl. 181-290.000.

Morinaka, Akira: *See*—
Inoue, Yasuyuki; Kawachi, Masao; Okamoto, Katsunari; Takato, Norio; Yamamoto, Fumihiko; Suda, Hiroyuki; Furukawa, Shinichi; and Morinaka, Akira, 5,546,483, Cl. 385-14.000.

Morita, Keisuke: *See*—
Fukuoka, Hirotsugu; Morita, Keisuke; Matsunaga, Hiroshi; and Muramatsu, Shigeru, 5,545,021, Cl. 418-63.000.

Morita, Kiyozi: *See*—
Fukushima, Saburo; Yagi, Masaharu; Morita, Kiyozi; Ando, Masami; and Saito, Tokuo, 5,545,458, Cl. 428-117.000.

Moriwaki, Nobuyuki: *See*—
Nakane, George; Mukunoki, Toshio; Moriwaki, Nobuyuki; Sumi, Tatsumi; Hirano, Hiroshige; and Nakakuma, Tetsuji, 5,546,342, Cl. 365-189.010.

Moriya, Kouji: *See*—
Shimizu, Michio; Konuma, Toshimitsu; and Moriya, Kouji, 5,546,208, Cl. 359-81.000.

Moriya, Nobuharu: *See*—
Yoshida, Katunori; Koizumi, Ichirho; Kimura, Kohichi; and Moriya, Nobuharu, 5,544,426, Cl. 34-314.000.

Moriyama, Hitoshi: *See*—
Yoshida, Yuichi; and Moriyama, Hitoshi, 5,544,964, Cl. 400-322.000.

Morooka, Yasuo: *See*—
Abe, Shigeo; Kayama, Masahiro; Takenaga, Hiroshi; Morooka, Yasuo; Kawakami, Junzo; and Takatoo, Masao, 5,546,503, Cl. 395-23.000.

Morris, Douglas I.: *See*—
Frizell, Kathleen H.; Mefford, Brent W.; Vermeyen, Tracy B.; and Morris, Douglas I., 5,544,973, Cl. 405-16.000.

Mortensen, Dana, to Essef Corporation. Self grounding lamp for special use in an underwater environment. 5,545,952, Cl. 315-74.000.

Mortensen, John: *See*—
Offray, Denise A.; Koch, Durmus; and Mortensen, John, 5,545,217, Cl. 623-8.000.

Morterol, Frederic R. M. M.; and Raufast, Charles, to BP Chemicals Limited. Fluidized bed reactor with polymer recycle line. 5,545,378, Cl. 422-132.000.

Mortimer, William P., Jr.: *See*—
Ameen, Joseph G.; Mortimer, William P., Jr.; and Yokimcus, Victor P., 5,545,473, Cl. 428-283.000.

Morton International, Inc.: *See*—
Barnes, Michael W.; Deppert, Thomas M.; and Taylor, Robert D., 5,544,687, Cl. 149-83.000.
Vine, Daniel C., 5,544,911, Cl. 280-728.200.

Mosaid Technologies Incorporated: *See*—
Gillingham, Peter B., 5,546,350, Cl. 365-230.060.

Moser, Helmut A., to Sandoz Ltd. Cationically bridged tetrakisazo dyestuffs with variable couplers, their production and use. 5,545,724, Cl. 534-604.000.

Moss, David L.; and Mills, Richard S., to Dell USA, L.P. Serial fan cooling subsystem for computer systems. 5,546,272, Cl. 361-687.000.

Motohashi, Teruyuki; and Sone, Tomoshi, to NEC Corporation. Paging receiver capable of reporting the time of paging connection. 5,546,078, Cl. 340-825.440.

Motor Wheel Corporation: *See*—
Daudi, Anwar R., 5,544,945, Cl. 301-63.100.

Motorola: *See*—
Ackley, Donald E.; and Lebby, Michael S., 5,545,359, Cl. 264-1.240.
Lebby, Michael S.; Chun, Christopher K. Y.; and Witting, Gary F., 5,546,413, Cl. 372-6.000.
Wiemann, David A.; Dworsky, Lawrence N.; Jaskie, James E.; Kane, Robert C.; and Moyer, Curtis D., 5,545,946, Cl. 313-497.000.

Motorola, Inc.: *See*—
Bai, Monty W.; Kerns, Thomas M.; and Brannon, Edward L., 5,545,493, Cl. 429-90.000.
Bizuneh, Daniel T.; Obregón, Carlos; Wells, Michael A.; and Neely, Eric D., 5,546,021, Cl. 326-86.000.
Brown, Clem H.; and Salina, John E., 5,545,893, Cl. 250-239.000.
Chan, Joseph Y.; and Rybicki, Mathew A., 5,546,047, Cl. 330-253.000.
Chen, Wei-Ming; Sun, Shih-Wei; and Tsui, Paul G. Y., 5,545,574, Cl. 437-40.000.
Cheng, Shih K.; and Orlowski, Marius, 5,545,575, Cl. 437-40.000.
Chiasson, Gregory M.; Rasky, Phillip D.; and Baum, Kevin L., 5,546,429, Cl. 375-341.000.
Deems, Vincent B.; Racino, Gregory A.; Feddeler, James R.; and Shiff, Victor E., 5,546,588, Cl. 395-750.000.
Eaton, Eric T.; Evoy, Ronald H.; Hayes, David J.; Willard, David F.; Ito, Shogo; and Yamao, Yasushi, 5,546,394, Cl. 370-79.000.
Holden, Irving H.; Mooney, Charles W.; Brinkley, Gerald E.; and McKee, John M., 5,546,069, Cl. 340-407.100.
Leitch, Clifford D.; Schwendeman, Robert J.; and Macnak, Philip P., 5,546,411, Cl. 371-5.500.
Magera, Yaroslaw A.; Savic, Jovica; and Brown, Vernon L., 5,545,430, Cl. 427-98.000.
Malaspina, Francis P., 5,544,784, Cl. 221-135.000.
McCall, Scott D.; and Hoshizaki, Gary W., 5,546,040, Cl. 327-479.000.
Moutrie, Michael F.; Whitmore, Andrew, III; Hess, David M.; Laugal, John C.; Mina, Steven M.; and Boler, Matthew J., 5,546,275, Cl. 361-707.000.
Parkes, John J., Jr.; and Mittel, James G., 5,545,970, Cl. 323-277.000.
Raatz, Donovan L.; and Feng, Taisheng, 5,546,355, Cl. 365-233.000.
Ristic, Ljubisa; Koury, Daniel N.; Schmiesing, John E.; Gutteridge, Ronald J.; and Hughes, Henry G., 5,545,912, Cl. 257-417.000.
Romero, Guillermo L.; and Martinez, Joe L., Jr., 5,544,412, Cl. 29-832.000.
Smith, Roger A., 5,546,333, Cl. 364-709.050.
Tomasi, Peter A.; Prill, Mark E.; and Cahill, Stephen V., 5,546,380, Cl. 370-17.000.
Wang, Shay-Ping T.; Teng, Dan; Stuckman, Bruce E.; and Hayner, David A., 5,546,302, Cl. 364-148.000.

170–652 O.G.–96–29: QL3

Motoyama, Shuichiro: *See—*
Yoshida, Shinji; Motoyama, Shuichiro; Ohashi, Takashi; and Ishihara, Masamichi, 5,546,261, Cl. 361-19.000.
Mottier, Bradley D.; MacLeod, J. Norman; Mechlowitz, Dean; and Erickson, Randy, to Unison Industries Limited Partnership. Magneto with dual mode operation. 5,544,633, Cl. 123-310.000.
Moutrie, Michael F.; Whitmore, Andrew, III; Hess, David M.; Laugal, John C.; Mina, Steven M.; and Boler, Matthew J., to Motorola, Inc. Electrical module mounting apparatus. 5,546,275, Cl. 361-707.000.
Moyer, Charles R.: *See—*
Bell, Cecil R.; Moyer, Charles R.; Poole, Gregory S.; and Silvers, Kenneth B., 5,544,603, Cl. 112-475.120.
Moyer, Curtis D.: *See—*
Wiemann, David A.; Dworsky, Lawrence N.; Jaskie, James E.; Kane, Robert C.; and Moyer, Curtis D., 5,545,946, Cl. 313-497.000.
Mozumder, Purnendu K.; and Saxena, Sharad, to Texas Instruments Incorporated. Use of spatial models for simultaneous control of various non-uniformity metrics. 5,546,312, Cl. 364-468.030.
Mrenna, Stephen A., to Eaton Corporation. Support plate for a circuit breaker. 5,546,060, Cl. 335-35.000.
MTS Systems Corporation: *See—*
Gloden, Michael L.; and Sprecher, Arnold F., Jr., 5,545,984, Cl. 324-207.130.
Mück, Manfred: *See—*
Götter, Hans; Mück, Manfred; and Wilhelm, Thomas, 5,544,370, Cl. 4-619.000.
Mueller, Denis A.: *See—*
Bollinger, Parker A., Jr.; Mueller, Denis A.; Smith, James D. B.; and Wehrli, Henry A., III, 5,545,679, Cl. 523-512.000.
Mueller, Elmar; and Kunz, Dieter, to Robert Bosch GmbH. Anti-lock brake system and/or traction control system. 5,544,956, Cl. 303-196.000.
Mueller, Otward M.; Yakymyshyn, Christopher P.; Roemer, Peter B.; and Watkins, Ronald D., to General Electric Company. Preamplifier circuit for magnetic resonance system. 5,545,999, Cl. 324-322.000.
Mueller-Largent, Heidi: *See—*
O'Connor, Kurt F.; Hoff, James P.; Frasier, Donald J.; Peeler, Ralph E.; Mueller-Largent, Heidi; Trees, Floyd F.; Whetstone, James R.; Lane, John H.; and Jeffries, Ralph E., 5,545,003, Cl. 415-115.000.
Muhr, Jürgen, to Huels Aktiengesellschaft. Process for preparing 1-cyclopropylalkane-1,3-diones. 5,545,762, Cl. 568-346.000.
Mukai, Tina: *See—*
Josten, Jeffrey W.; Mukai, Tina; Narang, Inderpal S.; and Teng, James Z., 5,546,579, Cl. 395-600.000.
Mukharji, Indrani: *See—*
Ausich, Rodney L.; Brinkhaus, Friedhelm L.; Mukharji, Indrani; Proffitt, John; Yarger, James; and Yen, Huei-Che B., 5,545,816, Cl. 800-205.000.
Mukohzaka, Naohisa: *See—*
Kobayashi, Yuji; Yoshida, Narihiro; Mukohzaka, Naohisa; Toyoda, Haruyoshi; and Hara, Tsutomu, 5,546,181, Cl. 356-237.000.
Mukunoki, Toshio: *See—*
Nakane, George; Mukunoki, Toshio; Moriwaki, Nobuyuki; Sumi, Tatsumi; Hirano, Hiroshige; and Nakakuma, Tetsuji, 5,546,342, Cl. 365-189.010.
Mulcahy, Roy T.: *See—*
Chang, Chi S.; Desai, Subahu D.; Gernhart, Debra A.; Hartley, Phillip A.; Haskins, Robert J., Jr.; Ho, Keith K. T.; Martone, Robert A.; Mulcahy, Roy T.; Shaffer, Louis J.; Schoening, Robert D.; and Versprille, Scott A., 5,546,321, Cl. 364-491.000.
Mullen, James J.: *See—*
Armijo, David L.; Baker, Tony R.; Cherington, Floyd E.; Christopher, Delbert S.; Moody, David J.; Mullen, James J.; Vinson, Hugh E.; Warren, John L.; Beilfuss, Robert C.; and Wiker, John H., 5,544,645, Cl. 126-101.000.
Muller, Arno: *See—*
Hunter, Kevin D.; and Muller, Arno, 5,546,112, Cl. 347-171.000.
Müller, Friedemann: *See—*
Heidingsfeld, Herbert; Bräuer, Wolfgang; Müller, Friedemann; and Meister, Willi, 5,545,707, Cl. 528-60.000.
Müller, Marcel: *See—*
Alig, Leo; Hadvary, Paul; Hürzeler, Marianne; Müller, Marcel; Steiner, Beat; and Weller, Thomas, 5,545,658, Cl. 514-423.000.
Muller, Marcel W.: *See—*
Indeck, Ronald S.; Muller, Marcel W.; Engel, George Lawrence; and Hege, Alan L., 5,546,462, Cl. 380-23.000.
Muller, Sylviane: *See—*
Plaue, Serge; Muller, Sylviane; and Van Regenmortel, Marc, 5,545,718, Cl. 530-327.000.
Multi-Tech Systems, Inc.: *See—*
Caswell, Ty J.; Davis, Jeffrey P.; Johnson, Gregory R.; Reinarts, Timothy J.; and Sun, Ting, 5,546,448, Cl. 379-142.000.
Sharma, Raghu N.; Davis, Jeffrey P.; Gunn, Timothy D.; Li, Ping; Maitra, Sidhartha; and Thanawala, Ashish A., 5,546,395, Cl. 370-84.000.
Mumford, Neal A.: *See—*
Chen, Cheng-Chi; Lloyd, Ben A.; Mumford, Neal A.; and Johns, Rolf M., 5,545,278, Cl. 156-175.000.
Munchkin Bottling Inc.: *See—*
Dunn, Steven B.; and Suarez, Fernando, 5,544,766, Cl. 215-11.100.
Munini, Dino: *See—*
Marcorin, Franco; Tonel, Ivo S.; and Munini, Dino, 5,544,551, Cl. 81-3.290.
Murakami, Fumiaki: *See—*
Takagi, Akira; Murakami, Fumiaki; Fujutsuna, Masami; Natsume, Kazuyuki; Suzuki, Masaru; and Takei, Toshihiro, 5,544,538, Cl. 74-335.000.
Murakami, Hiroki: *See—*
Ibaraki, Susumu; Katta, Noboru; Nakamura, Seiji; and Murakami, Hiroki, 5,546,461, Cl. 380-20.000.
Murakami, Mitsuaki: *See—*
Harato, Takuo; Ishida, Takahiro; Kumagae, Yoshio; Inami, Michikazu; Ishibashi, Kazuhisa; and Murakami, Mitsuaki, 5,545,384, Cl. 423-121.000.
Murakami, Motoaki, to Noritsu Koki Co., Ltd. Continuous film take-up apparatus. 5,544,840, Cl. 242-532.700.
Muramatsu, Shigeru: *See—*
Fukuoka, Hirotsugu; Morita, Keisuke; Matsunaga, Hiroshi; and Muramatsu, Shigeru, 5,545,021, Cl. 418-63.000.
Muraoka, Kimihiro; Shimizu, Naohiro; and Tamamushi, Takashige, to Toyo Denki Seizo Kabushiki Kaisha; and Tamamushi, Takashige. Static induction semiconductor device with a static induction schottky shorted structure. 5,545,905, Cl. 257-268.000.
Murashima, Nobuharu: *See—*
Wada, Shigeru; Nakamura, Ikushi; Ueno, Takuya; Tanino, Ken; Konishi, Yoshito; and Murashima, Nobuharu, 5,546,150, Cl. 354-288.000.
Murata Manufacturing Co., Ltd.: *See—*
Azuma, Takahiro; Tokuda, Hiromichi; and Kaneko, Toshimi, 5,546,058, Cl. 333-183.000.
Yorita, Tadahiro; Yamada, Yasuo; and Miyamoto, Hirohumi, 5,546,059, Cl. 333-202.000.
Murata, Shigeki: *See—*
Iwata, Noriya; Matuura, Kenji; and Murata, Shigeki, 5,546,259, Cl. 360-130.220.
Murata, Shizuo: *See—*
Nakayama, Minoru; Sawai, Toshiya; and Murata, Shizuo, 5,545,444, Cl. 428-1.000.
Murdock, Douglas R.: *See—*
Hogan, Steven J.; Feltz, Kristi T.; Murdock, Douglas R.; and Smith, Keith E., 5,546,449, Cl. 379-202.000.
Murkett, Stephen; and Bayer, Jürgen, to Dr. Ing. h.c.F. Porsche AG. Passenger car with a removable top assembly. 5,544,934, Cl. 296-215.000.
Murphy, Oliver J.; Hitchens, G. Duncan; Hodko, Dalibor; Clarke, Eric T.; Miller, David L.; and Parker, Donald L., to Lynntech, Inc. Method of using conductive polymers to manufacture printed circuit boards. 5,545,308, Cl. 205-125.000.
Murphy, Sean; and Need, Daniel E., to Acuson Corporation. Voice control of a medical ultrasound scanning machine. 5,544,654, Cl. 128-660.070.
Murphy, William: *See—*
Whitlock, Michael; and Murphy, William, 5,545,242, Cl. 55-502.000.
Murphy, William J.: *See—*
Archambeault, Gary L.; Murphy, William J.; and Mackert, Edmund M., 5,545,804, Cl. 588-253.000.
Murray, Nancy: *See—*
Foladare, Mark J.; Goldman, Sbelley B.; Murray, Nancy; Silverman, David P.; Tsao, Yao-Chung; and Weber, Roy P., 5,546,442, Cl. 377-57.000.
Murray, Thomas J.; and Simpson, Sharon M., to Minnesota Mining and Manufacturing Company. Acrylonitrile compounds as co-developers for black-and-white photothermographic and thermographic elements. 5,545,515, Cl. 430-617.000.
Murtfeldt, Robert L. Wound dilatation device. 5,545,176, Cl. 606-192.000.
Muschelewicz, Adana: *See—*
Haung, Wu-Nan; Manwill, Niles R.; Muschelewicz, Adana; and Chen, Fung-Bor, 5,545,451, Cl. 428-36.800.
Musgrave, Paul D.: *See—*
Tillery, Dean; Musgrave, Paul D.; McClusky, John; and Myers, Russell L., 5,544,811, Cl. 239-13.000.
Mushabac, David R. Method and apparatus for preparing tooth or modifying dental restoration. 5,545,039, Cl. 433-215.000.
Musoff, Howard: *See—*
Johnson, William M.; and Musoff, Howard, 5,546,309, Cl. 364-434.000.
Mutoh, Masaru: *See—*
Sato, Fumie; Amano, Takehiro; Kameo, Kazuya; Tanami, Tohru; Mutoh, Masaru; Ono, Naoya; and Goto, Jun, 5,545,666, Cl. 514-530.000.
Mycynek, Victor G.: *See—*
Krishnamurthy, Gopalan; Mycynek, Victor G.; and Sgrignoli, Gary J., 5,546,138, Cl. 348-735.000.
Myers, Russell L.: *See—*
Tillery, Dean; Musgrave, Paul D.; McClusky, John; and Myers, Russell L., 5,544,811, Cl. 239-13.000.
N.V. Kema: *See—*
Verhaart, Henricus F. A., 5,546,010, Cl. 324-713.000.
N.V. Michel Van De Wiele: *See—*
Derudder, Carlos, 5,544,676, Cl. 139-192.000.
Nagai, Kenichi: *See—*
Keck, David W.; Nagai, Kenichi; Yatsurugi, Yoshifumi; Morihara, Hiroshi; and Izawa, Junji, 5,545,387, Cl. 423-348.000.
Nagai, Kiyoshi: *See—*
Hoffman, Stephen J.; Looker, Douglas L.; Rosendahl, Mary S.; Stetler, Gary L.; Wagenbach, Michael; Anderson, David C.; Mathews, Antony J.; and Nagai, Kiyoshi, 5,545,727, Cl. 536-234.000.

Nagai, Shinichi, to Yugenkaisha Paramount Corporation. Automobile having fresh air ventilation and other health and safety features. 5,544,929, Cl. 296-99.100.
Nagamitsu, Sachio: *See—*
Hattori, Yoshihiro; Nagamitsu, Sachio; Nagata, Yoichi; and Kodama, Hisashi, 5,546,327, Cl. 364-556.000.
Nagano, Akihiko: *See—*
Konishi, Kazuki; and Nagano, Akihiko, 5,546,158, Cl. 354-410.000.
Nagano, Toru: *See—*
Ishii, Takashi; Watanabe, Tamio; and Nagano, Toru, 5,545,053, Cl. 439-364.000.
Nagaraj, Bangalore A.; Weil, Antoinette E.; and Devitt, John W., to General Electric Company. Method for forming a non-degrading refective coating system for high temperature heat shields. 5,545,437, Cl. 427-404.000.
Nagashima, Nobuharu: *See—*
Yajima, Shinya; and Nagashima, Nobuharu, 5,546,126, Cl. 348-175.000.
Nagata, Akira: *See—*
Shimizu, Yo; Miya, Masaru; and Nagata, Akira, 5,545,341, Cl. 252-62.50R.
Nagata, Iwami: *See—*
Iwata, Toshiro; Nagata, Iwami; Hatakeyama, Akira; and Nishigai, Kazuhisa, 5,545,024, Cl. 425-204.000.
Nagata, Kenichi: *See—*
Yamada, Noboru; Akahira, Nobuo; Nishiuchi, Kenichi; Nagata, Kenichi; Ohno, Eiji; and Furukawa, Shigeaki, 5,545,454, Cl. 428-64.100.
Nagata, Teruyuki; Kusuda, Chiyuki; and Wada, Masaru, to Mitsui Toatsu Chemicals, Inc. Process for the preparation of diphenylamine or nucleus-substituted derivative thereof. 5,545,752, Cl. 564-398.000.
Nagata, Teruyuki: *See—*
Kusuda, Chiyuki; Furuya, Masayuki; Wada, Masaru; Irizato, Yoshihiro; Naruse, Hiroshi; and Nagata, Teruyuki, 5,545,751, Cl. 564-398.000.
Nagata, Yoichi: *See—*
Hattori, Yoshihiro; Nagamitsu, Sachio; Nagata, Yoichi; and Kodama, Hisashi, 5,546,327, Cl. 364-556.000.
Nagy, Ferenc: *See—*
Dudits, Dénes; Paulovics, Katalin; Kalman, Katalin; Györgyey, János; Nagy, Ferenc; Bako, László; Horvath, Gábor; Eckes, Peter; and Donn, Günter, 5,545,819, Cl. 800-205.000.
Nahra, John E.; and Zimmer, Artur G., to DASI Corporation. Apparatus for treating fluent material. 5,544,571, Cl. 99-454.000.
Naito, Hiroyoshi: *See—*
Kawanaka, Seido; Yoshikawa, Mituo; and Naito, Hiroyoshi, 5,546,479, Cl. 382-290.000.
Naito, Kazuo: *See—*
Noguchi, Tomoko; Naito, Kazuo; Saito, Tasuku; Sakurai, Ryo; and Ishiharada, Minoru, 5,546,493, Cl. 385-125.000.
Naito, Masataka: *See—*
Adachi, Seiichiro; Naito, Masataka; and Hiroi, Masakazu, 5,546,168, Cl. 355-233.000.
Naito, Shotaro: *See—*
Uchiyama, Kaoru; Tsutsui, Mitsukuni; Naito, Shotaro; and Suda, Seiji, 5,544,523, Cl. 73-118.200.
Naito, Tutomu: *See—*
Takikawa, Osami; and Naito, Tutomu, 5,546,285, Cl. 362-61.000.
Naito, Yoshikazu: *See—*
Takahashi, Kenichi; and Naito, Yoshikazu, 5,546,404, Cl. 371-22.100.
Naka, Daiji, to Mitsubishi Kasei Corporation. Hepatocyte-growth agent. 5,545,722, Cl. 530-399.000.
Nakagakiuchi, Susumu; and Ueda, Shinobu, to Mitsubishi Denki Kabushiki Kaisha. Exposure control apparatus including a spatial light modulator. 5,546,128, Cl. 348-362.000.
Nakagawa, Azusa: *See—*
Iwama, Akifumi; Iseki, Masahiro; and Nakagawa, Azusa, 5,545,299, Cl. 204-412.000.
Nakagoshi, Kazuo: *See—*
Honma, Hisao; Nakagoshi, Kazuo; Takahashi, Naoya; Kogai, Makoto; and Takamoto, Kenichi, 5,546,348, Cl. 365-230.030.
Nakahara, Kazuyuki: *See—*
Hayashi, Masayuki; Mitekura, Yoshihiro; Kanaya, Koichi; Terao, Masato; Tagawa, Toshiya; Tomidokoro, Nobuaki; Kitayama, Masahiro; Kizaki, Osamu; Kawada, Yasuo; Nakahara, Kazuyuki; Harada, Tomofumi; and Hashimoto, Yasunari, 5,546,164, Cl. 355-204.000.
Nakahara, Kiyoshi: *See—*
Hosokawa, Toshihiro; Nakahara, Kiyoshi; Ishitsubo, Ryuichi; and Okuda, Toshiyuki, 5,545,023, Cl. 425-171.000.
Nakahata, Shigeru: *See—*
Oishi, Tetsuya; Ozawa, Hiroshi; Karasawa, Minato; Inomata, Masamitsu; Mega, Izumi; Yamauchi, Atsuyoshi; Kamada, Kazunori; Nakahata, Shigeru; Sakamoto, Katsumi; Nakashima, Tatsunobu; Watanabe, Akito; Suzuki, Jin; Ohkawa, Kouhei; Furusawa, Satoshi; Ono, Hiroshi; and Sugazaki, Kazuo, 5,545,702, Cl. 525-509.000.
Nakai, Hiroto: *See—*
Tanaka, Tomoharu; Momodomi, Masaki; Kato, Hideo; Nakai, Hiroto; Tanaka, Yoshiyuki; Shirota, Riichiro; Aritome, Seiichi; Itoh, Yasuo; Iwata, Yoshihisa; Nakamura, Hiroshi; Odaira, Hideko; Okamoto, Yutaka; Asano, Masamichi; and Tokushige, Kaoru, 5,546,351, Cl. 365-230.060.
Nakai, Kenji: *See—*
Nakamori, Toshinori; Sonomura, Minoru; and Nakai, Kenji, 5,544,502, Cl. 66-126.00A.
Nakajima, Hidenori; Hori, Yasuhiro; Goto, Toshio; Takase, Shigehiro; Verhaeghe, Koen; Terano, Hiroshi; and Okuhara, Masakuni, to Fujisawa Pharmaceutical Co., Ltd. WB2663 substances and method for their production. 5,545,542, Cl. 435-128.000.
Nakajima, Shigeru: *See—*
Yabe, Hisao; Iida, Yoshihiro; Suzuki, Akira; Ito, Hideo; Tashiro, Yoshio; Yamazaki, Minoru; Tamada, Osamu; and Nakajima, Shigeru, 5,545,121, Cl. 600-121.000.
Nakajima, Takeshi: *See—*
Shimada, Toshiyuki; and Nakajima, Takeshi, 5,546,427, Cl. 375-293.000.
Nakajima, Terukazu, to Koyo Seiko Co., Ltd. Shock absorbing steering device and method of manufacturing the device. 5,544,542, Cl. 74-492.000.
Nakajima, Toshiharu; Machimura, Satoru; Goto, Tadashi; Mochizuki, Toshitaka; Hoshino, Shinji; and Ohtani, Hiroshi, to Honda Giken Kogyo Kabushiki Kaisha. Pressure controller and pressure control method for resistance welder. 5,545,872, Cl. 219-89.000.
Nakajima, Yasuo: *See—*
Shimamune, Takayuki; and Nakajima, Yasuo, 5,545,306, Cl. 205-109.000.
Nakakuma, Tetsuji: *See—*
Nakane, George; Mukunoki, Toshio; Moriwaki, Nobuyuki; Sumi, Tatsumi; Hirano, Hiroshige; and Nakakuma, Tetsuji, 5,546,342, Cl. 365-189.010.
Nakamichi, Masumi: *See—*
Kimoto, Masahiko; Nakamichi, Masumi; Funakoshi, Takahiro; Wada, Yasuhiro; Yamamoto, Takehiro; and Tsuda, Yoichi, 5,546,496, Cl. 385-146.000.
Nakamori, Toshinori; Sonomura, Minoru; and Nakai, Kenji, to Shima Seiki Manufacturing Limited. Knitting yarn feeding apparatus for flat knitting machine. 5,544,502, Cl. 66-126.00A.
Nakamoto, Makoto; and Yamazaki, Yoshihide, to Fujitsu Limited. Information processing unit for modifying gain in a frequency band of a video signal. 5,546,136, Cl. 348-678.000.
Nakamoto, Masayuki, to Kabushiki Kaisha Toshiba. Optical sensor. 5,545,980, Cl. 324-96.000.
Nakamura, Akihiko: *See—*
Sakakibara, Yoshio; Gotou, Makoto; Kobayashi, Kazuhiko; Isaka, Haruo; and Nakamura, Akihiko, 5,546,248, Cl. 360-77.140.
Nakamura, Hiroshi: *See—*
Tanaka, Tomoharu; Momodomi, Masaki; Kato, Hideo; Nakai, Hiroto; Tanaka, Yoshiyuki; Shirota, Riichiro; Aritome, Seiichi; Itoh, Yasuo; Iwata, Yoshihisa; Nakamura, Hiroshi; Odaira, Hideko; Okamoto, Yutaka; Asano, Masamichi; and Tokushige, Kaoru, 5,546,351, Cl. 365-230.060.
Nakamura, Ikushi: *See—*
Wada, Shigeru; Nakamura, Ikushi; Ueno, Takuya; Tanino, Ken; Konishi, Yoshito; and Murashima, Nobuharu, 5,546,150, Cl. 354-288.000.
Nakamura, Kenji: *See—*
Satomura, Shinji; Nakamura, Kenji; Ikenaka, Tokuji; and Omichi, Kaoru, 5,545,530, Cl. 435-6.000.
Nakamura, Kimikazu: *See—*
Okabayashi, Athuo; Nakamura, Kimikazu; and Sugiura, Toshihiko, 5,546,061, Cl. 335-78.000.
Nakamura, Masakazu: *See—*
Ohmi, Tadahiro; and Nakamura, Masakazu, 5,545,868, Cl. 219-61.000.
Nakamura, Mitsunori: *See—*
Yasuhara, Mitsuki; Tatsuki, Yuuichirou; Nakamura, Mitsunori; and Matsunaga, Fujihisa, 5,545,753, Cl. 564-402.000.
Nakamura, Nobutaka, to Kabushiki Kaisha Toshiba. System for limiting change in bus clock frequency to duration of I/O operation upon completion signal. 5,546,567, Cl. 395-550.000.
Nakamura, Satoshi: *See—*
Yamashita, Masahiro; Kawada, Norihiko; and Nakamura, Satoshi, 5,546,127, Cl. 348-297.000.
Nakamura, Seiji: *See—*
Ibaraki, Susumu; Katta, Noboru; Nakamura, Seiji; and Murakami, Hiroki, 5,546,461, Cl. 380-20.000.
Nakamura, Takao, to Sumitomo Electric Industries, Ltd. Oxide superconductor thin film prepared by MBE. 5,545,611, Cl. 505-238.000.
Nakane, George; Mukunoki, Toshio; Moriwaki, Nobuyuki; Sumi, Tatsumi; Hirano, Hiroshige; and Nakakuma, Tetsuji, to Matsushita Electric Industrial Co., Ltd. Semiconductor memory device including reverse and rewrite means. 5,546,342, Cl. 365-189.010.
Nakanishi, Hiroshi; and Hamada, Hiroshi, to Sharp Kabushiki Kaisha. Concealing a bright defect using light blocking means to block only the wavelength band shed onto the defective pixel. 5,546,206, Cl. 359-67.000.
Nakanishi, Makoto: *See—*
Koshiba, Nobuharu; Takata, Kenichi; Asaka, Emi; and Nakanishi, Makoto, 5,545,468, Cl. 429-218.000.
Nakano, Hiroshi, to Brother Kogyo Kabushiki Kaisha. Filter device for ink jet printer. 5,546,109, Cl. 347-93.000.
Nakano, Toshihiro; Iijima, Hideaki; and Arakawa, Haruo, to Aisin Seiki Kabushiki Kaisha. Master cylinder having restriction means with piston. 5,544,485, Cl. 60-589.000.
Nakano, Yoshio, to Sanpou Lock Co., Ltd. Auxiliary lock. 5,544,506, Cl. 70-34.000.
Nakashima, Tatsunobu: *See—*

Oishi, Tetsuya; Ozawa, Hiroshi; Karasawa, Minato; Inomata, Masamitsu; Mega, Izumi; Yamauchi, Atsuyoshi; Kamada, Kazunori; Nakahata, Shigeru; Sakamoto, Katsumi; Nakashima, Tatsunobu; Watanabe, Akito; Suzuki, Jin; Ohkawa, Kouhei; Furusawa, Satoshi; Ono, Hiroshi; and Sugazaki, Kazuo, 5,545,702, Cl. 525-509.000.

Nakat, Sarangdhar S., to Sandoz Ltd. Compositions comprising paraesthetic agrochemicals. 5,545,663, Cl. 514-521.000.

Nakatani, Yoshinori; Kanebako, Toyomitsu; Aoki, Kunio; and Asahina, Hiroshi, to Kabushiki Kaisha Toshiba. X-ray diagnostic apparatus. 5,546,440, Cl. 378-98.200.

Nakato, Tatsuo, to Sharp Microelectronics Technology, Inc.; and Sharp Kabushiki Kaisha. Method of forming a pattern of silylated planarizing photoresist. 5,545,512, Cl. 430-323.000.

Nakatsu, Tetsuo; Green, Carter B.; Reitz, Gary A.; and Kang, Raphael K. L., to Takasago International Corporation; and Takasago Institute For Interdisciplinary Science Inc. 4-(1-menthoxymethyl)-2-phenyl-1,3-dioxolane or its derivatives and flavor composition containing the same. 5,545,424, Cl. 426-536.000.

Nakatsuyama, Takashi; and Saito, Takahiko, to Sony Corporation. Recording device and projecting device for motion picture film. 5,546,143, Cl. 352-184.000.

Nakayama, Masaru: *See*—
Shimada, Yasuhiro; Okamura, Yoshimasa; Takamatsu, Osamu; Nakayama, Masaru; and Yanagisawa, Yoshihiro, 5,546,375, Cl. 369-126.000.

Nakayama, Minoru; Sawai, Toshiya; and Murata, Shizuo, to Chisso Corporation. Diamino compounds and liquid crystal aligning films. 5,545,444, Cl. 428-1.000.

Nakayama, Takenori: *See*—
Yashiki, Takashi; Wada, Yasunori; Nishimoto, Hidenori; Terada, Yoshinori; Nakayama, Takenori; and Abumiya, Tadashi, 5,545,268, Cl. 148-518.000.

Nally, Debora E.; and Hall, Bryan C., to Siemens Automotive L.P. Housing for coil of solenoid-operated fuel injector. 5,544,816, Cl. 239-585.500.

Nam, Il-hyun; and Kim, Kwan-seong, to Samsung Electronics Co., Ltd. Differentially encoding quadrature phase shift keying modulation method and apparatus thereof. 5,546,428, Cl. 375-308.000.

Nanataki, Tsutomu: *See*—
Takeuchi, Yukihisa; Nanataki, Tsutomu; Masumori, Hideo; Takeuchi, Katsuyuki; and Maeda, Takahiro, 5,545,461, Cl. 428-138.000.

Narang, Inderpal S.: *See*—
Josten, Jeffrey W.; Mukai, Tina; Narang, Inderpal S.; and Teng, James Z., 5,546,579, Cl. 395-600.000.

Narazaki, Atsushi; and Hisamoto, Yoshiaki, to Mitsubishi Denki Kabushiki Kaisha. Method of fabricating insulated gate semiconductor device. 5,545,573, Cl. 437-40.000.

Narbonne, Yves. Apparatus and process for treating medical fluid waste containers. 5,545,802, Cl. 588-249.000.

Nardone, Edward A.; Follett, Paul S.; Schofield, Harry D.; Caron, Paul R.; and Rothwell, Chris S., to Atlantek, Inc. Cassette assembly for mounting thermal transfer ribbon in a thermal printer. 5,546,115, Cl. 347-214.000.

Nardone, Edward A.; Follett, Paul S.; Schofield, Harry D.; Caron, Paul R.; and Rothwell, Chris S., to Atlantek, Inc. Slidable media transport system for a single-pass multi-color thermal printer. 5,546,116, Cl. 347-218.000.

Nartron Corporation: *See*—
Voss, Mark G.; Peterson, Gregory E.; Harvey, William O.; and Perrin, Randall L., 5,544,484, Cl. 60-397.000.

Naruse, Hiroshi: *See*—
Kusuda, Chiyuki; Furuya, Masayuki; Wada, Masaru; Irizato, Yoshihiro; Naruse, Hiroshi; and Nagata, Teruyuki, 5,545,751, Cl. 564-398.000.

Nash, John E.: *See*—
Kensey, Kenneth; Nash, John E.; and Evans, Douglas, 5,545,178, Cl. 606-213.000.

Nass, Edwin L.: *See*—
Dennison, Everett; Nass, Edwin L.; Duffy, Timothy J.; Pauley, Gregory T.; Jones, Scott L.; and Shale, Deborah J., 5,546,445, Cl. 379-60.000.

Nass, Raymond D.: *See*—
Sween, Adrian P.; and Nass, Raymond D., 5,545,335, Cl. 210-748.000.

National Association For Stock Car Auto Racing, Inc.: *See*—
Nelson, Gary, 5,544,931, Cl. 296-180.100.

National Power PLC: *See*—
Zito, Ralph, 5,545,492, Cl. 429-29.000.

National Registry, Inc., The: *See*—
Merjanian, John M., 5,546,471, Cl. 382-124.000.

National Science Council: *See*—
Tang, Horng-Yi; Wu, Maw-Kuen; Lee, Chuen-Sheng; and Hsu, Huei-Ying, 5,545,305, Cl. 205-51.000.

National Semiconductor Corporation: *See*—
Pease, Robert A.; and Shields, Robin, 5,546,260, Cl. 361-18.000.
Phillips, Christopher E.; and Sankar, Narendra, 5,546,353, Cl. 365-230.060.
Sauer, Don R., 5,546,045, Cl. 327-561.000.
Tran, Toan V.; and Henderson, Richard, 5,546,433, Cl. 375-376.000.

National Starch and Chemical Investment Holding Corporation: *See*—
Koubek, Timothy C.; Puletti, Paul P.; and Wieczorek, Joseph, Jr., 5,545,472, Cl. 428-261.000.

National Steel Corporation: *See*—
Randall, Guy; and Calvin, Gregory P., 5,544,868, Cl. 266-47.000.

Natsume, Kazuyuki: *See*—
Takagi, Akira; Murakami, Fumiaki; Fujutsuna, Masami; Natsume, Kazuyuki; Suzuki, Masaru; and Takei, Toshihiro, 5,544,538, Cl. 74-335.000.

Nauerth, Arno, to Bruker Medizintechnik Gmbh. Low-noise NMR imaging method with single point recording (SPI). 5,545,991, Cl. 324-307.000.

Naujoks, Kurt: *See*—
Bartke, Ilse; Kostka, Gunter; Naujoks, Kurt; and Ullrich, Axel, 5,545,533, Cl. 435-723.000.

Navaroli, Henry D., to Litton Systems, Inc. Multiple surface high voltage structure for a gas discharge closing switch. 5,545,947, Cl. 313-589.000.

Naves, Neil H.: *See*—
Benderev, Theodore V.; Naves, Neil H.; and Legome, Mark J., 5,544,664, Cl. 128-898.000.

Nawa, Masayoshi: *See*—
Kurokawa, Takayuki; Saitoh, Atsushi; Matsubara, Shigemasa; Nawa, Masayoshi; and Kobayashi, Kazuo, 5,546,092, Cl. 342-357.000.

Nawamaki, Tsutomu: *See*—
Morimoto, Katsushi; Ohnari, Masatoshi; Nawamaki, Tsutomu; Watanabe, Shigeomi; and Ishikawa, Kimihiro, 5,545,608, Cl. 504-282.000.

NCR Corporation: *See*—
Simpson, David L., 5,546,592, Cl. 395-775.000.

NCS Pyrotechnie et Technologies: *See*—
Duguet, Jean-Rene, 5,544,585, Cl. 102-202.500.

NEC America: *See*—
Thaweethai, Ladavan; and Moon, Tien-Jan A., 5,546,379, Cl. 370-17.000.

NEC Corporation: *See*—
Ando, Manabu; and Monden, Junji, 5,546,410, Cl. 371-40.200.
Fujii, Akira; and Kaneda, Kiyoshi, 5,545,870, Cl. 219-69.130.
Gotou, Seiitirou, 5,545,865, Cl. 200-341.000.
Hironaka, Ken, 5,546,400, Cl. 370-95.100.
Katayama, Katsuo; Komachi, Kyoichi; Mabuchi, Hiroshi; and Akimoto, Takeshi, 5,545,258, Cl. 118-723.0MP.
Katsuta, Hiroshi, 5,546,566, Cl. 395-500.000.
Kitamura, Naoki; and Nishimoto, Hiroshi, 5,546,488, Cl. 385-45.000.
Koh, Risho, 5,545,586, Cl. 437-89.000.
Matsui, Koji; Kimura, Mitsuru; Utsumi, Kazuaki; Ogawa, Eiichi; Komano, Hiroshi; and Aoyama, Toshimi, 5,545,281, Cl. 156-273.700.
Motohashi, Teruyuki; and Sone, Tomoshi, 5,546,078, Cl. 340-825.440.
Nishida, Tetsuro; and Shinoda, Takashi, 5,546,522, Cl. 395-156.000.
Okamoto, Puyuki, 5,546,035, Cl. 327-208.000.
Okuda, Taneaki; and Toyoda, Arata, 5,544,776, Cl. 216-83.000.
Otsuki, Kazutaka; and Yamada, Masaaki, 5,545,911, Cl. 257-376.000.
Oyama, Ken-Ichi, 5,546,339, Cl. 365-185.020.
Sugai, Kazumi; Okabayashi, Hidekazu; and Kishida, Shunji, 5,545,591, Cl. 437-192.000.
Sukegawa, Osamu; and Ihara, Hirofumi, 5,546,205, Cl. 359-59.000.
Tomiyori, Makio, 5,546,426, Cl. 375-242.000.
Yamaguchi, Motoi, 5,546,028, Cl. 327-64.000.
Yatagai, Tetsuya, 5,546,032, Cl. 327-165.000.

NEC Environment Engineering Ltd.: *See*—
Kazama, Masahiro; and Haginoya, Shigekazu, 5,545,316, Cl. 210-188.000.

Need, Daniel E.: *See*—
Murphy, Sean; and Need, Daniel E., 5,544,654, Cl. 128-660.070.

Neely, Eric D.: *See*—
Bizuneh, Daniel T.; Obregón, Carlos; Wells, Michael A.; and Neely, Eric D., 5,546,021, Cl. 326-86.000.

Neher, Paul; and Schick, Wilfried, to SIPRA Patententwicklungs-und Beteiligungsgesellschaft mbH. Device for blowing fluff or the like away from a circular knitting machine and a circular knitting machine fitted with such a device. 5,544,504, Cl. 66-168.000.

Neier, Benjamin R., to Roto-Mix Enterprise, Ltd. Hay cutter with fork lift. 5,544,822, Cl. 241-101.730.

Neilson, Bruce H.: *See*—
Rudie, Eric N.; Neilson, Bruce H.; and Kauphusman, James V., 5,545,137, Cl. 604-96.000.

Nelson, Craig R.: *See*—
Stall, Richard A.; Tompa, Gary S.; Gurary, Alexander; and Nelson, Craig R., 5,544,618, Cl. 117-102.000.

Nelson, David: *See*—
Andrews, Winston A.; Nelson, David; and Novy, Richard W., 5,545,220, Cl. 623-11.000.

Nelson, David R.: *See*—
Bratt, Peter R.; and Nelson, David R., 5,545,896, Cl. 250-338.400.

Nelson, Gary, to National Association For Stock Car Auto Racing, Inc. Aerodynamic stabilizer for use with a motor vehicle. 5,544,931, Cl. 296-180.100.

Nelson, Gerald V.; Nongbri, Govanon; Pratt, Roy E.; Sherwood, David E., Jr.; and Dai, Pei-Shing E., to Texaco Inc. Catalyst with specified pore size distribution. 5,545,602, Cl. 502-314.000.

Nelson, James W., to Radio Frequency Systems, Inc. Connector for a hollow center conductor of a radio frequency cable. 5,545,059, Cl. 439-583.000.

Nelson, Marvin D.: *See*—
Jacobson, Michael B.; Voigt, Douglas L.; Nelson, Marvin D.; and Burkes, Theresa A., 5,546,558, Cl. 395-441.000.

Nelson-Whittaker, Ltd.: *See*—
Maher, Jay A., 5,544,904, Cl. 280-47.350.

Nemoto, Ichiro; Izumi, Hiroyuki; Fukui, Nobuyuki; and Takahashi, Kunioki, to Seiko Precision Inc. Focal plane shutter. 5,546,149, Cl. 354-265.000.

Nendzig, Gerhard; and Taus, Alfred, to Klinger AG. Sealing ring for a shut-off valve having a multi-ply structure. 5,544,898, Cl. 277-166.000.

NeoRx Corporation: *See*—
Grainger, David J.; Metcalfe, James C.; and Weissberg, Peter L., 5,545,569, Cl. 436-518.000.

Nepovim, Zdenek: *See*—
Lynes, Kenneth W.; and Nepovim, Zdenek, 5,545,847, Cl. 174-52.100.

Nesbitt, Steven M.: *See*—
Goodchild, John; and Nesbitt, Steven M., 5,545,729, Cl. 536-24.500.

Nestec S.A.: *See*—
Germond, Jacques E.; Hottinger, Herbert; Mignot, Olivier; Mollet, Beat; and Tsuda, Koichiro, 5,545,554, Cl. 435-252.900.
Hsu, Jau Y.; and Orzech, Thomas S., 5,545,426, Cl. 426-496.000.

Nestle, Robert J.: *See*—
Smith, David A.; and Nestle, Robert J., 5,544,471, Cl. 53-447.000.

Neuberger, Michael S.: *See*—
Surani, Azim M.; Neuberger, Michael S.; and Bruggemann, Marianne, 5,545,807, Cl. 800-2.000.

Neuenfeldt, Steven; Brauker, James; and Clarke, Robert, to Baxter International, Inc. Ported tissue implant systems and methods of using same. 5,545,223, Cl. 623-11.000.

Neumann, Harald: *See*—
Friese, Karl-Hermann; Gruenwald, Werner; Stahl, Roland; de la Prieta, Claudio; Schneider, Gerhard; and Neumann, Harald, 5,545,301, Cl. 204-425.000.

Neumann, Uwe: *See*—
Glencke, Astrid; Neumann, Uwe; Mergardt, Bernd; and Walz, Gerd, 5,545,678, Cl. 523-404.000.

Neuromedica, Inc.: *See*—
Shashoua, Victor E., 5,545,719, Cl. 530-345.000.

Neuromedical Systems, Inc.: *See*—
Boon, Mathilde E.; Kok, Lanbrecht P.; Mango, Laurie J.; Rutenberg, Akiva; and Rutenberg, Mark R., 5,544,650, Cl. 128-632.000.

Neville, Mark D., to United Kingdom Atomic Energy Authority. Filter cleaning. 5,545,311, Cl. 205-712.000.

New, Bernard I.; and Young, Steven P., to Xilinx, Inc. Fast carry structure with synchronous input. 5,546,018, Cl. 326-38.000.

New Holland North America, Inc.: *See*—
Branham, Douglas G., 5,546,286, Cl. 362-61.000.

New York University: *See*—
Costa, Max; and Zhitkovich, Anatoly V., 5,545,529, Cl. 435-6.000.

Newbridge Networks Corporation: *See*—
Wirth, Brian; and Duxbury, Tom, 5,546,378, Cl. 370-16.100.

Newell, Christine: *See*—
Gatehouse, Angharad; Hilder, Vaughan; Van Damme, Els; Peumans, Willy; Newell, Christine; and Hamilton, William, 5,545,820, Cl. 800-205.000.

Newell, Jonathan C.: *See*—
Saulnier, Gary J.; Gisser, David G.; Newell, Jonathan C.; Cook, Raymond D.; Goble, John C.; and Isaacson, David, 5,544,662, Cl. 128-734.000.

Newton, Mark K.: *See*—
Beal, John H.; and Newton, Mark K., 5,546,392, Cl. 370-60.100.

Nexus 1994 Limited: *See*—
Yokev, Hanoch; Harel, Haim; and Meiman, Yehouda, 5,546,422, Cl. 375-202.000.

Neyer, Richard H. Apparatus and process for transporting molten metal. 5,544,867, Cl. 266-45.000.

Ng, Yee S.: *See*—
Reshing, Allen J.; and Ng, Yee S., 5,546,165, Cl. 355-208.000.

NGK Insulators, Ltd.: *See*—
Kato, Makoto, 5,545,495, Cl. 429-193.000.
Kotani, Wataru; Ono, Yoshiro; and Kumazawa, Kazuhiko, 5,545,243, Cl. 55-523.000.
Takeuchi, Yukihisa; Nanataki, Tsutomu; Masumori, Hideo; Takeuchi, Katsuyuki; and Maeda, Takahiro, 5,545,461, Cl. 428-138.000.
Yoshida, Shinji; Motoyama, Shuichiro; Ohashi, Takashi; and Ishihara, Masamichi, 5,546,261, Cl. 361-19.000.

NGK Spark Plug Co., Ltd.: *See*—
Ogawa, Kouki; Yamasaki, Kozo; and Kato, Naomiki, 5,545,598, Cl. 501-127.000.

Nguyen, Frank: *See*—
West, Scott H.; and Nguyen, Frank, 5,545,200, Cl. 607-122.000.

Nguyen, Le T.: *See*—
Coon, Brett; Miyayama, Yoshiyuki; Nguyen, Le T.; and Wang, Johannes, 5,546,552, Cl. 395-375.000.

Nguyen, Philip: *See*—
Wetmore, Russ; and Nguyen, Philip, 5,546,586, Cl. 395-700.000.

Niaz, Hasan S.: *See*—
Grosskopf, Joseph R.; Niaz, Hasan S.; Reuss, Carolyn K.; Shih, Jerry C.; and Watson, Paul T., 5,546,574, Cl. 395-600.000.

Nichols, Richard E. D., to R. E. D. Nichols & Associates. Holster with hanger device. 5,544,794, Cl. 224-667.000.

Nicolas, Christophe; Loiseaux, Brigitte; Joubert, Cécile; and Huignard, Jean-Pierre, to Thomson-CSF. Chromatic light separator and picture projector using a chromatic light separator. 5,546,200, Cl. 359-15.000.

Nicolas, Robert: *See*—
Joël, Richard; Nicolas, Robert; Claude, Roussel; and Fabrice, Chopard, 5,544,703, Cl. 165-167.000.

Niesert, Claus-Peter: *See*—
Cameron, James F.; Frechet, Jean M. J.; Leung, Man-Kit; Niesert, Claus-Peter; MacDonald, Scott A; and Willson, Carlton G., 5,545,509, Cl. 430-270.100.

Niesluchowski, Matt A.: *See*—
Borninski, Thomas E.; Boran, Colm P.; Simmons, Paul; and Nieslu-chowski, Matt A., 5,544,914, Cl. 280-735.000.

Nihon Nohyaku Co., Ltd.: *See*—
Higashimura, Minoru; Ootsuka, Takashi; and Shibayama, Masakazu, 5,545,609, Cl. 504-282.000.

Nihon Techno Bute Limited: *See*—
Sakai, Masanori; Tomita, Katsuhiko; Ezaki, Joichiro; Suzuki, Kazuo; Fukuda, Seiji; and Hatakeyama, Kouichi, 5,545,988, Cl. 324-212.000.

Niigata Engineering Co. Ltd.: *See*—
Ikeda, Hachiro; Miyamoto, Noriaki; Umeda, Ryoei; Yasu, Hidenori; Fukukawa, Mitsuo; Masuyama, Yukiei; Kinoshita, Shoji; Takagi, Yukio; Gocho, Tomohiro; Goto, Fumio; Ishii, Akio; Ogawa, Tetsuo; Hasegawa, Yoshun; Hironaka, Keitaro; and Ogoshi, Yasuhiro, 5,546,123, Cl. 348-119.000.

Niijima, Hideto; Toyooka, Takashi; Satoh, Akashi; and Sakaue, Yoshinori, to International Business Machines Corporation. Flash-erase-type nonvolatile semiconductor storage device. 5,546,402, Cl. 371-10.200.

Nikon Corporation: *See*—
Fukumoto, Satoshi, 5,546,237, Cl. 359-794.000.
Imanari, Hitoshi; Kanno, Hideo; and Tanioka, Hiroshi, 5,546,233, Cl. 359-696.000.
Imura, Yoshio; Okano, Hiroshi; and Katayama, Akira, 5,546,159, Cl. 354-472.000.
Ohsawa, Keiji, 5,546,157, Cl. 354-406.000.
Ouchi, Yumiko, 5,546,228, Cl. 359-644.000.
Saegusa, Takashi, 5,546,100, Cl. 345-51.000.
Shiraishi, Naomasa, 5,546,225, Cl. 359-559.000.

Nilsson, Kenth: *See*—
Bergström, Inga-Maria; Bergström, Mats-Johan M.; and Nilsson, Kenth, 5,545,187, Cl. 607-32.000.

Nippon Felt Co., Ltd.: *See*—
Okubo, Hiroyuki, 5,544,677, Cl. 139-245.000.

Nippon Gasket Co., Ltd.: *See*—
Kubouchi, Kenji; Fukui, Yuji; and Inoue, Kunitoshi, 5,544,901, Cl. 277-235.00B.

Nippon Sheet Glass Co., Ltd.: *See*—
Mizusugi, Tetsuya, 5,545,245, Cl. 65-273.000.

Nippon Steel Corporation: *See*—
Ochi, Tatsuro; and Koyasu, Yoshiro, 5,545,267, Cl. 148-335.000.
Takada, Hiroshi, 5,546,578, Cl. 395-600.000.
Yoshitomi, Yasunari; Senuma, Takehide; Suga, Yozo; and Takahashi, Nobuyuki, 5,545,263, Cl. 148-111.000.

Nippon Techna Engineering Corp.: *See*—
Fukushima, Saburo; Yagi, Masaharu; Morita, Kiyozi; Ando, Masami; and Saito, Tokuo, 5,545,458, Cl. 428-117.000.

Nippon Telegraph and Telephone Corporation: *See*—
Inoue, Yasuyuki; Kawachi, Masao; Okamoto, Katsunari; Takato, Norio; Yamamoto, Fumihiko; Suda, Hiroyuki; Furukawa, Shinichi; and Morinaka, Akira, 5,546,483, Cl. 385-14.000.
Tokumitsu, Tsuneo, 5,546,056, Cl. 331-172.000.
Wang, Yuhu; and Ohwaki, Junichi, 5,545,595, Cl. 501-3.000.

Nippon Tungsten Co., Ltd.: *See*—
Tokumoto, Kei; Kitada, Tetsunori; Shinoaki, Hironobu; and Sakaguchi, Shigeya, 5,545,248, Cl. 75-238.000.

Nippon Zeon Co., Ltd.: *See*—
Yamada, Toshiro; Imai, Yasuo; and Mitsuda, Yasuhiro, 5,545,771, Cl. 570-164.000.

Nippondenso Co., Ltd.: *See*—
Fukaya, Kenji; Hayashi, Kazuo; Hori, Makoto; Hamaya, Masahiro; and Ohta, Minoru, 5,545,377, Cl. 422-108.000.
Kitahara, Noboru; Kondo, Minoru; and Sawada, Yukio, 5,544,527, Cl. 73-204.210.
Okabayashi, Athuo; Nakamura, Kimikazu; and Sugiura, Toshihiko, 5,546,061, Cl. 335-78.000.
Shouda, Hirofumi; Hirata, Yoshihiko; Kawai, Katsuhiko; Kondo, Toshio; and Haraguchi, Hiroshi, 5,544,639, Cl. 123-676.000.
Suzuki, Takahisa; Iritani, Kunio; Ishikawa, Hiroshi; and Isaji, Akira, 5,544,493, Cl. 62-133.000.
Takagi, Akira; Murakami, Fumiaki; Fujutsuna, Masami; Natsume, Kazuyuki; Suzuki, Masaru; and Takei, Toshihiro, 5,544,538, Cl. 74-335.000.
Tokura, Norihiro; and Okabe, Naoto, 5,545,908, Cl. 257-341.000.

Nishida, Masafumi: *See*—
Fujioka, Souichirou; Nishida, Masafumi; and Inai, Michifumi, 5,546,247, Cl. 360-77.130.

Nishida, Seiji; and Kai, Shoichiro, to Asahi Kasei Kogyo Kabushiki Kaisha. Capsule for use in fixing an anchor bolt. 5,544,981, Cl. 405-259.600.

Nishida, Tetsuro; and Shinoda, Takashi, to NEC Corporation. Optimal menu inquiry system and system for editing structure data by hierarchical menu inquiry processing. 5,546,522, Cl. 395-156.000.

Nishigai, Kazuhisa: *See*—
Iwata, Toshiro; Nagata, Iwami; Hatakeyama, Akira; and Nishigai, Kazuhisa, 5,545,024, Cl. 425-204.000.

Nishii, Michiharu; and Ishida, Satoshi, to Aisin Seiki Kabushiki Kaisha. Hydraulic brake device for a vehicle. 5,544,947, Cl. 303-116.200.

Nishimoto, Hidenori: *See*—

VOI
1189
ISS
2
AG
13
1996
UMI

Yashiki, Takashi; Wada, Yasunori; Nishimoto, Hidenori; Terada, Yoshinori; Nakayama, Takenori; and Abumiya, Tadashi, 5,545,268, Cl. 148-518.000.
Nishimoto, Hiroshi: *See*—
Kitamura, Naoki; and Nishimoto, Hiroshi, 5,546,488, Cl. 385-45.000.
Nishimura, Hiroshi: *See*—
Takahashi, Tetsuhiko; Kawasaki, Shinji; and Nishimura, Hiroshi, 5,544,653, Cl. 128-653.200.
Nishino, Hisayasu: *See*—
Satoh, Takamasa; Yasuda, Hiroshi; Kai, Junichi; Oae, Yoshihisa; Nishino, Hisayasu; Sakamoto, Kiichi; Yabara, Hidefumi; Seto, Isamu; Takigawa, Masami; Yamada, Akio; Arai, Soichiro; Abe, Tomohiko; Kiuchi, Takashi; and Miyazawa, Kenichi, 5,546,319, Cl. 364-488.000.
Nishio, Yoshitaka: *See*—
Sakata, Masakazu; Fujii, Hiroyuki; Hamada, Yuji; Shibata, Kenichi; and Nishio, Yoshitaka, 5,545,400, Cl. 424-76.210.
Nishishita, Kunihiko, to Zexel Corporation. Laminated heat exchanger with a single tank structure. 5,544,702, Cl. 165-153.000.
Nishiuchi, Kenichi: *See*—
Yamada, Noboru; Akahira, Nobuo; Nishiuchi, Kenichi; Nagata, Kenichi; Ohno, Eiji; and Furukawa, Shigeaki, 5,545,454, Cl. 428-64.100.
Nishiumi, Wataru: *See*—
Kaiya, Nobuo; Kobayashi, Hideki; and Nishiumi, Wataru, 5,545,831, Cl. 524-731.000.
Nishiyama, Masaki, to Canon Kabushiki Kaisha. Printing method and apparatus. 5,546,514, Cl. 395-111.000.
Nishizawa, Masumi: *See*—
Takiguchi, Ryohei; Saito, Hitoshi; and Nishizawa, Masumi, 5,545,606, Cl. 503-227.000.
Nissan Chemical Industries, Ltd.: *See*—
Morimoto, Katsushi; Ohnari, Masatoshi; Nawamaki, Tsutomu; Watanabe, Shigeomi; and Ishikawa, Kimihiro, 5,545,608, Cl. 504-282.000.
Nissan Motor Company: *See*—
Hirosaki, Naoto; Okada, Akira; and Akimune, Yoshio, 5,545,362, Cl. 264-65.000.
Nissan Motor Co., Ltd.: *See*—
Ochiai, Tatsuo, 5,545,107, Cl. 477-63.000.
Nitecki, Danute E.: *See*—
Kriegler, Michael; and Nitecki, Danute E., 5,545,518, Cl. 435-4.000.
Nitsch, Roger M.: *See*—
Growden, John H.; Nitsch, Roger M.; and Wurtman, Richard J., 5,545,566, Cl. 436-71.000.
Nittoku Engineering Kabushiki Kaisha: *See*—
Yano, Fumiharu, 5,544,827, Cl. 242-445.100.
Noble, Lawrence J.: *See*—
Koehler, Paul C.; Whitlock, Michael B.; Noble, Lawrence J.; and Jenkins, George C., 5,545,323, Cl. 210-493.200.
Nogi, Kenichiro: *See*—
Kato, Ikuo; and Nogi, Kenichiro, 5,544,410, Cl. 29-605.000.
Noguchi, Tomoko; Naito, Kazuo; Saito, Tasuku; Sakurai, Ryo; and Ishiharada, Minoru, to Bridgestone Corporation. Optical waveguide. 5,546,493, Cl. 385-125.000.
Noise Cancellation Technologies, Inc.: *See*—
Denenberg, Jeffrey N., 5,546,467, Cl. 381-71.000.
Nokia Technology GmbH: *See*—
Geisenberger, Stefan; and Aigner, Manfred, 5,546,470, Cl. 381-197.000.
NOM-ITO, Inc.: *See*—
Westelaken, Christianus M. T., 5,544,423, Cl. 34-174.000.
Nomura, Hiroyoshi: *See*—
Araki, Shoichi; Nomura, Hiroyoshi; Hayashi, Isao; and Wakami, Noboru, 5,546,506, Cl. 395-75.000.
Nomura, Noboru: *See*—
Kurii, Jun; Nomura, Noboru; Itoh, Masami; Ohira, Kozo; Tsumadori, Masaki; Matsunaga, Akira; Kimura, Akio; and Suzue, Shigetoshi, 5,545,349, Cl. 252-186.380.
Nongbri, Govanon: *See*—
Nelson, Gerald V.; Nongbri, Govanon; Pratt, Roy E.; Sherwood, David E., Jr.; and Dai, Pei-Shing E., 5,545,602, Cl. 502-314.000.
Noonan, James T.: *See*—
Lowe, Terry L.; and Noonan, James T., 5,544,709, Cl. 172-661.000.
Norand Corporation: *See*—
Mahany, Ronald L., 5,546,397, Cl. 370-85.100.
Norbeck, Daniel W.: *See*—
Kempf, Dale J.; Norbeck, Daniel W.; Erickson, John W.; Sham, Hing Leung; Codacovi, Lynn M.; and Plattner, Jacob J., 5,545,750, Cl. 564-360.000.
Nordica S.p.A.: *See*—
Borsoi, Bruno; and Martinazzo, Ivan, 5,544,433, Cl. 36-117.700.
Nordischer Maschinenbau Rud. Baader GmbH & Co., KG: *See*—
Bargelé, Norbert; Brandt, Manfred; and Kunig, Helmut, 5,545,083, Cl. 452-136.000.
Noritsu Koki Co., Ltd.: *See*—
Kishi, Takuji; and Ohtani, Kimiharu, 5,546,160, Cl. 355-50.000.
Murakami, Motoaki, 5,544,840, Cl. 242-532.700.
Norman, George W.; and Andert, Glenn P., to Taligent, Inc. Object-oriented system using objects representing hardware devices, physical connectors and connections between the physical connectors for configuring a computer. 5,546,595, Cl. 395-800.000.
North American Philips Corporation: *See*—
Dike, Charles E.; and Ostler, Farrell L., 5,546,544, Cl. 395-287.000.
Northern Telecom Limited: *See*—
Trumble, William P.; Harris, Mark R.; and Van Gaal, Adrianus P., 5,545,494, Cl. 429-163.000.
Northrop Grumman Corporation: *See*—
Basu, Santanu, 5,546,416, Cl. 372-34.000.
Castellucci, Nicholas T., 5,545,703, Cl. 526-256.000.
Fegley, Ronald W.; and Terry, Darrell A., 5,546,183, Cl. 356-336.000.
Nott, Sepideh H.: *See*—
Roberts, George T.; Hess, Kathleen L.; Nott, Sepideh H.; Chu, Michael S. H.; and Chin, Yem, 5,545,209, Cl. 623-1.000.
Nova Manufacturing & Assembly, Inc.: *See*—
Schairbaum, Edward C., 5,544,594, Cl. 108-50.000.
Novo Nordisk A/S: *See*—
Greenwood, Beverley, 5,545,638, Cl. 514-235.800.
Novof, Ilya I.: *See*—
Austin, John S.; Novof, Ilya I.; Strayer, Donald E.; and Wyatt, Stephen D., 5,546,052, Cl. 331-1.00A.
Novy, Richard W.: *See*—
Andrews, Winston A.; Nelson, David; and Novy, Richard W., 5,545,220, Cl. 623-11.000.
Noworolski, Jan M.: *See*—
Noworolski, Zbigniew; Sterescu, Vlad; Lee, Albert; Halton, Padraig; and Noworolski, Jan M., 5,546,003, Cl. 324-434.000.
Noworolski, Zbigniew; Sterescu, Vlad; Lee, Albert; Halton, Padraig; and Noworolski, Jan M., to Polytronics Engineering Ltd. Multi-cell battery monitoring system with single sensor wire. 5,546,003, Cl. 324-434.000.
NSK Ltd.: *See*—
Osawa, Nobuyuki, 5,544,954, Cl. 384-45.000.
NTN Corporation: *See*—
Iihara, Michio; Shimizu, Osamu; and Sera, Akira, 5,544,548, Cl. 76-107.100.
Kawase, Tatsuo; and Hattori, Naoshi, 5,545,101, Cl. 475-193.000.
NTS Communications, Inc.: *See*—
Tucker, Michel H.; Sams, Gary; Hennessey, Kathleen; Pattikonda, Ramakhrisna; and Condit, Mario, 5,546,398, Cl. 370-94.100.
Nukada, Katsumi: *See*—
Daimon, Katsumi; Nukada, Katsumi; Sakaguchi, Yasuo; and Igarashi, Ryosaku, 5,545,733, Cl. 540-139.000.
Nukui, Tadashi; and Tanabe, Ken, to Kabushiki Kaisha Toshiba. Power source device for watthour meter. 5,545,979, Cl. 323-313.000.
Nuttall, John C.: *See*—
Ammon, James G.; and Nuttall, John C., 5,544,969, Cl. 403-322.000.
Nyberg, Petri: *See*—
Huovila, Jyrki; Linsuri, Ari; Nyberg, Petri; and Odell, Michael, 5,545,293, Cl. 162-212.000.
Nye, Jeffrey L.: *See*—
Robertson, Iain C.; Nye, Jeffrey L.; Asal, Michael D.; Short, Graham B.; Simpson, Richard D.; and Littleton, James G., 5,546,553, Cl. 395-405.000.
O&K Rolltreppen GmbH: *See*—
Brunn, Erik, 5,544,729, Cl. 198-328.000.
Oae, Yoshihisa: *See*—
Satoh, Takamasa; Yasuda, Hiroshi; Kai, Junichi; Oae, Yoshihisa; Nishino, Hisayasu; Sakamoto, Kiichi; Yabara, Hidefumi; Seto, Isamu; Takigawa, Masami; Yamada, Akio; Arai, Soichiro; Abe, Tomohiko; Kiuchi, Takashi; and Miyazawa, Kenichi, 5,546,319, Cl. 364-488.000.
Obara, Noriyuki, to Fuji Xerox Co., Ltd. Paper stacking apparatus. 5,544,875, Cl. 271-176.000.
Oberdorf, Klaus: *See*—
Kirstgen, Reinhard; Oberdorf, Klaus; Sauter, Hubert; Bayer, Herbert; Grammenos, Wassilios; Rang, Harald; Harries, Volker; Lorenz, Gisela; and Ammermann, Eberhard, 5,545,664, Cl. 514-521.000.
Oberholtzer, Gary E., to E. R. Squibb & Sons, Inc. Ostomy device. 5,545,154, Cl. 604-336.000.
Oberlag, Randal K.: *See*—
Curtis, Harold D.; and Oberlag, Randal K., 5,545,356, Cl. 261-23.100.
Obermann, David P.; and Trumble, Mary K., to International Business Machines Corporation. Specification of cultural bias in database manager. 5,546,573, Cl. 395-600.000.
Obregón, Carlos: *See*—
Bizuneh, Daniel T.; Obregón, Carlos; Wells, Michael A.; and Neely, Eric D., 5,546,021, Cl. 326-86.000.
O'Brien, Gregory T.: *See*—
LaRocca, Brian; and O'Brien, Gregory T., 5,546,082, Cl. 341-166.000.
OCG Microelectronic Materials, Inc.: *See*—
Honda, Kenji; and Maw, Taishih, 5,545,353, Cl. 510-176.000.
Ochi, Tatsuro; and Koyasu, Yoshiro, to Nippon Steel Corporation. Steel product for induction-hardened shaft component and shaft component using the same. 5,545,267, Cl. 148-335.000.
Ochiai, Tatsuo, to Nissan Motor Co., Ltd. Lockup clutch control release inhibiting during shifting for automatic transmissions. 5,545,107, Cl. 477-63.000.
O'Connor, Kurt F.; Hoff, James P.; Frasier, Donald J.; Peeler, Ralph E.; Mueller-Largent, Heidi; Trees, Floyd F.; Whetstone, James R.; Lane, John H.; and Jeffries, Ralph E., to Allison Engine Company, Inc. Single-cast, high-temperature thin wall gas turbine component. 5,545,003, Cl. 415-115.000.
O'Connor, Michael G.; and Lovgren, Eric M., to Schneider (USA) Inc. Catheter having hydrophobic properties. 5,545,151, Cl. 604-282.000.
Oda, Hirofumi: *See*—

Ono, Hitoshi; Takahashi, Noriaki; Ando, Osamu; Takeuchi, Masako; and Oda, Hirofumi, 5,545,502, Cl. 430-110.000.
Odaira, Hideko: *See*—
Tanaka, Tomoharu; Momodomi, Masaki; Kato, Hideo; Nakai, Hiroto; Tanaka, Yoshiyuki; Shirota, Riichiro; Aritome, Seiichi; Itoh, Yasuo; Iwata, Yoshihisa; Nakamura, Hiroshi; Odaira, Hideko; Okamoto, Yutaka; Asano, Masamichi; and Tokushige, Kaoru, 5,546,351, Cl. 365-230.060.
Odaira, Isao, to Canon Kabushiki Kaisha. System having controlled power supply for prohibiting the power on switch from being turned on and accessing memory when supply voltage falls below second predetermined voltage. 5,546,589, Cl. 395-750.000.
Odell, Michael: *See*—
Huovila, Jyrki; Linsuri, Ari; Nyberg, Petri; and Odell, Michael, 5,545,293, Cl. 162-212.000.
O'Dell, Robin D.; Lex, Joseph A.; Simon, Alice M.; and Shah, Jayesh, to International Paper Company. Wear resistant glossy laminates. 5,545,476, Cl. 428-327.000.
ODL, Incorporated: *See*—
DeBlock, David A., 5,544,455, Cl. 52-200.000.
Oetiker, Hans, to Hans Oetiker AG Maschinen -und Apparatefabrik. Clamp structure with spring element. 5,544,392, Cl. 24-20.0CW.
Offray, Denise A.; Koch, Durmus; and Mortensen, John, to C.M. Offray & Son, Inc. Breast implant. 5,545,217, Cl. 623-8.000.
Ofosu-Asante, Kofi, to Procter & Gamble Company, The. Liquid or gel dishwashing detergent containing a polyhydroxy fatty acid amide, calcium ions and an alkylpolyethoxypolycarboxylate. 5,545,354, Cl. 510-237.000.
Ogata, Hiroaki; Kisu, Hiroki; Yamazaki, Michihito; and Asano, Erika, to Canon Kabushiki Kaisha. Charging device, process cartridge and image forming apparatus. 5,546,167, Cl. 355-219.000.
Ogata, Yasuji; and Baba, Toshiro, to Olympus Optical Co., Ltd. Wide-angle photographic lens system. 5,546,236, Cl. 359-794.000.
Ogawa, Eiichi: *See*—
Matsui, Koji; Kimura, Mitsuru; Utsumi, Kazuaki; Ogawa, Eiichi; Komano, Hiroshi; and Aoyama, Toshimi, 5,545,281, Cl. 156-273.700.
Ogawa, Hirotsugu: *See*—
Hayashi, Shigeki; Ueda, Hiroyuki; and Ogawa, Hirotsugu, 5,546,171, Cl. 355-271.000.
Ogawa, Kazufumi, to Matsushita Electric Industrial Co., Ltd. Finishing agent and method of using the same. 5,545,255, Cl. 106-272.000.
Ogawa, Kouki; Yamasaki, Kozo; and Kato, Naomiki, to NGK Spark Plug Co., Ltd. High heat conductive body and wiring base substrate fitted with the same. 5,545,598, Cl. 501-127.000.
Ogawa, Sai: *See*—
Yamaguchi, Shizuka; Kojima, Yoshitaka; Ogawa, Sai; Arikawa, Hideyuki; Haginoya, Mitsuo; Wada, Yukihiko; and Iwao, Kyozo, 5,545,484, Cl. 428-408.000.
Ogawa, Takashi; Yoshimoto, Kazuo; Uchiyama, Kensuke; Ibe, Harushige; Arai, Yoshiharu; Shiraishi, Taketoshi; and Gotoh, Yoshinori, to Japan Tobacco Inc.; and Mitsubishi Jukogyo Kabushiki Kaisha. Rotary valve apparatus. 5,544,995, Cl. 414-219.000.
Ogawa, Tetsuo: *See*—
Ikeda, Hachiro; Miyamoto, Noriaki; Umeda, Ryoei; Yasu, Hidenori; Fukukawa, Mitsuo; Masuyama, Yukiei; Kinoshita, Shoji; Takagi, Yukio; Gocho, Tomohiro; Goto, Fumio; Ishii, Akio; Ogawa, Tetsuo; Hasegawa, Yoshun; Hironaka, Keitaro; and Ogoshi, Yasuhiro, 5,546,123, Cl. 348-119.000.
Ogawa, Tetsuro: *See*—
Tsuru, Sumiaki; Yokoo, Akihiko; Sakurai, Takeshi; and Ogawa, Tetsuro, 5,545,240, Cl. 55-479.000.
Ogoshi, Yasuhiro: *See*—
Ikeda, Hachiro; Miyamoto, Noriaki; Umeda, Ryoei; Yasu, Hidenori; Fukukawa, Mitsuo; Masuyama, Yukiei; Kinoshita, Shoji; Takagi, Yukio; Gocho, Tomohiro; Goto, Fumio; Ishii, Akio; Ogawa, Tetsuo; Hasegawa, Yoshun; Hironaka, Keitaro; and Ogoshi, Yasuhiro, 5,546,123, Cl. 348-119.000.
Ogren, Wayne E.: *See*—
Payne, Richard L.; Huff, Richard E.; and Ogren, Wayne E., 5,544,672, Cl. 137-1.000.
Oguchi, Takahiro: *See*—
Kumda, Ryo; and Oguchi, Takahiro, 5,546,374, Cl. 369-126.000.
Ogura, Hidemitsu; and Kanzaki, Koichi, to Kabushiki Kaisha Toshiba. Non-volatile semiconductor memory device with contamination protection layers. 5,545,906, Cl. 257-315.000.
Ogura, Mieko: *See*—
Mitsuhashi, Masato; and Ogura, Mieko, 5,545,528, Cl. 435-6.000.
Oh, Masanari: *See*—
Yoshitake, Akio; and Oh, Masanari, 5,546,501, Cl. 395-3.000.
Oh, Se J.: *See*—
Lee, Woo B.; Oh, Se J.; Yeo, Tae J.; Ko, Jae W.; and Koo, Yung M., 5,545,572, Cl. 437-26.000.
Ohashi, Hideki: *See*—
Ohtsuka, Yasushi; Shirai, Katutada; Matsuoka, Ken; Suehiro, Yoshio; and Ohashi, Hideki, 5,546,283, Cl. 362-61.000.
Ohashi, Michihito: *See*—
Iida, Toru; Ohashi, Michihito; Sakai, Yoshihiro; Kuramoto, Shin-ichi; Chiba, Shunichi; Asahina, Yasuo; and Tomita, Junko, 5,545,381, Cl. 422-186.000.
Ohashi, Takashi: *See*—
Yoshida, Shinji; Motoyama, Shuichiro; Ohashi, Takashi; and Ishihara, Masamichi, 5,546,261, Cl. 361-19.000.
Ohata, Satoru; and Iiboshi, Tomohiro, to Honda Giken Kogyo Kabushiki Kaisha. Intake system in v-shaped engine. 5,544,629, Cl. 123-184.360.
Ohba, Hiroki; Tonomoto, Yoshihiro; Yanagita, Kiyohisa; Houki, Yoji; Akuta, Tomokazu; and Komuro, Akihiro, to Fujitsu Limited. Printer with print density switching means. 5,546,170, Cl. 355-246.000.
Ohgai, Hideo; Momota, Hiroshi; Kumakura, Takeshi; Kajifusa, Noriyuki; Kitazawa, Toshiki; Oshiden, Kazuhide; and Matsushiro, Aizo, to Earth Chemical Company, Ltd. Vector for expression and secretion of polypeptide microorganism transformed by the vector and production of polypeptide with the same microorganism. 5,545,564, Cl. 435-320.100.
Ohi, Shigenori, to Fuji Photo Optical Co., Ltd. Apparatus for holographic interferometry suitable for inspection of cylindrical optical surfaces. 5,546,186, Cl. 356-348.000.
Ohio Willow Wood Company: *See*—
Kinsinger, Jay H.; Arbogast, Robert E.; Capper, James W.; and Colvin, James M., 5,545,230, Cl. 623-38.000.
Ohira, Kozo: *See*—
Kurii, Jun; Nomura, Noboru; Itoh, Masami; Ohira, Kozo; Tsumadori, Masaki; Matsunaga, Akira; Kimura, Akio; and Suzue, Shigetoshi, 5,545,349, Cl. 252-186.380.
Ohkawa, Kouhei: *See*—
Oishi, Tetsuya; Ozawa, Hiroshi; Karasawa, Minato; Inomata, Masamitsu; Mega, Izumi; Yamauchi, Atsuyoshi; Kamada, Kazunori; Nakahata, Shigeru; Sakamoto, Katsumi; Nakashima, Tatsunobu; Watanabe, Akito; Suzuki, Jin; Ohkawa, Kouhei; Furusawa, Satoshi; Ono, Hiroshi; and Sugazaki, Kazuo, 5,545,702, Cl. 525-509.000.
Ohkubo, Kazuhiko: *See*—
Tsutsui, Tomoki; Izukawa, Tsukuru; Ohkubo, Kazuhiko; and Sakaki, Yoshitsugu, 5,545,712, Cl. 528-408.000.
Ohmi, Tadahiro; and Nakamura, Masakazu, to Ohmi, Tadahiro. Superhigh purity fluid supply pipe system and method of installing the same. 5,545,868, Cl. 219-61.000.
Ohnaka, Kiyoshi: *See*—
Ishibashi, Akihiko; Kidoguchi, Isao; Ohnaka, Kiyoshi; and Mannou, Masaya, 5,546,418, Cl. 372-48.000.
Ohnari, Masatoshi: *See*—
Morimoto, Katsushi; Ohnari, Masatoshi; Nawamaki, Tsutomu; Watanabe, Shigeomi; and Ishikawa, Kimihiro, 5,545,608, Cl. 504-282.000.
Ohnishi, Keiichi: *See*—
Morikawa, Shinsuke; Samejima, Shunichi; Yoshitake, Masaru; Okamoto, Hidekazu; Ohnishi, Keiichi; and Tanuma, Toshihiro, 5,545,777, Cl. 570-176.000.
Ohno, Eiji: *See*—
Yamada, Noboru; Akahira, Nobuo; Nishiuchi, Kenichi; Nagata, Kenichi; Ohno, Eiji; and Furukawa, Shigeaki, 5,545,454, Cl. 428-64.100.
Ohno, Hiroyuki: *See*—
Toda, Masaaki; Ohuchida, Shuichi; and Ohno, Hiroyuki, 5,545,657, Cl. 514-422.000.
Ohno, Shigeru: *See*—
Shirai, Shigeru; and Ohno, Shigeru, 5,545,500, Cl. 430-67.000.
Ohno, Tadayoshi; Yamaguchi, Takashi; and Itoh, Shinichi, to Kabushiki Kaisha Toshiba. Portable storage medium and apparatus for processing the same. 5,546,117, Cl. 347-224.000.
Ohsawa, Keiji, to Nikon Corporation. Focus state detection device. 5,546,157, Cl. 354-406.000.
Ohsawa, Michitaka: *See*—
Sano, Yuji; Tsuruga, Sadao; Kitou, Kouji; and Ohsawa, Michitaka, 5,546,048, Cl. 330-263.000.
Ohsawa, Seiichi; and Yanagisawa, Takuma, to Pioneer Electronic Corporation. Information detection light intensity control apparatus in optical disc recorded-information reproducing apparatus. 5,546,372, Cl. 369-116.000.
Ohta, Kenji: *See*—
Fuji, Hiroshi; Deguchi, Toshihisa; Kojima, Kunio; Yamaguchi, Takeshi; Terashima, Shigeo; Takahashi, Akira; and Ohta, Kenji, 5,546,364, Cl. 369-13.000.
Ohta, Minoru: *See*—
Fukaya, Kenji; Hayashi, Kazuo; Hori, Makoto; Hamaya, Masahiro; and Ohta, Minoru, 5,545,377, Cl. 422-108.000.
Ohtani, Hiroshi: *See*—
Nakajima, Toshiharu; Machimura, Satoru; Goto, Tadashi; Mochizuki, Toshitaka; Hoshino, Shinji; and Ohtani, Hiroshi, 5,545,872, Cl. 219-89.000.
Ohtani, Kimiharu: *See*—
Kishi, Takuji; and Ohtani, Kimiharu, 5,546,160, Cl. 355-50.000.
Ohsuka, Yasushi; Shirai, Katutada; Matsuoka, Ken; Suehiro, Yoshio; and Ohashi, Hideki, to Koito Manufacturing Co., Ltd. Vehicular headlamp having improved assembly efficiency. 5,546,283, Cl. 362-61.000.
Ohuchi, Masatoshi; and Matsumoto, Masaru, to Opt Engineering Co., Ltd. Continuous riveting method for fastening blind rivets. 5,544,407, Cl. 29-525.060.
Ohuchida, Shuichi: *See*—
Toda, Masaaki; Ohuchida, Shuichi; and Ohno, Hiroyuki, 5,545,657, Cl. 514-422.000.
Ohwaki, Junichi: *See*—
Wang, Yuhu; and Ohwaki, Junichi, 5,545,595, Cl. 501-3.000.
Oiles Corporation: *See*—
Fujita, Takafumi; Shimoda, Ikuo; Mochimaru, Masami; Otsuka, Susumu; Kawai, Nobuyasu; Kurimoto, Kurimoto; and Inaba, Kanemasa, 5,544,452, Cl. 52-167.200.

Oishi, Tetsuya; Ozawa, Hiroshi; Karasawa, Minato; Inomata, Masamitsu; Mega, Izumi; Yamauchi, Atsuyoshi; Kamada, Kazunori; Nakahata, Shigeru; Sakamoto, Katsumi; Nakashima, Tatsunobu; Watanabe, Akito; Suzuki, Jin; Ohkawa, Kouhei; Furusawa, Satoshi; Ono, Hiroshi; and Sugazaki, Kazuo, to Mitsui Toatsu Chemicals, Inc. Diguanamines and preparation process, derivatives and use thereof. 5,545,702, Cl. 525-509.000.

Oji Kenzai Kogyo Co., Ltd.: *See—*
Miura, Noriyasu, 5,545,284, Cl. 156-474.000.

Ok, Hyun O.: *See—*
Baker, Robert K.; Kieczykowski, Gerard R.; Ok, Hyun O.; Parsons, William H.; and Rupprecht, Kathleen M., 5,545,734, Cl. 540-456.000.

Okabayashi, Athuo; Nakamura, Kimikazu; and Sugiura, Toshihiko, to Nippondenso Co., Ltd. Plunger type electromagnetic relay with arc extinguishing structure. 5,546,061, Cl. 335-78.000.

Okabayashi, Hidekazu: *See—*
Sugai, Kazumi; Okabayashi, Hidekazu; and Kishida, Shunji, 5,545,591, Cl. 437-192.000.

Okabe, Naoto: *See—*
Tokura, Norihiro; and Okabe, Naoto, 5,545,908, Cl. 257-341.000.

Okabe, Toyohiko. Determining device and a method for determining a failure in a motor compressor system. 5,546,015, Cl. 324-772.000.

Okada, Akira: *See—*
Hirosaki, Naoto; Okada, Akira; and Akimune, Yoshio, 5,545,362, Cl. 264-65.000.

Okada, Hajime; and Saito, Masashi, to Sumitomo Wiring Systems, Ltd. Connector. 5,545,047, Cl. 439-157.000.

Okamoto, Akira: *See—*
Kunikane, Tatsuro; Okamoto, Akira; Watanabe, Tetsuo; Miyata, Sadayuki; Furukawa, Hiroyuki; and Sakai, Yoshimitsu, 5,546,212, Cl. 359-163.000.

Okamoto, Fuyuki, to NEC Corporation. Latch circuit having a logical operation function. 5,546,035, Cl. 327-208.000.

Okamoto, Hidekazu: *See—*
Morikawa, Shinsuke; Samejima, Shunichi; Yoshitake, Masaru; Okamoto, Hidekazu; Ohnishi, Keiichi; and Tanuma, Toshihiro, 5,545,777, Cl. 570-176.000.

Okamoto, Katsunari: *See—*
Inoue, Yasuyuki; Kawachi, Masao; Okamoto, Katsunari; Takato, Norio; Yamamoto, Fumihiko; Suda, Hiroyuki; Furukawa, Shinichi; and Morinaka, Akira, 5,546,483, Cl. 385-14.000.

Okamoto, Naoki, to Daiwa Seiko, Inc. Brake device for use in a fishing reel. 5,544,832, Cl. 242-245.000.

Okamoto, Tadashi; Tomida, Yoshinori; Yamamoto, Nobuko; and Kawaguchi, Masahiro, to Canon Kabushiki Kaisha. Method for detecting bioindividuals by use of nonnatural type nucleic acid probe. 5,545,521, Cl. 435-5.000.

Okamoto, Takuji; Hamada, Masanori; Sokawa, Kenta; Uyeda, Kazuya; and Yamauchi, Hideaki, to Matsushita Electric Industrial Co., Ltd. Contour restoration apparatus. 5,546,135, Cl. 348-674.000.

Okamoto, Yutaka: *See—*
Tanaka, Tomoharu; Momodomi, Masaki; Kato, Hideo; Nakai, Hiroto; Tanaka, Yoshiyuki; Shirota, Riichiro; Aritome, Seiichi; Itoh, Yasuo; Iwata, Yoshihisa; Nakamura, Hiroshi; Odaira, Hideko; Okamoto, Yutaka; Asano, Masamichi; and Tokushige, Kaoru, 5,546,351, Cl. 365-230.060.

Okamura, Kiyoshi; and Shinohara, Seigo, to Taiho Industries Co., Ltd. Coating surface-lustering agent. 5,545,683, Cl. 524-277.000.

Okamura Laboratory Inc.: *See—*
Okamura, Michio; Morimoto, Takeshi; and Hiratsuka, Kazuya, 5,545,933, Cl. 307-109.000.

Okamura, Michio; Morimoto, Takeshi; and Hiratsuka, Kazuya, to Okamura Laboratory Inc.; ELNA Company Ltd.; and Asahi Glass Company Ltd. Electric power storage apparatus. 5,545,933, Cl. 307-109.000.

Okamura, Yoshimasa: *See—*
Shimada, Yasuhiro; Okamura, Yoshimasa; Takamatsu, Osamu; Nakayama, Masaru; and Yanagisawa, Yoshihiro, 5,546,375, Cl. 369-126.000.

Okano, Hiroshi: *See—*
Imura, Yoshio; Okano, Hiroshi; and Katayama, Akira, 5,546,159, Cl. 354-472.000.

Okatani, Toru: *See—*
Hirota, Masaya; Ideyama, Hiroyuki; Okatani, Toru; Yamashita, Toshiyuki; Ito, Hideo; and Kawabuchi, Yoichi, 5,546,166, Cl. 355-209.000.

Okazaki, Toru: *See—*
Yoshimura, Shunji; and Okazaki, Toru, 5,546,367, Cl. 369-44.320.

Oketani, Toshikazu: *See—*
Matsumoto, Seiji; Aoki, Takuya; Shimasaki, Yuichi; Hatcho, Seiji; Oketani, Toshikazu; Miyashita, Yukio; Saito, Akihisa; Komatsuda, Takashi; and Kato, Hiroaki, 5,544,482, Cl. 60-279.000.

Okeya, Makoto; Ueki, Yasunori; and Ito, Norio, to Seiko Epson Corporation. Displacement sensor with temperature compensation by combining outputs in a predetermined ratio. 5,545,983, Cl. 324-207.120.

Okochi, Ken: *See—*
Kikuchi, Kimihiro; Kihara, Takashi; and Okochi, Ken, 5,546,490, Cl. 385-93.000.

Okonogi, Kenji: *See—*
Itoh, Katsumi; Okonogi, Kenji; and Tasaka, Akihiro, 5,545,652, Cl. 514-383.000.

Okubo, Hiroyuki, to Nippon Felt Co., Ltd. Robotic apparatus for automatic cop changing for a weaving machine. 5,544,677, Cl. 139-245.000.

Okuda, Taneaki; and Toyoda, Arata, to NEC Corporation. Composition in a liquid used for removing a photoresist film and method therefor. 5,544,776, Cl. 216-83.000.

Okuda, Toshiyuki: *See—*
Hosokawa, Toshihiro; Nakahara, Kiyoshi; Ishitsubo, Ryuichi; and Okuda, Toshiyuki, 5,545,023, Cl. 425-171.000.

Okuhara, Masakuni: *See—*
Nakajima, Hidenori; Hori, Yasuhiro; Goto, Toshio; Takase, Shigehiro; Verhaeghe, Koen; Terano, Hiroshi; and Okuhara, Masakuni, 5,545,542, Cl. 435-128.000.

Okumura Corporation: *See—*
Fujita, Takafumi; Shimoda, Ikuo; Mochimaru, Masami; Otsuka, Susumu; Kawai, Nobuyasu; Kurimoto, Kurimoto; and Inaba, Kanemasa, 5,544,452, Cl. 52-167.200.

Okumura, Eisuke; and Tsuno, Katsuhiko, to Kabushiki Kaisha Toshiba. Angle detecting apparatus for detecting angle of inclination of scanning mirror provided on michelson interferometer. 5,546,185, Cl. 356-345.000.

Oldridge, Tommy L. Single curtain wine and juice grape vine pruner. 5,544,444, Cl. 47-4.000.

Olds, Daniel L.: *See—*
Manz, Kenneth W.; and Olds, Daniel L., 5,544,494, Cl. 62-292.000.

O'Leary, Stephen H.: *See—*
Conero, Ronald S.; and O'Leary, Stephen H., 5,545,140, Cl. 604-154.000.

Olin Corporation: *See—*
Corzine, Alan J.; Dippold, Jack D.; and Schluckebier, David K., 5,544,398, Cl. 29-1.230.
Mahulikar, Deepak; and Hoffman, Paul R., 5,545,850, Cl. 174-52.400.
Poole, Donald R.; Holland, Gary F.; Wolf, Nicholas A.; and Wilson, Michael A., 5,545,272, Cl. 149-48.000.

Olivo, Marco: *See—*
Maccarrone, Marco; Olivo, Marco; and Golla, Carla M., 5,546,054, Cl. 331-111.000.

Olshansky, Robert: *See—*
Hill, Paul M.; and Olshansky, Robert, 5,546,190, Cl. 359-158.000.

Olson, Richard E.: *See—*
Duncia, John J. V.; Ensinger, Carol L.; Olson, Richard E.; Quan, Mimi L.; Santella, Joseph B., III; and Vanatten, Mary K., 5,545,651, Cl. 514-381.000.

Olson, Todd E.: *See—*
Plaessmann, Henry; Grossman, William M.; and Olson, Todd E., 5,546,222, Cl. 359-346.000.

Olson, Walter H.; and Kaemmerer, William F., to Medtronic, Inc. Prioritized rule based method and apparatus for diagnosis and treatment of arrhythmias. 5,545,186, Cl. 607-14.000.

Olympus Optical Co., Ltd.: *See—*
Aoki, Norihiko, 5,546,229, Cl. 359-654.000.
Ishikawa, Kazumasa, 5,546,370, Cl. 369-77.200.
Miyazaki, Yasuhiro, 5,546,371, Cl. 369-112.000.
Ogata, Yasuji; and Baba, Toshiro, 5,546,236, Cl. 359-794.000.
Soga, Takumi, 5,546,585, Cl. 395-700.000.
Yabe, Hisao; Iida, Yoshihiro; Suzuki, Akira; Ito, Hideo; Tashiro, Yoshio; Yamazaki, Minoru; Tamada, Osamu; and Nakajima, Shigeru, 5,545,121, Cl. 600-121.000.
Yasugaki, Masato; Konuma, Osamu; and Iba, Yoichi, 5,546,227, Cl. 359-630.000.

Oman, John I. Engine parts organizer. 5,544,744, Cl. 206-319.000.

O'Meara, Thomas R.: *See—*
Pepper, David M.; O'Meara, Thomas R.; and Mitchell, Phillip V., 5,546,187, Cl. 356-357.000.

Omichi, Kaoru: *See—*
Satomura, Shinji; Nakamura, Kenji; Ikenaka, Tokuji; and Omichi, Kaoru, 5,545,530, Cl. 435-6.000.

Omni Forge, Inc.: *See—*
Stevens, Robert J.; and McInerney, Terrance M., 5,544,413, Cl. 29-888.092.

Omura, Akira: *See—*
Yamada, Akira; Yoshida, Shinichiro; Yoshino, Masahiro; Takahashi, Kiyoshi; Omura, Akira; and Konagai, Makoto, 5,545,443, Cl. 427-584.000.

Oncogen: *See—*
Senter, Peter D.; Su, Peter C.; Marquardt, Hans; Hayden, Martha S.; and Linsley, Peter, 5,545,548, Cl. 435-227.000.

O'Neil, William B. Axle Puller. 5,544,402, Cl. 29-261.000.

Onishi, Ken: *See—*
Hibi, Taketoshi; Maeno, Kenji; Ido, Kihei; Onishi, Ken; Ueda, Shinobu; Hirano, Akiyoshi; Hatanaka, Keiji; and Shiroshita, Takashi, 5,546,191, Cl. 358-335.000.

Onishi, Yoshitaka: *See—*
Satake, Akira; Onishi, Yoshitaka; and Miyoshi, Sotsuo, 5,545,943, Cl. 310-350.000.

Ono, Hiroshi: *See—*
Oishi, Tetsuya; Ozawa, Hiroshi; Karasawa, Minato; Inomata, Masamitsu; Mega, Izumi; Yamauchi, Atsuyoshi; Kamada, Kazunori; Nakahata, Shigeru; Sakamoto, Katsumi; Nakashima, Tatsunobu; Watanabe, Akito; Suzuki, Jin; Ohkawa, Kouhei; Furusawa, Satoshi; Ono, Hiroshi; and Sugazaki, Kazuo, 5,545,702, Cl. 525-509.000.
Ono, Hitoshi; Takahashi, Noriaki; Ando, Osamu; Takeuchi, Masako; and Oda, Hirofumi, to Mitsubishi Chemical Corporation. Electrostatic image-developing toner. 5,545,502, Cl. 430-110.000.

Ono, Naoya: *See—*

Sato, Fumie; Amano, Takehiro; Kameo, Kazuya; Tanami, Tohru; Mutoh, Masaru; Ono, Naoya; and Goto, Jun, 5,545,666, Cl. 514-530.000.

Ono Pharmaceutical Co., Ltd.: *See—*
Toda, Masaaki; Ohuchida, Shuichi; and Ohno, Hiroyuki, 5,545,657, Cl. 514-422.000.

Ono, Yoshiro: *See—*
Kotani, Wataru; Ono, Yoshiro; and Kumazawa, Kazuhiko, 5,545,243, Cl. 55-523.000.

Onoue, Keiji; Saito, Yukio; and Imai, Takashi, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Sliver piecing in spinning machines. 5,544,389, Cl. 19-157.000.

Onwunaka, Theo O.; and Karakelle, Mutlu, to Becton, Dickinson and Company. Thermoplastic polyurethane method of making same and forming a medical article therefrom. 5,545,708, Cl. 528-76.000.

Ooga, Masaaki: *See—*
Aota, Keiji; Ooga, Masaaki; and Tagusa, Yasunobu, 5,546,279, Cl. 361-749.000.

Ootsuka, Takashi: *See—*
Higashimura, Minoru; Ootsuka, Takashi; and Shibayama, Masakazu, 5,545,609, Cl. 504-282.000.

Ophidian Pharmaceuticals, Inc.: *See—*
Carroll, Sean B.; Firca, Joseph R.; Pugh, Charles; and Padhye, Nisha V., 5,545,721, Cl. 530-391.700.

Oppermann, Winfried: *See—*
Geiger, Istvan; and Oppermann, Winfried, 5,544,636, Cl. 123-478.000.

Opt Engineering Co., Ltd.: *See—*
Ohuchi, Masatoshi; and Matsumoto, Masaru, 5,544,407, Cl. 29-525.060.

Optiva Corp.: *See—*
Giuliani, David; McMahon, Ryan W.; and Engel, David, 5,544,382, Cl. 15-22.100.

Orbach, Zvi, to Quick Technologies Ltd. Personalizable gate array devices. 5,545,904, Cl. 257-209.000.

Orbisphere Laboratories Neuchatel S.A.: *See—*
Gretillat, François; Pellaux, Jean-Paul; Hale, John M.; and Weber, Eugen, 5,545,567, Cl. 436-172.000.

Orchard, John T.: *See—*
Roy, Richard H., III; Parish, David M.; Barratt, Craig H.; Yang, Chinping Q.; and Orchard, John T., 5,546,090, Cl. 342-174.000.

Oria, Vittorio L.: *See—*
Aitken, John; and Oria, Vittorio L., 5,544,711, Cl. 175-4.600.

Orlicki, David; Larrabee, James; and Herczeg, Karen L., to Eastman Kodak Company. Data transmission system for sparse array print head. 5,546,513, Cl. 395-111.000.

Orlowski, Marius: *See—*
Cheng, Shih K.; and Orlowski, Marius, 5,545,575, Cl. 437-40.000.

Ormond, Brian T.: *See—*
Quinn, Kraig A.; Jedlicka, Josef E.; and Ormond, Brian T., 5,545,913, Cl. 257-443.000.

O'Rourke, Daniel K. Computer oriented stereotactic microneurological surgery. 5,545,160, Cl. 606-10.000.

Orrock, James E.: *See—*
Agrawal, Mukul; Orrock, James E.; Patiath, Pradip K.; and Rachor, Lloyd A., 5,546,301, Cl. 364-140.000.

Örtemo, Bo L. H.: *See—*
Lindén, Anders T.; and Örtemo, Bo L. H., 5,545,294, Cl. 162-343.000.

Ortiz, Mark S.; Failla, Stephen J.; Kinet, Jean-Pierre; and Marie, Frederic, to Ethicon, Inc. Surgical lift method and apparatus. 5,545,123, Cl. 600-235.000.

Orzech, Thomas S.: *See—*
Hsu, Jau Y.; and Orzech, Thomas S., 5,545,426, Cl. 426-496.000.

Osada, Nobuya: *See—*
Yamanishi, Takahiro; Fujii, Hiroaki; and Osada, Nobuya, 5,544,913, Cl. 280-730.200.

Osan, Frank: *See—*
Brekner, Michael-Joachim; and Osan, Frank, 5,545,829, Cl. 526-160.000.

Osawa, Nobuyuki, to NSK Ltd. Ball retainers in a linear guide apparatus. 5,544,954, Cl. 384-45.000.

Osborn, Brock E.: *See—*
Gifford, George G.; and Osborn, Brock E., 5,546,322, Cl. 364-497.000.

Osborne, Robert E.; and Garlow, David A., to Precision Automation Systems, Inc. Automatic battery management system. 5,545,967, Cl. 320-2.000.

Oshiden, Kazuhide: *See—*
Ohgai, Hideo; Momota, Hiroshi; Kumakura, Takeshi; Kajifusa, Noriyuki; Kitazawa, Toshiki; Oshiden, Kazuhide; and Matsushiro, Aizo, 5,545,564, Cl. 435-320.100.

Oshika, Takatoshi, to Mitsubishi Materials Corporation. Surface coated cutting tool. 5,545,490, Cl. 428-701.000.

Osram Sylvania, Inc.: *See—*
Cannon, Donald M., 5,545,944, Cl. 313-318.010.
Lapatovich, Walter P.; and Butler, Scott J., 5,545,953, Cl. 315-248.000.

Ostler, Farrell L.: *See—*
Dike, Charles E.; and Ostler, Farrell L., 5,546,544, Cl. 395-287.000.

Ostrander, Steven P.: *See—*
Booth, Richard B.; Cooper, Emanuel I.; Giess, Edward A.; Kordus, Mark R.; Krongelb, Sol; Ostrander, Steven P.; Roldan, Judith M.; Sambucetti, Carlos J.; and Saraf, Ravi, 5,545,429, Cl. 427-97.000.

Ostroff, Alan: *See—*
Jacobson, Peter; Kroiss, Daniel; and Ostroff, Alan, 5,545,181, Cl. 607-4.000.

Oswald, Richard: *See—*
Berg, Robin; Mohns, Lawrence; and Oswald, Richard, 5,544,974, Cl. 405-53.000.

Ota, Akira, to Fuji Xerox Co., Ltd. Optical scanning apparatus. 5,546,215, Cl. 359-208.000.

Ota, Kazuo: *See—*
Hotomi, Hideo; Ebisu, Osamu; and Ota, Kazuo, 5,546,108, Cl. 347-55.000.

Otawara-Hamamoto, Yoko: *See—*
Akita, Mikio; Enomoto, Koichi; Tanaka, Shigeaki; and Otawara-Hamamoto, Yoko, 5,545,534, Cl. 435-4.920.

Otis Elevator Company: *See—*
Adrian, Willy; and Bruehl, Klaus, 5,544,730, Cl. 198-336.000.
Roberts, Randall K., 5,544,721, Cl. 187-394.000.

Otsuka Pharmaceutical Co., Ltd.: *See—*
Matsumori, Akira, 5,545,623, Cl. 514-26.000.

Otsuka, Shizuo: *See—*
Lipp, Ronald L.; Rodriguez, David; Toriya, Michio; Kanjo, Junji; and Otsuka, Shizuo, 5,546,077, Cl. 340-825.440.

Otsuka, Susumu: *See—*
Fujita, Takafumi; Shimoda, Ikuo; Mochimaru, Masami; Otsuka, Susumu; Kawai, Nobuyasu; Kurimoto, Kurimoto; and Inaba, Kanemasa, 5,544,452, Cl. 52-167.200.

Otsuki, Kazutaka; and Yamada, Masaaki, to NEC Corporation. Semiconductor device having mosfets formed in inherent and well regions of a semiconductor substrate. 5,545,911, Cl. 257-376.000.

Otsuki, Toshiaki; Kozai, Haruhiko; and Ishii, Seiji, to Fanuc Ltd. Speed control method for a numerical control apparatus. 5,545,959, Cl. 318-568.150.

Otter, Brian A.; and Schwartz, Edward L., to Montefiore Medical Center. 5-ethoxy-2'-deoxyuridines. 5,545,629, Cl. 514-50.000.

Otto Bock Orthopädische Industrie Besitz-und Verwaltungs-Kommanditgesesllschaft: *See—*
Van de Veen, Paul G., 5,545,232, Cl. 623-39.000.

OTV Omnium de Traitements et de Valorisation S.A.: *See—*
Guibelin, Eric; and Valette, Yves, 5,544,598, Cl. 110-238.000.

Ouchi, Yumiko, to Nikon Corporation. Re-imaging optical system. 5,546,228, Cl. 359-644.000.

Outboard Marine Corporation: *See—*
Irgens, Christopher R., 5,544,673, Cl. 137-15.000.
Westberg, Tom; Wagner, Jeffrey F.; Kantola, James C.; and Zdanowicz, Lawrence E., 5,544,631, Cl. 123-193.500.

Ouyang, Jiangbo; Rodzewich, Edward A.; and Harpel, William L., to Betz Laboratories, Inc. Low phosphorous, low etch cleaner and method. 5,545,347, Cl. 510-254.000.

Ouyang, Jiangbo; and Melzer, Jeffrey I., to Betz Laboratories, Inc. Hydrophilic treatment for aluminum. 5,545,438, Cl. 427-299.000.

Oveyssi, Kamran: *See—*
Dunfield, John C.; and Oveyssi, Kamran, 5,545,937, Cl. 310-90.500.

Owen, A. DeBow: *See—*
Baltins, Guntis U.; Boyle, Russell W.; Mason, Denis G.; Moore, Howard M.; Owen, A. DeBow; and Sharp, Joseph A., 5,544,526, Cl. 73-180.000.

Owens, Bryon C., to Vesture Corporation. Method of heating seat cushion with removable heating pad. 5,545,198, Cl. 607-108.000.

Owens Corning Fiberglas Technology, Inc.: *See—*
Grant, Larry J., 5,545,453, Cl. 428-43.000.

Owens, Gary D.: *See—*
Gillenwater, Russell L.; Safari, Davoud; and Owens, Gary D., 5,546,406, Cl. 371-22.500.

Oxman, Joel D.: *See—*
Palazzotto, Michael C.; Ubel, F. Andrew, III; Oxman, Joel D.; and Ali, M. Zaki, 5,545,676, Cl. 522-15.000.

Oxx, George D.: *See—*
Gaynes, Michael A.; Oxx, George D.; Pierson, Mark V.; and Zalesinski, Jerzy, 5,545,465, Cl. 428-209.000.

Oy GMA Printing Systems Ab: *See—*
Similä, Jussi, 5,544,994, Cl. 412-9.000.

Oy W. Rosenlew AB: *See—*
Koskinen, Erkki; and Stenmark, Tom, 5,544,472, Cl. 53-449.000.

Oyama, Ken-Ichi, to NEC Corporation. Nonvolatile semiconductor memory device equipped with means for suppressing drain disturbance phenomenon. 5,546,339, Cl. 365-185.020.

O'Young, Chi-Lin; and Sawicki, Robert A., to Texaco Inc. Method of preparing manganese oxide octahedral molecular sieve. 5,545,393, Cl. 423-605.000.

Ozaki, Kouki: *See—*
Tanaka, Tadashi; Sakamoto, Masaaki; Yamamoto, Koichi; and Ozaki, Kouki, 5,545,249, Cl. 75-246.000.

Ozaki, Masahiko; Sonoda, Keisuke; Kikuchi, Hiroshi; Tsukamoto, Osamu; Komatsu, Masao; and Asai, Koetsu, to Mitsubishi Jukogyo Kabushiki Kaisha. Abyssal casting apparatus for liquefied carbonated gas. 5,544,491, Cl. 62-53.100.

Ozawa, Hiroshi: *See—*
Oishi, Tetsuya; Ozawa, Hiroshi; Karasawa, Minato; Inomata, Masamitsu; Mega, Izumi; Yamauchi, Atsuyoshi; Kamada, Kazunori; Nakahata, Shigeru; Sakamoto, Katsumi; Nakashima, Tatsunobu; Watanabe, Akito; Suzuki, Jin; Ohkawa, Kouhei; Furusawa, Satoshi; Ono, Hiroshi; and Sugazaki, Kazuo, 5,545,702, Cl. 525-509.000.

Ozawa, Takesi: *See—*

VOL 1189 ISS 2 AG 13 1996 UMI

Higashiyama, Kazutoshi; Doi, Toshiya; Ozawa, Takesi; Takeuchi, Seizi; Kamo, Tomoichi; Matsuda, Shinpei; and Yoshida, Yutaka, 5,545,610, Cl. 505-120.000.

Ozveren, Cuneyt M., to Digital Equipment Corporation. Efficient distributed method for computing max-min fair rates of a limited resource in ATM networks. 5,546,377, Cl. 370-13.000.

Paal, Michael: *See*—
Heath, William F., Jr.; McDonald, John H., III; Paal, Michael; Rühter, Gerd; Schotten, Theo; and Stenzel, Wolfgang, 5,545,636, Cl. 514-214.000.

Pacesetter AB: *See*—
Bergström, Inga-Maria; Bergström, Mats-Johan M.; and Nilsson, Kenth, 5,545,187, Cl. 607-32.000.

Pacesetter, Inc.: *See*—
Doan, Phong D., 5,545,203, Cl. 607-122.000.
Helland, John R.; and Li, Hong, 5,545,201, Cl. 607-127.000.

Pacific Nuclear Systems, Inc.: *See*—
Jones, Kyle B.; Lehnert, Robert A.; McInnes, Ian D.; Quinn, Robert D.; Sisley, Steven E.; and Temus, Charles J., 5,546,436, Cl. 376-272.000.

Paddock, Charles W.: *See*—
Garland, Thomas A.; Kolich, Robert A.; Paddock, Charles W.; and Bicheler, James P., 5,544,372, Cl. 5-99.100.

Padhye, Nisha V.: *See*—
Carroll, Sean B.; Firca, Joseph R.; Pugh, Charles; and Padhye, Nisha V., 5,545,721, Cl. 530-391.700.

Padwa, Daniel H.: *See*—
McKinnis, David R. R.; Luebbert, David L.; Berman, Eric R.; Saxton, Thomas W.; and Padwa, Daniel H., 5,546,581, Cl. 395-650.000.

Paessens, Arnold: *See*—
Wild, Hanno; Roeben, Wolfgang; Paessens, Arnold; and Petersen-von Gehr, Jörg, 5,545,736, Cl. 540-522.000.

Page, Martin J., to Burroughs Wellcome Co. Method for treating a mammal by administering a CHO-glycosylated antibody. 5,545,403, Cl. 424-133.100.

Page, Martin J., to Burroughs Wellcome Co. Method for treating a mammal suffering from a T-cell medicated disorder with a CHO-Glycosylated antibody. 5,545,404, Cl. 424-133.100.

Page, Martin J., to Burroughs Wellcome Co. Method for treating a mammal suffering from cancer with a cho-glycosylated antibody. 5,545,405, Cl. 424-133.100.

Pagliaro, Vittorio; Urso, Paolo; and Caro, Lorenzo, to Bull HN Information Systems Italia S.p.A. Printer with multifunctional paper handling capability. 5,544,966, Cl. 400-616.000.

Pai, Joseph Y.: *See*—
Tran, Nang T.; Pai, Joseph Y.; and Kim, Choon-Woo, 5,545,899, Cl. 250-370.090.

Pakull, Ralf: *See*—
Haese, Wilfried; Bruder, Friedrich; Pakull, Ralf; Kirsch, Jürgen; and Löwer, Hartmut, 5,545,710, Cl. 528-201.000.

Palazzotto, Michael C.; Ubel, F. Andrew, III; Oxman, Joel D.; and Ali, M. Zaki, to Minnesota Mining and Manufacturing Company. Ternary photoinitiator system for addition polymerization. 5,545,676, Cl. 522-15.000.

Pall Corporation: *See*—
Bormann, Thomas J.; Pascale, Frank R.; and Gsell, Thomas C., 5,545,339, Cl. 210-806.000.
Koehler, Paul C.; Whitlock, Michael B.; Noble, Lawrence J.; and Jenkins, George C., 5,545,323, Cl. 210-493.200.
Whitlock, Michael; and Murphy, William, 5,545,242, Cl. 55-502.000.

Palmer, Cindy L.: *See*—
Varney, Michael D.; Palmer, Cindy L.; and Deal, Judy G., 5,545,744, Cl. 558-418.000.

Palmer, Larry G.: *See*—
Palmer, Ricky S.; and Palmer, Larry G., 5,546,324, Cl. 364-514.00R.

Palmer, Nelson R.: *See*—
Hurley, Rick A.; Innes, Mark E.; and Palmer, Nelson R., 5,546,268, Cl. 361-154.000.

Palmer, Ricky S.; and Palmer, Larry G., to Digital Equipment Corporation. Video teleconferencing for networked workstations. 5,546,324, Cl. 364-514.00R.

Pan, Jengwei: *See*—
Biro, Larry L.; and Pan, Jengwei, 5,546,320, Cl. 364-488.000.

Pan, Jing-Jong: *See*—
Shih, Ming; Xu, Jingyu; Su, Weng-Herng; and Pan, Jing-Jong, 5,546,486, Cl. 385-31.000.

Pantzar, Göran, to Sandvik AB. Cutting insert with twisted chip surface. 5,544,984, Cl. 407-113.000.

Pao, Cheng-Keng: *See*—
Wen, Cheng P.; and Pao, Cheng-Keng, 5,546,049, Cl. 330-277.000.

Papanu, James S.: *See*—
Chen, Jian; Papanu, James S.; Mak, Steve S. Y.; Ish-Shalom, Carmel; Hsieh, Peter; Lau, Wesley G.; Rhoades, Charles S.; Shieh, Brian; Latchford, Ian S.; Williams, Karen A.; and Yu-Wang, Victoria, 5,545,289, Cl. 156-643.100.

Papenfhus, Theodor; Kanschik-Conradsen, Andreas; and Pressler, Wilfried, to Hoechst AG. Process for the preparation of chlorofluronitrobenzenes and difluoronitrobenzenes. 5,545,768, Cl. 568-938.000.

Paper Converting Machine Company: *See*—
Wierschke, Larry D., 5,544,557, Cl. 83-37.000.

Paper Machinery Corporation: *See*—
Konzal, Daryl R., 5,544,537, Cl. 74-53.000.

Papworth, David B.: *See*—
Martell, Robert W.; Hinton, Glenn J.; Fetterman, Michael A.; Papworth, David B.; Colwell, Robert P.; and Glew, Andrew F., 5,546,597, Cl. 395-800.000.

Parise, Michael C.; and Saarem, Myrl J. Shower water filter assembly. 5,545,314, Cl. 210-100.000.

Parish, David M.: *See*—
Roy, Richard H., III; Parish, David M.; Barratt, Craig H.; Yang, Chinping Q.; and Orchard, John T., 5,546,090, Cl. 342-174.000.

Park, Byung-Suk: *See*—
Yun, Tae-Jin; Hong, Dong-Pyo; and Park, Byung-Suk, 5,545,076, Cl. 451-287.000.

Park, Chan-Kyu, to Daewoo Electronics Co., Ltd. Astigmatic lens for use in detecting a focussing error in an optical pickup system. 5,546,235, Cl. 359-742.000.

Park, Dong-jin: *See*—
Lee, Rae-hwan; Jeon, Hwa-jin; Choi, Kwang-sik; Park, Hong-soon; Yun, Sang-hwa; Song, Kwang-lyeol; Choi, Hae-min; Lee, Deok-hyun; Song, Bong-hun; Park, Dong-jin; and Byeon, Seong-jin, 5,546,368, Cl. 369-47.000.

Park, Goo-man; Baik, Sei-hyun; and Han, Taek-soo, to Samsung Electronics Co., Ltd. Method of recording/reproducing ATV signals divided into trick play data and normal play data. 5,546,244, Cl. 360-53.000.

Park, Hong-soon: *See*—
Lee, Rae-hwan; Jeon, Hwa-jin; Choi, Kwang-sik; Park, Hong-soon; Yun, Sang-hwa; Song, Kwang-lyeol; Choi, Hae-min; Lee, Deok-hyun; Song, Bong-hun; Park, Dong-jin; and Byeon, Seong-jin, 5,546,368, Cl. 369-47.000.

Park, Hyeon S.: *See*—
Yun, Dong H.; Lee, Kyu C.; Hong, Hyung K.; Park, Hyeon S.; Kwon, Chul H.; and Shin, Hyun W., 5,545,300, Cl. 204-424.000.

Park, John S.: *See*—
MacBeath, Fiona S.; and Park, John S., 5,545,346, Cl. 510-514.000.

Park, Joung I., to Goldstar Co., Ltd. Apparatus and method for measuring electric power consumed in electrical heaters. 5,545,876, Cl. 219-492.000.

Park Medical Systems, Inc.: *See*—
Gagnon, Daniel; Pouliot, Nicole; Therrien, Michel; and Laperrière, Luc, 5,545,898, Cl. 250-369.000.

Park, Sun-hoo: *See*—
Lee, Jueng-gil; Park, Sun-hoo; and Choi, Gil-heyun, 5,544,771, Cl. 216-2.000.

Park, Young-hoon; Seo, Young-woo; and Lee, Yong-hee, to Samsung Electronics Co., Ltd. Method of maufacturing a semiconductor device having a low resistance gate electrode. 5,545,578, Cl. 437-44.000.

Parker, Donald L.: *See*—
Murphy, Oliver J.; Hitchens, G. Duncan; Hodko, Dalibor; Clarke, Eric T.; Miller, David L.; and Parker, Donald L., 5,545,308, Cl. 205-125.000.

Parker, Jeff P. K.: *See*—
Wong, Raymond S. C.; Grant, Ian; Patel, Jayantilal D.; Parker, Jeff P. K.; and Swanson, Eric B., 5,545,821, Cl. 800-230.000.

Parker Medical Associates: *See*—
Duback, Jeffrey E., 5,544,663, Cl. 128-846.000.

Parkes, John J., Jr.; and Mittel, James G., to Motorola, Inc. Voltage regulator circuit having adaptive loop gain. 5,545,970, Cl. 323-277.000.

Parsons, John R.; Lee, Casey K.; Langrana, Noshir A.; Clemow, Alastair J.; Chen, Elizabeth H.; and Hawkins, Monica V., to University of Medicine and Dentistry of NJ; and Rutgers University. Functional and biocompatible intervertebral disc spacer containing elastomeric material of varying hardness. 5,545,229, Cl. 623-17.000.

Parsons, William H.: *See*—
Baker, Robert K.; Kieczykowski, Gerard R.; Ok, Hyum O.; Parsons, William H.; and Rupprecht, Kathleen M., 5,545,734, Cl. 540-456.000.

Partington, Stephen R.: *See*—
Cooper, Jeremy B.; Frost, Jonathon C.; and Partington, Stephen R., 5,545,787, Cl. 585-444.000.

Partovi, Hamid; Butler, Steven; and Tran, Luan, to Digital Equipment Corporation. Static random access memory having tunable-self-timed control logic circuits. 5,546,354, Cl. 365-233.000.

Parvin, Jackie D.: *See*—
Schmidt, Clayton C.; Zorich, Chris; Lammens, Arthur E.; and Parvin, Jackie D., 5,544,957, Cl. 312-221.000.

Pascal, Jean-Claude; McCort, Gary; Blondet, Dominique; and Gellibert, Françoise, to Syntex Pharmaceuticals, Limited. Heterocyclic derivatives in the treatment of ischaemia and related diseases. 5,545,645, Cl. 514-326.000.

Pascale, Frank R.: *See*—
Bormann, Thomas J.; Pascale, Frank R.; and Gsell, Thomas C., 5,545,339, Cl. 210-806.000.

Paster, Max. Security mechanism for securing a movable closure. 5,544,924, Cl. 292-6.000.

Pasteur Sanofi Diagnostics: *See*—
Plaue, Serge; Muller, Sylviane; and Van Regenmortel, Marc, 5,545,718, Cl. 530-327.000.

Patel, Chandresh. Method and apparatus to emulate VLSI circuits within a logic simulator. 5,546,562, Cl. 395-500.000.

Patel, Jayantilal D.: *See*—
Wong, Raymond S. C.; Grant, Ian; Patel, Jayantilal D.; Parker, Jeff P. K.; and Swanson, Eric B., 5,545,821, Cl. 800-230.000.

Pathak, Vijay K.; and Leppin, Dennis, to Gas Research Institute. Water and organic constituent separator system and method. 5,545,296, Cl. 203-1.000.

Patiath, Pradip K.: *See*—
Agrawal, Mukul; Orrock, James E.; Patiath, Pradip K.; and Rachor, Lloyd A., 5,546,301, Cl. 364-140.000.

Pattikonda, Ramakhrisna: *See*—
Tucker, Michel H.; Sams, Gary; Hennessey, Kathleen; Pattikonda, Ramakhrisna; and Condit, Mario, 5,546,398, Cl. 370-94.100.

Pauley, Gregory T.: *See*—
Dennison, Everett; Nass, Edwin L.; Duffy, Timothy J.; Pauley, Gregory T.; Jones, Scott L.; and Shale, Deborah J., 5,546,445, Cl. 379-60.000.

Paulman, Roger, to Peerless of America, Incorporated. Differential coatings for microextruded tubes used in parallel flow heat exchangers. 5,544,698, Cl. 165-133.000.

Paulovics, Katalin: *See*—
Dudits, Dénes; Paulovics, Katalin; Kalman, Katalin; Györgyey, János; Nagy, Ferenc; Bako, László; Horvath, Gábor; Eckes, Peter; and Donn, Günter, 5,545,819, Cl. 800-205.000.

Paulsen, Hedde-Christoph: *See*—
Bucken, Rene; Consoir, Rudolf; Hermanns, Ferdinand-Josef; Kathke, Gregor; Schwalm, Hans-Werner; Schultz, Waldemar; Paulsen, Hedde-Christoph; and Kery, Michael, 5,544,829, Cl. 242-35.50R.

Paumen, Jacky M. G. N.; Hemming, Rowland; Hartmann, Kai; and Beckers, Marc, to Duracell Inc. Packaging. 5,544,755, Cl. 206-705.000.

Paxall Group, The: *See*—
Klopfenstein, Kraig L., 5,544,738, Cl. 198-626.500.

Paxall Group, Inc., The: *See*—
Stapp, Richard E.; and Hayes, Glenn A., 5,545,856, Cl. 177-25.180.

Payne, Richard L.; Huff, Richard E.; and Ogren, Wayne E., to Atlantic Richfield Company. Slug flow mitigation control system and method. 5,544,672, Cl. 137-1.000.

Pearl, Donald L.: *See*—
Aulet, Nancy R.; Bogdan, David C.; Hussain, Muhammed I.; Hutt, George W.; Pearl, Donald L.; and Pribula, David T., 5,546,325, Cl. 364-525.000.

Pearl Musical Instrument Company: *See*—
Isomi, Takenori, 5,544,561, Cl. 84-421.000.

Pease, Robert A.; and Shields, Robin, to National Semiconductor Corporation. Protection circuit used for deactivating a transistor during a short-circuit having an inductive component. 5,546,260, Cl. 361-18.000.

Pechanek, Gerald G.; and Vassiliadis, Stamatis, to International Business Machine Corporation. Processor using folded array structures for transposition memory and fast cosine transform computation. 5,546,336, Cl. 364-725.000.

Pedlick, Jack S.: *See*—
Le, Thu A.; Yi, Sung S.; Zwaskis, William; Pedlick, Jack S.; Luscombe, Brian H.; Jamiolkowski, Dennis D.; Di Giovanni, John; Seritella, Keith A.; Steckel, Mark G.; and Harwin, Steven F., 5,545,180, Cl. 606-232.000.

Peeler, Ralph E.: *See*—
O'Connor, Kurt F.; Hoff, James P.; Frasier, Donald J.; Peeler, Ralph E.; Mueller-Largent, Heidi; Trees, Floyd F.; Whetstone, James R.; Lane, John H.; and Jeffries, Ralph E., 5,545,003, Cl. 415-115.000.

Peerless of America, Incorporated: *See*—
Paulman, Roger, 5,544,698, Cl. 165-133.000.

Pehle, Hans J., to Mannesmann Aktiengeselschaft. Method for controlling the stretching of rolling stock. 5,544,513, Cl. 72-12.200.

Pellaux, Jean-Paul: *See*—
Gretillat, François; Pellaux, Jean-Paul; Hale, John M.; and Weber, Eugen, 5,545,567, Cl. 436-172.000.

Pellegrini, John T., to Plane Sight, Inc. Golf swing training device. 5,544,888, Cl. 473-220.000.

Penafiel, Luis M.: *See*—
Litovitz, Theodore A.; and Penafiel, Luis M., 5,544,665, Cl. 128-897.000.

Penarrubia, Lola: *See*—
Fischer, Robert L.; Margossian, Linda J.; and Penarrubia, Lola, 5,545,815, Cl. 800-205.000.

Penn State Research Foundation, The: *See*—
Dougherty, Joseph P., 5,545,184, Cl. 607-5.000.
Wilfinger, William W.; and Kendall, Bruce, 5,545,841, Cl. 174-17.080.

Pennetreau, Pascal; and Balthasart, Dominique, to Solvay (Société Anonyme). Process for the preparation of 1,1,1-trifluoroethane. 5,545,772, Cl. 570-164.000.

Pentoney, Stephen L., Jr.; Lew, Clarence Y.; and Rakestraw, David, to Beckman Instruments, Inc. Automated optical alignment using a galvometric scanner. 5,545,901, Cl. 250-458.100.

Pepinsky, R. Blake: *See*—
Goelz, Susan E.; Cate, Richard L.; Chow, E. Pingchang; and Pepinsky, R. Blake, 5,545,723, Cl. 424-85.600.

Pepper, David M.; O'Meara, Thomas R.; and Mitchell, Phillip V., to Hughes Aircraft Company. Self–referencing laser–based ultrasonic wave receiver. 5,546,187, Cl. 356-357.000.

Peppiette, Roger C.; Cooper, Richard B.; and Stoddard, Robert J., to Allegro Microsystems, Inc. Separate protective transistor. 5,545,917, Cl. 257-547.000.

Peptide Technology Limited: *See*—
Trigg, Timothy E.; Souires, Edward L.; and Jochle, Wolfgang, 5,545,408, Cl. 424-422.000.

Pequea Machine, Inc.: *See*—
Skibo, Dennis, 5,544,475, Cl. 56-15.500.

Pera, Ivo E., to Lloyds International Trust. Extensible and self-retractable cable device. 5,544,836, Cl. 242-372.000.

Perceptual Images: *See*—
Miller, John L.; and Winnek, Douglas F., 5,546,120, Gl. 348-59.000.

Perfecto, Eric D.: *See*—
Farooq, Mukta S.; Kaja, Suryanarayana; Perfecto, Eric D.; and White, George E., 5,545,927, Cl. 257-762.000.

Perkin-Elmer Corporation, The: *See*—
Hinshaw, John V.; and Schallis, Paul E., 5,545,252, Cl. 95-15.000.

Perkins, Jamie. Multiple fishing hook and leader storage device. 5,544,442, Cl. 43-57.200.

Permelec Electrode Co. Ltd.: *See*—
Shimamune, Takayuki; and Nakajima, Yasuo, 5,545,306, Cl. 205-109.000.

Perricone, Nicholos V. Method and compositions for topical application to the skin of tocotrienol for prevention and/or treatment of skin damage. 5,545,398, Cl. 424-59.000.

Perrin, Randall L.: *See*—
Voss, Mark G.; Peterson, Gregory E.; Harvey, William O.; and Perrin, Randall L., 5,544,484, Cl. 60-397.000.

Perrin, Stephen J. Shock absorbing shoulder strap. 5,544,795, Cl. 224-254.000.

Perry, Carol A.: *See*—
Corley, Ronald E.; and Perry, Carol A., 5,544,555, Cl. 81-125.000.

Perry, Charles H.; Bauer, Tibor L.; Long, David C.; Pickering, Bruce C.; and Vittori, Pierre C., to International Business Machines Corporation. Probe card assembly having a ceramic probe card. 5,546,012, Cl. 324-754.000.

Perry, William M.; and Helmer, Kerry L., to United Technologies Automotive, Inc. Power pack for an automotive exterior mirror assembly. 5,546,240, Cl. 359-871.000.

Perstorp AB: *See*—
Sirén, Matti, 5,545,632, Cl. 514-103.000.

Perstorp Analytical, Inc.: *See*—
Honigs, David E.; and Lynch, Donald, 5,545,376, Cl. 422-104.000.

Peter, Cornelius; Seiler, Hartmut; AAB, Volker; and Haderer, Guenter, to Robert Bosch GmbH. Electric motor drive. 5,545,961, Cl. 318-647.000.

Petering, John L. Method and apparatus for the treatment of concentrated wastewater. 5,545,326, Cl. 210-605.000.

Peterman, K. Russell; and Smith, Michael V., to Radian Corporation. Atmospheric remote sensing instrument system. 5,544,525, Cl. 73-170.130.

Peters, T. Scott: *See*—
Bokros, Jack C.; Ely, John L.; Emken, Michael R.; Haubold, Axel D.; Peters, T. Scott; Stupka, Jonathan C.; and Waits, C. Thomas, 5,545,216, Cl. 623-2.000.

Petersen, Uwe; Schenke, Thomas; Böhm, Stefan; Grosser, Rolf; Bremm, Klaus D.; Endermann, Rainer; and Metzger, Karl G., to Bayer Aktiengesellschaft. Derivatives of 1-(2-fluorocyclopropyl)-quinolonecarboxylic acid and 1-(2-fluorocyclopropyl)-naphthridonecarboxylic acid. 5,545,642, Cl. 514-312.000.

Petersen-von Gehr, Jörg: *See*—
Wild, Hanno; Roeben, Wolfgang; Paessens, Arnold; and Petersen-von Gehr, Jörg, 5,545,736, Cl. 540-522.000.

Peterson, Gregory E.: *See*—
Voss, Mark G.; Peterson, Gregory E.; Harvey, William O.; and Perrin, Randall L., 5,544,484, Cl. 60-397.000.

Peterson, Ivan H.; Hoelle, James S.; Cunningham, Neil F.; and Umney, Michael A., to General Electric Company. Swaged wear sleeve and method. 5,544,849, Cl. 248-74.100.

Petropoulos, Labros S.: *See*—
Morich, Michael A.; and Petropoulos, Labros S., 5,545,996, Cl. 324-318.000.

Petry, Klaus: *See*—
Fischer, Heinz; Scherer, Thomas; Markwart, Michael; and Petry, Klaus, 5,545,084, Cl. 454-76.000.

Petty, Margaret A.: *See*—
Grisar, J. Martin; Petty, Margaret A.; and Bolkenius, Frank, 5,545,660, Cl. 514-458.000.

Petty, Steven J.: *See*—
South, Robert E.; and Petty, Steven J., 5,544,476, Cl. 56-400.070.

Peumans, Willy: *See*—
Gatehouse, Angharad; Hilder, Vaughan; Van Damme, Els; Peumans, Willy; Newell, Christine; and Hamilton, William, 5,545,820, Cl. 800-205.000.

Pfeifer, Thomas M.: *See*—
Gallagher, Dennis M.; Pfeifer, Thomas M.; and Schoonmaker, Richard P., 5,544,579, Cl. 101-91.000.

Pfeiffer, Hans C.; and Stickel, Werner, to International Business Machines Corporation. Electron beam lithography system. 5,545,902, Cl. 250-492.200.

Pfeiffer, Ned C.: *See*—
Campbell, James K.; Pfeiffer, Ned C.; Balderi, Nicola; and Schaefer, Doug G., 5,544,941, Cl. 297-423.450.

Pfeiffer, Thomas, to Alcatel N. V. Mode-locked fiber ring laser. 5,546,414, Cl. 372-18.000.

Pfitzenmaier, Gerhard, to Siemens, Aktiengesellschaft. Antenna/filter combiner. 5,546,057, Cl. 333-134.000.

Pfizer Inc.: *See*—
Hecker, Scott J.; Jefson, Martin R.; and McFarland, James W., 5,545,624, Cl. 514-30.000.
Loose, Leland D.; Lombardino, Joseph G.; and Weiner, Ethan S., 5,545,656, Cl. 514-414.000.
Macor, John E.; and Wythes, Martin J., 5,545,644, Cl. 514-323.000.

Pharmacia AB: *See*—

Fryklund, Linda; Hjertman, Birger; Gustavsson, Marie-Louise; Kaluski, Jacob; Levander, Gustav; Ljungquist, Olle; Ström, Anders; and Virding, Jonas, 5,545,144, Cl. 604-187.000.
Phenix Group, Inc.: *See*—
Lanoie, Louis A., 5,544,437, Cl. 40-334.000.
Phillips, Christopher E.; and Sankar, Narendra, to National Semiconductor Corporation. Partitioned decode circuit for low power operation. 5,546,353, Cl. 365-230.060.
Phillips, Edward H., to Edward H. Phillips-Techo Corp. Method and apparatus for enhancing stability in servo systems comprising hydro-mechanically driven actuators. 5,544,715, Cl. 180-417.000.
Phillips, Eugene: *See*—
Hulderman, Garry N.; Phillips, Eugene; and Swanson, Richard J., 5,545,511, Cl. 430-315.000.
Phillips, Jeffrey O., to High Gear Inc. Lightweight, portable, self-opening, collapsible shelter/camper/storage unit. 5,544,671, Cl. 135-88.140.
Phillips, Matthew L.; and Hollars, Anthony S., to Reebok International Ltd.; and Innovations in Cycling. Inflation device for an inflatable article of manufacture and adaptor therefor. 5,544,670, Cl. 137-224.000.
Phillips Petroleum Company: *See*—
Shaw, James E.; Sattich, William E.; and Efner, Howard F., 5,545,714, Cl. 528-374.000.
Trepka, William J.; Moczygemba, George A.; Stacy, Nathan E.; and Farrar, Ralph C., Jr., 5,545,690, Cl. 525-98.000.
Phoenix Controls Corporation: *See*—
Sharp, Gordon; Dean, Jerome; and Desrochers, Eric, 5,545,086, Cl. 454-238.000.
Piber, Earl T.: *See*—
King, Todd L.; Mading, James E.; and Piber, Earl T., 5,544,856, Cl. 251-129.080.
Picanol N.V.: *See*—
De Ro, Ignace, 5,544,680, Cl. 139-450.000.
Tacq, Jo, 5,544,679, Cl. 139-450.000.
Picker International, Inc.: *See*—
Morich, Michael A.; and Petropoulos, Labros S., 5,545,996, Cl. 324-318.000.
Pickering, Bruce C.: *See*—
Perry, Charles H.; Bauer, Tibor L.; Long, David C.; Pickering, Bruce C.; and Vittori, Pierre C., 5,546,012, Cl. 324-754.000.
Pickering, Samuel M., Jr.; Bloodworth, J. Elmo; and Turner, Donald G., to U.S. Borax, Inc. Process for whitening kaolin. 5,545,599, Cl. 501-146.000.
Picotti, Claudio: *See*—
Robolini, Severo; and Picotti, Claudio, 5,544,516, Cl. 72-235.000.
Pieper, Steven D.: *See*—
Chen, David T.; Pieper, Steven D.; and McKenna, Michael, 5,545,120, Cl. 600-117.000.
Pierce, Michael E., to Intel Corporation. Power down state machine for PCMCIA PC card applications. 5,546,590, Cl. 395-750.000.
Piercey, Montford F.: *See*—
Lin, Chiu-Hong; Haadsma-Svensson, Susanne R.; Piercey, Montford F.; Romero, Arthur G.; and Darlington, William H., 5,545,755, Cl. 564-428.000.
Pierson, Mark V.: *See*—
Gaynes, Michael A.; Oxx, George D.; Pierson, Mark V.; and Zalesinski, Jerzy, 5,545,465, Cl. 428-209.000.
Pies, Michael; Käsbauer, Josef; and Fiege, Helmut, to Bayer Aktiengesellschaft. Process for the hydrodehalogenation of halogenated benzenes. 5,545,779, Cl. 570-204.000.
Pike, Christopher G., to Procter & Gamble Company, The. Rinsing compositions. 5,545,352, Cl. 510-514.000.
Pillay, Gautam: *See*—
Heath, William O.; Gauglitz, Phillip A.; Pillay, Gautam; Bergsman, Theresa M.; Eschbach, Eugene A.; Goheen, Steven C.; Richardson, Richard L.; Roberts, Janet S.; and Schalla, Ronald, 5,545,803, Cl. 588-253.000.
Pinneo, John M., to Crystallume. Diamond film and solid non-diamond particle composite compositions. 5,545,030, Cl. 428-408.000.
Pioneer Electronic Corporation: *See*—
Fukushima, Akio, 5,546,381, Cl. 370-18.000.
Ohsawa, Seiichi; and Yanagisawa, Takuma, 5,546,372, Cl. 369-116.000.
Pioneer Hi-Bred International, Inc.: *See*—
Allen, Rebecca L.; and Lonsdale, David M., 5,545,546, Cl. 435-172.300.
Ambrose, William B.; and Gogerty, Joseph K., 5,545,812, Cl. 800-200.000.
Jensen, Gary L., 5,545,809, Cl. 800-200.000.
Piper, Todd E., 5,545,813, Cl. 800-200.000.
Weber, Gerhart P., 5,545,814, Cl. 800-200.000.
Wong, Raymond S. C.; Grant, Ian; Patel, Jayantilal D.; Parker, Jeff P. K.; and Swanson, Eric B., 5,545,821, Cl. 800-230.000.
Piper, Todd E., to Pioneer Hi-Bred International, Inc. Inbred maize line PHRF5. 5,545,813, Cl. 800-200.000.
Pirahesh, Mir H.: *See*—
Cochrane, Roberta J.; Pirahesh, Mir H.; and Sidle, Richard S., 5,546,576, Cl. 395-600.000.
McPherson, John A., Jr.; Pirahesh, Mir H.; Truong, Tuong C.; and Coyle, Daniel J., Jr., 5,546,570, Cl. 395-600.000.
Piriou, Jean-Pierre; Hermant, Jean-Jacques; and Roussel, Hervé, to UNIR (Ultra Propre Nutrition Industrie Recherche) Association Loi de 1901; and Protial S.A. Ultraclean transportation. 5,544,736, Cl. 198-493.000.
Pitney Bowes Inc.: *See*—
DeFigueiredo, Carlos L., 5,544,874, Cl. 271-2.000.
Gallagher, Dennis M.; Pfeifer, Thomas M.; and Schoonmaker, Richard P., 5,544,579, Cl. 101-91.000.
Hunter, Kevin D.; and Muller, Arno, 5,546,112, Cl. 347-171.000.
Pitsillides, Koullis F.; and Longhurst, John C., to University of California, The Regents of the. Method and apparatus for myocardial wall measurement. 5,544,656, Cl. 128-661.040.
Pitterna, Thomas: *See*—
Maienfisch, Peter; Böger, Manfred; Pitterna, Thomas; and Szczepanski, Henry, 5,545,630, Cl. 514-63.000.
Pittway Corporation: *See*—
Moran, Walter J., III, 5,546,293, Cl. 362-301.000.
Piva, Maria T. Electrical apparatus for destroying surgical instruments. 5,545,869, Cl. 219-68.000.
Plaessmann, Henry; Grossman, William M.; and Olson, Todd E., to Lightwave Electronics Corporation. Multi-pass light amplifier. 5,546,222, Cl. 359-346.000.
Plane Sight, Inc.: *See*—
Pellegrini, John T., 5,544,888, Cl. 473-220.000.
Plant Genetic Systems, N.V.: *See*—
De Greve, Henri M. J.; Salgado, Maria B. L. F.; Van Montagu, Marc C. E.; Vaeck, Mark A.; Zabeau, Marcus F. O.; Leemans, Jan J. A.; and Hofte, Hermanus F. P., 5,545,565, Cl. 435-320.100.
Plasma Technology Corporation: *See*—
Camacho, Salvador L., 5,544,597, Cl. 110-223.000.
Plastiroute S.A.: *See*—
Boldt, Peter C., 5,544,972, Cl. 404-75.000.
Plastofilm Industries, Inc.: *See*—
Moren, Mike; Buck, Todd; and Kizziah, Pat, 5,545,370, Cl. 264-522.000.
Plattner, Jacob J.: *See*—
Kempf, Dale J.; Norbeck, Daniel W.; Erickson, John W.; Sham, Hing Leung; Codacovi, Lynn M.; and Plattner, Jacob J., 5,545,750, Cl. 564-360.000.
Platzer, Stephan J.: *See*—
Wilczak, Wojciech A.; Platzer, Stephan J.; and Siegfried, David L., 5,545,506, Cl. 430-253.000.
Plaue, Serge; Muller, Sylviane; and Van Regenmortel, Marc, to Pasteur Sanofi Diagnostics. Synthetic peptides of the conjugate of ubiquitine and H2A histone. 5,545,718, Cl. 530-327.000.
Pliura, Diana H.; Wiffen, Diane E.; Ashraf, Salman; and Magnin, Anthony A., to Hemosol Inc. Purification of hemoglobin by displacement chromatography. 5,545,328, Cl. 210-635.000.
PLIVA farmaceutska, kemijska, prehrambena i kozmeticka industrija, dionicko drustvo: *See*—
Dumić, Miljenko; Filić, Darko; Vinković, Mladen; Jamnicky, Blanka; and Eškinja, Mirela, 5,545,659, Cl. 514-450.000.
Plum, Dennis L.: *See*—
Drew, Robert M.; Plum, Dennis L.; and Walmsley, Graham M., 5,546,541, Cl. 395-200.150.
Plume, Steve H.: *See*—
Clowers, Earl R.; Plume, Steve H.; and Smith, John C., 5,545,080, Cl. 451-359.000.
Plummer, Walter A., III; Shrader, Vernon L.; and Klein, Laurence R., to Zippertubing Company, The. Quick access electrical shielding chamber. 5,545,844, Cl. 174-35.0MS.
Podlaseck, Stanley; Shumaker, Gene P.; and Rimer, Paul D., to Martin Marietta Corporation. Electromagnetic-attenuating coating materials. 5,545,474, Cl. 428-288.000.
Pohl, Jens G.: *See*—
Conru, Harold W.; Froebel, Francis E.; Gregoritsch, Albert J., Jr.; Rieley, Sheldon C.; Starr, Stephen G.; Uttecht, Ronald R.; White, Eric J.; and Pohl, Jens G., 5,545,921, Cl. 257-669.000.
Pohl, Marsha: *See*—
Malatesta, James; and Pohl, Marsha, 5,544,758, Cl. 209-584.000.
Pohlenz, Charles: *See*—
Boucher, Didier; and Pohlenz, Charles, 5,546,361, Cl. 367-158.000.
Polaroid Corporation: *See*—
Fantone, Stephen D., 5,546,487, Cl. 385-33.000.
Polastre, Robert J.: *See*—
Ichioka, Yoshikazu; Jenkins, Leslie C.; Kimura, Shinichi; Polastre, Robert J.; Troutman, Ronald R.; and Wisnieff, Robert L., 5,546,013, Cl. 324-770.000.
Poling, William F., to Intel Corporation. Method and system for updating files of a plurality of storage devices through propogation of files over a nework. 5,546,539, Cl. 395-200.050.
Pollack, Frederick J.: *See*—
Cobbley, David A.; Valerio, James A.; and Pollack, Frederick J., 5,546,538, Cl. 395-200.010.
Pollmeier, Werner, to Siemens Nixdorf Informationssysteme Aktiengesellschaft. Circuit arrangement for driving an MOS field-effect transistor. 5,546,043, Cl. 327-427.000.
Pollutro, Dennis C.: *See*—
Cynan, T. F.; and Pollutro, Dennis C., 5,544,921, Cl. 283-70.000.
Polytronics Engineering Ltd.: *See*—
Noworolski, Zbigniew; Sterescu, Vlad; Lee, Albert; Halton, Padraig; and Noworolski, Jan M., 5,546,003, Cl. 324-434.000.
Pontius, Dale E., to International Business Machines Corporation. Bandgap reference generator having regulation and kick-start circuits. 5,545,978, Cl. 323-313.000.
Pontzer, Carol H.: *See*—

Johnson, Howard M.; Pontzer, Carol H.; and Griggs, Nathan D., 5,545,716, Cl. 530-324.000.
Poole, Donald R.; Holland, Gary F.; Wolf, Nicholas A.; and Wilson, Michael A., to Olin Corporation. Thermally stable gas generating composition. 5,545,272, Cl. 149-48.000.
Poole, Gregory S.: *See*—
Bell, Cecil R.; Moyer, Charles R.; Poole, Gregory S.; and Silvers, Kenneth B., 5,544,603, Cl. 112-475.120.
Poplawski, Daniel S.; and McGinley, James W., to Methode Electronics, Inc. Removable optoelectronic transceiver module with potting box. 5,546,281, Cl. 361-752.000.
Popov, Leonid: *See*—
Terziev, Nicola; and Popov, Leonid, 5,544,627, Cl. 123-53.100.
Porex Technologies Corp.: *See*—
Wingo, James P.; and Miller, John R., 5,545,226, Cl. 623-16.000.
Porter-Cable Corporation: *See*—
Clowers, Earl R.; Plume, Steve H.; and Smith, John C., 5,545,080, Cl. 451-359.000.
Poss, Michael A., to E. R. Squibb & Sons, Inc. Diol sulfonamide and sulfinyl renin inhibitors. 5,545,838, Cl. 564-89.000.
Poston, Ricky L.: *See*—
Cline, Troy L.; Isensee, Scott H.; Poston, Ricky L.; and Werner, Jon H., 5,546,520, Cl. 395-155.000.
Potgieter, Jacobus L. Cookware. 5,544,568, Cl. 99-340.000.
Potter, Basil E.; and Potter, Marc A., to Basil E. Potter & Associates, Inc. Encoding method for compressing a tabular database by selecting effective compression routines for each field and structure of partitions of equal sized records. 5,546,575, Cl. 395-600.000.
Potter, Marc A.: *See*—
Potter, Basil E.; and Potter, Marc A., 5,546,575, Cl. 395-600.000.
Potts, Walter H.: *See*—
Wurzburg, Henry; and Potts, Walter H., 5,546,591, Cl. 395-750.000.
Pouliot, Nicole: *See*—
Gagnon, Daniel; Pouliot, Nicole; Therrien, Michel; and Laperrière, Luc, 5,545,898, Cl. 250-369.000.
Poullain, Serge: *See*—
Estop, Pascal; Poullain, Serge; and Verhaege, Thierry, 5,545,932, Cl. 307-104.000.
Poulose, Ayrookaran J.: *See*—
Kolattukudy, Pappachan; and Poulose, Ayrookaran J., 5,545,547, Cl. 435-183.000.
Powell, Joseph B.; Slaugh, Lynn H.; Forschner, Thomas C.; Semple, Thomas C.; and Weider, Paul R., to Shell Oil Company. Cobalt-catalyzed process for preparing 1,3-propanediol using a lipophilic bidentate phosphine promotor. 5,545,766, Cl. 568-862.000.
Powell, Joseph B.: *See*—
Slaugh, Lynn H.; Powell, Joseph B.; Forschner, Thomas C.; Semple, Thomas C.; and Weider, Paul R., 5,545,765, Cl. 568-862.000.
Weider, Paul R.; Powell, Joseph B.; Slangh, Lynn H.; Forschner, Thomas C.; and Semple, Thomas C., 5,545,767, Cl. 568-867.000.
PPG Industries, Inc.: *See*—
Rardon, Daniel E.; and McCollum, Gregory J., 5,545,696, Cl. 525-375.000.
Stengel, Sandra R.; Eisenmann, George; and Friedrich, Sharon M., 5,545,824, Cl. 524-590.000.
Prager, Jay M.: *See*—
Vinciarelli, Patrizio; and Prager, Jay M., 5,546,065, Cl. 336-84.00C.
Pratt, Roy E.: *See*—
Nelson, Gerald V.; Nongbri, Govanon; Pratt, Roy E.; Sherwood, David E., Jr.; and Dai, Pei-Shing E., 5,545,602, Cl. 502-314.000.
Precision Automation Systems, Inc.: *See*—
Osborne, Robert E.; and Garlow, David A., 5,545,967, Cl. 320-2.000.
Preferred Packaging Systems, Inc.: *See*—
Harrison, Lewis I.; and Harrison, Marjorie S., 5,544,468, Cl. 53-390.000.
Preh-Werke GmbH & Co. KG: *See*—
Bauer, Karl-Heinz; Eckert, Gerold; Maisch, Edgar; and Rüttiger, Anton, 5,545,864, Cl. 200-283.000.
President and Fellows of Harvard College: *See*—
Hayes, Wilson C.; Robinovitch, Stephen N.; and McMahon, Thomas A., 5,545,128, Cl. 602-61.000.
Pressler, Wilfried: *See*—
Papenfhus, Theodor; Kanschik-Conradsen, Andreas; and Pressler, Wilfried, 5,545,768, Cl. 568-938.000.
Prete, Ralph; Brunstein, Vladimir; and Kazmirski, Todd J., to Rotron Incorporated. Electrical power converter, power supply, and inverter with series-connected switching circuits. 5,546,295, Cl. 363-17.000.
Prevorsek, Dusan C.; Lem, Kwok W.; Li, Hsin L.; and Kwon, Young D., to AlliedSignal Inc. Constructions having improved penetration resistance. 5,545,455, Cl. 428-76.000.
Pribula, David T.: *See*—
Aulet, Nancy R.; Bogdan, David C.; Hussain, Muhammed I.; Hutt, George W.; Pearl, Donald L.; and Pribula, David T., 5,546,325, Cl. 364-525.000.
Prill, Mark E.: *See*—
Tomasi, Peter A.; Prill, Mark E.; and Cahill, Stephen V., 5,546,380, Cl. 370-17.000.
Prince Corporation: *See*—
Snyder, Ronald P.; and Kalkman, Jesse, 5,544,927, Cl. 296-97.900.
Van Order, Kim L.; and Smith, Nels R., 5,546,288, Cl. 362-74.000.
Prins, Garrett P.: *See*—
Cederwall, Philip J.; Prins, Garrett P.; and Leuven, Vern V., 5,545,010, Cl. 416-145.000.
Procter & Gamble Company, The: *See*—
Baker, Ellen S.; Bodet, Jean-Francois; Demeyere, Hugo J. M.; Hartman, Frederick A.; Hubesch, Bruno A.; Mermelstein, Robert; Taylor, Lucille F.; and Wahl, Errol H., 5,545,350, Cl. 510-517.000.
Hall, Bonnie J.; Baur, Julie A.; and Deckner, George E., 5,545,407, Cl. 424-401.000.
Honkonen, Robert S., 5,545,681, Cl. 524-115.000.
MacBeath, Fiona S.; and Park, John S., 5,545,346, Cl. 510-514.000.
Ofosu-Asante, Kofi, 5,545,354, Cl. 510-237.000.
Pike, Christopher G., 5,545,352, Cl. 510-514.000.
Wahl, Errol H.; Bacon, Dennis R.; Baker, Ellen S.; Bodet, Jean-Francois; Burns, Michael E.; Demeyere, Hugo J. M.; Hensley, Charles A.; Mermelstein, Robert; Severns, John C.; Shaw, John H., Jr.; Sikloši, Michael P.; Vogel, Alice M.; and Watson, Jeffrey W., 5,545,340, Cl. 510-517.000.
Products Finishing Corporation: *See*—
Esposito, Patsy, 5,544,910, Cl. 280-654.000.
Proebsting, Robert J., to Townsend and Townsend Khourie and Crew. Fast voltage equilibration of differential data lines. 5,546,338, Cl. 365-181.000.
Proebsting, Robert J.; and Heald, Raymond A., to Intergraph Corporation. Apparatus for writing data to and reading data from a multi-port RAM in a single clock cycle. 5,546,569, Cl. 395-550.000.
Proffitt, John: *See*—
Ausich, Rodney L.; Brinkhaus, Friedhelm L.; Mukharji, Indrani; Proffitt, John; Yarger, James; and Yen, Huei-Che B., 5,545,816, Cl. 800-205.000.
Progressive Games, Inc.: *See*—
Jones, Daniel A.; and Suttle, James P., 5,544,893, Cl. 273-309.000.
Promer, Inc.: *See*—
Malatesta, James; and Pohl, Marsha, 5,544,758, Cl. 209-584.000.
Prompac Industries, Inc.: *See*—
Maida, Richard C.; and Sferlazza, Joseph, 5,544,473, Cl. 53-460.000.
Proprietary Technology, Inc.: *See*—
Bartholomew, Donald D., 5,544,923, Cl. 285-242.000.
Prosper, Jacob: *See*—
Atos, Sheldon; and Prosper, Jacob, 5,544,417, Cl. 30-276.000.
Prota, Giuseppe: *See*—
Lee, Caroline M.; Green, Martin R.; and Prota, Giuseppe, 5,545,399, Cl. 424-59.000.
Protial S.A.: *See*—
Piriou, Jean-Pierre; Hermant, Jean-Jacques; and Roussel, Hervé, 5,544,736, Cl. 198-493.000.
Pruchniewicz, Edward I.: *See*—
Dowler, Glyn W.; and Pruchniewicz, Edward I., 5,544,769, Cl. 215-227.000.
Pruehs, Allen V.: *See*—
Robinson, Darrell; Pruehs, Allen V.; and Williams, John, 5,546,269, Cl. 361-660.000.
Prusinski, Ronald G.: *See*—
Jasper, William C., II; Middleton, Cheryl S.; and Prusinski, Ronald G., 5,545,878, Cl. 219-541.000.
Pudleiner, Heinz: *See*—
Köhler, Burkhard; Pudleiner, Heinz; and Horn, Klaus, 5,545,692, Cl. 525-146.000.
Pugach, Joseph: *See*—
Dawson, Bryan T.; and Pugach, Joseph, 5,545,761, Cl. 568-342.000.
Pugh, Charles: *See*—
Carroll, Sean B.; Firca, Joseph R.; Pugh, Charles; and Padhye, Nisha V., 5,545,721, Cl. 530-391.700.
Puletti, Paul P.: *See*—
Koubek, Timothy C.; Puletti, Paul P.; and Wieczorek, Joseph, Jr., 5,545,472, Cl. 428-261.000.
Pullman Industries, Inc.: *See*—
Walworth, Tom M., Jr.; Jurica, Joseph J.; Weilemann, Donald E.; and Turner, Joseph, 5,544,932, Cl. 296-183.000.
Quaghebeur, Theo; and Loocke, Walter Van, to Sandoz Ltd. Herbicidal compositions comprising metolachlor and triketone herbicides. 5,545,607, Cl. 504-130.000.
Qualcomm Incorporated: *See*—
Sih, Gilbert C.; and Antonio, Franklin P., 5,546,459, Cl. 379-411.000.
Quan, Mimi L.: *See*—
Duncia, John J. V.; Ensinger, Carol L.; Olson, Richard E.; Quan, Mimi L.; Santella, Joseph B., III; and Vanatten, Mary K., 5,545,651, Cl. 514-381.000.
Quantum Corporation: *See*—
Che, Xiaodong, 5,546,253, Cl. 360-113.000.
Queneau, Paul B.: *See*—
Coltrinari, Enzo L.; Downey, Jerome P.; Hazen, Wayne C.; and Queneau, Paul B., 5,544,859, Cl. 251-368.000.
Quick Technologies Ltd.: *See*—
Orbach, Zvi, 5,545,904, Cl. 257-209.000.
Quickie Designs Inc.: *See*—
Stevens, Rex W., 5,544,940, Cl. 297-411.280.
Quinn, Kevin P.: *See*—
Reddy, Chitranjan N.; and Quinn, Kevin P., 5,545,934, Cl. 307-130.000.
Quinn, Kraig A.; Jedlicka, Josef E.; and Ormond, Brian T., to Xerox Corporation. Assembly for mounting semiconductor chips in a full-width-array image scanner. 5,545,913, Cl. 257-443.000.
Quinn, Robert D.: *See*—

VOL 1189 ISS 2 AG 13 1996 UMI

Jones, Kyle B.; Lehnert, Robert A.; McInnes, Ian D.; Quinn, Robert D.; Sisley, Steven E.; and Temus, Charles J., 5,546,436, Cl. 376-272.000.

Quinn Wise & Associates Inc.: *See*—
Gabriel-Lacki, Christopher; and Krysztofowicz, Andrzej, 5,544,864, Cl. 256-25.000.

Quint, Jessica L.; and Robinson, Joel W., to Virtual Vision. Head mounted display system with light blocking structure. 5,546,099, Cl. 345-8.000.

Quinton Instrument Company: *See*—
Densmore, Bruce D.; Hass, Lester A.; Rotunda, John T.; and Fissel, Gregory W., 5,545,112, Cl. 482-54.000.

R. E. D. Nichols & Associates: *See*—
Nichols, Richard E. D., 5,544,794, Cl. 224-667.000.

R. L. Craig, Inc.: *See*—
Craig, Richard L., 5,544,860, Cl. 254-7.00R.

Raatz, Donovan L.; and Feng, Taisheng, to Motorola, Inc. Integrated circuit memory having a self-timed write pulse independent of clock frequency and duty cycle. 5,546,355, Cl. 365-233.000.

Rabe, Jeffrey L.: *See*—
Chen, Ray; and Rabe, Jeffrey L., 5,546,548, Cl. 395-296.000.

Rabii, Khosro M.: *See*—
Bestler, Caitlin B.; and Rabii, Khosro M., 5,546,119, Cl. 348-10.000.

Rabinovitz, Marco; and Fisher, Joyce M., to United States of America, Health and Human Services. Method of inhibiting transformed cells. 5,545,639, Cl. 514-292.000.

Racal-Datacom, Limited: *See*—
Boal, John H.; and Newton, Mark K., 5,546,392, Cl. 370-60.100.

Rachor, Lloyd A.: *See*—
Agrawal, Mukul; Orrock, James E.; Patiath, Pradip K.; and Rachor, Lloyd A., 5,546,301, Cl. 364-140.000.

Racino, Gregory A.: *See*—
Deems, Vincent B.; Racino, Gregory A.; Feddeler, James R.; and Shiff, Victor E., 5,546,588, Cl. 395-750.000.

Racioppi, Stephen G., to Microtest, Inc. Microbial transport media. 5,545,555, Cl. 435-253.600.

Radel, Harry; and Vick, Christian, to Dolmar GmbH. Carburetor. 5,545,357, Cl. 261-35.000.

Radian Corporation: *See*—
Peterman, K. Russell; and Smith, Michael V., 5,544,525, Cl. 73-170.130.

Radio Frequency Systems, Inc.: *See*—
Nelson, James W., 5,545,059, Cl. 439-583.000.

Raehse, Wilfried; Beck, Wilhelm; Jung, Dieter; and Sonnemann, Dieter, to Henkel Kommanditgesellschaft auf Aktien. Process for the production of granules suitable as wetting agents, detergents and/or cleaning products. 5,544,427, Cl. 34-372.000.

Rahnenführer, Eckhard: *See*—
Thiesen, Stefan; Rahnenführer, Eckhard; and Köhler, Josef, 5,544,587, Cl. 102-431.000.

Rainey, Ronald S.; Cambbell, Ian P.; Fallas, Pablo M. A.; and Solano, Edgar N., to Barrera, Roberto Gonzales. Methods for removing outer layers of palm stalks from palm heart. 5,545,421, Cl. 426-481.000.

Raith, Alex K., to Ericsson GE Mobile Communications, Inc. Communication management technique for a radiotelephone system including microcells. 5,546,443, Cl. 379-59.000.

Raith, Krister A.; and Dent, Paul W., to Ericsson Inc. Method of and apparatus for selective resynchronization in a digital cellular communications system. 5,546,464, Cl. 380-48.000.

Rakestraw, David: *See*—
Pentoney, Stephen L., Jr.; Lew, Clarence Y.; and Rakestraw, David, 5,545,901, Cl. 250-458.100.

Ramakrishnan, Kadangode K.: *See*—
Yang, Henry S.; Ramakrishnan, Kadangode K.; Daniely, Gady; and Wertheimer, Aviad, 5,546,543, Cl. 395-250.000.

Ramanujam, Parthasarathy; Shin, Charlie C.; Fermelia, Louis R., Jr.; and Stambaugh, Andrew J., to Hughes Aircraft Company. Shaped dual reflector antenna system for generating a plurality of beam coverages. 5,546,097, Cl. 343-781.00R.

Ramos, Sergio; Hall, John T.; Tanzer, Herbert J.; and Severns, Rudy, to Delco Electronics Corp. Air/liquid cooled metallic turn for high frequency high power charging transformers. 5,545,966, Cl. 320-2.000.

Ramsey, Timothy B.: *See*—
Roy, Bryan A.; Ingram, Joseph D.; Arrowsmith, Hubert W.; and Ramsey, Timothy B., 5,545,796, Cl. 588-4.000.

Randall, Carol C. Portable holder for tissues. 5,544,750, Cl. 206-494.000.

Randall, Guy; and Calvin, Gregory P., to National Steel Corporation. Blow pipe and gas lance for blast furance. 5,544,868, Cl. 266-47.000.

Raney, Tommy; and King, Julius D., Jr., to Cycolor Imaging, Inc. Pressure developer apparatus. 5,546,154, Cl. 354-304.000.

Ranford, Alan B.: *See*—
Schenk, Robert W.; Ranford, Alan B.; Ray, Shawn C.; Sunderland, Richard A.; and Kinghorn, Curtis D., 5,545,174, Cl. 606-182.000.

Rang, Harald: *See*—
Kirstgen, Reinhard; Oberdorf, Klaus; Sauter, Hubert; Bayer, Herbert; Grammenos, Wassilios; Rang, Harald; Harries, Volker; Lorenz, Gisela; and Ammermann, Eberhard, 5,545,664, Cl. 514-521.000.

Rao, V. N. Mallikarjuna, to E.I. Du Pont de Nemours and Company. Process for manufacture of high purity 1, 1-dichlorotetrafluoroethane. 5,545,770, Cl. 570-151.000.

Rao, V. N. Mallikarjuna, to Du Pont de Nemours, E. I., and Company. Process for the manufacture of 1,1,1,3,3,3-hexafluoropropane. 5,545,774, Cl. 570-168.000.

Raphael, Ian P. Detector system using extremely low power to sense the presence or absence of an inert or hazardous fuild. 5,546,009, Cl. 324-694.000.

Rardon, Daniel E.; and McCollum, Gregory J., to PPG Industries, Inc. Etherified alkyl or arylcarbamylmethylated aminotriazines and curable compositions containing the same. 5,545,696, Cl. 525-375.000.

Rasky, Daniel J.; and Kourtides, Demetrius A., to United States of America, National Aeronautics and Space Administration. Hybrid flexible and rigid ceramic insulation. 5,545,273, Cl. 156-60.000.

Rasky, Phillip D.: *See*—
Chiasson, Gregory M.; Rasky, Phillip D.; and Baum, Kevin L., 5,546,429, Cl. 375-341.000.

Rasmussen, Poul B.: *See*—
Molin, Søren; Gerdes, Kenn A.; Rasmussen, Poul B.; and Andersson, Poul K., 5,545,541, Cl. 435-172.300.

Rasneur, Bernard: *See*—
Boilot, Jean-Pierre; Boncoeur, Marcel; Rasneur, Bernard; and Renoult, Olivier, 5,545,427, Cl. 427-6.000.

Rauchwerger, George P., to Flowline Inc. Guarded capacitance probe and related measurement circuit. 5,546,005, Cl. 324-688.000.

Raufast, Charles: *See*—
Morterol, Frederic R. M. M.; and Raufast, Charles, 5,545,378, Cl. 422-132.000.

Rava, Richard P.; Fodor, Stephen P. A.; and Trulson, Mark, to Affymax Technologies N.V. Methods for making a device for concurrently processing multiple biological chip assays. 5,545,531, Cl. 435-6.000.

Ravencroft, Gary N. Shaft gripper for pulling an arrow. 5,544,926, Cl. 294-1.100.

Ray, Robert W., Jr.: *See*—
Giamati, Michael J.; Ray, Robert W., Jr.; and Sluss, Terry L., 5,544,845, Cl. 244-134.00E.

Ray, Shawn C.: *See*—
Schenk, Robert W.; Ranford, Alan B.; Ray, Shawn C.; Sunderland, Richard A.; and Kinghorn, Curtis D., 5,545,174, Cl. 606-182.000.

Ray, William F.: *See*—
Stephenson, John M.; and Ray, William F., 5,545,964, Cl. 318-701.000.

Raynor, Joe W. Device for expediting the cutting of boxes. 5,544,997, Cl. 414-412.000.

Record, David W.: *See*—
Broderick, Kevin B.; Song, Joo H.; Townsend, Donald J.; Record, David W.; and Tyrpin, Henry T., 5,545,416, Cl. 426-3.000.
Tyrpin, Henry T.; Broderick, Kevin B.; and Record, David W., 5,545,415, Cl. 426-3.000.

Recourt, Patrick: *See*—
Dick, Sami; Recourt, Patrick; and Laurenceau, Serge, 5,545,033, Cl. 431-181.000.

Redd, Harold J.: *See*—
Florian, Michael H.; Redd, Harold J.; Hogue, David R.; and Bonebright, Rodney K., 5,546,050, Cl. 330-282.000.

Reddy, Chitranjan N.; and Quinn, Kevin P., to Alliance Semiconductor Corporation. Voltage clamp circuit. 5,545,934, Cl. 307-130.000.

Reebok International Ltd.: *See*—
Phillips, Matthew L.; and Hollars, Anthony S., 5,544,670, Cl. 137-224.000.

Reed, Lehman T. Retrievable sealing plug coil tubing suspension device. 5,544,706, Cl. 166-379.000.

Reed, Michael A.: *See*—
Richey, Lindell C.; Hook, Jeffrey S.; Reed, Michael A.; and Yatka, Robert J., 5,545,417, Cl. 426-5.000.

Regensburg, Michael W.: *See*—
Cooley, David M.; DiGiovanni, Joseph J.; Kaewell, John D.; Kurtz, Scott D.; Lemmo, Mark A.; Regensburg, Michael W.; Vessal, David; and Johns, Eric, 5,546,383, Cl. 370-50.000.

Reid, Randall H. Self-powered heat transfer fan. 5,544,488, Cl. 62-3.700.

Rein, Russell J.: *See*—
Canfield, Thomas F.; Mollenkopf, Lloyd C.; Rein, Russell J.; and Jilk, Larry M., 5,544,593, Cl. 108-50.000.

Reinarts, Timothy J.: *See*—
Caswell, Ty J.; Davis, Jeffrey P.; Johnson, Gregory R.; Reinarts, Timothy J.; and Sun, Ting, 5,546,448, Cl. 379-142.000.

Reinehr, Dieter; and Borsos, Elek, to Ciba-Geigy Corporation. Process for the preparation of 1,3,5-triazines. 5,545,836, Cl. 544-216.000.

Reinemuth, Otto; and Jäger, Kurt, to Firma Carl Freudenberg. Holder for vibration-decoupled fastening of a substantially flat machine part. 5,544,871, Cl. 267-293.000.

Reitz, Gary A.: *See*—
Nakatsu, Tetsuo; Green, Carter B.; Reitz, Gary A.; and Kang, Raphael K. L., 5,545,424, Cl. 426-536.000.

Reliant Technologies, Inc.: *See*—
Black, Michael; and Lemberg, Vladimir, 5,546,214, Cl. 359-203.000.

Renaldo, Alfred F.: *See*—
Doss, Saad K.; McKean, Dennis R.; Renaldo, Alfred F.; and Wilson, Robert J., 5,545,307, Cl. 205-122.000.

Renaudineau, Joel: *See*—
Keita, Gabriel; and Renaudineau, Joel, 5,545,828, Cl. 526-72.000.

Renkema, Kornelis: *See*—
Lust, Victor; Martin, W. Anthony; Renkema, Kornelis; and Van Der Meulen, Wybren, 5,545,366, Cl. 264-225.000.

Renoult, Olivier: *See*—
Boilot, Jean-Pierre; Boncoeur, Marcel; Rasneur, Bernard; and Renoult, Olivier, 5,545,427, Cl. 427-6.000.

Renquist, Stephanie L.: *See*—
Marschner, Jamie J.; and Renquist, Stephanie L., 5,546,304, Cl. 364-419.040.

Rensselaer Polytechnic Institute: *See*—
Saulnier, Gary J.; Gisser, David G.; Newell, Jonathan C.; Cook, Raymond D.; Goble, John C.; and Isaacson, David, 5,544,662, Cl. 128-734.000.

Repinski, Gregory A.: *See*—
Schneider, Erika; Linz, Anton M.; and Repinski, Gregory A., 5,545,995, Cl. 324-318.000.

Research Foundation of State University of New York, The: *See*—
Albert, Mitchell S.; Balamore, Dilip; Cates, Gordon D., Jr.; Driehuys, Bastiaan; Happer, William; Saam, Brian; and Wishnia, Arnold, 5,545,396, Cl. 424-93.000.

Ressl, Charles T.: *See*—
Lawrence, Roger R.; Micklich, Frank T.; Ressl, Charles T.; and Sechrist, Paul A., 5,545,312, Cl. 208-152.000.

Reuss, Carolyn K.: *See*—
Grosskopf, Joseph R.; Niaz, Hasan S.; Reuss, Carolyn K.; Shih, Jerry C.; and Watson, Paul T., 5,546,574, Cl. 395-600.000.

Reutemann, Werner: *See*—
Hammer, Hans; and Reutemann, Werner, 5,545,757, Cl. 564-475.000.

RF Monolithics, Inc.: *See*—
Wright, Peter V., 5,545,940, Cl. 310-313.00D.

Rheinmetall Industrie GmbH: *See*—
Thiesen, Stefan; Rahnenführer, Eckhard; and Köhler, Josef, 5,544,587, Cl. 102-431.000.

Rhoades, Charles S.: *See*—
Chen, Jian; Papanu, James S.; Mak, Steve S. Y.; Ish-Shalom, Carmel; Hsieh, Peter; Lau, Wesley G.; Rhoades, Charles S.; Shieh, Brian; Latchford, Ian S.; Williams, Karen A.; and Yu-Wang, Victoria, 5,545,289, Cl. 156-643.100.

Rhodes, Ken; Coelho, Rohan; Frank, Davis; and Bender, Blake, to Intel Corporation. Method and apparatus for displaying an image in a windowed environment. 5,546,103, Cl. 345-119.000.

Ribar, George R., Jr.: *See*—
Santos, Esteban; and Ribar, George R., Jr., 5,546,265, Cl. 361-93.000.

Rich, Stephen E., to International Business Machines Corporation. Rotating priority selection logic circuit. 5,546,545, Cl. 395-291.000.

Richards, Edwin A.; Balch, David J.; and Atherton, Howard, to Vickers Shipbuilding & Engineering Ltd.; and Royal Ordinance PLC. Primer cartridge leader for guns. 5,544,563, Cl. 89-24.000.

Richardson, John A., to Ford Motor Company. Locking frustrum nut. 5,544,991, Cl. 411-237.000.

Richardson, Richard J.; and Crown, Charles E., to Anthony's Manufacturing Company, Inc. Foam rail door. 5,544,454, Cl. 52-171.100.

Richardson, Richard L.: *See*—
Heath, William O.; Gauglitz, Phillip A.; Pillay, Gautam; Bergsman, Theresa M.; Eschbach, Eugene A.; Goheen, Steven C.; Richardson, Richard L.; Roberts, Janet S.; and Schalla, Ronald, 5,545,803, Cl. 588-253.000.

Richart, Robert B.: *See*—
Hu, Chung-You; Richart, Robert B.; Garg, Shyam G.; and Banerjee, Sanjay K., 5,546,340, Cl. 365-185.300.

Richey, Lindell C.; Hook, Jeffrey S.; Reed, Michael A.; and Yatka, Robert J., to Wm. Wrigley Jr. Company. Natural carbohydrate gum hydrolyzate coated chewing gum. 5,545,417, Cl. 426-5.000.

Richiuso, Leonard: *See*—
Baxter, Dennis E.; and Richiuso, Leonard, 5,546,147, Cl. 354-187.000.

Richmond, James W., to Emerson Electric Co. Clog resistant water valve inlet screen with ribs. 5,545,318, Cl. 210-232.000.

Ricoh Company, Ltd.: *See*—
Fujitaka, Junichi, 5,544,534, Cl. 73-862.230.
Hanaoka, Katsunari, 5,545,925, Cl. 257-755.000.
Hart, Peter; and Graham, Jamey, 5,546,502, Cl. 395-12.000.
Hayashi, Masayuki; Mitekura, Yoshihiro; Kanaya, Koichi; Terao, Masato; Tagawa, Toshiya; Tomidokoro, Nobuaki; Kitayama, Masahiro; Kizaki, Osamu; Kawada, Yasuo; Nakahara, Kazuyuki; Harada, Tomofumi; and Hashimoto, Yasunari, 5,546,164, Cl. 355-204.000.
Iida, Toru; Ohashi, Michihito; Sakai, Yoshihiro; Kuramoto, Shin-ichi; Chiba, Shunichi; Asahina, Yasuo; and Tomita, Junko, 5,545,381, Cl. 422-186.000.
Suzuki, Seizo, 5,546,216, Cl. 359-216.000.

Ricoh Corporation: *See*—
Hart, Peter; and Graham, Jamey, 5,546,502, Cl. 395-12.000.

Ricoh Research Institute of General Electronics Co., Ltd.: *See*—
Hanaoka, Katsunari, 5,545,925, Cl. 257-755.000.

Ridenour, Ralph G.; and Kerr, Dennis W., to Universal Enterprises, Inc. Tube fitting assembly method. 5,544,406, Cl. 29-520.000.

Ridgway, Michael: *See*—
Earle, Anthony; Glover, Edward C. T. S.; and Ridgway, Michael, 5,546,153, Cl. 354-298.000.

Rieley, Sheldon C.: *See*—
Conru, Harold W.; Froebel, Francis E.; Gregoritsch, Albert J., Jr.; Rieley, Sheldon C.; Starr, Stephen G.; Uttecht, Ronald R.; White, Eric J.; and Pohl, Jens G., 5,545,921, Cl. 257-669.000.

Riggs, William F.; and Wheeler, Thomas A., to Baker Hughes Incorporated. Use of stearic acid esters of polypropylene glycol to control foam. 5,545,351, Cl. 252-321.000.

Riley, James E.: *See*—
Topouzian, Daron; and Riley, James E., 5,544,726, Cl. 188-264.00A.

Rimer, Paul D.: *See*—
Podlaseck, Stanley; Shumaker, Gene P.; and Rimer, Paul D., 5,545,474, Cl. 428-288.000.

Ripberger, Richard A.: *See*—
Allen, Vincent K.; Goncharsky, Robert S.; and Ripberger, Richard A., 5,546,557, Cl. 395-438.000.

Riso Kagaku Corporation: *See*—
Takahashi, Yasuhiro, 5,544,580, Cl. 101-118.000.

Ristic, Ljubisa; Koury, Daniel N.; Schmiesing, John E.; Gutteridge, Ronald J.; and Hughes, Henry G., to Motorola, Inc. Electronic device enclosure including a conductive cap and substrate. 5,545,912, Cl. 257-417.000.

Ritter, Robert A. Chemical destruction of toxic organic compounds. 5,545,799, Cl. 588-200.000.

Rituper, Rafael: *See*—
Gärtner, Horst; Hollmann, Friedrich; Rituper, Rafael; and Block, Bodo, 5,545,260, Cl. 134-41.000.

Rivera, Lester: *See*—
Doyle, Richard C.; and Rivera, Lester, 5,546,263, Cl. 361-50.000.

Rivern, Louis, to Giant Factories Inc. Flue baffle for gas-fired hot water tanks. 5,544,625, Cl. 122-155.200.

Rizzolio, Michele C.: *See*—
Fu, Roger C.; Leung, De-Mei; Fleitman, Jeffrey S.; Rizzolio, Michele C.; and Miksztal, Andrew R., 5,545,637, Cl. 514-233.500.

Roach, Peter O., Jr.; Comer, Edward I.; Link, Charles M., II; and Laster, Maurice S., to BellSouth Corporation. Methods and apparatus for communicating data via a cellular network control channel. 5,546,444, Cl. 379-59.000.

Robers, Kevin J.; Bretl, Richard A.; Gabbey, Lawrence W.; Kerkman, William J.; and Kersher, Tod T., to Modine Manufacturing Company. Oil cooler with a self-fastening, self-orienting pressure relief valve. 5,544,699, Cl. 165-283.000.

Robert Bosch GmbH: *See*—
Boeck, Cornelius; and Fuchs, Rudolf, 5,545,077, Cl. 451-311.000.
Burg, Andreas; and Schmitt, Johannes, 5,544,950, Cl. 303-165.000.
Friese, Karl-Hermann; Gruenwald, Werner; Stahl, Roland; de la Prieta, Claudio; Schneider, Gerhard; and Neumann, Harald, 5,545,301, Cl. 204-425.000.
Haussecker, Walter, 5,546,014, Cl. 324-772.000.
Maier, Stefan; and Hommel, Jochen, 5,544,514, Cl. 72-75.000.
Mueller, Elmar; and Kunz, Dieter, 5,544,956, Cl. 303-196.000.
Peter, Cornelius; Seiler, Hartmut; AAB, Volker; and Haderer, Guenter, 5,545,961, Cl. 318-647.000.
Schmidt, Guenther; and Schmidt, Klaus, 5,544,948, Cl. 303-122.110.
Schmitt, Johannes; Burg, Andreas; and Donath, Ralf, 5,544,949, Cl. 303-140.000.
Senger, Karl-Heinz; Keuper, Gerhard; and Bäuerle, Peter, 5,545,106, Cl. 477-43.000.
Strohl, Willi; and Lust, Rainer, 5,545,017, Cl. 417-423.700.
Zeller, Thomas; Zieger, Detlev; and Hönig, Günter, 5,544,634, Cl. 123-399.000.

Roberts, George T.; Hess, Kathleen L.; Nott, Sepideh H.; Chu, Michael S. H.; and Chin, Yem, to Texas Petrodet, Inc. Controlled deployment of a medical device. 5,545,209, Cl. 623-1.000.

Roberts, Janet S.: *See*—
Heath, William O.; Gauglitz, Phillip A.; Pillay, Gautam; Bergsman, Theresa M.; Eschbach, Eugene A.; Goheen, Steven C.; Richardson, Richard L.; Roberts, Janet S.; and Schalla, Ronald, 5,545,803, Cl. 588-253.000.

Roberts, Kenneth L.: *See*—
Jailor, John; Frederick, William H.; Umbach, Steven R.; Graham, Scott R.; Roberts, Kenneth L.; and Metzger, Eric R., 5,544,385, Cl. 15-350.000.

Roberts, Ralph J. Portable shower/multi use stall. 5,544,369, Cl. 4-599.000.

Roberts, Randall K., to Otis Elevator Company. Method and apparatus for adjusting an elevator car based on stored horizontal displacement and acceleration information. 5,544,721, Cl. 187-394.000.

Roberts Sinto Corporation: *See*—
Gyger, Jack D., 5,544,735, Cl. 198-465.300.

Roberts, Troy W.: *See*—
Lennox, Charles D.; and Roberts, Troy W., 5,545,195, Cl. 607-105.000.

Robertshaw Controls Company: *See*—
Mathews, Mark R., 5,546,331, Cl. 364-571.010.

Robertson, Iain C.; Nye, Jeffrey L.; Asal, Michael D.; Short, Graham B.; Simpson, Richard D.; and Littleton, James G., to Texas Instruments Incorporated. Multifunctional access devices, systems and methods. 5,546,553, Cl. 395-405.000.

Robinette, Rex T., III, to Dow Chemical Company, The. Multiple solute standard preparation. 5,544,684, Cl. 141-83.000.

Robinovitch, Stephen N.: *See*—
Hayes, Wilson C.; Robinovitch, Stephen N.; and McMahon, Thomas A., 5,545,128, Cl. 602-61.000.

Robinson, Darrell; Pruehs, Allen V.; and Williams, John, to Ekstrom Industries, Inc. Metered electrical service tap. 5,546,269, Cl. 361-660.000.

Robinson, James A., Jr.: *See*—
White, George W.; Teague, Robert W.; Tennent, Antony D.; and Robinson, James A., Jr., 5,544,717, Cl. 182-90.000.

Robinson, Joel W.: *See*—
Quint, Jessica L.; and Robinson, Joel W., 5,546,099, Cl. 345-8.000.

Robolini, Severo; and Picotti, Claudio, to Danieli & C. Officine Meccaniche SpA. System to roll at least two sections in blocks of fast rolling mill stands. 5,544,516, Cl. 72-235.000.

Robot-Coupe (S.N.C.): *See—*
Gateaud, Andre, 5,544,573, Cl. 99-492.000.
Rochem Separation Systems: *See—*
LaMonica, David A., 5,545,329, Cl. 210-651.000.
Rockefeller University, The: *See—*
Gotschlich, Emil C., 5,545,553, Cl. 435-252.330.
Rockford Corporation: *See—*
Harris, Wayne, 5,546,273, Cl. 361-697.000.
Rockwell International Corporation: *See—*
Vilsoet, Robert W.; and McGourty, Bernard J., 5,546,456, Cl. 379-265.000.
Rodny, Uri: *See—*
Deretsky, Zachary Y.; Rodny, Uri; and White, Marvin S., Jr., 5,546,107, Cl. 395-600.000.
Rodriguez, David: *See—*
Lipp, Ronald L.; Rodriguez, David; Toriya, Michio; Kanjo, Junji; and Otsuka, Shizuo, 5,546,077, Cl. 340-825.440.
Rodriguez, Giovanni R.: *See—*
Canela, Heriberto; and Rodriguez, Giovanni R., 5,545,288, Cl. 156-578.000.
Rodriguez, Guillermo: *See—*
Jain, Abhinandan; and Rodriguez, Guillermo, 5,546,508, Cl. 395-95.000.
Rodzewich, Edward A.: *See—*
Ouyang, Jiangbo; Rodzewich, Edward A.; and Harpel, William L., 5,545,347, Cl. 510-254.000.
Roeben, Wolfgang: *See—*
Wild, Hanno; Roeben, Wolfgang; Paessens, Arnold; and Petersen-von Gehr, Jörg, 5,545,736, Cl. 540-522.000.
Roemer, Peter B.: *See—*
Mueller, Otward M.; Yakymyshyn, Christopher P.; Roemer, Peter B.; and Watkins, Ronald D., 5,545,999, Cl. 324-322.000.
Rogers, Charles J.; and Kornel, Alfred. Methods for the synthesis of chemical compounds. 5,545,388, Cl. 423-352.000.
Rogers, Patrick J.: *See—*
Scarborough, Charles S.; Kelly, Robert M.; Gaylor, Rodney W.; and Rogers, Patrick J., 5,544,613, Cl. 114-363.000.
Rogers, Russell L.; and Marrison, William C., to Aeroquip Corporation. Quick disconnect fluid coupling. 5,544,858, Cl. 251-149.600.
Roh, Jun-yong, to Samsung Electronics Co., Ltd. Method for manufacturing semiconductor device capacitor. 5,545,582, Cl. 437-52.000.
Rohm and Haas Company: *See—*
Amici, Robert M.; LaFleur, Edward E.; and Work, William J., 5,545,689, Cl. 525-057.000.
Amici, Robert M.; LaFleur, Edward E.; and Work, William J., 5,545,826, Cl. 525-57.000.
Blankenship, Robert M., 5,545,695, Cl. 525-301.000.
Rohm Co., Ltd.: *See—*
Kuga, Kaeko, 5,546,104, Cl. 345-125.000.
Kumano, Hiroshi, 5,545,914, Cl. 257-469.000.
Yoshitake, Akio; and Oh, Masanari, 5,546,501, Cl. 395-3.000.
Rohner, Ronald, to Inventio AG. Method for the parallel connection of inverters by reference to extreme current values. 5,546,298, Cl. 363-71.000.
Rohrer, Donald K.: *See—*
Svetkoff, Ronald J.; Rohrer, Donald K.; and Kelley, Robert W., 5,546,189, Cl. 356-376.000.
Roldan, Judith M.: *See—*
Booth, Richard B.; Cooper, Emanuel I.; Giess, Edward A.; Kordus, Mark R.; Krongelb, Sol; Ostrander, Steven P.; Roldan, Judith M.; Sambucetti, Carlos J.; and Saraf, Ravi, 5,545,429, Cl. 427-97.000.
Roman, Richard B.: *See—*
Eppstein, Deborah A.; Felgner, Philip L.; Gadek, Thomas R.; Jones, Gordon H.; and Roman, Richard B., 5,545,412, Cl. 424-450.000.
Romanauskas, William A. Tension band centrifuge rotor. 5,545,118, Cl. 494-20.000.
Romar Technologies, Inc.: *See—*
Guess, Robert G., 5,545,331, Cl. 210-713.000.
Romero, Arthur G.: *See—*
Lin, Chiu-Hong; Haadsma-Svensson, Susanne R.; Piercey, Montford F.; Romero, Arthur G.; and Darlington, William H., 5,545,755, Cl. 564-428.000.
Romero, Guillermo L.; and Martinez, Joe L., Jr., to Motorola, Inc. Method for coupling a power lead to a bond pad in an electronic module. 5,544,412, Cl. 29-832.000.
Roovers, Gijsbertus C. F.; and D'Herripon, Bastiaan A., to Van Doorne's Transmissie B.V. Continuously variable transmission. 5,545,100, Cl. 475-185.000.
Roovers, Wilhelmus C. W. M.; d'Herripon, Bastiaan A.; and Choi, Chi C., to Van Doorne's Transmissie B.V. Method for influencing the driving behaviour of a vehicle with a continuously variable transmission. 5,545,105, Cl. 477-43.000.
Rorabaugh, Dale; and Costa, Ron. Moveable sponsons for hydrofoil watercraft, including both large entended-performance hydrofoil watercraft and leaping personal hydrofoil watercraft. 5,544,607, Cl. 114-123.000.
Rosasco, James J., to Shape Corporation. Apparatus for manufacturing a vehicle bumper. 5,545,022, Cl. 425-110.000.
Rosasco, James J., to Shape Corporation. Method of making a vehicle bumper with foam therein using a deformable plug. 5,545,361, Cl. 264-45.200.
Rosemount Analytical Inc.: *See—*
LaRocca, Brian; and O'Brien, Gregory T., 5,546,082, Cl. 341-166.000.
Rosemount Office Systems, Inc.: *See—*
Canfield, Thomas F.; Mollenkopf, Lloyd C.; Rein, Russell J.; and Jilk, Larry M., 5,544,593, Cl. 108-50.000.
Rosen, James L.: *See—*
Castonguay, Roger N.; Rosen, James L.; and Zaffetti, Mark A., 5,545,867, Cl. 200-400.000.
Rosen, Jan: *See—*
Hammarberg, Bjoern; Rosen, Jan; and Slettenmark, Bruno, 5,544,519, Cl. 73-37.000.
Rosen, Robert: *See—*
Wolf, Richard J.; Fossgreen, Donald J.; Rosen, Robert; Vento, Christopher M.; and Wells-Papanek, Doris, 5,546,525, Cl. 395-159.000.
Rosenberg, Mark F.: *See—*
Vadgama, Pankaj M.; Rosenberg, Mark F.; and Jones, Malcolm N., 5,545,519, Cl. 435-4.000.
Rosendahl, Mary S.: *See—*
Hoffman, Stephen J.; Looker, Douglas L.; Rosendahl, Mary S.; Stetler, Gary L.; Wagenbach, Michael; Anderson, David C.; Mathews, Antony J.; and Nagai, Kiyoshi, 5,545,727, Cl. 536-234.000.
Rosenthal, Susannah. Artificial flower making apparatus, method of making the same and artificial flower made thereby. 5,545,274, Cl. 156-61.000.
Rosenvinge, Carl Cilius. Clamping device for a textile edge. 5,544,395, Cl. 24-460.000.
Rosler, Jeffrey: *See—*
Joyce, Robert; Rosler, Jeffrey; Ehrlich, Jason; and Brouillet, Jean-Luc, 5,546,455, Cl. 379-265.000.
Ross, Edward E.; and Meissner, Konrad E., to Atlas Pacific Engineering Company. Agitating apple orientor. 5,544,731, Cl. 198-387.000.
Ross, Jay B., to Videofaxx, Inc. Method and apparatus for converting a video image format to a group III fax format. 5,546,194, Cl. 358-445.000.
Roth, Bruce L.; Millard, Paul J.; Yue, Stephen T.; Wells, K. Sam; and Haugland, Richard P., to Molecular Probes, Inc. Fluorescent assay for bacterial gram reaction. 5,545,535, Cl. 435-34.000.
Roth, Rudolf, to U.S. Philips Corporation. Record carriers containing a user's preferred order of reproduction of items of information included therein, and apparatus for use with and/or for creating such record carriers. 5,546,365, Cl. 369-032.000.
Rothwell, Chris S.: *See—*
Nardone, Edward A.; Follett, Paul S.; Schofield, Harry D.; Caron, Paul R.; and Rothwell, Chris S., 5,546,115, Cl. 347-214.000.
Nardone, Edward A.; Follett, Paul S.; Schofield, Harry D.; Caron, Paul R.; and Rothwell, Chris S., 5,546,116, Cl. 347-218.000.
Roto-Mix Enterprise, Ltd.: *See—*
Neier, Benjamin R., 5,544,822, Cl. 241-101.730.
Rotoflow Corporation: *See—*
Agahi, Reza R.; and Ershagi, Behrooz, 5,545,006, Cl. 415-169.200.
Rotron Incorporated: *See—*
Prete, Ralph; Brunstein, Vladimir; and Kazmirski, Todd J., 5,546,295, Cl. 363-17.000.
Rotunda, John T.: *See—*
Densmore, Bruce D.; Hass, Lester A.; Rotunda, John T.; and Fissel, Gregory W., 5,545,112, Cl. 482-54.000.
Rounding, Howard-Paul: *See—*
Straub, Alexander; Goldmann, Siegfried; Stoltefuss, Jürgen; Bechem, Martin; Dembowsky, Klaus; Gross, Rainer; Hebisch, Siegbert; Hütter, Joachim; and Rounding, Howard-Paul, 5,545,646, Cl. 514-337.000.
Roussel, Hervé: *See—*
Piriou, Jean-Pierre; Hermant, Jean-Jacques; and Roussel, Hervé, 5,544,736, Cl. 198-493.000.
Rowe, C. Daniel: *See—*
Stephens, Randy R.; Banik, Michael S.; Ashmore, Leslie R.; Rowe, C. Daniel; and Selecman, George E., 5,545,142, Cl. 604-167.000.
Rowland, Richard R.; Fong, Ronald A.; Wiersema, Richard J.; and Zielske, Alfred G., to Clorox Company, The. Polyglycolate peracid precursors. 5,545,748, Cl. 562-2.000.
Roy, Bryan A.; Ingram, Joseph D.; Arrowsmith, Hubert W.; and Ramsey, Timothy B., to Scientific Ecology Group. Article made out of radioactive or hazardous waste and a method of making the same. 5,545,796, Cl. 588-4.000.
Roy, Richard H., III; Parish, David M.; Barratt, Craig H.; Yang, Chinping Q.; and Orchard, John T., to Arraycomm, Inc. Method and apparatus for calibrating antenna arrays. 5,546,090, Cl. 342-174.000.
Royal Ordinance PLC: *See—*
Richards, Edwin A.; Balch, David J.; and Atherton, Howard, 5,544,563, Cl. 89-24.000.
Rozenwasser, Avraham Moshe: *See—*
Rozenwasser, David, 5,544,477, Cl. 59-13.000.
Rozenwasser, David, to Rozenwasser, Avraham Moshe. Method of producing chain links for fine jewelry rope chains. 5,544,477, Cl. 59-13.000.
Rua, Louis, Jr.; and Martin, Stephen E., to Webcraft Technologies, Inc. Erasable scratch-off lottery ticket. 5,544,881, Cl. 273-139.000.
Rubsamen, Reid M.: *See—*
Lloyd, Lester J.; Lloyd, Peter M.; Rubsamen, Reid M.; and Schuster, Jeffrey A., 5,544,646, Cl. 128-200.140.
Ruch, Mark H., to Compaq Computer Corporation. Printed paper receiving and stacking apparatus for an image reproduction machine. 5,544,876, Cl. 271-179.000.
Rude, Carl A.: *See—*
Taylor, Thomas J.; Kielmeyer, William H.; and Rude, Carl A., 5,545,825, Cl. 524-195.000.

Rudie, Eric N.; Neilson, Bruce H.; and Kauphusman, James V., to Urologix, Inc. Device for asymmetrical thermal therapy with helical dipole microwave antenna. 5,545,137, Cl. 604-96.000.
Rudisill, Charles A.; Rutledge, Joseph D.; and Selker, Edwin J., to International Business Machines Corporation. Assembly suitable for life testing a multi-dimensional force transducer. 5,544,530, Cl. 73-810.000.
Rudnick, Leslie R.: *See—*
Coolbaugh, Thomas S.; Loveless, Frederick C.; Matthews, Demetreos N.; and Rudnick, Leslie R., 5,545,783, Cl. 585-12.000.
Rudolph, Werner: *See—*
Braun, Max; Rudolph, Werner; and Eichholz, Kerstin, 5,545,298, Cl. 204-157.600.
Ruehle, Thomas M.: *See—*
Marlin, James W.; Knudson, Raymond L.; Ruehle, Thomas M.; Stuart, Anthony F.; and Hughes, Edward T., III, 5,546,577, Cl. 395-600.000.
Rugge, Richard L.: *See—*
Besnard, Philippe; Tang, Larry; Rugge, Richard L.; Sieleman, Jim; and Dumontier, Franck, 5,544,885, Cl. 473-350.000.
Rühter, Gerd: *See—*
Heath, William F., Jr.; McDonald, John H., III; Paal, Michael; Rühter, Gerd; Schotten, Theo; and Stenzel, Wolfgang, 5,545,636, Cl. 514-214.000.
Rule Industries, Inc.: *See—*
Anastos, William N.; and Boyd, Stephen B., 5,545,012, Cl. 417-44.110.
Rumery, Robert J.: *See—*
Balthis, Vernon M.; Merten, Ronald A.; Rumery, Robert J.; and Vollmer, Robert L., 5,545,499, Cl. 430-59.000.
Runels, Thomas L.: *See—*
Freigang, Alan R.; Schultz, Gary R.; Runels, Thomas L.; and Gerlofs, Kurt R., 5,544,688, Cl. 152-415.000.
Rupprecht, Kathleen M.: *See—*
Baker, Robert K.; Kieczykowski, Gerard R.; Ok, Hyun O.; Parsons, William H.; and Rupprecht, Kathleen M., 5,545,734, Cl. 540-456.000.
Rushing, Allen J.; and Ng, Yee S., to Eastman Kodak Company. Scanner as test print densitometer for compensating overall process drift and nonuniformity. 5,546,165, Cl. 355-208.000.
Russell, Ernest J., to Texas Instruments Incorporated. Leadframe-over-chip having off-chip conducting leads for increased bond pad connectivity. 5,545,920, Cl. 257-666.000.
Rutenberg, Akiva: *See—*
Boon, Mathilde E.; Kok, Lanbrecht P.; Mango, Laurie J.; Rutenberg, Akiva; and Rutenberg, Mark R., 5,544,650, Cl. 128-632.000.
Rutenberg, Mark R.: *See—*
Boon, Mathilde E.; Kok, Lanbrecht P.; Mango, Laurie J.; Rutenberg, Akiva; and Rutenberg, Mark R., 5,544,650, Cl. 128-632.000.
Rutgers University: *See—*
Parsons, John R.; Lee, Casey K.; Langrana, Noshir A.; Clemow, Alastair J.; Chen, Elizabeth H.; and Hawkins, Monica V., 5,545,229, Cl. 623-17.000.
Rutledge, Joseph D.: *See—*
Rudisill, Charles A.; Rutledge, Joseph D.; and Selker, Edwin J., 5,544,530, Cl. 73-810.000.
Ruttens, Frank: *See—*
Tavernier, Serge; Ruttens, Frank; Verhecken, André; Mampaey, Jozef; and Joly, Ludovicus, 5,545,501, Cl. 430-106.600.
Rüttiger, Anton: *See—*
Bauer, Karl-Heinz; Eckert, Gerold; Maisch, Edgar; and Rüttiger, Anton, 5,545,864, Cl. 200-283.000.
Ruzic, Steven L.: *See—*
Houghton, Richard A.; and Ruzic, Steven L., 5,545,890, Cl. 235-494.000.
RXS Schrumpftechnik-Garnituren GmbH: *See—*
Boscher, Georg; Amrhein, Klaus; and Sagemuehl, Dieter, 5,545,852, Cl. 174-84.00R.
Meltsch, Hans-Juergen; Froehlich, Franz-Fr; Zimmer, Rainer; and Kluwe, Wolf, 5,545,851, Cl. 174-74.00R.
Rybicki, Mathew A.: *See—*
Chan, Joseph Y.; and Rybicki, Mathew A., 5,546,047, Cl. 330-253.000.
Rykman, Alexander: *See—*
Fine, Wendy J.; Davidson, Gary A.; and Rykman, Alexander, 5,544,361, Cl. 2-10.000.
S. C. Johnson & Son, Inc.: *See—*
Horvath, Stephen R., Jr.; Abrams, Robert D.; and Helf, Thomas A., 5,544,810, Cl. 239-10.000.
SA Martin: *See—*
Capdeboscq, Bernard, 5,545,001, Cl. 414-790.800.
Saam, Brian: *See—*
Albert, Mitchell S.; Balamore, Dilip; Cates, Gordon D., Jr.; Driehuys, Bastiaan; Happer, William; Saam, Brian; and Wishnia, Arnold, 5,545,396, Cl. 424-93.000.
Saarem, Myrl J.: *See—*
Parise, Michael C.; and Saarem, Myrl J., 5,545,314, Cl. 210-100.000.
Sabin, Michel: *See—*
Vu Khac, Tham; Sabin, Michel; and Guerinot, Thierry, 5,544,942, Cl. 297-452.370.
Sachinvala, Navzer D.; Ju, Redford F.; and Litt, Morton H., to Hawaiian Sugar Planters' Association. 1',2,3,3',4,4',6,6'-Octa-o-Crotylsucrose. 5,545,732, Cl. 536-120.000.
Saegusa, Takashi, to Nikon Corporation. Flashing LCD display system. 5,546,100, Cl. 345-51.000.
SAES Getters S.p.A: *See—*
Manini, Paolo; and Belloni, Fortunato, 5,544,490, Cl. 62-46.100.
Safari, Davoud: *See—*
Gillenwater, Russell L.; Safari, Davoud; and Owens, Gary D., 5,546,406, Cl. 371-22.500.
Sagemuehl, Dieter: *See—*
Boscher, Georg; Amrhein, Klaus; and Sagemuehl, Dieter, 5,545,852, Cl. 174-84.00R.
Saida, Muneo; Hirasawa, Yutaka; and Yoshimura, Katsuhiro, to Mitsui Mining & Smelting Co., Ltd. Copper-clad laminate and printed wiring board. 5,545,466, Cl. 428-209.000.
Saidi, M. Yazid: *See—*
Chang, On-Kok; and Saidi, M. Yazid, 5,545,496, Cl. 429-218.000.
Saint-Gobain Vitrage International: *See—*
Alvarez Casariego, Pedro; and Massol, Jean-Jacques, 5,545,596, Cl. 501-71.000.
Saint-Gobain/Norton Industrial Ceramics Corp.: *See—*
Yeckley, Russell L., 5,545,597, Cl. 501-98.000.
Saito, Akihisa: *See—*
Matsumoto, Seiji; Aoki, Takuya; Shimasaki, Yuichi; Hatcho, Seiji; Oketani, Toshikazu; Miyashita, Yukio; Saito, Akihisa; Komatsuda, Takashi; and Kato, Hiroaki, 5,544,482, Cl. 60-279.000.
Saito, Atsushi: *See—*
Fukuda, Kazuhiro; and Saito, Atsushi, 5,545,256, Cl. 118-410.000.
Saito, Hitoshi: *See—*
Takiguchi, Ryohei; Saito, Hitoshi; and Nishizawa, Masumi, 5,545,606, Cl. 503-227.000.
Saito, Masaki, to Sony Corporation. CVD method and apparatus for making silicon oxide films. 5,545,436, Cl. 427-255.300.
Saito, Masashi: *See—*
Okada, Hajime; and Saito, Masashi, 5,545,047, Cl. 439-157.000.
Saito, Nobuhiro; and Takenouchi, Masaki, to Sony Corporation. Magneto-optical recording medium. 5,545,477, Cl. 428-332.000.
Saito, Takahiko: *See—*
Nakatsuyama, Takashi; and Saito, Takahiko, 5,546,143, Cl. 352-184.000.
Saito, Tasuku: *See—*
Noguchi, Tomoko; Naito, Kazuo; Saito, Tasuku; Sakurai, Ryo; and Ishiharada, Minoru, 5,546,493, Cl. 385-125.000.
Saito, Tokuo: *See—*
Fukushima, Saburo; Yagi, Masaharu; Morita, Kiyozi; Ando, Masami; and Saito, Tokuo, 5,545,458, Cl. 428-117.000.
Saito, Yoshiyuki: *See—*
Konishi, Akio; Saito, Yoshiyuki; Takeda, Sbuzo; Yoshio, Hideaki; and Kurumatani, Hiroshi, 5,546,249, Cl. 360-95.000.
Saito, Yukio: *See—*
Onoue, Keiji; Saito, Yukio; and Imai, Takashi, 5,544,389, Cl. 19-157.000.
Saitoh, Atsushi: *See—*
Kurokawa, Takayuki; Saitoh, Atsushi; Matsubara, Shigemasa; Nawa, Masayoshi; and Kobayashi, Kazuo, 5,546,092, Cl. 342-357.000.
Sakaguchi, Shigeya: *See—*
Tokumoto, Kei; Kitada, Tetsunori; Shinoaki, Hironobu; and Sakaguchi, Shigeya, 5,545,248, Cl. 75-238.000.
Sakaguchi, Yasuo: *See—*
Daimon, Katsumi; Nukada, Katsumi; Sakaguchi, Yasuo; and Igarashi, Ryosaku, 5,545,733, Cl. 540-139.000.
Sakai, Akihiro; Mizuno, Yoshio; and Utsunomiya, Takehito, to Canon Kabushiki Kaisha. Image forming system having main power source. 5,546,161, Cl. 355-200.000.
Sakai, Masanori; Tomita, Katsuhiko; Ezaki, Joichiro; Suzuki, Kazuo; Fukuda, Seiji; and Hatakeyama, Kouichi, to TDK Corporation; and Nihon Techno Bute Limited. Waveform signal processor with selective sampling. 5,545,988, Cl. 324-212.000.
Sakai, Shigeru: *See—*
Kaneyoshi, Masami; and Sakai, Shigeru, 5,545,386, Cl. 423-263.000.
Sakai, Yoshihiro: *See—*
Iida, Toru; Ohashi, Michihito; Sakai, Yoshihiro; Kuramoto, Shin-ichi; Chiba, Shunichi; Asahina, Yasuo; and Tomita, Junko, 5,545,381, Cl. 422-186.000.
Sakai, Yoshimitsu: *See—*
Kunikane, Tatsuro; Okamoto, Akira; Watanabe, Tetsuo; Miyata, Sadayuki; Furukawa, Hiroyuki; and Sakai, Yoshimitsu, 5,546,212, Cl. 359-163.000.
Sakaki, Yoshitsugu: *See—*
Tsutsui, Tomoki; Izukawa, Tsukuru; Ohkubo, Kazuhiko; and Sakaki, Yoshitsugu, 5,545,712, Cl. 528-408.000.
Sakakibara, Yoshio; Gotou, Makoto; Kobayashi, Kazuhiko; Isaka, Haruo; and Nakamura, Akihiko, to Matsushita Electric Industrial Co., Ltd. Reproducing apparatus that performs tracking control and phase control for a signal recorded in plural tracks of a tape medium. 5,546,248, Cl. 360-77.140.
Sakamoto, Atsunobu; and Sekiguchi, Chieko. Fuse bonding and fuse cutting machine for a plastic balloon and the like. 5,545,117, Cl. 493-203.000.
Sakamoto, Katsumi: *See—*
Oishi, Tetsuya; Ozawa, Hiroshi; Karasawa, Minato; Inomata, Masamitsu; Mega, Izumi; Yamauchi, Atsuyoshi; Kamada, Kazunori; Nakahata, Shigeru; Sakamoto, Katsumi; Nakashima, Tatsunobu; Watanabe, Akito; Suzuki, Jin; Ohkawa, Kouhei; Furusawa, Satoshi; Ono, Hiroshi; and Sugazaki, Kazuo, 5,545,702, Cl. 525-509.000.
Sakamoto, Kiichi: *See—*

VOL 1189 ISS 2 1996 AG UMI

Satoh, Takamasa; Yasuda, Hiroshi; Kai, Junichi; Oae, Yoshihisa; Nishino, Hisayasu; Sakamoto, Kiichi; Yabara, Hidefumi; Seto, Isamu; Takigawa, Masami; Yamada, Akio; Arai, Soichiro; Abe, Tomohiko; Kiuchi, Takashi; and Miyazawa, Kenichi, 5,546,319, Cl. 364-488.000.

Sakamoto, Masaaki: *See*—
Tanaka, Tadashi; Sakamoto, Masaaki; Yamamoto, Koichi; and Ozaki, Kouki, 5,545,249, Cl. 75-246.000.
Tanaka, Tadashi; Sakamoto, Masaaki; Yamamoto, Koichi; Kato, Tohru; and Sugita, Mitsuru, 5,545,489, Cl. 428-629.000.

Sakata, Masakazu; Fujii, Hiroyuki; Hamada, Yuji; Shibata, Kenichi; and Nishio, Yoshitaka, to Sanyo Electric Co., Ltd. Deodorant method. 5,545,400, Cl. 424-76.210.

Sakaue, Yoshinori: *See*—
Niijima, Hideto; Toyooka, Takashi; Satoh, Akashi; and Sakaue, Yoshinori, 5,546,402, Cl. 371-10.200.

Sakia, Shuzo: *See*—
Sugimoto, Toshiyuki; Kubota, Michio; and Sakia, Shuzo, 5,545,587, Cl. 435-97.000.

Sakuma, Shuji; Atsumi, Kiminori; Inose, Akira; and Koyama, Hideo, to Kabushiki Kaisha Sangi. Method for the catalytic conversion of lower aliphatic alcohols to gasoline hydrocarbons. 5,545,791, Cl. 585-639.000.

Sakurai, Ryo: *See*—
Noguchi, Tomoko; Naito, Kazuo; Saito, Tasuku; Sakurai, Ryo; and Ishiharada, Minoru, 5,546,493, Cl. 385-125.000.

Sakurai, Takeshi: *See*—
Tsuru, Sumiaki; Yokoo, Akihiko; Sakurai, Takeshi; and Ogawa, Tetsuro, 5,545,240, Cl. 55-479.000.

Salgado, Maria B. L. F.: *See*—
De Greve, Henri M. J.; Salgado, Maria B. L. F.; Van Montagu, Marc C. E.; Vaeck, Mark A.; Zabeau, Marcus F. O.; Leemans, Jan J. A.; and Hofte, Hermanus F. P., 5,545,565, Cl. 435-320.100.

Salina, John E.: *See*—
Brown, Clem H.; and Salina, John E., 5,545,893, Cl. 250-239.000.

Salka, Barry A.: *See*—
Casamassina, Thomas; Morales, Florencio, Jr.; Salka, Barry A.; and Fallon, John, 5,545,622, Cl. 252-353.000.

Sallam, Faisal K.; and Gardocki, Gilbert, to United Technologies Automotive, Inc. Solenoid with plunger rod. 5,546,064, Cl. 335-261.000.

Salvio, Paul R.; Masarik, David M.; and Wasserstein, Kevin J., to Hughes Aircraft Company. Window wiper system for small windows. 5,545,956, Cl. 318-283.000.

Sambucetti, Carlos J.: *See*—
Booth, Richard B.; Cooper, Emanuel I.; Giess, Edward A.; Kordus, Mark R.; Krongelb, Sol; Ostrander, Steven P.; Roldan, Judith M.; Sambucetti, Carlos J.; and Saraf, Ravi, 5,545,429, Cl. 427-97.000.

Samejima, Shunichi: *See*—
Morikawa, Shinsuke; Samejima, Shunichi; Yoshitake, Masaru; Okamoto, Hidekazu; Ohnishi, Keiichi; and Tanuma, Toshihiro, 5,545,777, Cl. 570-176.000.

Sams, Gary: *See*—
Tucker, Michel H.; Sams, Gary; Hennessey, Kathleen; Pattikonda, Ramakhrisna; and Condit, Mario, 5,546,398, Cl. 370-94.100.

Samsung Electronics Co. Ltd.: *See*—
Kim, Jae-young, 5,546,465, Cl. 381-18.000.
Kwak, Heui-kuk, 5,546,511, Cl. 395-106.000.
Lee, Hyung-hee; and Heo, Jung-kwon, 5,546,369, Cl. 369-58.000.
Lee, Jueng-gil; Park, Sun-hoo; and Choi, Gil-heyun, 5,544,771, Cl. 216-2.000.
Lee, Myeong-hwan, 5,546,134, Cl. 348-673.000.
Lee, Rae-hwan; Jeon, Hwa-jin; Choi, Kwang-sik; Park, Hong-soon; Yun, Sang-hwa; Song, Kwang-lyeol; Choi, Hae-min; Lee, Deok-hyun; Song, Bong-hun; Park, Dong-jin; and Byeon, Seong-jin, 5,546,368, Cl. 369-47.000.
Lee, Sang-su; and Hong, Chang-wan, 5,545,857, Cl. 178-18.000.
Lee, Young-sik; Jo, Hyun-min; Jee, Kyung-ha; and Choi, Nak-choon, 5,546,300, Cl. 363-132.000.
Nam, Il-hyun; and Kim, Kwan-seong, 5,546,428, Cl. 375-308.000.
Park, Goo-man; Baik, Sei-hyun; and Han, Taek-soo, 5,546,244, Cl. 360-53.000.
Park, Young-hoon; Seo, Young-woo; and Lee, Yong-hee, 5,545,578, Cl. 437-44.000.
Roh, Jun-yong, 5,545,582, Cl. 437-52.000.
Suh, Kang D.; Kim, Jin K.; and Choi, Jeong H., 5,546,341, Cl. 365-185.330.
Yoo, Choon K.; and Kim, Young G., 5,546,478, Cl. 382-282.000.
Yun, Tae-Jin; Hong, Dong-Pyo; and Park, Byung-Suk, 5,545,076, Cl. 451-287.000.

Sanders, Fritz; and Exner, Gregory F., to United Technologies Automotive, Inc. Steering wheel with tapered bub sleeve. 5,544,545, Cl. 74-552.000.

Sandia Corporation: *See*—
Graf, Darin C.; and Warpinski, Norman R., 5,544,520, Cl. 73-38.000.

Sandoz Ltd.: *See*—
Blanchette, Robert A.; Brush, Theresa S.; Farrell, Roberta L.; Krisa, Keith A.; and Mishra, Chittra, 5,545,544, Cl. 435-171.000.
Moser, Helmut A., 5,545,724, Cl. 534-604.000.
Nakat, Sarangdhar S., 5,545,663, Cl. 514-521.000.
Quaghebeur, Theo; and Loocke, Walter Van, 5,545,607, Cl. 504-130.000.

Sandvik AB: *See*—
Pantzar, Göran, 5,544,984, Cl. 407-113.000.

Sanger, James A.: *See*—
Vickers, Thomas E.; and Sanger, James A., 5,544,873, Cl. 269-47.000.

Saniee, Iraj: *See*—
Cosares, Steven T.; Saniee, Iraj; and Wasem, Ondria J., 5,546,542, Cl. 395-200.210.

Sankar, Narendra: *See*—
Phillips, Christopher E.; and Sankar, Narendra, 5,546,353, Cl. 365-230.060.

Sankyo Seisakusho Co.: *See*—
Kato, Heizaburo, 5,544,576, Cl. 100-35.000.
Kato, Heizaburo, 5,544,577, Cl. 100-35.000.

Sano, Akinobu: *See*—
Egawa, Motoji; Takayanagi, Kazutoshi; Takayama, Akio; Fujita, Tetsuji; and Sano, Akinobu, 5,546,251, Cl. 360-103.000.

Sano, Koichi: *See*—
Taguchi, Jun'ichi; Kido, Kunihiko; and Sano, Koichi, 5,545,993, Cl. 324-309.000.

Sano, Yuji; Tsuruga, Sadao; Kitou, Kouji; and Ohsawa, Michitaka, to Hitachi, Ltd. Amplifier and display apparatus employing the same. 5,546,048, Cl. 330-263.000.

Sanpou Lock Co., Ltd.: *See*—
Nakano, Yoshio, 5,544,506, Cl. 70-34.000.

Sansbury, Francis H.: *See*—
Simpson, Sharon M.; and Sansbury, Francis H., 5,545,507, Cl. 430-264.000.

Sanshin Kogyo Kabushiki Kaisha: *See*—
Tsunekawa, Hiroyuki; and Abe, Kouji, 5,545,064, Cl. 440-53.000.

Sansone, Stanley A. Method for processing and interpreting wide band FM seismic signals. 5,545,858, Cl. 181-122.000.

Santa Barbara Research Center: *See*—
Bratt, Peter R.; and Nelson, David R., 5,545,896, Cl. 250-338.400.
Jack, Michael D., 5,545,897, Cl. 250-339.130.

Santella, Joseph B., III: *See*—
Duncia, John J. V.; Ensinger, Carol L.; Olson, Richard E.; Quan, Mimi L.; Santella, Joseph B., III; and Vanatten, Mary K., 5,545,651, Cl. 514-381.000.

Santos, Esteban; and Ribar, George R., Jr., to General Electric Company. Digital circuit interrupter shunt trip control circuit. 5,546,265, Cl. 361-93.000.

Sanyo Electric Co., Inc.: *See*—
Iwama, Akifumi; Iseki, Masahiro; and Nakagawa, Azusa, 5,545,299, Cl. 204-412.000.

Sanyo Electric Co., Ltd.: *See*—
Kano, Yoshinori; and Mohara, Masayuki, 5,544,411, Cl. 29-740.000.
Kuroda, Koichi; Aoki, Yoshiaki; Fujikawa, Kiyokazu; Kawamura, Youzon; Hirota, Tatsuya; Kawamura, Tamotsu; Fukuda, Takashi; Kishi, Minoru; and Hirose, Hisanori, 5,544,428, Cl. 34-493.000.
Sakata, Masakazu; Fujii, Hiroyuki; Hamada, Yuji; Shibata, Kenichi; and Nishio, Yoshitaka, 5,545,400, Cl. 424-76.210.
Suzuki, Hajime; and Harada, Tetsuo, 5,545,259, Cl. 134-18.000.
Yamamoto, Katsuya; and Inada, Norifumi, 5,544,779, Cl. 220-89.200.

Saraf, Ravi: *See*—
Booth, Richard B.; Cooper, Emanuel I.; Giess, Edward A.; Kordus, Mark R.; Krongelb, Sol; Ostrander, Steven P.; Roldan, Judith M.; Sambucetti, Carlos J.; and Saraf, Ravi, 5,545,429, Cl. 427-97.000.

Sargeant, Gary L.: *See*—
Attey, Graeme S.; Searls, Jesse H.; and Sargeant, Gary L., 5,544,487, Cl. 62-3.700.

Sarkar, Jyotirmoy. Puzzle including overlaying puzzle pieces. 5,544,882, Cl. 273-157.00R.

Sarkissian, Geoffrey. Self-cleaning cat box. 5,544,620, Cl. 119-166.000.

Sarp Industries: *See*—
Vigneron, André; and Codaccioni, Jean-Pierre, 5,544,975, Cl. 405-128.000.

Sasahara, Masayuki: *See*—
Shibazaki, Hiroshi; and Sasahara, Masayuki, 5,546,197, Cl. 358-534.000.

Sasaki, Goro; Yano, Hiroshi; Sawada, Sosaku; and Doguchi, Kentaro, to Sumitomo Electric Industries, Ltd. Optical link apparatus. 5,546,489, Cl. 385-88.000.

Sasaki, Hiroyuki: *See*—
Ishiguro, Shiro; Watanuki, Masatoshi; Kawanishi, Toshiaki; Hanzawa, Kohtaro; Sasaki, Hiroyuki; and Yoshino, Jun, 5,546,466, Cl. 381-61.000.

Sasaki, Kunitsuna: *See*—
Goto, Narito; Isshiki, Masanori; Sasaki, Kunitsuna; Sekiguchi, Nobuyuki; Takeda, Katsuyuki; and Takahashi, Hideki, 5,545,462, Cl. 428-141.000.

Sasaki, Shuji: *See*—
Ishijima, Zenzo; Ichikawa, Jun-ichi; Sasaki, Shuji; Shikata, Hideo; Urata, Hideo; Kawase, Shoji; and Ueda, Jun-ichi, 5,545,487, Cl. 428-548.000.

Sasou, Hiroshi; and Kawashima, Takumi, to Tamura Electric Works, Ltd. Magnetic card and card reader apparatus utilizing a pseudo bar code and an address information code. 5,545,883, Cl. 235-449.000.

Satake, Akira; Onishi, Yoshitaka; and Miyoshi, Sotsuo, to Mitsubishi Denki Kabushiki Kaisha. Variable air-gap type driving device. 5,545,943, Cl. 310-350.000.

Satake, Sunao; Yatsuyanagi, Yoshimi; Fujii, Masahiro; and Imagawa, Ippei, to Toyo Ink Manufacturing Co., Ltd. Reactive microgel and photosensitive resin composition containing the reactive microgel for flexographic printing plate. 5,545,694, Cl. 525-286.000.

Sato, Atsushi: *See*—
Sato, Yukio; Sato, Atsushi; Sumikawa, Tatsuro; and Uemura, Tazuo, 5,545,737, Cl. 544-101.000.

Sato, Fumie; Amano, Takehiro; Kameo, Kazuya; Tanami, Tohru; Mutoh, Masaru; Ono, Naoya; and Goto, Jun, to Taisho Pharmaceutical Co., Ltd. Prostaglandin derivatives. 5,545,666, Cl. 514-530.000.

Sato, Hirokazu: *See*—
Kita, Hiroshi; Sato, Hirokazu; and Daifuku, Koji, 5,545,514, Cl. 430-546.000.

Sato, Hiroshi; and Hamano, Hiroyuki, to Canon Kabushiki Kaisha. Zoom lens. 5,546,230, Cl. 359-684.000.

Sato, Hiroshi, to Konica Corporation. Zoom lens employing plastic lenses. 5,546,231, Cl. 359-687.000.

Sato, Hirotoshi; and Wada, Tomohisa, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device having decoder. 5,546,352, Cl. 365-230.060.

Sato, Kazumasa; and Kokubu, Akihiko, to Wells Japan Limited. IC socket. 5,545,050, Cl. 439-331.000.

Sato, Koichi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Device for recording an image signal so that the resulting recorded signal has a smaller number of horizontal scanning lines in a field. 5,546,192, Cl. 358-335.000.

Sato, Masahiko: *See*—
Bryant, Henry U.; Dodge, Jeffrey A.; Sato, Masahiko; and Yang, Na N., 5,545,635, Cl. 514-177.000.

Sato, Naoki, to Hitachi, Ltd. Data storage apparatus with an A/D converter having a reference voltage control based upon a signal before and after discrimination. 5,546,245, Cl. 360-65.000.

Sato, Nobuaki: *See*—
Golwalkar, Suresh V.; Foehringer, Richard; Wentling, Michael; Takatsuki, Ryo; Kawashima, Shigeo; Tsujimoto, Keiichi; and Sato, Nobuaki, 5,545,922, Cl. 257-676.000.

Sato, Yukio; Sato, Atsushi; Sumikawa, Tatsuro; and Uemura, Tazuo, to Daiichi Pharmaceutical Co., Ltd. Process for selectively producing an (S)-9-fluoro-3-methyl-10-(4-methyl-1-piperazinyl)-7-oxo-2,3-dihydro-7h-pyrido (1,2,3, -de) (1,4) benzoxazine-6-carboxylic acid hemihydrate or monohydrate. 5,545,737, Cl. 544-101.000.

Satoh, Akashi: *See*—
Niijima, Hideto; Toyooka, Takashi; Satoh, Akashi; and Sakaue, Yoshinori, 5,546,402, Cl. 371-10.200.

Satoh, Takamasa; Yasuda, Hiroshi; Kai, Junichi; Oae, Yoshihisa; Nishino, Hisayasu; Sakamoto, Kiichi; Yabara, Hidefumi; Seto, Isamu; Takigawa, Masami; Yamada, Akio; Arai, Soichiro; Abe, Tomohiko; Kiuchi, Takashi; and Miyazawa, Kenichi, to Fujitsu Limited. Method of and system for charged particle beam exposure. 5,546,319, Cl. 364-488.000.

Satomura, Shinji; Nakamura, Kenji; Ikenaka, Tokuji; and Omichi, Kaoru, to Wako Pure Chemical Industries, Ltd. Process for measuring analyte in sample. 5,545,530, Cl. 435-6.000.

Sattelberg, Thomas R., Sr.: *See*—
Miller, Shawn C.; Victor, Frantz; Spitzer, Wayne A.; Sattelberg, Thomas R., Sr.; and Tebbe, Mark J., 5,545,653, Cl. 514-388.000.

Sattelmayer, Thomas: *See*—
Jansohn, Peter; Marling, Tino-Martin; and Sattelmayer, Thomas, 5,545,032, Cl. 431-9.000.

Sattich, William E.: *See*—
Shaw, James E.; Sattich, William E.; and Efner, Howard F., 5,545,714, Cl. 528-374.000.

Satyam, Apparao: *See*—
Kauvar, Lawrence M.; Lyttle, Matthew H.; and Satyam, Apparao, 5,545,621, Cl. 514-18.000.

Sauer, Curtis R., to Howmet Corporation. Variable control of weld torch parameters. 5,545,873, Cl. 219-124.030.

Sauer, Don R., to National Semiconductor Corp. Rail to rail operational amplifier output stage. 5,546,045, Cl. 327-561.000.

Sauer, Michael: *See*—
Hilfinger, Peter; Kressner, Gerhard; and Sauer, Michael, 5,545,968, Cl. 320-2.000.

Saul, Jonathan R.; Marshall, Richard E.; and LaPointe, Larry P., to La-Z-Boy Chair Company. Mounting apparatus for securing independent sections of a sectional sofa assembly. 5,544,938, Cl. 297-248.000.

Saulnier, Gary J.; Gisser, David G.; Newell, Jonathan C.; Cook, Raymond D.; Goble, John C.; and Isaacson, David, to Rensselaer Polytechnic Institute. High-speed electric tomography. 5,544,662, Cl. 128-734.000.

Saupe, Martin: *See*—
Zwingenberger, Arthur; and Saupe, Martin, 5,545,383, Cl. 422-295.000.

Sauter, Hubert: *See*—
Kirstgen, Reinhard; Oberdorf, Klaus; Sauter, Hubert; Bayer, Herbert; Grammenos, Wassilios; Rang, Harald; Harries, Volker; Lorenz, Gisela; and Ammermann, Eberhard, 5,545,664, Cl. 514-521.000.

Savic, Jovica: *See*—
Magera, Yaroslaw A.; Savic, Jovica; and Brown, Vernon L., 5,545,430, Cl. 427-98.000.

Savignac, Dominique; Gleis, Dieter; and Menke, Manfred, to Siemens Aktiengesellschaft. Charge pump. 5,546,296, Cl. 363-60.000.

Savignac, Dominique: *See*—
Sommer, Diether; Savignac, Dominique; and Gleis, Dieter, 5,546,036, Cl. 327-208.000.

Savio, Lenore E., to Church & Dwight Co., Inc. Non-Phosphate high carbonate machine dishwashing detergents containing maleic acid homopolymer. 5,545,348, Cl. 510-230.000.

Sawada, Akihiro: *See*—
Agata, Masashi; Matsuyama, Kazuhiro; Akamatsu, Hironori; Kikukawa, Hirohito; Sawada, Akihiro; and Iwanari, Shunichi, 5,546,346, Cl. 365-203.000.

Sawada, Sosaku: *See*—
Sasaki, Goro; Yano, Hiroshi; Sawada, Sosaku; and Doguchi, Kentaro, 5,546,489, Cl. 385-88.000.

Sawada, Yukio: *See*—
Kitahara, Noboru; Kondo, Minoru; and Sawada, Yukio, 5,544,527, Cl. 73-204.210.

Sawai, Toshiya: *See*—
Nakayama, Minoru; Sawai, Toshiya; and Murata, Shizuo, 5,545,444, Cl. 428-1.000.

Sawayanagi, Masahiro, to Yazaki Corporation. Panel lock connector. 5,545,061, Cl. 439-752.000.

Sawicki, Robert A.: *See*—
O'Young, Chi-Lin; and Sawicki, Robert A., 5,545,393, Cl. 423-605.000.

Saxena, Sharad: *See*—
Mozumder, Purnendu K.; and Saxena, Sharad, 5,546,312, Cl. 364-468.030.

Saxton, Thomas W.: *See*—
McKinnis, David R. R.; Luebbert, David L.; Berman, Eric R.; Saxton, Thomas W.; and Padwa, Daniel H., 5,546,581, Cl. 395-650.000.

Scarborough, Charles S.; Kelly, Robert M.; Gaylor, Rodney W.; and Rogers, Patrick J., to Dagger Canoe Co., Inc. Foot rest for boats. 5,544,613, Cl. 114-363.000.

Scerbo, Frank C., III. Sidearm handgun holster-mounted surveillance recorder carrier vessel. 5,546,124, Cl. 348-158.000.

Schach, Bernadine. Hair styling device. 5,544,666, Cl. 132-273.000.

Schaefer, Doug G.: *See*—
Campbell, James K.; Pfeiffer, Ned C.; Balderi, Nicola; and Schaefer, Doug G., 5,544,941, Cl. 297-423.450.

Schaffer, Ronald R.: *See*—
Bruckner, Carl M.; Calhoun, Edward E., III; Fasnacht, Matthew J.; Schaffer, Ronald R.; and Shay, Francis J., 5,546,495, Cl. 385-135.000.

Schairbaum, Edward C., to Nova Manufacturing & Assembly, Inc. Adjustable monitor support assembly. 5,544,594, Cl. 108-50.000.

Schalla, Ronald: *See*—
Heath, William O.; Gauglitz, Phillip A.; Pillay, Gautam; Bergsman, Theresa M.; Eschbach, Eugene A.; Goheen, Steven C.; Richardson, Richard L.; Roberts, Janet S.; and Schalla, Ronald, 5,545,803, Cl. 588-253.000.

Schallis, Paul E.: *See*—
Hinshaw, John V.; and Schallis, Paul E., 5,545,252, Cl. 95-15.000.

Schasfoort, Richardus B. M.; and Voogt, Jan O., to Innocom (I.T.) B.V. System for analyzing the concentration of a number of different ions in a watery solution. 5,545,303, Cl. 204-601.000.

Schaupp, Richard E., to Smyth Systems Company. Rotary magazine system for labeler. 5,545,286, Cl. 156-570.000.

Scheffer, Terry J.; and Clifton, Benjamin R., to In Focus Systems, Inc. Integrated driver for display implemented with active addressing technique. 5,546,102, Cl. 345-100.000.

Scheidt & Bachmann GmbH: *See*—
Miller, Gert, 5,546,242, Cl. 360-2.000.

Schell, Jerry D.: *See*—
Singh, Jogender; Schell, Jerry D.; and Young, William R., 5,545,431, Cl. 427-205.000.

Schenk, Robert W.; Ranford, Alan B.; Ray, Shawn C.; Sunderland, Richard A.; and Kinghorn, Curtis D., to Sherwood Medical Company. Finger stick device. 5,545,174, Cl. 606-182.000.

Schenke, Thomas: *See*—
Petersen, Uwe; Schenke, Thomas; Böhm, Stefan; Grosser, Rolf; Bremm, Klaus D.; Endermann, Rainer; and Metzger, Karl G., 5,545,642, Cl. 514-312.000.

Schepens Eye Research Institute, Inc., The: *See*—
Dartt, Darlene A.; and Kessler, Timothy L., 5,545,617, Cl. 514-12.000.

Scherer, Thomas: *See*—
Fischer, Heinz; Scherer, Thomas; Markwart, Michael; and Petry, Klaus, 5,545,084, Cl. 454-76.000.

Schering Aktiengesellschaft: *See*—
Schneider, Martin; and Schillinger, Ekkehard, 5,545,671, Cl. 514-573.000.

Schering Corporation: *See*—
Gala, Dinesh, 5,545,558, Cl. 435-280.000.

Scherrer, Norbert, to Societe Europeene de Propulsion. Self-cooled and removable integrated cryogenic liquid pump. 5,545,015, Cl. 417-360.000.

Schick, Jean-François, to Goro S.A. Fastening device for belt connectors. 5,544,801, Cl. 227-110.000.

Schick, Wilfried: *See*—
Neher, Paul; and Schick, Wilfried, 5,544,504, Cl. 66-168.000.

Schillinger, Ekkehard: *See*—
Schneider, Martin; and Schillinger, Ekkehard, 5,545,671, Cl. 514-573.000.

Schilp, Reinhold; and Epper, Wolfgang, to Kloeckner-Humboldt-Deutz Aktiengesellschaft. Solid bowl worm centrifuge. 5,545,119, Cl. 494-56.000.

Schimpf, Wolfgang: *See*—
Landua, Werner; and Schimpf, Wolfgang, 5,544,667, Cl. 134-64.00R.
Landua, Werner; and Schimpf, Wolfgang, 5,544,694, Cl. 164-20.000.

Schlegel (UK) Holdings Limited: *See*—
Ford, Peter R.; Thorley, Neil; and Foy, Martin J., 5,545,448, Cl. 428-31.000.

VOL 1189 ISS 2 AG 13 1996 UMI

Schluckebier, David K.: *See—*
Corzine, Alan J.; Dippold, Jack D.; and Schluckebier, David K., 5,544,398, Cl. 29-1.230.
Schlumberger Industries, S.A.: *See—*
Dubin, Michel; Talbot, Jacques; and Decaux, Pierre, 5,545,981, Cl. 324-142.000.
Schmelz, Helmut, to Siemens Aktiengesellschaft. Sensor for determining the course of concentration of an adsorbent substance. 5,546,004, Cl. 324-446.000.
Schmidt, Anthony, Jr., to Bradley, Jack. Boat lifting device. 5,544,606, Cl. 114-48.000.
Schmidt, Clayton C.; Zorich, Chris; Lammens, Arthur E.; and Parvin, Jackie D., to Hon Industries Inc. Locking mechanism for multiple vertical drawers. 5,544,957, Cl. 312-221.000.
Schmidt, Guenther; and Schmidt, Klaus, to Robert Bosch GmbH. Service and emergency brake system having a master cylinder with a travel simulator gas-filled spring. 5,544,948, Cl. 303-122.110.
Schmidt, Karl M.; Schmidt, Michelle R.; Cole, George S.; Jenkins, Stuart E.; and Edwards, Harry W., to Energaire Corporation. Heel/metatarsal structure having premolded bulges. 5,545,463, Cl. 428-178.000.
Schmidt, Klaus: *See—*
Schmidt, Guenther; and Schmidt, Klaus, 5,544,948, Cl. 303-122.110.
Schmidt, Melvin J.; Coach, Thomas P.; Hause, Glenn C.; Galowitz, Dennis A.; Wyman, James P.; Hendricks, Robert A.; Ver Steeg, Lawrence J.; and Evans, Harold H., to Andersen Corporation. Double-hung tilting sash type window system. 5,544,450, Cl. 49-419.000.
Schmidt, Michelle R.: *See—*
Schmidt, Karl M.; Schmidt, Michelle R.; Cole, George S.; Jenkins, Stuart E.; and Edwards, Harry W., 5,545,463, Cl. 428-178.000.
Schmidt, Randall G.: *See—*
Mealey, Shawn K.; Schmidt, Randall G.; and Brady, William P., 5,545,700, Cl. 525-478.000.
Schmidt, Robert M.; and Feldman, Mark, to United Technologies Automotive, Inc. Rotary potentiometer assembly for a push-pull switch. 5,546,067, Cl. 338-172.000.
Schmiesing, John E.: *See—*
Ristic, Ljubisa; Koury, Daniel N.; Schmiesing, John E.; Gutteridge, Ronald J.; and Hughes, Henry G., 5,545,912, Cl. 257-417.000.
Schmitt, Johannes; Burg, Andreas; and Donath, Ralf, to Robert Bosch GmbH. Traction control system. 5,544,949, Cl. 303-140.000.
Schmitt, Johannes: *See—*
Burg, Andreas; and Schmitt, Johannes, 5,544,950, Cl. 303-165.000.
Schmitt, Robert A.: *See—*
Aaseth, Allen; and Schmitt, Robert A., 5,544,405, Cl. 29-467.000.
Schmitt, Werner H., to Hoppmann Corporation. Method and apparatus for orienting and conveying flexible or thin articles. 5,544,732, Cl. 198-392.000.
Schmutz, Markus: *See—*
Marescaux, Christian; Bernasconi, Raymond; Schmutz, Markus; Fröstl, Wolfgang; and Mickel, Stuart J., 5,545,631, Cl. 514-89.000.
Schneider Electric SA: *See—*
Baurand, Gilles; and Stentz, Antoine, 5,546,262, Cl. 361-31.000.
Duchemin, Pierre, 5,546,062, Cl. 335-132.000.
Schneider, Erika; Linz, Anton M.; and Repinski, Gregory A., to General Electric Company. Measurement of geometric distortion in MRI images. 5,545,995, Cl. 324-318.000.
Schneider, Gerhard: *See—*
Friese, Karl-Hermann; Gruenwald, Werner; Stahl, Roland; de la Prieta, Claudio; Schneider, Gerhard; and Neumann, Harald, 5,545,301, Cl. 204-425.000.
Schneider (USA) Inc: *See—*
O'Connor, Michael G.; and Lovgren, Eric M., 5,545,151, Cl. 604-282.000.
Schneider, Martin; and Schillinger, Ekkehard, to Schering Aktiengesellschaft. Antimetastically acting agents. 5,545,671, Cl. 514-573.000.
Schneider, Michel: *See—*
Tournier, Hervé; Hyacinthe, Roland; and Schneider, Michel, 5,545,395, Cl. 424-932.000.
Schneider, Siegfried. Spiral vortex device. 5,544,952, Cl. 366-175.100.
Schnippering, Friedhelm: *See—*
Edelmann, Roland; Schnippering, Friedhelm; Fliedner, Christine; and Matthes, Reinhard, 5,545,253, Cl. 106-122.000.
Schoen, William R.: *See—*
Bochis, Richard J.; Hodges, Paul J.; Schoen, William R.; and Wyvratt, Matthew J., Jr., 5,545,735, Cl. 540-490.000.
Schoening, Robert D.: *See—*
Chang, Chi S.; Desai, Subahu D.; Gernhart, Debra A.; Hartley, Phillip A.; Haskins, Robert J., Jr.; Ho, Keith K. T.; Martone, Robert A.; Mulcahy, Roy T.; Shaffer, Louis J.; Schoening, Robert D.; and Versprille, Scott A., 5,546,321, Cl. 364-491.000.
Schofield, Harry D.: *See—*
Nardone, Edward A.; Follett, Paul S.; Schofield, Harry D.; Caron, Paul R.; and Rothwell, Chris S., 5,546,115, Cl. 347-214.000.
Nardone, Edward A.; Follett, Paul S.; Schofield, Harry D.; Caron, Paul R.; and Rothwell, Chris S., 5,546,116, Cl. 347-218.000.
Schohe-Loop, Rudolf: *See—*
Heine, Hans-Georg; Schohe-Loop, Rudolf; Glaser, Thomas; De Vry, Jean M. V.; Dompert, Wolfgang; and Sommermeyer, Henning, 5,545,643, Cl. 514-322.000.
Schoonmaker, Richard P.: *See—*
Gallagher, Dennis M.; Pfeifer, Thomas M.; and Schoonmaker, Richard P., 5,544,579, Cl. 101-91.000.
Schottdorf, Johannes: *See—*
Hofmann, Heinrich; Schottdorf, Johannes; and Goosens, Andre F. L., 5,544,962, Cl. 384-448.000.
Schotten, Theo: *See—*
Heath, William F., Jr.; McDonald, John H., III; Paal, Michael; Rühter, Gerd; Schotten, Theo; and Stenzel, Wolfgang, 5,545,636, Cl. 514-214.000.
Schow, Steven R.: *See—*
Ayral-Kaloustian, Semiramis; Schow, Steven R.; Du, Mila T.; and Gibbons, James J., Jr, 5,545,662, Cl. 514-478.000.
Schrodi, Karl: *See—*
Wippenbeck, Matthias; Willmann, Gert; and Schrodi, Karl, 5,546,389, Cl. 370-60.000.
Schuit, Johannes. Universal, hydraulic, self adjusting, work clamping device. 5,544,872, Cl. 269-26.000.
Schuller International, Inc.: *See—*
Taylor, Thomas J.; Kielmeyer, William H.; and Rude, Carl A., 5,545,825, Cl. 524-195.000.
Schulman, Joseph H.: *See—*
Mann, Alfred E.; and Schulman, Joseph H., 5,545,191, Cl. 607-57.000.
Schulte, Theodore J.; Dahl, Roger W.; Bach, Stanley M., Jr.; Shapland, J. Edward; and Lang, Douglas J., to Cardiac Pacemakers, Inc. Unitary intravascular defibrillating catheter with bipolar sensing. 5,545,205, Cl. 607-123.000.
Schultz, Gary R.: *See—*
Freigang, Alan R.; Schultz, Gary R.; Runels, Thomas L.; and Gerlofs, Kurt R., 5,544,688, Cl. 152-415.000.
Schultz, Waldemar: *See—*
Bucken, Rene; Consoir, Rudolf; Hermanns, Ferdinand-Josef; Kathke, Gregor; Schwalm, Hans-Werner; Schultz, Waldemar; Paulsen, Hedde-Christoph; and Kery, Michael, 5,544,829, Cl. 242-35.50R.
Schulz, Andreas; and Höfler, Marco, to Cerdec Aktiengesellschaft Keramische Farben. Aqueous precious metal preparations and their use for manufacturing precious metal decorations. 5,545,452, Cl. 428-41.700.
Schulz, Manfred; Waldner, Gerhard; and Wagemann, Alfred, to Metabowerke GmbH & Co. Quick-action clamping device for axially securing a disk shaped tool. 5,545,078, Cl. 451-342.000.
Schumacher, Heiko: *See—*
Heine, Steffen; Schumacher, Heiko; and Johnen, Rolf, 5,544,895, Cl. 277-9.500.
Schumacher, Lawrence H. Ladder lift with swivel tray. 5,544,718, Cl. 182-129.000.
Schuster, Dieter H. P.; Fels, Achim G.; and Spors, Herbert, to Akzo Nobel Faser AG; and H.A. Schmitz GmbH. Anti-vandalism layer. 5,545,470, Cl. 428-229.000.
Schuster, Jeffrey A.: *See—*
Lloyd, Lester J.; Lloyd, Peter M.; Rubsamen, Reid M.; and Schuster, Jeffrey A., 5,544,646, Cl. 128-200.140.
Schutt, Karl; Hinken, Johann H.; Klinger, Martin; and Timtchev, Savtcho S., to Suspa Spannbeton GmbH. Monitoring device for tension members of soil or rock anchors, compression members of poles, prestressing elements for prestressed concrete structures and bridge cables. 5,545,987, Cl. 324-219.000.
Schutten, Michael J.; Vlatkovic, Vlatko; and Steigerwald, Robert L., to General Electric Company. Resonant converter with wide load range. 5,546,294, Cl. 363-17.000.
Schwalm, Hans-Werner: *See—*
Bucken, Rene; Consoir, Rudolf; Hermanns, Ferdinand-Josef; Kathke, Gregor; Schwalm, Hans-Werner; Schultz, Waldemar; Paulsen, Hedde-Christoph; and Kery, Michael, 5,544,829, Cl. 242-35.50R.
Schwartz, Edward L.: *See—*
Otter, Brian A.; and Schwartz, Edward L., 5,545,629, Cl. 514-50.000.
Schwartz Electro-Optics, Inc.: *See—*
Wangler, Richard J.; Gustavson, Robert L.; McConnell, Robert E., II; and Fowler, Keith L., 5,546,188, Cl. 356-376.000.
Schwarzmaier, Peter; Häckl, Peter; Stöger, Manfred; and Mielke, Ingolf, to Hoechst Aktiengesellschaft. Process for the preparation of vinyl chloride. 5,545,780, Cl. 570-226.000.
Schwendeman, Robert J.: *See—*
Leitch, Clifford D.; Schwendeman, Robert J.; and Macnak, Philip P., 5,546,411, Cl. 371-5.500.
Sci-Can: *See—*
Zwingenberger, Arthur; and Saupe, Martin, 5,545,383, Cl. 422-295.000.
Science Incorporated: *See—*
Kriesel, Marshall S., 5,545,139, Cl. 604-132.000.
Scientific Ecology Group: *See—*
Roy, Bryan A.; Ingram, Joseph D.; Arrowsmith, Hubert W.; and Ramsey, Timothy B., 5,545,796, Cl. 588-4.000.
Scime, Earl E.: *See—*
Funsten, Herbert O.; McComas, David J.; and Scime, Earl E., 5,545,894, Cl. 250-281.000.
SCIMED Life Systems, Inc.: *See—*
Burns, Matthew M.; and Lafontaine, Daniel M., 5,545,133, Cl. 604-96.000.
Scott, David B.: *See—*
Frazer, James T.; Scott, David B.; and Bondanza, James F., 5,544,599, Cl. 112-118.000.
Scott, James W.: *See—*
Hall, Herbert L.; and Scott, James W., 5,545,279, Cl. 156-201.000.

Scott, Stuart K.: *See—*
Hall, Jon R.; Carpenter, Clint W.; and Scott, Stuart K., 5,545,677, Cl. 523-212.000.
Scott-Young, Robert E.: *See—*
Wunder, Heiko; Scott-Young, Robert E.; Maddern, Kenneth N.; and Corrigan, Mark C., 5,545,385, Cl. 423-183.000.
Scurrah, Mark E.: *See—*
Ziegler, Byron J.; and Scurrah, Mark E., 5,545,951, Cl. 315-58.000.
Seabright Corporation: *See—*
Hew, Choy L.; and Fletcher, Garth L., 5,545,808, Cl. 800-2.000.
Seagate Technology, Inc.: *See—*
Dunfield, John C.; and Oveyssi, Kamran, 5,545,937, Cl. 310-90.500.
Tolman, Charles H., 5,546,256, Cl. 360-126.000.
Searls, Jesse H.: *See—*
Attey, Graeme S.; Searls, Jesse H.; and Sargeant, Gary L., 5,544,487, Cl. 62-3.700.
Sechrist, Paul A., to UOP. Process and apparatus for discharging particles and fluids from flow channels. 5,545,382, Cl. 422-216.000.
Sechrist, Paul A.: *See—*
Lawrence, Roger R.; Micklich, Frank T.; Ressl, Charles T.; and Sechrist, Paul A., 5,545,312, Cl. 208-152.000.
Seeds, Jeffrey K.: *See—*
Behr, Stephen R.; Seeds, Jeffrey K.; Lamb, Catherine S.; Garleb, Keith A.; and Walton, Joseph E., 5,545,414, Cl. 424-484.000.
Seegmiller, Ben L. Anchor structure. 5,544,980, Cl. 405-259.600.
Seegmiller, Ben L. Mine strata support structure. 5,544,982, Cl. 405-288.000.
Seesink, Petrus H., to Sierra Semiconductor B.V. Feed-back circuit for CMOS high voltage generator to program (E) eprom-memory cells. 5,546,031, Cl. 327-155.000.
Sega Pinball, Inc.: *See—*
Borg, John D., 5,544,880, Cl. 273-119.00R.
Sehier, Philippe; and Deprey, Dominique, to Alcatel Telspace. Spread spectrum digital transmission system using low-frequency pseudorandom encoding of the wanted information and spectrum spreading and compression method used in a system of this kind. 5,546,423, Cl. 375-206.000.
Seibel, George L.: *See—*
Adams, Jerry L.; Hall, Ralph F.; Lee, Dennis; Mayer, Ruth J.; and Seibel, George L., 5,545,669, Cl. 514-562.000.
Seiko Epson Corporation: *See—*
Coon, Brett; Miyayama, Yoshiyuki; Nguyen, Le T.; and Wang, Johannes, 5,546,552, Cl. 395-375.000.
Konno, Tsugimi, 5,545,498, Cl. 430-18.000.
Okeya, Makoto; Ueki, Yasunori; and Ito, Norio, 5,545,983, Cl. 324-207.120.
Takeuchi, Kesatoshi, 5,546,137, Cl. 348-714.000.
Seiko Precision Inc.: *See—*
Nemoto, Ichiro; Izumi, Hiroyuki; Fukui, Nobuyuki; and Takahashi, Kunioki, 5,546,149, Cl. 354-265.000.
Seiler, Hartmut: *See—*
Peter, Cornelius; Seiler, Hartmut; AAB, Volker; and Haderer, Guenter, 5,545,961, Cl. 318-647.000.
Seiren Co., Ltd.: *See—*
Wakabayashi, Sobei; Hashimukai, Tomoko; Katakura, Takeo; and Takano, Yoshihito, 5,545,212, Cl. 623-1.000.
Sejnoha, Vladimir: *See—*
Lynch, Thomas E.; Sejnoha, Vladimir; and Dinger, Thomas E., 5,546,499, Cl. 395-2.490.
Seki, Takahiro: *See—*
Soneda, Mitsuo; and Seki, Takahiro, 5,545,941, Cl. 310-318.000.
Sekiguchi, Chieko: *See—*
Sakamoto, Atsunobu; and Sekiguchi, Chieko, 5,545,117, Cl. 493-203.000.
Sekiguchi, Nobuyuki: *See—*
Goto, Narito; Isshiki, Masanori; Sasaki, Kunitsuna; Sekiguchi, Nobuyuki; Takeda, Katsuyuki; and Takahashi, Hideki, 5,545,462, Cl. 428-141.000.
Sekine, Chizu; Tani, Takeshi; Ueda, Kayoko; Fujisawa, Koichi; Higashii, Takayuki; Fujimoto, Yukari; Toda, Shoji; and Minai, Masayoshi, to Sumitomo Chemical Company, Limited. Liquid crystal mixture and liquid crystal element comprsing the same. 5,545,345, Cl. 252-299.610.
Sekine, Hiroshi, to Honda Giken Kogyo Kabushiki Kaisha. Intercommunication system for vehicle. 5,546,311, Cl. 364-449.000.
Sekiya, Tsuneo: *See—*
Tomitaka, Tadafusa; and Sekiya, Tsuneo, 5,546,125, Cl. 348-169.000.
Selecman, George E.: *See—*
Stephens, Randy R.; Banik, Michael S.; Ashmore, Leslie R.; Rowe, C. Daniel; and Selecman, George E., 5,545,142, Cl. 604-167.000.
Seliger, Robert; Ehrhardt, Fred W.; and Braunstein, Andrew S., to Hewlett-Packard Company. Method and apparatus for coordinating concurrent updates to a medical information database. 5,546,580, Cl. 395-600.000.
Selker, Edwin J.: *See—*
Rudisill, Charles A.; Rutledge, Joseph D.; and Selker, Edwin J., 5,544,530, Cl. 73-810.000.
Sellner, James, Carlyn Sellner, executors: *See—*
Gengenbach, Burle G.; Somers, David A.; Bittel, Douglas C.; Shaver, Jonathan M.; Sellner, Juantia M., deceased, 5,545,545, Cl. 435-172.300.
Sellner, Juantia M., deceased (by James Sellner, Carlyn Sellner, executors): *See—*
Gengenbach, Burle G.; Somers, David A.; Bittel, Douglas C.; Shaver, Jonathan M.; Sellner, Juantia M., deceased, 5,545,545, Cl. 435-172.300.
Semi-Bulk Systems, Inc.: *See—*
Alack, Charles S., 5,544,951, Cl. 366-163.200.
Semiconductor Energy Laboratory Co., Ltd.: *See—*
Shimizu, Michio; Konuma, Toshimitsu; and Moriya, Kouji, 5,546,208, Cl. 359-81.000.
Yamazaki, Shunpei, 5,545,503, Cl. 430-128.000.
Yamazaki, Shunpei; Zhang, Hongyong; Uochi, Hideki; Adachi, Hiroki; and Takemura, Yasuhiko, 5,545,571, Cl. 437-21.000.
Semitool, Inc.: *See—*
Thompson, Raymon F.; Berner, Robert W.; Curtis, Gary L.; Culliton, Stephen P.; and Wright, Blaine G., 5,544,421, Cl. 34-58.000.
Semple, Thomas C.: *See—*
Powell, Joseph B.; Slaugh, Lynn H.; Forschner, Thomas C.; Semple, Thomas C.; and Weider, Paul R., 5,545,766, Cl. 568-862.000.
Slaugh, Lynn H.; Powell, Joseph B.; Forschner, Thomas C.; Semple, Thomas C.; and Weider, Paul R., 5,545,765, Cl. 568-862.000.
Weider, Paul R.; Powell, Joseph B.; Slaugh, Lynn H.; Forschner, Thomas C.; and Semple, Thomas C., 5,545,767, Cl. 568-867.000.
Seneker, Stephen D.: *See—*
Barksby, Nigel; and Seneker, Stephen D., 5,545,706, Cl. 528-49.000.
Senercomm, Inc.: *See—*
Keating, Mark K.; and Staudt, Fredrick J., 5,544,809, Cl. 236-44.00C.
Senger, Karl-Heinz; Keuper, Gerhard; and Bäuerle, Peter, to Robert Bosch GmbH. Method for adjusting the transmission ratio of a transmission. 5,545,106, Cl. 477-43.000.
Sens, Rüdiger; and Etzbach, Karl-Heinz, to BASF Aktiengesellschaft. Thermal transfer of pyridone dyes. 5,545,235, Cl. 8-471.000.
Sensmeier, Jürgen: *See—*
Thiele, Siegfried; and Sensmeier, Jürgen, 5,544,559, Cl. 83-43.800.
Senter, Peter D.; Su, Peter C.; Marquardt, Hans; Hayden, Martha S.; and Linsley, Peter, to Oncogen. Thermally stable cytosine deaminase from saccharomyces. 5,545,548, Cl. 435-227.000.
Sentrol, Inc.: *See—*
Bernal, Brian A.; Fischette, Robert G.; Johnson, Kirk R.; and Marman, Douglas H., 5,546,074, Cl. 340-628.000.
Senuma, Takehide: *See—*
Yoshitomi, Yasunari; Senuma, Takehide; Suga, Yozo; and Takahashi, Nobuyuki, 5,545,263, Cl. 148-111.000.
Seo, Young-woo: *See—*
Park, Young-hoon; Seo, Young-woo; and Lee, Yong-hee, 5,545,578, Cl. 437-44.000.
Sepracor, Inc.: *See—*
Gao, Yun; and Zepp, Charles M., 5,545,745, Cl. 560-42.000.
Sera, Akira: *See—*
Iihara, Michio; Shimizu, Osamu; and Sera, Akira, 5,544,548, Cl. 76-107.100.
Sereno, Daniele, to Sip - Societa Italiana per l'esercizio Delle Telecomunicazioni S.p.A. Method of and device for quantizing spectral parameters in digital speech coders. 5,546,498, Cl. 395-2.380.
Sergel, Horst; and Bartsch, Friedrich, to Continental Aktiengesellschaft. Method and device for determining overlapping length of a wound strip of material. 5,546,330, Cl. 364-562.000.
Seritella, Keith A.: *See—*
Le, Thu A.; Yi, Sung S.; Zwaskis, William; Pedlick, Jack S.; Luscombe, Brian H.; Jamiolkowski, Deanis D.; Di Giovanni, John; Seritella, Keith A.; Steckel, Mark G.; and Harwin, Steven F., 5,545,180, Cl. 606-232.000.
Seshadri, Nambirajan; and Sundberg, Carl-Erik W., to AT&T Corp. Methods of and devices for enhancing communications that use spread spectrum technology by using variable code techniques. 5,546,420, Cl. 375-200.000.
Seto, Fumiaki, to Fujitsu Limited. Transfer omission detector in transfer unit for image forming apparatus. 5,546,172, Cl. 355-274.000.
Seto, Isamu: *See—*
Satoh, Takamasa; Yasuda, Hiroshi; Kai, Junichi; Oae, Yoshihisa; Nishino, Hisayasu; Sakamoto, Kiichi; Yabara, Hidefumi; Seto, Isamu; Takigawa, Masami; Yamada, Akio; Arai, Soichiro; Abe, Tomohiko; Kiuchi, Takashi; and Miyazawa, Kenichi, 5,546,319, Cl. 364-488.000.
Seto, Yoshiaki; Miyauchi, Masayuki; and Fujii, Takanobu, to Tamura Electric Works, Ltd. Card reader apparatus. 5,545,884, Cl. 235-449.000.
Seto, Yoshiharu, to Amada MFG America Inc. Turret punch press. 5,545,116, Cl. 483-29.000.
Seto, Youichi; Kikuchi, Masahiro; Kodaira, Takatoshi; Tezuka, Shu; Komura, Fuminobu; and Matsumoto, Kuniaki, to Hitachi, Ltd. Method for retrieving database of image information. 5,546,572, Cl. 395-600.000.
Setoyama, Tohru, to Hitachi, Ltd. Data and synchronization signal outputting apparatus for recovering missing data and synchronization signals. 5,546,243, Cl. 360-51.000.
Severns, John C.: *See—*
Wahl, Errol H.; Bacon, Dennis R.; Baker, Ellen S.; Bodet, Jean-Francois; Burns, Michael E.; Demeyere, Hugo J. M.; Heasley, Charles A.; Mermelstein, Robert; Severns, John C.; Shaw, John H., Jr.; Siklosi, Michael P.; Vogel, Alice M.; and Watson, Jeffrey W., 5,545,340, Cl. 510-517.000.
Severns, Rudy: *See—*
Ramos, Sergio; Hall, John T.; Tanzer, Herbert J.; and Severns, Rudy, 5,545,966, Cl. 320-2.000.
Seward, Eric. Storage pockets for file folders. 5,545,087, Cl. 462-6.000.
Sextant Avionique: *See—*

Clauzel, Yves; and Jaeger, Christian, 5,546,396, Cl. 370-85.100.
Seymour Housewares Corporation: *See*—
Mattesky, Henry, 5,544,781, Cl. 220-404.000.
Sferlazza, Joseph: *See*—
Maida, Richard C.; and Sferlazza, Joseph, 5,544,473, Cl. 53-460.000.
Sgrignoli, Gary J.: *See*—
Krishnamurthy, Gopalan; Mycynek, Victor G.; and Sgrignoli, Gary J., 5,546,138, Cl. 348-735.000.
SGS-Thomson Microelectronics, Inc.: *See*—
Cameron, Scott W., 5,546,030, Cl. 327-110.000.
McClure, David C., 5,546,537, Cl. 395-183.210.
SGS-Thomson Microelectronics S.r.l.: *See*—
Calligaro, Cristiano; Gastaldi, Roberto; Malcovati, Piero; and Torelli, Guido, 5,546,044, Cl. 327-543.000.
Maccarrone, Marco; Olivo, Marco; and Golla, Carla M., 5,546,054, Cl. 331-111.000.
Shaffer, Louis J.: *See*—
Chang, Chi S.; Desai, Subahu D.; Gernhart, Debra A.; Hartley, Phillip A.; Haskins, Robert J., Jr.; Ho, Keith K. T.; Martone, Robert A.; Mulcahy, Roy T.; Shaffer, Louis J.; Schoening, Robert D.; and Versprille, Scott A., 5,546,321, Cl. 364-491.000.
Shagoury, John G., to General Electric Company. Method and apparatus for preferential cooling. 5,544,700, Cl. 165-139.000.
Shah, Jayesh: *See*—
O'Dell, Robin D.; Lex, Joseph A.; Simon, Alice M.; and Shah, Jayesh, 5,545,476, Cl. 428-327.000.
Shahab, Syed A.; and Chirehdast, Mehran, to Ford Motor Company. Energy absorbing vehicle pillar structure. 5,544,933, Cl. 296-189.000.
Shale, Deborah J.: *See*—
Dennison, Everett; Nass, Edwin L.; Duffy, Timothy J.; Pauley, Gregory T.; Jones, Scott L.; and Shale, Deborah J., 5,546,445, Cl. 379-60.000.
Sham, Hing Leung: *See*—
Kempf, Dale J.; Norbeck, Daniel W.; Erickson, John W.; Sham, Hing Leung; Codacovi, Lynn M.; and Plattner, Jacob J., 5,545,750, Cl. 564-360.000.
Shan, Ming-Chien, to Hewlett-Packard. Method of recursively deriving and storing data in, and retrieving recursively-derived data from, a computer database system. 5,546,571, Cl. 395-600.000.
Shanbrom, Edward. Antiviral, spermicidal vaginal gel and foam containing low molecular weight povidone-iodine. 5,545,401, Cl. 424-78.070.
Shank, Steven M.: *See*—
Soave, Robert J.; Then, Alan M.; Shank, Steven M.; and Tasker, G. William, 5,544,772, Cl. 216-2.000.
Shape Corporation: *See*—
Rosasco, James J., 5,545,022, Cl. 425-110.000.
Rosasco, James J., 5,545,361, Cl. 264-45.200.
Shapland, J. Edward: *See*—
Schulte, Theodore J.; Dahl, Roger W.; Bach, Stanley M., Jr.; Shapland, J. Edward; and Lang, Douglas J., 5,545,205, Cl. 607-123.000.
Sharkey, Hugh R.; Goldwasser, Benad; and Edwards, Stuart D., to Vidamed, Inc. Anastomosis catheter. 5,545,171, Cl. 606-148.000.
Sharma, Raghu N.; Davis, Jeffrey P.; Gunn, Timothy D.; Li, Ping; Maitra, Sidhartha; and Thanawala, Ashish A., to Multi-Tech Systems, Inc. Dynamic selection of compression rate for a voice compression algorithm in a voice over data modem. 5,546,395, Cl. 370-84.000.
Sharp Corporation: *See*—
Kawanaka, Seido; Yoshikawa, Mituo; and Naito, Hiroyoshi, 5,546,479, Cl. 382-290.000.
Sharp, Gordon; Dean, Jerome; and Desrochers, Eric, to Phoenix Controls Corporation. Air flow control for pressurized room facility. 5,545,086, Cl. 454-238.000.
Sharp, Joseph A.: *See*—
Baltins, Guntis U.; Boyle, Russell W.; Mason, Denis G.; Moore, Howard M.; Owen, A. DeBow; and Sharp, Joseph A., 5,544,526, Cl. 73-180.000.
Sharp Kabushiki Kaisha: *See*—
Aota, Keiji; Ooga, Masaaki; and Tagusa, Yasunobu, 5,546,279, Cl. 361-749.000.
Fuji, Hiroshi; Deguchi, Toshihisa; Kojima, Kunio; Yamaguchi, Takeshi; Terashima, Shigeo; Takahashi, Akira; and Ohta, Kenji, 5,546,364, Cl. 369-13.000.
Kimoto, Masahiko; Nakamichi, Masumi; Funakoshi, Takahiro; Wada, Yasuhiro; Yamamoto, Takehiro; and Tsuda, Yoichi, 5,546,496, Cl. 385-146.000.
Miyamae, Futoshi; and Miyata, Souichi, 5,546,600, Cl. 395-800.000.
Nakanishi, Hiroshi; and Hamada, Hiroshi, 5,546,206, Cl. 359-67.000.
Nakato, Tatsuo, 5,545,512, Cl. 430-323.000.
Takao, Yasunori, 5,546,203, Cl. 359-49.000.
Wada, Takasumi; Fujita, Hirokazu; and Inui, Koichi, 5,546,169, Cl. 355-244.000.
Sharp Microelectronics Technology, Inc.: *See*—
Nakato, Tatsuo, 5,545,512, Cl. 430-323.000.
Shashoua, Victor E., to Neuromedica, Inc. Nerve growth peptides. 5,545,719, Cl. 530-345.000.
Shaver, Jonathan M.: *See*—
Gengenbach, Burle G.; Somers, David A.; Bittel, Douglas C.; Shaver, Jonathan M.; Sellner, Juantia M., deceased, 5,545,545, Cl. 435-172.300.
Shaver, Robert, to Jervis B. Webb Company. Wheeled luggage tipper. 5,544,733, Cl. 198-408.000.
Shaw, Herbert J.: *See*—
Fling, John J.; Shaw, Herbert J.; Digonnet, Michel J.; and Kapany, Narinder S., 5,546,484, Cl. 385-16.000.
Shaw, James E.; Sattich, William E.; and Efner, Howard F., to Phillips Petroleum Company. Oxidation of dimercaptans to organic disulfide polymers. 5,545,714, Cl. 528-374.000.
Shaw, John H., Jr.: *See*—
Wahl, Errol H.; Bacon, Dennis R.; Baker, Ellen S.; Bodet, Jean-Francois; Burns, Michael E.; Demeyere, Hugo J. M.; Hensley, Charles A.; Mermelstein, Robert; Severns, John C.; Shaw, John H., Jr.; Siklosi, Michael P.; Vogel, Alice M.; and Watson, Jeffrey W., 5,545,340, Cl. 510-517.000.
Shaw, Michael; and Slater, Gary W., to Dunlop Limited. Golf ball dimple patterns. 5,544,890, Cl. 473-383.000.
Shay, Francis J.: *See*—
Bruckner, Carl M.; Calhoun, Edward E., III; Fasnacht, Matthew J.; Schaffer, Ronald R.; and Shay, Francis J., 5,546,495, Cl. 385-135.000.
Sheehan, John A.: *See*—
Urness, Randall J.; and Sheehan, John A., 5,544,375, Cl. 5-611.000.
Shell Oil Company: *See*—
Bening, Robert C.; and St. Clair, David J., 5,545,691, Cl. 525-102.000.
Kemp, Richard A., 5,545,603, Cl. 502-347.000.
Powell, Joseph B.; Slaugh, Lynn H.; Forschner, Thomas C.; Semple, Thomas C.; and Weider, Paul R., 5,545,766, Cl. 568-862.000.
Slaugh, Lynn H.; Powell, Joseph B.; Forschner, Thomas C.; Semple, Thomas C.; and Weider, Paul R., 5,545,765, Cl. 568-862.000.
Weider, Paul R.; Powell, Joseph B.; Slaugh, Lynn H.; Forschner, Thomas C.; and Semple, Thomas C., 5,545,767, Cl. 568-867.000.
Shelton, David B. Cooking vessel with water detection means. 5,545,877, Cl. 219-497.000.
Shemitz, Sylvan R., to Sylvan R. Shemitz Designs, Inc. Hospital corridor lighting/information unit and system. 5,546,292, Cl. 362-234.000.
Shen, Anthony P., to Aastra Technologies Inc. Call waiting cancellation device. 5,546,451, Cl. 379-215.000.
Sheng, Yi-Chung; Chung, Chen-Hui; and Su, Kuan-Cheng, to United Microelectronics Corporation. Multi-state read-only memory using multiple polysilicon selective depositions. 5,545,580, Cl. 437-48.000.
Shepard, Howard M.: *See*—
Swartz, Jerome; Shepard, Howard M.; Krichever, Mark J.; Metlitsky, Boris; and Barkan, Edward, 5,545,889, Cl. 235-472.000.
Shepherd, Nigel R. C, to Haigh Engineering Company Ltd., The. Rotary disintegrators. 5,544,819, Cl. 241-37.000.
Sherwood, David E., Jr.: *See*—
Nelson, Gerald V.; Nongbri, Govanon; Pratt, Roy E.; Sherwood, David E., Jr.; and Dai, Pei-Shing E., 5,545,602, Cl. 502-314.000.
Sherwood Medical Company: *See*—
Schenk, Robert W.; Ranford, Alan B.; Ray, Shawn C.; Sunderland, Richard A.; and Kinghorn, Curtis D., 5,545,174, Cl. 606-182.000.
Shibata, Kenichi: *See*—
Sakata, Masakazu; Fujii, Hiroyuki; Hamada, Yuji; Shibata, Kenichi; and Nishio, Yoshitaka, 5,545,400, Cl. 424-76.210.
Shibayama, Akinori: *See*—
Yamada, Toshio; Shibayama, Akinori; Iwanari, Shunichi; and Fujiwara, Atsushi, 5,545,977, Cl. 323-313.000.
Shibayama, Masakazu: *See*—
Higashimura, Minoru; Ootsuka, Takashi; and Shibayama, Masakazu, 5,545,609, Cl. 504-282.000.
Shibazaki, Hiroshi; and Sasahara, Masayuki, to Dainippon Screen Mfg. Co., Ltd. Method and apparatus for generating halftone images with adjusted screen angles. 5,546,197, Cl. 358-534.000.
Shieber, Stuart M.: *See*—
Marks, Joseph W.; Shieber, Stuart M.; and Hwa, Rebecca P., 5,546,517, Cl. 395-145.000.
Shieh, Brian: *See*—
Chen, Jian; Papanu, James S.; Mak, Steve S. Y.; Ish-Shalom, Carmel; Hsieh, Peter; Lau, Wesley G.; Rhoades, Charles S.; Shieh, Brian; Latchford, Ian S.; Williams, Karen A.; and Yu-Wang, Victoria, 5,545,289, Cl. 156-643.100.
Shieh, Jin-Ren. Burglaryproof axial pin tumbler lock. 5,544,512, Cl. 70-491.000.
Shields, Patrick: *See*—
Huege, Fred R.; and Shields, Patrick, 5,544,971, Cl. 404-72.000.
Shields, Robin: *See*—
Pease, Robert A.; and Shields, Robin, 5,546,260, Cl. 361-18.000.
Shiff, Victor E.: *See*—
Deems, Vincent B.; Racino, Gregory A.; Feddeler, James R.; and Shiff, Victor E., 5,546,588, Cl. 395-750.000.
Shih, Jerry C.: *See*—
Grosskopf, Joseph R.; Niaz, Hasan S.; Reuss, Carolyn K.; Shih, Jerry C.; and Watson, Paul T., 5,546,574, Cl. 395-600.000.
Shih, Ming; Xu, Jingyu; Su, Weng-Herng; and Pan, Jing-Jong, to E-Tek Dynamics, Inc. Optical fiber end for application in an optical isolator and a method of manufacture thereof. 5,546,486, Cl. 385-31.000.
Shikata, Hideo: *See*—
Ishijima, Zenzo; Ichikawa, Jun-ichi; Sasaki, Shuji; Shikata, Hideo; Urata, Hideo; Kawase, Shoji; and Ueda, Jun-ichi, 5,545,487, Cl. 428-548.000.
Shim, Chang S.: *See*—
Lee, Sang H.; Ko, Jung H.; Lee, Tae H.; and Shim, Chang S., 5,546,401, Cl. 370-105.100.
Shima Seiki Manufacturing Ltd.: *See*—
Miyamoto, Masaki, 5,544,503, Cl. 66-146.000.

Nakamori, Toshinori; Sonomura, Minoru; and Nakai, Kenji, 5,544,502, Cl. 66-126.00A.
Shimada, Toshiyuki; and Nakajima, Takeshi, to Matsushita Electric Industrial Co., Ltd. Method and apparatus for digital code resynchronization in data encoding/decoding. 5,546,427, Cl. 375-293.000.
Shimada, Yasuhiro; Okamura, Yoshimasa; Takamatsu, Osamu; Nakayama, Masaru; and Yanagisawa, Yoshihiro, to Canon Kabushiki Kaisha. Method of manufacturing a tip for scanning tunneling microscope using peeling layer. 5,546,375, Cl. 369-126.000.
Shimamune, Takayuki; and Nakajima, Yasuo, to Permelec Electrode Co. Ltd. Method of producing an electrolytic electrode. 5,545,306, Cl. 205-109.000.
Shimasaki, Yuichi: *See*—
Matsumoto, Seiji; Aoki, Takuya; Shimasaki, Yuichi; Hatcho, Seiji; Oketani, Toshikazu; Miyashita, Yukio; Saito, Akihisa; Komatsuda, Takashi; and Kato, Hiroaki, 5,544,482, Cl. 60-279.000.
Shimizu, Keiichi, to Toyo Kohan Co., Ltd. Method of redrawing a predrawn coated metal can. 5,544,517, Cl. 72-349.000.
Shimizu, Michio; Konuma, Toshimitsu; and Moriya, Kouji, to Semiconductor Energy Laboratory Co., Ltd. Electrooptical device involving a mixture of liquid crystal, photo curable resins and reaction initiating material for forming resinous columns. 5,546,208, Cl. 359-81.000.
Shimizu, Naohiro: *See*—
Muraoka, Kimihiro; Shimizu, Naohiro; and Tamamushi, Takashige, 5,545,905, Cl. 257-268.000.
Shimizu, Osamu: *See*—
Iihara, Michio; Shimizu, Osamu; and Sera, Akira, 5,544,548, Cl. 76-107.100.
Shimizu, Shumpei; Cho, Toshitsura; and Iiri, Shigeo, to Tama Chemicals Co., LTD. Method of processing organic quaternary ammonium hydroxide-containing waste liquid. 5,545,309, Cl. 205-437.000.
Shimizu, Yo; Miya, Masaru; and Nagata, Akira, to Agency of Industrial Science & Technology. Process for preparing ferromagnetic material. 5,545,341, Cl. 252-62.50R.
Shimoda, Ikuo: *See*—
Fujita, Takafumi; Shimoda, Ikuo; Mochimaru, Masami; Otsuka, Susumu; Kawai, Nobuyasu; Kurimoto, Kurimoto; and Inaba, Kanemasa, 5,544,452, Cl. 52-167.200.
Shimoda, Kenji, to Kabushiki Kaisha Toshiba. Packet conversion apparatus and system. 5,546,399, Cl. 370-94.100.
Shimoji, Tamotsu, to Daifuku Co., Ltd. Warning apparatus. 5,546,075, Cl. 340-666.000.
Shin, Charlie C.: *See*—
Ramanujam, Parthasarathy; Shin, Charlie C.; Fermelia, Louis R., Jr.; and Stambaugh, Andrew J., 5,546,097, Cl. 343-781.00R.
Shin-Etsu Chemical Co., Ltd.: *See*—
Kaneyoshi, Masami; and Sakai, Shigeru, 5,545,386, Cl. 423-263.000.
Shin, Hyun W.: *See*—
Yun, Dong H.; Lee, Kyu C.; Hong, Hyung K.; Park, Hyeon S.; Kwon, Chul H.; and Shin, Hyun W., 5,545,300, Cl. 204-424.000.
Shinko Kosen Kogyo Kabushiki Kaisha: *See*—
Yamaoka, Yukio; Tamai, Kishio; and Masutani, Hiroshi, 5,545,482, Cl. 428-379.000.
Shinoaki, Hironobu: *See*—
Tokumoto, Kei; Kitada, Tetsunori; Shinoaki, Hironobu; and Sakaguchi, Shigeya, 5,545,248, Cl. 75-238.000.
Shinoda, Takashi: *See*—
Nishida, Tetsuro; and Shinoda, Takashi, 5,546,522, Cl. 395-156.000.
Shinohara, Seigo: *See*—
Okamura, Kiyoshi; and Shinohara, Seigo, 5,545,683, Cl. 524-277.000.
Shinokura, Kiichiro: *See*—
Endo, Tetsuro; and Shinokura, Kiichiro, 5,546,220, Cl. 359-332.000.
Shinozaki, Eiji; Fukahori, Kiyoshi; and Kurisu, Masafumi, to Silicon Systems, Inc. Peak detector. 5,546,027, Cl. 327-59.000.
Shioda, Masahiro: *See*—
Yamamoto, Chiyoko; Maruhashi, Daisuke; and Shioda, Masahiro, 5,546,403, Cl. 371-20.500.
Shirai, Katutada: *See*—
Ohtsuka, Yasushi; Shirai, Katutada; Matsuoka, Ken; Suehiro, Yoshio; and Ohashi, Hideki, 5,546,283, Cl. 362-61.000.
Shirai, Shigeru; and Ohno, Shigeru, to Canon Kabushiki Kaisha. Electrophotographic layered light receiving member containing A-Si and Ge. 5,545,500, Cl. 430-67.000.
Shiraishi, Masami, to Stuff Co., Ltd.; and Works Co., Ltd. Educational toy keyboard. 5,545,071, Cl. 446-143.000.
Shiraishi, Naomasa, to Nikon Corporation. High resolution printing technique by using improved mask pattern and improved illumination system. 5,546,225, Cl. 359-559.000.
Shiraishi, Taketoshi: *See*—
Ogawa, Takashi; Yoshimoto, Kazuo; Uchiyama, Kensuke; Ibe, Harushige; Arai, Yoshiharu; Shiraishi, Taketoshi; and Gotoh, Yoshinori, 5,544,995, Cl. 414-219.000.
Shirohita, Takashi: *See*—
Hibi, Taketoshi; Maeno, Kenji; Ido, Kihei; Onishi, Ken; Ueda, Shinobu; Hirano, Akiyoshi; Hatanaka, Keiji; and Shirohita, Takashi, 5,546,191, Cl. 358-335.000.
Shirota, Riichiro: *See*—
Tanaka, Tomoharu; Momodomi, Masaki; Kato, Hideo; Nakai, Hiroto; Tanaka, Yoshiyuki; Shirota, Riichiro; Aritome, Seiichi; Itoh, Yasuo; Iwata, Yoshihisa; Nakamura, Hiroshi; Odaira, Hideko; Okamoto, Yutaka; Asano, Masamichi; and Tokushige, Kaoru, 5,546,351, Cl. 365-230.060.
Short, Graham B.: *See*—
Robertson, Iain C.; Nye, Jeffrey L.; Asal, Michael D.; Short, Graham B.; Simpson, Richard D.; and Littleton, James G., 5,546,553, Cl. 395-405.000.
Shouda, Hirofumi; Hirata, Yoshihiko; Kawai, Katsuhiko; Kondo, Toshio; and Haraguchi, Hiroshi, to Nippondenso Co., Ltd. Temperature predicting system for internal combustion engine and temperature control system including same. 5,544,639, Cl. 123-676.000.
Shoup, Robert D.: *See*—
Bocko, Peter L.; Eid, Bernard A.; Johnson, Ronald E.; Lock, William E.; Shoup, Robert D.; and Themont, Jean-Pierre, 5,544,582, Cl. 101-211.000.
Shrader, Theodore J. L.: *See*—
Li, Shih-Gong; and Shrader, Theodore J. L., 5,546,526, Cl. 395-159.000.
Shrader, Vernon L.: *See*—
Plummer, Walter A., III; Shrader, Vernon L.; and Klein, Laurence R., 5,545,844, Cl. 174-35.0MS.
Shriver, David I., to International Business Machines Corporation. Method and system for providing a client/server interface in a programming language. 5,546,583, Cl. 395-650.000.
Shu, Emily Y.; and Brown, Dale M., to General Electric Company. Optical sensing of combustion dynamics. 5,544,478, Cl. 60-39.030.
Shuffle Master, Inc.: *See*—
Breeding, John G., 5,544,892, Cl. 273-292.000.
Shufflebarger, Harry L.: *See*—
Biedermann, Lutz; Shufflebarger, Harry L.; and Harms, Jürgen, 5,545,165, Cl. 606-61.000.
Shumaker, Gene P.: *See*—
Podlaseck, Stanley; Shumaker, Gene P.; and Rimer, Paul D., 5,545,474, Cl. 428-288.000.
Shumard, Dennis D.; and Lundstrom, Michael L., to EBAA Iron, Inc. Wedge assembly restraint. 5,544,922, Cl. 285-23.000.
Shumate, Douglas S.; and Crumpton, Samuel D. Elongated article carrier. 5,544,798, Cl. 224-402.000.
Sidle, Richard S.: *See*—
Cochrane, Roberta J.; Pirahesh, Mir H.; and Sidle, Richard S., 5,546,576, Cl. 395-600.000.
Siebert, Christopher J.: *See*—
Zhu, Ming-De; and Siebert, Christopher J., 5,545,302, Cl. 204-454.000.
Siegfried, David L.: *See*—
Wilczak, Wojciech A.; Platzer, Stephan J.; and Siegfried, David L., 5,545,506, Cl. 430-253.000.
Sieleman, Jim: *See*—
Besnard, Philippe; Tang, Larry; Rugge, Richard L.; Sieleman, Jim; and Dumontier, Franck, 5,544,885, Cl. 473-350.000.
Siemens Aktiengesellschaft: *See*—
Baumgartl, Rudi, 5,546,081, Cl. 341-139.000.
Biedermann, Rolf; and Telges, Burkhard, 5,546,460, Cl. 379-411.000.
Conru, Harold W.; Froebel, Francis E.; Gregoritsch, Albert J., Jr.; Rieley, Sheldon C.; Starr, Stephen G.; Uttecht, Ronald R.; White, Eric J.; and Pohl, Jens G., 5,545,921, Cl. 257-669.000.
Kiefer, Berthold; and Feinberg, David A., 5,545,990, Cl. 324-307.000.
Kiehl, Oliver, 5,545,972, Cl. 323-315.000.
Krause, Hartmut; Dahmen, Georg P.; and Meiss, Ludwig, 5,545,124, Cl. 601-2.000.
Lenz, Helmut, 5,546,299, Cl. 363-71.000.
Loch, Manfred, 5,546,491, Cl. 385-99.000.
Pfitzenmaier, Gerhard, 5,546,057, Cl. 333-134.000.
Savignac, Dominique; Gleis, Dieter; and Menke, Manfred, 5,546,296, Cl. 363-60.000.
Schmelz, Helmut, 5,546,004, Cl. 324-446.000.
Sommer, Diether; Savignac, Dominique; and Gleis, Dieter, 5,546,036, Cl. 327-208.000.
Strobach, Peter, 5,546,332, Cl. 364-572.000.
Wagner, Roman, 5,546,079, Cl. 340-870.390.
Siemens Aktiengesellschaft: *See*—
Zierhut, Hermann, 5,546,419, Cl. 375-257.000.
Siemens Automotive L.P.: *See*—
Nally, Debora E.; and Hall, Bryan C., 5,544,816, Cl. 239-585.500.
Siemens Elema AB: *See*—
Hammarberg, Bjoern; Rosen, Jan; and Slettenmark, Bruno, 5,544,519, Cl. 73-37.000.
Siemens Energy & Automation, Inc.: *See*—
Trainor, Jack; LaPlace, Carl J.; and Harlow, James, 5,545,974, Cl. 323-340.000.
Siemens Medical Systems, Inc.: *See*—
Banjanin, Zoran B., 5,544,659, Cl. 128-661.090.
Kim, Jin H.; and Liu, Dong-Chyuan, 5,544,658, Cl. 128-661.090.
Kurowski, Lorenz V.; Blanz, Wolf-Ekkehard; and Delong, Wolf, 5,544,657, Cl. 128-661.080.
Siemens Nixdorf Informationssysteme Aktiengesellschaft: *See*—
Gut, Bernhard; and Wandinger, Franz, 5,546,271, Cl. 361-680.000.
Manzer, Hans; and Viechter, Manfred, 5,546,178, Cl. 355-319.000.
Pollmeier, Werner, 5,546,043, Cl. 327-427.000.
Sierra Semiconductor B.V.: *See*—
Seesink, Petrus H., 5,546,031, Cl. 327-155.000.
Siev, Chhay S.: *See*—
Boelstler, Richard; and Siev, Chhay S., 5,544,838, Cl. 242-384.200.
Sih, Gilbert C.; and Antonio, Franklin P., to Qualcomm Incorporated. Variable block size adaptation algorithm for noise-robust acoustic echo cancellation. 5,546,459, Cl. 379-411.000.

Siklosi, Michael P.: *See—*
Wahl, Errol H.; Bacon, Dennis R.; Baker, Ellen S.; Bodet, Jean-Francois; Burns, Michael E.; Demeyere, Hugo J. M.; Hensley, Charles A.; Mermelstein, Robert; Severns, John C.; Shaw, John H., Jr.; Siklosi, Michael P.; Vogel, Alice M.; and Watson, Jeffrey W., 5,545,340, Cl. 510-517.000.

Silca S.P.A.: *See—*
Botteon, Renato; and Chies, Ezio, 5,544,510, Cl. 70-456.00R.

Silen, Stuart L.: *See—*
Brockmeyer, Roger L.; Dievendorff, Richard; House, Daniel E.; Jenner, Earle H.; LaBelle, Margaret K.; Mall, Michael G.; and Silen, Stuart L., 5,546,582, Cl. 395-650.000.

Silicon Systems, Inc.: *See—*
Shinozaki, Eiji; Fukahori, Kiyoshi; and Kurisu, Masafumi, 5,546,027, Cl. 327-59.000.

Siliconix incorporated: *See—*
Williams, Richard K.; Hille, Peter; and Wrathall, Robert G., 5,545,909, Cl. 257-355.000.

Silva, John H. Fishing rod transport apparatus. 5,544,797, Cl. 224-311.000.

Silvatech Corporation: *See—*
Hughes, Michael, 5,544,558, Cl. 83-75.500.

Silver, Jordan R., to Tandem Computers Incorporated. Decentralized bus arbitration system which continues to assert bus request signal to preclude other from asserting bus request signal until information transfer on the bus has been completed. 5,546,587, Cl. 395-730.000.

Silveri, Michael A. Method of inhibiting scale formation in spa halogen generator. 5,545,310, Cl. 205-537.000.

Silverman, David P.: *See—*
Foladare, Mark J.; Goldman, Shelley B.; Murray, Nancy; Silverman, David P.; Tsao, Yao-Chung; and Weber, Roy P., 5,546,442, Cl. 377-57.000.

Silvers, Kenneth B.: *See—*
Bell, Cecil R.; Moyer, Charles R.; Poole, Gregory S.; and Silvers, Kenneth B., 5,544,603, Cl. 112-475.120.

Simes, David P. Conversion kit assembly for a light bulb. 5,546,291, Cl. 362-223.000.

Simig, Gyula: *See—*
Szántay, Csaba; Kardos, Zsuzsanna B.; Moldvai, István; Major, Eszter T.; Szántay, Csaba, Jr.; Mándi, Attila; Blaskó, Gábor; Simig, Gyula; Lax, Györgyi; Drabant, Sándor; Szállási, Tamas; Fekete, Márton; and Gigler, Gábor, 5,545,741, Cl. 546-276.700.

Similä, Jussi, to Oy GMA Printing Systems Ab. Feed deflection apparatus for at least partially folded newspapers or magazines. 5,544,994, Cl. 412-9.000.

Simmons, Paul: *See—*
Borninski, Thomas E.; Boran, Colm P.; Simmons, Paul; and Nieslu-chowski, Matt A., 5,544,914, Cl. 280-735.000.

Simms, Robert A.: *See—*
Brougham, Paul; and Simms, Robert A., 5,545,343, Cl. 514-557.000.

Simon, Alice M.: *See—*
O'Dell, Robin D.; Lex, Joseph A.; Simon, Alice M.; and Shah, Jayesh, 5,545,476, Cl. 428-327.000.

Simpson, David L., to NCR Corporation. System and method for incrementing memory addresses in a computer system. 5,546,592, Cl. 395-775.000.

Simpson, Richard D.: *See—*
Robertson, Iain C.; Nye, Jeffrey L.; Asal, Michael D.; Short, Graham B.; Simpson, Richard D.; and Littleton, James G., 5,546,553, Cl. 395-405.000.

Simpson, Sharon M., to Minnesota Mining and manufacturing Company. Amine compounds as contrast enhancers for black-and-white photothermographic and thermographic elements. 5,545,505, Cl. 430-250.000.

Simpson, Sharon M.; and Sansbury, Francis H., to Minnesota Mining and Manufacturing Company. Hydroxamic acid compounds as contrast enhancers for black-and-white photothermographic and thermographic elements. 5,545,507, Cl. 430-264.000.

Simpson, Sharon M.: *See—*
Murray, Thomas J.; and Simpson, Sharon M., 5,545,515, Cl. 430-617.000.

Singh, Jogender; Schell, Jerry D.; and Young, William R., to General Electric Company. Method for making a rotary seal membrane. 5,545,431, Cl. 427-205.000.

Singh, Rajendra: *See—*
Singh, Sharat; Singh, Rajendra; Meneghini, Frank; and Ullman, Edwin F., 5,545,834, Cl. 544-6.000.

Singh, Sharat; Singh, Rajendra; Meneghini, Frank; and Ullman, Edwin F., to Behringwerke AG. Chemiluminescent compounds and methods of use. 5,545,834, Cl. 544-6.000.

Sinzawa, Kouichi: *See—*
Takano, Tsunesuke; and Sinzawa, Kouichi, 5,545,862, Cl. 200-16.00R.

Sip - Societa Italiana per l'esercizio Delle Telecomunicazioni S.p.A.: *See—*
Sereno, Daniele, 5,546,498, Cl. 395-2.380.

SIPRA Patententwicklungs-und Beteiligungsgesellschaft mbH: *See—*
Neher, Paul; and Schick, Wilfried, 5,544,504, Cl. 66-168.000.

Sirén, Matti, to Perstorp AB. Method of treating retroviral disease. 5,545,632, Cl. 514-103.000.

Sisley, Steven E.: *See—*
Jones, Kyle B.; Lehnert, Robert A.; McInnes, Ian D.; Quinn, Robert D.; Sisley, Steven E.; and Temus, Charles J., 5,546,436, Cl. 376-272.000.

Sisodia, Ashok: *See—*
Ansley, David A.; and Sisodia, Ashok, 5,546,492, Cl. 385-116.000.

Skarbo, Rune A.; and Elliott, John D., to Intel Corporation. Displaying caller identification information in a computer system. 5,546,447, Cl. 379-142.000.

SKC, Limited: *See—*
Song, Il-Cheon; Kim, Sang-Il; and Lee, Young-Jin, 5,545,364, Cl. 264-210.500.

Skelly, Susan M.; Tackney, Charles T.; Snouwaert, John N.; and Fowlkes, Dana M., to Trustees of Princeton University, The. Method of making cysteine depleted IL-6 muteins. 5,545,537, Cl. 435-69.520.

Skibo, Dennis, to Pequea Machine, Inc. Dual hitch. 5,544,475, Cl. 56-15.500.

Skubitz, Keith M.; and Anderson, Peter M. Oral glutamine to reduce stomatitis. 5,545,668, Cl. 514-561.000.

Slater, Gary W.: *See—*
Shaw, Michael; and Slater, Gary W., 5,544,890, Cl. 473-383.000.

Slaugh, Lynn H.; Powell, Joseph B.; Forschner, Thomas C.; Semple, Thomas C.; and Weider, Paul R., to Shell Oil Company. Cobalt-catalyzed process for preparing 1,3-propanediol using a lipophilic quaternary arsonium salt promoter. 5,545,765, Cl. 568-862.000.

Slaugh, Lynn H.: *See—*
Powell, Joseph B.; Slaugh, Lynn H.; Forschner, Thomas C.; Semple, Thomas C.; and Weider, Paul R., 5,545,766, Cl. 568-862.000.
Weider, Paul R.; Powell, Joseph B.; Slaugh, Lynn H.; Forschner, Thomas C.; and Semple, Thomas C., 5,545,767, Cl. 568-867.000.

Slaughter, David C.: *See—*
Giles, Durham K.; and Slaughter, David C., 5,544,813, Cl. 239-71.000.

Slettenmark, Bruno: *See—*
Hammarberg, Bjoern; Rosen, Jan; and Slettenmark, Bruno, 5,544,519, Cl. 73-37.000.

Sluss, Terry L.: *See—*
Giamati, Michael J.; Ray, Robert W., Jr.; and Sluss, Terry L., 5,544,845, Cl. 244-134.00E.

Smedal, Arne: *See—*
Breivik, Kare; Smedal, Arne; and Syvertsen, Kare, 5,545,065, Cl. 441-5.000.

Smeltzer, Sean G., to Westinghouse Air Brake Company. Dipstick assembly. 5,544,419, Cl. 33-731.000.

Sminchak, Michael D.; and Anderson, James M., to General Electric Co. Inflatable capacitance measuring device. 5,546,008, Cl. 324-690.000.

Smith, Addison M.: *See—*
Tung, Hsueh S.; Smith, Addison M.; and Swain, Charles F., 5,545,778, Cl. 570-178.000.

Smith & Loveless, Inc.: *See—*
Volland, Craig S., 5,545,327, Cl. 210-615.000.

Smith & Nephew Richards, Inc.: *See—*
Davidson, James A.; and Kovacs, Paul, 5,545,227, Cl. 623-16.000.
Kambin, Parviz, 5,545,228, Cl. 623-17.000.

Smith, Christopher E.; and Timothy, Earle, to United Parcel Service of America, Inc. Method and apparatus for decoding bar code symbols using subpixel scan lines. 5,545,887, Cl. 235-462.000.

Smith, David A.; and Nestle, Robert J., to Dowbrands L.P. Flexible product folding and transferring apparatus and process. 5,544,471, Cl. 53-447.000.

Smith, David G.: *See—*
Matzner, Bruce; King, Harold B.; and Smith, David G., 5,546,437, Cl. 376-442.000.

Smith, Edward; and Taylor, Richard. Apparatus and method for the conversion of a three crew member aircraft cockpit to a two crew member aircraft cockpit. 5,544,842, Cl. 244-1.00R.

Smith, Gregory H.: *See—*
Kiridena, Vijitha S.; Ebenstein, Samuel E.; and Smith, Gregory H., 5,546,328, Cl. 364-552.000.

Smith, James D. B.: *See—*
Bollinger, Parker A., Jr.; Mueller, Denis A.; Smith, James D. B.; and Wehrli, Henry A., III, 5,545,679, Cl. 523-512.000.

Smith, John C.: *See—*
Clowers, Earl R.; Plume, Steve H.; and Smith, John C., 5,545,080, Cl. 451-359.000.

Smith, John S.; and Yeh, Hsi-Jen J., to University of California, The Regents of the. Method for fabricating self-assembling microstructures. 5,545,291, Cl. 156-655.100.

Smith, Keith E.: *See—*
Hogan, Steven J.; Feltz, Kristi T.; Murdock, Douglas R.; and Smith, Keith E., 5,546,449, Cl. 379-202.000.

Smith, Kim R.; Boyd, Frederick M.; and Abouhalkah, Samih S., to Huntington Laboratories, Inc. Quaternary ammonium compounds with high flash points and method of making the same. 5,545,749, Cl. 564-282.000.

Smith, Marcus R. Circuit for increasing the sensitivity of a photodiode to received infrared signals in response to changes in ambient light. 5,545,891, Cl. 250-214.0AL.

Smith, Michael V.: *See—*
Peterman, K. Russell; and Smith, Michael V., 5,544,525, Cl. 73-170.130.

Smith, Nels R.: *See—*
Van Order, Kim L.; and Smith, Nels R., 5,546,288, Cl. 362-74.000.

Smith, Otto J. M. Three phase motor operated from a single phase power supply and phase converter. 5,545,965, Cl. 318-768.000.

Smith, Redd H., to Baker Hughes Incorporated. Fabrication method for rotary bits and bit components. 5,544,550, Cl. 76-108.200.

Smith, Richard D.; Wahl, Jon H.; and Hofstadler, Steven A., to Battelle Memorial Institute. Ion current detector for high pressure ion sources for monitoring separations. 5,545,304, Cl. 204-603.000.

Smith, Richard R.: *See—*
Carter, John D.; and Smith, Richard R., 5,545,686, Cl. 524-513.000.

Smith, Roger A., to Motorola, Inc. Data processor having a data table for performing a dual function of alphanumeric notice and numerical calculations. 5,546,333, Cl. 364-709.050.

SmithKLine Beecham, p.l.c.: *See—*
Hughes, Mark J.; and Kitteringham, John, 5,545,740, Cl. 546-112.000.

Smits, Karel F. A. A.; and Bourgeois, Ivan M. P. G., to Medtronic, Inc. Medical electrical lead having stable fixation system. 5,545,207, Cl. 607-130.000.

SMS Schloemann-Siemag AG: *See—*
Gärtner, Horst; Hollmann, Friedrich; Rituper, Rafael; and Block, Bodo, 5,545,260, Cl. 134-41.000.

Smyth Systems Company: *See—*
Schaupp, Richard E., 5,545,286, Cl. 156-570.000.

Snelgrove, W. Martin: *See—*
Elliott, Duncan G.; and Snelgrove, W. Martin, 5,546,343, Cl. 365-189.040.

Snook, Kim C. Supportive foot cushion device. 5,545,129, Cl. 602-66.000.

Snouwaert, John N.: *See—*
Skelly, Susan M.; Tackney, Charles T.; Snouwaert, John N.; and Fowlkes, Dana M., 5,545,537, Cl. 435-69.520.

Snyder, Ronald P.; and Kalkman, Jesse, to Prince Corporation. Twist-in visor mount. 5,544,927, Cl. 296-97.900.

Soane, David S.: *See—*
Bae, Young C.; Soane, David S.; and Crocker, Charles, 5,545,367, Cl. 264-401.000.

Soane Technologies, Inc.: *See—*
Bae, Young C.; Soane, David S.; and Crocker, Charles, 5,545,367, Cl. 264-401.000.

Soave, Robert J.; Thèn, Alan M.; Shank, Steven M.; and Tasker, G. William, to Galileo Electro-Optics Corporation. Fabrication of a microchannel plate from a perforated silicon. 5,544,772, Cl. 216-2.000.

Societe Europeene de Propulsion: *See—*
Scherrer, Norbert, 5,545,015, Cl. 417-360.000.

Societe National d'Etude et de Construction de Moteurs d'Aviation "SNECMA": *See—*
Alassoeur, Philippe L. A.; Collot, André C. F.; Guyonnet, Xavier J. M. A.; Klein, Gilles C. C.; and Molliex, Ludovic E. C., 5,544,805, Cl. 228-190.000.

Societe Nationale D'Etude et de Construction de Moteurs D'Aviation S.N.E.C.M.A.: *See—*
Bourguignon, Anne-Elisabeth F.; Fortunier, Pascal; and Hebraudl, Guy R. E., 5,545,002, Cl. 415-115.000.

Soga, Takumi, to Olympus Optical Co., Ltd. Personal computer system with start-up capability from an external mass storage device. 5,546,585, Cl. 395-700.000.

Sokawa, Kenta: *See—*
Okamoto, Takuji; Hamada, Masanori; Sokawa, Kenta; Uyeda, Kazuya; and Yamauchi, Hideaki, 5,546,135, Cl. 348-674.000.

Sokolov, Vladimir: *See—*
Contolatis, Athanase; and Sokolov, Vladimir, 5,545,924, Cl. 257-724.000.

Solano, Edgar N.: *See—*
Rainey, Ronald S.; Cambbell, Ian P.; Fallas, Pablo M. A.; and Solano, Edgar N., 5,545,421, Cl. 426-481.000.

Solar Turbines Incorporated: *See—*
Cederwall, Philip J.; Prins, Garrett P.; and Leuven, Vern V., 5,545,010, Cl. 416-145.000.

Solé, Nuria A.: *See—*
Barany, George; Albericio, Fernando; Solé, Nuria A.; Chang, Janc; and Zalipsky, Samuel, 5,545,698, Cl. 525-420.000.

Solvay (Société Anonyme): *See—*
Pennetreau, Pascal; and Balthasart, Dominique, 5,545,772, Cl. 570-164.000.

Solvay Fluor und Derivate GmbH: *See—*
Braun, Max; Rudolph, Werner; and Eichholz, Kerstin, 5,545,298, Cl. 204-157.600.

Solvay Interox Limited: *See—*
Brougham, Paul; and Simms, Robert A., 5,545,343, Cl. 514-557.000.
Clapp, Phillip A.; Evans, Dennis F., deceased; and McKenna, Antonia F. E., executrix, 5,545,391, Cl. 423-573.100.
French, Madeline S.; and Harvey, Anita J., 5,545,374, Cl. 422-28.000.

Somatogen, Inc.: *See—*
Hoffman, Stephen J.; Looker, Douglas L.; Rosendahl, Mary S.; Stetler, Gary L.; Wagenbach, Michael; Anderson, David C.; Mathews, Antony J.; and Nagai, Kiyoshi, 5,545,727, Cl. 536-234.000.

Somero, Nick. Brush rake. 5,544,435, Cl. 37-405.000.

Somers, David A.: *See—*
Gengenbach, Burle G.; Somers, David A.; Bittel, Douglas C.; Shaver, Jonathan M.; Sellner, Juantia M., deceased, 5,545,545, Cl. 435-172.300.

Sommer, Diether; Savignac, Dominique; and Gleis, Dieter, to Siemens Aktiengesellschaft. Circuit array for amplifying and holding data with different supply. 5,546,036, Cl. 327-208.000.

Sommer, James J., to General Motors Corporation. Supplemental inflation restraint and door arrangement. 5,544,912, Cl. 280-728.300.

Sommermeyer, Henning: *See—*
Heine, Hans-Georg; Schohe-Loop, Rudolf; Glaser, Thomas; De Vry, Jean M. V.; Dompert, Wolfgang; and Sommermeyer, Henning, 5,545,643, Cl. 514-322.000.

Sommerstein, Michael. Panel mounting structure. 5,544,461, Cl. 52-235.000.

Sommovigo, Christopher V.; and Kimber, Ray L. Faceted stirring object for solid and liquid food substances. 5,544,960, Cl. 366-130.000.

Sone, Tomoshi: *See—*
Motohashi, Teruyuki; and Sone, Tomoshi, 5,546,078, Cl. 340-825.440.

Soneda, Mitsuo; and Seki, Takahiro, to Sony Corporation. Crystal oscillator circuit. 5,545,941, Cl. 310-318.000.

Song, Bong-hun: *See—*
Lee, Rae-hwan; Jeon, Hwa-jin; Choi, Kwang-sik; Park, Hong-soon; Yun, Sang-hwa; Song, Kwang-lyeol; Choi, Hae-min; Lee, Deok-hyun; Song, Bong-hun; Park, Dong-jin; and Byeon, Seong-jin, 5,546,368, Cl. 369-47.000.

Song, Il-Cheon; Kim, Sang-Il; and Lee, Young-Jin, to SKC, Limited. Process for the preparation of heat resistant polyester film. 5,545,364, Cl. 264-210.500.

Song, Joo H.: *See—*
Broderick, Kevin B.; Song, Joo H.; Townsend, Donald J.; Record, David W.; and Tyrpin, Henry T., 5,545,416, Cl. 426-3.000.

Song, Kwang-lyeol: *See—*
Lee, Rae-hwan; Jeon, Hwa-jin; Choi, Kwang-sik; Park, Hong-soon; Yun, Sang-hwa; Song, Kwang-lyeol; Choi, Hae-min; Lee, Deok-hyun; Song, Bong-hun; Park, Dong-jin; and Byeon, Seong-jin, 5,546,368, Cl. 369-47.000.

Song, Seungyoon P., to International Business Machines Corporation. Processing system and method of operation for processing dispatched instructions with detected exceptions. 5,546,599, Cl. 395-800.000.

Sonnemann, Dieter: *See—*
Raehse, Wilfried; Beck, Wilhelm; Jung, Dieter; and Sonnemann, Dieter, 5,544,427, Cl. 34-372.000.

Sonoda, Keisuke: *See—*
Ozaki, Masahiko; Sonoda, Keisuke; Kikuchi, Hiroshi; Tsukamoto, Osamu; Komatsu, Masao; and Asai, Koetsu, 5,544,491, Cl. 62-53.100.

Sonomura, Minoru: *See—*
Nakamori, Toshinori; Sonomura, Minoru; and Nakai, Kenji, 5,544,502, Cl. 66-126.00A.

Sony Corporation: *See—*
Ido, Yasuo, 5,546,118, Cl. 348-7.000.
Kamoda, Hitoshi; Maekawa, Tomohiro; Yui, Yasuji; Iima, Shin; and Bunya, Takashi, 5,544,965, Cl. 400-582.000.
Maari, Koichi, 5,545,907, Cl. 257-315.000.
Nakatsuyama, Takashi; and Saito, Takahiko, 5,546,143, Cl. 352-184.000.
Saito, Masaki, 5,545,436, Cl. 427-255.300.
Saito, Nobuhiro; and Takenouchi, Masaki, 5,545,477, Cl. 428-332.000.
Soneda, Mitsuo; and Seki, Takahiro, 5,545,941, Cl. 310-318.000.
Tomitaka, Tadafusa; and Sekiya, Tsuneo, 5,546,125, Cl. 348-169.000.
Yamashita, Masahiro; Kawada, Norihiko; and Nakamura, Satoshi, 5,546,127, Cl. 348-297.000.
Yoshimura, Shunji; and Okazaki, Toru, 5,546,367, Cl. 369-44.320.

Sooho Medi-Tech Co., Ltd.: *See—*
An, Sung-soon; and Lee, Suk-jae, 5,545,211, Cl. 623-1.000.

Soon-Shiong, Patrick; Desai, Neil P.; and Heintz, Roswitha E., to VivoRx, Inc. Cytoprotective, biocompatible, retrievable macrocapsule containment systems for biologically active materials. 5,545,423, Cl. 424-484.000.

Sota, Tomizo, to Daikin Industries Ltd. Method for determination of trace metal impurity in fluorine-containing polymer and process for production of fluorine-containing polymer using the method. 5,546,182, Cl. 356-312.000.

Souires, Edward L.: *See—*
Trigg, Timothy E.; Souires, Edward L.; and Jochle, Wolfgang, 5,545,408, Cl. 424-422.000.

Sourdillon: *See—*
Le Monnier De Gouville, Jean-Bernard, 5,545,034, Cl. 431-255.000.

South, Robert E.; and Petty, Steven J., to Midwest Rake Co. Sand-trap rake with oppositely-angled teeth. 5,544,476, Cl. 56-400.070.

Southpac Trust International, Inc.: *See—*
Weder, Donald E.; and Straeter, Lisa A., 5,544,469, Cl. 53-410.000.

Southwall Technologies, Inc.: *See—*
Hood, Thomas G.; Iles, Roger F.; and Millar, Peter, 5,544,465, Cl. 52-786.130.

Sozansky, Wayne A.: *See—*
Disney, Donald R.; Sozansky, Wayne A.; and Himelick, James M., 5,545,915, Cl. 257-491.000.

Sparks, Darrel W.: *See—*
McEwen, Richard; and Sparks, Darrel W., 5,544,712, Cl. 175-57.000.

Spec International Inc.: *See—*
Stephenson, Orlando W., III; Terpstra, Lee M.; and Armock, Charles E., 5,544,595, Cl. 109-74.000.

Spectra-Physics Visiontech OY: *See—*
Jokinen, Hannu, 5,546,176, Cl. 356-5.100.

Spectrospin AG: *See—*
Favre, Patrick; Frey, Urban; Marek, Daniel; and Metz, François, 5,545,998, Cl. 324-321.000.

Speich, Francisco, to Textilma AG. Guide bar arrangement for a crochet galloon knitting machine. 5,544,500, Cl. 66-85.00R.

Spenser, Benjamin, to Dan Mamtirim, Israeli Limited Partnership. Rotary sprinklers. 5,544,814, Cl. 239-241.000.

Spielvogel, Bernard F.; and Meyer, Dominique, to Boron Biologicals, Inc.; and Guerbet S.A. Contrast agents and compositions for radiological imaging, and radiological imaging method utilizing same. 5,545,397, Cl. 424-9.400.

VOL
1189
ISS
2
AG
13
1996
UMI

Spies, Hans: *See*—
Fendt, Günter; Hora, Peter; Spies, Hans; Steurer, Helmut; Watzka, Willibald; and Wetzel, Guido, 5,544,915, Cl. 280-735.000.

Spiess, Peter A., to Inventio AG. Entraining and unlatching apparatus for elevator doors. 5,544,720, Cl. 187-319.000.

Spitzer, Wayne A.: *See*—
Miller, Shawn C.; Victor, Frantz; Spitzer, Wayne A.; Sattelberg, Thomas R., Sr.; and Tebbe, Mark J., 5,545,653, Cl. 514-388.000.

Spooner, Jeffrey: *See*—
Groshans, Joseph R.; Spooner, Jeffrey; and Jones, Seth A., 5,544,710, Cl. 173-176.000.

Spors, Herbert: *See*—
Schuster, Dieter H. P.; Fels, Achim G.; and Spors, Herbert, 5,545,470, Cl. 428-229.000.

Sprecher, Arnold F., Jr.: *See*—
Gloden, Michael L.; and Sprecher, Arnold F., Jr., 5,545,984, Cl. 324-207.130.

Spridco, Dale R.; and Gruneberg, J. Marc, to GearTechnic Corporation. Gear drive with eccentric shift mechanism. 5,544,539, Cl. 74-353.000.

Spruill, Theresa. Inflatable speculum. 5,545,122, Cl. 600-222.000.

Spry, Robert H. Sheller for seed corn. 5,544,575, Cl. 99-628.000.

SPX Corporation: *See*—
Manz, Kenneth W., 5,544,492, Cl. 62-85.000.
Manz, Kenneth W.; and Olds, Daniel L., 5,544,494, Cl. 62-292.000.

Stacy, Nathan E.: *See*—
Trepka, William J.; Moczygemba, George A.; Stacy, Nathan E.; and Farrar, Ralph C., Jr., 5,545,690, Cl. 525-98.000.

Stagg, Arthur J.: *See*—
Barrett, Linda; Long, Lynn D.; Mendittu, Louis F.; Stagg, Arthur J.; and Ward, Raymond E., 5,546,549, Cl. 395-309.000.

Staggs, Randall D.: *See*—
Hailey, James E.; Wilkey, Foy E.; and Staggs, Randall D., 5,546,193, Cl. 358-335.000.

Stahl, Kevin J. Dental appliance. 5,544,754, Cl. 206-581.000.

Stahl, Roland: *See*—
Friese, Karl-Hermann; Gruenwald, Werner; Stahl, Roland; de la Prieta, Claudio; Schneider, Gerhard; and Neumann, Harald, 5,545,301, Cl. 204-425.000.

Stähle, Martin. Centrifugal pump. 5,545,005, Cl. 415-169.100.

Stalker, David M.: *See*—
McBride, Kevin E.; and Stalker, David M., 5,545,817, Cl. 800-205.000.

Stall, Richard A.; Tompa, Gary S.; Gurary, Alexander; and Nelson, Craig R. Apparatus for depositing a coating on a substrate. 5,544,618, Cl. 117-102.000.

Stallmo, David C.; Andrews, Anthony; and Brinkman, Candace, to EMC Corporation. Multiple controller sharing in a redundant storage array. 5,546,535, Cl. 395-182.070.

Stambaugh, Andrew J.: *See*—
Ramanujam, Parthasarathy; Shin, Charlie C.; Fermelia, Louis R., Jr.; and Stambaugh, Andrew J., 5,546,097, Cl. 343-781.00R.

Stamler, Jonathan; and Kobzik, Lester, to Duke Univ.; and Harvard College. Controlling nitrogen oxide concentrations to modulate skeletal muscle contraction. 5,545,614, Cl. 514-6.000.

Standard Car Truck Company: *See*—
Taillon, Armand P., 5,544,591, Cl. 105-223.000.

Standard-Keil Industries, Inc.: *See*—
Wang, Yushan, 5,545,016, Cl. 417-393.000.

Stanfield, James R.; Daquilante, Robert A.; and Lanham, Bobby G., Jr., to Advanced Fishing Technologies, Inc. Electronic fish scale for coding and storing weights and displaying same in inverse order. 5,545,855, Cl. 177-25.130.

Stapp, Richard E.; and Hayes, Glenn A., to Paxall Group, Inc., The. Distribution system for a combination weigher or the like. 5,545,856, Cl. 177-25.180.

Starr, Stephen G.: *See*—
Conru, Harold W.; Froebel, Francis E.; Gregoritsch, Albert J., Jr.; Rieley, Sheldon C.; Starr, Stephen G.; Uttecht, Ronald R.; White, Eric J.; and Pohl, Jens G., 5,545,921, Cl. 257-669.000.

Staub, Wendy C., to Unisys Corporation. Apparatus and method for generating a knowledge base. 5,546,507, Cl. 395-76.000.

Staudt, Fredrick J.: *See*—
Keating, Mark K.; and Staudt, Fredrick J., 5,544,809, Cl. 236-44.00C.

St. Clair, David J.: *See*—
Bening, Robert C.; and St. Clair, David J., 5,545,691, Cl. 525-102.000.

Steckel, Mark G.: *See*—
Le, Thu A.; Yi, Sung S.; Zwaskis, William; Pedlick, Jack S.; Luscombe, Brian H.; Jamiolkowski, Dennis D.; Di Giovanni, John; Seritella, Keith A.; Steckel, Mark G.; and Harwin, Steven F., 5,545,180, Cl. 606-232.000.

Stedman, Dennis F., to Chrysler Corporation. Floating end structural reinforcement for a vehicle door. 5,544,930, Cl. 296-146.600.

Steffens, Charles E., Jr.: *See*—
Fleming, William J.; and Steffens, Charles E., Jr., 5,544,918, Cl. 280-805.000.

Steffier, Wayne S., to Hyper-Therm High Temperature Composites, Inc. Method of making a toughened ceramic composite comprising chemical vapor deposited carbon and ceramic layers on a fibrous preform. 5,545,435, Cl. 427-249.000.

Stege, Peter, to U.S. Philips Corporation. X-ray system. 5,546,441, Cl. 378-110.000.

Steglich, Travis W. Sprayer retrofit unit for specific area herbicide application. 5,544,443, Cl. 47-1.500.

Stehr, Norbert, to EVV-Vermögensverwaltungs-GmbH. Agitator mill. 5,544,825, Cl. 241-171.000.

Steigerwald, Robert L.: *See*—
Schutten, Michael J.; Vlatkovic, Vlatko; and Steigerwald, Robert L., 5,546,294, Cl. 363-17.000.

Stein, Cy A.; and Wax, Martin B., to Trustees of Columbia University in the City of New York, The; and Washington University. Method of treating glaucoma with oligonucleotides. 5,545,626, Cl. 514-44.000.

Steiner, Beat: *See*—
Alig, Leo; Hadvary, Paul; Hürzeler, Marianne; Müller, Marcel; Steiner, Beat; and Weller, Thomas, 5,545,658, Cl. 514-423.000.

Steiner Company, Inc.: *See*—
Meyer, Paul, 5,544,788, Cl. 222-110.000.

Stengel, Sandra R.; Eisenmann, George; and Friedrich, Sharon M., to PPG Industries, Inc. Curing composition for acrylic polyol coatings and coating produced therefrom. 5,545,824, Cl. 524-590.000.

Stenmark, Tom: *See*—
Koskinen, Erkki; and Stenmark, Tom, 5,544,472, Cl. 53-449.000.

Stentz, Antoine: *See*—
Baurand, Gilles; and Stentz, Antoine, 5,546,262, Cl. 361-31.000.

Stenzel, Wolfgang: *See*—
Heath, William F., Jr.; McDonald, John H., III; Paal, Michael; Rühter, Gerd; Schotten, Theo; and Stenzel, Wolfgang, 5,545,636, Cl. 514-214.000.

Stephen Krissman, Integrated Data Systems, Inc.: *See*—
Gorelik, Vladimir, 5,546,417, Cl. 372-36.000.

Stephens, Randy R.; Banik, Michael S.; Ashmore, Leslie R.; Rowe, C. Daniel; and Selecman, George E., to Ethicon, Inc. Seal members for surgical trocars. 5,545,142, Cl. 604-167.000.

Stephenson, John M.; and Ray, William F., to Switched Reluctance Drives Ltd. Control of switched reluctance machines. 5,545,964, Cl. 318-701.000.

Stephenson, Orlando W., III; Terpstra, Lee M.; and Armock, Charles E., to Spec International Inc. Security hinge for gaming device. 5,544,595, Cl. 109-74.000.

Sterescu, Vlad: *See*—
Noworolski, Zhigniew; Sterescu, Vlad; Lee, Albert; Halton, Padraig; and Noworolski, Jan M., 5,546,003, Cl. 324-434.000.

Stern, Jerry A.: *See*—
Andrews, G. Wayne; Webber, Steven H.; Kelly, James P.; Johnson, Lawrence E.; Stern, Jerry A.; Milano, Vincent J., Jr.; and Davis, Charles R., 5,546,452, Cl. 379-219.000.

Sternberg, Alberto: *See*—
de Sternberg, Lilian Z.; and Sternberg, Alberto, 5,545,875, Cl. 219-440.000.

Stetler, Gary L.: *See*—
Hoffman, Stephen I.; Looker, Douglas L.; Rosendahl, Mary S.; Stetler, Gary L.; Wagenbach, Michael; Anderson, David C.; Mathews, Antony J.; and Nagai, Kiyoshi, 5,545,727, Cl. 536-234.000.

Steurer, Helmut: *See*—
Fendt, Günter; Hora, Peter; Spies, Hans; Steurer, Helmut; Watzka, Willibald; and Wetzel, Guido, 5,544,915, Cl. 280-735.000.

Stevens, John H., to Heartport, Inc. Enduvascular aortic valve replacement. 5,545,214, Cl. 623-2.000.

Stevens, John K.; and Dunn, James M., to Visible Genetics Inc. Method for testing for mutations in DNA from a patient sample. 5,545,527, Cl. 435-6.000.

Stevens, Rex W., to Quickie Designs Inc. Pivotal rear latch assembly for an armrest apparatus for a wheelchair. 5,544,940, Cl. 297-411.280.

Stevens, Robert J.; and McInerney, Terrance M., to Omni Forge, Inc. Method and apparatus for manfacturing a flashless metal connecting rod. 5,544,413, Cl. 29-888.092.

Stewart, Gregory N., to Dell USA, L.P. Rechargeable system with separate battery circuits in a common module. 5,545,935, Cl. 307-150.000.

Stickel, Werner: *See*—
Pfeiffer, Hans C.; and Stickel, Werner, 5,545,902, Cl. 250-492.200.

Stieferman, Dale M., to Keifer Controls, Inc. Fill controller for liquified gas container and apparatus for filling tank using same. 5,544,685, Cl. 141-198.000.

Stihl, Andreas: *See*—
Höppner, Klaus; and Kaiser, Bernd, 5,544,544, Cl. 74-526.000.

Stiles, Gary: *See*—
Jacobson, Kenneth A.; and Stiles, Gary, 5,545,627, Cl. 514-46.000.

Still, David L.: *See*—
Mittelman, Michael H.; Still, David L.; and Temme, Leonard A., 5,546,241, Cl. 359-885.000.

Stingelin, Willy: *See*—
Käser, Adolf; and Stingelin, Willy, 5,545,725, Cl. 534-759.000.

Stockley, Henry W., III: *See*—
Brady, Sean A.; and Stockley, Henry W., III, 5,545,419, Cl. 426-129.000.

Stockman, Gregory W. Gun lock. 5,544,440, Cl. 42-70.070.

Stoddard, John W., to Monsanto Company. Phosphorus-containing polymers and fibers formed therefrom. 5,545,833, Cl. 528-337.000.

Stoddard, Robert J.: *See*—
Peppiette, Roger C.; Cooper, Richard B.; and Stoddard, Robert J., 5,545,917, Cl. 257-547.000.

Stöger, Manfred: *See*—
Schwarzmaier, Peter; Häckl, Peter; Stöger, Manfred; and Mielke, Ingolf, 5,545,780, Cl. 570-226.000.

Stokes, Ty J., to Kimberly-Clark Corporation. Conjugate fiber nonwoven fabric. 5,545,464, Cl. 428-198.000.

Stoll, Gerhard: *See*—
Koester, Rita; Stoll, Gerhard; and Daute, Peter, 5,545,332, Cl. 210-729.000.

Stoll, Thomas D.; and Switek, Lawrence E., to Delaware Capital Formation, Inc. Refrigeration system and pump therefor. 5,544,496, Cl. 62-498.000.

Stoltefuss, Jürgen: *See*—
Straub, Alexander; Goldmann, Siegfried; Stoltefuss, Jürgen; Bechem, Martin; Dembowsky, Klaus; Gross, Rainer; Hebisch, Siegbert; Hütter, Joachim; and Rounding, Howard-Paul, 5,545,646, Cl. 514-337.000.

Stolzenberg, Norman R.: *See*—
Collin, Per; Deleryd, Roland; Ivars, Roland; Lundqvist, Fredrik; and Stolzenberg, Norman R., 5,546,435, Cl. 376-253.000.

Stone, Geoffrey C., to Storage Technology Corporation. Method and apparatus for radix decision packet processing. 5,546,390, Cl. 370-60.000.

Storage Technology Corporation: *See*—
Kleinschnitz, Donald J., 5,546,315, Cl. 364-478.060.
Stone, Geoffrey C., 5,546,390, Cl. 370-60.000.

Story, Phillip M.: *See*—
Brownbridge, Thomas I.; and Story, Phillip M., 5,544,817, Cl. 241-21.000.

Stotts, Lawrence J.; and Alt, Eckhard, to Intermedics, Inc. Cardioverter/defibrillator shock timing function. 5,545,182, Cl. 607-5.000.

Straeter, Lisa A.: *See*—
Weder, Donald E.; and Straeter, Lisa A., 5,544,469, Cl. 53-410.000.

Stratagene: *See*—
Mathur, Eric J., 5,545,552, Cl. 435-252.300.

Stratman, Rick: *See*—
Bulin, David S.; Fye, Michael E.; and Stratman, Rick, 5,545,866, Cl. 200-345.000.

Straub, Alexander; Goldmann, Siegfried; Stoltefuss, Jürgen; Bechem, Martin; Dembowsky, Klaus; Gross, Rainer; Hebisch, Siegbert; Hütter, Joachim; and Rounding, Howard-Paul, to Bayer Aktiengesellschaft. 4-bicyclically substituted dihydropyridines and their use in medicaments. 5,545,646, Cl. 514-337.000.

Strayer, Donald E.: *See*—
Austin, John S.; Novof, Ilya I.; Strayer, Donald E.; and Wyatt, Stephen D., 5,546,052, Cl. 331-1.00A.

Strobach, Peter, to Siemens Aktiengesellschaft. Process for compensating for quasi-periodic disturbances of measurement signals. 5,546,332, Cl. 364-572.000.

Strobel, Mark J. Leg system for beds. 5,544,374, Cl. 5-310.000.

Strohl, Willi; and Lust, Rainer, to Robert Bosch GmbH. Unit for delivering fuel from a supply tank to the internal combustion engine of a motor vehicle. 5,545,017, Cl. 417-423.700.

Ström, Anders: *See*—
Fryklund, Linda; Hjertman, Birger; Gustavsson, Marie-Louise; Kaluski, Jacob; Levander, Gustav; Ljungquist, Olle; Ström, Anders; and Virding, Jonas, 5,545,144, Cl. 604-187.000.

Strong, Gary R.: *See*—
Liang, Xuecheng; and Strong, Gary R., 5,545,372, Cl. 420-12.000.

Strong, Henry L., to American Cyanamid Company. 5,6-disubstituted-3-pyridylmethyl ammonium halide compounds useful for the preparation of 5-(substituted methyl)-2,3-pyridinedicarboxylic acids. 5,545,835, Cl. 544-215.000.

Stroud, Robert W. Parachute deployment system. 5,544,846, Cl. 244-147.000.

Stuart, Anthony F.: *See*—
Marlin, James W.; Knudson, Raymond L.; Ruehle, Thomas M.; Stuart, Anthony F.; and Hughes, Edward T., III, 5,546,577, Cl. 395-600.000.

Stuckman, Bruce E.: *See*—
Wang, Shay-Ping T.; Teng, Dan; Stuckman, Bruce E.; and Hayner, David A., 5,546,302, Cl. 364-148.000.

Studer, Werner, to Landis & Gyr Technology Innovation AG. Apparatus for the attachment of an axle. 5,544,970, Cl. 403-399.000.

Stuff Co., Ltd.: *See*—
Shiraishi, Masami, 5,545,071, Cl. 446-143.000.

Stupka, Jonathan C.: *See*—
Bokros, Jack C.; Ely, John L.; Emken, Michael R.; Haubold, Axel D.; Peters, T. Scott; Stupka, Jonathan C.; and Waits, C. Thomas, 5,545,216, Cl. 623-2.000.

Su, Bor-Lin. Sprocket mechanism for a multistage bicycle. 5,545,096, Cl. 474-160.000.

Su, Chung-Hui: *See*—
Wang, Chen-jong; Liang, Mong-song; Wuu, Shou-gwo; and Su, Chung-Hui, 5,545,585, Cl. 437-52.000.
Wuu, Shou-Gwo; Liang, Mong-Song; Wang, Chen-Jong; and Su, Chung-Hui, 5,545,584, Cl. 437-52.000.

Su, Kuan-Cheng: *See*—
Sheng, Yi-Chung; Chung, Chen-Hui; and Su, Kuan-Cheng, 5,545,580, Cl. 437-48.000.

Su, Peter C.: *See*—
Senter, Peter D.; Su, Peter C.; Marquardt, Hans; Hayden, Martha S.; and Linsley, Peter, 5,545,548, Cl. 435-227.000.

Su, Weng-Herng: *See*—
Shih, Ming; Xu, Jingyu; Su, Weng-Herng; and Pan, Jing-Jong, 5,546,486, Cl. 385-31.000.

Suarez, Fernando: *See*—
Dunn, Steven B.; and Suarez, Fernando, 5,544,766, Cl. 215-11.100.

Suchocki, Anthony J.: *See*—
Boggavarapu, Rao L.; Goldstein, Yeshayahu S. A.; Keogh, Catherine M.; Suchocki, Anthony J.; and Widner, Melvin M., 5,544,588, Cl. 102-472.000.

Suciu, Elena N.: *See*—
Knudsen, George A.; Suciu, Elena N.; and Michaelson, Robert C., 5,545,600, Cl. 502-152.000.

Suda, Hiroyuki: *See*—
Inoue, Yasuyuki; Kawachi, Masao; Okamoto, Katsunari; Takato, Norio; Yamamoto, Fumihiko; Suda, Hiroyuki; Furukawa, Shinichi; and Morinaka, Akira, 5,546,483, Cl. 385-14.000.

Suda, Seiji: *See*—
Uchiyama, Kaoru; Tautsui, Mitsukuni; Naito, Shotaro; and Suda, Seiji, 5,544,523, Cl. 73-118.200.

Suehiro, Yoshio: *See*—
Ohtsuka, Yasushi; Shirai, Katutada; Matsuoka, Ken; Suehiro, Yoshio; and Ohashi, Hideki, 5,546,283, Cl. 362-61.000.

Sueyoshi, Satoru: *See*—
Komatsubara, Shigeo; Sueyoshi, Satoru; and Kanbayashi, Hiroshi, 5,546,218, Cl. 359-237.000.

Suga, Hitoshi: *See*—
Mori, Kazuhumi; Sugimori, Shigemi; and Suga, Hitoshi, 5,544,928, Cl. 296-97.900.

Suga, Yozo: *See*—
Yoshitomi, Yasunari; Senuma, Takehide; Suga, Yozo; and Takahashi, Nobuyuki, 5,545,263, Cl. 148-111.000.

Sugai, Kazumi; Okabayashi, Hidekazu; and Kishida, Shunji, to NEC Corporation. Method for forming an aluminum film used as an interconnect in a semiconductor device. 5,545,591, Cl. 437-192.000.

Sugawara, Motoo, to Fujitsu General Limited. Color display unit with plasma display panel. 5,546,101, Cl. 345-63.000.

Sugazaki, Kazuo: *See*—
Oishi, Tetsuya; Ozawa, Hiroshi; Karasawa, Minato; Inomata, Masamitsu; Mega, Izumi; Yamauchi, Atsuyoshi; Kamada, Kazunori; Nakahata, Shigeru; Sakamoto, Katsumi; Nakashima, Tatsunobu; Watanabe, Akito; Suzuki, Jin; Ohkawa, Kouhei; Furusawa, Satoshi; Ono, Hiroshi; and Sugazaki, Kazuo, 5,545,702, Cl. 525-509.000.

Sugi, Tokio; and Furuno, Fumiya, to Tokyo Keiso Kabushiki-kaisha. Area flow meter with hall devices having magnetism-responsive surfaces. 5,544,533, Cl. 73-861.560.

Sugimori, Shigemi: *See*—
Mori, Kazuhumi; Sugimori, Shigemi; and Suga, Hitoshi, 5,544,928, Cl. 296-97.900.

Sugimoto, Toshiyuki; Kubota, Michio; and Sakia, Shuzo, to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo. Polypeptide possessing cyclomaltodextrin glucanotransferase activity. 5,545,587, Cl. 435-97.000.

Sugimura, Akihisa: *See*—
Koizumi, Haruhiko; Sugimura, Akihisa; Tateoka, Kazuki; and Kanazawa, Kunihiko, 5,546,051, Cl. 330-297.000.

Sugita, Mitsuru: *See*—
Tanaka, Tadashi; Sakamoto, Masaaki; Yamamoto, Koichi; Kato, Tohru; and Sugita, Mitsuru, 5,545,489, Cl. 428-629.000.

Sugiura, Atsushi: *See*—
Kawaguchi, Megumi; Inoue, Hiromi; Sugiura, Atsushi; Suzuki, Kenji; and Fujii, Tsunenori, 5,545,747, Cl. 560-123.000.

Sugiura, Souichi: *See*—
Kohyama, Yusuke; and Sugiura, Souichi, 5,545,926, Cl. 257-755.000.

Sugiura, Toshihiko: *See*—
Okabayashi, Athuo; Nakamura, Kimikazu; and Sugiura, Toshihiko, 5,546,061, Cl. 335-78.000.

Suh, Kang D.; Kim, Jin K.; and Choi, Jeong H., to Samsung Electronics Co., Ltd. Nonvolatile semiconductor memory. 5,546,341, Cl. 365-185.330.

Suida, Teresa. Wash-cloth that cleans and massages. 5,545,456, Cl. 428-76.000.

Sukegawa, Osamu; and Ihara, Hirofumi, to NEC Corporation. Active matrix liquid crystal display panel having compensating capacitor provided without lowering pixel aperture ratio. 5,546,205, Cl. 359-59.000.

Sukenik, Chaim N.: *See*—
DeGuire, Mark R.; Heuer, Arthur H.; and Sukenik, Chaim N., 5,545,432, Cl. 427-226.000.

Sulzer Pumpen AG: *See*—
Guelich, Johann, 5,545,008, Cl. 415-206.000.

Sumi, Tatsumi: *See*—
Nakane, George; Mukunoki, Toshio; Moriwaki, Nobuyuki; Sumi, Tatsumi; Hirano, Hiroshige; and Nakakuma, Tetsuji, 5,546,342, Cl. 365-189.010.

Sumikawa, Tatsuro: *See*—
Sato, Yukio; Sato, Atsushi; Sumikawa, Tatsuro; and Uemura, Tazuo, 5,545,737, Cl. 544-101.000.

Sumita Optical Glass, Inc.: *See*—
Wang, Yuhu; and Ohwaki, Junichi, 5,545,595, Cl. 501-3.000.

Sumitomo Chemical Co., Ltd.: *See*—
Harano, Takuo; Ishida, Takahiro; Kumagae, Yoshio; Inami, Michikazu; Ishibashi, Kazuhisa; and Murakami, Mitsuaki, 5,545,384, Cl. 423-121.000.
Sekine, Chizu; Tani, Takeshi; Ueda, Kayoko; Fujisawa, Koichi; Higashi, Takayuki; Fujimoto, Yukari; Toda, Shoji; and Minai, Masayoshi, 5,545,345, Cl. 252-299.610.

Sumitomo Electric Industries, Ltd.: *See*—
Fijioka, Hideaki; and Yasuzumi, Kazumi, 5,545,929, Cl. 303-166.000.
Nakamura, Takao, 5,545,611, Cl. 505-238.000.

Sasaki, Goro; Yano, Hiroshi; Sawada, Sosaku; and Doguchi, Kentaro, 5,546,489, Cl. 385-88.000.

Sumitomo Metal Industries, Ltd.: *See—*
Katayama, Katsuo; Komachi, Kyoichi; Mabuchi, Hiroshi; and Akimoto, Takeshi, 5,545,258, Cl. 118-723.0MP.

Sumitomo Special Metals Co., Ltd.: *See—*
Hirosawa, Satoshi; and Kanekiyo, Hirokazu, 5,545,266, Cl. 148-302.000.

Sumitomo Wiring Systems, Ltd.: *See—*
Okada, Hajime; and Saito, Masashi, 5,545,047, Cl. 439-157.000.
Tanaka, Seiji; Kosuge, Shnji; and Fuse, Kazuhiko, 5,545,055, Cl. 439-507.000.
Yamaguchi, Jun, 5,545,056, Cl. 439-532.000.

Summa, Gareth D.; and Hespe, Darrel, to Mid-West Conveyor Company. Automatic seal crossover system for power and free conveyor on-floor carriages. 5,544,590, Cl. 104-130.090.

Summers, Donald J.; Correll, Robert S., Jr.; and Dellinger, Donald E., to Whitaker Corporation, The. Board to board matable assembly. 5,545,051, Cl. 439-350.000.

Sun, Bao-Lin: *See—*
Hsu, Robert J.; and Sun, Bao-Lin, 5,545,325, Cl. 210-605.000.

Sun Microsystems, Inc.: *See—*
Ammon, James G.; and Nuttall, John C., 5,544,969, Cl. 403-322.000.
D'Souza, Godfrey P.; and Laird, Douglas A., 5,546,022, Cl. 326-87.000.
Davidson, Howard L., 5,546,274, Cl. 361-701.000.
Yung, Robert; Williams, Greg; and Yeh, Huoy-Ming, 5,546,554, Cl. 395-413.000.
Zandbergen, Russ E., 5,546,277, Cl. 361-726.000.

Sun Refining and Marketing Company: *See—*
Berg, Robin; Mohns, Lawrence; and Oswald, Richard, 5,544,974, Cl. 405-53.000.

Sun, Shih-Wei: *See—*
Chen, Wei-Ming; Sun, Shih-Wei; and Tsui, Paul G. Y., 5,545,574, Cl. 437-40.000.

Sun, Ting: *See—*
Caswell, Ty J.; Davis, Jeffrey P.; Johnson, Gregory R.; Reinarts, Timothy J.; and Sun, Ting, 5,546,448, Cl. 379-142.000.

Sundberg, Carl-Erik W.: *See—*
Seshadri, Nambirajan; and Sundberg, Carl-Erik W., 5,546,420, Cl. 375-200.000.

Sundberg, Jack G.; Bisson, Bernard J.; Desai, Mihir C.; and Books, Martin T., to Coltec Industries Inc. Variable displacement vane pump, component parts and method. 5,545,014, Cl. 417-204.000.

Sundberg, Jack G., to Coltec Industries Inc. Variable displacement vane pump having floating ring seal. 5,545,018, Cl. 418-30.000.

Sunderland, Richard A.: *See—*
Schenk, Robert W.; Ranford, Alan B.; Ray, Shawn C.; Sunderland, Richard A.; and Kinghorn, Curtis D., 5,545,174, Cl. 606-182.000.

Surabian, Glenn M.: *See—*
Cordova, Amado; and Surabian, Glenn M., 5,546,482, Cl. 385-12.000.

Surani, Azim M.; Neuberger, Michael S.; and Bruggemann, Marianne, to Babraham Institute, The; and Medical Research Council. Production of antibodies from transgenic animals. 5,545,807, Cl. 800-2.000.

Susek, David N.: *See—*
Amelio, Armand F.; and Susek, David N., 5,544,449, Cl. 49-383.000.

Suspa Spannbeton GmbH: *See—*
Schutt, Karl; Hinken, Johann H.; Klinger, Martin; and Tintchev, Savtcho S., 5,545,987, Cl. 324-219.000.

Suthard, William L.; and Farris, Robert D., to Bell Atlantic Network Services, Inc. System and method for providing switch translations. 5,546,450, Cl. 379-207.000.

Suttle, James P.: *See—*
Jones, Daniel A.; and Suttle, James P., 5,544,893, Cl. 273-309.000.

Suyama, Masuo, to Fujitsu Limited. Optical amplifier and optical communication system provided with the optical amplifier. 5,546,213, Cl. 359-179.000.

Suydam, Christopher J.: *See—*
Crimp, Melissa J.; Wilson, Brett A.; Suydam, Christopher J.; and Crimp, Martin A., 5,545,428, Cl. 427-8.000.

Suzue, Shigetoshi: *See—*
Kurii, Jun; Nomura, Noboru; Itoh, Masami; Ohira, Kozo; Tsumadori, Masaki; Matsunaga, Akira; Kimura, Akio; and Suzue, Shigetoshi, 5,545,349, Cl. 252-186.380.

Suzuki, Akira: *See—*
Yabe, Hisao; Iida, Yoshihiro; Suzuki, Akira; Ito, Hideo; Tashiro, Yoshio; Yamazaki, Minoru; Tamada, Osamu; and Nakajima, Shigeru, 5,545,121, Cl. 600-121.000.

Suzuki, Hajime; and Harada, Tetsuo, to Sanyo Electric Co., Ltd. Dish washing machine. 5,545,259, Cl. 134-18.000.

Suzuki, Hideo, to Casio Computer Co., Ltd. Input/output apparatus having a pen, and method of associating and processing handwritten image data and voice data. 5,546,565, Cl. 395-500.000.

Suzuki, Isao; Matsushima, Sunao; Kubota, Yoshikazu; and Kamijyou, Masayasu, to Kohjin Co., Ltd. Paper additive for hot-pressed forms and hot-pressed forms using it. 5,545,467, Cl. 428-211.000.

Suzuki, Jin: *See—*
Oishi, Tetsuya; Ozawa, Hiroshi; Karasawa, Minato; Inomata, Masamitsu; Mega, Izumi; Yamauchi, Atsuyoshi; Kamada, Kazunori; Nakahata, Shigeru; Sakamoto, Katsumi; Nakashima, Tatsunobu; Watanabe, Akito; Suzuki, Jin; Ohkawa, Koubei; Furusawa, Satoshi; Ono, Hiroshi; and Sugazaki, Kazuo, 5,545,702, Cl. 525-509.000.

Suzuki, Kazuo: *See—*
Sakai, Masanori; Tomita, Katsuhiko; Ezaki, Joichiro; Suzuki, Kazuo; Fukuda, Seiji; and Hatakeyama, Kouichi, 5,545,988, Cl. 324-212.000.

Suzuki, Kenji: *See—*
Kawaguchi, Megumi; Inoue, Hiromi; Sugiura, Atsushi; Suzuki, Kenji; and Fujii, Tsunenori, 5,545,747, Cl. 560-123.000.

Suzuki, Masanori: *See—*
Itoh, Hiroyuki; Suzuki, Masanori; Kamiya, Akira; and Furuyama, Takeki, 5,545,715, Cl. 564-409.000.

Suzuki, Masaru: *See—*
Takagi, Akira; Murakami, Fumiaki; Fujutsuna, Masami; Natsume, Kazuyuki; Suzuki, Masaru; and Takei, Toshihiro, 5,544.538, Cl. 74-335.000.

Suzuki, Nobuo: *See—*
Tsunokawa, Keiichi; and Suzuki, Nobuo, 5,546,446, Cl. 379-114.000.

Suzuki, Norio: *See—*
Hirabayashi, Kazuo; Suzuki, Norio; and Tachibana, Yosuke, 5,546,306, Cl. 364-424.040.

Suzuki, Seizo, to Ricoh Company Ltd. Optical scanning system. 5,546,216, Cl. 359-216.000.

Suzuki, Takahisa; Iritani, Kunio; Ishikawa, Hiroshi; and Isaji, Akira, to Nippondenso Co., Ltd. Air-conditioning device for electric automobiles. 5,544,493, Cl. 62-133.000.

Suzuyoshi Corporation: *See—*
Tanaka, Masaru, 5,545,882, Cl. 235-98.00R.

Svensson, Mats: *See—*
Lundin, Kenneth; Wiman, Lars-Erik; and Svensson, Mats, 5,546,584, Cl. 395-700.000.

Svetkoff, Ronald J.; Rohrer, Donald K.; and Kelley, Robert W., to View Engineering, Inc. Triangulation-based 3D imaging and processing method and system. 5,546,189, Cl. 356-376.000.

Swain, Charles F.: *See—*
Thenappan, Alagappan; Swain, Charles F.; and Lully, Matthew H., 5,545,775, Cl. 570-168.000.
Tung, Hsueh S.; Smith, Addison M.; and Swain, Charles F., 5,545,778, Cl. 570-178.000.

Swanson, David K.: *See—*
Dahl, Roger W.; Swanson, David K.; Hahn, Stephen J.; Lang, Douglas J.; and Heil, John E., 5,545,202, Cl. 607-129.000.

Swanson, Eric B.: *See—*
Wong, Raymond S. C.; Grant, Ian; Patel, Jayantilal D.; Parker, Jeff P. K.; and Swanson, Eric B., 5,545,821, Cl. 800-230.000.

Swanson, Richard J.: *See—*
Hulderman, Garry N.; Phillips, Eugene; and Swanson, Richard J., 5,545,511, Cl. 430-315.000.

Swartz, Jerome; Shepard, Howard M.; Krichever, Mark J.; Metlitsky, Boris; and Barkan, Edward. Portable laser diode scanning head. 5,545,889, Cl. 235-472.000.

Sween, Adrian P.; and Nass, Raymond D., to Sween, Adrian P. Water purifier. 5,545,335, Cl. 210-748.000.

Sweetnam, Gordon W.: *See—*
Diggs, Matthew B.; and Sweetnam, Gordon W., 5,544,626, Cl. 123-90.160.

Swenson, Paul M.: *See—*
Hume, William J.; Swenson, Paul M.; and Vasapoli, Michael L., 5,545,028, Cl. 425-549.000.

Switched Reluctance Drives Ltd.: *See—*
Stephenson, John M.; and Ray, William F., 5,545,964, Cl. 318-701.000.

Switek, Lawrence E.: *See—*
Stoll, Thomas D.; and Switek, Lawrence E., 5,544,496, Cl. 62-498.000.

Syftestad, Glenn T.: *See—*
Laurencin, Cato T.; Lucas, Paul A.; Syftestad, Glenn T.; Domb, Abraham; Glowacki, Julianne; and Langer, Robert S., 5,545,409, Cl. 424-426.000.

Sylvan R. Shemitz Designs, Inc.: *See—*
Shemitz, Sylvan R., 5,546,292, Cl. 362-234.000.

Symbios Logic Inc.: *See—*
Thornberg, Gary R., 5,545,440, Cl. 427-345.000.

Symbol Technologies Inc.: *See—*
Barkan, Edward; and Bridgelall, Raj, 5,545,888, Cl. 235-462.000.
Metlitsky, Boris; Katz, Joseph; Marom, Emanuel; and Gousgounis, Dean, 5,545,886, Cl. 235-462.000.

Synaptic Pharmaceutical Corporation: *See—*
Gerald, Christophe; Walker, Mary W.; Branchek, Theresa; and Weinshank, Richard L., 5,545,549, Cl. 435-240.200.

Synek, Richard J. Ball glove with web assembly. 5,544,362, Cl. 2-19.000.

Syntex (U.S.A.) Inc.: *See—*
Eppstein, Deborah A.; Felgner, Philip L.; Gadek, Thomas R.; Jones, Gordon H.; and Roman, Richard B., 5,545,412, Cl. 424-450.000.
Fu, Roger C.; Leung, De-Mei; Fleitman, Jeffrey S.; Rizzolio, Michele C.; and Miksztal, Andrew R., 5,545,637, Cl. 514-233.500.

Syntex Pharmaceuticals, Limited: *See—*
Pascal, Jean-Claude; McCort, Gary; Blondet, Dominique; and Gellibert, Françoise, 5,545,645, Cl. 514-326.000.

Synthelabo: *See—*
Borrega, Regis; and Kitamura, Satoshi, 5,545,738, Cl. 544-291.000.

System Teeg AB: *See—*
Engwall, Sten, 5,544,453, Cl. 52-169.500.

Syvertsen, Kare: *See—*
Breivik, Kare; Smedal, Arne; and Syvertsen, Kare, 5,545,065, Cl. 441-5.000.

Szajda, Kenneth S., to Massachusetts Institute of Technology. Feedback sensor circuit. 5,546,041, Cl. 327-512.000.

Szállási, Tamas: *See—*
Szántay, Csaba; Kardos, Zsuzsanna B.; Moldvai, István; Major, Eszter T.; Szántay, Csaba, Jr.; Mándi, Attila; Blaskó, Gábor; Simig, Gyula; Lax, Györgyi; Drabant, Sándor; Szállási, Tamas; Fekete, Márton; and Gigler, Gábor, 5,545,741, Cl. 546-276.700.

Szántay, Csaba; Kardos, Zsuzsanna B.; Moldvai, István; Major, Eszter T.; Szántay, Csaba, Jr.; Mándi, Attila; Blaskó, Gábor; Simig, Gyula; Lax, Györgyi; Drabant, Sándor; Szállási, Tamas; Fekete, Márton; and Gigler, Gábor, to Egis Gyogyszergyar Rt. Process for the preparation of epibatidine. 5,545,741, Cl. 546-276.700.

Szántay, Csaba, Jr.: *See—*
Szántay, Csaba; Kardos, Zsuzsanna B.; Moldvai, István; Major, Eszter T.; Szántay, Csaba, Jr.; Mándi, Attila; Blaskó, Gábor; Simig, Gyula; Lax, Györgyi; Drabant, Sándor; Szállási, Tamas; Fekete, Márton; and Gigler, Gábor, 5,545,741, Cl. 546-276.700.

Szczepanski, Henry: *See—*
Maienfisch, Peter; Böger, Manfred; Pitterna, Thomas; and Szczepanski, Henry, 5,545,630, Cl. 514-63.000.

T. S. I. Medical: *See—*
Fischell, David R., 5,545,143, Cl. 604-180.000.

Tachi-S Co., Ltd.: *See—*
Kawasaki, Kiyoshi, 5,544,602, Cl. 112-470.090.

Tachibana, Yosuke: *See—*
Hirabayashi, Kazuo; Suzuki, Norio; and Tachibana, Yosuke, 5,546,306, Cl. 364-424.040.

Tackney, Charles T.: *See—*
Skelly, Susan M.; Tackney, Charles T.; Snouwaert, John N.; and Fowlkes, Dana M., 5,545,537, Cl. 435-69.520.

Tacq, Jo, to Picanol N.V. Defective weft yarn insertion prevention. 5,544,679, Cl. 139-450.000.

Tada, Gen, to Fuji Electric Co., Ltd. Method of producing a semiconductor device having two MIS transistor circuits. 5,545,577, Cl. 437-41.000.

Tagamolila, Constante P., to UOP. Desalting process for primary fractionator. 5,545,313, Cl. 208-348.000.

Tagawa, Toshiya: *See—*
Hayashi, Masayuki; Mitekura, Yoshihiro; Kanaya, Koichi; Terao, Masato; Tagawa, Toshiya; Tomidokoro, Nobuaki; Kitayama, Masahiro; Kizaki, Osamu; Kawada, Yasuo; Nakahara, Kazuyuki; Harada, Tomofumi; and Hashimoto, Yasunari, 5,546,164, Cl. 355-204.000.

Taguchi, Akira, to Mori-Gumi Co., Ltd. Method of transferring material from the bottom of a body of water. 5,544,983, Cl. 406-85.000.

Taguchi, Hiromu: *See—*
Haruta, Youichi; Kambayashi, Tomio; Kato, Hitoshi; and Taguchi, Hiromu, 5,544,773, Cl. 216-13.000.

Taguchi, Jun'ichi; Kido, Kunihiko; and Sano, Koichi, to Hitachi Medical Corporation. Method of motion tracking measurement in MR imaging system. 5,545,993, Cl. 324-309.000.

Tagusa, Yasunobu: *See—*
Aota, Keiji; Ooga, Masaaki; and Tagusa, Yasunobu, 5,546,279, Cl. 361-749.000.

Tai, Wei-Heng; and Hsu, Yi-Chin, to Taiwan Semiconductor Manufacturing Company Ltd. Dynamic dispatching rule that uses long term due date and short term queue time to improve delivery performance. 5,546,326, Cl. 364-552.000.

Taichung Machinery Works, Co., Ltd.: *See—*
Cheng, Chao-hsi; and Lee, Yuan-jyi, 5,544,451, Cl. 52-167.200.

Taiho Industries Co., Ltd.: *See—*
Manabe, Nobuyuki; and Ando, Masaaki, 5,544,669, Cl. 134-109.000.
Okamura, Kiyoshi; and Shinohara, Seigo, 5,545,683, Cl. 524-277.000.

Taillon, Armand P., to Standard Car Truck Company. Stabilized roller bearing adapter. 5,544,591, Cl. 105-223.000.

Taisho Pharmaceutical Co., Ltd.: *See—*
Sato, Fumie; Amano, Takehiro; Kameo, Kazuya; Tanami, Tohru; Mutoh, Masaru; Ono, Naoya; and Goto, Jun, 5,545,666, Cl. 514-530.000.

Tait, David B.; Burreson, B. Jay; and Brandt, Thomas J., to Tektronix, Inc. Systems and methods for making printed products. 5,546,114, Cl. 347-212.000.

Taiwan Fu Hsing Industrial Co., Ltd.: *See—*
Lin, Jui-Chang, 5,544,507, Cl. 70-107.000.

Taiwan Semiconductor Manufacture Company: *See—*
Liao, Hung-jen, 5,546,019, Cl. 326-81.000.

Taiwan Semiconductor Manufacturing Company: *See—*
Chung, Wen-Jye; and Lee, Chu-Mei, 5,545,570, Cl. 437-8.000.
Liang, Mong-Song; and Hsu, Charles C.-H., 5,545,579, Cl. 437-44.000.
Wang, Chen-jong; Liang, Mong-song; Wuu, Shou-gwo; and Su, Chung-Hui, 5,545,585, Cl. 437-52.000.
Wuu, Shou-Gwo; Liang, Mong-Song; Wang, Chen-Jong; and Su, Chung-Hui, 5,545,584, Cl. 437-52.000.
Yoo, Chue-San, 5,545,588, Cl. 437-187.000.

Taiwan Semiconductor Manufacturing Company Ltd: *See—*
Tai, Wei-Heng; and Hsu, Yi-Chin, 5,546,326, Cl. 364-552.000.

Tajima, Toshio: *See—*
Kawamura, Kiyoshi; Tajima, Toshio; and Koseki, Shinya, 5,545,839, Cl. 84-171.000.

Takada, Hiroshi, to Nippon Steel Corporation. Data base retrieval system utilizing stored vicinity feature values. 5,546,578, Cl. 395-600.000.

Takagi, Akira; Murakami, Fumiaki; Fujutsuna, Masami; Natsume, Kazuyuki; Suzuki, Masaru; and Takei, Toshihiro, to Nippondenso Co., Ltd. Hydraulic controller for automatic transmission having automatic manual control and automatic failsafe operation. 5,544,538, Cl. 74-335.000.

Takagi, Hisamitsu: *See—*
Tomura, Masashi; and Takagi, Hisamitsu, 5,546,457, Cl. 379-368.000.

Takagi, Shozo: *See—*
Chow, Laurence C.; and Takagi, Shozo, 5,545,254, Cl. 106-35.000.

Takagi, Yukio: *See—*
Ikeda, Hachiro; Miyamoto, Noriaki; Umeda, Ryoei; Yasu, Hidenori; Fukukawa, Mitsuo; Masuyama, Yukiei; Kinoshita, Shoji; Takagi, Yukio; Gocho, Tomohiro; Goto, Fumio; Ishii, Akio; Ogawa, Tetsuo; Hasegawa, Yoshun; Hironaka, Keitaro; and Ogoshi, Yasuhiro, 5,546,123, Cl. 348-119.000.

Takagishi, Takashi; and Makita, Toshihiko, to Yazaki Corporation. Terminal for passing through waterproof rubber plug and method of producing terminal. 5,545,062, Cl. 439-877.000.

Takahashi, Akira: *See—*
Fuji, Hiroshi; Deguchi, Toshihisa; Kojima, Kunio; Yamaguchi, Takeshi; Terashima, Shigeo; Takahashi, Akira; and Ohta, Kenji, 5,546,364, Cl. 369-13.000.

Takahashi, Hideki: *See—*
Goto, Narito; Isshiki, Masanori; Sasaki, Kunitsuna; Sekiguchi, Nobuyuki; Takeda, Katsuyuki; and Takahashi, Hideki, 5,545,462, Cl. 428-141.000.

Takahashi, Hironori; and Aoshima, Shinichiro, to Hamamatsu Photonics K.K. Voltage measuring apparatus. 5,546,011, Cl. 324-753.000.

Takahashi, Kenichi; and Naito, Yoshikazu, to Minolta Camera Kabushiki Kaisha. input/output port fault diagnosing device. 5,546,404, Cl. 371-22.100.

Takahashi, Kiyoshi: *See—*
Yamada, Akira; Yoshida, Shinichiro; Yoshino, Masahiro; Takahashi, Kiyoshi; Omura, Akira; and Konagai, Makoto, 5,545,443, Cl. 427-584.000.

Takahashi, Koichi; Takatori, Tetsuya; Ichikawa, Haruo; Kaya, Akimasa; and Takahashi, Tomoyuki, to Fuji Photo Film Co., Ltd. Photographic film cassette, and apparatus and method of loading and removing photographic film in association with the cassette. 5,544,835, Cl. 242-348.100.

Takahashi, Kunioki: *See—*
Nemoto, Ichiro; Izumi, Hiroyuki; Fukui, Nobuyuki; and Takahashi, Kunioki, 5,546,149, Cl. 354-265.000.

Takahashi, Kunitomo: *See—*
Doi, Koji; Tsuji, Yasuyuki; Yokokawa, Shuuho; Takahashi, Kunitomo; Hirose, Youji; Ueno, Hiroshi; Takeuchi, Youichi; Yamada, Koutara; and Iwanaga, Hidenori, 5,545,840, Cl. 118-658.000.

Takahashi, Mikiko: *See—*
Koyama, Masayoshi; Takahashi, Mikiko; and Doi, Kazuyuki, 5,545,720, Cl. 530-380.000.

Takahashi, Naoya: *See—*
Honma, Hisao; Nakagoshi, Kazuo; Takahashi, Naoya; Kogai, Makoto; and Takamoto, Kenichi, 5,546,348, Cl. 365-230.030.

Takahashi, Nobuyuki: *See—*
Yoshitomi, Yasunari; Senuma, Takehide; Suga, Yozo; and Takahashi, Nobuyuki, 5,545,263, Cl. 148-111.000.

Takahashi, Noriaki: *See—*
Ono, Hitoshi; Takahashi, Noriaki; Ando, Osamu; Takeuchi, Masako; and Oda, Hirofumi, 5,545,502, Cl. 430-110.000.

Takahashi, Tetsuhiko; Kawasaki, Shinji; and Nishimura, Hiroshi, to Hitachi Medical Corporation. Magnetic resonance imaging method and apparatus. 5,544,653, Cl. 128-653.200.

Takahashi, Tomoyuki: *See—*
Takahashi, Koichi; Takatori, Tetsuya; Ichikawa, Haruo; Kaya, Akimasa; and Takahashi, Tomoyuki, 5,544,835, Cl. 242-348.100.

Takahashi, Yasuhiro, to Riso Kagaku Corporation. Mimeographic printing machine having sheet jamming detector. 5,544,580, Cl. 101-118.000.

Takahashi, Yousuke: *See—*
Hihara, Toshio; and Takahashi, Yousuke, 5,545,236, Cl. 8-549.000.

Takamatsu, Osamu: *See—*
Shimada, Yasuhiro; Okamura, Yoshimasa; Takamatsu, Osamu; Nakayama, Masaru; and Yanagisawa, Yoshihiro, 5,546,375, Cl. 369-126.000.

Takamoto, Kenichi: *See—*
Honma, Hisao; Nakagoshi, Kazuo; Takahashi, Naoya; Kogai, Makoto; and Takamoto, Kenichi, 5,546,348, Cl. 365-230.030.

Takano, Tsunesuke; and Sinzawa, Kouichi, to Kabushiki Kaisha T an T. Slide switch. 5,545,862, Cl. 200-16.00R.

Takano, Yoshihito: *See—*
Wakabayashi, Sobei; Hashimukai, Tomoko; Katakura, Takeo; and Takano, Yoshihito, 5,545,212, Cl. 623-1.000.

Takao, Yasunori, to Sharp Kabushiki Kaisha. Liquid crystal display having a frame which does not transmit light source heat to the display. 5,546,203, Cl. 359-49.000.

Takasago Institute For Interdisciplinary Science Inc.: *See—*
Nakatsu, Tetsuo; Green, Carter B.; Reitz, Gary A.; and Kang, Raphael K. L., 5,545,424, Cl. 426-536.000.

Takasago International Corporation: *See—*
Nakatsu, Tetsuo; Green, Carter B.; Reitz, Gary A.; and Kang, Raphael K. L., 5,545,424, Cl. 426-536.000.

Takase, Sbigehiro: *See—*

VOL 1189 ISS 2 AG 13 1996 UMI

Nakajima, Hidenori; Hori, Yasuhiro; Goto, Toshio; Takase, Shigehiro; Verhaeghe, Koen; Terano, Hiroshi; and Okuhara, Masakuni, 5,545,542, Cl. 435-128.000.

Takata Corporation: *See—*
Yamanishi, Takahiro; Fujii, Hiroaki; and Osada, Nobuya, 5,544,913, Cl. 280-730.200.

Takata, Kenichi: *See—*
Koshiba, Nobuharu; Takata, Kenichi; Asaka, Emi; and Nakanishi, Makoto, 5,545,468, Cl. 429-218.000.

Takato, Norio: *See—*
Inoue, Yasuyuki; Kawachi, Masao; Okamoto, Katsunari; Takato, Norio; Yamamoto, Fumihiko; Suda, Hiroyuki; Furukawa, Shinichi; and Morinaka, Akira, 5,546,483, Cl. 385-14.000.

Takatoo, Masao: *See—*
Abe, Shigeo; Kayama, Masahiro; Takenaga, Hiroshi; Morooka, Yasuo; Kawakami, Junzo; and Takatoo, Masao, 5,546,503, Cl. 395-23.000.

Takatori, Tetsuya: *See—*
Takahashi, Koichi; Takatori, Tetsuya; Ichikawa, Haruo; Kaya, Akimasa; and Takahashi, Tomoyuki, 5,544,835, Cl. 242-348.100.

Takatsuki, Ryo: *See—*
Golwalkar, Suresh V.; Foehringer, Richard; Wentling, Michael; Takatsuki, Ryo; Kawashima, Shigeo; Tsujimoto, Keiichi; and Sato, Nobuaki, 5,545,922, Cl. 257-676.000.

Takayama, Akio: *See—*
Egawa, Motoji; Takayanagi, Kazutoshi; Takayama, Akio; Fujita, Tetsuji; and Sano, Akinobu, 5,546,251, Cl. 360-103.000.

Takayanagi, Kazutoshi: *See—*
Egawa, Motoji; Takayanagi, Kazutoshi; Takayama, Akio; Fujita, Tetsuji; and Sano, Akinobu, 5,546,251, Cl. 360-103.000.

Takeda Chemical Industries, Ltd.: *See—*
Asahi, Satoru; Yano, Takahiko; and Doi, Muneharu, 5,545,538, Cl. 435-86.000.
Itoh, Katsumi; Okonogi, Kenji; and Tasaka, Akihiro, 5,545,652, Cl. 514-383.000.

Takeda, Katsuyuki: *See—*
Goto, Narito; Isshiki, Masanori; Sasaki, Kunitsuna; Sekiguchi, Nobuyuki; Takeda, Katsuyuki; and Takahashi, Hideki, 5,545,462, Cl. 428-141.000.

Takeda, Shuzo: *See—*
Konishi, Akio; Saito, Yoshiyuki; Takeda, Shuzo; Yoshio, Hideaki; and Kurumatani, Hiroshi, 5,546,249, Cl. 360-95.000.

Takehara, Katsuomi, to Kabushiki Kaisha Takehara Kikai Kenkyusho. Fiber crimping apparatus with movable crimping member. 5,544,397, Cl. 28-263.000.

Takei, Toshihiro: *See—*
Takagi, Akira; Murakami, Fumiaki; Fujutsuna, Masami; Natsume, Kazuyuki; Suzuki, Masaru; and Takei, Toshihiro, 5,544,538, Cl. 74-335.000.

Takemura, Yasuhiko: *See—*
Yamazaki, Shunpei; Zhang, Hongyong; Uochi, Hideki; Adachi, Hiroki; and Takemura, Yasuhiko, 5,545,571, Cl. 437-21.000.

Takenaga, Hiroshi: *See—*
Abe, Shigeo; Kayama, Masahiro; Takenaga, Hiroshi; Morooka, Yasuo; Kawakami, Junzo; and Takatoo, Masao, 5,546,503, Cl. 395-23.000.

Takenouchi, Masaki: *See—*
Saito, Nobuhiro; and Takenouchi, Masaki, 5,545,477, Cl. 428-332.000.

Takeshi, Watanabe, to GAC International, Inc. Interarch orthodontic coil spring. 5,545,037, Cl. 433-21.000.

Takeuchi, Esther S.; and Leising, Randolph A., to Wilson Greatbatch Ltd. Cathode material for nonaqueous electrochemical cells. 5,545,497, Cl. 429-219.000.

Takeuchi, Katsuyuki: *See—*
Takeuchi, Yukihisa; Nanataki, Tsutomu; Masumori, Hideo; Takeuchi, Katsuyuki; and Maeda, Takahiro, 5,545,461, Cl. 428-138.000.

Takeuchi, Kesatoshi, to Seiko Epson Corporation. Apparatus and method of transferring video data of a moving picture. 5,546,137, Cl. 348-714.000.

Takeuchi, Masako: *See—*
Ono, Hitoshi; Takahashi, Noriaki; Ando, Osamu; Takeuchi, Masako; and Oda, Hirofumi, 5,545,502, Cl. 430-110.000.

Takeuchi, Seizi: *See—*
Higashiyama, Kazutoshi; Doi, Toshiya; Ozawa, Takesi; Takeuchi, Seizi; Kamo, Tomoichi; Matsuda, Shinpei; and Yoshida, Yutaka, 5,545,610, Cl. 505-120.000.

Takeuchi, Youichi: *See—*
Doi, Koji; Tsuji, Yasuyuki; Yokokawa, Shuuho; Takahashi, Kunitomo; Hirose, Youji; Ueno, Hiroshi; Takeuchi, Youichi; Yamada, Koutara; and Iwanaga, Hidenori, 5,545,840, Cl. 118-658.000.

Takeuchi, Yukihisa; Nanataki, Tsutomu; Masumori, Hideo; Takeuchi, Katsuyuki; and Maeda, Takahiro, to NGK Insulators, Ltd. Ceramic diaphragm structure having convex diaphragm portion and method of producing the same. 5,545,461, Cl. 428-138.000.

Takigawa, Masami: *See—*
Satoh, Takamasa; Yasuda, Hiroshi; Kai, Junichi; Oae, Yoshihisa; Nishino, Hisayasu; Sakamoto, Kiichi; Yabara, Hidefumi; Seto, Isamu; Takigawa, Masami; Yamada, Akio; Arai, Soichiro; Abe, Tomohiko; Kiuchi, Takashi; and Miyazawa, Kenichi, 5,546,319, Cl. 364-488.000.

Takiguchi, Ryohei; Saito, Hitoshi; and Nishizawa, Masumi, to Dai Nippon Printing Co., Ltd. Thermal transfer image-recieving sheet. 5,545,606, Cl. 503-227.000.

Takikawa, Osami; and Naito, Tutomu, to Koito Manufacturing Co., Ltd. Vehicular lighting unit, apparatus and method for producing the same. 5,546,285, Cl. 362-61.000.

Takizawa, Toshiaki: *See—*
Yamamoto, Toru; Hisano, Akihiko; and Takizawa, Toshiaki, 5,544,387, Cl. 16-87.40R.

Talbert, Michael J.: *See—*
Gonzalez, Jaime D.; and Talbert, Michael J., 5,546,290, Cl. 362-223.000.

Talbot, Jacques: *See—*
Dubin, Michel; Talbot, Jacques; and Decaux, Pierre, 5,545,981, Cl. 324-142.000.

Talbot, Pierre J., to United States of America, Air Force. Optical monopulse chirp processor. 5,546,089, Cl. 342-159.000.

Taligent, Inc.: *See—*
Norman, George W.; and Andert, Glenn P., 5,546,595, Cl. 395-800.000.

Tam, Andrew C.: *See—*
Kerth, Randall T.; Krajnovich, Douglas J.; Kulkarni, Murlidhar V.; Leung, Wing P.; and Tam, Andrew C., 5,544,775, Cl. 216-65.000.

Tama Chemicals Co., LTD.: *See—*
Shimizu, Shumpei; Cho, Toshitsura; and Iiri, Shigeo, 5,545,309, Cl. 205-437.000.

Tamada, Osamu: *See—*
Yabe, Hisao; Iida, Yoshihiro; Suzuki, Akira; Ito, Hideo; Tashiro, Yoshio; Yamazaki, Minoru; Tamada, Osamu; and Nakajima, Shigeru, 5,545,121, Cl. 600-121.000.

Tamai, Kishio: *See—*
Yamaoka, Yukio; Tamai, Kishio; and Masutani, Hiroshi, 5,545,482, Cl. 428-379.000.

Tamamushi, Takashige: *See—*
Muraoka, Kimihiro; Shimizu, Naohiro; and Tamamushi, Takashige, 5,545,905, Cl. 257-268.000.

Tamura Electric Works, Ltd.: *See—*
Sasou, Hiroshi; and Kawashima, Takumi, 5,545,883, Cl. 235-449.000.
Seto, Yoshiaki; Miyauchi, Masayuki; and Fujii, Takanobu, 5,545,884, Cl. 235-449.000.
Tsunokawa, Keiichi; and Suzuki, Nobuo, 5,546,446, Cl. 379-114.000.

Tan, Haw-Chan; and Chang, Tim S. L., to Hon Hai Precision Ind. Co., Ltd. Interconnection system with I/O connector module board. 5,545,057, Cl. 439-540.100.

Tanabe, Ken: *See—*
Nukui, Tadashi; and Tanabe, Ken, 5,545,979, Cl. 323-313.000.

Tanaka, Kazuna; and Kapec, Jeffrey, to HowMedica, Inc. Methods and apparatus for preparing and delivering bone cement. 5,545,460, Cl. 428-137.000.

Tanaka, Masaru, to Katsu Manufacturing Co., Ltd. Cooled pellet making machine. 5,545,025, Cl. 425-315.000.

Tanaka, Masaru, to Suzuyoshi Corporation. Paper sheet counting machine. 5,545,882, Cl. 235-98.00R.

Tanaka, Seiji; Kosuge, Shuji; and Fuse, Kazuhiko, to Sumitomo Wiring Systems, Ltd. Method and apparatus for mechanically and electrically coupling metal terminals in a housing. 5,545,055, Cl. 439-507.000.

Tanaka, Shigeaki. *See—*
Akita, Mikio; Enomoto, Koichi; Tanaka, Shigeaki; and Otawara-Hamamoto, Yoko, 5,545,534, Cl. 435-4.920.

Tanaka, Tadashi; Sakamoto, Masaaki; Yamamoto, Koichi; and Ozaki, Kouki, to Daido Metal Company Ltd. Sintered bearing alloy for high-temperature application and method of manufacturing an article of the alloy. 5,545,249, Cl. 75-246.000.

Tanaka, Tadashi; Sakamoto, Masaaki; Yamamoto, Koichi; Kato, Tohru; and Sugita, Mitsuru, to Daido Metal Company Ltd. Multi-layer sliding bearing having excellent fretting property. 5,545,489, Cl. 428-629.000.

Tanaka, Tomoharu; Momodomi, Masaki; Kato, Hideo; Nakai, Hiroto; Tanaka, Yoshiyuki; Shirota, Riichiro; Aritome, Seiichi; Itoh, Yasuo; Iwata, Yoshihisa; Nakamura, Hiroshi; Odaira, Hideko; Okamoto, Yutaka; Asano, Masamichi; and Tokushige, Kaoru, to Kabushiki Kaisha Toshiba. Non-volatile semiconductor memory device and memory system using the same. 5,546,351, Cl. 365-230.060.

Tanaka, Toshihiko; Yamamoto, Akihiro; and Amenomori, Akira, to Mitsubishi Chemical Corporation. 3-phenylpyrrolidine derivatives. 5,545,647, Cl. 514-343.000.

Tanaka, Yoshiyuki: *See—*
Tanaka, Tomoharu; Momodomi, Masaki; Kato, Hideo; Nakai, Hiroto; Tanaka, Yoshiyuki; Shirota, Riichiro; Aritome, Seiichi; Itoh, Yasuo; Iwata, Yoshihisa; Nakamura, Hiroshi; Odaira, Hideko; Okamoto, Yutaka; Asano, Masamichi; and Tokushige, Kaoru, 5,546,351, Cl. 365-230.060.

Tanami, Tohru: *See—*
Sato, Fumie; Amano, Takehiro; Kameo, Kazuya; Tanami, Tohru; Mutoh, Masaru; Ono, Naoya; and Goto, Jun, 5,545,666, Cl. 514-530.000.

Tandem Computers, Inc.: *See—*
Gillenwater, Russell L.; Safari, Davoud; and Owens, Gary D., 5,546,406, Cl. 371-22.500.
Silver, Jordan R., 5,546,587, Cl. 395-730.000.

Tang, Horng-Yi; Wu, Maw-Kuen; Lee, Chuen-Sheng; and Hsu, Huei-Ying, to National Science Council. Method for the electrochemical deposition of $REBa_2Cu_3O_{7-x}$ superconductors. 5,545,305, Cl. 205-51.000.

Tang, Larry: *See—*
Besnard, Philippe; Tang, Larry; Rugge, Richard L.; Sieleman, Jim; and Dumontier, Franck, 5,544,885, Cl. 473-350.000.

Tani, Takeshi: *See—*

Sekine, Chizu; Tani, Takeshi; Ueda, Kayoko; Fujisawa, Koichi; Higashii, Takayuki; Fujimoto, Yukari; Toda, Shoji; and Minai, Masayoshi, 5,545,345, Cl. 252-299.610.

Taniguchi, Susumu: *See—*
Hashizume, Masahiro; Taniguchi, Susumu; and Kameyama, Shinji, 5,546,174, Cl. 355-283.000.

Tanino, Ken: *See—*
Wada, Shigeru; Nakamura, Ikushi; Ueno, Takuya; Tanino, Ken; Konishi, Yoshito; and Murashima, Nobuharu, 5,546,150, Cl. 354-288.000.

Tanioka, Hiroshi: *See—*
Imanari, Hitoshi; Kanno, Hideo; and Tanioka, Hiroshi, 5,546,233, Cl. 359-696.000.

Taniyama, Yoshihiko. Shutter locking mechanism for a miniature compact disk cartridge or the like and a method of manufacturing the same. 5,546,376, Cl. 369-291.000.

Tanner, Noel, to Abt, Peter; Trust, Rennat; and Trust, Jamiece Tanner. Dynamic mining system comprsing hydrated multiple recovery sites and related methods. 5,544,756, Cl. 209-458.000.

Tanuma, Toshihiro: *See—*
Morikawa, Shinsuke; Samejima, Shunichi; Yoshitake, Masaru; Okamoto, Hidekazu; Ohnishi, Keiichi; and Tanuma, Toshihiro, 5,545,777, Cl. 570-176.000.

Tanzer, Herbert J.: *See—*
Ramos, Sergio; Hall, John T.; Tanzer, Herbert J.; and Severns, Rudy, 5,545,966, Cl. 320-2.000.

Tapia P., Héctor L. Simplified pumps for fuel injection. 5,544,637, Cl. 123-495.000.

Tarlow, Kenneth: *See—*
Forselius, Frank E.; and Tarlow, Kenneth, 5,544,384, Cl. 15-235.700.

Tasaka, Akihiro: *See—*
Itoh, Katsumi; Okonogi, Kenji; and Tasaka, Akihiro, 5,545,652, Cl. 514-383.000.

Tashiro, Yoshio: *See—*
Yabe, Hisao; Iida, Yoshihiro; Suzuki, Akira; Ito, Hideo; Tashiro, Yoshio; Yamazaki, Minoru; Tamada, Osamu; and Nakajima, Shigeru, 5,545,121, Cl. 600-121.000.

Tasker, G. William: *See—*
Soave, Robert J.; Then, Alan M.; Shank, Steven M.; and Tasker, G. William, 5,544,772, Cl. 216-2.000.

Tassara, Jean-Pierre: *See—*
Baudouin, Michel; and Tassara, Jean-Pierre, 5,545,781, Cl. 570-229.000.

Tateoka, Kazuki: *See—*
Koizumi, Haruhiko; Sugimura, Akihisa; Tateoka, Kazuki; and Kanazawa, Kunihiko, 5,546,051, Cl. 330-297.000.

Tatsuki, Yuuichirou: *See—*
Yasuhara, Mitsuki; Tatsuki, Yuuichirou; Nakamura, Mitsunori; and Matsunaga, Fujihisa, 5,545,753, Cl. 564-402.000.

Taubin, Gabriel: *See—*
Bolle, Rudolf M.; Connell, Jonathan H.; Haas, Norman; Mohan, Rakesh; and Taubin, Gabriel, 5,546,475, Cl. 382-190.000.

Taus, Alfred: *See—*
Nendzig, Gerhard; and Taus, Alfred, 5,544,898, Cl. 277-166.000.

Tauscher, Robert C.: *See—*
Woyski, William B.; Tauscher, Robert C.; and Cappel, Klaus L., 5,544,528, Cl. 73-665.000.

Tavernier, Serge; Ruttens, Frank; Verhecken, André; Mampaey, Jozef; and Joly, Ludovicus, to AGFA-Gevaert, N.V. Electrostatographic developer composition. 5,545,501, Cl. 430-106.600.

Taylor, Lucille F.: *See—*
Baker, Ellen S.; Bodet, Jean-Francois; Demeyere, Hugo J. M.; Hartman, Frederick A.; Hubesch, Bruno A.; Mermelstein, Robert; Taylor, Lucille F.; and Wahl, Errol H., 5,545,350, Cl. 510-517.000.

Taylor Made Golf Co., Inc.: *See—*
Besnard, Philippe; Tang, Larry; Rugge, Richard L.; Sieleman, Jim; and Dumontier, Franck, 5,544,885, Cl. 473-350.000.

Taylor, Richard: *See—*
Smith, Edward; and Taylor, Richard, 5,544,842, Cl. 244-1.00R.

Taylor, Robert D.: *See—*
Barnes, Michael W.; Deppert, Thomas M.; and Taylor, Robert D., 5,544,687, Cl. 149-83.000.

Taylor, Thomas J.; Kielmeyer, William H.; and Rude, Carl A., to Schuller International, Inc. Low VOC furan resins and method of reducing VOCs in furan resins. 5,545,825, Cl. 524-195.000.

TDK Corporation: *See—*
Sakai, Masanori; Tomita, Katsuhiko; Ezaki, Joichiro; Suzuki, Kazuo; Fukuda, Seiji; and Hatakeyama, Kouichi, 5,545,988, Cl. 324-212.000.

Teague, Robert W.: *See—*
White, George W.; Teague, Robert W.; Tennent, Antony D.; and Robinson, James A., Jr., 5,544,717, Cl. 182-90.000.

Team Corporation: *See—*
Woyski, William B.; Tauscher, Robert C.; and Cappel, Klaus L., 5,544,528, Cl. 73-665.000.

Tebbe, Mark J.: *See—*
Miller, Shawn C.; Victor, Frantz; Spitzer, Wayne A.; Sattelberg, Thomas R., Sr.; and Tebbe, Mark J., 5,545,653, Cl. 514-388.000.

Technichem Pty. Ltd.: *See—*
Gamilis, James; and Gamilis, Emmanuel A., 5,544,786, Cl. 222-59.000.

Technipetrol S.p.A.: *See—*
Zinnamosca, Francesco; and Berruti, Massimo, 5,545,543, Cl. 435-162.000.

Technoflow Tube-Systems GmbH: *See—*
Brunnhofer, Erwin, 5,544,404, Cl. 29-430.000.

Tecnol Medical Products, Inc.: *See—*
Bowen, Michael L., 5,545,197, Cl. 607-108.000.

Tedrow, Kerry D.; Keeney, Stephen N.; Fazio, Albert; Atwood, Gregory E.; Javanifard, Johnny; and Wojciechowski, Kenneth, to Intel Corporation. High precision voltage regulation circuit for programming multiple bit flash memory. 5,546,042, Cl. 327-538.000.

Tektronix, Inc.: *See—*
Tait, David B.; Burreson, B. Jay; and Brandt, Thomas J., 5,546,114, Cl. 347-212.000.

Telect, Inc.: *See—*
Hill, Timothy L.; Allen, Brian J.; Jonas, William P.; and Kennedy, James P., 5,546,282, Cl. 361-796.000.

Teledyne Industries, Inc.: *See—*
Gray, Buddy D., 5,545,380, Cl. 422-186.070.
Gray, Buddy Don, 5,545,379, Cl. 422-186.040.

Telefonaktieibolaget LM Ericsson: *See—*
Larsson, Leif M.; and Berghager, Hans A. P., 5,546,387, Cl. 370-60.000.

Telefonaktiebolaget LM Ericsson: *See—*
Arvidsson, Stig A.; and Henningsson, Bo U. E., 5,545,843, Cl. 174-35.0GC.

Telges, Burkhard: *See—*
Biedermann, Rolf; and Telges, Burkhard, 5,546,460, Cl. 379-411.000.

Telia AB: *See—*
Lyberg, Bertil, 5,546,500, Cl. 395-2.860.

Temic Telefunken microelectronic GmbH: *See—*
Fendt, Günter; Hora, Peter; Spies, Hans; Steurer, Helmut; Warzka, Willibald; and Wetzel, Guido, 5,544,915, Cl. 280-735.000.

Temme, Leonard A.: *See—*
Mittelman, Michael H.; Still, David L.; and Temme, Leonard A., 5,546,241, Cl. 359-885.000.

Temus, Charles J.: *See—*
Jones, Kyle B.; Lehnert, Robert A.; McInnes, Ian D.; Quinn, Robert D.; Sisley, Steven E.; and Temus, Charles J., 5,546,436, Cl. 376-272.000.

Teng, Dan: *See—*
Wang, Shay-Ping T.; Teng, Dan; Stuckman, Bruce E.; and Hayner, David A., 5,546,302, Cl. 364-148.000.

Teng, James Z.: *See—*
Josten, Jeffrey W.; Mukai, Tina; Narang, Inderpal S.; and Teng, James Z., 5,546,579, Cl. 395-600.000.

Tenma, Shoji: *See—*
Funaki, Jun; and Tenma, Shoji, 5,546,363, Cl. 368-200.000.

Tennent, Antony D.: *See—*
White, George W.; Teague, Robert W.; Tennent, Antony D.; and Robinson, James A., Jr., 5,544,717, Cl. 182-90.000.

Tenney, Joel D.: *See—*
Winters, John R.; Gray, John M.; and Tenney, Joel D., 5,545,389, Cl. 423-478.000.

Teo, Phuay E.: *See—*
Looi, Hon Y.; and Teo, Phuay E., 5,545,446, Cl. 428-13.000.

Terada, Yoshinori: *See—*
Yashiki, Takashi; Wada, Yasumori; Nishimoto, Hidenori; Terada, Yoshinori; Nakayama, Takenori; and Abumiya, Tadashi, 5,545,268, Cl. 148-518.000.

Terano, Hiroshi: *See—*
Nakajima, Hidenori; Hori, Yasuhiro; Goto, Toshio; Takase, Shigehiro; Verhaeghe, Koen; Terano, Hiroshi; and Okuhara, Masakuni, 5,545,542, Cl. 435-128.000.

Terao, Masato: *See—*
Hayashi, Masayuki; Mitekura, Yoshihiro; Kanaya, Koichi; Terao, Masato; Tagawa, Toshiya; Tomidokoro, Nobuaki; Kitayama, Masahiro; Kizaki, Osamu; Kawada, Yasuo; Nakahara, Kazuyuki; Harada, Tomofumi; and Hashimoto, Yasunari, 5,546,164, Cl. 355-204.000.

Terasaki, Ryuichi: *See—*
Terui, Yoshinori; and Terasaki, Ryuichi, 5,544,617, Cl. 117-87.000.

Terashima, Shigeo: *See—*
Fuji, Hiroshi; Deguchi, Toshihisa; Kojima, Kunio; Yamaguchi, Takeshi; Terashima, Shigeo; Takahashi, Akira; and Ohta, Kenji, 5,546,364, Cl. 369-13.000.

Terastore, Inc.: *See—*
Hurt, Thomas D.; and Halpine, Scott A., 5,546,337, Cl. 365-121.000.

Terpstra, Lee M.: *See—*
Stephenson, Orlando W., III; Terpstra, Lee M.; and Armock, Charles E., 5,544,595, Cl. 109-74.000.

Terrapin Technologies, Inc.: *See—*
Kauvar, Lawrence M.; Lyttle, Matthew H.; and Satyam, Apparao, 5,545,621, Cl. 514-18.000.

Terry, Alan J., to U.S. Philips Corporation. Television receiver having an arrangement for vertically shifting subtitles. 5,546,131, Cl. 348-564.000.

Terry, Darrell A.: *See—*
Fegley, Ronald W.; and Terry, Darrell A., 5,546,183, Cl. 356-336.000.

Terui, Yoshinori; and Terasaki, Ryuichi, to Denki Kagaku Kogyo Kabushiki Kaisha. Method for producing single crystal, and needle-like single crystal. 5,544,617, Cl. 117-87.000.

Terumo Kabushiki Kaisha: *See—*
Wakabayashi, Sobei; Hashimukai, Tomoko; Katakura, Takeo; and Takano, Yoshihito, 5,545,212, Cl. 623-1.000.

Terziev, Nicola; and Popov, Leonid. Engine design for gasoline/diesel engines. 5,544,627, Cl. 123-53.100.

Test, Howard R.; Vinson, Michael R.; and Kuckhahn, Albert H., to Texas Instruments Incorporated. Capillary designs and process for fine pitch ball bonding. 5,544,804, Cl. 228-180.500.

Texaco Inc.: *See*—
Brooker, Donald D.; Falsetti, James S.; Wolfenbarger, James K.; and Vuong, Dinh-Cuong. 5,545,238, Cl. 48-197.00R.
Marrelli, John D., 5,546,007, Cl. 324-640.000.
Nelson, Gerald V.; Nongbri, Govanon; Pratt, Roy E.; Sherwood, David E., Jr.; and Dai, Pei-Shing E., 5,545,602, Cl. 502-314.000.
O'Young, Chi-Lin; and Sawicki, Robert A., 5,545,393, Cl. 423-605.000.

Texas Instrument Incorporated: *See*—
Johnson, Douglas R., 5,545,973, Cl. 323-315.000.

Texas Instruments Incorporated: *See*—
Bishop, Robert P.; and Hainey, Paul L., 5,544,399, Cl. 29-25.410.
Douglas, Monte A., 5,545,290, Cl. 156-646.100.
Farley, Joseph, 5,545,491, Cl. 429-7.000.
Greenberg, Craig B., 5,546,024, Cl. 326-106.000.
Houghton, Richard A.; and Ruzic, Steven L., 5,545,890, Cl. 235-494.000.
Hynecek, Jaroslav, 5,546,438, Cl. 377-60.000.
Ichimaru, Kouzou, 5,546,053, Cl. 331-11.000.
Leonard, Jerry, 5,546,480, Cl. 385-3.000.
Mozumder, Purnendu K.; and Saxena, Sharad, 5,546,312, Cl. 364-468.030.
Robertson, Iain C.; Nye, Jeffrey L.; Asal, Michael D.; Short, Graham B.; Simpson, Richard D.; and Littleton, James G., 5,546,553, Cl. 395-405.000.
Russell, Ernest J., 5,545,920, Cl. 257-666.000.
Test, Howard R.; Vinson, Michael R.; and Kuckhahn, Albert H., 5,544,804, Cl. 228-180.500.
Watkins, David C.; Bramer, Lowell M.; and Gerling, Christopher F., 5,545,593, Cl. 437-225.000.
Williams, Charles E.; Davis, Dennis D.; and Kee, David, 5,545,846, Cl. 174-51.000.

Texas Petrodet, Inc.: *See*—
Aitken, John; and Oria, Vittorio L., 5,544,711, Cl. 175-4.600.
Roberts, George T.; Hess, Kathleen L.; Nott, Sepideh H.; Chu, Michael S. H.; and Chin, Yem, 5,545,209, Cl. 623-1.000.

Textilma AG: *See*—
Speich, Francisco, 5,544,500, Cl. 66-85.00R.

Tezuka, Shu: *See*—
Seto, Youichi; Kikuchi, Masahiro; Kodaira, Takatoshi; Tezuka, Shu; Komura, Fuminobu; and Matsumoto, Kuniaki, 5,546,572, Cl. 395-600.000.

Thanawala, Ashish A.: *See*—
Sharma, Raghu N.; Davis, Jeffrey P.; Gunn, Timothy D.; Li, Ping; Maitra, Sidhartha; and Thanawala, Ashish A., 5,546,395, Cl. 370-84.000.

Tharpe, John M.: *See*—
Herrin, Robert M.; and Tharpe, John M., 5,545,275, Cl. 156-731.000.

Thaweethai, Ladavan; and Moon, Tien-Jan A., to NEC America. Bandwidth-on-demand remote office network apparatus and method. 5,546,379, Cl. 370-17.000.

Thayer, Bruce E., to Xerox Corporation. Electrostatic brush cleaner performance monitor. 5,546,177, Cl. 355-301.000.

Themont, Jean-Pierre: *See*—
Bocko, Peter L.; Eid, Bernard A.; Johnson, Ronald E.; Lock, William E.; Shoup, Robert D.; and Themont, Jean-Pierre, 5,544,582, Cl. 101-211.000.

Then, Alan M.: *See*—
Soave, Robert J.; Then, Alan M.; Shank, Steven M.; and Tasker, G. William, 5,544,772, Cl. 216-2.000.

Thenappan, Alagappan; Swain, Charles F.; and Lily, Matthew H., to Allied-Signal Inc. Liquid phase process for the preparation of 1,1-difluoroethane. 5,545,775, Cl. 570-168.000.

Thermwood Corporation: *See*—
Hardesty, Michael P., 5,544,990, Cl. 409-183.000.

Therrien, Michel: *See*—
Gagnon, Daniel; Pouliot, Nicole; Therrien, Michel; and Laperrière, Luc, 5,545,898, Cl. 250-369.000.

Thiel, David W.: *See*—
Davis, Scott H.; Goleman, William L.; Thiel, David W.; Bean, Robert G.; and Zahrobsky, James A., 5,546,536, Cl. 395-182.180.

Thiele, Siegfried; and Sensmeier, Jürgen, to Wilhelm Altendorf GmbH & Co. KG. Workpiece abutment for machine tools. 5,544,559, Cl. 83-43.800.

Thiesen, Stefan; Rahnenführer, Eckhard; and Köhler, Josef, to Rheinmetall Industrie GmbH; and WNC Nitrochemie GmbH. Cannon ammunition having combustible cartridge case. 5,544,587, Cl. 102-431.000.

Thiokol Corporation: *See*—
Chen, Cheng-Chi; Lloyd, Ben A.; Mumford, Neal A.; and Johns, Rolf M., 5,545,278, Cl. 156-175.000.

Thomas, Christopher P.; Coatesworth, Timothy A.; DeGroot, Kenneth P.; Ehlers, Jeffery C.; and McMackin, Mark E., to Chrysler Corporation. System and method for heating an oxygen sensor via multiple heating elements. 5,544,640, Cl. 123-689.000.

Thomas, David E.: *See*—
Hardee, Kenneth L.; Ernes, Lynne M.; Carlson, Richard C.; and Thomas, David E., 5,545,262, Cl. 148-527.000.

Thomas, John E.: *See*—
Tippins, George W.; and Thomas, John E., 5,544,408, Cl. 29-527.700.

Thomas, Nicholas, to Amersham International PLC. Pipetting device. 5,544,535, Cl. 73-864.220.

Thompson, James E., Jr.: *See*—
Basile, Philip C.; Thompson, James E., Jr.; Kline, David; and Toner, Gary E., 5,546,421, Cl. 375-200.000.

Thompson, Raymon F.; Berner, Robert W.; Curtis, Gary L.; Culliton, Stephen P.; and Wright, Blaine G., to Semitool, Inc. Semiconductor wafer processing system. 5,544,421, Cl. 34-58.000.

Thompson, Richard B.; and Jones, Eric R., to United States of America, Navy. Selective metal ion detectioo using a photoluminescent indicator binding to a macromolecule-metal ion complex. 5,545,517, Cl. 435-4.000.

Thompson Urethane Products: *See*—
Thompson, William L.; and Borski, Mark A., 5,544,584, Cl. 101-401.100.

Thompson, William L.; and Borski, Mark A., to Thompson Urethane Products. Process for producing polymer-covered flexographic printing sleeves. 5,544,584, Cl. 101-401.100.

Thomson Consumer Electronics, Inc.: *See*—
Hailey, James E.; Wilkey, Foy E.; and Staggs, Randall D., 5,546,193, Cl. 358-335.000.

Thomson Consumer Electronics S.A.: *See*—
Hackett, Andrew; Knee, Michael; Kerdranvat, Michel; and Bolender, Nadine, 5,546,130, Cl. 348-447.000.

Thomson-CSF: *See*—
Colineau, Joseph, 5,546,255, Cl. 360-115.000.
Nicolas, Christophe; Loiseaux, Brigitte; Joubert, Cécile; and Huignard, Jean-Pierre, 5,546,200, Cl. 359-15.000.

Thomson, George M., to United States of America, Army. Device for assessing an impact of a projectile with a target using optical radiation. 5,546,358, Cl. 367-128.000.

Thorley, Neil: *See*—
Ford, Peter R.; Thorley, Neil; and Foy, Martin J., 5,545,448, Cl. 428-31.000.

Thornberg, Gary R., to AT&T Global Information Solutions Company (aka NCR Corporation); Hyundai Electronics America; and Symbios Logic Inc. Method and apparatus for polymer coating of substrates. 5,545,440, Cl. 427-345.000.

Thuen, Torbjorn; and Breed, Allen, to Breed Automotive Technology, Inc. Two piece inflator housing. 5,544,916, Cl. 280-741.000.

Tian, Hong; Briggs, Christopher H. W.; Chiang, Chisin; and Lee, Jia-Kuen J., to Conner Peripherals, Inc. Non-destructive in-situ landing velocity determination of magnetic rigid disk drives using back EMF from the spindle motor during shutdown. 5,545,989, Cl. 324-212.000.

Tiedeman, George T., to Weyerhaeuser Company. Polyether-reinforced fiber-based materials. 5,545,449, Cl. 428-34.200.

Tillery, Dean; Musgrave, Paul D.; McClusky, John; and Myers, Russell L., to Acoatings, Inc. Flame spray system and method of using the same. 5,544,811, Cl. 239-13.000.

Tilley, Michael J. Automotive sun gear/planetary housing assembly. 5,545,104, Cl. 475-331.000.

Timothy, Earle: *See*—
Smith, Christopher E.; and Timothy, Earle, 5,545,887, Cl. 235-462.000.

Tinkler, Mike R. Foot support apparatus for supporting a user's foot relative to a sportsboard. 5,544,919, Cl. 280-809.000.

Tintchev, Savtcho S.: *See*—
Schutt, Karl; Hinken, Johann H.; Klinger, Martin; and Tintchev, Savtcho S., 5,545,987, Cl. 324-219.000.

Tippins, George W.; and Thomas, John E., to Tippins Incorporated. Intermediate thickness slab caster and inline hot strip and plate line with slab sequencing. 5,544,408, Cl. 29-527.700.

Tippins Incorporated: *See*—
Tippins, George W.; and Thomas, John E., 5,544,408, Cl. 29-527.700.

Tkach, Robert W.: *See*—
Chraplyvy, Andrew R.; Forghieri, Fabrizio; and Tkach, Robert W., 5,546,210, Cl. 359-124.000.

Tobise, Masahiro: *See*—
Kubo, Kenji; Dhaouadi, Rached; Tobise, Masahiro; and Azusawa, Noboru, 5,545,957, Cl. 318-432.000.

Toda, Masaaki; Ohuchida, Shuichi; and Ohno, Hiroyuki, to Ono Pharmaceutical Co., Ltd. Heterocyclic compounds. 5,545,657, Cl. 514-422.000.

Toda, Shoji: *See*—
Sekine, Chizu; Tani, Takeshi; Ueda, Kayoko; Fujisawa, Koichi; Higashii, Takayuki; Fujimoto, Yukari; Toda, Shoji; and Minai, Masayoshi, 5,545,345, Cl. 252-299.610.

Tohoku Pioneer Electronic Corporation: *See*—
Endo, Tetsuro; and Shinokura, Kiichiro, 5,546,220, Cl. 359-332.000.

Tokuda, Hiromichi: *See*—
Azuma, Takahiro; Tokuda, Hiromichi; and Kaneko, Toshimi, 5,546,058, Cl. 333-183.000.

Tokumitsu, Tsuneo, to Nippon Telegraph and Telephone Corporation. Injection-locked oscillator having non-reciprocal four port network. 5,546,056, Cl. 331-172.000.

Tokumoto, Kei; Kitada, Tetsunori; Shinoaki, Hironobu; and Sakaguchi, Shigeya, to Nippon Tungsten Co., Ltd. Titanium-base hard sintered alloy. 5,545,248, Cl. 75-238.000.

Tokura, Norihiro; and Okabe, Naoto, to Nippondenso Co., Ltd. Vertical type insulated-gate semiconductor device. 5,545,908, Cl. 257-341.000.

Tokushige, Kaoru: *See*—

Tanaka, Tomoharu; Momodomi, Masaki; Kato, Hideo; Nakai, Hiroto; Tanaka, Yoshiyuki; Shirota, Riichiro; Aritome, Seiichi; Itoh, Yasuo; Iwata, Yoshihisa; Nakamura, Hiroshi; Odaira, Hideko; Okamoto, Yutaka; Asano, Masamichi; and Tokushige, Kaoru, 5,546,351, Cl. 365-230.060.

Tokyo Keiso Kabushiki-kaisha: *See*—
Sugi, Tokio; and Furuno, Fumiya, 5,544,533, Cl. 73-861.560.

Tokyo Ohka Kogyo Co., Ltd.: *See*—
Matsui, Koji; Kimura, Mitsuru; Utsumi, Kazuaki; Ogawa, Eiichi; Komano, Hiroshi; and Aoyama, Toshimi, 5,545,281, Cl. 156-273.700.

Tolman, Charles H., to Seagate Technology, Inc. Inductive transducer with closed-loop pole circumscribing I-shaped pole to reduce leakage flux. 5,546,256, Cl. 360-126.000.

Tomasi, Peter A.; Prill, Mark E.; and Cahill, Stephen V., to Motorola, Inc. Method for supervising TDMA radio frequency communications. 5,546,380, Cl. 370-17.000.

Tomida, Yoshinori: *See*—
Okamoto, Tadashi; Tomida, Yoshinori; Yamamoto, Nobuko; and Kawaguchi, Masahiro, 5,545,521, Cl. 435-5.000.

Tomidokoro, Nobuaki: *See*—
Hayashi, Masayuki; Mitekura, Yoshihiro; Kanaya, Koichi; Terao, Masato; Tagawa, Toshiya; Tomidokoro, Nobuaki; Kitayama, Masahiro; Kizaki, Osamu; Kawada, Yasuo; Nakahara, Kazuyuki; Harada, Tomofumi; and Hashimoto, Yasunari, 5,546,164, Cl. 355-204.000.

Tomita, Junko: *See*—
Iida, Toru; Ohashi, Michihito; Sakai, Yoshihiro; Kuramoto, Shin-ichi; Chiba, Shunichi; Asahina, Yasuo; and Tomita, Junko, 5,545,381, Cl. 422-186.000.

Tomita, Katsuhiko: *See*—
Sakai, Masanori; Tomita, Katsuhiko; Ezaki, Joichiro; Suzuki, Kazuo; Fukuda, Seiji; and Hatakeyama, Kouichi, 5,545,988, Cl. 324-212.000.

Tomitaka, Tadafusa; and Sekiya, Tsuneo, to Sony Corporation. Video signal follow-up processing system. 5,546,125, Cl. 348-169.000.

Tomiyori, Makio, to NEC Corporation. Method for executing a coding and decoding process comprising subprocesses. 5,546,426, Cl. 375-242.000.

Tompa, Gary S.: *See*—
Stall, Richard A.; Tompa, Gary S.; Gurary, Alexander; and Nelson, Craig R., 5,544,618, Cl. 117-102.000.

Tomura, Masashi; and Takagi, Hisamitsu, to Fujitsu Limited. Terminal apparatus. 5,546,457, Cl. 379-368.000.

Tomura, Yoshihiro; and Bessho, Yoshihiro, to Matsushita Electric Industrial Co., Ltd. Method of forming a bump having a rugged side, a semiconductor device having the bump, and a method of mounting a semiconductor unit and a semiconductor device. 5,545,589, Cl. 437-183.000.

Tonel, Ivo S.: *See*—
Marcorin, Franco; Tonel, Ivo S.; and Munini, Dino, 5,544,551, Cl. 81-3.290.

Toner, Gary E.: *See*—
Basile, Philip C.; Thompson, James E., Jr.; Kline, David; and Toner, Gary E., 5,546,421, Cl. 375-200.000.

Tonomoto, Yoshihiro: *See*—
Ohba, Hiroki; Tonomoto, Yoshihiro; Yanagita, Kiyohisa; Houki, Yoji; Akuta, Tomokazu; and Komuro, Akihiro, 5,546,170, Cl. 355-246.000.

Topouzian, Daron; and Riley, James E., to Ford Motor Company. Brake rotor with flow through ventilation. 5,544,726, Cl. 188-264.00A.

Torelli, Guido: *See*—
Calligaro, Cristiano; Gastaldi, Roberto; Malcovati, Piero; and Torelli, Guido, 5,546,044, Cl. 327-543.000.

Toriya, Michio: *See*—
Lipp, Ronald L.; Rodriguez, David; Toriya, Michio; Kanjo, Junji; and Otsuka, Shizuo, 5,546,077, Cl. 340-825.440.

Torkowski, Thorsten, to Kiekert Aktiengesellschaft. Motor-vehicle central lock system for trunk and gas-filler doors. 5,544,508, Cl. 70-264.000.

Torrence, Robert J., to Eaton Corporation. Electrically operated expansion valve. 5,544,857, Cl. 251-129.150.

Torres, David F. Table-top air freshener. 5,544,812, Cl. 239-55.000.

Tosoh Akzo Corporation: *See*—
Ikeda, Yoshihiko; Yamane, Takeo; Kaji, Eiichi; and Ishimaru, Kenji, 5,545,759, Cl. 568-6.000.

Totsuka, Mitsuhiko: *See*—
Kondo, Hiroki; Totsuka, Mitsuhiko; Kudo, Toshiharu; and Hanazaki, Hisashi, 5,546,066, Cl. 337-163.000.

Tournier, Hervé; Hyacinthe, Roland; and Schneider, Michel, to Bracco Research, S.A. Method of imaging using encapsulated magnetite particles. 5,545,395, Cl. 424-932.000.

Tower Tech, Inc.: *See*—
Curtis, Harold D.; and Oberlag, Randal K., 5,545,356, Cl. 261-23.100.

Townsend and Townsend Khourie and Crew: *See*—
Proebsting, Robert J., 5,546,338, Cl. 365-181.000.

Townsend, Donald J.: *See*—
Broderick, Kevin B.; Song, Joo H.; Townsend, Donald J.; Record, David W.; and Tyrpin, Henry T., 5,545,416, Cl. 426-3.000.

Toy Biz, Inc.: *See*—
Arad, Avi; and Kennedy, Melvin, 5,545,072, Cl. 446-268.000.

Toyo Denki Seizo Kabushiki Kaisha: *See*—
Muraoka, Kimihiro; Shimizu, Naohiro; and Tamamushi, Takashige, 5,545,905, Cl. 257-268.000.

Toyo Ink Manufacturing Co., Ltd.: *See*—
Arai, Yoshifumi, 5,546,195, Cl. 358-518.000.
Satake, Sunao; Yatsuyanagi, Yoshimi; Fujii, Masahiro; and Imagawa, Ippei, 5,545,694, Cl. 525-286.000.

Toyo Kohan Co., Ltd.: *See*—
Shimizu, Keiichi, 5,544,517, Cl. 72-349.000.

Toyoda, Arata: *See*—
Okuda, Taneaki; and Toyoda, Arata, 5,544,776, Cl. 216-83.000.

Toyoda, Haruyoshi: *See*—
Kobayashi, Yuji; Yoshida, Narihiro; Mukohzaka, Naohisa; Toyoda, Haruyoshi; and Hara, Tsutomu, 5,546,181, Cl. 356-237.000.

Toyoda, Hidetoshi; Tsuchida, Tetsuo; and Iwashita, Kanau, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle braking system and method. 5,544,946, Cl. 303-9.640.

Toyooka, Takashi: *See*—
Niijima, Hideto; Toyooka, Takashi; Satoh, Akashi; and Sakaue, Yoshinori, 5,546,402, Cl. 371-10.200.

Toyota Jidosha Kabushiki Kaisha: *See*—
Kotani, Takeshi, 5,545,928, Cl. 290-40.00C.
Kurasako, Ryoichi, 5,544,724, Cl. 188-72.200.
Masuda, Satoki; and Hasegawa, Toshiaki, 5,545,046, Cl. 439-142.000.
Mori, Kazuhumi; Sugimori, Shigemi; and Suga, Hitoshi, 5,544,928, Cl. 296-97.900.
Yamamoto, Masaki, 5,546,308, Cl. 364-426.040.
Yuda, Shuji, 5,544,638, Cl. 123-674.000.

Trainor, Jack; LaPlace, Carl J.; and Harlow, James, to Siemens Energy & Automation, Inc. Variamp oil temperature control. 5,545,974, Cl. 323-340.000.

Tran, Don H.: *See*—
Fugoso, Mauricio L.; and Tran, Don H., 5,545,138, Cl. 604-102.000.

Tran, Luan: *See*—
Partovi, Hamid; Butler, Steven; and Tran, Luan, 5,546,354, Cl. 365-233.000.

Tran, Nang T.; Pai, Joseph Y.; and Kim, Choon-Woo, to Minnesota Mining and Manufacturing Company. Solid state radiation detection panel having tiled photosensitive detectors arranged to minimize edge effects between tiles. 5,545,899, Cl. 250-370.090.

Tran, Toan V.; and Henderson, Richard, to National Semiconductor Corporation. Digital phase lock loop having frequency offset cancellation circuitry. 5,546,433, Cl. 375-376.000.

Travers, Christine; and Burzynski, Jean-Pierre, to Institut Francais Du Petrole. Skeletal isomerisation process for olefins using an alumina-based compound. 5,545,793, Cl. 585-671.000.

Travisano, Frank P. Tamper evident seal and system. 5,544,770, Cl. 215-230.000.

Trees, Floyd F.: *See*—
O'Connor, Kurt F.; Hoff, James P.; Frasier, Donald J.; Peeler, Ralph E.; Mueller-Largent, Heidi; Trees, Floyd F.; Whetstone, James R.; Lane, John H.; and Jeffries, Ralph E., 5,545,003, Cl. 415-115.000.

Tremblay, Rejean: *See*—
Begin, Pierre; Choquette, Denis; and Tremblay, Rejean, 5,544,693, Cl. 164-4.100.

Trent, Jeffrey M.; and Meltzer, Paul S., to University of Michigan, The Regents of the. Compositions and methods for chromosome region-specific probes. 5,545,524, Cl. 435-6.000.

Trentino, Salvatore J. Output tube bias selection apparatus for tone alteration in a tube-type audio amplifier. 5,546,046, Cl. 330-127.000.

Trepka, William J.; Moczygemba, George A.; Stacy, Nathan E.; and Farrar, Ralph C., Jr., to Phillips Petroleum Company. Tapered block copolymers of monovinylarenes and conjugated dienes. 5,545,690, Cl. 525-98.000.

Trevett, Neil F., to 3DLabs Limited. Data-array processing system. 5,546,532, Cl. 395-164.000.

Trigg, Timothy E.; Souires, Edward L.; and Jochle, Wolfgang, to Peptide Technology Limited. Biocompatible implant for the timing of ovulation in mares. 5,545,408, Cl. 424-422.000.

Tropsha, Yelena G.; and Antoon, Mitchell K., to Becton, Dickinson and Company. Blood collection tube assembly. 5,545,375, Cl. 422-102.000.

Troutman, Ronald R.: *See*—
Ichioka, Yoshikazu; Jenkins, Leslie C.; Kimura, Shinichi; Polastre, Robert J.; Troutman, Ronald R.; and Wisnieff, Robert L., 5,546,013, Cl. 324-770.000.

Trulson, Mark: *See*—
Rava, Richard P.; Fodor, Stephen P. A.; and Trulson, Mark, 5,545,531, Cl. 435-6.000.

Trumble, Mary K.: *See*—
Obermann, David F.; and Trumble, Mary K., 5,546,573, Cl. 395-600.000.

Trumble, William P.; Harris, Mark R.; and Van Gaal, Adrianus P., to Northern Telecom Limited. Environmental protectors for electronics devices. 5,545,494, Cl. 429-163.000.

Trummer, Günther; and Körber, Richard, to Deutsche Aerospace AG. High-precision radar range finder. 5,546,088, Cl. 342-124.000.

Truong, Tuong C.: *See*—
McPherson, John A., Jr.; Pirahesh, Mir H.; Truong, Tuong C.; and Coyle, Daniel J., Jr., 5,546,570, Cl. 395-600.000.

Trust, Jamiece Tanner: *See*—
Tanner, Noel, 5,544,756, Cl. 209-458.000.

Trust, Rennat: *See*—
Tanner, Noel, 5,544,756, Cl. 209-458.000.

Trustees of Columbia University in the City of New York, The: *See*—
Stein, Cy A.; and Wax, Martin B., 5,545,626, Cl. 514-44.000.

Trustees of Princeton University, The: *See*—
Skelly, Susan M.; Tackney, Charles T.; Snouwaert, John N.; and Fowlkes, Dana M., 5,545,537, Cl. 435-69.520.

Trustees of Princeton University Office of Research and Project Administration, The: *See—*
Albert, Mitchell S.; Balamore, Dilip; Cates, Gordon D., Jr.; Driehuys, Bastiaan; Happer, William; Saam, Brian; and Wishnia, Arnold, 5,545,396, Cl. 424-93.000.
Trützschler GmbH & Co. KG: *See—*
Hartung, Reinhard; and Hösel, Fritz, 5,544,390, Cl. 19-240.000.
TRW Inc.: *See—*
Hindman, Carlton L., 5,546,084, Cl. 342-25.000.
Little, Scott C., 5,544,522, Cl. 73-118.100.
TRW Vehicle Safety Systems Inc.: *See—*
Boelstler, Richard; and Siev, Chhay S., 5,544,838, Cl. 242-384.200.
Fleming, William J.; and Steffens, Charles E., Jr., 5,544,918, Cl. 280-805.000.
Loxton, Steven R.; and Czarnecki, Donald P., 5,544,917, Cl. 280-801.200.
Mazur, Joseph F.; Blackburn, Brian K.; and Gentry, Scott B., 5,546,307, Cl. 364-424.050.
Tsai, Chin-Lin. Ignition device with an air fan. 5,545,035, Cl. 431-255.000.
Tsai, Tung-Hung: *See—*
Deng, Chih-Chiang; and Tsai, Tung-Hung, 5,545,439, Cl. 427-327.000.
Tsai, Yen-Wen. Swimming aid assembly. 5,545,066, Cl. 441-61.000.
Tsao, Yao-Chung: *See—*
Foladare, Mark J.; Goldman, Shelley B.; Murray, Nancy; Silverman, David P.; Tsao, Yao-Chung; and Weber, Roy P., 5,546,442, Cl. 377-57.000.
Tseng, Chin C. Auto cycling multi-functional massaging device. 5,545,125, Cl. 601-71.000.
Tsuchida, Tetsuo: *See—*
Toyoda, Hidetoshi; Tsuchida, Tetsuo; and Iwashita, Kanau, 5,544,946, Cl. 303-9.640.
Tsuda, Koichiro: *See—*
Germond, Jacques E.; Hottinger, Herbert; Mignot, Olivier; Mollet, Beat; and Tsuda, Koichiro, 5,545,554, Cl. 435-252.900.
Tsuda, Yoichi: *See—*
Kimoto, Masahiko; Nakamichi, Masumi; Funakoshi, Takahiro; Wada, Yasuhiro; Yamamoto, Takehiro; and Tsuda, Yoichi, 5,546,496, Cl. 385-146.000.
Tsui, Paul G. Y.: *See—*
Chen, Wei-Ming; Sun, Shih-Wei; and Tsui, Paul G. Y., 5,545,574, Cl. 437-40.000.
Tsuji, Yasuyuki: *See—*
Doi, Koji; Tsuji, Yasuyuki; Yokokawa, Shuuho; Takahashi, Kunitomo; Hirose, Youji; Ueno, Hiroshi; Takeuchi, Youichi; Yamada, Koutara; and Iwanaga, Hidenori, 5,545,840, Cl. 118-658.000.
Tsujimoto, Keiichi: *See—*
Golwalkar, Suresh V.; Foehringer, Richard; Wentling, Michael; Takatsuki, Ryo; Kawashima, Shigeo; Tsujimoto, Keiichi; and Sato, Nobuaki, 5,545,922, Cl. 257-676.000.
Tsukamoto, Osamu: *See—*
Ozaki, Masahiko; Sonoda, Keisuke; Kikuchi, Hiroshi; Tsukamoto, Osamu; Komatsu, Masao; and Asai, Koetsu, 5,544,491, Cl. 62-53.100.
Tsumadori, Masaki: *See—*
Kurii, Jun; Nomura, Noboru; Itoh, Masami; Ohira, Kozo; Tsumadori, Masaki; Matsunaga, Akira; Kimura, Akio; and Suzue, Shigetoshi, 5,545,349, Cl. 252-186.380.
Tsunekawa, Hiroyuki; and Abe, Kouji, to Sanshin Kogyo Kabushiki Kaisha. Control for outboard motor. 5,545,064, Cl. 440-53.000.
Tsuno, Katsuhiko: *See—*
Okumura, Eisuke; and Tsuno, Katsuhiko, 5,546,185, Cl. 356-345.000.
Tsunokawa, Keiichi; and Suzuki, Nobuo, to Tamura Electric Works, Ltd. Public telephone system using a prepaid card to enable communication. 5,546,446, Cl. 379-114.000.
Tsuru, Sumiaki: Yokoo, Akihiko; Sakurai, Takeshi; and Ogawa, Tetsuro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Deodorants and gas filters therefor. 5,545,240, Cl. 55-479.000.
Tsuruga, Sadao: *See—*
Sano, Yuji; Tsuruga, Sadao; Kitou, Kouji; and Ohsawa, Michitaka, 5,546,048, Cl. 330-263.000.
Tsutsui, Mitsukuni: *See—*
Uchiyama, Kaoru; Tsutsui, Mitsukuni; Naito, Shotaro; and Suda, Seiji, 5,544,523, Cl. 73-118.200.
Tsutsui, Tomoki; Izukawa, Tsukuru; Ohkubo, Kazuhiko; and Sakaki, Yoshitsugu, to Mitsu Toatsu Chemicals, Inc. Preparation process for polyoxyalkylene polyol. 5,545,712, Cl. 528-408.000.
Tsuzuki, Mikihisa, to Kazuyuki Katsuno. Earth globe. 5,545,041, Cl. 434-136.000.
Tucker, Michel H.; Sams, Gary; Hennessey, Kathleen; Pattikonda, Ramakhrisna; and Condit, Mario, to NTS Communications, Inc. Signal intercept system and method. 5,546,398, Cl. 370-94.100.
Tucker, Richard S.: *See—*
Beck, Norman G.; Anderson, Gary J.; and Tucker, Richard S., 5,545,019, Cl. 418-55.100.
Tuftco Corporation: *See—*
Frost, Steven L., 5,544,605, Cl. 112-475.230.
Tung, Hsueh S.; Smith, Addison M.; and Swain, Charles F., to AlliedSignal Inc. Single stage process for producing hydrofluorocarbons from perchloroethylene. 5,545,778, Cl. 570-178.000.
Turner, Donald G.: *See—*
Pickering, Samuel M., Jr.; Bloodworth, J. Elmo; and Turner, Donald G., 5,545,599, Cl. 501-146.000.
Turner, Joseph: *See—*
Walworth, Tom M., Jr.; Jurica, Joseph J.; Weilemann, Donald E.; and Turner, Joseph, 5,544,932, Cl. 296-183.000.
Turton, Robert C.: *See—*
Collin, Edwin J.; and Turton, Robert C., 5,544,959, Cl. 335-202.000.
Tyrpin, Henry T.; Broderick, Kevin B.; and Record, David W., to Wm. Wrigley Jr. Company. Low moisture chewing gum compositions containing erythritol. 5,545,415, Cl. 426-3.000.
Tyrpin, Henry T.: *See—*
Broderick, Kevin B.; Song, Joo H.; Townsend, Donald J.; Record, David W.; and Tyrpin, Henry T., 5,545,416, Cl. 426-3.000.
Tzou, Ming-Shin: *See—*
Cannady, John P.; Gohndrone, John M.; and Tzou, Ming-Shin, 5,545,743, Cl. 556-466.000.
Ubel, F. Andrew, III: *See—*
Palazzotto, Michael C.; Ubel, F. Andrew, III; Oxman, Joel D.; and Ali, M. Zaki, 5,545,676, Cl. 522-15.000.
Uchida, Hiroshi, to Ciba-Geigy Corporation. Urethane modified epoxy resin compositions. 5,545,697, Cl. 525-403.000.
Uchiyama, Kaoru; Tsutsui, Mitsukuni; Naito, Shotaro; and Suda, Seiji, to Hitachi, Ltd. Physical quantity sensor arrangement. 5,544,523, Cl. 73-118.200.
Uchiyama, Kensuke: *See—*
Ogawa, Takashi; Yoshimoto, Kazuo; Uchiyama, Kensuke; Ibe, Harushige; Arai, Yoshiharu; Shiraishi, Taketoshi; and Gotoh, Yoshinori, 5,544,995, Cl. 414-219.000.
Udelle, Laura L.: *See—*
Udelle, Steven D.; and Udelle, Laura L., 5,544,623, Cl. 119-706.000.
Udelle, Steven D.; and Udelle, Laura L. Ball and track for cats with pivoting base. 5,544,623, Cl. 119-706.000.
Ueda, Hiroyuki: *See—*
Hayashi, Shigeki; Ueda, Hiroyuki; and Ogawa, Hirotsugu, 5,546,171, Cl. 355-271.000.
Ueda, Jun-ichi: *See—*
Ishijima, Zenzo; Ichikawa, Jun-ichi; Sasaki, Shuji; Shikata, Hideo; Urata, Hideo; Kawase, Shoji; and Ueda, Jun-ichi, 5,545,487, Cl. 428-548.000.
Ueda, Katsuyuki: *See—*
Yoshida, Hirohisa; and Ueda, Katsuyuki, 5,544,818, Cl. 241-29.000.
Ueda, Kayoko: *See—*
Sekine, Chizu; Tani, Takeshi; Ueda, Kayoko; Fujisawa, Koichi; Higashii, Takayuki; Fujimoto, Yukari; Toda, Shoji; and Minai, Masayoshi, 5,545,345, Cl. 252-299.610.
Ueda, Satoshi; Ueda, Tetsuya; Yamano, Atsuhiro; and Yano, Kousaku, to Matsushita Electric Industrial Co., Ltd. Semiconductor device and method of fabricating the same. 5,545,919, Cl. 257-641.000.
Ueda, Shinobu: *See—*
Hibi, Taketoshi; Maeno, Kenji; Ido, Kihei; Onishi, Ken; Ueda, Shinobu; Hirano, Akiyoshi; Hatanaka, Keiji; and Shiroshita, Takashi, 5,546,191, Cl. 358-335.000.
Nakagakiuchi, Susumu; and Ueda, Shinobu, 5,546,128, Cl. 348-362.000.
Ueda, Tetsuya: *See—*
Ueda, Satoshi; Ueda, Tetsuya; Yamano, Atsuhiro; and Yano, Kousaku, 5,545,919, Cl. 257-641.000.
Uehara, Yasuhiro; Kusumoto, Yasuhiro; Kanesawa, Yoshio; and Inoue, Toru, to Fuji Xerox Co., Ltd. Image fixing device and method thereof. 5,546,175, Cl. 355-290.000.
Ueki, Yasunori: *See—*
Okeya, Makoto; Ueki, Yasunori; and Ito, Norio, 5,545,983, Cl. 324-207.120.
Uemura, Tazuo: *See—*
Sato, Yukio; Sato, Atsushi; Sumikawa, Tatsuro; and Uemura, Tazuo, 5,545,737, Cl. 544-101.000.
Ueno, Hiroshi: *See—*
Doi, Koji; Tsuji, Yasuyuki; Yokokawa, Shuuho; Takahashi, Kunitomo; Hirose, Youji; Ueno, Hiroshi; Takeuchi, Youichi; Yamada, Koutara; and Iwanaga, Hidenori, 5,545,840, Cl. 118-658.000.
Ueno, Takuya: *See—*
Wada, Shigeru; Nakamura, Ikushi; Ueno, Takuya; Tanino, Ken; Konishi, Yoshito; and Murashima, Nobuharu, 5,546,150, Cl. 354-288.000.
Ueno, Yoshio; and Wada, Yasuo, to Elephant Chain Block Company Limited. Manual chain block. 5,544,863, Cl. 254-358.000.
Ueta, Kosaku, to Japan Metal Gasket Co., Ltd. Metallic gasket. 5,544,899, Cl. 277-235.00B.
Uhlman, James S.: *See—*
Huyer, Stephen A.; Grant, John R.; and Uhlman, James S., 5,544,524, Cl. 73-147.000.
Ukita, Motomu: *See—*
Wada, Tomohisa; and Ukita, Motomu, 5,546,345, Cl. 365-190.000.
Ullah, M. Rifat: *See—*
Draskovich, Barry S.; and Ullah, M. Rifat, 5,544,896, Cl. 277-22.000.
Ullman, Edwin F.: *See—*
Singh, Sharat; Singh, Rajendra; Meneghini, Frank; and Ullman, Edwin F., 5,545,834, Cl. 544-6.000.
Ullrich, Axel: *See—*
Bartke, Ilse; Kostka, Gunter; Naujoks, Kurt; and Ullrich, Axel, 5,545,533, Cl. 435-723.000.
Ullrich, Kenneth A. Anti-viral acoustically transparent earphone cover. 5,545,859, Cl. 181-129.000.
Umbach, Steven R.: *See—*

Tailor, John; Frederick, William H.; Umbach, Steven R.; Graham, Scott R.; Roberts, Kenneth L.; and Metzger, Eric R., 5,544,385, Cl. 15-350.000.
Umeda, Ryoei: *See—*
Ikeda, Hachiro; Miyamoto, Noriaki; Umeda, Ryoei; Yasu, Hidenori; Fukukawa, Mitsuo; Masuyama, Yukiei; Kinoshita, Shoji; Takagi, Yukio; Gocho, Tomohiro; Goto, Fumio; Ishii, Akio; Ogawa, Tetsuo; Hasegawa, Yoshun; Hironaka, Keitaro; and Ogoshi, Yasuhiro, 5,546,123, Cl. 348-119.000.
Umney, Michael A.: *See—*
Peterson, Ivan H.; Hoelle, James S.; Cunningham, Neil F.; and Umney, Michael A., 5,544,849, Cl. 248-74.100.
Underwood, Ronald L. Clip-on sunglasses. 5,546,140, Cl. 351-47.000.
Uniden America Corporation: *See—*
Lipp, Ronald L.; Rodriguez, David; Toriya, Michio; Kanjo, Junji; and Otsuka, Shizuo, 5,546,077, Cl. 340-825.440.
Union Special Corporation: *See—*
Winter, Frank F., 5,544,604, Cl. 112-475.170.
UNIR (Ultra Propre Nutrition Industrie Recherche) Association Loi de 1901: *See—*
Piriou, Jean-Pierre; Hermant, Jean-Jacques; and Roussel, Hervé, 5,544,736, Cl. 198-493.000.
Uniroyal Chemical Company, Inc.: *See—*
Friedlander, Barry T.; Davis, Robert A.; Blem, Allen R.; and Walker, David L., 5,545,655, Cl. 514-397.000.
Uniroyal Chemical Ltd./Ltee: *See—*
Friedlander, Barry T.; Davis, Robert A.; Blem, Allen R.; and Walker, David L., 5,545,655, Cl. 514-397.000.
Unison Industries Limited Partnership: *See—*
Mottier, Bradley D.; MacLeod, J. Norman; Mechlowitz, Dean; and Erickson, Randy, 5,544,633, Cl. 123-310.000.
Unisys Corporation: *See—*
Carter, Wilmer G., 5,546,550, Cl. 395-309.000.
Staub, Wendy C., 5,546,507, Cl. 395-76.000.
United Dominion Industries, Inc.: *See—*
Alexander, James C., 5,544,381, Cl. 14-71.700.
United Kingdom Atomic Energy Authority: *See—*
Neville, Mark D., 5,545,311, Cl. 205-712.000.
United Microelectronics Corp.: *See—*
Kao, Oliver C. K., 5,546,497, Cl. 395-2.350.
Sheng, Yi-Chung; Chung, Chen-Hui; and Su, Kuan-Cheng, 5,545,580, Cl. 437-48.000.
United Parcel Service of America, Inc.: *See—*
Bonnet, Henri, 5,544,466, Cl. 53-138.700.
Smith, Christopher E.; and Timothy, Earle, 5,545,887, Cl. 235-462.000.
U.S. Borax, Inc.: *See—*
Pickering, Samuel M., Jr.; Bloodworth, J. Elmo; and Turner, Donald G., 5,545,599, Cl. 501-146.000.
United States Defense Research, Inc.: *See—*
Hoffman, Jerzy, 5,546,063, Cl. 335-229.000.
United States of America
Air Force: *See—*
Edwards, Thomas R., 5,544,480, Cl. 60-243.000.
Elam, Carl M., 5,546,083, Cl. 342-175.000.
Harris, Meckie T.; Bliss, David F.; Armington, Alton F.; Higgins, William M.; and Bryant, George G., 5,544,615, Cl. 117-18.000.
Leland, John E., 5,544,696, Cl. 165-80.400.
Talbot, Pierre J., 5,546,089, Cl. 342-159.000.
Army: *See—*
Branovich, Louis E.; Eckart, Donald W.; and Fischer, Paul, 5,545,945, Cl. 313-346.00R.
Huerta, Joseph, 5,544,586, Cl. 102-374.000.
Thomson, George M., 5,546,358, Cl. 367-128.000.
Health and Human Services: *See—*
Duyn, Jozef H., 5,544,652, Cl. 128-653.200.
Jacobson, Kenneth A.; and Stiles, Gary, 5,545,627, Cl. 514-46.000.
Rabinovitz, Marco; and Fisher, Joyce M., 5,545,639, Cl. 514-292.000.
Wahl, Sharon M.; McCarthy, James B.; and Furcht, Leo T., 5,545,620, Cl. 514-12.000.
Interior: *See—*
Frizell, Kathleen H.; Mefford, Brent W.; Vermeyen, Tracy B.; and Morris, Douglas I., 5,544,973, Cl. 405-16.000.
National Aeronautics and Space Administration: *See—*
Bryant, Robert G., 5,545,711, Cl. 528-244.000.
Jain, Abhinandan; and Rodriguez, Guillermo, 5,546,508, Cl. 395-95.000.
Rasky, Daniel J.; and Kourtides, Demetrius A., 5,545,273, Cl. 156-60.000.
Navy: *See—*
Huyer, Stephen A.; Grant, John R.; and Uhlman, James S., 5,544,524, Cl. 73-147.000.
Mittelman, Michael H.; Still, David L.; and Temme, Leonard A., 5,546,241, Cl. 359-885.000.
Thompson, Richard B.; and Jones, Eric R., 5,545,517, Cl. 435-4.000.
Zehner, William J., 5,546,356, Cl. 367-88.000.
Zehner, William J., 5,546,357, Cl. 367-88.000.
U.S. Philips Corporation: *See—*
Bolk, Hendrik J. J.; and Zieltjens, Georges C. P., 5,545,900, Cl. 250-395.000.
Dekker, Jacobus N.; De Valk, Elwin; and Fraij, Fred, 5,544,414, Cl. 30-43.600.
Koke, Andreas, 5,546,029, Cl. 327-108.000.
Roth, Rudolf, 5,546,365, Cl. 369-032.000.
Stege, Peter, 5,546,441, Cl. 378-110.000.
Terry, Alan J., 5,546,131, Cl. 348-564.000.
Van Der Poel, Carolus J.; Valster, Adriaan; and Ambrosius, Hubertus P. M. M., 5,545,903, Cl. 257-14.000.
Walgers, Erik J., 5,546,106, Cl. 345-184.000.
United Technologies Automotive, Inc.: *See—*
Perry, William M.; and Helmer, Kerry L., 5,546,240, Cl. 359-871.000.
Sallam, Faisal K.; and Gardocki, Gilbert, 5,546,064, Cl. 335-261.000.
Sanders, Fritz; and Exner, Gregory P., 5,544,545, Cl. 74-552.000.
Schmidt, Robert M.; and Feldman, Mark, 5,546,067, Cl. 338-172.000.
United Technologies Corporation: *See—*
Amelio, Armand F.; and Susek, David N., 5,544,449, Cl. 49-383.000.
Martin, Anthony N., 5,545,007, Cl. 415-173.200.
Meltz, Gerald; and Ball, Gary A., 5,546,481, Cl. 385-11.000.
Univ. of Minnesota, The Regents of the: *See—*
Blanchette, Robert A.; Brush, Theresa S.; Farrell, Roberta L.; Krisa, Keith A.; and Mishra, Chittra, 5,545,544, Cl. 435-171.000.
Universal Enterprises, Inc.: *See—*
Ridenour, Ralph G.; and Kerr, Dennis W., 5,544,406, Cl. 29-520.000.
Universite de Montreal: *See—*
Montplaisir, Serge; Mercure, Stéphane; and Lemay, Guy, 5,545,525, Cl. 435-6.000.
Université du Québecâ Hull: *See—*
Liao, Ke-Qiang; and Gu, Yonghai, 5,546,430, Cl. 375-341.000.
University of California, The Regents of the: *See—*
Ellman, Jonathan A., 5,545,568, Cl. 436-518.000.
Fischer, Robert L.; Margossian, Linda J.; and Penarrubia, Lola, 5,545,815, Cl. 800-205.000.
Funsten, Herbert O.; McComas, David J.; and Scime, Earl E., 5,545,894, Cl. 250-281.000.
Giles, Durham K.; and Slaughter, David C., 5,544,813, Cl. 239-71.000.
Pitsillides, Koullis F.; and Longhurst, John C., 5,544,656, Cl. 128-661.040.
Smith, John S.; and Yeh, Hsi-Jen J., 5,545,291, Cl. 156-655.100.
Upadhye, Ravindra S.; and Wang, Francis T., 5,545,800, Cl. 588-231.000.
University of Central Florida: *See—*
Delfyett, Peter J.; Yusim, A.; and Gee, S., 5,546,415, Cl. 372-25.000.
University of Florida: *See—*
Johnson, Howard M.; Pontzer, Carol H.; and Griggs, Nathan D., 5,545,716, Cl. 530-324.000.
University of Florida Research Foundation, Inc.: *See—*
Bergeron, Raymond J., 5,545,650, Cl. 514-374.000.
University of Florida Research Foundation, Inc.: *See—*
Bergeron, Raymond J., 5,545,649, Cl. 514-374.000.
University of Medicine and Dentistry of NJ: *See—*
Parsons, John R.; Lee, Casey K.; Langrana, Noshir A.; Clemow, Alastair J.; Chen, Elizabeth H.; and Hawkins, Monica V., 5,545,229, Cl. 623-17.000.
University of Michigan, The Regents of the: *See—*
Trent, Jeffrey M.; and Meltzer, Paul S., 5,545,524, Cl. 435-6.000.
University of Minnesota: *See—*
Barany, George; Albericio, Fernando; Solé, Nuria A.; Chang, Janc; and Zalipsky, Samuel, 5,545,698, Cl. 525-420.000.
University of Minnesota, Reagents of the: *See—*
Wahl, Sharon M.; McCarthy, James B.; and Furcht, Leo T., 5,545,620, Cl. 514-12.000.
University of Minnesota, Regents of the: *See—*
Gengenbach, Burle G.; Somers, David A.; Bittel, Douglas C.; Shaver, Jonathan M.; Sellner, Juantia M., deceased, 5,545,545, Cl. 435-172.300.
University of New Mexico: *See—*
Ewing, Rodney C.; Lutze, Werner; and Weber, William J., 5,545,797, Cl. 588-10.000.
University of Oregon, The State of Oregon Acting by and through the State Board of Higher Education on Behalf of the: *See—*
Doxsee, Kenneth M., 5,545,394, Cl. 423-659.000.
University of Southern California: *See—*
Willner, Alan E.; Chang-Hasnain, Constance J.; and Leight, James E., 5,546,209, Cl. 359-115.000.
University of Texas System, The: *See—*
Knutson, Victoria P., 5,545,672, Cl. 514-603.000.
University of Washington: *See—*
Kaushansky, Kenneth; and Hagen, Frederick S., 5,545,536, Cl. 435-69.100.
University Paris - VI: *See—*
Collandre, Helene; Montagnier, Luc; Agut, Henri; and Bechet, Jean-Marie, 5,545,520, Cl. 435-5.000.
Unix Corporation, Ltd.: *See—*
Morimoto, Toru, 5,545,861, Cl. 181-290.000.
Uochi, Hideki: *See—*
Yamazaki, Shunpei; Zhang, Hongyong; Uochi, Hideki; Adachi, Hiroki; and Takemura, Yasuhiko, 5,545,571, Cl. 437-21.000.
UOP: *See—*
Lawrence, Roger R.; Micklich, Frank T.; Ressl, Charles T.; and Sechrist, Paul A., 5,545,312, Cl. 208-152.000.
Sechrist, Paul A., 5,545,382, Cl. 422-216.000.
Tagamolila, Constante P., 5,545,313, Cl. 208-348.000.

Upadhye, Ravindra S.; and Wang, Francis T., to University of California, Regents of the. Clean process to destroy arsenic-containing organic compounds with recovery of arsenic. 5,545,800, Cl. 588-231.000.

Upjohn Company, The: *See*—
Lin, Chiu-Hong; Haadsma-Svensson, Susanne R.; Piercey, Montford F.; Romero, Arthur G.; and Darlington, William H., 5,545,755, Cl. 564-428.000.

Urata, Hideo: *See*—
Ishijima, Zenzo; Ichikawa, Jun-ichi; Sasaki, Shuji; Shikata, Hideo; Urata, Hideo; Kawase, Shoji; and Ueda, Jun-ichi, 5,545,487, Cl. 428-548.000.

Urdea, Michael S.; and Horn, Thomas, to Chiron Corporation. Multifunctional nucleic acid monomer. 5,545,730, Cl. 536-28.510.

Urizar, Daniel F. Procedure and apparatus for materials separation by pneumatic flotation. 5,544,759, Cl. 209-164.000.

Urness, Randall J.; and Sheehan, John A., to Joerns Healthcare Inc. Two motor, full electric sectional bed. 5,544,375, Cl. 5-611.000.

Urologix, Inc.: *See*—
Rudie, Eric N.; Neilson, Bruce H.; and Kauphusman, James V., 5,545,137, Cl. 604-96.000.

Urso, Paolo: *See*—
Pagliaro, Vittorio; Urso, Paolo; and Caro, Lorenzo, 5,544,966, Cl. 400-616.000.

Utsumi, Kazuaki: *See*—
Matsui, Koji; Kimura, Mitsuru; Utsumi, Kazuaki; Ogawa, Eiichi; Komano, Hiroshi; and Aoyama, Toshimi, 5,545,281, Cl. 156-273.700.

Utsunomiya, Takehito: *See*—
Sakai, Akihiro; Mizuno, Yoshio; and Utsunomiya, Takehito, 5,546,161, Cl. 355-200.000.

Uttecht, Ronald R.: *See*—
Conru, Harold W.; Froebel, Francis E.; Gregoritsch, Albert J., Jr.; Rieley, Sheldon C.; Starr, Stephen G.; Uttecht, Ronald R.; White, Eric J.; and Pohl, Jens G., 5,545,921, Cl. 257-669.000.

Uyeda, Kazuya: *See*—
Okamoto, Takuji; Hamada, Masanori; Sokawa, Kenta; Uyeda, Kazuya; and Yamauchi, Hideaki, 5,546,135, Cl. 348-674.000.

Vadgama, Pankaj M.; Rosenberg, Mark F.; and Jones, Malcolm N., to Victoria University of Manchester. Electrolytic analytical methods. 5,545,519, Cl. 435-4.000.

Vaeck, Mark A.: *See*—
De Greve, Henri M. J.; Salgado, Maria B. L. F.; Van Montagu, Marc C. E.; Vaeck, Mark A.; Zabeau, Marcus F. O.; Leemans, Jan J. A.; and Hofte, Hermanus F. P., 5,545,565, Cl. 435-320.100.

Valeo Climatisation: *See*—
Danieau, Jacques, 5,545,085, Cl. 454-124.000.

Valeo Thermique Habitacle: *See*—
Benedict, Olusegun O., 5,544,498, Cl. 62-513.000.

Valerio, James A.: *See*—
Cobbley, David A.; Valerio, James A.; and Pollack, Frederick J., 5,546,538, Cl. 395-200.010.

Valette, Yves: *See*—
Guibelin, Eric; and Valette, Yves, 5,544,598, Cl. 110-238.000.

Valmet Corporation: *See*—
Huovila, Jyrki; Linsuri, Ari; Nyberg, Petri; and Odell, Michael, 5,545,293, Cl. 162-212.000.

Valmet-Karlstad AB: *See*—
Lindén, Anders T.; and Örtemo, Bo L. H., 5,545,294, Cl. 162-343.000.

Valster, Adriaan: *See*—
Van Der Poel, Carolus J.; Valster, Adriaan; and Ambrosius, Hubertus P. M. M., 5,545,903, Cl. 257-14.000.

Van Doorne's Transmissie B.V.: *See*—
Roovers, Gijsbertus C. F.; and D'Herripon, Bastiaan A., 5,545,100, Cl. 475-185.000.
Roovers, Wilhelmus C. W. M.; d'Herripon, Bastiaan A.; and Choi, Chi C., 5,545,105, Cl. 477-43.000.

Vanatten, Mary K.: *See*—
Duncia, John J. V.; Ensinger, Carol L.; Olson, Richard E.; Quan, Mimi L.; Santella, Joseph B., III; and Vanatten, Mary K., 5,545,651, Cl. 514-381.000.

Van Damme, Els: *See*—
Gatehouse, Angharad; Hilder, Vaughan; Van Damme, Els; Peumans, Willy; Newell, Christine; and Hamilton, William, 5,545,820, Cl. 800-205.000.

Vanderauwera, Raymond; and Coulonvaux, Paul, to Donaldson Company, Inc. Air cleaner. 5,545,241, Cl. 55-490.000.

van der Gracht, Joseph; and Athale, Ravindra. Generation of selective visual effects. 5,546,198, Cl. 359-1.000.

Van Der Meulen, Wybren: *See*—
Lust, Victor; Martin, W. Anthony; Renkema, Kornelis; and Van Der Meulen, Wybren, 5,545,366, Cl. 264-225.000.

Van Der Poel, Carolus J.; Valster, Adriaan; and Ambrosius, Hubertus P. M. M., to U.S. Philips Corporation. Radiation-emitting semiconductor diode and method of manufacturing same. 5,545,903, Cl. 257-14.000.

VanderSande, John B.: *See*—
Yurek, Gregory J.; and VanderSande, John B., 5,545,613, Cl. 505-430.000.

Van de Veen, Paul G., to Otto Bock Orthopadische Industrie Besitz-und Verwaltungs-Kommanditgesesllschaft. Device for mutual pivoting connection of parts of an orthopaedic apparatus. 5,545,232, Cl. 623-39.000.

Van de Velde, Stefan C.: *See*—
Buytaert, Tom G.; Van de Velde, Stefan C.; and Vuylsteke, Pieter P., 5,546,473, Cl. 382-132.000.

Van Gaal, Adrianus P.: *See*—
Trumble, William P.; Harris, Mark R.; and Van Gaal, Adrianus P., 5,545,494, Cl. 429-163.000.

Van Gelder, Russell N.; Von Zastrow, Mark E.; Barchas, Jack D.; and Eberwine, James H. Process for amplifying a target polynucleotide sequence using a single primer-promoter complex. 5,545,522, Cl. 435-6.000.

Van Iten, Thomas P., to Kimberly-Clark Corporation. Panty shield. 5,545,157, Cl. 604-385.100.

Van Montagu, Marc C. E.: *See*—
De Greve, Henri M. J.; Salgado, Maria B. L. F.; Van Montagu, Marc C. E.; Vaeck, Mark A.; Zabeau, Marcus F. O.; Leemans, Jan J. A.; and Hofte, Hermanus F. P., 5,545,565, Cl. 435-320.100.

Van Netta, Alice H. Yarn caddy. 5,544,831, Cl. 242-127.000.

Van Order, Kim L.; and Smith, Nels R., to Prince Corporation. Snap-in electrical vehicle accessory. 5,546,288, Cl. 362-74.000.

van Osselaer, Tony: *See*—
Berg, Klaus; Wulff, Claus; Malamet, Georg; Eitel, Alfred; Meurer, Kurt P.; van Osselaer, Tony; and Hinz, Jürgen, 5,545,764, Cl. 568-724.000.

Van Regenmortel, Marc: *See*—
Plaue, Serge; Muller, Sylviane; and Van Regenmortel, Marc, 5,545,718, Cl. 530-327.000.

Van Savage, Gary; and Clevenger, James M., to Ciba-Geigy Corporation. Method for using a radiation cured drug release controlling membrane. 5,545,442, Cl. 427-513.000.

Van Selous, Joseph S., to Ford Motor Company. Brake band servo for automatic transmission. 5,544,565, Cl. 92-130.00R.

VanSkiver, David. Golf practice device. 5,544,886, Cl. 473-143.000.

Varian Associates, Inc.: *See*—
Barbara, Thomas M., 5,545,994, Cl. 324-315.000.

Varney, Michael D.; Palmer, Cindy L.; and Deal, Judy G., to Agouron Pharmaceuticals, Inc. Cyano naphthalene compounds. 5,545,744, Cl. 558-418.000.

Vasapoli, Michael L.: *See*—
Hume, William J.; Swenson, Paul M.; and Vasapoli, Michael L., 5,545,028, Cl. 425-549.000.

Vassiliadis, Stamatis: *See*—
Pechanek, Gerald G.; and Vassiliadis, Stamatis, 5,546,336, Cl. 364-725.000.

VBCO: *See*—
Cushman, Veronica B., 5,544,614, Cl. 116-63.00P.

Vedage, Gamini A.; and Armor, John N., to Air Products and Chemicals, Inc. Hydrogenation of aromatic amines using mixed metal oxide support. 5,545,756, Cl. 564-450.000.

Veeder-Root Company: *See*—
Hart, Robert P.; and Malinin, Leonid M., 5,544,518, Cl. 73-1.00H.

Vella, Michael C., to Electro-Graph, Inc. Magnetic filter apparatus and method for generating cold plasma in semiconductor processing. 5,545,257, Cl. 118-723.00R.

Vento, Christopher M.: *See*—
Wolf, Richard J.; Fossgreen, Donald J.; Rosen, Robert; Vento, Christopher M.; and Wells-Papanek, Doris, 5,546,525, Cl. 395-159.000.

Ventritex, Inc.: *See*—
Altman, Peter A., 5,545,183, Cl. 607-5.000.
Carson, Dean F., 5,545,206, Cl. 607-126.000.
Fayram, Timothy A., 5,545,189, Cl. 607-37.000.

Verhaart, Henricus F. A., to N.V. Kema. Method for measuring a resistance value in an electrical apparatus. 5,546,010, Cl. 324-713.000.

Verhaege, Thierry: *See*—
Estop, Pascal; Poullain, Serge; and Verhaege, Thierry, 5,545,932, Cl. 307-104.000.

Verhaeghe, Koen: *See*—
Nakajima, Hidenori; Hori, Yasuhiro; Goto, Toshio; Takase, Shigehiro; Verhaeghe, Koen; Terano, Hiroshi; and Okuhara, Masakuni, 5,545,542, Cl. 435-128.000.

Verhecken, André: *See*—
Tavernier, Serge; Ruttens, Frank; Verhecken, André; Mampaey, Jozef; and Joly, Ludovicus, 5,545,501, Cl. 430-106.600.

Verhoeven, Thomas R.: *See*—
King, Anthony O.; Larsen, Robert D.; Verhoeven, Thomas R.; and Zhao, Mangzhu, 5,545,758, Cl. 568-6.000.

Vermeyen, Tracy B.: *See*—
Frizell, Kathleen H.; Mefford, Brent W.; Vermeyen, Tracy B.; and Morris, Douglas I., 5,544,973, Cl. 405-16.000.

Versprille, Scott A.: *See*—
Chang, Chi S.; Desai, Subahu D.; Gernhart, Debra A.; Hartley, Phillip A.; Haskins, Robert J., Jr.; Ho, Keith K. T.; Martone, Robert A.; Mulcahy, Roy T.; Shaffer, Louis J.; Schoening, Robert D.; and Versprille, Scott A., 5,546,321, Cl. 364-491.000.

Ver Steeg, Lawrence J.: *See*—
Schmidt, Melvin J.; Coach, Thomas P.; Hause, Glenn C.; Galowitz, Dennis A.; Wyman, James P.; Hendricks, Robert A.; Ver Steeg, Lawrence J.; and Evans, Harold H., 5,544,450, Cl. 49-419.000.

Vessal, David: *See*—
Cooley, David M.; DiGiovanni, Joseph J.; Kaewell, John D.; Kurtz, Scott D.; Lemmo, Mark A.; Regensburg, Michael W.; Vessal, David; and Johns, Eric, 5,546,383, Cl. 370-50.000.

Vesture Corporation: *See*—
Owens, Bryon C., 5,545,198, Cl. 607-108.000.

Vexilar, Inc.: *See*—
Baumann, Steven E.; Christman, Richard E., deceased, 5,546,362, Cl. 367-173.000.

Vicarb: *See*—
Joël, Richard; Nicolas, Robert; Claude, Roussel; and Fabrice, Chopard, 5,544,703, Cl. 165-167.000.

Vick, Christian: *See*—
Radel, Harry; and Vick, Christian, 5,545,357, Cl. 261-35.000.

Vickers Shipbuilding & Engineering Ltd.: *See*—
Richards, Edwin A.; Balch, David J.; and Atherton, Howard, 5,544,563, Cl. 89-24.000.

Vickers, Thomas E.; and Sanger, James A., to AlliedSignal Inc. Apparatus to hold compressor or turbine blade during manufacture. 5,544,873, Cl. 269-47.000.

Victor, Frantz: *See*—
Miller, Shawn C.; Victor, Frantz; Spitzer, Wayne A.; Sattelberg, Thomas R., Sr.; and Tebbe, Mark J., 5,545,653, Cl. 514-388.000.

Victoria University of Manchester: *See*—
Vadgama, Pankaj M.; Rosenberg, Mark F.; and Jones, Malcolm N., 5,545,519, Cl. 435-4.000.

Vidamed, Inc.: *See*—
Sharkey, Hugh R.; Goldwasser, Benad; and Edwards, Stuart D., 5,545,171, Cl. 606-148.000.

Videofaxx, Inc.: *See*—
Ross, Jay B., 5,546,194, Cl. 358-445.000.

Viechter, Manfred: *See*—
Manzer, Hans; and Viechter, Manfred, 5,546,178, Cl. 355-319.000.

Viertl, John R. M., to General Electric Co. Rolling-ball thermoelectric potential probe and housing for nondestructive testing of metallic and semiconductor objects. 5,544,953, Cl. 374-164.000.

View Engineering, Inc.: *See*—
Svetkoff, Ronald J.; Rohrer, Donald K.; and Kelley, Robert W., 5,546,189, Cl. 356-376.000.

Vigneron, André; and Codaccioni, Jean-Pierre, to Sarp Industries. Method for the rehabilitation of polluted soils and installation for the implementation of this method. 5,544,975, Cl. 405-128.000.

Vilsoet, Robert W.; and McGourty, Bernard J., to Rockwell International Corporation. Telecommunication system with inbound call responsive predictive outdialing system and method. 5,546,456, Cl. 379-265.000.

Vinarcik, Edward J., to Ford Motor Company. Method of magnetically reinforcing composite components. 5,545,368, Cl. 264-437.000.

Vinciarelli, Patrizio; and Prager, Jay M., to VLT Corporation. High frequency circuit having a transformer with controlled interwinding coupling and controlled leakage inductances. 5,546,065, Cl. 336-84.00C.

Vine, Daniel C., to Morton International, Inc. Airbag module diffuser with flange extensions. 5,544,911, Cl. 280-728.200.

Vinković, Mladen: *See*—
Dumić, Miljenko; Filić, Darko; Vinković, Mladen; Jamnicky, Blanka; and Elkinja, Mirela, 5,545,659, Cl. 514-450.000.

Vinson, Hugh E.: *See*—
Armijo, David L.; Baker, Tony R.; Cherington, Floyd E.; Christopher, Delbert S.; Moody, David J.; Mullen, James J.; Vinson, Hugh E.; Warren, John L.; Beilfuss, Robert C.; and Wiker, John H., 5,544,645, Cl. 126-101.000.

Vinson, Michael R.: *See*—
Test, Howard R.; Vinson, Michael R.; and Kuckhahn, Albert H., 5,544,804, Cl. 228-180.500.

Virding, Jonas: *See*—
Fryklund, Linda; Hjertman, Birger; Gustavsson, Marie-Louise; Kaluski, Jacob; Levander, Gustav; Ljungquist, Olle; Ström, Anders; and Virding, Jonas, 5,545,144, Cl. 604-187.000.

Virtual Vision: *See*—
Quint, Jessica L.; and Robinson, Joel W., 5,546,099, Cl. 345-8.000.

Visible Genetics Inc.: *See*—
Stevens, John K.; and Dunn, James M., 5,545,527, Cl. 435-6.000.

Vittori, Pierre C.: *See*—
Perry, Charles H.; Bauer, Tibor L.; Long, David C.; Pickering, Bruce C.; and Vittori, Pierre C., 5,546,012, Cl. 324-754.000.

Vitunic, Mark R., to Micro Linear Corporation. Hot insertable active SCSI terminator. 5,546,017, Cl. 326-30.000.

VivoRx, Inc.: *See*—
Soon-Shiong, Patrick; Desai, Neil P.; and Heintz, Roswitha E., 5,545,423, Cl. 424-484.000.

Vlakancic, Constant G. Cycle computer system and protective cable. 5,545,982, Cl. 324-174.000.

Vlatkovic, Vlatko: *See*—
Schutten, Michael J.; Vlatkovic, Vlatko; and Steigerwald, Robert L., 5,546,294, Cl. 363-17.000.

VLSI Technology, Inc.: *See*—
Waters, Michael R., 5,546,432, Cl. 375-372.000.
Wurzburg, Henry; and Potts, Walter H., 5,546,591, Cl. 395-750.000.

VLT Corporation: *See*—
Vinciarelli, Patrizio; and Prager, Jay M., 5,546,065, Cl. 336-84.00C.

Vogel, Alice M.: *See*—
Wahl, Errol H.; Bacon, Dennis R.; Baker, Ellen S.; Bodet, Jean-Francois; Burns, Michael E.; Demeyere, Hugo J. M.; Hensley, Charles A.; Mermelstein, Robert; Severns, John C.; Shaw, John H., Jr.; Siklosi, Michael P.; Vogel, Alice M.; and Watson, Jeffrey W., 5,545,340, Cl. 510-517.000.

Voigt, Dieter, to Volkswagen AG. Valve control arrangement for an internal combustion engine. 5,544,628, Cl. 123-90.160.

Voigt, Douglas L.: *See*—
Jacobson, Michael B.; Voigt, Douglas L.; Nelson, Marvin D.; and Burkes, Theresa A., 5,546,558, Cl. 395-441.000.

Voith Sulzer Papiermaschinen GmbH: *See*—
Leitenberger, Werner, 5,544,422, Cl. 34-117.000.

Volkswagen AG: *See*—
Geiger, Istvan; and Oppermann, Winfried, 5,544,636, Cl. 123-478.000.
Heuer, Karsten, 5,544,483, Cl. 60-283.000.
Voigt, Dieter, 5,544,628, Cl. 123-90.160.

Volland, Craig S., to Smith & Loveless, Inc. Wastewater treatment method and apparatus. 5,545,327, Cl. 210-615.000.

Vollmer, Robert L.: *See*—
Balthis, Vernon M.; Merten, Ronald A.; Rumery, Robert J.; and Vollmer, Robert L., 5,545,499, Cl. 430-59.000.

von Ahn, Volker H.: *See*—
Winter, Roland A. E.; and von Ahn, Volker H., 5,545,782, Cl. 585-5.000.
Winter, Roland A. E.; and von Ahn, Volker H., 5,545,786, Cl. 585-435.000.

Von Zastrow, Mark E.: *See*—
Van Gelder, Russell N.; Von Zastrow, Mark E.; Barchas, Jack D.; and Eberwine, James H., 5,545,522, Cl. 435-6.000.

Voogt, Jan O.: *See*—
Schasfoort, Richardus B. M.; and Voogt, Jan O., 5,545,303, Cl. 204-601.000.

Voss, Mark G.; Peterson, Gregory E.; Harvey, William O.; and Perrin, Randall L., to Nartron Corporation. Engine induction air driven alternator. 5,544,484, Cl. 60-397.000.

VPL Research, Inc.: *See*—
Grimaud, Jean-Jacques G.; Lanier, Jaron Z.; Abraham, Arthur; and Harvill, Young, 5,546,530, Cl. 395-163.000.

Vu Khac, Tham; Sabin, Michel; and Guerinot, Thierry, to Bertrand Faure Automobile "BFA". Motor vehicle seat padding. 5,544,942, Cl. 297-452.370.

Vuong, Dinh-Cuong: *See*—
Brooker, Donald D.; Falsetti, James S.; Wolfenbarger, James K.; and Vuong, Dinh-Cuong, 5,545,238, Cl. 48-197.00R.

Vurens, Gerard H.: *See*—
Lin, Li-Ju J.; Foster, John S.; Gudeman, Christopher S.; and Vurens, Gerard H., 5,545,478, Cl. 428-332.000.

Vuylsteke, Pieter P.: *See*—
Buytaert, Tom G.; Van de Velde, Stefan C.; and Vuylsteke, Pieter P., 5,546,473, Cl. 382-132.000.

W. L. Gore & Associates: *See*—
Korleski, Joseph E., 5,545,475, Cl. 428-306.600.

W. L. Gore & Associates, Inc.: *See*—
Ameen, Joseph G.; Mortimer, William P., Jr.; and Yokimcus, Victor P., 5,545,473, Cl. 428-283.000.

W. R. Grace & Co.-Conn.: *See*—
Brady, Sean A.; and Stockley, Henry W., III, 5,545,419, Cl. 426-129.000.

W. Schlafhorst AG & Co.: *See*—
Bucken, Rene; Consoir, Rudolf; Hermanns, Ferdinand-Josef; Kathke, Gregor; Schwalm, Hans-Werner; Schultz, Waldemar; Paulsen, Hedde-Christoph; and Kery, Michael, 5,544,829, Cl. 242-35.50R.

WABCO Vermogensverwaltungs GmbH: *See*—
Henken, Immanuel; and Langner, Horst, 5,544,855, Cl. 251-121.000.

Wada, Koichi, to Beam Company Limited. Traveling-wave feeder type coaxial slot antenna. 5,546,096, Cl. 343-771.000.

Wada, Masaru: *See*—
Kusuda, Chiyuki; Furuya, Masayuki; Wada, Masaru; Irizato, Yoshihiro; Naruse, Hiroshi; and Nagata, Teruyuki, 5,545,751, Cl. 564-398.000.
Nagata, Teruyuki; Kusuda, Chiyuki; and Wada, Masaru, 5,545,752, Cl. 564-398.000.

Wada, Shigeru; Nakamura, Ikushi; Ueno, Takuya; Tanino, Ken; Konishi, Yoshito; and Murashima, Nobuharu, to Minolta Co., Ltd. Apparatus provided with a movable cartridge casing. 5,546,150, Cl. 354-288.000.

Wada, Takasumi; Fujita, Hirokazu; and Inui, Koichi, to Sharp Kabushiki Kaisha. Capability copier with image superposition capability. 5,546,169, Cl. 355-244.000.

Wada, Tomohisa; and Ukita, Motomu, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device having bipolar transistor. 5,546,345, Cl. 365-190.000.

Wada, Tomohisa: *See*—
Sato, Hirotoshi; and Wada, Tomohisa, 5,546,352, Cl. 365-230.060.

Wada, Yasuhiro: *See*—
Kimoto, Masahiko; Nakamichi, Masumi; Funakoshi, Takahiro; Wada, Yasuhiro; Yamamoto, Takehiro; and Tsuda, Yoichi, 5,546,496, Cl. 385-146.000.

Wada, Yasunori: *See*—
Yashiki, Takashi; Wada, Yasunori; Nishimoto, Hidenori; Terada, Yoshinori; Nakayama, Takenori; and Abumiya, Tadashi, 5,545,268, Cl. 148-518.000.

Wada, Yasuo: *See*—
Ueno, Yoshio; and Wada, Yasuo, 5,544,863, Cl. 254-358.000.

Wada, Yukihiko: *See*—
Yamaguchi, Shizuka; Kojima, Yoshitaka; Ogawa, Sai; Arikawa, Hideyuki; Hagiooya, Mitsuo; Wada, Yukihiko; and Iwao, Kyozo, 5,545,484, Cl. 428-408.000.

Wafer, John A.: *See*—
Mackenzie, Raymond W.; and Wafer, John A., 5,546,266, Cl. 361-93.000.

Wagemann, Alfred: *See*—

Schulz, Manfred; Waldner, Gerhard; and Wagemann, Alfred, 5,545,078, Cl. 451-342.000.

Wagenbach, Michael: *See—*
Hoffman, Stephen J.; Looker, Douglas L.; Rosendahl, Mary S.; Stetler, Gary L.; Wagenbach, Michael; Anderson, David C.; Mathews, Antony J.; and Nagai, Kiyoshi, 5,545,727, Cl. 536-234.000.

Wagner & Keller GmbH & Co.: *See—*
Braun, Hans, 5,544,619, Cl. 119-474.000.

Wagner, Gerhard; and Wuest, Rainer, to Mercedes-Benz AG. Arrangement and method for controlling an automatic shift device of a gear-change transmission of a motor vehicle. 5,545,108, Cl. 477-125.000.

Wagner, Jeffrey F.: *See—*
Westberg, Tom; Wagner, Jeffrey F.; Kantola, James C.; and Zdanowicz, Lawrence E., 5,544,631, Cl. 123-193.500.

Wagner, Roman, to Siemens Aktiengesellschaft. Output circuit arrangement integrated in an integrated electric circuit for supplying an output signal determined by user selectable parameters. 5,546,079, Cl. 340-870.390.

Wagner, Stephen J., to American National Red Cross, The. Inactivation of extracellular enveloped viruses in blood and blood components by phenthiazin-5-ium dyes plus light. 5,545,516, Cl. 435-2.000.

Wahl, Errol H.; Bacon, Dennis R.; Baker, Ellen S.; Bodet, Jean-Francois; Burns, Michael E.; Demeyere, Hugo J. M.; Hensley, Charles A.; Mermelstein, Robert; Severns, John C.; Shaw, John H., Jr.; Siklosi, Michael P.; Vogel, Alice M.; and Watson, Jeffrey W., to Procter & Gamble Company, The. Concentrated biodegradable quaternary ammonium fabric softener compositions and compounds containing intermediate iodine value unsaturated fatty acid chains. 5,545,340, Cl. 510-517.000.

Wahl, Errol H.: *See—*
Baker, Ellen S.; Bodet, Jean-Francois; Demeyere, Hugo J. M.; Hartman, Frederick A.; Hubesch, Bruno A.; Mermelstein, Robert; Taylor, Lucille F.; and Wahl, Errol H., 5,545,350, Cl. 510-517.000.

Wahl, Jon H.: *See—*
Smith, Richard D.; Wahl, Jon H.; and Hofstadler, Steven A., 5,545,304, Cl. 204-603.000.

Wahl, Sharon M.; McCarthy, James B.; and Furcht, Leo T., to United States of America, Health and Human Services; and University of Minnesota, Reagents of the. Synthetic fibronectin fragments as inhibitors of retroviral infection. 5,545,620, Cl. 514-12.000.

Waits, C. Thomas: *See—*
Bokros, Jack C.; Ely, John L.; Emken, Michael R.; Haubold, Axel D.; Peters, T. Scott; Stupka, Jonathan C.; and Waits, C. Thomas, 5,545,216, Cl. 623-2.000.

Wakabayashi, Sobei; Hashimukai, Tomoko; Katakura, Takeo; and Takano, Yoshihito, to Terumo Kabushiki Kaisha; and Seiren Co., Ltd. Artificial blood vessel. 5,545,212, Cl. 623-1.000.

Wakai, Haruo: *See—*
Matsumoto, Hiroshi; Wakai, Haruo; and Joubettou, Hiroyasu, 5,545,576, Cl. 437-41.000.

Wakamatsu, Hideki, to Kabushiki Kaisha Toshiba. IC contactor. 5,545,045, Cl. 439-70.000.

Wakami, Noboru: *See—*
Araki, Shoichi; Nomura, Hiroyoshi; Hayashi, Isao; and Wakami, Noboru, 5,546,506, Cl. 395-75.000.

Wakefield, David L., to Argo-Tech Corporation. Light weight bearing apparatus and assembly method. 5,544,955, Cl. 384-295.000.

Wako Pure Chemical Industries, Ltd.: *See—*
Satomura, Shinji; Nakamura, Kenji; Ikenaka, Tokuji; and Omichi, Kaoru, 5,545,530, Cl. 435-6.000.

Wakui, Shinji, to Canon Kabushiki Kaisha. Positioning system. 5,545,962, Cl. 318-677.000.

Waldner, Gerhard: *See—*
Schulz, Manfred; Waldner, Gerhard; and Wagemann, Alfred, 5,545,078, Cl. 451-342.000.

Walega, William, to International Shoe Machine Corporation. Composite band for use in a footwear forming machine. 5,544,380, Cl. 12-14.400.

Walgers, Erik J., to U.S. Philips Corporation. Interactive image display device with cursor control. 5,546,106, Cl. 345-184.000.

Walker, David L.: *See—*
Friedlander, Barry T.; Davis, Robert A.; Blem, Allen R.; and Walker, David L., 5,545,655, Cl. 514-397.000.

Walker, Hugh C.: *See—*
Anderson, Thomas J.; and Walker, Hugh C., 5,544,806, Cl. 229-178.000.

Walker, Mary W.: *See—*
Gerald, Christophe; Walker, Mary W.; Branchek, Theresa; and Weinshank, Richard L., 5,545,549, Cl. 435-240.200.

Wallace Computer Services, Inc.: *See—*
Chang, John C. H., 5,545,459, Cl. 428-121.000.

Wallace, Robert L., Jr.: *See—*
Baker, Ralph T.; Beatty, Richard P.; Farnham, William B.; and Wallace, Robert L., Jr., 5,545,769, Cl. 570-134.000.

Wallack, Aaron S.: *See—*
Brost, Randolph C.; Goldberg, Kenneth Y.; Wallack, Aaron S.; and Canny, John, 5,546,314, Cl. 364-474.010.

Walmsley, Graham M.: *See—*
Drew, Robert M.; Plum, Dennis L.; and Walmsley, Graham M., 5,546,541, Cl. 395-200.150.

Walt Disney Company, The: *See—*
Johnson, Steven A.; and Bodden, Christian P., 5,545,092, Cl. 472-66.000.

Walters, Jerry W. Clear-trajectory rotary-driven impact comminuter. 5,544,820, Cl. 241-38.000.

Walters, Marlin E.; Kolonko, Richard P.; and Wehmeyer, Richard M., to Dow Chemical Company, The. Process for making fluorenones. 5,545,760, Cl. 568-321.000.

Walton, Joseph E.: *See—*
Behr, Stephen R.; Seeds, Jeffrey K.; Lamb, Catherine S.; Garleb, Keith A.; and Walton, Joseph E., 5,545,414, Cl. 424-484.000.

Walworth, Tom M., Jr.; Jurica, Joseph J.; Weilemann, Donald E.; and Turner, Joseph, to Pullman Industries, Inc. Truck bed and method of manufacture with improved rear sill member. 5,544,932, Cl. 296-183.000.

Walz, Gerd: *See—*
Giencke, Astrid; Neumann, Uwe; Mergardt, Bernd; and Walz, Gerd, 5,545,678, Cl. 523-404.000.

Wandinger, Franz: *See—*
Gut, Bernhard; and Wandinger, Franz, 5,546,271, Cl. 361-680.000.

Wandio, Raymond. Reversing mechanism for an overhead door opener. 5,544,691, Cl. 160-188.000.

Wang, Chen-jong; Liang, Mong-song; Wuu, Shou-gwo; and Su, Chung-Hui, to Taiwan Semiconductor Manufacturing Company. Method of making a dram circuit with fin-shaped stacked capacitors. 5,545,585, Cl. 437-52.000.

Wang, Chen-Jong: *See—*
Wuu, Shou-Gwo; Liang, Mong-Song; Wang, Chen-Jong; and Su, Chung-Hui, 5,545,584, Cl. 437-52.000.

Wang, Chin-Li. Apparatus for temporarily shutting off electric power to an air conditioning compressor using a piston and microswitch. 5,545,931, Cl. 307-10.100.

Wang, Francis T.: *See—*
Upadhye, Ravindra S.; and Wang, Francis T., 5,545,800, Cl. 588-231.000.

Wang, Johannes: *See—*
Coon, Brett; Miyayama, Yoshiyuki; Nguyen, Le T.; and Wang, Johannes, 5,546,552, Cl. 395-375.000.

Wang, John S.-Y.: *See—*
Chow, Alex C.; and Wang, John S.-Y., 5,546,524, Cl. 395-157.000.

Wang, Kuo-Hsin. Two-stage flush device for a toilet tank. 5,544,368, Cl. 4-405.000.

Wang, Mei-San; and Hsu, Lee-Hwei. Stepping machine. 5,545,111, Cl. 482-53.000.

Wang, Shay-Ping T.; Teng, Dan; Stuckman, Bruce E.; and Hayner, David A., to Motorola, Inc. Polynomial controller for nonlinear systems. 5,546,302, Cl. 364-148.000.

Wang, Tihu: *See—*
Ciszek, Theodore F.; and Wang, Tihu, 5,544,616, Cl. 117-60.000.

Wang, Yuhu; and Ohwaki, Junichi, to Sumita Optical Glass, Inc.; and Nippon Telegraph and Telephone Corporation. Wavelength up-conversion transparent glass ceramics and a process for the production of the same. 5,545,595, Cl. 501-3.000.

Wang, Yushan, to Standard-Keil Industries, Inc. Plural chamber pneumatic pump having a motive fluid exhaust valve. 5,545,016, Cl. 417-393.000.

Wangler, Richard J.; Gustavson, Robert L.; McConnell, Robert E., II; and Fowler, Keith L., to Schwartz Electro-Optics, Inc. Intelligent vehicle highway system sensor and method. 5,546,188, Cl. 356-376.000.

Ward, Raymond E.: *See—*
Barrett, Linda; Long, Lynn D.; Menditto, Louis F.; Stagg, Arthur J.; and Ward, Raymond E., 5,546,549, Cl. 395-309.000.

Warpinski, Norman R.: *See—*
Graf, Darin C.; and Warpinski, Norman R., 5,544,520, Cl. 73-38.000.

Warren, John L.: *See—*
Armijo, David L.; Baker, Tony R.; Cherington, Floyd E.; Christopher, Delbert S.; Moody, David J.; Mullen, James J.; Vinson, Hugh E.; Warren, John L.; Beilfuss, Robert C.; and Wiker, John H., 5,544,645, Cl. 126-101.000.

Wasem, Ondria J.: *See—*
Cosares, Steven T.; Saniee, Iraj; and Wasem, Ondria J., 5,546,542, Cl. 395-200.210.

Washington University: *See—*
Atkinson, John P.; Hourcade, Dennis; and Krych, Malgorzata, 5,545,619, Cl. 514-12.000.
Indeck, Ronald S.; Muller, Marcel W.; Engel, George Lawrence; and Hege, Alan L., 5,546,462, Cl. 380-23.000.
Stein, Cy A.; and Wax, Martin B., 5,545,626, Cl. 514-44.000.

Wasserstein, Kevin J.: *See—*
Salvio, Paul R.; Masarik, David M.; and Wasserstein, Kevin J., 5,545,956, Cl. 318-283.000.

Watanabe, Akito: *See—*
Oishi, Tetsuya; Ozawa, Hiroshi; Karasawa, Minato; Inomata, Masamitsu; Mega, Izumi; Yamauchi, Atsuyoshi; Kamada, Kazunori; Nakahata, Shigeru; Sakamoto, Katsumi; Nakashima, Tatsunobu; Watanabe, Akito; Suzuki, Jin; Ohkawa, Kouhei; Furusawa, Satoshi; Ono, Hiroshi; and Sugazaki, Kazuo, 5,545,702, Cl. 525-509.000.

Watanabe, Kenichi; Maeda, Yuji; and Hikita, Sakae, to Hitachi, Ltd.; and Hitachi Automotive Engineering, Co., Ltd. Generated-voltage regulator for automobile ensuring correct key switch on-state determination. 5,545,930, Cl. 307-10.100.

Watanabe, Shigeomi: *See—*
Morimoto, Katsushi; Ohnari, Masatoshi; Nawamaki, Tsutomu; Watanabe, Shigeomi; and Ishikawa, Kimihiro, 5,545,608, Cl. 504-282.000.

Watanabe, Tamio: *See—*
Ishii, Takashi; Watanabe, Tamio; and Nagano, Toru, 5,545,053, Cl. 439-364.000.

Watanabe, Tetsuo: *See—*

Kunikane, Tatsuro; Okamoto, Akira; Watanabe, Tetsuo; Miyata, Sadayuki; Furukawa, Hiroyuki; and Sakai, Yoshimitsu, 5,546,212, Cl. 359-163.000.

Watanabe, Yohji; and DeBrosse, John K., to Kabushiki Kaisha Toshiba; and International Business Machines. Exchangeable hierarchical data line structure. 5,546,349, Cl. 365-230.040.

Watanuki, Masatoshi: *See—*
Ishiguro, Shiro; Watanuki, Masatoshi; Kawanishi, Toshiaki; Hanzawa, Kohtaro; Sasaki, Hiroyuki; and Yoshino, Jun, 5,546,466, Cl. 381-61.000.

Waters, Michael R., to VLSI Technology, Inc. Method and apparatus for attenuating jitter in a digital transmission line. 5,546,432, Cl. 375-372.000.

Watkins, David C.; Bramer, Lowell M.; and Gerling, Christopher F., to Texas Instruments Incorporated. Method of aligning layers in an integrated circuit device. 5,545,593, Cl. 437-225.000.

Watkins, Ronald D.: *See—*
Mueller, Otward M.; Yakymyshyn, Christopher P.; Roemer, Peter B.; and Watkins, Ronald D., 5,545,999, Cl. 324-322.000.

Watkinson, Allan, to Elizabeth Arden Co., Division of Conopco, Inc. Skin care method and composition. 5,545,402, Cl. 424-94.630.

Watson, Jeffrey W.: *See—*
Wahl, Errol H.; Bacon, Dennis R.; Baker, Ellen S.; Bodet, Jean-Francois; Burns, Michael E.; Demeyere, Hugo J. M.; Hensley, Charles A.; Mermelstein, Robert; Severns, John C.; Shaw, John H., Jr.; Siklosi, Michael P.; Vogel, Alice M.; and Watson, Jeffrey W., 5,545,340, Cl. 510-517.000.

Watson, Lowell G., to Greif Bros. Corporation. Stackable plastic container with drain sump and pallet and method of making the same. 5,544,777, Cl. 220-4.130.

Watson, Paul T.: *See—*
Grosskopf, Joseph R.; Niaz, Hasan S.; Reuss, Carolyn K.; Shih, Jerry C.; and Watson, Paul T., 5,546,574, Cl. 395-600.000.

Watts, Leslie M., to Illinois Tool Works Inc. Carrier with reflective means to block reading of a bar code. 5,544,749, Cl. 206-459.500.

Watzka, Willibald: *See—*
Fendt, Günter; Hora, Peter; Spies, Hans; Steurer, Helmut; Watzka, Willibald; and Wetzel, Guido, 5,544,915, Cl. 280-735.000.

Wax, Martin B.: *See—*
Stein, Cy A.; and Wax, Martin B., 5,545,626, Cl. 514-44.000.

Wazumi, Seiichiro, to Kabushiki Kaisha Toshiba. Cooperative distributed problem solver. 5,546,594, Cl. 395-800.000.

Weakley, Todd S.: *See—*
May, Robert J.; Gabalis, Stephen E.; and Weakley, Todd S., 5,544,714, Cl. 180-68.400.

Webasto Karosseriesysteme GmbH: *See—*
Ganz, Thomas; Lutz, Berthold; Liedl, Bernhard; and Weissbrich, Alfons, 5,545,261, Cl. 136-251.000.

Webber, Steven H.: *See—*
Andrews, G. Wayne; Webber, Steven H.; Kelly, James P.; Johnson, Lawrence E.; Stern, Jerry A.; Milano, Vincent J., Jr.; and Davis, Charles R., 5,546,452, Cl. 379-219.000.

Webcraft Technologies, Inc.: *See—*
Rua, Louis, Jr.; and Martin, Stephen E., 5,544,881, Cl. 273-139.000.

Weber, Eugen: *See—*
Gretillat, François; Pellaux, Jean-Paul; Hale, John M.; and Weber, Eugen, 5,545,567, Cl. 436-172.000.

Weber, Gerhart P., to Pioneer Hi-Bred International, Inc. Inbred maize line PHFR8. 5,545,814, Cl. 800-200.000.

Weber, Joan. Nursing apron. 5,544,364, Cl. 2-104.000.

Weber, Roy P.: *See—*
Foladare, Mark J.; Goldman, Shelley B.; Murray, Nancy; Silverman, David P.; Tsao, Yao-Chung; and Weber, Roy P., 5,546,442, Cl. 377-57.000.

Weber, William J.: *See—*
Ewing, Rodney C.; Lutze, Werner; and Weber, William J., 5,545,797, Cl. 588-10.000.

Weder, Donald E.; and Straeter, Lisa A., to Southpac Trust International, Inc. Wrapping material having an extension for design indicia for wrapping flower pots and floral arrangements and methods. 5,544,469, Cl. 53-410.000.

Weelink, Johannes M. W. Building for accommodating livestock. 5,544,622, Cl. 119-436.000.

Wegner, Gary D. Window attachment screen system. 5,544,689, Cl. 160-100.000.

Wehmeyer, Richard M.: *See—*
Walters, Marlin E.; Kolonko, Richard P.; and Wehmeyer, Richard M., 5,545,760, Cl. 568-321.000.

Wehrli, Henry A., III: *See—*
Bollinger, Parker A., Jr.; Mueller, Denis A.; Smith, James D. B.; and Wehrli, Henry A., III, 5,545,679, Cl. 523-512.000.

Weider, Paul R.; Powell, Joseph B.; Slaugh, Lynn H.; Forschner, Thomas C.; and Semple, Thomas C., to Shell Oil Company. Process for preparing 1,3-propanediol. 5,545,767, Cl. 568-867.000.

Weider, Paul R.: *See—*
Powell, Joseph B.; Slaugh, Lynn H.; Forschner, Thomas C.; Semple, Thomas C.; and Weider, Paul R., 5,545,766, Cl. 568-862.000.
Slaugh, Lynn H.; Powell, Joseph B.; Forschner, Thomas C.; Semple, Thomas C.; and Weider, Paul R., 5,545,765, Cl. 568-862.000.

Weil, Antoinette E.: *See—*
Nagaraj, Bangalore A.; Weil, Antoinette E.; and Devitt, John W., 5,545,437, Cl. 427-404.000.

Weilemann, Donald E.: *See—*
Walworth, Tom M., Jr.; Jurica, Joseph J.; Weilemann, Donald E.; and Turner, Joseph, 5,544,932, Cl. 296-183.000.

Weiner, Ethan S.: *See—*
Loose, Leland D.; Lombardino, Joseph G.; and Weiner, Ethan S., 5,545,656, Cl. 514-414.000.

Weinshank, Richard L.: *See—*
Gerald, Christophe; Walker, Mary W.; Branchek, Theresa; and Weinshank, Richard L., 5,545,549, Cl. 435-240.200.

Weiss, Richard A.: *See—*
Monteleone, Michael G.; Weiss, Richard A.; Evans, Mark D.; and Hanna, Marie R., 5,545,763, Cl. 568-630.000.

Weissbach, Lawrence, to General Hospital Corporation, The. Plasmilar and plasmilar antibody compositions as malignant cell markers. 5,545,717, Cl. 530-324.000.

Weissberg, Peter L.: *See—*
Grainger, David J.; Metcalfe, James C.; and Weissberg, Peter L., 5,545,569, Cl. 436-518.000.

Weissbrich, Alfons: *See—*
Ganz, Thomas; Lutz, Berthold; Liedl, Bernhard; and Weissbrich, Alfons, 5,545,261, Cl. 136-251.000.

Weitkamp, Jens; Ernst, Stefan; Bock, Thomas; Kromminga, Thomas; Kiss, Akos; and Kleinschmit, Peter, to Degussa Aktiengesellschaft. Method of modifying molecular sieves by means of solid state ion exchange, and a method for hydrogenating olefinic compounds. 5,545,784, Cl. 585-250.000.

Weller, Thomas: *See—*
Alig, Leo; Hadvary, Paul; Hürzeler, Marianne; Müller, Marcel; Steiner, Beat; and Weller, Thomas, 5,545,658, Cl. 514-423.000.

Wells Japan Limited: *See—*
Sato, Kazumasa; and Kokubu, Akihiko, 5,545,050, Cl. 439-331.000.

Wells, John E. Rotary joint internal spring compressor. 5,544,400, Cl. 29-227.000.

Wells, K. Sam: *See—*
Roth, Bruce L.; Millard, Paul J.; Yue, Stephen T.; Wells, K. Sam; and Haugland, Richard P., 5,545,535, Cl. 435-34.000.

Wells, Michael A.: *See—*
Bizuneh, Daniel T.; Obregón, Carlos; Wells, Michael A.; and Neely, Eric D., 5,546,021, Cl. 326-86.000.

Wells-Papanek, Doris: *See—*
Wolf, Richard J.; Fossgreen, Donald J.; Rosen, Robert; Vento, Christopher M.; and Wells-Papanek, Doris, 5,546,525, Cl. 395-159.000.

Wen, Cheng P.; and Pao, Cheng-Keng, to Hughes Aircraft Company. Frequency scalable pre-matched transistor. 5,546,049, Cl. 330-277.000.

Wentling, Michael: *See—*
Golwalkar, Suresh V.; Foehringer, Richard; Wentling, Michael; Takatsuki, Ryo; Kawashima, Shigeo; Tsujimoto, Keiichi; and Sato, Nobuaki, 5,545,922, Cl. 257-676.000.

Wenz, Robert P., to Minnesota Mining and Manufacturing Company. Method of selectively applying adhesive to protrusions on a substrate. 5,545,280, Cl. 156-234.000.

Werner, Jon H.: *See—*
Cline, Troy L.; Isensee, Scott H.; Poston, Ricky L.; and Werner, Jon H., 5,546,520, Cl. 395-155.000.

Wernicke & Co.: *See—*
Gottschald, Lutz, 5,545,075, Cl. 451-42.000.

Wertheimer, Aviad: *See—*
Yang, Henry S.; Ramakrishnan, Kadangode K.; Daniely, Gady; and Wertheimer, Aviad, 5,546,543, Cl. 395-250.000.

West, Scott H.; and Nguyen, Frank, to Medtronic Cardiorhythm. Steerable electrophysiology catheter. 5,545,200, Cl. 607-122.000.

Westberg, Tom; Wagner, Jeffrey F.; Kantola, James C.; and Zdanowicz, Lawrence E., to Outboard Marine Corporation. Cylinder head construction for outboard motor with four-stroke engine. 5,544,631, Cl. 123-193.500.

Westelaken, Christianus M. T. (NOM-ITO). Gas distributor. 5,544,423, Cl. 34-174.000.

Westinghouse Air Brake Company: *See—*
Carroll, John B., 5,544,854, Cl. 251-99.000.
Daugherty, David W., Jr., 5,544,767, Cl. 213-50.500.
Smeltzer, Sean G., 5,544,419, Cl. 33-731.000.

Westphal, Michael; and Laukien, Günther, to Bruker Analytische Messtechnik GmbH. Therapy tomograph with homogeneity device. 5,545,997, Cl. 324-320.000.

Wetmore, Russ; and Nguyen, Philip, to Apple Computer, Inc. Method and apparatus for vectorizing the contents of a read only memory device without modifying underlying source code. 5,546,586, Cl. 395-700.000.

Wetzel, Guido: *See—*
Fendt, Günter; Hora, Peter; Spies, Hans; Steurer, Helmut; Watzka, Willibald; and Wetzel, Guido, 5,544,915, Cl. 280-735.000.

Weuthen, Manfred, to Henkel Kommanditgesellschaft auf Aktien. Alkyl and/or alkenyl oligoglycoside carbonates. 5,545,731, Cl. 510-119.000.

Weyerhaeuser Company: *See—*
Tiedeman, George T., 5,545,449, Cl. 428-34.200.

Wheatley, Charles E. Adjustable glasses. 5,546,141, Cl. 351-49.000.

Wheeler, Gerald: *See—*
Keller, Michael; and Wheeler, Gerald, 5,544,578, Cl. 100-100.000.

Wheeler, Steven P.; and Bryan, Theodore R. Method of neutralizing aldehyde-containing waste waters and the like. 5,545,336, Cl. 210-757.000.

Wheeler, Thomas A.: *See—*
Riggs, William F.; and Wheeler, Thomas A., 5,545,351, Cl. 252-321.000.

Whetstone, James R.: *See—*

O'Connor, Kurt F.; Hoff, James P.; Frasier, Donald J.; Peeler, Ralph E.; Mueller-Largent, Heidi; Trees, Floyd F.; Whetstone, James R.; Lane, John H.; and Jeffries, Ralph E., 5,545,003, Cl. 415-115.000.

Whitaker Corporation, The: *See—*
Bruckner, Carl M.; Calhoun, Edward E., III; Fasnacht, Matthew J.; Schaffer, Ronald R.; and Shay, Francis J., 5,546,495, Cl. 385-135.000.
Summers, Donald J.; Correll, Robert S., Jr.; and Dellinger, Donald E., 5,545,051, Cl. 439-350.000.

White Consolidated Industries, Inc.: *See—*
Castaldi, John; and Greenzang, Fred, 5,544,996, Cl. 414-280.000.

White, Craig W., to Automotive Systems Laboratory, Inc. Dual, independent sensor vehicle impact detectin system. 5,544,716, Cl. 180-274.000.

White Eagle International Technologies, LP: *See—*
Davankov, Vadim A., 5,545,131, Cl. 604-5.000.

White, Eric J.: *See—*
Conru, Harold W.; Froebel, Francis E.; Gregoritsch, Albert J., Jr.; Rieley, Sheldon C.; Starr, Stephen G.; Uttecht, Ronald R.; White, Eric J.; and Pohl, Jens G., 5,545,921, Cl. 257-669.000.

White, George E.: *See—*
Farooq, Mukta S.; Kaja, Suryanarayana; Perfecto, Eric D.; and White, George E., 5,545,927, Cl. 257-762.000.

White, George W.; Teague, Robert W.; Tennent, Antony D.; and Robinson, James A., Jr., to Duke Power Company. Combination step bolt and harness attachment. 5,544,717, Cl. 182-90.000.

White, Gerard, to Concord Communications, Inc. Automatic topology monitor for multi-segment local area network. 5,546,540, Cl. 395-200.100.

White, John L., to American Piledriving Equipment, Inc. Clamp assemblies for driving caissons into the earth. 5,544,979, Cl. 405-232.000.

White, Marvin S., Jr.: *See—*
Deretsky, Zachary Y.; Rodny, Uri; and White, Marvin S., Jr., 5,546,107, Cl. 395-600.000.

Whitlock, Michael; and Murphy, William, to Pall Corporation. In–line filter for tubing. 5,545,242, Cl. 55-502.000.

Whitlock, Michael B.: *See—*
Koehler, Paul C.; Whitlock, Michael B.; Noble, Lawrence J.; and Jenkins, George C., 5,545,323, Cl. 210-493.200.

Whitmore, Andrew, III: *See—*
Moutrie, Michael F.; Whitmore, Andrew, III; Hess, David M.; Laugal, John C.; Mina, Steven M.; and Boler, Matthew J., 5,546,275, Cl. 361-707.000.

Wicks, Douglas A.: *See—*
Hicks, Sharon D.; Wicks, Douglas A.; and Grace, Scott A., 5,545,705, Cl. 528-44.000.

Widner, Melvin M.: *See—*
Boggavarapu, Rao L.; Goldstein, Yeshayahu S. A.; Keogh, Catherine M.; Suchocki, Anthony J.; and Widner, Melvin M., 5,544,588, Cl. 102-472.000.

Wieczorek, Joseph, Jr.: *See—*
Koubek, Timothy C.; Puletti, Paul P.; and Wieczorek, Joseph, Jr., 5,545,472, Cl. 428-261.000.

Wiedmann, Martin: *See—*
Batt, Carl; Wiedmann, Martin; and Brandon, Richard, 5,545,523, Cl. 435-6.000.

Wiemann, David A.; Dworsky, Lawrence N.; Jaskie, James E.; Kane, Robert C.; and Moyer, Curtis D., to Motorola. Field emission display with getter in vacuum chamber. 5,545,946, Cl. 313-497.000.

Wierschke, Larry D., to Paper Converting Machine Company. Method and apparatus for cutting superposed webs. 5,544,557, Cl. 83-37.000.

Wiersema, Richard J.; and Hostynek, Jurij J., to Clorox Company, The. Methods for treating neoplasms with betaines. 5,545,667, Cl. 514-556.000.

Wiersema, Richard J.: *See—*
Rowland, Richard R.; Fong, Ronald A.; Wiersema, Richard J.; and Zielske, Alfred G., 5,545,748, Cl. 562-2.000.

Wiffen, Diane E.: *See—*
Pliura, Diana H.; Wiffen, Diane E.; Ashraf, Salman; and Magnin, Anthony A., 5,545,328, Cl. 210-635.000.

Wight, Ernest W.: *See—*
Didier, James J.; Lindstrand, Bruce L.; and Wight, Ernest W., 5,544,841, Cl. 242-541.100.

Wiker, John H.: *See—*
Armijo, David L.; Baker, Tony R.; Cherington, Floyd E.; Christopher, Delbert S.; Moody, David J.; Mullen, James J.; Vinson, Hugh E.; Warren, John L.; Beilfuss, Robert C.; and Wiker, John H., 5,544,645, Cl. 126-101.000.

Wilczak, Wojciech A.; Platzer, Stephan J.; and Siegfried, David L., to Hoechst Celanese Corporation. [Method of producing an image using a] negative working, peel developable, single sheet color proofing system. 5,545,506, Cl. 430-253.000.

Wild, Hanno; Roeben, Wolfgang; Paessens, Arnold; and Petersen-von Gehr, Jörg, to Bayer Aktiengesellschaft. 6-thiono-5,6-dihydro-dibenz[B,E] azepin-11-one-11-oximes. 5,545,736, Cl. 540-522.000.

Wilde, Margaret: *See—*
Darlington, Gretchen J.; Wilson, Deborah R.; and Wilde, Margaret, 5,545,563, Cl. 435-320.100.

Wilfinger, William W.; and Kendall, Bruce, to Penn State Research Foundation, The. Acclimatized experiment container for controlled biochemical and biological investigations. 5,545,841, Cl. 174-17.080.

Wilhelm Altendorf GmbH & Co. KG: *See—*
Thiele, Siegfried; and Sensmeier, Jürgen, 5,544,559, Cl. 83-43.800.

Wilhelm Hedrich Vakuumanlagen GmbH & Co. KG: *See—*
Hauser, Erhard, 5,545,029, Cl. 425-557.000.

Wilhelm, Thomas: *See—*
Götter, Hans; Mück, Manfred; and Wilhelm, Thomas, 5,544,370, Cl. 4-619.000.

Wilk, Peter J. Medical system and associated method for automatic treatment. 5,544,651, Cl. 128-633.000.

Wilkes, Eugene; Mendez, Alejandro; and Bauer, Bradley W., to Ford Motor Company. Discharge muffler for an automotive compressor and method for making same. 5,545,860, Cl. 181-255.000.

Wilkey, Foy E.: *See—*
Hailey, James E.; Wilkey, Foy E.; and Staggs, Randall D., 5,546,193, Cl. 358-335.000.

Willard, David F.: *See—*
Eaton, Eric T.; Evoy, Ronald H.; Hayes, David J.; Willard, David F.; Ito, Shogo; and Yamao, Yasushi, 5,546,394, Cl. 370-79.000.

William Marsh Rice University: *See—*
Gustin, Michael C., 5,545,556, Cl. 435-254.200.

Williams, Charles E.; Davis, Dennis D.; and Kee, David, to Texas Instruments Incorporated. Laser bond header. 5,545,846, Cl. 174-51.000.

Williams, Dwight E., to Dow Corning Corporation. Liquid column packing materials and method for making the same. 5,545,317, Cl. 210-198.200.

Williams, Greg: *See—*
Yung, Robert; Williams, Greg; and Yeh, Huoy-Ming, 5,546,554, Cl. 395-413.000.

Williams, John: *See—*
Robinson, Darrell; Pruehs, Allen V.; and Williams, John, 5,546,269, Cl. 361-660.000.

Williams, Karen A.: *See—*
Chen, Jian; Papanu, James S.; Mak, Steve S. Y.; Ish-Shalom, Carmel; Hsieh, Peter; Lau, Wesley G.; Rhoades, Charles S.; Shieh, Brian; Latchford, Ian S.; Williams, Karen A.; and Yu-Wang, Victoria, 5,545,289, Cl. 156-643.100.

Williams, Richard K.; Hille, Peter; and Wrathall, Robert G., to Siliconix incorporated. Electrostatic discharge protection device for integrated circuit. 5,545,909, Cl. 257-355.000.

Williamson, Gregory L.; and Hoffman, John P., to Caterpillar Inc. Reverse voltage protection circuit. 5,546,264, Cl. 361-84.000.

Williamson, Warren P., IV, to Ethicon Endo-Surgery, Inc. Endoscopic access assembly. 5,545,179, Cl. 606-213.000.

Willmann, Gert: *See—*
Wippenbeck, Matthias; Willmann, Gert; and Schrodi, Karl, 5,546,389, Cl. 370-60.000.

Willner, Alan E.; Chang-Hasnain, Constance J.; and Leight, James E., to University of Southern California; and Leland Stanford University, Board of Trustees of the. One-to-many simultaneous and reconfigurable optical two-dimensional plane interconnections using multiple wavelength, vertical cavity, surface-emitting lasers and wavelength-dependent detector planes. 5,546,209, Cl. 359-115.000.

Willson, Carlton G.: *See—*
Cameron, James F.; Frechet, Jean M. J.; Leung, Man-Kit; Niesert, Claus-Peter; MacDonald, Scott A; and Willson, Carlton G., 5,545,509, Cl. 430-270.100.

Wilson, Brett A.: *See—*
Crimp, Melissa J.; Wilson, Brett A.; Suydam, Christopher J.; and Crimp, Martin A., 5,545,428, Cl. 427-8.000.

Wilson, Deborah R.: *See—*
Darlington, Gretchen J.; Wilson, Deborah R.; and Wilde, Margaret, 5,545,563, Cl. 435-320.100.

Wilson Greatbatch Ltd.: *See—*
Takeuchi, Esther S.; and Leising, Randolph A., 5,545,497, Cl. 429-219.000.

Wilson, John B.: *See—*
Clinton, Mary B.; and Wilson, John B., 5,545,145, Cl. 604-192.000.

Wilson, Michael A.: *See—*
Poole, Donald R.; Holland, Gary F.; Wolf, Nicholas A.; and Wilson, Michael A., 5,545,272, Cl. 149-48.000.

Wilson, Robert J.: *See—*
Doss, Saad K.; McKean, Dennis R.; Renaldo, Alfred F.; and Wilson, Robert J., 5,545,307, Cl. 205-122.000.

Wilson Sporting Goods Co.: *See—*
Hardman, Thomas P., 5,544,884, Cl. 473-327.000.
Meyer, Dean E., 5,544,883, Cl. 473-313.000.

Wilson, William N.: *See—*
Jones, Richard R.; and Wilson, William N., 5,544,705, Cl. 166-250.400.

Wiman, Lars-Erik: *See—*
Lundin, Kenneth; Wiman, Lars-Erik; and Svensson, Mats, 5,546,584, Cl. 395-700.000.

Winbond Electronics Corp.: *See—*
Jang, Wen-Yueh, 5,545,910, Cl. 257-362.000.

Wingo, James P.; and Miller, John R., to Porex Technologies Corp. Implants for cranioplasty. 5,545,226, Cl. 623-16.000.

Winkler, Helmut; and Horndler, George-Michael, to Maschinenfabrik Niehoff GmbH & Co. KG. Automatic bobbin-changing device having a vertical rotating axis. 5,544,828, Cl. 242-35.50A.

Winnek, Douglas F.: *See—*
Miller, John L.; and Winnek, Douglas F., 5,546,120, Cl. 348-59.000.

Winnik, Mitchell A.: *See—*
Ziemelis, Maris J.; Chang, Eng-Pi; and Winnik, Mitchell A., 5,545,830, Cl. 528-15.000.

Winsert, Inc.: *See—*
Liang, Xuecheng; and Strong, Gary R., 5,545,372, Cl. 420-12.000.

Winter, Frank F., to Union Special Corporation. Three needle stitch with cover thread. 5,544,604, Cl. 112-475.170.

Winter, Roland A. E.; and von Ahn, Volker H., to Ciba-Geigy Corporation. Method for inhibiting premature polymerization of vinyl aromatic monomers. 5,545,782, Cl. 585-5.000.

Winter, Roland A. E.; and von Ahn, Volker H., to Ciba-Geigy Corporation. Method for inhibiting premature polymerization of vinyl aromatic monomers. 5,545,786, Cl. 585-435.000.

Winters, John R.; Gray, John M.; and Tenney, Joel D., to Eka Nobel AB. Process for the production of chlorine dioxide. 5,545,389, Cl. 423-478.000.

Wippenbeck, Matthias; Willmann, Gert; and Schrodi, Karl, to Alcatel N.V. Method of controlling access to a buffer and a device for temporary storage of data packets and an exchange with such a device. 5,546,389, Cl. 370-60.000.

Wirekraft Industries, Inc.: *See—*
Jasper, William C., II; Middleton, Cheryl S.; and Prusinski, Ronald G., 5,545,878, Cl. 219-541.000.

Wirth, Brian; and Duxbury, Tom, to Newbridge Networks Corporation. Fault tolerant FDDI wiring hub. 5,546,378, Cl. 370-16.100.

Wishnia, Arnold: *See—*
Albert, Mitchell S.; Balamore, Dilip; Cates, Gordon D., Jr.; Driehuys, Bastiaan; Happer, William; Saam, Brian; and Wishnia, Arnold, 5,545,396, Cl. 424-93.000.

Wisner, Craig A.; Graham, James C.; and Mandery, Thomas F., to Hein-Werner Corporation. Adjustable riser-ramp assembly. 5,544,861, Cl. 254-88.000.

Wisnieff, Robert L.: *See—*
Ichioka, Yoshikazu; Jenkins, Leslie C.; Kimura, Shinichi; Polastre, Robert J.; Troutman, Ronald R.; and Wisnieff, Robert L., 5,546,013, Cl. 324-770.000.

Witco: *See—*
Loy, Jean-Philippe; Ghesquiere, Denis; and Fiquet, Line, 5,545,675, Cl. 521-172.000.

Witco GmbH: *See—*
Lisowsky, Richard, 5,545,785, Cl. 585-375.000.

Witting, Gary F.: *See—*
Lebby, Michael S.; Chun, Christopher K. Y.; and Witting, Gary F., 5,546,413, Cl. 372-6.000.

Wixon, Harold E.: *See—*
Beagle, Charles A.; Adams, Richard P.; and Wixon, Harold E., 5,545,342, Cl. 510-299.000.

Wm. Wrigley Jr. Company: *See—*
Broderick, Kevin B.; Song, Joo H.; Townsend, Donald J.; Record, David W.; and Tyrpin, Henry T., 5,545,416, Cl. 426-3.000.
Richey, Lindell C.; Hook, Jeffrey S.; Reed, Michael A.; and Yatka, Robert J., 5,545,417, Cl. 426-5.000.
Tyrpin, Henry T.; Broderick, Kevin B.; and Record, David W., 5,545,415, Cl. 426-3.000.

WNC Nitrochemie GmbH: *See—*
Thiesen, Stefan; Rahnenführer, Eckhard; and Köhler, Josef, 5,544,587, Cl. 102-431.000.

Wojciechowski, Kenneth: *See—*
Tedrow, Kerry D.; Keeney, Stephen N.; Fazio, Albert; Atwood, Gregory E.; Javanifard, Johnny; and Wojciechowski, Kenneth, 5,546,042, Cl. 327-538.000.

Wolcott, Dana W.: *See—*
Bernardi, Bryan D.; McIntyre, Dale F.; Dunsmore, Clay A.; and Wolcott, Dana W., 5,546,145, Cl. 354-76.000.

Wolf, Nicholas A.: *See—*
Poole, Donald R.; Holland, Gary F.; Wolf, Nicholas A.; and Wilson, Michael A., 5,545,272, Cl. 149-48.000.

Wolf, Richard J.; Fossgreen, Donald J.; Rosen, Robert; Vento, Christopher M.; and Wells-Papanek, Doris, to Lotus Development Corporation. Computer user interface with multimode selection of displayed controls. 5,546,525, Cl. 395-159.000.

Wolfenbarger, James K.: *See—*
Brooker, Donald D.; Falsetti, James S.; Wolfenbarger, James K.; and Vuong, Dinh-Cuong, 5,545,238, Cl. 48-197.00R.

Wolff, Rodney G.; and Hull, Vincent W., to Medtronic, Inc. Intralumenal drug eluting prosthesis. 5,545,208, Cl. 623-1.000.

Wong, Patrick S.: *See—*
Kuczynski, Anthony L.; Ayer, Atul D.; and Wong, Patrick S., 5,545,413, Cl. 424-473.000.

Wong, Raymond S. C.; Grant, Ian; Patel, Jayantilal D.; Parker, Jeff P. K.; and Swanson, Eric B., to Pioneer Hi-Bred International. Inc. Production of improved rapeseed exhibiting a reduced saturated fatty acid content. 5,545,821, Cl. 800-230.000.

Wood, Grant W.: *See—*
Gupta, Rajendra P.; and Wood, Grant W., 5,544,821, Cl. 241-46.017.

Wood, Peter N., to International Rectifier Corporation. MOS gate driver for ballast circuits. 5,545,955, Cl. 315-224.000.

Woodruff, Teresa K., to Genentech, Inc. Method for predicting and/or preventing preterm labor. 5,545,616, Cl. 514-8.000.

Woody, William C.: *See—*
Garnaat, John A.; Ferrell, Bruce H.; and Woody, William C., 5,546,085, Cl. 342-25.000.

Work, William J.: *See—*
Amici, Robert M.; LaFleur, Edward E.; and Work, William J., 5,545,689, Cl. 525-057.000.
Amici, Robert M.; LaFleur, Edward E.; and Work, William J., 5,545,826, Cl. 525-57.000.

Workman, Steven G., to Baker Hughes Incorporated. Skimmer mechanism for rectangular basin chain and flight. 5,545,324, Cl. 210-525.000.

Works Co., Ltd.: *See—*
Shiraishi, Masami, 5,545,071, Cl. 446-143.000.

Woyski, William B.; Tauscher, Robert C.; and Cappel, Klaus L., to Team Corporation. High frequency vibration test fixture with hydraulic servo valve and piston actuator. 5,544,528, Cl. 73-665.000.

Wrathall, Robert G.: *See—*
Williams, Richard K.; Hille, Peter; and Wrathall, Robert G., 5,545,909, Cl. 257-355.000.

Wright, Blaine G.: *See—*
Thompson, Raymon F.; Berner, Robert W.; Curtis, Gary L.; Culliton, Stephen P.; and Wright, Blaine G., 5,544,421, Cl. 34-58.000.

Wright, Judith A.: *See—*
Lam, Chung H.; Lord, David K.; and Wright, Judith A., 5,545,583, Cl. 437-52.000.

Wright, Larry G.; LaPack, Mark A.; Blaser, Wayne W.; Beebe, Kenneth R.; and Leugers, Mary A., to Dow Chemical Company, The. Method of standardizing data obtained through mass spectrometry. 5,545,895, Cl. 250-282.000.

Wright, Peter V., to RF Monolithics, Inc. Multitrack transversely folded surface acoustic wave structure. 5,545,940, Cl. 310-313.00D.

WTC Industries, Inc.: *See—*
Lonneman, Alan, 5,545,315, Cl. 210-120.000.

WTI International Corporation: *See—*
Esguerra, Alfonso; and Esguerra, George, 5,544,834, Cl. 242-347.100.

Wu, Margaret M.; and Xiong, Yusheng, to Mobil Oil Corporation. Process for the catalytic cyclodimerization of cyclic olefins. 5,545,790, Cl. 585-510.000.

Wu, Maw-Kuen: *See—*
Tang, Horng-Yi; Wu, Maw-Kuen; Lee, Chuen-Sheng; and Hsu, Huei-Ying, 5,545,305, Cl. 205-51.000.

Wu, Rei Young A., to Hunt-Wesson, Inc. Process for preparing a shelf-stable, packaged, bean-containing product. 5,545,425, Cl. 426-634.000.

Wuest, Rainer: *See—*
Wagner, Gerhard; and Wuest, Rainer, 5,545,108, Cl. 477-125.000.

Wulff, Claus: *See—*
Berg, Klaus; Wulff, Claus; Malamet, Georg; Eitel, Alfred; Meurer, Kurt P.; van Osselaer, Tony; and Hinz, Jürgen, 5,545,764, Cl. 568-724.000.

Wunder, Heiko; Scott-Young, Robert E.; Maddern, Kenneth N.; and Corrigan, Mark C., to Amcor Limited. Process for recovering alkali metal hydroxide from organic liquors. 5,545,385, Cl. 423-183.000.

Wurster, Helmut. Endoscopic sewing instrument. 5,545,148, Cl. 604-223.000.

Wurtman, Richard J.: *See—*
Growden, John H.; Nitsch, Roger M.; and Wurtman, Richard J., 5,545,566, Cl. 436-71.000.

Wurzburg, Henry; and Potts, Walter H., to VLSI Technology, Inc. Distributed power management system for battery operated personal computers. 5,546,591, Cl. 395-750.000.

Wuu, Shou-Gwo; Liang, Mong-Song; Wang, Chen-Jong; and Su, Chung-Hui, to Taiwan Semiconductor Manufacturing Company. Unified contact plug process for static random access memory (SRAM) having thin film transistors. 5,545,584, Cl. 437-52.000.

Wuu, Shou-gwo: *See—*
Wang, Chen-jong; Liang, Mong-song; Wuu, Shou-gwo; and Su, Chung-Hui, 5,545,585, Cl. 437-52.000.

Wyatt, Stephen D.: *See—*
Austin, John S.; Novof, Ilya I.; Strayer, Donald E.; and Wyatt, Stephen D., 5,546,052, Cl. 331-1.00A.

Wyman, James P.: *See—*
Schmidt, Melvin J.; Coach, Thomas P.; Hause, Glenn C.; Galowitz, Dennis A.; Wyman, James P.; Hendricks, Robert A.; Ver Steeg, Lawrence J.; and Evans, Harold H., 5,544,450, Cl. 49-419.000.

Wythes, Martin J.: *See—*
Macor, John E.; and Wythes, Martin J., 5,545,644, Cl. 514-323.000.

Wyvratt, Matthew J., Jr.: *See—*
Bochis, Richard J.; Hodges, Paul J.; Schoen, William R.; and Wyvratt, Matthew J., Jr., 5,545,735, Cl. 540-490.000.

Xerox Coporation: *See—*
Maeda, Patrick Y., 5,546,111, Cl. 347-144.000.

Xerox Corporation: *See—*
Bowers, Frank H.; and Card, Stuart K., 5,546,529, Cl. 395-159.000.
Collins, David J.; Kuhman, Daniel E.; and Hermanson, Herman A., 5,545,283, Cl. 156-382.000.
Gorsky, John T., 5,545,000, Cl. 414-790.300.
Guerin, Jean-Michel, 5,546,201, Cl. 359-17.000.
Keoshkerian, Barkev; Georges, Michael K.; and Drappel, Stephan V., 5,545,504, Cl. 430-137.000.
Quinn, Kraig A.; Jedlicka, Josef E.; and Ormond, Brian T., 5,545,913, Cl. 257-443.000.
Thayer, Bruce E., 5,546,177, Cl. 355-301.000.

Xerxes Corporation: *See—*
Berg, Robin; Mohns, Lawrence; and Oswald, Richard, 5,544,974, Cl. 405-53.000.

Xilinx, Inc.: *See—*
New, Bernard J.; and Young, Steven P., 5,546,018, Cl. 326-38.000.

Xiong, Tian-yu, to Institute of Gas Technology. Gas-fired, porous matrix, combustor-steam generator. 5,544,624, Cl. 122-4.00D.

Xiong, Yusheng: *See—*
Wu, Margaret M.; and Xiong, Yusheng, 5,545,790, Cl. 585-510.000.

Xu, Jingyu: *See—*

VOL 1189 ISS 2 AG 13 1996 UMI

Shih, Ming; Xu, Jingyu; Su, Weng-Herng; and Pan, Jing-Jong. 5,546,486, Cl. 385-31.000.

Yabara, Hidefumi: *See*—
Satoh, Takamasa; Yasuda, Hiroshi; Kai, Junichi; Oae, Yoshihisa; Nishino, Hisayasu; Sakamoto, Kiichi; Yabara, Hidefumi; Seto, Isamu; Takigawa, Masami; Yamada, Akio; Arai, Soichiro; Abe, Tomohiko; Kiuchi, Takashi; and Miyazawa, Kenichi, 5,546,319, Cl. 364-488.000.

Yabe, Hisao; Iida, Yoshihiro; Suzuki, Akira; Ito, Hideo; Tashiro, Yoshio; Yamazaki, Minoru; Tamada, Osamu; and Nakajima, Shigeru, to Olympus Optical Co., Ltd. Cover-type endoscope apparatus. 5,545,121, Cl. 600-121.000.

Yabu, Hiroshi: *See*—
Meguro, Yasuo; and Yabu, Hiroshi, 5,545,190, Cl. 607-96.000.

Yagi, Masaharu: *See*—
Fukushima, Saburo; Yagi, Masaharu; Morita, Kiyozi; Ando, Masami; and Saito, Tokuo, 5,545,458, Cl. 428-117.000.

Yaguramaki, Iwao, to YKK Corporation. Auto-lock slider for concealed slide fastener. 5,544,394, Cl. 24-424.000.

Yajima, Shinya; and Nagashima, Nobuharu, to Fuji Photo Optical Co., Ltd. Television camera lens diagnostic system. 5,546,126, Cl. 348-175.000.

Yakymyshyn, Christopher P.: *See*—
Mueller, Otward M.; Yakymyshyn, Christopher P.; Roemer, Peter B.; and Watkins, Ronald D., 5,545,999, Cl. 324-322.000.

Yamada, Akio: *See*—
Satoh, Takamasa; Yasuda, Hiroshi; Kai, Junichi; Oae, Yoshihisa; Nishino, Hisayasu; Sakamoto, Kiichi; Yabara, Hidefumi; Seto, Isamu; Takigawa, Masami; Yamada, Akio; Arai, Soichiro; Abe, Tomohiko; Kiuchi, Takashi; and Miyazawa, Kenichi, 5,546,319, Cl. 364-488.000.

Yamada, Akira; Yoshida, Shinichiro; Yoshino, Masahiro; Takahashi, Kiyoshi; Omura, Akira; and Konagai, Makoto, to Yoshida Kogyo K.K.; and Makoto Konagai. Method for producing a transparent conductive ZnO film by incorporating a boron or aluminum containing material. 5,545,443, Cl. 427-584.000.

Yamada, Koutara: *See*—
Doi, Koji; Tsuji, Yasuyuki; Yokokawa, Shuuho; Takahashi, Kunitomo; Hirose, Youji; Ueno, Hiroshi; Takeuchi, Youichi; Yamada, Koutara; and Iwanaga, Hidenori, 5,545,840, Cl. 118-658.000.

Yamada, Masaaki: *See*—
Otsuki, Kazutaka; and Yamada, Masaaki, 5,545,911, Cl. 257-376.000.

Yamada, Noboru; Akahira, Nobuo; Nishiuchi, Kenichi; Nagata, Kenichi; Ohno, Eiji; and Furukawa, Shigeaki, to Matsushita Electric Industrial Inc., Ltd. Optical information recording medium and method of designing its structure. 5,545,454, Cl. 428-64.100.

Yamada, Toshio; Shibayama, Akinori; Iwanari, Shunichi; and Fujiwara, Atsushi, to Matsushita Electric Industrial Co., Ltd. Reference potential generating circuit and semiconductor integrated circuit arrangement using the same. 5,545,977, Cl. 323-313.000.

Yamada, Toshiro; Imai, Yasuo; and Mitsuda, Yasuhiro, to Nippon Zeon Co., Ltd. Process for preparation of gem-difluoroalkanes. 5,545,771, Cl. 570-164.000.

Yamada, Yasuo: *See*—
Yorita, Tadahiro; Yamada, Yasuo; and Miyamoto, Hirohumi, 5,546,059, Cl. 333-202.000.

Yamaguchi, Jun, to Sumitomo Wiring Systems, Ltd. Electrical connector mounting construction of electrical connector holder. 5,545,056, Cl. 439-532.000.

Yamaguchi, Motoi, to NEC Corporation. Chopper type comparator for an analog-to-digital converter. 5,546,028, Cl. 327-64.000.

Yamaguchi, Shizuka; Kojima, Yoshitaka; Ogawa, Sai; Arikawa, Hideyuki; Haginoya, Mitsuo; Wada, Yukihiko; and Iwao, Kyozo, to Hitachi, Ltd. Heat and oxidation resistive high strength material and its production method. 5,545,484, Cl. 428-408.000.

Yamaguchi, Takao; and Hamada, Masahiro, to Matsushita Electric Industrial Co., Ltd. Working situation management apparatus. 5,546,598, Cl. 395-800.000.

Yamaguchi, Takashi: *See*—
Ohno, Tadayoshi; Yamaguchi, Takashi; and Itoh, Shinichi, 5,546,117, Cl. 347-224.000.

Yamaguchi, Takeshi: *See*—
Fuji, Hiroshi; Deguchi, Toshihisa; Kojima, Kunio; Yamaguchi, Takeshi; Terashima, Shigeo; Takahashi, Akira; and Ohta, Kenji, 5,546,364, Cl. 369-13.000.

Yamaha Corporation: *See*—
Kawamura, Kiyoshi; Tajima, Toshio; and Koseki, Shinya, 5,545,839, Cl. 84-171.000.

Yamamoto, Akihiro: *See*—
Tanaka, Toshihiko; Yamamoto, Akihiro; and Amenomori, Akira, 5,545,647, Cl. 514-343.000.

Yamamoto, Chiyoko; Maruhashi, Daisuke; and Shioda, Masahiro, to Fujitsu Limited. Bidirectional line switch ring network. 5,546,403, Cl. 371-20.500.

Yamamoto, Fumihiko: *See*—
Inoue, Yasuyuki; Kawachi, Masao; Okamoto, Katsunari; Takato, Norio; Yamamoto, Fumihiko; Suda, Hiroyuki; Furukawa, Shinichi; and Morinaka, Akira, 5,546,483, Cl. 385-14.000.

Yamamoto, Katsuya; and Inada, Norifumi, to Sanyo Electric Co., Ltd.; and Coca-Cola (Japan) Co., Ltd. Safety device for pressure vessel. 5,544,779, Cl. 220-89.200.

Yamamoto, Koichi: *See*—
Tanaka, Tadashi; Sakamoto, Masaaki; Yamamoto, Koichi; and Ozaki, Kouki, 5,545,249, Cl. 75-246.000.

Tanaka, Tadashi; Sakamoto, Masaaki; Yamamoto, Koichi; Kato, Tohru; and Sugita, Mitsuru, 5,545,489, Cl. 428-629.000.

Yamamoto, Masaki, to Toyota Jidosha Kabushiki Kaisha. Apparatus for controlling vehicle speed in response to a road holding ability change. 5,546,308, Cl. 364-426.040.

Yamamoto, Nobuko: *See*—
Okamoto, Tadashi; Tomida, Yoshinori; Yamamoto, Nobuko; and Kawaguchi, Masahiro, 5,545,521, Cl. 435-5.000.

Yamamoto, Shinya: *See*—
Fukanuma, Tetsuhiko; Goto, Kunifumi; Yamamoto, Shinya; and Iguchi, Masao, 5,545,020, Cl. 418-55.400.

Yamamoto, Shohei, to Fuji Photo Film Co., Ltd. DP bag. 5,546,155, Cl. 354-354.000.

Yamamoto, Takehiro: *See*—
Kimoto, Masahiko; Nakamichi, Masumi; Funakoshi, Takahiro; Wada, Yasuhiro; Yamamoto, Takehiro; and Tsuda, Yoichi, 5,546,496, Cl. 385-146.000.

Yamamoto, Toru; Hisano, Akihiko; and Takizawa, Toshiaki, to Yoshida Kogyo K.K. Curtain attachment connector assembly and curtain attachment connector. 5,544,387, Cl. 16-87.40R.

Yamane, Takeo: *See*—
Ikeda, Yoshihiko; Yamane, Takeo; Kaji, Eiichi; and Ishimaru, Kenji, 5,545,759, Cl. 568-6.000.

Yamanishi, Takahiro; Fujii, Hiroaki; and Osada, Nobuya, to Takata Corporation. Protective device for protecting vehicle occupant. 5,544,913, Cl. 280-730.200.

Yamano, Atsuhiro: *See*—
Ueda, Satoshi; Ueda, Tetsuya; Yamano, Atsuhiro; and Yano, Kousaku, 5,545,919, Cl. 257-641.000.

Yamanouchi, Haruhiko, to Canon Kabushiki Kaisha. Zoom lens barrel in which a moving stroke of the front lens group is long. 5,546,234, Cl. 359-700.000.

Yamao, Yasushi: *See*—
Eaton, Eric T.; Evoy, Ronald H.; Hayes, David J.; Willard, David F.; Ito, Shogo; and Yamao, Yasushi, 5,546,394, Cl. 370-79.000.

Yamaoka, Yukio; Tamai, Kishio; and Masutani, Hiroshi, to Shinko Kosen Kogyo Kabushiki Kaisha. Two-phase stainless steel wire rope having high fatigue resistance and corrosion resistance. 5,545,482, Cl. 428-379.000.

Yamasaki, Kozo: *See*—
Ogawa, Kouki; Yamasaki, Kozo; and Kato, Naomiki, 5,545,598, Cl. 501-127.000.

Yamashita, Masahiro; Kawada, Norihiko; and Nakamura, Satoshi, to Sony Corporation. Solid-state imaging apparatus. 5,546,127, Cl. 348-297.000.

Yamashita, Toshiyuki: *See*—
Hirota, Masaya; Ideyama, Hiroyuki; Okatani, Toru; Yamashita, Toshiyuki; Ito, Hideo; and Kawabuchi, Yoichi, 5,546,166, Cl. 355-209.000.

Yamauchi, Atsuyoshi: *See*—
Oishi, Tetsuya; Ozawa, Hiroshi; Karasawa, Minato; Inomata, Masamitsu; Mega, Izumi; Yamauchi, Atsuyoshi; Kamada, Kazunori; Nakahata, Shigeru; Sakamoto, Katsumi; Nakashima, Tatsunobu; Watanabe, Akito; Suzuki, Jin; Ohkawa, Kouhei; Furusawa, Satoshi; Ono, Hiroshi; and Sugazaki, Kazuo, 5,545,702, Cl. 525-509.000.

Yamauchi, Hideaki: *See*—
Okamoto, Takuji; Hamada, Masanori; Sokawa, Kenta; Uyeda, Kazuya; and Yamauchi, Hideaki, 5,546,135, Cl. 348-674.000.

Yamazaki, Michihito: *See*—
Ogata, Hiroaki; Kisu, Hiroki; Yamazaki, Michihito; and Asano, Erika, 5,546,167, Cl. 355-219.000.

Yamazaki, Minoru: *See*—
Yabe, Hisao; Iida, Yoshihiro; Suzuki, Akira; Ito, Hideo; Tashiro, Yoshio; Yamazaki, Minoru; Tamada, Osamu; and Nakajima, Shigeru, 5,545,121, Cl. 600-121.000.

Yamazaki, Shunpei, to Semiconductor Energy Laboratory Co., Ltd. Method of making printing member for electrostatic photocopying. 5,545,503, Cl. 430-128.000.

Yamazaki, Shunpei; Zhang, Hongyong; Uochi, Hideki; Adachi, Hiroki; and Takemura, Yasuhiko, to Semiconductor Energy Laboratory Co., Ltd. Method of making TFT with anodic oxidation process using positive and negative voltages. 5,545,571, Cl. 437-21.000.

Yamazaki, Yoshihide: *See*—
Nakamoto, Makoto; and Yamazaki, Yoshihide, 5,546,136, Cl. 348-678.000.

Yan, Xinglong; and Lidsky, Lawrence M., to Longmark Power International, Inc. Dual brayton-cycle gas turbine power plant utilizing a circulating pressurized fluidized bed combustor. 5,544,479, Cl. 60-39.183.

Yanagisawa, Takuma: *See*—
Ohsawa, Seiichi; and Yanagisawa, Takuma, 5,546,372, Cl. 369-116.000.

Yanagisawa, Yoshihiro: *See*—
Shimada, Yasuhiro; Okamura, Yoshimasa; Takamatsu, Osamu; Nakayama, Masaru; and Yanagisawa, Yoshihiro, 5,546,375, Cl. 369-126.000.

Yanagita, Kiyohisa: *See*—
Ohba, Hiroki; Tonomoto, Yoshihiro; Yanagita, Kiyohisa; Houki, Yoji; Akuta, Tomokazu; and Komuro, Akihiro, 5,546,170, Cl. 355-246.000.

Yanai, Kunio: *See*—
Kajihara, Kazuhisa; Kawamura, Motoshi; and Yanai, Kunio, 5,544,963, Cl. 384-482.000.

Yang, Chinping Q.: *See*—
Roy, Richard H., III; Parish, David M.; Barratt, Craig H.; Yang, Chinping Q.; and Orchard, John T., 5,546,090, Cl. 342-174.000.

Yang, Henry S.; Ramakrishnan, Kadangode K.; Daniely, Gady; and Wertheimer, Aviad, to Digital Equipment Corporation. Method for assigning priority to receive and transmit requests in response to occupancy of receive and transmit buffers when transmission and reception are in progress. 5,546,543, Cl. 395-250.000.

Yang, Na N.: *See*—
Bryant, Henry U.; Dodge, Jeffrey A.; Sato, Masahiko; and Yang, Na N., 5,545,635, Cl. 514-177.000.

Yang, Ning, to Industrial Technology Research Institute. Process for preparing powders with superior homogeneity from aqueous solutions of metal nitrates. 5,545,360, Cl. 264-9.000.

Yano, Fumiharu, to Nittoku Engineering Kabushiki Kaisha. Automatic coil winder. 5,544,827, Cl. 242-445.100.

Yano, Hiroshi: *See*—
Sasaki, Goro; Yano, Hiroshi; Sawada, Sosaku; and Doguchi, Kentaro, 5,546,489, Cl. 385-88.000.

Yano, Kousaku: *See*—
Ueda, Satoshi; Ueda, Tetsuya; Yamano, Atsuhiro; and Yano, Kousaku, 5,545,919, Cl. 257-641.000.

Yano, Takahiko: *See*—
Asahi, Satoru; Yano, Takahiko; and Doi, Muneharu, 5,545,538, Cl. 435-86.000.

Yao, Lu. Multipurpose pen with illuminator means. 5,544,967, Cl. 401-195.000.

Yarbrough, Harvey M., to Illinois Tool Works Inc. Machine and process for sealing wrapped epoxy sticks. 5,544,470, Cl. 53-442.000.

Yarger, James: *See*—
Ausich, Rodney L.; Brinkhaus, Friedhelm L.; Mukharji, Indrani; Proffitt, John; Yarger, James; and Yen, Huei-Che B., 5,545,816, Cl. 800-205.000.

Yarger, Richard J. Laparoscopic delivery device. 5,545,169, Cl. 606-108.000.

Yashiki, Takashi; Wada, Yasunori; Nishimoto, Hidenori; Terada, Yoshinori; Nakayama, Takenori; and Abumiya, Tadashi, to Kabushiki Kaisha Kobe Seiko Sho. Surface treated metal member excellent in wear resistance and its manufacturing method. 5,545,268, Cl. 148-518.000.

Yasu, Hidenori: *See*—
Ikeda, Hachiro; Miyamoto, Noriaki; Umeda, Ryoei; Yasu, Hidenori; Fukukawa, Mitsuo; Masuyama, Yukiei; Kinoshita, Shoji; Takagi, Yukio; Gocho, Tomohiro; Goto, Fumio; Ishii, Akio; Ogawa, Tetsuo; Hasegawa, Yoshun; Hironaka, Keitaro; and Ogoshi, Yasuhiro, 5,546,123, Cl. 348-119.000.

Yasuda, Hiroshi: *See*—
Satoh, Takamasa; Yasuda, Hiroshi; Kai, Junichi; Oae, Yoshihisa; Nishino, Hisayasu; Sakamoto, Kiichi; Yabara, Hidefumi; Seto, Isamu; Takigawa, Masami; Yamada, Akio; Arai, Soichiro; Abe, Tomohiko; Kiuchi, Takashi; and Miyazawa, Kenichi, 5,546,319, Cl. 364-488.000.

Yasufuku, Motonobu: *See*—
Kitazumi, Masato; and Yasufuku, Motonobu, 5,545,097, Cl. 474-266.000.

Yasugaki, Masato; Konuma, Osamu; and Iba, Yoichi, to Olympus Optical Co., Ltd. Image display apparatus. 5,546,227, Cl. 359-630.000.

Yasuhara, Mitsuki; Tatsuki, Yuuichirou; Nakamura, Mitsunori; and Matsunaga, Fujihisa, to Mitsui Petrochemical Industries, Ltd. Process for preparing anilines, catalysts used therefor and process for preparing same. 5,545,753, Cl. 564-402.000.

Yasuzumi, Kazumi: *See*—
Fijioka, Hideaki; and Yasuzumi, Kazumi, 5,545,929, Cl. 303-166.000.

Yatagai, Tetsuya, to NEC Corporation. Clock signal regeneration method and apparatus. 5,546,032, Cl. 327-165.000.

Yatka, Robert J.: *See*—
Richey, Lindell C.; Hook, Jeffrey S.; Reed, Michael A.; and Yatka, Robert J., 5,545,417, Cl. 426-5.000.

Yatsurugi, Yoshifumi: *See*—
Keck, David W.; Nagai, Kenichi; Yatsurugi, Yoshifumi; Morihara, Hiroshi; and Izawa, Junji, 5,545,387, Cl. 423-348.000.

Yatsuyanagi, Yoshimi: *See*—
Satake, Sunao; Yatsuyanagi, Yoshimi; Fujii, Masahiro; and Imagawa, Ippei, 5,545,694, Cl. 525-286.000.

Yazaki Corporation: *See*—
Hasegawa, Toshiaki; and Masuda, Satoki, 5,545,049, Cl. 9-310.000.
Ishida, Hidehito, 5,545,854, Cl. 174-153.00G.
Ishii, Takashi; Watanabe, Tamio; and Nagano, Toru, 5,545,053, Cl. 439-364.000.
Kondo, Hiroki; Totsuka, Mitsuhiko; Kudo, Toshiharu; and Hanazaki, Hisashi, 5,546,066, Cl. 337-163.000.
Maeda, Akira, 5,545,048, Cl. 439-273.000.
Masuda, Satoki; and Hasegawa, Toshiaki, 5,545,046, Cl. 439-142.000.
Sawayanagi, Masahiro, 5,545,061, Cl. 439-752.000.
Takagishi, Takashi; and Makita, Toshihiko, 5,545,062, Cl. 439-877.000.

Yazaki Meter Co., Ltd.: *See*—
Cahill, Sean S., 5,545,594, Cl. 437-228.000.

Yazdy, Farid A.: *See*—
Bowes, Michael J.; and Yazdy, Farid A., 5,546,547, Cl. 395-294.000.

Yeckley, Russell L., to Saint-Gobain/Norton Industrial Ceramics Corp. Silicon nitride ceramic having high fatigue life and high toughness. 5,545,597, Cl. 501-98.000.

Yeh, Hsi-Jen J.: *See*—
Smith, John S.; and Yeh, Hsi-Jen J., 5,545,291, Cl. 156-655.100.

Yeh, Huoy-Ming: *See*—
Yung, Robert; Williams, Greg; and Yeh, Huoy-Ming, 5,546,554, Cl. 395-413.000.

Yen, Huei-Che B.: *See*—
Ausich, Rodney L.; Brinkhaus, Friedhelm L.; Mukharji, Indrani; Proffitt, John; Yarger, James; and Yen, Huei-Che B., 5,545,816, Cl. 800-205.000.

Yeo, Tae J.: *See*—
Lee, Woo B.; Oh, Se J.; Yeo, Tae J.; Ko, Jae W.; and Koo, Yung M., 5,545,572, Cl. 437-26.000.

Yi, Sung S.: *See*—
Le, Thu A.; Yi, Sung S.; Zwaskis, William; Pedlick, Jack S.; Luscombe, Brian H.; Jamiolkowski, Dennis D.; Di Giovanni, John; Seritella, Keith A.; Steckel, Mark G.; and Harwin, Steven F., 5,545,180, Cl. 606-232.000.

YKK Corporation: *See*—
Yaguramaki, Iwao, 5,544,394, Cl. 24-424.000.

Yokev, Hanoch; Harel, Haim; and Meiman, Yehouda, to Nexus 1994 Limited. Method of transmitting low-power frequency hopped spread spectrum data. 5,546,422, Cl. 375-202.000.

Yokimcus, Victor P.: *See*—
Ameen, Joseph G.; Mortimer, William P., Jr.; and Yokimcus, Victor P., 5,545,473, Cl. 428-283.000.

Yokokawa, Shuuho: *See*—
Doi, Koji; Tsuji, Yasuyuki; Yokokawa, Shuuho; Takahashi, Kunitomo; Hirose, Youji; Ueno, Hiroshi; Takeuchi, Youichi; Yamada, Koutara; and Iwanaga, Hidenori, 5,545,840, Cl. 118-658.000.

Yokoo, Akihiko: *See*—
Tsuru, Sumiaki; Yokoo, Akihiko; Sakurai, Takeshi; and Ogawa, Tetsuro, 5,545,240, Cl. 55-479.000.

Yokota, Hideo, to Canon Kabushiki Kaisha. Viewfinder device wherein the spacing between the display and the optical system is variable to effect diopter adjustment. 5,546,224, Cl. 359-425.000.

Yoo, Choon K.; and Kim, Young G., to Samsung Electronics Co., Ltd. Picture print controlling device. 5,546,478, Cl. 382-282.000.

Yoo, Chue-San, to Taiwan Semiconductor Manufacturing Company. Method of using disposable hard mask for gate critical dimension control. 5,545,588, Cl. 437-187.000.

Yorita, Tadahiro; Yamada, Yasuo; and Miyamoto, Hirohumi, to Murata Manufacturing Co., Ltd. Dielectric filter having a non-conductive region in each resonator hole. 5,546,059, Cl. 333-202.000.

Yoshida, Hirohisa; and Ueda, Katsuyuki, to Mitsubishi Jukogyo Kabushiki Kaisha. Pulverizing method and horizontal mill. 5,544,818, Cl. 241-29.000.

Yoshida, Jiro: *See*—
Mizushima, Koichi; Yoshida, Jiro; and Kubo, Koh-ichi, 5,545,612, Cl. 505-239.000.

Yoshida, Katunori; Koizumi, Ichirbo; Kimura, Kohichi; and Moriya, Nobuharu, to Fuji Paudal Kabushiki Kaisha. Apparatus and method for processing moistened powder and granular materials. 5,544,426, Cl. 34-314.000.

Yoshida Kogyo K.K.: *See*—
Yamada, Akira; Yoshida, Shinichiro; Yoshino, Masahiro; Takahashi, Kiyoshi; Omura, Akira; and Konagai, Makoto, 5,545,443, Cl. 427-584.000.
Yamamoto, Toru; Hisano, Akihiko; and Takizawa, Toshiaki, 5,544,387, Cl. 16-87.40R.

Yoshida, Narihiro: *See*—
Kobayashi, Yuji; Yoshida, Narihiro; Mukohzaka, Naohisa; Toyoda, Haruyoshi; and Hara, Tsutomu, 5,546,181, Cl. 356-237.000.

Yoshida, Shinichiro: *See*—
Yamada, Akira; Yoshida, Shinichiro; Yoshino, Masahiro; Takahashi, Kiyoshi; Omura, Akira; and Konagai, Makoto, 5,545,443, Cl. 427-584.000.

Yoshida, Shinji; Motoyama, Shuichiro; Ohashi, Takashi; and Ishihara, Masamichi, to NGK Insulators, Ltd. Superconducting fault current limiter. 5,546,261, Cl. 361-19.000.

Yoshida, Yuichi; and Moriyama, Hitoshi, to Fujitsu Limited. Dot line printer having a balance shuttle. 5,544,964, Cl. 400-322.000.

Yoshida, Yutaka: *See*—
Higashiyama, Kazutoshi; Doi, Toshiya; Ozawa, Takesi; Takeuchi, Seizi; Kamo, Tomoichi; Matsuda, Shinpei; and Yoshida, Yutaka, 5,545,610, Cl. 505-120.000.

Yoshikawa, Mituo: *See*—
Kawanaka, Seido; Yoshikawa, Mituo; and Naito, Hiroyoshi, 5,546,479, Cl. 382-290.000.

Yoshimoto, Kazuo: *See*—
Ogawa, Takashi; Yoshimoto, Kazuo; Uchiyama, Kensuke; Ibe, Harushige; Arai, Yoshiharu; Shiraishi, Taketoshi; and Gotoh, Yoshinori, 5,544,995, Cl. 414-219.000.

Yoshimura, Katsuhiro: *See*—
Saida, Muneo; Hirasawa, Yutaka; and Yoshimura, Katsuhiro, 5,545,466, Cl. 428-209.000.

Yoshimura, Sbunji; and Okazaki, Toru, to Sony Corporation. Method and disc apparatus for reproducing information signals and including compensation for disk tilt-based playback deterioration. 5,546,367, Cl. 369-44.320.

Yoshino, Jun: *See*—
Ishiguro, Shiro; Watanuki, Masatoshi; Kawanishi, Toshiaki; Hanzawa, Kohtaro; Sasaki, Hiroyuki; and Yoshino, Jun, 5,546,466, Cl. 381-61.000.

Yoshino, Masahiro: *See*—
Yamada, Akira; Yoshida, Shinichiro; Yoshino, Masahiro; Takahashi, Kiyoshi; Omura, Akira; and Konagai, Makoto, 5,545,443, Cl. 427-584.000.

Yoshio, Hideaki: *See*—

Konishi, Akio; Saito, Yoshiyuki; Takeda, Shuzo; Yoshio, Hideaki; and Kurumatani, Hiroshi, 5,546,249, Cl. 360-95.000.

Yoshitake, Akio; and Oh, Masanari, to Rohm Co., Ltd. Defuzzification system for shifting and scaling centroid values. 5,546,501, Cl. 395-3.000.

Yoshitake, Masaru: *See*—
Morikawa, Shinsuke; Samejima, Shunichi; Yoshitake, Masaru; Okamoto, Hidekazu; Ohnishi, Keiichi; and Tanuma, Toshihiro, 5,545,777, Cl. 570-176.000.

Yoshitomi, Yasunari; Senuma, Takehide; Suga, Yozo; and Takahashi, Nobuyuki, to Nippon Steel Corporation. Process for production of grain oriented electrical steel sheet having superior magnetic properties. 5,545,263, Cl. 148-111.000.

Young, Keith: *See*—
Kuhn, Stephen R.; and Young, Keith, 5,544,848, Cl. 246-276.000.

Young, Richard H.: *See*—
Lancaster, E. Peter; and Young, Richard H., 5,545,159, Cl. 604-391.000.

Young, Steven P.: *See*—
New, Bernard I.; and Young, Steven P., 5,546,018, Cl. 326-38.000.

Young, William R.: *See*—
Singh, Jogender; Schell, Jerry D.; and Young, William R., 5,545,431, Cl. 427-205.000.

Youngquist, John S. Storm monitor. 5,545,975, Cl. 324-72.000.

Yozawa, Hitoshi: *See*—
Asami, Katuo; and Yozawa, Hitoshi, 5,546,122, Cl. 348-96.000.

Yn C., Lin. Setting angle adjuster for the car headlamp. 5,546,287, Cl. 362-66.000.

Yuda, Shuji, to Toyota Jidosha Kabushiki Kaisha. Apparatus for disposing of fuel vapor. 5,544,638, Cl. 123-674.000.

Yue, Stephen T.: *See*—
Roth, Bruce L.; Millard, Paul J.; Yue, Stephen T.; Wells, K. Sam; and Haugland, Richard P., 5,545,535, Cl. 435-34.000.

Yugenkaisha Paramount Corporation: *See*—
Nagai, Shinichi, 5,544,929, Cl. 296-99.100.

Yui, Yasuji: *See*—
Kamoda, Hitoshi; Maekawa, Tomohiro; Yui, Yasuji; Iima, Shin; and Bunya, Takashi, 5,544,965, Cl. 400-582.000.

Yun, Dong H.; Lee, Kyu C.; Hong, Hyung K.; Park, Hyeon S.; Kwon, Chul H.; and Shin, Hyun W., to Goldstar Co., Ltd. Low power consumption type thin film gas sensor. 5,545,300, Cl. 204-424.000.

Yun, Sang-hwa: *See*—
Lee, Rae-hwan; Jeon, Hwa-jin; Choi, Kwang-sik; Park, Hong-soon; Yun, Sang-hwa; Song, Kwang-lyeol; Choi, Hae-min; Lee, Deok-hyun; Song, Bong-hun; Park, Dong-jin; and Byeon, Seong-jin, 5,546,368, Cl. 369-47.000.

Yun, Tae-Jin; Hong, Dong-Pyo; and Park, Byung-Suk, to Samsung Electronics Co., Ltd. Apparatus for gringing a semiconductor wafer while removing dust therefrom. 5,545,076, Cl. 451-287.000.

Yung Chi Paint & Varnish Mfg. Co., Ltd.: *See*—
Kuo, Ping-Lin; and Chuang, Theng-Fu, 5,545,823, Cl. 523-122.000.

Yung, Robert; Williams, Greg; and Yeh, Huoy-Ming, to Sun Microsystems, Inc. Apparatus for dynamic register management in a floating point unit. 5,546,554, Cl. 395-413.000.

Yurek, Gregory J.; and VanderSande, John B., to Massachusetts Institute of Technology. Preparation of superconducting oxides and oxide-metal composites. 5,545,613, Cl. 505-430.000.

Yusim, A.: *See*—
Delfyett, Peter J.; Yusim, A.; and Gee, S., 5,546,415, Cl. 372-25.000.

Yu-Wang, Victoria: *See*—
Chen, Jian; Papanu, James S.; Mak, Steve S. Y.; Ish-Shalom, Carmel; Hsieh, Peter; Lau, Wesley G.; Rhoades, Charles S.; Shieh, Brian; Latchford, Ian S.; Williams, Karen A.; and Yu-Wang, Victoria, 5,545,289, Cl. 156-643.100.

Zabeau, Marcus F. O.: *See*—
De Greve, Henri M. J.; Salgado, Maria B. L. F.; Van Montagu, Marc C. E.; Vaeck, Mark A.; Zabeau, Marcus F. O.; Leemans, Jan J. A.; and Hofte, Hermanus F. P., 5,545,565, Cl. 435-320.100.

Zaffetti, Mark A.: *See*—
Castonguay, Roger N.; Rosen, James L.; and Zaffetti, Mark A., 5,545,867, Cl. 200-400.000.

Zahrobsky, James A.: *See*—
Davis, Scott H.; Goleman, William L.; Thiel, David W.; Bean, Robert G.; and Zahrobsky, James A., 5,546,536, Cl. 395-182.180.

Zalesinski, Jerzy: *See*—
Gaynes, Michael A.; Oxx, George D.; Pierson, Mark V.; and Zalesinski, Jerzy, 5,545,465, Cl. 428-209.000.

Zalipsky, Samuel: *See*—
Barany, George; Albericio, Fernando; Solé, Nuria A.; Chang, Jane; and Zalipsky, Samuel, 5,545,698, Cl. 525-420.000.

Zandbergen, Russ E., to Sun Microsystems, Inc. Computer component torsional latching mechanism and method. 5,546,277, Cl. 361-726.000.

Zander, Dennis R., to Eastman Kodak Company. Film roll accumulating device. 5,544,833, Cl. 242-348.000.

Zandi, Ahmad: *See*—
Langdon, Glen G., Jr.; and Zandi, Ahmad, 5,546,080, Cl. 341-107.000.

Zank, Gregg A.: *See*—
Burns, Gary T.; Zank, Gregg A.; and Ewald, Jeffrey A., 5,545,687, Cl. 524-701.000.

Zdanowicz, Lawrence E.: *See*—
Westberg, Tom; Wagner, Jeffrey F.; Kantola, James C.; and Zdanowicz, Lawrence E., 5,544,631, Cl. 123-193.500.

Zdroik, Jerome J. Soft cranberry and undersize cranberry separator and method. 5,544,761, Cl. 209-672.000.

Zdunich, Gordon L. Concealed security system. 5,546,071, Cl. 340-541.000.

Zehner, William J., to United States of America, Navy. Wide beam acoustic projector with sharp cutoff and low side lobes. 5,546,356, Cl. 367-88.000.

Zehner, William J., to United States of America, Navy. Monostatic projector synthetic aperture sonar. 5,546,357, Cl. 367-88.000.

Zeller, Thomas; Zieger, Detlev; and Hönig, Günter, to Robert Bosch GmbH. Method and arrangement for controlling an internal combustion engine. 5,544,634, Cl. 123-399.000.

Zenith Electronics Corporation: *See*—
Krishnamurthy, Gopalan; Mycynek, Victor G.; and Sgrignoli, Gary J., 5,546,138, Cl. 348-735.000.

Zepp, Charles M.: *See*—
Gao, Yun; and Zepp, Charles M., 5,545,745, Cl. 560-42.000.

Zexel Corporation: *See*—
Nishishita, Kunihiko, 5,544,702, Cl. 165-153.000.

Zhang, Hongyong: *See*—
Yamazaki, Shunpei; Zhang, Hongyong; Uochi, Hideki; Adachi, Hiroki; and Takemura, Yasuhiko, 5,545,571, Cl. 437-21.000.

Zhao, Mangzhu: *See*—
King, Anthony O.; Larsen, Robert D.; Verhoeven, Thomas R.; and Zhao, Mangzhu, 5,545,758, Cl. 568-6.000.

Zhitkovich, Anatoly V.: *See*—
Costa, Max; and Zhitkovich, Anatoly V., 5,545,529, Cl. 435-6.000.

Zhu, Ming-De; and Siebert, Christopher J., to Bio-Rad Laboratories, Inc. Suppression of electroendosmosis during electrophoresis in gel-free polymer media by use of charged polymers. 5,545,302, Cl. 204-454.000.

Zicht, E. Wayne: *See*—
Beakes, John M.; and Zicht, E. Wayne, 5,544,409, Cl. 29-598.000.

Zieger, Detlev: *See*—
Zeller, Thomas; Zieger, Detlev; and Hönig, Günter, 5,544,634, Cl. 123-399.000.

Ziegler, Byron J.; and Scurrah, Mark E., to High End Systems, Inc. High power strobe lamp. 5,545,951, Cl. 315-58.000.

Zielske, Alfred G.: *See*—
Rowland, Richard R.; Fong, Ronald A.; Wiersema, Richard J.; and Zielske, Alfred G., 5,545,748, Cl. 562-2.000.

Zieltjens, Georges C. P.: *See*—
Bolk, Hendrik J. J.; and Zieltjens, Georges C. P., 5,545,900, Cl. 250-395.000.

Ziemelis, Maris J.; Chang, Eng-Pi; and Winnik, Mitchell A., to Dow Corning Corporation. Curable fluorescent organopolysiloxane compositions. 5,545,830, Cl. 528-15.000.

Zierhut, Hermann, to Siemens Aktiengesellschuft. Bus coupler. 5,546,419, Cl. 375-257.000.

Zimmer, Artur G.: *See*—
Nahra, John E.; and Zimmer, Artur G., 5,544,571, Cl. 99-454.000.

Zimmer, Rainer: *See*—
Meltsch, Hans-Juergen; Froehlich, Franz-Fr; Zimmer, Rainer; and Kluwe, Wolf, 5,545,851, Cl. 174-74.00R.

Zinnamosca, Francesco; and Berruti, Massimo, to Technipetrol S.p.A. Process for the continuous production of ethanol from cereals. 5,545,543, Cl. 435-162.000.

Zippertubing Company, The: *See*—
Plummer, Walter A., III; Shrader, Vernon L.; and Klein, Laurence R., 5,545,844, Cl. 174-35.0MS.

Zito, Ralph, to National Power PLC. Electrochemical apparatus for power delivery utilizing an air electrode. 5,545,492, Cl. 429-29.000.

Zodiac International: *See*—
Eymard, Michel, 5,544,612, Cl. 114-345.000.

Zorich, Chris: *See*—
Schmidt, Clayton C.; Zorich, Chris; Lammens, Arthur E.; and Parvin, Jackie D., 5,544,957, Cl. 312-221.000.

Zulu, Joshua, to Caterpillar Inc. Compact steering apparatus. 5,545,098, Cl. 475-23.000.

Zumatu, S.A.: *See*—
Garmendia, Jose L., 5,544,572, Cl. 99-489.000.

Zuniga, Oscar A., to Hewlett-Packard Company. Detection of photo regions in digital images. 5,546,474, Cl. 382-176.000.

Zwaskis, William: *See*—
Le, Thu A.; Yi, Sung S.; Zwaskis, William; Pedlick, Jack S.; Luscombe, Brian H.; Jamiolkowski, Dennis D.; Di Giovanni, John; Seritella, Keith A.; Steckel, Mark G.; and Harwin, Steven F., 5,545,180, Cl. 606-232.000.

Zwiechowski, Jurgen, to Maschinenfabrik Alfred Schmermund GmbH & Co. Method of and apparatus for the formation of the cigarette blocks. 5,544,515, Cl. 53-148.000.

Zwingenberger, Arthur; and Saupe, Martin, to Sci-Can. Pressure housing for a sterilization chamber for steam sterilization of medical instruments, implants and the like. 5,545,383, Cl. 422-295.000.

ZymoGenetics, Inc.: *See*—
Kaushansky, Kenneth; and Hagen, Frederick S., 5,545,536, Cl. 435-69.100.
Maraganore, John M., 5,545,615, Cl. 514-2.000.

3DLabs Limited: *See*—
Trevett, Neil F., 5,546,532, Cl. 395-164.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 13th DAY OF AUGUST, 1996

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Hitachi, Ltd.: *See*—
Hori, Ryoichi; Itoh, Kiyoo; and Tanaka, Hitoshi, Re. 35,313, Cl. 371-22.100.

Hitachi Micro Computer Engineering, Ltd.: *See*—
Hori, Ryoichi; Itoh, Kiyoo; and Tanaka, Hitoshi, Re. 35,313, Cl. 371-22.100.

Hori, Ryoichi; Itoh, Kiyoo; and Tanaka, Hitoshi, to Hitachi, Ltd.; and Hitachi Micro Computer Engineering, Ltd. Semiconductor integrated circuit with voltage limiter having different output ranges from normal operation and performing of aging tests. Re. 35,313, Cl. 371-22.100.

Itoh, Kiyoo: *See*—
Hori, Ryoichi; Itoh, Kiyoo; and Tanaka, Hitoshi, Re. 35,313, Cl. 371-22.100.

Tanaka, Hitoshi: *See*—
Hori, Ryoichi; Itoh, Kiyoo; and Tanaka, Hitoshi, Re. 35,313, Cl. 371-22.100.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

ADC Telecommunications, Inc.: *See*—
Anton, Mark A.; Steinman, Jory A.; Suek, Paul A.; and Johnson, Wayne A., B1 1,034,955, Cl. 385-53.000.

Anton, Mark A.; Steinman, Jory A.; Suek, Paul A.; and Johnson, Wayne A., to ADC Telecommunications, Inc. Optical fiber distribution frame. B1 1,034,955, Cl. 385-53.000.

Beakley, Bruce E.; and Flanders, Thomas E., to Trilogy Systems Corp. Linear motor. B1 1,034,674, Cl. 310-12.000.

Buchanan, Scott J., to Minnesota Mining and Manufacturing Company. Conductive coated abrasives. B1 5,108,463, Cl. 51-295.000.

Estes, Roy D., to Rock Bit International, Inc. Rock bit with reaming rows. B1 5,145,016, Cl. 175-331.000.

Flanders, Thomas E.: *See*—
Beakley, Bruce E.; and Flanders, Thomas E., B1 1,034,674, Cl. 310-12.000.

Gillette Company: *See*—
Hahn, Steve S.; Madeira, John; and Ruth, James A., Jr., B1 5,295,305, Cl. 30-50.000.

Hahn, Steve S.; Madeira, John; and Ruth, James A., Jr., to Gillette Company. Razor blade technology. B1 5,295,305, Cl. 30-50.000.

Johnson, Wayne A.: *See*—
Anton, Mark A.; Steinman, Jory A.; Suek, Paul A.; and Johnson, Wayne A., B1 1,034,955, Cl. 385-53.000.

Kabushiki Kaisha Suzuki Rashi Seisakusho: *See*—
Suzuki, Yasuo, B1 5,358,366, Cl. 411-311.000.

Killion, Mead C., to Knowles Electronics, Inc. Class D hearing aid amplifier. B1 4,592,087, Cl. 381-68.000.

Killion, Mead C., to Knowles Electronics, Inc. Class D hearing aid amplifier. B1 4,689,819, Cl. 381-68.000.

Knowles Electronics, Inc.: *See*—
Killion, Mead C., B1 4,592,087, Cl. 381-68.000.
Killion, Mead C., B1 4,689,819, Cl. 381-68.000.

Madeira, John: *See*—
Hahn, Steve S.; Madeira, John; and Ruth, James A., Jr., B1 5,295,305, Cl. 30-50.000.

Minnesota Mining and Manufacturing Company: *See*—
Buchanan, Scott J., B1 5,108,463, Cl. 51-295.000.
Yafuso, Masao; and Suzuki, John K., B1 4,824,789, Cl. 436-68.000.

OSG Corp.: *See*—
Suzuki, Yasuo, B1 5,358,366, Cl. 411-311.000.

Rock Bit International, Inc.: *See*—
Estes, Roy D., B1 5,145,016, Cl. 175-331.000.

Ruth, James A., Jr.: *See*—
Hahn, Steve S.; Madeira, John; and Ruth, James A., Jr., B1 5,295,305, Cl. 30-50.000.

Steinman, Jory A.: *See*—
Anton, Mark A.; Steinman, Jory A.; Suek, Paul A.; and Johnson, Wayne A., B1 1,034,955, Cl. 385-53.000.

Suek, Paul A.: *See*—
Anton, Mark A.; Steinman, Jory A.; Suek, Paul A.; and Johnson, Wayne A., B1 1,034,955, Cl. 385-53.000.

Suzuki, John K.: *See*—
Yafuso, Masao; and Suzuki, John K., B1 4,824,789, Cl. 436-68.000.

Suzuki, Yasuo, to Kabushiki Kaisha Suzuki Rashi Seisakusho; and OSG Corp. Screw and thread rolling die. B1 5,358,366, Cl. 411-311.000.

Trilogy Systems Corp.: *See*—
Beakley, Bruce E.; and Flanders, Thomas E., B1 1,034,674, Cl. 310-12.000.

Yafuso, Masao; and Suzuki, John K., to Minnesota Mining and Manufacturing Company. Gas sensor. B1 4,824,789, Cl. 436-68.000.

LIST OF DESIGN PATENTEES

Acushnet Company: *See*—
Chou, Arthur C. P., 372,751, Cl. D21-217.000.

Akerlind, Jan, to C-D Catering Development AB. Instant coffee capsule. 372,738, Cl. D1-199.000.

Akura Electronics Ltd.: *See*—
Palmer, Brian J., 372,605, Cl. D6-434.000.

Albinson, Eric. Desk clock. 372,677, Cl. D10-25.000.

Aldrich, Thomas B., III: *See*—
Miller, Christopher J.; McElfresh, Mark W.; Aldrich, Thomas B., III; Williams, Guy A.; and Park, Yeong C., 372,768, Cl. D23-366.000.

Alves, Roger J.; and Nimpoeno, Roy, to Scosche Industries, Inc. Compact disc organizer. 372,623, Cl. D6-630.000.

Alviar, Christopher: *See*—
Sanchez, Russell; and Alviar, Christopher, 372,709, Cl. D14-114.000.

AmAsia International, Ltd.: *See*—
Finn, Norman H., 372,575, Cl. D2-959.000.

American Standard Inc.: *See*—
Moon, In-Ho, 372,763, Cl. D23-238.000.

Amron Ltd.: *See*—
Ganor, Michael, 372,769, Cl. D23-366.000.

Aqua-Leisure Industries, Inc.: *See*—
Klundt, Kalvin K., 372,749, Cl. D21-203.000.

Arnone, Robert J.; McNulty, Tom; and Giesler, Ed, to Potlatch Corporation. Bathroom tissue with floral design. 372,587, Cl. D5-37.000.

AT&T Corp.: *See*—
Grewe, Anthony J.; Lewis, Charles R., Jr.; Nuttall, Michael J.; and Singer, Howard M., 372,707, Cl. D14-114.000.

AT&T IPM Corp.: *See*—
Biasotti, Mark; Nuttall, Michael J.; and Schaffeld, John H., 372,718, Cl. D14-240.000.

Athanasiadis, Elias. Upright electric chicken barbecuer. 372,631, Cl. D7-347.000.

Atkinson, William A., to Unidrive Pty. Ltd. Center bearing rubber insulator. 372,662, Cl. D8-354.000.

August Company: *See*—
Longstreet, Dean E., 372,666, Cl. D8-383.000.

Baillie, Bob L.: *See*—
Schultz, Craig H.; Baillie, Bob L.; and Wihlm, Chad E., 372,595, Cl. D6-366.000.

Baines, Tom R. Garlic press. 372,642, Cl. D7-665.000.

Ball, Allan: *See*—

Dubois, Craig A.; Matt, Brian J.; Ball, Allan; and Swyst, Thomas, 372,772, Cl. D23-382.000.
Baranowski, Frank, Jr., to General Regulator, Inc. Single-barrel propane torch. 372,653, Cl. D8-30.000.
Baranowski, Frank, Jr., to General Regulator, Inc. Double-barrel propane torch. 372,654, Cl. D8-30.000.
Bayerische Motoren Werke AG: *See*—
Nagashima, Joji, 372,695, Cl. D12-169.000.
Bayerische Motoren Werke Aktiengesellschaft: *See*—
Boyer, Boyke, 372,687, Cl. D12-92.000.
Beaty, Michael A.; and Page, Jon P., to Valley Inc. Handpiece assemblage container. 372,582, Cl. D3-313.000.
Benckiser Consumer Products, Inc.: *See*—
Pollard, Karen; Robbins, Carol; and Terwilleger, Karen, 372,675, Cl. D9-542.000.
Benefit International Products, Ltd.: *See*—
Quintanilla, Jorge, 372,586, Cl. D4-105.000.
Bernoni, Claudio: *See*—
Echazabal, Alberto; and Bernoni, Claudio, 372,697, Cl. D12-209.000.
Bernstein, Michael S.; Weiner, Bruce B.; Bernstein, Thomas E.; and Nicholson, David, to S J B Enterprises, Inc. Business case. 372,581, Cl. D3-279.000.
Bernstein, Thomas E.: *See*—
Bernstein, Michael S.; Weiner, Bruce B.; Bernstein, Thomas E.; and Nicholson, David, 372,581, Cl. D3-279.000.
Bertani, Alberto: *See*—
Decursu, Giorgio; and Bertani, Alberto, 372,658, Cl. D8-312.000.
Betend-Bon, Alain, to Tefal S.A. Food storage box. 372,641, Cl. D7-629.000.
Biasotti, Mark; Nuttall, Michael J.; and Schaffeld, John H., to AT&T IPM Corp. Telephone caller-ID module. 372,718, Cl. D14-240.000.
Black & Decker Inc.: *See*—
Dubois, Craig A.; Matt, Brian J.; Ball, Allan; and Swyst, Thomas, 372,772, Cl. D23-382.000.
Borges, Marcos, to Goodman Company, L.P. Air conditioner cabinet front. 372,767, Cl. D23-354.000.
Bosch-Siemens Hausgeraete GmbH: *See*—
Wilsdorf, Gerd, 372,629, Cl. D7-340.000.
Bossert, Marie C.; and Peters, Bernd, to Raycap B.V.; and Henkel KGaA. Correction fluid holder. 372,671, Cl. D9-347.000.
Boyer, Boyke, to Bayerische Motoren Werke Aktiengesellschaft. Automobile exterior body. 372,687, Cl. D12-92.000.
Brancazio, Diane M.; Gardner, Susannah E.; Hern, Matthew D.; Lubrano, Francis M.; Snow, David A.; and Sykes, David M., to Fountainhead Technologies. Water purifier. 372,760, Cl. D23-209.000.
Brant, Ron: *See*—
Tuggle, Lloyd H.; Brant, Ron; and Houge, Michael S., 372,649, Cl. D8-8.000.
Braswell, David. Toiletry dispenser for a shower head. 372,762, Cl. D23-228.000.
Brightbill, Keith, to Rubbermaid Incorporated. Storage basket. 372,583, Cl. D3-314.000.
Bromley, Robert L.: *See*—
Lang, Tamara; and Bromley, Robert L., 372,617, Cl. D6-552.000.
Brother Kogyo Kabushiki Kaisha: *See*—
Hattori, Mitsuharu; and Katayama, Shigeharu, 372,720, Cl. D15-69.000.
Brun, Serge, to Calor S.A. Massager. 372,788, Cl. D24-215.000.
Brunner, Merlin A.; and Draheim, Harvey J., to Simmons Juvenile Products Company, Inc. Mirror. 372,591, Cl. D6-300.000.
Brunson, Wayne A. Hydrofloss wand with removable head for oral cleansing. 372,778, Cl. D24-112.000.
Bundy, William C. Garbage disposer plunger. 372,650, Cl. D8-14.000.
Burgess, William H.; and Thelman, John P., to Kimberly-Clark Tissue Company. Embossed paper towel. 372,589, Cl. D5-53.000.
Bush, Joseph. Model building implement. 372,651, Cl. D8-14.000.
Bustos, Rafael T., to L&P Property Management Company. Refrigerated beverage merchandiser. 372,739, Cl. D20-5.000.
C-D Catering Development AB: *See*—
Akerlind, Jan, 372,738, Cl. D1-199.000.
Cacciola, Joseph C.; and Ford, William K., to Little Tikes Company, The. Bed frame. 372,599, Cl. D6-388.000.
Cal-Marble Furniture Mfg. Corp.: *See*—
Mann, Phylliss; and Platt, Lawrence, 372,590, Cl. D6-300.000.
Calor S.A.: *See*—
Brun, Serge, 372,788, Cl. D24-215.000.
Canon Kabushiki Kaisha: *See*—
Taneya, Yoichi; Ishinaga, Hiroyuki; Tokuda, Hiroyuki; and Sekine, Tetsuya, 372,732, Cl. D18-56.000.
Cateye Co., Ltd.: *See*—
Nagano, Toshiyuki, 372,656, Cl. D8-303.000.
Ceramaspeed Limited: *See*—
McWilliams, Kevin R., 372,638, Cl. D7-407.000.
Chapman, Daniel M. Glove. 372,578, Cl. D2-617.000.
Chein, Adam. Retractable straw. 372,624, Cl. D7-300.200.
Chih, I-Shun. Garden sprinkler. 372,761, Cl. D23-214.000.
Chipman, Raymond R., Sr. Storage case for gun powder and shot. 372,580, Cl. D3-262.000.
Chou, Arthur C. P., to Acushnet Company. Golf putter head. 372,751, Cl. D21-217.000.
Chrysler Corporation: *See*—
Mantua, James P., 372,698, Cl. D12-209.000.
Mantua, James P., 372,699, Cl. D12-209.000.
CJC Holdings, Inc.: *See*—
Davis, Parke; and Goodwin, Mike, 372,681, Cl. D11-26.000.
Clarke, Michael: *See*—
Lerch, Karl D.; and Clarke, Michael, 372,740, Cl. D21-10.000.
Cohen, Milton L.; and Siegel, Jeff, to Lifetime Hoan Corporation. Knife. 372,648, Cl. D7-693.000.
Cohen, Seymour, to Telco Cretions, Inc. Cowboy santa on a rocking horse. 372,683, Cl. D11-129.000.
Cole, Harold: *See*—
Lewis, Robert A.; Cole, Harold; Leukhardt, Alan; and Smith, Ray G., 372,630, Cl. D7-346.000.
Colitto, Domenic, to Royal Extrusions Limited. Window header. 372,790, Cl. D25-124.000.
Concord Manufacturing Systems: *See*—
Lin, Steven, 372,579, Cl. D3-249.000.
Lin, Steven, 372,655, Cl. D8-102.000.
Confidence Golf, Inc.: *See*—
Williams, Robert J., 372,753, Cl. D21-220.000.
Conran, Eileen. Headgear. 372,572, Cl. D2-876.000.
Coolman, David W.; and Sawyer, Eugene, to Plyco Corporation. Crimping tool. 372,652, Cl. D8-14.000.
Cosmétique Sans Soucis GmbH: *See*—
Desgrippes, Joël, 372,676, Cl. D9-550.000.
Credle, Michael T., Sr. Fish-shaped table top. 372,612, Cl. D6-511.000.
Crouch, Kathy: *See*—
Stone, Philip; and Crouch, Kathy, 372,606, Cl. D6-445.000.
Cute, M. Thomas. Handgun rest. 372,616, Cl. D6-552.000.
Cyr, Stephane. Computer mouse holder. 372,706, Cl. D14-114.000.
Dacor: *See*—
Lewis, Robert A.; Cole, Harold; Leukhardt, Alan; and Smith, Ray G., 372,630, Cl. D7-346.000.
Daiwa Seiko, Inc.: *See*—
Kaneko, Kyoichi; and Shinohara, Eiji, 372,758, Cl. D22-137.000.
Davis, Parke; and Goodwin, Mike, to CJC Holdings, Inc. Finger ring. 372,681, Cl. D11-26.000.
Day, Marilyn A. Bookmark. 372,734, Cl. D19-34.000.
De'Armond, Robert, to Newell Operating Company. Knob. 372,657, Cl. D8-307.000.
De'Armond, Robert, to Newell Operating Company. Pull. 372,659, Cl. D8-317.000.
Decursu, Giorgio; and Bertani, Alberto, to Elesa S.P.A. Knob. 372,658, Cl. D8-312.000.
Deimen, Michael L.: *See*—
Hodge, David N.; Deimen, Michael L.; Jenkins, David C.; Mercier, Michael L.; Sandberg, Donald K.; and Teppo, David S., 372,611, Cl. D6-500.000.
Delgado, Frederick N.: *See*—
Krug, John A.; and Delgado, Frederick N., 372,780, Cl. D24-128.000.
DelMonte, Ernest J. Dual doorway modular housing unit. 372,789, Cl. D25-35.000.
Delta Somoza, Inc.: *See*—
Lucas, Robert V., 372,661, Cl. D8-352.000.
Desgrippes, Joël, to Cosmétique Sans Soucis GmbH. Combined bottle and cap. 372,676, Cl. D9-550.000.
Design, Development & Marketing, Inc.: *See*—
Sinner, George A., 372,640, Cl. D7-551.000.
Dial Corp, The: *See*—
Miller, Christopher J.; McElfresh, Mark W.; Aldrich, Thomas B., III; Williams, Guy A.; and Park, Yeong C., 372,768, Cl. D23-366.000.
Dozier, Glenda S.; and Dozier, Terrance D. Bandage. 372,787, Cl. D24-189.000.
Dozier, Terrance D.: *See*—
Dozier, Glenda S.; and Dozier, Terrance D., 372,787, Cl. D24-189.000.
Draheim, Harvey J.: *See*—
Brunner, Merlin A.; and Draheim, Harvey J., 372,591, Cl. D6-300.000.
Dreger, Kurt W.; and Dreger, Leah N. Knot tying cleat. 372,663, Cl. D8-356.000.
Dreger, Leah N.: *See*—
Dreger, Kurt W.; and Dreger, Leah N., 372,663, Cl. D8-356.000.
Dubin, Alfred R., to Phylrich International. Escutcheon. 372,764, Cl. D23-254.000.
Dubois, Craig A.; Matt, Brian J.; Ball, Allan; and Swyst, Thomas, to Black & Decker Inc. Portable fan. 372,772, Cl. D23-382.000.
Dudley Kebow, Inc.: *See*—
Tang, Yu-Wing, 372,643, Cl. D7-679.000.
Duncan, Patrick. String tie. 372,684, Cl. D11-204.000.
Dupzyk, Joel A. Skate odometer. 372,678, Cl. D10-98.000.
Duracraft Corporation: *See*—
Wang, Jui-Shang; Jané, Rodney; and Longan, John, 372,771, Cl. D23-380.000.
Eason, Donald H., to Ultimate Support Systems, Inc. Bicycle stand. 372,691, Cl. D12-115.000.
Echazabal, Alberto; and Bernoni, Claudio, to Motoring Accessories, Inc. Front face of a vehicle wheel. 372,697, Cl. D12-209.000.
Edmark, Tomima L. Hat. 372,573, Cl. D2-880.000.
Elesa S.P.A.: *See*—
Decursu, Giorgio; and Bertani, Alberto, 372,658, Cl. D8-312.000.
Enman, Bruce F. Coat hanger organizer. 372,608, Cl. D6-475.000.
Ethan Allen Inc.: *See*—
Stone, Philip; and Crouch, Kathy, 372,606, Cl. D6-445.000.

Falke, James; and Falke, Shirley. Kitchen organizer. 372,614, Cl. D6-520.000.
Falke, Shirley: *See*—
Falke, James; and Falke, Shirley, 372,614, Cl. D6-520.000.
Finn, Norman H., to AmAsia International, Ltd. Front portion of a shoe sole. 372,575, Cl. D2-959.000.
Fisher-Price, Inc.: *See*—
Lerch, Karl D.; and Clarke, Michael, 372,740, Cl. D21-10.000.
Ford, William K.: *See*—
Cacciola, Joseph C.; and Ford, William K., 372,599, Cl. D6-388.000.
Foreman, Scott H., to Woodland Sales Inc. Refrigerator air deodorizer. 372,770, Cl. D23-368.000.
Forsén, Kent, to Primulator AB. Drink dispenser. 372,625, Cl. D7-308.000.
Fountainhead Technologies: *See*—
Brancazio, Diane M.; Gardner, Susannah E.; Hern, Matthew D.; Lubrano, Francis M.; Snow, David A.; and Sykes, David M., 372,760, Cl. D23-209.000.
Francke, Kurt, to RFSU Rehab AG. Raised toilet seat. 372,766, Cl. D23-311.000.
Frederiks, Hank, to Superior Propane Inc. Propane cylinder storage cabinet. 372,604, Cl. D6-432.000.
Fuji Photo Film Co., Ltd.: *See*—
Funato, Kenichi; and Isozaki, Makoto, 372,724, Cl. D16-217.000.
Isozaki, Makoto, 372,722, Cl. D16-208.000.
Tanaka, Kunihiko, 372,721, Cl. D16-202.000.
Yoshida, Koji, 372,733, Cl. D18-55.000.
Funato, Kenichi; and Isozaki, Makoto, to Fuji Photo Film Co., Ltd. Camera. 372,724, Cl. D16-217.000.
Gallitzendoerfer, Josef: *See*—
Sacco, Bruno; Gallitzendoerfer, Josef; Pfeiffer, Peter; and Guenak, Murat, 372,689, Cl. D12-92.000.
Ganor, Michael, to Amron Ltd. Electric light aroma unit. 372,769, Cl. D23-366.000.
Gardner, Susannah E.: *See*—
Brancazio, Diane M.; Gardner, Susannah E.; Hern, Matthew D.; Lubrano, Francis M.; Snow, David A.; and Sykes, David M., 372,760, Cl. D23-209.000.
Gebhardt, Paul E., to Oneida Ltd. Large knife handle. 372,635, Cl. D7-401.200.
General Binding Corporation: *See*—
Herbst, Walter B.; and Lazar, Ralph, 372,737, Cl. D19-72.000.
General Regulator, Inc.: *See*—
Baranowski, Frank, Jr., 372,653, Cl. D8-30.000.
Baranowski, Frank, Jr., 372,654, Cl. D8-30.000.
Giannini, Judy A. Signal generating remote device locator and activator. 372,679, Cl. D10-106.000.
Giesler, Ed: *See*—
Arnone, Robert J.; McNulty, Tom; and Giesler, Ed, 372,587, Cl. D5-37.000.
Globus, Karin R. Physical exercise implement. 372,748, Cl. D21-191.000.
Goodman Company, L.P.: *See*—
Borges, Marcos, 372,767, Cl. D23-354.000.
Goodwin, Mike: *See*—
Davis, Parke; and Goodwin, Mike, 372,681, Cl. D11-26.000.
Greene, Nathaniel. Combined stomach distress bags and dispenser. 372,668, Cl. D9-305.000.
Grewe, Anthony J.; Lewis, Charles R., Jr.; Nuttall, Michael J.; and Singer, Howard M., to AT&T Corp. Packaging for memory device. 372,707, Cl. D14-114.000.
Grundfos A/S: *See*—
Jensen, Niels D., 372,719, Cl. D15-7.000.
Guenak, Murat: *See*—
Sacco, Bruno; Gallitzendoerfer, Josef; Pfeiffer, Peter; and Guenak, Murat, 372,689, Cl. D12-92.000.
Hannon, John F.; Stinauer, Robert J., II; and Kallis, David E., to Motorola, Inc. Junction box. 372,703, Cl. D13-152.000.
Hannum, Richard C., to McGuire Furniture Company, The. Support for furniture. 372,610. Cl. D6-495.000.
Hattori, Mitsuharu; and Katayama, Shigeharu, to Brother Kogyo Kabushiki Kaisha. Sewing machine. 372,720, Cl. D15-69.000.
Hattori, Moriyoshi; and Yamamoto, Yutaka, to Suzuki Motor Corporation. Passenger car. 372,685, Cl. D12-91.000.
Hattori, Moriyoshi; and Yamamoto, Yutaka, to Suzuki Motor Corporation. Passenger car. 372,686, Cl. D12-91.000.
Healey, Frederick A. Package. 372,670, Cl. D9-346.000.
Henkel KGaA: *See*—
Bossert, Marie C.; and Peters, Bernd, 372,671, Cl. D9-347.000.
Herbst, Walter B.; and Lazar, Ralph, to General Binding Corporation. Combined electric paper punch and stapler. 372,737, Cl. D19-72.000.
Hern, Matthew D.: *See*—
Brancazio, Diane M.; Gardner, Susannah E.; Hern, Matthew D.; Lubrano, Francis M.; Snow, David A.; and Sykes, David M., 372,760, Cl. D23-209.000.
Hetherington, Michael H. Computer adaptor housing. 372,708, Cl. D14-114.000.
Hewitt, Stephen K., to Topstamp, Inc. Stamp mount. 372,729, Cl. D18-18.000.
Hodge, David N.; Deimen, Michael L.; Jenkins, David C.; Mercier, Michael L.; Sandberg, Donald K.; and Teppo, David S., to Steelcase, Inc. Chair seat. 372,611, Cl. D6-500.000.
Holbrook, Richard M., to Hunter Fan Company. Combined housing and light fixture for an electric ceiling fan. 372,774, Cl. D23-411.000.
Hon Industries Inc.: *See*—
Reinhard, Kenneth E., 372,596, Cl. D6-379.000.
Schultz, Craig H.; Baillie, Bob L.; and Wihlm, Chad E., 372,595, Cl. D6-366.000.
Houge, Michael S.: *See*—
Tuggle, Lloyd H.; Brant, Ron; and Houge, Michael S., 372,649, Cl. D8-8.000.
Household Articles Limited: *See*—
Ireland, Keith N., 372,627, Cl. D7-319.000.
Hunter Fan Company: *See*—
Holbrook, Richard M., 372,774, Cl. D23-411.000.
Husted, Wayne. Peppermill. 372,644, Cl. D7-679.000.
Husted, Wayne. Peppermill. 372,645, Cl. D7-679.000.
Hyougo, Kuninori, to Sony Corporation. Video cassette recorder. 372,711, Cl. D14-135.000.
Instromedix, Inc.: *See*—
Sabri, Mohamed; and Portnuff, Colin M., 372,785, Cl. D24-167.000.
International Business Machines Corporation: *See*—
Lynch, Robert C.; Myers, Kevin H.; Smith, Ronald A.; Talley, William L.; and Veals, Edward R., 372,705, Cl. D14-113.000.
Ireland, Keith N., to Household Articles Limited. Coffee pot. 372,627, Cl. D7-319.000.
Ishimoto, Mikio, to Shikoku Kakoi Co., Ltd. Beverage package. 372,672, Cl. D9-431.000.
Ishinaga, Hiroyuki: *See*—
Taneya, Yoichi; Ishinaga, Hiroyuki; Tokuda, Hiroyuki; and Sekine, Tetsuya, 372,732, Cl. D18-56.000.
Isozaki, Makoto, to Fuji Photo Film Co., Ltd. Camera. 372,722, Cl. D16-208.000.
Isozaki, Makoto: *See*—
Funato, Kenichi; and Isozaki, Makoto, 372,724, Cl. D16-217.000.
Jané, Rodney: *See*—
Wang, Jui-Shang; Jané, Rodney; and Longan, John, 372,771, Cl. D23-380.000.
Jarrett, Alastair W.; Oblak, James W.; Sharbaugh, David A.; and Ueki, Michinari, to PhoneMate, Inc. Telephone answering device base unit. 372,717, Cl. D14-240.000.
Jenkins, David C.: *See*—
Hodge, David N.; Deimen, Michael L.; Jenkins, David C.; Mercier, Michael L.; Sandberg, Donald K.; and Teppo, David S., 372,611, Cl. D6-500.000.
Jensen, Niels D., to Grundfos A/S. Water pump. 372,719, Cl. D15-7.000.
Joergensen, Carsten, to PI-Design AG. Thermos pot. 372,626, Cl. D7-319.000.
Joihon & Johnson Consumer Products, Inc.: *See*—
Yost, Kevin G.; and Trojanowski, Alan G., 372,584, Cl. D4-104.000.
Kakudo, Shigekazu S. Playing card holder. 372,742, Cl. D21-54.000.
Kallis, David E.: *See*—
Hannon, John F.; Stinauer, Robert J., II; and Kallis, David E., 372,703, Cl. D13-152.000.
Kan, Chi C., to Wealthy Way International Limited. Breast pump. 372,777, Cl. D24-109.000.
Kaneko, Kyoichi; and Shinohara, Eiji, to Daiwa Seiko, Inc. Line roller for a spinning fishing reel. 372,758, Cl. D22-137.000.
Katayama, Shigeharu: *See*—
Hattori, Mitsuharu; and Katayama, Shigeharu, 372,720, Cl. D15-69.000.
Killer Loop S.p.A.: *See*—
Simioni, Luciano, 372,726, Cl. D16-326.000.
Simioni, Luciano; and Menegon, Sergio, 372,727, Cl. D16-327.000.
Kim, Sooki. Cable tie. 372,665, Cl. D8-396.000.
Kimberly-Clark Tissue Company: *See*—
Burgess, William H.; and Thelman, John P., 372,589, Cl. D5-53.000.
Klundt, Kalvin K., to Aqua-Leisure Industries, Inc. Amusement ball. 372,749, Cl. D21-203.000.
Kristinik, Elgin R. Sports/squeeze bottle. 372,639, Cl. D7-511.000.
Krug, John A.; and Delgado, Frederick N. Solution bottle positioner. 372,780, Cl. D24-128.000.
Kumho & Co., Inc.: *See*—
Lim, Nack-Hyun, 372,693, Cl. D12-147.000.
L&P Property Management Company: *See*—
Bustos, Rafael T., 372,739, Cl. D20-5.000.
Sulzer, James H., 372,618, Cl. D6-500.000.
LADD Furniture, Inc.: *See*—
Ungaro, Nicholas A., 372,598, Cl. D6-380.000.
Lang, Tamara; and Bromley, Robert L., to Laug, Tamara; and Thamm, Jake. Sporting goods storage rack. 372,617. Cl. D6-552.000.
Laug, Tamara: *See*—
Lang, Tamara; and Bromley, Robert L., 372,617, Cl. D6-552.000.
Lazar, Ralph: *See*—
Herbst, Walter B.; and Lazar, Ralph, 372,737, Cl. D19-72.000.
Leica Camera GmbH: *See*—
Schaefer, Klaus-Dieter; and Meinzer, Manfred, 372,723, Cl. D16-209.000.
Leight, Howard S. Multi-cone earplug. 372,776, Cl. D24-106.000.
Lerch, Karl D.; and Clarke, Michael, to Fisher-Price, Inc. Arcade game. 372,740, Cl. D21-10.000.
Leukhardt, Alan: *See*—
Lewis, Robert A.; Cole, Harold; Leukhardt, Alan; and Smith, Ray G., 372,630, Cl. D7-346.000.
Lewis, Charles R., Jr.: *See*—

VOL 1189 ISS 2 AG 13 1996 UMI

Grewe, Anthony J.; Lewis, Charles R., Jr.; Nuttall, Michael J.; and Singer, Howard M., 372,707, Cl. D14-114.000.
Lewis, Robert A.; Cole, Harold; Leukhardt, Alan; and Smith, Ray G., to Dacor. Cooktop. 372,630, Cl. D7-346.000.
Lewis, Sally S. Table. 372,609, Cl. D6-480.000.
Lifetime Hoan Corporation: *See*—
Cohen, Milton L.; and Siegel, Jeff, 372,648, Cl. D7-693.000.
Lim, Nack-Hyun, to Kumbo & Co., Inc. Pneumatic tire for vehicle. 372,693, Cl. D12-147.000.
Lin, Hong-Kung. Rewinder. 372,715, Cl. D14-217.000.
Lin, Steven, to Concord Manufacturing Systems. Combination card dispenser and calculator. 372,579, Cl. D3-249.000.
Lin, Steven, to Concord Manufacturing Systems. Letter opener. 372,655, Cl. D8-102.000.
Little Tikes Company, The: *See*—
Cacciola, Joseph C.; and Ford, William K., 372,599, Cl. D6-388.000.
Martin, Jeffery G.; and Pipik, Nancy M., 372,757, Cl. D21-244.000.
Longan, John: *See*—
Wang, Jui-Shang; Jané, Rodney; and Longan, John, 372,771, Cl. D23-380.000.
Longstreet, Dean E., to August Company. Rope lock. 372,666, Cl. D8-383.000.
Loubser, Nicolaas D. R. Motor vehicle. 372,688, Cl. D12-92.000.
Lozano, Sergio G., to Nike, Inc. Shoe upper. 372,577, Cl. D2-969.000.
Lubrano, Francis M.: *See*—
Brancazio, Diane M.; Gardner, Susannah E.; Hern, Matthew D.; Lubrano, Francis M.; Snow, David A.; and Sykes, David M., 372,760, Cl. D23-209.000.
Lucas, Robert V., to Delta Somoza, Inc. Escutcheon for a key operated gas valve. 372,661, Cl. D8-352.000.
Luther Medical Products, Inc.: *See*—
Spehalski, Stephen R., 372,782, Cl. D24-133.000.
Lynch, Robert C.; Myers, Kevin H.; Smith, Ronald A.; Talley, William L.; and Veals, Edward R., to International Business Machines Corporation. Combined computer monitor and support arm. 372,705, Cl. D14-113.000.
Mann, Phylliss; and Platt, Lawrence, to Cal-Marble Furniture Mfg. Corp. Frame. 372,590, Cl. D6-300.000.
Mantua, James P., to Chrysler Corporation. Vehicle wheel front face segment. 372,698, Cl. D12-209.000.
Mantua, James P., to Chrysler Corporation. Vehicle front face segment. 372,699, Cl. D12-209.000.
Maple, Drew, to Resin Partners, Inc. Chair with ornamental back. 372,593, Cl. D6-358.000.
Maple, Drew, to Resin Partners, Inc. Seat with ornamental back. 372,597, Cl. D6-379.000.
Martin, Jeffery G.; and Pipik, Nancy M., to Little Tikes Company, The. Activity gym. 372,757, Cl. D21-244.000.
Mathews, John G., to SRL, Inc. Combined toy mirror and magnifier. 372,746, Cl. D21-109.000.
Mathews, John G., to SRL, Inc. Combined toy light and sound flasher. 372,747, Cl. D21-109.000.
Matt, Brian J.: *See*—
Dubois, Craig A.; Matt, Brian J.; Ball, Allan; and Swyst, Thomas, 372,772, Cl. D23-382.000.
May, David G. Floating tether cord. 372,756, Cl. D21-237.000.
Mazda, Masayosi. Bellows container. 372,667, Cl. D9-301.000.
Mazda, Masayosi. Bellows container. 372,669, Cl. D9-301.000.
McElfresh, Mark W.: *See*—
Miller, Christopher J.; McElfresh, Mark W.; Aldrich, Thomas B., III; Williams, Guy A.; and Park, Yeong C., 372,768, Cl. D23-366.000.
McGuire Furniture Company, The: *See*—
Hannum, Richard C., 372,610, Cl. D6-495.000.
McNulty, Tom: *See*—
Arnone, Robert J.; McNulty, Tom; and Giesler, Ed, 372,587, Cl. D5-37.000.
McWilliams, Kevin R., to Ceramaspeed Limited. Radiant stove heater. 372,638, Cl. D7-407.000.
Meinzer, Manfred: *See*—
Schaefer, Klaus-Dieter; and Meinzer, Manfred, 372,723, Cl. D16-209.000.
Menegon, Sergio: *See*—
Simioni, Luciano; and Menegon, Sergio, 372,727, Cl. D16-327.000.
Mercedes-Benz AG: *See*—
Sacco, Bruno; Gallitzendoerfer, Josef; Pfeiffer, Peter; and Guenak, Murat, 372,689, Cl. D12-92.000.
Mercier, Michael L.: *See*—
Hodge, David N.; Deimen, Michael L.; Jenkins, David C.; Mercier, Michael L.; Sandberg, Donald K.; and Teppo, David S., 372,611, Cl. D6-500.000.
Microsoft Corporation: *See*—
Sanchez, Russell; and Alviar, Christopher, 372,709, Cl. D14-114.000.
Thorne, Edwin, III, 372,716, Cl. D14-218.000.
Miller, Christopher J.; McElfresh, Mark W.; Aldrich, Thomas B., III; Williams, Guy A.; and Park, Yeong C., to Dial Corp, The. Air treatment device. 372,768, Cl. D23-366.000.
Mills, John; and Palmer, Stephen M., to Wolverine World Wide, Inc. Sole for a boot or shoe. 372,576, Cl. D2-960.000.
Minnesota Mining and Manufacturing Company: *See*—
Nelson, Bruce E., 372,704, Cl. D14-113.000.
Nelson, Bruce E., 372,710, Cl. D14-115.000.
Mizushima, Kazuyuki, to Yamaha Corporation. Electronic piano. 372,728, Cl. D17-7.000.
Modcom, Inc.: *See*—
Palmer, Robert H., 372,786, Cl. D24-176.000.
Mongeon, Douglas R. Gastric suction system. 372,779, Cl. D24-112.000.
Moon, In-Ho, to American Standard Inc. Faucet body. 372,763, Cl. D23-238.000.
Moore, Devin, to W. C. Bradley Company. Grill cart. 372,637, Cl. D7-403.000.
Motley, Marvin D. Gripping, wire fence stretcher connector. 372,664, Cl. D8-382.000.
Motoring Accessories, Inc.: *See*—
Echazabal, Alberto; and Bernoni, Claudio, 372,697, Cl. D12-209.000.
Motorola, Inc.: *See*—
Hannon, John F.; Stinauer, Robert J., II; and Kallis, David E., 372,703, Cl. D13-152.000.
Murphey, William W. Block sliding game. 372,745, Cl. D21-104.000.
Myers, Kevin H.: *See*—
Lynch, Robert C.; Myers, Kevin H.; Smith, Ronald A.; Talley, William L.; and Veals, Edward R., 372,705, Cl. D14-113.000.
Nagano, Toshiyuki, to Cateye Co., Ltd. Handlebar grip for a bicycle. 372,656, Cl. D8-303.000.
Nagashima, Joji, to Bayerische Motoren Werke AG. Exterior surface of a front bumper for an automobile. 372,695, Cl. D12-169.000.
Nakai, Keiichi, to Plus One Co., Ltd. Tri-cycle for child. 372,690, Cl. D12-113.000.
Nardi, Sam R. Golf ball and golf club head washer. 372,755, Cl. D21-234.000.
Neff Kitchen Manufacturers Limited: *See*—
Neff, Paul J., 372,636, Cl. D7-402.000.
Neff, Paul J., to Neff Kitchen Manufacturers Limited. Cooktop. 372,636, Cl. D7-402.000.
Nelson, Bruce E., to Minnesota Mining and Manufacturing Company. Display panel for a compact photothermographic imager. 372,704, Cl. D14-113.000.
Nelson, Bruce E., to Minnesota Mining and Manufacturing Company. Key pad panel for a compact photothermographic imager. 372,710, Cl. D14-115.000.
Newell Operating Company: *See*—
De'Armond, Robert, 372,657, Cl. D8-307.000.
De'Armond, Robert, 372,659, Cl. D8-317.000.
Nicholson, David: *See*—
Bernstein, Michael S.; Weiner, Bruce B.; Bernstein, Thomas E.; and Nicholson, David, 372,581, Cl. D3-279.000.
Nickerson, Elwood H. Combined top and bottom bedsheet set. 372,622, Cl. D6-602.000.
Niessner, Odo O. Automobile bullet door-knob lock accessory. 372,660, Cl. D8-343.000.
Nike, Inc.: *See*—
Lozano, Sergio G., 372,577, Cl. D2-969.000.
Nilsson, Lennart. Water distribution box for snow making machine. 372,759, Cl. D23-200.000.
Nimpoeno, Roy: *See*—
Alves, Roger J.; and Nimpoeno, Roy, 372,623, Cl. D6-630.000.
Nixon, William J., II. Soap dispenser. 372,613, Cl. D6-545.000.
Nobelpharma AB: *See*—
Sandberg, Ronny; and Vasilic, Momo, 372,784, Cl. D24-155.000.
NuTone Inc.: *See*—
Schuler, Norman F., 372,775, Cl. D23-412.000.
Nuttall, Michael J.: *See*—
Biasotti, Mark; Nuttall, Michael J.; and Schaffeld, John H., 372,718, Cl. D14-240.000.
Grewe, Anthony J.; Lewis, Charles R., Jr.; Nuttall, Michael J.; and Singer, Howard M., 372,707, Cl. D14-114.000.
Oates, Thomas B.: *See*—
Weber, Desna V.; and Oates, Thomas B., 372,674, Cl. D9-443.000.
Oblak, James W.: *See*—
Jarrett, Alastair W.; Oblak, James W.; Sharbaugh, David A.; and Ueki, Michinari, 372,717, Cl. D14-240.000.
Oneida Ltd.: *See*—
Gebhardt, Paul E., 372,635, Cl. D7-401.200.
Owens, R. Larry. Towel dispenser with built-in wall holder. 372,615, Cl. D6-522.000.
Page, Jon P.: *See*—
Beaty, Michael A.; and Page, Jon P., 372,582, Cl. D3-313.000.
Palka, James J. Wall linen cabinet. 372,619, Cl. D6-561.000.
Pallas, Luis A. Tool cabinet. 372,607, Cl. D6-445.000.
Palmer, Brian J., to Akura Electronics Ltd. Entertainment cabinet. 372,605, Cl. D6-434.000.
Palmer, Robert H., to Modcom, Inc. Plural bobbin dispenser. 372,786, Cl. D24-176.000.
Palmer, Stephen M.: *See*—
Mills, John; and Palmer, Stephen M., 372,576, Cl. D2-960.000.
Park, Yeong C.: *See*—
Miller, Christopher J.; McElfresh, Mark W.; Aldrich, Thomas B., III; Williams, Guy A.; and Park, Yeong C., 372,768, Cl. D23-366.000.
Paus, Michael J., to Universal Furniture Industries, Inc. Post bed. 372,600, Cl. D6-393.000.
Peters, Bernd: *See*—
Bossert, Marie C.; and Peters, Bernd, 372,671, Cl. D9-347.000.
Pfeiffer, Peter: *See*—

Sacco, Bruno; Gallitzendoerfer, Josef; Pfeiffer, Peter; and Guenak, Murat, 372,689, Cl. D12-92.000.
PhoneMate, Inc.: *See*—
Jarrett, Alastair W.; Oblak, James W.; Sharbaugh, David A.; and Ueki, Michinari, 372,717, Cl. D14-240.000.
Phylrich International: *See*—
Dubin, Alfred R., 372,764, Cl. D23-254.000.
PI-Design AG: *See*—
Joergensen, Carsten, 372,626, Cl. D7-319.000.
Pinchuk, Rene C., to Sharper Image Corporation. Hand held recorder with graphical display representation. 372,714, Cl. D14-168.000.
Pipik, Nancy M.: *See*—
Martin, Jeffery G.; and Pipik, Nancy M., 372,757, Cl. D21-244.000.
Platt, Lawrence: *See*—
Mann, Phylliss; and Platt, Lawrence, 372,590, Cl. D6-300.000.
Plus One Co., Ltd.: *See*—
Nakai, Keiichi, 372,690, Cl. D12-113.000.
Plyco Corporation: *See*—
Coolman, David W.; and Sawyer, Eugene, 372,652, Cl. D8-14.000.
Pollard, Karen; Robbins, Carol; and Terwilleger, Karen, to Benckiser Consumer Products, Inc. Bottle. 372,675, Cl. D9-542.000.
Portnuff, Colin M.: *See*—
Sabri, Mohamed; and Portnuff, Colin M., 372,785, Cl. D24-167.000.
Potlatch Corporation: *See*—
Arnone, Robert J.; McNulty, Tom; and Giesler, Ed, 372,587, Cl. D5-37.000.
Welch, Rosie, 372,588, Cl. D5-37.000.
Potrzuski, Stanley G. Clapping novelty. 372,744, Cl. D21-64.000.
Prime Wheel: *See*—
Tung, Mitchell M., 372,696, Cl. D12-209.000.
Primulator AB: *See*—
Forsén, Kent, 372,625, Cl. D7-308.000.
Quintanilla, Jorge, to Benefit International Products, Ltd. Toothbrush. 372,586, Cl. D4-105.000.
R.R. Foreman & Company: *See*—
Turner, William E., 372,673, Cl. D9-432.000.
Rapoza, David. Golf club cover. 372,754, Cl. D21-221.000.
Raudman, Charles J. Golf putter head. 372,752, Cl. D21-219.000.
Raycap B.V.: *See*—
Bossert, Marie C.; and Peters, Bernd, 372,671, Cl. D9-347.000.
Redl, Arnost, Jr. Slicing and weighing machine. 372,633, Cl. D7-383.000.
Reese, Michael S. Dining room chair. 372,594, Cl. D6-363.000.
Regal Ware, Inc.: *See*—
Rohrer, Jeffrey, 372,634, Cl. D7-391.000.
Reif, Thomas H., to TRI Technologies Inc. Heart valve rotator. 372,781, Cl. D24-133.000.
Reinhard, Kenneth E., to Hon Industries Inc. Chair. 372,596, Cl. D6-379.000.
Resin Partners, Inc.: *See*—
Maple, Drew, 372,593, Cl. D6-358.000.
Maple, Drew, 372,597, Cl. D6-379.000.
RFSU Rehab AG: *See*—
Francke, Kurt, 372,766, Cl. D23-311.000.
Richardson, Willie F. Bed desk. 372,602, Cl. D6-429.000.
Ringo, Ralph A. Foam brick mounted on flexible handle. 372,743, Cl. D21-59.000.
Riskin, Matthew. Automatic stirrer. 372,632, Cl. D7-379.000.
Rittal-Werk Rudolf Loh GmbH & Co. KG: *See*—
Schauwecker, Uwe; and Wirbelauer, Jörg, 372,700, Cl. D14-102.000.
Robbins, Carol: *See*—
Pollard, Karen; Robbins, Carol; and Terwilleger, Karen, 372,675, Cl. D9-542.000.
Roberts, Fay D.; and Williamson, Debra D. Computer desk module. 372,601, Cl. D6-422.000.
Roemer, Thomas B. Finger ring. 372,682, Cl. D11-34.000.
Rohrer, Jeffrey, to Regal Ware, Inc. Cooking vessel lid. 372,634, Cl. D7-391.000.
Rollert, Steve. Scissors with hanger clip. 372,783, Cl. D24-149.000.
Royal Extrusions Limited: *See*—
Colitto, Domenic, 372,790, Cl. D25-124.000.
Rubbermaid Incorporated: *See*—
Brightbill, Keith, 372,583, Cl. D3-314.000.
S J B Enterprises, Inc.: *See*—
Bernstein, Michael S.; Weiner, Bruce B.; Bernstein, Thomas E.; and Nicholson, David, 372,581, Cl. D3-279.000.
Sabri, Mohamed; and Portnuff, Colin M., to Instromedix, Inc. External lead adaptor for wrist-worn cardiac monitor. 372,785, Cl. D24-167.000.
Sacchio Lodispoto, Amelia. Modular cabinet. 372,603, Cl. D6-432.000.
Sacco, Bruno; Gallitzendoerfer, Josef; Pfeiffer, Peter; and Guenak, Murat, to Mercedes-Benz AG. Motor vehicle exterior body. 372,689, Cl. D12-92.000.
Salva, Joseph A.; and Turdo, Louis E., Jr. Bracelet with U-shaped locking clasp. 372,680, Cl. D11-4.000.
Sanchez, Russell; and Alviar, Christopher, to Microsoft Corporation. Base for a computer input device. 372,709, Cl. D14-114.000.
Sandberg, Donald K.: *See*—
Hodge, David N.; Deimen, Michael L.; Jenkins, David C.; Mercier, Michael L.; Sandberg, Donald K.; and Teppo, David S., 372,611, Cl. D6-500.000.
Sandberg, Ronny; and Vasilic, Momo, to Nobelpharma AB. Prosthetic bridge part. 372,784, Cl. D24-155.000.
Sanner, Dennis, to Woods Industries, Inc. Electrical cord set with continuity polarity safety switch. 372,702, Cl. D13-142.000.
Sasaki, Jeffrey K., to Verifone, Inc. Transaction terminal console. 372,730, Cl. D18-4.000.
Sawyer, Eugene: *See*—
Coolman, David W.; and Sawyer, Eugene, 372,652, Cl. D8-14.000.
Schaefer, Klaus-Dieter; and Meinzer, Manfred, to Leica Camera GmbH. Compact camera. 372,723, Cl. D16-209.000.
Schaffeld, John H.: *See*—
Biasotti, Mark; Nuttall, Michael J.; and Schaffeld, John H., 372,718, Cl. D14-240.000.
Schauwecker, Uwe; and Wirbelauer, Jörg, to Rittal-Werk Rudolf Loh GmbH & Co. KG. Computer housing. 372,700, Cl. D14-102.000.
Schloss, Andrew. Ball. 372,750, Cl. D21-204.000.
Schuler, Norman F., to NuTone Inc. Combined lens and grill cover for a bathroom exhaust fan with integral light fixture. 372,775, Cl. D23-412.000.
Schultz, Craig H.; Baillie, Bob L.; and Wihlm, Chad E., to Hon Industries Inc. Chair. 372,595, Cl. D6-366.000.
Scosche Industries, Inc.: *See*—
Alves, Roger J.; and Nimpoeno, Roy, 372,623, Cl. D6-630.000.
Sekine, Tetsuya: *See*—
Taneya, Yoichi; Ishinaga, Hiroyuki; Tokuda, Hiroyuki; and Sekine, Tetsuya, 372,732, Cl. D18-56.000.
Sharbaugh, David A.: *See*—
Jarrett, Alastair W.; Oblak, James W.; Sharbaugh, David A.; and Ueki, Michinari, 372,717, Cl. D14-240.000.
Sharper Image Corporation: *See*—
Pinchuk, Rene C., 372,714, Cl. D14-168.000.
Shea, Joseph, to SRL, Inc. Shoe sole. 372,574, Cl. D2-953.000.
Shikoku Kakoi Co., Ltd.: *See*—
Ishimoto, Mikio, 372,672, Cl. D9-431.000.
Shinohara, Eiji: *See*—
Kaneko, Kyoichi; and Shinohara, Eiji, 372,758, Cl. D22-137.000.
Siegel, Jeff: *See*—
Cohen, Milton L.; and Siegel, Jeff, 372,648, Cl. D7-693.000.
Sierra Wireless, Inc.: *See*—
Tahmassebpur, Mohammed, 372,701, Cl. D13-103.000.
Simioni, Luciano, to Killer Loop S.p.A. Sunglasses. 372,726, Cl. D16-326.000.
Simioni, Luciano; and Menegon, Sergio, to Killer Loop S.p.A. Sunglasses. 372,727, Cl. D16-327.000.
Simmons Juvenile Products Company, Inc.: *See*—
Brunner, Merlin A.; and Draheim, Harvey J., 372,591, Cl. D6-300.000.
Singer, Howard M.: *See*—
Grewe, Anthony J.; Lewis, Charles R., Jr.; Nuttall, Michael J.; and Singer, Howard M., 372,707, Cl. D14-114.000.
Sinner, George A., to Design, Development & Marketing, Inc. Tray. 372,640, Cl. D7-551.000.
Sisk, David E. Gasket. 372,765, Cl. D23-269.000.
Smith, Ray G.: *See*—
Lewis, Robert A.; Cole, Harold; Leukhardt, Alan; and Smith, Ray G., 372,630, Cl. D7-346.000.
Smith, Ronald A.: *See*—
Lynch, Robert C.; Myers, Kevin H.; Smith, Ronald A.; Talley, William L.; and Veals, Edward R., 372,705, Cl. D14-113.000.
Snow, David A.: *See*—
Brancazio, Diane M.; Gardner, Susannah E.; Hern, Matthew D.; Lubrano, Francis M.; Snow, David A.; and Sykes, David M., 372,760, Cl. D23-209.000.
Sony Corporation: *See*—
Hyougo, Kuninori, 372,711, Cl. D14-135.000.
Spehalski, Stephen R., to Luther Medical Products, Inc. Catheter field trimming device. 372,782, Cl. D24-133.000.
SRL, Inc.: *See*—
Mathews, John G., 372,746, Cl. D21-109.000.
Mathews, John G., 372,747, Cl. D21-109.000.
Shea, Joseph, 372,574, Cl. D2-953.000.
Stabler, Faye B., to Stabler, Faye B. Decorative cap for a mechanical pen or pencil. 372,736, Cl. D19-57.000.
Starck, Philippe, to Thomson Consumer Electronics (Societe Anonyme). Video tape recorder. 372,712, Cl. D14-135.000.
Starck, Philippe, to Thomson Consumer Electronics (Societe Anonyme). Video tape recorder. 372,713, Cl. D14-135.000.
Steelcase, Inc.: *See*—
Hodge, David N.; Deimen, Michael L.; Jenkins, David C.; Mercier, Michael L.; Sandberg, Donald K.; and Teppo, David S., 372,611, Cl. D6-500.000.
Stinauer, Robert J., II: *See*—
Hannon, John F.; Stinauer, Robert J., II; and Kallis, David E., 372,703, Cl. D13-152.000.
Stone, Philip; and Crouch, Kathy, to Ethan Allen Inc. Cabinet. 372,606, Cl. D6-445.000.
Sulzer, James H., to L&P Property Management Company. Seat and backrest for a medical stool. 372,618, Cl. D6-500.000.
Sumitomo Rubber Industries, Ltd.: *See*—
Suzuki, Shigehiko, 372,694, Cl. D12-151.000.
Suncast Corporation: *See*—
Tisbo, Thomas A., 372,620, Cl. D6-572.000.
Sunmex Import Corporation: *See*—
Tseng, Chen H., 372,735, Cl. D19-51.000.
Superior Propane Inc.: *See*—

VOI
1189
ISS
2
AG
1
1996
UMI

Frederiks, Hank, 372,604, Cl. D6-432.000.
Suzuki Motor Corporation: *See—*
Hattori, Moriyoshi; and Yamamoto, Yutaka, 372,685, Cl. D12-91.000.
Hattori, Moriyoshi; and Yamamoto, Yutaka, 372,686, Cl. D12-91.000.
Suzuki, Shigehiko, to Sumitomo Rubber Industries, Ltd. Motorcycle tire. 372,694, Cl. D12-151.000.
Swyst, Thomas: *See—*
Dubois, Craig A.; Matt, Brian J.; Ball, Allan; and Swyst, Thomas, 372,772, Cl. D23-382.000.
Sykes, David M.: *See—*
Brancazio, Diane M.; Gardner, Susannah E.; Hern, Matthew D.; Lubrano, Francis M.; Snow, David A.; and Sykes, David M., 372,760, Cl. D23-209.000.
Tahmassebpur, Mohammed, to Sierra Wireless, Inc. Shrink wrap battery pack. 372,701, Cl. D13-103.000.
Talley, William L.: *See—*
Lynch, Robert C.; Myers, Kevin H.; Smith, Ronald A.; Talley, William L.; and Veals, Edward R., 372,705, Cl. D14-113.000.
Tanaka, Kunihiko, to Fuji Photo Film Co., Ltd. Video camera recorder. 372,721, Cl. D16-202.000.
Taneya, Yoichi; Ishinaga, Hiroyuki; Tokuda, Hiroyuki; and Sekine, Tetsuya, to Canon Kabushiki Kaisha. Ink tank for printer. 372,732, Cl. D18-56.000.
Tang, Yu-Wing, to Dudley Kebow, Inc. Condiment dispenser with pepper and salt granules. 372,643, Cl. D7-679.000.
Tefal S.A.: *See—*
Betend-Bon, Alain, 372,641, Cl. D7-629.000.
Telco Cretions, Inc.: *See—*
Cohen, Seymour, 372,683, Cl. D11-129.000.
Teppo, David S.: *See—*
Hodge, David N.; Deimen, Michael L.; Jenkins, David C.; Mercier, Michael L.; Sandberg, Donald K.; and Teppo, David S., 372,611, Cl. D6-500.000.
Terwilleger, Karen: *See—*
Pollard, Karen; Robbins, Carol; and Terwilleger, Karen, 372,675, Cl. D9-542.000.
Thamm, Jake: *See—*
Lang, Tamara; and Bromley, Robert L., 372,617, Cl. D6-552.000.
Thelman, John P.: *See—*
Burgess, William H.; and Thelman, John P., 372,589, Cl. D5-53.000.
Thomason, Lee. Bicycle gear assembly. 372,692, Cl. D12-123.000.
Thomson Consumer Electronics (Societe Anonyme): *See—*
Starck, Philippe, 372,712, Cl. D14-135.000.
Starck, Philippe, 372,713, Cl. D14-135.000.
Thorne, Edwin, III, to Microsoft Corporation. Remote control. 372,716, Cl. D14-218.000.
Tisbo, Thomas A., to Suncast Corporation. Tool hanger. 372,620, Cl. D6-572.000.
Tokuda, Hiroyuki: *See—*
Taneya, Yoichi; Ishinaga, Hiroyuki; Tokuda, Hiroyuki; and Sekine, Tetsuya, 372,732, Cl. D18-56.000.
Topstamp, Inc.: *See—*
Hewitt, Stephen K., 372,729, Cl. D18-18.000.
Tran, Chi D. Hanger for panty hose. 372,592, Cl. D6-317.000.
Trentadue, Dominic: *See—*
Zoccolillo, Ralph A.; and Trentadue, Dominic, 372,585, Cl. D4-124.000.
TRI Technologies Inc.: *See—*
Reif, Thomas H., 372,781, Cl. D24-133.000.
Trojanowski, Alan G.: *See—*
Yost, Kevin G.; and Trojanowski, Alan G., 372,584, Cl. D4-104.000.
Tsai, Wen H. Toy helicopter. 372,741, Cl. D21-87.000.
Tseng, Chen H., to Sunmex Import Corporation. Ballpoint pen. 372,735, Cl. D19-51.000.
Tsukineko, Inc.: *See—*
Yasoshima, Haruo, 372,731, Cl. D18-17.000.
Tuggle, Lloyd H.; Brant, Ron; and Houge, Michael S., to WCI Outdoor Products, Inc. Lawn trimmer handle. 372,649, Cl. D8-8.000.
Tung, Mitchell M., to Prime Wheel. Automobile wheel. 372,696, Cl. D12-209.000.
Turdo, Louis E., Jr.: *See—*
Salva, Joseph A.; and Turdo, Louis E., Jr., 372,680, Cl. D11-4.000.
Turner, William E., to R.R. Foreman & Company. Storage box. 372,673, Cl. D9-432.000.
Ueki, Michinari: *See—*
Jarrett, Alastair W.; Oblak, James W.; Sharbaugh, David A.; and Ueki, Michinari, 372,717, Cl. D14-240.000.
Ultimate Support Systems, Inc.: *See—*
Eason, Donald H., 372,691, Cl. D12-115.000.
Ungaro, Nicholas A., to LADD Furniture, Inc. Chair. 372,598, Cl. D6-380.000.
Unidrive Pty. Ltd.: *See—*
Atkinson, William A., 372,662, Cl. D8-354.000.
Universal Furniture Industries, Inc.: *See—*
Paus, Michael J., 372,600, Cl. D6-393.000.
Valley Inc.: *See—*
Beaty, Michael A.; and Page, Jon P., 372,582, Cl. D3-313.000.
Vasilic, Momo: *See—*
Sandberg, Ronny; and Vasilic, Momo, 372,784, Cl. D24-155.000.
Vasquez, Sandra P. Tamale masa spreader. 372,647, Cl. D7-688.000.
Veals, Edward R.: *See—*
Lynch, Robert C.; Myers, Kevin H.; Smith, Ronald A.; Talley, William L.; and Veals, Edward R., 372,705, Cl. D14-113.000.
Venditto, Rocco, Jr. Cap. 372,571, Cl. D2-869.000.
Verifone, Inc.: *See—*
Sasaki, Jeffrey K., 372,730, Cl. D18-4.000.
Vigneron, Emilien. Diving mask. 372,725, Cl. D16-311.000.
W. C. Bradley Company: *See—*
Moore, Devin, 372,637, Cl. D7-403.000.
Wang, Jui-Shang; Jané, Rodney; and Longan, John, to Duracraft Corporation. Multiple blade window fan. 372,771, Cl. D23-380.000.
Warda, Henry D. Grilled food utensil. 372,646, Cl. D7-683.000.
Wareham, Richard C. Solar cooker reflector. 372,628, Cl. D7-324.000.
WCI Outdoor Products, Inc.: *See—*
Tuggle, Lloyd H.; Brant, Ron; and Houge, Michael S., 372,649, Cl. D8-8.000.
Wealthy Way International Limited: *See—*
Kan, Chi C., 372,777, Cl. D24-109.000.
Weber, Desna V.; and Oates, Thomas B. Bag clip with molded end. 372,674, Cl. D9-443.000.
Weiner, Bruce B.: *See—*
Bernstein, Michael S.; Weiner, Bruce B.; Bernstein, Thomas E.; and Nicholson, David, 372,581, Cl. D3-279.000.
Welch, Rosie, to Potlatch Corporation. Bathroom tissue with print pattern. 372,588, Cl. D5-37.000.
Wihlm, Chad E.: *See—*
Schultz, Craig H.; Baillie, Bob L.; and Wihlm, Chad E., 372,595, Cl. D6-366.000.
Williams, Guy A.: *See—*
Miller, Christopher J.; McElfresh, Mark W.; Aldrich, Thomas B., III; Williams, Guy A.; and Park, Yeong C., 372,768, Cl. D23-366.000.
Williams, Robert J., to Confidence Golf, Inc. Iron club head. 372,753, Cl. D21-220.000.
Williamson, Debra D.: *See—*
Roberts, Fay D.; and Williamson, Debra D., 372,601, Cl. D6-422.000.
Wilsdorf, Gerd, to Bosch-Siemens Hausgeraete GmbH. Electric range. 372,629, Cl. D7-340.000.
Wirbelauer, Jörg: *See—*
Schauwecker, Uwe; and Wirbelauer, Jörg, 372,700, Cl. D14-102.000.
Wolverine World Wide, Inc.: *See—*
Mills, John; and Palmer, Stephen M., 372,576, Cl. D2-960.000.
Woodland Sales Inc.: *See—*
Foreman, Scott H., 372,770, Cl. D23-368.000.
Woods Industries, Inc.: *See—*
Sanner, Dennis, 372,702, Cl. D13-142.000.
Yamaha Corporation: *See—*
Mizushima, Kazuyuki, 372,728, Cl. D17-7.000.
Yamamoto, Yutaka: *See—*
Hattori, Moriyoshi; and Yamamoto, Yutaka, 372,685, Cl. D12-91.000.
Hattori, Moriyoshi; and Yamamoto, Yutaka, 372,686, Cl. D12-91.000.
Yasoshima, Haruo, to Tsukineko, Inc. Combined stamp pad and container. 372,731, Cl. D18-17.000.
Yoshida, Koji, to Fuji Photo Film Co., Ltd. Thermal printer. 372,733, Cl. D18-55.000.
Yost, Kevin G.; and Trojanowski, Alan G., to Joihon & Johnson Consumer Products, Inc. Bristled head for a toothbrush. 372,584, Cl. D4-104.000.
Young, Edward L. Air blowing mirror drier. 372,773, Cl. D23-386.000.
Zoccolillo, Ralph A.; and Trentadue, Dominic. Golf shoe brush. 372,585, Cl. D4-124.000.
Zorbas, Tass. Blind slat material. 372,621, Cl. D6-580.000.

LIST OF PLANT PATENTEES

Deroose, Reginald: *See—*
Devroe, Luc J., 9,627, Cl. Plt.-88.800.
Devroe, Luc J., to Deroose, Reginald. *Neoregelia carolinae* plant named 'Gruvroe'. 9,627, Cl. Plt.-88.800.
Egger, Donald L. Longiflorum×Asiatic hybrid lily plant 'Ceb Dazzle'. 9,626, Cl. Plt.-87.400.
Goemans, Frank, to Wuelfinghoff Alstroemeria B.V. Alstroemeria plant named 'Little Eleanor'. 9,624, Cl. Plt.-37.100.
Gruppe, Werner; and Schmidt, Hanna, to Inter-Plant Patent Marketing, Inc. Cherry rootstock Gl 148/2. 9,622, Cl. Plt.-37.000.
Gruppe, Werner; and Schmidt, Hanna, to Inter-Plant Patent Marketing, Inc. Cherry rootstock Gl 148/9. 9,623, Cl. Plt.-37.000.
Inter-Plant Patent Marketing, Inc.: *See—*
Gruppe, Werner; and Schmidt, Hanna, 9,622, Cl. Plt.-37.000.
Gruppe, Werner; and Schmidt, Hanna, 9,623, Cl. Plt.-37.000.
Schmidt, Hanna: *See—*
Gruppe, Werner; and Schmidt, Hanna, 9,622, Cl. Plt.-37.000.
Gruppe, Werner; and Schmidt, Hanna, 9,623, Cl. Plt.-37.000.
Van Der Voort, Cees A., to Vletter & Den Haan Beheer B.V. Lily plant named 'Nippon'. 9,625, Cl. Plt.-87.400.
Vletter & Den Haan Beheer B.V.: *See—*
Van Der Voort, Cees A., 9,625, Cl. Plt.-87.400.
Wuelfinghoff Alstroemeria B.V.: *See—*
Goemans, Frank, 9,624, Cl. Plt.-37.100.

VOL 1189 ISS 2 AG 13 1996 UMI

CLASSIFICATION OF PATENTS

ISSUED AUGUST 13, 1996

NOTE—First number, class; second number, subclass; third number, patent number

CLASS 2

10	5,544,361
19	5,544,362
102	5,544,363
104	5,544,364
115	5,544,365
237	5,544,366
410	5,544,367

CLASS 4

405.000	5,544,368
599	5,544,369
619	5,544,370

CLASS 5

85.1	5,544,371
99.1	5,544,372
118	5,544,373
310	5,544,374
611	5,544,375
618	5,544,376
630	5,544,377
644	5,544,378

CLASS 7

138	5,544,379

CLASS 8

471	5,545,235
549	5,545,236

CLASS 9

310	5,545,049

CLASS 12

14.4	5,544,380

CLASS 14

71.7	5,544,381

CLASS 15

22.1	5,544,382
106	5,544,383
235.7	5,544,384
350	5,544,385

CLASS 16

82	5,544,386
87.4 R	5,544,387
375	5,544,388

CLASS 19

157	5,544,389
240	5,544,390

CLASS 24

16 PB	5,544,391
20 CW	5,544,392
306	5,544,393
424	5,544,394
460	5,544,395
523	5,544,396

CLASS 28

263	5,544,397

CLASS 29

1.23	5,544,398
25.41	5,544,399
227	5,544,400
243.526	5,544,401
261	5,544,402
426.5	5,544,403
430	5,544,404
467	5,544,405
520	5,544,406
525.06	5,544,407
527.7	5,544,408
598	5,544,409
605	5,544,410
740	5,544,411
832	5,544,412
888.092	5,544,413

CLASS 30

43.6	5,544,414
43.92	5,544,415
50	B1 5,295,305
193	5,544,416
276	5,544,417
392	5,544,418

CLASS 33

731	5,544,419
760	5,544,420

CLASS 34

58	5,544,421
117	5,544,422
174	5,544,423
181	5,544,424
187	5,544,425
314	5,544,426
372	5,544,427
493	5,544,428

CLASS 36

7.1 R	5,544,430
25 R	5,544,429
38.0	5,544,431
43	5,544,432
117.7	5,544,433

CLASS 37

266	5,544,434
405	5,544,435

CLASS 40

124.2	5,544,436
334	5,544,437
605	5,544,438

CLASS 42

70.07	5,544,440
100	5,544,439
106	5,544,441

CLASS 43

57.2	5,544,442

CLASS 44

380	5,545,237

CLASS 47

1.5	5,544,443
4	5,544,444
33	5,544,445
45	5,544,446
66	5,544,447

CLASS 48

197 R	5,545,238

CLASS 49

377	5,544,448
383	5,544,449
419	5,544,450

CLASS 51

295	B1 5,108,463

CLASS 52

167.2	5,544,451
	5,544,452
169.5	5,544,453
171.1	5,544,454
200	5,544,455
204.1	5,544,456
204.591	5,544,458
204.69	5,544,457
220.3	5,544,459
223.3	5,544,460
235	5,544,461
243.1	5,544,462
254	5,544,463
330	5,544,464
786.13	5,544,465

CLASS 53

138.7	5,544,466
148	5,544,515
387.2	5,544,467
390	5,544,468
410	5,544,469
442	5,544,470
447	5,544,471
449	5,544,472
460	5,544,473

CLASS 55

223	5,545,239
479	5,545,240
490	5,545,241
502	5,545,242
523	5,545,243

CLASS 56

10.2 A	5,544,474
15.5	5,544,475
400.07	5,544,476

CLASS 59

13	5,544,477

CLASS 60

39.03	5,544,478
39.183	5,544,479
243	5,544,480
274	5,544,481
279	5,544,482
283	5,544,483
397	5,544,484
589	5,544,485
599	5,544,486

CLASS 62

3.64	5,544,489
3.7	5,544,487
	5,544,488
46.1	5,544,490
53.1	5,544,491
85	5,544,492
133	5,544,493
292	5,544,494
457.7	5,544,495
497	5,544,497
498	5,544,496
513	5,544,498

CLASS 65

160	5,545,244
273	5,545,245
435	5,545,246

CLASS 66

1 A	5,544,499
85 R	5,544,500
124	5,544,501
126 A	5,544,502
146	5,544,503
168	5,544,504

CLASS 70

18	5,544,505
34	5,544,506
107	5,544,507
264	5,544,508
366	5,544,509
456 R	5,544,510
457	5,544,511
491	5,544,512

CLASS 72

12.2	5,544,513
75	5,544,514
235	5,544,516
349	5,544,517

CLASS 73

1 H	5,544,518
37	5,544,519
38	5,544,520
117.3	5,544,521
118.1	5,544,522
118.2	5,544,523
147	5,544,524
170.13	5,544,525
180	5,544,526
204.21	5,544,527
665	5,544,528
716	5,544,529
810	5,544,530
861.01	5,544,531
861.16	5,544,532
861.56	5,544,533
862.23	5,544,534
864.22	5,544,535
866.5	5,544,536

CLASS 74

53	5,544,537
335	5,544,538
353	5,544,539
467	5,544,540
473 R	5,544,541
492	5,544,542
502.4	5,544,543
526	5,544,544
552	5,544,545
569	5,544,546
730.1	5,544,547

CLASS 75

231	5,545,247
238	5,545,248
246	5,545,249
252	5,545,250
444	5,545,251

CLASS 76

107.1	5,544,548
107.8	5,544,549
108.2	5,544,550

CLASS 81

3.29	5,544,551
44	5,544,552
57.3	5,544,553
57.4	5,544,554
125	5,544,555

CLASS 82

1.11	5,544,556

CLASS 83

37	5,544,557
43.8	5,544,559
75.5	5,544,558

CLASS 84

171	5,545,839
387 A	5,544,560
421	5,544,561
470 R	5,544,562

CLASS 89

24	5,544,563
37.01	5,544,564

CLASS 92

130 R	5,544,565

CLASS 95

15	5,545,252

CLASS 99

287	5,544,566
336	5,544,567
340	5,544,568
422	5,544,569
443 C	5,544,570
454	5,544,571
489	5,544,572
492	5,544,573
572	5,544,574
628	5,544,575

CLASS 100

35	5,544,576
	5,544,577
100	5,544,578

CLASS 101

91	5,544,579
118	5,544,580
126	5,544,581
211	5,544,582
240	5,544,583
401.1	5,544,584

CLASS 102

202.5	5,544,585
374	5,544,586
431	5,544,587
472	5,544,588
492	5,544,589

CLASS 104

130.09	5,544,590

CLASS 105

223	5,544,591

CLASS 106

35	5,545,254
122	5,545,253
272	5,545,255

CLASS 108

48	5,544,592
50	5,544,593
	5,544,594

CLASS 109

74	5,544,595

CLASS 110

106	5,544,596
223	5,544,597
238	5,544,598

CLASS 112

118	5,544,599
217.3	5,544,600
261	5,544,601
470.09	5,544,602
475.12	5,544,603
475.17	5,544,604
475.23	5,544,605

CLASS 114

48	5,544,606
123	5,544,607
230	5,544,608
288	5,544,609
312	5,544,610
343	5,544,611
345	5,544,612
363	5,544,613

CLASS 116

63 P	5,544,614

CLASS 117

18	5,544,615
60	5,544,616
87	5,544,617
102	5,544,618

CLASS 118

410	5,545,256
658	5,545,840
723 MP	5,545,258
723 R	5,545,257

CLASS 119

166	5,544,620
230	5,544,621
436	5,544,622
474	5,544,619
706	5,544,623

CLASS 122

4 D	5,544,624
155.2	5,544,625

CLASS 123

53.1	5,544,627
90.16	5,544,626
	5,544,628
184.36	5,544,629
185.3	5,544,630
193.5	5,544,631
195 C	5,544,632
310	5,544,633
399	5,544,634
425	5,544,635
478	5,544,636
495	5,544,637
674	5,544,638
676	5,544,639
689	5,544,640

CLASS 124

25	5,544,641
62	5,544,642

CLASS 125

12	5,544,643

CLASS 126

91 R	5,544,644
101	5,544,645

CLASS 128

200.14	5,544,646
200.23	5,544,647
207.14	5,544,648
630	5,544,649
632	5,544,650
633	5,544,651
653.2	5,544,652
	5,544,653
660.07	5,544,654
661.010	5,544,655
661.04	5,544,656
661.08	5,544,657
661.09	5,544,658
	5,544,659
662.06	5,544,660
700	5,544,661
734	5,544,662
846	5,544,663
897	5,544,665
898	5,544,664

CLASS 132

273	5,544,666

CLASS 134

18	5,545,259
41	5,545,260
64 R	5,544,667
104.2	5,544,668
109	5,544,669

CLASS 135

88.14	5,544,671

CLASS 136

251	5,545,261

CLASS 137

1	5,544,672
15	5,544,673
98	5,544,674
224	5,544,670
797	5,544,675

CLASS 139

192	5,544,676
245	5,544,677
383 A	5,544,678
450	5,544,679
	5,544,680

CLASS 141

1.001	5,544,681
9.000	5,544,682
65	5,544,683
83	5,544,684
192	5,544,686
198	5,544,685

CLASS 148

111	5,545,263
283	5,545,264
302	5,545,266
335	5,545,267
421	5,545,265
518	5,545,268
527	5,545,262
654	5,545,269
	5,545,270
671	5,545,271

CLASS 149

48	5,545,272
83	5,544,687

CLASS 152

415	5,544,688

CLASS 156

60	5,545,273
61	5,545,274
79	5,545,276
106	5,545,277
175	5,545,278
201	5,545,279
234	5,545,280
273.7	5,545,281
344	5,545,282
382	5,545,283
474	5,545,284
496	5,545,285
570	5,545,286
575	5,545,287
578	5,545,288
643.1	5,545,289
646.1	5,545,290
655.1	5,545,291
731	5,545,275

CLASS 160

100	5,544,689
133	5,544,690
188	5,544,691
349.2	5,544,692

CLASS 162

30.11 5,545,292
212 5,545,293
343 5,545,294
358.1 5,545,295

CLASS 164

4.1 5,544,693
20 5,544,694
437 5,544,695

CLASS 165

80.4 5,544,696
80.5 5,544,701
133 5,544,698
139 5,544,700
153 5,544,702
167 5,544,703
209 5,544,697
283 5,544,699

CLASS 166

117.6 5,544,704
250.4 5,544,705
379 5,544,706
382 5,544,707

CLASS 172

272 5,544,708
661 5,544,709

CLASS 173

176 5,544,710

CLASS 174

17.08 5,545,841
35 GC 5,545,842
5,545,843
35 MS 5,545,844
35 R 5,545,845
51 5,545,846
52.1 5,545,847
5,545,848
52.4 5,545,849
5,545,850
74 R 5,545,851
84 R 5,545,852
120 R 5,545,853
153 G 5,545,854

CLASS 175

4.6 5,544,711
57 5,544,712
331 B1 5,145,016
434 5,544,713

CLASS 177

25.13 5,545,855
25.18 5,545,856

CLASS 178

18 5,545,857

CLASS 180

68.4 5,544,714
274 5,544,716
417 5,544,715

CLASS 181

122 5,545,858
129 5,545,859
255 5,545,860
290 5,545,861

CLASS 182

90 5,544,717
129 5,544,718

CLASS 187

237 5,544,719
319 5,544,720
394 5,544,721
410 5,544,722

CLASS 188

65.4 5,544,723
72.2 5,544,724
264 A 5,544,726

CLASS 192

48.91 5,544,727

CLASS 194

206 5,544,728

CLASS 198

328 5,544,729
336 5,544,730
387 5,544,731
392 5,544,732
408 5,544,733
412 5,544,734
465.3 5,544,735
493 5,544,736
615 5,544,737
626.5 5,544,738
750.6 5,544,739
834 5,544,740

CLASS 200

16 R 5,545,862
283 5,545,864
341 5,545,865
345 5,545,866
400 5,545,867

CLASS 203

1 5,545,296

CLASS 204

157.6 5,545,298
412 5,545,299
424 5,545,300
425 5,545,301
454 5,545,302
601 5,545,303
603 5,545,304

CLASS 205

51 5,545,305
109 5,545,306
122 5,545,307
125 5,545,308
437 5,545,309
537 5,545,310
712 5,545,311

CLASS 206

308.1 5,544,741
308.3 5,544,742
315.3 5,544,743
319 5,544,744
320 5,544,745
346 5,544,746
378 5,544,747
387.13 5,544,748
459.5 5,544,749
494 5,544,750
509 5,544,751
524.8 5,544,752
570 5,544,753
581 5,544,754
705 5,544,755

CLASS 208

152 5,545,312
348 5,545,313

CLASS 209

164 5,544,759
166 5,544,760
458 5,544,756
518 5,544,757
584 5,544,758
672 5,544,761
675 5,544,762

CLASS 210

100 5,545,314
120 5,545,315
188 5,545,316
198.2 5,545,317
232 5,545,318
279 5,545,319
321.6 5,545,320
411 5,545,321
440 5,545,322
493.2 5,545,323
525 5,545,324
605 5,545,325
5,545,326
615 5,545,327
635 5,545,328
651 5,545,329
703 5,545,330
713 5,545,331
729 5,545,332
739 5,545,333
741 5,545,334
748 5,545,335
757 5,545,336
761 5,545,337
791 5,545,338
806 5,545,339

CLASS 211

22 5,544,763
60.1 5,544,764
189 5,544,765

CLASS 213

50.5 5,544,767

CLASS 215

11.1 5,544,766
209 5,544,768
227 5,544,769
230 5,544,770

CLASS 216

2 5,544,771
5,544,772
13 5,544,773
22 5,544,774
65 5,544,775
83 5,544,776

CLASS 219

61 5,545,868
68 5,545,869
69.13 5,545,870
69.17 5,545,871
89 5,545,872
124.03 5,545,873
400 5,545,874
440 5,545,875
492 5,545,876
497 5,545,877
541 5,545,878
689 5,545,879
703 5,545,880
719 5,545,881

CLASS 220

4.13 5,544,777
23.4 5,544,778
89.2 5,544,779
211 5,544,780
404 5,544,781
584 5,544,782
735 5,544,783

CLASS 221

135 5,544,784

CLASS 222

3 5,544,785
59 5,544,786
105 5,544,787
110 5,544,788
153.13 5,544,789
212 5,544,790
262 5,544,791

CLASS 224

153 5,544,792
254 5,544,795
310 5,544,796
311 5,544,797
402 5,544,798
502 5,544,799
645 5,544,793
667 5,544,794

CLASS 227

009 5,544,800
110 5,544,801
176.1 5,544,802

CLASS 228

20.5 5,544,803
180.5 5,544,804
190 5,544,805

CLASS 229

178 5,544,806
305 5,544,807
400 5,544,808

CLASS 235

98 R 5,545,882
449 5,545,883
5,545,884
5,545,885
462 5,545,886
5,545,887
5,545,888
472 5,545,889
494 5,545,890

CLASS 236

44. C 5,544,809

CLASS 239

10 5,544,810
13 5,544,811
55 5,544,812
71 5,544,813
241 5,544,814
533.8 5,544,815
585.5 5,544,816

CLASS 241

21 5,544,817
29 5,544,818
37 5,544,819
38 5,544,820
46.017 5,544,821
79 5,544,823
80 5,544,824
101.73 5,544,822
171 5,544,825
242 5,544,826

CLASS 242

35.50 A 5,544,828
35.5 R 5,544,829
43 A 5,544,830
127 5,544,831
245 5,544,832
347.1 5,544,834
348 5,544,833
348.1 5,544,835
372 5,544,836
384.2 5,544,838
396.6 5,544,839
445.100 5,544,827
532.7 5,544,840
541.1 5,544,841
599.3 5,544,837

CLASS 244

1 R 5,544,842
3.11 5,544,843
8 5,544,844
134 E 5,544,845
147 5,544,846
214 5,544,847

CLASS 246

276 5,544,848

CLASS 248

74.1 5,544,849
164 5,544,850
544 5,544,851

CLASS 249

192 5,544,852

CLASS 250

214 AL 5,545,891
231.12 5,545,892
239 5,545,893
281 5,545,894
282 5,545,895
338.4 5,545,896
339.13 5,545,897
369 5,545,898
370.09 5,545,899
395 5,545,900
458.1 5,545,901
492.2 5,545,902

CLASS 251

63 5,544,853
99 5,544,854
121 5,544,855
129.08 5,544,856
129.15 5,544,857
149.6 5,544,858
368 5,544,859

CLASS 252

62.5 R 5,545,341
186.38 5,545,349
299.61 5,545,345
321 5,545,351
353 5,545,622
570 5,545,355

CLASS 254

7 R 5,544,860
88 5,544,861
124 5,544,862
358 5,544,863

CLASS 256

25 5,544,864
26 5,544,870
67 5,544,865
69 5,544,866

CLASS 257

14 5,545,903
209 5,545,904
268 5,545,905
315 5,545,906
5,545,907
341 5,545,908
355 5,545,909
362 5,545,910
376 5,545,911
417 5,545,912
443 5,545,913
469 5,545,914
491 5,545,915
531 5,545,916
547 5,545,917
577 5,545,918
641 5,545,919
666 5,545,920
669 5,545,921
676 5,545,922
691 5,545,923
724 5,545,924
755 5,545,925
5,545,926
762 5,545,927

CLASS 261

23.1 5,545,356
35 5,545,357
123 5,545,358

CLASS 264

1.24 5,545,359
9 5,545,360
45.2 5,545,361
65 5,545,362
78 5,545,363
102 5,545,297
210.5 5,545,364
225 5,545,366
328.7 5,545,365
401 5,545,367
437 5,545,368
508 5,545,369
522 5,545,370
555 5,545,371

CLASS 266

45 5,544,867
47 5,544,868
88 5,544,869

CLASS 267

221 5,544,725
293 5,544,871

CLASS 269

26 5,544,872
47 5,544,873

CLASS 271

2 5,544,874
176 5,544,875
179 5,544,876

CLASS 273

1.5 A 5,544,877
73 C 5,544,878
119 R 5,544,880
139 5,544,881
157 R 5,544,882
244 5,544,891
292 5,544,892
309 5,544,893
414 5,544,894

CLASS 277

9.5 5,544,895
22 5,544,896
81 R 5,544,897
166 5,544,898
235 B 5,544,899
5,544,900
5,544,901
236 5,544,902

CLASS 280

18 5,544,903
47.35 5,544,904
279 5,544,905
288.1 5,544,906
288.3 5,544,907
610 5,544,908
617 5,544,909
654 5,544,910
728.2 5,544,911
728.3 5,544,912
730.2 5,544,913
735 5,544,914
5,544,915
741 5,544,916
801.2 5,544,917
805 5,544,918
809 5,544,919

CLASS 281

46 5,544,920

CLASS 283

70 5,544,921

CLASS 285

23 5,544,922
242 5,544,923

CLASS 290

40 C 5,545,928

CLASS 292

6 5,544,924
216 5,544,925

CLASS 294

1.1 5,544,926

CLASS 296

97.9 5,544,927
5,544,928
99.1 5,544,929
146.6 5,544,930
180.1 5,544,931
183 5,544,932
189 5,544,933
215 5,544,934

CLASS 297

183.2 5,544,935
195.1 5,544,936
215.12 5,544,937
248 5,544,938
340 5,544,939
411.28 5,544,940
423.45 5,544,941
452.37 5,544,942
452.56 5,544,943

CLASS 298

5 5,544,944

CLASS 301

63.1 5,544,945

CLASS 303

9.64 5,544,946
116.2 5,544,947
140 5,544,948
165 5,544,949
166 5,544,950
196 5,545,929
5,544,956

CLASS 307

10.1 5,545,930
5,545,931
104 5,545,932
109 5,545,933
130 5,545,934
150 5,545,935

CLASS 310

12 5,545,936
B1 Re.34,674
90.5 5,545,937
156 5,545,938
270 5,545,939
313 D 5,545,940
318 5,545,941
341 5,545,942
350 5,545,943

CLASS 312

221 5,544,957
237 5,544,958

CLASS 313

318.01 5,545,944
346 R 5,545,945
497 5,545,946
589 5,545,947
634 5,545,948

CLASS 315

039 5,545,949
56 5,545,950
58 5,545,951
74 5,545,952
224 5,545,955
248 5,545,953

CLASS 318

116 5,545,954
283 5,545,956
432 5,545,957
560 5,545,958
568.15 5,545,959
587 5,545,960
647 5,545,961
677 5,545,962
696 5,545,963
701 5,545,964
768 5,545,965

CLASS 320

2 5,545,966
5,545,967
5,545,968
5 5,545,969

CLASS 323

259 5,545,971
277 5,545,970
313 5,545,977
5,545,978
315 5,545,972

5,545,973
340 5,545,974

CLASS 324

72 5,545,975
76.38 5,545,976
96 5,545,980
142 5,545,981
174 5,545,982
207.12 5,545,983
207.13 5,545,984
207.21 5,545,985
5,545,986
212 5,545,988
5,545,989
219 5,545,987
307 5,545,990
5,545,991
309 5,545,992
5,545,993
315 5,545,994
318 5,545,995
5,545,996
320 5,545,997
321 5,545,998
322 5,545,999
5,546,000
418 5,546,001
434 5,546,003
446 5,546,004
640 5,546,007
688 5,546,005
5,546,006
690 5,546,008
694 5,546,009
713 5,546,010
753 5,546,011
754 5,546,012
770 5,546,013
772 5,546,014
5,546,015

CLASS 326

30 5,546,016
5,546,017
38 5,546,018
81 5,546,019
83 5,546,020
86 5,546,021
87 5,546,022
93 5,546,023
106 5,546,024

CLASS 327

43 5,546,025
54 5,546,026
59 5,546,027
64 5,546,028
108 5,546,029
110 5,546,030
155 5,546,031
165 5,546,032
170 5,546,033
174 5,546,034
208 5,546,035
5,546,036
230 5,546,037
310 5,546,038
379 5,546,039
427 5,546,043
479 5,546,040
512 5,546,041
538 5,546,042
543 5,546,044
561 5,546,045

CLASS 330

127 5,546,046
253 5,546,047
263 5,546,048
277 5,546,049
282 5,546,050
297 5,546,051

CLASS 331

1 A 5,546,052
11 5,546,053
111 5,546,054
116 FE 5,546,055
172 5,546,056

CLASS 333

134 5,546,057
183 5,546,058
202 5,546,059

CLASS 335

35 5,546,060
78 5,546,061
132 5,546,062
202 5,544,959
229 5,546,063
261 5,546,064

CLASS 336

84 C 5,546,065

CLASS 337

163 5,546,066

CLASS 338

172 5,546,067

CLASS 340

146.2 5,546,068
407.1 5,546,069
442 5,546,070
541 5,546,071
574 5,546,072
585 5,546,073
628 5,546,074
666 5,546,075
690 5,546,076
825.440 5,546,077
5,546,078
870.39 5,546,079

CLASS 341

107 5,546,080
139 5,546,081
166 5,546,082

CLASS 342

25 5,546,084
5,546,085
70 5,546,086
120 5,546,087
124 5,546,088
159 5,546,089
174.000 5,546,090
175 5,546,083
181 5,546,091
357 5,546,092
5,546,093

CLASS 343

702 5,546,094
703 5,546,095
771 5,546,096
781 R 5,546,097

CLASS 345

3 5,546,098
8 5,546,099
51 5,546,100
63 5,546,101
100 5,546,102
119 5,546,103
125 5,546,104
155 5,546,105
184 5,546,106

CLASS 347

55 5,546,108
93 5,546,109
115 5,546,110
144 5,546,111
171 5,546,112
195 5,546,113
212 5,546,114
214 5,546,115
218 5,546,116
224 5,546,117

CLASS 348

7 5,546,118
10 5,546,119
59 5,546,120
64 5,546,121
96 5,546,122
119 5,546,123
158 5,546,124
169 5,546,125
175 5,546,126
297 5,546,127
362 5,546,128
416 5,546,129
447 5,546,130
564 5,546,131
607 5,546,132
642 5,546,133
673 5,546,134
674 5,546,135
678 5,546,136
714 5,546,137
735 5,546,138
754 5,546,139

CLASS 351

47 5,546,140
49 5,546,141
237 5,546,142

CLASS 352

184 5,546,143

CLASS 353

120 5,546,144

CLASS 354

76 5,546,145
120 5,546,146
187 5,546,147
203 5,546,148
265 5,546,149
288 5,546,150
296 5,546,151
5,546,152
298 5,546,153
304 5,546,154
354 5,546,155
400 5,546,156
406 5,546,157
410 5,546,158
472 5,546,159

CLASS 355

50 5,546,160
200 5,546,161
5,546,162
204 5,546,163
5,546,164
208 5,546,165
209 5,546,166
219 5,546,167
233 5,546,168
244 5,546,169
246 5,546,170
271 5,546,171
274 5,546,172
282 5,546,173
283 5,546,174
290 5,546,175
301 5,546,177
319 5,546,178

CLASS 356

5.1 5,546,176
73 5,546,179
73.1 5,546,180
237 5,546,181
312 5,546,182
336 5,546,183
345 5,546,184
5,546,185
348 5,546,186
357 5,546,187
376 5,546,188
5,546,189

CLASS 358

335 5,546,191
5,546,192
5,546,193
445 5,546,194
518 5,546,195
527 5,546,196
534 5,546,197

CLASS 359

1 5,546,198
15 5,546,200
17 5,546,201
40 5,546,202
49 5,546,203
59 5,546,204
5,546,205
67 5,546,206
74 5,546,207
81 5,546,208
115 5,546,209
124 5,546,210
154 5,546,211
158 5,546,190
163 5,546,212
179 5,546,213
203 5,546,214
208 5,546,215
216 5,546,216
223 5,546,217
237 5,546,218
281 5,546,219
332 5,546,220
341 5,546,221
346 5,546,222
385 5,546,223
425 5,546,224
559 5,546,225
616 5,546,226
630 5,546,227
644 5,546,228
654 5,546,229
684 5,546,230
687 5,546,231
691 5,546,232
696 5,546,233
700 5,546,234
742 5,546,235
794 5,546,236
823 5,546,237
5,546,238
855 5,546,239
871 5,546,240
885 5,546,241

CLASS 360

2 5,546,242
51 5,546,243
53 5,546,244
65 5,546,245
72.2 5,546,246
77.13 5,546,247
77.140 5,546,248
95 5,546,249
97.02 5,546,250
103 5,546,251
106 5,546,252
113 5,546,253
5,546,254
115 5,546,255
126 5,546,256
128 5,546,257
130.220 5,546,259

CLASS 361

18 5,546,260
19 5,546,261
31 5,546,262
50 5,546,263
84 5,546,264
93 5,546,265
5,546,266
119 5,546,267
154 5,546,268
660 5,546,269
680 5,546,270
5,546,271
687 5,546,272
697 5,546,273
701 5,546,274
707 5,546,275
724 5,546,276
726 5,546,277
737 5,546,278
749 5,546,279
752 5,546,280
5,546,281
796 5,546,282

CLASS 362

61 5,546,283
5,546,284
5,546,285
5,546,286
5,546,287
74 5,546,288
101 5,546,289
223 5,546,290
5,546,291
234 5,546,292
301 5,546,293

CLASS 363

17 5,546,294
5,546,295
60 5,546,296
62 5,546,297
71 5,546,298
5,546,299
132 5,546,300

CLASS 364

140 5,546,301
148 5,546,302
401 5,546,303
419.04 5,546,304
424.03 5,546,305
424.04 5,546,306
424.05 5,546,307
426.04 5,546,308
434 5,546,309
449 5,546,310
5,546,311
468.03 5,546,312
5,546,313
474.01 5,546,314
478.06 5,546,315
479.03 5,546,316
481 5,546,317
483 5,546,318
488 5,546,319
5,546,320
491 5,546,321
497 5,546,322
5,546,323
514 R 5,546,324
525 5,546,325
552 5,546,326
5,546,328
5,546,329
556 5,546,327
562 5,546,330
571.01 5,546,331
572 5,546,332
709.05 5,546,333
709.11 5,546,334
715.01 5,546,335
725 5,546,336

CLASS 365

121 5,546,337
181 5,546,338
185.02 5,546,339
185.3 5,546,340
185.33 5,546,341
189.01 5,546,342
189.04 5,546,343
189.05 5,546,344
190 5,546,345
203 5,546,346
221 5,546,347
230.03 5,546,348
230.04 5,546,349
230.06 5,546,350
5,546,351
5,546,352
233 5,546,353
5,546,354
5,546,355

CLASS 366

130 5,544,960
163.2 5,544,951
5,544,961
175.1 5,544,952

CLASS 367

88 5,546,356
5,546,357
128 5,546,358
134 5,546,359
150 5,546,360
158 5,546,361
173 5,546,362

CLASS 368

200 5,546,363

CLASS 369

13 5,546,364
032 5,546,365
36 5,546,366
44.32 5,546,367
47 5,546,368
58 5,546,369
77.2 5,546,370
112 5,546,371
116 5,546,372
120 5,546,373
126 5,546,374
5,546,375
291 5,546,376

CLASS 370

13 5,546,377
16.1 5,546,378
17 5,546,379
5,546,380
18 5,546,381
24 5,546,382
50 5,546,383
5,546,384
58.2 5,546,385
60 5,546,386
5,546,387
5,546,388
5,546,389
5,546,390
5,546,391
60.1 5,546,392
5,546,393
79 5,546,394
84 5,546,395
85.1 5,546,396
5,546,397
94.1 5,546,398
5,546,399
95.1 5,546,400
105.1 5,546,401

CLASS 371

5.5 5,546,411
10.2 5,546,402
20.5 5,546,403
22.1 Re.35,313
5,546,404
5,546,405
22.5 5,546,406
27 5,546,407
5,546,408
37.4 5,546,409
40.2 5,546,410

CLASS 372

6 5,546,413
18 5,546,414
25 5,546,415
34 5,546,416
36 5,546,417
48 5,546,418

CLASS 374

164 5,544,953

CLASS 375

200 5,546,420
5,546,421
202 5,546,422
206 5,546,423
5,546,424
220 5,546,425
242 5,546,426
257 5,546,419
293 5,546,427
308 5,546,428
341 5,546,429
5,546,430
350 5,546,431
372 5,546,432
376 5,546,433
5,546,434

CLASS 376

253 5,546,435
272 5,546,436
442 5,546,437

CLASS 377

57 5,546,442
60 5,546,438

CLASS 378

15 5,546,439
98.2 5,546,440
110 5,546,441

CLASS 379

59 5,546,443
5,546,444
60 5,546,445
114 5,546,446
142 5,546,447
5,546,448
202 5,546,449
207 5,546,450
215 5,546,451
219 5,546,452
242 5,546,453
265 5,546,454
5,546,455
5,546,456
368 5,546,457
390 5,546,458
411 5,546,459
5,546,460

CLASS 380

20 5,546,461
23 5,546,462
25 5,546,463
48 5,546,464

CLASS 381

18 5,546,465
61 5,546,466
68 B1 4,592,087
B1 4,689,819
71 5,546,467
86 5,546,468
152 5,546,469
197 5,546,470

CLASS 382

124 5,546,471
131 5,546,472
132 5,546,473
176 5,546,474
190 5,546,475
201 5,546,476
242 5,546,477
282 5,546,478
290 5,546,479

CLASS 384

45 5,544,954
295 5,544,955
448 5,544,962
482 5,544,963

CLASS 385

3 5,546,480
11 5,546,481
12 5,546,482
14 5,546,483
16 5,546,484
28 5,546,485
31 5,546,486
33 5,546,487

45 5,546,488
53 B1 Re.34,955
88 5,546,489
93 5,546,490
99 5,546,491
116 5,546,492
123 5,546,493
129 5,546,494
135 5,546,495
146 5,546,496

CLASS 395

2.35 5,546,497
2.38 5,546,498
2.49 5,546,499
2.86 5,546,500
3 5,546,501
12 5,546,502
23 5,546,503
25 5,546,504
26 5,546,505
75 5,546,506
76 5,546,507
95 5,546,508
106 5,546,511
111 5,546,513
5,546,514
133 5,546,515
140 5,546,516
145 5,546,517
152 5,546,518
155 5,546,519
5,546,520
5,546,521
156 5,546,522
5,546,523
157 5,546,524
159 5,546,525
5,546,526
5,546,527
5,546,528
5,546,529
163 5,546,530
164 5,546,531
5,546,532
182.03 5,546,533
182.04 5,546,534
182.07 5,546,535
182.18 5,546,536
183.21 5,546,537
200.01 5,546,538
200.02 5,546,596
200.05 5,546,539
200.1 5,546,540
200.15 5,546,541
200.21 5,546,542
250 5,546,543
287 5,546,544
291 5,546,545
292 5,546,546
294 5,546,547
296 5,546,548
309 5,546,549
5,546,550
375 5,546,551
5,546,552
405 5,546,553
413 5,546,554
417 5,546,555
427 5,546,556
438 5,546,557
441 5,546,558
460 5,546,559
468 5,546,560
490 5,546,561
500 5,546,562
5,546,563
5,546,564
5,546,565
5,546,566
550 5,546,567
5,546,568
5,546,569
600 5,546,107
5,546,570
5,546,571
5,546,572
5,546,573
5,546,574
5,546,575
5,546,576
5,546,577
5,546,578
5,546,579
5,546,580
650 5,546,581
5,546,582
5,546,583
700 5,546,584
5,546,585
5,546,586
730 5,546,587
750 5,546,588
5,546,589
5,546,590
5,546,591
775 5,546,592
800 5,546,593
5,546,594
5,546,595
5,546,597
5,546,598
5,546,599
5,546,600

CLASS 400

322 5,544,964
582 5,544,965
616 5,544,966

CLASS 401

195 5,544,967

CLASS 403

31 5,544,968
322 5,544,969
399 5,544,970

CLASS 404

72 5,544,971
75 5,544,972

CLASS 405

16 5,544,973
53 5,544,974
128 5,544,975
129 5,544,976
154 5,544,977
232 5,544,978
5,544,979
259.6 5,544,980
5,544,981
288 5,544,982

CLASS 406

85 5,544,983

CLASS 407

113 5,544,984

CLASS 408

56 5,544,985
67 5,544,986
72 R 5,544,987
90 5,544,988
153 5,544,989

CLASS 409

183 5,544,990

CLASS 411

237 5,544,991
311 B1 5,358,366
353 5,544,992
414 5,544,993

CLASS 412

9 5,544,994

CLASS 414

219 5,544,995
280 5,544,996
412 5,544,997
522 5,544,998
786 5,544,999
790.3 5,545,000
790.8 5,545,001

CLASS 415

115 5,545,002
5,545,003
5,545,004
169.100 5,545,005
169.2 5,545,006
173.2 5,545,007
206 5,545,008

CLASS 416

95 5,545,009
145 5,545,010
207 5,545,011

CLASS 417

44.11 5,545,012
201 5,545,013
204 5,545,014
360 5,545,015
393 5,545,016
423.7 5,545,017

CLASS 418

30 5,545,018
55.1 5,545,019
55.4 5,545,020
63 5,545,021

CLASS 420

12 5,545,372
81 5,545,373

CLASS 422

28 5,545,374
102 5,545,375
104 5,545,376
108 5,545,377
132 5,545,378
186 5,545,381
186.04 5,545,379
186.07 5,545,380
216 5,545,382
295 5,545,383

CLASS 423

121 5,545,384
183 5,545,385
263 5,545,386
348 5,545,387
352 5,545,388
478 5,545,389
499.1 5,545,390
573.1 5,545,391
592 5,545,392
605 5,545,393
659 5,545,394

CLASS 424

9.4 5,545,397
59 5,545,398
5,545,399
5,545,400
76.21 5,545,401
78.07 5,545,723
85.6 5,545,396
93 5,545,402
94.63 5,545,403
133.1 5,545,404
5,545,405
401 5,545,407
422 5,545,408
426 5,545,409
439 5,545,410
5,545,411
450 5,545,412
473 5,545,413
484 5,545,414
5,545,423
932 5,545,395

CLASS 425

110 5,545,022
171 5,545,023
204 5,545,024
315 5,545,025
389 5,545,026
546 5,545,027
549 5,545,028
557 5,545,029

CLASS 426

3 5,545,415
5,545,416
5 5,545,417
53 5,545,418
129 5,545,419
5,545,420
481 5,545,421
482 5,545,422
496 5,545,426
536 5,545,424
634 5,545,425

CLASS 427

6 5,545,427
8 5,545,428
97 5,545,429
98 5,545,430
205 5,545,431
226 5,545,432
230 5,545,433
243 5,545,434
249 5,545,435
255.3 5,545,436
299 5,545,438
327 5,545,439
345 5,545,440
389.8 5,545,441
404 5,545,437
513 5,545,442
584 5,545,443

CLASS 428

1 5,545,444
4 5,545,445
13 5,545,446
16 5,545,447
31 5,545,448
34.2 5,545,449
34.5 5,545,450
36.8 5,545,451
41.7 5,545,452
43 5,545,453
64.1 5,545,454
76 5,545,455
5,545,456
5,545,457
77 5,545,458
117 5,545,459
121 5,545,460
137 5,545,461
138 5,545,462
141 5,545,463
178 5,545,464
198 5,545,465
209 5,545,466
5,545,467
211 5,545,470
229 5,545,471
251 5,545,472
261 5,545,473
283 5,545,474
288 5,545,475
306.6 5,545,476
327 5,545,477
332 5,545,478
5,545,480
364 5,545,481
378 5,545,482
379 5,545,483
402.21 5,545,030
408 5,545,484
5,545,485
423.1 5,545,486
542.8 5,545,487
548 5,545,488
586 5,545,489
629 5,545,490
701

CLASS 429

7 5,545,491
29 5,545,492
90 5,545,493
163 5,545,494
193 5,545,495
218 5,545,468
5,545,496
219 5,545,497

CLASS 430

18 5,545,498
59 5,545,499
67 5,545,500
106.6 5,545,501
110 5,545,502
128 5,545,503
137 5,545,504
250 5,545,505
253 5,545,506
264 5,545,507
265 5,545,508
270.1 5,545,509
312 5,545,510
315 5,545,511
323 5,545,512
506 5,545,513
346 5,545,514
617 5,545,515

CLASS 431

8 5,545,031
9 5,545,032
181 5,545,033
5,545,034
5,545,035
266 5,545,036

CLASS 433

21 5,545,037
120 5,545,038
215 5,545,039

CLASS 434

58 5,545,040
136 5,545,041
207 5,545,042
322 5,545,044

CLASS 435

2 5,545,516
4 5,545,517
5,545,518
5,545,519
4.92 5,545,534
5 5,545,520
5,545,521
6 5,545,522
5,545,523
5,545,524
5,545,525
5,545,526
5,545,527
5,545,528
5,545,529
5,545,530
5,545,531
7.23 5,545,532
34 5,545,535
69.1 5,545,536
69.52 5,545,537
86 5,545,538
91.2 5,545,539
5,545,540
97 5,545,587
128 5,545,542
162 5,545,543
171 5,545,544
172.3 5,545,541
5,545,545
5,545,546
183 5,545,547
227 5,545,548
240.2 5,545,549
5,545,550
252.3 5,545,551
5,545,552
252.33 5,545,553
252.9 5,545,554
253.6 5,545,555
254.2 5,545,556
255.1 5,545,557
280 5,545,558
290.1 5,545,559
290.2 5,545,560
307.1 5,545,562
320.1 5,545,563
5,545,564
5,545,565
723 5,545,533

CLASS 436

68 B1 4,824,789
71 5,545,566
172 5,545,567
518 5,545,568
5,545,569

CLASS 437

8 5,545,570
21 5,545,571
26 5,545,572
40 5,545,573
5,545,574
5,545,575
41 5,545,576
5,545,577
44 5,545,578
5,545,579
48 5,545,580
52 5,545,581
5,545,582
5,545,583
5,545,584
5,545,585
89 5,545,586
183 5,545,589
187 5,545,588
189 5,545,590
192 5,545,591
200 5,545,592
225 5,545,593
228 5,545,594

CLASS 439

70 5,545,045
142 5,545,046
157 5,545,047
273 5,545,048
287.3 5,545,561
331 5,545,050
330 5,545,051
354 5,545,052
364 5,545,053
467 5,545,054
507 5,545,055
532 5,545,056
540.1 5,545,057
547 5,545,058
583 5,545,059
747 5,545,060
752 5,545,061
877 5,545,062

CLASS 440

47 5,545,063
53 5,545,064

CLASS 441

5 5,545,065
61 5,545,066
64 5,545,067

CLASS 446

39 5,545,068
73 5,545,069
104 5,545,070
143 5,545,071
268 5,545,072

CLASS 451

39 5,545,073
40 5,545,074
42 5,545,075
287 5,545,076
311 5,545,077
342 5,545,078
5,545,079
359 5,545,080
367 5,545,081
456 5,545,082

CLASS 452

136 5,545,083

CLASS 454

76 5,545,084
124 5,545,085
238 5,545,086

CLASS 462

6 5,545,087

CLASS 463

40 5,545,088

CLASS 464

83 5,545,089
96 5,545,090
157 5,545,091

CLASS 472

66 5,545,092

CLASS 473

36 5,545,093
143 5,544,886
220 5,544,888
230 5,544,887
313 5,544,883
314 5,544,879
317 5,545,094
327 5,544,884
350 5,544,885
383 5,544,889
5,544,890

CLASS 474

135 5,545,095
160 5,545,096
266 5,545,097

CLASS 475

23 5,545,098
135 5,545,099
185 5,545,100
193 5,545,101
223 5,545,103
230 5,545,102
331 5,545,104

CLASS 477

43 5,545,105
5,545,106
63 5,545,107
125 5,545,108
178 5,545,109

CLASS 482

27 5,545,110
53 5,545,111
54 5,545,112
125 5,545,113
140 5,545,114
146 5,545,115

CLASS 483

29 5,545,116

CLASS 493

203 5,545,117

CLASS 494

20 5,545,118
56 5,545,119

CLASS 501

3 5,545,595
71 5,545,596
98 5,545,597
127 5,545,598
146 5,545,599

CLASS 502

152 5,545,600
156 5,545,601
314 5,545,602
347 5,545,603
414 5,545,604
414 5,545,656
422 5,545,657
423 5,545,658
450 5,545,659
458 5,545,660
460 5,545,661
478 5,545,662
521 5,545,663
5,545,664
530 5,545,665
5,545,666
556 5,545,667
557 5,545,343
561 5,545,668
562 5,545,669
5,545,670
573 5,545,671
603 5,545,672
772.3 5,545,673

CLASS 518

715 5,545,674

CLASS 521

172 5,545,675

CLASS 522

15 5,545,676

CLASS 523

122 5,545,823
212 5,545,677
404 5,545,678
512 5,545,679

CLASS 524

4/ 5,545,680
115 5,545,681
195 5,545,825
265 5,545,682
277 5,545,683
354 5,545,684
490 5,545,685
513 5,545,686
590 5,545,824
701 5,545,687
731 5,545,831
827 5,545,688

CLASS 525

057 5,545,689
5,545,826
98 5,545,690
102 5,545,691
146 5,545,692
187 5,545,693
286 5,545,694
301 5,545,695
375 5,545,696
403 5,545,697
420 5,545,698
478 5,545,700
509 5,545,702

CLASS 526

72 5,545,828
160 5,545,829
256 5,545,703

CLASS 528

15 5,545,704
5,545,830
44 5,545,705
49 5,545,706
60 5,545,707
76 5,545,708
201 5,545,710
211 5,545,832
244 5,545,711
295 5,545,713
337 5,545,833
374 5,545,714
408 5,545,712

CLASS 530

324 5,545,716
5,545,717
327 5,545,718
345 5,545,719
380 5,545,720
391.7 5,545,721
399 5,545,722

CLASS 534

604 5,545,724
759 5,545,725

CLASS 536

23.1 5,545,726
24.5 5,545,729
28.51 5,545,730
120 5,545,732
234 5,545,727

CLASS 540

139 5,545,733
456 5,545,734
490 5,545,735
522 5,545,736

CLASS 544

6 5,545,834
101 5,545,737
215 5,545,835
216 5,545,836
291 5,545,738

CLASS 546

108 5,545,739
112 5,545,740
276.7 5,545,741

CLASS 548

261 5,545,742

CLASS 556

460 5,545,837
466 5,545,743

CLASS 558

418 5,545,744

CLASS 560

42 5,545,745
78 5,545,746
123 5,545,747

CLASS 562

2 5,545,748

CLASS 564

89 5,545,838
282 5,545,749
360 5,545,750
398 5,545,751
5,545,752
5,545,753
409 5,545,715
418 5,545,754
428 5,545,755
450 5,545,756
475 5,545,757

CLASS 568

6 5,545,758
5,545,759
321 5,545,760
342 5,545,761
346 5,545,762
630 5,545,763
724 5,545,764
862 5,545,765
5,545,766
867 5,545,767
938 5,545,768

CLASS 570

134 5,545,769
151 5,545,770
164 5,545,771
5,545,772
167 5,545,773
168 5,545,774
5,545,775
174 5,545,776
176 5,545,777
178 5,545,778
204 5,545,779
226 5,545,780
229 5,545,781

CLASS 585

5 5,545,782
12 5,545,783
250 5,545,784
375 5,545,785
435 5,545,786
444 5,545,787
467 5,545,788
508 5,545,789
510 5,545,790
639 5,545,791
665 5,545,792
671 5,545,793

CLASS 588

1 5,545,794
2 5,545,795
4 5,545,796
10 5,545,797
18 5,545,798
200 5,545,799
231 5,545,800
249 5,545,801
5,545,802
253 5,545,803
5,545,804
256 5,545,805

CLASS 600

117 5,545,120
121 5,545,121
222 5,545,122
235 5,545,123

CLASS 601

2 5,545,124
71 5,545,125

CLASS 602

27 5,545,127
61 5,545,128
66 5,545,129

CLASS 604

4 5,545,130
5 5,545,131
96 5,545,132
5,545,133
5,545,134
5,545,135
5,545,136
5,545,137
102 5,545,138
132 5,545,139
154 5,545,140
164 5,545,141
167 5,545,142
180 5,545,143
187 5,545,144
192 5,545,145
198 5,545,146
209 5,545,147
223 5,545,148
256 5,545,150
265 5,545,149
282 5,545,151
283 5,545,152
294 5,545,153
336 5,545,154
378 5,545,155
385.1 5,545,156
5,545,157
385.2 5,545,158
391 5,545,159

CLASS 606

10 5,545,160
41 5,545,161
57 5,545,162
61 5,545,163
5,545,164
5,545,165
5,545,166
5,545,167
74 5,545,168
108 5,545,169
148 5,545,170
4 5,545,171
10 5,545,172
18 5,545,173
200 5,545,174
231 5,545,175
249 5,545,176
5,545,177
253 5,545,178
5,545,179
256 5,545,180

CLASS 607

4 5,545,181
5 5,545,182
5,545,183
5,545,184
14 5,545,185
5,545,186
32 5,545,187
37 5,545,188
5,545,189
57 5,545,191
88 5,545,192
96 5,545,190
99 5,545,193
104 5,545,194
105 5,545,195
5,545,196
108 5,545,197
5,545,198
109 5,545,199
122 5,545,200
5,545,203
123 5,545,204
5,545,205
126 5,545,206
127 5,545,201
129 5,545,202
130 5,545,207

CLASS 623

1 5,545,208
5,545,209
5,545,210
5,545,211
5,545,212
2 5,545,213
5,545,214
5,545,215
5,545,216
8 5,545,217
10 5,545,219
11 5,545,220
5,545,221
5,545,222
5,545,223
15 5,545,224
16 5,545,226
5,545,227
5,545,228
17 5,545,229
38 5,545,230
5,545,231
39 5,545,232
43 5,545,233
49 5,545,234

CLASS 800

2 5,545,806
5,545,807
5,545,808
200 5,545,809
5,545,811
5,545,812
5,545,813
5,545,814
5,545,815
5,545,816
5,545,817
5,545,818
5,545,819
5,545,820
230 5,545,821
235 5,545,822

CLASSIFICATION OF DESIGNS

D1— 199 372,738
D2— 617 372,578
869 372,571
876 372,572
880 372,573
953 372,574
959 372,575
960 372,576
969 372,577
D3— 249 372,579
262 372,580
279 372,581
313 372,582
314 372,583
D4— 104 372,584
105 372,586
124 372,585
D5— 37 372,587
372,588
53 372,589
D6— 300 372,590
372,591
317 372,592
358 372,593
363 372,594
366 372,595
379 372,596
372,597
380 372,598
388 372,599
393 372,600
422 372,601
429 372,602
432 372,603
372,604
434 372,605
445 372,606
372,607
475 372,608
480 372,609
495 372,610
500 372,611
372,618
511 372,612
520 372,614
522 372,615
545 372,613
552 372,616
372,617
561 372,619
572 372,620
580 372,621
602 372,622
630 372,623
D7— 300.2 372,624
308 372,625
319 372,626
372,627
324 372,628
340 372,629
346 372,630
347 372,631
372,632
383 372,633
391 372,634
401.2 372,635
402 372,636
403 372,637
407 372,638
511 372,639
551 372,640
629 372,641
665 372,642
372,644
372,645
683 372,646
688 372,647
693 372,648
D8— 8 372,649
14 372,650
372,651
372,652
30 372,653
372,654
102 372,655
303 372,656
307 372,657
312 372,658
317 372,659
343 372,660
352 372,661
354 372,662
356 372,663
382 372,664
383 372,666
396 372,665
D9— 301 372,667
372,669
305 372,668
346 372,670
347 372,671
372,672
432 372,673
443 372,674
542 372,675
550 372,676
D10— 25 372,677
98 372,678
106 372,679
D11— 4 372,680
26 372,681
34 372,682
129 372,683
204 372,684
D12— 91 372,685
372,686
92 372,687
372,688
372,689

CLASSIFICATION OF PATENTS

	113	372,690			372,708		326	372,726		104	372,745		238	372,763		133	372,781
	115	372,691			372,709		327	372,727		109	372,746		254	372,764			372,782
	123	372,692		115	372,710	D17—	7	372,728			372,747		269	372,765		149	372,783
	147	372,693		135	372,711	D18—	4	372,730		191	372,748		311	372,766		155	372,784
	151	372,694			372,712		17	372,731		203	372,749		354	372,767		167	372,785
	169	372,695			372,713		18	372,729		204	372,750		366	372,768		176	372,786
	209	372,696		168	372,714		55	372,733		217	372,751			372,769		189	372,787
		372,697		217	372,715		56	372,732		219	372,752		368	372,770		215	372,788
		372,698		218	372,716	D19—	34	372,734		220	372,753		380	372,771	D25—	35	372,789
		372,699		240	372,717		51	372,735		221	372,754		382	372,772		124	372,790
D13—	103	372,701			372,718		57	372,736		234	372,755		386	372,773			
	142	372,702	D15—	7	372,719		72	372,737		237	372,756		411	372,774			
	152	372,703		69	372,720	D20—	5	372,739		244	372,757		412	372,775			
D14—	102	372,700	D16—	202	372,721	D21—	10	372,740	D22—	137	372,758	D24—	106	372,776			
	113	372,704		208	372,722		54	372,742	D23—	200	372,759		109	372,777			
		372,705		209	372,723		59	372,743		209	372,760		112	372,778			
	114	372,706		217	372,724		64	372,744		214	372,761			372,779			
		372,707		311	372,725		87	372,741		228	372,762		128	372,780			

CLASSIFICATION OF PLANTS

P.—	37	9,622			9,623		37.1	9,624		87.4	9,625			9,626		88.8	9,627

GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

04 :	5,544,363	5,544,731	5,545,210	5,545,800	5,546,097	5,546,550
	5,544,412	5,544,750	5,545,214	5,545,806	5,546,098	5,546,551
	5,544,873	5,544,766	5,545,220	5,545,815	5,546,105	5,546,552
	5,544,896	5,544,774	5,545,257	5,545,817	5,546,107	5,546,554
	5,544,987	5,544,775	5,545,273	5,545,818	5,546,111	5,546,555
	5,545,004	5,544,789	5,545,274	5,545,834	5,546,120	5,546,561
	5,545,026	5,544,794	5,545,286	5,545,842	5,546,144	5,546,562
	5,545,104	5,544,795	5,545,289	5,545,844	5,546,179	5,546,569
	5,545,493	5,544,803	5,545,291	5,545,856	5,546,183	5,546,570
	5,545,575	5,544,806	5,545,297	5,545,871	5,546,187	5,546,571
	5,545,855	5,544,813	5,545,302	5,545,885	5,546,201	5,546,575
	5,545,893	5,544,842	5,545,307	5,545,891	5,546,209	5,546,576
	5,545,912	5,544,869	5,545,322	5,545,892	5,546,211	5,546,579
	5,545,936	5,544,872	5,545,329	5,545,896	5,546,214	5,546,582
	5,545,946	5,544,885	5,545,336	5,545,897	5,546,222	5,546,586
	5,546,021	5,544,906	5,545,358	5,545,901	5,546,253	5,546,587
	5,546,040	5,544,924	5,545,367	5,545,909	5,546,254	5,546,590
	5,546,085	5,544,926	5,545,401	5,545,922	5,546,260	5,546,595
	5,546,204	5,544,937	5,545,412	5,545,923	5,546,274	4,824,789
	5,546,257	5,544,940	5,545,413	5,545,934	5,546,277	08 : 5,544,402
	5,546,273	5,544,958	5,545,423	5,545,937	5,546,278	5,544,468
	5,546,366	5,544,969	5,545,424	5,545,955	5,546,289	5,544,525
	5,546,413	5,544,992	5,545,435	5,545,956	5,546,290	5,544,616
	5,546,557	5,545,006	5,545,447	5,545,965	5,546,291	5,544,859
	5,546,591	5,545,010	5,545,450	5,545,966	5,546,338	5,544,973
05 :	5,544,444	5,545,030	5,545,463	5,545,982	5,546,344	5,545,044
06 :	5,544,364	5,545,057	5,545,478	5,545,989	5,546,347	5,545,219
	5,544,369	5,545,068	5,545,496	5,545,994	5,546,353	5,545,408
	5,544,376	5,545,087	5,545,509	5,546,003	5,546,354	5,545,440
	5,544,384	5,545,092	5,545,511	5,546,005	5,546,379	5,545,499
	5,544,454	5,545,113	5,545,518	5,546,009	5,546,385	5,545,727
	5,544,460	5,545,116	5,545,528	5,546,016	5,546,416	5,545,825
	5,544,465	5,545,130	5,545,531	5,546,017	5,546,432	5,545,858
	5,544,489	5,545,138	5,545,552	5,546,018	5,546,433	5,546,226
	5,544,528	5,545,140	5,545,568	5,546,022	5,546,436	5,546,250
	5,544,578	5,545,152	5,545,592	5,546,026	5,546,437	5,546,304
	5,544,607	5,545,161	5,545,594	5,546,030	5,546,455	5,546,315
	5,544,608	5,545,164	5,545,604	5,546,033	5,546,459	5,546,474
	5,544,611	5,545,166	5,545,616	5,546,037	5,546,482	5,546,535
	5,544,614	5,545,167	5,545,618	5,546,042	5,546,484	5,546,577
	5,544,620	5,545,171	5,545,621	5,546,045	5,546,486	09 : 5,544,449
	5,544,646	5,545,176	5,545,624	5,546,046	5,546,502	5,544,518
	5,544,654	5,545,183	5,545,637	5,546,049	5,546,508	5,544,579
	5,544,656	5,545,189	5,545,665	5,546,072	5,546,518	5,544,721
	5,544,664	5,545,191	5,545,667	5,546,076	5,546,528	5,544,787
	5,544,668	5,545,193	5,545,703	5,546,080	5,546,529	5,544,874
	5,544,674	5,545,200	5,545,730	5,546,084	5,546,530	5,544,959
	5,544,706	5,545,203	5,545,744	5,546,090	5,546,547	5,545,007
	5,544,718	5,545,206	5,545,748	5,546,091	5,546,548	5,545,014

5,545,018
5,545,059
5,545,072
5,545,118
5,545,244
5,545,252
5,545,398
5,545,421
5,545,426
5,545,460
5,545,510
5,545,655
5,545,656
5,545,688
5,545,850
5,545,867
5,545,887
5,545,902
5,546,073
5,546,112
5,546,265
5,546,292
5,546,295
5,546,435
5,546,467
5,546,481
10 : 5,544,758
5,545,250
5,545,473
5,545,475
5,545,651
5,545,693
5,545,769
5,545,770
5,545,774
12 : 5,544,361
5,544,365
5,544,431
5,544,442
5,544,447
5,544,495
5,544,592
5,544,599
5,544,606
5,544,623
5,544,627
5,544,633
5,544,783
5,544,809
5,544,834
5,544,836
5,544,879
5,544,884
5,544,886
5,544,894
5,544,960
5,545,031
5,545,038
5,545,150
5,545,165
5,545,175
5,545,275
5,545,288
5,545,366
5,545,371
5,545,474
5,545,649
5,545,650
5,545,716
5,545,833
5,545,890
5,545,967
5,545,970
5,545,985
5,546,038
5,546,069
5,546,146 18 : 5,544,374
5,546,188 5,544,413
5,546,241 5,544,459
5,546,318 5,544,476
5,546,356 5,544,632
5,546,357 5,544,642
5,546,394 5,544,648
5,546,411 5,544,708
5,546,415 5,544,754
5,546,468 5,544,882
5,546,568 5,544,888
13 : 5,544,383 5,544,990
5,544,466 5,545,003
5,544,470 5,545,147
5,544,678 5,545,318
5,544,784 5,545,411
5,545,226 5,545,635
5,545,276 5,545,636
5,545,292 5,545,638
5,545,334 5,545,641
5,545,338 5,545,653
5,545,389 5,545,661
5,545,464 5,545,685
5,545,481 5,545,749
5,545,488 5,545,866
5,545,555 5,545,878
5,545,599 5,545,915
5,546,077
5,546,376
5,546,417
5,546,444
15 : 5,545,732
5,545,809
16 : 5,544,463
5,545,141
5,546,217
5,546,558
5,544,362
5,544,398
5,544,424
5,544,425
5,544,438
5,544,469
5,544,575
5,544,583
5,544,591
5,544,604
5,544,624
5,544,631
5,544,675
5,544,686
5,544,698
5,544,738
5,544,749
5,544,767
5,544,848
5,544,868
5,544,880
5,544,883
5,544,891
5,544,902
5,544,904
5,544,941
5,544,968
5,545,036
5,545,054
5,545,098
5,545,103
5,545,222
5,545,223
5,545,296
5,545,312
5,545,313
5,545,370
5,545,382
5,545,415
5,545,416
5,545,417
5,545,425
5,545,430
5,545,459
5,545,739
5,545,750
5,545,816
5,546,093
5,546,119
5,546,138
5,546,264
5,546,267
5,546,275
5,546,281
5,546,293
5,546,302
5,546,323
5,546,331
5,546,380
5,546,429
5,546,454
5,546,456
5,546,472
5,546,574
4,592,087
4,689,819
5,544,413
5,544,459
5,544,476
5,544,632
5,544,642
5,544,648
5,544,708
5,544,754
5,544,882
5,544,888
5,544,990
5,545,003
5,545,147
5,545,318
5,545,411
5,545,635
5,545,636
5,545,638
5,545,641
5,545,653
5,545,661
5,545,685
5,545,749
5,545,866
5,545,878
5,545,915
19 : 5,544,709
5,544,793
5,544,957
5,545,811
5,545,812
5,545,973
5,546,397
5,546,449
5,544,799
20 : 5,544,822
5,545,327
21 : 5,545,877
22 : 5,544,400
5,544,555
5,544,567
5,544,682
5,544,740
5,544,820
5,545,674
5,545,822
24 : 5,544,571
5,544,581
5,544,586
5,544,652
5,544,665
5,544,792
5,544,865
5,545,254
5,545,376
5,545,476
5,545,516
5,545,517
5,545,522
5,545,620
5,545,627
5,545,639
5,545,726
5,546,198
5,546,358
5,546,450
25 : 5,544,399
5,544,446
5,544,479
5,544,532
5,544,660
5,544,670
5,544,700
5,544,741
5,544,843
5,544,887
5,544,897
5,545,012
5,545,028
5,545,086
5,545,120
5,545,128
5,545,132
5,545,149
5,545,168
5,545,170
5,545,177
5,545,192
5,545,209
5,545,331
5,545,337
5,545,409
5,545,532
5,545,539
5,545,540
5,545,566
5,545,597
5,545,613
5,545,615
5,545,617
5,545,717
5,545,719
5,545,723
5,545,729
5,545,745
5,545,917
5,545,953
5,546,000
5,546,041
5,546,065
5,546,190
5,546,309
5,546,320
5,546,377
5,546,453
5,546,471
5,546,487
5,546,499
5,546,517
5,546,525
5,546,540
5,546,543
5,546,580
5,295,305
5,544,377
5,544,385
5,544,436
5,544,441
27 : 5,544,450
5,544,593
5,544,892
5,545,133
5,545,137
5,545,139
5,545,151
5,545,186
5,545,194
5,545,202
5,545,205
5,545,208
5,545,213
5,545,280
5,545,315
5,545,326
5,545,335
5,545,505
5,545,507
5,545,515
5,545,544
5,545,545
5,545,668
5,545,676
5,545,698
5,545,814
5,545,899
5,545,926
5,546,256
5,546,301
5,546,362
5,546,390
5,544,448
5,544,455
5,544,458
5,544,471
5,544,481
28 : 5,544,943
29 : 5,544,590
5,544,671
5,544,685
5,544,760
5,544,951
5,545,042
5,545,095
5,545,174
5,545,619
5,545,673
5,546,316
5,546,462
30 : 5,544,421
5,544,744
32 : 5,544,440
5,544,728
5,544,893
5,545,310
5,545,314
5,546,063
33 : 5,544,380
5,544,615
5,544,802
5,545,146
5,545,195
5,545,918
5,546,324
5,546,452
5,546,536
34 : 5,544,420
5,544,610
5,544,618
5,544,657
5,544,748
5,544,753
5,544,768
5,544,770
5,544,781
5,544,862
5,544,881
5,544,916
5,545,016
5,545,069
5,545,136
5,545,143
5,545,155
5,545,180
5,545,217
5,545,229
5,545,237
5,545,269
5,545,270
5,545,330
5,545,333
5,545,342
5,545,348
5,545,359
5,545,410
5,545,442
5,545,455
5,545,472
5,545,506
5,545,529
5,545,537
5,545,549
5,545,558
5,545,600
5,545,622
5,545,734
5,545,735
5,545,742
5,545,758
5,545,763
5,545,788
5,545,790
5,545,835
5,545,838
5,545,945
5,546,082
5,546,124
5,546,194
5,546,210
5,546,420
5,546,421
5,546,442
5,546,485
5,546,521
5,546,531
5,544,520
5,544,574
5,544,723
5,545,797
5,545,798
5,545,894
5,546,314
5,544,403
5,544,434

5,544,997
5,545,198
5,545,328
5,545,344
5,545,363
5,545,375
5,545,397
5,545,492
5,545,614
5,545,648 40 : 5,544,704
5,545,679 5,544,712
5,545,952 5,544,817
5,545,974 5,544,846
5,545,984 5,545,356
5,546,268 5,545,690
5,546,336 5,545,714
5,546,464 5,545,873
5,546,541 41 : 5,544,661
5,546,549 5,544,866
5,544,406 5,544,919
39 : 5,544,409 5,544,944
5,544,480 5,545,162
5,544,492 5,545,394
5,544,494 5,545,535
5,544,540 5,545,949
5,544,556 5,546,023
5,544,696 5,546,074
5,544,845 5,546,102
5,544,849 5,546,103
5,544,860 5,546,114
5,544,867 5,546,434
5,544,912 5,546,447
5,544,935 5,546,538
5,544,955 5,546,539
5,544,978 5,546,546
5,545,019 5,546,596
5,545,123 5,546,597
5,545,127 42 : 5,544,391
5,545,142 5,544,408
5,545,179 5,544,419
5,545,221 5,544,475
5,545,230 5,544,486
5,545,262 5,544,621
5,545,265 5,544,695
5,545,279 5,544,764
5,545,319 5,544,807
5,545,340 5,544,854
5,545,350 5,545,051
5,545,354 5,545,081
5,545,388 5,545,154
5,545,407 5,545,160
5,545,414 5,545,172
5,545,431 5,545,178
5,545,432 5,545,184
5,545,437 5,545,228
5,545,453 5,545,287
5,545,483 5,545,347
5,545,547 5,545,438
5,545,681 5,545,601
5,545,686 5,545,669
5,545,713
5,545,824
5,545,841
5,545,996
5,546,083
5,546,141
5,546,154
5,546,240
5,546,445
5,544,704
5,544,712
5,544,817
5,544,846
5,545,356
5,545,690
5,545,714
5,545,873
5,544,661
5,544,866
5,544,919
5,544,944
5,545,162
5,545,394
5,545,535
5,545,949
5,546,023
5,546,074
5,546,102
5,546,103
5,546,114
5,546,434
5,546,447
5,546,538
5,546,539
5,546,546
5,546,596
5,546,597
5,544,391
5,544,408
5,544,419
5,544,475
5,544,486
5,544,621
5,544,695
5,544,764
5,544,807
5,544,854
5,545,051
5,545,081
5,545,154
5,545,160
5,545,172
5,545,178
5,545,184
5,545,228
5,545,287
5,545,347
5,545,438
5,545,601
5,545,669
5,545,689
5,545,695
5,545,696
5,545,705
5,545,756
5,545,761
5,545,783
5,545,826
5,545,916
5,545,944
5,545,947
5,546,060
5,546,068
5,546,110
5,546,266
5,546,286
5,546,383
5,546,463
5,546,495
5,546,507
5,546,744
5,544,437
5,544,524
5,544,692
5,545,115
5,545,353
5,546,115
5,546,116
5,546,360
5,544,445
5,544,745
5,544,976
5,545,419
5,545,451
5,546,313
5,546,592
5,544,747
45 : 5,544,561
47 : 5,544,600
5,544,605
5,544,613
5,544,831
5,545,080
5,545,091
5,545,163
5,545,227
5,545,373
5,545,379
5,545,380
5,545,796
48 : 5,544,393
5,544,430
5,544,443
5,544,594
5,544,645
5,544,666
5,544,672
5,544,705
5,544,711
5,544,713
5,544,763
5,544,797
5,544,800
5,544,804
5,544,811
5,544,839
5,544,876
5,544,922
5,544,971
5,544,977
5,545,082
5,545,182
5,545,188
5,545,197 49 : 5,544,550
5,545,216
5,545,278
5,545,290
5,545,308
5,545,351
5,545,429
5,545,556
5,545,563
5,545,574
5,545,593
5,545,602
5,545,603 50 : 5,544,558
5,544,909
5,545,672
5,545,691
5,545,760
5,545,765
5,545,766
5,545,767
5,545,792
5,545,801 51 : 5,544,371
5,545,804
5,545,845
5,545,846
5,545,920
5,545,935
5,545,940
5,545,951
5,546,007
5,546,024
5,546,039
5,546,047
5,546,055
5,546,272
5,546,297
5,546,310
5,546,312
5,546,325 53 : 5,544,382
5,546,333
5,546,340
5,546,355
5,546,398
5,546,405
5,546,406
5,546,438
5,546,469
5,546,480
5,546,519
5,546,520
5,546,524
5,546,526
5,546,527
5,546,537
5,546,553
5,546,573
5,546,583
5,546,588
5,546,599
Re.34,674
5,145,016
5,544,687
5,544,756
5,544,844
5,544,911
5,544,980
5,544,982
5,545,224
5,545,324
5,545,708
5,546,071
5,546,544
54 : 5,545,706
55 : 5,544,375
5,544,484
5,544,537
5,544,539
5,544,557
5,544,673
5,544,689
5,544,699
5,544,751
5,544,761
5,544,762
5,544,808
5,544,810
5,544,841
5,544,851
5,544,856
5,544,861
5,544,974
5,545,156
5,545,157
5,545,158
5,545,185
5,545,372
5,545,420
5,545,526
5,545,550
5,545,721
5,545,813
5,545,879
5,545,958
5,545,992
5,546,439
5,544,979
5,545,063
5,545,074
5,545,112
5,545,159
5,545,169
5,545,201
5,545,231
5,545,234
5,545,272
5,545,285
5,545,304
5,545,387
5,545,449
5,545,512
5,545,536
5,545,548
5,545,794
5,545,803
5,545,859
5,545,976
5,546,050
5,546,099
5,546,282
5,546,581
5,546,677
5,546,612
5,546,664
5,546,709
5,546,716
5,546,745
5,546,778
5,546,791
5,546,818
5,546,856
5,546,861
5,546,974
5,547,156
5,547,157
5,547,158
5,547,185
5,547,372
5,547,420
5,547,526
5,547,550
5,547,721
5,547,813
5,547,879
5,547,958
5,547,992

DESIGN PATENTS

04 : 372,601
372,768
05 : 372,756
06 : 372,579
372,587
372,590
372,592
372,609
372,610
372,611
372,623
372,630
372,644
372,645 08 : 372,582
372,646
372,650
372,651
372,655 09 : 372,606
372,663
372,678 12 : 372,613
372,684
372,696
372,714
372,717
372,718
372,729
372,730
372,734
372,735
372,736
372,739
372,742
372,743
372,752 15 : 372,668
372,753 17 : 372,602
372,764
372,774
372,776
372,779
372,780
372,617
372,691 18 : 372,593
372,783
372,772 19 : 372,595
21 : 372,598
372,633
372,679 22 : 372,649
372,697 24 : 372,596
372,748
372,762
372,781 25 : 372,574
372,615
372,637
372,622
372,653
372,654
372,760
372,771
372,670 26 : 372,698
372,699
372,692
372,703 27 : 372,710
372,682
372,765
372,632
372,642
372,572
372,584
372,707
372,754
372,585
372,616
372,631
372,635
372,648
372,575
372,608
372,683
372,740
372,750
372,770
372,789
372,600 37 : 372,705
372,640
372,583
372,599
372,614
372,657
372,659
372,757
372,773
372,775
372,577 41 : 372,588
372,666
372,785
372,786
372,571
372,581
372,589
372,675
372,680
372,624
44 : 372,746
372,747
372,751
48 : 372,573
372,578
372,580
372,594
372,639
372,647
372,681
50 : 372,677
51 : 372,612
53 : 372,664
372,709
372,716
372,745
372,778
55 : 372,591
372,618
372,628
372,634
372,652

PLANT PATENTS

41 : 9,626

VOL
1189
ISS
2
AG
13
1996
UMI

CHANGE OF ADDRESS FORM

NAME– FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

Mail this form to: NEW ADDRESS

Superintendent of Documents
Government Printing Office SSOM
Washington, D.C. 20402

Attach last subscription label here.

VOL
1189
ISS
2
AG
1
19 96
UMI

Superintendent of Documents **Subscription** Order Form

Order Processing Code:
*** 5606**

❑ **YES,** enter _____ subscription(s) to **Official Gazette of the U.S. Patent and Trademark Office: Patents** (OG) for $549 per year ($686.25 foreign).

The total cost of my order is $_____. Price includes regular shipping and handling and is subject to change. International customers please add 25%.

Company or personal name (Please type or print)

Additional address/attention line

Street address

City, State, Zip code

Daytime phone including area code

Purchase order number (optional)

Charge your order. It's easy!

For privacy protection, check the box below:
❑ Do not make my name available to other mailers

Fax your orders (202) 512–2250

Check method of payment:
❑ Check payable to Superintendent of Documents
❑ GPO Deposit Account ☐☐☐☐☐☐☐–☐
❑ VISA ❑ MasterCard

☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

☐☐☐☐ (expiration date)

Phone your orders (202) 512–1800

Thank you for your order!

Authorizing signature 4/95

Mail To: Superintendent of Documents
P.O. Box 371954, Pittsburgh, PA 15250–7954

Important: Please be sure to include this completed order form with your remittance.

VOL
1189
'55
2
AG
13
1996
UMI

Superintendent of Documents **Subscription** Order Form

Order Processing Code:
* **5606**

❑ **YES,** enter _____ subscription(s) to **Official Gazette of the U.S. Patent and Trademark Office: Patents** (OG) for $549 per year ($686.25 foreign).

The total cost of my order is $_____. Price includes regular shipping and handling and is subject to change. International customers please add 25%.

Company or personal name (Please type or print)

Additional address/attention line

Street address

City, State, Zip code

Daytime phone including area code

Purchase order number (optional)

Charge your order. It's easy!

For privacy protection, check the box below:
❑ Do not make my name available to other mailers

Fax your orders (202) 512–2250

Check method of payment:
❑ Check payable to Superintendent of Documents
❑ GPO Deposit Account ☐☐☐☐☐☐ – ☐
❑ VISA ❑ MasterCard

☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

☐☐☐☐ (expiration date)

Phone your orders (202) 512–1800

Thank you for your order!

Authorizing signature 4/95

Mail To: Superintendent of Documents
P.O. Box 371954, Pittsburgh, PA 15250–7954

Important: Please be sure to include this completed order form with your remittance.

VOL
1189
ISS
2
AG
13
1996
UMI

VOL
1189

ISS
2

AG
13

19 96

U.S. DEPARTMENT OF COMMERCE
Michael Kantor, *Secretary*
PATENT AND TRADEMARK OFFICE
Bruce Lehman, *Commissioner*

UMI

VOL
1189
ISS
3
AG
2 (
19 96
UMI

Vol. 1189 Number 3

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

PATENTS

August 2 [illegible]



PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

U.S.
DEPARTMENT
OF COMMERCE

Patent
and
Trademark
Office

VOL
1189
ISS
3
AUG
20
1996
UMI

OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
August 20, 1996 Volume 1189 Number 3

CONTENTS

		Page
Patent and Trademark Office Notices		
Patent Cooperation Treaty (PCT) Information	1189	OG 47
Notice of Maintenance Fees Payable	1189	OG 47
Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee	1189	OG 49
Reissue Applications Filed	1189	OG 55
Requests for Reexaminations Filed	1189	OG 56
Notice of Expiration of Trademark Registrations Due to Failure to Renew	1189	OG 56
Guidance On Searching and Examining PCT Applications Drawn to Computer-Related Inventions	1189	OG 58
37 CFR § 1.47 Notice by Publication	1189	OG 58
Status of Certification Services	1189	OG 61
Errata	1189	OG 61
Service by Publication	1189	OG 61
Revision of Patent Fees for Fiscal Year 1997	1189	OG 62
Appendix A	1189	OG 66
Patent Certificate of Correction	1189	OG 69
Summary of Final Decisions Issued by the Trademark Trial and Appeal Board	1189	OG 70
Special Boxes for Mail	1189	OG 72
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1189	OG 74
Patent Examining Corps	1189	OG 76
Condition of Trademark Applications	1189	OG 77
Reexaminations		1621
Reissue Patents Granted (35,314)		1623
Plant Patents Granted (9,628)		1625
Patents Granted		
General and Mechanical (5,546,601)		1627
Chemical (5,547,475)		1935
Electrical (5,548,079)		2105
Design Patents Granted (372,791)		2379
Index of Patentees		PI 1
Indices of Reissue, Reexaminations, Design and Plant Patents		PI 104
Classification of		
Patents (Including Reissues and Reexaminations)		PI 113
Designs and Plants Applications		PI 117
Geographical Index of Residence of Inventors		
Patents (Including Reissues and Reexaminations)		PI 119
Designs and Plants Applications		PI 121
Change of Address Form		PI 123
Subscription Order Form		PI 125

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402, to whom all subscriptions should be made payable and all communications addressed. VISA or MasterCard may be used for telephone orders, (202)-512-1800.

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly. Stock No. 703-033-00000-8
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly. Stock No. 703-034-00000-4
PATENT AND TRADEMARK OFFICE NOTICES, issued weekly. Stock No. 703-035-00000-1
GENERAL INFORMATION concerning PATENTS. Stock No. 003-004-00661-7

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $3.00 each; PLANT PATENTS in color, $12.00 each; copies of TRADEMARKS at $3.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S.P.T.O.

For sale by the U.S. Government Printing Office
Superintendent of Documents, Mail Stop: SSOP; Washington, DC 20402–9328

VOL
1189
ISS
3
AG
20
1996
UMI

Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1187 O.G. 49, on June 18, 1996.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective July 1, 1996, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1187 O.G. 73, on June 25, 1996.

International fees were changed, effective on January 1, 1996, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1181 O.G. 49, on December 19, 1995.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1995, and were announced in the *Official Gazette* at 1177 O.G. 171, on August 29, 1995.

The schedule of PCT fees (in U.S. dollars), effective July 1, 1996, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	220.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed	660.00
— Corresponding prior U.S. national application filed	430.00
— Supplemental search fee, per additional invention (payable only upon invitation)	190.00
European Patent Office as ISA	1585.00
International fees	
Basic fee	677.00
Basic supplemental fee (for each page over 30)	13.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	164.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	164.00
— Confirmation fee	82.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	207.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	470.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	710.00
— Additional examination fee, per additional invention (payable only upon invitation)	250.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	47.00	94.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	340.00	680.00
USPTO was ISA but not IPEA	375.00	750.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	505.00	1010.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	440.00	880.00
Other National fees		
— For each independent claim in excess of 3	39.00	78.00
— For each claim in excess of 20.	11.00	22.00
— For each application containing a multiple dependent claim	125.00	250.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(l)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(l)	130.00	130.00

June 4, 1996

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

---

Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on August 17, 1993 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,235,703 through 5,237,702
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on August 15, 1989 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,856,109 through 4,858,244
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on August 13, 1985 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,534,065 through 4,535,476
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1994, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $495.00
By other than a small entity $990.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $995.00
By other than a small entity $1,990.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,495.00
By other than a small entity $2,990.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $660.00
(2) unintentional $1,550.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED June 12, 1996
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,808	06/872,140	12/27/88
(4,453,344)	(06/520,758)	(06/12/84)
Re. 33,447	07/207,291	11/20/90
(4,749,097)	(07/082,791)	(06/07/88)
4,453,273	06/445,924	06/12/84
4,453,284	06/389,417	06/12/84
4,453,309	06/323,218	06/12/84
4,453,317	06/378,631	06/12/84
4,453,325	06/391,722	06/12/84
4,453,326	06/395.134	06/12/84
4,453,330	06/380,128	06/12/84
4,453,340	06/379,773	06/12/84
4,453,341	06/422,573	06/12/84
4,453,358	06/295,391	06/12/84
4,453,367	06/282,145	06/12/84
4,453,385	06/392,344	06/12/84
4,453,386	06/380,692	06/12/84
4,453,390	06/337,238	06/12/84
4,453,391	06/361,045	06/12/84
4,453,392	06/377,089	06/12/84
4,453,394	06/364,885	06/12/84
4,453,399	06/356,936	06/12/84
4,453,402	06/367,599	06/12/84
4,453,408	06/241,488	06/12/84
4,453,412	06/397,263	06/12/84
4,453,416	06/331,057	06/12/84
4,453,417	06/355,857	06/12/84
4,453,420	06/364,236	06/12/84
4,453,421	06/398,390	J6/12/84
4,453,425	06/362,196	06/12/84
4,453,426	06/372,870	06/12/84
4,453,428	06/261,048	06/12/84
4,453,438	06/520,474	06/12/84
4,453,439	06/397,344	06/12/84
4,453,441	06/447,080	06/12/84
4,453,443	06/367,934	06/12/84
4,453,446	06/444,472	06/12/84
4,453,449	06/300,843	06/12/84
4,453,455	06/385,642	06/12/84
4,453,464	06/440,971	06/12/84
4,453,467	06/264,138	06/12/84
4,453,470	06/347,169	06/12/84
4,453,475	06/406,706	06/12/84
4,453,479	06/347,617	06/12/84
4,453,487	06/363,106	06/12/84
4,453,492	06/407,643	06/12/84
4,453,494	06/360,154	06/12/84
4,453,500	06/378,250	06/12/84
4,453,502	06/456,143	06/12/84
4,453,510	06/529,553	06/12/84
4,453,512	06/372,003	06/12/84
4,453,514	06/460,722	06/12/84
4,453,516	06/266,136	06/12/84
4,453,524	06/435,703	06/12/84
4,453,527	06/334,956	06/12/84
4,453,530	06/447,325	06/12/84
4,453,534	06/396,227	06/12/84
4,453,535	06/318,776	06/12/84
4,453,539	06/353,511	06/12/84

Patent Number	Serial Number	Issue Date
4,453,547	06/251,139	06/12/84
4,453,548	06/490,361	06/12/84
4,453,551	06/237,984	06/12/84
4,453,553	06/473,934	06/12/84
4,453,558	06/366,487	06/12/84
4,453,561	06/383,307	06/12/84
4,453,563	06/392,724	06/12/84
4,453,564	06/366,617	06/12/84
4,453,565	06/351,977	06/12/84
4,453,566	06/373,184	06/12/84
4,453,569	06/357,997	06/12/84
4,453,570	06/278,800	06/12/84
4,453,581	06/487,181	06/12/84
4,453,584	06/495,270	06/12/84
4,453,592	06/289,616	06/12/84
4,453,595	06/415,537	06/12/84
4,453,607	06/409,240	06/12/84
4,453,613	06/296,341	06/12/84
4,453,614	06/360,022	06/12/84
4,453,615	06/384,242	06/12/84
4,453,622	06/287,906	06/12/84
4,453,625	06/309,215	06/12/84
4,453,628	06/481,296	06/12/84
4,453,629	06/450,725	06/12/84
4,453,639	06/377,441	06/12/84
4,453,644	06/453,892	06/12/84
4,453,647	06/461,243	06/12/84
4,453,650	06/320,750	06/12/84
4,453,654	06/389,071	06/12/84
4,453,658	06/409,175	06/12/84
4,453,661	06/312,748	06/12/84
4,453,664	06/439,384	06/12/84
4,453,667	06/340,101	06/12/84
4,453,671	06/344,103	06/12/84
4,453,674	06/373,074	06/12/84
4,453,677	06/507,758	06/12/84
4,453,679	06/362,323	06/12/84
4,453,680	06/277,849	06/12/84
4,453,684	06/329,093	06/12/84
4,453,693	06/280,068	06/12/84
4,453,697	06/353,046	06/12/84
4,453,698	06/373,098	06/12/84
4,453,703	06/322,850	06/12/84
4,453,706	06/477,233	06/12/84
4,453,708	06/326,476	06/12/84
4,453,709	06/375,793	06/12/84
4,453,717	06/417,408	06/12/84
4,453,722	06/451,634	06/12/84
4,453,723	06/385,333	06/12/84
4,453,729	06/420,034	06/12/84
4,453,731	06/362,174	06/12/84
4,453,743	06/316,864	06/12/84
4,453,746	06/220,188	06/12/84
4,453,748	06/342,549	06/12/84
4,453,753	06/385,327	06/12/84
4,453,757	06/324,121	06/12/84
4,453,760	06/292,928	06/12/84
4,453,762	06/419,460	06/12/84
4,453,763	06/367,898	06/12/84
4,453,765	06/422,132	06/12/84
4,453,771	06/349,567	06/12/84
4,453,773	06/454,738	06/12/84
4,453,775	06/322,452	06/12/84
4,453,776	06/302,431	06/12/84
4,453,780	06/329,787	06/12/84
4,453,781	06/343,529	06/12/84
4,453,783	06/334,491	06/12/84
4,453,785	06/312,390	06/12/84
4,453,788	06/283,947	06/12/84
4,453,803	06/371,809	06/12/84
4,453,816	06/445,286	06/12/84
4,453,836	06/297,944	06/12/84
4,453,845	06/459,191	06/12/84
4,453,847	06/419,347	06/12/84
4,453,848	06/381,593	06/12/84
4,453,856	06/271,018	06/12/84
4,453,862	06/378,328	06/12/84
4,453,864	06/439,670	06/12/84
4,453,865	06/400,397	06/12/84
4,453,870	06/355,827	06/12/84
4,453,875	06/397,526	06/12/84
4,453,877	06/316,663	06/12/84
4,453,883	06/381,157	06/12/84
4,453,889	06/407,628	06/12/84
4,453,895	06/392,447	06/12/84
4,453,907	06/486,792	06/12/84
4,453,912	06/341,260	06/12/84
4,453,923	06/230,981	06/12/84
4,453,924	06/361,763	06/12/84
4,453,928	06/376,529	06/12/84
4,453,933	06/324,542	06/12/84
4,453,941	06/439,802	06/12/84
4,453,942	06/448,571	06/12/84
4,453,943	06/478,005	06/12/84
4,453,944	06/479,291	06/12/84
4,453,948	06/445,641	06/12/84
4,453,949	06/473,308	06/12/84
4,453,950	06/420,051	06/12/84
4,453,954	06/487,635	06/12/84
4,453,960	06/419,954	06/12/84
4,453,964	06/397,632	06/12/84
4,453,967	06/422,487	06/12/84
4,453,972	06/460,471	06/12/84
4,453,978	06/417,156	06/12/84
4,453,990	06/383,984	06/12/84
4,453,992	06/270,959	06/12/84
4,453,997	06/468,807	06/12/84
4,453,999	06/368,313	06/12/84
4,454,006	06/401,165	06/12/84
4,454,013	06/496,813	06/12/84
4,454,014	06/455,367	06/12/84
4,454,015	06/423,673	06/12/84
4,454,023	06/477,948	06/12/84
4,454,024	06/438,407	06/12/84
4,454,025	06/263,395	06/12/84
4,454,029	06/267,596	06/12/84
4,454,032	06/501,487	06/12/84
4,454,042	06/427,086	06/12/84
4,454,050	06/476,950	06/12/84
4,454,053	06/472,476	06/12/84
4,454,054	06/399,756	06/12/84
4,454,061	06/382,306	06/12/84
4,454,068	06/513,088	06/12/84
4,454,072	06/398,118	06/12/84
4,454,086	06/389,836	06/12/84
4,454,099	06/375,528	06/12/84
4,454,100	06/439,414	06/12/84
4,454,101	06/508,969	06/12/84
4,454,102	06/303,462	06/12/84
4,454,107	06/412,747	06/12/84
4,454,109	06/357,167	06/12/84
4,454,110	06/518,951	06/12/84
4,454,112	06/358,557	06/12/84
4,454,123	06/472,786	06/12/84
4,454,127	06/443,404	06/12/84
4,454,138	06/363,125	06/12/84
4,454,148	06/448,149	06/12/84
4,454,154	06/276,658	06/12/84
4,454,155	06/435,623	06/12/84
4,454,159	06/410,989	06/12/84
4,454,161	06/336,941	06/12/84
4,454,167	06/395,202	06/12/84
4,454,176	06/434,247	06/12/84
4,454,181	06/466,790	06/12/84
4,454,193	06/470,548	06/12/84
4,454,195	06/397,236	06/12/84
4,454,206	06/401,032	06/12/84
4,454,207	06/513,523	06/12/84
4,454,213	06/366,376	06/12/84
4,454,230	06/397,002	06/12/84
4,454,233	06/331,859	06/12/84
4,454,241	06/381,388	06/12/84
4,454,243	06/344,907	06/12/84
4,454,244	06/479,418	06/12/84
4,454,246	06/408,256	06/12/84
4,454,261	06/358,391	06/12/84

Patent Number	Serial Number	Issue Date
4,454,262	06/369,337	06/12/84
4,454,263	06/489,684	06/12/84
4,454,267	06/450,823	06/12/84
4,454,268	06/507,191	06/12/84
4,454,271	06/476,389	06/12/84
4,454,274	06/427,400	06/12/84
4,454,276	06/428,394	06/12/84
4,454,278	06/276,916	06/12/84
4,454,281	06/445,944	06/12/84
4,454,286	06/484,061	06/12/84
4,454,290	06/272,798	06/12/84
4,454,293	06/507,394	06/12/84
4,454,294	06/407,757	06/12/84
4,454,297	06/458,225	06/12/84
4,454,307	06/530,678	06/12/84
4,454,308	06/447,092	06/12/84
4,454,321	06/387,625	06/12/84
4,454,323	06/545,202	06/12/84
4,454,324	06/481,218	06/12/84
4,454,329	06/279,650	06/12/84
4,454,333	06/401,338	06/12/84
4,454,335	06/378,397	06/12/84
4,454,339	06/395,448	06/12/84
4,454,340	06/499,607	06/12/84
4,454,346	06/248,630	06/12/84
4,454,352	06/401,479	06/12/84
4,454,353	06/426,663	06/12/84
4,454,354	06/404,210	06/12/84
4,454,358	06/337,683	06/12/84
4,454,361	06/448,653	06/12/84
4,454,369	06/376,076	06/12/84
4,454,373	06/442,430	06/12/84
4,454,375	06/416,304	06/12/84
4,454,377	06/390,308	06/12/84
4,454,378	06/447,969	06/12/84
4,454,384	06/376,888	06/12/84
4,454,385	06/437,931	06/12/84
4,454,388	06/445,803	06/12/84
4,454,389	06/279,547	06/12/84
4,454,395	06/351,311	06/12/84
4,454,396	06/384,695	06/12/84
4,454,404	06/324,570	06/12/84
4,454,407	06/395,377	06/12/84
4,454,408	06/286,842	06/12/84
4,454,416	06/339,032	06/12/84
4,454,419	06/370,398	06/12/84
4,454,427	06/320,114	06/12/84
4,454,428	06/285,886	06/12/84
4,454,429	06/299,053	06/12/84
4,454,436	06/391,956	06/12/84
4,454,439	06/470,491	06/12/84
4,454,447	06/415,308	06/12/84
4,454,448	06/339,956	06/12/84
4,454,450	06/527,506	06/12/84
4,454,451	06/333,199	06/12/84
4,454,453	06/386,529	06/12/84
4,454,464	06/331,643	06/12/84
4,454,466	06/444,946	06/12/84
4,454,469	06/421,935	06/12/84
4,454,471	06/321,273	06/12/84
4,454,474	06/330,215	06/12/84
4,454,487	06/360,003	06/12/84
4,454,489	06/279,936	06/12/84
4,454,492	06/368,115	06/12/84
4,454,503	06/299,047	06/12/84
4,454,507	06/336,751	06/12/84
4,454,517	06/382,117	06/12/84
4,454,519	06/400,107	06/12/84
4,454,525	06/215,822	06/12/84
4,454,527	06/252,356	06/12/84
4,454,531	06/350,556	06/12/84
4,454,535	06/292,533	06/12/84
4,454,536	06/365,643	06/12/84
4,454,537	06/353,248	06/12/84
4,454,538	06/401,431	06/12/84
4,454,539	06/342,980	06/12/84
4,454,540	06/342,981	06/12/84
4,454,544	06/328,834	06/12/84
4,454,545	06/388,143	06/12/84
4,454,547	06/394,603	06/12/84
4,454,553	06/363,399	06/12/84
4,454,554	06/404,554	06/12/84
4,454,556	06/429,719	06/12/84
4,454,559	06/412,683	06/12/84
4,454,563	06/398,458	06/12/84
4,454,572	06/382,525	06/12/84
4,454,577	06/274,951	06/12/84
4,454,581	06/383,900	06/12/84
4,454,582	06/359,269	06/12/84
4,454,587	06/283,189	06/12/84
4,454,595	06/334,037	06/12/84
4,454,598	06/405,594	06/12/84
4,454,609	06/308,273	06/12/84
4,748,699	07/051,297	06/07/88
4,748,701	06/899,908	06/07/88
4,748,702	07/038,635	06/07/88
4,748,709	06/918,160	06/07/88
4,748,710	06/864,615	06/07/88
4,748,715	07/075,435	06/07/88
4,748,717	06/917,963	06/07/88
4,748,720	07/052,082	06/07/88
4,748,731	07/029,101	06/07/88
4,748,732	07/048,216	06/07/88
4,748,737	06/802,562	06/07/88
4,748,739	07/006,752	06/07/88
4,748,740	06/822,299	06/07/88
4,748,742	06/935,256	06/07/88
4,748,749	06/930,766	06/07/88
4,748,751	06/936,865	06/07/88
4,748,752	07/003,857	06/07/88
4,748,753	07/022,668	06/07/88
4,748,754	07/035,643	06/07/88
4,748,756	07/006,176	06/07/88
4,748,761	07/054,721	06/07/88
4,748,762	06/911,732	06/07/88
4,748,765	06/887,887	06/07/88
4,748,766	06/829,015	06/07/88
4,748,773	07/023,821	06/07/88
4,748,776	07/058,845	06/07/88
4,748,778	06/946,217	06/07/88
4,748,783	07/008,470	06/07/88
4,748,792	06/888,326	06/07/88
4,748,795	06/896,235	06/07/88
4,748,804	06/939,218	06/07/88
4,748,808	06/879,442	06/07/88
4,748,810	06/901,526	06/07/88
4,748,811	06/906,290	06/07/88
4,748,813	07/077,591	06/07/88
4,748,815	07/083,447	06/07/88
4,748,816	07/069,081	06/07/88
4,748,822	06/938,103	06/07/88
4,748,835	07/076,752	06/07/88
4,748,837	06/940,493	06/07/88
4,748,839	07/026,513	06/07/88
4,748,841	06/853,097	06/07/88
4,748,843	06/922,258	06/07/88
4,748,845	07/112,241	06/07/88
4,748,847	07/053,812	06/07/88
4,748,853	06/908,538	06/07/88
4,748,856	07/006,147	06/07/88
4,748,858	06/888,821	06/07/88
4,748,862	07/026,615	06/07/88
4,748,863	07/026,915	06/07/88
4,748,872	06/856,805	06/07/88
4,748,879	06/907,084	06/07/88
4,748,880	06/859,404	06/07/88
4,748,884	07/016,813	06/07/88
4,748,892	07/079,511	06/07/88
4,748,899	06/941,749	06/07/88
4,748,903	07/069,347	06/07/88
4,748,904	06/880,758	06/07/88
4,748,908	06/817,220	06/07/88
4,748,910	06/941,409	06/07/88
4,748,911	06/941,382	06/07/88
4,748,912	06/864,008	06/07/88
4,748,924	06/935,043	06/07/88

Patent Number	Serial Number	Issue Date
4,748,928	07/065,525	06/07/88
4,748,930	07/017,000	06/07/88
4,748,936	06/885,779	06/07/88
4,748,937	06/887,538	06/07/88
4,748,938	07/030,909	06/07/88
4,748,942	07/100,558	06/07/88
4,748,946	07/070,987	06/07/88
4,748,947	07/064,719	06/07/88
4,748,949	06/759,949	06/07/88
4,748,966	06/927,210	06/07/88
4,748,968	07/037,067	06/07/88
4,748,972	07/039,434	06/07/88
4,748,973	07/010,265	06/07/88
4,748,977	06/809,730	06/07/88
4,748,978	06/781,098	06/07/88
4,748,984	07/055,534	06/07/88
4,748,993	07/107,250	06/07/88
4,748,996	07/012,062	06/07/88
4,748,998	06/431,310	06/07/88
4,748,999	06/934,399	06/07/88
4,749,006	06/758,512	06/07/88
4,749,010	06/931,750	06/07/88
4,749,011	06/946,612	06/07/88
4,749,015	06/879,971	06/07/88
4,749,016	06/903,870	06/07/88
4,749,019	06/941,162	06/07/88
4,749,034	07/067,521	06/07/88
4,749,035	07/044,414	06/07/88
4,749,036	06/915,478	06/07/88
4,749,038	06/843,464	06/07/88
4,749,039	06/896,554	06/07/88
4,749,044	07/010,209	06/07/88
4,749,045	07/046,785	06/07/88
4,749,046	07/046,635	06/07/88
4,749,047	07/044,581	06/07/88
4,749,051	06/780,198	06/07/88
4,749,052	06/947,359	06/07/88
4,749,053	06/832,190	06/07/88
4,749,071	06/370,740	06/07/88
4,749,079	06/851,889	06/07/88
4,749,081	07/019,854	06/07/88
4,749,084	06/930,321	06/07/88
4,749,089	07/000,595	06/07/88
4,749,093	07/024,766	06/07/88
4,749,098	07/087,782	06/07/88
4,749,101	07/062,486	06/07/88
4,749,104	07/096,438	06/07/88
4,749,106	06/807,615	06/07/88
4,749,108	07/109,663	06/07/88
4,749,109	06/911,398	06/07/88
4,749,111	07/066,193	06/07/88
4,749,112	07/117,435	06/07/88
4,749,113	06/935,777	06/07/88
4,749,117	06/846,966	06/07/88
4,749,121	06/793,173	06/07/88
4,749,127	07/014,595	06/07/88
4,749,141	07/077,150	06/07/88
4,749,142	06/946,207	06/07/88
4,749,147	06/927,714	06/07/88
4,749,150	06/813,234	06/07/88
4,749,152	07/043,752	06/07/88
4,749,156	06/867,817	06/07/88
4,749,179	06/924,042	06/07/88
4,749,180	07/058,234	06/07/88
4,749,184	07/028,313	06/07/88
4,749,187	06/889,680	06/07/88
4,749,190	07/038,412	06/07/88
4,749,194	06/887,091	06/07/88
4,749,195	07/027,261	06/07/88
4,749,200	06/864,768	06/07/88
4,749,205	06/885,872	06/07/88
4,749,206	07/016,792	06/07/88
4,749,215	07/086,166	06/07/88
4,749,216	06/851,733	06/07/88
4,749,217	06/936,621	06/07/88
4,749,218	07/061,466	06/07/88
4,749,226	06/933,104	06/07/88
4,749,228	07/039,581	06/07/88
4,749,232	07/003,089	06/07/88
4,749,234	06/812,072	06/07/88
4,749,235	07/001,694	06/07/88
4,749,247	06/847,703	06/07/88
4,749,254	06/719,346	06/07/88
4,749,263	07/001,802	06/07/88
4,749,264	06/942,290	06/07/88
4,749,271	06/929,327	06/07/88
4,749,275	06/913,252	06/07/88
4,749,280	06/920,568	06/07/88
4,749,285	06/941,420	06/07/88
4,749,289	07/060,003	06/07/88
4,749,290	06/894,034	06/07/88
4,749,300	07/004,597	06/07/88
4,749,302	06/494,818	06/07/88
4,749,303	06/860,847	06/07/88
4,749,309	06/922,477	06/07/88
4,749,312	07/037,096	06/07/88
4,749,313	06/908,186	06/07/88
4,749,316	06/935,371	06/07/88
4,749,332	06/816,960	06/07/88
4,749,338	07/048,535	06/07/88
4,749,341	06/913,106	06/07/88
4,749,342	06/812,347	06/07/88
4,749,346	06/924,969	06/07/88
4,749,348	06/825,364	06/07/88
4,749,350	07/095,559	06/07/88
4,749,358	07/022,886	06/07/88
4,749,363	07/025,020	06/07/88
4,749,366	07/078,931	06/07/88
4,749,369	07/025,727	06/07/88
4,749,371	06/927,154	06/07/88
4,749,377	06/860,496	06/07/88
4,749,383	06/870,741	06/07/88
4,749,387	06/937,069	06/07/88
4,749,388	07/007,975	06/07/88
4,749,394	07/083,676	06/07/88
4,749,401	07/090,396	06/07/88
4,749,405	06/894,734	06/07/88
4,749,412	07/031,253	06/07/88
4,749,415	07/008,028	06/07/88
4,749,416	06/891,992	06/07/88
4,749,417	07/033,676	06/07/88
4,749,423	06/863,230	06/07/88
4,749,425	07/072,179	06/07/88
4,749,426	06/582,524	06/07/88
4,749,431	06/867,698	06/07/88
4,749,446	06/597,560	06/07/88
4,749,447	06/866,892	06/07/88
4,749,451	07/011,124	06/07/88
4,749,456	07/082,874	06/07/88
4,749,458	07/020,773	06/07/88
4,749,463	07/043,556	06/07/88
4,749,466	07/040,246	06/07/88
4,749,470	06/903,314	06/07/88
4,749,476	06/904,339	06/07/88
4,749,478	06/927,870	06/07/88
4,749,481	06/891,942	06/07/88
4,749,483	07/072,245	06/07/88
4,749,485	06/900,165	06/07/88
4,749,486	06/843,088	06/07/88
4,749,487	06/817,728	06/07/88
4,749,496	06/885,108	06/07/88
4,749,499	06/913,540	06/07/88
4,749,501	06/879,438	06/07/88
4,749,512	06/926,851	06/07/88
4,749,515	06/927,454	06/07/88
4,749,516	06/779,726	06/07/88
4,749,518	06/763,052	06/07/88
4,749,523	06/725,068	06/07/88
4,749,525	06/881,425	06/07/88
4,749,528	06/941,576	06/07/88
4,749,530	06/929,431	06/07/88
4,749,536	07/076,030	06/07/88
4,749,537	06/843,789	06/07/88
4,749,539	06/614,896	06/07/88
4,749,542	06/916,137	06/07/88
4,749,546	06/905,502	06/07/88

Patent Number	Serial Number	Issue Date
4,749,548	06/903,514	06/07/88
4,749,552	06/894,308	06/07/88
4,749,556	06/804,548	06/07/88
4,749,558	07/030,030	06/07/88
4,749,559	06/869,714	06/07/88
4,749,560	06/640,191	06/07/88
4,749,564	06/832,454	06/07/88
4,749,566	06/801,843	06/07/88
4,749,570	06/815,752	06/07/88
4,749,573	07/015,226	06/07/88
4,749,576	06/869,646	06/07/88
4,749,580	06/818,781	06/07/88
4,749,584	06/893,502	06/07/88
4,749,597	07/109,635	06/07/88
4,749,598	07/016,315	06/07/88
4,749,599	07/044,652	06/07/88
4,749,604	07/018,477	06/07/88
4,749,605	06/904,052	06/07/88
4,749,616	06/876,597	06/07/88
4,749,626	06/879,118	06/07/88
4,749,633	07/107,114	06/07/88
4,749,635	06/754,494	06/07/88
4,749,638	06/859,037	06/07/88
4,749,644	06/875,611	06/07/88
4,749,651	06/570,284	06/07/88
4,749,653	06/789,530	06/07/88
4,749,654	06/321,893	06/07/88
4,749,656	06/900,011	06/07/88
4,749,658	06/662,851	06/07/88
4,749,659	07/020,065	06/07/88
4,749,663	07/066,082	06/07/88
4,749,666	06/944,154	06/07/88
4,749,671	06/880,827	06/07/88
4,749,672	06/802,542	06/07/88
4,749,673	06/897,323	06/07/88
4,749,682	06/912,768	06/07/88
4,749,683	06/914,528	06/07/88
4,749,685	06/892,588	06/07/88
4,749,689	07/087,966	06/07/88
4,749,691	07/037,470	06/07/88
4,749,694	06/604,349	06/07/88
4,749,698	06/752,695	06/07/88
4,749,701	06/941,807	06/07/88
4,749,705	07/014,370	06/07/88
4,749,706	06/843,150	06/07/88
4,749,710	06/729,326	06/07/88
4,749,717	07/001,282	06/07/88
4,749,718	06/888,257	06/07/88
4,749,724	06/933,409	06/07/88
4,749,726	06/939,523	06/07/88
4,749,727	06/791,405	06/07/88
4,749,729	06/812,345	06/07/88
4,749,731	06/851,769	06/07/88
4,749,733	06/940,834	06/07/88
4,749,737	07/065,465	06/07/88
4,749,741	07/029,123	06/07/88
4,749,745	06/837,196	06/07/88
4,749,748	06/828,236	06/07/88
4,749,749	07/084,868	06/07/88
4,749,752	06/843,089	06/07/88
4,749,754	07/077,920	06/07/88
4,749,755	06/868,931	06/07/88
4,749,756	07/003,740	06/07/88
4,749,759	06/824,630	06/07/88
4,749,763	06/785,193	06/07/88
4,749,768	07/014,841	06/07/88
4,749,775	07/070,553	06/07/88
4,749,776	06/925,945	06/07/88
4,749,781	06/909,434	06/07/88
4,749,786	07/034,517	06/07/88
4,749,789	07/072,004	06/07/88
4,749,797	06/878,039	06/07/88
4,749,799	06/869,232	06/07/88
4,749,803	06/816,078	06/07/88
4,749,805	07/013 145	06/07/88
4,749,811	06/792,420	06/07/88
4,749,813	06/454,828	06/07/88
4,749,815	07/010,362	06/07/88
4,749,818	07/103,764	06/07/88
4,749,820	06/650,594	06/07/88
4,749,823	07/035,220	06/07/88
4,749,825	07/032,867	06/07/88
4,749,829	07/035,660	06/07/88
4,749,833	07/083,630	06/07/88
4,749,837	07/011,067	06/07/88
4,749,838	06/809,986	06/07/88
4,749,840	06/864,448	06/07/88
4,749,843	06/918,482	06/07/88
4,749,844	06/865,744	06/07/88
4,749,852	07/086,573	06/07/88
4,749,854	07/022,165	06/07/88
4,749,866	06/897,552	06/07/88
4,749,871	07/037,889	06/07/88
4,749,876	06/944,981	06/07/88
4,749,885	07/015,382	06/07/88
4,749,889	06/932,579	06/07/88
4,749,890	07/038,992	06/07/88
4,749,893	06/885,527	06/07/88
4,749,900	06/931,602	06/07/88
4,749,902	06/937,552	06/07/88
4,749,903	06/934,481	06/07/88
4,749,906	07/054,507	06/07/88
4,749,918	06/328,611	06/07/88
4,749,919	06/720,065	06/07/88
4,749,922	07/040,785	06/07/88
4,749,928	07/026,382	06/07/88
4,749,931	07/033,451	06/07/88
4,749,933	06/833,982	06/07/88
4,749,936	06/926,103	06/07/88
4,749,938	07/046,740	06/07/88
4,749,940	06/944,028	06/07/88
4,749,945	06/934,720	06/07/88
4,749,950	06/839,851	06/07/88
4,749,954	07/060,858	06/07/88
4,749,959	06/933,799	06/07/88
4,749,965	06/942,839	06/07/88
4,749,969	07/075,190	06/07/88
4,749,971	07/065,747	06/07/88
4,749,972	07/060,269	06/07/88
4,749,978	07/096,795	06/07/88
4,749,979	07/086,434	06/07/88
4,749,988	06/932,573	06/07/88
4,749,994	06/870,583	06/07/88
4,749,995	06/705,575	06/07/88
4,750,003	07/091,144	06/07/88
4,750,013	07/083,844	06/07/88
4,750,023	07/059,146	06/07/88
4,750,026	06/799,556	06/07/88
4,750,030	06/942,229	06/07/88
4,750,049	06/890,082	06/07/88
4,750,053	06/576,140	06/07/88
4,750,054	06/915,487	06/07/88
4,750,057	06/814,457	06/07/88
4,750,062	06/724,616	06/07/88
4,750,076	07/040,224	06/07/88
4,750,082	07/103,331	06/07/88
4,750,084	07/018,928	06/07/88
4,750,086	06/807,713	06/07/88
4,750,090	06/947,200	06/07/88
4,750,097	06/934,833	06/07/88
4,750,105	06/893,726	06/07/88
4,750,119	06/917,894	06/07/88
4,750,132	06/906,255	06/07/88
4,750,133	06/516,175	06/07/88
4,750,142	06/822,892	06/07/88
4,750,143	06/830,228	06/07/88
4,750,158	06/461,791	06/07/88
4,750,167	06/920,825	06/07/88
4,750,184	07/030,897	06/07/88
4,750,189	06/945,620	06/07/88
4,750,190	07/033,213	06/07/88
4,750,196	06/798,096	06/07/88
4,750,199	07/106,488	06/07/88
4,750,201	06/902,253	06/07/88
4,750,205	06/829,325	06/07/88
4,750,206	06/923,978	06/07/88

Patent Number	Serial Number	Issue Date
4,750,213	06/872,627	06/07/88
4,750,217	06/849,515	06/07/88
5,119,513	07/712,141	06/09/92
5,119,515	07/613,048	06/09/92
5,119,522	07/427,581	06/09/92
5,119,526	07/723,763	06/09/92
5,119,532	07/671,118	06/09/92
5,119,538	07/565,656	06/09/92
5,119,539	07/624,075	06/09/92
5,119,544	07/642,828	06/09/92
5,119,545	07/579,703	06/09/92
5,119,548	07/461,996	06/09/92
5,119,559	07/738,385	06/09/92
5,119,560	07/638,386	06/09/92
5,119,564	07/674,009	06/09/92
5,119,565	07/770,441	06/09/92
5,119,566	07/656,093	06/09/92
5,119,571	07/561,675	06/09/92
5,119,574	07/627,299	06/09/92
5,119,575	07/600,747	06/09/92
5,119,576	07/589,336	06/09/92
5,119,577	07/669,637	06/09/92
5,119,579	07/701,743	06/09/92
5,119,580	07/716,294	06/09/92
5,119,584	07/735,078	06/09/92
5,119,586	07/679,240	06/09/92
5,119,591	07/733,639	06/09/92
5,119,593	07/667,133	06/09/92
5,119,598	07/590,172	06/09/92
5,119,599	07/557,925	06/09/92
5,119,602	07/777,846	06/09/92
5,119,604	07/696,001	06/09/92
5,119,605	07/572,421	06/09/92
5,119,606	07/672,747	06/09/92
5,119,610	07/623,751	06/09/92
5,119,613	07/495,092	06/09/92
5,119,618	07/474,479	06/09/92
5,119,620	07/682,313	06/09/92
5,119,622	07/567,644	06/09/92
5,119,623	07/570,049	06/09/92
5,119,627	07/431,660	06/09/92
5,119,629	07/372,562	06/09/92
5,119,630	07/381,633	06/09/92
5,119,642	07/804,973	06/09/92
5,119,647	07/486,619	06/09/92
5,119,648	07/580,067	06/09/92
5,119,649	07/610,378	06/09/92
5,119,650	07/751,098	06/09/92
5,119,651	07/698,324	06/09/92
5,119,663	07/640,444	06/09/92
5,119,667	07/719,149	06/09/92
5,119,673	07/553,651	06/09/92
5,119,676	07/753,516	06/09/92
5,119,680	07/640,803	06/09/92
5,119,682	07/548,969	06/09/92
5,119,684	07/558,757	06/09/92
5,119,688	07/530,202	06/09/92
5,119,690	07/750,190	06/09/92
5,119,696	07/390,909	06/09/92
5,119,699	07/675,867	06/09/92
5,119,713	07/529,103	06/09/92
5,119,714	07/662,935	06/09/92
5,119,715	07/724,631	06/09/92
5,119,720	07/820,444	06/09/92
5,119,722	07/619,528	06/09/92
5,119,724	07/684,282	06/09/92
5,119,729	07/433,589	06/09/92
5,119,730	07/740,523	06/09/92
5,119,731	07/604,637	06/09/92
5,119,732	07/643,036	06/09/92
5,119,740	07/791,007	06/09/92
5,119,742	07/673,069	06/09/92
5,119,745	07/691,076	06/09/92
5,119,748	07/605,850	06/09/92
5,119,750	07/573,353	06/09/92
5,119,751	07/617,838	06/09/92
5,119,753	07/569,407	06/09/92
5,119,754	07/703,165	06/09/92
5,119,762	07/779,861	06/09/92
5,119,763	07/725,155	06/09/92
5,119,764	07/663,668	06/09/92
5,119,765	07/743,864	06/09/92
5,119,767	07/624,479	06/09/92
5,119,781	07/661,975	06/09/92
5,119,784	07/674,737	06/09/92
5,119,785	07/670,413	06/09/92
5,119,790	07/551,900	06/09/92
5,119,796	07/593,937	06/09/92
5,119,798	07/577,258	06/09/92
5,119,801	07/779,113	06/09/92
5,119,803	07/709,202	06/09/92
5,119,808	07/544,741	06/09/92
5,119,812	07/716,318	06/09/92
5,119,816	07/578,880	06/09/92
5,119,821	07/473,569	06/09/92
5,119,826	07/560,576	06/09/92
5,119,838	07/657,907	06/09/92
5,119,842	07/734,448	06/09/92
5,119,843	07/751,529	06/09/92
5,119,844	07/790,821	06/09/92
5,119,846	07/700,399	06/09/92
5,119,856	07/256,956	06/09/92
5,119,858	07/734,174	06/09/92
5,119,867	07/673,189	06/09/92
5,119,869	07/596,958	06/09/92
5,119,870	07/658,253	06/09/92
5,119,872	07/738,020	06/09/92
5,119,878	07/667,643	06/09/92
5,119,883	07/744,997	06/09/92
5,119,887	07/716,921	06/09/92
5,119,889	07/660,293	06/09/92
5,119,892	07/616,635	06/09/92
5,119,899	07/659,203	06/09/92
5,119,901	07/656,636	06/09/92
5,119,904	07/754,072	06/09/92
5,119,909	07/470,114	06/09/92
5,119,928	07/578,435	06/09/92
5,119,932	07/629,829	06/09/92
5,119,933	07/630,525	06/09/92
5,119,946	07/655,130	06/09/92
5,119,950	07/759,162	06/09/92
5,119,955	07/527,434	06/09/92
5,119,958	07/731,073	06/09/92
5,119,959	07/636,682	06/09/92
5,119,966	07/686,703	06/09/92
5,119,969	07/791,710	06/09/92
5,119,970	07/598,598	06/09/92
5,119,973	07/628,228	06/09/92
5,119,976	07/176,183	06/09/92
5,119,978	07/651,637	06/09/92
5,119,979	07/612,096	06/09/92
5,119,988	07/545,399	06/09/92
5,119,996	07/795,304	06/09/92
5,119,997	07/746,619	06/09/92
5,120,006	07/462,124	06/09/92
5,120,007	07/459,275	06/09/92
5,120,008	07/387,583	06/09/92
5,120,012	07/706,785	06/09/92
5,120,014	07/707,854	06/09/92
5,120,028	07/671,265	06/09/92
5,120,029	07/376,935	06/09/92
5,120,030	07/705,988	06/09/92
5,120,031	07/702,552	06/09/92
5,120,035	07/467,867	06/09/92
5,120,036	07/727,401	06/09/92
5,120,041	07/669,535	06/09/92
5,120,050	07/619,110	06/09/92
5,120,051	07/374,983	06/09/92
5,120,053	07/740,138	06/09/92
5,120,054	07/640,702	06/09/92
5,120,055	07/732,833	06/09/92
5,120,060	07/755,524	06/09/92
5,120,069	07/783,523	06/09/92
5,120,070	07/669,471	06/09/92
5,120,072	07/644,023	06/09/92
5,120,074	07/650,591	06/09/92

Patent Number	Serial Number	Issue Date
5,120,075	07/460,893	06/09/92
5,120,079	07/629,023	06/09/92
5,120,080	07/512,467	06/09/92
5,120,081	07/701,744	06/09/92
5,120,082	07/674,873	06/09/92
5,120,086	07/666,551	06/09/92
5,120,087	07/623,355	06/09/92
5,120,095	07/362,389	06/09/92
5,120,097	07/599,631	06/09/92
5,120,098	07/577,513	06/09/92
5,120,101	07/628,529	06/09/92
5,120,102	07/695,212	06/09/92
5,120,104	07/759,508	06/09/92
5,120,108	07/658,333	06/09/92
5,120,110	07/694,449	06/09/92
5,120,111	07/714,918	06/09/92
5,120,114	07/437,859	06/09/92
5,120,117	07/705,579	06/09/92
5,120,122	07/490,305	06/09/92
5,120,123	07/427,039	06/09/92
5,120,124	07/526,395	06/09/92
5,120,128	07/641,444	06/09/92
5,120,136	07/405,948	06/09/92
5,120,141	07/595,811	06/09/92
5,120,142	07/554,020	06/09/92
5,120,143	07/554,019	06/09/92
5,120,144	07/516,551	06/09/92
5,120,155	07/677,770	06/09/92
5,120,161	07/650,319	06/09/92
5,120,164	07/705,489	06/09/92
5,120,168	07/737,435	06/09/92
5,120,182	07/577,155	06/09/92
5,120,183	07/668,218	06/09/92
5,120,185	07/623,085	06/09/92
5,120,190	07/682,286	06/09/92
5,120,197	07/553,031	06/09/92
5,120,198	07/733,445	06/09/92
5,120,200	07/653,063	06/09/92
5,120,204	07/746,174	06/09/92
5,120,212	07/605,830	06/09/92
5,120,214	07/649,258	06/09/92
5,120,216	07/689,292	06/09/92
5,120,218	07/699,114	06/09/92
5,120,224	07/309,294	06/09/92
5,120,225	07/694,468	06/09/92
5,120,226	07/639,570	06/09/92
5,120,230	07/710,233	06/09/92
5,120,236	07/715,613	06/09/92
5,120,243	07/611,547	06/09/92
5,120,249	07/741,081	06/09/92
5,120,254	07/652,041	06/09/92
5,120,261	07/714,921	06/09/92
5,120,262	07/478,613	06/09/92
5,120,263	07/695,056	06/09/92
5,120,264	07/653,722	06/09/92
5,120,273	07/760,943	06/09/92
5,120,279	07/453,702	06/09/92
5,120,282	07/597,669	06/09/92
5,120,283	07/700,408	06/09/92
5,120,286	07/622,492	06/09/92
5,120,287	07/686,400	06/09/92
5,120,289	07/760,918	06/09/92
5,120,290	07/617,891	06/09/92
5,120,294	07/713,694	06/09/92
5,120,301	07/539,012	06/09/92
5,120,303	07/359,665	06/09/92
5,120,304	07/734,884	06/09/92
5,120,309	07/364,253	06/09/92
5,120,314	07/673,951	06/09/92
5,120,321	07/540,139	06/09/92
5,120,332	07/435,122	06/09/92
5,120,335	07/699,189	06/09/92
5,120,344	07/747,467	06/09/92
5,120,345	07/627,615	06/09/92
5,120,354	07/696,792	06/09/92
5,120,356	07/641,848	06/09/92
5,120,357	07/785,035	06/09/92
5,120,358	07/397,867	06/09/92
5,120,374	07/522,339	06/09/92
5,120,386	07/586,356	06/09/92
5,120,388	07/592,860	06/09/92
5,120,392	07/703,300	06/09/92
5,120,402	07/714,008	06/09/92
5,120,409	07/560,145	06/09/92
5,120,410	07/583,442	06/09/92
5,120,422	07/663,423	06/09/92
5,120,424	07/643,143	06/09/92
5,120,429	07/071,812	06/09/92
5,120,439	07/682,941	06/09/92
5,120,440	07/523,027	06/09/92
5,120,450	07/457,449	06/09/92
5,120,451	07/671,911	06/09/92
5,120,457	07/579,527	06/09/92
5,120,458	07/679,253	06/09/92
5,120,459	07/498,055	06/09/92
5,120,460	07/501,960	06/09/92
5,120,461	07/570,576	06/09/92
5,120,472	07/359,530	06/09/92
5,120,476	07/627,354	06/09/92
5,120,478	07/659,870	06/09/92
5,120,479	07/643,915	06/09/92
5,120,489	07/674,016	06/09/92
5,120,491	07/761,097	06/09/92
5,120,493	07/716,024	06/09/92
5,120,494	07/709,456	06/09/92
5,120,504	07/378,477	06/09/92
5,120,513	07/381,507	06/09/92
5,120,515	07/643,617	06/09/92
5,120,516	07/461,923	06/09/92
5,120,517	07/646,431	06/09/92
5,120,543	07/726,731	06/09/92
5,120,544	07/538,778	06/09/92
5,120,555	07/719,142	06/09/92
5,120,568	07/527,914	06/09/92
5,120,569	07/629,786	06/09/92
5,120,578	07/737,352	06/09/92
5,120,579	07/749,144	06/09/92
5,120,596	07/744,658	06/09/92
5,120,608	07/571,239	06/09/92
5,120,611	07/565,374	06/09/92
5,120,615	07/536,701	06/09/92
5,120,617	07/602,357	06/09/92
5,120,623	07/624,076	06/09/92
5,120,629	07/507,338	06/09/92
5,120,647	07/617,882	06/09/92
5,120,648	07/199,229	06/09/92
5,120,673	07/645,770	06/09/92
5,120,676	07/498,868	06/09/92
5,120,686	07/638,171	06/09/92
5,120,687	07/374,908	06/09/92
5,120,688	07/529,816	06/09/92
5,120,689	07/611,646	06/09/92
5,120,698	07/703,314	06/09/92
5,120,711	07/616,813	06/09/92
5,120,718	07/714,820	06/09/92
5,120,730	07/713,788	06/09/92
5,120,744	07/593,180	06/09/92
5,120,750	07/508,612	06/09/92
5,120,755	07/563,178	06/09/92
5,120,759	07/690,408	06/09/92
5,120,764	07/265,654	06/09/92
5,120,766	07/612,910	06/09/92
5,120,775	07/727,288	06/09/92
5,120,782	07/724,414	06/09/92
5,120,789	07/641,496	06/09/92
5,120,792	07/670,257	06/09/92
5,120,793	07/510,485	06/09/92
5,120,803	07/401,841	06/09/92
5,120,815	07/373,857	06/09/92
5,120,818	07/453,782	06/09/92
5,120,825	07/631,557	06/09/92
5,120,826	07/631,559	06/09/92
5,120,839	07/540,060	06/09/92
5,120,841	07/027,433	06/09/92
5,120,848	07/639,184	06/09/92
5,120,851	07/437,664	06/09/92

Patent Number	Serial Number	Issue Date
5,120,857	07/483,282	06/09/92
5,120,860	07/134,863	06/09/92
5,120,862	07/770,822	06/09/92
5,120,864	07/620,854	06/09/92
5,120,866	07/686,290	06/09/92
5,120,868	07/676,361	06/09/92
5,120,872	07/621,392	06/09/92
5,120,873	07/723,976	06/09/92
5,120,874	07/164,384	06/09/92
5,120,879	07/707,376	06/09/92
5,120,884	07/655,875	06/09/92
5,120,897	07/569,310	06/09/92
5,120,914	07/572,972	06/09/92
5,120,920	07/376,080	06/09/92
5,120,923	07/584,558	06/09/92
5,120,932	07/627,778	06/09/92
5,120,943	07/539,986	06/09/92
5,120,952	07/536,598	06/09/92
5,120,957	07/765,485	06/09/92
5,120,960	07/691,187	06/09/92
5,120,963	07/642,320	06/09/92
5,120,973	07/694,425	06/09/92
5,120,975	07/497,899	06/09/92
5,120,983	07/759,830	06/09/92
5,121,009	07/539,027	06/09/92
5,121,015	07/613,178	06/09/92
5,121,019	07/341,247	06/09/92
5,121,020	07/317,412	06/09/92
5,121,022	07/574,021	06/09/92
5,121,041	07/667,384	06/09/92
5,121,048	07/605,792	06/09/92
5,121,052	07/642,774	06/09/92
5,121,054	07/534,437	06/09/92
5,121,058	07/686,263	06/09/92
5,121,059	07/539,408	06/09/92
5,121,064	07/576,244	06/09/92
5,121,083	07/675,515	06/09/92
5,121,086	07/682,484	06/09/92
5,121,088	07/644,070	06/09/92
5,121,094	07/742,131	06/09/92
5,121,097	07/423,967	06/09/92
5,121,098	07/692,920	06/09/92
5,121,107	07/558,052	06/09/92
5,121,110	07/597,173	06/09/92
5,121,117	07/671,315	06/09/92
5,121,118	07/435,418	06/09/92
5,121,122	07/529,970	06/09/92
5,121,123	07/700,382	06/09/92
5,121,128	07/487,209	06/09/92
5,121,131	07/428,521	06/09/92
5,121,133	07/445,974	06/09/92
5,121,140	07/627,419	06/09/92
5,121,156	07/750,741	06/09/92
5,121,161	07/681,772	06/09/92
5,121,166	07/588,688	06/09/92
5,121,204	07/604,536	06/09/92
5,121,217	07/506,113	06/09/92
5,121,219	07/511,168	06/09/92
5,121,248	07/376,352	06/09/92
5,121,254	07/611,602	06/09/92
5,121,256	07/669,200	06/09/92
5,121,259	07/434,431	06/09/92
5,121,265	07/333,272	06/09/92
5,121,269	07/782,156	06/09/92
5,121,281	07/625,194	06/09/92
5,121,291	07/654,595	06/09/92
5,121,295	07/654,732	06/09/92
5,121,296	07/712,437	06/09/92
5,121,305	07/680,841	06/09/92
5,121,306	07/665,462	06/09/92
5,121,313	07/734,431	06/09/92
5,121,317	07/566,738	06/09/92
5,121,321	07/313,423	06/09/92
5,121,331	07/595,785	06/09/92
5,121,338	07/730,394	06/09/92
5,121,339	07/568,499	06/09/92
5,121,341	07/532,823	06/09/92
5,121,342	07/399,743	06/09/92
5,121,348	07/401,209	06/09/92
5,121,351	07/666,429	06/09/92
5,121,364	07/741,874	06/09/92
5,121,367	07/335,860	06/09/92
5,121,375	07/567,506	06/09/92
5,121,377	07/183,582	06/09/92
5,121,398	07/557,443	06/09/92
5,121,399	07/612,537	06/09/92
5,121,409	07/504,294	06/09/92
5,121,410	07/471,521	06/09/92
5,121,418	07/745,837	06/09/92
5,121,419	07/606,123	06/09/92
5,121,428	07/610,317	06/09/92
5,121,429	07/376,544	06/09/92
5,121,433	07/538,547	06/09/92
5,121,434	07/365,566	06/09/92
5,121,435	07/433,713	06/09/92
5,121,440	07/575,188	06/09/92
5,121,443	07/410,552	06/09/92
5,121,459	07/735,288	06/09/92
5,121,462	07/582,970	06/09/92
5,121,463	07/504,673	06/09/92
5,121,481	07/475,711	06/09/92
5,121,496	07/224,508	06/09/92
5,121,498	07/193,248	06/09/92

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

5,194,662, Re. S.N. 08/627,377, Apr. 5, 1996, Cl. 560/35, O-BENZYLOXIME ETHERS AND CROP PROTECTION AGENTS CONTAINING THESE COMPOUNDS, Siegbert Brand, et. al., Owner of Record: *BASF Aktiengesellschaft, Rheinland Pfalz, Federal Republic of Germany,* Attorney or Agent: Norman F. Oblon, Ex. Gp.: 1205

5,224,745, Re. S.N. 08/499,072, July 6, 1995, Cl. 249/19.1, DEVICE FOR ATTACHING MATERIALS TO TREE LIMBS, J. Franklin Howell, Owner of Record: *Superior AG Products, Yakima, Wash.,* Attorney or Agent: Jeffrey J. King, Ex. Gp.: 3102

5,279,387, Re. S.N. 08/584,088, Jan. 11, 1996, Cl. 182/27, ARTICULATED LADDER ASSEMBLY, Paul R. Swiderski, et. al., Owner of Record: *Emerson Electric Co., St. Louis, Mo.,* Attorney or Agent: Ralph B. Brick, Ex. Gp.: 3505

5,299,314, Re. S.N. 08/623,457, Mar. 28, 1996, Cl. 395/200, NETWORK ADAPTER USING STATUS IN-LINES AND DATA LINES FOR BI-DIRECTIONALLY TRANSFERRING DATA BETWEEN LAN AND STANDARD P.C. PARALLEL PORT, Dirk I. Gates, Owner of Record: *Xircom, Inc., Woodland Hills, Calif.,* Attorney or Agent: David M. Simon, Ex. Gp.: 2317

5,302,316, Re. S.N. 08/624,354, Apr. 11, 1996, Cl. 252/183, OPTICAL FIBER COATING COMPOSITION, Yutaka Hashimoto, et. al., Owner of Record: *Dainippon Ink and Chemicals Inc., Tokyo, Japan,* Attorney or Agent: Le-Nhung Mcleland, Ex. Gp.: 2204

5,318,193, Re. S.N. 08/659,415, June 6, 1996, Cl. 220/1.5, BRACING SYSTEM FOR A LINER FOR A CARGO CONTAINER, Victor T. Podd, Sr., et. al., Owner of Record: *Inventors,* Attorney or Agent: James M. Bagarazzi, Ex. Gp.: 3207

5,319,394, Re. S.N. 08/658,528, June 5, 1996, Cl. 348/148, SYSTEM FOR RECORDING AND MODIFYING BEHAVIOR OF PASSENGER IN PASSENGER VEHICLES, Randy Dukek, Owner of Record: *Ultrak, Inc., Carrollton, Tex.,* Attorney or Agent: Jeffery E. Bacon, Ex. Gp.: 2602

5,320,618, Re. S.N. 08/663,619, June 14, 1996, Cl. 606/9, DEVICE FOR TREATMENT OF UNDESIRED SKIN DISFIGUREMENTS, Morgan Gustafsson, Owner of Record: *Inventor*, Attorney or Agent: None, Ex. Gp.: 3309

5,322,136, Re. S.N. 08/665,801, June 18, 1996, Cl. 175/65, AIR PERCUSSION DRILLING ASSEMBLY, Huy D. Bui, et. al., Owner of Record: *Smith International, Inc. Corp., Houston, Tex.*, Attorney or Agent: Jeffrey W. Tayon, Ex. Gp.: 3506

5,322,712, Re. S.N. 08/667,254, June 20, 1996, Cl. 427/250, PROCESS FOR IMPROVED QUALITY OF CVD COPPER FILMS, John A. Norman, et. al., Owner of Record: *Air Products and Chemicals, Inc., Allentown, Pa.*, Attorney or Agent: Geoffrey L. Chase, Ex. Gp.: 1112

5,358,630, Re. S.N. 08/648,520, May 13, 1996, Cl. 208/120, REGENERATING ZEOLITIC CRACKING CATALYSTS, Brent J. Bertus, Owner of Record: *Phillips Petroleum Co., Bartlesville, Okla.*, Attorney or Agent: Edward L. Bowman, Ex. Gp.: 1106

5,402,129, Re. S.N. 08/661,525, June 11, 1996, Cl. 342/70, MONOPULSE AZIMUTH RADAR SYSTEM FOR AUTOMOTIVE VEHICLE TRACKING, Robert C. Gellner, Owner of Record: *Vorad Safety Systems, Inc., San Diego, Calif.*, Attorney or Agent: Bruce W. Greenhaus, Ex. Gp.: 2202

5,421,713, Re. S.N. 08/660,672, June 6, 1996, Cl. 425/209, PASTA, PASTRY, COOKIE AND HORS D'OEUVRE MAKER, Alan L. Backus, Owner of Record: *Ronco R&D Incorp., Beverly Hills, Calif.*, Attorney or Agent: Thomas J. Daly, Ex. Gp.: 1305

5,462,131, Re. S.N. 08/661,954, June 12, 1996, Cl. 180/14, DEVICE FOR ATTACHING AN AGRICULTURAL IMPLEMENT TO A TRACTOR, Manfred Eidam, et. al., Owner of Record: *GKN Walterschield Gmbh, Lohmar, Federal Republic of Germany*, Attorney or Agent: W.R. Duke Taylor, Ex. Gp.: 3106

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

5,479,762, Reexam. No. 90/004,304, July 22, 1996, Cl. 53/490, CARRIER PUCK, Gary S. Bliss, Owner of Record: *Dow Brands L.P., Annapolis, Ind.*, Attorney or Agent: Robert L. Showalter, Dayton, Ohio, Ex. Gp.: 3201, Requester: Owner

---

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED APRIL 02, 1996 DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
104,931	71/084,810	06/29/1915
105,005	71/084,350	06/29/1915
105,018	71/083,293	06/29/1915
105,019	71/084,580	06/29/1915
325,406	71/358,428	06/25/1935
325,407	71/358,499	06/25/1935
325,443	71/361,957	06/25/1935
325,449	71/361,866	06/25/1935
325,451	71/361,489	06/25/1935
325,456	71/361,469	06/25/1935
325,458	71/361,467	06/25/1935
325,469	71/361,537	06/25/1935
325,494	71/361,726	06/25/1935
325,499	71/361,680	06/25/1935
325,507	71/361,490	06/25/1935
325,556	71/356,566	06/25/1935
607,802	71/650,799	06/28/1955
607,803	71/668,331	06/28/1955
607,814	71/674,093	06/28/1955
607,822	71/667,913	06/28/1955
607,832	71/667,218	06/28/1955
607,847	71/652,004	06/28/1955
607,850	71/668,131	06/28/1955
607,854	71/675,397	06/28/1955
607,855	71/618,838	06/28/1955
607,856	71/623,579	06/28/1955
607,872	71/661,663	06/28/1955
607,876	71/666,217	06/28/1955
607,882	71/671,513	06/28/1955
607,885	71/672,663	06/28/1955
607,890	71/674,146	06/28/1955
607,899	71/621,374	06/28/1955
607,902	71/641,011	06/28/1955
607,903	71/647,354	06/28/1955
607,906	71/652,902	06/28/1955
607,907	71/653,023	06/28/1955
607,911	71/654,708	06/28/1955
607,916	71/660,003	06/28/1955
607,942	71/651,452	06/28/1955
607,954	71/671,188	06/28/1955
607,955	71/671,190	06/28/1955
607,958	71/648,416	06/28/1955
607,960	71/665,620	06/28/1955
607,975	71/671,696	06/28/1955
607,978	71/638,112	06/28/1955
607,984	71/658,384	06/28/1955
607,985	71/659,018	06/28/1955
607,997	71/669,332	06/28/1955
608,020	71/669,320	06/28/1955
608,022	71/670,156	06/28/1955
608,037	71/640,221	06/28/1955
608,044	71/525,525	06/28/1955
608,045	71/636,418	06/28/1955
608,046	71/638,579	06/28/1955
608,061	71/659,099	06/28/1955
608,066	71/665,885	06/28/1955
608,068	71/666,832	06/28/1955
608,082	71/671,635	06/28/1955
608,083	71/671,744	06/28/1955
608,086	71/670,685	06/28/1955
608,093	71/655,179	06/28/1955
608,094	71/661,283	06/28/1955
608,096	71/668,697	06/28/1955
608,102	71/669,953	06/28/1955
608,108	71/664,112	06/28/1955
608,111	71/641,949	06/28/1955
608,114	71/652,528	06/28/1955
608,115	71/657,476	06/28/1955
608,121	71/634,476	06/28/1955
608,133	71/673,965	06/28/1955
608,134	71/663,723	06/28/1955
608,136	71/646,482	06/28/1955

Reg. Number	Serial Number	Reg. Date
608,140	71/665,547	06/28/1955
608,150	71/670,707	06/28/1955
1,013,779	73/014,845	02/04/1975
1,013,896	73/004,360	06/24/1975
1,013,897	73/004,833	06/24/1975
1,013,905	73/017,200	06/24/1975
1,013,911	73/022,154	06/24/1975
1,013,915	73/030,480	06/24/1975
1,013,916	73/030,759	06/24/1975
1,013,933	73/016,766	06/24/1975
1,013,935	73/017,850	06/24/1975
1,013,939	73/021,541	06/24/1975
1,013,942	73/022,494	06/24/1975
1,013,944	73/022,726	06/24/1975
1,013,945	73/023,020	06/24/1975
1,013,946	73/024,214	06/24/1975
1,013,947	73/025,064	06/24/1975
1,013,948	73/025,685	06/24/1975
1,013,950	73/026,436	06/24/1975
1,013,953	73/029,359	06/24/1975
1,013,954	73/029,953	06/24/1975
1,013,957	73/032,630	06/24/1975
1,013,969	73/037,098	06/24/1975
1,013,975	73/015,763	06/24/1975
1,013,978	73/028,217	06/24/1975
1,013,981	73/028,636	06/24/1975
1,013,982	73/029,557	06/24/1975
1,013,983	73/000,589	06/24/1975
1,013,987	73/005,471	06/24/1975
1,013,991	73/010,784	06/24/1975
1,013,992	73/016,309	06/24/1975
1,013,994	73/020,991	06/24/1975
1,013,997	73/000,192	06/24/1975
1,013,998	73/004,528	06/24/1975
1,014,001	73/007,211	06/24/1975
1,014,005	73/008,912	06/24/1975
1,014,007	73/011,911	06/24/1975
1,014,008	73/011,912	06/24/1975
1,014,011	73/012,982	06/24/1975
1,014,012	73/014,156	06/24/1975
1,014,013	73/014,481	06/24/1975
1,014,016	73/015,088	06/24/1975
1,014,020	73/020,552	06/24/1975
1,014,025	73/000,659	06/24/1975
1,014,026	73/001,572	06/24/1975
1,014,028	73/003,905	06/24/1975
1,014,031	73/005,853	06/24/1975
1,014,032	73/005,968	06/24/1975
1,014,034	73/006,251	06/24/1975
1,014,036	73/013,334	06/24/1975
1,014,043	73/021,556	06/24/1975
1,014,048	73/025,361	06/24/1975
1,014,053	73/028,734	06/24/1975
1,014,055	73/029,901	06/24/1975
1,014,056	73/030,485	06/24/1975
1,014,057	73/030,662	06/24/1975
1,014,062	73/033,647	06/24/1975
1,014,064	73/013,718	06/24/1975
1,014,066	73/023,741	06/24/1975
1,014,069	73/006,463	06/24/1975
1,014,071	73/022,263	06/24/1975
1,014,073	73/027,949	06/24/1975
1,014,074	73/027,950	06/24/1975
1,014,075	73/028,003	06/24/1975
1,014,076	73/028,189	06/24/1975
1,014,077	73/028,190	06/24/1975
1,014,078	73/028,191	06/24/1975
1,014,079	73/028,196	06/24/1975
1,014,080	73/028,197	06/24/1975
1,014,081	73/028,200	06/24/1975
1,014,082	73/028,202	06/24/1975
1,014,083	73/028,203	06/24/1975
1,014,084	73/028,204	06/24/1975
1,014,086	73/007,194	06/24/1975
1,014,087	73/011,016	06/24/1975
1,014,089	73/012,426	06/24/1975
1,014,090	73/012,437	06/24/1975
1,014,092	73/019,301	06/24/1975
1,014,097	73/029,660	06/24/1975
1,014,098	73/031,352	06/24/1975
1,014,105	73/002,006	06/24/1975
1,014,106	73/008,227	06/24/1975
1,014,108	73/010,007	06/24/1975
1,014,115	73/018,981	06/24/1975
1,014,117	73/019,516	06/24/1975
1,014,118	73/021,509	06/24/1975
1,014,121	73/026,549	06/24/1975
1,014,122	73/026,798	06/24/1975
1,014,123	73/028,159	06/24/1975
1,014,124	73/028,321	06/24/1975
1,014,129	73/029,043	06/24/1975
1,014,136	73/013,167	06/24/1975
1,014,137	73/015,942	06/24/1975
1,014,138	73/015,944	06/24/1975
1,014,144	73/019,569	06/24/1975
1,014,146	73/023,718	06/24/1975
1,014,147	73/023,886	06/24/1975
1,014,148	73/024,263	06/24/1975
1,014,155	73/035,403	06/24/1975
1,014,158	73/017,906	06/24/1975
1,014,160	73/020,217	06/24/1975
1,014,161	73/026,837	06/24/1975
1,014,162	73/012,468	06/24/1975
1,014,166	73/014,450	06/24/1975
1,014,168	73/022,183	06/24/1975
1,014,177	73/031,917	06/24/1975
1,014,179	73/019,442	06/24/1975
1,014,181	73/024,160	06/24/1975
1,014,184	73/015,538	06/24/1975
1,014,192	73/028,526	06/24/1975
1,014,194	73/002,641	06/24/1975
1,014,197	73/011,742	06/24/1975
1,014,198	73/013,728	06/24/1975
1,014,199	73/015,511	06/24/1975
1,014,200	73/017,890	06/24/1975
1,014,203	73/021,469	06/24/1975
1,014,204	73/028,960	06/24/1975
1,014,205	73/029,271	06/24/1975
1,014,206	73/030,064	06/24/1975
1,014,208	73/002,668	06/24/1975
1,014,213	73/010,760	06/24/1975
1,014,217	73/013,853	06/24/1975
1,014,218	73/017,472	06/24/1975
1,014,227	73/022,338	06/24/1975
1,014,232	73/002,757	06/24/1975
1,014,233	73/012,566	06/24/1975
1,014,234	73/013,472	06/24/1975
1,014,235	73/023,345	06/24/1975
1,014,236	73/024,296	06/24/1975
1,014,238	73/000,956	06/24/1975
1,014,241	73/010,204	06/24/1975
1,014,243	73/019,181	06/24/1975
1,014,244	73/019,182	06/24/1975
1,014,245	73/019,183	06/24/1975
1,014,248	73/032,935	06/24/1975
1,014,252	73/014,213	06/24/1975
1,014,253	73/023,986	06/24/1975
1,014,255	73/000,141	06/24/1975
1,014,259	73/008,888	06/24/1975
1,014,260	73/009,241	06/24/1975
1,014,262	73/012,902	06/24/1975
1,014,263	73/013,579	06/24/1975
1,014,268	73/026,014	06/24/1975
1,014,270	73/030,534	06/24/1975
1,014,272	73/006,696	06/24/1975
1,014,273	73/008,916	06/24/1975
1,014,274	73/009,738	06/24/1975
1,014,275	73/019,503	06/24/1975
1,014,278	73/023,596	06/24/1975
1,014,283	73/027,423	06/24/1975
1,014,291	73/001,134	06/24/1975
1,014,296	73/009,244	06/24/1975
1,014,298	73/010,866	06/24/1975
1,014,299	73/013,083	06/24/1975
1,014,300	73/014,661	06/24/1975
1,014,304	73/000,070	06/24/1975

Reg. Number	Serial Number	Reg. Date
1,014,305	73/000,332	06/24/1975
1,014,306	73/001,276	06/24/1975
1,014,307	73/003,183	06/24/1975
1,014,310	73/005,893	06/24/1975
1,014,312	73/008,708	06/24/1975
1,014,313	73/009,631	06/24/1975
1,014,314	73/018,397	06/24/1975
1,014,323	73/031,336	06/24/1975
1,014,324	73/039,157	06/24/1975
1,014,326	72/397,783	06/24/1975
1,014,328	72/424,851	06/24/1975
1,014,332	72/464,334	06/24/1975
1,014,334	72/428,710	06/24/1975
1,014,335	72/442,340	06/24/1975
1,014,337	72/453,501	06/24/1975
1,014,339	72/462,474	06/24/1975
1,014,340	72/454,656	06/24/1975
1,014,341	72/414,335	06/24/1975
1,014,349	72/459,374	06/24/1975
1,014,351	72/438,959	06/24/1975
1,014,353	72/443,015	06/24/1975
1,014,354	72/449,896	06/24/1975
1,014,358	72/463,944	06/24/1975
1,014,359	72/466,130	06/24/1975
1,014,365	72/280,708	06/24/1975
1,014,374	72/458,981	06/24/1975
1,014,375	72/459,585	06/24/1975
1,014,377	72/463,190	06/24/1975
1,014,380	72/443,420	06/24/1975
1,014,382	72/431,699	06/24/1975
1,014,383	72/435,334	06/24/1975
1,014,386	72/454,897	06/24/1975
1,014,387	72/456,048	06/24/1975
1,014,388	72/456,219	06/24/1975
1,014,391	72/460,407	06/24/1975
1,014,393	72/464,487	06/24/1975
1,014,394	72/464,925	06/24/1975
1,014,397	72/465,796	06/24/1975
1,014,399	72/460,071	06/24/1975
1,014,402	72/435,185	06/24/1975
1,014,407	72/456,863	06/24/1975
1,014,412	72/412,600	06/24/1975
1,014,418	72/359,822	06/24/1975
1,014,425	72/459,028	06/24/1975
1,014,426	72/301,705	06/24/1975
1,014,428	72/441,041	06/24/1975
1,014,429	72/465,654	06/24/1975
1,014,431	72/439,170	06/24/1975
1,014,433	72/442,639	06/24/1975
1,014,434	72/454,329	06/24/1975
1,014,436	72/455,321	06/24/1975
1,014,437	72/455,942	06/24/1975
1,014,440	72/464,664	06/24/1975
1,014,441	72/449,522	06/24/1975
1,014,448	72/435,683	06/24/1975
1,014,462	73/020,472	06/24/1975
1,014,463	73/032,170	06/24/1975
1,014,464	73/021,389	06/24/1975
1,014,465	73/017,518	06/24/1975
1,014,470	73/018,980	06/24/1975
1,014,473	73/025,074	06/24/1975
1,014,475	72/458,697	06/24/1975
1,014,476	72/449,663	06/24/1975

Guidance On Searching and Examining PCT Applications Drawn to Computer-Related Inventions

The following guidance should be applied when searching and examining a PCT application drawn to a computer-related invention:

Chapter I (Form 210 Search Report)

Under Chapter I, Office personnel conduct an international search and prepare an international search report on all subject matter searched and examined in U.S. national applications. Routinely, such subject matter includes *inter alia* computer-related inventions. Under the Examination Guidelines for Computer-Related Inventions (Guidelines), Office personnel conduct a complete examination, including a thorough search of the prior art, for *all* U.S. national applications drawn to computer-related inventions regardless of whether the claims recite statutory subject matter. *See* 61 Fed. Reg. 7478 (Feb. 28, 1996); 1184 OG 87 (March 26, 1996). Thus, Office personnel must conduct an international search, and prepare an international search report, on all PCT applications drawn to computer-related inventions.[1]

Office personnel are reminded that, when completing Section C. of the search report (Documents Considered To Be Relevant), the prior art references should be categorized as either "A", "X" or "Y" based on the claims read in light of the disclosure. Also, the citations should indicate which claims are relevant to the reference.

Chapter II (Form 408 Written Opinion and Form 409 IPER)

Under Chapter II, Office personnel conduct a preliminary examination and prepare an international preliminary examination report (IPER). In the examination, Office personnel determine whether the claimed invention satisfies the criteria for novelty, inventive step, and industrial applicability. For PCT applications drawn to computer-related inventions, Office personnel should use the Guidelines as an aid in determining whether the claimed invention satisfies the criteria for industrial applicability. Often, a claimed invention determined to be non-statutory under the Guidelines will not satisfy the criteria for industrial applicability because the claimed invention cannot be made or used in the technological sense in any kind of industry. *See* PCT Article 33(4).

Office personnel are reminded, however, that written opinions and IPERs should not cite U.S. statutes, regulations, or case law except those which pertain to PCT. In the same manner, written opinions and IPERs should not reference the Guidelines *per se*.

[1] Accordingly, Item 1. of Box I. in the search report is not applicable. However, in rare circumstances, Office personnel will be unable to conduct an international search, *e.g.*, it is impossible to determine the subject matter of the PCT application. In that circumstance, Item 2. of Box I. should be checked and explained, as it would be in a similar circumstance for non-computer-related subject matter.

July 22, 1996

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

37 CFR § 1.47 Notice by Publication

Notice is hereby given of the filing of the following applications with a petition under 37 CFR § 147 requesting the acceptance of the application without the signature of all inventors or, if the inventor is deceased, the legal representative of the deceased inventor. The petition in each application has been granted. A notice has been sent to the last known address of the non-signing inventor or the legal representative. The inventors or legal representatives whose signatures are missing may join in the application by promptly filing an oath or declaration complying with 37 CFR § 1.63.

Application No.	Filing Date	Non-Signing Inventor(s)	Title of Invention
08/029,746	June 1, 1993	Kun Lin	Digital-To-Analog Converter Including Integral Digital Audio Filter

Application No.	Filing Date	Non-Signing Inventor(s)	Title of Invention
08/120,212	September 10, 1993	Quinghua Qian	Method for Inducing Thrombosis in Blood Vessels
08/229,607	April 12, 1994	Joseph Wisniewski AlbinRosinski	Video Display on Vehicle Mirror
08/233,111	December 22, 1994	Sid Smith	Collapsible Container for Hauling Bulk Materials
08/236,294	May 2, 1994	Samlal Nandlal	Direct Tendon To Pile Connection
08/292,576	August 22, 1994	John Rogers	Telephone Pinless Payment System
08/317,676	October 5, 1994	Martin Alpert	Mobile Telephone System for Receiving and Storing Alpha-Numeric Information
08/329,542	October 26, 1994	Matthew Bartlett	Vapor Compression Refrigeration System
08/333,497	November 2, 1994	Burkhard Katz	Multo-Image Compositing
08/344,743	November 23, 1994	Daniel St. Louis	Recombinant Retroviruses
08/362,662	December 22, 1994	Frederic de Sauvage Daniel Eaton	C-MPL Ligand Polypeptide
08/366,668	December 30, 1994	James Neil	Active Digit Cancelling Parallel Dialer
08/377,610	January 25, 1995	David Arnold, Jr.	No-Reset Option in a Batch Billing System
08/383,190	February 3, 1995	Arnold Herer	Process for Irradiating Gemstones
08/386,275	February 9, 1995	Brian Houghton	Bi-Directional Electric Torque Motor and Driver
08/388,655	February 14, 1995	Brian Keish	An Improved Method of Applying Boundary Test Patterns
08/389,814	February 14, 1995	Dennis DeCamp	Syringe and Cannula For Insertion of Viscoelastic Material Into and Eye and Method of Using Same
08/399,699	March 3, 1995	Philip Canada	Separation System Belt Construction
08/414,467	March 31, 1995	Peter Ecclesine	A Method and Apparatus for Writing and Reading Entries in An Event Status Queue of a Host Memory
08/414,468	March 31, 1995	Peter Ecclesine	Delivering Received Data Based on Packet Size
08/414,474	March 31, 1995	Peter Ecclesine	Interrupt Request Control Logic
08/414,535	March 31, 1995	Jerry Twomey	Grandiflora Rose Variety Named "Twoangel"
08/414,536	March 31, 1995	Jerry Twomey	Grandiflora Rose Variety Named "Twocherish"
08/422,591	April 14, 1995	Tak Wah Mak	Transgenic Mammals Lacking Expression of Particular CD45 Isoforms
08/430,716	April 27, 1995	William Sutherland	Display Device with Singular, Unidirectional Impulse Drive
08/433,178	May 3, 1995	Adrian Adrienne Van Der Straten-Ponthoz	Expressions of Heterologous Proteins in Drosphila Cells

Application No.	Filing Date	Non-Signing Inventor(s)	Title of Invention
08/434,693	May 4, 1995	Joseph Blechl	Automated Prescription Vial Filling System
08/449,850	May 24, 1995	Rolf Muller	TEM Waveguide Arrangement
08/455,398	May 31, 1995	Michael Mahar	Automatic Prescription Dispensing System
08/456,746	June 1, 1995	Michael Shebanow	Programmable Instruction Trap System and Method
08/457,049	June 1, 1995	Michael Shebanow	Method and Apparatus For Rotating Active Instructions in Parallel Data Processor
08/458,968	June 2, 1995	Michael Allaway	Laminated Visco-Elastic Support
08/459,182	June 2, 1995	Thomas Gates	Method for Preventing Heartburn
08/468,084	June 6, 1995	Arup Sen	Biocompatible Hydroxyapatite Formulations and Uses Therefor
08/469,909	June 6, 1995	Arup Sen	Biocompatible Hydroxyapatite Formulations and Uses Therefor
08/471,216	June 6, 1995	Arup Sen	Biocompatible Hydroxyapatite Formulations and Uses Therefor
08/472,109	June 7, 1995	Daniel St. Louis	Recombinant Retroviruses
08/473,846	June 7, 1995	Oliver McConnell	Novel Cytoxic Macrolides and Methods of Use
08/481,169	June 7, 1995	Michael LeBlanc	Multiple Lumen Catheter
08/484,667	June 7, 1995	John Vavruska	Plasma Energy Recycle and Conversion (PERC) Reactor and Process
08/490,461	June 14, 1995	Stephen Christensen	An Apparatus and Method for Accessing Memory in a TDM Network
08/497,591	June 30, 1995	Michael Sartori	Apparatus for Acoustic Near Field Scanning Using Conformal Arrayal
08/503,953	July 19, 1995	Roy Greeff Glenn Arbanas Bruce Williams	An Improved Digital/Analog Bit Synchronizer
08/504,779	July 20, 1995	Roy Coyle	Manufacture of Transition Metal Carbide, Nitride or Carbonitride Whiskers
08/507,801	August 21, 1995	David Wolfer	Pulse on Pulse Angle of Arrival Processing
08/509,048	July 31, 1995	Scott Clifford	Method and Apparatus for Cutting and Applying Adhesive Tape of Lead-On-Chip (LOC) Semiconductor Packages
08/511,306	August 4, 1995	Edward Hill	Power Line Isolator
08/517,158	August 18, 1995	Franklin Santagate	Therapy Device
08/517,229	August 21, 1995	Michael Shebanow	Addressing Method for Executing Load Instructions Out of Order with Respect to Store Instructions
08/517,542	August 21, 1995	Yulin Shao	Power Plant With Carbon Dioxide Capture and Zero Pollutant Emissions

Application No.	Filing Date	Non-Signing Inventor(s)	Title of Invention
08/518,549	August 31, 1995	Michael Shebanow	Method and Apparatus for Efficiently Writing Results to Renamed Registers
08/537,568	October 2, 1995	Michael Theobald	Method and Apparatus for Reducing Data Delay Within a Multi-Channel Shared Data Processing Environment
08/540,263	October 6, 1995	Steve Lipsky	Mobile or Modular Home Heating and Humidifying System and Method for Installing Humidifier Therein
08/549,969	October 30, 1995	Thomas Leonard	Wafer Grinding Machine
08/554,055	November 6, 1995	James Barnes	Printed Circuit Board Wedge Section Retainer
08/560,573	November 17, 1995	Benjamin Shapherd	Interrupt Request Control Logic
08/581,772	January 2, 1996	Danny Sebastian	Drill String Orienting Tool
08/590,700	January 31, 1996	Robin Roddewig	System and Method for Determining Absolute Vehicle Height and Ground Speed

Application No.	Filing Date	Non-Signing Legal Representative	Title of Invention
08/472,105	June 7, 1995	Hardevi Gianchandani	Compositions of Poly(Phenylene Ether) and Polyamide Resins, Which Exhibit Improved Beard Growth Reduction

Status of Certification Services

On November 28, 1995, the Office published an Official Gazette Notice entitled "Temporary Suspension of At Cost Services for Orders for Certified Copies" (1180 OG 121) to advise practitioners and the public of delays in filling orders for certified copies of PTO documents. This is an update of actual days to mail for orders filled during the month of June 1996:

Certified Product	Goal	Actual Calendar Days to Mail
Patent Application-As-Filed, Expedited	7	15
Patent Application-As-Filed, Regular	17	19
Patent Related File Wrapper	25	31
Patent Copy	10	5
Patent Assignments	17	13
Trademark Application-As-Filed, Expedited	7	12
Trademark Application-As-Filed, Regular	17	17
Trademark Related File Wrapper	25	46
Trademark Assignments	17	20
Trademark Registration, Expedited	3*	5*
Trademark Registration, Regular	10*	12*

* Business Days

Due to backlogs and varying availability of media, customers will not be advised when orders are not delivered within the published goal periods. However, customers will be advised if any unexpected delay in their order has been identified. Customers should use the above actual days to mail for each product as a guide as to when they can expect their orders.

Delivery of any specific copy will vary based on the availability of microfilm products and/or file accessibility. Customers are encouraged to fax orders for copies directly to Certification Division at (703) 308-9759 and to pay by PTO Deposit Account, MasterCard, or Visa. Information on the status of pending orders may be obtained by calling (703) 308-9726 or 1 (800) 972-6382 (outside the Washington, D.C. Metro area).

July 24, 1996 WESLEY H. GEWEHR
Administrator for Information Dissemination

Errata

In the list of patents which expired December 21, 1985, due to failure to pay maintenance fees, in the O.G. of February 28, 1995, the following patent should not have appeared:

Patent Number	Serial Number	Issue Date	Filing Date
4,365,066	06/253,932	12/12/82	11/25/80

Service by Publication

A petition to cancel the registration identified below having been filed, and the notice of such proceeding sent by certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, its assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

Mid Kansas Savings and Loan Association, Wichita, Kans., Reg. No 1,246,577 for the mark "SAFECHECK AND DESIGN", Canc. No. 23,925.

JEAN BROWN
Technical Support Manager,
Trademark Trial
and Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner
for Trademarks

Department of Commerce
Patent and Trademark Office

37 CFR Part 1
[Docket No. 960417113-6186-02]
RIN 0651-AA82

Revision of Patent Fees for Fiscal Year 1997

Agency: Patent and Trademark Office, Commerce.
Action: Notice of Final Rulemaking.
Summary: The Patent and Trademark Office (PTO) is amending the rules of practice in patent cases to adjust certain patent fee amounts to reflect fluctuations in the Consumer Price Index (CPI) and to recover costs of operation.
Effective Date: October 1, 1996.
For Further Information Contact: Robert Harris by telephone at (703) 305-8510, fax at (703) 305-8525, e-mail at rharris@uspto.gov, or by mail marked to his attention and addressed to the U.S. Patent and Trademark Office, Office of Planning and Evaluation, Crystal Park 1, Suite 1107, Washington, D.C. 20231.
Supplementary Information: This rule change is designed to adjust PTO fees in accordance with the applicable provisions of title 35, United States Code; and section 10101 of the Omnibus Budget Reconciliation Act of 1990 (as amended by section 8001 of Public Law 103-66), all as amended by the Patent and Trademark Office Authorization Act of 1991 (Public Law 102-204).

BACKGROUND:

Statutory Provisions

Patent fees are authorized by 35 U.S.C. 41 and 35 U.S.C. 376. A fifty percent reduction in the fees paid under 35 U.S.C. 41(a) and (b) by independent inventors, small business concerns, and nonprofit organizations who meet prescribed definitions is required by 35 U.S.C. 41(h).

Subsection 41(f) of title 35, United States Code, provides that fees established under 35 U.S.C. 41(a) and (b) may be adjusted on October 1, 1992, and every year thereafter, to reflect fluctuations in the Consumer Price Index (CPI) over the previous 12 months.

Section 10101 of the Omnibus Budget Reconciliation Act of 1990 (amended by section 8001 of Public Law 103-66) provides that there shall be a surcharge on all fees established under 35 U.S.C. 41(a) and (b) to collect $115 million in fiscal year 1997.

Subsection 41(d) of title 35, United States Code, authorizes the Commissioner to establish fees for all other processing, services, or materials related to patents to recover the average cost of providing these services or materials, except for the fees for recording a document affecting title, for each photocopy, and for each black and white copy of a patent.

Section 376 of title 35, United States Code, authorizes the Commissioner to set fees for patent applications filed under the Patent Cooperation Treaty (PCT).

Subsection 41(g) of title 35, United States Code, provides that new fee amounts established by the Commissioner under section 41 may take effect thirty days after notice in the *Federal Register* and the *Official Gazette of the Patent and Trademark Office.*

Recovery Level Determinations

This rule adjusts patent fees for a planned recovery of $716,723,000 in fiscal year 1997, as proposed in the Administration's budget request to the Congress.

The patent statutory fees established by 35 U.S.C. 41(a) and (b) will be adjusted on October 1, 1996, to reflect any fluctuations occurring during the previous 12 months in the Consumer Price Index for all urban consumers (CPI-U). In calculating these fluctuations, the Office of Mangement and Budget (OMB) has determined that the PTO should use CPI-U data as determined by the Secretary of Labor. However, the Department of Labor does not make public the CPI-U until approximately 21 days after the end of the month being calculated. Therefore, the latest CPI-U information available is for the month of June 1996. In accordance with previous rulemaking methodology, the PTO uses the Administration's projected CPI-U for the 12-month period ending September 30, 1996, which is 3.1 percent. Based on this projection, patent statutory fees will be adjusted by 3.1 percent. Before the final fee schedule is published, the fees may be adjusted slightly based on updated data available from the Department of Labor.

Certain non-statutory patent processing fees established under 35 U.S.C. 41(d) and PCT processing fees established under 35 U.S.C. 376 will be adjusted to recover their estimated average costs in fiscal year 1996. Three patent service fees that are set by statute will not be adjusted. The three fees that are not being adjusted are assignment recording fees, printed patent copy fees and photocopy charge fees.

The final fee amounts were rounded by applying standard arithmetic rules so that the amounts rounded would be convenient to the user. Fees of $100 or more were rounded to the nearest $10. Fees between $2 and $99 were rounded to an even number so that any comparable small entity fee would be a whole number.

Workload Projections

Determination of workload varies by fee. Principal workload projection techniques are as follows:

Patent application workloads are projected from statistical regression models using recent application filing trends. Patent issues are projected from an in-house patent production model and reflect examiner production achievements and goals. Patent maintenance fee workloads utilize patents issued 3.5, 7.5 and 11.5 years prior to payment and assume payment rates of 79 percent, 55 percent and 32 percent, respectively. Service fee workloads follow linear trends from prior years' activities.

General Procedures

Any fee amount that is paid on or after the effective date of the fee increase would be subject to the new fees then in effect. For purposes of determining the amount of the fee to be paid, the date of mailing indicated on a proper Certificate of Mailing or Transmission, where authorized under 37 CFR 1.8, will be considered to be the date of receipt in the PTO. A Certificate of Mailing or Transmission under Section 1.8 is not proper for items which are specifically excluded from the provisions of Section 1.8. Section 1.8 should be consulted for those items for which a Certificate of Mailing or Transmission is not proper. Such items include, inter alia, the filing of national and international applications for patents and the filing of trademark applications. However, the provisions of 37 CFR 1.10 relating to filing papers and fees with an "Express Mail" certificate do apply to any paper or fee (including patent and trademark applications) to be filed in the PTO. If an application or fee is filed by "Express Mail" with a proper certificate dated on or after the effective date of the rules, as amended, the amount of the fee to be paid would be the fee established by the amended rules.

In order to ensure clarity in the implementation of the new fees, a discussion of specific sections is set forth below.

Discussion of Specific Rules

37 CFR 1.16 National application filing fees.

Section 1.16, paragraphs (a), (b), (d), and (f) through (i), is revised to adjust fees established therein to reflect fluctuations in the CPI. Further, section 1.16, is revised to remove the undesignated text following paragraph (d), and add a new paragraph (k) including the provisions of such deleted undesignated text. In addition, § 1.16(k) is also applicable to any additional fees required by §§ 1.16(i) and (j).

37 CFR 1.17 Patent application processing fees.

Section 1.17, paragraphs (b) through (g), (m), (r) and (s), is revised to adjust fees established therein to reflect fluctuations in the CPI.

Section 1.17, paragraphs (j) and (n) through (p), is revised to adjust fees established therein to recover costs.

37 CFR 1.18 Patent issue fees.

Section 1.18, paragraphs (a) through (c), is revised to adjust fees established therein to reflect fluctuations in the CPI.

37 CFR 1.20 Post-issuance fees.

Section 1.20, paragraphs (c), (i), and (j), is revised to adjust fees established therein to recover costs.

Section 1.20, paragraphs (e) through (g), is revised to adjust fees established therein to reflect fluctuations in the CPI.

37 CFR 1.21 Miscellaneous fees and charges.

Section 1.21, paragraph (a)(1), is revised to establish a nonrefundable application fee which reflects the costs of processing an application for the registration examination. Currently, the PTO evaluates and processes the applications of individuals who do not qualify for admission or those who withdraw from the examination, but generally refunds the examination fee to such applicants. Thus, other fee payers bear the costs of this evaluation and processing. This amendment will shift the expense of evaluating applications to all applicants. In order to offset the application fee, the examination fee will be slightly decreased.

Section 1.21, paragraphs (a)(3) and (a)(6), is revised to adjust fees established therein to recover costs.

37 CFR 1.445 International application filing, processing, and search fees.

Section 1.445, paragraph (a), is revised to adjust the fees authorized by 35 U.S.C. 376 to recover costs and reflect current business practices.

37 CFR 1.482 International preliminary examination fees.

Section 1.482, paragraphs (a)(1)(i), (a)(1)(ii), and (a)(2)(ii), is revised to adjust the fees authorized by 35 U.S.C. 376 to recover costs.

37 CFR 1.492 National stage fees.

Section 1.492, paragraphs (a), (b) and (d), is revised to adjust fees established therein to reflect fluctuations in the CPI.

Response to Comments on the Rules

A notice of proposed rulemaking to adjust patent fee amounts was published in the *Federal Register* on May 1, 1996, at 61 FR 19224 and in the *Official Gazette of the United States Patent and Trademark Office* on May 7, 1996, at 1186 OG 14.

A public hearing was held on June 5, 1996. Two comments were received and considered in adopting the rules set forth herein. No oral testimony was presented.

Comment: One respondent stated that the PTO should not adjust patent fee amounts using the U.S. Department of Labor's Consumer Price Index (CPI). The respondent stated that the CPI does not reflect a true or accurate index of increasing consumer prices.
Response: The PTO is required by law to base its inflationary fee increases on fluctuations in the CPI over the 12 months prior to the effective date of the fee increase. However, if the Department of Labor modifies the definition or changes the method of calculating the Consumer Price Index for all urban consumers (CPI-U), which is the version of the CPI that OMB has determined the PTO should use, future PTO inflationary fee increases could be based on the revised index.
Comment: One respondent stated that the patent extension fees set in 37 CFR 1.17(a) through (d) should be reduced by at least 50 percent for patent applications filed on or after June 8, 1995.
Response: Patent extension fees were set in statute by Congress in 1982 with the enactment of Public Law 97-247. The PTO does not have the authority to offer a 50 percent discount for all patent applications filed on or after June 8, 1995.

Other Considerations

This rulemaking contains no information collection within the meaning of the Paperwork Reduction Act of 1995, 44 U.S.C. 3501 et seq. This rule has been determined to be not significant for purposes of Executive Order 12866. The PTO has determined that this rule change has no Federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

The Assistant General Counsel for Legislation and Regulation of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration, that the rule change will not have a significant impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 605(b)). The rule change increases fees to reflect the change in the CPI as authorized by 35 U.S.C. 41(f). Further, the principal impact of the major patent fees has already been taken into account in 35 U.S.C. 41(h), which provides small entities with a 50-percent reduction in the major patent fees.

A comparison of existing and new fee amounts is included as an Appendix to this notice of final rulemaking.

Lists of Subjects in 37 CFR Part 1

Administrative practice and procedure, Inventions and patents, Reporting and recordkeeping requirements, Small businesses.

For the reasons set forth in the preamble, the PTO is amending title 37 of the Code of Federal Regulations, Part 1, as set forth below.

Part 1 - Rules of Practice in Patent Cases

1. The authority citation for 37 CFR Part 1 continues to read as follows:
Authority: 35 U.S.C. 6, unless otherwise noted.

2. Section 1.16 is amended by revising paragraphs (a), (b), (d), (f) through (i), and adding a new paragraph (m) before the note to read as follows:

§ 1.16 National application filing fees.

(a) Basic fee for filing each application for an original patent, except provisional, design or plant applications:

By a small entity (§ 1.9(f))	$385.00
By other than a small entity	$770.00

(b) In addition to the basic filing fee in an original application, except provisional applications, for filing or later presentation of each independent claim in excess of 3:

By a small entity (§ 1.9(f))	$40.00
By other than a small entity	$80.00

*****

(d) In addition to the basic filing fee in an original application, except provisional applications, if the application contains, or

is amended to contain, a multiple dependent claim(s), per application:

By a small entity (§ 1.9(f)) $130.00
By other than a small entity $260.00

*****

(f) Basic fee for filing each design application

By a small entity (§ 1.9(f)) $160.00
By other than a small entity $320.00

(g) Basic fee for filing each plant application, except provisional applications:

By a small entity (§ 1.9(f)) $265.00
By other than a small entity $530.00

(h) Basic fee for filing each reissue application:

By a small entity (§ 1.9(f)) $385.00
By other than a small entity $770.00

(i) In addition to the basic filing fee in a reissue application, for filing or later presentation of each independent claim which is in excess of the number of independent claims in the original patent:

By a small entity (§ 1.9(f)) $40.00
By other than a small entity $80.00

*****

(m) If the additional fees required by paragraphs (b), (c), (d), (i) and (j) of this section are not paid on filing or on later presentation of the claims for which the additional fees are due, they must be paid or the claims must be canceled by amendment, prior to the expiration of the time period set for reply by the Office in any notice of fee deficiency.

3. Section 1.17 is amended by revising paragraphs (b) through (g), (j), (m) through (p), (r), and (s) to read as follows:

§ 1.17 Patent application processing fees.

*****

(b) Extension fee for response within second month pursuant to § 1.136(a):

By a small entity (§ 1.9(f)) $195.00
By other than a small entity $390.00

(c) Extension fee for response within third month pursuant to § 1.136(a):

By a small entity (§ 1.9(f)) $465.00
By other than a small entity $930.00

(d) Extension fee for response within fourth month pursuant to § 1.136(a):

By a small entity (§ 1.9(f)) $735.00
By other than a small entity $1,470.00

(e) For filing a notice of appeal from the examiner to the Board of Patent Appeals and Interferences:

By a small entity (§ 1.9(f)) $150.00
By other than a small entity $300.00

(f) In addition to the fee for filing a notice of appeal, for filing a brief in support of an appeal:

By a small entity (§ 1.9 (f)) $150.00
By other than a small entity $300.00

(g) For filing a request for an oral hearing before the Board of Patent Appeals and Interferences in an appeal under 35 U.S.C. 134:

By a small entity (§ 1.9(f)) $130.00
By other than a small entity $260.00

*****

(j) For filing a petition to institute a public use proceeding under § 1.292 ..... $1,470.00

*****

(m) For filing a petition:
(1) For revival of an unintentionally abandoned application, or
(2) For the unintentionally delayed payment of the fee for issuing a patent:

By a small entity (§ 1.9(f)) $645.00
By other than a small entity $1,290.00

(n) For requesting publication of a statutory invention registration prior to the mailing of the first examiner's action pursuant to § 1.104—$900.00 reduced by the amount of the application basic filing fee paid.

(o) For requesting publication of a statutory invention registration after the mailing of the first examiner's action pursuant to § 1.104—$1,790.00 reduced by the amount of the application basic filing fee paid.

(p) For submission of an information disclosure statement under § 1.97(c) $230.00

*****

(r) For entry of a submission after final rejection under §1.129(a):

By a small entity (§ 1.9(f)) $385.00
By other than a small entity $770.00

(s) For each additional invention requested to be examined under §1.129(b):

By a small entity (§ 1.9(f)) $385.00
By other than a small entity $770.00

4. Section 1.18 is revised to read as follows:

§ 1.18 Patent issue fees.

(a) Issue fee for issuing each original or reissue patent, except a design or plant patent:

By a small entity (§ 1.9(f)) $645.00
By other than a small entity $1,290.00

(b) Issue fee for issuing a design patent:

By a small entity (§ 1.9(f)) $220.00
By other than a small entity $440.00

(c) Issue fee for issuing a plant patent:

By a small entity (§ 1.9(f)) $325.00
By other than a small entity $650.00

5. Section 1.20 is amended by revising paragraphs (c), (e) through (g), (i)(1), (i)(2), and (j)(1) through (j)(3) to read as follows:

§ 1.20 Post issuance fees.

*****

(c) For filing a request for reexamination (§ 1.510(a)) $2,460.00

*****

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980, in force beyond four years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $510.00
By other than a small entity $1,020.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980, in force beyond eight years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,025.00
By other than a small entity $2,050.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980, in force beyond twelve years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,540.00
By other than a small entity $3,080.00

*****

(i) ***

(1) unavoidable $680.00
(2) unintentional $1,600.00

(j) ***

(1) Application for extension under §1.740 ..... $1,090.00
(2) Initial application for interim extension under §1.790 ..... $410.00
(3) Subsequent application for interim extension under §1.790 ..... $210.00

6. Section 1.21 is amended by revising paragraph (a)(1), (a)(3), and (a)(6) to read as follows:

§ 1.21 Miscellaneous fees and charges.

*****

(a) ***

(1) For admission to examination for registration to practice:
(i) Application Fee (non-refundable) $40.00
(ii) Registration examination fee $300.00

*****

(3) For reinstatement to practice $40.00

*****

(6) For requesting regrading of an examination under § 10.7(c):
(i) Regrading of morning section (PTO Practice and Procedure) $225.00
(ii) Regrading of afternoon section (Claim Drafting) $530.00

*****

7. Section 1.445 is amended by revising paragraph (a) to read as follows:

§ 1.445 International application filing, processing and search fees.

(a) The following fees and charges for international applications are established by the Commissioner under the authority of 35 U.S.C. 376:
(1) A transmittal fee (see 35 U.S.C. 361(d) and PCT Rule 14) $230.00
(2) A search fee (see 35 U.S.C. 361(d) and PCT Rule 16):
(i) Where a corresponding prior United States National application filed under 35 U.S.C. 111(a) with the filing fee under 37 CFR 1.16(a) has been filed $440.00
(ii) For all situations not provided for in (a)(2)(i) of this section $680.00
(3) A supplemental search fee when required, per additional invention $200.00

*****

8. Section 1.482 is amended by revising paragraphs (a)(1)(i), (a)(1)(ii), and (a)(2)(ii) to read as follows:

§ 1.482 International preliminary examination fees.

(a) ***

(1) ***

(i) Where an international search fee as set forth in § 1.445(a)(2) has been paid on the international application to the United States Patent and Trademark Office as an International Searching Authority, a preliminary examination fee of $480.00
(ii) Where the International Searching Authority for the international application was an authority other than the United States Patent and Trademark Office, a preliminary examination fee of $730.00

(2) ***

(ii) Where the International Searching Authority for the international application was an authority other than the United States Patent and Trademark Office $260.00

*****

9. Section 1.492 is amended by revising paragraphs (a), (b), and (d) to read as follows:

§ 1.492 National stage fees.

*****

(a) The basic national fee:
(1) Where an international preliminary examination fee as set forth in § 1.482 has been paid on the international application to the United States Patent and Trademark Office:

By a small entity (§ 1.9(f)) $350.00
By other than a small entity $700.00

(2) Where no international preliminary examination fee as set forth in § 1.482 has been paid to the United States Patent and Trademark Office, but an international search fee as set forth in § 1.445(a)(2) has been paid on the international application to the United States Patent and Trademark Office as an International Searching Authority:

By a small entity (§ 1.9(f)) $385.00
By other than a small entity $770.00

(3) Where no international preliminary examination fee as set forth in § 1.482 has been paid and no international search fee as set forth in § 1.445(a)(2) has been paid on the international application to the United States Patent and Trademark Office:

By a small entity (§ 1.9(f)) $520.00
By other than a small entity $1,040.00

(4) Where an international preliminary examination fee as set forth in §1.482 has been paid to the United States Patent and Trademark Office and the international preliminary examination report states that the criteria of novelty, inventive step (non-obviousness), and industrial applicability, as defined in PCT Article 33 (1) to (4) have been satisfied for all the claims presented in the application entering the national stage (see § 1.496(b)):

By a small entity (§ 1.9(f)) $48.00
By other than a small entity $96.00

(5) Where a search report on the international application has been prepared by the European Patent Office or the Japanese Patent Office:

By a small entity (§ 1.9(f)) $455.00
By other than a small entity $910.00

(b) In addition to the basic national fee, for filing or later presentation of each independent claim in excess of 3:

By a small entity (§ 1.9(f)) $40.00
By other than a small entity $80.00

*****

(d) In addition to the basic national fee, if the application contains, or is amended to contain, a multiple dependent claim(s), per application:

By a small entity (§ 1.9(f)) $130.00
By other than a small entity $260.00

*****

July 24, 1996

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

---

NOTE- The following appendix will not appear in the Code of Federal Regulations.

Appendix A - Comparison of Existing and Revised Fee Amounts

37 CFR Sec.	DESCRIPTION	Pre-Oct 1996	Oct 1996
1.16(a)	Basic Filing Fee	$750	$770
1.16(a)	Basic Filing Fee (Small Entity)	$375	$385
1.16(b)	Independent Claims	$78	$80
1.16(b)	Independent Claims (Small Entity)	$39	$40
1.16(c)	Claims in Excess of 20	$22	—
1.16(c)	Claims in Excess of 20 (Small Entity)	$11	—
1.16(d)	Multiple Dependent Claims	$250	$260
1.16(d)	Multiple Dependent Claims (Small Entity)	$125	$130
1.16(e)	Surcharge - Late Filing Fee	$130	—
1.16(e)	Surcharge - Late Filing Fee (Small Entity)	$65	—
1.16(f)	Design Filing Fee	$310	$320
1.16(f)	Design Filing Fee (Small Entity)	$155	$160
1.16(g)	Plant Filing Fee	$510	$530
1.16(g)	Plant Filing Fee (Small Entity)	$255	$265
1.16(h)	Reissue Filing Fee	$750	$770
1.16(h)	Reissue Filing Fee (Small Entity)	$375	$385
1.16(i)	Reissue Independent Claims	$78	$80
1.16(i)	Reissue Independent Claims (Small Entity)	$39	$40
1.16(j)	Reissue Claims in Excess of 20	$22	—
1.16(j)	Reissue Claims in Excess of 20 (Small Entity)	$11	—
1.16(k)	Provisional Application Filing Fee	$150	—
1.16(k)	Provisional Application Filing Fee (Small Entity)	$75	—
1.16(l)	Surcharge - Incomplete Provisional App. Filed	$50	—
1.16(l)	Surcharge - Incomplete Provisional App. Filed (Small Entity)	$25	—
1.17(a)	Extension - First Month	$110	—
1.17(a)	Extension - First Month (Small Entity)	$55	—
1.17(b)	Extension - Second Month	$380	$390
1.17(b)	Extension - Second Month (Small Entity)	$190	$195
1.17(c)	Extension - Third Month	$900	$930
1.17(c)	Extension - Third Month (Small Entity)	$450	$465
1.17(d)	Extension - Fourth Month	$1,400	$1,470
1.17(d)	Extension - Fourth Month (Small Entity)	$700	$735
1.17(e)	Notice of Appeal	$290	$300
1.17(e)	Notice of Appeal (Small Entity)	$145	$150
1.17(f)	Filing a Brief	$290	$300
1.17(f)	Filing a Brief (Small Entity)	$145	$150
1.17(g)	Request for Oral Hearing	$250	$260
1.17(g)	Request for Oral Hearing (Small Entity)	$125	$130
1.17(h)	Petition - Not All Inventors	$130	—
1.17(h)	Petition - Correction of Inventorship	$130	—
1.17(h)	Petition - Decision on Questions	$130	—
1.17(h)	Petition - Suspend Rules	$130	—
1.17(h)	Petition - Expedited License	$130	—
1.17(h)	Petition - Scope of License	$130	—
1.17(h)	Petition - Retroactive License	$130	—
1.17(h)	Petition - Refusing Maintenance Fee	$130	—
1.17(h)	Petition - Refusing Maintenance Fee - Expired Patent	$130	—
1.17(h)	Petition - Interference	$130	—
1.17(h)	Petition - Reconsider Interference	$130	—
1.17(h)	Petition - Late Filing of Interference	$130	—
1.20(b)	Petition - Correction of Inventorship	$130	—
1.17(h)	Petition - Refusal to Publish SIR	$130	—
1.17(i)	Petition - For Assignment	$130	—

37 CFR Sec.	DESCRIPTION	Pre-Oct 1996	Oct 1996
1.17(i)	Petition - For Application	$130	—
1.17(i)	Petition - Late Priority Papers	$130	—
1.17(i)	Petition - Suspend Action	$130	—
1.17(i)	Petition - Divisional Reissues to Issue Separately	$130	—
1.17(i)	Petition - For Interference Agreement	$130	—
1.17(i)	Petition - Amendment After Issue	$130	—
1.17(i)	Petition - Withdrawal After Issue	$130	—
1.17(i)	Petition - Defer Issue	$130	—
1.17(i)	Petition - Issue to Assignee	$130	—
1.17(i)	Petition - Accord a Filing Date Under § 1.53	$130	—
1.17(i)	Petition - Accord a Filing Date Under § 1.62	$130	—
1.17(i)	Petition - Make Application Special	$130	—
1.17(j)	Petition - Public Use Proceeding	$1,430	$1,470
1.17(k)	Non-English Specification	$130	—
1.17(l)	Petition - Revive Abandoned Appl.	$110	—
1.17(l)	Petition - Revive Abandoned Appl. (Small Entity)	$55	—
1.17(m)	Petition - Revive Unintentionally Abandoned Appl.	$1,250	$1,290
1.17(m)	Petition - Revive Unintentionally Abandoned Appl. (Small Entity)	$625	$645
1.17(n)	SIR - Prior to Examiner's Action	$870	$900
1.17(o)	SIR - After Examiner's Action	$1,740	$1,790
1.17(p)	Submission of an Information Disclosure Statement (§ 1.97)	$220	$230
1.17(q)	Petition - Correction of Inventorship (Prov. App.)	$50	—
1.17(q)	Petition - Accord a filing date (Prov. App.)	$50	—
1.17(q)	Petition - Entry of submission after final rejection (Prov. App.))	$50	—
1.17(r)	Filing a submission after final rejection (1.129(a))	$750	$770
1.17(r)	Filing a submission after final rejection (1.129(a)) (Small Entity)	$375	$385
1.17(s)	Per add'l invention to be examined (1.129(b))	$750	$770
1.17(s)	Per add'l invention to be examined (1.129(b)) (Small Entity)	$375	$385
1.18(a)	Issue Fee	$1,250	$1,290
1.18(a)	Issue Fee (Small Entity)	$625	$645
1.18(b)	Design Issue Fee	$430	$440
1.18(b)	Design Issue Fee (Small Entity)	$215	$220
1.18(c)	Plant Issue Fee	$630	$650
1.18(c)	Plant Issue Fee (Small Entity)	$315	$325
1.19(a)(1)(i)	Copy of Patent	$3	—
1.19(a)(1)(ii)	Patent Copy - Overnight delivery to PTO Box or overnight fax	$6	—
1.19(a)(1)(iii)	Patent Copy Ordered by Expedited Mail or Fax - Exp. service	$25	—
1.19(a)(2)	Plant Patent Copy	$12	—
1.19(a)(3)(i)	Copy of Utility Patent or SIR in Color	$24	—
1.19(b)(1)(i)	Certified Copy of Patent Application as Filed	$15	—
1.19(b)(1)(ii)	Certified Copy of Patent Application as Filed, Expedited	$30	—
1.19(b)(2)	Cert. or Uncert. Copy of Patent-Related File Wrapper/Contents	$150	—
1.19(b)(3)	Cert. or Uncert. Copies of Office Records, per Document	$25	—
1.19(b)(4)	For Assignment Records, Abstract of Title and Certification	$25	—
1.19(c)	Library Service	$50	—
1.19(d)	List of Patents in Subclass	$3	—
1.19(e)	Uncertified Statement-Status of Maintenance Fee Payment	$10	—
1.19(f)	Copy of Non-U.S. Patent Document	$25	—
1.19(g)	Comparing and Certifying Copies, Per Document, Per Copy	$25	—
1.19(h)	Duplicate or Corrected Filing Receipt	$25	—
1.20(a)	Certificate of Correction	$100	—
1.20(c)	Reexamination	$2,380	$2,460
1.20(d)	Statutory Disclaimer	$110	—
1.20(d)	Statutory Disclaimer (Small Entity)	$55	—
1.20(e)	Maintenance Fee - 3.5 Years	$990	$1020
1.20(e)	Maintenance Fee - 3.5 Years (Small Entity)	$495	$510
1.20(f)	Maintenance Fee - 7.5 Years	$1,990	$2,050
1.20(f)	Maintenance Fee - 7.5 Years (Small Entity)	$995	$1,025
1.20(g)	Maintenance Fee - 11.5 Years	$2,990	$3,080
1.20(g)	Maintenance Fee - 11.5 Years (Small Entity)	$1,495	$1,540
1.20(h)	Surcharge - Maintenance Fee - 6 Months	$130	—
1.20(h)	Surcharge - Maintenance Fee - 6 Months (Small Entity)	$65	—
1.20(i)(1)	Surcharge - Maintenance After Expiration - Unavoidable	$660	$680
1.20(i)(2)	Surcharge - Maintenance After Expiration - Unintentional	$1,550	$1,600
1.20(j)(1)	Extension of Term of Patent Under 1.740	$1,060	$1,090
1.20(j)(2)	Initial Application for Interim Extension Under 1.790	$400	410
1.20(j)(3)	Subsequent Application for Interim Extension Under 1.790	$200	$210
1.21(a)(1)(i)	Application Fee (non-refundable)	—	$40
1.21(a)(1)(ii)	Registration examination fee	$310	$300
1.21(a)(2)	Registration to Practice	$100	—
1.21(a)(3)	Reinstatement to Practice	$15	$40
1.21(a)(4)	Certificate of Good Standing	$10	—
1.21(a)(4)	Certificate of Good Standing, Suitable Framing	$20	—
1.21(a)(5)	Review of Decision of Director, OED	$130	—
1.21(a)(6)(i)	Regrading of A.M. section (PTO Practice and Procedure)	$130	$225
1.21(a)(6)(ii)	Regrading of P.M. section (Claim Drafting)	$130	$530
1.21(b)(1)	Establish Deposit Account	$10	—

37 CFR Sec.	DESCRIPTION	Pre-Oct 1996	Oct 1996
1.21(b)(2)	Service Charge Below Minimum Balance	$25	—
1.21(b)(3)	Service Charge Below Minimum Balance	$25	—
1.21(c)	Filing a Disclosure Document	$10	—
1.21(d)	Box Rental	$50	—
1.21(e)	International Type Search Report	$40	—
1.21(g)	Self-Service Copy Charge	$.25	—
1.21(h)	Recording Patent Property	$40	—
1.21(i)	Publication in the OG	$25	—
1.21(j)	Labor Charges for Services	$30	—
1.21(k)	Unspecified Other Services	Actual Cost	—
1.21(k)	Terminal Use APS-CSIR (per hour)	$50	—
1.21(l)	Retaining abandoned application	$130	—
1.21(m)	Processing Returned Checks	$50	—
1.21(n)	Handling Fee - Incomplete Application	$130	—
1.21(o)	Terminal Use APS-TEXT	$40	—
1.24	Coupons for Patent and Trademark Copies	$3	—
1.296	Handling Fee - Withdrawal SIR	$130	—
1.445(a)(1)	Transmittal Fee	$220	$230
1.445(a)(2)(i)	PCT Search Fee - Prior U.S. Application	$430	$440
1.445(a)(2)(ii)	PCT Search Fee - No U.S. Application	$660	$680
1.445(a)(3)	Supplemental Search	$190	$200
1.482(a)(1)(i)	Preliminary Exam Fee	$470	$480
1.482(a)(1)(ii)	Preliminary Exam Fee	$710	$730
1.482(a)(2)(i)	Additional Invention	$140	—
1.482(a)(2)(ii)	Additional Invention	$250	$260
1.492(a)(1)	Preliminary Examining Authority	$680	$700
1.492(a)(1)	Preliminary Examining Authority (Small Entity)	$340	$350
1.492(a)(2)	Searching Authority	$750	$770
1.492(a)(2)	Searching Authority (Small Entity)	$375	$385
1.492(a)(3)	PTO Not ISA nor IPEA	$1,010	$1,040
1.492(a)(3)	PTO Not ISA nor IPEA (Small Entity)	$505	$520
1.492(a)(4)	Claims - IPEA	$94	$96
1.492(a)(4)	Claims - IPEA (Small Entity)	$47	$48
1.492(a)(5)	Filing with EPO/JPO Search Report	$880	$910
1.492(a)(5)	Filing with EPO/JPO Search Report (Small Entity)	$440	$455
1.492(b)	Claims - Extra Individual (Over 3)	$78	$80
1.492(b)	Claims - Extra Individual (Over 3) (Small Entity)	$39	$40
1.492(c)	Claims - Extra Total (Over 20)	$22	—
1.492(c)	Claims - Extra Total (Over 20) (Small Entity)	$11	—
1.492(d)	Claims - Multiple Dependents	$250	$260
1.492(d)	Claims - Multiple Dependents (Small Entity)	$125	$130
1.492(e)	Surcharge	$130	—
1.492(e)	Surcharge (Small Entity)	$65	—
1.492(f)	English Translation - After 20 Months	$130	—
2.6(a)(1)	Application for Registration, Per Class	$245	—
2.6(a)(2)	Amendment to Allege Use, Per Class	$100	—
2.6(a)(3)	Statement of Use, Per Class	$100	—
2.6(a)(4)	Extension for Filing Statement of Use, Per Class	$100	—
2.6(a)(5)	Application for Renewal, Per Class	$300	—
2.6(a)(6)	Surcharge for Late Renewal, Per Class	$100	—
2.6(a)(7)	Publication of Mark Under § 12(c), Per Class	$100	—
2.6(a)(8)	Issuing New Certificate of Registration	$100	—
2.6(a)(9)	Certificate of Correction of Registrant's Error	$100	—
2.6(a)(10)	Filing Disclaimer to Registration	$100	—
2.6(a)(11)	Filing Amendment to Registration	$100	—
2.6(a)(12)	Filing Afffidavit Under Section 8, Per Class	$100	—
2.6(a)(13)	Filing Affidavt Under Section 15, Per Class	$100	—
2.6(a)(14)	Filing Affidavit Under Sections 8 & 15, Per Class	$200	—
2.6(a)(15)	Petitions to the Commissioner	$100	—
2.6(a)(16)	Petition to Cancel, Per Class	$200	—
2.6(a)(17)	Notice of Opposition, Per Class	$200	—
2.6(a)(18)	Ex Parte Appeal to the TTAB, Per Class	$100	—
2.6(a)(19)	Dividing an Application, Per New Application Created	$100	—
2.6(b)(1)(i)	Copy of Registered Mark	$3	—
2.6(b)(1)(ii)	Copy of Registered Mark, overnight delivery to PTO box or fax	$6	—
2.6(b)(1)(iii)	Copy of Reg. Mark Ordered Via Exp. Mail or Fax, Exp. Svc.	$25	—
2.6(b)(2)(i)	Certified Copy of TM Application as Filed	$15	—
2.6(b)(2)(ii)	Certified Copy of TM Application as Filed, Expedited	$30	—
2.6(b)(3)	Cert. or Uncert. Copy of TM-Related File Wrapper/Contents	$50	—
2.6(b)(4)(i)	Cert. Copy of Registered Mark, Title or Status	$10	—
2.6(b)(4)(ii)	Cert. Copy of Registered Mark, Title or Status - Expedited	$20	—
2.6(b)(5)	Certified or Uncertified Copy of TM Records	$25	—
2.6(b)(6)	Recording Trademark Property, Per Mark, Per Document	$40	—
2.6(b)(6)	For Second and Subsequent Marks in Same Document	$25	—
2.6(b)(7)	For Assignment Records, Abstracts of Title and Cert.	$25	—
2.6(b)(8)	Terminal Use X-SEARCH	$40	—
2.6(b)(9)	Self-Service Copy Charge	$0.25	—

37 CFR Sec.	DESCRIPTION	Pre-Oct 1996	Oct 1996
2.6(b)(10)	Labor Charges for Services	$30	—
2.6(b)(11)	Unspecified Other Services	Actual Cost	—

—These fees are not affected by this rulemaking.

Certificate of Correction
For Week of August 20, 1996

				5,485,757	5,499,513	5,506,074	5,514,710
				5,486,218	5,499,604	5,506,226	5,515,072
				5,486,233	5,499,679	5,506,345	5,515,429
Re. 31,910	5,386,297	5,447,223	5,468,403	5,486,706	5,500,397	5,506,364	5,515,474
Re. 35,184	5,388,231	5,447,615	5,468,680	5,486,777	5,500,422	5,506,645	5,515,711
D. 355,660	5,391,617	5,447,655	5,469,459	5,486,914	5,500,923	5,507,222	5,515,920
D. 369,403	5,391,813	5,448,297	5,470,631	5,486,919	5,501,563	5,507,365	5,515,966
4,647,541	5,395,676	5,449,344	5,470,950	5,487,731	5,501,575	5,507,792	5,516,219
4,771,285	5,399,568	5,449,920	5,471,498	5,488,204	5,501,713	5,508,111	5,516,591
4,839,808	5,400,267	5,450,704	5,472,563	5,488,212	5,501,751	5,508,179	5,516,718
4,933,168	5,400,789	5,453,286	5,472,600	5,488,486	5,501,888	5,508,237	5,516,812
4,990,503	5,403,416	5,453,467	5,473,514	5,488,585	5,502,070	5,508,496	5,516,957
5,116,993	5,404,777	5,454,905	5,474,763	5,488,959	5,502,077	5,508,529	5,517,066
5,198,533	5,405,426	5,455,113	5,474,846	5,489,258	5,502,080	5,508,759	5,517,337
5,218,072	5,408,305	5,455,554	5,476,319	5,490,896	5,502,204	5,508,843	5,517,461
5,238,756	5,411,330	5,456,664	5,476,752	5,491,750	5,502,333	5,509,070	5,517,604
5,266,842	5,412,801	5,456,669	5,477,019	5,491,854	5,502,475	5,509,081	5,517,822
5,274,124	5,413,526	5,456,674	5,478,502	5,491,940	5,502,567	5,509,555	5,518,007
5,312,107	5,414,688	5,456,897	5,478,596	5,492,038	5,502,574	5,510,048	5,518,109
5,322,779	5,418,270	5,457,128	5,478,610	5,492,062	5,502,589	5,510,678	5,518,186
5,333,661	5,418,950	5,458,291	5,480,917	5,492,802	5,502,667	5,510,756	5,518,261
5,335,677	5,419,378	5,459,517	5,480,947	5,492,823	5,502,710	5,511,113	5,518,280
5,344,735	5,421,366	5,459,657	5,480,964	5,492,873	5,502,963	5,511,137	5,518,476
5,348,168	5,425,683	5,459,976	5,480,975	5,493,333	5,503,666	5,511,551	5,519,692
5,348,186	5,430,809	5,460,088	5,481,089	5,493,587	5,503,691	5,511,706	5,520,267
5,356,785	5,430,854	5,460,577	5,481,282	5,493,647	5,503,735	5,511,897	5,520,353
5,357,691	5,432,204	5,461,067	5,481,629	5,493,658	5,503,944	5,512,305	5,520,769
5,361,627	5,432,420	5,461,485	5,481,776	5,493,853	5,503,946	5,512,431	5,520,869
5,364,903	5,435,453	5,462,675	5,482,291	5,494,306	5,503,990	5,512,474	5,521,183
5,367,680	5,438,297	5,463,716	5,482,391	5,495,816	5,504,009	5,512,494	5,521,517
5,369,526	5,439,715	5,463,775	5,482,499	5,495,824	5,504,228	5,512,993	5,521,917
5,369,593	5,440,016	5,463,949	5,482,681	5,496,402	5,504,282	5,513,191	5,522,976
5,369,852	5,440,032	5,464,463	5,483,140	5,496,425	5,504,475	5,513,265	5,523,114
5,369,988	5,442,185	5,464,864	5,483,246	5,496,907	5,504,830	5,513,284	5,523,140
5,370,604	5,443,075	5,465,192	5,483,760	5,496,958	5,504,865	5,513,639	5,524,029
5,371,995	5,444,749	5,465,289	5,484,007	5,497,744	5,505,096	5,513,772	5,525,126
5,373,455	5,445,009	5,465,348	5,484,166	5,498,423	5,505,491	5,514,214	5,525,416
5,375,522	5,445,096	5,465,399	5,484,484	5,498,436	5,505,819	5,514,540	5,525,608
5,377,331	5,445,809	5,466,171	5,484,543	5,498,762	5,506,046	5,514,547	5,526,318
5,377,617	5,446,803	5,466,528	5,485,286	5,499,015			
5,385,520	5,446,948	5,466,555	5,485,579	5,499,213			

Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

June 3-7, 1996

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
6-4	EX	74/294,216	Twin Laboratories, Inc.	whether matter asserted for registration is capable of registration on the Supp. Reg. or is, instead, a generic term for goods to which it is applied; requirement for literature under Rule 2.61(b)	Refusal Affirmed (on both grounds)		"INFANT CARE" [dietary supplements]		No
6-4	EX	74/315,065	Stig R. Erlander	2(d)	Refusal Affirmed (as to both registrations cited)		"ERLANDER'S JUBILEE" [cleaning preparations, namely, skin soap, liquid soap for hands, face and body, laundry cleaning preparation, body powder and personal deodorants]	"JUBILEE" (in stylized lettering) [body perfumes]; "JUBILEE" [cleaning and polishing preparations and household surfaces]	No
6-4	EX	74/378,510	Multi-asistencia, S. A.	2(d)	Refusal Reversed		"MA MULTI ASSISTANCE" (and design) [construction and repair of buildings, maintenance and restoration of buildings, painting buildings, plumbing, electrical repairs and installation of heating, inspection of building projects, furniture repairs, rental of building and construction equipment, and planning and laying out of residential communities by plot]	"MA" (and design) [construction, repair and demolition services in connection with fixed works, namely, asphalt paving, concrete work, chip sealing, rubberized chip sealing, land leveling, earth moving, excavation, grading, trenching, asphalt curb replacement, patching, manhole adjusting, edge drain installation, concrete reinforced structure construction and reconstruction, and related electrical and plumbing services]	No
6-4	EX	74/396,551	Microfibres, Inc.	2(d) [deceptive]	Refusal Reversed		"MICROVEL" [fabrics for packaging and display]		No
6-5	EX	74/453,040	Henry Co.	2(d)	Refusal Affirmed		"POLYMULSION" [asphalt emulsion for forming a film on roofs and roof repair fabrics and tapes for professional roofers]	"POLYMULSION" [protective coating for concrete and wood]	No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (R)=REQ. FOR RECONSIDERATION

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
6-5	EX (R)	74/326,789	Brenda French	geographical misdescriptiveness; 2(a) [deceptiveness]	Request for Reconsideration Denied [Refusal Affirmed (on both grounds)]		"FRENCH RAGS" [sweaters, scarves, pants, skirts, jackets and coats]		No
6-6	EX	74/428,682	Baldwin Hardware Corp.	2(d)	Refusal Affirmed		"STANFORD" [door hardware]	"STANFORD" [wooden doors]	No
6-7	EX	74/286,487	American Family Life Assurance Co. of Columbus	2(d)	Refusal Affirmed		"...OUR STRENGTH IS YOUR SECURITY" [insurance underwriting services in the fields of health, life, accident, and cancer insurance]	"OUR STRENGTH IS YOUR SECURITY" [banking services, mortgage banking services, loan financing services, and trust services]	No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (R)=REQ. FOR RECONSIDERATION

SPECIAL BOXES FOR PATENT MAIL

Special box designations should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special boxes. If any documents other than the specified type identified for each special box are addressed to that box, they will be significantly delayed in reaching the appropriate area for which they are intended.

Please address mail as follows:

Box _____
Assistant Commissioner for Patents
Washington, D.C. 20231

Box Designations	Explanation
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 12	Contributions to the Examiner Education Program.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or materials related to the Disclosure Document Program.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	All communications following the receipt of a PTOL–85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box Missing Parts	Response to the Notice to File Missing Parts of Application and associated papers and fees.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent applications and associated papers and fees.
Box Patent Ext.	Applications for patent term extension and any communications relating thereto.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filing of all provisional patent applications and any communications relating thereto.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

SPECIAL BOXES FOR TRADEMARK MAIL

Special box designations should be used to allow forwarding of particular types of trademark mail to the appropriate areas as quickly as possible. In addition to these box designations, filers are encouraged to indicate whether the contents of the envelope contain a fee. Envelopes containing a fee should be marked "FEE;" envelopes not containing a fee should be marked "NO FEE." Box designations and "FEE/NO FEE" indicators should appear on the envelope as well as on the cover sheet or first page of any document.

Please address mail as follows:

Box _____
FEE (or NO FEE)
Assistant Commissioner for Trademarks
2900 Crystal Drive
Arlington, Virginia 22202-3513

Box Designations	Explanation
Box NEW APP FEE	New trademark applications and fees.
Box ITU FEE	Statements of Use (SOUs) and extension requests.
Box TTAB FEE	Oppositions, cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions, and extension requests.
Box STATUS NO FEE	Written status inquiries.
Box POST REG FEE	Affidavits, renewals, corrections and amendments.
Box RESPONSES NO FEE	Responses to Examining Attorneys' Office actions and Post Registration actions.

SPECIAL BOXES APPLICABLE TO *BOTH* PATENT AND TRADEMARK MAIL

The following special box designations are applicable to both patent and trademark related mail, and the recommendations for "Special Boxes for Patent Mail" (above) should be followed for the types of mail listed below.

Please address mail as follows:

Box _____
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Box Designations	Explanation
Box 3	Mail for the Office of Personnel from NFC.
Box 4	Mail for the Deputy Assistant Secretary of Commerce and Deputy Commissioner of Patents and Trademarks; Office of Legislative and International Affairs.
Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation and disciplinary proceedings*; papers relating to pending litigation in court cases shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box M Fee	Correspondence regarding patent maintenance fees and related matter.
Box OED	Mail for the Office of Enrollment and Discipline.

VOL 1189 ISS 3 AG 2 19 96

Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries

The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information in various formats from the U.S. Patent and Trademark Office. Many PTDLs have on file all full-text patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PTDLs have both the patent and trademark sections of the *Official Gazette of the U.S. Patent and Trademark Office*. The full-text utility and design patents are distributed numerically on 16 mm microfilm, and plant patents on color microfiche. Patent and trademark search systems on CD-ROM (Compact Disc-Read Only) format are available at all PTDLs to increase utilization of and enhance access to the information found in patents and trademarks. It is through the CD-ROM systems that preliminary patent and trademark searches can be conducted through the numerically arranged collections.

All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 844-1747
	Birmingham Public Library	(205) 226-3620
Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4488
	Sunnyvale Center for Innovation, Invention and Ideas	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6249
Connecticut	New Haven: Science Park Library	(203) 786-5447
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(317) 494-2872
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
Kansas	Wichita: Ablah Library, Wichita State University	(316) 689-3155
Kentucky	Louisville Free Public Library	(502) 574-1611
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maine	Orono: Raymond H. Fogler Library, University of Maine	(207) 581-1678
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Media Union Library, University of Michigan	(313) 647-5735
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit: Great Lakes Patent and Trademark Center	(313) 833-3379
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada, Reno Library	(702) 784-6579
New Hampshire	Concord: New Hampshire State Library	Not Yet Operational
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
New York	Albany: New York State Library	(518) 474-5355
	Buffalo and Erie County Public Library	(716) 858-7101
	New York Public Library (The Research Libraries)	(212) 592-7000
North Carolina	Raleigh: D.H. Hill Library, North Carolina State University	(919) 515-3280
North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Akron - Summit County Public Library	Not Yet Operational
	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Portland: Paul L. Boley Law Library, Lewis & Clark College	(503) 768-6786
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Puerto Rico	Mayaquez General Library, University of Puerto Rico	Not Yet Operational
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Clemson University Libraries	(803) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	(605) 394-6822
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
	Lubbock: Texas Tech University	Not Yet Operational
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3051
Wyoming	Casper: Natrona County Public Library	(307) 237-4935

UMI

VOL
1189
ISS
3
AG
2 U
19 96
UMI

PATENT EXAMINING CORPS

BRUCE A. LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
EDWARD R. KAZENSKE, Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—JOHN E. KITTLE, Director	308-0661	10/06/94
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200—RICHARD V. FISHER, Director	308-1235	07/18/94
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—BARRY S. RICHMAN, Director	308-0651	09/15/94
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	12/29/94
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	07/15/94
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	08/16/94
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	12/27/94
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—BOBBY R. GRAY, Director	305-9600	10/07/93
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3800	04/19/94
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	12/23/94
TELECOMMUNICATIONS, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	11/15/94
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	12/19/94
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	05/31/94
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—CARLTON R. CROYLE, Director	308-1148	09/08/94
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	04/24/95
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	03/23/95
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	10/04/94

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Philip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of July 1, 1996

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 101—Ron Williams, Managing Attorney, (703) 308–9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/30/95	03/15/96
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308–9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/19/95	01/06/96
Law Office 103—Kathryn Erskine, Managing Attorney, (703) 308–9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/26/95	05/28/96
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/05/96	04/13/96
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/26/96	04/03/96
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/03/96	03/07/96
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/16/96	03/21/96
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/13/96	03/22/96
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308–9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/28/96	04/12/96
**Collective Marks—Class 200 **Certification Marks—Classes A & B		
Office of Trademark Services—Vacant (703) 308-9100 Trademark Assistance Center—(703) 308-9000 Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188 Intent-To-Use—(ITU)—(703) 308-9500 Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126		
Affidavits Under Sections 8 & 15 (All Classes)	01/15/96	—0—
Renewals (All Classes)	04/15/96	—0—
Section 12(c) Publications (All Classes)	01/25/96	—0—

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

170–653 O.G.–96–2: QL3

VOI
1189
ISS
3
AG
1996
UMI

REEXAMINATIONS

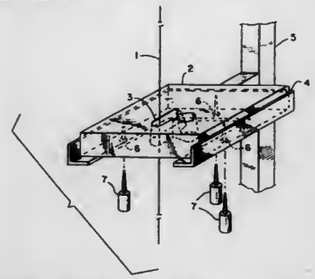
AUGUST 20, 1996

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,700,451 (2974th)
METHOD FOR AUTOMATICALLY INDEXING CAST FIELD SHAPING BLOCKS TO A RADIATION THERAPY TREATMENT TRAY AND A COOLING TRAY FOR CAST BLOCKS

William T. Clark, III, 13 Park La., Folsom, La. 70437

Reexamination Request No. 90/003,923, Aug. 15, 1995.
Reexamination Certificate for Patent 4,700,451, issued Oct. 20, 1987, Ser. No. 862,969, May 14, 1986.
Division of Ser. No. 658,434, Oct. 5, 1984, abandoned.
Int. Cl.[6] B23P *17/00*
U.S. Cl. 29—527.5



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–5** are confirmed.

3. A method for indexing field shaping block to a radiation therapy treatment tray comprising:

supporting a polyfoam block to be cut by a hot wire cutting system,

indexing the polyfoam block to its support in the cutting system,

cutting the supported, indexed polyfoam block with the hot wire to form a cavity in the polyfoam block,

securing the cut polyfoam block on a cooling tray,

pouring molten metal into the cavity in the polyfoam block secured to the cooling tray,

cooling the molten metal to form a cast metal block,

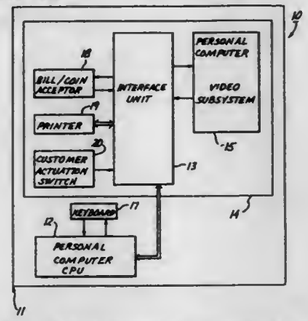
positioning the polyfoam block having the metal block cast into the cavity on the treatment tray of the radiation therapy treatment machine, in an indexed position wherein the polyfoam block is indexed to the treatment tray of the radiation therapy treatment machine with respect to its radiation source and positioned patient identically to the indexation of said polyfoam block to the block support in the hot wire cutting system with respect to its radiation source and patient X-ray film,

securing the cast metal block to the treatment tray in its indexed position.

B1 5,038,293 (2975th)
METHOD AND APPARATUS FOR VENDING CUSTOMIZED DOCUMENTS

Sidney R. Goodman, La Jolla, Calif.

Reexamination Request No. 90/002,750, Jun. 9, 1992.
Reexamination Certificate for Patent 5,038,293, issued Aug. 6, 1991, Ser. No. 580,323, Jun. 10, 1990.
Continuation of Ser. No. 284,065, Dec. 3, 1988.
Int. Cl.[6] G06F *17/00;7/08*
U.S. Cl. 364—479



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–6** are cancelled.

1. A system for producing customized documents, comprising:

customer actuated document format input means for receiving document format information from a customer corresponding to a customized document to be produced;

computer document creating means for receiving said customized information to create the customized document having a content composed at the discretion of the customer independently of any data information stored in the system;

means responsive to said document format information for generating and supplying to the customer cost information for using the system to produce said customized document;

means responsive to receipt of payment to use the system for generating signals indicative of the amount of payment received for producing the customized document to be produced;

printer means for transferring the customized information to customized document paper stock;

means responsive to said signals indicative of payment being received for retrieving the customized information;

means for supplying the retrieved customized information to said printer means; and

means responsive to said retrieved information for causing said printer means to deposit indicia on the paper stock, said indicia configured in the shape of the customized information for producing the customized document.

VOL 1189 ISS 3 AG 2 19 96 UMI

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,314

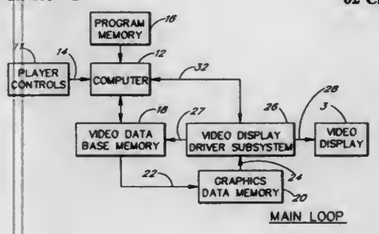
MULTI-PLAYER, MULTI-CHARACTER COOPERATIVE PLAY VIDEO GAME WITH INDEPENDENT PLAYER ENTRY AND DEPARTURE

George E. Logg, Los Altos, Calif., assignor to Atari Games Corporation, Milpitas, Calif.

Original No. 4,738,451, dated Apr. 19, 1988, Ser. No. 865,387, May 20, 1986. Continuation of Ser. No. 473,262, Jan. 31, 1990, abandoned. Application for reissue Jun. 6, 1994, Ser. No. 254,482

Int. Cl.[6] A63F 9/22

U.S. Cl. 463—2 62 Claims



22. A system for multi-player competition, comprising:

a video display;

means for allowing a plurality of players to simultaneously and independently control the movement of a plurality of characters in a playfield displayed on the video display; and

computer means, connected to the video display and the allowing means, for encouraging the players to cooperate during play to reach predetermined objectives on the playfield, the means for encouraging including means for displaying on the video display only a portion of the playfield at any one time, and wherein the portion of the playfield that is displayed is determined by the relative positions of all the characters on the playfield and wherein the characters are restricted from moving outside the bounds of the displayed portion of the playfield.

Re. 35,315

MASK FOR MANUFACTURING SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURE THEREOF

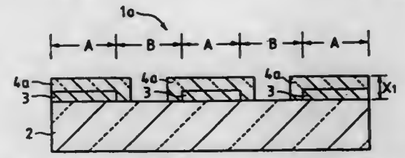
Yoshihiko Okamoto, 1-17-301, Gakuennishi-machi, Kodaira-shi, Tokyo, Japan

Original No. 5,045,417, dated Sep. 3, 1991, Ser. No. 437,268, Nov. 16, 1989. Application for reissue Sep. 3, 1992, Ser. No. 940,315

Claims priority, application Japan, Oct. 2, 1989, 1-257226

Int. Cl.[6] G03F 9/00

U.S. Cl. 430—5 39 Claims



5. A mask for manufacturing a semiconductor device comprising:

a transparent substrate having main and back surfaces;

a circuit pattern formed on said main surface and comprising a light shield region [comprising] *having* a metal layer *on the main surface in the light shield region,* and a transmission region wherein said transparent substrate is exposed, the lower surface of said metal layer being in contact with *the main surface of* said transparent substrate; [a second groove in part of the light shield region and having a depth reaching said transparent substrate from an upper surface opposite to a lower surface, and said first groove for shifting phase of light being located below said second groove] *and*

a first groove region for shifting phase of transmitted light, formed extending from an upper surface of said metal layer into a depth of the transparent substrate in a portion of the light shield region, said portion of the light shield region in which said first groove region is formed being spaced from the transmission region, and a width of the first groove region being sufficiently narrow so as not to form an independent bright image corresponding thereto, said portion being located such that light transmitted through the first groove region and light transmitted through the transmission region interfere with each other at an end portion of the light shield region adjacent the transmission region, whereby resolution is improved due to interference between light beams transmitted through the first groove region and the transmission region, when the circuit pattern is optically projected onto a wafer on which the semiconductor device is to be formed.

VOL
1189
SS
3
AG
20
1996
UMI

PLANT PATENTS

GRANTED AUGUST 20, 1996

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,628

MINIATURE ROSE PLANT NAMED 'SAVACRIM'

F. Harmon Saville, Rowley, Mass., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.

Filed Dec. 27, 1994, Ser. No. 364,593

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described.

9,629

FLORIBUNDA ROSE PLANT NAMED 'SCHOVIAN'

Petrus N. J. Schreurs, De Kwakel, Netherlands, assignor to Piet Schreurs Holding B.V., De Kwakel, Netherlands

Filed Sep. 6, 1995, Ser. No. 523,825

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—23 **1 Claim**

1. A new and distinct variety of rose plant named 'Schovian,' as illustrated and described.

9,630

CHERRY ROOTSTOCK GI 195/1

Werner Gruppe, Linden/Grossen/Linden, and Hanna Schmidt, Ahrensburg, both of, Germany, assignors to Inter-Plant Patent Marketing, Inc., Ontario, Canada

Filed Jun. 7, 1995, Ser. No. 485,404

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—37 **1 Claim**

1. A new and distinct variety of cherry hybrid tree as shown and described herein.

9,631

CHERRY ROOTSTOCK GI 195/2

Werner Gruppe, Linden, and Hanna Schmidt, Ahrensburg, both of, Germany, assignors to Inter-Plant Patent Marketing, Inc., Ontario, Canada

Filed Jun. 7, 1995, Ser. No. 485,405

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—37 **1 Claim**

1. A new and distinct variety of cherry hybrid tree as shown and described herein.

9,632

POINSETTIA PLANT NAMED 'RED SPLENDOR'

Scott C. Trees, Arroyo Grande, Calif., assignor to Geo. J. Ball, Inc., West Chicago, Ill.

Filed Apr. 14, 1995, Ser. No. 422,692

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—86.4 **1 Claim**

1. A new and distinct cultivar of Poinsettia plant named 'Red Splendor' substantially as herein shown and described, which:

(a) exhibits under natural short days a response period to initiate bract coloration of approximately 9 to 10 weeks when grown in central California,
(b) forms attractive clear red bracts that are commonly upwardly disposed,
(c) forms dark green foliage that creates an attractive contrast with the bract coloration,
(d) forms sturdy thick stems, and
(e) exhibits a strong basal branching character with pinching to create a very compact growth habit.

VOL
1189
ISS
3
AG
2 0
19 96
UMI

PATENTS

GRANTED August 20, 1996

ERRATA

For CLASS	See PATENT NO.
198–419	5,547,004
187–289	5,547,059
473–168	5,547,186
296–037	5,547,187
473–287	5,547,188
473–026	5,547,192
473–282	5,547,193
473–350	5,547,194
473–277	5,547,195
473–242	5,547,196
473–384	5,547,197
463–009	5,547,201
463–029	5,547,202
180–281	5,547,208
096–054	5,547,439
015–104	5,547,601
510–152	5,547,602
510–509	5,547,603
134–022	5,547,612
502–117	5,547,675
424–499	5,547,696
501–066	5,547,904
502–066	5,547,905
435–085	5,547,932
521–134	5,547,996
381–042	5,548,647
510–237	5,545,354
424–484	5,545,423
429–218	5,545,468
435–097	5,545,587
252–353	5,545,622
524–409	5,545,715
424–085	5,555,723
510–119	5,555,731
523–122	5,555,823
524–590	5,555,824
524–195	5,555,825

ERRATA–CONTINUED

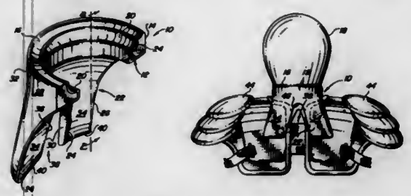
For CLASS	See PATENT NO.
525–057	5,555,826
526–057	5,555,827
526–072	5,555,828
526–160	5,555,829
528–015	5,555,830
524–731	5,555,831
528–211	5,555,832
528–337	5,555,833
544–006	5,555,834
544–215	5,555,835
544–216	5,555,836
556–460	5,555,837
564–089	5,555,838
315–224	5,555,955
324–072	5,555,975
324–076	5,555,976
395–600	5,556,107
356–005	5,556,176
359–158	5,556,190

PATENTS

GRANTED AUGUST 20, 1996

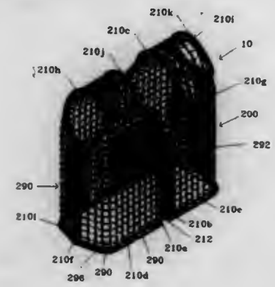
GENERAL AND MECHANICAL

5,546,601
NECK AND CERVICAL SPINE PROTECTOR DEVICE FOR DISPERSING AXIAL COMPRESSIVE FORCES
Alan Abeyta, 220 Nice Ln., #304, Newport Beach, Calif. 92663
Filed Feb. 23, 1995, Ser. No. 395,871
Int. Cl.[6] A41D *13/00*
U.S. Cl. 2—2 **20 Claims**



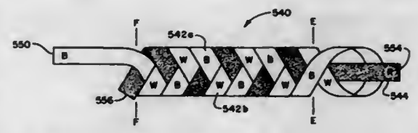
1. A neck and cervical spine protector device, comprising:
(a) a U-shaped upper structure for fitting about the back and opposite sides of the neck of a user and resting upon posterior midline portions of the shoulders of the user adjacent to the opposite sides of the neck;
(b) means defined in said U-shaped upper structure for seating thereon a head protector worn by the user, said means for seating the head protector being a superior surface defined on said upper structure having an arcuate substantially concave cross-sectional shape and extending about a superior outer edge of said upper structure; and
(c) a lower structure, connected to and extending downwardly from a lower portion of said U-shaped upper structure, to overlie the upper thoracic region on opposite sides of the spinal column of the user for dispersing axial compressive forces applied on the head away from the neck and spine to the posterior midline portions of the shoulders and upper thoracic region of the user.

5,546,602
PROTECTIVE GEAR
Reggie D. Hale, 2505 Trails End Dr., Bentonville, Ark. 72712
Filed Oct. 6, 1995, Ser. No. 540,068
Int. Cl.[6] A41D *13/00;1/04*
U.S. Cl. 2—2 **9 Claims**



9. A garment including at least one section of material presenting at least one seam, said garment covering a selected body part of a user, the garment comprising:
a primary air channel made of a flexible material extending along said at least one seam, said primary air channel having an air inlet;
at least one air tube array presenting a plurality of interwoven air tubes with each of said air tubes having an end in fluid communication with said air channel;
valve means for regulating an entry of pressurized air into said air inlet, said air inflating said air channel and said at least one air tube array connected thereto, said inflation of said air tube array presenting said at least one tube array in a first mode for absorbing impact forces occurring thereon during said user wear.

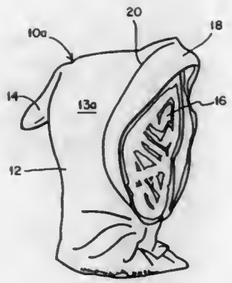
5,546,603
HEADBAND WITH PONYTAIL-RECEIVING FEATURE
Charles S. Lawhorne; Kerry B. Lawhorne, and Laura M. Helyer, all of Casselberry, Fla., assignors to Athletic Images, Inc., Casselberry, Fla.
Filed May 12, 1994, Ser. No. 241,642
Int. Cl.[6] A42C *5/02*
U.S. Cl. 2—181 **6 Claims**



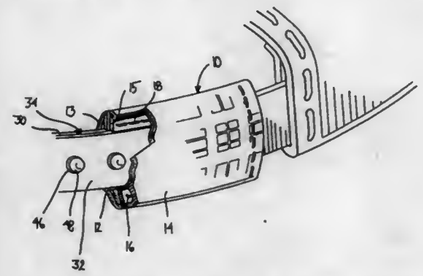
1. A braided headband, comprising:
two strands of material, a one relatively long strand and another relatively short strand;
the relatively long strand is doubled back onto itself and partially braided, a ponytail-receiving ring being formed at a midpoint of the relatively long strand, a one end of the relatively long strand extending beyond an other end of the relatively long strand;
the relatively short strand is threaded through the partially-braided relatively long strand;
a one end of the relatively short strand extending through a one side of the ponytail-receiving ring and looped back onto the partially-braided relatively long strand; and
the one end of the relatively long strand extending through an other side of the ponytail-receiving ring and looped back onto the partially-braided relatively long strand.

5,546,604
HOOD WITH A CONCEALING FACE MASK
Alan Geller, Carle Place, N.Y., assignor to Fun World, Carle Place, N.Y.
Filed Feb. 9, 1995, Ser. No. 386,072
Int. Cl.[6] A42B *1/06*
U.S. Cl. 2—202 **13 Claims**

1. A device for covering a wearer's head, face and eyes comprising:
a hood adapted to be worn over a head, said hood being made from a non-shrink material;
a dark mesh face mask made from a woven material attached to said hood and adapted to completely cover a face with an inner side proximate a face and an opposite outer side, said face mask appearing semi-transparent from the inner side enabling a wearer to see clearly through the mask while appearing opaque from the outer side to totally conceal a wearer's face and eyes; and
a cowl formed along a portion of the junction between said hood and said face mask, said cowl extending forwardly over said face mask so that said face mask is recessed within said hood to further conceal a face.



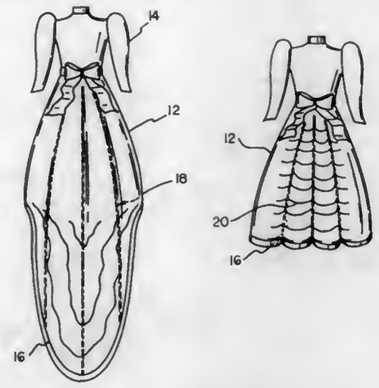
5,546,605
PROTECTIVE STRAP COVER FOR A CAP
Maret L. Mallardi, 6 Saw Mill Rd., Cold Spring Harbor, N.Y. 11724
Continuation-in-part of Ser. No. 114,652, Dec. 22, 1993, abandoned. This application Jun. 15, 1995, Ser. No. 490,772
Int. Cl.[6] A42B *1/06*
U.S. Cl. 2—209.13 **7 Claims**



1. A strap enclosure for a hat having an adjustable strap assembly including first and second selectively engageable linear members, said strap enclosure comprising:
first and second portions of flexible material connected to one another along parallel seam lines to define an elongated tubular structure configured to receive and enclose said first and second linear strap members, at least one of said portions of flexible material being cushioned to provide a pad-like surface for contacting the head of a wearer.

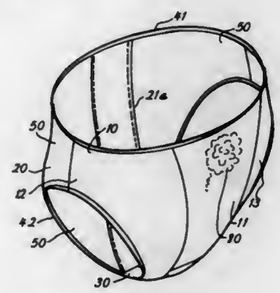
5,546,606
ADJUSTABLE BRIDAL TRAIN
Thelma J. Luckabaugh, 1718 Harvey Yingling Rd., Manchester, Md. 21102
Continuation-in-part of Ser. No. 4,891, Feb. 16, 1993, abandoned. This application Dec. 8, 1994, Ser. No. 351,941
Int. Cl.[6] A41D *1/14*
U.S. Cl. 2—217 **4 Claims**

1. An adjustable bridal train comprising:
a skirt web for forming a portion of a gown;
a train web extending from the gown and configured to extend beyond the skirt web so as to trail behind an individual wearing the gown;
and,
a retracting means coupled to an interior surface of the train web for shortening the train web to a length substantially equal to a length of the skirt web such that the train web hangs from the gown without trailing along a ground surface beneath the gown,



wherein the retracting means also operates for folding the train web into a plurality of pleats, and
wherein the retracting means comprises a plurality of flexible guide tubes secured to an interior surface of the train web in a substantially spaced and colinear orientation to one another; and a flexible cord extending through the aligned flexible guide tubes and being coupled to a lowermost one of the guide tube, wherein a retracting of the cord through the guide tubes will draw the train web into a shortened configuration.

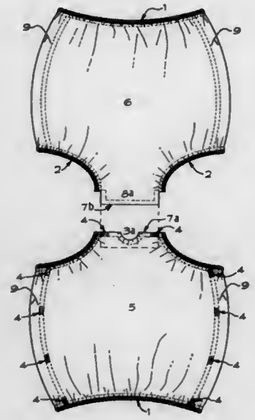
5,546,607
HYGIENIC PANTY
Mary K. Roberts, 1009 Dunlap La., Knoxville, Tenn. 37914
Filed Mar. 4, 1994, Ser. No. 205,831
Int. Cl.[6] A61F *13/15*
U.S. Cl. 2—406 **15 Claims**



1. A hygienic panty comprising
a front portion,
a back portion,
a crotch portion, and
a first and second side portions,
said front portion, back portion, first and second side portions, and crotch portion being joined to form a waist opening and two leg openings,
said crotch portion comprising an outer layer made from a waterproof material and an inner layer,
said front portion comprising a central segment and a first and second flanking segment,
said central segment extending from said crotch portion to said waist opening and tapering outward such that the central segment is wider at the waist opening than at the crotch opening,

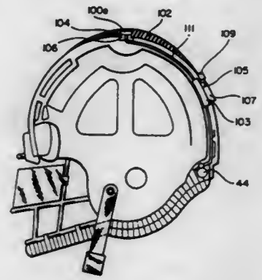
said central segment comprising an outer layer made from a waterproof material, an inner layer, and at least one interliner sandwiched between said inner layer and said outer layer,
said interliner extending from the waist opening to the crotch portion, said interliner being essentially rectangular in shape throughout most of its length and tapering inwardly toward the crotch portion, and
said first and second flanking segments comprised of a single layer only.

5,546,608
UNDERGARMENT
Jama K. Russano, 123 Soundview Ter., Northport, N.Y. 11768
Continuation-in-part of Ser. No. 702,056, May 17, 1991. This application Apr. 8, 1992, Ser. No. 865,056
Int. Cl.[6] A41D *9/00;* **A41B** *9/00*
U.S. Cl. 2—408 **2 Claims**



1. An undergarment for physically handicapped persons which comprises:
a) a front panel applicable to a front of a person's torso;
b) a rear panel applicable to a back of a person's torso, the front and rear panels being connected, one of said panels having a cut-out at said connection defining an opening therein, said connection being in such a manner so as to provide said opening at a position corresponding to a person's crotch and having side edge margins with fastening means situated thereon for assembling and securing the garment to the person's torso by interconnecting the front and rear panels along the opposing edge margin, wherein said front panel and said rear panel include attaching means at the crotch, said attaching means positioned to cooperate between said front panel and said rear panel in attaching said panels at said crotch; and
c. a flap attached to at least one panel, said flap being positioned along said crotch opening and of sufficient size to cover said opening in a closed position, said flap being positioned on the inside of the crotch opening, said flap situated so as to move from a first position in which the crotch opening of the undergarment is open to a second position in which the opening of the undergarment is closed.

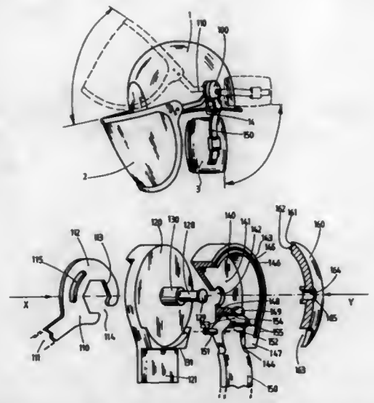
5,546,609
HELMET
Gus A. Rush, III, 1800 12th St., Meridian, Miss. 39301
Continuation-in-part of Ser. No. 66,670, May 25, 1993, Pat. No. 5,390,367, which is a continuation-in-part of Ser. No. 964,875, Oct. 22, 1992, Pat. No. 5,287,562, which is a continuation-in-part of Ser. No. 818,840, Jan. 10, 1992, abandoned. This application Aug. 10, 1994, Ser. No. 288,078
Int. Cl.[6] A42B *3/06;3/30*
U.S. Cl. 2—413 **31 Claims**



1. A helmet assembly for providing an indication when a predetermined axial compressive force tending to cause serious injury to the wearer is applied thereto, said assembly comprising:
a rigid helmet having a lower rim for at least partially encircling the head of the wearer, said helmet being defined by an exterior surface including a crown area;
a signalling device disposed within said helmet for providing a signal to said wearer when a predetermined amount of axial compressive force is applied to said crown area; and
sensor means for actuating said signalling device in response to an external impact on said crown area with said predetermined amount of axial compressive force;
said helmet assembly further comprising an extensible means generally disposed along said lower rim and normally not projecting substantially below said lower rim but being extendable therebelow to engage the shoulders of the wearer and substantially transfer to the shoulders the force of an external impact on the crown area of said helmet; and
gas-operable means carried by said helmet for extending said extensible means to engage the shoulders of a wearer within less than 25 milliseconds of an external impact on said crown area of said helmet, said gas-operable means including means carried by said helmet for almost instantaneously generating gas for operating said gas-operable means;
said sensor means being constructed and arranged to operate said gas-generating means in response to said external impact with said predetermined amount of force to rapidly extend said extensible means to engage the shoulders of a wearer so as to be able to transfer the impact force to the shoulders instead of directly through said helmet and head of the wearer generally axially to the cervical spine of the wearer.

5,546,610
FASTENING SYSTEM FOR FASTENING A FACE-PROTECTION SHEILD AND/OR HEARING PROTECTION CAPS TO A WORK HELMET
Kurt Herzig, Liestal, and Hugo Herzig, Lausen, both of, Switzerland, assignors to Artilux Herzig AG, Liestal, Switzerland
Filed Sep. 29, 1994, Ser. No. 314,907
Claims priority, application Switzerland, Sep. 30, 1993, 2942/93
Int. Cl.[6] A42B *3/16;3/18*
U.S. Cl. 2—422 **21 Claims**

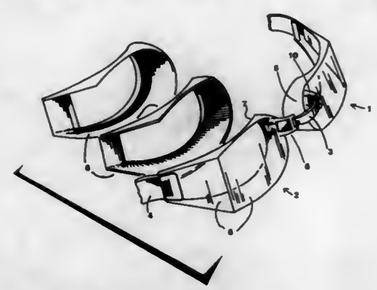
1. A head protection arrangement comprising:
a protective helmet;



a first strap support plate mounted on a lateral side of the helmet and having a first side facing the helmet, a second side facing away from the helmet, and a coupling cam formed on one of the sides and having a multisided outer contour; and

a face-protection shield including a strap having a claw for grasping the coupling cam and having a multisided inner contour complementary to the outer contour of the coupling cam, the claw being shaped like an open-jawed spanner and having a jaw opening and a recess facilitating elastic expansion of the jaw opening, the inner contour of the claw being spaced from the outer contour of the coupling cam by an air gap, the shield being pivotable about the cam between a raised position and a lowered position in which the shield protects a face of a wearer of the helmet and being stably locked in either position by engagement between the cam and the claw.

5,546,611
HIGH PERFORMANCE SWIM GOGGLE STRUCTURE
Kim N. Lathrop, 7230 SE. Market, Portland, Oreg. 97215
Filed Aug. 21, 1992, Ser. No. 934,022
Int. Cl.[6] A63B *33/00*
U.S. Cl. 2—428 **15 Claims**



1. Swim goggles comprising:

(a) a pair of eyepieces each having a lens and an eyepiece wall for spacing said lens apart from a wearer's eye, said eyepiece wall having a front edge connected to said lens, a distal rear edge, and a smooth outer surface free of protrusions;

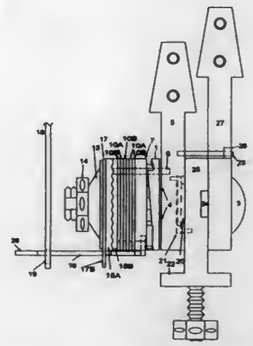
(b) a nose strap connecting said eyepieces;

(c) a head strap connected to each eyepiece for extending around the head of a wearer;

(d) a first resilient sleeve having a first portion covering at least a portion of said eyepiece wall outer surface, and having an inwardly extending lip covering at least a portion of said eyepiece wall rear edge; and

(e) a second resilient sleeve overlaying at least a portion of said first resilient sleeve.

5,546,612
AUTOMATIC DOMESTIC TOILET SEAT LOWERING APPARATUS AND DISC BRAKE ASSEMBLY
Oriz W. Johnson, 7086 Butterwood Dr., Cincinnati, Ohio 45241
Filed Apr. 24, 1995, Ser. No. 427,608
Int. Cl.[6] A47K *13/10*
U.S. Cl. 4—248 **9 Claims**



1. A brake apparatus for use with a toilet seat and lid hinge assembly including a right-hand hinge and a left-hand hinge each having a seat hinge member and a lid hinge member rotatably mounted to an anchor member, said anchor member suitable for fixedly attaching said hinge assembly to a bowl of a toilet, said brake assembly comprising:

an axle shaft fixedly mountable to said anchor member for rotatably mounting one pair of said seat and lid hinge members;

brake means mounted on an extended portion of said axle shaft for slowing descent of said seat, said brake means including a plurality of rotatable friction discs slidably and rotatably mounted on said axle shaft, said rotatable friction discs fixedly attachable to said seat hinge member, a plurality of non-rotatable friction discs slidably mounted on said axle shaft, a thrust cam mounted rotatably and a cam follower mounted slidably to said axle shaft on one side of said discs, and a compression spring mounted to said axle shaft on an opposite side of said discs;

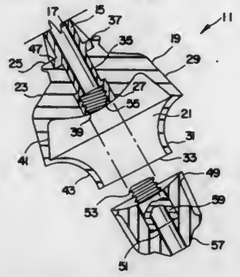
means for arresting seat descent including a notch in a perimeter of one of said rotatable friction discs, and a rod-type arrest spring fixedly attached to said cam follower and extending therefrom to an end portion beyond said compression spring, said arrest spring being biased toward and engaging said notch when said seat hinge member is in a raised position;

seat arrest release means including a flush rod for releasing said arrest spring from said notch;

seat descent initiating means including a torsion spring having a first end attachable to said seat hinge member and a second end attachable to said anchor member; and

lid capture means for releasably securing said seat hinge member to said lid hinge member.

5,546,613
MULTI-PURPOSE WATER PRESSURE PLUNGER
Clyde F. Davenport, P.O. Box 8127, Greenwood, S.C. 29649
Continuation of Ser. No. 132,109, Oct. 5, 1993, abandoned, which is a continuation-in-part of Ser. No. 33,942, Feb. 16, 1993, Pat. No. 5,261,128, which is a continuation of Ser. No. 799,351, Nov. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 498,287, Mar. 23, 1990, Pat. No. 5,020,166. This application Apr. 10, 1995, Ser. No. 420,445
Int. Cl.[6] E03D *11/00*
U.S. Cl. 4—255.05 **1 Claim**



1. A multi-purpose water pressure plunger which sanitarily, efficiently, and dependably utilizes water pressure to clear clogged drains and the like comprising:

a compressible cup defining an interior cavity and having a solid rubber upper portion with a top and a bottom, said cup having an outer wall which extends to form a barrel-like bottom with edges for partially extending into and sealing against walls of a drain opening, said barrel-like bottom constructed of a substantially deformable rubberized material and defining a circumferential orifice;

said upper portion having a central passage defined therethrough, said passage beginning in a first opening at the top of said upper portion and terminating in a second opening positioned centrally in the bottom of said upper portion;

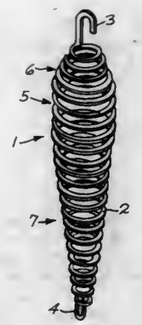
said outer wall and said interior cavity of said cup having an expansive portion proximate said upper portion and a narrow portion at said barrel-like bottom;

a firm, elongated handle attached to the top of said upper portion, said handle having a lengthwise aperture therethrough and having an open end which extends into said central passage; and

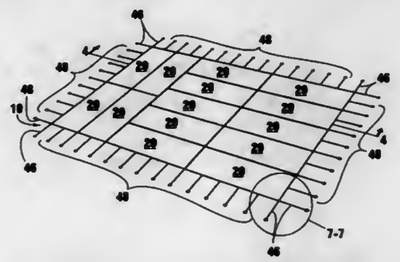
a rubber member for fitting into drain openings extending from said bottom of said solid upper portion, said rubber member having a central passage defined therethrough coaxial and in direct communication with said central passage of said upper portion wherein said rubber member has a plurality of vent grooves defined on an outer surface of said rubber member, said grooves extending generally parallel to said central passage in said rubber member.

5,546,614
REFUSE COLLECTOR DRAINPIPE INSERT
David E. King, II, 3270 Goldmaur Ct., No. B, Port Orchard, Wash. 98366
Continuation of Ser. No. 88,660, Jul. 7, 1993, abandoned. This application Oct. 25, 1994, Ser. No. 328,945
Int. Cl.[6] E03D *9/00*
U.S. Cl. 4—256.1 **1 Claim**

1. A refuse-collecting insert adapted to be lodged in a drainpipe connected to the drain opening from a plumbing fixture for discharge therethrough of waste water carrying refuse and removable from the drainpipe upward through such drain opening, comprising a generally helical open coil having refuse-entangling convolutions forming an interior hollow and a bulge located axially spaced from the opposite ends of said coil of a size to fit snugly in the drainpipe, and said coil having a section tapered upwardly from said bulge for flow of waste water in the drainpipe from the exterior of said coil through the spaces between the refuse-entangling convolutions of said upwardly tapered section into the interior hollow of said coil and having a section tapered downwardly from said bulge for flow of waste water out of the interior hollow of said coil through the spaces between the refuse-entangling convolutions of said downwardly tapered section, said downwardly tapered section being longer than said upwardly tapered section, the combined lengths of said tapered sections constituting the major portion of the length of said coil, and the adjacent convolutions of a tapered section being in partially edge-overlapping relationship radially of the coil.



5,546,615
METHOD AND DEVICE FOR PROVIDING AN INSULATED COVER OVER A POOL
Gary M. Chamness, Blairsburg, Iowa, assignor to Waste Management & Design, Inc., Webster, Iowa
Filed Nov. 14, 1994, Ser. No. 337,867
Int. Cl.[6] E04H *4/10*
U.S. Cl. 4—503 **10 Claims**



1. An insulated cover for a pool having a pool perimeter, a pool bottom, and a quantity of fluid contained therein, said cover comprising:

a plurality of panels having perimetric panel edges, each of said panels comprising first and second sheet members each having perimetric sheet edges, said first and second sheet members being superimposed in registered relation with one another and having their respective perimetric sheet edges joined together to create a pocket therebetween, and an insulative material enclosed within said pocket;

a plurality of panel tie members joining said plurality of panels together in edge to edge relation so as to create a panel assembly having a perimetric assembly edge;

a plurality of anchors adapted to be positioned around said pool;

a plurality of elongated plastic members made of corrosion and acid resistant material extending along and retentively engaging said assembly edge of said panel assembly;

a plurality of anchor tie members, each connected to one of said elongated plastic members and to one of said anchors to secure said panel assembly in covering relation over said fluid within said pool.

5,546,616

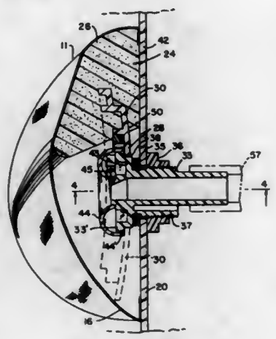
HEAD REST ASSEMBLY

John M. Bloemer, Madison; Michael J. Kurth, Howards Grove, both of Wis.; Alan D. Bengtson, East Aurora, N.Y.; Robert C. Giese; Todd D. Dannenberg, both of Sheboygan; Carter J. Thomas, Port Washington; Edwin R. Potter, Jr., Howards Grove; Thomas A. Bonnell, Sheboygan; Daniel N. Halloran, Saukville, and Thomas W. Clarke, Sheboygan, all of Wis., assignors to Kohler Co., Kohler, Wis.

Continuation-in-part of Ser. No. 107,404, Aug. 16, 1993. This application Jan. 23, 1995, Ser. No. 376,575

Int. Cl.[6] A47K *3/00*

U.S. Cl. 4—541.200 **12 Claims**



1. A head rest assembly for use in conjunction with a bathing fixture comprising:

a body member including a section to support a head;

a fluid inlet nozzle for providing fluid to the body member;

means on said body member for attachment of said body member to said nozzle; and

means for signalling when said body member is mounted on said nozzle comprising a first member mounted on one of said body member and said nozzle and a second member mounted on the other of said body member and said nozzle.

5,546,617

WATER FIXTURE FOR BATHTUBS OR SIMILAR VESSELS AND METHOD OF INSTALLING THE SAME

Gianni Sandrin, Pordenone, Italy, assignor to Albatros System S.p.A., Pordenone, Italy

Filed Aug. 31, 1994, Ser. No. 302,195

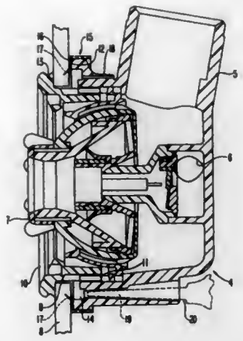
Claims priority, application Italy, Sep. 24, 1993, PN930025 U

Int. Cl.[6] E03C *1/08*

U.S. Cl. 4—541.600 **7 Claims**

1. A fixture for use in conveying fluid through a hole in a wall of a vessel, said fixture comprising:

a hollow body having a screw thread, an end surface used to position the hollow body against one side of the wall of the vessel, a recess defined in a portion of said end surface so as to define a space when the hollow body is positioned against the wall of the vessel, a first vent through-hole having one end open to said recess and another end open at a peripheral surface of the body, and a second through-hole having one end open at an outer peripheral surface of the hollow body and another end open to said recess;



a front ring nut having a screw thread threadable to the screw thread of said hollow body, and an end surface used to position the ring nut against the other side of the wall of the vessel, whereby screwing the front ring to said body is used to clamp the wall between said front ring and said hollow body to secure the fixture in place in the hole in the wall of the vessel; and

a ring extending over an outer edge of the body defining the outer periphery of said end surface of the body, said ring having a front wall that is positionable between at least part of said end surface of the hollow body and the one side of the wall of the vessel as the fixture is secured in place,

whereby when the fixture is secured in place in the hole in the wall of the vessel, the recess defines a space into which sealant can be introduced via the second through-hole, air in the space being vented through the first vent through-hole.

5,546,618

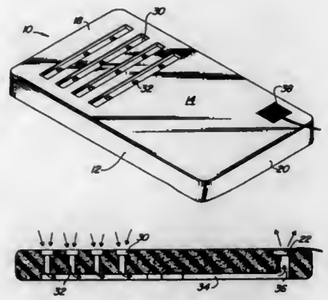
VENTILATED MATTRESS FOR INFANTS

Robert G. Beedy, 8828 Corcoran Rd., Hometown, Ill. 60456, and Raymond A. Lutz, 2507 214th St. North Lot 257, Port Byron, Ill. 61275

Filed Mar. 16, 1995, Ser. No. 405,106

Int. Cl.[6] A47C *27/00*

U.S. Cl. 5—725 **3 Claims**



1. A safety mattress for removing exhaled breath from near the face of a resting infant, comprising:

(a) a substantially rectangular mattress having an upper surface and a lower surface, a head end and a foot end;

(b) a plurality of breath intake channels situated within said head end, upper surface of said mattress; and

(c) an exhaust channel situated within said lower surface of said mattress and in communication with said breath intake channels, extending to said foot end of said mattress and having an exhaust fan affixed therein.

5,546,619

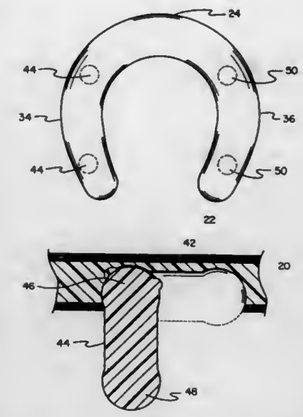
HEAD SUPPORTING DEVICE FOR USE WHILE SUNTANNING

Mary J. Braun, 481 Anaconda Dr., Colorado Springs, Colo. 80919

Filed Jan. 5, 1995, Ser. No. 369,079

Int. Cl.[6] A47C *20/02*

U.S. Cl. 5—638 **1 Claim**



1. A head support which enables a person to comfortably rest upon his or her stomach, the head support comprising, in combination:

a rigid horseshoe-shaped head support having a first opened end, a second closed end, an inner periphery, an outer periphery, an upper surface, a lower surface, a first side and a second side, two sockets formed within the first side lower surface and two sockets formed within the second side lower surface, the inner periphery adapted to support a user's head;

a layer of resilient cushioning covering all the surfaces of the rigid head support, the cushioning permitting access to the two sockets formed within the first side lower surface and within the sockets formed within the second side lower surface;

a first set of legs for supporting the first side of the rigid head support, each leg of the first set having a first ball-shaped end and a second surface engaging end, each ball-shaped end secured within one of the sockets formed within the first side lower surface of the head support, each leg of the first set having a first position adjacent the lower surface of the head support, and a second position substantially perpendicular to the lower surface of the head support;

means to positively lock each of the legs of the first set in the second position substantially perpendicular to the lower surface of the head support;

a second set of legs for supporting the second side of the rigid head support, each leg of the second set having a first ball-shaped end and a second surface engaging end, each ball-shaped end secured within one of the sockets formed within the second side lower surface of the head support, each leg of the second set having a first position adjacent the lower surface of the head support, and a second position substantially perpendicular to the lower surface of the head support; and

means to positively lock each of the legs of the second set in the second position substantially perpendicular to the lower surface of the head support.

5,546,620

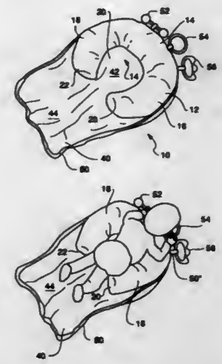
BABY SUPPORT WITH INTERCONNECTABLE PLAY TOYS

Susan H. Matthews, 29753 Canterbury Cir., Evergreen, Colo. 80439

Filed Aug. 17, 1994, Ser. No. 292,240

Int. Cl.[6] A47C *20/02*

U.S. Cl. 5—655 **19 Claims**



1. A multi-functional baby device, comprising:

a resilient support comprising a back portion and two laterally displaced side portions each interconnected with said back portion and each having end portions longitudinally displaced from said back portion;

at least one strap interconnected with said support;

at least one toy interconnected with said at least one strap;

a mat interconnected with said support, wherein a first portion of said mat extends away from said end portions of said two side portions and a second portion of said mat integral with said first portion, occupies an interior region of said support defined by said two side portions and said back portion, wherein said mat and said support are both formed from an upper layer, a separate lower layer, and a separate strip, wherein said strip is attached to each of said upper and lower layers.

5,546,621

ARROW-OUT

Carl E. Bulot, P.O. Box 564, Port Sulphur, La. 70083, assignor to Carl E. Bulot, Port Sulphur, La.

Filed Feb. 27, 1995, Ser. No. 394,899

Int. Cl.[6] B25B *13/00*

U.S. Cl. 7—138 **5 Claims**

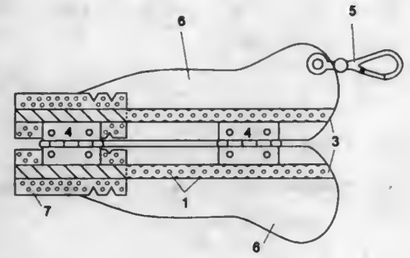
1. A compound tool for gripping an arrow shaft and removing an arrow head comprising:

a first handle section having an elongated groove along a length thereof, said groove having a shaft gripping means thereon;

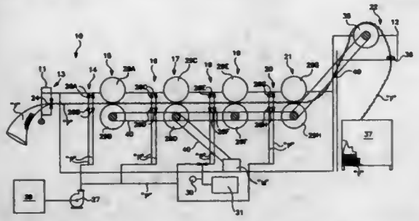
a second handle section having an elongated groove along a length thereof, said second handle section groove matching said first handle section groove in shape and size;

said first and second handle sections being pivotally attached to one another to allow for gripping of said arrow shaft;

a socket at one end of the handle sections, with each section defining a portion of said socket, to grip arrow head.



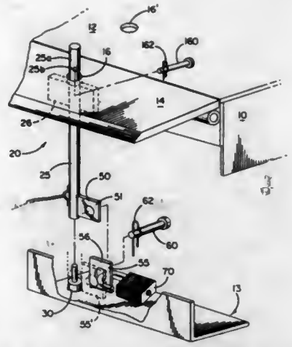
5,546,622
FABRIC PROCESSING APPARATUS AND METHOD OF TREATING A CONTINOUS LENGTH OF TUBULAR-KNIT FABRIC IN TUBULAR FORM
Ronald E. McAlister, 3042 Foxborough Ct., Gastonia, N.C. 28056; Eddie L. Crafton, 12 Monroe Rd., Maiden, N.C. 28650, and Ervin N. Keever, 4255 Barbrick St., Sherrills Ford, N.C. 28673
Filed Jul. 5, 1994, Ser. No. 271,009
Int. Cl.[6] D06B *3/32*
U.S. Cl. 8—151 **26 Claims**



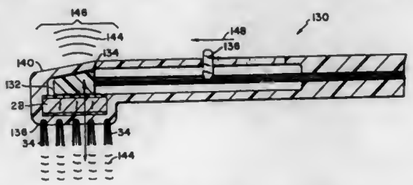
22. A method of treating a continuous length of tubular-knit fabric in tubular form, said method comprising the steps of:
(a) feeding the length of tubular-knit fabric into a fabric processing apparatus at an upstream end thereof;
(b) transversely spreading the tubular-knit fabric to define a flat, double thickness continuous-length fabric web of uniform width for being moved downstream through said apparatus;
(c) washing said flat fabric web with water;
(d) flat pressing said flat fabric web on opposite surfaces thereof for squeezing the wash water from said fabric web; and
(e) moving said flat fabric web in a lengthwise tensionless condition through said apparatus from an upstream end to a downstream end thereof, and along a substantially linear path during feeding, washing, and pressing of the fabric.

5,546,623
MAINTENANCE STRUT FOR DOCK LEVELER
Norbert Hahn, Franklin, Wis., assignor to Rite-Hite Corporation, Milwaukee, Wis.
Filed Feb. 28, 1995, Ser. No. 395,672
Int. Cl.[6] E01D *1/00*
U.S. Cl. 14—69.5 **12 Claims**

1. A maintenance strut assembly for supporting a dock leveler in a maintenance position, the leveler including a deck, and being disposed within a dock pit such that the deck may be disposed above a dock platform surface, the leveler also including a receiving opening, the strut comprising in combination;
a strut member including a lower portion and an upper portion and receivable within the receiving opening in the leveler, the strut member being adapted to be oriented in a supporting orientation with the lower portion disposed beneath the leveler and the upper portion extending above the top surface of the leveler in the maintenance position;
a base member disposed beneath the leveler and engaging the lower portion of the strut member to maintain the strut member in the supporting orientation;
a supporting member fixed to the strut member, and positioned along the strut member to engage the underside of the leveler and prevent downward movement of the leveler beyond the maintenance position.



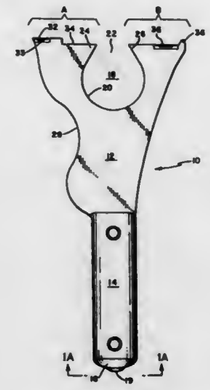
5,546,624
APPARATUS TO SELECTIVELY COUPLE ULTRANSONIC ENERGY IN A THERAPEUTIC ULTRANSONIC TOOTHBRUSH
Robert T. Bock, Brewster, N.Y., assignor to Sonex International Corporation, Brewster, N.Y.
Continuation-in-part of Ser. No. 911,489, Jul. 10, 1992, Pat. No. 5,247,716, and a continuation-in-part of Ser. No. 674,123, Mar. 25, 1991, Pat. No. 5,138,733, and a continuation-in-part of Ser. No. 84,979, Jun. 25, 1993, Pat. No. 5,369,831. This application Oct. 18, 1994, Ser. No. 325,127
Int. Cl.[6] A61C *17/20*
U.S. Cl. 15—22.1 **30 Claims**



1. A therapeutic oral hygiene device to remove soft plaque from teeth and gums and to treat gingivitis of the gums and recurring aphthous stomatitis of the oral cavity, comprising:
a rigid elongated member having a handle end and a bristle end;
a piezoelectric transducer secured to the elongated member adjacent the bristle end for contracting and expanding volumetrically in response to a changing electrical field, said transducer having first and second active surface portions for generating and radiating vibrations operative to at least one of (a) to loosen plaque on the surface of the teeth and disrupt the bacterial colonization process in the gingival pockets; and (b) to reduce recurrence of aphthous stomatitis and accelerate healing of the sores of the mucous membranes of the oral cavity without appreciable relative movement of the bristle end with respect to the handle end;
means coupled to the piezoelectric transducer operative for generating electric signals and transmitting said signals to said piezoelectric transducer;

a plurality of bristle clusters secured to a side of the handle of the elongated member adjacent the first active surface portion of the piezoelectric transducer, said bristle clusters to be received within the mouth for conducting said vibrations to the tooth and gums to be and moved across tooth and gingival surfaces for dislodging the plaque therefrom;
a side of the handle adjacent to the second active surface portion of the transducer to contact the inside surfaces of the oral cavity for acoustically coupling the energy to the said inside surfaces of the oral cavity while the brush is moved across tooth and gingival Surfaces to reduce recurrence of aphthous stomatitis and to accelerate healing of the sores of the mucous membranes of the oral cavity.

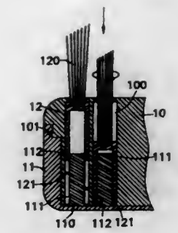
5,546,625
MULTIPURPOSE PAINTER'S TOOL
Eddie H. Mealey, Sr., 158 McLay Ave., East Haven, Conn. 06512
Filed Jul. 13, 1995, Ser. No. 502,306
Int. Cl.[6] B05C *17/10;* **B26B** *9/02;* **B25B** *27/00*
U.S. Cl. 15—105 **7 Claims**



7. A painter's tool for removing a paint roller sleeve from a paint roller comprising:
a blade member of generally triangular configuration and a handle secured thereto, said blade member having a base edge remote from said handle; and
a generally circular opening centrally intersecting said base edge forming an open space in said base edge and defining a collar in said blade member, said collar having a diameter sized to contact the end of a paint roller sleeve and having a circumference substantially greater than 180° so that it may engage and remove said paint roller sleeve from a paint roller.

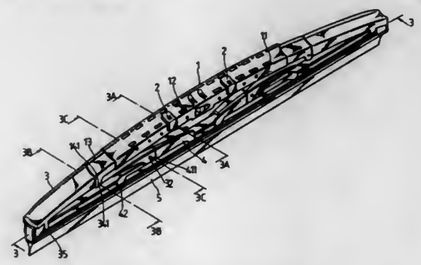
5,546,626
TOOTHBRUSH WITH MOVABLE BUNDLES OF BRISTLES
Chin-Fu Chung, No. 898, Min-sheng St., Kuei-Jen Hsiang, Tainan Hsien, Taiwan
Filed Dec. 20, 1995, Ser. No. 575,633
Int. Cl.[6] A46B *9/08*
U.S. Cl. 15—167.1 **1 Claim**

1. A toothbrush of the type comprising a handle, and a head at one end of said handle to hold bundles of bristles, wherein said head comprises:
a box-like easing having rows of upright pins on the inside, each upright pin having a spiral groove around the periphery;



a cover covered on said box-like casing, having rows of through holes respectively disposed in alignment with the rows of upright pins of said box-like casing;
a plurality of tubular bristle holders respectively sleeved onto said upright, pins and stopped inside said box-like casing by said cover, each tubular bristle holder holding a bundle of bristles outside one through hole of said cover, and has two steel balls retained at two opposite sides by two plugs and partially forced into the spiral groove of the respective upright pin; and
a plurality of spring elements respectively mounted around said upright pins and stopped between said box-like casing and said tubular bristle holders to force said tubular bristle holders upwards.

5,546,627
ADJUSTABLE LENGTH WINDSHIELD WIPER
Liang-Yuan Chen, 180, Hsinmin St., Tamshui, Taipei Hsien, Taiwan
Filed Dec. 20, 1995, Ser. No. 575,385
Int. Cl.[6] B60S *1/38;1/04*
U.S. Cl. 15—250.39 **4 Claims**



1. An adjustable length windshield wiper comprising:
an outer elongated frame including first and second end portions, each end portion of said outer frame having a top wall with two laterally spaced side walls depending therefrom, each of said side walls being formed with a flange, said flanges of said respective end portions extending towards one another, said top walls each having a plurality of slots therein and said side walls each having a plurality of holes therein;
a pair of elongated extension arms, each said arm being of a generally inverted U-shaped form in transverse cross-section, said arms each having two parallel depending legs, each leg formed with a plurality of holes therein, inner ends of said extension arms being inserted, respectively, into said ends of said outer elongated frame between said side walls with said legs supported by said flanges, each said extension arm being provided at an outer end with a pair of first depending lugs, each lug having a hole therein;
a pair of positioners, each positioner having an upper plate with a side plate joined thereto, each said upper plate being provided with a protuberance extending from a lower surface thereof, each said side plate being provided with a shaft

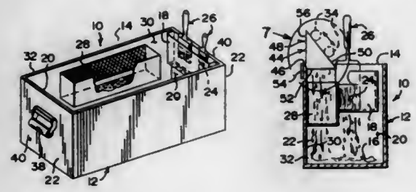
extending outwardly from an inner surface thereof, said positioners respectively couple the extension arms with the first and second end portions of said outer frame, said protuberances respectively engage one of said slots and said shafts respectively engage both a pair of said holes in said side walls and a pair of said holes in said legs to thereby respectively fix the extension arms with respect to the outer frame;

a pair of intermediate elongated frames respectively coupled with said pair of extension arms, each intermediate frame provided at an intermediate portion thereof with an axle engaged with the holes in the respective pairs of lugs, said intermediate elongated frames each being provided close to an outer end thereof with two depending ears, each ear formed with a flange, said flanges on respective ends of said intermediate frames extending towards one another and an inner end of each said intermediate frame provided with a pair of second depending lugs, each lug having a hole therein;

a pair of inner elongated frames respectively coupled with said pair of intermediate elongated frames, each inner frame provided at an intermediate portion thereof with an axle engaged with the holes in the respective second depending lugs, said inner elongated frames each being provided at first and second ends thereof with a pair of flanges, each said pair of flanges extending towards one another; and

an elongated wiper blade having two opposite longitudinal grooves engaged respectively with said pairs of flanges of each inner and intermediate frame.

5,546,628
VERSATILE PAINT CARRIER WITH SUPPORT BASKETS
Rudolph Silvera, 21-81 38th St., Apt. #4, Astoria, N.Y. 11105
Filed Nov. 14, 1994, Ser. No. 338,968
Int. Cl.[6] B44D *3/12*
U.S. Cl. 15—257.06 **1 Claim**



1. A versatile paint carrier comprising:

a) a box-shaped paint receptacle having an open top for holding paint therein;

b) a first perforated basket mounted in a vertical position to an inner surface of a side wall of said paint receptacle, so that paint can drip from bristles of paint brushes stored in said first perforated basket back into said paint receptacle; and

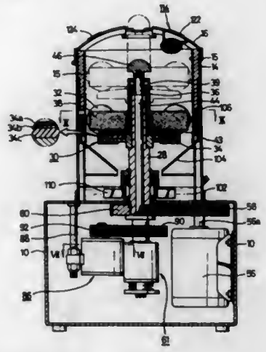
c) a second perforated basket mounted in a vertical position to an inner surface of a rear wall of said paint receptacle, so that paint can drip from a roller of a paint roller stored in said second perforated basket back into said paint receptacle;

further including a pair of handles, each affixed to an opposite outer surface of one side wall of said paint receptacle, so that a person can grasp said handles and transport said carrier from one location to another location, further including a third perforated basket mounted in a vertical position to an inner surface of a side wall of said paint receptacle opposite from said first perforated basket, so that paint can drip from bristles of additional paint brushes inserted into said third perforated basket back into said paint receptacle, further including a roller excess paint remover device which to facilitate cleaning thereof, is removable attached to a top rear edge of said paint receptacle, to allow any paint in the paint roller to be extracted therefrom and go back into said paint receptacle, wherein said paint remover device includes:

i) a triangular shaped housing having a perforated downwardly angled front wall and an open bottom; and

ii) a pair of inverted L-shaped brackets attached in spaced apart relationships to a lower portion of a vertical rear wall of said triangular shaped housing, so that said brackets can hook onto the top rear edge of said paint receptacle, with the perforated downwardly angled front wall extending over said paint receptacle, to allow paint from the paint roller to drip down into said paint receptacle.

5,546,629
BALL CLEANING DEVICE
Sang B. Shim, Yaksu Apt. 5-102, 216-3, Sangdo-dong, Dongjak-ku, Seoul, Rep. of Korea
Filed Jun. 14, 1995, Ser. No. 490,397
Claims priority, application Rep. of Korea, Nov. 16, 1994, 94-30511; Apr. 20, 1995, 95-9308
Int. Cl.[6] A63B *47/04*
U.S. Cl. 15—302 **12 Claims**



1. A ball cleaning device, comprising:

a housing having a side wall, a top access opening and a bottom;

a cleaning fabric provided on an inner surface of the side wall;

a spindle rotatably fitted through the bottom of the housing to extend upwards in parallel to the side wall;

a turntable coaxially mounted on the spindle for rotational movement therewith, said turntable adapted to support a plurality of game balls;

an idle wheel mounted on the turntable for rotation relative to the turntable, said idle wheel having a plurality of compartments arranged along a circumference thereof, each compartment receiving a respective one of the game balls in a spaced apart relationship with one another; and

means for rotatably driving the spindle and the turntable in unison to subject the game balls to a rolling movement and a planetary movement around the spindle so that the idle wheel is pushed by the game balls into rotation about the spindle.

5,546,630
BLAST WIPER FOR MOTOR VEHICLE LIGHTS
Andre Long, 17-4th Ave., P.O. Box 11, Clair, N. B. EOL 1BO, Canada
Filed Jan. 4, 1995, Ser. No. 368,544
Int. Cl.[6] B60S *1/62;1/46;* **B05B** *1/08*
U.S. Cl. 15—313 **22 Claims**

1. A blast wiper for cleaning snow from a light of a vehicle having a compressed air system, said blast wiper comprising essentially,

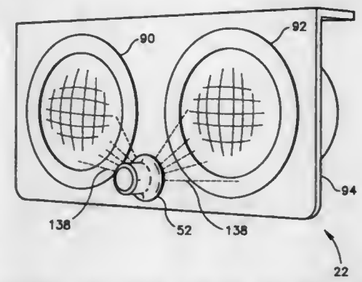
automatic control means for regulating a flow of air from said compressed air system into intermittent gushes of air, said automatic control means comprising a first timer for regulating a span between said gushes of air, and a second timer for regulating a duration of each of said gushes of air,

supply tubing means for connecting said automatic control means to said compressed air system,

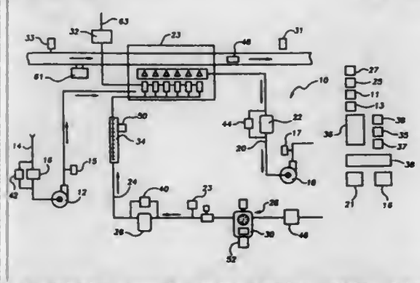
nozzle means for directing said intermittent gushes of air toward a surface of said light, and

delivery tubing means for connecting said automatic control means to said nozzle means,

whereby said intermitte· t gushes of air maintain said light of said vehicle visible when said vehicle is driving in snowy condition, and said automatic control means prevents a continuous outflow of air from said compressed air system.



5,546,631
WATERLESS CONTAINER CLEANER MONITORING SYSTEM
Michael D. Chambon, 3636 Corinne Ave., Chalmette, La. 70043-1500
Filed Oct. 31, 1994, Ser. No. 332,253
Int. Cl.[6] A47L *15/00;5/14*
U.S. Cl. 15—319 **20 Claims**



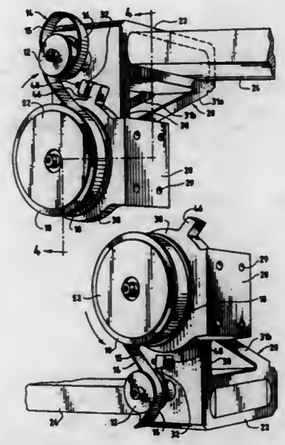
8. A monitoring system for use in a waterless container cleaner having a container cleaning queue for holding a plurality of containers to be cleaned and having a pressure blower, a pressurized air line having a pressurized air line filter, a vacuum blower, a vacuum air line having a vacuum air line filter, a compressed air line having a compressed air line filter, and a compressed air line regulator having a reservoir for collecting condensation within said compressed air line, said monitoring system comprising:

a digital controller having a plurality of inputs and at least one output;

a visual display unit in electrical connection with said at least one output of said controller, said visual display unit displaying a plurality of predetermined messages in response to receipt of various signals from said controller;

a moisture detector means, in functional connection with the compressed air within said compressed air line, for sensing the moisture level of the compressed air within said compressed air line, said moisture detector means having an electrical output in connection with a first one of said plurality of inputs of said controller, said moisture detector means supplying a first input signal to said controller when a predetermined moisture level is sensed within said compressed air line.

5,546,632
SHEAR VISCOUS DAMPED HINGE
Anthony D. Robinson, Leesburg, and Shawn T. Curtin, Manassas, both of Va., assignors to Orbital Sciences Corporation, Dulles, Va.
Filed Feb. 4, 1994, Ser. No. 191,246
Int. Cl.[6] E05F *1/08;3/14;5/02*
U.S. Cl. 16—54 **20 Claims**



1. A hinge, comprising:

an outer damper housing having a perimeter;

a spring roller mounted for revolution around the perimeter of said outer damper housing;

a negator spring having one end attached to said outer damper housing and the other end resting on said spring roller and biasing said roller for revolution around the perimeter of said outer damper housing;

a hinge arm fixedly attached to said spring roller;

an inner damper housing attached to said hinge arm, said inner damper housing being adapted for rotation with said hinge arm, said inner damper housing being rotatably connected within said outer damper housing; and

a fluid disposed between said outer damper housing and said inner damper housing for shear damping rotation of said inner damper housing.

5,546,633
HINGE
Sunny Liu, 2F., No. 37, Fu-Shin 4th Rd., Pei-to Area, Taipei, Taiwan
Filed Nov. 22, 1994, Ser. No. 345,742
Int. Cl.[6] E05F *1/12;1/08*
U.S. Cl. 16—278 **2 Claims**

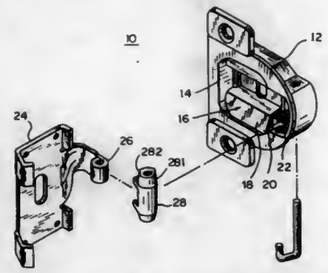
1. A hinge comprising:

a seat including a receiving space;

a pressing member disposed in said receiving space;

a pivoting member including at one end thereof a pivoting portion;

a cam member having two sides, each of the sides including a respective cam portion each cam portion further including a respective upholding portion,



said cam member being pivoted to said pivoting portion of said pivoting member,

means for said pivoting member to turn on said pivoting portion acting as a fulcrum by said pivoting portion of said pivoting member and said cam member being pivoted in said receiving space of said seat, and

means for pressing said cam portion of said cam member elastically by said pressing member, said means for pressing including means for regulating an angle at which said seat and said pivoting member are caused to intersect;

wherein said pressing member includes an elastic pressing piece having a body provided at one side thereof with two pressing portions which are extended outwards and are spaced at an interval such that said two pressing portions correspond in location to said two cam portions of said cam member.

5,546,634

CYLINDER DISTANCE ADJUSTING DEVICE FOR CARDING MACHINE

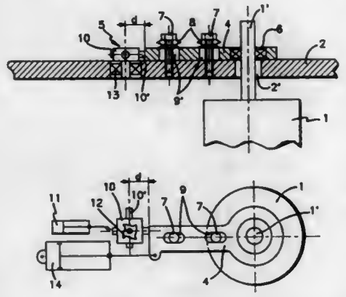
Henri Genevray, Guebwiller, France, assignor to N. Schlumberger et Cie, S.A., Guebwiller, France

Filed May 19, 1994, Ser. No. 246,102

Claims priority, application France, May 19, 1993, 9306275

Int. Cl.[6] D01G *15/18;15/50*

U.S. Cl. 19—101 **6 Claims**



1. Device for adjusting the distance between working cylinders and a main swift and/or between a comb and the main swift of a card, the comb and each working cylinder having an axle, said device comprising for each working cylinder and/or for the comb, a supporting and mounting means adjustable in position on a machine frame, a support arm secured to the machine frame, a positioning device including means for telecontrolled adjustment, said positioning device being operatively associated and coacting with said supporting and mounting means, said main swift having an axis, said means for supporting and mounting being adjustable in position on the frame, radially with respect to said axis and including a first eccentric socket for receiving the axle of the working cylinder or of the comb, said first eccentric socket being mounted in a bearing at the end of the support arm, and a second eccentric socket controlled by the position of the working cylinder relative to a scavenging cylinder and coacting with the machine frame.

5,546,635

APPARATUS FOR CLEANING AND OPENING FIBER TUFTS

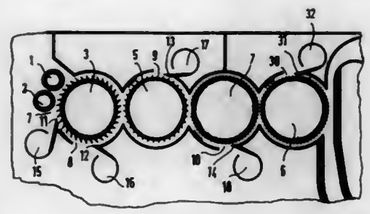
Ferdinand Leifeld, Kempen, Germany, assignor to Trützschler GmbH & Co. KG, Mönchengladbach, Germany

Continuation-in-part of Ser. No. 858,524, Mar. 27, 1992, abandoned. This application Aug. 10, 1994, Ser. No. 288,053

Claims priority, application Germany, Mar. 28, 1991, 41 10 297.5

Int. Cl.[6] D01G *9/14*

U.S. Cl. 19—200 **6 Claims**



1. In an apparatus for cleaning and opening fiber tufts, including a feeding device and an opening device adjoining the feeding device for receiving fiber tufts therefrom; the improvement wherein said opening device comprises a series of immediately consecutive fiber processing rolls each having a point density; said point density increasing from roll to roll as viewed in a direction of fiber material advance through the roll series of the opening device; said series being formed of a first roll receiving fiber material from said feeding device, a second roll receiving fiber material from said first roll, a third roll receiving fiber material from said second roll and a fourth roll receiving fiber material from said third roll; said first roll being a fully spiked roll having spikes of a length of about 12 mm and a spike point density of about 0.6/cm^2, said second roll being a needle roll, said third roll being a medium sawtooth roll having sawteeth of a length of about 6 mm and a sawtooth point density of about 3/cm^2 said fourth roll being a fine sawtooth roll having sawteeth of a height of about 6 mm and a sawtooth point density of about 5/cm^2.

5,546,636

COMBER MACHINE

Gerhard Mandl, Strehlgasse 8, CH-8311 Brütten, and Hans-Peter Meile, Pestalozzistrasse 12, CH-8404 Winterthur, both of, Switzerland

Filed Mar. 27, 1995, Ser. No. 410,891

Int. Cl.[6] D01G *19/04*

U.S. Cl. 19—231 **14 Claims**

1. A comber machine comprising:

a nipper head pivotable about a fixed-position bearing;

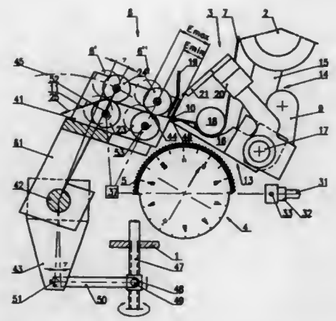
at least two detaching rolls and bearings for rotatable mounting of the rolls;

the rolls being provided in pairs;

wherein the nipper head and a pair of the detaching rolls are movable relative to one other during a combing cycle along a stroke path, up to a predetermined separation value;

the machine further comprises means for adjusting the predetermined separation while still maintaining the stroke path;

at least the bearings of the detaching rolls which are closest to the nipper are displacable relative to the fixed-position bearing of the nipper head, jointly along a track for increasing or reducing the separation value, and is fixable in at least some of the displacement settings.



5,546,637

TWO-PART PLASTIC CLIP FOR CLOSING SAUSAGE CASINGS, BAGS OR THE LIKE

Herbert Niedecker, Am Ellerhang 6, DE 61462, Konigstein, Germany

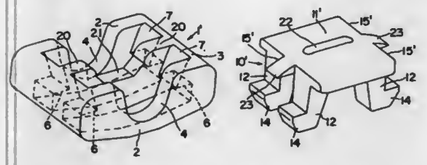
PCT No. PCT/EP92/02634, § 371 Date Jul. 25, 1994, § 102(e) Date Jul. 25, 1994, PCT Pub. No. WO93/10012, PCT Pub. Date May 27, 1993

PCT Filed Nov. 12, 1992, Ser. No. 244,095

Claims priority, application Germany, Nov. 14, 1991, 41 37 478.9

Int. Cl.[6] B65D *77/10;* **F16L** *55/00;* **A22C** *11/12*

U.S. Cl. 24—30.5R **18 Claims**



1. A plastic clip which serves to close sausage casings, bags or the like and consists of two parts, which embrace the wrapper end that has been gathered to form a tip and are adapted to be interlocked, and the tip is deflected in wave shape by at least one inwardly directed projection and is subjected to an applied pressure when the clip is in its interlocked closed state,

characterized in that at least one part (1;1') of the plastic clip consists of an elongate frame, which extends transversely to the longitudinal direction of the tip and is optionally closed on the outside and has side bars (2), which are relatively high relative to their wall thickness and have centrally disposed aligned recesses (4), and that the projection is integrally formed at least with the second part (1; 10; 10'), which substantially covers the frame on the side on which the recesses (4) are disposed, and the projection consists of a rib (2a; 13), which is parallel to the side bars (2) and protrudes into the interior (5) of the frame, and is further characterized in that the recesses (4) in the side bars (2) are arcuate and the rib is an intermediate bar (2a), which is recessed to a smaller depth and extends parallel to the side bars.

5,546,638

SHEET CLAMP

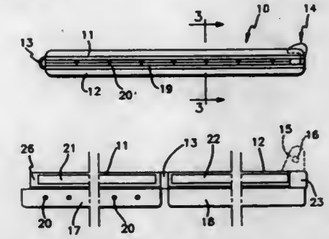
Michelangelo Chiodaroli, Milan, Italy, assignor to I.M.L. Industria Meccanica Lombarda S.R.L., Offanego, Italy

Filed Oct. 19, 1994, Ser. No. 325,506

Claims priority, application Italy, Oct. 19, 1993, MI93U00796

Int. Cl.[6] B42F *1/10*

U.S. Cl. 24—67.9 **4 Claims**



1. A sheet holder clamp (10) to restrain a set of sheets, a newspaper, a magazine, or the like by gripping it along an edge, comprising:

a substantially elongated body having first and second clamping jaws (11, 12) to be moved between an open condition and a closed condition to restrain said set of sheets;

said jaws (11, 12) of the clamp (10) including opposite flat clamping surfaces (17, 18) parallelly and longitudinally extending on one side of the clamp (10), said clamping surfaces (17, 18) being spaced apart to define a longitudinal groove for insertion of the set of sheets, at least one of said clamping surfaces (17, 18) having projections (20) which extend towards the other one of said clamping surfaces (17, 18);

at least one of said clamping surfaces (17, 18) further having longitudinal ribbing (21) on an internal side and the other one of said clamping surfaces (17, 18) having a corresponding groove (22), also on an internal side;

a flexible hinge means (13), provided at one end of the clamp (10), for connecting the jaws (11, 12) together; and

disengageable hooking means (14), being provided at an opposite end of the clamp (10), for maintaining the jaws (11, 12) in the closed condition;

said projections (20) being discretely spaced from each other between the ends of the clamp (10).

5,546,639

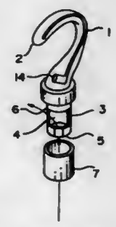
SHOCK CORD HOOKS

Ernest H. Lacore, Cromwell, Conn., and Thomas S. Weaver, Essex Junction, Vt., assignors to Wecor, Cromwell, Conn.

Filed Mar. 27, 1995, Ser. No. 411,336

Int. Cl.[6] A44B *13/00;* **F16B** *2/10;* **F16G** *11/00*

U.S. Cl. 24—265 H **18 Claims**



18. A fastening mechanism for attaching a fastening element to an end of a cord, comprising:

a cord;

a fastening element with an integral base member having at least a top and a bottom, said fastening element located at the top of said base member, and wherein said base member comprises:

an internal storage section,

at least one slot exposing said storage section, and

an aperture in said bottom of said base member;

said aperture having a diameter less than a diameter of said internal storage section;

a cap having an upper opening to engage and substantially cover said base member and a lower opening to receive said end of said cord, and

wherein said end of said cord is secured within said storage section during assembly and said cap is slidingly engaged onto said base member to retain the end of said cord therein.

5,546,640

CLAMP

Karlhans Krönauer, Ilmmünster; Josef Aigner, Gosseltshausen; Franz Klein, Pfaffenhofen/Ilm; Karsten Weber, Pfaffenhofen/Ilm; Monika Schmid, Pfaffenhofen/Ilm, and Robert Pfab, Brunnen-Hohenried, all of, Germany, assignors to Mawa Metallwarenfabrik Wagner GmbH, Pfaffenhofen, Germany

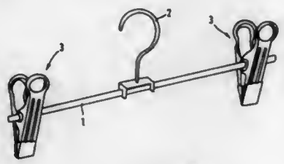
PCT No. PCT/EP94/00099, § 371 Date Sep. 13, 1994, § 102(e) Date Sep. 13, 1994, PCT Pub. No. WO94/15506, PCT Pub. Date Jul. 21, 1994

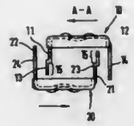
PCT Filed Jan. 14, 1994, Ser. No. 302,811

Claims priority, application Germany, Jan. 15, 1993, 93 00 473.7 U

Int. Cl.[6] A44B *21/00*

U.S. Cl. 24—510 **22 Claims**





1. A clamp for arrangement on a carrying arm (1) with a first and a second clamp half (10, 20) with in each case two lateral angle pieces (11, 12; 21, 22), in which are located a hole (13, 14; 23, 24) for the positioning of the clamp halves (10, 20) on the carrying arm (1), whereby the angle pieces (11, 22 and 12, 21) which are directed against each other lie pairwise against echo other and in each case one angle piece (12; 21) of each clamp half (210, 20) lies on the inside and the other angle piece (12; 22) of the same clamp half (10, 20) lies on the outside, and with a legged spring (4) which lies between the clamp halves 10, 20) and keeps the clamps (3) closed, characterized in that the internal angle piece (11; 21) of one clamp half (10, 20) interlocks rotatably with the external angle piece (22; 12) of the other clamp half (20; 10), by parts (15) of the inner angle pieces (11; 21) being outwardly offset, elbowed or bent over and engaging in corresponding apertures (36) or the holes (14; 24) in the outer angle pieces (12; 22) or, conversely, parts (45, 55, 65, 75) of the outer angle pieces (12; 22) being inwardly offset, elbowed or bent over and engaging in corresponding apertures or the boles (13; 23) of the inner angle pieces (11; 21), and

the legged spring (4) fills, in axial direction, the space between the internal angle pieces (11; 21) in each case of the clamp halves (10, 20).

5,546,641

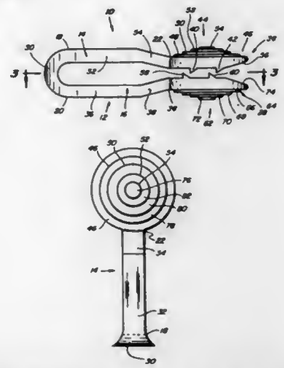
CLIP FOR RETAINING SHIRT SLEEVES OR CUFFS IN A FOLDED POSITION

Bill Radvin, St. Louis, Mo., and Steve Schmitt, Evansville, Ind., assignors to Clipps, Inc., Evansville, Ind.

Filed Mar. 22, 1995, Ser. No. 408,626

Int. Cl.[6] A44B *21/00*

U.S. Cl. 24—557 **18 Claims**



1. A clip comprising a unitary body having a pair of opposing arms joined by an arcuate portion and each of the arms having an opposed jaw portion at ends opposite the arcuate portion, each of the jaw portions having an exterior surface and an interior surface, each exterior surface having a finger grip and each interior surface having gripping means with each finger grip being positioned above each of the gripping means, and at least one of the opposing arms having a planar section adjacent the arcuate portion and an offset section between the planar section and the jaw portion, each of the jaw portions being circular in shape and having a diameter with the diameters being larger than the width of each of the arms, the arcuate portion having a width which is greater than the width of the arms and less than the diameters of the jaw portions.

5,546,642

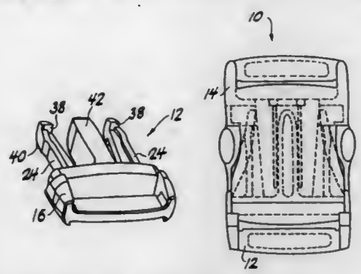
SIDE-RELEASE BUCKLE FASTENER

Joseph Anscher, Muttontown, N.Y., assignor to National Molding Corporation, Frmingdale, N.Y.

Filed Aug. 5, 1994, Ser. No. 286,610

Int. Cl.[6] A44B *11/26*

U.S. Cl. 24—625 **31 Claims**



1. A two-piece buckle, comprising:

a male member including a base portion and two arms extending outwardly therefrom, said arms each including at a free end distal said base portion an upper abutment surface and a lower abutment surface wherein said upper and lower abutment surfaces are discrete and spaced-apart from each other, wherein each arm includes a longitudinal axis extending therethrough, and for each arm the upper and lower abutment surfaces are located opposite sides of the longitudinal axis of said arm; and

a female member including a body with a cavity therein for receiving said arms of said male member, said body including a plurality of retaining surfaces, each corresponding to one of said abutment surfaces of said male member and adapted for engaging said abutment surface when the male and female members are coupled to resist separation thereof, the female member also including two actuating members, each engageable with one of said arms for disengaging said abutment surfaces from corresponding retaining surfaces and thereby uncoupling the male and female members when desired.

5,546,643

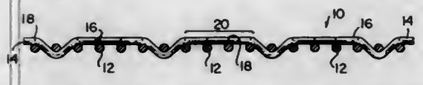
METHOD TO REDUCE FORMING FABRIC EDGE CURL

John M. Hawes; Joe W. Sims, both of Appleton, and Don Lee, Menasha, all of Wis., assignors to Albany International Corp., Albany, N.Y.

Filed Sep. 6, 1995, Ser. No. 524,234

Int. Cl.[6] D06C *13/00*

U.S. Cl. 26—11 **6 Claims**



1. A method for reducing forming fabric edge curl comprising;

maintaining a forming fabric in a substantially flat condition, said forming fabric being woven from machine-direction and cross-machine direction yarns in a pattern producing a surface on said fabric formed substantially by knuckles of said cross-machine direction yarns, said surface being a long-shute knuckle side of said fabric; and

scoring a plurality of said knuckles of said cross-machine direction yarns on said long-shute knuckle side to provide each of said plurality of said knuckles with at least one slit, so that the ratio between the shrink forces acting across the two sides of the forming fabric will approach unity, whereby forming fabric edge curl will be reduced or eliminated.

5,546,644

METHOD OF MAKING AN ACCELERATION SENSOR

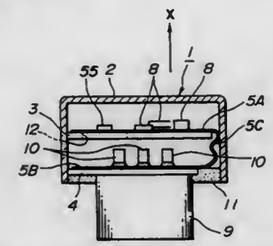
Shinobu Kakizaki, and Kimihisa Kasajima, both of Atsugi, Japan, assignors to Atsugi Unisia Corporation, Japan

Division of Ser. No. 991,434, Dec. 16, 1992. This application Apr. 25, 1995, Ser. No. 428,680

Claims priority, application Japan, Dec. 17, 1991, 3-332393

Int. Cl.[6] H01L *41/22*

U.S. Cl. 29—25.35 **9 Claims**



1. A method of assembling an acceleration sensor, comprising:

a) forming an elongate flexible substrate;

b) mounting an acceleration detection means on said flexible substrate so as to be active to detect acceleration applied to said sensor;

c) mounting signal processing means on said flexible substrate in connection with said acceration detection means so as to receive an output thereof;

d) mounting connecting terminals to said flexible substrate in connection with said signal processing means;

e) adhering opposing portions of said flexible substrate to respective plates, one of said plates having an opening defined therethrough, a portion of said flexible substrate mounting said acceleration detection means being positioned over said opening;

f) folding said flexible substrate along a central folding portion;

g) inserting said plates and said folded flexible substrate into a casing having an open portion such that one plate is inserted topmost and said acceleration detecting means mounted on flexible substrate is facing in an acceleration direction, the shape of the plates conforming to the circumferential shape of the casing and the other plate being inset at the bottom of the open portion of the casing;

h) installing connecting means connecting said acceleration detecting means with an output external to said casing; and

i) sealing said casing via a sealing agent.

5,546,645

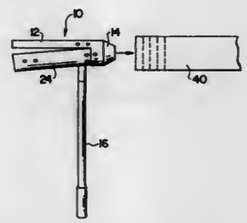
MOUNTING TOOL FOR POLYCAP FENCE TOP

Gene A. Baughman, Rt. 1, 8516 Rd. 137, Paulding, Ohio 45879

Continuation of Ser. No. 962,336, Oct. 16, 1992, abandoned. This application May 12, 1994, Ser. No. 241,666

Int. Cl.[6] B23P *19/04;* **B25B** *33/00*

U.S. Cl. 29—235 **10 Claims**



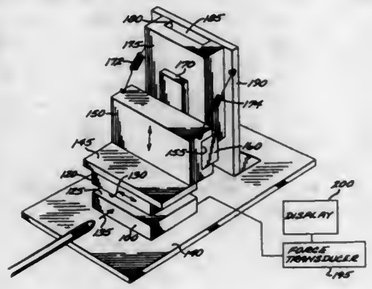
1. A mounting tool comprising:

a main body member having distal and proximal ends, a longitudinal axis and a vertical plane of symmetry containing said longitudinal axis, said distal end being spaced from said proximal end along said longitudinal axis;

at least two spreader wings each having distal and proximal ends spaced along said longitudinal axis, said distal end of each spreader wing being hingedly attached to said main body member so that said proximal end of each spreader wings is movable with respect to said longitudinal axis; and

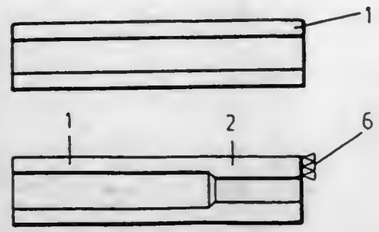
a handle immovably coupled to said main body member so as to be immovable with respect to said main body member, said handle extending generally transversely to said longitudinal axis between said distal end of each spreader wing and said proximal end of said spreader wings, at least a substantial portion of said handle being laterally offset from said vertical plane of symmetry.

5,546,646
METHOD FOR MOUNTING AN INTRAVASCULAR STENT ON A CATHETER
Michael S. Williams, Chapel Hill, N.C.; Lilip Lau, Sunnyvale; Farhad Khosravi, Belmont; William Hartigan, Fremont, and Avegel Hernando, Union City, all of Calif., assignors to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.
Division of Ser. No. 66,707, May 24, 1993, Pat. No. 5,437,083.
This application Feb. 17, 1995, Ser. No. 390,096
Int. Cl.[6] B23P *11/00*
U.S. Cl. 29—407.08 **6 Claims**



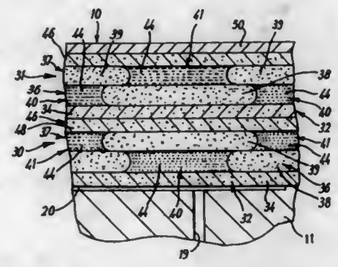
1. A method of affixing an intravascular stent onto a catheter, comprising:
placing an intravascular stent onto a catheter,
placing the portion of said catheter containing said stent between two substantially flat surfaces,
providing relative sliding movement between said two substantially flat surfaces and simultaneously imparting compressive forces on said stent to removably attach said stent onto the catheter.

5,546,647
METHOD OF MAKING AN EJECTOR TUBE FOR MOLDS
Alberto N. Pruna, 8, calle Juan Ramón Jiménez, 08960 Sant Just Desvern, Spain
Filed Nov. 22, 1994, Ser. No. 343,573
Claims priority, application Spain, Apr. 6, 1993, P 9300719
Int. Cl.[6] B23P *25/00*
U.S. Cl. 29—527.4 **5 Claims**



1. A method of making an ejector tube for molds, comprising the steps of cutting a starting tube to a desired length, with inside and outside diameters slightly oversized with respect to final inside and outside diameters; deforming one end area of the tube from an outside in to reduce the inside diameter of the one end area; pre-truing from the outside to bring the outside diameter of the tube to a desired value; machining an inside of the deformed one end area ensuring a total concentricity; treating the tube by induction; externally truing the tube to bring its outside diameter to a desired value; internally truing the one end area to obtain the inside diameter of desired value from the one end area; and truing a front end of the tube.

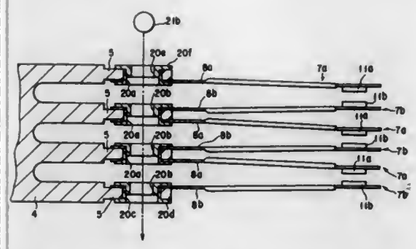
5,546,648
METHOD OF MAKING A ROTOR
Colin D. Tarrant, Flint, United Kingdom, assignor to British Nuclear Fuels plc, Cheshire, United Kingdom
Division of Ser. No. 232,268, Jul. 16, 1994, Pat. No. 5,477,092.
This application May 24, 1995, Ser. No. 448,684
Claims priority, application United Kingdom, Sep. 7, 1992, 9218928; Jul. 6, 1993, 9313945
Int. Cl.[6] H02K *15/02*
U.S. Cl. 29—598 **1 Claim**



1. A method of manufacturing a rotor comprising fibre-reinforced plastics material incorporating magnetic filler material, the fibre-reinforced plastics material being arranged as a multi-layered cylindrical portion of the rotor, the magnetic filler material being disposed within and between the layers, the method including the steps of:
a) winding onto a mandrel an initial layer comprising resin-impregnated fibres;
b) winding at least one intermediate layer comprising resin-impregnated fibres about the initial layer so as to defined spaces between the fibres of the intermediate layer;
c) disposing a mixture comprising magnetic filler material and a resin matrix material in the spaces;
d) winding an outer layer comprising resin-impregnated fibres about the intermediate layer;
e) applying a magnetic field to align the magnetic filler material in a required orientation whilst the resin is in the liquid state prior to gelling and during the gelling process;
f) curing the resin; and
g) magnetising the magnetic material.

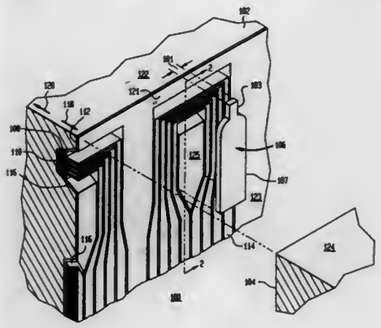
5,546,649
ASSEMBLY METHOD OF CARRIAGE ASSEMBLY OF MAGNETIC DISK DRIVE
Machio Shimanuki, Ome, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 13, 1994, Ser. No. 304,857
Claims priority, application Japan, Sep. 14, 1993, 5-228536
Int. Cl.[6] G11B *5/42*
U.S. Cl. 29—603.03 **3 Claims**

1. A method of assembling a carriage assembly of a magnetic disk drive, the carriage assembly including a carriage with a plurality of arms arranged in parallel at predetermined intervals and having end portions in which through-holes are formed, a plurality of first magnetic head assemblies with cylindrical first mount portions each having an outer diameter substantially equal to the diameter of each of the through-holes, and a plurality of second magnetic head assemblies with cylindrical second mount



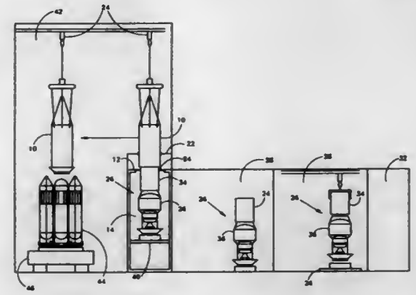
portions each having an outer diameter substantially equal to the inner diameter of each of the first mount portions, each of the first magnetic head assemblies being fixed to one side surface of an associated one of the arms with the first mount portion being engaged in the through-hole of the associated arm, each of the first magnetic head assemblies facing one surface of an associated one of magnetic disks situated between adjacent ones of the arms, each of the second magnetic head assemblies being fixed to the other side surface of an associated one of the arms with the second mount portion being engaged in the first mount portion engaged in the through-hole of the associated arm, each of the second magnetic head assemblies facing the other surface of the associated one of the magnetic disks, each magnetic disk being interposed between a pair of the mutually facing first and second magnetic head assemblies,
said method comprising the steps of:
fixing each of the first magnetic head assemblies to one side surface of an associated one of the arms, by fitting and calking the first mount portion of the first magnetic head assembly in the through-hole of the associated arm; and
fixing each of the second magnetic head assemblies to the other side surface of the associated one of the arms, after the first magnetic head assemblies are fixed, by fitting and calking the second mount portion of the second magnetic head assembly in an inner hole of the first mount portion fixed in the through-hole of the associated arm.

5,546,650
METHOD OF MANUFACTURING A MULTIPLE TRACK THIN FILM RECORDING HEAD
Richard H. Dee, Louisville, Colo., assignor to Storage Technology Corporation, Louisville, Colo.
Filed Jun. 22, 1994, Ser. No. 263,828
Int. Cl.[6] G11B *5/42*
U.S. Cl. 29—603.16 **18 Claims**



1. A method of manufacturing magnetic tape head components comprising the steps of:
(a) obtaining a block of clean, flat magnetic ferrite material to form a substrate;
(b) cutting a trench into a first surface of said substrate;
(c) filling said trench with a nonmagnetic composition to form an insulator;
(d) forming a recess defining a closed path having a first portion formed in said insulator in said trench and a second portion formed outside of said trench in said first surface of said substrate, said recess
defining a back gap portion of said first surface;
(e) depositing a gap producing insulating material on said first surface of said substrate to form a gap layer;
(f) depositing an electrically conductive material in said recess on said gap producing insulating material to form a coil having conductive turns traveling along said closed path;
(g) obtaining a block of clean, flat nonmagnetic material to form a closure section; and
(h) depositing a high saturation magnetic flux density composition to a first surface of said closure section to form a magnetic pole piece, said magnetic pole piece having a top section and a bottom section.

5,546,651
APPARATUS FOR ENCAPSULATING SPACE LAUNCH PAYLOADS
James E. Hollopeter; Tsvi H. Estline, both of San Diego, and Robert L. Barton, Bonita, all of Calif., assignors to Lockheed Martin Corporation, Denver, Colo.
Filed Aug. 1, 1994, Ser. No. 283,622
Int. Cl.[6] B23P *21/00*
U.S. Cl. 29—722 **7 Claims**



1. Apparatus for encapsulating a payload in a shroud and mounting the resulting assembly on a launch vehicle which comprises:
a cargo encapsulation cell having a generally clean interior;
said encapsulation cell having a roof structure capable of supporting a shroud, payload and supporting fixtures;
sealing means for engaging a shroud on said roof adjacent to said roof forming an airlock to said encapsulation cell;
selectively openable access means in said roof for providing access into said shroud through said cell roof; and
means for inserting a payload in said encapsulation cell into said shroud.

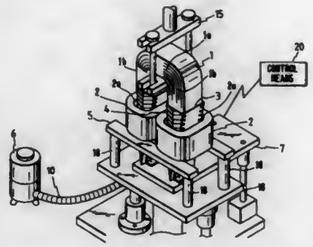
5,546,652

AMORPHOS CORE/COIL ASSEMBLING APPARATUS

Toshio Ogata; Masanori Yoshizaki, both of Nakajo-machi, and Kenji Taguchi, Shibata, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 30, 1994, Ser. No. 297,839
Claims priority, application Japan, Aug. 31, 1993, 5-215951
Int. Cl.[6] H01F *41/02*
U.S. Cl. 29—738 4 Claims

1. An amorphous core/coil assembling apparatus for manufacturing an amorphous core/coil assembly by inserting an amorphous core into a coil having an opening, said apparatus comprising:



fixation means for holding an amorphous core of an upside-down U shape at a predetermined position;

coil holding means for holding a coil having an opening at a position facing the amorphous core and for moving the coil to a position where an end of a leg of the amorphous core is inserted into the opening of the coil;

clamping means disposed so as to face ends of the legs of the U-shaped amorphous core, for clamping the end of at least one of the legs of the U-shaped amorphous core;

positioning means for moving said clamping means to the predetermined position of the amorphous core; and

control means for controlling operation of said coil holding means, said clamping means and said positioning means such that first said coil holding means is driven to a position where said clamping means is inserted into the opening of the coil and then said coil holding means is driven to a position where the at least one of the legs of the amorphous core is inserted into the opening of the coil after said clamping means has clamped the at least one of the legs of the amorphous core.

5,546,653

CRIMPING TOOL FOR THE CONNECTION OF AN ELECTRIC CABLE IN AN END ELEMENT

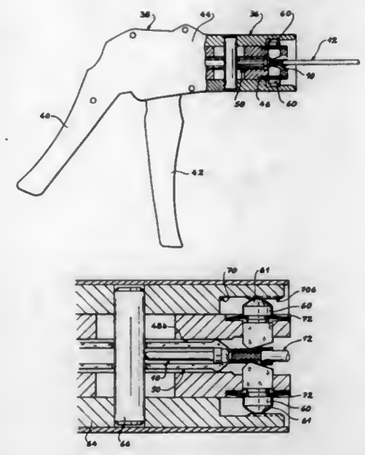
Gilles Tournier, Lequevin, and Stéphane Seguier, Toulouse, both of, France, assignors to Societe Nationale Aerospatiale Industrielle, Paris, France

Filed Sep. 29, 1994, Ser. No. 314,828
Claims priority, application France, Oct. 1, 1993, 93 11712
Int. Cl.[6] H01R *43/042*
U.S. Cl. 29—751 11 Claims

1. Crimping tool for the connection of an electric cable in an end element having a frustrum shaped outer surface, wherein said crimping tool comprises:

a tool body provided with a recess having a given longitudinal axis, said recess having a rear portion and a front portion adapted to receive the end element,

a gripping plier having gripping elements normally spaced from said longitudinal axis, said plier being located in said rear portion of the recess and being moveable along said longitudinal axis between a front position for loading said end element and a rear position for crimping said end element,



means for automatically moving said gripping elements towards said longitudinal axis when said plier is moved from its front position,

a crimping die located in the tool body adjacent said front portion of said recess spaced from said longitudinal axis and being moveable in a direction substantially perpendicular to said longitudinal axis between a crimping position and an open position and

crimping control means for maintaining the crimping die in its crimping position when the gripping plier moves from its front position to its rear position, and for maintaining said crimping die in its open position when the gripping plier is in either its rear or front positions and when it moves from its rear position to its front position.

5,546,654

VACUUM FIXTURE AND METHOD FOR FABRICATING ELECTRONIC ASSEMBLIES

Robert J. Wojnarowski, Ballston Lake, and Thomas B. Gorczyca, Schnectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 29, 1994, Ser. No. 297,076
Int. Cl.[6] H05K *3/30;3/42;* B23P *19/04*
U.S. Cl. 29—841 23 Claims

1. A method for packaging an electronic component, comprising the steps of:

positioning at least one electronic component having a face with connection pads face down on an insulative film;

positioning the insulative film on a porous sheet supported by a vacuum fixture, the porous sheet and vacuum fixture for creating vacuum conditions for holding the insulative film with a substantially flat surface on the porous sheet;

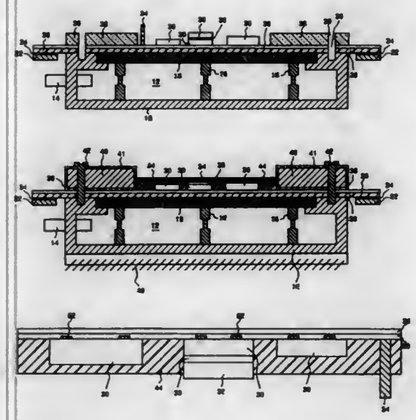
creating a vacuum for flatly holding the insulative film on the porous sheet; and

applying a substrate to the insulative film and the at least one electronic component by

securing the insulative film in position with a mold form having at least one opening for holding substrate molding material to be added therein, the at least one opening positioned around the at least one electronic component; and

adding substrate molding material at least partially around the at least one component through the at least one opening; and

hardening the substrate molding material.



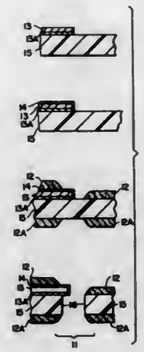
5,546,655

METHOD OF APPLYING FLEX TAPE PROTECTIVE COATING ONTO A FLEX PRODUCT

Claudius Feger, Hopewell Junction; Teresita O. Graham, Irvington; Kurt R. Grebe, Beacon; Alphonso P. Lanzetta, Marlboro; John J. Liutkus, Yorktown Heights; Linda C. Matthew, Peekskill; Michael J. Palmer, Walden; Nelson R. Tanner, Harpursville; Ho-Ming Tong, Yorktown Heights, all of N.Y.; Charles H. Wilson, Beckley, W. Va., and Helen L. Yeh, Katonah, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 761,182, Sep. 17, 1991, Pat. No. 5,360,946.
This application Oct. 25, 1994, Ser. No. 329,066
Int. Cl.[6] H05K *3/02*
U.S. Cl. 29—846 25 Claims

1. A method for making a flex product comprising: in a metal lead having a top surface and a bottom surface, securing said bottom surface of said metal lead to a substrate, plating a protective metal coating on said top surface of said metal lead, applying a photoresist coating on said protective metal coating, placing a pattern on said photoresist coating, exposing said pattern and developing said pattern to result in selected open areas in said photoresist coating, and contacting said open areas with an etchant to form openings through said substrate.

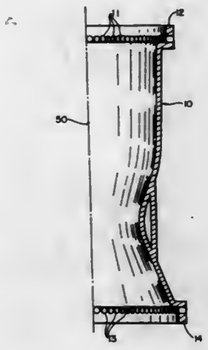


5,546,656

FABRICATION OF ROCKET THRUST CHAMBERS

Mark L. Hartman, Tequesta; Russell J. Meinick, Jupiter, and Daniel A. Bales, Palm City, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 30, 1994, Ser. No. 346,646
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—890.01 13 Claims



1. A method of making a rocket chamber having tubular passages therein comprising:

providing a structural jacket having first and second opposed ends and a plurality of first and second holes extending through the jacket adjacent the first and second ends, respectively, said jacket having inner and outer surfaces, said inner surface coated with a bonding material;

positioning a plurality of tubes within the jacket, each tube having an outer surface comprising said bonding material, each tube having a first tube end positioned in one of the first holes and a second tube end positioned in one of the second holes, thereby forming a tube bundle;

sealingly welding the jacket to each tube end at each hole thereby preventing communication between the inner and outer surfaces of the structural jacket through the first and second holes;

positioning a mandrel within the tube bundle mandrel having a purge port extending therethrough and a purge line connected to said purge port;

sealingly welding the perimeter of the first and second ends of the jacket to the mandrel, thereby defining an isolated volume bounded by the mandrel, the jacket, and the outside of each of the tubes, said isolated volume communicating with the outer surface of the jacket solely through a purge line;

evacuating the isolated volume and sealing the purge line; and,

placing the jacket, tubes and mandrel as an assembly into a cold isostatic pressure chamber and raising the pressure of the chamber to a pressure at which plastic or superplastic deformation of the tubes can take place thereby inflating each of the tubes and expanding each of the tubes into intimate contact with immediately adjacent tubes, the inner surface of the jacket, and the mandrel, and subjecting the assembly to ultrasonic vibrations at a frequency and amplitude sufficient to cause deformation at contact points between each of the tubes and the immediately adjacent tubes, the liner, and the inner surface of the jacket in contact therewith, said deformation causing atomic bonding at the contact points.

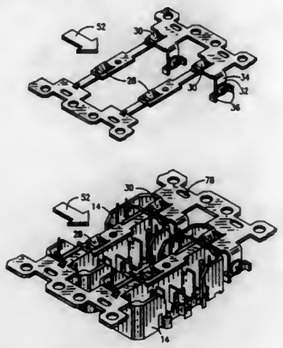
VOL 1189 ISS 3 AG 20 1996 UMI

5,546,657

METHOD OF ASSEMBLING WIRING DEVICES IN CONTINUOUS SUCCESSION

Parag J. Mehta, Copiague; Gunter Callas, Woodbury; Vincent Barbo, Greenlawn, and Jean-Claude Marcou, DeWitt, all of N.Y., assignors to Pass & Seymour, Inc., Syracuse, N.Y.

Filed Feb. 3, 1995, Ser. No. 383,443
Int. Cl.[6] H01R *9/14*
U.S. Cl. 29—884 **20 Claims**



1. A method of automatically assembling wiring devices in a continuous sequence, said method comprising:

a) moving an elongated strip of sheet metal in a linear direction parallel to the longitudinal axis of said strip;

b) forming in said strip a continuous succession of mutually attached blanks elongated between opposite ends along parallel axes perpendicular to said linear direction, said blanks being suitable for forming mounting straps for said wiring devices;

c) assembling all other elements of said wiring device with said mounting strap blanks while the latter remain mutually attached; and

d) severing the endmost of said mounting strap blanks from the immediately preceding mounting strap blank, thereby providing an assembled wiring device having a mounting strap.

5,546,658

NAIL CLIPPING AND COLLECTING DEVICE

David L. MacLeod, 2324 English Village La., Birmingham, Ala. 35233; Jack M. Sayler, Jr., and Lloyd B. Cooper, both of Birmingham, Ala., assignors to David L. MacLeod, and John M. Sayler, Jr., both of Birmingham, Ala.

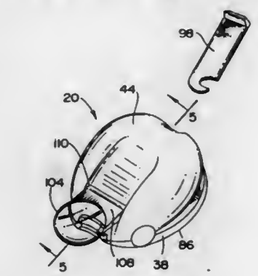
Filed Aug. 14, 1995, Ser. No. 514,971
Int. Cl.[6] A45D *29/02*
U.S. Cl. 30—28 **23 Claims**

1. A nail clipping and collecting device for use with a nail clipper having first and second opposed clipping blades, first and second elongated arm members defining holes therein and extending respectively from said blades, said arm members connected together at ends thereof, a post slidably extending through said holes in said arm members, and a fulcrum lever arm connected to said post and in contact with said second arm member at a fulcrum point, said nail clipping device comprising:

a base defining a first cavity for removably receiving said first arm member, a first portion of said second arm member and a first portion of said post substantially within said cavity and further defining a first hinge element;

a handle defining a second cavity for removably receiving a second portion of said second arm member, said fulcrum lever arm and a second portion of said post substantially within said second cavity when said base and said handle are hingedly connected together; and

said handle further defining a second hinge element for removably connecting to said first hinge element, whereby said base and said handle can be removably hingedly connected together with said nail clipper in position within said first and second cavities.

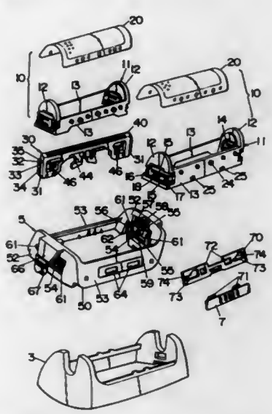


5,546,659

RECIPROCATORY DRY SHAVER

Masao Tanahashi; Takeshi Shiba, and Toshio Ikuta, all of Hikone, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Division of Ser. No. 47,501, Apr. 19, 1993, Pat. No. 5,398,412. This application Jan. 24, 1995, Ser. No. 377,361
Claims priority, application Japan, Apr. 23, 1992, 4-103330; Dec. 22, 1992, 4-342204
Int. Cl.[6] B26B *19/04;19/06*
U.S. Cl. 30—43.92 **5 Claims**



1. A reciprocatory dry shaver comprising:

a shaver housing with three elongated cutter heads each having a longitudinal axis, said three elongated cutter heads composed of a center cutter head and two outer cutter heads arranged on opposite sides of said center cutter head with the individual longitudinal axes of said three elongated cutter heads lying substantially parallel to each other, each of said two outer cutter heads comprising an outer foil and an outer movable cutter driven to reciprocate along said longitudinal axis of each of said two outer cutter heads in hair shearing engagement with said outer foil of each of said two outer cutter heads, said center cutter head comprising a stationary cutter and a center movable cutter driven to reciprocate along said longitudinal axis in hair shearing engagement with said stationary cutter of said center cutter head; and

reciprocating means for imparting a reciprocating motion to said outer and center movable cutters;

said stationary cutter of said center cutter head being of a generally U-shaped configuration with a slotted top wall and a pair of side walls depending from opposed lateral sides of said top wall, said stationary cutter having longitudinal ends secured respectively to L-shaped holders disposed between said side walls, said L-shaped holders formed with connections for connection with at least one spring being held between said L-shaped holders and center movable cutter for biasing said center movable cutter against said stationary cutter;

said center movable cutter of said center cutter head being provided with a downwardly extending coupler for connection with said reciprocating means;

wherein said coupler of said center movable cutter is connected with said reciprocating means at a coupling point which is spaced away from lower edges of said side walls of said stationary cutter within a reciprocating length of said coupler.

5,546,660

DYNAMIC RAZOR HEAD

Charles Burout, Knoxville, Tenn., and Ernest Ortiz, Cheshire, Conn., assignors to Warner-Lambert Company

Filed Sep. 30, 1994, Ser. No. 315,735
Int. Cl.[6] B26B *21/22*
U.S. Cl. 30—50 **5 Claims**

1. A razor head comprising:

a support structure;

at least one blade movably supported relative to said support structure, said blade having a sharpened edge which defines a cutting path when said razor head is drawn across a skin surface during shaving;

said blade operatively connected to said support structure by means for movably connecting said blade to said support structure;

said connecting means comprising at least one portion formed of a resilient material;

wherein said connecting means comprises a blade support connected to said blade, said blade support comprising a pin;

said connecting means further comprising a receptacle for receiving said pin, defined by said support structure;

wherein at least one of said pin or said receptacle comprise a resilient material; and

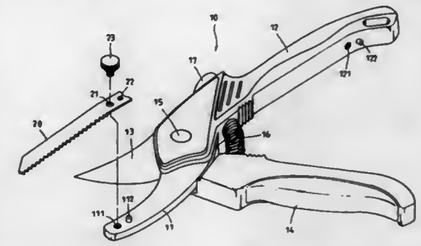
wherein said blade support pin has a semi-circular cross-section.

5,546,661

GARDENING SHEARS

Chung-Jeng Yang, 58, Ma Yuan West St., Taichung, Taiwan

Filed Nov. 13, 1995, Ser. No. 554,962
Int. Cl.[6] B25F *1/00*
U.S. Cl. 30—146 **3 Claims**



1. A pair of shears having a fixed blade, a fixed handle connecting said fixed blade, a driving blade, a driving handle connecting said driving blade, a compressed spring disposed between said fixed handle and said driving handle, a pin disposed on a crisscross portion between said fixed blade and said driving blade, and a switch button disposed on an outer side of said fixed handle, and wherein the improvement comprises:

a first threaded hole and a first positioning post formed on a front of said fixed blade;

a second threaded hole and a second positioning post formed on an inner side of said fixed handle;

a cutting device disposed in front of said fixed blade;

a through hole and a positioning hole formed on a rear of said cutting device;

said first positioning post inserting in said positioning hole; and

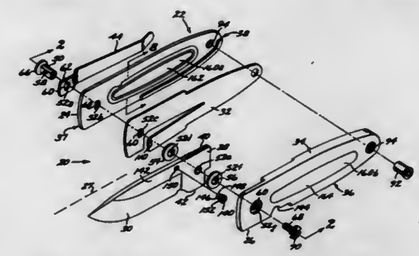
a screw passing through said through hole and said first threaded hole to fasten said cutting device.

5,546,662

KNIFE WITH LOCKABLE BLADE

Brett P. Seber, Escondido, and Roy L. Helton, Jr., San Diego, both of Calif., assignors to Buck Knives, Inc., El Cajon, Calif.

Continuation-in-part of Ser. No. 138,703, Oct. 18, 1993, abandoned, and a continuation-in-part of Ser. No. 138,670, Oct. 18, 1993, abandoned. This application Sep. 16, 1994, Ser. No. 307,183
Int. Cl.[6] B26B *1/04*
U.S. Cl. 30—161 **8 Claims**



1. A knife, comprising:

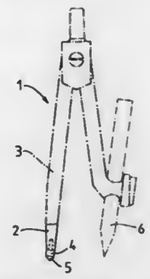
a knife body having a first side piece and a second side piece, the second side piece being parallel to and separated from the first side piece, the first side piece and the second side piece having aligned pivot axle bores therethrough;

a cylindrical pivot axle extending through the pivot axle bores;

a blade pivotably supported on the pivot axle;

a clip having an engagement region; and
keying means for engaging the clip to the first side piece and for preventing the clip from rotating with respect to the first side piece, the keying means including
a key on the pivot axle, and
a keyway on the clip engagement region.

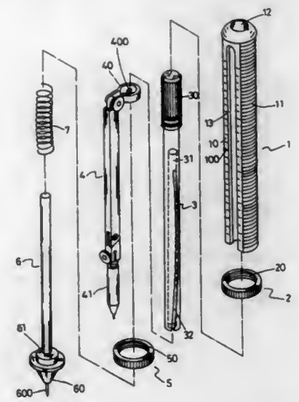
5,546,663
COMPASS HAVING A SQUAT TIP
Clive W. Warwicker, Cookley, England, assignor to Helix Limited, United Kingdom
Filed Jan. 5, 1995, Ser. No. 369,072
Int. Cl.[6] G01B *3/16*
U.S. Cl. 33—27.02 **12 Claims**



1. A drawing instrument comprising:
first and second legs each having first and second longitudinal ends, said second longitudinal ends of said first and second legs being operatively coupled together, at least one leg having a tip mounted to said first longitudinal end thereof, said tip including a generally conical portion having an apex, a height of said apex relative to a base of said conical portion being less than or equal to a diameter of said tip at said base of said conical portion, said tip being formed as a separate metal piece having a stem which is inserted into a receiving hole defined at said first longitudinal end of the leg, said separate metal piece being formed with an annular shoulder which engages an end rim of said first longitudinal end of said leg, surrounding said hole.

5,546,664
COMPASS ABLE TO DRAW ANY-SIZE ELLIPSES
Kuo Ming-Shish, No. 26-1, Alley 43, Lane 344 Chung-Chen S. Road, Yung-Kang City, Tainan Shien, Taiwan 710, Taiwan
Filed Sep. 11, 1995, Ser. No. 526,582
Int. Cl.[6] B43L *11/055*
U.S. Cl. 33—30.3 **1 Claim**

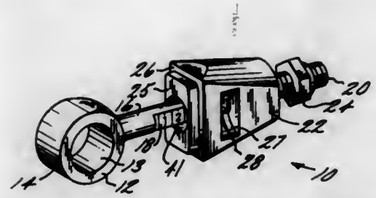
1. A compass able to draw any-size ellipses, comprising:
a body having a lengthwise flat slide surface, a graduation on said flat slide surface, a lengthwise male thread on an outer surface except said flat slide surface, a lengthwise center through hole, and a lengthwise opening in said flat slide surface communicating with said center through hole;
a first and a second position ring having a female thread to screw with an upper proper and a lower proper portion of said male thread of said body respectively;
a movable rod contained in said center through hole, having a grip formed at an upper end, a lengthwise tubular chamber opening to a bottom end and closed at an upper end, a lengthwise slowly curved groove communicating with said tubular chamber;
a pen rod movably fitted on said opening of said movable rod, having a rod holding band pivotally connected with an upper end, a projection on an inner surface of said rod holding band,



and a pen connected at a lower end and adjustable in its angle relative to said pen rod;
a position rod contained in said tubular chamber of said movable rod, having a cone-shaped lower end with a needle extending straight down, and a disc stop on said cone-shaped end;
a coil spring fitted around said position rod, with its lower end resting on said cone-shaped lower end of said position rod and with its upper end supporting a bottom end of said movable rod within said center through hole of said body; and
said first and said second position ring being adjusted in the distance between them according to the length of a long axis and a short axis in drawing an ellipse, said needle of said position rod being made to stand on a crossing point of said long and said short axis, said grip of said movable rod being pressed down to force said projection of said rod holding band of said pen rod move along said slide groove of said movable rod, said pen rod gradually being pushed down to extend outward and turned at the same time for one fourth round and with the top of said pen rod moving down for the distance between said two position rings, said pen moving according to movement of the pen rod and starting from one end point of said short axis to move to one end point of said long axis and drawing one fourth of an ellipse wanted, then said pen rod being pushed up and turned further for one fourth round once again and with the top thereof moving up for the distance between said two position rings, then said pen drawing another fourth of the ellipse wanted by moving from the end point of said long axis to the other end point of said short axis, then another half of the ellipse wanted being able to be drawn by repeating another half round of movement of said pen rod with said pen as described above, said pen rod being rotated for one round with its top end moving up and down for twice between said distance between said two position rings for finishing drawing an ellipse wanted.

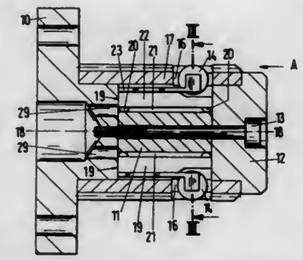
5,546,665
MOTORCYCLE REAR WHEEL ALIGNMENT SYSTEM
John A. Jackmauh, 35 Winton Rd., East Windsor, Conn. 06088
Continuation of Ser. No. 214,245, Mar. 17, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 480,795
Int. Cl.[6] B62M *9/16;* **G01B** *5/255*
U.S. Cl. 33—203 **26 Claims**

1. A device for positioning and aligning an axle comprising a pair of devices, each device including:
a) a ring fixedly attached to a stud, said stud being threaded at an end portion opposed from said ring, said stud further having a scale thereon;
b) a block having a central bore to accept through passage of said stud and a provision for viewing said scale on said stud,



said block including a first bearing surface for bearing against an end of a swingarm and a second bearing surface for providing a surface against which a nut threaded on said threaded end portion of said stud will bear to draw said stud and position said axle.

5,546,666
TOOTHING TESTING APPARATUS
Rudolf Och, Nürnberg, Germany, assignor to Frenco Verzahnungslehren GmbH, Germany
Filed Jul. 28, 1994, Ser. No. 281,564
Claims priority, application Germany, Aug. 6, 1993, 43 26 406.9; May 30, 1994, 44 18 829.3
Int. Cl.[6] G01B *5/16*
U.S. Cl. 33—501.7 **30 Claims**

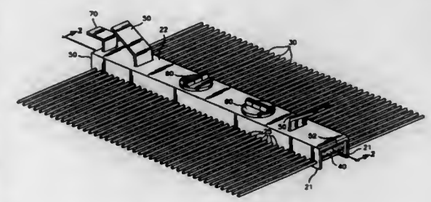


1. A toothing testing apparatus comprising: at least one pair of measuring members having a circular cross-section of a certain diameter arranged to be introduced into respective substantially diametrically opposed tooth spaces of a testpiece; a measuring probe for each of said measuring members, each measuring probe comprising a base part and a measuring part elastically secured to the base part and which is rockable in a rocking movement relative thereto, and arranged to measure the distance between the measuring members of said at least one pair, the measuring part of one of said measuring probes having one of the measuring members attached thereto and the base part of said one of said measuring probes being attached to a stationary part of the testing apparatus; means for symmetrically positioning and automatically centering the measuring members of said at least one pair in the tooth spaces to be measured; and means for electrically measuring a depth of penetration of the measuring members into the tooth spaces.

5,546,667
ADJUSTABLE CARTRIDGE CASE GAUGE
Franz Thalhammer, Wolftratshauser Str. 44, D-82065 Baierbrunn, Germany
Filed Dec. 28, 1994, Ser. No. 365,581
Claims priority, application Germany, Mar. 12, 1994, 9404195 U
Int. Cl.[6] G01B *5/00*
U.S. Cl. 33—506 **4 Claims**

1. An adjustable cartridge case gauge for establishing a specified cartridge size within a cartridge case of a firearm, a rear of the cartridge case being closed by a breech and a front of the case being defined by inwardly angled shoulders, said gauge comprising:
a head portion positioned within the cartridge case adjacent to the shoulder of the case and a foot portion positioned adjacent to the breech;
said head portion being threadable and rotatably attached to a first end of a threaded rod and said foot portion being threadably and rotatably attached to a second end of said threaded rod;
means for adjusting an axial distance between a reference surface of said head portion and a reference surface of said foot portion by rotatably translating said head portion and said foot portion in one of either two directions along said threaded rod, the construction being such that the range of adjustment between said head portion and said foot portion enables said gauge to replicate cartridges having the same diameter as that of a rear surface of said foot portion;
said head portion having a rounded front surface which is hemispherically configured to ensure contact between said head portion and the shoulder regardless of the caliber of the corresponding cartridge, the angle of the shoulder and the length of the shoulder contact with said head portion, the distance between said head portion and said foot portion being fixed at each position during construction of a cartridge case which utilizes said gauge.

5,546,668
LEVELING AND LOCKING PROFILE TRANSFER DEVICE
Ned M. Ahdoot, 6916 Kings Harbor Dr., Rancho Palos Verdes, Calif. 90275
Filed Mar. 31, 1995, Ser. No. 414,747
Int. Cl.[6] G01B *5/20*
U.S. Cl. 33—527 **9 Claims**



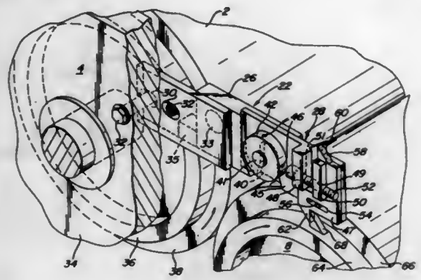
1. A contour tracer comprising:
an elongate U-shaped housing having a top plate and opposing side walls, the walls each having at least one side aperture aligned longitudinally;
a series of linear probe rods fitting slidably through the side apertures, each of the probe rods being engaged in the apertures and freely movable laterally therein;
compressed between the top plate and the rods, a pressure pad of resilient material exerting pressure on the rods such that the rods require a determined force to be repositioned in the housing;
a low friction, flexible and wear resistant layer between the pressure pad and the rods, the rods being in contact with the layer.

5,546,669

CYLINDER POSITIONING APPARATUS FOR OFFSET PRESSES AND DUPLICATIONS

Thomas M. Brennan, 514 W. Moyamensing, Philadelphia, Pa. 19148

Filed Jul. 12, 1994, Ser. No. 274,053
Int. Cl.[6] B41B *11/00*
U.S. Cl. 33—620 29 Claims



1. An apparatus for positioning the cylinders of a press which prints two-color images on paper, said press having a plurality of moving parts comprising a first color plate cylinder, a second color plate cylinder, a blanket cylinder and an impression cylinder, said apparatus comprising;

(a) a mounting bracket connected to said press;

(b) a cylinder positioner coupled to said mounting bracket, said cylinder positioner comprising a positioner stop;

(c) means for positioning said first color plate cylinder comprising a first adjustment stop attached to said blanket cylinder; and

(d) means for positioning said second color plate cylinder comprising a second adjustment stop attached to said blanket cylinder,

wherein said cylinder positioner operates to engage said first adjustment stop and said second adjustment stop appropriately to eliminate any misalignment of the two-color images.

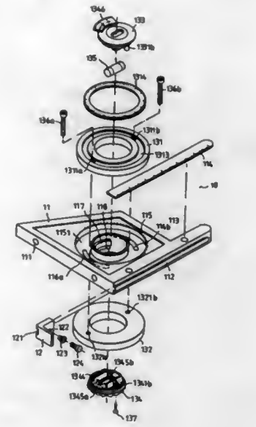
5,546,670

MULTI-PURPOSE MEASURING INSTRUMENT FOR WOOD WORKING MACHINES

Vance Chiang, P.O. Box 63-150, Taichung, Taiwan

Filed Oct. 5, 1994, Ser. No. 318,100
Int. Cl.[6] B27G *23/00*
U.S. Cl. 33—640 4 Claims

1. A multi-purpose measuring instrument for wood working machines, said measuring instrument comprising a body having a horizontal side and a vertical side, said horizontal side being provided with a plurality of magnets and said vertical side being provided with slide blocks capable of longitudinal sliding movement and positioning for measuring the height of a blade, and a circular level set capable of axial rotation being movably and pivotally disposed in the center of said body and consisting of rotary inner rings and outer rings and a bubble tube having therein a bubble, wherein an angle adjustment is achieved by turning said inner and outer rings to a desired degree and adjusting the position of said bubble in said bubble tube.

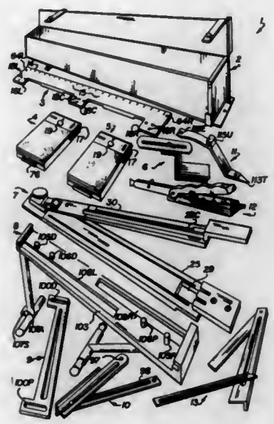


5,546,671

MULTI-PURPOSE ROOFING TOOL KIT

Ted P. Kehoe, 479 Moss St., Chula Vista, Calif. 91911

Filed Jan. 4, 1994, Ser. No. 177,511
Int. Cl.[6] G01D *21/00*
U.S. Cl. 33—648 19 Claims



1. A set of cooperating tools for use while installing roofing shingles or tiles over a roof surface, which comprises:

first and second knee-pads, each of said knee-pads having a flat, unencumbered bottom surface shaped for direct contact with said roof surface and at least one straight solid aligning edge; and

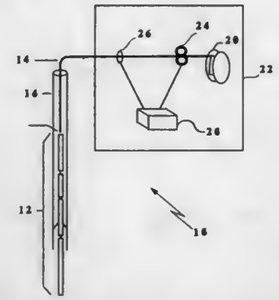
releasable means for fixedly interconnecting said knee-pads in a plurality of arrangements including means for positioning the aligning edge of one of said knee-pads perpendicularly to the aligning edge of the other knee-pad.

5,546,672

MAGNETIC MARK DETECTION

Heather A. Campbell, Cambridge, Mass.; Terry L. Mayhugh, Round Rock, Tex.; Marvin W. Rasmussen, and Guy Vachon, both of Austin, Tex., assignors to Schlumberger Technology Corporation, Austin, Tex.

Filed Nov. 9, 1994, Ser. No. 337,332
Int. Cl.[6] G01B *7/26*
U.S. Cl. 33—716 19 Claims



1. A method of detecting the location of magnetic marks impressed at predetermined lengths on a wireline cable as the cable traverses a borehole, comprising the steps of:

sampling the wireline cable with a Hall Effect sensor at periodic distance intervals substantially less than the predetermined lengths as the cable traverses the borehole to obtain a plurality of samples at the approximate location of a magnetic mark;

detecting an analog signal value for each sample;

digitizing said plurality of analog signal values;

processing said digitized signal values to discriminate between signal and noise; and

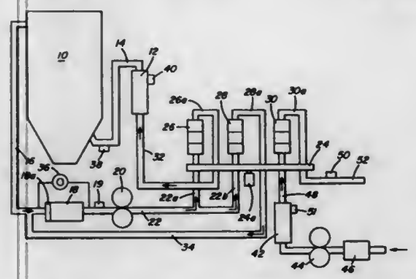
determining which processed digitized signal values are indicative of a magnetic mark.

5,546,673

PLASTIC PELLET DRYER CONTROL SYSTEM EQUIPPED WITH A TEMPERATURE PROTECTION DEVICE FOR THE HEATING UNIT

Jon J. Weagraff, Titusville, and Kaihan Tavakoli, Oil City, both of Pa., assignors to The Conair Group, Inc., Pittsburgh, Pa.

Filed May 19, 1995, Ser. No. 444,705
Int. Cl.[6] F26B *21/06*
U.S. Cl. 34—80 20 Claims



9. A dryer control system for controlling the drying of plastic pellets within a dryer hopper comprising:

a dryer hopper having a hot air inlet in the lower portion and an air outlet in its upper portion;

a process heater box to supply heated air to said hopper hot air inlet;

a cooler with a cooler filter to receive air from said hopper air outlet;

a desiccant carousel carrying at least three desiccant tanks and being rotatable to selectively position a first desiccant tank in communication with said cooler and said process heater, to selectively position a second desiccant tank in communication with said cooler only, and to selectively position a third desiccant tank in communication with a desiccant regeneration heater box;

a desiccant regeneration heater box to supply heated air for regenerating said desiccant tanks;

a programmable logic controller;

a temperature controller;

a plurality of passive fault warning lights;

an alarm warning light;

a plurality of temperature snap switches mounted on components of said system;

a temperature probe mounted on the air line delivering heated air from said process heater box to said dryer hopper hot air inlet;

a limit switch mounted on said desiccant carousel

a pressure switch mounted across said cooler and said cooler filter;

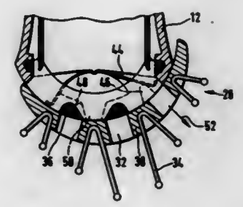
said programmable logic controller and said temperature controller receiving signals from said snap switches, said temperature probe, said pressure switch and said limit switch to activate one or more of said passive fault warning lights if a fault exists in the operation of said system which does not require shut-down of said system and to activate said alarm light and to shut-down said system if a serious fault exists.

5,546,674

AIR-MOVING APPLIANCE FOR DRYING OR STYLING HAIR

Klaus-Peter Lange, Eppstein, and Peter Janouch, Linsengericht, both of, Germany, assignors to Braun Aktiengesellschaft, Kronberg, Germany

PCT No. PCT/EP93/02848, § 371 Date Apr. 24, 1995, § 102(e) Date Apr. 24, 1995, PCT Pub. No. WO94/09669, PCT Pub. Date May 11, 1994
PCT Filed Oct. 15, 1993, Ser. No. 424,252
Claims priority, application Germany, Oct. 24, 1992, 42 36 036.6
Int. Cl.[6] A45D *20/12*
U.S. Cl. 34—97 54 Claims



1. An air-moving appliance for styling hair, comprising a housing having an air inlet opening and an air moving means and an air outlet opening, a supporting structure, the supporting structure supporting a plurality of hair pickup means and being provided with a plurality of apertures fluidly communicable with the air outlet opening, the supporting structure being attachable to the housing at the air outlet opening, and a diaphragm device provided at the air outlet opening in operative engagement with the supporting structure, wherein the supporting structure is displaceable relative to the diaphragm device by a force exerted on the hair pickup means in engagement with hair of a user, whereby when the supporting structure is displaced a first portion of the apertures of the supporting structure is at least partially prevented by the diaphragm device from fluid communication with the air outlet

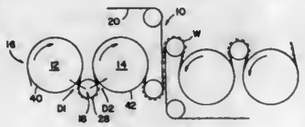
opening and a second portion of the apertures is in fluid communication with the air outlet opening.

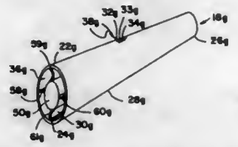
5,546,675

SINGLE TIER DRYING SECTION APPARATUS

William R. McGraw, Beloit, Wis., and Jeffrey H. Pulkowski, Roscoe, Ill., assignors to Beloit Technologies, Inc., Wilmington, Del.

Filed Nov. 22, 1993, Ser. No. 155,990
Int. Cl.[6] F26B *11/02;* **D06F** *58/00*
U.S. Cl. 34—113 **11 Claims**





1. A single tier drying section apparatus for drying a web of paper, said drying section apparatus comprising:

a first and second dryer disposed in a single tier for drying the web;

a vacuum roll disposed closely adjacent to and between said first and second dryers for guiding the web from said first to said second dryer;

a dryer felt extending from said first dryer to and around said vacuum roll, said dryer felt thereafter extending from said vacuum roll around said second dryer such that said dryer felt is disposed between said vacuum roll and the web during movement of the web and said dryer felt around said vacuum roll;

said vacuum roll including:

rotatable roll shell having a first and a second end, said shell defining an outer surface and an internal chamber extending between said first and second end of said shell, said shell defining a plurality of channels, each channel extending from said chamber to said surface such that said chamber is disposed in fluid communication with said outer surface; and

vane means disposed within said chamber and extending continuously along the roll shell within the internal chamber between the said first and second ends, the vane means for cooperating with said shell and being spaced from said shell and stationary relative to said shell, the arrangement being such that during rotation of said shell, a flow of air flows towards said chamber through said plurality of channels for drawing the web into close conformity with said dryer felt when the web extends around said vacuum roll.

5,546,676

AGGRESSIVE CONVECTIVE DRYING IN AN AGITATED PAN TYPE DRYER

Len W. Haleen, Edwardsville, Ill., assignor to Mallinckrodt Medical, Inc., St. Louis, Mo.

Filed May 17, 1995, Ser. No. 443,279
Int. Cl.[6] F26B *11/00*
U.S. Cl. 34—187 **11 Claims**

1. A method of aggressive drying of chemical compounds in an agitated pan dryer comprising:

a pan having walls and a bottom;

a cover attached to and covering said pan, said cover including an outlet port for the release of vaporized liquids from a product charged to said pan;

an agitator housed within said pan, said agitator including blades for smoothing and plowing product charged to said pan;

a drive means attached to said agitator and adapted to drive said agitator; and

means to create turbulence within said pan during a drying cycle;

said method comprising:

charging product to be dried to said pan;

covering said pan with said cover;

starting said drive means to drive said agitator to smooth and plow said product;

creating turbulence within said pan;

removing volatiles evaporated from said product through said outlet port;

continuing said steps of driving said agitator and creating turbulence and removing volatiles until the volatile level within said product have been decreased to a predetermined level;

stopping turbulence within said pan;

stopping said drive means; and

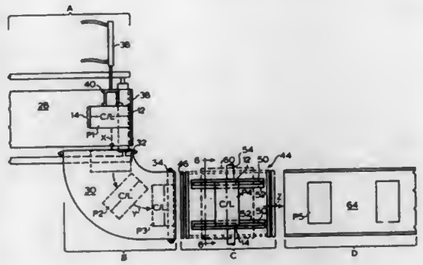
removing said product from said pan wherein said means to create turbulence comprises at least one high velocity nozzle for injecting drying medium at high velocity into said pan.

5,546,677

APPARATUS AND METHOD FOR SHRINKING FILM WRAPPED AROUND A PRODUCT

Sidney S. Tolson, Scotland Neck, N.C., assignor to Ossid Corporation, Rocky Mount, N.C., and Ibaraki Seiki Machinery Co., Ltd., Osaka, Japan

Filed Mar. 28, 1995, Ser. No. 411,898
Int. Cl.[6] F26B *7/00;* **B65B** *53/06*
U.S. Cl. 34—216 **11 Claims**



1. An apparatus for shrinking a heat-shrinkable film wrapped around a product in a manner to substantially avoid discoloration and distortion of such film, comprising:

(a) means for receiving in a first orientation, a package wrapped in heat-shrinkable film sealed with a longitudinal bottom seam and a pair of transverse end seams;

(b) means for repositioning said package from said first orientation to a second orientation in which said transverse end seams are exposed for being heated;

(c) means for moving said package while in said second orientation into and through a shrink tunnel; and

(d) a source of heat directed at each of said transverse end seams as said package is transported through said shrink tunnel.

7. A method for shrinking a heat-shrinkable film wrapped around a product in a manner so that said film is subject to a minimum of discoloration and distortion, comprising the steps of:

(a) supplying to a first location a package wrapped with said heat-shrinkable film so as to have a longitudinal bottom seam oriented substantially parallel to the path of a shrink tunnel conveyor and a transverse seam at each end oriented substantially perpendicular to said path;

(b) repositioning said package while moving from said first location to a second location laterally offset from said first location so that at said second location said transverse seams are oriented substantially parallel to said path and are exposed for being heated;

(c) transporting said repositioned package along said path with said transverse seams parallel thereto;

(d) directing a stream of hot air at each of said transverse seams while said package is conveyed by said conveyor so as to cause said film adjacent said transverse seams to shrink; and

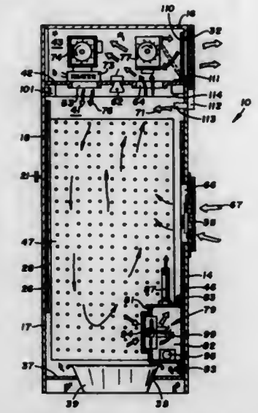
(e) discharging said package from said conveyor.

5,546,678

ARMOIRE ADAPTABLE TO A SAUNA, DRUM DRYER, AND TUBULAR LIGHTED CLOTHING DRYER WITH HUMIDITY DAMPER CONTROL OF EXHAUST GASES

Gregory L. Dhaemers, 829 N. 27th Ave. W., Duluth, Minn. 55806

Continuation-in-part of Ser. No. 72,151, Jun. 4, 1993, Pat. No. 5,369,892. This application Dec. 5, 1994, Ser. No. 350,224
Int. Cl.[6] F26B *19/00*
U.S. Cl. 34—275 **20 Claims**



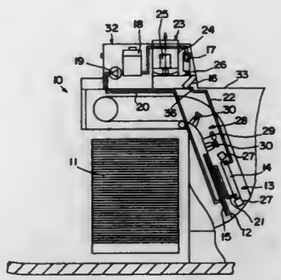
1. A dryer for articles comprising: housing means having an internal drying chamber for accommodating articles, door means movably mounted on the housing means for movement to an open position to permit access into the drying chamber and to a closed position to enclose the drying chamber, wall means within said housing means providing an air mixing chamber, said wall means having first and second openings to allow air to flow from the air mixing chamber into the drying chamber and out of the drying chamber into the air mixing chamber, heater means for heating air flowing into the drying chamber, first fan means located within the air mixing chamber operable to move air from the mixing chamber through said first opening into the drying chamber, second fan means located within the air mixing chamber operable to draw air from the drying chamber and discharge air mixing chamber, said housing means having at least one first opening communicating the air mixing chamber with the environment outside the dryer, damper means movable between open and closed positions relative to said first opening to selectively open and close said first opening to allow air to flow out of the air mixing chamber to the environment outside of the dryer and block the flow of air through said first opening, first control means responsive to the humidity of the air in the drying chamber for moving the damper means between the open and closed positions thereof, said second fan means operable to discharge air through the first opening to the environment outside of the dryer when the damper means is in the open position, first filter means mounted on the housing means covering said first opening to remove odors from the air flowing through said filter means, said housing means having at least one second opening into the drying chamber to allow outside air to flow into the drying chamber, second filter means extending across said second opening into the drying chamber to remove odors from the air flowing into the drying chamber, and second control means for the heater means and first and second fan means operable to connect the heater means and first and second fan means to a source of power whereby the first fan means moves air from the mixing chamber into the drying chamber, the heater means heats the air in the drying chamber, the heater means so that the air is heated and discharged as hot air into the drying chamber and the second fan means draws air from the drying chamber and air mixing chamber and discharges air to the environment outside of the dryer when the damper means is in the open position, said air in the drying chamber circulating and recirculating within the drying chamber to remove moisture from the articles within the drying chamber.

5,546,679

INSTALLATION FOR THE THERMAL DRYING OF STRIPS, SHEETS, ETC., OF MATERIAL

Alfred Keller, Leinfelden-Echterdingen, Germany, assignor to Weitmann & Konrad GmbH & Co., Leinfelden-Echterdingen, Germany

Filed Jan. 3, 1995, Ser. No. 362,463
Claims priority, application Germany, Oct. 26, 1992, 9214459 U
Int. Cl.[6] F26B *3/34*
U.S. Cl. 34—278 **18 Claims**



1. Device for thermal drying of webs of material, including a dryer unit (13), having dryer elements (14), wherein the webs are conveyed along a conveyor path (12) over guide elements (15) that are provided in the vicinity of the dryer elements (14) of the dryer unit (13),

with a cooling unit (16, 17, 18, 19) whose coolant is sent to the guide elements (15) in the dryer unit and to dryer elements (14) and from there onto a heat exchanger (16) and

with an air exhaust device (23), having an air intake area (36), for venting the air from the area of the dryer,

characterized in that the heat exchanger (16) of the cooling unit is arranged in the air intake area (36) of the air exhaust device that is connected to the dryer unit.

5,546,680

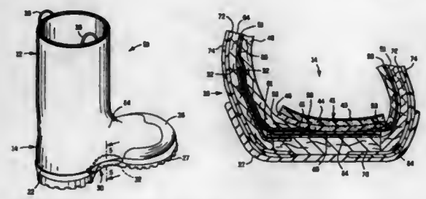
SAFETY FOOTWEAR

Tarachand S. Barma, and John L. Baier, both of La Crosse, Wis., assignors to LaCrosse Footwear, Inc., LaCrosse, Wis.

Continuation of Ser. No. 967,770, Oct. 28, 1992, abandoned. This application Sep. 17, 1993, Ser. No. 122,617

Int. Cl.[6] A43B *13/16*

U.S. Cl. 36—108 **16 Claims**



12. A rubber safety boot, comprising:

an upper portion configured for covering a human foot and lower leg, including an outer rubber layer; and

a lower portion secured to the upper portion including a heel, an instep, and a toe each having an outer rubber layer, and a sole including:

a rubber outsole,

a midsole comprising a first protective plate spanning substantially the entire length and width of the part of the outsole that underlies the wearer's foot when the footwear product is worn and effective to prevent penetration of a sharp object to a wearer's foot when a wearer steps on the sharp object with the outsole, and

a sole liner overlying the midsole;

and wherein the instep has a second protective plate disposed to cover an inside side portion of the instep, which inside side portion of the instep is on the right side of a footwear product for a left foot and is on the left side of a footwear product for a right foot, at a location to one side of the first protective plate in a manner effective to prevent penetration of a sharp object to the wearer's foot when the wearer steps on the sharp object with the inside side portion of the instep, which second protective plate conforms in shape to the inside side portion of the instep and comprises a shell that, as to vertical configuration, extends upwardly and outwardly from a bottom edge thereof, and as to horizontal configuration, has a center portion which extends laterally inwardly from its front and rear ends and wherein the first protective plate is separate from the second protective plate.

5,546,681

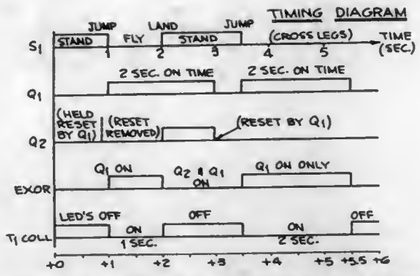
FOOTWEAR WITH FLASHING LIGHTS

Mark R. Goldston; Jon L. Bemis, both of Santa Monica, and William J. Robinson, Manhattan Beach, all of Calif., assignors to L.A. Gear, Inc., Santa Monica, Calif.

Continuation-in-part of Ser. No. 13,839, Feb. 5, 1993, Pat. No. 5,303,485. This application Dec. 10, 1993, Ser. No. 164,902

Int. Cl.[6] A43B *23/00;7/04*

U.S. Cl. 36—137 **13 Claims**



1. Footwear for improving visibility of a wearer thereof, said footwear including an upper portion contacting an upper surface of a wearer's foot and a sole portion that underlies a lower surface of the wearer's foot and supports the wearer's foot against the ground, the improvement comprising:

a light source mounted in said footwear such that light emitted from said light source is visible exteriorly of said footwear;

a power source disposed in said footwear for energizing said light source;

first switch means, disposed in said footwear and operatively responsive to pressure from the weight of the wearer so as to close when the wearer's foot is removed from the ground and pressure on said first switch means is released, for initiating illumination of said light source; and

processing means, disposed in said footwear and operatively responsive to said first switch means, for supplying power to said light source when the wearer's foot is removed from the ground and for removing power from said light source when at least one of the wearer's foot is returned to the ground and a predetermined period of time has elapsed.

5,546,682

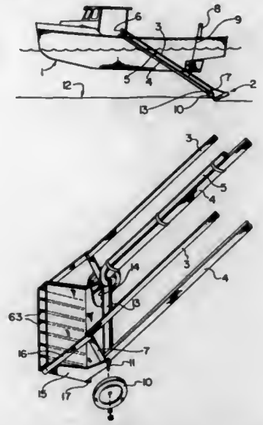
SEDIMENT RELOCATION MACHINE

Eric Skerry, 370 North Market St., Summerside, Canada

Filed Oct. 5, 1994, Ser. No. 328,276

Int. Cl.[6] E02F *03/88*

U.S. Cl. 37—322 **18 Claims**



1. An apparatus for relocating sedimentary material adapted to be attached to a floating platform, which platform carries a pump means for supplying water under pressure, and a winch means to lower the sediment relocation machine into and to lift it from the water, comprising in combination:

manifold means having attached thereto at least one row of water jets having substantially parallel outlets spaced apart along the manifold means;

hose connection means constructed and arranged to supply water under pressure from the pump means to the manifold means and through the water jets in a flow direction generally perpendicular to the manifold means, thereby dislodging the sedimentary material with water to produce a turbulent flow of water containing dislodged sedimentary material;

pair of parallelogram linkages each comprising in combination:

a separation arm fixed to each end of the manifold means;

an upper angle control arm and a lower floating arm each pivotally attached to the ends of the separation arm; and

a control arm pivotally attached to the ends of the upper angle control arm and the lower floating arm;

pivot means attaching the parallelogram linkage to the platform, including locking means to lock the control arm in a desired position;

support means attached to the manifold means adapted to support the manifold means on the sedimentary material;

duct means, in cooperating relationship with the manifold means, the duct means having upper, side, and lower faces, the ends of the side faces being attached to the manifold means so that the upper face is above the water jets, the side faces are adjacent each end of the manifold means, and each of the upper and side faces extend to be closely adjacent the manifold means to leave a minimum gap therebetween, to receive the turbulent flow of water containing dislodged sedimentary material and to convert the turbulent flow into a uni-directional flow substantially along the duct means;

duct arm means attached to the side face of the duct means, and to the upper end of the lower separation arm, whereby movement of the parallelogram linkage does not affect the position of the duct means relative to the manifold means, and

exit means from the duct means through which the uni-directional flow containing dislodged sedimentary material is released in a desired direction.

5,546,683

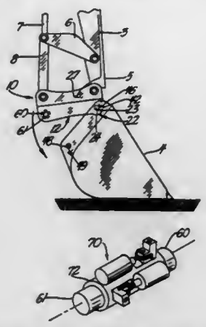
BUCKET ATTACHMENT DEVICE WITH REMOTE CONTROLLED RETRACTABLE PINS

George J. Clark, 7100 Trumble La., St. Clair Shores, Mich. 48079

Filed Sep. 29, 1993, Ser. No. 129,459

Int. Cl.[6] F02F *3/81;3/70*

U.S. Cl. 37—468 **7 Claims**



1. A quick coupling device for attaching and releasing an implement to a boom of an earth moving vehicle, such as an excavator, said quick coupling device comprising:

a main body having a first end and a second end, said first end having a hook member integrally formed therein for engaging said implement, said second end of said main body having a bore therethrough;

means for connecting said main body to said boom wherein said quick coupling device is mounted to an end of said boom of said earth moving vehicle;

a first pivot pin located in said bore in said main body;

a second pivot pin separate from said first pivot pin located in said bore in said main body and axially aligned with respect to said first pivot pin;

means for biasing mounted in said bore of said main body between said first and second pivot pins such that said biasing means biases said first and second pivot pins in directions away from each other so that an end portion of each of said first and second pivot pins projects from said bore in said main body; and

means for selectively moving said first and second pivot pins in a direction toward each other, such that said first and second pivot pins are contained within said bore of said main body, said moving means being capable of overcoming said biasing means, said means for selectively moving said first and second pivot pins comprising:

a first hydraulic cylinder attached to and aligned with said first pivot pin for moving said first pivot pin to a position in which said first pivot pin is contained within said main body; and

a second hydraulic cylinder attached to and aligned with said second pivot pin for moving said second pivot pin to a position in which said second pivot pin is contained within said main body;

whereby after said main body is connected to said boom, and said boom is manipulated to engage said hook member with said implement at a predetermined point on said implement, and said first and second pivot pins are contained within said main body by said moving means, said bore in said main body is then aligned with a bore in said implement such that when said moving means is disengaged, said biasing means cause said first and second pivot pins to engage said bore in said implement, thereby connecting said implement to said main body and said boom.

5,546,684

METHOD AND AN APPARATUS FOR FEEDING A LAUNDRY ARTICLE TO A LAUNDRY PROCESSING APPARATUS

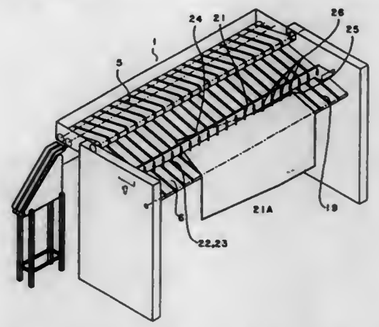
Jørn M. Jensen, Bern, Switzerland, assignor to Ejnar Jensen & Son A/S, Rønne, Denmark

Filed Jan. 30, 1995, Ser. No. 380,422

Claims priority, application Denmark, Feb. 8, 1994, 0163/94

Int. Cl.[6] D06F *67/04*

U.S. Cl. 38—143 **11 Claims**



1. A method for aligning a substantially flat laundry article for feeding in an aligned position to a laundry processing apparatus comprising feeding the article along a substantially flat face of a conveyor in a feeding direction with a rear edge of the article stretched flat across the conveyor face and past a straight line extending at a predetermined angle with respect to the direction of feed, detecting the position of the rear edge of the article with respect to the conveyor face at a plurality of locations along its length in a direction transverse to the feeding direction and braking movement of the rear edge of the article in response to its detected position at a plurality of locations locally along said straight line as the rear edge passes said line to align the rear edge of the article

with the line, the continued forward movement of the article, while the rear edge is being braked, thereby straightening out and aligning the article for feeding to the laundry processing apparatus.

5,546,685

DISPLAY APPARATUS FOR DESIRED ITEMS WITH EASY EXCHANGE OF DESIRED ITEMS, AND WITH PROTECTION FROM ULTRA-VIOLENT LIGHT

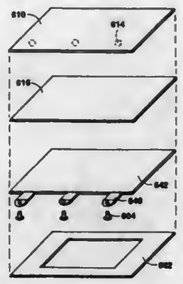
Gerald B. Gallagher, 9 Main St., Acton, Mass. 01720

Continuation-in-part of Ser. No. 807,992, Dec. 16, 1991, Pat. No. 5,371,963. This application Jun. 29, 1992, Ser. No. 905,882

The portion of the term of this patent subsequent to Dec. 13, 2011, has been disclaimed.

Int. Cl.[6] B44C *5/02*

U.S. Cl. 40—768 **24 Claims**



1. A display assembly, comprising:

a frame, said frame forming a first opening for the display of desired materials;

a transparent plate mounted within said frame and covering said first opening, said transparent plate permitting viewing of said desired materials through said first opening and protecting said desired materials, said transparent plate having a first side turned away from an inside of said frame and a second side turned toward said inside of said frame;

a mat mounted within said frame, said mat adjacent to said second side of said transparent plate, said mat having a second opening, said second opening forming a window for viewing said desired materials, said second opening in said mat being smaller than said first opening formed by said frame;

a retainer to hold said desired materials in said second opening of said mat, said retainer formed from at least one sheet of transparent material, said desired materials held by said retainer for viewing, said retainer having holes formed therein;

a backing board to form a back support in said frame to hold said transparent plate, said desired materials, said mat, and said retainer within said frame;

a pin passing through at least one of said holes in said retainer, said pin holding said retainer in predetermined relationship to said opening in said mat;

attachment means for fastening said backing board within said frame.

5,546,686

ELECTROMOTIVE DEVICE FOR EXHIBITING PICTURES

Young Kwan You, 4/4, 23-1 Galwol-dong, Yongsan-ku, Seoul, Rep. of Korea

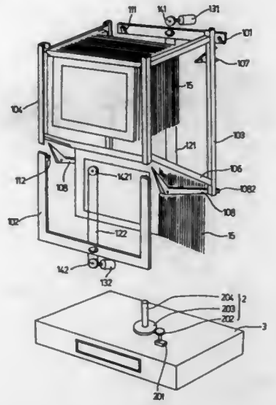
PCT No. PCT/KR94/00030, § 371 Date Nov. 28, 1994, § 102(e) Date Nov. 28, 1994, PCT Pub. No. WO94/23337, PCT Pub. Date Oct. 13, 1994

PCT Filed Apr. 4, 1994, Ser. No. 343,463

Claims priority, application Rep. of Korea, Apr. 6, 1993, UM 1993-5346

Int. Cl.[6] G09F *11/00*

U.S. Cl. 40—476 **5 Claims**



1. An electromotive device for exhibiting pictures comprising:

an exhibit section including:

a housing having a front exhibition window formed at an upper part of a front surface of the housing and a rear exhibition window formed at a lower part of a rear surface of the housing,

a plurality of picture keeping members circulating between an upper position and a lower position in the housing,

two upper suspending rails for suspending the picture keeping members at the upper position, the upper suspending rails declining forward and extending longitudinally along both inner side edges of an upper surface of the housing,

two lower suspending rails for suspending the picture keeping members at the lower position, the lower suspending rails declining backward and extending longitudinally along middle portions of both side surfaces of the housing,

rear guiding rails vertically extending along both inner side edges of the rear surface of the housing,

from guiding rails vertically extending along both inner side edges of the front surface of the housing,

an ascending carrier, guided along the rear guiding rails, for ascending the picture keeping members one by one from the lower position to the upper position,

a descending carrier, guided along the front guiding rails, for descending the picture keeping members one by one from the upper position to the lower position, driving means for providing a driving force to ascend and descend the ascending carrier and the descending carrier,

upper compressing means, lower compressing means, and snap members disposed at both corners between the rear guiding rails and the upper suspending rails, each of the picture keeping members operating the upper compressing means to compress the picture keeping members suspended at the upper position toward the front exhibition window when said each of the picture keeping members is ascended by the ascending carrier, the ascending carrier operating the lower compressing means to compress the picture keeping members suspended at the lower position toward the rear exhibition window when

the ascending carrier is descended, said each of the picture keeping members including:

an attachment plate for holding exhibits and

a suspension bar assembled integrally with the attachment plate, the suspension bar having engaging parts and suspension grooves formed at both ends of the suspension bar, the ascending carrier and the descending carrier respectively including carrier pins at both ends of the ascending carrier and the descending carrier, the carrier pins being engaged with the engaging parts of said each of the picture keeping members, each of the snap members being pivotally supported by a pivot pin hingedly connected to a middle point of said each of the snap members, said each of the snap members having a first end connected to a first spring, the first spring being fixed to each of the upper suspending rails, and a second end extending backward and upward into each of the rear guiding rails, so that each of the picture keeping members is put on the upper suspending rails from the ascending carrier when said each of the picture keeping members passes the snap members;

means for rotatively supporting the exhibit section; and

means for controlling operations of the exhibit section and the support means.

5,546,687

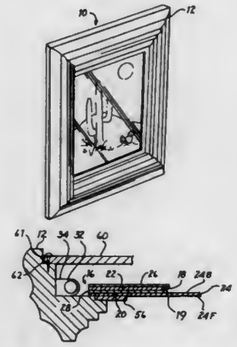
APPARATUS FOR DISPLAYING AN ILLUMINATED IMAGE INCLUDING LIGHT INTENSIFIER AND METHOD THEREFOR

Paul Iorfida, 13 Orchard Ave., #4, Cincinnati, Ohio 45215

Filed Feb. 27, 1995, Ser. No. 394,730

Int. Cl.[6] F21V *8/00*

U.S. Cl. 40—546 **16 Claims**



1. Apparatus for displaying an illuminated image in a frame, comprising, in combination:

a transparent optical material that has a polished back surface, polished edges and a ground front surface;

a mirrored coating that is carried on and in contact with said polished back surface of said transparent optical material;

light intensifier means coupled to said ground front surface for increasing intensity of light passing therethrough;

an image transparency that has a back surface bonded to said light intensifier means; and

means for passing light through said edges for reflection from said mirrored coating through said ground surface, said light intensifier means, and said image transparency in contact therewith to provide a lit display of said image transparency.

5,546,688

CLOTHING TAG AND METHOD OF USE

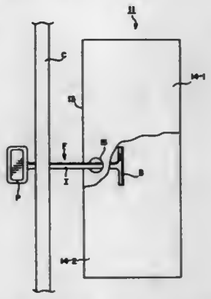
F. Gerard Merser, Round Pond, Mass., assignor to Avery Dennison Corp., Pasadena, Calif.

Continuation of Ser. No. 945,211, Sep. 17, 1992, Pat. No. 5,373,656. This application Jul. 11, 1994, Ser. No. 273,399

The portion of the term of this patent subsequent to Dec. 20, 2011, has been disclaimed.

Int. Cl.[6] G09F *3/08*

U.S. Cl. 40—663 **5 Claims**



3. A clothing tag for use with a fastener comprising a filament, a cross-bar at one end of the filament and a paddle at the other end of the filament, said clothing tag comprising a single sheet of material appropriately folded along a fold line and sealed to define a sealed pocket, said sealed pocket being provided with a single opening located off to one side of said fold line and through which said cross-bar of said fastener may be inserted, said sealed pocket and said single opening being appropriately sized and shaped so that, when said cross-bar is inserted into said sealed pocket through said single opening, said cross-bar cannot thereafter be removed from said sealed pocket without tampering with said sealed pocket in a readily identifiable manner.

5,546,689

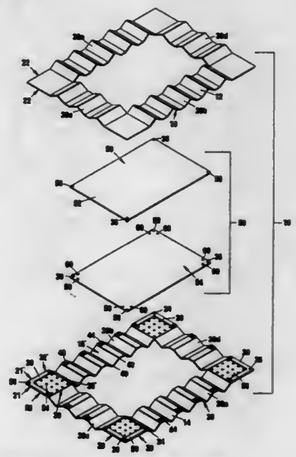
ADJUSTABLE PICTURE FRAME

Daniel Bomze, 835 Waverly St., Palo Alto, Calif. 94301

Filed Dec. 5, 1994, Ser. No. 349,678

Int. Cl.[6] G09F *1/12*

U.S. Cl. 40—741 **3 Claims**



1. An adjustable picture frame comprising:

a first framing member having a series of interconnected adjustable walls defining an opening for displaying a picture, wherein the adjustable walls are for adjustably fitting over a plurality of portions of a display means;

a second framing member having a series of interconnected adjustable walls defining an opening for displaying a picture, wherein the adjustable walls are for adjustably fitting over a plurality of portions of a display means;

means for fastening the adjustable walls of the first framing member to the adjustable walls of the second framing member;

means for displaying a picture between the first and second framing members; and

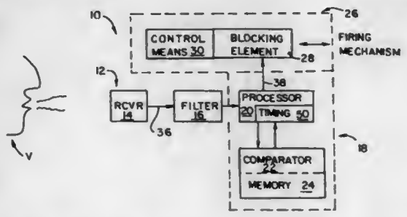
means for selectively positioning the display means between the first and second framing members in a plurality of positions, wherein the selective positioning means are integrally located on at least one of the framing members, the selective positioning means comprising at least one locator grid integrally formed on at least one of the first and second framing members, the locator grid having a series of receiving boles, and at least one locator pin on the display means, the locator pin adapted for being received in the series of receiving holes, wherein the locator pin positions the display means in the plurality of positions within the adjustable picture frame.

5,546,690

AUDIO CONTROLLED GUN LOCKING MECHANISM

Gary Ciluffo, 103 Henderon Hill, Vincennes, Ind. 47594

Filed Jan. 4, 1995, Ser. No. 368,371
Int. Cl.[6] F41A *17/06*
U.S. Cl. 42—70.11 **6 Claims**



1. In a firearm for discharging a projectile and having a barrel through which the projectile is discharged and a firing mechanism for firing the projectile through the barrel, the firing mechanism including a user operable trigger operable to activate the firing mechanism, and means operatively connected to the trigger for effecting projectile discharge, a safety mechanism for inhibiting operation of the firing mechanism, comprising:

blocking means movable into and out of contact with the firing mechanism, said blocking means having a first position inhibiting the firing mechanism from discharging the projectile and a second position at which the firing mechanism is enabled to discharge the projectile;

receiving means installed on the firearm for receiving audio frequency signals spoken by the user; and,

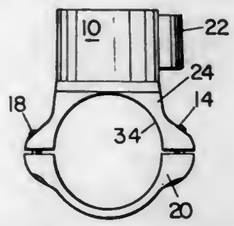
audio recognition means installed on the firearm and having an input from the receiving means for audio signals received by the receiving means to be directed to the audio recognition means, and said audio recognition means including means for processing received audio frequency signals to determine if a received signal corresponds to a predetermined audio frequency signal to move the blocking means from one position to another, the processing means including a processor in which is stored information corresponding to a predetermined audio input signal spoken by the weapon user, comparing means for comparing a received audio input signal with the stored information to determine if the received signal matches the predetermined audio input signal, means responsive to an output from the comparing means if a match occurs to move the blocking means from one position to the other, and the processing means including means for storing a first predetermined audio frequency signal for comparison with an audio frequency signal spoken by the user when the user wants to fire the weapon and a second predetermined audio frequency signal for comparison with a second audio frequency signal spoken by the user when the user wants to inhibit the weapon from being fired.

5,546,691

RIFLE MOUNTED BALLISTIC CHART

Mark R. Allison, 832 Poplar St., Denver, Colo. 80220

Filed Jan. 19, 1995, Ser. No. 374,418
Int. Cl.[6] F41A *35/00*
U.S. Cl. 42—90 **13 Claims**



1. An apparatus for displaying ballistic information comprising:

(a) a cylindrical casing mounted to a scope of a rifle; and

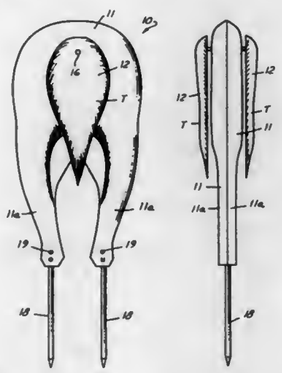
(b) a tape, spring loaded within the cylindrical casing, the tape having a manual pull end to pull the tape out of the casing, the tape having ballistic information displayed thereon.

5,546,692

DEER DECOY

Mark D. Byers, 2203 E. 11 Mile Rd., Royal Oak, Mich. 48067

Continuation-in-part of Ser. No. 328,441, Oct. 25, 1994, abandoned. This application Dec. 30, 1994, Ser. No. 366,824
Int. Cl.[6] A01M *31/06*
U.S. Cl. 43—2 **33 Claims**



1. A deer decoy comprising

a plastic body having opposed exterior three-dimensional sculptured sides,

each of said exterior sides simulating the rear end of a standing deer,

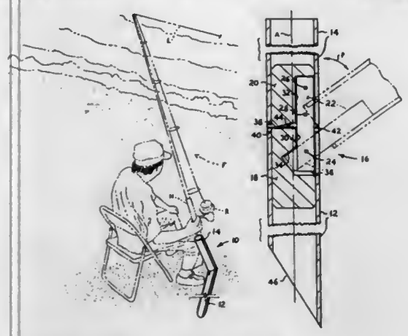
a tail associated with each side and normally dependent therefrom to simulate a relaxed tail-hanging position of repose, and means for moving said tail relative to said body out of the repose position.

5,546,693

HINGED FISHING ROD HOLDER

Stanley C. Stockton, and Mary J. Stockton, both of 3234 Geona St., Cocoa, Fla. 32926

Filed Jul. 21, 1995, Ser. No. 505,074
Int. Cl.[6] A01K *97/10*
U.S. Cl. 43—21.2 **10 Claims**



1. A hinged fishing rod holder, comprising:

an elongate first portion comprising an elongate tubular member;

an oppositely disposed elongate second portion comprising an elongate tubular member; and,

a hinge assembly joining said first portion with said second portion, said hinge assembly comprising,

a first portion plug securable within said first portion, said first portion plug including a first slot,

a second portion plug securable within said second portion, said second portion plug including a second slot alignable with said first slot, and

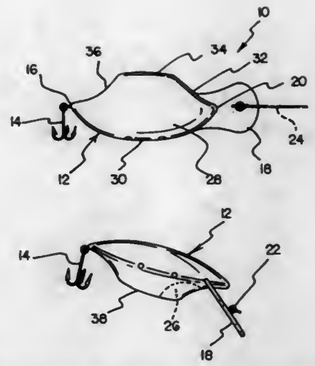
a hinge strap pivotally secured in said first slot and immovably secured in said second slot such that said second portion is axially pivotable with respect to said first portion, said first slot and said second slot engaging said hinge strap and defining a first stop position and a second stop position, wherein said second portion and said first portion are aligned in the first stop position and said second portion is at a predetermined angle relative to said first portion in the second stop position.

5,546,694

SIMULATED CRAB LURE

F. Charles Wilkinson, 1165 Old Wilmington Rd., Hockessin, Del. 19707

Filed Apr. 11, 1995, Ser. No. 419,705
Int. Cl.[6] A01K *85/00*
U.S. Cl. 43—42.39 **5 Claims**



1. A simulated crab lure comprising:

a crab body shaded so as to substantially simulate an appearance of a crab, said crab body being formed of a substantially buoyant material and including a weight positioned therein;

a hook extending from the crab body for engaging a fish attracted to the lure;

a bill projecting from a forward end of the crab body for hydrodynamically biasing the crab body in response to the movement of the lure through a fluid;

a line anchor secured to the bill and spaced from the crab body to permit attachment of a fishing line to the lure;

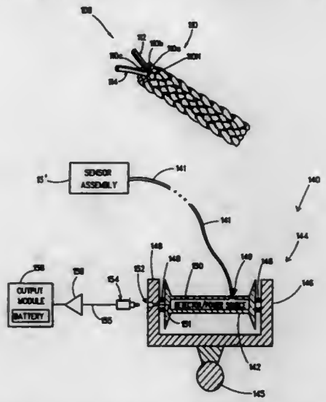
and further wherein the crab body includes a forward end spaced from a rearward end; and further wherein the crab body comprises a domed upper surface having an outer peripheral edge extending between the rearward end and the forward end, the outer peripheral edge of the domed upper surface being shaped so as to define an arcuate lateral edge extending between the forward end and the rearward end along a first side of the crab body, the arcuate lateral edge having an approximately constant radius of curvature and being substantially semi-circular in shape, the domed upper surface being further shaped so as to define an involute forward edge extending from the forward end of the crab body and integrally continuing into a straight lateral edge which intersects an involute rear edge terminating at the rearward end of the crab body along a second side thereof.

5,546,695

FISHING LINE AND REEL

Alexander G. Langer, 94 St. Rose St., Jamaica Plain, Mass. 02130

Continuation of Ser. No. 91,225, Jul. 13, 1993, abandoned. This application Apr. 4, 1995, Ser. No. 416,502
Int. Cl.[6] A01K *91/00*
U.S. Cl. 43—44.98 **8 Claims**



1. A fishing line having a proximal end and a distal end, said fishing line consisting of:

a first inner line, for transmission of electrical signals, said first inner line running from said proximal end to said distal end of said fishing line;

a braided outer line, disposed about said first inner line, wherein at least a portion of said braided line comprises an outermost portion of said fishing line; and

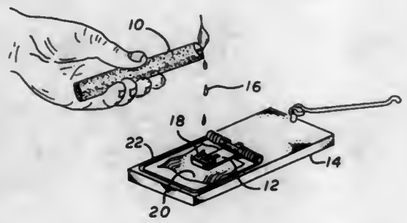
a second inner line covered by said braided outer line wherein said second inner line is provided having a tensile strength less than the tensile strength of said first inner line.

5,546,696

ANIMAL TRAP COMPOSITE BAIT MATERIAL AND METHODS OF USE

Kenneth B. Parker, Jr., 23516 Bell Bluff Truck Trail, Alpine, Calif. 91901

Filed Aug. 22, 1994, Ser. No. 294,411
Int. Cl.[6] A01M *23/00;23/24*
U.S. Cl. 43—58 **7 Claims**



1. A method of baiting an animal trap in trapping a selected animal, comprising:

mixing a food substance attractive to a selected animal with a hardening substance adapted to be flowable when mixed with said attracted food substance, but hardened when exposed to air at ambient temperatures at a selected location where said animal trap will be located, to form a composite bait material;

heating at least said hardening substance to ensure that said composite bait material assumes a liquified state;

applying said liquified composite bait material onto a trigger of said animal trap so said composite bait material conforms and adheres thereto;

allowing said composite bait material to harden;

setting said animal trap;

whereby improved force coupling between said composite bait material and said trigger gives improved triggering of the trap when an animal disturbs said bait composite material.

5,546,697

FLORAL WATER TUBE MOUNTING A FLOWER AT A SELECTED ELEVATION

Vlasios Lymberis, 30 Fawn Hill Rd., Monsey, N.Y. 10952, and Dimitrios Lymberis, 166 78th St., Brooklyn, N.Y. 11209

Filed Apr. 17, 1995, Ser. No. 423,025
Int. Cl.[6] A01G *5/00;* **A47G** *7/00*
U.S. Cl. 47—41.15 **7 Claims**

1. An improvement in a floral water tube having a tubular reservoir within which the stem of a flower is held for irrigation, and a piercing projection extending from the tubular reservoir for mounting the tubular reservoir, with the flower, upon a retaining base constructed of a material capable of receiving the piercing projection to secure the floral water tube to the retaining base, the piercing projection extending longitudinally from a first end to a second end, the first end of the piercing projection being integral with the tubular reservoir and the second end of the piercing projection being remote from the tubular reservoir and including a piercing configuration at the second end, the improvement enabling selection of the elevation of the tubular reservoir above the retaining base when the floral water tube is secured to the retaining base, the improvement comprising:



a first selective coupling element extending longitudinally along the piercing projection between the first end and the second end, the first selective coupling element being spaced longitudinally a distance from the piercing configuration at the second end of the piercing projection and in a direction toward the first end of the piercing projection;

an extension post for selective coupling to the piercing projection, the extension post having a first end, a second end, and a selected longitudinal length between the first end and the second end of the extension post;

a second selective coupling element at the second end of the extension post, the second selective coupling element being complementary to the first selective coupling element for selectively coupling the extension post to the piercing projection; and

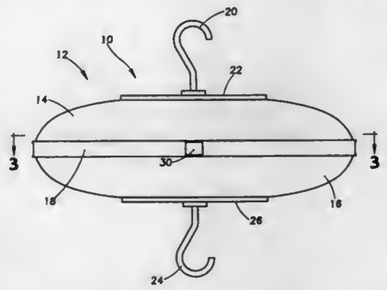
a further piercing configuration at the first end of the extension post, the longitudinal length of the extension post being such that upon selective coupling of the extension post with the tubular reservoir, the further piercing configuration is placed longitudinally further from the tubular reservoir than the piercing projection to selectively elevate the tubular reservoir further from the retaining base by a distance corresponding to the longitudinal length of the extension post.

5,546,698

SELF-ROTATING HANGING PLANT SUPPORT

Terry R. Rock, 2551 Paw Paw, Apt. 2B, Benton Harbor, Mich. 49022

Filed Apr. 24, 1995, Ser. No. 427,164
Int. Cl.[6] A01G *9/02;* **A47G** *7/02*
U.S. Cl. 47—67 **10 Claims**



1. An apparatus for supporting and rotating a hanging plant, comprising:

a housing;

an upper hook fixedly attached to a top surface of the housing;

a lower hook, extending from a bottom surface of the housing, for hanging and supporting a plant thereon;

a light sensing means, disposed on the outside of the housing, for detecting the amount of ambient light incident upon the housing; and

a rotary means, disposed within the housing, for periodically rotating the lower hook whenever the amount of ambient light detected by the light sensing means exceeds a thresbold value, the rotary means further comprising:

a DC motor stationed within the housing;

a reduction gearing assembly, connected to an output shaft of the motor, comprising:

a pinion attached to the output shaft of the motor;

a first gear and shaft combination, meshed with the pinion;

a second gear and shaft combination, meshed with the first gear and shaft combination;

a third gear and shaft combination, meshed with the second gear and shaft combination; and

said third gear and shaft combination including a vertically disposed shaft; and

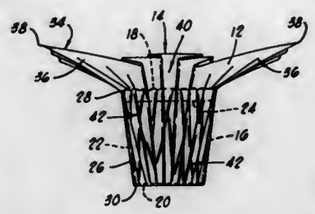
said vertically disposed shaft being rotatingly coupled to the reduction gearing assembly and connected to the lower hook; and said lower hook being capable of rotating about a longitudinal axis of the vertically disposed shaft.

5,546,699

ARTICLE FORMING SYSTEM

Donald E. Weder; E. H. Weder, both of Highland, Ill.; R. E. Jack Dunn, St. Louis, and Franklin J. Craig, Valley Park, both of Mo., assignors to Southpac Trust International, Inc., Highland, Ill.

Continuation of Ser. No. 24,573, Mar. 1, 1993, abandoned, which is a continuation of Ser. No. 464,694, Jan. 16, 1990, Pat. No. 5,208,027, which is a continuation of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,987,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned. This application Feb. 2, 1995, Ser. No. 382,955
Int. Cl.[6] A01G *9/02*
U.S. Cl. 47—72 **16 Claims**



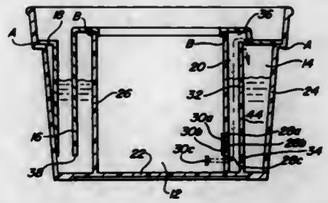
1. A preformed pot cover for covering a pot made by forming at least one sheet of material into the pot cover comprising a base having an upper end, a lower end, an outer surface, an object opening, and a skirt extending a distance from the upper end of the base, and wherein the sheet of material has adhesive means on at least a portion thereof, and wherein the forming of the sheet of material into the preformed pot cover having a preformed shape is accomplished by forming the sheet of material into the base and the skirt with the base having a plurality of flattened and overlapping folds which are randomly positioned at various positions with adjacent overlapping portions of at least some of the folds being connected via said adhesive means and with the skirt having a plurality of overlapping folds, said folds in the skirt being left substantially unconnected during the forming of the pot cover, and the connected folds in the base cooperating to retain the preformed pot cover in the preformed shape of the preformed pot cover wherein the preformed pot cover is flexible and may be substantially flattened and unflattened to assume the original preformed shape of the preformed pot cover without substantial loss of the preformed shape thereby providing the flexible, yet shape-sustaining nature of the preformed pot cover.

5,546,700

FLUID LEVEL CONTROL SYSTEM

William J. Kumpf, 295 Continental Dr., Lockport, N.Y. 14094

Filed Oct. 7, 1994, Ser. No. 319,641
Int. Cl.[6] A01G *25/00*
U.S. Cl. 47—79 **20 Claims**



1. An apparatus having an internal system for supplying a fluid comprising:

a first compartment for containing the fluid;

a second compartment for containing the fluid, the second compartment having a fill opening through which the second compartment is supplied with the fluid;

an air lock channel having an upper end and a lower end, the first compartment and the lower end of the air lock channel having a fluid level control hole therebetween, the second compartment and the upper end of the air lock channel having a second opening therebetween;

a metering orifice formed in the lower end of the air lock channel through which fluid flows from the second compartment to the air lock channel until the fluid level in the air lock channel is equal to the fluid level in the second compartment; and

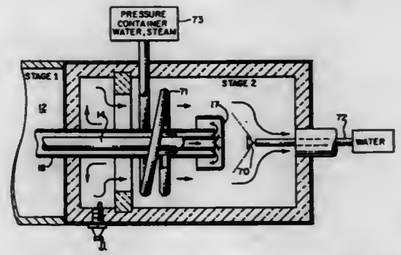
said fluid level control hole being provided to allow fluid to flow from the air lock channel into the first compartment until the fluid level in the first compartment covers the fluid level control hole, whereby an air lock in the air lock channel and the second compartment substantially precludes dispensing fluid through the fluid level control hole until the water level in the first compartment drops below the fluid level control hole.

5,546,701

UNDEROXIDIZED BURNER UTILIZING IMPROVED INJECTORS

Leonard Greiner; David M. Moard, and Bharat Bhatt, all of Costa Mesa, Calif., assignors to Hydrogen Burner Technology, Inc., Costa Mesa, Calif.

Division of Ser. No. 309,041, Sep. 20, 1994, Pat. No. 5,437,123. This application May 15, 1995, Ser. No. 441,214
Int. Cl.[6] C10G *3/00*
U.S. Cl. 48—108 **4 Claims**



1. In an internal combustion apparatus, the combination which comprises:

a burner means having at least one internal combustion chamber for combusting air and hydrocarbon fuels at fuel-rich stoichiometric air/fuel ratios within the range from 0.25 to 1.0 to provide air/fuel vapors;

injector means disposed in said burner means for separately introducing air and fuel into said combustion chamber;

said injector means includes an air inlet tube and a fuel inlet tube having open ends terminating in close proximity with respect to each other;

a cup-like thimble disposed about a spaced relationship to said open ends of said air inlet: tube and said fuel inlet tube for simultaneously receiving introduced air and fuel;

said thimble including a flat barrier wall and a continuous sidewall terminating in an edge about said open ends for receiving said introduced air and fuel in forced impingement relationship to create an air/fuel mixture in said combustion chamber;

said barrier wall is disposed immediately ahead of said introduced air and fuel for receiving and redirecting said air/fuel mixture to further blend said air/fuel mixture;

a heat exchanger disposed in said combustion chamber about said injector means; and

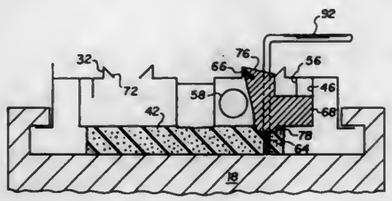
a source of pressurized moisture connected to said heat exchanger to provide liquid water or steam to said air inlet tube of said injector means.

5,546,702

ADJUSTABLE BRACE FOR WINDOW SASH

Richard S. deNormand, Rochester, and Patrick E. Milligan, West Henrietta, both of N.Y., assignors to Caldwell Manufacturing Company, Rochester, N.Y.

Filed Apr. 20, 1995, Ser. No. 425,483
Int. Cl.[6] E05D *15/22*
U.S. Cl. 49—161 **31 Claims**



1. An adjustable window bracing system for a sash within a window frame comprising:

a jamb liner having front and back faces, a channel between said front and back faces, and a guide ridge on said front face for engaging a sash plow in the sash;

a brace having first and second relatively moveable parts; said first part of the brace being located in said channel in a position supporting said guide ridge;

said second part of the brace extending through an opening in said back face of the jamb liner for bearing against the window frame; and

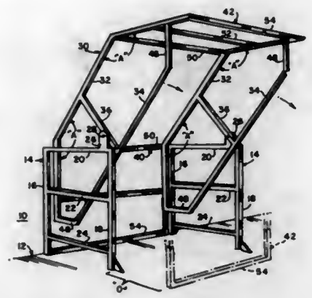
said first and second parts of the brace being relatively adjustable for supporting said guide ridge of the jamb liner at different distances from the window frame to control a force required to disengage the sash from the jamb liner.

5,546,703

PIVOTABLE SAFETY GATE

James M. Conway, 9 Woodcrest Rd., Manchester, Mass. 01944

Filed Nov. 21, 1994, Ser. No. 342,590
Int. Cl.[6] E05D *15/38*
U.S. Cl. 49—197 **14 Claims**



1. A mezzanine gate assembly for the safe enclosure of and access to a loading and unloading area, comprising:

a pair of parallel siderail assemblies having support bars thereon, said support bars having a distalmost end and a proximalmost end;

a pivotable gate assembly including a proximalmost and a distalmost gate arranged transverse to said siderail assemblies, and mounted for arcuate pivotable movement on said support bars on said siderail assemblies;

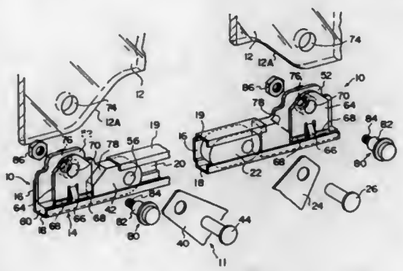
a gate assembly support axis arrangement disposed adjacent the proximalmost end of said support bars, to permit easy access to the area between said siderails and proximal of said axis arrangement when said proximalmost gate is in the up orientation.

5,546,704

GLASS HOLDER

Hiroyuki Maruoka, Yokohama, Japan, assignor to NIFCO Inc., Japan

Filed Mar. 15, 1995, Ser. No. 404,324
Claims priority, application Japan, Mar. 24, 1994, 6-053815
Int. Cl.[6] B60J *1/00*
U.S. Cl. 49—375 **7 Claims**



1. A glass holder for attachment to an elevating member of a window regulator which raises and lowers a door glass, said glass holder comprising:

a first holding plate having a through hole;

a second holding plate having a through hole and being pivotal to face said first holding plate to hold the door glass in cooperation with said first holding plate;

a fastening member being insertable into a mounting hole formed in the door glass and into said through holes formed in said first and second holding plates to fasten the door glass to said glass holder;

a hinge pivotally connecting said second holding plate to said first holding plate to allow said second holding plate to form a holding space with said first holding plate for holding the door glass; and

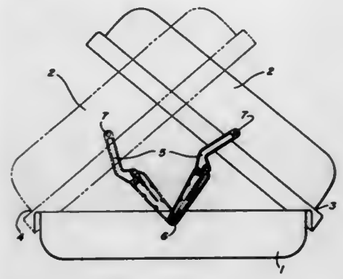
an engagement tongue protruding from said second holding plate and into said holding space such that said second holding plate is pivoted toward said first holding plate when said engagement tongue is pressed by the door glass.

5,546,705

SUPPORT FOR HOLDING A CLOSING ELEMENT

Artur Hirtsiefer, Neunkirchen-Seelscheid, Germany, assignor to Howil-Werke GmbH, Ruppichteroth, Germany

Filed Sep. 30, 1994, Ser. No. 315,759
Claims priority, application Germany, Oct. 2, 1993, 9314977 U
Int. Cl.[6] E05F *1/10;* **E05D** *15/50*
U.S. Cl. 49—386 **8 Claims**



1. A support for holding a closing element, especially a flap or lid, in a closed or open position relative to a container to be closed thereby, and the closing element which is optionally pivotable around the one or the other of two side edges extending parallel relative to one another, comprising:

a first and a second arm, with one of the arms being connected to the container by a first pivot bearing and the other arm being connected to the closing element by a second pivot bearing and with the two arms being connected to one another by a third pivot bearing said pivot bearing on the first arm at the container and the pivot bearing of the second arm at the closing element each being articulated centrally between the two side edges at the container and the closing element respectively;

a pressure spring operational between said arms and said arms being supported relative to one another in a first arm position, which corresponds to the closed position, and in which the pivot bearings are close to one another, or in a second arm position, which corresponds to the open position, and in which the pivot bearings are positioned so as to be remote from one another, one end of the pressure spring is supported on the first arm and the other end at the second arm;

at the second arm, the pressure spring is supported eccentrically relative to the third pivot bearing connecting the two arms;

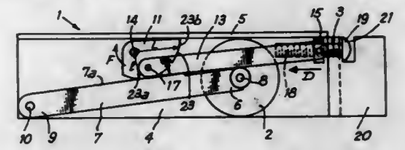
in the second position of the arms corresponding to the open position, the point of application of the pressure spring at the second arm is offset towards one side of the connecting line extending between the center of the first pivot bearing at the first arm and the third pivot bearing between the two arms and that in the closed first position it is offset towards the other side of the connecting line.

5,546,706

SLIDING DEVICE FOR A SLIDING PANEL

Jean-Marie Coupet, 16, rue du Quesne, 62840 Fleurbaix, France

Filed Apr. 26, 1995, Ser. No. 427,803
Claims priority, application France, Apr. 27, 1994, 94 05344
Int. Cl.[6] E05D *13/02*
U.S. Cl. 49—420 **9 Claims**



1. A sliding device for a sliding panel, the device comprising:

a) a support which is shaped in or attached to the bottom portion of the panel, said support having a downwardly open upside-down U-shape;

b) an oscillating arm secured to the support about a pivot axis which is horizontal and which extends transversely relative to the U-shape;

c) sliding means fixed towards the free end of the oscillating arm;

d) a pivoting cam which, when rotated, is suitable for causing the oscillating arm to pivot; and

e) an adjustment screw whose displacement serves to adjust the angle of rotation of the cam;

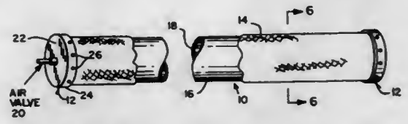
wherein the cam is secured to the support via a first axis of rotation and bears against the oscillating arm, and wherein to control rotation of the cam under drive from the adjustment screw, it includes a linkage between the cam and the adjustment screw, said screw being held stationary relative to the support.

5,546,707

POLYETHELENE INFLATABLE TUBE CONSTRUCTION DEVICE

Vincent C. Caruso, 140 Pacific Dr., Quakertown, Pa. 18951

Filed Jan. 5, 1995, Ser. No. 368,860
Int. Cl.[6] E04B *1/34*
U.S. Cl. 52—213 **5 Claims**



1. An inflatable tube, comprising:

a) a cylindrically-shaped elastomer bladder having a pair of ends and containing an internal cavity, said pair of ends of said cylindrically-shaped elastomer bladder having a plurality of circumferencially disposed throughbores;

b) a cylindrically-shaped woven polyethylene fabric casing having a pair of ends, said pair of ends of said cylindrically-shaped woven polyethylene fabric casing having a plurality of circumferencially disposed throughbores, said cylindrically-shaped woven polyethylene fabric casing covering said cylindrically-shaped elastomer bladder with said plurality of circumferencially disposed throughbores of said pair of ends of said cylindrically-shaped woven polyethylene fabric casing aligning with said plurality of circumferencially disposed throughbores of said pair of ends of said cylindrically-shaped elastomer bladder, so that said cylindrically-shaped elastomer bladder can expand to a high pressure in the range of 50 psi and 500 psi within the confines of said cylindrically-shaped woven polyethylene fabric casing without breaking due to the inherent strength of said cylindrically-shaped woven polyethylene fabric casing;

c) a pair of end closures covering said pair of ends of said cylindrically-shaped woven polyethylene fabric casing, each of said pair of end closures having a face corresponding to an end of said pair of ends of said cylindrically-shaped woven polyethylene fabric casing and a lip extending perpendicularly from said face of each of said pair of end closures and along said cylindrically-shaped woven polyethylene fabric casing, said lip of each of said pair of end closures having a plurality of circumferencially disposed throughbores aligning with said plurality of circumferencially disposed throughbores of each of said pair of ends of said cylindrically-shaped woven polyethylene fabric casing and aligning with said plurality of circumferencially disposed throughbores of each of said pair of ends of said cylindrically-shaped elastomer bladder;

d) an air valve extending through said face of one of said pair of end closures and in to said internal cavity of said cylindrically-shaped elastomer bladder and being in fluid communication therewith;

e) a plurality of rivets having a plurality of rivet heads, said plurality of rivet heads of said plurality of rivets disposed in said internal cavity of said cylindrically-shaped elastomer bladder, said plurality of rivets passing through said plurality of circumferencially disposed throughbores of said lip of each of said pair of end closures, passing through said plurality of circumferencially disposed throughbores of said pair of ends of said cylindrically-shaped woven polyethylene fabric casing, and passing through said plurality of circumferencially disposed throughbores of said pair of ends of said cylindrically-shaped elastomer bladder, so that said pair of end closures, said cylindrically-shaped woven polyethylene fabric casing, and said cylindrically-shaped elastomer bladder are fastened together simultaneously; and

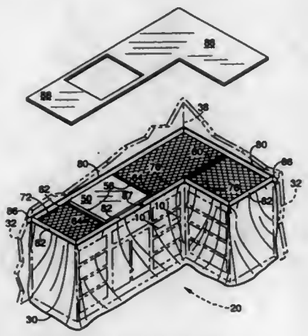
f) a plurality of washers disposed between said plurality of rivet heads and said cylindrically-shaped elastomer bladder, so that said plurality of rivet heads are prevented from pulling through said cylindrically-shaped elastomer bladder.

5,546,708

SELF-LEVELING COUNTERTOP UNDERLAYMENT

Eleftherios T. Efstratis, 143 Hopfield Dr., Folsom, Calif. 95630, and Dale E. Watnee, 5302 Hibiscus Dr., Fair Oaks, Calif. 95628

Division of Ser. No. 763,283, Sep. 20, 1991, Pat. No. 5,260,007. This application Sep. 23, 1993, Ser. No. 106,599
Int. Cl.[6] E04H *1/00*
U.S. Cl. 52—36.2 **7 Claims**



1. A tile countertop underlayment comprising:

a. a horizontal top deck of a cabinet;

b. a sheet of lath;

c. means for affixing said lath to said deck;

d. a hardened, self-leveling, settable fluid matrix covering said lath and having an upper surface sufficiently level and even for tiling; and,

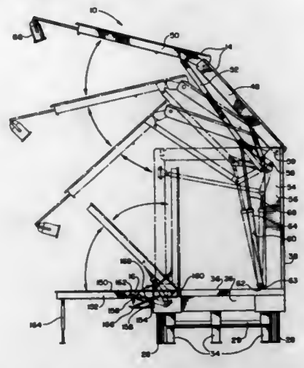
e. a first nail driven part-way into said deck in a first area of said deck, said first nail's head residing in the same horizontal plane as said underlayment's upper surface in said first area, said first nail's head also residing in the same horizontal plane as the head of a second nail, said second nail being driven part-way into said deck in a second area of said deck and residing in the same horizontal plane as said underlayment's upper surface in said second area of said deck.

5,546,709

PORTABLE PERFORMANCE PLATFORM WITH RAIN EXCLUSION MEANS AND HYDRAULIC ACTUATOR

Matthew J. Decker, Owatonna; Todd C. Eustice, New Richland; Douglas Rau, Owatonna, and Arie Boers, Plymouth, all of Minn., assignors to Wenger Corporation, Owatonna, Minn.

Filed Aug. 1, 1994, Ser. No. 283,702
Int. Cl.[6] E04B *7/16*
U.S. Cl. 52—66 **9 Claims**



1. An improved portable platform for the performing arts for providing a generally covered performing stage having a stage front margin, rear margin, and opposed end margins, a chassis having first and second side margins and a stage support structure extending generally between said first and second side margins, said chassis first and second side margins generally corresponding to said stage rear and front margins, a back wall carried by said upright support means along said first side margin, first and second wall panels operably, hingeably coupled to said back wall, said wall panels shiftable between a stowed configuration wherein they comprise opposed end walls and a performance configuration wherein said wall panels comprise extensions to said back wall, ground engaging wheels operably carried by the chassis for over land transportation of said chassis, upright support means operably coupled to said chassis, said upright support means comprising weight bearing standards operably coupled to said chassis along said first side margin, articulated roof assembly means for forming a canopy over the stage operably coupled to said support means including a lower roof assembly having a back margin, a front margin, and opposed side margins, pivotally coupled to said support means at said back margin, and an upper roof assembly operably, pivotally coupled to said lower roof assembly at a hinge line defined along said front margin thereof, and means for selectively shifting said roof assembly means between a stowed configuration wherein said lower roof assembly comprises a top wall and said upper roof assembly comprises a sidewall and a performing configuration wherein said lower roof assembly and upper roof assembly comprise an overhead canopy extending over said stage, the improvement comprising:

first rain exclusion means for preventing the passage of rain through the canopy at the hinge line formed between the upper roof assembly and the lower roof assembly having a first portion operably coupled to said upper roof assembly and a second portion operably coupled to said the lower roof assembly at the front margin thereof, said first and second portions of said first rain exclusion means being in cooperative sealing engagement defining a substantially water impervious seal along said hinge line when in the stowed configuration and being overlapped, defining a substantially rain impervious joint along said hinge line when in the performance configuration; and

second rain exclusion means for preventing the intrusion of rain into the interior space defined within the portable platform when in the stowed configuration having a first upwardly tending portion carried by said wall panels and a second portion depending from the side margins of the lower roof assembly, being disposed outwardly of and overlapping the first portion thereof when in the stowed configuration, defining a substantially rain impervious joint along the side margins of the lower roof assembly.

a plurality of clear plastic enclosure inserts secured within the plurality of recessed portions formed in the front wall of the monument.

5,546,710

CUSTOMIZED MEMORIAL

David J. Barry, 6032 N. Hamburg Rd., Oldenburg, Ind. 47036

Filed Apr. 13, 1995, Ser. No. 421,525
Int. Cl.[6] E01F *9/011*
U.S. Cl. 52—104 **5 Claims**

1. A customized memorial for providing a graveside memorial comprising, in combination:

a base portion having a top side, a bottom side, a front wall, a rear wall, and two side walls, the top side having a recess formed therein, the recess having a bottom side, a front side, a rear side, and two sides, the bottom side of the recess having apertures formed through opposing ends thereof extending through the bottom side of the base portion, the rear side and the front side of the recess each having apertures formed through opposing ends thereof extending through the respective front wall and rear wall of the base portion;

a pair of auger-style anchors received through the apertures through opposing ends of the bottom side of the recess and extending outwardly of the bottom side of the base portion, the pair of auger-style anchors securing the base portion into a ground area;

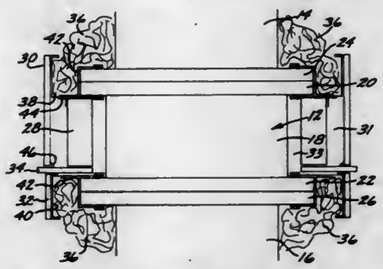
a monument having an upper end, a lower end, a front wall, a rear wall, and two side walls, the monument having a pair of apertures formed through the front wall and extending through the rear wall adjacent to the lower end thereof, the lower end of the monument received within the recess in the base portion, the pair of apertures aligning with the apertures formed in the rear side and front side of the recess the monument secured to the base portion by nuts and bolts through the aligning apertures, the front wall of the monument having a rectangular indented area therein downwardly of the upper end, the front wall having a plurality of recessed portions formed therein downwardly of the rectangular indented area, the front wall having two square indented areas therein downwardly of the plurality of recesses portions;

5,546,711

BASE ISOLATOR FIRE BARRIER SYSTEM

Paul S. Heller, 14041 Mar Vista St., Whittier, Calif. 90602

Filed May 26, 1995, Ser. No. 452,106
Int. Cl.[6] F04H *9/02*
U.S. Cl. 52—167.1 **16 Claims**



1. A fire barrier system for a base isolator, comprising:

an isolator disposed in line with a building's vertical support member in order to reduce the transfer of seismic loads therethrough;

a plurality of insulative components disposed about said isolator configured so as to shield said isolator from the heat;

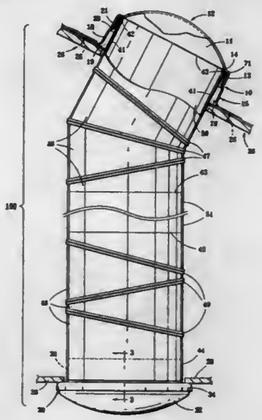
means for interconnecting said components to one another and to said isolator so as to allow sliding movement between the components and between the components and the isolator during distortion of the isolator while maintaining an effective barrier against the transfer of heat thereto.

5,546,712

SYSTEM AND METHOD OF CONSTRUCTING A SKYLIGHT

Joseph A. Bixby, 9659 Forest La., Ste. C-205, Dallas, Tex. 75243

Filed Nov. 3, 1994, Ser. No. 333,626
Int. Cl.[6] E04D *13/03*
U.S. Cl. 52—200 **11 Claims**



1. A skylight system for a building with a roof and a ceiling and a space therebetween, comprising:

a roof assembly having a roofing mount and a first light permeable cap, said roofing mount comprising a base and a cylindrical first sleeve defining a first aperature and having an upper end and a lower end;

a ceiling assembly having a ceiling mount and a second light permeable cap, said ceiling mount comprising a substantially cylindrical second sleeve having an upper sleeve section and a lower sleeve section and a first tapered step between said upper and lower sleeve sections; and

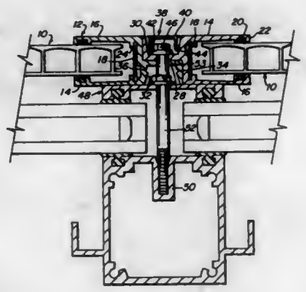
a tubular body having a highly reflective interior surface and having a first end with a supporting lip and a straight second end; wherein said tubular body is inserted through said first aperture and suspended within said first aperture by resting said supporting lip on the upper end of said first sleeve and positioning said second end over said upper sleeve of said ceiling mount.

5,546,713

OVERLAPPING FRAMING SYSTEM FOR GLAZING ELEMENTS

William P. Voegele, Jr., Pittsburgh, Pa.; Douglas A. Ramsey, Delray Beach, Fla.; Alan D. Lohr, and Carl E. Kamphaus, both of Pittsburgh, Pa., assignors to Extech/Exterior Technologies, Inc., Pittsburgh, Pa.

Filed Apr. 13, 1995, Ser. No. 421,374
Int. Cl.[6] E06B *3/26*
U.S. Cl. 52—202 **14 Claims**



1. A framing system for supporting glazing elements on a substrate, said framing system comprising:

a plurality of frames, each frame surrounding and supporting one glazing element, each frame including a plurality of frame members joined to form sides of said frame;

each frame member including a rabbet for receiving said glazing element having a pair of spaced sides and a base connecting said spaced sides, and a flange extending outwardly from said base of said rabbet;

said flanges of said frame members overlapping with said flanges of adjacent ones of said frame members of adjacent frames;

each said flange having a leg spaced from the respective said base and extending from an end of the respective said flange whereby a channel is formed by said leg, said flange and portion of said base:

said channel on one frame member of each pair of over lapping frame members facing inwardly toward said substrate and said channel on the other of said frame members facing outwardly away from said substrate; and

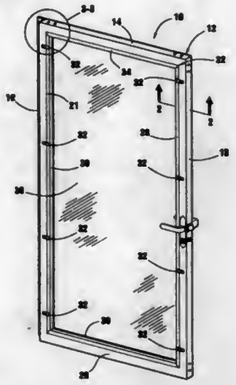
fasteners extending through said flanges for attaching said framing system to said substrate.

5,546,714

GLAZING SEAL AND DOOR FRAME

Terry Kenkel, Des Moines, Iowa, assignor to EMCO Enterprises, Inc., Des Moines, Iowa

Filed Jan. 5, 1995, Ser. No. 368,844
Int. Cl.[6] E06B *3/54*
U.S. Cl. 52—204.5 **8 Claims**



1. In combination:

a rectangular door frame forming a window opening;

a sheet of glass having a perimetric edge;

a window frame fitted within said window opening, said window frame overlapping the edge and both sides adjacent the perimeter of the glass sheet;

sealing member having a first portion extending around said perimeter of the glass sheet and sealingly engaging said edge of said glass and said window frame to provide a substantially airtight seal there between;

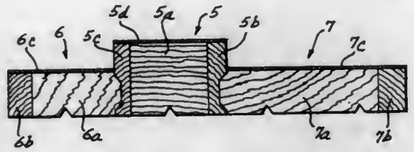
said sealing member having a second portion unitary with said first portion fitted between said window frame and said door frame to provide a substantially airtight seal there between, whereby said sealing member provides a unitary substantially airtight seal between said glass and said window frame, said window frame and said door frame, and said glass and said door frame.

5,546,715

FABRICATED JAMB OR THE LIKE

Melvin G. Edstrom, 13617 - 56th Ave. NE., Marysville, Wash. 98271

Filed Jun. 8, 1994, Ser. No. 257,249
Int. Cl.[6] E06B *1/52;1/08*
U.S. Cl. 52—215 **1 Claim**



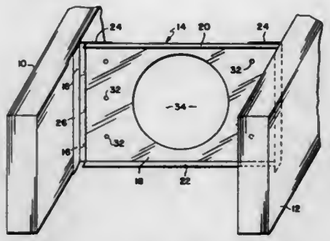
1. A fabricated jamb or the like comprising a flange component, a rib component thicker than said flange component and arranged in edge-abutting relationship to said flange component with a portion of the thickness of said rib component projecting beyond said flange component, said rib component including a facing strip facing the edge of said rib component adjacent to said flange component, the abutting edge of one of said components having in it a tongue-and-groove joint elongated groove flared transversely of its length and the abutting edge of the other of said components having a tongue-and-groove joint elongated tongue tapered transversely of its length complemental to the flare of said tongue-and-groove joint groove and fitting snugly therein, the width of said tongue-and-groove joint tongue at its root being a plurality of times as great as the thickness of said tongue-and-groove joint tongue, said tongue-and-groove joint groove and said tongue-and-groove joint tongue being bonded together, and said flange component having a veneered face extending to said facing strip said rib component and forming a reentrant angle therewith.

5,546,716

JOIST BRIDGE

Donald J. Broxterman, 3511 SW. Burlingame Rd., Topeka, Kans. 66611, and Kevin M. Broxterman, 2207 SW. 7th St., Topeka, Kans. 66606

Filed Jul. 22, 1994, Ser. No. 279,044
Int. Cl.[6] E04C *2/52*
U.S. Cl. 52—220.1 **3 Claims**



1. In combination with a pair of spaced, elongated, side-by-side joists, each of said joists having an upper longitudinal surface:

a transverse plate member extending between said joists and located entirely below said upper surfaces, said member having a pair of spaced ends and presenting a major surface between said ends disposed substantially in an upright plane, said member including a pair of plate components presenting the respective ends thereof, at least one of which is movable in directions to vary the span of the member to accommodate the space between said joists,

means for securing said one component in a selected position, whereby the span of the member is set to accommodate the joist spacing,

means for securing said ends of the member to corresponding joists below said upper surfaces, and

said member having an opening through said major surface thereof for receiving a conduit extending longitudinally of the joists to support the conduit in the space between the joists, whereby to provide a supporting bridge that permits the installation of heat runs and the like between the joists.

5,546,717

ACESS FLOOR TRENCH RACEWAY

John P. Penczak, Washington, W. Va., and Edmund B. Kalbfleisch, Bloomingdale, N.J., assignors to Walker Systems, Inc., Parkersburg, W. Va.

Filed Apr. 20, 1994, Ser. No. 230,979
Int. Cl.[6] E04C *2/52*
U.S. Cl. 52—220.5 **24 Claims**

1. A trench raceway providing multiple wire passages between an undersurface and an access surface having an access passage with opposing first and second access sides, the access passage providing access to an intermediate area between the undersurface and access surface, the trench raceway comprising:

A. at least a first and a second pedestal, each of which has (i) an undersurface support engaging the undersurface, (ii) a floor support having a floor support portion and an access passage portion, and (iii) an adjustable central section intermediate the undersurface support and the floor support, the floor support portion of the first floor support abutting the first access side of the access surface, and the floor support portion of the second floor support abutting the second access side of the access surface; and

B. a trench pan having a pan section intermediate a first flank opposite a second flank, the first flank of the trench pan being supported by the access passage portion of the first floor support, the second flank of the trench pan being supported by the access passage portion of the second floor support, the pan section of the trench pan further having a pan support passage centrally disposed in the pan section; and

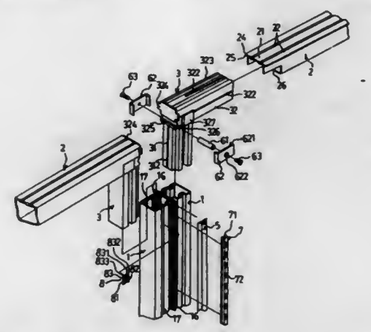
C. an adjustable pan support having (i) an undersurface engaging end, (ii) a cover plate engaging end, and (iii) a pan support adjuster intermediate the undersurface engaging end and the cover plate engaging end and mounted in the pan support passage to supportingly engage the pan section of the trench pan.

5,546,718

PARTITION WALL

Hsiao Way, Taipei, Taiwan, assignor to Chingdar Enterprise Co., Ltd., Taipei, Taiwan

Filed May 17, 1995, Ser. No. 442,827
Int. Cl.[6] E04H *5/00*
U.S. Cl. 52—238.1 **3 Claims**



1. A partition wall, comprising:

a plurality of partition wall units each of which includes:

two extruded hollow aluminum columns each having a connecting surface through which two units are connected in the horizontal direction and two side surfaces perpendicular to said connecting surface, in which two longitudinal edges of said connecting surface extend beyond said side surfaces respectively, each forming an end flange having an arcuate projection projecting in the direction opposite to said connecting surface;

two extruded hollow aluminum beams each having a connecting surface through which two units are connected in the vertical direction and two side surfaces perpendicular to said connecting surface, in which two longitudinal edges of

VOL 1189 ISS 3 AUG 20 1996

said connecting surface extend beyond said side surfaces respectively, each forming an end flange having an arcuate projection projecting in the direction opposite to said connecting surface; and

four plastic joints for connecting the columns and the beams to each other;

a plurality of panels;

a plurality of resilient snap elements;

a plurality of holding bars; and

a plurality of sets of locking assemblies of which each set includes a locking tube, two locking plates, and two screws,

characterized in that:

said plastic joint comprises a vertical hollow portion and a horizontal hollow portion perpendicular to each other in a L shape, in which the outer periphery profile of the cross section of said vertical portion matches with the inner periphery profile of the cross section of the hollow column, while said horizontal portion comprises a main body, a connecting end face, a locking portion having a transverse semi-circular groove, an expanding portion slightly projecting beyond both sides of the main body, and a locking slot between said locking portion and said expanding portion on each side of said horizontal portion, and the outer periphery profile of the cross section of said main body of said horizontal portion matches with the inner periphery profile of the cross section of the hollow beam, so that the column and the beam are connected to each other by inserting said vertical portion and said main body of said horizontal portion into the column and the beam respectively;

said connecting surface of the column is provided with a groove and a tongue spaced from each other and parallelly extending through the entire longitudinal length of the column, so that the partition wall units are connected in the horizontal direction by attaching respective columns of two units through the engagement of said groove and said tongue of the column of one unit with complementary said tongue and said groove of the column of another unit, and each of the two side surfaces of the column is provided with a first channel and a second channel spaced from each other and parallelly extending through the entire longitudinal length of the column, in which said first channel closer to said connecting surface is designed to receive a hanging rack therein, and said second channel remote from said connecting surface is designed to receive said resilient snap elements which connect said panels to columns and hence to the partition wall units;

said connecting surface of the beam is provided with two grooves or two tongue spaced from each other and parallelly extending through the entire longitudinal length of the beam, so that the partition wall units are connected in the vertical direction by attaching respective beams of two units through the engagement of said grooves or said tongues of the beam of one unit with complementary said tongues or said grooves of the beam of another unit;

said holding bar is made of hard plastics in a substantially ⊓-shaped cross section, and has a length substantially equal to the longitudinal length of the column or the beam, and the inner periphery profile of the cross section of the concave holding bar matches with the outer periphery profile of the cross section of the attached flanges and projections of two columns or two beams of the two wall units to be assembled, so that said connecting surfaces of said two columns or two beams are tightly engaged with each other by pressing said holding bars to firmly encase the attached flanges and projections on opposite sides; and

said locking tube of said locking assembly is dimensioned to be inserted into a through hole formed by two said semi-circular grooves of the horizontal portions of two attached plastic joints, and the thickness of said locking plate is equal to the difference in transverse width between said expanding portion and said locking portion of the horizontal portion of the plastic joint on each side, while the width of said locking plate is designed to just allow each of the projections at both ends of said locking plate to be inserted into corresponding said locking slot between said expanding portion and said locking portion on each of two attached plastic joints, so that two attached plastic joints and hence two partition wall units are firmly connected by tightening said screws passing through said locking plates and said locking tube from both sides.

5,546,719

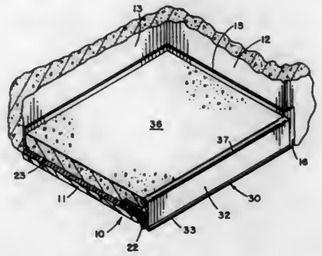
WATERPROOF DECKING METHOD AND APPARATUS

Charles P. Maiers, and Gerald J. Maiers, both of 5901 Tavendale Dr., Orlando, Fla. 32809

Filed Oct. 14, 1994, Ser. No. 324,111

Int. Cl.[6] E04B *7/20*

U.S. Cl. 52—408 **12 Claims**



1. A waterproof deck comprising:

a deck subfloor supported on joists adjacent a building;

a drip edge attached along the edge of said deck subfloor where water runs off of the deck;

an elastomeric waterproofing material covering said subfloor;

a strip of T-bar edging attached along the edge of said subfloor and having one portion extending over said elastomeric waterproofing material and over said drip edge and another portion extending above said subfloor to form a raised edge therealong; and

a concrete floor covering said elastomeric waterproofing material and subfloor to a level approximately along the top edge of said T-bar raised edge, whereby water drains off said concrete floor over said T-bar edging and drains from beneath said concrete floor over said drip edge to prevent collection of water below said concrete floor.

5,546,720

PANEL ASSEMBLY SYSTEM

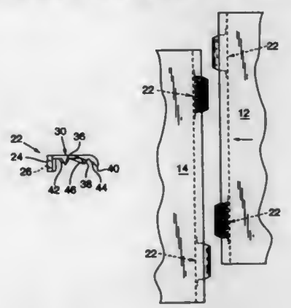
Gabriel M. LaBruzza, Beaverton, Oreg., assignor to Color & Design Exhibits, Beaverton, Oreg.

Filed Mar. 10, 1995, Ser. No. 402,484

Int. Cl.[6] E04B *2/00*

U.S. Cl. 52—587.1 **7 Claims**

1. A panel system in which adjacent panels are removably joined



at their edges, comprising:

a pair of panels to be joined, each of the panel edges defining a channel having flat walls which extend parallel to their respective panel, from a channel bottom to the panel edge,

a pair of substantially identical clips, each of which is affixed to an edge of a panel, each clip including a base portion and a body portion extending upwardly from the base portion in a generally perpendicular direction, at least two linear members extending in an inward direction away from the body portion and parallel to the base, the members defining at least two slots therebetween which also extend parallel to the base, the body portion further having a substantially flat, outwardly facing portion on the side of the body opposite from the members;

the base of each clip being affixed to its respective channel at the bottom thereof, with at least one of the members and at least one of the slots being disposed within the channel when the base is so mounted, and at least one of the members and at least one of the slots extending out of the channel beyond the edge of the panel when the base is so mounted, and with the flat, outwardly facing portion of the body of each clip extending in substantial contact with one of the channel walls, so that the clips and their associated panels can be mounted to one another by sliding the members of one of the clips into complementing slots in the other clip, with the channel walls preventing the two clips from being disengaged.

5,546,721

CLEAN OUT BLOCK ASSEMBLY

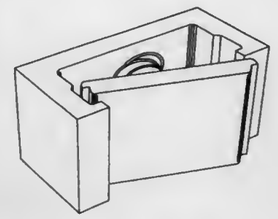
Norman G. Daniells, Queensland, Australia, assignor to Boral Resources (QLD) pty Limited, Queensland, Australia

Filed Nov. 15, 1994, Ser. No. 339,956

Claims priority, application Australia, Jan. 14, 1994, PM 3381

Int. Cl.[6] E04C *2/04*

U.S. Cl. 52—606 **6 Claims**



1. A clean out block assembly comprising:

a clean out block having a back wall integral with two opposed end walls defining an opening therebetween and a separate front wall adapted to block said opening defined between the front ends of said end walls;

blocking means on said end walls for blocking outward passage of the front wall from said clean out block when said front wall is disposed substantially parallel to said rear wall; and

spacing means for spacing said front wall from said back wall and juxtaposed to said blocking means

wherein said spacing means includes resilient support means for urging said front wall towards said blocking means.

5,546,722

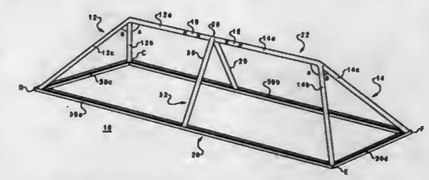
MODULAR ROOF STRUCTURE

Yen T. Huang, 9405 Pinewood Dr., Dallas, Tex. 75243

Continuation-in-part of Ser. No. 681,179, Apr. 5, 1991. This application Dec. 28, 1992, Ser. No. 997,339

Int. Cl.[6] E04H *12/18*

U.S. Cl. 52—646 **15 Claims**



1. A building roof structure, comprising:

a base frame having first, second, third and fourth corners;

a first construction member having first, second and third branches interconnected to define a Y-shape with respective space angles between adjacent ones of said first, second and third branches;

a second construction member having fourth, fifth and sixth branches interconnected to define a Y-shape with respective space angles between adjacent ones of said fourth, fifth and sixth branches, said first and fourth branches being coupled along a common axis to define an apex of said roof structure, said second, third, fifth and sixth branches being coupled between said apex and the respective first, second, third and fourth corners of said base frame;

a section intermediate said first and second construction members;

wherein said intermediate section includes first, second, third and fourth members, said first and second members extending between said apex and respective opposed first and second sides of said base frame to define a first gable, said third and fourth members extending between said apex and the respective opposed first and second sides of said base frame to define a second gable; and

means for adjusting the distance between said first and second gables along said common axis, whereby said intermediate section is lengthwise adjustable.

5,546,723

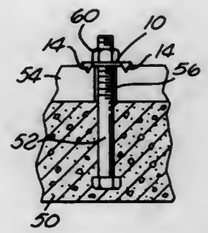
WOOD SILL REINFORCEMENT PLATE

Robert G. Jones, Arcadia, Calif., assignor to Harlen Metal Products, Inc., Compton, Calif.

Filed Dec. 20, 1993, Ser. No. 169,227

Int. Cl.[6] F04B *1/38*

U.S. Cl. 52—698 **6 Claims**



1. A wood reinforcing plate that resists forces parallel to the plate in buildings of the type including anchor bolts embedded in a concrete foundation and with the anchor bolts extending upward and with a wood sill resting on the concrete foundation and with the wood sill having openings which receive the upwardly extending anchor bolts, including

a plate member,

means for sliding the plate member over the anchor bolt to position the plate member around the anchor bolt adjacent the wood sill including, an opening extending through the plate member and with the opening having a dimension slightly larger than the diameter of the anchor bolt, and

the plate member including a plurality of integral gripper prongs extending in a direction substantially perpendicular to the plate member for embedding the gripper prongs into the wood sill to lock the plate member into the wood when the plate member is slid over the anchor bolt and positioned around the anchor bolt adjacent the wood sill.

5,546,724

BEAM ANCHORING DEVICE

Lars A. Reinklou, Ostersund, Sweden, assignor to Combisafe International Aktiebolag, Ostersund, Sweden

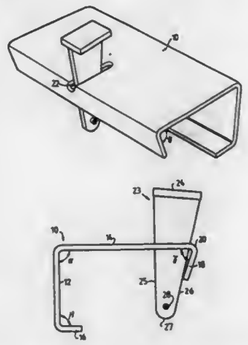
PCT No. PCT/SE93/00061, § 371 Date Aug. 1, 1994, § 102(e) Date Aug. 1, 1994, PCT Pub. No. WO93/15285, PCT Pub. Date Aug. 5, 1993

PCT Filed Jan. 28, 1993, Ser. No. 256,969

Claims priority, application Sweden, Jan. 30, 1992, 9200260

Int. Cl.[6] E04B *1/58;* **F16B** *2/14*

U.S. Cl. 52—698 **3 Claims**



1. In a device for anchoring beams, to one another or to other structural elements, comprising a beam attachment which has a generally U-shaped configuration so as to be able to stradle a beam when fitted thereon, and which attachment includes a first leg, a second leg and an angled collar, said legs extending generally at right angles (α) to one another and the outer extremities of each of said legs being bent at a respective predetermined angle β and γ; the improvement wherein the angled collar (**16**) is formed on the first leg (**12**) and a locking device (**23**) is mounted in a slot (**22**) in the second leg (**14**); the locking device (**23**) being movable through the slot between the first leg (**12**) and the outer end (**18**) of said second leg (**14**), the side of said locking device (**23**) opposite said first leg (**12**) being in contact only with the endmost portion of said outer end (**18**) of said second leg (**14**), whereby said outer end (**18**) of said second leg (**14**) serves as an abutment spring to urge said locking device (**23**) toward said first leg (**12**), wherein the locking device is a wedge (**23**) whose side edges (**25, 26**) converge towards one another in the direction that said first leg (**12**) extends away from said second leg (**14**), and wherein said wedge has a hammer plate (**24**) at its wider end and stop means (**28**) at its narrower end to keep the wedge in the slot (**22**).

5,546,725

COMPOSITE ANCHOR

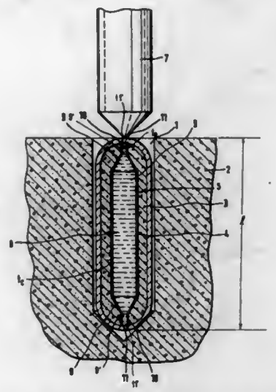
Willi Haug, Freudenstadt/Musbach, Germany, assignor to fischerwerke, Artur Fischer GMBH & Co KG, Waldachtal, Germany

Filed Dec. 8, 1994, Ser. No. 352,554

Claims priority, application Germany, Dec. 16, 1993, 43 42 887.8

Int. Cl.[6] E04B *1/38*

U.S. Cl. 52—698 **9 Claims**



1. A composite anchoring device for fixing an anchoring rod (7) in a drilled hole (1), said anchoring device consisting of said anchoring rod (7) and a cartridge (3) having a length (1) and capable of being crushed by said anchoring rod (7), said cartridge (3) containing a hardenable bonding agent comprising a mineral mortar (4) as a solid component and said cartridge (3) also containing a crushable inner container (5) extending over the length (1) of the cartridge (3), having ends and filled with water (6) as a liquid component, said solid and liquid components being mixed by driving the anchoring rod (7) into the drilled hole (1) containing the cartridge (3) to crush the cartridge and fix the anchoring rod in the drilled hole,

wherein the crushable inner container (5) held in the cartridge (3) consists of a plurality of inner container sections (**10,9,8**) distributed over the length (1) of the cartridge (3), delimited from each other and crushable in succession as the anchoring rod (7) is driven into the drilled hole (1) to release said water (6) progressively in portions, and the inner container (5) has first breakpoints (**11**) and second breakpoints (**9'**), said second breakpoints (**9'**) being arranged further from said ends of said inner container (5) than said first breakpoints (**11**), wherein said first breakpoints (**11**) and said second breakpoints (**9'**) are graded to have predetermined resistances to stress so as to break in succession from each of said ends of the inner container (5) towards a middle of the inner container (5) as the anchoring rod (7) is driven into the drilled hole (1) to release the water (6) located in the respective inner container sections (**10,9,8**) to the mineral mortar (4) in the vicinity of the inner container sections.

5,546,726

RAFTER-TO-SUPPORT-MEMBER CONNECTION APPARATUS

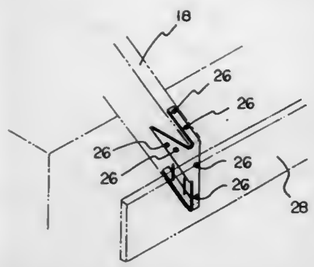
Michael E. Stalzer, 2540 So. Ingram Mill Rd. 3327, Springfield, Mo. 65804

Filed Dec. 1, 1994, Ser. No. 347,697

Int. Cl.[6] E04C *5/18*

U.S. Cl. 52—702 **3 Claims**

1. A rafter-to-support-member connection apparatus, comprising:



a single-piece, substantially two-dimensional blank which includes a longitudinal portion and a single transverse portion projecting transversely from said longitudinal portion, wherein said longitudinal portion includes a first end region and a second end region, wherein said single transverse portion includes transverse connection apertures, and

a plurality of indicia located at predetermined crease line locations on said longitudinal portion,

wherein said single transverse portion and said first end region and said second end region of said longitudinal portion are adapted to be bent with respect to each other along predetermined locations on said single transverse portion and said longitudinal portion to form a three-dimensional structure,

wherein said longitudinal portion includes longitudinal connection aperture, and wherein said single transverse portion is triangular shaped.

5,546,727

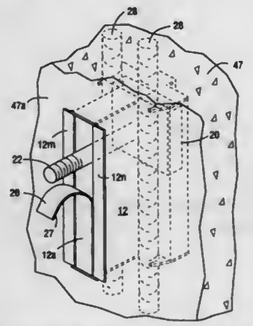
CONCRETE STRUCTURE HAVING LOAD TRANSFERRING INSERT AND METHOD FOR MAKING SAME

David L. Kelly, Sacramento, Calif., and Sidney E. Francies, III, Universal City, Tex., assignors to The Burke Group, Sacramento, Calif.

Filed Jan. 6, 1995, Ser. No. 369,449

Int. Cl.[6] E04B *1/38*

U.S. Cl. 52—704 **43 Claims**



1. A concrete support apparatus for supporting thereon an object, said apparatus comprising;

a concrete structure having a surface,

a reinforcement bar disposed in said concrete structure,

a primary support member for securely engaging a secondary support member for member attached to said object, and

an insert embedded in said concrete structure and having an interior volume and an opening coplanar with said surface of said structure with a remainder of said insert being embedded within said concrete structure, said insert comprising a wall defining said interior volume, said interior volume having first and second contiguous portions, said first portion side and shaped to accept said primary support member in a first orientation and said second portion sized and shaped such that said primary support member does not fit into said second portion when in said first orientation said primary support member being disposed in said first portion of said interior volume of said insert, whereby said secondary support member can be attached to said primary support member and a load of said object is transferred through said concrete structure,

wherein said insert further comprises an extension projecting beyond said wall, said extension defining a recess for engaging a reinforcement bar in a position relative to said insert such that said load of said object is also transferred through said reinforcement bar.

5,546,728

DEVICE FORMING PACKAGING FOR QUANTITIES OF A GLUTINOUS SUBSTANCE

Michel Dekeyser, Kestergat 22, B-1670, Pepingen, Belgium

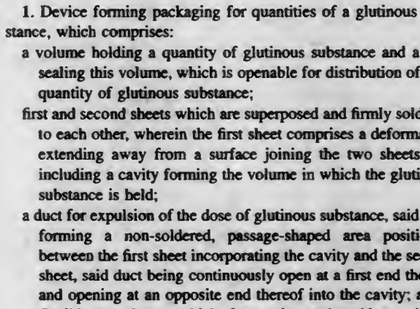
PCT No. PCT/BE92/00054, § 371 Date Jul. 15, 1994, § 102(e) Date Jul. 15, 1994, PCT Pub. No. WO93/74003, PCT Pub. Date Jul. 22, 1993

PCT Filed Dec. 18, 1992, Ser. No. 256,349

Claims priority, application Belgium, Jan. 15, 1992, 09200034

Int. Cl.[6] B65D *75/36*

U.S. Cl. 53—133.1 **3 Claims**



1. Device forming packaging for quantities of a glutinous substance, which comprises:

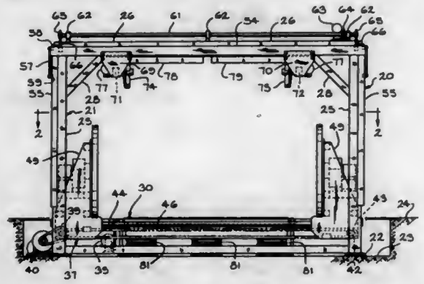
a volume holding a quantity of glutinous substance and a seal sealing this volume, which is openable for distribution of said quantity of glutinous substance;

first and second sheets which are superposed and firmly soldered to each other, wherein the first sheet comprises a deformation extending away from a surface joining the two sheets and including a cavity forming the volume in which the glutinous substance is held;

a duct for expulsion of the dose of glutinous substance, said duct forming a non-soldered, passage-shaped area positioned between the first sheet incorporating the cavity and the second sheet, said duct being continuously open at a first end thereof and opening at an opposite end thereof into the cavity; and

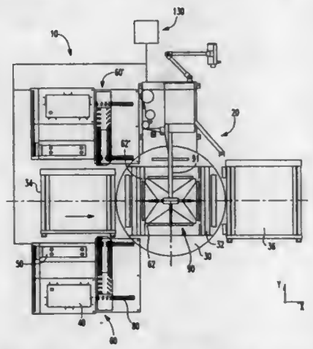
a flexible membrane which forms the seal, said membrane separating the cavity from the duct wherein the membrane in an area of the duct, is connected to said first sheet in order to form a fragile seal, and at the duct, one of a first and second assembly exists wherein in the first assembly, neither of the first and second sheets is deformed and the duct is formed exclusively as a result of the existence of the non-soldered area and wherein, in the second assembly, the first sheet is deformed, the flexible membrane has the shape of the deformed first sheet in an area in which the flexible membrane is attached to said deformation and the second sheet comprises a flat sheet having a stiffness greater than that of the first sheet.

5,546,729
WRAPPING MACHINE
David J. Pienta, Lambertville, Mich., assignor to Automatic Handling Inc., Erie, Mich.
Filed Nov. 15, 1994, Ser. No. 339,775
Int. Cl.[6] B65B *11/04*
U.S. Cl. 53—211 12 Claims



1. A wrapping machine for a roll comprising, a frame including opposed side members and top member extending between said opposed side members, a turning assembly positioned below said top member, said turning assembly including a driven member for rotating the roll, a motor operatively connected to said driven member, a header carriage mounted adjacent said turning assembly, said header carriage including opposed, moveable headers for holding an end disk and positioning the end disks on the ends of the roll, said headers including a vacuum end plate defining a plurality of openings and a blower and motor assembly in communication with, said openings, a pair of opposed and vertically moveable crimper paddles positioned above said header carriage, drive mechanism for rotating each of said crimper paddles and a motor operatively connected to said crimper paddles for rotating said crimper paddles, and a lift positioned below said turning assembly for lifting the roll upwardly from said turning assembly.

5,546,730
METHOD AND APPARATUS FOR PLACING CORNER BOARDS AND STRETCH WRAPPING A LOAD
Gregory A. Newell, Louisville; Randy R. George, Lagrange; Patrick R. Lancaster, III, and Robert D. Janes, both of Louisville, all of Ky., assignors to Lantech, Inc., Louisville, Ky.
Filed Mar. 31, 1994, Ser. No. 220,592
Int. Cl.[6] B65B *13/04;53/00;61/00*
U.S. Cl. 53—399 8 Claims



2. A method for stretch wrapping a load having sides and corners, comprising:

positioning the load on a turntable at a wrapping station including a dispenser for dispensing stretch wrap packaging material and orienting a first corner of the load at a first corner board placement position;

supplying a first corner board placer with a first corner board;

placing the first corner board on the first corner of the load;

holding the first corner board on the first corner of the load;

rotating the turntable to orient a second corner of the load at the first corner board placement position;

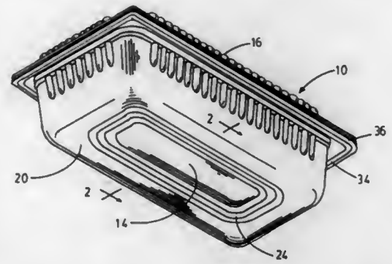
supplying the first corner board placer with a second corner board;

placing the second corner board on the second corner of the load;

holding the second corner board on the second corner of the load; and

dispensing stretch wrap packaging material from the dispenser and rotating the turntable to wrap the stretch wrap packaging material around the load with the corner boards placed on the corners of the load.

5,546,731
METHOD OF EXTENDING SHELF LIFE OF A COMESTIBLE PRODUCT WHILE PROVIDING A LOCALLY PACKAGED APPEARANCE
Ihor Wyslotsky, 5050 Newport Dr. Section 7, Rolling Meadows, Ill. 60008, assignor to Ihor Wyslotsky, Rolling Meadows, Ill.
Filed Jul. 2, 1993, Ser. No. 87,602
Int. Cl.[6] B65B *31/00;55/00*
U.S. Cl. 53—400 15 Claims



1. A method of preserving a comestible product and extending the shelf-life thereof while providing a freshly baked and locally packaged appearance, said method comprising the steps of:

providing a package bottom having at least one retractable inwardly disposable panel thereon;

inserting the comestible product thereinto;

providing a package lid for the package bottom;

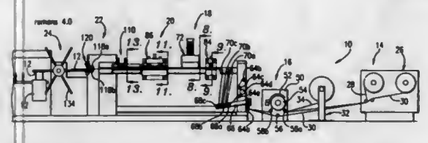
covering the package bottom with the package lid;

injecting a substantially inert atmosphere which is absorbable at least in part by the comestible product been inserted into the covered package bottom;

absorbing at least a portion of the inert gaseous atmosphere into the comestible product to lower the partial gaseous pressure within the covered package, and thereby to cause the inwardly disposable panel on the package bottom to retract inwardly; and

wherein the package lid has no panel thereon susceptible to inward retraction, whereby the consumer sees no retraction of a panel in viewing the package lid from above, and thus may conclude that the comestible has been made and packaged locally.

5,546,732
METHOD AND APPARATUS FOR MAKING AND FILLING BAGS
Charles P. Coleman; Dennis D. Garberg, and Thomas J. Butler, all of Overland Park, Kans., assignors to Dennis Garberg & Associates, Inc., Overland Park, Kans.
Filed Jul. 13, 1995, Ser. No. 502,095
Int. Cl.[6] B65B *09/00*
U.S. Cl. 53—450 4 Claims



1. A packaging method for forming a wicket of elongated bags each secured to a common header and with an external, sealed pouch on each bag having an article therein, said method comprising the steps of:

providing a web set including an elongated continuous packaging web and an elongated continuous pouch web secured thereto,

said packaging web presenting opposed inner and outer faces, opposed, laterally spaced apart first and second side margins, and a plurality of axially spaced apart article-receiving sections along the length of said outer face thereof,

said pouch web presenting opposed internal and external faces and opposed, laterally spaced apart first and second edges, said pouch web being of a width less than the width of said packaging web,

said pouch and packaging webs being in substantial axial alignment with the second edge of the pouch web adjacent the second side margin of said packaging web,

said pouch web being secured to said packaging web along said first edge of the pouch web to define an axial line of connection along the length of the packaging web between said first and second side margins thereof, with said internal face of said pouch web being adjacent said outer face of said packaging web;

providing an elongated continuous backing web presenting opposed inboard and outboard faces and opposed, laterally spaced apart first and second side boundaries;

axially moving said web set and said backing web forwardly along a path of travel with said inboard face of said backing web being adjacent said inner face of said packaging web and with said second side boundary of said backing web adjacent said second side margin of said packaging web;

partially interconnecting said pouch web, packaging web and backing webs by forming successive partial heat seals between adjacent ones of said article-receiving sections, said partial heat seals being oriented transverse to the longitudinal axes of said webs and extending only a portion of the width of said pouch web leaving said second edge of the pouch web free of interconnection with said second side margin of said packaging web to thereby form a series of axially spaced apart partial pockets between said pouch web and said packaging web;

successively dispensing an article into each of said partial pockets, said transversely oriented partial heat seals serving to maintain said articles within said partial pockets and to inhibit lateral shifting of said articles beyond the corresponding partial pockets without the need for adhesive or the like;

fully interconnecting said pouch web, packaging web and backing web along transversely oriented full seal lines proximal to said partial heat seals, and Interconnecting said second side margins with said second edges and second side boundaries to define a plurality of completed elongated bags each presenting a sealed external pouch containing an article and an open end adjacent and between the first side margin of said packaging web and said first side boundary of the backing web, and separating said completed elongated bags; and

joining said completed elongated bags to a common header adjacent the open ends thereof to form said wicket.

5,546,733
METHOD AND AN APPARATUS FOR REGISTERING A LEVEL OF CONTENTS
Roberto Paltrinieri, Modena, Italy, assignor to Tetra Laval Holdings & Finance S.A., Pully, Switzerland
Filed Mar. 22, 1995, Ser. No. 408,351
Claims priority, application Italy, May 9, 1994, MI94A0903
Int. Cl.[6] B65B *1/36;9/06;57/10*
U.S. Cl. 53—503 10 Claims



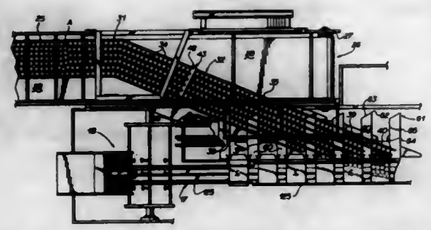
1. A method of determining the level of contents in a packaging material tube which, during a downward movement of the packaging material tube through a packaging machine, is supplied with contents from a feeder device, the feeder device being controlled by a level sensing unit, comprising the steps of:

sensing, with at least one temperature sensing device of a level sensing unit, a location on the packaging material tube at which a temperature change occurs due to the presence, in the packaging material tube, of the contents in the packaging material tube, the temperature change being indicative of the position of the level of contents in the packaging material tube;

continuously adjusting a temperature of the packaging material tube at an upper end thereof to a temperature different from a temperature of the contents by blowing gas at a temperature different from the temperature of the contents against the packaging material tube.

5,546,734
PACKAGING MACHINE AND METHOD OF PACKAGING ARTICLES
Frank Moncrief, Acworth, Ga.; Kelly W. Ziegler, Crosby, Minn.; Michael Hiney, Atlanta, and Dennis Grimm, Marietta, both of Ga., assignors to Riverhood International Corporation, Atlanta, Ga.
Filed Sep. 2, 1993, Ser. No. 118,111
Int. Cl.[6] B65B *35/30*
U.S. Cl. 53—534 30 Claims

1. A packaging machine for processing articles along a longitudinal path and for directing the articles into a container, comprising:



(a) article infeed means for arranging said articles in discrete lanes of a first width, said article infeed means being adjustable to accommodate and arrange articles of different diameters;

(b) article selection means disposed adjacent to and cooperating with said article infeed means for selecting a predetermined number of articles from said article infeed means and arranging said predetermined number of articles into an article group;

(c) container transport means disposed adjacent to and functioning in timed relationship with said article selection means for positioning said container to receive articles from said article selection means; and

(d) container supply means disposed adjacent to and functioning in timed relationship with said container transport means for supplying containers to said container transport means;

said article infeed means comprising a first guide rail section having spaced parallel guide rails defining said lanes of said first width and said article infeed means being adjustable by sliding said guide rails to define lanes of a second width;

said article infeed means also comprising a second guide rail section having spaced parallel guide rails defining said lanes of said first width and being adjustable by sliding said guide rails to define lanes of said second width, said guide rails in said second guide rail section being at an angle to said guide rails in said first guide rail section;

said packaging machine further comprising a first corner guide rail section having spaced guide rails defining lanes of said second width, said first corner guide rail section being inserted between said first guide rail section and said second guide rail section and mating with said first guide rail section and said second guide rail section when said lanes of said first guide rail section and said second guide rail section are at said second width.

5,546,735

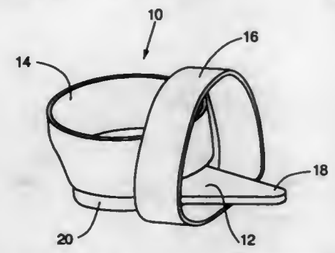
HORSE HOOF SANDAL

Carleton Brooks, 100 Central Ave., Redwood City, Calif. 94061

Filed Jul. 19, 1994, Ser. No. 276,904

Int. Cl.[6] B68C *5/00*

U.S. Cl. 54—82 **10 Claims**



1. A horse hoof sandal comprising a substantially triangular member dimensioned and configured to occupy at least a portion of the area adjoining the frog of a hoot, the substantially triangular member having at least a first band and a second band attached thereto, the first band dimensioned and configured to support the substantially triangular member under and against the frog of the hoof, the second band dimensioned and configured to support the substantially triangular member against the frog of the hoof.

5,546,736

HARVESTER FOR GREEN FODDER PREPARATION

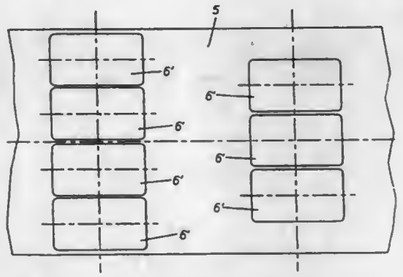
Wilhelm V. Allwörden, Oberstotzingen, Germany, assignor to SAME S.p.A., Treviglio, Italy

Filed Apr. 20, 1995, Ser. No. 393,015

Claims priority, application Germany, Sep. 1, 1992, 42 29 060.0

Int. Cl.[6] A01D *82/00*

U.S. Cl. 56—16.4 B **10 Claims**



3. A mobile green fodder conditioner comprising:

a fodder pressing device including,

a belt for conveying green fodder in an inlet to discharge fodder moving direction,

a first cylinder disposed on a first horizontal axis transverse to said fodder moving direction and in supporting relation to said belt,

a second cylinder disposed above said belt on a second horizontal axis parallel to said first horizontal axis and comprised of a plurality of elastically deformable annular segments arranged in axially spaced side-by-side relation to one another on said second horizontal axis and

a third cylinder disposed above said belt on a third horizontal axis parallel to said first horizontal axis and spaced from said second horizontal axis in said fodder moving direction, said third cylinder comprising a plurality of elastically deformable annular segments arranged in axially spaced side-by-side relation to one another on said third horizontal axis, said annular segments of said third cylinder being in staggered relation in an axial direction relative to said annular segments of said second cylinder,

said second and third cylinders being positioned sufficiently close to said first cylinder to form pressing regions for said green fodder conveyed by said belt.

5,546,737

MOWING DEVICE FOR STALKY STEM PRODUCTS

Karl Moosbrucker, Saulgau, Germany, assignor to Claas Saulgau GmbH, Saulgau, Germany

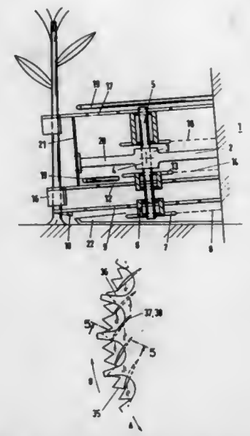
Filed Mar. 16, 1995, Ser. No. 405,536

Claims priority, application Germany, Mar. 22, 1994, 44 09 788.3; Nov. 26, 1994, 44 42 164.8

Int. Cl.[6] A01D *34/64*

U.S. Cl. 56—94 **24 Claims**

15. A mowing device for stalky stem products, comprising a cutting disc rotating about a substantially vertical axis; a transporting disc rotating coaxially relative to said cutting disc at a distance above said cutting disc and provided with a plurality of pocket-shaped recesses on its periphery for receiving stalky stem products, said cutting disc and said transporting disc being driven with substantially different peripheral speeds; and means for driving said cutting disc and said transporting disc at substantially different peripheral speeds, said cutting disc having an upper side provided on its periphery with means which prevent falling out of stem product stalks cut by said cutting discs.



5,546,738

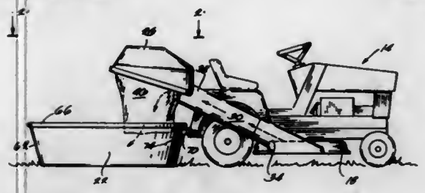
DEVICE FOR COLLECTING LAWN DEBRIS

Bruce A. Turner, 1647 N. Battlecreek Rd., Oconomowoc, Wis. 53066

Filed Nov. 7, 1994, Ser. No. 335,471

Int. Cl.[6] A01D *49/00;75/28*

U.S. Cl. 56—202 **3 Claims**



1. A lawn clipping collector comprising

a generally flat bottom wall made of rigid plastic and having an outer edge defining a generally circular periphery,

a generally vertically extending sidewall rigidly fixed relative to the bottom wall, the sidewall having a lower edge integrally formed with the outer edge of the bottom wall and having an upper edge defining an opening, the sidewall having extending therethrough a pair of slots, and

a strap extending through the pair of slots and having opposite ends.

5,546,739

RADIAL RAKE DEVICE

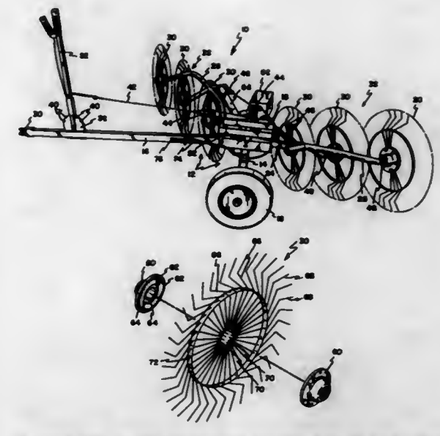
Allen J. Hettich, 6200 S. Shore Dr., Aberdeen, S. Dak. 57401

Division of Ser. No. 442,135, May 16, 1995, Pat. No. 5,479,768, which is a continuation of Ser. No. 87,195, Jul. 2, 1993, abandoned. This application Sep. 28, 1995, Ser. No. 535,756

Int. Cl.[6] A01D *78/14*

U.S. Cl. 56—367 **8 Claims**

1. A wheel type radial rake, comprising:



a central hub having opposed hub sections with an axial central opening formed therein;

a plurality of tines extending radially outward from the hub, each of the tines having a bent inner portion extending along an axial direction;

wherein each of the hub sections has a plurality of axially extending bores formed therein spaced in an annular ring and configured for receiving the bent inner portions of the tines and a plurality of raised portions annularly spaced on the hub sections radially outward from the bores, wherein the raised portions are spaced to receive a tine between adjacent raised portions.

5,546,740

ACTUATING LINKAGE FOR BOBBIN CHANGER

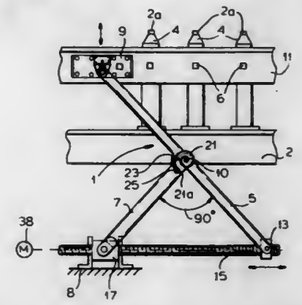
Friedrich Dinkelmann, Maltis; Dieter Vetter, Ebersbach/Fils, and Manfred Samp, Diezisau, all of, Germany, assignors to Zinser Textilmaschinen GmbH, Ebersbach/Fils, Germany

Filed Aug. 2, 1995, Ser. No. 510,464

Claims priority, application Germany, Aug. 12, 1994, 44 28 665.1

Int. Cl.[6] D01H *9/00;9/04*

U.S. Cl. 57—266 **14 Claims**



1. In a ring-spinning machine having a frame and a spindle bank holding a row of bobbins, a bobbin-changing apparatus comprising:

a gripper beam engageable with the bobbins of the spindle banks and movable between an upper and a lower position;

a scissor linkage pivoted on the frame and on the gripper beam extendable for raising the beam and collapsible for lowering the beam, the linkage comprising

a pair of arms both of which have lower ends, one of which is long and has an upper end pivoted on the beam, and the other of which is short and has an upper end pivoted on the long arm below the beam,

an abutment on which one of the lower ends is pivoted and against which the one lower end is fixed against longitudinal movement, and

a guide longitudinally displaceable on the frame and on which the other lower end is pivoted; and

biasing means operatively engageable with one of the ends of one of the arms at least in the lower position of the beam for exerting torque on the one end of the one arm and upwardly biasing the beam at least in the lower position of the beam.

5,546,741

REVERSE STRANDING APPARATUS AND METHODS

Raimo Karhu, Helsinki, Finland, assignor to Noki-Maillefer Oy, Vantaa, Finland

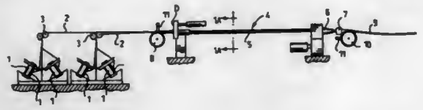
PCT No. PCT/FI93/00127, § 371 Date Oct. 3, 1994, § 102(e) Date Oct. 3, 1994, PCT Pub. No. WO93/20566, PCT Pub. Date Oct. 14, 1993

PCT Filed Mar. 30, 1993, Ser. No. 313,240

Claims priority, application Finland, Apr. 3, 1992, 921477

Int. Cl.[6] D01H *5/00; 7/46*

U.S. Cl. 57—293 **14 Claims**



10. Reverse stranding apparatus comprising:

a divider at an inlet end for receiving elongated elements;

a twisting head rotatable in opposite directions at an outlet end for twisting the elements and forming a stranded cable;

a central element between said divider and said twisting head;

torsion tubes periodically rotatable in opposite directions and peripherally surrounding said central element;

a nozzle cooperable with the twisting head for passing elongated elements received from said divider, said torsion tubes and said twisting head;

an input capstan positioned before said divider and about which the elements are arranged to pass; and

an output capstan positioned immediately after said nozzle and about which the stranded elements are arranged to pass, said input capstan and said output capstan being rotatable at peripheral speeds higher than the speed of the elements or cable.

5,546,742

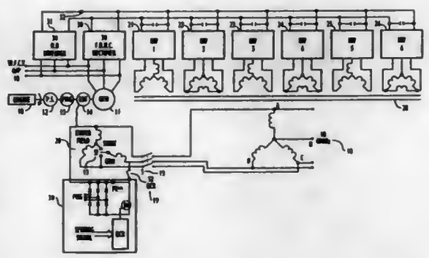
AIRCRAFT ENGINE ELECTRIC START SYSTEM WITHOUT A SEPARATE EXCITER FIELD INVERTER

Sampat Shekhawat; John J. Tumpey, and James C. Widdis, Monmouth, all of N.J., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Jul. 29, 1994, Ser. No. 282,698

Int. Cl.[6] F02C *7/268*

U.S. Cl. 60—39.142 **7 Claims**



1. A novel aircraft engine start system without the use of a separate exciter field inverter comprising:

resolver means connected to an output shaft of an aircraft engine;

permanent magnet generator means connected to said resolver means;

exciter means connected to said permanent magnet generator means wherein said exciter means comprises an exciter field;

generator means connected to said exciter means;

rectifier means connected to said generator means;

a plurality of inverter means connected to said rectifier means;

transformer means connected to said plurality of inverter means;

diode means connected to said plurality of inverter means;

half bridge inverter means connected to said rectifier means and to said diode means;

a first switch means connected between said exciter field and 400 Hz AC voltage;

a second switch means connected to said exciter field;

exciter field control means connected to said second switch means; and,

third switch means connected within said exciter field for switching from start to generator mode;

wherein by rearranging exciter field windings within said exciter field, and by properly arranging said first switch means, said second switch means and said third switch means, 400 Hz AC voltage is directly used to generate a field and start said aircraft engine without the use of a separate exciter field inverter.

5,546,743

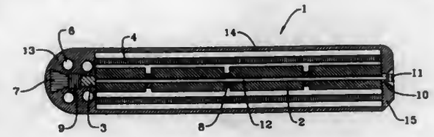
ELECTRON PROPULSION UNIT

Paul H. Conner, 4157 Waterway Dr., Dumfries, Va. 22026

Filed Dec. 8, 1994, Ser. No. 352,237

Int. Cl.[6] H05H *5/00*

U.S. Cl. 60—202 **17 Claims**



1. An electron accelerator including:

a thermionic fission cell for generating electricity;

an electron injector for converting electricity into free electrons;

a liner accelerator for accelerating said free electrons converted by said electron injector;

a linear electron path through said linear accelerator for acceleration of said electrons in a straight path.

5,546,744

PULSE DETONATION APPARATUS WITH SPHERICAL SEALS

Don D. Winfree, Keller, and Louis G. Hunter, Jr., Fort Worth, both of Tex., assignors to Lockheed Martin, Fort Worth, Tex.

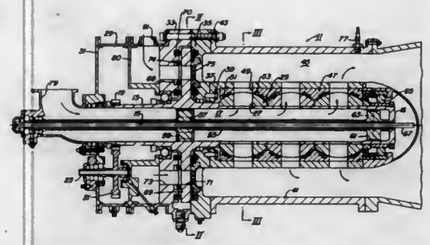
Continuation-in-part of Ser. No. 265,661, Jun. 24, 1994, Pat. No. 5,473,885. This application Mar. 24, 1995, Ser. No. 410,334

Int. Cl.[6] F02C *5/02;* **F02K** *7/06*

U.S. Cl. 60—247 **20 Claims**

1. A pulse detonation apparatus, comprising in combination:

a tubular inner housing which has a longitudinal axis;



a tubular outer housing coaxially surrounding the inner housing, the outer housing having a sleeve which receives the inner housing and having a jacket which is spaced outward from the sleeve, providing an annulus;

drive means for rotating the inner housing and the sleeve relative to each other;

a spherical inner seal surface coaxially located on the inner housing;

a mating spherical outer seal surface coaxially and stationarily located on the sleeve for rotatably receiving the inner seal surface;

an inner housing port extending through the inner housing to the inner seal surface;

an outer housing port extending through the sleeve to the outer seal surface which cyclically registers with the inner housing port to provide an injection passage between the inner housing and annulus which opens and closes as the inner housing and sleeve rotate relative to each other;

at least one annular seal located on one of the seal surfaces surrounding one of the ports for sealing the injection passage;

each of the housings having an upstream end and a downstream end, with the downstream end of one of the housings being closed, defining an injection chamber, and the downstream end of the other of the housings being open, defining a detonation chamber;

injection means for injecting a gaseous fuel into the injection chamber for flowing through the injection passage into the detonation chamber; and

detonation means in the detonation chamber for detonating the gaseous fuel received in the detonation chamber when the injection passage is closed to create a detonation wave for passing out the open downstream end of the detonation chamber.

5,546,745

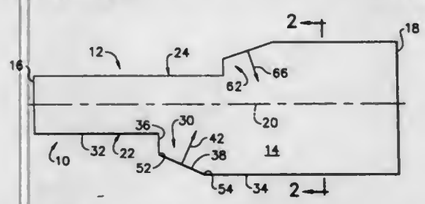
SCRAMJET COMBUSTOR HAVING A TWO-PART, AFT-FACING STEP WITH PRIMARY AND SECONDARY FUEL INJECTOR DISCHARGE ORIFICES

Paul H. Kutschenreuter, Jr., Loveland, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Jun. 27, 1994, Ser. No. 266,069

Int. Cl.[6] F02K *7/10*

U.S. Cl. 60—270.1 **19 Claims**



1. A flight vehicle scramjet combustor, comprising:

two spaced-apart, generally opposing, and generally longitudinally extending walls extending forward and aft, wherein one of said walls includes a generally aft-facing step, a forward wall portion extending generally longitudinally forward of said step, and an aft wall portion extending generally longitudinally aft of said step, said step further including a first section and an interconnected second section, wherein said first section is attached to said forward wall portion and said second section is attached to said aft wall portion, said second section including a primary fuel injector discharge orifice and a plurality of secondary fuel discharge orifices positioned adjacent thereto, wherein fuel is provided through said primary fuel injector discharge orifice and said secondary fuel injector discharge orifices by independent fuel supplies, said primary and secondary fuel discharge orifices each having a fuel discharge axis aligned generally perpendicular to said second section which projects both generally towards the other of said walls and longitudinally aft.

5,546,746

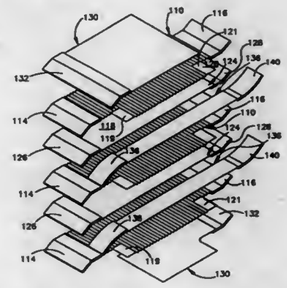
CORE ELEMENT USEFUL IN A COMBINED ELECTRICALLY HEATABLE AND LIGHT-OFF CONVERTER

William A. Whittenberger, Leavittsburg, Ohio, and Edward T. Woodruff, Woodbine, Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Continuation-in-part of Ser. No. 13,516, Feb. 4, 1993, abandoned. This application Oct. 13, 1994, Ser. No. 322,258

Int. Cl.[6] F01N *3/20;* **B60L** *1/02*

U.S. Cl. 60—274 **35 Claims**



1. A core element useful in a combined electrically heatable catalytic converter and a light-off converter comprising an elongated thin metal strip having marginal edges, one edge being a leading edge and another edge being a trailing edge with respect to fluid flowing transversely thereover, and having a longitudinally extending leading portion including said leading edge and a longitudinally extending trailing portion including said trailing edge, said thin metal strip having a transversely extending metal tab secured to each end of said elongated strip, said tabs being transversely bent in opposite directions, and means for isolating one of said portions from the other electrically and thermally.

5,546,747

DEVICE FOR THE PRECIPITATION OF PARTICULATE IN EXHAUST GASES

Angelo Colletta, and Medardo Pinti, both of Rome, Italy, assignors to Centro Sviluppo Materiali S.p.A., Rome, Italy

Filed Dec. 17, 1993, Ser. No. 168,154

Int. Cl.[6] F01N *3/20*

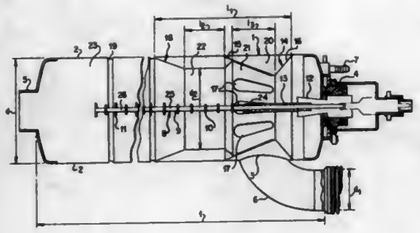
U.S. Cl. 60—275 **21 Claims**

1. A device for precipitation of the particulate in exhaust gases comprising:

an outer shell of metallic material,

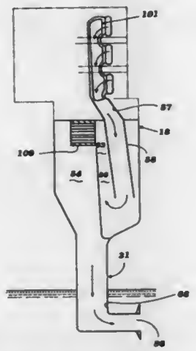
means for introduction of air into said outer shell,

means for introduction of said exhaust gases into said outer shell,



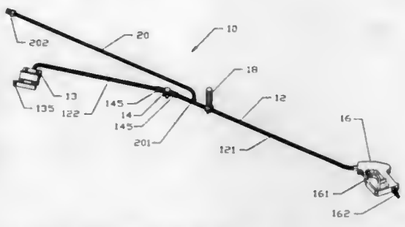
a voltage generator with one pole connected to an electrode and the other to said outer shell,
a first zone for mixing said air with said exhaust gas,
a second zone for ionization of said mixture coming from said first zone, and
a third zone for ignition and combustion of said particulate present in said mixture coming from said second zone
wherein said means for introduction of said exhaust gases comprises a duct, an inlet opening in said outer shell for receiving exhaust gases from said duct, and an annular duct surrounding said first zone and including a plurality of ports.

5,546,748
EXHAUST SYSTEM FOR OUTBOARD MOTOR
Tomio Iwai, and Seiichi Tanaka, both of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan
Filed Nov. 29, 1993, Ser. No. 159,056
Claims priority, application Japan, Nov. 27, 1992, 4-341498
Int. Cl.[6] F01N *3/28*
U.S. Cl. 60—302 **29 Claims**



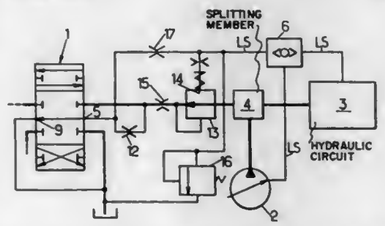
1. An exhaust system for an internal combustion engine comprising an engine body member having a plurality of exhaust ports opening through a surface of said body member for exhaust of combustion products from cylinders of said engine, said body member surface defining a cavity enclosed by a cover plate detachably affixed to said body member, a manifold forming member received in said cavity, said manifold forming member being comprised of an outer shell having qenerally tubular inner surface supporting a catalyst material for contact with exhaust gases passing through said manifold forming member and defining with said exhaust ports and said body member surfaces an exhaust collector section through which exhaust gases from said exhaust ports must pass before discharge to the atmosphere, said manifold forming member consisting of a plurality of inlet sections, each supporting a catalyst bed therein and adapted to cooperate with a respective one of said exhaust ports to receive the exhaust gases therefrom and catalytically treat such exhaust gases, and an outlet section adapted to communicate with an exhaust discharge system for the engine.

5,546,749
NAIL GUN HANDLE EXTENSION
Kent Couchee, 291 Penn Way, Los Gatos, Calif. 95032
Filed Mar. 17, 1995, Ser. No. 406,066
Int. Cl.[6] F16D *31/02;* **A47L** *11/12*
U.S. Cl. 60—370 **7 Claims**



1. A handle extension for an air powered hand tool comprising:
an extending element,
tool holding means,
a trigger mechanism, and
means to supply driving air to said tool; and wherein
said extending element includes an upper segment and a lower segment, the two segments being joined by a joint whose angle is adjustable,
said joint includes two opposing plates, each plate including a set of raised teeth on an inner surface thereof, said teeth meshing together to hold said joint at a fixed angle when a locking means of said joint is activated, said joint being released from said fixed angle by a user releasing said locking means, thereby allowing said sets of teeth to disengage.

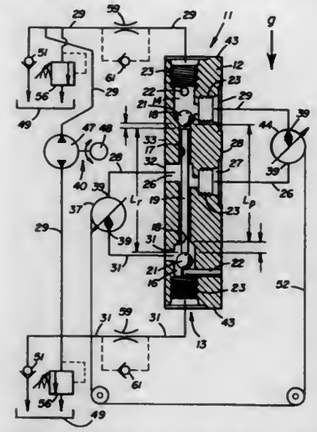
5,546,750
HYDRAULIC CIRCUIT FOR PRESSURE-CONTROLLING A HYDRAULIC DISTRIBUTOR OF THE OPEN-CENTRE TYPE
Emmanuel Richer, Bourgoin Jallieu, France, assignor to Rexroth-Sigma, France
Continuation of Ser. No. 85,941, Jul. 6, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 474,144
Claims priority, application France, Jul. 3, 1992, 92 08242
Int. Cl.[6] F16D *31/02;* **F15B** *11/00*
U.S. Cl. 60—426 **5 Claims**



1. A control circuit for controlling a pressure of hydraulic fluid to a hydraulic distributor associated therewith and to a separate hydraulic circuit, comprising:
a variable flow rate hydraulic fluid source for simultaneously supplying pressurized hydraulic fluid to the hydraulic distributor and to the separate hydraulic circuit;

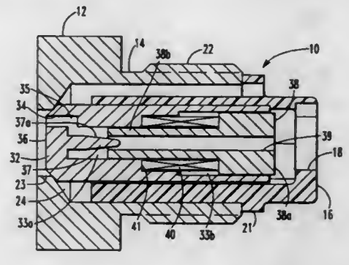
a main hydraulic fluid line connecting said fluid source to a main inlet of the hydraulic distributor;
a signal line through the distributor having an inlet and an outlet, said signal line being closed as a spool of the distributor is moved upon actuation of the hydraulic distributor from a neutral position;
a flow rate regulating means for providing a constant hydraulic fluid flow rate therethrough, said flow rate regulating means being connected from said main hydraulic fluid line to said inlet of said signal line such that a pressure of the hydraulic fluid in said signal line increases as the spool moves from a neutral position; and
a pressure head detection means, connected by a first load sensing line to said inlet of said signal line and by a second load sensing line to the separate hydraulic circuit, (a) for detecting a highest fluid pressure between a fluid pressure at said inlet of said signal line and a fluid pressure in said separate hydraulic circuit and (b) for controlling the flow rate of the hydraulic fluid source as a function of the highest pressure detected.

5,546,751
ANTI-CAVITATION MANIFOLD FOR DRIVE COUPLED, DUAL MOTOR, REVERSIBLE HYDRAULIC DRIVE SYSTEMS
Harry J. Last, 122 Dunecrest Ave., Monterey, Calif. 93940
Filed Oct. 14, 1994, Ser. No. 322,464
Int. Cl.[6] F16D *31/02*
U.S. Cl. 60—424 **21 Claims**



1. A manifold for hydraulically coupling a reversibly source of hydraulic power for reversibly circulating hydraulic liquid to a drive coupled, dual motor, reversible hydraulic drive system, comprising, in combination:
(i) two hydraulic input/output (I/O) chambers each hydraulically coupled to receive input liquid from the reversibly source of hydraulic power, and each hydraulically coupled for providing liquid input to and receiving liquid output from one reversible hydraulic motor;
(ii) a tubular bypass cavity hydraulically coupled to receive liquid from and provide liquid to both reversible hydraulic motors;
(iii) a translation passageway having an opening into each input/output (I/O) chamber hydraulically establishing communication between each chamber and the tubular bypass cavity;
(iv) a ball within each input/output (I/O) chamber seatable upon a valve seat annularly surrounding the opening of the translation passageway for isolating the tubular bypass cavity from hydraulic liquid input from the reversibly source of hydraulic power and for directing that liquid to the particular reversible hydraulic motor coupled to that chamber to rotate its actuator; and
(v) a shuttle rod translating in the translation passageway having a cross section for permitting liquid to flow though the translation passageway and having a length longer than the translation passage for preventing the respective balls in the input/output (I/O) chambers from simultaneously seating upon the valve seats in the respective input/output (I/O) chambers; whereby, the hydraulic output of the remaining reversible hydraulic motor is hydraulically coupled to its input via the tubular bypass cavity and translation passageway enabling it to function as a pump without cavitating.

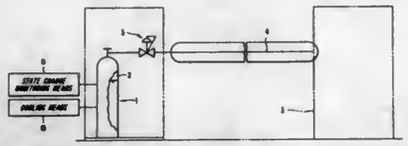
5,546,752
COMBINATION VALVE INCLUDING IMPROVED NEUTRAL VALVE FOR USE IN HYDROSTATIC TRANSMISSION
Todd Horton, and Michael Bennett, Both of Bethany, Ill., assignors to Hydro-Gear LTD. Partnership, Sullivan, Ill.
Filed Feb. 23, 1995, Ser. No. 392,484
Int. Cl.[6] F16D *31/02;* **F15B** *11/08;* **G05D** *11/00*
U.S. Cl. 60—464 **12 Claims**



1. A valve mechanism for use in a hydrostatic transmission including a porting system for hydraulic fluid and a sump, comprising
a valve body, hydraulically linked to said hydrostatic transmission, whereby said valve body has a first opening to said porting system formed at a first end thereof and a second opening to said sump formed at the second end thereof;
a first spool slidably mounted in said valve body and having a passage for hydraulic fluid, said passage having a first end in communication with the first opening of said valve body and a second end in communication with the second opening of said valve body;
a second spool slidably mounted in said first spool and having an internal passage for hydraulic fluid; and
said first spool having an internal projection formed at said second end thereof and communicating with the internal passage of said second spool.

5,546,753
EVAPORATED GAS SUPPLY METHOD
Kazuo Yokogi, Tokyo, Japan, assignor to Teisan K.K., Tokyo, Japan
Filed Dec. 22, 1994, Ser. No. 361,389
Claims priority, application Japan, Dec. 27, 1993, 5-332355
Int. Cl.[6] F17C *7/04*
U.S. Cl. 62—48.1 **6 Claims**

1. An evaporated gas supply method in which an evaporated gas having a primary pressure filled in a cylinder is reduced in pressure to a secondary pressure through adiabatic expansion, with the



evaporated gas having the secondary pressure being supplied to a predetermined consuming installation, which method comprises

a first step of cooling the gas in the cylinder to a temperature whereby the enthalpy of the gas in the cylinder corresponds to the secondary pressure of the gas achieved upon adiabatic expansion such that liquefaction of the gas after adiabatic expansion to such secondary pressure does not occur; and

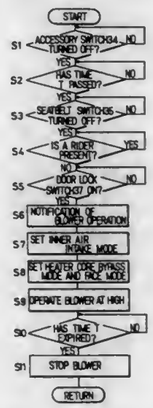
a second step of adiabatically expanding the evaporated gas filled in the cylinder so that its pressure is reduced to the secondary pressure, and supplying the evaporated gas having the reduced secondary pressure to said consuming installation.

5,546,754

AIR-CONDITIONING APPARATUS FOR VEHICLE USE

Tadayoshi Terao, Toyoake, and Katsuya Kusano, Chita-gun, both of, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 29, 1994, Ser. No. 350,133
Claims priority, application Japan, Dec. 1, 1993, 5-301527
Int. Cl.[6] B60H *1/00*
U.S. Cl. 62—133 **13 Claims**



1. An air-conditioning system comprising:

an air passage having an air intake port and at least one air outlet port;

means for moving air at a predetermined flow rate from said intake port to said outlet port, said moving means being disposed in said air passage;

an evaporator disposed within said air passage for conditioning said moving air;

means for determining whether power to said air conditioning system has been terminated;

means for continued operation of said moving means at at least said predetermined flow rate for a predetermined period of time before power to said air conditioning system has been terminated,

wherein said air conditioner is for use in a vehicle,

wherein said moving meads is a blower disposed in said air passage, and

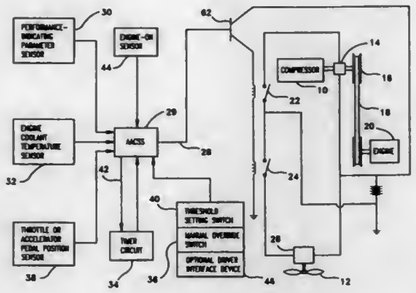
wherein said determining means includes means for sensing presence of a rider in said vehicle, means for detecting whether a seatbelt is unfastened, and second means for detecting whether a car door has been locked.

5,546,755

AUTOMATIC AIR CONDITIONER SHUTOFF SYSTEM

Todd N. Krieger, 292 N. Pointe Dr. NE., Apt. 312, Cedar Rapids, Iowa 52402

Filed Mar. 7, 1995, Ser. No. 399,613
Int. Cl.[6] B60H *1/32;* **F25B** *27/00*
U.S. Cl. 62—133 **20 Claims**



1. An automatic air conditioner shutoff system for use with an air conditioner having a compressor which receives power from an engine, said automatic air conditioner shutoff system comprising:

means for sensing the value of a power demand indicating parameter;

means for generating the steady state, level ground value of a performance indicating parameter at a sensed value of the power demand indicating parameter sensed by said means for sensing the value of a power demand indicating parameter;

means for sensing the realtime value of a performance indicating parameter;

means for calculating a performance parameter threshold by reducing said steady state, level ground value of said performance indicating parameter by a user selected percentage;

means for comparing said realtime value of said performance indicating parameter with said performance parameter threshold;

signalling means responsive to said means for comparing said realtime value of said performance indicating parameter with said performance parameter threshold, said signalling means indicating a first signal when said realtime value of said performance indicating parameter is less than said performance parameter threshold, and said signalling means indicating a second signal when said realtime value of said performance indicating parameter is greater than said performance parameter threshold;

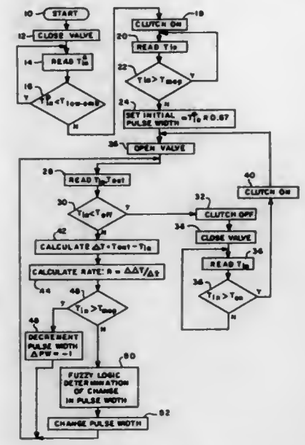
means for engaging said compressor to said engine responsive to said signalling means, said means for engaging said compressor to said engine acting to engage said compressor to said engine in response to said second signal, and said means for engaging said compressor to said engine acting to disengage said compressor from said engine in response to said first signal.

5,546,756

CONTROLLING AN ELECTRICALLY ACTUATED REFRIGERANT EXPANSION VALVE

Dawood A. Ali, Bloomingdale, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Feb. 8, 1995, Ser. No. 385,406
Int. Cl.[6] F25B *41/04;* **F24F** *3/14*
U.S. Cl. 62—204 **6 Claims**



1. A control system for a refrigeration system of the type having a compressor circulating refrigerant through a condenser, evaporator and an electrically operated expansion valve for controlling flow from the condenser to the evaporator, comprising:

(a) first sensor means sensing the refrigerant temperature entering the evaporator and providing an electrical signal indicative thereof;

(b) second sensor means sensing the refrigerant temperature discharging from the evaporator;

(c) controller means operative to

(i) determine the value of the difference (ΔT) of said temperature signals,

(ii) determine the degree of membership of said ΔT value in each of predetermined plural overlapping bands of ΔT,

(iii) determine the time rate of change (R) of ΔT, from said ΔT signal,

(iv) determine the degree of membership of said rate of change in each of predetermined plural overlapping bands of R,

(v) determine for combinations of said degrees of membership the change in control signal (ΔPW) from a predetermined set of rules (consequences),

(vi) determine the discrete value for said change and including means to deenergize said compressor means when said evaporator refrigerant inlet temperature is less than a predetermined valve; and

(d) circuit means connecting said controller to said expansion valve for applying said control signal thereto.

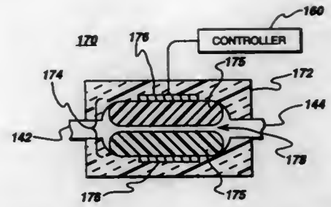
5,546,757

REFRIGERATION SYSTEM WITH ELECTRICALLY CONTROLLED EXPANSION VALVE

Walter Whipple, III, Amsterdam, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 7, 1994, Ser. No. 301,762
Int. Cl.[6] F16K *31/68;* **F25B** *41/04*
U.S. Cl. 62—225 **8 Claims**

1. An energy-efficient refrigeration system comprising:



an electrically controlled thermal expansion valve disposed in refrigerant system piping so as to control flow of refrigerant in said refrigeration system; and

an expansion valve controller coupled to said thermal expansion valve to provide a control signal thereto, said controller comprising a refrigerant flow sensing device coupled to said refrigeration system to sense a flow control temperature corresponding to refrigerant temperature at a flow measurement site, whereby said thermal expansion valve selectively controls refrigerant flow in said refrigeration system in response to said controller;

said thermal expansion valve comprising an orifice chamber, a variable-sized orifice through which the system refrigerant passes, a thermal expansion medium, and a heating element thermally coupled to said thermal expansion medium,

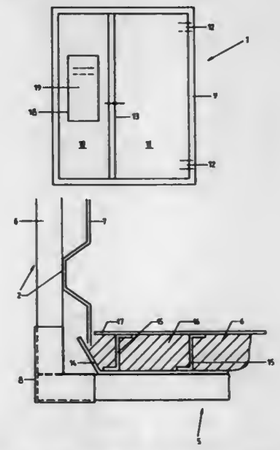
said thermal expansion medium comprising a refrigerant-filled elastomer material disposed within said orifice chamber such that the size of said orifice corresponds to the volume of said refrigerant-filled elastomer material, said volume being determined by the pressure of said thermal expansion medium, the volume of said thermal expansion medium being responsive to energy supplied by said heating element.

5,546,758

CONTAINER

Heinrich Hintermeier, Brunnlettbert 28, D-92287 Schmidmuhlen, Germany

Filed Sep. 28, 1994, Ser. No. 314,492
Int. Cl.[6] F25D *23/12;* **B65D** *88/00*
U.S. Cl. 62—259.1 **7 Claims**



1. A container comprising a plurality of wall elements bordering a container interior space, said wall elements including at least one front element, at least two side elements, at least one rear element,

at least one cover element, and at least one bottom element, said wall elements being detachably connected to one another by connecting pieces, said front element comprises a non-opening solid panel, at least one swinging door, and at least one climatic or cooling unit attached to said non-opening solid panel of said front element, wherein all servicing elements of said climatic or cooling element is located on an outside of said non-opening solid panel, said non-opening solid panel of said front element, said container further comprising thermal insulation provided on inside surfaces of said container, said thermal insulation comprises a plurality of insulating plates which are detachably connected to one another and to said wall elements of said container, and wherein said container is collapsible, whereby said wall elements can be stacked together with said insulating plates on said an least one bottom element for transporting said container.

5,546,759

REFRIGERATOR HAVING A VEGETABLE COMPARTMENT AND A SEPARATE KIMCHI CHAMBER

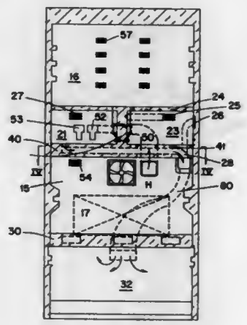
Sun G. Lee, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 29, 1994, Ser. No. 365,957

Claims priority, application Rep. of Korea, Jan. 26, 1994, 94-1465 U

Int. Cl.[6] F25B *29/00*

U.S. Cl. 62—441 **6 Claims**



1. A refrigerator comprising:

an evaporator for cooling air;

a refrigerating compartment;

a freezing compartment;

a vegetable compartment;

a kimchi chamber including a heater for heating air in said kimchi chamber; and

an air passage system interconnecting said refrigerating compartment and said kimchi chamber for combining first and second discharged air flows from said refrigerating compartment and said kimchi chamber, respectively, and directing the combined first and second air flows to said vegetable compartment.

5,546,760

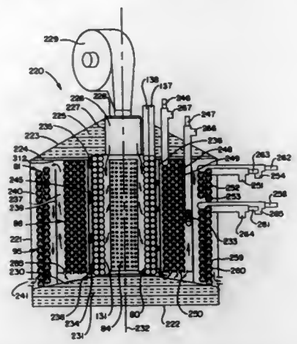
GENERATOR FOR ABSORPTION HEAT PUMPS

F. Bert Cook, Columbus; Stephen E. Petty, Dublin; Howard C. Meacham, Jr., Upper Arlington; Richard N. Christensen, Columbus, all of Ohio, and Kevin R. McGahey, Arlington, Va., assignors to Columbia Gas of Ohio, Inc., Columbus, Ohio

Division of Ser. No. 292,843, Aug. 19, 1994, which is a division of Ser. No. 768,772, Oct. 9, 1991, Pat. No. 5,339,654, and a continuation-in-part of Ser. No. 478,269, Feb. 9, 1990, Pat. No. 5,067,330. This application Jun. 7, 1995, Ser. No. 487,501

Int. Cl.[6] F25B *33/00*

U.S. Cl. 62—497 **14 Claims**



7. An absorption heat-transfer system comprising:

a) a first cylindrical chamber containing a heat source and a first plurality of generator coils with the coils juxtaposed one to the next in a generally annular composite form, with said plurality of generator coils surrounding said heat source;

b) a second annular chamber surrounding said first cylindrical chamber and containing a first plurality of recuperator coils with the coils juxtaposed one to the next in a generally annular composite form;

c) a third annular chamber surrounding said second annular chamber and containing a second plurality of generator coils with the coils juxtaposed one to the next in a generally annular composite form and a second plurality of recuperator coils juxtaposed one to the next in a generally annular composite form; and

d) means for circulating hot air and/or combustion products from said heat source through said first chamber, said second chamber, and said third chamber.

5,546,761

RECEIVER-INTEGRATED REFRIGERANT CONDENSER

Hiroki Matsuo, Kariya; Yasushi Yamanaka, Nakashima-gun; Norimasa Baba, Nagoya; Michiyasu Yamamoto, Chiryu, and Ken Yamamoto, Obu, all of, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 15, 1995, Ser. No. 389,185

Claims priority, application Japan, Feb. 16, 1994, 6-019254; Dec. 13, 1994, 6-308703

Int. Cl.[6] F25B *39/04;* **F28F** *9/02*

U.S. Cl. 62—509 **22 Claims**

1. A receiver-integrated refrigerant condenser comprising:

a core having first and second ends and a condensing part for condensing a refrigerant flowing in a horizontal direction;

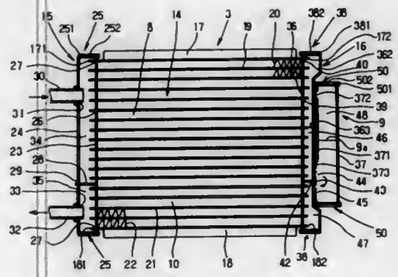
a first header extending in a vertical direction at said first end of said core and connected to an upstream end of said condensing part;

a second header extending in a vertical direction at said second end of said core and connected to a downstream end of said condensing part, said second header including therein a communication chamber in fluid communication with said condensing part, and a gas-liquid separation chamber provided beside said communication chamber within said second header for separating refrigerant into gas and liquid phases;

a refrigerant introducing means for introducing the refrigerant within said communication chamber into said gas-liquid separation chamber; and

a receiving part disposed in a position lower than said refrigerant introducing means for receiving liquid refrigerant from said gas-liquid separation chamber,

wherein a vertical length of said gas-liquid separation chamber is shorter than that of said second header.



5,546,762

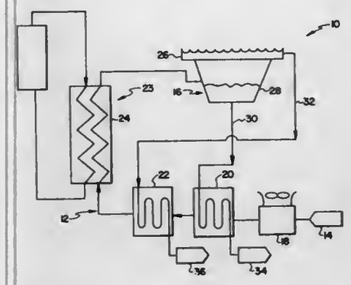
CHILL SEPARATION SYSTEM

David T. Leaf, 2815 Dalkeith Dr., Richmond, Va. 23233

Filed Dec. 9, 1994, Ser. No. 355,235

Int. Cl.[6] B01D *9/04*

U.S. Cl. 62—532 **13 Claims**



9. A method for separating soluble solids from solution comprising:

cooling a solution containing dissolved soluble solids to a precipitation temperature at which the soluble solids become precipitatable; and

separating said precipitatable soluble solids from the solution thereby creating a separated solids stream and a clarified water stream.

5,546,763

METHOD OF AND APPARATUS FOR CRYSTALLIZATION

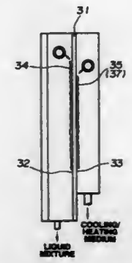
Kazuo Kikuchi; Hiroshi Umino; Hiromitsu Shibuya; Masahito Makino, all of Yokohama; Yasuyuki Sakakura, and Kiyoshi Takahashi, both of Yokkaichi, all of, Japan, assignors to JGC Corporation, Tokyo, Japan

Filed Oct. 12, 1994, Ser. No. 321,995

Claims priority, application Japan, Oct. 13, 1993, 5-280457; Oct. 4, 1994, 6-266362

Int. Cl.[6] B01D *9/04*

U.S. Cl. 62—532 **18 Claims**



1. A method of separating a crystallizable component contained in a liquid mixture, the method comprising the steps of:

circulating the liquid mixture to one side surface of a flat vertical plate, said mixture flowing down on said one side surface of the plate or crystal layers as a film;

supplying a cooling medium of a temperature lower than a freezing point of the liquid mixture onto an opposite side surface of said plate, said cooling medium flowing down on said opposite side surface of the plate as a film so as to form a desired amount of crystals of the crystallizable component on said one side surface; and

supplying a heating medium of a temperature higher than a freezing point of the crystals onto said opposite side surface, said heating medium flowing down on said opposite side surface as a film so as to melt and recover the crystals formed on said one side surface of the plate.

5,546,764

ABSORPTION PROCESS FOR RECOVERING ETHYLENE AND HYDROGEN FROM REFINERY AND PETROCHEMICAL PLANT OFF-GASES

Yuv R. Mehra, The Woodlands, Tex., assignor to Advanced Extraction Technologies, Inc., Houston, Tex.

Filed Mar. 3, 1995, Ser. No. 398,554

Int. Cl.[6] F25J *3/00;* **C07C** *7/00*

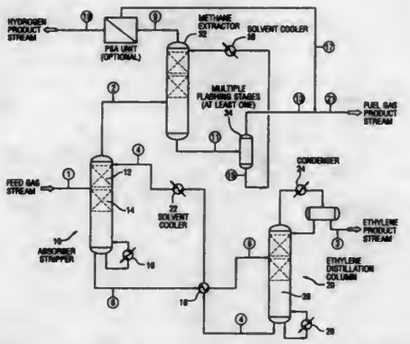
U.S. Cl. 62—625 **21 Claims**

1. A continuous process for recovering ethylene from a feed gas stream that is comprised of ethylene, methane and heavy hydrocarbons, the process comprising the steps of:

introducing the feed gas stream, in the absence of an external absorption solvent, to an absorber stripper;

contacting the feed gas stream with an absorption solvent stream comprised of heavy hydrocarbons in the absorber stripper, wherein the section of the absorber stripper above the feed point is the absorption section and the section of the absorber stripper below the feed point is the stripping section, to produce an absorber stripper overhead gas stream comprised of methane and an absorber stripper bottoms stream comprised of the heavy hydrocarbons and ethylene;

fractioning the absorber stripper bottoms stream in an ethylene distillation column to produce an overhead stream comprising ethylene and heavy hydrocarbons that is the ethylene product stream, and a liquid bottoms stream comprising heavy hydrocarbons that are derived from the feed gas stream;



adjusting the reflux and reboil rates of the ethylene distillation column to control the bottoms inventory within a specified range;

feeding the liquid bottoms steam from the ethylene distillation column to the absorber stripper as the absorption solvent stream; and

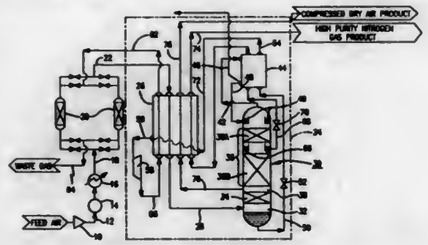
adjusting the flow rate of the liquid bottoms stream from the ethylene distillation column to the absorber stripper to control the concentration of ethylene and heavy hydrocarbons in the absorber overhead gas stream within a specified range.

5,546,765

AIR SEPARATING UNIT

Takashi Nagamura, and Shinji Tomita, both of Hyogo, Japan, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris Cedex, France

Filed Feb. 22, 1995, Ser. No. 392,341
Claims priority, application Japan, Sep. 14, 1994, 6-220174
Int. Cl.[6] F25J 3/02
U.S. Cl. 62—643 **6 Claims**



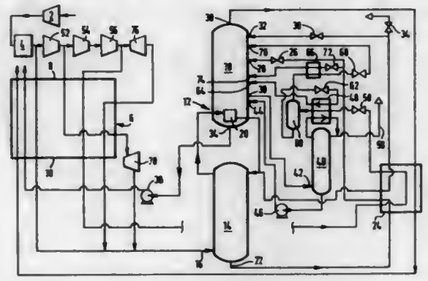
1. In an air separating process in which feed air taken from the atmosphere is cooled down near to its liquefying point by a heat exchanger, after being compressed, and the cooled feed air is introduced into a rectification column, nitrogen gas is separated by rectification from the feed air in said rectification column and is liquefied by condensation in a condenser, and liquid nitrogen liquefied by condensation in said condenser is introduced into the top portion of said rectification column as a reflux liquid, and a part of said reflux liquid is led out of said rectification column, thereby producing a nitrogen product; the improvement wherein the rectifying portion in said rectification column comprises a lower rectifying portion and an upper rectifying portion, and said lower rectifying portion contains a sufficient number of theoretical stages to remove heavy impurities from the feed air so that the total impurity content is less than a predetermined value, and wherein the feed air substantially freed of the heavy impurities is removed from a space (38) between said lower rectifying portion and said upper rectifying portion and is removed from said process as a product gas.

5,546,766

AIR SEPARATION

Paul Higginbotham, Guildford, United Kingdom, assignor to The BOC Group plc, Windlesham, United Kingdom

Filed May 22, 1995, Ser. No. 446,998
Claims priority, application United Kingdom, May 27, 1994, 9410696
Int. Cl.[6] F25J 3/02
U.S. Cl. 62—645 **19 Claims**



1. A method of separating air comprising:

compressing and purifying the air;

rectifying a first stream of compressed purified air in a double rectification column comprising a higher pressure column and a lower pressure column;

withdrawing oxygen-rich and nitrogen-rich product streams from the double rectification column;

rectifying in an argon rectification column a stream of argon-enriched fluid withdrawn from the lower pressure column so as to obtain argon-rich vapour at the head of the argon rectification column;

condensing at least some of the said argon-rich vapour and employing at least some of the resulting condensate in the argon rectification column as reflux;

withdrawing an argon-rich product stream from the argon rectification column;

partially reboiling a second stream of compressed, purified air in a liquid state at a pressure greater than that at the top of the lower pressure column but less than that at the top of the higher pressure column so as to form an oxygen-enriched liquid and an oxygen-depleted vapour;

disengaging the oxygen-enriched liquid from the oxygen-depleted vapour;

condensing a stream of the oxygen-depleted vapour; and

introducing the condensed oxygen-depleted vapour stream into the lower pressure rectification column;

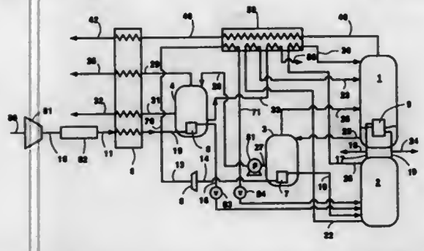
the partial reboiling of the second stream of air being performed by indirect heat exchange thereof with said condensing argon-rich vapour.

5,546,767

CRYOGENIC RECTIFICATION SYSTEM FOR PRODUCING DUAL PURITY OXYGEN

James R. Dray, Kenmore; David R. Parsnick, Tonawanda; Theodore F. Fisher, Amherst, and Michael W. Wisz, Tonawanda, all of N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.

Filed Sep. 29, 1995, Ser. No. 536,589
Int. Cl.[6] F25J 3/02
U.S. Cl. 62—646 **8 Claims**



1. A method for producing lower purity oxygen and higher purity oxygen comprising:

(A) at least partially condensing a first feed air portion and passing the resulting first feed air portion into a higher pressure column of a double column which also comprises a lower pressure column;

(B) at least partially condensing a second feed air portion, having a pressure less than that of the first feed air portion, and passing the resulting second feed air portion into the higher pressure column;

(C) separating feed air within the double column by cryogenic rectification to produce first oxygen-richer fluid and nitrogen-richer fluid;

(D) passing first oxygen-richer fluid from the double column into a first auxiliary column and separating the first oxygen-richer fluid within the first auxiliary column by cryogenic rectification to produce second oxygen-richer fluid having an oxygen concentration greater than that of the first oxygen-richer fluid;

(E) passing second oxygen-richer fluid from the first auxiliary column into a second auxiliary column and separating second oxygen-richer fluid within the second auxiliary column by cryogenic rectification into lower purity oxygen, having an oxygen concentration which is greater than that of the first oxygen-richer fluid and less than that of the second oxygen-richer fluid, and into higher purity oxygen, having an oxygen concentration greater than that of the lower purity oxygen; and

(F) recovering lower purity oxygen and higher purity oxygen from the second auxiliary column.

5,546,768

CIRCULAR SLIVER KNITTING MACHINE HAVING A MANIFOLD FOR CONTROLLING MULTIDIRECTIONAL AIRFLOW

Michael K. Kuhrau, and Donald C. Fosselman, both of Orangeburg, S.C., assignors to Mayer Industries, Inc., Orangeburg, S.C.

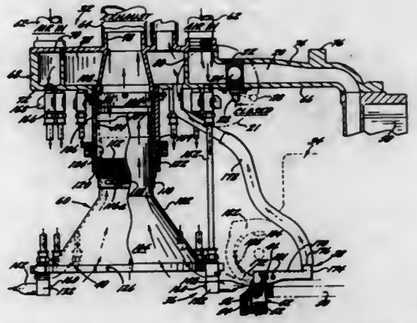
Filed Oct. 6, 1995, Ser. No. 540,060
Int. Cl.[6] D04B 9/14
U.S. Cl. 66—9 B **10 Claims**

1. A circular sliver knitting machine comprising:

a frame;

a needle cylinder rotatably supported on said frame;

a plurality of needles supported in said needle cylinder for rotational movement about an axis therewith and vertical movement parallel to the axis of rotation thereof;



a plurality of card units at radially spaced locations along the rotational path of said needle cylinder to deliver sliver fibers to said needles during movement thereof;

a yarn feeding station adjacent each of said card units for feeding yarn to said needles;

a plurality of sinkers cooperating with said needles for forming the yarn and the sliver fibers into knitted fabric;

air supply means for supplying air to said circular sliver knitting machine;

a first air nozzle unit cooperating with each of said card units for directing air along a path generally radially outward toward said needles;

a second air nozzle unit cooperating with each of said card units for directing air along a path generally radially inward toward said needles; and

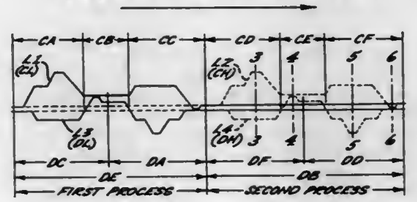
air distributing means for distributing air received from said air supply means to at least one of said first air nozzle unit and said second air nozzle unit, wherein a first selected fabric pattern is obtained by directing air flow to said first air nozzle unit, a second selected fabric pattern is obtained by directing air flow to said second air nozzle unit, and a third selected fabric pattern is obtained by directing air flow to both said first and second air nozzle units.

5,546,769

APPARATUS FOR KNITTING A DOUBLE-KNIT FABRIC HAVING NON-RUN AND STRETCHABILITY CHARACTERISTICS

Yoshiaki Igarashi, and Yoshiro Ito, both of Hyogo, Japan, assignors to Precision Fukuhara Works, Ltd., Japan

Division of Ser. No. 181,343, Jan. 14, 1994. This application May 24, 1995, Ser. No. 449,821
Int. Cl.[6] D04B 9/06
U.S. Cl. 66—20 **1 Claim**



1. An interlock circular knitting machine for knitting a double-knit fabric comprising

two types of cylinder needles alternately mounted for vertical sliding movement between high-tucking, holding, clearing and welt positions,

two types of dial needles alternately mounted for radial sliding movement between clearing, high-tucking and holding positions,

yarn feeding means for feeding at least one yarn to said cylinder needles and at least one yarn to said dial needles, and

needle selecting and controlling means for selecting, moving and controlling said two types of cylinder and dial needles through first and second processes said needle selecting and controlling means including means for selecting one type of said cylinder and dial needles in said first process and for selecting the other type of said cylinder and dial needles in said second process, said needles selecting and controlling means including means for moving said one type of cylinder needles successively to and from a cylinder needle high-tucking position, a cylinder needle holding position and a cylinder needle clearing position in said first process while maintaining the other type of cylinder needles in a cylinder needle welt position and means for moving said one type of dial needles successively to and from a dial needle clearing position and a dial needle high-tucking position in said first process while maintaining the other type of dial needles in a dial needle holding position, said needle selecting and controlling means further including means for moving said other type of cyliner needles to and from the cylinder needle high-tucking position, holding position and clearing position in said second process while maintaining said one type of cylinder needles in the cyliner needle welt position and means for moving said other type of said dial needles to and from the dial needle clearing position and the dial needle high-tucking position in said second process while maintaining said one type of said dial needles in the dial needle holding position.

5,546,770

KNITTING PARTS OF KNITTING MACHINE

Takanori Nanya, Sayama, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

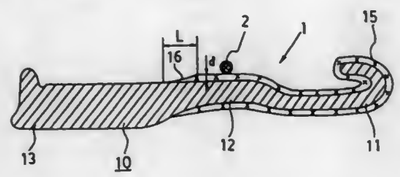
PCT No. PCT/JP94/00566, § 371 Date Nov. 30, 1994, § 102(e) Date Nov. 30, 1994, PCT Pub. No. WO94/23105, PCT Pub. Date Oct. 13, 1994

PCT Filed Apr. 5, 1994, Ser. No. 338,526

Claims priority, application Japan, Apr. 6, 1993, 5-022458

Int. Cl.[6] D04B *15/00*

U.S. Cl. 66—116 **2 Claims**



1. An improved knitting machine having a plurality of parts each of said parts having at least a portion thereof in contact with knitting yarn when the parts are connected to the knitting machine to perform knitting, at least one of said plurality of parts including an outer surface covering of hard carbon film having a preset film thickness on a portion of the surface of a base material of the part frequently in contact with the knitting yarn, the improvement comprising:

a film thickness changing area found on the surface of said parts where a thickness of the hard carbon film decreases gradually in a direction from an area where the covering of the hard carbon film having the preset thickness is formed to an area where said outer surfaces covering is not formed on the surface of said parts.

5,546,771

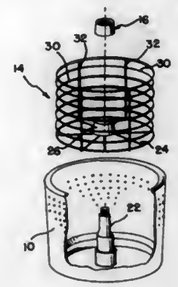
COMBINATION CLOTHES & DISH WASHER & DRYER

George D. Bonar, P.O. Box 8425, New York, N.Y. 10116

Filed Sep. 30, 1994, Ser. No. 314,294

Int. Cl.[6] D06F *39/00*

U.S. Cl. 68—4 **7 Claims**



1. A conversion kit for converting a clothes washer to a dishwasher, comprising;

an open mesh basket having an open mesh bottom with a connector for mounting said open mesh basket on a washing machine agitator spindle, an open top and an open mesh cylindrical wall;

a plurality of divider means for inserting in said open mesh basket, each of said plurality of said divider means having an open mesh disc shape with a plurality of vertical finger means for supporting dishware, where one of said divider means is inserted in the open mesh basket to receive dishware and another of said divider means is inserted to provide said plurality of divider means separated by dishware; and,

a plurality of vertical dividers for separating dishware, where said vertical dividers radiate from said mesh dish shape divider means for mounting said open mesh basket on a washing machine agitator spindle.

5,546,772

TUB DOOR SYSTEM FOR A TOP LOADING HORIZONTAL AXIS AUTOMATIC WASHER

Jean-Paul D. Merlin, Lincoln Township, Berrien County; Brenner M. Sharp, St. Joseph; Eric K. Farrington, Lincoln Township, Berrien County, and Vonda K. Johnston, St. Joseph, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Continuation-in-part of Ser. No. 236,814, May 2, 1994, Pat. No. 5,398,528, and Ser. No. 236,822, May 2, 1994, Pat. No. 5,469,596, and Ser. No. 236,830, May 2, 1994, Pat. No. 5,448,900. This application Jul. 25, 1994, Ser. No. 279,730

Int. Cl.[6] D06F *37/28*

U.S. Cl. 68—24 **20 Claims**

1. An automatic washer comprising:

an imperforate tub having an access opening for accessing the interior of said tub;

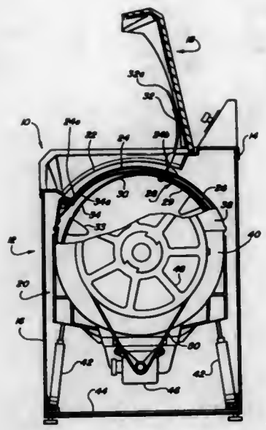
a perforate wash basket disposed within said tub and being rotatable about a horizontal axis;

a tub door having a from edge and a rear edge and being slidably supported for selectively closing said access opening, said tub door being positionable in a closed and an open position;

a spring interconnected with said tub door for biasing said tub door toward said open position;

a catch for selectively engaging said tub door in a closed position;

a rib extending inwardly from the wash tub toward the wash basket, said rib being positioned such that said rib deflects said rear edge of said tub door toward said wash basket when said tub door is biased to said open position; and



a tub door hook extending from said wash basket for engaging said rear edge of said tub door when said rear edge is deflected toward said wash basket by said rib,

wherein when said rear edge is deflected toward said wash basket by said rib, said tub door hook engages said rear edge of said tub door when said tub door hook is rotated past said read edge of said tub door such that rotation of said wash basket drives said tub door to a closed position.

5,546,773

DOOR OPENING/CLOSING APPARATUS FOR A WASHING MACHINE

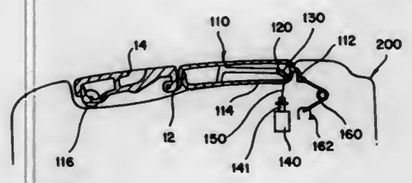
Keun-Byung Lee, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Sep. 20, 1994, Ser. No. 309,068

Claims priority, application Rep. of Korea, Sep. 21, 1993, 93-19062

Int. Cl.[6] D06F *39/14*

U.S. Cl. 68—196 **17 Claims**



1. A washing machine comprising:

a container having a washing agitator;

a door mounted on said container for movement between an open position and a closed position; and

a door opening/closing apparatus comprising:

a power-driven mechanism operably connected to said door for moving said door from a closed position to an open position and from an open position to a closed position, and a resilient member operably connected to said door for storing energy during movement of said door to said open and closed positions and releasing said stored energy in response to arrival of said door at said open and closed positions to maintain said door biased in said open and closed positions.

5,546,774

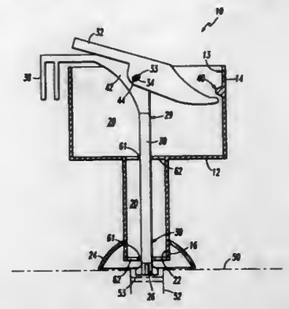
PRE-RINSE DISPENSER

Matilda Thompson, R.D. 2, Box 420 Eighty Four, Pa. 15330, and W. Grey Williams, Pittsburgh, Pa., assignors to Matilda Thompson, Eighty Four, Pa.

Filed Jan. 5, 1995, Ser. No. 369,095

Int. Cl.[6] D06F *39/08*

U.S. Cl. 68—208 **17 Claims**



1. A dispenser device for use with an automatic washing machine operable through a sequence of washing operations in a wash cycle and a wash tub having a drain, the device comprising:

an elongated housing having a drain passage disposed therethrough; said housing further having a first end provided with a first opening and a second end provided with a second opening, wherein said openings are both connected to said drain passage;

a sealing gasket provided around said housing second end proximate said second opening;

means for mounting said device within the wash tub;

means for selectably placing the device into a sealed and an unsealed position, wherein when said device is in said sealed position, said sealing gasket makes sealing contact with the wash tub around the wash tub drain such that .fluid that enters said first opening travels through said drain passage down the wash tub drain while fluid that enters the wash tub is stored in the wash tub and prevented from travelling down the wash tub drain by the device; and wherein when said device is in said unsealed position, said sealing gasket is separated from the wash tub such that fluid that enters the wash tub and fluid that enters said first opening travels down the wash tub drain;

fluid communication means between said housing first opening and the automatic washing machine; and

a valve means for said fluid communication means of said device, wherein said valve means allow fluid to travel alternatively into said first opening and into the wash tub.

5,546,775

LOCKING DEVICE FOR THE AUTOMATIC SHIFT LEVER OF A CAR

Chi-Yuan Lee, Back Building, No. 740-7, Chung-Cheng Rd., Hsin-Chuang; Taipei, Taiwan

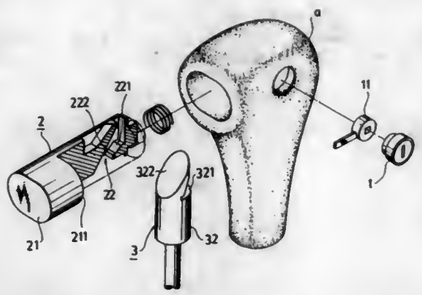
Filed Jan. 18, 1995, Ser. No. 374,300

Int. Cl.[6] F16H *57/00*

U.S. Cl. 70—201 **8 Claims**

1. A lock device for an automatic shift lever of a car comprising:

a control link extending within a knob provided on a top of an automatic shift lever, said control link including a first end protruding from a lateral side of said knob that forms a push button, said push button having an external diameter that is larger than an adjacent portion of said control link such that said push button defines a protruding portion, said control link being formed with a groove at a position spaced from said protruding portion, said groove including a first bevelling



surface and a fixing member on one side thereof opposite to said first bevelling surface;

a shift control rod extending within said knob, said shift control rod being provided at a top end thereof with a sliding block that is received in said groove, said sliding block being formed with a second bevelling surface that is arranged juxtaposed to said first bevelling surface and is inclined at an angle equal to that of said first bevelling surface, said sliding block further including a limiting groove which receives said fixing member before operation of said control link; and

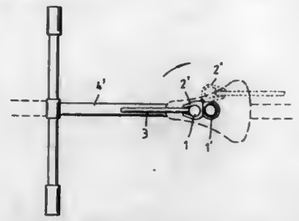
a stop piece selectively rotatably mounted within said knob between at least a first, release position wherein said stop member permits said control link to be shifted within said knob through manual force applied to said push button which causes said fixing member to be released from said limiting groove, said second bevelling surface to slide along said first bevelling surface and said shift control rod to move downward to establish a shiftable state and a second, locking position wherein said stop member abuts said control link to prevent shifting of said control link within said knob.

5,546,776

PADLOCK AND LOCK HOLDER UNIT

Min-Hsiung Sun, No. 761, Sec. 2, Ta-Tung Rd., Tainan, Taiwan, and Wang-Hsing Lin, No. 24, Alley 14, Lane 291, Yen-Cheng Rd., Tainan, Taiwan

Filed Nov. 21, 1994, Ser. No. 345,741
Int. Cl.[6] E05B *67/22;45/00*
U.S. Cl. 70—233 **1 Claim**



1. A padlock and lock holder unit comprising a padlock and a lock holder, said padlock including a casing; said casing having a base, a top having a shorter length than said base arranged on said base, said top having two side walls with concave surfaces; a shackle having two arms fastened into said bottom of said casing at said sides of said top of said casing where said concave surfaces have a curvature matching that of said arms of said shackle for closely receiving sides of said arms; said padlock further including a circuit board, a circuit board supporting frame fastened to said casing by screws for holding said circuit board inside said casing, said circuit board comprising a battery, a light emitting diode, a buzzer, and a press button extended out of one of said side walls of said top of said casing adjacent said shackle so that said press button cannot be pressed when said shackle is fastened into said casing, said light emitting diode and said buzzer being exposed through holes in said top of said casing, said circuit board supporting frame having a sliding door for accessing said battery; said circuit board being set to an alarm mode when said press button is depressed for turning on said light emitting diode for five seconds, and disarmed when said press button is depressed again for turning on said light emitting diode for about ten seconds; and

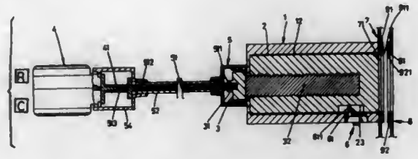
said lock holder fixedly fastened to a vehicle for holding said padlock when said padlock is not in use, said lock holder comprising a fixed clamping frame, a movable holder frame, a screw bolt, and a locknut, said fixed clamping frame comprising a toothed clamping wall mounted around a vehicle frame, two parallel walls with screw holes extended from two opposite ends of said toothed clamping wall and fastened together by screws, and a barrel longitudinally disposed at one side and having a corrugated top edge, said corrugated top edge including a series of radially extending grooves and ridges, said movable holder frame comprising a socket portion for holding said casing of said padlock, and a shackle coupling portion for holding said shackle, said socket portion having a barrel longitudinally disposed at one side having a corrugated bottom edge, said corrugated bottom edge including a series of radially extending grooves and ridges meshed with said series of radially extending grooves and ridges of said corrugated top edge of said barrel of said fixed clamping frame, said barrel of said fixed clamping frame and said barrel of said movable holder frame being longitudinally connected together by said screw bolt and said locknut, said shackle coupling portion having an arched recess for holding said shackle, said movable holder frame rotatable about said screw bolt for changing an angular position of said padlock relative to said vehicle frame when said locknut is loosened from said screw bolt.

5,546,777

REMOTE-CONTROLLED LOCK DEVICE FOR MOTOR VEHICLES

Chao-Ming Liu, No. 82, Lin 4, Mao Shang Tsun, Wu Ku Hsiang, Taipei Hsien, and Chih-Lung Lin, No. 289, Yueh Mei Tan, Yueh Tan Tsun, Hsing Kang Hsiang, Chia I Hsien, both of, Taiwan

Filed May 24, 1995, Ser. No. 449,547
Int. Cl.[6] E05B *47/00*
U.S. Cl. 70—257 **3 Claims**



1. A remote-controlled lock device comprising:

a striking plate fixedly secured to a fixed part of a motor vehicle, said striking plate comprising a locking hole, and a plurality of mounting holes respectively fastened to said fixed part of said motor vehicle by rivets;

a mounting plate fixedly secured to a movable part of said motor vehicle for permitting said movable part to be locked in a closed position closed on said fixed part of said motor vehicle, said mounting plate comprising a center hole aligned with a hole on said movable part of said motor vehicle and the locking hole on said striking plate, a plurality of screw holes respectively aligned with respective through holes on said movable part of said motor vehicle;

a casing fixedly secured to said mounting plate, said casing comprising a plurality of longitudinal screw holes respectively connected to the screw holes on said mounting plate and the through holes on said movable part of said motor vehicle, a longitudinal center hole aligned with the center hole on said mounting plate, a locating pin at a bottom side thereof projecting into the longitudinal center hole of said casing, an externally threaded coupling tube at one end, and a side opening;

a lock bolt disposed in the longitudinal center hole of said casing, said lock bolt having a longitudinal screw hole at one end, a longitudinal locating slot and a longitudinal sliding slot on the periphery, said longitudinal sliding slot receiving said locating pin;

a reversible motor mounted inside said motor vehicle and having an output shaft;

a transmission rod having a screw rod section at one end threaded into the longitudinal screw hole on said lock bolt and a coupling hole at an opposite end coupled to the output shaft of said reversible motor;

a remote controller;

control circuit connected to said reversible motor and controlled by said remote controller to turn said reversible motor forwards and backwards; and

a two-way switch mounted in the side opening on said casing and connected between said control circuit and said reversible motor, said two-way switch having a control lever inserted into the longitudinal locating slot on said lock bolt;

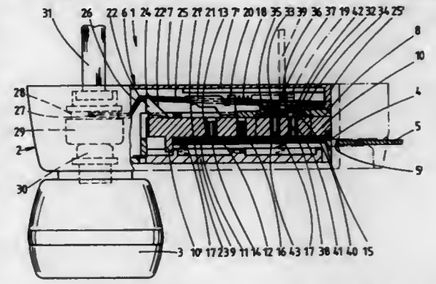
wherein when said reversible motor is turned in one direction by means of the control of said remote controller, said transmission rod is turned in the same direction, causing said lock bolt to be driven into the center hole on said mounting plate, the corresponding hole on said movable part of said motor vehicle, the locking hole on said striking plate, and a corresponding hole on said fixed part of said motor vehicle to lock said movable part of said motor vehicle in the closed position closed on said fixed part of said motor vehicle, and at the same time the control lever of said two-way switch is driven by said lock bolt to cut off power supply from said reversible motor; when said reversible motor is turned in the reversed direction by means of the control of said remote controller, said transmission rod is turned in the same direction, causing said lock bolt to be moved away from said fixed part of said motor vehicle, said striking plate, said movable part of said motor vehicle, and said mounting plate and received back inside said casing to unlock said movable part of said motor vehicle from said fixed part of said motor vehicle, and at the same time the control lever of said two-way switch is driven by said lock bolt to cut off power supply from said reversible motor.

5,546,778

LOCKING SYSTEM COMPOSED OF A LOCK AND SEVERAL KEYS

Armin Eisermann, Velbert, Germany, assignor to Schulte-Schlagbaum Aktiengesellschaft, Velbert, Germany

PCT No. PCT/EP93/01010, § 371 Date Nov. 2, 1994, § 102(e) Date Nov. 2, 1994, PCT Pub. No. WO93/23645, PCT Pub. Date Nov. 25, 1993
PCT Filed Apr. 27, 1993, Ser. No. 335,837
Claims priority, application Germany, May 18, 1992, 42 16 421.4
Int. Cl.[6] E05B *47/00*
U.S. Cl. 70—276 **5 Claims**



1. A closure system composed of a lock and several keys, in which a closing of the lock is determined by magnetically controlled tumblers, and wherein the closing of the lock can be modified by a change of a closure code of the lock, said several keys including a first key and subsequent keys each of which has magnetized regions, the lock comprising

a plurality of permanent magnets, a slide having openings for receiving individual ones of said magnets, a blocking plate for engagement with individual ones of said magnets to provide blocking positions whereby the blocking plate blocks movement of said slide, means for receiving said first key and allowing the key to be brought into position parallel to said slide for magnetically urging individual ones of said magnets to be displaced in a direction transverse to the direction of movement of said slide, and a tumbler disk having a face parallel to a plane of movement of said slide and having within said face insertion openings for receiving individual ones of said magnets;

wherein said tumbler disk is rotatable relative to said slide for admitting and excluding insertion of various ones of said magnets into said insertion openings;

said lock is operable with said subsequent keys wherein said subsequent keys have arrays of magnetized regions different from each other and from an array of the magnetized regions of said first key, each of said keys being operative with an individual closure code;

the closure code of the lock corresponds initially to the code of said first key and can be varied by a repositioning of said tumbler disk within the lock to the code of one of said subsequent keys;

the closure code of the lock is formed by individual ones of said permanent magnets which are arranged in the openings of said slide and are displaceable out of their blocking positions with respect to said blocking plate by means of correspondingly positioned ones of said magnetized regions of one of said keys which is brought into its position parallel to said slide;

said slide is displaceable into a lock-open position, and a portion of said permanent magnets are developed as recoding magnets; and

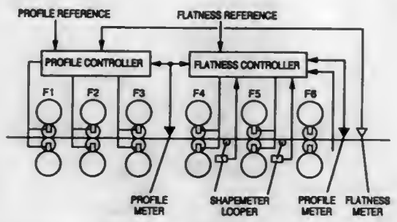
said tumbler disk is developed as an adjusting part associated with individual ones of the recoding magnets in the manner that an insertion opening of said disk for an individual one of said recoding magnets is displaceable out of an aligned position of a respective individual recoding magnet.

5,546,779

INTERSTAND STRIP GAUGE AND PROFILE CONROL

Vladimir B. Ginzburg, Pittsburgh, Pa., assignor to Danieli United, Inc., and International Rolling Mill Consultants, Inc., both of Pittsburgh, Pa.

Filed Mar. 24, 1994, Ser. No. 217,245
Int. Cl.[6] B21B *37/06*
U.S. Cl. 72—11.4 **9 Claims**



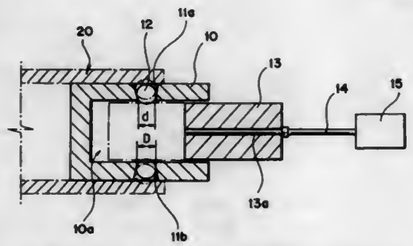
1. Apparatus for controlling the thickness and profile of a metal strip during hot rolling in a multi-stand hot rolling mill, comprising a looper operable in adjustable height and constant height modes located between two adjacent mill stands and movable between (a) a strip threading position in which the looper height is adjusted for providing constant strip tension during threading above a rolling pass line of the mill and (b) a rolling position in which the looper height is maintained constant with the strip substantially in the rolling pass line at an elevation optimum for strip profile control and in which position a desired strip tension is maintained, means to adjust the looper height in the strip threading position, means to control the looper at a constant height in a rolling position, and a thickness and profile gage adjacent the looper and including means to project an X-ray beam onto the strip during rolling of the strip, said thickness and profile gage being in operative association with the strip when the looper is in the lowered, rolling position and the means to hold the strip at a constant height during rolling is effective to maintain the strip at an angle of substantially 90° to the X-ray beam during rolling of the strip, thereby minimizing measurement errors due to variable angularity between the X-ray beam and the strip.

5,546,780

METHOD AND APPARATUS FOR FORMING A LUBRICANT, CONDUCTING GROOVE IN A CYLINDRICAL SURFACE OF A BEARING MEMBER

Ho-Chul Lee, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Oct. 28, 1994, Ser. No. 330,787
Claims priority, application Rep. of Korea, Oct. 28, 1993, 93-22603
Int. Cl.[6] B21H *7/18*
U.S. Cl. 72—75 **9 Claims**



1. Apparatus for forming a lubricant-conducting groove in an internal cylindrical face of a bearing member, comprising:

a hollow ball carrier having a cylindrical outer surface and at least one hole extending radially from said outer surface to an inner surface of said carrier, a ball freely rotatably mounted in said at least one hole, said at least one hole being tapered from a largest cross-section thereof at said outer surface to a smallest cross-section at said inner surface, said smallest cross-section being small enough to prevent travel of said ball completely therethrough and large enough to enable an inner portion of said ball to project therethrough and into an interior space of said carrier defined by said inner surface, said ball being radially movable relative to said carrier with reference to a longitudinal axis thereof, said carrier being positionable relative to said bearing member such that said at least one ball is in opposing relationship to the cylindrical face of the bearing member;

said ball carrier and cylindrical face being relatively movable longitudinally along said axis and rotationally about said axis; and

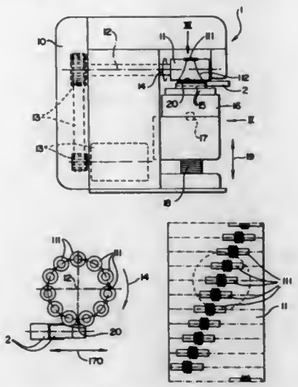
a pusher member sized to enter said interior space for engaging said inner portion of said ball and pushing said ball radially outwardly against the cylindrical face so that said ball rolls along the cylindrical face to form a helical groove therein during said relative longitudinal and rotational movements.

5,546,781

PROCESS FOR THE PRODUCTION OF A TOOTHED RACK VIA COLD FORMING, THE RACK PRODUCED THEREBY, AND AN APPARATUS FOR PRACTICING THE PROCESS

Hans Krapfenbauer, Kusnacht, Switzerland, assignor to Ernst Grob AG, Mannedorf, Switzerland

Filed Jan. 21, 1994, Ser. No. 183,873
Claims priority, application Switzerland, Feb. 25, 1993, 00571/93
Int. Cl.[6] B21B *21/00;1/00;19;00*
U.S. Cl. 72—191 **12 Claims**



1. A method for cold forming toothings on a rack, said method comprising:

initiating relative motion between a workpiece and a rolling head, said rolling head having a plurality of freely rotating rollers;

drivingly revolving said rolling head about a rolling head axis;

relatively moving a workpiece blank, to be formed into said toothings on said rack, transversely to said rolling head axis, during said relative motion with reference to said rolling head axis so that said rollers, rotatably journalled in said rolling head and revolving with said rolling head in a planetary manner, engage said workpiece with said rollers, each of said rollers having one tooth space-form-type forming ring rib;

performing in quick and overlapping succession, a single rolling process relative to one tooth space form; and

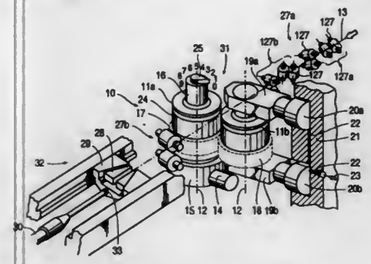
displacing, predominantly from a bottom land area of the toothings to a top land area of the toothings, workpiece material, as a result of the cold forming of said workpiece blank, via said forming ring ribs of said rollers of said rolling head, wherein during said engaging step, each of said rollers engages said workpiece blank so as to produce only one of the toothings being formed on said workpiece blank via said rollers.

5,546,782

MACHINE TO SHARPEN BARS TO A POINT

Bruno Di Giusto, Udine, Italy, assignor to Danieli & C. Officine Meccaniche SpA, Buttrio, Italy

Filed Sep. 20, 1994, Ser. No. 309,155
Claims priority, application Italy, Sep. 28, 1993, UD93A0195
Int. Cl.[6] B21B *31/07;15/00*
U.S. Cl. 72—240 **13 Claims**



1. A machine to sharpen bars to a point, comprising:

at least one sharpening assembly comprising a pair of circumferentially tangent reduction rolls having parallel axes, each of said rolls containing, at a plane of positioning of a bar, a groove having, in a circumferential direction, at least two different sections, wherein said reduction rolls are rotatable about their axes so as to be able to effect a desired reduction of section of said bar by said reduction rolls;

an assembly for displacement of said bar in relation to said at least one sharpening assembly;

at least one upstream rolling assembly upstream of said at least one sharpening assembly; and

at least one downstream rolling assembly downstream of said at least one sharpening assembly, each of said at least one upstream rolling assembly and said at least one downstream rolling assembly having a pair of rolls having axes at a right angle to the axes of said reduction rolls.

5,546,783

CRIMP SEALING OF TUBES FLUSH WITH OR BELOW A FIXED SURFACE

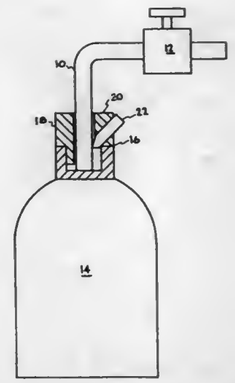
Jon E. Fischer, Concord; Don Walmsley, and P. Derek Wapman, both of Livermore, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 31, 1994, Ser. No. 251,421
Int. Cl.[6] B21D *28/00*
U.S. Cl. 72—325 **8 Claims**

1. A tube sealing apparatus comprising:

a pressure vessel having ductile metal tubes to be sealed attached thereto, wherein said pressure vessel has a fixed surface surrounding the base of said tube at said pressure vessel;

an anvil for placement against said tubes to be sealed, wherein said anvil is slanted for simultaneous sealing of multiple said tubes, said anvil being slanted relative to the tubes in a plane



extending transverse to the tube axes such that a surface of said anvil contacting said tubes extends nonparallel with a line extending through the centers of the tubes in said plane;

a die guide located on a side of said tubes that is opposite from said anvil; and

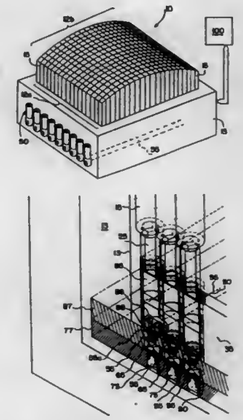
a pinch-off die inserted into said die guide, wherein said pinch-off die is positioned at an angle less than 90 degrees with respect to the axes of said tubes to be sealed, wherein said die guide is configured so that said pinch-off die contacts said base of said tubes below said fixed surface surrounded by said pressure vessel.

5,546,784

ADJUSTABLE FORM DIE

Edwin G. Haas, Seaford, and Martin Kesselman, Commack, both of N.Y., assignors to Grumman Aerospace Corporation, Los Angeles, Calif.

Filed Dec. 5, 1994, Ser. No. 349,434
Int. Cl.[6] B21D *37/02;37/14*
U.S. Cl. 72—413 **27 Claims**

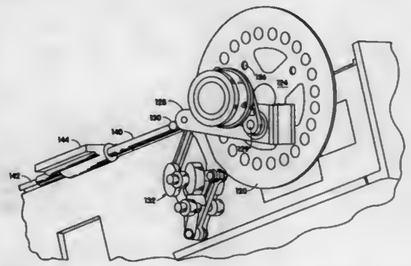


1. A self-adjusting die for forming a three-dimensional contoured die surface comprising:

a) a plurality of individual pin means defining a matrix of pin rows and pin columns, each said pin means independently movable in an extended and retracted position along a single axis;

(b) control means for generating desired positional information for each of said plurality of individual pins of said matrix;
(c) drive means having a drive motor and a first drive shaft for each row/column of said matrix of pins, each said first drive shaft having a plurality of worm gears rotating therewith and spaced apart at each pin location; and
(d) torque engaging means corresponding to and operatively connected with each said pin means, each said torque engaging means selectively engaging said pin means to said first drive shaft to selectively supply torque to said corresponding pin means, said drive means and said torque engaging means being responsive to said positional information generated by said control means for providing simultaneous and independent axial movement of each said pin means of said matrix along each respective said single axis.

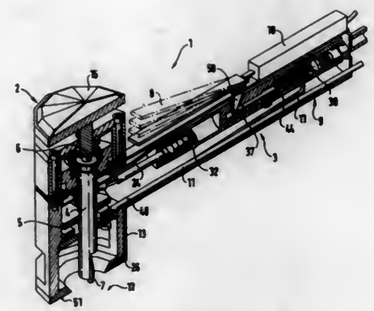
5,546,785
CRANK MECHANISM FOR CAN BODY MAKER APPARATUS
Grayeme E. Platt, Pine; Robert D. Anderson, Littleton, both of Colo., and P. Michael Mueller, Suwanee, Ga., assignors to Aluminum Company of America, Pittsburgh, Pa.
Filed May 5, 1995, Ser. No. 435,358
Int. Cl.[6] B21J *9/18*
U.S. Cl. 72—450 **17 Claims**



1. In combination with a can body maker apparatus including ram means for the forming of a can body mounted for reciprocal motion within a can body maker frame, an improved drive system for effecting the reciprocal motion of the ram, said drive system comprising a crank having a first half and a second half, both being adapted for rotational movement about a first axis; a brake disk means fixedly mounted on said first half, a crank arm mounted on said second half, said brake disk means and said crank arm defining therebetween a second axis; whereby said brake disk means and said crank arm are adapted to support therebetween a connecting rod rotatable about said second axis and in mechanical communication with the ram means.

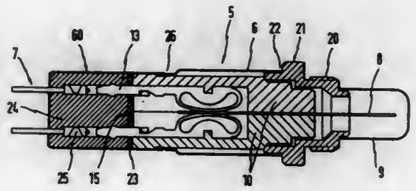
5,546,786
SHAPING DEVICE
Martin Fugel, Friedrichshafen, Germany, assignor to MV Marketing und Vertriebs - GmbH & Co. KG., Germany
Filed Aug. 30, 1994, Ser. No. 297,970
Claims priority, application Germany, Aug. 30, 1993, 9312980 U
Int. Cl.[6] B21D *1/12*
U.S. Cl. 72—457 **19 Claims**

1. A device for deforming a thin-walled component, comprising:
a holding member adapted to be welded to the component,
a pulling means for applying a pulling force to said holding member, said pulling means having a motor-actuation means whereby after said holding member has been welded to the component, a part of the component which is to be shaped can



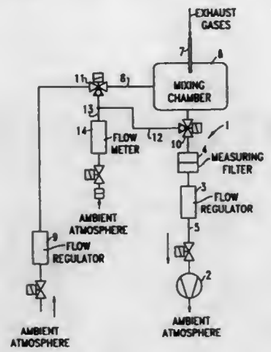
be brought into a predetermined limit position by motor actuation of said pulling means, and
said motor-actuation means further being operable to disengage said welded holding member from the component.

5,546,787
HOUSING FOR GAS SENSORS
Edelbert Häfele, Karlsruhe, and Walter Seeger, Gaggenau, both of, Germany, assignors to Roth-Technik GmbH & Co., Gaggenau, Germany
PCT No. PCT/EP93/00376, § 371 Date Apr. 22, 1994, § 102(e) Date Apr. 22, 1994, PCT Pub. No. WO93/16379, PCT Pub. Date Aug. 19, 1993
PCT Filed Feb. 16, 1993, Ser. No. 234,991
Claims priority, application Germany, Feb. 18, 1992, 42 04 850.8
Int. Cl.[6] G01N *27/407*
U.S. Cl. 73—23.31 **25 Claims**



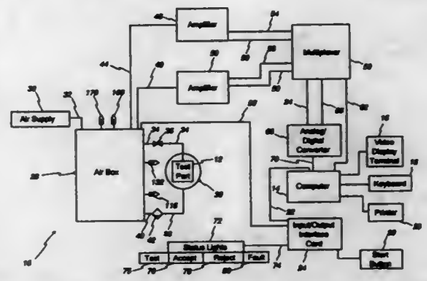
1. A housing for gas sensors having lambda probes for detecting the content of pollution or oxygen or both in exhaust from internal-combustion engines, comprising: a protective outer housing with electric connections at one end thereof for a sensor mounted on a plate-like member; a perforated protective cap at the other end of said protective outer housing and accommodating said sensor for exposure to a gas being analyzed; a ceramic shape holding means for securing to said electric connections; said ceramic shape comprising at least two halves, each of said halves having a slot at said one end of said outer housing; contacts resting flat against a base and walls of each said slot with one side elevated above an open side; each half of said ceramic shape also accommodating a depression extending from said one end to said other end of said protective outer housing; with said plate-like member fitting into the depressions of said two halves of said ceramic shape; at least projecting areas of said contacts being in said depression, said connections being connected to said contacts.

5,546,788
METHOD AND APPARATUS FOR MEASURING THE CONCENTRATION OF SOLID PARTICLES (SOOT) IN THE EXHAUST GASES OF INTERNAL COMBUSTION ENGINES
Achim Dickow, Velbert, Germany, assignor to Pierburg GmbH, Neuss, Germany
Filed Jan. 24, 1995, Ser. No. 377,768
Claims priority, application Germany, Feb. 17, 1994, 44 04 947.1
Int. Cl.[6] G01N *37/00*
U.S. Cl. 73—28.01 **9 Claims**



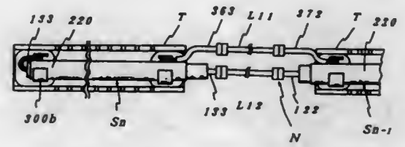
1. Apparatus for determining the concentration of particles in exhaust gases of an internal combustion engine comprising:
a mixing chamber,
a sample line connected to said mixing chamber to supply a flow of exhaust gases to said mixing chamber from an internal combustion engine,
an air line connected to said mixing chamber to supply air to the mixing chamber to mix with and dilute the exhaust gases in the mixing chamber while cooling the exhaust gases,
an air induction line connected to the mixing chamber including means to aspirate the mixed exhaust gases and air from the mixing chamber,
a measurement filter in said air induction line to measure the amount of particles in the mixed exhaust gases and air in the air induction line coming from the mixing chamber,
a first valve in said air line upstream of the mixing chamber and a second valve in said air induction line downstream of said mixing chamber,
a bypass line connected to said air line and said air induction line respectively by said first and second valves,
said first and second valves having respective open and closed states to establish respective first and second operation stages, said bypass line in said first stage being closed-off so that air in said air line flows into said mixing chamber and mixed exhaust gases and air flow from the mixing chamber through the measurement filter in said air induction line, said bypass line in said second stage being connected to said air line and said air induction line to bypass the mixing chamber,
a second air line connected to supply a flow of air to said bypass line during said second stage in an amount which is substantially equal to the flow of exhaust gases to said mixing chamber during said first stage, and
a meter for measuring mass flow of air in said second air line.

5,546,789
LEAKAGE DETECTION SYSTEM
David J. Balke, and Jacques E. Hoffmann, both of Chicago, Ill., assignors to InterTech Development Company, Skokie, Ill.
Continuation of Ser. No. 924,312, Aug. 3, 1992, abandoned. This application May 3, 1994, Ser. No. 237,316
Int. Cl.[6] G01M *3/26;3/32*
U.S. Cl. 73—40 **19 Claims**



1. A leakage detection system for testing a test part for leakage, said leakage detection system comprising:
a first connection line in fluid communication with an interior of the test part;
a sealed test enclosure for enclosing the test part in a substantially pressure sealed environment;
a reservoir means for enclosing a volume of gas;
a second connecting line for providing a gas flow passage between the enclosed volume of the reservoir means and the sealed environment of the sealed test enclosure;
a reference bias flow generator for injecting a reference bias flow of gas into the second connecting line; and
a leak sensor coupled to the second connecting line for sensing an algebraic sum of the reference bias flow of gas and a gas flow between the test enclosure and the reservoir means and for detecting a leak when the algebraic sum of the reference bias flow of gas and a gas flow between the test enclosure and the reservoir means exceeds a predetermined amount.

5,546,790
LOW MOLECULAR WEIGHT ORGANIC LIQUID LEAKAGE DETECTION SYSTEM
Toshio Kudo, Arida; Masaaki Nagai, Amagasaki, and Yasuo Shiraiwa, Yokohama, all of, Japan, assignors to Mitsubishi Cable Industries, Ltd., Hyogo, and Tatsuno Corporation, Tokyo, both of, Japan
Filed Apr. 13, 1995, Ser. No. 422,309
Claims priority, application Japan, Apr. 13, 1994, 6-074912
Int. Cl.[6] G08B *21/00;* **G01M** *3/40*
U.S. Cl. 73—40.500 R **10 Claims**



1. A low molecular weight organic liquid leakage detection system for detecting leaks in a container or pipe, comprising plural sensors, each sensor having the structure of an electrically conducting layer disposed on an electrically insulating surface of a reinforcing core providing mechanical strength to the sensor, where the plural sensors are
(a) installed at possible leakage sites of said container or pipe,

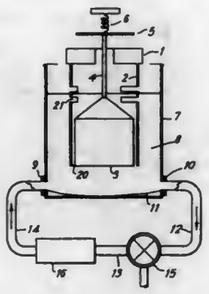
(b) electrically connected in series, and
(c) electrically connected to an electric resistance detector, and each of said sensors
(d) has wire leads and terminals connected to a conductive layer, placed at a plurality of locations on said container or pipe,
(e) is capable of showing an electrical resistance variation upon contact of said conductive layer with a low molecular weight organic liquid leaked out from said container or pipe, and
(f) is detachably connected by mating connector halves as installed on each of the plurality of sensors at the end of wire leads or terminals, such detachable connection of mating connector halves being accomplished in a waterproof or non-waterproof manner.

5,546,791

RHEOMETER

Gerald H. Meeten, Ware, England, assignor to Schlumberger Technology Corporation, Houston, Tex.

Continuation of Ser. No. 66,121, May 26, 1993, abandoned. This application Jan. 19, 1995, Ser. No. 375,062
Claims priority, application United Kingdom, Dec. 4, 1990, 9026294
Int. Cl.[6] G01N *11/14*
U.S. Cl. 73—54.28 **13 Claims**



1. A rheometer for measuring the rheological characteristics of a fluid comprising:
a) a cup for holding the fluid to be measured, the cup having in use an upper and a lower portion;
b) a coaxial rotor and stator arrangement positionable within the upper portion of the cup;
c) means for driving the rotor;
d) means for sensing and measuring the torque effect caused by the fluid; and
e) means for providing a non-laminar and pulsatile flow of fluid through the cup while the torque effect is sensed and measured.

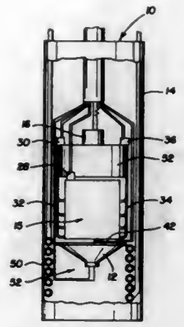
5,546,792

COMPUTERIZED SONIC PORTABLE TESTING LABORATORY

Harold L. Becker, 18906 Grosbeak, Tomball, Tex. 77375, assignor to Harold L. Becker, Tomball, Tex.

Filed Dec. 22, 1994, Ser. No. 363,274
Int. Cl.[6] G01N *33/28;29/02*
U.S. Cl. 73—64.53 **17 Claims**

1. Fluid testing equipment for selecting optimized wax crystal modifiers for use in a waxy crude, said equipment comprising:
a variable frequency generator;
speaker, electrically connected to said variable frequency generator, for broadcasting sound waves through a sample of said waxy crude to be tested;



means for altering the temperature of said sample through a range of temperature from above said waxy crude's initial cloud point to a lower temperature at which all of the wax in said waxy crude is no longer in solution in said crude, said speaker broadcasting continuously as said sample is cooled through said range of temperature;
a microphone, positioned in proximity to said speaker, so that said microphone can receive said sound waves from said speaker;
a microphone amplifier, electrically connected to said microphone, to amplify an electrical signal from said microphone;
a sonic output device, electrically connected to said microphone amplifier; and
a probe, comprising a casing and a sample cavity, defined by the walls of said casing and an upper and lower endplate, and wherein said speaker is contained within said casing, proximate to said cavity, and wherein said microphone is contained within said casing, proximate to said cavity.

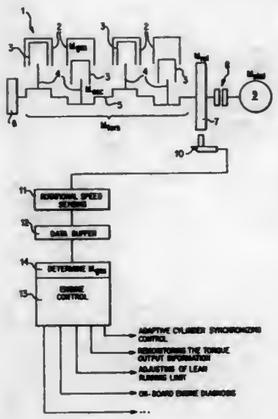
5,546,793

PROCESS FOR DETERMINING GAS-FORCE TRANSMITTED TORQUE TO AN INTERNAL-COMBUSTION ENGINE CRANKSHAFT

Helmut Gimmler, Kelterstrasse; Ulrich Nester, Klosterstrasse; Gerhard Kurz, Panoramastrasse, and Werner Huhn, Karl-Baisch-Strasse, all of, Germany, assignors to Mercedes-Benz AG, Germany

Filed Mar. 6, 1995, Ser. No. 400,107
Claims priority, application Germany, Mar. 4, 1994, 44 07 167.1
Int. Cl.[6] G01M *15/00*
U.S. Cl. 73—116 **11 Claims**

1. Process for determining operating parameters of an internal-combustion engine, comprising the steps of analyzing a rotational speed data which is detected by determining rotational speed of a component fixedly connected with an engine crankshaft, a rotating moment being computed by an inertia moment of the engine from angular speed correlated with the rotational speed,
using an engine model to compute torque of oscillating masses, moment of crankshaft torsion and static torque composed of slowly variable friction moments, effective moments and load moments,
determining torque on a cylinder-individual basis from the torques and moments, resulting from gas pressures in engine cylinders, and
supplying the resulting torque to at least one of a control system and/or a diagnostic system.

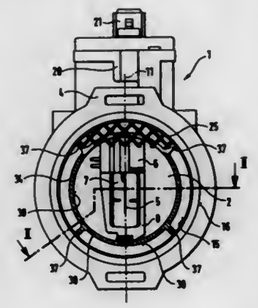


5,546,794

DEVICE FOR MEASURING THE MASS OF A FLOWING MEDIUM

Ulrich Kuhn, Renningen; Dieter Tank, Eberdingen, and Uwe Konzelmann, Asperg, all of, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 10, 1994, Ser. No. 339,198
Claims priority, application Germany, Dec. 1, 1993, 43 40 882.6
Int. Cl.[6] G01M *19/00*
U.S. Cl. 73—118.2 **10 Claims**



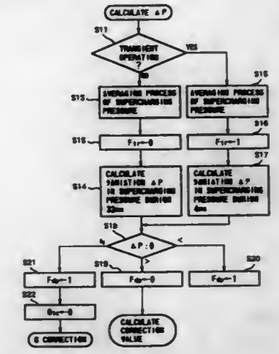
1. A device for measuring the mass of a flowing medium of an intake air mass of an internal combustion engine, comprising a measuring conduit within said device (1), a carrier body that secures a measuring element in said measuring conduit with the flowing medium passing the measuring element, said measuring element serves to measure the mass of the flowing medium, at least upstream of the measuring element (5) means (30) that have friction faces (31) are placed in the measuring conduit (2) in a region spaced from an inside wall (15) of the measuring conduit (2) and are exposed to an oncoming flow medium.

5,546,795

METHOD AND APPARATUS FOR DIAGNOSIS OF TROUBLE IN SUPERCHARGING PRESSURE SENSOR

Yoichiro Yamagishi, Atsugi, Japan, assignor to Unisia Jecs Corporation, Atsugi, Japan

Filed May 26, 1995, Ser. No. 452,373
Claims priority, application Japan, May 26, 1994, 6-112959
Int. Cl.[6] G01M *15/00*
U.S. Cl. 73—118.2 **4 Claims**



1. A method for diagnosis of a detecting error in a supercharging pressure detector which is interposed between a compressor and a throttle valve, said supercharging pressure detector being operable to detect a supercharging pressure of the compressor in an internal combustion engine which induces a supercharger, said throttle valve being provided in an air intake passage located at a downstream side of said compressor; said method comprising the steps of:
detecting whether or not the engine is in a state of transient operation;
detecting directly a flow rate of an intake air of the engine at an upstream side of said compressor when the engine is in the state of transient operation;
calculating the flow rate of an intake air corresponding to an amount of an intake air of a cylinder of the engine based on a volume of air in a supercharging chamber interposed between said compressor and said throttle valve and a variation in the supercharging pressure detected by said supercharging pressure detector when the engine is in the state of transient operation; and
comparing the calculated flow rate of an intake air with the detected flow rate of an intake air to thereby diagnose the detecting error of the supercharging pressure detector, wherein said supercharging pressure detector is diagnosed as having the detecting error when a deviation between the calculated flow rate of an intake air and the detected flow rate of an intake air is equal to or less than a first value.

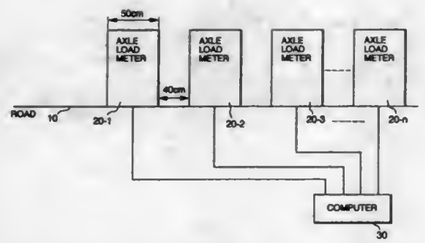
5,546,796

METHOD AND APPARATUS FOR MEASURING AXLE LOAD OF A RUNNING VEHICLE

Kunio Taniguchi, Kanagawa, Japan, assignor to Omron Corporation, Japan

Filed Jul. 5, 1995, Ser. No. 498,311
Claims priority, application Japan, Jul. 6, 1994, 6-154993
Int. Cl.[6] E01C *23/00*
U.S. Cl. 73—146 **4 Claims**

1. An apparatus for measuring an axle load of a running vehicle, comprising:
axle load meters arranged in an axle load measuring area of a road;
means for measuring, using the axle load meters, instantaneous axle load values $W_1, W_2, \ldots, W_n$ at time points $t_1, t_2, \ldots, t_n$.



respectively, as measured from a time point when the running vehicle enters the axle load measuring area;

means for setting fixed time intervals T_1, T_2, . . ., T_j, where j is an integer not less than 2;

means for determining pairs of instantaneous axle load values (W_1, W_{1+Tk}), (W_2, W_{2+Tk}), . . ., (W_i, W_{i+Tk}) at time points (t_1, t_{1+k}), (t_2, t_{2+k}), . . ., (t_i, t_{i+k}) each having a fixed time interval T_k, where k=1 to j, based on the measured instantaneous axle load values W_1, W_2, . . ., W_n, and calculating average values W_{1Tk}, W_{2Tk}, . . ., W_{iTk} of the respective pairs, to thereby produce average value groups for the respective fixed time intervals T_1, T_2, . . ., T_j;

means for selecting an average value group having a minimum variation from the average value groups; and

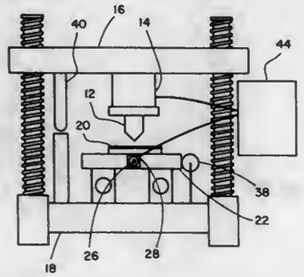
means for employing an average of the selected average value group as the axle load of the running vehicle.

5,546,797

CONSTANT-DEPTH SCRATCH TEST FOR THE QUANTIFICATION OF INTERFACIAL SHEAR STRENGTH AT FILM-SUBSTRATE INTERFACES

Indranath Dutta, Marina, Calif., and David P. Lascurain, North Charleston, S.C., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 11, 1995, Ser. No. 422,725
Int. Cl.[6] G01N *3/34*
U.S. Cl. 73—150 A **3 Claims**



1. A method of determining the shear strength of film-substrate interfaces, based on precise measurements of the vertical and horizontal loads imposed on a film-substrate sample by an indentor so as to debond the film from the substrate, where the indentation debonding is classified as Type I for weak interfaces when failure occurs on elastic loading of the film by the indentor, and classified as Type II for intermediate interfacial strength when failure occurs after plastic deformation of the film, but before the indentor penetrates the entire film, and classified as Type III for high interfacial strength when failure occurs after the indentor has penetrated the entire film and plastically deformed the substrate, without the necessity of detecting the actual debonding event, comprising the steps of:

causing the indentor to vertically penetrate through the film, partially or completely, depending on whether the film undergoes Type II or Type III indentation debonding, and measuring the vertical force imposed upon the sample;

moving the sample laterally in relation to the indentor, while maintaining the depth of penetration of the indentor into the film constant along the length of the scratch, for measuring the horizontal stress imposed upon the sample by the indentor; and

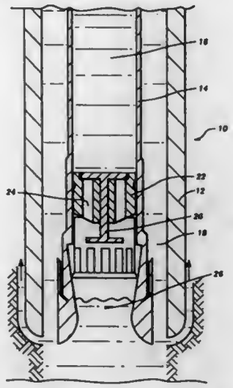
combining the vertical and horizontal force measurements for calculating the inter-facial shear strength of the film-substrate sample as a funcion of position on the sample.

5,546,798

METHOD AND COMPOSITION FOR PRESERVING CORE SAMPLE INTEGRITY USING A WATER SOLUBLE ENCAPSULATING MATERIAL

Pierre E. Collee, Kingwood, and Dorothy P. Enright, Houston, both of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed May 12, 1995, Ser. No. 440,451
Int. Cl.[6] E21B *33/12;* **C09K** *7/06*
U.S. Cl. 73—152.09 **31 Claims**



1. A method for maximizing the chemical integrity of a core sample during transport from a subterranean formation to the surface comprising:

cutting a core sample downhole, said core sample having an outer surface;

encapsulating said core sample, as said core sample enters a core barrel, with a water-based encapsulating material having a desired plasticity; and

transporting said encapsulated core sample to said surface.

5,546,799

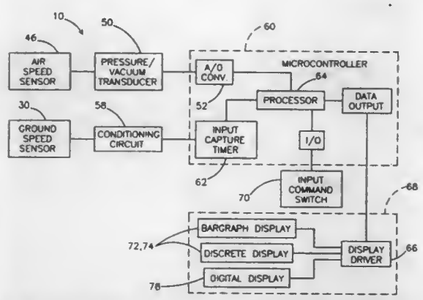
DRAFT MONITORING DEVICE MOUNTED ON MOTOR VEHICLE TO DETERMINE WIND SPEED RELATIVE TO GROUND

Donald R. Parker, Largo, Fla., assignor to Digital Control Corp., Largo, Fla.

Filed Dec. 9, 1994, Ser. No. 352,524
Int. Cl.[6] G01P *5/00*
U.S. Cl. 73—170.11 **20 Claims**

1. A device for monitoring wind conditions associated with the operation of a motor vehicle, said device comprising:

a ground speed sensor for detecting a speed of the motor vehicle with respect to the ground, said ground speed sensor outputting a first signal indicative of said vehicle ground speed;



an air speed sensor for detecting a first wind speed with respect to the motor vehicle during operation, said air speed sensor outputting a second signal indicative of said first wind speed; and

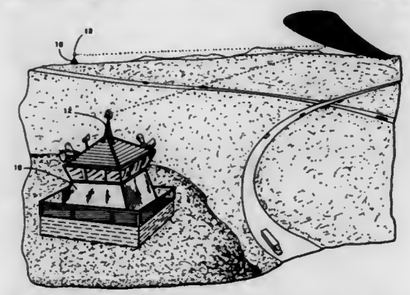
a processor for comparing said first signal and said second signal to determine a second wind speed and a wind direction with respect to the ground proximate the location of the motor vehicle.

5,546,800

EARLY WARNING TORNADO DETECTOR

Bernard Daniel, 515 S. Ave. P., Clifton, Tex. 76634

Filed Nov. 8, 1995, Ser. No. 554,760
Int. Cl.[6] G01W *1/00*
U.S. Cl. 73—170.16 **10 Claims**



9. A method for early detection and tracking of meteorological conditions conducive to tornado formation in a given area, comprising the steps:

a) determining the negative ion flow intensity threshold level which indicates that meteorological conditions are conducive to tornado formation in the area;

b) measuring the negative ion flow intensity over the area; and

c) comparing the measured ion flow intensity with the threshold intensity to determine if tornado formation is imminent.

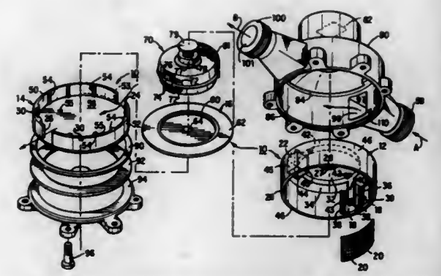
5,546,801

WATER FLOW METER ADAPTER FOR RESIDENTIAL FIRE SERVICE SPRINKLER SYSTEMS

Thierry W. Swinson, Wetumpka, and Brent M. Walden, Montgomery, both of Ala., assignors to Schlumberger Industries, Inc., Norcross, Ga.

Filed Jun. 1, 1994, Ser. No. 252,353
Int. Cl.[6] G01F *3/08;15/14*
U.S. Cl. 73—273 **18 Claims**

2. An adapter for a meter chamber, suitable for use for proportionally metering a flow of water through a maincase installed in a residential fire service sprinkler line, the adapter comprising:



(a) a chamber housing dimensioned to receive a meter chamber and having a first inlet aperture and a first outlet aperture for allowing a first flow of water to flow through a received meter chamber, said chamber housing including

(i) a ceiling having an outer perimeter;

(ii) a first outer wall depending from the outer perimeter of said ceiling and having a bottom rim and an inner surface;

(iii) means disposed within said chamber housing for seating a meter chamber received therein;

(b) a bypass having a second inlet aperture and a second outlet aperture for allowing a second flow of water to pass through said bypass, said bypass including:

(i) a floor;

(ii) a second outer wall extending upward from said floor and dimensioned for mating engagement with said bottom rim of said first outer wall, said second outer wall having a top rim and an inner surface; and

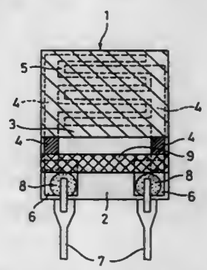
(c) a bypass plate for insertion between said chamber housing and said bypass, for providing fluid isolation between said first flow of water and said second flow of water.

5,546,802

HUMIDITY SENSOR AND METHOD FOR MAKING

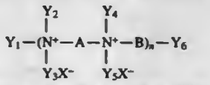
Emiko Yoshimura, and Shin-ichi Tezuka, both of Chiba, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Mar. 31, 1995, Ser. No. 414,952
Claims priority, application Japan, Mar. 31, 1994, 6-087866
Int. Cl.[6] B05D *5/12*
U.S. Cl. 73—335.05 **9 Claims**



1. A humidity sensor comprising an insulating substrate, a pair of opposed electrodes disposed on the substrate and defining a gap therebetween, and a humidity sensitive thin film disposed on the gap,

said humidity sensitive thin film containing a cross-linked product of a polymer of the following formula (1):



(1)

wherein A and B each are a divalent group,

Y_1, Y_2, Y_3, Y_4, Y_5, and Y_6 each are a monovalent group, at least one of Y_1 to Y_6 is a group terminated with an ethylenically unsaturated reactive group,

optionally at least two of Y_1, Y_2, Y_3, Y_4, Y_5, A, and portions of Y_1, Y_2, Y_3, Y_4, Y_5, and A adjoining the nitrogen (N) atom, or at least two of Y_4, Y_5, Y_6, B, and portions of Y_4, Y_5, Y_6, and B adjoining the nitrogen (N) atom, taken together, form a ring with the nitrogen atom,

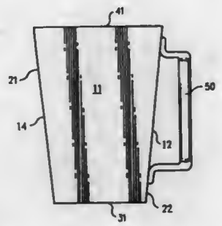
X is a halide ion, and n is a number of 2 to 5,000.

5,546,803

SCOOP FOR COMPACTING AND MOLDING MASONARY MIXTURES

James R. Reynolds, 9502 384th. Ave. SE., Snoqualmie, Wash. 98065

Filed Jun. 12, 1995, Ser. No. 489,674
Int. Cl.[6] E04B *2/46*
U.S. Cl. 73—427 **1 Claim**



1. A scoop for the compaction, molding and measuring of masonry mixtures comprising: a multisided open ended tapered scoop formed of at least three tapered sidewall panels, each panel having approximately equal shapes and dimensions, the panels joined together along their sides with each side tapering down to a smaller measure at the base of the scoop to form a lower opening in the scoop which is smaller than the opening formed by said sides at the top of the scoop; gradient marks located on at least one of the panel walls on a surface located inside of the scoop; and a means for grasping the stoop located on the exterior face of at least one of the panels; whereby the top opening comprises a means for receiving a masonry mixture to be compacted, the gradient marks comprise a means to regulate the amount of compaction of the mixture, and the smaller opening provides a means to allow the compacted mixture to exit the top opening to slide out of the scoop in a molded volume.

5,546,804

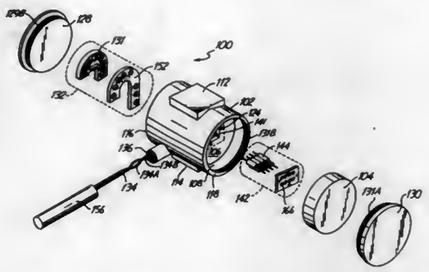
TRANSMITTER WITH MOISTURE DRAINING HOUSING AND IMPROVED METHOD OF MOUNTING RFI FILTERS

John D. Johnson, St. Paul, and William R. Kirkpatrick, Faribault, both of Minn., assignors to Rosemount Inc., Eden Prairie, Minn.

Filed Aug. 11, 1994, Ser. No. 288,949
Int. Cl.[6] G01D *11/30*
U.S. Cl. 73—431 **17 Claims**

1. A transmitter for transmitting a process variable over cabling, comprising:

a cylindrical housing having a process mounting disposed on a base of the housing, the housing having a first and a second compartment sharing an internal bulkhead, the second compartment tending to receive moisture and capped by a cover, the second compartment having a curved internal wall extending between a top area generally opposite the base of the housing and the process mounting at the base of the housing, the internal wall having a center defined therebetween;



a first access channel having an access channel internal wall disposed on the housing adjacent to the processmounting in the second compartment and offset relative to the center of the internal wall of the cylindrical housing, the access channel internal wall forming an intersection substantially flush with an inner surface of the second compartment, the access channel connectable to an external piece of electrical conduit containing the cabling;

a circuit in the first compartment compensating the process variable, the circuit providing the compensated process variable to a feedthrough circuit in the bulkhead;

a pair of terminals in the second compartment connected to the feedthrough circuit and to a pair of conductors in the cabling, where the transmitter drains moisture through the channel in a range of mountings;

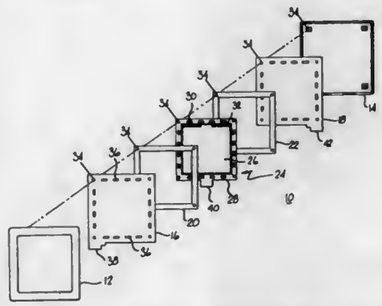
and wherein the access channel internal wall is substantially flush with and tangent to the curved internal wall of the second compartment, and the access channel internal wall is substantially parallel with the curved internal wall at a point where the access channel internal wall meets a substantially continuous surface therebetween, so as to facilitate drainage of moisture from the second compartment.

5,546,805

ANGLE AND ANGULAR ACCELERATION SENSORS

Harold L. Swartz, and Jane E. Anderson, both of, Springerville, Ariz., assignors to Coyote Engineering Services, Inc., Springerville, Ariz.

Filed Aug. 12, 1994, Ser. No. 289,636
Int. Cl.[6] G01P *15/00*
U.S. Cl. 73—514.02 **11 Claims**



1. An angle sensor formed as a layered sandwich structure of rectangularly-shaped elements, comprising:

a metallic central sensing plate;

left and right spacers positioned on either side of said central sensing plate;

left and right driver plates positioned outside said left and right spacers, respectively; and

electrical connection means for electrically connecting said central sensing plate and said left and right driver plates to external angle measurement circuitry;

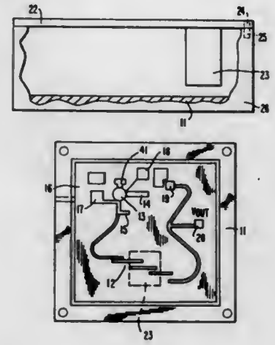
said central sensing plate comprising a peripheral frame and a central plate area, the central plate area being uniformly spaced away from the peripheral frame along the entirety of top and bottom edges of the central plate area and being uniformly spaced away from the peripheral frame along substantially the entirety of left and right edges of the central plate area, the central plate area being connected to the peripheral frame only by way of a pair of axially aligned torsion bars, each of the torsion bars extending inwardly at the top edge of the central plate area from left and right inner edges, respectively, of the peripheral frame to allow the central plate area to rotate toward and away from said driver plates when said angle sensor is tilted with respect to the axis of the pair of torsion bars.

5,546,806

MICROWAVE VECTOR DISPLACEMENT AND ACCELERATION TRANSDUCER

Aron Z. Kain, 1733 Corning St., Los Angeles, Calif. 90035

Division of Ser. No. 40,894, May 24, 1993, which is a continuation-in-part of Ser. No. 778,290, Oct. 17, 1991, Pat. No. 5,261,278. This application Dec. 14, 1994, Ser. No. 355,479
Int. Cl.[6] G01P *15/08*
U.S. Cl. 73—514.31 **12 Claims**



1. A microwave accelerometer comprising

a housing supporting a deflecting element and

a sensing circuit,

said housing having a ground plate upon which is located a dielectric material,

said sensing circuit comprising

planar conducting structures contacting said dielectric material, wherein microwave resonating structures are formed by the combination of said planar conducting structures, dielectric material and ground plate,

means for generating microwaves in said microwave resonating structures,

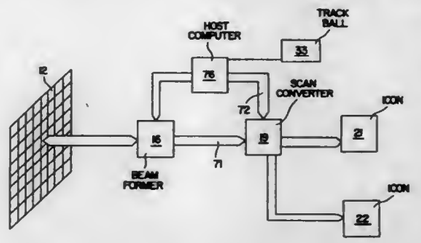
said deflecting element adapted to oscillate near said planar conducting structures in response to accelerations of the accelerometer structures, wherein fields in said microwave resonating structures are caused to vary in amplitude, frequency or phase.

5,546,807

HIGH SPEED VOLUMETRIC ULTRASOUND IMAGING SYSTEM

John T. Oxaal, c/o 3D Ultrsound Inc. 302 E. Pettigrew #307, Durham, N.C. 22503; Alat T. Van Ramm, 4718 Harmony Ch Rd., Efzand, N.C. 27243; David M. Blaker, 1617 Bellechase Rd, Hillsborough, N.C. 27278-9210, and Robert S. Smith, 1263 Emory St., San Jose, Calif. 95126

Filed Dec. 2, 1994, Ser. No. 306,716
Int. Cl.[6] G01N *29/06*
U.S. Cl. 73—606 **25 Claims**



1. An apparatus for simultaneously displaying in real time, an image of at least one section of variable thickness of a three dimensional object having a range of acoustical properties, said at least one cross section being any cross section of said object and selected by a viewer viewing said displayed image, said apparatus comprising:

means adapted for radiating said object with a plurality of sonic beams such that each beam of said plurality of sonic beams generates a wave reflected from a plurality of locations distributed in all regions of said object;

means for resolving said wave into a plurality of echo data, each echo datum of said plurality of echo data representing intensity of reflection of one of said plurality of sonic beams from one of said plurality of locations in said object respectively;

scan converter means for storing each said datum at one of a plurality of addresses in a memory of said scan converter means, each one of said plurality of addresses corresponding to one of said plurality of locations in said object respectively;

means for displaying said image of said at least one section including a screen with a plurality of display locations and terminal means for receiving a plurality of signals and displaying each signal as brightness at a respective one of said plurality of display locations corresponding to said image;

buffer memory means for storing each said echo datum from said scan converter memory then transferring each said echo datum so as to apply a series of said plurality of signals to said terminal means of said display means;

said buffer memory means having buffer memory addresses, each buffer memory address corresponding to one of said display locations respectively;

means operated by said viewer for selecting a set of addresses in said scan converter memory of said scan converter corresponding to said at least one section in said object selected by said viewer;

an address pointer means for matching each buffer memory address to a memory address in said memory of said scan converter means belonging to said set of memory addresses in said scan converter memory and transferring to each said buffer memory address said datum stored in said memory address of said scan converter memory respectively;

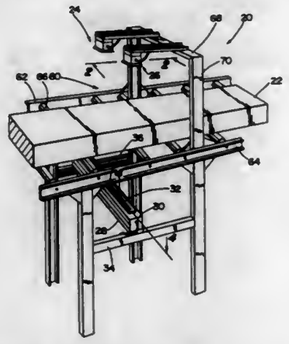
means for providing data stored in said buffer memory address to said terminal means of said display means.

5,546,808

APPARATUS AND METHOD FOR BINOCULAR MEASUREMENT SYSTEM

David E. Harris, Powell, Ohio, assignor to Harris Instrument Corporation, Columbus, Ohio

Filed Sep. 6, 1994, Ser. No. 301,352
Int. Cl.[6] G01N *21/00*
U.S. Cl. 73—618 **12 Claims**



1. A measurement apparatus, comprising:
an array of discrete electromagnetic radiation emitting devices, said array located a distance from a first surface of a material workpiece, and extending partially outwardly from an edge of said workpiece, each of said devices being responsive to the application of current thereto to emit radiation;
a first receiver responsive to radiation emitting from said devices, said first receiver located a stand-off distance from a second surface of said material workpiece and a first radiation emitting device in said array;
a second receiver responsive to radiation emitting from said devices and located a stand-off distance from said second surface of said workpiece and a last emitting device in said array;
a drive circuit for applying said current to said discrete radiation emitting devices;
a processor for receiving first receiver signals from said first receiver and for receiving second receiver signals from said second receiver, said processor adapted to process said first receiver signals with respect to said second receiver signals, whereby to produce at least one measurement of sai workpiece, said at least one measurement taken from the group including a thickness dimension of said workpiece and a width dimension of said workpiece.

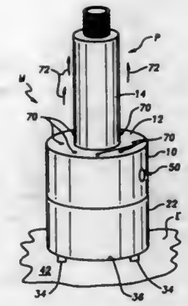
5,546,809

VIBRATION MONITOR MOUNTING BLOCK

Harvey E. Cotton, Friendswood, Tex., assignor to Houston Industries Incorporated, Houston, Tex.

Continuation of Ser. No. 354,919, Dec. 12, 1994, abandoned. This application Mar. 1, 1996, Ser. No. 610,971
Int. Cl.[6] G01N *29/24;29/28*
U.S. Cl. 73—644 **11 Claims**

1. A mounting block structure for mounting an electrical test probe for vibration testing of equipment which becomes heated during use, comprising:
a block body, said block body comprising:
a first block member having a mounting surface thereon for receiving the vibration test probe to extend outwardly therefrom;
a second block member adapted to be mounted to the equipment;
means for interconnecting said first and second block members to form said block body:



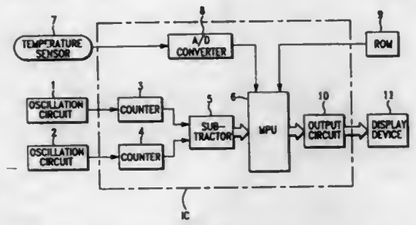
means with said second block member for mounting said block body to the equipment;
a cooling gas inlet formed in said first; block member of said block body on a surface other than said mounting, said surface inlet for receiving a supply of cooling gas;
flow exit passages formed in said mounting surface of said first block member for directing the cooling gas outwardly from said mounting surface past the test probe to cool the test probe;
manifold means comprising a fluid flow duct formed inwardly of said cooling gas inlet in said first block member of said block body for distributing the cooling gas from said inlet to said flow exit passages for cooling of the test probe; and
said flow exit passages being formed in said first block member extending from said fluid flow duct of said manifold means through said mounting surface for passage of the cooling gas to cool the vibration test probe.

5,546,810

PRESSURE MEASURING DEVICE AND METHOD USING QUARTZ RESONATORS

Yasuo Arikawa, and Eiichi Miyazawa, both of Suwa, Japan, assignors to Seiko Epson Corporation, Japan

PCT No. PCT/JP94/01086, § 371 Date May 3, 1995, § 102(e) Date May 3, 1995, PCT Pub. No. WO95/02173, PCT Pub. Date Jan. 19, 1995
PCT Filed Jul. 4, 1994, Ser. No. 367,330
Claims priority, application Japan, Jul. 6, 1993, 5-167127; Jan. 31, 1994, 6-009535
Int. Cl.[6] G01L *11/00;1/10*
U.S. Cl. 73—702 **22 Claims**



1. A method for measuring pressure, comprising the steps of:
measuring a difference in oscillation frequency between first and second oscillation circuits, with said first oscillation circuit having a first quartz resonator and said second oscillation circuit having a second quartz resonator, said first and second quartz resonators being placed under different pressures from each other;
measuring the ambient temperature of said first and second quartz resonators;

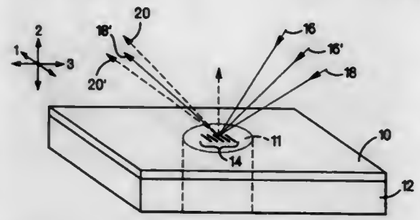
storing calibration parameters substantially corresponding to said oscillation frequency differences measured for at least three different temperatures; and
performing calibration of said measured oscillation frequency difference using said calibration parameters and said ambient temperature according to a temperature calibration formula of quadratic or higher order.

5,546,811

OPTICAL MEASUREMENTS OF STRESS IN THIN FILM MATERIALS

John A. Rogers, Castle Rock, Colo., and Keith A. Nelson, Newton, Mass., assignors to Massachusetts Institue of Technology, Cambridge, Mass.

Filed Jan. 24, 1995, Ser. No. 377,308
Int. Cl.[6] G01M *9/00;* G01L *1/24*
U.S. Cl. 73—800 **22 Claims**



1. A method for determining the residual stress in a region of an unsupported thin film sample, said method comprising the steps of:
(a) optically exciting an unsupported region of the sample with a spatially and temporally varying optical excitation field having at least one excitation wavevector, said exciting launching counter-propagating acoustic modes along at least one excitation wavevector in the region;
(b) diffracting a portion of an optical probe field off the excited acoustic modes to generate a time-dependent signal field at the excitation wavevector;
(c) detecting the signal field to generate a time-dependent, light-induced signal;
(d) analyzing the light-induced signal to determine the frequency or phase velocity of at least one acoustic mode corresponding to at least one excitation wavevector;
(e) partially determining the dispersion of at least one mode; and,
(f) comparing the determined dispersion to that calculated from a mathematical model generated using equations of motions for a stressed unsupported film system, said comparing allowing the residual stress properties of the film in the excited region to be determined.

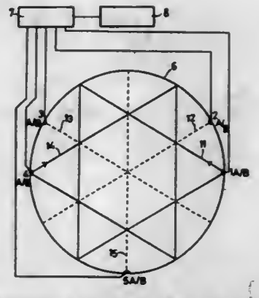
5,546,812

METHOD AND DEVICE FOR DETERMINING CHARACTERISTICS OF THE FLOW OF A MEDIUM

Jan G. Drenthen, Mijnsheerenland, Netherlands, assignor to Servex B.V., Dordrecht, Netherlands

Filed Aug. 16, 1994, Ser. No. 291,146
Claims priority, application Netherlands, Aug. 17, 1993, 9301422
Int. Cl.[6] G01F *1/66*
U.S. Cl. 73—861.29 **19 Claims**

11. A device for determining swirl of a flow of a medium in a conduit, comprising at least one acoustic transducer, which can act individually as a transmitter and receiver for transmitting sound waves along first acoustic paths having different sensitivities to swirl and receiving thereof, said at least one transducer being arranged at the periphery of the conduit in such a way that the first acoustic paths comprise at least one reflection against the wall of the conduit, as well as means for measuring transit times of the sound waves and determining a measure of swirl from the measured transit times.

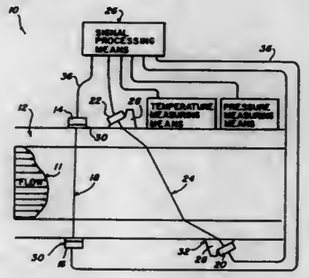


5,546,813

APPARATUS FOR DETERMINING FLUID FLOW

Calvin R. Hastings; Ernest M. Hauser, both of Pittsburgh, and Robert C. Miller, New Alexandria, all of Pa., assignors to Caldon, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 957,411, Oct. 6, 1992, abandoned. This application Mar. 31, 1995, Ser. No. 415,090
Int. Cl.[6] G01F *1/00*
U.S. Cl. 73—861.29 **21 Claims**

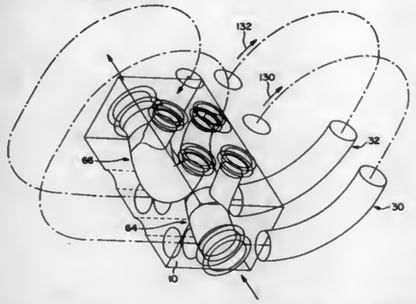


1. An apparatus for determining fluid flow rate in a pipe comprising:
a first transducer for transmitting acoustic energy, said first transducer in acoustic contact with said pipe;
a second transducer for receiving said acoustic energy from said first transducer, said second transducer in contact with said pipe such that the acoustic energy transmitted by the first transducer follows a substantially diametrical path through the fluid in the pipe;
a third transducer for transmitting acoustic energy, said third transducer in acoustic contact with said pipe;
a fourth transducer for receiving said acoustic energy transmitted from said third transducer, said fourth transducer in acoustic contact with said pipe such that the acoustic energy transmitted by said third transducer follows a diagonal path through the fluid in the pipe, said diametrical path adjacent to said diagonal path;
wherein each transducer is disposed on the outside of the pipe and acoustic energy follows a path through the pipe wall, and
signal processing means for determining the flow rate of fluid in the pipe based on acoustic energy received by the second and fourth transducers with the energy received by the second transducer used to determine the speed of sound of the fluid so the flow of fluid can be determined, said second and fourth transducers in communication with said signal processing means.

5,546,814
PARALLEL-FLOW CORIOLIS-TYPE MASS FLOWMETER WITH FLOW-DIVIDING MANIFOLD

Wade M. Mattar, Wrentham, and Norman G. Hildreth, Milford, both of Mass., assignors to The Foxboro Company, Foxboro, Mass.

Filed Oct. 26, 1994, Ser. No. 329,957
Int. Cl.[6] G01F *1/84*
U.S. Cl. 73—861.355 **17 Claims**



16. Apparatus for a Coriolis-type mass flowmeter, said apparatus comprising:

first and second manifolds, each comprising:

a cavity of generally uniform cross-section disposed along an axis, said cavity being in sealed fluidic communication with a fluid line;

first and second ports each having a center axis oriented at substantially the same angle with respect to said axis of said cavity;

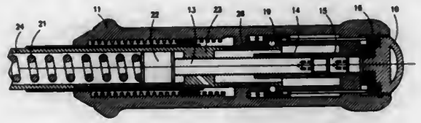
a first transition region disposed along a smooth, continuous first centerline between said first port and an end of said cavity, said first centerline being substantially tangent to said axis of said cavity and to said center axis of said first port; and

a second transition region disposed along a smooth, continuous second centerline between said second port and an aperture disposed in a wall of said cavity, said second centerline being substantially tangent to said center axis of said second port.

5,546,816
LOCKABLE SPRING TIGHTENING DEVICE

Conny Jansson, Enköping; Håkan Bergqvist, and Hans Himbert, both of Bromma, all of, Sweden, assignors to Sandvick AB, Sandviken, Sweden

PCT No. PCT/SE93/00692, § 371 Date Jul. 13, 1994, § 102(e) Date Jul. 13, 1994, PCT Pub. No. WO94/05463, PCT Pub. Date Mar. 17, 1994
PCT Filed Aug. 19, 1993, Ser. No. 232,011
Claims priority, application Sweden, Aug. 31, 1992, 9202491-8
Int. Cl.[6] B25B *23/142*
U.S. Cl. 73—862.21 **13 Claims**



1. A tightening device for a spring in a moment indicating tool comprising:

a shaft,

a spring situated in the shaft, the spring having an end,

an indication device actuated by a force of the spring that indicates when a turning moment on the tool attains a predetermined indication moment,

a screw for tightening the spring by displacing the end of the spring,

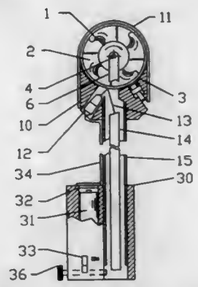
a rotatable grip connected with the screw and at least one scale for reading off the indication moment,

wherein the total indication moment is read on a longitudinal scale in a direction of the shaft relative to a moveable index which is moveable with respect to the rotatable grip and whose displacement relative to the shaft is larger than a displacement of the end of the spring relative to the shaft.

5,546,815
DIGITAL WIND-SPEED METER

David B. Wittry, 1036 S. Madison Ave., Pasadena, Calif. 91106

Filed Aug. 25, 1994, Ser. No. 295,981
Int. Cl.[6] G01F *15/00*
U.S. Cl. 73—861.77 **13 Claims**

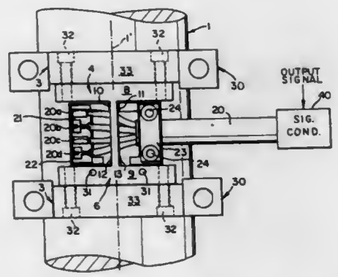


1. A digital wind-speed meter having a freely-turning turbine inside a turbine housing, having openings for the passage of fluid through said housing, said turbine containing a coaxial cylinder having reflecting and non-reflecting surface areas on its periphery, the rotational velocity of said cylinder being determined by a digital optical tachometer that receives light reflected from said cylinder.

5,546,817
STEM TORQUE SENSOR

Stephen M. Heiman, Exton, Pa., assignor to Liberty Technologies, Inc., Conshohocken, Pa.

Filed Jun. 4, 1993, Ser. No. 71,560
Int. Cl.[6] G01M *19/00*
U.S. Cl. 73—862.333 **9 Claims**



1. A system for determining torsional loading on a generally cylindrical member comprising:

mounting means for removable attachment to a portion of a cylindrical member and for moving in response to torsional deformations in the portion of the cylindrical member, the mounting means comprising a set of opposing clamping surfaces, a hinged member coupling together the set of opposing clamping surfaces and a compressive member securing the opposing clamping surfaces to the cylindrical member; and

sensor means connected with the mounting means for sensing rotational movement of the mounting means resulting from torsional deformations in the portion of the cylindrical member and for generating signals proportional to the sensed movement;

wherein the sensor means comprises at least one strain gauge mounted to a separate strain member which is rigidly secured to the mounting means;

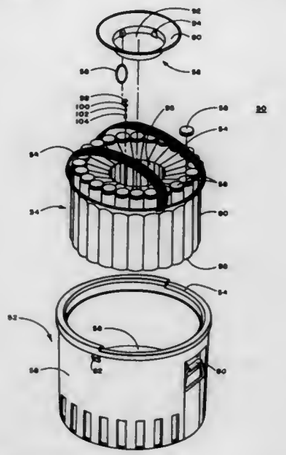
wherein the strain member is removable and interchangeable among different mounting means and

wherein the strain member is one piece and includes at least first and second mutually perpendicularly oriented beams.

5,546,818
FLUID SAMPLING APPARATUS HAVING A UNIVERSAL BASE

Richard E. Keefer, Lincoln, Nebr., assignor to Isco, Inc., Lincoln, Nebr.

Continuation of Ser. No. 89,087, Jul. 8, 1993, abandoned. This application May 19, 1995, Ser. No. 444,657
Int. Cl.[6] G01N *1/14;* **F25D** *3/08;* **B65B** *3/12*
U.S. Cl. 73—863 **7 Claims**



1. A sampler comprising:

a base;

said base having an outer surface, an inner surface and a top portion;

a plurality of inner container carriers;

said inner surface having locating members therein adapted to cooperate with mating surfaces on said inner container carriers;

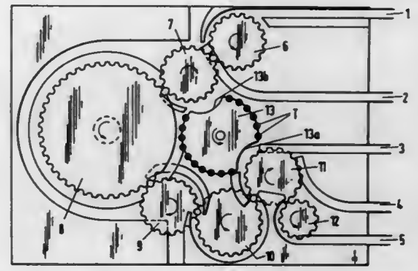
each of said inner container carriers having one of a plurality of configurations, each of which has a shape and size that permits it to fit within said inner surface and match with said locating members, whereby different configurations of inner container carriers can fit with different orientations within said base, whereby a plurality of different inner container carriers containing different arrangements of containers can be inserted in the same base; and

sequencer means for distributing samples into one or more containers within said sampler.

5,546,819
BOTTLE INSPECTION MACHINE

Rudolf Zodrow, Lichtstrasse 37, 40235 Düsseldorf, Germany

PCT No. PCT/EP93/00053, § 371 Date Sep. 30, 1994, § 102(e) Date Sep. 30, 1994, PCT Pub. No. WO93/13879, PCT Pub. Date Jul. 22, 1993
PCT Filed Jan. 13, 1993, Ser. No. 256,396
Claims priority, application Germany, Jan. 15, 1992, 42 00 798.4
Int. Cl.[6] G01M *19/00;* **G01N** *21/90;* **B67C** *03/22;* **B65G** *43/08*
U.S. Cl. 73—865.8 **13 Claims**



1. A bottle inspection machine comprising:

an inlet for bottles to be inspected;

a plurality of outlet-conveyor sections for the bottles after they have been inspected;

a plurality of inspection sections located between the inlet and the outlet-conveyor sections and arranged one behind the other, the bottles passing through said plurality of inspection sections being inspected for a variety of properties;

a plurality of rotating bottle carriers having peripheries configured as receiving points for the bottles passing through said bottle inspection machine, said plurality of rotating bottle carriers transporting the bottles through the plurality of inspection sections;

a sorting station located after a last of said plurality of inspection sections, said sorting station passing the bottles which have passed through said inspection sections to different ones of said plurality of outlet-conveyor sections depending on the results of the inspection;

said plurality of rotating bottle carriers and said sorting station forming a primary conveyor section for the bottles passing through said bottle inspection machine;

a closed circuit secondary conveyor section comprising said plurality of rotating bottle carriers and a magazine which holds a plurality of test bottles used to calibrate said bottle inspection machine;

said magazine including at least one rotating test bottle carrier having a plurality of receiving points at its periphery for holding said test bottles;

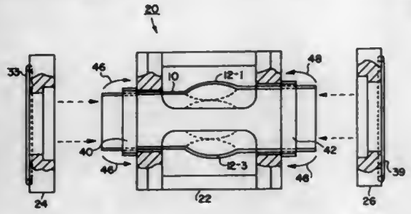
wherein said secondary conveyor section is switchable between an open state wherein said rotating test bottle carrier is disengaged from said plurality of inspection sections, and a closed state wherein said rotating test bottle carrier passes said test bottles to a first of said plurality of rotating bottle carriers and receives said test bottles from a last of said plurality of rotating bottle carriers of said primary conveyor section thereby bypassing said sorting station, the test bottle receiving points and the receiving points of the plurality of rotating bottle carriers forming a continuous chain of receiving points for the test bottles in said closed state.

5,546,820

METHOD AND APPARATUS FOR TESTING OF CIRCUMFERENTIALLY COMPLIANT BIOPROSTHETIC VALVE

Carol E. Eberhardt, Fullerton; Mark J. Capps, Orange, and Luis Salazar, Rowland Heights, all of Calif., assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 910,933, Jul. 9, 1992, Pat. No. 5,406,857. This application Nov. 14, 1994, Ser. No. 339,364
Int. Cl.[6] G01M *10/00;* **F16K** *37/00*
U.S. Cl. 73—866.4 **12 Claims**



1. A fixture for in-vitro testing of a circumferentially compliant bioprosthetic valve, comprising:

a simulated aorta patterned from dimensions of a natural human aorta, having a generally hollow cylindrical shape with open inflow and outflow ends, said aorta having a predetermined circumferential compliance, and said aorta adapted to receive said circumferentially compliant bioprosthetic valve in a desired spatial relationship;

a test fixture cradle, adapted to receive and support the ends of said simulated aorta and valve to permit flow simulating natural blood flow through said aorta and valve and to prevent interference with the compliance characteristics of said aorta and valve; and

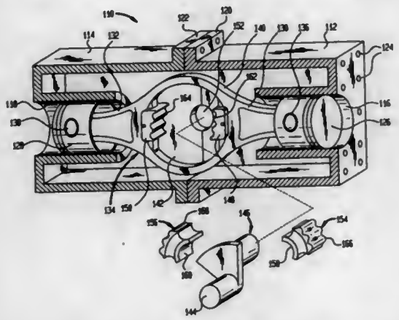
said test fixture cradle further having fluid seals disposed on each end thereof, allowing said test fixture to be installed in a sealed flow loop of a testing apparatus and the aorta and valve to be disposed along the sealed flow loop of said apparatus.

5,546,821

MOTION ARRESTER FOR A CONJUGATE DRIVE MECHANISM

Douglas C. Brackett, 2535 Mason Oaks Dr., Valricho, Fla. 33594

Continuation-in-part of Ser. No. 148,492, Nov. 8, 1993, Pat. No. 5,351,567. This application Oct. 3, 1994, Ser. No. 317,238
Int. Cl.[6] F16H *21/18*
U.S. Cl. 74—49 **49 Claims**



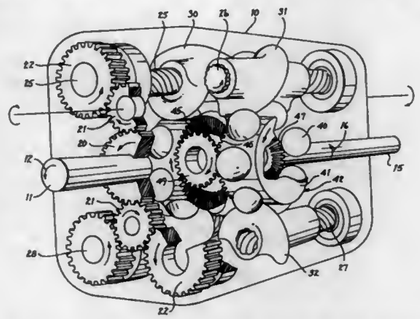
1. A motion arrester for a conjugate drive mechanism of a scotch yoke type motion converter, comprising a linearly movable shuttle; a crankpin positioned within an aperture in said shuttle and rotatable in a circular path; a bearing conjugate having a trackable profile, which forms a portion of a peripheral boundary of said aperture and which has a first circumferential length; a conjugate driver positioned within said aperture and rotatably mounted about said crankpin, at least a portion of said conjugate driver being located between said crankpin and said bearing conjugate and having a tracking profile, which has a second circumferential length equal to said first circumferential length, said tracking profile and said trackable profile engaging each other continuously in conjugation between a first end point and a second end point as said crankpin rotates such that motion is transferable between said crankpin and said shuttle; and arresting means for arresting the motion of said conjugate driver relative to said bearing conjugate at said first end point and said second end point.

5,546,822

VARIABLE SPEED TORQUE MULTIPLYING TRANSMISSION

John E. Fowler, Jack's Trading Post, Sawmill Rd., Whiteriver, Ariz. 85941

Filed Jun. 13, 1994, Ser. No. 259,007
Int. Cl.[6] F16H *29/12*
U.S. Cl. 74—113 **24 Claims**



1. A means for varying the ratio of an input rotational velocity to an output rotational velocity comprising:

a cam driver mounted for rotation about a driver axis;

an open ended cylinder cam having a camming tooth with a continuously varying tooth pitch and tooth angle mounted on said driver to be driven thereby;

said cam translatable axially of said driver;

means for axially positioning said cam on said driver; and

a plurality of cam followers each successively contacting said cam to be driven thereby arranged to form a cam follower cluster mounted for rotation about an axis perpendicular to said driver axis.

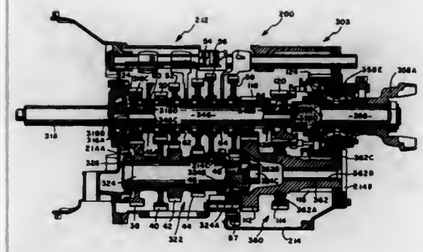
5,546,823

HIGH-CAPACITY COMPOUND TRANSMISSION

Alan C. Stine, Kalamazoo, and Joseph D. Reynolds, Climax, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 063,792, May 20, 1993, Pat. No. 5,390,561, and Ser. No. 63,829, May 20, 1993, Pat. No. 5,370,013. This application Nov. 28, 1994, Ser. No. 345,092
Int. Cl.[6] F16H *3/08;3/04*
U.S. Cl. 74—331 **19 Claims**

1. A compound vehicular change gear transmission (**200**) comprising a multiple speed main transmission section (**212**) connected in series with a multiple speed auxiliary transmission section (**302**), said main and auxiliary transmission sections contained within a



common transmission housing (**214**) defining a forward end wall (**214A**) and a rearward end wall (**214B**);

said main transmission section comprising an input shaft (**316**) supported for rotation in said housing by input shaft bearing means (**318B**) carried by said forward end wall, at least one input gear (**24**) fixable to said input shaft, a mainshaft (**346**) generally coaxial with said input shaft and extending into said auxiliary transmission section, a plurality of substantially identical main section countershafts (**324**) rotatably supported in said housing and driven by said input shaft, a plurality of main section countershaft gears (**38, 40, 42, 44, 46**) fixed to each of said main section countershafts, a plurality of mainshaft gears (**50, 52, 54, 56**) surrounding said mainshaft and constantly meshed with pairs of said main section countershaft gears and main section clutch means (**60, 62, 64**) carried by said mainshaft for selectively fixing said mainshaft gears to said mainshaft for rotation therewith;

said auxiliary transmission section comprising a plurality of substantially identical auxiliary section countershafts (**362**) coaxial with said main section countershafts and rotatably supported in said housing, an output shaft (**358**) generally coaxial with said mainshaft and rotatably supported in said housing by output shaft bearing means (**358E**) carried by said rearward end wall (**214B**), an auxiliary section countershaft gear (**112, 114, 116**) fixed to each of said auxiliary section countershafts, at least one auxiliary section central gear (**118, 120, 124**) generally coaxial with said output shaft and constantly meshed with a pair of said auxiliary section countershaft gears and auxiliary section clutch means (**126, 128**) for selectively clutching at least one of said auxiliary section central gears and said mainshaft to said output shaft;

said transmission characterized by:

the coaxial ones of said main section and auxiliary section countershafts being independently rotatable in said housing with bearing means therebetween and together defining a coaxial assembly of countershafts rotatably supported in said housing solely by bearing means (**326, 362C**) mounted in said forward end wall and in said rearward end wall and a single bearing (**324B**) mounted in an intermediate (**214C**) housing wall;

the rearward end of said input shaft is provided with a generally tapered surface for abutting engagement with a generally complimentary tapered surface provided on the forward end of said mainshaft; and

said mainshaft is supported in said housing solely by said input shaft and said output shaft.

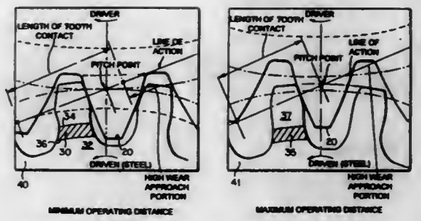
5,546,824

VISUAL METHOD AND APPARATUS FOR ADJUSTING GEARS AND PINIONS

Frank S. Miller, Norwell, and John F. Croto, South Weymouth, both of Mass., assignors to Imo Industries Inc., Lawrenceville, N.J.

Continuation-in-part of Ser. No. 141,381, Oct. 22, 1993, Pat. No. 5,423,232. This application Mar. 9, 1995, Ser. No. 400,946
U.S. Cl. 74—421 R **17 Claims**

1. A gear system for driving roll stands, comprising:



at least one non-metal driver gear, a driven gear, keyless locking means for securing said gears to shafts, said driver gear having teeth with increased addendum relative to standard gearing, and said driven gear having teeth with addendum decreased in magnitude equal to said increase in addendum of said driver gear, all relative to standard gearing; and

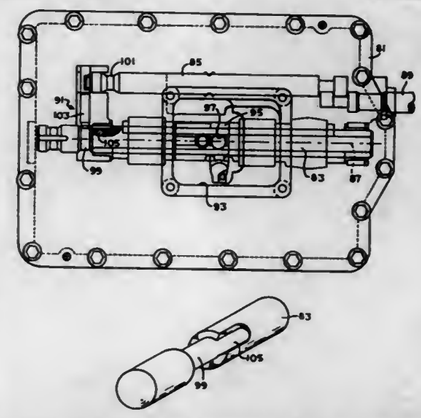
wherein said driven gear has a first set of teeth, each tooth of said first set of teeth having range groove means disposed on a facing surface thereon, said groove means for assuring proper selection of said driven gear.

5,546,825

CHANGE GEAR TRANSMISSION AND SHIFT ROD INTERLOCK THEREFOR

Thomas N. Riley, Portage, Mich., and Philip A. Morris, Manchester, England, assignors to Eaton Corporation, Cleveland, Ohio

Filed Dec. 13, 1994, Ser. No. 355,358
Int. Cl.[6] F16H *61/18*
U.S. Cl. 74—477 **4 Claims**



1. A compound change gear transmission of the type including a multiple speed ratio main transmission section and an auxiliary transmission section connected in series; said main transmission section comprising a shift control assembly therefor, including at least a first shift rod axially moveable therein from a neutral, nondisplaced position to engage and disengage, respectively, selected main transmission section gear ratios; said auxiliary transmission section including at least a second shift rod axially moveable therein to engage and disengage selected auxiliary transmission section gear ratios; and a shift rod interlock assembly of the type including an interlock pin member operable between a first position engaging said first shift rod and preventing axial movement thereof from said axially nondisplaced position while permitting axial movement of said second shift rod and a second position engaging said second shift rod and preventing axial movement thereof while permitting axial movement of said first shift rod; characterized by:

(a) said first shift rod having at least one normal position and an interlock deactivation position corresponding to a non-neutral, predetermined gear ratio of said main transmission section; and

(b) said first shift rod defining an interlock recess disposed to receive therein said interlock pin member, when said first shift rod is in said interlock deactivation position and in said displaced position, thereby permitting axial movement of said second shift rod.

5,546,826

DRIVE SYSTEM

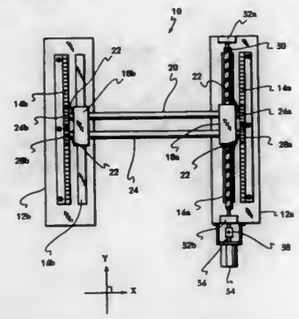
Ken Yanagisawa, c/o Kabushiki Kaisha Mechanic Sekkei Jimusho, 5175-1, Ooaza Toyoshina, Toyoshina-machi, Minamiazumi-gun, Nagano-ken, Japan

Filed Jan. 6, 1995, Ser. No. 369,931

Claims priority, application Japan, Jan. 13, 1994, 6-002066

Int. Cl.[6] F16H *57/12;25/20;19/04*

U.S. Cl. 74—490.09 **16 Claims**



1. A drive system, comprising:

a pair of racks being arranged parallel in a first direction;

a pair of travellers being capable of moving parallel to said racks in the first direction;

a first shaft being arranged in a second direction perpendicular to the first direction, said first shaft being rotatably connected to said travellers;

a second shaft being arranged in the second direction, said second shaft being rotatably connected to said travellers;

a pair of first pinion gears being fixed to said first shaft, said first pinion gears being respectively engaged with each rack and capable of rolling thereon;

a pair of second pinion gears being fixed to said second shaft, said second pinion gears being respectively engaged with each rack and capable of rolling thereon; and

driving means for moving said travellers in the first direction,

wherein said first pinion gears are engaged with said racks with torsion, which has been applied to said first shaft, in a first circumferential direction with respect thereto, and

wherein said second pinion gears are engaged with said racks with torsion, which has been applied to said second shaft, in a second circumferential direction with respect thereto, which is the opposite direction of the first circumferential direction.

5,546,827

CORE ELEMENT WIPER SUSPENDED BOOT

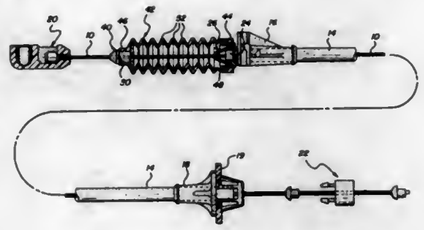
Joseph Pospisil, Royal Oak, Mich., assignor to Teleflex Incorporated, Plymouth, Pa.

Filed Jul. 10, 1995, Ser. No. 500,483

Int. Cl.[6] F16C *1/10*

U.S. Cl. 74—502.4 **9 Claims**

1. A motion transmitting remote-control assembly comprising:



a conduit means (**14, 16, 18**) extending between first and second ends;

a swivel ball (**24**) supported at said first end of said conduit means;

a flexible motion-transmitting core element (**10**) movably supported by said conduit means and extending from said swivel ball (**24**) at said first end thereof;

a wiper cap (**26**) mounted on said swivel ball (**24**) for swivelling movement about the center of said swivel ball (**24**) and including a wiper portion (**28**) in close sliding engagement with said core element (**10**);

wiper-retainer means (**40**) in close sliding engagement with said core element (**10**) and spaced axially along said core element (**10**) from said wiper cap (**26**), and a boot (**42**) extending between a first end (**44**) supported on said wiper cap (**26**) and a second end (**46**) supported on said wiper-retainer means (**40**), said boot (**42**) being flexible and axially extendable and contractible axially with movement of said core element (**10**).

5,546,828

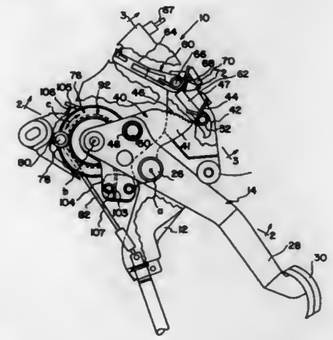
PARKING BRAKE

B. Paul Golarz, Ajax, Canada, assignor to Atoma International Inc., Newmarket, Canada

Filed Jan. 13, 1995, Ser. No. 373,572

Int. Cl.[6] G05G *1/14;5/06*

U.S. Cl. 74—512 **14 Claims**



1. A parking brake mechanism for a vehicle having a cable-operated brake mechanism comprising

a frame structure constructed and arranged to be fixedly mounted in the vehicle,

a lever assembly pivotally mounted on said frame structure for pivotal movement about a pivotal axis between a brake-releasing position and a range of different brake-applying positions,

said lever assembly providing a series of ratchet teeth corresponding with said brake-applying positions,

said ratchet teeth being constructed and arranged to extend in a row arcuate about the pivotal axis of said lever assembly,

a pawl pivotally mounted on said frame structure and spring biased to move into engagement with at least one of said ratchet teeth when said lever assembly is moved into any one of the brake-applying positions to releasably retain said lever assembly thereat,

an actuatable releasing mechanism operatively associated with said pawl to move said pawl out of tooth engagement to permit said lever assembly to return to the brake-releasing position thereof,

a rotary assembly providing a cable connection capable of movement in opposite directions within an arcuate path and an exterior cylindrical surface mounted on said lever assembly in spaced parallel relation to said pivot axis and capable of movement in opposite directions within the plane of said cylindrical surface in conjunction with the movement of said cable connection,

said cable connection being constructed and arranged to fixedly connect therewith one end of a cable which is adapted to extend to the cable-operated brake mechanism so that when said cable connection moves in said arcuate path (1) in one direction the cable connected thereto will be moved in a direction to increase the tension in said cable and (2) in an opposite direction the cable will be moved in a direction to slacken the tension in said cable,

a spring system acting on said rotary assembly constructed and arranged to resiliently bias (1) said cable connection to move within the arcuate path thereof in said one direction so as to apply a predetermined slack tension to the cable connected therewith and (2) said exterior cylindrical surface to move in a direction corresponding with the one direction of said cable connection,

a helical coil spring having a series of volutes constructed and arranged to be biased to engage said exterior cylindrical surface,

said helical coil spring being constructed and arranged to enable the helical coil spring volutes to frictionally engage said exterior cylindrical surface to prevent movement of said exterior cylindrical surface in a direction corresponding with the opposite direction of movement of said cable connection,

said helical coil spring having an end portion constructed and arranged to be moved from a normal inoperative position into a volute-disengaging position wherein the normal biased engagement of the volutes with said exterior cylindrical surface is relieved to allow said exterior cylindrical surface to move in opposite directions within the plane thereof and said cable connection to move in opposite directions within the arcuate path thereof, and

an abutment constructed and arranged to engage the end portion of said helical coil spring,

said lever assembly, said abutment and the end portion of said helical coil spring being constructed and arranged such that (1) when said lever assembly is in the brake-releasing position thereof the end portion of said helical coil spring is maintained by said abutment in the volute-disengaging position thereof to allow the cable connection to move within said arcuate path in opposite directions to maintain a desired slack tension on the cable connected therewith and (2) when said lever assembly is out of the brake-releasing position thereof the end portion of said helical coil spring is maintained in the normal inoperative position thereof so that during the movement of said lever assembly out of the brake-releasing position thereof into one of said brake-applying positions thereof the cable connection will pull the cable connected thereto into brake operating relation with the cable-operated brake mechanism.

5,546,829

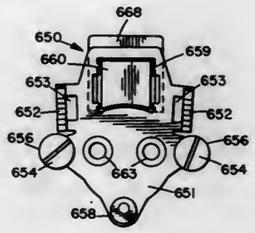
CLIPLESS BICYCLE PEDAL SYSTEM

Richard M. Bryne, San Diego, Calif., assignor to Speedplay, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 947,350, Sep. 18, 1992, Pat. No. 5,325,738, which is a continuation-in-part of Ser. No. 804,070, Dec. 9, 1991, abandoned. This application Jan. 21, 1994, Ser. No. 184,029

Int. Cl.[6] B62M *3/08;* **G05G** *1/14*

U.S. Cl. 74—594.6 **28 Claims**



1. A clipless bicycle pedal system having a pedal and a cleat for attachment to a rider's shoe comprising:

said pedal comprising:

a body comprising an upper half-shell and a lower half-shell, said upper half-shell and said lower half-shell being mirror-images of each other, each of said upper and lower half-shells having a semi-circular channel formed in its inner surface which forms a circular bore when said upper and lower half-shells are joined within which a pedal spindle is rotatably retained;

a neck portion extending from each of a top surface of said upper half-shell and a bottom surface of said lower-half shell, said neck portion having a neck diameter; and

a head portion disposed on an end of each said neck portion, said head portion having a head thickness and a pair of head tabs extending diametrically opposite each other on said head portion, said pair of head tabs having a tab width; and

said cleat comprising:

a cleat plate having a front, a rear and two sides and having means for attachment to said rider's shoe, said cleat plate having a plurality of bores formed therein, at least one bore of said plurality of bores being disposed in each of said two sides;

a pair of screws screwed into said plurality of bores in said two sides and extending perpendicular from said cleat plate, each said screw having a top portion and a stem portion, said stem portion having a height greater than said head thickness and a first spacing between said stem portions being greater than said tab width, and a second spacing between said top portions being smaller than said tab width and greater than said neck diameter;

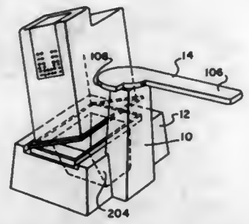
a stop disposed at said rear of said cleat plate; and

a resilient tab disposed at said front of said cleat plate, said resilient tab having a locking edge at its rearmost extent which becomes substantially level with said cleat plate when pressure is applied to said resilient tab by placing said head portion in contact with said cleat and sliding said cleat forward so that said head tabs are between said stem portions and above said top portions and said resilient tab resiles once said head portion has passed said locking edge in said cleat's forward motion to hold said head portion within a locking area defined by said stop, said screws and said resilient tab, wherein said neck diameter closely fits within a third spacing between said stop and said locking edge;

wherein rotation of said cleat relative to said pedal causes said head tabs to exit from said top portions so that said head portion is released from said locking area.

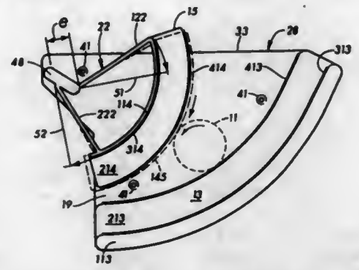
VOL 1189 ISS 3 AG 20 1996 UMI

5,546,830
INK CARTRIDGE OPENER
Kenneth H. Yuen, 1613 Chelsea Rd., San Marino, Calif. 91108
Filed Apr. 26, 1994, Ser. No. 233,359
Int. Cl.[6] B67B 7/92
U.S. Cl. 81—3.39 10 Claims



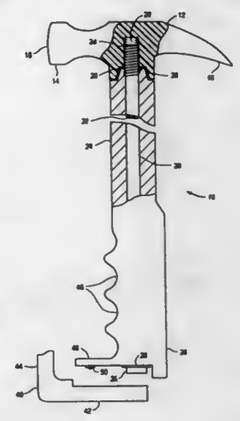
1. An ink cartridge opener for use in connection with a flat support surface, comprising:
a base stand having a substantially-coplanar inner and outer bottom surfaces adapted for engagement with the support surface;
the inner bottom surface having two long sides and two short sides joined at right angles, such that the inner bottom surface is open, rectangular and elongate;
the outer bottom surface having first and second long sides and two short sides joined at right angles, the first long side having an outward U-shaped projection, such that the outer bottom surface is open, substantially rectangular and elongate with a U-shaped projection from the first long side;
the base stand having four slightly inwardly-sloped side walls extending upwardly from the outer bottom surface to a planar top surface, with adjacent side walls being joined at sloping edges to one another;
the top surface being parallel to the bottom surfaces and substantially U-shaped, with two side portions connected by a middle portion;
the top surface side portions being long in the same direction as the bottom surface long walls and the top surface middle portion being long in the direction of the bottom surface side walls;
the base stand further including a planar intermediate surface parallel to the top and bottom surfaces, the intermediate surface having two long sides and two short sides joined at right angles, such that the intermediate surface is open, rectangular and elongate, with the top and intermediate surfaces being joined by three, short walls extending therebetween, with one the intermediate surface short sides being wider than the other and not connected to the top surface;
the base stand further including four inner surfaces extending downwardly from the intermediate surface to the inner bottom surface, the inner surfaces being slightly inwardly-sloped, with an inner surface extending from the wider intermediate surface short side having an angled interface portion;
a pivot tower extending upwardly from the U-shaped projection of the outer bottom surface and outwardly from one of the base stand side walls, the pivot tower having four slightly inwardly sloped walls, joined at right angles, such that the tower is rectangular in cross-sections parallel to the bottom surfaces, and the tower walls terminating at a top surface, the top surface being planar and parallel to the bottom surfaces;
the pivot tower further including an inner cylindrical surface extending downwardly from the center of the pivot tower top surface, the cylindrical surface having a central axis perpendicular to the bottom surfaces; and
a lever arm having a pivot shaft rotatably-engaged with the cylindrical surface of the pivot tower, the arm having coplanar upper and lower surfaces parallel to the base stand bottom surfaces with the pivot shaft extending from the lever arm lower surface, the pivot shaft being cylindrical about a central axis collinear with the pivot tower central axis, and the lever arm having a handle extending outwardly from the lever arm central axis on one side of the lever arm, and an eccentric surface being formed on the other side of the lever arm.

5,546,831
GRIPPING SYSTEM FOR ROTARY OBJECTS
Katherine M. Grant, deceased, late of Bellflower, Calif., and Frederic F. Grant, 14505 Eastbrook Ave., Bellflower, Calif. 90706
Filed Sep. 24, 1993, Ser. No. 126,981
Int. Cl.[6] B67B 7/14
U.S. Cl. 81—3.44 44 Claims



29. Apparatus for gripping any one of several rotary objects of various diameters without a need for manual adjustment to any of said various diameters, comprising in combination:
a pair of object-gripping jaws spaced at a taper to each other for said various diameters;
a stationary base for one of said jaws; and
a one-piece assembly including the other of said jaws having two flexible pivot levers attached to said base.

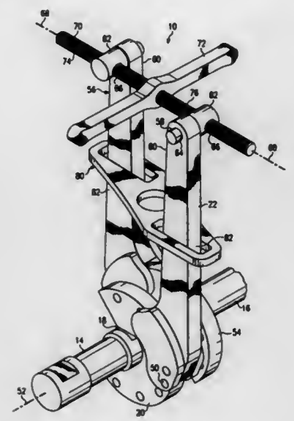
5,546,832
STRIKING APPARATUS HAVING AN INTERCHANGEABLE HEAD
Kevin P. Townsend, 535 Chalan Pale R.H., #116-16, 96929, Ylgo, Guam
Filed Feb. 10, 1995, Ser. No. 388,225
Int. Cl.[6] B25D 1/02
U.S. Cl. 81—25 18 Claims



1. A striking apparatus, comprising:
an interchangeable head;

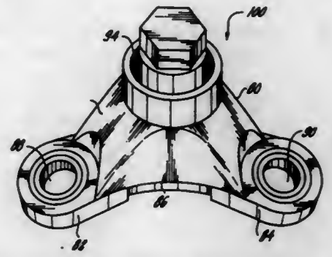
a handle having a distal end, a proximal end, and an axial lumen extending therebetween, wherein the handle is removably connected to the head at its distal end by a bolt extending through the lumen and into the head; and
an extension removably held at the proximal end of the handle, the extension having an aperture for receiving a head of the bolt.

5,546,833
SCREW DRIVE TOOL JOINT WRENCH
R. Brian Holdeman; Fred H. Kohman, both of Perry; Greg T. Harrison, Stillwater, and Bradley W. Hise, Perry, all of Okla., assignors to The Charles Machine Works, Inc., Perry, Okla.
Filed Mar. 3, 1995, Ser. No. 398,107
Int. Cl.[6] B25B 13/00
U.S. Cl. 81—52 16 Claims



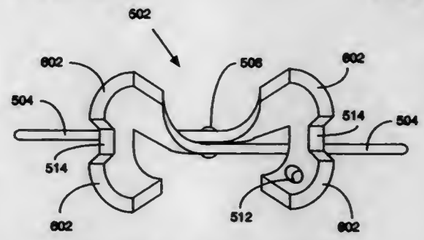
1. A wrench assembly for breaking a threaded connection between a first pipe section and a second pipe section, comprising:
a first jaw engaged to the first pipe section for rotation therewith;
a first torque arm having a proximal end and a distal end, the first torque arm secured to the first jaw at the proximal end;
a second jaw engaged to the second pipe section for rotation therewith;
a second torque arm having a proximal end and a distal end, the second torque arm secured to the second jaw at the proximal end;
a threaded assembly threaded to the first and second torque arms at the distal ends thereof to move the distal ends relative each other to break the threaded joint;
the threaded assembly including a threaded rod and a handle secured thereto, a first pivoting nut pivotally secured to the first torque arm at the distal end thereof and rotatable about a single axis, and a second pivoting nut pivotally secured to the second torque arm at the distal end thereof and pivotal around a single axis, each of said pivoting nuts having a threaded aperture to receive the threaded rod therein, the single axis of pivotal motion of the first and second pivoting nuts providing negation of twisting movement in the torque arms through the engagement of the threaded rod and torque arms.

5,546,834
TOOL FOR REMOVING THREADED FASTENERS
Jack Gable, and Doug Harrington, both of 6900 Valley View, Bakersfield, Calif. 93306
Filed Apr. 16, 1990, Ser. No. 509,553
Int. Cl.[6] B25B 13/50
U.S. Cl. 81—53.2 20 Claims



1. A tool for removing a threaded article comprising:
a threaded bracket;
a driver having a first set of threads having a pitch matching the pitch of the threads of the article with the first set of threads threadably engageable to said bracket, and a second set of threads having threads of a larger pitch than the first set of threads;
an engager threadably engageable to said second set of threads of said driver;
and means for limiting relative rotation between said driver and said engager.

5,546,835
FLEXIBLE HOSE JOINING TOOL
John A. Seile, 1128 SW. 28th St., Palm City, Fla. 34990
Filed Jul. 11, 1994, Ser. No. 274,301
Int. Cl.[6] B25B 7/02
U.S. Cl. 81—426.5 10 Claims



1. A tool for joining flexible hosing, comprising:
pivot means;
first and second opposing members, each opposing member further comprising;
handle means;
jaw means, the jaw means having a first cutout in one edge of the distal end of the jaw means and located such that the jaw means forms a finger section on each side of the first cutout; and
means to attach to the pivot means; and
first nipple pushing means, the first nipple pushing means having an aperture for holding hose connection nipples; and
the first and second opposing members pivotally attached to the pivot means such that the jaw means can move between an open and a closed position, the first and second opposing members further attached to the pivot means such that the first cutout on the first opposing member's jaw means is substantially aligned with the first cutout on the second opposing

member's jaw means when the jaw means are closed, the fingers on the jaw means of the first and second opposing members forming a pocket when the jaw means are closed.

5,546,836

LATHE WITH AN AUXILIARY TRANSVERSE TABLE

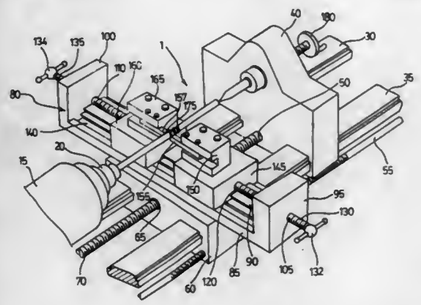
Young S. Choi, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Jun. 30, 1994, Ser. No. 269,384

Claims priority, application Rep. of Korea, Jun. 30, 1993, 93-12166

Int. Cl.[6] B23B *21/00*

U.S. Cl. 82—132 **5 Claims**



1. A lathe for machining a workpiece, said lathe comprising:
a drive spindle having a chuck for firmly clamping said workpiece at one end thereof and for rotating said workpiece;
a tail stock having a tail stock center for firmly supporting said workpiece at the other end thereof on an upper portion, and said tail stock being moved slidably in a longitudinal direction of said workpiece;
a machining table for machining said workpiece at one side and for supporting said workpiece at the other side, said machining table being moved slidably in said longitudinal direction during a machining operation, said machining table further comprises:
a base having a transverse guiding protrusion thereon;
a first wall having a first hole on an end of said base;
a second wall having a second hole on the other end of said base;
a transverse table having a first groove at a lower portion thereof and being engaged with said transverse guiding protrusion on a first side of said machining table, for machining the workpiece, and said transverse table being moved slidably along said transverse guiding protrusion;
an auxiliary transverse table having a second groove at a lower portion thereof and being engaged with said transverse guiding protrusion on a second side of the machining table facing with said first side, for supporting the workpiece and said auxiliary transverse table being moved slidably along said transverse guiding protrusion;
a first transverse lead screw connecting said first wall with said transverse table through said first hole and said first groove; and
a second transverse lead screw connecting said second wall with said auxiliary transverse table through said second hole and said second groove.

5,546,837

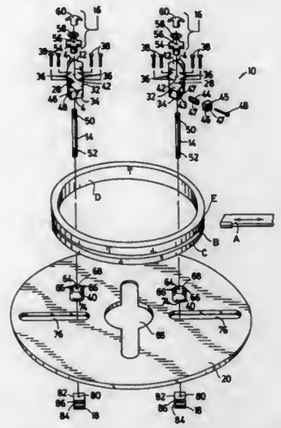
RING SUPPORT ASSEMBLY

Gary E. Dibble, Wellsville; Wallace F. Morehouse, Olean, and Ralph G. Blackman, Wellsville, all of N.Y., assignors to Dresser-Rand, Wellsville, N.Y.

Filed Mar. 16, 1994, Ser. No. 213,566

Int. Cl.[6] B23B *31/40;* B23Q *3/14*

U.S. Cl. 82—169 **13 Claims**



1. A ring support member for holding a ring piece being cut from a ring-shaped structure, the ring support member comprising:
a bar assembly having a convex arcuate surface adapted to be disposed against and aligned with an inner circumferential portion of the ring-shaped structure, said bar assembly further including a pair of substantially parallel faces substantially perpendicular to the convex arcuate surface;
a supporting stud extending substantially perpendicularly through the faces of said bar assembly; and
a first clamping assembly and a second clamping assembly, said first clamping assembly attached to one end of said supporting stud and adapted to fix said bar assembly to said supporting stud and said second clamping assembly adapted to slidably fix another end of said supporting stud to a plate having first and second parallel sides and at least one elongated radial passage extending between the first and second sides, wherein a base connected between one of the faces of said bar assembly and said second clamping assembly at the other end of said supporting stud is adapted to slidably fit within said elongated passage from the first side of said plate and said second clamping assembly is adapted to slidably fit within said elongated passage from the second side of said plate.

5,546,838

NOTCH TIMING DEVICE AND METHOD FOR CARD SLITTING MACHINE

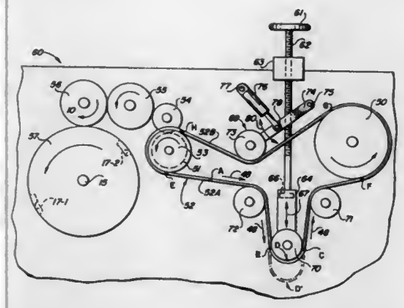
Michael V. Longwell, San Marcos, Calif., assignor to The Upper Deck Company, Carlsbad, Calif.

Filed Apr. 28, 1995, Ser. No. 431,190

Int. Cl.[6] B26D *5/20;1/56*

U.S. Cl. 83—37 **15 Claims**

12. A method of operating a slitting machine for producing a plurality of interrupted of cut slits in an advancing sheet having a leading edge and a trailing edge, the method comprising the steps of:
(a) providing a lower shaft, a plurality of lower hubs rigidly mounted on the lower shaft, and a plurality of circular notched lower blades rigidly attached to the lower hubs, respectively, and also providing an upper shaft, a plurality of upper hubs mounted on the upper shaft, and a plurality of



circular upper blades attached to the upper hubs, respectively, so that an edge portion of each upper blade overlaps and engages an edge portion of a corresponding lower blade to cut the interrupted cut slits;
(b) advancing the sheets by means of a sheet feeder;
(c) rotating a driven pulley in synchronization with the advancing of the sheet by means of a fixed-length belt driven by a drive pulley, the belt providing a power path between the drive pulley and the driven pulley and also providing a return path between the drive pulley and the driven pulley; and
(d) adjusting the length of the power path to thereby adjust the locations of the notches of the lower blades as they rotate relative to the locations of the sheet as it is advanced by the sheet feeder and thereby adjust margins between ends of the interrupted cut slits and the leading and trailing edges of the sheet.

5,546,839

PNEUMATIC EJECTOR

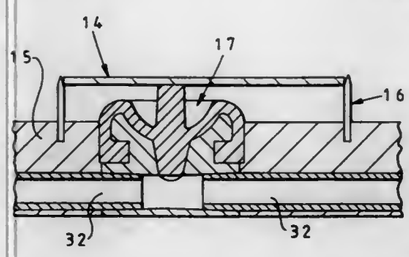
Richard Gardiner, Parish Mill, Longhope, Gloucestershire, England

Filed Jul. 29, 1994, Ser. No. 282,458

Claims priority, application United Kingdom, Aug. 4, 1993, 9316126

Int. Cl.[6] B26D *7/06*

U.S. Cl. 83—128 **6 Claims**



1. A pneumatic ejector comprising a rigid support member having a base portion and an upstanding boss integral with the base portion, and an elastomeric ejection element having a diaphragm portion and a peripheral portion surrounding the diaphragm portion, said peripheral portion being secured to the boss, the support member having an air inlet passage for supplying air under pressure to move the diaphragm away from the boss, the diaphragm having an integral protrusion upstanding from a central region of the diaphragm and extending in a direction away from said air inlet passage.

5,546,840

SLITTING MACHINE WITH POSITION CHECK OF THE CUTTING EDGES

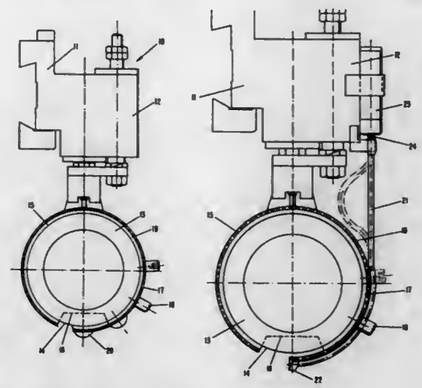
Rudolf Supe-Dienes, Overath, Germany, assignor to Dienes Werke für Maschinenteile GmbH & Co. KG, Overath-Vilkerath, Germany

Filed Oct. 27, 1993, Ser. No. 145,988

Claims priority, application Germany, Oct. 28, 1992, 42 36 288.1

Int. Cl.[6] B26D *7/27;1/14*

U.S. Cl. 83—478 **7 Claims**



1. A slitting device comprising:
a cutting blade arrangement comprising a plurality of cutting blade holders laterally arranged, each cutting blade holder supporting an individual cutting blade;
a lifting device connected to each of said cutting blade holders for lowering said cutting blades in a first direction against a counter blade for performing a cutting operation and retracting said cutting blades away from the counter blade into a rest position;
each said cutting blade holder comprising an indicating device for showing, when said cutting blade is in said rest position a cutting position in a plane perpendicular to said first direction of said cutting blade relative to said counter blade, which said cutting blade will assume when lowered against the counter blade;
wherein each said cutting blade holder has a protective cover for covering said cutting blade in said rest positioo;
wherein said indicating device includes a slide which is slidably connected to said protective cover so as to be slidable about a periphery of said protective cover; and
wherein said slide comprises an indicator that indicates said cutting position of said cutting blade.

5,546,841

DRUM ASSEMBLY

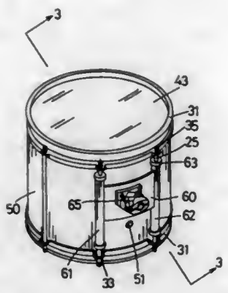
Ming-Hawi Chen, 581, Wen Chu Road, Da Jia Town, Taichung, Taiwan

Filed Mar. 24, 1995, Ser. No. 410,512

Int. Cl.[6] G10D *13/02*

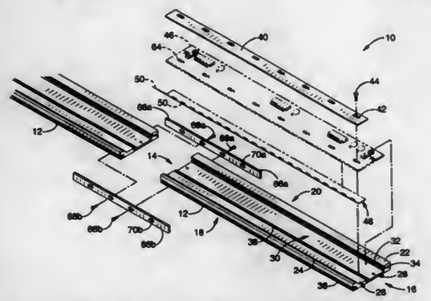
U.S. Cl. 84—411 R **1 Claim**

1. A drum assembly comprising:
a cylindrical body including an upper portion and a lower portion,
a pair of rims engaged on said upper portion and said lower portion of said cylindrical body respectively and each including a membrane provided therein,
a pair of frames engaged on said rims respectively and each including a plurality of ears extended radially outward therefrom,



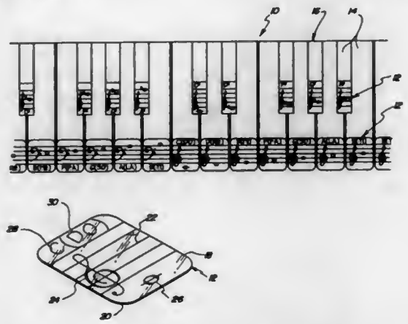
a pair of rings,
a plurality of posts secured between said rings and engaged between said ears of said frames,
means for securing said ears to said posts so as to secure said frames together and so as to secure the cylindrical body and said rims between said frames, and
a panel including a pair of tubes secured thereto, said tubes being engaged with two of said posts so as to secure said panel to said posts.

5,546,842
RECORDING SENSOR MOUNTING RAIL FOR KEYBOARD OPERATED MUSICAL INSTRUMENT
Robert L. Pimentel, Sacramento, Calif., assignor to Burgett, Inc., Sacramento, Calif.
Filed Jul. 13, 1995, Ser. No. 502,083
Int. Cl.[6] G10G *3/00*
U.S. Cl. 84—461 **10 Claims**



9. A mounting rail apparatus for supporting a recording sensor assembly in a keyboard operated musical instrument, comprising:
(a) an elongated mounting rail, said mounting rail having first and second ends, said mounting rail having front and rear sides;
(b) said mounting rail including a rectilinear flange extending longitudinally between said first and second ends along the rear side of said mounting rail, said rectilinear flange including a slot opposite the rear side of said mounting rail, said slot extending longitudinally between said first and second ends of said mount rail;
(c) said mounting rail including an arcuate flange extending longitudinally between said first and second ends along the front side of said mounting rail;
(d) shelf means for supporting a second edge of a recording sensor assembly, said shelf means positioned adjacent to said arcuate flange, said shelf means extending longitudinally between said first and second ends of said mounting rail, said shelf means including a slot extending longitudinally between said first and second ends of said mounting rail along said shelf means; and
(e) a compression rail;
(f) compression rail coupling means for coupling said compression rail to said shelf means; and
(g) mounting rail coupling means for coupling said mounting rail to a second mounting rail, said mounting rail coupling means positioned in said arcuate flange and said rectilinear flange.

5,546,843
PIANO KEY IDENTIFICATION SYSTEM
John Degaard, 9 Woodland Dr., Hasbrouck Heights, N.J. 07604
Filed Sep. 15, 1995, Ser. No. 528,561
Int. Cl.[6] G09B *15/08*
U.S. Cl. 84—478 **14 Claims**



1. A piano key identification system comprising:
a plurality of informational stickers securable to an individual one of a plurality of keys of a musical instrument, the informational stickers each including indicia printed thereon communicating to an individual an identity of the particular key to which a particular informational sticker can be attached; said informational stickers each comprising a base web formed in a substantially rectangular configuration, said base web being formed of a flexible material having an adhesive applied to a bottom surface thereof and operable to effect securement of the base web to an upper surface of a key; and,
a removable template backing configured so as to depict a piano keyboard, with the informational stickers each being attached to the respective keys of the piano keyboard depicted on the template backing.

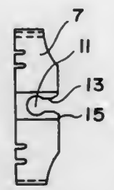
5,546,844
HYBRID PROPELLANT/ELECTROTHERMAL GUN
Herbert Krumm, Kaarst; Adolf Nordmann, Erkrath; Johannes Ehrhardt, München; Johann Lorenz, Hohenkammer, and Günter Stoffler, Vierkirchen, all of, Germany, assignors to Rheinmetall Industrie GmbH, Ratingen, Germany
Filed Mar. 24, 1995, Ser. No. 409,584
Claims priority, application Germany, Mar. 25, 1994, 44 10 327.1
Int. Cl.[6] F41B *6/00*; F41A *21/02*
U.S. Cl. 89—8 **11 Claims**



1. A gun barrel for a hybrid propellant/electrothermal gun adapted to fire a projectile by propellant gases and to increase

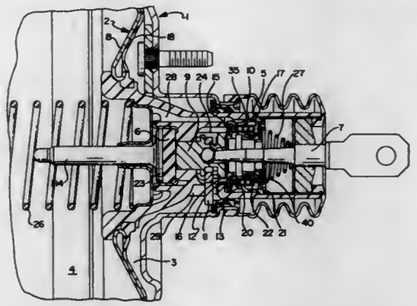
acceleration of the projectile by introducing electric energy into a barrel length portion containing a plasma path; said gun barrel having a barrel axis and comprising
(a) a first barrel portion;
(b) a second barrel portion axially separated from said first barrel portion;
(c) an insulator unit forming a third barrel portion; said insulator unit connecting said first and second barrel portions to one another and defining a plasma path; said insulator unit including
(1) a first metal coupling part surrounding an end portion of said first barrel portion; said end portion being oriented toward said plasma path;
(2) a second metal coupling part surrounding an end portion of said second barrel portion; said end portion of said second barrel portion being oriented toward said plasma path; said first and second metal coupling parts being axially spaced from one another;
(3) a component unit of electrically insulating fiber composite material disposed between said first and second metal coupling parts; said component unit having an inner face defining said plasma path; said component unit fixedly interconnecting said first metal coupling part and said second metal coupling part; and
(4) a cover sleeve surrounding said component unit; and
(d) electric potential applying means for placing said first barrel portion on a first electric potential and for placing said second barrel portion on a second electric potential; said first and second potentials being different from one another for generating, in said plasma path, an electric arc having an orientation parallel to said axis for beating the propellant gases.

5,546,845
CARTRIDGE BELT
Ernst Wössner, Sulz, and Mathias Braun, Meppen, both of, Germany, assignors to Heckler & Koch GmbH, Oberndorf am Neckar, Germany
Filed May 1, 1995, Ser. No. 432,973
Claims priority, application Germany, Apr. 29, 1994, 44 15 112.8; May 20, 1994, 44 17 782.8
Int. Cl.[6] F41A *9/80*
U.S. Cl. 89—35.01 **14 Claims**



1. A component belt for mounting thereon a plurality of components, each of the plurality of components having an axis and a circumferential cross-section, said component belt mounting said plurality of components to lie adjacent to one another with the axes of the components oriented parallel to each other for feeding one component at a time to a component using apparatus, said component belt comprising:
a) at least first and second belt members, each of said first and second belt members for mounting a corresponding one of the plurality of components and being of an annular configuration in accordance with the circumferential cross-section of its mounted component, each of said first and second belt members including first and second bulges disposed opposite each other about said annular configuration and further including a first edge and a second, opposing edge, said first and second bulges having therethrough first and second openings respectively, each of said first and second openings having a first dimension; and
b) a connecting member for insertion through said first opening of said first belt member and said second opening of said second belt member to articulately and releasably join said first and second belt members together, said connecting member comprising a joining portion having a second dimension and opposing ends, and enlarged portions affixed respectively to said opposing ends of said joining portion and having a common, third dimension greater than said second dimension;
c) said first opening of said first belt member communicating with one of its first and second edges by a first path within said first belt member, said second opening of said second belt member communicating with its same one edge by a second path within said second belt member, each of said first and second paths having a narrowed portion of a fourth dimension of a minimum extent along said circumferential cross-section of the component mounted within its belt member, said forth dimension being less than both of said first dimension and said third dimension, said first and second belt members being made of a flexible material to permit said connecting member to widen and thereby be withdrawn through each of said first and second paths, said connecting member being withdrawn in a first direction through said first path within said first belt member and in a second direction opposite to said first direction through said second path of said second belt member.

5,546,846
VACUUM BRAKE POWER BOOSTER FOR AUTOMOTIVE VEHICLES
Jurgen Bauer, Wiesbaden, Germany, assignor to ITT Automotive Europe GmbH
Filed Feb. 22, 1995, Ser. No. 387,892
Claims priority, application Germany, Aug. 22, 1992, 42 27 879.1
Int. Cl.[6] F15B *9/10*
U.S. Cl. 91—376 R **9 Claims**



1. A vacuum brake power booster for automotive vehicles, comprising:
a booster housing having its interior subdivided by a movable wall into a vacuum chamber and a working chamber, and a control valve which controls a pressure differential acting on the movable wall and comprises two concentrically arranged sealing seats and an elastically deformable valve member,
means for applying a pneumatic pressure, prevailing in the working chamber, to the side of the valve member remote from the sealing seats, wherein the valve member has a radially external and a radially internal rolling fold which, along with its sealing surface and a retaining ring retaining the valve member in a control housing, confine a pneumatic chamber, and further including
an annular reinforcing element and a valve spring, wherein said annular reinforcing element is arranged on the side of the

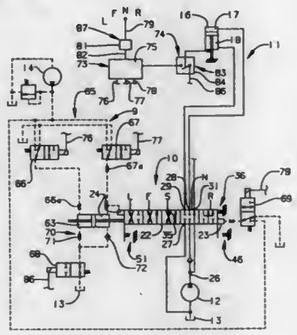
valve member remote from the sealing seats and said valve spring bears against the reinforcing element and biases the valve member in the direction toward the sealing seats wherein the reinforcing element has a U-shaped cross-section and contains at least one opening opposite to the passage of the valve member.

5,546,847

HYDRAULIC CYLINDER SNUBBING ARRANGEMENT

Charles E. Rector, Waubun, Minn.; Steven R. Wells, Aurora, Ill.; Daniel T. Mather, Lockport, Ill., and Robin S. Arndt, Crest Hill, Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Sep. 12, 1995, Ser. No. 526,831
Int. Cl.[6] F15B *11/048;11/044*
U.S. Cl. 91—403 **17 Claims**



1. A hydraulic cylinder snubbing arrangement disposed to reduce the velocity of a hydraulic cylinder as the hydraulic cylinder nears its end of stroke position wherein the hydraulic cylinder has at least one actuating chamber, comprising:
- a pilot operated control valve disposed to control fluid flow into and out of the actuating chamber and including a valve spool movable to a first discrete operating position establishing substantially unrestricted fluid flow out of the actuating chamber and to a second discrete operating position establishing a restricted flow path out of the actuating chamber, a pilot chamber at one end of the valve spool, a snubber spring device disposed to resiliently bias the spool from the first operating position to the second operating position when the fluid pressure in the pilot chamber is reduced from a first pressure level to a second lower pressure level;
- valve means for establishing the first pressure level in the pilot chamber in response to receiving a first control signal and for establishing the second lower pressure level in the pilot chamber in response to receiving a second control signal;
- means for directing the first control signal to the valve means in response to receiving a command signal; and
- means for directing the second control signal to the valve means when the hydraulic cylinder nears its end of stroke position.

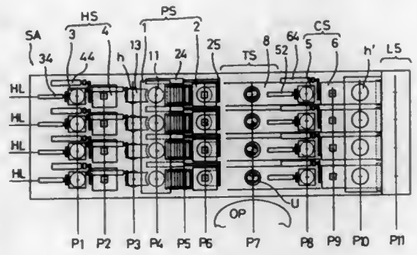
5,546,848

SANDWICH PREPARATION APPARATUS

Michiyuki Naramura, Okayama-ken, Japan, assignor to Kabushiki Kaisha Kyowa Kogyosho, Okayama-ken, Japan

Filed Mar. 27, 1995, Ser. No. 411,349
Claims priority, application Japan, Mar. 25, 1994, 6-055335; Sep. 9, 1994, 6-215494
Int. Cl.[6] A21C *9/04;* **B32B** *31/04;* **A21D** *13/08;* **A23L** *1/31*
U.S. Cl. 99—326 **13 Claims**

1. A sandwich preparation apparatus, comprising:
at least first and second sandwich production lines;



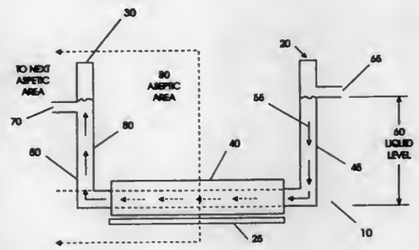
said at least first and second sandwich production lines including means for producing a sandwich;
said sandwich including at least a heel, a crown, and an item therebetween;
said at least first and second sandwich production lines being parallel to each other;
said at least first and second sandwich production lines having a width slightly greater than a width of said sandwich; and
said at least first and second sandwich production lines having means for toasting said heel, means for toasting said crown, and means for permitting adding said item to complete said sandwich.

5,546,849

HYDROSTATIC HEATING APPARATUS

Sarid M. Shefet, Raleigh, N.C., assignor to North Carolina State University, Raleigh, N.C.

Filed Mar. 6, 1995, Ser. No. 399,201
Int. Cl.[6] A23L *3/16;3/22*
U.S. Cl. 99—330 **20 Claims**



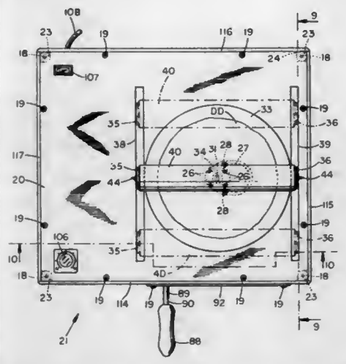
1. A hydrostatic heating apparatus for heating a particulate product in a liquid, said hydrostatic heating apparatus comprising:
- an enclosed chamber which is open to atmospheric pressure configured to contain said liquid under hydrostatic pressure, said enclosed chamber having a product inlet opening and a product outlet opening formed therein, and having a heating zone positioned between said product inlet opening and said product outlet opening;
- transporting means positioned in said enclosed chamber and extending through said heating zone for transporting said particulate product in said liquid from said product inlet opening through said heating zone and to said product outlet opening;
- hydrostatic pressure means operatively associated with said enclosed chamber for maintaining said particulate product in said liquid under pressure in said beating zone; and
- a heater connected to said enclosed chamber for heating said particulate product in said liquid under pressure in said heating zone.

5,546,850

ELECTRIC ROLLING PIN APPARATUS FOR MAKING DISCS OF DOUGH

Vikram H. Zaveri, 6723 122nd Ave., Fennville, Mich. 49408

Filed Jul. 6, 1995, Ser. No. 498,920
Int. Cl.[6] A47J *19/00*
U.S. Cl. 99—349 **22 Claims**



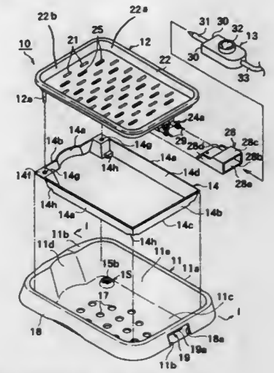
1. An electric rolling pin apparatus for making discs of dough comprising:
- an enclosed mechanism housing structure having four side walls, a top cover plate, and a bottom cover;
- a motor-driven rotating disc means located on top of said housing structure;
- a reciprocating rolling pin on top of said disc means pivotally supported by two arms of a glider protruded upwardly through two parallel slots in said top cover plate, each laid diagonally across and tangentially to the periphery of said disc means;
- said glider formed into a U shape, having a slider disposed equidistant from its two vertical arms and rigidly secured to its bottom surface by shoulder rivets, leaving a gap between the two, equal to the height of said shoulders;
- a long slotted drive link disposed within said gap between said glider and said slider with its slot at one end in sliding and rotational contact around one of the shoulders of a centrally located slider pin pivotally disposed between said glider and said slider and held in its position by said shoulder rivets disposed on both sides of its central location;
- an eccenter having a mating slot to receive a drive shaft of a main drive gearmotor and an eccentric pin rigidly secured at an eccentric distance from the axis of said mating slot;
- said eccentric pin having its middle shoulder in sliding and rotational contact with the remainder of the long slot in said drive link which is retained in sliding contact between the head of said eccentric pin at the top and said eccenter at the bottom;
- a rectangular frame-like structure disposed in a horizontal plane within said housing structure having laterally disposed front and rear brackets to form two opposite sides of said rectangular frame structure, connecting a transversely disposed side bracket and a slider guiding means which form remaining two opposite sides;
- said drive link having its other end pivotally mounted on the horizontal flange of said side bracket and said slider installed within said slider guiding means on the opposite side; and
- a motor mounting bracket disposed on said frame structure, for rigidly securing said main drive gearmotor under said eccenter with its drive shaft protruding vertically upwards through the mating slot in said eccenter, thereby providing driving means to rotate said eccenter and said eccentric pin, causing arcuate displacement of said drive link about its pivot, resulting in the reciprocatory motion of said slider within said slider guiding means and also of said glider and said rolling pin mounted on it.

5,546,851

ELECTRIC COOKING APPARATUS

Hisashi Goto, Kakamigahara, Japan, assignor to Alco Industries Kabushiki Kaisha, Gifu, Japan

Filed Dec. 27, 1994, Ser. No. 364,153
Claims priority, application Japan, Dec. 27, 1993, 5-350791; Nov. 10, 1994, 6-302853
Int. Cl.[6] A47J *27/00*
U.S. Cl. 99—446 **16 Claims**



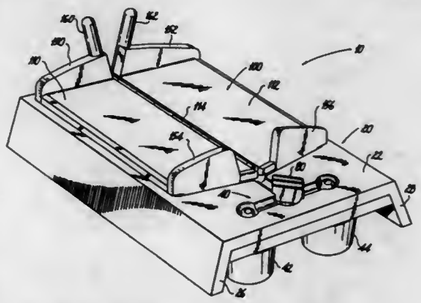
1. A cooking apparatus, comprising:
a cooking plate;
means for heating said cooking plate;
a plurality of drip holes in said cooking plate;
each of said drip holes being individually surrounded by one of a separate projection and a separate groove on a bottom side of said cooking plate;
a first container disposed below said cooking plate for supporting said cooking plate and for receiving a fluid dripping through said drip holes; and
a second container disposed below said first container for supporting said first container.

5,546,852

FOOD PREPARATION ASSEMBLY

Robert E. Bidwell, 27 Montrose Pl., Melville, N.J. 11747

Filed Jan. 13, 1995, Ser. No. 372,443
Int. Cl.[6] B23Q *3/00*
U.S. Cl. 99—446 **22 Claims**



1. A carving board assembly comprising:
a carving board platform having a substantially planar carving surface and having a sloping collection channel defined therein extending about the periphery of said carving surface for collecting drippings, separator means associated with said collection channel for separating the dripping according to

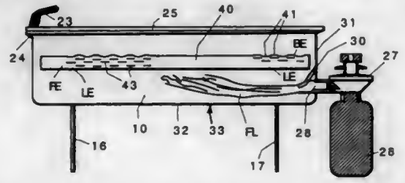
their relative densities and for distributing the separated drippings to respective catchment basins, and respective catchment basins adjacent said separator means for retaining the separated drippings.

5,546,853

BARBECUE GRILL WITH FLUIDIC BURNER AND HEAT DISTRIBUTION SYSTEM

Fred Heil, Baltimore, and Michael Lombardo, Forest Hill, both of Md., assignors to Bowles Fluidics Corporation

Filed Mar. 15, 1995, Ser. No. 404,635
Int. Cl.[6] A47J *37/00;37/07*
U.S. Cl. 99—447 **10 Claims**



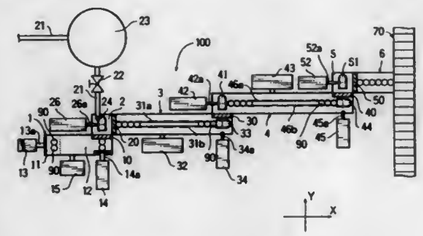
1. In a gas barbecue grill having a housing, said housing having ends, sides and bottom walls and a centerline, a grate supported by said housing to support food for cooking, a gas burner means for supplying heat, the improvement wherein said burner means includes at least one fluidic burner element centrally located and projecting a heating flame aligned substantially along the centerline, a heat radiation and distribution member having an axis aligned with said centerline and at least a pair of downwardly diverging planar elements, said burner projecting a flame along said centerline which beats the center of said radiation and distribution member, said radiation and distribution member having first and second groups of apertures, said first group of apertures being proximate one end of said radiation and distribution member and spaced from said center of said radiation and distribution member and in each of said planar elements, said second group of apertures being proximate the end of said heat radiation and distribution member opposite said one end and spaced from said center of said radiation and distribution member and in each of said planar elements, whereby substantially uniform heating is delivered to food supported on said grate.

5,546,854

APPARATUS FOR HEATING AND STERILIZING FOOD

Masayuki Nakatani, Nagoya; Koji Sengoku, Chiba-ken, and Akifumi Fujita, Ichihara, all of, Japan, assignors to House Foods Corporation, Osaka, Japan

Filed Jun. 15, 1995, Ser. No. 490,885
Claims priority, application Japan, Jun. 16, 1994, 6-134658; Oct. 31, 1994, 6-267365
Int. Cl.[6] A23L *3/00*
U.S. Cl. 99—470 **1 Claim**

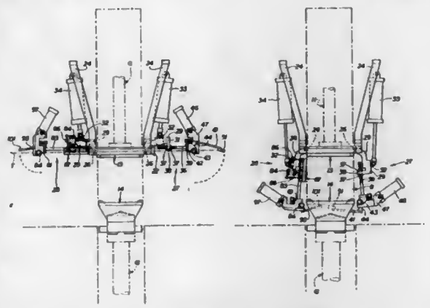


5,546,855

AUTOMATIC BALE TYING APPARATUS

Donald W. Van Doorn, Columbus; James B. Hawkins, Fortson, and Mark D. Cory, Columbus, all of Ga., assignors to Lummus Corporation, Columbus, Ga.

Filed Jun. 30, 1995, Ser. No. 497,704
Int. Cl.[6] A01F *15/14*
U.S. Cl. 100—11 **20 Claims**



1. An apparatus for heating and sterilizing food comprising: a food feeding section;
a pressure upward regulating chamber;
a heating and sterilizing chamber for heating and sterilizing food under pressure higher than atmospheric pressure;
a cooling chamber for cooling the heated and sterilized food;
a pressure downward regulating chamber and a delivery section for discharging food arranged successively and connected by way of respective sealing gates;
steam supply means for supplying steam; and
drain means for draining unnecessary fluid out of the heating and sterilizing chamber;
the food being contained in rigid containers, each container having an opening facing upward and a hole formed in the bottom thereof, said hole having a size so that food cannot pass therethrough, wherein steam supplied from said steam supply means is applied to the food in each of said containers through said upward opening and flows downward through the container and out said hole; each of said containers being moved successively from said food feeding section to said heating and sterilizing chamber; and
wherein said food feeding section, said heating and sterilizing chamber, said cooling chamber and said delivery section are arranged perpendicularly relative to or in parallel with each other and said food feeding section;
said pressure upward regulating chamber, said heating and sterilizing chamber, said cooling chamber, said pressure downward regulating chamber and said delivery section being provided at respective upstream portions thereof with a pusher device for pushing downstream said rigid containers.

---

1. In a baling press having opposing platen assemblies for compressing baleable material therebetween, the improvement comprising:
(a) a first set of articulated guide members associated with one side of a first platen assembly;
(b) a second set of articulated guide members associated with an opposite side of said first platen assembly, each of said first and second set having the members thereof aligned with the members of the other set;
(c) a plurality of wire channels passing through said first platen assembly intermediate said aligned members;
(d) a plurality of knot channels extending through an opposing platen assembly in alignment with said wire channels, said knot channels sized to receive a distal portion of said aligned members therewithin;

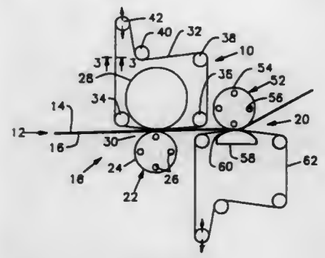
(e) a wire knotting means carried on the distal end of each articulated member of one of said sets of articulated members adapted to engage a first formed loop in the end of a wire baling tie and retain said first loop in engagement as said articulated member moves into registry in an associated knot channel; and
(f) guide means affixed on the distal end of each aligned articulated member of the other set for guiding a second formed loop at an opposite end of said tie into knotting position for engagement with said first formed loop engaged by said wire knotting means with said wire tie extending about a formed bale through said wire channels into said knot channels.

5,546,856

METHOD FOR FINISHING A CONTINUOUS SHEET OF PAPER

Thomas M. Neider, 3 Cardinal Dr., Washingtonvile, N.Y. 10992, and Robert J. Rudt, 9 Birch Ct., Highland Mills, N.Y. 10930

Division of Ser. No. 221,470, Apr. 1, 1994, Pat. No. 5,400,707, which is a continuation of Ser. No. 150,760, Nov. 10, 1993, abandoned, which is a continuation of Ser. No. 957,804, Oct. 9, 1992, abandoned. This application Nov. 21, 1994, Ser. No. 342,864
Int. Cl.[6] D21G *1/00*
U.S. Cl. 100—38 **14 Claims**



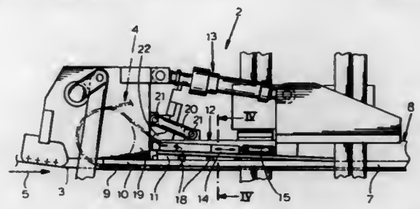
1. A method for imparting a smooth finish to a web of paper, said method comprising the steps of:
providing a calender roll rotatable about a longitudinal axis, said calender roll adapted to be heated to a temperature of at least about 400° F.;
providing a continuous belt having an inner surface and an outer finishing surface, said continuous belt comprising a substrate including the inner surface formed from a synthetic material and the outer finishing surface formed from a smooth material capable of withstanding temperatures of at least about 400° F.;
placing the outer finishing surface of said belt in proximity to the heated calender roll;
exerting pressure on the inner surface of said belt to urge said outer finishing surface of the belt to a position substantially adjacent to said calendering roll such that a calender nip is defined intermediate the calender roll and the outer surface of said belt for receiving a web of paper therebetween;
simultaneously rotating the heated calender roll and moving the belt; passing a web of paper through said heated nip while maintaining the temperature in said nip at a value of at least about 400° F. whereby a surface of said web of paper adjacent to outer finishing surface is finished and whereby the movement of the belt enables cooling of portions of the belt spaced from the heated nip.

5,546,857

STEEL BELT PRESS WITH INLET MOUTH CONTOUR ADJUSTABILITY

Klaus Gerhardt, Rheurdt; Lothar Sebastian, Bochum, and Horst Weiss, Krefeld, all of, Germany, assignors to G. Siempelkamp GmbH & Co., Krefeld, Germany

Filed Sep. 20, 1995, Ser. No. 531,035
Claims priority, application Germany, Sep. 21, 1994, 44 33 641.1
Int. Cl.[6] B30B *5/06*
U.S. Cl. 100—93 P **6 Claims**



1. A continuous press for the production of pressed board from a mat of comminuted material, said press comprising:
a press stand;
upper and lower beams mounted in said stand;
upper and lower heated press platens spaced apart between said upper and lower beams on said stand;
upper and lower endless steel belts mounted on said stand, having passes traveling between said press platens and defining an inlet mouth at an inlet side of the press;
respective endless bracing roller devices interposed between each of said passes and the respective press platen to brace the respective pass of the respective belt against the respective press platen;
at least one cantilever tongue projecting on a respective one of said press platens toward said inlet side of the press and defining a gap with the respective one of said beams;
means for setting a contour of said mouth and including means for imparting a bending moment to said tongue; and
means for fixing a configuration of said tongue and including:
a contouring slider guided on said one of said beams,
a contouring drive operatively connected with said contouring slider for moving said contouring slider back and forth along said one of said beams,
a plurality of steps on said slider extending transverse to a direction of feed through said press and disposed in a stop-defining staircase, and
a counter bar selectively engageable by said steps in accordance with displacement of said slider, said counter bar being provided on the respective press platen and, by engagement with a selected step of said staircase, determining said configuration of said tongue.

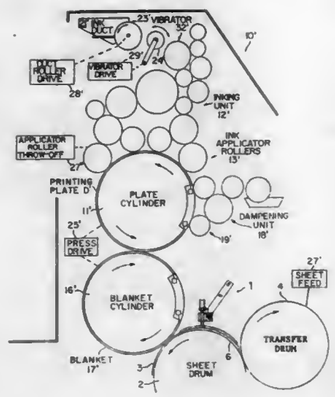
5,546,858

PRINTING PRESS

Günter Stephan, Bensheim, Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Germany

Filed Mar. 22, 1995, Ser. No. 407,978
Claims priority, application Germany, Mar. 24, 1994, 44 10 189.9
Int. Cl.[6] B41F *7/06;1/32*
U.S. Cl. 101—142 **18 Claims**

1. A printing press comprising:
a frame;
a plate cylinder rotatably mounted on said frame, said plate cylinder for accommodating a printing plate thereon;
an ink reservoir for holding a supply of ink;
an inking mechanism for transferring ink between said ink reservoir and said plate cylinder during operation of said printing press;



said inking mechanism comprising a plurality of inking rollers for transferring ink from said ink reservoir to said plate cylinder;

a blanket cylinder being rotatably mounted on said frame and having means for being engaged with said plate cylinder during operation of said printing press;

means for feeding sheets of printing stock into said printing press;

a cylinder for advancing sheets of printing stock, fed from said feeding means, towards said blanket cylinder to be printed, said cylinder having an axis of rotation and an outer circumferential surface disposed thereabout:

said outer circumferential surface of said cylinder having a contour;

said cylinder having a width dimension defined parallel to the axis of rotation;

means for guiding sheets of printing stock along said outer circumferential surface of said cylinder during rotation of said cylinder;

said guiding means comprising:

means for directing a flow of air, said means for directing a flow of air comprising the sole means for directing a flow of air on said cylinder;

said means for directing a flow of air comprising means for directing a flow of air towards said cylinder, to prevent the sheets of printing stock from being lifted off of said outer circumferential surface of said cylinder;

a guide plate, said guide plate comprising a guide surface;

said means for directing a flow of air towards said cylinder being disposed in said guide plate;

said guide surface having a width dimension and a length dimension, said guide surface being substantially contiguous and substantially unbroken along both said width dimension and said length dimension;

said guide plate having a thickness dimension, said thickness dimension being very substantially less than said length dimension of said guide surface, and very substantially less than said width dimension of said guide surface;

said guide surface being disposed adjacent said outer circumferential surface of said cylinder;

said width dimension and said length dimension of said guide surface both extending along a substantial portion of said outer circumferential surface of said cylinder, and along a substantial portion of said width dimension of said cylinder; and

said guide surface having a contoured shape, said contoured shape substantially matching said contour of said outer circumferential surface of said cylinder.

5,546,859

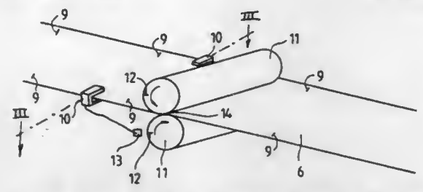
DEVICE FOR PRESETTING A CUT-OFF REGISTER IN A FOLDER OF A WEB-FED PRINTING PRESS

Joel C. Hern, Rollinsford, N.H., assignor to Heidelberg-Harris GmbH, Heidelberg, Germany

Division of Ser. No. 189,749, Feb. 1, 1994, Pat. No. 5,415,092, which is a continuation of Ser. No. 947,965, Sep. 18, 1992, Pat. No. 5,289,770. This application Mar. 16, 1995, Ser. No. 405,159

Int. Cl.[6] B41F *13/56*

U.S. Cl. 101—226 **6 Claims**



1. Device for presetting a cut-off register in a folder of a web-fed printing press, comprising a marking device for applying at least one mark in an image-free region between two regions of a web onto which images are to be printed, detector means for detecting the image-free region on the web, said detector means being connected to said marking device for signalling said marking device when the image-free region is detected thereby, said marking device being disposed a defined distance in front of a nip located between cylinders of at least one printing unit, and means for activating the marking device to apply a mark to the image-free region of the web when a respective output signal of said detector indicates the presence of the image-free region on the web, wherein at least one of the cylinders is formed with a gap, and wherein said detector means are assigned to another cylinder of the printing press carrying a reference mark thereon which revolves in synchronism with said gap of said one cylinder, said defined distance at which said marking device is disposed in front of said nip corresponding to a circumferential distance extending from a measuring location of said detector means to a given location provided on the outer cylindrical surface of said other cylinder and extending parallel to said nip.

5,546,860

DEVICE FOR ADJUSTING DISTANCES BETWEEN AXES OF CYLINDERS IN A PRINTING MACHINE

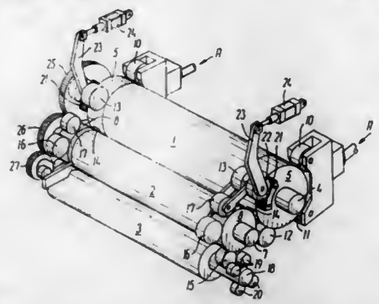
Einar Riis, Skodsborg, Denmark, assignor to Werner Kammann Maschinenfabrik GmbH, Bünde, Germany

Filed Jul. 28, 1995, Ser. No. 495,458

Claims priority, application Denmark, Feb. 3, 1993, 0125/93

Int. Cl.[6] B41F *13/24*

U.S. Cl. 101—247 **8 Claims**



1. Device for adjusting the distance between the axes of a counterpressure cylinder (1) and a plate cylinder (2), and optionally also between the axes of the plate cylinder (2) and an inking cylinder (3) in a printing machine, wherein:

a) the counterpressure cylinder (1) has an axis of rotation and includes stub shafts (4) at opposite ends thereof extending along said axis, said stub shafts (4) being rotatably supported in first bearing housings (5) of generally cylindrical shape and bordering on the opposite ends of the counterpressure cylinder (1);

b) each bearing housing (5) is rotatably held between rollers (10, 11, 12, 13) in the printing machine and comprises a projection in the form of a roller (14) which includes a cylindrical surface that is rotatably supported in the bearing housing (5) about an axis parallel to said axis of the counterpressure cylinder (1), said cylindrical surface protruding beyond the cylindrical surface of the bearing housing (5);

c) the plate cylinder (2) has an axis of rotation and includes stub shafts (7) at opposite ends thereof extending along the last mentioned axis, said last mentioned stub shafts (7) being rotatably supported in second bearing housings (8) of generally cylindrical shape and bordering on the opposite ends of the plate cylinder (2), each of said second bearing housings (8) being yieldingly held between the roller (14) in the adjacent first bearing housing (5) for the counterpressure cylinder (1) and rollers (15, 16, 17) in the printing machine, and

d) a mechanism (21, 22, 23, 24) is provided for turning each first bearing housing for the counterpressure cylinder (1) from a position in which the axis of said roller (14) is co-planar with the axes of rotation of counterpressure cylinder (1) and the plate cylinder (2), and in which the distance between the two last-mentioned axes is at maximum, to a position in which the axis of the roller (14) is not co-planar with the axes of rotation of the counterpressure cylinder (1) and the plate cylinder (2); and,

e) the inking cylinder (3) has an axis of rotation and includes stub shafts (18) at opposite ends thereof extending along the last mentioned axis, said last mentioned stub shafts (18) being yieldingly held between mutually opposing pairs (19, 20) of rollers, the rollers of each pair having shafts at opposite ends thereof, with the shafts for one (19) of the pairs being rigidly connected to a shaft for one (15) of said rollers (15, 16, 17) holding the second bearing housing (8) for the plate cylinder (2) and being situated closest to the inking cylinder (3), said rigidly interconnected shafts being capable of swinging to a limited extent about the axis of rotation of the inking cylinder (3) in such a manner, that said one roller (15), with its own axis of rotation and a cylindrical surface which protrudes beyond the cylindrical surface of the inking cylinder, may be made to swing from a position in which its own axis is co-planar with the axes of the plate cylinder (2) and the inking cylinder (3) and the distance between the two last-mentioned axes is at a maximum, to a position in which said axis of said roller (15) is not co-planar with said axes of said plate cylinder (2) and said inking cylinder (3).

1. Method of controlling inking in a printing press, which comprises the steps of evaluating the inking in non-image areas during printing with a printing form on printing material, generating with at least one image-detecting device image signals from the non-image areas on the surface of the printing material, feeding the image signals to a control or regulating device and, with a temperature-controlling device, varying the temperature of ink applied to the printing form in accordance with the image signals.

5,546,862

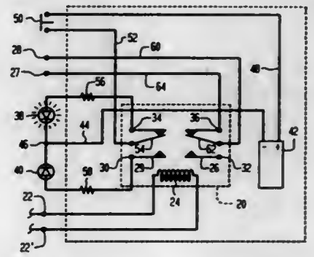
REMOTE CONTROL ADAPTOR FOR A DETONATOR SYSTEM

Paul G. Schadbach, Churchville, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 19, 1995, Ser. No. 375,336

Int. Cl.[6] F42D *3/00*

U.S. Cl. 102—302 **8 Claims**



1. A remote control adaptor for use with an electrical firing control signal generating detonator for controlling the actuation of a self-powered device comprising:

input terminal means for receiving an electrical firing control signal from a detonator;

output terminal means for connection to a self-powered device to be actuated;

switch means connected between said input terminal means and said output terminal means and being selectively operable to produce open-circuit and closed-circuit states at said output terminal means;

said switch means being operable in responsive to an electrical firing control signal applied to said input terminal means to produce a closed-circuit state at said output terminal means to thereby actuate a self-powered device connected thereacross; and

indicator means connected to said switch means for generating a warning signal indicative of a closed-circuit state at said output terminal means prior to the connection of the self-powered device to the output terminal means as an indication of an unsafe connection condition.

5,546,861

METHOD OF CONTROLLING INKING IN A PRINTING PRESS

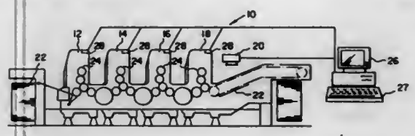
Gerhard Löffler, Walldorf, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Apr. 20, 1995, Ser. No. 425,826

Claims priority, application Germany, Apr. 20, 1994, 44 13 731.1

Int. Cl.[6] B41F *31/00*

U.S. Cl. 101—484 **1 Claim**



5,546,863

LINE CARRYING PROJECTILE

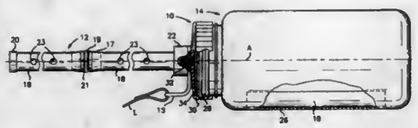
Edward Joslyn, Pawleys Island, S.C., assignor to O.F. Mossberg & Sons, Inc., North Haven, Conn.

Filed Dec. 22, 1994, Ser. No. 363,391

Int. Cl.[6] F42B *12/68*

U.S. Cl. 102—504 **20 Claims**

1. A line carrying projectile for use with a firearm having a barrel including a muzzle end and defining a bore, said line carrying projectile comprising an axially elongate projectile rod having a forward end and a rear end and sized to be slidably received in a launching position within the bore, a container assembly including a hollow at least partially transparent container body having an opening therethrough communicating with the



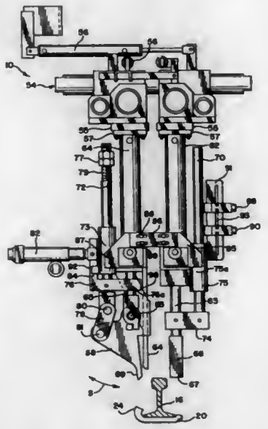
interior thereof and a container cap releasably secured to said container body and forming a closure for said opening, mounting means for securing said container assembly to said forward end of said projectile rod, attaching means for securing a line to said projectile and including a line attaching member supported on said mounting means forward of said projectile rod for free rotational movement about the axis of said projectile rod, a chemiluminescent flare disposed within said container assembly and retaining means carried by said projectile rearward of side line attaching means for engaging and releasably frictionally gripping the barrel of a firearm such as aforesaid to releasably secure said projectile in a launching position within the bore.

5,546,864

RAIL ANCHOR REMOVER

William Straub, Milwaukee; Jack Hosking, Waukesha, both of Wis.; Mickey Topal, Granite City, Ill., and Bruce Boczklewicz, Mukwonago, Wis., assignors to Oak Industries, Inc., Waltham, Mass.

Filed May 4, 1995, Ser. No. 434,563
Int. Cl.[6] E01B *29/32*
U.S. Cl. 104—17.2 **17 Claims**



1. An anchor removing mechanism configured for connection to a vehicle for removing rail anchors from a rail, the anchor removing mechanism comprising:

a pusher insert for impacting and dislodging rail anchors from the rail;

a pusher shaft operably connected to one end of said pusher insert for vertically reciprocating said pusher insert between a work up position and a down position;

a pusher guide rod spaced generally parallel to said pusher shaft and slidably positioned within a stationary hollow sleeve, said guide rod being secured to said pusher shaft to reciprocate therewith for guiding and supporting said vertical reciprocation of said pusher shaft; and

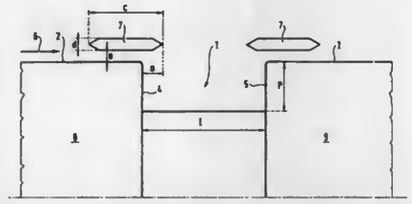
control means for monitoring and controlling vertical displacement of said pusher shaft between said positions as a function of vertical displacement of said pusher guide rod.

5,546,865

DEVICE FOR REDUCING THE AERODYNAMIC DRAG OF A CAVITY IN A FLOW, AND A VEHICLE, IN PARTICULAR A RAIL VEHICLE, PROVIDED WITH SUCH A DEVICE

Stéphen Haentjens, La Rochelle; Philippe Chappet, Cravanche; Jean-Luc Tessier, Marseille; Jean-Paul Ardissone, Marseille, and Jean-Pierre Guibergia, Marseille, all of, France, assignors to GEC Alsthom Transport S.A., Paris, France

Filed Mar. 22, 1995, Ser. No. 408,649
Claims priority, application France, Mar. 24, 1994, 94 03472
Int. Cl.[6] B61D *17/00*
U.S. Cl. 105—1.2 **5 Claims**



1. In combination, a rail vehicle and at least one device for reducing the aerodynamic drag by 30% to 40% of a cavity in an airstream flow formed by said rail vehicle and a second rail vehicle spaced therefrom, said cavity being delimited by a first wall of said vehicle and a second wall of said second vehicle, said first and second walls further defining a first cavity edge and a second cavity edge, said cavity having a cavity width l between said vehicles and a cavity depth P extending inwardly from said first and second walls at said cavity edges, said device comprising a blade disposed in the vicinity of said first wall and being spaced therefrom such that said blade overlaps said first cavity edge, and wherein said blade is such that:

$0 \leq a/c \leq 1$
$0.05 \leq c/l \leq 0.5$
$0 \leq d/E \leq 0.1$
$0.03 \leq e/E \leq 0.07$

and where:

the letter a designates the length of that portion of the blade which overlaps the cavity;

the letter c designates the width of the blade;

the letter d designates the thickness of the blade;

the letter e designates the distance between the wall of the first vehicle and the blade; and

the letter E designates the thickness of the boundary layer of the flow upstream from the cavity.

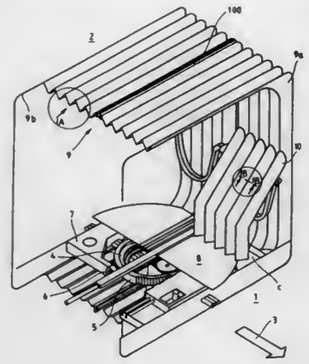
5,546,866

BELLOWS

Robert Koch, Bad Sooden-Allendorf, Germany, assignor to Hubner Gummi- und Kunststoff GmbH, Kassel, Germany

Filed Aug. 17, 1995, Ser. No. 516,168
Claims priority, application Germany, Aug. 18, 1994, 9413320 U
Int. Cl.[6] B60D *5/00*; B61D *17/14*
U.S. Cl. 105—8.1 **8 Claims**

1. Crossing apparatus for use with a bellows acting as a crossing protection apparatus between two vehicles connected to one another in an articulated manner, wherein the bellows has side walls consisting of material strips, two of which are connected to one another at longitudinal edges belonging to each other by a connecting means, said connecting means comprising a rail clamping profile, said crossing apparatus further comprising turning platform means connected between said vehicles, apron means which bridges a gap between each of the side walls and said turning platform, each apron means comprising material strips, two



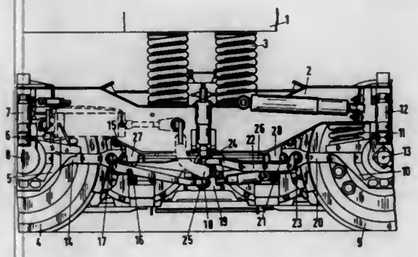
each of which are connected to one another at the longitudinal edges belonging to each other in the area of said rail profiles, said side walls and said apron means having mutually corresponding folds, the profiles of the apron means having upper ends and lower ends connected to the clamping profiles of the corresponding side wall, and intermediate portions between said upper and lower ends in spaced relationship to said side walls for covering said gap, each said apron means comprising a plurality of straight extruded profiles extending parallel to a corresponding side wall of said bellows, a plurality of arc-shaped extruded profiles associated with the said extruded profiles at the upper connection points and a material web, said web being associated with the arc-shaped extruded profiles, each straight extruded profile having first and second side flanges defining a groove therebetween for receiving an inner edge profile of the corresponding side wall of the bellows, the gap to be bridged extending into the area defined by the straight extruded profile and by the section of each arc-shaped extruded profile that is farthest away from the side wall.

5,546,867

TRUCK FRAME FOR A RAILBORNE VEHICLE

Johann M. Lipsius, and Wolfgang Auer, both of Kassel, Germany, assignors to ABB Patent GmbH, Mannheim, Germany

Continuation of Ser. No. 203,283, Feb. 28, 1994, abandoned. This application Aug. 3, 1995, Ser. No. 511,045
Claims priority, application Germany, Feb. 27, 1993, 43 06 112.5
Int. Cl.[6] B61F *5/38*
U.S. Cl. 105—168 **6 Claims**



1. A bogie for a railborne vehicle with a rail car box, comprising:

a truck frame adapted to be suspended from a rail car box of a railborne vehicle,

said truck frame having wrist blocks for articulatingly fastening wheelset guide rods;

wheelsets and axle bearing housings suspended from said truck frame, said wrist blocks being disposed between said axle bearing housings and said truck frame;

an intermediate partial frame having bearings for fastening and bearing compensating levers;

said intermediate partial frame having bearings for a rigid pivot shaft joining the compensating levers of both sides of a truck, and

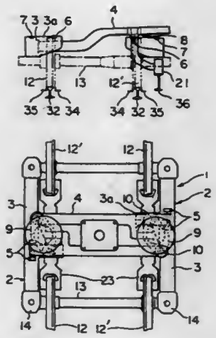
said intermediate partial frame being removably and directly secured to said wrist blocks of said bogie frame for the wheelset guide rods.

5,546,868

VARIABLE WHEEL-SPACING TRUCK

Sunao Sugimoto; Mitsuji Yoshino, and Noboru Kobayashi, all of Kobe, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Division of Ser. No. 139,175, Oct. 21, 1993, Pat. No. 5,421,265. This application Apr. 13, 1995, Ser. No. 421,267
Claims priority, application Japan, Oct. 21, 1992, 4-308151; Oct. 21, 1992, 4-308152
Int. Cl.[6] B61F *7/00*
U.S. Cl. 105—178 **22 Claims**



1. A variable wheel-spacing truck, comprising:

a pair of bogie frames each having a substantially T-letter shape, an end portion of a transom of one of the bogie frames overlapping with a side beam of another of the bogie frames,

a pair of vehicle supports mounted on the pair of bogie frames, each support including an elastic body,

a locking mechanism capable of releasably locking the pair of bogie frames at plural positions against movement in a widthwise direction of the truck,

auxiliary wheels associated with the locking mechanism and vertically movable to switch the locking mechanism between a locked state preventing transverse movement of the bogie frames and a released state permitting transverse movement of the bogie frames,

a pair of support wheels, at least one of the support wheels being allowed to slide relative to a wheel shaft in an axial direction of the wheel shaft, and

axle boxes and supporting members each engaged with a respective one of said bogie frames, and supporting a respective one of the support wheels.

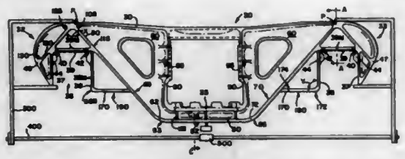
VOL 1189 155 3 AG 20 1996 UMI

5,546,869

LIGHTWEIGHT RAILCAR TRUCK SIDEFRAME WITH INCREASED RESISTANCE TO LATERAL TWISTING

Rami V. Nassar, Chicago, Ill., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Jul. 13, 1995, Ser. No. 501,998
Int. Cl.[6] B61F *5/52*
U.S. Cl. 105—206.1 **7 Claims**



1. An improved lightweight railcar truck sideframe of a generally solid and open, I-beam cross-sectional shape for carrying a railcar payload, said sideframe having a longitudinal axis, a front end, a back end and a midsection therebetween,

a longitudinally elongate solid upper compression member having a first end and a second end, each of said ends including a respective pedestal jaw downwardly depending therefrom, each of said pedestal jaws formed by a vertically disposed forward pedestal, a vertically disposed rearward pedestal and a horizontally disposed pedestal roof interconnecting said forward and rearward pedestals, each of said pedestal jaws including a forward corner and a rearward corner, said corners formed at the intersection of a respective pedestal and said roof, said pedestal roof including a midpoint between said forward and rearward corners,

a longitudinally elongate solid lower tension member having a front section, a rear section and a central section therebetween, said central section having a proximal and distal ends, each of said sections integrally formed such that said central section is disposed generally parallel to said upper compression member, while said front section upwardly extends as a solid diagonal arm from said center section proximal end to said upper compression member first end, and said back section upwardly extends as a solid diagonal arm from said center section distal end to said upper compression member second end, each of said diagonal arms extending upwards to and connecting with a respective upper compression member end at a respective pedestal jaw,

a substantially solid vertical web having an inboard side and an outboard side, said inboard and outboard sides defining an inboard and outboard side of said sideframe, said web including a bolster opening about said sideframe midsection which defines a front vertical column and a rear vertical column,

said sideframe I-beam cross-sectional shape defined by a solid top flange corresponding to said upper compression member, a solid bottom flange corresponding to said lower tension member, and said substantially solid vertical web interconnecting said upper and lower flanges, said improvement comprising:

said sideframe front and rear ends being structurally reinforced with bracing means on each of said sideframe sides at each of said pedestal jaws in order to increase the lateral stiffness of said sideframe while decreasing succeptability to structural sideframe twisting, said bracing means comprised of a primary bracing means and a secondary bracing means, said primary bracing means connecting said pedestal jaw roof to said top compression member and said secondary bracing means connecting said rearward pedestal to said lower tension member, wherein said pedestal jaw is simultaneously connected to said upper and lower members on each side of said sideframe, wherein said primary bracing means is comprised of a generally L-shaped bracket interconnecting said pedestal jaw roof to said upper compression member, said lower tension member, and said vertical web,

said primary bracing means having a foot and a leg, said foot including a toe end and a heel end and said leg including a bottom end and a top end, said heel end of said foot connected to said bottom end of said leg, said heel end and said leg bottom end joined to said upper compression member at the same location,

wherein said secondary bracing means includes at least one horizontally disposed joist, said joist disposed such that said rearward pedestal and said joist form a substantially right angle when connected,

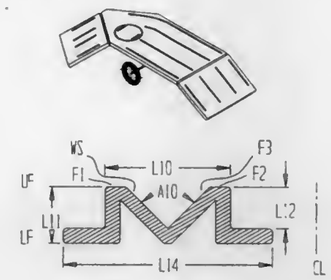
wherein said secondary bracing means connects one of said lower tension member front and rear arms to said rearward pedestal of said pedestal jaw, said second bracing means coextensive with said rearward pedestal at said pedestal jaw and with said bottom tension member at said arm.

5,546,870

2D AND 3D PILOT-CHANNEL ARRAYS

Patrick E. Meacham, 20298 Hunter Ct., Lakeville, Minn. 55044; Michael S. Zeilinger, 8916 72nd St., Cottage Grove, Minn. 55106; Clifford B. Meacham, 8730 E. 195th St., Prior Lake, Minn. 55372, and M. Conrad Huffstutler, Jr., 280 Cole Dr., Liberty Hill, Tex. 78642

Filed Oct. 12, 1993, Ser. No. 134,709
Int. Cl.[6] B61D *49/00*
U.S. Cl. 105—355 **5 Claims**



1. An apparatus for accommodating powered track-driven vehicles or containers each of which includes a pair of parallel elongated runners for steering the vehicle or container, comprising:

a vehicle platform for supporting said vehicles or containers,

a pair of parallel pilot channels fixed to the vehicle platform for directly supporting said pair of parallel elongated runners and for preventing said runners from directly contacting said vehicle platform, said pair of pilot channels being spaced from each other by an average spacing distance corresponding to the lateral spacing distance of said pair of elongated runners,

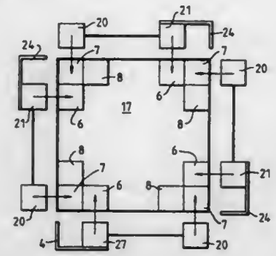
each said pilot channel including a pair of lower, horizontal mounting flange portions (MF) for directly contacting and supporting said channel on said platform, a pair of vertical portions extending from the mounting-flange portions, a pair of upper horizontal portions (F1, F2) extending inwardly from said vertical portions and having upper working surfaces for directly supporting and guiding said elongated runners, and a pair of sloped portions forming a recess zone (F3) and extending downwardly from said upper horizontal portions, said sloped portions being joined together along the longitudinal axis of said pilot channel.

5,546,871

PALLET SYSTEM WHEREIN AN ARRAY OF VERTICAL SOCKETS MATE WITH MODULE SIDE ELEMENTS

Leslie J. Chapman, Alresford, United Kingdom, assignor to KHS Group Limited, Alton, United Kingdom

Filed Jan. 12, 1995, Ser. No. 367,250
Claims priority, application United Kingdom, Jul. 16, 1992, 9215135
Int. Cl.[6] B65D *19/30*
U.S. Cl. 108—54.1 **12 Claims**



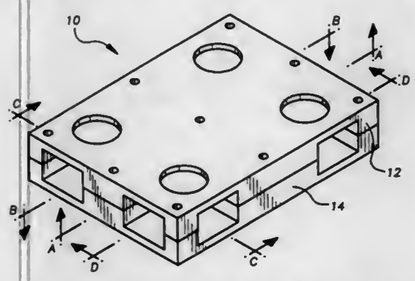
1. A pallet system comprising a base element providing a horizontal supporting surface of generally rectangular outline, first and second connecting means provided at each corner of said surface and arranged to extend normally thereto, and four side enclosure elements each including first and second uprights arranged to mate respectively with a first connecting means at one corner of the base element and a second connecting means at an adjacent corner thereof, whereby said enclosure element stands upright along an edge of said surface between said adjacent corners, each said first upright including locating means for embracing a second upright of another side enclosure element at said one corner in order to maintain relative alignment of the uprights in a horizontal direction, whereby said four enclosure elements interlink to form an enclosure bounding said supporting surface and providing at an upper edge of the enclosure support for a base element of another pallet system.

5,546,872

PLASTIC PALLET

Joseph R. Young, 625 Atlanta St., Metairie, La. 70003

Filed Jan. 23, 1995, Ser. No. 377,142
Int. Cl.[6] B65D *19/12*
U.S. Cl. 108—56.1 **1 Claim**



1. A plastic pallet of the type having a top pallet section and a base pallet section adapted to receive load bearing structures thereon and facilitating transportation by use of a fork lift, the improvement comprising:

a) said top pallet section having a first surface, second surface and four observation apertures, said second surface of said top pallet section having nine top leg members extending vertically therefrom;

b) a base pallet section having a unitary waffle section having a third surface having a plurality of interconnecting channels formed therein and a fourth surface having nine base leg members extending vertically therefrom, said top leg members and said base leg members being aligned in a manner such that a longitudinal skid passageway and a transverse skid passageway are formed between said second surface of said top pallet section and said base pallet section, and each of said four observation apertures is positioned in a manner to allow simultaneous viewing of one longitudinal skid passageway and one transverse skid passageway;

c) nine top bolt-locking mechanisms formed within said top pallet section, each said top bolt-locking mechanism including a top bolt-locking recess formed into said first surface of said top pallet section, a top bolt passageway passing through said top bolt locking recess and one of said nine top leg members, and eight radiating members extending vertically within the top bolt-locking recess, each radiating member having a deformable locking flap extending vertically therefrom;

d) nine base bolt-locking mechanisms formed within said base pallet section, each said base-locking mechanism including a base bolt-locking recess formed into said third surface of said base pallet section, a base bolt passageway passing through said base bolt locking recess and one of said nine base leg members, and eight radiating members extending vertically within the base bolt-locking recess, each radiating member having a deformable locking flap extending vertically therefrom; each said base bolt passageway being in alignment with one of said top bolt passageways when said top leg members and said base leg members are aligned in a manner such that a longitudinal skid passageway and a transverse skid passageway are formed between said second surface of said top pallet section and said base pallet section; and

nine bolt and nut type fasteners having a threadably connectable bolt and nut, each of said nine bolts extending through one of said aligned top and base locking-bolt passageways in a manner such that a head portion of said bolt is entirely disposed within a said top bolt-locking recess, each of said nine nuts being threaded onto one of said nine bolts in a manner such that each said nut is entirely disposed within one of said base bolt-locking recess and each of said eight deformable locking flaps within each of said top and base bolt-locking recesses is deformed sufficiently to exert a locking force against one of said nine bolt and nut type fasteners.

5,546,873

FURNITURE WORKSURFACE UNIT AND METHOD

John P. Conner, Grandville; James W. Ross; Bradley D. Youngs, both of Grand Rapids, all of Mich.; Paul Haigh, Greenwich, Conn., and William C. Small, Greenville, Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Filed Oct. 28, 1994, Ser. No. 331,010
Int. Cl.[6] A47B *3/06*
U.S. Cl. 108—153 **22 Claims**

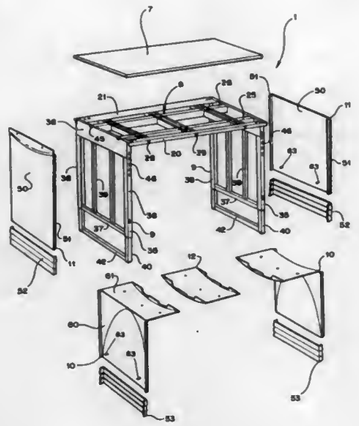
1. A worksurface unit, comprising:

a worksurface frame having a top frame member with upper and lower sides thereof, and being supported adjacent opposite ends thereof by first and second end frame members, each having exterior and interior sides thereof;

a top skin connected with and covering the upper side of said top frame member;

at least one outer leg cover connected with and covering the exterior side of an associated one of said end frame members;

at least one inner leg cover connected with the interior side of said associated one of said end frame members, and having an inverted L-shaped side elevational configuration which wraps around and covers the interior side of said associated one of said end frame members and at least a portion of the lower side of said top frame member.



5,546,874

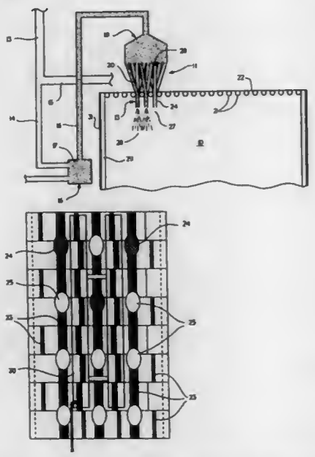
LOW NOX INTER-TUBE BURNER FOR ROOF-FIRED FURNACES

Bernard P. Breen, Pittsburgh; John P. Blonda, Jr., Coraopolis, both of Pa.; James E. Gabrielson, Plymouth, Minn.; Roger W. Glickert, Washington, D.C., and Anthony Hallo, Springdale, Pa., assignors to Duquesne Light Company, and Energy Systems Associates, both of Pittsburgh, Pa.

Filed Dec. 22, 1994, Ser. No. 362,290

Int. Cl.[6] F23C *1/10*

U.S. Cl. 110—261 **16 Claims**



1. A method of reducing NOX emissions from roof-fired furnaces that use multi-nozzle inter-tube burners comprising the steps of:

a) blocking at least some of a plurality of fuel nozzles that discharge a mixture of pulverized coal and air into said roof-fired furnace from a roof-burner;

b) introducing secondary air around each of said plurality of fuel nozzles regardless of whether said fuel nozzle is blocked or not; and

c) creating a fuel-lean environment adjacent said plurality of fuel nozzles that are blocked.

10. In a roof-fired furnace of a type where a mixture of pulverized coal and air is delivered to a coal burner that leads to a plurality of fuel nozzles that discharge said mixture into said furnace, so as to mix and burn with secondary air, an apparatus for reducing NOX emissions comprising:

a) means for blocking some of said plurality of fuel nozzles wherein said blocking means forces said mixture of pulverized coal and air through one or more unblocked fuel nozzles to create fuel rich conditions for initial combustion and

b) openings in the roof of said furnace adjacent said plurality of fuel nozzles wherein secondary air passes through said openings.

5,546,875

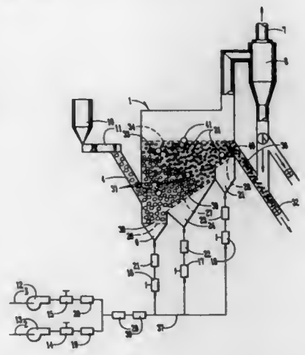
CONTROLLED SPONTANEOUS REACTOR SYSTEM

Stanley J. Selle, East Grand Forks, Minn.; Douglas R. Hajicek, Grand Forks, N. Dak.; Michael D. Mann, Thompson, N. Dak., and Nanak S. Grewal, Grand Forks, N. Dak., assignors to Energy and Environmental Research Center Foundation, Grand Forks, N. Dak.

Continuation-in-part of Ser. No. 113,451, Aug. 27, 1993, abandoned. This application Nov. 18, 1994, Ser. No. 341,742

Int. Cl.[6] F23B *7/00*

U.S. Cl. 110—342 **19 Claims**



1. A process of improving overall quality in coals comprising heat treating low-rank coals in a controlled spontaneous fluidized bed reactor zone comprising:

introducing raw coal feed and fluidized gas in a reactor, said reactor having a top portion and a bottom portion and a smaller cross sectional area at said bottom portion than at the top portion wherein the bottom portion is divided into multiple plenum chambers;

treating the raw coal feed with a mixture of air and fluidizing gas wherein the mixture is fed into the reactor through the plenum chambers, and further providing that the velocity of the fluidizing mixture is substantially higher at the bottom portion of the reactor than the top portion of the reactor, wherein the treated coal progressively rises from the bottom portion of the reactor to the top portion of the reactor as the coal becomes smaller in size;

withdrawing the treated low-rank coal from the top portion of the reactor;

wherein the size of the treated coal is controlled by using variable velocity, temperature of the inlet gas, oxygen-to-fuel ratio, fuel feed rate, and reactor design.

5,546,876

SEWING UNIT WITH A FABRIC HOLDER DISPLACEABLE RELATIVE TO A THREAD-GUIDING NEEDLE AND WITH A FABRIC PRESSER FOOT WITH AN ASYMETRICALLY WIDENED OPENING

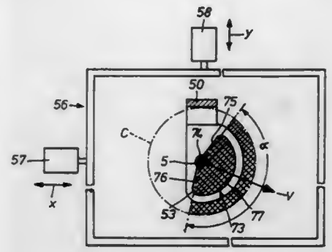
Lothar Schilling, Kaiserslautern, and Gottfried Schmidt, Stebach, both of, Germany, assignors to G. M. Pfaff Aktiengeselschaft, Kaiserslautern, Germany

Filed May 15, 1995, Ser. No. 441,031

Claims priority, application Germany, Dec. 23, 1994, 44 46 138.0

Int. Cl.[6] D05B *21/00;* **D05C** *9/06*

U.S. Cl. 112—102.5 **6 Claims**



1. A sewing unit, comprising:

a thread guiding needle, said needle being movable up and down;

a lock stitch hook carrying a thread reserve, said lock stitch hook cooperating with said needle;

a fabric holder;

means for moving said fabric holder in any desired direction in relation to the needle, in an essentially horizontal plane;

a fabric presser foot which can be moved up and down in cycle with the movement of the needle, said presser foot having a needle passage opening, wherein loop or twist stitches are formed in an area of the direction of movement of the fabric holder, said needle passage opening covering the looping and twisting area over an angular range α where δ is an obtuse angle defined by two lines which originate at the needle.

5,546,877

FABRIC SECURING DEVICE INCLUDING ADHESIVE AND NEEDLE LUBRICATION

Leo M. Moore, Richmond, Va., assignor to Mutual Holdings Inc., Richmond, Va.

Filed Jun. 10, 1994, Ser. No. 258,052

Int. Cl.[6] D05B *39/00;71/00*

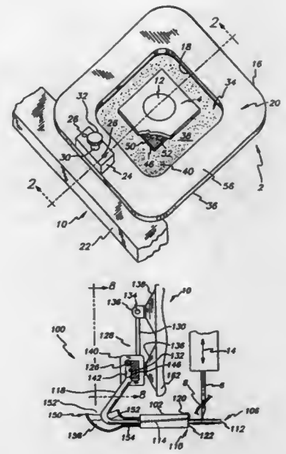
U.S. Cl. 112—103 **41 Claims**

1. A device for securing at least one fabric in place relative to a needle and thread of a sewing machine while applying an image to said at least one fabric by said needle and thread, comprising:

a plate having at least one opening extending through said plate, said at least one opening being surrounded by a peripheral portion of said plate;

a first material means attached to one surface of said peripheral portion and extending into said at least one opening, said first material means having a first surface for attachment to said fabric, said first surface comprising a first adhesive; and

means for attaching said plate to a sewing machine so that said at least one opening is in alignment with said needle.



5,546,878

LOOPER DRIVE MECHANISM FOR SEWING MACHINE

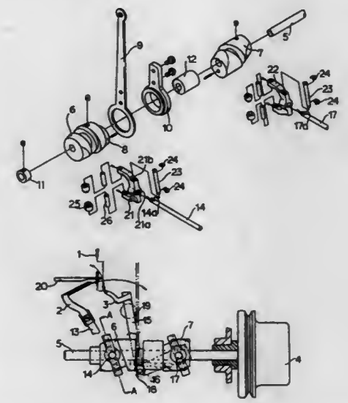
Kouichi Sakuma, Yamagata, Japan, assignor to Suzuki Manufacturing Co., Ltd., Japan

Filed Jul. 28, 1994, Ser. No. 281,561

Claims priority, application Japan, Aug. 10, 1993, 5-198616

Int. Cl.[6] D05B *57/34*

U.S. Cl. 112—162 **6 Claims**



1. A looper drive mechanism for a sewing machine, comprising:

at least one looper;

a looper drive shaft for driving said looper;

a main shaft extending across one plane transverse to said looper drive shaft; and

transmission means for transmitting rotation of said main shaft to said looper drive shaft;

said transmission means including:

at least one slant grooved cam fixed to said main shaft and and having a groove extending around its full circumference and slanted relative to said main shaft;

a U-shaped follower having two rollers, each of which is supported by said looper drive shaft and rotates about its own axis within said groove of said groove slant grooved cam; and

a connection pin defining a central, longitudinal axis in parallel with a line connecting said two rollers, said U-shaped follower being mounted on said connection pin for rotation about said longitudinal axis, in a plane perpendicular to said line connecting said two rollers with each other.

5,546,879

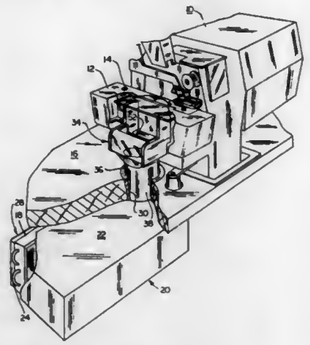
LINT BARRIER FOR A SEWING MACHINE

John McEwen, Mocksville; David Tolzman, Rural Hall, and Anthony DiDonato, Winston-Salem, all of N.C., assignors to Sara Lee Corporation, Winston-Salem, N.C.

Continuation of Ser. No. 274,853, Jul. 14, 1994, Pat. No. 5,454,338. This application Jun. 6, 1995, Ser. No. 466,357

Int. Cl.[6] D05B *71/00;* **F28F** *1/00*

U.S. Cl. 112—282 **15 Claims**



1. A sewing machine comprising:

(a) a machine housing;

(b) a plenum and an air source for moving air through said plenum;

(c) a conduit having an inlet end in communication with said air source and an outlet end in communication with the interior of said sewing machine, whereby air is conducted through said conduit and into the interior of said sewing machine to maintain a positive pressure within said sewing machine interior, thereby preventing the entry of lint into said sewing machine interior; and

(d) a table having an opening therein, said sewing machine interior being positioned above said table, said air source and plenum being positioned below said table. and said conduit extending through said opening from said air source to said sewing machine interior.

5,546,880

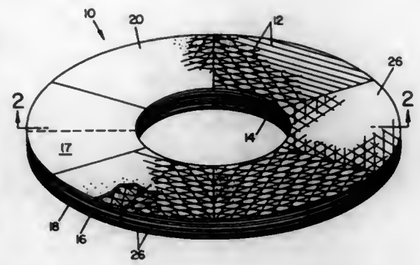
ANNULAR FILAMENTARY STRUCTURES AND METHODS OF MAKING

David M Ronyak, Copley, and Kevin L. Leffel, Akron, both of Ohio, assignors to The BF Goodrich Company, Akron, Ohio

Filed Dec. 29, 1994, Ser. No. 366,070

Int. Cl.[6] D05B *3/00;* **B32B** *31/10;32/12;* **F16D** *69/02*

U.S. Cl. 112—475.01 **25 Claims**



1. A method of making a multi-layered annular shaped fibrous structure (**10**, **40**) having a radius and a thickness comprising the steps of: forming a multidirectional fabric (**30**, **50**) having substantially continuous fibrous members (**12**) disposed in at least two directions; cutting arcuate or trapezoidal sectors (**20**, **20'**) of an annular shape from said multidirectional fabric, each sector having a radial width (**22**, **22'**) generally corresponding to the radial width (**24**) of the fibrous structure to be formed; assembling the sectors (**20**, **20'**) in contiguous relationship to form an annular layer (**26**) having a radial width (**22**, **22'**) generally corresponding to the radial width (**24**) of the fibrous structure to be formed; providing a stack (**29**) of thus formed layers (**26**) of fibrous material, one layer on top of another; and needlepunching the stacked layers (**26**) to produce cross-linking of the layers (**26**) by fibers (**15**) displaced out of the layers (**26**) and disposed in a direction generally perpendicular to the layers (**26**).

5,546,881

TRACK SYSTEM TO BE FASTENED TO A GROOVE IN A SPAR

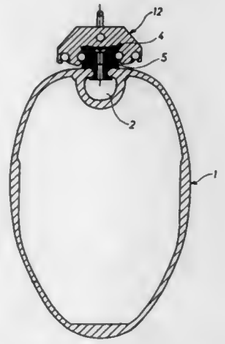
Gert H. Frederiksen, 187, Ibækvej, DK-7100, Vejle, Denmark

PCT No. PCT/DK92/00182, § 371 Date Dec. 9, 1994, § 102(e) Date Dec. 9, 1994, PCT Pub. No. WO93/25436, PCT Pub. Date Dec. 23, 1993

PCT Filed Jun. 12, 1992, Ser. No. 351,301

Int. Cl.[6] B63H *9/08*

U.S. Cl. 114—112 **9 Claims**



1. A track system for being fastened to a groove of a spar, the system comprising:

a profiled track configured to receive cars in an axially slidable manner, the track including a plurality of transverse openings for receiving fasteners;

a plurality of slide members adapted to be slidably and non-rotatably arranged in the groove of a spar, each slide member having a base which engages an interior of the groove of a spar upon attachment of said slide members in the groove, and a shaft which extends through a slot which opens into the groove of a spar upon attachment of the slide members to the spar. the shaft of each slide member having an axial opening which coacts with a fastener passing through a corresponding transverse opening in the track for fastening the track to the plurality of slide members; and

wherein the track is provided with a plurality of recesses corresponding to said plurality of transverse openings in the track, each of said recesses being disposed opposite to a corresponding transverse opening, wherein a protruding portion of the shaft of a slide member is positionable in one of the recesses of the track with the axial opening in said shaft in substantial alignment with a corresponding transverse opening.

5,546,882

ARRANGEMENT FOR TOWING

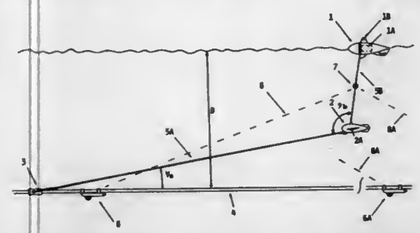
Hans-Walter Knche, Sprockhövel, Germany, assignor to Petroleum Geo-Services A/S, Lysaker, Norway

Filed Jul. 7, 1995, Ser. No. 499,294

Claims priority, application Norway, Jul. 13, 1994, 942623

Int. Cl.[6] B63B *21/56*

U.S. Cl. 114—244 **7 Claims**



1. Apparatus for towing a surface buoy, in particular a reference position buoy, from a marine seismic streamer comprising: a flexible element which is attached at only one point of attachment to a section of the streamer and to the surface buoy respectively, wherein an intermediate portion of the cable length is provided with a weight or deflector device being adapted during towing to impose an angular deviation of the flexible element so that the direction thereof downwards and upwards from the weight or deflector device forms a mutual angle differing significantly from 180°, and that the point of attachment at the streamer is located at an active section thereof.

5,546,883

ANCHOR, ANCHORFLUKE AND METHODS FOR ANCHORING

Rob van der Haak, Ijssel, Netherlands, assignor to Vrijhof Ankers Beheer B.V., Ijssel, Netherlands

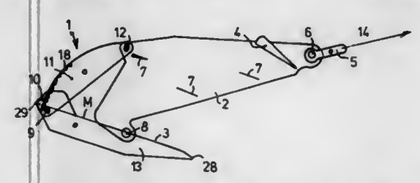
PCT No. PCT/NL92/00144, § 371 Date May 10, 1994, § 102(e) Date May 10, 1994, PCT Pub. No. WO93/03958, PCT Pub. Date Mar. 4, 1993

PCT Filed Aug. 17, 1992, Ser. No. 196,263

Claims priority, application Netherlands, Aug. 16, 1991, 9101396; Feb. 14, 1992, 9200270

Int. Cl.[6] B63B *21/32*

U.S. Cl. 114—301 **62 Claims**



1. Method for anchoring an object in a body of water having a ground-like bottom, in which an anchor, comprising a fluke means having a center of area on an upper surface thereof, and a shank means, which obliquely extends upwards and forwards from the fluke means and is connected at a first end to the fluke means and at a second end to a penetration or pulling line, is pulled into the bottom ground by means of the pulling line, and wherein the anchor, after the fluke means has penetrated the bottom ground to a sufficient extent, is attached by means of an anchor line to the object, the point of engagement of the anchor line being essentially located above the center of area and the pulling force exerted thereon via the anchor line being essentially directed vertically.

5,546,884

ANCHOR, ANCHORFLUKE AND METHODS FOR ANCHORING

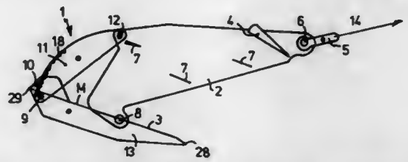
Rob Van Den Haak, Krimpen A/D Ijssel, Netherlands, assignor to Vrijof Ankers Beheer B.V., A/D Ijssel, Netherlands

Division of Ser. No. 196,263, May 10, 1994. This application Jun. 7, 1995, Ser. No. 473,713

Claims priority, application Netherlands, Aug. 16, 1991, 9101396; Feb. 14, 1992, 9200270

Int. Cl.[6] B63B *21/32*

U.S. Cl. 114—301 **22 Claims**



1. Anchor fluke, being so formed as to have a penetration or front-side and a rear side, as well as a longitudinal plane of symmetry intersecting these sides, said anchor fluke comprising first means for attachment of an anchor line for a vertical anchoring system and second means for attachment of at least two connecting means spaced in the longitudinal plane of symmetry so as to connect the fluke to a pulling or penetration anchor line, the fluke being so formed that at least its upper surface has a shape convexly curved or buckled in cross-section along the plane of symmetry, the first attachment means for the anchor line for a vertical anchoring system being located near the centre of area of the fluke.

5,546,885

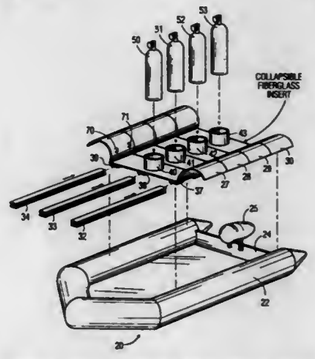
COLLAPSIBLE SCUBA TANK SUPPORTS FOR AN INFLATABLE DINGHY

William M. Porada, 2785 Pacific Coast Hwy., #E-244, Torrance, Calif. 90505

Filed Oct. 12, 1995, Ser. No. 542,076

Int. Cl.[6] B63B *7/00*

U.S. Cl. 114—345 **6 Claims**



1. A collapsible insert for an inflatable rubber dinghy having a floor and inflated side tubes for supporting said floor, said insert

comprising a plurality of base sections, each of said base sections including a flat section with end sections curved upwards and outwards to conform to said inflated side tubes with said flat section extending therebetween, said inserts being arranged front-to-back on said floor and mounted on a plurality of rails.

5,546,886

CRAFT WITH RIGID TUBULARS, HAVING WATERTIGHT, NON-COMMUNICATING COMPARTMENTS

Luciano Franceschelli, via Nogaredo, 49, 00124 Roma, and Angelo Mancini, via del Manical, 41, 00054 Fiumicino RM, both of, Italy

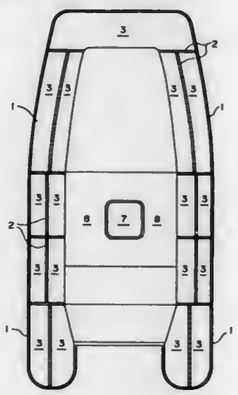
PCT No. PCT/IT93/00077, § 371 Date Dec. 15, 1994, § 102(e) Date Dec. 15, 1994, PCT Pub. No. WO94/26584, PCT Pub. Date Nov. 24, 1994

PCT Filed Jul. 20, 1993, Ser. No. 356,261

Claims priority, application Italy, May 18, 1993, RM93A0326

Int. Cl.[6] B63B *43/10*

U.S. Cl. 114—360 **23 Claims**



1. A craft, comprising:

rigid tubular hulls which provide a floating capacity and are not deformable during movement of the craft;

a plurality of longitudinally extending diaphragms and a plurality of transversely extending diaphragms for separating an internal volume of each of the hulls into longitudinal and transverse compartments, to thereby provide a plurality of non-communicating, watertight chambers within each of the hulls for anti-sinking safety, wherein said longitudinally extending diaphragms include a first diaphragm diverging with respect to a centerline of said craft from a forward end toward a rearward end, a second diaphragm extending rearwardly of said first diaphragm, a third diaphragm extending rearwardly of said second diaphragm, and wherein said first, second and third diaphragms are longitudinally non-aligned;

perimetral internal shapes in the tubular hulls for increasing the internal volume of the tubular hulls; and

a plurality of lateral backs, movable on hinges, applied onto upper, external edges of the craft.

5,546,887

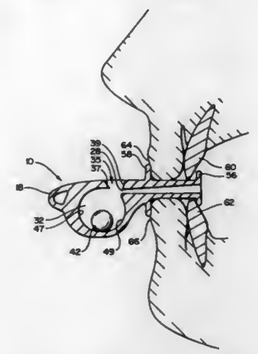
EMERGENCY WHISTLE

Robert W. Cameron, 4972 Northwest Rd., Bellingham, Wash. 98226

Filed Apr. 7, 1994, Ser. No. 224,508

Int. Cl.[6] G10K *5/00*

U.S. Cl. 116—137 R **13 Claims**



13. An emergency signaling whistle comprising:

a mouthpiece portion configured to be gripped by a person's incisors said mouthpiece portion comprising:

a first flange portion which extends outwardly around said mouthpiece portion such that a person's lips may form a substantially air-tight pressure seal against said first flange portion; and

a second flange portion which extends at least upwardly and downwardly from an outer end of said mouthpiece portion by a sufficient distance to allow inwardly sloping inner surfaces of a person's incisor to engage said second flange portion without the need for fully clamping a person's incisors against said mouthpiece portion;

said second flange portion being spaced from said first flange portion by a predetermined distance such that a person's lips may seal against said first flange portion in response to said second flange portion being engaged by a person's incisors;

whereby said mouthpiece portion is held in a person's mouth with lips sealed against said first flange portion without using one's hands;

first and second air passages formed in said mouthpiece portion for receiving air which is blown from a person's mouth;

means associated with said first air passage for generating a whistle tone having a first pitch in response to flow of said air through said first passage;

means associated with said second air passage for generating a whistle tone having second pitch in response to flow of said air through said second passage;

said first pitch being relatively low so as to enable said whistle to be heard by persons at relatively long distances and said second pitch being relatively high so as to enable said whistle to be localized by persons at relatively short distances;

each said means associated with said air passages for generating said whistle tones comprising:

an exit slot at an end of said air passage; and

a chamber mounted to said mouthpiece portion and having an opening across which said air from said exit slot is directed to produce said whistle tone;

a first of said chambers which is associated with said first passage being relatively larger so as to produce said whistle tone having said relatively lower first pitch, and a second of said chambers which is associated with said second passage being relatively smaller so as to produce said whistle tone having said relatively higher second pitch;

said first and second chambers being generally barrel-shaped and mounted transversely in end-to-end relationship at said ends of said air passages, said opening being formed along an edge of each said barrel-shaped chamber so that a portion of said air flowing through said passages enters therein;

a pea member received in each said barrel-shaped chamber for imparting a warble to said whistle tone which is produced by said chamber, said pea in said first chamber being sized relatively larger than said pea in said second chamber so that said relatively larger pea in said first chamber imparts a relatively deeper rumbling to said relatively lower whistle tone, and said relatively smaller pea in said second chamber imparts a relatively shrill staccato to said relatively higher whistle tone;

each said generally barrel-shaped chamber being generally oval-shaped in vertical cross-section, so that an acoustic chamber which is formed by said barrel-shaped chamber comprises:

a forward cupped wall portion; and

a rearward cupped wall portion;

said cupped wall portions being oriented to generally face one another so that sound pressure waves are reflected within an interior of said acoustic chamber between said forward and rearward wall portions;

said first and second barrel-shaped chambers having outer end walls with exterior grip surfaces which are generally cylindrically concave about axes which extend in a generally vertical direction when said mouthpiece is gripped in a person's mouth, so that cylindrical concave grip surfaces are generally aligned with distal phalanges of a person's thumb and finger when said whistle is gripped by a person's mouth and hand, said grip surfaces being provided with surface texturing for enhancing a grip which is offered thereby;

said outer end walls of said chambers having a substantially constant thickness, so that said end walls have interior surfaces which are generally cylindrically convex about said vertically-extending axes, so as to form humps within said chambers past which said peas rotate so as to vary a shape and effective volume of said acoustic chambers which are formed within said barrel-shaped chambers, and so as to provide an increased rate of rotation and rattling of said peas in said barrel-shaped chambers which enhances the staccato effect imparted to said whistle tones.

5,546,888

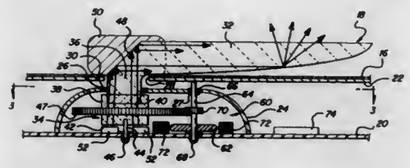
SURFACE MOUNTED GAUGE WITH ILLUMINATED POINTER

Steven G. Skiver, and Mankong H. Leung, both of Kokomo, Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Sep. 9, 1994, Ser. No. 303,978

Int. Cl.[6] G01D *11/28;* **G01R** *1/08*

U.S. Cl. 116—286 **14 Claims**



7. In an automotive display having a face plate with inner and outer surfaces including an aperture, a circuit board spaced from the inner surface of the face plate, and indicia on said outer surface a gauge comprising:

a housing mounted on the circuit board between the circuit board and the face plate and having an opening opposite the aperture in the face plate, the housing and the circuit board defining a gauge cavity;

a light conducting pointer having a needle movable across the outer surface of the face plate cooperable with said indicia and a hub extending from the needle into the gauge cavity;

means for supporting the hub on the circuit board for rotation in the opening and in the aperture about a first axis, the hub having an end face spaced from the circuit board;

a light source means on the circuit board opposite the end face of the hub for illuminating the pointer;

a gauge motor in the cavity mounted for rotation about a second axis; means for activating the motor mounted on the circuit board and

drive means for coupling the motor to the hub for pointer rotation.

5,546,889

METHOD OF MANUFACTURING ORGANIC ORIENTED FILM AND METHOD OF MANUFACURING ELECTRONIC DEVICE

Katsuya Wakita, Nara; Shu Hotta, Kawasaki; Nobuo Sonoda, Settsu, all of, Japan, and Yang Yang, Santa Barbara, Calif., assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 132,348, Oct. 6, 1993. This application Sep. 30, 1994, Ser. No. 315,354

Int. Cl.[6] C30B *29/54*

U.S. Cl. 117—84 **16 Claims**

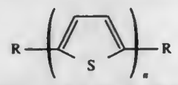


1. A method of manufacturing a conducting organic oriented film comprising the steps of

forming a polytetrafluoroethylene oriented film on a substrate, and

contacting an oligothiophene compound represented by Formula (1) with the polytetrafluoroethylene oriented film:

Formula (1)



wherein n represents an integer of 3 to 6, and R represents a hydrogen atom or an alkyl group having 1 to 2 carbon atoms.

5,546,890

REMOVING INTERHALOGEN COMPOUNDS FROM SEMICONDUCTOR MANUFACTURING EQUIPMENT

Tokuhiko Tamaki, and Shinichi Imai, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 21, 1995, Ser. No. 391,666

Claims priority, application Japan, Feb. 21, 1994, 6-022272

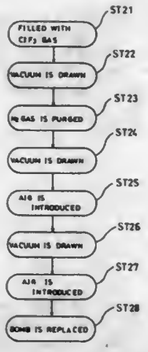
Int. Cl.[6] C30B *25/00;* **B08B** *9/03;* **H01L** *21/00*

U.S. Cl. 117—102 **7 Claims**

1. A method of opening to the atmosphere the inside of a component of a system used for producing semiconductor devices and through which interhalgen compound gas passes in a hermetically sealed manner, said method comprising:

a. stopping the flow of gas through the semiconductor device producing system;

b. cleaning a component of the semiconductor device producing system containing a residual interhalogen compound gas by passing an inert gas through said component until the concentration of said residual interhalogen compound gas in said



component is reduced to about 10 ppm and discharging said inert gas from said component into a processing device;

c. then cleaning said component through which said inert gas has been passed and discharged with a gas having a humidity exceeding 1% to decompose the remnants of said residual interhalogen compound gas into a substance and reducing the concentration of said residual interhalogen gas in the component to about 0.1 ppm and discharging said gas having a humidity exceeding 1% into said processing device; and

d. opening to the atmosphere said component from which said substance has been discharged.

5,546,891

Patent Not Issued For This Number

5,546,892

APPARATUS FOR SEPARATING MILK AND AIR FROM EACH OTHER AT AN EARLY STAGE IN A PIPE MILKING MACHINE

Christer Forsström, Vantaa, Finland, assignor to Pellonpaja Oy, Ylihärma, Finland

PCT No. PCT/FI93/00199, § 371 Date Oct. 24, 1994, § 102(e) Date Oct. 24, 1994, PCT Pub. No. WO93/22902, PCT Pub. Date Nov. 25, 1993

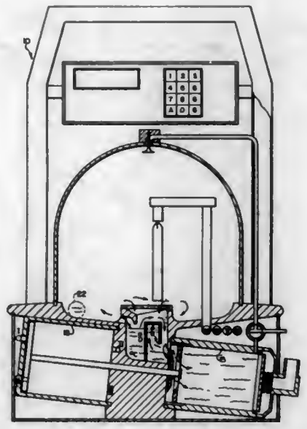
PCT Filed May 7, 1993, Ser. No. 325,313

Claims priority, application Finland, May 8, 1992, 922092

Int. Cl.[6] A01J *5/007*

U.S. Cl. 119—14.08 **7 Claims**

1. An apparatus for separating milk and air from each other at an early stage in a pipe milking machine, said apparatus comprising a milker claw (**1**) and a pump assembly (**10**) in flow communication therewith and connected to a vacuum tube (**5**) and including a body element (**13**) provided with an inlet chamber (**25, 26**) for milk flowing into the pump assembly (**10**), and pump means for pumping milk into a normal-pressure milk pipe (**4***a*) connected with assembly (**10**), said pump means comprising a milk pump consisting of a milk cylinder (**15**) and a pump piston (**16, 16***a*) axially movable therein, as well as a vacuum pump consisting of an operating cylinder (**18**) and an operating piston (**19**) axially movable therein mutually adjacent and with the pump piston (**16, 16***a*) and operating piston (**19**) coupled functionally with each other, characterized in that the inlet chamber (**25, 26**) is mounted substantially above the axis of the milk cylinder (**15**) in flow communication with the milk cylinder (**15**) whereby, in operation, milk and air flow in the state of vacuum from the claw (**1**) to the pump assembly (**10**), the milk only flowing essentially by the action of gravity, and that the pump assembly (**10**) uses the pump piston (**16, 16***a*) for bringing the milk flowing gravitationally through the inlet chamber (**25, 26**) to the milk cylinder (**15**) upwards to said normal-pressure milk pipe (**4***a*).



5,546,893

BIRD ENCLOSURES

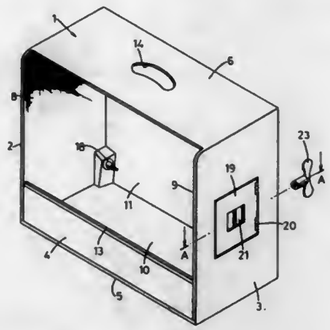
Roger H. Stone, 19 St. Patricks Rd., Yeovil, Somerset, BA1 3EX, United Kingdom

Filed Sep. 1, 1994, Ser. No. 298,959

Claims priority, application United Kingdom, Sep. 1, 1993, 9318112

Int. Cl.[6] A01K *31/06*

U.S. Cl. 119—404 **8 Claims**



1. A bird enclosure of generally rectangular design having two side walls, a base, a top, a rear wall and a front wall, and formed from two interengaging sections which nest within one another to create a closed interior and at least one double side wall defining a cavity in that side wall, the front wall of the enclosure incorporating a mesh viewing panel, the enclosure also having a top interior wall which inclines downwardly from the front to the rear, the inclined wall being formed as part of one of the interengaging sections and a horizontal top wall extends as part of the other section from the front wall of the enclosure over the inclined wall.

5,546,894

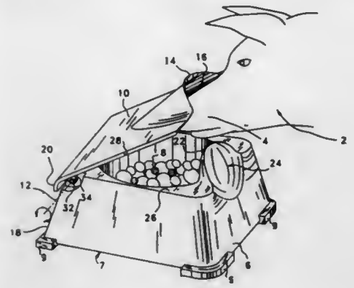
SELF-CLOSABLE FOOD CONTAINER ASSEMBLY FOR AN ANIMAL WITH A MUZZLE

Roger St-Pierre, RR 2, Site 18, Boîte 6, Pokemouche, Nouveau Brunswick, Canada

Filed Apr. 26, 1995, Ser. No. 428,985

Int. Cl.[6] A01K *5/01*

U.S. Cl. 119—61 **13 Claims**



1. A self-closable food container assembly for an animal with a muzzle, comprising:

a food container provided with a top opening properly sized to give the animal access to food contained in the food container;

a lid tiltably mounted about a pivot axis onto the food container, the lid being movable between a closed position where the lid covers the top opening of the food container and an open position where the lid uncovers the top opening of the food container, the lid having a front edge that is generally parallel to said pivot axis and is embossed to define an upwardly projecting cavity into which the animal may insert its muzzle to lift the lid and thereby have access to the food contained in the food container; and

means for returning the lid to its closed position as soon as the animal removes its muzzle from under the lid;

wherein the food container has a front upper edge that is generally parallel to said pivot axis and is embossed to define a rearwardly projecting complementary cavity contiguous to the upwardly projecting cavity of the lid when the lid is in said closed position.

5,546,895

GROOMING BRUSH PET DOOR

Thomas E. Brown, Star Rt., Box 452, Lottsburg, Va. 22511

Filed Sep. 7, 1995, Ser. No. 524,634

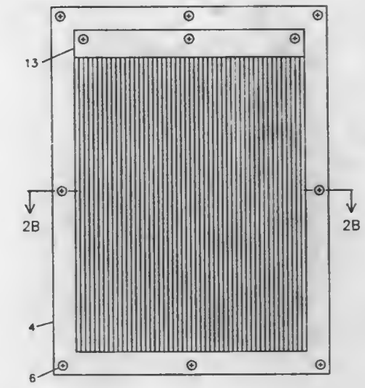
Int. Cl.[6] A01K *1/035;13/00*

U.S. Cl. 119—484 **6 Claims**

1. A pet door comprising:

(a) an opening in a building, and

(b) a brush fastened in said opening such that only the bristles of said brush substantially completely fill said opening but permit passage of an animal through said opening.



5,546,896

ARTICULATED, OIL-COOLED PISTON FOR INTERNAL COMBUSTION ENGINES

Dieimar Zaiser, Fellbach, Germany, assignor to Mahle GmbH, Stuttgart, Germany

Filed Jul. 18, 1995, Ser. No. 503,824

Claims priority, application Germany, Aug. 25, 1994, 44 30 137.5

Int. Cl.[6] F02F *3/22*

U.S. Cl. 123—193.6 **7 Claims**

1. An articulated, oil-cooled piston for an internal combustion engine, the oil-cooled piston extending along a longitudinal axis and including a piston skirt, a piston head with bosses, annular ribs and a piston pin disposed within the bosses for connecting the piston skirt and a connecting rod to the piston head, the piston head comprising:

a ring belt having a lower end and at least one ring groove, said ring belt defining an outer border of an annular cooling oil duct which is positioned radially inwardly of said ring belt, said annular cooling oil duct surrounding said bosses and said annular ribs and having an opening adjacent said lower end, said ring belt having two diametrically opposed slots formed adjacent said lower end; and

an annular plate covering said annular cooling oil duct approximately at the height of said lower end, said annular plate being radially-divided into plate parts each having an outer periphery, said plate parts being radially inserted into respective slots whereby said plate parts are disposed in a common plane oriented perpendicular to the piston axis with said outer periphery supported by the slots.

5,546,897

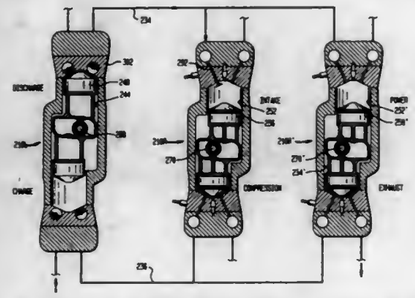
INTERNAL COMBUSTION ENGINE WITH STROKE SPECIALIZED CYLINDERS

Douglas C. Brackett, 2535 Mason Oaks Dr., Valricho, Fla. 33594

Continuation-in-part of Ser. No. 149,063, Nov. 8, 1993, Pat. No. 5,375,566. This application Oct. 3, 1994, Ser. No. 317,295

Int. Cl.[6] F02B *75/28*

U.S. Cl. 123—70 R **36 Claims**



20. A reciprocating piston internal combustion engine having a plurality of cylinders for slideably receiving a corresponding plurality of mated pistons therein moving in synchronous reciprocation relative to the rotation of a crankshaft, comprising:

(a) a shuttle having a slot therein affixed to a first of said plurality of pistons, one side of said slot being defined by a first trackable profile having a first circumferential length and an opposite side being defined by a second trackable profile having a second circumferential length, said slot receiving a crankpin of said crankshaft for interconverting between reciprocating motion of said first piston and rotary motion of said crankshaft,

(b) a pair of conjugate drivers rotatably mounted on said crankpin, one of said conjugate drivers having a first tracking profile with a third circumferential length, which is equal to said first circumferential length and the other of said conjugate drivers having a second tracking profile with a fourth circumferential length, which is equal to said second circumferential length; and

(c) means for interconverting between reciprocating motion of the remainder of said plurality of pistons and rotary motion of said crankshaft, at least one of said plurality of cylinders dedicated to infusing an intake charge into at least one other of said plurality of cylinders, the at least one other of said plurality of cylinders capable of serving as a combustion chamber the relationship between the piston position and crank angle for at least one of said plurality of pistons differing from that of at least one other of said plurality of pistons.

5,546,898

DEVICE FOR CONTROLLING THE FLOW OF INTAKE AND EXHAUST GASES IN AN INTERNAL COMBUSTION ENGINE

Yoonsuk Kim, Kyungki-do, Rep. of Korea, assignor to Hyundai Motor Company, Rep. of Korea

Filed Jun. 30, 1995, Ser. No. 497,600

Claims priority, application Rep. of Korea, Jun. 30, 1994, 94-15552

Int. Cl.[6] F02B *75/02*; **F01L** *1/00*

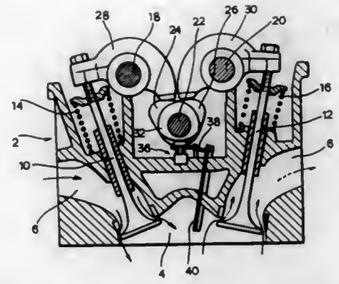
U.S. Cl. 123—90.1 **10 Claims**

1. A device for controlling the flow of intake and exhaust gases in an internal combustion engine, comprising:

a cylinder head with a plurality of cylinders each forming combustion chamber for burning air/fuel mixture to produce a mechanical energy, said combustion chamber having an intake valve for receiving an air/fuel mixture and an exhaust valve for exhausting burnt gases;

a blocking means for isolating the side of said intake valve from the side of said exhaust valve so as to prevent a fresh air/fuel mixture and said burnt gases from interfering with each other in the overlap interval between the final stage of the exhaust stroke and the beginning stage of the intake stroke during which said intake and exhaust valves simultaneously maintain the opening state; and

a cam shaft for driving said intake and exhaust valves and said blocking means.



5,546,899

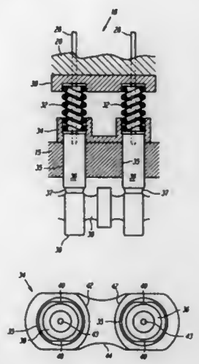
VALVE TRAIN LOAD TRANSFER DEVICE FOR USE WITH HYDRAULIC ROLLER LIFTERS

Kenneth R. Sperling, Granada Hils, and Guy L. Tripp, Saugus, both of Calif., assignors to Air Flow Research Heads, Inc., Pacoima, Calif.

Filed Feb. 10, 1995, Ser. No. 386,856

Int. Cl.[6] F01L *1/14*

U.S. Cl. 123—90.5 **12 Claims**



1. A valve train load transfer apparatus for use with hydraulic roller lifters in an internal combustion engine, each of the roller lifters having a rigid cylindrical body with an open upper end, said load transfer apparatus comprising:

an auxiliary coil spring inserted between the open end of each lifter body and a cylinder head of the engine; and

a load transfer retainer receivable on adjacent pairs of hydraulic roller lifters, said load transfer retainer comprising a biasing force retaining member for each lifter to retain said auxiliary coil springs in engagement with the open ends of the lifter bodies; and an anti-rotation member for ganging said roller lifters together to prevent said roller lifters from rotating.

5,546,900

INTAKE ASSEMBLY FOR A MULTI-CYLINDER INTERNAL-COMBUSTION ENGINE

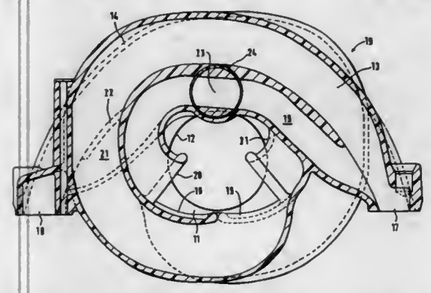
Peter Adamek, Stuttgart; Eduard Kopec, Bietigheim-Bissingen, and Armin Ludmann, Gerlingen, all of, Germany, assignors to Filterwerk Mann & Hummel Gmbh, Ludwigsburg, Germany

Filed Jul. 5, 1995, Ser. No. 498,186

Claims priority, application Germany, Jul. 5, 1994, 44 23 427.9

Int. Cl.[6] F02B *27/02*; **F02D** *9/16*

U.S. Cl. 123—184.55 **10 Claims**



1. An intake assembly for a multi-cylinder internal combustion engine, said assembly comprising at least first and second intake ducts of different lengths for each cylinder which proceed from an intake distributor and converge shortly before an intake valve, wherein a shorter of said first and second intake ducts is provided with a shut-off device comprising a control shaft, the shorter intake ducts for each cylinder being arranged laterally adjacent each other, and wherein the control shaft has at least one end mounted in a radially freely movable manner and extends entirely across the laterally adjacent shorter intake ducts.

5,546,901

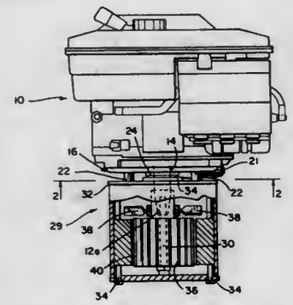
ENGINE HOUSING FOR AN ENGINE-DEVICE ASSEMBLY

Richard M. Acker, Delafield; Brian T. Brunelli, Greendale, and Douglas H. Kautzer, Sussex, all of Wis., assignors to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed Jun. 30, 1995, Ser. No. 497,298

Int. Cl.[6] F02F *7/00*

U.S. Cl. 123—195 C **16 Claims**



1. An engine housing for an internal combustion engine, said engine having a vertically-disposed crankshaft during engine operation, said engine housing comprising:

an engine housing section, including

a first side that at least partially encloses said engine;

a second side opposite to said first side;

an aperture through said first side and said second side, said crankshaft extending through said aperture; and

four raised mounting bosses extending from said second side and disposed about said aperture, each of said mounting bosses being positioned 90 degrees from an adjacent mounting boss, said bosses being used to attach a device to said engine housing.

5,546,902

FUEL/GAS DELIVERY SYSTEM FOR INTERNAL COMBUSTION ENGINES

John W. D. Paluch, Mount Claremont; Stephen R. Maiss, Woodvale; Lyle A. Gildersleeve, Brentwood; Christopher K. Schlunke, South City Beach; Gregory B. Bell, Woodlands, and Darren A. Smith, Doubleview, all of, Australia, assignors to Orbital Engine Company (Australia) Pty. Limited, Balcatta, Australia

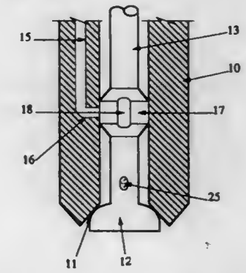
PCT No. PCT/AU93/00222, § 371 Date Nov. 7, 1994, § 102(e) Date Nov. 7, 1994, PCT Pub. No. WO93/23668, PCT Pub. Date Nov. 25, 1993

PCT Filed May 14, 1993, Ser. No. 331,487

Claims priority, application Australia, May 15, 1992, PL2477

Int. Cl.[6] F02M *43/00;43/04;25/10*; **F02D** *19/08*

U.S. Cl. 123—304 **31 Claims**



1. A method of operating an internal combustion engine comprising directly injecting a quantity of fuel entrained in air into a combustion chamber of an engine, and over at least a selected portion of the engine operating load range delivering into the combustion chamber a quantity of a combustion control substance in timed relation to said injecting of the fuel and establishing at a selected location within the combustion chamber a selected combustion control substance distribution.

5,546,903

THROTTLE VALVE CONTROL DEVICE OF INTERNAL COMBUSTION ENGINE

Eiichi Saton, Isehara, and Masahiro Iriyama, Atsugi, both of, Japan, assignors to Nissan Motor Co., Ltd., Kanagawa, Japan

Filed May 24, 1995, Ser. No. 448,868

Claims priority, application Japan, May 31, 1994, 6-118738

Int. Cl.[6] F02D *9/02*; **B60K** *28/16*

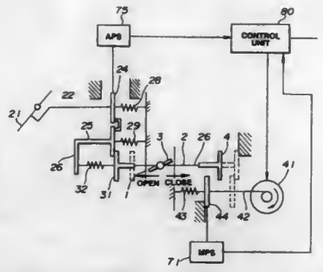
U.S. Cl. 123—399 **12 Claims**

1. A throttle valve control device of an internal combustion engine for use in a motor vehicle, comprising:

a first control system which controls a throttle valve in accordance with movement of an accelerator pedal;

a second control system which, upon a traction control of the vehicle, enforcedly pivots, with an aid of an electric actuator, the throttle valve in a direction to reduce the open degree thereof irrespective of operation of said first control system;

an accelerator position sensor for issuing a first signal which represents the operation position of said first control system;



an actuator position sensor for issuing a second signal which represents the operation position of said electric actuator;

first means for deriving a first open degree of the throttle valve from said first signal;

second means for deriving a second open degree of the throttle valve from said second signal; and

third means for selecting a smaller one from said first and second open degrees of the throttle valve,

wherein said second control system is operated in accordance with both said second signal and the selected smaller open degree of the throttle valve.

5,546,904

MOTION TRANSMISSION MECHANISM FOR CONTROLLING AN INTERNAL COMBUSTION ENGINE

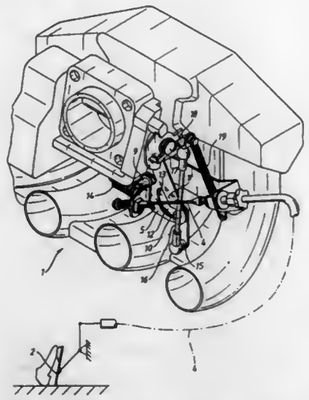
Dieter Papenhagen, Waiblingen, and Thorsten Meyer, Fellbach, both of, Germany, assignors to Mercedes-Benz AG, Stuhgart, Germany

Filed Aug. 8, 1995, Ser. No. 512,535

Claims priority, application Germany, Aug. 26, 1994, 44 30 282.7

Int. Cl.[6] F02D *7/00*

U.S. Cl. 123—400 **3 Claims**



1. A motion transmission mechanism for transmitting motion between a control input member and a power output control member, such as a butterfly valve, which is spring biased into an idle position for controlling an internal combustion engine, comprising: an input lever pivotally mounted on a first support shaft and operatively connected to said control input member, an output lever pivotally mounted on a second support shaft spaced from said first support shaft, one of said input and output levers having a guide slot and the other having a projection received in said guide slot for cooperating movement of said input and output levers in the same said direction, said guide slot comprising first and second slot sections arranged at an angle with regard to each other, said first section guiding said projection in a lower partial load range of said engine so as to provide for a small ratio of motion transmission from said input lever to said output lever and said second section guiding said projection in an upper partial load range of said engine so as to provide for a large ratio of motion transmission from said input lever to said output lever such that any incremental position change of said input lever causes a small position change of said power output control member in said lower partial load range and a large position change of said power output control member in said upper partial load range, said output lever being a double armed lever having first and second arms, a tension spring having one end connected to the free end of said first arm and an operating rod having one end operatively connected to the end of said second arm and the other to said engine power output control member, said tension spring having its other end connected to said input lever at such a location that a line of force of said spring extends essentially in a direction of movement of said projection within said first slot section of said guide slot, thereby increasing a tension of said tension spring at a high rate while causing small movement of said output lever, and that the line of force of said spring extends at an angle to the direction of movement of said projection within said second slot section of said guide slot so as to increase the spring tension at a low rate while causing large movement of said output lever with a concurrent small spring tension increase.

5,546,905

CONTROL APPARATUS FOR CONTROLLING THE IGNITION TIMING OF AN INTERNAL COMBUSTION ENGINE

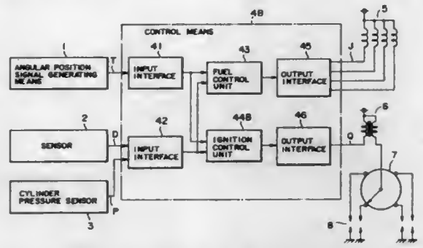
Wataru Fukui, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 10, 1993, Ser. No. 149,953

Claims priority, application Japan, Nov. 16, 1992, 4-305547

Int. Cl.[6] F02P *5/14*

U.S. Cl. 123—25 **28 Claims**



1. A control apparatus for an internal combustion engine that has a plurality of cylinders, comprising:

angular position signal generating means for generating a predetermined angular position signal for each of said cylinders in accordance with a rotation speed of said engine;

sensor means for detecting an operation state of said engine and for generating an engine operation state signal;

fuel injection means for injecting fuel into each of said cylinders;

ignition means for firing a fuel mixture within each of said cylinders; and

control means for generating a fuel injection signal for said fuel injection means and an ignition timing signal for said ignition means on the basis of said angular position signal and said engine operation state signal;

wherein said control means controls said ignition timing signal so that, for one of said cylinders for which application of said fuel injection signal ceases, ignition timing is shifted by a period which corresponds to a predetermined crank angle from a top dead center position of said one cylinder.

5,546,906

FUEL INJECTION PUMP

Michael P. Cooke, Gillingham, United Kingdom, assignor to Lucas Industries, Solihull, England

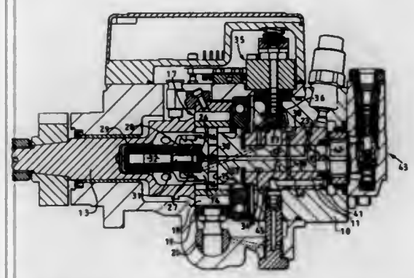
Filed Aug. 31, 1995, Ser. No. 522,484

Claims priority, application United Kingdom, Oct. 7, 1994, 9420254

Int. Cl.[6] F02M *37/04*

U.S. Cl. 123—447 **4 Claims**

1. A fuel injection pump for supplying fuel to an internal



combustion engine comprising a pumping plunger slidable in a bore, a cam operable to move the pumping plunger inwardly towards one end of the bore, an outlet communicating with said end of the bore and through which fuel is supplied to the associated engine, a spill valve including a spill valve member operable to spill fuel from said end of the bore during inward movement of the pumping plunger thereby to control the quantity of fuel supplied through the outlet, means biasing the valve member to the closed position, a piston slidable in a cylinder and a control valve operable to supply fuel under pressure from said one end of the bore to one end of said cylinder thereby to displace the piston towards the other end of the cylinder, said piston and said spill valve member being operatively connected so that movement of the piston away from said one end of the cylinder will effect movement of the spill valve member from the closed position to spill fuel from said one end of the bore, the piston and the wall of the cylinder defining a restricted flow path whereby fuel can escape from said one end of the cylinder.

5,546,907

FUEL METERING CONTROL SYSTEM IN INTERNAL COMBUSTION ENGINE

Isao Komoriya; Yusuke Hasegawa; Shusuke Akazaki, and Hidetaka Maki, all of Kenkyusho, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 27, 1995, Ser. No. 507,977

Claims priority, application Japan, Jul. 29, 1994, 6-197238

Int. Cl.[6] F02D *41/10;41/18*

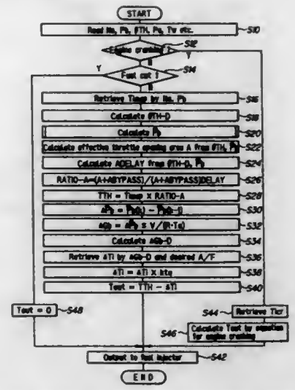
U.S. Cl. 123—478 **16 Claims**

1. A system for controlling fuel metering in an internal combustion engine, including:

engine operating condition detecting means for detecting parameters indicating an engine operating condition at least including an engine speed (Ne), a manifold pressure (Pb) and a throttle valve opening (θTH);

fuel injection quantity obtaining means for obtaining a quantity of fuel injection (Timap) in accordance with a predetermined characteristic at least based on the engine speed (Ne) and the manifold pressure (Pb);

pseudo-manifold pressure determining means for determining an n-th order lag value (θTH-D) of the throttle valve opening (θTH) to determine a pseudo-manifold pressure (P̂b) at least based on the n-th order lag value (θTH-D) and the engine speed (Ne);



first effective throttle opening area determining means for determining an effective throttle opening (A) at least based on the throttle valve opening (θTH) and the pseudo-manifold pressure (P̂b);

second effective throttle opening area determining means for determining a value (ADELAY) indicating an n-th order lag of the effective throttle opening area (A) at least based on the n-th order lag value (θTH-D) of the throttle valve opening (θTH) and the pseudo-manifold pressure (P̂b); and

fuel injection quantity determining means for determining a quantity of fuel injection (Tout) by multiplying the quantity of fuel injection (Timap) by a ratio between the effective throttle opening area (A) and the value (ADELAY) as

$$Tout=Timap\times A/ADELAY$$

wherein the improvement comprises:

said first and second effective throttle opening area determining means corrects the pseudo-manifold pressure (P̂b) by the engine operating condition.

5,546,908

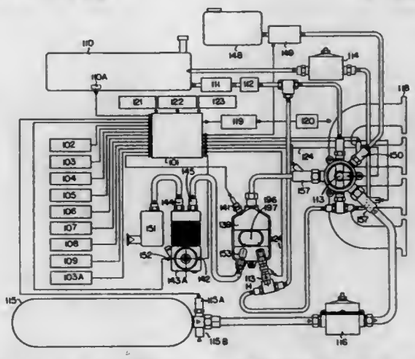
PLURAL FUEL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Richard A. Stokes, 112 E. Fourth St., Apt. B-1, Aberdeen, Wash. 98520

Filed Jan. 7, 1994, Ser. No. 178,662

Int. Cl.[6] F02D *41/26;* **F02M** *43/00*

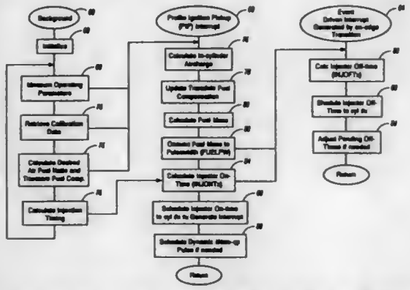
U.S. Cl. 123—480 **16 Claims**



1. A plural fuel system for an internal combustion engine said system comprising:

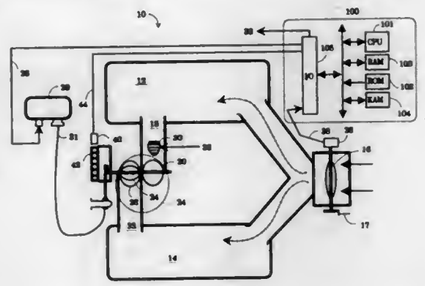
a. a variable supply of a plurality of fluid fuels differing in octane rating and thermal content, the fuels being usable independently and in variable mixtures for delivery to the engine;
b. optimum engine operation parameters at different engine speeds and loads being stored in a ROM;
c. sensors arranged for sensing actual engine operation parameters, load conditions, and fuel availability;
d. a processor in communication with the sensors and the ROM for selecting available fuels and fuel delivery rates;
e. a fuel delivery system controlled by the processor for delivering the selected fuels at the chosen rates to approximate the optimum engine operation parameters at the actual engine speed and load in real time, the fuel delivery system including:
(i) a fuel injector;
(ii) a fuel source providing fuel in a gaseous state;
(iii) a distribution valve in fluid communication with the fuel source; and
(iv) a distribution manifold in fluid communication with and conducting fuel from the distribution valve to an intake manifold of the engine; and
f. an air compressor controlled by the processor and arranged for directing compressed air into the engine for adjusting the effective compression ratio and fuel charge density as the fuel delivery variations change octane rating, energy yield, and flame travel velocity.

5,546,909
METHOD AND SYSTEM FOR GENERATING A FUEL PULSE WAVEFORM
Isis A. Messih, Troy, and Paul C. Mingo, Farmington Hills, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Dec. 27, 1994, Ser. No. 364,329
Int. Cl.[6] F02D *41/10;41/12*
U.S. Cl. 123—492 **20 Claims**



1. A method of generating a fuel pulse waveform, including a leading edge and a trailing edge, to control fuel delivery from a fuel injector to a cylinder of an internal combustion engine, the method comprising:
storing a plurality of calibration data;
sensing a plurality of engine parameters;
in response to a first event of a plurality of predetermined events prior to activation of the fuel injector,
calculating an initial engine fuel requirement based on the stored calibration data and the sensed engine parameters; and
calculating a leading edge of the fuel pulse waveform based on the calculated initial engine fuel requirement;
generating the leading edge of the fuel pulse waveform based on the calculated leading edge;
in response to the generation of the leading edge,
calculating at least one final engine fuel requirement in response to each event of the plurality of predetermined events based on the stored calibration data and the sensed engine parameters; and
calculating a trailing edge of the fuel pulse waveform based on each of the calculated final engine fuel requirements; and
generating the trailing edge of the fuel pulse waveform based on the calculated trailing edge.

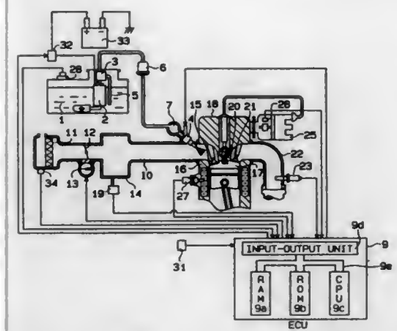
5,546,910
AIR/FUEL CONTROLLER WITH COMPENSATION FOR SECONDARY INTAKE THROTTLE TRANSIENTS
Isis A. Messih, Troy, and Mark T. Linenberg, Romulus, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Jul. 6, 1995, Ser. No. 498,827
Int. Cl.[6] F02D *41/10;41/12*
U.S. Cl. 123—492 **9 Claims**



1. A method for controlling delivery of fuel to an intake port of an intake system in an engine during transient engine operation, comprising the steps of:
determining an equilibrium fuel mass value which is indicative of the fuel mass on the walls of the intake system when the engine is operating under steady state conditions, as a function of an intake runner value which is indicative of a change in the fuel mass on the walls of the intake system due to movement of a secondary intake throttle plate from a first position to a second position;
determining an actual fuel mass value, which is indicative of the actual fuel film mass residing on the walls of the intake system when the engine is operating under transient conditions, as a function of a prior actual fuel mass value, and an equilibrium fuel transfer rate value which is indicative of a transfer rate of fuel from the walls of the intake system to a combustion chamber of the engine; and
generating a fuel injector signal as a function of said equilibrium fuel mass value and said actual fuel mass value.

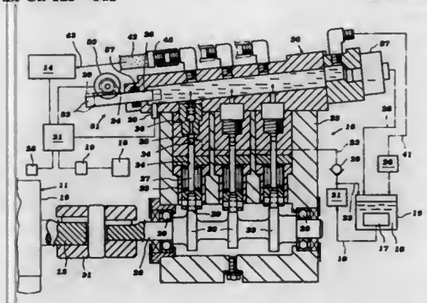
5,546,911
FUEL INJECTION CONTROL APPARATUS
Shinji Iwamoto, Oobu; Toshiaki Mizuno, Kariya; Toshihiko Muramatsu, Chiryu; Kazushi Nakashima, Oobu; Tomoaki Abe, Chita; Masao Yonekawa, Kariya, and Yoshihiro Sakashita, Oobu, all of, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Apr. 6, 1994, Ser. No. 224,008
Claims priority, application Japan, Apr. 20, 1993, 5-092957; Sep. 16, 1993, 5-230166; Sep. 22, 1993, 5-236326; Dec. 22, 1993, 5-324070
Int. Cl.[6] F02M *37/04*
U.S. Cl. 123—497 **29 Claims**

1. A fuel injection control apparatus for an internal combustion engine comprising:
a fuel tank for storing fuel to be supplied to said internal combustion engine;
a fuel injection valve disposed in an intake pipe of said engine for injecting fuel into said intake pipe;



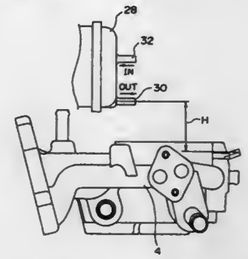
a fuel pump for pumping fuel from said fuel tank to said fuel injection valve;
pressure regulating means disposed in a fuel supply pipe between said fuel pump and said fuel injection valve for regulating pressure of fuel supplied from said fuel pump to said fuel injection valve such that said pressure is proportional to a predetermined pressure, which is a pressure other than a pressure in said intake pipe, without returning fuel from said injection valve to said fuel tank;
intake pressure detecting means for detecting pressure in said intake pipe;
fuel injection quantity control means for controlling an amount of fuel supplied from said fuel injection valve to said internal combustion engine; and
fuel injection quantity correcting means for correcting said amount of fuel supplied from said fuel injection valve based on a deviation of said fuel pressure regulated by said pressure regulating means from a proper value due to a differential pressure between said predetermined pressure of said pressure regulating means and said intake pressure.

5,546,912
FUEL SUPPLY DEVICE
Masaichi Yamada, and Junichi Kaku, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Shizuoka-Ken, Japan
Filed Dec. 14, 1994, Ser. No. 355,532
Claims priority, application Japan, Dec. 14, 1993, 5-343169
Int. Cl.[6] F02M *37/10;55/00;49/00*
U.S. Cl. 123—511 **24 Claims**



1. A fuel supply device, comprising at least one fuel pump connected to a fuel source, at least one fuel injection valve, a fuel distribution line connecting said fuel pump with said fuel injection valve, a pressurizing device for pressurizing said fuel distribution line independently of said fuel pump, and a safety valve to relieve any excess pressure from said pressurizing device, the safety valve connected to said fuel source by a return line.

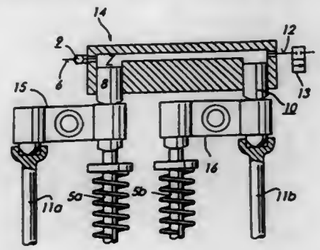
5,546,913
EVAPORATIVE FUEL DISCHARGE-PREVENTING DEVICE FOR ENGINE
Masahiro Aoki, Shizuoka-ken, Japan, assignor to Suzuki Motor Corporation, Shizuoka-ken, Japan
Filed May 16, 1995, Ser. No. 442,476
Claims priority, application Japan, Aug. 10, 1994, 6-209089
Int. Cl.[6] F02M *33/02*
U.S. Cl. 123—520 **1 Claim**



1. In an evaporative fuel discharge-preventing device for an engine, having a canister provided midway along an air communication passage which intercommunicates the inside of a fuel tank and an air intake passage of an engine intake manifold, and a purge valve provided in said air communication passage between said canister and said intake manifold, in which said canister absorbingly retains evaporated fuel during stopping of said engine, said evaporated fuel being generated in said fuel tank, but releases said absorbingly retained fuel from said canister during operation of said engine by fresh air being introduced into said canister, whereby said evaporated fuel is supplied to said air intake passage, the improvement comprising: a surge tank, having a predetermined volumetric capacity, disposed in said air communication passage between said intake manifold and said purge valve, said surge tank being located at a position greater in height than said intake manifold and said surge tank having an outlet side pipe positioned at a lower portion thereof and an inlet side pipe located at a position above said outlet side pipe.

5,546,914
ARRANGEMENT FOR RECIRCULATING EXHAUST GAS IN AN INTERNAL COMBUSTION ENGINE
Helmut Scheinert, Ebersbach/Fils, Germany, assignor to Mercedes-Benz AG, Stuttgart, Germany
Filed Jul. 13, 1995, Ser. No. 502,003
Claims priority, application Germany, Jul. 14, 1994, 44 24 802.4
Int. Cl.[6] F02M *25/07;* **F01L** *25/02*
U.S. Cl. 123—569 **4 Claims**

1. An arrangement for recirculating exhaust gas in a four-stroke



internal combustion engine, especially a diesel engine, having at least one cylinder with at least one intake and one exhaust valve

and mechanical means for timely opening said intake and exhaust valves during the engine intake and exhaust strokes, respectively, said means for opening said intake valve including a hydraulic force transfer structure disposed between said means for opening said exhaust valve and said intake valve for actuating said intake valve also during the engine exhaust stroke for discharging a portion of the exhaust gas from said cylinder through said intake valve and including a solenoid valve capable of timely releasing fluid from said hydraulic force transfer structure for permitting said intake valve to close in a controlled manner after being actuated during the engine exhaust stroke by said hydraulic force transfer structure.

5,546,915

EXHAUST GAS RECIRCULATING SYSTEM WITH REDUCED DEPOSIT

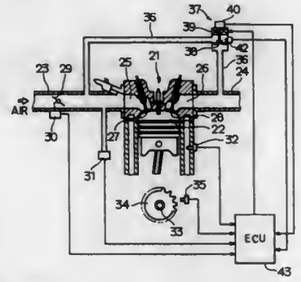
Daiji Isobe, Toyohashi, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Aug. 3, 1995, Ser. No. 510,670

Claims priority, application Japan, Aug. 25, 1994, 6-225892

Int. Cl.[6] F02M *25/07*

U.S. Cl. 123—570 **6 Claims**



1. An exhaust gas recirculating system comprising:

an exhaust gas recirculation passage for recirculating a part of exhaust gas from an exhaust system of an internal combustion engine to an intake system;

a recirculation control valve provided on the way within the exhaust gas recirculation passage for regulating recirculation gas flow rate according to engine operating conditions;

recirculation gas temperature determining means for determining a temperature of recirculation gas flowing within the exhaust gas recirculation passage; and

recirculation gas temperature rise controlling means for controlling a recirculation gas temperature to higher than a predetermined deposit generation temperature when the recirculation gas temperature determined by the recirculation gas temperature determining means is below the deposit generation temperature, thereby reducing an accumulation of exhaust gas deposit in the exhaust gas passage.

5,546,916

METHOD AND APPARATUS OR ADAPTING AIR VALUES FROM A SUBSTITUTE PERFORMANCE GRAPH BEING EMPLOYED FOR CONTROLLING A MIXTURE PREPARATION DURING PULSATIONS OF AIR IN AN INTAKE PIPE OF AN INTERNAL COMBUSTION ENGINE TO CURRENTLY PREVAILING STATE VARIABLES OF AMB

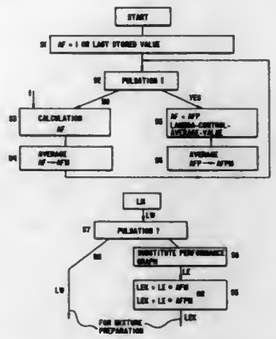
Michael Südholt, Wolkering; Manfred Wier, Wenzenbach; Stephan Krebs, Regensburg; Bernhard Bauer, Rötz, and Wolfgang Reupke, Regensburg, all of, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jan. 30, 1995, Ser. No. 381,093

Claims priority, application European Pat. Off., Jul. 28, 1992, 92112871.6

Int. Cl.[6] F02D *41/00*

U.S. Cl. 123—674 **19 Claims**



1. A method for controlling mixture preparation in an intake tube of an internal combustion engine, which comprises the steps of:

1. measuring air values in an intake tube of an internal combustion engine with an air mass meter;

2. adapting the air values by multiplying the air values by an adaptation factor, and calculating the adaptation factor by:

a. dividing a measured value supplied by the air meter in the intake tube of the internal combustion engine by an air value taken from a substitute performance graph and subjecting the adaptation factor to sliding averaging, at times when no pulsations are present; and

b. using a lambda-control-average value as the adaptation factor and subjecting the adaptation factor to sliding averaging, at times when pulsations are present; and

3. controlling mixture preparation in the intake tube of the internal combustion engine by employing adapted air values as a signal to a fuel injector.

5,546,917

APPARATUS FOR DISPOSING OF FUEL VAPOR

Akinori Osanai, Susono; Toshinari Nagai, Shizuoka; Hiroshi Kanai; Kenji Harima, both of Susono; Kazuhiko Iwano, Aichi, and Shuji Yuda, Susono, all of, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Mar. 16, 1995, Ser. No. 405,328

Claims priority, application Japan, Mar. 30, 1994, 6-60908

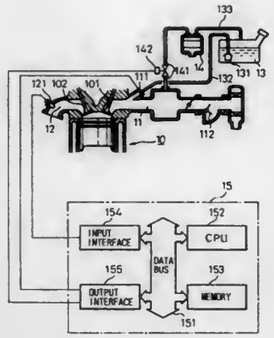
Int. Cl.[6] F02D *41/14*; F02M *25/08*

U.S. Cl. 123—674 **14 Claims**

1. An apparatus for disposing of fuel-vapor comprising:

a charcoal canister for absorbing the fuel-vapor evaporating from a fuel tank of an engine;

a purge valve arranged in a purge pipe which connects said charcoal canister and an inlet pipe and controls the flow rate of the purge gas;



a purge rate calculating means for calculating a purge rate, that is, a rate of the purge gas to the inlet air, and limiting the changing rate of the purge rate to less than a predetermined threshold rate for the changing rate;

a purge valve opening output means for outputting the opening demand to said purge valve determined according to the purge rate calculated by said purge rate calculating means when the driving state of the engine allows the purge;

an air-fuel ratio detecting means arranged in an exhaust pipe of the engine for detecting the air-fuel ratio of the exhaust gas;

an air-fuel ratio control means for calculating an air-fuel ratio correction factor in order to control the air-fuel ratio detected by the said air-fuel ratio detecting means at a predetermined target air-fuel ratio;

a vapor concentration learning means for learning the vapor concentration of the fuel-vapor purged into the inlet pipe according to the air-fuel ratio correction factor calculated by said air-fuel ratio control means; and

a fuel injection valve controlling means for controlling fuel injection valves in accordance with the air-fuel ratio correction factor calculated by said air-fuel ratio control means and the vapor concentration of the fuel-vapor learned by said vapor concentration learning means; wherein

said purge rate calculating means further includes a first rate limiting means for limiting said threshold rate within a narrower range when the vapor concentration is not learned enough than when it is learned enough.

5,546,918

METHOD OF ADJUSTING THE COMPOSITION OF THE OPERATING MIXTURE FOR AN INTERNAL COMBUSTION ENGINE

Ulrich Mayer, Waiblingen; Ernst Wild, Oberriexingen, and Peter Kaltenbrunn, Bietigheim-Bissingen, all of, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jun. 7, 1995, Ser. No. 472,644

Claims priority, application Germany, Jul. 2, 1994, 44 23 241.1

Int. Cl.[6] F02D *41/14*

U.S. Cl. 123—674 **7 Claims**

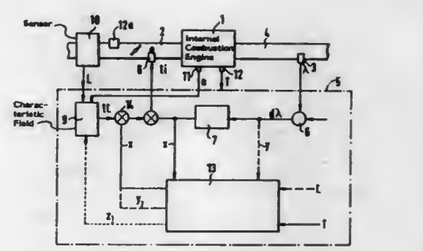
1. A learning control method for adjusting a composition of an operating mixture in a control loop of an internal combustion engine, the method comprising the steps of:

detecting an actual value of the composition;

providing a desired value of the composition;

forming a control variable as a function of the instantaneous deviation of the actual value from the desired value;

logically coupling the control variable to a base value of an adjusting parameter of said composition and driving an actuator on the basis of the logically coupled value; and,



learning of an additional intervention in the control loop from a performance of the control loop wherein the learning takes place at a speed which is at least dependent upon temperature.

5,546,919

OPERATING ARRANGEMENT FOR GASEOUS FUELED ENGINE

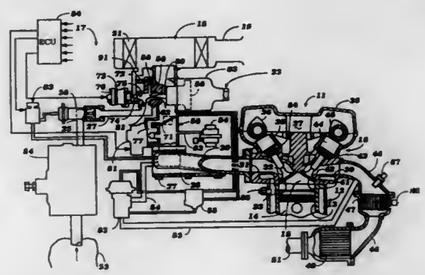
Yoshikatsu Iida; Noriyuki Kurihara, and Toshio Suzuki, all of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Aug. 29, 1994, Ser. No. 297,393

Claims priority, application Japan, Aug. 31, 1993, 5-216379; Aug. 31, 1993, 5-216380

Int. Cl.[6] F02D *41/00*

U.S. Cl. 123—682 **40 Claims**



1. A gaseous fueled engine having an induction system including a charge former supplying a fuel-air mixture to said engine and comprising an air induction passage for receiving atmospheric air and a fuel supply circuit for receiving gaseous fuel from a source of gaseous fuel stored under pressure and mixing said fuel with the air in said induction passage for forming a fuel-air mixture for said engine, an air bleed passage communicating an atmospheric air inlet with said fuel supply circuit, an automatic air bleed control valve in said air bleed passage for controlling the amount of air bleed into said fuel supply circuit to control the mixture strength, an engine combustion sensor for detecting the air-fuel ratio, feedback control means for receiving the signal from said engine combustion sensor and controlling said automatic air bleed valve to maintain the desired air-fuel ratio, an air bypass circuit for bypassing atmospheric air to said fuel supply circuit independently of said air bleed passage, and valve means for controlling the air flow through said air bypass circuit and adjustable to maintain the desired rate of control in response to changes in the system due to deterioration.

5,546,920

STARTING SYSTEM FOR INTERNAL COMBUSTION ENGINES WHICH CAN BE DRIVEN BY DIFFERENT FUELS

Anders Johansson, Enhörna, Sweden, assignor to Saab Automobile Aktiebolag, Sweden

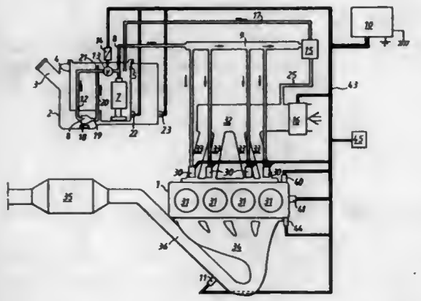
PCT No. PCT/SE93/00982, § 371 Date May 17, 1995, § 102(e) Date May 17, 1995, PCT Pub. No. WO94/11630, PCT Pub. Date May 26, 1994

PCT Filed Nov. 17, 1993, Ser. No. 428,207

Claims priority, application Sweden, Nov. 18, 1992, 9203451

Int. Cl.[6] F02M *37/00;* **B60K** *15/02*

U.S. Cl. 123—685 **4 Claims**



1. An arrangement for supplying fuel to an internal combustion engine having a fuel manifold, which arrangement comprises:

a main tank having a filler opening through which fuel may be introduced into the main tank;

a slave tank arranged to receive the fuel from the main tank, the slave tank having an overflow outlet at a predetermined height;

a fuel pump arranged in the slave tank, the fuel pump having a suction side for drawing fuel from the slave tank and a pressure side;

a feed pipe arranged between the pressure side of the fuel pump and the fuel manifold for delivering fuel from the pressure side of the pump to the fuel manifold;

an ejector having a suction side and a pressure side, the suction side of the ejector being connected to the main tank, the ejector being connected to and being operable by the pressure side of the pump for sucking in fuel from the main tank and delivering said fuel to the pressure side of the ejector; and

a rising pipe connected to the pressure side of the ejector and extending vertically, the rising pipe having an outlet at a height higher than the height of the overflow outlet and the height of the overflow outlet being higher than a maximum height which the main tank can be filled.

5,546,921

AIR-FUEL RATIO CONTROL SYSTEM

Akira Uchikawa, Atsugi, Japan, assignor to Unisia Jecs Corporation, Atsugi, Japan

Filed Apr. 4, 1995, Ser. No. 395,651

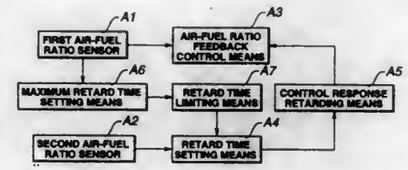
Claims priority, application Japan, Apr. 5, 1994, 6-067170

Int. Cl.[6] F02D *41/00*

U.S. Cl. 123—694 **4 Claims**

1. An air-fuel ratio control system for an internal combustion engine, comprising:

first and second air-fuel ratio sensors disposed respectively upstream and downstream of a catalytic converter disposed in an exhaust system of the engine, each air-fuel ratio sensor producing an output value that changes in response to a concentration of a component in exhaust gas, which concentration changes in accordance with an air-fuel ratio of an air-fuel mixture to be supplied to the engine;



air-fuel ratio feedback control means for feedback-controlling an amount of fuel to be supplied to the engine in accordance with the output value of said first air-fuel ratio sensor so as to regulate the air-fuel ratio of the air-fuel mixture toward a target air-fuel ratio;

retard time setting means for setting a retard time where a control response in connection with an inversion between lean and rich sides of the air-fuel ratio relative to the target air-fuel ratio is retarded, in accordance with the output of said second air-fuel ratio sensor;

control response retarding means for compulsorily retarding the control response in connection with the inversion between the lean and rich sides, in accordance with said retard time set by said retard time setting means;

maximum retard time setting means for setting a maximum value of said retard time in accordance with a cycle of output of said first air-fuel ratio sensor; and

retard time limiting means for limiting said retard time set by said retard time setting means, in a range not longer than said maximum value of said retard time.

5,546,922

CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

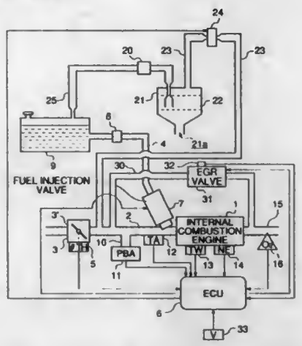
Fumio Hara; Akira Fujimura; Yoshihisa Hara, and Masahiro Sakanushi, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 187,469, Jan. 28, 1994, Pat. No. 5,469,833. This application Sep. 12, 1995, Ser. No. 526,563

Claims priority, application Japan, Feb. 1, 1993, 5-36094

Int. Cl.[6] F02M *25/08;* **F02D** *41/14*

U.S. Cl. 123—698 **4 Claims**



1. In a control system for an internal combustion engine having an intake passage, a fuel tank, a canister for adsorbing evaporative fuel generated from said fuel tank, a purging passage connecting said canister and said intake passage for allowing said evaporative fuel to be purged therethrough into said intake passage, said control system including a purge control valve arranged in said purging passage for controlling a flow rate of said evaporative fuel purged through said purging passage into said intake passage, operating condition-detecting means for detecting operating conditions of said engine, evaporative fuel concentration-dependent

correction coefficient-setting means for setting an evaporative fuel concentration-dependent correction coefficient dependent on concentration of said evaporative fuel purged into said intake passage, purging flow rate correction coefficient-setting means for setting a purging flow rate correction coefficient, and purging flow rate-controlling means for controlling said purge control valve depending on said operating conditions of said engine detected by said operating condition-detecting means and said purging flow rate correction coefficient,

the improvement comprising:

purging region-setting means for setting a purge control valve-enabling region in which said purge control valve is made operative, and a purge control valve-disabling region in which said purge control valve is made inoperative, based on said operating conditions of said engine, and

purging flow rate correction coefficient-updating control means for storing said purging flow rate correction coefficient to hold said purging flow rate correction coefficient when said engine is in said purge control valve-disabling region, and causing said purging flow rate correction coefficient-setting means to progressively set said purging flow rate correction coefficient to a larger value depending on said evaporative fuel concentration-dependent correction coefficient, after said engine has shifted from said purge control valve-disabling region to said purge control valve-enabling region.

5,546,923

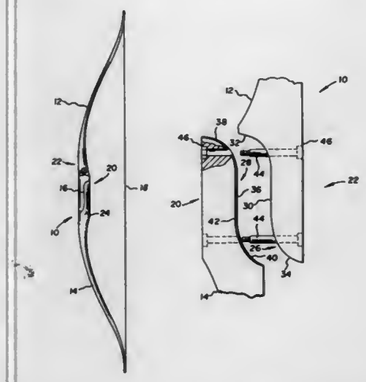
TAKE-DOWN ARCHERY BOW

Douglas J. Duncan, 8157 Budworth School Rd., P.O. Box 742, Beetown, Wis. 53802

Filed Oct. 27, 1994, Ser. No. 330,831

Int. Cl.[6] F41B *5/00*

U.S. Cl. 124—23.1 **18 Claims**



1. An archery bow having a belly and a back comprising two elongated branch components detachably joined together at a joint with at least one releasable fastener extending through holes in each component which extend from the belly to the back of the bow, the joint extending from the belly to the back and, forming the joint, an end of each component having a first curved surface extending to the bow belly and a second curved surface extending to the bow back.

5,546,924

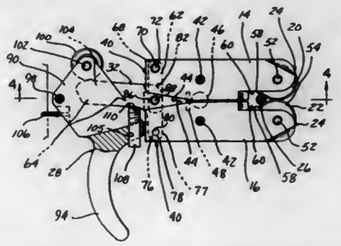
BOW STRING RELEASE DEVICE

Gary J. Todd, 33551 Giftos, Clinton Township, Mich. 48035

Filed Jun. 8, 1994, Ser. No. 255,391

Int. Cl.[6] F41B *5/18*

U.S. Cl. 124—35.2 **23 Claims**



1. A bow string release device for releasing a bow string of an archery bow comprising:

a support body;

a pair of carriers pivotally connected to said support body;

a pair of rollers supported by said carriers for movement between a closed position, wherein a bow string is retained by said rollers, and an open position, wherein the bow string is permitted to pass between said rollers;

a linkage assembly pivotally connected to said pair of carriers for pivotally moving said carriers between said closed position and said open position; and

means for manually actuating said linkage assembly for movement between said closed position and said open position.

5,546,925

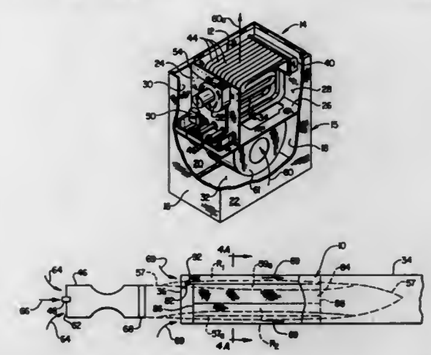
INSHOT FUEL BURNER NOX REDUCTION DEVICE WITH INTEGRAL POSITIONING SUPPORT STRUCTURE

John T. Knight, Fort Smith; Joey W. Huffaker, Rudy, and Michael B. Rinke, Van Buren, all of Ark., assignors to Rheem Manufacturing Company, New York, N.Y.

Filed Aug. 9, 1995, Ser. No. 513,132

Int. Cl.[6] F24H *3/02*

U.S. Cl. 126—110 R **27 Claims**



1. A reduced NOx emission combustion system for a fuel-fired heating appliance, comprising:

a combustor tube having an open inlet end and an essentially straight combustion section longitudinally extending inwardly from said open inlet end and having an interior side surface;

a fuel burner operative to inject a flame and resulting hot combustion gases into said open inlet end for flow through said combustion section of said combustor tube in a manner

drawing ambient combustion air into said combustion section around the flame; and

apparatus for reducing the NOx emissions of the heating appliance during operation thereof, said apparatus including:

a NOx reducing insert member formed from a metal mesh material and having a hollow body portion extending lengthwise along an axis and opposite open ends longitudinally spaced apart along said axis, and a circumferentially spaced plurality of axially elongated ribs projecting laterally outwardly from said body portion, said NOx reducing insert member being received within said combustion section of said combustor tube with said ribs slidably engaging said interior side surface of said combustion section and maintaining said body portion in a coaxial, laterally inwardly spaced relationship with said combustion section, each of said ribs being defined by a different side-by-side duality of circumferential segments of said body portion secured to one another in a parallel, abutting relationship, and

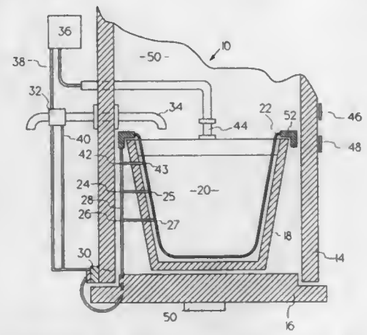
cooperatively engaged means on said combustion section and said NOx reducing insert member for preventing appreciable axial movement of said NOx reducing insert member within said combustion section.

5,546,926

WHOLE HOUSE HUMIDIFIER FOR USE WITH HOT AIR HEATING SYSTEMS

Jared L. Lake, 1365 Old Garth Hts., Charlottesville, Va. 22901

Filed Oct. 7, 1994, Ser. No. 319,935
Int. Cl.[6] F24F *3/14;* **A61M** *16/00*
U.S. Cl. 126—113 **5 Claims**



1. A humidifier for a hot air furnace comprising a heat chamber and a duct,

said heat chamber having at least one wall and a removable base and comprising:

a water retaining vessel, said water retaining vessel being positioned on said removable base;

water level sensor means, said water level sensor means registering the minimum and maximum operable water level;

heating means, said heating means incorporating heat sensing means;

water refill means; and

control means; said control means being connected to said water level sensor means, said heating means and said water refill means;

said duct connecting said heat chamber to the furnace duct work,

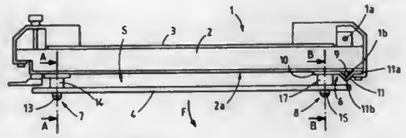
wherein said control means controls the water level based on information received from said water level sensor means and controls the temperature based on information received from said heating means, thereby providing a constant level of evaporation within said heat chamber to be drawn through said duct.

5,546,927

OVEN DOOR

Pierre Lancelot, Gommegnies, France, assignor to Eurofours S.A., France

PCT No. PCT/FR94/00496, § 371 Date Jan. 20, 1995, § 102(e) Date Jan. 20, 1995, PCT Pub. No. WO94/25802, PCT Pub. Date Nov. 10, 1994
PCT Filed Apr. 29, 1994, Ser. No. 360,704
Claims priority, application France, Apr. 29, 1993, 93 05315
Int. Cl.[6] F24C *15/04*
U.S. Cl. 126—194 **4 Claims**



1. An oven door comprising:

a frame on which an inside pane and an outside pane are mounted that are parallel and spaced apart from each other, said inside pane being hinge-mounted relative to the frame by means of a hinge piece and pivotable about a hinge axis thereof along one of four side edges of the inside face of the frame; and

rapid-action locking and unlocking closure means situated remote from the hinge axis of the inside pane and enabling the inside pane to be held in a closed position relative to the frame;

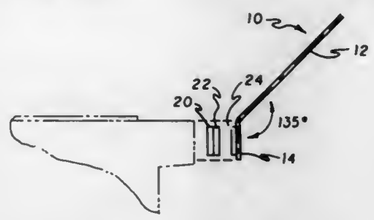
wherein the closure means comprise one or more point spacers providing rapid-action locking and unlocking closure, said point spacers capable of maintaining a space between the inside pane and the inside face of the frame when the inside pane is closed, wherein the hinge piece includes at least one plate, and wherein the inside pane is fixed at a distance from said plate by at least one fixing point spacer in such a manner that when said inside pane is in the closed position said plate engages and bears against the inside face of the frame.

5,546,928

GREASE SPLATTER GUARD

Dan Lewis, 1007 S. Edwards Rd., and Anthony Lewis, 8001 E. Gloucester Rd. both of, Muncie, Ind. 47302

Filed May 17, 1995, Ser. No. 442,772
Int. Cl.[6] F24C *15/10*
U.S. Cl. 126—214 D **10 Claims**



1. A grease splash guard, for a range-top comprising:

a flat, elongated splatter protection portion;

a flat, elongated base portion having an inside face and an outside face

said base portion being at an angel to said splatter protection portion being in the range of 120° to 150°;

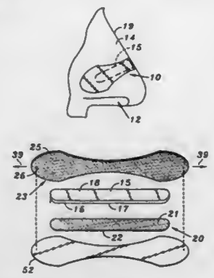
said inside face of said flat, elongated base portion removably attached to a vertical front topside of the range-top by an elongated magnetic strip attached to said base portion with elongated hook and loop fasteners disposed on said magnetic strip and said base portion, said magnetic strip extending along said vertical front topside of said range-top.

5,546,929

NASAL DILATOR

Jerome D. Muchin, 320 Constock Ave., Los Angeles, Calif. 90024

Filed Jul. 7, 1995, Ser. No. 499,636
Int. Cl.[6] A61M *15/00;16/00;* **A61F** *5/08;* **A62B** *7/00*
U.S. Cl. 128—200.24 **44 Claims**



1. A nasal dilator for preventing outer wall tissue of nasal passages of a human nose from drawing in during breathing, comprising:

an elongated spring member for bridging a human nose, the spring member having an outer edge and opposite flat surfaces and being for extending over a bridge of the nose and being for engaging the user's nose;

a flexible pad having a surface area and peripheral edge, the pad being for engaging the spring member and extending around the spring member so that there is a surface perimeter area of the pad formed between the outer edge of the spring member and the peripheral edge of the pad, the spring being inset from the peripheral edge of the pad substantially around the pad, and wherein the surface perimeter area includes an adhesive for adhering to skin of the nose; and

an adhesive means between the spring member and the pad such that the spring member on one of its flat surfaces adheres with the pad, the arrangement being such that when the spring member is located over the bridge of the nose, the opposite flat surface of the spring member extends over the bridge of the nose and at least partly beyond the bridge on both sides of the bridge, and the surface perimeter area of the pad adheres to the skin of the nose, the arrangement being such that, in use, the spring is located between the nose and the pad.

5,546,930

PATIENT CONNECTOR WITH HME, FILTER, AND NEBULIZER CONNECTION

Per Wikefeldt, Järfälla, Sweden, assignor to Engstrom Medical Aktiebolag, Sweden

Filed Sep. 2, 1993, Ser. No. 116,014
Claims priority, application Sweden, Sep. 28, 1992, 02787; Apr. 26, 1993, 01376; Jun. 9, 1993, 01963
Int. Cl.[6] A62B *18/08;7/10;23/02;* **A61M** *16/10*
U.S. Cl. 128—201.13 **31 Claims**

1. An apparatus for connecting a patient to a respiration-anesthesia device, comprising:

patient connection nipple means for directing an inhalation-exhalation stream to a patient;

divider means for separating said inhalation-exhalation stream into an inhalation substream and an exhalation substream;

patient connection conduit means for connecting said patient connection nipple means to said divider means, heat and moisture exchange means for exchanging heat and moisture between said inhalation and exhalation substreams, a respiration-anesthesia device being connected to said heat and moisture exchange means through said inhalation and exhalation substreams, so that said heat and moisture exchange means removes heat and moisture from said exhalation substream and delivers said heat and moisture to said inhalation substream; and

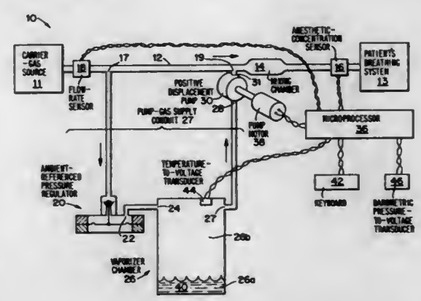
nebulizer connection means for connecting said inhalation-exhalation stream to a nebulizer.

5,546,931

ANESTHETIC-VAPOR DELIVERY APPARATUS WITH AN AMBIENT-REFERENCED PRESSURE REGULATOR

Tibor Rusz, 1508 Tejana Mesa Place N.E., Albuquerque, N.M. 87112

Filed Oct. 19, 1995, Ser. No. 545,907
Int. Cl.[6] A61M *15/00*
U.S. Cl. 128—203.12 **12 Claims**



1. An anesthetic-vapor delivery apparatus of the kind including a carrier-gas conduit having an inlet end into which a carrier gas may be introduced, having an outlet end to which a patient's breathing system may be connected, and having a distal port in said carrier-gas conduit; a pump-gas supply conduit comprised of an anesthetic vaporizer chamber including a liquid-anesthetic reservoir for holding a liquid anesthetic agent and an anesthetic vapor reservoir for holding evaporated anesthetic agent, said anesthetic vaporizer chamber having an outlet port in one portion of said anesthetic vapor reservoir; and a positive displacement pump having a pump outlet connected to said distal port in said carrier-gas conduit at

which pumped anesthetic vapor may be mixed with a carrier gas prior to being delivered to the patient's breathing system, and having a pump inlet connected to said anesthetic vaporizer outlet port, said pump gas-supply conduit serving as a source from which said pump sucks anesthetic vapor; wherein the improvement comprises:

an ambient-referenced pressure regulator means connected in said pump gas-supply conduit for sensing ambient atmospheric pressure to the patient, and for maintaining pressure at said pump inlet to just below ambient atmospheric pressure.

5,546,932

POWDER JET DISPENSER FOR MEDICAMENT INHALATION THERAPIES

Rosaria Galli, Camogli, Italy, assignor to Tebro SA, Luxemborg, Luxembourg

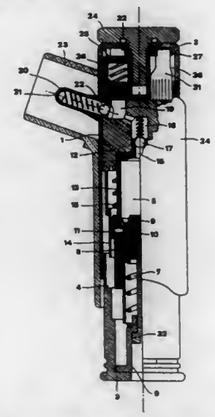
PCT No. PCT/IT93/00024, § 371 Date Nov. 15, 1994, § 102(e) Date Nov. 15, 1994, PCT Pub. No. WO93/18812, PCT Pub. Date Sep. 30, 1993

PCT Filed Mar. 24, 1993, Ser. No. 313,033

Claims priority, application Italy, Mar. 25, 1992, GE92A0030; Dec. 23, 1992, GE92A0134

Int. Cl.[6] A61M *15/00*

U.S. Cl. 128—203.15 **21 Claims**



1. A powder jet dispenser serving as a medicament pack container for medicament inhalation therapies, comprising:

a main body portion(1);

a nozzle (20);

a drug reservoir (36) having a bottom side;

a dosage chamber (19) arranged at the bottom side of said drug reservoir (36); and

a dose metering system, comprising:

filling means for filling said dosage chamber (19), said filling means comprising:

a separation unit (25, 26) for providing, after the filling of said dosage chamber, an air-tight separation of said filling means from said drug reservoir (36);

an air compression system comprising:

a cylindrical compression chamber (5) formed in a tubular element (13);

a plunger (3), the stroke of said plunger being adapted to actuate said air compression system;

a spiral load spring (7) adapted to accumulate energy by means of its compression;

a sliding control mechanism (11, 14) adapted to automatically release the accumulated energy of said spiral load spring (7) automatically actuated by the stroke of the plunger (3), wherein said dosage chamber (19) is connected to said compression chamber (5); and

a piston (8), wherein said accumulated energy is released against said piston (8) which is adapted, under the thrust of said load spring (7), to snap forwardly into said compression chamber (5) thereby producing a jet of compressed air delivering the drug from the dosage chamber (19) through said nozzle (20), wherein said filling means is rotatable and said dosage chamber (19) is fixed with respect to said main body portion (1).

5,546,933

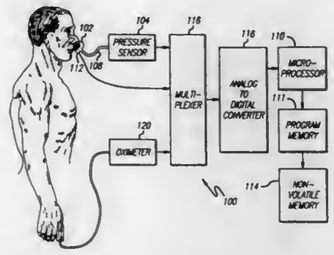
METHOD FOR OPTIMIZING THE CONTINUOUS POSITIVE AIRWAY PRESSURE FOR TREATING OBSTRUCTIVE SLEEP APNEA

David M. Rapoport, New York, and Robert G. Norman, New Windsor, both of N.Y., assignors to New York University, New York, N.Y.

Division of Ser. No. 246,964, May 20, 1994, Pat. No. 5,490,502, and a continuation-in-part of Ser. No. 879,578, May 7, 1992, Pat. No. 5,335,654. This application Jun. 7, 1995, Ser. No. 475,227

Int. Cl.[6] A61M *16/00*

U.S. Cl. 128—204.23 **7 Claims**



1. A method for detecting flow limitations in the airway of a patient, comprising the steps of:

a) providing a nasal fitting in fluid communication with the airway of a patient, the nasal fitting having means for measuring the inspiratory flow of air to the patient;

b) measuring the inspiratory flow of air to the airway of the patient;

c) generating a curve of data values representative of the inspiratory flow of air to the patient for each breathing cycle;

d) processing such data values to generate a plurality of indices each independently descriptive of the shape of each such curve; and

e) combining such indices to determine whether a flow limitation in the patient is indicated.

5,546,934

RESUSCITATOR

William J. Kaigler, North Huntingdon, and Richard J. Lordo, West Deer Township, both of Pa., assignors to Respironics, Inc., Murrysville, Pa.

Filed Sep. 26, 1994, Ser. No. 312,313

Int. Cl.[6] A62B *7/00*

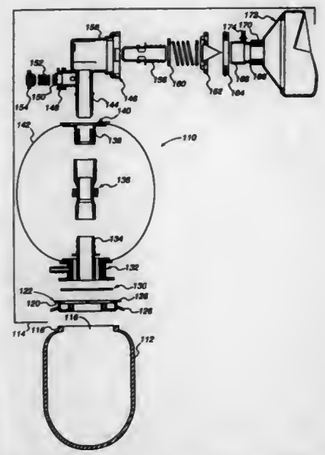
U.S. Cl. 128—205.13 **14 Claims**

1. An assembly for use in a resuscitator apparatus equipped with a squeeze bag, said squeeze bag having an opening and formed of compressible material, said assembly comprising

a first manifold adapted for connection to said squeeze bag opening;

a second manifold;

first tubular means for fluidly coupling said first and second manifolds;



means for providing an interface between said resuscitator apparatus and the airway of a subject; and

second tubular means for fluidly coupling said second manifold and said interface means, said second manifold and said second tubular means including means for rotatably coupling said second tubular means to said second manifold, and said first tubular means including means for non-rotatably coupling said first tubular means to said second manifold, and said first tubular means including means for sealingly coupling said first tubular means to said second tubular means and to said second manifold.

5,546,935

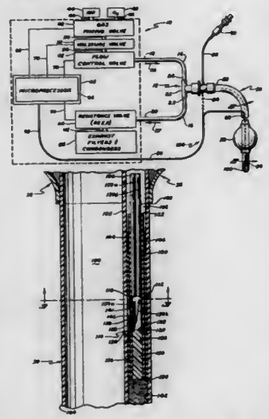
ENDOTRACHEAL TUBE MOUNTED PRESSURE TRANSDUCER

Eugene J. Champeau, Plymouth, Minn., assignor to MedAmicus, Inc., Minneapolis, Minn.

Filed Mar. 9, 1993, Ser. No. 28,355

Int. Cl.[6] A61M *16/00;* A62B *7/00;9/06;* F16K *31/02*

U.S. Cl. 128—205.23 **17 Claims**



1. Apparatus for providing improved ventilation of a patient, said apparatus comprising:

an endotracheal breathing tube comprising first and second passages, said breathing tube and said first and said second passages having distal and proximal ends, said distal end of said breathing tube being configured for disposition in the patient's trachea;

an airway tube for supply of at least one ventilation gas to said first passage and for removal of exhalation gases from the patient, said airway tube being connected at one end to a supply of at least one ventilation gas and at the other end to said proximal end of said first passage;

said first passage providing a flow path for the at least one ventilation gas between said airway tube and the patient;

ventilator means for controllably ventilating the patient with the at least one ventilation gas;

wherein said apparatus further includes a sensor for sensing pressure within the patient's trachea, said sensor being disposed on said distal end of said breathing tube and providing real-time sensing of the gas pressure within the patient's trachea, said sensor being in communication with said ventilator means;

said sensor comprising:

a pressure transducer; and

an optical path extending longitudinally within said second passage of said breathing tube and defining a light transmitting circuit comprised of optical fiber lead means for transmitting light along said optical path from an external source to said pressure transducer and from said pressure transducer to said ventilator means, said path having a distal end and a proximal end; and

wherein said pressure transducer is mounted at said distal end of said optical path and of said breathing tube such that it senses the pressure within the patient's trachea and comprises:

a housing disposed within said second passage and receiving and holding said distal end of said optical path in predetermined position in optical coupling relation with itself, said housing having an aperture disposed distally of said distal end of said optical path; and

a flexible membrane on said housing disposed in covering relation to said aperture, said membrane having a pressure responsive segment extending over said aperture and exposed to the pressure inside of the patient's trachea on its outer surface and to pressure inside of said housing on its inner surface, said pressure responsive segment of said membrane being movable transversely across said aperture in response to changes in pressure inside said first passage to thereby change light transmission through said distal end of said optical path, and said membrane is a cylindrical sleeve embracing said housing in a snug fit therewith;

whereby said ventilator means controls the ventilation of the patient in response to the sensed gas pressure in said breathing tube.

5,546,936

TRACHEAL TUBE WITH REINFORCED FLEXIBLE SEGMENT

Robert A. Virag, Chesterfield, Mo.; Richard V. Nye, Laguna Hills, Calif., and Duane L. Horton, St. Louis, Mo., assignors to Mallinckrodt Medical, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 124,829, Sep. 21, 1993, which is a continuation of Ser. No. 885,691, May 19, 1992, Pat. No. 5,245,992. This application Nov. 8, 1994, Ser. No. 336,139

Int. Cl.[6] A61M *16/00*

U.S. Cl. 128—207.14 **8 Claims**

1. A tracheal tube comprising

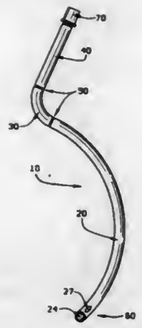
a distal end portion for intubation into a patient;

a flexible intermediate portion smoothly merged with said distal end portion; and

a proximal end portion smoothly merged with said intermediate portion;

wherein said tracheal tube has a smooth continuous lumen running the entire length of the tracheal tube;

170–653 O.G.–96–6: QL3



wherein said flexible intermediate portion includes a reinforcing filament and is capable of withstanding acute bends without kinking;

and wherein said distal end portion and said proximal end portion are each attached to said intermediate portion, by a suitable means selected from the group consisting of adhesives, connectors, compression fittings, and insert molded connectors.

5,546,937

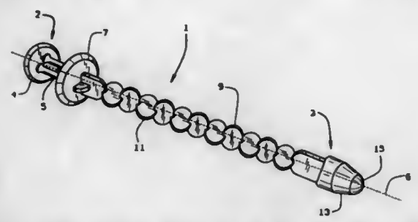
OBTURATOR AND TRACHEOSTOMY TUBE CONTAINING THE OBTURATOR

J. Michael Stuart, 24182 Elrond La., Lake Forest, Calif. 92630, and Jeff G. Uding, 27039 Pacific Terrace, Mission Viejo, Calif. 92692

Filed Dec. 13, 1993, Ser. No. 166,472

Int. Cl.[6] A61M *16/00*

U.S. Cl. 128—207.15 **9 Claims**



1. A plastic obturator suitable for use in a tracheostomy tube comprising a handle at its proximal end, a bullet shaped tip at its distal end, and an outer cannula supporting body between the handle and the tip, which outer cannula supporting body contains sectionalized flex points and sectionalized laterally extending supporting surfaces along its length; wherein the laterally extending supporting surfaces are provided by a series of alternating flat discs positioned at different angles and one or more sets of alternating flat discs provide the sectionalized flex points.

5,546,938

ICU PATIENTS VENTILATOR TUBE HOLDING DEVICE

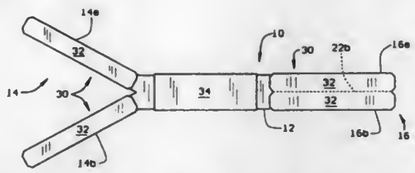
Shirley T. McKenzie, 1159 Olive Lake Dr., St. Louis, Mo. 63132

Filed Aug. 24, 1995, Ser. No. 518,821

Int. Cl.[6] A61M *16/00*

U.S. Cl. 128—207.17 **7 Claims**

1. A device for attaching and holding a ventilator tube inserted in the mouth or nose of a person in place to provide a ventilation and suction passage for the person, the ventilator tube including an elongate hollow cylinder one end of which is inserted in the



person's mouth or the end of a nasal passage and the other end of which protrudes out of the mouth or nasal passage once the tube is in place, comprising:

an elongate piece of material the length of which is sufficient for the device to be fitted behind the person's head with the ends of the piece reaching across at least a portion of the person's mouth or nose for use in securing a ventilator tube in place in the mouth or nose;

perforation means allowing the respective ends of the material to be separated into at least two parallel strips, the separation between the strips extending along the longitudinal centerline of the piece of material with the separable portions of the ends of the piece forming the respective strips extending longitudinally of the piece of material with notches being formed in the respective ends of the piece of material at a junction between the respective strips for separating the strips by grasping the respective ends of adjacent strips and pulling them in opposite directions, the respective outer ends of the strip being spatially separable from each other for each strip to be separably usable to wrap about a protruding portion of the ventilator tube or about the person's face to position and hold the ventilator tube in place and make it difficult for the ventilator tube to be intentionally or inadvertently dislodged; and,

removable cover means covering the strips prior to their being separated, the strips being of an adhesive material and the cover means covering the adhesive material until removed by a user prior to use of the device thereby making the device easy to fit about a person's head, the cover means being in place when the device is so fitted, the cover means then being removed for the strips to be used in fitting the ventilator tube in place.

5,546,939

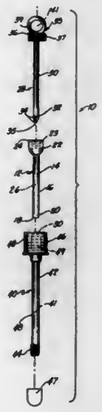
EMERGENCY TRACHEOSTOMY APPARATUS

Ronald French, 3525 Prytania St., New Orleans, La. 70115

Filed Dec. 5, 1994, Ser. No. 349,322

Int. Cl.[6] A61M *16/04*

U.S. Cl. 128—207.29 **13 Claims**



1. An apparatus for performing emergency tracheostomies, comprising:

a) an air delivery tube, having a body portion, a first end, a second end, and a bore extending throughout the body portion to accommodate air flow through the air delivery tube;

b) a trocar member including a body portion insertable through the bore of the air delivery tube, with a pointed end partially protruding out of the second lower end of the air delivery tube;

c) extendor means engageable to a first upper end of the air delivery tube defining a means to provide air flow through the air delivery tube into a trachea of a patient; and

d) a lower cap portion engageable on a lower end of the body portion of the trocar member so that the air delivery tube is maintained in the trocar member during non use.

5,546,940

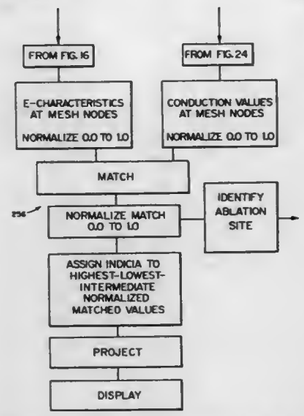
SYSTEM AND METHOD FOR MATCHING ELECTRICAL CHARACTERISTICS AND PROPAGATION VELOCITIES IN CARDIAC TISSUE TO LOCATE POTENTIAL ABLATION SITES

Dorin Panescu, Sunnyvale, and David K. Swanson, Mountain View, both of Calif., assignors to EP Technologies, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 197,236, Jan. 28, 1994, abandoned. This application Aug. 22, 1995, Ser. No. 524,115

Int. Cl.[6] A61B *5/04;* **A61N** *1/18*

U.S. Cl. 128—642 **10 Claims**



1. A system for locating a potential ablation site in heart tissue comprising

at least three spaced apart electrodes,

locating means for positioning at least two of the electrodes in contact with a region of heart tissue,

first means operable for transmitting electrical current in a first path through the region of heart tissue between a first pair of the electrodes, for transmitting electrical current in a second path through heart tissue in the region between a second pair of the electrodes, and for deriving therefrom tissue electrical characteristics based, at least in part, upon sensing impedances of the tissue lying in the first and second paths,

second means for sensing timing of local depolarization events in the tissue in which impedance is sensed and for deriving therefrom propagation velocities of the sensed local depolarization events, and

third means for normalizing the derived tissue electrical characteristics in spatial relation to the electrodes, for normalizing the derived propagation velocities in spatial relation to the electrodes, and for matching the normalized derived electrical characteristics with the normalized derived propagation velocities to provide a range of matched values in spatial relation to the electrodes,

fourth means for normalizing the matched value range to a normalized range of 0.0 to 1.0 in spatial relation to the electrodes by dividing each matched value in the matched value range by the maximum matched value in the matched value range,

fifth means for converting all matched values in the matched value range above a selected threshold value to a first converted value while converting all matched values in the matched value range equal to or below the selected threshold value to a second converted value different than the first converted value, and

means for outputting the converted matched values in groups of equal first and second converted values in spatial relation to the electrodes, in which each group of the first converted values identifies a potential ablation site.

5,546,941

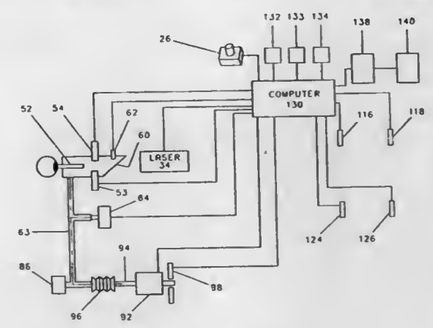
PATIENT OPERATED TONOMETERS

Ran C. Zeimer, Reisterstown, Md.; George J. Jost, Lake In The Hills, Ill.; Robert C. Bainbridge, Sandwich, Ill.; Richard Schwarzbach, Naperville, Ill.; Charles Ware, Warrenville, Ill., and Kathleen D. Zebrowski, Hinsdale, Ill., assignors to CDS Technologies, L.L.C., West Chicago, Ill.

Filed Oct. 28, 1994, Ser. No. 330,981

Int. Cl.[6] A61B *3/16*

U.S. Cl. 128—652 **19 Claims**



1. In a tonometer comprising

a barrel having an open forward end,

an elongate probe slidable in said open forward end of said barrel,

contact means at a forward end of said probe for contacting an eye of a patient, and

means for detecting applanation of an eye of a patient, the improvement comprising

means for pressurizing said barrel for moving said probe down said barrel,

a stepper motor for driving said means for pressurizing said barrel,

shaft means connected to said stepper motor for driving said means for pressurizing said barrel,

said shaft means having a first position for commencing pressurizing said barrel, and

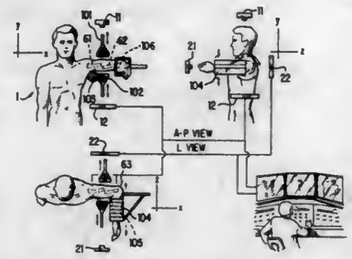
detection means for detecting that said shaft means is in said first position prior to a test.

5,546,942

ORTHOPEDIC ROBOT AND METHOD FOR REDUCTION OF LONG-BONE FRACTURES

Zhongman Zhang, 2190 Deer Creek Dr., Fayetteville, Ark. 72703

Filed Jun. 10, 1994, Ser. No. 258,002
Int. Cl.[6] A61B 6/03
U.S. Cl. 128—653.1 40 Claims



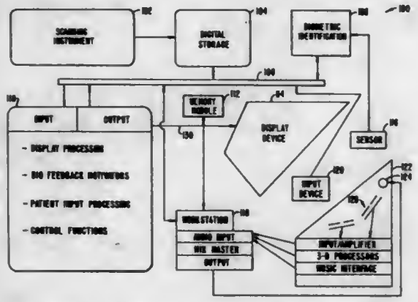
1. An apparatus for the reduction of bone fractures, comprising:
an x-ray system for imaging the bone fractures with at least one x-ray generator and one camera:
an imaging system coupled to said x-ray system for accepting image inputs of the bone fractures from said camera and for generating results;
a computer image analyzer for analyzing the results of said imaging system;
a robot with at least one manipulator for moving the bone fractures imaged by said x-ray system and
a robot controller to drivingly control said at least one manipulator, said robot controller accepting commands from said analyzer.

5,546,943

STIMULATING A BENEFICIAL HUMAN RESPONSE BY USING VISUALIZATION OF MEDICAL SCAN DATA TO ACHIEVE PSYCHONEUROIMMUNOLOGICAL VIRTUAL REALITY

Duncan K. Gould, 747 Calmar Ave., Oakland, Calif. 94610

Filed Dec. 9, 1994, Ser. No. 353,140
Int. Cl.[6] A61B 6/00
U.S. Cl. 128—653.1 16 Claims



1. A method of interactive simulation of a reduction in an ailment-causing agent in a patient having an ailment, comprising the steps of:
inputing medical scan data representative of the patient's anatomy into a computer memory storage device, the medical scan data including an indication of the ailment-causing agent;
reading a portion of the medical scan data from the computer memory storage device;
displaying the portion of the medical scan data on a display device visible to the patient, the portion displayed being a view of the ailment-causing agent;
accepting signals from a user input device controlled by the patient, wherein the signals describe the patient's manipulation of the user input device to effect a simulated attack on the display of the ailment-causing agent; and
displaying a modified view of the ailment-causing agent, the modified view being a view modified by the simulated effects of the simulated attack.

5,546,944

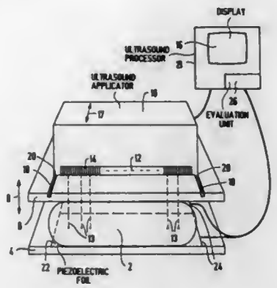
Patent Not Issued For This Number

5,546,945

METHOD AND APPARATUS FOR DISPLAYING ACOUSTIC SIGNAL TRANSIT TIMES

Richard Soldner, Herzogenaurach, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sep. 12, 1995, Ser. No. 526,741
Claims priority, application European Pat. Off., Sep. 14, 1994, 94114459
Int. Cl.[6] A61B 8/00
U.S. Cl. 128—661.020 23 Claims



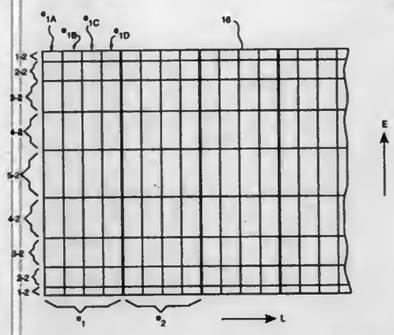
1. A method for displaying acoustic transit times comprising the steps of:
transmitting ultrasound signals, at respective transmission points in time, into an examination subject from one side of said examination subject along a plurality of respective scan lines;
receiving said ultrasound signals at an opposite side of said examination subject at respective reception points in time after said ultrasound signals have passed through said examination subject;
calculating a transit time in said examination subject for each ultrasound signal between its transmission point in time and its reception point in time; and
presenting a display of said transit times respectively arranged on a plurality of image lines respectively corresponding to said scan lines, each image line having an origin, by disposing visible marks on the respective image lines at a spacing from the origin of each image line corresponding to the transit time for the ultrasound signal transmitted along the scan line to which the image line corresponds.

5,546,946

ULTRASONIC DIAGNOSTIC TRANSDUCER ARRAY WITH ELEVATION FOCUS

Jacques Souquet, Issaquah, Wash., assignor to Advanced Technology Laboratories, Inc., Bothell, Wash.

Filed Jun. 24, 1994, Ser. No. 265,169
Int. Cl.[6] A61B 8/00
U.S. Cl. 128—662.03 22 Claims



1. A linear array of ultrasonic transducer elements which transmits acoustic beams in a plane extending from a central longitudinal axis of said array, including a plurality of uniform elements arrayed across the full aperture in the longitudinal direction comprising subelements arrayed in the elevational direction and exhibiting varying aspect ratios such that the electro-mechanical coupling coefficients of the subelements vary as a function of their distance from said central longitudinal axis whereby an acoustic beam which varies in intensity in the elevational direction may be produced by said array.

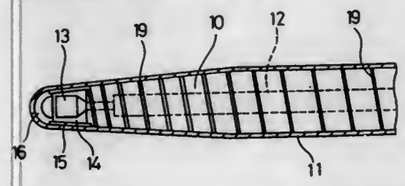
5,546,947

ULTRASONIC ENDOPROBE

Hiroyuki Yagami; Naoto Sato; Hideaki Yamashita; Satoshi Nakagawa, and Jun Maekawa, all of Fujinomiya, Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1994, Ser. No. 312,964
Claims priority, application Japan, Sep. 30, 1993, 5-245335; Dec. 3, 1993, 5-304143; Mar. 18, 1994, 6-048302; Mar. 31, 1994, 6-063828
Int. Cl.[6] A61B 8/12
U.S. Cl. 128—662.06 11 Claims

1. An ultrasonic endoprobe comprising:



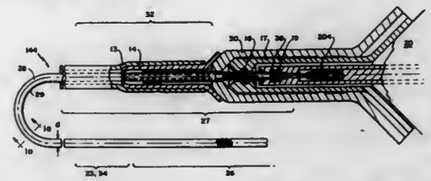
a tubular member having an interior bollow space, the tubular member including a metal tube and a resin cover which covers an outer surface of said metal tube, said metal tube being provided with a spiral slit arrangement formed in a slit region at a distal portion of the metal tube, said spiral slit arrangement being formed with a pitch such that the pitch is smaller at a distal end of the slit region and greater at a proximal end of the slit region;
a drive shaft encased in the interior hollow space of said tubular member; and
an ultrasonic transducer connected to said drive shaft.

5,546,948

ULTRASOUND IMAGING GUIDEWIRE

Mark A. Hamm, Malden, and Robert J. Crowley, Wayland, Mass., assignors to Boston Scientific Corporation, Watertown, Mass.

Continuation of Ser. No. 946,809, Sep. 17, 1992, Pat. No. 5,368,035, which is a continuation of Ser. No. 839,178, Feb. 21, 1992, abandoned, which is a continuation-in-part of Ser. No. 570,319, Aug. 21, 1990, abandoned. This application Nov. 28, 1994, Ser. No. 345,616
Int. Cl.[6] A61B 8/12
U.S. Cl. 128—662.060 20 Claims



1. A medical guidewire having a substantially uniform small diameter throughout its length and incorporating a lateral acoustic scanning device,
said guidewire comprising a proximal connector, an extended main guidewire body portion, an axially elongated transition section, and a floppy tip portion,
said main body portion comprising a stationary outer wall including means capable of transmitting torque and, within said outer wall, an elongated rotatable shaft with a distally positioned acoustic scanning device mounted thereon,
said proximal connector being constructed to be attached to and detached from a drive device to enable a therapeutic device to be introduced over the guidewire, said connector having a stationary portion secured to said outer wall and an inner drive portion secured to said shaft,
said floppy tip portion comprising an outer wire coil and a core rod which tapers from a relatively large diameter, at a proximal joint with said outer wire coil, to a smaller diameter at a floppy distal tip,
said transition section joining said main body portion to said floppy tip section in a manner retaining substantially the same lateral stiffness as said main body portion and sufficient torquability to enable torquing of said floppy tip by torque applied to the proximal end of said guidewire.

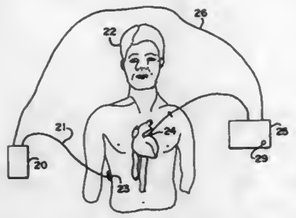
5,546,949

METHOD AND APPARATUS OF LOGICALIZING AND DETERMINING ORIENTATION OF AN INSERTION END OF A PROBE WITHIN A BIOTIC STRUCTURE

Leon Frazin, 542 Willgate Ter., Glencoe, Ill. 60027, and Michael J. Voresh, 2296 Scott Rd., Northbrook, Ill. 60062

Continuation of Ser. No. 233,507, Apr. 26, 1994, abandoned. This application Mar. 16, 1995, Ser. No. 406,273
Int. Cl.[6] A16B 8/12
U.S. Cl. 128—662.06 36 Claims

1. An apparatus for localizing and determining orientation of an insertion end of a probe having therapeutic or diagnostic utility within a biotic structure, such apparatus comprising:
a probe with a directional acoustic transmitter attached to a tip of an insertion end of the probe;
a power supply for energizing the directional acoustic transmitter; and



an ultrasonic imaging system having Doppler capability for displaying positional information of the probe and indicia of the orientation of the tip of the probe based upon a signal from the directional acoustic transmitter.

5,546,950

ELECTROCARDIOGRAPIC PATIENT LEAD CABLE APPARATUS

Kurt P. Schoeckert, New Berlin, and David W. Mortara, River Hills, both of Wis., assignors to Mortara Instrument, Inc., Milwaukee, Wis.

Filed Jul. 6, 1994, Ser. No. 271,051
Int. Cl.[6] A61B *5/0402*
U.S. Cl. 128—696 **21 Claims**



1. Electrocardiographic patient, unitary lead cable apparatus for connecting a plurality of electrocardiographic electrodes to an electrocardiograph, the electrodes being applied at spaced locations on upper and lower portions of the body of a patient, said apparatus comprising:

an elongated cable part and a connector part;

said cable part having first and second ends between which said cable part extends, said cable part being joined at said first end to said connector part, said cable part comprising a plurality of connecting wires having connectors for the electrodes, said connecting wires being joined together for varying portions of their length along said cable part to form a common portion for said cable part extending from said first end toward said second end, said connecting wires separating from said common portion at selected points spaced along said common portion to form separated connecting wires, the separation of said connecting wires at said points facilitating connection to the electrodes at the spaced locations on the upper and lower portions of the body of a patient;

certain of said separated connecting wires for the electrodes being located at a medial portion between said first and second ends of said cable part for attachment to spaced locations in a common region on the upper portion of a body of a patient;

certain other of said separated connecting wires for the electrodes being located on opposite sides of the medial portion of said cable part for attachment to other spaced locations on the upper and lower portions of a body of a patient;

the lengths of said separated connecting wires being chosen to correspond to the distance between the common portion and the particular spaced location on the upper and lower portions of the body of the patient;

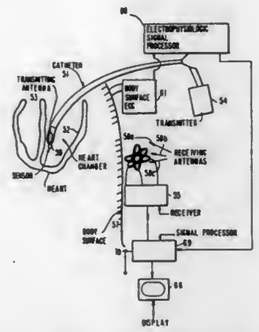
said connector part having means for connecting said lead cable apparatus to the electrocardiograph.

5,546,951

METHOD AND APPARATUS STUDYING CARDIAC ARRHYTHMIAS

Shlomo Ben-Haim, Haifa, Israel, assignor to Biosense, Inc., Orangeburg, N.Y.

Division of Ser. No. 94,539, Jul. 20, 1993, Pat. No. 5,391,199.
This application Sep. 23, 1994, Ser. No. 311,593
Int. Cl.[6] A61B *5/04*
U.S. Cl. 128—702 **24 Claims**



1. A method for studying cardiac arrhythmias, which comprises the steps of:

(a) positioning the distal tip of each of one or more catheters at a site adjacent to or within the heart;

(b) sensing location information at the site;

(c) sensing body surface ECG while pacing from that site;

(d) processing sensed and derived information from steps (b) and (c) to create one or more date points; and

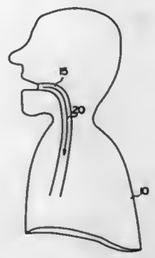
(e) repeating steps (a), (b), (c), and (d) one or more times to create sufficient data points for a map.

5,546,952

METHOD AND APPARATUS FOR DETECTION OF A RESPIRATORY WAVEFORM

Donald J. Erickson, Plymouth, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Sep. 21, 1994, Ser. No. 310,362
Int. Cl.[6] A61B *5/08*
U.S. Cl. 128—716 **20 Claims**



1. A method for determining the validity of a respiratory effort waveform from a signal having non-respiratory artifacts comprising the steps of:

(a) monitoring a respiratory effort waveform of the patient for at least one time parameter of the waveform characteristic of a non-respiratory artifact; and

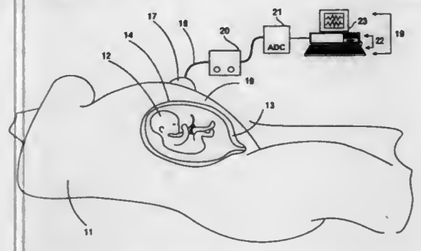
(b) comparing the parameter value with a predetermined limit having as a lower limit a fixed time period and as an upper limit a time period calculated from a baseline average of the parameter, the valid respiratory waveform indicated by the parameter value being between the upper limit and lower limit.

5,546,953

METHOD AND APPARATUS FOR THE RECORDING AND ANALYSIS OF UTERINE ELECTRICAL ACTIVITY FROM THE ABDOMINAL SURFACE

Robert E. Garfield, Friendswood, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex.

Filed May 19, 1994, Ser. No. 246,214
Int. Cl.[6] A61B *5/04*
U.S. Cl. 128—733 **19 Claims**



1. A method of characterizing uterine electrical activity, comprising:

applying action potential measuring electrodes to an abdominal or vaginal surface of a patient;

storing electromyographic signals, including action potentials, produced by said electrodes;

analyzing uterine activity indicating parameters from action potentials within said stored electromyographic signals; and

characterizing uterine activity of said patient based on said parameter analysis.

5,546,954

METHOD AND APPARATUS OF APPLYING HIGH-FREQUENCY WAVE CURRENT TO REACTIVE ELECTRO-PERMEABLE POINT OF PATIENT

Mamoru Yamada, Omiya, Japan, assignor to Yugen Kaisha Toyo Igaku, Japan

Filed Oct. 4, 1994, Ser. No. 317,564
Claims priority, application Japan, Jan. 10, 1994, 6-000659
Int. Cl.[6] A61H *39/02*
U.S. Cl. 128—735 **15 Claims**

1. A method of applying high-frequency current to reactive electro-permeable points of a patient, the method comprising the steps of:

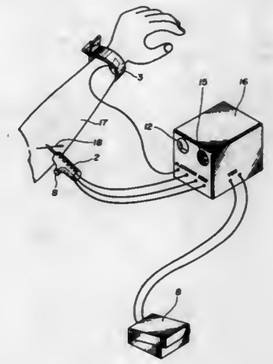
connecting a first electrode to a wrist of a patient;

applying DC electric current between the first electrode and a second electrode;

moving the second electrode over the patient's skin in a manner to detect a reactive electro-permeable point on the patient;

inserting an acupuncture needle at the detected reactive electro-permeable point;

connecting the second electrode with the acupuncture needle; and applying a high-frequency wave current which is controlled within 2–10 MHz and within 0.5–7 W output to the acupuncture needle through the first and second electrodes for a period automatically limited to 1–10 seconds.

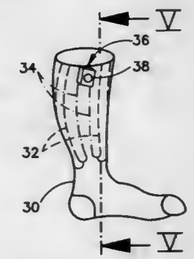


5,546,955

MEDICAL STOCKING FOR TEMPERATURE DETECTION

Peter J. Wilk, 185 West End Ave., New York, N.Y. 10023

Continuation-in-part of Ser. No. 900,848, Jun. 18, 1992, abandoned. This application Mar. 24, 1994, Ser. No. 217,371
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—736 **28 Claims**



1. A medical diagnostic device comprising:

sensor means for detecting temperature at a plurality of relatively spaced points on a person's leg;

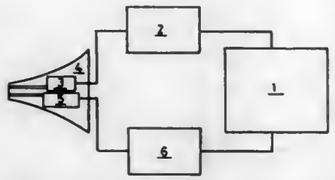
attachment means including a stocking attachable to a person's leg for maintaining said sensor means in operative juxtaposition with the person's leg, said sensor means being mounted to said stocking;

comparator means operatively connected to said sensor means for automatically comparing a temperature detected by said sensor means at one of said points with a temperature detected by said sensor means at another of said points and for generating an electrical signal encoding results of that comparison; and

indicator means operatively connected to said sensor means, said stocking and said comparator means for automatically providing, in response to said electrical signal, a sensible signal indicative of a local rise in leg temperature at said one of said points relative to said another of said points, thereby providing an alert as to possible phlebitis in the leg.

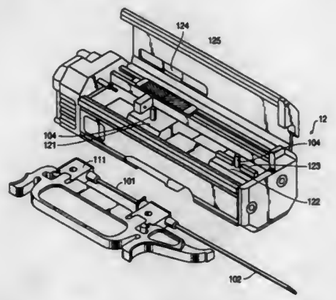
5,546,956
TESTING HEARING
Arthur R. D. Thornton, Southampton, United Kingdom, assignor to Medical Research Council, London, United Kingdom
PCT No. PCT/GB93/00639, § 371 Date Feb. 13, 1995, § 102(e) Date Feb. 13, 1995, PCT Pub. No. WO93/19670, PCT Pub. Date Oct. 14, 1993
PCT Filed Mar. 29, 1993, Ser. No. 313,212
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—746 **10 Claims**

A SCHEMATIC DIAGRAM OF THE INVENTION



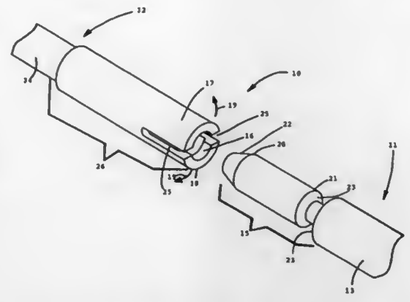
1. Apparatus for testing hearing, comprising a sound source for applying a sound to a subject's ear, and a sound detector for detecting the sound returned from the subject's inner ear in response to said sound, characterised in that said sound source produces a sequence of sounds constituting a maximum length sequence (MLS), a variant of such a sequence or a variant of a similar sequence.

5,546,957
BIOPSY NEEDLE
Norbert Heske, Am Brand 1D, 82299 Türkenfeld, Germany, assignor to Norbert Heske, Terkenfeld County, Germany
Filed Sep. 9, 1994, Ser. No. 301,993
Claims priority, application Germany, Sep. 9, 1993, 93 13 569.6
Int. Cl.[6] A61B *10/00*
U.S. Cl. 128—754 **14 Claims**



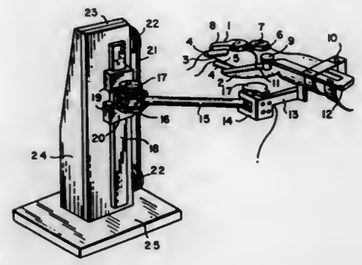
1. A biopsy system for collecting a tissue sample, comprising a biopsy needle and a biopsy gun into which said biopsy needle is insertable, said biopsy gun comprising a housing and first and second slides, each of said first and second slides having a pin provided thereon, said biopsy needle comprising an inner needle having a recess in a vicinity of a distal end thereof for receiving the tissue sample and having a first connecting element at a proximal end thereof, and an outer tube displaceably guided on said inner needle and having a second connecting element at a proximal end thereof, wherein each of the first and second connecting elements has a hole therein into which a respective pin on each of said first and second slides is insertable, and wherein at least one of said slides has a rib running in a lengthwise direction of said biopsy needle, said rib being capable of engaging a recess provided in a respective one of said first and second connecting elements.

5,546,958
GUIDEWIRE EXTENSION SYSTEM WITH TACTILE CONNECTION INDICATION
Michael S. Thorud, Bloomington, and Robert L. Assell, Mendota Heights, both of Minn., assignors to Lake Region Manufacturing Company, Inc., Chaska, Minn.
Filed Mar. 31, 1994, Ser. No. 220,902
Int. Cl.[6] A01B *5/00*
U.S. Cl. 128—772 **13 Claims**



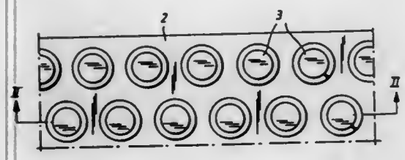
1. A coupler for a guidewire/extension wire system, the coupler comprising:
a male segment and a cooperating
female segment, the male and female segments each being attached to one or the other of the distal end of the extension wire or the proximal end of the guidewire, the female coupler segment comprising:
a hollow, elongate sleeve, the sleeve having opposite ends and a sleeve wall which defines inside and outside sleeve diameters, one of said ends having an inside diameter such that it can be attached to one of said guidewire or said extension wire, the other of said ends defining a lip, and a plurality of slots, said slots intersecting said lip so that the lip can be separated by insertion of said male segment, the male coupler segment comprising:
an elongate member, the member having an exterior surface which defines an outside diameter which is less than said sleeve inside diameter, and oppositely disposed insertion and following ends, the exterior surface of said member defining a radial groove and an annular shoulder on said following end, said groove having a diameter which cooperates with said lip so that when said male segment is inserted into said female segment to couple, rotatively the female segment to the male segment, said female coupler segment is retained along said male coupler segment with an annular space therebetween, and coupling occurs with a tactile indication that insertion is complete and without the creation of a frictional fit between the segments, whereby said male segment and said female coupler segments are conveniently coupled and decoupled.

5,546,959
MULTIMODE FEEDBACK DISPLAY TECHNOLOGY
Elaine Chen, 70 Park St., Somerville, Mass. 02143; Brian Eberman, 264 Willow Ave., Somerville, Mass. 02144, and Beth A. Marcus, 78 Woburn St., Lexington, Mass. 02173
Filed Jan. 27, 1994, Ser. No. 187,646
Int. Cl.[6] A61B *5/103*
U.S. Cl. 128—782 **9 Claims**



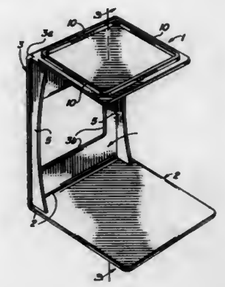
1. An apparatus for creating a complex tactile sensation for a human operator, the apparatus comprising:
an articulating device dimensioned and constructed for receiving a hand of said operator, said articulating device including means for detecting positions and movements of said hand, and means for encoding said positions and movements as data points;
computation means adapted to receive said data points, and calculate a set of commands based thereon; and
at least two display means for producing said complex sensation, said display means being adapted to receive said commands from computation means and produce said complex tactile sensation in response thereto.

5,546,960
SURGICAL DRAPE
Tomas Billgren, Kullavik, Sweden, assignor to Molnlycke AB, Goteborg, Sweden
PCT No. PCT/SE93/00603, § 371 Date Dec. 29, 1994, § 102(e) Date Dec. 29, 1994, PCT Pub. No. WO94/01051, PCT Pub. Date Jan. 20, 1994
PCT Filed Jun. 30, 1993, Ser. No. 362,441
Claims priority, application Sweden, Jul. 8, 1992, 9202117
Int. Cl.[6] A61B *19/00*
U.S. Cl. 128—849 **7 Claims**



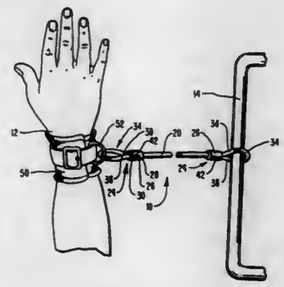
1. A surgical drape which is comprised of an absorbent top sheet (1) and attached thereto a fluid-impermeable bottom sheet (2) forming a barrier against fluid transfer between the two sides of the sheet, the fluid-impermeable sheet (2) having projections (3) on the underside thereof that in use lies nearest the user's skin.

5,546,961
STERILITY MAINTENANCE COVER AND INSTRUMENT SUPPORT
Samuel W. Harrison, 4003 Scenic Dr., Shreveport, La. 71119
Filed Oct. 10, 1995, Ser. No. 540,470
Int. Cl.[6] A61B *19/00;* **A61F** *11/00*
U.S. Cl. 128—849 **20 Claims**



1. A device for supporting instruments over a supine patient on a surface, comprising a base panel for insertion beneath the patient and the surface; a support panel extending upwardly from one end of said base panel; an opening provided in said support panel for accessing the patient; and an instrument platform extending from one end of said support panel over at a portion of the patient, said instrument platform having two sides and a free end, for supporting the instruments above the patient.

5,546,962
PHYSICAL RESTRAINT DEVICE
Michael D. Power, 607 Mountain View #10 Windrift, Park City, Utah 84060
Filed Jun. 13, 1995, Ser. No. 487,244
Int. Cl.[6] A61B *19/00;* **A61F** *5/37*
U.S. Cl. 128—869 **13 Claims**



1. A device for physically restraining movement comprising:
a) linking means for linking a user to a fixed object, the linking means having two ends and being pliant and extensible such that movement between the user and the fixed object is

limited but not restricted, and such that the distance between the user and the fixed object is variable, the variability depending upon the length and extensibility of the linking means;

b) coupling means, attached at each end of the linking means and attachable to the user or the fixed object, for joining one end of the linking means to the user and the other end to the fixed object; and

c) a locking means for locking the coupling means into place such that the coupling means, once attached to the user of the fixed object, cannot be removed from the user or the fixed object without release of the locking means, the locking means being located within the coupling means such that access to the locking means is unavailable to the user being restrained, yet readily available to the person applying the restraint.

5,546,963

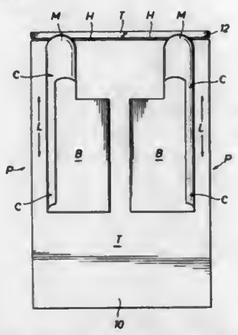
SURGICAL HAND AND ARM PROTECTOR

Michael C. Doody, 408 North Line St., Metairie, La. 70005

Continuation of Ser. No. 46,627, Apr. 13, 1993, abandoned. This application Jun. 28, 1994, Ser. No. 267,832

Int. Cl.[6] A61F *5/37*

U.S. Cl. 128—878 **5 Claims**



1. An apparatus for protecting a patient's hand and arm from injury while the patient is lying on a treatment table, the apparatus comprising:

a base for placement under the patient's torso, the base having a side medial to the patient and a side lateral to the patient;

a channel member extending upwardly from said lateral side of said base, said channel member extending longituctinaily from an upper end along said lateral side of said base for protecting a portion of the patient's arm; and

a mitt formed at a lower end of said channel member, said mitt enclosing at least the fingers of the patient's hand and protecting same;

said base, channel member, and mitt being integrally formed of a unitary piece of a rigid material.

5,546,964

METHOD FOR TREATING A BLEEDING NOSE

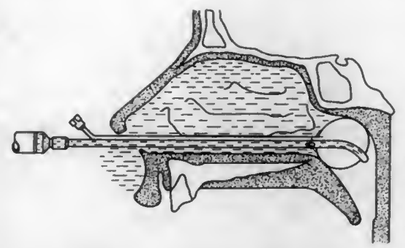
Sven-Eric Stangerup, Slettebjerget 83, DK-3400, Hilleröd, Denmark

Filed Jan. 27, 1995, Ser. No. 379,151

Claims priority, application Sweden, Feb. 2, 1994, 9400364

Int. Cl.[6] A61B *17/12*

U.S. Cl. 128—898 **4 Claims**



1. A method for treating a nosebleed, which comprises:

(a) inserting a catheter having a front end into a bleeding nose having a bleeding point inside the nose and an air passage above the bleeding point, wherein said front end of said catheter has an inflatable balloon, said catheter having an opening for administering a liquid, wherein said opening is immediately below said inflatable balloon,

(b) positioning said catheter inside the bleeding nose such that said balloon is positioned above the bleeding point inside the nose,

(c) inflating said balloon thereby substantially blocking the air passage, wherein said inflated balloon contacts the air passage substantially above the bleeding point, and

(d) passing a liquid through said opening for administering a liquid for a time sufficient to inhibit a nosebleed.

5,546,965

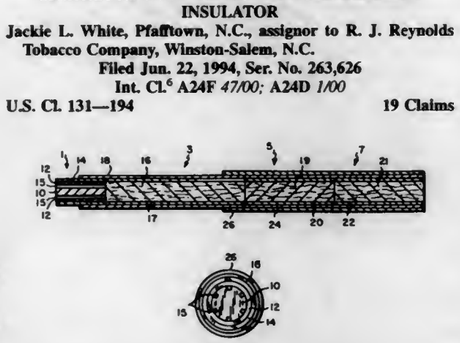
CIGARETTE WITH IMPROVED FUEL ELEMENT INSULATOR

Jackie L. White, Pfafftown, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Jun. 22, 1994, Ser. No. 263,626

Int. Cl.[6] A24F *47/00;* **A24D** *1/00*

U.S. Cl. 131—194 **19 Claims**



1. A smoking article comprising:

(a) a combustible fuel element less than about 30 mm in length prior to smoking, said fuel element being insulated by an insulating material surrounding at least a portion of the periphery thereof; and

(b) a physically separate aerosol generating means disposed longitudinally behind the fuel element comprising a substrate material bearing an aerosol forming material;

wherein the insulating material for the fuel element comprises a wire cloth or a noncombustible synthetic cloth material.

5,546,966

HAIR CLIP

Yeong-Bin Lin, P.O. Box 1758, Taichung, Taiwan

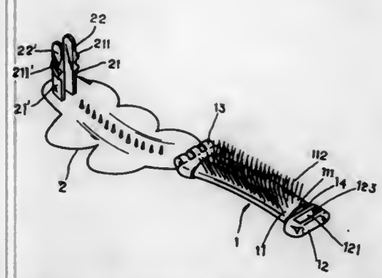
Filed Jan. 27, 1995, Ser. No. 379,286

Int. Cl.[6] A45D *8/28*

U.S. Cl. 132—279 **1 Claim**

1. A hair clip comprising:

a base including an upper surface having a plastic layer secured thereto, said plastic layer including a plurality of comb teeth provided thereon, said base including two ends each having a



cross bar extended therefrom, said base including a first end having a retaining block secured to a first of said cross bar and including a second end, said retaining block including a central retaining hole formed therein, said retaining hole including an inner wall having two retaining protuberances formed therein and opposite to each other; and

a cover including a first end pivotally coupled to said second end of said base so as to allow said cover to rotate relative to said base about said first end of said cover, said cover including a second end having two retaining projections extended therefrom for engaging with said retaining hole of said retaining block of said base, said retaining projections each including at least one adjustment retainer having a protrusion formed thereon for engaging with said protuberances of said retaining block.

5,546,967

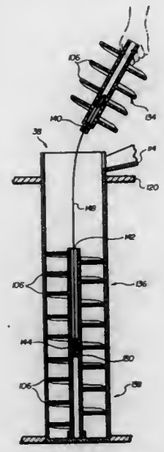
APPARATUS AND METHOD FOR WASHING BALLS

Ralph Weimer, Wheaton, and Duane R. Acker, Mundelein, both of Ill., assignors to Discovery Zone, Inc., Chicago, Ill.

Division of Ser. No. 184,513, Jan. 21, 1994, Pat. No. 5,499,641, which is a continuation-in-part of Ser. No. 827,773, Jan. 29, 1992, Pat. No. 5,353,822. This application Jun. 7, 1995, Ser. No. 475,317

Int. Cl.[6] B08B *3/04*

U.S. Cl. 134—65 **5 Claims**



1. An apparatus for washing balls in a fluid comprising:

(a) an elongated cylindrical housing suitable for receiving the fluid and having at least one open end, a first ball inlet, and a first ball outlet longitudinally spaced from said first ball inlet;

(b) a screw conveyor coaxially slidably disposed in said cylindrical housing to convey the balls from said ball inlet to said ball outlet, said screw conveyor being made of a plurality of sections, each section being mateably engagable with its adjacent sections;

(c) line means for coupling at least one pair of adjacent sections, said line means allowing said adjacent sections to be disengaged and separated from each other a distance sufficient so that one of said adjacent sections may be removed from said housing and tilted with respect to said housing's longitudinal axis while still coupled to the other adjacent sections by said line means.

5,546,968

SUPPLEMENTARY WASHING DEVICE OF A DISH WASHER

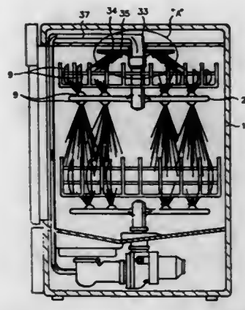
Si M. Jeon, and Seong K. Kang, both of Seoul, Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Oct. 19, 1994, Ser. No. 325,873

Claims priority, application Rep. of Korea, Oct. 23, 1993, 22133/1993; Nov. 10, 1993, 23818/1993

Int. Cl.[6] B08B *3/02*

U.S. Cl. 134—179 **5 Claims**



1. A supplementary washing device of a dish washer comprising:

a tub forming an outer wall of a dish washer;

spray arms formed in the tub for spraying washing water onto dirty dishes;

a feed water pipe for feeding washing water to the spray arms at a fixed pressure;

a static pressure effluence means formed in the feed water pipe for making washing water flow out of the feed water pipe by the static pressure of washing water;

a circular supplementary arm rotated by the washing water flowing out through the static pressure effluence means; and

a splashing means formed on the circular supplementary arm for splashing washing water all over the dishes by exerting different centrifugal forces to the washing water; and wherein the static pressure effluence means comprises a plurality of hollow pins penetrating the feed water pipe each positioned with a slope at a certain angle support and rotate the circular supplementary arm with a minimum contact area with the rotating circular supplementary arm.

5,546,969

DISHWASHING MACHINE WITH INTEGRATED RECYCLING SYSTEM

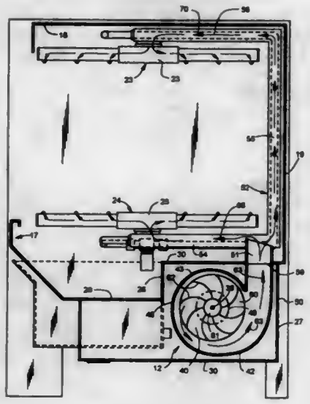
Erik O. Vilen, Oakbrook, Ill., assignor to Blako Inc., Chicago, Ill.

Filed May 3, 1995, Ser. No. 433,144

Int. Cl.[6] A47L *15/42*

U.S. Cl. 134—188 **15 Claims**

1. In a dishwashing machine including means defining a wash chamber, spray means for spraying water within said wash cham-



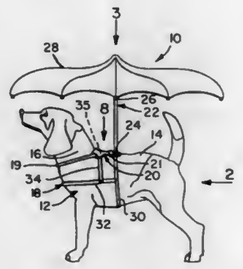
ber, and a sump serving as a source of water for said spray means, an integrated recycling system for supplying water from said sump to said spray means, said integrated recycling system comprising:

an impeller located within said sump;

an impeller housing located within said sump and enclosing said impeller, said impeller housing having an inlet through which water in said sump is drawn into said impeller housing by the action of said impeller as said impeller is rotated, and an outlet portion in fluid communication with said spray means, with said impeller housing including means defining a peripheral wall having first and second opposing open sides and means closing said first side of said peripheral wall, said impeller housing being mounted on a wall of said sump whereby said second side of said peripheral wall is closed by said wall of said sump; and

a drive motor having a drive shaft coupled to said impeller for rotating said impeller within said impeller housing.

5,546,970
ANIMAL UMBRELLA
Michael Amato, 2270 W. 1st St., Brooklyn, N.Y. 11223
Filed Dec. 11, 1995, Ser. No. 570,594
Int. Cl.[6] A01K *1/06;* **A45B** *11/02*
U.S. Cl. 135—16 **18 Claims**



1. An animal umbrella adaptable to a conventional animal harness and collar, comprising:

a) a saddle detachably mountable to the conventional animal harness and pivotally mountable to the conventional animal collar, said saddle having a lower surface;

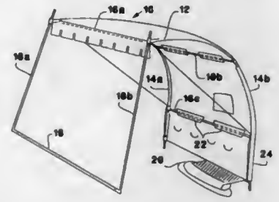
b) saddle attaching means for detachably mounting said saddle to the conventional animal harness;

c) a vertical shank having a proximal end with a cross section and a distal end with a cross section, said vertical shank being detachably mounted to said saddle at said proximal end of said vertical shank;

d) vertical shank attaching means for detachably mounting said vertical shank to said saddle; and

e) a rigid canopy detachably mounted to said distal end of said vertical shank.

5,546,971
FOLDABLE SHELTER
William G. Leonhardt, P.O. Box 130, Pickering, Ontario, Canada
Filed Jul. 27, 1994, Ser. No. 281,104
Claims priority, application Canada, Jul. 29, 1993, 2101602
Int. Cl.[6] E04H *15/40;15/46*
U.S. Cl. 135—127 **6 Claims**



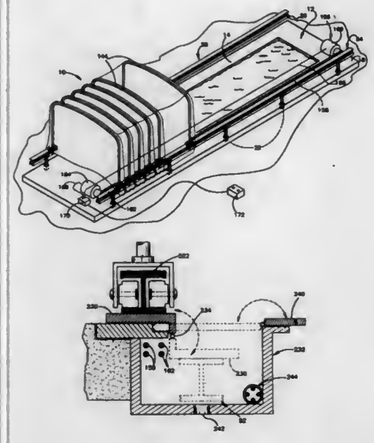
4. A foldable shelter comprising a canopy and a frame for supporting said canopy, said frame including: a pair of flexible lateral rods each having forward and rearward ends; at least two struts being spaced apart from one another extending between said lateral rods and maintain said lateral rods in a spaced parallel relationship one of said struts being connected to the forward ends of the lateral rods; a resilient fastener having a split sleeve and attached to an end of each said strut, said fastener having a length-wise opening which, when said lateral rod is forced against it, enlarges sufficiently by resilient deformation of said fastener to receive said rod in the bore of said sleeve and when said rod is therein, said opening contracts as said fastener returns to its undeformed condition thereby maintaining said lateral rod within said bore whereby said lateral rod is interconnected to said strut; and a guy attached adjacent one end to each said lateral rod at a pair of spaced points along the length thereof for applying a force thereto, said guy being attached adjacent an opposite end to each of said lateral rod, with resulting bending of said lateral rod to a generally arcuate shape, said guys cooperating with said struts and lateral rods so that said frame is self-supporting.

5,546,972
KIT COVER SYSTEMS FOR SWIMMING POOLS, HOT TUBS AND PATIOS
Jacqueline R. Wardell, 139 N. Bodmer Ave. Rear; James R. Wardell, and Allison E. Wardell, both of 136 W. First St., Strasburg, all of Ohio 44680
Continuation-in-part of Ser. No. 28,943, Mar. 5, 1993, abandoned. This application Oct. 11, 1994, Ser. No. 321,265
Int. Cl.[6] E04H *15/38*
U.S. Cl. 135—129 **7 Claims**

1. A collapsible cover system for a recreation area, said cover system comprising:

a plurality of longitudinal rails fit together in end to end registering relationship to form two lenghts of said spaced guide tracks that extend along the sides of said recreation area;

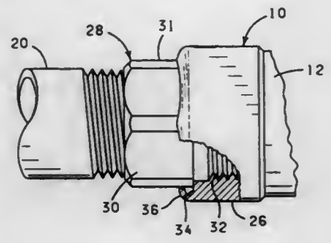
a plurality of inverted bow-shaped members each having two free ends, each free end removably secured to said guide tracks; and



plurality of carrier means for slidingly connecting each free end of said bow-shape members to an associated guide track;

wherein each said rail section is associated by a hinge to a trough and wherein said rail section is selectably disposed in an operating position above grade and in a storage position below grade in said trough.

5,546,973
THREADED VALVE WITH SAFETY JOINT
John P. Scaramucci, Oklahoma City, Okla., assignor to Balon Corporation, Oklahoma City, Okla.
Filed Jun. 3, 1994, Ser. No. 254,024
Int. Cl.[6] F16L *55/18;* **F16K** *51/00*
U.S. Cl. 137—15 **10 Claims**



1. In a fitting having opposite ends and an adapter threaded into one end thereof, said adapter having wrench flats on the outer surface thereof, the steps of:

forming a deformable lip on said one end of the fitting around the adapter;

then deforming the lip against the wrench flats to lock the adapter to the fitting.

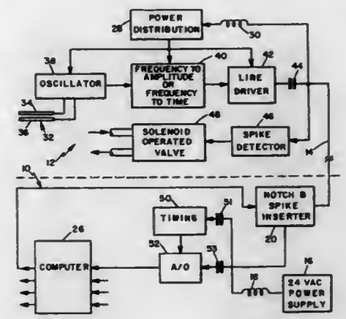
3. The combination of:

a fitting having a body portion adapted to be threaded onto the ends of adjacent pipe sections;

an adapter threaded into one end of the fitting body having at least a pair of wrench flats on the outer surface thereof; and

a deformable lip on the body portion of the fitting adjacent the adapter positioned to be deformed against the wrench flats to lock the adapter to the fitting.

5,546,974
MOISTURE MONITORING SYSTEM
Richard L. Bireley, 6951 Southgate Dr., San Diego, Calif. 92116
Filed Jan. 3, 1995, Ser. No. 367,739
Int. Cl.[6] A01G *25/16*
U.S. Cl. 137—78.3 **44 Claims**



1. A sensor for measuring moisture in a medium, comprising:

a first conductive plate disposed in a plane, said first plate having a first terminal;

a second conductive plate coplanar with said first conductive plate and not in contact with said first conductive plate, said second plate having a second terminal;

a casing made of a dielectric material, said first and second plates embedded in said casing with said terminals protruding from said casing, said casing having a thickness in a dimension normal to said plane; and

said thickness varies across said plane.

21. A moisture monitoring system, comprising:

a central unit for communicating with at least one remote unit, comprising:

power supply means for providing a power signal;

first detector means for extracting a moisture measurement signal imposed on said power signal;

processor means for receiving said moisture measurement signal; and

at least one remote unit disposed at a location remote from said central unit and receiving power from said power signal, comprising:

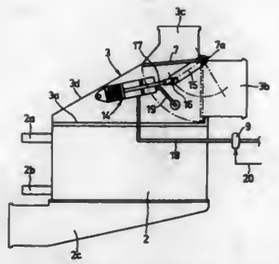
a sensor for measuring a moisture level in a medium and for producing a moisture measurement signal corresponding to said measured moisture level; and

remote unit modulator means for imposing said moisture measurement signal on said power signal.

5,546,975
CONTROL DEVICE FOR A FLUID PASSING THROUGH A BYPASS AND SYSTEM EQUIPPED WITH SUCH A DEVICE TO REGULATE THE SUPERCHARGING AIR OF AN INTERNAL COMBUSTION ENGINE
Jean-Paul Pernet, Chassieu, France, assignor to Renault Vehicules Industriels, Lyons, France
Filed Oct. 5, 1994, Ser. No. 318,093
Claims priority, application France, Oct. 5, 1993, 93-11856
Int. Cl.[6] F16K *1/16;* **F02B** *29/04*
U.S. Cl. 137—115.16 **6 Claims**

1. Device for control of the circulation of a fluid through a fluid bypass having an exterior casing delimiting an interior chamber for fluid flow, a fluid inlet, a main fluid outlet and a secondary fluid bypass outlet, said device comprising:

a blocking flap pivotally mounted in the interior chamber of the bypass for movement between a position that closes the main outlet and a position that closes the bypass outlet;



a pneumatic actuator having a housing, and having a piston rod connected to the blocking flap for moving the blocking flap;

a connection duct fluidically connected between the interior chamber of the bypass and the housing of the actuator such that a pressure of a fluid in said interior chamber is applied to said actuator;

an elastic return element in said actuator, said elastic return element having a return force selected as a function of a predetermined bypass fluid pressure threshold at which said bypass outlet is to be closed; and

a further actuator for moving the blocking flap, said further actuator comprising a thermally responsive element which is responsive to a temperature of the pneumatic fluid in said bypass.

5,546,976

CONDENSATE TRAP INSTALLATIONS

Keith Farquhar, Cheltenham, United Kingdom, assignor to Spirax-Sarco Limited, Gloucestershire, United Kingdom

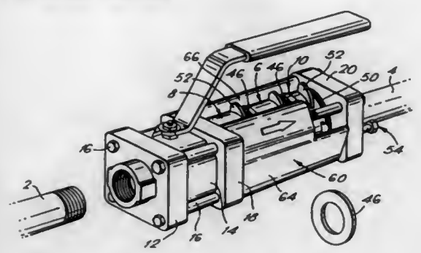
Filed Jul. 19, 1994, Ser. No. 277,009

Claims priority, application United Kingdom, Jan. 12, 1994, 9400496

Int. Cl.[6] F16T *1/38*

U.S. Cl. 137—183 **15 Claims**

1. A pipeline comprising:



first and second aligned pipe ends, the first pipe end being provided with a first coupling body and the second pipe end being provided with a second coupling body, each coupling body having an abutment face, the abutment faces being parallel and being oppositely disposed;

a condensate trap installation disposed between the abutment faces and having opposite outermost end surfaces, the condensate trap installation comprising a condensate valve and at least one further component, the condensate valve and the further component each comprising a housing having oppositely disposed parallel end faces which are parallel to the abutment faces of the coupling bodies, one of the end faces of the condensate valve being adjacent to one of the end faces of the further component; and

clamping means which extends between the coupling bodies and which clamps together the condensate valve and the further component at the adjacent end faces, the clamping means exerting a compressive force at the axially outermost end surfaces of the condensate trap installation,

the clamping means comprising a carrier which is independently releasably secured at each end to the respective coupling bodies and which, in the assembled condition, and before the application of the compressive force, retains the condensate valve and the further component in position between the abutment faces.

5,546,977

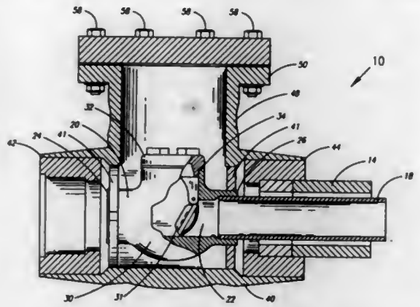
DUAL CONTAINMENT VALVE SYSTEM

David A. Chaney, Catoosa, Okla., assignor to Conley Corporation, Tulsa, Okla.

Filed Mar. 8, 1994, Ser. No. 207,945

Int. Cl.[6] G01M *3/08;* **F16K** *43/00*

U.S. Cl. 137—312 **11 Claims**



1. An integral dual containment valve system for dual containment piping having inner carrier pipes for fluid and outer containment pipes, which dual containment valve system comprises:

an inner carrier housing having means to connect said inner carrier pipes thereto;

valve means to control flow of fluid through said inner carrier housing;

an outer containment housing surrounding said inner carrier housing having means to connect said outer containment pipes to said outer containment housing;

said outer containment housing having sealable access means to access said valve means to allow repair, maintenance and replacement of said valve means without disassembling said outer containment housing; and

a plurality of spacers mounted between said carrier housing and said containment housing and said outer flow fluid drainage between said outer containment housing and said outer containment pipes, said spacers concentric with said inner carrier pipes and said outer containment pipes, and said spacers supportingly receiving said inner carrier housing within said outer containment housing.

5,546,978

REPLACEMENT FAUCET SPAYER HOSE INSTALLATION KIT

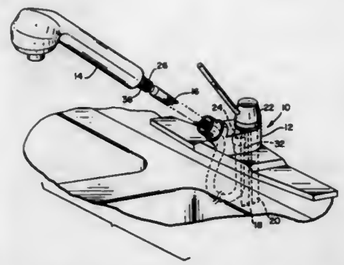
Thomas W. Parker, San Diego, Calif., assignor to Plumbmaster, Inc., Oceanside, Calif.

Filed Jun. 22, 1994, Ser. No. 263,554

Int. Cl.[6] F16K *43/00;* **F16L** *33/00*

U.S. Cl. 137—315 **9 Claims**

1. An aftermarket replacement faucet sprayer hose installation kit for use with an OEM faucet having a mixing valve with a threaded outlet port, a pull-out spray head with a threaded inlet port, and a hose segment connecting the outlet port to the inlet port, the kit comprising:



a replacement hose segment having first and second ends, a preselected standard threaded male connector attached to said first end and a cooperating preselected standard threaded female connector attached to said second end, each of said preselected standard threaded male and female connectors being directly attachable to at least a faucet mixing valve outlet port and to a pull-out spray head inlet port of a preselected OEM faucet; and

a plurality of selectively interchangable adaptors each having at least one threaded end and a generally cylindrical longitudinal bore, one threaded end of each said adaptor being directly attachable to at least one of said first and ends second end of said replacement hose segment and the other end of said adaptor being directly attachable to at least one of a mixing valve outlet port and a pull-out spray head inlet port of a different OEM faucet having a mixing valve outlet port and a pull-out spray head inlet port with fittings not directly attachable to the preselected standard threaded male connector and not directly attachable to the preselected standard threaded female connector.

5,546,979

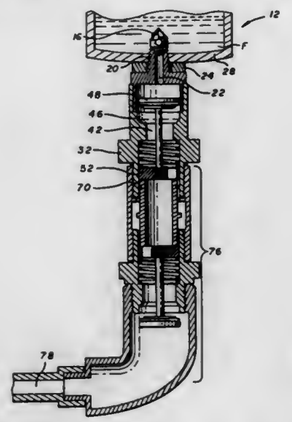
DEVICE FOR DRAINING FLUID FROM A CONTAINER

James E. Clark, II, Ojai, Calif., and Poul Van Santen, Rotterdam, Netherlands, assignors to Clark Technology Systems, Inc., Santa Paula, Calif.

Continuation-in-part of Ser. No. 300,402, Sep. 2, 1994. This application Feb. 7, 1995, Ser. No. 384,946

Int. Cl.[6] F01M *11/04;* **F16K** *24/02*

U.S. Cl. 137—318 **11 Claims**



1. A fluid container draining device which allows fluid to be removed from a fluid container in a controlled manner, said fluid container having walls defining a fluid filled interior region therebetween, said fluid container draining device comprising:

a threaded screw means having a sharpened tip at its forward region, which screw means is adapted to penetrate the wall of the fluid container and enter the fluid containing cavity of the fluid container, said screw means having an internal channel communicating between an opening at the forward end of the screw means and a rear region of the threaded screw means, said rear region being externally threaded;

a means to provide fluid tight sealing between the screw means and the fluid container wall to prevent fluid leakage from between the threaded screw means and the walls of the fluid container;

a turning surface adapted for engagement with a drill to permit said fluid container draining device to be turned to drill and screw said threaded screw means into the wall of the fluid container to engage the fluid container draining device therewith, independent of other means to retain the device in contact with the fluid container; and

a fluid valve means positioned at the rear region of the screw means in fluid connection with the channel, said fluid valve means providing fluid flow control between the interior of the fluid container and the outside of the fluid container by only opening up when it is coupled with a fluid evacuation line, and otherwise remaining closed, said fluid valve means having an internally threaded front region which screws into the externally threaded rear region of the screw means, and an externally threaded rear region, onto which a fluid evacuation line is to be attached.

5,546,980

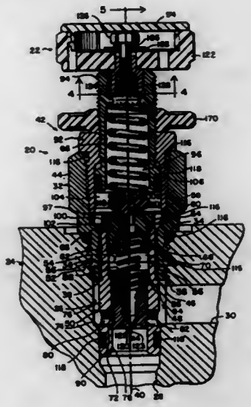
FLOATING CAGE CARTRIDGE VALVE AND KNOB

Constantine Kosarzecki, 592 Windsor Cir., Inverness, Ill. 60067

Filed Feb. 2, 1995, Ser. No. 382,421

Int. Cl.[6] F16K *27/00*

U.S. Cl. 137—454.5 **15 Claims**



1. A cartridge valve for installation in a manifold having a receiving cavity formed therein and an inlet port and an outlet port communicating with said valve receiving cavity, said cartridge valve comprising:

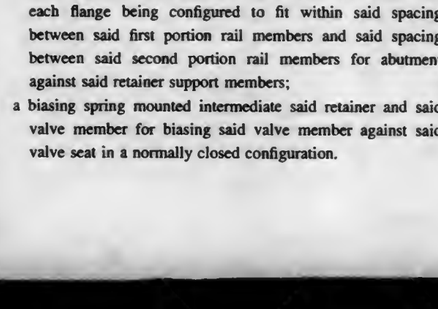
a cavity adapter for engagement in said valve receiving cavity, said cavity adapter having walls defining a primary bore and a central axis longitudinally extending therethrough;

means for resisting opening of said cartridge valve operatively associated with said cavity adapter; and

a cage assembly operatively associated with said cavity adapter, a cage body of said cage assembly at least partially extending

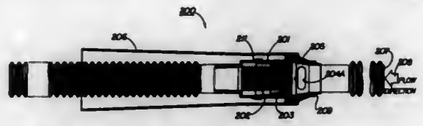
through said primary bore of said cavity adapter, said cage assembly being tiltable and axially shiftable relative to said central axis.

5,546,981
CHECK VALVE
Y. Christian Li; Edward S. Poleshuk, and James R. McMordie, all of Greensboro, N.C., assignors to Gilbarco, Inc., Greensboro, N.C.
Filed Jan. 12, 1995, Ser. No. 372,008
Int. Cl.[6] F16K *17/26;15/02*
U.S. Cl. 137—493.3 **7 Claims**



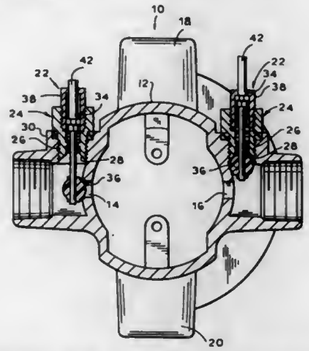
1. A check valve having a negligible pressure drop thereacross, said check valve comprising:
a valve seat defining an inlet flow region having a predetermined flow area;
a support frame projecting outwardly from said valve seat and defining an outlet flow region having a predetermined flow area greater than the area of said inlet flow region said support frame including a first frame portion having at least two generally elongate rail members projecting generally parallelly outwardly a predetermined distance from said valve seat, said rail members being joined by a retainer support member extending from a distal end of a first rail member to a distal end of a second rail member in generally perpendicular alignment with the rail members and a second frame portion structurally similar to said first frame portion and mounted to said valve seat at a predetermined spacing from said first frame portion;
a valve member slidably mounted to said support frame for reciprocal movement between a flow blocking position in abutment with said valve seat and a flow sustaining position away from said valve seat;
a retainer mounted to said frame and extending between said first frame portion and said second frame portion in abutment with said retainer support members, said retainer including two flanges projecting outwardly from opposing sides thereof, each flange being configured to fit within said spacing between said first portion rail members and said spacing between said second portion rail members for abutment against said retainer support members;
a biasing spring mounted intermediate said retainer and said valve member for biasing said valve member against said valve seat in a normally closed configuration.

5,546,982
AUTOMATIC SWIMMING POOL CLEANERS AND ASSOCIATED COMPONENTS
William T. Clark, Coral Springs; James D. Scott, II, Boca Raton; Graham M. Barton, Tamarac; Chris A. Rice, Boca Raton, and Shawn M. McLaughlin, Delray Beach, all of Fla., assignors to Baracuda International Corp., Ft. Lauderdale, Fla.
Division of Ser. No. 331,349, Oct. 28, 1994. This application May 12, 1995, Ser. No. 439,635
Int. Cl.[6] F16K *37/00*
U.S. Cl. 137—557 **13 Claims**



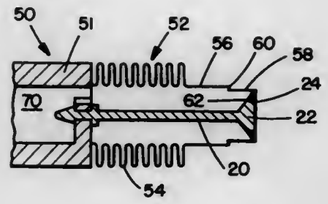
1. A flow rate indicator comprising:
a) a tube assembly comprising;
(i) an inlet tube having a bypass port;
(ii) a throat attached to the inlet tube; and
(iii) an exit tube having a spring stop therein attached to the throat;
b) a spring having a first end and a second end positioned inside of the tube assembly in which the first end is urged against the spring stop; and
c) an annular flow rate gauge urged against the second end.

5,546,983
SHUT-OFF VALVE
Manamohan Clare, Mississauga, Canada, assignor to Friedrich Grohe Aktiengesellschaft, Hemer, Germany
Filed Nov. 3, 1994, Ser. No. 334,790
Int. Cl.[6] F16K *11/20*
U.S. Cl. 137—607 **6 Claims**



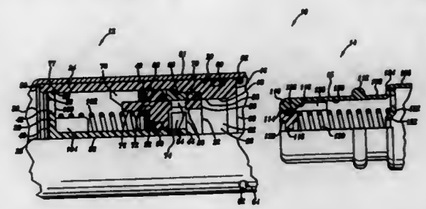
1. A pressure balanced valve assembly comprising a valve housing having inlet ports for hot and cold water, an outlet port for properly mixed water of a desired temperature and pressure, means for controlling said valve and hence the temperature and pressure of water exiting said outlet port, and means for quickly stopping water flow into said valve housing at said inlet ports, said stopping means comprising, for each inlet port: casing means on said housing and providing access to the inlet port adjacent thereto; a linearly reciprocable valve actuator sealingly retained within said casing for direct movement between first and second positions; and a valve member fixed to said actuator for sealingly blocking said inlet port when said actuator is in said second position, said inlet port being open to normal water flow when said actuator is in said first position, an internally splined cap member within said casing, said actuator comprising: a push button member within and projecting from said cap member, an actuator shaft extending from said push button member through said casing towards said adjacent inlet port, and means for holding said actuator in either of said first or second positions, said valve member being affixed to the end of said actuator shaft opposite said cap member, said push button member including a cylindrical rod member projecting from said cap member, said bolding means comprising: a first ratchet member at one end of said rod member within said cap member, said first ratchet member having a plurality of external, longitudinally extending splines for continuous engagement with corresponding longitudinally extending internal splines within said cap member, and a plurality of generally radially extending ratchet teeth on a lower end face thereof, a second ratchet member at one end of said actuator shaft proximate said first ratchet member, said second ratchet member having a plurality of external, longitudinally extending splines engageable with said cap member splines, and a plurality of generally radially extending ratchet teeth on an upper end face thereof and engageable with the ratchet teeth of said first ratchet member, and a compression spring within said casing engageable with said second ratchet member when said actuator is in said second position, said cap member splines terminating at a location such that the splines of said second ratchet member will abut against the bottom end of said cap member splines when said actuator is in said second position, said second ratchet member being rotatable by said first ratchet member to bring the splines of said second ratchet member into registry with the splines of said cap member so as to permit movement of said actuator from said second position to said first position.

5,546,984
BELLOWS-TYPE, LOW SPILLAGE, QUICK DISCONNECT UNIT
David J. Arcaro, Boise, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Jun. 14, 1994, Ser. No. 259,772
Int. Cl.[6] F16L *37/28*
U.S. Cl. 137—614.03 **8 Claims**



1. A quick disconnect fitting for joining to a female fitting that includes an outlet housing, an outlet opening and a spring loaded plug that is biased against said outlet opening so as to seal said outlet opening, said male fitting comprising:
an inlet housing;
a plunger having an expanded tip;
support means for fixedly-mounting said plunger to said inlet housing; and
a bellows concentrically surrounding said plunger and extending from said inlet housing to said expanded tip so as to form a fluid pathway, said bellows having an engagement end which bears against said expanded tip and a shoulder which, upon insertion of said plunger into said outlet opening, engages said outlet housing and causes compression of said bellows and a separation of said engagement end of said bellows from said expanded tip, whereby said bellows forms a closed pathway into said inlet housing.

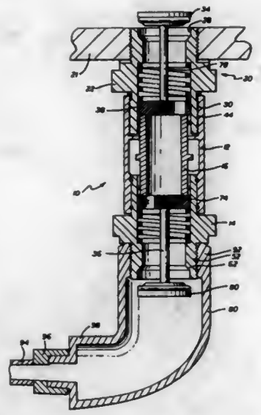
5,546,985
QUICK CONNECT FLUID COUPLING
Donald D. Bartholomew, Mt. Clemens, Mich., assignor to Proprietary Technology, Inc., Bloomfield Hills, Mich.
PCT No. PCT/US92/07999, § 371 Date Mar. 17, 1995, § 102(e) Date Mar. 17, 1995, PCT Pub. No. WO94/07078, PCT Pub. Date Mar. 31, 1994
PCT Filed Sep. 21, 1992, Ser. No. 406,973
Int. Cl.[6] F16L *37/26;37/28*
U.S. Cl. 137—614.04 **27 Claims**



1. A connector assembly for providing a quick connection, comprising:
a tubular male conduit adapted to convey fluid and for providing a blocking wall portion disposed transversely to the central axis of said male conduit;
male blocking valve means having an axial bore therein for receiving said tubular conduit, means disposed in said bore for providing a seal between said tubular male conduit and said male blocking valve means, means provided on said male blocking valve means to seal said tubular male conduit, spring means to bias said male blocking valve means in a stop fluid flow position;
a female housing having axial bore means therein for receiving said male blocking valve means at a first end, means disposed in said axial bore means for providing a seal between said male blocking valve means and said female housing, means that cooperate with said tubular male conduit to lock said female housing to said tubular male conduit and said male blocking valve means, and means including a solid pin to cause said male blocking valve means to open;
female blocking valve means encased within said female housing such that upon insertion of said male blocking valve means into said female housing, an end portion of said tubular male conduit opens said female blocking valve means by causing compression of spring means that biases said female blocking valve means to a stop fluid flow position and the solid pin opens the male blocking valve means, said male blocking valve means being sealed to said female housing prior to the opening of said male and female blocking valve means.

5,546,986
LEAKPROOF DUAL ACTION FLUID TRANSFER VALVE
James E. Clark, III, Ojai, Calif., and Poul Van Santen, Rotterdam, Netherlands, assignors to Clark Technology Systems, Inc., Santa Paula, Calif.
Filed Feb. 7, 1995, Ser. No. 384,947
Int. Cl.[6] F16L *29/00*
U.S. Cl. 137—614.05 **4 Claims**

1. A leakproof dual action valve which is operated by its relative state of engagement and disengagement to a complementary, mating, spring actuated valve that is positionable on a fluid supply, said spring actuated valve having a valve body with an internal bore, a forward end having an external seat, and a threaded rear end; a plunger piston having a head which is fluid tightly seatable on the external seat, the head having a valve stem extending rearwardly therefrom into the internal bore, with a connected, terminating pusher portion located inside the internal bore, said pusher portion having a fluid opening; and a spring means having



a predetermined biasing strength which biases the head of the plunger piston against the external seat to prevent fluid from passing through the spring actuated valve; said dual action valve comprising:

an engagement sleeve with an internal bore, a threaded front region, a rear region, and a stop means located rearwardly of said threaded front region inside of said bore;

a piston carrier with a front region, a rear region, and an internal longitudinal bore, said front region of said piston carrier being liquid tightly engaged with said rear region of said engagement sleeve, said piston carrier having a stop means in its internal longitudinal bore and said rear region having a terminal sealing seat;

a generally cylindrical piston body with a longitudinal fluid channel with a front region, a rear region, and a stop means extending radially outwardly from said cylindrical piston body, said piston body being movably located in said engagement sleeve, such that said piston body stop means is rearward of said piston carrier stop means, and with the rear region of the piston body being fluid tightly contacting said internal longitudinal bore of said piston body, said piston body being moveable forwardly and rearwardly within said engagement sleeve;

a plunger valve having a sliding piston body contacting portion with a fluid opening formed therethrough, a valve stem extending rearwardly from the sliding piston body contacting portion, and a seating head positioned on a terminal end of said the valve stem, said seating head being fluid tightly seatable with said sealing seat on the piston carrier; and

a biasing spring with a predetermined biasing strength, which is positioned inside said internal longitudinal bore of said piston carrier, said biasing spring having a first end being placed adjacent said stop means of the piston carrier and with a second end being placed against said sliding piston body contacting portion, said coil spring tending to bring the plunger valve's seating head into sealing contact with said sealing seat of said piston carrier;

wherein in the use of said leakproof dual action valve, when said threaded front region of said engagement sleeve is screwed onto said mating, spring actuated valve on a fluid supply, said sliding piston body of said dual action valve will be brought into contact with a pusher plate of the spring actuated valve's plunger piston and said sliding piston body contacting portion of said plunger valve, and simultaneously push the spring actuated valve's plunger piston's head away from the external seat of the valve body and push said plunger valve's seating head away from said terminal sealing seat, to thereby allow fluid to flow through the spring actuated valve and through the dual action valve, and wherein when said engagement sleeve is unscrewed from the spring actuated valve, any flow of fluid through the spring actuated valve and dual action valve will be stopped.

5,546,987

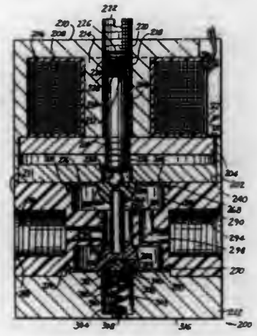
SOLENOID VALVE

Akos Sule, 4 Gates Ave., Roseland, N.J. 07068

Continuation of Ser. No. 85,132, Jun. 29, 1993, abandoned, which is a continuation of Ser. No. 444,020, Nov. 30, 1989, abandoned, which is a continuation of Ser. No. 128,145, Dec. 3, 1987, abandoned, which is a division of Ser. No. 756,845, Jul. 18, 1985, Pat. No. 4,711,269, which is a continuation-in-part of Ser. No. 318,846, Nov. 6, 1981, abandoned. This application Sep. 8, 1994, Ser. No. 303,133

Int. Cl.[6] F16K *11/048;31/06*

U.S. Cl. 137—625.5 **20 Claims**



1. A solenoid valve comprising a valve body having a valve cavity,

first port means disposed on said valve body and communicating with said valve cavity,

second port means disposed on said valve body and communicating with said valve cavity,

orifice means formed in said valve cavity and disposed separating said first and second ports,

electrically operated solenoid coil means mounted on said valve body,

armature means disposed proximate to said solenoid coil means for actuation by said solenoid coil means,

diaphragm means mounted in said valve cavity with said diaphragm means having an upper surface and a lower surface,

poppet means disposed on said lower surface of said diaphragm means with said poppet means operative to close said orifice means,

actuator shaft means disposed on said upper surface of said diaphragm means with said actuator shaft means having connecting means for connecting said actuator shaft means to said armature means,

means for transmitting motion from said actuator shaft means to the upper surface of the diaphragm means comprising force means in free abutting engagement with said actuator shaft means and the upper surface of said diaphragm means,

spring means disposed to bear on said armature means and bias said armature in a first direction, away from said solenoid coil means and with said poppet means closing said orifice means, and

with said solenoid coil means capable of biasing said armature means in a second direction which is opposite said first direction, thereby opening said orifice, said diaphragm means, and said poppet means, are each made of a plastic material.

5,546,988

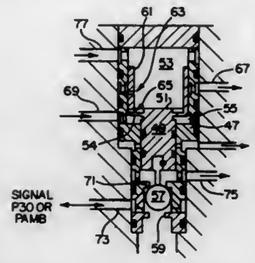
SERVO MULTIPLEXING SYSTEM

Russell C. Perkey; Bruce S. Ramey, both of Granger, Ind., and George S. Wieger, Niles, Mich., assignors to AlliedSignal Inc., Morristown, N.J.

Filed Sep. 23, 1994, Ser. No. 311,075

Int. Cl.[6] F15B *13/06*

U.S. Cl. 137—625.66 **19 Claims**



6. A fluidically actuated, fluidically latched bistable control valve comprising;

a housing;

a piston having first and second opposed faces, the piston faces and housing cooperating to define first and second variable volume chambers, the piston being reciprocable within the housing between first and second stable positions;

fluidic control signal means for supplying one of a low fluid pressure switching signal and a high fluid pressure switching signal to the first variable volume chamber, the first variable volume chamber able to receive from the fluidic control signal means a low pressure holding fluid when the piston is in the first stable position and to receive a high pressure holding fluid when the piston is in the second stable position; and

a valve member movable with the piston for delivering a first fluid pressure when the piston is in one stable state and a second fluid pressure when the piston is in the other stable state.

5,546,989

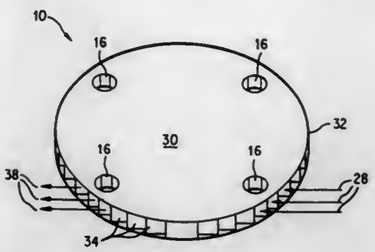
WEATHERPROOF FLANGE PROTECTIVE COVER AND METHOD FOR PROTECTING A MACHINED SURFACE OF A PIPE FLANGE USING SAME

William G. Bowes, Union City, Pa., assignor to Bunzl Plastics, Inc., St. Louis, Mo.

Continuation of Ser. No. 249,967, May 27, 1994, Pat. No. 5,435,350. This application Jul. 21, 1995, Ser. No. 505,634

Int. Cl.[6] B65D *59/06*

U.S. Cl. 138—96 R **10 Claims**



1. A flange protector for covering a machined surface of a pipe flange and adapted to cooperate with the pipe flange for securing the flange protector to the pipe flange, comprising:

a plate member formed of a weatherproof material having a shape substantially matching a shape of the pipe flange; and

said plate member comprising a first end wall in contact with the pipe flange and a second end wall spaced from said first end wall, and a cushioning layer between said first and second end walls defining a plurality of air channels located between the first end wall and the second end wall;

wherein, upon impact, the first end wall remains in contact with the pipe flange as the second end wall moves toward the first end wall thereby deforming the air channels as the cushioning layer is compressed.

2. A method for protecting a machined surface of a pipe flange, said method comprising the steps of:

providing a plate member formed of a lightweight, weatherproof material having a shape substantially matching a shape of the pipe flange;

forming said plate member with a first end wall connected to a second end wall spaced from said first end wall to define a cushioning layer between the first and second end walls;

attaching the first end wall of the plate member to the machined surface of the pipe flange with the cushioning layer extending away from the pipe flange to protect the pipe flange from impact; and

absorbing impact on said second end wall with the cushioning layer, wherein the first end wall remains in contact with the pipe flange as the second end wall moves toward the first end wall and the cushioning layer is compressed.

5,546,990

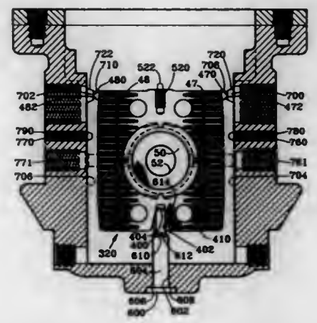
METHOD OF MEASURING FLOW THROUGH A FITTING WITH AN ORIFICE PLATE FOR REDUCING ECCENTRICITY

Donald J. Wass, and Anthony E. Carter, both of Houston, Tex., assignors to Daniel Industires, Inc., Houston, Tex.

Continuation of Ser. No. 125,587, Sep. 23, 1993, Pat. No. 5,419,372, which is a continuation of Ser. No. 849,239, Mar. 10, 1992, which is a division of Ser. No. 659,989, Feb. 22, 1991, Pat. No. 5,181,542. This application Feb. 9, 1995, Ser. No. 385,806

Int. Cl.[6] F15D *1/02*

U.S. Cl. 138—44 **7 Claims**



1. A method of measuring flow through a fitting with an orifice plate assembly for reducing eccentricity,

the fitting comprising a central passage, a stop and at least one fitting ear,

the orifice plate assembly comprising an orifice plate and a carrier for receiving the orifice plate,

the carrier comprising an indentation and at least one plate ear, the method of measuring flow through the fitting for reducing the eccentricity between the orifice plate and the central passage through the fitting comprising the steps of:

(a) introducing the orifice plate assembly into the fitting,

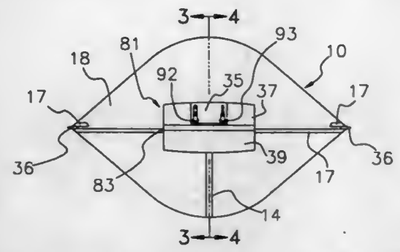
(b) accepting the stop into the indentation during continued introduction of the orifice plate assembly into the fitting for providing general alignment of the office plate assembly within the fitting,
(c) engaging the plate ear with the fitting ear during continued introduction of the orifice plate assembly into the fitting for providing precise positional alignment between the orifice plate assembly and the fitting, and
(d) abutting the stop within the indentation for terminating the introduction of the orifice plate assembly into the fitting for providing precise positional alignment of the orifice plate assembly in the fitting and for reducing the eccentricity between an orifice plate and the central passage through the fitting.

5,546,991

INFLATABLE FABRIC BAG PLUG

Allen D. Mathison, Richfield, and Randy D. Smith, New Hope, both of Minn., assignors to Cherne Industries Incorporated, Minneaplois, Minn.

Filed Jun. 2, 1995, Ser. No. 460,255
Int. Cl.[6] F16L *55/12*
U.S. Cl. 138—93 **20 Claims**



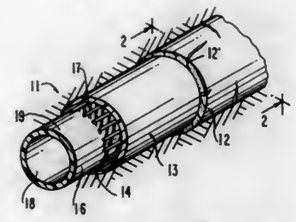
1. An inflatable plug for sealing low pressure pipelines comprising:
(a) a plug body having opposing ends and being constructed of a plurality of coated woven fabric elements of a predetermined construction and configuration and having exposed woven fabric ends, said plug body further having a plurality of seams exposing said woven fabric ends, said plug body having a generally rectangular configuration when in its deflated state;
(b) means to bond said coated woven fabric elements to form said plug body;
(c) means to seal said plurality of seams to thereby seal said exposed woven fabric ends of said coated woven fabric elements;
(d) an inflator assembly mounted to and being in communication with said plug body for inflating and deflating said plug; and
(e) a plurality of sealing ribs transversely bonded about generally the midsection of said plug body.

5,546,992

DUAL CONTAINMENT PIPE REHABILITATION SYSTEM

Douglas K. Chick, Elstree, England, and F. Thomas Driver, Memphis, Tenn., assignors to Insituform B.V., Netherlands

Filed Jan. 18, 1994, Ser. No. 183,146
Int. Cl.[6] F16L *55/16*
U.S. Cl. 138—98 **20 Claims**



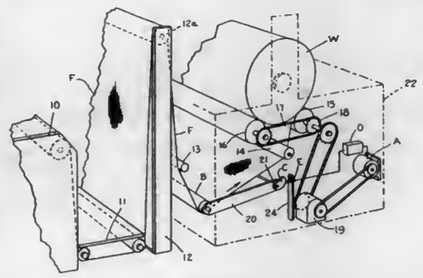
1. A dual containment pipe system suitable for installation into an existing conduit of a given length, comprising
an impervious primary containment pipe which is adapted to be installed in an existing conduit and after installation is configured to conform to the interior configuration of the existing conduit, and
a substantially crush-resistant spacer formed of a plurality of spaced apart and substantially parallel longitudinal members of a selected length, and a plurality of spaced apart substantially parallel flexible connecting ribs disposed at an angle to and crossing the longitudinal members, the connecting ribs and longitudinal members being bonded together,
the spacer element disposed about the entire external circumference of the containment pipe for maintaining the primary containment pipe substantially coaxial with the existing conduit,
the longitudinal elements forming a plurality of substantially uninterrupted longitudinally extending channels along the length of the system for providing communication along the length of the system and the connecting ribs forming a plurality of substantially uninterrupted helical channels for communicating about the entire external circumference of the pipe system.

5,546,993

WEB TENSION APPARATUS WITH SENSOR SWITCH ARRANGEMENT FOR OSCILLIATING DANCER ROLL AND METHOD

Shala W. Summey, III, Greenville, and William J. Alexander, III, Mauldin, both of S.C., assignors to Alexander Machinery, Inc., Mauldin, S.C.

Filed Aug. 19, 1994, Ser. No. 292,872
Int. Cl.[6] D03D *49/20*
U.S. Cl. 139—311 **16 Claims**



1. Loom tension control apparatus for use in a cloth takeup having a motor driving a pair of spaced rolls carrying a cloth roll for surface winding therebetween positioned in front of a machine from which cloth is delivered in open width to the cloth roll for winding thereon comprising:
means conveying said cloth in at least one substantially horizontal run during its delivery to the cloth roll;
means carrying said cloth on an upward path and a downward path prior to said horizontal run;
a control shaft carried for oscillation in axial alignment with said spaced rolls;
a movable roll supported by said cloth in said horizontal run, said roll being raised and lowered responsive to variations in tension in said cloth;

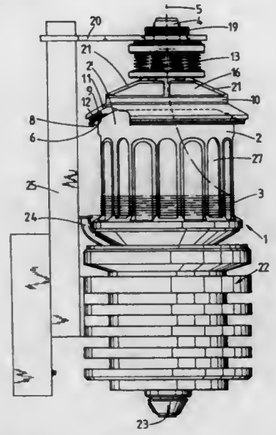
a pair of transversely spaced arms carrying the movable roll on one end thereof, the other end of said arms having connection with said control shaft for oscillating said control shaft responsive to variations in tension in the cloth in said horizontal run;
means carrying a cam for movement varying the position of cam in response to raising and lowering said moveable roll responsive to variations in tension in said cloth;
a motor control circuit supplying power to and controlling the speed of said motor; and
a proximity sensor transmitting power to said motor control circuit responsive to the position of said cam producing variations in power supplied by said motor control circuit for varying the speed of said motor in response to movements of said cam whereby the tension imparted to said fabric is varied.

5,546,994

THREAD STORAGE DRUM WITH FRUSTOCONICAL BRAKE STRIP

Alberto G. Sarfati, Como, Italy, assignor to Sobrevin Société de brevets industriels-Etablissement, Vaduz, Liechtenstein

Filed Oct. 14, 1994, Ser. No. 324,099
Int. Cl.[6] D03D *47/36*
U.S. Cl. 139—452 **22 Claims**



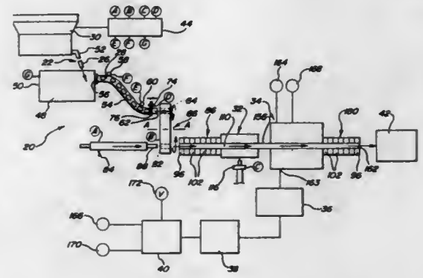
1. A thread storage comprising
a substantially cylindrical storage drum adapted to receive and deliver circumferentially deposited turns of thread,
a central, thread withdrawal eye through which the thread is adapted to pass for withdrawal overhead of the thread,
a frustoconical withdrawal slide surface on a withdrawal-side end region of the drum,
a continuous, frustoconical brake strip of flexible material, said brake strip having an inner side comprising a frustoconical braking surface resting on said frustoconical withdrawal slide surface, the thread being adapted to pass between said braking surface and said frustoconical withdrawal slide surface, and
elastic means engagingly supporting the other side of said brake strip, the frustoconical braking surface of the brake strip complementarily resting on said frustoconical withdrawal slide surface with frustoconical surface-to-surface flush engagement, both said braking surface and said frustoconical withdrawal slide surface comprising continuously substantially smooth surfaces which flushly engage each other thereby permitting the thread to slide between said slide and braking surfaces during the withdrawal of the thread through the withdrawal eye, and flexibility of the brake strip in combination with the elastic means permitting the brake strip to lift off from the slide surface in a region where the thread slides between said surfaces while the remainder of said surfaces are in flush engagement.

5,546,995

PRESSURIZED CANISTER RECYCLING APPARATUS AND METHODS

Larry W. Van Etten, 124 Cherry La., Tampa, Fla. 33610

Continuation of Ser. No. 95,881, Jul. 22, 1993, Pat. No. 5,332,009. This application Jul. 21, 1994, Ser. No. 278,304
Int. Cl.[6] B65B *31/00*
U.S. Cl. 141—7 **17 Claims**



1. A method for recycling contents of a plurality of pressurized canisters, comprising the steps of:
releasing the canisters from a hopper;
moving the canisters away from said hopper, advancing the canisters with each moving step;
isolating the canisters from an outside environment;
opening the canisters after said isolating step;
evacuating the contents of the canisters into an evacuation tank after said opening step, said evacuating step comprising the sub-steps of drawing the contents of the canisters through a tank tap by means of a vacuum, and storing the propellant in a storage tank;
measuring pressure and temperature differences between said evacuation tank and said storage tank; and
bleeding off atmospheric air from said storage tank when a threshold pressure and temperature is reached.

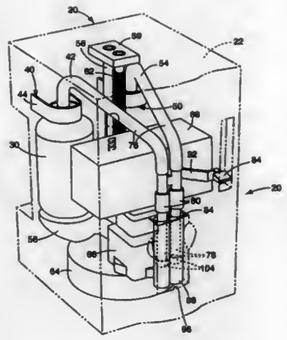
5,546,996

DISPENSING CARTRIDGE REFILLNG SYSTEM

Bruce R. Boyles, Oakdale; Cary A. Kipke, Woodbury, both of Minn., and William R. George, Chicago, Ill., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 9, 1994, Ser. No. 287,841
Int. Cl.[6] B65B *1/04;3/04*
U.S. Cl. 141—18 **33 Claims**

1. A dual chamber dispensing cartridge refilling system comprising:
a housing having a first receptacle, a second receptacle and a third receptacle;
a first container releasably received in said first receptacle and containing a quantity of a first component;
a second container releasably received in said second receptacle and containing a quantity of a second component;
a dual chamber dispensing cartridge releasably received in said third receptacle, said cartridge including a first elongated chamber for receiving the first component and a second elongated chamber for receiving the second component;
first tubing in communication with said first container when said first container is received in said first receptacle, said first



tubing being in communication with said first chamber of said cartridge when said cartridge is received in said third receptacle;

second tubing in communication with said second container when said second container is received in said second receptacle, said second tubing being in communication with said second chamber of said cartridge when said cartridge is received in said third receptacle;

means for directing the first component from said first container, through said first tubing and into said first chamber, and for directing the second component from said second container, through said second tubing and into said second chamber; and

structure for substantially precluding said second container from being received in said first receptacle in order to avoid directing the second component into said first chamber of said cartridge.

5,546,997

EASILY-CLEANED REUSABLE LID INCLUDING AN EVACUATING PUMP

Eric J. Miramon, Morro Bay, Calif., assignor to Invental Laboratory, Inc., Morro Bay, Calif.

Continuation-in-part of Ser. No. 49,005, Apr. 19, 1993, Pat. No. 5,406,992. This application Apr. 10, 1995, Ser. No. 419,193

Int. Cl.[6] B65D *51/24*

U.S. Cl. 141—65 **7 Claims**

1. An easily-cleaned reusable lid including an evacuating pump for use on a container, comprising:

a body including an upper face and a lower face, and including a first hole and a second hole both extending completely through said body from said upper face to said lower face;

an evacuating pump including a resilient plug removably inserted into said first hole in sealing engagement with said body;

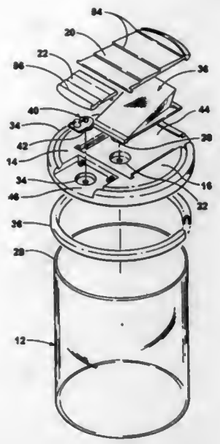
a pump actuator;

first means for removably and pivotally attaching said pump actuator to said body;

a vacuum release valve including a resilient plug removably inserted into said second hole in sealing engagement with said body;

a vacuum release valve actuator; and,

second means for removably and pivotally attaching said vacuum release valve actuator to said body.



5,546,998

APPARATUS FOR VACUUM INJECTING LIQUID CRYSTAL

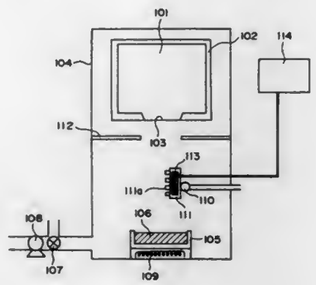
Masayuki Shimamune, Tokyo; Takashi Enomoto, Sagamihara; Tatsuo Murata, Isehara, and Mutsuo Mitsui, Tokyo, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 165,848, Dec. 14, 1995, Pat. No. 5,417,257. This application Feb. 17, 1995, Ser. No. 390,660

Claims priority, application Japan, Dec. 25, 1992, 4-357906

Int. Cl.[6] G02F *1/05*

U.S. Cl. 141—82 **4 Claims**



1. An apparatus for injecting a liquid crystal into a liquid crystal panel by vacuum injection scheme, comprising:

a vacuum vessel for containing a blank panel having an injection port, said vacuum vessel being evacuated by a vacuum evacuation system:

a liquid crystal pan for containing a liquid crystal: and

an applicator for applying the liquid crystal onto the injection port of the blank panel, said applicator being provided with temperature control means for controlling the temperature of the applicator so that the liquid crystal is applied onto the injection port of the blank panel while at a viscosity in the range of 0.0005–0.005 kg/ms.

5,546,999

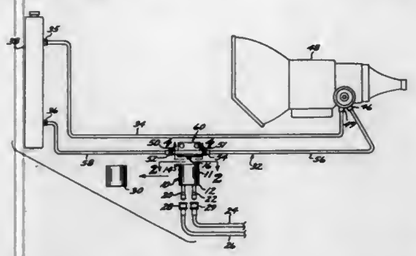
EXTERNAL TRANSMISSION FILTER ADAPTER

Zachary T. Parker, Huntington Beach, Calif., assignor to Flo-Dynamics, Inc., Compton, Calif.

Continuation-in-part of Ser. No. 348,614, Dec. 2, 1994, which is a continuation-in-part of Ser. No. 145,686, Oct. 29, 1993, Pat. No. 5,370,160, which is a continuation-in-part of Ser. No. 11,992, Feb. 1, 1993, abandoned. This application Apr. 4, 1995, Ser. No. 416,335

Int. Cl.[6] B65B *1/04;3/04;* **B67C** *3/02*

U.S. Cl. 141—98 **9 Claims**



1. An external adapter for mounting to a threaded mounting fitting of an external transmission filter mount including filtered and unfiltered fluid ports spaced a predetermined distance apart for connection with respective used and unused transmission fluid conduits and comprising:

an elongated housing formed on one end with a threaded housing fitting for complementarily engaging said mounting fitting to mount said housing from said mount;

an open ended longitudinal unused fluid passageway formed in said housing and including an outlet at said one end of said housing for, when said housing fitting is engaged with said mounting fitting, mating with said filtered port and including an opposite end defining an unused fluid inlet for receiving fresh transmission fluid;

an open ended longitudinal used fluid passageway formed in said housing and including an inlet at said one end of said housing for, when said housing and mounting fitting are engaged, mating with said unfiltered port to receive used fluid from said unfiltered port and including an opposite end defining a used fluid outlet; and

used and unused fluid fittings in the respective said unused fluid inlet and used fluid outlet whereby said housing may be mounted from said filter mount by engaging said housing fitting with said mounting fitting and said used and unused fluid conduits may be connected with the respective said used and unused fittings so that used transmission fluid may be withdrawn from said unfiltered port through said used fluid passage to said used fluid conduit and unused transmission fluid introduced through said unused fluid conduit, through said unused fluid passage to said filtered fluid port.

5,547,000

METHOD AND APPARATUS FOR COLOR MATCHING OF SILICONE SEALANTS

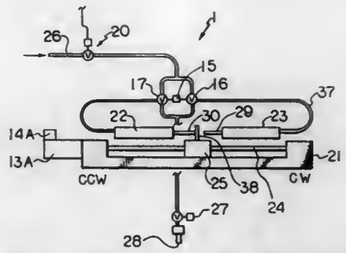
Daniel N. Kemp; Timothy W. Mitin; Kenneth J. Rohman; Christopher C. Shirk, all of Midland, and Ronald W. Wieck, Bay City, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 27, 1994, Ser. No. 364,352

Int. Cl.[6] B65B *1/04;3/04*

U.S. Cl. 141—104.000 **11 Claims**

1. A method of making a colored sealant comprising (i) programming a computer to control the operation of a mixing device, and a plurality of dosing units each having a pair of opposing cylinders containing a metering chamber with expelling means actuated by a ball screw table/servo-motor mechanism for expelling a measured volume of the metering chamber contents at a predetermined rate; (ii) supplying a sealant base and coloring agents to individual dosing units, and feeding the sealant base and coloring agents into the metering chamber in only one cylinder of each dosing unit; (iii) activating the ball screw table/servo-motor mechanism of each dosing unit in response to signals from the computer to meter from the metering chambers a predetermined volume of sealant base and coloring agents; (iv) simultaneously with step (iii) filling the metering chamber in the other cylinder in each dosing unit with the same material metered from the opposing cylinder of the pair; (v) feeding the metered volumes of sealant base and coloring agents from individual dosing units to the mixing device; (vi) mixing the sealant base and the coloring agents in the mixing device; and (vii) dispensing colored sealant into a cartridge.



5,547,001

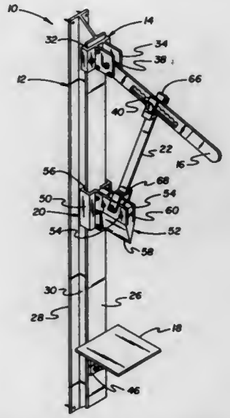
KINDLING WOOD SPLITTER DEVICE

Ronald F. Cumming, and Donald A. Fraser, both of Box 92, Tumbler Ridge, B.C., Canada

Filed Jun. 12, 1995, Ser. No. 489,354

Int. Cl.[6] B27L *7/00*

U.S. Cl. 144—195.4 **3 Claims**



1. A new and improved kindling wood splitter device comprising, in combination:

an I-beam formed in an elongated configuration with a front plate, a back plate and a central plate affixed perpendicularly therebetween, the I-beam being positioned vertically in an operative orientation, the front plate having an upper region and a lower region, each region including mounting holes;

an upper bracket including a front surface with two frontwardly projecting members and a rear surface including a recessed slot, the bracket including mounting holes to permit secure

coupling to the upper region of the front plate of the I-beam with cooperatively coupled bolts, an axle being positioned in a horizontal orientation between the frontwardly projecting members;

a handle formed in an elongated planar configuration having an elongated central aperture with an inboard extent and an outboard extent, the aperture having an upper edge and a lower edge, the upper edge including a plurality of semicircular grooves, the handle including a rounded outboard end and an inboard end having a circular aperture, the aperture of the inboard end being rotatably coupled to the axle of the upper bracket;

a platform formed in a planar generally rectangular configuration, the platform being positioned horizontally and including a vertical brace member having mounting holes, the brace member being coupled to the lower region of the front face of the I-beam with cooperatively coupled bolts, the platform permitting the secure positioning of kindling wood to be split;

a sliding cutter assembly comprising a slidable wedge holder and a wedge, the wedge holder including a front surface with two frontwardly projecting bars and a rear surface including a recessed slot, the recessed slot permitting slidable coupling to the front plate of the I-beam, the bars including a plurality of apertures, the wedge including a generally triangular shaped blade with a point oriented in a downward direction, the wedge having an upper end including apertures, the upper end adapted to be coupled between the bars with cooperatively coupled bolts; and

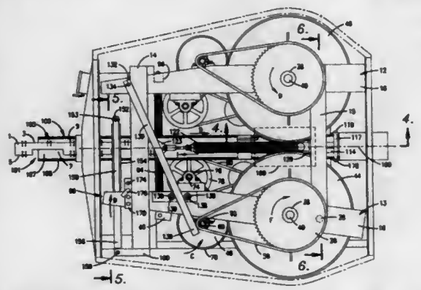
a linkage shaft formed in a planar rectangular configuration with an upper claw and a lower claw, the lower claw being rotatably coupled to the sliding cutter assembly, the upper claw including a large cylindrical pin member with a resilient coil spring, the pin member being positionable within one of the semicircular grooves of the handle, a user positioning the pin in the inboard extent of the aperture and pulling the handle downwardly to split large pieces of kindling wood, a user positioning the pin in the outboard extent of the aperture and pulling the handle downwardly to split small pieces of kindling wood.

5,547,002

PRESS MACHINE

Larry J. Runnebaum, Beattie, Kans.

Filed Jun. 6, 1995, Ser. No. 467,736
Int. Cl.[6] B27G *1/00;1/02*
U.S. Cl. 144—332 **17 Claims**



16. A method for refurbishing a piece of lumber having foreign material projecting from at least one side thereof to form smooth sides on the lumber, said method comprising the steps of:

conveying a piece of lumber along a processing path;

slidably engaging upper and lower surfaces of the lumber to resist twisting of the lumber about a longitudinal axis thereof as the lumber moves along the processing path; and

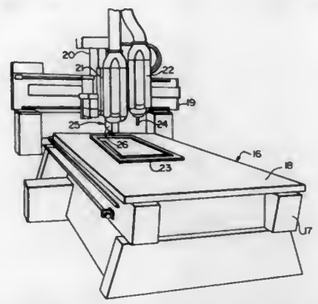
inducing continuous pressure upon opposite sides of the lumber simultaneously as the lumber passes through a pressing station to smooth said foreign material.

5,547,003

DEVICE AND METHOD FOR FORMING SQUARE INSIDE CORNERS ON RAISED PANELS FORMED OF SINGLE WORKPIECES

Kenneth J. Susnjara, Santa Claus, and Michael P. Hardesty, Dale, both of Ind., assignors to Thermwood Corporation, Dale, Ind.

Filed May 11, 1994, Ser. No. 241,191
Int. Cl.[6] B27M *1/08*
U.S. Cl. 144—368 **16 Claims**



13. A method of forming a juncture of a pair of adjoining surfaces spaced a predetermined angle apart in a curved portion of a workpiece, comprising:

positioning a tool bit having a pair of adjoining side wall surfaces displaced said predetermined angle apart with material removal means disposed on either the lower edges of said side wall surfaces or a bottom wall thereof adjacent the portion of said workpiece material forming said curved portion to be removed;

reciprocating said tool bit along a line of travel bisecting the planes of said side wall surfaces; and

guiding the apex of said adjoining side wall surfaces of said tool bit along a predetermined path into said workpiece material to be removed to form a juncture having a profile corresponding to the path along which said tool bit is guided.

5,547,004

METHOD AND DEVICE FOR ARRANGING A STREAM OF PRODUCTS

A. A. Joseph Fransen, Vlaardingen, Netherlands, assignor to Klockner Hansel Tevopharm B.V., Schiedam, Netherlands

PCT No. PCT/NL93/00029, § 371 Date Jul. 27, 1994, § 102(e) Date Jul. 27, 1994, PCT Pub. No. WO93/15005, PCT Pub. Date Aug. 5, 1993
PCT Filed Jan. 28, 1993, Ser. No. 256,946
Claims priority, application Netherlands, Feb. 11, 1992, 920047; Jan. 28, 1993, 9200154
Int. Cl.[6] B65G *47/26*
U.S. Cl. 198—419.3 **8 Claims**



1. A method for arranging a series of products (**17**, **106**), moving in succession in a downstream direction along a conveyor (**2**, **103**, **104**) at an essentially constant first speed, said products passing a controlled activation element (**9**, **113**) which is movable parallel to the products, and by means of which said series of products can be arranged, said element is controlled depending on a predetermined

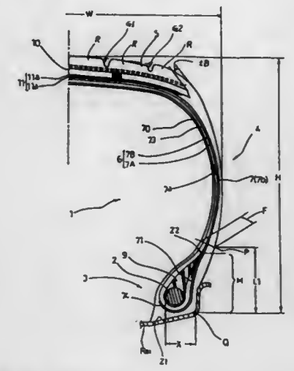
product upstream of the element passing a certain position (**12**, **115**), and said products, on passing said element, move along at an essentially constant second speed, and are arranged depending on a product processing unit (**20**, **108**) situated downstream and operating in phase with the second speed; before the abovementioned detected product passes the element, measuring the first speed Vx and second speed Vy, the position Yn of the product processing unit and the position Z of the element, determining the distance Xn covered by the abovementioned detected product from the abovementioned position, calculating the required position Za of the element (**9**, **113**) and also the required speed Vya from Vx, Vy, Xn and Yn, comparing the measured position Z and also the measured second speed Vy with the required position Za and the required second speed Vya, and if there is a deviation between the measured position Z and the required position Za or the measured speed Vy and the required speed Vya, moving the element or changing the second speed Vy.

5,547,005

RADIAL TIRE WITH ENHANCED BEAD DURABILITY

Kiyoshi Ueyoko, Osaka, and Mikio Takatsu, Takarazuka, both of, Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogoken, Japan

Filed Nov. 4, 1992, Ser. No. 971,470
Claims priority, application Japan, Nov. 5, 1991, 3-318465
Int. Cl.[6] B60C *9/04;9/08;101/00;125/00*
U.S. Cl. 152—209 R **11 Claims**



1. A radial tire comprising:

a tread having a main groove of a depth f1 circumferentially extending substantially parallel to the tire equator and a sub-groove disposed between the main groove and the outside edge of the tread of a depth f2 where f2 is in the range of between 0.65 to 0.95 f1;

a carcass composed of a plurality of carcass plies, each of said carcass plies having a plurality of carcass cords laid at an angle of 75 to 90 degrees to the tire equator and extending from the tread through sidewalls to a bead core in each of two bead parts and turned up around each bead core, wherein a ratio F/X is equal to or less than 0.6, such that a bead thickness F is the distance between a point P located on the tire's outer surface a distance L1 of 0.2 times a tire sectional height H to a bead heel point Q, and a length X is the distance in the tire axial direction between the bead heel point Q and the inner edge of a bead core;

a belt layer composed of at least one belt ply of belt cords disposed outside of the carcass in the tire radial direction in the tread; and

a cut breaker composed of at least one cut breaker ply of breaker cords disposed between the carcass and the belt layer,

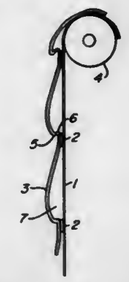
each of said carcass plies having carcass cords buried in topping rubber, the center of each carcass cord being arranged without linking with weft between an upper critical plane and a lower critical plane, each of said upper and lower critical planes being equally spaced from a reference plane a distance of +1/10 times the diameter of the carcass cords, and in the regions of the tire extending from the bottom of each of said beads to the turned up ends of said carcass, each of said plurality of cords in adjacent carcass plies being spaced a distance within a range of between ¼ to 2 times a diameter K1 of one of the plurality of carcass cords, wherein the distance being the shortest distance between the outer surfaces of each of the carcass cords in a perpendicular direction to the carcass.

5,547,006

ROLL-UP CELLULAR SHADES

Raymond N. Auger, Aspen, Colo., assignor to Hunter Douglas Inc., Upper Saddle River, N.J.

Filed May 4, 1993, Ser. No. 58,162
Int. Cl.[6] E06B *9/06*
U.S. Cl. 160—84.01 **14 Claims**



1. A window shade comprising the combination of a roller and a first sheet secured to said roller and adapted to hang vertically from the roller in a substantially planar orientation, said roller having a predetermined circumference, a second sheet secured to the first sheet by narrow attachments along spaced parallel horizontal lines of attachment, the length of the second sheet between said attachments being greater than the length of the first sheet between the attachments such that when rolled on said roller, both sheets lie against each other but when unrolled, air spaces are created between the two sheets and the attachments, the distance between said attachments, when less than the circumference of said roller, being other than a whole number divisor of the circumference of said roller.

5,547,007

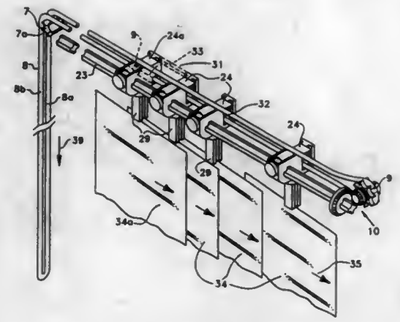
ACTUATING DEVICE FOR CURTAIN STRIPS

Hans Grutzner, Kehrsatz, Switzerland, assignor to K. Bratschi, Silent Gliss, Muri b. Bern, Switzerland

PCT No. PCT/CH93/00123, § 371 Date Jan. 14, 1994, § 102(e) Date Jan. 14, 1994, PCT Pub. No. WO93/24726, PCT Pub. Date Dec. 9, 1993
PCT Filed May 17, 1993, Ser. No. 182,052
Claims priority, application Switzerland, May 22, 1992, 1658/92
Int. Cl.[6] E06B *9/36*
U.S. Cl. 160—168.1 **7 Claims**

1. An activation device for a curtain rail having a guide shaft defining a longitudinal axis, and a plurality of sliding elements having pivoting axles for receiving a plurality of curtain strips and for simultaneously pivoting the curtain strips about their longitudinal axes;

wherein the sliding elements are connected by a plurality of spacers and are capable of guided displacement along the longitudinal axis of the guide shaft responsive to interaction



between the sliding elements and the spacers, and wherein the sliding elements further comprise a drive mechanism operatively associated with the pivoting axles and the guide shaft;

wherein the activation device further comprises a puller having a cord pull with two catches fixed to the cord pull at a spaced distance from one another, and wherein the cord pull passes through the sliding elements so that a first one of the sliding elements is situated between the two catches, and so that contact between either one of the two catches and the first one of the sliding elements moves the first one of the sliding elements in a specified direction along the curtain rail; and

wherein the drive mechanism includes a gear system connecting the puller to the guide shaft, and fixed to an end housing associated with the curtain rail, and wherein the gear system further comprises a slip clutch and a meshed tooth connection between the puller and the guide shaft.

5,547,008

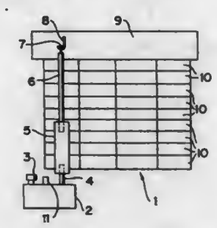
MINI BLIND AND VERTICAL BLIND ACTUATOR

Kenneth J. Sullivan, 242 E. High St., Avon, Mass. 02322

Filed Feb. 2, 1995, Ser. No. 382,758

Int. Cl.[6] E06B *9/26*

U.S. Cl. 160—176.1 **7 Claims**



1. In a motorized window blind system having a motor with an output shaft adapted to be operatively attached to a mechanism means for opening and closing said window blind system,

said motorized window blind system having adjustable limit switches to control the amount said window blind system is open or closed,

a rigid shaft having a first end detachably attached to said mechanism means and a second end having means for detachably attaching said rigid shaft to said output shaft of said motor,

said means for detachably attaching said rigid shaft to said output shaft of said motor comprising a hollow tube detachably connected at one end to said output shaft of said motor and detachably connected at an opposite end to said second end of said rigid shaft.

5,547,009

DRIVING AND TENSIONING DEVICE FOR A FLEXIBLE PROTECTIVE MEMBER SUCH AS A STRIP, CURTAIN OR SKIRT

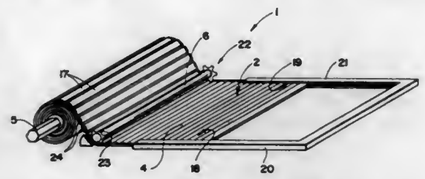
Louis Plumer, Belfort, France, assignor to Etablissments Bubendorff (Societe Anonyme), Saint-Louis, France

Filed Sep. 23, 1994, Ser. No. 311,059

Claims priority, application France, Sep. 29, 1993, 93 11767

Int. Cl.[6] A47G *5/02*; A47H *1/00*; E06B *9/56*

U.S. Cl. 160—310 **17 Claims**



1. A driving and tensioning device for a flexible protective member and a flexible protective member comprising one of a strip, a curtain, and a skirt, said device comprising:

a rolling-up driving-shaft rolling said flexible protective member;

and an unrolling driving-shaft acting on said flexible protective member for unfolding said flexible protective member;

each of said rolling-up driving-shaft and said unrolling driving-shaft being each driven in rotation by a respective electric rolling and unrolling motor;

said rolling and unrolling motors each associated with a respective braking means, wherein said braking means do not brake when one of said rolling and unrolling motors is activated;

said device further including means for controlling power supplied to said motors to create a torque during a rolling and an unrolling operation,

wherein during said unrolling operation, said controlling means supplies a reduced power to said rolling motor in a direction opposite an unrolling direction, the reduced power to said rolling motor being less than a power supplied to said unrolling motor, and

wherein, during said rolling operation, said controlling means supplies a reduced power to said unrolling motor in a direction opposite a rolling direction the reduced power to said unrolling motor being less than a power supplied to said rolling motor.

5,547,010

ADJUSTABLE CURTAIN FRAME

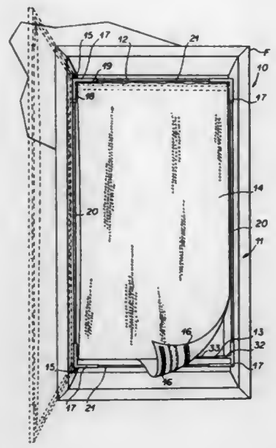
Leigh S. Stuart, 55 Delmont Dr., Apt. A-2, Atlanta, Ga. 30305

Filed Sep. 12, 1994, Ser. No. 304,113

Int. Cl.[6] A47H *1/00*

U.S. Cl. 160—335 **14 Claims**

1. An adjustable curtain frame adapted to be mounted in windows of various sizes and with the adjustable curtain frame comprising a peripheral frame having four tubular, L-shaped corner members each having a horizontal portion and a vertical portion, two upright members each having opposite ends telescopically mounted to said vertical portions of said corner members, two cross members having opposite ends telescopically mounted to said horizontal portions of said corner members, and a telescoping curtain rod mounted to two of said corner members substantially parallel and adjacent one of said cross members; and hinge means



for hingedly mounting said peripheral frame to a window, whereby as the vertical members and cross members are adjusted in the corner members to fit a window of a selected size the curtain rod is self adjusted in length without altering its spacing from the adjacent cross member.

5,547,011

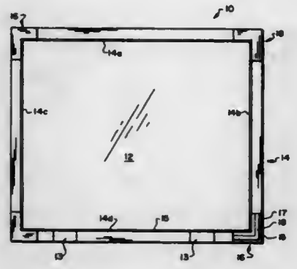
WINDOW SCREEN APPARATUS

Cynthia Dotson, and Danny George, both of Pennsboro, W. Va., assignors to SLI, Inc., Wilmington, Del.

Filed Jan. 25, 1994, Ser. No. 186,686

Int. Cl.[6] A47G *5/00*; E06B *9/24*

U.S. Cl. 160—381 **34 Claims**



1. A window screen frame for supporting screening, the frame adapted to ride within tracks of a window jamb said window screen frame including:

A. four frame segments forming a top, a bottom, a first side and a second side of the frame;

B. corner keys interconnecting the frame segments and forming frame corners, at least one of the corner keys including a raised stop having first and second opposing side surfaces connected by an outer frame surface, the stop being positioned a predetermined distance from an outer edge of the key and substantially parallel to the track in which the frame moves, wherein one of said opposing sides of the stop prevents the frame from penetrating beyond the predetermined distance into the tracks.

5,547,012

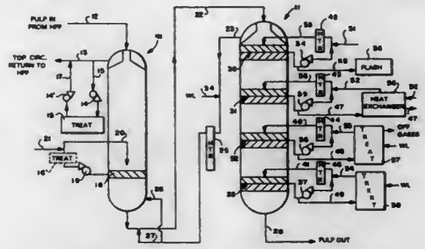
DISSOLVED SOLIDS CONTROL IN PULP PRODUCTION

Bruno Marcoccia, South Glens Falls; J. Robert Prough, Queensbury; Richard O. Laakso, Queensbury; Joseph R. Phillips, Queensbury, all of N.Y.; Rolf C. Ryham, Roswell, Ga.; Jan T. Richardsen, Glens Falls, and R. Fred Chasse, Queensbury, both of N.Y., assignors to Kamyr, Inc., Glens Falls, N.Y.

Continuation-in-part of Ser. No. 56,211, May 4, 1993, Pat. No. 5,489,363. This application Sep. 28, 1993, Ser. No. 127,548

Int. Cl.[6] D21C *7/14*

U.S. Cl. 162—42 **31 Claims**



1. A method of kraft cooking comminuted cellulose fibrous material at a rate of at least 8 tons of pulp per day in a single batch digester comprising the steps of (a) cooking the comminuted cellulosic fibrous material to produce pulp and liquor surrounding the pulp which contains effective dissolved lignin concentration and (b) maintaining the effective dissolved lignin concentration at about 50 g/l or less throughout substantially the entire kraft cook and wherein the effective dissolved lignin concentration is obtained by continuously passing substantially dissolved organic material-free cooking liquor into and out of contact with the cellulose material until completion of the kraft cooking thereof.

5,547,013

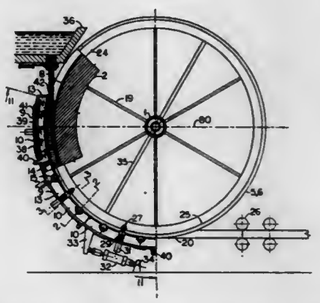
ROTARY WHEEL CASTING MACHINE

William L. Sherwood, 7249 Cypress Street, Vancouver, B.C. V6P 5M2, Canada

Continuation-in-part of Ser. No. 308,539, Sep. 21, 1994, abandoned, which is a continuation-in-part of Ser. No. 33,605, Mar. 17, 1993, abandoned. This application Apr. 10, 1995, Ser. No. 419,114

Int. Cl.[6] B22D *11/06*

U.S. Cl. 164—416 **31 Claims**



1. A continuous casting machine comprising a rotary wheel incorporating a circumferential inner-radius mold wall with two parallel annular inner mold-wall edges, integral with the wheel rim;

a non-rotating casting-mold segment incorporating an outer-radius mold wall having two outer mold-wall edges which are

parallel to, and interface with, said inner mold-wall edges, forming a casting mold envelope between said-inner and outer radius mold walls;

molten metal pouring means adapted for introducing molten metal proximate the entry end of said mold envelope to pass through in the casting direction of circular wheel rotation and at least partially solidify a cast metal section for exit from the exit end of said mold envelope;

external support means of said non-rotating segment adapted to maintain it in a substantially fixed angular position in relation to said wheel;

reciprocal oscillation means connected to said non-rotating casting-mold segment adapted to effect relative annular oscillation movement of said outer radius mold wall alternately in said casting and

reverse directions in relation to said support means and thereby between said outer-radius mold wall and said solidifying cast metal section, in combination with:

at least one annular outer-radius mold-wall edge guide track integral with said rotary wheel proximate the wheel rim and which is parallel to said parallel mold-wall edges; and

at least one guide track follower fixed to said non-rotating casting segment which is maintained in contact with said guide track during rotation of said wheel, adapted to maintain a substantially constant dimensional clearance between said inner-radius and outer-radius mold-wall edges.

5,547,014

ASSEMBLY OF MOLD AND IMMERSION NOZZLE WITH IMPROVED DISCHARGE CHANNEL

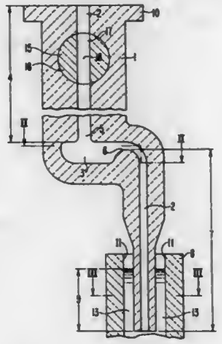
Raimund Brückner, Niedernhausen, and José Gimpera, Wiesbaden, both of, Germany, assignors to Didier-Werke AG, Wiesbaden, Germany

Filed May 31, 1994, Ser. No. 251,200

Claims priority, application Germany, Jun. 17, 1993, 43 19 966.6

Int. Cl.[6] B22D *11/04;11/10;41/50*

U.S. Cl. 164—437 **46 Claims**



1. In an assembly of a mold with a mold cavity having a long, thin transverse cross-sectional configuration, and an immersion nozzle for discharging material into said mold cavity and including an immersion zone to be immersed in material in said mold cavity, said nozzle having therethrough a discharge channel including an inlet region and an outlet region, the improvement comprising:

said discharge channel further including, between said inlet region and said outlet region and at a location in the vicinity of said immersion zone, a pool-forming chamber;

a portion of said outlet region of said discharge channel extending through said immersion zone being widened and having a configuration approximating said cross-sectional configuration of said mold cavity;

said outlet region having, from said chamber in a direction of material flow, a configuration approximately corresponding to said configuration through said immersion zone; and

a device to regulate the flow of material through said discharge channel.

5,547,015

METHOD AND APPARATUS FOR MANUFACTURING MOULDS OR MOULD PARTS BY BLOWING PARTICULATE MATERIAL INTO A MOULD CHAMBER

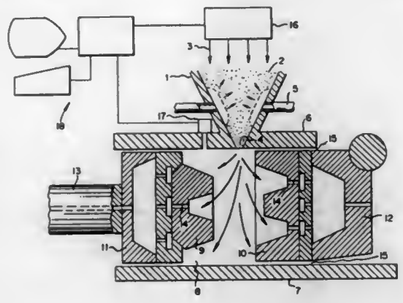
Jan B. Johansen, Humlebæk, Denmark, assignor to Dansk Industri Syndikat A/S, Herlev, Denmark

Filed Jun. 28, 1994, Ser. No. 266,548

Claims priority, application Denmark, Jul. 1, 1993, 0781/93

Int. Cl.[6] B22C *11/10;15/24;15/28*

U.S. Cl. 164—456 **9 Claims**



1. A method of manufacturing moulds within a mould chamber comprising the steps of:

continuously blowing particulate material into a mould chamber wherein said blowing of the particulate material into the mould chamber creates a pressure within the mould chamber which increases to a first maximum pressure and then decreases:

monitoring said pressure within the mould chamber; and

terminating said blowing of the particulate material after said pressure within the mould chamber reaches said first maximum pressure.

6. An apparatus for manufacturing moulds comprising;

means defining a mould chamber;

blowing-in means for continuously blowing particulate material into said mould chamber wherein said blowing creates a pressure within the mould chamber which increases to a first maximum pressure and then decreases;

pressure sensing means for sensing said pressure in said mould chamber; and

control means for operatively controlling said blowing-in means, said control means operatively connected to said pressure sensing means wherein said control means terminates said blowing after said pressure sensing means senses that said pressure in the mould chamber has reached said first maximum pressure.

5,547,016

METHOD FOR HEATING A GAS IN A REGENERATOR

Hans-Georg Fassbinder, Sulzbach-Rosenberg, Germany, assignor to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation des Procedes Georges Claude, Paris Cedex, France

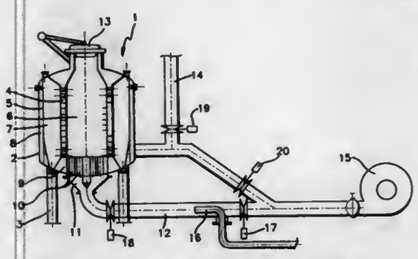
PCT No. PCT/FR93/01025, § 371 Date Apr. 28, 1994, § 102(e) Date Apr. 28, 1994, PCT Pub. No. WO94/10519, PCT Pub. Date May 11, 1994

PCT Filed Oct. 19, 1993, Ser. No. 232,064

Claims priority, application Germany, Oct. 29, 1992, 42 36 619.4

Int. Cl.[6] F23L *15/02*

U.S. Cl. 165—9.4 **4 Claims**



1. Method for heating a gas and reducing stack effects in a regenerator with a heat accumulation mass consisting of a loose bulk material arranged in a ring between an inner cylindrical grid and an outer coaxial cylindrical grid, a hot collection chamber, surrounded by the inner grid, for hot gases and a cold collection chamber, enclosed between the outer grid and an external wall of the regenerator, for cold gases, comprising:

a) during a heating phase, conveying a heating gas from the hot collection chamber to the cold collection chamber, through the heat accumulation mass;

b) during a blowing phase, conveying said gas to be heated from the cold collection chamber to the hot collection chamber, through the heat accumulation mass;

wherein ΔP hot$-\Delta P$ cold$\geq 5\ \rho gH$ where

ΔP hot represents the pressure drop of the regenerator at the end of the heating phase,

ΔP cold represents the pressure drop of the regenerator at the start of the heating phase,

H is the height of the regenerator,

ρ is the density of said gas to be heated at 20° C.,

g is the acceleration due to gravity, and wherein a flow rate of the said gas to be heated during the heating phase is at least equal to 300 $m^3N/h.m^2$ of surface area of the inner grid at standard pressure.

5,547,017

AIR DISTRIBUTION FAN RECYCLING CONTROL

Armin Rudd, Cocoa, Fla., assignor to University of Central Florida, Orlando, Fla.

Filed Jan. 5, 1995, Ser. No. 369,180

Int. Cl.[6] F24F *7/00;1/00*

U.S. Cl. 165—244 **18 Claims**

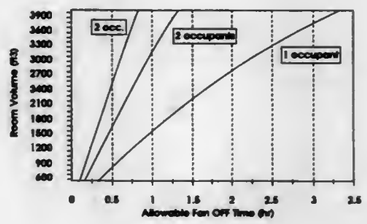
1. A fan recycling control apparatus for a central air conditioning(CAC) system comprising:

a circulating fan;

a central air conditioning system with ducts to distribute cooled and heated conditioned air throughout a building;

a thermostat for activating and deactivating both the central air conditioning system and the circulating fan; and

a recycle control for periodically activating and deactivating only the circulating fan after a preselected time period, since the central air conditioning system or the circulating fan have been deactivated.



5,547,018

AIR CONDITIONER

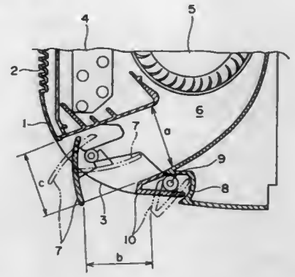
Tomomi Takahashi; Masahisa Takata; Masayoshi Kogure; Ritsushi Taira, and Hiroyuki Hamano, all of Kawasaki, Japan, assignors to Fujitsu General Limited, Kawasaki, Japan

Filed Dec. 7, 1994, Ser. No. 351,590

Claims priority, application Japan, Dec. 10, 1993, 5-310068; Nov. 10, 1994, 6-301407

Int. Cl.[6] F28F *13/12;27/00*

U.S. Cl. 165—267 **19 Claims**



1. An air conditioner to be installed in a room, comprising,

a housing having upper and lower parts,

an air inlet provided at the upper part of said housing,

an air outlet provided at the lower part of said housing and having an opening with an inner wall,

an air passage provided in said housing so as to connect said air inlet and said air outlet to each other,

heat exchanging means and air blowing means disposed in said air passage,

a wind direction plate provided inside the opening of said air outlet in order to change a direction of air blown out of said air outlet, and

an air quantity adjusting plate provided at an end of said opening of said air outlet in order to change an area of said opening of said air outlet, said air quantity adjusting plate having a first face contiguous to the inner wall of said opening of said air outlet and a second face contiguous to an outer surface of said housing.

5,547,019

THERMOELECTRIC INTERCOOLER COOLING TURBOCHARGED AIR

Robert S. Iaculle, 16906-13th N.W., Seattle, Wash.

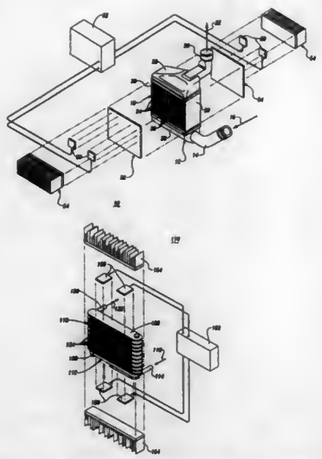
Filed Oct. 28, 1994, Ser. No. 331,019

Int. Cl.[6] F02B *29/4*

U.S. Cl. 165—51 **7 Claims**

1. An active intercooler for heating or cooling the gazes exiting a compression stage of a turbocharger, the intercooler comprising:

a chamber for receiving the gases exiting the compression stage of the turbocharger, the interior of the chamber having a



plurality of tubes through which the gases flow, and an antifreeze filling the chamber and surrounding the tubes;

a thermoelectric heat pump thermally coupled to the chamber; and

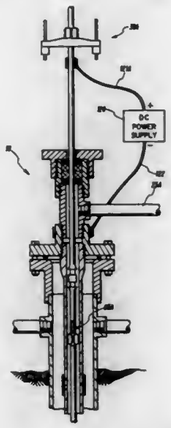
temperature control means for controlling the current flow through the thermoelectric heat pump to control the temperature of the chamber and, thus, the temperature of the gases flowing through the chamber.

5,547,020

CORROSION CONTROL WELL INSTALLATION

Donald E. Sable, Dallas, and Donald E. Sable, II, Denton, both of Tex., assignors to McClung-Sable Partnership, Dallas, Tex.

Filed Mar. 6, 1995, Ser. No. 398,530
Int. Cl.[6] E21B *41/02*
U.S. Cl. 166—65.1 **16 Claims**



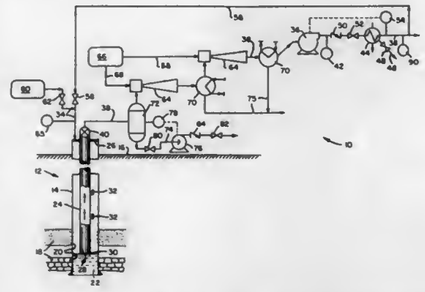
1. In a well tool installation having well tubing through which fluids are pumped to the surfaces by means of a string of rods which extends through the tubing to a submerged pump at the lower end of the tubing; a plurality of longitudinally spaced anode assemblies rigidly mounted on preselected rods of the string located in zones of corrosive activity of the fluids being pumped, said anode assemblies comprising a metal anode in electrical contact with the rod on which it is mounted; and means securing said anode to the rod on which said rod is mounted, wherein each of said anode assemblies comprises a rigid electrically nonconductive tubular body rigid with the rod, said anode being mounted on said tubular body and having a portion extending beyond said body and in electrically conducting engagement with the rod.

5,547,021

METHOD AND APPARATUS FOR FLUID PRODUCTION FROM A WELLBORE

Dennis P. Raden, P.O. Box 101, McNeil, Tex. 78651

Filed May 2, 1995, Ser. No. 433,210
Int. Cl.[6] E21B *34/06;43/40;47/06*
U.S. Cl. 166—250.07 **14 Claims**



1. An apparatus for fluid production from an oil bearing reservoir in the earth, comprising:

a tubular well casing extending into the earth, said well casing including a lower end disposed below the top of the oil bearing reservoir and an upper end remote therefrom, said well casing including a plurality of perforations therethrough communicating with the oil bearing reservoir so that liquid flows into said well casing through said plurality of perforations, said well casing defining a sump therein at said lower end of said well casing for collecting oil bearing liquid therein;

a sealed wellhead on said upper end of said well casing;

a string of tubing depending from said wellhead in said well casing, said string of tubing including a lower end defining an inlet opening positioned in said sump, said string of tubing further including a plurality of downwardly projecting fins about said inlet opening; and,

a vacuum pump having a pump inlet and a pump outlet, said pump inlet communicating with the inside of said string of tubing so as to impose a vacuum on the oil bearing liquid collected in said sump and assist in drawing the oil bearing liquid collected in said sump into said inlet opening.

13. A method for simultaneous liquid and gas production from a wellbore, comprising the steps of:

placing a string of tubing in the wellbore having an inlet opening partially submerged in the liquid in the wellbore;

evacuating liquid and gas from said string of tubing to establish subatmospheric pressure therein;

separating evacuated liquid from evacuated gas; compressing the evacuated gas; and,

supplying to the wellbore the compressed gas to impel the liquid in the wellbore into said inlet opening in said string of tubing.

5,547,022

HEAVY OIL WELL STIMULATION COMPOSITION AND PROCESS

Max S. Juprasert, Bakersfield, and Bruce W. Davis, Fullerton, both of Calif., assignors to Chevron U.S.A. Inc., Richmond, Calif.

Filed May 3, 1995, Ser. No. 433,731
Int. Cl.[6] E21B *43/24;43/25*
U.S. Cl. 166—263 **49 Claims**

1. A method of treating a subterranean formation surrounding a wellbore of a production well to increase the production of crude oil therefrom comprising contacting said formation with a well treatment concentrate comprising effective amounts of:

a defoaming agent suitable for extinguishing foams in oil-brine-gas systems;

a demulsifying agent, suitable for demulsifying oil external emulsions, that comprises a first surface active agent selected from the group consisting of first nonionic surface active agents, first anionic surface active agents and mixtures thereof; and

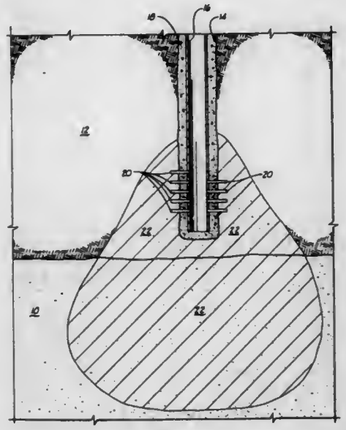
optionally, a stabilizing agent suitable for stabilizing said concentrate as an aqueous emulsion.

5,547,023

SAND CONTROL WELL COMPLETION METHODS FOR POORLY CONSOLIDATED FORMATIONS

Billy W. McDaniel, and Hazim H. Abass, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Continuation-in-part of Ser. No. 310,174, Sep. 21, 1994, Pat. No. 5,431,225. This application May 25, 1995, Ser. No. 451,080
Int. Cl.[6] E21B *43/267;43/27*
U.S. Cl. 166—280 **20 Claims**



1. A method of completing a well in a desired producing formation which has stability problems and which is bounded on at least one side by a consolidated formation which does not have well bore stability problems comprising the steps of:

(a) drilling a well bore into said consolidated formation adjacent to said desired producing formation;

(b) creating one or more flow channels in said bounding formation which communicates with said well bore and extends into said desired producing formation, wherein said flow channel is created by fluid jetting at least one hole or slot from said well bore into said desired producing formation; and

(c) producing fluids from said desired producing formation into said well bore by way of said flow channel.

5,547,024

METHOD OF USING CONSTRUCTION GRADE CEMENT IN OIL AND GAS WELLS

Gino F. Di Lullo Arias, Singapore, Singapore, assignor to BJ Services Co, Houston, Tex.

Filed Dec. 6, 1994, Ser. No. 349,990
Int. Cl.[6] E21B *33/13*
U.S. Cl. 166—292 **20 Claims**

1. A method of cementing a wellbore of an oil or gas well comprising the steps of:

forming a pumpable slurry which includes water and a cementitious component, the cementitious component consisting essentially of a blend of construction grade cement and granulated blast furnace slag;

pumping the slurry to a selected location within the wellbore; and then

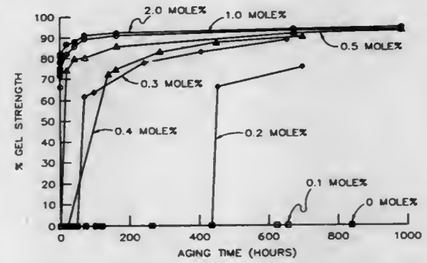
allowing the slurry to solidify within the wellbore.

5,547,025

PROCESS FOR TREATING OIL-BEARING FORMATION

Iqbal Ahmed, Bartlesville, and Ahmad Moradi-Araghi, Tulsa, both of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 14, 1995, Ser. No. 422,394
Int. Cl.[6] E21B *33/138;43/22*
U.S. Cl. 166—295 **22 Claims**



1. A process comprising injecting a gelling composition into a subterranean formation wherein said composition comprises a carboxylate-containing polymer, a crosslinking agent and a liquid wherein said polymer forms gels, in the presence of said crosslinking agent, when injected into a subterranean formation; said crosslinking agent is a multivalent metallic compound whose metal is selected from the group consisting of Zr, Ti, Fe, Al, and combinations of any two or more thereof, and does not contain a gelation-delaying agent; and said polymer has an effective molecular weight sufficient to effect the delaying of gelation of said composition.

5,547,026

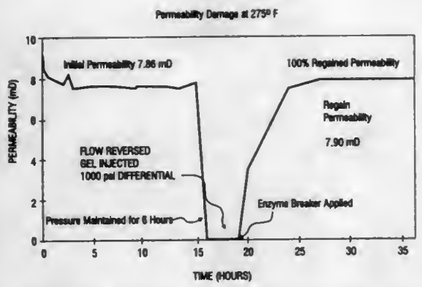
CROSSLINKED GUAR BASED BLOCKING GEL SYSTEM FOR USE AT LOW TO HIGH TEMPERATURES

Harold D. Brannon, Spring; Allan R. Rickards, Pinehurst; Brian B. Beall, Houston, and Marshall G. Ault, Spring, all of Tex., assignors to BJ Services Company, Tomball, Tex.

Filed Apr. 19, 1995, Ser. No. 424,832
Int. Cl.[6] E21B *33/138;43/25*
U.S. Cl. 166—295 **12 Claims**

1. A method of forming a blocking gel for use in well bore operations, the method comprising the steps of:

providing a gelled, aqueous base fluid containing up to 100 pounds per 1000 gallons of a hydrated polymer selected from the group consisting of guar and guar derivatives and pumping the gelled, aqueous base fluid into a subterranean formation to reach a desired treatment interval;



adding to the gelled aqueous base fluid immediately prior to pumping from about 20 to about 250 pounds per 1000 gallons of aqueous base fluid of said selected polymer in an unhydrated, particulate form; and

further comprising the step of adding to the aqueous base fluid a suitable crosslinking agent for crosslinking the hydratable polymer to form a polymer gel.

5,547,027

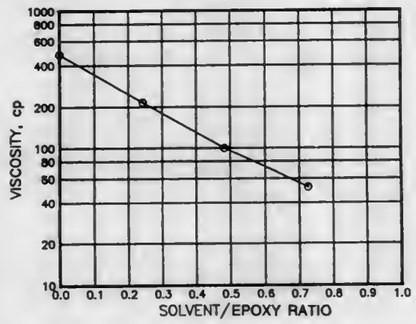
LOW TEMPERATURE, LOW RHEOLOGY SYNTHETIC CEMENT

Keng S. Chan, Missouri City, and Thomas J. Griffin, Jr., Richmond, both of Tex., assignors to Dowell, a division of Schlumberger Technology Corporation, Houston, Tex.

Division of Ser. No. 275,203, Jul. 14, 1994, abandoned. This application May 24, 1995, Ser. No. 449,640

Int. Cl.[6] E21B *33/14*

U.S. Cl. 166—295 **2 Claims**



1. A method of cementing a well penetrating a subterranean formation comprising the steps of:

(a) providing a low-temperature, low-rheology cement composition comprising

(i) an epoxy resin;

(ii) a resin catalyst;

(iii) a hardener; and

(iv) an aromatic solvent in a ratio of 10 to 100% by weight of the epoxy resin; and

(b) pumping the cement composition under pressure into the well, the well having a casing along its length, their being an annular space between the casing and the wellbore, wherein the cement composition is of a sufficiently low viscosity that it is capable of being pumped into the subterranean formation at temperatures at or below 20 degrees C;

(c) further wherein the step of pumping comprises pumping the cement composition into an annular space between the casing and the wellbore.

5,547,028

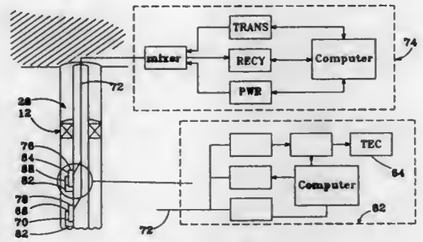
DOWNHOLE SYSTEM FOR EXTENDING THE LIFE SPAN OF ELECTRONIC COMPONENTS

Steve Owens, Katy, and Brett Bouldin, Pearland, both of Tex., assignors to PES, Inc., The Woodlands, Tex.

Filed Sep. 12, 1994, Ser. No. 304,698

Int. Cl.[6] E21B *43/00*

U.S. Cl. 166—302 **46 Claims**



1. An apparatus engaged with an electric power source for extending the life span of an electronic component in a well, comprising:

a connecter for engagement with the electric power source;

a converter attached to said connecter for transforming power from the electric power source into thermal energy to create a cold surface for cooling the electronic component, wherein said converter further has a hot surface for dissipating thermal energy away from said converter.

5,547,029

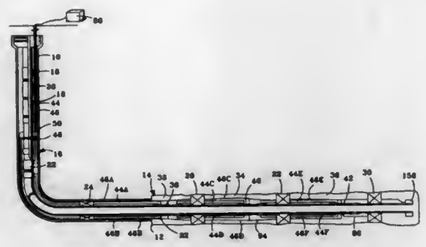
SURFACE CONTROLLED RESERVOIR ANALYSIS AND MANAGEMENT SYSTEM

Richard P. Rubbo, Bait Al-Na-Ba, Den of Cults, Aberdeen AB1 9NN, Scotland, United Kingdom; Brett W. Boundin, 4012 Cartagena, Pearland, Tex. 77581, and Steven C. Owens, 6019 Fernhollow Ct., Katy, Tex. 77449

Filed Sep. 27, 1994, Ser. No. 315,122

Int. Cl.[6] E21B *43/00*

U.S. Cl. 166—375 **37 Claims**



1. A well control system for communication between the surface of a well and a downhole well tool, comprising:

a surface controller at the well surface;

a hydraulic line engaged with the tool for providing pressurized hydraulic fluid to operate the tool;

a control means engaged with said hydraulic line and the well tool for selectively operating the well tool by discharging hydraulic fluid from the hydraulic line; and

a conductor for transmitting electric signals between said surface controller and said control means.

5,547,030

BRUSHING APPARATUS

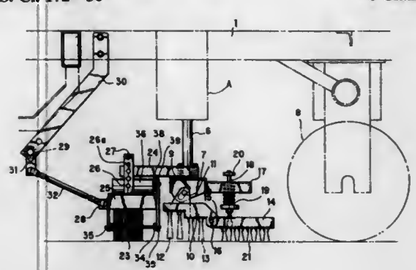
Kazuya Takayama, and Hidehiko Takayama, both of 860-16, Kamisakunobe, Takatsu-ku, Kawasaki, Kanagawa 213, Japan

Filed Jan. 19, 1995, Ser. No. 375,358

Claims priority, application Japan, Jul. 29, 1994, 6-197667; Nov. 18, 1994, 6-309646

Int. Cl.[6] A01B *45/00*

U.S. Cl. 172—30 **6 Claims**



1. A brushing apparatus comprising:

a leveling vehicle;

a brush frame fixedly secured to said vehicle, said brush frame having a brush containing bristles having fixed ends mounted to an underside of said brush frame and free ends projecting therebelow;

an oscillating frame extending below the brush frame and having means for separating said brush into plural bunches of bristles in a direction parallel to a traveling direction of the leveling vehicle; and

driving means for oscillating the oscillating frame in a direction perpendicular to the traveling direction of the leveling vehicle, whereby said bristles are moved transversely from side-to-side with respect to said vehicle traveling direction.

5,547,031

ORIENTATION CONTROL MECHANISM

Tommy M. Warren, Coweta, and Houston B. Mount, Tulsa, both of Okla., assignors to Amoco Corporation, Chicago, Ill.

Filed Feb. 24, 1995, Ser. No. 394,134

Int. Cl.[6] E21B *7/06*

U.S. Cl. 175—61 **20 Claims**

6. A method for orienting an eccentric sleeve of a curve drilling apparatus, comprising the steps of:

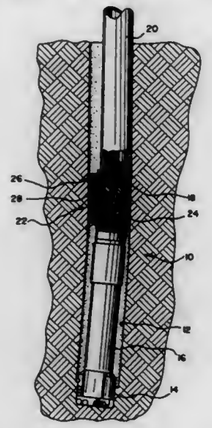
a) mounting, within a cavity located within a sleeve, a blade-like member having a distal generally straight edge and having a proximate end surface, said cavity having an aperture therein for receiving a source of drilling fluid, said cavity and said proximate end surface defining a chamber, said edge lying in a plane that is at an angle to the longitudinal axis of said sleeve such that, when said edge engages the borehole walls and said sleeve is rotated in the clockwise direction as viewed from the up-hole end of said sleeve, said sleeve is driven upwardly in the borehole, said cavity sealingly carrying said proximate end surface of said blade-like member within said cavity for movement towards and away from said longitudinal axis in response to the introduction of drilling fluid into said cavity and against said end surface of said blade-like member;

b) mounting a drill pipe mandrel within said sleeve, said drill pipe mandrel having two opposite ends, having an interior between said ends and having at least one of said ends adapted to be connected to a string of drill pipe having drilling fluid supplied thereto;

c) using a drilling fluid pressure responsive valve that is carried by said mandrel to duct drilling fluid from said interior of said mandrel through said aperture and into said cavity to move said blade-like member into engaging contact with the walls of a curved borehole;

d) lowering said string of drill pipe into the borehole to induce said sleeve to rotate counter-clockwise; and

e) moving said blade-like member out of engaging contact with said wall of borehole after said sleeve has moved downwardly within said borehole by a pre-determined distance.



5,547,032

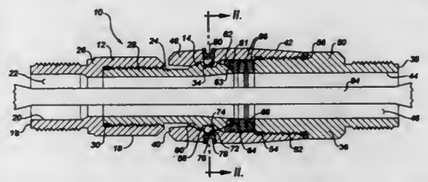
APPARATUS FOR DRILLING CURVED SECTIONS OF WELL HOLES

William R. Wenzel, #4 Quarry Crescent, Twin Parks, Edmonton, Alberta, Canada

Filed Jan. 9, 1995, Ser. No. 370,163

Int. Cl.[6] E21B *17/20*

U.S. Cl. 175—73 **3 Claims**



1. An apparatus for drilling curved sections of well holes, comprising:

a first tubular member having a bulbous first end, a second end, an exterior surface and an interior surface defining an interior bore;

a plurality of pockets form a first annular ring in the exterior surface at the bulbous first end of the first tubular member;

a second tubular member having a first end, a second end, an exterior surface and an interior surface defining an interior bore, a one piece socket being integrally formed to accommodate the bulbous first end of the first tubular member by arcuate shoulders protruding from the interior surface at the second end of the second tubular member such that the bulbous first end of the first tubular member cannot be pulled past the arcuate shoulders of the socket, the second end of the first tubular member telescopically extending through the interior bore of the second tubular member until such second end of the first tubular member extends from the first end of the second tubular member with the bulbous first end engaging the socket, the bulbous first end of the first tubular member being capable of omnidirectional pivotal movement within the socket;

a plurality of pockets disposed within the socket form a second annular ring in the interior surface at the second end of the second tubular member, the second annular ring having the same number of pockets as the first annular ring; and

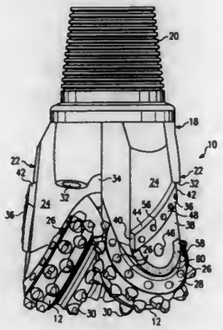
a ball disposed in each of the pockets of the first annular ring, each ball extending from the pockets of the first annular ring into one of the pockets of the second annular ring thereby coupling the first tubular member and the second tubular member in rotation.

5,547,033

ROTARY CONE DRILL BIT AND METHOD FOR ENHANCED LIFTING OF FLUIDS AND CUTTINGS

Harry M. Campos, Jr., Grand Prairie, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Dec. 7, 1994, Ser. No. 351,019
Int. Cl.[6] E21B *10/08*
U.S. Cl. 175—331 **29 Claims**



23. A method for enhanced lifting of fluids and cuttings from a borehole, comprising the steps of:

providing a rotary cone drill bit having a plurality of support arms extending from a bit body, a cutter cone projecting generally downwardly and inwardly with respect to each support arm;

forming a surface on an exterior of each support arm, each of said surfaces inclined at an angle from a leading edge to a trailing edge of its respective support arm;

inserting the rotary cone rock bit into a borehole;

directing drilling fluid from the rotary cone rock bit toward a bottom of the borehole; and

rotating the rotary cone rock bit within the borehole such that the cutter cones rotate on the support arms so as to form cuttings and the inclined surfaces on the support arms cooperate with each other to direct the cuttings and fluid upwardly in the borehole.

5,547,034

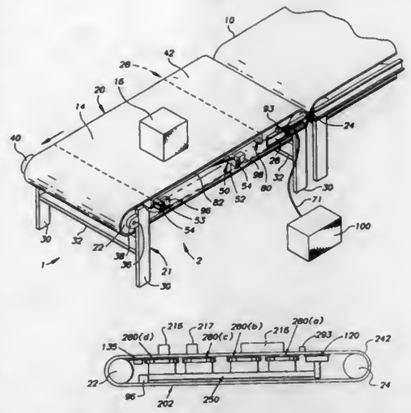
CONVEYOR FRICTION SCALE

Albert Wurz, Doylestown; William Scott, Sellersville, and Richard Skokowski, Green Lane, all of Pa., assignors to Accu-Sort Systems, Inc., Telford, Pa.

Filed Jan. 10, 1994, Ser. No. 179,422
Int. Cl.[6] G01G *19/22;13/02;* **G01N** *3/56*
U.S. Cl. 177—25.13 **6 Claims**

1. An improved combination of a conveyor scale assembly and a conveyor for weighing an article on a moving conveyor belt comprising:

support means which contacts the underside of the moving conveyor belt and generates a friction force;



sensor means attached to the support means which continuously measures the friction force and transmits data representing the measured friction force to a logic means; and

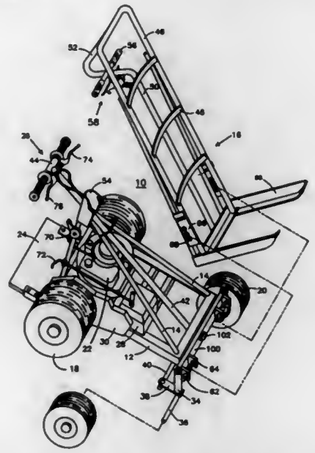
logic means for receiving and processing the representative data to provide a weight for the article on the moving conveyor belt.

5,547,035

POWERED HAND TRUCK

Blane P. Berry, 108 Glen Rd. S., Rome, N.Y. 13440

Filed Jan. 25, 1995, Ser. No. 377,969
Int. Cl.[6] B62D *51/04;51/02;* **B60G** *23/00*
U.S. Cl. 180—19.2 **13 Claims**



1. A powered hand truck for transporting tree limbs, logs and other bulky, heavy loads over rough and inclined terrain which comprises in combination:

a wheeled cart member having a generally rectangular frame and first and second pairs of wheels supporting the front and rear ends respectively of said cart member frame;

an axle bar member pivotally mounted on the front end of said frame for movement about an horizontal axis;

said first pair of wheels being individually mounted at the opposite ends of said axle bar for rotation about an horizontal axis and for pivotal steering motion about a vertical axis to facilitate turning of said cart member;

said second pair of wheels serving as drive wheels for said cart member;

motive power means operatively connected to said second pair of wheels;

steering handle means rotatably mounted on said frame and operatively connected to said first pair of wheels for steering said hand truck;

load carrying means having an upwardly inclined mast section and a fork portion mounted at the lower end of said mast section so as to extend substantially perpendicular thereto;

said load carrying means being pivotally mounted on said axle bar adjacent the junction of said mast section and fork portion for pivotable movement from a load carrying position to a load/unload position and side to side pivotal movement with said axle bar; and

control means mounted on said frame for controlling the operation of said motive power means and cart member;

whereby said first pair of wheels and said load carrying means can pivot from side to side so as to clear the terrain when said hand truck is maneuvered over rough and inclined terrain.

5,547,036

BATTERY SUPPORT DEVICE

Sadanand Gawaskar, Farmington Hills; Frank J. Norris, Sterling Heights; Joseph Vitous, Clarkston, and Kevin L. Young, New Baltimore, all of Mich., assignors to Chrysler Corporation

Filed Sep. 26, 1994, Ser. No. 312,245
Int. Cl.[6] B60R *16/04*
U.S. Cl. 180—68.5 **19 Claims**

1. A battery support device for supporting a battery in an automobile, the automobile having an engine compartment, the engine compartment having a side and a side rail, the side rail having an upper surface, the upper surface having an outer side toward the side of the engine compartment, the engine compartment further having a vertical wall extending upwardly from the outer side of the upper surface of the side rail, the battery support device comprising:

a one-piece support tray for supporting a battery, the support tray being attachable to the side rail of the automobile so that the battery is cantilevered off the side rail, the support tray having

a base having an outer edge for placement adjacent the side rail;

a side wall extending upwardly from the outer edge of the base; and

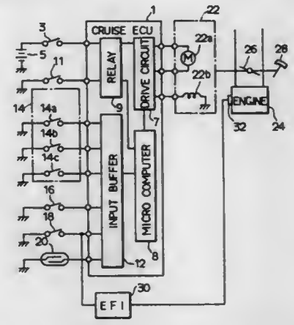
an integral outwardly-extending appendage on the side wall adapted to be attached to the upper surface of the side rail of the automobile.

5,547,037

CONSTANT-SPEED CRUISE CONTROL DEVICE FOR A VEHICLE

Yoshinari Torii, Gamagori, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed May 23, 1995, Ser. No. 447,815
Claims priority, application Japan, May 23, 1994, 6-108656
Int. Cl.[6] B60K *31/02*
U.S. Cl. 180—178 **18 Claims**



1. A constant-speed cruise control device for a vehicle provided with a fuel cutoff control device to stop fuel supply to an internal combustion engine in a case where a fuel cutoff condition has been obtained, said constant-speed cruise control device comprising:

vehicle speed detecting means for detecting a vehicle speed of a vehicle;

drive power regulating means, connected to said vehicle speed detecting means, for regulating drive power of said internal combustion engine to cause vehicle speed to match a target cruising speed and a comparative speed based on the vehicle speed detected by said vehicle speed detecting means during constant-speed cruise control;

fuel cutoff condition detecting means for detecting when at least one of a fuel cutoff condition and a condition wherein a possibility of fuel cutoff is strong has been obtained, said fuel cutoff condition detecting means being a switch, said switch assuming a first state under a condition when the possibility of fuel cutoff is strong and a condition when fuel cutoff occurs, said switch assuming a second state when the possibility of fuel cutoff is weak; and

increasing means, connected to said fuel cutoff condition detecting means and responsive thereto, for increasing drive power of said internal combustion engine to avoid execution of said fuel cutoff control by said fuel cutoff control device when, during constant-speed cruise control, said switch assumes said first state.

5,547,038

WHEELED CHASSIS HAVING INDEPENDENTLY PIVOTABLE DRIVEWHEELS FOR OMNIDIRECTIONAL MOTION

Albert Madwed, 110 Wedgewood Dr., Easton, Conn. 06612

Continuation of Ser. No. 739,329, Aug. 1, 1991, abandoned. This application Sep. 2, 1993, Ser. No. 116,227
Int. Cl.[6] B60K *1/02*
U.S. Cl. 180—253 **32 Claims**

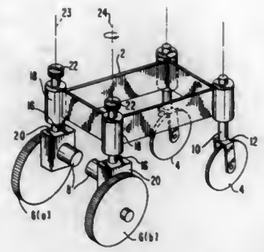
1. A wheeled chassis having independently pivotable drivewheels for omnidirectional motion, comprising:

a frame;

first and second drivewheels, each said drivewheel being connected by a kingpin to said frame;

at least one free-spinning wheel rotatably attached to said frame;

first and second pivoting means for independent and unrestricted 360° pivoting of each respective kingpin of each respective



drivewheel about a substantially vertical axis, said first and second pivoting means cooperatively determining a direction of travel of said chassis;

first and second drive means each operatively connected to a respective drivewheel for moving the chassis in said determined direction of travel;

a control system operatively connected to said pivoting means and said drive means for controlling and changing said direction of travel and for setting a speed of travel of said chassis; and

means for sensing an angular displacement of each of said drivewheels with respect to its respective vertical axis;

wherein said sensing means comprises, for each of said drivewheels, a sloped cam and a microswitch, and wherein said sensing means has a first state in which said switch is engaged and a second state in which said switch is disengaged, and the shift between said first and second state correlates with a zero position for said drivewheel.

5,547,039

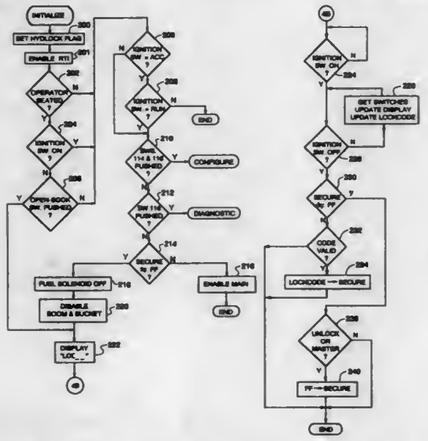
SECURITY AND SAFETY INTERLOCKS FOR A LOADER

John G. Berger, Landisville; Robert E. Long, Lancaster, and Darryl T. Leeds, Wrightsville, all of Pa., assignors to New Holland North America, Inc., New Holland, Pa.

Filed Nov. 25, 1994, Ser. No. 348,910

Int. Cl.[6] B60R *25/00*

U.S. Cl. 180—287 **12 Claims**



1. A loader having a boom and bucket, hydraulic controls for controlling movement of said boom and bucket, and an interlock system, said interlock system comprising:

a programmable controller including a non-volatile memory having a storage location therein for selectively receiving and storing a locking security code or an unlock security code;

switch means for entering an enterable security code into said programmable controller, said programmable controller including first means responsive to said switch means and to a locking security code in said storage location for replacing said locking security code in said storage location with an unlock security code when said enterable security code matches said locking security code in said storage location, and second means responsive to said switch means and to said unlock security code in said storage location for storing said enterable security code in said storage location as a locking security code when said storage location stores said unlock security code at a time when said enterable security code is entered into the programmable controller; and,

control means for inhibiting said hydraulic controls to prevent movement of said boom and bucket as long as said locking security code is stored in said storage location, said control means enabling said hydraulic controls to permit movement of said boom and bucket when said unlock security code is in said storage location.

5,547,040

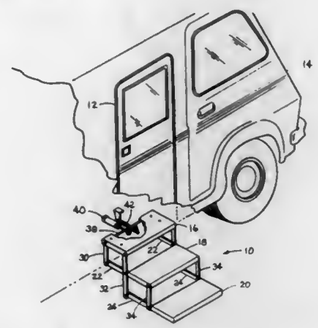
AUTOMATIC STEP FOR RECREATIONAL VEHICLES

Paul E. Hanser; Daniel J. Boddicker, both of Tipton, Iowa, and John F. Blake, Preemption, Ill., assignors to HWH Corporation, Moscow, Iowa

Continuation of Ser. No. 267,338, Jun. 28, 1994, abandoned. This application Sep. 22, 1995, Ser. No. 532,296

Int. Cl.[6] B60R *3/02*

U.S. Cl. 182—88 **3 Claims**



1. An automatic step extension and retraction system for recreational vehicles, comprising:

(a) an extendable and retractable entryway step;

(b) an extension system comprising a control switch operably connected to and activating an extend relay, said extend relay operably connected to a hydraulic pump and a pump solenoid which provide hydraulic fluid to a hydraulic extension cylinder affixed between said vehicle and said step, and further including a pressure switch engaged and actuated by the full extension of said step and operably connected to said extend relay whereby said extend relay is deactivated when said step is extended; and

(c) a retraction system comprising said control switch operably connected to and activating a retract relay, said retract relay operably connected to said pump solenoid, and a retraction spring affixed between said vehicle and said step.

5,547,041

LADDER

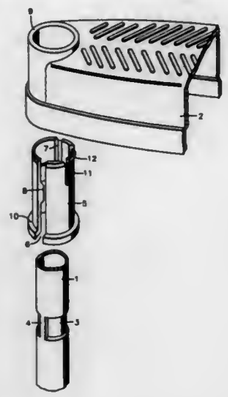
Jaime Morral Gispert, Polinya, Spain, assignor to Astral, Sociedad Anónima de Construcciones Metálicas, Polinya, Spain

Filed Aug. 29, 1994, Ser. No. 297,046

Claims priority, application Spain, Sep. 21, 1993, 930203

Int. Cl.[6] E06C *7/08*

U.S. Cl. 182—228 **5 Claims**



1. A ladder comprising two elongated and vertically extending, rigid uprights, each having at least one axially extending recess portion;

at least one rung extending horizontally between said two uprights and having apertures defined by sleeves having uninterrupted inner surfaces for receiving therethrough said rigid uprights; and

a means for securing said rungs to said uprights comprising an elongated split sleeve in coaxial alignment around one of said uprights, said split sleeve having a protrusion on an inner edge for engaging with said axially extending recess portion and wherein said sleeve of said rung slides over said split sleeve aligned on around said upright, to secure said rung in position along the length of said rigid upright.

5,547,042

CRANK CASE DRAIN PLUG STRUCTURE AND METHOD

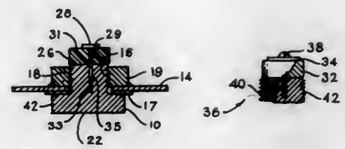
Richard B. Platt, 381 Country Club La., Detroit, Mich. 48236

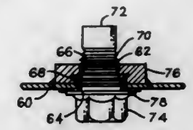
Filed Jan. 23, 1995, Ser. No. 377,009

Int. Cl.[6] F16C *3/14*

U.S. Cl. 184—1.5 **20 Claims**

1. An oil pan having an oil drain opening therethrough in a lower portion thereof having internal threads therein, an oil pan drain plug including a stem portion having external threads thereon and a head on one end of the stem portion adapted to facilitate screwing of the drain plug into and out of the opening through the oil pan and a sealing member secured to one of the oil pan within the opening therethrough and the drain plug stem immediately adjacent one end of the threads of the one of the oil pan within the opening therethrough and the drain plug stem which sealing member has a sealing diameter immediately adjacent another end of the threads which it is immediately adjacent to which is one of equal to or greater than the smallest diameter of the internal threads in the opening through the oil pan and equal to or greater than the smallest diameter of the external threads on the stem of the drain plug of the at least one of the opening through the oil pan and the stem of the drain plug.





9. A drain plug comprising a cylindrical stem portion having threads thereon which threads have a minimum and maximum diameter, a head portion on one end of the stem portion adapted to engage a tool, and a sealing member secured to the stem portion of the drain plug immediately adjacent an other end of the stem portion having a sealing diameter, immediately adjacent the other end of the stem portion of the drain plug, which sealing diameter is equal to or greater than the smallest diameter of the threads on the stem of the drain plug.

5,547,043

ELECTROCHEMICALLY REACTIVE ELEMENT FOR LUBRICANT DISPENSER

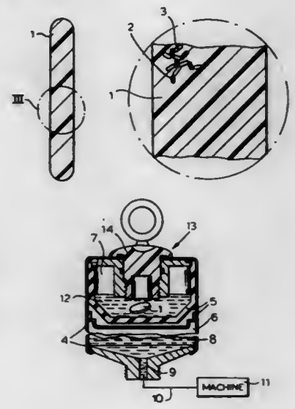
Walter Graf, Euerdorf, and Ulrich Immisch, Bad Kissingen, both of, Germany, assignors to Satzinger GmbH & Co., Euerdorf, Germany

Filed Apr. 14, 1995, Ser. No. 422,589

Claims priority, application Germany, Apr. 27, 1994, 44 14 672.8

Int. Cl.[6] F16N *5/00*

U.S. Cl. 184—39 **7 Claims**



1. In a lubricant dispenser comprising:

a housing;

a piston subdividing the housing into a pair of compartments one of which is generally closed and the other of which is adapted to be connected to a machine to be lubricated;

a body of a reactive liquid in the one closed compartment;

a body of a fluent lubricant in the other compartment, the piston being movable against the lubricant body to force same from the housing to the machine;

an element in the one compartment capable of reacting with the liquid and forming a gas; and

means for immersing the element in the reactive liquid and thereby pushing the piston by means of the gas against the lubricant body and expelling the lubricant from the housing, the improvement wherein

the reactive element is constituted as a coherent block by

a first multiplicity of particles of an active first substance capable of reacting with the liquid and forming a gas on reaction therewith and

a second multiplicity of particles intermixed and in electrically conductive engagement with the reactive particles of a second substance that is less active than the first substance.

5,547,044

ELEVATOR HOIST APPARATUS AND MANUFACTURING METHOD THEREFOR

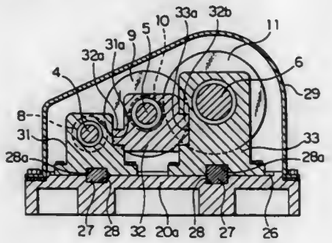
Shinji Yamasaki, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 19, 1995, Ser. No. 374,903

Claims priority, application Japan, Jan. 19, 1994, 6-004165

Int. Cl.[6] B66B *11/08*

U.S. Cl. 187—254 **9 Claims**



9. A method for manufacturing an elevator hoist apparatus comprising the steps of preparing a base, mounting to said base a speed reduction gear mechanism including an input shaft to be connected to a driving power source, an output shaft to be connected to a rope sheave, and a plurality of parallel axis gears, and mounting a cover to said base for covering said speed reduction gear mechanism;

said method further comprising the steps of:

forming a base engagement portion in said base;

forming a bearing-mount engagement portion in a plurality of bearing pedestals each of the plurality of bearing pedestals including a bearing pedestal engagement portion;

combining the bearing pedestals and the plurality of parallel axis gears to assemble the speed reduction gear mechanism;

fitting a positioning member to the base engagement portion of the base and the bearing pedestal engagement portion of each bearing pedestal to position the bearing pedestals of the speed reduction gear mechanism with respect to the base;

fixing said speed reduction gear mechanism to said base; and

fixing a cover for covering said speed reduction gear mechanism to said base.

5,547,045

ADJUSTABLE WHEEL CHOCKS FOR TANDEM WHEELED VEHICLES

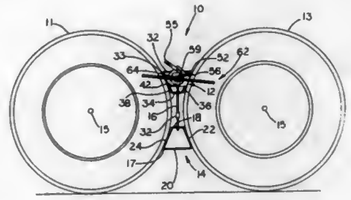
Jay Stutzman, 1010 Eisenhower Dr. S., Goshen, Ind. 46526-5395

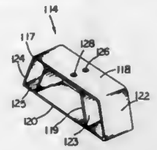
Filed Apr. 11, 1995, Ser. No. 420,031

Int. Cl.[6] B60T *1/04*

U.S. Cl. 188—2 R **3 Claims**

1. Adjustable wheel chock mechanism for tandem axle vehicles comprising a pair of chock members, each of said chock members including a tubular housing having a pair of ends and an outer wall extending continuously between said ends, the wall of each of said housings having a pair of inclined surfaces extending continuously across the width of said housing between said ends and tapering toward one another and facing the inclined surfaces on the other chock member, one of the inclined surfaces on each of the chock members engaging the tread of a corresponding one of a pair of tandem wheels, the other inclined surface on each chock member engaging the tread of the other tandem wheel whereby each of the inclined surfaces engages its corresponding wheel across all of that portion of the width of said housings disposed between said wheels, a cable extending between said chock members and secured to one of the chock members, substantially horizontal ratchet means carried by one of the housings for winding said cable on the rachet means for drawing said chock members toward one another, at least one of said tubular housings further including an inner wall extending continuously between said ends, said inner wall having a pair of second inclined surfaces extending continuously across the width of said housing between said ends, said second inclined surfaces being spaced apart from and parallel to said first mentioned inclined surfaces for accommodating vehicles with varying spacing between said tandem axles.





5,547,046

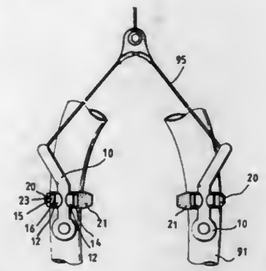
BRAKE MECHANISM FOR BICYCLE

Zen-Ming Chen, P.O. Box 53-8, Taichung, Taiwan

Filed Aug. 21, 1995, Ser. No. 519,152

Int. Cl.[6] B62L *1/12*

U.S. Cl. 188—24.21 **1 Claim**



1. A brake mechanism for a bicycle comprising:

a pair of brake arms including a lower portion for pivotally coupling to the bicycle and including an upper portion for engaging with a cable, said brake arms each including a middle portion having an oblong hole formed therein,

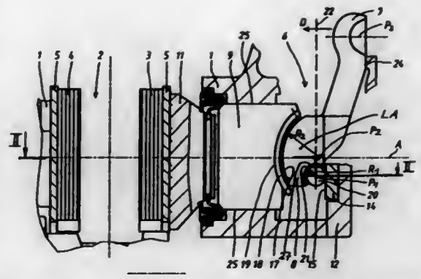
a pair of bolts engaged in said oblong holes of said brake arms respectively and adjustable along said oblong holes respectively, said bolts each including a first end having a brake shoe secured thereto and each including a second end having an outer screw formed therein,

a pair of nuts engaged with said outer threads of said bolts so as to secure said bolts to said middle portion of said brake arms, said nuts each including a first end having a curved surface formed therein,

a pair of washers each including a curved recess corresponding to said brake arms for engaging with said brake arms, a first gasket engaged on said bolt and engaged between a first of said washers and said brake shoe, a second gasket engaged on said bolt and engaged between a second of said washers and said nut, said second gasket including a curved depression formed therein for engaging with said curved surface of said nut so as to allow said nut to rotate relative to said second gasket, and

a spring means engaged between said second gasket and said second washer,

said brake shoes and said bolts being directly secured to said middle portions of said brake arms so as to reduce vibrations while conducting braking operations.



5,547,047

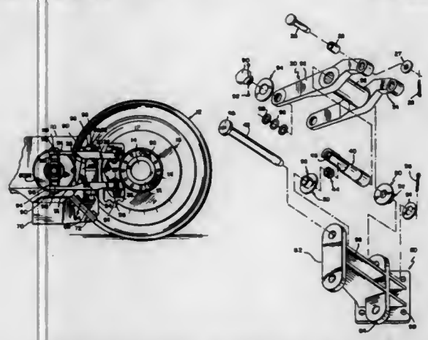
BRAKE CALIPER SHOCK AND VIBRATION ISOLATION SYSTEM

Richard Kohar, Kingston, Canada, and Brian M. McLaughlin, Watertown, N.Y., assignors to New York Air Brake Corporation, Watertown, N.Y.

Filed Jan. 25, 1995, Ser. No. 378,357

Int. Cl.[6] B61H *13/00*

U.S. Cl. 188—59 **17 Claims**



1. A brake caliper assembly having at least one lever pivotally connected to a bridge by a bridge pin and further comprising:

a rigid non-metal washer separating said lever from said bridge;

a rigid non-metal bridge bushing separating a shaft of said bridge pin from said bridge; and

a rigid non-metal lever bushing separating said bridge pin from said lever.

5,547,048

MECHANISM FOR DISC BRAKE

Paul Anthony, Worms, Germany, assignor to Perrot Bremsen GmbH, Mannheim, Germany

Filed Aug. 25, 1995, Ser. No. 519,171

Claims priority, application Germany, Aug. 25, 1994, 44 30 258.4

Int. Cl.[6] F16D *65/16*

U.S. Cl. 188—72.9 **11 Claims**

1. A brake application mechanism for a sliding-caliper disc brake having an application shaft oriented substantially parallel to a plane defined by a rotor of the disc brake, which application shaft has a first side directed toward said plane and supported against a thrust piece which is movable toward and away from said plane, said application shaft having a second side directed away from said plane and supported against a support element with respect to which the thrust piece is movable, wherein:

said first side is arranged such that the application shaft is de-coupled from the thrust piece with respect to rotation around a first rotational axis of the application shaft oriented parallel to a longitudinal axis of the application shaft, but said application shaft is coupled with the thrust piece with respect to translational movement of the first rotational axis toward and away from said plane;

said second side of the application shaft is supported by said support element such that the application shaft is coupled to the support element with respect to rotation of said application shaft around a second rotational axis oriented substantially parallel to the longitudinal axis of the application shaft, which second rotational axis is different from said first rotational axis;

the support element is arranged with respect to the application shaft such that the first rotational axis does not move parallel to the plane of the brake rotor when there is movement of the second rotational axis parallel to the plane of the brake rotor; and

the thrust piece is mounted such that it is movable only perpendicularly with respect to the plane of the brake rotor.

5,547,049

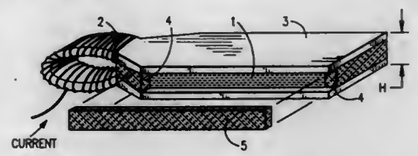
MAGNETORHEOLOGICAL FLUID COMPOSITE STRUCTURES

Keith D. Weiss, Cary; Theodore G. Duclos, Holly Springs; Michael J. Chrzan, Raleigh, and Lynn C. Yanyo, Cary, all of N.C., assignors to Lord Corporation, Cary, N.C.

Filed May 31, 1994, Ser. No. 251,562

Int. Cl.[6] F16F *15/03*

U.S. Cl. 188—267 **6 Claims**



1. A flexible structural element in the form of a beam, panel, bar, or plate that includes a magnetorheological fluid comprising of a particle component containing 1.0 to 500 μm size paramagnetic, superparamagnetic or ferromagnetic particles in an amount equal to 5 to 50 percent by volume of the total composition, a carrier component having a viscosity of 1 to 100,000 centipoise in an amount equal to 50 to 95 percent by volume of the total composition, and a dispersant present in an amount of 0.1 to 20 percent by weight relative to the weight of the particle component, wherein the dispersant is selected from the group of ferrous oleate and naphthenate, metallic soaps, alkaline soaps, sulfonates, phosphate

esters, stearic acid, glycerol monooleate, sorbitan sesquioleate, stearates, laurates, fatty acids, fatty alcohols, fluoroaliphatic polymeric esters and titanate, aluminate and zirconate coupling agents, and wherein said magnetorheological fluid is confined in place by containment layers within said structural element and at least a portion of two of said containment layers being capable of allowing a magnetic field to be applied to the fluid, wherein flexing of said structural element imparts shear and axial tension to said fluid, the magnitude of said magnetic field is selected for defining the complex moduli of said fluid and the resultant complex stiffness and damping characteristics globally distributed over said structural element and a permanent magnet or an electromagnet is contiguous with an end of said containment layers.

5,547,050

SHOCK ABSORBER HAVING A PISTON PERMANENTLY ATTACHED TO ITS PISTON ROD

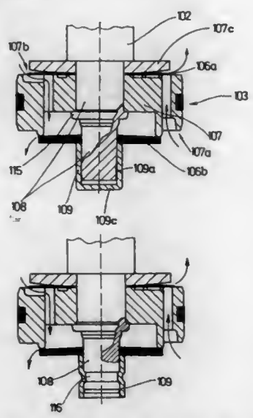
Hubert Beck, Eltorf-Keuenhof, Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Germany

Filed May 6, 1994, Ser. No. 239,365

Claims priority, application Germany, May 10, 1993, 43 15 457.3; May 10, 1993, 43 15 458.1

Int. Cl.[6] F16F *9/34*

U.S. Cl. 188—322.15 **2 Claims**



1. A shock absorber for a motor vehicle, said shock absorber comprising:

a cylinder defining a chamber therein, said cylinder containing a damping fluid;

a piston rod sealingly projecting into said cylinder and being axially displaceable within said said cylinder;

a piston attached to said piston rod, said piston being slidably disposed within said cylinder to sealingly divide said chamber into first and second chambers;

means for permitting fluid communication between said first chamber and said second chamber;

a first end and a second end;

said cylinder being disposed between said first end and said second end;

said first end comprising first means for connecting said shock absorber to a first body;

said second end comprising second means for connecting said shock absorber to a second body;

said piston rod comprising a cylindrical protrusion;

means for fastening said cylindrical protrusion and said piston together;

said fastening means comprising a portion, said portion comprising means for being destroyed during the removal of said cylindrical protrusion from said piston, said means for being destroyed being the portion within said fastening means for holding said cylindrical protrusion and said piston together, whereby said cylindrical protrusion and said piston are substantially non-detachable from one another, said cylindrical protrusion and said piston being detachable from one another only upon substantial destruction of said means for being destroyed;

said means for being destroyed comprises a substantial portion of said fastening means;

said means for being destroyed comprises at least one weld;

said fastening means further comprises a cylindrical sleeve disposed about said cylindrical protrusion;

said cylindrical sleeve comprises a first end and a second end, said second end being disposed adjacent said piston and said first end being disposed a substantial distance from said first end;

said cylindrical protrusion and said cylindrical sleeve are fastened to one another by said at least one weld;

said cylindrical sleeve comprises at least one of a) and b):

a) an opening disposed at said first end of said cylindrical sleeve; and

b) a bottom portion disposed at said first end, said bottom portion substantially enclosing said cylindrical protrusion within said cylindrical sleeve;

said piston comprises valve means disposed about said cylindrical protrusion;

said valve means comprises disc means for regulating fluid flow in said means for permitting fluid communication;.

said piston further comprises a piston body;

said fastening means axially fastens said valve means against said piston body and said fastening means axially fixes said piston body on said cylindrical protrusion;

said fastening means fastens said cylindrical protrusion and said piston together such that at least one of: a portion of said cylindrical protrusion and a portion of said piston is destroyed upon the removal of said cylindrical protrusion from said piston;

said means for permitting fluid communication comprises:

a first passage and a second passage;

said disc means comprises:

a first disc packet and a second disc packet;

said first disc packet and said second disc packet each having at least one disc;

said first passage comprises a first opening and a second opening;

said second passage comprises a third opening and a fourth opening;

said first disc packet is disposed adjacent said first opening of said first passage and said third opening of said second passage; and

said second disc packet is disposed adjacent said second opening of said first passage and said fourth opening of said second passage.

5,547,051

PROTECTIVE LUGGAGE TOTE BAG AND METHOD

Martin D. Bartscht, 1125 Canterbury Ct., Dallas, Tex. 75208, and Morgan S. Gibbens, 2540 Elm St., Dallas, Tex. 75226

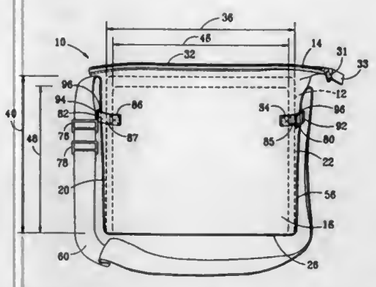
Filed Feb. 15, 1994, Ser. No. 196,313

Int. Cl.[6] A45C *3/08;13/00;13/26*

U.S. Cl. 190—26 **14 Claims**

1. A protective tote bag for covering and carrying a briefcase of the type having a handle at the top and having a length, a height and a width defining a rectangular shape, said protective tote bag comprising:

(a) an enclosure formed of a protective fabric material and having two closed sides, two closed ends and a closed bottom defining an interior which has a length, beight and width defining a rectangular shape sufficiently large for accommodating said briefcase to be covered and having a closable opening and closing mechanism along a top edge thereof;



(b) a support strap having a width equal to a minimum width of the briefcase to be covered, which strap is securely fastened along said two ends, and extending around said bottom of said enclosure; and

(c) a shoulder strap securely fastened to said support strap at each end of said enclosure and extending above said closable opening at said top edge of said enclosure forming a loop, which loop has a length sufficient for supporting said tote bag over a human being's shoulder.

5,547,052

MODULAR WHEELED LUGGAGE SYSTEM, WHEELED LUGGAGE, GARMENT BAG AND CONNECTOR FOR SAME

Ricky J. Latshaw, Republic, Mo., assignor to Purdy Neat Things Company, Inc., Republic, Mo.

Filed Dec. 9, 1994, Ser. No. 353,195

Int. Cl.[6] A45C *5/14;13/22;13/30;13/38*

U.S. Cl. 190—108 **24 Claims**



1. A modular wheeled luggage system arranged to be positioned in a storage space underneath an airline seat or in an overhead storage compartment within a passenger compartment of an airplane, the luggage system comprising:

a first piece of luggage sized to be positioned underneath a passenger's seat or in an overhead storage area above a passenger's seat, said first piece of luggage including a body having overall respective length, width, and depth dimensions of no greater than 24-inches by 16-inches by 10-inches, and wheels connected to lower end portions of said body and a luggage connector detachably connected to said body for detachably connecting additional luggage thereto, said luggage connector including a first elongate strap having a first end portion including means for detachably connecting to portions of said body and longitudinally extending outwardly therefrom and a second elongate strap connected along medial portions thereof to a second end portion of said first elongate strap and transversely extending outwardly from said first elongate strap, said second elongate strap having a first pair of connectors secured thereto;

a second piece of luggage detachably connected to said luggage connector of said first piece of luggage and positioned adjacent and overlying portions of said body of said first piece of luggage, said second piece of luggage having a body sized so that said body of said second piece of luggage has dimensions substantially no greater than said body of said first piece of luggage and means connected to said body of said second piece of luggage for detachably connecting an additional piece of luggage thereto, said second piece of luggage further having a second pair of connectors secured to said body of said second piece of luggage and arranged to matingly receive said first pair of connectors secured to said second elongate strap of said luggage connector, said luggage connector of said first piece of luggage further including a third elongate strap having first and second end portions, said first end portion including means for detachably connecting to medial portions of said first elongate strap and longitudinally extending outwardly therefrom so as to overlie said second piece of luggage, said second end portion having a connector secured to said second end portion for connecting additional pieces of luggage thereto; and

a third piece of luggage detachably connected to said connecting means of said second piece of luggage and sized so that said luggage case has dimensions substantially no greater than either said second piece of luggage or said body of said first piece of luggage, said third piece of luggage being detachably connected to said second piece of luggage so that when said second piece of luggage is disconnected from said luggage connector of said first piece of luggage said third piece of luggage remains connected to said second piece and whereby said second and third piece of luggage together are sized to have overall respective length, width, and depth dimensions no greater than 24-inches by 16-inches by 10-inches.

5,547,053

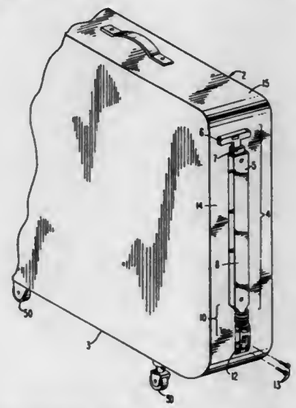
SPRING LOADED LUGGAGE HANDLE

Joseph Liang, P.O. Box 1060, Alpine, N.J. 07620

Filed Sep. 8, 1994, Ser. No. 303,062

Int. Cl.[6] A45C *13/26*

U.S. Cl. 190—115 **18 Claims**



1. A handle assembly for selectively moving an article of luggage in a user-defined direction on and along an underlying supporting surface, the article of luggage including a top wall, a bottom wall adjacent and confrontingly opposite the underlying supporting surface, and a forward facing wall disposed between the top and bottom walls and defining a forward direction of movement of the article, said handle assembly comprising:

an elongated substantially rigid member carrying a graspable portion at one end of the member and graspable by a user for

pulling the article of luggage so as to substantially move the article along the underlying supporting surface, said member being pivotally movable between a first position in which said member lies substantially along the forward facing wall and said graspable portion is disposed closely adjacent the forward facing wall, and a second position in which said one end of the member and said graspable portion are disposed in remotely spaced relation from the forward facing wall;

a support fixed to the forward facing wall proximate the bottom wall; and

a movement assembly coupling a second end of said rigid member opposite said one end to said support for pivotal movement of said member relative to said support between said first and second positions, said movement assembly comprising coupling means for pivotally connecting the member second end and said support so as to accommodate said pivotal movement of said member between said first and second positions and at least one spring disposed spanningly between said member second end and said support and normally urging said member from said second to said first position so that when a user, selectively moving the article of luggage in a user-defined direction by grasping and pulling the graspable portion and thereby causing said elongated member to pivotally move from said first to said second position of the member, then releases the user's grasp of the graspable portion said member pivotally returns from said second to said first position without user intervention under the return urgency of said spring;

wherein said coupling means comprises a universal joint.

5,547,054

FREE-WHEELING COUPLING SENSITIVE TO THE DIRECTION OF ROTATION

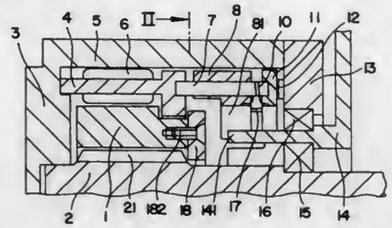
Franz Gratzer, St. Johann, Austria, assignor to Steyr-Daimler-Puch AG, Vienna, Austria

Filed Sep. 9, 1994, Ser. No. 303,355

Claims priority, application Germany, Sep. 8, 1993, 43 30 435.4

Int. Cl.[6] F16D *41/08;* **B60K** *23/08*

U.S. Cl. 192—35 **12 Claims**



1. A free-wheeling coupling sensitive to the direction of rotation for a motor vehicle, comprising

a first ring which constitutes a driving element in a towing mode for a motor vehicle,

a second ring which constitutes a driven element in said towing mode,

clamping elements which act between said first and second rings to transfer torque between said first and second rings in both directions of torque flow,

a cage in which said clamping elements are disposed,

a friction element acting between said cage and said second ring,

a fixed switching ring,

a cam rotatably mounted on said cage, said cam including a control lever which interacts with said fixed switching ring,

a spring which urges said control lever into engagement with said fixed switching ring until there is sufficient centrifugal force to lift said control lever out of engagement with said fixed switching ring, and

a stop finger fixedly connected to said first ring which interacts with said cam to limit the relative rotation between said first ring and said cage.

5,547,055

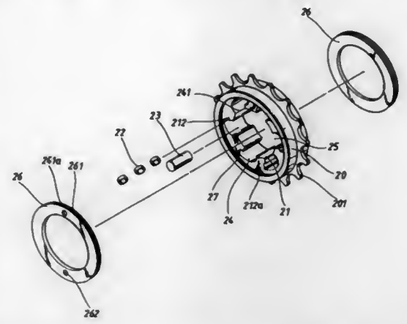
UNIDIRECTIONAL ROLLER BEARING WITH ROLLER RETAINING STRUCTURE

Chun-Hsiung Chang, T'ao-Yuan Hsien, and I-Heng Chen, T'ao-Yuan, both of, Taiwan, assignors to Chin-Fa Chen, Taipei Hsien, Taiwan

Filed Jan. 12, 1995, Ser. No. 371,975

Int. Cl.[6] F16D *41/066*

U.S. Cl. 192—45 **12 Claims**



1. A unidirectional roller bearing comprising an annular main body, a plurality of rolling bodies, a plurality of elastic elements, and two locating annular plates; wherein

said annular main body has an interior hollow portion which is provided with at least three roller grooves equidistantly and equiangularly spaced therearound, which roller grooves each has a bottom of varying depth and a groove opening connected to the interior hollow portion of said main body and a groove wall extending around the opening and forming a reduced neck portion defining an opening having a width that is smaller than the outside diameter of said rolling bodies to prevent said rolling bodies from dropping out of the grooves and each roller groove includes a deeper end, and further has an elastic element seat arranged at the deeper end;

said annular main body having an upper end surface, a lower end surface, an inner annular portion formed on a central area of each end surface and a plurality of locating grooves arranged between the end surfaces of said main body and said inner annular portions to engage with said locating annular plates and prevent said rolling bodies from dropping out;

each of said rolling bodies having an appropriate outside diameter that is larger than the width of said roller groove openings;

each of said elastic elements having a resilient restoring capability when compressed;

said locating annular plates preventing said rolling bodies and said elastic elements from escaping from their positions; and

said rolling bodies and said elastic elements are individually placed in corresponding said roller grooves and said elastic element seats and said two locating annular plates are attached to two ends of said annular main body by an engagement with said locating grooves.

5,547,056

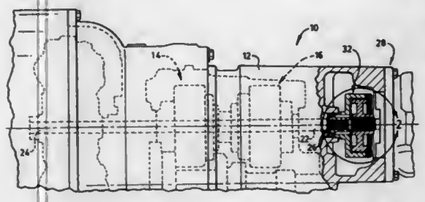
OIL DAM COUPLING

Dwight V. Stone, and Charles E. Whalen, both of East Peoria, Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Jan. 4, 1995, Ser. No. 368,464

Int. Cl.[6] F16D *47/06;3/80*

U.S. Cl. 192—51 **7 Claims**



1. A transmission arrangement having a coaxial pump drive, comprising:

a forward-reverse clutch arrangement rotatably positioned within the transmission arrangement, the forward-reverse clutch arrangement having a axial center bore therethrough;

a shaft extending axially through the axial center bore of the forward-reverse clutch arrangement, the shaft having an input end and an output end;

a pump assembly mounted on the transmission, the pump assembly having an input shaft axially aligned with the shaft of the clutch arrangement; and

an oil dam coupling connected between the output end of the shaft of the clutch arrangement and the input shaft of the pump assembly.

5,547,057

CHANGE-SPEED GEARBOX SHIFT DEVICE

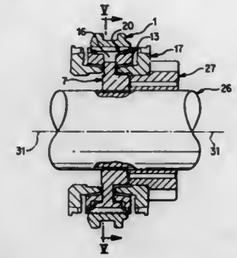
Rolf Sperber, Wendlingen, Germany, assignor to Mercedes-Benz, Germany

Filed Apr. 14, 1995, Ser. No. 421,932

Claims priority, application Germany, Apr. 15, 1994, 44 13 169.0

Int. Cl.[6] F16D *23/06*

U.S. Cl. 192—53.34 **1 Claim**



1. Shift device for a change-speed gearbox, wherein for coupling a gear to a shaft a shift sleeve carrier is operatively fixedly arranged relative to the shaft, an outer axial coupling toothing is immovably arranged relative to the gear and concentric to a rotation axis of the shaft, an outer axial driving toothing immovably arranged relative to the shift sleeve carrier and concentric to the rotation axis and in alignment with the outer coupling toothing, an annular shift sleeve arranged concentrically to the rotation axis and for axial movement relative to the shaft, an inner axial coupling toothing immovably arranged relative to the shift sleeve and concentric to the rotation axis and in alignment with the outer coupling toothing, a synchronizer ring arranged concentric to the rotation axis and axially between the gear and the shift sleeve carrier for axial and rotational movement relative to the gear and the shaft, an outer locking toothing immovably arranged relative to the synchronizer ring and concentric to the rotation axis and in alignment with the outer coupling toothing, stops for limiting rotation between the synchronizer ring and the shaft, a pair of friction surfaces which has one friction surface associated with the synchronizer ring and one friction surface associated with the gear and is operable to be brought into frictional connection by axial relative movement of the synchronizer ring in a direction of the gear axially immovably arranged relative to the shaft, an annular shaped coil spring element closed upon itself in a peripheral direction thereof and arranged both concentrically to the rotation axis and axially between the driving toothing and the locking toothing, said element being mounted at each of a number of points on a periphery thereof on a respective supporting element immovable relative to the synchronizer ring, and at least one tooth of the inner coupling toothing arranged in a peripheral region between two supporting elements and has a radial overlap with the shaped coil spring element and, on an end face thereof facing the gear, has an inclined surface inclined relative to the rotation axis for engagement on the shaped coil spring element, whereby a root circle of the inner coupling toothing and an addendum circle of the driving toothing each lies concentrically to the rotation axis, the inner coupling toothing engages in matching driving toothing for rotational movement therewith and axial movement therealong, teeth of the inner coupling toothing which lie in a supporting element peripheral region are radially non-overlappingly arranged with respect to the shaped coil spring element, the inclined surface has a larger diameter at an end thereof facing the gear than at another end opposite the gear, the shaped coil spring element is supported substantially rigidly, relative to the synchronizer ring, in a direction of the rotation axis towards the gear, and, in respect of portions thereof lying between the supporting elements in the peripheral direction, resiliently in a centripetal direction, and that the number of points is an integral multiple of one, wherein an addendum circle of the inner coupling toothing and the root circle of the driving toothing are each composed of a number of circular lines which lie eccentrically relative to the rotation axis, the centers of the circular lines lying in separate planes which each case the rotation axis and are directed centrally relative to a supporting element, the number of circular lines being at least two.

5,547,058

HYDRAULICALLY ACTUATABLE DEVICE FOR DISENGAGING A GEARSHIFT CLUTCH OF AN AUTOMOTIVE VEHICLE

Walter Parzefall, Bubenreuth, and Herbert Folk, Burghaslach, both of, Germany, assignors to INA Walzlager Schaeffler KG, Germany

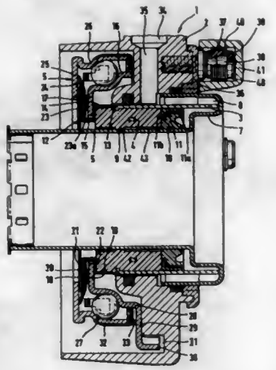
Filed Mar. 17, 1995, Ser. No. 407,445

Claims priority, application Germany, Apr. 15, 1994, 44 12 928.9

Int. Cl.[6] F16D *23/14;25/06*

U.S. Cl. 192—85 CA **5 Claims**

1. A hydraulically actuatable device (1) for disengaging a gearshift clutch of an automotive vehicle, having an annular piston (4) arranged for sliding displacement with its inner peripheral surface (9) on a guide sleeve (6) and its outer peripheral surface (13) in a clutch output cylinder (2), a release bearing (5) positionally fixed by a disc spring (20) being lodged in an end of the annular piston (4) away from a pressure chamber (8), characterized in that, there is arranged on said end of the annular piston (4) a fixing ring (12) comprising a cylindrical portion (14) which engages around a part of the outer peripheral surface (13) of the annular piston (4) to which it is fixed by positive engagement, and a radially inwards oriented arm (17) of an inner ring (16) of the release bearing (5) engages into a portion (15,45) of the fixing ring (12) having a U- or L-shaped cross section and extending beyond said end of the annular piston (4), said arm (17) of the inner ring (16) being urged by the disc spring (20) supported on a first annular radial portion (21) of the fixing ring (12) against a second annular radial portion (22) thereof which bears against an end face of the annular piston (4).

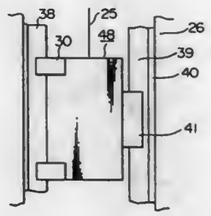


5,547,059

LINEAR MOTOR ELEVATOR SYSTEM

Eiki Watanabe; Toshiaki Ishii; Masamoto Mizuno, and Kazuhiko Sugita, all of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 4,316, Jan. 14, 1993, abandoned.
This application Dec. 19, 1994, Ser. No. 358,980
Claims priority, application Japan, Jan. 16, 1992, 4-005883
Int. Cl.[6] B66B *7/00;11/00*
U.S. Cl. 187—289 8 Claims



1. A linear motor elevator system for driving an elevator car in a hoistway which has first and second opposing walls, said system comprising:

a movable body having a first side and a second side opposing the first side, the movable body being disposed in the hoistway such that the first side of the movable body opposes the first wall of the hoistway and the second side of the movable body opposes the second wall of the hoistway;

one and only one magnetic induction member, said one and only one magnetic induction member being disposed along the first wall of the hoistway;

a bracket having first and second legs opposing said magnetic induction member, said bracket being disposed only on the first side of said movable body;

means for generating a magnetic drive force for moving said movable member along said hoistway, said means for generating being secured to each leg of said bracket; and

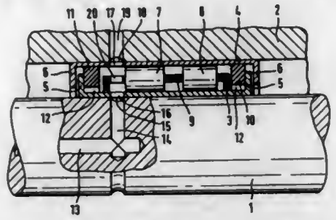
a brake unit disposed only on the second side of the movable body.

5,547,060

PRESSURIZED RADIAL BEARINGS

Peter Giese, Herzogenaurach, Germany, assignor to INA Walzlager Schaeffler KG, Germany

Filed Aug. 10, 1994, Ser. No. 288,572
Claims priority, application Germany, Sep. 21, 1993, 43 32 032.5
Int. Cl.[6] F16C *33/46*
U.S. Cl. 192—110 B 4 Claims



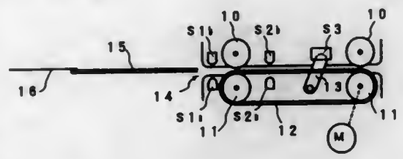
1. A radial bearing which can be pressurized by a pressure medium and is arranged between two elements of a load-switchable transmission which rotate at different speeds, a hydraulic pressure medium flowing through the radial bearings for causing engagement of a multiplate clutch, and radial sealing rings (**10**,**11**) being arranged between said two elements of said transmission in a region of the radial bearing on each side of a pressure medium passage, characterized in that the radial bearing is configured as a rolling bearing whose rolling elements (**7**,**8**) are bearing needles guided in a cage (**9**) which comprises several circumferentially uniformly spaced radial through-apertures (**20**).

5,547,061

CURRENCY-IDENTIFYING APPARATUS

Eiji Itako, Sakado, and Ichiro Fukuda, Kawagoe, both of, Japan, assignors to Nippon Conlux Co., Ltd., Tokyo, Japan

Filed Dec. 12, 1994, Ser. No. 354,361
Claims priority, application Japan, Dec. 27, 1993, 5-346941
Int. Cl.[6] G07F *7/04*
U.S. Cl. 194—203 8 Claims



1. A paper currency-identifying apparatus for extracting data intrinsic to a paper currency transported through a currency conveyance passageway by the use of a currency information detection means and for making a decision as to whether said paper currency is genuine or counterfeit according to the extracted data, said apparatus comprising:

passage detection sensors facing said currency conveyance passageway to detect passage of said currency;

optical sensors facing said currency conveyance passageway to detect passage of said currency;

a first storage means for storing data obtained from said optical sensors immediately after said currency is detected by said passage detection sensors and before said currency is detected by said optical sensors;

a second storage means for storing data obtained from said optical sensors after said passage detection sensors cease to detect said currency; and

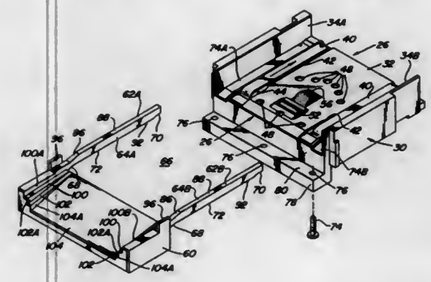
a decision means for making a decision according to the data stored in said first storage means and according to the data stored in said second storage means as to whether a tether is attached to said currency carried through said currency conveyance passageway.

5,547,062

UNIVERSAL CURRENCY ACCEPTOR

David S. Mays, and Robert E. Blevins, both of Mentor, Ohio, assignors to Diversified Technologies, Inc., Blue Bell, Pa.

Filed May 31, 1995, Ser. No. 454,997
Int. Cl.[6] G07D *11/00;* B65H *9/04*
U.S. Cl. 194—206 7 Claims



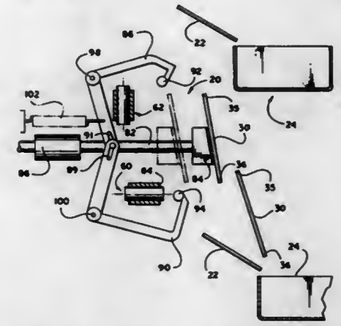
1. A note acceptor for validating a paper currency note introduced therein, said acceptor being arranged to accept a first paper currency note and a second, paper currency note, said second paper currency note being larger in width than said first paper currency note, said acceptor comprising a validator unit and at least a first entrance port means for guiding said first paper currency note to said validator, said validator unit comprising a housing, conveying means, and sensor means, said housing having a pair of spaced apart internal surfaces defining a path therebetween, said path extending through said validator unit and being arranged to have either the first or second paper currency notes conveyed therethrough, said path being of a width sufficient to accommodate the second paper currency note, said sensor means being disposed adjacent said path to sense either the first or the second paper currency note, said conveying means being disposed within said housing adjacent said path to convey either the first or the second paper currency note to said sensor means for sensing thereby, said first entrance port means being releasably secured to said housing to form the entrance to said path and comprising a front portion from which a pair of elongated rails project rearwardly, said front portion being located outside said housing with said rails extending substantially into said housing along said path when said first entrance port means is releasably secured to said housing, said elongated rails defining therebetween a first channel of a first predetermined width corresponding to the width of the first paper currency note, whereupon when the first paper currency note is inserted into said channel said channel guides the first paper currency note to said conveying means, which in turn conveys the first paper currency note in proper alignment and orientation to said sensor means, said validator unit being arranged to accept the second paper currency note when the first entrance port means is removed from said housing, whereupon the second paper currency note is guided through said path by said spaced apart internal surfaces of said validator unit.

5,547,063

APPARATUS AND METHOD OF SORTING OBJECTS

Henri Bonnet, Atlanta, Ga., assignor to United Parcel Service of America Inc., Atlanta, Ga.

Filed May 24, 1994, Ser. No. 248,057
Int. Cl.[6] B65G *37/00;47/10*
U.S. Cl. 198—370.02 5 Claims



1. An ejection apparatus for use in sorting individual items traveling along a path, said ejection apparatus comprising:

a jaw which discourages movement of said items in a transverse direction relative to said path;

a plunger configured to eject said items in said direction,

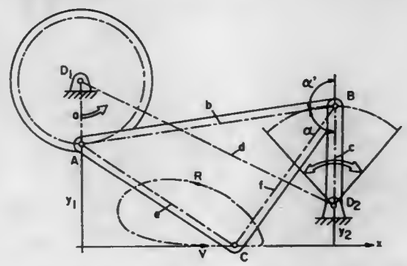
wherein said jaw is configured to extend under said items, as well as around said items, as said items move down said path, and wherein said jaw is configured to move away from around said item as said plunger pushes said item from said path.

5,547,064

APPARATUS FOR SERIALLY TRANSFERRING OBJECTS BETWEEN TWO CONVEYOR MEANS

Meinrad Meyer, Wohlen, and Peter Summermatter, Zürich, both of, Switzerland, assignors to Elpatronic AG, Zug, Switzerland

Filed Feb. 1, 1995, Ser. No. 381,773
Claims priority, application Switzerland, Feb. 8, 1994, 352/94; Feb. 11, 1994, 412/94; Feb. 16, 1994, 469/94
Int. Cl.[6] B65G *37/00*
U.S. Cl. 198—468.1 12 Claims

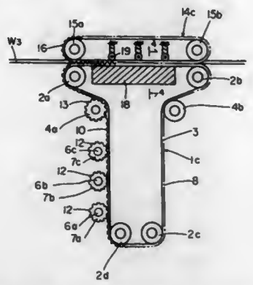


1. Apparatus for serially transferring objects from a supply conveyor means to a receiving conveyor means in which the speed of the supply conveyor means is larger than or equal to the speed of the receiving conveyor means which apparatus comprises a feed cam which is of a type drivable by means of a four bar linkage with a drive crank (a), a coupling (b), a driven crank (c) and a stationary link (d) which are linked with one another such that the feed cam contacts the objects to be transferred one behind the other in a substantially straight linear movement over a transfer strip (V)

VOL 1189 ISS 3 AUG 20 1996 UMI

and returns again outside of the serial stream of objects on a return path (R) again into its departure position characterized in that the four bar linkage is a oscillating crank mechanism for which the link lengths satisfy the following: a<c<b<d or a<b<c<d and (a+d)<(b+c), and that the feed cam is connected fixedly to the coupling (c) in the region of a coupling point (C).

5,547,065
MULTI-WIRE FEEDING APPARATUS
Souichi Watanabe, Yokohama, and Kazuaki Kamei, Yamato, both of, Japan, assignors to Molex Incorporated, Lisle, Ill.
Filed Nov. 15, 1994, Ser. No. 339,848
Claims priority, application Japan, Nov. 30, 1993, 5-326063
Int. Cl.[6] B65G *15/14*
U.S. Cl. 198—604 **21 Claims**



1. A multi-wire feeding apparatus for feeding a plurality of individual wires, each wire having a center electrically conductive portion and an outer insulative portion surrounding said center portion, said apparatus including a plurality of wire feeding units, each unit comprising:

drive means for engaging one of said wires generally on a first side thereof;

pressure means for engaging said one of said wires generally on a second side opposite said first side;

motor means for driving said drive means to feed said one of said wires between said drive means and said pressure means;

said drive means and said pressure means including endless belts, said drive means including a plurality of projections extending from an outer periphery thereof along the length thereof; and

said motor means including an engagement member having a plurality of projections thereon for interengagement with the projections of said drive means outside said endless belt to drive said drive means to feed one of said wires.

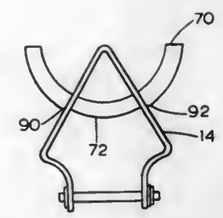
5,547,066
GATHERING CHAIN PIN
Bobby Chang, Thousand Oaks, Calif., assignor to R.R. Donnelley & Sons Company, Lisle, Ill.
Continuation of Ser. No. 165,104, Dec. 10, 1993, abandoned.
This application May 2, 1995, Ser. No. 434,314
Int. Cl.[6] B65G *49/00*
U.S. Cl. 198—644 **33 Claims**

1. A gathering chain link comprising:

a first wall having first and second surfaces and an opening therethrough from the first surface to the second surface of the first wall;

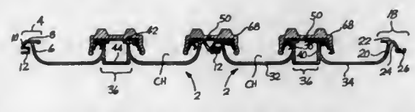
a second wall having first and second surfaces and an opening therethrough from the first surface to the second surface of the second wall; and,

a gathering chain pin extending through the openings of the first and second walls, wherein the gathering chain pin has first and second ends, wherein the gathering chain pin has a notch



between the first and second ends, wherein the openings of the first and second walls are offset from one another, wherein the second surface of the first wall and the first surface of the second wall are generally facing, wherein the notch has a first ridge engaging the first surface of the first wall and a second ridge engaging the second surface of the second wall, wherein the notch and the first and second ridges are arranged to retain the gathering chain pin in engagement with the first and second walls, and wherein the first and second ends of the gathering chain pin are larger than the openings of the first and second walls to ensure substantial centering of the gathering chain pin between the first and second walls.

5,547,067
RECIPROCATING FLOOR CONVEYOR WITH LIQUID COLLECTING BASE STRUCTURE
Raymond K. Foster, P.O. Box 1, Madras, Oreg. 97741
Filed Aug. 2, 1995, Ser. No. 510,383
Int. Cl.[6] B65G *25/00*
U.S. Cl. 198—750.3 **28 Claims**



1. In a reciprocating floor conveyor having a base structure that includes a plurality of longitudinal base sections that are connected together along longitudinal side edges, said base structure providing a plurality of laterally spaced apart guide beams and channels between the guide beams, said guide beams supporting slide bearings and said slide bearings in turn supporting longitudinal floor members which are moved longitudinally in one direction to convey a load and are retracted in the opposite direction, an improved connection between adjacent base sections, comprising:

each said base section including first and second opposite side portions;

said first side portion including a first sidewall, a first top portion that forms part of a top of a guide beam, a first inner wall extending downwardly from said first top portion, and a groove portion of a tongue and groove joint carried by said first inner wall, said groove portion including a laterally outwardly directed groove which extends longitudinally of the base section and is spaced below said top of said guide beam;

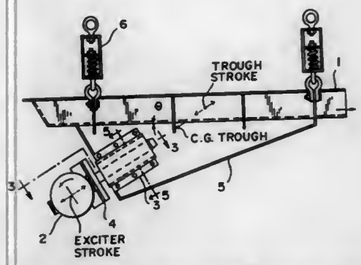
said second side portion of the base section including a second sidewall, a second top portion that forms part of said top of said guide beam, a second inner wall extending downwardly from said second top portion, and a laterally outwardly directed tongue portion of said tongue and groove joint carried by said second inner wall, said tongue portion extending longitudinally of the base section;

said tongue portion of each said base section extending into a groove portion of an adjacent base section to form a tongue and groove joint spaced below said top of said guide beam; and

said first and second inner walls of adjacent first and second side portions, respectively, together defining an upwardly opening space above said joint, said space being large enough, and

said groove and tongue portions being spaced below said top of said guide beam a distance sufficient, to permit said joint to be sealed while maintaining said joint, including sealing portions thereof, isolated from an area above a vertical height defined by the upper surfaces of said first and second top portions.

5,547,068
CENTER BEAM TWO MASS VIBRATORY DEVICE
W. V. Spurlin, 202 Locust St., Indiana, Pa. 15701
Filed Aug. 11, 1995, Ser. No. 518,596
Int. Cl.[6] B65G *27/28*
U.S. Cl. 198—760 **10 Claims**



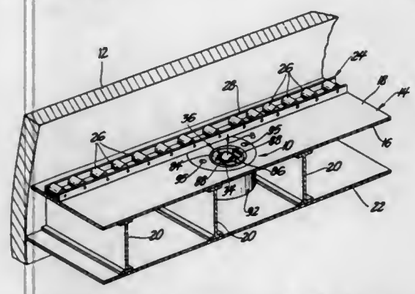
1. A two mass spring coupled vibrating system coupled to a work member comprising:

a first mass comprising an exciter to produce vibratory work energy;

a second mass having a work member including a single center beam with cylindrical elastomer springs mounted thereto, and

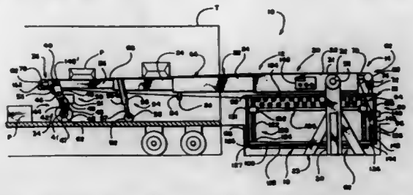
wherein said cylindrical elastomer springs comprise first and second concentric cylinders encapsulating a tubular elastomer element.

5,547,069
MODULAR CARGO DRIVE UNIT FOR A CONVEYOR
Robert J. Pritchard, Lansdale, Pa., assignor to Teleflex Incorporated, Plymouth Meeting, Pa.
Continuation of Ser. No. 648,028, Jan. 30, 1991, abandoned.
This application Apr. 13, 1992, Ser. No. 867,502
Int. Cl.[6] B65G *13/12*
U.S. Cl. 198—782 **19 Claims**



1. An aircraft conveyor drive assembly (**10**, **10'**) of the type for rollably engaging the lower surface (**32**) of a pallet (**30**) and urging the pallet (**30**) along a conveyor path, said assembly (**10**) comprising: a roller (**34**) supported for rotation about a substantially horizontal drive axis (A) for frictionally engaging the lower surface (**32**) of the pallet (**30**); support means (**36**) for supporting said roller (**34**) above an upper surface (**18**) of an aircraft floor structure (**14**) with at least a portion of said roller (**34**) submergible below the upper surface (**18**) of the floor structure (**14**); a drive motor (**38**) operatively coupled to said roller (**34**) for forcibly urging said roller (**34**) to rotate about said drive axis (A); and characterized by pallet tracking means (**64**) for automatically moving said drive axis (A) of said roller (**34**) vertically in response to irregularities in the lower surface (**32**) of the pallet (**30**) while said drive motor (**38**) simultaneously rotates said roller (**34**) about said drive axis (A) to continuously maintain frictional engagement between said roller (**34**) and the lower surface (**32**) of the pallet (**30**) during uninterrupted rotation of said roller (**34**); said pallet tracking means (**64**) including biasing means (**74**) for continuously urging said drive axis (A) of said roller (**34**) toward an extended operative position.

5,547,070
MATERIAL CONVEYING APPARATUS AND METHOD
Henri Bonnet, Atlanta, Ga., assignor to United Parcel Service of America, Inc., Atlanta, Ga.
Filed Feb. 13, 1995, Ser. No. 387,465
Int. Cl.[6] B65G *15/26;21/14*
U.S. Cl. 198—812 **18 Claims**



1. A material transporting apparatus for transporting material from a first location to a second location, said apparatus comprising;

an extendible boom having a first end and a second end wherein said second end is extendible relative to said first end to permit the extended length of said extendible boom to extend from a retracted length to an extended length, said boom defining an upper support surface between said first end and said second end, and end rollers supported by said extendible boom at said first end and said second end;

an endless conveyor belt having a predetermined belt length and defining an excess belt portion and an active belt portion, said active belt portion supported by and adapted to move longitudinally along said upper support surface of said extendible boom about said end rollers at any extended length of said extendible boom, said conveyor belt presenting an upwardly facing material support surface for carrying material placed thereon;

a belt take-up for accumulating said excess belt portion of said endless conveyor belt; and

a driven boom support for supporting said boom adjacent said second end and for extending said second boom end relative to said first boom end, said driven boom support comprising a support frame in supporting engagement with said boom, at least one wheel supported for rotation by said support frame and adapted to engage a support surface over which said extendible boom is extended, and a motor operatively interconnected to said wheel to cause said wheel to rotate thereby causing said extendible boom to extend or retract.

13. A material transporting apparatus for transporting material from a first location to a second location, said apparatus comprising;

an extendible boom having a first end and a second end wherein said second end is extendible relative to said first end to permit the extended length of said extendible boom to extend from a retracted length to an extended length, said boom defining an upper support surface between said first end and said second end, and end rollers supported by said extendible boom at said first end and said second end;

an endless conveyor belt having a predetermined belt length and defining an excess belt portion and an active belt portion, said active belt portion supported by and adapted to move longitudinally along said upper support surface of said extendible boom about said end rollers at any extended length of said extendible boom, said conveyor belt presenting an upwardly facing material support surface for carrying material placed thereon;

a belt take-up for accumulating said excess belt portion of said endless conveyor belt, said excess belt portion of said conveyor belt being equal to said predetermined length of said belt less a portion of said conveyor belt approximately equal to the difference between said boom extended length and said boom retracted length;

a sensor outputting a signal representative of boom extension or retraction; and

a controller responsive to said signal for operating said take-up to accumulate or release a length of conveyor belt corresponding to boom movement.

5,547,071

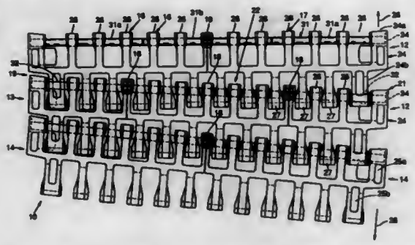
PLASTIC CONVEYOR BELT

Karl V. Palmaer, Folsom, and Eric K. Palmaer, Rancho Cordova, both of Calif., assignors to KVP Systems, Inc., Rancho Cordova, Calif.

Continuation of Ser. No. 239,953, May 9, 1994, Pat. No. 5,419,428, which is a continuation of Ser. No. 999,301, Dec. 31, 1992, Pat. No. 5,310,046, which is a continuation of Ser. No. 594,623, Oct. 9, 1990, Pat. No. 5,181,601. This application May 25, 1995, Ser. No. 450,528

Int. Cl.[6] B65G *17/06*

U.S. Cl. 198—853 **9 Claims**



1. In a plastic conveyor belt capable of following a path including straight and curving sections and including a series of connected and serially interdigited elongated molded plastic belt module rows each including one or more belt modules in the row, the belt module rows being connected by rods extending transversely to the length of the conveyor belt, each belt module row having a set of first aligned spaced projections extending in one direction from the row and a set of second aligned spaced projections extending an opposite direction and arranged generally in staggered relationship with the first projections, the first and second projections of serially adjacent module rows being longitudinally overlapping and juxtaposed when the modules are connected serially in the conveyor belt by the connecting rods extending through transverse openings in the projections, the transverse openings of one of said sets of spaced projections being longitudinally elongated slotted holes to accommodate lateral curves wherein the module rows become angularly shifted and collapse together at the inside of the curve, with substantially the entire longitudinal tension of the belt from module to module carried at the outside of a curve, the improvement comprising,

at one side of each of a series of belt modules which include first and second spaced projections, an outermost, edge projection as one of said first and second projections, positioned to be at an extremity of the module to form the edge of the assembled conveyor belt, said edge projection having an extended width portion extending outwardly to the edge of the module, with a generally flat outer edge face generally in a vertical, longitudinal plane relative to the direction of belt travel, and a recess in the extended width portion inward of said outer edge face.

5,547,072

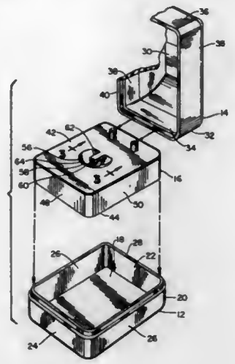
JEWELRY BOX WITH REMOVABLE DISPLAY PLATFORM

Burton Kaiser, 2501 N. Wayne #1, Chicago, Ill. 60614

Filed Jun. 3, 1994, Ser. No. 253,897

Int. Cl.[6] B65D *5/50*; **A45C** *11/16*

U.S. Cl. 206—765 **10 Claims**



1. A container comprising:

a bottom member;

a removable display platform adapted to be fitted within the bottom member;

a separate cover adapted to fit on the bottom member in a closed position;

said display platform comprising means for receiving an edge of said cover and supporting said cover in an open position; and

means for removing the display platform from the bottom member using the cover as a handle.

5,547,073

DISPLAY STAND ERECTABLE FROM SHIPPING CONTAINER

Michael J. Smith, Orangeburg, N.Y., assignor to Arrow Art Finishers, Inc., Bronx, N.Y.

Filed Dec. 5, 1994, Ser. No. 350,402

Int. Cl.[6] B65D *5/52*

U.S. Cl. 206—45.24 **6 Claims**

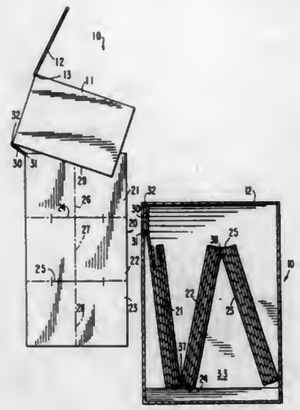
1. A foldable display stand, comprising:

a) a generally box-shaped housing having an open end;

b) a collapsible base for supporting the housing at an elevation above ground, said base including a plurality of consecutive sections each having interconnected front, back and side walls displaceable relative to one another between their erected positions in which the respective section has a tubular shape, and their collapsed positions in which the walls of each section lie flat against each other;

c) means for connecting the sections to one another for movement between their unfolded positions in which they form continuations of one another, and their folded positions in which they are situated adjacent one another; and

d) means for mounting one of the sections on the housing at the open end thereof for pivoting between one position in which all of the sections are situated outside the bousing, and another position in which all of the sections are fully accommodated and located entirely within the housing.



5,547,074

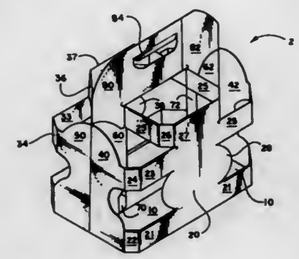
ARTICLE CARRIER

Bob E. Plaxico, Lithonia; James W. Wright, Woodstock, both of Ga., and Philippe Domansky, Chateauroux, France, assignors to The Mead Corporation, Dayton, Ohio

Filed Oct. 21, 1994, Ser. No. 326,987

Int. Cl.[6] B65D *75/00*

U.S. Cl. 206—193 **12 Claims**



1. An article carrier comprising:

opposed side walls;

opposed end walls adjoining said opposed side walls;

a handle structure extending between said opposed end walls;

riser panels extending between respective ends of said handle structure and said opposed end walls;

cell forming means extending between each said side wall and said handle structure including bands extending between said handle structure and said side wall; and

a bifurcated bottom wall having each side thereof foldably joined to a respective said side wall;

wherein an intersection where each said side wall adjoins a respective said end wall is bevelled; and

wherein a juncture of each said band and a respective side wall is bevelled.

7. A blank for forming an article carrier comprising:

side wall panels;

end wall panels;

first corner tabs respectively foldably joining said side wall panels and said end wall panels such that a bevelled corner is formed thereby between a respective said side wall panel and said end wall panel when the article carrier is erected from the blank;

riser panels each having a first portion foldably joined respectively to said end wall panels;

handle structure panels foldably joined respectively to a second portion of said riser panels adjacent said first portion thereof; and

cell forming bands each including a second corner tab foldably joined to a respective one of said side wall panels and a central portion having a first end foldably joined to said handle structure, and having a second end foldably joined to said second corner tab such that a bevelled corner is formed thereby between a respective said side wall panel and said end wall panel when the article carrier is erected from the blank.

5,547,075

MULTIPURPOSE MAILING ENVELOPE

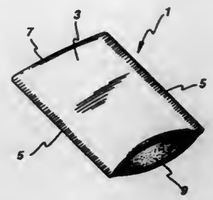
Ronald P. Hoogerwoord, Eerbeek, Netherlands, assignor to Nederlandse Pillo-Pak Maatschappij B.V., Eerbeek, Netherlands

Filed Mar. 15, 1995, Ser. No. 412,534

Claims priority, application European Pat. Off., Apr. 5, 1994, 94250087

Int. Cl.[6] B65D *81/26;85/84;30/08*

U.S. Cl. 206—204 **5 Claims**



1. In a multipurpose mailing envelope, comprising an outer envelope of two outer layers of biodegradable paper stock as an outer jacket which are securely joined to one another and which lie on top of one another along long side edges and one transverse side edge, and with an inside surface which is free from plastic coating, and stiffening layers of soft elastic material comprising plastic padding in the form of air padding sheets which are located between said outer layers and which are securely joined to one another to form an independent inner jacket which is disposed loosely in said outer jacket; the improvement wherein inside surfaces of said outer jacket and outside surfaces of said inner jacket opposite one another are hydrophylic, said plastic padding material being hydrophylic on a surface thereof which forms an outside of said inner jacket, said air padding sheets having a smooth surface forming an inside of the inner jacket and a tufted surface forming an outside of said inner jacket which is hydrophilic.

5,547,076

PACKAGING STRUCTURE

Yuji Doi, Akishima; Yoshiya Kato, Higashimurayama; Takanobu Kanezashi, Hamura, and Yuichi Masuda, Kunitachi, all of, Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Dec. 7, 1994, Ser. No. 350,540

Claims priority, application Japan, Dec. 16, 1993, 5-342708

Int. Cl.[6] B65D *85/40*

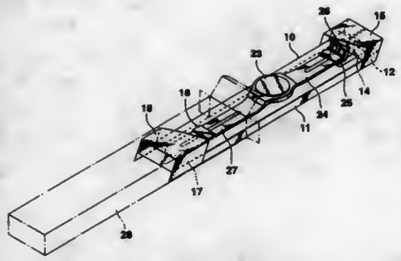
U.S. Cl. 206—301 **14 Claims**

1. A packaging structure for packaging an article having a circular member, said packaging structure comprising:

a plate-like base on which the article for packaging can be arranged for storage, said plate-like base including:

an opening formed in the plate-like base,

a tongue-like portion extending into the opening, said tongue-like portion being insertable into the circular member of the article for packaging,



a cover portion for covering an extending end portion of the tongue-like portion to prevent the circular member of the article for packaging into which the tongue-like portion is insertable from being removable therefrom, said cover portion being continuously formed from a portion of the plate-like base outside the opening thereof; and

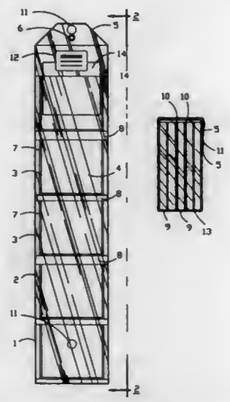
a case member for storing the plate-like base therein, said case member locking the cover portion of the plate-like base in place to cover the extending end portion of the tongue-like portion of the plate-like base and prevent the circular member of the article for packaging into which the tongue-like portion is insertable from being removable therefrom.

5,547,077

COMPACT DISK DISPLAY AND STORAGE PACKAGE

Jin S. Wang, Torrance, Calif., assignor to JMR Research Inc., Torrance, Calif.

Filed Feb. 10, 1995, Ser. No. 386,750
Int. Cl.[6] B65D *85/57*
U.S. Cl. 206—307.1 **8 Claims**



1. A package for the display and storage of product containers comprising:

a carrier strip comprising a flexible, elongated sheet-form material, said carrier strip having a front and a rear surface and having a first and second end,

a plurality of pocket covers made of sheet-form material, the pocket covers being attached to the carrier strip, each pocket cover forming a pocket suitable for containing and bolding a product container, each pocket having an opening of sufficient size to allow the insertion into or removal from the pocket of a product container, the plurality of pocket covers being located substantially adjacent to each other so as to form a plurality of substantially adjacent pockets oriented in a column aligned with the elongated dimension of the carrier strip and the opening of each pocket being oriented toward the first end of the carrier strip, the adjacent pockets being separated by hinging portions of the carrier strip, said hinging portions allowing the carrier strip with the product containers inserted therein to be folded in an accordion-like manner into a stack of the pockets, said hinging portions, when in the one of said fastening devices located on the flap, and the other of said fastening devices positioned relative thereto so that stacked configuration, is disposed alternately along a first side of the stack and along only a second side of the only stack, said second side of the stack being on the opposite side of the stack from the first side of the stack,

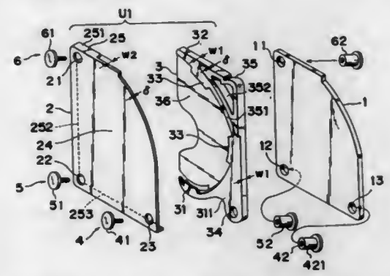
the carrier strip further including a flap at one end of the carrier strip, the carrier strip also including a fastening device at each end thereof, for fastening the flap to the opposite end of the carrier strip wben the carrier strip is folded in an accordion-like manner into a stack, one of said fastening devices located on the flap, and the other of said fastening devices positioned relative thereto so that the flap, when fastened to the opposite end of the carrier strip is situated substantially adjacent to the hinging portions along only the first side of the stack, whereby said flap constrains the movement relative to each other of said hinging portions located along the first side of the stack, while allowing the hinging portions located along the first side of the stack to operate as hinges for angular movement about said hinges of pairs of adjacent pockets relative to other pairs of adjacent pockets, and at the same time allowing the second side of the stack to be opened in a manner similar to opening a book, so that the product containers can be examined one at a time.

5,547,078

HOUSING FOR ACCOMMODATING ONE OR MORE DISKS

Yoshiaki Iida, 3-12, Myokenhigashi 3-chome, Katano-shi, Osaka 576, Japan

Filed Nov. 7, 1994, Ser. No. 335,533
Int. Cl.[6] B65D *85/57*
U.S. Cl. 206—308.1 **9 Claims**



9. A housing for holding a disk-shaped recording medium, comprising:

a holder means for holding said recording medium and for receiving and releasing said recording medium along a path of travel in a radial direction of the recording medium;

said holder means defining a holder fastener hole;

a cover means for covering a first side of said holder means whereat said recording medium is exposed;

said cover means having a web side for covering said exposed recording medium and a peripheral flange projecting substantially perpendicularly therefrom for accepting said holder means within an enclosure area defined by said peripheral flange and said web side;

said holder means and said cover means being arranged in an assembly wherein said holder means are held within said cover means, and said holder means and said cover means define an interior area for accepting said recording medium;

said cover means each defining a fastener hole in alignment with said holder fastener hole for accepting a fastener about which said holder means is pivotable;

an end plate contoured in conformance with said peripheral flange of said cover means and defining fastener holes therein;

said cover means further defining other fastener holes for coupling together said cover means and said end plate;

first fastener means for releasably coupling said holder and cover means together received in said holder fastener holes and said fastener holes of said cover means and coupled to said end plate;

second fastener means for releasably coupling together said cover means and said end plate, said second fastener means being received in said other fastener holes provided in said cover means and said end plate in alignment with each other, said other holes being disposed such that a passage of said recording medium from said holder means during pivoting about said first fastener means is not hindered by said second fastener means;

said holder means having an edge flange including a grip portion at a juncture of an upper edge and a vertical edge of said holder means, said holder fastener hole which receives said first fastener means being provided in a lower end portion of said vertical edge;

said peripheral flange extending around a perimeter of said cover means from a first flange end to a second flange end, said first and second flange end defining a flangeless portion ranging from an end of said edge flange at said upper edge to a point corresponding to said lower end portion of said vertical edge, said peripheral flange having a depth equal to a thickness of said holder means;

said grip portion being disposed proximate a corner defined by an intersection of said upper edge and said vertical edge, and a lower end of said edge flange at said vertical edge incorporating said holder fastener hole;

said end plate and cover means having substantially rectangular contours with the exception of a rounded-off corner exposing said grip portion of said edge flange when said holder means is in a closed position; and

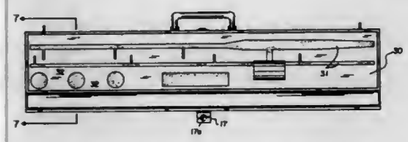
said edge flange having an end abutting one of said first and second ends of said peripheral flanges when in holder means is in said dosed position.

5,547,079

FISHING ROD AND ACCESSORIES CARRYING CASE

Victoria R. Pino, 540 La Vega Rd. S.W., Albuquerque, N.M. 87105

Filed Nov. 16, 1994, Ser. No. 340,532
Int. Cl.[6] B65D *85/00*
U.S. Cl. 206—315.11 **1 Claim**



1. A fishing rod and accessories carrying case comprising:

a rigid rectangular container having a front wall spaced from a rear wall, space sided walls and a bottom wall defining an interior compartment of the container, with a hinged lid pivotally mounted to the rear wall;

a first recess extending completely around the top edges of said rear, front and side walls, and a second complementary recess extending completely around the edges of said hinged lid in a confronting mirror image relationship to said first recess;

a continuous resilient seal disposed within said second recess wherein said seal is received within said first recess when the lid is closed so as to provide for a fluid impermeable interior compartment within the container and lid;

a polymeric foam insert snugly engaged within said walls of said interior compartment;

a first elongated recess in said foam insert extending substantially the entire length of the bottom wall of said compartment, said elongated recess having an enlarged diameter at one end thereof to accommodate the handle portion of a fishing rod and an elongated narrower diameter for the major portion of said recess to accommodate the pole section of a fishing rod;

a further plurality of cylindrical recesses in said foam insert spaced from and extending substantially along the length of said elongated recess for receipt of containers for bait, fishing lures and accessories therein;

a handle member pivotally and medially secured to the exterior of said front wall, and a pair of pivot loops fixedly mounted to said front wall each adjacent to a respective one of the side walls; and a flexible strap extending loosely between said pivot loops;

and,

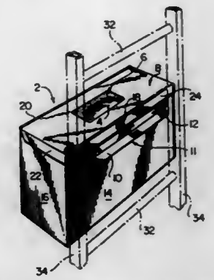
a latch plate having a latch plate hinge pivotally mounting said latch plate to said lid opposite the hinged side of said lid, and said latch plate arranged to extend over said front wall of said container to engage a slot in said latch plate with a latch loop pivotally mounted to said front wall of said container.

5,547,080

SUSPENDIBLE TOOL BOX

Joseph J. Klimas, 8454 South Kolin, Chicago, Ill. 60652

Filed Aug. 22, 1994, Ser. No. 293,546
Int. Cl.[6] B65D *85/20;* **E06C** *7/14*
U.S. Cl. 206—373 **14 Claims**



1. An improved tool box, having a front wall, a rear wall and two side walls, each lying generally in a vertical plane, and a bottom wall lying generally in a horizontal plane, said front wall and said rear wall each having their bottom edges connected to the front edge and the rear edge, respectively, of the bottom wall, said side walls each having their bottom edges connected to the side edges, respectively, of the bottom wall, the front side edge of each of the side walls connected, respectively, to the side edge of the front wall, and the rear side edge of each of the side walls connected, respectively, to the side edge of the rear wall, a lid connected to at least one of the walls lying in a generally vertical plane, wherein the improvement comprises:

a. a means for suspending the box from an object while permitting free movement of the lid for opening and closing and without limiting movement of the lid by the object to which the box may be suspended,

said means for suspending being operably connected to one of the vertical walls of said box, adapted to suspend said box from a horizontal member of a scaffold, said scaffold having the horizontal member supported on each end by a parallel vertical support member, and said means for suspending the box extends horizontally and is centrally disposed on said vertical wall and has a horizontal length that is less than the horizontal length of the vertical wall of the box to which the means for suspending the box is attached,

wherein each end of the vertical wall of the box on which the means for suspending the box is disposed extending beyond the centrally disposed means for suspending the box defines a vertical section, and

wherein each vertical section may be positioned adjacent to a parallel vertical support member of a scaffold having a horizontal member disposed between parallel vertical support members,

whereby, rotational movement of the box about said horizontal member of a scaffold is obstructed by contact between each of said vertical sections and the adjacent parallel vertical support member; and

b. a horizontal lid hinge operably connected to the lid and having an axis disposed along and operably connected to the vertical wall of the box that is opposite the vertical wall of the box on which the means for suspending the box is disposed, said lid being pivotally movable about the axis of said lid hinge from a closed position with the lid resting generally horizontally on top of said box to an open position,

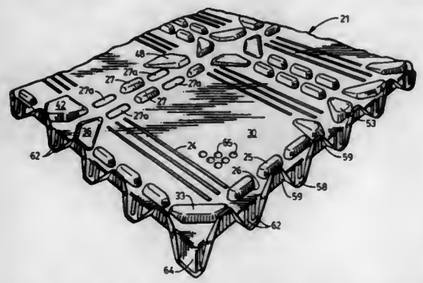
whereby, a scaffold from which the box may be suspended will not impede the use of the lid which may be opened and closed while the box is suspended from the scaffold.

5,547,081

UNITIZED, STABLE STACKING SYSTEM WITH TIER SHEET STABILIZER, AND METHOD

Daniel Mullock, Cincinnati; Paul Baker, Cambridge, and John Knight, New Concord, all of Ohio, assignors to Chiquita Brands, Inc., Cincinnati, Ohio

Filed Oct. 25, 1993, Ser. No. 142,587
Int. Cl.[6] B65D *21/032*
U.S. Cl. 206—504 **4 Claims**



1. In combination, a plurality of containers having sidewalls, said containers stacked in at least two layers comprising an upper layer and a lower layer, and a tier sheet positioned between said upper and lower layers, said tier sheet comprising:

(a) a top surface having an outer perimeter and a substantially planar area for supporting said upper layer;

(b) a bottom surface having an outer perimeter;

(c) a peripheral upper retainer disposed about and extending upwardly away from at least a portion of the perimeter of said top surface; and

(d) a plurality of protuberances depending downwardly away from said bottom surface;

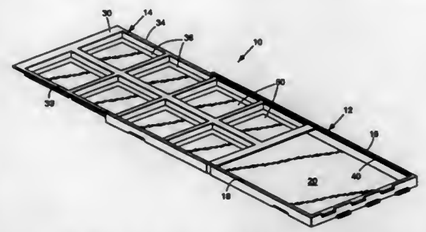
such that said upper retainer retains said upper layer on said top surface, and wherein said protuberances are located so as to snugly engage the sidewalls of at least a portion of the containers of said lower layer, thereby stabilizing said lower layer of containers in a predetermined arrangement wherein said tier sheet further comprises a peripheral lower retainer disposed about and extending downwardly away from at least a portion of the perimeter of said bottom surface, such that said lower retainer further stabilizes said lower layer by restricting the movement of the containers of said lower layer relative to one another; wherein said containers are of an open-topped, lidless variety, and wherein at least a portion of said protuberances snugly engage the interior sidewalls of the lower layer of containers; wherein each of said containers is rectangular in shape, and further wherein each of the four corners of the open top of each container of said lower layer has at least one protuberance nesting therein.

5,547,082

COMPONENT TRAY WITH REMOVABLE INSERT

Leon D. Royer, Woodbury, Minn.; Thomas Skrtic, Eau Claire, and Mark J. Zach, Altoona, both of Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 212,063, Mar. 14, 1994, abandoned. This application Jul. 26, 1995, Ser. No. 507,601
Int. Cl.[6] B65D *73/02*
U.S. Cl. 206—725 **45 Claims**



1. A component tray system for storage of electronic components and delivery of the electronic components to a placement apparatus, the system comprising:

a) a single frame;

b) a plurality of different inserts, each insert having a plurality of pockets, each pocket adapted for receiving and holding at least one component, wherein each insert is adapted for receiving and holding a component different than the component that each other insert is adapted to receive and hold; and

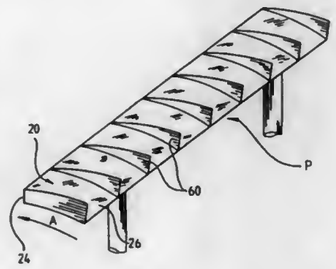
c) means for releasably securing each insert to said frame such that the at least one component may be received by a pocket when an insert is releasably secured to said frame.

5,547,083

APPARATUS FOR TREATING FIBER SUSPENSION

Timo Alajääski; Kalevi Laakso; Antero Laine, and Risto Ljokkoi, all of Karhla, Finland, assignors to A. Ahlstrom Corporation, Noormarkku, Finland

PCT No. PCT/F193/00151, § 371 Date Oct. 13, 1994, § 102(e) Date Oct. 13, 1994, PCT Pub. No. WO93/22494, PCT Pub. Date Nov. 11, 1993
PCT Filed Apr. 8, 1993, Ser. No. 318,719
Claims priority, application Finland, Apr. 23, 1992, 921801
Int. Cl.[6] B07B *1/04*
U.S. Cl. 209—273 **40 Claims**



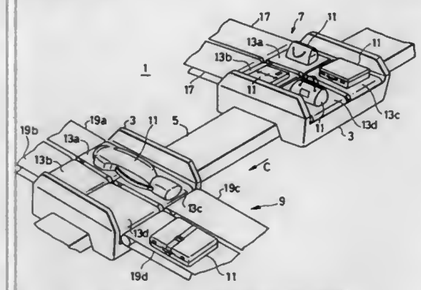
1. Apparatus for treating a fiber suspension comprising: an outer casing; a plurality of conduits for introducing fiber suspension into said outer casing and for discharging two fractions of suspension therefrom a screen cylinder having a screen surface; a pulse member having an axis and at least one continuous surface facing said screen surface, said continuous surface having a leading edge and one of a trailing surface and a trailing edge, and a circumference; at least one of said screen cylinder and said pulse member being rotatably mounted on a shaft; said at least one continuous surface facing said screen cylinder being provided with at least two substantially circumferential channels, said channels having a cross-sectional area increasing away from said leading edge which said channels causing said screen surface of said screen cylinder to be subjected to a strong suction effect to maintain said screen surface clean.

5,547,084

ARTICLE SORTING METHOD AND SYSTEM

Nobuyuki Okada, and Takuya Eikyu, both of Tokyo, Japan, assignors to Toyokanetsu Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 8, 1994, Ser. No. 271,982
Claims priority, application Japan, Jul. 8, 1993, 5-169268
Int. Cl.[6] B07C *5/00*
U.S. Cl. 209—583 **15 Claims**



1. An article sorting method comprising the steps of:

(a) reading sorting destination data from articles;

(b) positioning, at an article receiving section based on the sorting destination data read from said articles, a carriage having a plurality of conveying means and movable along a track;

(c) loading one or more of said articles on selected one or ones of said plurality of conveying means provided on said carriage thus positioned;

(d) positioning said carriage at an article sorting section; and

(e) sorting at least one of said articles therefrom according to the sorting destination data of said articles by driving independently or cooperatively selected one or ones of said plurality of conveying means, wherein a single article is loaded over at least two of said plurality of conveying means at said article receiving section.

5,547,085

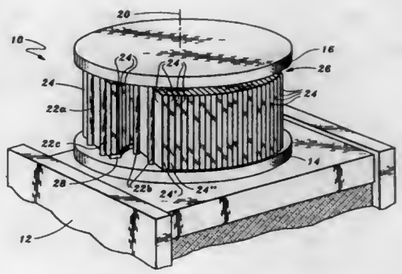
STORAGE CAROUSEL FOR COMPACT DISC RECORDING AND THE LIKE

Douglas M. Gaus, 207 Augustine Dr., Martinez, Calif. 94553

Filed Aug. 11, 1994, Ser. No. 289,313
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—40 **6 Claims**

1. The combination of a storage carousel and a plurality of disc recordings contained respectively in disc recording cases each of which has a hinged spine, comprising:

a first platform mounted on a turntable bearing and thus being rotatable about a vertical axis, and having at least one curvilinear edge portion;



a second platform maintained in a predetermined position above said first platform by at least one support member;

disc recording case supporting means for maintaining a plurality of said disc recording cases upright upon said first platform;

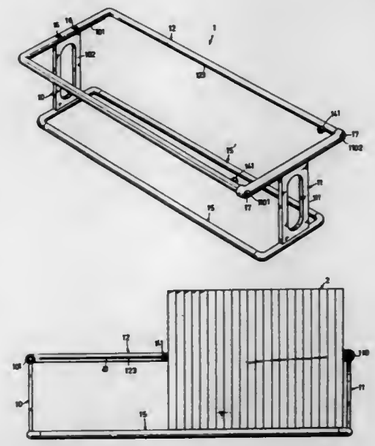
curvilinear backstop means so positioned and configured that the spines of a selected plurality of disc recording cases which are resting on said first platform are supported by said disc recording case supporting means, are in contact with said curvilinear backstop means, and are in face-to-face contact over a major part of their confronting faces lie within a predetermined distance from said at least one curvilinear edge portion.

5,547,086

VIDEO COMPACT DISK STORAGE RACK

Hui-Huang Chen, No. 105-1, Sec. 1, Chang Shui Rd., Pu Yen Hsiang, Changhwa Hsien, Taiwan

Filed May 10, 1995, Ser. No. 438,341
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—40 **4 Claims**



1. A video compact disk storage rack comprising:

a first end member, said first end member comprising an upright, a horizontal channel bar connected to the upright of said first end member at a top side, and a plurality of screw holes on said horizontal channel bar;

a second end member, said second end member comprising an upright, and a horizontal rod connected to the upright of said second end member at a top side, said horizontal rod having two countersunk hole at two opposite ends;

two connecting tubes respectively connected between the upright of said first end member and the upright of said second end member at a bottom side;

an open frame connected between said horizontal channel bar of said first end member and said horizontal rod of said second end member, said open frame comprising a transverse middle part supported on said horizontal channel bar of said first end member, two opposite ends respectively connected to the countersunk holes on said horizontal rod of said second end member, two longitudinal sliding slots bilaterally disposed on the inside between said horizontal channel bar and said horizontal rod, the transverse middle part of said open frame having a plurality of countersunk holes respectively connected to the screw holes on said horizontal channel bar of said first end member by a respective screw;

two expansion springs respectively mounted inside said longitudinal sliding slots; and

two T-blocks respectively mounted on said open frame and supported on said expansion springs and moved along said longitudinal sliding slots on said open frame, each T-block comprising an elongated mounting portion disposed said open frame and connected to one expansion spring and an elongated retainer portion perpendicularly connected to said elongated mounting portion and extended out of the respective longitudinal sliding slot for holding down video compact disks within said open frame.

5,547,087

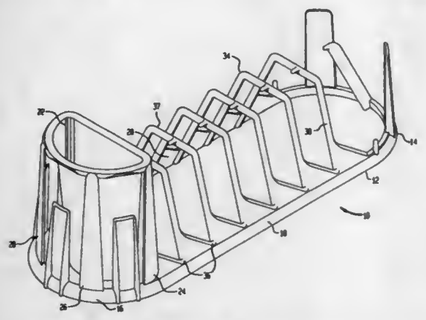
DEVICE FOR HOLDING FLATWARE AND UTENSILS

Yaffa Licari, 875 Ocean Ave., Elberon, N.J. 07740

Filed Jun. 10, 1994, Ser. No. 258,322

Int. Cl.[6] A47F *7/00*

U.S. Cl. 211—41 **7 Claims**



1. A dish drying rack comprising:

(a) a substantially horizontal elongated base frame comprising a first end portion and a second end portion attached to said first end portion by at least one longitudinal frame member, said base frame having ratio of overall length to greatest width of at least 1.75:1, and having a minimum width of two inches;

(b) utensil holding means for holding utensils, said utensil holding means comprising a cup and at least two cup support members, said cup support members being attached to said upper surface of said base frame at said first end portion and extending substantially vertically upward from and nearly perpendicular to said base frame with a degree of inclination from vertical of about 3 degrees to as much as 20 degrees in towards the longitudinal axis of said base frame, said cup being attached to said at least two cup support members and having a depth of at least three inches and having an inner surface which is outwardly inclining from bottom to top at an angle of from 3 degrees to about 20 degrees such that the interior cross-sectional area thereof is increasing from bottom to top, and having an outer surface complementary to said inner surface, said outer surface of said cup outwardly inclining from bottom to top at an angle of from 3 degrees to about 20 degrees from vertical;

(c) a plurality of flatware holding means for holding flatware in a substantially vertical position, said plurality of flatware holding means being integrally attached to the top of said at least one longitudinal frame member and extending in a linear arrangement therealong from said second end portion to a point adjacent to said utensil holding means; and

(d) a plurality of bowl holding means for holding bowls or cups, said plurality of bowl holding means being integrally attached to the top outer edge of said horizontal base frame on said first end portion surrounding said utensil holding means and on said second end portion, said bowl holding means comprising bowl support members extending upwardly from said base frame and having an inward degree of inclination of from two degrees to as much as fifteen degrees from vertical.

5,547,088

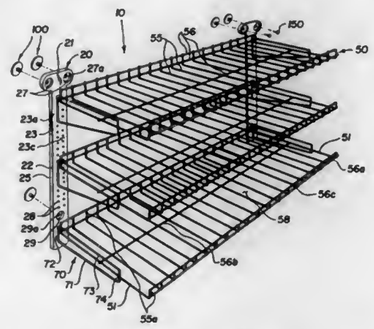
REMOVABLE DISPLAY RACK ASSEMBLY

Paul Belokin; Martin P. Belokin, both of P.O. Box 1907, Denton, Tex. 76202, and Norman P. Belokin, 3341 Evers Pky., Denton, Tex. 76207

Filed Dec. 28, 1993, Ser. No. 174,512

Int. Cl.[6] A47F *5/00*

U.S. Cl. 211—87 **15 Claims**



1. A removeable rack assembly comprising:

(a) a rack shelf;

(b) an elongated rack support having an array of connectors for adjustably positioning the rack shelf longitudinally along the rack support; and

(c) a plurality of suction devices on said rack support connectable to a flat surface.

5,547,089

SLACKLESS DRAWBAR ASSEMBLY UTILIZING A BALL AND RACE ASSEMBLY

David W. Daugherty Jr., Bolingbrook; Wajih Kanjo, Lockport, both of Ill., and Michael G. Hawryszkow, Munster, Ind., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Sep. 19, 1994, Ser. No. 308,604

Int. Cl.[6] B61G *9/00*

U.S. Cl. 213—62 R **26 Claims**

1. An improved slackless type drawbar assembly for use in connecting together adjacently disposed ends of a pair of railway cars in a substantially semi-permanent fashion, said slackless type drawbar assembly comprising:

(a) at least one female connection member, said at least one female connection member including;

(i) a first end portion, having a first predetermined configuration, engageable within an outer end portion of a center sill member disposed on a bottom portion of a car body member of a first railway car, and

(ii) a radially opposed second end portion which extends outwardly from such outer end portion of such center sill member;

(b) a cavity formed in said radially opposed second end portion of said at least one female connection member, said cavity being defined by an inner surface of a back wall portion, having a second predetermined configuration, an inner surface of a top wall portion and inner surfaces of a pair of side wall portions, each side wall portion having a third predetermined configuration, said cavity being open adjacent at least a portion of a bottom and an outer end of said radially opposed second end portion of said at least one female connection member;

(c) a first opening, having a fourth predetermined configuration, formed through a first one of said pair of side wall portions;

(d) a radially opposed second opening, having a fifth predetermined configuration, formed through a second one of said pair of side wall portions;

(e) at least one male connection member having a sixth predetermined configuration, said at least one male connection member including;

(i) a first end portion, at least a portion of said first end portion of said at least one male connection member being movably disposed within said cavity formed in said radially opposed second end portion of said at least one female connection member, and

(ii) and a radially opposed second end portion;

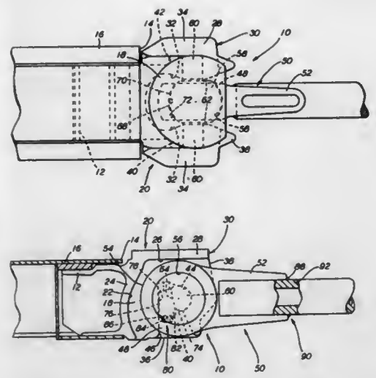
(f) an aperture formed through a predetermined portion of said at least one male connection member adjacent said first end portion thereof;

(g) a spherical shaped member, at least a portion of said spherical shaped member being disposed within said aperture formed through said first end portion of said at least one male connection member;

(h) a pair of substantially horizontally disposed shaft members extending outwardly for a predetermined distance from radially opposed and substantially vertically disposed outer surface portions of said spherical shaped member, at least a portion of a first one of said pair of shaft members being disposed within said first opening formed through said first one of said pair of side wall portions and at least a portion of a second one of said pair of shaft members being disposed within said second opening formed through said second one of said pair of side wall portions, each respective one of said pair of shaft members has a radially opposed and substantially flat surface portion formed thereon;

(i) a pair of wedge means, a first surface of a first one of said pair of wedge means being engaged with a first one of said radially opposed and substantially flat surface portions formed on said pair of shaft members and a second surface of said first one of said pair of wedge means being engaged with a substantially flat and vertically disposed surface portion formed on said first one of said pair of side wall portions adjacent a portion of said first opening and a first surface of a second one of said pair of wedge means being engaged with a second one of said radially opposed and substantially flat surface portions formed on said pair of shaft members and a second surface of said second one of said pair of wedges means being engaged with a substantially flat and vertically disposed surface portion formed on said second one of said pair of side wall portions adjacent a portion of said second opening; and

(j) a means, separate from a railway car center sill, adapted for engaging said second end portion of said at least one male connection member and a second end portion of another male connection member for securing said second end portion of said at least one male connection member to said second end portion of said another male connection member thereby forming an improved slackless type drawbar assembly.



5,547,090

APPARATUS FOR UNCOUPLING TRACK-GUIDED TOY VEHICLES

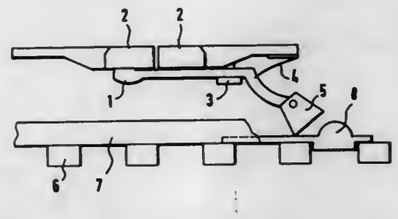
Michael Richter, Berlin, Germany, assignor to Ernst Paul Lehmann Patentwerk, Nuremberg, Germany

Filed Apr. 24, 1995, Ser. No. 427,521

Claims priority, application Germany, Apr. 25, 1994, 9406955 U; May 9, 1994, 9407916 U

Int. Cl.[6] B61G *7/04*

U.S. Cl. 213—75 A **19 Claims**



1. Apparatus for automatically uncoupling track-guided toy vehicles comprising a first coupling element adapted to be pivotally mounted on one toy vehicle for pivotal movement between a coupling position and an uncoupling position, a second coupling element adapted to be disposed on another toy vehicle, said first coupling element coupling with said second coupling element when said first coupling element is in said coupling position, said first coupling element uncoupling from said second coupling element when said first coupling element is in said uncoupling position, a spring means pivotally biasing said first coupling element in said coupling position, a pendulum, pivot means pivotally suspending said pendulum from said first coupling member, a lifting means disposed to underlie the path of travel of said toy vehicles, said lifting means having an elongated base section having an upper surface and an elevated part engageable by said pendulum to effect pivoting of said first coupling member from said coupling position to said uncoupling position, said upper surface for facilitating sliding of said pendulum on said upper surface as said one toy vehicle moves along its path of travel.

5,547,091

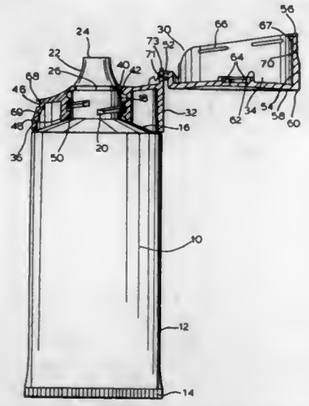
DISPENSING CONTAINER SNAP HINGE CLOSURE

George J. Neveras, Kendall; James C. McKinney, Cranbury, both of N.J.; Adam Sherman, Brooklyn, N.Y.; Richard L. Lohrman, Grayslake, and David Ziegenhorn, Lake Zurich, both of Ill., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 800,173, Nov. 27, 1991, abandoned. This application Nov. 9, 1992, Ser. No. 973,810

Int. Cl.[6] B65D *51/18;37/00*

U.S. Cl. 215—237 15 Claims



1. A closure for use with a container having a dispensing nozzle; said closure comprising:

a base cap having a central axis, a substantially planar base top end wall having an aperture, a first annular wall depending from the peripheral edge of said aperture and defining a central channel to receive a nozzle of a container, and an annular outer side wall depending from a peripheral edge of said base top end wall, said base top end wall at the peripheral edge of said aperture having an inwardly extending radial lip for removably interlocking with a groove on said nozzle of said container and being angled with respect to the central axis to facilitate the delivery of product, said first annular wall having means for removably attaching said base cap to the nozzle of said container; and

a cap lid hinged to said base cap by a living snap hinge integrally formed with said base cap, said cap lid having a cap top end wall, an annular side wall and an annular seal ring depending from said cap top end wall and being concentric to a central axis of said cap lid, said cap lid being hinged to said base cap so that said annular seal ring seals said nozzle when said cap lid is in a closed position.

5,547,092

CONTAINER CLOSURE WITH FRANGIBLE BRIDGES

Nigel Thompson, Stourbridge, United Kingdom, assignor to MCG Closures Limited, United Kingdom

Continuation of Ser. No. 27,752, Mar. 8, 1993, abandoned. This application Apr. 29, 1994, Ser. No. 235,211

Claims priority, application United Kingdom, Mar. 12, 1992, 9205374

The portion of the term of this patent subsequent to Jul. 13, 2010, has been disclaimed.

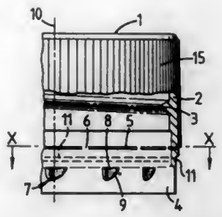
Int. Cl.[6] B65D *41/34*

U.S. Cl. 215—252 7 Claims

1. A container closure molded from plastics material, comprising

(a) a crown;

(b) an annular skirt depending from said crown and having a screw-thread on an internal surface thereof;



(c) said skirt containing a circumferential line of weakness to define a tamper-evident ring depending from said skirt, said line of weakness including a plurality of spaced frangible bridges adapted to transmit rotational forces arising between said ring and said skirt during onscrewing process and for connecting said ring with said skirt;

(d) a plurality of integral protrusions extending radially inwardly from an inner surface of said ring, each of said protrusions having a contact surface facing said crown and including a compound curve extending downwardly from said contact surface; and

(e) each of said bridges comprising in cross section a weakened portion whose radial extent decreases in an unscrewing direction of the closure towards a leading edge, whereby during unscrewing of the closure from a container neck having a plain security band, said bridges are sequentially fractured as a result of tension and shear forces created in the line of weakness owing to engagement of said protrusions with the security band of the container neck.

5,547,093

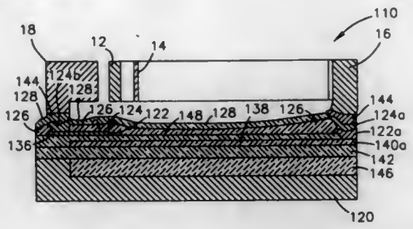
METHOD FOR FORMING A MICROMACHINE MOTION SENSOR

Douglas R. Sparks, Kokomo, Ind., assignor to Delco Electronics Corporation, Kokomo, Ind.

Filed Sep. 14, 1994, Ser. No. 305,540

Int. Cl.[6] B44C *1/22*

U.S. Cl. 216—2 13 Claims



1. A method for forming a motion sensor having a sensing structure which is circumscribed by an electrode pattern and supported above a substrate so as to define an axis of the motion sensor, the method comprising the steps of:

providing a substrate formed by a wafer on which MOS circuits are formed;

forming at least three non-dielectric layers on the substrate, wherein:

a first of the at least three non-dielectric layers is formed as a bias plane for the motion sensor, the bias plane being formed so as to be electrically insulated from the substrate and such that a central portion of the bias plane is defined at the axis;

a second of the at least three non-dielectric layers is formed so as to define a radial conductor pattern which is electrically insulated from the substrate and the bias plane, and such that each radial conductor of the radial conductor pattern

extends approximately radially from the axis and terminates with a radial distal end;

a third of the at least three non-dielectric layers is formed so as to define a concentric conductor pattern which is electrically insulated from the substrate, and such that each concentric conductor of the concentric conductor pattern is electrically interconnected with at least one of the radial conductors of the radial conductor pattern; and

one of the at least three non-dielectric layers is a planarized doped polysilicon layer and two of the at least three non-dielectric layers are planarized and passivated metal layers;

forming a passivation layer over the at least three non-dielectric layers, such that the passivation layer forms a surface of the motion sensor;

forming a post along the axis such that the post is electrically interconnected to the bias plane;

forming the sensing structure such that the sensing structure is supported by the post over the surface of the motion sensor and is electrically interconnected to the bias plane through the post; and

forming the electrode pattern which circumscribes the sensing structure such that the electrode pattern is electrically interconnected to each radial distal end of the radial conductor pattern.

5,547,094

METHOD FOR PRODUCING ATOMIZING NOZZLE ASSEMBLIES

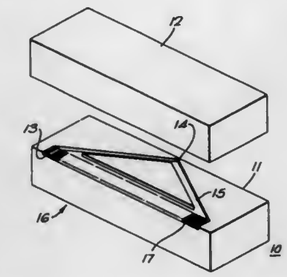
Frank Bartels, Waldbronn; Wulf Bachtler, Mainz, both of, Germany; Stephen T. Dunne, Suffolk, United Kingdom; Joachim Eicher, Karlsruhe, Germany; Bernhard Freund, Gau-Algesheim, Germany; William B. Hart, Suffolk, United Kingdom, and Christoph Lessmoellmann, Gernsbach, Germany, assignors to DMW (Technology) Ltd., United Kingdom, and Boehringer Ingelheim International GmbH, Germany

Division of Ser. No. 128,021, Sep. 29, 1993, Pat. No. 5,472,143. This application Jun. 5, 1995, Ser. No. 462,680

Claims priority, application United Kingdom, Sep. 29, 1992, 9220505; Germany, Oct. 24, 1992, 42 36 037.4; United Kingdom, Jul. 19, 1993, 9314804

Int. Cl.[6] B44C *1/22*

U.S. Cl. 216—33 19 Claims



1. A method of producing a plurality of nozzle assemblies, comprising:

forming a first member to have a first generally planar surface and a plurality of grooves formed within said first generally planar surface;

forming a second member to have a second generally planar surface;

joining said first member and said second member along said first generally planar surface and said second generally planar surface to form a composite structure; and

separating said composite structure into individual composite portions to form individual nozzle assemblies, wherein each of said nozzle assemblies comprises a nozzle intake, a nozzle outlet and a channel connecting said nozzle intake and said nozzle outlet in fluid flow communication formed from said plurality of grooves.

5,547,095

ELECTRONICS AND INSTRUMENTATION ENCLOSURE AND A FRAME THEREFOR

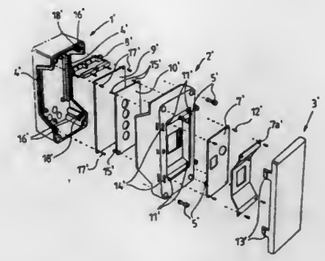
John-Erik Sonntag, Tammisaari, and Matti Ropponen, Espoo, both of, Finland, assignors to Fibox Oy AB, Tammisaari, Finland

Filed Oct. 11, 1994, Ser. No. 330,244

Claims priority, application Finland, Oct. 11, 1993, 934475

Int. Cl.[6] H02G *3/08*

U.S. Cl. 220—3.8 2 Claims



1. An electronics and instrumentation enclosure to be used for electronic, electrical and apparatus installations having a plurality of mounting levels, the enclosure comprising:

a first mounting level being a lower portion, the lower portion comprising fixing points for components to be mounted;

a frame, the frame being fastened to the lower portion by means of screws, the components being mounted between the lower portion and the frame;

a cover, the cover being formed to cover the frame substantially entirely including the screws by which the frame is secured to the lower portion and the cover is hinged on the frame; and

the frame comprising means defining holes for fixing two component mounting plates on both sides of the frame, the two component mounting plates being a second mounting level and a third mounting level, respectively, wherein one of the component mounting plates is positioned on the frame side facing the cover, and the other component mounting plate is positioned on the frame side facing the lower portion, so that versatile components are mounted on different mounting levels.

5,547,096

PLATED POLYMERIC FUEL TANK

Hendrik Kleyn, Grandville, Mich., assignor to Kleyn Die Engravers, Inc., Jenison, Mich.

Filed Dec. 21, 1994, Ser. No. 361,316

Int. Cl.[6] B65D *6/24*

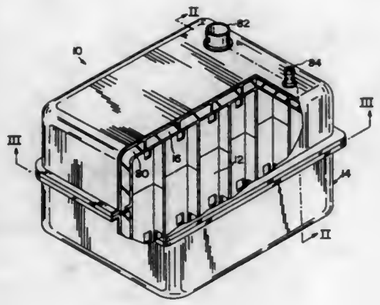
U.S. Cl. 220—4.14 8 Claims

1. A plated, polymeric fuel tank shell, comprising:

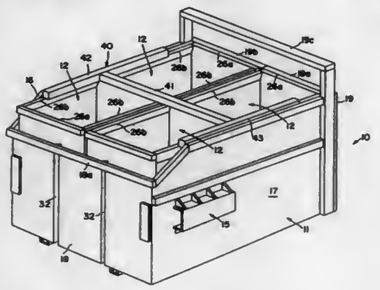
a first outer shell half;

a second outer shell half mating with said first outer shell half to define a spaces for the containment of an inner shell; and

a metallic plating on a surface of said first and said second shell halves, said metallic plating includes a layer of copper, a layer of nickel, and a layer of chrome.

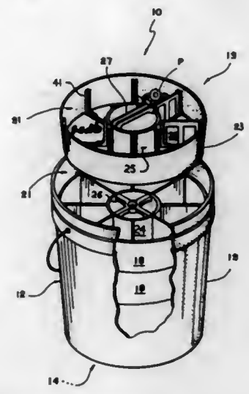


5,547,097
CONTAINER ASSEMBLY FOR WASTE
John C. Lyon, Spalding, Great Britain, assignor to David J. Dawe, and Philip A. Munnelly, both of, Great Britain
PCT No. PCT/GB92/00781, § 371 Date Dec. 9, 1993, § 102(e) Date Dec. 9, 1993, PCT Pub. No. WO92/19516, PCT Pub. Date Dec. 11, 1992
PCT Filed Apr. 28, 1992, Ser. No. 146,042
Claims priority, application United Kingdom, May 1, 1991, 9109453
Int. Cl.[6] B65D 90/00
U.S. Cl. 220—23.83 9 Claims



1. A waste container assembly, comprising:
a housing including a plurality of mobile containers, wherein said housing is adapted for engagement with a tipping apparatus capable of raising the housing to an elevated tipped position where at said housing is positioned upside down to permit contents of said containers to be emptied therefrom, wherein said housing includes a tipping support for holding each of said mobile containers captive within said housing when said housing is in said elevated tipped position, said housing having opposed end walls and opposed sidewalls defining an internal space; and
each of said mobile containers having a plurality of wheels and having a cross-section and size to nest together and substantially fill said internal space of said housing,
wherein said tipping support of said housing abuts said containers for preventing said containers from falling out of said housing when said housing is positioned in said elevated tipped position.

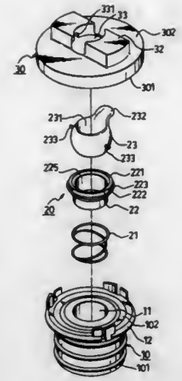
5,547,098
CONTAINER WITH STACKABLE TRAYS AND ADJUSTABLE PARTITIONS
Raymond L. Jordan, 2875 Idlewild Dr., #58, Reno, Nev. 89509
Continuation-in-part of Ser. No. 122,297, Sep. 17, 1993, Pat. No. 5,386,922. This application Nov. 28, 1994, Ser. No. 348,260
Int. Cl.[6] B65D 21/02
U.S. Cl. 220—23.86 20 Claims



1. A storage container comprising:
a bucket;
a plurality of vertically stackable trays, with each of said trays having a configuration conforming to the configuration of said bucket for insertion and is inserted thereinto;
at least one of said trays including a plurality of partitions removably inserted therein and adapted to divide said at least one of said trays into a plurality of selectably variable volumes, and;
a plurality of inserts removably inserted into said trays, each of said plurality of inserts having a floor;
each of said inserts including means dimensioned and configured to have a constricted neck portion, said constricted neck portion extending to said floor;
each of said inserts further being dimensioned and configured to cooperate with other said inserts such that at least two of said inserts are insertable into any one said tray, whereby;
said bucket is vertically divided into tiers, and each tier is subdivided into adjacent compartments.

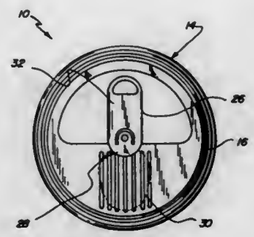
5,547,099
COVER ASSEMBLY FOR PERMITTING ACCESS INTO A CONTAINER WITHOUT REMOVAL THEREFROM
Mong-Shiang Chang, No. 2, Hsin-Hsing Rd., Wu-Jin Hsiang, Taichung Hsien, Taiwan
Filed Jan. 31, 1995, Ser. No. 380,999
Int. Cl.[6] B65D 55/02
U.S. Cl. 220—212.5 4 Claims

1. A cover assembly for a container, permitting access into said container without removal therefrom, said cover assembly comprising:
a base body having a cylindrical wall defining an axial bore therethrough with a lower portion for engaging an entry of said container, an upper portion to be exposed exteriorly of said container, and an annular flange extending inwardly and radially from said cylindrical wall into said axial bore;
a shield mounted to said upper portion of said base body and having a central opening aligned with said axial bore of said base body;
a valve device having a coil spring provided within said axial bore and placed on said annular flange, a hollow cylinder-



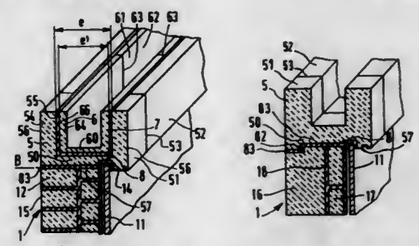
shaped valve seat provided axially in said axial bore of said base body and inserted into said coil spring such that said valve seat is in communication with said container, said valve seat having an outwardly and radially extending press member biased by said coil spring toward said shield, and a blocking valve with a spherical external face and an axial hole extending therethrough, said blocking valve being provided between said valve seat and said shield and being connected pivotally to said shield such that said blocking valve is pivotable relative to said shield between a first position, wherein said axial hole of said blocking valve is communicated with said central opening of said shield and said container via said valve seat, and a second position wherein said spherical face covers said valve seat, thereby blocking communication between said central opening of said shield and said valve seat; and
said shield having an internal surface facing said valve device, an external surface opposite to said internal surface, and two aligned protrusions formed on said external surface at two sides of said central opening for protecting an upper portion of said blocking valve.

5,547,100
BEVERAGE CAN INSECT COVER
Michael D. Johnson, Rt. 3, Box. 321, Murray, Ky. 42071
Filed Mar. 6, 1995, Ser. No. 398,734
Int. Cl.[6] B65D 51/18
U.S. Cl. 220—253 1 Claim



1. A beverage can insect cover comprising:
a flat circular member positionable atop a beverage can, the circular member being shaped so as to be positionable within a projecting flange of a top end of the beverage can, the circular member having a plurality of elongated apertures directed therethrough the circular member for permitting egress of liquids from the beverage can, while precluding ingress of insects into the beverage can, wherein the circular member further has a semi-circular aperture directed therethrough defining a straight separating edge substantially dividing the circular member in half and an arcuate portion extending about the semi-circular aperture of the circular member, wherein an opening lever of the beverage can is positionable through the semi-circular aperture such that an engaging portion of the opening lever can be positioned to extend over the straight separating edge of the circular member so as to capture the circular member between a top surface of the beverage can and a bottom surface of the engaging portion of the opening lever of the beverage can.

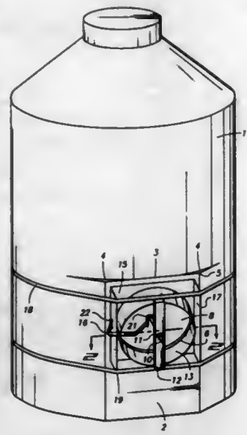
5,547,101
ACID TANK CLOSING DEVICE
Michel Haquin, Villiers Sur Marne, and Jacques Brosson, Riom, both of, France, assignors to CLECIM, Cergy Pontoise, France
PCT No. PCT/FR92/00777, § 371 Date Apr. 9, 1993, § 102(e) Date Apr. 9, 1993, PCT Pub. No. WO93/03200, PCT Pub. Date Feb. 18, 1993
PCT Filed Aug. 6, 1992, Ser. No. 39,096
Claims priority, application France, Aug. 9, 1991, 91 10194
Int. Cl.[6] B65D 6/28
U.S. Cl. 220—561 8 Claims



1. A closing device and tank for containing a corrosive product, said tank comprising a bottom surrounded by a side wall having an upper edge delimiting an opening which is closed by a cover fitted with a side lip designed to engage on closing, in a seal, said seal having a U-shaped channel provided along said upper edge of the side wall and containing water, said U-shaped channel being made up of a plurality of monolithic U-shaped elements arranged in sequence on the upper edge of the side wall, each monolithic element being carved from natural igneous eruptive rock, and seals being provided between adjoining monolithic U-shaped elements.

5,547,102
PLASTIC TANK MANWAY BULGE RESTRICTOR
David D. Rule, and Toby D. Rule, both of 616 S. Road 40 E., Pasco, Wash. 99301
Continuation of Ser. No. 108,454, Aug. 19, 1993, abandoned. This application Jul. 21, 1995, Ser. No. 505,598
Int. Cl.[6] B65D 7/42
U.S. Cl. 220—648 20 Claims

1. A means of applying pressure to prevent a vertical cylindrical container side wall from bulging near a sealed aperture, said sidewall being plastic and exhibiting a tendency to deform outwardly under stress near said sealed aperture, as when the weight of a fluidous material exerts an outward hydrostatic pressure on said side wall, said means comprising;
(a) A load-distributing means positioned adjacent to said sealed aperture and abutting the exterior of said sidewall, said load-distributing means being capable of distributing concentrated forces exerted on said load-distributing means to said sidewall in a uniform fashion, in a direction perpendicular to said sidewall, and in an area directly adjacent said sealed aperture; and



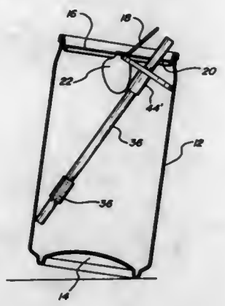
(b) At least one tension-bearing means positioned circumjacent to said container wall and held away from the cylindrical surface, which is defined by said container sidewall, by said load-distributing means so that said tension-bearing means exerts an inward force on said load-distributing means that is sufficient to counteract the internal pressure that tends to bulge the area around said sealed aperture.

5,547,103

BEVERAGE CONTAINER WITH SELF-CONTAINED DRINKING STRAW

Peter F. Murphy, Grosse Pointe; James H. Kurtz, Jr., Grosse Pointe Farms, both of Mich.; Ross Whitehead, and David A. Szasz, both of Wilmington, Del., assignors to The PopStraw Company, LLC, Grosse Pointe Farms, Mich.

Filed Sep. 6, 1994, Ser. No. 301,228
Int. Cl.[6] B65D *47/06*
U.S. Cl. 220—709 **15 Claims**



1. A beverage container having a body with a closed bottom end and a top end having associated therewith a normally closed offset orifice and including manually operable means for opening the orifice; and further comprising:

a straw disposed within the body of the container; and

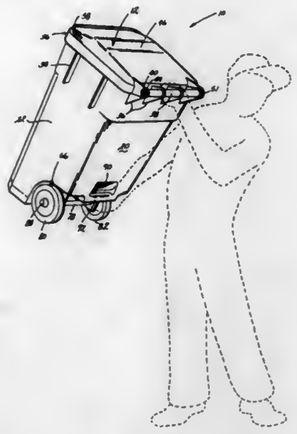
a weighted member operatively associated with the straw and gravity responsive to manipulation of the container to cause the straw to move within the container and thereby align the straw with the orifice through appropriate manipulation of the container.

5,547,104

WASTE CONTAINER WITH DUMP HANDLE

Brian G. Parker, Alto, Mich., assignor to Cascade Engineering, Inc., Grand Rapids, Mich.

Filed Aug. 11, 1994, Ser. No. 289,018
Int. Cl.[6] B65D *25/28*
U.S. Cl. 220—772 **18 Claims**



1. A waste container for receiving and storing waste material and comprising:

a container body comprising:

a front wall, a rear wall, side walls, and a bottom wall, which together define a waste receiving receptacle;

axle mounting plates on the bottom wall; and

an upper handle disposed at an upper portion of the rear wall;

a wheel assembly having an axle mounted to the axle mounting plates and wheels mounted to the axle in a position adjacent the bottom wall of the container body;

a recess in the rear wall at a bottom central portion thereof above the mounting plates and defined in part by a downward wall extending to the bottom wall;

a handle web joined to the rear wall at a lower end of the rear wall recess rearwardly of the downward wall, the rear wall recess forming a handle opening for gripping the handle web;

whereby the handle web forms a lower handle at the bottom of the rear wall of the container body for lifting the container in conjunction with the upper handle formed at the upper portion of the rear wall.

5,547,105

CAN VENDING MECHANISM

Kenneth W. Oden, Charles Town, and Michael D. Ring, Kearneysville, both of W. Va., assignors to Royal Vendors, Inc., Kearneysville, W. Va.

Filed Oct. 18, 1994, Ser. No. 324,501
Int. Cl.[6] G07F *11/08*
U.S. Cl. 221—181 **18 Claims**

1. A vending module for vending cylindrical products to an outlet in the face of a vending machine comprising:

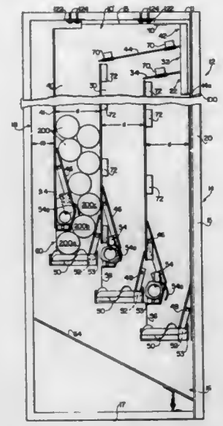
first, second, and third vertical channels having top and bottom ends and being disposed one behind the other in parallel relationship behind the face of the vending machine, said bottom ends of said channels being in communication with the outlet, and said channels being dimensioned to accommodate multiple stacks of products with the longitudinal axes of the products being parallel to the vending machine face;

first, second, and third funnels positioned respectively in said first, second, and third vertical channels to funnel said multiple stacks of products into single, generally vertically-extending stacks of products at said bottom ends;

first, second, and third vend slots in communication with said first, second, and third vertical channels at said top ends of said channels for loading products into said first, second, and third vertical channels;

first, second, and third dispensing means for dispensing the products from said bottom ends of said first, second, and third channels, respectively; and

first, second, and third switches operatively connected to said first, second, and third dispensing means, respectively, said first, second, and third switches being operative to de-activate said first, second, and third dispensing means when a pre-determined number n of products greater than zero remains in escrow at said bottom ends of said channels to prevent said first, second, and third dispensing means from dispensing said pre-determined number of products remaining in escrow.

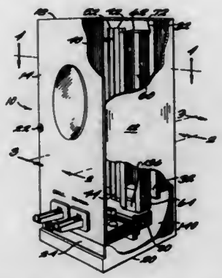


5,547,106

APPARATUS FOR DISPENSING OBJECTS

R. Lynn Samonsky, 211 Wildwood Dr., Belvedere, S.C. 29841

Continuation-in-part of Ser. No. 163,878, Dec. 8, 1993, abandoned. This application Aug. 22, 1994, Ser. No. 293,704
Int. Cl.[6] G07F *11/10*
U.S. Cl. 221—193 **20 Claims**



1. An apparatus for dispensing an object, said apparatus comprising:

a housing having an opening;

a hopper carried within said housing and having a bottom, said hopper for holding a plurality of objects in a stack, each object of said plurality of objects having a first end and a second end, said hopper dimensioned for holding pairs of said objects in side-by-side arrangement, each pair of said pairs supporting a remainder of said pairs above it and with a bottom pair of said pairs being at the bottom of said stack, said hopper having an opening at said bottom for passing said bottom pair therethrough;

a shelf carried by said housing and having an upper surface, said upper surface of said shelf spaced apart from and below said bottom of said hopper so that when said bottom pair falls through said opening in said hopper and lands on said shelf, pairs of said objects that have not fallen through said opening are supported by said bottom pair;

a chute formed in said housing for conveying pairs of objects between said upper surface of said shelf and said opening of said housing, said chute dimensioned to pass said pairs therethrough;

means carried by said housing for pushing said bottom pair from said upper surface of said shelf into said chute so that said bottom pair is conveyed by said chute from said upper surface of said shelf to said opening of said housing; and

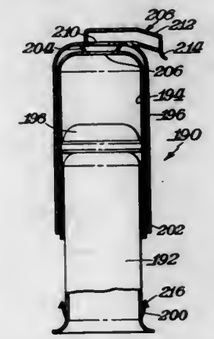
a wedge carried by said pushing means for lowering said first end of said each object of said plurality of objects to said shelf after said second end of said each object of said plurality of objects has fallen into contact with said shelf.

5,547,107

DISPENSER FOR FLOWABLE MATERIALS

Mario Boiardi, Queenstown, Md., assignor to Package Research, Inc., Cleveland, Ohio

Filed Jan. 4, 1993, Ser. No. 94
Int. Cl.[6] B67D *5/00*
U.S. Cl. 222—1 **4 Claims**



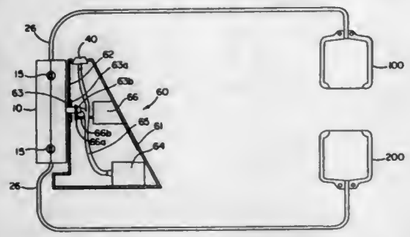
1. A method of dispensing toothpaste comprising the steps of providing a barrel in the form of a tubular member having a closed upper end with a dispensing spout and an open lower end, disposing toothpaste in the barrel, closing the barrel by a piston head mounted into the barrel to create a dispensing chamber which is filled with the toothpaste in a prepackaged unit consisting of the barrel and the toothpaste and the piston head, mounting the prepackaged unit on a plunger with the plunger being telescoped into the barrel until the plunger contacts the piston head, dispensing toothpaste from the dispensing spout of the barrel by applying manual pressure for causing relative motion between the barrel with respect to the piston head and plunger, repeating the dispensing until substantially all of the toothpaste is dispensed from the barrel, removing the barrel and piston head from the plunger, inserting a new unit on the plunger with the new unit consisting of a barrel with toothpaste and a piston head, the barrel comprising a cartridge having a dispensing opening covered by a sealing strip and a holder with the holder being reusable and the cartridge being the replaceable part of the barrel, and including the steps of removing the sealing strip to expose the dispensing opening of the

cartridge, mounting the cartridge into the holder so that the holder generally encapsulates the cartridge to form a barrel unit, and mounting the barrel unit over the plunger.

5,547,108
EXPRESSOR

Thomas C. Gsell; Frank R. Pascale, both of Glen Cove, and Charles Lipari, Port Jefferson, all of N.Y., assignors to Pall Corporation, East Hills, N.Y.

Continuation of Ser. No. 156,643, Nov. 24, 1993, abandoned, which is a continuation of Ser. No. 912,731, Jul. 13, 1992, abandoned. This application Aug. 2, 1904, Ser. No. 284,268
Int. Cl.[6] B65D *35/28*
U.S. Cl. 222—95 **53 Claims**



1. An expressor for varying the amount of fluid in a variable-volume container connected to at least one conduit, the expressor comprising:

a housing defining an enclosed chamber which can accommodate the container, the housing including at least one opening through which the conduit can extend, a base, a cover releasably mounted to the base, and at least one latch coupled to at least one of the base and cover;

a pressure regulating mechanism coupled to the housing to vary the pressure of fluid in the chamber and thereby vary the volume of the container, and wherein the latch includes a pressure equalization mechanism which equalizes the pressure between the chamber and the exterior of the housing before the cover is released from the base;

a casing; and

an oscillating mechanism disposed within the casing and coupled to the housing via a shaft, the oscillating mechanism oscillating the housing circumferentially about the shaft, whereby the fluid in the container is agitated.

5,547,109
CONTAINER AND MEASURING/DISPENSING CAP ASSEMBLY

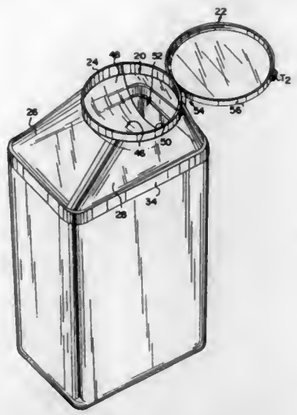
Edward S. Robbins, III, 2802 E. Avalon Ave., Muscle Shoals, Ala. 35661

Continuation-in-part of Ser. No. 26,369, Jul. 26, 1994, Pat. No. 363,649, and a continuation-in-part of Ser. No. 288,896, Aug. 10, 1994, Pat. No. 5,509,582, which is a continuation of Ser. No. 47,086, Apr. 16, 1993, abandoned, which is a continuation-in-part of Ser. No. 237,336, May 3, 1994, Pat. No. 5,465,871, which is a continuation of Ser. No. 979,042, Nov. 19, 1992, abandoned. This application Aug. 18, 1994, Ser. No. 291,919
Int. Cl.[6] B67D *5/38*
U.S. Cl. 222—158 **15 Claims**

1. A container and measuring/dispensing cap assembly comprising:

a container having a peripheral wall including four side wall portions, a bottom wall and an open upper end;

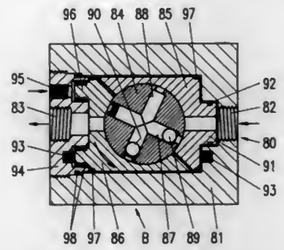
a cap including a top portion having a dispensing aperture defined by an upper rim and a pivotally mounted dispensing door engageable with said rim and a peripheral skirt portion tapering downwardly and outwardly from said top portion to a lower attachment rim adapted to secure the cap to the container, said dispensing aperture and said dispensing door located asymmetrically relative to the open upper end of the container; a weir panel located below said top portion of said cap and partially defining a measuring chamber in said cap, and wherein said weir panel includes a weir edge which, in combination with said upper rim, defines a weir aperture located wholly on one side of a center axis of said cap extending parallel to said weir edge; and further wherein said dispensing door is pivotally secured to said skirt portion by a hinge located adjacent said weir aperture.



5,547,110
METERING DEVICE FOR FLUIDS

Wilhelm A. Keller, Obstgartenweg 9, CH-6402 Merlischachen, Switzerland, and Laurence R. Penn, Northants, Great Britain, assignors to Wilhelm A. Keller, Merlischachen, Switzerland

Filed Oct. 3, 1994, Ser. No. 317,595
Claims priority, application European Pat. Off., Oct. 1, 1993, 93810696
Int. Cl.[6] G01F *11/22*
U.S. Cl. 222—219 **7 Claims**



1. A metering device for fluids, comprising a housing having at least one inlet and at least one outlet for fluids to be metered, and at least one rotatable member comprising metering means, wherein the rotatable member is a ball having at least one transverse bore containing the metering means and at least one drive shaft, the rotatable member being captured between two seats opposed to each other, each seat having at least one passage for one of inlet and outlet flow of said fluids;

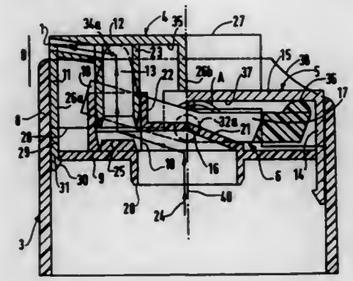
wherein the rotatable member comprises more than one transverse bore, each bore containing one metering means; and

wherein two transverse bores are arranged at 90° and off-center within the rotatable member.

5,547,111
DEVICE TO CLOSE A SIDE DISPENSING ORIFICE BY AXIAL SLIDING WITH PUSH BUTTON ELEMENT

Reinold Geiger, 3 rue Salomon Reinach, 78100 Saint Germain en laye, and André Tartaglione, 20 rue Ampére, 01112 Oyonnax, both of, France

Filed Jun. 22, 1994, Ser. No. 263,836
Claims priority, application France, Jun. 22, 1993, 93 07561
Int. Cl.[6] B67D *3/00*
U.S. Cl. 222—505 **12 Claims**

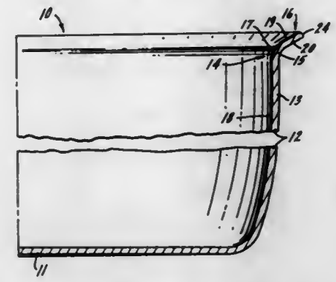


1. Device to close by axial sliding a side dispensing orifice (1) for a container (2), the device comprising a cap (3) having a lateral skirt (8) and a transverse wall (9) provided with an evacuation passage (10); a dispensing element (4) having a lateral wall (11) in sliding contact with said lateral skirt (8), a top face (12), and an elbowed passage (13) extending partially in the direction of sliding and partially radially, communicating with said evacuation passage (10) and opening on said lateral wall (11) as said side dispensing orifice (1); said dispensing element (4) being slidably mounted partly into a cavity defined by said lateral skirt (8) and said transverse wall (9) of said cap (3) between a closed position wherein said lateral skirt (8) masks said side dispensing orifice (1) and an open position wherein said side dispensing orifice (1) is uncovered; first means for slidably guiding and blocking the sliding movement of the element (4) with respect to the cap (3); and means to control the sliding movement of said dispensing element (4); wherein said control means comprise a push button element (5) mounted in sliding contact with said dispensing element (4) and said skirt (8) in order to slide axially in the cavity of the cap (3), between a rest position and an active position; the push button element (5) having a lateral wall (14) in sliding contact with said lateral skirt (8), and a top face (15); and wherein said device further comprises second means for slidably guiding and blocking said push button element (5) between said active and rest positions, and said control means further comprising a transmission element (6) for transmitting axially sliding movements of said push button element (5) to said dispensing element (4) and vice-versa, in an opposite direction, said transmission element (6) comprising a pivoting element mounted in the cavity of the cap (3), and rotatable about an axis (16) orthogonal to an axial direction (D), said transmission element (6) comprising two connected parts (17, 18) disposed on either side of said orthogonal axis (16) each said part (17, 18) being in contact with a respective one of said dispensing and push button elements (4, 5).

5,547,112
POURING EDGE STRUCTURE FOR ELIMINATING DRIBBLE

Larry W. Schiffer, Manitowoc, Wis., assignor to Anchor Hocking Corporation, Freeport, Ill.

Filed Jun. 16, 1995, Ser. No. 491,499
Int. Cl.[6] B65D *5/74*
U.S. Cl. 222—571 **6 Claims**



1. In a vessel having a generally vertically upwardly extending wall, a pouring structure at the upper portion of said wall which eliminates drip and dribble when both viscus and fluid liquids are poured over said pouring structure, said pouring structure including

a flange located above the upper portion of the wall in the pouring area,

said flange having a smooth inner surface whereby no protrusions or depressions are present between the upper portion of the wall and the flange and the outer most extremity of the flange, said flange also including an outer surface,

said flange terminating at an edge, the edge having a convex curvature, said convex curvature being formed between the inner and the outer surfaces of the flange,

the junction angle between the inner surface of the flange and the edge being about 90°,

the junction angle between the outer surface of the flange and the edge being about 90°,

the inner surface of the flange having a ramp which terminates at the junction of the inner surface of the flange and the edge,

the inner surface of said flange, including the ramp, blending smoothly into the upper portion of the inner surface of the wall so that a smooth, continuous surface is formed between the upper end portion of the wall and throughout the inner surface of the ramp.

5,547,113
AUTOMATIC FEED SUPPLY MACHINE

Ming J. Chen, 47-2, Lane 25, Chingli Street, Tucheng Hsiang, Taipei Hsien, Taiwan

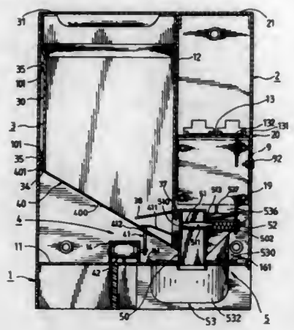
Filed Jun. 7, 1994, Ser. No. 255,082
Int. Cl.[6] B65D *83/00;* **B67D** *3/00;* **G04C** *23/00*
U.S. Cl. 222—642 **4 Claims**

1. An automatic feed machine, comprising:

a. a housing, said housing including:

i. a main base having a horizontal base plate at a lower end thereof, a motor mounting frame on said horizontal base plate, a feed-dropping nozzle insertion hole in said horizontal base plate and a lever receiving groove in said horizontal base plate; a vertical partition board extending from adjacent said horizontal base plate and approximately at the center of the main base; a horizontal battery supporting plate at the center of said vertical partition board; and

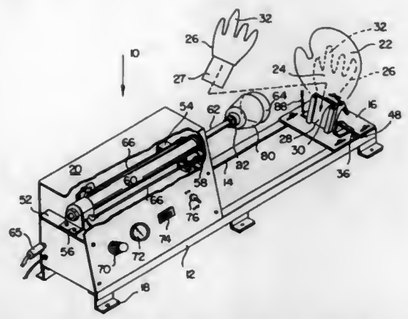
ii. a panel which mounts to the main base and together with the main base encloses said horizontal base plate, said vertical partition board and said horizontal battery supporting plate;



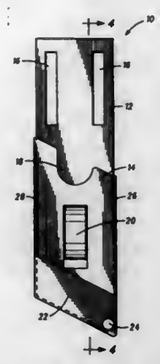
b. a feed container for storing material to be dispensed mounted within the bousing between said main base and said panel and disposed above said horizontal base plate and to one side of said vertical partition board, said feed container including:
i. a movable lid for closing an open top thereof;
ii. a flexible rubber bottom which slopes towards an opening therein, said opening communicating with a feed-dropping nozzle inserted within said feed-dropping nozzle insertion hole of said horizontal base plate;
iii. a feed damper within the feed container disposed above the opening;
iv. a feed pushing plate for pushing feed towards the opening; and
v. a disk, spring biased against the opening in the feed container for closing said opening;
c. means for operating said dispenser, said means for operating comprising:
i. a spring biased lever extending through said lever receiving groove in said horizontal base plate adjacent the lower end of said feed-dropping nozzle, said lever having a cup actuating end for engagement by a cup and an operating end within said housing, said operating end including means thereon for engaging a protrusion on a rod connected to said disk for moving said disk from a closed position to an open position upon movement of said lever by a cup;
ii. a motor mounted to said motor mounting frame on said horizontal base plate, said motor being connected to a crank having means thereon for vibrating said flexible rubber bottom of said feed container and for moving said feed pushing plate;
iii. batteries mounted on said horizontal battery supporting plate and operatively connected to said motor and a switch; and
iv. a protrusion on said operating end of said lever for engaging said switch to operate the motor upon movement of said lever by a cup;
whereby, upon moving said lever from a rest position to an actuated position by a cup, said disk is moved to an open position, said flexible rubber bottom of said feed container is vibrated to agitate the feed within the feed container, said feed pushing plate is moved to push feed to the opening and feed is dispensed through said feed-dropping nozzle.

5,547,114
APPARATUS FOR BREAKING IN ATHLETIC GLOVES
Martin Mitchell, 51 De Groff Pl., Park Ridge, N.J. 07656
Filed Mar. 15, 1995, Ser. No. 404,525
Int. Cl.[6] A41H *43/00*
U.S. Cl. 223—78 **14 Claims**

1. Apparatus for conditioning a leather athletic glove for use which conditioning includes softening at least a glove pocket defining palm part from a stiffened condition thereof to a condition thereof which is such softer than a leather condition in a glove finger part adjacent the pocket part that the glove finger part more readily can be moved relative to the pocket to close such finger part over an object caught by a user in the pocket, said apparatus comprising
a holder on which the athletic glove can be mounted and held for presenting the glove palm part in a fixed positioning,
an impact member mounted for movement in a travel course between a retracted position and an extended striking position wherein it strikes the athletic glove palm part with leather softening impact force,
means for pivotably mounting said holder such that it has impact absorbing pivoting movement when the glove palm part is struck by the impact member,
means for applying counter bias to said holder, said counter bias applying means being operable to return said holder from an impact induced pivoted position to an initial glove presenting position on movement of the impact member to retracted position, and
power operated means connected to said impact member and operable to cyclicly move said impact member between said retracted and extended positions.



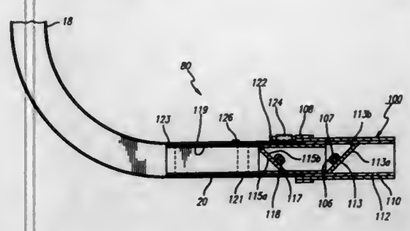
5,547,115
NAIL/STAPLE CLIP HOLSTER
Steven G. Ambroslus, N6955 Van Boxtel Rd., Oneida, Wis. 54155, and Neil J. Van Boxtel, N4149 County Trunk U, De Pere, Wis. 54115
Filed Sep. 8, 1994, Ser. No. 303,164
Int. Cl.[6] A45F *5/00*
U.S. Cl. 224—240 **12 Claims**



1. A holster for holding clips of fasteners for fastening application by power tools used in the construction trades, comprising:

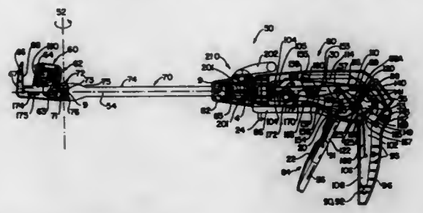
a substantially rigid, hollow, upright pouch for vertical storage of the fasteners;
said pouch having a front wall, a back wall, two side walls, and a bottom portion and further having a substantially rectangular horizontal cross-section;
said back wall extending upwards further than said side walls and said front wall and having means for attaching the holster to a worker;
said front wall having an angled lower edge with respect to a horizontal plane and said bottom portion having an upper edge, said lower edge of said front wall being joined to the upper edge of the bottom portion; said bottom portion further having an angled lower edge with respect to the plane, said lower edge of said bottom portion being joined to said back wall;
said bottom portion having a hole at its lowest vertical point, thereby allowing dirt, water and other debris to drain from said pouch, and said lower edge of said bottom portion being attached to said back wall at a vertical point lower than a second vertical point at which said upper edge of said bottom portion is attached to said front wall; and
each of said side walls being substantially the same length and having substantially horizontal upper edges which join said from wall and said back wall to form substantially 90 degree angles and each of said side walls further having one side edge longer than the opposing side edge defining a substantially angled bottom edge, said longer one side edge being attached to said back wall, and said shorter second side edge being attached to said front wall, and with said side walls being attached to said back wall so that one of said upper edges of said side walls is attached at a higher point on said back wall than the other of said upper edges of said side walls, and with each of said side walls being attached to said bottom portion along said substantially angled bottom edge.

5,547,116
BRACKET FOR MOUNTING A CARRIER ON A VEHICLE
Richard A. Eckhart, P.O. Box 7299, Thousand Oaks, Calif. 91359
Continuation-in-part of Ser. No. 101,365, Aug. 2, 1993, Pat. No. 5,449,100. This application May 8, 1995, Ser. No. 436,977
Int. Cl.[6] B60R *9/08*
U.S. Cl. 224—509 **12 Claims**



1. An improved bracket for firmly and rigidly supporting a support structure of a vehicle-mountable carrier, said bracket comprising;
a first portion for being rigidly connected to the carrier support structure,
a second portion for being rigidly mounted oil a vehicle,
one of said portions being elongated, having a central axis that extends generally horizontally, and having an elongated internal receptacle that is open at one end,
the other of said portions being elongated, having a central axis that extends generally horizontally, and being configured to be assembled with the other portion by being received in said receptacle with the axes of the two portions generally co-aligned along a central axis, said other portion having an external shape in section that is slightly smaller than the shape in section of said receptacle,
each of said portions having a means that defines an open channel that extends transversely of its portion,
said channels being transversely co-aligned when said portions are assembly with one another in a predetermined relationship,
an elongated locking member configured to be assembled with said portions by being inserted through said channels when they are co-aligned,
each of said channels having a main section for aligning with the other of said channels when said portions are in said predetermined relationship, and one of said channels having a secondary section that extends away from its associated main section in a direction at an angel to said central axis, said one of said channels being formed by a pair of openings in opposite sides of the associated bracket portion and a transverse plate section fixed in place between the openings that provides an angled surface that is aligned with an edge of the secondary section of that channel and is thereby positioned to engage the locking member assembled to extend through that channel,
means for selectively causing relative axially movement of the assembled portions with regard to one another to a locked position where wedging action between said secondary channel section and said locking member caused by such relative axial movement serves to firmly and rigidly lock the portions to one another against tilting movement therebetween, said means also maintaining the portions in such locked position.

5,547,117
HANDLE ACTUATOR FOR SURGICAL INSTRUMENT HAVING CLAMP LOCK AND EMERGENCY RELEASE
Steven W. Hamblin; David A. Witt, both of Loveland; Thomas J. Sierocuk; Kirk M. Nicola, both of West Chester; Matthew R. Otten, Cincinnati, and Craig B. Berky, Milford, all of Ohio, assignors to Ethicon Endo-Surgery, Cincinnati, Ohio
Division of Ser. No. 219,846, Mar. 30, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 484,475
Int. Cl.[6] A61B *17/068*
U.S. Cl. 227—175.2 **9 Claims**



1. A surgical instrument for applying one or more surgical fasteners to tissue, comprising:
a fastener applying assembly including fastener holding means for holding one or more surgical fasteners, means for driving said surgical fasteners into the tissue, means for capturing and clamping said tissue prior to forming said fasteners and for releasing said tissue after forming said fasteners;
a shaft assembly for mounting to the distal end thereof said fastener applying assembly;

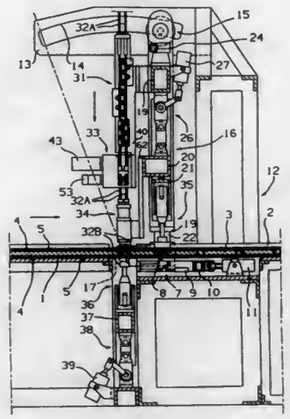
an actuator handle assembly mounted to the proximal end of said shaft assembly and including first actuator means for actuating said means for capturing, clamping, and releasing said tissue, and further including second actuator means in cooperation with said first actuator means, said second actuator means operable to drive said surgical fasteners, wherein said first actuator means is pivotally mounted about a first pivot point to said actuator handle assembly, and said second actuator means is pivotally mounted about a second pivot point to said first actuator means, wherein said first actuator means includes clamp locking means for locking said first actuator means after said tissue is clamped.

5,547,118

QUICK-ADJUSTMENT SLEWING DEVICE FOR INSERTING AND CUTTING CROSS WIRES IN AUTOMATIC EQUIPMENT FOR PREFABRICATING BUILDING PANELS

Angelo Candiracci, Via Rosciano, 44, 61032 Fano PS, Italy

Filed Jun. 21, 1994, Ser. No. 263,122
Claims priority, application Italy, Jun. 21, 1993, PS93A0011
Int. Cl.[6] B21F *27/10*
U.S. Cl. 228—5.1 **17 Claims**



6. A device, in automated equipment for the prefabrication of sandwich building panels formed of an upper sheet of wire netting, a lower sheet of wire netting, and a sheet of expanded plastic material sandwiched between the upper and lower sheets of wire netting, for introducing wires crosswise through the building panels so as to form cross wires in the panels and for cutting the cross wires above the building panels so as to separate the cross wires from a feed supply of wire, comprising:

a substantially horizontal platform;

means for advancing a sandwich building panel on and along the platform in a forward jogging motion;

wheels for pulling at least one line of wire and for inserting a portion of the at least one line of wire crosswise into the panel at each forward jogging motion of the panel;

adjustable means for driving said wheels for pulling and inserting;

a tiltable bridge for supporting said wheels and said adjustable means; and

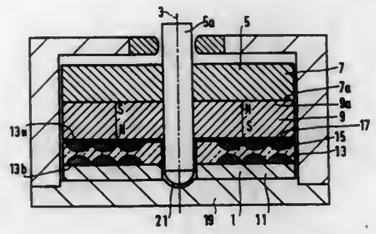
means for cutting the at least one line of wire above the panel after insertion of the wire portion so as to separate the inserted portion of the wire from the at least one line of wire.

5,547,119

ELECTRICAL MACHINE AND METHOD OF MANUFACTURING THE ELECTRICAL MACHINE

Jan Haisma; Evert M. H. Kamerbeek; Gijsbertus A. C. M. Spierings, and Peter W. De Haas, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 284,714, Aug. 2, 1994, Pat. No. 5,483,115, which is a continuation of Ser. No. 25,692, Mar. 3, 1993, abandoned. This application May 24, 1995, Ser. No. 449,128
Claims priority, application Netherlands, Mar. 20, 1992, 9200515
Int. Cl.[6] B23K *20/12*
U.S. Cl. 228—116 **19 Claims**



1. A method of securing a soft-magnetic body and a hard-magnetic body to one another, comprising the steps of:

polishing a surface of the soft-magnetic body such that the surface roughness height is about less than or equal to two nanometers;

polishing a surface of the hard-magnetic body such that the surface roughness height is about less than or equal to two nanometers; and

placing the surfaces together so that the surfaces are interconnected to form a composite body by direct bonding without requiring an additional bonding material between the surfaces.

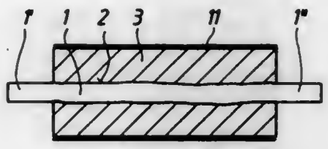
5,547,120

METHOD OF MAKING A GASTIGHT CONNECTION BETWEEN A CONDUCTOR AND AN INSULATION IN FORM OF A TUBE

Theodore Schmitt, Vienna, Austria, assignor to Electrovac, Fabrikation elektrotech-nischer Spezialartikel Gosellschaft m.b.H., Klosterneuburg, Austria

Filed Mar. 30, 1995, Ser. No. 415,076
Claims priority, application Austria, Mar. 30, 1994, 681/94
Int. Cl.[6] H01R *4/00*; H01J *9/32*
U.S. Cl. 228—121 **9 Claims**

1. A method of making a gastight connection between a conductor and an insulation in form of a tube made of a temperature-resistant material, comprising the steps of inserting a conductor-forming wire of metal in the tube, and heating the wire within the tube to a temperature above its melting point, whereby the tube essentially maintains its configuration.



5,547,121

BRAZING OF DIAMOND FILM TO TUNGSTEN CARBIDE

Rakesh R. Kapoor, Shrewsbury; Bela G. Nagy, Acton, and Louis K. Bigelow, Boylston, all of Mass., assignors to Saint-Gobain/Norton Industrial Ceramics Corp., Worcester, Mass.

Division of Ser. No. 283,311, Jul. 29, 1994. This application Jun. 1, 1995, Ser. No. 457,841
Int. Cl.[6] B23K *1/008;35/32*
U.S. Cl. 228—121 **8 Claims**

1. A method for joining a diamond film to a tungsten carbide substrate comprising the steps of:

(a) placing a vanadium-containing braze composition between a diamond film and a tungsten carbide substrate; and

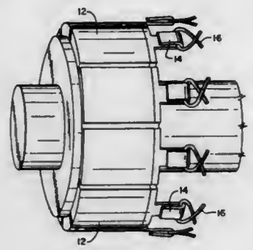
(b) heating the braze to a temperature sufficiently high to melt the braze and form a brazed joint between the tungsten carbide substrate and the diamond film, wherein the joint has an average shear strength of at least 40,000 psi (276 MPa) and the braze has a contact angle with the diamond film of less than 15°.

5,547,122

JOINTS IN BONDING OF ELECTRICAL WIRES

John G. Smeggil, Simsbury; Elizabeth A. Rasley, both of Glastonbury, Conn., and Bill R. McCoy, Statesville, N.C., assignors to United Technologies Motor Systems, Inc., Columbus, Miss.

Filed Mar. 7, 1995, Ser. No. 399,820
Int. Cl.[6] B23K *11/34;* H02K *13/04;* H01R *4/02*
U.S. Cl. 228—173.3 **8 Claims**



1. A method of attaching armature wire ends of electric motors to commutator tines wherein said armature wires have a titanium oxide-containing insulation coating of a selected thickness comprising the steps of:

a) roughening the surface of said tines to a depth of at least about the thickness of said insulation coating;

b) placing armature wire ends in contact with said roughened tine surfaces; and

c) fusing said armature wire ends to said tines.

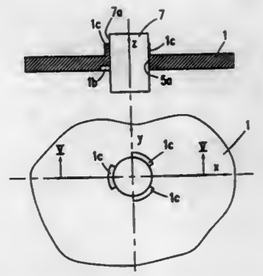
5,547,123

METHOD OF SECURING AN APPARATUS PART

Hans Gumbert, Sinn, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 19, 1994, Ser. No. 293,359
Claims priority, application Germany, Aug. 21, 1993, 43 28 211.3
Int. Cl.[6] B23K *28/02*
U.S. Cl. 228—173.6 **2 Claims**

1. A method for securing a part of an apparatus into a hole in a metal base plate having an overlying protective layer, said method comprising the steps of:



(a) introducing a mandril into the hole of the base plate in a precise orientation along a z-axis perpendicular to the metal base plate;

(b) mechanically deforming a plurality of portions of the edge of the hole to remove the protective layer at the edge in the direction of introduction of the mandril to form a plurality of peripheral areas equi-spaced about the circumference of the hole with exposed bare metal portions;

(c) replacing the mandril by the part to be secured to the base plate;

(d) melting the bare metal portions of the base plate and of corresponding portions of the part to be secured by coherent laser light; and

(e) fusing together the melted bare metal portions and the melted corresponding portions of the part to be secured to form a secure connection between the base plate and the part.

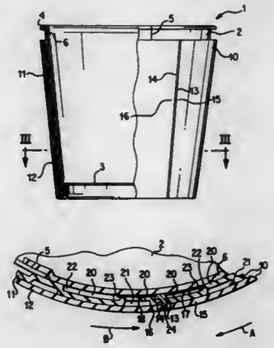
5,547,124

HEAT INSULATING CONTAINER

Berthold Mueller, Suessen, Germany, assignor to Michael Hoerauf Maschinenfabrik GmbH & Co. KG, Germany

Filed Jul. 18, 1995, Ser. No. 503,630
Int. Cl.[6] B65D *3/22*
U.S. Cl. 229—403 **17 Claims**

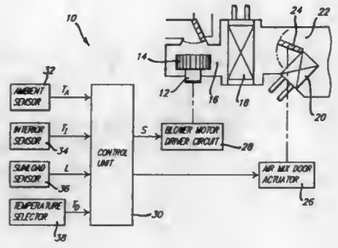
1. A heat insulating container, comprising an inner container and a sleeve having cut edges extending transversely to a circumferential direction of the container and via attaching surfaces operatively associated with a circumferential wall of the inner container, wherein each of the attaching surfaces with a pre-applied adhesive layer extending transversely to the circumferential direction of the container so as to be pressingly held against the circumferential wall.



5,547,125
VEHICLE CLIMATE CONTROL SYSTEM AND OPERATING METHOD

Robert P. Hennessee, Rochester Hills; Steven C. Huetteman, Canton, and Ron M. Markowitz, West Bloomfield, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Aug. 1, 1995, Ser. No. 509,924
Int, Cl.[6] F24F *7/00*; G05D *23/00*
U.S. Cl. 236—49.3 **16 Claims**



1. A system for automatically controlling the temperature of the passenger compartment of a motor vehicle, said system comprising:

a first temperature sensor for generating an ambient temperature value based on the ambient air temperature;

a second temperature sensor for generating an interior temperature value based on the temperature at a given location within the passenger compartment;

a desired-temperature selecting means operable by a passenger of the motor vehicle for generating a desired temperature value based on the passenger's selection of a desired interior temperature;

a means for directing air into the passenger compartment, said air-directing means including a blower fan operative to direct air through a first passage into the passenger compartment, and a variable-speed motor responsive to a blower control signal for driving the blower fan; and

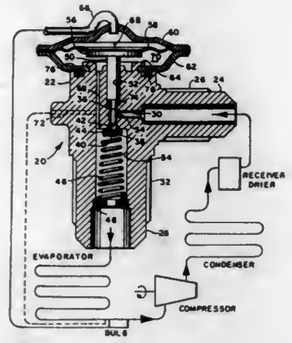
a control means for generating said blower control signal based on the ambient temperature value, the interior temperature value and the desired temperature value, wherein a base control signal is derived from the ambient temperature value, and a first relative percent increase value is derived from the relative difference between the interior temperature value and the desired temperature value, wherein the first relative percent increase value is adjusted downwardly towards zero responsive to the ambient temperature value and the absolute difference between the interior temperature value and the desired temperature, and wherein said base control signal is multiplied by the adjusted first relative percent increase value to obtain said blower control signal.

5,547,126
RING ANGLE THERMALLY RESPONSIVE EXPANSION VALVE

George E. Bogrand, IV, North Prairie; Andrew A. Kenny, Sussex, and Francois O. Rosaz, Milwaukee, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 312,335, Sep. 26, 1994, abandoned. This application Nov. 13, 1995, Ser. No. 558,924
Int. Cl.[6] G05D *27/00*
U.S. Cl. 236—92 B **2 Claims**

1. A thermally responsive expansion valve comprising:



(a) a body member defining an inlet port adapted for connection to a source of fluid at a relatively high pressure and an outlet port for discharging fluid at a substantially reduced pressure at right angles to said inlet port; said inlet and outlet ports connected by a valving passage having a valve seat formed therein;

(b) a valve member disposed in said passage and moveable between a closed position contacting and an open position spaced from said valve seat for controlling flow to said outlet port at a reduced pressure;

(c) means biasing said valve member toward said closed position;

(d) valve actuator means comprising an elongated member guided for sliding movement in said body and having a portion of reduced transverse dimension with the end of said reduced portion extending through said valving passage on the inlet pressure side of side valve seat operable for contacting said valve member, said actuator means including a head portion of enlarged transverse dimension distal said reduced portion, said head portion extending externally of said body member;

(e) a fluid filled pressure capsule attached to said body member, said capsule having a pressure responsive diaphragm forming a portion of the wall thereof, with said diaphragm contacting said head portion of said actuator means,

(f) sealing means located in said body member for moveably sealing between said reduced portion and said body, said sealing means isolating said diaphragm from said inlet pressure;

(g) a fluid pressure signal conduit communicating with one side of said pressure responsive diaphragm for providing a fluid pressure signal thereto, wherein said pressure responsive diaphragm is operative in response to pressure changes in said capsule to move said valve actuator means and effect movement of said valve member between said closed position and said open position; and,

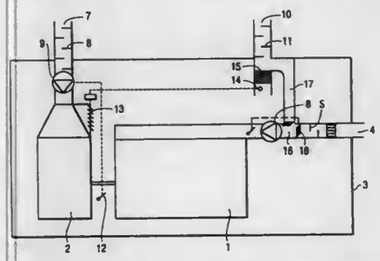
(h) said body member defining a pressure equalization passage communicating the pressure in said outlet with the side of said diaphragm opposite said one side.

5,547,127
METHOD FOR UTILIZATION OF HEAT ENERGY IN A DISTRICT HEATING NETWORK FROM A GENERATING PLANT WITH AN AIR-COOLED GENERATOR POWERED BY AN INTERNAL COMBUSTION ENGINE, AND A GENERATING PLANT PERFORMING THE METHOD

Søren M. Madsen, Frederiksberg, and Jan Stromvig, Odense, both of, Denmark, assignors to Krüger Systems AS, Soborg, Denmark

PCT No. PCT/DK92/00353, § 371 Date Oct. 28, 1994, § 102(e) Date Oct. 28, 1994, PCT Pub. No. WO93/11354, PCT Pub. Date Jun. 10, 1993
PCT Filed Nov. 27, 1992, Ser. No. 244,196
Claims priority, application Denmark, Nov. 28, 1991, 1931/91
Int. Cl.[6] F24D *5/00*
U.S. Cl. 237—12.1 **3 Claims**

1. A combined heat and power plant for the production of



thermal energy, which can be exploited in a heat distributing plant, said plant comprising a generator which is air-cooled by means of a cooling ventilator and driven by means of a combustion engine enclosed in a sound-absorbing, ventilated cabinet, the cooling water and the exhaust gas of which are passed through heat exchangers inserted in the heat distributing plant, and in which the cooling air outletted from the generator is transferred to the cabinet, characterized in that the cooling air ventilator is power regulated and controlled by a thermostat placed in the cabinet, and in that the thermostat is placed in the cooling air outletted from the generator, and in that a further thermostat placed in the outlet from the cabinet is adapted to control a bypass in the generator cooling placed upstream with respect to the generator.

5,547,128
SPRAYER

Edward D. Scheffler, Labelle, Fla., assignor to Jack M. Berry Inc., LaBelle, Fla.

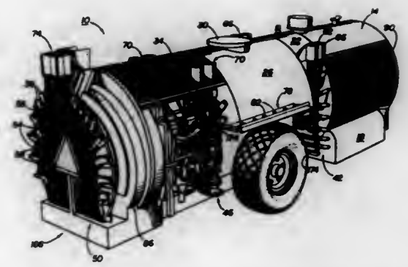
Filed Jun. 1, 1994, Ser. No. 252,315
Int. Cl.[6] B05B *9/06*
U.S. Cl. 239—77 **8 Claims**

1. Apparatus for spraying vegetation with fluid, the apparatus having a length and comprising:

a. a frame;

b. means for discharging a first fluid onto the vegetation at a first velocity and comprising:

i. a first set of nozzles connected to the frame at a first location along the length; and



ii. a second set of nozzles connected to the frame at a second location along the length spaced from the first location;

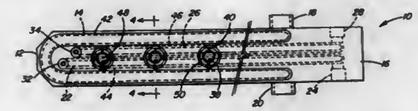
c. means for thereafter discharging a second fluid onto the vegetation at a second velocity, which said second velocity is substantially less than the first velocity, and which said means for thereafter discharging said second fluid is connected to the frame at a third location spaced along the length from the first and second locations; and

d. means for thereafter discharging said first fluid onto the vegetation at approximately the first velocity and comprising a third set of nozzles connected to the frame at a fourth location along the length spaced from the first, second, and third locations.

5,547,129
LOW PROFILE SPRAY ASSEMBLY

Fred A. Fortunato, Allison Park; Barry L. Shadle, Leechburg, and Helmut Franz, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 30, 1994, Ser. No. 316,148
Int. Cl.[6] B05B *1/20;7/00;15/00*
U.S. Cl. 239—132.3 **20 Claims**



1. A multiple nozzle liquid spray assembly comprising:

a longitudinally extending bar member;

receivers spaced along a surface of said member to allow securing of nozzles to said bar member;

a coolant conduit extending along at least a portion of said bar member;

a liquid conduit extending along said bar member in close proximity to each of said receivers;

a gas conduit extending along said bar member in close proximity to each of said receivers;

a first set of passages interconnecting each of said receivers with said liquid conduit; and

a second set of passages interconnecting said gas conduit with said bar member surface, wherein said second set of passages extend to said surface in close proximity to said receivers.

5,547,130

LOCK FOR AN ENGINE THRUST REVERSER

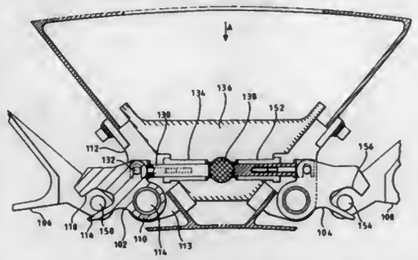
Stephen H. Davies, Telford, England, assignor to Lucas Industries public limited company, West Midlands, England

Filed Oct. 4, 1994, Ser. No. 317,711

Claims priority, application United Kingdom, Oct. 5, 1993, 9320447

Int. Cl.[6] F02K *1/76*

U.S. Cl. 239—265.29 **11 Claims**



1. A lock for an engine thrust reverser having first and second thrust reversing members, said lock comprising a first locking element, a second locking element, a third locking element and an electromechanical actuator, said first locking element being movable between a first position for preventing deployment of the first thrust reversing member and a second position corresponding to deployment of the first thrust reversing member, said second locking element being movable between a first position for preventing deployment of the second thrust reversing member and a second position corresponding to deployment of the second thrust reversing member, said third locking element being movable between first and second positions for preventing and permitting, respectively, movement of said first and second locking elements from the first positions to the second positions thereof, and said electromechanical actuator being arranged to move said third locking element from the first position to the second position thereof.

5,547,131

DISPENSING DEVICE WITH SPRAY NOZZLE AND DRIVEN PISTON

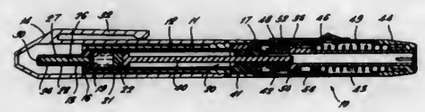
Geoffrey Brace, Norfolk, United Kingdom, assignor to Bespak plc, United Kingdom

Continuation of Ser. No. 927,396, Dec. 4, 1992, abandoned. This application Jun. 3, 1994, Ser. No. 253,581

Claims priority, application United Kingdom, Apr. 6, 1990, 9007813

Int. Cl.[6] A61M *5/315*

U.S. Cl. 239—309 **18 Claims**



17. A dispensing device, comprising:

a multi-dose liquid container holding a plurality of doses of liquid medicament to be dispensed, the plurality of doses of liquid being in direct contact with an interior surface of said multi-dose liquid container;

an outlet nozzle positioned at an outlet end of said dispensing device, and said outlet nozzle including means to break-up a flow of liquid under pressure into a spray suitable for nasal administration of the liquid medicament;

a piston slidable in the multi-dose liquid container, said piston being in direct contact with the interior surface of the multi-dose container and with the liquid which is also in direct contact with the interior surface of the multi-dose liquid container, such that said piston, upon sliding, forces liquid in a continuous, uninterrupted flow first out of the multi-dose liquid container under pressure, then through the nozzle and then out away from said dispensing device in a spray; and

mechanical drive means for moving the piston a predetermined distance to dispense a predetermined dose of liquid from the multi-dose liquid container, through said nozzle and out away from said dispensing device in a spray, the drive means including a dose selector for selecting the predetermined dose of liquid.

5,547,132

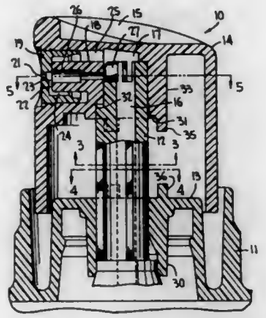
SPRAYER HAVING VARIABLE SPRAY PATTERN

R. Pat Grogan, Downey, Calif., assignor to Calmar Inc., City of Industry, Calif.

Filed Oct. 20, 1994, Ser. No. 326,230

Int. Cl.[6] B05B *9/00*

U.S. Cl. 239—333 **25 Claims**



1. A pump sprayer having a hollow piston stem defining a single liquid discharge passage through which liquid passes upon pumping, said piston stem being reciprocable during pumping within a container closure, a plunger head mounted on said stem and having a probe extending transversely from said stem, a nozzle cap surrounding said probe, said cap having a discharge orifice and means including a spin chamber in communication with said orifice for imparting a spin at a given velocity to the liquid to be discharged through said orifice as a fine mist spray having a predetermined spray cone, said plunger head and said nozzle cap having means defining a first liquid path extending from said discharge passage to said orifice via said spin imparting means through which the liquid passes, the improvement comprising:

said probe having a through opening defining a second liquid path communicating directly with said single liquid discharge passage and with said spin chamber for likewise directing the liquid from said liquid passage through said probe opening to said spin chamber for negating the given velocity to produce a spray cone more narrow than the predetermined spray cone.

5,547,133

MANUFACTURE PROCESS FOR GROUND OAT CEREAL

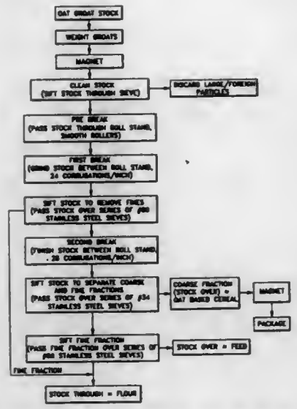
Lynn Rogers, 1536 Wavertree, Fullerton, Calif. 92631; Robert D. Maneval, 1735 - 34th St. SW. Unit B, Fargo, N. Dak. 58103; Daryl W. Bashor, Box 215, Baker, Minn. 56513, and David J. Johnson, 4214 - 9th Ave. SW. #106, Fargo, N. Dak. 58103

Filed Dec. 23, 1993, Ser. No. 175,207

Int. Cl.[6] B02C *9/00;9/04*

U.S. Cl. 241—9 **20 Claims**

1. A process of producing an oat-based cereal comprising the steps of:



cracking open oat groats by passing said oat groats through a first pair of counter-rotating rollers, said rollers having smooth surfaces and being spaced apart by a distance substantially equal to the nominal thickness of an oat groat in a process batch, said rollers having a 1 to 1 speed differential;

grinding said oat groats into granules of a size generally about 0.04 inches or larger by passing said oat groats through a second pair of counter-rotating rollers, said rollers having corrugated surfaces and being spaced apart by a distance of generally about 0.035 inches, said rollers having a 3 to 1 speed differential;

sifting said stock passed through said second rollers over a first series of screens of generally about 0.0088 inch openings;

finishing said stock by passing said stock through a third pair of counter-rotating rollers, said rollers having corrugated surfaces and being spaced apart by a distance of generally about 0.030 inches, said rollers having a 3 to 1 speed differential; and

sifting said oat groat stock from said third pair of rollers through a a second series of screens of generally about 0.023 inch openings to separate said oat groats into coarse and fine fractions, said coarse fraction principally having granular sizes generally ranging from about 0.04 inches to 0.08 inches and comprising about 70% of the oat groat produce processed through said third rollers.

5,547,134

METHOD OF PROCESSING AND RECOVERY OF ELECTRONIC AND ELECTRIC SCRAP

Julius Rubenstein, Sirenevuy Boulevard, 3b, Apt 20, Moscow, 105077, Russian Federation

Filed Jun. 6, 1995, Ser. No. 471,169

Int. Cl.[6] B02C *19/12;23/08*

U.S. Cl. 241—23 **6 Claims**

1. A method of processing and recovery of magnetic, non-magnetic and plastic materials from electronic or electrical scrap equipment comprising the steps of:

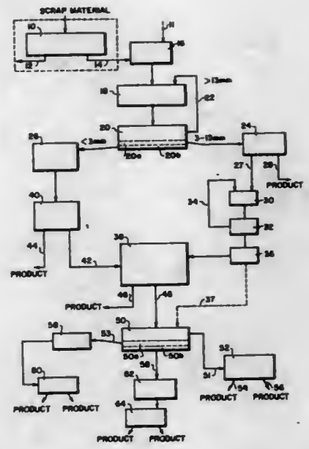
(a) separating by thermal or mechanical treatment the plastic substrate and components,

(b) pressing the components to change the integrity of said components,

(c) mechanically crushing said components to reduce the size of said components,

(d) passing the crushed components into a first double vibrating screens wherein the intermediate size components are directed to a first magnetic separator and the smaller size particles are directed to a first dust collector.

(e) returning the larger size particles to said crushing step before they pass through said double screen for further reducing the size of said components,



(f) recovering the magnetic components from said magnetic separator as a product ready for use,

(g) passing the non-magnetic components to another mechanical crusher to further reduce the size of said components,

(h) passing the components through a second vibrating screen and thereafter into a second dust collector, and passing the components therein into a high power magnetic separator.

(i) passing the components present in said first dust collector to a second magnetic separator,

(j) passing the magnetic components from said second magnetic separator and second dust collector to said high power magnetic separator, and

(k) means for separating said plastic components and the non-ferrous metal products and recovering the same as products ready for use.

5,547,135

MICROMILLING APPARATUS

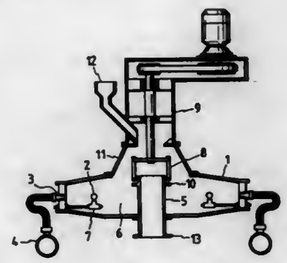
Hiroyuki Moriya; Junichi Tomonaga; Kiyoshi Hashimoto, and Kazunari Muraoka, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 85,145, Jul. 2, 1993, abandoned, which is a continuation of Ser. No. 774,997, Oct. 11, 1991, abandoned, which is a continuation-in-part of Ser. No. 592,026, Oct. 2, 1990, abandoned. This application Apr. 8, 1994, Ser. No. 224,995

Claims priority, application Japan, Dec. 14, 1990, 2-410560

Int. Cl.[6] B02C *19/06*

U.S. Cl. 241—40 **2 Claims**



1. A device for micromilling solid particles, comprising:

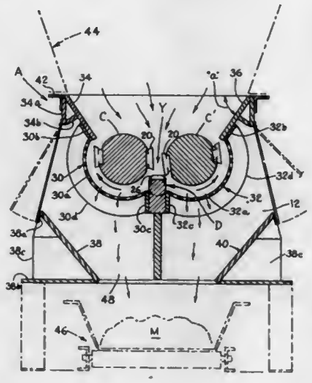
a generally cylindrical milling chamber having an open interior space;
an inlet for introducing solid particles to the open interior space;
sorting means located within said milling chamber for retaining oversize solid particles within the open interior space;
a plurality of injection means for injecting a plurality of streams of compressed air into said milling chamber, independently from the introduction of solid particles to said open interior space, in predetermined paths, respectively, to accelerate the solid particles in the open interior space of said milling chamber along said predetermined paths; and
a plurality of discrete impact elements located within the open interior space of said milling chamber, one of said discrete elements located in each of said predetermined paths, said impact elements impacting with said solid particles accelerated by said injection means and deflecting said solid particles accelerated by said injection means to cause said deflected solid particles to collide with other solid particles retained in said open interior space, said impact elements having a shape of one of a sphere, an egg, a cylinder, and a once;
each of said injection means being oriented such that a line bisecting the injection means and a respective one of said impact elements forms an angle other than 0° with a radial line passing through the injection means and bisecting the cylindrical milling chamber.

5,547,136

ROTARY GRINDING APPARATUS FOR RECYCLING WASTE MATERIALS

Hermann J. Steffens, Statesville, and Elwood L. Cunningham, Nebo, both of N.C., assignors to Kathleen M. Smith-Steffens, Statesville, N.C.

Filed Mar. 23, 1995, Ser. No. 409,195
Int. Cl.[6] B02C *4/18*
U.S. Cl. 241—73 **31 Claims**



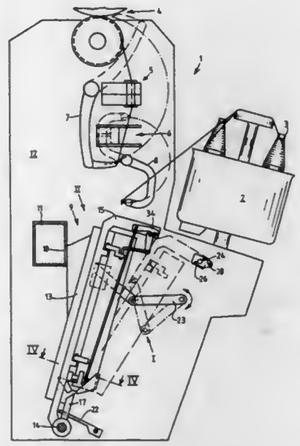
1. A grinding apparatus for grinding scrap material for recycling comprising:
a first frame end plate;
a second frame end plate spaced from said first end plate;
first, second, and third cutout openings formed in each of said first and second end plates;
said cutout openings being formed in said first and second end plates in exact duplicate patterns of center-to-center spacing so that said first, second, and third cutout openings have their centers in precise opposing alignment;
said first cutout openings in said first and second end plates having centers aligned along a first center axis, said second cutout openings in said first and second end plates having centers aligned along a second center axis, and said third cutout openings in said first and second end plates having centers aligned along a third center axis;
said first, second, and third center axes being arranged parallel to each other;
a first cutting blade rotor rotatably carried in said first cutout openings of said first and second end plates having a plurality of cutting blades;
a second cutting blade rotor rotatably carried in said second cutout openings of said first and second end plates having a plurality of cutting blades;
a cutting anvil disposed adjacent said first and second cutting blade rotors having first and second cutting edges disposed in a material cutting relationship with said rotor cutting blades; and
a boss carried on each opposing end of said anvil received in said third cutout openings of said first and second end plates in a manner that said anvil may be set in a position to provide a precision alignment between said cutting blades on said rotors and said cutting edges of said anvil.

5,547,137

BOBBIN WINDING MACHINE WITH A MULTIPLICITY OF WINDING STATIONS

Gregor Rüth; Ulrich Wirtz, both of Mönchengladbach, and Leo Tholen, Heinsberg, all of, Germany, assignors to W. Schlafhorst AG & Co., Moenchengladbach, Germany

Filed Jul. 11, 1994, Ser. No. 273,392
Claims priority, application Germany, Jul. 9, 1993, 43 22 952.2
Int. Cl.[6] B65H *54/02;69/04*
U.S. Cl. 242—35.5 R **10 Claims**



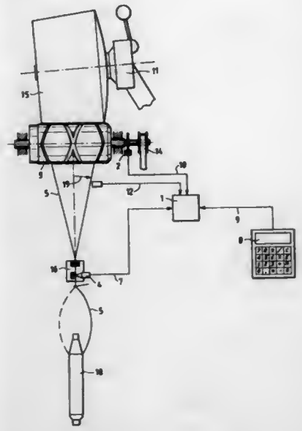
1. A bobbin winding machine, comprising:
a multiplicity of winding stations for rewinding spinning cops, each of said winding stations having:
a bobbin magazine for holding the cops; and
a bottle-shaped unwinding chamber having a bearing shaft, an arbor pivotally disposed about said bearing shaft, said unwinding chamber surrounding a cop being fixed on said arbor during unwinding, a cop chute pivotally disposed between a cop transfer position for receiving a spinning top from the bobbin magazine, and an unwinding position, and said cop chute forming at least a portion of said unwinding chamber.

5,547,138

BOBBIN WINDING METHOD AND WINDING MACHINES FOR YARN WINDING AFTER CONTROLLED CUTTING OF THE YARN

Demetrio Claut, Monterale Valcellina; Nereo Marangone, and Roberto Badiali, both of Pordenone, all of, Italy, assignors to Savio Macchine Tessili S.r.l., Pordenone, Italy

Filed May 23, 1994, Ser. No. 247,278
Claims priority, application Italy, May 28, 1993, MI93A1110; May 28, 1993, MI93A1111
Int. Cl.[6] B65H *63/00;54/38*
U.S. Cl. 242—36 **10 Claims**



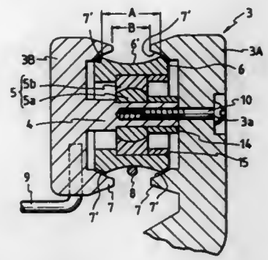
1. A method of collecting yarn on a cross-yarn bobbin of an automatic winding machine having a plurality of side by side winding units in which the yarn is wound on the bobbin by the simultaneous action of a drive roller and a yarn guide element which includes a traversing movement in the yarn, and including a sensor control unit, which comprises:
determining, based upon an input to the control unit from a sensor during winding, the position of the winding yarn on the bobbin under formation, which moment by moment changes an angular position thereof in a frontal plane of the winding machine within an angular sector formed between the yarn guide element and a drive roller sector with continuous to-and-fro reciprocating traversing movement;
continuously and simultaneously measuring both yarn winding speed and traversing speed during traversing movement of the winding yarn;
feeding into the control unit; with continuously measuring the yarn winding speed and yarn traversing speed, characterizing values for the bobbin under formation, said values representing the type of yarn being wound on the bobbin, the desired bobbin quality and a length of yarn left free upon controlled cutting of the yarn as calculated by the control unit;
generating in said control unit, with the feeding of the yarn characterizing values, the required yarn cutting request signals, and cutting the yarn prior to being wound on the bobbin upon detection of an undesirable defect in the yarn, on the basis of said characterizing values for the bobbin under formation, the speed measurements and the yarn angular position determination, so as to calculate a point in time for cutting the yarn such that a yarn end left free after cutting winds onto a central portion of the bobbin within a central angular sector portion of said angular sector; and
collecting the yarn on the bobbin.

5,547,139

FISHLINE GUIDE MECHANISM FOR SPINNING REEL

Kyoichi Kaneko, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan

Continuation of Ser. No. 136,695, Oct. 15, 1993, abandoned. This application Jul. 18, 1995, Ser. No. 503,880
Claims priority, application Japan, Oct. 16, 1992, 4-078162 U
Int. Cl.[6] A01K *89/01*
U.S. Cl. 242—231 **9 Claims**



1. A fishline guide mechanism in which a fishline is guided on a rotatable guide roller which is supported on a bail support member by tilt means for varying its rotational axis depending on a direction of force applied to the fishline, said rotatable guide roller comprising a guide surface being defined by a concave surface having lateral ends and end surfaces extending from each of said lateral ends in a direction angled with respect to said rotational axis, said support member having a pair of annular projections opposite to each other and defining inner surfaces opposite to said end surfaces of the guide roller, wherein:
a first distance defined between said lateral ends of said guide surface is greater than a second distance defined between opposing distal ends of said annular projections; and
a clearance defined between one of said inner surfaces of said annular projections and corresponding one of said lateral ends of said guide surface is maintained at substantially the same constant amount even when said guide roller is tilted relative to said support member such that the inner surfaces of the annular projections and the corresponding one of the lateral ends of the guide surface are maintained in a spaced relationship and out of contact with one another.

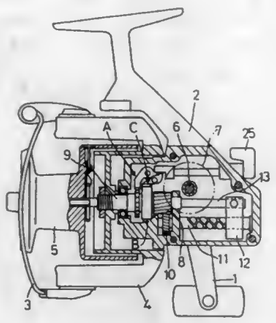
5,547,140

SPINNING REEL HAVING AN ANTI-REVERSE MECHANISM

Yuzo Kawabe, Izumi, and Noboru Sakaguchi, Tondabayashi, both of, Japan, assignors to Shimano, Inc., Sakai, Japan

Filed May 12, 1993, Ser. No. 59,672
Claims priority, application Japan, May 13, 1992, 4-031071 U
Int. Cl.[6] A01K *89/02;* **F16D** *55/02*
U.S. Cl. 242—247 **19 Claims**

1. A spinning reel, comprising:
a reel body;
a rotor provided on said reel body, said rotor including a sleeve shaft rotatable with said rotor;
an anti-reverse mechanism for preventing said rotor from rotating in a line unwinding direction, said anti-reverse mechanism including:
engaging teeth fixed on said sleeve shaft;
an engaging pawl supported on said reel body, said pawl being displaceable between an operative position engageable with said engaging teeth and an inoperative position disengaged from said engaging teeth;



a brake mechanism for applying a braking force to rotation of said rotor in a line unwinding direction, said brake mechanism including a rolling type one-way clutch mechanism mounted on said sleeve shaft;

a selector mechanism switchable between a first mode in which said engaging pawl is placed in said operative position and said brake mechanism is in a condition to apply a braking force, and a second mode in which said engaging pawl is placed in said inoperative position and said brake mechanism is in a condition not to apply a braking force.

5,547,141

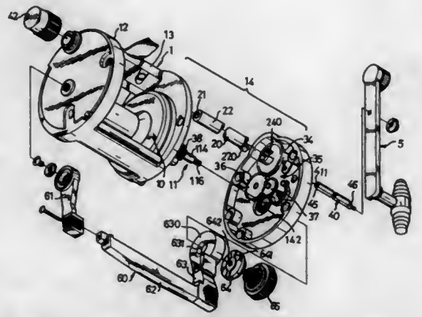
FISHHING REEL WITH AN AMBIDEXTROUS HANDLE

Shih-yuan Yeh, No. 2-4, Chen Hsing Rd., Tai Ping Hsiang, Taichung Hsien, Taiwan

Continuation-in-part of Ser. No. 188,574, Jan. 28, 1994, abandoned. This application Jun. 21, 1995, Ser. No. 493,293

Int. Cl.[6] H01K *89/015*

U.S. Cl. 242—270 **2 Claims**



1. A fishing reel comprising:

a reel body (1) including a first side frame (12), a second side frame (14) and an elongated frame (13) formed therebetween, a first passage (16) longitudinally defined in said elongated frame (13) and extending through said first and second side frames (12) and (14);

a driven shaft (20) rotatably mounted in said first passage (16) and having a second passage (21) longitudinally defined therein;

a drive shaft (40) detachably mounted in said second passage (21) for rotating said driven shaft (20) therewith and including a first end (45) and a second end (46), an inner thread (411) formed in the first end (45) of said drive shaft (40);

a handle portion (5) engaged with the second end (46) of said drive shaft (40) for rotating said drive shaft (40) therewith;

a cap (42) rotatably mounted on one of said first and second side frames (12) and (14), a stud (421) fixedly formed in said cap (42) and threadedly engaged in said inner thread (411) of the first end (45) of said drive shaft (40) for retaining said drive shaft (40) in said second passage (21) of said driven shaft (20);

a spool shaft (11) slidably mounted in said reel body (1) and having a first end (112) retained in said first side frame (12) and a second end (114) retained in said second side frame (14), an outer thread (116) formed on the second end (114) of said spool shaft (11) and protruding therefrom;

a spool (10) rotatably mounted around said spool shaft (11) and having a first end portion (102) located adjacent said first side frame (12) and a second end portion (104) located adjacent said second side frame (14), a drag washer (73) fixedly mounted on the second end portion (104) of said spool (10), a compartment (76) defined in the second end portion of said spool (10), a biasing member (75) received in said compartment (76), a stop (72) mounted around the second end (114) of said spool shaft (11) and urged by said biasing member (75) such that a space (722) is defined between said drag washer (73) and said stop (72);

a transmission mechanism (35) mounted between said driven shaft (20) and said spool shaft (11) and including a drive gear (34) fixedly mounted around said driven shaft (20) to rotate therewith, a pinion (38) fixedly engaged with said stop (72) and rotatably mounted around the second end (114) of said spool shaft (11) and driven to rotate by means of said drive gear (34) so as to rotate said stop (72) therewith; and

a rotation control mechanism (60) mounted on said first and second side frames (12) and (14) and engaged with said second end (114) of said spool shaft (11) such that said spool shaft (11) together with said spool (10) is moved by means of said rotation control mechanism (60) between a first position where said stop (72) is urged on said drag washer (73) such that said spool (10) is rotated in concert with said pinion (38) by engagement of said stop (72) and said drag washer (73), and a second position where said stop (72) is disengaged with said drag washer (73).

5,547,142

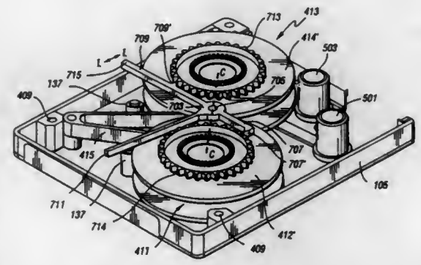
TAPE CASSETTE WITH INTERNAL TAPE CLEANING AND LOCKING

Samuel D. Cheatham, Golden; Lynn C. Jacobs, Louisville; Donovan M. Janssen, Boulder; Michael L. Leonhardt, Longmont; Charles A. Milligan, Golden, and Christian A. Todd, Denver, all of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Dec. 30, 1994, Ser. No. 367,513

Int. Cl.[6] G11B *23/087*

U.S. Cl. 242—338.1 **5 Claims**



1. A tape cassette for use with an operatively compatible tape drive having a tape reeling mechanism, comprising:

a shell having external dimensions conforming to automated tape handling apparatus for 3480/3490 magnetic tape car-

tridges and a central cavity with a pair of tape spool access wells adapted to receive a coupling from said tape reeling mechanism;

a tape supply spool mounted with respect to one of said tape spool access wells for rotation within said central cavity and adapted to engage said coupling of said tape reeling mechanism;

a tape take-up spool mounted with respect to another one of said tape spool access wells for rotation within said central cavity and adapted to engage said coupling of said tape reeling mechanism;

a length of magnetic tape having its extreme ends coupled to each said spool respectively and a magnetic coating side facing outwardly from each said spool;

a tape cleaning device including a pivot fixedly mounted within said cavity, a forked member, mounted for rotation about said pivot, having a first fork extending from said pivot to a region between flanges of said supply spool and a second fork extending from said pivot to a region between flanges of said take-up spool, and a pair of cleaning pads respectively adhered to each said first and second fork and adapted to wipe a segment of said magnetic coating side of said tape as said tape is reeled from spool to spool; and

a spool locking device including

i. engaging means, mounted with said cassette, for selectively engaging each of said spools;

ii. shifting means, integrated with said engaging means, for shifting said engaging means from a first predetermined position in which said spools are locked to a second predetermined position in which said spools are unconstrained; and

iii. receiving means, respectively associated with each said spool, for receiving said engaging means.

5,547,143

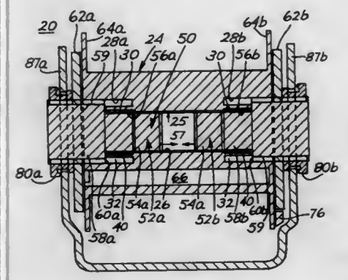
SEAT BELT RETRACTOR WITH INTEGRATED LOAD LIMITER

Harold J. Miller, III, Troy, and Niels Dybro, Utica, both of Mich., assignors to AlliedSignal Inc., Morristown, N.J.

Filed Aug. 24, 1994, Ser. No. 296,045

Int. Cl.[6] B60R *22/28*

U.S. Cl. 242—379.100 **4 Claims**



1. A load absorbing retractor comprising:

a rotatable spool or reel,

seat belt webbing wound about the spool;

first means, responsive to loads generated during an emergency situation, for deforming at least one deformable part and in so doing dissipating a determinable amount of the energy, wherein the first means comprising:

a first bore in the retractor,

an axle, having an axial advanceable first axle part and second axle part received in the bore for rotationally supporting the spool,

second means for advancing the first axle part in the bore and for causing a portion of the at least one deformable part to be crushed in response to the advancing motion of the first axle part to generate a determinable reaction force in the seat belt when loaded by an occupant and a stop means engageable after a determinable amount of advancement of the first axle part, for preventing further advancement of the first axle part to increase the reactive force, wherein the second axle part is opposingly received in the bore and axial advanceable relative to the first axle part and wherein the first means includes another deformable part, and the retractor includes third means for advancing the second axle part in the bore and for causing a portion of the other deformable part to be crushed in response to the advancing motion of the second axle part and wherein the stop means is engageable with the second axle part after a determinable amount of advancement of the second axle part, for preventing further advancement of the second axle part,

wherein the stop means includes facing portions of the first and second axle parts which come together after the determinable amount of advancement of the first and second axle parts.

5,547,144

CABLE REEL OF ELECTRIC SIGNAL TRANSMISSION APPARATUS

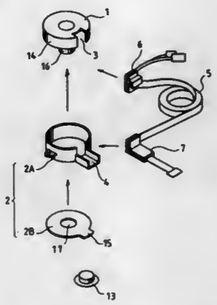
Yoshito Sakamoto; Takeshi Kihara, and Haruo Saen, all of Tochigi, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Filed Jun. 17, 1994, Ser. No. 262,042

Claims priority, application Japan, Jun. 18, 1993, 5-147169

Int. Cl.[6] H01R *39/02*

U.S. Cl. 242—402 **4 Claims**



1. A cable reel of an electric signal transmission apparatus comprising:

a tape-shaped cable for absorbing a relative rotation between an external member that generates an external force and said cable reel by tightening and loosening of windings of said tape-shaped cable, beginning and end grasping members being provided for beginning and end portions of said tape-shaped cable, respectively; and

a housing including an inner cylinder having a flange portion and an outer cylinder having side and bottom surface portions, said inner cylinder having a notch portion into which said end grasping member is fitted, and said side surface portion of side outer cylinder has a guide portion onto which said beginning grasping member is fitted;

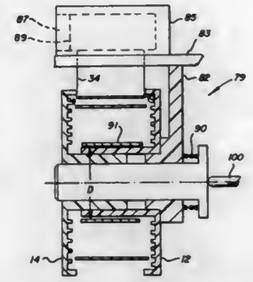
wherein an upper portion of said side surface portion is engaged with and covered by said flange portion of said inner cylinder.

5,547,145

AUTOMATIC PROCESSING REEL FOR USE IN PHOTOFINISHING

Daniel M. Pagano, Henrietta, and Kevin J. Klees, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 27, 1994, Ser. No. 330,400
Int. Cl.[6] B65H *18/08*
U.S. Cl. 242—536 **22 Claims**



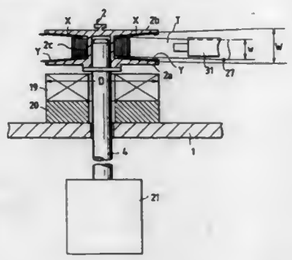
1. A reel for holding a photosensitive filmstrip comprising:
a first side wall and a second side wall being substantially parallel to said first side wall, said first and second side walls each having a wall member disposed in a spiral pattern so as to form a spiral path for receiving the edges of a photosensitive filmstrip between said side walls;
a clutch mechanism for advancing the filmstrip along the spiral path; and
means for disengaging the clutch mechanism so as to allow removal of the filmstrip from the spiral path.

5,547,146

APPARATUS FOR WINDING A MAGNETIC TAPE ON A FLANGED REEL

Akihisa Kita, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 17, 1992, Ser. No. 853,074
Claims priority, application Japan, Mar. 18, 1991, 3-077110
Int. Cl.[6] B65H *18/26;* **G11B** *5/84*
U.S. Cl. 242—548.4 **3 Claims**



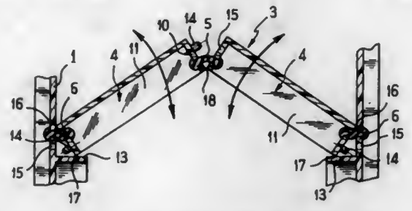
1. A tape winding apparatus comprising: a tape winding member having a pair of upper and lower flanges, means for rotating said tape winding member for winding a magnetic tape on said tape winding member, and means for applying a magnetic field to said tape near said tape winding member so as to drive said tape in the direction of the width thereof while said tape is being wound on said tape winding member, the distance W between inner surfaces of said flanges and width w of said tape where said tape is wound on said tape winding member being in a relation of $W \leqq w+0.16w$ and the speed of said winding being 5 m/sec or more, so as to keep the side edges of said tape out of contact with the inner surfaces of said flanges during said winding.

5,547,147

COLLAPSIBLE DRUM

Pierre Georges, Clermont-Ferrand, France, assignor to E M S, Randan, France

Filed Jul. 26, 1994, Ser. No. 279,841
Claims priority, application France, Jul. 30, 1993, 93 09447
Int. Cl.[6] B65H *75/24*
U.S. Cl. 242—607.1 **9 Claims**



1. A collapsible drum comprising flange plates associated with a hub made up of hinged elements, each of which comprises two portions having respective ends that face each other and that are connected together, and respective opposite ends that are connected to respective ones of the flange plates by flexible connecting members so that the portions of each of the hinged elements are substantially in alignment and substantially perpendicular to the flange plates when the drum is in an in-use position, and so that the portions of each of the hinged elements are collapsed so that they extend along a direction that is substantially parallel to the flange plates when the drum is in a storage position, the portions of the hinged elements being provided with respective side surfaces disposed so as to touch one another in substantially radial planes of the hub when the drum is in the in-use position, the flange plates being provided with collars which project into the hub and on which corresponding ends of the hub portions bear for centerless pivotal movement, and means tending to urge the flange plates towards each other.

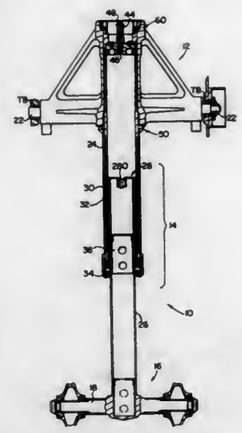
5,547,148

CRASHWORTHY LANDING GEAR

Berardino Del Monte, Monroe, and Ralph P. Barone, Hamden, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 18, 1994, Ser. No. 341,786
Int. Cl.[6] B64L *25/58*
U.S. Cl. 244—104 FP **9 Claims**

1. A shock strut assembly for an aircraft landing gear, comprising:
a trunnion fitting mounted in combination with the aircraft;
a wheel subassembly;
a compressible oleo strut subassembly operative to attenuate energy coupled into the aircraft by said wheel subassembly during normal landings, said compressible oleo strut subassembly including
a cylinder member having a lower end and an upper end mounted in combination with said trunnion fitting, and
a piston member having a lower end affixed in combination with said wheel subassembly and an upper end slidably inserted in said lower end of said cylinder member;
a mechanical load control subassembly locked in combination with said upper end of said cylinder member and said trunnion fitting, said mechanical load control subassembly being operative during normal landings to restrain relative movement between said cylinder member and said trunnion fitting and being operative during a crash landing in response to a



predetermined axial load to allow upward displacement of said cylinder member with respect to said trunnion fitting, said mechanical load control subassembly including
a shear ring having a cylindrical body and opposed shear flanges extending outwardly from said cylindrical body, each said shear flange having a torsion key,
a retainer nut,
said upper endface of said cylinder member having complementary flange cutouts, and
said trunnion fitting having an upper internal shoulder having complementary torsion key slots;
said shear ring being locked in combination with said upper end of said cylinder member and said trunnion fitting by threaded engagement of said retainer nut with said trunnion fitting wherein said retainer nut engages said shear flanges of said shear ring; and wherein
in said locked combination said cylindrical body abuts said cylinder member, said shear flanges engage said complementary flange cutouts of said cylinder member, and said torsion keys are disposed in said complementary torsion key slots; and
an energy dissipating subassembly disposed in combination with said cylinder member and operative in response to the crash landing to mechanically dissipate crash landing energy induced in the aircraft by said wheel subassembly during the upward displacement of said cylinder member.

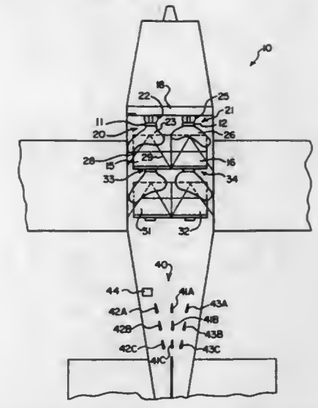
5,547,149

AIRCRAFT AIRBAG PROTECTION APPARATUS AND METHOD

Robert C. Kalberer, Boulder, and Dan Goor, Colorado Springs, both of Colo., assignors to Flight Safety Systems Inc., Boulder, Colo.

Filed May 16, 1994, Ser. No. 242,936
Int. Cl.[6] B64D *25/00*
U.S. Cl. 244—121 **51 Claims**

1. Apparatus for controlling the inflation of an airbag in an aircraft, the aircraft including a control member for manual movement by a pilot to facilitate control of the aircraft, the apparatus comprising;
first means for sensing that the aircraft has experienced an excessive acceleration force, and for generating a control signal in response to said acceleration force,
an airbag mounted relative to said control member and relative to the pilot, said airbag being responsive to said control signal,
second means for sensing an aircraft operating parameter, and



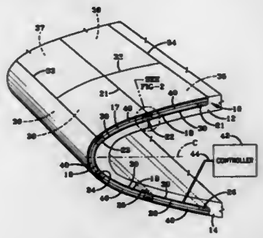
means responsive to said second means and operable to prevent response of said airbag to said control signal as a function of the presence of said operating parameter.

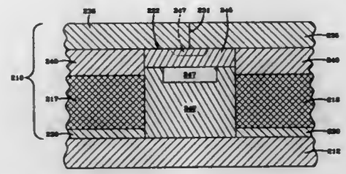
5,547,150

MECHANICAL DEICER HAVING DECOUPLED SKIN SEGMENTS

Lowell J. Adams, Dayton; Kevin L. Leffel, Akron, both of Ohio; Gary V. Tenison, New Brighton, Minn., and Norbert A. Weisend, Jr., Cuyahoga Falls, Ohio, assignors to The B.F. Goodrich Company, Akron, Ohio

Filed Mar. 22, 1994, Ser. No. 216,001
Int. Cl.[6] B64D *15/16*
U.S. Cl. 244—134 R **25 Claims**





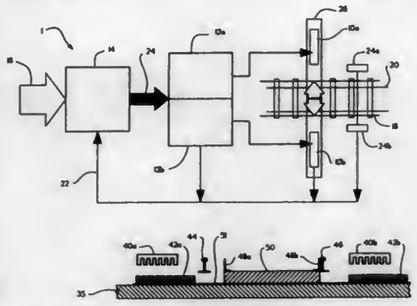
1. A deicing apparatus for an airfoil comprising:
first outer shell segment having outer edges;
deflection means disposed beneath said first outer shell segment for deflecting said first outer shell segment when energized;
a second outer shell segment having outer edges and disposed adjacent said first outer shell segment so that adjacent outer edges of said first and second outer shell segments define a division line therebetween; and,
elastomeric decoupling means for resiliently connecting said first to second outer shell segment across said division line.

5,547,151

RAILWAY SWITCH MECHANISM

Theo C. Giras, Pittsburgh; Joseph A. Profeta, Verona, both of Pa., and Dario Romano, Salerno, Italy, assignors to Union Switch & Signal Inc., Pittsburgh, Pa.

Filed Jan. 6, 1995, Ser. No. 369,685
Int. Cl.[6] B61L *5/00*
U.S. Cl. 246—227 **15 Claims**



1. A railway switch mechanism for controlling traffic between alternative rail tracks comprising:

a. at least one linear induction motor for vertically and transversely thrusting a switch track from a first predetermined position to a second predetermined position and said at least one linear induction motor being operably connected with said switch track;

b. at least one controllable power supply connected to said at least one linear induction motor, for providing electric current to said at least one linear induction motor; and

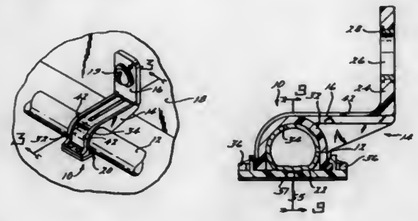
c. a controller, connected to said at least one controllable power supply, said controller being responsive to at least one of a feedback signal from said at least one controllably power supply, a feedback signal from said at least one linear induction motor, a feedback signal from said switch track, and a remote signal.

5,547,152

PIPE MOUNTING BRACKET

Albert W. Krock, Shelby Township, Mich., assignor to Connection Systems Group, Auburn Hills, Mich.

Filed Dec. 9, 1994, Ser. No. 353,085
Int. Cl.[6] F16L *3/08*
U.S. Cl. 248—74.1 **12 Claims**



1. A bracket for supporting and affixing an automotive fluid containing pipe element having an indented section with respect to an automotive vehicle in lateral, axial and rotational directions, said bracket characterized by:

a base member having a first end section constructed for securement to said automotive vehicle;

said base member having an arcuate section sized to receive a pipe element;

opposing flanges extend radially outward from opposite ends of said arcuate section;

a closure member having a substantially planar surface and adapted to engage said indented section in said pipe element; and

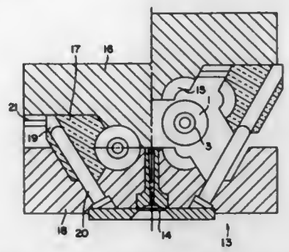
said closure member and opposing flanges having complementary fastener elements for affixing said closure member to said flanges whereby the substantially planar surface limits axial slippage of said pipe and prevents rotation of said pipe within said clamp.

5,547,153

PROTECTOR FOR A HOSE AND A HOSE PROVIDED WITH SUCH PROTECTOR

Jarl F. Larsen, and Flemming Larsen, both of Strandby, Denmark, assignors to Ole Bjerre, Vestbjerg, Denmark

PCT No. PCT/DK93/00048, § 371 Date Oct. 12, 1994, § 102(e) Date Oct. 12, 1994, PCT Pub. No. WO93/16314, PCT Pub. Date Aug. 19, 1993
PCT Filed Feb. 12, 1993, Ser. No. 284,555
Claims priority, application Denmark, Feb. 14, 1992, 0194/92
Int. Cl.[6] A47F *5/00*
U.S. Cl. 248—76 **7 Claims**



1. A protector for use with a bose having a certain outside diameter, said protector comprising:

a solid annular body providing an interior surface which extends from a first end thereof to a second end thereof and defines a central passage therethrough, and an exterior surface which extends from said first end to said second end, said interior surface at said first and second ends having a diameter which substantially equals said certain outside diameter, such that said protector can sealingly engage said hose when said hose is extended through said central passage, and said exterior surface provides a first portion which gradually expands in diameter from juncture with said interior wall at said first end of said solid annular body to a central second portion of largest diameter, and a third portion which gradually contracts in diameter from said second portion to juncture with said interior wall at said second end of said solid annular body.

5,547,154

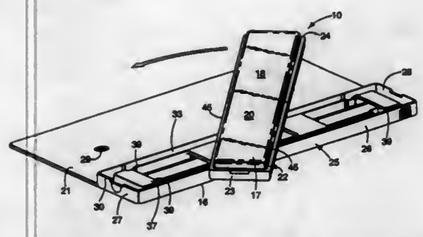
WRIST REST ASSEMBLY

Kenneth J. Kirchhoff, Gem Lake, and Robert J. Wolf, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 18, 1994, Ser. No. 324,734
Int. Cl.[6] B43L *15/00*
U.S. Cl. 248—118.3 **9 Claims**

1. A wrist rest assembly for use along the from edge of a device to be operated by a person's hands or fingers, such as in front of a computer keyboard, computer mouse or other input device, said wrist rest assembly comprising:

a base assembly having an upper pad snpport surface and an opposite bottom supported surface adapted to be supported on a borizontal surface along the front edge of the device; and



an elongate pad comprising a layer of gel, said pad having opposite top and bottom surfaces, opposite longitudinally extending edges, and opposite longitudinally spaced ends, the bottom surface of said elongate pad being supported on the upper pad support surface of said base assembly, said pad having a sufficient thickness between said top and bottom surfaces and width between said edges to afford supporting a users wrists on said top surface with a portion of the layer of gel beneath and conforming to the supported wrists and to afford significant motion of the top surface of the pad with the supported wrists relative to the bottom surface in a horizontal plane;

said base assembly comprises an elongate top portion having said upper surface supporting the bottom surface of said elongate pad and first and second ends; and _a bottom portion comprising an elongate part having said bottom supported surface adapted to be supported on a horizontal surface, and first and second ends;

the length dimensions between said ends of said elongate top portion and between said ends of said elongate part of said bottom portion being parallel to each other and said elongate top portion and said elongate part of said bottom portion having engaging parts adapted for engagement in a first relative orientation with said first ends of said top portion and said elongate part of said bottom portion adjacent one another, said second ends of said top portion and said elongate part of said bottom portion adjacent one another, and with the top surface of said elongate pad supported at a first predetermined level with respect to said bottom supported surface, and adapted for engagement in a second relative orientation with said first end of said top portion adjacent the second end of said elongate part of the bottom portion, with said second end of said top portion adjacent the first end of said elongate part of the bottom portion, and with the top surface of said elongate pad supported at a second predetermined level with respect to said bottom supported surface.

5,547,155

ADJUSTABLE SEAT POST ADAPTOR ASSEMBLY FOR BICYCLES AND LIKE CYCLES

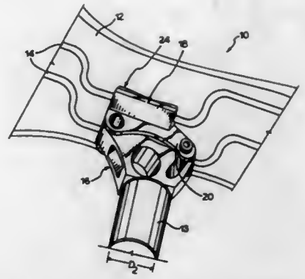
Eric Herting, Valencia, Calif., assignor to Answer Products, Inc., Valencia, Calif.

Filed Sep. 1, 1994, Ser. No. 299,530
Int. Cl.[6] B62J *1/00*
U.S. Cl. 248—219.2 **53 Claims**

1. An adjustable seat post adaptor assembly for a bicycle having a seat, at least two bars located underneath the seat, a seat tube and an extension post attached to the seat tube, the adjustable seat post adaptor assembly comprising:

a. an adapter member having a bottom end, a top end, a rear portion with a rear end, a middle portion, and a front portion with a front end, the rear and middle potions each having a horizontal bore, the front portion having a horizontal slotted curved bore, the adapter member further having a vertical opening located between the two horizontal bores of the rear and middle potions;

b. a calibration scale means located on said front end of said adapter member and having a plurality of divisions for precisely adjusting an angle of said seat of said bicycle;



c. a cylindrical member having one end integrally connected to said bottom end of said adapter member and the other end for connecting to said extension post;

d. a base plate member having a lower surface, an upper surface, a central bore, two transverse sides, two longitudinal sides, and two longitudinal opposite semi-circular grooves located on the upper surface and adjacent to and parallel to the two longitudinal sides respectively;

e. two rocking arms integrally connected to said lower surface of said base plate member and located between said central bore of said base plate member, each rocking arm having a proximal portion with a proximal end and a horizontal proximal bore, and a distal portion with a distal end and a horizontal distal bore, the distal portions extending away from said base plate member, where the distal ends of the two rocking arms include an indicating marker for assisting in reading said calibration scale means on said adapter member;

f. said base plate member mounted to said top end of said adapter member such that said central bore of said base plate member is located adjacent to said vertical opening of said adapter member, said horizontal proximal bores located adjacent to and aligned with said horizontal bore of said rear portion of said adapter member for hinging said base plate member to said adapter member;

g. said horizontal distal bores of said rocking arms being aligned with said horizontal slotted curved bore of said adapter member and fastened by a first threaded fastener means for allowing said base plate member to be independently adjusted in an up or down position; and

h. an X-shaped clamping member having a central portion with a central bore and four extending tips each having a semi-circular groove for clamping onto said upper surface of said base plate member, such that the central bore is aligned with said central bore of said base plate member for receiving a second threaded fastener means extending therethrough to fasten the clamping member to said base plate member, the four semi-circular grooves being complementary to said two longitudinal opposite semi-circular grooves of said base plate member respectively for allowing said at least two bars of said seat to be secured therein to independently adjust said seat in a forward or backward direction;

i. whereby when said adjustable seat post adaptor assembly is assembled, said second threaded fastener means allows said seat of said bicycle to be independently adjusted in said forward or backward direction, and said first threaded fastener means allows said seat to be independently adjusted in said up or down direction.

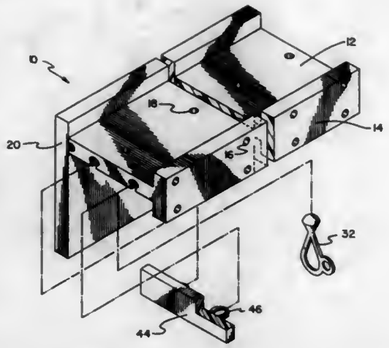
5,547,156

SLIDING HOLDER FOR A CURTAIN

Zoran Djuric, 100 Wingarden Ct., #116, Scarborough, Ontario, Canada

Filed Nov. 7, 1994, Ser. No. 334,941
Int. Cl.[6] A47H *13/12*
U.S. Cl. 248—307 **1 Claim**

1. A sliding curtain bolder comprising:



a substantially elongated support plate having a first longitudinal side spaced from a second longitudinal side, the support plate including a pair of retaining channels extending in a substantially spaced and parallel orientation along a bottom surface of the support plate, each of the retaining channels being defined by a quarter-round slot extending longitudinally through the support plate which is accessible from the bottom surface of the support plate through a rectangular slot extending longitudinally from the bottom surface and a plurality of support plate apertures extending through the support plate which permit the direction of threaded fasteners therethrough which can engage and secure to a ceiling surface to join the support plate thereto;

a plurality of sliding hooks slidably positioned within the retaining channel for coupling to an upper end of a curtain with the sliding hooks comprising a clip member of a substantially arcuate configuration including a resilient latch permitting selective entrance into an interior of the sliding hook; a conical projection secured to the clip member, the conical projection having a hemi-spherical head, with the conical projection and the hemi-spherical head being positioned within the retaining channel and the clip member projecting below the bottom surface of the support plate through the rectangular slot of the retaining channel; and a hook eye of closed configuration projecting from the clip member opposite the latch;

a mounting plate coupled to and extending along the first longitudinal side of the support plate, the mounting plate extending in opposed directions both above and below the support plate and including a plurality of through extending mounting apertures which permit the direction of threaded fasteners therethrough to secure the mounting plate and the support plate relative to a vertical wall surface;

a valance removably coupled to the second longitudinal side of the support plate wherein the valance extends both above and below the support plate to effectively conceal the mounting plate and the threaded fasteners, the valance including a cylindrical projection extending along a longitudinal length thereof, with the second longitudinal side of the support plate being shaped so as to define a cylindrical groove, the cylindrical projection being positioned within the cylindrical groove formed in the second longitudinal side of the support plate for coupling the valance thereto; and

a pair of end caps removably coupled to transverse ends of the support plate for concealing the transverse ends of the support plate and for retaining the associated sliding hooks in the retaining channels, the end caps including rectangular plates with spaced pairs of arcuate projections adapted to fictionally engage respectively opposed sides of the quarter-round slot of each of the retaining channels, whereby such frictional engagement therebetween retains the end caps relative to the respective ends of the support plate.

5,547,157

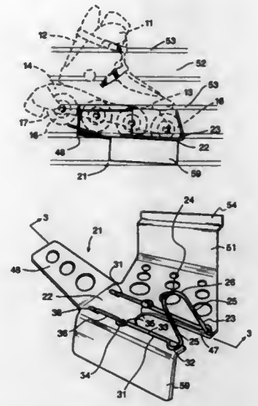
DISPLAY APPARATUS FOR SUPPORTING IN-LINE SKATES

Louis Hsiao, 765 A Loma Verde Ave., Palo Alto, Calif. 94303

Filed Jun. 30, 1994, Ser. No. 268,310

Int. Cl.[6] A63C *3/12*

U.S. Cl. 248—309.1 **24 Claims**



1. In combination, an in-line skate and a display apparatus for supporting said in-line skate, said in-line skate comprising a boot, a frame depending from said boot having an inverted channel and a plurality of rollers rotatably mounted at spaced intervals to said frame with said rollers being positioned in said channel and extending below said frame, said display apparatus comprising:

a support member, and

retaining means for retaining said skate in a substantially upright position, said retaining means having a pair of retaining arms extending upwardly from said support member, said retaining arms engaging opposite sides of at least one of said rollers to retain said skate in a substantially upright position.

5,547,158

DEVICE FOR ADJUSTING THE SEATING LEVEL OF A VEHICLE SEAT

Daisuke Uchimoto; Hiroshi Monmasu; Toshihiko Tomita, and Junsuke Inoue, all of Aki-gun, Japan, assignors to Kabushiki Kaisha Toyo Seat, Hiroshima, and Mazda Motor Corporation, Hiroshima-ken, both of, Japan

Filed Jun. 3, 1994, Ser. No. 253,485

Claims priority, application Japan, Jun. 4, 1993, 5-030036 U; Jun. 4, 1993, 5-134764

Int. Cl.[6] B60N *1/00;* **F16M** *11/00*

U.S. Cl. 248—396 **20 Claims**

1. A device for adjusting the seating level of a vehicle seat, comprising:

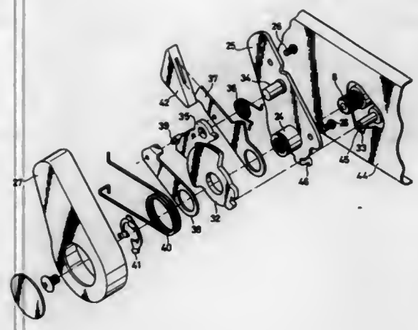
an elevating mechanism attached on a frame of the vehicle seat for raising or lowering the seating level;

a handle assembly separatably connected with the elevating mechanism for manipulating the elevating mechanism, the handle assembly including therein:

an actuating mechanism for actuating the elevating mechanism;

a locking mechanism for locking the actuating mechanism; and

a releasing mechanism for releasing the lock state of the actuating mechanism.



5,547,159

MANUALLY OPERABLE MECHANICAL MEMORY DEVICE

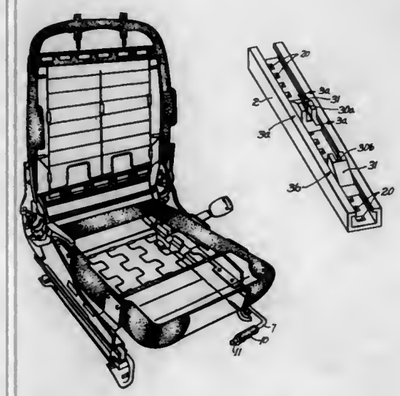
Markus Treichl, Rossach, and Christian Alt, Coburg, both of, Germany, assignors to Brose Fahrzeugteile GmbH & Co. KG, Coburg, Germany

Filed Sep. 23, 1994, Ser. No. 311,501

Claims priority, application Germany, Oct. 5, 1993, 43 33 892.5

Int. Cl.[6] F16M *13/00*

U.S. Cl. 248—429 **16 Claims**



1. A manually operable mechanical memory device for use with an occupant seat on a vehicle floor for storing at least one seat position, the device comprising:

at least one slider that is slidably displaced within a slider rail, wherein the slider includes at least one stop face positioned perpendicular to a longitudinal axis of the slider rail;

at least one stop element which can be brought into engagement with the slider and is movable vertically to the slider rail, wherein an element of the device selected from the group consisting of the stop element and the slider rail is adapted to be connected to a movable frame portion of the seat, wherein the other of such element in the group that is not connected to the frame portion of the seat is adapted to be fixed with respect to a portion of the vehicle floor, wherein the stop element is vertically displaceable between a neutral position and a stop position, and wherein the stop element is in contact against the stop face of the slider when placed in the stop position.

5,547,160

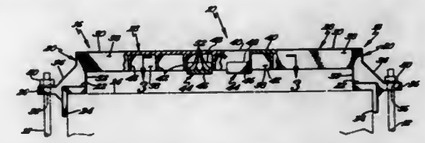
BATTERY HOLDDOWN

Jerome Johnson, Hayward, Wis., assignor to Quick Cable Corporation, Racine, Wis.

Continuation-in-part of Ser. No. 110,363, Aug. 23, 1993, Pat. No. 5,377,947. This application Jul. 8, 1994, Ser. No. 273,016

Int. Cl.[6] A47B *97/00*

U.S. Cl. 248—503 **20 Claims**



1. Holddown for a battery positioned in a battery tray, with the battery having a top and opposite sides, comprising, in combination: first and second brackets, with each of the brackets including a first part for abutting with the top of the battery, a second part for abutting with the side of the battery, and a cross rod extending over the top of the battery, with the first bracket including a channel for slidably receiving the cross rod of the second bracket and the second bracket including a channel for slidably receiving the cross rod of the first bracket, with each of the channels including a first side wall, a first support portion, and a second support portion, with the first side wall and the first support portion being in a spaced parallel relation and the second support portion extending between the first side wall and the first support portion, with the cross rod being slidably between the first side wall and the first support portion in a longitudinal direction and being movable in a movement direction which is not parallel to the longitudinal direction, whereby the cross rod is movable between an abutment position with the cross rod flushly abutting with the second support portion and a spaced position with the cross rod not abutting with the second support portion; first and second drawing means adapted to extend between the battery tray and the first and second brackets respectively for drawing the first and second brackets toward the battery tray to sandwich the battery between the battery tray and the first and second brackets; a plurality of abutments on the cross rods spaced in the longitudinal direction; and at least a first lug extending from the second support portion intermediate the first support portion and first side wall for abutting with at least one of the abutments to prevent sliding of the cross rods in the channels in the abutment position.

5,547,161

BASE FOR MACHINES AND THE LIKE

Werner Gleich, Leitershofen; Fritz D. Rothacker, Stuttgart; Dieter Brückel, Kaufbeuren, and Eduard Schmid, Untermeitingen, all of, Germany, assignors to Bõwe Systec AG, Augsburg, Germany

PCT No. PCT/EP93/00480, § 371 Date Sep. 9, 1994, § 102(e) Date Sep. 9, 1994, PCT Pub. No. WO93/18336, PCT Pub. Date Sep. 16, 1993

PCT Filed Mar. 3, 1993, Ser. No. 302,717

Claims priority, application Germany, Mar. 9, 1992, 9203100 U

Int. Cl.[6] F16M *13/00;5/00*

U.S. Cl. 248—678 **11 Claims**

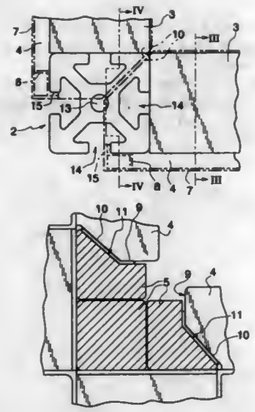
1. Base for machines, devices, scaffolds and the like, comprising:

posts and struts formed of extruded light-metal sections, said posts and struts being assembled into a framework;

wall elements connected to said posts and struts;

cover sections closing upwardly facing post surfaces, each individual wall element having a width corresponding to a distance between centers of adjacent posts;

space-forming members for putting individual wall elements in contact with outer surfaces of said posts, a bent upper web extending from said individual wall element over a partial

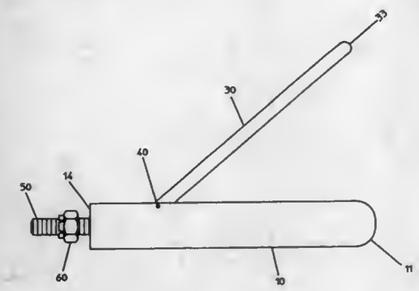


area of said upwardly facing post surfaces, said cover section being recessed in said partial area.

5,547,162
ARCHERY BOW STAND

Eugene R. Scbolewski, R.D. 1, Box 1008, Barnesville, Pa. 18214, and David M. Roskos, 545 E. Muir Ave., Hazleton, Pa. 18201

Filed Oct. 31, 1994, Ser. No. 332,261
Int. Cl.[6] F41B *5/00*
U.S. Cl. 248—688 5 Claims



1. An archery bow stand, comprising:

a) an elongated body having a free end and an opposite end, said free end separated from said opposite end by an elongated body length and

b) a retractable leg having a free end and an opposite end, said retractable leg pivotably connected at said opposite end to said elongated body and said retractable leg aligned with said elongated body when said retractable leg is in a retracted position,

wherein said free end of said retractable leg extends a distance beyond said free end of said elongated body when said retractable leg is in said retracted position and wherein said distance is at least 0.05 times the elongated body length,

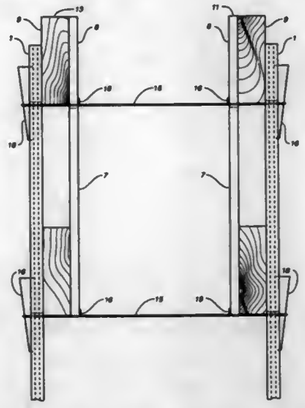
wherein said elongated body further comprises an inset at said opposite end of said elongated body and a keyway between said free end and said opposite end of said elongated body, and

wherein said retractable leg is snap fitted within said keyway of said elongated body.

5,547,163
WEDGED TIEWIRE ASSEMBLED PLYFORM PANEL TO I-BEAM STAKES

Clarence A. Lack, 16759 Madrone St., Pioneer, Calif. 95666

Continuation-in-part of Ser. No. 130,997, Dec. 15, 1993, abandoned. This application Nov. 25, 1994, Ser. No. 347,513
Int. Cl.[6] E04C *2/12;2/34*
U.S. Cl. 249—5 7 Claims



1. A concrete form assembly comprising two spaced-apart opposing form panels, at least two opposing holes formed on the panels, two frames each fastened to a back side of each of said form panels for reinforcing said form panel, two I-beam stakes each having at least one elongated slot being aligned with said opposing holes of the panels, a tie wire comprising two first bent portions defining two slotted extensions at the ends of the tie wire and two second bent portions located at open ends of said slotted extensions wherein said tie wire extends through the holes of the form panels and the slots of the stakes, and two wedges each extending through the slotted extension with the second bent portions of the tie wire catching against front surfaces of the form panels to secure the stakes, the frame and the form panels into an operating position.

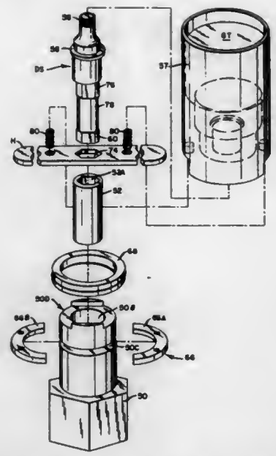
5,547,164
MOTORIZED WATER HYDRANT WITH MANUAL OVERRIDE

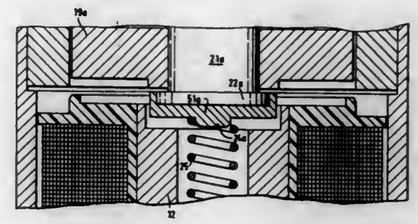
H. Ronald Hatnik, and Otmar Ulbing, both of Pittsford, N.Y., assignors to Ratnik Industries, Inc., Pittsford, N.Y.

Filed Dec. 28, 1994, Ser. No. 364,959
Int. Cl.[6] F16K *31/05*
U.S. Cl. 251—129.03 14 Claims

1. In a motorized water hydrant comprising a housing adapted to receive and contain water; means defining a valve seat in said housing through which water can enter said housing; means defining an outlet in said housing through which water within said housing can flow out of said housing; a plug adapted to cooperate with said valve seat to control the flow of water into said housing; a stem, operatively connected to said plug, for controlling the position of said plug relative to said valve seat, said valve stem having an end portion disposed outside said housing; threaded means in said housing for rotatably supporting said valve stem and for converting rotational movement of said valve stem to axial movement of said valve stem, whereby said plug can be moved toward and away from said valve seat during rotational movement of said valve stem to conrol the flow rate of water into said housing; selectively energizable bi-directional electric motor means for rotatably driving said valve stem, said motor means comprising a rotatably-driven drive shaft having a first portion characterized by a substantially circular cross-section, and a second portion, axially spaced from said first portion and characterized by a non-circular cross-section, and coupling means for coupling said drive shaft to said valve stem, whereby rotational movement of the drive shaft effects a rotational movement of said valve stem about its longitudinal axis, the improvement comprising:

manually operated means for selectively rotating said valve stem in the event of electric power loss, said manually operated means comprising a handle member operatively connected with said motor drive shaft and extending radially therefrom, said handle member having a non-circular aperture therein which corresponds in shape to the non-circular cross-sectional shape of said motor drive shaft, said handle member being arranged so that said motor drive shaft passes through said non-circular aperture in the handle, said handle member being movable axially along said motor shaft between a first position in which said handle aperture surrounds the first portion of the drive shaft while allowing said shaft to freely rotate therein, and a second position in which said handle aperture engages said second portion of the drive shaft and prevents said drive shaft from rotating relative said electric motor means, and means for rotatably mounting said electric motor means for movement about said valve stem axis, whereby said hydrant valve seat can be opened and closed by manually positioning said handle member in said second position and rotating said electric motor means about said valve stem axis.





magnetic circuit, said valve member cooperating with said stationary structural elements through said at least one auxiliary air gap and said at least one working air gap, all said structural elements cooperating in said working gap being at least partially provided with at least one non-magnetic coating formed as an electrically conductive coating so that at least one surface of one of said structural elements facing a corresponding another structural element is provided with said coating, said working air gap being located in an inner space of said magnet coil axially between said end surfaces of said magnet coil.

5,547,165
ELECTROMAGNETICALLY OPERATED PROPORTIONAL VALVE

Werner Brehm, Hemmingen; Horst Keuerleber, Eberdingen; Georg Koepff, Hemmingen, and Markus Deeg, Schwieberdingen, all of, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

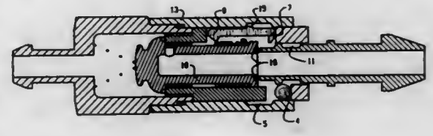
Filed Aug. 12, 1994, Ser. No. 289,750
Claims priority, application Germany, Sep. 3, 1993, 43 29 760.9
Int. Cl.[6] F16K *31/08*
U.S. Cl. 251—129.16 5 Claims

1. An electromagnetically operated proportional valve formed as a pressure regulating valve for automatic transmission of motor vehicles, comprising a magnet housing having an axis; a magnet coil and stationary flux guiding elements received in said magnet housing, said magnet coil having two end surfaces axially spaced from one another; a magnet armature; a valve member with which said magnet armature cooperates; stationary structural elements forming at least one auxiliary air gap and a working air gap in a

5,547,166
HOSE COUPLING FOR COMPRESSED AIR

Björn Engdahl, Krokslätts Parkgata 58C, S-431 58 Mölndal, Sweden

PCT No. PCT/SE93/00839, § 371 Date Apr. 17, 1995, § 102(e) Date Apr. 17, 1995, PCT Pub. No. WO94/09304, PCT Pub. Date Apr. 28, 1994
PCT Filed Oct. 14, 1993, Ser. No. 416,825
Claims priority, application Sweden, Oct. 16, 1992, 9203040
Int. Cl.[6] F16L *37/28*
U.S. Cl. 251—149.6 8 Claims



1. A hose coupling comprising:

a male member;

a female member dimensioned to receive said male member, said female member comprising:

(i) an axially displaceable slide having a spring-loaded ring, said slide movable to a first position to turn off the flow of fluid through the coupling, and movable to a second position to open the flow of fluid through the coupling, wherein said slide is movable to the second position by insertion of said male member into said female member,

(ii) at least one pawl means pivotable about a pivot surface, and having first and second levers, said first lever engageable with said male member to lock said male member to said female member, and said second lever engageable with said spring-loaded ring to hold said male member in a sealing contact with said female member,

(iii) at least one locking member engageable with said male member to lock said male member to said female member, and

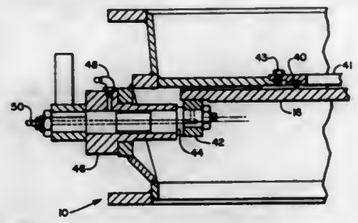
(iv) an axially displaceable sleeve enclosing said female member and movable to a first position to disengage said first lever from said male member, disengage said second lever from said spring-loaded ring, and engage said locking member with said male member, and movable to a second position to disengage said locking member from said male member.

5,547,167

GATE VALVE FOR FLUIDIZED PARTICULAR MATERIAL

Robert J. Torok, Kirtland, and Ernest A. Duschen, Geauga, both of Ohio, assignors to General Signal Corporation, Stamford, Conn.

Filed Jun. 21, 1995, Ser. No. 493,040
Int. Cl.[6] F16K *3/18*
U.S. Cl. 251—187 **20 Claims**



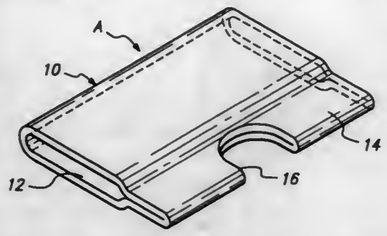
1. A gate valve apparatus which comprises:
a housing having a passageway defined therein for a fluent material;
a generally planar gate;
means for supporting the gate within said housing, said means for supporting allowing movement of said gate in opposed first and second directions, said first and second directions being generally parallel to said generally planar gate;
an annular seal carried on said housing around the perimeter of said passageway; and
means for moving said gate in a direction substantially perpendicular to said generally planar gate, said means for moving including a first shaft, said first shaft having a first axial portion that is disposed in eccentric relationship to other axial portions of said first shaft, a first roller carried on said first axial portion of said first shaft, said first roller including a bearing allowing free rotational movement about said first axial portion of said first shaft.

5,547,168

STAKE PULLER ATTACHMENT FOR PRY BARS

David L. Kelly, Sacramento, Calif., assignor to The Burke Group, Sacramento, Calif.

Filed May 3, 1995, Ser. No. 433,089
Int. Cl.[6] E21B *19/00*
U.S. Cl. 254—30 **6 Claims**



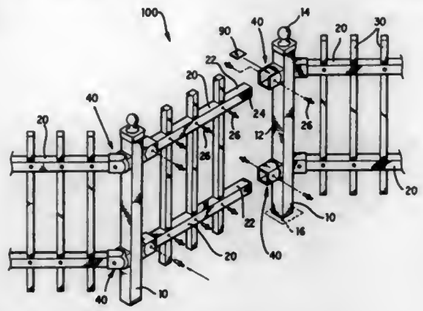
1. A stake puller for attachment to the end of a pry bar, said puller comprising:
a. a section of pipe having a continuous side wall flattened to provide a socket comprised of spaced portions of the side wall configured for telescopic engagement over the end of the pry bar and a thin edge comprised of juxtaposed portions of the side wall to one side of the socket; and,
b. a notch formed in the edge, said notch being proportioned for slidable receipt around a stake to be pulled and gripping engagement with the stake upon being cocked relative thereto.

5,547,169

FENCE ASSEMBLY WITH SWIVEL BRACKET

William C. Russell, Lutherville, Md., assignor to The Anchor Group, Baltimore, Md.

Filed Nov. 10, 1994, Ser. No. 338,813
Int. Cl.[6] E04H *17/14*; **F16C** *11/00*; **F16D** *1/12*
U.S. Cl. 256—67 **17 Claims**



1. A fence assembly kit comprising:
at least one fence post having an outer surface;
at least one fence rail configured for adjustable securement to the fence post, the fence rail including two ends with one of the two ends attachable to the outer surface of the fence post after being adjusted along either of horizontal and vertical pivot axes;
a swivel bracket attachable to the outer surface of the fence post and to the one end of the fence rail for facilitating pivotal adjustment of the fence rail relative to the fence post along either of said two pivot axes and for securing the fence rail to the fence post, the swivel bracket including:
a base member having a first end for securement to the outer surface of the fence post and a second end defining a rounded depression;
a pivotable body member having a rounded exterior portion configured to be received in the depression of the base member to permit adjustment of the body member, and a plurality of generally flat walls defining a hollow chamber having an entry opening configured to receive the one end of the fence rail;
wherein the first end of the base member of the swivel bracket is securable to the outer surface of the fence post with the rounded portion of the pivotable body member placed in the depression of the base member at a desired angular position and then secured thereto;
whereby the one end of the fence rail may thereafter be positioned in the chamber of and secured to the pivotable body member to fix the fence rail to the fence post at the desired position.

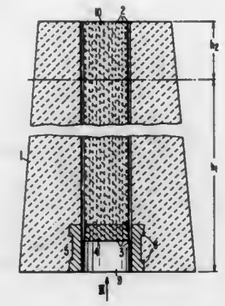
5,547,170

GAS AND/OR SOLID MATERIAL BLASTING DEVICE FOR A METALLURGICAL VESSEL AND METHOD OF MANUFACTURE THEREOF

Alois Angeler, Mühlheim an der Ruhr; Harald Kaune, Krefeld, and Theo Scheuten, Duisburg-Huckingen, all of, Germany, assignors to Didier-Werke AG, Wiesbaden, Germany

Division of Ser. No. 388,577, Feb. 14, 1995, Pat. No. 5,533,713. This application Sep. 14, 1995, Ser. No. 528,163
Claims priority, application Germany, Apr. 2, 1994, 44 11 538.5
Int. Cl.[6] C21B *7/16*
U.S. Cl. 266—47 **15 Claims**

1. A method of manufacturing a blasting device to be used to introduce a material into a metallurgical vessel, said method comprising:



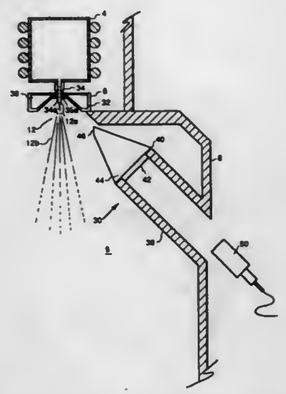
inserting ends of a plurality of blasting tubes arranged in a tube bundle into respective receiving bores in a metal apertured plate and producing a press fit therebetween, thereby defining a space within said tube bundle;
subsequently filling said space within said tube bundle with a prefabricated ceramic internal member;
positioning said tube bundle with said internal member therein within a pressing mold partially filled with a portion of ceramic material to be used to form a blasting brick;
subsequently completing filling of said pressing mold with a remaining portion of ceramic material to be used to form the blasting brick; and
operating said pressing mold to press said ceramic material to thereby form said blasting brick with said tube bundle and said internal member situated therein.

5,547,171

APPARATUS AND METHOD FOR ATOMIZING LIQUID METAL WITH VIEWING INSTRUMENT

Steven A. Miller, Amsterdam; Russell S. Miller, Ballston Spa, both of N.Y., and Roy W. Christensen, Northborough, Mass., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 236,828, May 2, 1994, Pat. No. 5,516,354, which is a division of Ser. No. 37,848, Mar. 29, 1993, abandoned. This application Apr. 27, 1995, Ser. No. 429,993
Int. Cl.[6] B22D *41/58*
U.S. Cl. 266—78 **26 Claims**



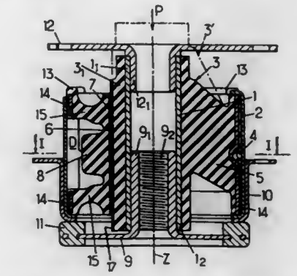
1. A system for preventing freeze-off during the atomization of liquid metal in a close coupled gas atomization apparatus, the system comprising:
an enclosure defining a chamber for containing particulates formed from atomized liquid metal;
a nozzle, mounted on the enclosure in communication with the chamber, for atomizing the liquid metal, the nozzle having a plenum means and a melt guide tube extending axially therethrough to an exit orifice, the plenum means allowing atomizing gas to converge in an atomization zone extending from the exit orifice;
viewing means for providing a field of view of the atomization zone including a plume; and
at least one process sensor, operational positioned in the viewing means, for monitoring the atomization zone.

5,547,172

HYDRAULIC ANTIVIBRATION SUPPORTS, AND TO METHODS OF MANUFACTURING THEM

Patrick E. Corcoran, Rockford, Mich., assignor to Hutchinson, Paris, France

Continuation of Ser. No. 177,469, Jan. 5, 1994, abandoned. This application Apr. 24, 1995, Ser. No. 427,705
Claims priority, application France, Dec. 9, 1993, 93 14811
Int. Cl.[6] F16M *5/00*
U.S. Cl. 267—140.13 **16 Claims**



1. A hydraulic antivibration body mount adapted to support a permanent vertical load of a vehicle body, comprising:
an inner rigid strength member and a tubular outer rigid strength member, said inner member having a vertical longitudinal axis, the outer member horizontally surrounding the inner member, and one of said strength members being adapted to have applied thereto the vertical load parallel to the vertical longitudinal axis,
an elastomer body connecting said members to each other which enables relative vertical and horizontal motion of said members,
at least two liquid-filled chambers which are defined at least in part by the elastomer body and which are interconnected by at least one narrow channel,
wherein the elastomer body comprises:
a central portion having at least two slanting support arms that extend radially and axially downward from the inner strength member to the outer strength member, said support arms adapted to vertically support the vertical load by a compression thereof and enable the relative vertical and horizontal displacement of the two members by a resiliency thereof, each of said support arms being disposed between two of the chambers, and each said slanting support arm including an inner horizontal top end and an outer horizontal top end with said inner horizontal top end located vertically above said outer horizontal top end in order to adapt said slanting support arm to effectively oppose the compressive deformation imparted to the support arm by the vertical load;
flexible walls each defining the inside of one of said chambers, each flexible wall having two lateral edges that extend vertically and that are each connected to one of the support arms in the vicinity of the outer strength member, each flexible wall being separated from the central portion of the elastomer body by a vertical slot which extends between the two lateral edges

of said flexible wall, such that the antivibration body mount thus damps vertical and horizontal vibrations between said strength members and has a low stiffness relative to the vertical vibrations; and

vertical abutment surfaces immovable relative to the inner strength member, said vertical abutment surfaces facing horizontally outwardly and cooperating respectively with the flexible walls which define the chambers to deform said flexible walls in response to horizontal vibrations, said vertical abutment surfaces extending in use upwardly and downwardly further than said chambers when no vertical vibrations are applied to said elastomer body.

5,547,173

FLUID-FILLED CYLINDRICAL ELASTIC MOUNT HAVING THREE FLUID CHAMBERS AND THREE ORIFICES, WITH ONE VALVE MEANS PROVIDED IN ONE ORIFICE

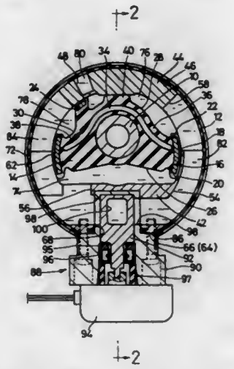
Joji Tsutsumida, Komaki; Yasuhiro Suzuki, Chigasaki, and Tetsuo Uozumi, Zama, all of, Japan, assignors to Tokai Rubber Industries, Ltd., Japan, and Nissan Motor Company, Ltd., Japan

Filed Jul. 25, 1995, Ser. No. 506,591

Claims priority, application Japan, Jul. 28, 1994, 6-176890

Int. Cl.[6] F16F *13/00*

U.S. Cl. 267—140.15 **7 Claims**



1. A fluid-filled cylindrical elastic mount for flexibly connecting two members to each other, comprising:

an inner sleeve fixed to one of the two members to be flexible connected;

an outer sleeve disposed radially outwardly of said inner sleeve with a radial spacing therebetween, and fixed to the other of the two members;

an elastic body interposed between said inner and outer sleeves, said elastic body partially defining a primary fluid chamber formed between the inner and outer sleeves, said primary fluid chamber being adapted to undergo pressure changes upon application of a vibrational load to the mount;

a first flexible diaphragm partially defining a first auxiliary fluid chamber formed between said inner and outer sleeves, a volume of said first auxiliary fluid chamber being variable due to deformation of said first flexible diaphragm;

a second flexible diaphragm partially defining a second auxiliary fluid chamber formed between said inner and outer sleeves, a volume of said second auxiliary fluid chamber being variable due to deformation of said second flexible diaphragm, said second flexible diaphragm having a larger stiffness than said first flexible diaphragm;

a non-compressible fluid filling said primary fluid chamber, said first auxiliary fluid chamber and said second auxiliary fluid chamber;

an orifice-defining structure for separately defining a first orifice passage, a second orifice passage, and a third orifice passage, said first orifice passage communicating with said primary fluid chamber and said first auxiliary fluid chamber so as to allow said non-compressible fluid to flow therebetween, said first orifice passage being tuned to a first frequency range, said second orifice passage communicating with said primary fluid chamber and said first auxiliary fluid chamber so as to allow said non-compressible fluid to flow therebetween, said second orifice passage being tuned to a second frequency range that is higher than said first frequency range, said third orifice passage communicating with said primary fluid chamber and said second auxiliary fluid chamber so as to allow said non-compressible fluid to flow therebetween, said third orifice passage being tuned to a third frequency range that is higher than said second frequency range, and being designed such that said non-compressible fluid is less likely to flow through said third orifice passage than through said first and second orifice passages, when the mount receives vibrations in said first and second frequency ranges; and

valve means for selectively permitting or interrupting flow of the fluid through said second orifice passage between said primary fluid chamber and said second auxiliary fluid chamber.

5,547,174

BEARING

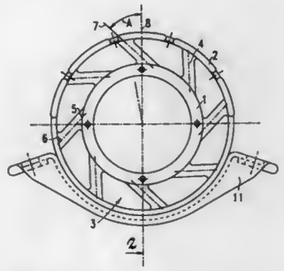
Karl H. Bade, Mörlenbach; Walter Gruber, Weinheim, and Anold Simuttis, Bad Kreuznach, all of, Germany, assignors to Firma Carl Freudenberg, Weinheim, Germany

Filed Jun. 16, 1993, Ser. No. 78,130

Claims priority, application Germany, Aug. 25, 1992, 42 28 170.9

Int. Cl.[6] F16C *27/06;* **B60K** *17/24*

U.S. Cl. 267—154 **18 Claims**



1. A bearing, comprising:

an inner support ring;

an outer support ring surrounding the inner support ring at a radial distance; and

an intermediate ring made of rubber-elastic material by which the inner and outer support rings are supported on each other in a radially elastic manner, the intermediate ring including at least three elongate web elements which are distributed over the circumference of the support rings and which are fastened to the support rings along holding surfaces along the inner support ring and the outer support ring, each of said web elements having axially extending side surfaces that are substantially parallel to one another when the bearing is in an unstressed state;

wherein the holding surface along the inner support ring and the holding surface along the outer support ring are connected by an intermediate linking portion of each of the web elements that lies along an imaginary line which intersects the central region of the circumferential extent of each holding surface, said imaginary line forming an angle with respect to a radial plane of 15°–75°.

5,547,175

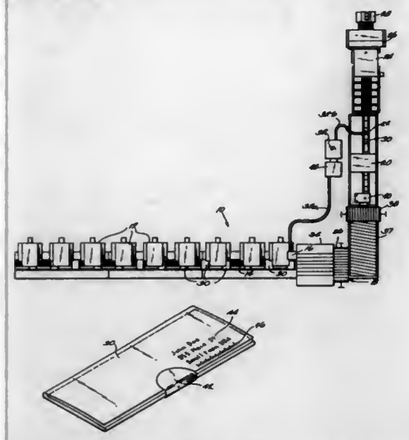
APPARATUS AND METHOD FOR PREPARING MAIL PRODUCTS

William T. Graushar, Wauwatosa, and Todd J. Dettmering, Menomonee Falls, both of Wis., assignors to Quad/Tech, Inc., Pewaukee, Wis.

Filed Mar. 29, 1993, Ser. No. 39,922

Int. Cl.[6] B41L *43/12;* **B42C** *1/00*

U.S. Cl. 270—037 **8 Claims**



1. A system for preparing mail products, said system comprising;

controller means cooperating with a source of individualized subscriber information for generating control signals in accordance with said individualized subscriber information;

conveyor means for transporting said mail products;

feeder means responsive to control signals from said controller means for demographically delivering mail products to said conveyor means so that the mail products are individualized according to said individualized subscriber information;

customizing means operatively connected with said conveyor means for effecting a customizing operation on said mail products, said customizing means including first printing means located adjacent said feeder means and downstream thereof for applying customized information on said mail products being delivered on said conveyor means, and said customizing means including second printing means for applying mailing information on said mail products;

forming means operatively connected with said conveyor means for folding said mail products into folded portions, said forming means being positioned downstream of said first printing means and upstream of said second printing means, and said forming means having at least one fold unit for effecting at least one fold in each of said mail products; and

tabbing means operatively connected with said conveyor means for externally sealing said mail products once said mail products have been folded.

7. A method for preparing mail products in a system of the type having a conveyor line and a plurality of feeders for delivering signatures to said conveyor line according to individualized subscriber information, said method comprising the steps of:

providing a programmable control means for generating signals according to said individualized subscriber information;

delivering signatures to the conveyor line in accordance with the signals generated by the programmable control means so that the signatures are demographically sorted according to said individualized subscriber information;

customizing at least selected ones of the demographically sorted signatures;

folding individual collections of signatures to form mail products after the selected ones of the signatures in each collection are customized;

externally applying a tab around each of said mail products after each of said mail products has been folded to close each of said mail products; and

printing address information on each of said mail products after each of said mail products has been closed.

5,547,176

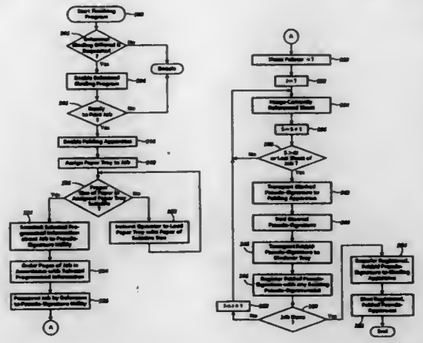
APPARTUS AND METHOD FOR BINDING PSEUDO-SIGNATURES INTO A BOOKLET

Geoffrey C. Williams, Penfield, and David P. VanBortel, Walworth, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 15, 1994, Ser. No. 356,614

Int. Cl.[6] B41L *43/12;* **G03G** *21/00*

U.S. Cl. 270—37 **10 Claims**



1. In a printing system with a print engine for producing N-up prints from a job with at least 4N electronic pages, each of the N-up prints including opposing sides with at least two images being disposed on each of the opposing sides in a side-by-side relationship, a system for binding a set of individually folded N-up prints comprising:

a folding device, operatively coupled with the print engine, for folding each of the N-up prints, each of the N-up prints being folded one at a time, so that each of the N-up prints is individually folded, and each of the folded N-up prints having a folded edge;

a stacker operatively coupled with said folding device, said stacker including a stacking area for receiving the set of individually folded N-up prints when delivered thereto, the individually folded N-up prints being disposed in a stacked relationship in said stacker, so that at least one of the individually folded N-up prints is disposed on top of another one of the individually folded N-up prints, and the folded edges of the individually folded N-up prints being disposed along a common axis;

a binding device, operatively coupled with said stacker, for applying an adhesive layer to the set of individually folded N-up prints, the adhesive layer contacting each of the folded edges so as to provide a secure binding relationship between each of the individually folded N-up prints; and

a substrate tray operatively coupled with the print engine, wherein during an N-up print binding mode the substrate tray is to be loaded with a selected type of substrates, and wherein when said substrate tray is loaded with substrates other than the selected type of substrates, during the N-up print binding mode, operation of the binding system is inhibited.

5,547,177

METHOD AND APPARATUS FOR REPLACING INCOMPLETE PRINTED PRODUCTS IN THE PRODUCTION OF NEWSPAPERS, MAGAZINES AND SIMILAR PRODUCTS

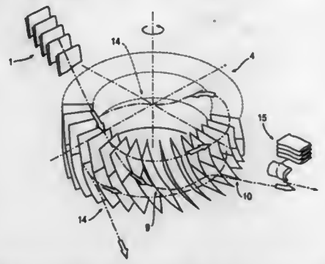
Peter Merkli, Oftringen, and Heinz Linder, Zofingen, both of, Switzerland, assignors to Grapha-Holding AG, Hergiswil, Switzerland

Filed Jun. 27, 1994, Ser. No. 266,500

Claims priority, application Switzerland, Jun. 29, 1993, 01946/93

Int. Cl.[6] B65H *7/20;39/02*

U.S. Cl. 270—52.05 **12 Claims**



1. A method of assembling printed products comprising the steps of:

selectively delivering the printed products to receiving devices situated in succession along a production line formed by a plurality of controlled sheet feeder stations;

selectively supplying printed products to a receiving device at a discharge end of the production line;

transferring at least indirectly the printed products selectively supplied to the receiving device at the discharge end of the production line to an upstream end of a helical circulation track which includes a plurality of further receiving devices driven in synchronism with the production line through a feed path disposed between the discharge end of the production line and the circulation track;

guiding the further receiving devices along a helical path defined by the circulation track between its upstream end and its downstream end;

removing any incomplete printed products from the printed products; and

replacing the incomplete printed products with replacement complete printed products by delivering the replacement complete printed products to respective receiving devices of the circulation track corresponding to removed incomplete printed products at a feed point in the circulation track through the feed path, the feed path thereby being adapted to transfer both originally complete printed products and replacement complete printed products to the circulation track.

5,547,178

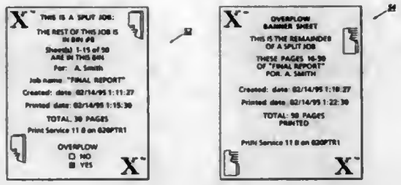
PRINTER MAILBOX SPLIT JOBS OVERFLOW BANNER SHEET INDICATOR SYSTEM

Mark Costello, Rochester, N.Y., assignor to Xerox Corporation, Stamdford, Conn.

Filed Feb. 23, 1995, Ser. No. 393,605

Int. Cl.[6] B65H *39/00*

U.S. Cl. 270—52.02 **9 Claims**



1. In a shared users printing system, with an electronic printer for printing respective plural print jobs of plural printed sheets of respective different plural users of said printer, with a printer mailbox system connected to said electronic printer to receive said print jobs from said electronic printer, said printer mailbox system having multiple individual print job storage mailbox bins of a limited preset maximum sheet stacking capacity, and a sheet distribution system for automatically variably directing and stacking into different said individual mailbox bins electronically assigned to different respective users the respective plural print jobs of the different plural users of said electronic printer, wherein at least the initial portion of a first print job of a particular user is directed to a selected first said mailbox bin assigned to that user, the improvement comprising:

a control system controlling said sheet distribution system in a job splitting program in accordance with said maximum sheet stacking capacity of said first bin to divert subsequent printed sheets of a print job being printed for that particular user which would exceed said maximum sheet stacking capacity of said first bin to at least one other bin and in coordination therewith controlling said printer to automatically print and automatically insert a special banner sheet as the last sheet inserted into said first bin as the top sheet in said first bin, which special banner sheet is automatically printed with readable indicia indicating that said subsequent printed sheets for that user are being so diverted to said other bin.

5,547,179

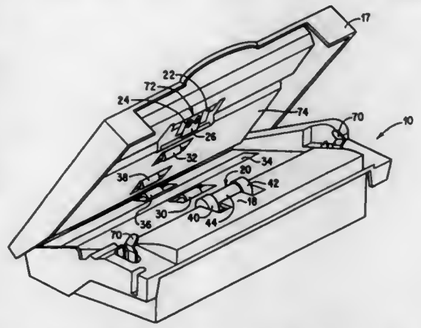
SCANNING UNIT WITH INDEPENDENT SPRING-LOADED DOCUMENT CONTROL COMPONENTS MOUNTED ON AN INTEGRATED CHASSIS

Darren W. Wilcox, and Alpha N. Doan, both of San Diego, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 17, 1994, Ser. No. 324,821

Int. Cl.[6] B65H *5/00*

U.S. Cl. 271—3.2 **21 Claims**



1. A scanning unit for feeding an individual document sheet along a document path past a scanning window, comprising:

an upper guide member;

a central pre-scanning pinch roller;

first mounting means for rotatably mounting said pre-scanning pinch roller on said upper guide member adjacent the document path before the scanning window, said first mounting means including first spring means for providing a first spring bias to hold-the document sheet against a first drive roller;

a central post-scanning pinch roller;

second mounting means for rotatably mounting said post-scanning pinch roller on said upper guide member adjacent the document path after the scanning window, said second mounting means including second spring means for providing a second spring bias to hold the document sheet against a second drive roller; and

wherein said first drive roller constitutes a primary drive roller, and said second drive roller constitutes a secondary drive roller, with said first spring means providing a first spring bias having a greater force than said second spring bias.

5,547,180

SHEET FEED AND PRESENTING ASSEMBLIES AND METHOD

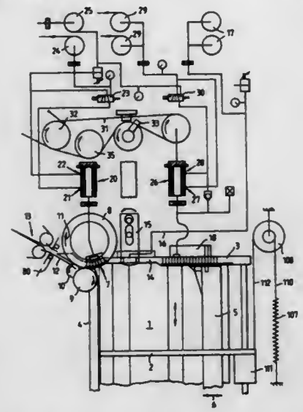
Colin P. Brotherston, Emsworth, United Kingdom, assignor to De La Rue Systems Limited, London, United Kingdom

Filed Sep. 28, 1994, Ser. No. 314,344

Claims priority, application England, Sep. 29, 1993, 9320085

Int. Cl.[6] B65H *3/12*

U.S. Cl. 271—96 **67 Claims**



1. A sheet feed assembly for feeding sheets from a stack, the assembly comprising a vacuum feed device which is movable with a cyclic movement to feed a sheet from the stack in a feed direction while the sheet is held on said feed device under vacuum; a sheet holding device spaced from said vacuum feed device and positioned adjacent the stack for selectively preventing sheets from being fed from the stack; a vacuum source; and a control device coupled to said vacuum source, to said vacuum feed device and to said sheet holding device to selectively supply a vacuum from the vacuum source to said vacuum feed device to cause said device to feed a sheet and at substantially the same time to deactivate said sheet holding device so as to allow a single sheet to be fed by said vacuum feed device, whereby said control device controls the supply of vacuum to said feed device asynchronously with respect to said cyclic movement of said feed device.

5,547,181

MEDIA SHEET PICK AND FEED SYSTEM

John A. Underwood, Vancouver, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 20, 1995, Ser. No. 579,727

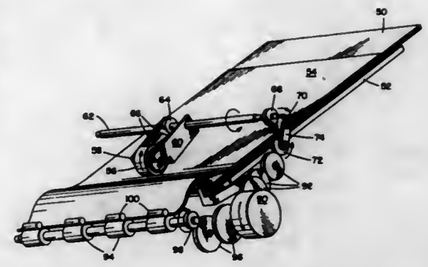
Int. Cl.[6] B65H *3/06*

U.S. Cl. 271—114 **8 Claims**

1. A media sheet pick and feed system comprising:

a pick roller shaft mounted for rotation;

a media sheet support surface for supporting a stack of media sheets during pick and feed operations, said support surface separated from said pick roller shaft by a fixed distance during said operations;



arm means coupled to and extending from said pick roller shaft;

pick roller means rotatably supported by said arm means so as to rest upon an upper most media sheet of said stack, and drivingly engaged with said pick roller shaft;

drive means juxtaposed to, and for rotating said pick roller shaft and having first and second directions of rotation; and

clutch means positioned between said drive means and said pick roller shaft, having a driving state and a non-driving state and in said driving state, coupling said drive means to said pick roller shaft to cause a rotation thereof and a pick rotation of said pick roller means said clutch means in said non-driving state being uncoupled from said pick roller shaft to enable free wheeling of said pick roller shaft and pick roller means while still in contact with a media sheet being fed.

5,547,182

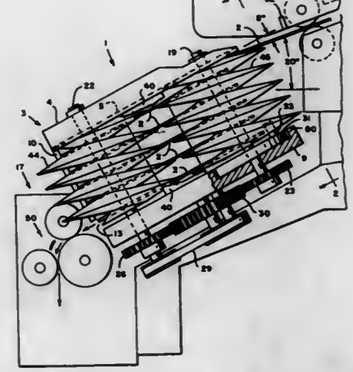
APPARATUS FOR FEEDING DISTORTED DOCUMENTS

Charles F. Murphy, III, 236 Second Ave., Milford, Conn. 06460

Filed Aug. 19, 1994, Ser. No. 292,698

Int. Cl.[6] B65H *29/42*

U.S. Cl. 271—179 **3 Claims**

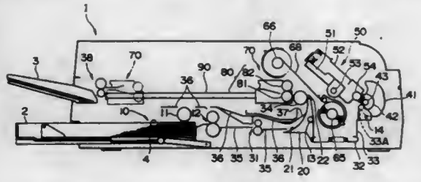


1. An improved apparatus for buffering transport of a document of the type in which an upper deck has an outer surface and a recessed substantially planar surface, and in which a lower deck is positioned below the upper deck, the improvement comprising:

means for transporting a distorted document, the means comprising a plurality of opposite, parallel, threaded screw conveyers for feeding the document orthogonal to the upper deck, the recessed substantially planar surface extending beyond the axis of the threaded screw converters towards the incoming document, the plurality of screw conveyers spaced in close

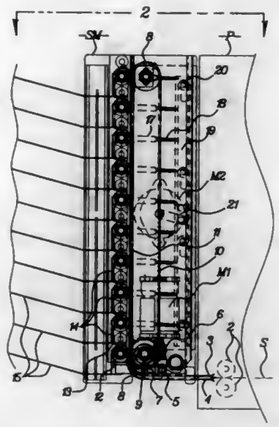
proximity to the feed direction of the preceding conveyer to allow transport of the distorted document without jamming.

5,547,183
IMAGING DEVICE
Toshiharu Tamura, Saitama-ken, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 31, 1992, Ser. No. 937,280
Claims priority, application Japan, Aug. 30, 1991, 3-244744; Oct. 28, 1991, 3-308420; Oct. 28, 1991, 3-308421; Oct. 28, 1991, 3-308422; Oct. 28, 1991, 3-308423; Nov. 20, 1991, 3-331239; Nov. 20, 1991, 3-331242; Dec. 11, 1991, 3-351006; Dec. 11, 1991, 3-351007; Dec. 13, 1991, 3-352004; Dec. 18, 1991, 3-353808; Dec. 18, 1991, 3-353809; Dec. 18, 1991, 3-353810; Dec. 18, 1991, 3-353811
Int. Cl.[6] B65H *5/06*
U.S. Cl. 271—264 **33 Claims**



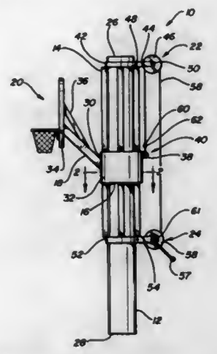
1. A sheet-shaped member feed structure for holding a sheet-shaped member with movable holding means, and for feeding the sheet-shaped member by the movement of said holding means, comprising:
means for engaging said holding means for holding and releasing said sheet-shaped member;
a driving mechanism for driving said means for engaging, disposed on opposite ends of a movement stroke of said holding means;
drive means for driving said driving mechanism;
swingable arm members for supporting said driving mechanism; and
arm member swinging means provided with said driving mechanism for swinging said arm members in a swing motion;
wherein, when said holding means is located at said movement stroke ends, said driving mechanism is selectively located at one of a position where said driving mechanism can operate said means for engaging, and a position where said driving mechanism is unable to operate said means for engaging, by said swing motion of said arm members swung by said arm member swinging means.

5,547,184
RESILIENT SHEET TRANSPORT SYSTEM
Peter M. Coombs, Tustin, Calif.; Klaus Thogersen, Klampenborg, Denmark, and Edward Seibel, Fountain Valley, Calif., assignors to Bradco (Japan) Ltd., Tokyo, Japan
Filed Oct. 31, 1994, Ser. No. 332,204
Int. Cl.[6] B65H *39/10*
U.S. Cl. 271—297 **7 Claims**



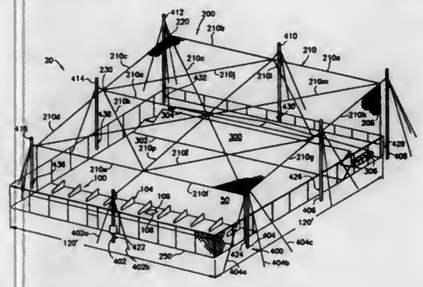
1. In a sheet receiver for use with a printer or copier comprising:
an array of vertically spaced and horizontally extended trays for receiving sheets, sheet transport means for moving sheets vertically in a path along sheet inlet ends of said trays, gates at the respective sheet inlet ends of said trays and normally in a closed position allowing vertical transport of sheets past the sheet inlet ends of said trays and selectively swingable to positions to deflect a sheet into a selected tray, the improvement wherein said sheet transport means includes belts having runs movable vertically at said sheet inlet ends of said trays, a belt support backing up said runs of said belts, infeed rolls mounted opposite to said runs of said belts to drive a sheet therebetween, means coacting with said infeed rolls for carrying a sheet deflected by a selected gate to a selected tray, and including means for applying a resilient, compressive frictional drive force between said belts and said infeed rolls to frictionally drive said infeed rolls wherein said gate actuating means are operable to swing said gates simultaneously toward a sheet deflecting position into resilient pressure contact with a sheet moving between said belts and said feed rollers and in advance of the leading edge of said sheet moving in said path.

5,547,185
ADJUSTABLE BASKETBALL GOAL
Glenn Wagner, and Anita Wagner, both of 516 N. Hudson, Tulsa, Okla. 74115
Filed Oct. 25, 1995, Ser. No. 548,089
Int. Cl.[6] A63B *63/08*
U.S. Cl. 273—1.5 R **7 Claims**



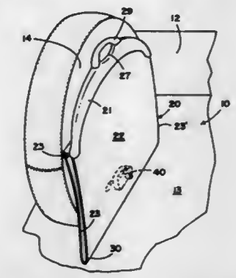
1. A adjustable basketball goal comprising:
a vertical pole disposed to extend above a playing surface, said pole having a plurality of rails formed on an outside thereof running along the longitudinal axis of said pole;
a crank assembly having a rotatable reel fastened to said pole beneath said rails;
a pulley assembly having a grooved wheel fastened to said pole atop said rails;
a collar having an interior surface forming trackways therein, said collar being slidably mounted on said pole, said rails being disposed within said trackways, said collar being movable between said crank assembly and said pulley assembly;
a basketball goal extending upwardly and outwardly from said collar; and
a cable having a first end connected to said reel and a second end connected to said collar, said cable being threaded over said grooved wheel for moving said collar between said crank assembly and said pulley assembly.

5,547,186
LIMITED SPACE GOLF DRIVING RANGE
Michael J. Papp, 54 Old Farm La., and Kevin W. Whalen, 6 Fir Dr., both of New Milford, Conn. 06776
Filed Jun. 1, 1994, Ser. No. 252,350
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—168 **5 Claims**



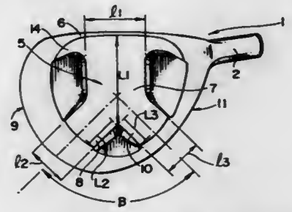
1. A limited space driving range, comprising:
a field;
a multiplicity of golfing bays from which golfers hit golf balls arranged on a front part of the field;
netting means having three side nets that surround the field, having a single top net that extends over the field and above said multiplicity of golf bays for substantially enclosing said field and said multiplicity of golfing bays and having no wall netting between said multiplicity of golfing bays, said netting means being made from material that is lightweight, durable and flexible enough to contain the golf balls being hit by the golfer, said single top net having a cable structure woven therein for providing structural support;
golf ball collection means arranged on a back part of said field, having an upwardly sloping ramp from front-to-back, a ball collection channel with at least one sidewardly sloping ramp arranged behind the upwardly sloping ramp, and a ball collection bin arranged at a lower end of the sidewardly sloping ramp, so the golf balls that are hit roll over the upwardly sloping ramp, down said at least one sidewardly sloping ramp and into the ball collection bin;
netting raising, holding and lowering means being adapted for lifting and holding said single top net over said field and above the multiplicity of golf bays and for lowering said single top net to perform maintenance and to prevent said single top net from being damaged by high wind, heavy snow and ice accumulation, having a plurality of utility poles arranged about said multiplicity of golf bays and having a respective pulley means disposed thereon, a plurality of wires, each being adapted to said single top net and cooperating with a respective one of said pulley means, and a plurality of winch means, each being disposed on a respective one of the plurality of utility poles and being connected to an associated one of said plurality of wire means for lifting and lowering the single top net; and
a central control panel electrically connected to said plurality of winch means for controlling from one central point the raising and lowering of said single top net of said golf bay enclosing means.

5,547,187
MULTI-FUNCTION COVER
David J. Spykerman, Zeeland, Mich., assignor to Prince Corporation, Holland, Mich.
Filed Aug. 24, 1994, Ser. No. 295,267
Int. Cl.[6] B60R *7/04*
U.S. Cl. 296—37.16 **32 Claims**



1. A multi-function cover for a vehicle comprising:
a web of flexible material including a rigid support at opposite ends thereof;
a first bracket for holding one of said ends to a side of the vehicle; and
a second bracket for releasably holding said opposite end of said web to the same side of the vehicle.

5,547,188
SERIES OF GOLF CLUBS
Franck Dumontier, Vista, Calif.; Jean-Marc Guibaud, Annecy, France; Mike Peters, San Diego, and Steven Brouillette, Vista, both of Calif., assignors to Taylor Made Golf Company, Inc., Carlsbad, Calif.
Filed Oct. 14, 1994, Ser. No. 321,842
Claims priority, application France, Nov. 12, 1993, 93 13680
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—287 **22 Claims**



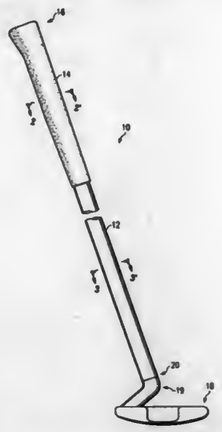
1. A series of golf clubs, each of said clubs comprising:
a hosel extending along a vertical plane (P) positioned perpendicular to a driving line (T); and
a head;
where in:
said head comprising a plurality of faces, said plurality of faces comprising:
a bottom face for resting upon the ground; and
a front face inclined by a loft angle (α) with respect to said vertical plane (P);
said head further comprising an attack edge formed by an intersection of said bottom face and said front face;
said bottom face comprising at least one median rib in relief, said median rib being positioned substantially perpendicularly to said attack edge; and
said median rib has a predeterminate width (l1) for each of said clubs within said series, said predeterminate width of said median rib decreasing as said loft angle (α) increases within said series.

5,547,189

GOLF CLUB AND CLUB SHAFT CONSTRUCTIONS

David P. Billings, 6432 Walnut Hill La., Dallas, Tex. 75230

Filed Jul. 20, 1994, Ser. No. 277,680
Int. Cl.[6] A63B *53/12;53/02;53/14*
U.S. Cl. 473—305 **22 Claims**



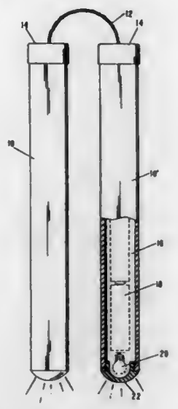
1. A golf club having a shaft and a head attached to the shaft, the shaft comprising a tube having a butt end and a tip end, the shaft having substantially the same outer diameter of greater than at least 0.75 inch along its length from the butt end to the tip end and being formed of a substantially rigid material of constant wall thickness to provide stability to the shaft when the golf club is used by a golfer to strike a golf ball, wherein the shaft tip end further provides an enlarged bonding surface area for the head.

5,547,190

LIGHTED NUNCHAKUS

Frank A. Mackewich, Jr., 1522 Scenic Dr., and Herman J. Luette, III, 904 S. Florida #40, both of Alamogordo, N.M. 88310

Filed Aug. 16, 1995, Ser. No. 515,669
Int. Cl.[6] F41B *15/02*
U.S. Cl. 273—84 R **15 Claims**



1. A martial arts nunchakus comprising:

a first and second elongated handle portions each having a first and second end portion and a hollow interior portion with said first end portion of each of said handles affixed to a substantially non-elastic cord wherein at least one of said handles comprises a light emitting apparatus in said hollow interior and further having a means for allowing light to radiate through said handle portion or through said second end.

5,547,191

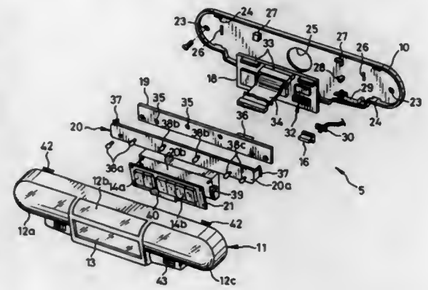
Patent Not Issued For This Number

5,547,192

DISPLAY APPARATUS FOR GAMING MACHINE

Kazuyoshi Ishibashi, Tokyo, Japan, assignor to Universal Sales Co., Ltd., Tokyo, Japan

Filed Apr. 18, 1994, Ser. No. 229,015
Claims priority, application Japan, Apr. 16, 1993, 5-090082
Int. Cl.[6] A63F *9/24*
U.S. Cl. 463—26 **20 Claims**



1. In a display apparatus selectively adaptable to a plurality of kinds of gaming machines in which a playing medium is bet to play a game, said display apparatus giving an external display of information regarding conditions of said gaming machine, said gaming machine paying playing media when said game results in a win, said win comprising a normal win and at least one kind of specific win for which more playing media are paid than for said normal win, said game comprising a normal game and at least one kind of bonus game of which the probability of winning is set higher than that of said normal game, said bonus game being triggered when said specific win is acquired, said gaming machine generating a play signal representing a play of said game and a specific win signal representing said specific win; the improvement wherein said display apparatus comprises:

display means for displaying said information;

memory means provided with at least one display program stored therein particular to a selected kind of said plurality of kinds of gaming machines and accessed to drive said display means;

switch means disposed in switchable fashion for signaling switched information regarding said gaming machine, said switch means comprising a plurality of separately actuable switches, a status of said plurality of switches determining the information to be displayed on said display mean and determining which of said at least one display program is to be accessed to drive said display means; and

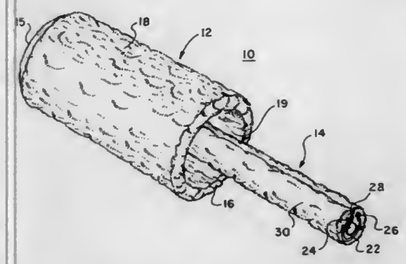
control means, supplied with said play signal and said specific win signal, for executing said display program, said control means including a first counter section for counting the times said normal game is played between the end of playing said bonus game and the occurrence of said specific win, and a second counter section for counting the times said specific win occurs, said control means being supplied with said switched information from said switch means, and causing said display means responsively to display the number of said times of said normal game and the number of said times of said specific win.

5,547,193

GOLF CLUB COVER

Robert F. Sander, Dallas, Tex., assignor to Sports Systems Inc., Plano, Tex.

Continuation-in-part of Ser. No. 1,152, Nov. 3, 1992, abandoned. This application Apr. 19, 1994, Ser. No. 224,810
Int. Cl.[6] A63B *57/00*
U.S. Cl. 473—252 **11 Claims**



1. A combination golf club head cover and shaft protector, comprising:

a first cover member having a first enclosure for receiving a head portion of a golf club, said first cover member having an open end through which the head portion is insertable into said first enclosure;

a second cover member depending from said first cover member, having a second enclosure having a C-shaped member for receiving a shaft portion of the golf club, said second cover member having an elongated slot communicating with said second enclosure, the shaft portion being insertable into the second enclosure through said slot; and

said first cover member being radially enlarged with respect to said second cover member.

5,547,194

GOLF CLUB HEAD

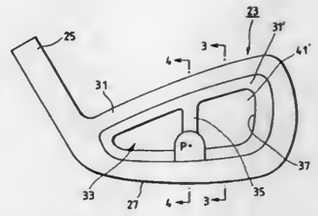
Yuichi Aizawa; Mahito Kimura, and Yasuto Imai, all of Tokyo, Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan

Filed Jan. 19, 1995, Ser. No. 375,108
Claims priority, application Japan, Jan. 19, 1994, 6-003961; Jan. 21, 1994, 6-005046; Nov. 17, 1994, 6-283176; Nov. 17, 1994, 6-283590
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—350 **8 Claims**

1. A golf club head having a head main body, said golf club head comprising:

a face portion opposite from a back portion for defining a ball hitting surface;

a recessed portion formed in said back portion of said head main body;



a peripheral edge portion remaining unrecessed and circumscribing said recessed portion;

a support portion having a thickness smaller than a thickness of said peripheral edge portion, said support portion being integral with said head main body;

a through hole formed in said recessed portion to extend from said back portion to said face portion; and

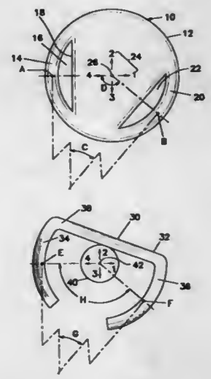
a face plate formed of material lighter in specific gravity than said head main body and fitted at said face portion, said face plate being in contact with said support portion.

5,547,195

GOLF SWING TRAINING DEVICE AND METHOD

Sean P. Callanann, 3824 Malec Cir., Sarasota, Fla. 34233

Filed Jan. 17, 1995, Ser. No. 372,978
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—227 **9 Claims**



1. A golf swing training device comprising:

a circular disc having two spaced apart arcuate slots formed through said disc and positioned in close proximity to, and extending along, a portion of a perimeter of said disc;

said slots cooperatively sized and positioned with respect to said perimeter portion to define a right-hand and a left-hand arcuate gripping portion along and defining a portion of said perimeter;

said gripping portions angularly oriented one to another at an angle of between about 135° and 180° with respect to, and generally concentric about, a geometric center of said disc;

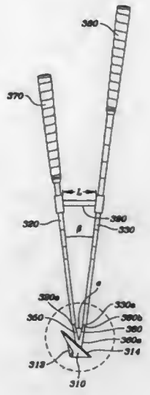
said disc having an overall size for allowing a golfer to hold and practice swing said disc similar to that of a golf club.

5,547,196

TWO-SHAFTED GOLF WEDGE CLUB AND METHOD FOR USING SAME

George G. Izett, 2538 Haverford Ave., Ardmore, Pa. 19003, and Jay Ciccarone, 668 Woodland Ave., Pottstown, Pa. 19464

Continuation-in-part of Ser. No. 313,732, Sep. 27, 1994, abandoned. This application Apr. 20, 1995, Ser. No. 425,592
Int. Cl.[6] A63B 61/36
U.S. Cl. 473—242 14 Claims



1. A golf pitching wedge for training a golfer to repeatedly chip a golf ball using a constant chipping swing, said golfer having a pair of shoulders and first and second hands, said constant chipping swing being defined by movement of said shoulders of said golfer in a pendulum motion, comprising:

(A) a wedge-shaped club head having a top and a ball striking face;

(B) a first hosel with a first end coupled to said top of said head and a second end rigidly holding a connecting end of a first shaft in a fixed position relative to said club head, said first shaft having a gripping end positioned opposite said connecting end of said first shaft;

(C) a second hosel with a first end coupled to said top of said head and a second end rigidly holding a connecting end of a second shaft in a fixed position relative to said club head, said second shaft having a gripping end positioned opposite said connecting end of said second shaft; and

(D) a brace for rigidly connecting said first and second shafts together, said brace having a first end detachably coupled to said first shaft between said connecting and gripping ends of said first shaft, said brace having a second end detachably coupled to said second shaft between said connecting and gripping ends of said second shaft;

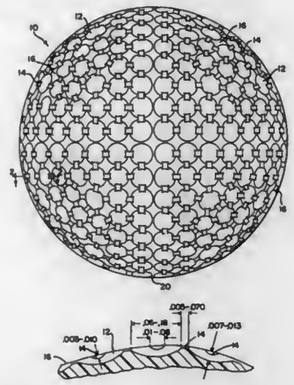
wherein said first and second hosels are angled relative to each other such that said first and second shafts extend therefrom with a desired angle that helps said golfer to repeatedly swing using said constant chipping swing when said first and second shafts are simultaneously and respectively gripped by said first and second hands of said golfer, said desired angle being less than 180 degrees and remaining fixed during said chipping swing.

5,547,197

GOLF BALL DIMPLE CONSTRUCTION

Terence W. Pocklington, Tupelo, Miss., assignor to Hansberger Precision Golf Incorporated, Pontotoc, Miss.

Filed Mar. 30, 1995, Ser. No. 413,491
Int. Cl.[6] A63B 37/14
U.S. Cl. 473—384 7 Claims



1. A golf ball construction comprising a core and cover, said ball defining an equator forming a first great circle extending over the cover surface, at least two additional great circles extending over the cover surface and intersecting said first great circle, said additional great circles being spaced apart equally with respect to each other whereby said ball surface is divided by the combination of the first great circle and the additional great circles into a plurality of discrete symmetrically arranged surface areas, a separate array of spaced-apart dimples formed on the cover surface within each of said discrete surface areas, each of said arrays covering substantially completely the cover surface in each discrete area, and including channels formed exclusively within each discrete area and extending between adjacent ones of the dimples in each area, one of said channels extending from each dimple to every other dimple adjacent thereto, and none of said channels crossing any of said great circles.

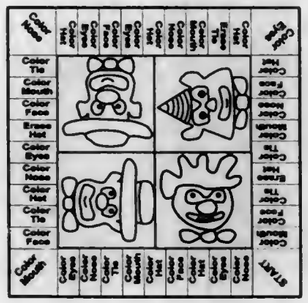
5,547,198

COLORING BOARD GAME AND APPARATUS THEREFOR

Ronald A. Kaiser, 12821 McCracken Rd., Garfield Heights, Ohio 44125

Filed Nov. 10, 1994, Ser. No. 336,931
Int. Cl.[6] A63F 3/00
U.S. Cl. 273—243 6 Claims

1. A board game apparatus comprising a board acting as a playing field and a coloring implement, said board having permanently marked spaces constituting a path or course extending around the board, said path affording a continuous track for the purpose of continuity of play, an area of the board having an erasable surface and said erasable surface having permanently printed indicia defining boundaries for spatial regions on said erasable surface that are substantially lacking in color, and upon which a player may apply from said coloring implement color that can easily be removed after it is applied as the playing of a game progresses.

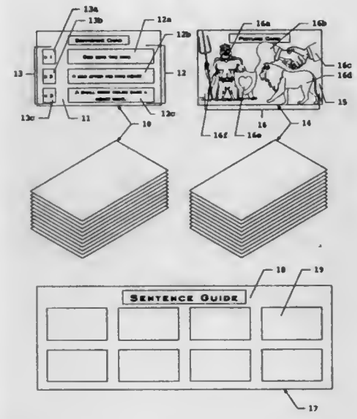


5,547,199

METHOD OF PLAYING A SENTENCE FORMING GAME

Christopher A. Calhoun, 435-2 Oriana Rd., Suite 200, Newport News, Va. 23602

Filed Jun. 12, 1995, Ser. No. 489,557
Int. Cl.[6] A63F 1/02
U.S. Cl. 273—299 20 Claims



1. A method of playing a game comprising the steps of:

a. providing players a plurality of sentence means to display a plurality of words forming a plurality of sentences, and a plurality of picture means to display a plurality of pictures;

b. a player commencing his (or her) turn by:

i. said player relating a number of words in said sentence(s) of said sentence means to a number of pictures of a number of provided picture means;

ii. allowing said player to display a number of provided picture means;

iii. if a predetermined plurality of picture means are displayed and/or if a number of picture means sufficient to relate to a predetermined number of words in said sentence(s) of said sentence means are displayed;

(1) said player explains to the other players the relation of a number of picture(s) of a number of provided picture means displayed to a number of words in sentence(s) of said sentence means;

(2) other players judging said player's explanation of step iii.(1);

(a) if judged favorably, ending the game;

(b) if judged unfavorably, subsequent player repeats steps b–iv;

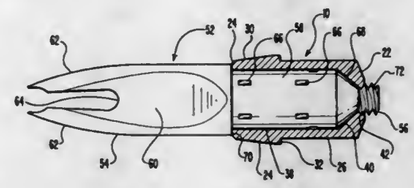
iv. if a predetermined plurality of picture means are not displayed and/or if a number of picture means sufficient to relate to a predetermined number of words in said sentence of said sentence means are not displayed, a subsequent player repeats steps b–iv.

5,547,200

ARROW NOCK AND SHAFT INSERT

Louis Rangel, 11 N. 3175 East, Layton, Utah 84040

Continuation of Ser. No. 242,179, May 13, 1994, abandoned, which is a continuation-in-part of Ser. No. 180,220, Jan. 12, 1994, abandoned. This application Apr. 6, 1995, Ser. No. 418,131
Int. Cl.[6] F42B 6/06
U.S. Cl. 273—416 6 Claims



1. A nock for attachment to the nock end of a hollow arrow shaft via an insert, the insert having an introduction end, a receiving end located opposite the introduction end, a substantially cylindrical body extending from the receiving end to the introduction end, and a receiving chamber having an opening at the receiving end and extending a distance into the cylindrical body, the receiving chamber being axially aligned and communicating with a threaded duct which extends farther through the cylindrical body toward the introduction end, the nock comprising:

a) a string receiving end for receiving a bow string;

b) an engaging shank located opposite the string receiving end, the engaging shank having a size and shape to permit threaded engaging between the engaging shank and the threaded duct; and

c) a compression shank extending between the string receiving end and the engaging shank, the compression shank having a size and shape for insertion into the receiving chamber to produce a friction fit therewith, the compression shank further having an exterior surface with compression knobs formed thereon.

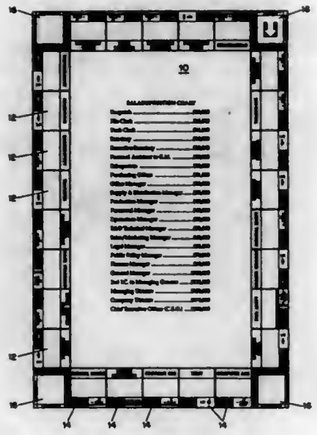
5,547,201

CAREER GAME

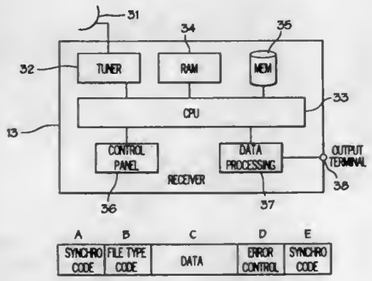
Roberta L. Honeywill, Unit 1/3 Maretimo Street, Balgowlah, State of New South Wales, Australia

Division of Ser. No. 385,665, Feb. 8, 1995, Pat. No. 5,503,399. This application Dec. 7, 1995, Ser. No. 568,750
Claims priority, application Australia, Feb. 8, 1994, PM3724
Int. Cl.[6] A63F 3/00
U.S. Cl. 463—9 6 Claims

1. A game apparatus comprising means for displaying a game board, and a plurality of question designators, wherein the displayed game board is divided into a plurality of compartments, the compartments being located on the displayed game board in the form of a path to be followed by participants in the game, each compartment including a reference to a respective business predicament and positive/negative consequence indicators, the plurality of question designators each having a question with a selection of possible answers, whereby a participant landing on a compartment is required to define the meaning of the business predicament represented in the compartment, and, on producing an answer deemed to be correct, is required to answer the question on a selected question designator, the participant acquiring a positive or negative consequence as a result of correct and incorrect answers, respectively.

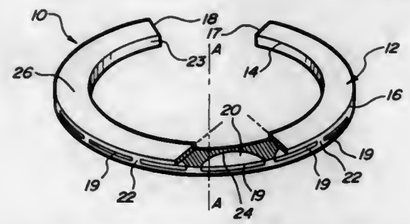


5,547,202
COMPUTER GAME DEVICE
Mihoji Tsumura, Osaka, Japan, assignor to Ricos Co., Ltd., Japan
Continuation of Ser. No. 19,052, Feb. 18, 1993, abandoned. This application Dec. 30, 1994, Ser. No. 367,686
Claims priority, application Japan, Feb. 18, 1992, 4-069560; Feb. 28, 1992, 4-079182; May 21, 1992, 4-156008; Jul. 22, 1992, 4-217130; Jul. 22, 1992, 4-217131; Jul. 22, 1992, 4-217132
Int. Cl.[6] A63F 9/22
U.S. Cl. 463—29 4 Claims



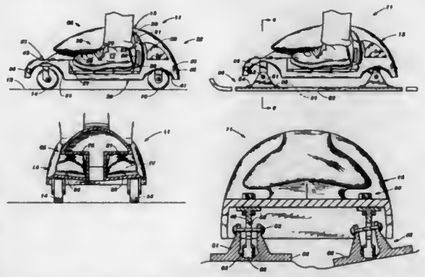
1. A computer game device comprising:
a host computer for storing game data, a plurality of terminal devices, and means for transmitting data between said host computer and said terminal devices, said host computer having means for registering said terminal devices as participants in a game, said terminal devices being registered in the order in which said terminal devices accessed said host computer, said terminal devices including means for accessing said host computer and means for registering as a participant in said host computer register, said host computer further including means for transmitting said game data to one of said registered terminal devices when a predetermined number of said terminal devices have been registered and, means for accepting uploaded play data from one of said registered terminal devices, and means for transmitting said play data along with said game data to a subsequent one of said registered terminal devices.

5,547,203
SEGMENTED CERAMIC INLAY PISTON RING
John D. Binford, Richmond, Ind., assignor to Dana Corporation, Toledo, Ohio
Filed Jun. 24, 1994, Ser. No. 265,356
Int. Cl.[6] F16J 9/00
U.S. Cl. 277—224 8 Claims



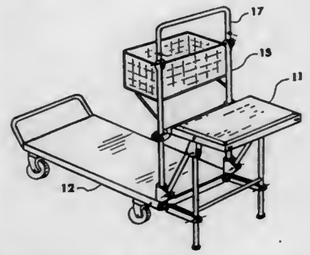
1. An annular piston ring extending about a longitudinal axis, comprising:
a ring body with an inner periphery and an outer periphery, said outer periphery spaced a radial distance from said inner periphery, said body being discontinuous and including two end parts spaced selectively away from one another;
a series of closed slots spaced circumferentially about said outer periphery, each of said slots extending radially inwardly from said outer periphery, a hinge point formed between each pair of adjacent slots, said hinge point corresponding to said outer periphery of said ring body such that said slots are non-overlapping, a flexing of said ring body taking place at each said hinge point to selectively alter spacing between said end parts, an inner surface of said inner periphery being uninterrupted such that a radially innermost extent of each of said slots is positioned radially outwardly of said inner periphery; and
a wear surface material inlayed in each of said slots, said wear material remaining undamaged by said flexing.

5,547,204
MULTIPURPOSE MOBILE DEVICE WITH OPEN SIDED FOOT ENGAGEMENT
Israel Gamzo, 709 Solano Ave., Albany, Calif. 94706
Filed Apr. 11, 1994, Ser. No. 225,801
Int. Cl.[6] A63C 17/00;17/14;17/18;17/28
U.S. Cl. 280—11.19 31 Claims



1. A mobile device for supporting a person and which enables travel of the supported person along an underlying surface, said mobile device having a motion facilitating component attached to a lower surface of the device and a foot receiving component which establishes a foot position at which the person places a foot, wherein the improvement comprises:
said foot receiving component having at least one partially open foot chamber which is bounded in part by an elongated floor shaped to enable resting of said person's foot thereon, said foot chamber being further bounded by a back wall which extends upward at the back of said chamber and a side wall which extends upward at one side of said chamber and by a top wall which extends laterally from said side wall towards the opposite side of said chamber at a location which is forward from said back wall and spaced apart therefrom, said foot chamber having an access opening with a lower region situated at said opposite side of said chamber which opening is shaped to enable entry of said person's foot into said chamber and withdrawal of said person's foot therefrom at said opposite side of said chamber, said access opening having an upper region which extends laterally towards said side wall at the top of said chamber between said top wall and said back wall and which is shaped to receive said person's ankle.

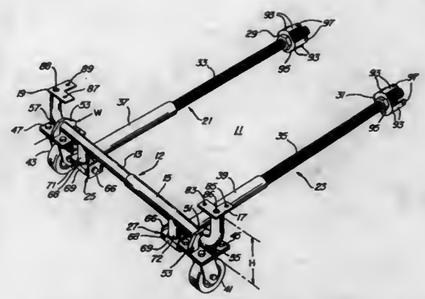
5,547,205
LUGGAGE CART WITH ATTACHED SEAT
Maria do Rosario Sousa de Cabedo, 2337 E. Brookdale Pl., Fullerton, Calif. 92631
Continuation-in-part of Ser. No. 193,417, Feb. 7, 1994, abandoned. This application Feb. 28, 1995, Ser. No. 396,263
Claims priority, application Brazil, Feb. 9, 1993, 7300209 U
Int. Cl.[6] B62B 3/10
U.S. Cl. 280—30 3 Claims



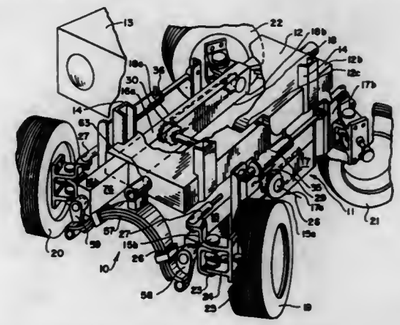
1. A folding seat pivotally attached by an interconnecting linkage to a four-wheeled luggage cart comprising:
a) a vertical stanchion that pivotally connects to the center of two channels on the lower side of the seat and supports vertical loads on the seat in compression directly to the floor;
b) a diagonal link that connects to the center of the seat and shares the vertical loads and transmits the loads downward into said luggage cart to which it is attached;
c) a guide link that guides the interconnecting linkage to a folded up stowed position and to a deployed seated position and in the deployed position completes a triangular support for acceptance of the induced loads; and
d) a sliding fitting pivotally connects the diagonal link to the cart at a pivot point and transmits loads directly into said luggage cart at this position, and is permitted to slide upward on the cart to the folded stowed position when the distance between the pivot point and the pivotal connection of the seat to the cart is shortened.

5,547,206
VEHICLE DOLLY APPARATUS
Douglas Hodges, 672 W. 12th St. Unit #4, San Pedro, Calif. 90731
Continuation of Ser. No. 306,137, Sep. 14, 1994, abandoned. This application Feb. 21, 1995, Ser. No. 391,216
Int. Cl.[6] B62B 1/00
U.S. Cl. 280—47.15 20 Claims

1. A vehicle dolly comprising:
a forward stabilizer bar including first and second horizontal tubes telescopically mounted and movable with respect to one another, each of said first and second horizontal tubes curving upward at a respective end thereof;
first and second tube point plate means pivotally attached respectively to said first and second horizontal tubes for connection to a vehicle;
caster means for providing mobility to said forward stabilizer bar;
first and second rear struts;
means for mounting each of said first and second rear struts to said forward stabilizer bar so as to provide pivotal movement of each said rear strut in the horizontal plane and rotation of each said rear strut in the vertical plane; and
means rotatably positionable along said rear struts for establishing third and fourth connections to said vehicle frame.



5,547,207
ROUGH TERRAIN VEHICLE
Herman J. Madler, 108 S. George St., Mt. Prospect, Ill. 60056
Filed Aug. 9, 1995, Ser. No. 513,068
Int. Cl.[6] B60G 21/02
U.S. Cl. 280—104 28 Claims



1. A frame for a rough terrain vehicle comprising:
first and second forwardly-extending spaced-apart frame arms which each include proximal and distal ends, each of the distal ends of the first and second frame arms having a wheel rotatably mounted thereon;
third and fourth rearwardly-extending spaced-apart frame arms which each include proximal and distal ends, each of the distal ends of the third and fourth frame arms having a wheel rotatably mounted thereon;
pivot means for connecting the proximal ends of the first and third frame arms and the proximal ends of the second and fourth frame arms, said pivot means permitting relative movement of the first and third frame arms about a first pivot point at one side of the vehicle and permitting relative movement of the second and fourth frame arms about a second pivot point at an opposite side of the vehicle;

a transverse axis extending generally through the pivot means and first and second pivot points at approximately a mid-point of the vehicle;

first connecting means secured to and extending between the first and third frame arms for controlling relative movement of the first and third frame arms about the first pivot point;

second connecting means secured to and extending between the second and fourth frame arms for controlling relative movement of the second and fourth frame arms about the second pivot point;

control means operatively associated with the first and second connecting means for adjusting the relative position of the frame arms about the first and second pivot points so that the transverse axis of the vehicle is substantially maintained in a relatively horizontal plane as the wheels travel over a ground surface.

5,547,208

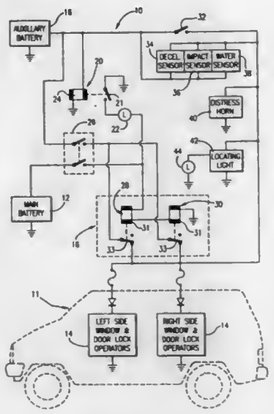
VEHICLE SAFETY EXIT APPARATUS

John W. Chappell; Anthony Shangler, both of Pleasant Hill, Mo., and Dennis L. Chappell, Rancho Viejo, Tex., assignors to Dennis L. Chappell, Rancho Viejo, Tex.

Filed Mar. 14, 1995, Ser. No. 403,643

Int. Cl.[6] B60K *28/12;28/14*

U.S. Cl. 180—281 **22 Claims**



1. A vehicle safety exit apparatus for use in a vehicle having an electrical system including a main battery, an ignition switch and left and right side electric window and door lock operators, said vehicle safety exit apparatus comprising:

an auxiliary battery; and

control means for controlling the delivery of power from said auxiliary battery to the left and right side window and door lock operators, said control means including

sensing means for sensing disablement of the main battery, and

switching means responsive to said sensing means for switching power from said auxiliary battery to the left and right side window and door lock operators for actuating the left and right side window and door lock operators when said sensing means senses the disablement of the main battery,

said sensing means including a dual relay having a pair of independently operating first and second relays, wherein said first relay is coupled between said main battery and the left side window and door lock operators and said second relay is coupled between said main battery and the right side window and door operators.

5,547,209

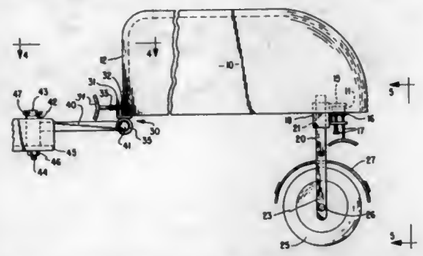
DEVICE FOR BOAT TRANSPORT

Robert L. Vanderlinde, 201 N. Prairie Ave., Sioux Falls, S. Dak. 57104

Filed Mar. 3, 1995, Ser. No. 398,150

Int. Cl.[6] B60P *3/10*

U.S. Cl. 280—414.2 **4 Claims**



1. In combination with a boat having a bow end and a stern member, a wheel bracket adapted to be fastened to said bow end, a wheel journalled in said wheel bracket and means removably attached to said stern member to fasten said stern member to a towing vehicle including brackets attached to said stern member, connecting means including at least one cross member journalled in said brackets on an axis substantially parallel to said stern member, said connecting means being attachable to said towing vehicle.

5,547,210

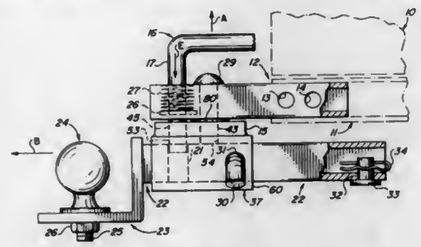
TRAILER HITCH

James B. Dugger, Phoenix, Ariz., assignor to Hitchquick, Inc., Tempe, Ariz.

Filed Mar. 14, 1995, Ser. No. 403,476

Int. Cl.[6] B60D *1/36*

U.S. Cl. 280—477 **4 Claims**



1. A trailer hitch assembly for use with a hollow rectangular receiver sleeve attached to the rear of a vehicle; said assembly including in combination:

a first arm adapted to be slidably received in said receiver sleeve and releaseably secured therein;

a second hollow sleeve freely pivotally attached to said first arm and capable of 360° rotation therewith and located below said first arm;

a second arm slidably mounted in said second sleeve for simultaneous pivoting therewith and extendable from a first position substantially underlying said hollow receiver sleeve to a second position with an end thereof extending outwardly beyond the rear of a vehicle;

a trailer hitch attachment member mounted on said end of said second arm; and

a releasable locking member carried by said first arm to engage and lock both said second hollow sleeve and said second arm when said second arm is in said first position and said second hollow sleeve is aligned with said receiver sleeve to secure said second hollow sleeve against pivotal rotation relative to said first arm when said vehicle tows a trailer.

5,547,211

HYDROPNEUMATIC SUSPENSION SYSTEM WITH STABILIZATION

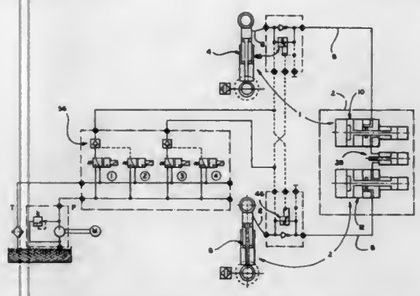
Walter L. Runkel, Wuppertal, Germany, assignor to Hemscheidt Fahrwerktechnik GmbH & Co., Wuppertal, Germany

Filed Oct. 13, 1994, Ser. No. 322,586

Claims priority, application Germany, Apr. 29, 1994, 94 07 167.5

Int. Cl.[6] B60G *11/26*

U.S. Cl. 280—708 **14 Claims**



1. Hydropneumatic suspension system for motor vehicles, comprising at least two strut systems (**1,2**) each with a hydraulic strut (**4,6**) which during its deflection and rebound movement acts upon at least one hydropneumatic piston-type accumulator (**10,12**) via a hydraulic medium, whereby the piston-type accumulator (**10,12**) is provided with a separating piston (**16**) which has a separating piston rod (**22**) that extends out of the piston-type accumulator (**10,12**) and separates a hydraulic storage volume (**18**) from a spring chamber (**20**) containing a compressible medium, and whereby the separating piston (**16**) is charged with a hydraulic pressure on the side of the storage volume (**18**) resulting in a force (Fh), a pneumatic pressure on the side of the spring chamber (**20**) resulting in a force (Fp) and, with a supplementary spring force (FF) via the separating piston rod (**22**), whereby the supplementary spring force (FF) is generated by a pressure medium cylinder (**24,26**) that acts upon the separating piston rod (**22**) by connecting the pressure medium cylinder (**24,26**) with at least one pressure accumulator (**28,36**) which generates a prestress pressure (pv), characterized by the fact that said at least two strut systems (**1,2**) are interconnected by connecting their said pressure medium cylinders (**24,26**) with at least one .

5,547,212

PASSENGER SIDE AIRBAG INFLATOR WITH FLANGED MOUNTING ADAPTER

David J. Dyer, Kaysville, and Brian D. Gunn, Ogden, both of Utah, assignors to Morton International, Inc., Chicago, Ill.

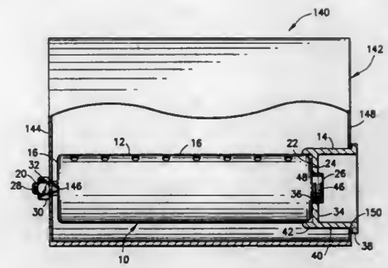
Filed Aug. 22, 1995, Ser. No. 517,798

Int. Cl.[6] B60R *21/16*

U.S. Cl. 280—728.2 **20 Claims**

1. An inflator for use in an airbag module assembly including a reaction canister having a front canister endplate and a rear canister endplate defining an inflator-receiving aperture, the inflator comprising:

an inflator housing having a cylindrical sidewall, a front housing end having means for securing the front housing end to the front canister endplate, and a rear housing end forming an endwall and a boss, the boss extending rearwardly from the endwall;



a mounting adapter including an adapter end cap defining an opening, the adapter end cap positioned adjacent the endwall of the inflator housing with the boss extending through the opening, the adapter end cap mechanically interengaged with the rear housing end of the inflator housing to secure the mounting adapter to the inflator housing, the mounting adapter further having a peripheral flange extending radially outward from the adapter end cap and housing sidewall and sized and adapted to engage the rear canister endplate surrounding the inflator-receiving aperture;

whereby the mounting adapter and means for securing the front housing end to the front canister endplate, in combination, secure the inflator within the reaction canister and allow the inflator to withstand substantial tensional loading between the canister endplates.

5,547,213

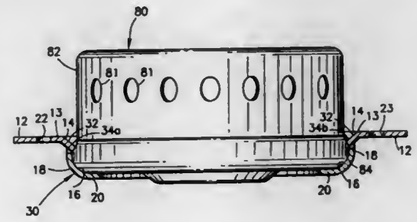
PRESS-ON INFLATOR MOUNT

Gregory J. Lang, South Ogden, and George C. Marjanski, Riverdale, both of Utah, assignors to Morton International, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 522,978, Sep. 1, 1995. This application Dec. 4, 1995, Ser. No. 566,886

Int. Cl.[6] B60R *21/16*

U.S. Cl. 280—728.2 **25 Claims**

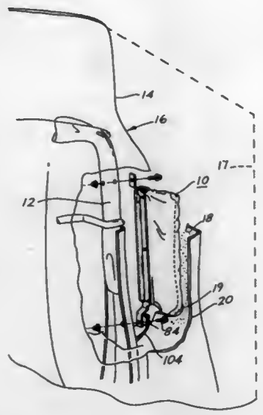


1. An inflator mount for attachment to an inflator having a cylindrical sidewall and a peripheral inflator flange radially extending from the sidewall and for mounting the inflator within an airbag module, the inflator mount comprising:

a generally flat annular bracket having an inside edge defining an opening accommodating passage of the radially extending peripheral inflator flange; and

an inflator flange grip extending downwardly and inwardly from the inside edge of the annular bracket, the inflator flange grip slidingly receiving and grippingly engaging the inflator flange and embracing the underside thereof, thereby securing the inflator mount to the inflator and adapting the inflator and inflator mount for mounting in an airbag module by means of the annular bracket.

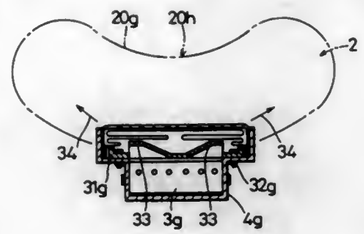
5,547,214
SIDE IMPACT SOFT PACK AIR BAG MODULE
Ronald A. Zimmerman, II, Rochester, and John C. Hofer, Novi, both of Mich., assignors to AlliedSignal Inc., Morristown, N.J.
Filed Jan. 23, 1995, Ser. No. 376,419
Int. Cl.[6] B60R *21/22*
U.S. Cl. 280—730.1 **14 Claims**



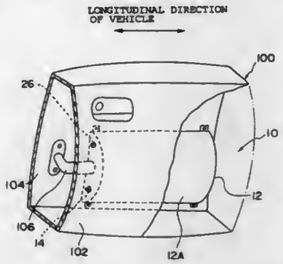
1. A side impact, occupant protection system comprising:
a cylindrically shape housing (**30**) including an open side (**36**);
an inflator for providing inflation gas disposed within the housing such that the inflation gas flows through the open side of the housing;
an air bag (**50**) having a flexible, inflatable cushion (**52, 54**) portion which when inflated protects a seated occupant, prior to inflation of the cushion portion, the cushion portion is maintained in a compacted configuration outside and generally in front of the housing to provide a soft, cushioned boundary relative to the seated occupant, the cushion including a neck or inlet (**56**) portion adjacent the opening side of the housing to receive inflation gas exiting therefrom;
the compacted air bag cushion, prior to inflation thereof is maintained in its compacted configuration outside and generally in front of the housing by a soft, flexible shell (**70**) disposed thereabout, the shell including a preferred tear section opened on inflation of the air bag.

5,547,215
AIRBAG SYSTEM
Masahiro Taguchi, Hazu-gun; Kazutaka Katoh, Okazaki, and Masatada Yoshida, Ichinomiya, all of, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Apr. 3, 1995, Ser. No. 415,508
Claims priority, application Japan, Apr. 4, 1994, 6-65962
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—732 **11 Claims**

1. An airbag system installed in a vehicle, comprising:
an inflator which generates gas when the vehicle crashes;
an airbag inflatable by the gas from the inflator, the airbag having an installation hole through which the gas flows into the airbag;
a retainer, attached to the inflator and the airbag, which secures the inflator and the airbag to the vehicle; and
a plate, fixed to the retainer, which allows the gas introduced through the installation hole of the airbag to be discharged into the airbag only in a crosswise direction of the vehicle.



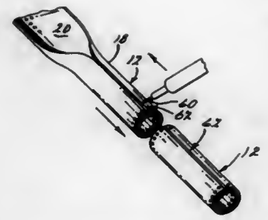
5,547,216
CRUSH SENSOR
Hitoshi Iwata, and Tatsuya Ishida, both of Aichi-ken, Japan, assignors to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Aichi-ken, Japan
Filed Jan. 25, 1995, Ser. No. 377,936
Claims priority, application Japan, Mar. 4, 1994, 6-034749
Int. Cl.[6] B60R *21/32*
U.S. Cl. 280—734 **19 Claims**



1. A crush sensor comprising:
an air tank disposed between a vehicle-door outer panel and a door inner member which make up a vehicle door, such that a pressure-receiving surface of said air tank, which has a predetermined area, is opposed to said vehicle-door outer panel,
a gas venting means for maintaining a state of equilibrium between the internal pressure of said air tank and ambient external pressure caused by temperature changes, and for maintaining said air tank in a semi-sealed state such that a sudden change in the internal pressure of said tank only occurs as a result of a rapid crushing of said air tank, and
a pressure sensor for detecting the internal pressure of said air tank and outputting an electrical signal proportional to a detected value.

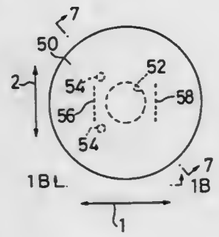
5,547,217
AIR BAG INFLATOR AND METHOD OF MANUFACTURE THEREOF
Daniel G. Zelenak, Orion Township, and Rickey L. Stratton, Pontiac, both of Mich., assignors to Automotive Systems Laboratory, Inc., Farmington Hills, Mich.
Filed Jul. 6, 1995, Ser. No. 498,886
Int. Cl.[6] B60R *21/28*
U.S. Cl. 280—741 **4 Claims**

3. An air bag inflator comprising:
a first perforate right circular metal cylinder having a longitudinal slot therein;
a second perforate right circular metal cylinder of larger diameter than said first cylinder having a longitudinal slot therein telescoped thereabout in a concentric array;
a wire mesh filter disposed between said cylinders; and



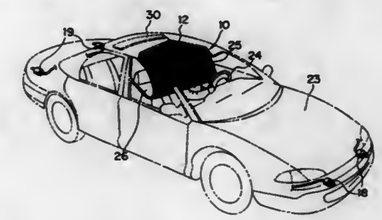
a single common longitudinally and radially extending weld closing each of the slots in said cylinders joining said cylinders to one another in said concentric array.

5,547,218
AIR BAG AND AIR BAG DEVICE
Masato Kuretake; Takayasu Zushi; Motonobu Kitagawa; Kazuhiko Yamakawa; Yoshimi Okamoto, and Sawayo Uda, all of Shiga, Japan, assignors to Takata Corporation, Tokyo, Japan
Filed Nov. 22, 1993, Ser. No. 155,172
Claims priority, application Japan, Dec. 1, 1992, 4-321695
Int. Cl.[6] B60R *21/20*
U.S. Cl. 280—743.1 **8 Claims**



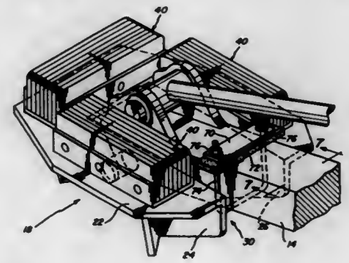
1. An air bag for an air bag device to be inflated by an inflater, comprising:
a front panel and a rear panel sewn together at peripheral portions thereof to form the air bag,
an opening for the inflater formed in a central portion of the rear panel, and
means for connecting a vicinity of the central portion of said rear panel and said front panel, said connecting means having first and second connecting lines extending parallel to each other to locate the opening between the first and second connecting lines and to form a first part of the air bag located at a side of the first connecting line and a second part of the air bag located at a side of the second connecting line, said air bag being folded such that the first part of the air bag is folded over the front panel substantially along the first connecting line to overlap the second part; the second part of the air bag is folded over the first part substantially along the second connecting line to form an elongated substantially rectangular shape having two elongated halves; and each of said halves is folded without overlapping the other half and is located adjacent to each other to form a substantially square shape.

5,547,219
CRASH NET SAFETY DEVICE FOR AN AUTOMOBILE
Jin S. Ha, 17578 Tuscan Dr., Granada Hills, Calif. 91394
Filed Oct. 3, 1994, Ser. No. 320,406
Int. Cl.[6] B60R *21/06*
U.S. Cl. 280—749 **7 Claims**



1. A crash net safety device attached to a ceiling of an automobile, comprising:
a net having a first end portion and a second end portion, said first end portion being fixed to said ceiling;
a U-shaped bar having a substantially horizontal portion made of a substantially resilient material, and a pair of arm portions extending therefrom, said arm portions being pivotally mounted to two interior sides of said automobile by a pair of pivotal pins and provided with a first pair of springs for pressing against the U-shaped bar, and said second end portion of said net being operatively attached to said substantially horizontal portion of said U-shaped bar;
a trigger operatively connected to said U-shaped bar at one end thereof and provided with a second spring for retaining the trigger; and
a plurality of impact points located on the outside of the automobile, said impact points connected to said trigger through wires, whereby upon vehicle impact, the trigger is separated from the one end of the U-shaped bar and the net safety device immediately comes down and covers passengers in the automobile for minimizing injury;
wherein one end of said U-shaped bar for mating with the trigger has an L-shaped member, and said trigger has an L-shaped configuration for mating with the L-shaped member of the U-shaped bar so as to smoothly separate from each other.

5,547,220
STABILIZER PAD FOR VEHICLES
Andry Lagsdin, 54 King Hill Rd., Hanover, Mass. 02339
Continuation-in-part of Ser. No. 283,247, Jul. 29, 1994, Pat. No. 5,466,004. This application Mar. 6, 1995, Ser. No. 398,866
Int. Cl.[6] B60S *9/02*
U.S. Cl. 280—763.1 **25 Claims**


40
40
70
76
76
70
76
76
76

a stabilizer pad having a plate having a first ground contact face and a second ground contact face, pivotally coupled to said arm such that the plate can rotate about said arm over a predetermined range of rotation to engage a ground surface with either the first ground contact face or the second ground contact face; and

spring means for providing a spring tension which resists rotation of the stabilizer pad relative to said arm, coupled to said arm and positioned so as to engage said stabilizer pad over at least a portion of the predetermined range of rotation of said stabilizer pad with respect to said arm, the spring means providing a first resistance to rotation of the stabilizer pad with respect to the arm in a first direction, and providing a second resistance to rotation of said stabilizer pad with respect to said arm in a second direction, the first resistance being greater than the second resistance.

5,547,221

ENERGY ABSORBING MEMBER FOR SHOCK ABSORBING STEERING COLUMN APPARATUS

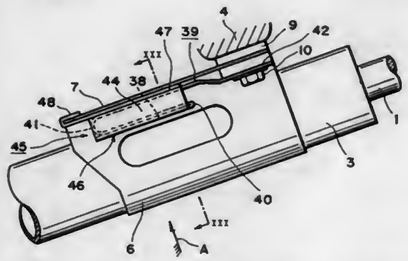
Masaki Tomaru, Shibukawa; Seiichi Moriyama, Takasaki, and Kiyoshi Sadakata, Gunma-ken, all of, Japan, assignors to NSK, Ltd., Tokyo, Japan

Filed Mar. 15, 1995, Ser. No. 404,617

Claims priority, application Japan, Mar. 25, 1994, 6-056004

Int. Cl.[6] B62D *1/19*

U.S. Cl. 280—777 **14 Claims**



1. A shock absorbing steering column apparatus, comprising:

an energy absorbing member disposed between a mounting member fixed to a tubular steering column into which a steering shaft is rotatably inserted and a portion fixed to a vehicle body, and which permits the steering column to be displaced forward while absorbing impact energy applied to the steering column upon a collision, said energy absorbing member including:

a base;

a plastically deformable belt portion extending from a rear edge of the base;

a first folded portion formed by folding a base end portion of the belt portion forward approximately 130 degrees with a first radius of curvature;

a second folded portion formed by folding a middle portion of said belt portion with a second radius of curvature larger than said first radius of curvature in an opposite direction to that of said first folded portion;

a connecting portion formed in a fore end portion of said belt portion and projecting backward relative to the rear edge of said base for connecting the fore end portion of the belt portion with said portion fixed to the vehicle body;

a pair of bent portions bent from opposite sides of said base toward a side where said belt portion is present; and

an interconnecting plate fixed to free edges of said pair of bent portions such that a distance between said interconnecting plate and said base is substantially equal to a thickness of the folded middle portion of said belt portion, said interconnecting plate being distinct from said mounting member and mounted on said mounting member.

5,547,222

SAFETY BELT SYSTEM FOR A VEHICLE

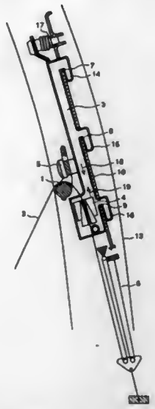
Reinhard Schmidt, Lennestadt-Grevenbreück, Germany, assignor to R. Schmidt GmbH, Lennestadt-Grevenbrück, Germany

Filed Jan. 24, 1995, Ser. No. 377,748

Claims priority, application Germany, Jan. 28, 1994, 44 02 593.9

Int. Cl.[6] B60R *22/47;22/18;22/36*

U.S. Cl. 280—801.2 **6 Claims**



1. Safety belt system for a motor vehicle comprising:

a safety belt,

a belt storage unit in which said safety belt is stored,

a belt guide means for reversing the safety belt while fastening said safety belt,

a carrier that is fastened onto a part of a body of the motor vehicle,

an adjusting part, on which the belt guide means is mounted, arranged on the carrier such that it is displaceable and lockable in different positions,

a clamping device for the safety belt which is mounted on the carrier between the belt guide means and the belt storage unit, and

means for actuating the clamping device upon at least one of an excessive belt draw-out speed and an excessive change in the speed of the motor vehicle,

the belt guide means and the clamping device being positioned in a fixed relation to each other on the carrier while the clamping device is actuated so that forces caused by belt tension and introduced into the carrier are essentially directed opposite to forces occurring at the belt guide means.

5,547,223

WEBBING FOR RESTRAINING A VEHICLE OCCUPANT

Eiji Koketsu; Koki Sato; Tetsushi Muromachi; Mutsumu Haraoka; Toshio Nagata; Michihiro Yanagihara, and Kuniaki Oma, all of Aichi-ken, Japan, assignors to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, and Toyota Shatai Kabushiki Kaisha, both of Aichi-ken, Japan

Filed Jul. 27, 1994, Ser. No. 281,027

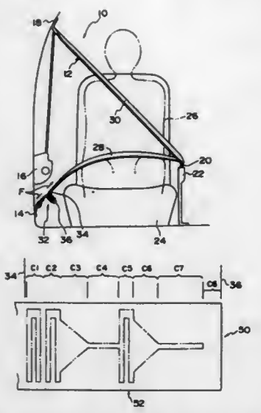
Claims priority, application Japan, Jul. 30, 1993, 5-190555; Apr. 26, 1994, 6-088327

Int. Cl.[6] B60R *22/28*

U.S. Cl. 280—805 **18 Claims**

1. An elongated webbing for restraining a vehicle occupant, comprising:

a webbing length increasing device including a fold sewn into said webbing by a plurality of stitches, said fold being formed along a transverse direction of said webbing and being



defined on one side by a fold tip end such that when a load applied between a vehicle occupant and said webbing length increasing device exceeds a stitch strength of said webbing length increasing device, said stitches of said webbing length increasing device come undone, said webbing length increasing device having at least a first sewn-together portion and a second sewn-together portion, each having rows of stitches, said second sewn-together portion being adjacent to said tip end side of said fold and having a stitch strength which is smaller than a stitch strength of said first sewn-together portion, wherein the load required to break the stitches of said second sewn-together portion diminishes the closer said stitches are to the webbing fold tip end side, and said rows of stitches of said second sewn-together portion are inclined with respect to the longitudinal axis of said webbing.

5,547,224

AUTOMOTIVE SUBFRAME FOR SUPPORTING A VEHICLE SUSPENSION SYSTEM

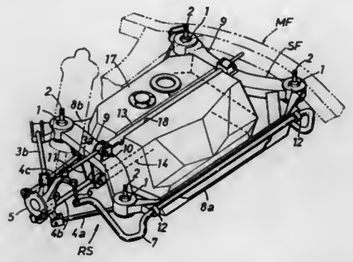
Yozo Kami; Teruaki Anzawa; Yasunori Oku, and Shinji Hinosawa, all of Saitama-ken, Japan, assignors to Hondo Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 16, 1995, Ser. No. 390,220

Claims priority, application Japan, Mar. 9, 1994, 6-65704

Int. Cl.[6] B60P *3/22*

U.S. Cl. 280—834 **10 Claims**



1. In combination:

(a) a fuel tank having a flange extending around at least a portion thereof;

(b) an automotive subframe adapted to be interposed between a wheel suspension system and a vehicle body, and having an annular shape for defining an inner space for accommodating said fuel tank therein, comprising:

a pair of longitudinal members extending substantially in parallel to each other, each of said longitudinal members having a substantially closed cross section; and

a pair of lateral members extending substantially in parallel to each other across front and rear end portions of said longitudinal members, each of said lateral members having an open cross section, an open part of said open cross section of at least one of said lateral members receiving a portion of said flange projecting from said fuel tank.

5,547,225

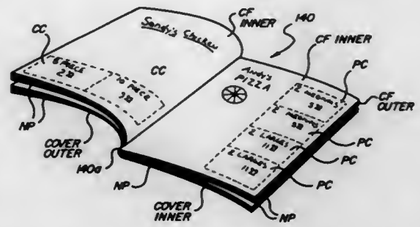
PRINTING METHOD AND APPARATUS

Andrew V. DeAngelis, 164 Kirkwood Ct., Bloomfield Hills, Mich. 48304

Continuation-in-part of Ser. No. 902,840, Jun. 23, 1972, Pat. No. 5,320,334. This application Dec. 16, 1993, Ser. No. 168,752

Int. Cl.[6] B42D *1/00*

U.S. Cl. 281—211 **4 Claims**



1. A book comprising a plurality of pages of interspersed multi-color coated pages and newsprint pages adhesively bound along one of their common edges wherein said book has a front and rear cover page formed of multi-color coated paper and includes a first plurality of pages of coated paper disposed between the cover pages and a second plurality of pages of newsprint paper disposed between the cover pages and interspersed with said first plurality of coated pages, each of said first and second pluralities of pages being formed as one half of a folded sheet, and the folded sheets being arranged in nested relation with all of the respective folds thereof being arranged on a single common center line passing through the common adhesively bound edges.

5,547,226

HOUSEHOLD FILING SYSTEM

Claudia H. Wentworth, 108 Crest Ave., Walnut Creek, Calif. 94595

Filed Jun. 26, 1995, Ser. No. 494,730

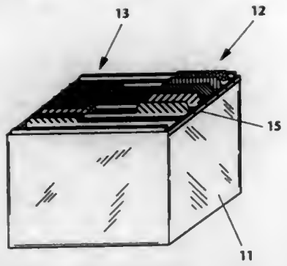
Int. Cl.[6] B42F *21/00*

U.S. Cl. 283—36 **24 Claims**

1. A filing system for storing, organizing, and managing household and personal documents and information, including;

a first plurality of file folders disposed within a first plurality of divider file folders, said file folders and divider file folders having a common first color, said divider file folders labeled to receive incoming documents including mail, bills, and general information, said file folders labeled with subtopics to organize said incoming documents;

a second plurality of file folders disposed within a second plurality of divider file folders, said second file folders and second divider file folders having a common second color, said second divider file folders labeled to receive documents related to money received and money paid out, said second file folders labeled with subtopics to organize bank statements, income receipts, purchase receipts, and payments relating to household expenses;



a third plurality of file folders disposed within a third plurality of divider file folders, said third file folders and third divider file folders having a common third color, said third file folders labeled to receive documents related to household information regarding insurance, mortgage and other loans, tax returns, and other household financial matters;

a fourth plurality of file folders disposed within a fourth plurality of divider file folders, said fourth file folders and fourth divider file folders having a common fourth color, said fourth file folders labeled to receive documents related to household information regarding non-financial, personal matters;

whereby said incoming documents are initially sorted and placed in said first plurality of file folders in said first plurality of file folders for short-term storage, and said incoming documents are processed and filed in appropriately labeled file folders for long-term storage in said second, third, and fourth plurality of file folders.

5,547,227

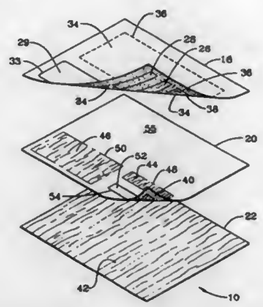
LAMINATED LABEL FORM WITH REMOVABLE PORTIONS

David F. Laurash, Bellbrook, Ohio; Joey V. Huddleston, Winter Springs, Fla.; Patrick A. Konkol, Sharonville, Ohio; Jeffery J. Hartke, Little Rock, Ark., and Hugh B. Skees, Dayton, Ohio, assignors to The Standard Register Company, Dayton, Ohio

Continuation-in-part of Ser. No. 276,262, Jul. 18, 1994, Pat. No. 5,486,021, which is a continuation of Ser. No. 961,377, Oct. 15, 1992, Pat. No. 5,383,686. This application Jan. 23, 1995, Ser. No. 376,844

Int. Cl.[6] B42D *15/00*

U.S. Cl. 283—81 **23 Claims**



1. A multiple-ply label form for an operation control system comprising:

a first ply having an underside and including at least one first portion and at least one second portion, the underside of said at least one second portion being substantially coated with an adhesive, said first portion and said second portion being readily separable from a remainder of said first ply and being adapted for having indicia applied thereon; and

a second ply having an upper side adhesively bonded to the underside of said first ply, at least one first section and at least one second section respectively in register with said at least one first portion and said at least one second portion, said at least one second portion being adhesively bonded to and readily releasable from the upper side of said at least one second section and securable elsewhere by means of the adhesive thereon, said at least one first section being readily separable from said second ply, and the underside of said at least one first portion being permanently bonded with the upper side of said at least one first section by an adhesive to form a multiple-ply laminate readily separable from said form.

5,547,228

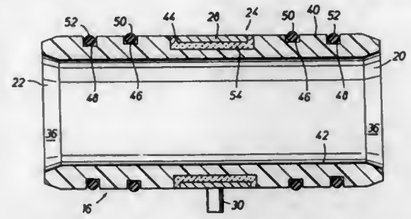
CYLINDRICAL CORROSION BARRIER FOR PIPE CONNECTIONS

Wiliam D. Abbema, Rte. 3 Box 3344, Pearland, Tex. 77581, and John K. Lewis, 14006 Blazey Dr., Houston, Tex. 77095

Filed Apr. 1, 1994, Ser. No. 221,834

Int. Cl.[6] F16L *13/02*

U.S. Cl. 285—22 **28 Claims**



1. A continuous corrosion barrier for welded interconnections of pipe ends, comprising:

a sleeve having a cylindrical outer surface, a cylindrical inner surface and opposed first and second ends;

a first seal disposed on said outer surface intermediate the center of said opposed first and second ends and said first end;

a second seal disposed on said outer surface intermediate said first seal groove and said first end; and

said first seal extending a first height from said outer cylindrical surface and said second seal extending a second height from said outer cylindrical surface, said first height exceeding said second height.

5,547,229

FLUID COUPLING ASSEMBLY

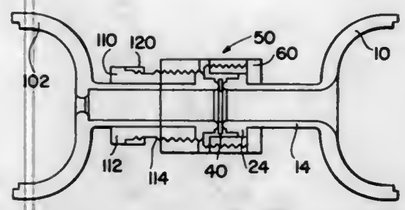
Paul G. Eidsmore, 1700 Granite Creek Rd., Santa Cruz, Calif. 95065

Continuation-in-part of Ser. No. 242,374, May 13, 1994. This application Feb. 22, 1995, Ser. No. 392,104

Int. Cl.[6] F16L *35/00*

U.S. Cl. 285—93 **13 Claims**

1. In a fluid coupling of the type including first and second glands, each gland having a longitudinal fluid passage therethrough that terminates in an end face that extends generally perpendicular to the fluid passage, each end face extending toward the other end face for forming a sealed joint therebetween, a shoulder of a first predetermined diameter on the first gland spaced axially inwardly from the end face and a male nut assembly having a second predetermined diameter less than the first predetermined diameter that abuts against the first gland shoulder, and the male nut assembly having external threads for selective engagement with a female nut operatively associated with the second gland, the male nut assembly of the first member being positioned over the first gland



in a direction from the end face toward the shoulder, the female nut including a pair of externally threaded inserts and a collar having a first internally threaded region joining the inserts together and a second internally threaded region for selectively mating to the external threads of the male nut assembly.

5,547,230

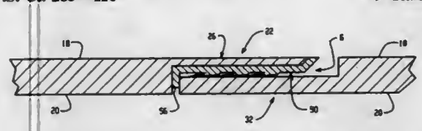
JOINT FOR VARIABLE WALL THICKNESS CONDUIT

Michael D. Bank, South Euclid, and Thomas W. Hawkins, Aurora, both of Ohio, assignors to The Lamson & Sessions Co., Cleveland, Ohio

Filed Apr. 28, 1995, Ser. No. 430,434

Int. Cl.[6] F16L *17/035*

U.S. Cl. 285—110 **9 Claims**



1. A conduit section having an outer wall, a first end and a second end, said wall having an inner surface and an outer surface, a variable thickness being defined therebetween, said conduit section comprising:

a. first joint member formed at said first end, said first joint member comprising:

i. a first support surface formed adjacent said outer surface, said first support surface having a constant width; and

ii. a sealing leg formed adjacent said inner surface; and

b. a second joint member formed at said second end, said second joint member comprising:

i. a second support surface formed adjacent said outer surface, said second support surface having a constant width that is less than the width of said first support surface; and

ii. a recess formed adjacent said inner surface;

whereby said first joint member aligns and joins to the second joint member of a second conduit section and said second joint member aligns and joins with the first joint member of a third conduit section.

5,547,231

FITTINGS FOR USE WITH DOUBLE WALL PIPELINE SYSTEMS HAVING SUPPORT FINS

Bruce R. Sharp, 126 Leland Way, Marco Island, Fla. 33937

Continuation-in-part of Ser. No. 150,361, Nov. 9, 1993, Pat. No. 5,456,502, which is a continuation-in-part of Ser. No. 876,505, Apr. 30, 1992, Pat. No. 5,259,651, which is a continuation-in-part of Ser. No. 680,513, Apr. 4, 1991, abandoned. This application Nov. 7, 1994, Ser. No. 335,074

Int. Cl.[6] F16L *9/18*

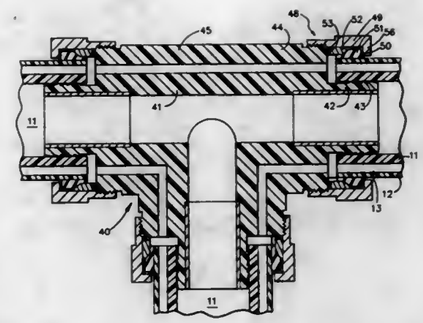
U.S. Cl. 285—133.1 **20 Claims**

1. A double wall compression fitting for attachment to a double wall pipeline system having an inner pipeline with terminals for conveying a liquid and an outer pipeline with terminals for containing liquid with an annular space and a multiplicity of longitudinally running support fins between the pipelines wherein the fitting is capable of continuing the functions of the inner pipeline and outer pipeline by connecting to the double wall pipeline system in a manner such that a sealed connection is made with the inner pipeline and a sealed connection is made with the outer pipeline and the annular space between the pipelines is in communication with an annular space in the fitting, said double wall compression fitting, comprising:

a) an inner housing having at least two terminals;

b) an outer housing substantially encasing the inner housing in a manner such that an annular space between the housings is formed, said outer housing having at least two terminals; and

c) a compression connecting assembly which allows the terminals of the inner pipeline to be engaged to the terminals of the inner housing and which is capable of engaging the terminals of the outer pipeline to the terminals of the outer housing, said assembly having a coupler with means to form a seal with the outer pipeline.



5,547,232

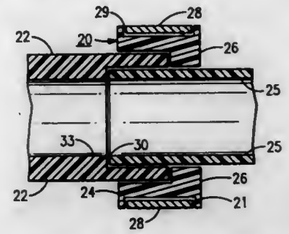
REUSABLE SEALED COUPLING FOR TWO PIPES

Timothy J. Waterman, Carmel, Ind., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 12, 1993, Ser. No. 134,649

Int. Cl.[6] F16L *21/00*

U.S. Cl. 285—236 **5 Claims**



1. A reusable sealed coupling and pipe combination with a first pipe having a first uniform, cylindrical outer diameter along its entire length and a first internal diameter adjacent a first end thereof, said first internal diameter being substantially equal to a uniform, cylindrical outer diameter of a second pipe, said combination comprising:

a coupler capable of receiving the first end of the first pipe within a first portion thereof and capable of receiving an end of the second pipe within a second portion thereof so that said coupler, said second pipe, and said first pipe achieve mutual overlap in at least one region, wherein said first pipe and said second pipe are both set into predetermined positions with respect to said coupler and with respect to one another; and

means for creating a seal between said coupler, said second pipe, and said first pipe in at least a portion of said one region of mutual overlap wherein an outer surface of said coupler contains a circumferential groove therein, said groove being sized to accommodate a hose clamp; and

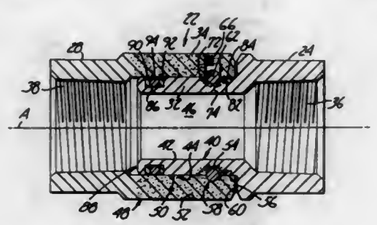
wherein an outer diameter of the second pipe is substantially uniform and an inner diameter of the first pipe is stepped so that a first inner diameter exceeds a second inner diameter at a location proximate said first end of said first pipe and wherein the end of the second pipe abuts said step.

5,547,233

HYDRAULIC SWIVEL HAVING SELECTIVELY HARDENED PORTIONS

Bruce A. Hoegger, Brooklyn Center, Minn., assignor to Remanco Hydraulics, Inc., Minneapolis, Minn.

Filed Mar. 24, 1993, Ser. No. 37,809
Int. Cl.[6] F16L *27/10*
U.S. Cl. 285—276 **21 Claims**



9. A device for rotatably connecting fluid flow lines such that fluid is flowable between the fluid flow lines, the device comprising:

a female component having:

a first means for accepting a first fluid flow line and

a female portion with a hardened region;

a male component having:

a second means for accepting a second fluid flow line;

an inner annular surface defining a bore within the male component, the bore capable of being placed in fluid communication with the second fluid flow line; and

a male portion with a hardened region and a non-hardened region and wherein the hardened region of the male portion is located between the female portioo and the non-hardened region and between the female portion and the bore and the female portion is capable of accepting the male portion; and

bearing means for allowing relative rotational motion between the male and female components.

5,547,234

LOCKING DEVICE FOR LOCKING THE OPENABLE TOP OF AN OPEN AUTOMOBILE

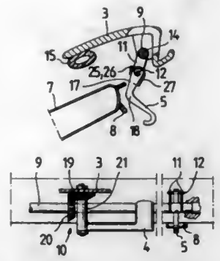
Matti Kinnanen, Uusikaupunki, Finland, assignor to Valmet Automotive, Uusikaupunki, Finland

Filed Sep. 29, 1992, Ser. No. 954,000
Claims priority, application Finland, Oct. 17, 1991, 914899
Int. Cl.[6] E05C *19/10*
U.S. Cl. 292—25 **5 Claims**

1. A device for locking a top of an automobile from open to closed; the top lying in a first plane substantially horizontal when the top is closed; the automobile having a body, a windshield, a top framework, and a frame rib on the top framework; the device comprising:

(a) first and second lugs fixed to the windshield;

(b) a first locking hook connected to the frame rib at a first area for locking the top, the first locking hook having an open



position for when the top is open and a closed position for when the top is closed, the first locking hook including,

(i) a first hooking end for hooking onto said first lug when the first locking hook is in the closed position; and

(ii) a first pivot end opposite of the first hooking end;

(c) a first crank lever pivotably connected to said first pivot end of the first locking hook;

(d) a second locking hook connected to the frame rib at a second area for locking the top, the second locking hook having an open position for when the top is open and a closed position for when the top is closed, the second locking hook including,

(i) a second hooking end for hooking onto said second lug when the second locking hook is in the closed position; and

(ii) a second pivot end opposite of the second hooking end;

(e) a second crank lever pivotably connected to the second pivot end of the second locking hook;

(f) a transmission connected to the frame rib and including a spindle and an angle drive having a shaft;

(i) said angle drive connected to said spindle for rotatably driving said spindle, the angle drive rotating the spindle more than 180 degrees;

(ii) said spindle being connected to said first and second crank levers so that when the spindle rotates, the first and second crank levers move and turn about the first and second pivot ends, respectively; and

(g) a handle fixedly connected to said shaft of said angle drive, the handle being turnable in a second plane parallel to the first plane, the handle for transmitting force from an operator to said angle drive by turning the handle;

wherein when the handle is turned, the transmission and first and second crank levers cooperate to move the first and second locking hooks between the open and closed positions.

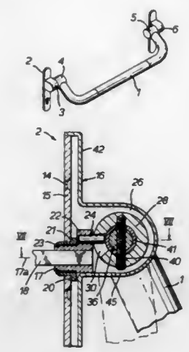
5,547,235

GEARING FOR A DOOR LOCK, IN PARTICULAR FOR A PANIC OR SMOKE-PROTECTION DOOR LOCK

Richard Dziuk, Arolsen, and Horst Jäger, Edertal-Buhlen, both of, Germany, assignors to HEWI Heinrich Wilke GmbH, Arolsen, Germany

Filed Jan. 15, 1993, Ser. No. 4,988
Claims priority, application Germany, Jan. 17, 1992, 42 01 070.5
Int. Cl.[6] F05B *65/10*
U.S. Cl. 292—92 **23 Claims**

1. Gearing for a door lock having a lock actuating means and an actuating member (**18**, **60**) therefor, particularly a panic or smoke-protection door lock, the gearing comprising a first gearing part (**17**, **59**) having and being rotatable around a first axis of rotation (**17***a*, **59***a*) and being connectable with said actuating member (**18**, **60**); and a second gearing part (**28**, **66**) which has and is rotatable around a second axis of rotation (**29**, **67**) and is connectable with a handle (**1**, **46**), the first axis of rotation (**17***a*, **59***a*) and the second axis of rotation (**29**, **67**) being arranged so as to be substantially perpendicular to one another and, for the purpose of converting a rotational movement of said second gearing part (**28**, **66**) into a rotational movement of said first gearing part (**17**, **59**) in at least one rotating direction, one of the gearing parts being provided with



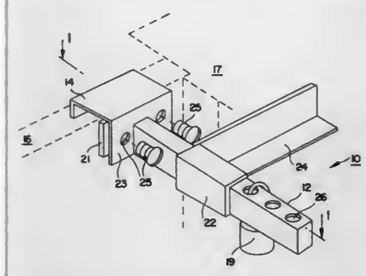
a driver pin (**24**, **63**) which is arranged parallel to and at a distance from the axis of rotation (**17***a*, **59***a*) of said one of said gearing parts while the other of said gearing parts is provided with a guide part (**31**, **31***a*, **77**) cooperating with the driver pin.

5,547,236

REMOVABLE DOOR LOCK

John E. Gregory, 803 Ricky Dr., Campbell, Calif. 95008

Filed Feb. 23, 1995, Ser. No. 393,568
Int. Cl.[6] E05C *1/04*
U.S. Cl. 292—148 **4 Claims**



1. A temporary locking device for a door having a horizontal top edge and an unhinged vertical edge and said door having a backside opposite a front side and closing with said front side against a door jamb of a door frame in a wall, said device comprising:

an elongated extension arm having a square cross section;

means adapted for detachably attaching one end of said extension arm to said door proximal to one of said top edge and said vertical edge at any location on said edges such that said extension arm is perpendicular to said door;

a tubular telescoping member that telescopes onto said extension arm;

a retainer arm having an end perpendicularly attached to a side of said telescoping member providing that, when said extension arm is secured to said door by said means for attaching, said retainer arm is enabled to be slidably positioned against a front side of said wall such that said retainer arm is fixable in both of a horizontal orientation and a vertical orientation at said any location along said one of said top edge and said vertical edge;

said extension member having a row of apertures;

each aperture arranged to receive a padlock such as to secure said telescoping tube member in a position on said extension arm selected to retain said retaining arm against said wall.

5,547,237

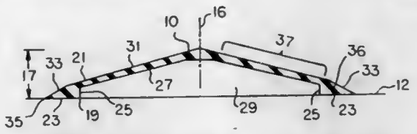
Patent Not Issued For This Number

5,547,238

CIRCULAR DISK DOORSTOP

Richard Payette, P.O. Box 214, Newcastle, N.H. 03854

Filed May 5, 1994, Ser. No. 238,538
Int. Cl.[6] E05F *5/00*
U.S. Cl. 292—343 **2 Claims**



2. A portable doorstop comprising a circular disk formed of a resilient deformable material;

said disk having a lower surface adapted to seat on a floor, and an upper surface adapted to engage the lower edge of a door;

said circular disk having a central vertical axis and a circular edge centered on said axis;

said disk upper surface comprising a convex conical surface centered on said central vertical axis;

said convex conical surface having a slope angle of approximately fifteen (15) degrees for wedge fit interaction with a door lower edge;

said disk lower surface comprising an annular flat, horizontal, support surface (**23**) proximate to the disk circular edge, a concave conical surface (**27**) centered on said central axis, and an upstanding concave cylindrical surface (**25**) joining said flat, horizontal, support surface to said concave conical surface; said concave conical surface and said upstanding concave cylindrical surface cooperatively forming a vacant cavity within a space circumscribed by said annular flat, horizontal, support surface;

said disk upper surface comprising an annular rim surface (**33**) proximate to the disk circular edge;

said annular rim surface sloping upwardly from said circular edge at an acute angle to the plane of said flat borizontal support surface substantially greater than fifteen degrees;

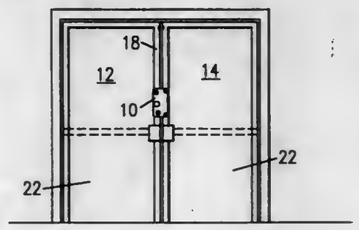
said convex conical surface (**31**) and said concave conical surface (**27**) being spaced apart by a relatively small distance so as to form an annular deflectable diaphragm.

5,547,239

LATCH GUARD FOR CENTER HUNG DOORS

Howard M. Allenbaugh, Huntington Beach, Calif., assignor to M.A.G. Eng. & Mfg. Inc., Huntington Beach, Calif.

Continuation of Ser. No. 85,417, Jun. 30, 1993, abandoned.
This application Jan. 27, 1995, Ser. No. 379,006
Int. Cl.[6] E05B *17/00*
U.S. Cl. 292—346 **12 Claims**



1. A latch guard for protecting a door latch of a door having a raised cylinder, the latch guard comprising:

a cover plate adapted to be removably mounted on a surface of a door and sized to extend from the door into overlapping relation with an adjacent door or door frame, the cover plate having,

a cylinder pivot hole sized to allow the raised cylinder to pass therethrough,

first and second mounting holes located at substantially equal distances from the cylinder pivot hole, the first mounting hole located above the cylinder pivot hole and the second mounting hole located below the cylinder pivot hole,

first and second slots formed in the first and second mounting holes, respectively, each slot having a width and a length, each slot extending away from a center of the respective mounting hole in a direction substantially perpendicular to a line through the center of the cylinder pivot hole and the center of the respective mounting hole, and the slot of the second mounting hole extending in a direction substantially opposite the direction of the first slot;

first and second substantially flat portions, the first substantially flat portion having the cylinder pivot hole, the first and second mounting holes and the first and second slots, wherein the first flat portion is adapted to be mounted on the door surface with the second flat portion extending from the door into overlapping relation with the adjacent door or door frame, and

first and second substantially perpendicular sections, the first perpendicular section connecting the first and second flat portions, and the second perpendicular section being connected to the second flat portion along an edge opposite the first perpendicular section, wherein the first and second perpendicular sections increase the strength of the cover plate; and

first and second mounting bolts, each mounting bolt having an enlarged head, a spacer, and a shaft, the enlarged head sized to be larger than the width of the first and second slots but smaller than the size of the respective first and second mounting holes and the spacer being sized to fit within the width of the slot, the mounting bolts further being adapted to be mounted in the door with the shaft extending into holes in the surface of the door at locations corresponding to the location of the first and second mounting holes, such that the enlarged head of each bolt is spaced away from the surface of the door by the spacer to allow the cover plate to slide under the enlarged head, and such that the cover plate may rotate about the cylinder pivot hole with the spacers adapted to slide within the respective first and second slots to allow the cover plate to be retained by the enlarged head of the respective mounting bolts.

5,547,240

HAND-HELD TROWEL WITH AN ACCESSIBLE HOLLOW HANDLE COMPARTMENT

Gordon K. Hartshorn, P.O. Box 338, Rollinsville, Colo. 80474, and Karen A. Pyrtek, 50 Martins View Rd., Lake Hopatcong, N.J. 07849

Filed Jan. 6, 1995, Ser. No. 369,745

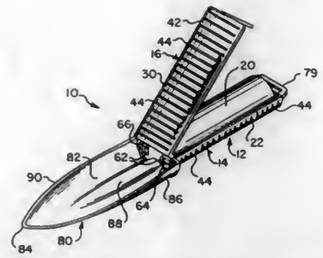
Int. Cl.[6] A01B *1/02*

U.S. Cl. 294—49 **19 Claims**

1. A hand-held trowel useful for both digging a latrine in the ground and conveniently and accessibly carrying a plurality of toilet tissues in a roll, comprising:

a blade assembly having a blade suitable for digging, said blade assembly having a digging tip end and an opposed rear handle end; and

a substantially cylindrical handle assembly having a front end portion connected to said rear handle end of the blade assembly, said handle assembly defining a substantially hollow cylindrical compartment comprised of mating upper and lower substantially semi-cylindrical hollow portions which are hingedly connected together at said front end of said



handle assembly, said substantially hollow cylindrical compartment of said handle assembly being sized and adapted to carry a plurality of toilet tissues in a roll, and wherein said handle assembly includes an anterior portion opposed to said front end portion of said handle assembly; whereby said trowel may be used for both digging a latrine in the ground and for carrying for easy access a plurality of toilet tissues in a roll within said hollow cylindrical compartment of said handle assembly of said trowel.

5,547,241

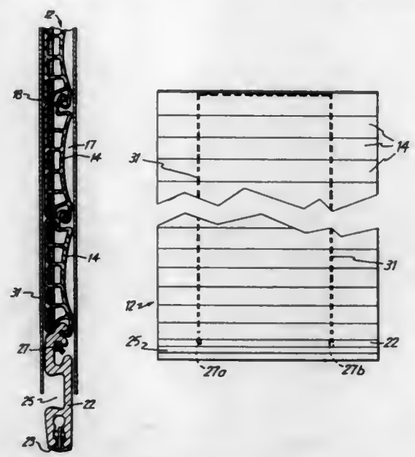
SHOCK-CORDED ARTICULATED DOOR

Paul A. Villella, St. Paul, Minn., and Jerry T. Teigen, New Richmond, Wis., assignors to Dorso Trailer Sales Inc., St. Paul, Minn.

Continuation of Ser. No. 84,740, Jun. 29, 1993, abandoned, which is a continuation-in-part of Ser. No. 877,874, May 11, 1992, Pat. No. 5,238,283, which is a continuation of Ser. No. 675,657, Mar. 27, 1991, Pat. No. 5,165,746. This application Mar. 20, 1995, Ser. No. 406,649

Int. Cl.[6] B60P *3/00;* **B60J** *5/06*

U.S. Cl. 296—24.1 **24 Claims**



1. An articulated door comprising:

a plurality of panel sections connected together in hinged relation in a sequence of panel sections, adjacent panel sections forming a hinge allowing the adjacent panel sections to be positioned at varying angles with respect to each other; and

cord means, coupled to a first panel section and a second panel section of the sequence of panel sections, for applying a compression force between the first panel section of the sequence of panel sections and the second panel section of the

sequence of panel sections to urge the adjacent panel sections into contact with each other.

12. A beverage body for transporting beverages, the beverage body comprising:

a floor;

a roof;

a plurality of generally vertical walls intermediate to the floor and the roof and forming an interior of the beverage body;

a plurality of beverage storage bays located in the interior; and

a plurality of articulated doors with each door providing access to one of the storage bays, wherein each door is comprised of:

a left channel comprised of a pair of left channel members:

a right channel comprised of a pair of right channel members;

a plurality of panel sections connected together to form a hinge between adjacent panel sections, the hinge allowing the adjacent panel sections to be positioned at varying angles with respect to each other, wherein each panel section includes:

a left end which extends into the left channel; and

a right end which extends into the right channel; and

cord means, coupled to a first panel section and a second panel section of the plurality of panel sections, for applying a compression force between the first panel section of the plurality of panel sections and the second panel section of the plurality of panel sections to urge the adjacent panel sections into contact with each other.

5,547,242

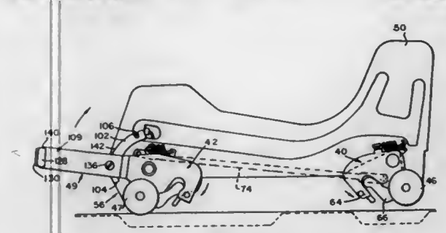
LATCH/UNLATCH INDICATOR FOR VEHICLE SEAT-TO FLOOR LATCH MECHANISM

Matthew F. Dukatz, Bloomfield Hills; Charles E. Harland, Livonia; Fred C. Kresky, Rochester Hills; Jay P. McCarthy, Livonia, and Stephen A. Sharples, Northville, all of Mich., assignors to Atoma International, Inc., Newmarket, Canada, and Chrysler Corporation, Auburn Hills, Mich.

Filed Feb. 10, 1995, Ser. No. 387,425

Int. Cl.[6] B60N *2/44*

U.S. Cl. 296—65.1 **16 Claims**



1. Actuating structure for manually moving hook members mounted on a rigid support structure, said rigid support structure for supporting a portion of a cushioned seat structure of a vehicle seat for use in a vehicle having floor means, said hook members being mounted on said rigid support structure for movement between (1) an operative position engaged in hooked relationship with anchor members of the floor means so as to detachably fixedly retain the rigid support structure and the portion of the seat structure when mounted thereon in a fixed operative position on the floor means and (2) an inoperative position disposed above the operative position thereof so as to enable the rigid support structure and the portion of the seat structure when mounted thereon to be moved relatively over said floor means, said actuating structure being constructed and arranged to move said hook members between the operative and inoperative positions thereof, said actuating structure including:

a manually releasable locking mechanism constructed and arranged to selectively lock said hook members in one of the operative and inoperative positions thereof, and

indicating structure operatively associated with said locking mechanism and movable between a first position providing visual indication that said locking mechanism and said hook members are disposed in a fully locked position and a second position providing visual indication that said locking mechanism and said hook members are in a position other than a fully locked position.

5,547,243

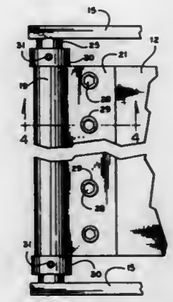
TRUCK COVER PROTECTOR

Leon Lamb, 4772 S. Expressway, Forest Park, Ga. 30050, and John A. Redd, 6331 Westbury Rd., Riverdale, Ga. 30274

Filed Oct. 13, 1995, Ser. No. 542,812

Int. Cl.[6] B60P *7/04*

U.S. Cl. 296—98 **3 Claims**



1. In a truck having a body with an open top, a front of said body and a rear of said body, a flexible cover having a width and first end fixed at said front of said body, a spindle receiving a second end of said cover, means for selectively moving said spindle to said front of said body for placing said second end of said cover adjacent to said first end for uncovering said body, and to said rear of said body for placing said second end on said rear of said body for covering said body, the combination therewith of a cover protector comprising a substantially form-rigid polymeric cylindrical portion having a length substantially equal to said width for receiving said spindle therein, said cylindrical portion defining a slot therein for receiving said cover therethrough, and rigid flanges extending from said cylindrical portion adjacent to said slot for fixing said protector to said flexible cover, so that said protector encases said spindle and said second end of said cover for protecting said cover from damage.

5,547,244

CANOPY MOUNTING DEVICE FOR A SKID STEER LOADER

Seung K. Lee, Incheon, Rep. of Korea, assignor to Daewoo Heavy Industries Ltd., Incheon, Rep. of Korea

Filed Dec. 30, 1994, Ser. No. 366,714

Claims priority, application Rep. of Korea, Dec. 30, 1993, 93-31190U

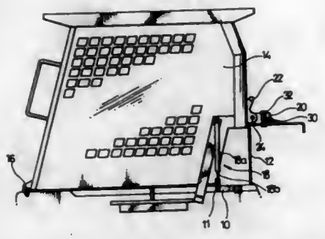
Int. Cl.[6] B62D *33/07*

U.S. Cl. 296—102 **6 Claims**

1. A canopy mounting device for a skid steer loader adapted for pivotally mounting a canopy on a vehicle body with a gas spring disposed between the canopy and the vehicle body in a preloaded condition, which comprises:

a bracket fixedly secured to the vehicle body, the bracket having a first through-hole;

a hinge block attached to the canopy, the hinge block having an interlocking lug at an upper end thereof, a second through-hole formed adjacent to a lower end thereof and an abutment surface extending downward from the interlocking lug;



a pivot pin inserted through the first and second through-holes to enable the canopy to be pivoted with respect to the vehicle body between a first closed position and a second open position;

an interlocking ring for holding the canopy against pivotal movement into the first closed position, the interlocking ring engaged with the interlocking lug of the hinge block when the canopy is in the second open position; and

a height-adjustable stopper for coming into contact with the abutment surface of the hinge block as the canopy is pivoted to the second open position.

5,547,245

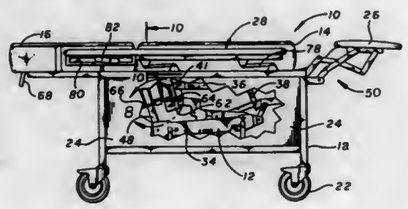
RECLINER CHAIR

Bobby W. Knouse, 681 Co. Sq. Dr., #56, Ventura, Calif. 93003

Filed May 12, 1993, Ser. No. 59,741

Int. Cl.[6] A61G *15/00*

U.S. Cl. 297—85 **15 Claims**



15. A recliner chair, comprising:

a chair frame;

a seat;

a seatback; and

a recliner linkage including a seat link mounted on said seat, and means for movably supporting said seat link and said seatback for movement between a generally upright position and at least one reclined position with said seat link tilted upwardly toward a front of the chair frame and with said seatback tilted rearwardly, said supporting means including a carrier link and means for pivotally connecting said carrier link generally to a rear end of said seat link;

said pivotally connecting means including latch means normally engaged for pivotally connecting said carrier link with said seat link so that said seat link follows said carrier link upon operation of said recliner linkage for movement between said upright and reclined positions;

said latch means being releasable to permit relative sliding displacement between said seat link and said carrier link for movement of said seat from said reclined position to a substantially horizontal position;

said recliner linkage further including means for permitting displacement of said seatback from said reclined position to a substantially horizontal position oriented substantial coplanar with said seat upon movement of said seat from said reclined position to said substantially horizontal position;

said seatback including at least one lift bar for engaging an undersurface of a rear edge of said seat upon movement of said seatback to said horizontal position for lifting said seat to said horizontal position substantially coplanar with said seatback; and

at least one armrest unit mounted on said chair frame for movement between a deployed position elevated above said seat at one side thereof, and a lowered position disposed substantially coplanar with said seat when said seat and seatback are in said substantially coplanar horizontal position.

5,547,246

COMBINED CANOE CARRIER AND CHAIR

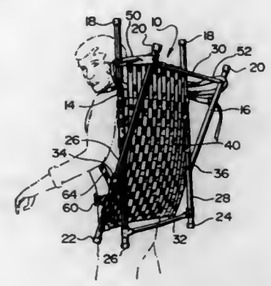
Michael Lambert, 2201 Deschenes Street, Ottawa, Canada

Filed May 30, 1995, Ser. No. 453,280

Claims priority, application Canada, May 31, 1994, 2124699

Int. Cl.[6] A47C *13/00*

U.S. Cl. 297—129 **3 Claims**



1. An apparatus which functions as a combination backpack frame and canoe carrier and is usable as a folding camp chair, said apparatus comprising:

first and second frame assemblies having upper ends, and ground engageable ends in the chair mode, each frame assembly including parallel side members;

pivot means connecting the side members of the first and second frame assemblies intermediate their ends to define upper and lower portions for each frame assembly; a first transverse member interconnecting said upper portion of said side members of said first frame assembly, a second transverse member interconnecting an upper portion of said side members of the second frame assembly and a third transverse member interconnecting the lower portion of the parallel side members of said second frame assembly;

a web extending between upper portions of the frame assemblies to form a back rest and a seat portion;

straps to extend between upper portions of the side members of each frame assembly to maintain the first and second frame assemblies angularly disposed to each other to form the chair; and

a carrier belt secured to said second frame along said second transverse member and shoulder straps secured between the upper portions of the first and second frame assemblies for use in a carrier mode and said straps joining the upper portion of a first frame assembly with the lower portion of the second frame assembly while in the carrier mode to support a cross member of an inverted canoe therebetween.

5,547,247

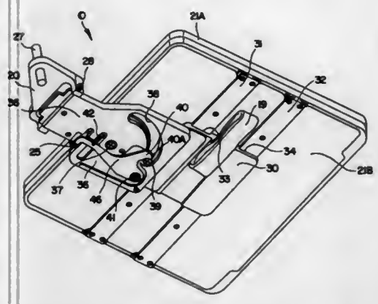
PASSENGER TRAY TABLE WITH INGRESS/EGRESS POSITION

Richard W. Dixon, Winston-Salem, N.C., assignor to Burns Aerospace Corporation, Winston-Salem, N.C.

Filed Aug. 16, 1994, Ser. No. 291,182

Int. Cl.[6] A47B *39/00*

U.S. Cl. 297—145 **7 Claims**



1. A stowable seat tray table for use with a seat having a tray table stowage compartment on one side thereof, comprising:

(a) a tray table having a long side and a perpendicular short side;

(b) connecting means for connecting the table to the seat and for permitting the table to be moved into and out of the stowage compartment;

(c) said connecting means including table pivot means and table translating means, said pivot means and said table translating means cooperating with said table for moving the table when out of the stowage compartment between:

(1) a use position wherein the long side of the table extends across the seat from one side to an opposing side for use by an occupant; and

(2) an ingress/egress position at a substantially right angle to the use position wherein the table is pivoted about a vertical axis by the pivot means and laterally translated while remaining in the horizontal plane of the use position towards the stowage compartment by the translating means to provide sufficient room for the occupant to ingress to or egress from the seat without removing items from the tray;

(d) said table pivot means comprising:

(1) a mounting block attached to a bottom surface of the table;

(2) a pivot block pivotally mounted on said mounting block;

(3) an arcuate guide slot formed in said pivot block; and

(4) a guide pin mounted on said mounting block in a fixed position and extending upwardly into said guide slot for limiting pivotal movement of said pivot block to the arc of the arcuate guide slot; and

(e) said table including locking means cooperating with said table pivot means for locking the table in the use position, said locking means comprising a book for holding the guide pin in a predetermined locked position in said guide slot.

5,547,248

PASSENGER SEAT FOR A PUBLIC TRANSPORT VEHICLE, THE SEAT INCLUDING A VIDEO DISPLAY WHICH CAN BE RETRACTED INTO AN ARMREST

Robert R. Marechal, Paris, France, assignor to Societe Industrielle et Commerciale De Materiel Aeronautique, Issoudun, France

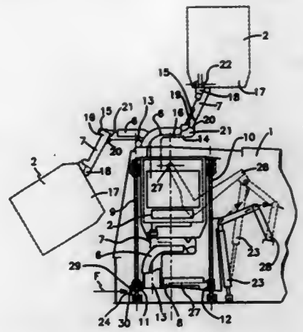
Filed May 3, 1994, Ser. No. 237,397

Claims priority, application France, May 26, 1993, 93 06315

Int. Cl.[6] A47C *7/72*

U.S. Cl. 297—188.17 **6 Claims**

1. In a passenger seat for a public transport vehicle, the seat including at least one armrest (**1**) having a front portion (**5**) with a top wall (**4**) and at least one individual video display (**2**) associated with the armrest (**1**), the video display (**2**) being mounted via a hinged arm (**6**, **7**) that is hinged to a base plate (**8**) guided inside a front portion (**5**) of the armrest (**1**) by two vertical guide columns (**9**, **10**) extending in front of and behind the base plate (**8**); the improvement wherein the hinged arm (**6**, **7**) includes a crank (**6**) having an end (**14**) and hinged to the base plate (**8**) about a vertical axis (**13**), and a connecting rod means (**7**) having two ends, one of which is hinged to the end (**14**) of the crank (**6**) about a horizontal axis, the other end of which is hinged to the video display (**2**) via its bottom portion (**17**), the video display (**2**) being retractably mounted via a slot (**3**) provided in a top wall (**4**) of the front portion (**5**) of the armrest (**1**).



5,547,249

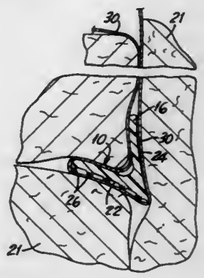
STABILIZING DEVICE FOR USE WITH COVERS AND CUSHIONS ON SEATING AND UPHOLSTERED FURNITURE

Paula Riley, New York, and Kenneth V. Stevens, Greenpoint, both of N.Y., assignors to Prescient Partners, L.P., New York, N.Y.

Filed Jul. 1, 1994, Ser. No. 270,057

Int. Cl.[6] A44B *21/00*

U.S. Cl. 297—228.13 **40 Claims**



1. A stabilizing device comprising:

an elongated V-shaped member having a solid nose formed as a substantially triangular configuration, including a base having two substantially flat surfaces tapering to an outer point having a radius of sharp curvature, and a pair of spaced arms forming the V-shape extending outwardly from said base opposite said point and forming substantially continuous, opposing outer flat surfaces extending from the outer point and along the base and spaced arms, the base and arms forming an opposite curved surface with an inner radius of smaller curvature than the curvature of the point, wherein said member is made of an elastic, polymeric material having an

elasticity such that said pair of arms are moveable from a first naturally open stable position to a second closed unstable position in which an outward biasing action from the arms can be exerted when the stabilizing device is received within a crevice formed below cushions and adjacent the back or sides of an upholstered piece of furniture to hold a fabric cover positioned over a cushioned seat of the furniture with a portion of the cover disposed within the crevice around the stabilizing device.

5,547,250

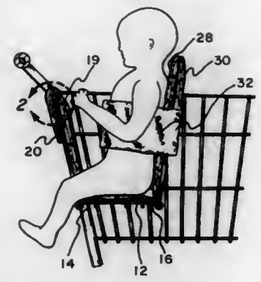
CART CADDY FOR SHOPPING CARTS

Shirley A. Childers, 33 Mapleshade La., Pittsgrove, N.J. 08318

Filed Oct. 21, 1994, Ser. No. 325,136

Int. Cl.[6] A47C *1/08*

U.S. Cl. 297—256.17 **4 Claims**



1. A cushioned seating device and a shopping cart wherein said shopping cart includes a grill frame having a front wall and a rear wall, an end panel pivotally secured to said rear wall of said grill frame, a handle bar extending upwardly and outwardly from said end panel and a collapsible seat having a horizontal seat member and back rest having a front surface and a rear surface wherein said cushioned seating device comprises:

a central padded portion having a first end and a second end, said central padded portion being located on said horizontal seat member;

a padded end panel cover portion extending from said first end of said central padded portion, said end panel cover portion having a first segment and a second segment, said first segment being hingedly connected to said second segment;

means securing said end cover portion over said end panel of said grill frame below said handle bar of said shopping cart whereby said handle bar remains exposed;

a padded seat back portion having a predetermined width and extending from said second end of said central padded portion, said seat back portion having a first section and a second section flexibly connected to said first section, said first section being positioned against said front surface of said back rest and said second section being positioned against said rear surface of said back rest, and

strap means secured to and extending outwardly from the sides of said second section of said seat back portion around said back rest and adapted to pass around the torso of a child seated in said seat.

5,547,251

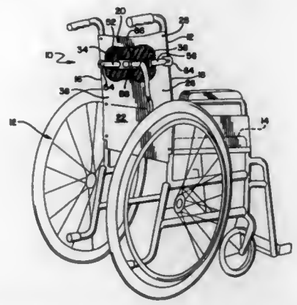
BACK SUPPORT ADJUSTING APPARATUS FOR CHAIR WITH BACKREST FLEXIBLE UPHOLSTERY

Peter W. Axelson, Santa Cruz, Calif., assignor to Beneficial Designs, Inc., Santa Cruz, Calif.

Filed Jun. 1, 1994, Ser. No. 252,326

Int. Cl.[6] A47C *7/42*

U.S. Cl. 297—284.5 **14 Claims**



1. A combination for providing support to the back of an occupant of a chair, comprising:

a flexible upholstery including a forward face toward the occupant, a rear face and two vertical side edge portions;

at least two generally vertical support posts, said support posts being a part of the chair, one of said support posts attached to each of said side edge portions, said upholstery extending between said support posts;

cushion means contacting said rear face of said upholstery when the occupant leans against said upholstery for supporting at least a portion of the back of the occupant; and

strap means extending from said cushion means and removably secured to each of said support posts, said strap means being adjustable as to length for laterally positioning said cushion means at a desired location along said rear face of said upholstery.

5,547,252

OFFICE CHAIR

Reto Pfenniger, Ammannsegg, Switzerland, assignor to Girsberger Holding AG, Bützberg, Switzerland

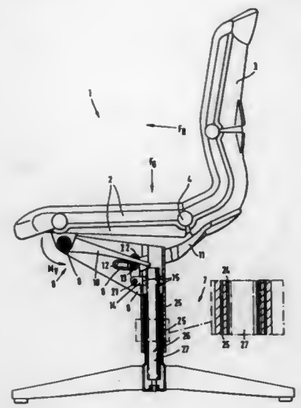
Filed Aug. 12, 1994, Ser. No. 289,465

Claims priority, application Germany, Aug. 14, 1993, 43 27 373.4

Int. Cl.[6] A47C *3/00*

U.S. Cl. 297—300.3 **16 Claims**

1. A chair, particularly, an office chair, comprising a seat support (6) fastened to a lower chair part (7) and joined in a swiveling fashion with a seat (2) that is movably coupled with a backrest (3) by means of a synchronizing sliding guide (5), wherein the seat (2) is supported by a readjusting apparatus (8) that acts against swiveling movement, the seat support (6) being guided at the lower chair part (7) in an approximately vertical direction, the seat (2) being supported at the lower chair part (7) by the readjusting apparatus (8), whereby a movement transmission path is provided between the backrest (3) and the lower part (7) of the chair, and further comprising a blocking apparatus (14) to compensate for movement transmitted to the readjusting apparatus (8) during a backward swinging movement of the backrest (3).



5,547,253

SIT/STAND ADJUSTABLE, TOWER CHAIR

Edward M. Schwartz, deceased, late of Bedford Hills, N.Y., and by Nancy L. Schwartz, administratrix, 9 Nottingham Rd., Bedford Hills, N.Y. 10507

Filed Aug. 11, 1994, Ser. No. 288,911

Int. Cl.[6] A47C *3/20*

U.S. Cl. 297—338 **18 Claims**

1. An adjustable chair comprising:

a base including a central portion and a plurality of radial spokes projecting from said central portion;

a tower including a lower portion comprising a lazy S-shaped member having one downwardly facing end mounted to said central portion of said base and an opposite upwardly facing end, and an upper portion having a lower end joined to said opposite upwardly facing end of said lower portion and extending upwardly with respect to said lower portion, said upper portion thereby being off-center with respect to said central portion of said base; and

a seat disposed on said upper portion of said tower and including seat height adjustment means connected between said seat and said tower for movably adjusting said seat up and down on said tower.

5,547,254

PAWL AND RATCHET TYPE SEAT TILT CONTROL APPARATUS

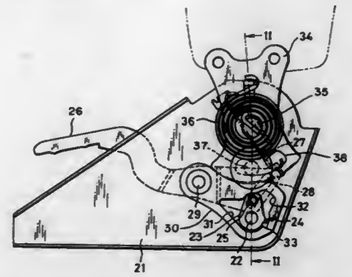
Naoaki Hoshihara, Nagoya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Japan

Filed Sep. 28, 1993, Ser. No. 127,575

Claims priority, application Japan, Sep. 30, 1992, 4-283593; Sep. 30, 1992, 4-283594

Int. Cl.[6] B60N *2/22*

U.S. Cl. 297—367 **4 Claims**



1. A pawl and ratchet type seat tilt control apparatus comprising:

a pair of spaced lower arms;

a connecting rod, each end of which is supported on one of said lower arms so that said connecting rod is free to rotate;

a pair of cam members, one cam member secured to one end of said connecting rod, the other cam member secured to the other end of said connecting rod;

a pair of pawls, each pawl having one end fastened by a pin to a corresponding lower arm, each pawl having a cam slot for receiving a corresponding cam member wherein movement of said release lever provides for movement of said cam members which results in said engagement and disengagement;

a pair of ratchets, each ratchet configured to be secured to an upper arm, for engaging with and disengaging from a corresponding pawl; and

a single release lever pivotally supported on one of said lower arms and having a slot for receiving a pin fixed to one of said cam members.

5,547,255

RECLINING DEVICE FOR VEHICLE

Tatsuro Ito; Keiichi Oae, both of Kariya, and Seijiro Shiota, Nagoya, all of, Japan, assignors to Toyota Shatai Kabushiki Kaisha, Kariya, Japan

Filed Dec. 27, 1994, Ser. No. 363,906

Claims priority, application Japan, Dec. 27, 1993, 5-351558; May 20, 1994, 6-142126

Int. Cl.[6] B60N *2/02*

U.S. Cl. 297—367 **6 Claims**

1. A reclining device for vehicle comprising:

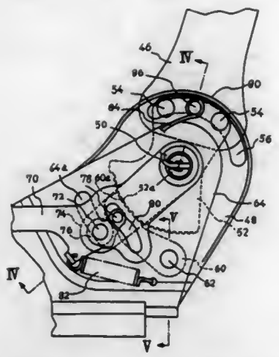
a lower arm;

an upper arm,

a flat ratchet plate having opposing surfaces and a center portion that is rotatably supported by said lower arm, and an upper end secured to said upper arm, said flat ratchet plate having a toothed edge along a lower periphery thereof;

a plate-shaped pawl having a base end that is rotatably supported by said lower arm, and a free end having a toothed edge adapted to engage said toothed edge of said flat ratchet plate, said plate-shaped pawl being rotatable by a release lever to engage and disengage said toothed edge of said plate-shaped pawl and said toothed edge of said flat ratchet plate; and

a flat set plate adapted to hold said flat ratchet plate and said plate-shaped pawl with said lower arm in contact with both surfaces of said flat ratchet plate and said plate-shaped pawl,



said flat set plate being secured to said lower arm with two shafts, one of said shafts being adapted to rotatably support said center portion of said flat ratchet plate at an upper end of said flat set plate, and the other of said shafts being adapted to rotatably support said base end of said plate-shaped pawl at a position below said flat ratchet plate, and said lower arm and said flat set plate closely contacting a respective surface of said flat ratchet plate except for connecting parts to said upper arm, and said plate-shaped pawl so as to be slidable relative to said flat ratchet plate and said plate-shaped pawl said lower arm being disposed between said flat ratchet plate and said upper arm and having a protection flange along an upper periphery thereof so as to surround a portion of said flat ratchet plate, thereby protecting said toothed edge of said flat ratchet plate, when said toothed edges faces upwardly upon rotation of said flat ratchet plate.

5,547,256

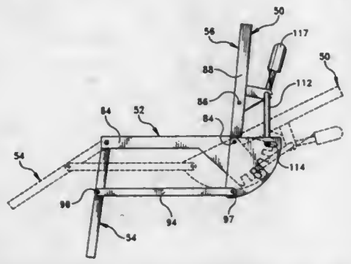
CHILD'S SEATING DEVICE

Robert A. D'Antuono, 45 Water St., and William J. Kirk, 327 Gilbert Stuart Dr., both of East Greenwich, R.I. 02818

Filed Dec. 30, 1993, Ser. No. 175,936

Int. Cl.[6] A47C *1/035*

U.S. Cl. 297—377 **6 Claims**



1. A child's seating device comprising an outer frame and a child supporting assembly comprising interconnected seat, leg rest and backrest portions, said frame supporting said child supporting assembly and including means for fixing the position of said seat portion relative to said frame in a generally longitudinally disposed use position, said seat portion including a relatively flat bottom member having opposed front and rear edges and a top surface which defines a generally horizontal plane in which said seat portion is disposed in said use position, both said leg rest and backrest portions each including a relatively flat panel pivotally interconnected to said seat portion bottom member proximal the front and rear edges thereof respectively at first and second operational angles with respect to said horizontal plane, and a linkage assembly operative to simultaneously move said leg rest portion and said backrest portion in unison with respect to said seat portion about said bottom member pivotal interconnections such that said first and second operational angles are essentially equal to each other, including means for holding said linkage assembly in a fixed position so that said leg rest and backrest portions are fixed relative to said seat portion, both said frame and said child supporting assembly being vertically and simultaneously collapsible, said linkage assembly holding means including a first plate rearwardly extending from said seat portion and a second plate downwardly extending from said backrest portion such that the plates are in face to face operational relation, said second plate arcuately movable across portions of said first plate upon movement of said backrest portion and means for locking said plates in varying relative positions with respect to each other.

5,547,257

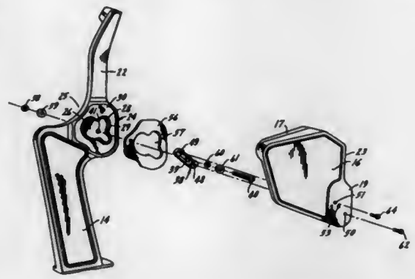
RETRACTABLE ARMREST

Donald C. Lavender, Hickory Corners, Mich., assignor to GDS Seating, Inc., Fountain Inn, S.C.

Filed Jul. 22, 1993, Ser. No. 96,126

Int. Cl.[6] A47C *7/54*

U.S. Cl. 297—411.32 **7 Claims**



1. A stadium chair comprising an armrest mounted to a main seat support which in includes a seat back, said armrest being movable relative to said seat back to two positions, a first of said two positions being one in which said armrest provides an arm support surface for an occupant of said seating device and prevents lateral sliding by an occupant from said chair, a second of said two positions being one in which said armrest is retracted and allows an occupant to exit from said seat laterally, said main seat support having an internal bearing surface, and said armrest carrying a non-circular lug, said lug having an opening, a fastener extending through said opening and holding said lug in proximity to said bearing surface, said lug being fixed to said armrest, said bearing surface surrounding said lug with an endless bearing surface strip defining at least two lobes, wherein one of said lobes is for receiving an end of said lug and holding said armrest in said first position and a second one of said lobes receiving an end of said lug and holding said armest in said second position, said bearing surface having a plurality of abutments adjacent to a first one of said lobes for contacting said lug to restrict rotational movement of said armrest when one end of said lug is within said first lobe, whereby said lug is slidably lifted together with said armrest from said first position out of engagement with said first one of said lobes and is rotatably brought into engagement with said second one of said lobes in said second position.

5,547,258

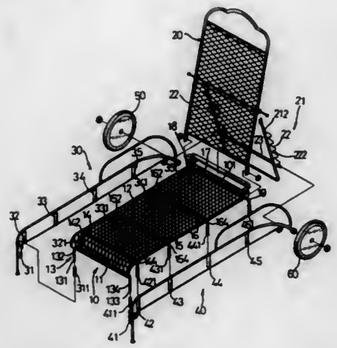
DECK CHAIR ASSEMBLY

Steve Lin, No. 80, Kengtsai Ping, Hoping Village, Chuchi Hsiang, Chiayi Hsien, Taiwan

Filed May 31, 1995, Ser. No. 455,842

Int. Cl.[6] A47C *4/02*

U.S. Cl. 297—440.22 **4 Claims**



1. A deck chair assembly comprising:

a body (**10**) including a first end portion (**11**), a mediate flat portion (**12**) and a second end portion (**101**);

a first supporting member (**13**) substantially inverted U-shaped in section being fixedly mounted on an underside of the first end portion (**11**) of said body (**10**) and including a first leg (**132**) and a second leg (**134**);

at least one second supporting member (**14, 15, 16**) substantially inverted U-shaped in section being fixedly mounted on an underside of the mediate end portion (**12**) of said body (**10**) and including a first leg (**142, 152, 162**) and a second leg (**144, 154, 164**);

a third supporting member (**17**) fixedly mounted on an underside of the second end portion (**101**) of said body (**10**) and including a first end (**172**) and a second end (**174**);

a first L-shaped member (**18**) having a horizontal portion (**184**) fitted in the first end (**172**) of said third supporting member (**17**) and a vertical portion (**182**);

a second L-shaped member (**19**) having a horizontal portion (**194**) fitted in the second end (**174**) of said third supporting member (**17**) and a vertical portion (**192**);

a first positioning member (**30**) including a first outer sleeve (**31**) mounted on said first leg (**132**) of said first supporting member (**13**), at least one second outer sleeve (**32, 33, 34**) mounted on said first leg (**142, 152, 162**) of said second supporting member (**14, 15, 16**), and a third outer sleeve (**35**) mounted on said vertical portion (**182**) of said first L-shaped member (**18**);

a second positioning member (**40**) including a fourth outer sleeve (**41**) mounted on said second leg (**134**) of said first supporting member (**13**), at least one fifth outer sleeve (**42, 43, 44**) mounted on said second leg (**144, 154, 164**) of said second supporting member (**14, 15, 16**), and a sixth outer sleeve (**45**) mounted on said vertical portion (**192**) of said second L-shaped member (**19**);

a backrest (**20**) having a lower portion pivotably engaged with the second end portion (**101**) of said body (**10**); and

a first wheel (**50**) rotatably mounted on said first positioning member (**30**), and a second wheel (**60**) rotatably mounted on said second positioning member (**40**).

5,547,259

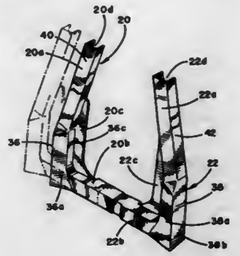
MODULAR AUTOMOTIVE SEAT FRAME

Mark D. Fredrick, Corunna, Mich., assignor to Mitchell Corporation of Owosso, Inc., Owosso, Mich.

Filed May 9, 1994, Ser. No. 240,853

Int. Cl.[6] A47C *7/02*

U.S. Cl. 297—452.18 **29 Claims**



1. A modular automotive seat back frame, comprising:

a first side support;

a second side support, each of said side supports include an upright member and a cross member, said cross members being dimensioned to slidably nest with each other;

adjustable mounting means for securing said first side support to said second side support at a desired spaced apart distance, said adjustable mounting means including said cross members;

a cross support extending between said side supports; and

an upper member mounted to said side supports, said upper member including a headrest tube mounted to said side supports and a headrest bracket mounted to said headrest tube.

5,547,260

AUXILIARY CUTTER UNITS OF A SHIELD MACHINE

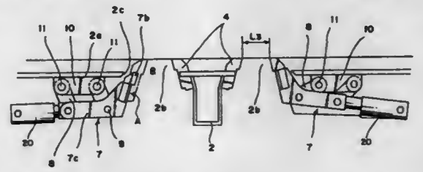
Kazunari Kawai, and Norio Mitani, both of Hirakata, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Jan. 25, 1994, Ser. No. 186,656

Claims priority, application Japan, Feb. 19, 1993, 5-011009 U

Int. Cl.[6] E21D *9/08*

U.S. Cl. 299—33 **20 Claims**



1. An excavating assembly including:

a main body having a front section;

a cutter head rotatably attached to said main body front section, said cutter head having a face plate and a plurality of teeth attached to said face plate that extends forward therefrom, said cutter head face plate being formed with teeth pockets that extend through said face plate;

at least one auxiliary cutter unit attached to said cutter head rearward of said face plate, said auxiliary cutter unit including:

an auxiliary cutter unit body;

a plurality of forwardly extending cutter teeth attached to said auxiliary cutter unit body, said auxiliary cutter teeth being positioned to be selectively seated in said cutter head face plate teeth pockets; and

two linkage members, each said linkage member being pivotally connected at one end thereof to said cutter head and at opposed end thereof to said auxiliary cutter unit body to move said auxiliary cutter unit body from a retracted position wherein said teeth auxiliary cutter unit teeth are disposed in said cutter head face plate teeth pockets and an extended position wherein said auxiliary cutter unit teeth project forward of said cutter head face plate, said linkage members being connected to said cutter head at pivot point spaced apart a first distance and are connected to said auxiliary cutter unit body at pivot points spaced apart a second distance greater than said first distance; and

an actuator connected to said at least one auxiliary cutter unit body for selectively moving said auxiliary cutter unit from said retracted position to said extended position.

5,547,261

MOVABLE RACK SYSTEM FOR LONGWALL CONVEYOR MEANS

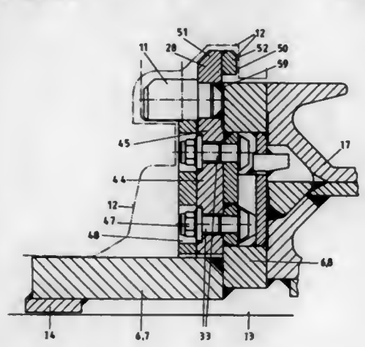
Hans J. Kölbl, Starenweg 2, 47441 Moers, Germany

Filed Jan. 23, 1995, Ser. No. 377,043

Claims priority, application Germany, Dec. 1, 1994, 44 42 627.5

Int. Cl.[6] E21C *29/02*

U.S. Cl. 299—43 **11 Claims**



1. A longwall conveyor having a lantern pinion on a machine roadway side comprising plural racks, plural conveyor trough faces, adjacent racks bridging the conveyor trough faces and being spaced apart, a plate-shaped plug-in element provided on each of the plural racks, each element having teeth welded thereon, vertical roadway flanges provided between the racks, each flange having a guide slit formed by a preceding retaining plate and a support plate, plural bolts for attaching the elements to the guide slits, each retaining plate comprising portions having lengths corresponding to lengths of the racks, the portions being arranged to be offset from the racks and the portions being connected to the support plate, and wherein the bolts are welded to the elements and, a bore is provided on each element wherein the bolts are connected to the retaining plates and fit within the bores to form an ellipse in a direction of transport, and fasteners for releasably connecting the support plates and the retaining plates to the vertical roadway flange.

5,547,262

GUIDE RAIL FOR SCRAPER CONVEYOR OF MINING MACHINE

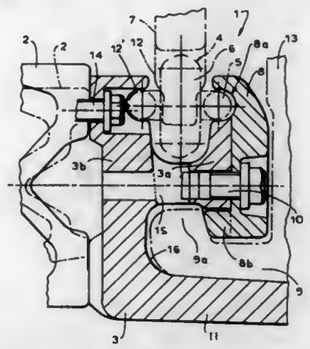
Ernst Braun, and Gert Braun, both of Essen, Germany, assignors to DBT Deutsche Bergau-Technik GmbH, Wuppertal, Germany

Filed Mar. 1, 1995, Ser. No. 397,691

Claims priority, application Germany, Mar. 5, 1994, 9403731 U

Int. Cl.[6] E21C *29/02*

U.S. Cl. 299—43 **8 Claims**



1. In a mining apparatus having

a longitudinally extending conveyor;

a guide-rail assembly secured to the conveyor and forming an upwardly open cruciform passage extending a full length of the assembly;

a drive chain in the passage; and

a mining machine displaceable along the assembly and having a toothed drive wheel engageable in the chain in the passage;

the improvement wherein

the rail assembly is formed by

a main rail fixed to the conveyor and forming a portion of the passage,

a secondary rail on the main rail and forming the rest of the passage, and attachment means releasably securing the secondary rail to the main rail;

the main and secondary rails form offset from the passage a horizontally outwardly open and longitudinally extending slot having an inner flank formed by the main rail and an outer confronting flank formed by the secondary rail; and

the mining machine has a foot received in and longitudinally displaceable along the slot and captured between the inner and outer flanks of the slot.

5,547,263

Patent Not Issued For This Number

5,547,264

BRAKING FORCE DISTRIBUTION CONTROL SYSTEM

Kenji Tozu, Kariya; Kenji Asano, Toyota, and Noriaki Hattori, Anjo, all of, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

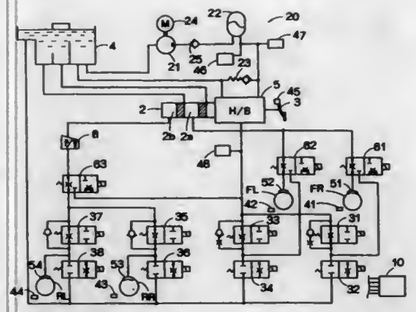
Filed Nov. 2, 1993, Ser. No. 144,434

Claims priority, application Japan, Nov. 4, 1992, 4-319475; Nov. 16, 1992, 4-330062; Nov. 16, 1992, 4-330071

Int. Cl.[6] B60T *8/04*

U.S. Cl. 303—9.62 **11 Claims**

1. A braking force distribution control system for controlling a braking force applied to a rear wheel of an automotive vehicle in a



certain relationship with a braking force applied to a front wheel of said automotive vehicle, comprising:

a front wheel brake cylinder operatively connected to said front wheel for applying the braking force thereto;

a rear wheel brake cylinder operatively connected to said rear wheel for applying the braking force thereto;

a reservoir for storing a brake fluid therein;

a master cylinder for pressurizing the brake fluid fed from said reservoir and supplying a hydraulic braking pressure to each of said front and rear wheel brake cylinders in response to depression of a brake pedal;

pressure control valve means disposed in a hydraulic circuit communicating said master cylinder with at least said rear wheel brake cylinder for controlling the hydraulic braking pressure in said rear wheel brake cylinder;

an auxiliary power source communicated with said reservoir for pressurizing the brake fluid fed from said reservoir and discharging a power pressure;

dynamic hydraulic braking pressure regulating means communicated with said auxiliary power source for regulating said power pressure to a pressure regulated in a certain relationship with the hydraulic braking pressure discharged from said master cylinder in response to depression of said brake pedal;

a changeover valve disposed between said master cylinder and said valve means and selectively placed in one of a first operating position for communicating said valve means with said master cylinder and blocking the communication between said valve means and said regulating means, and a second operating position for communicating said valve means with said regulating means and blocking the communication between said valve means and said master cylinder; and

control means for placing said changeover valve from said first operating position to said second operating position, and actuating said valve means to control the hydraulic braking pressure in said rear wheel brake cylinder in a certain relationship with the hydraulic braking pressure in said front wheel brake cylinder.

5,547,265

ANTI-LOCK BRAKING SYSTEM

Alan L. Harris, Coventry, and Dennis Turner, Ridditch, both of, England, assignors to Lucas Industries PLC, West Midlands, England

PCT No. PCT/GB94/01638, § 371 Date May 30, 1995, § 102(e) Date May 30, 1995, PCT Pub. No. WO95/03962, PCT Pub. Date Feb. 9, 1995

PCT Filed Jul. 29, 1994, Ser. No. 397,061

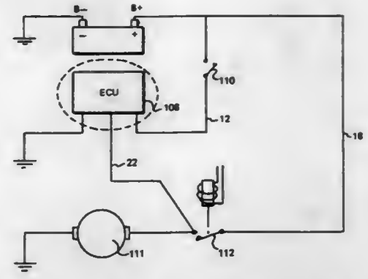
Claims priority, application United Kingdom, Jul. 31, 1993, 9315895

Int. Cl.[6] B60T *13/20*

U.S. Cl. 303—10 **6 Claims**

1. An anti-lock braking system for a road vehicle, comprising:

(a) a plurality of hydraulically operated brake actuators;



(b) a plurality of control channels controlling the supply of hydraulic fluid to the brake actuators;

(c) electrical power supply means;

(d) a hydraulic pump for supplying hydraulic fluid to a brake actuation circuit, the pump being driven by an electric motor energized by said power supply means,

(e) said electric motor being connected to a monitor line for determining voltage supplied by the power supply means at the electric motor;

(f) comparing means connected to said monitor line for comparing the operating voltage at the electric motor with a predetermined reference value; and

(g) means for inhibiting said control channels if the electric motor voltage is less than said reference value.

5,547,266

BRAKE PRESSURE CONTROLLER FOR A HYDRAULIC VEHICLE BRAKE SYSTEM

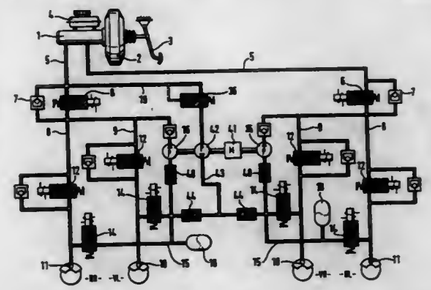
Erhard Beck, Weilburg; Dieter Dinkel, Eppstein, and Karl-heinz Haupt, Gau-Algesheim, all of, Germany, assignors to ITT Automotive Europe GmbH, Frankfurt, Germany

Division of Ser. No. 211,741, Aug. 25, 1994, Pat. No. 5,486,040. This application Jun. 6, 1995, Ser. No. 471,485

Claims priority, application Germany, Oct. 16, 1991, 41 34 214.3; WIPO, Aug. 14, 1992, PCT/EP92/01863

Int. Cl.[6] B60T *8/34;8/42;8/48*

U.S. Cl. 303—113.2 **3 Claims**



1. A brake system for controlling fluid pressure in a wheel brake during normal braking, brake slip control and traction slip control, said brake system comprising:

a brake pedal;

a pressure fluid reservoir containing a pressure fluid;

a master brake cylinder in fluid communication with said pressure fluid reservoir and responsive to movement of said brake pedal for developing a pressure build up of pressure fluid in said master brake cylinder in response to actuation of said brake pedal;

a first and a second brake circuit each having:

(a) a wheel brake,

(b) first control means extending between said master brake cylinder and said wheel brake for:
(i) controlling pressure fluid flow from and to said master brake cylinder,
(ii) permitting pressure fluid flow between said master brake cylinder and said wheel brake during normal braking as said brake pedal is actuated and without sensing a tendency of wheel lock,
(iii) regulating pressure fluid flow to said wheel brake during brake slip control as a tendency of wheel lock is sensed, and
(iv) preventing pressure fluid flow through said first control means to said master brake cylinder during traction slip control as wheel slippage is sensed,
(c) a hydrostatic pump having an intake and an outlet,
(d) a return conduit extending between said wheel brake and said intake of said hydrostatic pump,
(e) a low pressure accumulator containing pressure fluid disposed in said return conduit,
(f) an outlet valve disposed in said return conduit between said wheel brake and said low pressure accumulator for:
(i) preventing pressure fluid flow from said wheel brake during normal braking as said brake pedal is actuated and without sensing a tendency of wheel lock,
(ii) regulating pressure fluid flow from said wheel brake during brake slip control as a tendency of wheel lock is sensed, and
(iii) regulating pressure fluid flow from said wheel brake during traction slip control as wheel slippage is sensed,
(g) a pressure holding valve disposed in said return conduit between said intake of said hydrostatic pump and said low pressure accumulator for permitting pressure fluid flow from said wheel brake through said return conduit and to said hydrostatic pump only when the pressure of said wheel brake exceeds an opening pressure, and
(h) third control means extending between said outlet of said hydrostatic pump and said first control means for conducting pressure fluid flow from said outlet of said hydrostatic pump to said first control means during brake slip control and traction slip control;

a charging pump having an intake and an outlet for generating a pressure exceeding the opening pressure of said pressure holding valve;

a connecting conduit extending between said intake of said charging pump and said master brake cylinder;

a valve disposed in said connecting conduit for
(a) preventing pressure fluid flow between said pressure fluid reservoir and said intake of said charging pump during normal braking and brake slip control, and
(b) permitting pressure fluid flow between said pressure fluid reservoir and said intake of said charging pump during traction slip control;

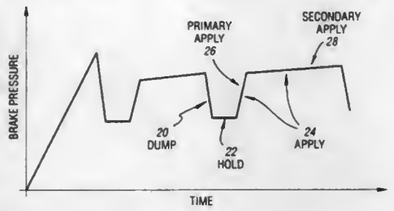
a charging pressure conduit extending between:
(a) said outlet of said charging pump,
(b) a first point in said return conduit of said first brake circuit between said low pressure accumulator of said first brake circuit and said pressure holding valve of said first brake circuit, and
(c) a second point in said return conduit of said second brake circuit between said low pressure accumulator of said second brake circuit and said pressure holding valve of said second brake circuit,

said charging pressure conduit for conducting pressure fluid from said outlet of said charging pump to said intake of said hydrostatic pump of said first brake circuit and to said intake of said hydrostatic pump of said second brake circuit, during traction slip control;

a first check valve disposed between said charging conduit and said return conduit of said first brake circuit and preventing fluid flow from said return conduit of said first brake circuit to said charging conduit; and

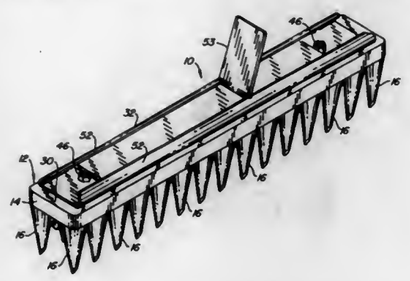
a second check valve disposed between said charging conduit and said return conduit of said second brake circuit add preventing fluid flow from said return conduit of said second brake circuit to said charging conduit, said first check valve and said second check valve for hydraulically separating said first brake circuit from said second brake circuit.

5,547,267
METHOD AND SYSTEM FOR ANTILOCK BRAKING ON A DEFORMABLE SURFACE
Mark Luckevich, Ann Arbor; Bernard W. Johnson, Brighton, both of Mich., and Dan Negrin, Wiesbaden, Germany, assignors to Kelsey-Hayes Company, Livonia, Mich.
Filed Feb. 3, 1995, Ser. No. 382,841
Int. Cl.[6] B60T *8/68*
U.S. Cl. 303—165 **16 Claims**



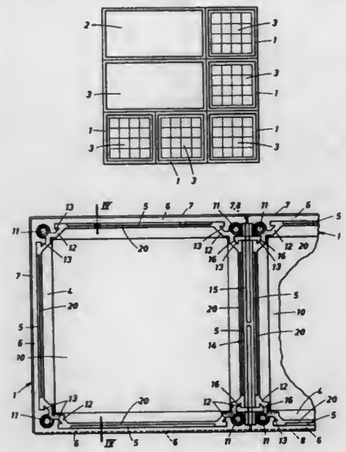
1. A method for controlling a vehicle anti-lock braking system (ABS) on a deformable driving surface, the ABS including a base slip threshold, the method comprising:
calculating a target wheel slip depth based on an estimated vehicle speed;
determining an actual wheel slip depth based on the estimated vehicle speed and a measured wheel speed;
calculating an offset to the base slip threshold if the target wheel slip depth exceeds the actual wheel slip depth indicating the presence of a deformable driving surface, wherein the offset is based on the estimated vehicle speed, the target wheel slip depth and the actual wheel slip depth; and
modifying the base slip threshold by the offset such that wheel slip increases to improve stopping performance on the deformable surface.

5,547,268
TRACTION DEVICE FOR TRACKED VEHICLE
David W. Hansen, 818 E. Savannah Dr., Sandy, Utah 84098
Continuation-in-part of Ser. No. 843,768, Feb. 28, 1992, Pat. No. 5,318,141. This application Jun. 7, 1994, Ser. No. 255,226
Int. Cl.[6] B62D *55/28*
U.S. Cl. 305—191 **13 Claims**



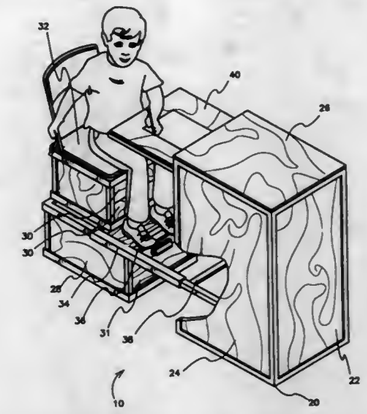
1. A traction unit for an endless, flexible track of a vehicle comprising:
a body having a plurality of flexible teeth aligned in one or more rows thereon, said body being adapted for connection to said track with at least one row of teeth extending transversely of said track and projecting outwardly therefrom, said teeth being conical.

5,547,269
SWITCH AND DISPLAY PANEL FOR ELECTRICAL MONITORING AND CONTROL SYSTEMS
Erwin Bernecker, Mitterndorf 70, A-5122 Ach, and Josef Rainer, Holzöster 16, A-5131 Franking, both of, Austria
PCT No. PCT/AT92/00075, § 371 Date Dec. 10, 1993, § 102(e) Date Dec. 10, 1993, PCT Pub. No. WO92/22948, PCT Pub. Date Dec. 23, 1992
PCT Filed Jun. 10, 1992, Ser. No. 162,165
Claims priority, application Austria, Jun. 11, 1991, 1171/91
Int. Cl.[6] F16B *12/00*
U.S. Cl. 312—111 **9 Claims**



1. A switchboard for an electric monitoring and control system, comprised of
(a) at least two modular elements, the modular elements having visible sides of the same regular contour or of a multiple of said regular contour, the visible sides of the modular elements abutting each other to form a continuous pattern constituting a visible side of the switchboard, and each modular element comprising
(1) a surface element forming the visible side and
(2) side walls projecting backwards from the surface element, the surface element having edge portions projecting outwards of the side wall and forming a peripheral region,
(3) the edge portions having outer edges with mating tongue and groove profiles whereby abutting surface elements of the modular elements may be plugged together while leaving gaps between adjacent ones of the side walls below the projecting edge portions, and
(4) the side walls being formed with undercut locking grooves, and
(b) connecting elements inserted in the gaps between the adjacent side walls and having
(1) detent projections engaging the locking grooves, the detent projections being arranged at respective ends of the connecting elements and having hooked arms extending from the connecting element ends.

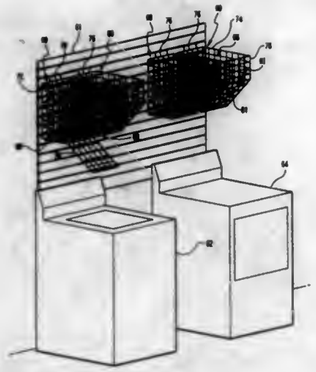
5,547,270
COMPACT DESK WITH LOCKING ENCLOSURE
Anh H. Dang, 202 S. 30th Ave. Apt. 105, Hattiesburg, Miss. 39401
Filed Apr. 19, 1995, Ser. No. 424,192
Int. Cl.[6] A47B *17/03;19/08;27/00*
U.S. Cl. 312—194 **6 Claims**



1. A compact desk assembly having front, side, rear, and top surfaces, said compact desk assembly being selectively extensible into an open position and folded into a compact condition, said compact desk assembly comprising:
an enclosure having a rear panel, opposed side panels, a top panel, and means for closing the front of said compact desk, said rear panel, said opposed side panels, said top panel, and said means for closing the front of said compact desk combining to fully enclose said compact desk when said compact desk is folded into said compact condition;
a drawer assembly having means for extending from said enclosure in a first direction and for retracting into said enclosure, and a drawer having means for extending from said drawer assembly in a second direction opposite said first direction;
a first horizontal work surface having first means for extending from said enclosure and for retracting into said enclosure;
a second horizontal work surface having second means for extending from said enclosure and for retracting into said enclosure, and means for spacing said second horizontal work surface vertically apart from said first horizontal work surface, said first horizontal work surface and said second horizontal work surface each being independently extensible from said enclosure with respect to one another; and
a chair affixed to said drawer assembly.

5,547,271
LAUNDRY SORTING AND STORAGE DEVICE AND METHOD
Susan M. Rydell, 8062 Charlecot Dr., Indianapolis, Ind. 46268
Continuation-in-part of Ser. No. 658,999, Feb. 21, 1991, Pat. No. 5,228,760. This application May 13, 1993, Ser. No. 61,351
Int. Cl.[6] A47B *81/00*
U.S. Cl. 312—211 **17 Claims**

1. A device for sorting and storing laundry, comprising:
a multiple bin unit comprising a plurality of elevated laundry bins each said bin comprising;
a front element;
a rear element;
first and second side elements connected between said front element and said rear element, said first and second side elements, said front element and said rear element defining a top end opening;



a bottom element connected to said rear element between said first and second side elements, said first and second side elements, said front element and said bottom element defining a bottom end opening remote from said rear element; and

a normally-closed drop bottom hinged to one of said front element said bottom element or said first or second side elements and rear element;

wherein each said bin receives laundry through each said top end opening, said laundry being contained by each said bin when each said drop bottom is closed; and

wherein each said drop bottom opens downward to release said laundry from each said bin whereupon release said laundry falls from each said bin;

wherein said bin unit sorts said laundry by receiving said laundry through said top end openings so that said laundry is separately contained within said bins;

said device for sorting and storing laundry further comprising a laundry working area, wherein said bin unit is elevated above said working area at a height whereby said drop bottoms open downward to release said laundry from said bins, whereupon release said laundry falls from said bins to said laundry working area.

5,547,272

MODULAR CABINET BEZEL

Robert W. Paterson, Seneca, S.C., and Werner B. Stephan, Augsburg, Germany, assignors to AT&T Global Information Solutions Company, Dayton, Ohio

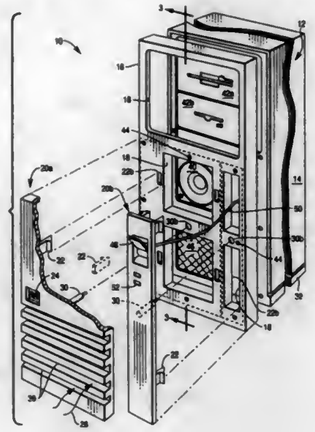
Filed Apr. 24, 1995, Ser. No. 428,608
Int. Cl.[6] F16B *12/10*
U.S. Cl. 312—223.2 **13 Claims**

1. A modular bezel for covering a front side of a cabinet containing an electrical device comprising:

a bezel frame fixedly joinable to said cabinet, and including a plurality of windows therethrough for providing access into said cabinet, said frame further including a plurality of fasteners accessible from a front side of said frame for joining said frame to said cabinet;

a bezel face panel sized to cover at least one of said frame windows and to cover said fasteners; and

joining means for removably connecting said face panel to said frame.

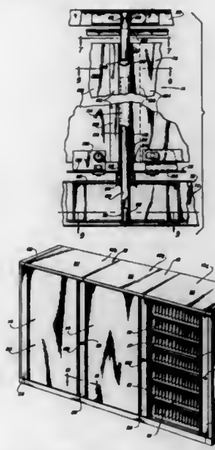


5,547,273

ROTARY FILE AND STORAGE CABINET

Walter E. Hudnall, R R #2 Box 173, Nowata, Okla. 74048

Filed Sep. 5, 1995, Ser. No. 523,463
Int. Cl.[6] A47B *88/00*
U.S. Cl. 312—305 **18 Claims**



1. An improved rotary file and storage cabinet having a cabinet housing defined by oppositely positioned side walls and oppositely disposed access openings on which is mounted a canopy, said cabinet housing being fixedly mounted to a base member, the improvement comprising:

a rotatable file assembly mounted between a canopy and a base member, wherein said rotatable file assembly comprises:

a pair of oppositely positioned doors;

a partition with outer ends interposed between said doors with said outer ends of said partition being secured to said doors, whereby a oppositely arranged storage compartment is defined on each side of said partition;

an axle assembly including a fixed axle mounted at one end to said canopy and affixed at the opposite end to said base member on which said rotatable file assembly is rotatably mounted;

means for vertically positioning said axle assembly and centrally locating said fixed axle within said cabinet housing;

means for fixedly securing said fixed axle to said base member;

a plurality of bearing members selectively mounted on said fixed axle so as to be interposed between said fixed axle and said rotatable file assembly, whereby said rotatable file assembly is rotatable about said fixed axle;

coaxial support means formed in the central portion of said partition to define a coaxial housing for said axle assembly, wherein said fixed axle and said bearing members are mounted within said coaxial housing, whereby said rotatable file assembly is selectively rotatable about said fixed axle;

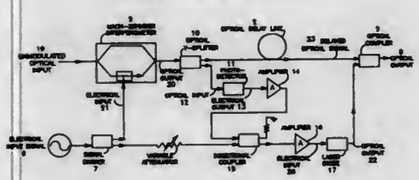
positioning means mounted to said base member operably positioned between said rotatable file assembly and said base member.

5,547,274

MODULATED LIGHT SOURCE WITH A LINEAR TRANSFER FUNCTION

Robert J. Plastow, Cambridge, Mass., assignor to Orchard Communications Inc., Wallingford, Conn.

Filed Mar. 14, 1990, Ser. No. 493,458
Int. Cl.[6] G02B *6/26*
U.S. Cl. 385—15 **6 Claims**



1. A method for reducing distortion in an optical transmission system, comprising:

a) a first modulatable optical source with a non-ideal transfer function, exhibiting high power and low noise;

b) an optical delay line to delay the output of the first optical modulator;

c) an error signal generator which compares the non-ideal signal from the first optical source with the original input signal and provides an error signal output;

d) a second, different, modulatable optical source exhibiting low power and moderate noise, which is modulated by the output of the error signal generator; and

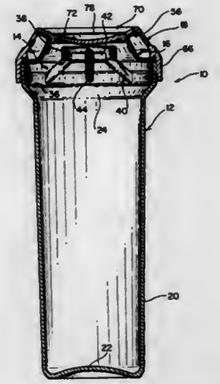
e) an optical combiner, which combines the delayed optical signal from a) with the modulated optical output from d) in such a way that the departures from linearity (which form the error signal) are removed, giving a linear transfer function of electrical signal to light through the complete system; the error signal generator and optical combiner are chosen such that most of the final optical output comes from the first optical source, giving a linear, high power, low noise optical signal at the output of the system.

5,547,275

SHAKER AND BLENDER

Stig Lillelund, Garderhøjvej; Jakob Helberg, Gronnevaenge, both of, Denmark, and Robert H. C. M. Daenen, Bruckersebaan, Belgium, assignors to Dart Industries Inc., Deerfield, Ill.

Filed Aug. 17, 1995, Ser. No. 516,200
Int. Cl.[6] B01F *15/00*
U.S. Cl. 366—130 **14 Claims**



1. A shaker for flowable foodstuffs comprising an upwardly opening vessel having a bottom, a peripheral wall integral with said bottom and extending upward therefrom and terminating in an upwardly opening mouth portion including an annular collar, said collar having an upper rim, upwardly directed support means within said mouth portion, a blender insert removably positioned within said mouth portion, said blender insert having flow blending components and including an outer peripheral edge portion engagable on said support means for support of said blender insert within said mouth portion, a pouring spout removably mounted in an assembled position over said mouth portion in overlying relation to said blender insert, said pouring spout including an edge portion seating on said upper rim and a depending radially inward portion engageable with said outer peripheral edge portion of said blender insert to retain said blender insert against said support means, and cooperating retaining means on said mouth portion and said pouring spout for releasably retaining said pouring spout in said assembled position, said pouring spout having an upper pour opening defined by a surrounding pouring lip, and a cap mountable over said pouring spout, said cap including a depending skirt positionable about said collar, releasable locking means on said skirt and collar for releasably locking said cap to said collar, said cap including means for sealing said pour opening upon a mounting of said cap in a closed position over said pouring spout.

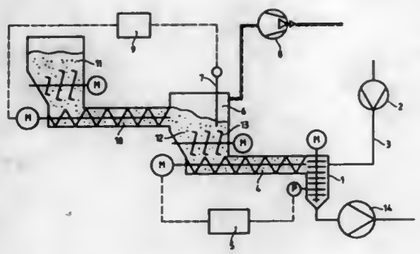
5,547,276

METHOD AND APPARATUS FOR CONTINUOUSLY DISPERSING FINE PARTICLE-SIZED SOLIDS IN A LIQUID

Hans-Michael Sulzbach, Königswinter; Reiner Raffel, Siegburg; Ferdinand Althausen, Neunkirchen-Seelscheid, and Jürgen Wirth, Cologne, all of, Germany, assignors to Maschinenfabrik Hennecke GmbH, Leverkusen, Germany

Filed Jun. 29, 1995, Ser. No. 496,377
Claims priority, application Germany, Jul. 6, 1994, 44 23 649.2; Oct. 6, 1994, 44 35 717.6
Int. Cl.[6] B01F *13/06;15/04*
U.S. Cl. 366—139 **4 Claims**

3. An apparatus for continuously dispersing fine particle-sized solids in a liquid by a continuous process, in which the fine particle-sized solids are deaerated before being dispersed in the



liquid, said apparatus comprising a mixing apparatus, a device for feeding a constant stream of liquid into the mixing apparatus, an intermediate tank for the fine particle-sized solids, a device for maintaining a reduced pressure in the intermediate tank, a screw for conveying the fine particle-sized solids from the intermediate tank to the mixing apparatus, a device for measuring the pressure in the mixing apparatus, a device for controlling the conveying power of the screw as a function of the pressure measured by said pressure measuring device and wherein said controlling device is connected to the conveying power for the screw, a device for conveying the fine particle-sized solids to the intermediate tank, and a device for controlling the introduction of the solids into the intermediate tank in accordance with a specific required solids level of the intermediate tank.

5,547,277

PREHEATING SCREW

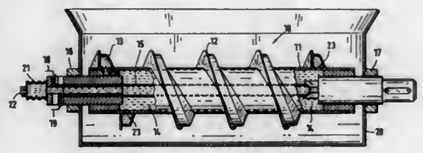
Heinz Caspelherr, and Ulrich Hüwel, both of Köln, Germany, assignors to Klöckner-Humboldt-Deutz AG, Köln, Germany

Filed Apr. 12, 1995, Ser. No. 422,494

Claims priority, application Germany, Apr. 12, 1994, 44 12 536.4

Int. Cl.[6] B01F *15/06*

U.S. Cl. 366—146 **7 Claims**



1. A preheating screw for the simultaneous mixing and heating of fine-grained or paste-like substances, comprising:

a screw trough,

a hollow screw rotatably mounted in said screw trough including a bollow screw shaft having a shell and a hollow helical flight secured to said shell, said screw shaft and said helical flight having cavities filled with a heat-transfer fluid,

an electrical heating device (**15**) inside said hollow screw shaft (**11**),

means supplying electrical energy to said heating device including sliding contacts (**18, 19**) on the outside of said screw shaft (**11**),

a plurality of axially spaced openings (**23**) along the axial length of said screw shaft shell, said openings being equally spaced around the circumference of said shell and connecting said cavities of said screw shaft (**14**) and of said screw flight (**13**) to one another.

5,547,278

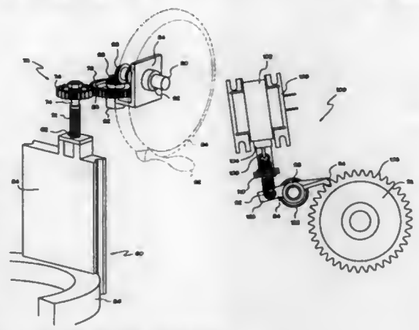
MIXING MACHINE BOWL SUPPORT LOCK

Mark M. Xie, Tipp City, Ohio, assignor to Premark FEG Corporation, Wilmington, Del.

Filed Mar. 29, 1995, Ser. No. 412,965

Int. Cl.[6] B01F *15/00*

U.S. Cl. 366—203 **10 Claims**



1. A mixing machine comprising:

a mixing head;

a mixing bowl support for supporting a mixing bowl under the mixing head;

a gear train comprising a plurality of intermeshing gears for raising and lowering the bowl support and mixing bowl into and out of position beneath the mixing head; and

a lock which engages one of the gears of the gear train to prevent the bowl support from moving out of position beneath the mixing head during mixing;

wherein the gear train further includes a screw which, at a first end, is received in a threaded aperture in the bowl support such that by rotating the screw, the bowl support can be raised and lowered and, at a second end, has a screw gear mounted thereon, said screw gear being a part of the gear train which is engaged by the lock whereby the screw is prevented from rotating and the bowl support is prevented from moving out of position beneath the mixing head during mixing.

5,547,279

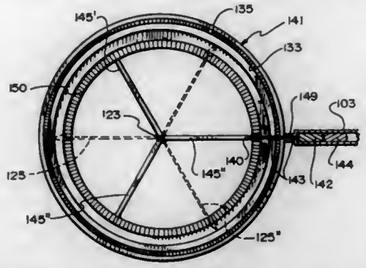
STIR-WIPE COOKING VESSELS

Harry L. Spitzer Sr., 16318 Rappelo Rd., Brooksville, Fla. 34601

Filed Aug. 16, 1995, Ser. No. 515,820

Int. Cl.[6] B01F *7/18*

U.S. Cl. 366—251 **18 Claims**



1. Apparatus for use with a cooking vessel having a bottom and a cylindrical sidewall about a vertical central axis, comprising

rotatable stirrer means fitting within the vessel and effective when rotating to wipe the sidewall and the bottom of the vessel, and

a side handle including non-manual drive means effective to rotate the stirrer means to stir the contents slowly and to wipe the sidewall in so doing.

5,547,280

MAGNETIC STIRRER WITH A SEALED GLASS HOUSING

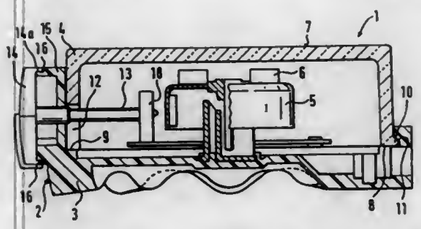
Alfred Wanninger, deceased, late of Heitersheim, Germany, assignor to Janke & Kunkel GmbH & Co. KG IKA-Labortechnik, Staufen, Germany

Filed Feb. 27, 1995, Ser. No. 394,971

Claims priority, application Germany, Feb. 25, 1994, 44 06 217.6

Int. Cl.[6] B01F *13/08*

U.S. Cl. 366—274 **18 Claims**



1. A magnetic stirrer (1) comprising a housing (2) having a lower part (3) and an upper part (4) connectable with the lower part, a drive motor (5) with controlling means for controlling the drive motor, an electrical connection for the drive motor and a drive magnet (6), drivingly attached to the drive motor, located in the lower part (3) of the housing (2), the upper part (4) forming on its top side a mounting surface (7) for a stirring container that holds a stirring magnet, the upper part (4) being made of glass and having a cupped or bowl shape with a lower, free, circumferential edge (8) pressed against an opposing surface (9) of the lower part (3), the lower, free, circumferential edge (8) having a widening (10), and the opposing surface (9) forming a seat having an undercut (11) for receiving the widening (10) in a self-sealing manner.

5,547,281

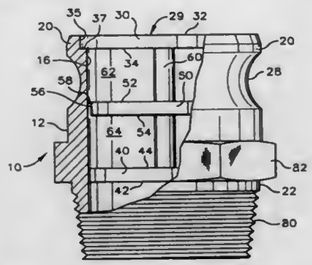
APPARATUS AND PROCESS FOR PREPARING FLUIDS

John R. Brooks, Brenham, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 11, 1994, Ser. No. 321,068

Int. Cl.[6] B01F *5/00*

U.S. Cl. 366—340 **19 Claims**



1. Apparatus comprising:

a substantially tubular member having first and second opposite end portions, an inner surface and an outer surface;

a first end wall having an inner surface and an outer surface and secured to and closing the first end portion of said substantially tubular member and having at least one first aperture extending therethrough between the inner and outer surfaces thereof;

a second end wall having an inner surface and an outer surface and secured to and closing the second end portion of said substantially tubular member and having at least one second aperture extending therethrough between the inner and outer surfaces thereof;

an intermediate wall disposed within said substantially tubular member intermediate said first and second end walls, said intermediate wall having a first surface facing said first end wall, a second surface facing said second end wall and a circumferential outer edge;

support means disposed within said substantially tubular member for fixedly securing said intermediate wall relative to the inner surface of said substantially tubular member whereby the circumferential outer edge of said intermediate wall and the inner surface of said tubular member define a substantially annular passage;

wherein the inner surface of said substantially tubular member, the inner surface of said first end wall, and the first surface of said intermediate wall define a first chamber;

wherein the inner surface of said substantially tubular member, the inner surface of said second end wall, and the second surface of said intermediate wall define a second chamber;

wherein said substantially annular passage provides fluid flow communication between said first and second chambers; and

wherein the at least one first aperture and the at least one second aperture are both circular in cross section and the diameter of the at least one first aperture is greater than the diameter of the at least one second aperture.

5,547,282

CALORIMETRIC MEASURING APPARATUS

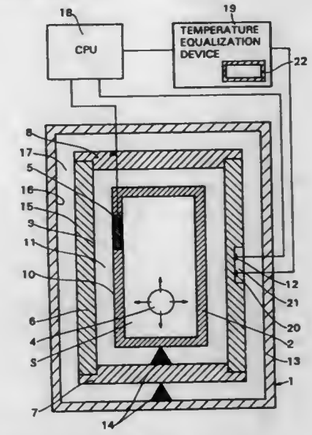
Hubert Pinhack, Heitersheim; Jürgen Fuhrmann, Schwedt, and Rolf Gegg, Freiburg, all of, Germany, assignors to Ika-Analysentechnik Gmbh, Heitersheim, Germany

Filed Apr. 28, 1994, Ser. No. 235,729

Claims priority, application Germany, May 3, 1993, 43 14 454.3

Int. Cl.[6] G01N *25/22*

U.S. Cl. 374—36 **8 Claims**



1. A calorimetric measuring apparatus comprising a decomposition vessel whose interior is configured as a reaction chamber and which can be tightly sealed, said decomposition vessel (2) being removably arranged inside a jacket and having a first temperature

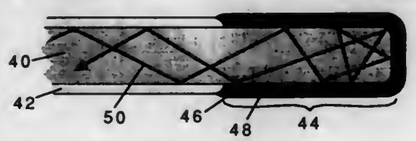
sensor for the measurement of temperature attained inside the decomposition vessel, said jacket surrounding the decomposition vessel (2) being configured as a heat sink (6) and having at least some portions made of a material having good thermal conductivity with a high heat capacity, said heat sink (6) having inner surfaces (9) spaced from outer surfaces (10) of the decomposition vessel (2) thereby forming a first thermal insulation space (11), an outer housing (13) which surrounds the heat sink (6) having inner surfaces (16) spaced from outer surfaces (15) of said heat sink, thereby forming a second thermal insulation space (17), and a temperature equalization device (19) adapted for receiving a second decomposition vessel 22, said device (19) being connected to a computing and control unit (18) and being connected to a temperature sensing means located at a wall zone of said heat sink for determining the temperature of the heat sink (6), the first temperature sensor and the temperature sensing means also being connected to the computing and control unit (18).

5,547,283

OPTICAL TEMPERATURE SENSOR USING THERMOCHROMIC SEMICONDUCTORS

James W. Kronberg, 108 Independence Blvd., Aiken, S.C. 29801

Filed Nov. 1, 1994, Ser. No. 332,068
Int. Cl.[6] G01K *11/12;11/14;1/14*
U.S. Cl. 374—162 **10 Claims**



1. An optical temperature sensor comprising:
a thermochromic semiconductor material, wherein said thermochromic semiconductor material is defined by the formula $Zn_xCd_yHg_{(1-a-y)}O_aS_bSe_cTe_{(1-a-b-c)}$ wherein Zn represents zinc, Cd represents Cadmium, Hg represents mercury, O represents oxygen, S represents sulfur, Se represents selenium, and Te is tellurium; and the value of x ranges from 0.0 to 0.5, the value of y ranges from 0.5 to 1.0, the value of a ranges from 0.0 to 0.5, the value of b ranges from 0.5 to 1.0 and the value of c ranges from 0.0 to 0.5,
said thermochromic semiconductor material being contained within a tip of an optic fiber having a glass matrix containing said thermochromic semiconductor covering the fiber tip and forming a continuous layer; and
a boundary layer formed by interdiffusion of said glass matrix with the surface layer of said optic fiber tip; and
said boundary layer being inside said continuous layer;
said thermochromic semiconductor material changing color in response to changes in temperature; and
said semiconductor material comprising a hexagonal wurtzite structure.

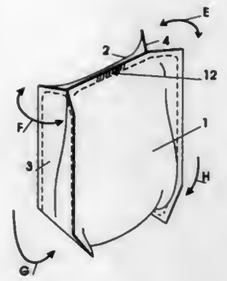
5,547,284

BAG FOR LIQUIDS, PASTES, OR GRANULATES AND METHOD OF MANUFACTURING

Rodney H. Imer, Berliner Allee 45, 40272 Düsseldorf, Germany

Continuation of Ser. No. 70,612, Jun. 1, 1993, abandoned.
This application Apr. 26, 1995, Ser. No. 430,092
Claims priority, application Germany, Jun. 4, 1992, 92 07 558.4
Int. Cl.[6] B65D *30/16*
U.S. Cl. 383—104 **22 Claims**

1. A bag comprising: a front wall, a rear wall and two side walls demarcating an inside of the bag receptive of liquids, powders, pastes or granulates and when full having a sealable top portion



and a substantially flat rectangular base at a bottom portion thereof upon which the bag stands,
wherein the front and rear walls each have bottom edges and the side walls each have a bottom edge having a given length and sealed to the bottom edge of the front wall along half of the given length and sealed to the bottom edge of the rear wall along half of the given length and wherein remaining portions of the bottom edges of the front and rear walls are sealed together,
whereby when empty, the two halves of the bottom edge of each side wall along with portions of the bottom edges of the front and rear walls to which the halves are sealed are freely bendable toward and away from each other, such that the side walls are infoldable with the two halves of the bottom edge of each side wall bent toward each other to permit the walls to lie substantially flat and
wherein as the bag is filled, the side walls are outfolded with the two halves of the bottom edge of each side wall along with portions of the bottom edges of the front and rear walls to which the halves are sealed, automatically bend away from each other and bottom portions of the side walls automatically fold under the bag and form the base upon which the bag stands.

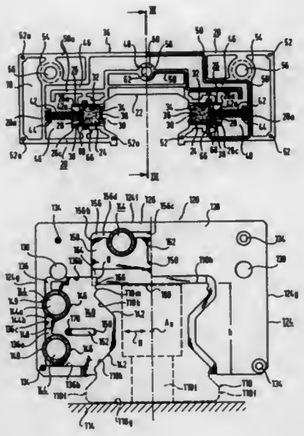
5,547,285

LINEAR GUIDE MEANS

Bernhard Hutzel, Neunkirchen; Günter Blaurock, Niederwerrn, and Michael Klein, Grafenrheinfeld, all of, Germany, assignors to Deutsche Star GmbH, Schweinfurt, Germany

Filed Apr. 14, 1994, Ser. No. 227,738
Claims priority, application Germany, Apr. 16, 1993, 43 12 470.4; Feb. 9, 1994, 44 04 109.8
Int. Cl.[6] F10C *29/06*
U.S. Cl. 384—15 **74 Claims**

1. A linear guide unit comprising a guide rail with an axis and at least one track and at least one guide carriage with at least one running element which in an operating condition is guided on this track, whereby there is mounted on the guide carriage a treating unit carrier for at least one rail treating unit, said rail treating unit being guided on the treating unit carrier in a plane substantially orthogonal to the axis by guide means and being pre-tensioned toward the guide rail, said rail treating unit being captively disposed in the treating unit carrier, said rail treating unit having abutment means cooperating with counter-abutting means on the treating unit carrier, said abutment means and counter-abutting means limiting the mobility of the rail treating unit which is allowed by the guide means.

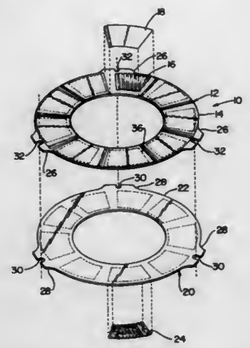


5,547,286

HYDRODYNAMIC AIR THRUST BEARING WITH OFFSET BUMP FOILS

Ronald M. Struziak, Longmeadow, Mass., assignor to United Technologies Corporation, Hartford, Conn.

Filed Apr. 18, 1995, Ser. No. 424,030
Int. Cl.[6] F16C *17/06*
U.S. Cl. 384—105 **11 Claims**



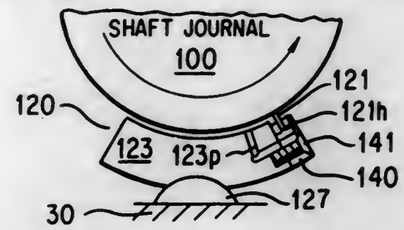
1. A hydrodynamic fluid film thrust bearing comprising a toroidally shaped upper plate defining an upper surface, a plurality of resilient bump foil segments spaced circumferentially on said surface, each of said segments including a leading edge and means for attaching said leading edge to said upper plate, a plurality of top foils each having a leading edge circumferentially spaced on said surface and disposed in overlying relationship with said resilient bump foil segment, a toroidally shaped lower plate defining a lower surface, said toroidally shaped lower plate complementing and being space axially and disposed coaxially relative to said toroidally shaped upper plate, a plurality of other resilient bump foil segments circumferentially spaced on said lower surface and each other resilient bump foil segment having a leading edge, means for attaching said leading edge to said toroidally shaped lower plate, each of said resilient bump foil segments and each of said other resilient bump foil segments being in overlying relationship and said leading edges of each of said resilient bump foil segments and the leading edges of each of said other bump foil segments in overlying relationship being offset relative to each other.

5,547,287

METHOD AND BEARING CONSTRUCTION FOR CONTROL OF HOT OIL CARRYOVER AND LOSS OF LUBRICANT

Fouad Y. Zeidan, Warwick, R.I., assignor to KMC, Inc., R.I.

Filed Dec. 7, 1993, Ser. No. 162,760
Int. Cl.[6] F16C *17/03*
U.S. Cl. 384—117 **14 Claims**



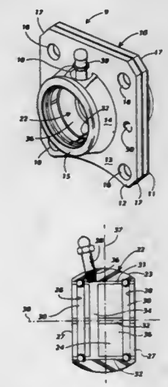
2. A hydrodynamic bearing for supporting a rotating shaft, the bearing comprising:
a plurality of bearing pads supported on a base for movement with respect to the shaft, each of the bearing pads having a leading edge and a trailing edge which is closest to the shaft surface;
a nozzle located between each bearing pad and the bearing pad immediately adjacent thereto, the nozzle including a nozzle fluid passage for supplying lubricant to the leading edge of a bearing pad; and
scraping means for inhibiting the flow of lubricant between the bearing and the shaft, the scraping means comprising means located between the trailing edge of each bearing pad and the nozzle fluid passage for supplying lubricant to the leading edge of an adjacent pad.

5,547,288

CAMSHAFT BUSHING ASSEMBLY

Paul R. Quinn, Lyndhurst; Richard R. Kempski, Chagrin Falls, and Douglas J. King, Elyria, all of Ohio, assignors to Euclid Industries, Inc., Cleveland, Ohio

Filed Feb. 24, 1995, Ser. No. 394,408
Int. Cl.[6] F16C *23/04;33/74*
U.S. Cl. 384—207 **6 Claims**



1. A camshaft bushing, comprising:
a truncated spherical ball with an inner surface defining a central cylindrical opening therethrough;
said ball being comprised of molybdenum impregnated nylon;

said inner surface having two annular grooves near the outer edges of the inner surface for receiving two O-rings;

said ball having a grease port through the spherical wall for receiving a grease fitting for delivering lubricant to the central opening; and

said inner surface having a shallow annular groove and a longitudinal groove both in alignment with said grease port for initially receiving lubricant from said grease fitting.

3. A camshaft bushing assembly, comprising:

a housing comprising two adjoined metal plates each with an outer support wall and an annular protruding wall converging inwardly and ending in a circular lip, wherein the protruding walls protrude away from each other and form an internal receptacle for a bushing and wherein one protruding wall has a closed-edge grease opening therein;

an inner annular bushing mounted in said receptacle, said bushing having an inner cylindrical wall defining a cylindrical central opening for rotatably supporting a camshaft extending therethrough;

said bushing comprised of molybdenum impregnated nylon;

a grease port extending through said bushing and communicating directly with said central opening of said bushing;

a grease fitting mounted in said grease port of said bushing and protruding outwardly through said closed edge opening for delivering lubricant from an external source directly to said central opening and the camshaft;

said bushing having two O-ring grooves on said inner surface for receiving O-rings, said O-ring grooves being integral pans of said bushing, and O-rings placed in said O-ring grooves for maintaining lubricant within the confines of the bushing.

5,547,289

BEARING SYSTEM

Jörg Urban, Ludwigshafen, Germany, assignor to KSB Aktiengesellschaft, Frankenthal, Germany

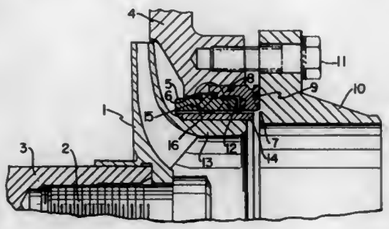
PCT No. PCT/EP92/02451, § 371 Date Mar. 14, 1995, § 102(e) Date Mar. 14, 1995, PCT Pub. No. WO94/07034, PCT Pub. Date Mar. 31, 1994

PCT Filed Sep. 10, 1993, Ser. No. 403,685

Claims priority, application Germany, Sep. 14, 1992, 42 30 714.7; Aug. 14, 1993, 43 27 425.0

Int. Cl.[6] F16C *23/04*

U.S. Cl. 384—215 **8 Claims**



1. A bearing arrangement for a centrifugal pump comprising:

a pump housing;

an impeller rotatably mounted within said pump housing, said impeller including an intake port;

a beating shell pivotably mounted within the pump housing about the intake port, wherein a retaining unit, which may be manipulated from outside the pump housing holds the beating shell in position within the pump housing.

5,547,290

ROLLING BEARING UNIT WITH ROTATIONAL SPEED SENSOR

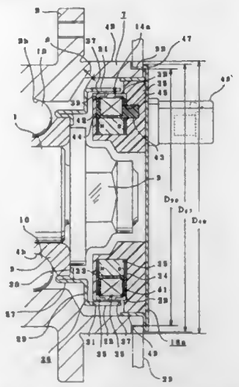
Hideo Ouchi, Fujisawa, and Kenji Takei, Toyoda, both of, Japan, assignors to NSK Ltd., Tokyo, Japan

Filed Sep. 12, 1995, Ser. No. 527,247

Claims priority, application Japan, Sep. 12, 1994, 6-217105; Mar. 10, 1995, 7-051157; Mar. 24, 1995, 7-065871; Aug. 23, 1995, 7-214545

Int. Cl.[6] F16C *33/00;* **G01P** *3/48*

U.S. Cl. 384—448 **7 Claims**



1. A rolling bearing unit with a rotational speed sensor comprising:

a stationary outer ring member having an end opening portion, an outwardly flanged attachment portion on an outer peripheral face thereof and an outer ring raceway on an inner peripheral face thereof,

a rotatable inner ring member having an inner ring raceway and a flange for wheel fixture on an outer peripheral face thereof,

a plurality of rolling bodies provided between the outer ring raceway and inner ring raceway,

a tone wheel fixed to the inner ring member,

a cover fixedly engaged with the end opening portion of the outer ring member, and

a sensor supported in the cover so as to be faced to the tone wheel,

the cover having an outwardly flanged brim formed on an outer peripheral face thereof, and

the brim of the cover having at least a portion protruding radially outwards from the end opening portion of the outer ring member.

5,547,291

PRELOADED ROLLING BEARING UNITS

Seizo Miyazaki, Kawasaki; Shiro Saito, and Daijiro Kitahara, both of Tokyo, all of, Japan, assignors to NSK, Ltd., Tokyo, Japan

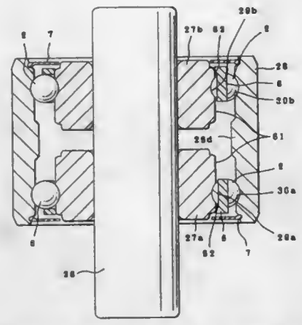
Filed Sep. 28, 1994, Ser. No. 313,804

Claims priority, application Japan, Sep. 29, 1993, 5-243239; Oct. 15, 1993, 5-258608; Dec. 17, 1993, 5-318362; Dec. 17, 1993, 5-318363

Int. Cl.[6] F16C *19/08*

U.S. Cl. 384—512 **1 Claim**

1. A preloaded rolling bearing unit comprised of; a first member having a first peripheral face, a second member located concentric with the first member with a second peripheral face opposite to the first peripheral face, a first raceway formed on the first peripheral face, a second raceway formed on a portion of the second peripheral face which is opposite to the first raceway, and a third raceway formed on a portion of the second peripheral face which is displaced in the axial direction from the second raceway, a third member supported on the first member with sufficient engaging strength, concentric with the first and second members and having a third peripheral face opposite to the second peripheral face, a fourth raceway formed on a portion of the third peripheral face which is opposite to the third raceway, and a plurality of balls provided respectively between the first and second raceways and between the third raceway and fourth raceways, such that an appropriate preload is applied to the plurality of balls by adjusting an engaging or fitting depth of the third member with respect to the first member, the fourth raceway formed on the third peripheral face at a location displaced in an axial direction from a central portion of the third member, so that a first cylindrical portion is formed on the third member to axially protrude by a relatively large amount from one side of the fourth raceway, while a second cylindrical portion is formed on the third member to axially protrude by a relatively small amount from the other side of the fourth raceway, and that the first cylindrical portion is positioned on an axially inner side of the bearing unit and the second cylindrical portion is positioned on an axially outer side of the bearing unit.



5,547,292

PRINTING APPARATUS

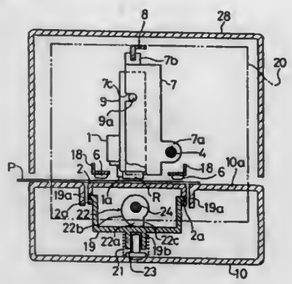
Hiroyuki Harada, Tokyo, Japan, assignor to Seikosha Co., Ltd., Tokyo, Japan

Filed Jan. 19, 1995, Ser. No. 374,440

Claims priority, application Japan, Jan. 28, 1994, 6-008453

Int. Cl.[6] B41J *11/20*

U.S. Cl. 400—58 **3 Claims**



1. A printing apparatus for guiding a piece of printing paper between a printing head and a platen and effecting the printing, comprising:

a printing head, a carrier, a platen, and a platen receiver; said printing head being carried by said carrier, and said platen being received by said platen receiver;

a base frame, a pair of stationary frame plates mounted to face each other on said base frame for supporting said printing head; and a platen driving means for contacting said platen with said printing head mounted on said base frame;

a guide shaft for guiding said carrier in a printing direction, a carrier driving means for driving said carrier in the printing direction, and stoppers facing said platen around said printing head, said stoppers having ends protruding toward said platen beyond a front surface of said printing head, said stoppers being fixed to said stationary frame plates;

said platen driving means including biasing means for biasing said platen receiver towards said printing head, and platen moving means including cam means disposed between said platen and said platen receiver for moving said platen receiver away from said printing head against a biasing force of said biasing means; and

the printing apparatus having a printing stand-by mode, wherein said platen moving means keeps the gap between said platen and said printing heads to a predetermined gap which is larger than the gap in the printing mode, and a printing mode wherein the printing paper is clamped and fastened between said platen and said stoppers by the biasing force of said biasing means.

5,547,293

LABEL PRINTER SUCH AS A PRINTER FOR PRINTING SELF-ADHESIVE LABELS

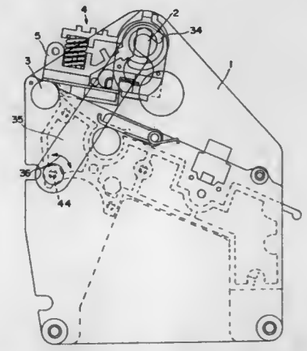
Ulf Koch, Eberbach, and Peter Schneider, Neckargemünd, both of, Germany, assignors to Esselte Meto International GmbH, Heppenheim, Germany

Filed Sep. 22, 1994, Ser. No. 310,615

Claims priority, application Germany, Sep. 24, 1993, 43 32 602.1

Int. Cl.[6] B41J *2/315*

U.S. Cl. 400—120.17 **20 Claims**



1. A label printer for printing labels on a label material, said label printer comprising:

means for storing label material to be printed upon;

at least one printing element, said at least one printing element comprising means for printing on the label material;

surface means disposed adjacent said at least one printing element;

biasing means for applying a force to said at least one printing element for biasing said at least one printing element into engagement with said surface means;

means for feeding label material from said means for storing label material to an area between said at least one printing element and said surface means;

means for actuating said at least one printing element to print on the label material between said at least one printing element and said surface means;

means for positioning said biasing means relative to said at least one printing element;

means for adjusting said means for positioning, said means for adjusting comprising at least first and second positions for moving said biasing means between at least first and second positions;

said biasing means in said first position applying a first biasing force to said at least one printing element, and said biasing means in said second position applying a second biasing force to said at least one printing element;

said second biasing force being greater than said first biasing force;

means for locking said means for adjusting in at least said first and second positions;

said label printer further comprising bearing shaft means;

said bearing shaft means having a longitudinal axis;

means for mounting said biasing means;

means for pivotably mounting said print head; and

said means for mounting said biasing means and said means for pivotably mounting said print head being disposed on said bearing shaft means.

5,547,294

METHOD AND APPARATUS FOR CONTROLLING SERIAL PRINTER

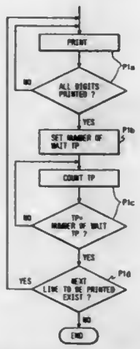
Ichirou Nakayama, and Masami Ookawa, both of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Dec. 21, 1992, Ser. No. 994,305

Claims priority, application Japan, Dec. 19, 1991, 3-337249; Apr. 1, 1992, 4-079940; Jun. 2, 1992, 4-141444; Nov. 20, 1992, 4-312211

Int. Cl.[6] B41J *1/22*

U.S. Cl. 400—145 **22 Claims**



1. A method for controlling a serial printer using a DC motor as a power source, said serial printer including means for generating timing pulses in correspondence to a rotation of a character device, means for causing a carriage holding print means to consecutively move in a digit direction, means for selecting a desired character of said character device to be printed by counting a predetermined number of the timing pulses, means for stopping the rotation of the character device for a predetermined time determined by a gear train while energizing an electromagnet, means for conducting a printing operation by biasing the desired character with the print means and rotating the character device after the carriage has been moved to a next digit, and means for starting a rotation of the character device and a generation of the timing pulses before the carriage is returned to a home position by biasing means while utilizing movement of the carriage, said method comprising the steps of:

setting the number of timing pulses based on a first digit character to be printed by the serial printer and a last digit character printed in a last line; and

counting the predetermined number of timing pulses to select the character to be printed as the first digit character.

5,547,295

CARRIAGE DRIVING METHOD AND APPARATUS FOR EFFICIENTLY ACCELERATING TO A CONSTANT SPEED

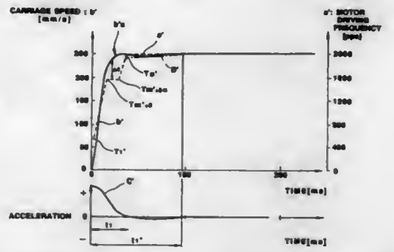
Shinji Kanemitsu, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 936,772, Aug. 28, 1992, abandoned. This application Jan. 20, 1995, Ser. No. 376,096

Claims priority, application Japan, Sep. 2, 1991, 3-221705

Int. Cl.[6] B41J *21/17*

U.S. Cl. 400—279 **19 Claims**



1. A recording device for recording while scanning a recording head, said device comprising:

a carriage for mounting said recording head, said carriage having a natural frequency, wherein a periodic vibration equal to the natural frequency of said carriage occurs when accelerated;

a stepping motor for moving said carriage;

a driving circuit for switching respective phases of said stepping motor in accordance with an input pulse signal, and sequentially advancing the respective phases; and

control means for generating the pulse signal for determining a driving frequency for said stepping motor in order to drive said carriage, said control means comprising setting means for setting a time period of nearly a half period of the periodic vibration generated in said carriage in a moving direction when said carriage shifts from a stopped state to a moving state equal to a time for an acceleration region of said stepping motor, and driving said stepping motor with acceleration during the time period, and thereafter generating the pulse signal so as to drive said stepping motor at the constant speed as said stepping motor being in a constant speed region.

5,547,296

METHOD OF CONTROLLING A PRINTHEAD CARRIAGE VELOCITY OF A SERIAL PRINTER

Naotoshi Iwazawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 24, 1994, Ser. No. 248,011

Claims priority, application Japan, May 24, 1993, 5-121066

Int. Cl.[6] B41J *19/30*

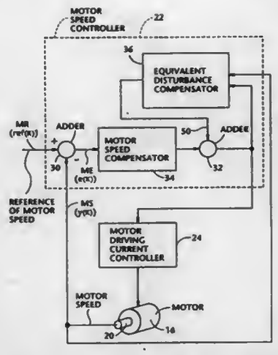
U.S. Cl. 400—322 **5 Claims**

1. A method of controlling a transportation velocity of a printhead carriage of a serial printer, said printhead carriage being driven by a motor by way of a timing belt, said method comprising the steps of:

(a) receiving at an equivalent disturbance compensator signals corresponding to a motor speed, and a current applied to said motor;

(b) generating at said equivalent disturbance compensator an equivalent disturbance compensating signal based on a characteristic equation, wherein said motor speed and said current applied to said motor are variables of said characteristic equation;

(c) generating a motor speed compensating signal based on a difference between said motor speed and a desired motor speed; and



(d) producing a current to be applied to said motor in accordance with said motor speed compensating signal and said equivalent disturbance compensating signal.

5,547,297

PRINTER HAVING A SPEED REDUCTION MECHANISM WITH INTEGRAL AND NON-INTEGRAL GEAR RATIOS

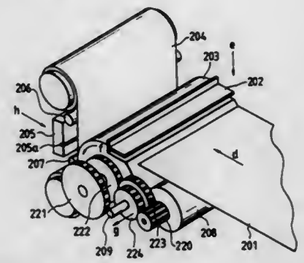
Jyun-ichi Aizawa; Kunihiko Nakagawa; Hiroshi Nakao; Hitoshi Ezaki, and Koubei Sunaga, all of Kyoto, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 53,016, Apr. 27, 1993, Pat. No. 5,433,544, which is a continuation of Ser. No. 520,709, May 8, 1990, abandoned. This application May 1, 1995, Ser. No. 431,749

Claims priority, application Japan, May 8, 1989, 1-114631; Jun. 15, 1989, 1-154906; Aug. 21, 1989, 1-97544 U; Aug. 21, 1989, 1-215239; Aug. 21, 1989, 1-215240; Jan. 29, 1990, 2-19449; Mar. 2, 1990, 2-52103; Mar. 2, 1990, 2-52111; Mar. 16, 1990, 2-27518 U; Apr. 6, 1990, 2-92640

Int. Cl.[6] B41J *19/96*

U.S. Cl. 400—567 **4 Claims**



1. A printer for transferring an image onto recording paper at a recording position disposed between an input transport path and an output transport path comprising:

input means for conveying a sheet of recording paper along said input path;

a cylindrical platen roller rotatable about a longitudinal axis of rotation comprising a circumferential outer surface, said roller being disposed so that said circumferential surface intersects said input path and said output path;

a clamping mechanism, comprising a clamper bar moveably attached to said roller and extendable between at least a first radial position and a second radial position wherein said clamper bar is securably pressed against said circumferential surface;

a control arm, moveable between at least a first position, whereby said clamping mechanism is engaged and mechanically moved to said first radial position, and a second position, wherein said clamping mechanism is not engaged and said clamper bar is in said second radial position,

driving means for rotatably driving said platen roller, said driving means comprising:

a rotatably operable motor for providing a rotational driving force to said platen roller;

a speed reduction mechanism, comprising a plurality of selectively engageable gears, for selectively changing the ratio of revolutions of the said motor to said platen roller, said ratios comprising at least one integral number and at least one non-integral number.

5,547,298

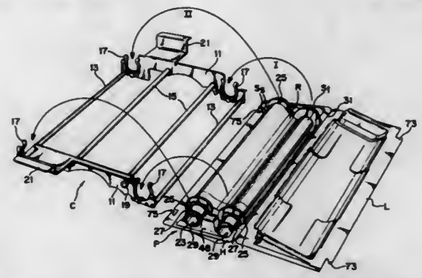
DYE RIBBON PACKAGE FOR THERMAL PRINTERS

Paul Wouters, Vrouw Waver, and Lieven Dirx, Oud-Turnhout, both of, Belgium, assignors to Agfa-Gevaert N. V., Mortsel, Belgium

Filed Jun. 28, 1995, Ser. No. 496,110

Int. Cl.[6] B41J *29/02;* **B65H** *75/00*

U.S. Cl. 400—692 **18 Claims**



1. A method of transferring a supply spool having thereon a roll of dye ribbon which is wound in one direction and extends to a leading end that is affixed to a take-up spool and wound on said take-up spool in an opposite direction at least one turn therearound, said spools each having axially opposed journals at opposite ends thereof, from a storage package having an elongated base and generally upstanding abutments adjacent opposite ends of said elongated base, said abutments including two sets of axially spaced and aligned upwardly opening generally U-shaped slots for supporting the journals of said two spools in spaced parallel relation, to a reloadable cassette of a thermal printer which cassette is of generally flat open frame configuration and has two sets of laterally spaced apart axially aligned generally U-shaped bearings defining two spool positions which are spaced apart in a direction transverse to the bearing axes with their axes parallel to each other and to the flat direction of the cassette, the spacing separating the two spool positions in said cassette being substantially greater than the spacing between the axes of said two sets of U-shaped slots in said package, wherein said spools are arranged in said U-shaped slots of said package with a length of said dye ribbon extending between the outermost windings on said supply and take-up spools at an inclined angle from an upper side of said supply roll directed generally away from said base of said package to an underside of said take-up spool, which comprises the steps of placing the reloadable cassette on a flat surface, locating said dye ribbon package on said surface adjacent said cassette with the axes of said slots in said package in generally parallel relation to the axes of said bearings in said cassette, said abutments of said package in general transverse alignment with said bearings in said cassette and said supply spool proximate to said cassette, removing from the package said take-up spool and transferring the same to the spool position in said cassette nearest to said package to engage its journals in the bearings at said spool position, whereby a portion of the outermost turn of dye ribbon wound on said take-up spool is unwrapped therefrom as an inherent result of the take-up spool transfer, and then removing from said package said supply spool

and transferring the same to the spool position of said cassette which is remote from said package to engage the journals thereof in the bearings at said position, whereby a portion of the outer winding of ribbon on said supply roll is unwrapped therefrom as an inherent result of the supply roll transfer and the combined length of the portions of dye ribbon thus unwrapped is at least equal to the difference between the separation of the spool positions in said cassette and the separation between the two sets of slots in said package.

5,547,299

DEVICE FOR THE EXACT POSITIONING OF A PRINTING HEAD IN RELATION TO A RECORDING SUBSTRATE

Richard Düsterhus, Paderborn; Udo Petermann, Altenbeken; Reimund Selke, Paderborn, and Ruprecht Flügge, Bad Lippspringe, all of, Germany, assignors to Siemens Nixdorf Informationssysteme Aktiengesellschaft, Paderborn, Germany

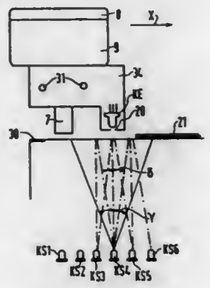
PCT No. PCT/DE94/00273, § 371 Date Sep. 20, 1995, § 102(e) Date Sep. 20, 1995, PCT Pub. No. WO94/21466, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 11, 1994, Ser. No. 525,601

Claims priority, application Germany, Mar. 22, 1993, 43 09 184.9; Mar. 22, 1993, 43 09 185.7

Int. Cl.[6] B41J *29/44*

U.S. Cl. 400—708 **11 Claims**



1. A device for exact positioning of a printing head in relation to a recording substrate in a printer,

a recording substrate holder for holding the recording substrate at least one recording substrate stop bounding the recording substrate holder on one side thereof for aligning the recording substrate on the recording substrate holder,

the printing head being moveable in at least one movement direction transverse to the recording substrate stop over the recording substrate holder,

at least one receiving or transmitting means which is moveable together with the printing head, being coupled in a defined position with the printing head,

at least one transmitting or receiving means, which extends in the movement direction of the printing head, being arranged in or on the recording substrate bolder such that the transmitting or receiving means is at least partially covered by the recording substrate, as a result of which communication between the receiving or transmitting means and the transmitting or receiving means is interruptable in a deposit region of the recording substrate.

5,547,300

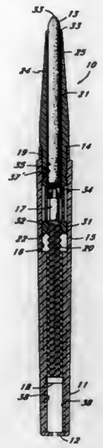
COSMETIC PENCIL WITH THREADS POSITIONED ON FLEXIBLE ARMS

Ronald J. Powers, 550 E. Third St. #B., Oxnard, Calif. 93030

Continuation-in-part of Ser. No. 169,213, Dec. 20, 1993, Pat. No. 5,407,286. This application Oct. 28, 1994, Ser. No. 331,127

Int. Cl.[6] A45D *40/06;40/20*

U.S. Cl. 401—68 **6 Claims**



1. A cosmetic pencil **10** for dispensing a soft cosmetic mass **13**, said cosmetic pencil comprising:

a generally cylindrical elongated hollow lower barrel **11** having a bottom **12**, a top **14**, an outer surface **15** and an inner surface **16**;

an elongated push rod **17** supported by said hollow barrel **11** so that it may more axially of said barrel but cannot turn in said barrel, said elongated push rod **17** having a bottom **18** and a top **19** and having external threads **20** and including means to prevent said push rod from being turned with respect to said barrel **11**, said elongated push rod **17** having a head **30** adjacent the top **19** to assist in pushing a cosmetic mass **13** out of a sheath **21**;

a hollow sheath **21** rotatingly held by said barrel **11** having a bottom **22**, a top **23** an outer surface **24** and an inner surface **25**, said sheath having at least two opposed arms **26** and **27**, each having at least one thread portion **28** and **29** which mates with the external threads **20** of push rod **17**, said opposed arms being sufficiently separated and flexible to permit the passage of the enlarged head **30** between them from a radial direction when the sheath **21** is out of the lower barrel **11** and at least one of said at least two opposed arms **26** and **27** having an outer surface **31** and **32** which contacts the inner surface **16** of said hollow barrel **11** when it is inserted in said barrel to prohibit the at least one thread portion **28** and **29** from moving out of contact with the elongated push rod **17**; and

a generally cylindrical length of a soft cosmetic mass **13** supported in said hollow sheath **21** having a tip **33**, a bottom **34** and a length, said tip **33** being extendable out of the top **23** of the hollow sheath **21** and the bottom **34** being in contact with the enlarged head **30** of said elongated push rod **17**.

5,547,301

WRITING INSTRUMENT WITH ROTATABLE ADVANCEMENT AND RETRACTION

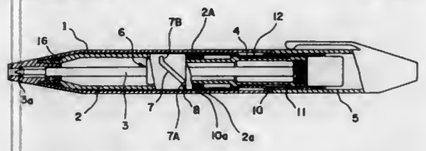
Shuhei Kageyama; Sachio Arai; Tadashi Yamamoto, and Tadayoshi Ebinuma, all of Kawagoe, Japan, assignors to Kotobuki & Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 143,085, Oct. 25, 1993, abandoned. This application Jan. 17, 1995, Ser. No. 384,582

Claims priority, application Japan, Dec. 3, 1992, 4-083448 U; Feb. 12, 1993, 5-004262 U; Mar. 15, 1993, 5-011124 U

Int. Cl.[6] B43K *24/06;7/12*

U.S. Cl. 401—116 **20 Claims**



1. A writing instrument comprising;

a front tubular member (**1**);

an inner front tubular member (**2**) disposed in said front tubular member (**1**);

a writing refill (**3**) inserted in said inner front tubular member (**2**);

a driver (**10**) mounted in said front tubular member (**1**) and inner front tubular member (**2**), said driver (**10**) being rotatable but not axially displaceable relative to said front tubular member (**1**) and said inner front tubular member (**2**);

a rear tubular member (**5**) detachably connected to said driver (**10**) and unrotatable relative thereto;

an inner rear tubular member (**4**) inserted in said driver (**10**);

an inclined path (**7**) in one of said inner tubular members (**2, 4**) extending at an oblique angle relative to the axis of said inner tubular member (**2, 4**) from a first end (**7A**) to a second end (**7B**);

a projection (**8**) on an end of the other of said inner tubular members (**2, 4**) engaging said inclined path (**7**); said other inner tubular member (**2, 4**) having said projection having the end cut off on a side opposite said projection (**8**) so that said projection (**8**) can pass through said one tubular member (**2, 4**) and engage said inclined path (**7**);

said rear inner tubular member (**4**) and driver (**10**) interengaging with each other by engagement between at least one axial groove (**11**) and corresponding projection (**12**) to allow axial displacement but not rotation relative to said driver (**10**).

5,547,302

TWIST-UP PRODUCT DISPENSER HAVING CONFORMABLE APERTURED APPLICATOR SURFACE

Arthur H. Dornbusch, and Scott E. Smith, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jul. 29, 1994, Ser. No. 282,676

Int. Cl.[6] A45D *40/06;40/10*

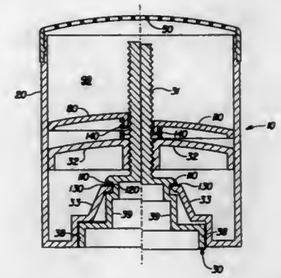
U.S. Cl. 401—172 **18 Claims**

1. A dispensing package for dispensing a product onto a surface, said dispensing package comprising:

(a) a container body having an interior chamber for containing said product and a dispensing opening;

(b) a conformable applicator element affixed to said container body across said dispensing opening and substantially covering said dispensing opening, said applicator element having a plurality of discrete apertures extending therethrough, said apertures having upper edges which collectively define an applicator surface of said applicator element; and

(c) a product supply mechanism within said interior chamber for advancing said product toward said applicator surface such that said product fills said apertures to a level substantially even with said applicator surface, said product supply mechanism including:



(i) a force-limiting element for halting advancement of said product, said force-limiting element having a predetermined threshold which limits the amount of force said product can exert upon said applicator surface during advancement of said product to prevent extrusion of said product through said apertures; and

(ii) a force-maintaining element for maintaining determined force level between said product and said applicator surface during dispensing of said product.

5,547,303

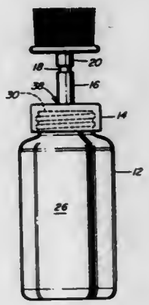
APPARATUS FOR DISPENSING AND APPLYING FLUID

Ronald R. Pyrozyk, Penticton, Canada, assignor to Okanagan House Inc., Penticton, Canada

Continuation of Ser. No. 237,985, May 4, 1994, abandoned. This application Aug. 30, 1995, Ser. No. 521,458

Int. Cl.[6] A46B *11/00*

U.S. Cl. 401—270 **13 Claims**



1. An apparatus for dispensing and applying fluid from a container, the apparatus including;

a) a cover engageable with a top portion of said container, the cover having an opening in fluid communication with said container;

b) a rigid conduit extending through said opening in said cover, said rigid conduit having first and second end portions, the first end portion having a first opening and being operable to project inside said container when said cover is on said container, such that said first opening is in fluid communication with said container, and said second end portion having a second opening in communication with said first opening, said second end portion being operable to project outside of said container, the conduit being moveable relative to said cover such that said conduit is extendable and retractable relative to said container;

c) a brush head having bristles, a fluid receiving opening and a fluid dispersing opening in communication with said fluid receiving opening for dispersing said fluid received at said fluid receiving opening amongst said bristles, said fluid

receiving opening and said fluid dispersing opening being immediately adjacent each other; and

d) a coupling connected to said second end portion of said conduit, said coupling being connected to and in fluid communication with said second opening in said conduit and cooperating with said brush head to movably secure said brush head to said second end portion of said conduit such that said brush head is operable to be positioned remotely from said container by extension of said conduit, the coupling securing said brush head such that said brush head is axially moveable between first and second positions relative to said coupling, said coupling having a plug operable to plug said fluid receiving opening to prevent fluid from flowing from said second opening in said conduit into said fluid receiving opening when said brush head is in said first position and operable to permit fluid to flow from said second opening in said conduit into said fluid receiving opening when said brush head is in said second position.

5,547,304

CONNECTOR UNIT, PARTICULARLY OF THE MULTIPLE-CONNECTION RAPID-ENGAGEMENT TYPE

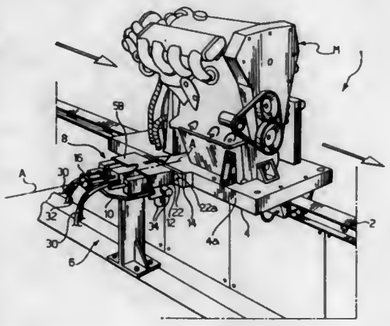
Franco Cascio, Vercelli, Italy, assignor to IF-1 S.r.l., Vercelli, Italy

Filed Dec. 12, 1994, Ser. No. 354,763

Claims priority, application Italy, Oct. 12, 1993, TO93A0939

Int. Cl.[6] B25G *3/00*; **F16D** *1/12*; **G01M** *15/00*

U.S. Cl. 403—13 **11 Claims**



1. A connector unit of the multiple-connection, rapid-engagement type connecting an auxiliary support structure to a movable body, comprising a first connector part mounted on an auxiliary support structure and a second connector part which can be coupled face to face as a result of a relative movement along a direction of coupling defined by a general axis of the first connector part, said second connector part being carried by a movable body adapted to stop close to the first connector part so that the first and second connector parts substantially face each other, means for mutually centering the connector parts on the direction of coupling, and said first connector part being movable transverse to the direction of coupling so that, during coupling with the second connector part the transversely-movable connector part can compensate for any transverse misalignment with the direction of coupling, wherein the transversely-movable connector part is swingably mounted with respect to said auxiliary support structure with the interposition of resiliently-yielding, transverse position-adjustment means, said position-adjustment means being preloaded so as, in the undeformed condition, to define a rest position corresponding to the aligned condition of the two connector parts.

5,547,305

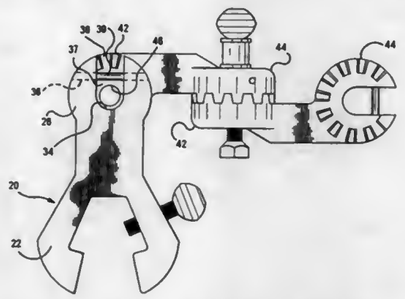
RAPID, TOOL-LESS ADJUSTING SYSTEM FOR HOTSTICK TOOLING

Ronald Treche, Glendale, Ariz., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Mar. 2, 1995, Ser. No. 397,333

Int. Cl.[6] H01R *13/00*

U.S. Cl. 403—97 **14 Claims**



1. A hotstick component to be secured to another component, comprising:

a body having a fastening end; and

a fastening subassembly which secures said fastening end of the body to the other component said fastening end includes a through hole and said fastening subassembly includes a screw member and a spring member, said spring member is disposed over said screw member and said screw member is received through said through hole to threadably engage the other component, the body is springably maintained in an engaged position in which the orientation of the body is fixed, wherein said fastening end includes a C-shaped member having inner walls and a mouth, two holes are disposed through said C-shaped member intersecting said mouth, a pin is disposed in the holes to bisect said mouth and form said through hole between said pin and said inner walls the fastening subassembly allows movement of the body into a disengaged position wherein the body is free to rotate about the fastening subassembly thereby being reoriented with respect to the other component.

5,547,306

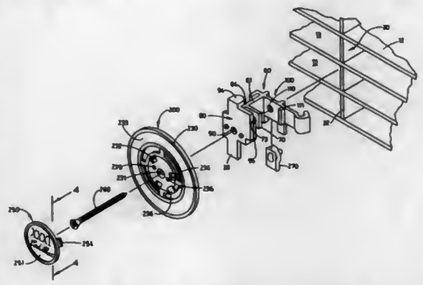
FASTENER ASSEMBLY

Jerry Zakrajsek, Fredonia, Wis., assignor to DCI Marketing, Inc., Milwaukee, Wis.

Filed Sep. 21, 1994, Ser. No. 310,282

Int. Cl.[6] G09F *21/04*

U.S. Cl. 403—202 **20 Claims**



1. A fastener assembly for engaging a substantially vertical component of a lattice structure which includes a plurality of substantially horizontally oriented components, and a plurality of substantially vertically oriented components, the vertical component having a leading edge and a trailing edge, the fastener assembly comprising:

a main body having a first portion which is operable to engage the leading edge of the vertical component, and a second portion which is operable to engage the trailing edge of the vertical component;

an object of interest borne by the main body and operable to be releasably secured on the main body; and

a fastener operable to engage the main body and the object of interest thereby securing the main body and the object of interest on the lattice like structure;

where, in operation, the vertical component is sandwiched between the first and second portions.

5,547,307

DEVICE FOR BUTT-JOINTING PERFORATED CABLE TRAY SECTIONS

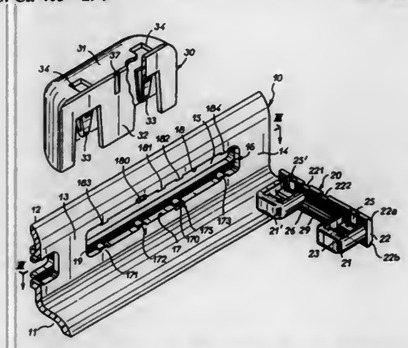
Bertrand Decore, Chapelle Saint Aubin, and Alain Jadaud, Tennie, both of, France, assignors to Legrand, and Legrand SNC, both of Limoges, France

Filed Dec. 12, 1994, Ser. No. 354,801

Claims priority, application France, Dec. 10, 1993, 93 14852

Int. Cl.[6] F16L *3/26*; **F16B** *7/04*

U.S. Cl. 403—294 **21 Claims**



1. Butt-jointing device for butt-jointing sections of cable trays having aligned perforations, said device comprising (i) a fishplate having slot means registrable with aligned perforations in adjacent sections to be butt-jointed, (ii) latch means having at least one projecting hoop insertable through the slot means and registrable aligned perforations of each of the adjacent sections, the latch means being adjustable in position along the slot means, and (iii) comb means having teeth nestingly insertable into the projecting hoops for securing the butt-jointing device in position on the adjacent sections.

5,547,308

FASTENING DEVICE

Andrew C. W. Wright, Farnham, United Kingdom, assignor to Drus Fastener Europe Limited, Farnham, United Kingdom

PCT No. PCT/GB93/00871, § 371 Date Oct. 24, 1994, § 102(e) Date Oct. 24, 1994, PCT Pub. No. WO93/22182, PCT Pub. Date Nov. 11, 1993

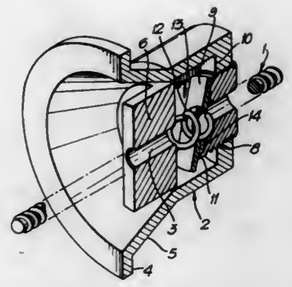
PCT Filed Apr. 27, 1993, Ser. No. 325,336

Claims priority, application United Kingdom, Apr. 28, 1992, 9209155

Int. Cl.[6] F16B *2/18*

U.S. Cl. 403—325 **6 Claims**

1. A fastening device comprising a shaft (1) and a clamping assembly (2), the clamping assembly having:



an outer housing (5) shaped so as to retain an object to be clamped in position; an inner core (6) rotatably disposed within the outer housing and in threaded engagement with a hole in one end of the outer housing; a sprag plate (9) disposed within the outer housing and located in a slot (13) in the inner core, both the inner core and the sprag plate having through holes (3) to receive the shaft, and a bias spring (2) for biasing the sprag plate into engagement with the inner core, such that when the inner core is rotated in relation to the outer housing the sprag plate pivots between a first position normal to the shaft, in which the shaft is free to move through the hole in the sprag plate, and a second position inclined relative to the shaft, in which the shaft is gripped by the sprag plate.

5,547,309

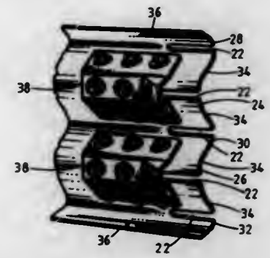
THRIE-BEAM TERMINAL WITH BREAKAWAY POST CABLE RELEASE

King K. Mak, San Antonio; Roger P. Bligh; Hayes E. Ross, Jr., both of Bryan, all of Tex., and Dean L. Sicking, Lincoln, Nebr., assignors to The Texas A&M University System, College Station, Tex.

Continuation-in-part of Ser. No. 78,020, Jun. 15, 1993, Pat. No. 5,407,298. This application Dec. 22, 1994, Ser. No. 362,654

Int. Cl.[6] E01F *15/00*

U.S. Cl. 404—6 **6 Claims**



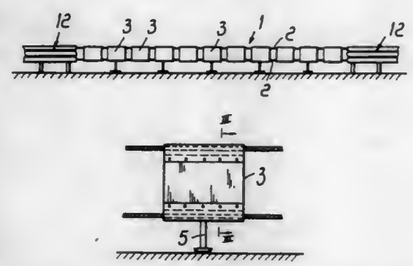
1. A highway guardrail terminal for extending along a roadway, the terminal having an upstream portion and a downstream portion and comprising:

a thrie-beam rail having three peaks and two valleys;

a slotted section in the rail, the slotted section having a slot longitudinally disposed in the rail and of a size sufficient to reduce the ability of the rail to resist buckling in response to a longitudinal loading from an end of the rail, said slot having an upstream end and a downstream end; and

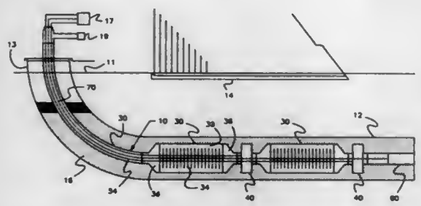
a reinforced portion of the rail proximate the downstream end of the slot, a portion Of the slot extending beyond the reinforced portion toward the upstream portion of the terminal.

5,547,310
BARRIER CONSTRUCTION FOR REMOVABLY CLOSING ROAD PASSAGES
Franz M. R. Muller, Via Tolstoi, 45, 20098, San Giuliano Milanese (Milano), Italy
Filed Apr. 11, 1995, Ser. No. 420,022
Claims priority, application Italy, Apr. 18, 1994, MI94A0745
Int. Cl.[6] E01F *13/00*
U.S. Cl. 404—6 **11 Claims**



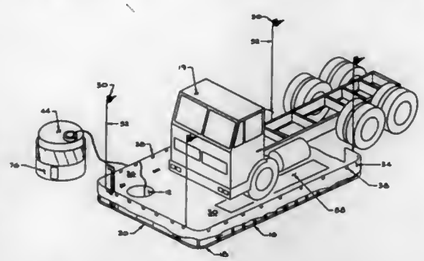
1. A barrier construction for removably closing road passages, comprising at least two cables spaced from one another and coupled, at the end portions thereof, to a stretching assembly arranged near terminal portions of a road passage, wherein between said cables are supported single piece spacer plates for said cables, said cables being arranged at such a height as to delimit therebetween an average of the values of the heights of the centers of gravities of conventional vehicles, said cables having a height from ground between 200 and 1000 mm and, preferably, 200 and 700 mm, and said single piece spacer plates are provided with bent edges to define a passage channel for said cables.

5,547,311
CATHODIC PROTECTION, LEAK DETECTION, AND THERMAL REMEDIATION SYSTEM
William P. Kenda, 17119 Kettle Creek Dr., Spring, Tex. 77379
Filed Oct. 1, 1993, Ser. No. 130,622
Int. Cl.[6] E02B *13/00*
U.S. Cl. 405—52 **18 Claims**



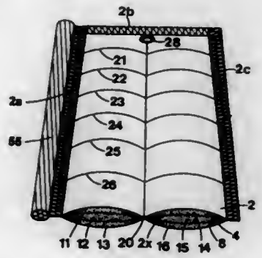
1. A system for cathodically protecting a structure that is in contact with soil and for extracting vapor or liquid from the soil, comprising:
a porous electrically conducting material in direct contact with the soil;
a power source having positive and negative terminals, said negative terminal being electrically connected to the structure;
a tubing string having a central passage;
at least one anode electrically connected to said positive terminal of said power source;
at least one screen member having perforations therethrough;
each of said anodes and said screens being a separate piece of equipment and aligned axially with said tubing string;
said tubing string, said screen and said anode being surrounded and supported by said conducting material such that current provided by said power source flows into said anode, through said conducting material and soil, to the structure; and
said tubing string, said anode and said screen having a common passage therethrough for allowing the vapor or liquid present in the soil to flow to the surface;
the system being positioned in a substantially horizontal well under the structure.

5,547,312
APPARATUS FOR CONTAINING RUN-OFF PRODUCED AFTER WASHING VEHICLES AND THE LIKE
John W. Schmitz, Jr., 382 Prince Frederick St., King of Prussia, Pa. 19406
Filed Apr. 22, 1994, Ser. No. 231,322
Int. Cl.[6] F16N *31/00*
U.S. Cl. 405—52 **19 Claims**



1. An apparatus for containing liquids, comprising:
a plurality of self-standing, substantially rigid, side members, connected in a predetermined manner to define an interior area;
a liquid-impermeable pliable floor comprised of a sheet material, situated within the predetermined area;
a liquid-impermeable wall connected to the floor and supported by the side members for containing liquids;
a gate, integrated with the side members, for facilitating entry onto and egress from the floor; and
a sump cooperating with the floor for collecting the liquid.

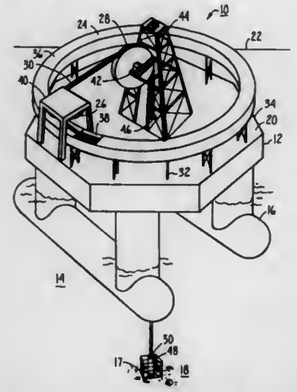
5,547,313
MARINE FUELING FACILITY SPILL CONTAINMENT SYSTEM
Herbert W. Holland, 2314 Chimney Rock, Houston, Tex. 77056
Filed May 10, 1994, Ser. No. 240,321
Int. Cl.[6] E02B *15/04*
U.S. Cl. 405—63 **16 Claims**



1. A barrier boom for a marine vessel fueling facilities proximate a docking area comprising:

a plurality of absorbent devices joined end-to-end to float in the water and surround a marine vessel berthed within the docking area;
each absorbent device being a body having an outer envelope layer of textile material with a section of boltrope integrated into the body of the outer envelope along one edge with a plurality of chambers formed within said outer envelope in stratification therein by internal layers of textile material with a polymer material disposed within the stratified chambers of the envelope having a characteristic of substantially absorbing and solidifying liquid hydrocarbon substances that come in contact with the device, said polymer being sealed within the stratified chambers by a seam joinder of the outer envelope and the internally stratified layers of textile material and a plurality of quilting seams defining a multiplicity of hydrocarbon absorption consolidation points therein and subdividing each stratified chamber into a distinct hydrocarbon absorption unit within the device; and
each absorbent device further including means attached to the outer envelope for securing adjacent absorbent devices together.

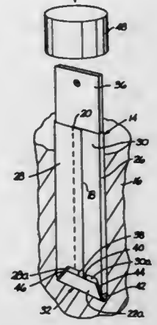
5,547,314
OFFSHORE SYSTEM AND METHOD FOR STORING AND TRIPPING A CONTINUOUS LENGTH OF JOINTED TUBULAR CONDUIT
Thomas J. Ames, Houston, Tex., assignor to Marathon Oil Company, Findlay, Ohio
Filed Jun. 8, 1995, Ser. No. 488,476
Int. Cl.[6] E21B *17/01;17/20;19/22;43/01*
U.S. Cl. 405—165 **38 Claims**



1. A system for conveying a tubular conduit between a deck above a surface of a body of water and a location below the surface of the body of water, said system comprising:
a deck positionable above a surface of a body of water, said deck having a perimeter and an opening through said deck;
a carousel defining a substantially continuous curved carousel pathway in substantially parallel or coplanar alignment with said deck;
a tubular conduit extending along said carousel pathway, said tubular conduit having an outer surface;
means for engaging said tubular conduit and defining a substantially horizontal curved pathway for said tubular conduit, thereby redirecting said tubular conduit in a substantially linear radial direction relative to said carousel pathway; and
means for engaging said tubular conduit and defining a substantially vertical curved pathway for said tubular conduit, thereby redirecting said tubular conduit in a substantially linear perpendicular direction relative to said carousel pathway.

31. A method for tripping a tubular conduit from a deck above a surface of a body of water to a location below the surface of the body of water, said method comprising:
positioning a deck above a surface of a body of water, said deck having a perimeter and an opening through said deck;
coiling a tubular conduit having a plurality of connected disconnectable joints formed therein along a substantially continuous curved pathway in substantially parallel or coplanar alignment with said deck;
conveying said tubular conduit from said continuous curved pathway in a substantially linear inward radial direction relative to said continuous curved pathway; and
conveying said tubular conduit from said linear inward radial direction in a substantially linear downward perpendicular direction relative to said continuous curved pathway.

5,547,315
POST ANCHOR
Charles F. Halloran, Jr., 1607 Bailey Ave., Chattanooga, Tenn. 37404
Filed Jul. 8, 1994, Ser. No. 272,131
Int. Cl.[6] E02D *5/80;5/54*
U.S. Cl. 405—244 **11 Claims**



1. A socket for installing a post or the like in a solid body permitting entry when pierced, said post having a predetermined cross sectional configuration, said socket comprising a unitary member having wall means of finite length defining an elongated hollow cavity having a cross sectional configuration substantially identical to that of said post for receiving said post snugly, closure means solely comprising at least a portion of said wall means at one end of said unitary member for closing said one end of said cavity and forming a seat within said cavity for abutment by said post and for forming the exterior surface of said one end into an oblique configuration having a pair of discrete oppositely facing surfaces defining a leading edge for piercing and entering said body when said socket is impacted with said leading edge abutting said body, whereby said socket may be positioned within the body with a second end opposite said one end accessible for receiving said post and for abutting said seat.

5,547,316

PREFABRICATED MEMBERS OF SECTIONAL MONOLITHIC WALL IN GROUND, DESIGN OF WALL BUILT UP OF SAID MEMBERS, AND METHOD FOR ERECTION OF SAID WALL

Sergei O. Zege, 1 Aeroportovskaya ulitsa, 6, kv.181; Irina A. Zege; Dmitry V. Antonov; Igor I. Sedov; Lev V. Makovsky; Igor A. Pokladok, and Arkady J. Mikhailov, all of Moscow, Russian Federation, assignors to Sergei Olegovich Zege, Moscow, Russian Federation

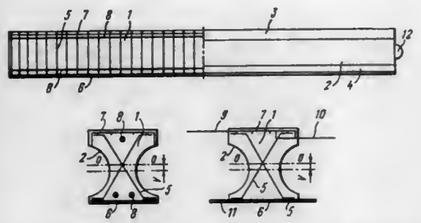
PCT No. PCT/RU93/00321, § 371 Date Sep. 28, 1994, § 102(e) Date Sep. 28, 1994, PCT Pub. No. WO94/18397, PCT Pub. Date Sep. 18, 1994

PCT Filed Dec. 28, 1993, Ser. No. 313,079

Claims priority, application Russian Federation, Jan. 29, 1993, 93003689

Int. Cl.[6] E02D *5/18;29/02*

U.S. Cl. 405—267 **11 Claims**



1. A prefabricated member (1) of a sectional monolithic wall in ground comprised of a reinforcing cage and a concrete body with longitudinal curvilinear slots (2) on end faces, characterized in that the longitudinal curvilinear slots (2) are offset towards one of the longitudinal sides of the body and form thicker (3) and thinner (4) projections, the reinforcing cage consists of external sheet reinforcement (6) disposed on the external surface of the longitudinal side of the body at the side of thinner projections, tiers of transverse bars (7) extending through the height of the body, bars (5) disposed at the longitudinal side of the body on the side of the thicker projections and intersecting in each tier, said bars (5) having bends at the ends which are welded at the side of thinner projections to the external sheet reinforcement (6) while at the side of thicker projections they are secured to transverse bars (7).

5,547,317

MINE SUPPORT SYSTEM

Mark Howell, and Graham H. Clarke, both of Transvaal, South Africa, assignors to HL&H Timber Products (Pty) Limited, Braamfontein, South Africa

Filed Dec. 22, 1993, Ser. No. 172,421

Claims priority, application South Africa, Dec. 22, 1992, 92/9955

Int. Cl.[6] E21O *15/55*

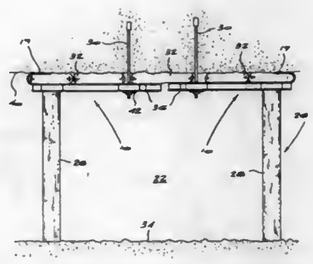
U.S. Cl. 405—288 **8 Claims**

1. A mine support system for supporting a hanging wall of a mine working having a hanging wall and a footwall, the mine support system comprising:

a pair of spaced apart, elongate props, each prop having a lower end bearing in use on the footwall and an upper end;

for each prop, an elongate headboard which spans transversely across the upper end of the prop, each headboard having an inner end and an outer end, the inner ends of the headboards being adjacent to one another and being supported by roof bolts engaging the hanging wall, each outer end of the headboard being supported by a prop, and the headboards being aligned with one another; and

a plurality of grout bags which are located on the aligned headboards and which are inflatable with grout so as to bear forcibly against the hanging wall, the inflated grout bags and



aligned headboards forming a substantially continuous beam in contact with the hanging wall and spanning between the upper ends of the props.

5,547,318

PROCESS FOR EFFECTING SEALED SHEET PILE CONSTRUCTION AND DEVICE FOR APPLICATION OF THE SEALANT RESULTING IN AN IMPERMEABLE SEALED SHEET PILE CONSTRUCTION

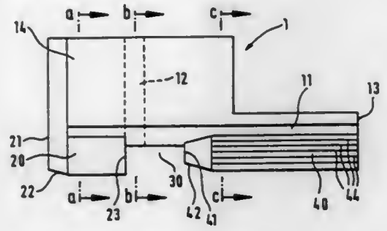
Jean Decker, Luxembourg, Luxembourg, assignor to Profi-lARBED S.A., Luxembourg

Filed Mar. 9, 1994, Ser. No. 208,742

Claims priority, application Luxembourg, Aug. 27, 1993, 88397

Int. Cl.[6] E02D *5/02*

U.S. Cl. 405—303 **14 Claims**



1. Process for effecting sealed sheet pile constructions prior to threading wherein at least one interlock of a pair of interlocks is, over a given distance of its length, completely filled with a sealing compound and wherein the sealing compound is contained within a feeding chamber area extending from the bottom of the interlock up to the upper rim of the interlock, including the steps of:

moving said feeding chamber area from one end of the interlock to the other end of the interlock;

moving a profiled sealing compound distributing chuck axially at the same time as the feeding chamber is moved while maintaining the axis of the profiled sealing compound distributing chuck concentric with respect to the axis of the cavity interlock to thereby fill with sealing compound the whole volume of the interlock section flowing out along the faces of the profiled sealing compound distributing chuck.

5,547,319

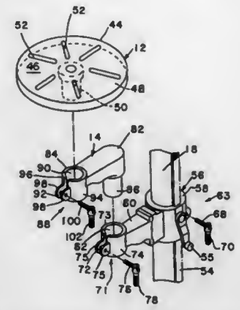
MACHINE TOOL APPARATUS HAVING A WORK PIECE SUPPORT TABLE SUPPORTED BY AN ARTICULATING ARM

Henry Poliak, Pottstown, Pa., assignor to American Machine & Tool Company, Inc., Royersford, Pa.

Filed Apr. 24, 1995, Ser. No. 429,209

Int. Cl.[6] B23B *47/00;* **B23Q** *1/04*

U.S. Cl. 408—90 **20 Claims**



1. A machine tool apparatus having a work piece support table supported by an articulating arm comprising:

a stand;

a motor on the stand;

a moveable cutting tool holder on the stand;

a transmission mechanism drivingly coupled between the motor and the cutting tool holder on the stand;

a work piece support table;

a table positioning support movably coupled to the stand, part of the support projecting outwardly from the stand; and

an arm having first and second ends, the first end is pivotally coupled with the projecting part of the table positioning support, and the second end is rotatably coupled with the work piece support table.

5,547,320

Patent Not Issued For This Number

5,547,321

COMBINED SIDEWALL AND TIE-DOWN FOR PALLET

James D. Thomas, Macomb County, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 22, 1995, Ser. No. 521,230

Int. Cl.[6] B60P *7/08;* **B61D** *45/00*

U.S. Cl. 410—102 **8 Claims**

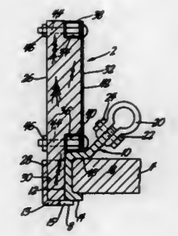
8. An adaptor assembly for a cargo platform allowing multiple cargo carrying configurations for the platform, the adaptor assembly comprising:

a bed;

a pocket fixed to an edge of the bed, the pocket having two opposed sides, a web between the sides facing toward the edge, a ledge between the sides facing up, the pocket defining at its bottom a gap between the sides coplanar with the ledge;

a clamp passed through the gap, the clamp having a flat, wide mediate section facing against the edge, opposing the web and contacting the sides of the pocket;

first and second legs of the clamp joined to the mediate section and bearing on opposed sides of the bed so that the mediate section and the legs together form a C-shaped structure closely received on the bed;



a flange of the clamp extending inboard of the bed from the first leg, the flange defining an aperture;

the clamp having a first position wherein the flange lies above the bed and having a second, inverted position wherein the flange lies below the bed;

a shank fitting closely between the sides of the pocket and fitting closely between the mediate section and the web.

5,547,322

FASTENING MEMBER FOR FASTENING AN OBJECT SUCH AS A NET A STEEL WIRE CABLE OR THE LIKE TO SUCH AS A POST

Lars Lilja, Folkungagatan 3, Varnamo S-331 41, Sweden, and Ulf Enroth, Folkungagatan 5, Varnamo S-331 41, Sweden

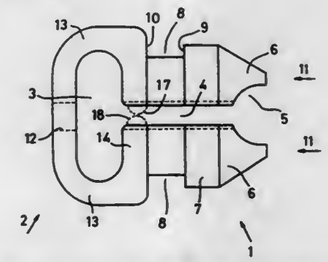
PCT No. PCT/SE93/00129, § 371 Date Sep. 26, 1994, § 102(e) Date Sep. 26, 1994, PCT Pub. No. WO93/20313, PCT Pub. Date Oct. 14, 1993

PCT Filed Feb. 19, 1993, Ser. No. 313,037

Claims priority, application Sweden, Mar. 27, 1992, 9200949

Int. Cl.[6] F16B *13/06;19/00;* **F16L** *3/00*

U.S. Cl. 411—60 **19 Claims**

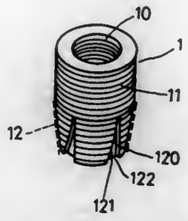


1. A fastening member for fastening an object, such as a net, a steel wire, cable and the like to a carrier, comprising:

one holder portion for fixedly retaining the object, one anchorage portion for anchoring the fastening member in an opening in the carrier, said anchorage portion having barb means and a longitudinally extending passage opening into an accommodation space provided in the holder portion, the wall of the holder portion facing away from the anchorage portion having an opening aligned with the passage for introducing a locking pin into the passage, and the anchorage portion is substantially rigid while the holder portion is resiliently yieldable for allowing deformations to occur when introducing the object

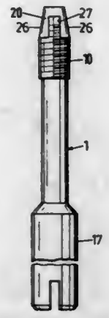
into the accommodation space and when introducing the anchorage portion into the opening of the carrier.

5,547,323
THREADED BUSH
Steven Fang, 288-5, Sec. 4, Tien Chin Rd., Taichung, Taiwan
Filed May 31, 1994, Ser. No. 251,292
Int. Cl.[6] F16B *35/04;37/12*
U.S. Cl. 411—178 **1 Claim**



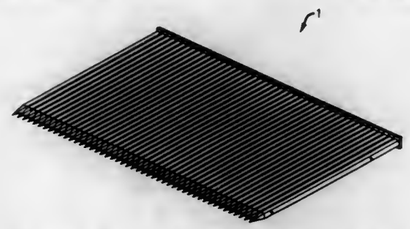
1. A threaded bush comprising a hollow cylindrical body provided with a female thread on an inner surface, a male thread on an outer surface, a lower sloping down portion, and a plurality of generally triangular recessed stop grooves spaced equi-distantly in said lower sloping-down portion, each recessed stop groove formed by a vertical side wall and a curved side wall with an angle defined by both said side walls, said recessed stop grooves engaging uncut wall material of a hole said bush is screwed in, preventing said bush from loosening out.

5,547,324
MEMBER PROVIDED WITH AN EXTERNAL SCREW THREAD
Walter Dürr, Remchingen, and Axel Kirsch, Filderstadt, both of, Germany, assignors to Eberle Medizintechnische Elemente GmbH, Wurmberg, and IMZ Fertigungs-und Vertriebsgesellschaft für dentale Technologie mbH, Filderstadt, both of, Germany
PCT No. PCT/DE92/00292, § 371 Date Jan. 15, 1993, § 102(e) Date Jan. 15, 1993, PCT Pub. No. WO92/18780, PCT Pub. Date Oct. 29, 1992
PCT Filed Apr. 7, 1992, Ser. No. 965,381
Claims priority, application Germany, Apr. 20, 1991, 41 13 411.7
Int. Cl.[6] F16B *39/34;* **A61C** *8/00*
U.S. Cl. 411—304 **16 Claims**



1. A member comprising external screw threads, a recess extending in a longitudinal direction into an end portion of the threads to interrupt the threads, an end of the member being an attachment projection extending beyond the threads, and means for increasing frictional engagement of the threads when threaded into internal threads of a second member, said means including a plastic part having a socket for receiving said projection and skirt means received in the recess for at least partially replacing the external screw threads of the member.

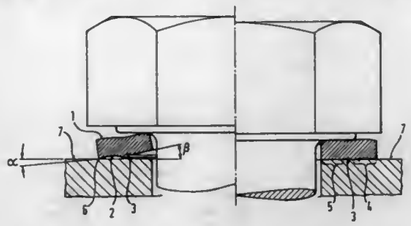
5,547,325
NAIL PACKS MADE OF COMPOSITES HAVING HIGH COMPRESSIVE STRENGTH AND FLEXURAL MODULES
Pamela S. Tucker, and Nancy Showers, both of Austin, Tex., assignors to Utility Composites, Inc., Austin, Tex.
Filed Feb. 18, 1994, Ser. No. 198,845
Int. Cl.[6] F16B *15/08;* **B65D** *85/24;* **B21G** *3/00*
U.S. Cl. 411—442 **42 Claims**



1. A plastic nail pack mountable in an automatic nailer and comprising nails made from a plastic composite having a compression strength greater than about 20,000 psi and a flexural modulus greater than about 1.2×10^6 psi

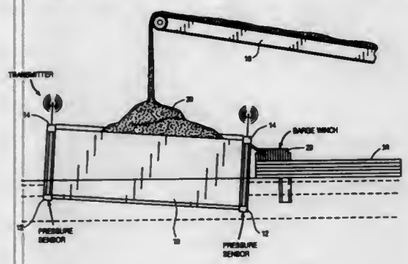
wherein nails from said nail pack, when having a L/d ratio of about 25.5±0.5 and driven by an industry standard tool designed for 15 gauge metal finish nails, completely penetrate white pine and yellow pine and at least partially penetrate oak.

5,547,326
SPRING WASHER FOR THE SECURING OF SCREWS, NUTS, OR THE LIKE
Egon Overhues, Neuenrade, Germany, assignor to Teckentrup GmbH & Co. KG, Herscheid, Germany
Filed Feb. 24, 1995, Ser. No. 394,078
Claims priority, application Germany, Feb. 25, 1994, 44 06 270.2
Int. Cl.[6] F16B *39/24;43/02*
U.S. Cl. 411—544 **17 Claims**



1. Spring washer for the securing of screws, nuts or the like with an essentially ring-shaped washer body of a determined thickness having a washer top side and a washer under side, the washer under side being subdivided into an outer ring surface and an inner ring surface, the washer in an unstressed state resting with the outer edge of the outer ring surface on a flat base and the outer ring surface and the inner ring surface forming each an acute angle with this base, characterized in that the washer under side (2) is subdivided by a circular groove (3) into the outer ring surface (4) and the inner ring surface (5) and the outer ring surface (4) is arched inwards and forms a smaller acute angle (α) with the flat base (7) than the inner ring surface (5).

5,547,327
METHOD AND APPARATUS FOR CONTINUOUSLY DETERMINING THE INCLINATION AND DRAFT OF A WATERBORNE FLOATING VESSEL TO ENABLE AUTOMATIC LOADING OF THE VESSEL
William D. Bachalo, Los Altos Hills, and Adam Isakovic, San Jose, both of Calif., assignors to Aerometrics, Inc., Sunnyvale, Calif.
Filed Sep. 1, 1995, Ser. No. 523,046
Int. Cl.[6] B65G *67/62*
U.S. Cl. 414—137.1 **17 Claims**



1. An apparatus for continuously determining the inclination and draft of a waterborne floating vessel, said apparatus including:

a first pressure sensing device attached to said floating vessel at a first point below the level of the water in which said vessel is floating, said first pressure sensing device producing a first signal proportional to its depth below the surface of the water;

a second pressure sensing device attached to said floating vessel at a second point below the level of the water in which said vessel is floating, said second pressure sensing device producing a second signal proportional to its depth below the surface of the water;

a computer, said computer receiving said first signal and said second signal and computing the draft and inclination of said vessel therefrom.

5,547,328
METHOD AND APPARATUS FOR TRANSFERRING ARTICLES BETWEEN TWO CONTROLLED ENVIRONMENTS
Anthony C. Bonora, Menlo Park, Calif.; Gilles Guerre, Les Loges en Josas, France; Mihir Parikh, San Jose; Frederick T. Rosenquist, Jr., Redwood City, and Sudhir Jain, Milpitas, all of Calif., assignors to Asyst Technologies, Inc., Fremont, Calif.
Division of Ser. No. 948,148, Sep. 21, 1992, Pat. No. 5,370,491, which is a continuation of Ser. No. 607,898, Nov. 1, 1990, Pat. No. 5,169,272. This application Sep. 1, 1994, Ser. No. 299,900
Int. Cl.[6] B65G *49/07*
U.S. Cl. 414—217 **18 Claims**

1. A receiving station for receiving a container having a first interior region, said container including a container door which makes a seal with said container to establish a sealed environment in said first interior region, the receiving station comprising:

a port assembly having an aperture, said port assembly adapted to form a first seal with said container when said container is moved to a sealing position with respect to said receiving station;

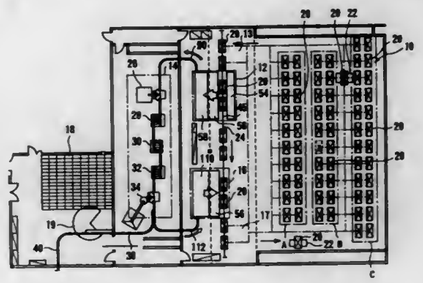


a port door adapter to form a second seal with said port assembly when said port door is in a sealing position with respect to said port assembly;

an inlet for injecting gas into said receiving station, said inlet introducing gas into said container when said container door is removed from said container and when said container is in said sealing position with respect to said port assembly; and

an outlet for removing gas from said receiving station.

5,547,329
ROLLER BOTTLE HANDLING SYSTEM
Osamu Hirai; Keiji Tamura, and Hajime Ichihashi, all of Tokyo-to, Japan, assignors to Kirin Beer Kabushiki Kaisha, Tokyo-to, Japan
Filed Apr. 7, 1995, Ser. No. 418,294
Claims priority, application Japan, Jun. 22, 1994, 6-140410
Int. Cl.[6] B65G *1/10*
U.S. Cl. 414—222 **18 Claims**



1. A roller bottle handling system comprising:

a culture rack storage station storing a plurality of culture racks each accommodating a plurality of roller bottles filled with a culture medium and cells;

a mass-handling facility extracting completed cultures from the roller bottles and replacing a culture medium in the roller bottles with a new culture medium;

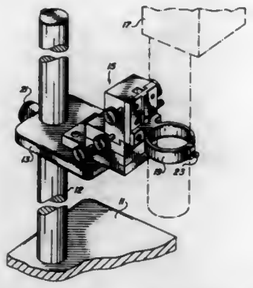
an unloading station taking out roller bottles from the culture racks delivered from said culture rack storage station and delivering the roller bottles to said mass-handling facility;

a loading station charging roller bottles filled with a culture medium and cells into culture racks;

first conveying means for delivering the culture racks, one at a time, between said culture rack storage station and said unloading and loading stations; and

second conveying means for delivering the culture racks, one at a time, between said unloading station and said loading station wherein said second conveying means comprises an elevated track, an aerial carriage movable along the elevated track and grip means detachably gripping a top portion of each of said culture racks.

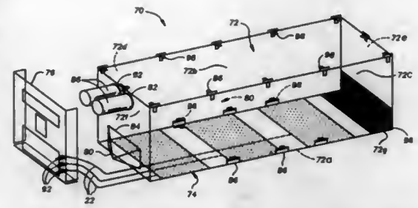
5,547,330
ERGONOMIC THREE AXIS POSITIONER
Edsel J. Wallmaa, 15015 S. 7th St., Phoenix, Ariz. 85048, and Hugh N. Grady, Jr., 13236 N. 7th St., Unit 4290, Phoenix, Ariz. 85022
Filed Sep. 22, 1994, Ser. No. 310,384
Int. Cl.[6] B65G *35/00*
U.S. Cl. 414—749 **10 Claims**



1. A positioner for moving an article along three mutually perpendicular axes, said positioner comprising:
a first slide for supporting said article;
a second slide coupled to said first slide by a first sliding joint;
a third slide coupled to said second slide by a second sliding joint;
a base plate coupled to said third slide by a third sliding joint;
a first rack and a first pinion gear interconnecting said first slide and said second slide, said first pinion gear mounted on a first shaft, wherein one of the first rack and the first shaft is mounted to one of the first slide and the second slide and the other of the first rack and the first shaft is mounted to the other of the first slide and the second slide;
a second rack and a second pinion gear interconnecting said third slide and said base plate, said second pinion gear mounted on a second shaft, wherein one of the second rack and the second shaft is mounted to one of the third slide and the base plate and the other of the second rack and the second shaft is mounted to the other of the third slide and the base plate;
a third shaft having a threaded portion and a carriage engaging said threaded portion, said carriage interconnecting said second slide and said third slide, wherein one of the second slide and the third slide includes a hole for receiving said carriage and the third shaft is mounted to the other of the second slide and the third slide;
wherein said first shaft, said second shaft, and said third shaft are parallel and extend from a first side of said positioner; and
first, second, and third knobs attached one each to the ends of said first shaft, said second shaft, and said third shaft.

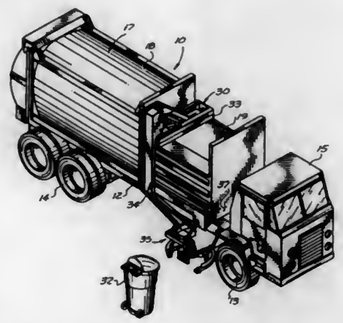
5,547,331
METHOD FOR LOADING BULK MATERIAL INTO A CARGO CONTAINER WITH AN AERATION/VACUUM LINER PAD SYSTEM
Stephen D. Podd, One Lincoln Blvd., Rouses Point, N.Y. 12979, and Victor L Podd, 1678 SW. 20th Ave., Boca Raton, Fla. 33486
Division of Ser. No. 950,469, Sep. 24, 1992, abandoned. This application Mar. 16, 1994, Ser. No. 210,252
Int. Cl.[6] B65G *65/30*
U.S. Cl. 414—786 **7 Claims**

1. A method for loading a bulk cargo into a cargo space of a cargo container, said method comprising disposing a flexible liner within the cargo space and attaching the liner to the cargo container at a plurality of locations on both bottom and top surfaces of



the container so that the liner generally conforms to the shape of the cargo container, and placing at least one air pad having at least one air permeable side within the liner on a bottom surface thereof, and drawing gas from within the cargo space and liner by connecting the at least one air pad to a suction source simultaneously with loading of the bulk material to draw the bulk cargo to the bottom of the cargo space and liner so as to compact the bulk cargo in the cargo space.

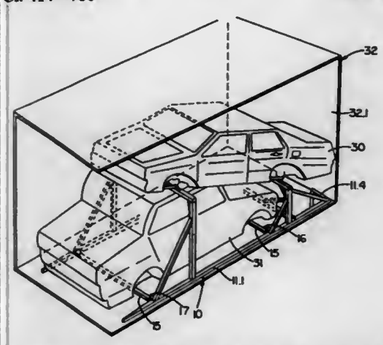
5,547,332
TOP MOUNTED CONTAINER HANDLING APPARATUS
Fred P. Smith, Alpine, and William R. Johnson, American Fork, both of Utah, assignors to The Heil Company, Chattanooga, Tenn.
Division of Ser. No. 36,487, Mar. 24, 1993, Pat. No. 5,419,671. This application Mar. 3, 1995, Ser. No. 398,364
Int. Cl.[6] B65F *3/04*
U.S. Cl. 414—786 **4 Claims**



1. A method of collecting refuse comprising the steps of:
providing a refuse collection vehicle having a body and a container handling apparatus mounted on top of said body, said container handling apparatus including;
a mounting platform affixed to the top of said body;
a lift arm coupled to said mounting platform and having;
a master bar having a first end and a second end, said first end pivotally coupled to said mounting platform,
a gripper base having a first end and a second end,
a support link having a first end and a second end, said first end pivotally coupled to said second end of said master bar, and said second end pivotally coupled to said second end of said gripper base,
a tension link having a first end and a second end, said first end pivotally coupled to said second end of said master bar, and said second end pivotally coupled to said first end of said gripper base,
an extension cylinder having a first end pivotally coupled to said mounting platform spaced apart from said first end of said master bar, and a second end pivotally coupled to said support link intermediate said first and second ends; and

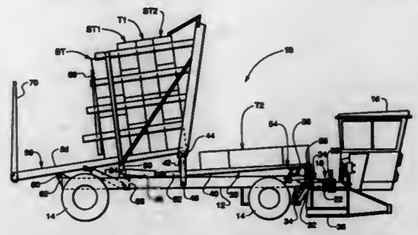
a hoist cylinder having a first end pivotally coupled to said mounting platform spaced apart from said first end of said master bar, and a second end pivotally coupled to said first end of said support link,
a container engaging mechanism coupled to said lift arm for engaging and emptying containers;
completing a reach cycle including;
extending said lift arm from a retracted position to an extended position;
gripping said refuse container; and
retracting said lift arm;
completing a dump cycle including;
hoisting said lift arm to a raised position to empty said refuse container; and
moving said lift arm to a lowered position.

5,547,333
METHOD FOR PACKING VEHICLE BODIES IN A TRANSPORT CONTAINER
Salmon Pienaar, 38 Vigne Rd., Summerstand, Port Elizabeth, South Africa
Division of Ser. No. 260,058, Jun. 15, 1994, which is a continuation-in-part of Ser. No. 13,302, Feb. 4, 1993, abandoned. This application Aug. 9, 1995, Ser. No. 512,840
Claims priority, application South Africa, Feb. 11, 1995, 92/0971
Int. Cl.[6] E04H *6/06*
U.S. Cl. 414—786 **22 Claims**



1. A method of packing at least a first vehicle body without wheels into a transport container having a floor using a frame structure, such that the first vehicle is inclined to and elevated above the floor of the transport container, the frame structure comprising a base, a lower vehicle support member, an upper vehicle support member, the lower vehicle support member mounted transversely across and above the base on a pair of first vertical support members extending up from the base, the upper vehicle support member mounted transversely across and above the base on a second pair of vertical support members extending up from the base such that the upper vehicle support member is spaced horizontally from and vertically above the lower vehicle support member, the frame structure further comprising at least a first attachment member and a second attachment member, the first attachment member and the second attachment member each having brackets thereon for attaching to the first vehicle body, the vehicle support members supportingly receiving the respective attachment members substantially parallel thereto, the method of packing comprising the steps of:
a) attaching the first attachment member across the first vehicle;
b) attaching the second attachment member across the first vehicle, laterally spaced from the first attachment member;
c) supportingly locating the first attachment member on the lower vehicle support member and supportingly locating the second attachment member on the upper vehicle support member; and
d) loading the frame structure into the transport container.

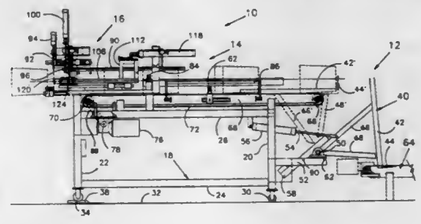
5,547,334
METHOD OF FORMING A STACK OF BALES OF CROP MATERIAL
Albert F. Baril, Leola, Pa., assignor to New Holland North America, Inc., New Holland, Pa.
Filed Aug. 14, 1995, Ser. No. 515,078
Int. Cl.[6] B65G *57/22*
U.S. Cl. 414—786 **11 Claims**



1. A method for automatically forming with a bale wagon a weather-resistant, block-shaped stack of bales of crop material from a plurality of similarly shaped bales as the bale wagon picks up and handles bales during traversal of a field in which a plurality of formed bales have been deposited, comprising the steps of
forming a first tier by placing a plurality of bales within a generally rectangular configuration,
forming a tie tier by placing a plurality of bales within a generally rectangular configuration similar in shape to said rectangular configuration of said first tier, the outermost of which bales in said tie tier not being in alignment with the bales in said first tier,
positioning said tie tier above said first tier,
forming a tight top tier by placing a plurality of bales in a generally rectangular configuration similar in shape to said rectangular configuration of said tie tier, and with adjacent ends and side surfaces of said bales in said tight top tier being contiguous, the outermost of which bales in said tight top tier are not in alignment with the bales in said tie tier, and
positioning said tight top tier above said tie tier whereby said contiguous relationship of said bales provides a barrier for resisting the entry of moisture into the stack via the top of the stack.

5,547,335
HANDLE ORIENTER FOR BUCKETS
David E. Lovett, and Richard O'Brien, both of Indianapolis, Ind., assignors to Webber Manufacturing Co., Inc., Indianapolis, Ind.
Filed Aug. 22, 1995, Ser. No. 517,840
Int. Cl.[6] B65G *59/10*
U.S. Cl. 414—795.6 **18 Claims**

1. An apparatus for orienting a receptacle, the receptacle having



a base, an upper portion and a pivotable handle attached to the upper portion thereof such that the receptacles may hang from the pivotable handle, the apparatus comprising:

first means for supporting the receptacle;

means for retaining the pivotable handle of the receptacle;

means for moving the receptacle off the first support means such that the receptacle hangs from the handle retaining means; and

means for releasing the handle from the handle retaining means such that the receptacle is oriented in a predetermined position with respect to the apparatus when released.

5,547,336

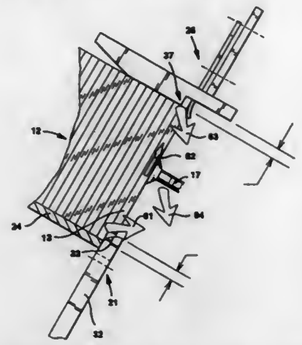
MAGAZINE RELEASE ASSEMBLY

Ronald Whiteman, Crosby, Minn., assignor to Riverwood International Corporation, Atlanta, Ga.

Filed Sep. 29, 1995, Ser. No. 536,079

Int. Cl.[6] B65G *59/04*

U.S. Cl. 414—798.9 **20 Claims**



15. In a magazine assembly having a frontal peripheral frame with a top bracket and a lower bracket, an article release assembly for dispensing rigid articles comprising:

(a) an upper clip assembly mounted to said top bracket and having an upper retention structure with a retention slot extending upwardly a predetermined distance and an upper clip structure, said upper clip structure being mounted to said top bracket and positioned a predetermined distance forward of said upper retention structure, said upper clip structure having a downwardly extending terminal end curved away from said top bracket; and

(b) a lower clip assembly mounted to said lower bracket and having an upwardly disposed rounded edge positioned toward said peripheral frame of said magazine assembly, said lower clip assembly being constructed and arranged for sliding movement thereon by the bottom of the rigid articles.

5,547,337

METHOD AND CLOSED-LOOP CONTROL DEVICE FOR THE CLOSED-LOOP CONTROL OF A TURBINE-GENERATOR CONFIGURATION

Kurt Fork, Neunkirchen, and Frank Krutemeier, Hemhofen, both of, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

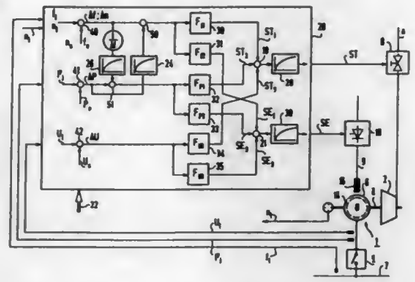
Filed Nov. 28, 1994, Ser. No. 345,136

Claims priority, application Germany, May 27, 1992, 42 17 625.5

Int. Cl.[6] F04D *17/06*

U.S. Cl. 415—1 **9 Claims**

1. A method for the closed-loop control of a turbine-generator configuration, which comprises:



supplying a turbine control element with a first correcting variable;

supplying an exciter control element with a second correcting variable;

forming each of the correcting variables from at least one respective reference value;

forming the first correcting variable for the turbine control element from at least two partial correcting variables; and

deriving one of the at least two partial correcting variables from the reference value for forming the second correcting variable for the exciter control element.

8. A closed-loop control device for controlling a turbine-generator configuration, comprising:

a turbine control element;

an exciter control element; and

a controller receiving actual values of a generator power and of a generator voltage as input variables;

said controller forming each of first and second correcting variables from at least one respective reference value;

said controller outputting the first correcting variable to said turbine control element and the second correcting variable to said exciter control element;

said controller having means for combining at least two partial correcting variables together to form the first correcting variable for said turbine control element; and

said controller having means for deriving one of the partial correcting variables from the reference value for forming the second correcting variable for said exciter control element.

5,547,338

FRICTION PUMP WITH MAGNETIC BEARINGS DISPOSED IN THE EMPELLER

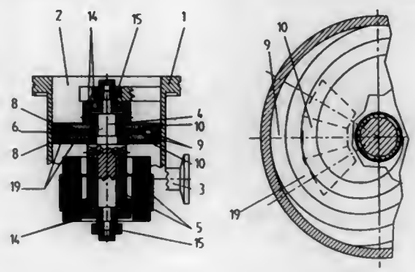
Armin Conrad, Herborn, Germany, and Torbjörn Lembke, Uppsala, Sweden, assignors to Balzers-Pfeiffer GmbH, Asslar, Germany

Filed Mar. 24, 1995, Ser. No. 410,444

Claims priority, application Germany, Mar. 26, 1994, 44 10 656.4

Int. Cl.[6] F04D *19/04;29/04;29/26*

U.S. Cl. 415—90 **5 Claims**



1. A friction pump for conveying gases, comprising at least one pump stage, said at least one pump stage, including:

a rotor;

two spaced stationary discs having on surfaces thereof facing each other spirally-shaped grooves and webs;

a rotating disc formed of an electrically conductive material, located between said two stationary discs, and mounted on the rotor for joint rotation therewith; and

a plurality of permanent magnets mounted on said surfaces of said two stationary discs facing each other;

wherein said permanent magnets are mounted in such a manner that they induce, in said rotating disc, oppositely directed eddy currents which produce a magnetic field generating a force for stabilizing said rotor in an axial direction.

5,547,339

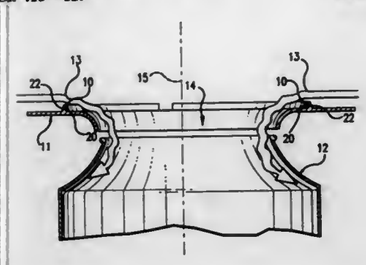
TURBULATOR FOR A FLUID IMPELLING DEVICE

Phillip Burgers, San Diego, Calif., assignor to Comair Rotron, Inc., San Ysidro, Calif.

Filed Apr. 11, 1995, Ser. No. 420,128

Int. Cl.[6] F01D *5/10*

U.S. Cl. 415—119 **49 Claims**



1. A turbulator for use in a fluid impelling device having an inlet passage through which fluid enters, the turbulator comprising:

a first side proximate to the inlet passage;

an opposing second side; and

an apex toward which the first and second sides taper into an angle substantially less than ninety degrees;

the turbulator being circumferentially situated about the inlet passage is adapted to transition fluid flowing toward the inlet passage from the turbulator's second side to the turbulator's first side from a laminar flow to a turbulent flow prior to the fluid entering the inlet passage, the turbulator further being concentrically aligned with the inlet passage along an axis.

5,547,340

SPILLSTRIP DESIGN FOR ELASTIC FLUID TURBINES

William S. Dalton, Chesterfield; Richard S. Clark, Feeding Hills, and Kevin S. Trunkett, Springfield, all of Mass., assignors to IMO Industries, Inc., Lawrenceville, N.J.

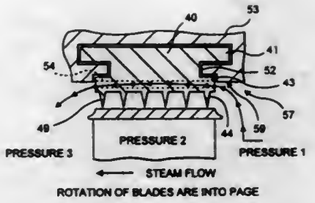
Filed Mar. 23, 1994, Ser. No. 216,685

Int. Cl.[6] F01D *11/08*

U.S. Cl. 415.00—121.2 **12 Claims**

1. A spillstrip for use in forming a tip seal in an axial flow elastic fluid turbine including at least one stage having at least one diaphragm stationarily mounted in a turbine casing and having a plurality of steam directing nozzles, and a rotor fixedly attached to a turbine shaft rotatably mounted within said turbine casing, said rotor having a plurality of blades bounded by a shroud and disposed adjacent said plurality o steam directing nozzles, said spillstrip comprising:

a body portion having a longitudinal extent, a vertical extent, and a horizontal extent, and being particularly adapted for mounting in a groove formed in said diaphragm;



at least one projection extending from said body portion substantially parallel to said vertical extent and along the longitudinal extent of said body portion, said at least one projection having tapered side walls converging to a tip portion continuously extending along the longitudinal extent of said body portion and forming a tip seal with the shroud of said rotor; and

a narrow channel formed through a portion of the vertical extent of said body portion and beneath said at least one projection, without interrupting said tip portion continuously extending along the longitudinal extent of said body portion, and

said narrow channel being disposed at an oblique angle with respect to said longitudinal extent.

5,547,341

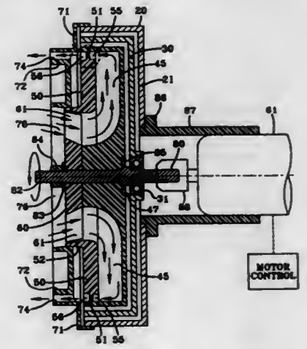
DEVICE FOR THERMAL TRANSFER USING AIR AS THE WORKING MEDIUM

Sanjaykumar Amin, Youngstown, Ohio, assignor to Entropy Systems, Inc., Youngstown, Ohio

Continuation-in-part of Ser. No. 171,516, Dec. 22, 1993, abandoned. This application Feb. 21, 1995, Ser. No. 391,108

Int. Cl.[6] F04D *29/26*

U.S. Cl. 415—143 **9 Claims**



1. A device for generating a thermal difference in a working medium, comprising:

a housing;

an impeller assembly having a plurality of blades extending from a central hub to a casing, defining a like plurality of compartments within said impeller assembly, said impeller assembly carried coaxially substantially within said housing;

a substantially annulus-shaped disk having a plurality of outlet vanes along the perimeter thereof, said blades shaped to allow said annulus-shaped disk to be carried coaxially substantially within said impeller assembly; and,

a substantially circular disk having a plurality of inlet vanes along the perimeter thereof and a diameter to allow the same to be carried coaxially substantially within the interior of said annulus-shaped disk.

5,547,342

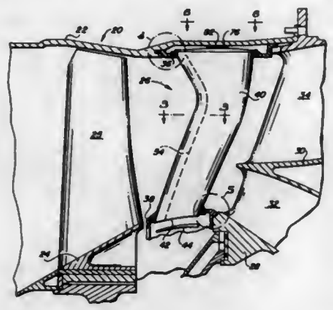
INSERTABLE STATOR VANE ASSEMBLY

John P. Furseth, Chandler; Frank Heydrich, Phoenix; Forest H. Hover, Chandler; Ian Little, Phoenix; Steven G. Mackin, Chandler Heights; Steven C. Stenard; James L. Thompson, both of Scottsdale; Ellen White, Tempe, and Bruce D. Wilson, Gilbert, all of Ariz., assignors to AlliedSignal Inc., Morris Township, N.J.

Division of Ser. No. 173,318, Dec. 22, 1993, Pat. No. 5,494,404. This application Jun. 7, 1995, Ser. No. 474,270

Int. Cl.[6] F04D *5/00*

U.S. Cl. 415—200 8 Claims



1. A composite stator vane for a gas turbine engine comprising a plurality of compression molded, heat cured plies, said plies including a plurality of centrally located internal plies of reinforcement material of unidirectional yarns of para-aramid fibers, a plurality of plies of resin impregnated graphite fiber material on each side of said centrally located plies of reinforcement material, and an external steel wire mesh ply on the leading edges of said vanes.

5,547,343

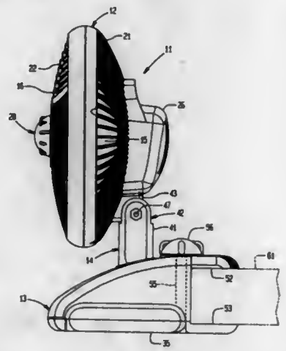
TABLE FAN WITH VISE CLAMP

Rodney Jané, Westboro; John Longan, Natick, both of Mass.; Jui-Shang Wang, Taipei, Taiwan, and Stanley Gresens, Homewood, Ill., assignors to Duracraft Corporation, Southborough, Mass.

Filed Mar. 24, 1995, Ser. No. 409,394

Int. Cl.[6] F04D *29/64*

U.S. Cl. 416—246 28 Claims



1. A portable electric fan comprising:

housing means defining an air inlet opening and an air outlet opening;

a fan blade rotatably mounted within said housing means and operable to produce air flow between said inlet opening and said outlet opening;

an electric motor operatively coupled to said fan blade;

support means attached to said housing means;

base means retaining said support means and defining a substantially planar support surface means for engaging a substantially horizontal foundation surface, said base means and surface means adapted to stably support said electric fan on the foundation surface; and

vise means attached to said electric fan and manually activatable into clamping engagement with a mounting so as to support said electric fan therefrom.

5,547,344

FLUID COMPRESSOR WITH SELECTOR VALVE

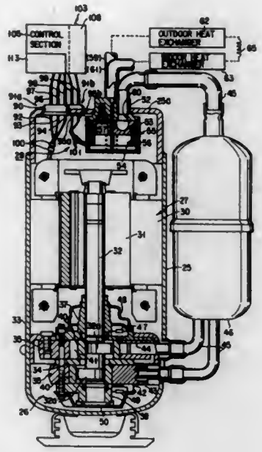
Akihiko Sugiyama, Fuji; Hideaki Tsuchiyama, Fujinomiya; Toshihiko Futami, Fuji; Hisataka Kato, Fuji, and Takao Hoshi, Fuji, all of, Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Filed Aug. 12, 1994, Ser. No. 289,371

Claims priority, application Japan, Mar. 30, 1994, 6-060519; Mar. 30, 1994, 6-060520

Int. Cl.[6] F04B *49/10;* F25B *27/00*

U.S. Cl. 417—32 25 Claims



1. A fluid compressor comprising:

a closed casing;

compression means provided in the casing for compressing an uncompressed low-pressure fluid and discharging a compressed high-pressure fluid into an inside space of the casing; and

a selector valve including,

a valve base attached to the casing in a manner such that one surface of the valve base is exposed to an outside region of the casing and that an other surface of the valve base is situated in the casing, and having circumferentially arranged three ports penetrating the valve base and opening in the one and the other surface of the valve base,

a valve disk rotatably mounted on the valve base in a manner such that one surface of the valve disk faces the other surface of the valve base, and having a communication passage adapted to select two adjacent ports of said three ports in said valve, and to make the selected two ports communicate with each other when the valve disk rotates through a predetermined angle, and a through hole penetrating the valve disk from the one surface thereof to an other surface thereof,

whereby a third, non-selected of said ports opens into the casing when the valve disk rotates through a predetermined angle,

a pipe for the uncompressed low-pressure fluid, the pipe connecting one of the three ports of the valve base and the compression means so that the uncompressed low-pressure fluid having flowed from the outside region of the casing into the selector valve and passed through the communication passage of the valve disk is introduced into the compression means, and

drive means for rotating the valve disk so as to change a high-pressure fluid passage of the compressed high-pressure fluid flowing out from the inside space of the casing to the outside region of the casing and to switch a low-pressure fluid passage of the uncompressed low-pressure fluid flowing from the outside region of the casing into the selector valve to communicate with the compression means.

5,547,345

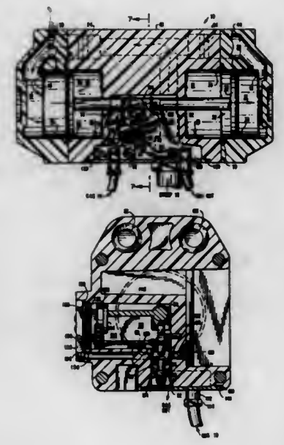
COUNTER FOR A PLURAL-CHAMBER PNEUMATIC PUMP

Thomas G. North, III, Woodstock, Ga.; Thomas Graham, Ocean, and Yushan Wang, Howell, both of N.J., assignors to Standard Keil Industries, Inc., Allenwood, N.J., and The Coca-Cola Company, Atlanta, Ga.

Division of Ser. No. 381,538, Jan. 31, 1995. This application Apr. 3, 1995, Ser. No. 415,292

Int. Cl.[6] F04B *53/00*

U.S. Cl. 417—63 5 Claims



1. A pneumatically-operated pump, comprising:

a housing;

a pair of opposed pump chambers in said housing, each of said pump chambers having a reciprocating diaphragm dividing the pump chamber into a variable volume pumped-fluid receiving chamber and a variable volume pressurization chamber;

a shaft connecting said diaphragms;

valve means in said housing, comprising a valve chamber and a valve body mounted within the valve chamber, said valve means coupled to said pressurization chambers for alternately pressurizing and venting said pressurization chambers to effect diaphragm and shaft reciprocation;

and a counter mounted within said valve chamber coupled to said shaft for counting the reciprocations thereof.

5,547,346

VARIABLE DISPLACEMENT COMPRESSOR

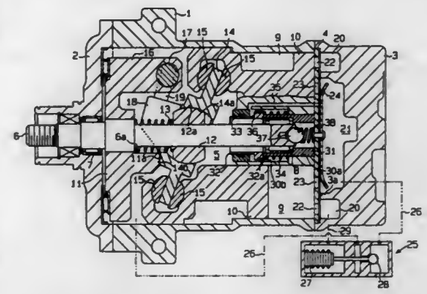
Shigeki Kanzaki; Masahiro Kawaguchi; Masanori Sonobe, and Tomohiko Yokono, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

PCT No. PCT/JP94/00379, § 371 Date Oct. 28, 1994, § 102(e) Date Oct. 28, 1994, PCT Pub. No. WO95/24557, PCT Pub. Date Sep. 14, 1995

PCT Filed Mar. 9, 1994, Ser. No. 331,563

Int. Cl.[6] F04B *1/26*

U.S. Cl. 417—222.2 8 Claims



1. A variable displacement compressor comprising a swash plate tiltably supported on a rotary drive shaft in a crank chamber in a housing, said swash plate being arranged to move in the axial direction of the drive shaft to tilt within a range defined between a maximum inclined position and an upright position, said swash plate being coupled to a piston capable of reciprocating in a cylinder bore in accordance with an undulating movement of said swash plate, whereby gas supplied to said cylinder bore from a suction chamber is compressed by said piston and discharged to a discharge chamber, and the volume of the gas discharged to said discharge chamber is determined by the inclined position of said swash plate, said tilting range of said swash plate including a predetermined minimum inclined position adjacent to the upright position where the volume of discharged gas to said discharge chamber from said cylinder bore is a predetermined minimum above zero;

a rotor secured to said drive shaft;

hinge means for connecting said swash plate with said rotor;

means for controlling the pressure in said crank chamber whereby the inclined position of said swash plate is altered in accordance with the difference between the pressures in said suction chamber and said crank chamber;

means for restricting the axial movement of said swash plate in the minimum displacement direction replacing the upright position of the tilting range with said predetermined minimum inclined position; and

means for releasing said restriction of the axial movement of said swash plate by introducing the pressure in said discharge chamber to said restricting means to permit driving said swash plate between said maximum inclined position and said upright position.

5,547,347

GAS INJECTION APPARATUS AND METHOD

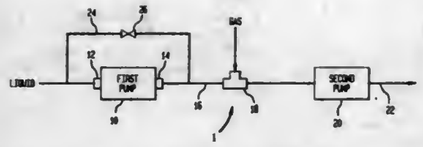
Rustam H. Sethna, New Brunswick, and Atul M. Athalye, Chatham, both of N.J., assignors to The BOC Group, Inc., New Providence, N.J.

Filed Sep. 21, 1995, Ser. No. 531,987

Int. Cl.[6] F04B *25/00*

U.S. Cl. 417—250 5 Claims

1. An apparatus for dispersing a gas into a liquid, said apparatus comprising:



a first pump to pump said liquid to produce a pressurized liquid stream;

means for injecting said gas, at a gas injection pressure, into said pressurized liquid stream to produce a pressurized gas-liquid stream;

said first pump configured to pump said liquid such that said pressurized liquid stream has a static pressure no greater than said injection pressure of said gas; and

a second pump to pump said pressurized gas-liquid stream such that liquid and gas pressures of said liquid and gas, respectively, are greater than said gas injection and static pressures and said gas is broken up into small bubbles;

said second pump consisting of one of a turbine pump, a centrifugal pump and an axial propeller pump.

5,547,348

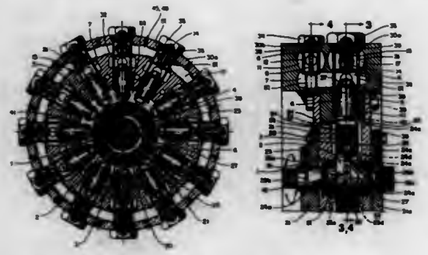
RADIAL PISTON FLUID MACHINE AND/OR ADJUSTABLE ROTOR

William C. Riley, Shelbyville; Marc S. Albertin, Atlanta, and James B. May, Sandwich, all of Ill., assignors to Whitemoss, Inc., West Lafayette, Ind.

Division of Ser. No. 955,902, Jan. 19, 1993, Pat. No. 5,377,559, which is a continuation-in-part of Ser. No. 546,373, Jun. 29, 1990, abandoned. This application Aug. 22, 1994, Ser. No. 293,793

Int. Cl.[6] F04B *1/07*; G05G *1/08*

U.S. Cl. 417—273 **45 Claims**



1. A radial piston fluid machine comprising:

A. a cylinder block with exterior surfaces of the block being oriented to allow contacting, close, axially aligned, stacked-fit of similar devices which devices are attachable by various means, the block further containing a plurality of radial piston bores positioned so as to extend radially in the block; a low pressure fluid distribution system which includes a means of connection to said bores and a means of fluid communication with said bores from a low pressure fluid source, a high pressure fluid distribution system which includes another means of connection to said bores and a means of fluid communication with said bores to a high pressure fluid output usage;

B. a casing mounted centrally of the block;

C. cover plates for the casing;

D. bearings fitted within a central part of the casing and the cover plate;

E. a centrally located shaft and an eccentric means on said shaft, which is located in radial alignment with a centerline of the radial piston bores in the cylinder block, the shaft being supported and journalled on the bearings, the shaft being terminated at one end with locking means for acceptance of a type of termination means at another end of the shaft, allowing an axial coupling of like shafts and the contacting, close, axially aligned stacked fit of similar devices;

F. valves operably connected with the cylinder block controlling fluid communication between the low pressure fluid distribution system and the high pressure fluid distribution system; and

G. a plurality of sliding pistons operably connected with the radial bores of the cylinder block, whereby said pistons reciprocate in turn coincident with rotary movement of the shaft and the eccentric means in relation to the block;

wherein said cylinder block includes a plurality of piston cartridges, said cartridges being fitted to the radial bores in the cylinder block including a means of fixing and sealing said cartridges to the cylinder block; each of said piston cartridges being constructed of at least one part, containing said slidably fitted piston, the cartridge containing a spring, the spring being interposed between the piston and the cartridge, and a means for limiting the spring against the cartridge and the piston, allowing for the free action of the spring against the piston; said cartridge also having at least one cylinder intake port allowing movement of fluid into a piston cylinder chamber on the suction stroke, said cartridge having at least one exhaust port allowing fluid communication to the high pressure fluid distribution system during the pressure stroke; and the cartridge having a normally closed spring-action valve and valve seat past which fluid is expelled from the piston cylinder chamber during the exhaust stroke;

characterized in that the cylinder block includes a plurality of inlet cartridges fitted to radial bores in the cylinder block, including a means of fixing and sealing said cartridges to the cylinder block; each inlet cartridge being constructed of at least one part, containing a normally closed spring-action valve and valve seat, the cartridge having at least one port providing for fluid movement from a low pressure fluid distribution system into the cartridge allowing fluid communication past said valve and valve seat to the piston cylinder chamber and the high pressure distribution system.

5,547,349

OIL PUMP SYSTEM

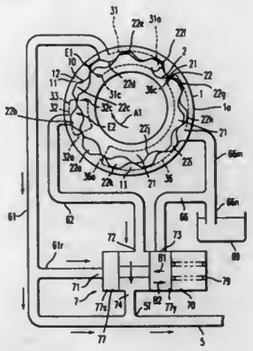
Ichiro Kimura, Nagoya, and Hisashi Miyazaki, Anjo, both of, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya City, Japan

Filed Aug. 25, 1995, Ser. No. 519,646

Claims priority, application Japan, Aug. 25, 1994, 6-200579; Aug. 24, 1995, 7-215699

Int. Cl.[6] F04C *2/14*

U.S. Cl. 417—282 **13 Claims**



13. An oil pump system, comprising:

an oil pump including:

a pump body defining a pump chamber therein;

a rotor rotated by a driving source in the pump body;

an inlet port sucking a hydraulic oil into the pump chamber as the rotor rotates; and

an outlet port array having a first outlet port and a second outlet port at least, the first and second outlet ports discharging the hydraulic oil out of the pump chamber as the rotor rotates;

a first hydraulic passage connecting a hydraulic-oil-delivery passage with the first outlet port of said oil pump, and delivering the hydraulic oil, coming from the first outlet port, to the hydraulic-oil-delivery passage, the hydraulic-oil-delivery passage delivering the hydraulic oil to a hydraulic oil receiving unit;

a second hydraulic passage connecting the hydraulic-oil-delivery passage with the second outlet port of said oil pump, and delivering the hydraulic oil, coming from the second outlet port, to the hydraulic-oil-delivery passage; and

a return hydraulic passage connected to said second hydraulic passage, and communicated with the inlet port of said oil pump;

control means for outputting a control signal in responsive to at least one or a hydraulic-oil pressure in said first hydraulic passage, a hydraulic-oil temperature, an opening degree of a throttle valve, and a revolving speed of the driving source; and

a control valve connected to said first hydraulic passage, said second hydraulic passage and said return hydraulic passage, the control valve including a valve body actuated in accordance with the control signal outputted by said control means, and the control valve being capable of switching the valve body between a first position and a second position;

the first position joining said first hydraulic passage and said second hydraulic passage so as to join the hydraulic oil flowing in both of them, and delivering the joined hydraulic oil to the hydraulic-oil-delivery passage when the hydraulic pressure in said first hydraulic passage is lower than a predetermined value;

the second position preventing said first hydraulic passage and said second hydraulic passage from joining, delivering the hydraulic oil flowing in said first hydraulic passage to the hydraulic-oil-delivery passage, and returning the hydraulic oil flowing in said second hydraulic passage to said return hydraulic passage when the hydraulic pressure in said first hydraulic passage is higher than the predetermined value.

5,547,350

MODULAR SHAFTLESS COMPRESSOR

Dharamendra N. Rawal, Waukesha, Wis., and Philippe Auber, LeHavre, France, assignors to Dresser-Rand Company, Corning, N.Y.

Filed Dec. 15, 1994, Ser. No. 356,671

Int. Cl.[6] F04B *35/04*

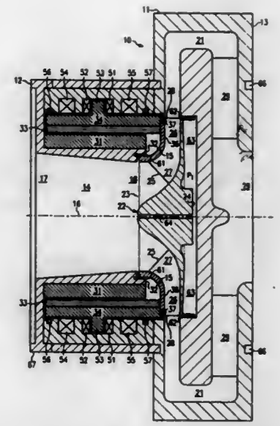
U.S. Cl. 417—354 **20 Claims**

1. A shaftless compressor module comprising:

a module casing having an inlet end and an outlet end, said module casing having a first chamber and a second chamber therein, said first chamber having a longitudinal axis, said second chamber being an annular chamber having a central axis and being positioned in said module casing radially outwardly from said first chamber so that said central axis coincides with said longitudinal axis of said first chamber, said module casing having an inlet to said first chamber and an outlet from said first chamber;

an annular motor stator fixedly positioned in said second chamber so as to be coaxial with said longitudinal axis of said first chamber;

an annular motor rotor positioned in said second chamber radially outwardly from said annular motor stator so as to be coaxial with said annular motor stator and with said longitudinal axis of said first chamber;



a shaftless impeller, said shaftless impeller being rotatably mounted within said first chamber of said module casing for rotation about said longitudinal axis of said first chamber, said shaftless impeller having a first end and a second end, said shaftless impeller having a plurality of impeller blades forming impeller passageways, with one end of each of said plurality of impeller passageways being in fluid communication with said inlet of said first chamber and the other end of each of said plurality of impeller passageways being located in a radially outer periphery of said shaftless impeller and in fluid communication with said outlet from said first chamber.

5,547,351

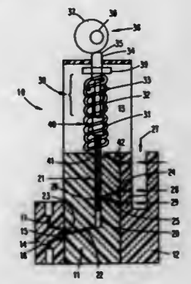
LOW PRESSURE LOW VOLUME LIQUID PUMP

James P. Hanus, Mesquite, Tex., assignor to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Filed Mar. 1, 1994, Ser. No. 203,781

Int. Cl.[6] F04B *9/08*

U.S. Cl. 417—386 **2 Claims**



1. A diaphragm pump which comprises:

a cylinder block having a cylinder bore formed therein;

a plunger provided in said cylinder bore for reciprocal movement therein, said plunger having an end which remains within said cylinder bore during the reciprocal movement;

a diaphragm which defines a deformable wall of a head cavity, said diaphragm being in fluid communication with said cylinder bore whereby fluid pressures within said cylinder bore act on said diaphragm to cause movement thereof;

two hydraulic fluid passages which connect to said cylinder bore at a common point at which said end of said plunger passes

during the reciprocal movement thereof, whereby said plunger closes said two hydraulic fluid passages periodically during reciprocal movement of said plunger;

inlet and outlet fluid passages connected to said head cavity; and

check valves provided in said inlet and outlet fluid passages.

5,547,352

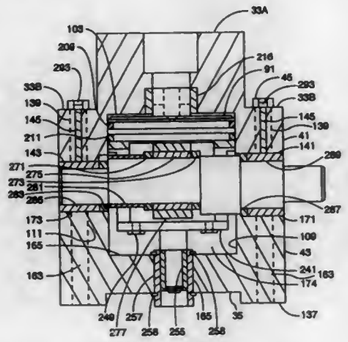
CRANKSHAFT DRIVEN RECIPROCATING PISTON PUMP HAVING PLURAL GUIDE RODS

Darrel D. Hillman, and Charles T. Russell, Jr., both of P.O. Box 1325, Mineral Wells, Tex. 76068

Filed Aug. 31, 1995, Ser. No. 521,967

Int. Cl.[6] F04B *53/10*; F16J *1/00*

U.S. Cl. 417—569 **3 Claims**



1. A pump for pumping a fluid, comprising:

a body having a surrounding wall forming a cavity with a cylindrical chamber with opposite first and second ends and with an axis extending between said first and second ends,

a piston located in said chamber for movement in first and second opposite directions between said first and second opposite ends respectively of said chamber,

said piston having first and second opposite ends with an axis extending therebetween such that said first and second ends of said piston move toward and away from said first and second ends of said chamber respectively upon movement of said piston in said first direction and away from and toward said first and second ends of said chamber respectively upon movement of said piston in said second direction,

first and second apertures extending in said body from said first and second ends of said chamber respectively along the axis of said chamber,

first and second guide rods extending from said first and second ends of said piston respectively along the axis of said piston,

said first and second guide rods being movable in said first and second apertures respectively upon movement of said piston is said first and second directions,

inlet and outlet apertures formed in said body in fluid communication with said first aperture,

an inlet one way valve located in said inlet aperture for allowing fluid to flow only from the exterior of said pump into said first aperture,

an outlet one way valve located in said outlet aperture for allowing fluid to flow only from said first aperture to the exterior of said body,

an axial aperture formed in said first guide rod along the axis of said piston,

at least one radial aperture formed in said first guide rod transverse to the axis of said piston and in fluid communication with said axial aperture,

a crank shaft receiving aperture formed through said piston transverse to the axis of said piston,

first and second diametrically opposite crank shaft apertures extending through said wall of said body of said cavity transverse to said axis of said chamber,

a crank shaft extending through said crank shaft apertures of said body and through said crank shaft receiving aperture of said piston and supported for rotation,

said piston having first and second cam surfaces axially spaced from each other and facing each other in said crank shaft receiving aperture,

said crank shaft having a cam located in said crank shaft receiving aperture of said piston such that upon rotation of said crank shaft, said cam alternately engages said first and second cam surfaces of said piston to move said piston in said first and second directions respectively,

upon movement of said piston in said second direction, said inlet one way valve allows fluid to flow into said chamber by way of said axial and radial apertures of said first guide rod,

upon movement of said piston is said first direction, said piston causes fluid in said chamber to be forced outward through said outlet one way valve by way of said radial and axial apertures of said first guide rod.

5,547,353

SCROLL TYPE COMPRESSOR WITH ELLIPTICAL SPIRAL ELEMENT

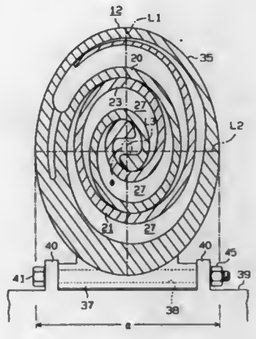
Tetsuya Yamaguchi; Yasushi Watanabe; Tetsuhiko Fukanuma, all of Kariya; Yasuhiro Oki, Okazaki, and Yuuji Yamamoto, Toyota, all of, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, and Nippondenso Co., Ltd., both of Kariya, Japan

Filed Aug. 3, 1995, Ser. No. 510,600

Claims priority, application Japan, Aug. 5, 1994, 6-184979

Int. Cl.[6] F01C *1/04*

U.S. Cl. 418—55.2 **8 Claims**



1. A scroll type compressor including compression chambers defined between a fixed spiral element of a fixed scroll and a movable spiral element of a movable scroll by engaging with each other, wherein said compression chambers suck a fluid in accordance with an orbital movement of the movable scroll around the fixed scroll to compress and discharge the fluid, said compressor comprising:

a substantially elliptical housing for accommodating the movable scroll and the fixed scroll;

said fixed scroll spiral element having a substantially elliptical spiral shape, and including a substantially elliptical fixed end plate, said fixed end plate having the fixed spiral element formed thereon; and

said movable scroll spiral element having a substantially elliptical spiral shape, and including a substantially elliptical movable end plate thereon.

5,547,354

SCROLL COMPRESSOR BALANCING

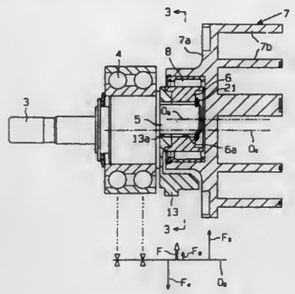
Izuru Shimizu; Tetsuhiko Fukanuma; Tetsuya Yamaguchi; Kunifumi Goto; Shigeru Hisanaga, and Hirotaka Egami, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, and Nippondenso Co., Ltd., both of Kariya, Japan

Filed Dec. 1, 1994, Ser. No. 347,965

Claims priority, application Japan, Dec. 2, 1993, 5-303124

Int. Cl.[6] F04C *18/04*

U.S. Cl. 418—55.5 **17 Claims**



1. A scroll-type compressor having a fixed scroll, a rotary shaft, a pin joined eccentrically to said rotary shaft, a bushing coupled to said pin, and a movable scroll coupled to said bushing, said scrolls being constructed to define between them a displaceable fluid pocket which, upon rotation of said rotary shaft in a given direction causing said pin, said bushing, and said movable scroll to orbit the longitudinal axis of said rotary shaft, reduces its volume to compress any gas in said pocket, and said bushing and said movable scroll develop a first component of centrifugal force when said rotary shaft is rotated, said compressor further comprising:

a primary balance weight coupled to said bushing eccentric relative to said rotary shaft for creating a second component of centrifugal force for counteracting a portion of said first component of centrifugal force, said primary balance weight being constructed such that said second component of centrifugal force counteracts 80 to 97 percent of said first component of centrifugal force.

5,547,355

SCROLL TYPE MACHINE HAVING MEANS TO PREVENT OR SUPPRESS DEFLECTION OF LEGS OF SCROLL-SUPPORTING FRAME

Kazuhide Watanabe; Kimiharu Takada, both of Nishi-Kasugai-gun; Masumi Sekita, Nagoya; Takahide Ito, Nagoya, and Kazuya Tani, Nagoya, all of, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

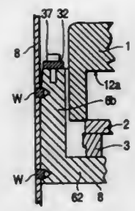
Filed Jan. 31, 1995, Ser. No. 381,561

Claims priority, application Japan, Feb. 1, 1994, 6-010414; Feb. 4, 1994, 6-012597

Int. Cl.[6] F01C *1/04*

U.S. Cl. 418—55.5 **8 Claims**

1. A scroll machine comprising: a sealed housing; a discharge cover extending across the interior of said housing so as to divide the housing into a high-pressure side and a low-pressure side; a frame disposed in said housing, said frame having an end plate, and a plurality of legs extending upright on said end plate and spaced from one another along the outer circumference of the end plate; a stationary scroll disposed in the low-pressure side of said housing, said stationary scroll being attached to top ends of the legs of said frame remote from the end plate of said frame; a swivel scroll disposed in the low-pressure side of said housing in meshing engagement with said stationary scroll; a support spring through which said stationary scroll is attached to the top ends of the legs of said frame, said support spring having a resiliency that allows said stationary scroll to be displaceable relative to said frame in an axial direction; said stationary scroll and said discharge cover having respective parts sealingly engaged with one another, said respective parts defining an intermediate pressure chamber on a side of said stationary scroll opposite from said swivel scroll such that pressure generated in said intermediate pressure chamber tends to force said stationary scroll toward said swivel scroll; and a plurality of plug-welds fixing said frame to an inner circumferential surface of said sealed housing, said plug-welds being located at said legs of the frame so as to suppress or prevent deflection of said legs relative to the end plate of said frame in a direction perpendicular to the axial direction.



5,547,356

GEAR PUMP AND METHOD OF USING SAME

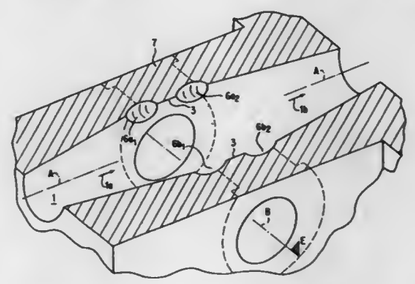
Roger Stehr, Bülach; Peter Blume, Zürich, and Marco Benetti, Villmergen, all of, Switzerland, assignors to Maag Pump Systems AG, Zurich, Switzerland

Filed Apr. 7, 1995, Ser. No. 417,853

Claims priority, application European Pat. Off., Apr. 7, 1994, 94105347

Int. Cl.[6] F01C *21/00*

U.S. Cl. 418—189 **16 Claims**



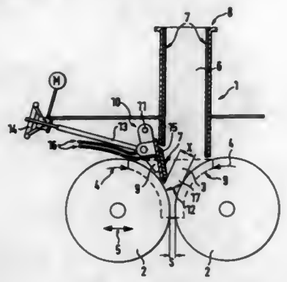
1. Gear pump comprising at least two rotors which mesh in an externally toothed manner in a product duct, at least one volume-enlarging recess being molded in a product wall of said product duct at least on a delivery side of an area of meshing of the rotors, wherein the at least one recess is formed by a three dimensionally continuously curved surface.

5,547,357

APPARATUS FOR HOT-BRIQUETTING IRON SPONGE

Hans-Georg Bergendahl, Bochum, Germany, assignor to Maschinenfabrik Koppern GmbH & Co. KG, Hattinger, Germany

Filed May 20, 1994, Ser. No. 246,884
Claims priority, application Germany, Dec. 8, 1993, 9318843 U
Int. Cl.[6] B29C *31/00*; B22F *3/03*
U.S. Cl. 425—79 36 Claims



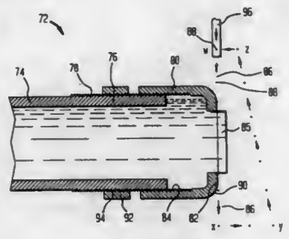
1. An apparatus for hot-briquetting iron sponge, comprising a gravity feeder which comprises a feed shaft and regulating means for supplying material in a dosed quantity to a moulding gap of a roller press, wherein the regulating means (**10**, **18**, **26**) are provided with heat-reducing means (**7**, **16**).

5,547,358

DEVICES FOR MAKING ARTIFICIAL EGG YOLKS IN THE FORM OF DISCS

Eustathios Vassiliou, 12 S. Townview La., Newark, Del. 19711

Filed Mar. 14, 1995, Ser. No. 403,671
Int. Cl.[6] B29C *47/22*; A23P *1/12*
U.S. Cl. 425—96 17 Claims



1. A cutting device for forming egg-yolk disks comprising in combination:

an assembly of a cutting wire and a frame supporting the cutting wire, the cutting wire being adapted to follow a cutting path, the cutting path having a first direction; and

an extrusion array comprising

a main cylinder having a front end with a first set of threads;

an extrusion head having a front surface and a second set of threads commensurate to the first set of threads of the main cylinder, in a manner that the extrusion head may be threaded on the main cylinder to a desired degree in order to attain a desired position, wherein the front surface substantially coincides with the cutting path of the cutting wire, so that when the cutting wire follows the cutting path, said cutting wire slides on the front surface of the extrusion head; and

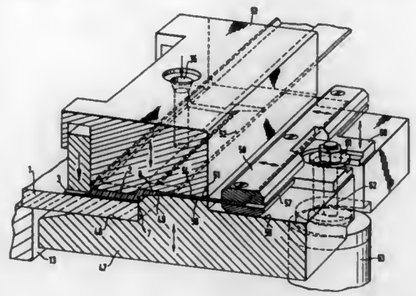
a mechanism for locking the extrusion head in position.

5,547,359

APPARATUS FOR PRODUCING A GLAZING EQUIPPED WITH A PERIPHERAL FRAME BASED ON A POLYMER

Hans Cordes; Helmut Krumm; Ludwig Schwartz, all of Aachen; Ilan Kahn, Uebach-Palenberg; Gerd Cornils, Merzenich-Girbelsrath, and Ulrich Behrend, Inden, all of, Germany, assignors to Saint Gobain Virtage International, France

Division of Ser. No. 241,235, May 11, 1994, Pat. No. 5,456,874, which is a division of Ser. No. 911,449, Jul. 10, 1992, Pat. No. 5,316,829. This application Jun. 7, 1995, Ser. No. 487,131
Claims priority, application Germany, Jul. 13, 1991, 41 23 256.9
Int. Cl.[6] B29C *45/14*
U.S. Cl. 425—125 18 Claims



1. An apparatus for adding a moulded polymer part of a desired shape upon a peripheral portion of a glazing having top and bottom surfaces comprising:

a mould member having an upper and lower portions which form a cavity which corresponds to the desired shape of the polymer part;

means for positioning the mould member against the peripheral surface of the glazing in surrounding relation to the glazing surface portion where the polymer part is to be added;

an injection orifice in the mould member for introducing material for forming the polymer part in the cavity; and

at least one sealing slat extending from the mould member for contact with the glazing surface to form part of the cavity.

5,547,360

POWDER MOLDING PRESS

Tatsuichi Yokoyama, Nagaoka, Japan, assignor to Tamagawa Machinery Co., Ltd., Tokyo, Japan

Filed Mar. 17, 1994, Ser. No. 210,008
Int. Cl.[6] B29C *43/58*; B30B *11/02*
U.S. Cl. 425—149 4 Claims

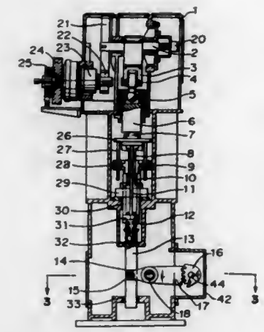
1. A powder molding press having an external power source for rotating a main shaft therein, comprising;

an encoder for detecting a rotational angle of said main shaft driving directly a first ram and indirectly a second ram;

a control device provided with a memory containing predetermined input numerical data on the movement of said first ram, and containing other input data programmed by an operator of said press, for enabling said second ram to be controlled in accordance with said detected rotational angle of said main shaft and said input data and for determining movements of said second ram by data obtained and/or computed from the control device;

a servo motor driving said second ram under the control of said control device; and

a pair of non-circular gears for converting rotational force of said servo motor to a compressive force and to a second ram driving speed for operating said powder molding press;



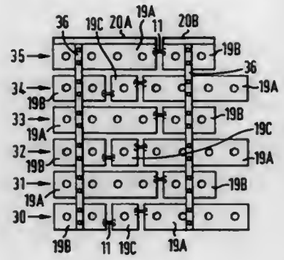
whereby control of said second ram in accordance with movements of said first ram is substantially improved.

5,547,361

TOOLING FOR FACING A WALL

Colin A. Baker, 44 Parvills, Waltham Abbey, Essex EN9 1QG, United Kingdom

Division of Ser. No. 52,565, Apr. 23, 1993, Pat. No. 5,391,331. This application Oct. 19, 1994, Ser. No. 325,862
Claims priority, application United Kingdom, Sep. 21, 1992, 9219867
Int. Cl.[6] B28B *7/14*; *11/08*
U.S. Cl. 425—171 19 Claims



1. A wall facing patterning tool for forming a brickwork resembling layer in a wall facing of unset settable building material, the tool comprising:

a plurality of rigid blades formed from planar sheet material; and means for supporting the blades relative to one another;

the thickness of the sheet material defining the thickness of the blade;

the thickness of the blade being such that the blades can slice into said unset settable building material without significant compression of the building material so as to form a plurality of cut lines therein;

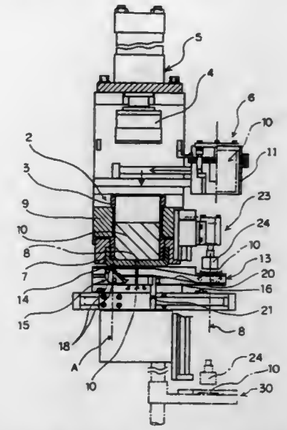
the supporting means separating the blades by a predetermined distance such that said tool can produce said cut lines to form the edges of a joint line of the brickwork resembling layer.

5,547,362

MOLDING MACHINE

Takefumi Kato; Shigeru Morita, and Kiminori Sato, all of Saga-ken, Japan, assignors to NOK Corporation, Tokyo, Japan

Division of Ser. No. 297,530, Sep. 26, 1994, which is a division of Ser. No. 111,784, Aug. 26, 1993, Pat. No. 5,401,157, which is a division of Ser. No. 875,469, Apr. 29, 1992, Pat. No. 5,273,418. This application Mar. 16, 1995, Ser. No. 404,990
Int. Cl.[6] B29C *31/00*
U.S. Cl. 425—297 6 Claims



1. In a molding machine for producing products of a resilient material, a mold material supply apparatus comprising:

extruding means including a pot having a through-hole for extruding a mold material through the through-hole so as to form an extruded mold material, the pot containing the mold material therein;

cutting means including a transportation means with a blade for cutting the extruded mold material by means of the blade and transporting the extruded mold material, said cutting means including a plurality of guide rails having groove means, and cylinder means for shifting the transportation means along the groove means of the guide rails, said groove means having two straight portions and an inclined intermediate portion disposed between the two straight portions so that the transportation means can partly rotate at the inclined intermediate portion so that the transportation means can change form an inclined condition in which the blade of the transportation means cuts the extruded mold material to a horizontally maintained condition; and

transferring means for receiving the extruded an cut mold material from the transportation means of the cutting means and transferring it to a molding place within the molding machine.

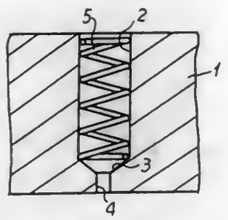
5,547,363

NOZZLE FOR SPINNING PITCH-BASED CARBON FIBERS

Yasuyuki Takai; Tetsuo Yamada; Toshifumi Kawamura, all of Ibaragi; Susuma Shimizu, Tokyo, and Haruki Yamasaki, Kanagawa, all of, Japan, assignors to Petoca, Ltd., and Tanaka Kikinzoku Kogyo K.K., both of Tokyo, Japan

Continuation of Ser. No. 246,571, May 20, 1994, abandoned, which is a continuation of Ser. No. 944,654, Sep. 14, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 462,544
Claims priority, application Japan, Sep. 13, 1991, 3-262787
Int. Cl.[6] D01D *4/02*
U.S. Cl. 425—376.1 4 Claims

1. A spinning nozzle having one or more discharge openings and one or more introduction openings located upstream from the



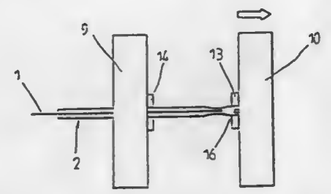
discharge openings for producing pitch-based carbon fibers, the nozzle further having means for guiding a flow of melted pitch through the introduction openings consisting of one or more spiral members formed by spirally deforming a linear member or a tape member and having a vacant central portion and being present in each introduction opening whereby when the melted pitch is passed from an introduction opening to a discharge opening a part of the melted pitch flows down along the one or more spiral members and the remaining melted pitch flows down vertically in the vacant central portion of the one or more spiral members without contact with the one or more spiral members.

5,547,364

TIPPING DEVICE AND METHOD OF PRODUCING MEDICAL CATHETERS

Chang-Ming Wong, and Shihn-Juh Liour, both of Hsin Chu, Taiwan, assignors to Industrial Technology Research Institute, Hsin Chu Hsien, Taiwan

Filed Oct. 19, 1994, Ser. No. 325,602
Int. Cl.[6] B29C *55/22*
U.S. Cl. 425—384 **6 Claims**



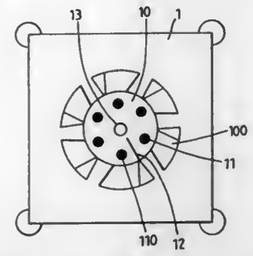
1. A tipping device for manufacturing medical catheters, the tipping device comprising:
a base;
a fixed front board vertically mounted on said base, said fixed front board comprising a mounting hole for receiving the catheter and a first clamping device disposed around said mounting hole;
a moveable board vertically movably mounted on said base and moved in parallel relative to said fixed front board, said movable board comprising a mounting pin longitudinally aligned with said mounting hole for bolding a front end of the catheter and a second clamping device disposed around said mounting pin, the outer diameter of said mounting pin being smaller than the inner diameter of the catheter;
a first driving means controlled to reciprocate said movable board relative to said fixed front board;
a second driving means controlled to turn said first and second clamping devices each into an operative position to hold down the catheter and to release said first and second claiming devices from said operative position; and
means for selectively heating and cooling down a part of the catheter between the first and second clamping devices.

5,547,365

FAN BLADE MOLD

Wen-Hao Chuang, No. 236, Ching Hua St., San Min Dist., Kaohsiung, Taiwan

Filed Mar. 17, 1995, Ser. No. 405,822
Int. Cl.[6] B29C *45/36*
U.S. Cl. 425—577 **1 Claim**



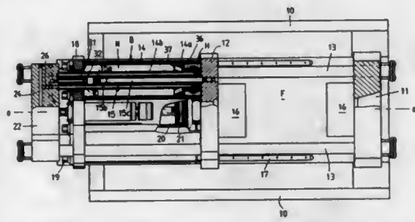
1. A fan blade mold apparatus comprising a fan blade mold, a center shaft molding unit having a longitudinal center cavity for molding a center shaft of an integral fan blade to be molded, and a blade molding unit defining with the fan blade mold a plurality of blade molding cavities around said center shaft molding unit for molding the blades on the center shaft of the integral fan blade, wherein said center shaft molding unit comprises a plurality of knock-out pins spaced around said center cavity for knocking out the fan blade to be molded and for molding a respective circular dent on a hub of the fan blade to be molded, and a reference line raised from a top side thereof and aligned with one lateral side of one blade molding cavity, said knock-out pins being respectively disposed at radial lines which pass through a point at ⅓ of the radial width of each blade molding cavity measured from the left lateral side of each blade molding cavity, said apparatus further comprising means for adjusting the balance of the fan blade comprising means for turning the center shaft molding unit relative to the blade molding unit and means for adjusting the lengths of the knock-out pins.

5,547,366

MOLD CLOSING UNIT FOR USE IN AN INJECTION MOLDING MACHINE FOR PROCESSING SYNTHETIC MATERIALS

Karl Hehl, Arthur-Hehl-Str. 32, D-72290 Lossburg, Germany

Filed Nov. 30, 1994, Ser. No. 351,116
Claims priority, application Germany, Nov. 30, 1993, 43 40 693.9
Int. Cl.[6] B29C *45/64*
U.S. Cl. 425—589 **9 Claims**



1. In a mold closing unit for use in an injection molding machine for processing synthetic materials, including
a stationary mold carrier,
a movable mold carrier constituting a mold tentering space together with said stationary mold carrier between said movable mold carrier and said stationary mold carrier,

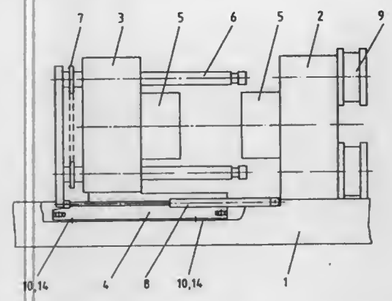
pressure cylinder,
a pressure piston located inside said pressure cylinder to build up a locking pressure,
a piston-cylinder-unit for transferring the movable mold carrier into and out of a closed position with said stationary mold carrier for closing parts of a mold within said mold tentering chamber; said piston-cylinder-unit having a drive piston and a drive cylinder; one of said drive piston and said drive cylinder of said piston-cylinder-unit being interconnected with said pressure cylinder,
the improvement wherein
said pressure piston is stationary with respect to said stationary mold carrier and
said pressure cylinder and said movable mold carrier constitute a motion unit displaceable relative to said pressure piston.

5,547,367

MECHANISM FOR CLOSING A MOLD IN PLASTIC INJECTION-MOLDING MACHINERY THAT ACCOMMODATES A LARGE AND HEAVY MOLDING TOOL

Walter Stein, Schwerin, Germany, assignor to Heimscheidt Maschinentechnik Schwerwin GmbH & Co., Schwerin, Germany

Filed Feb. 2, 1995, Ser. No. 382,537
Claims priority, application Germany, Feb. 2, 1994, 44 03 079.7
Int. Cl.[6] B29C *45/64*
U.S. Cl. 425—589 **13 Claims**



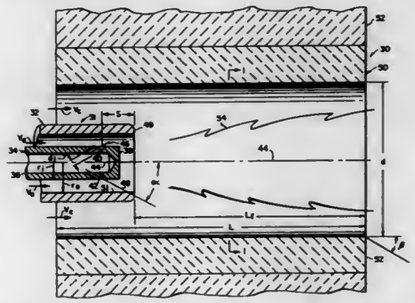
1. An apparatus for closing a mold having two sections in a plastic injection-molding machine comprising:
a base (1);
a carriage (4);
a first chuck (2) sized so as to accommodate one section of the mold, said first chuck being fixedly mounted to said base (1) and having at least two alignment holes passing at least partially therethrough;
a second chuck (3) sized so as to accommodate the second section of the mold;
at least two alignment poles (6) longitudinally mounted to said second chuck (3) so that said alignment poles (6) are substantially parallel to one another and directed toward and aligned with the alignment holes in said first chuck (2);
a mounting means for mounting said second chuck (3) to said carriage (4);
a forward support means for slidably supporting said carriage (4) on said base (1), said forward support means supporting a forward end of said carriage (4) most proximate to said first chuck (2) at a minimum of two points, said forward support means comprising:
at least two forward bearing sites (4.4) fixedly mounted proximate to the forward end of said carriage (4) and proximate to forward corners of said carriage (4);
a forward suspension crossarm (10.2, 14.2) mounted to each of said forward bearing sites (4.4) so that said forward suspension crossarms are capable of pivoting longitudinally in a direction substantially parallel to said alignment poles (6); and
a forward rocking shoe (10.1, 14.1) mounted to each of said forward suspension crossarms (10.2, 14.2), said forward rocking shoes (10.1, 14.1) riding on said base (10); and
a rear support means for slidably supporting said carriage on said base (1), said rear support means supporting a rear end of said carriage (4) most remote from said first chuck (2) at a minimum of two points, said rear support means comprising:
at least two rear bearing sites (4.4) fixedly mounted proximate to the rear end of said carriage (4) and proximate to rear corners of said carriage (4);
at least two shafts (11) each having an eccentric portion (11.1) and a non-eccentric portion (11.2), the non-eccentric portion (11.2) of each shaft extending transversely through and being rotatably mounted in a respective bearing site (4.4), the non-eccentric portions (11.2) of said shafts (11) being connected to one another by a torsion rod (12) so that the eccentricity of one of said eccentric portions (11.1) opposes the eccentricity of another of said eccentric portions (11.1);
at least two rear suspension crossarms (10.2, 14.2) rotatably mounted transversely to respective eccentric portions (11.1) of said shafts (11) so that said rear suspension crossarms are capable of pivoting longitudinally in a direction substantially parallel to said alignment poles (6); and
a rear rocking shoe (10.1, 14.1) mounted to each of said rear suspension crossarms (10.2, 14.2), said rear rocking shoes (10.1, 14.1) riding on said base (10).

5,547,368

PROCESS AND DEVICE FOR COMBUSTION-ENHANCED ATOMIZATION AND VAPORIZATION OF LIQUID FUELS

Aleksandar G. Slavejkov, Allentown, Pa.; Lee Broadway, Leesburg, Fla.; Mahendra L. Joshi, Calgary, Canada, and James K. Nabors, Apopka, Fla., assignors to Air Products and Chemicals, Inc., Allentown, Pa., and Combustion, Tec. Inc., Apopka, Fla.

Filed Mar. 1, 1993, Ser. No. 24,557
Int. Cl.[6] F23D *21/00*
U.S. Cl. 431—8 **9 Claims**



1. A method of producing a low NO_x oxy-fuel flame for heating a chamber to an elevated temperature comprising the steps of:
producing an oxy-liquid fuel flame of the type wherein a core of fuel-rich phase is surrounded by a sheath of a fuel-lean phase; and
confining and directing said flame in a cylindrical shape for a distance from a point wherein said flame is generated to a point where said flame can be introduced into the heating device, said distance being determined from the ratio of length traveled to diameter of the flame at its point of origin

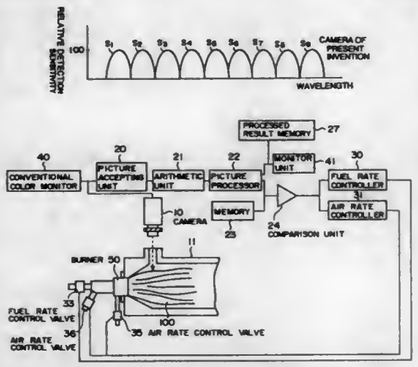
between 2 and 6 when the heat of generation is between 0.25 and 20 million Btu/hr.

5,547,369

CAMERA, SPECTRUM ANALYSIS SYSTEM, AND COMBUSTION EVALUATION APPARATUS EMPLOYING THEM

Kenichi Sohma, Ibaraki-ken; Kazuyuki Itoh, Katsuta; Michio Kuroda, and Tadayoshi Murakami, both of Hitachi, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 17, 1994, Ser. No. 214,103
Claims priority, application Japan, Mar. 17, 1993, 5-057418
Int. Cl.[6] F23N *5/00*
U.S. Cl. 431—75 **38 Claims**



1. A camera comprising a plurality of photosensors which are disposed on an imaging face thereof, and which separately deliver photodetection signals of each of said photosensors;

at least two of said plurality of photosensors in a predetermined combination being set as one photosensitive unit on a condition that the photosensors included in said one photosensitive unit have detection wavelength ranges which do not overlap each other.

16. A combustion system, comprising:

a burner which burns a mixture consisting of fuel and air;

feed means for feeding the fuel and the air to said burner;

adjustment means for adjusting a feed rate of at least one of said fuel and said air which are to be fed to said burner;

a camera which photographs flames, the camera including a plurality of photosensors having respective detection wavelength ranges which do not overlap one another;

display means for displaying a picture of the flames by using an output signal from said camera;

arithmetic means for obtaining a physical quantity for evaluating a combustion property of the flames, by using the output signal from said camera; and

control means for controlling said adjustment means in accordance with the physical quantity obtained by said arithmetic means.

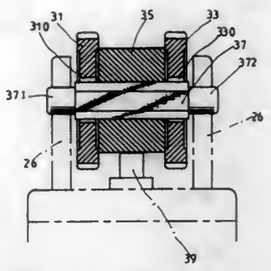
5,547,370

SAFETY STRIKER WHEEL ASSEMBLY FOR GAS LIGHTERS

Ing F. Hwang, No. 2, Lane 22, Sec. 2, Rd., Shan-Shi, Taichung, Taiwan

Filed Sep. 12, 1995, Ser. No. 527,302
Int. Cl.[6] F23Q *1/02*
U.S. Cl. 431—276 **3 Claims**

1. A safety striker wheel assembly comprising a wheel axle mounted between two upright supports at the top of a butane reservoir, two driving wheels mounted around said wheel axle between said upright supports, and a striker wheel fixedly mounted around said wheel axle and disposed in contact with a spring-supported flint below and turned by said driving wheels through said wheel axle to strike said spring-supported flint in producing sparks, wherein said wheel axle is made of polygonal cross section, having two round rods at two opposite ends loosely inserted into a respective axle hole on each upright support; said driving wheels have a center through holes of bigger diameter relative to said wheel axle for passing said wheel axle, at least one center through hole of said driving wheels is a polygonal center through so arranged that said driving wheels run idle when turned without being depressed, or turned to rotate said wheel axle and said striker wheel when depressed.



5,547,371

VARIABLE TORCH APPARATUS

M. Fred Rose, 115 Madrona Ave., Belvedere, Calif. 94920

Filed Aug. 22, 1995, Ser. No. 517,770
Int. Cl.[6] F23D *3/24*
U.S. Cl. 431—320 **10 Claims**



1. A variable torch apparatus comprising:

a torch portion having a fuel canister and wick element, said torch portion constructed of a segment of copper pipe which has been capped and sealed;

a vertical support portion constructed of a length of copper pipe and attached to said torch portion by a copper pipe reducer element; and

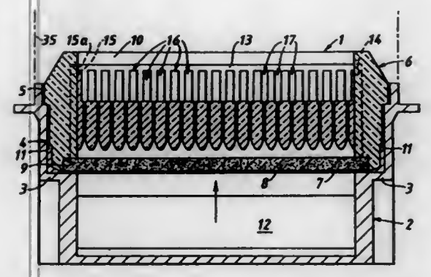
a base portion connected to said vertical support portion, said base portion constructed of copper pipe material.

5,547,372

FUEL FIRED BURNERS

Colin Smith, Epsom, United Kingdom, assignor to British Gas plc, London, England

Filed Jul. 5, 1995, Ser. No. 424,482
Claims priority, application United Kingdom, Nov. 12, 1992, 9223728
Int. Cl.[6] F23D *14/12*
U.S. Cl. 431—328 **6 Claims**



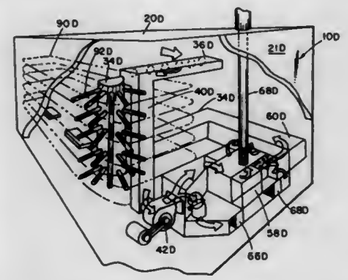
1. A fuel fired burner comprising a chamber for receiving a premixture of fuel and air, a flame support extending across the chamber and having a plurality of elongate slots extending therethrough, each slot having a converging inlet portion, each slot including a portion which has an exit opening of a relatively narrow dimension, which exit opening opens stepwise by means of a land into an outlet portion of the slot for containing or supporting the flame fronts when the burner is within a given heat output range, each outlet portion comprising at least one substantially constant relatively wide dimension section.

5,547,373

BAKING OVEN WITH INTEGRAL EMISSIONS CONTROL APPARATUS

Richard E. Snell, Raleigh, N.C., assignor to APV Baker, Inc., Grand Rapids, Mich.

Filed Sep. 30, 1993, Ser. No. 129,595
Int. Cl.[6] A21B *1/00*
U.S. Cl. 432—72 **17 Claims**



1. An apparatus for baking a dough-based product which releases environmental contaminants during baking, comprising:

a combustion-type, commercial oven including an enclosure with walls, burner means for heating the air in said enclosure to bake the product, and automated means for positioning the product inside said enclosure;

an emissions control device of high-volume capacity suitable for commercial application, for removing at least certain of said contaminants from said heated oven air by addition of thermal energy to such air; and

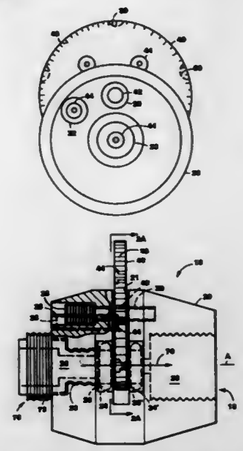
a recirculation system operably connected to said oven and said emissions control device for recirculating at least certain of the hot air from said emissions control device to said enclosure, said emissions control device being integrally associated with and located closely proximate to said oven so that thermal energy from said emissions control device can be readily communicated to said oven, whereby the integral association of said emissions control device with said recirculation system and said oven facilitates installation and operation of said baking apparatus.

5,547,374

RATE CONTROLLED FLUID DELIVERY IN DENTAL APPLICATIONS

Thomas A. Coleman, P.O. Box 230, Shaftsbury, Vt. 05262

Filed Oct. 21, 1994, Ser. No. 327,378
Int. Cl.[6] A61C *1/12*
U.S. Cl. 433—85 **13 Claims**



1. A dental syringe assembly for attachment to an air source and a water source, the assembly comprising a fluid control block comprising:

a) a barrel portion having a first connector for attachment to an air/water syringe and a second connector for attachment to a delivery nozzle, said barrel portion defining a flow passage,

b) a dial rotatably mounted to said barrel portion, said dial defining a plurality of differently sized flow orifices alignable one-at-a-time with said flow passage, each of said flow orifices allowing a predetermined level of fluid flow through said flow passage when aligned with said flow passage, and

c) a deformable connecting member positioned between said dial and said flow passage, said connecting member being designed to vent excess air pressure in said flow passage to atmosphere during operation of said syringe.

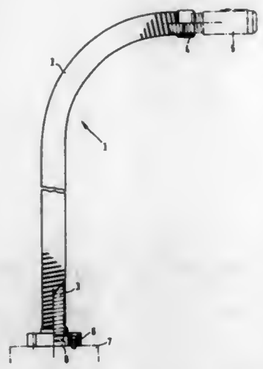
5,547,375

SUCTION DEVICE FOR DENTAL TREATMENT UNITS

Hans-Georg Schneider, Bendigstr. 09, 12557 Berlin, Germany

Filed Aug. 26, 1994, Ser. No. 296,698
Claims priority, application Germany, Aug. 27, 1993, 43 29 352.2
Int. Cl.[6] A61C *17/06*
U.S. Cl. 433—96 **10 Claims**

1. A suction device for a dental treatment unit comprising a plastic suction hose and a flexible suction cannula positioned



intraorally and fixable thereto, wherein the suction hose is connected to a single three-dimensional movable, flexible tube and is guided in a fixed manner within the flexible tube.

5,547,376

METHODS AND APPARATUS FOR CONTAINING AND RECOVERING ABRASIVE POWDERS FROM AN ABRASIVE POLISHER

Stephen K. Harrel, 4510 Ridge Rd., Dallas, Tex. 75229

Continuation-in-part of Ser. No. 900,617, Jun. 18, 1992, Pat. No. 5,378,150. This application Oct. 20, 1994, Ser. No. 326,763

Int. Cl.[6] A61C *1/16*

U.S. Cl. 433—116 **23 Claims**



1. Apparatus for use with an abrasive polisher of the type having a rigid nozzle for directing a stream of an abrasive powder toward a surface to be polished, comprising:

an attachment body portion having a bore therein for slidable insertion over the nozzle so as to be supported by said nozzle, said attachment body having an internal chamber, and including a conduit having a bore in communication with the chamber, said conduit being connectable to a container for holding the powder and residue removed from the surface; and

a flexible skirting portion connected to the attachment body portion and including a peripheral edge for engaging and containing a surface to be polished, said flexible skirting extending the chamber and providing an enclosed area for containing the abrasive powder, and providing a circulation path for the stream of abrasive powder from the surface through said conduit and to the container.

5,547,377

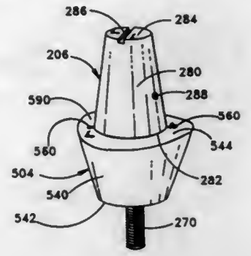
ANATOMICAL RESTORATION DENTAL IMPANT SYSTEM WITH INTERLOCKABLE VARIOUS SHAPED HEALING CAP ASSEMBLY AND MATCHING ABUTMENT MEMBER

Fereidoun Daftary, 50 N. La Cienega Blvd., Beverly Hills, Calif. 90211

Division of Ser. No. 157,471, Nov. 26, 1993, Pat. No. 5,431,567, and a continuation-in-part of Ser. No. 61,746, May 17, 1993, Pat. No. 5,297,963. This application Dec. 16, 1994, Ser. No. 358,784

Int. Cl.[6] A61C *13/12;13/225;8/00*

U.S. Cl. 433—172 **7 Claims**



1. A healing cap assembly attachable to an exposed end of a dental implant fixture which has a hollow with inner screw threads, the healing cap assembly comprising:

a healing cap member having a divergent body with a smaller proximal end, a larger distal end, and an interior bore extending from the distal end to the proximal end, the larger distal end having a rounded triangle shape, the smaller proximal end for attaching to said exposed end of said dental implant fixture, and the divergent body being positioned above and extending upwardly from said exposed end of said dental implant fixture.

5,547,378

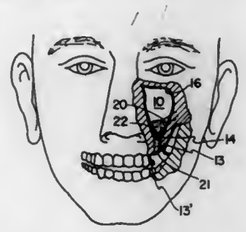
APPARATUS AND METHOD FOR CLOSING A SINUS OPENING DURING A DENTAL IMPLANT OPERATION

Leonard 1. Linkow, 1530 Palisade Ave., Fort Lee, N.J. 07024

Filed Oct. 21, 1994, Ser. No. 327,458

Int. Cl.[6] A61C *8/00*

U.S. Cl. 433—173 **14 Claims**



9. Apparatus for closing a hole in the Schneiderian membrane of a maxillary sinus cavity formed during a dental implant operation comprising:

a balloon of elastic material with a closed end and an open end having a passage opening surrounded by lips, said balloon being collapsible and of a size small enough for said balloon closed end to pass through a channel in a patient's dental maxillary arch extending to the sinus cavity in an edentulous region such that its closed end extends into the sinus cavity and the lips at its open end extend out of the channel, said balloon closed end being at least partially inflatable and of sufficient strength to withstand the injection of bone fragments through said balloon open end into said closed end while in the sinus cavity; said balloon having a maximum size such that it may be substantially uncollapsed in the sinus cavity; and

fastening means on the outside of the lips at the open end of the balloon such that the outside of the lips of the balloon may be fastened to the opening at the dental arch.

5,547,379

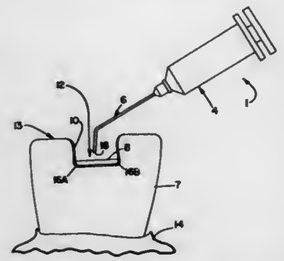
METHOD OF RESTORING A TOOTH

Robert W. Hasel, 619 Quixote Ave. North, Lakeland, Minn. 55043

Filed Oct. 6, 1994, Ser. No. 319,456

Int. Cl.[6] A61C *5/00*

U.S. Cl. 433—212.1 **24 Claims**



24. A curable, thixotropic composition injectable through a hypodermic needle for filling a hollow in the restoration of a tooth, comprising:

(a) a curable liquid resin portion having a polymerizable binder resin; and

(b) an inorganic filler portion comprising about 30% to about 70% by weight of the inorganic filler of fumed silica, and wherein the weight ratio of the curable liquid resin portion to the inorganic filler portion is less than 7:3.

5,547,380

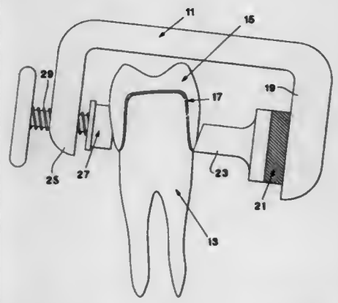
METHOD OF USING ULTRASONIC DENTAL TOOL

Jack Goodman, 3011 Third St., North, Arlington, Va. 22201

Filed Aug. 19, 1994, Ser. No. 292,202

Int. Cl.[6] A61C *3/03*

U.S. Cl. 433—215 **3 Claims**



1. A method for disintegrating the cement which adheres a cap to a tooth thereby loosening the cap for removable comprising the steps of:

providing an adjustable clamp, wherein said clamp has two legs, one leg having an ultrasonic device mounted thereon adapted and constructed to lie in abutment of a lower portion of said cap on one side thereof, said other leg having a compliant means adapted and constructed to lie in abutment of a lower portion of said cap on the other side thereof,

clamping said device on the lower portion of opposite sides of a cap mounted on a tooth whereby the ultrasonic device is substantially perpendicularly held against one side of said lower portion of said cap,

maintaining in abutment said compliant means against the opposite side of a lower portion of said cap thereby inhibiting lateral movement of said cap,

activating said ultrasonic device to impinge lateral strokes against the side of said cap against which the ultrasonic device abuts

controlling the lateral strokes of the ultrasonic device whereby lateral motion imparted to the said side of said cap is less than 10 microns, whereby causing a disintegrating of the cement to occur at said side of said lower portion of said cap to which the ultrasonic device impinges,

permitting the said disintegrating to extend around to the other side of the said cap while continuing the activation of the ultrasonic device until the said cap is completely loosened,

thereafter removing said cap.

5,547,381

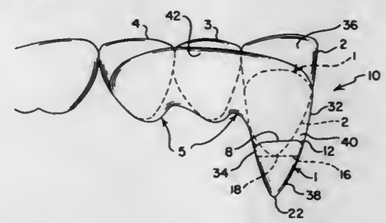
FANGS AND APPLICATION THEREOF

Donald W. Nutting, 1295 Ithaca Dr., Boulder, Colo. 80303

Filed Mar. 22, 1994, Ser. No. 216,066

Int. Cl.[6] A61C *5/08*

U.S. Cl. 433—219 **15 Claims**



1. Tooth extension apparatus for extending a person's real tooth in length to have the appearance of an animal fang, comprising:

a tooth cap body that has an outside surface, an inside surface, a front side, and a back side, said outside surface having a smoothly curved convex shape and said inside surface having a cavity extending therein toward said outside surface from a peripheral rim that substantially surrounds said cavity and forms said front side and said back side, said cavity conforming in size and shape to a lateral side of said real tooth and adapted to receive said lateral side of said real tooth when said tooth cap body is juxtaposed to said real tooth, said tooth cap body also having an extension that protrudes downwardly below said cavity and converging to a tip, and a lip protruding from said inside surface under said cavity to form a trough at the bottom of said cavity and adapted for receiving and retaining an extremity edge of the person's real tooth when said tooth cap body is juxtaposed to said real tooth and said lateral side of said real tooth is received in said cavity; and

an initially malleable, but hardenable material of a quantity that is more than enough to fill said cavity, a first portion of said material being placed in said cavity and adapted to be partially displaced by said lateral side of said real tooth when said lateral side of said real tooth is received in said cavity, and a second portion of said material extending from said first portion out of said cavity to a sufficient extent to be formable around additional teeth that are adjacent said person's real tooth.

5,547,382

RIDING SIMULATION SYSTEM FOR MOTORCYCLES

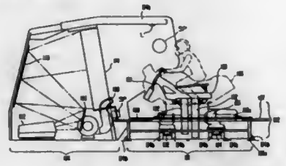
Gorou Yamasaki; Iseno Mitsuru, both of Saitama, and Yukio Miyamaru, Tokyo, all of, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

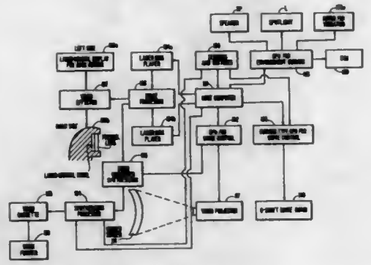
Continuation of Ser. No. 921,853, Jul. 29, 1992, abandoned, which is a continuation-in-part of Ser. No. 545,525, Jun. 18, 1990, abandoned. This application Apr. 10, 1995, Ser. No. 420,432

Claims priority, application Japan, Jul. 29, 1991, 3-188991; Aug. 19, 1991, 3-207056; Aug. 19, 1991, 3-207058

Int. Cl.[6] G09B *9/058*

U.S. Cl. 434—61 **1 Claim**





1. A riding simulation system comprising:

a simulation vehicle to be driven by a driver and having rear view mirrors;

display means disposed in front of said simulation vehicle for displaying images of pre-recorded running scenes observable by the driver;

a mount including drive means for imparting simulative running behaviors to said simulation vehicle;

processor means for controlling said display means and said mount in accordance with driving operations performed by the driver to simulate running conditions;

a backward image generator including:

(a) a first image control which generates first coordinate information indicative of a running position of another vehicle moving on an imaginary traveling map, and extracts second coordinate information indicative of a running position of said simulation vehicle and speed information indicative of a running speed of said simulation vehicle from information generated by said processor means;

(b) a second image control which, on the basis of said first and second coordinate information, generates first frame information designating an image of another vehicle of a size proportional to the distance between said simulation vehicle and said another vehicle, and second frame information designating the course image in the rear view corresponding to said second coordinate information;

(c) a first image producer having stored pre-recorded images of said another vehicle for reproducing an image of said another vehicle selected in accordance with said first frame information out of said pre-recorded images of said another vehicle;

(d) a second image producer having stored pre-recorded course images in the rear view for reproducing, on the basis of said speed information, a course image selected in accordance with said second frame information out of said pre-recorded course images; and

(e) an image combining means for combining said output images from said first and second image producers and thereby forming said backward image; and

backward image display means provided in said simulation vehicle for displaying, as images, video signals fed from said backward image generator.

5,547,383

SIMULATED STEERING APPARATUS FOR USE IN A VEHICLE SIMULATOR

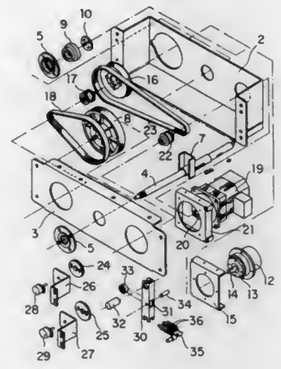
Toshiya Yamaguchi, Ohta-ku, Japan, assignor to Sega Enterprises, Ltd., Tokyo, Japan

Filed Feb. 17, 1995, Ser. No. 390,753

Claims priority, application Japan, Feb. 21, 1994, 6-46354

Int. Cl.[6] G09B *9/04;19/16*

U.S. Cl. 434—62 **9 Claims**



1. A simulated steering apparatus for use in a vehicle simulator comprising:

a base;

a steering wheel;

a steering shaft, which is coupled to said steering wheel at one end and is supported rotatably at said base;

steering direction detection means for detecting a steering direction relative to a neutral position of said steering shaft;

an electric motor having a rotary shaft that is positioned in parallel to said steering shaft;

a clutch, having an input member and an output member that are parallel to said steering shaft;

a first drive pulley, which is fitted over a rotary shaft of said electric motor;

a first coupled pulley, which is fitted over said input member of said clutch;

an endless input belt that is mounted around said first drive pulley and said first coupled pulley;

a second drive pulley, which is fitted over said output member of said clutch;

a second coupled pulley, which is fitted over said steering shaft;

an endless output belt that is mounted around said second drive pulley and said second coupled pulley; and

control means for controlling the rotation of said electric motor in a direction that is the opposite of said steering direction of said steering shaft, which is detected by said steering direction detection means.

5,547,384

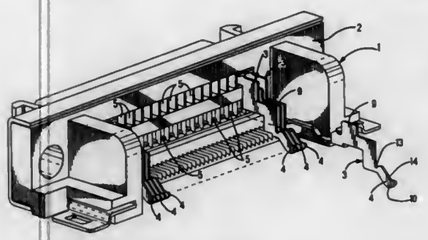
ELECTRICAL CONNECTOR WITH SURFACE MOUNT CONTACTS

Karen E. Benjamin, Harrisburg, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Continuation of Ser. No. 234,907, Apr. 28, 1994, abandoned. This application Dec. 20, 1995, Ser. No. 575,233

Int. Cl.[6] H01R *9/09*

U.S. Cl. 439—79 **11 Claims**



1. An electrical connector comprising:

an insulating housing and electrical contacts in the housing, solder tails on the contacts projecting outwardly from the housing, surface mount contact surfaces on the solder tails initially depending beyond a board-mounting surface of said housing and beyond a plane appropriate for engagement and electrical connection with corresponding contact surfaces of a circuit board, each contact being provided with a neck spaced from the corresponding surface mount contact surface, said neck being reduced in dimension from adjacent portions of said contact to concentrate bending stresses, to enable deformation of said solder tail at said neck by tooling to register said surface mount contact surfaces of all said solder tails into coplanarity for engagement and electrical connection with corresponding pads of a circuit element.

5,547,385

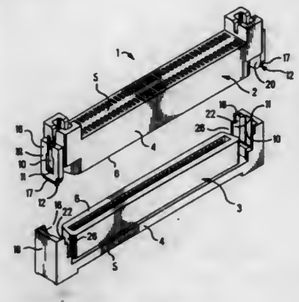
BLIND MATING GUIDES ON BACKWARDS COMPATIBLE CONNECTOR

Todd M. Spangler, Charlotte, N.C., assignor to The Whitaker Corporation, Wilmington, Del.

Filed May 27, 1994, Ser. No. 250,204

Int. Cl.[6] H01R *4/66*

U.S. Cl. 439—101 **15 Claims**



1. An electrical connector comprising,

an insulating housing of the electrical connector having a mating face;

electrical contacts in the housing extending toward the mating face for connection with electrical contacts in a mating electrical connector provided with board locks;

insulative posts on the housing; and

conductive ground contacts extending along the posts; the posts being spaced laterally from the mating face by respective, board lock silos receiving spaces; and

the posts straddling the board locks received in said spaces when the mating face is connected with said mating electrical connector.

5,547,386

APPARATUS ADAPTED FOR COACTION WITH A NUMBER OF CIRCUIT BOARDS

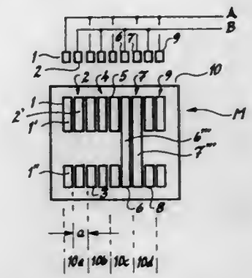
Sven T. Fredberg, Skarpnäck, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Sep. 15, 1994, Ser. No. 306,574

Claims priority, application Sweden, Sep. 23, 1993, 9303105

Int. Cl.[6] H05K *7/14*

U.S. Cl. 439—61 **10 Claims**



1. An apparatus having a backplane adapted for coaction with a number of circuit boards arranged in side-by-side relationship and including a number of mutually adjacent and mutually spaced elongated, narrow backplane-related connector fields, each of which is adapted for firm but easily removed mechanical and electrical coaction with a corresponding connector field related to an edge-part of respective circuit boards, wherein a number of first selected backplane-related connector fields are connected electrically to a first bus only, and a number of second selected backplane related connector fields are connected electrically to a second bus only; wherein the backplane-related connector fields are divided into a predetermined number of groups where each group is allotted a part-section of the backplane; and wherein the first selected backplane-related connector fields of respective groups are joined together and connect to the first bus; each group is allocated the same number of connector fields; and respective second selected backplane-related connector fields of respective groups are mutually joined and connected to the second bus.

5,547,387

JOINT CONSTRUCTION FOR IGNITION SYSTEM

Yoshinao Kobayashi, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Jul. 28, 1994, Ser. No. 281,748

Claims priority, application Japan, Aug. 5, 1993, 5-194665; Aug. 31, 1993, 5-216417

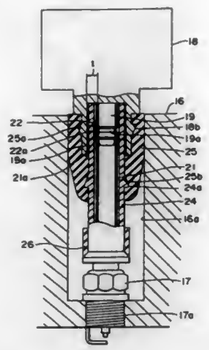
Int. Cl.[6] H01R *13/52*

U.S. Cl. 439—125 **8 Claims**

1. A joint construction between a rodlike high-voltage terminal provided at a distal end of one of an ignition coil and an ignition cable and a tubular electrical conductor in an ignition system, in which the high-voltage terminal is fitted into the electrical conductor so as to be connected to a spark plug through the electrical conductor, the joint construction comprising:

the high-voltage terminal being formed, on its outer periphery, with a recess;

VOL 1189 ISS 3 AG 20 1996 UMI



the electrical conductor being formed with a through-hole confronting the recess;

a ring having a boss and being fitted around the electrical conductor such that the boss is brought into engagement with the recess of the high-voltage terminal via the through-hole of the electrical conductor;

an insulating sleeve being fitted around the electrical conductor and the ring and having an inside diameter for regulating not only radial expansion of the ring but separation of the high-voltage terminal from the electrical conductor; and

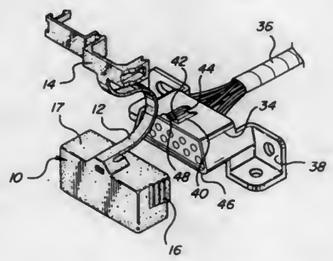
a locking member for detachably locking the insulating sleeve to one of the ignition coil and the ignition cable.

5,547,388

CONNECTOR COVER HAVING A SQUEEZE RELEASE

Mark G. Hill, Novi, Mich., assignor to Yazaki Corporation, Tokyo, Japan

Filed Sep. 13, 1994, Ser. No. 305,268
Int. Cl.[6] H01R *13/44;13/627*
U.S. Cl. 439—135 **18 Claims**



1. A cover securable to a connector, said cover comprising:

a shroud having opposite side walls and an intermediate wall extending therebetween, said shroud being of such size and shape as to cover and generally conform to the outer shape of the connector, but providing opposite clearances between the side walls and the connector, the shroud being formed of a resilient material such that squeezing the side walls closes said clearances and causes the intermediate wall to gap outwardly from the connector;

a latch extending inwardly from the inner surface of the intermediate wall;

means for limiting attachment of the shroud to the connector to one predetermined spatial relationship therebetween;

retaining means securable to a wiring harness; and

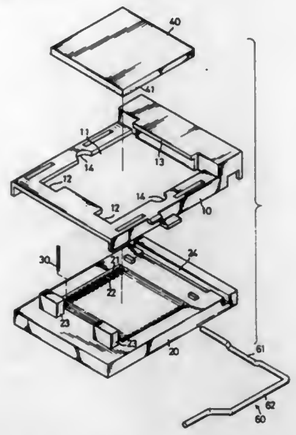
a tether connected between the shroud and the retaining means.

5,547,389

INTEGRATED CIRCUIT CHIP SOCKET

Feng-chien Hsu, 1st Fl., No. 121, Yun Ho St., Ta An Dist., Taipei, Taiwan

Filed May 23, 1995, Ser. No. 447,830
Int. Cl.[6] H01R *4/50*
U.S. Cl. 439—342 **4 Claims**



I. A socket for receiving an IC chip having ball-shaped pins comprising a base, a sliding cover housing the base and an actuating rod located between the base and the cover for causing a sliding movement of the cover relative to the base, the socket being characterized in that:

the cover has a central opening for permitting the IC chip to be inserted therethrough, and an urging element located at one side of the opening which is perpendicular to a direction of the sliding movement of the cover for pushing a heat sink affixed on the IC chip to thereby cause the IC chip to move relative to the base;

the base has a plurality of through holes defined therein and arranged in a form of a matrix aligning with the opening of the cover, and a catching means disposed at one end of the base which is opposite to the urging element for cooperating with the urging element to hold the IC chip in a contacting position; and

each of the through holes has a contacting leg disposed therein, the contacting leg having a first end extending beyond an upper face of the base and a second end extending through a bottom surface of the base, said first end having an arcuate surface which is perpendicular to the sliding movement of the IC chip and has a curvature equal to that of the ball-shaped pin of the IC chip so as to make an electrical surface contact with the ball-shaped pin when the IC chip is moved to the contacting position.

5,547,390

ELECTRICAL PLUG SECURING DEVICE

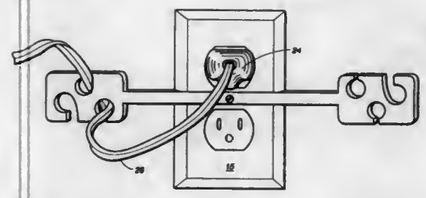
Mark E. Laherty, P.O. Box 662, Ross, Calif. 94957

Filed Jan. 17, 1995, Ser. No. 375,386
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—373 **4 Claims**

1. A device to prevent the accidental or unintentional removal of an electrical cord plug from a common, household electrical outlet, said device comprising:

a strip of material attached to said electrical outlet;

at least one appendage integrally attached to said strip; and



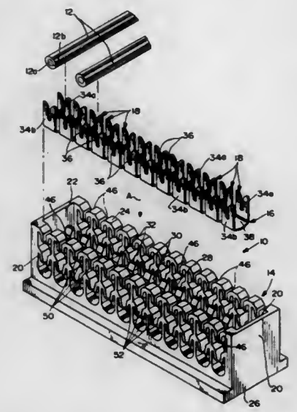
slots formed in said appendage such that an electrical cord, when wrapped around said appendage, may course through said slots in a manner that will inhibit movement of said cord, by friction, when tension is applied to said cord.

5,547,391

COMMONING ELECTRICAL CONNECTOR

Kevin C. Benes, Willowbrook, and Jeffrey J. Pawlicki, Downers Grove, both of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Mar. 11, 1993, Ser. No. 29,862
Int. Cl.[6] H01R *4/24*
U.S. Cl. 439—399 **6 Claims**



1. An electrical connector for commonly connecting a plurality of insulated conductor wires, comprising:

an insulating housing having generally parallel side walls defining an elongated terminal strip-receiving cavity therebetween,

a strip of terminal devices in the elongated cavity of the housing, each terminal device including at least one insulation-displacement wire-terminating slot for reception of an insulated conductor wire, and

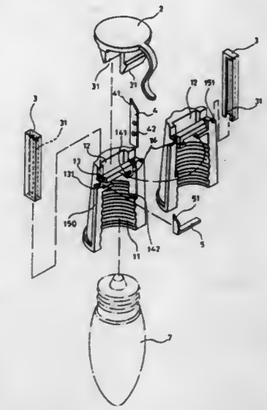
wire-admitting slots in each of said side walls, the wire-admitting slots being aligned with the wire-terminating slots in the terminal devices, each wire-admitting slot including a first, wire-restraining section for temporarily holding an insulated conductor wire prior to insertion into the respective wire-terminating slot and a second, wire-securing section for finally holding the insulated conductor wire when inserted into the wire-terminating slot.

5,547,392

STRUCTURE OF LAMP SOCKET

You-Jen Cheng, and Tzu-Ling Cheng, both of P.O. Box 82-144, Taipei, Taiwan

Filed Dec. 23, 1994, Ser. No. 363,244
Int. Cl.[6] H01R *4/24*
U.S. Cl. 439—419 **1 Claim**



1. A lamp socket comprising a socket body having a positive contact metal plate and a negative contact metal plate securely fixed on inside thereof, and a socket cap fastened to said socket body, and an electric wire retained between said socket body and said socket cap, wherein:

said socket body is comprised of two symmetrical halves fastened together by two fastening blocks, each half comprising a first slot, a first inside flange transversely disposed below said first slot, a second inside flange disposed opposite to said first inside flange, a second slot, a receptacle disposed below said second slot, two longitudinal ribs of substantially triangular cross section bilaterally disposed on the outside, said fastening blocks having a respective dovetail groove, which receives one longitudinal rib of each half of said socket body;

said positive contact metal plate has one end transversely supported between said first and second inside flanges, and an opposite end extended out of said first slot and piercing the insulation of said electric wire to make an electric contact, the transverse end of said positive contact metal plate which is supported between said first and second inside flanges having a raised contact portion extended out of said first and second inside flanges for the contact of a tip contact of the lamp bulb;

said negative contact metal plate has a bottom end inserted into said receptacle, a top end extended out of said second slot and piercing the insulation of said electric wire to make an electric contact, and a plurality of raised contact portions vertically spaced at an outer side thereof for contacting a ring contact of a lamp bulb.

5,547,393

BEAUTY SALON APPLIANCE WORKSTATION

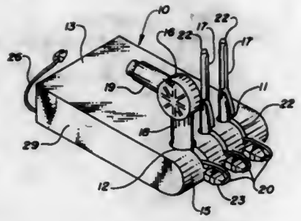
Janice Jansen, Pocahontas, Ark., assignor to Charles Allen, Jonesboro, Ark.

Filed Feb. 16, 1995, Ser. No. 389,776
Int. Cl.[6] A45D *4/16*
U.S. Cl. 439—501 **2 Claims**

1. A beauty salon appliance workstation, comprising:

a plurality of beauty salon appliances;

a cabinet having a plurality of receptacles, each of said receptacles adapted to receive one of said plurality of beauty salon appliances;



a plurality of retractable extension cords disposed within said cabinet, each of said retractable extension cords having a single female electrical outlet;

means allowing said retractable extension cords to be extended outside said cabinet;

means preventing said electrical outlets from being retracted inside said cabinet;

means supplying electrical power to said retractable extension cords; and

said plurality of beauty salon appliances having "pigtail" type power cords with single male electrical plugs whereby each of said male electrical plugs is connected to a respective one of said female electrical outlets such that, when said retractable extension cord is retracted, no substantial dangling loop of said power cords exists.

5,547,394

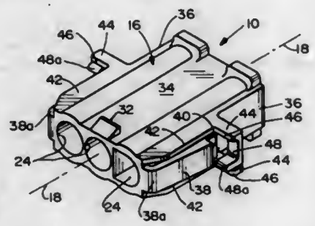
PANEL MOUNTED ELECTRICAL CONNECTOR

Gary M. Comstock, LaGrange, Ill., assignor to Molex Incorporated, Lisle, Ill.

Filed Mar. 8, 1995, Ser. No. 401,052

Int. Cl.[6] H01R *13/73*

U.S. Cl. 439—557 **12 Claims**



1. A panel mounted electrical connector for mounting in an aperture in a panel, comprising:

a dielectric housing adapted to be inserted along an axis through the aperture from a first surface to at least a second surface of the panel and including at least one side wall;

a pair of generally parallel, axially extending ribs projecting from said side wall and defining a channel therebetween having a given width;

a flexible latch arm having a width slightly less than the given width and located in the channel between said ribs and including a locking portion adapted to engage the second surface of the panel at the periphery of the aperture when the housing is inserted therethrough;

a yieldable anti-vibration arm axially aligned with the flexible latch arm, cantilevered transversely from one of said pair of axially extending ribs toward the second rib of said pair, the anti-vibration arm located away from the side wall outside the channel and having a contact portion located between extensions of planes passing through said axially extending ribs, the contact portion of the anti-vibration arm further adapted to engage the first surface of the panel and to bias the locking portion of the flexible latch arm against the second surface of the panel thereby preventing vibration between the connector and the panel; and

rigid stop shoulders projecting transversely outwardly of said ribs and adapted to engage the first surface of the panel at the periphery of the aperture when the housing is inserted completely therethrough and when said anti-vibration arm is flexed a preset maximum amount.

5,547,395

COAXIAL CABLE TERMINATION ARRANGEMENT

Jean C. Delamotte, Henonville, France, assignor to Raychem S.A., France

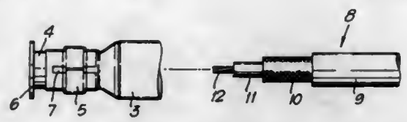
PCT No. PCT/GB93/00326, § 371 Date Jul. 19, 1994, § 102(e) Date Jul. 19, 1994, PCT Pub. No. WO93/16503, PCT Pub. Date Aug. 19, 1993

PCT Filed Feb. 16, 1993, Ser. No. 256,664

Claims priority, application United Kingdom, Feb. 17, 1992, 9203289

Int. Cl.[6] H01R *17/04*

U.S. Cl. 439—578 **4 Claims**



1. A termination arrangement for a coaxial cable, which comprises a dimensionally heat-recoverable sleeve that encloses a connecting element for a screen of the cable and a quantity of solder for forming a permanent electrical connection between the connecting element and said screen, the connecting element (a) comprising a ferrule having a generally cylindrical portion which has one or more axial slits that allow its diameter to change and (b) being biased to a state of relatively smaller diameter and being held in a state of relatively larger diameter by means of at least one of the solder and the sleeve being located within part of said at least one of the slits, the element changing to a smaller diameter state when the sleeve is recovered.

5,547,396

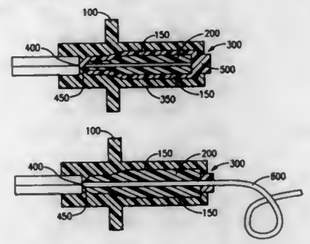
USE OF SEMI-INTERPENETRATING POLYMER NETWORKS FOR CABLE/FIBER RETENTION

George M. Jordhamo, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 4, 1994, Ser. No. 319,180

Int. Cl.[6] H01R *13/58*

U.S. Cl. 439—604 **11 Claims**



1. A strain relief mechanism for retention of a cable, said mechanism comprising:

a connector housing with a hollow center having inside walls, said housing having an open end and another end which has an aperture through which said cable is disposed;

an undersized polymer plug disposed within said connector housing, said undersized polymer plug being smaller in size than said connector housing's hollow center;

said undersized polymer plug also having an opening for said cable to pass through;

a monomer mixture disposed between said undersized polymer plug and said inside walls of said connector housing as to fill any vacancies surrounding said undersized polymer plug; and

said monomer mixture having characteristics so that said monomer mixture interacts with said undersized polymer plug to form a semi-interpenetrating network, causing said undersized polymer plug to swell and fill said hollow center and to press against said cable and said inside walls.

5,547,397

PC CARD CONNECTOR AND PC CARD

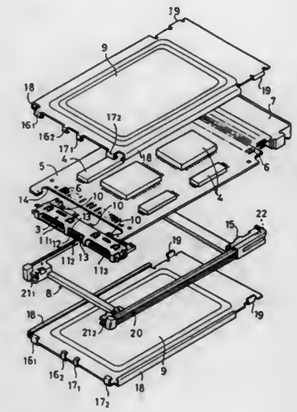
Yuji Hirai, Tokyo, Japan, assignor to Honda Tsushin Kogyo Kabushiki Kaisha (also trading as Honda Tsushin Kogyo Co., Ltd), Tokyo, Japan

Filed Nov. 16, 1994, Ser. No. 341,956

Claims priority, application Japan, Dec. 8, 1993, 5-307786

Int. Cl.[6] H05K *1/14*

U.S. Cl. 439—607 **3 Claims**



1. A PC card comprising:

a print circuit board for mounting electronic circuit elements thereon;

a connector having a connector main body connected to a wiring portion of said print circuit board;

a frame for supporting said print circuit board and containing grooves therein;

a pair of covers covering, from upper and lower sides, said print circuit board, said connector and said frame, each of said covers containing projecting portions attachably received in said grooves;

said connector including a plurality of contacts divided into mutually spaced sets;

said covers cooperating to form a plurality of openings in which said sets of contacts respectively lie exposed for connection with a mating connector; and

said connector main body having at least one groove formed therein between adjacent sets of contacts, said pair of covers further comprising projecting portions interposed between predetermined sets of said adjoining openings for engaging with said at least one groove in said connector main body.

5,547,398

SHIELDED ELECTRICAL CONNECTOR

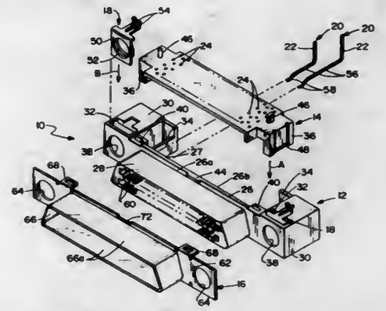
Shouzou Ichikawa, Kawasaki, and Naoya Matsuura, Yokohama, both of, Japan, assignors to Molex Incorporated, Lisle, Ill.

Filed May 22, 1995, Ser. No. 443,416

Claims priority, application Japan, Feb. 23, 1995, 7-002129 U

Int. Cl.[6] H01R *13/648*

U.S. Cl. 439—607 **19 Claims**



1. An electrical connector, comprising:

a housing molded of dielectric material mounting a plurality of terminals, the housing having a front face and a mating portion projecting forwardly of the front face with contact portions of the terminals located on the mating portion;

a conductive shield about at least a portion of the housing and including a flange abutting the front face of the housing and a shroud generally encircling the mating portion of the housing; and

complementary interengaging retaining means between the housing and the shield to properly retain the shield on the housing and including a recess in the flange of the shield and a boss formed integrally with said housing, said boss projecting forwardly from the front face of the housing into the recess.

5,547,399

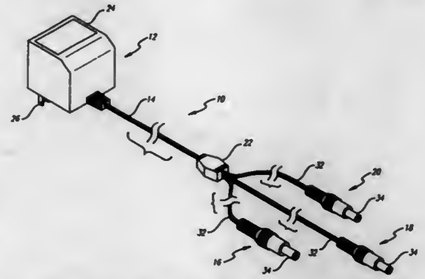
UNIVERSAL AC ADAPTOR FOR CONSUMER ELECTRONICS

Herschel Naghi, 1616 Blue Jay Way, Los Angeles, Calif. 90069, and David E. Naghi, 6630 Moore Dr., Los Angeles, Calif. 90048

Filed Feb. 27, 1995, Ser. No. 395,751

Int. Cl.[6] H01R *9/11*

U.S. Cl. 439—623 **10 Claims**



1. A universal. AC adaptor for home video games, comprising:

a transformer unit having a housing, a wall plug protruding through said housing and engageable with a standard wall

outlet, a transformer having a primary winding and a secondary winding and contained within said housing and coupled to said wall plug at the primary winding thereof for stepping down the AC voltage from the wall outlet, a rectifier circuit contained in said housing and coupled to the secondary winding of said transformer for rectifying the stepped-down voltage to a DC voltage, and a variable resistor connected in parallel to the output of said rectifier circuit;

an output cord having a first end coupled to the output of said rectifier circuit and a second end; and

a plurality of at least three plugs, each said plug having a flexible lead coupled to the second end of said output cord and having a connector protruding therefrom;

each said connectors of said plugs having a configuration different from said connectors of the other said plugs, said configuration being defined by diameter and voltage polarity;

each said connector having a configuration which is useable with a particular home video game unit; and

first and second home video game units coupled respectively to first and second plugs of said plurality of plugs;

whereby said adaptor is useable with most home video game units in that said plurality of plugs have configurations compatible with most home video game units on the market.

5,547,400

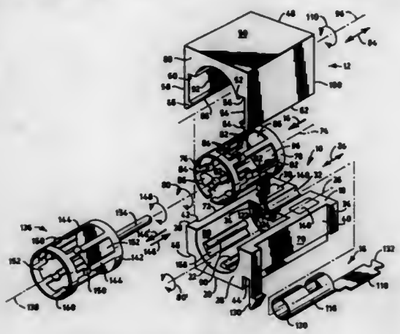
CONNECTOR MODULE

John O. Wright, York, Pa., assignor to Osram Sylvania Inc., Danvers, Mass.

Filed Apr. 24, 1995, Ser. No. 427,476

Int. Cl.[6] H01R *17/04*

U.S. Cl. 439—668 **20 Claims**



1. A connector module comprising:

a base having a first surface, an opposite second surface, a first channel extending into said base from said first surface towards said opposite second surface, said first channel further extending in the direction of a longitudinal axis of said base from a first end of said base towards an opposite second end of said base, and a second channel extending into said base from said first surface towards said second surface, said second channel further extending in the direction of said longitudinal axis of said base from said opposite second end of said base towards said first end of said base, said second channel opening into said first channel;

a cover removably attachable to said base to enclose said first channel and said second channel in a closed mode and to expose said first channel and said second channel in an open mode;

a metal shell positioned within said first channel and extending in the direction of said longitudinal axis of said base; and

a first metal connector positioned within said second channel and extending in the direction of said longitudinal axis of said base.

5,547,401

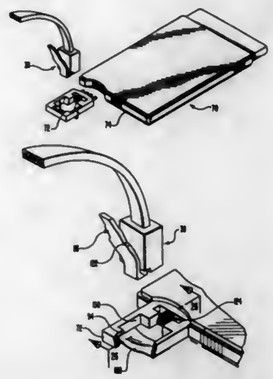
MEDIA CONNECTOR INTERFACE FOR USE WITH A THIN-ARCHITECTURE COMMUNICATIONS CARD

Stephen C. Aldous, Salt Lake City, and Guy M. Dake, Sandy, both of Utah, assignors to Megahertz Corporation, Utah

Continuation-in-part of Ser. No. 40,656, Mar. 31, 1993, Pat. No. 5,338,210, which is a continuation-in-part of Ser. No. 974,253, Nov. 10, 1992, abandoned, which is a division of Ser. No. 866,670, Apr. 8, 1992, Pat. No. 5,183,404. This application Aug. 16, 1994, Ser. No. 291,277

Int. Cl.[6] H01R *17/18*

U.S. Cl. 439—676 **1 Claim**



1. A communications card for use in connecting a downsized computer to a physical/electrical media connector of a communications system, the communications card comprising:

(a) an upper surface;

(b) a lower surface, the lower surface being separated from the upper surface by a distance smaller than the cross-section of the physical/electrical media connector, the electrical components of the communications card being positioned between the upper surface and the lower surface;

(c) an aperture formed in the communications card, the aperture extending from one of the surfaces into the communications card, the aperture being sized and configured so as to directly receive at least a portion of the physical/electrical media connector to connect the physical/electrical media connector to the communications card; and

(d) access means for enabling repeated receiving and removal of the at least a portion of the physical/electrical media connector in the aperture from outside the downsized computer when the communications card is housed within the downsized computer.

5,547,402

BULB SOCKET

Shinji Ogawa, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Jun. 27, 1994, Ser. No. 265,800

Claims priority, application Japan, Jul. 14, 1993, 5-197863

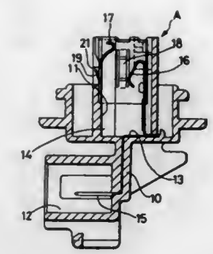
Int. Cl.[6] H01R *17/00*

U.S. Cl. 439—699.2 **20 Claims**

1. A bulb socket for holding a wedge base bulb which has a bulb portion, a base portion and power terminals, said bulb socket comprising:

a socket body for receiving the base portion of the wedge base bulb, said socket body having a longitudinal axis;

supplying terminals for electrically connecting with the respective power terminals of the wedge base bulb under a predetermined pressure, said terminals being held by said socket body; and



holding means for holding the base portion of the wedge base bulb therebetween under a predetermined pressure, said holding means having a plate-like portion extending substantially parallel to said longitudinal axis and being electrically non-conducting, separate from said supplying terminals and attached to said socket body.

5,547,403

BATTERY TERMINAL CLAMP

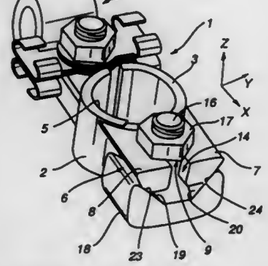
Rudolf Haberstroh, Schonach, and Georges Antonacakis, Ostfildern, both of, Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed Mar. 15, 1995, Ser. No. 405,270

Claims priority, application Germany, Mar. 15, 1994, 44 08 622.9

Int. Cl.[6] H01R *11/26*

U.S. Cl. 439—763 **7 Claims**



1. A battery terminal clamp, comprising:

a clamping receiver having a first and a second clamping jaw which extend in a substantially x-direction from a closed end portion to an open end portion having a first free end and a second free end positioned opposite each other in a y-direction perpendicular to the x-direction, separated from each other by a clamping gap, and movable relative to each other at least in the y-direction;

a tensioning device arranged proximate the open end portion configured to produce a tensioning force which acts in a z-direction perpendicular to an x-y plane defined by the x-direction and the y-direction; and

means for converting the tensioning force into a clamping force which moves the free ends toward each other essentially in the y-direction comprising at least one sloping surface extending obliquely to the x-y plane and at least one counter-surface corresponding to the at least one sloping surface, the at least one sloping surface and the corresponding at least one counter-surface slidingly configured to interact with each other;

wherein an angle between the at least one sloping surface and the x-y plane is greater at a point nearer the closed end than at a point farther away from the closed end.

5,547,404

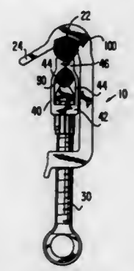
FIXED SPACER HOT LINE TAP

Robert A. Nellis, Jr., Staatsburg; Robert V. DeFrance, Poughkeepsie, and Richard R. Matlock, Catskill, all of N.Y., assignors to Fargo Mfg. Company Inc., Poughkeepsie, N.Y.

Filed Jun. 6, 1995, Ser. No. 467,205

Int. Cl.[6] H01R *4/30*

U.S. Cl. 439—803 **14 Claims**



1. A fixed spacer hot line tap comprising:

a body, said body including a base and a run-conductor groove substantially opposite to said base, said base further having a threaded hole therethrough;

an eyebolt, said eyebolt being screwed through said threaded hole in said base, said eyebolt having a tip at one end, said end with said tip being disposed between said run-conductor groove and said base of said body;

an extender on said tip of said eyebolt, said extender being attached to said tip of said eyebolt and having at least one spline on an outer surface thereof;

a spacer, said spacer comprising a foot, a first leg and a second leg, and a main transfer component together defining an open volume, said foot including a hole through which said extender is passed and secured in a press fit by said at least one spline, said tip of said extender being within said open volume in said spacer; and

a pad, said pad being within said open volume in said spacer and being attached,to said tip of said extender,

whereby, when said eyebolt is tightened, a tap conductor may be secured between said pad and said main transfer component within said open volume in said spacer, and may remain secured when said eyebolt is loosened by virtue of said press fit between said extender and said hole in said foot of said spacer, and a run conductor may be secured between said main transfer component and said run-conductor groove of said body.

5,547,405

CROSSTALK SUPPRESSING CONNECTOR

David R. Pinney, Shefford, and Kevin Stanton, Kettering, both of, United Kingdom, assignors to ITT Industries Limited, Hants, England

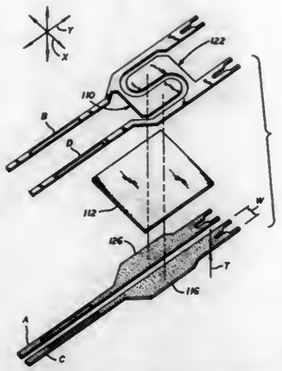
Filed Sep. 23, 1994, Ser. No. 311,247

Claims priority, application United Kingdom, Dec. 3, 1993, 9324816

Int. Cl.[6] H01R *23/02;4/24*

U.S. Cl. 439—894 **10 Claims**

1. An electrical connector that includes a housing and at least four longitudinally elongated and laterally spaced contacts mounted in said housing, with each contact having opposite ends, said contacts including first and second signal carrying pairs of contacts, with an initial contact in each pair lying adjacent to an initial contact of the other pair, and with a secondary contact of each pair not lying adjacent to the initial contact of the other pair, wherein the initial contact of said second pair and the secondary contact of said first pair have overlying portions that are laterally coincident but slightly vertically spaced, with a dielectric between



them, to provide close capacitive coupling between them while keeping them out of direct contact with each other, wherein:

said contacts are each stamped from a sheet of metal, and one of said contacts which has an overlying portion, is formed with an integral laterally extending extension, said extension having a longitudinally narrow middle that overlies one of said contacts that lies laterally between said initial contact of said second pair and said secondary contact of said first pair, said extension having a longitudinally longer end portion that is more than three times as long as the longitudinal length of said middle and that overlies said other of said contacts which has an overlying portion which lies over substantially the entire length of said end portion.

5,547,406

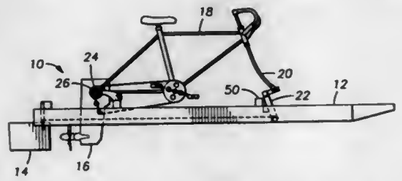
FLOATATION DEVICE WITH PROPELLER AND RUDDER DRIVEN BY A BICYCLE

Robert D. White, P.O. Box, Newton, Ill. 62448

Filed Jul. 6, 1995, Ser. No. 498,930

Int. Cl.[6] B63B *35/00*

U.S. Cl. 440—12 **12 Claims**



1. A floatation device for use with any standard bicycle frame allowing an individual the ability to have a self propelled water craft, comprising:

(a) floatation means having sufficient buoyancy to allow a standard bicycle frame and rider to maintain their balance on a surface of water;

(b) a steering mechanism having a yoke assembly adapted for coupling with the front fork of a bicycle frame;

(c) left and right rear mounting brackets extending upward from the floatation device for coupling with the rear axle slots of the bicycle frame, wherein the yoke assembly and the rear mounting brackets support the bicycle frame in an upright position;

(d) a propeller drive assembly comprising

(1) a transverse axle disconnectably connected to the rear mounting brackets;

(2) a drive gear assembly mounted concentrically about the axle comprising a chain sprocket rigidly coupled to an upper drive belt sprocket, and first and second bearings fixed at opposite ends of the assembly and engaging the axle to allow the assembly to spin freely about the axle;

(3) a rigid, water-tight housing downwardly depending from the axle having an inner wall;

(4) a lower bearing attached to the inner wall of the housing and having a rearwardly extending axis of rotation;

(5) a propeller shaft extending through the lower bearing having a propeller attached to a first end and a lower drive belt sprocket coupled to a second end;

(6) a drive belt frictionally engaging the upper and lower drive belt sprockets;

(7) upper and lower idlers coupled to the housing wall adjacent the upper and lower drive belt sprockets respectively, wherein one of the idlers is adapted to adjust the tension on the drive belt;

(8) wherein the housing substantially encloses the upper and lower drive belt sprockets and the upper and lower idlers, and wherein the chain sprocket cluster is freely accessible for engagement with a bicycle chain so that pedaling the bicycle causes the propeller to push the floatation device forward.

5,547,407

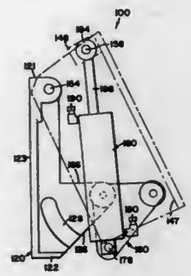
BOAT MOTOR TRIM AND TILT ASSEMBLY

James G. Peirce, Madison Lake, Minn., assignor to Johnson Worldwide Assocites, Inc., Sturtevant, Wis.

Filed Jan. 20, 1995, Ser. No. 376,187

Int. Cl.[6] B63H *5/12*

U.S. Cl. 440—61 **16 Claims**



1. An apparatus for pivoting a propulsion unit relative to a watercraft, comprising:

a first rigid member to be connected to the watercraft;

a second rigid member to be connected to the propulsion unit, wherein said second rigid member is pivotally connected to said first rigid member at a first pivot point;

a third rigid member disposed between said first rigid member and said second rigid member, and pivotally connected to said first rigid member at a second pivot point;

a linear force applying means that cooperates with said third rigid member to maintain said second rigid member at a desired orientation relative to said first rigid member, said linear force applying means having a first end pivotally connected to said second rigid member, and a second end pivotally connected to said third rigid member, wherein when said linear force applying means is in a first, relatively contracted configuration, said second rigid member occupies a first orientation relative to said first rigid member, and when said linear force applying means extends toward a second, relatively extended configuration, said third rigid member pivots about said second pivot point as said second rigid member pivots about said first pivot point to a second orientation relative to said first rigid member, and when said linear force applying means extends toward a third, relatively more extended configuration, said third rigid member remains in an effectively fixed orientation as said second rigid member pivots about said first pivot point to a third orientation relative to said first rigid member.

5,547,408

COMPRESSION WASHER ASSEMBLY WITH LINE CUTTER FOR A BOAT PROPELLER SHAFT

Lars Skyman, Gothenburg, Sweden, assignor to AB Volvo Penta, Gothenburg, Sweden

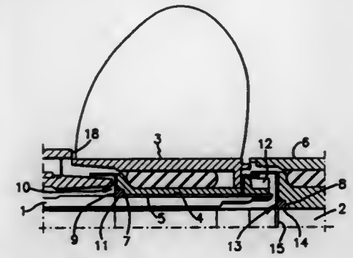
PCT No. PCT/SE93/01025, § 371 Date May 26, 1995, § 102(e) Date May 26, 1995, PCT Pub. No. WO94/12387, PCT Pub. Date Jun. 9, 1994

PCT Filed Nov. 26, 1993, Ser. No. 446,623

Claims priority, application Sweden, Nov. 30, 1992, 9203593

Int. Cl.[6] B63H *1/28*

U.S. Cl. 440—73 **9 Claims**



1. Compression washer assembly, for mounting on a boat propeller shaft between an abutment surface on the shaft and an end surface on the propeller hub, comprising an inner hub portion with a cross section conforming to the shaft and a cup with a line cutting edge, characterized in that the hub portion (**9**) comprises a plurality of axially stacked continuous washers (**22**), which are fixed in an opening (**19**) at the bottom of the cup (**16**).

5,547,409

MANUFACTURING METHOD OF PICTURE TUBE

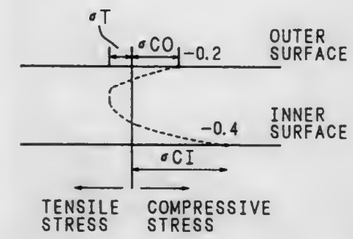
Koji Nakamura, and Tetsushin Yazu, both of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 28, 1994, Ser. No. 330,735

Claims priority, application Japan, Dec. 28, 1993, 5-335383

Int. Cl.[6] H01J *9/24*

U.S. Cl. 445—8 **15 Claims**



1. A manufacturing method of a picture tube, comprising the steps of:

forming a glass bulb comprising a panel portion, including a rectangular panel screen and a side face portion surrounding an outer peripbery of the rectangular panel screen, a funnel portion connected to the side face portion of the panel portion and being sealed with an anode button, and a neck portion connected to the funnel portion;

physically reinforcing the glass bulb to increase tensile stress in a central portion of a wall of the panel portion and to increase compressive stress on an outer surface of the panel portion;

exhausting the inside of the glass bulb; and

tightening the side face portion of the panel portion with a metal ring in order to prevent implosion.

5,547,410

METHOD OF MAKING AN IMPROVED TARGET/STEM CONNECTION FOR X-RAY TUBE ANODE ASSEMBLIES

Michael R. Eggleston, Scotia; Mark G. Benz, Burnt Hills; Melvin R. Jackson, Niskayuna; John R. Hughes, Scotia, and Thomas R. Raber, East Berne, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 8, 1994, Ser. No. 272,065

The portion of the term of this patent subsequent to Jul. 8, 2014, has been disclaimed.

Int. Cl.[6] H01J *9/18*

U.S. Cl. 445—28 **26 Claims**

1. The method for bonding a target to a stem for use in a rotating x-ray tube anode comprising the steps of:

pressing and sintering a combination TZM target with a Ta-alloy insert;

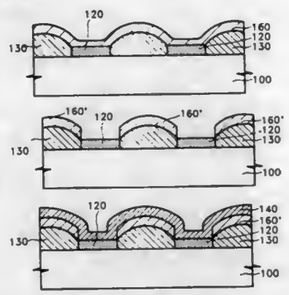
forging the target insert combination at a temperature of about 1400° C. to about 1700° C.;

stress relief annealing the combination at a temperature of about 1500° C. to about 1900° C.;

inserting a Nb-alloy shaft into the target; and

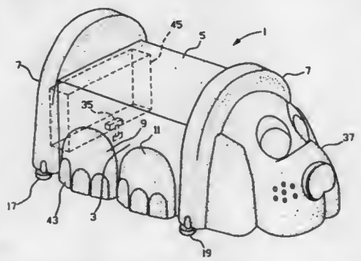
performing final heat treat on the combination from about 1200° C. to about 1500° C. wherein a combined stem target is interdiffused to each other wherein the coefficient of thermal expansion of the stem material is greater than the coefficient of thermal expansion of the insert material which is in turn greater than the coefficient of thermal expansion of the target material.

5,547,411
METHOD OF MANUFACTURING COLOR CATHODE RAY TUBE SCREEN
Byeong-yong Lee, Seoul, Rep. of Korea, assignor to Samsung Display Devices Co., Ltd., Kyungki-do, Rep. of Korea
Division of Ser. No. 125,216, Sep. 23, 1993, Pat. No. 5,489,816.
This application May 31, 1995, Ser. No. 454,743
Claims priority, application Rep. of Korea, Dec. 16, 1992, 92-24471
Int. Cl.[6] H01J *9/227*
U.S. Cl. 445—52 **2 Claims**



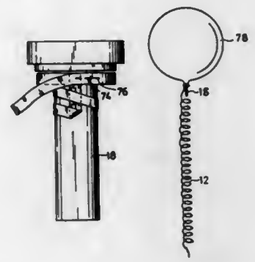
1. A method of manufacturing a color cathode ray tube having an improved screen comprising the steps of:
forming a black matrix on an inner surface of a panel;
forming a red, green and blue phosphor layer on the panel between elements of said black matrix;
forming a first film of a specific thickness on said phosphor layer and said black matrix;
removing said first film from said black matrix so that said first film remains on said phosphor layer;
overlaying a metal film on said first film and on said black matrix;
heat-processing the panel to pyrolyze said first film;
installing a shadow mask assembly on the panel; and coupling a funnel having a neck and an electron gun in the neck to the panel.

5,547,412
CHILDREN'S STEPSTOOL WITH AUTOMATIC ELECTRONIC MESSAGE MECHANISM
James J. Wilcox, Oldwick, N.J., assignor to Stap and a Half Toys, Oldwick, N.J.
Filed Jan. 25, 1995, Ser. No. 377,868
Int. Cl.[6] A63H *3/00;5/00;33/00*
U.S. Cl. 446—73 **20 Claims**



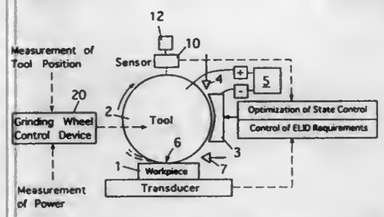
1. A stepstool for children with an automatic electronic message mechanism, which comprises:
a) a main housing which includes at least one horizontal step and a substantially vertical support connected to said step, said vertical support having a bottom;
b) at least one compressive pod located on the bottom of said substantially vertical support, said pod having a first, uncompressed height state, and having a second compressed height state, said second height being less than said first height, said second compressed height being establishable by application of a predetermined weight to said main housing;
c) an electronic message mechanism having a power source, an audio driver, a speaker, and a predetermined message chip having a predetermined message, and having an on/off switch, said audio driver and said predetermined message chip being electrically connected to said audio driver, said audio driver being electrically connected to said speaker, said electronic message mechanism being connected to said main housing and being positioned relative to said at least one compressive pod such that when said compressive pod is in its first, uncompressed height state, said switch is in its "off" position, and when said compressive pod is in its second, compressed height state, said switch is moved to its "on" position to activate said predetermined message.

5,547,413
HEAT-STAKED TETHER FOR TOY BALLOONS
Robert H. Murray, 52 Manor Hill Dr., Fairport, N.Y. 14450
Filed May 25, 1995, Ser. No. 450,819
Int. Cl.[6] A63H *27/10*
U.S. Cl. 446—220 **15 Claims**



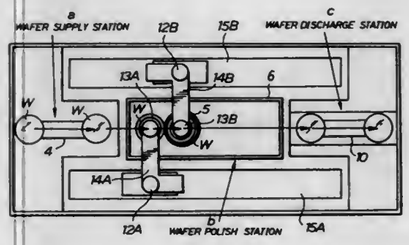
1. A toy balloon support assembly having a safe and effective heat-staked tether, the support assembly comprising;
a) an elongate support member for supporting a toy balloon, said elongate member including a first end for projecting longitudinally from the toy balloon and a second end for projecting longitudinally into the toy balloon; and
b) a ribbon tether consisting of a length of ribbon having a first end and a second end, said first end of ribbon tether being aligned against said first end of said elongate member, and said first end of said ribbon tether, as aligned, including an area thereof beat-staked to said first end of said elongate member, wherein said first end of said ribbon tether is disposed between said first end of said elongate member and said second end of said elongate member, and extends towards said second end of said elongate member,
whereby, when a force is applied to said second end of said ribbon tether in a direction substantially parallel to the axis of said elongate member, said ribbon tether will not peel off from said elongate member.

5,547,414
METHOD AND APPARATUS FOR GRINDING WITH ELECTROLYTIC DRESSING
Hitoshi Ohmori, Tokyo, Japan, assignor to Rikagaku Kenkyusho, Saitama-ken, Japan
Filed Aug. 23, 1994, Ser. No. 294,335
Claims priority, application Japan, Aug. 30, 1993, 5-213675
Int. Cl.[6] B24B *49/00*
U.S. Cl. 451—21 **15 Claims**



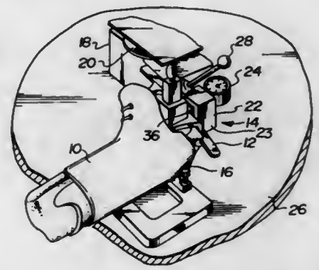
1. A method of grinding with electrolytic dressing, comprising the steps of:
grinding a workpiece with an electrically-conductive grinding wheel;
dressing the grinding wheel by supplying a conductive fluid between an electrode and said grinding wheel and applying a voltage between the electrode and the grinding wheel;
directly measuring a position of a working surface of the grinding wheel using an eddy current sensor arranged in proximity to, but not in contact with the working surface; and
controlling the position of the grinding wheel based on the position of the working surface.

5,547,415
METHOD AND APPARATUS FOR WAFER CHAMFER POLISHING
Fumihiko Hasegawa, Urawa; Tatsuo Ohtani, and Yasuyoshi Kuroda, both of Fukushima, all of, Japan, assignors to Shin-Etsu Handotai Co., Ltd., Japan
Filed Jun. 7, 1993, Ser. No. 72,741
Claims priority, application Japan, Jul. 31, 1992, 4-053886 U; Jul. 31, 1992, 4-205275
Int. Cl.[6] B24B *9/06*
U.S. Cl. 451—44 **17 Claims**



1. An apparatus for polishing chamfers of a semiconductor wafer, wherein said wafer has a periphery including an orientation flat portion, said apparatus comprising:
a wafer supply station from which the wafer is picked
a wafer polish station where the wafer's chamfers are polished, wherein said wafer polish station is capable of polishing both the chamfers along the orientation flat portion of the periphery of the wafer and those along a remainder of the periphery of the wafer,
a wafer clean station where the wafer is cleaned,
a wafer discharge station where the wafer is discharge, and
a wafer transportation means for picking up the wafer, turning the wafer circumferentially, and transporting the wafer to the wafer polish station, to the wafer clean station, and to the wafer discharge station in this order, said wafer transportation means being further adapted to keep holding the wafer as it carries the wafer from the wafer supply station until it releases the wafer at the wafer discharge station
wherein said wafer supply station, said wafer polish station, said wafer clean station, and said wafer discharge station are arranged in a row along a straight line, and said wafer transportation means includes means for transporting the wafer in a straight line.

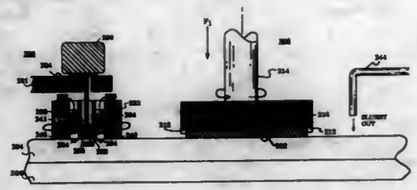
5,547,416
SKATE SHARPENING GAUGE
Alfred R. Timms, 4650 Martingale Crescent, Langley, British Columbia, V3A 4P6, Canada
Filed Aug. 26, 1994, Ser. No. 295,080
Int. Cl.[6] B24B *7/19*
U.S. Cl. 451—45 **11 Claims**



1. For use in a skate blade sharpening apparatus having a grinding wheel mounted on a table and a skate holder slidably mounted on said table and operative to clamp a skate so that said skate blade can be slid into and out of contact with the grinding wheel and thereby sharpen said blade, a device for determining whether or not a skate blade has been accurately sharpened, comprising:
(a) a base block affixable to said table;
(b) a pivotal block pivotally journaled to said base block about a pivotal axis, having an outer skate contacting surface disposed at a level of said pivotal axis when said base block is affixed to said table; and
(c) measuring means coupled to said pivotal block for measuring the pivotal displacement of said outer skate contacting surface of said pivotal block from a vertical orientation in response to contact by the blade of an ice skate mounted in said skate holder.

5,547,417
METHOD AND APPARATUS FOR CONDITIONING A SEMICONDUCTOR POLISHING PAD
Joseph R. Breivogel, Aloha; Matthew J. Price, and Christopher E. Barns, both of Portland, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.
Filed Mar. 21, 1994, Ser. No. 210,957
Int. Cl.[6] B24B *53/00*
U.S. Cl. 451—58 **19 Claims**

1. A pad conditioning assembly for generating a plurality of grooves in a polishing pad used to polish thin films formed on a semiconductor substrate, said pad conditioning assembly comprising:
a rotatable conditioning block having a top surface and a substantially planar bottom surface; said rotatable conditioning



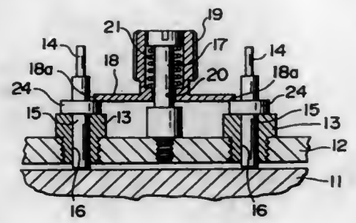
block capable of sweeping back and forth between an inner radius of said polishing pad and an outer radius of said polishing pad while said rotatable conditioning block rotates about an axis substantially perpendicular to said polishing pad and said substantially planar bottom surface having a plurality of discreet points extending from said substantially planar bottom surface capable of generating said plurality of grooves.

5,547,418

OPTICAL FIBER END-SURFACE POLISHING DEVICE

Mitsuo Takahashi, Matsudo, Japan, assignor to Seikoh Giken Co., Ltd., Chiba-ken, Japan

Filed Mar. 3, 1995, Ser. No. 397,967
Claims priority, application Japan, Oct. 7, 1994, 6-270530
Int. Cl.[6] B24B *7/00*
U.S. Cl. 451—278 **2 Claims**



1. An optical fiber end-surface polishing device for simultaneously polishing end surfaces of a plurality of optical fibers, comprising:

a holder plate for fixing and supporting a plurality of ferrules, each ferrule having an optical fiber attached thereto;

at least two ferrule accommodating sockets provided on the holder plate, each of said sockets having a through hole for accommodating a ferrule, each of said ferrule accommodating sockets including means for positioning the ferrule with respect to said holder plate;

a stationary shaft positioned on the holder plate and extending in a direction substantially parallel to that of the through holes;

a ferrule presser lever supported by and rotatable on said stationary shaft, said lever including an integrally formed operating knob in registration with the stationary shaft; and

biasing means for urging the ferrule presser lever toward the holder plate, said biasing means comprising a compression spring provided between said ferrule presser lever and said stationary shaft,

whereby the ferrule presser lever can be moved against a biasing force of the compression spring by moving the operating knob, and

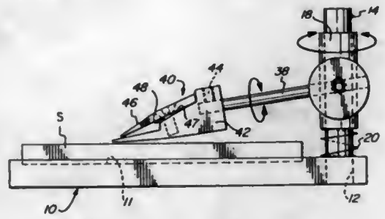
whereby said ferrule presser lever is movable between a first angular position where the ferrules inserted into the associated ferrule accommodating sockets are pressed against said holder plate by said ferrule presser lever and a second angular position where the polished ferrules are detachable from said holder plate.

5,547,419

KNIVES AND SCISSORS SHARPENER

Andrew M. Hulnicki, 60 Old Town Rd., No. 99, Vernon, Conn. 06066

Filed Aug. 31, 1994, Ser. No. 298,271
Int. Cl.[6] B24B *3/48*
U.S. Cl. 451—321 **10 Claims**



1. Blade-sharpening apparatus, comprising:

a base adapted to support sharpening means;

a blade holder including, in combination, a mounting member, a clamping member, and attaching means attaching said mounting and clamping members to one another for relative rotational movement of said clamping member through an angle of at least 180° about a first axis, said first axis extending between said mounting and clamping members, and said clamping member being so constructed as to dispose a clamped blade substantially in the plane in which said first axis extends; and

support means operatively associated with said base and supporting said blade holder for movement of said clamping member over said base, said support means and mounting member being cooperatively so constructed as to enable both free reciprocal axial movement of said holder on, and also free rotational movement of said blade holder through an angle of at least 180° about, a second axis extending generally normal to said base, said mounting member including a body portion constructed to enable such free axial and rotational movement of said blade holder on and about said second axis, and a head portion attached to said body portion for relative rotation of said head portion about a third axis perpendicular to both of said first and second axis, said body portion and said head portion having cooperating means thereon to disengageably affix said attaching means with a selected variable angle between said first and second axes and about said third axis, so that a blade held by said clamping member can be lowered, by displacement of said blade holder on said second axis, into contact with sharpening means supported on said base, with said first axis extending generally outwardly at such selected angle from said second axis toward said base, and so that said clamping member can be moved arcuately over the sharpening means to effect sharpening of the blade, rotational movement of said clamping member about said first axis serving to permit the maintenance of good contact between the blade and the sharpening means.

5,547,420

APPARATUS FOR PULVERIZING ANIMAL CARCASSES

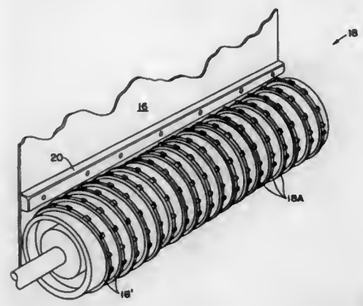
Larry F. Stikeleather, Raleigh, and Jerry R. Mckeithan, Jr., Arden, both of N.C., assignors to North Carolina State University, Raleigh, N.C.

Filed Dec. 15, 1994, Ser. No. 356,686
Int. Cl.[6] A22C *17/00*
U.S. Cl. 452—138 **24 Claims**

1. An apparatus for pulverizing organic material such as animal carcasses and the like for subsequent use or disposal, comprising:

an enclosed housing having an intake opening and an outlet opening;

grinding means positioned between the intake and outlet openings of said enclosed housing for producing finely ground organic matter from animal carcasses introduced into the intake opening of said enclosed housing said grinding means comprising a non-auger type grinding drum defining at least one helical groove therein and having a removable strand of raised cutting teeth mounted in said at least one helical groove with at least a portion of the cutting teeth extending radially above the surface of said grinding drum and extending in helical orientation along the longitudinal length thereof, and carcass retention means positioned adjacent the length of said grinding drum for cooperation therewith to facilitate simultaneous pulverizing of animal carcasses along the length of said grinding drum, said carcass retention means comprising a linear retention bar element mounted in spaced-apart relationship to said cutting teeth; and motor means for rotating said grinding drum.

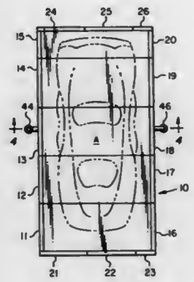


5,547,421

ENVIRONMENTALLY CONTROLLED STORAGE CONTAINERS

Scott Scheetz, R.R. 1, Box 209, Hamilton, Ill. 62341

Filed Jan. 13, 1995, Ser. No. 372,342
Int. Cl.[6] F24F *7/00*
U.S. Cl. 454—250 **12 Claims**



1. Respiratory housing means subjected to natural warming and cooling of ambient air and water vapor;

said housing means defining a substantially sealed volume containing an air and water vapor mixture that is warmed by ambient air and expanded during daytime and cooled by ambient air and contracted during nighttime in response to heat transfer through said housing means;

pressure responsive outlet and inlet valve means connecting said volume with ambient air and water vapor;

said outlet valve being operable in response to warming and expansion of said mixture to exhale the same from said volume;

said inlet valve being operable in response to cooling and contraction of said mixture to inhale ambient air and water vapor into said volume; and,

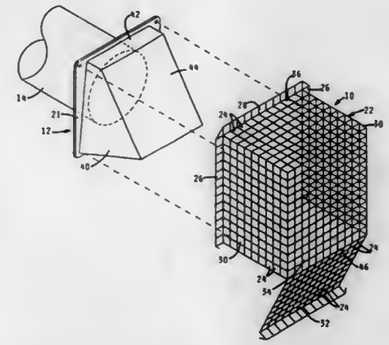
means for delaying operation of said inlet valve until ambient water vapor is condensed by natural cooling.

5,547,422

ACCESSORY VENT DUCT OUTLET PROTECTOR AUXILIARY

David A. Seboldt, 6118 S. Rural Dr., Indianapolis, Ind. 46227

Filed Apr. 28, 1995, Ser. No. 430,843
Int. Cl.[6] F24F *13/10*
U.S. Cl. 454—359 **14 Claims**



1. An accessory vent duct outlet protector auxiliary, provided as an additive attachment for an associated accessory vent duct outlet which leads exhaust substance from associated equipment interiorly of a wall to venting discharge exteriorly of the wall,

the associated vent duct outlet being connected to the wall, and extending outwardly of the wall, and having a movable closure flap means which is movably supported in and between a substance-discharge position which permits the exhaust substance to be discharged through the vent duct outlet and a closed position providing a loosely held barrier of said vent duct outlet,

the auxiliary attachment comprising a framework providing a cage-like body member,

the cage-like body member comprising panel means having opening means therein of restricted size such as to permit discharge of exhaust substance through the opening means but to block entry from the wall's exterior, inwardly toward the associated equipment, of matter of any size significantly larger than the particles of exhaust substance for which the auxiliary attachment is provided,

the cage-like body member having a peripheral flange means by which the cage-like body member may be operatively connected to the assembly of vent duct outlet and wall;

and the flange means is so located with respect to the panel means, and the panel means has a shape, form, and size, such that the flange means is operatively connectable to the wall with the panel means providing an additive enclosure attachment fitting over and enclosing the vent duct outlet.

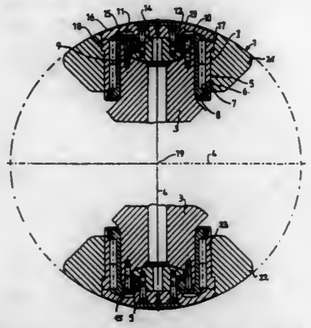
VOL 1189 ISS 3 AUG 20 1996 UMI

5,547,423

UNIVERSAL JOINT OF A CARDAN SHAFT SUITED FOR TRANSMISSION OF HIGH TORQUES

Hans Lindenthal, Heidenheim, and Peter Grawenhof, Bernstadt, both of, Germany, assignors to J.M. Voith GmbH, Heidenheim, Germany

Filed Jan. 13, 1994, Ser. No. 180,710
Claims priority, application Germany, Jan. 19, 1993, P43 011 78.0
Int. Cl.[6] F16D *3/41*
U.S. Cl. 464—136 **2 Claims**



1. A universal joint for a cardan shaft and adapted for transmitting high torques, said universal joint comprising:
two yokes, each said yoke having two bearing bores;
a spider having a plurality of journals respectively disposed in said bearing bores, each said journal having a journal bore, each said journal further defining a correspoding journal axis, said spider defining a joint axis extending generally perpendicular to each said journal axis;
a plurality of radial bearings disposed within respective said bearing bores for rotatably supporting said journal within said bearing bore, each said radial bearing including an inner race having a collar extending toward a respective said journal axis, said collar further extending radially inward towards said journal axis and up into said journal bore and including a first running face which faces toward said joint axis;
a plurality of bearing caps respectively disposed at an axial end of each said journal;
a plurality of components joined respectively to said plurality of bearing caps, each said component including a shoulder defining a second running face extending parallel to a respective said first running face and facing away from said joint axis; and
an axial bearing disposed within said journal bore, said axial bearing defined in part by said first running face and said second running face.

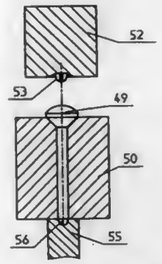
5,547,424

METHOD AND AN APPARATUS FOR MAKING AN ELONGATE OBJECT

Ove Nielsen, Skanderborg, Denmark, assignor to Enkotec A/S, Skanderborg, Denmark

PCT No. PCT/DK93/00082, § 371 Date Oct. 14, 1994, § 102(e) Date Oct. 14, 1994, PCT Pub. No. W093/17809, PCT Pub. Date Sep. 16, 1993
PCT Filed Mar. 3, 1993, Ser. No. 295,687
Claims priority, application Denmark, Mar. 3, 1992, 0275/92
Int. Cl.[6] B23G *9/00*; B21D *22/00*
U.S. Cl. 470—11 **14 Claims**

1. A method of making an elongate object having a head at one end and a point at the other end, comprising the steps of:
providing a preformed head on a shank of a blank so that said head has an excess of material with respect to a final head to be formed on the object,



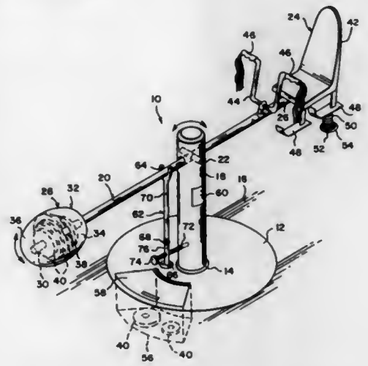
placing the shank of the blank in a through hole of a die such that said head of the blank is at one end of the die and an end of the shank is at an opposite end of the die,
engaging a stop member at said opposite end of the die, said stop member being formed with a cavity in extension of said through hole and facing said end of the shank, said stop member bearing against said die outside said through hole and not extending into said through hole, and
applying axial pressure to said head of the blank to produce flow of material in said shank of the blank so that said material flows at said end of the shank into the cavity in the stop member.

5,547,425

FUTURE TODER RECREATIONAL DEVICE

Gre Krhs, 1182B Market St. #643, San Francisco, Calif. 94102, and George Spector, 233 Broadway Rm. 702, New York, N.Y. 10279

Filed Sep. 9, 1994, Ser. No. 303,728
Int. Cl.[6] A63G *1/32*
U.S. Cl. 472—110 **4 Claims**



1. A playground apparatus which comprises:
a) a base having a central ring bearing mounted onto the ground;
b) a stanchion extending upwardly from said central ring bearing in said base, so as to rotate thereabout;
c) an elongate balance beam pivotally mounted near the top of said stanchion for movement up and down;
d) a seat assembly located at a first end of said balance beam to receive a person;
e) means located at a second end of said balance beam for counterbalancing the weight of the person in said seat, so as to permit the person to rotate said stanchion through a complete revolution in a clockwise and counterclockwise direction and to move said balance beam up and down; wherein said counterbalancing means includes:

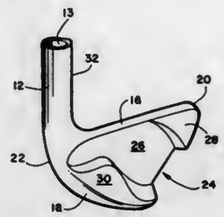
f) an egg-shaped housing having a first portion connected to the second end of said balance beam, whereby a second portion of said housing is separable from the first portion;
g) a swing clasp on said housing for retaining the second portion to the first portion and
h) a plurality of adjustable various sized barbell type weights, which can be placed in any combination onto the second end of said balance beam within said housing, to match the weight at the first end of said balance beam.

5,547,426

PROGRESSIVE GOLF CLUB HAVING A DIAGONALLY BALANCED SLOT BACK

Donald C. Wood, Carlsbad, Calif., assignor to Plop Golf Company, San Diego, Calif.

Filed Dec. 18, 1995, Ser. No. 574,320
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—290 **20 Claims**



1. A set of golf irons comprising:
a plurality of golf irons having progressively increasing shaft lengths and having progressively decreasing loft angles from a shortest iron to a longest iron;
each club comprising a head, a hosel secured to said head at a heel and a shaft connected to said hosel;
each head having a front striking face, a back face, a top edge, a sole, a heel contiguous with said hosel intersecting said sole and heel, and a toe opposite said hosel intersecting said top edge and heel; and
each of said back faces having a slot of predetermined depth extending entirely across said back face from a location adjacent to said intersection of said toe and sole to a location adjacent to said intersection of said heel and top edge to provide a slot floor over a thin center region and diagonally spaced thick regions adjacent to said slot, said thick regions located at said intersection of said sole and heel and at said intersection of said top edge and toe;
whereby said head is diagonally balanced.

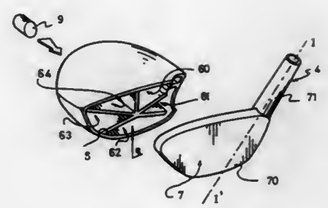
5,547,427

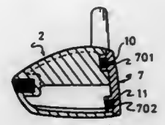
GOLF CLUB HEAD HAVING A HOLLOW PLASTIC BODY AND A METALLIC SEALING ELEMENT

Jean-Pierre Rigal, La Balme-de-Sillingy, and Benoit Vincent, Annecy-le-Vieux, both of, France, assignors to Taylor Made Golf Company, Inc., Carisbad, Calif.

PCT No. PCT/FR93/00196, § 371 Date Sep. 30, 1994, § 102(e) Date Sep. 30, 1994, PCT Pub. No. WO93/19817, PCT Pub. Date Oct. 14, 1993
PCT Filed Feb. 26, 1993, Ser. No. 313,041
Claims priority, application France, Apr. 1, 1992, 92/04191
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—345 **19 Claims**

1. A golf club head comprising:
a hollow body made of a single piece, said hollow body comprising an upper wall and a peripheral wall;
an impact-resistant metallic sealing element, said sealing element comprising a shock-resistant front wall, said front wall





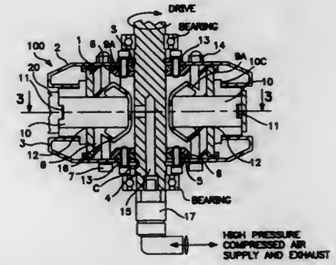
comprising a ball-striking surface, said sealing element cooperating with said hollow body to define an inner space;
said hollow body being molded in thermoplastic and comprising, at a periphery of said hollow body, at least one housing, said housing having therewithin an additional mass made of a high-density material; and
said sealing element comprises an upper tubular portion extending to form a neck of said golf club head and being adapted to have force-fitted therein a golf club shaft.

5,547,428

TRANSMISSION

Yutaka Matsuda, Toyonaka, and Kaoru Shimizu, Osaka, both of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 28, 1995, Ser. No. 412,713
Claims priority, application Japan, May 12, 1994, 6-098520
Int. Cl.[6] F16H *55/54*
U.S. Cl. 474—51 **18 Claims**



1. A transmission comprising:
a pair of pulleys at least one pulley having a variable outer diameter; and
means for transmitting power between said pair of pulleys;
said variable outer diameter pulley comprises:
a pipe containing a plurality of penetrating holes disposed radially around a side wall of said pipe;
supporting means having an internal fluid supply passage and a plurality of penetrating holes disposed radially around a side wall of said supporting means; and
a slider disposed in each of said penetrating holes and forming a pulley peripheral face; wherein:
said sliders are moved by fluid supplied through said fluid supply passage in a direction so that the outer diameter of said variable outer diameter pulley enlarges.

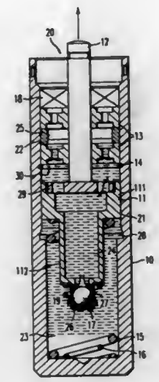
VOL 1189 ISS 3 AUG 20 1996 UMI

5,547,429

AUTO-TENSIONER

Katsumi Hirabayashi, Anjo, and Daigo Usa, Kariya, both of, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Oct. 14, 1994, Ser. No. 323,345
Claims priority, application Japan, Oct. 14, 1993, 5-256619
Int. Cl.[6] F16H 7/08
U.S. Cl. 474—110 3 Claims



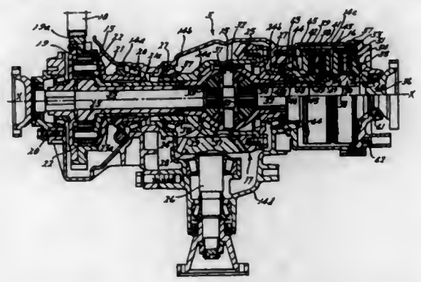
1. An auto-tensioner comprising:
a cylinder whose one end and is formed with a closed end and whose other end is opened;
a plunger slidably inserted into said cylinder with a small gap between its outer circumferential surface and an inner circumferential surface of said cylinder;
a pressure chamber formed between said one end of said cylinder and one end of said plunger;
a first reservoir chamber portion which communicates with said pressure chamber through said small gap;
a seal member disposed at the other end of said cylinder, wherein said first reservoir chamber portion is formed between said seal member and an other end of said plunger;
a rod connected with the other end of said plunger while slidably penetrating said seal member;
a check valve which is disposed at the one end of said plunger and which opens a passage formed in said plunger for communicating between said pressure chamber and said first reservoir chamber portion when the pressure of said pressure chamber becomes lower than that of said first reservoir chamber portion; and
a coil spring disposed in said pressure chamber and engaging said plunger so as to urge said plunger toward the other end of said cylinder;
wherein said plunger is provided with a cylindrical portion having one end connected to said plunger, said cylindrical portion projecting from a region of engagement of said coil spring with said plunger into the axial center space of said coil spring at the center portion of one end thereof, wherein a second reservoir chamber portion which has a diameter greater than that of said passage and which communicates with said first reservoir chamber portion is formed in said cylindrical portion, and wherein said passage and said check valve are provided on an end of said cylindrical portion for controlling the communication between said pressure chamber and said first reservoir chamber portion through said second reservoir chamber portion, said check valve being positioned at the end of said cylindrical portion projected into said coil spring.

5,547,430

IMPROVERD DRIVE ASSEMBLY FOR A FOUR WHEEL DRIVE VEHICLE HAVING A FIRST AND SECOND VISCOUS COUPLING

Christian Gasch, Lohmar, Germany, assignor to GKN Viscodrive GmbH, Lohmar, Germany

Filed Mar. 15, 1994, Ser. No. 213,187
Claims priority, application Germany, Mar. 16, 1993, 43 08 268.8
Int. Cl.[6] F16H 48/26
U.S. Cl. 475—89 6 Claims



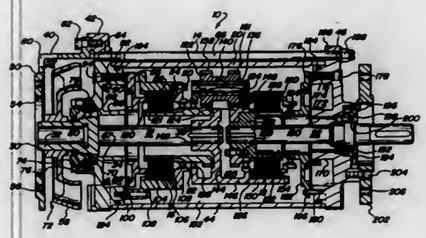
1. A drive assembly for a four wheel drive vehicle, comprising;
a distributor differential having a ring gear, a planetary gear carrier and a sun gear, said distributor differential including a spur gear differential distributing driving torque between a first and second drive axle;
a first viscous coupling, said viscous coupling at least partially eliminating the differential function of said distributor differential;
an axle differential;
and a second viscous coupling, said second viscous coupling at least partially eliminating the axle differential function, both said differentials and said first and second viscous couplings are arranged in the region of one of said drive axles;
said ring gear of the distributor differential is connected to a main drive of a motor vehicle, said planetary gear carrier of said distributor differential is connected to an axle drive of the second drive axle and said sun gear is connected to an axle drive of the first drive axle, said first viscous coupling being arranged between a differential gear carrier of the axle differential of the axle drive of the first drive axle and an output end of said axle differential of said first drive axle directed towards a wheel of the first drive axle, said two viscous couplings being arranged coaxially relative to one another on one side of the axle differential and coaxially relative to said output end of said axle differential of said first drive axle, which includes a plug-in shaft, said viscous coupling each including inner plates and outer plates, an inner plate carrier and an outer plate carrier and an inner space defined between both by housing parts and being at least partially filled with a high viscosity medium;
said two viscous couplings are arranged side by side, said inner plate carriers of both viscous couplings are non-rotatingly connected to one another and, by means of a plug-in connection, to the differential gear carrier of the axle differential of the first drive axle, said outer plate carrier of the first viscous coupling, by means of a plug-in connection, is connected to a driving dish, said driving dish including a gearwheel of an angle drive for driving the second drive axle, a plug-in shaft passes through the inner plate carrier of both viscous couplings and is non-rotatingly connected to an associated output bevel gear of the axle differential of the first drive axle by means of a plug-in connection and to an outer plate carrier of the second viscous coupling, and said plug-in connections are arranged coaxially relative to one another;
wherein towards the axle differential, the inner plate carrier of the second viscous coupling is extended by a projection with the help of which, by means of a plug-in connection, it non-rotatingly engages a correspondingly designed connecting both of the differential gear carrier of the axle differential and by means of teeth on the outer face of the projection of the inner plate carrier of the second viscous coupling, the inner plate carrier of the first viscous coupling is non-rotatingly accommodated by counter teeth.

5,547,431

ELECTRICALLY ENERGIZED OIL SHEAR DRIVE SYSTEM

Gordon M. Sommer, Grosse Pointe Farms, Mich., assignor to Midwest Brake Bond Company, Warren, Mich.

Continuation-in-part of Ser. No. 59,585, May 10, 1993, Pat. No. 5,454,765. This application Nov. 22, 1994, Ser. No. 343,191
Int. Cl.[6] F16H 37/06
U.S. Cl. 475—154 20 Claims



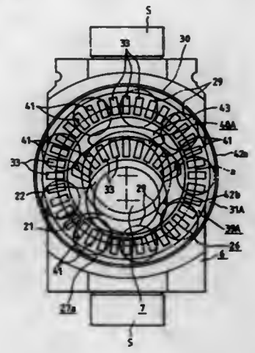
1. A two speed drive comprising:
input means for transmitting rotation to said two speed drive;
output means for transmitting rotation from said two speed drive;
a planetary gear train disposed between said input means and said output means, said gear train comprising;
a first gear member rotatably supported within said drive;
a second gear member rotatably supported within said drive;
a planetary member drivingly engaging said first and second gear members, said planetary member comprising a plurality of planet gears meshingly engaging said first and second gear members and a carrier rotatably supporting and circumferentially locating said plurality of planet gears with respect to said first and second gear members, each of said planet gears defining a respective planet gear axis of rotation, at least one of said planet gears being axially movable along said respective planet gear axis of rotation;
said input means being connected to one of said members of said planetary gear train, said output means being connected to another one of said members of said planetary gear train;
a selectively operable clutch for locking said first gear member of said planetary gear train to said output means to place said two speed drive in a first ratio, said clutch being capable of being positioned in an engaged or a disengaged condition;
a clutch biasing member to urge said clutch into said engaged condition; and
a selectively operable brake for prohibiting movement of said second gear of said planetary gear train to place said two speed drive in a second ratio, said brake being capable of being positioned in an engaged or disengaged position, said input means and said output means being prohibited from rotation by placing said brake and said clutch in said engaged positions.

5,547,432

TOROIDAL-TYPE CONTINUOUSLY VARIABLE TRANSMISSION

Takashi Imanishi, Yokohama; Tsutomu Abe, Chigasaki, and Hideki Kokubu, Fujisawa, all of, Japan, assignors to Nsk Ltd., Tokyo, Japan

Filed Dec. 14, 1994, Ser. No. 358,571
Claims priority, application Japan, Jan. 24, 1994, 6-005997
Int. Cl.[6] F16H 15/38; F16C 19/30;19/48
U.S. Cl. 476—40 4 Claims



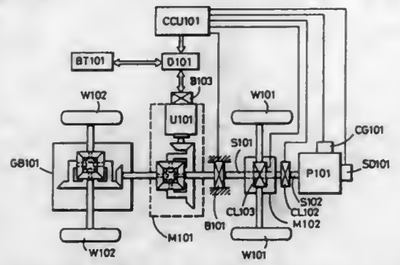
1. A toroidal-type continuously variable transmission, comprising:
a first disc which is rotatably supported; a second disc which is rotatably supported so as to be coaxial with said first disc and having an inner surface that faces an inner surface of said first disc; trunnions which are rocked around corresponding pivots transverse to the axes of the first and second discs; mobile shafts each of which includes a support shaft portion and a pivot portion parallel with and eccentric with respect to the support shaft portion and each of which is rotatably supported at its support shaft portion by a corresponding one of the trunnions, with its pivot portion projecting from an inner surface of the trunnion; power rollers each of which is rotatably supported around a corresponding one of the pivot portions and held between the first and second discs; thrust ball bearings each of which is set on an outer surface of a corresponding one of the power rollers in order to absorb thrust load given to the power roller while allowing the power roller to rotate; and thrust needle bearings each provided between an outer surface of the outer ring of a corresponding one of the thrust ball bearings and the inner surface of the corresponding trunnion in order to absorb thrust load given from the power roller and the outer ring, whereby the pivot portions and the outer rings can be rocked around the corresponding support shaft portions, wherein the inner surfaces of the first and second discs are formed to be surfaces of revolution each having a cross-sectional outline including an arcuate portion, the peripheral surfaces of the power rollers are spherical, the peripheral surface of each power roller comes into contact with the inner surfaces of the first and second discs, and wherein the following two conditions are satisfied:
(1) at least 70% of the entire circumference of a pitch circle of each thrust ball bearing, as seen in an axial direction of the corresponding pivot portion, is included in a load-absorbing region where a plurality of needles of the corresponding thrust needle bearing can absorb the thrust load; and
(2) a maximum interval between adjacent needles in said load-absorbing region does not exceed 5% of the entire circumference of said pitch circle.

VOL 1189 ISS 3 AG 20 1996 UMI

5,547,433
DISTRIBUTED DIFFERENTIAL COUPLING COMBINED POWER SYSTEM

Tai-Her Yang, No. 32 Lane 29, Taipin St., Si-Hu Town, Dzan-Hwa, Taiwan

Filed Oct. 3, 1994, Ser. No. 317,597
Int. Cl.[6] B60K *41/14*
U.S. Cl. 477—5 18 Claims



1. A differential combined power distribution system for use in rotational driving applications, comprising:

a rotational power source which includes a rotational output shaft coupled to drive a front section load, and also coupled with the input shaft of an electromagnetic coupling device to drive a rear section load,

wherein the electromagnetic coupling device includes means for generating a rotating electromagnetic field, and a rotor arranged to electromagnetically couple with said field; and

an operating device which includes means for controlling the electromagnetic coupling device to generate motor driving functions when an input current is applied and to generate variable speed coupling functions through an output current when the electromagnetic coupling device is employed as a generator, the operating device also including means for controlling the electromagnetic coupling device to start the engine and to serve as a power regeneration brake when the engine is the main power source for the front and rear section loads, means for causing the electromagnetic coupling device to charge a battery through a difference between a rotational speed of the rotational field and a rotational speed of the rotor, and means for adjusting the speed difference by controlling a battery charging current,

wherein the operating device thereby allows the rotational power source to be driven at a constant speed and at a partially adjustable speed to improve operating efficiency and decrease pollution, with one part of the differential speed output power generated through the electromagnetic coupling device being used for driving one of the loads independently or together with the rotational power source while the remainder of the output power is converted through the generator function of the electromagnetic coupling device to charge the battery.

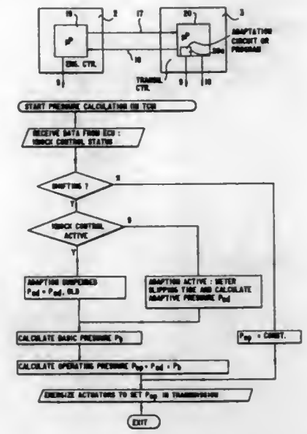
5,547,434
CONTROL FOR A MOTOR VEHICLE DRIVE HAVING AN AUTOMATIC TRANSMISSION

Friedrich Graf, and Dieter Brückner, both of Regensburg, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Continuation-in-part of Ser. No. 934,577, Aug. 24, 1992, abandoned. This application Jul. 15, 1994, Ser. No. 276,165
Claims priority, application European Pat. Off., Aug. 22, 1991, 91114113
Int. Cl.[6] B60K *41/04*
U.S. Cl. 477—109 7 Claims

1. In a motor vehicle drive having an engine and an automatic transmission, a control for the motor vehicle drive comprising:

an engine control connected to the engine for controlling torque of the engine;



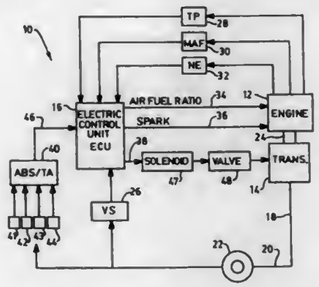
a transmission control connected to the transmission for controlling shifting operations of the transmission and connected to said engine control for sending a tripping signal to said engine control for changing torque and effecting a jerk-free shifting operation; and

means for exchanging data between said engine control and said transmission control preceding the tripping signal, by transmitting information as to a proportion by which the torque can be maximally reduced from said engine control to said transmission control for maximally reducing the torque of the engine for the shifting operation.

5,547,435
AUTOMATIC TRANSMISSION GEAR SHIFT CONTROL DURING POWER REDUCTION

Peter J. Grutter, Plymouth; Matthew J. Gerhart, Dearborn Heights; Matthew J. Gladd, Dearborn, and John A. Cushing, Woodhaven, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 17, 1994, Ser. No. 340,916
Int. Cl.[6] B60K *41/10*
U.S. Cl. 477—110 10 Claims



1. In a powertrain including a multiple gear automatic transmission, an engine controlled by a variable-position throttle and a device enabled part-time to alter the magnitude of power produced by the engine from that corresponding to the throttle position, a method comprising the steps of:

defining a first function relating the operating condition of the powertrain, partially represented by throttle position, to a corresponding desired gear;

defining a second function relating engine speed and net engine torque to a corresponding synthetic throttle position;

determining net engine torque, vehicle speed, engine speed, and throttle position;

determining synthetic throttle position from the second function;

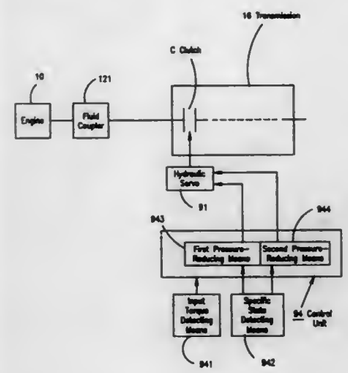
while the device is enabled, substituting synthetic throttle position for throttle position and determining the desired gear from the first function; and

controlling the transmission to produce said desired gear, so determined.

5,547,436
CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION

Masahiro Hayabuchi; Masaaki Nishida, both of Anjo; Yoshihisa Yamamoto, Nishio; Kazuhiro Mikami, Kariya; Hiroshi Tsutsui, Nishio, and Akihito Iwata, Hekinan, all of, Japan, assignors to Aisin AW Co., Ltd., Japan

Filed Apr. 25, 1995, Ser. No. 428,551
Claims priority, application Japan, Jun. 21, 1994, 6-139212
Int. Cl.[6] F16H *61/20;59/04;59/14;59/22*
U.S. Cl. 477—114 3 Claims



1. A control system for an automatic transmission in a vehicle drive train including an engine and a fluid coupling for transmitting the rotation of the engine to the transmission, the transmission including a clutch which is applied responsive to selection of a forward running range and a hydraulic servo which operates responsive to an oil pressure to apply said clutch, said control system comprising:

input torque detecting means for detecting input torque to said transmission;

starting condition detecting means for detecting satisfaction of a specific set of preconditions, said preconditions including (1) that the forward running range has been selected, (2) that the vehicle is stopped, and (3) that the engine is in an idling state; and

a control unit for controlling the oil pressure of said hydraulic servo, said control unit setting the oil pressure of the hydraulic servo to a set pressure corresponding to the detected input torque at the instant satisfaction of said specific set of preconditions is detected, and comprising:

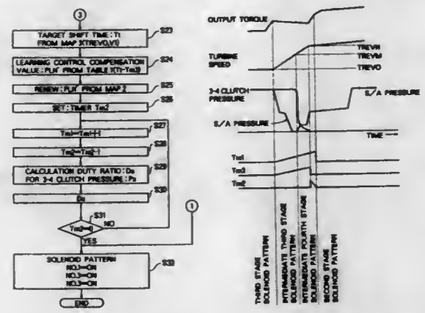
first pressure-reducing means for abruptly reducing the oil pressure of said hydraulic servo to said set oil pressure immediately prior to release of said clutch; and

second pressure-reducing means for gradually further reducing the oil pressure of said hydraulic servo, which has been reduced to said set oil pressure by said first pressure-reducing means.

5,547,437
ADAPTIVE PRESSURE CONTROL BASED ON DIFFERENCE BETWEEN TARGET AND ACTUAL SHIFT TIMES DURING A SHIFT

Shinya Kamada, Hiroshima; Hiroakai Yokota, Higashi-hiroshima; Shigeru Nagayama; Yuji Nakahara, both of Hiroshima; Shin Nakano, Higashi-hiroshima; Toshihisa Marusue, Hiroshima; Mitsutoshi Abe, Hiroshima-ken, and Hiroyuki Matsumoto, Ibaraki-ken, all of, Japan, assignors to Mazda Motor Corporation, Hiroshima-ken, Japan

Filed Oct. 14, 1994, Ser. No. 321,874
Claims priority, application Japan, Oct. 20, 1993, 5-262115
Int. Cl.[6] F16H *61/04*
U.S. Cl. 477—143 14 Claims



1. A shift control system of an automatic transmission comprising:

a first frictional element which is to be released in a shift operation,

a second frictional element which is to be engaged in the shift operation, and

a controller for (1) setting a target time period of the shift operation needed for releasing the first frictional element and engaging the second frictional element, (2) obtaining an actual time period of the shift operation needed for releasing the first frictional element and engaging the second frictional element, (3) determining a difference between the target time period and the actual time period, (4) controlling a releasing pressure of the first frictional element based on the difference between the target time period and the actual time period, and (5) controlling an engaging pressure of the second frictional element in the shift operation.

5,547,438
CONTROL APPARATUS FOR RAISING THE IDLE SPEED (ISC VALUE) AFTER THE LOCKUP CLUTCH IS UNLOCKED

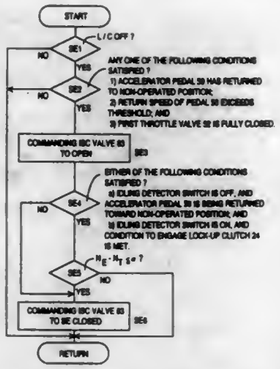
Kazutoshi Nozaki; Kunihiro Iwatsuki, and Tooru Matsubara, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Aug. 30, 1994, Ser. No. 297,855
Claims priority, application Japan, Sep. 10, 1993, 5-225403
Int. Cl.[6] F16H *61/14;* F02D *29/00*
U.S. Cl. 477—169 11 Claims

1. An apparatus for controlling an engine of a motor vehicle, and a lock-up clutch disposed between the engine and an automatic transmission for direct connection therebetween, wherein lock-up clutch control means is provided for engaging said lock-up clutch during deceleration of the motor vehicle, said apparatus comprising:

vehicle deceleration detecting means for detecting a decelerating state of the motor vehicle; and

engine deceleration restricting means, responsive to an output indicating vehicle deceleration by said detecting means, for restricting a rate of decrease of a speed of said engine for a



period following detection of said decelerating state of the motor vehicle by said vehicle deceleration detecting means,

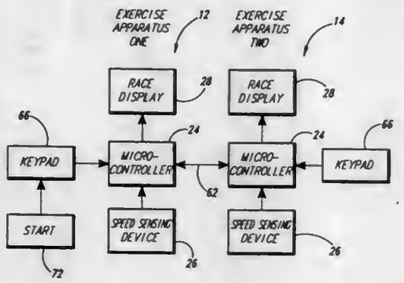
said lock-up clutch control means commanding said lock-up clutch to be engaged after said engine deceleration restricting means is operated said restricting means being disabled after said lockup clutch has been commanded to be engaged.

5,547,439

EXERCISE SYSTEM

R. Lee Rawls, Woodinville; Steven J. Wierlo, Kent, and Cathy L. Wade, Monroe, all of Wash., assignors to StairMaster Sports/Medical Products, Inc., Kirkland, Wash.

Filed Mar. 22, 1994, Ser. No. 216,007
Int. Cl.[6] A63B *21/00*
U.S. Cl. 482—5 **61 Claims**



28. An exercise system, comprising:

a first exercise cycle for a first user to apply a first user exercise effort;

a second exercise cycle for a second user to apply a second exercise effort;

a display control measuring the exercise efforts of the first and second users applied to the first and second exercise cycles and determining the cumulative exercise efforts of the first and second users, the display control determining when the cumulative exercise effort of one of the first and second users is within a preselected range less than the cumulative exercise effort of the other of the first and second users, and while the cumulative exercise effort of the one user remains within the preselected range and in response thereto, adjusting upward the cumulative exercise effort of the one user by a predetermined amount; and

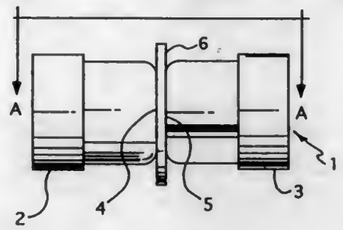
a display displaying an indication of the relative adjusted cumulative exercise efforts of the first and second users.

5,547,440

LUNG EXERCISER

Louis C. Rubens, and Jane R. Rubens, both of 503 Linwood St., Midland, Mich. 48640

Continuation of Ser. No. 58,771, May 10, 1993, Pat. No. 5,439,430. This application Mar. 28, 1994, Ser. No. 217,810
Int. Cl.[6] A63B *23/18*
U.S. Cl. 482—13 **4 Claims**



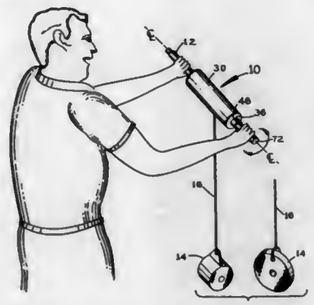
1. A lightweight piston for use in a cylindrical tube of the type including two cup-like pieces and at least one flexible disk and a fastening means, each said cup-like piece being configured essentially identical to the other, each said cup-like piece comprising a back and an outside diameter; each said cup-like piece joined to the other cup-like piece in back to back interfacial relationship to form a piston; said cup-like pieces having at least one flexible disk centered between their joined backs; each flexible disk having a diameter larger than the largest outside diameter of the cup-like pieces, said fastening means securing the cup-like pieces and the flexible disk together.

5,547,441

ADJUSTABLE RESISTANCE CORD WINDING EXERCISE METHOD

Raul Mora, Fort Lauderdale, Fla., assignor to Alrama Enterprises, Inc., Dade City, Fla.

Division of Ser. No. 113,065, Aug. 30, 1993, Pat. No. 5,380,261. This application Nov. 28, 1994, Ser. No. 345,850
Int. Cl.[6] A63B *23/14*
U.S. Cl. 482—46 **2 Claims**



1. A method of exercising the fingers, hands, wrists and forearms, using an apparatus comprising a shaft having a longitudinal axis, a flexible cord connected to said shaft and a weight member suspended from said flexible cord, a hollow outer cylinder shorter than said shaft mounted substantially coaxially over said shaft and having a cord opening through which said cord passes, first and second outer cylinder end walls having central bores and first and second tubular end flanges extending outwardly from said outer cylinder end walls and over said shaft, said first end wall being structurally connected to said outer cylinder, and a first set screw in said first end flange for tightening to cause said outer cylinder to rotate in unison with said shaft so that the outer surface of said outer cylinder gathers and releases said cord, comprising the steps of:

grasping said shaft with at least one hand and rotating said shaft about said longitudinal axis to lower said weight member,

rotating said shaft about said longitudinal axis to elevate said weight member, and

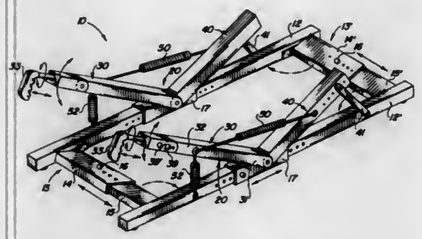
changing the magnitude of rotational resistance by tightening said first set screw to engage said outer cylinder to the shaft to gather said cord about said outer cylinder.

5,547,442

MULTIPLE EFFECT EXERCISE DEVICE

Hector Carballosa, 3301 SW. 139 Ave., Miami, Fla. 33175, and Enrique A. Kairus, 9331 SW. 4 St., Apt. 120, Miami, Fla. 33174

Filed Apr. 17, 1995, Ser. No. 423,342
Int. Cl.[6] A63B *21/02*
U.S. Cl. 482—46 **19 Claims**



1. An exercise device comprising:

(a) a pair of elongate support rails, said support rails being disposed in a spaced apart relation from one another,

(b) at least one connector segment disposed between said support rails so as to maintain said support rails in said spaced apart relation,

(c) a pair of exercise members, each of said exercise members being secured to one of said support rails and comprising:

a fore segment and a rear segment,

said fore segment including a proximal end and a distal end,

a handle grip segment extending from said distal end of said fore segment and structured to be gripped by a user,

fastening means structured to secure said handle grip segment to said fore segment,

said fastening means including biased pivot resistance means structured to enable resisted, pivoted movement of said handle grip segment relative to said fore segment upon pivoted movement of a wrist of the user gripping said handle grip segment,

said fastening means further including biased torsion resistance means structured to enable resisted, torsional movement of said handle grip segment relative to said fore segment upon torsional movement of the wrist of the user gripping said handle grip segment,

said fore segment and said rear segment being hingedly secured to one another and pivotally secured to said support rails,

variable height support means structured and disposed to adjustably secure said rear segment in a plurality of adjusted elevations relative to said support rail,

(d) vertical resistance means disposed between each of said support rails and each of said fore segments of said exercise members, said vertical resistance means being structured to resist movement of said fore segments away from said support rails, and

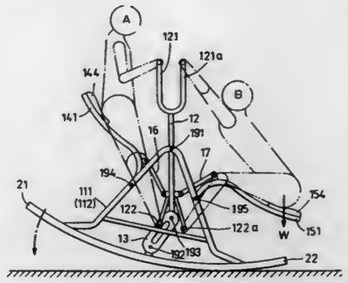
(e) horizontal resistance means structured and disposed to resist movement of said fore segments away from said rear segments.

5,547,443

ROCKING EXERCISE DEVICE WITH TWO SEATS

David Chen, 5Fl., No. 412-12, 2 Sec. Chung Shan Rd., Tai Ping, Taichung, Taiwan

Filed Sep. 7, 1995, Ser. No. 524,879
Int. Cl.[6] A63B *21/04*
U.S. Cl. 482—72 **1 Claim**



1. A rocking exercise device with two seats comprising:

a base body consisting of a plurality of rods erected into a substantially triangular frame,

an upstanding post pivotally connected to a central portion of said base body, a pair of handlebars being mounted on an upper portion thereof, and a pair of foot rests being mounted on a lower portion thereof;

a resilient means having an upper end portion pivotally connected to the lower portion of said upstanding post and a lower end portion pivotally connected to a horizontal bar of said base body, said resilient means being extendible when an external force is applied thereon;

a pair of seats located opposite to each other and supported on a pair of cantilever beams which are pivotally joined to the lateral sides of said base body, each of said seats having a cushion for supporting a user; and

a pair of linkages each of which has an upper end thereof pivotally connected to said upstanding post and a lower end thereof pivotally connected to one of said cantilever beams of said seats, wherein

said base body is mounted on a curved frame, said curved frame having a center of curvature in alignment with a perpendicular central line of said base body, said curved frame having two ends elevated above the floor, leg elements being detachable mounted onto the two ends of said curved frame for supporting and positioning the two ends.

5,547,444

MULTIPURPOSE EXERCISE DEVICE

Ching-Lien Huang, 2F, No. 14, Ning Hsia E. 5 St., Taichung, Taiwan

Filed Oct. 24, 1995, Ser. No. 547,155
Int. Cl.[6] A63B *21/00*
U.S. Cl. 482—72 **3 Claims**

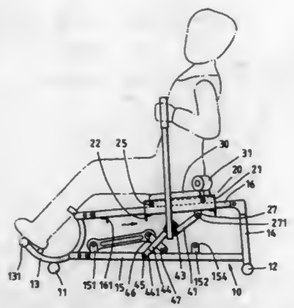
1. A multipurpose exercise device, which comprises:

a frame including a connection rod having a connection rod front end and a connection rod rear end, a front curved rod attached to the connection rod front end, a front cross tube attached to the front curved rod, a rear upright rod attached to the connection rod rear end, a rear cross tube attached to the rear upright rod, and a slanted rod attached between the rear upright rod and the front curved rod;

a sliding member mounted slidably on said slanted rod of said frame;

a seat mounted on said sliding member;

a transmission mechanism disposed in a space defined by said frame;



two rocking rod members fastened with said transmission mechanism; and

at least one elastic means for providing a damping effect;

wherein said connection rod is provided with two pivoting lugs having coaxially through holes;

wherein said transmission mechanism comprises a first support rod fastened pivotally at one end with said sliding member, a horizontal connection rod pivotally connected with said first support rod at another end thereof, and a second support rod fastened at one end thereof with said horizontal connection rod and fastened pivotally at another end thereof with said connection rod, said second support rod having two pivoting lugs;

wherein said rocking rods members are fastened with said horizontal connection rod of said transmission mechanism; and

wherein said elastic means is engageable with said pivoting lugs of said connection rod and the pivoting lugs of said second support rod for providing various damping effects.

5,547,445

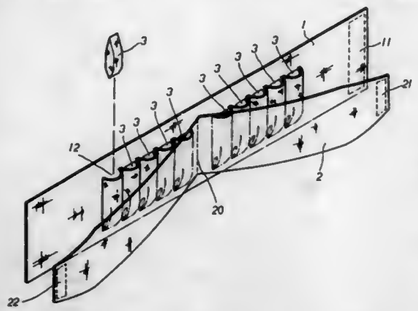
WEIGHTING DEVICE FOR EXERCISE PURPOSES

Sreter Chang, No. 451, Ta Tien Road, Homei Chen, Chang Hua Hsien, Taiwan

Filed May 10, 1995, Ser. No. 438,269

Int. Cl.[6] A63B *21/00*

U.S. Cl. 482—105 **3 Claims**



1. A weighted exercise belt, comprising:

a first belt having a middle portion, a first end portion and a second end portion;

a plurality of open pockets disposed on said first belt, for housing a plurality of weighted members;

first means for fastening said first belt having two mutually engageable fastening parts, one of said fastening parts disposed on said first end portion of said first belt and the other of said fastening parts disposed on said second end portion of said first belt;

a second belt having a middle portion, a first end portion and a second end portion, said middle portion of said second belt being fixed to said first belt; and

a second means for fastening said second belt having two mutually engageable fastening parts, one of said fastening parts being disposed on said first end portion of said second belt and the other of said fastening parts disposed on said second end portion of said second belt; wherein:

when said first end and said second end of said second belt are coupled by said second fastening means, said second belt substantially covers the openings of said pockets and applies pressure to the plurality of weighted members within said pockets thereby prohibiting undesired movement of said plurality of weighted members.

5,547,446

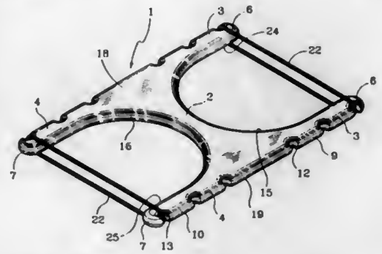
EXERCISE DEVICE

William J. Szabo, 10126 Langmuir Ave., Sunland, Calif. 19040

Filed May 11, 1995, Ser. No. 438,780

Int. Cl.[6] A63B *21/02*

U.S. Cl. 482—121 **8 Claims**



1. An exercise device including:

a rigid frame member having an "H"-shaped configuration with a central support and two pairs of spaced-apart rails, each pair being immovably secured to and extending outwardly from opposite portions of said central support, each of said rails being formed with a plurality of grooves; and

at least two elastic bands, each of which is removably mounted in selected grooves and extends between the respective spaced-apart rails of each pair of rails for use in performing various exercises by an exerciser selectively pushing in and pulling out said bands.

5,547,447

EXERCISING APPARATUS FOR TWISTING EXERCISES

Fa-Kuang Liang, B1, No. 20, Shian-Man St., Taipei, Taiwan

Filed Mar. 10, 1995, Ser. No. 402,281

Int. Cl.[6] A63B *21/16*

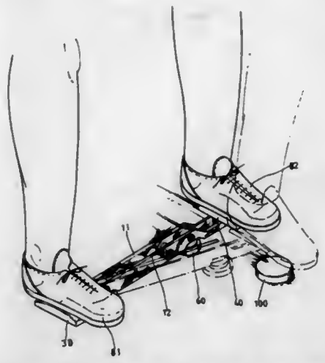
U.S. Cl. 482—146 **1 Claim**

1. An exercising apparatus for performing twisting exercises comprising:

an elongated base member including two foot plates, wherein each respective foot plate is fixedly mounted on a top side of said base member at opposite ends thereof, said base member further including two elongated frames, connected by said foot plates, in a parallel orientation,

two stands, each stand including a top section having an upright flange member, a bottom section rotatably fastened to said top section and a plurality of ball bearings rotatably coupled between said top section and said bottom section, thereby allowing said bottom section to rotate relative to said top section,

a bolt pivotally coupling each respective flange member of said stands to a bottom side to said base member intermediate said



foot plates and between said elongated frames, thereby supporting said base on a supporting surface, and

a plurality of wheels attached to an under surface of each of said foot plates, said wheels being suspended attached the supporting surface when said base is supported by both stands on the supporting surface.

5,547,448

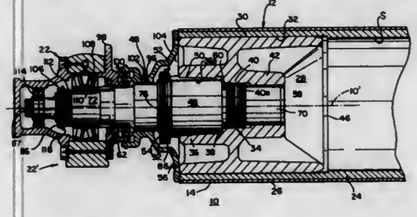
JOURNAL EQUIPPED ROTATIONAL DEVICES AND METHODS OF MAKING AND BALANCING THE SAME

Grant W. Robertson, 202 Claremont La., Downingtown, Pa. 19335, assignor to Grant W. Robertson, Lancashire, England

Filed Oct. 28, 1993, Ser. No. 144,864

Int. Cl.[6] B21B *31/08*

U.S. Cl. 492—16 **25 Claims**



1. Apparatus comprising:

a body at least generally symmetric about an axis of rotation and including an end portion having a journal opening therein extending along the axis of rotation and a journal stop surface, the journal opening defining an internal axially extending annular surface;

a journal member supported within the journal opening with one axial end of the journal member disposed within the body, the journal member including a journal section and a bearing section, the journal section extending into the journal opening, the bearing section being disposed outwardly of the journal opening and extending axially away from the body, the journal section including a stop surface abutting the journal stop surface of the body and an external axially extending annular surface, at least one of the internal axially extending annular surface and the external axially extending annular surface defining a substantially frustoconical journal surface;

a substantially annular sleeve releasably interposed radially between the internal axially extending annular surface in the journal opening and the external axially extending annular surface on the journal section, the substantially annular sleeve including at least one substantially frustoconical sleeve surface opposing the at least one substantially frustoconical journal surface; and

an urging member mounted to one of the body and the journal member so as to urge the at least one substantially frustoconical sleeve surface into engagement with the substantially frustoconical journal surface so as to maintain the journal stop surface and the stop surface abutted.

5,547,449

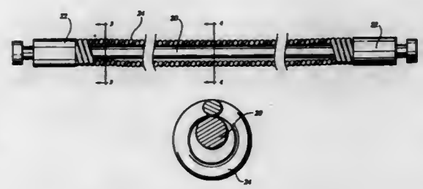
FLEXIBLE ROLL

Dan Krayenhagen, P.O. Box 411248, Charlotte, N.C. 28241-1248

Filed Mar. 14, 1995, Ser. No. 403,490

Int. Cl.[6] B21B *27/00*

U.S. Cl. 492—44 **4 Claims**



1. An elongated flexible roll for applying pressure to a substrate passing beneath and in contact therewith, said roll comprising:

(a) a longitudinally extending center rod having a predetermined diameter;

(b) a pair of journals mounted at each end of said center rod to define a predetermined length of said rod therebetween, each of said journals having a size larger than said center rod; and

(c) a wound helical coil formed of metal and having an internal diameter greater than said diameter of said center rod by a predetermined amount, said helical coil being attached at its ends to said journals, respectively, so that said center rod is substantially centered with respect to said coil at said journals, said predetermined length of said center rod and said predetermined difference between said diameters being selected so that the weight of said helical coil will result in said helical coil assuming a convex bowed configuration that extends from said journals to the midpoint portion of said center rod with the helical coil being in contact with said center rod only at said midpoint portion thereof, whereby said weight of said helical coil will be applied generally uniformly to said substrate across the extending length of said flexible roll.

5,547,450

HEARTH ROLLER WITH SUPPRESSED HEAT CROWN

Yoshiro Matsumoto, Sanda; Kazumi Isaka, Amagasaki; Masaaki Mitzuguchi, Joetsu; Yoshimitsu Oshima, Joetsu, and Osamu Takatsu, Joetsu, all of, Japan, assignors to Sumitomo Metal Industries, LTD., Osaka, Japan

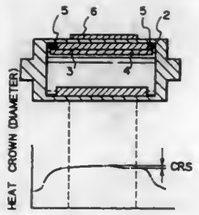
Continuation of Ser. No. 18,404, Feb. 17, 1993, abandoned. This application Feb. 24, 1994, Ser. No. 201,095

Claims priority, application Japan, Mar. 31, 1992, 4-108911

Int. Cl.[6] B23P *15/00*

U.S. Cl. 492—54 **17 Claims**

1. A hearth roller having shaft portions extending from opposite ends of a barrel portion, the barrel portion comprising an outer sleeve wherein the outer sleeve extends between opposite ends of the barrel portion and has a diameter larger than any other part of the bearth roller, the barrel portion further comprising an inner sleeve fitted into the outer sleeve, the ends of the inner sleeve in the axial direction being positioned inwardly and separated from each of the ends of the outer sleeve, and the inner sleeve exhibiting higher thermal conductivity than the outer sleeve.



5,547,451

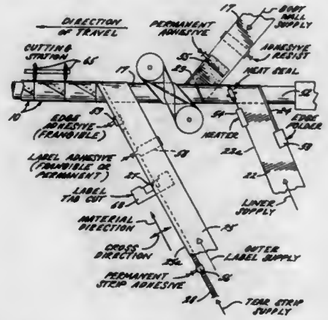
EASY-OPEN CONTAINER HAVING DIRECTIONALLY-ORIENTED LABEL TEAR

Michael T. Drummond, Florence; Calvin G. Hill, Hartsville; Richard M. Lowman, Jr., Hartsville; William c. Suski, Hartsville, all of S.C.; Rodney W. Roberts, Otisco, Ind., and James w. Lowry, Florence, S.C., assignors to Soncco Products Company, Hartsville, S.C.

Division of Ser. No. 263,879, Jun. 22, 1994, Pat. No. 5,494,215. This application Aug. 16, 1995, Ser. No. 515,956

Int. Cl.[6] B65D *85/00;3/26*

U.S. Cl. 493—299 **6 Claims**



1. A method of manufacturing an easy-open container having directionally-orienting tear comprising the steps of:

applying a flexible barrier liner layer in strip form, feeding the liner layer to a mandrel, and spirally-winding the liner layer on the mandrel to form overlapping liner layer edge portions;

applying a paperboard bodywall layer in strip form, feeding the bodywall layer to the mandrel, and spirally-winding the bodywall layer onto the spirally-wound liner layer on the mandrel while positioning the longitudinal edges of the bodywall layer in butt joint edge relationship to form a tube having a spiral seam extending the length thereof;

applying a flexible label layer in strip form and a reinforcing and tear strip of narrower width than the label layer strip and having a directionally-oriented tear incorporated therein in the transverse direction thereof, feeding such label layer and reinforcing and tear strip to the mandrel while applying a high strength bonding means to an upper surface of said reinforcing and tear strip and positioning the reinforcing and tear strip in superimposed position under one outer longitudinal edge portion of the label layer strip with the high strength bonding means therebetween and applying a low strength bonding means to a lower surface of said reinforcing and tear strip, and spirally-winding the superimposed label layer strip and reinforcing and tear strip onto the continuous tube on the mandrel with the longitudinal edges of the label layer strip in overlapped relation and positioning the reinforcing and tear strip and low strength bonding means in bridging relationship to the spiral seam in the spirally-wound bodywall layer; and

cutting the thus wound tubes into container lengths.

5,547,452

METHOD AND APPARATUS FOR CROSS-FOLDING SIGNATURES

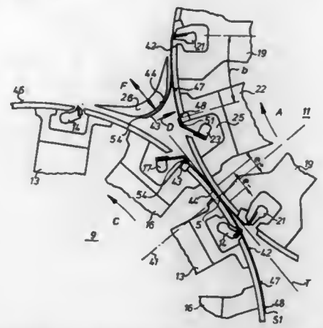
Manfred Kepert, Grosskarlbach, and Karl H. Zeller, Bobenheim-Roxheim, both of, Germany, assignors to Albert Frankenthal Aktiengesellschaft, Frankenthal, Germany

Filed Dec. 9, 1994, Ser. No. 352,520

Claims priority, application Germany, Dec. 9, 1993, 43 42 037.0

Int. Cl.[6] B41F *13/60*

U.S. Cl. 493—427 **13 Claims**



1. A method of cross-folding signatures in a folding apparatus of a rotary printing press including the steps of:

providing a collecting cylinder having a plurality of signature receiving fields with each of said receiving fields having only a signature leading edge gripper and a folding blade;

providing a folding flap cylinder having a plurality of folding fields with each of said folding fields having only a signature trailing edge gripper and a folding flap;

positioning said collecting cylinder and said folding flap cylinder in cooperative engagement at a contact point defined by an intersection of a line connecting the axes of rotation of said collecting and folding flap cylinders and a tangent line;

securing only a leading edge of a first half of a signature to said collecting cylinder using one of said signature leading edge grippers;

resting a trailing edge of a second half of said signature on a jacket surface of said collecting cylinder;

rotating said collecting cylinder and inserting a central portion of said signature into one of said folding flaps using one of said folding blades;

rotating said collecting and folding flap cylinders until said trailing edge of said signature is in the vicinity of said contact point;

gripping said trailing edge of said signature with one of said trailing edge grippers on said folding flap cylinder;

subsequently releasing said leading edge of said signature from said signature leading edge gripper on said collecting cylinder as said signature leading edge is travelling at a speed of essentially zero;

allowing said signature leading and trailing edges to become approximately overlapping on said folding flap cylinder; and

releasing said trailing edge of said signatures from said trailing edge grippers on said folding flap cylinder.

8. An apparatus for cross-folding signatures in a folding apparatus of a rotary printing press comprising:

a collecting cylinder having a plurality of signatures receiving fields, each of said receiving fields including only a signature leading end gripper and a folding blade and being adapted to grip only a leading end of a signature with a trailing end of a signature resting ungripped on a surface of said collecting cylinder; and

a folding flap cylinder having a plurality of folding fields, each of said folding fields including only a signature receiving folding flap and a signature trailing end holding device, said collecting cylinder and said folding flap cylinder being in

engagement at a contact point, each of said trailing end holding devices being located behind, in a direction of rotation of said folding flap cylinder, a corresponding one of said folding flaps a distance generally equal to one half of a length of a signature to be cross-folded, each of said signature trailing end holding devices being operable to grip a trailing end of a signature resting on said surface of said collecting cylinder when said signature trailing end holding device is in the vicinity of said contact point.

5,547,453

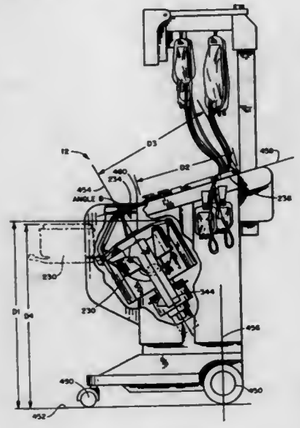
CENTRIFUGE WITH SLOPED ROTATIONAL AXIS AND FUNCTIONAL COMPONENTS MOUNTED ON COMPLEMENTING SLOPED PANEL

Paul M. Di Perna, Long Grove, Ill., assignor to Baxter International Inc., Deerfield, Ill.

Continuation of Ser. No. 173,509, Dec. 22, 1993, abandoned. This application Sep. 28, 1995, Ser. No. 535,762

Int. Cl.[6] B04B *7/02*

U.S. Cl. 494—60 **7 Claims**



1. A centrifugation system comprising

a frame comprising side panels, a front panel, and a top panel together enclosing an interior area, the frame including at least one weight bearing member for engaging a support surface generally lying in the horizontal plane,

a centrifuge assembly including a chamber and means for rotating the chamber about an axis, and

a base supporting the centrifuge assembly on the frame within the interior area with the rotational axis oriented in a first plane that tilts toward the front panel, lying outside a vertical plane perpendicular to the horizontal support surface,

the top panel being supported on the frame in a region above the centrifuge assembly, the top panel carrying at least one functional element, the top panel being oriented in a second plane that slopes outside the vertical plane and intersects the first plane in which the rotational axis of the chamber lies in the region above the centrifuge assembly so the centrifuge assembly extends within the interior area at least partially beneath the top panel, the top panel having a lower edge that terminates short of the front panel creating an access opening that extends from the lower edge of the top panel toward the front panel and includes a portion that extends into the front panel in a third plane oriented generally parallel to the vertical plane to provide access into the interior area and to the centrifuge assembly supported therein.

5,547,454

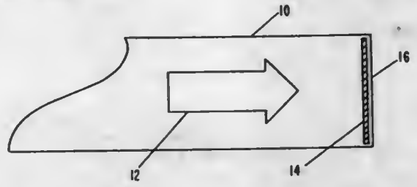
ION-INDUCED NUCLEAR RADIOTHERAPY

Kevin M. Horn, and Barney L. Doyle, both of Albuquerque, N.M., assignors to Sandia Corporation, Albuquerque, N.M.

Filed Nov. 2, 1993, Ser. No. 147,681

Int. Cl.[6] A61N *5/00*

U.S. Cl. 600—1 **61 Claims**



1. An apparatus for ion-induced atomic and nuclear reaction-based radiotherapy comprising:

means for introducing an ion beam into a conduit means;

conduit means for guiding the ion beam and containing the beam therewithin;

transmission window means at the end of said conduit means distal to the means for introducing an ion beam, said transmission window means containing the beam with the conduit means;

target material nuclei means inside said conduit means; and

means for exposing the target material nuclei means to the ion beam for producing a nuclear reaction product for exposure to a predetermined volume external to the conduit.

5,547,455

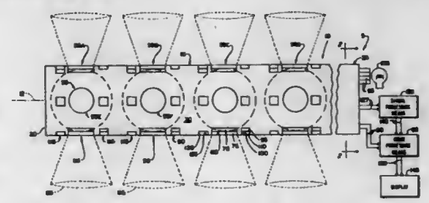
ELECTRONICALLY STEERABLE ENDOSCOPE

Michael A. McKenna, Cambridge, Mass.; Joseph M. Rosen, Hanover, N.H.; David T. Chen, Somerville, Mass.; Steven D. Pieper, Thetford, and Peter J. Robbie, Norwich, both of Vt., assignors to Medical Media Systems, West Lebanon, N.H.

Filed Mar. 30, 1994, Ser. No. 220,367

Int. Cl.[6] A61B *1/05*

U.S. Cl. 600—113 **15 Claims**



1. An endoscope comprising:

an elongated shaft, said elongated shaft having a distal end terminating in a distal end surface, a proximal end, an outer side wall extending from said distal end to said proximal end, and at least one internal passageway extending from said distal end to said proximal end;

a multiplicity of image capturing means being disposed on one or both of said outer side wall and said distal end surface so as to face outwardly therefrom in spaced relationship to one another, each of said image capturing means comprising lens means for defining an outwardly facing field of view for that image capturing means, and each of said image capturing means being adapted to capture an image of any object located within said field of view and to convert that image into corresponding signals, with said image capturing means being arranged so that each of said multiplicity of image capturing means has a substantially different field of view, at least one of said image capturing means being disposed adjacent to first and second of the other of said image captur-

ing means and disposed therebetween, and disposed adjacent to third and fourth of other of said image capturing means and disposed therebetween;

processing means associated with said proximal end of said shaft, said processing means being adapted to receive said corresponding signals from said image capturing means and to generate display comprising one or more of said images at said proximal end of said shaft; and

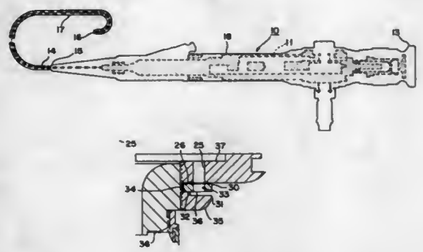
a multiplicity of connecting means for connecting each of said image capturing means to said processing means.

5,547,456

VENT SYSTEM FOR ENDOSCOPES

Karlheinz Strobl, and Steven Metras, both of Charlton, Mass., assignors to Karl Storz GmbH & Co., Germany

Filed Jan. 24, 1995, Ser. No. 377,538
Int. Cl.[6] A61B *1/04;1/12*
U.S. Cl. 600—133 **2 Claims**



1. In an endoscopic instrument having an outer structure which is impermeable to fluids, said structure including internal gas-containing cavities, and some portion which is flexible and liable to be exposed both to gas in said cavities and to gas and to liquids outside of said structure, said structure having a vent port therethrough which interconnects at least some of said cavities to said outside gases, the improvement comprising:

selectively permeable barrier means covering said vent port, said barrier means comprising a layer of porous material with surface properties and pore sizes relative to the surface tension properties of a liquid anticipated to be applied to said barrier means that said barrier means will prevent the flow of liquid through said barrier into said cavities, but still always pass gas into and out said cavities;

said outer structure including an inner and an outer surface, said vent port extending between said inner and outer surfaces, said barrier being applied to said outer surface, a ring-shaped spacer having a central opening aligned with said vent port and bearing against said barrier means;

and an overhanging shoulder on said outer structure which overhangs said spacer, leaving a limited spacing between them for access of fluid to said central opening and thereby to the barrier means.

5,547,457

OBJECTIVE OPTICAL SYSTEM FOR ENDOSCOPES

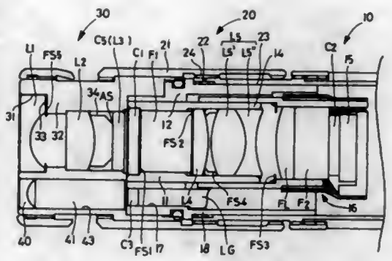
Hiroshi Tsuyuki, and Akira Kikuchi, both of Tokyo-to, Japan, assignors to Olympus Optical Co., Ltd., Tokyo-to, Japan

Filed Jan. 21, 1994, Ser. No. 184,062
Claims priority, application Japan, Jan. 22, 1993, 5-025968
Int. Cl.[6] A61B *1/06*
U.S. Cl. 600—175 **6 Claims**

1. An endoscope comprising:

an endoscope body;

a master lens unit which is fixed to a distal end of said endoscope body for forming an image of an object; and



a plurality of adaptor units each of which comprises lens components disposed on one optical axis and an aperture stop such that said adaptor units have focal lengths different from one another;

wherein said adaptor units are attachable and detachable to and from said distal end of said endoscope body,

wherein a first objective optical system defined by lens components from a first adapter unit from said plurality of adaptor units and said master lens unit if said first adaptor unit is attached to an object side of said master lens unit,

wherein a focal length of said first objective optical system equipped with said first adaptor unit is different from a focal length of a second objective optical system equipped with a second adaptor unit, and

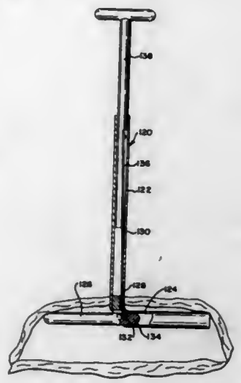
wherein the lens component which is disposed in the vicinity of said aperture stop of said first adaptor unit may selectively vary from the lens component which is disposed in the vicinity of said second adaptor unit.

5,547,458

T-SHAPED ABDOMINAL WALL LIFT WITH TELESCOPING MEMBER

Mark S. Ortiz, Milford, and Stephen J. Failla, Cincinnati, both of Ohio, assignors to Ethicon, Inc., Cincinnati, Ohio

Filed Jul. 11, 1994, Ser. No. 273,452
Int. Cl.[6] A61B *17/02*
U.S. Cl. 600—204 **2 Claims**



1. An abdominal wall lift device, comprising:

a first elongated tubular member having a distal end portion and a proximal end portion;

a second elongated tubular member having a first end portion and a second end portion, said first end portion of said second elongated tubular member being connected to said first elongated tubular member at said distal end portion of said first elongated tubular member such that said first and second elongated tubular members are in a generally L-shaped configuration;

an extension rod member telescopically received within said second elongated tubular member, said extension rod member being movable between a first position wherein said rod member is substantially received within said second elongated tubular member to facilitate insertion of the device into an abdominal cavity and a second position wherein said rod member extends substantially outwardly from said first end portion of said second elongated tubular member such that said second elongated tubular member and said rod member form a generally T-shaped configuration with said first elongated tubular member for deployment of said device within an abdominal cavity;

a control link member connected to said rod member to selectively move said rod member within said second elongated tubular member between its first and second positions; and

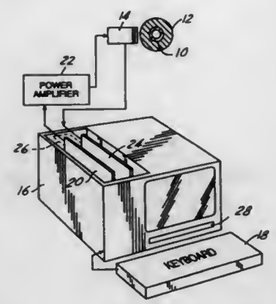
said rod member includes an inner portion and an outer portion, said control link member being flexible and having a first end portion connected to said inner portion of said rod member and a second end portion that extends into and is longitudinally movable within said first elongated tubular member such that as said second end portion of said control link member moves toward said distal end portion of said first elongated tubular member said rod member moves toward its first position and as said second end portion of said control link member moves toward said proximal end portion of said first elongated tubular member said rod member moves toward its second position.

5,547,459

ULTRASONIC BONE-THERAPY APPARATUS AND METHOD

Jonathan J. Kaufman, Brooklyn, N.Y., and Alessandro E. Chiabrera, Genoa, Italy, assignors to Orthologic Corporation, Phoenix, Ariz.

Filed Oct. 25, 1994, Ser. No. 329,015
Int. Cl.[6] A61N *1/00;* **A61B** *8/00*
U.S. Cl. 601—2 **43 Claims**



32. A method of non-invasively therapeutically treating a bone tissue in vivo using an ultrasonic signal, comprising the steps of:

(A) generating a therapeutic ultrasonic signal;

(B) selecting an intensity of said therapeutic signal by virtue of

(Ba) generating an interrogating ultrasonic pulse,

(Bb) transmitting said interrogating ultrasonic pulse to said bone tissue through said soft tissue overlying said bone tissue,

(Bc) receiving a portion of said interrogating pulse reflected from said bone tissue,

(Bd) determining the thickness of said soft tissue using said reflected portion, and

(Be) adjusting the amplitude of said therapeutic ultrasonic signal to ensure that a spatial-average time-average intensity thereof reaching said bone tissue corresponds to a predetermined value; and

(C) exposing said bone tissue to said therapeutic ultrasonic signal transmitted through soft tissue overlying said bone tissue;

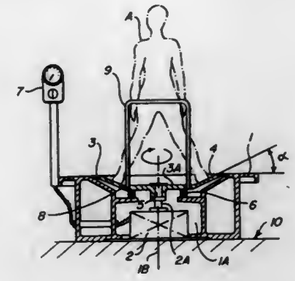
to thereby induce bone growth and healing.

5,547,460

ROTARY PLATFORM FOR MEDICAL TREATMENT

Kiyoshi Ishikawa, Ako, Japan, assignor to Akiko Ishikawa, Hyogo, Japan

Filed Nov. 3, 1994, Ser. No. 333,723
Claims priority, application Japan, Jan. 19, 1994, 6-019922
Int. Cl.[6] A61M *1/00*
U.S. Cl. 601—23 **5 Claims**



1. A rotary platform comprising a stationary platform having an internal hollow area, a tilted rotary plate located inside said internal hollow area, said plate being in the shape of a truncated inverted cone and having a tilted surface sloping at an angle towards the center thereof, a motor connected to said plate for rotating said plate together with a patient standing on said plate with the soles of her or his feet placed on said tilted surface, means connected to said plate for holding said plate for rotation on a substantially vertical axis, said plate being removably connected to said motor whereby said plate is adapted to be used with another selected tilted rotary plate having a different angle of inclination, and a handrail attached to said plate for steadying a patient.

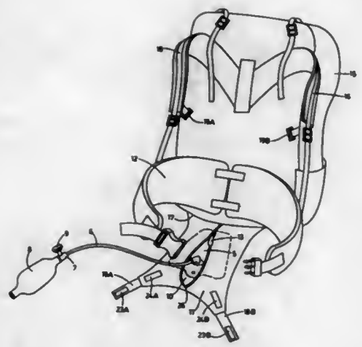
5,547,461

INFLATABLE LUMBAR SUPPORT FOR BACKPACK

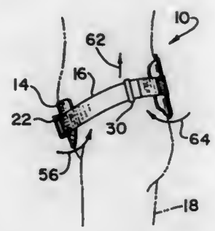
Jeffrey D. Levis, Fresno, Calif., assignor to Mountain Equipment, Inc., Fresno, Calif.

Filed Nov. 21, 1994, Ser. No. 343,330
Int. Cl.[6] A61F *5/00;5/37;* **A45F** *3/04*
U.S. Cl. 602—19 **20 Claims**

1. A backpacking device for providing relief from fatigue in the lumbar region of the back comprising a backpack including a closable waist belt attached near the bottom of the pack, said waist belt having an inside and an outside, a pad having a closable pocket therein, one end of said pad foldably attached to said waist belt adjacent to where said waist belt is attached to said pack, means for detachably connecting the opposite end of said pad to said pack, and an inflatable bag insertable into said pocket.

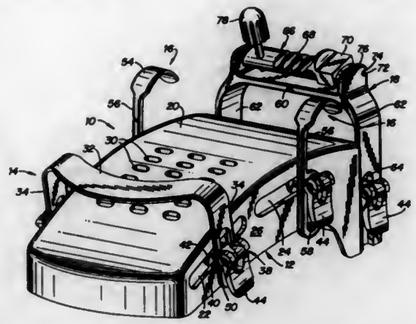


5,547,462
BACK BRACE
William T. Lanigan, 50 Vine Rd., Larchmont, N.Y. 10538, and Robert Carra, 8 Renee Rd., Syosset, N.Y. 11791
Filed Sep. 14, 1995, Ser. No. 528,133
Int. Cl.[6] A61F *5/00;5/37*
U.S. Cl. 602—19 1 Claim



1. A method of adjusting incident to applying pressure against a user's back, a back brace of a type having a back panel, a front panel, and a waist-encircling belt, said back brace-adjusting method comprising the steps of positioning said back panel in an operative position adjacent a selected location of said user's back, positioning said front panel characterized by opposite side edges angularly downwardly converging towards each other to correspondingly present in a semi-circular configuration panel-camming surfaces along a bottom edge thereof in an operative position adjacent a selected location of said user's stomach, positioning opposite length portions of said waist-encircling belt extending in opposite directions from an attachment to said back panel in crossing relation to said panel-camming surfaces of said front panel, holding, by initial tightening said waist-encircling belt said back and front panels in contact with said user at said selected locations, and urging said front panel in an ascending path of movement by subsequent tightening of said waist-encircling belt incident to the camming thereof at said crossing contact of said belt length portions and said panel-camming surfaces of said front panel, whereby there is a corresponding ascending movement in said back panel resulting in back-supporting pressure being applied to said user's back.

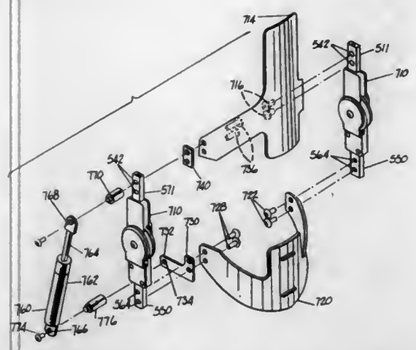
5,547,463
SURGICAL HAND SUPPORT APPARATUS
Peter W. J. Hinchliffe, New Haven; Dawn J. Pappalardo, Fairfield; Scott Larsen, Newtown; Ian J. Tovey, Milford, and Christopher McDonnell, Newton, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Filed Oct. 7, 1994, Ser. No. 319,853
Int. Cl.[6] A61F *5/00;* A61B *1/00*
U.S. Cl. 602—20 17 Claims

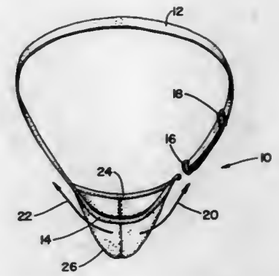


1. A surgical hand support apparatus which comprises:
a support member including a supporting surface for supporting at least the hand of a patient, the support member defining a general longitudinal axis;
a finger restraint movable relative to the supporting surface to be positioned to engage the fingers of the patient; and
a quick release mechanism for locking the finger restraint at a selected position relative to the supporting surface, the quick release mechanism including a locking latch pivotally movable relative to the finger restraint between an engaged position in locking engagement with the finger restraint such that the finger restraint is locked at the selected position and a disengaged position disengaged from the finger restraint such that the finger restraint is capable of moving relative to the supporting surface.

5,547,464
JOINT DEVICE
Tammy C. Luttrel, Fort Collins, and Paul Hollendorfer, Divide, both of Colo., assignors to DeRoyal Industries, Inc., Powell, Tenn.
Continuation-in-part of Ser. No. 841,625, Feb. 26, 1992, Pat. No. 5,352,190, which is a continuation-in-part of Ser. No. 495,044, Mar. 16, 1990, Pat. No. 5,117,814, and a continuation-in-part of Ser. No. 507,212, Apr. 9, 1991, Pat. No. 5,178,137, and a continuation-in-part of Ser. No. 550,256, Jul. 9, 1990, Pat. No. 5,144,943. This application Apr. 12, 1994, Ser. No. 226,169
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—26 16 Claims

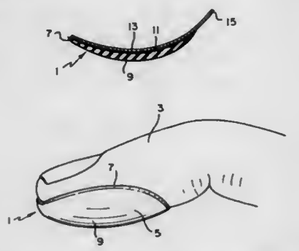
1. An apparatus for attachment to a limb, the limb having a joint between an upper portion of the limb and a lower portion of the limb, the apparatus comprising an upper limb attachment for attaching the device to the upper portion of the limb, a lower limb attachment for attaching the device to the lower portion of the limb, a lower strut attached to the lower limb attachment and adapted to extend along the lower portion of the limb toward the joint, an upper strut attached to the upper limb attachment and adapted to extend along the upper portion of the limb toward the joint, and a connecting mechanism to pivotally connect the upper and lower struts, wherein the connecting mechanism includes a lower telescoping portion slidably attached to the end of the lower strut that is toward the joint, whereby the first lower strut slides out of the lower telescoping portion and away from the joint as the joint bends and wherein the connecting mechanism further includes an upper telescoping portion slidably attached to the end of the upper strut that is toward the joint, whereby the upper strut slides out of the upper telescoping portion and away from the joint as the joint bends.





a waist band portion that is adapted to be positioned around the waist of the wearer, the posterior testicular strap portion extending from the waist band portion, the posterior testicular strap portion and the waist band portion being made from a generally unyielding material so that the posterior testicular strap portion relieves stress from and provides support to the wearer's testicular muscles and cords.

5,547,465
FINGER PATCH WITH ADHESIVE BACKING
Dorothy J. Powell, 4839 So. Vancouver, Tulsa, Okla. 74107
Filed Feb. 11, 1992, Ser. No. 833,666
Int. Cl.[6] A61F *13/00;15/00*
U.S. Cl. 602—54 5 Claims

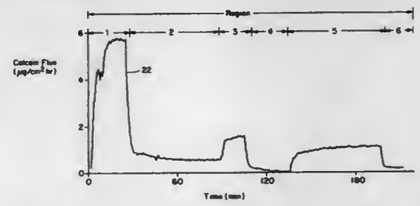


1. A finger patch consisting of a molded solid rubber body which is concave in an undeformed condition, and has a relatively thick mid-portion tapering to a relatively thin edge entirely peripherally bounding said body, a concave side of said body that contacts a finger tip of a user meeting a convex opposite side of said body at an acute angle at the said edge entirely peripherally about said body, thereby to avoid catching of the patch on edges of papers handled by a user, and a pressure-sensitive adhesive coating said concave side of said body.

5,547,466
MALE GENITALIA SUPPORT
Samuel J. McRoberts, Palm Beach Gardens, and Lee Kvarnberg, Jupiter, both of Fla., assignors to Male Pouch, Inc., Tequesta, Fla.
Filed Apr. 10, 1995, Ser. No. 419,467
Int. Cl.[6] A61F *5/40*
U.S. Cl. 602—70 26 Claims

1. A male genitalia support, comprising:
a posterior testicular strap portion adapted to be positioned on the posterior side of the wearer's scrotum and testicles when worn;

5,547,467
METHOD FOR RAPID TEMPORAL CONTROL OF MOLECULAR TRANSPORT ACROSS TISSUE
Uwe Pliquett, Leipzig, Germany; Mark R. Prausnitz, Dorchester, Mass.; James C. Weaver, Sudburry, Mass., and Robert S. Langer, Newton, Mass., assignors to Massachusettes Institute of Technology, Cambridge, Mass.
Continuation-in-part of Ser. No. 705,778, May 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 331,263, Mar. 30, 1989, Pat. No. 5,091,034, which is a continuation-in-part of Ser. No. 146,343, Jan. 21, 1988, abandoned. This application Jul. 23, 1993, Ser. No. 96,512
Int. Cl.[6] A61M *37/00*
U.S. Cl. 604—20 5 Claims



1. A method for measuring a blood component content of blood, comprising the steps of:
a) electroporating a portion of epidermis to cause an aqueous fluid to be directed through the electroporated epidermis to a surface of the epidermis; and
b) measuring the blood component content of the aqueous fluid for correlation with a known aqueous fluid blood component content associated with a known concentration of blood component in the blood, thereby measuring the blood component concentration of the blood.

5,547,468

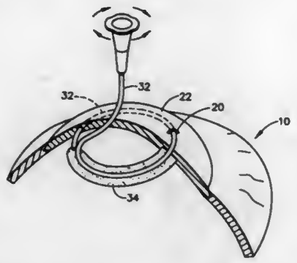
INSTRUMENTS FOR USE IN PERFORMING GEL INJECTION ADJUSTABLE KERATOPLASTY

Gabriel Simon, Barcelona, Spain; William G. Lee, Miami Beach, and Jean-Marie A. Parel, Miami Shores, both of Fla., assignors to University of Miami, Miami, Fla.

Continuation-in-part of Ser. No. 836,711, Feb. 19, 1992, Pat. No. 5,372,580, which is a continuation-in-part of Ser. No. 551,807, Jul. 12, 1990, Pat. No. 5,090,955. This application Sep. 1, 1994, Ser. No. 299,582

Int. Cl.[6] A61M *5/32*

U.S. Cl. 604—21 **5 Claims**



1. A device for use in injecting a gel into an annular channel formed at a predetermined depth in the cornea through an incision made through the surface of the cornea of an eye for the purpose of altering the radius of curvature of the cornea, comprising:

a tubular member capable of insertion into an annular channel, said member having a curved end of a corkscrew shape to facilitate the insertion through the incision into the cornea and completely into the channel;

means, coupled to said tubular member, for storing a gel, comprising a presterilized cartridge containing said gel;

and means, associated with said storage means, for transporting the gel from said storage means through said tubular member into the channel.

5,547,469

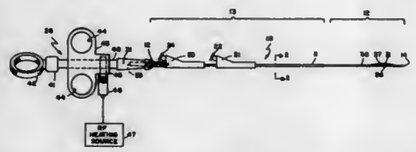
APPARATUS FOR PERFORMING DIAGNOSTIC AND THERAPEUTIC MODALITIES IN THE BILIARY TREE

Christopher A. Rowland, Marlborough, Mass.; Michael G. Vergano, Cumberland, R.I.; Bryan P. Eddy, Broomfield, Colo., and Peter B. Cotton, Charleston, S.C., assignors to Boston Scientific Corporation, Natick, Mass.

Filed May 13, 1994, Ser. No. 242,168

Int. Cl.[6] A61B *17/22*

U.S. Cl. 604—22 **12 Claims**



1. Apparatus for use in a treatment modality including an enlargement procedure and another procedure to be performed within a patient, said apparatus comprising:

A. catheter means for being directed through internal passageways in the patient, said catheter means having proximal and distal ends and proximal and distal portions adjacent to said proximal and distal ends respectively, first, second and third generally parallel lumens with said first lumen being larger than said second and third lumens, said lumens extending between said proximal and distal portions,

B. enlargement means for performing the enlargement procedure extending through said second lumen for operating at said distal portion in response to manipulations at said proximal end, said enlargement means comprising a cutting wire having a distal end attached to said catheter means at the distal end of said second lumen, a portion thereof external to said catheter means along a length coextensive with a portion of said distal portion of said catheter means and a proximal end of said cutting wire attached to said operator means,

C. operator means at said proximal end attached to said catheter means and said a proximal portion of said enlargement means for operating said enlargement means from a point proximal of said catheter means,

D. a first lumen proximal port in said proximal portion of said catheter means for enabling access to said first lumen, and

E. a third lumen proximal port at said proximal end of said catheter means for providing access to said third lumen to enable a user to control the other procedure at the distal end of said catheter means through said third lumen.

5,547,470

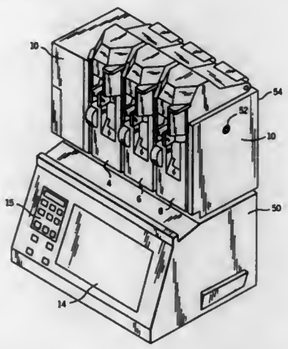
AUTOMATED DRUG INFUSION SYSTEM

Noel L. Johnson; Jyh-Yi T. Huang, Sunnyvale, and Robert R. Burnside, Mountain View, all of Calif., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 981,673, Nov. 25, 1992, Pat. No. 5,378,231. This application Sep. 27, 1994, Ser. No. 310,774

Int. Cl.[6] A61M *31/00*

U.S. Cl. 604—67 **8 Claims**



1. A control system for use with an automated intravenous drug and fluid infusion system, said control system comprising:

plural pumping channels that operate independently for intravenously infusing drugs and fluid, each of said pumping channels having a pumping channel controller for independent delivery in multiple infusion modes; and

a host controller that monitors and controls each of the pumping channels concurrently.

5,547,471

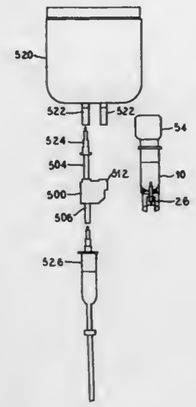
IN-LINE DRUG DELIVERY DEVICE FOR USE WITH A STANDARD IV ADMINISTRATION SET AND A METHOD FOR DELIVERY

Stacey S. Thompson, Elk Grove; James McShane, Schaumburg; Joseph Wong, Gurnee, all of Ill., and Ray W. Wood, Elkhorn, Wis., assignors to Baxter International Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 978,555, Nov. 19, 1992, Pat. No. 5,385,547. This application Nov. 22, 1993, Ser. No. 156,347

Int. Cl.[6] A61M *37/00*

U.S. Cl. 604—87 **7 Claims**



1. A method for drug delivery comprising the steps of:

providing a receptacle;

providing an adaptor containing a diluent, the adaptor having a vial containing a beneficial agent for forming a mixture with the diluent;

forming the mixture in the adaptor of the diluent in the adaptor and the beneficial agent from the vial;

coupling the adaptor, after forming the mixture, to the receptacle; and

coupling the receptacle to an IV administration set, for delivering, without air transfer, at least the mixture to a patient.

5,547,472

CATHETER WITH MEDICAMENT INJECTION PORES

Makoto Onishi, and Kenji Ishikawa, both of Kanagawa, Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

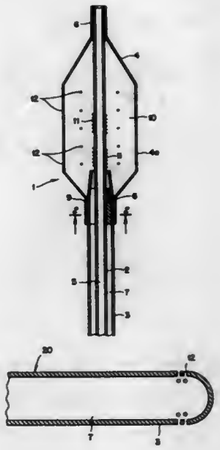
Filed Jan. 19, 1995, Ser. No. 375,589

Claims priority, application Japan, Jan. 20, 1994, 6-004867

Int. Cl.[6] A61M *11/00*

U.S. Cl. 604—93 **6 Claims**

1. A catheter including a tube having a tube wall, said tube comprising a first polymer and having a plurality of pores extending through said tube wall, said pores having associated therewith a second polymer which is different from the first polymer and which undergoes a structural change upon contact with a fluid introduced into the tube that has a physical or a chemical property that induces said structural change of said second polymer to thereby enable a selective transmission of the fluid through said tube wall.



5,547,473

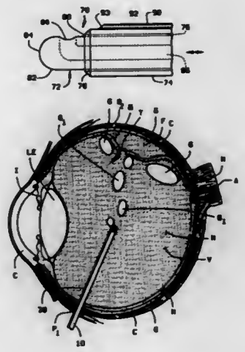
PNEUMATIC VITRECTOMY FOR RETINAL ATTACHMENT

Gholam A. Peyman, New Orleans, La., assignor to Syntec, Inc., Winfield, Mo.

Filed May 12, 1994, Ser. No. 241,749

Int. Cl.[6] A61M *1/00*

U.S. Cl. 604—27 **6 Claims**



1. A method for the reattachment of a detached retina comprising the steps of:

making a small sclerotomy incision in the eyeball;

inserting a surgical instrument into the vitreous cavity of the eye through said sclerotomy incision, said surgical instrument having means for cutting and removal of vitreous material, means for aspirating vitreous material, and means for injection of a non-expanding gas into the vitreous cavity;

removing vitreous material from said vitreous cavity;

injecting, simultaneously, non-expanding gas into said vitreous cavity to maintain the intraocular pressure within said cavity at a near normal level to urge the retina toward the choroid;

withdrawing said instrument from said sclerotomy incision; and

attaching said retina.

5,547,474

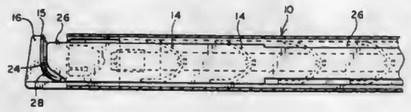
SURGICAL CLIP CLOSURE APPARATUS WITH SAFETY STOP

Terrance Kloecki, Palo Alto; Todd Thompson, San Jose, both of Calif.; Peter F. Costa, Winthrop; William A. Holmes, Marblehead, both of Mass., and Jay Daulton, San Jose, Calif., assignors to Origin Medsystems, Incorporated, Menlo Park, Calif.

Continuation-in-part of Ser. No. 888,723, May 26, 1992, Pat. No. 5,192,288. This application Oct. 9, 1992, Ser. No. 958,865

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—143 19 Claims



1. A surgical clip closure apparatus comprising:

a shaft;

an anvil attached to the shaft and configured to receive a surgical clip, the anvil having a first forming surface;

a hammer slidably coupled to the shaft and having a second forming surface generally parallel to the first forming surface, the hammer being movable between an open position and a closed position such that the second forming surface is closest to the first forming surface in the closed position;

means, operably coupled to the hammer, for moving the hammer; and

means on the hammer for limiting movement of the hammer toward the anvil when a clip is absent therefrom, whereby the first forming surface is separated from the second forming surface by a gap in the closed position.

5,547,475

PHOSPHATE-FREE REDUCTION BLEACHING FORMULATION

Rainer Hans Traber, Reinach, Switzerland, assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed Aug. 17, 1994, Ser. No. 292,152

Claims priority, application Switzerland, Aug. 20, 1993, 2492/93

Int. Cl.[6] D06L *3/00;3/10*

U.S. Cl. 8—110 6 Claims

1. A process for the reduction bleaching of natural or synthetic fibre materials selected from wool, silk, polyester and synthetic polyamide, which comprises treating said fibre material with an aqueous liquor comprising at least

(a) 30 to 80% by weight of a reduction bleaching agent which is the salt of dithionous acid and

(b) 20 to 70% by weight Of a bleach stabiliser which is a water-soluble alkali metal salt of citric acid.

5,547,476

DRY CLEANING PROCESS

Michael P. Siklosi, Cincinnati, and Timothy C. Roetker, Fairfield, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 414,156, Mar. 30, 1995, abandoned. This application Oct. 17, 1995, Ser. No. 544,360

Int. Cl.[6] D06L *1/02;1/04*

U.S. Cl. 8—142 14 Claims

1. A cleaning and refreshing process for fabrics, comprising agitating said fabrics with an effective amount of a cleaning composition, so that the fabrics are cleaned and refreshed, wherein said composition comprises:

(a) water;

(b) an etherified propanol solvent;

(c) 1,2-octanediol;

(d) an emulsifier;

(e) optionally, a detersive surfactant;

(f) optionally, a perfume; and

(g) optionally, a nonionic surfactant.

5,547,477

DYE MIXTURES WITH PYRIDONEAZO DYES

Arno Lange, Bad Duerkheim; Helmut Degen, Frankenthal; Gunther Lamm, Hassloch; Helmut Reichelt, Neustadt, and Dieter Wegerle, Mannheim, all of, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP93/01516, § 371 Date Dec. 23, 1994, § 102(e) Date Dec. 23, 1994, PCT Pub. No. WO94/00518, PCT Pub. Date Jan. 6, 1994

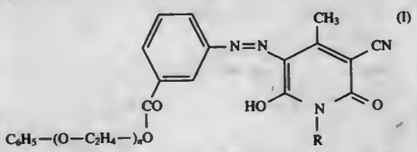
PCT Filed Jun. 16, 1993, Ser. No. 360,770

Claims priority, application Germany, Jun. 26, 1992, 42 21 008.9

Int. Cl.[6] C09B *67/22*

U.S. Cl. 8—639 5 Claims

1. Dye mixtures containing from 40 to 75% by weight, based on the weight of the dyes, of a dye of the formula I



(I)

where R is C_1–C_4-alkyl and n is 1, and from 25 to 60% by weight, based on the weight of the dyes, of a dye of the formula I where R is C_1–C_4-alkyl and n is 2.

5,547,478

COMPOSITIONS CONTAINING BENZODIFURANONE COMPOUNDS AND METHODS FOR DYEING HYDROPHOBIC MATERIALS USING THE SAME

Toshinori Fukui, Itami; Nobuyuki Katsuda, Ashiya; Shinichi Yabushita, Mishima-gun, and Shuhei Hashizume, Osaka, all of, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

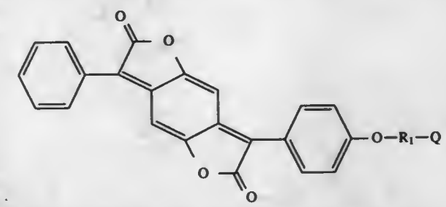
Filed Dec. 16, 1993, Ser. No. 167,019

Claims priority, application Japan, Dec. 22, 1992, 4-342047

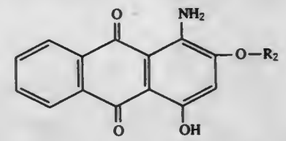
Int. Cl.[6] D06P *1/20;3/52;* C07D *493/04*

U.S. Cl. 8—643 8 Claims

1. A composition comprising at least one compound selected from the class of compounds represented by the following formula (I):



wherein R_1 represents a methylene, a straight or branched C_2–C_6 alkylene group, or a straight or branched C_2–C_6 alkylene group substituted with a hydroxy, C_1 to C_4 alkoxy, or C_1 to C_4 alkylcarbonyloxy group; Q represents a 5 or 6 membered heterocyclic ring having at least one hetero atom selected from the group consisting of O, S and N; and at least one compound selected from the class of compounds represented by the formula (II):



wherein R_2 represents (i) C_1–C_6 alkyl, (ii) C_1–C_6 alkyl substituted with a hydroxy, C_1–C_4 alkoxycarbonyloxy, C_1–C_4 alkoxy-C_1–C_4alkoxy, phenyl, phenoxy, phenoxycarbonyloxy, or aminophenylcarbonyloxy group, (iii) phenyl, or (iv) phenyl substituted with a halogen atom, C_1–C_4 alkyl, C_1–C_4 alkoxy, hydroxy, C_1–C_4 alkoxycarbonyl, C_1–C_4 alkoxycarbonyl-C_1–C_4 alkyl, oxopiperidino-C_1–C_4 alkyl C_1–C_4 alkylcarbonyl C_1–C_4 alkoxy, C_1–C_4 alkoxycarbonyl-C_1–C_4 alkoxy, hydroxyC_1–C_4 alkylthio, phenyl-C_1–C_4alkoxy, phenyoxy C_1–C_4alkoxy, C_1–C_4alkoxy C_1–C_4alkylaminosulfonyl, or C_1–C_4alkylphenylsulfonyloxy group.

5,547,479

ALPHA ABRASIVE ALUMINA-BASED GRAIN HAVING AN AS SINTERED OUTER SURFACE

Stanley L. Conwell, East Bethel, and William P. Wood, Golden Valley, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 174,431, Dec. 28, 1993, abandoned. This application May 26, 1995, Ser. No. 453,562

Int. Cl.[6] C09C *1/68*

U.S. Cl. 51—309 26 Claims

1. A plurality of abrasive grain having a specified nominal grade, said plurality of abrasive grain having a particle size distribution, by volume, ranging from fine to coarse and a median particle size less than 40 micrometers, and wherein at least a portion of said abrasive grain is a plurality of sintered, polycrystalline ceramic, alpha alumina-based abrasive grain having an as sintered outer surface.

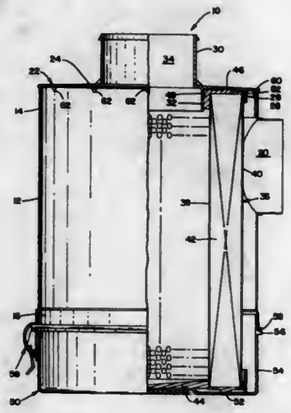
VOL 1189 ISS 3 AUG 20 1996 UMI

5,547,480

CYLINDRICAL AIR FILTER WITH RADIALLY DIRECTED SEAL

Paul R. Coulonvaux, Brussels, Belgium, assignor to Donaldson Company, Inc., Minneapolis, Minn.

Filed Jan. 21, 1994, Ser. No. 189,890
Int. Cl.[6] B01D *35/30*
U.S. Cl. 55—498 **4 Claims**



2. A housing for use with a substantially cylindrical air filter having a filter media, means for supporting the filter media and an end cap formed of elastomeric material and having a substantially cylindrical radially inward-facing surface defining an opening into the interior of the filter element, the opening having a first diameter, said housing comprising:

a tubular metal member with a particulate laden air inlet and first and second ends and having a plurality of portions positioned about said tubular member first end and projecting radially inwardly and toward said tubular member first end;

a plastic end cap at a first end of said housing with a substantially cylindrical air outlet member with a portion thereof extending into said tubular member, said portion having an outside diameter larger than the first diameter and on which the air filter is mounted with a radial seal between said portion and the inward facing surface of said plastic end cap, wherein said plastic end cap includes a plurality of complementary recesses formed therein configured for receiving said plurality of inwardly projecting portions; and

means for closing a second end of said housing.

5,547,481

A FILTER ELEMENT HAVING AN INHERENTLY STABLE, PERMEABLY POROUS PLASTIC BODY

Walter Herding, Hanbach; Jürgen Bethke, Sulzbach-Rosenberg, and Klaus Rabenstein, Hahnbach-Süss, all of, Germany, assignors to Herding GmbH Entstaubungsanlagen, Amberg, Germany

PCT No. PCT/EP93/00803, § 371 Date Mar. 7, 1995, § 102(e) Date Mar. 7, 1995, PCT Pub. No. WO93/19832, PCT Pub. Date Oct. 14, 1993
PCT Filed Apr. 1, 1993, Ser. No. 313,134
Claims priority, application Germany, Apr. 6, 1992, 42 11 529.9
Int. Cl.[6] B01D *39/16;46/24*
U.S. Cl. 55—523 **22 Claims**

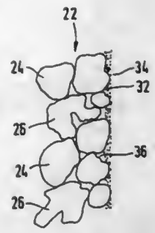
1. A filter element for separating solid particles from a fluid medium, the filter element comprising:

a permeably porous, substantially inherently stable shaped body made substantially of polyethylene and having an afflux surface defining surface pores thereon, the polyethylene being made from polyethylene grains combined and heated to form the shaped body, the polyethylene grains comprising:

an ultrahigh molecular polyethylene component including fine grains and having an average molecular weight of more than 10^6, the polyethylene component further having, in an initial state before heating, a minimum percentage of 95% by weight of fine grains larger than 63 microns and less than or equal to 250 microns; and

a further polyethylene component including fine grains in an initial state before heating, and which has an average molecular weight of less than 10^6, the fine grains of the further polyethylene component being adapted to be combined and heated with the fine grains of the polyethylene component for forming the shaped body; and

a fine pored coating of a fine grained material disposed on the afflux surface of the shaped body for filling at least a considerable depth of the surface pores present on the afflux surface, the coating having an average grain size less than an average grain size of the shaped body.



5,547,482

METHOD OF MAKING FUSED SILICA ARTICLES

Julie B. Chalk, 370 E. Warren St., Elmira, N.Y. 14901; Jonathan C. Rowe, 119 Daffodil Dr., Horseheads, N.Y. 14845; Paul M. Schermerhorn, 4182 Meads Creek Rd., Painted Post, N.Y. 14870, and Robert D. Shoup, 658 E. Lake Rd., Hammondsport, N.Y. 14840

Filed Jul. 5, 1994, Ser. No. 270,423
Int. Cl.[6] C03B *8/02;20/00*
U.S. Cl. 65—17.2 **19 Claims**

6. A method according to claim 5 wherein said porous body of amorphous silica is doped through the inclusion of at least one element selected from the group consisting of aluminum, antimony, barium, beryllium, boron, bromine, cadmium, calcium, cerium, chlorine, chromium, cobalt, copper, europium, fluorine, germanium, iron, lanthanum, lead, lithium, magnesium, neodymium, nickel, oxygen, phosphorous, potassium, samarium, silver, strontium, tantalum, tin, titanium, uranium, vanadium, yttrium, zinc and zirconium.

5,547,483

SPACERS FOR FLAT DISPLAY SCREENS

Michel Garcia, Les Milles, and Richard Pepi, Beziers, both of, France, assignors to Pixel International, Rousset, France

PCT No. PCT/FR93/01307, § 371 Date Aug. 29, 1994, § 102(e) Date Aug. 29, 1994, PCT Pub. No. WO94/15244, PCT Pub. Date Jul. 7, 1994
PCT Filed Dec. 28, 1993, Ser. No. 290,996
Claims priority, application France, Dec. 29, 1992, 92 16063; Jan. 28, 1993, 93 01188
Int. Cl.[6] C03B *23/20;* **E04C** *2/54*
U.S. Cl. 65—42 **10 Claims**

1. A method for assembling a spaced flat panel display screen having a first plate and a second plate, said first plate with an internal facing surface and bounded by a peripheral surface and said second plate with an internal facing surface and bounded by a peripheral surface, the internal facing surface of the first plate opposes the internal facing surface of the second plate, comprising the steps of:

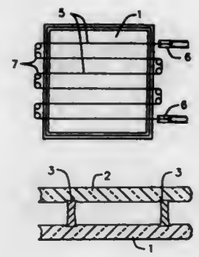
positioning spacers, formed from a fusible material having a predetermined melting point at which said spacers can be stretched, on said internal facing surface of at least said first plate;

positioning said second plate so that said internal facing surface of said second plate contacts said spacers;

heating said spacers to a temperature that is slightly higher than said predetermined melting point of said spacers thereby partially melting said spacers and causing said spacers to wet said internal facing surfaces of said plates thereby causing soldering of said spacers to said plates;

pulling said first and second plates apart to stretch said spacers until a predetermined distance between said first plate and said second plate is obtained; and

cooling said spacers to a temperature that is below said predetermined melting point.

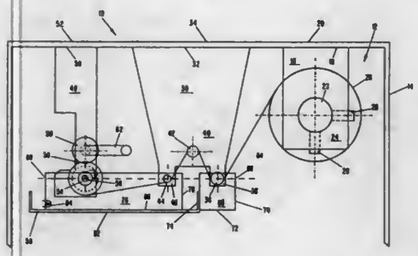


5,547,484

METHODS OF MAKING METALLIC GLASS FOIL LAMINATE COMPOSITES

Paul T. Vianco; Robert W. Fisher; Floyd M. Hosking, all of Albuquerque, and Frank J. Zanner, Sandia Park, all of N.M., assignors to Sandia Corporation, Albuquerque, N.M.

Filed Mar. 18, 1994, Ser. No. 210,791
Int. Cl.[6] C03C *29/00*
U.S. Cl. 65—42 **11 Claims**



1. A method for manufacturing a bulk composite material from an amorphous metal foil comprising:

a) immersing said foil in molten solder and forming a solder covered foil while said foil is under tension; and

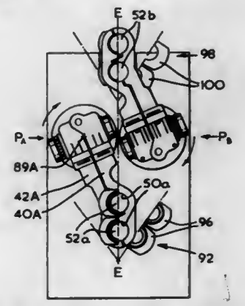
b) laminating a plurality of segments of said solder covered foil so as to form a layered bulk composite while said segments of solder covered foil are under tension.

5,547,485

PARISON TRANSFER MECHANISM

Stanley P. Jones, Doncaster, United Kingdom, assignor to Emhart Glass Machinery Investments Inc., Wilmington, Del.

Filed Apr. 6, 1994, Ser. No. 223,966
Claims priority, application United Kingdom, Apr. 13, 1993, 9307532
Int. Cl.[6] C03B *9/44*
U.S. Cl. 65—260 **4 Claims**



1. A transfer mechanism for transferring parisons formed in a cylindrical blank mold of a section of an I.S. machine to a cylindrical blow mold of the section wherein the vertical axes of the cylindrical blank mold and cylindrical blow mold define a vertical section center plane, comprising:

a first neck ring assembly including first and second neck ring arms for gripping a parison formed in the blank mold,

first means for mounting said first neck ring assembly for displacement about a horizontal axis so that said first and second neck ring arms with a gripped parison can be pivoted 180° from a first position to a second position, and

means for supporting said first means for mounting for displacement about a first vertical axis, a selected transverse distance from one side of said vertical section center plane, from a first orientation to a second orientation, so that the parison will be in the blank mold when said first and second neck ring arms grip the parison at said first position and so that the parison will be in the blow mold when said first and second neck ring arms grip the parison at said second position,

said first vertical axis being selectively located so that said first means for mounting will be located on one side of said vertical section center plane as the parison is displaced between said cylindrical blank mold and said cylindrical blow mold.

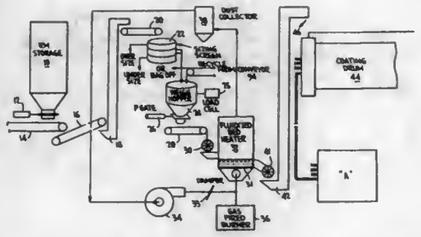
5,547,486

MACHINE SYTEM AND PROCESS FOR PRODUCING ATTRITION RESISTANT SLOW RELEASE FERTILIZERS

John H. Detrick, Birmingham, and Frederick T. Carney, Jr., Sylacauga, both of Ala., assignors to RLC Technologies, L.L.C., Sylacauga, Ala.

Continuation of Ser. No. 14,519, Feb. 8, 1993, Pat. No. 5,374,292. This application Dec. 15, 1994, Ser. No. 356,572
Int. Cl.[6] C05C *9/00;13/00*
U.S. Cl. 71—28 **12 Claims**

1. Process for coating a granular material with at least one water-insoluble polymer sealing layer comprising rotating a granular material to be coated to provide a cascading flow of said granular material, injecting a plurality of coating components separately into said cascading granular material at the top moving layer of said granular material while controlling separately the flow rate of each of said plurality of coating components which are injected into said rotating granules, and recovering said coated granular material wherein said granular material contains reactive functional groups; one of said coating components is a coupling agent having a functional group reactive with said granular material, and



one of the coating components of said water-insoluble polymer is reactive with the functional groups of said coupling agent.

5,547,487

AMORPHOUS METAL ALLOY AND METHOD OF PRODUCING SAME

Michael E. Blum, Palo Alto; Gary L. Boerman, Santa Clara, both of Calif.; Thomas M. Fekete, Yardly, Pa.; Donald L. Horak, Pocatello, Id.; Yulig K. Kovneristy, Moscow, Russian Federation, and Michael T. Orillion, Santa Clara, Calif., assignors to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 323,412, Oct. 14, 1994, Pat. No. 5,518,518. This application Dec. 5, 1994, Ser. No. 349,657

Int. Cl.[6] C21C *7/076*

U.S. Cl. 75—10.15 **8 Claims**

1. Process of producing an amorphous metal-containing alloy wherein ferrophos slag from a phosphorusproducing electric furnace is used to supply metalloid phosphorus values to said alloy comprising:

a) separating the slag into an upper layer of relatively low density and a much more dense molten ferrophos layer,

b) mixing said more dense molten ferrophos slag with iron to form a molten alloy comprising the metals and values expressed by the formula $Fe_aCr_bV_cP_d$ where the atomic percentage of "a" is from about 66 to about 80, "b" is from about 0.5 to about 10, "c" is from about 0.5 to about 5, and "d" is from about 8 to about 20, but wherein the total of "a", "b", "c" and "d" equals about 84 to about 98,

c) treating said molten alloy to a separation step to remove insoluble slag formed in said molten alloy, and

d) rapidly cooling the molten alloy to below the vitrification temperature of the molten alloy to convert into a solid amorphous metal alloy.

5,547,488

METHOD OF MAKING EJECTION POWDER FOR MECHANICAL PLATING

Masatsugu Watanabe; Yasuhisa Nagano; Hajime Shimoyama, and Tomohiro Osaka, all of Okayama, Japan, assignors to Dowa Iron Powder Co., Ltd., Okayama, Japan

Continuation of Ser. No. 17,626, Feb. 12, 1993, abandoned. This application Sep. 23, 1994, Ser. No. 312,002

Claims priority, application Japan, Feb. 14, 1992, 4-061427

Int. Cl.[6] B22F *9/06*

U.S. Cl. 75—335 **7 Claims**

5. A method of making ejection powder for mechanical plating comprising the steps of:

forming a zinc alloy melt;

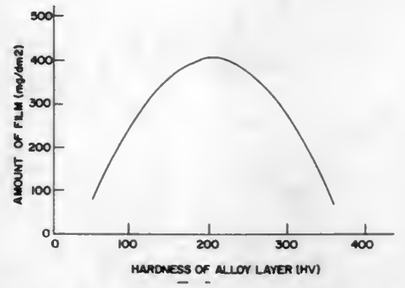
mixing iron alloy particles into said zinc alloy melt;

agitating said mixture of zinc alloy melt and iron alloy particles;

cooling said agitated mixture to room temperature to solidify said mixture into a solid alloy;

crushing said solid alloy to form a powder;

heating said powder to a temperature of 300°–700° C.; and keeping said powder at said temperature for 5–30 minutes;



whereby an ejection powder of an average Vicker's hardness between 60 and 370 is formed.

5,547,489

PROCESS FOR PRODUCING LOW-CARBON CHROMIUM-CONTAINING STEEL

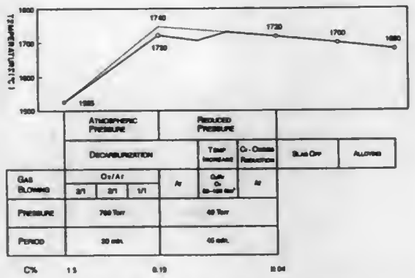
Yoshio Inagaki; Motoshi Shinkai, both of Aichi; Masahide Tsuno, and Akihiro Nagatani, both of Tokai, all of, Japan, assignors to Daido Tokushuko Kabushiki Kaisha, Nagoya, Japan

Filed May 22, 1995, Ser. No. 445,947

Claims priority, application Japan, Jun. 20, 1994, 6-162616

Int. Cl.[6] C21C *7/10*

U.S. Cl. 75—512 **1 Claim**



1. A process for producing a low-carbon chromium-containing steel containing 5% or more of chromium, comprising:

atmospheric pressure operation carried out by blowing an oxygen-containing gas into a molten steel charged in a refining furnace in atmosphere to decarburize the steel, and reduced pressure operation carried out by decreasing the pressure in the furnace to 20–200 Torr, blowing a non-oxidizing gas into the molten steel and by stirring the molten steel and slag in the furnace to cause reaction of chromium oxides in the slag and carbon in the molten steel so as to decarburize the steel, and then, reducing the chromium oxides by charging a reducing agent under keeping the reduced pressure;

wherein the total quantity of the oxygen gas in the oxygen-containing gas blown during the atmospheric pressure operation is decreased, while the oxygen-containing gas is blown again into the molten steel at the final stage of decarburization in the reduced pressure operation with such an oxygen gas quantity as equivalent to the oxygen gas quantity reduced from the oxygen-containing gas blown in the atmospheric pressure operation so as to cause heat generation by oxidation reaction of chromium, thereby to increase temperature of the molten steel to a determined temperature which is required from the view to cover temperature decrease during the subsequent stage.

5,547,490

METHOD AND INSTALLATION FOR REMOVING LEAD AND ZINC FROM FOUNDRY DUST

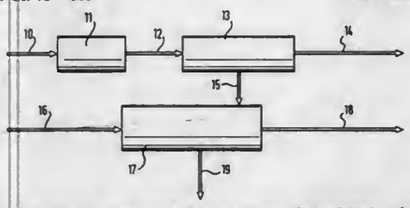
Heinz-Peter Discher, Offenburg; Ekkehard Greinacher, Hanover, and Hans Banski, Nürnberg, all of, Germany, assignors to Sudweststahl GmbH, Kehl AM Rhein, Germany

Filed Sep. 26, 1994, Ser. No. 307,758

Claims priority, application Germany, Mar. 26, 1992, 42 09 891.2

Int. Cl.[6] C22B *7/02;19/04;13/02*

U.S. Cl. 75—665 **30 Claims**



1. A method of removing lead and zinc from foundry dust material having components containing lead, zinc and alkali comprising the steps of

feeding the material to be treated to a lead-processing furnace and heating the material in the lead-processing furnace only until vaporization of said lead-containing components for generating a zinc bearing residual material said lead-containing components being removed from the lead-processing furnace by means of a scavenging gas flow and the scavenging gas flow which is charged with the lead-containing components being cooled down and filtered, and

heating the zinc-bearing residual material in a zinc-processing furnace under reducing conditions for reducing zinc oxide with the formation of zinc vapours, the zinc vapours being removed from the zinc-processing furnace by means of a scavenging gas flow mad the scavenging gas flow which is charged with the zinc vapours being cooled down and filtered.

5,547,491

PROCEDURE FOR THE SELECTIVE RECOVERY OF SOLVENTS FROM SOLVENT GAS MIXTURES AND DEVICE FOR THE REALIZATION OF THE PROCEDURE

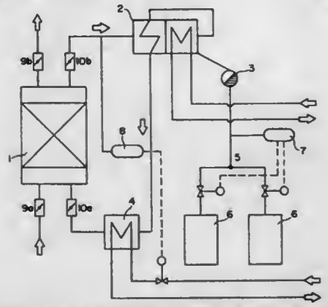
Werner Berwian, Idar-Oberstein; Thomas Frohs, Höringen, and Rolf Raffenbeul, Frankfurt am Main, all of, Germany, assignors to Adolf Lony KG Flexible Verpackungen, Lauterecken, and Raffenbeul & Partner, Frankfurt am Main, both of, Germany

Filed Sep. 1, 1994, Ser. No. 300,104

Claims priority, application Germany, Sep. 2, 1993, 43 29 642.4; Jul. 8, 1994, 44 24 155.0

Int. Cl.[6] B01D *53/047;53/14*

U.S. Cl. 95—12 **20 Claims**



1. A process for the selective recovery of solvents from a solvent gas mixture comprising the steps of fractionally sorbing a solvent gas mixture in a sorption agent to form individual solvent gas fractions in the agent, desorbing the individual solvent gas fractions from the sorption agent with a desorption gas in a fractionated manner, condensing these individual desorbed solvent gas fractions in a staggered-in-time manner to form a condensed solvent fraction flow, measuring the composition of the solvent fraction in the desorption gas from the sorption agent or of the solvent fraction in the condensed solvent fraction flow and separately collecting one solvent fraction from another depending on the measured composition of the solvent fraction.

5,547,492

METHOD FOR ADSORBING AND SEPARATING ARGON AND HYDROGEN GASES IN HIGH CONCENTRATION FROM WASTE AMMONIA PURGE GAS, AND APPARATUS THEREFOR

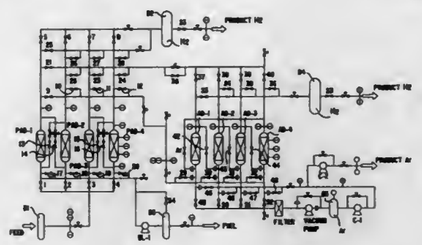
Soon-Haeng Cho; Kuck-Tack Chue; Jong-Nam Kim; Kwon-Il Kim; Youn-Jong You, all of Daejeon-Si, and Seng-Go Lee, Ulsan-Si, all of, Rep. of Korea, assignors to Korea Institute of Energy Research, Daejon-si, Rep. of Korea

Filed Jun. 10, 1994, Ser. No. 258,181

Claims priority, application Rep. of Korea, Apr. 12, 1994, 94-7563

Int. Cl.[6] B01D *53/053*

U.S. Cl. 95—100 **3 Claims**



1. A method for adsorption and recovery of argon and hydrogen simultaneously with a high concentration from ammonia purge gas, comprising:

removing ammonia, moisture, methane and nitrogen from an ammonia purge gas by passing the ammonia purge gas through a first adsorption stage of a four bed pressure swing adsorption, thereby recovering a large amount of hydrogen as a product during a first period of adsorption step and obtaining an intermediate product consisting of an argon-hydrogen mixture containing about 10–16% argon by volume during a second period of adsorption; and

passing the intermediate argon-hydrogen mixture through a second stage of adsorption of a four bed pressure swing adsorption, thereby obtaining simultaneously argon and hydrogen as high purity products.

5,547,493

ELECTROSTATIC PRECIPITATOR

Henry V. Krigmont, 2600 Marigold, Seal Beach, Calif. 90704

Filed Dec. 8, 1994, Ser. No. 351,757

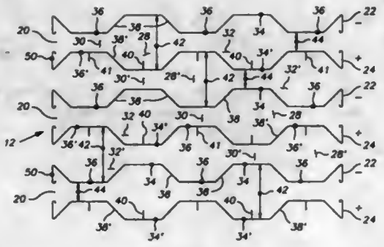
Int. Cl.[6] B03C *3/08*

U.S. Cl. 96—54 **18 Claims**

1. An electrostatic precipitator utilizing a high voltage power supply and electrodes for removing particulate matter from a gas stream passing therethrough comprising:

a plurality of spaced pairs of corrugated plate electrodes, each of which extend in the direction of the flow of the gas stream and are spaced from each other transverse to the flow direction;

each of said pairs of electrodes defining a plurality of spaced



primarily ionization zones and also defining collecting zones positioned between adjacent primarily ionization zones, the spacing extending in the flow direction; and

one electrode of each of said pairs including a corona source thereon in each primarily ionization zone.

5,547,494

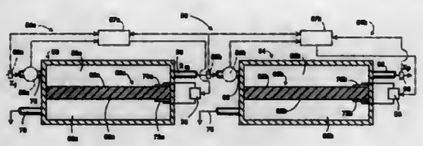
STAGED ELECTROLYTE MEMBRANE

Ravi Prasad, East Amherst, and Christian F. Gottzmann, Clarence, both of N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.

Filed Mar. 22, 1995, Ser. No. 408,857

Int. Cl.[6] B01D *53/22;71/02*

U.S. Cl. 95—54 **20 Claims**



1. A process of separating oxygen from a feed gas stream including a mixture of oxygen and at least one other gas to produce enriched oxygen permeate and oxygen-depleted retentate gas, the process comprising:

introducing the feed gas into a first gas chamber of a first process stage of at least two process stages arranged in a series feed relationship, the first chamber being separated from a second gas chamber by a first electrolyte membrane;

selecting a first oxygen flux through the first membrane and providing a first electrical current to and a first voltage across the first membrane to drive oxygen substantially at the first flux to obtain oxygen depleted retentate gas from the first chamber and enriched oxygen permeate from the second chamber;

delivering oxygen-depleted retentate gas from the first process stage to a third gas chamber of a second process stage, the third chamber being separated from a fourth gas chamber by a second electrolyte membrane; and

selecting a second oxygen flux through the second membrane and providing a second electrical current to and a second voltage across the second membrane to drive oxygen substantially at the second flux to obtain oxygen depleted retentate gas from the third chamber and enriched oxygen permeate from the fourth chamber, the second current being smaller than the first current and the second voltage being larger than the first voltage.

5,547,495

FLUE GAS CONDITIONING SYSTEM

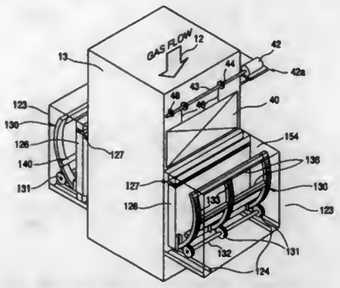
Robert A. Wright, Indianapolis, Ind., assignor to Wilhelm Environmental Technologies, Inc., Indianapolis, Ind.

Continuation of Ser. No. 907,159, Jul. 1, 1992, Pat. No. 5,240,470, and Ser. No. 922,576, Jul. 30, 1992, Pat. No. 5,365,697, which is a continuation-in-part of Ser. No. 907,159, and a continuation-in-part of Ser. No. 864,847, Apr. 7, 1992, Pat. No. 5,288,303, and a continuation-in-part of Ser. No. 882,835, May 14, 1992, Pat. No. 5,288,309. This application May 13, 1994, Ser. No. 242,356

The portion of the term of this patent subsequent to Jul. 30, 2012, has been disclaimed.

Int. Cl.[6] F23J *15/00*

U.S. Cl. 96—74 **19 Claims**



1. In a system for conditioning flue gas generated by a boiler furnace prior to its emission to the atmosphere, including a conduit for conducting a flow of flue gas from said boiler furnace to the atmosphere and an electrostatic precipitator located in said conduit for electrostatically removing particulate matter entrained in the flue gas, the improvement comprising:

an assembly arranged upstream of the electrostatic precipitator including a catalytic converter that is pivoted in said conduit for converting a portion of the sulfur dioxide contained in the flue gas flow to sulfur trioxide and a control for controlling the position of the catalytic converter and thereby the amount of sulfur trioxide generated by said catalytic converter.

5,547,496

ELECTROSTATIC PRECIPITATOR

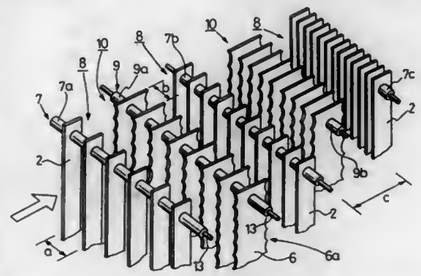
Keiichi Hara, Taito-ku, Japan, assignor to Filtration Japan Co., Ltd., Yamagata-ken, Japan

Filed Jan. 30, 1995, Ser. No. 380,506

Claims priority, application Japan, Jan. 31, 1994, 6-028860

Int. Cl.[6] B03C *3/08*

U.S. Cl. 96—79 **27 Claims**



1. An electrostatic precipitator, comprising:

a plurality of dust-collecting electrode groups, each dust-collecting electrode group comprising:

a plurality of elongated dust-collecting electrodes,

first spacing adjusting means for spacing the plurality of dust-collecting electrodes of a dust-collecting electrode group at a uniform spacing from one another,

wherein faces of the plurality of dust-collecting electrodes are arranged parallel to one another, and parallel to a gas flow direction of the electrostatic precipitator;

at least one discharge electrode group, each discharge electrode group comprising:

a plurality of elongated discharge electrodes,

second spacing adjusting means for spacing the plurality of discharge electrodes of a discharge electrode group at a uniform spacing from one another,

wherein faces of the plurality of discharge electrodes are arranged parallel to one another and parallel to the gas flow direction of the electrostatic precipitator; and

wherein each discharge electrode group is located between a pair of dust-collecting electrode groups, one of the pair of dust-collecting electrode groups being located upstream of the discharge electrode group in the gas flow direction, the other of the pair of dust-collecting electrode groups being located downstream of the discharge electrode group in the gas flow direction.

5,547,497

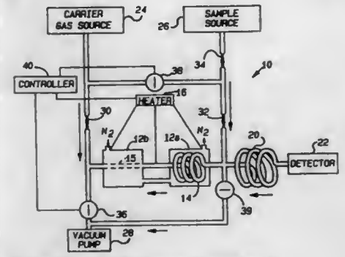
APPARATUS FOR GAS CHROMATOGRAPHY

Mark A. Klemp, Swartz Creek, and Anita J. Peters, Farmington Hills, both of Mich., assignors to Chromatofast, Inc., Ann Arbor, Mich.

Continuation-in-part of Ser. No. 953,893, Sep. 30, 1992, Pat. No. 5,288,310. This application Dec. 28, 1993, Ser. No. 174,129

Int. Cl.[6] B01D *15/08*

U.S. Cl. 96—104 **36 Claims**



1. A gas chromatography system comprising:

a source of a sample;

a source of a carrier gas;

a chromatography separation column;

a first sample tube having a first end and a second end, said first end communicating with said column and said source of a sample gas;

a second sample tube of a porous layer open tubular configuration having a first end communicating with the second end of said first sample tube and a second end communicating with said source of a carrier gas;

temperature adjustment means for controlling the temperature of said first sample tube between a first low temperature for condensing some components of said sample which thereby do not enter said second sample tube, and a first high temperature for vaporizing said some components, and for controlling the temperature of said second sample tube between a second low temperature for condensing other components of said sample, and a second high temperature for vaporizing said other components;

a controllable pressure means for causing said sample to flow into said first sample tube second end;

control means for controlling said temperature adjustment means and said pressure means wherein during a collection mode, said pressure means draws said sample into said first sample tube first end through said first and second sample tubes while said first and second sample tubes are simultaneously at said first and second low temperatures, respectively, and during an injection mode, causes said sample tubes to be simultaneously heated to said first and second high temperatures, respectively, thereby vaporizing said some components and said other components and allowing said carrier gas to flow into said second sample tube second end, through said second sample tube and into said first sample tube second end, through said first sample tube, and into said column.

5,547,498

EASILY DISPERSIBLE COLORING CARBON BLACK AND PROCESS FOR PREPAARING AN INK

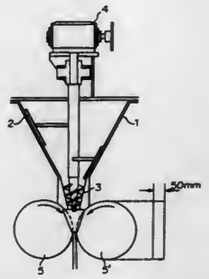
Akinori Sakaue; Nobutake Mise, and Makoto Ishizu, all of Kitakyushu, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Division of Ser. No. 296,155, Aug. 29, 1994, which is a continuation of Ser. No. 940,786, Sep. 4, 1992, abandoned, which is a continuation of Ser. No. 803,905, Dec. 9, 1991, abandoned, which is a continuation of Ser. No. 440,112, Nov. 22, 1989, abandoned. This application May 16, 1995, Ser. No. 442,152

Claims priority, application Japan, Nov. 25, 1988, 63-297421

Int. Cl.[6] C09D *11/00*

U.S. Cl. 106—20 C **9 Claims**



1. A process for preparing an ink, which comprises mixing a pigment and a solvent, wherein the pigment is flake-like carbon black obtained by compacting carbon black powder material to have a bulk density of from 0.1 to 0.50 g/cm^3 and having an initial dispersion in said solvent of at most 5.0%, whereby a reduced amount of time is required for dispersing said carbon black into said solvent, and whereby dirty, dusty and scattering operations are reduced.

5,547,499

AQUEOUS INK COMPOSITION

Toshimitsu Kawasumi, Osaka, and Hiroaki Ueda, Daito, both of, Japan, assignors to Sakura Color Products Corporation, Osaka, Japan

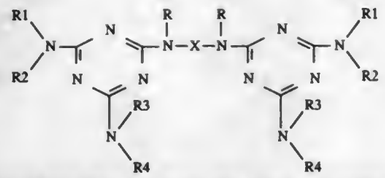
Filed May 18, 1995, Ser. No. 443,448

Claims priority, application Japan, Jun. 1, 1994, 6-143860; Jun. 29, 1994, 6-171657

Int. Cl.[6] C09D *11/02*

U.S. Cl. 106—20 R **10 Claims**

1. An aqueous ink composition comprising an aqueous ink mixture containing at least a coloring agent, a pigment dispersant, a water-soluble organic solvent and water, and an organic white pigment of an alkylene-bis-melamine derivative represented by the general formula (1):



(1)

wherein R represents a hydrogen atom, a lower alkyl group having 1 to 4 carbon atoms or an alicyclic group; R1, R2, R3 and R4 are the same or different, each representing a hydrogen atom or a lower alkyl group having 1 to 4 carbon atoms; R1 and R2, or R3 and R4 may form a heterocyclic group together with nitrogen atom; and X represents a lower alkylene group having 2 to 3 carbon atoms.

5,547,500

REVERSIBLE THERMAL COLORING COMPOSITIONS, AND RECORDING MEDIA AND METHODS USING THE SAME

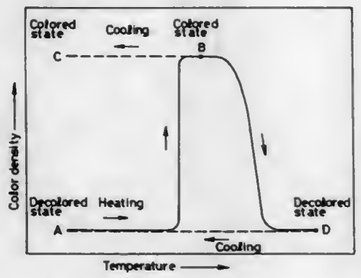
Kyohji Tsutsui, Mishima, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 23, 1995, Ser. No. 409,681

Claims priority, application Japan, Mar. 24, 1994, 6-078082; Mar. 14, 1995, 7-081677

Int. Cl.[6] C09D *11/00*

U.S. Cl. 106—21 A **8 Claims**



1. A reversible thermal coloring composition comprising
(1) a leuco compound,
(2) a salt or complex salt of an acidic substance A with a basic substance, and
(3) an acidic substance B, wherein the acidic substance A is identical with the acidic substance B.

5,547,501

METHOD FOR FORMATION OF INVISIBLE MARKING AND METHOD FOR READING OF INVISIBLE MARKING

Tsutomu Maruyama, Hiratsuka; Atsushi Akiyama, Chigasaki; Kazuo Sanada; Sadao Chigira, both of Chiba, and Masanobu Hidaka, Kiyose, all of, Japan, assignors to Kansai Paint Co., Ltd., Hyogo; Fujikura Ltd., Tokyo, and Matsuo Sangyo Co., Ltd., Osaka-fu, all of, Japan

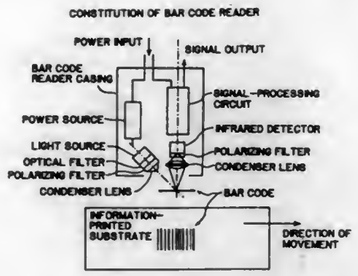
Filed May 5, 1995, Ser. No. 435,615

Claims priority, application Japan, May 6, 1994, 6-116039; May 6, 1994, 6-116040

Int. Cl.[6] C09D *11/02*

U.S. Cl. 106—21 R **18 Claims**

1. A method for formation of invisible marking, which comprises printing information on the surface of a substrate with a marking ink containing a mixture of an indium-tin mixed oxide



and at least one compound selected from the group consisting of alumina, barium sulfate, silicon dioxide and calcium carbonate.

5,547,502

DISPERSIBLE SILICA PARTICULATES AND REINFORCEMENT OF ELASTOMER/RUBBER MATRICES THEREWITH

Yvonick Chevallier, Decines, and Michel Rabeyrin, Dardilly, both of, France, assignors to Rhone-Poulenc Chimie, Courbevole Cedex, France

Division of Ser. No. 904,565, Jun. 26, 1992, Pat. No. 5,403,570. This application Nov. 16, 1994, Ser. No. 341,974

Claims priority, application France, Jun. 26, 1991, 91 07859

Int. Cl.[6] C01B *33/20*

U.S. Cl. 106—287.1 **20 Claims**

1. A process for the preparation of precipitated silica particulates by reacting a silicate with an acid agent, comprising (i) introducing such acid agent into a liquid reaction medium which comprises at least a portion of the silicate required for complete reaction and an electrolyte, to adjust the pH of said reaction medium to a value of at least 7, the concentration of silica in said reaction medium being less than 100 g/l and that of the electrolyte being less than 17 g/l, (ii) next introducing additional acid agent and any remaining required silicate into said reaction medium to produce a suspension of precipitated silica particulates having a dry solids content of no greater than 24% by weight, and (iii) recovering and drying said precipitated silica particulates.

5,547,503

COATING AND BONDING COMPOSITION

Donald A. Oldiges, 11819 Meadowview, Cypress, Tex. 77429, and Anthony W. Joseph, 2515 Truxillo, Houston, Tex. 77004

Continuation of Ser. No. 870,132, Apr. 15, 1992, Pat. No. 5,286,393. This application Nov. 23, 1993, Ser. No. 156,442

The portion of the term of this patent subsequent to Feb. 15, 2011, has been disclaimed.

Int. Cl.[6] C10M *113/08*

U.S. Cl. 106—287.18 **6 Claims**

1. An anti-seize coating and bonding composition comprising:
a) a thixotropic suspending agent;
b) an organic resin bonding agent;
c) an organic solvent thinning agent; and
d) a metallic flake,
where the coating and bonding composition is designed to bond to the surfaces of threaded connections to form an anti-seize film with adequate film strength to protect the threaded connections from

seizing, galling, or failure and to minimize metal release into the environment during make-up and break-out of the threaded connections.

5,547,504

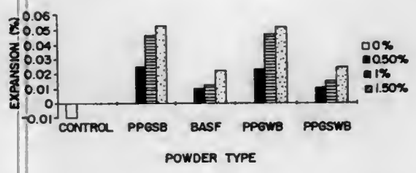
NON-SHRINK GROUT COMPOSITION WITH GAS FORMING ADDITIVE

Parviz Soroushian, East Lansing, Mich., assignor to Board of Trustees operating Michigan State University, East Lansing, Mich.

Continuation-in-part of Ser. No. 401,308, Mar. 9, 1995, Pat. No. 5,489,333, which is a continuation of Ser. No. 142,610, Oct. 25, 1993, abandoned. This application Aug. 23, 1995, Ser. No. 518,048

Int. Cl.[6] C04B *18/04*

U.S. Cl. 106—697 **27 Claims**



1. A dry, non-shrink grout composition which is admixed with water to cure and form a grout which comprises in admixture:
(a) Portland cement having a particle size between about 1 and 100 micrometers;
(b) optionally sand having a maximum particle size of about 3 mm, and a weight ratio of sand to cement of between about 0.1 to 1 and 5 to 1;
(c) dried paint polymer powder particles selected to have a particle size between about 50 and 1000 micrometers and to contain between about 0.001 and 0.1 parts by weight of a calcium material per part of the particles and between about 0.001 and 0.1 parts of aluminum per part of the particles which react when combined with water to cause the grout when fresh to expand due to formation of gas bubbles in the grout and to expand when hardened, wherein the particles are dispersed in the grout in an amount between about 0.5 and 5 percent by weight of the grout.

5,547,505

COMPOSITIONS FOR LOW HEAT CEMENTS

Kazuya Nakatsu, Fukuoka; Takaharu Goto, Ichikawa; Toru Higaki, Tokyo; Hideki Endo, Funabashi; Satoru Hirose, Tokyo, and Yukinori Yamazaki, Ichikawa, all of, Japan, assignors to Nihon Cement Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 119,177, Sep. 22, 1993, abandoned. This application May 25, 1995, Ser. No. 452,644

Claims priority, application Japan, Apr. 9, 1971, 3-161975; Oct. 11, 1991, 3-329423

Int. Cl.[6] C04B *7/02*

U.S. Cl. 106—713 **14 Claims**

1. A low heat cement composition consisting of:
from 85 to 99.9 wt. % of a powder composition having an amorphous content of at least 60 wt. %, a CaO/SiO_2 molar ratio from 0.8 to 1.5 from 1.0 to less than 12.0 wt. % of Al_2O_3 and a fineness of no less than 3000 cm^2/g; and
from 0.1 to 15 wt. % of an added material selected from the group consisting of portland cements, gypsum, sodium hydroxide, sodium carbonate, potassium hydroxide, and mixtures thereof.

5,547,506

STORABLE LIQUID CEMENTITIOUS SLURRIES FOR CEMENTING OIL AND GAS WELLS

Philip Rae, Aberdeen, and Neil Johnston, Westhill, both of, Scotland, assignors to BJ Services Company, Tomball, Tex.

Division of Ser. No. 186,719, Jan. 25, 1994, Pat. No. 5,447,197. This application May 22, 1995, Ser. No. 447,002

Int. Cl.[6] C04B *24/00*

U.S. Cl. 106—730 **17 Claims**

1. A storable, hydraulically-active, cementitious slurry comprising:
a hydraulically-active cementitious material suitable for cementing within subterranean formations for oil or gas wells;
an effective amount of a set retarder to allow the storage of the slurry with a minimal change of the slurry's set characteristics upon activation and to allow the reversal of retardation after adding an effective amount of an activator to the slurry prior to cementing;
a suspending agent for maintaining the slurry with minimal separation of the cementitious material;
an activating agent;
an effective amount of water to form a pumpable slurry;
wherein an effective amount of activating agent is added which is sufficient to overactivate the slurry and wherein an additional amount of set retarder is added to the slurry to achieve a setting time.

5,547,507

ELECTROMECHANICAL CAKE DECORATING APPARATUS

Charles F. Ciaramita, Raleigh, N.C., assignor to Too Sweet, Ltd., Atlanta, Ga.

Filed Nov. 30, 1994, Ser. No. 346,617

Int. Cl.[6] A21C *15/00*

U.S. Cl. 118—13 **18 Claims**

1. An apparatus for supporting a cake being prepared and for measuring and displaying a weight of the cake being prepared, said apparatus comprising:
a turntable comprising a platen and a shaft, said shaft having a first end and a second end, said first end of said shaft being connected to said platen, said platen for supporting a cake to be prepared;
a base having an opening formed therein for receiving said shaft and for preventing lateral movement of said turntable with respect to said base:
support means contained within said base for providing vertical support for said shaft and for allowing limited vertical movement of said shaft when weight is placed on said platen, said support means including a cantilevered beam having a first end attached to a support structure within said base and having a second end suspended within said base, said beam having means connected thereto between the first and second ends of said beam for receiving the second end of said shaft and for allowing rotational movement of said shaft within said base;
a weight sensor contained within said base, said weight sensor including a transducer for sensing the weight of the cake supported on said platen while the cake is being prepared and

for producing a voltage signal which is related to the weight of the cake supported on said platen wherein said beam is associated with the weight sensor such that when a cake is supported on said platen, the weight of the cake is translated to said transducer, thereby causing the voltage signal to be produced;

signal processing means connected to said weight sensor for receiving the voltage signal and for processing the signal into display information for display; and

display means connected to said signal processing means for receiving the display information from said signal processing means and for displaying a digital number which corresponds to the weight of the cake supported on said platen.

5,547,508

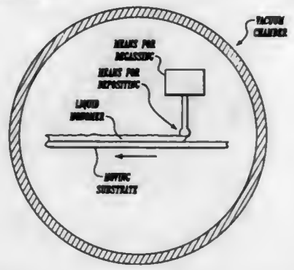
VACUUM DEPOSITION AND CURING OF LIQUID MONOMERS APPARATUS

John D. Affinito, Kennewick, Wash., assignor to Battelle Memorial Institute, Richland, Wash.

Division of Ser. No. 100,883, Aug. 2, 1993, Pat. No. 5,395,644, which is a continuation-in-part of Ser. No. 933,447, Aug. 21, 1992, Pat. No. 5,260,095. This application Nov. 17, 1994, Ser. No. 341,803

Int. Cl.[6] C23C *14/00*

U.S. Cl. 118—50 **14 Claims**



1. An apparatus for depositing a liquid monomer as a layer, comprising:

(a) a moving substrate,

(b) a vacuum chamber placed about said moving substrate,

(c) means for degassing the liquid monomer, and

(d) means for depositing a first layer including a nozzle for flowing the degassed liquid monomer onto said moving substrate within the vacuum chamber.

5,547,509

METHOD AND APPARATUS FOR CONTINUOUS SUPPORT OF A PAPER WEB THROUGH A COATING INSTALLATION

Thomas M. Nelder, Washingtonville, and Robert J. Rudt, Highland Mills, both of N.Y., assignors to Champion International Corporation, Stamford, Conn.

Continuation of Ser. No. 993,643, Dec. 21, 1992, abandoned. This application Jan. 23, 1995, Ser. No. 376,079

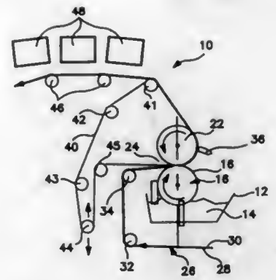
Int. Cl.[6] B05C *1/08*

U.S. Cl. 118—68 **6 Claims**

1. A coating installation for coating a continuous web of paper moving through said installation at a selected speed, said web of paper having opposed first and second surfaces, said coating installation comprising:

driving means for driving the web of paper through said installation;

a continuous support belt having a portion adapted to be disposed in supporting engagement with a portion of the second surface of the web of paper driven through said installation;



a supply of liquid coating material;

delivering means for delivering coating material from the supply to the first surface of the web of paper driven through said installation to form a coating of said material on said first surface, wherein the means for delivering the coating to the web includes an application roll having an outer circumferential surface communicating with the supply of coating liquid, the application roll being rotated such that the outer circumferential surface thereof is brought into contact with the first surface of the web, the coating installation further comprising a backing roll extending substantially parallel to and slightly spaced from the application roll thereby forming a nip therebetween, the backing roll being disposed such that the continuous support belt is intermediate the second surface of the web of paper and the backing roll;

driving means for driving the continuous support belt substantially at the speed of the web of paper being driven through said installation, wherein said driving means includes a plurality of drive rolls that are substantially parallel to and spaced from said backing roll for supporting and driving said continuous support belt;

metering means separate from and spaced downstream from said delivering means for removing excess coating material from said first surface of a web of paper supplied by said delivering means to form a uniform or substantially uniform coating of a predetermined thickness on the surface of the web, wherein the metering means is positioned in proximity to the application roll and beyond the nip;

wherein said support belt is configured and arranged to continuously support the web of paper in proximity to the metering means and the delivery means; and,

drying means for drying said coating of liquid coating material, said drying means positioned downstream of said metering means and wherein said web of paper separates from said continuous support belt in proximity to said drying means.

5,547,510

COATING APPARATUS

Hiroyuki Aizawa, and Seiichi Tobisawa, both of Hino, Japan, assignors to Konica Corporation, Japan

Filed Apr. 1, 1994, Ser. No. 221,764

Claims priority, application Japan, Apr. 8, 1993, 5-106277

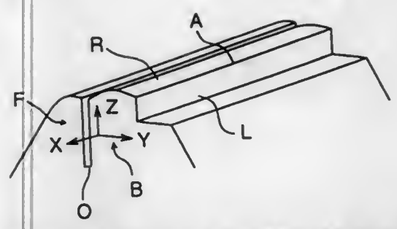
Int. Cl.[6] B05C *5/00;5/02*

U.S. Cl. 118—410 **8 Claims**

1. An apparatus for coating a coating solution on a support member, the apparatus comprising:

at least two coating bars along which the support member is conveyed in a running direction, wherein at least one of the coating bars is a downstream bar located downstream in said running direction, the downstream bar having an upstream side and a downstream side opposite each other, wherein an edge is located at the downstream side of said downstream bar; and

an extrusion outlet, located between the coating bars, for extruding the coating solution onto the support member,



wherein a center line mean roughness (Ra) on the edge at the downstream side of the downstream bar is not larger than 0.5 μm and the maximum height (R_{max}) on the edge is not larger than 6.0 μm.

5,547,511

ELECTRODE FORMING SYSTEM FOR CHIP COMPONENTS

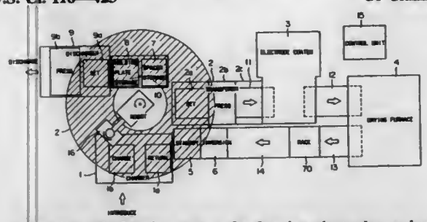
Mitsuro Hamuro; Hirokazu Higuchi; Tadahiro Nakagawa, and Akihiko Takahashi, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Dec. 6, 1993, Ser. No. 162,680

Claims priority, application Japan, Dec. 4, 1992, 4-350563

Int. Cl.[6] B05C *3/00*

U.S. Cl. 118—423 **26 Claims**



1. An electrode forming system for forming electrodes on both ends of chip components, said system comprising:

first and second holding plates having a number of receiving holes for resiliently holding said chip components;

a guide plate having a number of guide holes corresponding to said receiving holes;

a spacer for defining a clearance between said first and second holding plates;

charge means for charging said chip components into said guide holes of said guide plate;

transfer means having a number of press pins corresponding to said receiving holes, for transferring said chip components from said guide plate into said first holding plate and for transferring said chip components from said first plate into said second holding plate;

electrode coating means for coating one ends of said chip components held by said first holding plate with electrode material and for coating the other ends of said chip components held by said second holding plate with electrode material;

drying means for drying said electrode material coated on said chip components;

holding plate standby means for keeping said first and second holding plates on standby after being processed by said drying means;

discharge means having a number of press pins corresponding to said receiving holes for discharging said chip components coated with electrodes on both ends from said second holding plate;

conveyor means for carrying said first and second holding plates from said transfer means to said electrode coating means, from said electrode coating means to said drying means and from said drying means to said holding plate standby means;

transport means for transport of at least one of said guide plates, said first and second holding plates, and said spacer among said charge means, said transfer means, said discharge means and said holding plate standby means; and

control means for controlling said transport means; wherein

said transfer means has a number of uprightly directed press pins corresponding to said receiving holes of said holding plates, wherein

said press pins upwardly pushes said chip components from said guide holes into said receiving holes of said first holding plate a distance sufficient to have one end of said chip components exposed at a lower surface of said first holding plate when said first plate is superposed on said guide plate, and wherein

said press pins upwardly push said chip components from an upper surface of said first plate into said receiving holes of said second holding plate a distance sufficient to have the other end of said chip components exposed at a lower surface of said second holding plate when said second holding plate is superposed on said first bolding plate with said spacer therebetween.

5,547,512

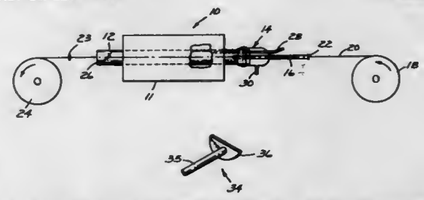
CONTINUOUS ATOMSPHERIC PRESSURE CVD COATING OF FIBERS

Thomas Gabor, Maplewood, and James M. O'Kelly, New Brighton, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 383,923, Jul. 21, 1989, Pat. No. 5,364,660. This application Jun. 17, 1994, Ser. No. 261,827

Int. Cl.[6] C25C *16/00*

U.S. Cl. 118—718 **15 Claims**



1. Apparatus by which barrier coatings can be continuously applied by CVD onto inorganic fibrous material, said apparatus comprising

a furnace,

a straight, elongated furnace tube extending through the furnace, which furnace tube is formed with

a uniform inside diameter of sufficiently large size to receive a tool for periodic cleaning while the apparatus is in use,

an unconstricted outlet,

an ambient atmosphere-excluding inlet through which said fibrous material enters, and

intake means for receiving a gaseous mixture comprising one or more reagents that can coat said fibrous material by CVD, and a tool inserted within said furnace tube.

5,547,513

STARCH-BASED TEXTURIZING AGENT

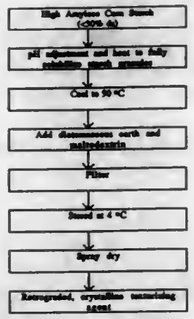
Francis M. Mallee; Joel A. Stone, both of Acton, and Eugene T. Finocchiaro, Milton, all of Mass., assignors to Opta Food Ingredients, Inc., Bedford, Mass.

Continuation-in-part of Ser. No. 138,541, Oct. 15, 1993, Pat. No. 5,470,391, which is a continuation-in-part of Ser. No. 900,899, Jun. 18, 1992, abandoned. This application Jun. 2, 1995, Ser. No. 459,401

Int. Cl.[6] C13K *1/06;* **A23G** *3/00;* **A23L** *1/05*

U.S. Cl. 127—38 **21 Claims**

1. A method of producing a high amylose starch-based texturizing agent, comprising the following steps:



a) heating a slurry of high amylose starch in an aqueous acidic medium for a temperature, pressure and time sufficient to substantially disrupt starch granules to produce a solubilized starch solution;

b) filtering the resultant solution to remove impurities; and

c) drying the solubilized starch solution by a suitable means to preserve the amorphous structure and produce a starch-based texturizing agent that is non-retrograded and non-crystalline.

5,547,514

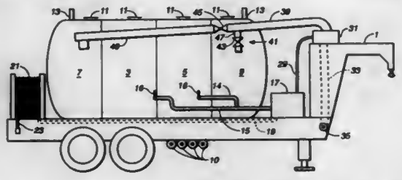
APPARATUS FOR CLEANING SUB-SURFACE ELECTRICAL ENCLOSURES AND THE LIKE

Stephen W. Ward, and Ray E. Harwood, both of Bakersfield, Calif., assignors to Pacific Gas and Electric Company, San Francisco, Calif.

Filed Sep. 28, 1994, Ser. No. 314,398

Int. Cl.[6] B08B *9/08*

U.S. Cl. 134—22.1 **3 Claims**



1. A method for cleaning liquids and solids from a sub-surface electrical enclosure that may have hazardous materials present, comprising:

opening a water feed valve attached to a water tank for supplying water to a water pump to clean the sub-surface electrical enclosure;

attaching a high pressure cleaning device to the water pump;

starting the water pump;

semi-liquefying the solids in the sub-surface electrical enclosure with the high pressure cleaning device to form a slurry;

attaching a suction hose to a suction pump to draw the liquids and solids from the sub-surface electrical enclosure;

opening a first waste inlet valve in fluid communication with a first waste tank so that liquids and solids can be received in the first waste tank;

starting the suction pump;

suctioning the liquids and solids from the sub-surface electrical enclosure through the suction hose to the first waste tank;

stopping the water pump and the suction pump when the liquids and solids have been removed from the sub-surface electrical enclosure;

attaching a clean-out attachment to the suction hose to flush the suction hose, the suction pump, and the first waste inlet valve;

connecting the high pressure cleaning device to the clean-out attachment; and

running the water pump and the suction pump until the suction hose, the suction pump, and the first waste inlet valve are clean of the liquids and solids.

5,547,515

METHOD FOR HANDLING OR PROCESSING SEMICONDUCTOR WAFERS

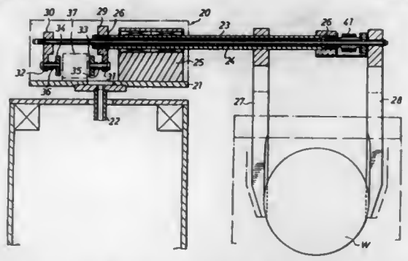
Hideo Kudo; Isao Uchiyama, both of Fukushima-ken; Yoshiharu Kimura, Nigata-ken; Morie Suzuki, Fukushima-ken, and Takashi Tanakajima, Gunma-ken, all of, Japan, assignors to Shin-Etsu Handotai Co., Ltd., Japan

Division of Ser. No. 920,392, Jul. 27, 1992, Pat. No. 5,317,778. This application Feb. 1, 1994, Ser. No. 189,679

Claims priority, application Japan, Jul. 31, 1991, 3-214654; Jul. 31, 1991, 3-214655; Aug. 13, 1991, 3-226358; Aug. 13, 1991, 3-226359; Aug. 13, 1991, 3-226360

Int. Cl.[6] B08B *11/02;5/04*

U.S. Cl. 134—21 **3 Claims**



1. A method for handling or processing a wafer comprising the steps of

transporting a wafer in a horizontal orientation to a wafer erecting location by a flowing liquid;

stopping and positioning said wafer in said flowing liquid with an arcuate array of stopper pins positioned on a receiving plate, said arcuate array of stopper pins circumscribing a circle having a diameter equivalent to a diameter of said wafer;

applying suction to said wafer with a suction nozzle mounted on a suction arm, said suction arm being rotatable about a horizontal shaft;

rotating said suction arm about said horizontal shaft to move said wafer to a vertical orientation;

gripping a wafer between two vertical hold-between arms respectively attached to inner and outer coaxial shafts which are axially shiftable relative to each other; and

vertically shifting said two vertical hold-between arms and said inner and outer coaxial shafts;

said gripping a wafer including further steps of

applying axial shifting forces to said inner and outer coaxial shafts with an actuator; and

limiting gripping forces applied to said wafer with an elastically deformable link between said actuator and respective ones of said inner and outer coaxial shafts.

5,547,516

SUBSTRATE STRUCTURES FOR INTEGRATED SERIES CONNECTED PHOTOVOLTAIC ARRAYS AND PROCESS OF MANUFACTURE OF SUCH ARRAYS

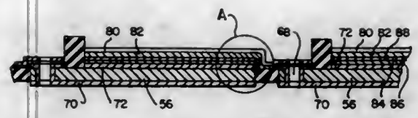
Daniel Luch, 17161 Copper Hill Dr., Morgan Hill, Calif. 95037

Filed May 15, 1995, Ser. No. 441,552

Int. Cl.[6] H01L *31/05*

U.S. Cl. 136—244 **21 Claims**

1. A substrate structure for series interconnected photovoltaic cell arrays, said substrate structure comprising one or more individual units, each said unit comprising:



a sheet of electrically conductive material, said sheet having a length, width, thickness, a top surface and a bottom surface, said width being defined as the distance between a first terminal edge and a second terminal edge of said sheet;

means for providing an electrically insulating strip of material positioned on said top surface and extending in the direction of said length, said insulating strip positioned between and defining a top contact surface area and a top collector surface area;

an electrically insulating joining portion extending in the direction of said length and attached to said conductive sheet close to or at said first terminal edge;

said sheet further comprising an electrically conductive polymer-based resin.

5,547,517

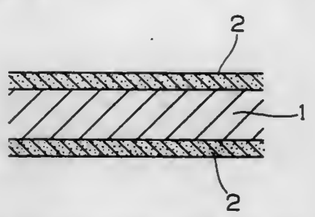
BRAZING AGENT AND A BRAZING SHEET BOTH COMPRISING AN ALUMINUM ALLOY CONTAINING A FLUX

Ichiro Iwai, Oyamashi, Japan, assignor to Showa Aluminum Corporation, Osaka, Japan

Continuation-in-part of Ser. No. 994,556, Dec. 21, 1992, Pat. No. 5,330,090. This application Jul. 18, 1994, Ser. No. 276,544

Int. Cl.[6] B23K *35/363*

U.S. Cl. 148—24 **21 Claims**



1. A flux-containing aluminum alloy brazing agent consisting essentially of a compacted powder mixture of an aluminum-silicon alloy and the flux, wherein silicon is contained at 3–15% by weight of all the elements other than the flux, and the ratio in weight of all the elements other than the flux to the flux is from 99.9:0.1 to 70:30, and wherein the apparent density is 90% or more of a theoretical density.

5,547,518

ENHANCED METHOD FOR CLEANING SOIL

Neil A. Johnson, Schenectady; Thomas R. Raber, East Berne; Louis E. Hibbs, Jr., Schenectady; Melissa L. Murray, Schaghticoke, and Mark G. Benz, Burnt Hills, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 3, 1995, Ser. No. 415,803

Int. Cl.[6] C22F *1/18*

U.S. Cl. 148—98 **9 Claims**

1. A method for cleaning niobium-based foil used in manufacturing a triniobium tin superconductor material comprising degreasing the foil; removing surface oxides from the foil by a method selected from the group consisting of acid cleaning, mechanical cleaning, and mixtures thereof; heat treating the foil at a temperature between about 950°–1150° C. for at least about 20 seconds in an inert atmosphere containing 10 parts per million or less thereby providing a clean surface on the foil to improve subsequent anodization and tin wetting of the foil; and then anodizing the foil.

5,547,519

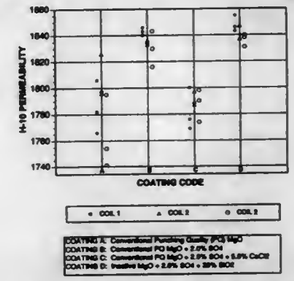
MAGNESIA COATING AND PROCESS FOR PRODUCING GRAIN ORIENTED ELECTRICAL STEEL FOR PUNCHING QUALITY

Robin A. Murphy, Middletown, Ohio, assignor to Armco Inc., Middletown, Ohio

Division of Ser. No. 395,552, Feb. 28, 1995. This application Jun. 5, 1995, Ser. No. 463,807

Int. Cl.[6] H01F *1/04*

U.S. Cl. 148—113 **11 Claims**



1. A method for producing regular grain oriented electrical steel strip having a permeability measured at 796 A/m of at least 1780 comprising the steps of:

a) decarburizing said strip to provide a maximum carbon level of 0.005% and silica surface layers on said strip;

b) applying an annealing separator coating containing magnesia and at least 15 parts by weight silica on a water free basis to said strip;

c) subjecting said decarburized strip with said annealing separator coating to a high temperature anneal whereby said magnesia reacts with said silica in said coating to form a glass film on said decarburized strip when heated within the range of 1100°–1300° C. in a hydrogen atmosphere, said glass film is characterized by a smooth interface between said glass film and said electrical steel; and

d) removing said glass film.

5,547,520

WEAR-RESISTANT HIGH PERMEABILITY MAGNETIC ALLOY AND METHOD OF MANUFACTURING THE SAME

Yuetsu Murakami, and Katashi Masumoto, both of Sendai, Japan, assignors to The Foundation: The Research Institute of Electric and Magnetic Alloys, Japan

Division of Ser. No. 254,892, Jun. 6, 1994, Pat. No. 5,496,419. This application Jan. 31, 1995, Ser. No. 381,489

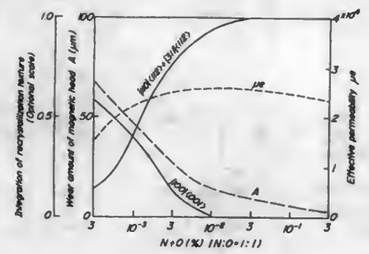
Claims priority, application Japan, Jul. 30, 1993, 5-190215

Int. Cl.[6] H01F *1/04*

U.S. Cl. 148—120 **6 Claims**

5. A method of manufacturing a wear-resistant high permeability alloy comprising:

hot working an alloy comprising by weight 60–90% Ni, 0.5–14% Nb, 0.0003–0.3% N and O in total, excluding 0% of N or O, and 0.001–30% in total of a secondary component including at least one element selected from the group consisting of less than 7% of Cr, Mo, Ge and Au, respectively, less than 10% of Co and V, respectively, less than 15% of W, less than 25% of Cu, Ta and Mn, respectively, less than 5% of Al, Si, Ti, Zr, Hf, Sn, Sb, Ga, In, Tl, Zn, Cd, rare earth elements, and platinum group elements, respectively, less than



3% of Be, Ag, Sr, and Ba, respectively, less than 1% of B, less than 0.7% of P and less than 0.1% of S, and a remainder of Fe at a temperature exceeding 900° C. and below a melting point;

cooling the alloy;

cold working the alloy at a working ratio of more than 50%;

heating the alloy to a temperature exceeding 900° C. and below a melting point;

cooling the alloy to a temperature above an ordered-disordered lattice transformation point;

cooling the alloy from said temperature above an ordered-disordered lattice transformation point to room temperature at a cooling rate of 100° C./sec to 1° C./hr;

heating the alloy to a temperature of less than an ordered-disordered lattice transformation point for more than 1 minute and less than 100 hours; and

cooling the alloy to form a recrystallization texture of {110}<112>+{311}<112> with an effective permeability of more than 3000 at 1 KHz and a saturated flux density of more than 4000 G.

5,547,521

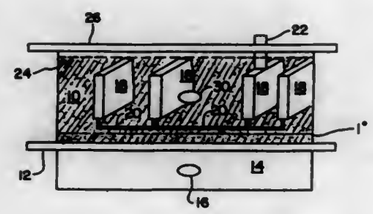
HEAT TREATMENT METHOD FOR LOST FOAM CAST MATERIALS

Bryan Hand, Norton, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Continuation-in-part of Ser. No. 207,811, Mar. 7, 1994, Pat. No. 5,429,172, which is a continuation of Ser. No. 976,755, Nov. 6, 1992, abandoned. This application Apr. 17, 1995, Ser. No. 423,593

Int. Cl.[6] B22C *9/04*; C21D *9/00*

U.S. Cl. 148—522 **7 Claims**



1. A heat treatment method for lost foam cast materials, comprising the steps of:

providing a plurality of lost foam cast materials that are integrally connected together with a controlled spacing between the cast materials; and

heating the integrally connected lost foam cast materials to a temperature for a time to improve the through hardness of the lost foam cast materials.

5,547,522

SUPPORT FOR A PLANOGRAPHIC PRINTING PLATE AND METHOD FOR PRODUCING SAME

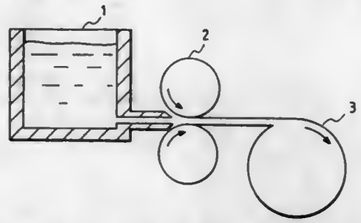
Masaya Matsuki; Hirokazu Sawada, and Akio Uesugi, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 132,871, Oct. 7, 1993, Pat. No. 5,456,772. This application Apr. 3, 1995, Ser. No. 415,388

Claims priority, application Japan, Nov. 20, 1992, 4-333862; Mar. 29, 1993, 5-91908

Int. Cl.[6] C22F *1/04*

U.S. Cl. 148—551 **9 Claims**



1. A method for producing a support for a planographic printing plate, comprising the steps of: forming molten aluminum into an aluminum plate having a thickness in a range of 4 to 30 mm through continuous casting using twin rollers; cold rolling said aluminum plate to reduce the thickness of said thin plate by 60 to 95%; annealing said thin plate at a temperature in a range of 260° to 300° C. for a time not shorter than 8 hours; further reducing the thickness of said thin plate by 30 to 90% through finishing rolling; heat treating said aluminum plate to thereby prepare an aluminum support; and subjecting said aluminum support to eletrochemical surface graining.

5,547,523

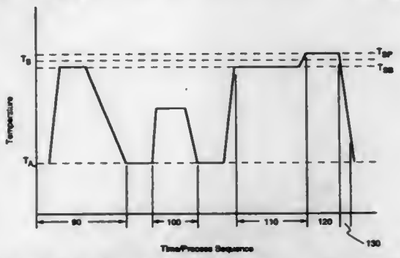
RETAINED STRAIN FORGING OF NI-BASE SUPERALLOYS

Charles P. Blankenship, Jr., Niskayuna, and Michael F. Henry, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 3, 1995, Ser. No. 367,635

Int. Cl.[6] C22F *1/10*

U.S. Cl. 148—677 **7 Claims**



1. A method of forging an article having a controlled grain size from a Ni-base superalloy, comprising the steps of:

selecting a forging preform formed from a Ni-base superalloy and having a microstructure comprising a mixture of γ and γ′ phases and a γ′ solvus temperature, wherein the γ′ phase occupies at least 40% by volume of the Ni-base superalloy;

isothermally forging the preform at a temperature that is 100° F. or less below the γ′ solvus temperature at a strain rate in the range of 0.0001–0.01 s^{-1} for a time sufficient to form the preform into a precursor forging;

forging at least a portion of the precursor forging at a strain rate in the range of 0.1–100 s^{-1} so as to produce a forged article having an amount of retained strain energy per unit of volume sufficient to promote recrystallization within the forged portion of the forged article upon subsequent annealing;

subsolvus annealing the forged article at a temperature that is 100° F. or less below the γ′ solvus temperature of the alloy for a time sufficient to recrystallize the microstructure of the forged portion; and

supersolvus annealing the article at a supersolvus temperature that is 100° F. or less above the solvus temperature for a time sufficient to ensure that substantially all of the forged portion is raised to the supersolvus temperature and produce growth of the recrystallized microstructure within the forged portion to a uniform average grain size in the range of about 90–120 microns.

5,547,524

HARDENED ALUMINUM ALLOY STOCK MATERIALS HAVING CONTINUOUS VARIATION IN PROPERTIES AND PROCESS FOR PRODUCING

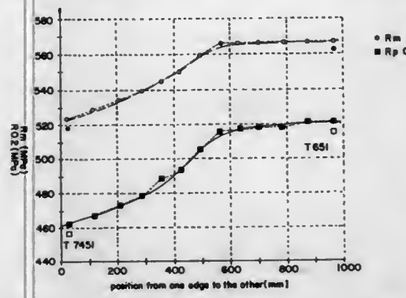
Pierre Sainfort, 23 Bd. Maréchal Leclerc; Hervé Vichery, 14 Place Jean Moulin, and Benoît Commet, 8, rue de l'Abbé Grégoire, all of 38000 Grenoble, France

Filed Jun. 21, 1994, Ser. No. 267,026

Claims priority, application France, Jun. 28, 1993, 93 08096

Int. Cl.[6] C22F *1/04*

U.S. Cl. 148—688 **11 Claims**



1. A process for producing a structurally hardened plate or sheet of aluminum alloy comprising quenching and final aging, said final aging comprising heating for a defined period of time a first portion of the plate or sheet including a first edge to a first temperature T, and a second portion of the plate or sheet including an opposite edge to a second temperature t<T, the plate or sheet having, after said final aging, mechanical properties which vary continuously from said first edge to said opposite edge.

5,547,525

ELECTROSTATIC DISCHARGE REDUCTION IN ENERGETIC COMPOSITIONS

S. John Bennett, Brigham City, and R. Scott Hamilton, Bear River City, both of Utah, assignors to Thiokol Corporation, Ogden, Utah

Filed Sep. 29, 1993, Ser. No. 128,793

Int. Cl.[6] C06B *45/10*

U.S. Cl. 149—19.1 **39 Claims**

1. A propellant composition containing at least 75 weight percent solids in a nonpolar polymeric binder comprising an effective quantity of conductive carbon fibrils sufficient to provide a volume resistivity to a level below or on the order of about 10^{10} ohm-cm, wherein said carbon fibrils are present in the propellant composition in the range from about 0.005 to about 0.1 weight percent, said carbon fibrils being catalytically grown and substantially free of pyrolytically deposited thermal carbon.

5,547,526

PRESSABLE EXPLOSIVE GRANULAR PRODUCT AND PRESSED EXPLOSIVE CHARGE

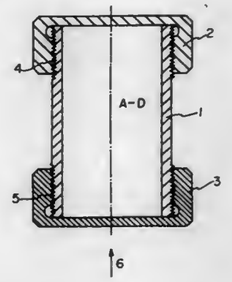
Paul Wanninger, Schrobenhausen; Richard Wild, Karlshuld; Ernst Kleinschmidt, and Helmut Späth, both of Schrobenhausen, all of, Germany, assignors to Daimler-Benz Aerospace AG, München, Germany

Continuation-in-part of Ser. No. 953,642, Sep. 29, 1992, abandoned, which is a continuation-in-part of Ser. No. 665,404, Mar. 5, 1991, Pat. No. 5,183,520. This application Apr. 21, 1994, Ser. No. 230,735

Claims priority, application Germany, Mar. 6, 1990, 40 06 961.3

Int. Cl.[6] C06B *45/10*

U.S. Cl. 149—19.2 **25 Claims**



1. An explosive charge, comprising: a pressed plastic bonded explosive charge having an explosive charge content of at least 94% by weight, said pressed explosive charge being formed of one of octogene or hexogene and 6% or less by weight of a binder, said pressed explosive charge having a density which is at least 97% of a theoretical maximum density, said binder being a gel-like silicone rubber which is a polysiloxane di-substituted by alkyl and/or aryl groups formed of two polysiloxane components crosslinking with each other by carrying functional groups reacting by addition reaction with each other, said gel-like silicone rubber having penetration according to DIN ISO 2137 in mm/10 of at least 30.

5,547,527

PROCESS FOR THE PRODUCTION OF DESENSITIZED EXPLOSIVES

Dietmar Müller, Karlsruhe; Mathial Helfrich, Landau, and Michael Mandt, Karlsruhe, all of, Germany, assignors to Fraunhofer Gesellschaft zur Forderung der angewandten Forderung der angewandten Forschung e.V., Munich, Germany

Continuation of Ser. No. 844,544, Mar. 2, 1992, abandoned. This application Aug. 16, 1993, Ser. No. 106,789

Claims priority, application Germany, Apr. 11, 1991, 41 11 752.2

Int. Cl.[6] C06B *45/10;21/00*

U.S. Cl. 149—19.92 **23 Claims**

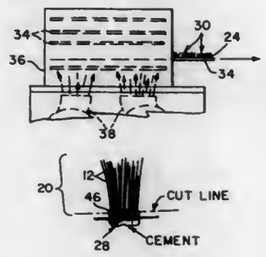
1. A process for the production of desensitized, high energy explosive, adapted to be used as a component of plastic-bound explosives or propellants, comprising providing a particulate explosive with a grain size up to 20 μm; suspending the particulate explosive with a desensitizing polymer and a surface active additive in an aqueous dispersion to form a slurry, the surface active additive being amorphous silicon dioxide; applying the slurry to a rotary, heated roller; drying the applied slurry at ambient pressure

and at a temperature between 100°and 150° C.; and scraping the dried slurry from the roller to thereby provide the particulate explosive coated with the desensitizing polymer.

5,547,528
NON-TOXIC PRIMER
Jack A. Erickson, Andover; Robert L. Kramer, Minneapolis, and John M. Hallis, Buffalo, all of Minn., assignors to Federal-Hoffman, Inc., Anoke, Minn.
Filed May 26, 1995, Ser. No. 451,559
Int. Cl.[6] C06B *25/34*
U.S. Cl. 149—92 **25 Claims**

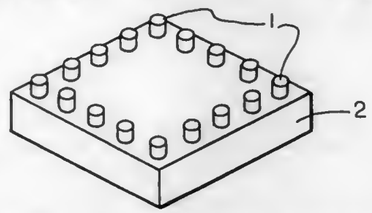
1. A non-toxic primer composition for use in small arms cartridges, which is devoid of metallic oxidizing compounds and of hygroscopic compounds comprising a mixture of:
(a) about 10–30% by weight of a suitable propellant;
(b) approximately 30–75% by weight of at least two percussion-sensitive compounds selected from a group consisting of a diazo, a triazole, and a tetrazole compounds;
(c) about 10–22% by weight of calcium silicide; and
(d) approximately 3–15% by weight of particles fine of glass.

5,547,529
PROCESS FOR FABRICATING FALSE EYELASH SYSTEM
David L. Woolf, c/o Yongho Han, 8 Clearmeadow Ct., Woodbury, N.Y. 11797
Filed Feb. 6, 1995, Ser. No. 383,943
Int. Cl.[6] A41G *5/02*
U.S. Cl. 156—61 **4 Claims**



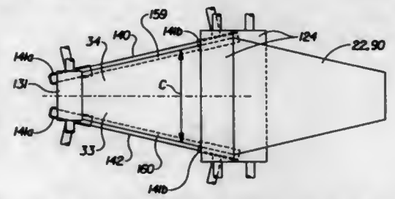
1. A false eyelash method, for producing unknotted clusters of false eyelashes having a desired eyelash length, using a plurality of long fibers, a main string, and cement, comprising the steps of:
a) knotting the long fibers onto the main string, forming a preliminary knot at the main string;
b) trimming the long fibers transverse to the long fibers at a distance from the preliminary knot equal to the desired eyelash length to create a short fiber cluster;
c) cementing the short fiber cluster at the preliminary knot, creating a cement clot that attaches the fibers for a discernible distance away from the preliminary knot; and
d) creating the unknotted cluster by cutting through the cement clot to remove the preliminary knot, while assuring that the fibers are still attached together by the cement clot; wherein the step of cementing the short fiber clusters is preceded by the step of: heating the short fiber clusters to curl the fibers by laying the main string across a tray and placing the tray in an oven having a pair of heat sources which emanate heat.

5,547,530
METHOD OF MANUFACTURING A CERAMIC SUBSTRATE
Yoshifumi Nakamura; Yoshihiro Bessho; Satoru Yuhaku, all of Osaka; Yasuhiko Hakotani, Nishinomiya; Minehiro Itagaki, and Kazuhiro Miura, both of Osaka, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Jan. 31, 1994, Ser. No. 189,482
Claims priority, application Japan, Feb. 2, 1993, 5-015203
Int. Cl.[6] B32B *31/04;31/12;31/24;* C04B *41/81*
U.S. Cl. 156—89 **26 Claims**



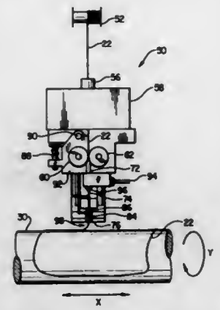
1. A method of manufacturing a ceramic substrate having a plurality of bumps comprising the steps of:
forming a bump forming layer having a plurality of holes therein on at least one of upper and lower faces of a laminated body of green sheets;
filling the holes in the bump forming layer with a bump forming paste;
sintering the laminated body of the green sheets and the bump forming paste wherein the bump forming layer is not sintered; and
forming bumps made of the sintered bump forming paste by removing the bump forming layer.

5,547,531
NONWOVEN FEMALE COMPONENT FOR REFASTENABLE FASTENING DEVICE AND METHOD OF MAKING THE SAME
Patrick J. Allen; Beverly J. Bross-Kelly, both of Cincinnati; Louis J. Viltro, Hamilton; William R. Vinnage, Jr., and David M. Weirich, both of Cincinnati, all of Ohio, assignors to The Proctor & Gamble Company, Cincinnati, Ohio
Division of Ser. No. 254,814, Jun. 6, 1994, abandoned. This application Apr. 10, 1995, Ser. No. 419,314
Int. Cl.[6] A61F *13/15*
U.S. Cl. 156—164 **25 Claims**



1. A method of manufacturing an elastomeric female fastening component capable of engaging a complementary male fastening component, the method comprising the steps of:
(a) providing a first lamina in a machine direction, said first lamina comprising an elastomeric, pressure-sensitive adhesive film having a first adhesive surface and a second adhesive surface opposed to said first adhesive surface, a relaxed orientation and an elongated orientation;
(b) contacting at least a first region of said second adhesive surface of said first lamina with a first belt to adhere said first region to said first belt and contacting at least a second region of second adhesive surface of said first lamina with a second belt to adhere said second region to said second belt, said first region being spaced apart from said second region; and
(c) diverging said first belt and said second belt such that said first lamina becomes stretched in a cross machine direction which is generally perpendicular to said machine direction said second adhesive surface being of such an adhesive nature that said film is retained on said belts during diverting without additional securing means, said first lamina being stretched from said relaxed orientation to said elongated orientation;
(d) contacting a second lamina comprising a nonwoven web with said first adhesive surface of said first lamina in said elongated orientation, thereby joining said second lamina and said first lamina to form a laminate; and
(e) relaxing said first lamina such that said second lamina is shirred to form catching regions capable of entangling the hooks of a complementary male fastening component.

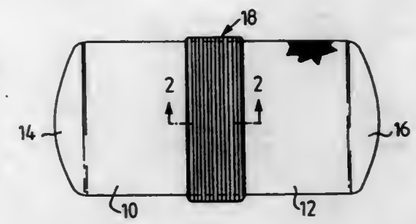
5,547,532
DIRECT WIND COIL WINDING HEAD ASSEMBLY
Arthur W. Wernersbach, Jr., Waxahacie; John R. Skaritka, DeSoto; Billy P. Yager; Rodney R, Barrick, both of Waxachachie, and John D. Ligier, Arlington, all of Tex., assignors to Universities Research Association, Inc., Washington, D.C.
Filed Mar. 23, 1994, Ser. No. 217,190
Int. Cl.[6] B65H *81/00*
U.S. Cl. 156—172 **18 Claims**



1. A method for direct winding of a coil on a coil support mandrel, comprising the steps of:
(a) coating a surface of said mandrel with a first adhesive;
(b) supplying a continuous length of conductor coated, with a second adhesive, to a first point:
(c) moving said mandrel such that said first point coincides with successive adjacent second points on said mandrel surface wherein said second points define a winding pattern of said coil; and
(d) controlling steps (b) mad (c) such that said conductor is supplied at a first rate substantially equal to a second rate of movement of said mandrel relative to said point.

4. A direct wind coil winding head assembly for depositing coil windings directly onto a coil support mandrel, comprising:
wire feed means having an input and an output, said wire feed means adapted to receive a continuous length of wire at said input and to cause said wire to exit said output at a first rate;
mandrel positioning means for dynamically positioning said coil support mandrel beneath said output; and
control means coupled to said wire feed means and said mandrel positioning means, said control means operable to cause said mandrel positioning means to dynamically position said coil support mandrel beneath said output such that said exiting wire is deposited onto said mandrel in a predetermined pattern, and further operable to control said wire feed means such that said first rate is substantially equal to a second rate of movement of said coil support mandrel relative to said output;
whereby said wire is deposited onto said coil support mandrel with substantially no residual winding stresses.

5,547,533
METHOD FOR MANUFACTURING GLASS-FIBRE REINFORCED PLASTIC CONTAINER
Kurt Berglund, Norrfjärden, Sweden, assignor to Composite Scandinavia AB, Pitea, Sweden
Division of Ser. No. 142,476, Nov. 22, 1993, abandoned. This application Dec. 8, 1994, Ser. No. 352,282
Claims priority, application Sweden, May 24, 1991, 9101584
Int. Cl.[6] B65H *81/00*
U.S. Cl. 156—175 **5 Claims**



1. Method of making a reinforcing body of fibre strands for insertion in a casting mould for casting of a fibre-reinforced cylinder with one end closed to be included in a plastic tank, said reinforcing body being built up with its open end facing downwards on a preshaping form, by several layers of both longitudinal and transverse reinforcing fiber strands being wound on the form, whereupon the reinforcing strands of the reinforcing body are sprayed with a meltable resin powder, which after heat treatment bonds the reinforcing strands to each other so that a pre-fabricated reinforcing body is formed, characterized by the following steps:
the reinforcing body (D) for casting a cylinder (**10**), the open end of which is made as a male end (**20**), is built up by first winding at least one layer (**35**) of longitudinal reinforcing strands closely adjacent to each other on the pre-shaping form (**50**) to define a longitudinal reinforcement;
winding at least one layer (**33**) of transverse reinforcing strands closely adjacent to each other on the longitudinal reinforcement to define a transverse reinforcement for said male end (**20**), and winding an additional layer (**29**) of longitudinal reinforcing strands on the transverse reinforcement, said additional layer of longitudinal reinforcing strands being collected in groups (**30**) of densely lying reinforcing strands with a pre-determined spacing (F) between the groups to provide channel-shaped spaces (**31**) between said groups (**30**),
the reinforcing body (C) for casting of a cylinder (**12**), the open end of which is to be formed as a female end (**22**), is built up by first winding a layer (**36**) of longitudinal reinforcing strands on the pre-shaping form (**50**), said longitudinal reinforcing strands being collected into groups (**37**) of densely lying reinforcing strands with a pre-determined spacing (F) between the groups to provide channel-shaped spaces (**38**) between said groups (**37**); winding at least one layer (**34**) of transverse reinforcing strands closely adjacent to each other on the groups (**37**) of densely lying longitudinal reinforcing strands to define a transverse reinforcement for said female end (**22**); and winding at least one additional layer (**32**) of longitudinal reinforcing strands closely adjacent to each other on the last mentioned transverse reinforcement.

5,547,534

PROTECTED IMAGE, AND PROCESS FOR THE PRODUCTION THEREOF

Robert M. Conforti, Woburn; Sun-Wook Kim, Cambridge, and Being-Kung Yao, Lexington, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 9, 1993, Ser. No. 118,882
Int. Cl.[6] B44C *1/165*; G03C *7/34*
U.S. Cl. 156—230 **13 Claims**

1. A process for protecting a binary image, this binary image comprising a plurality of first areas, at which a porous or particulate image-forming substance is adhered to a substrate, and a plurality of second areas, at which the substrate is free from the image-forming substance, which process comprises:

providing a laminating sheet comprising, in order, a barrier layer, a durable layer and a support layer, the barrier and durable layers being substantially transparent and the barrier layer being substantially impervious to the passage of hexane, isopropanol and water therethrough and comprising (a) a polymeric organic material comprising polymerized repeating vinylidene chloride units or (b) a polyurethane;

laminating the laminating sheet to the binary image so that the barrier layer adheres to both the first and second areas of the image; and

separating the support layer from the image such that the barrier and durable layers remain attached to the image,

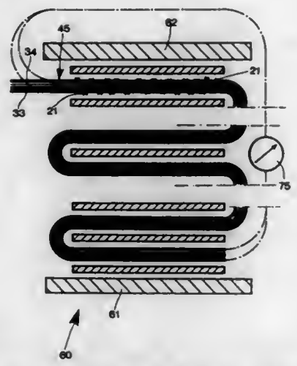
thereby covering the image with a barrier layer and a durable layer.

5,547,535

PROCESS FOR PRODUCING PLASTIC LAMINATES FROM CONTINUOUSLY FED BANDS

Bruno Ceraso, Milan, Italy, assignor to Cedal S.R.L., Milan, Italy

PCT No. PCT/IT92/00097, § 371 Date Dec. 21, 1994, § 102(e) Date Dec. 21, 1994, PCT Pub. No. WO94/01263, PCT Pub. Date Jan. 20, 1993
PCT Filed Aug. 7, 1992, Ser. No. 362,538
Claims priority, application Italy, Jul. 9, 1992, MI92A1676
Int. Cl.[6] B32B *31/20;31/04;15/08*; H05K *3/00*
U.S. Cl. 156—272.2 **3 Claims**



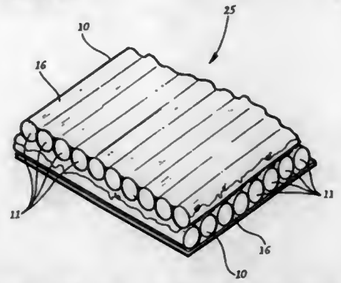
1. A process for producing plastic laminates for printed circuits, comprising forming at least two packages each including internal supporting sheets impregnated with plastic material and external laminates composed of bands of copper that wind continuously between one package and a next forming 180° bends in one direction and another direction with interposition of at least one sheet of steel; applying heat generated by connected ends of the copper bands to a generator of electrical current, said forming including making the packages from a multi-composition band composed both of the bands of supporting material impregnated with plastic material and of the copper bands so as to produce a plastic laminate for a printed circuit.

5,547,536

METHOD FOR FABRICATING A BALLISTIC LAMINATE STRUCTURE

Andrew D. Park, 2851 E. Brigstock Rd., Midlothian, Va. 23113

Division of Ser. No. 243,976, May 17, 1994, Pat. No. 5,437,905. This application Oct. 21, 1994, Ser. No. 327,318
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—292 **6 Claims**



1. A method of fabricating a ballistic laminate structure in sheet form, comprising:

(a) forming a first array of high performance, unidirectionally-oriented fiber bundles having a tensile strength of at least 7 grams per denier;

(b) forming a second array of high performance, unidirectionally-oriented fiber bundles having a tensile strength of at least 7 grams per denier;

(c) cross-plying said second array of fiber bundles at an angle with respect to said first array of fiber bundles;

(d) bonding thermoplastic films to respective opposing outer surfaces of said first and second cross-plied arrays of unidirectional fiber bundles; and

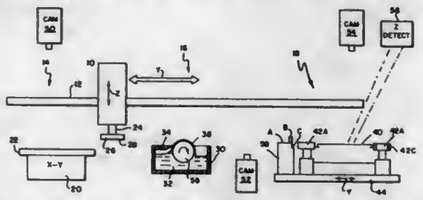
(e) uniting the first and second cross-plied arrays of unidirectional fiber bundles to form the ballistic laminate structure without penetration of said films into said fiber bundles or through the laminate from one side of the ballistic laminate structure to the other.

5,547,537

CERAMIC CARRIER TRANSPORT FOR DIE ATTACH EQUIPMENT

Edward P. Reynolds, Philadelphia; Natale F. Tinnerino, Doylestown, both of Pa., and Walter P. Schiefele, Sebastian, Fla., assignors to Kulicke & Soffa, Investments, Inc., Wilmington, Del.

Continuation of Ser. No. 885,849, May 20, 1992, abandoned. This application Jun. 3, 1994, Ser. No. 253,579
Int. Cl.[6] B23B *35/00*; B23P *19/00*
U.S. Cl. 156—351 **8 Claims**



1. An apparatus for aligning and positioning an electronic die on a substrate in a bonder comprising:

first transport means for transporting a substrate to a bonding location;

first sensor means for sensing the Z coordinate of said substrate and a die bonded on said substrate at said bonding location;

second transport means for transporting a die from a supply location to a bond site on said substrate;

second sensor means for sensing the Z coordinate of said second transport means; and

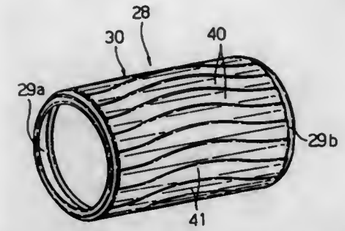
control means for correlating sensed coordinates from said first and second sensor means and adjusting the Z of said second transport means and said substrate relative to each other to place said die on a preselected bond site on said substrate and for measuring the Z position of the bonded die using said sensed coordinates from said first sensor means.

5,547,538

METAL FORMING MODULE FOR A BUILDING DRUM

Karl J. Siegenthaler, Rome, Italy, assignor to Bridgestone Corporation, Tokyo, Japan

Division of Ser. No. 343,748, Nov. 22, 1994. This application Jun. 6, 1995, Ser. No. 467,192
Claims priority, application Italy, Dec. 30, 1993, TO93A1024
Int. Cl.[6] B29D *30/26*
U.S. Cl. 156—415 **3 Claims**



1. A forming module connectable releasably to a tire building drum comprising two annular end elements connectable releasably to respective half drums; an intermediate tubular body connected at opposite ends to said annular end elements; the tubular body comprising a number of side-by-side, partially superimposed elastic metal blades; each of said blades comprising a pair of ends and an intervening wider central portion circumferentially overlapping the wider central portion of the adjacent blade; a plurality of recesses formed in each of the annular end elements and spaced circumferentially therealong; and each blade end having an end portion connected to the central portion of the blade by a narrow hinge portion, said narrow hinge portions engaging respective recesses to hingedly mount the blades to said annular end elements.

5,547,539

PLASMA PROCESSING APPARATUS AND METHOD

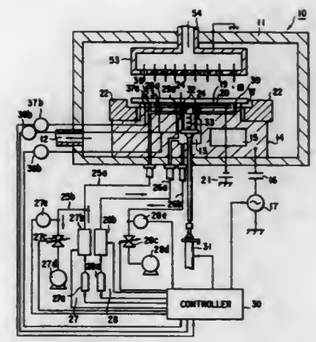
Masashi Arasawa; Katsuhiko Ono, both of Yamanashi; Hiroshi Nishikawa, and Kazuo Tsuchiya, both of Tokyo, all of, Japan, assignors to Tokyo Electron Limited, Tokyo, and Tokyo Electron Yamanashi Limited, Nirasaki, both of, Japan

Filed Dec. 22, 1994, Ser. No. 361,579
Claims priority, application Japan, Dec. 22, 1993, 5-346385; Jun. 20, 1994, 6-162706
Int. Cl.[6] H01L *21/00*
U.S. Cl. 156—626.1 **17 Claims**

14. A plasma processing method of using heat exchange gas to increase the efficiency of cooling an object, which is to be processed, through a suscepter during plasma generation comprising:

introducing first and second heat exchange gases into a small clearance between the suscepter and the object through holes formed in the top of the suscepter at a peripheral and a center area thereof, while exhausting the small clearance; and

making the backpressure of said first heat exchange gas higher than that of said second heat exchange gas.

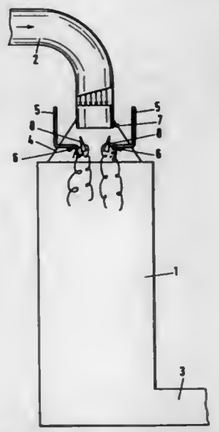


5,547,540

DEVICE FOR COOLING GASES AND OPTIONALLY DRYING SOLID PARTICLES ADDED TO THE GAS

Hans Ruscheweyh, Aachen, Germany, assignor to BDAG Balcke-Dürr Aktiengesellschaft, Ratingen, Germany

Filed Aug. 3, 1994, Ser. No. 286,487
Int. Cl.[6] B01B *1/00*
U.S. Cl. 159—4.08 **3 Claims**



1. A device for cooling gases and optionally drying solid particles within the gases, said device comprising:

a vertically arranged reactor housing, wherein the gases pass through said reactor housing in the vertical direction;

at least one inlet line having a mouth and connected with said mouth to said reactor housing for introducing the gases in the vertical direction into said reactor housing;

at least one nozzle, connected to said inlet line at said mouth and opening into said inlet line, for introducing a liquid and optionally solid particles into the gases;

said mouth being a shock diffusor; and at least one first insert, for generating a leading edge vortex system positioned within said mouth such that the gases and the liquid and, optionally the solid particles are intensively mixed by said leading edge vortex system.

5,547,541

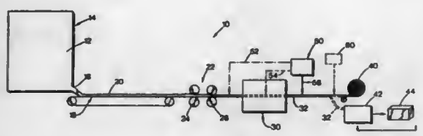
METHOD FOR DENSIFYING FIBERS USING A DENSIFYING AGENT

Michael R. Hansen, Seattle, and Richard H. Young, Sr., Renton, both of Wash., assignors to Weyerhaeuser Company, Federal Way, Wash.

Continuation-in-part of Ser. No. 931,059, Aug. 17, 1992, Ser. No. 931,277, Aug. 17, 1992, Ser. No. 931,213, Aug. 17, 1992, Pat. No. 5,300,192, Ser. No. 931,278, Aug. 17, 1992, Pat. No. 5,352,480, Ser. No. 931,284, Aug. 17, 1992, Pat. No. 5,308,896, Ser. No. 931,279, Aug. 17, 1992, Ser. No. 107,469, Aug. 17, 1993, Ser. No. 108,219, Aug. 17, 1993, Ser. No. 107,467, Aug. 17, 1993, Ser. No. 108,217, Aug. 17, 1993, Ser. No. 108,218, Aug. 17, 1993, and Ser. No. 192,682, Feb. 7, 1994. This application Feb. 16, 1994, Ser. No. 197,483

Int. Cl.[6] D21H *23/08*

U.S. Cl. 162—12 **14 Claims**



1. In a process for densifying fibers which comprises: (a) providing fibers that have hydrogen bonding functional sites, (b) forming a mass of said fibers, and (c) densifying said mass of fibers to a first density by compressing and then releasing said mass of fibers under a first set of conditions, the improvement comprises:

applying a densifying agent to said mass of said fibers in an amount effective to increase the density of said mass of fibers to a value greater than the first density after compressing and then releasing said mass of said fibers having the densifying agent applied thereto under said first set of conditions, wherein the densifying agent comprises a polymeric material selected from the group consisting of polyglycol, a polycarboxylic acid, a polycarboxylate, a poly(lactone) polyol, a polyamide, a polyamine, a polysulfonic acid, a polysulfonate, and combinations thereof,

a nonpolymeric organic material that includes a functionality selected from the group consisting of a carboxyl, a carboxylate, a carbonyl, a sulfonic acid, a sulfonate, a sulfonamide, a hydroxyl, a phosphoric acid, a phosphate, a phosphoramide, an amide, an amine, and combinations thereof; or

an inorganic material selected from the group consisting of tetrapotassium pyrophosphate, tetrasodium pyrophosphate, sodium salt of ethylenediaminetetraacetic acid, and dibasic sodium phosphate.

5,547,542

PROCESS FOR PURIFICATION AND RECYCLE OF SOLUTIONS

Johan Landfors, Sundsvall, Sweden, assignor to Eka Nobel AB, Bohus, Sweden

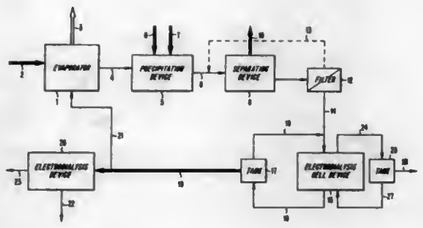
Filed Feb. 2, 1994, Ser. No. 190,534

Claims priority, application Sweden, Nov. 15, 1993, 9303766

Int. Cl.[6] D21C *11/00*

U.S. Cl. 162—29 **20 Claims**

1. A process for purifying and concentrating a dilute aqueous process stream containing salt from a pulp mill, which process comprises concentrating the dilute aqueous process stream by evaporation in an evaporator to form an evaporation concentrate, and subjecting at least a part of said concentrate to a first electrodialysis treatment so as to form a first electrodialysis concentrate



containing salt removed from the evaporation concentrate and at least one diluate depleted of said salt.

5,547,543

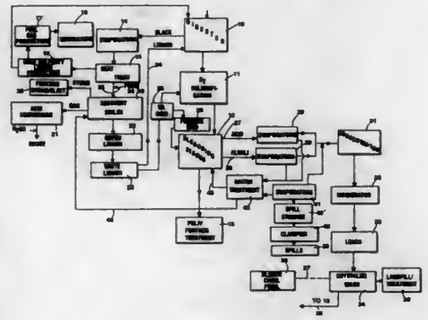
APPARATUS FOR MINIMIZING EFFLUENT DISCHARGES AND RECOVERING CHEMICALS IN A PULP MILL

Tuomo S. Nykanen; Brian F. Greenwood, both of Glens Falls, N.Y.; Johan Gullichsen, Helsinki, Finland; Erkki Kiiskila, Karhula, Finland; Esko Mattelmaki, Varkaus, Finland; Joseph R. Phillips, Glens Falls, N.Y.; Jan Richardsen; Rolf Ryham, both of Roswell, Ga.; Jarmo Soderman, Helsinki, and Karl Wiklund, Karhula, both of, Finland, assignors to Ahlstrom Machinery Inc., Glen Falls, N.Y.

Division of Ser. No. 922,334, Jul. 30, 1992, Pat. No. 5,374,333. This application Jul. 12, 1994, Ser. No. 274,091

Int. Cl.[6] D21C *11/12*

U.S. Cl. 162—31 **14 Claims**



1. Apparatus for producing chemical pulp with a minimum discharge of effluents, comprising:

a digester;

a chemical recovery loop operatively connected to said digester, and including a recovery boiler;

a bleach plant including at least one liquid effluent line therefrom;

concentrating means connected to said liquid effluent line from said bleach plant for producing a concentrated effluent;

an incinerator, distinct from said recovery boiler, in flow communication with said concentrating means for incinerating the concentrated effluent from said concentrating means and producing a residue;

recovering means in flow communication with said incinerator for recovering sodium, carbonate and/or sulfate materials from the incinerator residue and feeding means in flow communication from said recovering means to said recovery loop for feeding the recovered materials to the recovery loop.

5,547,544

METHOD OF MOLDING SHAPED PULP ARTICLES FROM FIBER PULP

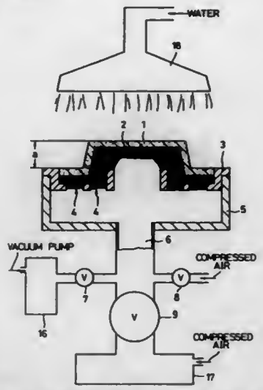
Yasuhiro Miyamoto, Handa; Toshiaki Ishihara, Nagoya, and Minoru Uda, Handa, all of, Japan, assignors to NGK Insulators, Ltd., Japan

Division of Ser. No. 24,776, Mar. 2, 1993, Pat. No. 5,431,784. This application Feb. 6, 1995, Ser. No. 383,853

Claims priority, application Japan, Mar. 6, 1992, 4-49355; Jun. 11, 1992, 4-151956; Sep. 3, 1992, 4-235928; Feb. 24, 1993, 5-35839

Int. Cl.[6] B01D *24/46*

U.S. Cl. 162—199 **5 Claims**



1. A method of molding shaped pulp articles from fiber pulp, comprising the steps of:

(1) providing a pulp mold comprising a molding layer providing at least a portion of a molding surface of said mold, formed by bonding first water-insoluble particles having an average particle size of 0.2–1.0 mm, said molding layer having a thickness 1–20 times the average particle size of said first particles; and a support layer located at the inner surface of said molding layer, formed by bonding second water-insoluble particles having an average particle size of 1.0–10.0 mm, wherein the average particle size of said second particles is larger than that of said first particles;

(2) molding a pulp article on said molding surface by suction through said mold;

(3) removing the molded pulp article from said mold; and

(4) after repeating steps (2) and (3) at least once, applying cleaning water to said mold to incorporate water in at least one of the molding layer and the support layer of said mold, and thereafter applying air pressure to said mold from inside the mold to drive said incorporated water from the mold, thereby removing fibers trapped in said mold.

5,547,545

DIGESTER TEMPERATURE DISTRIBUTION CONTROL SYSTEM

Hiroshi Egi, Matsudo, and Kazuhisa Toyama, Urawa, both of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

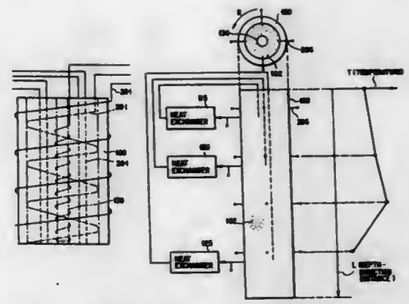
Filed Apr. 28, 1994, Ser. No. 233,986

Int. Cl.[6] D21C *7/12;7/10;7/00*

U.S. Cl. 162—238 **7 Claims**

1. A system for controlling temperature distribution of a charged chip mass in a digester, said digester having an inner wall, filters and a control valve for controlling steam so as to heat a charged chip mass, said system comprising:

an optical fiber type temperature measuring unit provided between the inner wall of the digester and said filters disposed in the digester, for detecting temperature at a plurality of



points in a length thereof including a predetermined reference point in the digester, the optical fiber type temperature measuring unit utilizing the Raman scattering effect

a reference temperature measuring unit provided at the reference point in the digester and measuring a reference point temperature signal as a reference temperature signal;

a reference point temperature setting unit for setting a temperature on the reference point at the optical fiber type temperature measuring unit by calibrating the reference point temperature signal which is output from the optical fiber type temperature measuring unit by a reference temperature signal measured by the reference temperature measuring unit;

a measured temperature distribution calculating unit for calculating a measured temperature distribution in depth direction of the charged chip mass of the digester on the basis of the reference point temperature signal output from the reference point temperature setting unit and temperature signals on the plurality of points output from the optical fiber type temperature measuring unit;

a target temperature distribution calculating unit for calculating a target temperature distribution of the charged chip mass in the digester on the basis of a target quantity of pulp production and temperature gradient restriction of the digester; and

control means for controlling the control values to allow a difference between the measured temperature distribution and the target temperature distribution set to be in a range of the control values.

5,547,546

CHIP BIN WITH STEAMING CONTROL AND A GAS VENT CONTAINING A VACUUM AND PRESSURE RELIEF DEVICE

J. Robert Prough, and Joseph R. Phillips, both of Queensbury, N.Y., assignors to Ahlstrom Machinery Inc., Glens Falls, N.Y.

Filed Oct. 4, 1994, Ser. No. 317,801

Int. Cl.[6] D21C *7/12*

U.S. Cl. 162—238 **18 Claims**

1. A chip bin comprising:

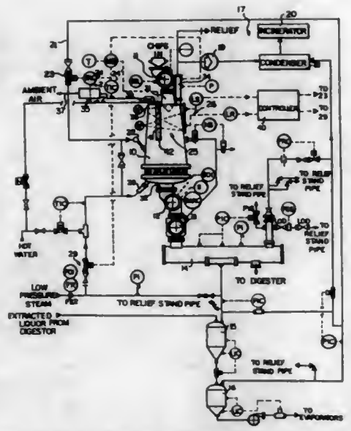
a generally vertical vessel having a top and a bottom;

a cellulose material inlet at said top for feeding cellulose material into said vessel to establish a column of comminuted cellulose material therein;

a material outlet at said bottom;

a non-condensible gas vent from said top;

a vacuum and pressure relief device disposed in said non-condensible gas vent, said vacuum and pressure relief device comprising: a solid interior peripheral portion of said vent; a gate mounted for pivotal movement with respect to said solid interior peripheral portion by a pivot shaft at a first end of said gate, said gate having a second, free, end opposite said first end; and a casing comprising a sector of a cylinder and having a closed curved exterior surface and closed first and second ends and open first and second sides, said cylindrical sector casing mounted in said solid interior peripheral portion so that



said open sides thereof communicate with said vent and so that said casing surrounds said gate between said first and second ends thereof, said gate being pivotal about said pivot shaft with respect to said casing;

a seal between said gate and at least said closed first and second ends of said cylindrical sector casing; and wherein said cylindrical sector casing has a sector angle of between about thirty-sixty degrees, so that said curved exterior surface extends between about thirty sixty degrees; and

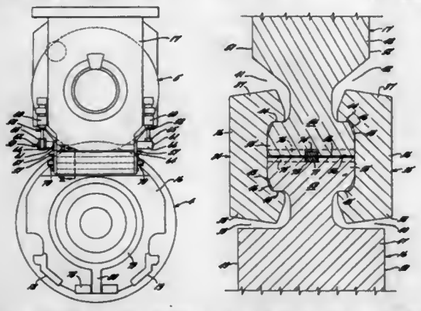
a counterweight mounted on said pivot shaft.

5,547,547

COMPACT FRAME ASSEMBLY FOR PRESS IN A PAPERMAKING OR BOARDMAKING

Roland Bengtsson, Karlstad, Sweden, assignor to Valmet-Karlstad AB, Karlstad, Sweden

Filed Nov. 29, 1994, Ser. No. 346,470
Claims priority, application Sweden, Dec. 2, 1993, 9304051
Int. Cl.[6] D21F *3/00*
U.S. Cl. 162—272 **8 Claims**



1. A compact frame assembly for a press having two parallel opposed rolls for subjecting a moving web to pressure in a nip formed between the rolls, both of which have two ends, at least one of the rolls having a stationary support beam, a rotatable roll shell disposed about the beam and defining a space therebetween, and a roll shell support carried by the beam in the space for providing vertically-movable and rotatable support of the roll shell relative to the support beam, said compact frame assembly comprising

a) four bearing housing members mountable one on each of the four roll ends for supporting the roll ends at least pivotally, each of the two bearing housing members for one of the rolls being disposed at an adjacent one of the two bearing housing members for the other roll and forming with said adjacent bearing housing member a pair of bearing housing members;

b) a device for interconnecting the two bearing housing members of each pair, said interconnecting device including for each pair of bearing housing members at least two interconnecting members, each of the at least two interconnecting members having a web portion and two rim portions projecting from the web portion, said two bearing housing members having surfaces defining recesses for engagement with said two respective rim portions so as to prevent the two bearing housing members of each pair from appreciably moving away from each other on loading of the press;

c) said at least two interconnecting members being in the shape of channel bars extending in a horizontal direction, said web portion and said two rim portions constituting a channel bottom and two channel sides, respectively, in each of the at least two channel bars, and each channel formed by each of the at least two channel bars having a symmetrical cross sectional shape that over a major portion of a channel depth is of a constant channel width from channel side to channel side;

d) each of the two bearing housing members in each pair including a plate member having two sides which, when the bearing housing member is mounted on a roll end, extend in a plane substantially parallel to a plane perpendicular to an axis of rotation of the rotatable roll shell, with one of the two sides facing the parallel opposed rolls and the other of the two sides facing in an opposite direction, said recesses being elongated and substantially L-shaped in cross section and located one in each of the two sides of the plate member at an edge thereof and extending parallel to each other and to said edge, so as to form in one of the two plate members a head portion of substantially T-shaped cross section and in the other of the two plate members a foot portion of inverted substantially T-shaped cross section, said head portion and said foot portion each comprising a cross piece with a central portion, two free ends, and a plane top face, the two plate members in each of the two pairs of bearing housing members being disposed with the cross piece top face of the head portion facing the cross piece top face of the foot portion, the cross piece of the head portion and the cross piece of the foot portion being of a combined thickness that is slightly smaller than the channel width of said respective channel bars; and

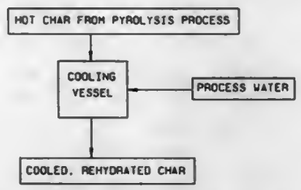
e) a device for mounting said two channel bars with their channels facing each other, one on each side of the pair of plate members, and with the channel bars in clamping engagement with the cross piece of the head portion and the cross piece of the foot portion.

5,547,548

PYROLYSIS PROCESS WATER UTILIZATION

Mark A. Siddoway, Destrehan, La., assignor to Tek-Kol, LaJolla, Calif.

Filed Jul. 18, 1994, Ser. No. 276,319
Int. Cl.[6] C10B *21/18;* C10L *5/00;* C10G *1/00*
U.S. Cl. 201—29 **12 Claims**



1. A method for producing a stable carbonaceous material or char from a pyrolysis process comprising:

drying coal to remove water from coal;

pyrolyzing the dried coal forming a char to remove any water left in the coal;

collecting the process water from the pyrolyzing step;

pre-cooling the pyrolyzed char with water;

collecting process water from the pre-cooling step;

rehydrating the char with the process water; and

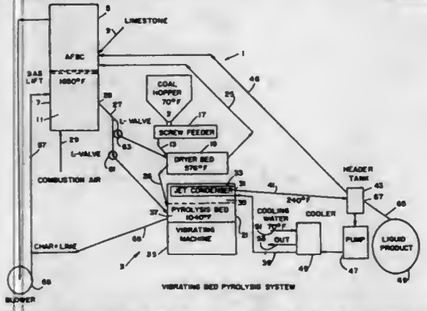
post-cooling the char.

5,547,549

VIBRATING BED COAL PYROLYSIS SYSTEM

Arthur P. Fraas, 1040 Scenic Dr., Knoxville, Tenn. 37919

Division of Ser. No. 50,948, Apr. 22, 1993, Pat. No. 5,496,465.
This application Jun. 2, 1995, Ser. No. 460,217
Int. Cl.[6] C10B *21/20;49/00;* F23G *5/00*
U.S. Cl. 202—99 **5 Claims**



1. A coal pyrolizer apparatus, comprising a vibrating pyrolysis bed, a vibrating machine connected to the vibrating pyrolysis bed for vibrating the vibrating pyrolysis bed, a hot solid particle supply connected to the vibrating pyrolysis bed for supplying and vibrating the hot solid particles in the vibrating pyrolysis bed, and a crushed coal supply connected to the vibrating pyrolysis bed for vibrating the crushed coal particles with the hot solid particles in the vibrating pyrolysis bed and producing hydrocarbon vapors from the coal particles, a condenser for receiving the hydrocarbon vapors from the vibrating pyrolysis bed and condensing the vapors to a liquid hydrocarbon product.

5,547,550

PREPARATION PROCESS FOR A MICROPOROUS DIAPHRAGM AND THE DIAPHRAGM PRODUCED THEREBY

Frédéric Kuntzburger, Le Plessis-Bouchard, and Jean-Claude Magne, La Courneuve, both of, France, assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France

PCT No. PCT/FR94/00342, § 371 Date Dec. 15, 1994, § 102(e) Date Dec. 15, 1994, PCT Pub. No. WO94/23093, PCT Pub. Date Oct. 13, 1994
PCT Filed Mar. 28, 1994, Ser. No. 343,450
Claims priority, application France, Mar. 26, 1993, 93 03486
Int. Cl.[6] C25B *13/04;13/06*
U.S. Cl. 204—252 **21 Claims**

1. A diaphragm comprising:

a) 100 parts by weight of asbestos fibers;

b) 30 to 70 parts by weight of silica-based derivatives;

c) 20 to 60 parts by weight of fluorinated polymer; and

d) optionally including a thickening agent in an amount of less than 1.5 parts by dry weight per 100 parts by dry weight of asbestos fibers deposited on a porous material, wherein the ratio of fluorinated polymer to silica-based derivatives is between about 0.6 and about 1.2 by weight with the exception of a diaphragm obtained by depositing a suspension containing 100 parts by dry weight of asbestos fibers, 30 parts by dry weight of silica-based derivatives, 25 parts by dry weight of fluorinated polymer and 1.5 parts by dry weight of thickening agent.

18. An electrolyzer unit for aqueous alkali halides comprising the diaphragm according to claim 1.

5,547,551

ULTRA-THIN INTEGRAL COMPOSITE MEMBRANE

Bamdad Bahar, Baltimore; Alex R. Hobson; Jeffrey A. Kolde, both of Elkton, and David Zuckerbrod, Baltimore, all of Md., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Filed Mar. 15, 1995, Ser. No. 404,853
Int. Cl.[6] C25B *13/08*
U.S. Cl. 204—296 **24 Claims**



15. An ion exchange membrane comprising:

(a) a membrane comprising an expanded polytetrafluoroethylene having a porous microstructure defined substantially of only fibrils; and

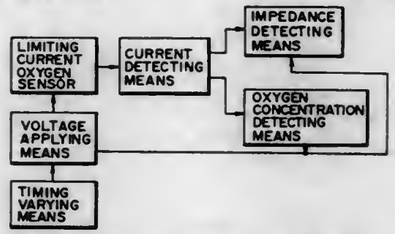
(b) an ion exchange material impregnated throughout the membrane, the impregnated expanded polytetrafluoroethylene membrane having a Gurley number of greater than 10,000 seconds, wherein the ion exchange material substantially impregnates the membrane to render an interior volume of the membrane substantially occlusive.

5,547,552

OXYGEN CONCENTRATION DETECTING APPARATUS

Jun Hasegawa; Shigenori Isomura, both of Kariya; Tomomichi Mizoguchi, Nagoya, and Yasutaka Nakamori, Anjo, all of, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 7, 1995, Ser. No. 480,239
Claims priority, application Japan, Jun. 20, 1994, 6-136816; Jun. 28, 1994, 6-145910; Jun. 30, 1994, 6-149098
Int. Cl.[6] G01N *27/26*
U.S. Cl. 204—406 **41 Claims**



1. An oxygen concentration detecting apparatus comprising:

a current limiting oxygen sensor;

voltage applying means for applying a positive voltage and a negative voltage to said oxygen sensor, said negative voltage being applied for a set period of time by changing over said voltages;

current detecting means for detecting currents flowing through said oxygen sensor during application of each of said voltages;

impedance detecting means for detecting a DC impedance of said oxygen sensor based on said current detected during application of said negative voltage to said oxygen sensor for said set period of time;

oxygen concentration detecting means for detecting an oxygen concentration based on said current detected during application of said positive voltage to said oxygen sensor; and

timing varying means for variably setting a timing for changing over said voltage applying means to apply said negative voltage to said oxygen sensor, wherein said timing varying

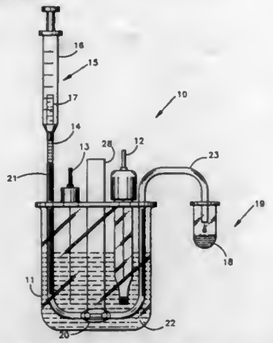
means includes means for changing said timing to change over said voltage applying means to provide said negative voltage in response to said DC impedance detected by said impedance detecting means, said change over occurring more frequently as said DC impedance increases.

5,547,553

MERCURY THREAD ELECTRODE

Husantha G. Jayaratna, Tippecanoe County, Ind., assignor to Bioanalytical Systems, Inc., W. Lafayette, Ind.

Filed Apr. 21, 1995, Ser. No. 426,358
Int. Cl.[6] G01N *27/26*
U.S. Cl. 204—413 **10 Claims**



1. An improved liquid mercury electrode for electrochemical analysis of liquid solutions comprising a elongated thread of liquid mercury contained within an inert tube which, at one point along its length, includes a section of semipermeable membrane surrounding and forming the electrode's active surface wherein the mercury thread is capable of being advanced in the tube to expose a fresh active surface.

5,547,554

ELECTROCHEMICAL MEASURING CELL HAVING A GAS-PERMEABLE HOUSING

Herbert Kiesele, Lübeck, Germany, assignor to Drägerwerk Aktiengesellschaft, Lübeck, Germany

Filed Oct. 14, 1994, Ser. No. 321,879
Claims priority, application Germany, Oct. 18, 1993, 43 35 409.2
Int. Cl.[6] G01N *27/404*
U.S. Cl. 204—415 **10 Claims**

1. An electrochemical measuring cell for detecting gaseous constituents in a gas present in the ambient, the measuring cell comprising:

a housing assembly;

an electrolyte;

a measuring electrode and a counter electrode disposed in said housing;

said housing assembly including a housing jacket defining an interior chamber partially filled with said electrolyte so as to leave a gas bubble in the remainder of said chamber thereby allowing said electrolyte to expand and contract in volume in response to changes in ambient conditions;

said housing assembly including first and second holder units for holding said measuring and said counter electrodes, respectively, in liquid contact with said electrolyte;

a gas permeable, electrolyte impermeable membrane interposed between said measuring electrode and said first holder unit so as to delimit said electrolyte chamber;

diffusion means for facilitating the passage of said gaseous constituents from the ambient to said gas permeable membrane; and,

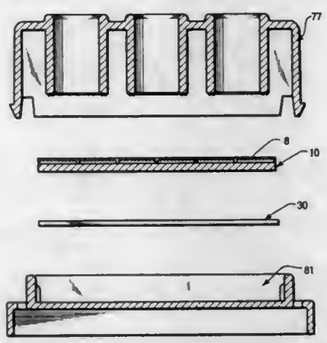
said housing jacket defining an inner wall surface and being impermeable to said electrolyte and said housing jacket being made entirely of porous material so as to permit a diffusion of gas through said housing jacket between said remainder of said electrolyte chamber and the ambient thereby equalizing the pressure between said chamber and the ambient.

5,547,555

ELECTROCHEMICAL SENSOR CARTRIDGE

Jerome L. Schwartz; Michael D. Cabelli, both of Wilmington, Del.; John C. Silvia, Newtown, and Craig D. T. Dahlin, Phoenixville, both of Pa., assignors to Ohmicron Technology, Inc., Wilmington, Del.

Filed Feb. 22, 1993, Ser. No. 23,774
Int. Cl.[6] G01N *27/26*
U.S. Cl. 204—418 **18 Claims**



1. An electrochemical sensor cartridge comprising an electrode assembly and at least three hollow cells, said electrode assembly being a thin flexible film that comprises (1) a first layer that is nonconducting, (2) a second layer that is a layer of metal electrodes said metal electrodes accessible to electrical contacts external to the cartridge, and (3) a third layer comprising an electroactive polymer film, said first layer below said second layer, said third layer above said second layer, wherein each hollow cell is comprised of a cell floor and a cell wall with a lower rim, wherein each cell floor is a portion of the top surface of said electrode assembly, and wherein each said lower rim is in leakproof contact with the outer perimeter of a cell floor,

wherein the cartridge is constructed from a set of parts that comprises a cover unit, a base unit, and said electrode assembly, such that the electrode assembly in the cartridge is sandwiched between the cover unit and the base unit, and wherein the cover unit and base unit are attached to each other by a securing means, and

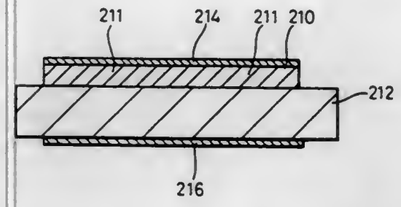
wherein the three hollow cells are in a linear array.

5,547,556

SOLID ELECTROLYTE GAS SENSOR AND PROCESS OF PRODUCING JOINED BODY OF CERAMICS AND HARD-TO-SINTER OXYACID SALT

Tsuyoshi Kobayashi, and Misa Saitoh, both of Nagano, Japan, assignors to Shinko Electric Industries Co., Ltd., Negano, Japan

Division of Ser. No. 236,021, Apr. 26, 1994, Pat. No. 5,482,609. This application May 2, 1995, Ser. No. 432,830
Claims priority, application Japan, Apr. 27, 1993, 5-100721; May 28, 1993, 5-126944; May 28, 1993, 5-126945
Int. Cl.[6] G01N *27/407*; B05D *1/18*
U.S. Cl. 204—426 **5 Claims**



1. A process of producing a joined body of a ceramic member and a hard-to-sinter oxyacid salt crystal, said process comprising the steps of:

impregnating a porous ceramic plate having micropores extending through the entire thickness thereof, with a melt of a hard-to-sinter oxyacid salt;

then cooling said impregnated ceramic plate to form a composite plate composed of said ceramic plate with said micropores filled with a crystal of said hard-to-sinter oxyacid salt; depositing a metal film on a ceramic base, the metal film then being anodized to form a porous oxide film, and

joining said composite plate to the ceramic base.

5,547,557

FORMATION OF ELECTROCONDUCTIVE THIN-FILM PATTERN

Hiroki Asai, Neyagawa, and Yuji Omata, Toyonaka, both of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed Oct. 20, 1994, Ser. No. 335,904
Claims priority, application Japan, Oct. 20, 1993, 5-262179
Int. Cl.[6] C25D *5/02;5/54;5/56;5/50*
U.S. Cl. 205—118 **4 Claims**

1. A process for forming an electroconductive thin-film pattern on an insulating substrate, comprising:

forming a metal layer having a low melting point on the insulating substrate;

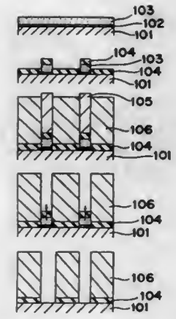
patterning the metal layer to form a patterned low melting point metal layer;

forming a base electrode layer for electroplating the electroconductive film pattern over the substrate having the patterned low melting point metal layer;

selectively forming a photoresist layer by photolithography on portions having the patterned low melting point metal layer;

forming the electroconductive film pattern by electroplating on portions other than the portions having the photoresist layer;

removing the photoresist layer; and



heating the substrate to a temperature above the melting point to melt the patterned low melting point metal layer, thereby enabling it to be removed.

5,547,558

PROCESS FOR ELECTROPLATING NONCONDUCTIVE SURFACE

Yoshihiro Sakamoto, and Toshio Tanimura, both of Amagasaki, Japan, assignors to MEC Co., Ltd., Amagasaki, Japan

Filed Mar. 15, 1995, Ser. No. 404,454
Claims priority, application Japan, Mar. 28, 1994, 6-057314
Int. Cl.[6] C25D *5/02;5/54;5/56;* C23C *28/00*
U.S. Cl. 205—125 **1 Claim**

1. A process for electroplating a through-hole inner wall of a printed-wiring board having a conductive metal layer, comprising:

(a) providing an aqueous dispersion of specific carbon particles containing (1) graphite particles with an average particle diameter of 2 μm or less or carbon black particles with an average diameter of 1 μm or less, or both and (2) 0.05 to 5% of an inorganic binder,

(b) applying said aqueous dispersion of specific carbon particles to a surface of said printed-wiring board in which through-holes have been provided, to deposit a layer of specific carbon particles in said through-holes,

(c) dipping said printed-wiring board in a strong acidic aqueous solution having a pH of 3 or lower,

(d) removing a specific carbon particle layer attached to the surface of said conductive metal layer by etching the metal layer to remove a thickness of 0.01 to 5.0 μm, and

(e) electroplating using the conductive metal layer and the specific carbon particle layer as a conductive layer.

5,547,559

PROCESS FOR PLATING METALS ONTO VARIOUS SUBSTRATES IN AN ADHERENT FASHION

Peter Kukanskis, Woodbury; Ernest Yakobson, and Lev Taytsas, both of Waterbury, all of Conn., assignors to MacDermid, Incorporated, Waterbury, Conn.

Filed Jul. 10, 1995, Ser. No. 499,835
Int. Cl.[6] C25D *5/02;5/56;5/34;* C23C *28/02*
U.S. Cl. 205—125 **13 Claims**

1. A process for electroplating surfaces comprising:

a. activation of the surfaces;

b. cathodically electrocleaning the surfaces; and

c. after treatment according to steps (a) and (b) electroplating upon the electrocleaned surfaces.

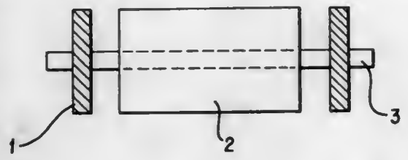
VOL 1189 ISS 3 AUG 20 1996 UMI

5,547,560

CONSUMABLE ANODE FOR CATHODIC PROTECTION, MADE OF ALUMINUM-BASED ALLOY

Hervé Le Guyader, Tourlaville, France, assignor to Etat Francais represented by the Delegue General Pour L'Armement, Armees, France

Filed Oct. 28, 1994, Ser. No. 331,119
Claims priority, application France, Oct. 29, 1993, 93.12916
Int. Cl.[6] C23F *13/00*
U.S. Cl. 205—732 12 Claims



12. A method of protecting iron, steels and alloys against corrosion in sea water and hydrogen embrittlement comprising providing a reactive anode of an aluminum-based alloy upon an electrically conducting mounting support wherein the aluminum-based alloy has the following composition indicated in weight percent:

Gallium and/or Cadmium in an amount of from 0.03 to 0.20%
Manganese in an amount of from greater than zero to 0.15% max
Iron in an amount of from greater than zero to 0.15% max
Silicon in an amount of from greater than zero to 0.15% max
Zinc in an amount of from greater than zero to 0.15% max
Indium in an amount of from greater than zero to 0.007% max
Mercury in an amount of from greater than zero to 0.007% max
Magnesium in an amount of from greater than zero to 0.10% max
Titanium in an amount of from greater than zero to 0.02% max
Other in an amount of from greater than zero to 0.01% max
Aluminum balance,

said anode operating in an electrochemical potential range in seawater of −870 mV to −700 mV based on the potential of a saturated calomel electrode.

5,547,561

SENSOR DEVICES AND METHOD OF USING SAME

Pankaj M. Vadgama, Manchester; Ian M. Christie, Stockport, and Yazid M. Benmakroha, Manchester, all of, United Kingdom, assignors to The Victoria University Of Manchester, Manchester, England

PCT No. PCT/GB93/01565, § 371 Date Apr. 3, 1995, § 102(e) Date Apr. 3, 1995, PCT Pub. No. WO94/02584, PCT Pub. Date Feb. 3, 1994
PCT Filed Jul. 23, 1993, Ser. No. 374,739
Claims priority, application United Kingdom, Jul. 28, 1992, 9215971
Int. Cl.[6] G01N *27/40;27/404*
U.S. Cl. 205—793 20 Claims

19. In a method of detecting and measuring the presence of an analyte in a fluid sample by a membrane enclosed sensor system, the improvement which comprises a permeable membrane comprising a polymer matrix of a mixture of polyvinyl chloride and a polyaryl sulphone wherein the membrane is selectively permeable to the analyte which diffuses through the polymer matrix while excluding interferants present in the fluid sample.

5,547,562

OIL DEWAXING METHOD

Rupinder S. Grewal, Sugar Land; Michael E. Joyce, Houston, and Randall F. Nord, Sugar Land, all of Tex., assignors to Nalco/Exxon Energy Chemicals, L.P., Sugarland, Tex.

Filed May 25, 1995, Ser. No. 450,450
Int. Cl.[6] C10G *23/00;73/06;73/32*
U.S. Cl. 208—24 6 Claims

1. A method for dewaxing a hydrocarbon oil which comprises:

a. adding polybehenyl methacrylate having a molecular weight of from about 10,000 to about 2,000,000 daltons to a hydrocarbon oil containing wax;
b. cooling the oil to allow wax crystals to form;
c. separating the wax crystals from the oil; and
d. recovering a dewaxed oil.

5,547,563

METHOD OF CONVERSION OF HEAVY HYDROCARBON FEEDSTOCKS

Lawrence R. Stowe, 2313 Dartmouth Dr., Arlington, Tex. 76015

Continuation-in-part of Ser. No. 136,531, Oct. 14, 1993, abandoned. This application Feb. 23, 1995, Ser. No. 393,201
Int. Cl.[6] C01G *9/00;11/00*
U.S. Cl. 208—106 30 Claims

1. In a process for the conversion of a heavy hydrocarbon feed to a lighter hydrocarbon product, the heavy hydrocarbon feed having a volume, of zero or more, boiling off at temperatures below 1000° F., the improvement comprising the steps of:

adding a terpene to the heavy hydrocarbon feed, the terpene having a volume boiling off at temperatures below 1000° F.; and

reacting the heavy hydrocarbon feed and the terpene to form a lighter hydrocarbon product, the lighter hydrocarbon product having a greater volume boiling off at temperatures below 1000° F. than a combination of the heavy hydrocarbon feed volume boiling off at temperatures below 1000° F. and the terpene volume boiling off at temperatures below 1000° F.

5,547,564

CATALYTIC CRACKING

Wu-Cheng Cheng, Elliot City, and Kuppuswamy Rajagopalan, Columbia, both of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Continuation of Ser. No. 994,054, Dec. 15, 1992, abandoned, which is a continuation of Ser. No. 719,453, Jun. 24, 1991, abandoned, which is a division of Ser. No. 533,227, Jun. 4, 1990, Pat. No. 5,168,086, which is a continuation-in-part of Ser. No. 318,099, Mar. 2, 1989, abandoned. This application May 22, 1995, Ser. No. 446,394
Int. Cl.[6] C10G *11/04*
U.S. Cl. 208—122 10 Claims

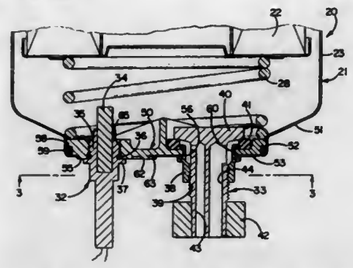
1. A method for catalytically cracking hydrocarbons which comprises reacting a hydrocarbon that contains metal under catalytic cracking conditions with a catalyst composition comprising a molecular sieve dispersed in an inorganic oxide matrix which includes from about 2 to 40 weight percent total of bayerite and/or eta alumina, said catalyst being further characterized by a Davison Attrition Index (DI) of 12 or less and an average bulk density (ABD) greater than 0.6 g/cm^3.

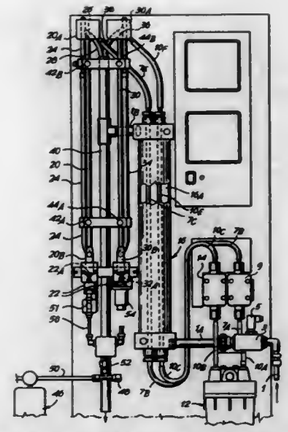
5,547,565

FUEL/WATER SEPARATOR WITH ADAPTOR PLATE FOR DRAIN VALVE AND WATER DETECTOR

David A. Biere, Kearney, Nebr.; O. Troy McConaughey, Atlanta, Ga., and Gene W. Brown, Kearney, Nebr., assignors to Baldwin Filters, Inc., Kearney, Nebr.

Filed Dec. 5, 1994, Ser. No. 350,262
Int. Cl.[6] B01D *27/08*
U.S. Cl. 210—86 12 Claims





8. Apparatus for separating water from fuel, said apparatus comprising a sheet metal shell of circular cross-section and having a filter element therein, means for admitting fuel into said shell for flow through said filter element and for enabling filtered fuel to flow from said shell, said shell having a fuel outlet end portion and a water outlet end portion, the water outlet end portion of said shell being of smaller diameter than the fuel outlet end portion and being defined by an annular side wall and by an end wall integral with said side wall whereby said walls coact to form a generally cylindrical pocket, a metal adaptor plate formed separately of said shell and located in said pocket, means for rigidly securing said adaptor plate to said shell, means for establishing a liquid-tight seal between said adaptor plate and at least one of said walls, a set of coaxially aligned first openings in said end wall and said adaptor plate, a drain valve extending through said first openings and having a housing fixed securely to said end wall and said adaptor plate, a set of coaxially aligned second openings in said end wall and said adaptor plate, the second opening in said adaptor plate being threaded with a thread size compatible with and capable of threadably receiving an electrical water detector, said securing means comprising angularly spaced lugs formed integrally with said adaptor plate, extending through said second opening in said end wall, and staked to said end wall.

5,547,566

DEVICE FOR DETECTING AND MEASURING CONTINUOUSLY SURFACTANT SUBSTANCES IN WATER

Paolo Sodi, Via Cesare Balbo No.31, 50047 Prato, Italy, and Roberto Sodi, Via Ugo Foscolo No.5, 50018 Scandicci, Firenze, Italy

Filed Nov. 10, 1994, Ser. No. 338,023
Claims priority, application Italy, Nov. 11, 1993, FI/93/A/228
Int. Cl.[6] B01D *17/12;* G01N *13/02*
U.S. Cl. 210—87 20 Claims

1. A device for measuring a surfactant substance, the device comprising:

a first measuring column for containing a reference fluid;
a second measuring column for containing a test fluid;
a first bubble means connected to said first measuring column and for generating bubbles in said first measuring column;
a second bubble means connected to said second measuring column and for generating bubbles in said second measuring column;
flow stabilization means connected to said first and second measuring columns to create separate flows through said first and second measuring columns, and to maintain the flows in said first and second measuring columns substantially constant and similar, said flows being substantially opposite to a buoyancy direction of the bubbles;
fluid supply means connected to said first and second measuring columns and for supplying the reference and test fluids to respective said first and second measuring columns;
filter means positioned in said fluid supply means and for filtering the test fluid to form the reference fluid;
heat exchanger means positioned in said fluid supply means and for equalizing temperatures of the reference fluid and the test fluid.

10. A device in accordance with claim 1, further comprising:

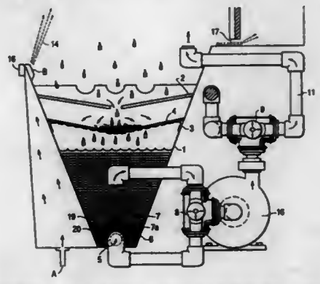
first detection means connected to said first measuring column and for measuring a speed of the bubbles in said first column;
second detection means connected to said second measuring column and for measuring a speed of the bubbles in said second column.

5,547,567

APPARATUS FOR WASHING-DOWN SERIGRAPHICAL FRAMES AND FILTERPART FOR THE APPARATUS

Claus H. Madsen, Vedbæk, Denmark, assignor to CPS - Chemical Products & Services A/S, Denmark

Continuation of Ser. No. 281,122, Jul. 28, 1994, abandoned, which is a continuation of Ser. No. 66,012, May 28, 1993, abandoned. This application Jul. 25, 1995, Ser. No. 506,651
Claims priority, application Denmark, Oct. 1, 1990, 2363/90
Int. Cl.[6] B41F *35/00*
U.S. Cl. 210—167 6 Claims



1. Apparatus for washing down serigraphical frames with a cleaning fluid, which apparatus comprises:

(a) a tank unit in which serigraphical frames are placed for washing down and which includes an elongated sink for collecting used cleaning fluid, said sink having an upper

portion, a lower portion and longitudinally extending front and back walls each inclined inwardly and downwardly from the upper portion toward the lower portion;

(b) a scavenging hose and brush affixed thereto for washing down the frames;

(c) a filter tray extending across the upper portion of the sink and sloping downwardly from each of the walls;

(d) a filter mat fitted on the tray, being formed of a chemically resistant material and for filtering sludge from cleaning fluid used for washing down the frames;

(e) sludge discharge means connected to the lower portion for intermittently discharging sludge collected in the bottom of the sink;

(f) pumping means connected to the sink above the lower portion for removing used cleaning fluid for the sink and for circulating the used cleaning fluid after filtration to the hose and for the the addition of fresh cleaning liquid to the hose;

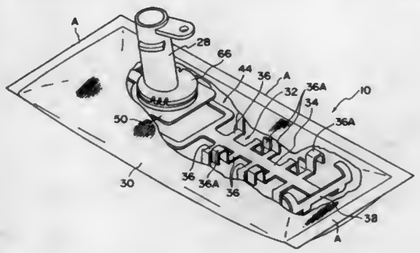
(g) means for blowing an air curtain upwardly across an upper edge of the front wall of the sink so as to shield an operator of the apparatus from vapors from the cleaning fluid when frames are being washed down; and

(h) a suction duct above the back wall for removal of vapors of the cleaning liquid.

5,547,568
FUEL FILTER

Noriyoshi Sasaki, Yokohama, Japan, assignor to NIFCO Inc., Japan

Filed Oct. 4, 1994, Ser. No. 317,938
Claims priority, application Japan, Oct. 4, 1993, 5-053719 U; Jan. 24, 1994, 6-005857
Int. Cl.[6] B01D *35/02;29/15*
U.S. Cl. 210—172 **27 Claims**



1. A fuel filter for connection to a fuel suction pipe within a fuel tank, comprising:

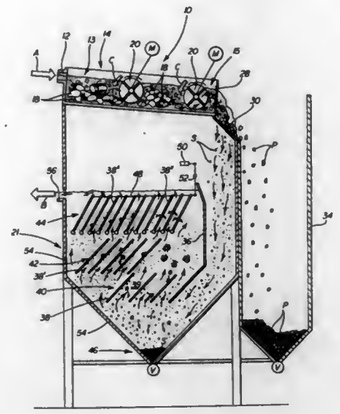
a bag main body having first and second opposite ends and an inner surface; and

an expanding frame disposed in the bag main body, the frame comprising a generally elongate extension extending parallel to a longitudinal axis and having first and second ends, and a plurality of bag expanding members extending generally parallel to a first transverse axis, the first transverse axis being transverse to the longitudinal axis, said expanding members having opposing bent portions protruding generally parallel to a second transverse axis which is transverse to the longitudinal axis and to the first transverse axis, the bent portions alternately protruding along mutually opposing directions which are generally parallel to the second transverse axis, the bent portions contacting the inner surface of the bag main body to prevent collapse of the bag main body.

5,547,569
MULTIPLE STAGE WATER CLARIFIER

Donald R. Spencer, Clay City, Ky., assignor to Hinkle Contracting Corporation, Paris, Ky.

Filed Jan. 25, 1995, Ser. No. 377,896
Int. Cl.[6] B01D *21/08*
U.S. Cl. 210—206 **17 Claims**



1. A multiple stage water clarifier primarily for separating, settling and collecting suspended solids from substantially continuously flowing process washwater slurry, comprising:

a feeding and mixing passageway for receiving and agitating said slurry;

means for flocculating said slurry in said passageway;

a settling tank receiving the slurry from said passageway, said slurry being mixed with said flocculating means;

means for directing said slurry from said passageway adjacent the top toward the bottom portion in a downflow area and back to the top portion of said setting tank in an upflow area;

at least first and second baffle means inside said upflow area and vertically separated from bottom to top in the flow direction, each baffle means comprising a plurality of spaced apart plates; and

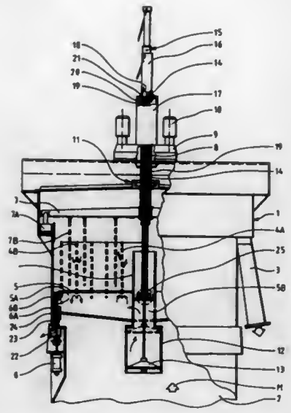
means for discharging the accumulation of said solids from the bottom portion of said settling tank.

5,547,570
SCREENING DEVICE

Ole Richter, Karlstad, Sweden, assignor to Kvaerner Pulping Technologies AB, Karlstad, Sweden

PCT No. PCT/SE93/00047, § 371 Date Sep. 9, 1994, § 102(e) Date Sep. 9, 1994, PCT Pub. No. WO93/19246, PCT Pub. Date Sep. 30, 1993
PCT Filed Jan. 25, 1993, Ser. No. 302,691
Claims priority, application Sweden, Mar. 17, 1992, 9200808
Int. Cl.[6] D21C *9/04;* **B01D** *29/54;29/72;33/00*
U.S. Cl. 210—209 **4 Claims**

1. A screening device includes a standing cylindrical container having an inlet and outlet for continuous flow-through of a fibre suspension, said device including a moveable supporting member disposed in said container and which supports hollow screening members for vertical movement with said supporting member, an enclosure connected to said supporting member having opposite open ends and a moveable piston mounted in said enclosure, means for moving said piston comprising a hydraulic drive unit

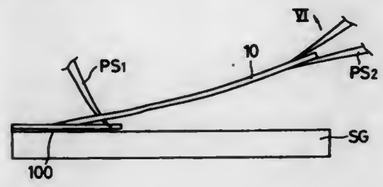


mounted outside of said container and transmission means connected between said hydraulic unit and said supporting member for counteracting the reaction force of the hydraulic unit onto said supporting member.

5,547,571
METHOD FOR MOUNTING SPECIMENS USING FILTER SHEET

Motohiro Tsubakino, Himeji, Japan, assignor to Taiho Industries Co., Ltd., Tokyo, Japan

Filed Feb. 24, 1994, Ser. No. 201,190
Claims priority, application Japan, Feb. 26, 1993, 5-061279
Int. Cl.[6] G01N *33/48*
U.S. Cl. 210—232 **1 Claim**



1. A method for mounting specimens using a filter sheet, which comprises:

mounting specimens on a filter sheet contained within a filter frame made of flexible material, said filter frame having parallel framing parts and a presser part arranged between said parallel framing parts, said presser part having a central opening,

setting said filter frame on a glass slide after staining and fixing treatments thereof,

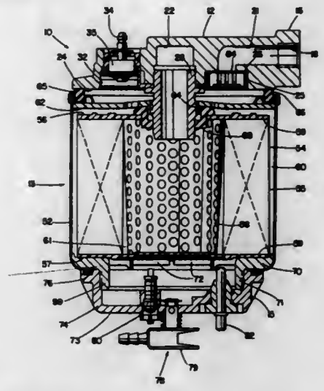
pulling up said filter frame while pressing said presser part so as to shear off said filter sheet between said presser part and said parallel framing parts, and

releasing said presser part to remove said filter frame from said glass slide and leaving only a portion of said filter sheet with said specimens mounted thereon on said glass slide.

5,547,572
FUEL FILTER

Walter H. Stone, Modesto, Calif., assignor to Parker Hannifin Corporation, Cleveland, Ohio

Continuation of Ser. No. 97,787, Jul. 27, 1993, abandoned, which is a division of Ser. No. 683,096, Apr. 10, 1991, Pat. No. 5,244,571, which is a continuation of Ser. No. 586,827, Sep. 24, 1990, abandoned, which is a division of Ser. No. 370,097, Jun. 20, 1989, Pat. No. 4,997,555, which is a continuation of Ser. No. 242,791, Sep. 9, 1988, abandoned, which is a continuation of Ser. No. 32,834, Mar. 30, 1987, abandoned, which is a continuation-in-part of Ser. No. 784,292, Oct. 7, 1985, Pat. No. 4,692,245, which is a continuation-in-part of Ser. No. 733,808, May 14, 1985, Pat. No. 4,668,393. This application Sep. 12, 1994, Ser. No. 305,494
Int. Cl.[6] B01D *27/08*
U.S. Cl. 210—232 **24 Claims**



1. A filter element comprising:

a housing having a generally cylindrical inner wall surface;

an annular filter medium separating a central fuel chamber from a peripheral fuel chamber;

a ring shaped member;

said housing having a turned in lower edge portion supporting said ring shaped member and filter medium;

said ring shaped member having an annular threaded portion whereby a collection bowl may be removably attached to said element;

a plurality of angularly spaced ribs in supported relation of said ring shaped member said ribs having contaminant flow passages extending thereinbetween, wherein said flow passages enable contaminants to pass externally of said filter medium from said peripheral fuel chamber to said attached collection bowl.

5,547,573
DEVICE FOR REMOVING CAKE OR RESIDUAL LAYER IN A CENTRIFUGE

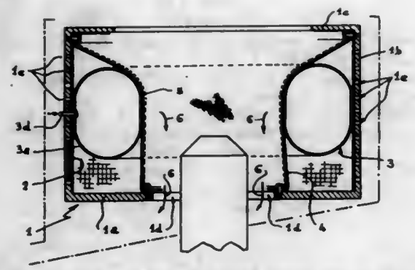
Michel Martin, Lyon, France, assignor to Robatel, Geneve, France

Filed Oct. 11, 1994, Ser. No. 321,537
Claims priority, application France, Oct. 13, 1993, 93.12391
Int. Cl.[6] B01D *33/44;33/52;* **B04B** *11/04;15/06*
U.S. Cl. 210—350 **19 Claims**

1. A device for use in a centrifuge comprised of a rotatable basket including a sidewall defining a plurality of fluid passages, comprising:

a first screen including an outer face and an inner face, said first screen being attachable to the basket such that said outer face contacts the sidewall;

a second screen covering said inner face of said first screen;



a third screen covering said second screen, said third screen being of a smaller mesh size than said first and second screens, said second and third screens being attachable to the basket; and

a fluid impermeable inflatable element disposed between said first and second screens, said inflatable element being connected to a source of pressurized gas for inflating the element so as to elastically deform said third screen and remove solid material retained thereagainst, said inflatable element being configured to enable fluid flow around said inflatable element and through the fluid passages in the sidewall in a non-inflated condition.

5,547,574

APPARATUS FOR FILTERING MINERAL SLURRIES

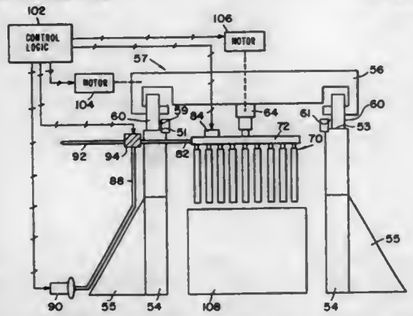
Michael W. Ginn, Wrightsville; Gary L. Cobb, Davisboro; Lawrence E. Broxton, Sandersville, and Kelly R. McNeely, Mitchell, all of Ga., assignors to ECC International Inc., Atlanta, Ga.

PCT No. PCT/US93/00553, § 371 Date Jul. 21, 1994, § 102(e) Date Jul. 21, 1994, PCT Pub. No. WO93/14855, PCT Pub. Date Aug. 5, 1993

Continuation-in-part of Ser. No. 823,996, Jan. 22, 1992, Pat. No. 5,213,687, and a continuation-in-part of Ser. No. 824,032, Jan. 22, 1992, Pat. No. 5,223,155. This PCT application Jan. 19, 1993, Ser. No. 256,717

Int. Cl.[6] B01D *29/68;29/72;33/48;33/54*

U.S. Cl. 210—388 **15 Claims**



1. Apparatus for filtering an aqueous mineral slurry comprising in combination:

(a) a filter plate having an interior porous support layer and an external microporous metal filtration layer overlying said support layer, the pore sizes in said filtration layer being substantially entirely 5 μm or less; and the side of said filtration layer non-adjacent said support layer constituting a filter surface for said mineral;

(b) fluid flow means connected to said plate for flowing fluids from and to said porous support layer;

(c) means connected to said fluid flow means, for selectively drawing a partial vacuum at said support layer to effect fluid flow inwardly through said filtration layer and porous support layer, and for providing one or more pulses of positive liquid pressure at said support layer to cause an outward liquid flow through said support layer and filtration layer;

(d) a mineral cake-forming station, including a container for receiving said mineral slurry, and means for positioning said filter plate within said slurry while drawing said partial vacuum, to cause said mineral to deposit on the external filtration layer as the aqueous phase of said slurry is withdrawn through said filtration layer and said support layer thereby forming a cake on said filtration layer;

(e) a cake-drying station for permitting additional moisture to be removed from said cake by continued application of said partial vacuum, said cake-drying station comprising means to remove the plate having the cake therein from said container;

(f) a cake-discharge station downstream of said cake-drying station, whereat application of said one or more positive liquid pressure pulses at the interior support layer of said plate causes a water film to form between said cake and said filter surface, said cake discharge station further comprising means for applying vibrations or oscillations to said plate, thereby loosening said cake, causing said cake to be dislodged to facilitate removal from said filter plate; and

(g) control means connected to said fluid flow means for enabling said drawing of a partial vacuum at said cake-forming and cake-drying station, and for enabling said one or more positive liquid pressure pulses at said cake discharge station.

5,547,575

METHOD FOR THE SURFACE MODIFICATION OF FORMED BODIES AND FORMED BODIES PRODUCED THEREBY

Wolfgang Demmer, Göttingen; Hans-Heinrich Hörl, Bovenden; Dietmar Nussbaumer, Göttingen; Abdul R. Weiss, Göttingen, and Eberhard Wünn, Göttingen-Bujikausberg, all of, Germany, assignors to Sartorius AG, Gottingen, Germany

Continuation of Ser. No. 945,638, Dec. 31, 1992, abandoned. This application Dec. 23, 1994, Ser. No. 364,394

Claims priority, application Germany, Mar. 6, 1991, P 41 07 171.9

Int. Cl.[6] B01D *67/00*

U.S. Cl. 210—490 **13 Claims**

1. A method of grafting polymerized components onto the surface of a polymeric microporous support membrane comprising the following steps:

(a) providing a polymeric microporous support membrane;

(b) forming a coated support membrane by coating said support membrane with a coating comprising an N-halogenated compound selected from an N-halogenated polymer and an N-halogenated polymeric precursor; and

(c) grafting said coating to said coated support membrane by contacting the same with an ethylenically unsaturated monomer and sodium dithionite in a primarily aqueous solution.

5,547,576

PATHOGENIC SUBSTANCE REMOVING MATERIAL AND A BLOOD FILTER CONTAINING THE MATERIAL

Makoto Onishi; Takashi Ohwada, both of Hadano; Ken Tatebe, Isehara; Yoshitaka Ohmura, Hadano, and Kenichi Shimura, Machida, all of, Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 6, 1993, Ser. No. 85,813

Claims priority, application Japan, Jul. 6, 1992, 4-178566; Oct. 9, 1992, 4-270632; Nov. 24, 1992, 4-313166

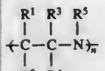
Int. Cl.[6] B01D *63/00;69/12;71/60*

U.S. Cl. 210—500.37 **7 Claims**

1. A material which removes viruses from a protein containing solution comprising a base material, a surface graft radical introduced onto a surface of said base material and a polyamine compound immobilized on a surface of the base material through the surface graft radical, wherein said polyamine compound is at least one type of compound selected from the group consisting of:

(a) a polyamine compound which has primary and secondary amines in its molecule and a hydrophobic part between these amines,

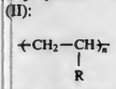
(b) a polyamine compound represented by the following formula (I):



(I)

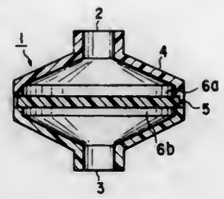
wherein R^1, R^2, R^3, R^4 and R^5 independently represent substituents selected from the group consisting of hydrogen, aliphatic and aromatic hydrocarbons, and halogen, and n is 5 or more, and

(c) a polyamine compound represented by the following formula (II):



(II)

wherein R represents NH_2 or an aminoalkyl group having 1 to 4 carbon atoms and n is 5 or more.



5,547,578

METHOD OF CONTROLLING WASTE WATER PURIFICATION PLANTS USING QUALITY EVALUATION OF MEASURING DATA

Marinus K. Nielsen, Virum, Denmark, assignor to L Krüger Systems A/S, Søborg, Denmark

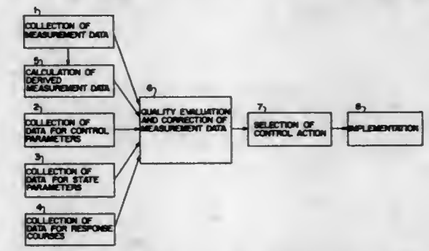
PCT No. PCT/DK92/00291, § 371 Date Mar. 22, 1994, § 102(e) Date Mar. 22, 1994, PCT Pub. No. WO93/07089, PCT Pub. Date Apr. 15, 1993

PCT Filed Oct. 1, 1992, Ser. No. 211,135

Claims priority, application Denmark, Oct. 1, 1991, 1677/91

Int. Cl.[6] C02F *1/00;3/00*

U.S. Cl. 210—614 **10 Claims**



1. A method of controlling a waste water purification plant comprising the steps of measuring at least two parameters and automatically controlling the plant on the basis of the measurement values obtained using a mathematical model for the purification process, comprising evaluating the quality of the measurement value for at least one parameter on the basis of a comparison of said value with an expected, dynamic value interval calculated continuously on the basis of the mathematical model and a simultaneous measurement of at least one other parameter, and controlling the plant on the basis of said evaluated measurement values.

5,547,577

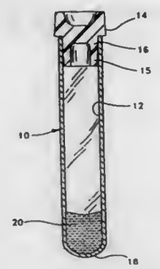
BLOOD COMPATIBLE, SHEAR SENSITIVE GELS

Erwin A. Vogler, Newhill; Thomas A. Shepard, Apex, and Jane C. Graper, Durham, all of N.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Continuation of Ser. No. 231,544, Apr. 22, 1994. This application May 22, 1995, Ser. No. 446,258

Int. Cl.[6] B01D *11/04;* **B01J** *13/00;* **C09K** *3/00*

U.S. Cl. 210—511 **2 Claims**



1. A blood compatible, shear sensitive gel formulation comprising:

(a) from about 50 to about 99.9% by weight of a polydimethyl siloxane/polyethylene oxide block copolymer;

(b) from about 0.01 to about 10% by weight of a gelling agent; and

(c) from about 0 to about 50% by weight of a liquid vehicle of water or alcohol.

5,547,579

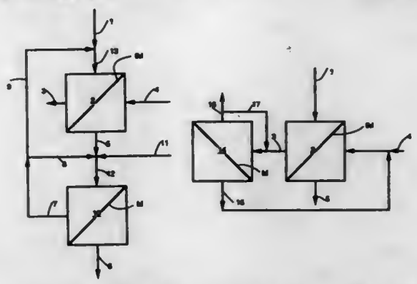
PROCESS AND APPARATUS FOR PURIFICATION OF CONTAMINATED ACIDS

Craig J. Brown, Pickering, Canada, assignor to Eco-Tec Limited, Pickering, Canada

Filed Jan. 20, 1995, Ser. No. 376,193

Int. Cl.[6] B01D *61/00*

U.S. Cl. 210—651 **22 Claims**



1. A process for separating a multi-valent metal salt from acid in a feed solution containing said metal salt and acid, the process comprising the steps of:

(a) treating said feed solution in an acid sorption unit to produce a second solution having a lower acid concentration than said feed solution and collecting said second solution;

(b) stripping acid from said sorption unit to produce a third solution;

(c) treating said third solution in a membrane separation unit to produce a fourth solution having a reduced metal salt concen-

tration, and a membrane reject solution having a higher metal salt concentration than said fourth solution; and,

(d) collecting said fourth solution.

5,547,580

PURIFICATION METHOD OF CRUDE PRODUCT

Masahiko Tsujii, Chiba Prefecture; Hirofumi Kuroda, Ibaraki Prefecture; Yoshikazu Furusawa, Ibaraki Prefecture, and Katsuhiko Hirota, Ibaraki Prefecture, all of, Japan, assignors to Eisai Chemical Co., Ltd., Ibaraki Prefecture, Japan

Continuation of Ser. No. 136,037, Oct. 14, 1993. This application Mar. 22, 1995, Ser. No. 408,185

Claims priority, application Japan, Oct. 14, 1992, 4-300560

Int. Cl.[6] B01D *15/08*

U.S. Cl. 210—656 **13 Claims**

1. A method of purifying a crude product by column chromatography with silica gel as a support which comprises using as eluent(s) (1) methanol-containing n-hexane and/or (2) n-hexane-containing methanol, wherein when the combination of eluents (1) and (2) are employed, the former eluent (1) is an upper layer and the latter eluent (2) is a lower layer, respectively, which separate from each other after thorough mixing of the n-hexane and methanol and wherein the crude product is selected from the group consisting of crude lecithin, indometacin farnesyl, menatetrenon, phytonadione, eicosapentaenoic acid, docosahexaenoic acid and coenzyme Q_{10}.

5,547,581

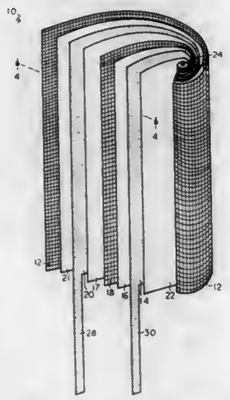
METHOD OF SEPARATING IONIC FLUIDS WITH A FLOW THROUGH CAPACITOR

Marc D. Adelman, 3 Fenimore Rd., Worcester, Mass. 01609

Division of Ser. No. 194,609, Feb. 10, 1994, Pat. No. 5,415,768, which is a continuation-in-part of Ser. No. 27,699, Mar. 8, 1993, Pat. No. 5,360,540, which is a division of Ser. No. 819,828, Jan. 13, 1992, Pat. No. 5,200,068, which is a continuation-in-part of Ser. No. 792,902, Nov. 15, 1991, Pat. No. 5,192,432, which is a continuation of Ser. No. 512,970, Apr. 23, 1990, abandoned. This application May 11, 1995, Ser. No. 439,310

Int. Cl.[6] B01D *15/08*

U.S. Cl. 210—656 **15 Claims**



1. A method for the separation of a fluid having ionic components which method comprises:

a) introducing the fluid into a flow-through electrical capacitor having a first and second high surface area electrically conductive material to act respectively as a stationary phase cathode and anode and the first and second high surface area material layers designed to face each other externally on either side of an electrically insulating ion-permeable spacer material layer to form a single anode-cathode unit;

b) applying a first and a second electrically conductive backing layer comprised of a continuous sheet material, externally and in contact respectively with the first and second high surface area material layers;

c) applying electrical charges to the cathode and anode to provide for the selected absorption of the ionic components of the fluid onto the first or second high surface area material; and

d) withdrawing a purified fluid from the capacitor.

5,547,582

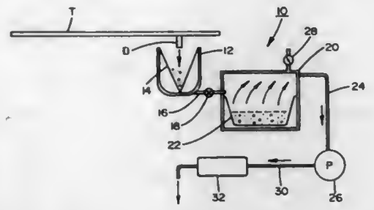
PROCESS FOR THE COLLECTION AND TREATMENT OF BIOLOGICAL WASTE

Peter J. Walbel, 515 N. 2nd St., New Hyde Park, N.Y. 11040

Division of Ser. No. 68,930, May 28, 1993, Pat. No. 5,454,953. This application Feb. 28, 1995, Ser. No. 395,461

Int. Cl.[6] C02F *9/00*

U.S. Cl. 210—664 **14 Claims**



1. A process for the collection and treatment of biological waste, and for rendering the biological waste biologically inactive for the environmentally non-contaminating disposal thereof, said biological waste being obtained from a surgical or medical procedure implemented on a patient or an autopsy and comprises body fluids, tissue, fats, blood clots and water, wherein said biological waste is initially constituted of organic solid constituents entrained in liquid; said process comprising the steps of:

(a) conducting a quantity of the biological waste into a liquid-permeable filter arranged within a fluid-impervious housing, discharging at least a major portion of the liquid of said waste which is passed through said filter into an outlet of said housing while retaining solids from said waste within said filter;

(b) conducting the discharged liquid portion of said waste and any residual solids contained therein from said outlet into an enclosed collection vessel; heating the interior of said collection vessel so as to vaporize said liquid portion; discharging said vaporized liquid portion from said collection vessel while retaining said residual solids in said collection vessel;

(c) liquefying said vaporized liquid portion upon discharge from said collection vessel into a liquid essentially constituted of water;

(d) conducting said liquid through a bed filter so as to separate therefrom any residual light organic materials and embedding said organic materials in said bed filter so as to purify said liquid;

(e) and draining the purified liquid from said bed filter.

5,547,583

METHOD FOR SEPARATING CONTAMINANTS FROM SOLUTION EMPLOYING AN ORGANIC-STABILIZED METAL-HYDROXY GEL

Donald H. Alexander, 212 High Meadows, Richland, Wash. 99352

Filed Nov. 30, 1994, Ser. No. 350,183

Int. Cl.[6] C02F *1/42*

U.S. Cl. 210—666 **5 Claims**



1. A method for extracting materials from a solution comprising the steps of contacting said solution with a gel-forming agent; contacting said solution with a gel-stabilizing agent; adjusting the pH of said solution such that said gel-forming and said gel stabilizing agents form an organic metal-hydroxy complex; separating said complex from said solution; and dissolving said complex to regenerate said gel-forming and said gel-stabilizing agents.

5,547,584

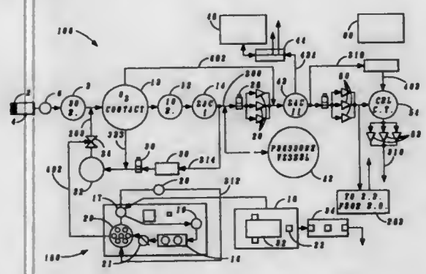
TRANSPORTABLE, SELF-CONTAINED WATER PURIFICATION SYSTEM AND METHOD

Jimmie D. Capehart, Sadler, Tex., assignor to Electronic Drilling Control, Inc., Irving, Tex.

Filed Mar. 17, 1994, Ser. No. 214,644

Int. Cl.[6] B01D *15/00*

U.S. Cl. 210—669 **31 Claims**



6. A method of purifying non-potable water by a system operable to make said water potable, comprising the steps of:

bringing said water into said system;

filtering said water by passing said water through a first filter;

contacting said filtered water with ozone;

filtering said water by passing said water through a second filter;

passing said water across a first granular activated carbon filter;

filtering said water by passing said water through a third filter;

passing said water across a second granular activated carbon filter and filtering said water by passing said water through a fourth filter;

contacting said filtered water with chlorine; and

desalinating said filtered water.

5,547,585

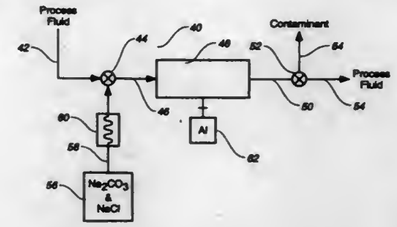
PROCESS FOR THE REMOVAL OF CONTAMINANTS FROM A FLUID STREAM

Samuel L. Shepherd, 5211 Mulberry Grove, Kingwood, Tex. 77345, and Anthony M. Wachinski, 3 Biscay Ct., The Woodlands, Tex. 77381

Filed Mar. 28, 1994, Ser. No. 218,661

Int. Cl.[6] B01D *15/04*

U.S. Cl. 210—673 **3 Claims**



1. A method for reducing contaminant concentrations in a fluid stream comprising the steps of:

forming a metal-complexed material having a surface suitable for exchange with the contaminant by encapsulating a core of ferromagnetic material with an ion exchange material wherein the metal complexed material is magnetically affixed to a metallic mesh retaining surface, which metal-complexed material has particles which have a size of less than 20 microns, said ion exchange material containing a metal selected from the group consisting of: silver and copper;

contacting the fluid stream with the metal-complexed material;

immobilizing at least a portion of the contaminant on the surface of the metal-complexed material; and

regenerating the metal-complexed material so as to remove the contaminant from the surface of the metal-complexed material, said step of regenerating comprising the steps of:

mixing four parts by weight of sodium bicarbonate with two parts by weight sodium chloride in an agueous solution, the combined sodium bicarbonate and sodium chloride being in an amount of two to six ounces per gallon of water;

interacting said agueous solution with the immobilized contaminant on the metal-complexed material, said agueous solution having a temperature of not less than 180° F.; and

contacting the metal-complexed material with aluminum or hydrogen during the step of interacting.

5,547,586

METHOD AND APPARATUS FOR THE DESALINATION OF SALT CONTAINING WATER

Mitchell L. Halperin, North York, and Surinder Cheema-Dhadli, Mississauga, both of, Canada, assignors to Rossmark Medical Publishers, Inc., Stirling, Canada

Filed May 2, 1994, Ser. No. 236,175

Int. Cl.[6] C02F *9/00*

U.S. Cl. 210—686 **19 Claims**

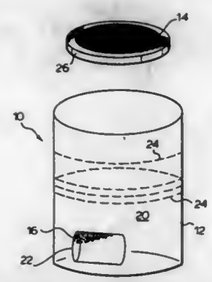
1. A method of producing biologically safe drinking-water from saline water comprising the steps of:

contacting said water with a first means selected to chemically bond with chloride anions in said water and to exchange for said chloride anions, anions selected from the group consisting of carbonate ions and bicarbonate ions, and

contacting said water with a second means selected to chemically bond with sodium cations in said water and to exchange for said sodium cations, hydrogen ions,

wherein said anions selected from the group consisting of carbonate ions and bicarbonate ions buffer said hydrogen ions to produce carbon dioxide and water, and

whereby when said first means exchanges said carbonate ions for said chloride ions, said first means is selected from the



group consisting of a compound comprising Ag_2CO_3 and a composition comprising Ag_2CO_3, and

when said first means exchanges said bicarbonate ions for said chloride ions, said first means is selected from the group consisting of a compound comprising $AgHCO_3$ and a composition comprising $AgHCO_3$.

5,547,587

PROCESS FOR DENATURING AND COAGULATING PAINTS

Thomas Molz; Hans-Joergen Rehm, both of Hilden; Toni Vogt, Krefeld, and Jnergen Geke, Duesseldorf, all of, Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP93/01154, § 371 Date Nov. 18, 1994, § 102(e) Date Nov. 18, 1994, PCT Pub. No. WO93/23337, PCT Pub. Date Nov. 25, 1993

PCT Filed May 11, 1993, Ser. No. 341,607

Claims priority, application Germany, May 18, 1992, 42 16 352.8

Int. Cl.[6] C02F *5/10*

U.S. Cl. 210—696 **18 Claims**

1. In a proceed for denaturing and coagulating organic coating materials including water-based paint particles, by contacting the organic coating material with circuit water in a wet separator for spray painting installations, containing a coagulating effective amount of coagulants to denature and coagulate said coating material the improvement which comprises: maintaining hardness of the circuit water at a value of 0 to 1.0 mmole/l alkaline earth metal ion equivalents to keep the denatured and coagulated coating materials suspended in the circuit water, wherein the coagulant contains as an active constituent at least one composition selected from the group consisting of layer silicates, waxes, ethylene/acrylic acid copolymers which contain 8 to 25% by weight of acrylic acid units and 92 to 75% by weight of ethylene units, based on the acid form of the copolymer, and which are present as the salt of an inorganic or organic base, talcum, alumina, polyethylene imines, protonated polyethylene imine, alkylated polyethylene imine, water-soluble alkali metal salts of molybdic acid, ammonium salts of molybdic acid, alkali metal salts of isopolymolybdic acid, ammonium salts of isopolymolybdic acid and polyelectrolytes comprising quaternary methacrylates - has been inserted.

5,547,588

ENHANCED ETTRINGITE FORMATION FOR THE TREATMENT OF HAZARDOUS LIQUID WASTE

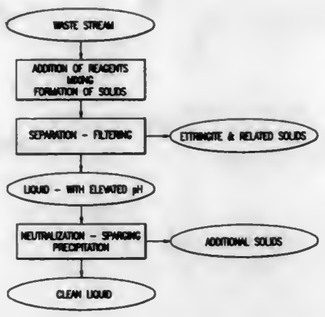
David J. Hassett, and Jeffrey S. Thompson, both of Grand Forks, N. Dak., assignors to Gas Research Institute, Chicago, Ill.

Filed Oct. 25, 1994, Ser. No. 328,894

Int. Cl.[6] C02F *1/62*

U.S. Cl. 210—724 **11 Claims**

1. A process for treatment of hazardous liquid wastes comprising oxyanions of at least one element selected from the group consisting of boron, selenium, chromium, arsenic, molybdenum and vanadium, the process comprising the steps of:



mixing a first portion of a hazardous liquid waste for treatment with a stoichiometric excess of calcium required for formation of ettringite, forming a first mixture;

mixing a second portion of said hazardous liquid waste with a stoichiometric excess of aluminum and a stoichiometric deficiency of sulfate required for formation of said ettringite, forming a second mixture;

adding said second mixture to said first mixture, forming a third mixture comprising a liquid portion and a solid comprising ettringite and at least one fixed oxyanion of said element; and

separating said liquid portion and said solid.

5,547,589

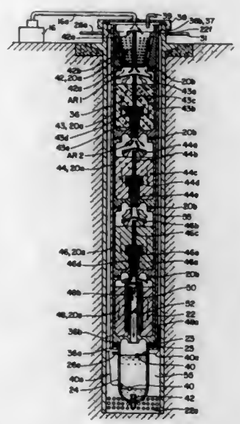
WATER RECOVERY FROM A SEPTIC TANK

Paul L. Carroll, II, 2548 SE. Monroe St., Stuart, Fla. 34997

Filed Jun. 1, 1995, Ser. No. 456,989

Int. Cl.[6] C02F *1/50;* **B01D** *24/12*

U.S. Cl. 210—747 **17 Claims**



1. A method, comprising:

injecting an effluent into a top of an elongated filter that extends to a depth below ground level;

capturing filtered fluid exiting said filter in an accumulator at said depth;

pressurizing the accumulator to discharge the fluid into the ground area surrounding the accumulator.

5,547,590

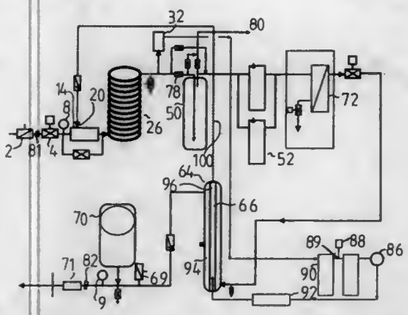
UV-BASED WATER DECONTAMINATION SYSTEM WITH DIMMER-CONTROL

Louis Szabo, 2940 Olafson Avenue, Richmond B.C., Canada

Filed Sep. 19, 1994, Ser. No. 310,064

Int. Cl.[6] C02F *1/32*

U.S. Cl. 210—748 **16 Claims**



1. A water decontamination apparatus for the batch treatment of contaminated water comprising: an ultraviolet lamp for the emission of germicidal-strength ionizing radiation; a water exposure chamber for the exposure of contaminated water to radiation emitted by said lamp; conduits to receive a pressurized stream of water from a source and to channel water through said system in a direction from an upstream end at said source to a downstream end at an exit from said apparatus; a reservoir for the storage and selective release of treated water; a pressure switch positioned to measure water pressure within said reservoir and adapted to generate a signal when said pressure and the water level within said reservoir drops below a fixed level; a valve within one of said conduits linked to said pressure switch and adapted to turn off the flow of water through said conduits when said pressure increases above said fixed level and permit the flow of water through said conduits when the pressure falls below said level; and a dimmer control for said ultraviolet lamp linked to said pressure switch and adapted to increase the output of said lamp from a first output level comprising a standby level to a second output level comprising an operative level in response to said signal.

5,547,591

METHOD FOR SEPARATING A BLOOD MATERIAL INTO BLOOD COMPONENTS BY CENTRIFUGATION, AND CENTRIFUGAL APPARATUS

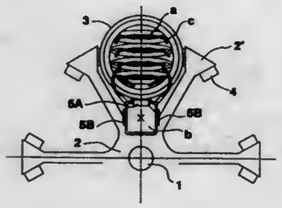
Takeaki Hagihara, Oita, and Mabo Toril, Yokohama, both of, Japan, assignors to Asahi Medical Co., Ltd., Tokyo, Japan

Filed Jun. 1, 1994, Ser. No. 251,954

Claims priority, application Japan, Jun. 1, 1993, 5-152641

Int. Cl.[6] B01D *21/26;35/00;35/02*

U.S. Cl. 210—782 **18 Claims**



1. A method for separating a blood material into blood components by centrifugation, comprising the steps of:

(1) providing at least two multiple blood bag units each including a plurality of flexible blood bags liquid-tightly connected to at least one leukocyte-removing filter device through flexible tubes in a predetermined order, at least one of said flexible blood bags containing a blood material, and

providing a centrifugal apparatus including a rotation shaft connected to a drive motor, a rotor fixedly connected at a central portion thereof to said rotation shaft and rotatable in accordance with rotation of said rotation shaft, said rotor including a central body portion and at least two centrifuge bucket-holding extensions radially extending from said central body portion, and at least two centrifuge buckets each swingably attached to said centrifuge bucket-holding extensions of the rotor, wherein said centrifuge bucket is adapted to be turned and oriented substantially in a direction of a centrifugal force exerted when said rotor is rotated;

(2) inserting at least said at least one flexible blood bag, which contains a blood material, of said plurality of flexible blood bags of each multiple blood bag unit in each centrifuge bucket while placing at least said at least one leukocyte-removing filter device of said plurality of flexible blood bags and said at least one leukocyte-removing filter device of each multiple blood bag unit outside of each centrifuge bucket, wherein said filter device is directly or indirectly secured to said rotor, or indirectly secured to said rotation shaft, and wherein a center of each filter device is located at a distance from an axis of said rotation shaft which is smaller than a distance between a pivotal axis of the turning of said centrifuge bucket and an axis of said rotation shaft at a portion thereof which has said rotor connected thereto; and

(3) actuating said drive motor to rotate said rotation shaft and said rotor and perform separation of said blood material in said blood bag into blood components by centrifugation.

5,547,592

LUBRICANT FOR METALLURGY

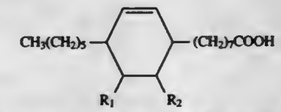
Kenichi Nakagawa; Michiyoshi Sugioka, and Koichi Ito, all of Urawa, Japan, assignors to Asahi Denka Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 820,909, Jan. 15, 1992, abandoned. This application Dec. 23, 1993, Ser. No. 172,246

Int. Cl.[6] C10M *135/22;129/42*

U.S. Cl. 508—511 **12 Claims**

1. A lubricant for metal working comprising 1 to 40% by weight of a dicarboxylic acid represented by the following general formula (I) or its amine salt or its alkali metal salt, 1 to 30% by weight of a dialkyl polysulfide compound as a sulfur extreme pressure agent:



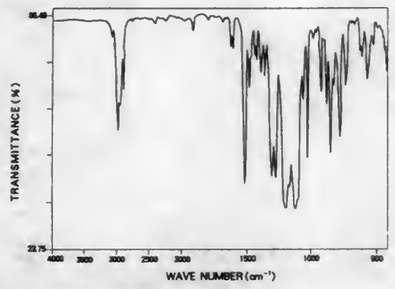
wherein R_1 stands for COOH or H; and R_2 stands for H when R_1 is COOH and COOH when R_1 is H, and the balance predominantly at least one member selected from the group consisting of water, mineral oil and synthetic oil.

5,547,593

LUBRICANT OIL COMPOSITION COMPRISING A FLUORINE-CONTAINING AROMATIC COMPOUND AND AN ALKYL- OR ALKYL DERIVATIVE-SUBSTITUTED AROMATIC COMPOUND, AND A REFRIGERANT COMPOSITION CONTAINING THE SAME

Kenichi Sanechika, Nobeoka; Hiroyuki Fukui, and Masanori Ikeda, both of Fuji, all of, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 11, 1994, Ser. No. 289,220
Claims priority, application Japan, Aug. 11, 1993, 5-199527
Int. Cl.[6] C10M *131/10*
U.S. Cl. 508—207 **34 Claims**



1. A lubricant oil composition comprising:

(A) a fluorine-containing aromatic compound, and

(B) an alkyl- or alkyl derivative-substituted aromatic compound, wherein said fluorine-containing aromatic compound (A) is present in an amount of from 0.1 to 99.9% by weight, based on the total weight of said fluorine-containing aromatic compound (A) and said alkyl- or alkyl derivative-substituted aromatic compound (B),

said fluorine-containing aromatic compound being represented by the formula:

$$R(XR_f)_n \qquad (A)$$

wherein:

X represents an oxygen or a sulfur atom;

n is an integer of from 1 to 4;

R represents an n-valent aromatic group, having from 6 to 60 carbon atoms, wherein n is as defined above, comprising at least one unsubstituted or substituted aromatic nucleus selected from the group consisting of an unsubstituted or substituted benzene nucleus and an unsubstituted or substituted naphthalene nucleus, wherein the ratio of carbon atoms in the aromatic nucleus of said R to carbon atoms in said R is from 0.10 to 1.0, with the proviso that when said n-valent aromatic group comprises at least two unsubstituted or substituted aromatic nuclei, said at least two aromatic nuclei are linked through a single bond or a linkage group containing no aromatic nuclei and having from 0 to 50 carbon atoms and a valence of from 2 to 6 to form a multinuclear structure; and

R_f represents an unsubstituted or partially substituted fluorocarbon group having from 1 to 25 carbon atoms in which the ratio of fluorine atom or atoms to carbon atom or atoms is from 0.6 to 3, wherein said unsubstituted fluorocarbon group is selected from the group consisting of a fluoroalkyl group, a fluoroalkenyl group, a fluoroalkyl group, a fluoroalkylaryl and a fluoroaralkyl group, in which each of the alkyl, alkenyl, aryl, alkylaryl and aralkyl groups is partially or entirely substituted with at least one fluorine atom, and said partially substituted fluorocarbon group has at least one substituent other than fluorine and hydrogen atoms in an amount such that the ratio of said at least one substituent to the total number of fluorine and hydrogen atoms of said partially substituted fluorocarbon group is not greater than 1.5, and wherein a main chain of said unsubstituted or partially substituted fluorocarbon group optionally has from 1 to 7 ether linkages;

wherein when n is an integer of from 2 to 4, the XR_f groups are the same or different; and

said alkyl- or alkyl derivative-substituted aromatic compound (B) comprising at least one substituted aromatic nucleus selected from the group consisting of a substituted benzene nucleus and a substituted naphthalene nucleus, wherein a substituent of said at least one substituted aromatic nucleus is an unsubstituted or substituted alkyl group having from 1 to 30 carbon atoms, or a derivative thereof, said alkyl- or alkyl derivative-substituted aromatic compound (B) having a kinetic viscosity of from 0.1 to 500 cSt as measured at 40° C.,

said lubricant oil composition having a kinetic viscosity of from 2 to 500 cSt as measured at 40° C.

5,547,594

FLUORINATED DISULFIDE LUBRICANTS FOR POLYETHYLENE SNOW SLIDERS

Athanasios Karydas, 1365 York Ave., New York, N.Y. 10021

Filed Feb. 3, 1995, Ser. No. 383,355
Int. Cl.[6] C10M *105/50;105/72*
U.S. Cl. 508—112 **10 Claims**

1. A lubricant for polyethylene snow sliders which comprises a fluorinated disulfide of the formula

$$[R_f(CH_2)_mS]_2$$

having a melting point of at least 25° C. and at most 60° C., a fluorine content of at least 61% and at most 68% and wherein R_f is independently a straight or branched perfluoroalkyl group containing 4 to 14 carbon atoms or the R_f group can be a mixture of such moieties; m is an integer from 2 to 4, and blended with one or more of the following: perfluorocarbons containing up to 20 carbon atoms, hydrocarbon waxes, graphite, fluorinated graphite, metal alloys, molybdenum disulfide, polysiloxanes.

5,547,595

AQUEOUS LUBRICANT AND PROCESS FOR COLD FORMING METAL, PARTICULARLY POINTING THICK-WALLED METAL TUBES

Kenneth J. Hacias, Sterling Heights, Mich., assignor to Henkel Corporation, Plymouth Meeting, Pa.

Filed Feb. 7, 1995, Ser. No. 384,978
Int. Cl.[6] C10M *173/02*
U.S. Cl. 508—156 **20 Claims**

1. A liquid composition suitable for applying to metal substrates a lubricating layer for cold working after drying on the metal substrates, said liquid composition consisting essentially of water and the following dissolved, dispersed, or both dissolved and dispersed components:

(A) ethoxylated straight chain aliphatic alcohol molecules, wherein the initial alcohol molecules have a single —OH moiety and at least 25 carbon atoms; and

(B) a component of inorganic boron containing acids or salts thereof, wherein in said liquid composition the ratio of the amount of each of: copolymers of styrene and maleic moieties; oxidized polyethylene: urethane polymers and copolymers; at least partially neutralized copolymers of (i) an alkene that contains no carboxyl or carboxylate group and (ii) a comonomer that is an organic acid including the moiety C=C—COOH; surfactants that are not part of component (A) and are not corrosion inhibitors; polyoxyalkylene polymers not containing an end group having at least 17 carbon atoms in a chain without any intervening carbon-oxygen bonds; and alkoxylates of Guerbet alcohols; these being individually or collectively denoted hereinafter as "disfavored organic component(s)", to the amount of component (A) is not greater than 0.5.

5,547,596

LUBRICANT COMPOSITION FOR LIMITED SLIP DIFFERENTIAL OF CAR

Yasunori Omiya, Ichihara, Japan, assignor to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Filed May 20, 1994, Ser. No. 246,745
Claims priority, application Japan, May 25, 1993, 5-122218
Int. Cl.[6] C10M *141/10*
U.S. Cl. 508—188 **10 Claims**

1. A lubricant composition for a limited slip differential of a car which is obtained by adding a phosphate amine salt and a borated ashless dispersant to a base oil comprising at least one of a mineral oil and a synthetic oil, a ratio (N/P) of a nitrogen content (N) to a phosphorus content (P) in the composition being 0.5 to 1.0, and a ratio (N/B) of the nitrogen content (N) to a boron content (B) in the composition being 4 to 10; the phosphorus content being in the range of 0.15 to 0.40% by weight, the nitrogen content being in the range of 0.08 to 0.30% by weight, and the boron content being in the range of 0.01 to 0.04% by weight.

5,547,597

LUBRICATING OIL COMPOSITION FOR TWO-CYCLE ENGINES

Katsuya Koganei; Takeshi Nomura; Toshiaki Kuribayashi, and Noboru Umemoto, all of Ohi-machi, Japan, assignors to Tonen Corporation, Tokyo, Japan

Continuation of Ser. No. 67,807, May 27, 1993, abandoned. This application May 18, 1995, Ser. No. 444,094
Claims priority, application Japan, May 29, 1992, 4-139405
Int. Cl.[6] C10M *105/42;129/78*
U.S. Cl. 508—409 **3 Claims**

1. A biodegradable lubricating oil composition for a two-cycle engine miscible with gasoline consisting essentially of:

30% to 70% by weight of a polyol ester having a kinetic viscosity of 9 to 15 cSt at 100° C., said polyol ester being an esterification product of a straight-chain or branched fatty acid having 16 to 24 carbon atoms and an aliphatic polyhydric alcohol;

30% to 70% by weight of a diester having a kinetic viscosity of 2 to 5 cSt at 100° C., said diester being an esterification product of a straight-chain or branched aliphatic dibasic acid having 6 to 10 carbon atoms and an aliphatic alcohol having 6 to 10 carbon atoms;

1% to 5% by weight of a polybutene having a molecular weight of 500 to 2,500 or of a polymethacrylate having a molecular weight of 5,000 to 40,000; and

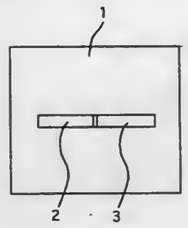
5% to 25% by weight of a dispersant.

5,547,598

THERMOELECTRIC SEMICONDUCTOR MATERIAL

Takashi Amano, Nagoya, and Makoto Okabayashi, Anjo, both of, Japan, assignors to Technova, Inc., Tokyo, Japan

Filed Aug. 2, 1994, Ser. No. 284,785
Claims priority, application Japan, Aug. 4, 1993, 5-193625
Int. Cl.[6] C22C *38/02;38/10*
U.S. Cl. 252—62.3 T **5 Claims**



1. Thermoelectric semiconductor material comprising Si crystal and crystal of semiconductive metal silicide, wherein said semiconductive metal silicide is β-$FeSi_2$, and

an atomic number ratio of Si to Fe is in the range of from 3 to 30.

5,547,599

FERRITE/EPOXY FILM

Austin A. Wolfrey, Holden, Mass., and Samuel L. Bagdasarian, Kissimmee, Fla., assignors to Raytheon Company, Lexington, Mass.

Filed Mar. 17, 1989, Ser. No. 325,162
Int. Cl.[6] H01F *1/113;1/117;* **C08L** *63/08*
U.S. Cl. 252—62.54 **5 Claims**

1. A composition comprising:

first and second reactive epoxy resins having equivalent weights between approximately 140 and 3000, both epoxy resins having oxirane attached to methylene bridges, both epoxy resins being B-stageable;

a curing agent comprising dicyandiamide;

a thermoplastic reactive rubber; and ferrite powder.

5,547,600

ABSORPTION REFRIGERATION SYSTEM WORKING FLUID WITH MOLYBDATE, BORATE, SILICATE INHIBITOR BLEND

Sandra J. Downey, Cazenovia, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed May 5, 1995, Ser. No. 435,930
Int. Cl.[6] C09K *5/04;* **F25B** *15/00*
U.S. Cl. 252—68 **6 Claims**

1. A working fluid for absorption refrigeration systems comprising

an aqueous solution of at least one compound selected from the group consisting of

lithium bromide,

lithium chloride and

lithium iodide,

said solution also containing;

a molybdate in a sufficient quantity to insure that said solution has a molybdenum concentration of about 10 to 500 ppm,

a borate in a sufficient quantity to insure that said solution has a boron concentration of about 1 to 10,000 ppm, and

a silicate in a sufficient quantity to insure that said solution has a silicon concentration of about 1–20 ppm.

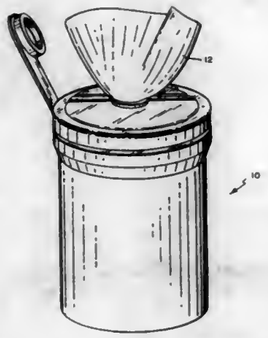
5,547,601

CFC-FREE SOLVENT FOR SOLVATING SOLDER FLUX

John J. Volpe, Milford, Mass., assignor to JNJ Industries, Inc., Milford, Mass.

Continuation-in-part of Ser. No. 942,311, Sep. 9, 1992, abandoned. This application Dec. 28, 1993, Ser. No. 174,875
Int. Cl.[6] C11D *7/50;7/26;17/04*
U.S. Cl. 15—104.93 **8 Claims**

1. A canister which comprises a number of disposable presaturated wipes, said wipes presaturated with a composition, said composition consisting of a solvent to remove flux from the surface of a PC board or substrate, said solvent consists of both approximately greater than 95.0 weight % of glycol ethers and approximately less than 5.0 weight % of alcohols, wherein said solvent is $C_nO_{m+1}p$ such that n=4 to 9, m=2 to 4, and p=10 to 18 and is characterized in that the solvent will solvate and remove flux



from the surface of the PC board or substrate, such that there is no remaining conductive residue to permit current leakage across the surfaces of the PC boards or substrate.

5,547,602

MOISTURIZING SOAP BAR

William H. Schuler, Edgewood, Ky., assignor to The Broxon Marketing Group, Inc., Chicago, Ill.

Filed May 12, 1995, Ser. No. 439,855
Int. Cl.[6] C11D *9/00;9/30*
U.S. Cl. 510—152 **9 Claims**

1. A moisturizing soap bar comprising:
(a) from about 50% to about 99% soap;
(b) from about 0.5% to about 10% petrolatum; and
(c) from about 0.1% to about 10% hydroxylated milk glycerides.

5,547,603

SILICATE COMPOSITION

Olle Sörensson, Lindome, and Krister Severinsson, Kungälv, both of, Sweden, assignors to Eka Nobel AB, Bohus, Sweden

Division of Ser. No. 75,927, Jun. 14, 1993, Pat. No. 5,338,528, which is a continuation of Ser. No. 680,135, Apr. 3, 1991, abandoned. This application May 13, 1994, Ser. No. 242,322
Claims priority, application Sweden, Nov. 14, 1990, 9003643
Int. Cl.[6] C11D *7/14;7/12;* **C01B** *33/32*
U.S. Cl. 510—509 **8 Claims**

1. A cleaning agent composition comprising a solid alkali metal silicate having a molar ratio SiO_2:M_2O from about 1.5 to about 3, wherein M is sodium and optionally potassium, wherein the silicate also contains from about 7 to about 20% by weight of sodium carbonate based on the dry material and a water content of from about 14 to about 22% on a total weight basis.

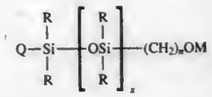
5,547,604

LIQUID CRYSTAL SILOXANES

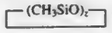
Harry J. Coles, Stockport; Jonathon P. Hannington, Beddau, and David R. Thomas, Barry, all of, United Kingdom, assignors to Dow Corning Limited, Barry, Wales

Continuation of Ser. No. 185,530, Jan. 21, 1994, abandoned. This application Feb. 10, 1995, Ser. No. 386,611
Claims priority, application United Kingdom, Jan. 30, 1993, 9301883
Int. Cl.[6] C09K *19/52;19/12;* **C07F** *7/04;7/08*
U.S. Cl. 252—299.01 **7 Claims**

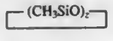
1. A siloxane compound having a smectic liquid crystal phase and represented by the general formula



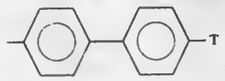
wherein Q represents a monovalent group selected from alkyl groups having from 1 to 8 carbon atoms, $—(CH_2)_nOM'$, a dye group, or the group $—(CH_2)_nL$ in which L is



the remaining free valence of each silicon in



is satisfied by the group $—(CH_2)_nSiR_2[OSiR_2]_x(CH_2)_nOM$ and z is an integer from 4 to 6, each x is an integer from 1 to 10, each R represents a group selected from an alkyl group having from 1 to 12 carbon atoms, alkenyl groups having from 2 to 6 carbon atoms and aryl groups having from 6 to 12 carbon atoms, each n is an integer from 6 to 11 and each M and M', which may be the same or different, represents a mesogenic group having the general formula



wherein T represents —CH, Cl or F, provided that when T is F or Cl, x has a value of at least 2.

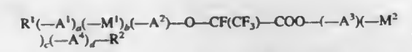
5,547,605

2-ARYLOXYTETRAFLUOROPROPIONIC ESTERS, PROCESS FOR THEIR PREPARATION, AND THEIR USE IN LIQUID-CRYSTALLINE MIXTURES

Robert Fuss, Kelheim; Javier Manero, Frankfurt, and Dietmar Jungbauer, Welterstadt, all of, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Dec. 13, 1994, Ser. No. 354,666
Claims priority, application Germany, Dec. 15, 1993, 43 42 756.1
Int. Cl.[6] C09K *19/06;19/34;19/30;* **G02F** *1/13*
U.S. Cl. 252—299.6 **7 Claims**

1. A liquid crystal mixture comprising one or more compounds of the formula I



in which the symbols and indices have the following meanings:
R^1 and R^2 are identical or different and are hydrogen, a straight-chain or branched alkyl radical having 1 to 20 carbon atoms (with or without asymmetrical carbon atoms), where one or more $—CH_2—$ groups may also be replaced by —O—, —CO—, cyclopropane-1,2-diyl, $—Si(CH_3)_2—$, with the proviso that oxygen atoms must not be bonded directly to one another, and/or one or more H atoms of the alkyl radical may be substituted by —F;
M^1 and M^2 are identical or different and are —CO—O—, —O—CO—, or a single bond;
A^1, A^2, A^3 and A^4 are identical or different and are 1,4-phenylene, in which one or more H atoms may be replaced by F, pyrazine-2,5-diyl, in which one or two H atoms may be replaced by F, pyridazine-3,6-diyl, in which one or two H atoms may be replaced by F, pyridine-2,5-diyl, in which one or more H atoms may be replaced by F, pyrimidine-2,5-diyl, in which one or two H atoms may be replaced by F, trans-1,4-cyclohexylene, 1,3,4-thiadiazole- 2,5-diyl, 1,3-dioxane-2,5-diyl, 1,3-dithiane-2,5-diyl, 1,3-thiazole-2,4-diyl, in which one H atom may be replaced by F, 1,3-thiazole-2,5-diyl, in which one H atom may be replaced by F, thiophene- 2,4-diyl, in which one H atom may be replaced by F, thiophene-2,5-diyl, in which one or two H atoms may be replaced by F, naphthalene-2,6-diyl, in which one or more H atoms may be replaced by F;
a, b, c and d are zero or one with the exception of phenyl phenoxytetrafluoropropionate.

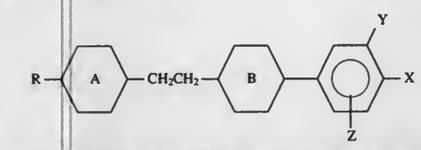
5,547,606

SILACYCLOHEXANE COMPOUND, A METHOD OF PREPARING IT AND A LIQUID CRYSTAL COMPOSITION CONTAINING IT

Takeshi Kinsho; Tatsushi Kaneko; Takaaki Shimizu, all of Joetsu; Tsutomu Ogihara, Kubiki-mura; Ryuichi Saito, Joetsu, and Hideshi Kurihara, Yokohama, all of, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

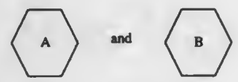
Filed Oct. 13, 1994, Ser. No. 322,549
Claims priority, application Japan, Oct. 14, 1993, 5-281883; Aug. 19, 1994, 6-218170
Int. Cl.[6] C09K *19/34;19/30;* **C07F** *7/08;* **G02F** *1/13*
U.S. Cl. 252—299.61 **4 Claims**

1. A silacyclohexane compound represented by the following formula (I):



(I)

wherein R denotes a hydrogen, a linear-chain alkyl group with a carbon number of 1–10, a branched-chain alkyl group with a carbon number of 3–8, an alkoxyalkyl group with a carbon number of 2–7, a fluoroalkyl group with a carbon number of 1–10 in which one or two hydrogen atoms are substituted by fluorine atom(s), or an alkenyl group with a carbon number of 2–8, and wherein at least one of



is trans-1-sila-1, 4-cyclobexylene or trans-4-sila-1, 4-cyclohexylene group whose silicon at position 1 or position 4 has a substitutional groups(s) of H, F, Cl or CH_3, and the other denotes a trans-1, 4-cyclohexylene group, X denotes a CN, F, Cl CF_3, CF_2Cl, $CHFCl$, OCF_3, $OCHF_2$, OCF_2Cl, $OCHFCl$, R or OR group, R is the same as defined in formula (1), Y denotes H or F, and Z denotes H or F.

5,547,607

STABLE AQUEOUS ALUMINA SOL AND METHOD FOR PREPARING THE SAME

Mikio Ando; Isao Yogo, and Takanobu Kikawa, all of Sodegaura, Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Division of Ser. No. 915,612, Jul. 21, 1992, Pat. No. 5,407,600. This application Oct. 13, 1994, Ser. No. 322,538
Claims priority, application Japan, Jul. 23, 1991, 3-182617; Jul. 23, 1991, 3-184716
Int. Cl.[6] B01J *13/00*
U.S. Cl. 252—313.1 **12 Claims**

1. A stable aqueous sol of amorpbous alumina having a uniform thickness in a range of 40 to 100 millimicrons and a uniform length in a range of 200 to 500 millimicrons, the length being 5 to 10 times the thickness, containing Al_2O_3 in an amount up to 15% by weight and an anion of acid in an amount of 0.1 to 0.5 gram equivalent to 1 mol of aluminum in the sol.

5,547,608

POLYURETHANE SRIM COMPOSITIONS HAVING INTERNAL MOLD RELEASE PROPERTIES

Richard P. Harrison, Lincoln Park; Bari W. Brown, Trenton; Richard C. Rossio, Troy; Gladys M. Aviles, Canton; Edward M. Dexheimer, Grosse Ile, all of Mich., and David Ho, Kzm-szh Court, Singapore, assignors to BASF Corporation, Mt. Olive, N.J.

Filed Sep. 9, 1994, Ser. No. 303,995
Int. Cl.[6] C08G *18/50*
U.S. Cl. 252—357 **15 Claims**

1. A polyol composition capable of providing internal mold release properties to a polyurethane system, comprising:
A.) an isocyanate-reactive polyol comprising at least one polyoxyalkylene polyether polyol having as an initiator an aromatic diamine with vicinai amino groups, and
B.) an effective amount of an internal mold release composition, consisting of:
from 1 to 50 pbw of a secondary hydroxyl functional polydimethylsiloxane, based on the weight of the internal mold release composition; and
from 50 to 99 pbw of epoxidized 2-ethylhexyl tallate ester, based on the weight of the internal mold release composition,
wherein the polyol composition is substantially free of separation behavior with respect to the internal mold release composition (B.).

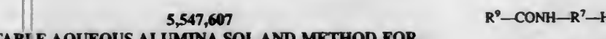
5,547,609

ELECTROCONDUCTIVE RESIN COMPOSITION, ANTISTATIC COATING AND MOLDED ARTICLE

Takeshi Fujii, and Manabu Ishikawa, both of Sodegaura, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Feb. 6, 1995, Ser. No. 384,102
Claims priority, application Japan, Feb. 4, 1994, 6-012639
Int. Cl.[6] H01B *1/00;1/18*
U.S. Cl. 252—511 **19 Claims**

1. An electroconductive resin composition comprising:
(a) about 100 parts by weight of a polyphenylene ether or a mixture of a polyphenylene ether and a styrene resin having a weight ratio of polyphenylene ether:styrene resin of less than 100:0 to greater than about 5:95;
(b) about 1 to about 50 parts by weight of a carboxylic acid amide wax having a high softening point which comprises a tetramide compound represented by formula (2):



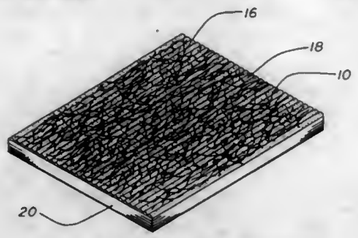
wherein R^6 is a divalent organic group, R^7 and R^8 are each the same or different divalent organic groups, and R^9 and R^{10} are each the same or different monovalent organic groups;
(c) about 5 to about 35 parts by weight of a carbon black having a dibutylphthalate adsorption of about 70 ml/100 gm or more;
(d) optionally 0 to about 50 parts by weight of a rubber material;
(e) optionally 0 to about 50 parts by weight of an electroconductive inorganic filler;
(f) optionally 0 to about 20 parts by weight of a polyolefin resin; and
(g) optionally 0 to about 30 parts by weight of a non-electroconductive inorganic filler.

5,547,610

CONDUCTIVE POLYMERIC ADHESIVE FOR FLOORING CONTAINING SILVER-COATED NON-CONDUCTIVE FIBER CORES

Kelly J. Mortensen, Conyngham, Pa., assignor to Forbo Industries, Inc., Hazelton, Pa.

Filed May 3, 1994, Ser. No. 237,026
Int. Cl.[6] H01B *1/16;* **D02G** *3/00*
U.S. Cl. 252—514 **12 Claims**



1. A conductive adhesive composition, comprising:
(a) a non-conductive Polymeric adhesive; and
(b) a plurality of conductive fibers dispersed within the non-conductive adhesive in an amount effective to form an unbroken electroconductive chain when the conductive adhesive composition is applied to a substrate, the conductive fibers comprising non-conductive fiber cores plated or coated with silver, wherein:
the non-conductive fiber cores are selected from the group consisting of nylon, polyester, acrylic, cellulose, cotton, silk, or wool.

5,547,611

Patent Not Issued For This Number

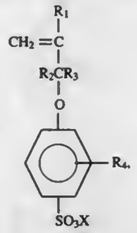
5,547,612

COMPOSITIONS OF WATER SOLUBLE POLYMERS CONTAINING ALLYLOXYBENZENESULFONIC ACID MONOMER AND METHALLYL SULFONIC ACID MONOMER AND METHODS FOR USE IN AQUEOUS SYSTEMS

Anne-Marie B. Austin, Signal Mountain; Allen M. Carrier, Hixson, both of Tenn., and Michael L. Standish, Rossville, Ga., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

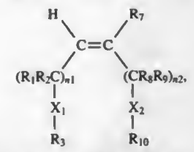
Filed Feb. 17, 1995, Ser. No. 390,731
Int. Cl.[6] C11D *1/94;1/28;13/18*
U.S. Cl. 134—22.19 **70 Claims**

1. A composition, comprising:
a water soluble polymer which comprises the polymerization product of,
at least 2.5 mole percent of an allyloxybenzenesulfonic acid monomer represented by the chemical structure (I):



(I)

wherein R_1, R_2, R_3, and R_4 are independently hydrogen or C_1–C_6 alkyl; and X is hydrogen, an alkali or alkaline earth metal or ammonium,
at least 0.5 mole percent of a methallylsulfonic acid monomer,
from 10 to 20 mole percent of a copolymerizable nonionic monomer represented by the chemical structure (III):



(III)

wherein n_1 and n_2 are independently 0 to 10; R_1, R_2, R_8 and R_9 are independently hydrogen, C_1–C_6 alkyl, or C_1–C_6 alkyl-substituted aryl; R_7 is hydrogen, C_1–C_6 alkyl, or CO_2X, where X is hydrogen, an alkali or alkaline earth metal or C_1–C_6 alkyl; X_1 and X_2 are absent or are independently O, C=O, or hydrogen; R_3 is absent or is $C{=}O_4$, OR_4, NR_5R_6, C_1–C_{18} alkyl or hydrogen, where R_4 is C_1–C_{18} alkyl or hydrogen and R_5 and R_6 are independently hydrogen, C_1–C_6 alkyl, or an alkyloxyether or alcohol; and R_{10} is absent or is $C{=}OR_{11}$, OR_{11}, $NR_{12}R_{13}$, C_1–C_{18} alkyl, or hydrogen, where R_{11} is C_1–C_{18} alkyl or hydrogen, R_{12} and R_{13} are independently hydrogen, C_1 to C_6 alkyl, or an alkyloxyether or alcohol; and
at least 60 mole percent of a copolymerizable olefinically unsaturated carboxylic acid monomer.

5,547,613

MAGNETO-OPTICAL ELEMENT MATERIAL FORMED OF MAGNETIC GARNET SINGLE CRYSTALS

Hirotaka Kawai, Hamamatsu; Shinzo Fujli, and Hiromitsu Umezawa, both of Toyohashi, all of, Japan, assignors to FDK Corporation, Tokyo, Japan

Filed Jul. 5, 1995, Ser. No. 498,226
Claims priority, application Japan, Jul. 5, 1994, 6-176020
Int. Cl.[6] G02B *5/20;* **C30B** *29/28;* **C01F** *17/00*
U.S. Cl. 252—584 **2 Claims**

1. A material for a magneto-optical element, said material comprising magnetic garnet single crystals expressed by a composition formula of $Nd_{3-x}Bi_xFe_5O_{12}$ wherein $0.5 \leqq x \leqq 1.9$ and formed by liquid-phase epitaxial growth on a non-magnetic garnet substrate, said non-magnetic garnet substrate expressed by a composition formula of $Gd_{3-y}Nd_ySc_2Ga_3O_{12}$ wherein $1.0 \leqq y \leqq 1.4$ and having a lattice constant a in the range of 12.61 Å$\leqq$a $\leqq$12.63 Å.

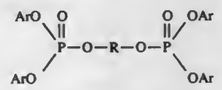
5,547,614

FLAME RETARDANT MIXTURE OF POLYBROMINATED DIPHENYL OXIDE AND ORGANIC DIPHOSPHATE

Gerald Fesman, Teaneck, N.J., and Alan M. Aaronson, Flushing Meadows, N.Y., assignors to Akzo Nobel N.V., Arnhem, Netherlands

Continuation of Ser. No. 436,285, Nov. 14, 1989, abandoned. This application Oct. 18, 1994, Ser. No. 324,862
Int. Cl.[6] C09K *21/08;21/12*
U.S. Cl. 252—609 **7 Claims**

1. A flame retardant mixture for polymers which consists essentially of: (a) a polybrominated diphenyl oxide; (b) an organic diphosphate of the formula:



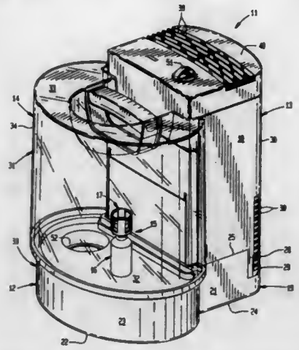
where Ar is substituted or unsubstituted aryl and R is alkylene; and (c) up to 20% by weight of triaryl phosphate.

5,547,615

PORTABLE HUMIDIFIER WITH BACTERIASTAT DISPENSER

Rodney B. Jané, Westboro, Mass.; Jerald A. Bradley, East Providence, R.I., and John Longan, Natick, Mass., assignors to Duracraft Corporation, Southborough, Mass.

Filed May 10, 1995, Ser. No. 438,583
Int. Cl.[6] B01F *3/04*
U.S. Cl. 261—24 **20 Claims**



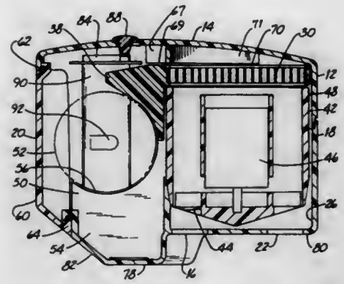
1. A portable humidifier with a bacteriastat dispenser and comprising:
a base defining a reservoir for retaining liquid;
a humidification device for inducing dispersion of liquid withdrawn from said reservoir;
a liquid storage tank having an outlet communicating with said reservoir and adapted to feed liquid thereto;
a container defining a chamber for containing a given volume of a treatment substance for liquids and discharge opening providing communication between said chamber and said tank; and
a dispenser for automatically and periodically dispensing through said discharge opening to said tank a dose portion of said treatment substance volume within said chamber.

5,547,616

DEVICE FOR DISPENSING A VOLATILE ACTIVE INGREDIENT

Imre J. Dancs, Greendale, and Frank Savage, Germantown, both of Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Filed May 8, 1995, Ser. No. 437,002
Int. Cl.[6] B01F *3/04*
U.S. Cl. 261—26 **22 Claims**



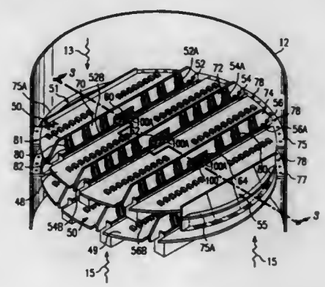
1. A dispensing device for dispensing a volatile active ingredient from an air-transmitting substrate that forms a part of a refill assembly, the dispensing device comprising
a. a housing with an intake vent and an exit vent, internal surfaces of the housing defining an airflow path extending between the intake and exit vents;
b. refill assembly support means for removably supporting the refill assembly with the substrate located in the airflow path;
c. battery-powered fan means for propelling air entering the housing by way of the intake vent along the airflow path, to pass through the substrate and exit by way of the exit vent; and
d. a battery holder for holding a battery for powering the fan means in such a manner that a refill assembly not fully inserted within the refill assembly support means blocks the placement of a battery in the battery holder, and the presence of a battery correctly held in the battery holder blocks the removal from the airflow path of a refill assembly supported in the airflow path by the refill assembly support means;
whereby successful placement of a battery in the battery holder serves to both verify and maintain the correct placement of the refill assembly in the airflow path.

5,547,617

APPARATUS FOR INCREASING EFFECTIVE ACTIVE AREA

Adam T. Lee, Richardson; Kuang Wu, Plano, and Larry Burton, De Soto, all of Tex., assignors to Glitsch, Inc., Dallas, Tex.

Filed Mar. 31, 1995, Ser. No. 414,792
Int. Cl.[6] B01F *3/04*
U.S. Cl. 261—114.5 **26 Claims**



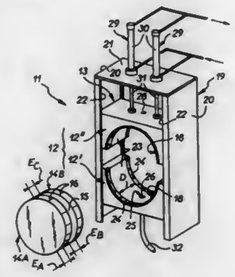
1. A downcomer-tray assembly for a vapor-liquid contact chemical process column of the type wherein said trays are formed with active regions thereon for the ascending flow of vapor therethrough and wherein liquid is directed to flow upon a first tray and downwardly therefrom through a first series of downcomers disposed therein onto a second tray and across active regions thereof between individual ones of a second series of downcomers disposed therein, said assembly further comprising:
means associated with said downcomer tray assembly and said column for the support of intermediate portions of said downcomer-tray assembly therein; and
a tower support ring extending circumferentially around said downcomer-tray assembly and having formed therein apertures for facilitating the ascending flow of vapor therethrough.

5,547,618

METHOD AND DEVICE FOR MANUFACTURING AN OPTICAL LENS FROM A POLYMERIZABLE SYNTHETIC MATERIAL

Jean-Francois Magne, Creteil, France, assignor to Essilor International Compagnie Generale d'Optique, Charenton Cedex, France

Filed Jan. 10, 1995, Ser. No. 370,973
Claims priority, application France, Dec. 12, 1994, 94 14927
Int. Cl.[6] B29D *11/00*
U.S. Cl. 264—1.360 **17 Claims**



1. Method of manufacturing an optical lens from a polymerizable synthetic material comprising the steps of: providing two molding shells and an annular closure member defined by clamping jaws; positioning the molding shell between the clamping jaws and closing the clamping jaws; the molding shells and clamping jaws together forming a molding cavity; filling the molding cavity with molding material; commencing polymerization of the molding material inside the molding cavity whereby before removing the molding shells from the jaws the material thus molded is at least partially polymerized.

6. Manufacturing station for manufacturing an optical lens from a polymerizable synthetic material comprising two molding shells and opposed clamping jaws having an open position for loading and unloading the molding shells and a closed position for clamping the molding shells therebetween in spaced relation and defining an annular closure member, said molding shells and clamping jaws together defining a molding cavity in the closed position of the clamping jaws, means for filling the molding cavity with molding material, and means for at least commencing polymerization of the material thus molded in situ inside the molding cavity whereby before removing the molding shells from the jaws the molded material is at least partially polymerized.

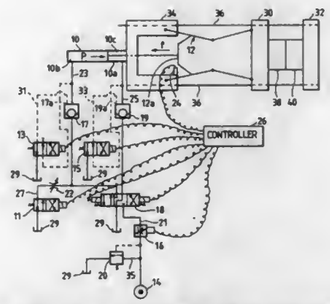
5,547,619

TOGGLE TYPE INJECTION MOLDING PROCESS

Tadanori Obayashi, Hiroshima, Japan, assignor to The Japan Steel Works, Ltd., Tokyo, Japan

Filed Sep. 30, 1994, Ser. No. 315,623
Int. Cl.[6] B29C *45/80*
U.S. Cl. 264—40.1 **2 Claims**

1. An injection compression molding method comprising:
closing a mold in a closing direction by a crosshead of a toggle mechanism;
injecting molten resin of a predetermined amount into a mold cavity during or after a mold closing process;
compressing the molten resin by causing the crosshead to advance in a first direction to a previously decided stroke position to form a molded piece;
relieving strain of the molded piece caused by pressure of the resin in the mold cavity by moving the crossbead in a second direction, which is opposite the first direction, to a predetermined retracted position from a final stroke position; and
removing a molded piece by opening the mold to remove the molded piece;
wherein said compressing step comprises:



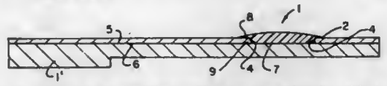
setting and storing a previously decided moving distance for each of stroke zones through which a movable portion of a mold clamping cylinder moves and a period required for the movable portion to move through the stroke zone, the mold clamping cylinder being coupled to the mold;
measuring a moving period of the movable portion for each of the stroke zones in a molding cycle,
comparing the moving period of the movable portion with the corresponding preset period to obtain a difference between the periods for each stroke zone; and
adjusting the flow rate of fluid supplied to the mold clamping cylinder so as to set the difference in period for each stroke zone to zero in the next molding cycle.

5,547,620

METHOD OF MANUFACTURING A FOOTWEAR INSOLE HAVING AN INTEGRATED COMFORT AND SUPPORT PAD

Dino Guiotto, via Bella Venezia, 5, 36078 Valdagno, Italy

Continuation of Ser. No. 253,278, Jun. 2, 1994, abandoned.
This application Apr. 11, 1995, Ser. No. 420,373
Claims priority, application Italy, Dec. 1, 1993, VI93A0191
Int. Cl.[6] B29C *44/06;44/12*
U.S. Cl. 264—46.4 **6 Claims**



1. A method for manufacturing a footwear insole with an integral comfort and support pad comprising the steps of:
cutting insole sheet stock material having opposite sides to form a pre-cut insole board;
forming a through opening in said insole sheet material, said through opening defining an inner peripheral edge;
providing a mold including a cavity defining an insole receiving portion and a curable material receiving portion;
placing the pre-cut insole within said insole receiving portion of the cavity with the material of said insole adjacent said inner peripheral edge overlapping said curable material receiving portion of the mold cavity by a predetermined distance, said predetermined distance is generally in the range of between about 1 and about 10 mm;
introducing curable material into the curable material receiving portion of the cavity, said curable material comprises polyol and isocyanate in amounts in a range of between about 27 and 47 parts by weight isocyanate per 100 parts by weight polyol;
closing the mold, maintaining the mold at a temperature in a range of between about 40° C. and 50° C. during the introducing step, maintaining said mold closed for a time sufficient to allow the curable material to cure, said time is in a range of between about 100 and about 180 seconds after the introducing step;
allowing the curable material to cure and bond to the inner peripheral edge of the opening and to the material of said insole adjacent said inner peripheral edge in said overlapping

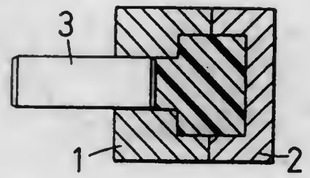
by a predetermined distance, wherein said predetermined distance being in the range between about 2 and about 6 mm, thus forming an insole with comfort and support pad integrated therein.

5,547,621

CAVITY EXPANDING AND CONTRACTING FOAM INJECTION MOLDING METHOD

Masanori Naritomi, Urayasu, Japan, assignor to Taisei Plas Co., Ltd., Tokyo, Japan

Filed Sep. 30, 1994, Ser. No. 314,259
Int. Cl.[6] B29C *44/02;44/10*
U.S. Cl. 264—51 **3 Claims**



1. A foam injection molding method comprising the steps of:
(a) forming a closed initial cavity by using at least three mold elements of which one of at least two mold elements is movable relative to the other two mold elements,
(b) charging a molding material into the initial cavity formed by said cavity forming step;
(c) forming an intermediate cavity having a volumetric capacity different from that of said initial cavity by moving one of said three mold elements relative to the other two mold elements without moving said other two mold elements while keeping the cavity closed, which is formed by said three mold elements; and
(d) forming a final cavity having a larger volumetric capacity than that of said initial cavity by moving one of said three mold elements relative to the other two mold elements without moving said two mold elements while keeping the cavity closed, which is formed by said three mold elements; wherein said capacity of said intermediate cavity is larger than the capacity of said final cavity and foaming said charged molding material occurs in said final cavity, thereby forming a foam injection-molded part.

5,547,622

BINDER FOR FIBER REINFORCED COMPOSITES

Devi Chalasani, Painted Post; Mark S. Friske, Campbell, both of N.Y., and Ronald E. Johnson, Tioga, Pa., assignors to Corning Incorporated, Corning, N.Y.

Filed Mar. 15, 1995, Ser. No. 405,044
Int. Cl.[6] B28B *3/00*
U.S. Cl. 264—60 **14 Claims**

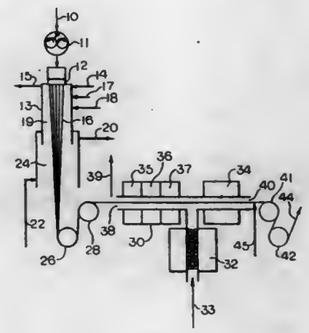
1. In the method for making an inorganic, fiber-reinforced, ceramic composite article comprising the steps of
(a) contacting inorganic, reinforcing fibers with a liquid dispersion of a powder of a ceramic matrix material, said liquid dispersion containing an organic binder material to bond a coating of said ceramic matrix powder to said fibers;
(b) removing said binder material from said powder-coated fibers; and then
(c) consolidating said powder-coated fibers through the application of heat and pressure thereto; the improvement comprising
(A) utilizing a water-soluble polymer as said binder material; and
(B) contacting said powder-coated fibers with an aqueous solution of a cross-linking agent which reacts with said water-soluble polymer binder material to form a gel.

5,547,623

METHOD FOR CONTINUOUS SPINNING AND PYROLYSIS OF CERAMIC FILAMENTS FROM A RESIN

Thomas D. Barnard, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Aug. 21, 1989, Ser. No. 396,160
Int. Cl.[6] C04B *40/00;* **D01C** *5/00*
U.S. Cl. 264—82 **19 Claims**



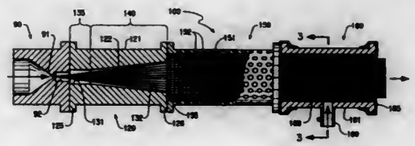
1. A method for producing filaments from a resinous organosilicon polymer, said method comprising the steps of:
preparing a molten resinous organosilicon polymer;
melt spinning said molten polymer into a plurality of filaments;
rapidly curing at least the outer surfaces of said filaments;
continuously gathering said filaments into a fiber tow; and,
continuously pyrolyzing said fiber tow as it emerges from said gathering operation.

5,547,624

PROCESS OF MAKING AND COLLECTING CONTINUOUS FIBERS IN THE FORM OF A ROD-SHAPED BATT

Ashok H. Shah, Chesterfield, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 9, 1994, Ser. No. 287,602
Int. Cl.[6] D01D *5/11;7/00*
U.S. Cl. 264—103 **2 Claims**



1. A method for forming rod-shaped batts of continuous backwindable fibers wherein the continuous fibers are provided with a stream of high speed gases, wherein the process comprises:
collecting the fibers into a batt in a collection tube while discharging gases through peripheral openings in the peripheral wall of the collection tube; and
controlling the rate of passage of the batt through the collection tube by changing the dimension of a constrictor positioned downstream of the collection tube.

5,547,625

METHOD OF PRODUCING FLEXIBLE PLASTIC BANDS COMPOUNDED WITH HARD-MATERIAL POWDERS AND/OR SOLDERING POWDERS

Karlheinz Gleissner, Alzenau; Hans-Martin Ringelstein, Frankfurt am Main, and Ekkehard Lange, Obertshausen, all of, Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Germany

Filed Jan. 7, 1994, Ser. No. 178,565

Claims priority, application Germany, Jan. 8, 1993, 43 00 298.6

Int. Cl.[6] B29C *43/24;* **B29B** *7/56*

U.S. Cl. 264—122 **5 Claims**

1. A method of producing a flexible plastic band of thermoplastic synthetic resin containing ≧40% by volume hard-material powder and/or soldering powder and ≦30% by volume plastic, remainder pores, said method comprising kneading a thermoplastic synthetic resin with a hard-material powder and/or soldering powder, wherein (a) said thermoplastic synthetic resin together with said hard-material power and/or soldering powder are individually placed, or (b) a granulate of a mixture of said thermoplastic synthetic resin together with said hard-material powder and/or soldering powder are placed, onto a grooved front shearing roller and an optionally grooved rear shearing roller which are arranged parallel to one another and run in opposite directions at different speeds, wherein said front shearing roller and said rear shearing roller have an application side and a removal side, wherein said front grooved shearing roller has a temperature of 25° to 90° C. on said application side and a temperature of 30° to 80° C. on said removal side and said rear optionally grooved shearing roller has a temperature of 30° to 130° C. on said application side and a temperature of 35° to 100° C. on said removal side and the temperature of said rear optionally grooved shearing roller is at least 5° C. above the temperature of said front grooved shearing roller and said rear optionally grooved shearing roller exhibits a speed which is 5 to 70% less than that of said front grooved shearing roller, wherein the speed of said front grooved shearing roller is approximately 5 to 25 rpms at a diameter of 100 to 160 mm.

5,547,626

LBT PROCESS OF MAKING HIGH-TENACITY POLYETHYLENE FIBER

Yasuo Ohta; Tadao Kuroki, and Yoshinobu Oie, all of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 355,910, Dec. 14, 1994, Pat. No. 5,443,904. This application Jun. 7, 1995, Ser. No. 478,804

Claims priority, application Japan, Dec. 16, 1993, 5-316954

Int. Cl.[6] D01D *5/04;5/06;* **D01F** *6/04*

U.S. Cl. 264—203 **4 Claims**

1. A process of producing a high-tenacity polyethylene fiber, comprising the steps of:

mixing an ultrahigh-molecular-weight polyethylene exhibiting an intrinsic viscosity $[\eta_A]$ of at least 10 and a solvent with heating for dissolution, the weight ratio of the polyethylene to the solvent being in the range of 5:95 to 50:50;

extruding the mixture and cooling the extrudate to form a semi-finished fiber; and

stretching the semi-finished fiber at a ratio of at least 10 times to form a finished fiber exhibiting an intrinsic viscosity $[\eta_B]$ of at least 7 and having a tenacity of at least 30 g/d and an elastic modulus of at least 900 g/d, the intrinsic viscosities $[\eta_A]$ and $[\eta_B]$ complying with the following relationship:

$$0.7\times[\eta_A]\leqq[\eta_B]\leqq0.9\times[\eta_A].$$

5,547,627

METHOD OF MAKING POLYESTER FIBER

Jun Tanaka, and Fumio Himematsu, both of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 239,853, May 9, 1994, and a continuation-in-part of Ser. No. 983,261, Nov. 30, 1992, abandoned, and a continuation-in-part of Ser. No. 679,665, Apr. 4, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 477,433

Claims priority, application Japan, Apr. 6, 1990, 2-90087; Apr. 6, 1990, 2-90088

Int. Cl.[6] D01D *5/12;10/02;* **D01F** *6/62*

U.S. Cl. 264—210.5 **4 Claims**

1. A method of manufacturing a polyester fiber comprised of an ethylene terephthalate as main recurrent units, said method comprising the following steps:

(a) a step of melt spinning a polyester having an intrinsic viscosity of between 0.50 and 0.90 at a spinning speed of at least 6.0 Km/min to obtain a undrawn yarn,

(b) a step of heat-drawing the undrawn yarn under conditions satisfying the following equations (1) to (3);

$$(2.05-12.3\Delta n+43.6\Delta n^2)\leqq DR\leqq(2.6-16.5\Delta n+50.0\Delta n^2) \quad (1)$$

$$(Tg-10)\leqq DT_1\leqq(Tg+100) \quad (2)$$

$$(Tg+100)\leqq DT_2\leqq Tm_2 \quad (3)$$

wherein DR stands for a drawing ratio, DT_1, stands for a drawing temperature (°C.) in a former part of a drawing process, DT_2 stands for a drawing temperature (°C.) in a latter part of the drawing process, Tg stands for a glass transition temperature (°C.), Δn stands for a birefringence, and Tm_2 stands for a crystalline melting point (°C.), and

(c) a step of heat treating under a relaxed condition.

5,547,628

METHOD OF MANUFACTURING THERMAL SHIELDING ELEMENTS FOR SPACE PLANES

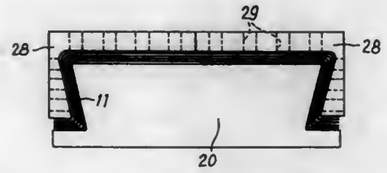
Alain Lacombe, Pessac, and Jean-Michel Rouges, Merignac, both of, France, assignors to Societe Europeenne de Propulsion, Suresnes, France

Filed Mar. 8, 1994, Ser. No. 207,388

Claims priority, application France, Mar. 9, 1993, 93 02703

Int. Cl.[6] B27N *3/10;* **B32B** *31/06*

U.S. Cl. 264—257 **12 Claims**



1. A method of manufacturing a thermal shielding element comprising an outer rigid panel made of a thermostructural composite material comprising a fiber reinforcement densified by a refractory matrix material, said panel having an external wall forming an outer wall of the thermal shielding element, and side walls defining with said external wall a recess filled with a thermal insulant, said method comprising the steps of:

providing a rigid block of thermally insulating material of low density, the block having an outside surface portion whose shape corresponds to an inside surface of the recess formed by the panel,

forming a fiber preform by laying a fibrous material on said outside surface portion of the block of insulating material, and densifying the fiber preform with the refractory matrix material of said thermostructural composite material, using the block of insulating material as a tooling element but without substantially densifying said block of insulating material, whereby a panel of thermostructural composite material is formed directly on the block of insulating material constituting said thermal insulant of the thermal shielding element.

5,547,629

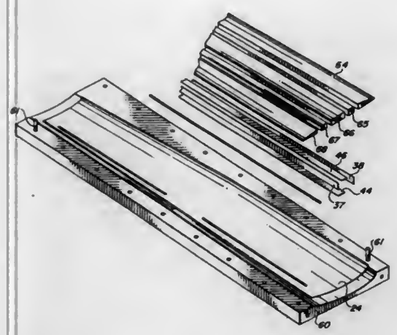
METHOD FOR MANUFACTURING A ONE-PIECE MOLDED COMPOSITE AIRFOIL

David Diesen, Mesa, and William R. Olsen, Jr., Phoenix, both of Ariz., assignors to Competition Composites, Inc., Phoenix, Ariz.

Filed Sep. 27, 1994, Ser. No. 313,348

Int. Cl.[6] B29C *70/44*

U.S. Cl. 264—257 **6 Claims**



1. A method of manufacturing a hollow airfoil, open at least at one end, with integral reinforcing members including the steps of:

providing an open mold having a cavity therein, opposite surfaces of which define an outer shape of said airfoil;

placing precut sheets of pre-preg fiber material on opposite surfaces of said mold cavity;

placing at least two adjacent elongated resilient mandrels over said precut sheets of pre-preg fiber on one of said opposite surfaces of said mold cavity to press said sheets into contact with said mold upon subsequent closure thereof;

placing an elongated web of pre-preg fiber material between said adjacent mandrels and in contact therewith to cause opposite edges thereof to contact said sheets of pre-preg fiber material on opposite sides of said mold cavity;

placing a layer of cell core material between said precut sheets of pre-preg fiber material to form a sandwich construction consisting of at least one layer of pre-preg fiber material on each side of a layer of said cell core material;

placing syntactic expandable foam material between said precut sheets of pre-preg fiber material comprising each of said sandwich construction in at least a region of said mold where said precut sheets of pre-preg fiber material on opposite surfaces of said mold cavity contact one another upon closure of said mold;

closing said mold and applying heat thereto to cure said pre-preg fiber material and to bond said elongated web with said precut sheets;

removing said airfoil from said mold cavity; and

pulling said resilient mandrels from the open end of said airfoil to stretch and contract said mandrels as they are removed from said airfoil.

5,547,630

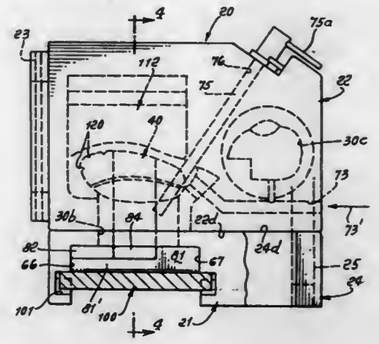
WAX PATTERN MOLDING PROCESS

Glenn Schmidt, Malibu, Calif., assignor to Callaway Golf Company, Carlsbad, Calif.

Continuation-in-part of Ser. No. 47,470, Apr. 19, 1993, Pat. No. 5,417,559, which is a continuation of Ser. No. 775,852, Oct. 15, 1991, Pat. No. 5,204,046. This application Jul. 15, 1994, Ser. No. 273,245

Int. Cl.[6] B29C *45/32;45/36*

U.S. Cl. 264—297.2 **12 Claims**



1. In a golf club head wax pattern molding process, employing a mold having a first cavity and cores extending endwise in the first cavity, the steps that include

a) closing the mold with the cores positioned in the first cavity, certain of the cores slidably interfitting endwise,

b) injecting flowing heated wax into the first cavity to flow about the cores,

c) allowing the flowing heated wax to cool and solidify to form the wax pattern,

d) removing the cores from the wax pattern, while the mold holds the wax pattern in position in the mold, by endwise removing the cores in sequence,

e) then opening the mold and removing the wax pattern from the mold,

f) providing the mold to have a body and first and second covers, and locating said first cavity to be covered by the second cover,

g) providing a second cavity in the mold,

h) and the first cavity formed in the shape of a golf club head, and the second cavity formed in the shape of a golf club head sole plate being kept closed by the second cover during step d), after opening of said first cover,

i) allowing some of the flowing heated wax to flow to the second cavity, there being an additional core, for the wax pattern for the sole plate, carried by the second cover,

j) and wherein the cores comprise multiple core pieces, and step d) includes removing the core pieces from the wax pattern in the mold, in a manner such that the pattern becomes a hollow shell supported in and by the mold,

k) the core pieces having ends that define the interior configuration of a golf club head,

l) and wherein said core pieces are removed from the wax pattern via that portion of the wax pattern which defines an opening which corresponds to a position of said golf club head sole plate to be separately attached to a cast golf club head, and molding a wax pattern of the sole plate in the mold at the same time that said steps b) and c) are carried out.

5,547,631

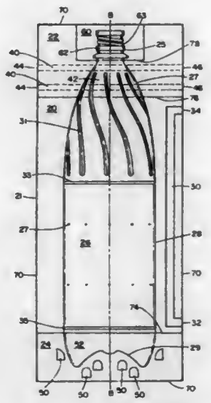
PROCESS FOR ANNEALING BIAXIALLY ORIENTED HOLLOW SHAPED THERMOPLASTIC ATRICLES

Christopher Mero, New Millford, Conn., and John Cahill, Yorktown Heights, N.Y., assignors to PepsiCo., Inc., Purchase, N.Y.

Continuation of Ser. No. 949,783, Sep. 22, 1992, abandoned. This application Feb. 22, 1994, Ser. No. 200,917

Int. Cl.[6] B29C *49/18;49/64*

U.S. Cl. 264—521 **8 Claims**



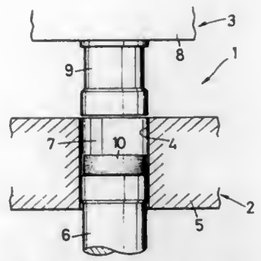
1. A process for preparing an annealed, transparent biaxially blown container comprising:

introducing a heated thermoplastic material in the form of a hollow preform into a mold and blowing said preform into the shape of the mold to form a container, the mold having temperature controlled portions, including a body portion maintained below 95° C., a neck-shoulder portion maintained between 60° C. and 70° C. and a bottom-heel portion maintained below 80° C., the temperature of said body portion, said neck-shoulder portion and said bottom-heel portion being different;

bringing the thermoplastic material into close contact with the walls of the mold;

maintaining the thermoplastic material in close contact with the walls of the mold for a time up to 25 seconds to simultaneously anneal the neck-shoulder and body portion; and

thereafter removing the annealed container from the mold.



step being higher than a speed V_2 of movement of the movable die up to reaching the same forging pressure at said second pressing step.

5,547,633

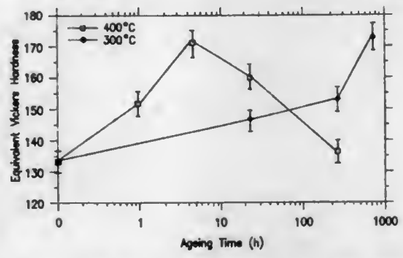
ALUMINUM-TITANIUM ALLOY

Barry C. Muddle, and Jianfeng Nie, both of Melbourne, Australia, assignors to Monash University, Clayton Victoria, Australia

Continuation of Ser. No. 911,217, Jul. 10, 1992, abandoned. This application Sep. 23, 1994, Ser. No. 312,156

Int. Cl.[6] C22C *21/00*

U.S. Cl. 420—552 **5 Claims**



1. An aluminum alloy produced by rapid solidification processing and consisting of at least 80% by weight of aluminum, at least 6% by weight of titanium, and a further alloying metal selected from the group consisting of cobalt, chromium, copper, magnesium, and nickel, wherein the weight ratio of titanium to the further alloying metal lies in the range from 2:1 to 4:1.

5,547,632

POWDER FORGING PROCESS

Hiroyuki Horimura; Kenji Okamoto; Masahiko Minemi, all of Saitama; Toshihiko Kaji, Hyogo; Yoshinobu Takeda, Hyogo, and Yoshishige Takano, Hyogo, all of, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, and Honda Giken Kogyo Kabushiki Kaisha, Tokyo, both of, Japan

Filed Dec. 20, 1994, Ser. No. 359,674

Claims priority, application Japan, Dec. 24, 1993, 5-328463

Int. Cl.[6] B22F *3/16*

U.S. Cl. 419—28 **22 Claims**

1. A powder forging process in which a heated green compact is placed into a stationary die and a press-forging is carried out for mainly reducing a thickness of the green compact, by cooperation of said stationary die with a movable die, wherein said press-forging comprises a plurality of pressing step s, each said pressing step being carried out with said green compact remaining in said stationary die, said pressing steps including a first pressing step and a second pressing step, a speed V_1 of movement of said movable die up to reaching a forging pressure at said first pressing

5,547,634

METHOD FOR ADDING ALUMINUM AND CALCIUM TO MOLTEN LEAD

Stephen G. Hibbins, Renfrew; Fernando A. Timpang, Pembroke, and Douglas J. Zuliani, Stittsville, all of, Canada, assignors to Timminco Limited, Toronto, Canada

Continuation-in-part of Ser. No. 240,062, May 9, 1994, abandoned. This application Nov. 30, 1994, Ser. No. 351,225

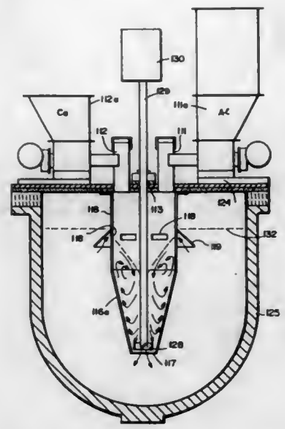
Claims priority, application Canada, Sep. 20, 1994, 2132485

Int. Cl.[6] C22C *1/02*

U.S. Cl. 420—564 **7 Claims**

1. A process for making a lead-calcium alloy by adding calcium and aluminum materials to molten lead, and which uses a generally vertical tubular housing for mixing the material with lead, said housing having a movable support therefor and having a wall with top opening means and having a bottom opening, comprising:

placing the movable support over a vessel containing a batch of the molten lead, so that said wall of said tubular housing extends down into the molten lead sufficiently far so that the top opening means are below the surface of the lead;



feeding particles of calcium and aluminum metal or alloys thereof into the interior of said tubular housing; and

using a rotary impeller positioned in said tubular housing between its top opening means and bottom opening to cause the molten lead to be drawn from the vessel into the housing and to be returned back into the vessel, said impeller having blades rotating in a horizontal plane and set at an angle of at least 40° to said horizontal plane and having a diameter less than one half the maximum diameter of the housing;

the shape of the housing and the nature and position of the impeller being such as to ensure that molten lead carrying the particles is swirled against the housing wall and recirculated within the housing before the lead leaves the housing.

5,547,635

STERILIZATION METHOD AND APPARATUS

Robert E. Duthie, Jr., 9321 Warner Gulf Rd., Holland, N.Y. 14080

Continuation of Ser. No. 816,853, Jan. 2, 1992, abandoned, which is a continuation of Ser. No. 257,444, Oct. 17, 1988, abandoned, which is a continuation-in-part of Ser. No. 112,504, Oct. 22, 1987, abandoned. This application Nov. 10, 1993, Ser. No. 150,280

Int. Cl.[6] A61L *2/00*

U.S. Cl. 422—24 **9 Claims**

1. In a method of sterilizing a surface of an object wherein the nature of the surface is such that the critical surface tension is changeable and the physical and chemical originality of the surface is unalterable when exposed to high energy ultraviolet light and a metal oxide and wherein there is provided a mercury/gallium metal halide ultraviolet light source having an ozone-free metallic doped quartz envelope, the improvement comprising:

a) placing the object with the surface to be sterilized in proximity to said light source at a distance providing rapid heat transfer between said light source and said object and surface;

b) operating said light source to emit high energy ultraviolet light and a metal oxide, said ultraviolet light being emitted through a wavelength range from about 175 nanometers to about 450 nanometers;

c) exposing said surface to said ultraviolet light and to said metal oxide for a time sufficient to provide a dynamic sterilization process including irradiation by said ultraviolet light, sputtering by said metal oxide and said rapid heat transfer simultaneously on said surface so that the critical surface tension on said surface is changed and biological contaminant layers are actively removed from said surface without altering the originality of said surface which eliminates any shielding or screening of microorganisms on said surface and which provides complete sterilization on said surface with microcombusting of microorganisms; and

d) wherein the portion of the energy of said ultraviolet light in the wavelength range from about 350 nanometers to about 450 nanometers provides said sputtering and the portion of the energy of said ultraviolet light in the wavelength range from about 175 nanometers to about 300 nanometers provides sterilization at about 253.7 nanometers.

5,547,636

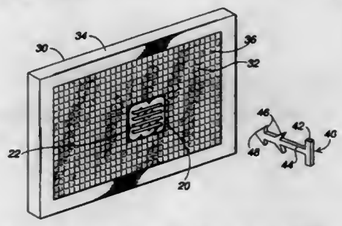
SCENTED AIR REFRESHENING DEVICE AND METHOD OF MAKING SAME

Doug M. Vick, Thomasville; James T. Baxter, Hahira, and George S. Gibbs, Thomasville, all of Ga., assignors to New Ideas International, Inc., Thomasville, Ga.

Continuation-in-part of Ser. No. 47,174, Apr. 12, 1993, abandoned, which is a continuation of Ser. No. 972,866, Nov. 3, 1992, abandoned, which is a continuation of Ser. No. 712,974, Jun. 10, 1991, abandoned, which is a continuation-in-part of Ser. No. 318,121, Mar. 2, 1989, abandoned. This application Jun. 7, 1994, Ser. No. 254,939

Int. Cl.[6] A62B *7/08;* **B01D** *47/00*

U.S. Cl. 422—124 **5 Claims**



1. A device for scenting air in a forced air ventilation system, comprising:

a foam robber substrate having interstices through which air may flow;

a polymeric material coating on the substrate in at least some of the substrate interstices, the polymeric material coating having a flagrant in a ratio ranging from about 1:1 to about 2:1 of flagrant to polymeric material by weight, which fragrant may diffuse slowly from the polymeric material coating into the air flowing through and about the substrate, the polymeric material coating having a viscosity of about 5,600 centipoise or less at a temperature of about 250° F. for being received in the substrate which holds and constrains the polymeric material coating from which fragrance is emitted; and

an attacher for bolding the substrate to a face of an air filter,

whereby the device, being disposed with an air filter in a forced air ventilation system, scents air flowing through and about the substrate.

5,547,637

PRODUCTION OF CONCENTRATED AQUEOUS SOLUTIONS OF FERRIC CHLORIDE

Rene Clair, Martigues, and Alain Gallet, Lavera, both of, France, assignors to Atochem, Puteaux, France

Division of Ser. No. 32,182, Mar. 15, 1993, Pat. No. 5,422,091, which is a continuation of Ser. No. 672,772, Mar. 20, 1991, abandoned, which is a continuation of Ser. No. 345,241, May 1, 1989, abandoned. This application Mar. 9, 1995, Ser. No. 401,439

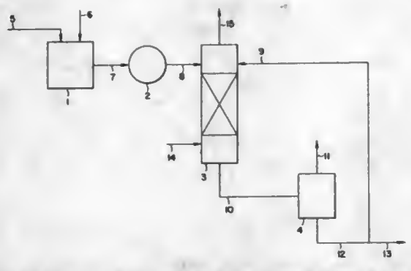
Claims priority, application France, Apr. 29, 1988, 88/05798

Int. Cl.[6] B01J *14/00*

U.S. Cl. 422—129 **11 Claims**

1. Apparatus for the production of concentrated aqueous solutions of ferric chloride, comprising (i) a first reaction zone contain-

VOL 1189 155 3 AG 2 0 19 96 UMI



ing a reaction vessel for digesting iron with a dilute aqueous solution of hydrochloric acid to thereby produce an aqueous solution of ferrous chloride, said reaction vessel having a first inlet connected to an iron or iron compound source, a second inlet connected to a hydrochloric acid source and a ferrous chloride outlet; (ii) a second reaction zone containing a second reaction vessel downstream from and in fluid communication with said first reaction zone for reacting chlorine with said aqueous solution of ferrous chloride in the presence of a recycled aqueous solution of ferric chloride, said second reaction vessel having a ferrous chloride inlet connected to the ferrous chloride outlet of the first reaction vessel, a ferric chloride inlet, a chlorine inlet connected to a chlorine source, and a reaction product outlet; (iii) a decompression zone downstream from and in fluid communication with said second reaction zone for decompressing reaction product emanating from said second reaction zone (ii); (iv) a recycle loop connected to the ferric chloride inlet of the second reaction vessel for recycling a fraction of decompressed liquid phase to said second reaction zone (ii); and (v) a product recovery outlet for recovering a remaining fraction of decompressed liquid phase as final product aqueous solution of ferric chloride.

5,547,638

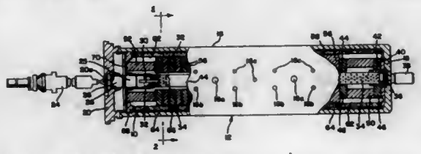
PYROTECHNIC AIR BAG INFLATOR WITH UNITARY FILTER

Linda M. Rink, Liberty, and Christopher Hock, Uintah, both of Utah, assignors to Morton International, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 114,211, Aug. 30, 1993. This application Jul. 26, 1994, Ser. No. 280,485

Int. Cl.[6] B60R *21/26*

U.S. Cl. 422—164 **14 Claims**



1. An air bag inflator comprising:

a housing for containing gas generator means, said housing including a plurality of diffuser ports in an outer wall for directing gas to inflate an air bag; and

a unitary, filter element mounted in said housing for entrapping contaminants from generated gas moving from said gas generator means toward said diffuser ports;

said filter element including a rigid, porous body of ceramic foam, having a reticulated structure forming a plurality of tortuous paths for gas flow therethrough for entrapment of contaminants from said gas.

5,547,639

Patent Not Issued For This Number

5,547,640

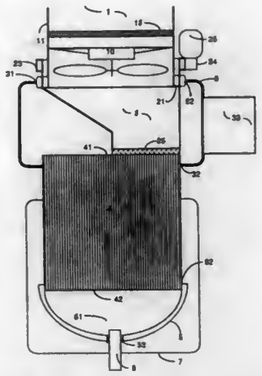
COMPACT HIGH TEMPERATURE AIR PURIFIER

Dae S. Kim, 49 Floral St., Newton, Mass. 02161

Filed Jan. 6, 1995, Ser. No. 369,655

Int. Cl.[6] B01D *50/00;53/02*

U.S. Cl. 422—177 **8 Claims**



1. An air purifier comprising:

a. a cylindrical ceramic heat transfer/storage element having a plurality of axially parallel flow passages,

b. means for establishing an inlet air flow,

c. rotative means for guiding said inlet air flow to an inlet radial segment on a first end of said ceramic element to pass through said flow passages and out of the opposite end of said ceramic element,

d. means for reversing said air flow exiting from said inlet radial segment in to another radial segment of said ceramic element in the opposite flow direction at the opposite end of said ceramic element to direct said air flow through said flow passages and out said first end of said another radial segment of said ceramic element,

e. means for discharging said air flow exiting from said first end of said ceramic element, and

f. means for heating said ceramic element at purifier start up to heat said air flow sufficiently to incinerate gaseous organic contaminants and airborne particulates to clean the air.

5,547,641

CATALYTIC CONVERTER EXHAUST SECTION FOR AN INTERNAL COMBUSTION ENGINE

Aaron L. Smith, and Scott T. White, both of East Peoria, Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Jan. 10, 1995, Ser. No. 370,693

Int. Cl.[6] B01D *50/00;53/34;* **F01N** *3/10*

U.S. Cl. 422—181 **9 Claims**

1. A catalytic converter exhaust section comprising:

a first mounting plate with an inlet opening therethrough;

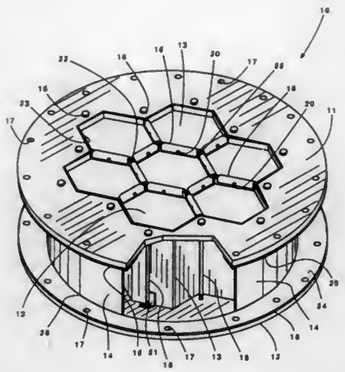
a second mounting plate with an outlet opening therethrough;

a plurality of substantially identical metallic catalytic converter substrates, each having a hexagonal cross section and an inlet end separated from an outlet end by six planar walls;

said metallic substrates being attached to one another in parallel to form a compound cross section with an inlet side, an outlet side and an outer border defined by a portion of said planar walls, and said planar walls of adjacent metallic substrates being in contact with one another;

a hollow cylindrically shaped tube with an inlet end separated from an outlet end by a wall impervious to exhaust, and being sized to surround said compound cross section; and

means for affixing said compound cross section within said tube and between said first mounting plate and said second mounting plate such that said inlet opening of said first mounting plate opens to said inlet side of said compound cross section and said outlet opening of said second mounting plate opens to said outlet side of said compound cross section.



5,547,642

LIGHT OZONE ASHER, LIGHT ASHING METHOD, AND MANUFACTURING METHOD OF SEMICONDUCTOR DEVICE

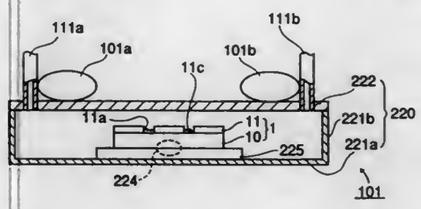
Yoshito Seiwa; Toshiaki Kitano, both of Itami, and Yasutaka Kohno deceased, late of Saijyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 1, 1995, Ser. No. 396,800

Claims priority, application Japan, Mar. 16, 1994, 6-045600

Int. Cl.[6] C23C *16/00;* **H01L** *21/302*

U.S. Cl. 422—186.3 **24 Claims**



1. A light/ozone asher comprising:

a process chamber containing a sample stage for supporting and processing a sample with active oxygen generated by irradiating ozone with UV rays; and

means for applying UV rays to the process chamber for generating active oxygen without irradiating a sample on the sample stage with UV rays.

5,547,643

APPARATUS FOR TREATING FLUE GASES BY IRRADIATION WITH ELECTRON BEAMS

Masao Nomoto; Kenji Fujita, and Hideo Hayashi, all of Kanagawa, Japan, assignors to Ebara Corporation, Tokyo, Japan

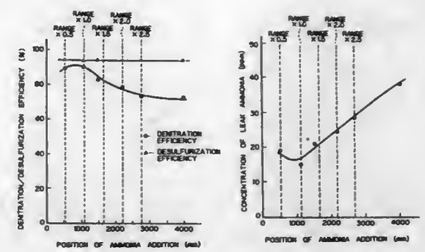
Filed Aug. 15, 1995, Ser. No. 518,578

Claims priority, application Japan, Aug. 16, 1994, 6-192504; Aug. 11, 1995, 7-205565

Int. Cl.[6] B01J *19/12*

U.S. Cl. 422—186.04 **7 Claims**

1. In an apparatus for treating flue gases such that the feed flue gas is mixed with ammonia and irradiated with electron beams to be freed of nitrogen oxides and/or sulfur oxides, the improvement wherein ammonia is added at a position in the flow of the flue gas that is upstream of the center of the electron beams being applied within a reactor by a distance no more than 2.5 times the range of the electron beams.



5,547,644

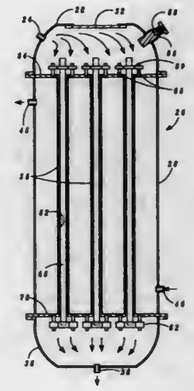
OZONE GENERATION SYSTEM

P. A. Taylor, Dallas; Todd O. Futrell, Kennedale; Neil M. Dunn, Jr., Carrollton; Michael P. Jusko; Casey R. DuBois, both of Arlington, and Jimmie D. Capehart, Sadler, all of Tex., assignors to Electronic Drilling Control, Inc., Irving, Tex.

Filed Sep. 21, 1994, Ser. No. 310,288

Int. Cl.[6] B01J *19/12*

U.S. Cl. 422—186.18 **8 Claims**



1. An ozone generator, comprising:

a housing forming a tubular-shaped shell;

a tubular electrode, removably suspended within said tubular-shaped shell of said housing, with an end of said electrode protruding from said tubular-shaped shell of said housing, said electrode as suspended forms an annular space of uniform width between said shell and said electrode;

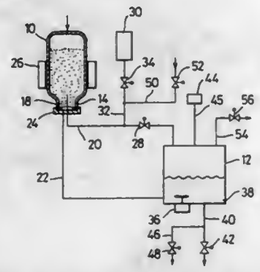
said electrode having an electrode material affixed thereto; and

a retainer for gripping said end of said electrode protruding from said tubular-shaped shell of said housing, said retainer connecting with said housing.

5,547,645
APPARATUS FOR DISSOLVING AN ADJUSTING AGENT OF A DIALYTIC SOLUTION

Tomomichi Ego, and Hiroshi Kinoshita, both of Tokyo, Japan, assignors to Nikkiso CO., Ltd., Tokyo, Japan

Filed Jul. 24, 1991, Ser. No. 735,302
Claims priority, application Japan, Jul. 30, 1990, 2-199128
Int. Cl.[6] B01F *1/00;15/02*
U.S. Cl. 422—264 **2 Claims**



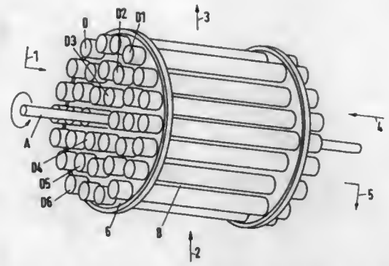
1. Apparatus for dissolving an adjusting agent of a dialytic solution, comprising a vessel containing dry particulate adjusting agent for a dialytic solution, a dissolving tank, a first pipe communicating between a lower portion of said vessel and an upper portion of said dissolving tank, valve means in said first pipe, a second pipe communicating between a lower portion of said vessel and a lower portion of said dissolving tank, water supplying means connected to said first pipe, valve means for controlling the flow of water from said water supplying means to said first pipe, an agitator in a lower portion of said dissolving tank, a liquid level switch in said dissolving tank for detecting a liquid level within said dissolving tank, a third pipe connected with a lower portion of said dissolving tank for discharging liquid from said dissolving tank, valve means in said third pipe controlling the discharge of liquid from said dissolving tank through said third pipe, and sealing means by which said first and second pipes are sealingly connected to the lowest portion of said vessel, said vessel being at a higher level than said dissolving tank, whereby when said valve means in said first pipe is opened, all remaining solution within said vessel flows into said dissolving tank.

5,547,646
PROCESS FOR THE DECOMPOSITION OF CHROME ORE BY ALKALINE OXIDATION

Rüdiger Drope, Cologne, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 260,865, Jun. 16, 1994, abandoned. This application Jan. 24, 1995, Ser. No. 377,580
Claims priority, application Germany, Jun. 23, 1993, 43 20 707.3
Int. Cl.[6] C01G *37/00;37/14;* **C22B** *34/30*
U.S. Cl. 423—53 **3 Claims**

1. A process for the decomposition of chrome ore by alkaline oxidation comprising
forming a mixture of finely divided chrome ore and alkaline compounds,
heating the mixture in an indirectly heated rotary kiln to between 800° and 1,200° C.,
introducing oxygen or gases enriched with oxygen into the kiln countercurrently to the mixture,
wherein
the mixture of chrome ore and alkaline compounds is divided into a plurality of individual streams,
each individual stream is fed into a separate, indirectly heated rotary kiln,
the separate rotary kilns are combined to form a bank of kilns,
the dimensions and speed of rotation of each rotary kiln and the inclination of the rotary kiln axes are such that the resulting



theoretical distance covered by the particles of the mixture through each rotary kiln is 5 to 30 m, and
each individual stream consists of a quantity of reaction mixture such that the average coverage of the inner surface of each rotary kiln is 1 to 5 kg of mixture/m^2.

5,547,647
PRODUCTION OF ALUMINA

Gillian M. Moody, West Yorkshire, and Clive Happs, Yorkshire, both of, England, assignors to Allied Colloids Limited, West Yorkshire, England

Filed Jun. 29, 1994, Ser. No. 268,022
Claims priority, application United Kingdom, Jun. 30, 1993, 9313545; Jan. 14, 1994, 9400690
Int. Cl.[6] C01F *7/00;* **C22B** *21/00*
U.S. Cl. 423—121 **19 Claims**

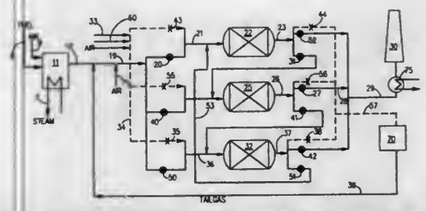
1. A process for producing alumina comprising removing organic material from bauxite by washing the bauxite with an aqueous alkaline wash liquor in a washing stage, separating the washed bauxite from the washing liquor, separating organic material from the separated wash liquor, digesting the washed bauxite with aqueous caustic in a digestion stage to form a digestion product comprising sodium aluminate and red mud, separating sodium aluminate liquor from the red mud in a separating stage, recovering alumina from the sodium aluminate liquor in an alumina recovery circuit, and recycling caustic from the alumina recovery circuit to the digestion stage, wherein the wash liquor has a caustic content of at least 100 g/l, measured as sodium hydroxide and comprises aqueous caustic from the alumina recovery circuit and, after removing organic material from the wash liquor, the wash liquor is added to the digestion stage, the separating stage or the alumina recovery circuit.

5,547,648
REMOVING SO_x, NO_x AND CO FROM FLUE GASES

John S. Buchanan, Trenton; Mark F. Mathias, Turnersville, both of N.J.; Joseph F. Sodomin, III, Landenberg, Pa., and Gerald J. Teltman, Vienna, Va., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 184,536, Jan. 21, 1994, which is a continuation-in-part of Ser. No. 63,473, May 19, 1993, abandoned, which is a continuation of Ser. No. 868,432, Apr. 15, 1992, Pat. No. 5,229,091. This application May 5, 1995, Ser. No. 435,914
Int. Cl.[6] B01D *53/46;53/81;53/96*
U.S. Cl. 423—210 **25 Claims**

1. A method of removing nitrogen oxide, sulfur oxide and carbon monoxide from a combustion flue gas stream from a fluid catalytic cracking unit comprising a FCC reactor for converting a stream of petroleum feedstock in the presence of a fluidized bed of cracking catalyst into a stream of cracked product, a FCC regenerator for combusting coke buildup and other products from spent catalyst to thereby regenerate the spent catalyst and provide the combustion flue gas stream, a conduit for feeding spent catalyst

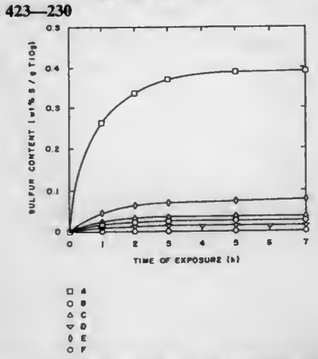


from the FCC reactor to the FCC regenerator, and another conduit for passing regenerated catalyst from the FCC regenerator to the FCC reactor comprising the steps of:
combusting said coke buildup deposited on the spent catalyst in said FCC regenerator with a reduced amount of oxygen-containing gas ranging from about 95% to about 110% of the stoichiometric amount required to convert carbon monoxide into carbon dioxide to partially convert carbon monoxide therein to carbon dioxide and sufficient to convert all sulfur-containing species therein to sulfur oxide, and thus forming a sulfur oxide containing flue gas stream having at least 500 ppm carbon monoxide and the amount of nitrogen oxide in the sulfur oxide containing gas is an inverse function of the amount of carbon monoxide therein when the amount of oxygen containing gas fed to the combustor is reduced relative to the amount of oxygen containing gas needed to oxide all the carbon monoxide into carbon dioxide;
contacting said sulfur oxide containing flue gas stream and sufficient additional air with a solid adsorbent bed for adsorbing thereon the sulfur oxides in the form of inorganic sulfates or sulfur oxides or combinations thereof, the solid adsorbent containing a catalytic oxidation promoter for oxidizing the carbon monoxide in said sulfur oxide containing gas stream to carbon dioxide, and thus forming a sulfur oxide and carbon monoxide depleted stream for disposal; and
contacting said adsorbent bed with a reducing gas stream for regenerating said adsorbent bed by reducing said retained inorganic sulfates or sulfur oxides or combinations thereof to hydrogen sulfide and/or sulfur dioxide, and thereby forming a hydrogen sulfide and/or sulfur dioxide bearing stream.

5,547,649
HYDROGEN SULFIDE CONVERSION WITH NANOPHASE TITANIA

Donald D. Beck, Rochester Hills, Mich., and Richard W. Siegel, Hinsdale, Ill., assignors to United States Department of Energy, Washington, D.C., and General Motors Corp., Detroit, Mich.

Filed Sep. 23, 1993, Ser. No. 125,884
Int. Cl.[6] B01D *53/52*
U.S. Cl. 423—230 **3 Claims**

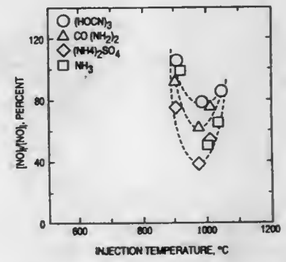


1. A process for disassociating H_2S in a gaseous feed, comprising contacting said feed at a temperature of at least about 275° C. with a catalyst of rutile nanophase titania having grain sizes in the range of from about 1 to about 100 nanometers, said rutile nanophase titania is a catalyst having a surface area of 76 m^2/g and a stoichiometric oxygen deficiency characterized by an oxygen to titanium molar ratio in the range of from about 1.85 to 1.

5,547,650
PROCESS FOR REMOVAL OF OXIDES OF NITROGEN

Bradley Edgar, Berkeley, and Robert W. Dibble, Livermore, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Mar. 24, 1994, Ser. No. 217,783
Int. Cl.[6] C01B *21/00*
U.S. Cl. 423—235 **9 Claims**



1. A selective non-catalytic process for removal of oxides of nitrogen from combustion exhaust gases, comprising:
(a) injecting a reductant for oxides of nitrogen into the combustion exhaust gases to form a mixture at a temperature below that effective for reduction of the oxides of nitrogen;
(b) heating the mixture to a temperature effective for reduction of the oxides of nitrogen such that the mixture forms reacted exhaust gases having a reduced content of oxides of nitrogen; and
(c) transferring heat from the reacted exhaust gases to heat the mixture according to step (b);
wherein steps (a) and (b) are carried out in the absence of a catalyst.

5,547,651
PROCESS FOR PRODUCTION AND USE OF DEACTIVATED GASEOUS ATOMIC NITROGEN FOR POST COMBUSTION GAS NITRIC OXIDE EMISSIONS CONTROL

Richard B. Rolfe, Dana Point, Calif., assignor to Sol Bleiweis, Mission Viejo, Calif.

Filed Apr. 17, 1995, Ser. No. 423,023
Int. Cl.[6] C01B *21/00*
U.S. Cl. 423—235 **35 Claims**



29. A process for reducing the nitric oxides of a post combustion gas stream, the process comprising the steps of:
a. generating activated nitrogen gaseous atoms;
b. deactivating said activated nitrogen gaseous atoms by a catalyst to produce deactivated nitrogen gaseous atoms; and
c. injecting said deactivated nitrogen gaseous atoms into said post combustion gas stream, thereby reducing said nitric oxides in said post combustion gas stream.

5,547,652

PROCESS FOR THE PURIFICATION OF INERT GASES

Guido Ghisolfi; Dario Giordano, and Giuseppina Boveri, all of Tortona, Italy, assignors to Sinco Engineering S.p.A., Italy

PCT No. PCT/EP93/03117, § 371 Date Mar. 10, 1995, § 102(e) Date Mar. 10, 1995, PCT Pub. No. WO95/24461, PCT Pub. Date Jan. 26, 1995

PCT Filed Nov. 8, 1993, Ser. No. 397,209

Claims priority, application Italy, Jul. 16, 1993, MI93A1576

Int. Cl.[6] B01J *8/00*

U.S. Cl. 423—245.3 16 Claims

1. Process for the purification from impurities formed of organic compounds of a recycle inert gas stream leaving a solid-state polycondensation reactor of polyester resins comprising adding oxygen or gas containing oxygen to the gas stream, circulating the gas stream on a catalytic bed containing Pt or mixtures of Pt and Pd supported on an inert porous support at temperatures from 250° to 600° C., characterized in that the quantity of oxygen used is stoichiometric with respect to the organic impurities or in such an excess that the gas at the outlet of the oxidation reactor contains up to 10 ppm of oxygen and in that the gaseous stream leaving the oxidation reactor is recycled to the solid-state polycondensation reactor after a drying treatment to remove water present.

5,547,653

CARBONIZATION OF HALOCARBONS

James L. Webster, Parkersburg, W. Va., and Scott C. Jackson, Kennett Square, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 24, 1994, Ser. No. 327,760

Int. Cl.[6] C01B *31/02;* A62D *3/00*

U.S. Cl. 423—445 R 15 Claims

1. Process consisting essentially of anhydrously carbonizing halocarbon in the presence of excess hydrogen to form carbon particles and anhydrous haloacid as the primary reaction products, said excess of said hydrogen being with respect to the stoichiometric requirement to convert all of the halogen of said halocarbon to said haloacid, and recovering said carbon particles and said anhydrous haloacid by separating said carbon particles and said haloacid from each other and from other reaction products and from any unreacted hydrogen and halocarbon.

5,547,654

SELF-ADHESIVE CARBONACEOUS GRAINS AND HIGH DENSITY CARBON ARTIFACTS DERIVED THEREFROM

Isao Machida, Fukuoka; Ryuji Fujiura, Tsukuba; Takashi Kojima, Tsukuba, and Hitoshi Sakamoto, Tsukuba, all of, Japan, assignors to Mitsubishi Gas Chemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 63,421, May 19, 1993, abandoned. This application Sep. 6, 1994, Ser. No. 301,038

Claims priority, application Japan, Jun. 19, 1992, 4-161182; Jun. 19, 1992, 4-161183

Int. Cl.[6] C01B *31/02*

U.S. Cl. 423—445 R 8 Claims

1. Self-adhesive carbonaceous grains having a ratio of hydrogen atoms to carbon atoms (H/C) within the range of from 0.35 to 0.48, and a ratio of oxygen atoms to carbon atoms (O/C) of less than 0.01, which grains are made by a process of heating a mesophase pitch in a range of from 470° C. to 550° C. in a non-oxidizing atmosphere, wherein the mesophase pitch has a softening point of higher than 170° C., an optical anisotropy of at least 80%, and a carbon yield of the mesophase pitch of at least 70% by weight when the mesophase pitch is heated to a temperature of about 600° C. in an inert gas atmosphere and then maintained at that temperature for 2 hours.

5,547,655

RECOVERY AND REGENERATION OF SULFURIC ACID

Tse-Chaun Chou, and Yi-Lin Chen, both of 22, Lane 252, Dong Ping Road, Tainan, Taiwan

Filed Nov. 28, 1994, Ser. No. 348,151

Int. Cl.[6] C01B *17/90*

U.S. Cl. 423—531 10 Claims

1. A method of recovery and regeneration of spent sulfuric acid catalyst from alkylation of olefins and alkanes, said spent sulfuric acid catalyst containing organic impurities and water, comprising the steps of:

(a) introducing spent sulfuric acid catalyst containing organic impurities and water into an electrolysis reactor containing and anode and cathode, introducing air into said spent sulfuric acid at a temperature of between −50 and 250 degrees C. and less than 20 atm;

(b) supplying electricity to said cathode and anode;

(c) creating as active intermediates OH., HO_2., HO_3., H_2O_2, $SO_4^{2-}/S_4O_8^{2-}$, hydroperoxide, dialkyl peroxide, peroxy acid or organic free radical generated via the electrolysis of said organic impurities;

(d) decomposing said organic impurites via reaction with said active intermediates;

(e) decomposing water via electrolysis and reaction with said active intermediates in said spent sulfuric acid; and,

(f) vaporizing water in said spent sulfuric acid to regenerate sulfuric acid catalyst for the alkylation of olefins and alkanes.

5,547,656

LOW DENSITY MICROSPHERES AND THEIR USE AS CONTRAST AGENTS FOR COMPUTED TOMOGRAPHY, AND IN OTHER APPLICATIONS

Evan C. Unger, Tucson, Ariz., assignor to Imarx Pharmaceutical Corp., Tucson, Ariz.

Division of Ser. No. 116,982, Sep. 7, 1993, Pat. No. 5,456,900, which is a division of Ser. No. 980,594, Jan. 19, 1993, Pat. No. 5,281,408, which is a division of Ser. No. 680,984, Apr. 5, 1991, Pat. No. 5,205,290. This application May 24, 1995, Ser. No. 449,090

Int. Cl.[6] A61K *49/04;* A61B *8/13*

U.S. Cl. 424—9.4 62 Claims

1. A contrast medium for computed tomography imaging of the gastrointestinal region or other body cavities comprising a substantially homogeneous aqueous suspension of low density gas-filled microspheres having an internal void volume of at least about 75% of the total volume of the microsphere, wherein said gas comprises a perfluorocarbon.

5,547,657

LOW-IRRITATION ANESTHETIC AND ANTISEPTIC MOUTH RINSE

Andy H. Singleton, Kingsport; Crystal L. Kendrick, Church Hill; Reinhold L. Riemer, II, Kingsport, and Robin L. Minga, Blountville, all of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Oct. 11, 1994, Ser. No. 320,345

Int. Cl.[6] A61K *7/16;7/22*

U.S. Cl. 424—49 12 Claims

1. A nonalcoholic low-irritation anesthetic and antiseptic mouth rinse which is stable consisting essentially of:

(A) 0.1 to 20 weight percent of a topical anesthetic selected from the group consisting of amethocaine, benzocaine, cocaine, and their acid addition salts;

(B) 4 to 87 weight percent of polyethylene glycol having a number average molecular weight of 200 to 300; and

(C) 0.01 to 5.0 weight percent of an aromatic organic antiseptic compound having one or more hydroxy groups attached directly to the benzene ring,

wherein the weight percentages are based on the total mouth rinse formulation.

5,547,658

COSMETIC COMPOSITION CONTAINING MELANINLIKE PIGMENTS IN COMBINATION WITH CERTAIN TOCOPHEROLS, AND PROCESS FOR PROTECTING THE SKIN, HAIR, MUCOSAE AND COSMETIC COMPOSITIONS

Isabelle Hansenne, Paris; Serge Forestier, Claye-Souilly, and Quang L. N'Guyen, Antony, all of, France, assignors to L'Oreal, Paris, France

Filed Mar. 3, 1993, Ser. No. 26,059

Claims priority, application France, Mar. 3, 1992, 92 02532

Int. Cl.[6] A61K *7/42;7/40;9/10*

U.S. Cl. 424—59 16 Claims

1. A cosmetic composition protecting the human epidermis, the mucosae and the hair against free radicals comprising the combination in a cosmetically acceptable carrier of at least one tocopherol selected from the group consisting of α-tocopherol, β-tocopherol, γ-tocopherol, and δ-tocopherol in a concentration of between 0.02 and 10% by weight relative to the total weight of the composition, and at least one natural or synthetic melanin pigment in a concentration of between 0.001 and 2% by weight relative to the total weight of the composition, the weight ratio of tocopherol to melanin pigment being between 0.1 and 100.

5,547,659

PHOTOPROTECTION COMPOSITIONS

Marie A. Rinaldi, Hamden, and Larry R. Robinson, Oxford, both of Conn., assignors to Richardson-Vicks Inc., Shelton, Conn.

Continuation of Ser. No. 696,902, May 7, 1991, abandoned. This application Jul. 7, 1993, Ser. No. 88,396

Int. Cl.[6] A61K *7/42*

U.S. Cl. 424—59 13 Claims

1. An oil-in-water sunscreen emulsion composition having improved efficiency for topical use and which provides an SPF of at least 8 comprising:

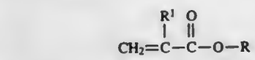
(a) from about 1% to about 20% of a sunscreen component consisting essentially of:

i) from about 1% to about 100% of octocrylene;

ii) from 0% to about 80% of ethylhexyl-p-methoxy cinnamate; and

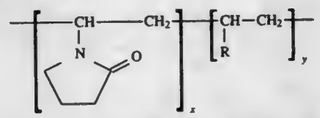
iii) from 0% to about 80% titanium dioxide;

(b) from about 0.025% to about 2.0% of a carboxylic copolymer comprising polymers of a monomeric mixture selected from the group consisting of acrylic, methacrylic and ethacrylic acids, about 1 to about 3.5 weight percent of an acryl ate ester of the formula:



wherein R is hydrogen or an alkyl radical containing 10 to 30 carbon atoms and R^1 is hydrogen, methyl or ethyl, and 0.1 to 0.6 weight percent of a polymerizable cross-linking polyalkenyl polyether of a polyhydric alcohol containing more than one alkenyl ether group per molecule wherein the parent polyhydric alcohol contains at least 3 carbon atoms and at least 3 hydroxyl groups;

(c) from about 0.1% to about 5.0% of a film-forming copolymer of the formula:



where R is a C_{12}–C_{30} straight alkyl chain and wherein the ratio of x to y is from about 1:5 to 5:1;

(d) from about 0.1% to about 10% of a wax component having a required HLB of from about 1 to about 8 and a melting point greater than about 50° C. wherein said wax component is selected from the group consisting of ester waxes, hydrocarbon waxes, diester waxes, silicone waxes, triglyceride waxes, and mixtures thereof; and

(e) a safe and effective amount of a pharmaceutically-acceptable sunscreen carrier;

wherein said sunscreen emulsion, when diluted as a 3.33% (w/w) aqueous solution, has a surface tension greater than about 30 dynes/cm.

5,547,660

NAIL LACQUER COMPOSITION CONTAINING POLY-HYDROXYSTYRENE

John Seed, Ellicott City, Md., and Brian Seed, Boston, Mass., assignors to Advanced Genetic Technologies Corporation, Gaithersburg, Md.

Continuation-in-part of Ser. No. 981,094, Nov. 24, 1992, abandoned. This application Apr. 18, 1994, Ser. No. 229,089

Int. Cl.[6] A61K *7/043*

U.S. Cl. 424—61 1 Claim

1. A method of cosmetically coating nails, comprising:

applying to nails a composition comprising:

(a) a protein-adherent polymer consisting of poly(4-hydroxystyrene) wherein said protein-adherent polymer is present at amounts of 0.5–40% by weight in said composition so that said protein-adherent polymer forms a film upon application to a nail;

(b) a plasticizing agent which is present in amounts of 5–40% based on the total solids content of the composition; and

(c) a cosmetically acceptable diluent.

5,547,661

ANTIPERSPIRANT DEODORANT COMPOSITIONS

Wei-Mei Sun, Palatine; Zhu-ning Ma, Oak Park; Maximo M. Panitch, Skokie, and Ramiro Galleguillos, Glendale Heights, all of Ill., assignors to Helene Curtis, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 199,499, Feb. 22, 1994, abandoned. This application Dec. 14, 1994, Ser. No. 355,641

Int. Cl.[6] A61K *7/38;* G61K *7/34*

U.S. Cl. 424—66 29 Claims

1. A gelled or solid antiperspirant composition comprising:

(a) about 1% to about 40% by weight of an antiperspirant compound;

(b) about 0.5% to about 10% by weight of a borate crosslinker;

(c) about 5% to about 70% by weight of a surfactant selected from the group consisting of a cationic surfactant, an amphoteric surfactant, and mixtures thereof; and

(d) a carrier comprising water;

wherein the antiperspirant composition has a pH of about 2 to about 6.

5,547,662

PREPARATION OF A SKIN SURFACE FOR A SURGICAL PROCEDURE

Mohammad A. Khan, Sandy, and Minh Q. Hoang, Taylorsville, both of Utah, assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Aug. 27, 1993, Ser. No. 113,445

Int. Cl.[6] A41D *13/10;19/00*

U.S. Cl. 424—78.03 20 Claims

1. A film forming composition for surgical site preparation on a skin surface comprising:

a fugitive solvent;

a film forming material soluble in said solvent;

an antimicrobial agent soluble in said solvent capable of being releasably retained in said film forming material;

means for providing color change indicating an area of the skin surface covered by said composition, said color change fur-

ther indicating substantial elimination of said fugitive solvent from said composition after said composition is applied to the skin surface; and

said film forming material and said antimicrobial agent when applied to the skin surface from said fugitive solvent, forming a substantially water insoluble, substantially tack-free flexible film adherent to the skin surface, said film capable of releasing said antimicrobial agent in a quantity sufficient to substantially inhibit microbial growth on the skin surface.

5,547,663

ABSOLUTE MOLECULAR WEIGHT POLYMERS AND METHODS FOR THEIR USE

Edward C. Holloman; Evan P. Kyba, and Joon S. Park, all of Arlington, Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Continuation-in-part of Ser. No. 149,153, Nov. 8, 1993, abandoned, which is a continuation of Ser. No. 967,330, Oct. 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 790,301, Nov. 8, 1991, abandoned. This application Dec. 13, 1994, Ser. No. 355,361

Int. Cl.[6] A61K *31/765;31/74*

U.S. Cl. 424—78.04 **23 Claims**

1. A polymer, wherein the number of repeating units is constant, of the structure:

W-BT(A-BT)$_n$-Y

wherein:

W and Y are chosen to be the same or different, and are selected from OH, NR^1R^2, or $N^+R^1R^2R^3(Z^-)$;

$R^{1\text{-}3}$ may be the same or different and are selected from: CH_3 and C_2–C_{24} primary, secondary or tertiary alkyl or cycloalkyl groups; C_3–C_{24} unsaturated hydrocarbon groups, including straight and branched chain alkenes; unsubstituted and variously substituted benzyl groups, particularly alkylated benzyl groups, where the alkyl group is as defined above;

BT is any pair of methylene units linked by a connector;

A is $R^1R^2N^+Z^-$;

Z^- is the anion corresponding to a variety of pharmaceutically acceptable Brønsted acids; and

n is an integer between 15 and 31.

5,547,664

EXPRESSION OF RECOMBINANT PROTEINS IN ATTENUATED BACTERIA

Ian G. Charles; Steven N. Chatfield, and Neil F. Fairweather, all of Kent, England, assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Continuation of Ser. No. 246,773, May 20, 1994, abandoned, which is a continuation of Ser. No. 81,361, Jun. 30, 1993, abandoned. This application Dec. 12, 1994, Ser. No. 354,776

Claims priority, application United Kingdom, Mar. 5, 1991, 9104596; Oct. 4, 1991, 9121208

Int. Cl.[6] A61K *39/08;39/10;39/112;* **C12N** *1/21*

U.S. Cl. 424—93.2 **7 Claims**

1. A vaccine comprising a pharmaceutically acceptable carrier or diluent and, as active ingredient, an attenuated Salmonella bacterium which contains a nirB promoter operably linked to a DNA sequence encoding a heterologous protein.

5,547,665

METHOD FOR REMOVING NITS FROM HAIR

Harry F. Upton, Darien, Conn., assignor to Care Technologies, Inc., Greenwich, Conn.

Continuation of Ser. No. 46,565, Apr. 13, 1993, abandoned. This application Aug. 25, 1994, Ser. No. 296,277

Int. Cl.[6] A61K *38/47*

U.S. Cl. 424—94.61 **9 Claims**

1. A method for removing nits from hair which comprises the application of a water-based enzyme composition comprising water-based enzyme and stabilizer to the hair, whereby said water-based enzyme composition is capable of causing swelling and/or breakdown of the complex organic structure that bonds the nits to the hair to facilitate the subsequent physical removal of the nits from the hair, wherein said water-based enzyme is N-acetyl D-glucosaminidase.

5,547,666

ANTIBIOTIC GE 2270 FACTORS A_1, A_2, A_3 AND H

Enrico Selva, Gropello Cairoli, and Paolo Tavecchia, Rho, both of, Italy, assignors to Gruppo Lepetit SpA, Gerenzano, Italy

Continuation of Ser. No. 135,862, Oct. 13, 1993, which is a continuation of Ser. No. 10,504, Jan. 28, 1993, abandoned, which is a continuation of Ser. No. 895,507, Jun. 8, 1992, abandoned, which is a division of Ser. No. 547,647, Jul. 2, 1990, Pat. No. 5,139,778. This application Jun. 7, 1995, Ser. No. 485,678

Claims priority, application European Pat. Off., Jul. 4, 1989, 89112171.7

Int. Cl.[6] A61K *35/00*

U.S. Cl. 424—123 **4 Claims**

4. A process for producing antibiotic GE 2270 factor A3 or an acceptable salt thereof, which has the following feature in the unsalified form:

Physico-chemical characteristics of antibiotic GE 2270 factor A_3

A) ultraviolet absorption spectrum which exhibits the following absorption maxima:

	Lambda max (nm)
0.1 M KOH	240 (shoulder) 309 330 (shoulder)
Phosphate buffer pH 7.4	240 (shoulder) 309 330 shoulder
Methanol	240 (shoulder) 309 340 (shoulder)

B) infrared absorption spectrum in nujol mull which exhibits the following absorption maxima (cm^{-1}): 3700–3140; 3110; 3020–2750 (nujol); 1720; 1655; 1590–1520; 1500; 1460 (nujol); 1375 (nujol) 1270–1200; 1130–1030; 1020; 980; 930; 840; 805; 750; 720 (nujol); 700;

C) ^{1}H-NMR spectrum which exhibits the following groups of signals (in ppm) at 500 MHz recorded in DMSO-D_6 hexadeuterodimethylsulfoxide) using TMS as the internal standard (0.00 ppm); the number of protons and multiplicity for each signal is also reported below (s=singlet; d=doublet; m=multiplet; dd=doublet of doublets; br s=broad singlet):

9.02,1H (d); 8.7L,1H (d); 8.70,1H (d); 8.65,1H (s); 8.57,1H (s); 8.46,1H (m); 8.38,1H (d); 8.28,1H (d); 8.25,1H (s); 7.38,1H (m); 7.37,1H (s); 7.36–7.20,5H (m); 6.05,1H (br s); 5.31,1H (m); 5.27,1H (dd); 5.20,1H (dd); 5.03,1H (d); 4.99,2H (s); 4.32,1H (dd); 3.82,1H (dd); 3.38,3H (s); 2.74,1H (dd); 2.60,3H (s); 2.49,3H (d); 2.17,1H (m); 1.35,1H (m); 0.88,3H (d); 0.84,3H (d);

D) retention-time (R_t) of 7.1 min when analyzed by reverse phase HPLC under the following conditions:

column: Ultrasphere ODS (reverse phase silanized silica gel; 5 micrometer) Altex (Beckman) 4.6 mm (i.d.)×250 mm

pre-column: Brownlee Labs RP 18 (octadecylsilane silica gel; 5 micrometer)

eluent A: acetonitrile:18 mM NaH_2PO_4, 70:30 (v/v), adjusted to pH 7.0

eluent B: acetonitrile:18 mM NaH_2PO_4 10:90 (v/v), adjusted to pH 7.0

elution mode: linear gradient of eluent A in eluent B from 45% to 70% in 20 min

flow rate: 1.8 ml/min

U.V. detector: 254 nm

internal standard: Chloramphenicol (R_t=3.6 min)

E) elemental analysis, after the sample has been previously dried at about 140° C. under inert atmosphere, which indicated the following composition: carbon 51.27%, hydrogen 4.02%, nitrogen 14.94%, sulfur,

F) FAB-MS analysis snowing the low mass isotope of the protonated molecular ion at m/z 1125 mass units; all the other peaks above 800 m/z mass units in the spectrum, not counting isotope peaks, were lower than 20% of the molecular ion, upon analysis with a Kratos MS-50 double focusing mass spectrometer under the following experimental conditions: Xe fast atom bombardment at 6 Kv; 0.6 mA discharge current; glycerol matrix; positive ionization mode

G) ^{13}C-NMR spectrum exhibiting the following groups of signals (ppm) at 125 MHz in DMSO-d_6 TMS as the internal reference (0.00 ppm). 171.2; 169.9; 169.6; 168.5; 167.8; 165.7; 164.8; 162.2; 161.4; 161.3; 160.5; 160.4; 153.5; 150.4; 150.1; 149.5; 149.1; 147.0; 143.8; 142.1; 141.8; 141.4; 141.0; 139.6; 131.8; 128.0 (2 carbons); 127.7; 127.6; 126.9; 126.8 (2 carbons); 123.1; 118.7; 116.4; 73.9; 67.4; 58.7; 58.3; 55.5; 48.2; 41.2; 37.7; 34.1; 25.9; 18.5; 18.0; 12.0;

H) a specific optical rotation $[\alpha]^{20}_D$ of +182.5 in $CHCl_3$+10% CH_3OH

which comprises subjecting antibiotic GE 2270 factor A to a hydrolysis reaction:

1) with an aqueous solution or suspension of a mineral acid in which said mineral acid is selected from the group consisting of hydrogen chloride, hydrogen bromide, hydrogen iodide, sulfuric acid and phosphoric acid, or with an aqueous solution or suspension an organic acid in which said organic acid is selected from the group consisting of C_1–C_6) aliphatic acids, halogenated(C_2–C_3) aliphatic acids, arylic acids, (C_2–C_6)alkyl sulfonic acids, and arylic sulfonic acids;

2) in the presence of a polar organic solvent selected from the group consisting of lower alkanols, phenyl substituted lower alkanols, lower alkyl carboxamides, lower alkyl sulfoxamides, lower alkyl phosphoramides, lower alkyl sulfoxides, lower alkyl sulfones and cyclic oxygen containing aliphatic solvents;

3) at a temperature ranging from 40° C. to 90° C.;

4) for a period of time ranging from 8 hours to 48 hours, and;

5) monitoring the reaction for the appearance antibiotic GE 2270 factor A_3 and recovering said antibiotic GE 2270 factor A_3 from the reaction medium.

5,547,667

LINKER FOR BIOACTIVE AGENTS

Francesco Angelucci; Laura Bersani; Michele Caruso; Marina Ripamonti; Daniela Ruggieri, and Antonino Suarato, all of Milan, Italy, assignors to Farmitalia Carlo Erba S.r.l., Milan, Italy

Continuation of Ser. No. 842,171, Apr. 3, 1992, Pat. No. 5,387,578. This application Oct. 25, 1994, Ser. No. 328,697

Claims priority, application United Kingdom, Aug. 3, 1990, 9017024.2

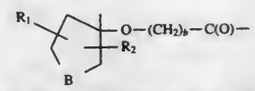
Int. Cl.[6] A61K *39/44;* **C07K** *17/06;15/252;19/06*

U.S. Cl. 424—181.1 **26 Claims**

1. A conjugate of general formula 1:

(A—O—W—Z)$_a$—T 1

wherein the moiety A—O— is the residue of drug of formula A—O—H in which —O—H is a primary or secondary hydroxyl group; a is an integer of from 1 to 5; W is a group of general formula 2:



2

wherein b is an integer of from 1 to 4, B represents a C_1–C_3 alkylene group and R_1 and R_2 are each independently selected from the group consisting of hydrogen, a halogen selected from the group consisting of chlorine, bromine and iodine, a C_1–C_4 alkyl group, phenyl or phenyl substituted by a halogen selected from the group consisting of chlorine, bromine and iodine, or by a C_1–C_4 alkyl group;

Z is a spacer group selected from the group consisting of:

(i) —NH—;

(ii) —NH—(CH$_2$)$_c$—S—S— wherein c is an integer of from 1 to 4;

(iii) —NH—(C)$_d$—N=CH— wherein:

(a) d is 0

(b) d is 1 and (C) represents —NH—CO—(CH$_2$)$_e$—CO—NH— in which e is an integer of from 2 to 4;

(c) d is an integer of from 1 to 4 and (C) represents —(CH$_2$)$_f$—O—(CH$_2$)$_f$— in which f is 1 or 2, or

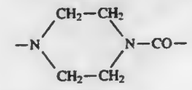
(d) d is an integer of from 2 to 6 and (C) is CH_2;

(iv) —NH—(C)$_d$—NH—CO— wherein (C) and d are as defined above;

(v) —(D)—NH— wherein (D) represents —NH—(CH$_2$)$_g$—CO— in which g is an integer of from 2 to 6;

(vi) —(E)—CO— wherein (E) represents —NH—(CH$_2$)$_g$—NH— in which g is an integer of from 2 to 6 and

(vii) the piperazinylcarbonyl moiety of the formula



and T is a carrier moiety.

5,547,668

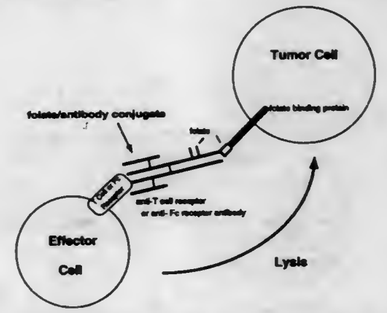
CONJUGATES OF FOLATE ANTI-EFFECTOR CELL ANTIBODIES

David M. Kranz, Champaign; Edward J. Roy, and Todd A. Patrick, both of Urbana, all of Ill., assignors to The Board of Trustees of The University of Illinois, Urbana, Ill.

Filed May 5, 1995, Ser. No. 435,175

Int. Cl.[6] A61K *39/395;* **C07K** *16/28;* **C21P** *21/08*

U.S. Cl. 424—181.1 **6 Claims**



1. A process of targeting a folate-receptor-positive tumor cell for lysis comprising binding to the tumor cell an effective targeting amount of a conjugate of an anti-T-cell-receptor antibody and folate or an analogue of folate having high affinity for the folate

receptor, wherein the folate-receptor-positive tumor cell is a folate-receptor-α -positive tumor cell or a folate-receptor-β-positive tumor cell.

5,547,669

RECOMBINANT PEPTIDES COMPRISING T CELL EPITOPES OF THE CAT ALLERGEN, FEL D 1

Bruce L. Rogers, 54 Richardson Rd., Belmont, Mass. 02178; Jay P. Morgenstern, 322 Marlborough St., Boston, Mass. 02116; Julian F. Bond, 294 Commercial St., Weymouth, Mass. 02188; Richard D. Garman, 86 Clarendon Ave., Somerville, Mass. 02143; Julia L. Greenstein, 174 Mount Vernon St., West Newton, Mass. 02165; Mei-chang Kuo, 5 Cox Rd., Winchester, Mass. 01890, and Malcolm Morville, 17 Twin Lakes Dr., Waterford, Conn. 06385

Continuation-in-part of Ser. No. 662,276, Feb. 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 431,565, Nov. 3, 1989, abandoned. This application Dec. 13, 1991, Ser. No. 807,529

Int. Cl.[6] C12N *15/12;* **A61K** *38/17;39/35;* **C07K** *14/47*

U.S. Cl. 424—185.1 **30 Claims**



1. An isolated peptide comprising at least two regions each having human T cell stimulating activity, said regions each comprising at least one T cell epitope of a protein allergen, said regions being arranged in a configuration different from a naturally-occurring configuration of said regions in a protein allergen and being derived from the same or different protein allergens, each of said regions selected from the group consisting of peptide X (SEQ ID NO: 7), peptide Y (SEQ ID NO: 8), peptide Z (SEQ ID NO: 9), peptide A (SEQ ID NO: 10), and peptide B (SEQ ID NO: 11).

5,547,670

RECOMBINANT HYBRID PORIN EPITOPES

Neil L Goldstein, West Orange, N.J., and Charles T. Tackney, Brooklyn, N.Y., assignors to Imclone Systems Incorporated, New York, N.Y.

Continuation of Ser. No. 669,528, Mar. 14, 1991, abandoned. This application Sep. 20, 1993, Ser. No. 124,369

Int. Cl.[6] C12N *15/62;15/70;* **C07K** *14/22*

U.S. Cl. 424—192.1 **4 Claims**

1. A polypeptide that is non-toxic in *E. coil* wherein the polypeptide comprises a sequence of P.IA of *N. gonorrhoeae* wherein the sequence is limited to that which is set forth in SEQ ID NO:2 and a sequence of P.IB of *N. gonorrhoeae* wherein the sequence is limited to that which is set forth in SEQ ID NO:5.

5,547,671

ANTI-INTOXICATION COMPOSITION

Phu Duthinh, 650 Huntington Ave., Boston, Mass. 02115

Filed Sep. 20, 1995, Ser. No. 531,351

Int. Cl.[6] A61K *35/78;9/48;9/20;9/14*

U.S. Cl. 424—195.1 **5 Claims**

1. A composition for relieving the side effects of ethanol consumption in humans, comprising the following ingredients:
about 0.5 to about 2.5 g of extract of kudzu vine blossom (*flos puerariae*);
about 5 to about 25 g of starch derived from the root of the kudzu vine (radix puerariae);
about 0.5 to about 2.5 g of extract of American ginseng (*panax quinquafolium*);
about 0.5 to about 2.5 g of extract of ginger root (*radix zingiberis officinalis*);
about 0.25 to about 1.25 g of extract of tangerine peel;
about 0.25 to about 1.25 g of extract of green lemon peel;
about 0.5 to about 2.5 g of extract of magnolia tree bark; and
about 50 mg of thiamine (vitamin B_1).

5,547,672

ACCELERATED WOUND HEALING

Rui-Juan Xiu, Fatburs Kvarngatan 3 6 tr/43, Stockholm, Sweden

PCT No. PCT/EP91/00451, § 371 Date Jan. 18, 1994, § 102(e) Date Jan. 18, 1994, PCT Pub. No. WO93/00104, PCT Pub. Date Jan. 7, 1993

PCT Filed Jun. 20, 1991, Ser. No. 162,059

Int. Cl.[6] A61K *35/78*

U.S. Cl. 424—195.1 **4 Claims**

1. A method for treating a skin injury comprising applying to the injury a pharmaceutical agent consisting essentially of a paste of *Tremella fuciformis* (Berk).

5,547,673

EXTRACTS OF CUCURBITA SP., PROCESS FOR THEIR PREPARATION AND THEIR USE IN MEDICAMENTS AND IN COSMETICS

Ezio Bombardelli, Milan, Italy, assignor to Indena S.p.A., Milan, Italy

Filed Dec. 8, 1993, Ser. No. 162,764

Claims priority, application Germany, Dec. 9, 1992, 42 41 487.3

Int. Cl.[6] A61K *35/78*

U.S. Cl. 424—195.1 **16 Claims**

1. A process for the preparation of an extract from the seeds of Cucurbita sp. comprising; (a) milling of the seeds at a temperature between −10° and +10° C. to a particle size between 0.1 and 1 mm, (b) extracting the active substances from said milled seeds with supercritical carbon dioxide at a pressure between 250 and 330 bar and a temperature between 34° and 65° C. or organic solvents at a temperature between 25° C. and the a boiling temperature of the solvent, and (c) purifying the resultant extract by fractional countercurrent extraction with supercritical carbon dioxide at a pressure between 110 and 180 bar and at a temperature between 34° and 80° C.

5,547,674

PHARMACEUTICAL PREPARATIONS DERIVED FROM EUROPEAN MISTLETOE

Tasneem A. Khwaja, Newport Beach, Calif., assignor to University of Southern California, Los Angles, Calif.

Filed Apr. 14, 1995, Ser. No. 422,423

Int. Cl.[6] A61K *35/78;38/00;38/16*

U.S. Cl. 424—195.1 **12 Claims**

1. An extract of European mistletoe which comprises lectins, viscotoxins, alkaloids and one or more Ca^{++} dependent sugar-binding proteins, said sugar-binding proteins being selected from the group consisting of proteins in said extract which bind to lactose, galactose, melibiose, N-acetyl-D-galactosamine and fucose, wherein the concentrations of said lectins, viscotoxins, alkaloids and Ca^{++} dependent sugar-binding proteins corresponds to:
8.0 to 12 μg lectins, 10 to 30 μg viscotoxins, 1 to 40 μg alkaloids and 0.01 to 1.0 mg sugar-binding protein per milliliter of extract wherein said extract is prepared by extracting European mistletoe in amounts equivalent to 1 gram of mistletoe per 100 milliliters of extractant.

5,547,675

MODIFIED MONOCYCLOPENTADIENYL TRANSITION METAL/ALUMOXANE CATALYST SYSTEM FOR POLYMERIZATION OF OLEFINS

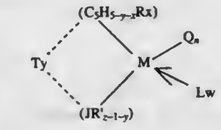
Jo Ann M. Canich, Houston, Tex., assignor to Exxon Chemical Patents Inc., Wilmington, Del.

Continuation of Ser. No. 75,850, Jun. 11, 1993, abandoned, which is a continuation of Ser. No. 812,432, Dec. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 581,841, Sep. 13, 1990, Pat. No. 5,096,867, which is a continuation-in-part of Ser. No. 533,245, Jun. 4, 1990, Pat. No. 5,055,438, which is a continuation-in-part of Ser. No. 406,945, Sep. 13, 1989, abandoned. This application Nov. 30, 1994, Ser. No. 348,261

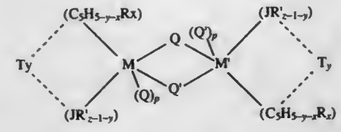
Int. Cl.[6] B01J *31/14*

U.S. Cl. 502—117 **20 Claims**

1. A catalyst system comprising:
(A) a transition metal compound or lanthanide metal compound of the formula:



or



wherein
M is a transition metal or lanthanide metal atom;
$(C_5H_{5-y-x}R_x)$ is a cyclopentadienyl ring which is substituted with from zero to five substituent groups R, "x" is 0, 1, 2, 3, 4 or 5 denoting the degree of substitution, and each substituent group R is, independently, a radical selected from the group consisting of C_1–C_{20} hydrocarbyl radicals; substituted C_1–C_{20} hydrocarbyl radicals wherein one or more hydrogen atoms is replaced by a halogen radical, an amido radical, a phosphido radical, an alkoxy radical, an alkylborido radical, or other radical containing a Lewis acidic or basic 18 functionality; C_1–C_{20} hydrocarbyl-substituted metalloid radicals wherein the metalloid is selected from the Group IV A of the Periodic Table of Elements; halogen radicals; amido radicals; phosphido radicals; alkoxy radicals; alkylborido radicals; and other radical containing Lewis acidic or basic functionality; or $(C_5H_{5-y-x}R_x)$ is a cyclopentadienyl ring in which two adjacent R-groups are joined forming C_4–C_{20} ring to give a saturated or unsaturated polycyclic cyclopentadienyl ligand;
(JR'_{z-1-y}) is a heteroatom ligand in which J is an element with a coordination number of three from Group V A or an element with a coordination number of two from Group VIA of the Periodic Table of Elements, each R' is, independently a radical selected from the group consisting of C_1–C_{20} hydrocarbyl radicals and substituted C_1–C_{20} hydrocarbyl radicals wherein one or more hydrogen atom is replaced by a halogen radical, a amido radical, a phosphido radical, an alkoxy radical, an alkylborido radical, or a radical containing a Lewis acidic or basic functionality; and "z" is the coordination number of the element J;
each Q is, independently, an univalent anionic ligand selected from the group consisting of halide, hydride, a substituted or unsubstituted C_1–C_{20} hydrocarbyl, alkoxide, aryloxide, amide, and phosphide provided that where Q is a hydrocarbyl ligand Q cannot be a substituted or unsubstituted cyclopentadienyl ring or both Q together are an alkylidene, a cyclometallated hydrocarbyl or a divalent anionic chelating ligand;
"n" and "p" are integer numbers such that n+2 and p+3 are equal to the oxidation state of M and the oxidation state of M is 3 or greater;
"y" is 0 or 1 when "w" is greater than 0; "y" is 1 when "w" is 0; when "y" is 1, T is a covalent bridging group containing a Group III A, IV A, V A, or VIA element;
L is a neutral Lewis base where "w" denotes a number from 0 to 3; and
(B) an alumoxane; and
(C) a modifier of the formula

$$R^*_{a-c}E(G\text{-}R^*_{b-1})_c \text{ or } R^*(G\text{-}R^*_{b-1})$$

wherein G is a Group VA or VIA element and "b" is equal to the coordination number of G, E is a Group IVA or VA element and "a" is equal to the coordination number of E, "c" is an integer from 1 to 4 but not greater than "a", and each R^* is independently a hydrogen, hydrocarbyl or substituted hydrocarbyl radical.

5,547,676

COSMETIC PRODUCT HAVING A STABILIZED REDOX POTENTIAL

Daniel Rocher, Les Milles, and Hugues Noel, St Chamas, both of, France, assignors to Daniel Jouvance, Aix Les Milles Cedex, France

Filed Oct. 13, 1993, Ser. No. 135,475

Claims priority, application France, Oct. 26, 1992, 92 12745

Int. Cl.[6] A61K *7/48;33/24*

U.S. Cl. 424—401 **8 Claims**

1. Cosmetic product having a stabilized redox potential, comprising, in contact with one another, a metal selected from the group consisting of zinc, copper, iron, molybdenum, vanadium, selenium, nickel, manganese and titanium, and a cosmetic composition comprising, in an aqueous medium, a water-soluble salt of said metal.

5,547,677

ANTIMICROBIAL OIL-IN-WATER EMULSIONS

D. Craig Wright, Gaithersburg, Md., assignor to Novavax, Inc., Rockville, Md.

Filed May 20, 1994, Ser. No. 246,868

Int. Cl.[6] A61K *7/40;9/107*

U.S. Cl. 424—401 **12 Claims**

1. An antimicrobial oil-in-water emulsion comprising positively charged droplets of a lipid-containing oily discontinuous phase dispersed in a continuous aqueous phase, the oily discontinuous phase consisting essentially of:
a. an oil;
b. glycerol monooleate as the primary lipid; and
c. a cationic halogen-containing compound having a C_{12}–C_{16} chain selected from the group consisting of cetylpyridinium

chloride, cetylpyridinium bromide, cetyltrimethylammonium bromide, cetyltrimethylammonium chloride, cetyldimethylethylammonium bromide, cetylbenzyldimethylammonium chloride, cetyltributylphosphonium bromide, dodecyltrimethylammonium bromide, and tetradecyltrimethylammonium bromide.

5,547,678

COMPOSITIONS AND METHODS FOR COMBATING BLEMISHES AND/OR AGEING OF THE SKIN

Francoise Gagnebien-Cabanne, Chatillon, France, assignor to L'Oreal, Paris, France

Filed Mar. 7, 1995, Ser. No. 399,545

Claims priority, application France, Mar. 8, 1994, 94 02656

Int. Cl.[6] A61K *7/40*

U.S. Cl. 424—401 **16 Claims**

1. A composition for preventing and/or combating skin blemishes and/or for combating ageing of the skin, comprising, in a cosmetically and/or dermatologically acceptable medium, (a) kojic acid and (b) an ultraviolet screening agent selected from the group consisting of benzylidenecamphor and functional derivatives thereof.

5,547,679

TAPE FOR HEAT VAPORIZATION OF ACTIVE AGENTS AND METHOD FOR VAPORIZING ACTIVE AGENTS BY HEATING

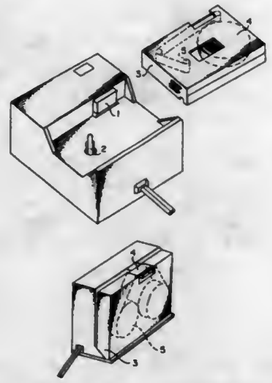
Minoru Ueda, Toyonaka, and Ken-ya Okada, Takarazuka, both of, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka-fu, Japan

Filed Jul. 11, 1994, Ser. No. 272,739

Claims priority, application Japan, Jul. 29, 1993, 5-187965; Mar. 31, 1994, 6-063027

Int. Cl.[6] A61L *9/03*

U.S. Cl. 424—402 **13 Claims**



1. A tape comprising a base layer containing substantially no active agent and a coating film layer containing a heat-vaporizable active agent and being formed on one side of the base layer by application of a coating containing the active agent, wherein the coating is a member selected from the group consisting of oil paint, fibrous coating, synthetic resin enamels and varnishes, and fluoropolymer resin enamels and varnishes; the heat-vaporizable active agent is a member selected from the group consisting of heat-vaporizable insecticides, bactericides, fungicides and aromatizing agents; and the base layer is made of synthetic resins or synthetic resins reinforced with glass fibers, aluminum foil or aluminum laminated films.

5,547,680

METHOD FOR PREPARING A TOPICAL, AMINOCAPROIC ACID CONTAINING OPHTHALMIC GEL

Patricia B. Williams, Norfolk, and Earl R. Crouch, Jr., Virginia Beach, both of Va., assignors to Eastern Virginia Medical School, Norfolk, and The Center for Innovative Technology, Herndon, both of Va.

Division of Ser. No. 390,788, Feb. 17, 1995, Pat. No. 5,505,954, which is a continuation of Ser. No. 223,837, Apr. 6, 1994, Pat. No. 5,415,863. This application May 19, 1995, Ser. No. 444,679

Int. Cl.[6] A61K *31/195*

U.S. Cl. 424—427 **6 Claims**

1. A method for preparing a topical, aminocaproic acid containing ophthalmic gel, comprising the steps of:

preparing a solution of carboxypolymethylene having an acidic pH;

sterilizing said solution of carboxypolyethylene by heat sterilization;

preparing an aminocaproic acid solution by combining aminocaproic acid with water;

sterilizing said aminocaproic acid solution without decomposing or discoloring said aminocaproic acid by filter sterilization; and

combining said solution of carboxypolymethylene and said aminocaproic acid solution after said heat and filter sterilizing steps to form a gel, wherein a concentration of said carboxypolymethylene ranges from 0.5% to 5% by weight of said gel, and said aminocaproic acid ranges from 10% to 60% by weight of said gel.

5,547,681

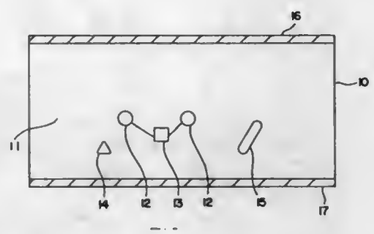
DERMAL PATCH

Elke M. A. Clark, Ringoes; Lawrence Marlin, Bridgewater; You-Ling Fan, East Brunswick, and Harshad M. Shah, Edison, all of N.J., assignors to Uulon Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Jul. 14, 1994, Ser. No. 274,834

Int. Cl.[6] A61F *13/00;13/02;* **A61K** *9/14*

U.S. Cl. 424—449 **9 Claims**



1. A dermal patch comprising:

a) an outer surface;

b) an inner surface which is removably adherent to a dermal surface of a mammal;

c) an internal matrix disposed between the inner surface and the outer surface, said internal matrix comprising a flexible, crosslinked polymeric gel comprising;

(i) from about 2 to 14 weight percent of polyvinyl alcohol, said polyvinyl alcohol having

(1) a molecular weight of from about 31,000 to 186,000 g/gmole; and

(2) a degree of hydrolysis of at least about 88%; and

(ii) from about 1.6 to 11 weight percent of a crosslinking agent comprising a titanium complex selected from the group consisting of;

(i) titanium complexes with tri(hydroxyalkyl)amines containing from 2 to 6 carbon atoms; and

(ii) titanium complexes with diketones containing from 5 to 20 carbon atoms; and

(iii) from about 25 to 95 weight percent water.

5,547,682

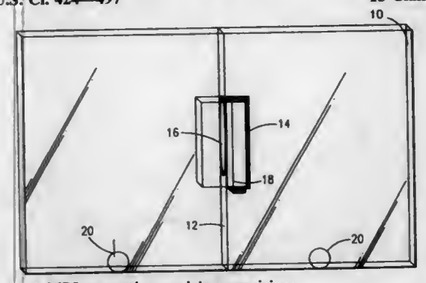
PREPARATION AND USE OF NOVEL INJECTABLE RES AVOIDING INORGANIC PARTICLES FOR MEDICAL APPLICATION

Mark S. Chagnon, Pelham, N.H.; Stephen E. Burkle, Andover, Mass.; Michelle J. Carter, Derry; Tracy J. Hamilton, Plaistow, both of N.H.; John Havelick, Jr., Wakefield, Mass.; Deborah A. Kaplan, Derry, N.H., and Kristin L. Marzloff, Auburn, N.H., assignors to BioQuest, Incorporated, Atkinson, N.H.

Continuation-in-part of Ser. No. 894,260, Jun. 8, 1992, which is a continuation-in-part of Ser. No. 556,169, Jul. 23, 1990, abandoned, which is a continuation-in-part of Ser. No. 455,071, Dec. 22, 1989, abandoned. This application Jul. 20, 1994, Ser. No. 277,655

Int. Cl.[6] A61K *9/16;9/50*

U.S. Cl. 424—497 **13 Claims**



1. A MRI responsive particle comprising:

a. an inorganic core particle; and

b. a poly(acrylic acid)-poly(alkylene ether) graft copolymer coating surrounding said core particle.

5,547,683

METHOD FOR PRODUCING MICROGRANULATED PARTICLE

Yoshiaki Yano, Kakogawa; Tamiji Fujimoto, and Takayoshi Hidaka, both of Kobe, all of, Japan, assignors to Kanegatuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

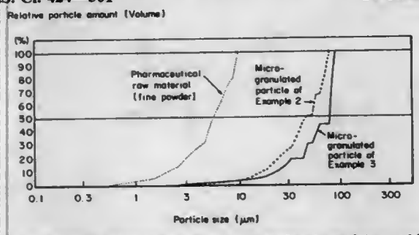
PCT No. PCT/JP93/01442, § 371 Date Jun. 8, 1994, § 102(e) Date Jun. 8, 1994, PCT Pub. No. WO94/08709, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 6, 1993, Ser. No. 244,375

Claims priority, application Japan, Oct. 9, 1992, 4-297905

Int. Cl.[6] A61K *9/50;* **B05D** *7/02;* **B32B** *5/16*

U.S. Cl. 424—501 **14 Claims**



1. A method for producing microgranulated particles, which comprises granulating a fine powder with an average particle size of not more than 10 μm into microgranulated particles having a particle size of not more than 0.2 mm, wherein said fine powder is being agitated, tumbled or fluidized, while spraying a solution containing a binder or a binder and a surfactant onto a surface of the fine powder to coat the fine powder with the binder or the binder and the surfactant.

5,547,684

COSMETIC COMPOSITION CONTAINING A DNA-SODIUM SALT AND METHODS OF MAKING AND USING THE SAME

Yuri P. Vainberg; Elli N. Kaplina, and Ideya G. Andosova, all of Moscow, Russian Federation, assignors to Pharmec Company, Moscow, Russian Federation

Filed Feb. 10, 1993, Ser. No. 16,014

Int. Cl.[6] A61K *35/52;6/00;31/70*

U.S. Cl. 424—561 **7 Claims**

1. A cosmetic formulation for the treatment of skin comprised of a cosmetic base and a DNA-sodium salt composition, obtained by extracting DNA with a sodium chloride solution, from the reproductive cells of a member selected from the group consisting of sturgeon, seruga and beluga milt.

5,547,685

METHODS FOR INHIBITING BONE LOSS WITH VANADYL SULFATE

George J. Cullinan, Trafalgar, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed May 16, 1995, Ser. No. 441,910

Int. Cl.[6] A61K *33/00;33/04*

U.S. Cl. 424—600 **11 Claims**

1. A method for inhibiting bone loss comprising administering to a human in need of treatment an effective amount of vanadyl sulfate, or a pharmaceutically acceptable solvate or hydrate thereof.

5,547,686

FEED SUPPLEMENTS FOR RUMINANTS AND METHOD FOR USING SAME

Thomas C. Jenkins, Central, S.C., assignor to Clemson University, Clemson, S.C.

Filed Aug. 15, 1994, Ser. No. 290,461

Int. Cl.[6] A23L *1/48;* **A61K** *31/16*

U.S. Cl. 426—2 **24 Claims**

1. A method for increasing the amount of unsaturated fatty acids in the tissues and milk of ruminants, said method comprising the step of:

feeding to a ruminant a composition containing a compound that is resistant to hydrogenation in the stomachs of said ruminant, wherein said compound is present in said composition in an amount effective to increase absorption and deposition of unsaturated fatty acids in the tissues and milk of said ruminant; and

wherein said compound comprises a reaction product of an unsaturated fatty acid and a non-acidic amine.

5,547,687

METHOD FOR REMOVING PHENYLALANINE FROM PROTEINACEOUS COMPOSITIONS, A PRODUCT SO OBTAINED AND USE THEREOF

Marko T. Outinen, Espoo; Olli Tossavainen, Helsinki; Matti Harju, Nummela, and Pekka Linko, Espoo, all of, Finland, assignors to Valio Oy, Helsinki, Finland

PCT No. PCT/FI93/00086, § 371 Date Sep. 12, 1994, § 102(e) Date Sep. 12, 1994, PCT Pub. No. WO93/17581, PCT Pub. Date Sep. 16, 1993

PCT Filed Mar. 10, 1993, Ser. No. 295,784

Claims priority, application Finland, Mar. 13, 1992, 921097

Int. Cl.[6] A23L *1/305*

U.S. Cl. 426—2 16 Claims

1. A method for removing phenylalanine from a proteinaceous composition, said method comprising the steps of:

a) degrading enzymatically protein in a proteinaceous composition with a proteolytic enzyme into a protein hydrolysate having a degree of hydrolysis of 30 to 60%,

b) ultrafiltering the protein hydrolysate thus obtained to remove non-degraded protein and recovering a permeate solution,

c) passing the recovered permeate solution through a hydrophobic polystyrene-based adsorption resin at a pH from 2 to 10, at a linear flow rate of 0.1 to 1.3 m/h and at a temperature of 5° to 65° C. to absorb phenylalanine from the composition into the resin,

d) eluting the resin with water at a linear flow rate of 0.1 to 1.3 m/h to form an eluate,

e) recovering from the eluate a proteinaceous composition containing fraction from which phenylalanine has been substantially removed, and

f) concentrating the recovered fraction to a dry solids content of at least 70% by weight.

5,547,688

METHOD FOR FEEDING AN ANIMAL UBIDECARENONE TO PREVENT DISCOLORATION OF MEAT AND FISH

Toru Tokoro, Tokyo, Japan, assignor to RTA Associates, Inc., Tokyo, Japan

Division of Ser. No. 355,194, Dec. 8, 1994. This application May 15, 1995, Ser. No. 441,310

Claims priority, application Japan, Dec. 8, 1993, 5-307643

Int. Cl.[6] A23B *4/20;* A23L *1/314*

U.S. Cl. 426—2 8 Claims

1. A method for preventing meat or fish from discoloring, comprising feeding ubidecarenone to an animal being bred for the production of meat or fish, under conditions and in an amount effective to inhibit oxidation of haem pigments contained in said meat or fish and thereby prevent discoloration of said meat or fish.

5,547,689

CHEWING-GUM COMPOSITION OF IMPROVED ORGANOLEPTIC QUALITY AND PROCESS ENABLING SUCH A CHEWING-GUM TO BE PREPARED

Guillaume Ribadeau-Dumas, Lambersart; Frédéric Bouvier, Lille, and Michel Serpelloni, Beuvry les Bethune, all of, France, assignors to Roquette Freres, Lestrem, France

Filed Jan. 31, 1995, Ser. No. 381,431

Claims priority, application France, Feb. 1, 1994, 94 01082

Int. Cl.[6] A23G *3/30*

U.S. Cl. 426—3 18 Claims

1. Chewing-gum composition containing a gum base, a flavouring agent and a sweetening filler comprising pulverulent maltitol, wherein said pulverulent maltitol has a maltitol purity greater than 95% and a particle size distribution such that at least 50% of the maltitol particles present within the composition are smaller than 90 microns in size.

5,547,690

COMPOSITIONS AND METHOD FOR IMPROVING FLOUR DOUGH

Seppo Vaisanen; Sampsa Haarasilta, both of Kerava, Finland, and Don Scott, Eld Grove, Ill., assignors to Gst-Brocades, N.V., Delft, Netherlands

Continuation-in-part of Ser. No. 153,539, Nov. 15, 1993, abandoned, which is a continuation of Ser. No. 976,287, Nov. 13, 1992, abandoned, which is a continuation of Ser. No. 496,072, Mar. 13, 1990, abandoned, which is a continuation-in-part of Ser. No. 136,003, Dec. 21, 1987, abandoned. This application Aug. 17, 1994, Ser. No. 291,623

Int. Cl.[6] A23B *5/00*

U.S. Cl. 426—10 11 Claims

1. A method for improving the rheological properties of a flour dough which comprises combining flour, yeast and water with a microbial enzyme preparation consisting essentially of active quantities of sulfhydryl oxidase and glucose oxidase in a ratio of 0.1 to 10 units of sulfhydryl oxidase per unit of glucose oxidase wherein the amount of sulfhydryl oxidase and glucose oxidase present in said preparation are effective to improve dough strength and stability and mixing said ingredients to form a suitable baking dough.

5,547,691

METHOD OF PRODUCING CHEESE AND PRODUCT THEREOF

Bjarne Kjaer; Bent Pedersen, and Jens B. Kjaer, all of Hjallerup, Denmark, assignors to Tetra Laval Holdings & Finance S.A., Switzerland

PCT No. PCT/DK93/00131, § 371 Date Dec. 16, 1994, § 102(e) Date Dec. 16, 1994, PCT Pub. No. WO93/20704, PCT Pub. Date Oct. 28, 1993

PCT Filed Apr. 7, 1993, Ser. No. 318,710

Claims priority, application Denmark, Apr. 10, 1992, 0491/92; Dec. 30, 1992, 1582/92

Int. Cl.[6] A23C *9/142*

U.S. Cl. 426—36 22 Claims

1. A method of producing cheese from ultrafiltration-concentrated milk comprising acidifying a starting retentate from the ultrafiltrated milk with at least one starter culture to obtain a fermented retentate with a pH value of from 4.5 to 5.6, adding an effective amount of salt, pumping the fermented retentate, while supplying rennet, into cheese molds or ready-made packages to obtain a curd, and heat treating the curd in said cheese molds or ready-made packages at from 18° to 65° C. for a period of from 4 to 36 hours.

5,547,692

FERMENTED BAGASSE FEED, AND ITS PREPARATION AND USES

Satoshi Iritani, Akaiwa-gun; Masakazu Mitsuhashi, Okayama; Hiroto Chaen, Okayama, and Toshio Miyake, Okayama, Japan, assignors to Kabushiki Kaisha Hayashibara Seitbutsu Kagaku Kenkyujo, Okayama, Japan

Filed Dec. 27, 1994, Ser. No. 364,490

Claims priority, application Japan, Dec. 27, 1993, 5-346948

Int. Cl.[6] A23K *1/00*

U.S. Cl. 426—53 11 Claims

1. A fermented bagasse feed, which is prepared by incorporating a nutrient source and a seed culture of a lactic acid bacterium capable of proliferating in an alkaline nutrient culture medium of not less than pH 9.5 or in a nutrient culture medium containing 6.5 w/w % sodium chloride into a alkali-treated bagasse, and by fermenting the resultant mixture said alkali-treated bagasse being prepared by softening a bagasse with calcium oxide with or without sodium hydroxide while preventing the substantial decomposition of cellulose.

5,547,693

METHOD OF PRESERVING NATURAL COLOR ON FRESH AND MINIMALLY PROCESSED FRUITS AND VEGETABLES

John M. Krochta; Mikal Saltveit, and Luis Cisneros-Zevallos, all of Davis, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Mar. 2, 1994, Ser. No. 205,282

Int. Cl.[6] A23B *7/16;7/148*

U.S. Cl. 426—90 19 Claims

1. A method of preventing white blush and preserving the natural color of either a fresh or minimally processed vegetable or fruit by applying to the surface of either the vegetable or fruit an edible hygroscopic coating selected from the group consisting of hygroscopic salts and lower alkyl polyhydric alcohols and sealing the coated vegetable or fruit in a gas permeable plastic container capable of maintaining an internal relative humidity of between 90 and 100%; said coating of salts and alcohols being present in an amount sufficient to prevent white blush discoloration of the surface of the vegetable of fruit due to loss of water from said surface.

15. A package comprising:

a gas permeable plastic container capable of maintaining an internal relative humidity of between 90 and 100%, said container containing water vapor in a concentration of between 90 and 100% of saturation in the air of said container and

a fresh or minimally processed vegetable or fruit having a surface and being disposed within said container, said surface of said vegetable or fruit being coated with either a hygroscopic salt, or a lower alkyl polyhydric alcohol, or a combination thereof, said salt or alcohol or combination thereof being present in an amount sufficient to prevent white blush discoloration of said surface due to loss of water from said surface.

5,547,694

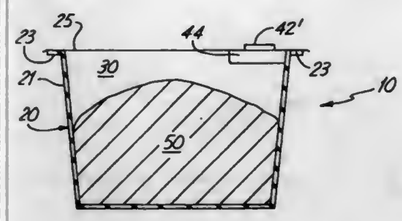
CONTAINER FOR REFRIGERATABLE YEAST-LEAVENED DOUGHS

Michael R. Perry, Plymouth; Victor T. Huang, Moundsview; Diane R. Rosenwald, Shoreview; Andrew H. Johnson, Coon Rapids, and Katy Ghiasi, Minneapolis, all of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Continuation of Ser. No. 35,469, Mar. 23, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 483,401

Int. Cl.[6] B65D *81/20;81/00;85/00*

U.S. Cl. 426—118 4 Claims



1. A refrigerated packaged dough product, said package comprising:

a substantially gas impermeable tray defining an interior cavity, the tray comprising a flange portion positioned on an upper edge of the tray and extending around its periphery;

said flange including a recess that is positioned within the flange but which does not extend to an outer perimeter of the flange;

an expandable yeast-leavened dough positioned within the interior cavity;

a top wall sealingly attached to the tray and covering the dough containing interior cavity and the recess;

a port formed through the top wall above the recess;

a pressure control means sealingly attached to the port;

said port being in gaseous communication with said interior cavity via said recess and through said pressure control means;

said recess being positioned in said flange together with said dough being positioned in said interior cavity such that enough head space is provided above the dough such that the dough will rise without the dough substantially interfering with said gaseous communication between the interior cavity and the port even as the dough expands to fill the inner cavity; and

wherein the pressure control means is capable of venting dough generated carbon dioxide from the package and maintaining an internal pressure of less than about 6 psig within the tray during refrigerated storage and as the dough expands within the package, such that pressure is prevented from building to a level which will cause the package to rupture;

said pressure control means substantially preventing the ingress of air into the package.

5,547,695

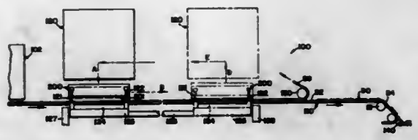
METHOD OF FORMING DOUGH INTO DESIRED CONFIGURATIONS

Roy R. Ricke, Eagan, Minn., and Connie K. Beisner, Salina, Kans., assignors to Schwan's Sales Enterprises, Inc., Marshall, Minn.

Filed Oct. 13, 1994, Ser. No. 322,251

Int. Cl.[6] A21D *6/00*

U.S. Cl. 426—496 25 Claims



1. A method of forming dough, comprising the steps of:

positioning the dough on a surface beneath a dough forming element;

heating downwardly extending protrusions on the dough forming element to a temperature sufficiently high to deactivate yeast in the dough upon contact therewith;

moving the dough forming element downward into contact with the dough and thereby causing a portion of the dough to rise above another portion of the dough and between the downwardly extending protrusions; and

moving the dough forming element upward out of contact with the formed dough.

5,547,696

PHARMACEUTICAL FORMULATION

Hans H. Sørensen, Virum, Denmark, assignor to Novo Nordisk A/S, Bagsvaerd, Denmark

Filed Oct. 13, 1994, Ser. No. 322,260

Int. Cl.[6] A61K *9/14;9/08;38/27*

U.S. Cl. 424—499 12 Claims

1. A pharmaceutical formulation comprising a growth hormone in the amount of about 0.1 mg/ml to about 40 mg/ml and valine at a concentration up to about 100 mM.

5,547,697

ZERO FAT WHIPPED FROZEN DESSERT PRODUCT

Michael H. Lipsch, Beusichem; Marinus J. Van Beek, Maarssen, and John S. Fung Kon Yin, Zwijndrecht, all of, Netherlands, assignors to Unilever Patent Holdings B.V., Vlaardingen, Netherlands

PCT No. PCT/EP93/01275, § 371 Date Jan. 23, 1995, § 102(e) Date Jan. 23, 1995, PCT Pub. No. WO93/24019, PCT Pub. Date Dec. 9, 1993

PCT Filed May 18, 1993, Ser. No. 347,423

Claims priority, application European Pat. Off., May 22, 1993, 92201482

Int. Cl.[6] A23G *9/02*

U.S. Cl. 426—565 **18 Claims**

1. A zero fat whipped frozen dessert product comprising:
a) 5–20% by weight milk solids not fat (MSNF), whey solids or mixtures thereof
b) 5–30% by weight carbohydrates, sugar alcohols or mixtures thereof
c) 0.1–5% by weight stabilizer
d) from 0.1 to 3% by weight emulsifier
e) water,
wherein the emulsifier comprises at least 20% by weight fatty acid monoglycerides and at least 10% by weight fatty acid diglycerides and wherein the emulsifier has an iodine value larger than 3.

5,547,698

EDIBLE FATS

Adrianus J. Lansbergen, and Robert Schijf, both of Vlaardingen, Netherlands, assignors to Van Den Bergh Foods Co., New York, N.Y.

Continuation of Ser. No. 680,186, Apr. 3, 1991, abandoned. This application Jun. 3, 1993, Ser. No. 71,350

Claims priority, application United Kingdom, Apr. 3, 1990, 9007497

Int. Cl.[6] A23D *7/00*

U.S. Cl. 426—602 **14 Claims**

1. In an edible water-in-oil emulsion spread comprising a liquid vegetable oil phase and hardstock, the improvement whereby the content of saturated fats and trans fatty acids is reduced, said improvement comprising the use, as the hardstock component, of:
an interesterified mixture having a behenic acid content of at least 8% and having a palmitic and stearic acid content totaling at least 50%, the interesterified mixture being obtained by interesterification of a source fat rich in behenic acid content with a source fat rich in palmitic acid, stearic acid or mixtures of palmitic and stearic acid, said source fat rich in behenic acid being selected from the group consisting of fully hardened high erucic acid rapeseed oil, fish oils, mustard seed oil and mixtures thereof.

5,547,699

MARINE MICRO-ALGAE FOOD MATERIAL CONTAINING DOCOSAHEXAENOIC ACID, FOOD CONTAINING THE SAME AND MANUFACTURING METHOD THEREFOR

Tokio Iizuka; Kenichi Uehara, and Daizo Taksuchi, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Tokyo, Japan

Filed Apr. 29, 1994, Ser. No. 235,339

Claims priority, application Japan, Apr. 30, 1993, 5-104828; Jun. 28, 1993, 5-157361

Int. Cl.[6] A23L *1/337;1/015;1/22;* **C12N** *1/00*

U.S. Cl. 426—615 **5 Claims**

1. A DHA-containing food material comprising:
food material; and
a strain of *Crypthecodinium cohnii*, a marine micro algae containing docosahexaenoic acid, designated by ATCC No. 30021, the strain being produced by a process comprising the steps of:
(a) culturing the strain of *Cryptthecodinium cohnii* by a liquid submerged method, the strain of *Crypthecodinium cohnii* having a pepsin digestibility in humans of at least 80%;
(b) separating bodies of the strain of *Cryptthecodinium cohnii;*
(c) water-washing the bodies of the strain of *Crypthecodinium cohnii;*
(d) disinfecting the bodies of the strain of *Crypthecodinium cohnii;* and
(e) drying the bodies of the strain of *Crypthecodinium cohnii.*

5,547,700

Patent Not Issued For This Number

5,547,701

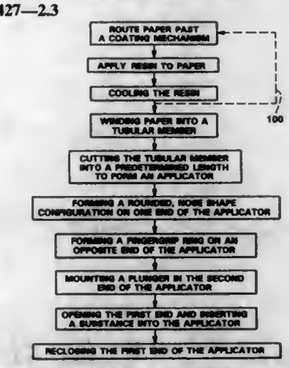
METHOD OF FORMING A PAPER APPLICATOR CONTAINING A WATER INSOLUBLE COATING

Steven J. Nielsen, Greenville; Yihua Chang, and Tammy J. Rentmeester, both of Appleton, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jun. 7, 1995, Ser. No. 476,477

Int. Cl.[6] A01N *1/02*

U.S. Cl. 427—2.3 **20 Claims**



1. A method of forming a paper applicator containing a water-insoluble coating, said method comprising the steps of:
a) routing a strip of uncoated paper past a coating mechanism, said paper having a pair of oppositely aligned major surfaces;
b) applying a single layer of a water-insoluble, hot thermoplastic resin onto at least one of said major surfaces of said paper to form a strip of coated paper;
c) cooling said resin into at least a partially solidified state;
d) winding said strip of coated paper into a hollow tubular applicator with said coating forming an exterior surface thereof, said applicator having a first end and a second end;
e) configuring said first end of said applicator into a rounded nose shape; and
f) forming a fingergrip ring on said second end of said applicator.

5,547,702

METHOD FOR CONTINUOUS MANUFACTURE OF DIAGNOSTIC TEST STRIPS

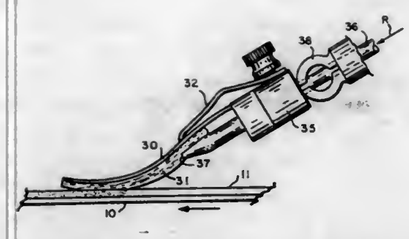
John M. Gleisner, Lynnwood, Wash., assignor to Polymer Technology International Corporation, Issaquah, Wash.

Filed Jul. 8, 1994, Ser. No. 272,192

Int. Cl.[6] G01N *33/531;* **B05D** *3/00;* **C12Q** *1/28;1/54*

U.S. Cl. 427—2.13 **11 Claims**

1. A method for making a test strip comprising a substrate, a layer disposed on the substrate and located adjacent the distal end



of the substrate, said layer containing a chemical reagent detection system capable of detecting the presence of an analyte in a sample of biological fluid, the reagent detection system producing a detectable change in said layer in the presence of said analyte, said method comprising:
providing a web comprising a length of substrate having a width substantially the dimension of a final length of the test strip being made;
providing on said substrate adjacent to one edge thereof a layer of material permeable to biological fluids, said layer having a width sufficient to place thereon a drop of biological fluid;
continuously applying to the layer of permeable material an aqueous solution containing reagent detection chemicals capable of providing the detectable change in the presence of the analyte, said solution being applied in an amount to substantially saturate the permeable material;
drying the layer of permeable material to contain the reagent detection chemicals within said layer; and
cutting the web into shorter lengths of web containing a plurality of test strips for further processing.

5,547,703

METHOD OF FORMING SI-O CONTAINING COATINGS

Robert C. Camilletti, Midland; Fredric C. Dall, Merrill, and Diana K. Dunn, Midland, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Apr. 11, 1994, Ser. No. 225,688

Int. Cl.[6] B05P *5/12*

U.S. Cl. 427—126.3 **10 Claims**

1. A method of forming an Si-O containing coating on an electronic substrate comprising:
(a) applying a coating comprising hydrogen silsesquioxane resin on an electronic substrate;
(b) heating the coated substrate at a temperature between about 75° and about 400° C. in an atmosphere consisting essentially of ammonia and moisture for at least about 15 minutes;
(c) heating the coated substrate resulting from step (b) at a temperature between about 75° and about 400° C. in an atmosphere consisting essentially of substantially anhydrous ammonia for at least about 15 minutes; and
(d) heating the coated substrate resulting from step (c) to a temperature of at least about 150° C. in an oxygen containing atmosphere for a time between 30 minutes and 72 hours to anneal the coating.

5,547,704

METHOD FOR PRODUCING A MAGNETIC DISK

Yasuo Nagashima, and Ryuji Shirahata, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

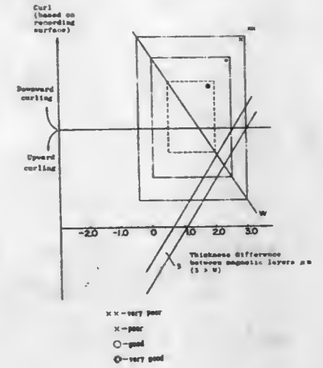
Continuation of Ser. No. 889,390, May 28, 1992, abandoned. This application Sep. 6, 1994, Ser. No. 300,542

Claims priority, application Japan, May 31, 1991, 3-129299

Int. Cl.[6] B05D *5/12*

U.S. Cl. 427—130 **9 Claims**

1. A method for producing a magnetic disk formed on a circular polymeric substrate comprising the steps of:



(a) forming a first magnetic layer on a first surface of a circular polymeric substrate by applying a coating material, comprising magnetic particles dispersed in a resin binder, to said first surface;
(b) drying said first magnetic layer;
(c) forming a second magnetic layer on a second surface of said polymeric substrate by applying said coating material to said second surface;
(d) drying said first magnetic layer and said second magnetic layer; and
(e) calendering Only said second magnetic layer to form a magnetic recording surface, said first magnetic layer being dried twice, and said second magnetic layer being dried once and subsequently calendered, to minimize curling in said magnetic disk.

5,547,705

NONLINEAR OPTICAL DEVICE AND METHOD OF MANUFACTURING SAME

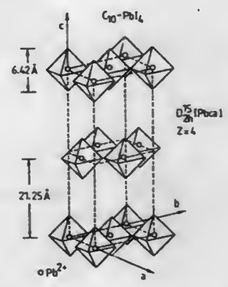
Tadashi Fukuzawa, Tokyo-to; Satoru S. Kano, Kanagawa-ken; Kiyoshi Kumata, Tokyo-to, all of, Japan; Victor Y. Lee, San Jose; Franklin M. Schellenberg, Cupertino, both of Calif., and Yutaka Takahashi, Tokyo-to, Japan, assignors to International Business Machine Corporation, Armonk, N.Y.

Division of Ser. No. 625,258, Dec. 10, 1990, abandoned. This application Sep. 4, 1992, Ser. No. 939,965

Claims priority, application Japan, Dec. 8, 1989, 01/317916

Int. Cl.[6] B05D *5/06*

U.S. Cl. 427—162 **16 Claims**



1. A method for producing a nonlinear optical device comprising:
providing a solution of an organic material comprising $(C_{10}H_{21}NH_3)_2PbI_4$) in a solvent; and spin coating a quantity

of said solution on a substrate to form an organic material film on the substrate, the film having crystal axes, one of the crystal axes of the film being oriented in a direction normal to said substrate, the film having a structure of two different layers thinner than the film alternately intercalated in said direction.

5,547,706

OPTICAL THIN FILMS AND METHOD FOR THEIR PRODUCTION

John F. Ackerman, Cheyenne, Wyo., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 27, 1994, Ser. No. 280,958

Int. Cl.[6] B05D *5/06*

U.S. Cl. 427—166 **6 Claims**

1. A method for producing an optical thin film which comprises depositing on a substrate alternating layers of titanium dioxide and magnesium aluminate by chemical vapor deposition at a constant temperature, using a titanium(IV) alkoxide of a C_{1-4} alkanol and a magnesium aluminum alkoxide of a C_{1-4} alkanol as reactants.

5,547,707

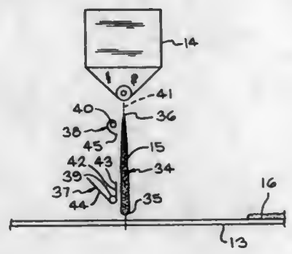
METHOD AND APPARATUS FOR APPLYING GRANULES TO STRIP ASPHALTIC ROOFING MATERIAL TO FORM VARIEGATED SHINGLES

Thomas D. Haubert, Columbus, and James S. Belt, Utica, both of Ohio, assignors to Owens Corning Fiberglas Technology, Inc., Summit, Ill.

Filed Jun. 7, 1995, Ser. No. 487,947

Int. Cl.[6] B05D *1/30*

U.S. Cl. 427—188 **17 Claims**



1. A method for forming a variegated granule-covered roofing material comprising

periodically dropping a blend drop of granules of a first color onto a tacky surface of a continuously moving sheet of asphaltic material to form spaced granule covered first areas separated by tacky second areas, said first areas having leading and trailing edges in the direction of the sheet movement;

trimming at least one of a leading and a trailing edge of each blend drop of first granules as each drop falls to the moving sheet to provide depositions having sharp edge configurations corresponding to the trimmed edges of granules on each first area; and subsequently dropping a blend drop of a second color onto said tacky second areas of said moving sheet.

5,547,708

CHEMICAL VAPOR DEPOSITION METHOD FOR FORMING A DEPOSITED FILM WITH THE USE OF LIQUID RAW MATERIAL

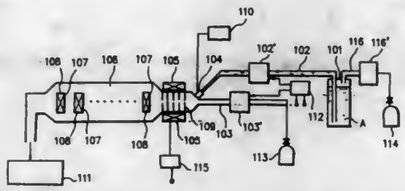
Tetsuo Asaba, Odawara, and Kenji Makino, Yokohama, both of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 997,543, Dec. 28, 1992, Pat. No. 5,383,970. This application Nov. 14, 1994, Ser. No. 339,887

Claims priority, application Japan, Dec. 26, 1991, 5-345056

Int. Cl.[6] C23C *16/00*

U.S. Cl. 427—248.1 **12 Claims**



1. A chemical vapor deposition method for forming a deposited film on a substrate using a film-forming liquid raw material, said chemical vapor deposition method comprises:

supplying said film-forming liquid raw material while regulating the amount of said film-forming liquid raw material into a liquid gasifying system comprising a liquid atomizing mechanism and a liquid gasifying mechanism provided with a plurality of plate-like shaped heating members respectively having a plurality of perforations; simultaneously supplying a gas into said liquid gasifying system while controlling the flow rate of said gas, wherein said film-forming liquid raw material is atomized into liquid fine particles which are heated together with said gas while being passed through said perforations of said plurality of plate-like shaped heating members while controlling the temperature of the heating members to produce a film-forming raw material gas;

introducing said film-forming raw material gas from said gasifying system into a reaction chamber; and

chemically reacting said film-forming raw material gas with a surface of a substrate disposed in said reaction chamber, said substrate being maintained at a temperature, sufficient to thereby cause the formation of a deposited film on said surface of said substrate.

5,547,709

SURFACE TREATMENT OF OPENING ROLLERS FOR OPEN END SPINNING

Jörg Lukschandel; Rudolf Patzon, both of Kempten, and Jürgen Hassler, Durach, all of, Germany, assignors to Elektroschmelzwerk Kempten GmbH, Munich, Germany

Continuation of Ser. No. 104,999, Aug. 10, 1993, abandoned. This application Jul. 28, 1994, Ser. No. 282,163

Claims priority, application Germany, Apr. 29, 1993, 43 14 161.7

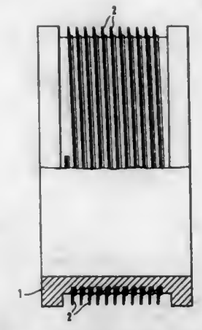
Int. Cl.[6] B05D *3/00*

U.S. Cl. 427—299 **11 Claims**

1. A surface treatment process for minimizing corrosion due to voids existing between the basic metallic body of an opening roller for open end spinning and a raw wire clothing mounted thereon comprising prior to deburring and application of an antiwear coating, the steps of:

a) introducing the opening roller into a bath comprising a sealing material in such a way that said sealing material is deposited in and on the walls of the voids existing between the raw wire and the basic body of the roller; said sealing material being selected from the group consisting of silicates, phosphates mixtures thereof;

b) rinsing the sealing material from an outer surface of the opening roller to form a rinsed opening roller;



c) heat treating the rinsed opening roller to produce a pretreated opening roller at temperatures sufficient to (i) evaporate any solvent from the sealing material and to (ii) harden the sealing material so as to prevent attack on such material during deburring and coating, and

then deburring and applying an antiwear coating to the pretreated opening roller.

5,547,710

AQUEOUS COATING COMPOSITIONS

Rajasingham Satgurunathan, Kingsley; David C. Hinde, Wirral; John C. Padget, Frodsham, and John G. Carey, Warrington, all of, England, assignors to Zeneca Limited, London, England

PCT No. PCT/GB93/00468, § 371 Date Nov. 3, 1994, § 102(e) Date Nov. 3, 1994, PCT Pub. No. WO93/18075, PCT Pub. Date Sep. 16, 1993

PCT Filed Mar. 5, 1993, Ser. No. 295,861

Claims priority, application United Kingdom, Mar. 11, 1992, 9205272; Nov. 19, 1992, 9224289

Int. Cl.[6] B05D *3/02*

U.S. Cl. 427—386 **22 Claims**

1. An aqueous curable polymer dispersion which comprises a polyester and/or polyurethane and polymeric product having a Tg within the range 25° C. to 100° C. obtainable by subjecting to a free-radical-initiated polymerisation process a mixture comprising the components

(a) at least one polymerisable olefinically unsaturated monomer which does not have an epoxy-functional group or an epoxy-reactive group or a group which is subsequently converted to an epoxy-reactive group;

(b) at least one polymerisable olefinically unsaturated monomer having at least one epoxy-functional group and/or at least one multi-functional epoxy compound having an average of 2 or more epoxy groups per molecule and which is not derived from the polymerisation of an olefinically unsaturated monomer system: and

(c) at least one olefinically unsaturated monomer having one or more of the following:

(i) at least one carboxyl group such that epoxy-reactive amine groups are provided in the resulting polymeric product by conversion subsequent to polymerisation of at least some of the carboxyl groups to epoxy-reactive amine groups;

(ii) at least one hydroxyl group such that epoxy-reactive hydroxyl groups are provided directly in the resulting polymeric product; and

(iii) at least one blocked amine group which is deblocked subsequent to polymerisation to provide epoxy-reactive amine groups in the resulting polymeric product and wherein:

(d) the level of component (b) based on the sum of components (a), (b), and (c), is from 2 to 48 weight %;

(e) the level of component (a) based on the sum of components (a), (b) and (c) is from 50 to 96 weight %; and

(f) the level of component (c) based on the sum of components (a), (b) and (c) is from 2 to 40 weight %.

5,547,711

SELF-CROSSLINKING PREPARATIONS, PRODUCTION AND USE THEREOF

Stephan Kirchmeyer, Leverkusen; Klaus Pohmer, and Tillmann Hassel, both of Köln, all of, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 19, 1995, Ser. No. 444,604

Claims priority, application Germany, May 26, 1994, 44 18 308.9

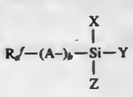
Int. Cl.[6] B05D *3/02;* **C08K** *3/20;* **C08G** *77/24*

U.S. Cl. 427—386 **9 Claims**

1. A self-crosslinking composition comprising

α) water

β) at least one alkoxysilane compound containing at least one perfluoroalkyl group, of the formula



(I)

wherein

R^f is a monovalent perfluoroalkyl group with 4 to 20 carbon atoms,

A is an (a+1)-valent aliphatic, cycloaliphatic, aromatic or heterocyclic group or a radical containing several members selected from the group consisting of aliphatic, cycloaliphatic, aromatic and heterocyclic groups, with 1 to 20 carbon atoms, which radical optionally contains 1 to 10 oxygen, nitrogen or sulphur atoms,

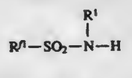
b is 1 or 0,

a is a number from 1 to 4 if b=1, and 1 if b=0,

X, Y and Z are identical or different monovalent alkoxy groups with 1 to 6 carbon atoms optionally interrupted by one or two oxygen atoms, cycloalkoxy groups with 6 to 10 carbon atoms, aryloxy groups with 6 to 10 carbon atoms, alkyl groups with 1 to 6 carbon atoms, cycloalkyl groups with 6 to 10 carbon atoms or aryl groups with 6 to 10 carbon atoms, providing that at least one of X, Y and Z denotes an alkoxy group, and

γ) at least one compound soluble in water or emulsifiable or dispersible in water containing at least one perfluoroalkyl group, which compound is produced from γ1, γ2 and γ3, wherein,

γ1 is at least one sulphonamide containing a perfluoroalkyl group, of the formula



(II)

wherein

R^f has the same meaning as R^f in formula (I), but independently thereof, and

R^1 is hydrogen or a monovalent hydrocarbon chain with 1 to 20 carbon atoms, optionally interrupted by 1 to 4 oxygen atoms,

γ2 is at least one compound having at least one group reactive with 1,2-epoxide groups and having at least one oxyethylene unit, and

γ3 is at least one compound which contains at least one 1,2-epoxide group,

compound γ containing 5 to 95 wt. % of oxyethylene units.

5,547,712

ANTISLIP PREPARATION

Ralf Gossen, Duisburg; Horst Buxhofer, Erkrath, and Hermann Onusseit, Haan, all of, Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP93/02405, § 371 Date Mar. 14, 1995, § 102(e) Date Mar. 14, 1995, PCT Pub. No. WO94/06880, PCT Pub. Date Mar. 31, 1994

PCT Filed Sep. 6, 1993, Ser. No. 397,145

Claims priority, application Germany, Sep. 14, 1992, 42 30 473.3

Int. Cl.[6] B05D *1/02*

U.S. Cl. 427—421 22 Claims

1. A process for producing an anti-slip clothes hanger comprising:

(a) forming an aqueous dispersion containing a copolymer of styrene and a diene in a ratio by weight of from 20:80 to 80:20; and

(b) applying said aqueous dispersion onto said clothes hanger.

5,547,713

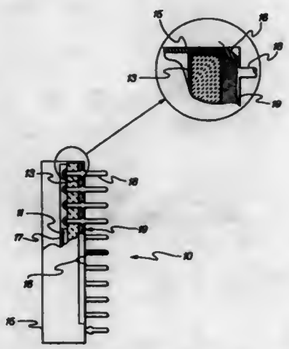
DUAL CURE EPOXY BACKSEAL FORMULATION

Julio M. Alvarado, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 919,653, Jul. 24, 1992, abandoned, which is a division of Ser. No. 607,435, Oct. 31, 1990, abandoned. This application Aug. 14, 1994, Ser. No. 286,591

Int. Cl.[6] C08F *2/46*

U.S. Cl. 427—493 7 Claims



1. A method for backsealing a ceramic carrier comprising:

(a) applying to a ceramic carrier having an integrated circuit chip mounted thereon a composition consisting essentially of:

(i) from 77.3 to 87.0 weight percent of a liquid, multifunctional bisphenol A epoxy;

(ii) from 9.7 to 19.3 weight percent of a liquid, multifunctional, hydroxyl-containing organic material having no epoxide groups;

(iii) from 1.25 to 1.70 weight percent of a complex onium salt photoinitiator selected from the group consisting of sulfonium salts of formulae $Ar_3S^+X^-$, wherein Ar is aryl, alkyl, substituted aryl or substituted alkyl and X is selected from the group consisting of BF_4, PF_6, AsF_6, SbF_6 and CF_3SO_3;

(iv) from 0.5 to 1.0 weight percent of a complex onium salt photoinitiator selected from the group consisting of iodonium salts of formulae $Ar_2I^+X^-$, wherein Ar is aryl alkyl, substituted aryl or substituted alkyl and X is selected from the group consisting of BF_4, PF_6, AsF_6, SbF_6 and CF_3SO_3; and

(v) from 0.5 to 1.0 weight percent of a complex cupric salt initiator of formula, $CU[II](Y^b)_a$ wherein Y is an organic or inorganic anion and the product of a times b is −2, said complex cupric salt and said complex onium salt generating a Bronsted acid in the presence of heat and said hydroxyl-containing organic material;

(b) exposing said composition applied on said ceramic carrier to UV radiation; and

(c) subsequently or simultaneously heating said composition on said ceramic carrier until said composition has completely polymerized.

5,547,714

ION BEAM DEPOSITION OF DIAMOND-LIKE CARBON FILMS

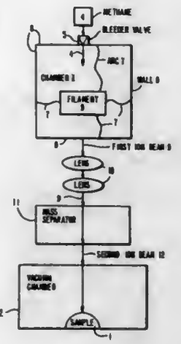
Hugo A. Huck; Alberto E. Jech; Raúl Righini; Emilia B. Halac; Maria A. R. de Benyacar, all of Buenos Aires; and Julio A. Hicolai, Moreno, all of, Argentina, assignors to Comision Nacional de Energia Atomica, Buenos Aires, Argentina

Continuation of Ser. No. 988,765, Dec. 10, 1992, abandoned. This application Apr. 12, 1995, Ser. No. 422,003

Claims priority, application Argentina, Dec. 23, 1991, 321491

Int. Cl.[6] C23C *14/48;* B05D *3/06*

U.S. Cl. 427—523 7 Claims



1. A process for forming on a solid substrate, a film of diamond-like carbon at ambient temperature, comprising the following steps:

a) cleaning and degreasing the outer surfaces of said solid substrate;

b) introducing said substrate, in a first chamber, which said chamber is substantially at ground potential, with a layout which also includes an ion source at a higher positive voltage as compared to the ground, the voltage variable between 1 and 70 KeV, and a path between said ion source and said first chamber in which are located, at least, one set of electrostatic lenses and one magnetic mass separator;

c) creating a vacuum in said layout, on an order of 10^{-5} bar;

d) generating a first ion beam of C^+, or CH_n^+ where n<5 in said ion source, at a high positive voltage as compared to said ground;

e) forming and concentrating said first ion beam with said set of electrostatic lenses;

f) homogenizing said first beam with said magnetic mass separator, capable of deviating any undesired ions, and obtaining a second beam with carbon-hydrogenated ions consisting of C^+ and C_n^+, where n<5 ions; and

g) subsequently applying only said second homogenized ion beam in said mass separator on the surface of said substrate, until said substrate is covered with said film of diamond-like carbon, wherein said ions of said second beam have an energy on the order of 30 keV, arising from the acceleration caused by the higher positive voltage as compared to ground the voltage variable being between 1 and 70 keV.

5,547,715

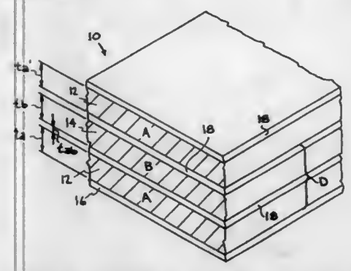
METHOD FOR FABRICATING AN IGNITABLE HETEROGENEOUS STRATIFIED METAL STRUCTURE

Troy W. Barber, Jr., Paloalto, and Timothy Weihs, Menlo Park, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Division of Ser. No. 275,472, Jul. 15, 1994. This application Oct. 13, 1995, Ser. No. 542,976

Int. Cl.[6] B05D *3/00*

U.S. Cl. 427—561 1 Claim



1. A method for fabricating an ignitable heterogeneous stratified metal structure for supporting the propagation of an internal chemical reaction along an expanding wavefront from an ignition starting point that has alternating planar depositions of a first and a second exothermic-constituent material fused together as a whole with a mutual interface of said first exothermic-constituent material reacted with said second exothermic-constituent material, the method comprising the steps of:

maintaining a substrate at a temperature of less than 110° C. in an argon atmosphere;

placing two target surfaces of a first exothermic-constituent material and a second exothermic-constituent material proximate to said substrate; and

applying a voltage to induce an argon plasma sheath, wherein argon atoms are accelerated to each target surface and provide kinetic energy to eject particles of said first and said second exothermic-constituent materials for deposit on said substrate in an alternating strata of said first exothermic-constituent material having a uniform thickness "t_a" in the range of 20–10,000 Å, said second exothermic-constituent material having a uniform thickness "t_b" in the range of 20–10,000 Å, an interface of reacted first and second exothermic-constituent materials having a thickness "t_i" in the range of 3–180 Å, and each combination of said first exothermic-constituent material, said second exothermic-constituent material and twice said interface of reacted first and second exothermic-constituent materials having a recurring interval "D" in the range of 50–20,000 Å.

5,547,716

LASER ABSORPTION WAVE DEPOSITION PROCESS AND APPARATUS

Stephen L. Thaler, St. Louis, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Continuation-in-part of Ser. No. 62,202, May 17, 1993, abandoned. This application Nov. 28, 1994, Ser. No. 346,641

Int. Cl.[6] C23C *14/14;14/30;8/00;* H05H *1/00*

U.S. Cl. 427—577 26 Claims

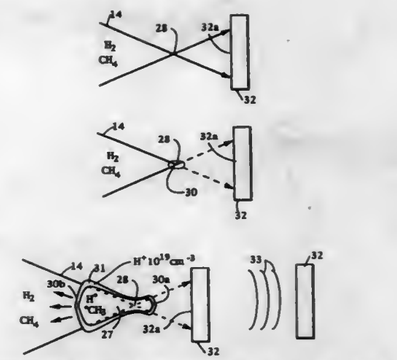
1. A method of coating a substrate material with a layer containing a first material comprising:

(a) providing a first gas in molecular form;

(b) irradiating the first gas and the substrate material with a pulse of energy from a laser to create at least a first plasma from the first gas wherein the molecules of the first gas are dissociated and ionized;

(c) cooling the at least first plasma into neutral precursors comprising atomic elements and radicals; and

(d) transporting the neutral precursors to the substrate material to form the layer thereon.



5,547,717

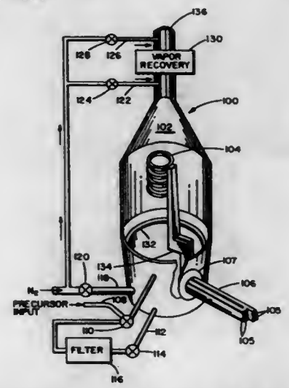
METHOD FOR DENSIFYING AND REFURBISHING BRAKES

David T. Scaringella, Littleton, Mass.; Donald E. Connors, Jr., Nashua, N.H., and Garrett S. Thurston, Lowell, Mass., assignors to Avco Corporation, Providence, R.I.

Continuation-in-part of Ser. No. 959,299, Oct. 9, 1992, Pat. No. 5,389,152. This application Feb. 13, 1995, Ser. No. 387,677

Int. Cl.[6] B05D *3/14*

U.S. Cl. 427—590 23 Claims



1. A rapid chemical vapor deposition method for refurbishing worn carbon brake component(s) for aircraft, comprising the steps:

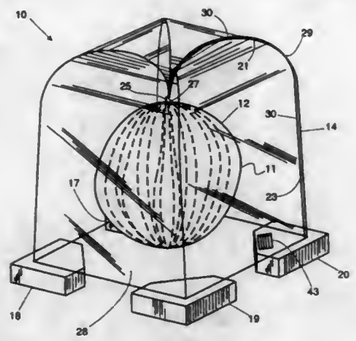
a) placing at least one worn carbon brake component(s), having pores defined by interior regions, including at least one geometric center region, and an exterior surface, in a liquid carbon-precursor contained within a reactor for densifying a porous structure, the reactor being adapted to contain the liquid carbon-precursor and to contain at least one internal induction coil; and

b) inductively heating the interior regions of the worn carbon brake component(s) to a temperature above the decomposition temperature of the liquid carbon-precursor, thereby effecting formation of a vapor from the liquid carbon-precursor and infiltration into the interior regions of the vapor and deposition of pyrolytic carbon within the interior regions;

whereby after refurbishing, the worn carbon brake component(s) are characterized by a microstructure and frictional wear properties

at least equal to those of carbon brake component(s) of equivalent size, density and composition which are presently in use in aircraft.

5,547,718
MOTORIZED SPINNING ILLUSION DEVICE
Ted S. Shapiro, 55 W. Eleventh St., Apt. 6C, New York, N.Y. 10011
Filed Nov. 1, 1993, Ser. No. 144,043
Int. Cl.[6] B44C *3/00*; G09F *19/12*
U.S. Cl. 428—13 **18 Claims**



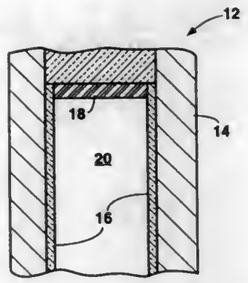
1. A novelty illusion device comprising:
a transparent case;
an illusion object disposed within said case;
a motor for producing rotational force;
a circuit for selectively controlling the operation of said motor;
power means for providing electric current to said motor;
drive shaft means for transmitting said rotational force from said motor to said illusion object; and
means to render said drive shaft means virtually invisible to an observer when said drive shaft is transmitting rotational force from said motor to said illusion object.

5,547,719
IMITATION CEREMONIAL RICE
Joel C. Diehl, 2404 Manana, Austin, Tex. 78730
Filed Mar. 22, 1993, Ser. No. 35,083
Int. Cl.[6] A41G *1/00*; A47G *33/00*
U.S. Cl. 428—15 **7 Claims**

1. A rice grain shaped product, comprising:
a dried mixture of a solid material, including a binder which tends to be soluble in water; wherein the dried mixture is digestible by birds and has a diameter and length similar to the diameter and length of a grain of rice; and wherein the product tends to dissolve in water more quickly than does rice.

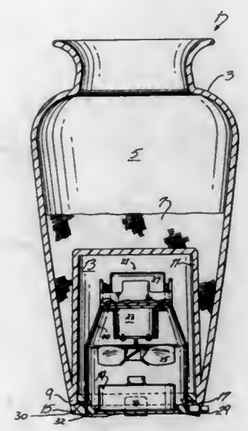
5,547,720
TRANSPARENT, PROTECTIVE GLAZING UNIT
Hermann L. Rittler, Corning, N.Y., assignor to Corning Incorporated, Corning, N.Y.
Filed Sep. 21, 1994, Ser. No. 310,277
Int. Cl.[6] E06B *3/24*
U.S. Cl. 428—34 **19 Claims**

1. A multi-panel glazing unit comprising a transparent, fluid sol and at least two transparent sheets of glazing material spaced apart



to enclose the fluid sol, the fluid sol comprising a polar solvent and at least two inorganic compounds that form a transparent sol with the solvent, the sol wetting the inner surfaces of the glazing sheets and being thermally convertible to a cellular, non-flammable, inorganic material that adheres to the inner surfaces of the glazing sheets and that insulates against heat transfer.

5,547,721
FLOWER VASE
Hsin H. Kuo, P.O. Box 368, Alhambra, Calif. 91802
Filed Dec. 30, 1993, Ser. No. 175,649
Int. Cl.[6] A47G *7/06*
U.S. Cl. 428—34.1 **5 Claims**



1. A vase comprising:
a container defining a first space to receive a plant, said container having a substantially closed base;
a housing defined in said container to define a second space separate from the first space, said housing having an opening at and through said base;
at least one of
(a) a light adapted to illuminate through said opening, or
(b) means for generating a scent and a blower to drive the scent from the scent generating means through the opening disposed in said base; and
means for powering said light or blower.

5,547,722
ETHYLENE POLYMER AND FUEL TANK COMPRISING THE SAME
Yumito Uehara; Nobuo Enokido; Kiyotoshi Fujioka, all of Kanagawa; Nobuyuki Shimizu, and Motonori Ueda, both of Okayama, all of, Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan
Division of Ser. No. 311,678, Sep. 23, 1994. This application Mar. 31, 1995, Ser. No. 414,231
Claims priority, application Japan, Sep. 27, 1993, 5-239986; Sep. 29, 1993, 5-242926; Sep. 29, 1993, 5-242927
Int. Cl.[6] B65D *88/12*; B32B *27/32;27/34*
U.S. Cl. 428—35.7 **18 Claims**

1. A fuel tank obtained by blow molding of an ethylene homopolymer or copolymer comprising ethylene and not more than 10% by weight of an α-olefin having from 3 to 20 carbon atoms, said ethylene polymer having (1) an intrinsic viscosity of from 2 to 6 dl/g, (2) a density of from 0.945 to 0.970 g/cm^3, (3) an R value of from 2.5 to 4, said R value being defined as a σ_2/σ_1 ratio, wherein σ_1 and σ_2 mean stress in elongation with a strain at 2 sec and 4 sec, respectively, under a flow at an elongational strain rate $\dot{\epsilon}$ of 0.5 sec^{-1}, and (4) a relationship between high-velocity impact strength (HRI-IZOD) measured at −30° C. and a melt index under a load of 21.6 kg (HLMI) satisfying formula:

$$\text{HRI-IZOD} \geqq -\log \text{HLMI} + 1.15.$$

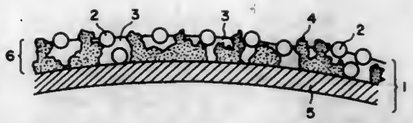
5,547,723
PLASTIC ARTICLES OF REDUCED GAS TRANSMISSION AND METHOD THEREFOR
Joel L. Williams, Cary, N.C.; Susan L. Burkett, Northport, Ala., and Shel McGuire, Omaha, Nebr., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.
Division of Ser. No. 301,101, Sep. 6, 1994. This application Sep. 21, 1995, Ser. No. 530,401
Int. Cl.[6] A61J *1/06*
U.S. Cl. 428—35.7 **6 Claims**

1. A container comprising a wall of polymer material, said polymer material having a coating of a gas transmission-limiting material on a surface corresponding to the outer wall of said container and said polymer material having been irradiated with high energy radiation to form radicals in the polymeric chains of said polymer material which serve to react with and thereby block passage of gases coming into said container from without.

5. A polypropylene blood collection assembly comprising an evacuated polypropylene tube having a closed end, a side wall and an open end having a puncturable stopper therein and a silicon oxide coating over an external surface of said tube, said tube or assembly having been irradiated with high energy radiation.

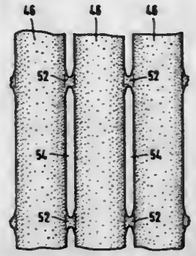
5,547,724
DEVELOPER CARRYING MEMBER, DEVELOPING DEVICE UNIT
Tetsuya Kuribayashi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 193,776, Feb. 10, 1994, abandoned, which is a continuation of Ser. No. 590,804, Oct. 1, 1990, abandoned. This application Aug. 10, 1995, Ser. No. 513,597
Claims priority, application Japan, Oct. 2, 1989, 1-255184; Oct. 4, 1989, 1-257651
Int. Cl.[6] G03G *15/09*
U.S. Cl. 428—35.8 **60 Claims**

1. A developer carrying member comprising a substrate and a coating film, wherein the surface of said substrate is covered with said coating film, and said coating film is formed by coating with a coating solution containing (a) separately dispersed therein (i) a graphite, a carbon black or a mixture thereof, and (ii) a spherical resin particle having a number average particle diameter of from 0.05 to 30μ and the ratio of major axis to minor axis of said



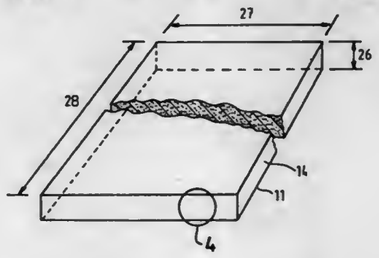
spherical resin particle is from 1.0 to 1.5, and (b) a film-forming binder resin dissolved in said coating solution, said spherical resin particle providing a surface of said coating film with roughness.

5,547,725
PRODUCTION OF A NOVEL SCULPTURED STRIP OF PLASTIC FOAM
Lawrence Barrows, Wayland; Gerald Lowden, Lowell, both of Mich.; Carmen Cassetta, and Yehuda Ozari, both of Charlotte, N.C., assignors to tesa tape Inc., Charlotte, N.C.
Filed Feb. 25, 1994, Ser. No. 201,584
Int. Cl.[6] B32B *3/30*
U.S. Cl. 428—43 **14 Claims**



1. A foam article comprising a foamed sheet having a top and a bottom, the sheet having a plurality of parallel longitudinal lines which extend through the entire foamed sheet to form a plurality of adjacent strips longitudinally connected to one another, said parallel longitudinal lines between adjacent strips being interrupted periodically so that adjacent strips are longitudinally connected to one another by integral compressed foam successive securing lengths at spaced locations up to about 260 mm, wherein said securing lengths permit adjacent strips to be pulled apart from the foam article.

5,547,726
CONSTRUCTION ELEMENT
Gerhard Dingler, Schillerstrasse 49, 7274 Haiterbach 1, Germany
Continuation-in-part of Ser. No. 526,515, May 21, 1990, abandoned. This application Apr. 8, 1993, Ser. No. 44,988
Claims priority, application Japan, May 24, 1989, 39 16 938.3
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—57 **49 Claims**



1. A building construction element of which the thickness dimension is substantially less than at least one of its length and width dimensions, having the following features:

a) in terms of weight, the construction element comprises more than 50% by weight plastic and less than 50% small pieces of metal selected from the group consisting of aluminum foil and aluminum alloy, the construction element being comprised predominantly of the plastic and the pieces of metal;

b) the pieces of metal are oriented irregularly and essentially evenly distributed in the plastic;

c) the pieces of metal have a longest dimension that is less than the construction element is thick;

d) the construction element has the dimensions of formwork panel sheets of elemental concrete formwork; and

e) the thermal transfer coefficient of the construction element is at least that of multilayer casting boards made of a plurality of layers of wood bonded by intermediate layers of plastic.

5,547,727

OPTICAL RECORDING ELEMENTS HAVING RECORDING LAYERS CONTAINING CATIONIC AZO DYES

Leslie Shuttleworth, Webster; Charles H. Weidner, Ontario, and Michael P. Cunningham, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 13, 1994, Ser. No. 355,367

Int. Cl.[6] B32B *3/00*

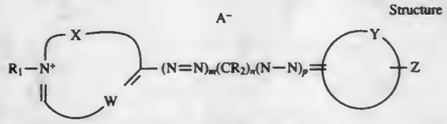
U.S. Cl. 428—64.1 **10 Claims**

1. An optical recording element having a transparent substrate and on the surface of said substrate, a recording layer and a light reflecting layer wherein:

(A) the unrecorded layer is such that the real part of the refractive (N) at 780 nm is at least 1.8 and the imaginary part (k) is 0.01 to 0.15 and

(B) the recording layer comprises a cationic azocyanine having the structure I:

Structure I



W and X together represent the atoms needed to complete a substituted or unsubstituted heterocyclic ring;

Y represents the atoms needed to complete a C_6 to C_{10}, substituted or unsubstituted, carbocyclic ring such as phenyl, naphthyl, dialkylaminophenyl, N-pyrazolylphenyl, 5-acetamido-2-methoxy-N,N-dibutylaniline, N-phenylthiomorpholine-1,1-dioxide, N-acetoxyethyl-N-ethylaniline, N-methyl-2-methylaniline, a heterocyclic ring such as benzothiazole, benzoxazole, N-benzyl-2,2,4-trimethyl-1,2-dihydroquinoline, N-phenethyl-2,2,4-trimethyl-1,2-dihydroquinoline, N-butyl-2,2,4-trimethyl-1,2-dihydroquinoline, N-acetoxyethyl-2,2,4-trimethyl-1,2-dihydroquinoline, N-hydroxyethyl-2,7-dimethyl-1,2,3,4-tetrahydroquinoline or julolidine, or a substituted or unsubstituted diphenyl methylidene such as bis (4-N,N-dimethylaminophenyl)methylidene, or (4-N,N-dimethylaminophenyl)phenyl methylidene;

Z represents hydrogen, OH or NR_3R_4;

A represents an anion;

R_1 represents alkyl of from 1–4 carbon atoms;

R_2 represents H, alkyl of from 1–4 carbon atoms, phenyl, 4-cyanophenyl, or 4-nitrophenyl;

R_3 and R_4, each independently, represent hydrogen, alkyl of from 1–4 carbon atoms, substituted alkyl, substituted or unsubstituted benzyl, substituted or unsubstituted phenethyl, 4-methylphenethyl, 4-chlorophenethyl or 4-nitrophenethyl; or R_3 may combine with R_4 to form a substituted or unsubstituted pyrazole ring; or R_3 alone, or R_4 alone, or R_3 and R_4 together, may combine with Y to form a heterocyclic ring;

m=1; and

n and p represent 0 or 1 provided that when n equals 0, p must be 0.

5,547,728

OPTICAL RECORDING ELEMENTS HAVING RECORDING LAYERS CONTAINING MIXTURES OF FORMAZAN AND CYANINE DYES

Michael P. Cunningham, and Steven Evans, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 311,071, Sep. 23, 1994, abandoned. This application Jan. 30, 1995, Ser. No. 380,490

Int. Cl.[6] B32B *3/00*

U.S. Cl. 428—64.1 **10 Claims**

1. An optical recording element having a transparent substrate and on the surface of said substrate, a recording layer and a light reflecting layer wherein recording layer comprises a mixture of a metallized formazan dye and indodicarbocyanine dye and the unrecorded layer is such that the real part of the refractive index (N) at 780 nm is not less than 1.8 and the imaginary part (k) is not greater than 0.2.

5,547,729

GLUE-LAMINATED WOOD STRUCTURAL MEMBER WITH SYNTHETIC FIBER REINFORCEMENT

Daniel A. Tingley, 3310 SW. Willamette Ave., Corvallis, Oreg. 97333

Continuation-in-part of Ser. No. 37,580, Mar. 24, 1993, Pat. No. 5,362,545. This application Jul. 22, 1994, Ser. No. 279,177

Int. Cl.[6] B32B *5/08;21/08;* **E04C** *3/12;3/29*

U.S. Cl. 428—74 **24 Claims**

1. A laminated wood structural member for bearing a structural load that creates compressive and tensile stresses in the structural member in respective compression and tension portions on opposite sides of a neutral axis, the structural member having a longitudinal axis and comprising:

plural elongate wood laminae having lengths and bonded together with their lengths generally aligned with the longitudinal axis;

a synthetic tension reinforcement having plural tension fiber strands held within a resin casing, the synthetic tension reinforcement being bonded to at least one of the wood laminae in the tension portion of the structural member; and

a synthetic compression reinforcement having plural compression fiber strands held within a resin casing, the fiber strands including strands of carbon and the synthetic compression reinforcement being bonded to at least one of the wood laminae in the compression portion of the structural member.

5,547,730

DEVICE HAVING A MOUNTING BOARD AND METHOD FOR APPLYING A PASSIVATING GEL

Kurt Weiblen, Metzingen, and Bertram Woessner, Beerwalde, both of, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 23, 1995, Ser. No. 376,515

Claims priority, application Germany, Feb. 25, 1994, 44 05 710.5

Int. Cl.[6] H01L *23/29;23/31*

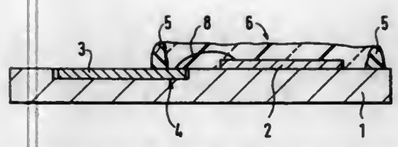
U.S. Cl. 428—76 **7 Claims**

1. A device comprising:

a mounting board;

a component arranged on the mounting board;

a passivating gel covering the component, the passivating gel having a plurality of sides; and



a flow arrester bounding at least one of the sides of the passivating gel, the flow arrester including a thixotropic gel.

5,547,731

NEEDLED CARPET AND A PROCESS FOR PRODUCING IT

Gunter Tesch, Ave. Jean-Marie Musy 15, Ch-1700 Fribourg, Switzerland

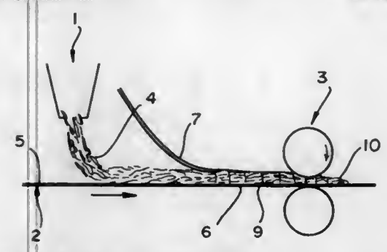
PCT No. PCT/EP93/01315, § 371 Date Jan. 25, 1994, § 102(e) Date Jan. 25, 1994, PCT Pub. No. WO93/24696, PCT Pub. Date Dec. 9, 1993

PCT Filed May 25, 1993, Ser. No. 182,166

Claims priority, application Germany, May 26, 1992, 42 17 439.2; May 26, 1992, 42 17 440.6; May 26, 1992, 42 17 442.2

Int. Cl.[6] B32B *3/02;5/16;* **D04M** *1/46*

U.S. Cl. 428—85 **14 Claims**



11. A needled carpet comprising in order:

a backing layer;

an intermediate layer containing a plurality of pieces of lumpy thermoplastic film; and

a fibrous top layer forming the visible side of the carpet, wherein the three layers are needled together such that fibers from the top layer penetrate through the intermediate layer and into the backing layer and wherein the fibers are heat bonded into the intermediate layer, the melting point of the fibers of the top layer being greater than the melting point of the plurality of film pieces of the intermediate layer.

5,547,732

METHOD AND APPARATUS FOR MAKING A PILE ARTICLE AND THE PRODUCTS THEREOF

Donald W. Edwards, Wilmington; James K. Odle, Newark; Peter Popper, Wilmington, all of Del.; Donald M. Sadler, Parkside, Pa.; Todd J. Savidge, West Grove, Pa.; Harold F. Staunton, Avondale, Pa.; William C. Walker, Wilmington, Del., and Paul W. Yngve, Chapin, S.C., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 17,162, Feb. 22, 1993, Pat. No. 5,472,762. This application May 15, 1995, Ser. No. 440,957

Int. Cl.[6] B32B *3/16;5/08;7/06;33/00*

U.S. Cl. 428—85 **40 Claims**

1. A pile article comprising:

a continuous length support strand having a peripheral pile containing surface,

and a plurality of pile-forming filaments or bundles of entangled or twisted filaments, each of said bundles having a dense portion of filaments bonded together and secured to said support strand; the securement having been effected while the general angular relationship between the pile-forming filaments or bundle of filaments and the support strand, as defined by a line describing the plane of the general linear direction of the pile-forming filaments or bundle of filaments and the line describing the general plane of the pile contacting surface of the support strand or a plane tangential to that surface, was other than essentially normal, each of said bundles of filaments having a frangible portion adjacent the dense portion and wherein the strength of the frangible portion is less than the strength of the bundle of filaments before bonding.

5,547,733

PLAITED DOUBLE-KNIT FABRIC

Moshe Rock, Andover; Douglas Lumb, and William Lie, both of Methuen, all of Mass., assignors to Malden Mills Industries, Inc., Lawrence, Mass.

Filed Jun. 2, 1995, Ser. No. 459,615

Int. Cl.[6] B32B *5/08;5/26;7/02;33/00*

U.S. Cl. 428—91 **15 Claims**

1. A composite textile fabric comprising an inner fabric layer made of a yarn comprising a plurality of fibers of polyester which have been rendered hydrophilic and an outer fabric layer made of a yarn comprising a plurality of fibers of polyester which have also been rendered hydrophilic;

wherein the denier ratio of the yarn fibers of the first inner fabric layer to those of the second outer fabric layer is between about 1:1 and 1.45:1;

wherein the denier ratio of the yarn of the first inner fabric layer to that of the second outer fabric layer is between about 1:1.10 and 1:5.0;

wherein the first inner fabric layer and second outer fabric layer are formed concurrently by knitting a plaited construction so that there is nothing interposed between the first and second fabric layers.

5,547,734

COVER

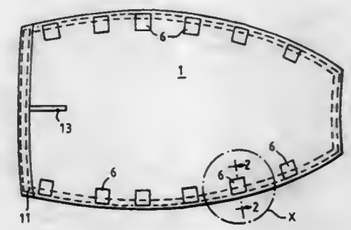
Klaus N. Tusch, London, England, assignor to Colebrand Limited, London, United Kingdom

Filed Sep. 15, 1994, Ser. No. 306,704

Claims priority, application United Kingdom, Apr. 11, 1994, 9407107

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—102 **37 Claims**



1. A cover for shielding an object from incident heat energy, comprising in combination:

(i) a first, non-heat reflective, sheet of material;

(ii) a second sheet of material adapted to reflect heat; and

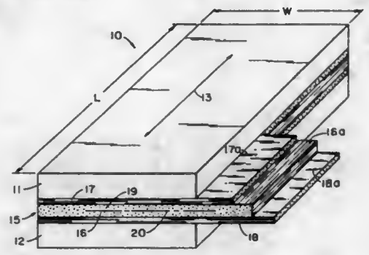
(iii) a layer of non-abrasive sheet material, wherein said first, second and non-abrasive sheets are superposed to provide a laminate and structurally arranged to provide a desired configuration.

5,547,735

IMPACT RESISTANT LAMINATE

Gerardus H. J. J. Roebroeks, Zuidzijde, and Arthur C. Mattousch, Amsterdam, both of, Netherlands, assignors to Structural Laminates Company, New Kensington, Pa.

Filed Oct. 26, 1994, Ser. No. 329,559
Int. Cl.[6] B32B 5/12
U.S. Cl. 428—110 17 Claims



1. A glass fiber reinforced laminate comprising:

(a) at least two metal sheets each having a thickness of about 0.1–0.8 mm and a tensile strength of greater than about 0.20 GPa, at least one of said metal sheets comprising an aluminum alloy of the AA2000 series or 7000 series and at least one of said metal sheets comprising an aluminum alloy of the AA5000 or 6000 series; and

(b) a reinforcing layer having a thickness of about 0.1–1.5 mm between said metal sheets and comprising a synthetic polymeric material reinforced with about 45–70 vol. % high strength glass fibers having a tensile strength of at least about 4 GPa, said reinforcing layer comprising:

(i) a center layer comprising glass fibers at least a majority of which are oriented generally parallel to a first direction; and

(ii) a first outer layer between said center layer and a first metal sheet and a second outer layer between said center layer and a second metal sheet, said first and second outer layers each containing glass fibers at least a majority of which are oriented in a second direction generally transverse to said first direction; and

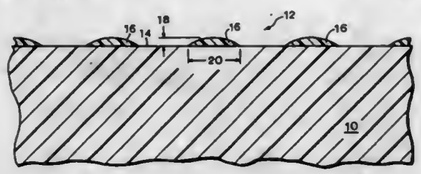
wherein about half of the glass fibers in said reinforcing layer are oriented in said first direction and about half are oriented in said second direction.

5,547,736

BLOCK-RESISTANT PARTIAL POLYVINYL BUTYVAL

Robert H. M. Simon, and Peter H. Farmer, both of Longmeadow, Mass., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 70,366, Jun. 7, 1993, Pat. No. 5,478,412. This application Dec. 19, 1994, Ser. No. 358,298
Int. Cl.[6] B32B 3/10;5/16
U.S. Cl. 428—143 15 Claims



1. A process for increasing the resistance to blocking of plasticized partial polyvinyl butyral sheet which comprises:

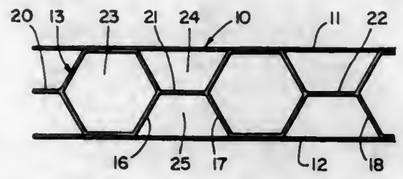
applying a multitude of spaced projections on the surface of the sheet which have low or no affinity for adhesion when in blocking contact with each other or with another plasticized partial polyvinyl butyral surface.

5,547,737

LIGHT-WEIGHT, HIGH-STRENGTH, STIFF PANELS

Maurice J. Evans, Sutton Coldfield; Sharon L. Faulkner, Coventry; Ronald Fisher, Rugby; Trevor C. Wells, Leamington, and Paul Hadlum, Coventry, all of, England, assignors to Dunlop Limited, London, England

Division of Ser. No. 190,615, Feb. 2, 1994, Pat. No. 5,360,500, which is a continuation of Ser. No. 74,985, Jun. 10, 1993, abandoned, which is a continuation of Ser. No. 888,403, May 21, 1992, abandoned, which is a continuation of Ser. No. 725,225, Jun. 26, 1991, abandoned, which is a continuation of Ser. No. 390,459, Aug. 4, 1989, abandoned, which is a continuation of Ser. No. 121,009, Nov. 20, 1987, abandoned. This application Sep. 9, 1994, Ser. No. 303,671
Claims priority, application United Kingdom, Nov. 20, 1986, 8627819
Int. Cl.[6] B32B 3/12
U.S. Cl. 428—178 5 Claims



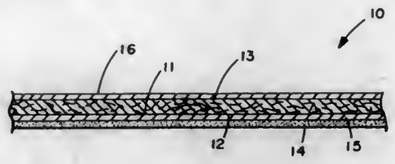
1. A panel comprising a pair of wall surface members separated and supported by a core structure comprising spaces or interconnected pores venting to an edge of the panel, the wall surface members and the core being of fibrous material rigidified by a pyrolytic matrix.

5,547,738

LINERLESS LABELS WITH TIE COAT

Nancy G. Mitchell, Grand Island; Joseph W. Langan, Cheektowaga; Adele C. Shipston, Williamsville; Timothy J. Russ, Niagara Falls, and Douglas M. Smith, Buffalo, all of N.Y., assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Continuation-in-part of Ser. No. 912,851, Jul. 13, 1992, Pat. No. 5,354,588. This application Sep. 12, 1994, Ser. No. 304,222
Int. Cl.[6] B32B 3/00
U.S. Cl. 428—195 20 Claims



1. Linerless label stock, comprising:

a substrate having first and second faces, wherein said substrate is insensitive to thermal effects;

a pressure sensitive adhesive;

a tie coat facilitating adherence of said pressure sensitive adhesive to said first face of said substrate, said tie coat adhering to both said substrate first face and said pressure sensitive adhesive;

a release coat, of material that has a low adherence to said pressure sensitive adhesive, on said second face of said substrate, and

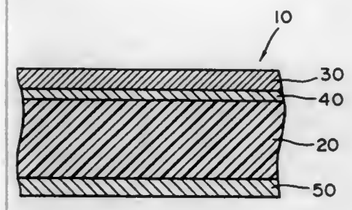
wherein the label stock has a spiral roll configuration such that the pressure sensitive adhesive adheres to the release coat to maintain the roll configuration, and wherein one or more labels of the stock may be peeled off the roll at an outer end of the roll.

5,547,739

RECORDING MEDIUM FOR HEAT SENSITIVE TRANSFER PRINTING

Kengo Ito, and Yoshio Fujiwara, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

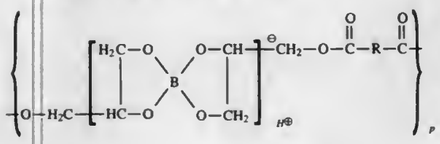
Continuation-in-part of Ser. No. 90,733, Jul. 13, 1993, abandoned. This application Sep. 30, 1994, Ser. No. 316,607
Claims priority, application Japan, Jul. 14, 1992, 4-210782
Int. Cl.[6] B32B 5/16;27/34
U.S. Cl. 428—207 6 Claims



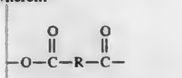
1. An ink sheet for use in heat-sensitive transfer printing comprising:

a substrate having a surface;

an adhesive layer disposed on the surface, the adhesive layer being formed from a composition comprising: about 100 parts by weight of a polar organic solvent soluble polyamide and greater than zero and about 100 parts by weight per 100 parts by weight of said polyamide of an organo boron polymer having repeating units of the formula:



wherein



is a residue of a dicarboxylic acid and p is from about 5 to about 50; and

an ink layer disposed on said adhesive layer.

5,547,740

SOLDERABLE CONTACTS FOR FLIP CHIP INTEGRATED CIRCUIT DEVICES

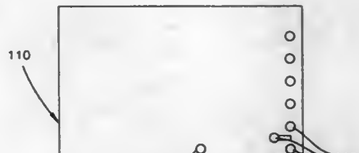
William D. Higdon, Greentown; Susan A. Mack, and Ralph E. Cornell, both of Kokomo all of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Mar. 23, 1996, Ser. No. 408,792
Int. Cl.[6] B32B 9/00
U.S. Cl. 428—209 8 Claims

1. A flip chip integrated circuit device having a surface, a perimeter, and solder bumps located on the surface, the flip chip integrated circuit device comprising:

at least one solder bump of the solder bumps being spaced apart from the perimeter of the flip chip integrated circuit device;

a second solder bump of the solder bumps being disposed at the perimeter of the flip chip integrated circuit device: and



a runner extending from the at least one solder bump to the perimeter of the flip chip integrated circuit device so as to electrically interconnect the at least one solder bump to a point at the perimeter.

5,547,741

FLOOR COVERINGS

Gary J. Wilson, Coventry, United Kingdom, assignor to The Amtico Company Limited, United Kingdom

PCT No. PCT/GB92/02380, § 371 Date Jun. 21, 1994, § 102(e) Date Jun. 21, 1994, PCT Pub. No. WO93/13169, PCT Pub. Date Jul. 8, 1993
PCT Filed Dec. 22, 1992, Ser. No. 256,037
Claims priority, application United Kingdom, Dec. 23, 1991, 9127263
Int. Cl.[6] B32B 27/06; C08L 27/06
U.S. Cl. 428—215 21 Claims

1. A floor covering comprising a wear layer, said wear layer having a wear surface, said wear layer comprising at least one vinyl film, said wear surface being defined by a vinyl film formed of a flexible PVC composition which comprises (a) 100 parts by weight PVC resin, (b) from 10 to 50 parts by weight of monomeric ester plasticizer, and (c) from 5 to 40 parts by weight of a thermoplastic polymer having urethane groups in its backbone.

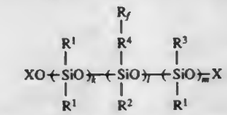
5,547,742

FUSER ROLL

Makoto Satoh; Takehide Okami, and Noboru Shimamoto, all of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jul. 5, 1994, Ser. No. 266,854
Claims priority, application Japan, Jul. 5, 1993, 5-191719
Int. Cl.[6] B32B 15/06; C08L 27/12;83/04;83/08
U.S. Cl. 428—215 13 Claims

1. A fuser roll having a metal core shaft and a resilient layer placed around said metal core shaft wherein at least the surface layer part of said resilient layer comprises a fluorosilicone rubber containing 20 to 40 wt. % of fluororesin; polytetrafluoroethylene; wherein fluorosilicone rubber is produced by curing a fluorosilicone rubber composition comprising (A) an organopolysiloxane; (B) a filler; (C) polytetrafluoroethylene; and (D) a curing agent; and wherein said organopolysiloxane (A) has the formula (1):



(1)

wherein R^1 and R^2, which may be the same or different, each represent a monovalent hydrocarbon group having no aliphatic unsaturated bonds and is selected from the group consisting of alkyl, cycloalkyl, aryl, aralkyl and cyanoalkyl, R^3 is a monovalent aliphatic unsaturated hydrocarbon group, R^4 represents a single

bond or a bivalent hydrocarbon group having no atiphatic unsaturated groups, R_f represents a fluorine-containing organic group, X represents a hydrogen atom or a group represented by the following general formula (2):



(2)

where R^7, R^8 and R^9 are each a monovalent hydrocarbon group, k and m are each an integer of zero or more, and l is an integer of one or more, provided that $0.5 \leqq l/(k+l+m) \leqq$ one and wherein said organopolysiloxane (A) contains at least one silicon-bonded alkenyl group and has a viscosity at 25° C. in the range of 100 to 10,000,000 cSt.

5,547,743

THIN HIGH DENSITY GLASS FIBER PANEL

Joseph Rumiesz, Jr., 16625 E. Dorado Ave., Aurora, Colo. 80015; Dixon R. Walker, 10 Mourning Dove La., Littleton, Colo. 80127, and Ralph M. Fay, 2249 S. Hoyt Ct., Lakewood, Colo. 80227

Continuation-in-part of Ser. No. 153,330, Nov. 16, 1993, abandoned. This application Aug. 9, 1994, Ser. No. 287,559

Int. Cl.[6] D03D *3/00*

U.S. Cl. 428—224 **10 Claims**



1. A glass fiber structural panel comprising: layers of glass fiber mat and layers of pliable, thermoplastic adhesive intermediate said layers of glass fiber mat; each of said glass fiber mats comprising fibers having an average diameter between 1 micron and 16 microns; each of said glass fiber mats having a weight between about 1.4 and about 2.8 pounds per one hundred square feet; said layers of thermoplastic adhesive adhesively bonding said layers of glass fiber mat together, but not impregnating said layers of glass fiber mat, to form a planar, thin, high density laminate of said glass fiber mat layers and said thermoplastic adhesive layers, between about 1/16 of an inch and about 3/16 of an inch thick that returns to a planar condition without wrinkles or creases after being folded.

5,547,744

Patent Not Issued For This Number

5,547,745

PARTICLE BINDERS

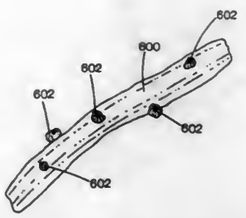
Michael R. Hansen, Seattle, and Richard H. Young, Sr., Renton, both of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Continuation-in-part of Ser. No. 931,059, Aug. 17, 1992, Ser. No. 931,277, Aug. 17, 1992, Ser. No. 931,213, Aug. 17, 1992, Pat. No. 5,300,192, Ser. No. 931,278, Aug. 17, 1992, Pat. No. 5,352,480, Ser. No. 931,284, Aug. 17, 1992, Pat. No. 5,308,896, and Ser. No. 931,279, Aug. 17, 1992. This application Aug. 17, 1993, Ser. No. 108,217

Int. Cl.[6] B32B *5/16*

U.S. Cl. 428—283 **78 Claims**

1. A fibrous product comprising individualized fibers, said product made by the method comprising the steps of:



providing fibrous material comprising individualized fibers having a hydrogen bonding functionality;

providing particles having a hydrogen bonding or a coordinate covalent bond forming functionality;

selecting a binder from the group consisting of a polymeric binder, a non-polymeric organic binder, and nonreactive combinations thereof with each other or with other binders, the binder comprising binder molecules, the binder molecules having at least one functional group capable of forming a hydrogen bond or a coordinate covalent bond with the particles, and at least one functional group capable of forming a hydrogen bond with the fibrous material,

wherein the polymeric binder is selected from the group consisting of polypropylene glycol, a polycarboxylic acid, a polycarboxylate, a poly(lactone) polyol, a polyamide, a polyamine, a polysulfonic acid, a polysulfonate, and combinations thereof, and

wherein the non-polymeric organic binder has a volatility less than water; and

exposing at least a portion of the particles to sufficient amounts of the binder in the presence of the fibrous material, under conditions that favor formation of non-covalent bonds, to bind at least a portion of the particles to the fibrous material.

5,547,746

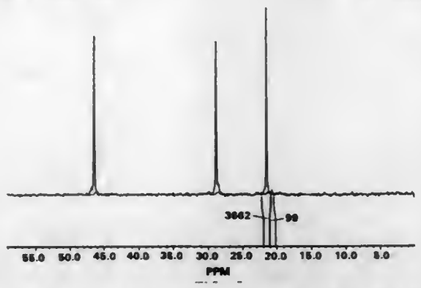
HIGH STRENGTH FINE SPUNBOUND FIBER AND FABRIC

Robert M. Burton, Sr., Alpharetta, Ga., assignor to Kimberly-Clark Corporation, Neehah, Wis.

Filed Nov. 22, 1993, Ser. No. 156,151

Int. Cl.[6] C08L *23/10;* **D02G** *3/00;* **D04H** *1/58*

U.S. Cl. 428—288 **10 Claims**



1. The nonwoven fabric produced according to the method of:

melting at least one polymer, said polymer having a melt temperature between about 410° and 470° F. (210° and 243° C.), xylene solubles between about 3.5 and 7.0%, a melt flow rate between about 30 and 45, and an isotacticity of at least about 94%;

extruding said polymer through fine openings;

drawing said polymer to produce fibers of a denier of 1.4 or less which have a tenacity of at least about 3 grams per denier, and; depositing said fiberized polymer on a collecting surface to form a web of disbursed fibers and;

which is present in a product selected from the group consisting of diapers, feminine hygiene products, adult incontinence products, and wipers.

5,547,747

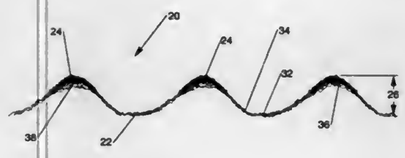
PROCESS OF MAKING ABSORBENT STRUCTURES AND ABSORBENT STRUTURES PRODUCED THEREBY

Paul D. Trokhan, Hamilton, and Dean V. Phan, West Chester, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 441,363, May 15, 1995, abandoned, which is a division of Ser. No. 154,667, Nov. 17, 1993, abandoned. This application Dec. 21, 1995, Ser. No. 576,322

Int. Cl.[6] A61F *13/15;13/20*

U.S. Cl. 428—320.2 **6 Claims**



1. The absorbent structure produced by the process comprising the steps of:

providing a transfer roll and an anvil roll, said rolls being disposed in axially parallel relationship to form a gap therebetween;

providing a liquid precursor on the periphery of said transfer roll;

providing a capillary absorbent substrate, said capillary substrate having topographically elevated regions, a plurality of said regions having a first density and a plurality of said regions having a second density less than said first density, and being oriented so that said topographically elevated regions are oriented towards said transfer roll while said capillary substrate is in said gap, said capillary substrate resting against said anvil roll while in said gap;

passing said capillary substrate through said gap; applying said liquid precursor from the peripbery of said transfer roll to said topographically elevated regions of said substrate, said topographically elevated regions having a lesser density than said regions to which said liquid precursor is not applied; and

polymerizing said liquid precursor in situ to form an immobilized osmotic absorbent on said substrate, whereby said immobilized osmotic absorbent is disposed on and joined to the surface of said substrate, only at said predetermined regions.

5,547,748

CARBON NANOENCAPSULATES

Rodney S. Ruoff, Menlo Park; Donald C. Lorents, Palo Alto; Ripudaman Malhotra, San Carlos, and Mark J. Dyer, San Jose, all of Calif., assignors to SRI International, Menlo Park, Calif.

Filed Jan. 14, 1994, Ser. No. 182,283

Int. Cl.[6] B32B *5/16*

U.S. Cl. 428—323 **16 Claims**

1. A nanoencapsulate composition, comprising;

a metal encapsulated in a nanopolybedron characterized by (i) an outer shell of nested, concentric layers of carbon, said shell



defining an internal cavity and (ii) encapsulated in said cavity, the metal.

5,547,749

COLORED CERAMIC COMPOSITION AND METHOD FOR PRODUCING GLASS PLATE USING THE SAME

Jiro Chiba, Yokohama, and Syuji Taguchi, Koriyama, both of, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Feb. 24, 1995, Ser. No. 394,274

Claims priority, application Japan, Feb. 24, 1994, 6-026896

Int. Cl.[6] B32B *5/02;* **C03C** *4/02;14/00*

U.S. Cl. 428—323 **13 Claims**

1. A colored ceramic composition, comprising, as inorganic components, from 55 to 75% by weight of a glass powder; from 1 to 17% by weight of a metal powder from 1 to 25% by weight of a scale-shaped refractory filler selected from the group consisting of mica, alumina, montmorillonite, bentonite and silica; and from 13 to 30% by weight of a heat-resistant coloring pigment; and

wherein said scale-like refractory filler has an average aspect ratio of at least 5, said aspect ratio being defined by the formula A=b/a, wherein a is a diameter of a maximum sphere inscribed to a particle of said refractory filler and b is a diameter of a minimum sphere circumscribed to a particle of said refractory filler.

5,547,750

NO DROP FILMS OR PLATES CONSISTING OF ACRYLIC POLYMERS AND PROCESS FOR THEIR PREPARATION

Marco Rigamonti; Franco Marciandi, and Massimo Cesana, all of Milan, Italy, assignors to Atohaas Holding C.V., Netherlands

Filed Nov. 10, 1994, Ser. No. 337,054

Claims priority, application Italy, Nov. 10, 1993, MI93A2399

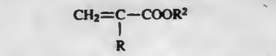
Int. Cl.[6] C08K *3/18;* **C09D** *4/02;5/00;* **B32B** *5/16*

U.S. Cl. 428—329 **15 Claims**

1. Films, plates and formed articles having no drop and antifogging characteristics, said articles films and plates comprising an acrylic support having a crosslinked, U.V. polymerized coating, said coating comprising the following components:

a) from 50% to 70% by weight of acrylic or methacrylic esters of C_2–C_{18}, aliphatic glycols or of (poly)alkylenoxides formed by 1 to 6 C_2–C_4 alkylenoxide units;

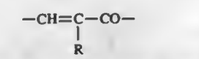
b) from 10 to 30% by weight of monomers of formula:



(I)

or of their oligomers, wherein R is H or CH_3; R^2 is a C_2–C_6 hydroxyalkyl or an ethoxylic group $-(CH_2-CH_2O)_n-H$ where n is a whole number from 1 to 10;

c) from 10 to 30% by weight of acrylic or methacrylic acid or of acrylic or methacrylic monomers containing a group of formula:



(II)

or their dimers or derivatives, in which R has the above-defined meaning;

d) from 1 to 10% of a crosslinking agent consisting of one or more acrylic or methacrylic esters of a polyfunctional alcohol, having at least three double bonds, the components of class (a) being excluded, the sum of components a, b, c and d being 100%;

e) from 0.01 to 3 parts by weight per 100 parts of a+b+c+d, of hydrophilic colloidal metal oxides; and

f) from 0 to 0.06 parts by weight per 100 parts of a+b+c+d of a U.V. polymerization initiator.

5,547,751

MAGNETO-OPTICAL RECORDING MEDIUM AND METHOD OF MANUFACTURING THE SAME

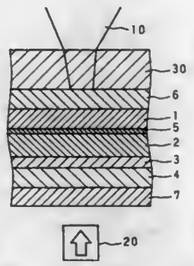
Yoshio Fujii; Takashi Tokunaga; Yoshiyuki Nakaki; Kazuhiko Tsutsumi; Kazuo Hashima; Tatsuya Fukami, and Yuji Kawano, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 45,437, Apr. 8, 1993, abandoned. This application Mar. 14, 1994, Ser. No. 209,258

Claims priority, application Japan, Apr. 10, 1992, 4-090492; May 18, 1992, 4-124568; Jun. 25, 1992, 4-167358; Jul. 20, 1992, 4-192056; Jul. 20, 1992, 4-192057

Int. Cl.[6] G11B *5/66*

U.S. Cl. 428—332 **4 Claims**



1. A magneto-optical recording medium comprising:

a transparent substrate;

a recording layer formed of plural magnetic layers on the substrate, where each magnetic layer comprises a rare earth and a transition metal having perpendicular magnetic anisotropy, and adjacent magnetic layers are exchange-coupled with each other; and

an initializing layer for maintaining a constant orientation of sub-lattice magnetization during recording or reproduction, enabling direct overwrite by light power modulation, comprising rare earth and transition metals, the initializing layer; being compositionally modulated in a direction perpendicular to a surface of the initializing layer and having a modulation cycle λ of 3 Å$\leq\lambda\leq$20 Å, wherein at least one of a perpendicular magnetic anisotropy and a coercive force of the initializing layer is increased to prevent a reversal of sub-lattice magnetization of the initializing layer during recording or reproduction.

5,547,752

BLEND OF POLYBUTYLENE AND IONOMER FORMING EASY-OPEN HEATSEAL

Apostol Yanidis, Berkeley, Calif., assignor to James River Paper Company, Inc., Milford, Ohio

Continuation-in-part of Ser. No. 208,527, Jun. 20, 1988, abandoned. This application Jun. 12, 1991, Ser. No. 713,936

Int. Cl.[6] C09J *7/02*

U.S. Cl. 428—349 **12 Claims**

1. In a flexible packaging material having a polymeric heatseal layer, the improvement wherein

a) the heatseal layer is a blend comprising about 15 to 50 percent by weight isotactic nonelastomeric polybutylene and about 50 to 85 percent by weight of a copolymer of an olefin and an ethylenically unsaturated monocarboxylic acid wherein at least 10 percent of the carboxylic acid groups are neutralized by a metal ion,

b) the strength of a heatseal formed by heatsealing the heatseal layer to itself is such that the heatseal is easy to open, with delamination occurring solely between the heatseal layers when the heatseal is opened, and

c) the heatseal layer is bonded directly to a coextruded layer of a polymer that forms a stronger bond with the heatseal layer than the heatseal layer forms with itself.

5,547,753

AMINOPLAST-ACHORED ULTRAVIOLET LIGHT STABILIZERS

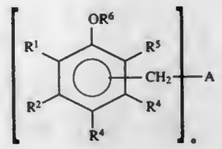
Jeno G. Szita, Norwalk, and Paul S. Waterman, Shelton, both of Conn., assignors to Cytec Technology Corp., Wilmington, Del.

Division of Ser. No. 998,099, Dec. 29, 1992. This application May 23, 1995, Ser. No. 449,401

Int. Cl.[6] B32B *19/00;* **C08G** *12/30*

U.S. Cl. 428—357 **19 Claims**

1. A cured film or object prepared by the steps of (I) contacting a substrate with a curable composition comprising (i) a stabilizingly effective amount of a stabilizer composition, (ii) a crosslinkingly effective amount of a crosslinking agent, and (iii) a polyfunctional active hydrogen containing material, and (II) thereafter curing said curable composition, wherein the stabilizer composition comprises a monomeric or oligomeric aminoplast anchor having more than 0.5 mole of phenolic light stabilizer group per mole of aminoplast pendently attached thereto, represented by the formula



wherein

A is an m functional monomeric or oligomeric aminoplast anchor molecule to which n phenolic light stabilizer groups are attached through n methylene bridges, the bridges replacing the R^2, R^3, R^4 or R^5 groups on the phenolic ring;

R^1 is a group which, together with the phenolic ring, comprise the phenolic light stabilizer group;

R^2, R^3, R^4 and R^5 are substituents independently selected from the group consisting of hydrogen, alkyl, aryl, aralkyl, hydroxy, alkoxy, and alkyl which is interrupted, substituted, or interrupted and substituted by one or more oxygen, carbonyl or carboxy groups;

R^6 is hydrogen or a blocking group selected from the group consisting of alkyl, acyl, aminocarbonyl and silyl groups;

m is at least 1; and

n is more than 0.5.

5,547,754

Patent Not Issued For This Number

5,547,755

PRE-ADHERIZED POLYESTER FILAMENT YARN FOR TIRE CORD

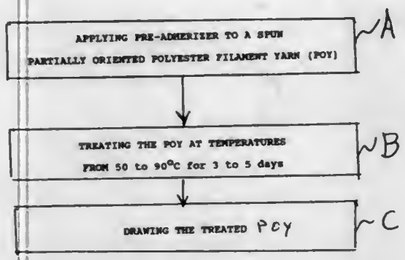
Peter Reinthaler, Neuenkirch, and Armin Mueller, Emmenbruecke, both of, Switzerland, assignors to Rhone-Poulenc Viscosuisse SA, Emmenbrucke, Switzerland

Continuation of Ser. No. 236,550, Apr. 29, 1994, abandoned, which is a continuation-in-part of Ser. No. 934,632, Sep. 14, 1992, abandoned. This application Sep. 5, 1995, Ser. No. 523,209

Claims priority, application Switzerland, Nov. 24, 1988, 4371/88

Int. Cl.[6] D02G *3/00*

U.S. Cl. 428—364 **5 Claims**



1. A pre-adherized polyester filament yarn for tire cord, said pre-adherized polyester filament yarn being produced by a process including the steps of:

a) melt-spinning at spinning speeds of 3200 m/min to 3800 m/min to obtain a partially oriented polyester filament yarn having a boiling water shrinkage value <20%;

b) spin-finishing the partially oriented polyester filament yarn;

c) after the spin-finishing, applying 0.05 to 0.20% by weight of a pre-adherizer, based on fiber weight, to the partially oriented polyester filament yarn while the filament yarn is running;

d) after the applying, taking up the filament yarn on a bobbin at a take-up speed of 3200 to 3800 m/min and treating the partially oriented polyester filament yarn on the bobbin with hot air at temperatures from 50° to 90° C. for 3 to 5 days to form a conditioned partially oriented polyester filament yarn; and then

e) drawing, in a single process step, by passing said conditioned partially oriented polyester filament yarn over a feed roller, a snubbing pin and a hot plate and by pulling the conditioned partially oriented polyester filament yarn over the snubbing pin and the hot plate with a motor-driven take-off roller to form the pre-adherized polyester filament yarn;

wherein said pre-adherized polyester filament yarn has a dimension stability DS of >24,000 cN^2/tex^2, a rubber adhesion of from 18 to 20.5 daN, a tenacity of from 60 to 70 cN/tex and a hot air shrinkage value at 190° C. of <3.5%, said hot air shrinkage value being obtained by exposing a yarn sample of said pre-adherized polyester filament yarn under a load of 0.4 cN/dtex to a temperature of 235° C. for 60 seconds, allowing the yarn sample to cool down to room temperature under a load of 0.01 cN/dtex, heating the yarn sample under the load of 0.01 cN/dtex at a temperature rate of 20 K/min and then measuring a residual shrinkage of the yarn sample at 190° C.

5,547,756

POROUS POLYPROPYLENE HOLLOW FIBER MEMBRANE OF LARGE PORE DIAMETER, PRODUCTION PROCESS THEREOF, AND HYDROPHILIZED POROUS HOLLOW FIBER MEMBRANES

Jun Kamo; Takayuki Hirai; Hiroshi Takahashi, and Kenji Kondou, all of Otake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 46,185, Apr. 14, 1993, abandoned, which is a division of Ser. No. 831,922, Feb. 6, 1992, Pat. No. 5,232,642. This application Apr. 28, 1995, Ser. No. 430,290

Claims priority, application Japan, Feb. 8, 1991, 3-037800; Aug. 20, 1991, 3-207791; Aug. 21, 1991, 3-209092

Int. Cl.[6] B32B *27/00*

U.S. Cl. 428—394 **14 Claims**

1. A porous polypropylene hollow fiber membrane of large pore diameter which consists of polypropylene, the hollow fiber membrane having:

(a) rectangular pores formed by microfibrils that are oriented in the lengthwise direction of the fiber and joint portions that are composed of stacked lamellae, the pores being contiguous with each other from the inner wall surface to the outer wall surface of the hollow fiber membrane to form a stacked, multicellular structure;

(b) an average pore diameter ranging from 1.7 μm up to 10 μm as measured with a mercury porosimeter;

(c) a porosity of 80 to 95%; and

(d) an air permeability of not less than 4×10^5 $l/m^2.hr.0.5$ atm.

5,547,757

COLOR-CLEAR COMPOSITE COATINGS HAVING IMPROVED INTERCOAT ADHESION

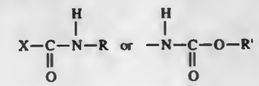
Shanti Swarup, Gibsonia; Brij N. Sharma, Pittsburgh, and B. Keith Johnston, Arnold, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 47,904, Apr. 19, 1993, Pat. No. 5,384,367. This application Sep. 8, 1994, Ser. No. 303,264

Int. Cl.[6] B32B *27/38;27/40;* **B05D** *1/36*

U.S. Cl. 428—413 **11 Claims**

1. A process for applying a composite coating to a substrate which comprises applying to the substrate a colored film-forming composition to form a base coat and applying to said base coat a clear film-forming composition to form a transparent top coat over the base coat, characterized in that the clear film-forming composition is a crosslinkable composition comprising a polyepoxide and a polyacid curing agent, wherein the polyepoxide is a polyepoxide-containing polymer which contains one or more pendant groups of the structure:



where X i



or —O and R is H or alkyl of 1–18 carbon atoms or R is bonded to X and forms part of a five- or six-membered ring and R' is alkyl of 1–18 carbon atoms.

5,547,758

INSULATING MATERIAL AND A CIRCUIT SUBSTRATE IN USE THEREOF

Chiharu Watanabe, Shibukawa; Tatsuo Nakano, and Kazuo Kato, both of Tokyo, all of, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 52,032, Apr. 20, 1993. This application Mar. 2, 1995, Ser. No. 397,762

Claims priority, application Japan, Apr. 20, 1992, 4-125459

Int. Cl.[6] B32B *27/38;* **C08K** *5/04;* **C07D** *301/32*

U.S. Cl. 428—413 **12 Claims**

1. An insulating material characterized by that said insulating material is made by curing a mixture comprising from 10 to 40 vol % of a bisphenol A epoxy resin purified by molecular distillation, having a purity which is equal to or more than 98% free of organic chlorine and d-glycol impurities and dimer, trimer and oligomers, and from 90 to 60 vol % of an inorganic filler, the thermal conductivity thereof is in the range of 5.0×10^{-3} to 18.0×10^{-3} cal/° C.·cm·sec and the glass transition temperature thereof is in the range of 164° to 240° C.

5,547,759

COATED FUSER MEMBERS AND METHODS OF MAKING COATED FUSER MEMBERS

Jiann-Hsing Chen, Fairport; Lawrence P. Demejo, Rochester; Gary F. Roberts, Macedon; Richard J. Kosakowski; Muhammed Aslam, both of Rochester, and John E. Derimiggio, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 9, 1993, Ser. No. 164,280

Int. Cl.[6] B32B *15/06;* **F16C** *13/00;* **G03G** *15/20;* **H05B** *3/00*

U.S. Cl. 428—421 **20 Claims**

1. A fuser member comprising, in order:

a support comprising a metal element;

a fluoroelastomer layer comprising fluoroelastomer polymer, said fluoroelastomer polymer is selected from the group consisting of copolymers of vinylidene fluoride, and hexafluoropropylene; and terpolymers of vinylidene fluoride, hexafluoropropylene and tetrafluoroethylene;

a primer layer comprising a mixture of a fluoropolymer resin and polyamide-imide, said primer layer adjacent to said fluoroelastomer layer; and

a fluoropolymer resin layer comprising fluoropolymer resin selected from the group consisting of polytetrafluoroethylene, polyperfluoroalkoxy-tetrafluoroethylene, polyfluorinated ethylene-propylene, and blends thereof, said fluoropolymer resin layer adjacent to said primer layer.

5,547,760

COMPOSITIONS AND PROCESSES FOR SEPARATING AND CONCENTRATING CERTAIN IONS FROM MIXED ION SOLUTIONS USING ION-BINDING LIGANDS BONDED TO MEMBRANES

Bryon J. Tarbet, Highland; Ronald L. Bruening, Springville, both of Utah; Anthony J. Di Leo, Westford, Mass.; Philip M. Goddard, New Ipswich, Mass., and Louis M. Scarmoutzos, Andover, Mass., assignors to IBC Advanced Technologies, Inc., American Fork, Utah, and Millipore Corporation, Bedford, Mass.

Filed Apr. 26, 1994, Ser. No. 233,640

Int. Cl.[6] B32B *27/00*

U.S. Cl. 428—471 **26 Claims**

1. A composition suitable for removing selected ions from solutions comprising an ion-binding ligand having an affinity for the selected ions which is covalently bonded to a membrane said membrane-ligand combination represented by the formula:

M—B—L

wherein M is any membrane having hydrophilic surface properties and containing polar functional groups, L is any ligand having an affinity for the selected ions containing a functional grouping reactive with an activated polar group from the membrane and B is the covalent linkage formed by the reaction between the activated polar group of the membrane and the functional group of the ligand.

5,547,761

LOW MELTING TETRAFLUOROETHYLENE COPOLYMER AND ITS USES

George R. Chapman, Jr., Media, Pa.; Richard A. Morgan, Vienne, W. Va.; Charles W. Stewart, Newark, Del.; William H. Tuminello, Newark, Del.; John G. Van Alsten, Wilmington, Del.; Randall A. Vogel, Wilmington, Del., and Mark E. Wagman, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 341,046, Nov. 16, 1994, Pat. No. 5,464,904, which is a division of Ser. No. 156,621, Nov. 23, 1993, Pat. No. 5,397,829, which is a continuation-in-part of Ser. No. 104,749, Aug. 11, 1993, abandoned, which is a continuation-in-part of Ser. No. 935,353, Aug. 28, 1992, Pat. No. 5,266,639. This application Jun. 1, 1995, Ser. No. 457,080

Int. Cl.[6] B32B *27/00*

U.S. Cl. 428—422 **14 Claims**

1. A coated article comprising a substrate coated with a coating, wherein the coating comprises partially crystalline copolymer of tetrafluoroethylene (TFE) and hexafluoropropylene (HFP) having a hexafluoropropylene index (HFPI) in the range 6.4 to about 9 and a T_m (end) from about 180° C. to about 255° C.

5,547,762

SANDWICH GLASSES

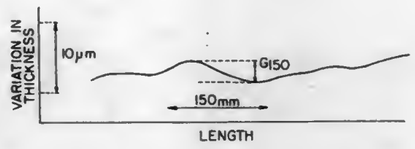
Hideyuki Niwa; Kiyomi Sasaki, both of Saitama-ken; Kyoei Yoshida, Tokyo; Itsuo Tanuma, Saitama-ken; Kazuo Naito, Kanagawa; Yasuhiro Morimura, and Takahiko Koga, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Continuation of Ser. No. 33,556, Mar. 18, 1993, abandoned. This application Nov. 28, 1994, Ser. No. 351,055

Claims priority, application Japan, Mar. 19, 1992, 4-063715; Apr. 22, 1992, 4-102707; Jun. 5, 1992, 4-145839

Int. Cl.[6] B32B *17/10;* **C03C** *27/12*

U.S. Cl. 428—442 **20 Claims**



1. A sandwich glass comprising a thermoset resin layer interposed between glass plates, wherein said thermoset resin layer, prior to thermosetting, comprises an uncured resin composition comprising:

(a) an organic peroxide,

(b) an ethylene-vinyl acetate copolymer, and

(c) at least one compound selected from the group consisting of at least one acryloxy or methacryloxy group-containing compound and a hydrocarbon resin having a ratio of hydrogenation ≧91%;

wherein said at least one acryloxy or methacryloxy group-containing compound is selected from the group consisting of 1-methyl-1,3-dimethacryloxypropane, 2,2-dimethyl-1,3-diacryloxypropane, 2,2-dimethyl-1,3-dimethacryloxypropane, 2-hydroxy- 1-acryloxy-3-methacryloxypropane, 2-hydroxy- 1,3-dimethacryloxypropane, 1-hydroxy-2-methyl-1,3-diacryloxypropane and 1-hydroxy-2-methyl-1,3-dimethacryloxypropane; and

wherein said ethylene-vinyl acetate copolymer contains vinyl acetate in an amount of from 10–50% by weight.

5,547,763

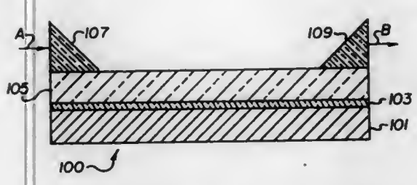
ORGANIC NONLINEAR OPTICAL ARTICLE WITH IMPROVED TRANSMISSION ENHANCEMENT LAYER

Michael Scozzafava, Rochester, and Bradley K. Coltrain, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 127,837, Sep. 27, 1993, abandoned. This application May 11, 1995, Ser. No. 439,075

Int. Cl.[6] B32B *9/04*

U.S. Cl. 428—447 **17 Claims**



1. In an optical article including an electrically conductive support, a poled polymeric film located on the support exhibiting a glass transition temperature of at least 50° C. and a second order polarization susceptibility greater than 10^{-9} electrostatic units, and a transmission enhancement layer interposed between the conductive support and the polymeric film, the improvement comprising:

(a) said transmission enhancement layer being capable of deflecting light and propagating it within the layer including a polymer phase having dispersed therein an interwoven network second phase of crosslinked metal oxide having the form —M—O—M— wherein M is a metal atom and O is oxygen, the second phase formed by hydrolysis and condensation of metal alkoxide, the layer being transparent in the visible and near infrared wavelengths, the arrangement being such that light coupled into the layer will propagate within the layer;

(b) means for coupling light into the layer so that it propagates within the layer; and

(c) means for receiving propagated light from the layer for directing it outside the article.

5,547,764

METHOD OF PRODUCING PVOH COATINGS WITH ENHANCED PROPERTIES

Marcia Blais, Fairport, N.Y., and Anthony R. Knoerzer, Plano, Tex., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 22, 1994, Ser. No. 361,934

Int. Cl.[6] B32B *15/08;27/08;* **B05D** *1/36;* **C08F** *28/02*

U.S. Cl. 428—461 **32 Claims**

1. A method of producing poly(vinyl alcobol) coated films having enhanced properties, comprising:

coating a substrate with a poly(vinyl alcohol) solution which includes a blend of at least two poly(vinyl alcohol) components, a first component being a poly(vinyl alcohol) resin having a hydrolysis level of at least about 98% and a second component being a poly(vinyl alcohol) resin having a hydrolysis level from about 80% to about 90% hydrolysis.

5,547,765

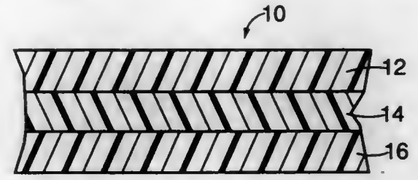
RETORTABLE POLYMERIC FILMS

Alfieri Degrassi, Schuylkill, Pa., and William W. Furrer, Morris, N.J., assignors to AlliedSignal Inc., Morris Township, N.J.

Continuation-in-part of Ser. No. 116,624, Sep. 7, 1993, abandoned. This application Mar. 25, 1994, Ser. No. 217,823

Int. Cl.[6] B32B *27/34*

U.S. Cl. 428—474.7 **20 Claims**



1. A retortable film having at least three layers comprised of:

a) two aliphatic polyamide layers; and

b) an interior layer of a blend of an aliphatic/aromatic polyamide and an ethylene vinyl alcohol copolymer,

wherein said interior layer is positioned between said two aliphatic polyamide layers and said aliphatic/aromatic polyamide has a glass transition temperature of less than or equal to 85° C.

5,547,766

NON-YELLOWING TAPE ARTICLE

Ramsis Gobran, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 28, 1995, Ser. No. 508,588

Int. Cl.[6] C08L *25/08;* **B05D** *5/10*

U.S. Cl. 428—515 **8 Claims**

1. A non-yellowing pressure-sensitive adhesive tape comprising a polypropylene film layer having an antioxidant package of:

(i) 0.004 to 0.04 weight percent of benzenepropanoic acid, 3,5-bis(1,1-dimethylethyl)- 4-hydroxy-, 2,2-bis[[3-[3,5-bis(1,1-dimethylethyl)-4-hydroxyphenyl]-1-oxopropoxy] methyl]-1,3-propanediyl ester);

(ii) 0.03 to 0.2 weight percent of a solid phosphite antioxidant;

(iii) 0.0 to 0.4 weight percent of a thioester;

(iv) 0.05 to 0.4 weight percent of an inorganic acid scavenger;

a tackified synthetic rubber pressure-sensitive adhesive layer comprising 100 parts of a polystyrene-polydiene block copolymer and 20 to 300 parts of a compatible tackifying resin, oil or plasticizer and an antioxidant package based on 100 parts of the polystyrene-polydiene block copolymer comprising:

(i) 0.1 to 0.6 parts benzenepropanoic acid, 3,5-bis(1,1-dimethylethyl)- 4-hydroxy-, 2,2-bis[[3-[3,5-bis(1,1-dimethylethyl)-4-hydroxypbenyl]-1-oxopropoxy] methyl]-1,3-propanediyl ester);

(ii) 0.1 to 0.6 parts phenol, 4-[[4,6-bis(octylthio)-1,3,5-triazine-2-yl] amino]-2,6-bis(1,1-dimethylethyl)-);

(iii) 0.0 to 0.6 parts of a phosphite antioxidant.

5,547,767

MULTILAYER MATERIAL, ANTI-EROSION AND ANTI-ABRASION COATING INCORPORATING SAID MULTILAYER MATERIAL AND PROCESS FOR PRODUCING SAID MULTILAYER MATERIAL

Serge Paidassi, Grenoble; Jacques Ernoult, St Etienne de Crossey; Michel Brun, Bizanos; Pierre Monge-Cadet, Serres-Morlaas; Yves Pauleau, Grenoble, and Guy Farges, La Ville du Bois, all of, France, assignors to Commissariat A L'Energie Atomique, Paris, France

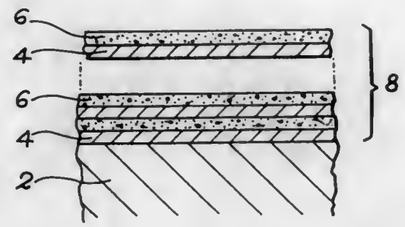
PCT No. PCT/FR92/00969, § 371 Date Jul. 19, 1993, § 102(e) Date Jul. 19, 1993, PCT Pub. No. WO93/08316, PCT Pub. Date Apr. 29, 1993

PCT Filed Oct. 14, 1992, Ser. No. 75,519

Claims priority, application France, Oct. 14, 1991, 91 12616; Jul. 9, 1992, 92 08500

Int. Cl.[6] C23C *14/00;14/06*

U.S. Cl. 428—610 **36 Claims**



1. Multilayer material, characterized in that it comprises a substrate covered with at least one ductile, metallic tungsten or tungsten alloy layer and at least one hard layer of a solid solution of an addition element in tungsten or in a tungsten alloy, the two types of layers alternating, said addition element being selected from the group consisting of carbon and mixture of carbon and nitrogen, said substrate being a member selected from the group consisting of a titanium alloy, a stainless steel, an aluminum alloy and a nickel alloy.

5,547,768

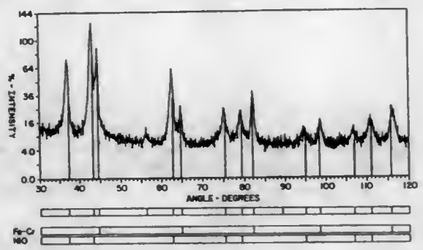
CORROSION RESISTANT NICKEL OXIDE SURFACE COATING

Mark J. Topolski, Jackson Township, Stark County, and James M. Tanzosh, Sliver Lake, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Apr. 7, 1995, Ser. No. 418,390

Int. Cl.[6] B32B *15/04;* **B05D** *3/02*

U.S. Cl. 428—632 **15 Claims**



1. A method for coating a substrate with a corrosion resistant surface comprising the steps of:

providing a substrate;

coating a portion of the substrate with a metallized corrosion resistant composition prior to coating the portion of the substrate with a nickel (II) nitrate hexahydrate solution; and

heating the solution-coated substrate to a temperature greater than 303° C. until a nickel oxide coating remains.

5,547,769

METHOD AND COATING FOR PROTECTING AGAINST CORROSIVE AND EROSIVE ATTACKS

Friedhelm Schmitz, Dinslaken, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 5, 1995, Ser. No. 417,006

Claims priority, application European Pat. Off., Oct. 5, 1992, 92116998

Int. Cl.[6] B32B *15/18;* **C22F** *1/04;* **F01D** *5/28*

U.S. Cl. 428—653 **15 Claims**

1. In a method for attaining protection of a substrate being formed of chromium steel for a component of a turbomachine, against at least one of corrosive and erosive attack at a temperature up to approximately 500° C., the improvement which comprises:

applying a metal coating of an age-hardenable aluminum-based alloy to the substrate, and age-hardening at least a surface of the metal coating to form a protective coating containing aluminum.

5,547,770

MULTIPLEX ALUMINIDE-SILICIDE COATING

Mehar C. Meelu, Birmingham; Alan T. Jones, Derby, both of, Great Britain, and Bruce G. McMordie, Perkasie, Pa., assignors to Sermatech International, Inc., Limerick, Pa., and Rolls Royce plc., London, England

PCT No. PCT/US93/04507, § 371 Date Jul. 6, 1994, § 102(e) Date Jul. 6, 1994, PCT Pub. No. WO93/23247, PCT Pub. Date Nov. 25, 1993

PCT Filed May 18, 1993, Ser. No. 185,923

Claims priority, application United Kingdom, May 19, 1992, 9210683

Int. Cl.[6] B32B *15/01;* **C23C** *16/00*

U.S. Cl. 428—678 **49 Claims**



1. An article comprising a superalloy substrate having thereon a corrosion-resistant multiplex aluminide-silicide coating, in which elements corresponding to constituent elements of the superalloy substrate are present throughout the extent of the coating but are combined differentially with aluminum and silicon constituents of the coating, said coating having an interface with the substrate, an outer surface and a composite microstructure such that a plurality of depthwise spaced apart bands having different compositions with respect to their aluminide and silicide contents are formed, there being at least two of said bands whose silicide contents are greater than or enhanced with respect to immediately adjacent bands of the coating, the one of said at least two bands having the lowest silicide contents being located farthest from the substrate surface.

5,547,771

HIGH-HARDNESS METAL SKIN FILM

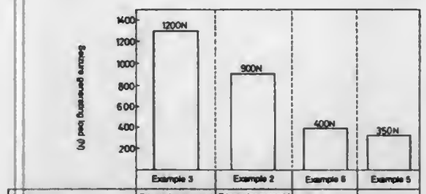
Takahiro Gunji; Masamune Tabata; Kenji Dosaka, and Kenji Hirose, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 17, 1995, Ser. No. 424,873

Claims priority, application Japan, Apr. 18, 1994, 6-103322; May 31, 1994, 6-141161; May 17, 1994, 6-128289

Int. Cl.[6] B32B *15/00*

U.S. Cl. 428—687 **13 Claims**



1. A high-hardness metal skin film formed of an aggregate of metal crystals, wherein an area rate A of pyramid-shaped metal crystals in a surface of said skin film is in a range of A≧40%, and said aggregate contains at least one element selected from carbon (C) and hydrogen (H) as an added element, the content of carbon (C) being in a range of C≧0.03% by weight, and the content of hydrogen (H) being in a range of H≧0.01% by weight.

5,547,772

MAGNETIC RECORDING MEDIUM

Shinji Saito; Hiroshi Ogawa; Takeshi Kakuta, and Hitoshi Noguchi, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 870,303, Apr. 17, 1992, abandoned. This application Apr. 4, 1995, Ser. No. 416,331

Claims priority, application Japan, Apr. 19, 1991, 3-115588

Int. Cl.[6] G11B *5/66;* **B32B** *3/10;5/16*

U.S. Cl. 428—694 B **8 Claims**

1. A magnetic recording medium comprising a non-magnetic support having provided thereon a plurality of magnetic layers each comprising a ferromagnetic powder and a binder, and said plurality of magnetic layers is composed of a lower magnetic layer and an upper magnetic layer provided on said lower magnetic layer, wherein the ferromagnetic powder contained in the upper magnetic layer has a length of major axis not longer than 0.30 μm and a crystallite size not larger than 400 Å, the upper magnetic layer has a dry thickness of not more than 1.20 μm, and the surface of the upper magnetic layer has a center-line average surface roughness (Ra) of 0.006 μm or less, and wherein:

(a) the ratio of the length of the major axis to the crystallite size of the ferromagnetic powder contained in the upper magnetic layer is from 3:1 to 7:1; and

(b) a dry thickness of the upper magnetic layer is not more than 30 times the crystallite size of ferromagnetic powder contained in the upper magnetic layer.

5,547,773

MAGNETOOPTIC RECORDING MEDIUM

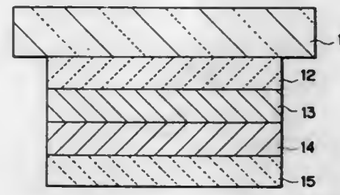
Toshimori Miyakoshi, Kasukabe, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 20, 1992, Ser. No. 914,589

Claims priority, application Japan, Jul. 23, 1991, 3-182507

Int. Cl.[6] G11B *5/66*

U.S. Cl. 428—634 ML **9 Claims**



1. A magnetoopic recording medium for magnetic field modulation overwriting, comprising:

a transparent substrate;

a first magnetic layer, having a thickness of at least 100 Å, which is provided on said transparent substrate, exhibits a large magneto-optical effect, and has an axis of easy magnetization that is perpendicular to a film surface, said first magnetic layer being made of a Gd—Fe—Co amorphous alloy that is dominant in iron group sublattice magnetization and whose saturation magnetization magnitude lies within a range from 50 to 300 emu/cc;

a second magnetic layer, having a thickness of at least 100 Å, which is provided on said first magnetic layer, which has a larger coercive force at room temperature than that of said first magnetic layer and a Curie temperature or a magnetic compensation temperature lower than that of the first magnetic layer, and which has an axis of easy magnetization that is perpendicular to a film surface, said second magnetic layer being made of an R—Fe—Co amorphous alloy, where R includes at least one of Tb and Dy, that is dominant in iron group sublattice magnetization and whose saturation magnetization magnitude lies within a range from 0 to 200 emu/cc, said first and second magnetic layers being mutually exchange-coupled;

a reflecting layer which is provided on said second magnetic layer and is used to reflect a light which has entered said medium from the transparent substrate side and has been transmitted through said first and second magnetic layers; and

wherein the combined film thickness of said first and second magnetic layers is 400 Å or less.

5,547,774

MOLECULAR RECORDING/REPRODUCING METHOD AND RECORDING MEDIUM

James Gimzewski, Zuerich; Michele Parrinello, Horgen, and Bruno Reihl, Wilen, all of, Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 1, 1993, Ser. No. 114,895

Claims priority, application European Pat. Off., Oct. 8, 1992, 92810762

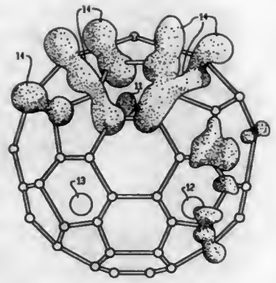
Int. Cl.[6] G11B *5/66*

U.S. Cl. 428—694 ML **22 Claims**

1. A method for recording binary coded information comprising the steps of:

defining at least one first position of a dopant in the interior of a molecule having a cagelike structure, said molecule being attached to a substrate, said first position representing binary '1',

defining at least one second position of said dopant in said molecule as representing binary '0', and



moving the dopant to one of said second positions by applying an external field to the molecule.

5,547,775

CIRCUIT FOR PREVENTING OVERCHARGE AND OVERDISCHARGE OF SECONDARY BATTERIES

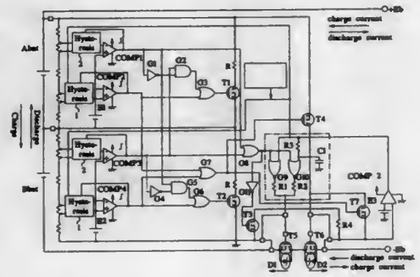
Yasuhito Eguchi, Kanagawa; Masayuki Sato, Tokyo; Toshio Narushima, Kanagawa; Akira Sanpei, Fukushima, and Kanji Murano, Tokyo, all of, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 921,758, Jul. 30, 1992, abandoned. This application Apr. 11, 1994, Ser. No. 226,105

Claims priority, application Japan, Apr. 26, 1991, 3-097734; Jul. 31, 1991, 3-213019

Int. Cl.[6] H02J *7/00*

U.S. Cl. 429—7 **8 Claims**



1. A circuit for preventing overcharge and overdischarge of series-connected secondary batteries, comprising:

an overcharge detecting circuit and an overdischarge detecting circuit having a hysteresis characteristic and connected between a positive electrode and a negative electrode of each of said secondary batteries;

a discharge circuit connected between the positive and negative electrodes of each of said secondary batteries and controlled by an output level of said overdischarge detecting circuit;

a circuit for interrupting charge current to said secondary batteries in accordance with an output level of said overcharge detecting circuit;

a circuit for interrupting discharge current from said secondary batteries in accordance with the output level of said overdischarge detecting circuit; and

a terminal to which is selectively connected one of a discharge load and charging power;

wherein overcharge and overdischarge of any of said secondary batteries are prevented, and capacities of said secondary batteries are balanced in both overcharge and overdischarge actions.

5,547,776

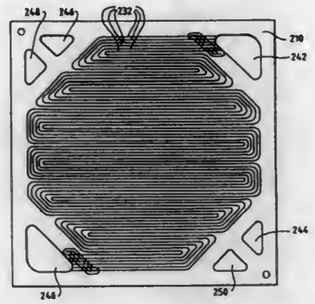
ELECTROCHEMICAL FUEL CELL STACK WITH CONCURRENTLY FLOWING COOLANT AND OXIDANT STREAMS

Nicholas J. Fletcher; Clarence Y. Chow; Eric G. Pow, all of Vancouver; Bogusláv M. Wozniczka, Coquitlam; Henry H. Voss, West Vancouver, all of, Canada, and Gerald Hornburg, Elchingen, Germany, assignors to Ballard Power Systems Inc., North Vancouver, Canada, and Daimler-Benz AG, Stuttgart, Germany

Continuation-in-part of Ser. No. 138,714, Oct. 19, 1993, Pat. No. 5,441,819, which is a continuation of Ser. No. 641,601, Jan. 15, 1991, Pat. No. 5,260,143. This application Jun. 24, 1994, Ser. No. 265,414

Int. Cl.[6] H01M *8/04*

U.S. Cl. 429—13 **38 Claims**



1. An electrochemical fuel cell stack comprising at least one fuel cell assembly, said assembly comprising:

A. at least one fuel cell comprising:

1. an anode layer comprising at least one fuel stream inlet and means for flowing within said anode layer a fuel stream introduced at said at least one fuel stream inlet, said fuel stream comprising hydrogen;

2. a cathode layer comprising at least one oxidant stream inlet, at least one oxidant stream outlet, and means for flowing an oxidant stream from said at least one oxidant stream inlet to said at least one oxidant stream outlet, said oxidant stream comprising oxygen and water formed by the electrochemical reaction of said hydrogen and said oxygen;

3. an electrolyte interposed between said anode layer and said cathode layer; and

B. a cooling layer disposed adjacent said cathode layer, said cooling layer comprising at least one coolant stream inlet, at least one coolant stream outlet, and means for flowing a coolant stream from said at least one coolant stream inlet to said at least one coolant stream outlet, said flowing means maintaining said coolant stream within a single flow field plate;

wherein said flowing means directs said coolant stream such that the coolest region of said cooling layer substantially coincides with the region of said cathode layer in which the oxidant stream has the lowest water content, and the warmest region of said cooling layer substantially coincides with the region of said cathode layer in which the oxidant stream has the highest water content.

5,547,777

FUEL CELL HAVING UNIFORM COMPRESSIVE STRESS DISTRIBUTION OVER ACTIVE AREA

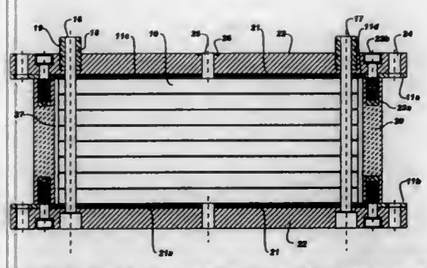
William R. Richards, Springfield, Va., assignor to Richards Engineering, Springfield, Va.

Filed Feb. 23, 1994, Ser. No. 200,391

Int. Cl.[6] H01M *8/10*

U.S. Cl. 429—32 **15 Claims**

1. A proton exchange membrane fuel cell stack, comprising:



said stack having a housing and end plates disposed on opposite sides of the stack including means for providing fixed support of said end plates to said housing;

multiple fuel cells arranged in the stack, each of said fuel cells having an inactive area and an active area within which electrically conductive elements are disposed, including an electrically conductive first bipolar plate portion as an anode, an electrically conductive second bipolar plate portion as a cathode, a proton exchange membrane and first and second electrically conductive electrodes, said first and second electrodes being respectively in contact within said active area with opposed surfaces of said membrane and with corresponding ones of said first and second bipolar plate portions;

current collecting means electrically connecting said bipolar plate portions to an external load; and

compliant pads disposed between said end plates and said current collecting means, and gaskets disposed in said inactive area for providing a spring stiffness in said inactive area that is less than that of said active area;

means applying a uniformed distribution of compressive force over the entirety of said active area of said multiple fuel cells with said means for providing fixed support of said end plates to said housing for increasing an effective area of said contact between said electrically conductive elements.

5,547,778

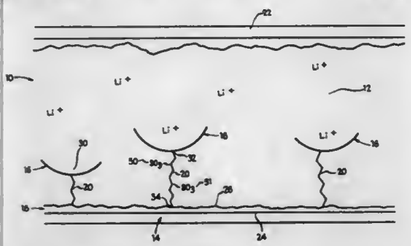
CAVITAND ELECTROLYTIC CELL AND ELECTROLYTIC PROCESS

Denis G. Fauteux, Acton; Martin Van Buren, Chelmsford, and Jie Shi, Arlington, all of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Filed Jul. 13, 1995, Ser. No. 502,109

Int. Cl.[6] H01M *2/38*

U.S. Cl. 429—81 **18 Claims**



1. An electrolytic cell comprising:

an electrolyte;

a metal ion source electrode having an interface operatively positioned between the electrolyte and a surface of the metal ion source electrode;

a cavitand operatively associated with the electrode and the electrolyte,

the cavitand having the ability to releasably attract particular ions, associated with the metal ion source electrode, within the electrolyte;

means for anchoring the cavitand to the metal ion source electrode regardless of fluctuations to the electrode surface due to deposition, or, dissolution of the particular ions;

means for causing the release of the particular ions which have been attracted to the cavitand; and

means for directing the released ions from the cavitand toward the metal ion source electrode enabling a charge transfer reaction to occur, wherein the directed ions consequently deposit on the electrode.

5,547,779

SEPARATOR FOR ALKALI-ZINC BATTERY

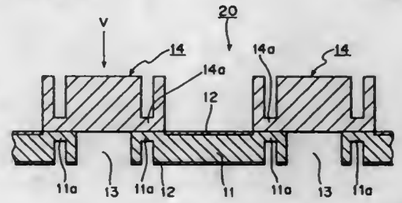
Tomonori Kishimoto; Mitsuo Yamane; Takehito Boguchi, and Yoshihiro Eguchi, all of Takatsuki, Japan, assignors to Yuasa Corporation, Takatsuki, Japan

Continuation of Ser. No. 920,288, Aug. 19, 1992, Pat. No. 5,320,916. This application Dec. 10, 1993, Ser. No. 164,730

Claims priority, application Japan, Dec. 28, 1990, 417044; Nov. 8, 1991, 292711; Dec. 9, 1991, 324325

Int. Cl.[6] H01M *2/16*

U.S. Cl. 429—144 **8 Claims**



1. A separator for a sealed alkali-zinc battery in which a cathode is isolated from a zinc anode by a separator and O_2 gas generated at the cathode is absorbed comprising a micro-porous membrane being O_2 gas permeable to an extent sufficient to permeate O_2 gas from the cathode to the zinc anode, said membrane having a plurality of pores and alkali resistance, wherein a part of said porous membrane is hydrophilic due to radiation graft polymerizing of a monomer having a hydrophilic group, and the remaining part being hydrophobic.

5,547,780

BATTERY PRECURSOR AND A BATTERY

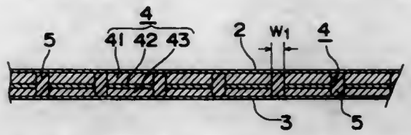
Hiroshi Kagawa; Shiro Kato, and Kazuo Murata, all of Takatsuki, Japan, assignors to Yuasa Corporation, Osaka, Japan

Filed Jan. 12, 1994, Ser. No. 180,424

Claims priority, application Japan, Jan. 18, 1993, 5-023774; Mar. 11, 1993, 5-078742; Mar. 11, 1993, 5-078743; Mar. 12, 1993, 5-079166; May 18, 1993, 5-139987; Aug. 18, 1993, 5-226501

Int. Cl.[6] H01M *6/46*

U.S. Cl. 429—149 **23 Claims**



1. A battery precursor for producing a battery through a cutting process, in which

a large number of battery elements comprising positive active material layers, separators having electrolytes and negative active material layers are installed in parallel under a state of parallel connection between a plate-like positive current collector plate and a negative current collector plate facing each

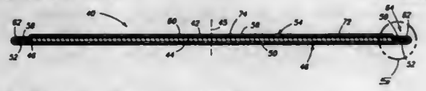
other, and the respective battery elements are partitioned with respect to each other and sealed by insulators.

5,547,781

BUTTON-TYPE BATTERY WITH IMPROVED SEPARATOR AND GASKET CONSTRUCTION

Peter M. Blonsky, and Mark E. Tuttle, both of Boise, Id., assignors to Micron Communications, Inc., Boise, Id.

Filed Mar. 2, 1994, Ser. No. 205,611
Int. Cl.[6] H01M *2/02*
U.S. Cl. 429—174 **10 Claims**



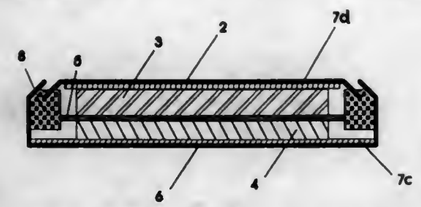
1. A button-type battery comprising:
an anode;
a cathode positioned adjacent to the anode;
an electrolyte between the anode and the cathode;
a conductive first terminal housing member in electrical contact with one of the anode or the cathode; the first terminal housing member having a periphery;
a conductive second terminal housing member in electrical contact with the other of the anode or the cathode; the second terminal housing member having a periphery;
the first and second terminal housing members forming an enclosed housing which holds and protects the anode and the cathode;
the first and second terminal housing member peripheries being configured together to form a seal which seals the anode and the cathode within the housing formed by the first and second terminal housing members;
a separator provided between and separating the anode and the cathode; and
wherein the entirety of at least one of the first and second terminal housing members is substantially planar.

5,547,782

CURRENT COLLECTOR FOR LITHIUM ION BATTERY

Sankar Dasgupta, c/o Electrofuels Manufacturing Co. 21 Hanna Ave., Toronto, Ont., Canada, and James K. Jacobs, c/o Electrofuel Manufacturing Co. Unit 10, 21 Hanna Ave., Toronto, Canada

Division of Ser. No. 204,439, Mar. 2, 1994, Pat. No. 5,464,706. This application Mar. 13, 1995, Ser. No. 402,359
Int. Cl.[6] H01M *4/66*
U.S. Cl. 429—194 **5 Claims**



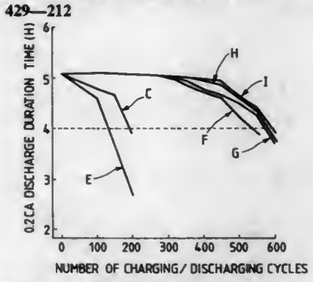
1. In a lithium ion battery, having a positive electrode comprising a positive active material capable of reacting with lithium ions in discharging said battery and releasing lithium ions in charging said battery, said positive electrode having two opposing major faces, a negative electrode comprising a negative active material capable of releasing lithium ions in discharging said battery and intercalating lithium ions in charging said battery, said negative electrode having two opposing major faces, a non-aqueous electrolyte containing a lithium salt capable of ionic dissociation, a first current collector in contact with a distal major face of said positive electrode, a second current collector in contact with a distal major face of said negative electrode, and metallic electrical lead means in juxtaposed contact position with the external face of each of said current collectors, the improvement comprising that said first current collector in contact with said distal major face of said positive electrode is an electrically conductive, continuous and coherent polymer layer, said polymer layer consisting essentially of an electrically non-conductive, continuous and coherent polymer laminate having a thickness, and said continuous and coherent polymer laminate is having dispersed therein more than 35 vol. % electrically conductive particles selected from the group consisting of titanium nitride, zirconium nitride, fine carbon, carbon black and carbon fibres, said conductive particles having major and minor dimensions.

5,547,783

VALVE-REGULATED LEAD-ACID BATTERY

Takayuki Funato, and Katsuhiro Takahashi, both of Kyoto, Japan, assignors to Japan Storage Battery Company, Limited, Kyoto, Japan

Filed Dec. 13, 1994, Ser. No. 355,007
Claims priority, application Japan, Dec. 29, 1993, 5-353461
Int. Cl.[6] H01M *4/14;4/62*
U.S. Cl. 429—212 **10 Claims**



1. A valve-regulated lead-acid battery comprising:
an electrolyte including sulfuric acid;
a battery jar which includes said electrolyte therein;
a positive plate including a positive electric collector which is filled with a positive active material; and
a negative plate including a negative electric collector which is filled with a negative active material, said negative active material including a conductive additive;
wherein a theoretical capacity (Ah: ampere-hour) of said negative active material is less than that of said positive active material in said valve-regulated lead-acid battery, and the amount of said conductive additive in said negative active material is in the range of 0.5 weight % to 7.5 weight % of the amount of the negative active material;
wherein said conductive additive is selected from the group consisting of carbon black, polyaniline, powdered tin, and a powdered tin compound.

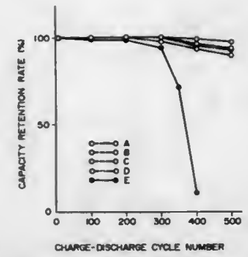
5,547,784

ALKALINE STORAGE BATTERY AND METHOD FOR PRODUCING THE SAME

Takashi Okawa, Fujisawa; Masashi Enokido, Chigasaki; Shingo Tsuda, Fujisawa, and Norikatsu Akutsu, Tokyo, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 175,507, Dec. 30, 1993, abandoned. This application Nov. 25, 1994, Ser. No. 348,085
Claims priority, application Japan, Jan. 18, 1993, 5-005591
Int. Cl.[6] H01M *4/26;4/28;4/48;4/38*
U.S. Cl. 429—218 **11 Claims**

1. An alkaline storage battery which comprises a positive electrode mainly composed of a metal oxide, a negative electrode



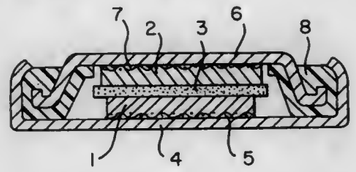
mainly composed of a hydrogen-storing alloy powder, a separator and an alkaline electrolyte, wherein said negative electrode comprises the hydrogen-storing alloy powder and any yttrium-containing material selected from the group of Y, Y_2O_3, $Y(OH)_3$ and $Y_2(SO_4)_3$ or a mixture thereof.

5,547,785

LITHIUM CELL

Hideaki Yumiba, Suita; Kazunobu Matsumoto, Mishima, and Akira Kawakami, Takatsuki, all of, Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Division of Ser. No. 105,169, Aug. 12, 1993, Pat. No. 5,470,678. This application Apr. 19, 1995, Ser. No. 425,063
Claims priority, application Japan, Aug. 19, 1992, 4-244280
Int. Cl.[6] H01M *4/48*
U.S. Cl. 429—220 **2 Claims**



1. A lithium cell comprising a negative electrode comprising lithium or a lithium containing material, a positive electrode and an electrolytic solution comprising an organic solvent, said positive electrode comprising a copper oxide compound as an active material, having an atomic ratio of at least 1 of the number of lithium (Li) atoms which react with one molecule of the copper oxide compound during the discharge of the lithium cell, to the number of oxygen (O) atoms contained in one molecule of said copper oxide compound, said ratio being expressed as Li/O, wherein said copper oxide compound comprises copper, oxygen, and at least one additional element wherein a positive electrode active material for a secondary lithium cell, having an electric potential higher by at least 2V above lithium, is added to said copper oxide compound.

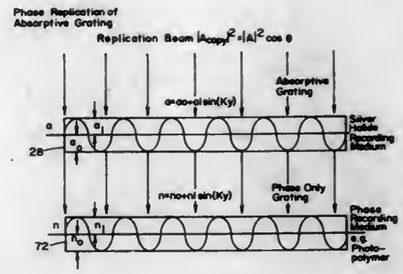
5,547,786

SYSTEM AND METHOD OF FABRICATING MULTIPLE HOLOGRAPHIC ELEMENTS

Robert W. Brandstetter, Levittown, and Nils J. Fonneland, Lake Ronkonkoma, both of N.Y., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Continuation of Ser. No. 957,593, Oct. 6, 1992, abandoned. This application Aug. 22, 1994, Ser. No. 294,199
Int. Cl.[6] G03H *1/20*
U.S. Cl. 430—1 **7 Claims**

1. A method of fabricating a multiple holographic element, comprising:
forming a master multiple holographic element having an absorption grating pattern producing a given index of refraction pattern across the master multiple holographic element, including the steps of



i) transmitting a reference beam onto a planar surface of an optical recording medium,
ii) transmitting a signal beam onto the planar surface of the recording medium,
wherein the reference and signal beams interfere at the recording medium to form the master multiple holographic element from the optical recording medium, said master multiple holographic element having a non-uniform efficiency;
coating the master multiple holographic element with a layer of a photopolymer;
directing a recording beam to and through the master multiple holographic element and onto the photopolymer layer,
wherein the absorption grating pattern of the master multiple holographic element modulates the amplitude of the recording beam, and the modulated recording beam forms the monomers of the photopolymer layer into a monomer pattern that produces said given index of refraction pattern across the photopolymer layer;
fixing the monomers of the photopolymer layer in said monomer pattern to form a copy of the master holographic element; and
removing the photopolymer layer from the master multiple holographic element;
wherein the recording beam has an amplitude profile on the planar surface of the master multiple holographic element, and the directing step includes the step of varying said amplitude profile to compensate for the non-uniform efficiency of the master multiple holographic element and thereby to form the copy of the master multiple holographic element with a uniform efficiency.

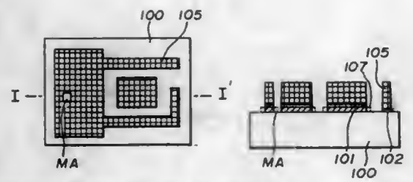
5,547,787

EXPOSURE MASK, EXPOSURE MASK SUBSTRATE, METHOD FOR FABRICATING THE SAME, AND METHOD FOR FORMING PATTERN BASED ON EXPOSURE MASK

Shinichi Ito, Yokohama; Haruo Okano, Tokyo; Toru Watanabe, and Katsuya Okumura, both of Yokohama, all of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 21, 1993, Ser. No. 49,788
Claims priority, application Japan, Apr. 22, 1992, 102695; Jul. 17, 1992, 191066; Mar. 9, 1993, 48301
Int. Cl.[6] G03F *9/00*
U.S. Cl. 430—5 **19 Claims**

1. An exposure mask comprising a light transmissive substrate and a semi-transparent film pattern on said substrate; a ratio of an optical path length of the semi-transparent film pattern to a wavelength of exposure light being differentiated by a predetermined amount from that of a transparent part of the light transmissive substrate, and the semi-transparent film pattern comprising a plurality of laminated layers of different composition materials each



containing at least one identical element of Si, Ge, and a metal element.

5,547,788

MASK AND METHOD FOR MANUFACTURING THE SAME

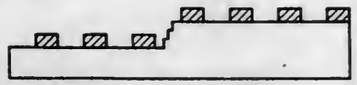
Woo-sung Han, Suwon, and Chang-jin Sohn, Kwangmyeong, both of, Rep. of Korea, assignors to Samsung Electronic Co., Ltd., Suwon, Rep. of Korea

Filed Mar. 4, 1994, Ser. No. 205,499

Claims priority, application Rep. of Korea, Mar. 4, 1993, 93 3216; Apr. 20, 1993, 93 6626

Int. Cl.[6] G03F *9/00*

U.S. Cl. 430—5 **23 Claims**



1. A mask for projecting a pattern through a projection lens onto a semiconductor wafer having a base portion and a stepped portion thereon, the mask comprising:

a transparent mask substrate having a stepped portion and a base portion, wherein said mask substrate is thicker at said stepped portion than at said base portion, said stepped portion on said mask substrate corresponding to the stepped portion on the semiconductor wafer, wherein light passed through said mask substrate at said stepped portion differs in phase from light passed through said mask substrate at said base portion by approximately an integral multiple of 2π radians; and

an opaque mask pattern formed on said mask substrate and arranged to block light from said mask substrate.

5,547,789

PATTERN TRANSFER MASK

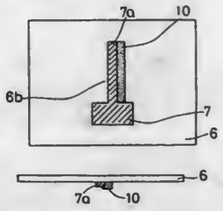
Mitsunori Nakatani; Yoshiki Kojima, and Hiroyuki Minami, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 142,860, Oct. 28, 1993, Pat. No. 5,395,739. This application Nov. 15, 1994, Ser. No. 340,865

Claims priority, application Japan, Dec. 15, 1992, 4-354580

Int. Cl.[6] G03F *9/00; 1/14*

U.S. Cl. 430—5 **3 Claims**



1. A pattern transfer mask for an optical exposure process in a method of making a field effect transistor, the method comprising depositing a positive photoresist on a surface of a semiconductor substrate, exposing the positive photoresist to light passing through said pattern transfer mask to produce an asymmetric intensity profile at a region of the semiconductor substrate where a gate electrode of the field effect transistor is to be formed, converting the positive photoresist into a negative photoresist, developing the negative photoresist to form a photoresist pattern having an aperture opposite the region where a gate electrode is to be formed and including asymmetric overhanging portions in the aperture, etching the semiconductor substrate using the photoresist pattern as an etching mask to form a recess in the semiconductor substrate, and depositing a gate metal using the photoresist pattern as a deposition mask to form the gate electrode in the recess, said pattern transfer mask comprising:

a transparent substrate having opposed first and second surfaces;

a light shielding film having a pattern and disposed on the first surface of the transparent substrate for shielding a part of a photoresist film located opposite the second surface of the transparent substrate from light incident on the first surface of and transmitted through the transparent substrate and incident on the photoresist film for transferring the pattern to the photoresist film; and

an opaque region in a part of the transparent substrate at the first surface and on one side of and contiguous to the light shielding film pattern.

5,547,790

ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR CONTAINING POLYMERIC CHARGE TRANSPORTING MATERIAL IN CHARGE GENERATING AND TRANSPORTING LAYERS

Minoru Umeda, and Tatsuya Niimi, both of Numazu, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 20, 1994, Ser. No. 326,700

Claims priority, application Japan, Oct. 20, 1993, 5-262409

Int. Cl.[6] G03G *5/047*

U.S. Cl. 430—58 **12 Claims**

1. An electrophotographic photoconductor comprising an electroconductive support and a photoconductive layer formed thereon, which comprises at least a charge generation layer comprising a charge generating material selected from the group consisting of azo pigments, perinone pigments and squaraines, and a polymeric charge transporting material, and a charge transport layer comprising a polymeric charge transporting material,

wherein said polymeric charge transporting material in said charge generation layer is selected from the group consisting of polysilylene, a polymer having a hydrazone structure on the main chain and/or side chain thereof, and a polymer having a tertiary amine structure on the main chain and/or side chain thereof, and

said polymeric charge transporting material in said charge transport layer is selected from the group consisting of polysilylene, a polymer having a hydrazone structure on the main chain and/or side chain thereof, and a polymer having a tertiary amine structure on the main chain and/or side chain thereof.

5,547,791

ELECTROPHOTOGRAPHIC PHOTORECEPTOR

Kozo Ishio, and Tetsuo Murayama, both of Machida, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

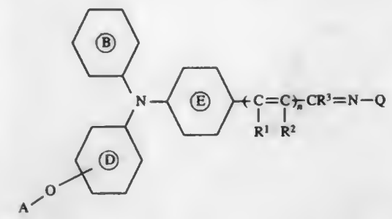
Filed Nov. 23, 1994, Ser. No. 347,132

Claims priority, application Japan, Nov. 26, 1993, 5-296778; Jun. 3, 1994, 6-122651

Int. Cl.[6] G03G *5/04*

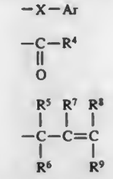
U.S. Cl. 430—59 **11 Claims**

1. An electrophotographic photoreceptor comprising on a conductive support a photosensitive layer containing an arylamine hydrazone compound represented by the general formula (I):



in which,

A represents a group of the general formula (II), (III) or (IV):

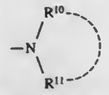


[II]

[III]

[IV]

Q represents a group of the general formula (V):



[V]

n is 0 or an integer equal to or more than 1;

X represents an optionally substituted alkylene group;

Ar represents an optionally substituted aryl group or an optionally substituted heterocyclic group;

B, D and E each represents a benzene ring optionally substituted with at least one substituent;

R^1, R^2, R^3, R^5, R^6, R^7, R^8 and R^9 each represents a hydrogen atom, an optionally substituted alkyl group, an optionally substituted aryl group or an optionally substituted heterocyclic group, provided that when n is equal to or more than 2, each R^1 in each structural unit may be identical or different each other and the same is true case of R^2;

R^4 represents an optionally substituted alkyl group, an optionally substituted aryl group, an optionally substituted heterocyclic group or an optionally substituted aralkyl group;

R^{10} and R^{11} each represents an optionally substituted aryl group, an optionally substituted heterocyclic group, an optionally substituted alkyl group, an optionally substituted aralkyl group or allyl group, provided that R^{10} and R^{11} may be bonded directly or by means of a linking group.

5,547,792

ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR, CARBONATE COMPOUND FOR USE IN THE SAME, AND INTERMEDIATE COMPOUND FOR PRODUCING THE CARBONATE COMPOUND

Tomoyuki Shimada, Shizuoka-ken; Masaomi Sasaki, Susono, and Chiaki Tanaka, Shizuoka-ken, all of, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

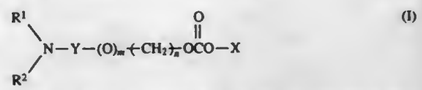
Filed Jun. 15, 1994, Ser. No. 260,981

Claims priority, application Japan, Jun. 15, 1993, 5-168523; Jun. 17, 1993, 5-171155; Jun. 17, 1993, 5-171156; Aug. 9, 1993, 5-217031; Aug. 9, 1993, 5-217032; Oct. 25, 1993, 5-288701

Int. Cl.[6] G03G *5/047*

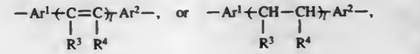
U.S. Cl. 430—59 **8 Claims**

1. An electrophotographic photoconductor comprising an electroconductive support and a photoconductive layer formed thereon comprising as a photoconductive material at least one carbonate compound of formula (I):



(I)

wherein R^1 and R^2 each is hydrogen, an alkyl group which may have a substituent, an aryl group which may have a substituent, or a condensed polycyclic group; Y is a bivalent arylene group which may have a substituent,



in which

Ar^1 and Ar^2 each is an arylene group which may have a substituent, R^3 and R^4 each is hydrogen, an alkyl group which may have a substituent or an aryl group which may have a substituent, and l is an integer of 1 or 2; and

R^1 and R^2, or R^1 and Y may independently form a ring; X is an alkyl group which may have a substituent or an aryl group which may have a substituent; m is an integer of 0 or 1; and n is an integer of 0 to 6.

5,547,793

METHOD FOR USING IMAGE SUPPORT REGENERATIVELY AND TOOL FOR FORMING IMAGE ON IMAGE SUPPORT

Shinichi Kuramoto, Numazu; Sadao Takahashi, Tokyo; Yoshiyuki Kimura, Ota-Ku; Kazuhiro Ando, Satsute; Tadashi Saito, Yokohama; Youichi Asaba, Yokohama; Kiyoshi Tanikawa, Yokohama; Yoshiaki Miyashita, and Satoshi Shinguryo, both of Kawasaki, all of, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 30, 1994, Ser. No. 314,291

Claims priority, application Japan, Oct. 3, 1993, 5-271362

Int. Cl.[6] G03G *13/22*

U.S. Cl. 430—97 **3 Claims**

1. A method for using an image support regeneratively, comprising the steps of:

(a) forming an image material on an image support from an image-forming member, said image-forming member containing a main component of colored thermoplastic resin particles, wherein said image is formed by solidifying said thermoplastic resin particles alone or by solidifying said thermoplastic resin particles together with a binder resin;

(b) wetting said image support having said image material formed thereon with at least one liquid selected from the group consisting of water, a solution of a surfactant, a solution of a water soluble polymer and a solution of a surfactant and a water soluble polymer;

(c) heating said wetted image support having said image material formed thereon and adhering to said heated image material on said image support a flaking member having a greater adherent force for said heated image material than the adherent force between said heated image material and a surface of the image support; and

(d) flaking said flaking member adhered to said image material from said image support.

5,547,794

TONER FOR ELECTROSTATIC LATENT IMAGE DEVELOPING

Ichiro Demizu, Toyonaka; Yasuki Nagai, Amagasaki; Mitsutoshi Nakamura, Ibaraki; Yukio Tanigami, Amagasaki, and Hideaki Ueda, Kishiwada, all of, Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed May 24, 1995, Ser. No. 448,998

Claims priority, application Japan, May 31, 1994, 6-118522

Int. Cl.[6] G03G *9/087*

U.S. Cl. 430—106 **15 Claims**

1. A toner comprising a residual organic solvent content of about 5 to about 100 ppm and a residual moisture content of about 0.05 to about 1.0 percent-by-weight of total toner weight, said toner being produced by an emulsion dispersion method comprising:

preparing an emulsion dispersion comprising water and a non-water-soluble component, said non-water-soluble component comprising a binder resin and an organic solvent; and

removing the water and the organic solvent to form particles of said toner.

5,547,795

MAGNETIC CARRIER FOR DEVELOPER

Masahisa Ochiai, Fukaya; Tsutomu Saitoh, and Masumi Asanae, both of Kumagaya, all of, Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Jun. 20, 1995, Ser. No. 492,866

Claims priority, application Japan, Jun. 22, 1994, 6-139947

Int. Cl.[6] G03G *9/107*

U.S. Cl. 430—106.6 **10 Claims**



1. A two-component developer for use in electrophotographic recording consisting essentially of a magnetic toner having a concentration in the developer of 10–90 percent by weight and a flat magnetic carrier made of a ferromagnetic particle with an average particle size of 100 μm or less, the flat magnetic carrier having a ratio (T/a) of a minimum outer size (T) to a maximum outer size (a) of 0.02–0.5, a specific volume resistance of 10^3 to 10^{14} Ω-cm, and a magnetization (σ_{1000}) of 40 emu/g or more.

5,547,796

DEVELOPER CONTAINING INSULATING MAGNETIC TONER FLOWABILITY-IMPROVING AGENT AND INORGANIC FINE POWDER

Takaaki Kohtaki, Yokohama; Masaaki Taya, and Masami Fujimoto, both of Kawasaki, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 67,283, May 26, 1993, abandoned. This application Jul. 18, 1994, Ser. No. 276,509

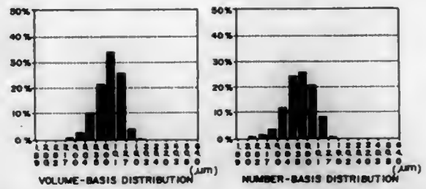
Claims priority, application Japan, May 27, 1992, 4-158952; Apr. 28, 1993, 5-123151

Int. Cl.[6] G03G *9/083;9/107;9/10;9/00*

U.S. Cl. 430—106.6 **22 Claims**

1. A one-component developer for developing an electrostatic image, comprising:

an insulating, negatively chargeable magnetic black toner containing a binder resin, a magnetic material and a negative charge control agent, and having a weight-average particle



size ($t\text{-}D_4$) of 4–12 μm, a number-average particle size ($t\text{-}D_1$) of 1–10 μm and a ratio ($t\text{-}D_4/t\text{-}D_1$) of 1.01–2, wherein the magnetic material is contained in a proportion of 20–150 wt. parts per 100 wt. parts of the binder resin,

a flowability-improving agent having a BET specific surface area of at least 30 m^2/g, and

positively chargeable inorganic fine powder having a weight-average particle size ($m\text{-}D_4$) of 0.6–5 μm, a number-average particle size ($m\text{-}D_1$) of 0.5–4 μm, and a ratio ($m\text{-}D_4/m\text{-}D_1$) which is in the range of 1.1–2.4 and is equal to or larger than the ratio ($t\text{-}D_4/t\text{-}D_1$),

wherein the inorganic fine powder is contained in an amount which is 2–8 times that of the flowability-improving agent by weight, and

the insulating magnetic toner and the inorganic fine powder have particle sizes satisfying the following condition:

$$1.5 \leq (t\text{-}D_4)/(m\text{-}D_4) \leq 7.0.$$

5,547,797

DEVELOPER FOR DEVELOPING ELECTROSTATIC LATENT IMAGES

Masahiro Anno, Sakai; Minoru Nakamura, Neyagawa; Makoto Kobayashi, Settsu, and Shigeyuki Hakumoto, Toyonaka, all of, Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Aug. 2, 1994, Ser. No. 284,236

Claims priority, application Japan, Aug. 5, 1993, 05-194659; Aug. 5, 1993, 05-194663

Int. Cl.[6] G03G *9/083;9/08*

U.S. Cl. 430—106.6 **17 Claims**

1. A developer for developing electrostatic latent images comprising:

a spherical toner containing a binder resin and a colorant whose number average particle size is 2–10 μm, having spherical toner particles of particles size smaller than ½ the number average particle size of the spherical toner being 5% or less by number % and spherical toner particles of particle size more than double the number average particle size of the spherical toner being 1% or less by number %, the spherical toner having a shape factor (SF) of 100–140, and

a non-spherical toner having a number average particle size of 2–10 μm, the number average particle size within ±25% of that of the spherical toner, the non-spherical toner having a shape factor (SF) of greater than 140,

the spherical toner whose ratio to the total number of toner being 5–80%, and

the shape factor (SF) being defined by the following equation:

$$SF = 100\pi(\text{maximum length})^2/(4\times\text{area})$$

in which the area is the projected area and the maximum length is the maximum length of a projected image of a particle.

8. The developer for developing electrostatic latent images according to claim 1 wherein the spherical toner and nonspherical toner contain the same binder resin, colorants, and magnetic powders.

5,547,798

TONER COMPOSITION AND TONER WITH LOW AND HIGH M.W. VINYL POLYMERS

Tatsuo Suzuki; Susumu Tanaka, both of Shiga, and Takashi Ueyama, Kusatsu, all of, Japan, assignors to Sekisui Chemical Co., Ltd., Osaka, Japan

Filed Nov. 14, 1994, Ser. No. 338,873

Claims priority, application Japan, Nov. 19, 1993, 5-290373

Int. Cl.[6] G03G *9/087*

U.S. Cl. 430—109 **3 Claims**

1. A toner resin composition comprising a low molecular weight vinyl polymer component and a high molecular weight vinyl polymer component having styrene containing monomers and (meth) acrylic esters as structural units of said polymer components and having peaks of molecular weight distribution in the region of molecular weights from about 4×10^3 to about 8×10^4 and in the region of molecular weights from about 1×10^5 to about 4×10^6, wherein said high molecular weight vinyl polymer component contains 97 wt % or more of styrene containing monomers as structural units for said polymer component, and having a styrene polymer with a weight average molecular weight of about 300,000 or higher, or a gel content of about 20 wt % or higher makes up 50 wt % or more of it.

5,547,799

ELECTROPHOTOGRAPHIC TONER WITH FISCHER-TROPSCH WAX HAVING MEAN MOLECULAR WEIGHT OF NOT LESS THAN 1,000

Naoki Yoshie, Takatsuki, and Junji Machida, Toyonaka, both of, Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Apr. 14, 1995, Ser. No. 421,937

Claims priority, application Japan, Apr. 15, 1994, 6-077232

Int. Cl.[6] G03G *9/097*

U.S. Cl. 430—110 **31 Claims**

1. A toner for electrophotography comprising:

(a) a styrene-acrylic polymer resin;

(b) a colorant; and

(c) a Fischer-Tropsch wax having average molecular weight not less than 1,000.

5,547,800

TONER AND ELECTROPHOTOGRAPHIC IMAGE FORMING METHOD USING THE SAME

Yoshiki Nishimori; Tsugio Abe, and Yuriko Suzuki, all of Hachioji, Japan, assignors to Konica Corporation, Japan

Filed May 23, 1995, Ser. No. 445,448

Claims priority, application Japan, Jun. 6, 1994, 6-123928

Int. Cl.[6] G03G *9/087*

U.S. Cl. 430—110 **6 Claims**

1. A toner for use in a two-component developer for developing an electrophotographic image comprising a binder and a colorant, in which a volume average diameter of the toner particles, Dv in μm, and a storage modulus at 170° C. thereof, G'_{170} in $dyne/cm^2$, satisfy the following relation;

$$-(2/15)Dv+3.5 \leq \log G'_{170} \leq -(3/15)Dv+5.5.$$

5,547,801

TONER RESIN COMPOSITION AND TONER

Tatsuo Suzuki, Shiga-ken, and Tsunehiro Masaoka, Takatsuki, both of, Japan, assignors to Sekisui Chemical Co., Ltd., Osaka, Japan

Filed Nov. 7, 1994, Ser. No. 335,256

Int. Cl.[6] G03G *9/097*

U.S. Cl. 430—115 **3 Claims**

1. A toner having a binder primarily composed of vinyl copolymer, the improvement comprising a vinyl copolymer which has, in its molecular weight distribution curve, at least a peak in the range of 1×10^3–8×10^4, plus a peak or a shoulder in the range of 1×10^5–4×10^6, or a Mw/Mn of 6 or more, or 5 wt % or more of a toluene insoluble component, and contains 25–35 wt % of ethylene-alpha olefin copolymer, wherein the structural unit of said vinyl copolymer is a styrene or methacrylic ester monomer and other vinyl monomers, and the ethylene-alpha olefin copolymer has a viscosity of 10,000 poises or less at 140° C.

5,547,802

IMAGE FORMATION MATERIALS AND IMAGE FADING PREVENTION METHOD

Hiromitsu Kawase, Mishima; Yoshikazu Kaneko, Numazu, and Shoji Maruyama, Yokohama, all of, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 31, 1994, Ser. No. 331,915

Claims priority, application Japan, Nov. 2, 1993, 5-297448; Oct. 24, 1994, 6-284362

Int. Cl.[6] G03G *9/097*

U.S. Cl. 430—110 **8 Claims**

1. An image formation material comprising a binder resin, a dye, and a singlet oxygen.

5,547,803

QUATERNARY PHOSPHONIUM TRIHALOCUPRATE SALTS AS CHARGE-CONTROL AGENTS FOR TONERS AND DEVELOPERS

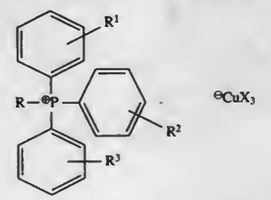
John C. Wilson, Rochester, and Dinesh Tyagi, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 7, 1994, Ser. No. 350,603

Int. Cl.[6] G03G *9/097*

U.S. Cl. 430—110 **4 Claims**

1. A dry, particulate electrostatographic toner composition comprising a polymeric binder and a charge-control agent comprising a quaternary phosphonium trihalocuprate salt having the structure:



wherein

R represents an unsubstituted alkyl group having from 1 to 24 carbon atoms; a substituted alkyl group having from 1 to 24 carbon atoms substituted with one or more hydroxy-, carboxy-, alkoxy-, carboalkoxy-, acyloxy-, nitro-, cyano-, keto- or halo-groups; a cycloalkyl group having from 3 to 7 carbon atoms; an alkaryl group having from 1 to 20 carbon atoms in the alkyl group and 6 to 14 carbon atoms in the aryl group; an aralkyl group having from 1 to 4 carbon atoms in the alkyl group and 6 to 14 carbon atoms in the aryl group wherein the aryl group is unsubstituted or substituted with one or more alkyl-, hydroxy-, carboxy-, alkoxy-, carboalkoxy-, acyloxy-, amino-, nitro-, cyano-, keto- or halo-groups; phenyl or substituted phenyl;

R^1, R^2 and R^3, which can be the same or different, represents hydrogen; an alkyl group having from 1 to 24 carbon atoms; hydroxy-; carboxy-; alkoxy-; carboalkoxy-; acyloxy-; amino-; nitro-; cyano-; keto-; or halo-groups; and

X, which can be the same or different, represents fluorine, chlorine, bromine or iodine.

5,547,804

LIQUID TONER, INK COMPOSITION, AND METHODS OF PRODUCING THE SAME

Masumi Nishizawa; Masayuki Iijima, and Takashi Miyama, all of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1995, Ser. No. 413,116

Claims priority, application Japan, Mar. 29, 1994, 6-058547; Mar. 31, 1994, 6-063062

Int. Cl.[6] G03G *9/087*; C09D *11/10*

U.S. Cl. 430—114 **4 Claims**

1. A liquid toner comprising copolymer resin particles composed of at least two different monomer components, said copolymer resin particles being dispersed in an electrically insulating dispersion medium, said copolymer resin particles and said dispersion medium being related to each other such that a difference $\Delta\delta^1$ between a solubility parameter value δp^1 of a homopolymer composed only of at least one monomer component in said copolymer resin and a solubility parameter value δp^1 of said dispersion medium is not smaller than 1.0, and that a difference $\Delta\delta^2$ between a solubility parameter value δp^2 of a homopolymer composed only of at least one other monomer component and the solubility parameter value δs^1 of said dispersion medium is not larger than 1.0, and further that a difference Δ between $\Delta\delta^1$ and $\Delta\delta^2$ ($\Delta\delta^1$–$\Delta\delta^2$) is at least 0.5, and said copolymer resin particles each comprising a nuclear portion which is insoluble in said dispersion medium, and an outer skin portion which wraps said nuclear portion, and which is soluble or swellable in said dispersion medium.

5,547,805

ELECTROPHOTOGRAPHIC METHOD USING AMORPHOUS SILICON PHOTOSENSITIVE MATERIAL

Hiroyuki Hazama; Masahiro Tsutsumi, and Masaru Watanabe, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Apr. 24, 1995, Ser. No. 427,174

Claims priority, application Japan, Apr. 28, 1994, 6-091705

Int. Cl.[6] G03G *13/22*

U.S. Cl. 430—125 **2 Claims**

1. In an electrophotographic method which comprises the steps of subjecting an amorphous silicon photosensitive material to main charging, imagewise exposure, development, pre-charging before transfer and transferring; wherein said main charging and said pre-charging before transfer generate ozone, which causes oxidation of the surface of the photosensitive material, and discharge products, which adhere to the surface of the photosensitive material; the improvement comprising:

said steps being carried out while abrading the surface of the photosensitive material by development with a developing toner containing an abrading material and exhausting ozone at the time of main charging and pre-charging before transfer so that x, the degree of oxidation (SiO/SiC) of the surface of the photosensitive material, and y, the amount of discharge products (mole/cm^2) adhering to the surface of the photosensitive material, satisfy the following relationships (1) and (2)

$$0.4 \leqq x \leqq 1.25 \quad (1)$$

$$y \leqq 2.2\times10^{-9}\cdot\exp(-2.0x) \quad (2);$$

and wherein said abrading material is at least one abradant selected from the group consisting of alumina, zirconia, mullite, cordierite, titania, steatite, silica, silica-alumina, silicon carbide, tungsten carbide, zirconium carbide, boron nitride, titanium nitride, silicon nitride, zirconium boride, titanium boride, tungsten silicide, molybdenum silicide, diamond, corundum, chromium oxide and cerium oxide.

5,547,806

PROCESS FOR PRODUCING MICROCAPSULE CONTAINING DIAZONIUM SALT COMPOUND AND PHOTO- AND HEAT-SENSITIVE RECORDING MATERIAL PRODUCED USING THE SAME

Hiroshi Kamikawa, and Sadao Ishige, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 21, 1994, Ser. No. 360,263

Claims priority, application Japan, Dec. 21, 1993, 5-322574

Int. Cl.[6] G03C *1/72*

U.S. Cl. 430—138 **18 Claims**

11. A photo- and heat-sensitive recording material comprising, a coupler, a basic compound, and microcapsules containing a diazonium salt compound, wherein the microcapsules are produced by a process comprising the steps of:

adding a dialkyl sulfate compound represented by the following formula:

RO—SO_2—OR

wherein R represents an alkyl or cycloalkyl group having up to 24 carbon atoms, to an organic solvent solution containing both the diazonium salt compound and a polyfunctional isocyanate compound,

emulsifying the resulting organic solvent solution into an aqueous solution of a water-soluble polymer, and then

polymerizing the polyfunctional isocyanate compound to form microcapsule walls.

5,547,807

PHOTOSTIMULABLE PHOSPHORS

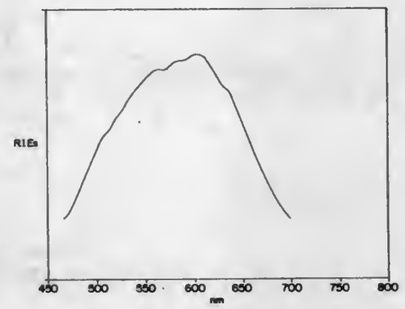
Paul Leblans, Berchem; Albert D. Adriaensens, Mortsel, both of, Belgium; Melvin Tecotzky, Mendham, N.J., and Jan A. Van den Bogaert, Schilde, Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Division of Ser. No. 243,516, May 16, 1994, Pat. No. 5,422,220, which is a continuation of Ser. No. 941,167, Sep. 4, 1992, abandoned. This application Mar. 15, 1995, Ser. No. 404,599

Claims priority, application European Pat. Off., Sep. 17, 1991, 91202378

Int. Cl.[6] G03C *1/675; 1/705; 5/17*

U.S. Cl. 430—139 **17 Claims**



1. A radiation image recording and reproducing method comprising the steps of:

(I) causing a visible radiation stimulable phosphor to absorb penetrating radiation having passed through an object or emitted by an object and to store energy of said penetrating radiation in said phosphor,

(ii) stimulating said phosphor with visible radiation in the wavelength range from 440 nm to 550 nm to release energy stored in said phosphor as fluorescent light differing in wavelength range from the stimulating light, and

(iii) detecting said fluorescent light, wherein said photostimulable phosphor has an emission intensity at the stimulation wavelength of 550 nm that is higher than the emission intensity at the stimulation wavelength of 600 nm, and wherein said phosphor is a divalent europium activated barium fluorobromide containing as codopant samarium, and wherein the terminology barium fluorobromide stands for an empirical formula wherein (1) a minor part of the barium (less than 50 atom %) is replaced by an alkali metal, (2) a minor part (less than 50 atom %) of the bromine is replaced by chlorine, and/or iodine, and (3) fluorine is present stoichiometrically in a larger atom % than bromine alone or bromine combined with chlorine and/or iodine, and

(iv) the alkali metal is selected from the group consisting of Li, Na, K, Rb and Cs and is present with respect to barium in an atom percent in the range of 10^{-4} to 10^{-2} at %.

5,547,808

RESIST COMPOSITION HAVING A SILOXANE-BOND STRUCTURE

Hisashi Watanabe, Kyoto, Japan, assignor to Matsushita Electronics Corporation, Osaka, Japan

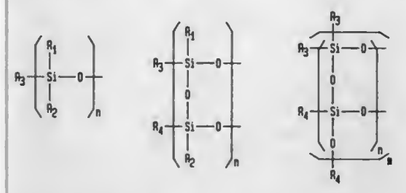
Continuation of Ser. No. 135,952, Oct. 13, 1993, Pat. No. 5,378,585, which is a continuation of Ser. No. 719,188, Jun. 21, 1991, abandoned. This application Sep. 9, 1994, Ser. No. 304,086

Claims priority, application Japan, Jun. 25, 1990, 2-167173

The portion of the term of this patent subsequent to Jan. 3, 2012, has been disclaimed.

Int. Cl.[6] G03C *1/00; 1/72*; G03F *7/075*

U.S. Cl. 430—176 **15 Claims**



1. A composition having sensitivity to light or radiation, consisting essentially of:

a polymer having a siloxane-bond structure and having at least one end group or a side chain group, wherein each of said end group and said side chain group is a functional group which causes condensation polymerization upon exposure to acid; and

a sensitizing agent;

wherein said sensitizing agent produces an acid when irradiated with light or radiation; and

wherein said acid causes condensation polymerization at said end group or said side chain group of said polymer.

5,547,809

THERMAL TRANSFER IMAGING SYSTEM BASED ON THE HEAT TRANSFER OF A REDUCING AGENT FOR REDUCING A SILVER SOURCE TO METALLIC SILVER

Geert Defieuw, Kessek-Lo; Wilhelmus Janssens, Aarschot; Luc Vanmaele, Lochristi; Jean-Marie Dewanckele, Drongen, and Herman Uytterhoeven, Bonheiden, all of, Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Apr. 21, 1995, Ser. No. 426,817

Claims priority, application European Pat. Off., May 17, 1994, 94201382

Int. Cl.[6] G03C *8/08; 8/24*

U.S. Cl. 430—200 **7 Claims**

1. A thermal imaging process using (i) a donor element comprising on a support a donor layer containing a binder and a thermotransferable strong reducing agent capable of reducing a silver source to metallic silver and (ii) a receiving element comprising on a support a receiving layer comprising a silver source, capable of being reduced by means of heat in the presence of a strong reducing agent, and a weak reducing agent for said silver source, said thermal imaging process comprising the steps of

bringing said donor layer of said donor element into face to face relationship with said receiving layer of said receiving element

image-wise heating a thus obtained assemblage, thereby causing image-wise transfer of an amount of said thermotransferable strong reducing agent to said receiving element in accordance with the amount of heat supplied

separating said donor element from said receiving element,

and after said image-wise heating, applying an overall heat treatment to said receiving element,

wherein said strong reducing agent is capable of reducing a silver ion to metallic silver by the application of heat, and

wherein said weak reducing agent is capable of reducing a silver ion to metallic silver only in the presence of metallic silver nuclei.

5,547,810

IMAGE FORMING METHOD WITH ALKALI PRECURSOR

Hitoshi Morimoto; Kazuhiro Miyazawa, and Masaru Tsuchiya, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Aug. 29, 1995, Ser. No. 520,600

Claims priority, application Japan, Sep. 16, 1994, 6-221887

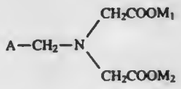
Int. Cl.[6] G03C *1/43; 8/40*

U.S. Cl. 430—203 **8 Claims**

1. An image forming method comprising the steps of:

(a) exposing a silver halide photographic light-sensitive material comprising a first support and provided thereon, a photographic component layer comprising a first binder, light sensitive silver halide and a metal compound selected from the group consisting of $Zn(OH)_2$, ZnO, $Co(OH)_2$, CoO, $Ni(OH)_2$, $Cu(OH)_2$, $Fe(OH)_2$, $Mn(OH)_2$, $BaCO_3$, $SrCO_3$, $CaCO_3$, basic lead carbonate, basic cobalt carbonate, basic nickel carbonate and basic bismuth carbonate;

(b) superposing the exposed material on an image receiving material comprising a second support and provided thereon, an image receiving layer comprising a second binder and a compound represented by Formula (I),



Formula (I)

wherein A represents a cycloalkyl group, an aryl group or a heterocyclic ring; and M_1 and M_2 independently represent an alkali metal atom, an ammonium ion or a quaternary ammonium ion, so

that the photographic component layer of the exposed material contacts the image receiving layer;

(c) heating the superposed materials in the presence of water; and

(d) separating the image receiving material from the exposed material to obtain an image on the image receiving layer of the image receiving material.

5,547,811

PHOTOSENSITIVE MATERIAL AND METHOD FOR MAKING COLOR-PROOFING FILMS

Karin Maerz, Mainz; Volker Matz, Frankfurt; Detlev Selp, Kelkheim, all of, Germany, and Stephen J. W. Platzer, Califon, N.J., assignors to Agfa-Gevaert AG, Leverkusen, Germany

Division of Ser. No. 432,048, Apr. 28, 1995, Pat. No. 5,492,791, which is a continuation of Ser. No. 168,120, Dec. 15, 1993, abandoned. This application Nov. 14, 1995, Ser. No. 557,250

Claims priority, application Germany, Dec. 19, 1992, 42 43 253.7

Int. Cl.[6] G03C *1/76*

U.S. Cl. 430—257 **13 Claims**

1. A method for the production of a multicolored image, which comprises:

(1) laminating a photosensitive material under pressure onto an image-receiving material, wherein the photosensitive material comprises:

(A) a transparent, flexible support,

(B) a photopolymerizable layer on (A) comprising:

(B1) a polymeric binder,

(B2) a compound polymerizable by a free-radical mechanism,

(B3) a compound which is capable of initiating the polymerization of (B2) under the action of actinic light, and

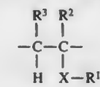
(B4) a dye or colored pigment in a primary color of multicolor printing, and

(C) a thermoplastic, heat-activatable adhesive layer on the photopolymerizable layer, wherein the adhesive layer (C) comprises at least one polymer which contains units (C1) with aliphatic side chains having at least 5 carbon atoms,

(2) exposing the photosensitive material imagewise through the film support with a color separation,

(3) peeling the support together with the exposed areas off from the image-receiving material to produce a first positive image in a primary color, and

(4) repeating the steps (1)–(3) with at least one further color separation, the exposure being carried out in register with the first primary-color image on the image-receiving material wherein the units (C1) are of the formula I

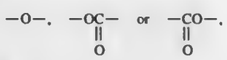


(I)

in which

R^1 is an aliphatic radical having at least 5 carbon atoms,

X is



R^2 is H or CH_3 and

R^3 is H or an alkyl group having 1 to 2 carbon atoms.

5,547,812

COMPOSITION FOR ELIMINATING MICROBRIDGING IN CHEMICALLY AMPLIFIED PHOTORESISTS COMPRISING A POLYMER BLEND OF A POLY(HYDROXYSTYRENE) AND A COPOLYMER MADE OF HYDROXYSTRENE AND AN ACRYLIC MONOMER

James P. Collins, Chittenden County, Vt.; Judy Dorn, Dutchess County, N.Y.; James T. Fahey, Middlesex County, Mass.; Leo Linehan, Orange County, N.Y.; William J. Miller, Chittenden County, Vt.; Wayne Moreau, Dutchess County, N.Y.; Erik A. Puttlitz, Chittenden County, Vt.; Randolph Smith, Orange County, and Gary Spinillo, Dutchess County, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 5, 1995, Ser. No. 464,229

Int. Cl.[6] G03F *7/038*

U.S. Cl. 430—270.1 **17 Claims**

1. A radiation sensitive chemically amplified negative tone photoresist composition, comprising:

a polymer blend having at least 10% by weight of a co-polymer of hydroxystyrene units and acrylic units, and up to 90% by weight of poly(hydroxystyrene);

an acid generating compound which forms an acid upon exposure to radiation; and

a crosslinking agent which is activatable by said acid formed from said acid generating compound.

5,547,813

A METHOD OF FORMING A FINE RESIST PATTERN OF HIGH RESOLUTION USING A CONTRAST ENHANCEMENT LAYER

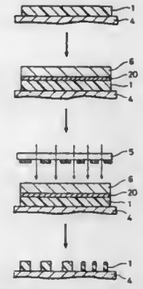
Kouichirou Tsujita, Hyogo-ken, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 31, 1993, Ser. No. 40,195

Claims priority, application Japan, Sep. 17, 1992, 4-248035

Int. Cl.[6] G03C *5/00*

U.S. Cl. 430—325 **5 Claims**



1. A method of forming a fine resist pattern of high resolution using a contrast enhancement layer, comprising the steps of:

forming a resist on a substrate,

forming a middle layer having the index of refraction adjusted to 1.3 to 1.4 on said resist for preventing said contrast enhancement layer and said resist from being mixed,

forming said contrast enhancement layer on said middle layer,

selectively directing light towards said resist from above said contrast enhancement layer,

removing said contrast enhancement layer and said middle layer, and

developing said resist,

wherein the film thickness of said middle layer and said contrast enhancement layer are selected from the group consisting of the following (a), (b) and (c) in which n denotes an integral number,

a) said contrast enhancement layer has a film thickness set to n×(1200±50)Å when the film thickness of said middle layer is (400±50)Å,

b) said contrast enhancement layer has a film thickness set to n×(1100±50)Å when the film thickness of said middle layer is (600+50)Å, and

c) said contrast enhancement layer has a film thickness set to n×(1000±50)Å when the film thickness of said middle layer is (800±50)Å.

5,547,814

O-QUINONEDIAZIDE SULFONIC ACID ESTERS OF PHENOLIC COMPOUNDS AND THEIR USE IN FORMING POSITIVE IMAGES

Andrew J. Blakeney, Seekonk, Mass.; Arturo N. Medina, Pawtucket; Medhat A. Toukhy, Barrington, both of R.I.; Lawrence Ferreira, Falls River, and Sobhy Tadros, Seekonk, both of Mass., assignors to OCG Microelectronic Materials, Inc., Norwalk, Conn.

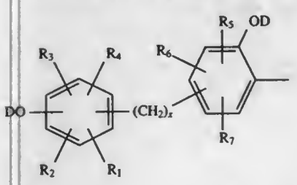
Division of Ser. No. 384,501, Feb. 1, 1995. This application May 26, 1995, Ser. No. 451,599

Int. Cl.[6] G03F *7/30;7/023*

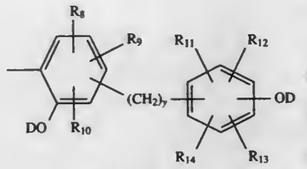
U.S. Cl. 430—326 **16 Claims**

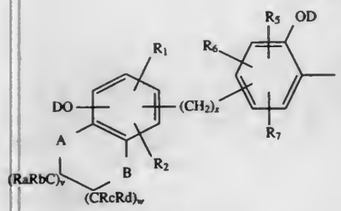
1. The process of of forming a positive patterened image on a substrate comprising:

(1) coating said substrate with a radiation sensitive mixture useful as a positive working photoresist, said mixture comprising an admixture of an alkali soluble binder resin and a photoactive compound comprising at least one o-quinonediazide sulfonic acid ester of a phenol compound, said ester having formulae (IB) or (IIB):

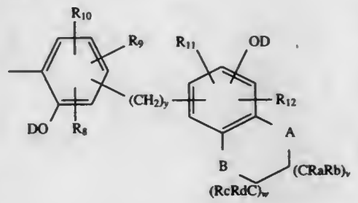


(IB)





(IIB)



wherein R_1, R_2, R_{11}, and R_{12} are each independently selected from the group consisting of hydrogen, OD, halogen, lower alkyl group having 1 to 4 carbon atoms; lower alkyl ether groups having 1 to 4 carbon atoms and lower alkyl thioether groups having 1 to 4 carbon atoms;

wherein R_3, R_4, R_5, R_6, R_7, R_8, R_9, R_{10}, R_{13}, and R_{14} are each independently selected from the group consisting of hydrogen, halogen, lower alkyl groups having 1 to 4 carbon atoms, lower alkyl ether groups having 1 to 4 carbon atoms, and lower alkyl thioether groups having 1 to 4 carbon groups;

wherein x and y are each independently selected from an integer from the group 0, 1, 2, 3, and 4;

wherein Ra, Rb, Rc, and Rd are each independently selected from hydrogen and a lower alkyl group having 1 to 4 carbon atoms;

wherein v and w are each independently selected from an integer from the group 0 and 1 and each sum of v and w on a fused ring is 1 or 2; and

wherein A and B are each independently selected from the group consisting of oxygen, sulfur, and a methylene radical;

wherein each —OD group is a hydroxyl or an o-quinonediazide sulfonic acid ester group wherein each D is selected from the group consisting of a napthoquinonediazide sulfonyl group or benzoquinonediazide sulfonyl group and provided that at least one —OD is an o-quinonediazide sulfonic acid ester group; and

wherein the amount of photoactive compound is from about 5% to about 40% by weight, based on the total solid content of said radiation sensitive mixture;

(2) subjecting said coating on said substrate to an image-wise exposure of radiation; and

(3) subjecting said image-wise exposed coated substrate to a developing solution wherein the exposed area of said radiation-exposed coatings are dissolved and removed from the substrate, thereby resulting in a positive image-wise pattern in the coating.

5,547,815

DYE DONOR ELEMENT FOR USE IN A THERMAL DYE TRANSFER METHOD

Luc Vanmaele, Lochristi, Belgium, assignor to Agfa-Gevaert, N.V., Mortsel, Belgium

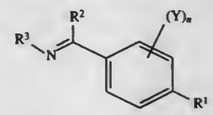
Division of Ser. No. 450,633, May 25, 1995. This application Dec. 19, 1995, Ser. No. 574,774

Claims priority, application European Pat. Off., Jul. 4, 1994, 94201905

Int. Cl.[6] G03C *1/73;8/10*

U.S. Cl. 430—338 **5 Claims**

1. Dye donor element comprising on a support a dye layer, said dye layer comprising a binder and a dye according to formula (I):



(I)

wherein:

R^1 represents NR^4R^5, OR^6 or SR^6,

R^2 represents hydrogen cyano COR^7, CO_2R^7, $CONR^8R^9$, SO_2R^{10},

Y represents any substituent,

n represents 0, 1, 2, 3 or 4, said Y substituents being the same or different when n is greater than 1 or said Y substituents can form an annelated ring system;

R^3 is The residue of a heterocyclic amine R^3—NH_2,

R^4, R^5, R^6, R^7, R^8 and R^9 each independently represent hydrogen, an alkyl, an alkenyl, an alkynyl, an aryl, a heterocyclic ring or R^4 and R^5 together represent the necessary atoms to form a 5- or 6-membered ring or R^4 and/or R^5 together with one of the Y-substituents represent the necessary atoms to form a 5- or 6-membered, fused-on heterocyclic ring system or R^8 and R^9 together represent the necessary atoms to form a 5- or 6-membered ring or R^7 or R^8 or R^9 or R^8 and R^9

together with one of the Y-substituents represent the necessary atoms to form a 5- or 6-membered, fused-on heterocyclic ring system,

R^{10} represents hydroxy, alkoxy, aryloxy, $NR^{11}R^{12}$, aryl or alkyl or R^{10} together with one of the Y-substituents represent the necessary atoms to form a 5- or 6-membered, fused-on heterocyclic ring system,

R^{11} and R^{12} each independently represent hydrogen, an alkyl, an alkenyl, an alkynyl, an aryl, a heterocyclic ring or R^{11} and R^{12} together represent the necessary atoms to form a 5- or 6-membered ring.

5,547,816

PHOTOGRAPHIC PROCESSING METHOD USING BLEACH SOLUTION COMPRISING HYDROGEN PEROXIDE AND HALIDE IONS

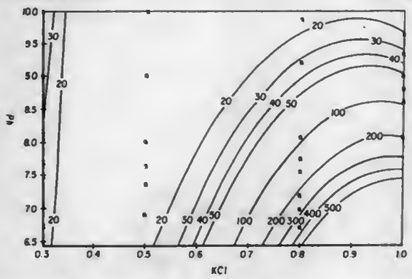
John R. Fyson, Hackney, and Peter D. Marsden, North Harrow, both of, Great Britain, assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 229,397, Apr. 15, 1994, abandoned, which is a continuation of Ser. No. 861,966, Jun. 18, 1992, abandoned. This application Feb. 15, 1995, Ser. No. 389,731

Claims priority, application United Kingdom, Oct. 19, 1990, 9022749

Int. Cl.[6] G03C *7/00;5/44;5/22;7/26*

U.S. Cl. 430—393 **7 Claims**



1. A method of processing an imagewise exposed silver halide color photographic material, comprising:

forming a color image on said color photographic material, wherein said forming comprises treating said color photographic material in a solution comprising a color photographic developing agent; and

bleaching said color photographic material directly following said forming of said color image or following an intermediate stop bath with a bleach solution having a pH in the range of from 11 inclusive down to but excluding 6, said bleach solution consisting essentially of: halide ions in a concentration of from 0.52 to 1.0 g/l, and

a silver bleaching agent consisting of hydrogen peroxide or a compound which releases hydrogen peroxide.

5,547,817

PHOTOGRAPHIC PROCESSING USING A NOVEL CHELATING COMPLEX

Hisashi Okada; Tadashi Inaba; Ryo Suzuki, and Hideaki Nomura, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

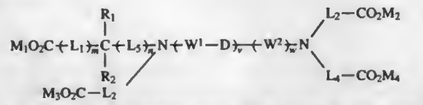
Filed Sep. 14, 1995, Ser. No. 528,015

Claims priority, application Japan, Oct. 20, 1994, 6-279793; May 25, 1995, 7-149761

Int. Cl.[6] G03C *7/00;5/18;5/26;5/44*

U.S. Cl. 430—393 **6 Claims**

1. A process for processing a silver halide photosensitive material, comprising the step of processing an imagewise exposed and developed silver halide photosensitive material in the presence of a compound represented by formula (I) or a metal chelate compound thereof,



wherein R_1 is an aliphatic hydrocarbon group, an aryl group, or a heterocyclic ring group;

R_2 is hydrogen, an aliphatic hydrocarbon group, an aryl group, or a heterocyclic ring group;

L_1, L_2, L_3, L_4 and L_5 are independently an alkylene group;

m and n are independently 0 or 1;

W^1 and W^2 are independently an alkylene group, an arylene group, aralkylene group or a divalent nitrogen-containing heterocyclic ring group;

D is a single bond, —O—, —S— or $—N(R_W)$, where R_2 is hydrogen, an aliphatic hydrocarbon group or an aryl group;

v is 0 or an integer or from 1 to 3;

w is an integer of from 1 to 3; and

M_1, M_2, M_3 and M_4 are independently hydrogen or a cation.

5,547,818

COLOUR PRINT MATERIAL WITH VARIABLE GRADATION

Otto Lapp, Gladbach; Arno Schmuck, Leichlingen; Wolfgang Schmidt, Gladbach, and Jörg Siegel, Leverkusen, all of, Germany, assignors to Agfa Gevaert AG, Germany

Filed Nov. 1, 1994, Ser. No. 333,078

Claims priority, application Germany, Nov. 12, 1993, 43 38 649.0; Feb. 22, 1994, 44 05 613.3; Jul. 1, 1994, 44 23 129.6

Int. Cl.[6] G03C *1/46*

U.S. Cl. 430—505 **13 Claims**

1. Color photographic silver halide print material which comprises on a support at least one blue-sensitive silver halide emulsion layer containing at least one yellow coupler, at least one green-sensitive silver halide emulsion layer containing at least one magenta coupler, at least one red-sensitive silver halide emulsion layer containing at least one cyan coupler and at least one control layer containing no color coupler said control layer containing a silver halide control emulsion sensitized in the range from 570 to 690 nm or in the range above 730 nm and a substance A, which, on color negative development of the control emulsion, releases a compound B which alters the gradation of at least one layer containing color coupler.

5,547,819

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Shigeru Ohno, and Yasushi Hattori, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

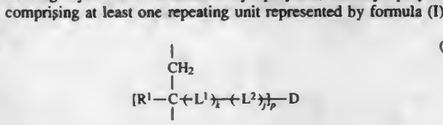
Filed Mar. 14, 1995, Ser. No. 403,485

Claims priority, application Japan, Mar. 16, 1994, 6-045473

Int. Cl.[6] G03C *1/83;1/12*

U.S. Cl. 430—522 **11 Claims**

1. A silver halide photographic material comprising an antihalation layer, a subbing layer, a protective layer, an interlayer or a backing layer which contains a dye polymer, said dye polymer comprising at least one repeating unit represented by formula (I):



wherein

R^1 represents a hydrogen atom, an alkyl group having from 1 to 4 carbon atoms, or a chlorine atom; L^1 represents —CON(R^2)— (where R^2 represents a hydrogen atom, an alkyl group having from 1 to 4 carbon atoms, or a substituted alkyl group having from 1 to 6 carbon atoms), —COO—, —NHCO—, —OCO—, $—C_6H_2(R^3)(R^4)COO—$ (where R^3 and R^4 each independently represent a hydrogen atom, a hydroxyl group, a halogen atom, or a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkoxy group, a substituted or unsubstituted acyloxy group or a substituted or unsubstituted aryloxy group; and C_6H_2 represents a benzene ring with four substituents), or $—C_6H_2(R^3)(R^4)CON(R^2)—$ (where R^2, R^3, R^4 and C_6H_2 have the same meaning as above);

L^2 represents a linking group by which L^1 and D are bonded to each other;

k and j each represent 0 or 1;

p represents 1 or 2; and

D represents a cyanine dye residue.

5,547,820

SILVER HALIDE PHOTOGRAPHIC MATERIAL COMPRISING EMULSION LAYER AND BACKING LAYER PROVIDED ON SUPPORT

Hajime Miyamoto, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 23, 1994, Ser. No. 362,925

Claims priority, application Japan, Dec. 24, 1993, 5-345871; Jan. 26, 1994, 6-007197

Int. Cl.[6] G03C *1/76*

U.S. Cl. 430—523 **22 Claims**

1. A silver halide photographic material comprising a silver halide emulsion layer provided on one side of a support and a surface backing layer provided on the opposite side of said support, wherein the surface backing layer contains an aliphatic hydrocarbon compound represented by the formula (I):

$$C_{n1}H_{m1}—X^1—C_{n2}H_{m2} \quad (I)$$

in which X^1 is a divalent linking group selected from the group consisting of —CO—, —O—, —S—, —NR^1—, —SO—, —SO_2— and a combination thereof; R^1 is hydrogen or an aliphatic group having 1 to 8 carbon atoms; each of n1 and n2 independently is an integer of 4 to 100; each of m1 and m2 independently is an integer of 9 to 201; n1+n2 is an integer of 25 to 120; at least one hydrogen atom of the groups $C_{n1}H_{m1}$— and $—C_{n2}H_{m2}$ is substituted with a polar group selected from the group consisting of —OH, —$COOM^1$, —NH_2, —$N^+R^2R^3R^4A^-$, —$CONH_2$ and —SO_3M^2; each of R^2, R^3, and R^4 independently is hydrogen or an aliphatic group having 1 to 8 carbon atoms; each of M^1 and M^2 is a cation; and A is an anion.

11. A silver halide photographic material comprising a silver halide emulsion layer provided on one side of a support and a surface backing layer provided on the opposite side of said support, wherein the surface backing layer contains an aliphatic hydrocarbon compound represented by the formula (II):

$$C_{n3}H_{m3}—X^2—C_{n4}H_{m4}—X^3—C_{n5}H_{m5} \quad (II)$$

in which each of X^2 and X^3 independently is a divalent linking group selected from the group consisting of —CO—, —O—, —S—, —NR^1—, —SO—, —SO_2— and a combination thereof; R^1 is hydrogen or an aliphatic group having 1 to 8 carbon atoms; each of n3 and n5 independently is an integer of 4 to 100; each of m3 and m5 independently is an integer of 9 to 201; n4 is an integer of 3 to 100; m4 is an integer of 6 to 200; n3+n4+n5 is an integer of 30 to 150; at least one hydrogen atom of the groups $C_{n3}H_{m3}$—, $—C_{n4}H_{m4}$— and $—C_{n5}H_{m5}$ in the formula is substituted with a polar group selected from the group consisting of —OH, —$COOM^1$, —NH_2, —$N^+R^2R^3R^4A^-$, —$CONH_2$ and —SO_3M^2; each of R^2, R^3, and R^4 independently is hydrogen or an aliphatic group having 1 to 8 carbon atoms; each of M^1 and M^2 is a cation; and A is an anion.

5,547,821

THERMALLY PROCESSABLE IMAGING ELEMENT COMPRISING A SURFACE LAYER THAT IS ELECTROCONDUCTIVE

Sharon M. Melpolder, Hilton; Charles C. Anderson, Penfield; Peter J. Cowdery-Corvan, Webster, and John F. DeCory, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 228,836, Apr. 18, 1994, abandoned. This application May 17, 1995, Ser. No. 442,743

Int. Cl.[6] G03C *1/85;1/77;1/00;1/76*

U.S. Cl. 430—527 **18 Claims**

1. A thermally processable imaging element, said element comprising:

(1) a support;

(2) a thermographic or photothermographic imaging layer on one side of said support; and

(3) at least one electroconductive outermost layer comprised of electrically-conductive metal-containing particles dispersed in a polymeric binder in an amount sufficient to provide a surface resistivity of less than 5×10^{11} ohms/square; said electroconductive outermost layer exhibiting a percent haze as measured by Taber abrasion testing of not more than 15.2 percent.

5,547,822

PROCESS FOR PRODUCING TITANIUM DIOXIDE PIGMENT FOR PHOTOGRAPH AND PHOTOGRAPHIC SUPPORT COMPRISING SAME

Touru Noda, Matsudo; Akira Uno, Kashiwa, and Kazuyoshi Muraoka, Akita, all of, Japan, assignors to Mitsubishi Paper Mills & Tohkam Products, Tokyo, Japan

Continuation of Ser. No. 94,951, Jul. 22, 1993, abandoned, which is a division of Ser. No. 714,847, Jun. 13, 1991, Pat. No. 5,264,033. This application Aug. 4, 1994, Ser. No. 286,378

Claims priority, application Japan, Jun. 20, 1990, 2-162084

Int. Cl.[6] G03C *1/76;* **B32B** *5/16*

U.S. Cl. 430—531 **6 Claims**

1. A process for producing a photographic support comprising a substrate, at least one side of which is coated with a thermoplastic resin composition, wherein the process comprises the following steps:

(a) adding at least one alkaline earth metal compound to titanium dioxide in an amount of 0.01–2.0% by weight in terms of a metal oxide based on the titanium dioxide before calcination, and subjecting the titanium dioxide and alkaline earth metal compound to calcination,

(b) acid-washing the titanium dioxide at acidic state after the calcination and before a step of surface treatment with a hydrated metal oxide,

(c) drying the titanium dioxide,

(d) grinding the titanium dioxide, whereby a particle size of the titanium dioxide is 0.110–0.150 μm shown by number-average diameter obtained by measuring the diameter in a certain direction using an electron microscope,

(e) kneading the resulting titanium dioxide pigment with a thermoplastic resin to obtain a resin composition, and

(f) melt-extrusion coating the substrate with the thermoplastic resin composition.

5,547,823

PHOTOCATALYST COMPOSITE AND PROCESS FOR PRODUCING THE SAME

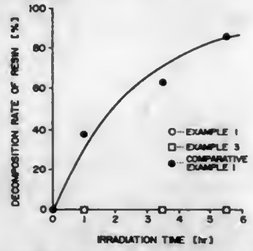
Sadao Murasawa; Hajime Murakami; Yasuro Fukui; Mitsuru Watanabe, all of Kusatsu; Akira Fujishima, 710-5, Nakamaruko, Nakahara-ku, Kawasaki-shi, and Kazuhito Hashimoto, Minamikosugaya Jutaku 2-506, 2000-10, Kosugaya-cho, Sakae-ku, Yokohama-shi, all of, Japan, assignors to Ishihara Sangyo Kaisha, Ltd., Osaka; Akira Fujishima, Kawasaki, and Kazuhito Hashimoto, Yokohama, all of, Japan

Continuation of Ser. No. 266,464, Jun. 27, 1994, abandoned. This application Nov. 9, 1995, Ser. No. 555,548

Claims priority, application Japan, Jun. 28, 1993, 5-181834; Oct. 26, 1993, 5-291212

Int. Cl.[6] G03C *1/725*

U.S. Cl. 430—531 **6 Claims**



1. A photocatalyst composite comprising a substrate having photocatalyst particles of titanium oxide adhered thereon via an adhesive of fluorinated polymers, said photocatalyst particles containing a second component of at least one selected from the group consisting of metals and metal compounds of V, Fe, Co, Ni, Cu, Zn, Ru, Rh, Pd, Ag, Pt and Au, inside and/or on the surfaces thereof, and the content of said photocatalyst particles being in the range of 50–98% by volume based on the total amount of said photocatalyst particles and said fluorinated polymers.

5,547,824

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL CONTAINING COMPOUNDS CAPABLE OF RELEASING PHOTOGRAPHICALLY USEFUL GROUPS AND A SPECIFIC SILVER IODOBROMIDE

Keiji Mihayashi, and Atsuhiro Ohkawa, both of Minami-Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 7, 1992, Ser. No. 909,684

Claims priority, application Japan, Jul. 16, 1991, 3-199863

Int. Cl.[6] G03C *1/08;1/46;1/005;7/26*

U.S. Cl. 430—544 **15 Claims**

1. A silver halide color photographic light-sensitive material which comprises a support and at least one light-sensitive emulsion layer on the support, wherein the emulsion layer contains silver halide grains having a lower silver iodide content on their surfaces than average silver iodide content of the grains, and wherein at least one emulsion layer contains a compound represented by the following formula (Ia) or (Ib) and/or a compound represented by the following formula (III) or (IV)

Formula (Ia)

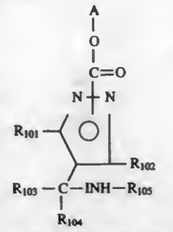
$$A\text{—}(L_1)_j\text{—}W\text{—}(Z_1(R_{11})_x\text{=}Z_2(R_{12})_y)_t\text{—}CH_2\text{-}PUG$$

Formula (Ib)

$$A\text{—}(L_1)\text{—}N\text{—}(Z_3\text{-}PUG)_2$$

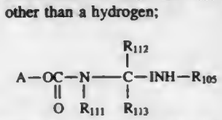
wherein A is a coupler residue or a redox group, W is an oxygen, a sulfur or tertiary amino group (—NR_{13})—, R_{11} and R_{12} are independently a hydrogen or a substituent group and at least one of R_{11} and R_{12} represents —CH_2-PUG, —CH_2-PUG is bonded to a position in which PUG can be released by electron transfer, when the bonding between A—$(L_1)_j$— and W is cleaved, R_{13} is a substituent group, L_1 is a divalent timing group, PUG is a photographically useful group, and j indicates 0, 1, or 2; R_{11}, R_{12}, and W can bond together to form a benzene ring or a heterocyclic ring; Z_1 and Z_2 are independently a carbon or a nitrogen; x and y are 0 or 1, x being 0 if Z_1 is a carbon atom but both x and y cannot be 0 at the same time and when only one of R_{11} and R_{12} is present, said only one of R_{11} and R_{12} represents —CH_2-PUG; Z_2 and y have the same relation as Z_1 and x; t is 1 or 2; and if t is 2, the two groups can either be identical or different; Z_3 is a substituted or unsubstituted methylene group, and two groups Z_3 can either be identical or different and can bond together to form a ring;

Formula (III)



wherein A is a coupler residue or a redox group; R_{101} and R_{102} are independently a hydrogen or a substituent group; R_{103} and R_{104} are independently a hydrogen or a substituent group; INH is a group which can inhibit development; R_{105} is an unsubstituted phenyl or primary alkyl group, or a primary alkyl group substituted by a group other than an aryl group; and at least one of groups R_{101} to R_{104} is a substituent group other than a hydrogen;

Formula (IV)



wherein A, INH, and R_{105} have the same definition as in formula (III); R_{111}, R_{112}, and R_{113} are independently a hydrogen or an organic residual group; and any two of R_{111}, R_{112}, and R_{113} can be divalent groups forming a ring by bonding together.

5,547,825

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Osamu Takahashi, and Nobutaka Ohki, both of Minami Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 70,702, Jun. 2, 1993, abandoned. This application Apr. 25, 1995, Ser. No. 428,585

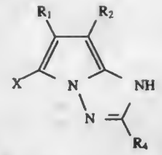
Claims priority, application Japan, Jun. 2, 1992, 4-165482

Int. Cl.[6] G03C *7/392;7/38*

U.S. Cl. 430—551 **17 Claims**

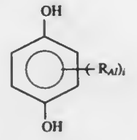
1. A silver halide color photographic material having on a support at least one cyan coupler represented by the following general formula (IIIa) and at least one compound which has a molecular weight of at least 350 selected from a group consisting of the compounds represented by the following general formula (A), the compounds represented by the following general formula (B) and the compounds represented by the following general formula (C);

(IIIa)



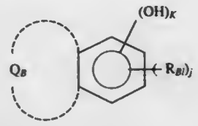
wherein R_1 and R_2 each represent an electron-withdrawing group having a Hammett's substituent constant σ_p of at least 0.2, provided that the sum of the σ_p values of R_1 and R_2 is at least 0.65; R_4 represents a hydrogen atom or a substituent group; and X represents a hydrogen atom or a group capable of splitting off by the coupling reaction with the oxidation product of an aromatic primary amine color developing agent; or R_1, R_2, R_4 or X may be a divalent group via which the cyan coupler can form a dimer or higher polymer or combine with a high molecular chain to form a homo- or copolymer;

(A)



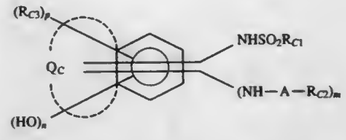
wherein R_{A1} represents a monovalent group; and i represents an integer of 1 to 4, and the R_{A1}'s when i=2 to 4 may be the same or different;

(B)



wherein R_{B1} represents a monovalent group; j represents an integer of 1 to 6, and the R_{B1}'s when j=2 to 6 may be the same or different; k represents 2 or 3, and the two —OH groups in the case of k=2 are situated in a position ortho or meta to each other, while the three —OH groups in the case of k=3 are situated in a position adjacent to one another; - - - Q_B - - - represents that a naphthalene ring may form together with the benzene ring;

(C)



wherein A represents —CO— or —SO_2—; R_{C1} and R_{C2} each represent an alkyl group, an aryl group, a heterocyclyl group or an amino group; R_{C3} represents a monovalent group; m represents an integer of 0 to 2, and the two (—NH—A—R_{C2})'s in the case of m=2 may be the same or different; n represents an integer of 0 to 2, provided that the sum of m and n is 1 or 2; at least either the moiety —NH—A—R_{C2} or —OH group is situated in the position ortho or para to —$NHSO_2R_{C1}$; p represents an integer of 0 to 6, and the R_{C3}'s in the case of p=2 to 6 may be the same or different; - - - Q_C - - - represent that a naphthalene ring may form together with the benzene ring;

wherein said compound of general formula (A), (B), or (C) is contained in a light-insensitive layer provided on the support.

5,547,826

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Takayuki Ito; Yasuhiro Shimada; Koushin Matsuoka, and Yasuhiro Yoshioka, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 22, 1995, Ser. No. 532,525

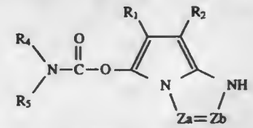
Claims priority, application Japan, Oct. 12, 1994, 6-271874

Int. Cl.[6] G03C *7/38*

U.S. Cl. 430—558 **26 Claims**

1. A silver halide photographic material comprising a support having provided thereon at least one layer containing a coupler represented by formula (I)

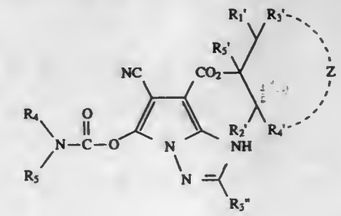
(I)



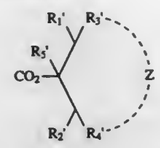
wherein Za represents —C(R_3)= or —N=, provided that when Za represents —N=, Zb represents —C(R_3)= and when Za represents —C(R_3)=, Zb represents —N=; R_1 [and R_2 each] represents an electron withdrawing group having a Hammett's substituent constant, σ_p, of from 0.20 to 1.0; R_2 represents an electron withdrawing group having a Hammett's substituent constant, σ_p, of from 0.20 to 1.0 and is an aliphatic oxycarbonyl group, a cyano group, a carbamoyl group, a sulfamoyl group, a dialkylphosphono group or a diarylphosphono group; R_3 represents a substituent; R_4 and R_5 are the same or different, and each represents a hydrogen atom, an aliphatic group, an aryl group or a heterocyclic group; and R_4 and R_5 may combine with each other to form a 5-membered ring or a 6-membered ring and the 5-membered ring or the 6-membered ring may form a condensed ring with a benzene ring or a heterocyclic ring.

18. A silver halide photographic material comprising a support having provided therein at least one layer containing a coupler represented by formula (V)

(V)



wherein



represents an electron withdrawing group having a Hammett's substituent constant, σ_p of from 0.20 to 1.0; R_4 and R_5 are the same or different, and each represents a hydrogen atom, an aliphatic group, an aryl group or a heterocyclic group; R_4 and R_5 may combine with each other to form a 5-membered ring or a 6-membered ring and the 5-membered ring or the 6-membered ring may form a condensed ring with a benzene ring or a heterocyclic ring; R_1' and R_2' each represents an aliphatic group; R_3', R_4' and R_5' each represents a hydrogen atom or an aliphatic group; and Z represents a nonmetallic atomic group necessary for forming a 5-, 6-, 7-, or 8-membered ring; and R_3" represents an aliphatic group or an aryl group.

5,547,827

IODOCHLORIDE EMULSIONS CONTAINING QUINONES HAVING HIGH SENSITIVITY AND LOW FOG

Benjamin T. Chen, Penfield, and Roger Lok, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 22, 1994, Ser. No. 361,924
Int. Cl.[6] G03C *1/035;1/34*
U.S. Cl. 430—567 **19 Claims**

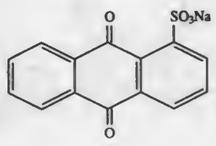
1. A radiation sensitive emulsion comprised of a dispersing medium and silver iodochloride grains

WHEREIN the silver iodochloride grains

are cubical and

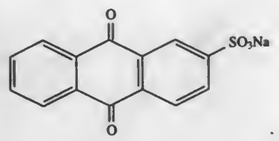
contain from 0.05 to 1 mole percent iodide, based on total silver, with a region of maximum iodide concentration located nearer the surface of the grains than their center

and wherein said emulsion further comprises a quinone comprising



(II)

or



(III)

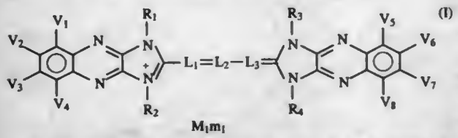
5,547,828

DIRECT POSITIVE TYPE SILVER HALIDE PHOTOGRAPHIC MATERIAL COMPRISING A MIXTURE OF DYES

Takanori Hioki; Toyohisa Oya, and Shingo Nishiyama, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 17, 1995, Ser. No. 373,404
Claims priority, application Japan, Jan. 18, 1994, 6-003664; Jan. 18, 1994, 6-003665
Int. Cl.[6] G03C *1/36*
U.S. Cl. 430—597 **12 Claims**

1. A direct positive silver halide photographic material containing at least one compound represented by the following formula (I) and at least one cyanine dye having a pyrazolo[5,1-b]quinazolone nucleus and a 5- or 6-membered nitrogen-containing heterocyclic ring, wherein a carbon atom at the 3-position of the pyrazolo[5,1-b] quinazolone nucleus is bonded through a four-methine chain to an atom at the 2-position or 4-position of the 5- or 6-membered nitrogen-containing heterocyclic ring, provided that the 4-position is possible only when the 5- or 6-membered nitrogen-containing heterocyclic ring is a quinoline or pyridine nucleus:



(I)

M_1m_1

wherein R_1, R_2, R_3 and R_4 each represents an alkyl group, an aryl group or a heterocyclic group;

V_1, V_2, V_3, V_4, V_5, V_6, V_7 and V_8 each represents a hydrogen atom or a monovalent substituent selected from the group consisting of an alkyl group, an aryl group, a heterocyclic group, a halogen atom, a mercapto group, a cyano group, a carboxyl group, a sulfo group, a hydroxyl group, a carbamoyl group, a sulfamoyl group, an amino group, a nitro group, an alkoxy group, an aryloxy group, an acyl group, an acylamino group, a sulfonyl group, a sulfonylamino group, an alkylthio group, an arylthio group, an alkoxycarbonyl group and an aryloxycarbonyl group;

L_1, L_2 and L_3 each represents a methine group;

M_1 represents a charge-neutralizing counter ion; and

m_1 is a number of 0 or larger necessary for intramolecular charge neutralization.

5,547,829

SILVER HALIDE PHOTOGRAPHIC MATERIAL CONTAINING SELENIUM OR TELLURIUM COMPOUND

Tetsuro Kojima; Morio Yagihara; Hirotomo Sasaki; Hiroyuki Mifune, all of Kanagawa, and Shinji Kato, Gifu, all of, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 16, 1994, Ser. No. 341,939
Claims priority, application Japan, Nov. 16, 1993, 5-286916
Int. Cl.[6] G03C *1/09*
U.S. Cl. 430—603 **12 Claims**

1. A silver halide photographic material comprising a silver halide emulsion layer provided on a support, wherein the silver halide emulsion layer contains a selenium compound represented by the formula (I):



(I)

in which R^1 is hydrogen, an aliphatic group, an aromatic group, a heterocyclic group, or $—OR^{11}$; R^{11} is hydrogen, an aliphatic group, an aromatic group or a heterocyclic group; R^2 is an aliphatic group or a heterocyclic group; and each of R^1, R^2, and R^{11} may have one or more substituent groups.

5,547,830

SILVER HALIDE PHOTOGRAPHIC MATERIAL COMPRISING IRON CONTAINING SILVER HALIDE GRAINS AND METHOD FOR FORMING IMAGES USING THE SAME

Masahiro Asami, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 148,405, Nov. 8, 1993, abandoned, which is a continuation of Ser. No. 878,920, May 6, 1992, abandoned. This application Jan. 31, 1995, Ser. No. 381,421
Claims priority, application Japan, May 10, 1991, 3-133267
The portion of the term of this patent subsequent to Dec. 28, 2010, has been disclaimed.
Int. Cl.[6] G03C *1/09*
U.S. Cl. 430—603 **10 Claims**

1. A silver halide photographic material comprising a support and at least one light-sensitive emulsion layer provided thereon, wherein said emulsion layer comprises a surface latent image silver halide emulsion containing silver halide grains formed of silver chlorobromide, silver chloroiodide or silver, chloroiodobromide each containing at least 90 mol % of silver chloride, or silver chloride, wherein 10^{-7} to 10^{-3} mol/mol of silver halide of an iron compound and 10^{-7} to 10^{-4} mol/mol of silver halide of a sulfur group compound selected from a tellurium-containing compound, and a selenium-containing compound represented by formula (I) or (II) are added to said silver halide grains during grain formation at any time up until physical ripening of said grains is completed, wherein 80% or more of the iron compound and 80% or more of said sulfur group compound are localized in a surface layer of the silver halide grains, the volume of the surface layer being 40% or less of the entire grain volume, and then said silver halide emulsion is subjected to chemical sensitization;



(I)

wherein Z_1 and Z_2, which may be the same or different, represent an alkyl group, an alkenyl group, an aryl group, a heterocyclic group, $—NR_1(R_2)$, $—OR_3$, or $—SR_4$, in which R_1 and R_2, which may be the same or different, represent a hydrogen atom, an alkyl group, an aryl group, a heterocyclic group, or an acyl group and R_3 and R_4, which may be the same or different, represent an alkyl group, an aryl group or a heterocyclic group;



(II)

wherein Z_3, Z_4 and Z_5, which may be the same or different, represent an aliphatic group, an aromatic group, a heterocyclic group, $—OR_7$, $—NR_8(R_9)$, $—SR_{10}$, $—SeR_{11}$, —X or a hydrogen atom, in which R_7, R_{10} and R_{11} represent an aliphatic group, an aromatic group, a heterocyclic group, a hydrogen atom or a cation, R_8 and R_9 represent an aliphatic group, an aromatic group, a heterocyclic group or a hydrogen atom; and X represents a halogen atom.

5,547,831

DRY PROCESS SILVER SALT PHOTOSENSITIVE MATERIAL AND IMAGE FORMING METHOD MAKING USE OF THIS DRY PROCESS SILVER SALT PHOTOSENSITIVE MATERIAL

Tetsuro Fukui, Yokohama; Motokazu Kobayashi, Kawasaki; Takehiko Ohi, Yokohama; Kazunori Ueno; Kenji Kagami, both of Atsugi; Masao Suzuki, Tokyo, and Katsuya Nishino, Hiratsuka, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 16, 1993, Ser. No. 152,209
Claims priority, application Japan, Nov. 18, 1992, 4-308782
Int. Cl.[6] G03C *1/498*
U.S. Cl. 430—619 **9 Claims**

1. A dry process silver salt photosensitive material comprising a support and provided thereon a photosensitive layer containing at least an organic silver salt, a reducing agent and a photosensitive silver halide or a photosensitive silver halide forming component; said photosensitive layer being incorporated with a compound selected from the following compound (i) and compound (ii):

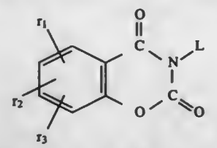
Compound (i):

$$[T^+X^-]Z_2$$

wherein T^+ is an organic coloring matter cationic residual group selected from the group consisting of a cyanine dye residual group, a styryl dye residual group, an aminovinyl dye residual group, an anilane dye residual group, a xanthane dye residual group and a phenoxazium dye residual group, X^- is a halide counter anion, and Z is a halogen atom selected from the group consisting of Br, I and Cl

Compound (ii) is represented by the following Formula I:

Formula (I)



wherein r_1, r_2 and r_3 are the same or different and each is a hydrogen atom, an alkyl group, an alkoxy group, a halogen atom, a hydroxyl group, an aryl group, an aralkyl group, an alkoxyalkoxyl group or an amino group, where any two of r_1, r_2 and r_3 combine to form a condensed ring; and L is a halogen atom.

5,547,832

METHOD FOR HARDENING PHOTOGRAPHIC MATERIALS

Marianne Yarmey, Florence, Mass.; James L. Bello; Gary F. Mitchell, both of Rochester, N.Y.; Glenn T. Pearce, Fairport, N.Y.; Wayne A. Bowman, Walworth, N.Y., and Melvin Sterman, Pittsford, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 7, 1992, Ser. No. 909,797
Int. Cl.[6] G03C *1/005;1/494*
U.S. Cl. 430—623 **3 Claims**

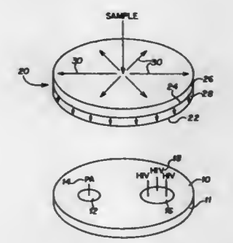
1. A method of hardening all of the photographic layers in a photographic material, which consists of one or more photographic layers coated over a layer of support material and wherein all of the photographic layers comprise gelatin as the colloidal carrier material, which method comprises placing in contact with at least one of the photographic layers a coating composition layer which (i) comprises a fast-acting hardener and a thickener, which is a co-polymer, with an average molecular weight between about 50,000 and about 1,000,000 daltons, of acrylamide and N-(3-aminopropyl)methylacrylamide hydrochloride wherein from about 70% to about 85% of the mass of the co-polymer is from acrylamide; (ii) during the process of being placed in the photographic material, is an aqueous solution which, at 40° C. and shear rates between about 1000 and 10,000 sec^{-1}, has a power law index of greater than about 0.90 and a viscosity of from about 5 cp to about 20 cp; and (iii) has a concentration of said thickener of less than about 50 mg/cm^3.

5,547,833

RADIAL FLOW ASSAY, DELIVERING MEMBER, TEST KIT, AND METHODS

Brent L. Dorval, Douglas; Lilibeth K. Denham, Cambridge, and Alexander M. Klibanov, Newton, all of Mass., assignors to Intracel Corporation, Cambridge, Mass.

Filed Jan. 4, 1994, Ser. No. 177,733
Int. Cl.[6] G01N *33/569;33/543*
U.S. Cl. 435—5 **6 Claims**



1. A test assay kit comprising a package containing:

a test assay surface for supporting a test assay reaction and including a binding partner of a test assay analyte immobilized thereupon;

a porous cellulosic prefilter having a pore size of from about 0.1 to about 1.0 microns, and having a delivering surface positionable in face to face relation with the test assay surface and a sample receiving surface opposite the delivering surface, the prefilter being removable from the test assay surface; and

a surfactant on the prefilter sample receiving surface, wherein the prefilter, except at the receiving surface, is essentially free of the surfactant.

5,547,834

RECOMBINANT CMV NEUTRALIZING PROTEINS

Richard R. Spaete, Belmont, and Carol A. Pachl, El Cerrito, both of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Continuation of Ser. No. 671,690, Jan. 26, 1989, abandoned, which is a continuation-in-part of Ser. No. 149,715, Jan. 29, 1988, abandoned. This application Nov. 15, 1994, Ser. No. 341,293

Int. Cl.[6] C12Q *1/70;* **C07K** *14/045*

U.S. Cl. 435—5 **6 Claims**

1. A cytomegalovirus (CMV) glycoprotein B (gB) polypeptide which comprises a modified endoproteolytic cleavage site such that cleavage of the gB protein between amino acids 460 and 461 is inhibited, the modification comprising a substitution of one or more amino acids at or near the proteolytic cleavage site.

5,547,835

DNA SEQUENCING BY MASS SPECTROMETRY

Hubert Köster, Concord, Mass., assignor to Sequenom, Inc., Boston, Mass.

Continuation-in-part of Ser. No. 1,323, Jan. 7, 1993, abandoned. This application Jan. 6, 1994, Ser. No. 178,216

Int. Cl.[6] C07H *21/02;21/04;* **C12P** *19/34;* **C12Q** *1/68*

U.S. Cl. 435—6 **42 Claims**

1. A method for determining the sequence of a nucleic acid, comprising the steps of:

a) generating at least two conditioned, base-specifically terminated nucleic acid fragments from a nucleic acid to be sequenced;

b) determining the molecular weight value of each base-specifically terminated fragment by mass spectrometry, wherein the molecular weight values of at least two base-specifically terminated fragments are determined concurrently; and

c) determining the sequence of the nucleic acid by aligning the base-specifically terminated nucleic acid fragments according to molecular weight.

5,547,836

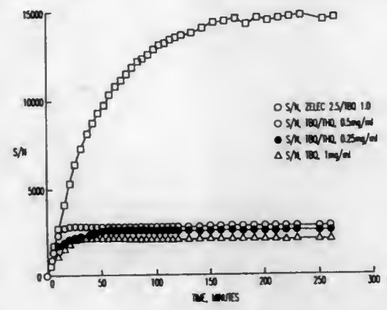
ENHANCEMENT OF CHEMILUMINESCENT ASSAYS

Irena Y. Bronstein, Newton; Brooks Edwards, Cambridge, and John C. Voyta, North Reading, all of Mass., assignors to Tropix, Inc., Bedford, Mass.

Continuation-in-part of Ser. No. 959,531, Oct. 13, 1992, and a continuation-in-part of Ser. No. 806,928, Dec. 12, 1991, Pat. No. 5,330,900, which is a division of Ser. No. 574,786, Aug. 30, 1990, Pat. No. 5,112,960. This application Mar. 15, 1993, Ser. No. 31,471

Int. Cl.[6] C12Q *1/68;* **G01N** *33/53*

U.S. Cl. 435—6 **20 Claims**



1. In a method for determining the presence or concentration of an analyte in an aqueous sample comprising admixing said sample with an enzyme complex capable of binding to said analyte, removing all unbound enzyme complex and adding to said treated sample a 1,2-dioxetane which is caused to decompose with the release of chemiluminescence when contacted by said enzyme thereby forming a 1,2-dioxetane oxyanion and excited state emitters, and wherein the amount of chemiluminescence is monitored to determine the presence or concentration of said analyte, the improvement comprising adding to said aqueous sample 0.005%–50%, weight by volume of the sample, poly(vinylbenzyltributylammonium chloride) (TBQ).

5,547,837

Patent Not Issued For This Number

5,547,838

METHOD FOR THE RAPID AND ULTRA-SENSITIVE DETECTION OF LEUKEMIC CELLS

Paul E. Nisson, and Nicoletta Sacchi, both of Gaithersburg, Md., assignors to Life Technologies, Inc., Gaithersburg, Md.

Continuation of Ser. No. 954,110, Oct. 1, 1992, abandoned. This application Apr. 19, 1994, Ser. No. 230,002

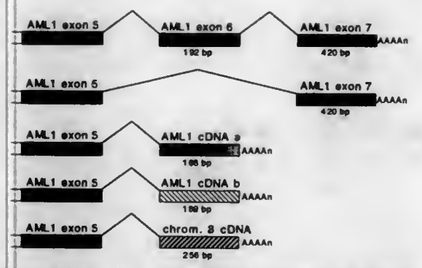
Int. Cl.[6] C12Q *1/68;* **C12P** *19/34;* **C07H** *21/00*

U.S. Cl. 435—6 **3 Claims**

1. A method for screening for the presence of leukemic cells in a sample wherein said sample contains suspected leukemic cells or RNA obtained from said suspected leukemic cells, said method comprising the steps:

(A) isolating RNA from said sample

(B) incubating RNA molecules of said sample in the presence of two different polynucleotide molecules, wherein said different polynucleotide molecules have the nucleotide sequence SEQ ID NO:1 and SEQ ID NO:2, under conditions sufficient to permit said plyynucleotide molecules to reverse transcribe a polynucleotide region of a target RNA molecule, if said target RNA molecule is present in said sample, and to then amplify said reverse transcribed polynucleotide region: wherein said



target RNA molecule arises from transcription of a chromosomal t(8;21) junction of a translocation characteristic of a leukemic cell;

(C) determining whether said step (B) results in the amplification of a polynucleotide having said t(8;21) junction by detecting amplified polynucleotides having said t(8;21) junction, whereby the presence of said amplified polynucleotide is suggestive of the presence of leukemic cells or RNA from said cells.

5,547,839

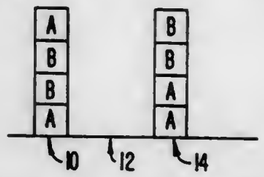
SEQUENCING OF SURFACE IMMOBILIZED POLYMERS UTILIZING MICROFLOURESCENCE DETECTION

William J. Dower, Menlo Park, and Stephen P. A. Fodor, Palo Alto, both of Calif., assignors to Affymax Technologies N.V., Curacao, Netherlands Antilles

Continuation-in-part of Ser. No. 492,462, Mar. 7, 1990, Pat. No. 5,143,854, which is a continuation-in-part of Ser. No. 362,901, Jun. 7, 1989, abandoned. This application Dec. 6, 1990, Ser. No. 626,730

Int. Cl.[6] C12Q *1/68*

U.S. Cl. 435—6 **7 Claims**



1. A method of identifying nucleotide sequences contained within a plurality of different polynucleotides, said method comprising:

(a) contacting said plurality of different polynucleotides with a surface of a solid substrate, said surface having attached thereto in spatially defined locations a plurality of different oligonucleotide primers, each of which has a free 3'-hydroxyl group and a defined nucleotide sequence and length, wherein said oligonucleotides are patterned on the surface of said substrate such that oligonucleotide primers with different nucleotide sequences are located in different locations;

(b) hybridizing said oligonucleotide primers to regions of complementary nucleotide sequence contained in said plurality of different polynucleotides in a reaction mixture comprising a nucleic acid polymerase and a labeled nucleotide having a 3'-hydroxyl group reversibly blocked by a photoremovable protecting group, under conditions suitable for template directed polymerization to occur, such that said primers are elongated only if said labeled nucleotide is complementary to a nucleotide in said polynucelotide adjacent to a 3'-terminal nucleotide of said primers prior to elongation;

(c) determining the location and thus the nucleotide sequence of the primer at that location at which said labeled nucleotide having a reversibly blocked 3'-hydroxyl group has been attached via a 5'-3' phosphodiester linkage to said 3'-hydroxyl group of said primer by detecting the presence of said label at said location, thereby determining a complementary sequence in said polynucleotide hybridized to said primer;

(d) removing said photoremovable protecting group by irradiation; and

(e) repeating steps (b) and (c) on the substrate resulting from step (d) using a labeled nucleotide having a reversibly blocked 3'-hydroxyl group, wherein said 3'-hydroxyl group is blocked by a photoremovable protecting group, and wherein said nucleotide is different from the nucleotide used in step (b).

5,547,840

Patent Not Issued For This Number

5,547,841

IN VITRO METHOD FOR SCREENING FOR DRUGS THAT INHIBIT PRODUCTION OR DEGRADATION OF HUMAN A4-AMYLOID

Charles A. Marotta, Cambridge, Mass., and Sayeeda Zain, Pittsford, N.Y., assignors to The McLean Hospital Corporatin, Belmont, Mass., and University of Rochester, Rochester, N.Y.

Division of Ser. No. 618,529, Nov. 26, 1990, abandoned, which is a continuation of Ser. No. 143,424, Jan. 13, 1988, abandoned, which is a continuation-in-part of Ser. No. 105,752, Oct. 8, 1987, abandoned. This application Dec. 15, 1992, Ser. No. 990,893

Int. Cl.[6] C12Q *1/68;* **G01N** *33/53;33/543*

U.S. Cl. 435—6 **3 Claims**

1. An in vitro method for screening drugs that are potentially useful for treatment of Alzheimer's disease which comprises (a) contacting a drug with a host transformed with a DNA construct, wherein said DNA construct comprises a DNA sequence encoding human A4amyloid peptide and said construct overexpresses said peptide and (b) detecting limitation or prevention of production or increased degradation of said peptide due to said drug.

5,547,842

NUCLEIC ACID PROBES FOR DETECTION AND/OR QUANTITATION OF NON-VIRAL ORGANISMS

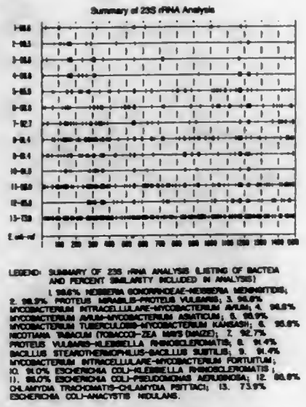
James Hogan; Richard Smith, both of San Diego, and Joann Kop, San Marcos, all of Calif., assignors to Gen-Probe Incorporated, San Diego, Calif.

Continuation of Ser. No. 171,368, Dec. 21, 1993, abandoned, which is a continuation of Ser. No. 907,106, Jun. 26, 1992, abandoned, which is a division of Ser. No. 806,929, Dec. 11, 1991, abandoned, which is a continuation of Ser. No. 295,208, Dec. 9, 1988, abandoned, which is a continuation-in-part of Ser. No. 83,542, Aug. 7, 1987, abandoned, which is a continuation-in-part of Ser. No. 934,244, Nov. 24, 1986, abandoned. This application Sep. 6, 1994, Ser. No. 301,269

Int. Cl.[6] C12Q *1/68;* **C07H** *21/04*

U.S. Cl. 435—6 **55 Claims**

1. A hybridization assay probe able to detect the presence of the *Mycobacterium tuberculosis* complex organisms *Mycobacterium africamum, Mycobacterium boris,* and *Mycobacterium tuberculosis,* comprising an otigonucleotide 10 to 100 nucleotides in length able to hybridize to a *Mycobacterium tuberculosis* complex nucleic acid target region present in each of *Mycobacterium africamum, Mycobacterium bovis,* and *Mycobacterium tuberculosis* to form a detectable target:probe duplex under selective hybridization assay conditions, said target region corresponding to, or perfectly complementary to a nucleic acid corresponding to, a region selected from the group consisting of:



bases 185–225 of *E. coli* 16S rRNA,

bases 540–575 of *E. coli* 23S rRNA,

bases 1155–1190 of *E. coli* 23S rRNA, and

bases 2195–2235 of *E. coli* 23S rRNA; wherein said oligonucleotide comprises a sequence which is at least 75% complementary to a target sequence of 10 contiguous nucleotides present in said target region in *Mycobacterium africahum, Mycobacterium bovis,* and *Mycobacterium tuberculosis,* and said oligonucleotide does not hybridize to nucleic acid from *Mycobacterium intracellulare* or *Mycobacterium avium* to form a detectable non-target:probe duplex under said hybridization conditions.

5,547,843

METHOD FOR PROMOTING SPECIFIC ALIGNMENT OF SHORT OLIGONUCLEOTIDES ON NUCLEIC ACIDS

F. William Studier, Stony Brook; Jan Kieleczawa, Coram, and John J. Dunn, Bellport, all of N.Y., assignors to Associated Universities, Inc., Washington, D.C.

Continuation of Ser. No. 916,062, Jul. 17, 1992, abandoned. This application Oct. 18, 1994, Ser. No. 325,539

Int. Cl.[6] C12Q *1/68;* C12P *19/34*

U.S. Cl. 435—6 **21 Claims**

1. A method for promoting the alignment of a plurality of short oligonucleotides on a single-stranded DNA, comprising:

a) forming an incubation mixture comprising:

i) the single-stranded DNA;

ii) a saturating amount of single-stranded DNA-binding protein; and

iii) a plurality of short oligonucleotides which are selected to be perfectly complementary to distinct but adjacent regions of a predetermined contiguous series of nucleotides in the single-stranded DNA; and

b) incubating the incubation mixture under conditions appropriate for:

i) binding of the single-stranded DNA-binding protein to the single-stranded DNA template; and

ii) annealing of the oligonucleotides to the distinct but adjacent regions of the predetermined contiguous series of nucleotides in the single-stranded DNA but not to isolated regions of the single-stranded DNA having a nucleotide sequence complementary to only a single oligonucleotide, thereby producing contiguously annealed oligonucleotides.

5,547,844

***HELICOBACTER PYLORI* BACTERIAL DERIVED FACTOR**

Peter A. Anton, West Hollywood; Joseph R. Reeve, Jr., Oakhurst; John H. Walsh, and Kym F. Faull, both of Los Angeles, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Feb. 23, 1995, Ser. No. 395,495

Int. Cl.[6] G01N *33/53;* C12N *1/00*

U.S. Cl. 435—7.1 **7 Claims**

1. A method for aiding in the diagnosis or following the course of infection by *H. pylori* in a mammalian host, said method comprising:

assaying a physiological sample of said mammalian host in which the secretory product of *H. pylori*, diethyl phthalate, or its metabolites is present during said infection for at least one of said diethyl phthalate;

wherein the presence of at least one of diethyl phthalate and its metabolic products is related to the presence and course of said infection.

5,547,845

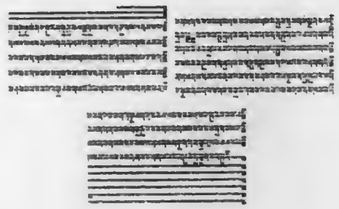
AQUEOUS SOLUTION CONTAINING D1 DOPAMINE RECEPTOR

James R. Bunzow; Olivier Civelli; David K. Grandy, and Qun Y. Zhou, all of Portland, Oreg., assignors to Duke University, Durham, N.C., and Oregon Health Sciences Univ., Oreg.

Division of Ser. No. 908,654, Jul. 2, 1992, Pat. No. 5,389,543, which is a continuation of Ser. No. 583,852, Sep. 17, 1990, abandoned, which is a continuation-in-part of Ser. No. 523,237, May 14, 1990, abandoned. This application Feb. 15, 1994, Ser. No. 196,523

Int. Cl.[6] C07K *14/705*

U.S. Cl. 435—7.1 **8 Claims**



1. An aqueous solution containing cell membranes, said cell membranes containing a D_1-dopamine receptor, wherein said cell membranes are free of D_2-dopamine receptors;

wherein said D_1-dopamine receptor is encoded by a cloned isolated gene encoding a mammalian D_1-dopamine receptor selected from the group consisting of:

(a) isolated DNA encoding the human D_1-dopamine receptor depicted in FIG. 1B(I) to 1B(III), or an isolated DNA encoding the rat D_1-dopamine receptor depicted in FIG. 3A; and

(b) isolated natural mammalian DNA which hybridizes to isolated DNA of (a) above under conditions defined by a wash stringency of 1× SSC at 55° C. and encodes a D_1-dopamine receptor.

5,547,846

IMMUNOGENIC REGIONS ON THE E7 PROTEIN OF HUMAN PAPILLOMAVIRUS TYPE 16

Dusan Bartsch, Heidelberg; Lutz Gissmann, Wiesloch, and Martin Müller, Heidelberg, all of, Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Germany

Continuation of Ser. No. 144,503, Nov. 2, 1993, abandoned, which is a continuation of Ser. No. 490,444, Mar. 8, 1990, abandoned. This application Aug. 16, 1994, Ser. No. 292,169

Claims priority, application Germany, Mar. 10, 1989, 39 07 721.7

Int. Cl.[6] C12Q *1/00;* G01N *33/53;* C07K *16/08;7/02*

U.S. Cl. 435—7.1 **4 Claims**

1. An immunogenic sequence of HPV 16 E7 protein consisting of one of the following amino acid sequences:

I. met leu asp leu gln pro glu thr thr asp leu tyr cys tyr glu gln;

II. met leu asp leu gln pro glu thr thr asp leu tyr;

III. met leu asp leu gln pro glu thr thr; or

IV. met leu asp leu gln pro glu thr.

5,547,847

DIAGNOSIS OF INSULIN-DEPENDENT DIABETES

William Hagopian, Seattle, Wash.; Ake Lernmark, Malmo, Sweden; Allan E. Karlsen, Allerød, Denmark, and Mona Landin-Olsson, Lund, Sweden, assignors to University of Washington, Seattle, Wash.

Filed Sep. 7, 1993, Ser. No. 117,907

Int. Cl.[6] G01N *33/573*

U.S. Cl. 435—7.4 **20 Claims**

1. A method for predicting the clinical course of diabetes in a patient comprising:

testing a biological fluid selected from the group consisting of blood, plasma and serum from a patient diagnosed as having non-insulin-dependent diabetes for the presence of autoantibodies to human islet cell glutamic acid decarboxylase (GAD); and

classifying said patient for clinical course of diabetes based on the presence or absence of said autoantibodies in said fluid.

5,547,848

IMMUNOASSAY ELEMENT CONTAINING A PULVERIZED WATER-INSOLUBLE POLYSACCHARIDE AND PROCESS FOR IMMUNOASSAY

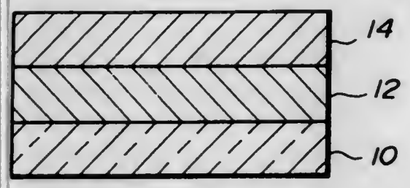
Hiroshi Shinoki; Toshikage Hiraoka, and Masashi Ogawa, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 846,804, Mar. 4, 1992, abandoned. This application Feb. 23, 1995, Ser. No. 393,240

Claims priority, application Japan, Mar. 4, 1991, 3-60972

Int. Cl.[6] G01N *33/535;33/548*

U.S. Cl. 435—7.9 **11 Claims**



1. An immunoassaying process for quantitatively analyzing an amount of a low molecular weight antigen in a sample by determining the change in enzymatic activity caused by competitive reactions between an enzyme-labelled antibody and said low molecular weight antigen and a conjugate of said low molecular weight antigen with a high molecular weight compound, comprising the steps of:

(a) mixing the sample containing the low molecular weight antigen, the enzyme-labelled antibody, and the conjugate of the antigen and the high molecular weight compound so as to allow the competitive reactions;

(b) applying a reaction product mixture of the competitive reactions of step (a) on a substrate layer containing a non-diffusible substrate for forming a diffusible material in the presence of said enzyme, said non-diffusible substrate being a pulverized insoluble polysaccharide which is classified after pulverization and has an average particle diameter of from 3 to 5 μm;

(c) allowing to migrate said diffusible material formed in said substrate layer into a reagent layer for detecting said diffusible material; and

(d) measuring the amount of said diffusible material migrating into said reagent layer.

5,547,849

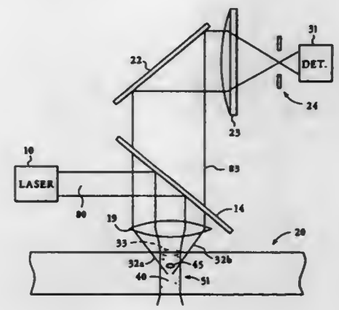
APPARATUS AND METHOD FOR VOLUMETRIC CAPILLARY CYTOMETRY

Thomas M. Baer; Louis J. Dietz, both of Mountain View; Robert S. Dubrow, San Carlos; Paul G. Hayter, Los Altos; Michael Hodges, Palo Alto; Bala S. Manian, Los Altos Hills, and Robert J. Shartle, Livermore, all of Calif., assignors to Biometric Imaging, Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 18,762, Feb. 17, 1993, abandoned. This application May 2, 1994, Ser. No. 236,342

Int. Cl.[6] G01N *33/536*

U.S. Cl. 435—7.24 **47 Claims**



1. A method of identifying and enumerating cellular components of biological fluids via fluorescence, the method comprising:

obtaining a sample of biological fluid having cellular components;

incubating the sample with an excess amount of a fluorescently-labeled binding agent directed to binding sites present on the cellular components to form fluorescent complexes;

placing the sample into a capillary tube, the capillary tube having specified dimensions and a longitudinal axis;

optically scanning the sample with an incident beam of light having a wavelength selected to excite the fluorescent complexes, so as to sequentially intersect the capillary tube in a plurality of beam spots of specified diameter to illuminate a plurality of columnar regions;

sequentially detecting emitted fluorescence confined to an interior depth dimension of each columnar region;

recording the emitted fluorescence from each columnar region of heightened fluorescence intensity; and

enumerating the cellular component of the sample from the emitted fluorescence.

5,547,850

PROCESS FOR DETERMINING HIRUDIN AND SYNTHETIC THROMBIN INHIBITORS

Götz Nowak; Elke Bucha, and Jutta Hoffman, all of Erfurt, Germany, assignors to Max-Planck-Gesellschaft, Gottingen, Germany

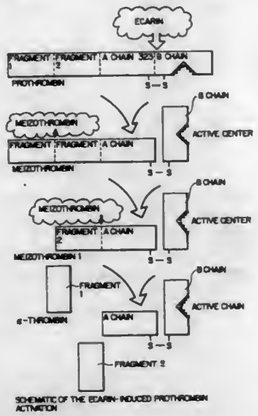
PCT No. PCT/EP93/00161, § 371 Date Oct. 5, 1994, § 102(e) Date Oct. 5, 1994, PCT Pub. No. WO93/16390, PCT Pub. Date Aug. 19, 1993

PCT Filed Jan. 25, 1993, Ser. No. 284,453

Claims priority, application Germany, Feb. 11, 1992, 42 03 980.0

Int. Cl.[6] C12Q *1/56;1/37;* G01N *33/00*

U.S. Cl. 435—13 10 Claims



SCHEMATIC OF THE ECARIN-INDUCED PROTHROMBIN ACTIVATION

1. A process for determining a concentration of hirudin or of a synthetic thrombin inhibitor selected from the group consisting of a derivative of a tripeptide phe-pro-arg and a hirolog in blood, in a blood component or in a body fluid other than blood, comprising adding a material selected from the group consisting of (1) a prothrombin intermediate selected from the group consisting of meizothrombin, PIVKA meizothrombin, PIVKA being an abbreviation for protein induced by vitamin K antagonist, and meizothrombin-des-fragment-1 or a pharmaceutically acceptable salt of said prothrombin intermediate, (2) a compound that splits prothrombin into meizothrombin or a pharmaceutically acceptable salt of said compound and (3) a mixture of said compound that splits prothrombin into meizothrombin or a salt thereof and said prothrombin intermediate or a salt thereof, to the blood, blood component, or a body fluid other than blood, measuring an elapsed time between said adding and the start of coagulation in said blood, blood component or a body fluid other than blood and comparing the elapsed time measurement with a standard in order to determine said concentration.

5,547,851

METHOD FOR MEASURING CARBON DIOXIDE AND REAGENT THEREFOR

Shizuo Hattori; Takahide Kishimoto; Yukihiro Sogabe, and Shigenori Emi, all of Tsuruga, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 18, 1994, Ser. No. 210,559

Claims priority, application Japan, Mar. 22, 1993, 5-061987

Int. Cl.[6] C12Q *1/25*

U.S. Cl. 435—26 13 Claims

1. A method for measuring bicarbonate ion in a liquid sample, comprising the steps of:

(1) reacting said bicarbonate ion in said sample with phosphoenolpyruvate carboxylase derived from *Acetobacter hansenii* and phosphoenolpyruvate;

(2) reacting the resultant oxalacetic acid with malate dehydrogenase and NADH; and

(3) measuring; wherein said NADH measurement correlates with said bicarbonate ion measurement.

5,547,852

COMPOSITION CONTAINING THE P40 SUBUNIT OF INTERLEUKIN-12

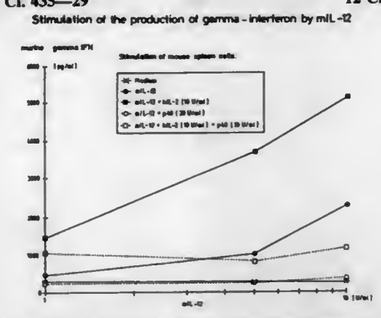
Friedrich-Robert Seiler, Marburg; Roland Kurrie, Niederweimar, and Klaus-Dieter Langner, Marbug, all of, Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Germany

Filed Apr. 29, 1994, Ser. No. 235,321

Claims priority, application Germany, May 7, 1993, 43 15 127.2; European Pat. Off., Apr. 12, 1994, 94105595

Int. Cl.[6] C12Q *1/02;* G01N *33/567;* A61K *45/05*

U.S. Cl. 435—29 12 Claims



1. A method of detecting IL-12 in a biological sample, comprising the steps of:

(a) providing a system comprising cells that produce a detectable biological response to IL-12;

(b) adding to said system a defined amount of p40/IL-12 effective to inhibit a biological response by said cells to IL-12, and a defined amount of a biological sample; and

(c) detecting said biological response.

5,547,853

CD2-BINDING DOMAIN OF LYMPHOCYTE FUNCTION ASSOCIATED ANTIGEN 3

Barbara P. Wallner, Cambridge; Glenn T. Miller, Haverhill, and Margaret D. Rosa, Winchester, all of Mass., assignors to Biogen, Inc., Cambridge, Mass.

PCT No. PCT/US92/02050, § 371 Date Oct. 21, 1992, § 102(e) Date Oct. 21, 1992, PCT Pub. No. WO92/16622, PCT Pub. Date Oct. 1, 1992

Continuation-in-part of Ser. No. 770,967, Oct. 7, 1991, abandoned, which is a continuation-in-part of Ser. No. 667,971, Mar. 12, 1991, abandoned. This PCT application Mar. 12, 1992, Ser. No. 940,861

Int. Cl.[6] C07K *14/705;* C12N *15/12;15/62*

U.S. Cl. 435—69.1 35 Claims

1. A polypeptide having the amino acid sequence: X_1-X_2-(SEQ ID NO:1) Asn Arg Val Tyr Leu Asp Thr Val Ser Gly-Y, wherein:

X_1 if present, is hydrogen or methionyl;

X_2, if present, is a polypeptide having the following amino acid sequence or a portion thereof consisting of the carboxy-terminal 1 to 77 amino acids of the sequence (SEQ ID NO:5): Val Ala Gly Ser Asp Ala Gly Arg Ala Leu Gly Val Leu Ser Val Val Cys Leu Leu His Cys Phe Gly Phe Ile Ser Cys Phe Ser Gln Gln Ile Tyr Gly Val val Tyr Gly Asn Val Thr Phe His Val Pro Ser Asn Val Pro Leu Lys Glu Val Leu Trp Lys Lys Gln Lys Asp Lys Val Ala Glu Leu Glu Asn Ser Glu Phe Arg Ala Phe Ser Ser Phe Lys;

Y is hydroxyl or a polypeptide of the following amino acid sequence or a portion thereof consisting of the amino terminal 1 to 32 amino acids of the sequence (SEQ ID NO:33): Ser Leu Thr Ile Tyr Asn Leu Thr Ser Ser Asp Glu Asp Glu Tyr Glu Met Glu Ser Pro Asn Ile Thr Asp Thr Met Lys Phe Phe Leu Tyr Val; said polypeptide being capable of binding to CD2.

5,547,854

DNA ENCODING A RECEPTOR FOR MÜLLERIAN INHIBITORY SUBSTANCE, MISR1, AND CORRESPONDING VECTORS, CELLS, PROBES, AND RECOMBINANT METHODS

Patricia K. Donahoe, Weston; Michael Gustafson, Boston, both of Mass., and Wei W. He, Germantown, Md., assignors to The General Hospital Corporation, Boston, Mass.

Continuation of Ser. No. 29,673, Mar. 11, 1993, abandoned, which is a continuation-in-part of Ser. No. 853,396, Mar. 18, 1992, abandoned. This application Oct. 4, 1994, Ser. No. 317,847

Int. Cl.[6] C12N *15/12;15/63;5/10;* C07K *14/715*

U.S. Cl. 435—69.1 27 Claims

1. Isolated DNA comprising a strand having

(a) a DNA sequence which encodes a naturally occuring Müllerian Inhibitory Substance (MIS) receptor, wherein a DNA having said sequence hydridizes under high stringency conditions with 50 nucleotide portion of the antisense strand of the coding region of misr1 cDNA (SEQ ID No:1);

(b) a DNA sequence which is a degenerate variant of (a); or

(c) a DNA sequence complementary to the full length of (a) or (b).

5,547,855

KAINATE-BINDING HUMAN CNS GLUTAMATE RECEPTORS EAA3C AND EAA3D, DNA ENCODING THEM, AND EXPRESSION OF THE DNA IN TRANSFORMED CELLS

Rajender Kamboj, Mississauga; Candace E. Elliott, and Stephen L. Nutt, both of Etobicoke, all of, Canada, assignors to Allelix Biopharmaceuticals Inc., Mississauga, Canada

Continuation of Ser. No. 989,793, Dec. 11, 1992, abandoned. This application Mar. 15, 1995, Ser. No. 405,392

Int. Cl.[6] C12N *15/12;5/10;* C07K *14/705;* C08L *89/00*

U.S. Cl. 435—69.1 24 Claims

1. An isolated and purified polynucleotide that codes for a kainate-binding human EAA3 receptor selected from the group consisting of: a human EAA3c receptor having the amino acid sequence of residues 1–836 of SEQ ID NO: 17, a human EAA3c receptor having the amino acid sequence of SEQ ID NO: 17, a human EAA3d receptor having the amino acid sequence of residues 31–848 of SEQ ID NO: 18 and a human EAA3d receptor having the amino acid sequence of SEQ ID NO: 18.

5,547,856

HEPATOCYTE GROWTH FACTOR VARIANTS

Paul J. Godowski, Burlingame; Natalie A. Lokker, San Francisco, and Melanie R. Mark, Burlingame, all of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Continuation-in-part of Ser. No. 884,811, May 18, 1992, Pat. No. 5,316,921, which is a continuation-in-part of Ser. No. 885,971, May 18, 1992, Pat. No. 5,328,837. This application Jul. 13, 1993, Ser. No. 87,783

Int. Cl.[6] C12P *21/06;* C12N *15/18;* C07H *17/00;* C07K *14/475*

U.S. Cl. 435—694 20 Claims

1. A nucleotide sequence encoding a hepatocyte growth factor (HGF) variant, said variant comprising a polypeptide comprising an alpha chain and a beta chain, said alpha chain and said beta chain being connected and being resistant to proteolytic cleavage by enzymes that are capable of in vivo conversion of HGF into said alpha chain and said beta chain.

5,547,857

PROCESS FOR PRODUCING 5-METHYLURIDINE AND PURIFICATION BY SEDIMENTATION VELOCITY

Shogo Maruyama, and Satoshi Kumon, both of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Apr. 17, 1995, Ser. No. 422,946

Claims priority, application Japan, Apr. 18, 1994, 6-078783

Int. Cl.[6] C12P *19/38;* C07H *19/00*

U.S. Cl. 435—87 2 Claims

1. A process for producing 5-methyluridine which comprises the steps of:

culturing a microorganism in a culture medium,

removing 50–90% of said culture medium from the microorganism,

adding a buffer to the microorganism, said buffer being added in an amount effective for product separation based on sedimentation velocity,

reacting a nucleoside or ribose-1-phosphoric acid with 5-methyluracil in the remaining culture medium and buffer containing said microorganism,

crystallizing 5-methyluridine formed, by forming 5-methyluridine crystals of average particle diameter from 50 to 550 μm, and impurity crystals of average particle diameter from 5 to 50 μm, and

separating 5-methyluridine crystals from impurities based on a difference in sedimentation velocity of 5-methyluridine crystals and impurity crystals.

5,547,858

METHOD FOR PURIFICATION OF AMINO ACIDS, NUCLEIC ACIDS USING A HYDROCYCLONE

Yoshimi Nagano, Kawasaki; Takao Suganuma, Yokohama; Kazuhiro Satoh, and Masao Ikeda, both of Kawasaki, all of, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Continuation of Ser. No. 730,657, Jul. 16, 1991, abandoned. This application Jul. 11, 1994, Ser. No. 272,655

Int. Cl.[6] C07H *1/06;21/00;19/00;* C12P *13/04*

U.S. Cl. 435—89 18 Claims

1. A method for producing an amino acid, a nucleoside or a nucleotide thereof by fermentation, comprising the steps of:

culturing cells in a suitable culture medium sufficiently to produce a slurry containing cells and crystals of an amino acid, a nucleic acid or a derivative thereof, said cells having a diameter of not greater than 5 μm and being present in an amount not greater than 10 wt. % of said slurry on a dry weight basis, and said crystals having a diameter of 10 to 2000 μm and being present in an amount of 5 to 60 wt. % of said slurry,

withdrawing said slurry,

isolating said crystals with a liquid cyclone, said liquid cyclone having a diameter which sufficiently increases the concentration of crystals at the downstream side of said cyclone to recover a concentrated solution of crystals having a concentration of 30 to 90 wt. % at the downstream side and which selects not less than 80% of the cells at the upstream side, and

recycling said cells at the upstream side of said cyclone to said culture medium.

5,547,859

CHAIN-TERMINATING NUCLEOTIDES FOR DNA SEQUENCING METHODS

Myron F. Goodman, 4719 Alminar Ave., LaCanada, Calif. 91011, and Linda J. Reha-Krantz, 1044 87th Avenue, Edmonton, Alberta, Canada

Filed Aug. 2, 1993, Ser. No. 101,593
Int. Cl.[6] C12P *19/34*
U.S. Cl. 435—91.1 **6 Claims**

1. A method for sequencing DNA, comprising:

contacting a polymerase selected from the group consisting of T4 polymerase, T2 polymerase, T6 polymerase and *E. coli* DNA polymerase II, with a primed DNA strand to be sequenced in the presence of dATP, dGTP, dCTP, dTTP, a first chain-terminating nucleotide, a second chain-terminating nucleotide, a third chain-terminating nucleotide and a fourth chain-terminating nucleotide; and

allowing said contacting to proceed under reaction conditions to maintain polymerase activity for a period of time sufficient to obtain sequencing information, wherein said first chain-terminating nucleotide is 3'-amino-2',3' dideoxy-ATP, said second chain-terminating nucleotide is 3'-amino- 2',3'dideoxy-GTP, said third chain-terminating nucleotide is 3'-amino-2',3'dideoxy-CTP and said fourth chain-terminating nucleotide is 3'-amino- 2',3'dideoxy-TTP.

5,547,860

SULPHOCOUMARIN-CONTAINING NUCLEOTIDES AND THEIR USE IN PROCESSES FOR DETECTING NUCLEIC ACIDS

Jürgen Köcher, Langenfeld; Wolfgang Springer, Wuppertal; Eberhard Kuckert, Leverkusen, and Thomas Böcker, Leichlingen, all of, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 21, 1994, Ser. No. 185,548
Claims priority, application Germany, Jan. 29, 1993, 43 02 459.9
Int. Cl.[6] C12P *19/34*; C12Q *1/70;1/68*; C07H *21/04*
U.S. Cl. 435—91.2 **13 Claims**

1. A fluorescent nucleotide of the formula:

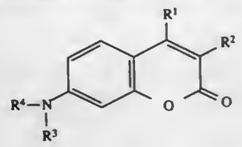
A—B—C

in which

A represents a natural or synthetic nucleotide;

represents a bridging member having two linkable centers; and

C represents a coumarin residue of the formula:



wherein

R^1 represents hydrogen or cyano;

R^2 represents sulphophenyl or sulphothiazolyl, which is bound in the 2, 4 or 5 position and is further unsubstituted or substituted;

R^3 represents H, or represents C_{1-4}-alkyl or C_{1-4}-alkoxycarbonyl-C_{1-4}-alkyl, in which C_{1-4}-alkyl is unsubstituted or substituted by hydroxyl, amino, carboxyl, C_{1-4}-alkoxycarbonyl or sulpho, or represents phenylsulphonyl, which is unsubstituted or substituted once or more than once by chlorine, bromine, C_{1-4}-alkyl or sulpho;

R^2 or R^3 can be substituted by a primary or secondary amino group, hydroxyl, carboxyl or C_{1-4}-alkoxycarbonyl or itself represent such a substituent, or R^2 or R^3 can be converted by hydrolysis into such a group; and

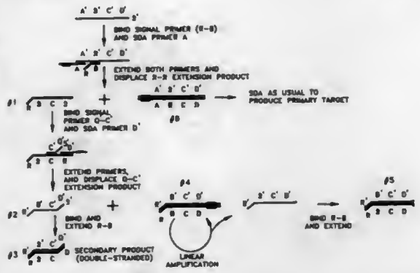
R^4 represents a substituent or a bond to B and, in the event that R^4 represents a substituent, then the bonding of C to B is effected by way of a further substituent on R^2.

5,547,861

DETECTION OF NUCLEIC ACID AMPLIFICATION

James G. Nadeau, and George T. Walker, both of Chapel Hill, N.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Apr. 18, 1994, Ser. No. 229,281
Int. Cl.[6] C12P *19/34*; C12Q *1/70;1/68*; C07H *21/04*
U.S. Cl. 435—91.2 **20 Claims**



1. A method for concurrently generating a secondary amplification product and an amplification product in a Strand Displacement Amplification (SDA) reaction, wherein the SDA reaction comprises (i) a DNA polymerase having strand displacing activity and lacking 5'-3' exonuclease activity and (ii) a restriction endonuclease which nicks a hemimodified double stranded restriction endonuclease recognition site, the method comprising:

a) hybridizing a signal primer to a target sequence and hybridizing a first SDA amplification primer to the target sequence upstream of the signal primer;

b) extending the hybridized signal primer on the target sequence to produce a signal primer extension product and extending the hybridized first SDA amplification primer on the target sequence such that extension of the first SDA amplification primer displaces the signal primer extension product from the target sequence;

c) hybridizing a second SDA amplification primer to the signal primer extension product and extending the hybridized second SDA amplification primer on the signal primer extension product to produce a second SDA amplification primer extension product comprising a newly synthesized strand and double stranded hemimodified recognition site for the restriction endonuclease;

d) nicking the hemimodified recognition site and displacing the newly synthesized strand from the signal primer extension product using the DNA polymerase;

e) hybridizing the signal primer to the displaced newly synthesized strand and extending the signal primer such that a double stranded secondary amplification product is generated.

5,547,862

VECTORS CONTAINING MULTIPLE PROMOTERS IN THE SAME ORIENTATION

James Meador; Hoyt E. McElroy; Michelle L. Herrmann, and Matthew Winkler, all of Austin, Tex., assignors to Ambion Inc., Austin, Tex.

Filed Jul. 29, 1993, Ser. No. 99,867
Int. Cl.[6] C12N *15/11;15/70*; C12P *19/34*
U.S. Cl. 435—91.3 **26 Claims**

1. A recombinant DNA for in vitro synthesis of RNA, comprising a site that accepts an RNA transcription unit, said site positioned downstream of a promoter region that includes at least two phage promoters in tandem that are recognized by distinct RNA polymerases.

5,547,863

PRODUCTION OF FRUCTAN (LEVAN) POLYFRUCTOSE POLYMERS USING BACILLUS POLYMYXA

Youn W. Han, and Margaret A. Clarke, both of New Orleans, La., assignors to The United States of America as represented by the Secretary of the Agriculture, Washington, D.C.

Filed Aug. 14, 1989, Ser. No. 393,604
Int. Cl.[6] C12P *19/04*; C07G *3/00*; C07D *413/00*
U.S. Cl. 435—101 **5 Claims**

2. A method of producing a β,2-6 linked fructofuranoside polymer comprising:

a) incubating *Bacillus polymyxa* selected from the group of deposits consisting of NRRL B-18475 and NRRL B-18476 in a media comprising one or more sugars under conditions suitable for said Bacillus to produce said polymer; and

b) recovering said polymer.

5,547,864

CORYNEFORM BACTERIA DEFICIENT IN A CELL SURFACE PROTEIN

Hisashi Kawasaki; Makoto Tsuchiya; Kiyoshi Miwa, and Yoshio Kawahara, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

PCT No. PCT/JP94/00039, § 371 Date Sep. 8, 1994, § 102(e) Date Sep. 8, 1994, PCT Pub. No. WO94/15963, PCT Pub. Date Jul. 21, 1994
PCT Filed Jan. 13, 1994, Ser. No. 295,670
Claims priority, application Japan, Jan. 13, 1993, 5-004069
Int. Cl.[6] C12P *1/4;13/4*; C12N *1/20*; C07K *14/34*
U.S. Cl. 435—170 **8 Claims**

1. Coryneform bacteria having a cell aggregating property and being deficient in a cell surface layer protein having the following two sequences within the molecule:

(1) Thr-Leu-Arg-Gln-His-Tyr-Ser-Ser-Leu-Ile-Pro-Asn-Leu-Phe-Ile-Ala-Ala-Val-Gly-Asn-Ile-Asn-Glu-Leu-Asn-Asn-Ala-Asp-Gln-Ala-Ala-Arg-Glu-Leu-Phe-Leu-Asp-Trp-Asp-Thr (SEQ ID NO: 1); and

(2) Asn-Lys-Thr-Asp-Phe-Ala-Glu-Ile-Glu-Leu-Tyr-Asp-Val-Leu-Tyr-Thr-Asp-Ala-Asp-Ile-Ser-Gly-Asp-Ala-Pro-Leu-Leu-Ala-Pro-Ala-Tyr-Lys (SEQ ID NO: 2),

wherein said protein has a molecular weight of about 63,000 dalton.

5,547,865

Patent Not Issued For This Number

5,547,866

TAXANE PRODUCTION IN HAPLOID-DERIVED CELL CULTURES

Don J. Durzan, and Frank F. Ventimiglia, both of Davis, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Jul. 20, 1994, Ser. No. 277,463
Int. Cl.[6] C12P *17/02;1/00*
U.S. Cl. 435—123 **10 Claims**

1. A method of producing a taxane, the method comprising:

establishing a cell culture from archegonial cells, oocytes or a combination thereof from Taxus spp.;

culturing the cell culture in a medium which comprises less than about 50 mg/L nitrate under conditions suitable for the production of the taxane;

nutritionally stressing the cell culture by withholding nutrients and subculture routines; and

recovering the taxane from the cell culture.

5,547,867

FERMENTATION PROCESSES FOR PREPARING SOLUBLE RICIN A

Bhupbendra V. Kara, Runcorn; Robert C. Hockney, Macclesfield, and John E. Fitton, Buxton, all of, England, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 841,533, Feb. 26, 1992, abandoned. This application Mar. 28, 1994, Ser. No. 218,303
Claims priority, application Germany, Feb. 26, 1991, 9104016; United Kingdom, Feb. 26, 1991, 9103925; Feb. 26, 1991, 9103926
Int. Cl.[6] C12N *9/22;15/29*; C12P *21/02*; C07K *14/415*
U.S. Cl. 435—199 **13 Claims**

1. A process for preparing a polypeptide which comprises ricin A or a structural analogue thereof, which process comprises cultivating a host cell that expresses said polypeptide in a growth medium under either of the following conditions:

(a) cultivating said host cell for an initial period at a first pH value which favours growth of the host cell so that said polypeptide is produced and lowering the pH to a second value and cultivating said host cell for a further period at said second pH value; or

(b) maintaining the pH at a value which favours growth of the host cell, and reducing the temperature of the growth medium during the terminal portion of the cultivation;

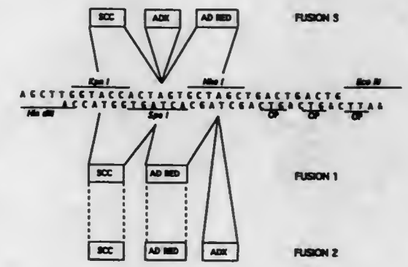
such that said polypeptide is obtained in soluble form from in the cytoplasmic fraction of the host cell.

5,547,868

CHOLESTEROL DISPOSAL FUSION ENZYMES

Walter L. Miller, San Francisco, Calif.; Jennifer A. Harikrishna, Selangor, Malaysia, and Stephen M. Black, San Francisco, Calif., assignors to Regents of the University of California, Oakland, Calif.

Filed Jun. 9, 1993, Ser. No. 75,193
Int. Cl.[6] C12N *9/02*; C07K *14/80*
U.S. Cl. 435—189 **12 Claims**



1. A fusion enzyme having an N-terminal end and an C-terminal end, comprising (1) P450scc or a fragment thereof retaining

cholesterol-side-chain-cleavage activity and (2) an electron-transfer protein having the ability to transfer electrons to said P450scc.

5,547,869

NOVEL PLASMIDS

Bruno Dumas, Paris; Monica Gervais, Saint Leu la Foret; Max Bergoin, Saint Christophe lez Ales; Mireille Jourdan, Moliere sur Ceze, and Francoise X. Jousset, Saint Christophe lez Ales, all of, France, assignors to Roussel Uclaf, France

Continuation of Ser. No. 881,054, May 11, 1992, abandoned, which is a continuation-in-part of Ser. No. 278,735, Dec. 2, 1988, abandoned. This application Feb. 14, 1994, Ser. No. 195,814

Claims priority, application France, Dec. 3, 1987, 87 16764

Int. Cl.[6] C12N *15/00;15/34;15/35*

U.S. Cl. 435—252.33 **6 Claims**

1. Recombinant plasmids capable of replicating themselves in *Escherichia coli* containing a complete sequence of the double or single strand DNA of a Densovirus (SEQ ID NO. 1) of Junonia (J-DNV) causing a densovirosis in a sensitive insect.

5,547,870

OXALATE DECARBOXYLATE

Asis Datta; Anuradha Mehta, and K. Natarajan, all of New Delhi, Ind., assignors to Zeneca Limited, London, United Kingdom

Continuation of Ser. No. 985,695, Nov. 30, 1992, abandoned. This application Oct. 18, 1994, Ser. No. 324,533

Int. Cl.[6] C12N *5/04;9/88;15/60;15/82*

U.S. Cl. 435—240.4 **5 Claims**

1. An isolated and purified DNA fragment encoding oxalate decarboxylase, having the sequence of SEQ ID No. 1.

5,547,871

HETEROLOGOUS SIGNAL SEQUENCES FOR SECRETION OF INSECT CONTROLLING PROTEINS

Bruce C. Black, Yardley, Pa., and Max D. Summers, Bryan, Tex., assignors to American Cyanamid Company, Wayne, N.J.

Filed Jan. 25, 1993, Ser. No. 9,265

Int. Cl.[6] C12N *7/01;15/32;15/85*

U.S. Cl. 435—240.1 **21 Claims**

1. An isolated nucleic acid sequence encoding a protein selected from the group consisting of the toxin from the mite species *Pyemotes tritici*, the *Bacillus thuringiensis* subsp. aizawai toxin, the *Bacillus thuringiensis* CryIVD toxin, the *Androctonus australis* insect toxin (AaIT), eclosion hormone, prothoracicotropic hormone, adipokinetic hormone, diuretic hormone, proctolin and juvenile hormone esterase, wherein immediately upstream of said sequence is a nucleic acid sequence encoding a signal sequence selected from the group consisting of the cuticle signal sequence from *Drosophila melanogaster* depicted in SEQ ID NO. 17, the chorion signal sequence from *Bombyx mori* depicted in SEQ ID NO. 13, the apolipophorin signal sequence from *Manduca sexta* depicted in SEQ ID NO. 9, the sex specific signal sequence from *Bombyx mori* depicted in SEQ ID NO. 25, the adipokinetic hormone signal sequence from *Manduca sexta* depicted in SEQ ID NO. 5, the pBMHPC-12 signal sequence from *Bombyx mori* depicted in SEQ ID NO. 1 and the esterase-6 signal sequence from *Drosophila melanogaster* depicted in SEQ ID NO. 21.

5,547,872

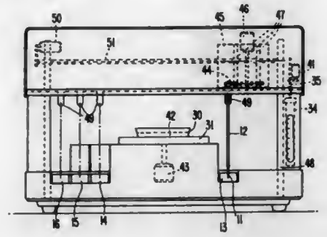
METHOD AND APPARATUS FOR CLEANING THE SAMPLE DELIVERY STYLUS OF MICROPROCESSOR CONTROLLED SPIRAL PLATERS

Samuel Schalkowsky, Chevy Chase, and Frances M. Scher, Gaithersburg, both of Md., assignors to Spiral Biotech, Inc., Bethesda, Md.

Filed Feb. 10, 1995, Ser. No. 386,669

Int. Cl.[6] G01N *35/02*

U.S. Cl. 436—49 **9 Claims**



1. A method for at least one of disinfecting or cleaning a sample delivery stylus of a digitally controlled spiral plater to safeguard against carry-over of disinfectant into a next sample to be plated or carry-over of microbes from a preceding sample into a next sample to be plated while minimizing replenishment of cleaning or disinfecting liquids comprising:

(a) determining a required minimum level h_{min} of a cleaning or disinfecting liquid in at least one container relative to a maximum expected depth of immersion of a sample delivery stylus in a preceding container with the minimum level providing for immersion of the sample delivery stylus to at least a depth of immersion in the preceding container in which the sample delivery stylus was last immersed;

(b) determining a maximum allowable level h_{max} of the cleaning or disinfection liquid in the at least one container by adding to the required minimum level h_{min} in the at least one container an amount Δh of the liquid computed from a positive integer number n, equal to at least one, which represents the required number of cleaning cycles or disinfecting cycles without replenishing the liquid in the at least one container, multiplied by a liquid cleaning volume V needed to assure cleaning or disinfecting of the sample delivery stylus and divided by a surface area A of the liquid in the at least one container;

(c) controlling, with a digital control, intake of a volume of the liquid from the at least one container into the sample delivery stylus to minimize a rate of consumption of the liquid in the at least one container;

(d) marking the at least one container with the maximum allowable and minimum required liquid levels h_{max} and h_{min} respectively to be maintained during at least one of a disinfecting or cleaning operation;

(e) filling the at least one container with the liquid to a level between the marks identifying the maximum and minimum allowable levels h_{max} and h_{min}; and

(f) replenishing the liquid within the at least one container when reduced to the mark of the minimum level h_{min} by an amount not to exceed the mark of the maximum allowable level h_{max}.

5,547,873

COMPOSITIONS FOR STABILIZING PROTEINS FOR LONG TERM DRY STORAGE AND METHODS OF MAKING AND USING THE COMPOSITIONS

Gerald R. Magneson, Needham, Mass., and David L. Reichenbach, Penbroke Pines, Fla., assignors to Genzyme Corporation, Cambridge, Mass.

Filed Feb. 22, 1994, Ser. No. 198,430

Int. Cl.[6] G01N *31/00*

U.S. Cl. 436—18 **11 Claims**

1. A composition for stabilizing a protein for long term dry storage, comprising:

a. a defibrinated blood plasma with a sodium salt concentration of less than about 20 mM;

b. a sugar selected from the group consisting of a reducing monosaccharide, a reducing disaccharide, non-reducing monosaccharide, a non-reducing disaccharide, and a sugar alcohol;

c. a serum albumin or a gelatin or a mixture thereof; and

d. a potassium salt wherein the concentration of the potassium salt is in the range of about 50 mM to 100 mM.

5,547,874

METHOD FOR CONTROL OR CALIBRATION IN A CHEMICAL ANALYTICAL DETERMINATION

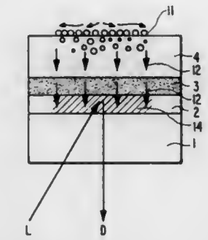
Masaaki Terashima, Saitama, Japan, assignor to Fujl Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 177,998, Jan. 6, 1994, abandoned, which is a division of Ser. No. 915,290, Jul. 20, 1992, Pat. No. 5,308,767, which is a continuation-in-part of Ser. No. 318,229, Mar. 2, 1989, abandoned, which is a continuation-in-part of Ser. No. 115,726, Nov. 2, 1987, abandoned. This application Apr. 5, 1995, Ser. No. 417,270

Claims priority, application Japan, Oct. 31, 1986, 61-259797; Nov. 18, 1986, 61-274919

Int. Cl.[6] G01N *31/00;21/77*

U.S. Cl. 436—12 **21 Claims**



1. An aqueous dispersion that contains a calibration or control substance for a dry analysis element,

wherein said aqueous dispersion comprises water and water-insoluble liquid particles having a mean particle size of from about 0.01 to 10 micrometers formed from a water insoluble liquid selected from the group consisting of water insoluble liquid phthalates, water insoluble liquid trimellitates, water insoluble liquid phosphoric esters, water insoluble liquid benzoates, N,N-diethyllaurylamide, N-tetradecylpyrrolidone, 2,4-di-t-amylphenol, water insoluble liquid aliphatic esters, water insoluble liquid paraffins, water insoluble liquid chloroparaffins, water insoluble liquid adipates, water insoluble liquid sebacates, and sodium alginate, and

wherein said calibration or control substance is selected from the group consisting of a component of organic body fluids, red dyes, triolein, glycerine, $(NH_4)_2SO_4$, NH_4Cl, $CaCl_2$, $Ca(NO_3)_2$, $MgCl_2$, NaCl, KCl, K_2HPO_4, and $NANO_3$, and further wherein said calibration or control substance reacts with a color-producing reagent of the dry analysis element to give a color, thereby calibrating or providing a control for the dry analysis element.

5,547,875

RECALIBRATING APPARATUS AND METHOD

John D. Petty, Holland Park, and Russell M. Peachey, Durack, both of, Australia, assignors to Ionode Pty Ltd., Queensland, Australia

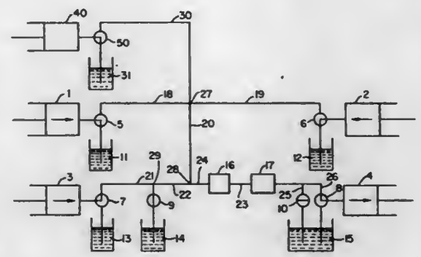
PCT No. PCT/AU93/00356, § 371 Date Jan. 10, 1995, § 102(e) Date Jan. 10, 1995, PCT Pub. No. WO94/02945, PCT Pub. Date Feb. 3, 1994

PCT Filed Jul. 16, 1993, Ser. No. 367,145

Claims priority, application Australia, Jul. 17, 1992, PL3588

Int. Cl.[6] G01N *35/08*

U.S. Cl. 436—8 **17 Claims**



1. A recalibrating apparatus comprising:

pump means for delivery of a fluid sample, reagent or sample/reagent mixture to a fluid junction;

first and second piston pump fluid delivery systems for delivery at first and second flow rates respectively of first and second fluid standards to said fluid junction;

conduit means providing fluid flow communication between said fluid junction and sensor means;

mixing means to mix said first and second fluid standards upstream of said sensor means relative to a fluid flow direction;

sensor means responsive to a fluid condition of said fluid sample, reagent or sample/reagent mixture and responsive to a fluid condition in said first standard, said second standard or mixtures thereof;

flow rate control means operatively coupled to at least one of said first or second piston pump fluid delivery systems for controllably varying a flow rate thereof to produce a plurality of ratios of said first and second flow rates in accordance with a sequence of functional steps, each of which steps is defined by at least one of a distinct flow rate ratio, a series of distinct flow rate ratios, a distinct gradient of flow rate ratios, or a series of distinct gradients of flow rate ratios;

said flow rate control means operatively coupled to said pump means and said first and second piston pump fluid delivery systems for operating said pump means and said first and second delivery systems in reciprocal modes of a pumping cycle so that in one half cycle said pump means delivers said fluid sample, reagent or sample/reagent mixture to said sensor means while said first and second piston pump systems refill with first and second standards respectively, and in the other half cycle said first and second piston pump systems deliver said first and second fluid standard and mixtures thereof to said sensor means while said pump means reloads with sample or sample/reagent mixture;

and wherein the condition of said sample or sample/reagent mixture detected by said sensor is compared to the condition of said first and second fluid standards and/or mixtures thereof detected by said sensor to effect calibration of said sample.

5,547,876

COMBUSTION ACCELERATORS, PROCESSES FOR THEIR PRODUCTION AND PROCESSES FOR THEIR USE IN ELEMENTAL ANALYSIS

Ching-Fong Chen, Baroda, and Carlos Guerra, Berrien Springs, both of Mich., assignors to Leco Corporation, St. Joseph, Mich.

Filed Sep. 27, 1994, Ser. No. 313,018
Int. Cl.[6] G01N *25/22*
U.S. Cl. 436—159 **38 Claims**

1. A method for conducting an elemental analysis of a substance comprising mixing said substance with a non-toxic accelerator for accelerating the combustion of said substance, said non-toxic accelerator comprising a compound selected from the group consisting of glass frit, niobium pentoxide, inorganic phosphates and mixtures thereof;

heating the resulting mixture to at least the decomposition temperature of said substance to be analyzed; and

analyzing the products of decomposition for the element to be analyzed for.

5,547,877

METHODS FOR THE RAPID DETECTION OF TOXIC HALOGENATED HYDROCARBONS AND KITS USEFUL IN PERFORMING THE SAME

Stephen B. Friedman, Chapel Hill; William B. Studabaker, and Patrick D. Mize, both of Durham, all of N.C., assignors to Ensys Environmental Products, Inc., Research Triangle Park, N.C.

Filed Oct. 25, 1994, Ser. No. 329,097
Int. Cl.[6] G01N *21/25*
U.S. Cl. 436—126 **15 Claims**

1. A method for the selective, sensitive detection of total trihalomethanes (TTHM), in an aqueous sample comprising:

a) contacting said aqueous sample with a solid phase extraction medium to essentially quantitatively adsorb trihalomethanes (THMs) from said aqueous sample;

b) eluting the adsorbed THMs from said solid phase extraction medium with pyridine to essentially quantitatively remove THMs from the solid phase extraction medium;

c) contacting the thus formed pyridine solution of eluted THMs with 0.1±0.025% of a base reagent and from 14–18% by volume of water to form a chromophoric product, wherein said amounts of base and water are sufficient to provide an optical absorption response for each chromophoric product which is approximately equal on a weight/weight basis to an optical absorption response for each of the other chromophoric products; and

d) determining concentration of TTHM by measuring an absorbance for the product of step c) and comparing said absorbance to a standard calibration curve.

5,547,878

METHOD OF MONITORING PATIENT COMPLIANCE WITH MEDICATIONS PRESCRIPTIONS

Michael Kell, 1447 Peachtree St., Suite 900, Atlanta, Ga. 30309

Continuation-in-part of Ser. No. 195,821, Nov. 2, 1993. This application May 24, 1994, Ser. No. 248,102
Int. Cl.[6] G01N *33/48*
U.S. Cl. 436—111 **3 Claims**

1. A method of monitoring compliance of a patient that has been placed on a medication maintenance program with a prescribed medication dosage, and with the method comprising the steps of

(a) obtaining a sample of the patient's urine,

(b) measuring the concentration of the medication or its metabolites in the urine and the urine specific gravity,

(c) calculating a normalized urine medication concentration as a function of the measured medication concentration in the urine and the urine specific gravity in accordance with the equation

$$u_n = u.(k_1.SGF - k_2$$

where nu is the normalized urine medication concentration, u is the measured concentration of medication in the urine, SGF is the specific gravity factor of the urine sample, and k_1 and k_2 are constants, and

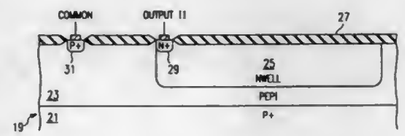
(d) comparing the normalized urine medication concentration with an expected medication concentration value for the patient for the maintenance program prescribed to determine any significant differences therebetween as an indication of noncompliance.

5,547,879

METHOD OF MAKING POSITION SENSING PHOTOSENSOR DEVICE

Eugene G. Dierschke, 6709 Leameadow Dr., Dallas, Tex. 75248, and John H. Berlien, Jr., 805 Wynnpage La., Plano, Tex. 75075

Division of Ser. No. 433,304, Nov. 7, 1995. This application Nov. 7, 1995, Ser. No. 554,878
Int. Cl.[6] H01L *31/18*
U.S. Cl. 437—2 **6 Claims**



1. A method for providing a photosensor device, comprising the steps of:

providing a semiconductor substrate;

providing a first current output terminal;

providing a second current output terminal;

disposing an epitaxial layer over said semiconductor substrate;

disposing a first plurality of photosensitive regions over said epitaxial layer, said first plurality of photosensitive regions being placed at the left side of said photosensor device and extending towards the right side, said first plurality of photosensitive regions being coupled to said first current output terminal;

disposing a second plurality of photosensitive regions over said epitaxial layer, said second plurality of photosensitive regions being placed at the right side of said photosensor device and extending towards the left side, said second plurality of photosensitive regions being coupled to said second output terminal; and

forming a tortuous interface region between said first plurality of said photosensitive regions and said second plurality of photosensitive regions, said tortuous interface region spacing said first and second pluralities apart a predetermined distance;

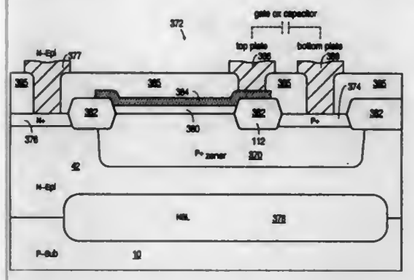
whereby the current at said first current output terminal is proportional to the area of said first plurality of photosensitive regions covered by a spot of light incident on the photosensor device, the current at said second current output is also proportional to the area of said second plurality of photosensitive regions covered by a spot of light incident on the photosensor device, such that the position of a spot of light incident on said photosensor device may be determined from said first and second output currents.

5,547,880

METHOD FOR FORMING A ZENER DIODE REGION AND AN ISOLATION REGION

Richard K. Williams, Cupertino; Hamza Yilmaz, Saratoga; Michael E. Cornell, Campbell, and Jun W. Chen, Saratoga, all of Calif., assignors to Siliconix Incorporated, Santa Clara, Calif.

Division of Ser. No. 323,950, Oct. 17, 1994, which is a continuation-in-part of Ser. No. 226,419, Apr. 11, 1994, Pat. No. 5,426,328, which is a continuation of Ser. No. 948,276, Sep. 21, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 464,978
Int. Cl.[6] H01L *21/04*
U.S. Cl. 437—15 **1 Claim**



1. A method for forming a zener diode region and an isolation region comprising the steps of:

forming an isolation region of a first conductivity type extending from a first surface area of an epitaxial layer of a second conductivity type and contacting a semiconductor material of said first conductivity type located below said first surface area, said isolation region having a first impurity concentration; and

implanting ions of said first conductivity type into a second surface area of said epitaxial layer, after said step of forming an isolation region, to form a zener diode region of said first conductivity type in said second surface area for use in forming a zener diode having a selected reverse breakdown voltage, said zener diode region having a second impurity concentration higher than said first impurity concentration,

said step of implanting also including implanting said ions in said first surface area to additionally dope said isolation region.

5,547,881

METHOD OF FORMING A RESISTOR FOR ESD PROTECTION IN A SELF ALIGNED SILICIDE PROCESS

Jau-Jey Wang; Pi-Chen Shieh, and Pin-Nan Tseng, all of Hsien-Chu, Taiwan, assignors to Taiwan Semiconductor Manufacturing Company LTD, Hsin-Chu, Taiwan

Filed Mar. 6, 1996, Ser. No. 612,620
Int. Cl.[6] H01L *21/266*
U.S. Cl. 437—24 **14 Claims**

1. A method of forming a high resistance contact, comprising the steps of:

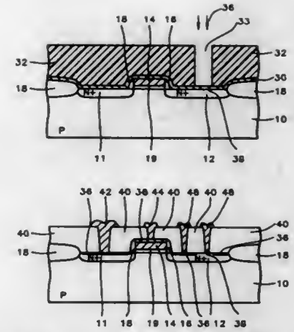
providing a silicon substrate with a number of devices formed therein wherein each device comprises a source region, a drain region, a high resistance contact region within said drain region, and a channel region;

providing field oxide regions formed in said silicon substrate;

providing gate oxide patterns formed on said silicon substrate over said channel regions;

providing polysilicon gate electrodes having sidewalls formed on said gate oxide patterns;

providing oxide spacers formed on said sidewalls of said polysilicon gate electrodes;



forming a metal layer on said silicon substrate covering said polysilicon gate electrodes, said oxide spacers, said source regions, said drain regions, and said high resistance contact regions;

forming a photoresist layer over said metal layer;

forming contact hole openings in said photoresist layer directly over said high resistance contact regions whereby said contact hole openings expose those regions of said metal layer directly over said high resistance contact regions;

implanting nitrogen ions into those regions of said metal layer directly over said high resistance contact regions by means of a beam of nitrogen ions using said photoresist layer with contact hole openings as a mask, wherein said beam of nitrogen ions changes said metal in those regions of said metal layer directly over said high resistance contact regions to metal nitride;

removing said photoresist layer after implanting said nitrogen ions into those regions of said metal layer directly over said high resistance contact regions;

annealing said silicon substrate and said metal layer, after changing said metal in those regions of said metal layer directly over said high resistance contact regions to metal nitride, thereby forming metal silicide over said polysilicon gate electrodes, said source regions, and said drain regions except said high resistance contact regions;

etching away said metal nitride and those parts of said metal layer not changed to metal silicide, after annealing said silicon substrate and said metal layer;

forming a passivation layer over said silicon substrate after etching away said metal nitride and those parts of said metal layer not changed to metal silicide;

forming contact holes in said passivation layer thereby exposing said high resistance contact regions and parts of said metal silicide formed over said polysilicon gate electrodes, said source regions, and said drain regions; and

filling said contact holes in said passivation layer with conducting material.

5,547,882

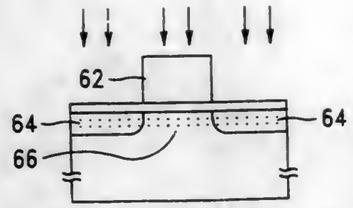
METHOD FOR FOAMING REROGRADE CHANNEL PROFILE BY PHOPSHORUS IMPLANTATION THOUGH POLYSILICON GATE

Miin-Horng Juang; San-Jung Chang, and Chin-Hsien Wang, all of Hsin-Chu, Taiwan, assignors to Mosel Vitelic Inc., Hsinchu, Taiwan

Filed Oct. 11, 1995, Ser. No. 540,774
Int. Cl.[6] H01L *21/266*
U.S. Cl. 437—40 **6 Claims**

1. A method for forming retrograde semiconductor substrate channel impurities profile by using the phosphorus ions implantation, comprising:

forming a sacrificial oxide layer on said semiconductor substrate;



ion-implanting boron ions to adjust threshold voltage of the device;
removing said sacrificial oxide layer;
forming a gate oxide layer on said silicon substrate;
depositing a gate polysilicon layer on said gate oxide layer;
forming a gate by etching said gate polysilicon layer;
ion-implanting firstly by implanting phosphorus ions to form lightly doped drain regions;
ion-implanting secondly by implanting phosphorus ions into said semiconductor substrate channel which is located between said lightly doped drain regions to form said retrograde semiconductor substrate channel impurities profile as well as to achieve proper threshold voltage.

5,547,883

METHOD FOR FABRICATING THIN FILM TRANSISTOR

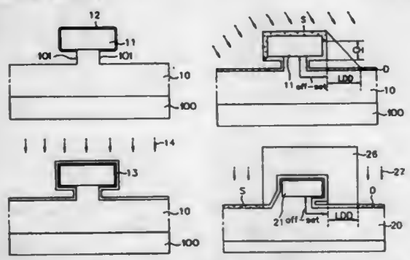
In Kim, Seoul, Rep. of Korea, assignor to Lg Semicon Co., Ltd., Chungcheongbuk-do, Rep. of Korea

Filed Jul. 20, 1995, Ser. No. 504,688

Claims priority, application Rep. of Korea, Jul. 21, 1994, 17688/1994

Int. Cl.[6] H01L *21/86*

U.S. Cl. 437—40 **13 Claims**



1. A method for fabricating a thin film transistor comprising the steps of:
forming an insulative film on a surface of a substrate;
forming a gate electrode on said insulative film, said gate electrode having first and second side surfaces, a top surface and a bottom surface;
etching a first portion of said insulative film adjacent said first side surface of said gate electrode, etching a second portion of said insulative film adjacent said second side surface of said gate electrode, and etching a third portion of said insulative film adjacent a portion of said bottom surface and said first side surface of said gate electrode;
forming a gate insulation film over said top surface, said first and second side surfaces of said gate electrode, and said portion of said bottom surface of said gate electrode;
forming a semiconductor layer on portions of said gate insulation film over said top surface, said first and second side surfaces of said gate electrode, and said potion of said bottom surface Of said .gate electrode; and
implanting a group of impurities into said semiconductor layer along a first direction which forms an angle other than 90 degrees with a second direction running parallel to said surface of said substrate.

5,547,884

METHOD OF MANUFACTURING A SEMICONDUCTOR MEMORY DEVICE HAVING A COMMON SOURCE REGION

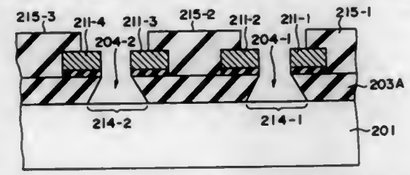
Yoshiko Yamaguchi, Tokyo, and Yoichi Ohshima, Yokohama, both of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 65,898, May 25, 1993, Pat. No. 5,394,001. This application Nov. 30, 1994, Ser. No. 351,159

Claims priority, application Japan, May 26, 1992, 4-132973

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—43 **11 Claims**



1. A method for manufacturing a semiconductor device comprising the steps of:
forming a plurality of striped field oxide films on a semiconductor substrate of a first conductivity type, said field oxide films being spaced apart from each other along a first direction;
forming a gate insulating film on a main surface of said semiconductor substrate between said field oxide films;
forming a plurality of striped conductive layers on said field oxide films and said gate insulating film, said conductive layers being spaced apart from each other along a second direction crossing said first direction;
forming grooves be removing said gate insulating film and said field oxide films between said conductive layers to a depth reaching the main surface of said semiconductor substrate wherein said conductive layers are used as apart of a mask, at least portions of said grooves formed in said field oxide films having a bottom portion being wider than an opening portion and than a space between said conductive layers;
introducing impurity of a second conductivity type into said semiconductor substrate in the portions of said grooves formed in said field oxide films, and forming common source wiring regions; and
subsequently introducing impurity of the second conductivity type into said semiconductor substrate in portions of said grooves formed in said gate insulating film, and forming source regions,
wherein said common source wiring regions electrically connect said source regions to thereby form common source regions.

5,547,885

METHOD OF MAKING ASYMMETRIC CDD TRANSISTOR

Ikuo Ogoh, Hyogo-ken, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

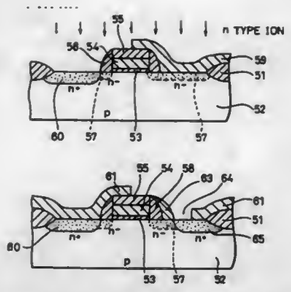
Division of Ser. No. 426,422, Apr. 19, 1995, which is a continuation of Ser. No. 87,437, Jul. 8, 1993, abandoned, which is a division of Ser. No. 675,593, Mar. 28, 1991, Pat. No. 5,254,866. This application Jun. 2, 1995, Ser. No. 462,938

Claims priority, application Japan, Apr. 3, 1990, 2-89508

Int. Cl.[6] H01L *21/8234*

U.S. Cl. 437—44 **11 Claims**

1. A method of manufacturing a semiconductor device including a field effect transistor, which method comprises:
forming a gate electrode on a surface of a semiconductor substrate having a first conductivity type with a gate insulating film interposed therebetween, wherein said gate electrode comprises first and second opposed sidewall surfaces;
depositing an oxide insulating film and anisotropically etching to form first and second sidewall spacers on said first and second opposed sidewall surfaces, respectively;
implanting into said substrate impurity ions of a conductivity type opposite that of the substrate to form a first source/drain region extending from said first sidewall surface and a second source/drain region extending from said second sidewall surface;
forming a resist mask on the gate electrode, second sidewall spacer, and second source/drain region;
implanting impurity ions into said substrate masked by said gate electrode and said resist mask;
removing said resist mask;
depositing an oxide insulating film and anisotropically etching to form a third sidewall spacer on said second sidewall spacer exposing a portion of said second source/drain region; and
implanting into said substrate impurity ions of a conductivity type opposite that of the substrate using said oxide insulating film and third sidewall spacer as a mask.



5,547,886

METHOD OF PRODUCING A SEMICONDUCTOR DEVICE

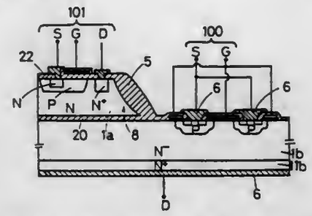
Masana Harada, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 904,666, Jun. 26, 1992, abandoned. This application Dec. 6, 1994, Ser. No. 350,414

Claims priority, application Japan, Jul. 11, 1991, 3-170872

Int. Cl.[6] H01L *21/70*

U.S. Cl. 437—51 **14 Claims**



1. A method of producing a semiconductor device, comprising the steps of:
(a) preparing a first single-crystal layer having a first major surface which is divided into first and second regions and a second major surface, and providing a first insulative layer at least on said first region, and providing a second single-crystal layer selectively above said first region through said first insulative layer, said second single-crystal layer having a stepped wall surface above a boundary between said first and second regions;
(b) providing an insulative wall on said stepped wall surface;
(c) providing a vertical power device in said second region; and
(d) providing in said second single-crystal layer a peripheral circuit having a second insulative layer thinner than said insulative wall.

5,547,887

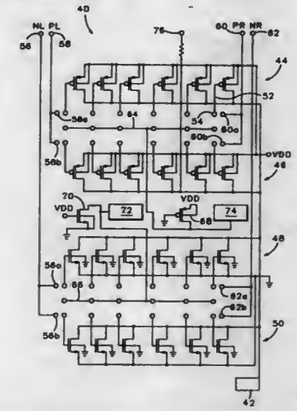
METHOD OF MAKING A CMOS OUTPUT PAD DRIVER WITH VARIABLE DRIVE CURRENTS, ESD PROTECTION AND IMPROVED LEAKAGE CURRENT BEHAVIOR

Charles A. Brown; George C. Rieck, both of Corvallis, Oreg., and Charles E. Moore, Loveland, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 91,705, Jul. 14, 1993, Pat. No. 5,436,578. This application Mar. 28, 1995, Ser. No. 413,055

Int. Cl.[6] H01L *21/70;27/00*

U.S. Cl. 437—51 **9 Claims**



1. A method for generating a photolithographic mask for an IC circuit for driving an IC output pad comprising the steps of:
creating said circuit by generating a base mask having:
a first array of transistors of a first conductivity type connected to the output pad, and each transistor having a gate,
a first island of a second conductivity type,
a first tie-off transistor connected between the first island and a first supply voltage terminal for receiving a first supply voltage,
a second array of transistors of the second conductivity type connected to the output pad and each transistor having a gate,
a second island of the first conductivity type, and
a second tie-off transistor connected between the second island and a second supply voltage terminal for receiving a second supply voltage;
determining a level of drive current for the output pad;
selecting a combination of transistors from the first and second arrays which together provide a level of drive current corresponding to said level of drive current for said output pad;
overlaying a first connection on the base mask which connects together the gates of selected transistors in the first array;
overlaying a second connection on the base mask which connects together the gates of selected transistors in the second array;
overlaying a third connection on the base mask which connects the gates of nonselected transistors in the first array to the first tie-off transistor; and
overlaying a fourth connection on the base mask which connects the gates of nonselected transistors in the second array to the second tie-off transistor,
wherein the tie-off transistors maintain the nonselected transistors in the first and second arrays in an off condition

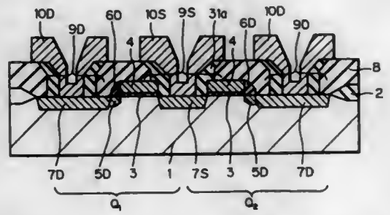
when power is applied to the IC and the first and second islands prevent leakage current from being produced by the output pad when power is not applied to the IC.

5,547,888

METHOD FOR MANUFACTURING A SRAM CELL HAVING ASYMMETRICAL LDD TYPE MOS DEVICE

Yasushi Yamazaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 22, 1994, Ser. No. 362,011
Claims priority, application Japan, Dec. 22, 1994, 5-352441
Int. Cl.[6] H01L *21/70;27/00*
U.S. Cl. 437—52 **3 Claims**



1. A method for manufacturing a SRAM cell having first and second driving transistors, comprising the steps of:

forming a gate insulating layer on a semiconductor substrate of a first conductivity type;

forming first and second gate electrodes, for said first and second driving transistors, respectively, on said gate insulating layer;

introducing impurities of a second conductivity type opposite to the first conductivity type into said semiconductor substrate using said first and second gate electrodes as a mask, to form first, second and third impurity diffusion regions within said semiconductor substrate, said first impurity diffusion region being located outside of said first gate electrode with respect to said second gate electrode, said second impurity diffusion region being located between said first and second gate electrodes, said third impurity diffusion region located outside of said second gate electrode with respect to said first gate electrode;

forming sidewall insulating layers on both sides of said first and second gate electrodes;

introducing impurities of the second conductivity type into said semiconductor substrate using said sidewall insulating layers and said first and second gate electrodes as a mask, to form fourth, fifth and sixth impurity diffusion regions within said semiconductor substrate, said fourth impurity diffusion region being located outside of said first gate electrode with respect to said second gate electrode, said fifth impurity diffusion region being located between said first and second gate electrodes, said sixth impurity diffusion region located outside of said second gate electrode with respect to said first gate electrode;

forming an insulating layer on an entire surface including said first, second, third, fourth, fifth and sixth impurity diffusion regions;

forming first, second and third contact holes in said insulating layer, said first contact hole leading to said fourth impurity diffusion region, said second contact hole leading to said fifth impurity diffusion region to expose parts of said first and second gate electrodes and simultaneously removing said sidewall insulating layers between said first and second gate electrodes, said third contact hole leading to said sixth impurity region;

introducing impurities of the second conductivity type into said semiconductor substrate using said insulating layer having said first, second and third contact holes formed therein as a mask,

said first and fourth impurity diffusion regions serving as a drain of said first driving transistor,

said fifth impurity diffusion region serving as a common source of said first and second driving transistors,

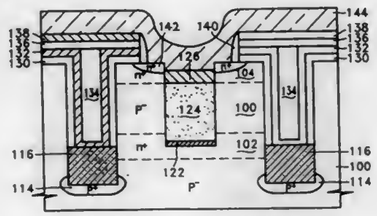
said third and sixth impurity diffusion regions serving as a drain of said second driving transistor.

5,547,889

METHOD OF FORMING A SEMICONDUCTOR DEVICE HAVING VERTICAL CONDUCTION TRANSISTORS AND CYLINDRICAL CELL GATES

Hyoung-sub Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co. Ltd., Suwon, Rep. of Korea

Division of Ser. No. 246,227, May 18, 1994, Pat. No. 5,460,994. This application May 8, 1995, Ser. No. 442,713
Claims priority, application Rep. of Korea, Mar. 28, 1994, 94-6232
Int. Cl.[6] H01L *21/70;27/00*
U.S. Cl. 437—52 **3 Claims**



1. A method for manufacturing a semiconductor device comprising the steps of:

forming a buried impurity layer of a second conductivity type in a semiconductor substrate of a first conductivity type;

forming a surface impurity layer of said second conductivity type in a surface portion of said semiconductor substrate wherein said buried impurity layer is formed;

forming a first trench isolation region in order to define an active region in said semiconductor substrate wherein said surface impurity layer is formed;

etching said active region deeper than said buried impurity layer, to thereby form a second trench;

forming a bit line in a lower portion of said second trench;

filling an interior of said second trench wherein said bit line is formed, with an insulating material;

etching said first trench isolation region to said buried impurity layer, to thereby form a silicon pillar comprised of said buried impurity layer of said second conductivity type, said semiconductor substrate of said first conductivity type, and said surface impurity layer of said second conductivity type;

forming a gate insulating film and a gate line sequentially so as to surround said silicon pillar;

depositing an insulating material on the resultant structure wherein said gate line is formed, and etching back said insulating material to thereby form a planarizing layer;

forming an insulating layer on the resultant structure wherein said planarizing layer is formed;

etching said insulating layer partially to thereby form a contact hole for exposing said surface impurity layer in said silicon pillar; and,

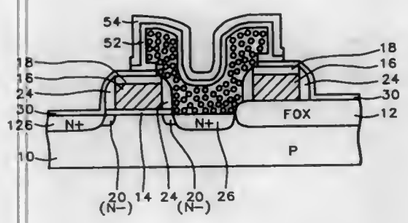
forming a storage node of a capacitor connected to said surface impurity layer through said contact hole, on the resultant structure wherein said contact hole is formed.

5,547,890

DRAM CELL WITH A CRADLE-TYPE CAPACITOR

Horng-Huei Tseng, Hsin Chu, Taiwan, assignor to Vanguard International Semiconductor Corporation, Hsinchu, Taiwan

Filed May 5, 1995, Ser. No. 435,197
Int. Cl.[6] H01L *21/70;27/00*
U.S. Cl. 437—52 **17 Claims**



1. A method of manufacturing a cradle-shape capacitor as part of a Dynamic Random Access Memory cell, comprising:

(a) providing a partially completed silicon integrated circuit structure comprising a plurality of Field Effect Transistors, each transistor having source, drain, and gate regions, said gate region having a first gate electrode formed on a gate oxide and a second gate electrode formed on a field oxide, said first and second gate electrodes are separated by said source region;

(b) then coating the structure with a first layer of silicon nitride and then with a first layer of silicon oxide;

(c) then coating the structure with a first layer of photoresist, patterned to protect only those parts of said first layers of silicon nitride and silicon oxide that overlie said first and second gate electrodes, then removing unprotected areas of said first layer of silicon nitride and said first layer of said silicon oxide thereby exposing said source region and then stripping said first layer of photoresist;

(d) then sequentially coating the structure with a first layer of undoped polycrystalline silicon and a second layer of silicon oxide, said second layer of silicon oxide being doped with an N type dopant;

(e) then coating the structure with a second layer of photoresist, patterned to protect only those parts of said first layer of undoped polycrystalline silicon and said second layer of silicon oxide that overlie said source region, and then removing unprotected areas of said first and second layers of silicon oxide and said first layer of undoped polycrystalline silicon;

(f) then isotropically etching said patterned second layer of photoresist, thereby symmetrically reducing its width and exposing portions of said second layer of silicon oxide on either side of said second layer of photoresist pattern;

(g) then removing the exposed portion of said second layer of silicon oxide down to said first layer of undoped polycrystalline silicon and then stripping said second layer of photoresist;

(h) then subjecting the structure to a heat treatment such that said N type dopant diffuses out of said second layer of silicon oxide into said first layer of undoped polycrystalline silicon;

(i) then subjecting the structure to a selective etching treatment wherein a portion of said first layer of undoped polycrystalline silicon into which N type dopant has diffused is selectively removed;

(j) then impregnating said first layer of undoped polycrystalline silicon with another N type dopant, thereby reducing its electrical resistivity and forming it into a bottom electrode;

(k) then coating said bottom electrode with a layer of a capacitor dielectric; and

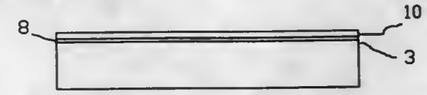
(l) then coating said capacitor dielectric layer with a second layer of polycrystalline silicon, thereby forming a top electrode.

5,547,891

STRUCTURAL MODIFICATION TO ENHANCE DRAM GATE OXIDE QUALITY

Richard L. Guldi, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 907,414, Jul. 1, 1992, abandoned. This application Jun. 29, 1994, Ser. No. 268,863
Int. Cl.[6] H01L *21/8242*
U.S. Cl. 437—52 **7 Claims**



1. A method of forming a dielectric layer on a substrate, comprising the steps of:

providing a substrate comprising silicon, said substrate having a surface;

forming a germanium layer on the surface of said substrate; and

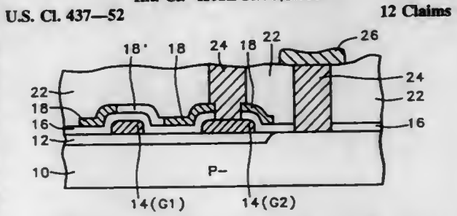
forming a dielectric layer onto said germanium layer, said dielectric layer comprising Ta_2O_5.

5,547,892

PROCESS FOR FORMING STACKED CONTACTS AND METAL CONTACTS ON STATIC RANDOM ACCESS MEMORY HAVING THIN FILM TRANSISTORS

Shou-Gwo Wuu; Mong-Song Liang; Chung-Hui Su, and Chen-Jong Wang, all of Hsin-Chu, Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Hsin-Chu, Taiwan

Filed Apr. 27, 1995, Ser. No. 429,725
Int. Cl.[6] H01L *21/70;27/00*
U.S. Cl. 437—52 **12 Claims**



1. A method for fabricating a plug structure for stacked contacts and metal contacts on a Static Random Access Memory (SRAM) cell having thin film transistors, comprising the steps of:

providing a semiconductor substrate having device areas and field oxide areas and further having field effect transistors (FETs) and word lines formed from a first polysilicon layer, and V_{ss} ground plates and bit lines formed from a second polysilicon layer, and further comprising of;

depositing a first insulating layer on said substrate;

depositing a third polysilicon layer on said first insulating layer, said third polysilicon layer doped with an N-type dopant;

patterning said third polysilicon layer and thereby forming first and second gate electrodes for first and second thin film transistors of said SRAM cell;

depositing a second insulating layer and thereby forming a gate oxide on said first and second gate electrodes;

depositing an N type amorphous silicon layer on said second insulating layer;

masking portions of said amorphous silicon layer over said first and second gate electrodes and ion implanting a P-type conductive dopant elsewhere in said amorphous silicon layer;

patterning said amorphous silicon layer leaving undoped portions over said first and second gate electrodes, and thereby forming P-channel regions for said first and second thin film transistors, each said undoped portions contiguous with P-doped portions of said amorphous silicon layer, and said P-doped portions extending over areas of the other said first and second gate electrodes, and on said second insulating layer;

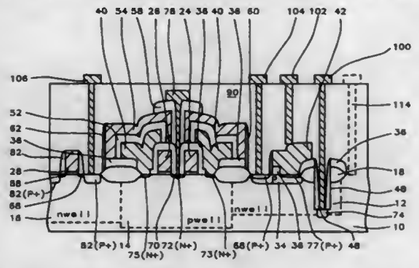
photoresist masking and etching openings in and through said P-doped portions of said amorphous silicon layer to said second insulating layer;
depositing a third insulating layer over said patterned amorphous silicon layer and said openings in said P-doped portions of said amorphous silicon layer;
forming a patterned photoresist mask on said third insulating layer having openings aligned over said openings in said P doped portions of said amorphous silicon layer, said photoresist mask openings being larger in size, and further said photoresist mask having openings for first metal contacts over said device areas;
anisotropically and selectively etching said third insulating layer in said photoresist mask opening to said openings in said P-doped portions of said amorphous silicon layer, and etching further to form openings in said second insulating layer to one of said first and second gate electrodes forming stacked contact openings, and simultaneously forming metal contact openings to said device areas elsewhere on the said substrate;
forming conducting plugs in said stacked contact and metal contact openings;
depositing a first metal layer and patterning said first metal layer to form a interconnecting metal layer, and thereby completing said plug structure on said SRAM cell.

5,547,893

METHOD FOR FABRICATING AN EMBEDDED VERTICAL BIPOLAR TRANSISTOR AND A MEMORY CELL

JanMye Sung, Yang-Mei, Taiwan, assignor to Vanguard International Semiconductor Corp., Hsin-Chu, Taiwan

Filed Dec. 27, 1995, Ser. No. 578,923
Int. Cl.[6] H01L *21/70;27/00*
U.S. Cl. 437—52 **30 Claims**



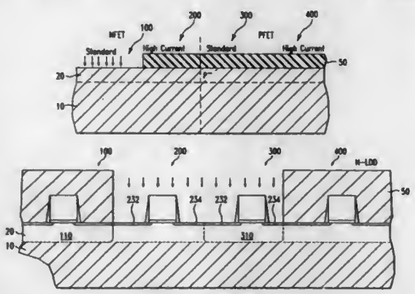
1. A method of simultaneously fabricating a memory cell and a vertical bipolar transistor in a substrate having spaced field oxide regions defining a DRAM active area and a bipolar active area, two spaced gate electrodes over said DRAM active area, a well of a first type conductivity in said DRAM active area and a well of a second opposite type conductivity in said bipolar active area, comprising the sequential process steps of:
a) forming a base region in said bipolar active area;
b) forming a first dielectric layer over a substrate surface;
c) forming storage node contact openings in said first dielectric layer between said field oxide regions and said gate electrodes in said DRAM active area, and in said bipolar active area, forming an emitter opening through said first dielectric layer over portions of said base region, and a collector opening through said first dielectric layer and through a field oxide region;
d) forming a first doped polysilicon layer over said first dielectric layer;
e) patterning said first doped polysilicon layer forming storage electrodes over said storage node contact openings and an emitter contact plug in said emitter opening, and forming, during the patterning said first doped polysilicon layer, a collector trench in said DRAM active area through said collector opening, said collector trench having side walls, said storage electrodes and said emitter contact plug containing impurities;
f) forming a capacitor dielectric layer over said storage electrodes, and a collector trench spacer on said sidewalls of said collector trench;
g) depositing a top electrode over said capacitor dielectric layer, heating said substrate forming an emitter region under said emitter contact plug, and forming source regions under said storage electrodes by diffusing said impurities from said emitter contact plug and said storage electrodes;
h) forming a base contact opening through said first dielectric layer over portions of said base region and a bit line opening through said first dielectric layer between said spaced gate electrodes;
i) forming bit line spacers over at least portions of sidewalls of said top electrode over said gate electrodes and over portions of sidewalls of said gate electrodes; and forming base contact spacers on sidewalls of said emitter contact plug and said storage electrodes;
j) forming an oxide layer over the substrate surface;
k) removing said oxide layer over said bit line opening;
l) forming a second doped polysilicon layer over said substrate surface, said second doped polysilicon layer filling said bit line opening and contacting the substrate;
m) pattering said oxide layer and said second doped polysilicon layer forming a bit line contact plug in said bit line opening contacting the substrate surface, said bit line contact plug having an impurity doping which diffuses into said substrate thereby forming a bit line;
n) implanting ions through said collector trench forming a collector region at a bottom of said collector trench; and
o) implanting ions through said base contact opening forming an extrinsic base in said base region.

5,547,894

CMOS PROCESSING WITH LOW AND HIGH-CURRENT FETS

Jack A. Mandelman, Stormville, N.Y.; Duane Galbi, Marlborough, Mass.; James A. Slinkman, Montpelier, and William R. Tonti, Essex Junction, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 21, 1995, Ser. No. 576,184
Int. Cl.[6] H01L *21/8238*
U.S. Cl. 437—56 **6 Claims**



1. A method of making an integrated circuit containing standard NFETs and PFETs and high current NFETs in NFET sites and PFET sites in a CMOS process using a P-type substrate comprising the steps of:
preparing a P⁻ substrate;
forming a blocking mask for blocking both PFET sites and high current NFET sites in said substrate
implanting P-wells for said standard NFETs in a subset of said NFET sites, whereby said high current NFET has no P well;
forming gates above said NFET and PFET sites;

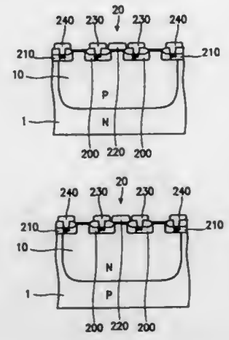
implanting an N-LDD dose for said standard NFET while said high current NFET sites are blocked;
simultaneously implanting said high current NFET and standard PFET with a P-LDD dose of boron;
implanting both the standard NFETs and PFETs and the high current NFET with a source and drain implant;
annealing the wafer, whereby the boron out-diffuses into the channel of the high current FET to form a boron halo that reduces punch-through; and
completing said integrated circuit.

5,547,895

METHOD OF FABRICATING A METAL GATE MOS TRANSISTOR WITH SELF-ALIGNED FIRST CONDUCTIVITY TYPE SOURCE AND DRAIN REGIONS AND SECOND CONDUCTIVITY TYPE CONTACT REGIONS

Sheng-Hsing Yang, Hsinchu, Taiwan, assignor to United Microelectronics Corp., Hsinchu, Taiwan

Filed Aug. 31, 1994, Ser. No. 299,217
Int. Cl.[6] H01L *21/70;27/00;21/302;21/304*
U.S. Cl. 437—57 **16 Claims**



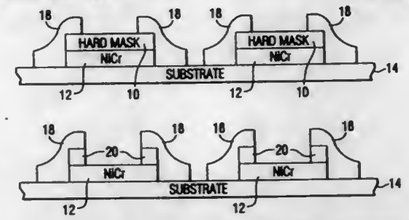
1. A method for fabricating a metal gate MOS transistor of a first conductivity type on a substrate of the first conductivity type, said method comprising the steps of:
(a) implanting impurity of a second conductivity type into a first position of said substrate and driving in said impurity into said substrate, to form a well of the second conductivity type in said substrate;
(b) forming a masking layer on the well of the second conductivity type at second positions;
(c) forming first field oxides between the masking layer on the well of the second conductivity type;
(d) removing the first field oxides;
(e) implanting impurities of the first conductivity type into third positions in the well of the second conductivity type by self-alignment using said masking layer as a mask to form first conductivity type source and drain electrode regions of said, metal gate MOS transistor and implanting impurities of the second conductivity type into fourth positions in the well of the second conductivity type by self-alignment using said masking layer as a mask to form second conductivity type contact regions of the well of the second conductivity type;
(f) forming second field oxides between the masking layer on the well of the second conductivity type;
(g) forming gate oxides on portions of said substrate between said second field oxides, and forming vias in said second field oxides; and
(h) providing a metallization process to form a metal gate over a gate oxide located between the first conductivity type source and drain electrode regions and to form metal contacts for said first conductivity type source and drain electrode regions and metal contacts for said second conductivity type contact regions.

5,547,896

DIRECT ETCH FOR THIN FILM RESISTOR USING A HARD MASK

Jack H. Linn, Melbourne; John T. Gasner, Satellite Beach; Stephen J. Gaul, and Chris A. McCarty, both of Melbourne, all of Fla., assignors to Morris Corporation, Melbourne, Fla.

Filed Feb. 13, 1995, Ser. No. 387,233
Int. Cl.[6] H01L *21/70*
U.S. Cl. 437—60 **30 Claims**



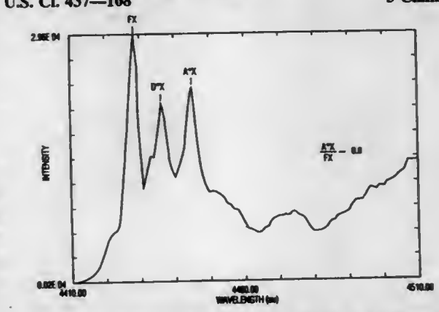
11. A method of producing a thin film resistor comprising the steps of masking a portion of a NiCr film with a hard mask that is immune to the etching effects of sulfuric acid heated to greater than 125° C., etching the hard mask with hydrogen peroxide that does not affect the film, and etching the film with sulfuric acid at a temperature greater than 125° C.

5,547,897

PHOTO-ASSISTED NITROGEN DOPING OF II-VI SEMICONDUCTOR COMPOUNDS DURING EPITAXIAL GROWTH USING AN AMINE

Nikhil R. Taskar, Ossining, N.Y.; Dennis Gallagher, Stamford, Conn., and Donald R. Dorman, Carmel, N.Y., assignors to Philips Electronics North America Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 91,634, Jul. 14, 1993, Pat. No. 5,354,708. This application Jun. 15, 1994, Ser. No. 259,944
Int. Cl.[6] H01L *21/22*
U.S. Cl. 437—108 **3 Claims**



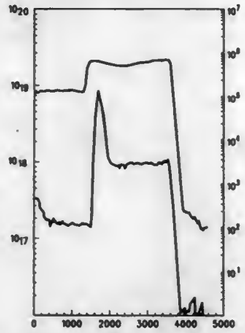
1. A method of incorporating N acceptors into an epitaxial layer of a II–VI semiconductor compound, said method comprising introducing an amine in an undissociated state into a growth chamber during a photo-assisted growth of the epitaxial layer, the growth being photoassisted with illumination having an energy at least above a bandgap energy of the semiconductor compound at the growth temperature and having spectral emission content in a wavelength range of 200 nm to 250 nm.

5,547,898

METHOD FOR P-DOPING OF A LIGHT-EMITTING DEVICE

Piotr Grodzinski, Chandler, Ariz.; Hsing-Chung Lee, Calabasas, Calif., and Chan-Long Shieh, Paradise Valley, Ariz., assignors to Motorola, Schaumburg, Ill.

Continuation of Ser. No. 270,719, Jul. 5, 1994, abandoned.
This application Sep. 18, 1995, Ser. No. 529,468
Int. Cl.[6] H01L *21/20*
U.S. Cl. 437—129 **16 Claims**



1. A method for controlling a selected carbon level for p-type doping of a deposited layer in a DBR reflector comprising the steps of:

placing a semiconductor substrate into a chamber of an epitaxial deposition system and depositing layers of material thereon;

flowing a Group V organometallic vapor and flowing a Group III organometallic vapor having a first ratio into the chamber of the epitaxial deposition system to epitaxially deposit a first layer of aluminum gallium arsenide with a first selected carbon doping concentration in the first layer of aluminum gallium arsenide being deposited on the layers of material on the semiconductor substrate;

flowing a Group V organometallic vapor and flowing a Group III organometallic vapor having a second ratio lower than the first ratio and lower than a third ratio into the chamber of the epitaxial deposition system to epitaxially deposit an aluminum gallium arsenide material having a carbon doping concentration that increases to form a spike of carbon doping concentration greater than the first carbon doping concentration and greater than a second carbon doping concentration;

adjusting the flow of the Group V organometallic vapor and adjusting the flow of the Group III organometallic vapor having the third ratio into the chamber of the epitaxial deposition system to complete epitaxial deposition of a second layer of aluminum gallium arsenide with the second carbon doping concentration; and

completing the DBR reflector with additional layers, thereby controlling carbon p-type dopant levels in a deposited layer of the DBR reflector.

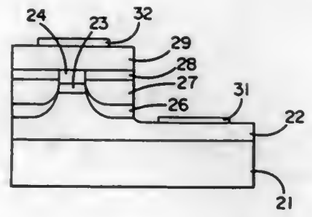
5,547,899

METHOD FOR MAKING A SEMICONDUCTOR DEVICE

Nariaki Fujii, and Tatsuya Kimura, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 10, 1995, Ser. No. 401,980
Claims priority, application Japan, Sep. 26, 1994, 6-229500
Int. Cl.[6] H01L *21/22*
U.S. Cl. 437—151 **14 Claims**

1. In a method of making a semiconductor device, growing a p-type compound semiconductor layer containing zinc as a dopant impurity and including at least one transition metal element selected from the group consisting of Fe, V, Cr, Mn, Co, and Ni



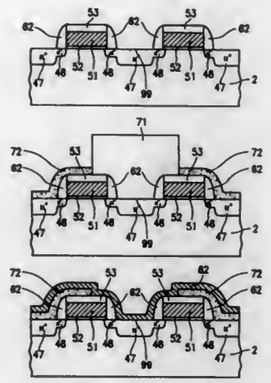
and contacting a second semiconductor layer on the p-type compound semiconductor layer, the at least one transition metal element inhibiting zinc from diffusing into the second semiconductor layer.

5,547,900

METHOD OF FABRICATING A SELF-ALIGNED CONTACT USING A LIQUID-PHASE OXIDE-DEPOSITION PROCESS

Jengping Lin, Taoyuan Hsien, Taiwan, assignor to United Microelectronics Corporation, Hsinchu, Taiwan

Filed May 26, 1995, Ser. No. 450,891
Int. Cl.[6] H01L *21/28*
U.S. Cl. 437—187 **7 Claims**



1. A method for fabricating a self-aligned contact of a semiconductor device comprising the steps of:

forming a gate electrode on a semiconductor substrate;

forming source/drain regions on said semiconductor substrate;

coating and patterning a layer of photoresist overlying an area of said semiconductor substrate that will form a contact portion of said source/drain regions;

forming an oxide layer by a liquid-phase deposition process using said photoresist as a mask covering said contact portion of said source/drain regions;

removing said photoresist to expose the contact portion of said source/drain regions; and

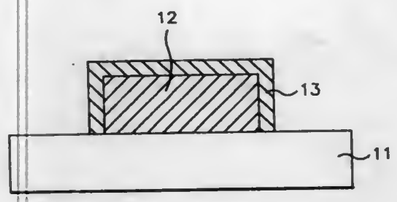
forming an interlevel conductive layer on said semiconductor substrate, wherein said interlevel conductive layer is connected to said source/drain regions through said contact portion.

5,547,901

METHOD FOR FORMING A COPPER METAL WIRING WITH ALUMINUM CONTAINING OXIDATION BARRIER

Jun K. Kim, and Kyung I. Lee, both of Seoul, Rep. of Korea, assignors to LG Semicon Co., Ltd., Chungcheongbuk-do, Rep. of Korea

Filed May 19, 1995, Ser. No. 445,107
Claims priority, application Rep. of Korea, May 24, 1994, 11304/1994
Int. Cl.[6] H01L *21/28*
U.S. Cl. 437—187 **13 Claims**



1. A method for fabricating a metal wiring of a semiconductor element comprising the steps of:

forming a copper metal wiring layer on a substrate, said copper metal

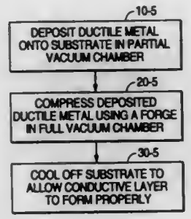
forming an oxidation prevention film by selectively forming an aluminum film having a thickness less than 100Å, on said exposed surface of said copper metal wiring layer thereby preventing oxidation of the copper metal wiring and completely oxidizing the oxidation prevention film.

5,547,902

POST HOT WORKING PROCESS FOR SEMICONDUCTORS

Don Rohner, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jan. 18, 1995, Ser. No. 375,414
Int. Cl.[6] H01L *21/44*
U.S. Cl. 437—187 **34 Claims**



1. A method for depositing a ductile metal onto a semiconductor substrate having a plurality of contact openings in order to fill in said contact openings, the method comprising the steps of:

a) depositing said ductile metal onto said semiconductor substrate in a partial vacuum environment;

b) compressing said ductile metal onto said semiconductor substrate using a forge in a full vacuum environment; and

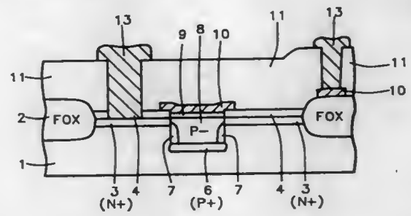
c) cooling said semiconductor substrate with said ductile metal compressed thereon.

5,547,903

METHOD OF ELIMINATION OF JUNCTION PUNCHTHROUGH LEAKAGE VIA BURIED SIDEWALL ISOLATION

Chen-Chung Hsu, Taichung, Taiwan, assignor to United Microelectronics Corporation, Hsin-Chu, Taiwan

Filed Nov. 23, 1994, Ser. No. 344,003
Int. Cl.[6] H01L *21/44;21/48*
U.S. Cl. 437—203 **22 Claims**



1. A method for fabricating a MOSFET device on a semiconductor substrate comprising the steps of:

forming a field oxide pattern, for isolation of device regions, on a surface of said substrate;

ion implantating a first conductivity imparting dopant of first conductivity type into said device regions to form a doped layer to create source and drain regions;

depositing a silicon nitride layer on said field oxide pattern, and on said doped layer;

removing portion of said silicon nitride layer to form an opening to expose a position of said doped layer;

removing the portion of exposed said doped layer and said substrate, from said silicon nitride opening, to form a channel trench region;

ion implanting a second conductivity imparting dopant of second conductivity type into a bottom surface of said channel trench region;

growing an insulator layer in said channel trench region and on said silicon nitride layer;

anisotropic etching to form insulator sidewalls on sides of said channel trench region;

growing an epitaxial layer of silicon in said channel trench region;

ion implanting a third conductivity imparting dopant of second conductivity type into said epitaxial silicon layer;

growing a gate oxide on an upper surface of said epitaxial silicon;

depositing a polysilicon layer on said gate oxide and on said silicon nitride layer;

ion implanting a fourth conductivity imparting dopant of first conductivity type into said polysilicon layer;

patterning said polysilicon layer to form said polysilicon gate structures on said gate oxide and on said silicon nitride;

depositing a first dielectric layer on said polysilicon structures and on said silicon nitride;

patterning said first dielectric layer and said silicon nitride layer to form openings to said polysilicon structures and to said source and drain regions;

depositing a metal film on said first dielectric layer, and in said openings to said polysilicon structures and to openings to said source and drain regions; and

patterning of said metal film to form contacts to said polysilicon structures and to said source and drain regions.

5,547,904
BOROSILICATE GLASS HAVING IMPROVED UV TRANSMISSION, THERMAL AND CHEMICAL PROPERITIES AND METHODS OF MAKING AND USING SAME

Eckhart Watzke, and Thomas Kloss, both of Jena, Germany, assignors to Jenaer Glaswerk GmbH, Jena, Germany

Filed Nov. 2, 1994, Ser. No. 333,369

Claims priority, application Germany, Nov. 8, 1993, 43 38 128.6

Int. Cl.[6] C03C *3/091;3/11;4/00;4/08*

U.S. Cl. 501—66 **13 Claims**

1. Borosilicate glass having a high UV transmission, a small linear coefficient of thermal expansion, a high chemical stability, and a composition in % by weight based on oxide of

glass formers	<96%,
SiO_2	from 79.0 to 81.0%,
B_2O_3	from 12.5 to 13.0%,
Al_2O_3	from 2.0 to 4.0%,
alkali metal oxides	>2%,

wherein said alkali metal oxides include from 2.0 to 3.5% K_2O and from 1.0 to 2.0% Li_2O,

alkaline earth metal oxides + ZnO	<0.3%,
reducing agent	0.025 to 2%, and
non-oxidizing fining agent	0 to 3%;

and wherein a weight ratio of K_2O to Li_2O is from 2:1 to 1:1.

5,547,905
CATALYST AND A PROCESS FOR PREPARING CARBOXYLIC ACIDS USING THE CATALYST

Girindra N. Kulsrestha; Mahendra P. Saxena; Ashok K. Gupta; Hari B. Goyal; Rameshwar Prasad; Turuga S. R. Prasada Rao, all of Dehradun, and Prakash D. Patel, Surat, all of, Ind., assignors to Council of Scientific & Industrial Research, New Delhi, Ind.

Filed Jul. 27, 1994, Ser. No. 280,658

Int. Cl.[6] B01J *29/06;* **C07C** *69/34;69/52*

U.S. Cl. 502—66 **10 Claims**

1. A novel catalyst useful for the preparation of carboxylic acids by the oxidation of hydrocarbons which comprises 70–99% by weight of cobaltic salt and 1–30% by weight of ferric salt, the acid component of the salt being selected from the group consisting of acetate, propionate, naphthenate, adipate, and phthalate.

5,547,906
METHODS FOR PRODUCING INTEGRATED CIRCUIT DEVICES

Pierre Badehi, Nataf 66, Mobile Post Harel, Yehuda 90804, Israel

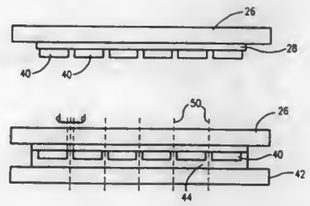
Division of Ser. No. 962,222, Aug. 20, 1993, Pat. No. 5,455,455. This application Jul. 13, 1994, Ser. No. 274,251

Int. Cl.[6] H01L *21/302*

U.S. Cl. 437—227 **17 Claims**

1. A method of producing prepackaged integrated circuit devices comprising the steps of:

providing a wafer having a first surface and a second surface generally parallel to and oppositely directed with respect to said first surface;



producing a plurality of integrated circuit dies on said first surface of said wafer, each of the integrated circuit dies comprising a multiplicity of pads;

attaching a first electrically insulative plate to said plurality of integrated circuit dies on the first surface of said wafer;

separating the integrated circuit dies from each other so as to define edges thereof while the dies remain attached to the insulative plate;

generally surrounding said integrated circuits on said edges and said second surface with a protective sealant; and

thereafter slicing the wafer and protective sealant and the insulative plate attached thereto, thereby to define a plurality of prepackaged integrated circuit devices.

5,547,907
CRYSTALLIZED GLASS COMPOSITION FOR COATING OXIDE BASED CERAMICS

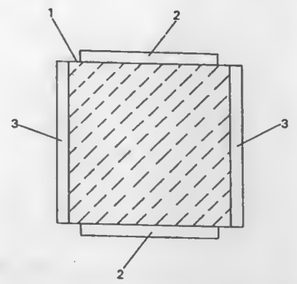
Masaaki Katsumata, Neyagawa; Osamu Kanaya, Chitose; Nobuharu Katsuki, Neyagawa, and Akihiro Takami, Katano, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 147,182, Nov. 1, 1993, Pat. No. 5,447,892, which is a division of Ser. No. 689,948, Jun. 26, 1991, Pat. No. 5,294,908. This application Feb. 14, 1995, Ser. No. 388,086

Claims priority, application Japan, Nov. 8, 1989, 1-290190; Nov. 8, 1989, 1-290191; Jan. 10, 1990, 2-3033; Jan. 10, 1990, 2-3037; Feb. 15, 1990, 2-35129

Int. Cl.[6] C03C *3/074*

U.S. Cl. 501—76 **17 Claims**



1. A crystallized glass composition for coating a zinc oxide varistor having varistor characteristics, the composition consisting of 50.0 to 64 percent by weight of PbO, 25 to 30.0 percent by weight of ZnO, 5.0 to 10.0 percent by weight of B_2O_3, and 6.0 to 15.0 percent by weight of SiO_2.

5,547,908
DIELECTRIC CERAMIC COMPOSITION AND PACKAGE MADE OF THE SAME COMPOSITION FOR PACKAGING SEMICONDUCTOR

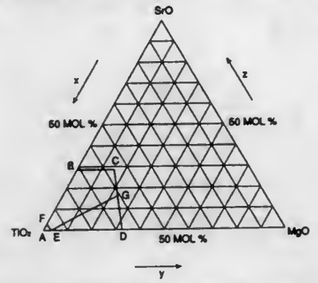
Akira Furuzawa; Akifumi Sata; Takeshi Kubota, and Kunihide Shikata, all of Kokubu, Japan, assignors to Kyocera Corporation, Kyoto, Japan

Filed Jul. 20, 1994, Ser. No. 278,175

Claims priority, application Japan, Jul. 30, 1993, 5-189707

Int. Cl.[6] C04B *35/46*

U.S. Cl. 501—136 **13 Claims**



1. A dielectric ceramic composition which contains manganese in an amount of from 0.1 to 0.6 parts by weight calculated as an oxide per 100 parts by weight of chief components which are represented in mole percent by the following formula

$$xTiO_2 \cdot yMgO \cdot zSrO$$

wherein x, y and z are numbers in a region surrounded by the following four points A, B, C and D in a ternary composition,

	x	y	z
A	100	0	0
B	72	0	28
C	57	15	28
D	66.7	33.3	0

wherein x+y+z=100, and

wherein the dielectric ceramic composition has a coefficient of thermal expansion not larger than 9.5×10^{-6}/°C. at a temperature ranging from 0° to 400° C.

5,547,909
REGENERATION OF HYDROGEN FLUORIDE ALKYLATION CATALYST

LeRoy W. Carlson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

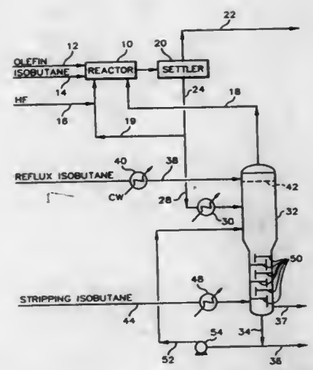
Filed Feb. 24, 1994, Ser. No. 200,978

Int. Cl.[6] B01J *20/34*

U.S. Cl. 502—20 **5 Claims**

1. A process for regenerating an HF catalyst, containing HF and Acid Soluble Oil (hereinafter "ASO"), used in an olefin and isoparaffin alkylation process, comprising:

utilizing separation means for separating ASO from said HF catalyst, said separation means comprises a separator column which defines a separation zone and having a top zone, an intermediate zone, and a bottom zone, wherein contained within said bottom zone are a series of vertically spaced, fixed valve fractionation trays, wherein each of said fixed valve fractionation trays include a plate defining a plurality of appertures and wherein fixedly spaced above each of said appertures is a valve having a shape substantially the same as said appertures for directing the flow of gas passing upwardly through said appertures of said plate into the direction substantially parallel to said plate;



introducing said HF catalyst into said intermediate zone;

introducing, as a reflux, liquid isoparaffin into said top zone;

introducing into said bottom zone and below said series of vertically spaced, fixed valve fractionation trays a vaporous isoparaffin stripping fluid;

removing from said top zone an overhead stream of purified HF, comprising HF;

removing from said bottom zone a bottoms stream comprising ASO; and

introducing at least a portion of said bottoms stream into said intermediate zone below the point of introduction of said HF catalyst.

5,547,910
METHOD AND SYSTEM FOR CONTROLLING THE ACTIVITY OF A CRYSTALLINE ZEOLITE CRACKING CATALYST

Edward J. Demmel, Pitman, and Hartley Owen, Belle Mead, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 258,356, Apr. 28, 1987, abandoned, which is a continuation of Ser. No. 754,220, Dec. 27, 1976, abandoned, which is a division of Ser. No. 595,833, Jul. 14, 1975, abandoned, which is a division of Ser. No. 316,632, Dec. 19, 1972, Pat. No. 3,926,778. This application Feb. 6, 1986, Ser. No. 827,183

Int. Cl.[6] B01J *38/12;38/20;* **C10G** *11/18*

U.S. Cl. 502—42 **1 Claim**

1. A process for regenerating spent fluidizable catalyst particles contaminated with carbonaceous deposits comprising the steps of:

(a) introducing spent catalyst particles and hot regenerated catalyst particles from a secondary regeneration zone into a stream of oxygen-containing gas and entraining the catalyst particles in the gas stream to produce a dilute phase catalyst particle stream; to oxidize substantially all of the carbonaceous deposits on said spent catalyst particles to gaseous combustion products; the temperature of the hot regenerated catalyst particles being greater than the minimum temperature required to initiate oxidation of the carbonaceous deposits on the spent catalyst particles, and the proportion of hot regenerated catalyst introduced into said gas stream being sufficient to raise the temperature of the dilute phase stream to at least the minimum temperature required to induce oxidation of said carbonaceous deposit;

(b) passing said dilute phase particle stream through an upwardly directed regeneration zone while maintaining regeneration conditions suitable for oxidation of said carbonaceous

deposit in said primary zone and oxidizing substantially all of the carbonaceous deposits on said spent catalyst particles to gaseous combustion products in said dilute phase stream in the regeneration zone to regenerate the catalyst particles;

(c) passing said dilute phase stream containing regenerated catalyst particles and gaseous combustion products from the top of said regeneration zone to a fluid bed of regenerated catalyst particles in a secondary regeneration zone connected to the upwardly directed regeneration zone;

(d) introducing an oxygen-containing regeneration gas into the lower portion of the fluid bed to assist in maintaining the fluid bed in a fluidized state and to effect substantially complete combustion of carbon monoxide in the bed;

(e) exhausting the gaseous combustion products from said secondary regeneration zone; said exhausted gaseous products being substantially free of carbon monoxide; and

(f) withdrawing hot regenerated catalyst particles from said secondary regeneration zone; said regenerated catalyst particles being substantially free of carbon.

5,547,911

PROCESS OF IMPRINTING CATALYTICALLY ACTIVE PARTICLES ON MEMBRANE

Walther G. Grot, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 11, 1994, Ser. No. 320,639

Int. Cl.[6] H01M *4/88;* **B05D** *5/12*

U.S. Cl. 502—101 **13 Claims**

1. A method for making a membrane and electrode structure comprising

(a) surface hydrolyzing at least one side of a polymeric ion exchange membrane to place the surface of the membrane in the ionic form while the remainder of the membrane is substantially in non-ionic form; and

(b) contacting at least one side of said ion exchange membrane, which side has been surface hydrolyzed, with an electrode ink.

5,547,912

SOLID CATALYST COMPONENT FOR POLYMERIZING OLEFINS AND CATALYST CONTAINING THE SAME

Takuo Kataoka, and Kenji Goto, both of Kanagawa, Japan, assignors to Toho Titanium Co., Ltd., Chigasaki, Japan

Filed Jan. 31, 1995, Ser. No. 380,979

Claims priority, application Japan, Jan. 31, 1994, 6-027344; Jun. 23, 1994, 6-164495; Jun. 23, 1994, 6-164496

Int. Cl.[6] B01J *31/38*

U.S. Cl. 502—154 **12 Claims**

1. A solid catalyst component (A) for polymerizing an olefin, which is prepared using substances (a) to (d):

(a) a dialkoxymagnesium represented by $Mg(OR^1)_2$, wherein R^1 represents a straight chain or branched chain alkyl group or an aryl group;

(b) an aluminum compound represented by $Al(OR^2)_nX^1_{3-n}$, wherein R^2 represents a straight chain or branched chain alkyl group; X^1 represents a halogen atom; and n is 0 or integer of 1 to 3;

(c) titanium tetrachloride; and

(d) a diester of aromatic dicarboxylic acid, wherein

(c) or (b) and (c) are reacted with a product obtained by reacting (a), (b), (c) and (d), or

(b) and (c) are reacted with a product obtained by reacting (a), (c) and (d).

5,547,913

PROCESS FOR PRODUCING EXHAUST-GASES-PURIFYING CATALYST

Riemi Muramoto, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aishi-ken, Japan

Filed Dec. 15, 1994, Ser. No. 356,662

Claims priority, application Japan, Dec. 17, 1993, 5-318449

Int. Cl.[6] B01J *23/58*

U.S. Cl. 502—328 **19 Claims**

1. A process for producing an exhaust-gases-purifying catalyst, comprising the steps of:

loading an NO_x adsorbent on a porous support, said adsorbent being capable of forming a carbonate;

carbonating said porous support with said NO_x adsorbent loaded, thereby converting said NO_x adsorbent into carbonate; and

loading a noble metal catalyst ingredient on said porous support with said carbonate loaded, said adsorbent being inhibited, by the converting into carbonate, from eluting into an aqueous solution.

5,547,914

DIRECT THERMAL IMAGING MATERIAL

Stefaan De Meutter, Antwerpen; Eugeen Van Goethem, Bornem; Ronald Schuerwegen, Schelle, and Bartholmeus Horsten, Rumst, all of, Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Oct. 4, 1995, Ser. No. 538,860

Claims priority, application European Pat. Off., Oct. 14, 1994, 94202980

Int. Cl.[6] B41M *5/32*

U.S. Cl. 503—210 **12 Claims**

7. A method for making an image comprising image-wise heating a recording material comprising on a support (i) a heat sensitive layer comprising a substantially light insensitive organic silver salt, (ii) a protective layer containing a calcined China clay or surface modified calcined China clay dispersed in a binder and (iii) a reducing agent being present in the heat sensitive layer and/or another layer on the same side of the support carrying the heat sensitive layerby means of a thermal head contacting the protective layer of the recording material.

5,547,915

INFORMATION RECORDING MEDIUM AND PRINTING METHOD USING THE SAME

Akira Suzuki; Yoshihiko Hotta, both of Mishima, and Hiroyuki Uemura, Numazu, all of, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 141,639, Oct. 27, 1993, Pat. No. 5,468,711. This application Apr. 25, 1995, Ser. No. 428,351

Claims priority, application Japan, Oct. 27, 1992, 4-311260

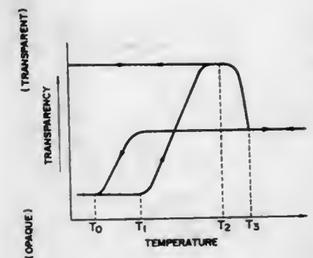
Int. Cl.[6] B41M *5/035;5/38*

U.S. Cl. 503—227 **7 Claims**

1. An information recording medium comprising;

a support;

a sublimable material receiving thermosensitive recording layer provided at least on one side of said support, said sublimable material receiving thermosensitive recording layer comprising (a) a matrix resin having a function one receiving a thermosensitive sublimable material, and (b) an organic low-molecular-weight material which is dispersed in said matrix resin, the transparency of said sublimable material receiving



thermosensitive recording layer being reversibly changeable depending upon the temperature thereof; and

a sublimation transfer image on said sublimable material receiving thermosensitive recording layer.

5,547,916

THERMAL TRANSFER PRINTING RECEIVER

Gary W. Morrison, London, United Kingdom, assignor to Imperial Chemical Industries PLC, United Kingdom

PCT No. PCT/GB93/01606, § 371 Date Mar. 16, 1995, § 102(e) Date Mar. 16, 1995, PCT Pub. No. WO94/03333, PCT Pub. Date Feb. 17, 1994

PCT Filed Jul. 29, 1993, Ser. No. 374,706

Claims priority, application United Kingdom, Jul. 29, 1992, 9216153

Int. Cl.[6] B41M *5/35;5/38*

U.S. Cl. 503—227 **6 Claims**

1. A thermal transfer printing receiver sheet for use in security laminates comprising a substrate having a dye receiving coat on one side and a back coat on the other side, characterized in that the substrate comprises a film of biaxially drawn, crystalline polyester having on at least one side thereof a layer of amorphous polyester co-extruded with the film, which layer has a lower melting point than the film and a tear strength of adhesion to the film greater than the tear strength of the film itself.

5,547,917

METHOD FOR CLEANING A THERMAL HEAD

Geert Defieuw, Kessel-Lo, and Marc Van Damme, Heverlee, both of, Belgium, assignors to Agfa-Gevaert, Mortsel, Belgium

Filed Nov. 14, 1994, Ser. No. 340,039

Claims priority, application European Pat. Off., Dec. 20, 1993, 93203587

Int. Cl.[6] B41M *5/35;5/38*

U.S. Cl. 503—227 **9 Claims**

1. Method for cleaning a thermal head of a thermal printer, by applying a cleaning solution to the thermal head, said cleaning solution comprising at least one organic solvent having in pure state a vapour pressure above 25 mbar at 20° C. and a polysiloxane lubricant.

5,547,918

BIOCIDAL AND AGROCHEMICAL SUSPENSIONS COMPRISING A STRUCTURED SURFACTANT WITH AN OIL COMPONENT

Jill E. Newton, 27 Silverdale Gardens, Stourbridge; Richard M. Clapperton, 9 Woodhouse Orchard, Stourbridge, and William J. Nicholson, 117 Nimmings Rd., Halesowen, all of, United Kingdom

Continuation of Ser. No. 385,749, Feb. 8, 1995, abandoned, which is a continuation of Ser. No. 246,938, May 20, 1994, abandoned, which is a continuation of Ser. No. 84,775, Jun. 29, 1973, abandoned, which is a continuation of Ser. No. 826,076, Jan. 27, 1992, abandoned. This application Jun. 1, 1995, Ser. No. 457,170

Claims priority, application United Kingdom, Feb. 8, 1991, 9102757

Int. Cl.[6] A01N *25/30*

U.S. Cl. 504—116 **23 Claims**

1. A biocidal or agrochemical composition consisting essentially of particles or droplets of a substantially water-insoluble or sparingly-soluble biocidally- or agrochemically-active substance cosuspended, by an aqueous structured surfactant, with an aliphatic oil, wherein the weight ratio of said surfactant to said active substance is less than 20:1, and said composition comprises between 3% and 40% by weight of said oil.

5,547,919

α-PYRIMIDINYL ACRYLIC ACID DERIVATIVES

Martin Eberle, Bottmingen; Fritz Schaub, Aesch, and Gerald W. Craig, Basel, all of, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

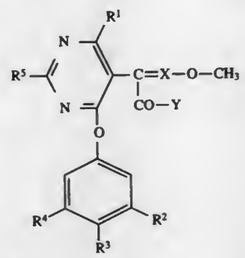
Filed Jan. 10, 1995, Ser. No. 370,992

Claims priority, application United Kingdom, Jan. 18, 1994, 9400889

Int. Cl.[6] C07D *239/02;* **A01N** *43/54*

U.S. Cl. 504—242 **11 Claims**

1. 2-(4-Phenoxypyrimidin-5-yl)-acrylic acid derivatives of formula I



wherein

R^1 is C_{1-4}alkoxy or-NR^8R^9,

R^2 is C_{1-4}alkyl, C_{1-4}haloalkyl, aryl, aryloxy, C_{3-5}alkenyloxy, C_{3-5}alkynyloxy, halogen, aryl-C_{1-4}alkoxy, aryloxy-C_{1-4}alkyl, aryloxy-C_{1-4}alkoxy, aryl-C_{3-5}alkenyloxy, C_{1-4}alkoxy, C_{2-5}alkenyl, C_{2-5}alkynyl, C_{1-4}alkoxycarbonyl, $-CONR^{10}R^{11}$, $-O-CONR^{10}R^{11}$, $-CR^7{=}N-NR^6R^{12}$, or $-CRT^7{=}N-O-R^6$

R^3 is hydrogen, C_{1-4}alkyl; C_{1-4}alkoxy, cyano, nitro or halogen,

R^4 is hydrogen, halogen, C_{1-4}alkoxy or C_{1-4}alkyl,

R^5 is hydrogen or methyl,

R^6 is C_{1-12}alkenyl, C_{3-12}alkellyl, C_{3-12}alkynyl, aryl-C_{1-4}alkyl, or aryl,

R^7 is hydrogen or methyl,

R^8 and R^9 are independently C_{1-4}alkyl,

R^{10} and R^{11} are independently C_{1-4}alkyl,

R^{12} is hydrogen or methyl,

X is CH or nitrogen, and

Y is OCH_3, NH_2, $NHCH_3$ or $N(CH_3)_2$.

5,547,920

THIADIZOLE DERIVATIVES AND HERBICIDE COMPOSITIONS CONTAINING THE SAME

Yasuaki Hanasaki; Kazuaki Tsukuda; Hiroyuki Watanabe; Kenji Tsuzuki; Mitsuyuki Murakami, and Noritoshi Niimi, all of Shinnanyo, Japan, assignors to Tosoh Corporation, Japan

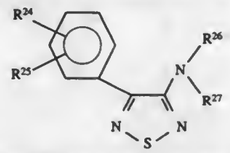
Division of Ser. No. 27,579, Mar. 5, 1993, Pat. No. 5,482,916, which is a continuation of Ser. No. 633,348, Dec. 27, 1990, abandoned, which is a continuation-in-part of Ser. No. 570,638, Aug. 22, 1990, abandoned. This application Jun. 28, 1994, Ser. No. 266,702

Claims priority, application Japan, Aug. 22, 1989, 1-215489; Oct. 30, 1989, 1-279725; Nov. 22, 1989, 1-302258; Dec. 25, 1989, 1-332875

Int. Cl.[6] A01N *43/824;* **C07D** *285/135*

U.S. Cl. 504—261 **2 Claims**

1. A thiadiazole derivative represented by the formula [IV]



[IV]

wherein R^{24} and R^{25}, which may be the same or different, represent hydrogen or halogen;

R^{26} and R^{27}, which may be the same or different, represent hydrogen, lower alkyl, —COR^{28} where R^{28} represents lower alkyl or amino group which may be substituted with lower alkyl, or R^{26} and R^{27} together form phthaloyl group,

provided R^{24}, R^{25}, R^{26}, and R^{27} are not simultaneously hydrogen atoms and excluding 3-amino-4-(p-bromophenyl)-1,2,5-thiadiazole.

5,547,921

RARE EARTH SUPERCONDUCTING COMPOSITION AND PROCESS FOR PRODUCTION THEREOF

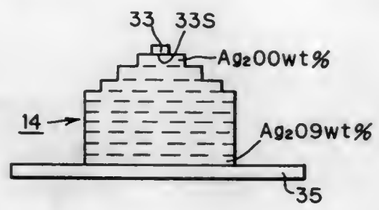
Makoto Tani, Inazawa; Tooru Hayase, Nagoya; Hideki Shimizu, Nagoya, and Kazuyuki Matsuda, Nagoya, all of, Japan, assignors to NGK Insulators, Ltd., Japan

Continuation of Ser. No. 37,005, Mar. 25, 1993, abandoned. This application Jan. 19, 1995, Ser. No. 375,277

Claims priority, application Japan, Mar. 31, 1992, 4-076552; Mar. 31, 1992, 4-076865

Int. Cl.[6] C04B *35/505;35/622;35/653*

U.S. Cl. 505—124 **42 Claims**



1. A copper-based rare earth superconducting composition comprising:

at least one grain consisting essentially of a rare earth superconducting oxide; and

a noble metal distributed throughout at least a major portion of said copper-based rare earth superconducting composition;

wherein said composition is produced by a method comprising the steps of:

forming at least about six layers of said superconducting composition, each layer having a constant noble metal concentration and a thickness of at least about 1.5 mm; and

laminating and heating the layers such that (i) said composition comprises a plurality of substantially layered regions, each having a constant noble metal concentration, (ii) the concentration of noble metal in said composition as a whole increases from region to region in at least one direction in said composition, and (iii) a lowest concentration of noble metal in said composition is substantially different from a highest concentration of noble metal in said composition, said lowest concentration of noble metal differing from said highest concentration of noble metal by at least about 1 wt %.

5,547,922

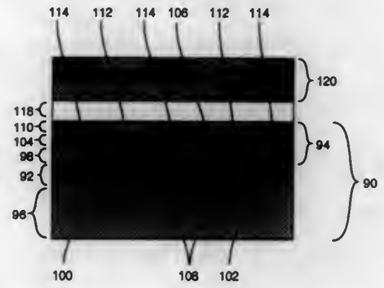
FABRICATION OF OXIDE SUPERCONDUCTOR DEVICES AND CIRCUITS BY IMPURITY ION IMPLANTATION

Qi Y. Ma, Vancouver, Canada, assignor to The University of British Columbia, Vancouver, Canada

Continuation of Ser. No. 61,320, May 14, 1993, abandoned. This application Feb. 17, 1995, Ser. No. 390,940

Int. Cl.[6] C23C *14/48;* **H01L** *39/24*

U.S. Cl. 505—325 **27 Claims**



1. A method of making a multilayer oxide superconductor device structure, said method comprising the steps of:

(a) depositing an oxide superconductor material having a crystal structure and a surface on a substrate;

(b) applying to said material a mask patterned to allow impurity ions to pass only through selected portions of said mask corresponding to portions of said material at which superconductivity is to be inhibited in a first layer at a selected depth;

(c) subjecting said surface of said masked material to impurity ion bombardment with ions of a species which is chemically more reactive with oxygen than an element to which oxygen is bonded in said crystal structure of said masked material at a first energy level in the range of 20 keV to 200 keV selected to implant said ions in said material with a concentration varying with depth in said material according to a peaked depth distribution function said depth distribution function having a maximum in said first layer and having values significantly less than said maximum in a second layer between said first layer and said surface;

(d) removing said mask;

(e) repeating steps (b), (c) and (d) for other selected portions of and/or depths in said material by subjecting said material to impurity ion bombardment at other energy levels controlled to implant said ions in said masked material at said other selected depths; and then

(f) musing said implanted ions to react with oxygen in said crystal structure of said material by annealing said material for 30 seconds to 60 minutes at a temperature of 300° C. or more

wherein said implantation step is continued until a sufficient concentration of said ions has been deposited in said first layer to render said first layer insulating after said annealing step, and said concentration of said ions in said second layer is insufficient to render said material in said second layer non-superconducting.

5,547,923

METHOD FOR MANUFACTURING SUPERCONDUCTING DEVICE HAVING A REDUCED THICKNESS OF OXIDE SUPERCONDUCTING LAYER

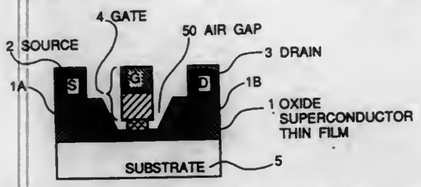
Takao Nakamura; Hiroshi Inada, and Michitomo Iiyama, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Division of Ser. No. 194,631, Feb. 10, 1994, Pat. No. 5,446,015, which is a continuation of Ser. No. 761,047, Sep. 18, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 476,582

Claims priority, application Japan, Sep. 19, 1990, 2-249547; Sep. 28, 1990, 2-259159

Int. Cl.[6] H01L *39/24*

U.S. Cl. 505—330 **10 Claims**



1. A method for manufacturing a superconducting device, the method comprising the steps of:

preparing a substrate having a principal surface thereon,

forming a first oxide superconductor thin film on the principal surface of the substrate,

forming on a portion of the first oxide superconductor thin film, a stacked structure including a gate insulator formed directly on the first oxide superconductor thin film and a gate electrode formed on the gate insulator,

growing a second oxide superconductor thin film having a thickness larger than that of the first oxide superconductor thin film on an exposed surface of the first oxide superconductor thin film, using the gate electrode as a mask, so that first and second superconducting regions provided by the first and second oxide superconductor thin films are formed at opposite sides of the gate electrode, electrically isolated from the gate electrode, and

forming a source electrode and a drain electrode on the first and second oxide superconducting regions, respectively.

5,547,924

SUPERCONDUCTIVE CERAMIC COMPOSITE MATERIAL

Yoshitaka Ito; Masami Ishii; Takayuki Nishio; Uichiro Mizutani; Yuh Yamada; Fumihiko Ogasawara, and Motohiro Suganuma, all of Aichi, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

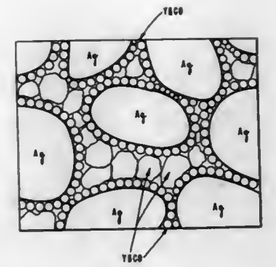
Continuation of Ser. No. 852,336, Mar. 17, 1992, abandoned, which is a continuation of Ser. No. 329,678, Mar. 28, 1989, abandoned. This application Sep. 21, 1995, Ser. No. 531,830

Claims priority, application Japan, Mar. 28, 1988, 63-73968

Int. Cl.[6] C04B *35/505;35/65*

U.S. Cl. 505—500 **21 Claims**

1. A process for producing a sintered superconductive ceramic composite material having a continuous network of superconductive ceramic material and a critical temperature of at least 4.2K comprising:



preparing a powder mixture of a superconductive powder and at least 5 vol. % of a silver or silver alloy metal powder having a melting point of about 1300° C. or less, the superconductive powder being finer in size than the metal powder, the superconductive powder being represented by $(RE_xAE_{1-x})_{1-y}Cu_yO_z$ where RE represents Y or a rare-earth element having an atomic number of 57–71, or a combination of at least two of these elements, AE is at least one of alkaline earth elements Ca, Sr and Ba, x is 0.13–0.67, y is 0.25–0.67, and z is 1.08–1.17, and

solid phase diffusion sintering the resultant mixture in a fresh oxygen atmosphere under the conditions such that the powder mixture is densified and a continuous network of a superconducting phase of said superconducting powder is formed, the sintering being performed at a temperature below the melting point of the metal powder.

5,547,925

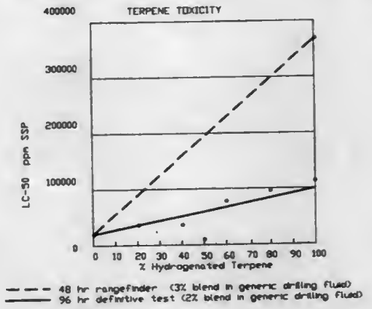
LOW TOXICITY TERPENE DRILLING FLUID AND DRILLING FLUID ADDITIVE

William M. Duncan, Jr., Nueces County, Tex., assignor to Integrity Industries, Inc., Kingsville, Tex.

Continuation-in-part of Ser. No. 142,953, Oct. 29, 1993, abandoned, which is a continuation of Ser. No. 950,491, Sep. 25, 1992, abandoned. This application Feb. 23, 1994, Ser. No. 200,677

Int. Cl.[6] C09K *7/02*

U.S. Cl. 507—103 **17 Claims**



1. A water based drilling fluid comprising a weight material, a fluid loss additive, a viscosifier and 1–8% of (a) 30–100 parts by volume saturated terpene and (b) 0–70 parts by volume unsaturated terpene.

5,547,926

NEW COMPOSITIONS FOR IRON CONTROL IN ACID TREATMENTS FOR OIL WELLS

Hervé Perthuis, Saint Etienne, France; Jean-Pierre Feraud, Tulsa, Okla.; Philippe Dejeux, St Priest En Jarez, and Pierre Maroy, Saint Galmier, both of, France, assignors to Dowell, a division of Schlumberger Technology Corporation, Houston, Tex.

Filed Jul. 9, 1992, Ser. No. 911,224

Claims priority, application France, Jul. 19, 1991, 9109323

The portion of the term of this patent subsequent to May 27, 2012, has been disclaimed.

Int. Cl.[6] E21B *43/00*

U.S. Cl. 507—258 7 Claims

1. An acidic fluid for treatment of a well penetrating a subterranean formation including an iron control agent comprising:

(a) a reducing agent having the formula:

H—S—R

wherein R is selected from a group consisting of an aliphatic group, an aromatic group and a

$—CH_2—Z$

group wherein Z is an aromatic group; and

(b) a reduction catalyst selected from a group consisting of copper, cupric ion, cuprous ion, iodine and combinations thereof.

5,547,927

ENTERAL NUTRITIONAL PRODUCT FOR PATIENTS UNDERGOING RADIATION THERAPY AND/OR CHEMOTHERAPY

Frederick O. Cope, Worthington; Normanella T. DeWille, Upper Arlington; Ernest W. Richards, Columbus; Terrence B. Mazer, Reynoldsburg; Ronnie C. Abbruzzese, Dublin; Gregory A. Snowden, Pickerington; Nickki L. Parlet, and Laura A. Pease, both of Columbus, all of Ohio, assignors to Abbott Laboratories, Abbott Park, Ill.

Filed May 28, 1993, Ser. No. 68,919

The portion of the term of this patent subsequent to May 28, 2010, has been disclaimed.

Int. Cl.[6] A23J *3/16;1/14;1/20;* A61K *38/01*

U.S. Cl. 514—2 19 Claims

1. A liquid enternal nutritional product comprising:

(a) a soy protein hydrolysate having a molecular weight partition, as determined by size exclusion chromatography, wherein 30–60% of the particles have a molecular weight in the range of 1,500–5,000 Daltons, and the soy protein hydrolysate provides by weight 60% to 90% of the protein in the nutritional product;

(b) a second source of protein which comprises a source of intact protein in a quantity sufficient to yield a stable emulsification of the soy protein hydrolysate and the intact protein in the nutritional product, the intact protein comprising by weight at least 10% of the protein in the nutritional product, said second source of protein comprising pea protein;

(c) a source of fat characterized by the ratio, by weight, of the sum of the n-6 fatty acids to the sum of the n-3 fatty acids being in the range of about 1.3:1 to 2.5:1; said nutritional product being terminally sterilized and having a pH of about 6.3–6.6.

5,547,928

METHODS AND COMPOSITIONS FOR THE DETECTION OF COLON CANCERS

Ying-Jye Wu, Framingham, and Susan K. Keesee, Harvard, both of Mass., assignors to Matritech, Inc., Newton, Mass.

Filed Dec. 17, 1993, Ser. No. 168,993

Int. Cl.[6] A61K *38/17;35/38;* C07K *1/28;14/435*

U.S. Cl. 514—2 17 Claims

1. An isolated and purified colon adenocarcinoma-associated protein selected from the group consisting of:

a protein having a molecular weight of about 22,359 and an isoelectric point of about 6.6;

a protein having a molecular weight of about 23,505 and an isoelectric point of about 6.9;

a protein having a molecular weight of about 20,838 and an isoelectric point of about 6.7; and

a protein having a molecular weight of about 58,600 and an isoelectric point of about 6.6;

wherein the isoelectric point is determined by standard isoelectric focusing techniques, and the molecular weight is determined by standard polyacrylamide gel electrophoresis techniques; and

wherein said protein is further characterized as being a non-cytoskeletal, nonchromatin protein that is detectable on a silver stained gel produced by two dimensional gel electrophoresis of proteins isolated from human colon adenocarcinoma cells but is not detectable on a silver stained gel produced by two dimensional gel electrophoresis of proteins isolated from normal human colon cells.

5,547,929

INSULIN ANALOG FORMULATIONS

James H. Anderson, Jr., Carmel; Michael R. De Felippis, Indianapolis; Bruce H. Frank, Indianapolis, and Henry A. Havel, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 12, 1994, Ser. No. 304,070

Int. Cl.[6] A61K *38/28*

U.S. Cl. 514—3 15 Claims

1. A parenteral pharmaceutical formulation comprising a soluble phase comprising an insulin analog and a solid phase comprising insulin-NPH crystals; wherein: the insulin analog is human insulin wherein Pro at position B28 is substituted with Asp, Lys, Leu, Val, or Ala, and Lys at position B29 is Lysine or Proline, des(B28–B30), or des(B27); the insulin-NPH crystals comprise about 0.25 to about 0.30 mg of protamine per 100 U of insulin; and the soluble phase contains less than about 20% insulin relative to the total soluble protein concentration.

5,547,930

ASP(B28) INSULIN CRYSTALS

Per Balschmidt, Esperærde, Denmark, assignor to Novo Nordisk A/S, Novo Alle, Denmark

Filed Sep. 28, 1993, Ser. No. 127,672

Claims priority, application Denmark, Jun. 21, 1993, 727/93

Int. Cl.[6] A61K *38/28*

U.S. Cl. 514—3 11 Claims

1. Crystals comprising Ash^{B28} human insulin and protamine.

5,547,931

METHODS OF STIMULATORY THROMBOCYTOPOIESIS USING MODIFIED C-REACTIVE PROTEIN

Lawrence A. Potempa, Deerfield, Ill., assignor to Immtech International Inc., Evanston, Ill.

Filed Feb. 23, 1994, Ser. No. 202,033

Int. Cl.[6] A61K *38/17;38/01*

U.S. Cl. 514—2 8 Claims

6. A method of treating thrombocytopenia in a mammal comprising administering to a mammal diagnosed as having thrombocytopenia an amount of modified C-reative protein effective to treat thrombocytopenia in a pharmaceutically-acceptable carrier.

5,547,932

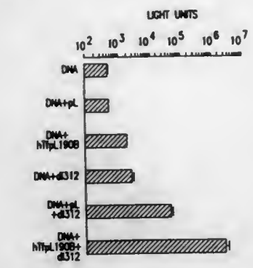
COMPOSITION FOR INTRODUCING NUCLEIC ACID COMPLEXES INTO HIGHER EUCARYOTIC CELLS

David T. Curiel, Chapel Hill, N.C.; Max L. Birnstiel; Matthew Cotten, both of Vienna, Austria; Ernst Wagner, Langenzersdorf, Austria; Kurt Zatloukal; Christian Plank, both of Vienna, Austria; Berndt Oberhauser, Vienna, Austria, and Walter G. M. Schmidt, Vienna, Austria, assignors to Boehringer Ingelheim International GmbH, Germany, and Genentech, Inc., San Francisco, Calif.

Continuation-in-part of Ser. No. 827,103, Jan. 30, 1992, abandoned, Ser. No. 768,039, Sep. 30, 1991, abandoned, and Ser. No. 937,788, Sep. 2, 1992, abandoned, which is a continuation-in-part of Ser. No. 864,759, Apr. 7, 1992, abandoned, which is a continuation-in-part of Ser. No. 827,102, Jan. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 767,788, Sep. 30, 1991, abandoned. This application Sep. 23, 1992, Ser. No. 948,357

Int. Cl.[6] C12Q *1/70;* C07H *21/04;* A01N *63/00;* C12N *15/00*

U.S. Cl. 435—65 75 Claims



1. A process for introducing nucleic acid into the cytoplasm of a higher eucaryotic cell, which comprises contacting the cell with a composition of matter which comprises a complex, wherein said complex comprises

(a) a nucleic acid of interest,

(b) a substance having affinity for nucleic acid, and

(c) an endosomolytic agent, whereby said complex is internalized into the cell by endocytosis, and is released into the cytoplasm of said cell by endosomolysis.

5,547,933

PRODUCTION OF ERYTHROPOIETIN

Fu-Kuen Lin, Thousand Oaks, Calif., assignor to Kirin-Amgen, Inc., Thousand Oaks, Calif.

Continuation of Ser. No. 202,874, Feb. 28, 1994, abandoned, which is a continuation of Ser. No. 113,178, Oct. 23, 1987, abandoned, which is a continuation of Ser. No. 675,298, Nov. 30, 1984, Pat. No. 4,703,008, which is a continuation-in-part of Ser. No. 655,841, Sep. 28, 1984, abandoned, which is a continuation-in-part of Ser. No. 582,185, Feb. 21, 1984, abandoned, which is a continuation-in-part of Ser. No. 561,024, Dec. 13, 1983, abandoned. This application Jun. 7, 1995, Ser. No. 487,774

Int. Cl.[6] A61K *38/18;* C12P *21/02*

U.S. Cl. 514—8 14 Claims

1. A non-naturally occurring erythropoietin glycoprotein product having the in vivo biological activity of causing bone marrow cells to increase production of reticulocytes and red blood cells and having glycosylation which differs from that of human urinary erythropoietin.

5,547,934

WF11243 SUBSTANCE

Akihiko Fujie, Tsuchiura; Shigehiro Takase, Ishioka; Michio Yamashita, Tsukuba; Tomoko Sato, Tsukuba; Seiji Hashimoto, Tsukuba, and Masakuni Okuhara, Tsukuba, all of, Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation of Ser. No. 140,074, Nov. 4, 1993, Pat. No. 5,466,022. This application Apr. 27, 1995, Ser. No. 429,636

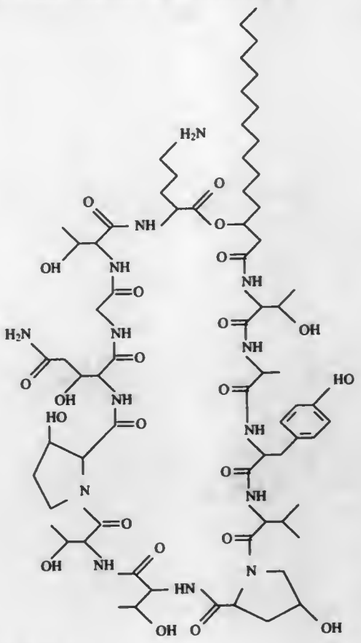
Claims priority, application Japan, May 9, 1991, 3-132234; Oct. 21, 1991, 3-299552

Int. Cl.[6] C07K *11/02;* C12P *21/02;* C12M *1/14;* A61K *38/12*

U.S. Cl. 514—11 7 Claims

1. An isolated compound having formula (I):

(I)



or a salt thereof.

5,547,935

MUTEINS OF HUMAN EPIDERMAL GROWTH FACTOR EXHIBITING ENHANCED BINDING AT LOW PH

Guy T. Mullenbach, San Francisco; Jeffrey M. Blaney, and Steven Rosenberg, both of Oakland, all of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Continuation of Ser. No. 746,651, Aug. 16, 1991, abandoned. This application Aug. 2, 1994, Ser. No. 284,923

Int. Cl.[6] C12N *15/18;* A61K *38/18;* C07K *14/485*

U.S. Cl. 514—12 5 Claims

1. An EGF mutein, said EGF mutein selected from the group consisting of:

(a) EGF-A_{16};

(b) EGF-$E_{11}A_{16}$;

(c) EGF-$E_{12}A_{16}$;

(d) EGF-$W_{13}A_{16}$;

(e) EGF-$E_{12}W_{13}A_{16}$;

(f) EGF-$E_{11}E_{12}A_{16}$;

(g) EGF-$E_{11}W_{13}A_{16}$; and

(h) EGF-$E_{11}E_{12}W_{13}A_{16}$.

5,547,936

IHIBITION OF CELL MIGRATION WITH SYNTHETIC PEPTIDES

Erkki I. Ruoslahti, Rancho Santa Fe; Michael D. Pierschbacher, and Kurt R. Gehlsen, both of San Diego, all of Calif., assignors to La Jolla Cancer Research Foundation, La Jolla, Calif.

Continuation of Ser. No. 773,106, Oct. 8, 1991, abandoned, and a continuation-in-part of Ser. No. 902,742, Jun. 19, 1992, which is a continuation of Ser. No. 660,526, Feb. 25, 1991, abandoned, which is a continuation of Ser. No. 242,713, Sep. 9, 1988, Pat. No. 5,041,380, which is a continuation of Ser. No. 744,981, Jun. 17, 1985, Pat. No. 4,792,525, which is a division of Ser. No. 554,821, Nov. 22, 1993, Pat. No. 4,578,079, said Ser. No. 773,106 is a continuation of Ser. No. 683,585, Apr. 10, 1991, abandoned, which is a continuation of Ser. No. 166,530, Mar. 10, 1988, abandoned. This application Dec. 17, 1993, Ser. No. 169,743

Int. Cl.[6] A61K 38/04;38/07;38/16

U.S. Cl. 514—12 **3 Claims**

1. A method of inhibiting tumor cell invasion through an extracellular matrix by contacting said tumor cell and said extracellular matrix with a synthetic peptide containing the amino acid sequence Xaa_1-Arg-Gly-Asp-Xaa_2-Xaa_3, wherein Xaa_1 is one or more amino acids or H, Xaa_2 is an amino acid, and Xaa_3 is one or more amino acids or OH, neither Xaa_1, Xaa_2, nor Xaa_3 interfere with the ability of said synthetic peptide to inhibit said tumor cell invasion, said synthetic peptide is soluble and less than about thirty amino acids long and said synthetic peptide inhibits said tumor cell invasion.

5,547,937

PULMONARY SURFACTANT PROTEIN FRAGMENTS

Madhup K. Dhaon, Mundelein; Edwin O. Lundell; Virender K. Sarin, both of Libertyville, all of Ill.; Constance H. Baxter, Galena, and Darryl R. Absolom, Columbus, both of Ohio, assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 866,916, Apr. 10, 1992, abandoned. This application Aug. 29, 1994, Ser. No. 296,898

Int. Cl.[6] A61K *38/00;* **C07K** *7/10;7/08*

U.S. Cl. 514—12 **3 Claims**

1. A method for treating pulmonary surfactant deficiencies and/or abnormal surfactant states said method comprising administration of an effective amount of a surfactant composition to a patient in need of treatment, said surfactant composition comprising at least one SP-B fragment and at least one lipid, said SP-B fragment being selected from the group consisting of:

a)

NH_2—Tyr—Ser—Val—Ile—Leu—Leu—Asp—Thr—Leu—
53

Leu—Gly—Arg—Met—Leu—Pro—Gln—Leu—Val—

Acm Acm
| |
Cys—Arg—Leu—Val—Leu—Arg—Cys—Ser—OH
78

SEQ. ID NO: 1 modified at positions 71 and 77 by providing each of the cysteine residues at positions 71 and 77 with an S-acetamidomethyl (Acm) group;

b)

NH_2—Leu—Asp—Thr—Leu—Leu—Gly—Arg—Met—Leu—
58

Pro—Gln—Leu—Val—OH
70

Amino acid redidue 58 to amino acid residue 70 of SEQ. ID NO: 1;

c)

NH_2—Leu—Asp—Thr—Leu—Leu—Gly—Arg—Met—Leu—
58

-continued

Pro—Gln—Leu—Val—Ala—Arg—Leu—Val—Leu—

Arg—Ala—Ser—OH
78

SEQ. ID NO: 2;

d)

NH_2—Leu—Asp—Thr—Leu—Leu—Gly—Arg—Met—Leu—
58

Acm
|
Pro—Gln—Leu—Val—Cys—Arg—Leu—Val—Leu—

Acm
|
Arg—Cys—Ser—OH
78

Amino acid residue 58 to amino acid residue 78 of SEQ. ID NO: 1 modified at positions 71 and 77 by providing each of the cysteine residues at positions 71 and 77 with an S-acetamidomethyl (Acm) group;

e)

NH_2—Gly—Arg—Met—Leu—Pro—Gln—Leu—Val—Ala—
63

Arg—Leu—Val—Leu—Arg—Ala—Ser—OH
78

Amino acid residue 63 to amino acid residue 78 of SEQ. ID NO: 2;

f)

Acm
|
NH_2—Gly—Arg—Met—Leu—Pro—Gln—Leu—Val—Cys—
63

Acm
|
Arg—Leu—Val—Leu—Arg—Cys—Ser—OH
78

Amino acid residue 63 to amino acid residue 78 of SEQ. ID NO: 1 modified at positions 71 and 77 by providing each of the cysteine residues at positions 71 and 77 with an S-acetamidomethyl (Acm) group;

g)

NH_2—Leu—Pro—Gln—Leu—Val—Ala—Arg—Leu—Val—
66

Leu—Arg—Ala—Ser—OH
78

Amino acid residue 66 to amino acid residue 78 of SEQ. ID NO: 2;

h)

NH_2—Leu—Pro—Gln—Leu—Val—Lys—Arg—Leu—Val—
66

Leu—Arg—Lys—Ser—OH
78

SEQ. ID NO: 3;

i)

Acm
|
NH_2—Leu—Pro—Gln—Leu—Val—Cys—Arg—Leu—Val—
66

Acm
|
Leu—Arg—Cys—Ser—OH
78

Amino acid residue 66 to amino acid residue 78 of SEQ. ID NO: 1 modified at positions 71 and 77 by providing each of the cysteine residues at positions 71 and 77 with an S-acetamidomethyl (Acm) group;

-continued

j)

NH_2—Leu—Val—Ala—Arg—Leu—Val—Leu—Arg—Ala—Ser—OH
69 78

Amino acid residue 69 to amino acid residue 78 of SEQ. ID NO: 2.

5,547,938

THERAPEUTIC AGENT FOR DIGESTIVE TRACT DISEASES USING GLICENTIN

Seiki Matsuno; Iwao Sasaki; Akira Ohneda, all of Sendai; Kazuyuki Sasaki, Saitama-ken; Yohei Natori, Saitama-ken, and Tomohisa Nagasaki, Saitama-ken, all of, Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 193,863, Feb. 9, 1994, Pat. No. 5,432,156. This application Jan. 25, 1995, Ser. No. 377,833

Claims priority, application Japan, Feb. 24, 1993, 5-35266; Oct. 18, 1993, 5-269799; Dec. 24, 1993, 5-326698

Int. Cl.[6] C07K *7/34;* **A61K** *38/26*

U.S. Cl. 514—012 **4 Claims**

1. A method for inhibiting peristalsis of the stomach or duodenum comprising:

administering an effective amount of glicentin to a subject in need of inhibition of peristalsis of the stomach or duodenum.

5,547,939

BROAD SPECTRUM ANTIMICROBIAL COMPOUNDS AND METHODS OF USE

Michael E. Selsted, Irvine, Calif., assignor to The Regents of the University of California, a California Corporation, Oakland, Calif.

Continuation-in-part of Ser. No. 715,271, Jun. 14, 1991, Pat. No. 5,324,716. This application Feb. 16, 1994, Ser. No. 197,205

The portion of the term of this patent subsequent to Jun. 28, 2011, has been disclaimed.

Int. Cl.[6] A61K *38/00;* **C07K** *5/00;7/00;17/00*

U.S. Cl. 514—14 **22 Claims**

1. An indolicidin analog having the amino acid sequence:

H_2N-I-L-P-W-K-W-P-W-W-P-W-X (SEQ ID NO: 8),

wherein X is one or two independently selected amino acids, said indolicidin analog having a c-terminal reactive group.

5,547,940

METHOD FOR STIMULATING PROLIFERATION OF COLON CELLS USING $POMC_{76-103}$

Edouard C. Nice; R. James; R. Simpson; A. W. Burgess, and Robert H. Whitehead, all of Victoria, Australia, assignors to Ludwig Institute for Cancer Research, New York, N.Y.

Continuation-in-part of Ser. No. 851,732, Mar. 16, 1992, Pat. No. 5,316,937. This application Feb. 28, 1994, Ser. No. 202,525

Int. Cl.[6] A61K *38/00;35/55;* **C12N** *5/00*

U.S. Cl. 514—21 **15 Claims**

1. An in vitro method for stimulating proliferation of colonic cells, comprising applying to said colonic cells a composition consisting essentially of a peptide having SEQ ID NO: 1; wherein said composition is applied in an amount effective to stimulate colonic cell proliferation.

7. A method for stimulating proliferation of colonic cells, comprising administering to a subject in need thereof a composition consisting essentially of a peptide having SEQ ID NO: 1; wherein said composition is administered in an amount effective to stimulate colonic cell proliferation.

5,547,941

CYCLIC DINUCLEOSIDE DIPHOSPHOROTHIOATES, RELATED COMPOUNDS AND PHARMACEUTICAL COMPOSITIONS

Carlo Battistini, Novate Milanese; Silvia Fustinoni; Maria G. Brasca, both of Milan, and Domenico Ungheri, Parabiago, all of, Italy, assignors to Farmitalia Carlo Erba S.R.L., Milan, Italy

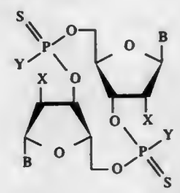
Continuation of Ser. No. 914,923, Jul. 17, 1992, abandoned. This application Dec. 9, 1994, Ser. No. 354,888

Claims priority, application United Kingdom, Jul. 18, 1991, 9115586

Int. Cl.[6] A61K *31/70;* **C07H** *19/213;21/02;21/04*

U.S. Cl. 514—44 **6 Claims**

1. A compound of formula (I)



(I)

wherein

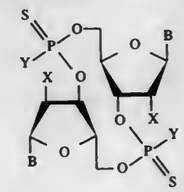
each group B is, independently, a naturally occurring or modified heterocyclic base linked through a nitrogen or a carbon atom of the ring to the sugar moiety;

each group X is, independently, hydrogen, fluorine, or hydroxy;

each group Y is, independently, hydrogen, sulphidryl or hydroxy; and

the pharmaceutically acceptable salts thereof.

4. A compound of formula (I)



(I)

wherein

each group B is a cytosine residue linked through the nitrogen at the 1-position of the ring to the sugar moiety;

each group X is hydrogen; and

each group Y is hydroxy; or a pharmaceutically acceptable salt thereof.

6. A pharmaceutical composition comprising a suitable carrier and, as an active principle, a compound of formula (I) as defined in claim 4 or a pharmaceutically acceptable salt thereof.

5,547,942

METHOD OF TREATMENT OF DIABETES MELLITUS BY ADMINISTRATION OF ADENOSINE 5'-TRIPHOSPHATE AND OTHER ADENINE NUCLEOTIDES

Eliezer Rapaport, 142 Payson Rd., Belmont, Mass. 02178

Filed Jan. 4, 1994, Ser. No. 177,771

Int. Cl.[6] A61K *31/70;* **C07K** *19/167*

U.S. Cl. 514—47 **26 Claims**

1. A method for treating chronic diabetes mellitus or chronic non-insulin-dependent diabetes mellitus (NIDDM or Type-II diabetes) in a human diabetic patient by administering to said patient a member selected from the group consisting of: (a) a mixture of adenosine and inorganic phosphate; and/or (b) an adenine nucleotide wherein said adenine nucleotide contains adenosine moi-

ety(ies) and phosphate moiety(ies) and undergoes rapid degradation to adenosine and inorganic phosphate after administration to said patient.

5,547,943

SUCRALFATE PREPARATION

Yoshimitsu Iida, Saitama-ken, and Minoru Machida, Tokyo, both of, Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 42,884, Apr. 27, 1987, abandoned. This application Feb. 2, 1989, Ser. No. 306,202

Claims priority, application Japan, Apr. 30, 1986, 61-99901

Int. Cl.[6] A61K *31/70*

U.S. Cl. 514—53 **9 Claims**

1. A pharmaceutical composition in solid form which consisting eventually of an effective ulcer-treating amount of an aluminum salt of a sucrose sulfate ester and 1–7% (w/w) of polyethylene glycol on the basis of said sucrose sulfate ester.

5,547,944

DERMATAN SULPHATE POSSESSING A THROMBOLYTIC ACTIVITY, AND PHARMACEUTICAL FORMS CONTAINING IT

Giuseppe Mascellani, and Pietro Bianchini, both of Corlo Di Formigine, Italy, assignors to Opocrin S.p.A., Corlo Di Formigine, Italy

PCT No. PCT/EP92/01790, § 371 Date Feb. 23, 1994, § 102(e) Date Feb. 23, 1994, PCT Pub. No. WO93/05074, PCT Pub. Date Mar. 18, 1993

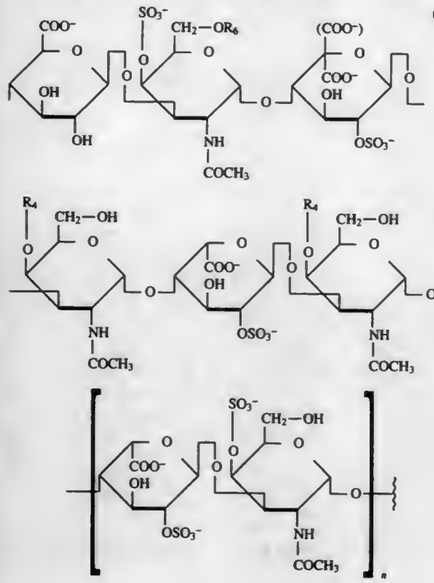
PCT Filed Aug. 6, 1992, Ser. No. 199,229

Claims priority, application Italy, Aug. 28, 1991, MI91A2310

Int. Cl.[6] A61K *31/725*

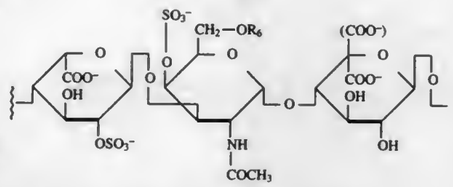
U.S. Cl. 514—54 **14 Claims**

1. A dermatan sulfate having anti-factor II activity mediated by heparin cofactor II higher than 220 U/mg and possessing thrombolytic and antithrombotic activity, having no activity on antithrombin III, containing an oligosaccharide sequence of formula

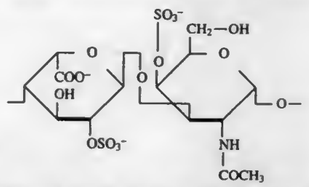


(III)

-continued



wherein n is 1 or 2; R_4 is SO_3— or H; R_6 is H or SO_3—, which comprises one glucuronic acid unit at one end and a non-sulfated uronic acid unit at the opposite end and at least four disulfated disaccharides formed by uronic acid-2-sulfate-N-acetyl galactosamine-4-sulfate (Ido-2SO_3-Gal-NAc-4SO_3—) of formula



(IV)

wherein the sulfate/carboxylate ratio is in the range of 1.00–1.200, which exhibits a ^{13}C Nuclear Magnetic Resonance spectrum with a signal at 102 attributable to the C-1 of iduronic acid 2-0-sulfate; a signal at 80 attributable to the C-4 of iduronic acid 2-0-sulfate; a signal at 74 attributable to the C-2 of iduronic acid 2-sulfate; a signal at 69.5 attributable to the C-3 of iduronic acid 2-sulfate and a signal at 68.6 attributable to the C-5 of iduronic acid 2-sulfate, these signals being characteristic of said disulfated disaccharide unit (IV).

5,547,945

REMITTING AGENT FOR NEPHROTIC SYNDROME AND HEPATOPATHY SYMPTOMS

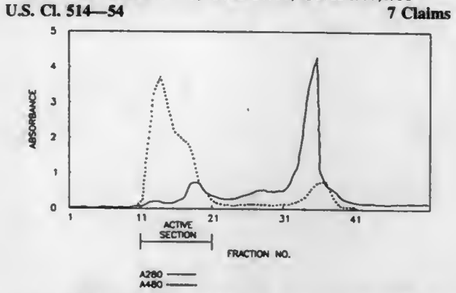
Guoji Ye; Jun-ichi Kajihara, both of Kobe; Sei Kirihara, Miki; Kazuo Kato, Kobe, and Hiroko Abe, Sakai, all of, Japan, assignors to JCR Pharmaceuticals Co., Ltd., Hyogo, Japan

Filed Jul. 7, 1994, Ser. No. 271,795

Claims priority, application Japan, Jul. 15, 1993, 5-199275; Mar. 30, 1994, 6-085871

Int. Cl.[6] A61K *31/715;* **C08B** *37/06;* **C07H** *1/00;1/08*

U.S. Cl. 514—54 **7 Claims**



1. A water-soluble polysaccharide which is extracted from Tanjin with water or an aqueous solvent and has the following characteristic properties:

A. Sugar content: 60 to 100%

(1) Sugar composition:

40 to 80% of uronic acid (composed almost entirely of D-galacturonic acid) and

10 to 30% of neutral sugars

(2) Neutral sugar composition:

0 to 15% of rhamnose

0 to 15% of glucose

25 to 55% of galactose

30 to 60% of arabinose

0 to 15% of mannose

B. Molecular weight: 150,000 to 300,000.

5,547,946

TOPICAL PHARMACEUTICAL COMPOSITIONS FOR RESPIRATORY ALLERGIES

Giuliano Molinari, Bresica, Italy, assignor to Farmin S.r.l., Brescia, Italy

Filed Nov. 15, 1993, Ser. No. 152,476

Claims priority, application Italy, Nov. 18, 1992, BS92A0130

Int. Cl.[6] A61K *9/08;31/185;31/19*

U.S. Cl. 514—129 **14 Claims**

1. Topical pharmaceutical composition in the form of oral local and/or nasal liquid solution or suspension for instillation, inhalation or insufflation containing, as active agent, at least one compound selected from the group consisting of: DL-α-glycerophosphoric acid, glutaric acid and their sodium or potassium salts as the essential active agent for use in the treatment of respiratory allergies, allergic rhinitis, allergic conjunctivitis, allergic asthma or allergy to fur or dust and in which free ion calcium plays a role, said active agent, when supplied in a sufficient amount, being effective to enable by a reduction in free ion calcium concentration the removal or improvement in symptoms of allergy amenable to said free calcium ion concentration reduction.

5,547,947

METHODS OF TREATMENT

Benoit T. Dore, Chateauguay; Richard L. Momparler, Montreal, both of, Canada, and Milan R. Uskokovic, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 29,744, Mar. 11, 1993, abandoned. This application Nov. 30, 1994, Ser. No. 347,539

Int. Cl.[6] A61K *31/59*

U.S. Cl. 514—167 **2 Claims**

1. A method of treating a host by inducing inhibition of cell proliferation in a solid breast tumor which comprises administering to the host in need of such treatment an effective amount of 1α,25-dihydroxy-26,27-hexafluoro-16-ene-23-yne-cholecalciferol.

5,547,948

CONTROLLED RELEASE OF STEROIDS FROM SUGAR COATINGS

Reginald J. Barcomb, Mooers Forks, N.Y., assignor to American Home Products Corporation, Madison, N.J.

Filed Jan. 17, 1995, Ser. No. 373,667

Int. Cl.[6] A61K *9/36;31/56;31/565;31/57*

U.S. Cl. 514—170 **6 Claims**

1. A compressed tablet comprising a tablet core containing conjugated estrogens and a sugar coating in which said sugar coating incorporates a hormonal steroid and a release rate controlling amount of microcrystalline cellulose.

5,547,949

STEROIDS WITH PREGNANE SKELETON, PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Sándor Mahó; Zoltán Tuba; AnikóGere; Pal Vittay; Béla Kiss; Éva Pálosi; LászlóSzporny; Erzsébet C. Francsicsné; Anna M. Boórné; Gábor Balogh, and Sándor Görög, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

PCT No. PCT/HU93/00035, § 371 Date Dec. 8, 1994, § 102(e) Date Dec. 8, 1994, PCT Pub. No. WO93/25570, PCT Pub. Date Dec. 23, 1993

PCT Filed Jun. 8, 1993, Ser. No. 351,448

Claims priority, application Hungary, Jun. 9, 1992, 1910/92

Int. Cl.[6] C07J *43/00;* **A61K** *31/56*

U.S. Cl. 514—176 **4 Claims**

1. 21-{4-[2,4-bis(1-adamantylamino)-6-pyrimidinyl]-1piperazinyl}- 16α-methylpregna-1,4,9(11)-triene-3,20-dione, or a pharmaceutically acceptable acid addition salt thereof.

5,547,950

OXAZOLIDINONE ANTIMICROBIALS CONTAINING SUBSTITUTED DIAZINE MOIETIES

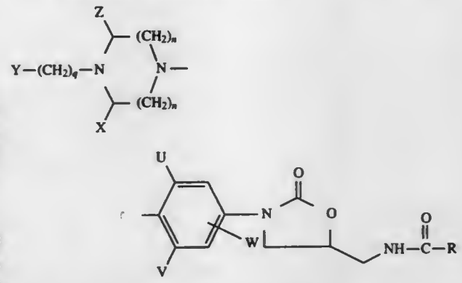
Douglas K. Hutchinson; Michael R. Barbachyn, both of Kalamazoo; Steven J. Brickner; Ronald B. Gammill, both of Portage, and Mahesh V. Patel, Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 880,432, May 8, 1992, abandoned. This application Oct. 31, 1994, Ser. No. 332,822

Int. Cl.[6] C07D *413/00;* **A61K** *31/495*

U.S. Cl. 514—252 **12 Claims**

1. A compound of structural Formula I:

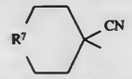


or pharmaceutically acceptable salts thereof wherein:

each n is 1;

Y is a) —C(O)—C_{1-6} alkyl, —C(O)—O—C_{1-6} alkyl or benzoyl,

b) —N(R^3)$_2$ where R^3 is independently hydrogen, C_{1-4} alkyl or phenyl which can be substituted with one to three F, Cl, OCH_3, OH, NH_2, or C_{1-4} alkyl, or



c)

(where R^7 is O, S, S(O), SO_2 or CH_2); wherein each occurrence of said C_{1-6} alkyl may be substituted with one or more F, Cl, Br, I, OR^1, CO_2R^1, CN, SR^1, or R^1 (where R^1 is a hydrogen or C_{1-4} alkyl);

X and Z are independently C_{1-6} alkyl, C_{3-12} cycloalkyl or hydrogen;

U, V and W are independently C_{1-6} alkyl, F, Cl, Br, hydrogen or a C_{1-6} alkyl substituted with one or more of F, Cl, Br or I;

R is hydrogen, C_{1-12} alkyl, C_{3-12} cycloalkyl, C_{1-6} alkoxy, C_{1-6} alkyl substituted with one or more F, Cl, Br, I or OH; and
q is 0 to 4 inclusive.

5,547,951

PYRIDO[2,3-]BENZOXAZEPIN (AND THIAZEPIN)-6(5H)-ONES AND-THIONES AND THEIR USE IN THE PREVENTION OR TREATMENT OF HIV-1 INFECTION

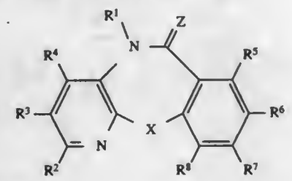
Karl D. Hargrave, Brookfield, Conn., and Gunther Schmidt, deceased, late of Munich, Germany, assignors to Boehringer Ingelheim Pharamceuticals, Inc., Ridgefield, Conn.

Continuation of Ser. No. 131,112, Oct. 4, 1993, abandoned, which is a continuation of Ser. No. 955,391, Oct. 1, 1992, abandoned, which is a continuation of Ser. No. 823,391, Jan. 21, 1992, abandoned, which is a continuation of Ser. No. 584,411, Sep. 14, 1990, abandoned, which is a continuation of Ser. No. 400,248, Aug. 29, 1989, abandoned. This application Aug. 17, 1994, Ser. No. 292,154

Int. Cl.[6] A61K *31/55;* **C07D** *513/04;498/04*

U.S. Cl. 514—211 **6 Claims**

1. A compound of the formula I



wherein,
either X or Z is sulfur and the other substituent is oxygen or both X and Z are sulfur;
R^1 is alkyl of 1 to 4 carbon atoms, fluoroalkylmethyl of 1 to 3 fluorine atoms and 2 to 4 carbon atoms, mono- or dihalovinyl, alkenyl or alkynyl of 2 to 4 carbon atoms, 2-chloro-propen-3-yl, alkoxyalkyl or alkylthioalkyl of 2 to 3 carbon atoms, alkoxycarbonylalkyl of 3 to 4 carbon atoms, or hydroxyalkylmethyl of 2 to 4 carbon atoms;
R^2 is hydrogen, methyl or chloro;
one of R^3 and R^4 is alkyl of 1 to 4 carbon atoms, aminoalkyl of 1 to 2 carbon atoms, mono- or dimethylaminomethyl, chloro, hydroxyalkyl of 1 to 4 carbon atoms, alkoxyalkyl wherein each alkyl moiety contains 1 to 2 carbon atoms, alkylthioalkyl wherein each alkyl moiety contains 1 to 2 carbon atoms, carboxyalkyl of 2 to 3 carbon atoms, or methoxycarbonylmethyl, and the remaining group is hydrogen; or,
R^3 and R^4 are both methyl or chloro when R^2 is hydrogen; or,
R^3 and R^4 are both hydrogen when R^2 is methyl or chloro; or,
R^2, R^3 and R^4 are each hydrogen; and,
one of R^5, R^6, R^7 and R^8 is alkyl of 1 to 3 carbon atoms, hydroxyl, amino, methylamino, aminoalkyl of 1 to 2 carbon atoms, mono- or dimethylaminomethyl, hydroxyalkyl of 1 to 3 carbon atoms, alkoxyalkyl wherein each alkyl moiety contains 1 to 2 carbon atoms, alkylthioalkyl wherein each alkyl moiety contains 1 to 2 carbon atoms, carboxyalkyl of 2 to 3 carbon atoms, or alkoxycarbonylmethyl or 3 to 4 carbon atoms, one of the three remaining groups is hydrogen or methyl, and the remaining two groups are both hydrogen; or,
R^5, R^6, R^7 and R^8 are each hydrogen;
or a pharmaceutically acceptable acid addition salt thereof.

5,547,952

3-OXO-1,4-BENZOTHIAZINE DERIVATIVES

Yoichi Kawashima, Kyoto; Atsutoshi Ota, Osaka; Yuko Morikawa, Neyagawa, and Hiroyuki Mibu, Osaka, all of, Japan, assignors to Santen Pharmaceutical Co., Ltd., Osaka, Japan

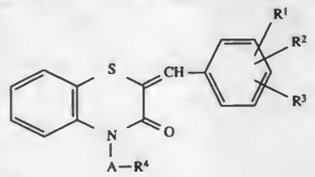
Filed Nov. 30, 1994, Ser. No. 347,043

Claims priority, application Japan, Dec. 9, 1993, 5-309131

Int. Cl.[6] C07D *279/16;* **A61K** *31/54*

U.S. Cl. 514—224.2 **15 Claims**

1. A compound having the following formula (I) or salt thereof,



(I)

wherein
R^1 is hydroxy which can be protected by a protective group;
R^2 is lower alkyl;
R^3 is hydrogen; a substituted or unsubstituted lower alkyl; hydroxy; hydroxy protected by a protective group; or lower alkoxy; wherein said substituted lower alkyl is substituted by hydroxy; hydroxy protected by a protective group; amino; or lower alkylamino;
R^4 is tetrazolyl, phosphono or lower alkyl ester thereof, or sulfonyl or lower alkyl ester thereof, and
A is alkylene having 1 to 10 carbon atoms.

5,547,953

SUBSTITUTED 1-OXO-1,2-DIHYDROISOQUINOLINOYLGUANIDINES AND 1,1-DIOXO-2H-1,2-BENZOTHIAZINOYLGUANIDINES, A PROCESS FOR THEIR PREPARATION, THEIR USE AS MEDICAMENTS OR DIAGNOSTIC AGENTS, AND MEDICAMENTS CONTAINING THEM

Andreas Weichert, Egelsbach; Heinz-Werner Kleemann, Bad Homburg; Hans-Jochen Lang, Hofheim; Jan-Robert Schwark, Frankfurt; Udo Albus, Florstadt, and Wolfgang Scholz, Eschborn, all of, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

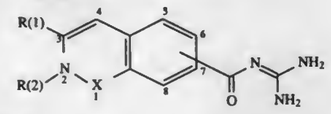
Filed Dec. 22, 1994, Ser. No. 362,003

Claims priority, application Germany, Dec. 24, 1993, 43 44 550.0

Int. Cl.[6] C07D *217/22;279/02;* **A61K** *31/47;31/54*

U.S. Cl. 514—226.5 **18 Claims**

1. An acylguanidine of the formula I



(I)

in which:
X is carbonyl, sulfonyl,
R(1) is H, $(C_1–C_8)$-alkyl, unsubstituted or substituted by hydroxyl, $(C_3–C_8)$-cycloalkyl, phenyl, which is unsubstituted or substituted by 1–3 substituents from the group consisting

of F, Cl, CF_3, CH_3, methoxy, hydroxyl, amino, methylamino or dimethylamino,
R(2) is H, $(C_1–C_4)$-alkyl,
and the pharmaceutically suitable salts thereof.

5,547,954

2,4-DIAMINO-5,6-DISUBSTITUTED-AND 5,6,7-TRISUBSTITUTED-5-DEAZAPTERIDINES AS INSECTICIDES

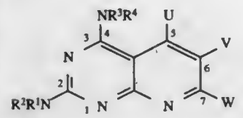
Robert N. Henrie, II, East Windsor; Clinton J. Peake, Trenton; Thomas G. Cullen, Milltown; Munirathnam K. Chaguturu, Lawrenceville, all of N.J.; Partha S. Ray, Memphis, Tenn., and Brian D. Bennett, Lake Hopatcong, N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed May 26, 1994, Ser. No. 249,586

Int. Cl.[6] A01N *43/54*

U.S. Cl. 514—258 **5 Claims**

1. A method for controlling insects which comprises applying to the locus where control is desired an insecticidal amount of a composition comprising, in admixture with an agriculturally, acceptable carrier and a surface active agent, a compound of the formula:



(I)

wherein
R^1 is hydrogen, lower alkyl or arylalkyl;
R^5 is hydrogen, lower alkyl or arylalkyl;
R^2 and R^4 are independently hydrogen, lower alkyl, arylalkyl, or



where R^7 is straight or branched chain alkyl, lower haloalkyl, lower alkynyl, straight or branched chain alkoxy, alkylsulfonylalkyl, aryl, arylalkyloxy, or ethers or polyethers of two to twelve carbon atoms in length containing one to four ether linkages;
W is hydrogen, halogen, lower alkyl, or hydroxy;
U is hydrogen, halogen, lower alkyl, lower haloalkyl, lower alkoxy, lower haloalkoxy, lower dialkylamino, aryl, arylalkyl, substituted arylthio, substituted arylsulfinyl, or substituted arylalkylthio;
V is hydrogen, lower haloalkyl, thienyl, aryl or substituted aryl, arylalkyl or substituted arylalkyl, aryloxy or substituted aryloxy, arylthio or substituted arylthio, arylsulfinyl or substituted arylsulfinyl, arylsulfonyl or substituted arylsulfonyl, substituted arylalkylamino, (aryl)(halo)alkenyl or substituted (aryl)(halo) alkenyl, aroyl or substituted aroyl, substituted arylalkyl-carbonylamino, substituted (aryl)(alkyl)aminoalkyl, and
agriculturally acceptable salts thereof;
wherein aryl is optionally-substituted phenyl or naphthyl, and aroyl is optionally-substituted benzoyl or naphthoyl, the substituents of the substituted aryl and aroyl groups of the V moiety being selected from one or more hydrogen, alkyl, halo, alkoxy, haloalkyl, haloarylalkoxy, haloaryloxy, alkoxycarbonyl, alkoxyalkyl, haloalkoxy, alkylthio, alkylsulfonyl, cyano, alkylamino, aryl, and haloaryl groups; the substituents of the substituted arylthio, arylsulfinyl, and arylalkylthio of the U moiety being one or more halogens, and
wherein each alkyl group is a lower alkyl group containing from 1 to 6 carbon atoms.

5,547,955

HIGH FRUCTOSE INSECTICIDE BAIT COMPOSITIONS

Jules Silerman, Walnut Creek, Calif., and Donald N. Bieman, Archer, Fla., assignors to The Clorox Company, Del.

Continuation-in-part of Ser. No. 964,994, Oct. 22, 1992, abandoned. This application Nov. 21, 1994, Ser. No. 342,543

Int. Cl.[6] A01N *25/00;43/54*

U.S. Cl. 514—275 **7 Claims**

1. An insecticidal bait composition comprising from about 0.25% to about 5% by weight of an insecticidal pentadienone hydrazone compound; from about 5% to about 20% of a binder; optionally a preservative from about 0.5% to about 1.0%; and up to about 80% by weight of a food attractant system comprising an ultra high ratio of fructose to glucose in excess of at least about 9:1, respectively.

5,547,956

PHARMACEUTICAL COMPOSITION AND THE METHOD FOR TREATING DRUG ADDICTS' WITHDRAWAL SYNDROMES AND DETOXIFYING ADDICTS BY THE SAME

Yueqian Qu, 510 Huayu Building, 15 Weiyuan Avenue, Chengguan Dist., Lanzhou, Gansu Province 730000, China, and Peng Qu, Lanzhou, China, assignors to Yueqian Qu, Gansu Province, China

Continuation-in-part of Ser. No. 912,791, Jul. 13, 1992, Pat. No. 5,290,784. This application Sep. 22, 1993, Ser. No. 125,363

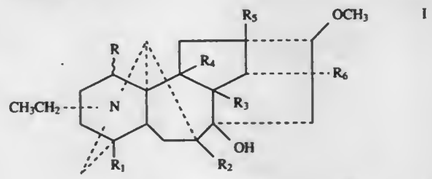
Claims priority, application China, Jul. 18, 1991, 91 104 811.1

The portion of the term of this patent subsequent to Mar. 1, 2011, has been disclaimed.

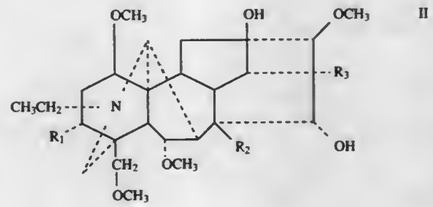
Int. Cl.[6] A61K *31/44*

U.S. Cl. 514—279 **27 Claims**

1. A pharmaceutical composition comprising:
aconitane derivatives having the structure of formula I, II, their inorganic acid salts, and combinations thereof; and
tetrahydroprotoberberine derivatives having the structure of formula III,

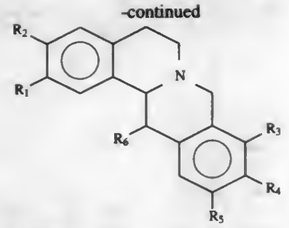


I



II

-continued



wherein in formula I

R=β-OCH_3, β-OH or α-OCH_3,

R_1=OAcABz, OH, OABz or H,

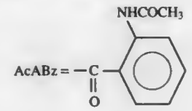
R_2=H or OH,

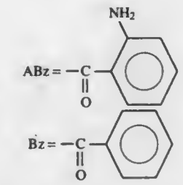
R_3=H or OH,

R_4=H or OH,

R_5=H or OH,

R_6=OCH_3, OBz, OAc or OH;





Ac = $-COCH_3$

wherein in formula II,

R_1=R_2=R_3=OH; and in formula III,

R_1=OCH_3 or OH,

R_2=OCH_3,

R_3=OCH_3 or H,

R_4=OCH_3 or OH,

R_5=H or OCH_3,

R_6=H or CH_3 and a pharmaceutical excipient.

5,547,957

METHOD OF TREATING ANDROGENIC ALOPECIA WITH 5-α REDUCTASE INHIBITORS

Glenn J. Gormley; Keith D. Kaufman; Elizabeth Stoner, all of Westfield, and Joanne Waldstreicher, Scotch Plains, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 138,500, Oct. 15, 1993, abandoned. This application Mar. 17, 1994, Ser. No. 214,905

Int. Cl.[6] A61K *31/58*

U.S. Cl. 514—284 **7 Claims**

1. A method of treating male pattern baldness comprising orally administering to a male person_having a balding area 17β-(N-tert-butylcarbamoyl)-4-aza-5α- androst-1-ene-3-one in a dosage amount from 0.05 to 3.0 mgs/day at least until growth of hair can be detected in the balding area by haircount analysis of the balding area.

5,547,958

III

N-(8α-ERGOLINYL)-AMIDES

Gerhard Sauer; Thomas Brumby; Helmut Wachtel; Jonathan Turner, and Peter-Andreas Löschmann, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

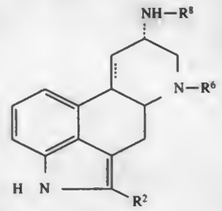
Continuation of Ser. No. 79,833, Jun. 21, 1993, abandoned, which is a continuation of Ser. No. 872,390, Apr. 23, 1992, abandoned, which is a division of Ser. No. 522,751, May 14, 1990, Pat. No. 5,212,178. This application Dec. 27, 1994, Ser. No. 364,015

Claims priority, application Germany, May 12, 1989, 39 15 950.7

Int. Cl.[6] A61K *31/48;31/44;* **C07D** *457/12;457/02*

U.S. Cl. 514—288 **17 Claims**

1. A compound of Formula I



I

in which

C. . .C each independently is a single or double bond;

R^2 is C_{1-7}-alkyl, C_{2-7}-alkenyl, CH_2—O—C_{1-4}-alkyl, CH_2—S—C_{1-4}-alkyl, or C_{1-7}-alkyl substituted with 1–3 of hydroxy, C_{1-4}-alkoxy, C_{2-5}-acyloxy or C(OR')R"R'", wherein R" and R'" each independently are hydrogen or C_{1-6} alkyl and R' is hydrogen, acetyl or S—C_{1-4}-alkyl;

R^6 is C_{3-6}-alkyl, C_{3-6}-alkenyl, or C_{3-5}-cycloalkyl—C_{1-2}-alkyl;

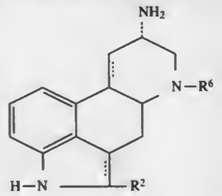
R^8 is—$COCF_3$, —COR^3, —CS—O—$(CH_2)_n$—$N(CH_3)_2$ or —CS—S—C_{1-6}-alkyl;

R^3 is hydrogen, C_{1-6}-alkyl, S—C_{1-6}-alkyl, —O—$(CH_2)_n$—$N(CH_3)_2$ or C_{1-6}-alkyl, singly or doubly substituted with hydroxy, C_{1-4}-alkoxy, acetyloxy, or dimethylamino groups; and

n is 1, 2, 3, or 4

or a pharmaceutically acceptable acid addition salt thereof, with the proviso that if R^2 is methyl, then R^8 is not —CO—$C(CH_3)_3$.

13. A compound of the Formula II



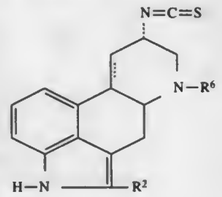
II

wherein

R^2 is substituted or unsubstituted C_{1-7}-alkyl, or C_{1-7}alkenyl, CH_2—O—C_{1-4} alkyl, or CH_2—S—C_{1-4}-alkyl; and

R^6 is C_{3-6}-alkyl, C_{3-6}-alkenyl, or C_{3-5}-cycloalkyl—C_{1-2}-alkyl.

14. A compound of Formula VI



VI

wherein

R^2 is substituted or unsubstituted C_{1-7}-alkyl, or C_{2-7}-alkenyl, CH_2—O—C_{1-4}-alkyl, or CH_2—S—C_{1-4}-alkyl; and

R^6 is C_{3-6}-alkyl, C_{3-6}-alkenyl, or C_{3-5}-cycloalkyl—C_{1-2}-alkyl.

16. A method of treating Parkinson's Disease comprising administering a compound of claim 1.

5,547,959

INNOVATIVE TECHNIQUE FOR IMMUNOSUPPRESSION INVOLVING ADMINISTRATION OF RAPAMYCIN LOADED FORMED BLOOD ELEMENTS

Jay J. Armstrong, Bensalem, Pa., and Surendra N. Sehgal, Princeton, N.J., assignors to American Home Products Corporation, Madison, N.J.

Division of Ser. No. 998,065, Dec. 22, 1992, Pat. No. 5,482,945. This application Apr. 18, 1995, Ser. No. 423,183

Int. Cl.[6] A61K *31/44*

U.S. Cl. 514—291 **1 Claim**

1. A method for inducing suppression of the immune responses of autoimmune diseases which consists of intravenous or intraarterial administration of a therapeutically effective amount of rapamycin-loaded formed blood elements suspended in blood plasma or a physiological substitute thereof wherein the autoimmune disease inhibited is systemic lupus erythematosus.

5,547,960

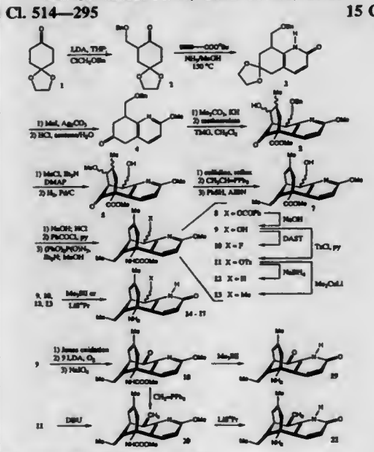
C-10 ANALOGS OF HUPERZINE A

Alan P. Kozikowski, Princeton, and Werner Tückmantel, North Brunswick, both of N.J., assignors to Mayo Foundation for Medical and Research, Rochester, Mich.

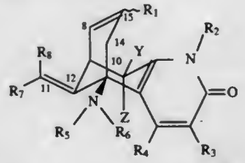
Filed Sep. 7, 1994, Ser. No. 302,357

Int. Cl.[6] A61K *31/44;* **C07D** *221/06;221/22*

U.S. Cl. 514—295 **15 Claims**



1. A compound of the formula:



wherein one of Y and Z is H or $(C_1–C_8)$alkyl and the other of Y and Z is $(C_1–C_8)$alkyl, vinyl, $(C_3–C_8)$alkenyl, ethynyl or CH_2X wherein X is OH, F, OC(O)Ph, or OSO_2CF_3; or together Y and Z are carbonyl or methylene; R_1 is H, $(C_1–C_8)$alkyl, or halo; R_2 is H or $(C_1–C_8)$alkyl; R_3 and R_4 are individually H, $(C_1–C_8)$alkyl, NO_2, hydroxy, or halo; R_5 and R_6 are individually H, $(C_1–C_8)$alkyl, aryl, or aralkyl; R_7 is H, halo, or $(C_1–C_8)$alkyl, R_8 is halo or $(C_1–C_8)$alkyl; or a pharmaceutically acceptable salt thereof.

5,547,961

METHOD OF TREATMENT OF INTESTINAL DISEASES

Mitsuaki Ohta; Takeshi Suzuki; Jun-ya Ohmori; Keiji Miyata, all of Ibaraki, and Isao Yanagisawa, Tokyo, all of, Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 215,226, Mar. 21, 1994, abandoned, which is a division of Ser. No. 755,735, Jan. 15, 1993, Pat. No. 5,336,679. This application Feb. 6, 1995, Ser. No. 384,624

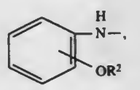
Claims priority, application Japan, May 25, 1990, 2-135850

Int. Cl.[6] A61K *31/435*

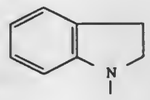
U.S. Cl. 514—300 **6 Claims**

1. A method of treatment of the syndrome of hypersensitive intestinal diseases which comprises administering a tetrahydroimidazopyridine derivative represented by the following formula:

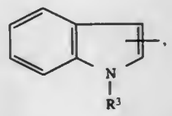
wherein either one of X and Y is nitrogen and the other one is a radical represented by the formula =C(R^1)—; and R is a radical of the formula:



a radical of the formula:



or a radical of the formula:



wherein R^1, R^2 and R^3 are the same or different and represent a hydrogen atom or a lower alkyl group, and salts thereof.

5,547,962

5-AMINO-8-METHYL-7-PYRROLIDINYLQUINOLINE-3-CARBOXYLIC ACID DERIVATIVE

Yasuo Ito, Katsuyama; Hideo Kato, Fukui; Singo Yasuda, Katsuyama; Noriyuki Kado, Fukui; Toshihiko Yoshida, Fukui-ken, and Yoichi Yamamoto, Nanao, all of, Japan, assignors to Horuriku Seiyaku Co., Ltd., Fujui-ken, Japan

Filed Jun. 17, 1994, Ser. No. 261,446

Claims priority, application Japan, Aug. 27, 1993, 5-234310; Oct. 22, 1993, 5-286272; Mar. 24, 1994, 6-76318

Int. Cl.[6] C07D *215/233;* A61K *31/47*

U.S. Cl. 514—312 **5 Claims**

1. 5-Amino-7-((S)-3-amino-1-pyrrolidinyl)-1-cyclopropyl-6-fluoro-1,4-dihydro-8 -methyl-4-oxoquinoline-3-carboxylic acid or a pharmacologically acceptable salt thereof.

5,547,963

METHOD FOR STIMULATING NERVE REGENERATION

Philippe Poindron; Serge Braun, both of Illkirch Cedex, and Badia Ferzaz, Antony, all of, France, assignors to Synthelabo, Le Plessis Robinson, France

Continuation of Ser. No. 230,930, Apr. 21, 1994, abandoned. This application Jul. 28, 1995, Ser. No. 508,458

Claims priority, application France, Mar. 9, 1994, 94 02699

Int. Cl.[6] A61K *31/445*

U.S. Cl. 514—317 **1 Claim**

1. A method of stimulating nerve regeneration in a mammal in need ther comprising administering to the mammal a therapeutically effective amount of eliprodil or an enantiomer thereof.

5,547,964

MEDICAL USE FOR TACHYKININ ANTAGONISTS

Russell M. Hagan, Ware, Great Britain, and Keith T. Bunce, Research Triangle Park, N.C., assignors to Glaxo Group Limited, London, England

Filed Mar. 17, 1994, Ser. No. 214,306

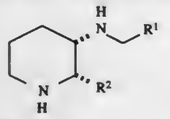
Claims priority, application United Kingdom, Mar. 19, 1993, 9305718

Int. Cl.[6] A61K *31/445*

U.S. Cl. 514—329 **13 Claims**

1. A method for the treatment or prophylaxis of emesis of a mammal, comprising administering to said mammal an effective amount of an NK_1 receptor antagonist of formula J, N, S or G:

(J)

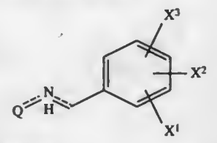


wherein

R^1 is aryl selected from the group consisting of indanyl, phenyl and naphthyl; heteroaryl selected from the group consisting of thienyl, furyl, pyridyl and quinolyl; or cycloalkyl having 3 to 7 carbon atoms, wherein one of said carbon atoms may optionally be replaced by nitrogen, oxygen or sulfur; wherein each of said aryl and heteroaryl groups may optionally be substituted with one or more substituents, and said $(C_3–C_7)$cycloalkyl may optionally be substituted with one or two substituents, said substituents being independently selected from the group consisting of chloro, fluoro, bromo, iodo, nitro, $(C_1–C_{10})$alkyl optionally substituted with from one to three fluoro groups, $(C_1–C_{10})$alkoxy optionally substituted with from one to three fluoro groups, amino, $(C_1–C_{10})$alkyl-S—, $(C_1–C_{10})$alkyl-S(O)—, $(C_1–C_{10})$alkyl-SO_2—, phenyl, phenoxy, $(C_1–C_{10})$alkyl-SO_2NH—, $(C_1–C_{10})$alkyl-SO_2NH-$(C_1–C_{10})$alkyl-, $(C_1–C_{10})$alkylamino-di$(C_1–C_{10})$alkyl-, cyano, hydroxy, cycloalkoxy having 3 to 7 carbon atoms, $(C_1–C_6)$alkylamino, $(C_1–C_6)$dialkylamino, HC(O)NH— and $(C_1–C_{10})$alkyl-C(O)—NH—, wherein the nitrogen atoms of said amino and $(C_1–C_6)$alkylamino groups may optionally be protected with an appropriate protecting group; and

R^2 is thienyl, benzhydryl, naphthyl or phenyl optionally substituted with from one to three substituents independently selected from the group consisting of chloro, bromo, fluoro, iodo, cycloalkoxy having 3 to 7 carbon atoms, $(C_1–C_{10})$alkyl optionally substituted with from one to three fluoro groups, and $(C_1–C_{10})$alkoxy optionally substituted with from one to three fluoro groups;

(N)



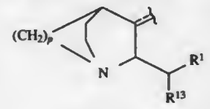
wherein

X^1 is hydrogen, $(C_1–C_{10})$alkoxy optionally substituted with from one to three fluorine atoms or $(C_1–C_{10})$alkyl optionally substituted with from one to three fluorine atoms;

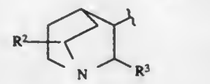
X^2 and X^3 are independently selected from the group consisting of hydrogen, halo, nitro, $(C_1–C_{10})$alkyl optionally substituted with from one to three fluorine atoms, $(C_1–C_{10})$alkoxy optionally substituted with form one to three fluorine atoms, trifluoromethyl, hydroxy, phenyl, cyano, amino, $(C_1–C_6)$-alkylamino, di-$(C_1–C_6)$alkylamino, —C(O)—NH-$(C_1–C_6)$-alkyl, $(C_1–C_6)$alkyl-C(O)—NH-$(C_1–C_6)$alkyl, hydroxy, $(C_1–C_4)$alkyl, $(C_1–C_4)$alkyoxy$(C_1–C_4)$alkyl, —NHC(O)H and —NHC(O)-$(C_1–C_6)$alkyl; and

Q is a group of the formula

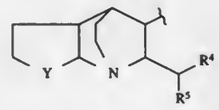
II



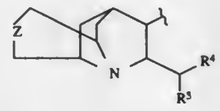
III



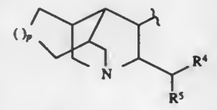
IV



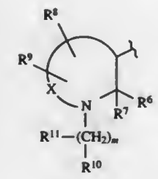
V



VI

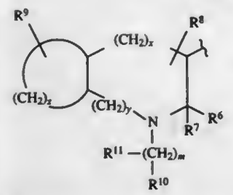


VII



-continued

VIII



wherein

R^1 is a radical selected from the group consisting of furyl, thienyl, pyridyl, indolyl, biphenyl and phenyl optionally substituted with one or two substituents independently selected from the group consisting of halo, $(C_1–C_{10})$alkyl optionally substituted with from one to three fluorine atoms, $(C_1–C_{10})$alkoxy optionally substituted with from one to three fluorine atoms, carboxy, benzyloxycarbonyl and $(C_1–C_3)$alkoxy-carbonyl;

R^{13} is selected from the group consisting of $(C_3–C_{44})$ branched alkyl, $(C_5–C_6)$ branched alkenyl, $(C_5–C_7)$cycloalkyl, and the radicals named in the definition of R^1;

R^2 is hydrogen or $(C_1–C_6)$alkyl;

R^3 is phenyl, biphenyl, naphthyl, pyridyl, benzhydryl, thienyl or furyl, and R^3 may optionally be substituted with from one to three substituents independently selected from the group consisting of halo, $(C_1–C_{10})$alkyl optionally substituted with from one to three fluorine atoms and $(C_1–C_{10})$alkoxy optionally substituted with from one to three fluorine atoms;

Y is $(CH_2)_l$ wherein l is an integer from one to three or Y is a group of the formula



Z is oxygen, sulfur, amino, $(C_1–C_3)$alkylamino or $(CH_2)_n$ wherein n is zero, one or two;

o is two or three;

p is zero or one;

R^4 is furyl, thienyl, pyridyl, indolyl, biphenyl, or phenyl optionally substituted with one or two substituents independently selected from the group consisting of halo, $(C_1–C_{10})$alkyl optionally substituted with from one to three fluorine atoms, $(C_1–C_{10})$alkoxy optionally substituted with from one to three fluorine atoms, carboxy, $(C_1–C_3)$alkoxycarbonyl and benzyloxycarbonyl;

R^5 is thienyl, biphenyl or phenyl optionally substituted with one or two substituents independently selected from the group consisting of halo, $(C_1–C_{10})$alkyl optionally substituted with from one to three fluorine atoms and $(C_1–C_{10})$alkoxy optionally substituted with from one to three fluorine atoms;

each of the two dashed lines in formula (N) and the dashed line in formula (II) represents an optional double bond that may optionally exist when Q is a group of the formula (II);

X is $(CH_2)_q$ wherein q is an integer from 1 to 6, and wherein any one of the carbon-carbon single bonds in said $(CH_2)_q$ may optionally be replaced by a carbon-carbon double bond, and wherein any one of the carbon atoms of said $(CH_2)_q$ may optionally be substituted with R^8, and wherein any one of the carbon atoms of said $(CH_2)_q$ may be substituted with R^9;

m is an integer from 0 to 8, and any one of the carbon-carbon single bonds of $(CH_2)_m$ may optionally be replaced by a carbon-carbon double bond, or a carbon-carbon triple bond, and any one of the carbon atoms of said $(CH_2)_m$ may optionally be substituted with R^{11};

R^6 is a radical selected from the group consisting of hydrogen, $(C_1–C_6)$ straight or branched alkyl, $(C_3–C_7)$cycloalkyl wherein one of the carbon atoms may optionally be replaced by nitrogen, oxygen or sulfur; aryl selected from the group consisting of biphenyl, phenyl, indanyl and napbthyl; heteroaryl selected from the group consisting of thienyl, furyl, pyridyl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, triazolyl, tetrazolyl and quinolyl; phenyl$(C_2–C_6)$alkyl, benzhydryl and benzyl, wherein each of said aryl and heteroaryl groups and the phenyl moieties of said benzyl, phenyl$(C_2–C_6)$alkyl and benzhydryl may optionally be substituted with one or more substituents independently selected from the group consisting of halo, nitro, $(C_1–C_{10})$alkyl optionally substituted with from one to three fluorine atoms, $(C_1–C_{10})$alkoxy optionally substituted with from one to three fluorine atoms, amino, hydroxy-$(C_1–C_6)$alkyl, $(C_1–C_6)$alkoxy-$(C_1–C_6)$alkyl, $(C_1–C_6)$alkylamino, $(C_1–C_6)$alkyl-O—C(O)—, $(C_1–C_6)$alkyl-O—C(O)—C-$(C_1–C_6)$alkyl, $(C_1–C_6)$alkyl-C—(O)—(O)—, $(C_1–C_6)$alkyl-C(O)$(C_1–C_6)$alkyl-O—, $(C_1–C_6)$alkyl-C(O), $(C_1–C_6)$alkyl-C(O)$(C_1–C_6)$alkyl-, di-$(C_1–C_6)$alkylamino, —C(O)NH-$(C_1–C_6)$-alkyl-, $(C_1–C_6)$alkyl-C(O)—NH-$(C_1–C_6)$alkyl, —NHC(O)H and NHC(O)-$(C_1–C_6)$alkyl; and wherein one of the phenyl moieties of said benzhydryl may optionally be replaced by naphthyl, thienyl, furyl or pyridyl;

R^7 is hydrogen, phenyl or $(C_1–C_6)$alkyl;

or R^6 and R^7, together with the carbon to which they are attached, form a saturated carbocyclic ring having from 3 to 7 carbon atoms wherein one of said carbon atoms may optionally be replaced by oxygen, nitrogen or sulfur;

R^8 and R^9 are each independently selected from the group consisting of hydrogen, hydroxy, halo, amino, oxo (=O), nitrile, hydroxy-$(C_1–C_6)$alkyl, $(C_1–C_6)$-alkoxy-$(C_1–C_6)$alkyl, $(C_1–C_6)$alkylamino, di-$(C_1–C_6)$alkylamino, $(C_1–C_6)$alkoxy, $(C_1–C_6)$alkyl-O—C(O)—, $(C_1–C_6)$-alkyl-O—C(O)-$(C_1–C_6)$alkyl, $(C_1–C_6)$alkyl-C(O)—O, $(C_1–C_6)$alkyl-C(O)-$(C_1–C_6)$alkyl-O—, $(C_1–C_6)$alkyl-C(O)—, $(C_1–C_6)$alkyl-C(O)-$(C_1–C_6)$alkyl-, and the radicals set forth in the definition of R^6;

R^{10} is $NHCR^{12}$, $NHCH_2R^{12}$, $NHSO_2R^{12}$, or one of the radicals set forth in any of the definitions of R^6, R^8 and R^9;

R^{11} is oximino (=NOH) or one of the radicals set forth in any of the definitions of R^6, R^8 and R^9; and

R^{12} is $(C_1–C_6)$alkyl, hydrogen, phenyl$(C_1–C_6)$alkyl or phenyl optionally substituted with $(C_1–C_6)$alkyl, and

with the provisos that

(a) when m is O, R^{11} is absent;

(b) neither R^8, R^9, R^{10} nor R^{11} can form, together with the carbon to which it is attached, a ring with R^7;

(c) when Q is a group of the formula (VIII), R^8 and R^9 cannot be attached to the same carbon atom;

(d) when R^8 and R^9 are attached to the same carbon atom, then either each of R^8 and R^9 is independently selected from hydrogen, fluoro, $(C_1–C_6)$alkyl, hydroxy-$(C_1–C_6)$alkyl and $(C_1–C_6)$alkoxy-$(C_1–C_6)$alkyl, or R^8 and R^9, together with the carbon to which they are attached, form a $(C_3–C_{46})$ saturated carbocyclic ring that forms a spiro compound with the nitrogen-containing ring to which they are attached;

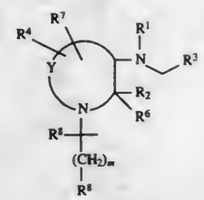
(e) the nitrogen of formula (N) cannot be double bonded to both Q and the substituted benzyl group to which it is attached;

(f) when Q is a group of the formula (VII) and q is 2 and either R^8 or R^9 is 5-hydroxy-$(C_1–C_6)$alkyl or 5-(C_1C_6)alkoxy-$(C_1–C_6)$alkyl, then the other of R^8 or R^9 is either 5-$(C_1–C_6)$alkyl or hydrogen;

(g) when Q is a group of the formula (VII) and q is 2, then neither R^8 nor R^9 is 4-hydroxy-$(C_1–C_6)$alkyl or 4-$(C_1–C_6)$alkoxy-$(C_1–C_6)$alkyl; and

(h) when neither X^1, X^2 nor X^3 is a fluorinated alkoxy group, at least one of R^1, R^3, R^4, R^5, R^6, R^7 and R^{13} is an aryl group substituted with a fluorinated alkoxy group;

and pharmaceutically acceptable acid addition and base salts of compounds of the formula (N);



(S)

wherein

Y is $(CH_2)_n$ wherein n is an integer from 1 to 6, and wherein any one of the carbon-carbon single bonds in said $(CH_2)_n$ may optionally be replaced by a carbon-carbon double bond, and wherein any one of the carbon atoms of said $(CH_2)_n$ may optionally be substituted with R^4, and wherein any one of the carbon atoms of said $(CH_2)_n$ may be substituted with R^7;

m is an integer from 0 to 8, and any one of the carbon-carbon single bonds of $(CH_2)_m$ may optionally be replaced by a carbon-carbon double bond, or a carbon-carbon triple bond, and any one of the carbon atoms of said $(CH_2)_m$ may be optionally substituted with R^8;

R^1 is hydrogen or $(C_1–C_8)$alkyl optionally substituted with hydroxy, alkoxy or fluoro;

R^2 is a radical selected from the group consisting of hydrogen, $(C_1–C_6)$ straight or branched alkyl, $(C_3–C_{47})$cycloalkyl wherein one of the carbon atoms may optionally be replaced by nitrogen, oxygen or sulfur; aryl selected from the group consisting of phenyl and naphthyl; heteroaryl selected from the group consisting of indanyl, thienyl, furyl, pyridyl, thiazolyl, isothiazolyl, oxazolyl, triazolyl, tetrazolyl and quinolyl; phenyl$(C_2–C_6)$alkyl, benzhydryl and benzyl, wherein each of said aryl and heteroaryl groups and the phenyl moieties of said benzyl, phenyl$(C_2–C_6)$alkyl and benzhydryl may optionally be substituted with one or more substituents independently selected from halo, nitro, $(C_1–C_6)$alkyl, $(C_1–C_6)$alkoxy, trifluoromethyl, amino, $(C_1–C_6)$alkylamino, $(C_1–C_6)$alkyl-O—C—(O)—, $(C_1–C_6)$alkyl-O—C(O)-$(C_1–C_6)$alkyl, $(C_1–C_6)$alkyl-C(O)—O, $(C_1–C_6)$alkyl-C(O)-$(C_1–C_6)$alkyl-O—, $(C_1–C_6)$alkyl-C(O)—, $(C_1–C_6)$alkyl-C(O)-$(C_1–C_6)$alkyl-, di-$(C_1–C_6)$alkyl-amino, —C(O)NH-$(C_1–C_6)$alkyl-, $(C_1–C_6)$alkyl-C(O)—NH-$(C_1–C_6)$alkyl, —NH(O)CH and —NH(O)C-$(C_1–C_6)$alkyl; and wherein one of the phenyl moieties of said benzhydryl may optionally be replaced by naphthyl, thienyl, furyl or pyridyl;

R^3 is hydrogen, phenyl or $(C_1–C_6)$alkyl;

or R^2 and R^3, together with the carbon to which they are attached, form a saturated carbocyclic ring having from 3 to 7 carbon atoms wherein one of said carbon atoms may optionally be replaced by oxygen, nitrogen or sulfur;

R^3 is aryl selected from the group consisting of phenyl and naphthyl; heteroaryl selected from the group consisting of indanyl, thienyl, furyl, pyridyl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, triazolyl, tetrazolyl and quinolyl; and cycloalkyl having 3 to 7 carbon atoms wherein one of said carbon atoms may optionally be replaced by nitrogen, oxygen or sulfur; wherein each of said aryl and heteroaryl groups may optionally be substituted with one or more substituents, and said $(C_3–C_7)$cycloalkyl may optionally be substituted with one or two substituents, each of said substituents being independently selected from the group consisting of halo, nitro, $(C_1–C_6)$alkyl, $(C_1–C_6)$alkoxy, trifluoromethyl, phenyl, amino, $(C_1–C_6)$alkylamino, —C(O)NH-$(C_1–C_6)$alkyl, $(C_1–C_6)$alkyl C(O)—NH-$(C_1–C_6)$alkyl, —NHC(O)H and —NHC(O)-$(C_1–C_6)$alkyl;

R^4 and R^7 are each independently selected from the group consisting of hydrogen, hydroxy, halo, amino, oxo (=O), nitrile, $(C_1–C_6)$alkylamino, di-$(C_1–C_6)$alkylamino, $(C_1–C_6)$alkoxy, $(C_1–C_6)$alkyl-O—C(O)—, $(C_1–C_6)$alkyl-O—C(O)-$(C_1–C_6)$alkyl, $(C_1–C_6)$alkyl-C(O)—O, $(C_1–C_6)$alkyl-C(O)-$(C_1–C_6)$alkyl-O—, hydroxy-$(C_1–C_6)$alkyl, $(C_1–C_6)$alkoxy$(C_1–C_6)$alkyl, $(C_1–C_6)$alkyl-C(O)—, $(C_1–C_6)$alkyl-C(O)-$(C_1–C_6)$alkyl- and the radicals set forth in the definition of R^2;

R^6 is NHC(O)R^9, $NHCH_2R^9$, SO_2R^9, or one of the radicals set forth in any of the definitions of R^2, R^4 and R^7;

R^8 is oximino (=NOH) or one of the radicals set forth in any of the definitions of R^2, R^4 and R^7;

R^9 is $(C_1–C_6)$alkyl, hydrogen, phenyl or phenyl$(C_1–C_6)$alkyl;

with the provisos that

(a) when m is O, R^8 is absent;

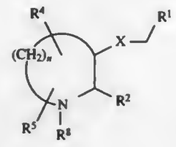
(b) neither R^4, R^6, R^7 nor R^8 can form, together with the carbon to which it is attached, a ring with R^5;

(c) when R^4 and R^7 are attached to the same carbon atom, then either each of R^4 and R^7 is independently hydrogen, fluoro or $(C_1–C_6)$alkyl, or R^1 and R^7, together with the carbon to which they are attached, form a $(C_3–C_6)$ saturated carbocyclic ring that forms a spiro compound with the nitrogen-containing ring to which they are attached;

(d) when n is 2 and either R^4 or R^7 is 5-hydroxy$(C_1–C_6)$alkyl or 5-$(C_1–C_6)$alkoxy-$(C_1–C_6)$alkyl, then the other of R^4 and R^7 is hydrogen;

(e) when n is 2, neither R^4 nor R^7 is 4-hydroxy$(C_1–C_6)$alkyl or 4-$(C_1–C_6)$alkoxy$(C_1–C_6)$alkyl; and

(f) in all compounds of the formula (S), either R^3 is aryl substituted with at least one phenyl group, or one or both of R^4 and R^7 is hydroxy-$(C_1–C_6)$alkyl or $(C_1–C_6)$alkoxy$(C_1–C_6)$alkyl;



(G)

wherein

n is 1, 2 or 3 and where any carbon atom of $(CH_2)_n$ may be substituted by R^4 and/or R^5;

X represents O or S;

R^1 represents phenyl optionally substituted by 1, 2 or 3 groups selected from the group consisting of C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, halo, cyano, nitro, trifluoromethyl, trimethylsilyl, —OR^a, SR^a, SOR^a, SO_2R^a, —NR^aR^b, —NR^aCOR^b, —$NR^aCO_2R^b$, CO_2R^a, or —$CONR^aR^b$;

R^2 represents aryl selected from the group consisting of phenyl and naphthyl; heteroaryl selected from the group consisting of indazolyl, thienyl, furyl, pyridyl, thiazolyl, tetrazolyl and quinolyl; benzhydryl; or benzyl; wherein each aryl or heteroaryl moiety may be substituted by C_{1-6}alkyl, C_{1-6}alkoxy, halo or trifluoromethyl;

R^4 and R^5 each independently represent H, halo, CH_2OR^9, C_{1-6}alkyl, oxo, CO_2R^{10} or $CONR^{10}R^{11}$;

R^8 represents H, COR^9, CO_2R^{10}, $COCONR^{10}R^{11}$, $COCO_2R^{10}$ or C_{1-6}alkyl optionally substituted by a group selected from the group consisting of CO_2R^{10}, $CONR^{10}R^{11}$, hydroxy, cyano, COR^9, $NR^{10}R^{11}$, C(NOH)$NR^{10}R^{11}$, CONHphenyl-$(C_{1-4}$alkyl), $COCO_2R^{10}$, $COCONR^{10}R^{11}$ and phenyl optionally substituted by one or more substituents selected from the group consisting of C_{1-6}alkyl, C_{1-6}alkoxy, halo and trifluoromethyl;

R^a and R^b each independently represent H, C_{1-6}alkyl, phenyl or trifluoromethyl;

R^9 represents H, C_{1-6}alkyl or phenyl; and

R^{10} and R^{11} each independently represent H or C_{1-6}alkyl.

5,547,965

USE OF SUBSTITUTED AMINES FOR THE TREATMENT OF BRAIN FUNCTION DISORDERS

Bernd-Wieland Krüger, Bergisch Gladbach, Germany; Fritz Maurer, Tochigi, Japan; Christoph Methfessel, Sprockhövel, Germany; Klaus Tietjen, Langenfeld, Germany; Alfred Maelicke, Niederholm, Germany; Bernard Schmidt, Lindlar, Germany, and Kozo Shiokawa, Kawasaki, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

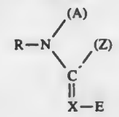
Filed Apr. 19, 1995, Ser. No. 424,950

Claims priority, application Germany, Apr. 27, 1994, 44 14 569.1

Int. Cl.[6] A61K *31/44;31/53;31/445;31/415*

U.S. Cl. 514—342 **13 Claims**

1. A method of treating or preventing brain functional disorders in a patient in need thereof which comprises administering to such patient an amount effective therefor of a compound of the formula



(I)

in which

R is hydrogen, or an optionally substituted acyl, alkyl, aryl, aralkyl, heteroaryl or heteroarylalkyl radical,

A is hydrogen or an acyl, alkyl or aryl radical, or is a bifunctional radical which is linked to the radical Z,

E is an electron-withdrawing radical,

X is a —CH= or =N— radical, it being possible for the —CH= radical to be linked to the Z radical instead of an H atom,

Z is an alkyl, —O—R, —S—R or



radical or is a bifunctional radical which is linked to the A radical or the X radical.

5,547,966

ARYL UREA AND RELATED COMPOUNDS

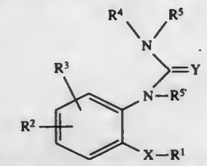
Karnail S. Atwal, Newtown, Pa.; Francis N. Ferrara, Martinsville, and Charles Z. Ding, Plainsboro, both of N.J., assignors to Bristol-Myers Squibb Company, Princeton, N.J.

Filed Oct. 7, 1993, Ser. No. 134,195

Int. Cl.[6] A61K *31/44;* **C07D** *213/02*

U.S. Cl. 514—352 **5 Claims**

1. A compound of the formula



I

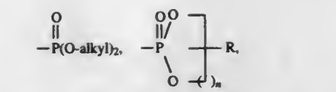
or pharmaceutically acceptable salts thereof wherein

X is a single bond, O, CO, S, NH or N(lower);

Y is O, S or NCN;

R^1 is cycloalkyl, aryl, or (aryl)alkyl;

R^2 is hydrogen, alkyl, haloalkyl, alkenyl, alkynyl, cycloalkyl, arylalkyl, (cycloalkyl)alkyl, —CN, —NO_2, —COR, —COOR, —CONHR, —$CONR^6$, —CF_3, —S-alkyl, —SOalkyl, —SO_2alkyl,



halogen, amino, substituted amino, —O-alkyl, —OCF_3, —OCH_2CF_3, —OCOalkyl, —OCONRalkyl, —NRCOalkyl, —NRCOOalkyl or —$NRCONR^6$, where R is hydrogen, alkyl, haloalkyl, aryl, arylalkyl, cycloalkyl or (cycloalkyl)alkyl;

R^3 is hydrogen, alkyl, hydroxy, —O-alkyl, amino, substituted amino, —NHCOR, —CN or —NO_2;

R^4 is heterocyclo;

R^5 and $R^5$are hydrogen, alkyl, or haloalkyl;

R^6 is hydrogen, hydroxy or —OCOR; and

n is an integer of 1 to 3, provided that when R^4-is pyridyl, R^1 is alkyl, X is a single bond and Y is oxygen, then R^2 is —CN or —CONHR and that when R^2 is hydrogen then R^3 is other than hydrogen.

5,547,967

(PHENYLALKYLAMINOALKYLOXY)-HETEROARYL-COMPOUNDS, PROCESSES AND INTERMEDIATES FOR THEIR PRODUCTION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Wolfgang Kehrbach; Michael Milnaric, both of Hannover; Dieter Ziegler, Hemmingen; Reinhard Brueckner, Hannover, and Willi Bielenberg, Alfeld/Leine, all of, Germany, assignors to Kali-Chemie Pharma GmbH, Hannover, Germany

Continuation-in-part of Ser. No. 352,353, Dec. 8, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 476,118

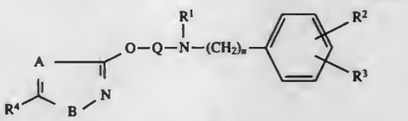
Claims priority, application Germany, Dec. 8, 1993, 43 41 749.3; Apr. 10, 1995, 195 13 503.2

Int. Cl.[6] A61K *31/41;31/42;* **C07D** *413/04;417/04;261/12;271/07;285/08*

U.S. Cl. 514—361 **12 Claims**

1. A compound corresponding to formula XXXI

XXXI



wherein

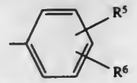
R^1 represents hydrogen or a lower alkyl group;

R^2 is hydrogen, halogen, lower alkyl, lower alkoxy, hydroxy, or, if Q and R^4 do not contain an OH group and R^3 is other than hydroxy, also a lower alkanoyloxy, and

R^3 represents hydrogen, halogen, lower alkyl, lower alkoxy, hydroxy, or, if Q and R^4 do not contain an OH group and R^2 is other than hydroxy, also lower alkanoyloxy or, if R^2 is hydrogen, also a trifluoromethyl, nitro amino, a lower alkylamino, lower alkylsulfonylamino, or a lower alkanoylamino group, with the proviso that R^3 is not nitro if R^6 is an amino, a lower alkylamino, or a lower alkanoylamino group, and is not lower alkanoylamino if R^6 is an amino or lower alkylamino group, or

R^2 and R^3 are bonded to two adjacent carbon atoms and together form an alkylenedioxy group with 1–2 carbon atoms;

R^4 represents thienyl or an optionally substituted phenyl group corresponding to formula c



c

wherein

R^5 is hydrogen, halogen, lower alkyl, lower alkoxy, hydroxy or, if Q does not contain an OH group and R^2, R^3, and R^6 are other than hydroxy, also a lower alkanoyloxy group, and

R^6 represents hydrogen, halogen, lower alkyl, lower alkoxy, hydroxy or, if Q does not contain an OH group and R^2, R^3, and R^5 are other than hydroxy, also a lower alkanoyloxy, or if R^5 is hydrogen, also a trifluoromethyl, nitro, amino, lower alkylamino, or a lower alkanoylamino group;

A represents nitrogen or an R^7-C group in which R^7 is hydrogen or a lower alkyl group,

B represents oxygen or, if A is nitrogen, also sulfur,

n is an integer from 1 to 5, and

Q represents a $(CH_2)_m$ group where m is an integer from 2 to 8 and which can optionally be substituted by lower alkyl, or represents the 2-hydroxypropylene chain, or a physiologically acceptable acid addition salt thereof.

5,547,968

TREATMENT OF OCULAR HYPERTENSION WITH A SYNERGISTIC COMBINATION

Ryuji Ueno, Hyogo-ken, Japan, assignor to R-Tech Ueno, Ltd., Osaka, Japan

Continuation of Ser. No. 352,822, Dec. 1, 1994, abandoned, which is a continuation of Ser. No. 51,434, Apr. 23, 1993, abandoned, which is a continuation of Ser. No. 833,025, Feb. 10, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 487,637

Claims priority, application Japan, Mar. 1, 1991, 3-061328

Int. Cl.[6] A61K *31/41;31/215;31/19*

U.S. Cl. 514—363 **9 Claims**

1. A method for treatment of ocular hypertension which comprises ocularly administering, to a subject in need of such treatment, an oculo-hypotensively synergistic combination of (a) a 13,14-dihydro-15-keto-20-lower alkyl prostaglandin F or a pharmaceutically acceptable salt thereof or a lower alkyl ester thereof and (b) acetazolamide, or a pharmaceutically acceptable salt thereof, in an amount effective in treatment of ocular hypertension.

5,547,969

METHOD FOR THE TREATMENT OF BRADYPHRENIA IN PARKINSON'S DISEASE PATIENTS

Ram Kaminski, Riverdale, N.Y., assignor to Mount Sinai School of Medicine of the City University of New York, N.Y.

Division of Ser. No. 954,258, Sep. 30, 1992, Pat. No. 5,352,688, which is a continuation-in-part of Ser. No. 743,254, Aug. 9, 1991, Pat. No. 5,177,081, which is a division of Ser. No. 655,759, Feb. 14, 1991, Pat. No. 5,070,101. This application Sep. 28, 1994, Ser. No. 314,414

Int. Cl.[6] A61K *31/425;31/34*

U.S. Cl. 514—370 **12 Claims**

1. A method for treating the symptoms of bradyphrenia in a patient suffering from Parkinson's Disease comprising administering to the patient a histamine H_2-antagonist that crosses the blood brain barrier in an amount effective to ameliorate the symptoms of bradyphrenia.

5,547,970

USE OF LEFLUNOMIDE FOR INHIBITING TUMOR NECROSIS FACTOR ALPHA

Klaus U. Weithmann, Hofheim, and Robert R. Bartlett, Darmstadt, both of, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 177,981, Jan. 6, 1994, abandoned. This application Mar. 28, 1995, Ser. No. 411,995

Claims priority, application Germany, Jan. 8, 1993, 43 00 280.3

Int. Cl.[6] A61K *31/42*

U.S. Cl. 514—378 **1 Claim**

1. A method for the treatment of a condition characterized by an elevated tumor necrosis factor alpha level in a human or animal suffering from endotoxic shock, cachexia, malaria, meningitis, pneumonia, poisoning by endotoxins, connective tissue swellings, pulmonary intoxications or pulmonary edema, wherein the method comprises administering to said human or animal N-(4-trifluoromethylphenyl)-5-methylisoxazole-4-carboxamide in an amount sufficient to inhibit the synthesis and liberation of said tumor necrosis factor.

5,547,971

USE OF LEFLUNOMIDE FOR INHIBITING INTERLEUKIN 8

Klaus U. Weithmann, Hofheim, and Robert R. Bartlett, Darmstadt, both of, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 177,980, Jan. 6, 1994, abandoned. This application Mar. 28, 1995, Ser. No. 411,848

Claims priority, application Germany, Jan. 8, 1993, 43 00 278.1

Int. Cl.[6] A61K *31/42*

U.S. Cl. 514—378 **1 Claim**

1. A method for the treatment of a condition characterized by the elevated interleukin 8 level in a human or animal suffering from skin cancer or wounds that do not readily heal, wherein the method comprises administering to said human or animal N-(4-trifluoromethylphenyl)-5-methylisoxazole-4-carboxamide in an amount sufficient to inhibit the synthesis and liberation of said interleukin.

5,547,972

THERAPEUTIC AGENTS USEFUL FOR TREATING INFLAMMATORY DISEASES

Lawrence S. Clegg; Ian M. Hunneyball; Colin G. P. Jones; Paul Rafferty, and Leslie Steele, all of Nottinghamshire, United Kingdom, assignors to The Boots Company PLC, Notts, United Kingdom

PCT No. PCT/EP92/02899, § 371 Date Jun. 3, 1994, § 102(e) Date Jun. 3, 1994, PCT Pub. No. WO93/13075, PCT Pub. Date Jul. 8, 1993

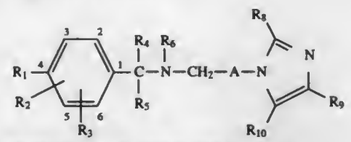
PCT Filed Dec. 12, 1992, Ser. No. 244,246

Claims priority, application United Kingdom, Dec. 23, 1991, 9127304

Int. Cl.[6] A61K *31/415;* **C07D** *233/61*

U.S. Cl. 514—399 **14 Claims**

1. Compounds of formula II



II

and pharmaceutically acceptable salts thereof

in which R_1 represents halo, a C_{1-4} alkyl group, a C_{2-4} alkoxy group, phenoxy, phenyl, a C_{2-4} alkoxycarbonyl group, a perhalo C_{1-2} alkoxy group, a perhalo C_{1-2} alkyl group, benzyloxy, an amino group of formula $NR_{13}R_{14}$ (in which R_{13} and R_{14} independently represent hydrogen or a C_{1-4} alkyl group), a $(C_{2-4}$alkoxycarbonyl)vinyl group, a C_{2-6} alkoxycarbonyl C_{1-2} alkyl group or R_1 and R_2 together with the phenyl ring to which they are attached represent a naphthyl group;

R_2 and R_3 independently represent hydrogen, halo, a C_{1-4} alkyl group, a C_{1-4} alkoxy group, a perhalo C_{1-2} alkyl group, or hydroxy;

R_4 and R_5 independently represent hydrogen, a C_{1-4} alkyl group, phenyl or R_4 and R_5 together with the carbon atom to which they are attached represent a C_{3-6} cycloalkyl group;

R_6 represents hydrogen or a C_{1-3} alkyl group;

A represents ethylene [trimethylene, tetramethylene, 1,1-dimethylethylene or heptamethylene];

R_8 represents hydrogen, a C_{1-4} alkyl group, phenyl or benzyl; and

R_9 and R_{10} independently represent hydrogen, a C_{1-4} alkyl group, halo, a C_{1-4} hydroxyalkyl group, a C_{2-6} alkoxycarbonyl group, nitro, or a C_{1-6} alkanoyloxy C_{1-2} alkyl group.

5,547,973

METHOD OF INHIBITING AROMATASE

Koichi Nimura, Saitama; Takao Ando, Yamanashi; Toyohiko Nitta, Ibaraki, and Yuko Ikeda, Chiba, all of, Japan, assignors to Kureha Chemical Industry Co., Ltd., Tokyo, Japan

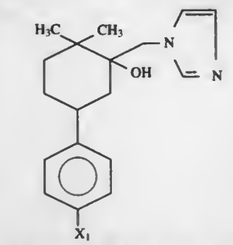
Continuation-in-part of Ser. No. 137,045, Oct. 14, 1993, Pat. No. 5,489,597. This application Jun. 7, 1995, Ser. No. 486,142

Claims priority, application Japan, Feb. 15, 1992, 4-61441

Int. Cl.[6] A61K *31/415;* **C07D** *233/60*

U.S. Cl. 514—399 **14 Claims**

1. A method of inhibiting aromatase, comprising administering to a mammal in need thereof a pharmaceutical composition comprising an effective aromatase inhibiting amount of a compound of the formula (I):



(I)

wherein X_1 is a chlorine or fluorine atom, or a hydroxy group, or a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable carrier.

5,547,974

DERIVATIVES OF N-PHENYLPYRAZOLES

Leslie R. Hatton, Essex; Ian G. Buntain, Chelmsford; David W. Hawkins, Upminster; Edgar W. Parnell, Essex; Christopher J. Pearson, Essex, and David A. Roberts, Essex, all of, England, assignors to Rhone-Poulenc Agriculture Ltd., Essex, England

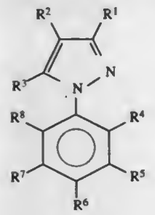
Division of Ser. No. 520,290, May 7, 1990, Pat. No. 5,232,940, which is a continuation-in-part of Ser. No. 445,153, Dec. 5, 1989, abandoned, and a continuation of Ser. No. 380,333, Jul. 17, 1989, abandoned, and Ser. No. 413,134, Sep. 27, 1989, abandoned, which is a continuation of Ser. No. 205,238, Jun. 10, 1988, abandoned, said Ser. No. 445,153is a continuation of Ser. No. 943,132, Dec. 18, 1986, abandoned, said Ser. No. 380,333is a continuation of Ser. No. 205,299, Jun. 10, 1988, abandoned. This application May 5, 1993, Ser. No. 57,669

Claims priority, application United Kingdom, Dec. 20, 1985, 85/31485; Jun. 12, 1987, 87/13768; Jun. 12, 1987, 87/13769

Int. Cl.[6] A61K *31/41;* **C07D** *231/10*

U.S. Cl. 514—406 **18 Claims**

1. A compound of the formula:



(I)

wherein:

R^1 represents cycloalkyl having from 3 to 6 carbon atoms;

R^2 represents $R'SO_2$, R'SO, or R'S or wherein R' is straight- or branched-chain alkyl, alkenyl or alkynyl having up to 6 carbon atoms which is unsubstituted or substituted by one or more halogen atoms which are the same or different; or R^2 is cyano, cycloalkyl having from 3 to 5 carbon atoms, straight- or branched-chain alkenyl having from 2 to 6 carbon atoms, thiocyanato, sulphamoyl which is unsubstituted or substituted by one or two straight- or branched-chain alkyl which are the same or different and which have from 1 to 6 carbon atoms, carbamoyl which is unsubstituted or substituted by one or two straight- or branched-chain alkyl which are the same or different and which have from 1 to 6 carbon atoms, straight- or branched-chain alkoxycarbonyl having from 2 to 7 carbon atoms, straight- or branched-chain alkanoyl having from 2 to 7 carbon atoms, or straight- or branched-chain alkyl having from 1 to 6 carbon atoms which is substituted by one or more halogen atoms;

R^3 represents hydrogen, or an amino group —NR"R"' wherein R" and R"', which are the same or different, each represents hydrogen, straight- or branched-chain alkenylalkyl or alkynylalkyl having up to 5 carbon atoms, straight- or branched-chain alkyl having from 1 to 6 carbon atoms, and which are unsubstituted or substituted by straight- or branched-chain alkoxycarbonyl of 2 to 5 carbon atoms, formyl, or straight- or branched-chain alkanoyl having from 2 to 7 carbon atoms and being unsubstituted or substituted with one or more halogen atoms; or R" and R"', together with the nitrogen atom to which they are attached, form a 5 or 6 membered cyclic imide and are themselves unsubstituted or substituted by one or more halogen atoms; or R^3 represents straight- or branched-chain alkoxycarbonyl having from 2 to 7 carbon atoms and being unsubstituted or substituted by one or more halogen atoms, or R^3 represents straight- or branched-chain alkoxymethyleneamino having from 2 to 5 carbon atoms which is unsubstituted or substituted on methylene by a straight- or branched-chain alkyl having from 1 to 4 carbon atoms; or R^3 represents halogen, cycloalkyl having from 3 to 6 carbon atoms, cycloalkylcarbonyl having from 4 to 7 carbon atoms or straight- or branched-chain alkoxycarbonyl having from 2 to 7 carbon atoms and which are unsubstituted or substituted by one or more halogen atoms; or R^3 represents straight- or branched-chain alkylsulphenylamino having from 1 to 4 carbon atoms, straight- or branched-chain alkoxymethyleneamino having from 2 to 5 carbon atoms which is unsubstituted or substituted on methylene by a straight- or branched-chain alkyl having from 1 to 4 carbon atoms; or R^3 represents straight- or branched-chain alkyl having from 1 to 4 carbon atoms, carboxy, or straight- or branched-chain alkylthio, alkylsulphinyl or alkylsulphonyl having from 1 to 6 carbon atoms which is unsubstituted or substituted by one or more halogen atoms; or R^3 represents straight- or branched-chained trialkylsilylmethyl having from 1 to 6 carbon atoms in each alkyl group which are the same or different, trialkylsilyl having from 1 to 6 carbon atoms in each alkyl group which are the same or different, or a cyano or nitro group;

and R^4, R^5, R^6, R^7 and R^8 are the same or different and represent halogen, straight- or branched-chain alkyl or alkoxy having from 1 to 4 carbon atoms which is unsubstituted or substituted by one or more halogen atoms, straight- or branched-chain alkylthio or alkylsulphinyl having from 1 to 4 carbon atoms which is substituted by one or more halogen atoms, nitro, cyano, or straight- or branched-chain alkylsulphonyl having from 1 to 4 carbon atoms which is unsubstituted or substituted by one or more halogen atoms.

5,547,975

BENZOPYRANOPYRAZOLYL DERIVATIVES FOR THE TREATMENT OF INFLAMMATION

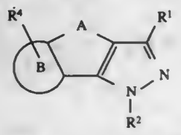
John J. Talley, 8772 Pine Ave.; Stephen R. Bertenshaw, 8758 Pine Ave., both of Brentwood, Mo. 63114; Matthew J. Graneto, 1510 Voltaire Dr., St. Louis, Mo. 63146, and Donald J. Rogier, 1828 Westmeade Dr., Chesterfield, Mo. 63017

Filed Sep. 20, 1994, Ser. No. 309,291

Int. Cl.[6] A61K *31/415;31/63;* **C07D** *491/048;495/04*

U.S. Cl. 514—406 **32 Claims**

1. A compound of Formula I



(I)

wherein A is $—(CH_2)_m—X—(CH_2)_n—$;

wherein X is selected from $S(O)_p$, and O;

wherein m is 0 to 3, inclusive;

wherein n is 0 to 3, inclusive;

wherein p is 0 to 2, inclusive;

wherein B is aryl;

wherein R^1 is selected from hydrido, halo, haloalkyl, cyano, nitro, formyl, alkoxycarbonyl, carboxyl, carboxyalkyl, alkoxycarbonylalkyl, amidino, cyanoamidino, aminocarbonyl, alkoxy, alkoxyalkyl, aminocarbonylalkyl, N-alkylaminocarbonyl, N-arylaminocarbonyl, N,N-dialkylaminocarbonyl, N-alkyl-N-arylaminocarbonyl, alkylcarbonyl, alkylcarbonylalkyl, hydroxyalkyl, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylthioalkyl, alkylsulfinylalkyl, alkylsulfonylalkyl, N-alkylsulfamyl, N-arylsulfamyl, arylsulfonyl, N,N-dialkylsulfamyl, and N-alkyl-N-arylsulfamyl;

wherein R^2 is aryl optionally substituted at a substitutable position with one or more radicals selected from alkylsulfonyl, sulfamyl, halo, alkyl, alkoxy, hydroxyl and haloalkyl; and

wherein R^4 is one or more radicals selected from hydrido, halo, alkylthio, alkylsulfinyl, alkyl, alkylsulfonyl, cyano, carboxyl, alkoxycarbonyl, amido, N-alkylaminocarbonyl, N-arylaminocarbonyl, N,N-dialkylaminocarbonyl, N-alkyl-N-arylaminocarbonyl, haloalkyl, hydroxyl, alkoxy, hydroxyalkyl, haloalkoxy, sulfamyl, N-alkylsulfamyl, amino, N-alkylamino, N,N-dialkylamino, nitro and acylamino;

provided either R^4 is sulfamyl or alkylsulfonyl, or R^2 is substituted with sulfamyl or alkylsulfonyl;

or a pharmaceutically-acceptable salt thereof.

5,547,976

FURTHER INDOLE DERIVATIVES WITH ANTIVIRAL ACTIVITY

Martin J. Slater; George S. Cockerill; Edward Littler, and Clive L. Yeates, all of Beckenham, Great Britain, assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

PCT No. PCT/GB93/00571, § 371 Date Aug. 23, 1994, § 102(e) Date Aug. 23, 1994, PCT Pub. No. WO93/18766, PCT Pub. Date Sep. 30, 1993

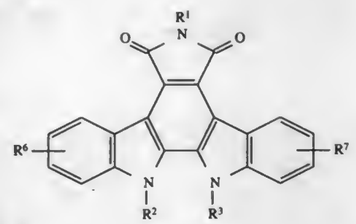
PCT Filed Mar. 19, 1993, Ser. No. 290,921

Claims priority, application United Kingdom, Mar. 20, 1992, 9206056; Mar. 27, 1992, 9206810

Int. Cl.[6] A61K *31/395;* **C07D** *403/14*

U.S. Cl. 514—410 **13 Claims**

1. A method of treatment of the symptoms or effects of a viral infection in an infected host which comprises administering to said host a therapeutically effective non-toxic amount of a compound of formula (I)



(I)

wherein

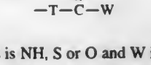
R^1 represents:

—H;

$—COR^{10}$, $—COOR^{10}$ where R^{10} is C_{1-6}alkyl, C_{3-7}cycloalkyl, aryl, arylalkyl, C_{1-6}alkenyl, or H;

$—OR^{10}$ where R^{10} is as hereinbefore defined;

$—C_{1-8}$ alkyl, C_{1-8} alkenyl or C_{3-8} cycloalkyl where the alky, alkenyl or cycloalkyl moiety may be optionally substituted by one or more substituents selected from halogen, cyano, nitro, azido, C_{3-8}cycloalkyl, $—OR^{10}$, $—SR^{10}$, $—SOR^{10}$, $—SO_2R^{10}$, $—NR^{11}R^{12}$ where R^{11} and R^{12}, which may be the same or different, each represent H, $—COR^{10}$ where R^{10} is as hereinbefore defined, C_{1-6} alkyl, C_{3-7} cycloalkyl, aryl, arylalkyl, tetrahydronaphthyl or indanyl or $—R^{11}R^{12}$ together with the N atom to which they are attached form a 3-,4-,5- or 6-membered heterocyclic ring in which from 1 to 3 of the carbon atoms may be replaced by heteroatoms independently selected from O, N and S, the ring being where possible, partially or completely unsaturated,



where T is NH or S, Z is NH, S or O and W is $NR^{11}R^{12}$ where R^{11} and R^{12} are each as defined above, non-aromatic heterocycle, —NH-non-aromatic-heterocycle and aryl, such heterocycle and aryl groups being optionally substituted by one or more substituents selected from $—OR^{10}$, $—NR^{11}R^{12}$, $—SR^{10}$, $—SOR^{10}$, $—SO_2R^{10}$, $—CO_2R^{10}$, nitro, cyano, SCN, C C_{1-6} alkyl wherein one or more hydrogen atoms are optionally replaced by a halogen atom, C_{3-6} cycloalkyl, hydroxyC_{1-6}alkyl, $CONH_2$, halogen and methylenedioxy, where R^{10}, R^{11} and R^{12} are each as defined above;

$—NR^{11}R^{12}$ where R^{11} and R^{12} are each as defined above;

-aryl optionally substituted by one or more substituents selected from OR^{10}, $—NR^{11}R^{12}$, $—SR^{10}$, $—SOR^{10}$, $—SO_2R^{10}$, $—CO_2R^{10}$, nitro, cyano, SCN, C_{1-6} alkyl wherein one or more hydrogen atoms are optionally replaced by a halogen atom, C_{3-6}cycloalkyl, hydroxy C_{1-6} alkyl, $CONH_2$, halogen and methylenedioxy where R^{10}, R^{11} and R^{12} are each as defined above;

a cyclic group containing from 3 to 6 carbon atoms in which from 1 to 3 of said atoms may be replaced by heteroatoms independently selected from O, S and N;

—NH-cyclic group containing from 3 to 6 carbon atoms in which from 1 to 3 of said atoms may be replaced by heteroatoms independently selected from O, S and N;

R^2 and R^3, which may be the same or different, are each independently selected from:

H;

$—COR^{10}$, $—COOR^{10}$ where R^{10} is C_{1-6}alkyl, C_{3-7} cycloalkyl, aryl, arylalkyl, C_{1-6} alkenyl, or H;

$—OR^{10}$ wherein R^{10} is as hereinbefore defined;

$—C_{1-8}$ alkyl, C_{1-8} alkenyl or C_{3-8} cycloalkyl where the alkyl, alkneyl or cycloalkyl moiety may be optionally substituted by one or more substituents selected from halogen, cyano, nitro, azido, C_{3-8} cycloalkyl, $—OR^{10}$, $—COR^{10}$, $—CO_2R^{10}$, $—OCOR^{10}$, $—SR^{10}$, $—SOR^{10}$, $—SO_2R^{10}$, $—CO_2NR^{11}R^{12}$, $—NR^{11}R^{12}$ where R^{11} and R^{12}, which may be the same or different, each represent H, $—COR^{10}$ where R^{10} is as hereinbefore defined, C_{1-6}alkyl, C_{3-7}cycloalkyl, aryl, arylakyl, tetrahydronaphthyl or indanyl or $—R^{11}R^{12}$ together with the N atom to which they are attached from a 3-,4-,5- or 6-membered heterocyclic ring in which from 1 to 3 of the carbon atoms may be replaced by heteroatoms independently selected from O, N and S, the ring being where possible, partially or completely unsaturated;

where T is NH or S, Z is NH, S or O and W is $NR^{11}R^{12}$ where R^{11} and R^{12} are each as defined above, non-aromatic heterocycle, —NH-non-aromatic-heterocycle and aryl, such heterocycle and aryl groups being optionally substituted by one or more substituents selected from $—OR^{10}$, $—NR^{11}R^{12}$, $—SR^{10}$, $—SOR^{10}$, $—SO_2R^{10}$, $—CO_2R^{10}$, nitro, cyano, SCN, C_{1-6} alkyl, wherein one or more hydrogen atoms are optionally replaced by a halogen atom, C_{3-6}cycloalkyl, hydroxy C_{1-6}alkyl, $CONH_2$, halogen and methylenedioxy, where R^{10},R^{11} and R^{12} are each as defined above;

$—NR^{11}R^{12}$ where R^{11} and R^{12} are each as defined above;

-aryl optionally substituted by one or more substituents selected from $—OR^{10}$, $—NR^{11}R^{12}$, SR^{10}, $—SOR^{10}$, $—SO_2R^{10}$, CO_2R^{10}, nitro, cyano, SCN, C_{1-6} alkyl, wherein one or more hydrogen atoms are optionally replaced by a halogen atom, C_{3-6}cycloalkyl, hydroxy C_{1-6} alkyl, $CONH_2$, halogen and methylenedioxy, where R^{10}, R^{11}, R^{12} are each as defined above;

R^6 and R^7, which may be the same or different, each represent one or more ring substituents selected from:

H;

C_{1-6}alkyl optionally substituted by one or more substituents independently selected from halogen $—NR^{11}R^{12}$, cyano, $—OR^{10}$, azido, $—SR^{10}$, $—SOR^{10}$, SO_2R^{10}, wherein R^{10}, R^{11}, and R^{12} are as hereinbefore defined;

cyano, nitro, halogen, methylenedioxy, $—OR^{10}$, $—SR^{10}$, $—SOR^{10}$, $—SO_2R^{10}$, $—NHSO_2R^{10}$, $—SO_2NR^{11}$ R^{12}, $—CO_2R^{10}$, $CONR^{11}R^{12}$, OCOR and $—NR^{11}$ R^{12} where R^{10}, R^{11} and R^{12} are as define above;

or a salt, ester or physiologically functional derivative thereof or a solvate of any thereof.

5,547,977

MEMORY ENHANCING AND ANALGESIC 1,2,3,3A,8,8A-HEXAHYDRO-3A,8(AND 1,3A,8)-DI (AND TRI) METHYLPYRROLO (2,3-B) INDOLES

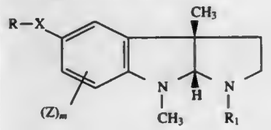
Richard L. Hamer, Far Hills; Grover C. Helsley, Pluckemin; Edward J. Glamkowski, Warren, and Yulin Chiang, Convent Station, all of N.J., assignors to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

Continuation of Ser. No. 828,752, Jan. 31, 1992, abandoned, which is a continuation of Ser. No. 252,309, Oct. 23, 1988, abandoned, which is a division of Ser. No. 49,894, May 15, 1987, Pat. No. 4,791,107, which is a continuation-in-part of Ser. No. 885,991, Jul. 16, 1986, abandoned. This application Oct. 16, 1992, Ser. No. 962,079

Int. Cl.[6] A61K *31/40;* **C07D** *487/04*

U.S. Cl. 514—41.1 **24 Claims**

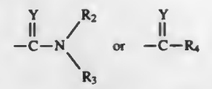
1. A compound of the formula



where

(a) X is O or S;

(b) R is



where Y is O or S; R_2 is bicycloalkyl, cycloalkenyl, arylloweralkyl, heteroaryl or heteroarylloweralkyl, R_3 is H or alkyl, and R_4 is hydrogen, loweralkyl, arylloweralkyl, diarylloweralkyl, aryl or heteroaryl;

(c) m is 1 or 2;

(d) each Z is independently H, loweralkyl, halogen, nitro, $—NH_2$, loweralkylcarbonylamino, arylcarbonylamino, loweralkoxycarbonylamino or loweralkylamino;

(e) R_1 is H, loweralkyl, arylloweralkyl, heteroarylloweralkyl, cycloalkylmethyl or loweralkenylmethyl;

or the 3aR-cis isomer thereof or a mixture of the two isomers including the racemic mixture or a pharmaceutically acceptable acid addition salt thereof.

5,547,978

DERIVATIVES OF PYRROLIDIN-2-YLCARBONYLHETEROCYCLIC COMPOUNDS

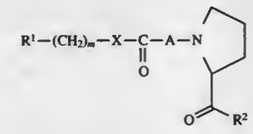
Burton G. Christensen, Lebanon, N.J.; Takashi Egawa, Yokohama, Japan; Yasuyuki Ichimaru, Kohoku-ku, Japan; Shokichi Ohuchi, Tokyo, Japan; Tsuneo Okonogi, Midoriku, Japan; Arthur A. Patchett, Westfield, N.J.; Seiji Shibahara, Tokyo, and Seiji Tsutsumni, Kohoku-ku, Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 6,105, Jan. 15, 1993, abandoned. This application Nov. 23, 1994, Ser. No. 346,240

Int. Cl.[6] C07D *207/06;209/08;277/06;* **A61K** *31/40*

U.S. Cl. 514—422 **13 Claims**

1. A pyrrolidin-2-ylcarbonylheterocyclic compound of the formula:



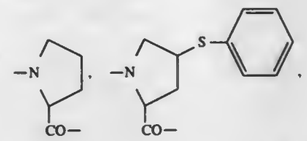
or its salt, wherein:

R^1 is aryl;

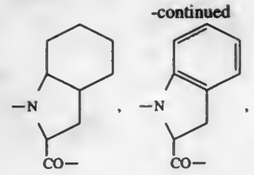
R^2 is a radical selected from the group consisting of 2-thiazole, 2-oxazole, 2-imidazole, 2-pyrrole, 2-thiophene, 2-benzothiazole, 2-benzoxazole, 2-benzimidazole, 4-oxazole, 2-(3,4-dimethylthiazole), 2-indole, 5-thiazole, 2-thiazoline, 2-triazole and 2-pyrazole;

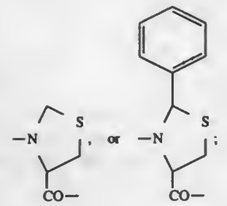
X is O, thiomethylene, or CH_2;

A is:



-continued





and m is an integer from 1 to 5.

5,547,979

TNF INHIBITION

Siegfried B. Christensen, IV, Philadelphia; Klaus M. Esser, Downingtown, both of Pa., and Philip L. Simon, Randolph, N.J., assignors to SmithKline Beecham, Philadelphia, Pa.

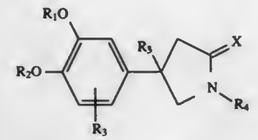
Continuation of Ser. No. 852,180, Mar. 30, 1992, Pat. No. 5,420,154. This application Apr. 19, 1995, Ser. No. 424,944

Int. Cl.[6] A61K *31/40*

U.S. Cl. 514—424 **7 Claims**

1. A method of treating tissue injury, reperfusion injury, myocardial infarction, stroke or circulatory shock in a mammal, which comprises administering to said animal in need thereof an effective TNF inhibiting amount of a compound according to the formula:

FORMULA (I)



wherein:

R_1 is cyclopentyl;

R_2 is selected from C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl all optionally substituted by one or more halogen atoms;

R_3 is a hydrogen atom or methoxy;

R_4 is a hydrogen atom, C_{1-5} alkyl, aryl, aryl optionally substituted by one or two methyl groups, aralkyl, C_{1-6} alkanoyl or COR_6;

R_6 is alkyl$_{1-10}$, hydroxy, O-C_{1-10}alkyl, aryl, aralkyl, O-aryl, O-aralkyl$_{1-10}$, NH_2, NH-C_{1-10}alkyl, NH-aryl, N(C_{1-10}alkyl)$_2$, N(aryl)$_2$, or -N(aryl)- (C_{1-10}alkyl);

X is an oxygen or sulfur atom;

R_5 is hydrogen or C_{1-4} alkyl; and the pharmaceutically acceptable salts thereof.

5,547,980

BICYCLE SULFONES, PROCESSES FOR THEIR PRODUCTION AND PHARMACEUTICAL AGENTS CONTAINING THEM

Walter-Gunar Friebe; Erhard Reinholz, both of Mannheim, and Henning Wilhelms, Weinheim, all of, Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

PCT No. PCT/EP92/01960, § 371 Date Feb. 28, 1994, § 102(e) Date Feb. 28, 1994, PCT Pub. No. WO93/05034, PCT Pub. Date Mar. 18, 1993

PCT Filed Aug. 26, 1992, Ser. No. 199,249

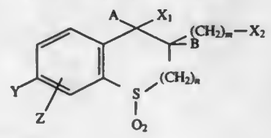
Claims priority, application Germany, Aug. 29, 1991, 41 28 690.1

Int. Cl.[6] A61K *31/38;* **C07D** *333/52*

U.S. Cl. 514—443 **9 Claims**

1. A bicyclic sulfone of the formula

(I)



wherein

Y is halogen;

Z is halogen or hydrogen;

m is an integer 1;

n is an integer 0;

A and B together are a valency bond;

X_1 is hydrogen and X_2 is —NR_1R_2;

R_1 is a member selected from the group consisting of C_1–C_6 alkyl, C_3–C_7 cycloalkyl, C_2–C_6 alkenyl and benzyl, with said benzyl being unsubstituted or substituted by halogen, C_1–C_6 alkyl, C_1–C_6 alkoxy or hydroxy; and

R_2 is hydrogen or a member as defined for R_1 or a tautomer, enantiomer, diastereomer or physiologically acceptable salt thereof.

5,547,981

TAXOL-7-CARBAZATES

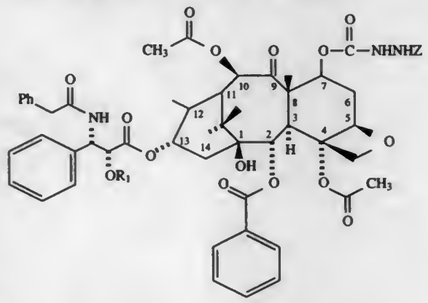
Richard B. Greenwald, Somerset, and Annapurna Pendri, Matawan, both of N.J., assignors to Enzon, Inc., Piscataway, N.J.

Continuation-in-part of Ser. No. 140,346, Oct. 20, 1993, abandoned, and Ser. No. 28,743, Mar. 9, 1993, abandoned. This application Feb. 17, 1994, Ser. No. 198,194

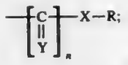
Int. Cl.[6] A61K *31/335;* **C07D** *305/14*

U.S. Cl. 514—449 **14 Claims**

1. A taxane derivative compound of the formula:



wherein Z is



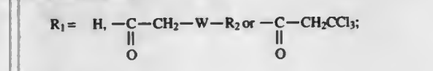
Y=O or S;

X=CH_2 or O;

n=a positive integer;

R=C_1–C_4 alkyl, haloalkyl, carboxyalkyl, thioalkyl, sulfonyalkyl, phenyl, hydroxyphenyl, aminophenyl, carboxyphenyl, a polyalkyleneoxide homopolymer or water soluble polyalkyleneoxide containing copolymer, having a molecular weight of from about 1,000 to about 20,000;

Ph is a phenyl group:

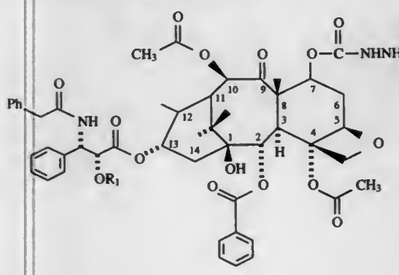


W=O, N—L, S or SO_2,

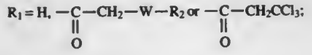
L=H, C_1–C_6 alkyl, phenyl;

R_2=C_1–C_6 alkyl, phenyl or a polyalkyleneoxide homopolymer or water soluble polyalkyleneoxide containing copolymer, having a molecular weight of from about 1,000 to about 20,000.

9. A taxane compound of the formula:



wherein



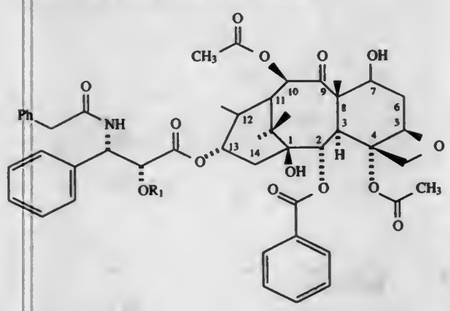
W=O, N—L, S or SO_2;

L=H, C_{1-C4} alkyl or phenyl;

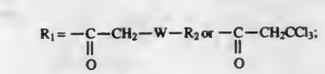
R_2=C_1–C_4 alkyl, phenyl or a water soluble polyalkyleneoxide having a molecular weight of from about 1,000 to about 20,000.

10. A method of preparing a taxane 7-carbazate, comprising:

a) dissolving a composition of the formula:



wherein:



W=O, N—L, S or SO_2;

L=H, C_1–C_4 alkyl or phenyl;

R_2=C_1–C_4 alkyl, phenyl or a water soluble polyalkyleneoxide having a molecular weight of flora about 1,000 to about 20,000 in an inert solvent;

b) reacting said dissolved composition of step a) with a member of the group consisting of carbonyldiimidazole, bis-succinimidyl carbonate, phosgene, phosgene derivatives, and paranitrophenylchloroformate and

c) reacting the product of step b) with a hydrazine derivative selected from the group consisting of acetic hydrazide, t-butyl carbazate, polyethylene glycol hydrazide and polyethylene glycol carbazate.

5,547,982

ANTI-TUMOR PLATINUM COMPLEXES

Michael J. Abrams, Glenmoore; Gerald E. Bossard, King of Prussia; Robert C. Brooks, Pottstown; Geoffrey W. Henson, and Jean F. Vollano, both of Exton, all of Pa., assignors to Johnson Matthey, Inc., West Chester, Pa.

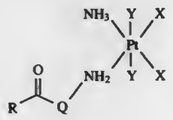
Filed Feb. 27, 1995, Ser. No. 396,164

Int. Cl.[6] A61K *31/28;* **C07F** *15/00*

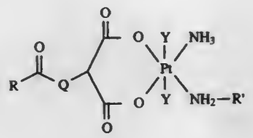
U.S. Cl. 514—492 **13 Claims**

1. A platinum complex selected from platinum complexes represented by one of the following structural formulas:

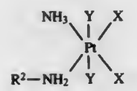
CLASS I



CLASS II



CLASS III



wherein R is H, lower alkyl of up to 8 carbons, alkenyl or alkynyl of up to 8 carbons or aryl; X is Cl, malonate, glycolate or oxalate; Y is OH, Cl, $COOR^1$ Lens B, or absent; Q is an alkylene, alkenyl, alkynyl or aryl linking group; R' is H, lower alkyl or aryl; R' is H, aliphatic, aromatic or cyclo aliphatic group and R^2 is a cyclic aliphatic ketone, ketal, hemiacetal or acetal.

5,547,983

AROMATIC AND POLYCYLIC COMPOUNDS AND THEIR USE IN HUMAN OR VETERINARY MEDICINE AND IN COSMETICS

Bruno Charpentier, Blot, France, assignor to Centre International de Recherches Dermatologiques, Valbonne, France

PCT No. PCT/FR92/00404, § 371 Date Aug. 22, 1994, § 102(e) Date Aug. 22, 1994, PCT Pub. No. WO92/19583, PCT Pub. Date Nov. 12, 1992

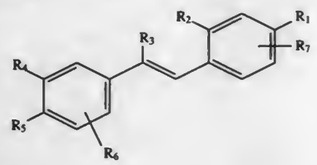
PCT Filed May 4, 1992, Ser. No. 140,079

Claims priority, application France, May 2, 1991, 91 05394

Int. Cl.[6] C07C *65/26;65/17;63/44*

U.S. Cl. 514—535 **15 Claims**

1. Aromatic bicyclic compounds corresponding to the following formula:



(I)

in which:

R_1 represents

(i) a hydrogen atom,

(ii) the radical $—CH_3$,

(iii) the radical $—CH_2—O—R_8$, R_8 representing a hydrogen atom or a lower alkyl radical having 1 to 6 carbon atoms,

(iv) a radical $—OR_8$,

(v) a radical



R_{10} representing:

(a) a hydrogen atom,

(b) a radical



r' and r" representing a hydrogen atom, a lower alkyl radical, a mono- or polyhydroxyalkyl radical, an aryl radical, an aryl radical substituted by at least an halogen atom, a hydroxyl or a nitro function, an amino acid residue derived from lysine glycine or aspartic acid or a sugar residue derived from glucose, galactose or mannose or r' and r" taken together, form a heterocycle, selected from the group consisting of piperidino, morpholino, pyrrolidino and piperazino optionally substituted in the 4-position by a C_1–C_4 alkyl radical or a mono- or polyhydroxy radical

(c) a radical $—OR_{11}$, R_{11} representing a hydrogen atom, a linear or branched alkyl radical having 1 to 20 carbon atoms, a mono- or polyhydroxyalkyl radical, an aryl or aralkyl radical optionally substituted or a sugar residue or an amino acid residue as above defined, and

(vi) a radical $—S(O)_tR_8$, t being 0, 1, or 2 and R_8 being as defined above,

R_2 represents a hydrogen atom,

R_3 represents a hydrogen atom, an aryl radical, an aralkyl radical or a lower alkyl radical optionally substituted by a hydroxyl, by a lower alkoxy or by a radical



R_{12} representing a hydrogen atom, a lower alkyl radical, a hydroxyl radical, a lower alkoxy radical or a radical



or R_2 and R_3, taken together, form, with the benzene nucleus, a naphthalene ring,

R_4 represents a linear branched or unbranched alkyl radical having 1 to 15 carbon atoms or a cycloaliphatic radical,

R_5 represents the radical $—(CH_2)_n—R_{13}$, the radical $—CH=CH—(CH_2)_n—R_{13}$, or the radical $—O(CH_2)_mR_{14}$

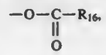
n being 0 or 1 to 6,

m being 1 to 6

R_{13} representing the radical



a monohydroxyalkyl radical or a polyhydroxyalkyl radical the hydroxy functions being optionally protected in the methoxy or acetoxy form, an epoxy lower alkyl radical or the radical



R_{15} representing the radical OR_{16} or the radical



R_{16} representing a hydrogen atom, a lower alkyl radical, an aryl radical or an aralkyl radical, R_{14} representing a hydroxyl radical when m>2, a monohydroxyalkyl radical, a polyhydroxyalkyl radical, the radical



the radical



or a mono- or polyhydroxylated alkenyl radical having 2 to 10 carbon atoms, or when R_2 and R_3 are not taken together, m may be 0 and/or R_{14} may represent a hydrogen atom or a lower alkyl radical,

R_6 and R_7 represent a hydrogen atom, a halogen atom, a lower alkyl radical or the radical $—OR_{16}$,

R_5 and R_6 may, in addition, form a methylenedioxy ring when R_6 is in the 3-position of the benzene nucleus, and the salts of the compounds of formula (I) when R_1 represents a carboxylic acid functional group and the chiral analogues of the said compounds of formula (I) and the geometrical isomers of the said compounds when R_2 and R_3 are not taken together.

5,547,984

N-ACETONYL-SUBSTITUTED-AMIDES

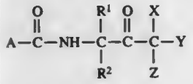
Ashok K. Sharma, Horsham, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 237,539, May 3, 1994, which is a division of Ser. No. 994,247, Dec. 21, 1992, Pat. No. 5,344,978, which is a division of Ser. No. 403,212, Sep. 5, 1989, Pat. No. 5,196,046, which is a division of Ser. No. 634,917, Jul. 26, 1984, Pat. No. 4,863,940. This application Jun. 6, 1995, Ser. No. 467,348

Int. Cl.[6] A01N *37/18;* **C07C** *233/01*

U.S. Cl. 514—541 **11 Claims**

1. A compound of the structure



wherein A is pyrazolyl, pyrimidinyl, phenylisoxazolyl, phenyl(C_2–C_4)alkenyl, cyclo(C_3–C_7)alkyl or (C_1–C_8)alkoxyalkyl group when A is a cyclic substituent, the cyclic portion may be substituted with up to three substituents independently selected from halo, trifluoromethyl, fluorosulfonyl methyl, ethyl, methoxy, or phenyl group;

X is hydrogen, chloro, bromo, iodo, fluoro, cyano, thiocyano, isothiocyano methylsulfonyloxy thio(C_1–C_2)alkyl (C_1–C_2)alkoxy carbamoyl (—OC(O)NR^3), dithiocarbamoyl (—SC(S)NR^3), hydroxy azide (C_1–C_4)alkylcarbonyloxy, phenylcarbonyloxy, trifluoromethylcarbonyloxy, phenoxy, phenylthio, imidazolyl or triazolyl group, when X is a phenylcarbonyloxy, phenoxy or phenylthio substituent, the phenyl moiety may be substituted with up to one substituent selected from chloro, fluoro, bromo, iodo or methyl group; and

Y and Z are each independently a hydrogen, bromo, chloro, iodo, fluoro, cyano, thiocyano, isothiocyano, methylsulfonyloxy thio(C_1–C_2)alkyl, (C_1–C_2)alkoxy, carbamoyl (—OC(O)NR^3), hydroxy, azide or (C_1–C_4)alkylcarbonyloxy group and either Y or Z may be an imidazolyl or triazolyl group;

R^1 and R^2 are each independently selected from a hydrogen atom and (C_1–C_6)alkyl group; and

each R^3 in a molecule is independently a hydrogen or a (C_1–C_4)alkyl group.

5,547,985

ADDITIVES TO FEMININE PRODUCTS

Susan K. Brown-Skrobot, Hamilton Square, and Mary R. Irving, Metuchen, both of N.J., assignors to McNeil-PPC, Inc., Skillman, N.J.

Continuation of Ser. No. 978,057, Nov. 18, 1992, abandoned, which is a continuation of Ser. No. 830,443, Feb. 3, 1992, abandoned, which is a continuation of Ser. No. 695,366, May 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 605,899, Oct. 30, 1990, abandoned. This application Nov. 12, 1993, Ser. No. 151,593

Int. Cl.[6] A61K *31/22;31/225;31/23*

U.S. Cl. 514—546 **5 Claims**

1. A method of inhibiting the production of toxic shock syndrome toxin-1 comprising exposing toxic shock syndrome toxin-1 producing *Staphylococcus aureus* bacteria to an absorbent product comprising a pharmaceutically acceptable carrier and a compound selected from the group consisting of:

a) monoesters of a polyhydric aliphatic alcohol and a fatty acid containing from eight to eighteen carbon atoms and wherein said monoester has at least one hydroxyl group associated with its aliphatic alcohol residue;

b) diesters of a polyhydric aliphatic alcohol and a fatty acid containing from eight to eighteen carbon atoms and wherein said diester has at least one hydroxyl group associated with its aliphatic alcohol residue; and

c) mixtures of said monoesters and diesters,

said compound being present in an amount which is effective to inhibit the production of toxic shock syndrome toxin-1 by *Staphylococcus aureus* bacteria when said product is exposed to said bacteria.

5,547,986

ESTER OF L-CARNITINE WITH GAMMA-HYDROXYBUTYRIC ACID AND PHARMACEUTICAL COMPOSITIONS CONTAINING IT FOR INHIBITING NEURONAL DEGENERATION AND FOR THE TREATMENT OF COMA

Maria O. Tinti; Domenico Misiti, and Claudio Cavazza, all of Rome, Italy, assignors to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A., Rome, Italy

Continuation of Ser. No. 302,995, Sep. 15, 1994, abandoned, which is a continuation of Ser. No. 145,667, Nov. 4, 1993, abandoned, which is a continuation of Ser. No. 991,710, Dec. 16, 1992, abandoned, which is a continuation of Ser. No. 599,995, Oct. 19, 1990, abandoned. This application Mar. 29, 1995, Ser. No. 412,858

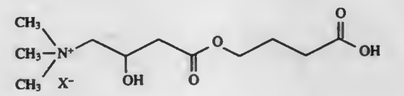
Claims priority, application Italy, Oct. 20, 1989, 48475/89

The portion of the term of this patent subsequent to Oct. 4, 2014, has been disclaimed.

Int. Cl.[6] A61K *31/225*

U.S. Cl. 514—547 **7 Claims**

1. An L-carnitine ester of gamma-hydroxybutyric acid of the formula (I):



(I)

or a pharmacologically acceptable salt thereof, wherein X^- is an anion of a pharmacologically acceptable salt.

5,547,987

PATHOGEN INHIBITOR FOR ANIMAL FEEDS

Bobby J. Bland, Buford, and Kurt E. Richardson, Hoschton, both of Ga., assignors to Anitox Corporation, Buford, Ga.

Filed Jul. 19, 1993, Ser. No. 92,788

Int. Cl.[6] A01N *37/00*

U.S. Cl. 514—557 **10 Claims**

1. A method for inhibiting the growth of mold in animal feedstuffs comprising: applying to a feedstuff an effective growth inhibiting amount of a mixture containing n-butyric acid and propionic acid in a ratio of 3:1 to 1:3 wherein 75:100 mol. % of the acid mixture is in the form of an ammonium salt.

5,547,988

ALLEVIATING SIGNS OF DERMATOLOGICAL AGING WITH GLYCOLIC ACID, LACTIC ACID OR CITRIC ACID

Ruey J. Yu, Ambler, and Eugene J. Van Scott, Abington, both of Pa., assignors to Tristrata Technology, Inc., Wilmington, Del.

Continuation of Ser. No. 117,559, Sep. 7, 1993, abandoned, which is a continuation of Ser. No. 936,863, Aug. 27, 1992, abandoned, which is a continuation of Ser. No. 683,437, Apr. 10, 1991, abandoned, which is a continuation-in-part of Ser. No. 469,738, Jan. 19, 1990, abandoned, which is a continuation of Ser. No. 945,680, Dec. 23, 1986, abandoned, and a continuation-in-part of Ser. No. 393,749, Aug. 15, 1989, Pat. No. 5,091,171. This application Dec. 20, 1994, Ser. No. 359,939

Int. Cl.[6] A61K *7/48;31/19*

U.S. Cl. 514—557 **14 Claims**

1. A method for reducing the appearance of skin changes associated with intrinsic and/or extrinsic aging, said skin changes associated with aging resulting from natural or innate aging or exposure to actinic radiation,

whereby said skin changes associated with aging are selected from the group consisting of wrinkles, thinning of the skin, deepening of skin lines, yellowish skin, loss of elasticity, loss of recoilability, and loss of collagen,

said method comprising topically applying to an area of skin exhibiting said change a composition comprising a compound selected from the group consisting of glycolic acid, lactic acid, citric acid, or a topically effective salt thereof, in an amount and for a period of time sufficient to reduce the appearance of said skin changes associated with aging.

5,547,989

COMPOSITIONS FOR TREATING CORNS AND CALLUSES

Thomas W. Chamness, Memphis, Tenn., assignor to Schering-Plough Healthcare Products, Inc., Memphis, Tenn.

Continuation-in-part of Ser. No. 293,369, Aug. 19, 1994, abandoned. This application Sep. 9, 1994, Ser. No. 304,009

Int. Cl.[6] A61K *31/20;31/19*

U.S. Cl. 514—558 **23 Claims**

1. A topical composition in gel form, consisting essentially of a 7 to 13 carbon dicarboxylic acid or a corresponding salt or ester thereof in a range of about 4 to about 64% and a pharmaceutically acceptable carrier material.

5,547,990

DISINFECTANTS AND SANITIZERS WITH REDUCED EYE IRRITATION POTENTIAL

Larry Hall, Nazareth, Pa.; Michael Y. Chiang, Flemington, and Judith M. Meyer, Somerville, both of N.J., assignors to Lonza, Inc., Fair Lawn, N.J.

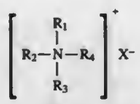
Filed May 20, 1994, Ser. No. 246,682

Int. Cl.[6] A61K *7/075;31/16;31/19;31/185*

U.S. Cl. 514—563 **26 Claims**

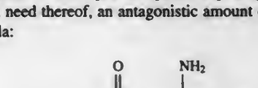
1. A sanitizing and disinfecting composition comprising:

a) a quaternary ammonium compound, having the following general formula:

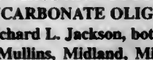


wherein R_1 and R_2 may be alkyl or alkoxy groups of 1 to 4 carbons; R_3 may be a straight or branched chain of 8 to 12 carbons; and R_4 may be either a straight or branched chain alkyl group of 8 to 12 carbons, or a benzyl or alkylbenzyl, wherein the alkyl group may be of 2 to 8 carbons atoms; and

b) a substituted imidazoline based amphoteric having the following general formula;



wherein R may be a fatty acid alkyl of 6 to 22 carbons; R_1 may be H or C_2H_4COOH or $C_2H_4HCOONa$; R_2 may be COONa or



or C_2H_4COONa or CH_2COOCH_2COOH or CH_2COOCH_2COONa; wherein the concentration of said quaternary ammonium compound is about 0.25 to 25 wt. % and the concentration of said imidazoline amphoteric surfactant is about 0.1 to 30 wt. % and the weight ratio of said quaternary ammonium compound to said amphoteric surfactant is about 10:1 to 0.1:1.

5,547,991

NMDA ANTAGONISM METHOD

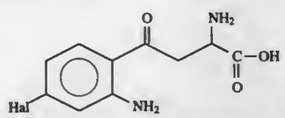
Michael G. Palfreyman, Cincinnati; Ian A. McDonald, Loveland; Francesco G. Salituro, Fairfield, all of Ohio, and Robert Schwarcz, Baltimore, Md., assignors to Merrell Pharmaceuticals Inc., Cincinnati, Ohio

Division of Ser. No. 165,144, Dec. 10, 1993, Pat. No. 5,484,814, which is a division of Ser. No. 57,195, May 3, 1993, abandoned, which is a continuation of Ser. No. 827,188, Feb. 3, 1992, abandoned, which is a continuation-in-part of Ser. No. 662,670, Feb. 28, 1991, abandoned. This application Jul. 17, 1995, Ser. No. 502,980

Int. Cl.[6] A61K *31/195*

U.S. Cl. 514—564 **10 Claims**

1. A method for antagonizing the effects of excitatory amino acids upon the NMDA receptor complex comprising administering to a patent in need thereof, an antagonistic amount of a compound of the formula:



II(b)

or a pharmaceutically acceptable salt thereof; in which Hal is a halogen atom.

5,547,992

ANTI-HERPES VIRUS AND CYTOMEGALOVIRUS POLYCARBONATE OLIGOMERS

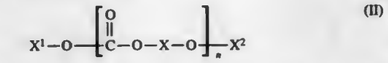
Alan D. Cardin; Richard L. Jackson, both of Cincinnati, Ohio, and Michael J. Mullins, Midland, Mich., assignors to The Dow Chemical Co., Midland, Mich., and Merrell Pharmaceuticals Inc., Cincinnati, Ohio

Division of Ser. No. 965,248, Jan. 7, 1993, which is a continuation-in-part of Ser. No. 710,370, Jun. 10, 1991, Pat. No. 5,276,182, which is a continuation-in-part of Ser. No. 549,782, Jul. 9, 1990, abandoned. This application Mar. 21, 1995, Ser. No. 407,832

Int. Cl.[6] A61K *31/265;* **C07C** *69/96*

U.S. Cl. 514—648 **6 Claims**

1. A method of treating a Herpes vital infection in a patient in need thereof which comprises administering to the patient an anti-Herpes virally effective amount of an oligomer which is a polycarbonate of the formula:



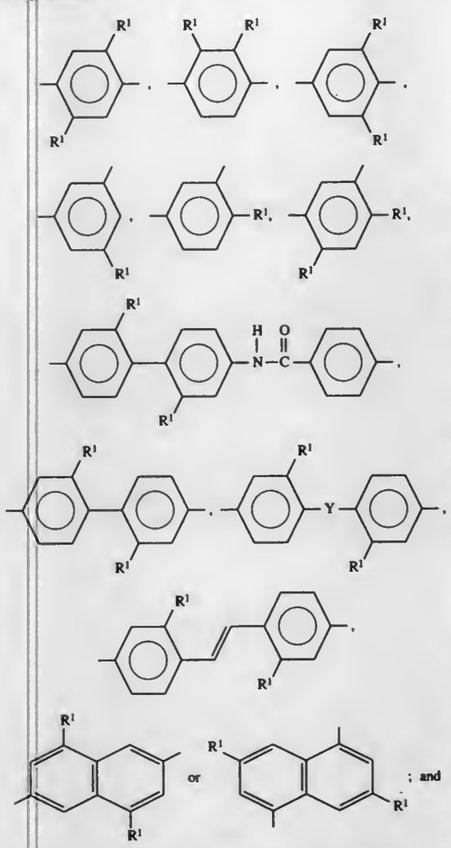
(II)

wherein:

R^1 represents $—SO_3R^2$, $—CO_2R^2$, $—PO_3(R^2)_2$, or $—OPO_3R^2$;

R^2 represents represents a hydrogen atom or a pharmaceutically-acceptable cation;

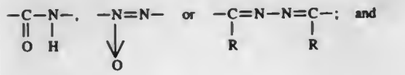
X represents:



X^1 represents an HO—X— group, where X is defined as for Formula II above, or a C_{1-4} alkyl group, a phenyl group, or a phenyl group substituted with from 1 to 2 R^1 moleties and up to 3 substituents independently selected from a chloro or bromo atom or C_{1-4} alkyl group;

X^2 represents a hydrogen atom or CO_2X^1, where X^1 is defined as above

Y represents $—CO_2—$, $—C\equiv C—$, $—N=N—$,



n represents an integer from 3 to 50.

5,547,993

THERAPEUTIC AGENT FOR GLAUCOMA

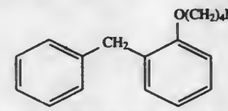
Hirohiko Miki, Osaka-fu, Japan, assignor to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Oct. 24, 1995, Ser. No. 547,541

Int. Cl.[6] A61K *31/135*

U.S. Cl. 514—648 **12 Claims**

1. A method of treating glaucoma which comprises administering to a patient in need thereof, an effective amount of a compound represented by the formula (I):



(I)

or a hydrate or pharmaceutically acceptable salt thereof.

5,547,994

METHOD FOR TREATING ASTHMA USING OPTICALLY PURE R(–) ALBUTEROL

Timothy J. Barberich, Concord, and James W. Young, Still River, both of Mass., assignors to Sepracor, Inc., Marlborough, Mass.

Continuation of Ser. No. 163,581, Dec. 7, 1993, Pat. No. 5,362,755, which is a continuation of Ser. No. 896,725, Jun. 9, 1992, abandoned, which is a continuation of Ser. No. 461,262, Jan. 5, 1990, abandoned. This application Nov. 7, 1994, Ser. No. 335,480

Int. Cl.[6] A61K *31/135*

U.S. Cl. 514—649 **6 Claims**

1. A method of treating an acute attack of asthma, while reducing side effects associated with the acute administration of racemic albuterol, comprising administering to an individual suffering from an acute attack of asthma a quantity of an optically pure R(–) isomer of albuterol sufficient to result in bronchodilation while simultaneously reducing undesirable side effects, said R isomer being substantially free of its S(+) isomer.

5,547,995

USE OF SELEGILENE IN VETERINARY MEDICINE

Marie-Sophie Filhol, Talence, and Thierry Pobel, Vayres, all of, France, assignors to Sanofi Sante Nutrition Animale, Libourne, France

Filed May 2, 1994, Ser. No. 235,965

Claims priority, application France, May 4, 1993, 93 05305; Dec. 22, 1993, 93 15495

Int. Cl.[6] A61K *31/135*

U.S. Cl. 514—654 **16 Claims**

1. A method for the treatment of a behavioral disorder with change of mood comprising administering to a mammal in need thereof selected from dogs and cats, an active ingredient selected from selegiline, its racemate, the laevorotatory isomer, mixtures thereof in any proportions and pharmaceutically acceptable salts thereof, in association with a pharmaceutically acceptable carrier.

5,547,996

METHOD OF PRODUCING FOAMED POLYMER MATERIALS

Donald K. Brandom; Jose P. DeSouza; Donald G. Baird, and Garth L. Wilkes, all of Blacksburg, Va., assignors to The Center for Innovative Technology, Herndon, Va.

Filed Jul. 29, 1994, Ser. No. 282,029

Int. Cl.[6] C08J *9/08*

U.S. Cl. 521—134 **10 Claims**

1. A method for producing foamed polymeric materials, comprising the steps of:

combining a first polymer having carbonyl functionality and a second polymer having amine functionality to produce a reactive composition;

heating said reactive composition under conditions sufficient to cause a ketimine or aldimine reaction between carbonyl moieties of said first polymer with amine moieties of said second polymer, said ketimine or aldimine reaction causing the release of water from said reactive composition and resulting in in-situ foaming of said reactive composition, said ketimine or aldimine reaction producing a foamed reaction product; and

recovering said foamed reaction product.

5,547,997

PLANT-DERIVED COSMETIC COMPOSITION AND METHOD OF TREATMENT OF SKIN

Martin Kludas, Berlin, Germany, assignor to Chemisches Laboratorium Dr. Kurt Richter GmbH, Berlin, Germany

Filed Oct. 1, 1991, Ser. No. 769,411

Int. Cl.[6] A61K *47/00;35/78*

U.S. Cl. 514—773 **14 Claims**

1. A cosmetic composition comprising a cosmetic carrier and a plant extracellular matrix extract in an amount corresponding to a concentration of not less than about 0.1% by volume of said plant extracellular matrix extract in the composition, wherein said plant extracellular matrix comprises a glycoprotein in substantially native conformation, and a carbohydrate polymer in substantially native conformation.

5,547,998

INSULATING RIGID POLYURETHANE FOAM COMPOSITIONS

Walter R. White, III, Trenton, and James A. Mullins, Wyandotte, both of Mich., assignors to BASF Corporation, Mount Olive, N.J.

Filed Nov. 1, 1995, Ser. No. 551,507

Int. Cl.[6] C08G *18/18*

U.S. Cl. 521—131 **16 Claims**

1. A storage stable polyol composition comprising:

a) an aromatic amine initiated polyoxyalkylene polyether polyol having an hydroxyl number of 200 meq polyol/g KOH or more;

b) an aliphatic amine initiated polyoxyalkylene polyether polyol having an hydroxyl number of 200 meq polyol/g KOH or more in an amount of 10 weight percent or less based on the weight of the polyol composition; and

c) cyclopentane;

wherein the cyclopentane is dissolved in the polyol composition.

5,547,999

REACTIVE MICROGEL AND PHOTOSENSITIVE RESIN COMPOSITION CONTAINING THE REACTIVE MICROGEL FOR FLEXOGRAPHIC PRINTING PLATE

Sunao Satake; Yoshimi Yatsuyanagi; Masahiro Fujii, and Ippei Imagawa, all of Tokyo, Japan, assignors to Toyolink Manufacturing Co., Ltd., Tokyo, Japan

Division of Ser. No. 386,087, Feb. 9, 1995. This application May 9, 1995, Ser. No. 437,923

Claims priority, application Japan, Feb. 10, 1994, 6-016486

Int. Cl.[6] C08J *3/28*

U.S. Cl. 522—122 **4 Claims**

1. A photosensitive resin composition for a water-developable flexographic printing plate, comprising

30 to 80 parts by weight of a reactive microgel (A) having an average particle diameter of 1 to 10 μm, formed of

microgel particles, as a core, synthesized from an acrylic monomer in an aqueous medium in the presence of an oil-soluble initiator and in the presence of a reactive polymer emulsifier which is an adduct of a neutralized product of an acrylic copolymer having a tertiary amino group with a compound having an epoxy group and an α,β-unsaturated double bond, and a nonionic emulsifier having an HLB of 12 to 16, and

a compound having an epoxy group and an α,β-unsaturated double bond, attached to surfaces of the microgel particles,

5 to 60 parts by weight of an ethylene-vinyl acetate copolymer and/or an ethylene-ethyl acrylate copolymer (B),

1 to 60 parts by weight of a compound having an α,β-ethylenically unsaturated double bond (C), and 0.01 to 10 parts by weight of a photopolymerization initiator (D).

5,548,000

ARTIFICIAL TOOTH

Joachim Nagel, Friedrichsdorf, and Albert Erdrich, Bad Nauheim, both of, Germany, assignors to Heraeus Kulzer GmbH, Hanau, Germany

Filed Mar. 23, 1995, Ser. No. 410,143

Claims priority, application Germany, Apr. 14, 1994, 44 12 831.2

Int. Cl.[6] A61C *13/087;* **C08K** *3/36;9/06;* **C08L** *33/10*

U.S. Cl. 523—115 **7 Claims**

1. An artificial tooth which consists of from 15 to 35 weight % polymethacrylate, 35 to 75 weight % barium aluminum silicate glass with a mean particle size of from 0.1 to 5 micrometers, 5 to 25 weight % silicon dioxide with a mean particle size of from 0.01 to 0.2 micrometers, and, optionally, pigment; and wherein the polymethacrylate is a copolymer of a monomer mixture of ⅔ by weight bis-[4-(2-hydroxy-3-methacryloyloxypropoxy)-phenyl] dimethylmethan and ⅓ by weight triethylene glycol dimethacrylate.

5,548,001

SWELLABLE BEAD POLYMER CONTAINING FILLERS

Wolfgang Podszun; Jens Winkel, Cologne, and Michael Müller, Bayerwerk, all of, Germany, assignors to Heraeus Kulzer GmbH & Co. KG, Hanau, Germany

Filed Feb. 7, 1991, Ser. No. 652,336

Claims priority, application Germany, Feb. 15, 1990, 40 04 678.8

Int. Cl.[6] C08K *3/20;* **C08L** *33/08;* **B32B** *5/16*

U.S. Cl. 523—116 **3 Claims**

1. A cross-linked bead polymer having an average particle diameter of 2 to 100 μm containing an inorganic filler content of 10 to 75% by weight and a degree of swelling of 50 to 2000%, measured in THF, synthesized from

A: 10 to 78% by weight of C_1–C_2-alkyl (meth)acrylate,

B: 5 to 50% by weight of C_3–C_{12}-alkyl (meth)acrylate,

C: 1 to 30% by weight of cross-linker;

10 to 75% by weight of an inorganic filler; and

E: 0 to 30% by weight of at least one other ethylenically unsaturated monomer.

5,548,002

PROVISIONAL LUTING MATERIALS

Peter Schwabe, Leverkusen; Ottfried Schlak; Jens Winkel, both of Cologne; Rainer Guggenberger, Herrsching, and Oswald Gasser, Seefeld, all of, Germany, assignors to Heraeus Kulzer GmbH & Co. KG, Hanau, Germany

Division of Ser. No. 858,912, Mar. 27, 1992, abandoned. This application Mar. 15, 1995, Ser. No. 404,710

Int. Cl.[6] A61C *13/23;* **C08L** *83/02;* **C08K** *5/56*

U.S. Cl. 523—118 **7 Claims**

1. A method of provisionally securing a provisional dental prosthesis to teeth by applying therebetween a water-free luting material which includes a silicone resin which contains alkoxy functional groups and has the empirical formula

$$R_xSi(OR')_yO_{\frac{4-x-y}{2}}$$

wherein

R is an alkyl or phenyl group,

R' is a methyl or ethyl group,

x has a value of 0.75–1.75 and

y has a value of 0.3–2.0.

and further includes an activator, and letting said luting material harden thereby temporarily to bond said prosthesis to said teeth.

5,548,003

AZOLE-ALDEHYDE ADDITION PRODUCT EMBOSSING INHIBITORS AND THE USE THEREOF

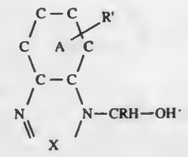
Joseph Remar, Lancaster, and Carl E. Sideman, Lititz, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Aug. 14, 1995, Ser. No. 515,110

Int. Cl.[6] C08K *5/3475;5/3447;* **C07D** *235/02;249/20*

U.S. Cl. 523—160 **6 Claims**

1. A printing ink composition comprising a resin, a solvent and an inhibitor, the inhibitor being a compound having the general formula



wherein the A ring is benzenoid, napthenoid or saturated cycloaliphatic, the A ring being unsubstituted or substituted with R' which is an alkyl group of 1 to 4 carbon atoms; R is selected from the group consisting of a hydrogen atom, an aryl radical, an alkyl radical, a haloalkyl radical, a haloaryl radical, a 4-pyridyl radical and a carboxy group; and X is a nitrogen atom or the

group, wherein R' is a hydrogen atom or an alkyl group of 1 to 4 carbon atoms, the inhibitor being present in an amount sufficient to inhibit foaming of the ink upon its application as an embossing medium on plastic surfaces.

5,548,004

METHOD OF PREPARING COATING MATERIALS

Frederick S. Mandel, Chagrin Falls; Charles D. Green, Hudson, and Anthony S. Scheibelhoffer, Norton, all of Ohio, assignors to Ferro Corporation, Cleveland, Ohio

Continuation of Ser. No. 236,882, Apr. 29, 1994, Pat. No. 5,399,597, which is a continuation of Ser. No. 970,401, Nov. 2, 1992, abandoned. This application Jan. 11, 1995, Ser. No. 371,242

Int. Cl.[6] C08F *6/10;* **C08J** *3/12;* **C08K** *5/04*

U.S. Cl. 523—342 **14 Claims**

1. A method of producing coating powders comprising the steps of:

(A) providing a first vessel having a motor driven mixer;

(B) providing a second vessel;

(C) providing a source of supercritical CO_2 gas;

(D) charging such first vessel with starting materials consisting essentially of a polymeric resin and a flow control agent both of which are solid at room temperature, such first vessel being substantially free of any solvent that is capable of dissolving such polymeric resin to any appreciable degree at 23° C. and 1 atmosphere;

(E) supplying such supercritical CO_2 gas to such first vessel, such that such first vessel contains from about 10 percent by weight to about 90 percent by weight such CO_2 gas and from about 10 percent by weight to about 90 percent by weight such starting materials;

(F) mechanically mixing such starting materials and such supercritical CO_2 gas in such first vessel utilizing such mixer for a period of from about 1 minute to about 480 minutes; and

(G) transferring such mixture of such CO_2 gas and such starting materials from such first vessel through a header and into such second vessel, such header comprising multiple nozzles having an orifice diameter of from about 0.01" to about 1", such second vessel being maintained at an internal pressure of from about 0 psi to about 5000 psi and a temperature of from about −85° C. to about 200° C. during said transferring step.

5,548,005

AQUEOUS, RADIATION-CURABLE BINDER DISPERSIONS

Inge Kurth, Wiesbaden; Gerhard Brindoepke, Sulzbach, and Manfred Marten, Mainz, all of, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Dec. 16, 1994, Ser. No. 357,738

Claims priority, application Germany, Dec. 22, 1993, 43 43 885.7

Int. Cl.[6] C08L *63/10;75/08;75/16*

U.S. Cl. 523—414 **23 Claims**

1. An aqueous, radiation-curable binder solution or an aqueous, radiation-curable binder dispersion comprising:

(A) a radiation-curable binder that contains acrylate groups and/or methacrylate groups, and

(B) a radiation-curable, hydrophilic polyepoxy-acrylate obtained from a di- or polyepoxy component (B0) reacted with

(B1) a primary or secondary monoamine of a polyethylene(propylene) glycol monoether, and/or

(B2) a diisocyanate or polyisocyanate and with a polyethylene(propylene) glycol monoether; and in a subsequent step by reaction with an acrylic and/or methacrylic acid.

5,548,006

SILICONE RUBBER COMPOSITIONS

Satao Hirabayashi, and Tsutomu Nakamura, both of Gunmaken, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Nov. 17, 1994, Ser. No. 341,085

Claims priority, application Japan, Nov. 18, 1993, 5-312534; Apr. 25, 1994, 6-108963

Int. Cl.[6] C08K *5/45*

U.S. Cl. 524—82 **16 Claims**

1. A silicone rubber composition comprising

(A) an organopolysiloxane of the following avenge compositional formula (1):

$$R^1_nSiO_{(4-n)/2} \quad (1)$$

wherein R^1 is a substituted or unsubstituted monovalent hydrocarbon group, the R^1 groups may be identical or different, and letter n is a positive number of 1.98 to 2.02, containing at least two aliphatic unsaturated groups in a molecule,

(B) an organohydrogenpolysiloxane of the following average compositional formula (2):

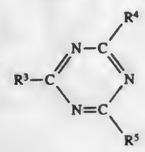
$$R^2_aH_bSiO_{(4-a-b)/2} \quad (2)$$

wherein R^2 is a substituted or unsubstituted monovalent

hydrocarbon group, the R^2 groups may be identical or different, letters a and b are in the range: $0 \leqq a < 3$ and $0.005 \leqq b \leqq 2$, and $0.8 \leqq a+b \leqq 3.0$, having at least two hydrogen atoms attached to silicon atoms in a molecule,

(C) a platinum series catalyst, and

(D) 0.005 to 1 part by weight of a control agent per 100 parts by weight of the organopolysiloxane (component A), wherein said control agent is selected from the group consisting of a triazine of the following general formula (3):



(3)

wherein R^3, R^4, and R^5 are independently selected from the group consisting of a peroxy group, monovalent hydrocarbon group, hydroxyl group and hydrogen atom, at least one of R^3, R^4 and R^5 being a peroxy group, and a sulfide of the following general formula (4):

$$R^6—(S)_m—R^7 \quad (4)$$

wherein each of R^6 and R^7 is a monovalent hydrocarbon having at least 3 carbon atoms or a monovalent hydrocarbon group having an ester bond or R^6 and R^7 taken together may form a ring structure, and letter m is a positive number of 1 to 3.

5,548,007

RADIATION-RESISTANT POLYPROPYLENE RESIN COMPOSITION

Tadashi Asanuma; Shigeru Kimura; Nobutaka Uchikawa, all of Takaishi, and Tetsunosuke Shiomura, Tokyo, all of, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Continuation of Ser. No. 215,251, Mar. 21, 1994, abandoned, which is a division of Ser. No. 74,161, Jun. 9, 1993, Pat. No. 5,340,848, which is a continuation of Ser. No. 617,154, Nov. 23, 1990, abandoned. This application Mar. 7, 1995, Ser. No. 400,449

Claims priority, application Japan, Dec. 6, 1989, 315141; Feb. 19, 1990, 036178

Int. Cl.[6] C08K *5/34*

U.S. Cl. 524—99 **8 Claims**

1. A radiation-resistant polypropylene resin composition suitable for the preparation of molded articles in which physical properties scarcely deteriorate during sterilization by radiation, which comprises a propylene homopolymer having a syndiotactic pentad fraction of 0.7 or more, or a copolymer of propylene and an α-olefin other than propylene having 2 to 25 carbon atoms in which in the absorption spectrum of ^{13}C-NMR measured in a 1,2,4-trichlorobenzene solution, a peak intensity at about 20.2 ppm on the basis of tetramethylsilane occupies 0.5 or more of the total intensity of peaks attributed to methyl groups of propylene units, and at least one additive selected from the group consisting of a phosphorus-containing antioxidant, an amine-containing antioxidant and a nucleating agent.

5,548,008

RADIATION-RESISTANT POLYPROPYLENE RESIN COMPOSITION

Tadashi Asanuma; Shigeru Kimura; Nobutaka Uchikawa, all of Takaishi, and Tetsunosuke Shiomura, Tokyo, all of, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Division of Ser. No. 400,449, Mar. 7, 1995, which is a continuation of Ser. No. 215,251, Mar. 21, 1994, abandoned, which is a division of Ser. No. 74,161, Jun. 9, 1993, Pat. No. 5,340,848, which is a continuation of Ser. No. 617,154, Nov. 23, 1990, abandoned. This application Mar. 24, 1995, Ser. No. 409,978

Claims priority, application Japan, Dec. 6, 1989, 1-315141; Feb. 19, 1990, 2-036178

Int. Cl.[6] C08K *5/34*

U.S. Cl. 524—99 **10 Claims**

1. A radiation-resistant polypropylene resin composition suitable for the preparation of molded articles in which physical properties scarcely deteriorate during sterilization by radiation, which comprises a propylene homopolymer having a syndiotactic pentad fraction of 0.7 or more, or a copolymer of propylene and an α-olefin other than propylene having 2 to 25 carbon atoms, in which in the absorption spectrum of ^{13}C-NMR measured in a 1,2,4-trichlorobenzene solution, a peak intensity at about 20.2 ppm on the basis of tetramethylsilane occupies 0.5 or more of the total intensity of peaks attributed to methyl groups of propylene units, and at least one additive selected from the group consisting of a phosphorus-containing antioxidant, an amine-containing antioxidant, and a nucleating agent, which composition further comprises less than 50% by weight of at least one member selected from the group consisting of a polypropylene having an isotactic structure, a copolymer of propylene and an α-olefin other than propylene, and a polyolefin other than polypropylene.

5,548,009

STABILIZATION OF ACETATE SYSTEMS

Wilhelm Weber; Karl-Heinz Sockel, and Hans-Heinrich Moretto, all of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 26, 1994, Ser. No. 233,670

Claims priority, application Germany, May 3, 1993, 43 14 502.7

Int. Cl.[6] C08K *5/42*

U.S. Cl. 524—157 **2 Claims**

1. A process for improving the life of an uncured silicone paste which cures by elimination of acetic acid and which is prepared using an anionically polymerized polysiloxane containing an alkali metal phosphate, which comprises adding to the silicone paste an acidic additive selected from the group consisting of sulfuric acid and at least one of an alkali metal hydrogen sulfate, to convert the alkali metal salt of the acidic additive.

5,548,010

COLOR DISSIPATABLE PAINT

Victor R. Franer, 218 W. County Rd. B2, Roseville, Minn. 55113

Filed Dec. 29, 1993, Ser. No. 175,264

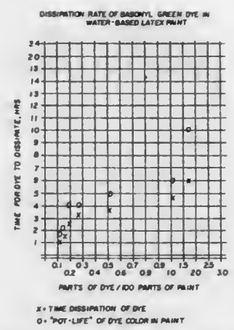
Int. Cl.[6] C08K *5/09;5/07*

U.S. Cl. 524—198 **14 Claims**

1. A paint composition, consisting essentially of:

a) a paint having a first color; and,

b) mixed into said composition a light-unstable dye having a second color, whereby the initial color of said composition is a blend of said first and second colors, exposure of the paint



to the dissipation-promoting condition of visible light, causing the color of the dye to dissipate and become invisible.

5,548,011

BLENDS OF POLYCARBONATES, DIMERIC FATTY ACID POLYESTERS AND PIB RUBBERS, SILICONES OR MINERAL OILS

Burkhard Köhler, Leverkusen; Wolfgang Ebert, Krefeld; Klaus Horn, Dormagen; Richard Weider, Leverkusen, and Thomas Scholl, Bergisch Gladbach, all of, Germany, assignors to Bayer AG, Leverkusen, Germany

Filed Aug. 31, 1995, Ser. No. 522,126

Claims priority, application Germany, Sep. 12, 1994, 44 32 379.4

Int. Cl.[6] C08L *69/00;67/08*

U.S. Cl. 524—267 **4 Claims**

1. Thermoplastic moulding compounds containing

A) 65–96.5 of aromatic polycarbonate,

B) 0.5 to 20 wt. % of phenolic hydroxy functional branched dimeric fatty acid polyester,

and at least one component selected from

C) 1–25 wt. % of polyisobutylene,

D) 1–25 wt. % of silicone oil,

E) 1–25 wt. % of mineral oil,

wherein the sum of A+B+C+D+E is 100.

5,548,012

AUTOMOTIVE WEATHER STRIP

Keisaku Yamamoto; Kiyoshi Ikeda, both of Ichihara; Masahiro Fukuyama, Sodegaura; Takeshi Naito, and Masanori Aritake, both of Aichi-ken, all of, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, and Toyoda Goesi Co., Ltd., Aichi-ken, both of, Japan

Filed Oct. 13, 1994, Ser. No. 322,531

Claims priority, application Japan, Oct. 14, 1993, 5-257080

Int. Cl.[6] B32B *27/38;* **C08K** *3/18;* **B29C** *47/06*

U.S. Cl. 524—433 **14 Claims**

1. An adhesive composition comprising the following components (A) to (E), the weight ratio of component (A) to component (B) being 60: 40 to 40: 60,

(A) an epoxy group-containing acrylic elastomer,

(B) an ethylene/α-olefin copolymer,

(C) 0.1 to 5 parts by weight of an organic peroxide, based on 100 parts by weight of the total weight of components (A) and (B),

(D) 0.2 to 5 parts by weight of at least one member selected from the group consisting of a primary amine and an imidazole compound, based on 100 parts by weight of the total weight of components (A) and (B), and

(E) 1 to 20 parts by weight of calcium oxide based on 100 parts by weight of the total weight of componeots (A) and (B).

5,548,013

THERMOPLASTIC RESIN COMPOSITION

Takeshi Fujii, Chiba-ken, and Masashi Yamamoto, Ichihara, both of, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 152,100, Nov. 15, 1993, Pat. No. 5,391,607, which is a continuation of Ser. No. 661,241, Feb. 27, 1991, abandoned. This application Nov. 14, 1994, Ser. No. 339,667

Int. Cl.[6] C08L *51/04*

U.S. Cl. 524—449 **5 Claims**

1. A thermoplastic resin composition which comprises:

(a) 100 parts by weight of a graft resin composition (K) obtained by graft polymerizing an unsaturated carboxylic acid or a derivative thereof selected from the group consisting of acrylic acid, methacrylic acid, maleic acid, itaconic acid, maleic anhydride and itaconic anhydride and an unsaturated aromatic monomer onto a mixture of 1–99% by weight of a crystalline polypropylene (C) and 99–1% by weight of a rubbery substance (H) which is styrene-ethylene.butylene-styrene copolymer rubber, the number average molecular weight of the styrene polymer block in the styrene-ethylene,butylene.styrene copolymer rubber being 1,000 to 200,000, the number average molecular weight of the ethylene.butylene copolymer block in the styrene-ethylene. ethylene.butylene-styrene copolymer rubber being 1,000 to 200,000, and the weight ratio of the styrene polymer block to the ethylene.butylene copolymer block being 10:90 to 40:60,

(b) 0.1–600 parts by weight of a saturated polyester resin (F) selected from the group consisting of polyethylene terephthalate and polybutylene terephthalate,

(c) 0.1–300 parts by weight of an epoxy group-containing copolymer (G) selected from the group consisting of a copolymer of ethylene and an unsaturated epoxy compound and a terpolymer of ethylene, an unsaturated epoxy compound and an ethylenic unsaturated compound other than ethylene, the unsaturated epoxy compound being at least one member selected from the group consisting of glycidyl acrylate, glycidyl methacrylate, glycidyl itaconate, allylglycidyl ether, 2-methylglycidyl ether and styrene-p-glycidyl ether, and the ethylenic unsaturated compound other than ethylene being at least one member selected from the group consisting of vinyl acetate, methyl acetate, ethyl acetate, methyl methacrylate, vinyl chloride, vinylidene chloride and isobutyl vinyl ether, the proportion of the unsaturated epoxy compound in the epoxy group-containing copolymer (G) being 0.1 to 50% by weight, and

(d) 0 to 1,900 parts by weight of a crystalline polypropylene (C), the content of the saturated polyester resin (F) in the thermoplastic resin composition being 45 to 1% by weight.

5,548,014

BLENDS OF ETHYLENE COPOLYMERS FOR HOT MELT ADHESIVES

Mun F. Tse, Seabrook; Virginia R. Cross, and Barry C. Trudell, both of Houston, all of Tex., assignors to Exxon Chemical Patents Inc., Wilmington, Del.

Continuation of Ser. No. 183,210, Jan. 18, 1994, abandoned, which is a continuation of Ser. No. 970,365, Nov. 2, 1992, abandoned, which is a continuation-in-part of Ser. No. 691,159, Apr. 24, 1991, abandoned, which is a continuation of Ser. No. 406,935, Sep. 13, 1989, abandoned. This application Mar. 20, 1995, Ser. No. 406,832

Int. Cl.[6] C09J *123/20*

U.S. Cl. 524—477 **21 Claims**

1. A hot melt adhesive composition comprising a blend of at least a first and a second ethylene/alpha-olefin copolymer and a tackifier, said first ethylene/alpha-olefin copolymer comprising from about 3 to about 17 mole percent of a C_3 to C_{20} alpha-olefin comonomer and having a weight average molecular weight from about 20,000 to about 39,500, and said second ethylene alpha-olefin copolymer comprising from about 3 to about 17 mole

percent of a C_3 to C_{20} alpha-olefin comonomer and having a weight average molecular weight of from about 40,000 to about 100,000, said first and second ethylene/alpha-olefin copolymers each having a composition distribution breadth index greater than about 70% and said blend having a total alpha-olefin comonomer mole percent of from about 5 to about 17 mole percent.

5,548,015

AQUEOUS PHENOLIC RESIN DISPERSIONS

Ken A. Bourlier, Randolph, N.J., and Peggy S. Mulrenin, Tucker, Ga., assignors to Georgia-Pacific Resins, Inc., Atlanta, Ga.

Filed Jan. 25, 1995, Ser. No. 377,735
Int. Cl.[6] C08L *29/04*

U.S. Cl. 524—503 **11 Claims**

1. A composition comprising a stable aqueous dispersion of a phenolic resin wherein said dispersion comprises:
   a. a heat-reactive hydrophilic phenolic resin obtained from the reaction of an aromatic alcohol and an aldehyde;
   b. a hydrophobic etherified bisphenol-A resin in an amount of at least about 10 wt % based on the weight of said phenolic resin; and
   c. a protective colloid that will form crosslinks with said phenolic resin upon curing.

5,548,016

WATER-BORNE FLEXIBLE PARTS PRIMER

Robert M. Provenzola, Milford, Mich., assignor to Tremco, Inc., Beachwood, Ohio

Filed Mar. 31, 1994, Ser. No. 221,290
Int. Cl.[6] C08L *75/00*

U.S. Cl. 524—507 **20 Claims**

1. A water-borne polymeric coating composition, comprising:
   a blend of polymeric resins and pigments dispersed in a water based solvent system, said resins including a water soluble or water-miscible polyurethane and a water soluble or water-miscible acrylic polymer, said resins comprising from about 10 to about 35 percent polyurethane by weight, the balance of said resins consisting essentially of one or more acrylic polymers, said resins comprising from about 15 to about 30 percent of said coating composition by weight, said pigments comprising from 20 to about 35 percent of said coating compositions by weight and including talc, said water based solvent system consisting essentially of water and water-miscible organic coalescing solvents, said water-miscible organic coalescing solvents comprising from about 10 to about 25 percent of the weight of said water based solvent system, said coating composition having a total solids content of from about 35 to about 70 percent and wherein said coating composition forms a continuous film at ambient temperature.

5,548,017

RELEASE COATING FOR PRESSURE SENSITIVE ADHESIVES

Frank V. DiStefano, Macungie, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Apr. 4, 1995, Ser. No. 416,563
Int. Cl.[6] C08L *77/08*

U.S. Cl. 524—514 **9 Claims**

1. In an aqueous release coating for pressure sensitive adhesive tapes comprising a latex film forming polymeric material and a release promoting additive, the improvement which comprises the incorporation of a polyamide resin microdispersed in an aqueous medium, said polyamide resin having a softening point of greater than 70° C., and wherein the latex film forming polymeric material is selected from the group consisting of vinyl chloride/ethylene copolymers, vinyl acetate/ethylene copolymers, and acrylic polymers.

5,548,018

AQUEOUS PRIMER COMPOSITION

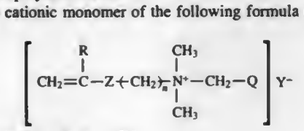
Masao Maekawa, Kashiba, Japan, assignor to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed May 19, 1995, Ser. No. 445,056
Claims priority, application Japan, Jun. 28, 1994, 6-146742
Int. Cl.[6] C08L *37/00*

U.S. Cl. 524—517 **2 Claims**

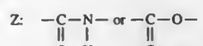
1. An aqueous primer composition comprising a copolymer composed of the following materials (A), (B), (C) and (D), wherein the structural unit derived from said (A) accounts for not less than 5 weight % of said copolymer, the structural unit derived from said (B) accounts for not less than 0.5 weight % of said copolymer, the structural unit derived from said (C) accounts for not less than 0.5 weight % of said copolymer, and the structural unit derived from said (D) accounts for not more than 94 weight % of said copolymer wherein

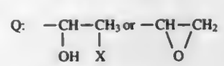
(A) is a cationic monomer of the following formula (1):



(1)

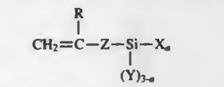
wherein R: —H or —CH_3

Z: 

Q: 

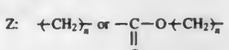
provided that X represents a halogen atom
Y: an organic or inorganic monovalent anion
n: an integer of 1–3

(B) An alkoxysilane monomer of the following formula (2):



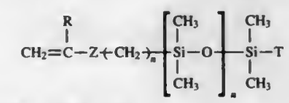
(2)

wherein R: —H or —CH_3

Z: 

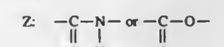
provided that n represents an integer of 0–3
X: —OCH_3, —OC_2H_5 or —$O(CH_2)_mO(CH_2)_pH$ provided that m and p represent an integer of 1–3 respectively
Y: —$(CH_2)_qH$ provided that q represents an integer of 0–3
a: an integer of 1–3

(C) A silane macromonomer of the following formula (3)

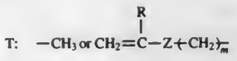


(3)

wherein R: —H or —CH_3

Z: 

n: an integer of 1–3

T: 

provided that m represents an integer of 1–3
u: an integer of 10–140

(D) an ethylenically unsaturated monomer.

5,548,019

COMPOSITION FOR AN AQUEOUS COATING MATERIAL

Shoichi Kawakami, Chiba; Toru Okamoto, Nagareyama; Nobuyuki Miyazaki; Bunji Uchino, both of Kawasaki; Kazuyoshi Nomura, Kazo, and Hiroyuki Kato, Konosu, all of, Japan, assignors to Asahi Glass Company Ltd; Asahi Glass Coat & Resin Co., Ltd., and Asia Industry Co., Ltd., all of Tokyo, Japan

Filed Jan. 4, 1995, Ser. No. 368,654
Claims priority, application Japan, Jan. 7, 1994, 6-000543
Int. Cl.[6] C08J *3/00;* **C08K** *3/20;* **C08L** *75/00;* **C08F** *8/00*

U.S. Cl. 524—591 **17 Claims**

1. An aqueous coating composition comprising a polyisocyanate compound and a fluorine-containing copolymer having hydroxyl groups is a compolymer comprising 20– 80 mol % of polymer units derived from a fluoroolefin and 0.1– 25 mol % of polymer units derived from a monomer having a hydrophilic site, said polyisocyante compound and said fluorine-containing copolymer both being dispersed in water.

5,548,020

STABILIZED POLYACRYLAMIDE EMULSIONS AND METHODS OF MAKING SAME

John J. Santini, and N. Alan Yankie, both of Mobile, Ala., assignors to Cytec Technology Corp., Wilmington, Del.

Division of Ser. No. 345,953, Nov. 28, 1994. This application May 24, 1995, Ser. No. 448,965
Int. Cl.[6] C08F *8/12*

U.S. Cl. 524—801 **13 Claims**

1. A water-in-oil emulsion comprising a partially hydrolyzed (alk)acrylamide polymer wherein said emulsion is stabilized against further hydrolysis, said emulsion having been prepared by the steps consisting essentially of:
   a) providing a water-in-oil emulsion having a discontinuous phase comprising (alk)acrylamide monomer, and a continuous phase comprising a liquid hydrocarbon and emulsifying agent(s);
   b) polymerizing said (alk)acrylamide monomer to form (alk)acrylamide polymer;
   c) reacting said (alk)acrylamide polymer with an alkaline substance to hydrolyze at least a portion of said polymer to produce
      1) a hydrolyzed poly(alk)acrylamide polymer; and
      2) ammonia; and
   d) neutralizing with acetic acid or removing said ammonia.

5,548,021

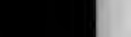
TRIALKYL ENDCAPPED POLYORGANOSILOXANE EMULSIONS

Donald T. Liles, and David L. Murray, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Oct. 28, 1994, Ser. No. 330,403
Int. Cl.[6] C08F *2/22;* **C08L** *83/04*

U.S. Cl. 524—837 **7 Claims**

1. A non-crosslinked polymeric emulsion comprising:
   (A) a preformed aqueous polydiorganosiloxane emulsion comprising water, a surfactant, and a plurality of silanol-terminated polydiorganosiloxane molecules;
   (B) an endblocking silane having the formula:



where X is a hydrolyzable group,
R is the same or different alkyl radical containing 1 to 7 carbon atoms inclusive; and
(C) an organotin catalyst, whereby the resulting composition forms a non-crosslinked emulsion polymer.

5,548,022

AQUEOUS DISPERSION TYPE STAIN-PROOFING AGENT AND METHOD FOR ITS PRODUCTION

Katsuji Ito, and Satoshi Kamata, both of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed May 15, 1995, Ser. No. 441,434
Claims priority, application Japan, May 16, 1994, 6-101344; Apr. 26, 1995, 7-102734
Int. Cl.[6] C08L *75/04;33/06*

U.S. Cl. 524—839 **9 Claims**

1. An aqueous dispersion type stain-proofing agent comprising an aqueous medium and fine particles containing a reaction product (A) and an addition polymer (B), wherein the reaction product (A) is a reaction product of a compound (a^1) having a polyfluoroalkyl group and a group containing active hydrogen reactive with an isocyanate group wherein the compound (a^1) is a compound of formula (1)

$$R_f—Q—A \quad (1)$$

wherein Q is a bivalent linking group selected from the group consisting of —(C=O)—, —CONR—, —SO_2NR—, —SO_2NR$(CH_2)_n$—, —SO_2—, —$(CH_2)_n$—, —C_6H_4—, —C_6H_3Cl— and —OC_2H_4—, wherein R is a hydrogen atom or a C_{1-6} lower alkyl group, n is an integer of from 1 to 20, and m is 0 or 1, wherein A is a hydroxyl group, an amino group or a carboxyl group, and R_f is a linear or branched C_4–C_{20} alkyl group wherein at least two hydrogen atoms of the alkyl are replaced by fluorine, and R_f optionally has one or more ether oxygen linkages, in the alkyl group or a carbon-carbon double bond or both,
with a polyfunctional isocyanate compound (a^2) selected from the group consisting of hexamethylene diisocyanate, isophorone diisocyanate, hydrogenated MDI, trimethylhexamethylene diisocyanate, hydrogenated XDI, xylylene diisocyanate (XDI), tolylene diisocyanate, phenylene diisocyanate, diphenylmethane diisocyanate (MDI) and isocyanurates, trimethylol modified products, trisbiuret modified products, and trifunctional amine derivatives thereof.

5,548,023

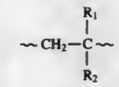
GRAFT COPOLYMERS OF PARA-ALKYLSTYRENE/ISOOLEFIN COPOLYMERS AS BLEND COMPATIBILIZERS

Kenneth W. Powers, Berkeley Heights; Hsien-Chang Wang, Edison, both of N.J.; T-C. Chung, State College, Pa.; Anthony J. Dias, Linden, and Joseph A. Olkusz, Fanwood, both of N.J., assignors to Exxon Chemical Patents, Inc., Wilmington, Del.

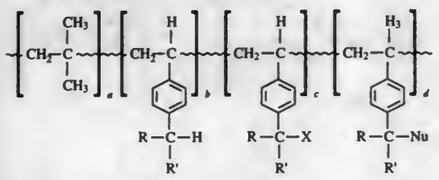
Division of Ser. No. 181,713, Jan. 14, 1994, Pat. No. 5,430,118, which is a continuation of Ser. No. 880,922, May 11, 1992, abandoned, which is a division of Ser. No. 442,028, Nov. 27, 1989, Pat. No. 5,162,445, which is a continuation-in-part of Ser. No. 441,575, Nov. 22, 1989, abandoned, which is a continuation-in-part of Ser. No. 416,713, Oct. 3, 1989, abandoned, and Ser. No. 416,503, Oct. 3, 1989, abandoned, which is a continuation-in-part of Ser. No. 119,665, Nov. 12, 1987, abandoned, said Ser. No. 416,713is a continuation-in-part of Ser. No. 119,665. This application Mar. 13, 1995, Ser. No. 402,792
Int. Cl.[6] C08L *25/16*

U.S. Cl. 525—69 **16 Claims**

1. A method of compatibilizing a polymer blend of (a) a first polymer including repeating units of the formula



wherein R_1 and R_2 are selected from the group consisting of hydrogen, aryl, alkyl, and mixtures thereof, and (b) a second polymer which is incompatible with said first polymer, said method comprising adding to said polymer blend a compatibilizer comprising a graft copolymer comprising



wherein R and R' are independently selected from the group consisting of hydrogen, alkyl, and the primary and secondary alkyl halides, a ranges from about 14 to 70,000, b ranges from 0 to about 70,000, c ranges from 0 to about 70,000, d ranges from 1 to 70,000, X comprises a halogen, and Nu comprises a nucleophilic residue provided by a thermoplastic polymeric nucleophile having a molecular weight of at least 1,000 and being sufficiently nucleophilic such that said nucleophile is capable of donating electrons to benzyl halides.

5,548,024

FUNCTIONALIZATION OF POLYMERS VIA ENAMINE OF ACETOACETATE

Alvin C. Lavoie, Lansdale; Daniel A. Bors, Maple Glen, and Ward T. Brown, N. Wales, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 91,489, Jul. 14, 1993. This application Jun. 6, 1995, Ser. No. 467,116

Int. Cl.[6] C08F *8/32*

U.S. Cl. 525—102 **4 Claims**

1. A process comprising reacting an acetoacetate-functional polymer with a compound which has primary amine and at least one divalent group selected from the group consisting of C_2 to C_{18} alkyl, and alkoxyl and polyalkoxyl chains having molecular weights of from about 72 to about 400,000 at conditions which favor formation of the enamine.

5,548,025

ALKOXY SILYL CAPPING AGENTS FOR MAKING TERMINALLY FUNCTIONALIZED POLYMERS

Robert C. Bening, Katy, Tex., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 330,054, Oct. 27, 1994, Pat. No. 5,478,899. This application Aug. 3, 1995, Ser. No. 510,928

Int. Cl.[6] C08F *8/00*

U.S. Cl. 515—105 **4 Claims**

1. A functionalized polymer, comprising:

a saturated or unsaturated polymer of 1,3-butadiene or isoprene; and

one or more terminal silyl acetal groups.

5,548,026

EPOXY COMPOUND BLEND WITH DI(AMINOALKYL)ETHER OF DIETHYLENE GLYCOL

Steven A. Jorissen, Vadnais Heights, Minn.; Gregory A. Ferguson, Warren, and Krystyna Imirowicz, Troy, both of Mich., assignors to H. B. Fuller Company, Vadnais Heights, Minn.

Continuation of Ser. No. 146,971, Nov. 3, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 462,141

Int. Cl.[6] C08L *63/02*

U.S. Cl. 525—113 **10 Claims**

1. An adhesive composition comprising:

(a) a first part comprising;

(i) about 1 to 25 wt-% of a polyfunctional epoxy compound having three or more epoxide groups,

(ii) about 30–80 wt-% of one or more diepoxy compounds,

(iii) about 1–25 wt-% of a toughening agent, and

(b) a second part comprising about 5–95 wt-% of a curing agent, said curing agent comprising about 2–40 wt-% of a di(aminoalkyl)ether of diethylene glycol

wherein the ratio of the second part to the first part is from about 1 part: 3.2 parts to 1 part: 4.8 parts by weight.

5,548,027

HOTMELT ADHESIVE

Reimar Heucher, Pulheim; Juergen Wichelhaus, Wuppertal; Kurt Schueller, Monheim; Siegfried Kopannia, Duesseldorf, and Angela Rossini, Casarile, all of, Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP93/00728, § 371 Date Oct. 13, 1994, § 102(e) Date Oct. 13, 1994, PCT Pub. No. WO93/20166, PCT Pub. Date Oct. 14, 1993

PCT Filed Mar. 25, 1993, Ser. No. 307,854

Claims priority, application Germany, Apr. 3, 1992, 42 11 125.0

Int. Cl.[6] C08L *77/08*

U.S. Cl. 525—179 **24 Claims**

1. A hotmelt adhesive comprising:

a) at least 50% by weight of the hotmelt adhesive of at least one polyamide based on dimerized fatty acid having at least one value selected from the group consisting of amine values of from 2 to 15 and acid values of from 1 to 50;

b) 5 to 20% by weight of the hotmelt adhesive of at least one copolymer of ethylene with at least one member selected from the group consisting of vinyl acetate, acrylate, said acrylate being derived from an alcohol containing 1 to 18 carbon atoms, methacrylate, said methacrylate being derived from an alcohol containing 1 to 18 carbon atoms and vinyl esters of C_{3-18} carboxylic acids and copolymers wherein up to 15% of the ethylene in the copolymer is replaced by propylene;

c) 2 to 10% by weight of the hotmelt adhesive of at least one copolymer of styrene with at least one member selected from the group consisting of ethylene, isoprene, butadiene and butylene; and

d) 5 to 25% by weight of at least one plasticizer.

5,548,028

CURABLE ELASTOMERIC BLEND WITH VULCANIZED FLUOROELASTOMER

David L. Tabb, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 24, 1995, Ser. No. 393,774

Int. Cl.[6] C08L *27/12;27/22;17/00;19/00*

U.S. Cl. 525—194 **20 Claims**

1. A curable elastomeric blend composition, consisting essentially of previously-vulcanized fluoroelastomer and uncured fluorine-free elastomer prepared by a process which comprises shredding or finely subdividing the previously vulcanized fluoroelastomer and blending the thus-treated fluoroelastomer with the uncured fluorine-free elastomer.

5,548,029

GRAFT COPOLYMERS OF PARA-ALKYLSTYRENE/ISOOLEFIN COPOLYMERS

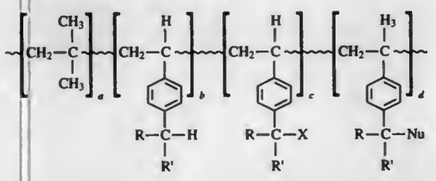
Kenneth W. Powers, Berkeley Heights, N.J.; Hsien-Chang Wang, Bellaire, Tex.; T-C. Chung, State College, Pa.; Anthony J. Dias, Houston, Tex., and Joseph A. Olkusz, Fanwood, N.J., assignors to Exxon Chemical Patents Inc., Wilmington, Del.

Division of Ser. No. 181,713, Jan. 14, 1994, Pat. No. 5,430,118, which is a continuation of Ser. No. 880,922, May 11, 1992, abandoned, which is a division of Ser. No. 442,028, Nov. 27, 1989, Pat. No. 5,162,445, which is a continuation-in-part of Ser. No. 441,575, Nov. 22, 1989, abandoned, which is a continuation-in-part of Ser. No. 416,713, Oct. 3, 1989, abandoned, and Ser. No. 416,503, Oct. 3, 1989, abandoned, each 416,713and Ser. No. 416,503, which is a continuation-in-part of Ser. No. 119,665, May 27, 1988, abandoned. This application Mar. 15, 1995, Ser. No. 404,803

Int. Cl.[6] C08G *81/02*

U.S. Cl. 525—195 **45 Claims**

1. A graft copolymer comprising



wherein R and R' are independently selected from the group consisting of hydrogen, alkyl, and the primary and secondary alkyl halides, a ranges from about 14 to 70,000, b ranges from 0 to about 70,000, c ranges from 0 to about 70,000, d ranges from 1 to 70,000, X comprises a halogen, and Nu comprises a nucleophilic residue provided by a thermoplastic polymeric nucleophile having a molecular weight of at least 1,000 and being sufficiently nucleophilic such that said nucleophile is capable of donating electrons to benzyl halides.

5,548,030

BLOCK COPOLYMER OF POLYALKYLENE AND HALOGENATED POLY(VINYL AROMATIC)

Ronald J. Hoxmeier, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 349,705, Dec. 5, 1994, which is a continuation of Ser. No. 574,170, Aug. 27, 1990, abandoned. This application Feb. 17, 1995, Ser. No. 394,528

Int. Cl.[6] C08F *8/04;8/22*

U.S. Cl. 525—314 **10 Claims**

1. A process to selectively halogenate aromatic rings of a polymer which comprises vinyl aromatic and hydrogenated conjugated diolefin monomer units, the process comprising the steps of:

a) hydrogenating a polymer which comprises vinyl aromatic and conjugated diolefin monomer units in the presence of a hydrogenation catalyst prepared by combining a Group VIII metal carboxylate or alkoxide with an alkyl or hydride of a Group I, II or III metal to selectively hydrogenate the conjugated diolefin monomer units; and

b) halogenating the hydrogenated polymer by contacting the hydrogenated polymer and hydrogenation catalyst with a halogenation agent that selectively halogenates the vinyl aromatic.

5,548,031

COPOLYMER PRODUCTION PROCESS

Toru Doi, Yamaguchi-ken, Japan, assignor to Tosoh Corporation, Japan

Filed Nov. 14, 1994, Ser. No. 340,334

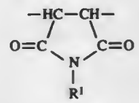
Claims priority, application Japan, Nov. 19, 1993, 5-290544

Int. Cl.[6] C08F *20/08*

U.S. Cl. 525—327.4 **3 Claims**

1. A process for producing a copolymer having succinimide units represented by formula (I), comprising:

(a) reacting in a slurry state in a solvent having a solubility parameter δ value not higher than 9.0, a copolymer containing 40–60 mole % maleic anhydride units, 60–40 mole % olefin units, and 0–20 mole % other copolymerizable monomer units, with an amine containing 1 to 6 carbon atoms or ammonia to convert the maleic anhydride units to the succinimide units:



where R^1 is a hydrogen atom, or an alkyl or cycloalkyl group of 1 to 6 carbons; and thereafter

(b) separating the copolymer as a solid from the reaction mixture of step (a).

5,548,032

CROSSLINKING AGENT FOR ACRYLIC RUBBER

Terumitsu Tokunaga, Toyonaka, and Michinori Kuraya, Nara, both of, Japan, assignors to Toyo Seal Kogyo Kabushiki Kaisha, Nara, Japan

Continuation of Ser. No. 40,342, Mar. 30, 1993, abandoned. This application May 5, 1995, Ser. No. 435,221

Int. Cl.[6] C08C *19/22;19/20;* **C08F** *8/34;8/32*

U.S. Cl. 525—352 **7 Claims**

1. A composition for crosslinking acrylic rubber comprising (A) a crosslinking agent consisting essentially of a reaction product of a compound selected from the group consisting of formaldehyde and a polymerized formaldehyde and a compound selected from the group consisting of urea and thiourea in the presence of an acid catalyst, and (B) a vulcanization accelerator.

5,548,033

PROCESS FOR THE SHORT-TIME TREATMENT OF A PLASTIC MELT WITH A LIQUID TREATMENT AGENT AND THE PLASTIC THUS PRODUCED

Heinz Vetter, Rossdorf; Werner Hoess, Heusenstamm; Joachim Dutschke, Bensheim, and Hartmut Schikowsky, Darmstadt, all of, Germany, assignors to Roehm GmbH Chemische Fabrik, Darmstadt, Germany

Filed Jan. 27, 1995, Ser. No. 379,999

Claims priority, application Germany, Jan. 29, 1994, 44 02 666.8

Int. Cl.[6] C08F *8/32*

U.S. Cl. 525—378 **15 Claims**

1. A process for the treatment of a plastic melt with a liquid treatment agent which comprises:

treating a plastic melt with a liquid treatment agent at a pressure and a temperature at which said treatment agent is in a liquid state,

expanding and degassing said mixture at a reduced pressure;

wherein said plastic melt is divided into defined individual subquantities, and said individual subquantities are brought into contact with said treatment agent,

said individual subquantities are combined after a residence time of less than one second, with portions of a minimum of one other said subquantity,

wherein said steps of dividing and combining said plastic melt are repeated a plurality of times at intervals less than one second or until an intimate mixture consisting of said plastic melt and said treatment agent is obtained, and, wherein said plastic melt is comprised of a (meth)acrylic ester homopolymer or a copolymer of (meth)acrylic acid ester with a monomer selected from the group consisting of styrene, substituted styrene, maleic anhydride, itaconic anhydride and mixtures thereof, and wherein said treatment agent is an amine, ammonia or a mixture thereof.

5,548,034

MODIFIED DICYANATE ESTER RESINS HAVING ENHANCED FRACTURE TOUGHNESS

Ali Afzali-Ardakani, Yorktown Heights; Jeffrey T. Gotro, Endwell; Jeffrey C. Hedrick, Peekskill; Konstantinos Papathomas, Endicott; Niranjan M. Patel, Wappingers Falls, all of N.Y.; Jane M. Shaw, Ridgefield, Conn., and Alfred Viehbeck, Fishkill, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 31, 1992, Ser. No. 923,723

Int. Cl.[6] C08G *65/48*

U.S. Cl. 525—390 **66 Claims**

1. A curable material comprising a blend of a fluorine-containing cyanate and a fluorine-containing poly(arylene ether) wherein said cyanate is a monomer having the structure

N≡C—O—R—$_n$—O—C≡N

said fluorine containing poly(arylene ether) has the structure

X—R—$_m$—X

wherein X is any group capable of reacting with a —C≡N group;

R is an aliphatic or aromatic group which may or may not be fluorosubstituted; R^1 is an aliphatic or aromatic group which may or may not be fluoro substituted or R^1 is selected from the group consisting of ether, carbonyl, sulfone, phosphine oxide and sulfide, and at least one of R or R^1 must be fluoro substituted;

n is 0–10; and

m is 0–100;

said material being heat-curable at a temperature between 180° and 325° C.;

said material in the cured state comprising a fluorine-containing polycyanurate network having a plurality of discrete phases of said fluorine-containing thermpolastic polymer dispersed therein wherein said thermoplastic polymer phases are of submicron size.

5,548,035

BIODEGRADABLE COPOLYMER AS DRUG DELIVERY MATRIX COMPRISING POLYETHYLENEOXIDE AND ALIPHATIC POLYESTER BLOCKS

Ho H. Kim; Guw D. Yeo, both of Tae Jeon, and Yil W. Yi, Chon-Jug all of, Rep. of Korea, assignors to Sam Yang Co., Ltd., Seoul, Rep. of Korea

Filed May 4, 1994, Ser. No. 238,083

Claims priority, application Rep. of Korea, Jan. 10, 1994, 94-270

Int. Cl.[6] C08G *65/32*

U.S. Cl. 525—408 **8 Claims**

1. A thermoplastic, biodegradable multi-block copolymer useful as a drug delivery matrix with the following formula (I):

(H—(OCHR$_1$COOCHR$_2$CO)$_m$—O(CH$_2$)$_l$—Y—A—Y'—((CH$_2$)$_z$O—(COCHR$_1$OC(=O)CHR$_2$O)$_m$—H)$_i$ (I)

wherein

block A is a hydrophilic multi-block copolymer —(—(OCH$_2$CH$_2$)$_n$—X)$_k$—(CH$_2$CH$_2$O)$_n$ —;

X is —O(COCH$_2$O)$_x$—, —O(COCH(CH$_3$)O)$_x$—, —OCH$_2$CONH—, —OCH$_2$CH$_2$CONH—, or —OCONH—;

Y is —CH$_2$NHCO—;

Y' is —CONHCH$_2$—;

R_1 and R_2 are each independently hydrogen or methyl;

x is an integer from 1 to 10;

z is an integer from 1 to 5;

y is an integer from 0 to 2;

l is an integer from 1 to 3;

m is an integer from 20 to 500;

n is an integer from 20 to 500; and

k is an integer from 0 to 50.

5,548,036

PREPARATION OF POLYMERS OF ASPARTIC ACID AND THEIR USE

Matthias Kroner, Eisenberg; Heinrich Hartmann, Limburgerhof; Gunnar Schornick, Neuleiningen; Richard Baur, Mutterstadt; Birgit Potthoff-Karl, Ludwigshafen; Volker Schwendemann, Neustadt, and Alexander Kud, Eppelsheim, all of, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP93/03641, § 371 Date Jun. 26, 1995, § 102(e) Date Jun. 26, 1995, PCT Pub. No. WO94/15993, PCT Pub. Date Jul. 21, 1994

PCT Filed Dec. 21, 1993, Ser. No. 464,624

Int. Cl.[6] C86G *69/08;69/10;73/10;73/06*

U.S. Cl. 525—419 **8 Claims**

1. A process for preparing polymers of aspartic acid by thermal condensation of monoamides of maleic acid, fumaric acid or the ammonium salts of the monoamides of these acids, in the presence or absence of compounds capable of cocondensation, wherein

(a) solid or molten maleic anhydride and

(b) ammonia and/or primary or secondary amines are reacted without diluent in the (a):(b) molar ratio of 1:0.1 to 1:3 to give solid phase monoamides of maleic acid, fumaric acid or their ammonium salts at up to 100° C., and the solid phase reaction products are subsequently thermally condensed, with or without compounds capable of a mixture of cocondensation, at above 100° C.

5,548,037

ACID DYE RESISTANT PIGMENTED POLYMER

Matthew B. Hoyt, Arden, N.C.; Andrew M. Coons, III, Anderson, S.C., and David N. Dickson, Charlotte, N.C., assignors to BASF Corporation, Mt. Olive, N.J.

Division of Ser. No. 228,358, Apr. 15, 1994, which is a division of Ser. No. 71,035, Jun. 2, 1993, Pat. No. 5,340,886, which is a continuation of Ser. No. 711,238, Jun. 6, 1991, abandoned.

This application May 22, 1995, Ser. No. 445,873

Int. Cl.[6] C08F *283/04*

U.S. Cl. 525—426 **5 Claims**

1. An acid dye resistant pigmented polymer comprising:

polymerized amide units;

sulphonated groups incorporated with said amide units and sufficient to provide the polymer with a sulphur content of between about 10 to about 60 equivalents per 10^6 grams polymer;

an amine end group blocker in a quantity to provide an amino end group content of between about 2 and about 20 equivalents per 10^6 grams polymer; and

a pigment.

5,548,038

ORGANOSILOXANE COMPOSITIONS YIELDING OPTICALLY CLEAR, NON-YELLOWING ORGANOSILOXANE GELS

Hiroji Enami, and Takeaki Saiki, both of Chiba Prefecture, Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Mar. 14, 1995, Ser. No. 404,405

Claims priority, application Japan, Mar. 31, 1994, 6-087992

Int. Cl.[6] C08F *283/00*

U.S. Cl. 525—478 **4 Claims**

1. A curable organosiloxane composition comprising

(A) 100 parts by weight of a first diorganopolysiloxane containing at least 1 silicon-bonded alkenyl radical in each molecule and exhibiting a viscosity at 25° C. of 50 to 100,000 centipoise (0.05 to 100 Pa.s),

(B) 1 to 50 parts by weight of an organosiloxane with the average formula

$(R^1_3SiO_{1/2})_a(R^1_2R^2SiO_{1/2})_b(SiO_{4/2})_c$

wherein R^1 represents monovalent hydrocarbon groups excluding alkenyl groups, R^2 represents alkenyl groups, a is 0 or a positive number, b is a positive number, c is a positive number, and the value of (a+b)/c is 0.6 from to 4.0, inclusive;

(C) a second diorganopolysiloxane exhibiting a viscosity at 25° C. of from 1 to 1,000,000 centipoise (0.001 to 1000 Pa.s) and containing at least two silicon-bonded hydrogen atoms per molecule, wherein said hydrogen atoms are present only on non-terminal silicon atoms in each molecule and the molar ratio of silicon-bonded hydrogen atoms to alkenyl radicals in ingredients A and B is from 0.1:1 to 1.2:1, inclusive; and

(D) a quantity of a platinum compound sufficient to promote curing of said composition; wherein the organosiloxane gel resulting from the curing of said composition is optically clear and exhibits a one-quarter scale cone penetration value of from 20 to 200, inclusive when measured in accordance with Japanese Industrial Standard K 2220.

5,548,039

POLYMER SCALE DEPOSITION PREVENTIVE AGENT

Toshihide Shimizu, and Mikio Watanabe, both of Kamisumachi, Japan, assignors to Shin-Etsu Chemical Co., Ltd, Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 364,498

Claims priority, application Japan, Dec. 24, 1993, 5-347556

Int. Cl.[6] C08F *2/00;122/06;120/06;120/10;118/04;136/04;116/12, 120/44;114/106*

U.S. Cl. 526—62 **11 Claims**

1. A process for producing a polymer by polymerization of a monomer having an ethylenically unsaturated double bond in a polymerization vessel having a scale preventive coating on inner wall surfaces of the polymerization vessel, wherein said scale preventive coating has been formed by applying, on the inner wall surfaces of the vessel, an alkaline solution containing a condensation product of:

(A) an anthraquinone compound having at least two amino groups and

(B) at least one compound selected from the group consisting of benzoquinone compounds and naphthoquinone compounds, followed by drying, whereby polymer scale is prevented from being deposited in the polymerization vessel.

5,548,040

PROCESS FOR PASSIVATION OF A REACTOR AFTER SHUTDOWN OF ALPHA OLEFIN POLYMERIZATION PROCESSES

Kevin J. Cann, Rocky Hill, N.J.; Fathi D. Hussein, Cross Lanes, W. Va.; Daniel P. Zilker, Jr., Charleston, W. Va., and Kiu H. Lee, South Charleston, W. Va., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Dec. 20, 1994, Ser. No. 359,513

Int. Cl.[6] C08F *2/34*

U.S. Cl. 526—62 **10 Claims**

1. A method for the passivation of internal reactor surfaces of a fluidized bed reactor after terminating a polymerization process of ethylene and at least one alpha olefin having 3 to 12 carbon atoms, hydrogen, and optionally a diene in the presence of a catalyst system comprising (i) a vanadium compound, (ii) an alkylaluminum or alkylaluminum halide co-catalyst, and optionally (iii) a halocarbon promoter, which method comprises: adding a passivation agent selected from the group consisting of (a) a dialkylzinc compound having 1 to 12 carbon atoms, (b) an alcohol having 1 to 10 carbon atoms, and (c) an epoxide having 1 to 8 carbon atoms after terminating the polymerization.

5,548,041

PROCESS FOR PRODUCING POLYCARBONATE

Tsutomu Yamato; Yasuhiro Oshino; Yutaka Fukuda; Tatsuya Kanno; Takaaki Kuwana, and Yoshimichi Okano, all of Hyogo, Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 376,862, Jan. 23, 1995, which is a division of Ser. No. 205,583, Mar. 3, 1994, which is a division of Ser. No. 851,806, Mar. 16, 1992, Pat. No. 5,434,227. This application Aug. 29, 1995, Ser. No. 521,071

Claims priority, application Japan, May 8, 1991, 3-198964/91; Nov. 6, 1991, 3-290176/91; Nov. 6, 1991, 3-290177/91; Nov. 6, 1991, 3-290178/91; Nov. 8, 1991, 3-293037/91

Int. Cl.[6] C08F *2/00*

U.S. Cl. 526—62 **44 Claims**

1. A process for producing a polycarbonate by transesterification, which comprises reacting in a molar ratio of 1:0.9 to 1.50 respectively, a dihydroxyl compound with a diester of carbonic acid in the presence of a substance by contacting the reactants in a stainless steel reactor whose inner surface area has been treated with said substance; said reaction conducted at a temperature of about 100° C. to 300° C. and a pressure of 0.3 Torr or below at the completion of the reaction; said substance not containing iron, nickel or polyfluoroethylene and being selected from the group consisting of:

(a) an inorganic material selected from the group consisting of a silicate; an oxide; a carbide; a nitride; a boride; a silicide; and a carbonaceous material;

(b) a metal selected from the group consisting of Cr, Mo, Al, Cu, Zn, Co and Mn;

(c) a metal alloy selected from the group consisting of those which contain Cr and/or Co in an amount of 50% by weight or above, Al and/or Mn in an amount of 50% by weight or above; one which contains Cr in an amount of 50% by weight or above, Co in an amount of 50% by weight or above; and Cu and Cr in a total amount thereof of 50% by weight or above.

VOI 1189 ISS 3 AG 2 19 96 UMI

5,548,042

PROCESS FOR THE PRODUCTION OF POLYPROPYLENE

Mark G. Goode, Hurricane, W. Va., assignor to Union Carbide Chemical & Plastics Technology Corporation, Danbury, Conn.

Filed Aug. 19, 1994, Ser. No. 293,473
Int. Cl.[6] C08F *2/34;2/40;10/06*
U.S. Cl. 526—65 **8 Claims**

1. A process for the production of polypropylene comprising continuously contacting propylene or a mixture comprising propylene and one or more other alpha-olefins, in two or more reaction zones connected in series, under gas phase polymerization conditions, with a catalyst system comprising (i) a solid particulate catalyst precursor, which includes magnesium; titanium; a halogen which is chlorine, bromine, or iodine, or mixtures thereof; and, as an inside electron donor, a carboxylic acid ester; (ii) a hydrocarbylaluminum cocatalyst; and (iii) as an outside electron donor, a silicon compound containing at least one silicon-oxygen-carbon linkage or a carboxylic acid ester, subject to the following conditions:

(a) introducing the catalyst precursor into the first reaction zone only;

(b) in the first reaction zone or in a first series of two or more reaction zones, partially deactivating the catalyst precursor with a deactivator and simultaneously increasing the monomer level wherein the deactivation and the increase in monomer level are effected in sufficient amounts to achieve a desired resin productivity in the first reaction zone(s);

(c) transferring resin product together with catalyst precursor residue from the first reaction zone or the last reaction zone of the first series of reaction zones to a second reaction zone (A) having purged the deactivator in a purge zone prior to the entry of the precursor residue into the second reaction zone and/or (B) adding cocatalyst, as an activator, and/or another activator to the purge zone or the second reaction zone wherein the activation is effected in sufficient amount to achieve a desired resin productivity in the second reaction zone; and

(d) optionally, repeating steps (b) and/or (c) in one or more succeeding reaction zones.

5,548,043

PROCESSES FOR PRODUCING BIMODAL TONER RESINS

Marko Saban, Etobicoke, Canada, assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 30, 1994, Ser. No. 351,153
Int. Cl.[6] C08F *2/38;4/48*
U.S. Cl. 526—84 **20 Claims**

1. A one-step polymerization process for producing a resin, comprising:

(a) initiating an anionic polymerization of a monomer or monomers in a reaction vessel to produce living polymer chains;

(b) terminating a first portion of said living polymer chains by controllably adding to the reaction vessel one of:

(i) at least one of air and oxygen to cause the termination of a portion of the living polymer chains by coupling of the living polymer chains, and

(ii) a quenchant selected from the group consisting of aliphatic and aromatic alcohols to cause the termination of a portion of the living polymer chains; and

(c) completing the polymerization of a remaining portion of said living polymer chains;

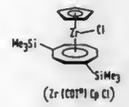
wherein said resin is a bimodal resin having a distinct low molecular weight portion and a high molecular weight portion.

5,548,044

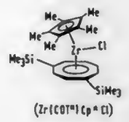
POLYMERIZATION CATALYSTS

Frederick G. N. Cloke, Brighton, England, assignor to BP Chemicals Limited, London, England

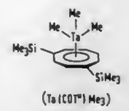
Division of Ser. No. 402,635, Mar. 13, 1995. This application Jun. 7, 1995, Ser. No. 488,191
Claims priority, application United Kingdom, Mar. 15, 1994, 9405012
Int. Cl.[6] C08F *4/642;4/68*
U.S. Cl. 526—127 **4 Claims**



(Zr(COT*)Cp Cl)



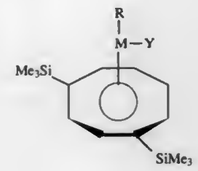
(Zr(COT*)Cp*Cl)



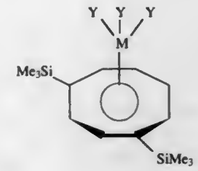
(Ta(COT*)Me3)

1. A process for the polymerisation of olefins comprising contacting at least one olefin monomer with a catalyst composition comprising a transition metal complex having the formula I or II:

I



II



wherein Y is halide, hydride or a hydrocarbyl group having 1 to 20 carbon atoms and may be the same or different, R is an unsubstituted or substituted cyclopentadienyl ring, and in Formula I M or Zr, Ti, or Hf and in Formula II M is tantalum, vanadium or niobium and (B) an organometallic compound of a metal from Group IA, IIA, IIB, or IIIB of the periodic Table.

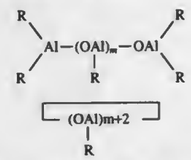
5,548,045

PROCESS FOR PRODUCING POLYBUTADIENE

Kohei Goto, Suzuka; Iwakazu Hattori, Aichi-ken; Shoji Ogasahara, Yokkaichi; Masahiro Shibata, Yokkaichi; Yoshiyuki Michino, Yokkaichi; Kazuo Soga, Tokyo, and Takeshi Shioso, Yokohama, all of, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 873,234, Apr. 24, 1992, abandoned. This application Sep. 12, 1994, Ser. No. 302,958
Claims priority, application Japan, Apr. 24, 1991, 3-119053
Int. Cl.[6] C08F *4/70*
U.S. Cl. 526—161 **6 Claims**

1. A process for producing a polybutadiene, which comprises polymerizing 1,3-butadiene in the presence of a catalyst consisting essentially of (A) a cobalt-phosphine complex and (B) an organoaluminum compound consisting essentially of an aluminoxane represented by formula (I) or (II):



(I)

(II)

wherein R is methyl, and m is an integer of 5 to 100, in a hydrocarbon solvent.

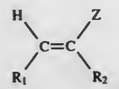
5,548,046

STABILIZED DIALKYL PEROXYDICARBONATE COMPOSITIONS AND THEIR USES

Jose Sanchez, Erie, N.Y., assignor to Elf Atochem North America, Inc., Philadelphia, Pa.

Filed Feb. 16, 1994, Ser. No. 197,031
Int. Cl.[6] C08F *4/34;120/20;14/06;112/08;110/02*
U.S. Cl. 526—230.5 **10 Claims**

1. An improved process for the polymerization of ethylenically unsaturated compounds which comprises treating one or more ethylenically unsaturated compounds under conditions of time and temperature sufficient to perform said polymerization with a dialkyl peroxydicarbonate wherein the improvement comprises the use in said polymerization of a dialkyl peroxydicarbonate containing from about 0.05% to about 1.4% by weight based on the weight of dialkyl peroxydicarbonate of at least one compound having the Structure 1:



I

where R_1 and R_2 are the same or different and are selected from the group consisting of hydrogen, alkyl of 1 to 4 carbons, cycloalkyl of 5 to 10 carbons, aryl of 6 to 10 carbons, aralkyl of 7 to 11 carbons, alkenyl of 2 to 6 carbons, bromo and chloro; and Z is —C≡N or —C≡C—R_3, where R_3 is selected from the group consisting of hydrogen, alkyl of 1 to 4 carbons, cycloalkyl of 5 to 10 carbons, alkenyl of 2 to 4 carbons, aralkyl of 7 to 11 carbons and aryl of 6 to 10 carbons.

5,548,047

PROCESS FOR THE PRODUCTION OF HIGHLY WATER ABSORPTIVE POLYMERS

Kiichi Ito; Shuhei Yada, both of Yokkaichi; Miho Oomori, Hokkaichi, and Toshiko Nakamura, Yokkaichi, all of, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Continuation of Ser. No. 910,875, Jul. 9, 1992, abandoned. This application May 16, 1995, Ser. No. 442,099
Claims priority, application Japan, Jul. 11, 1991, 3-171447
Int. Cl.[6] C08F *30/04*
U.S. Cl. 526—240 **8 Claims**

1. A process for producing a highly water absorptive polymer comprising the steps of:

subjecting a water-soluble ethylenically unsaturated monomer comprising as the main component acrylic acid and/or an alkali metal or ammonium salt thereof to a water-in-oil, reverse-phase suspension polymerization in the presence of water, a water-soluble radical polymerization initiator, a dispersant and a hydrophobic hydrocarbon solvent to form a slurry of water-containing particles of a highly water absorptive polymer in the solvent,

adding a polymerizable monomer to said slurry, and

polymerizing in said slurry the polymerizable monomer without the addition of additional polymerization initiator to obtain agglomerates of the particles of the highly water absorptive polymer.

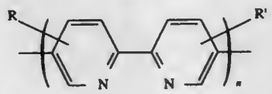
5,548,048

PROCESS FOR MANUFACTURING ALKYL-SUBSTITUTED POLY (2,2'-DIYL) BIPYRIDINE-5,5'-DIYL

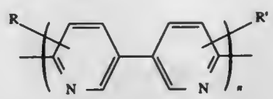
Takakazu Yamamoto, Yokohama, and Tsukasa Maruyama, Machida, both of, Japan, assignors to Tokyo Institute of Technology, Tokyo, Japan

Division of Ser. No. 128,038, Sep. 29, 1993, Pat. No. 5,424,381. This application Mar. 29, 1995, Ser. No. 412,883
Claims priority, application Japan, Mar. 29, 1993, 5-70.405
Int. Cl.[6] C08F *126/06;4/80*
U.S. Cl. 526—265 **6 Claims**

1. A process for manufacturing a polymer comprised of an alkyl substituted poly(2,2'-bipyridine-5,5'-diyl) having a chemical formula which is at least one of:



and



where R and R' are H or an alkyl group having not less than 1 carbon atom, except that at least one of R and R' is an alkyl group having not less than 3 carbons, 'n' is a degree of polymerization and is not less than 10, the process comprising:

a. providing at least one alkyl substituted 5,5'-dihalogenated-2,2'-bipyridine having alkyl substituents in the 3-, 4- or 6-position of two pyridinediyl groups; and

b. polymerizing the at least one alkyl substituted 5,5'-dihalogeanted-2,2'-bipyridine by adding an effective amount thereto of at least one substance which is effective to remove halogens therefrom, which at least one substance is selected from the group consisting of (a) at least one metal which is capable of dehalogenating the alkyl substituted 5,5'-dihalogenated-2,2'-bipyridine and (b) at least one

compound containing at least one metal which is capable of dehalogenating alkyl substituted 5,5'-dihalogenated-2,2'-bipyridine.

5,548,049

COPOLYMERS OF ALLYLIMINODIACETIC ACID WITH UNSATURATED CARBOXYLIC ACIDS AND THEIR USE AS COMPLEXING AGENTS, PEROXIDE STABILIZERS, BUILDERS IN WASHING AND CLEANING PRODUCTS AND DISPERSING AGENTS

Helmut Brehm, Krefeld; Kurt Dahmen, Mönchengladbach-Rheydt, and Richard Mertens, Krefeld, all of, Germany, assignors to Chemische Fabrik Stockhausen GmbH, Krefeld, Germany

PCT No. PCT/EP93/01694, § 371 Date Dec. 29, 1994, § 102(e) Date Dec. 29, 1994, PCT Pub. No. WO94/01477, PCT Pub. Date Jan. 20, 1994

PCT Filed Jul. 1, 1993, Ser. No. 362,435

Claims priority, application Germany, Jul. 3, 1992, 42 21 863.2

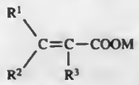
Int. Cl.[6] C08F *26/00*

U.S. Cl. 526—312 **14 Claims**

1. Polymers of

a) 1–50%-wt. of N-allymininodiacetic acid and/or its salts,

b) 50–99%-wt. of one or several unsaturated, polymerizable carboxylic acids of the formula I



(I)

wherein R^1 represents hydrogen, C_{1-C4} alkyl or —COOM, R^2 represents hydrogen, or C_{1-C4} alkyl, R^3 represents hydrogen, C_{1-C4} alkyl or CH_2COOM, and M represents hydrogen, ammonium, an alkali metal or an alkaline earth metal, and

c) 0–40%-wt. water-soluble monomers copolymerizable with a) and b)

wherein the polymers have a molecular weight of from about 1,000 to 76,000.

5,548,050

METHOD FOR THE PREPARATION OF ORGANIC SOLVENT-SOLUBLE POLYTITANOSILOXANES

Nobuo Kushibiki; Yoko Sugata, both of Kanagawa Prefecture, Japan, and Toshio Suzuki, Midland, Mich., assignors to Dow Cornings Asia, Ltd., Tokyo, Japan

Filed Feb. 17, 1995, Ser. No. 390,737

Claims priority, application Japan, Feb. 25, 1994, 6-028346

Int. Cl.[6] C08G *79/00*

U.S. Cl. 528—9 **9 Claims**

1. A method for the preparation of organic solvent-soluble polytitanosiloxanes, the method comprising:

(1) adding water simultaneously or successively to a tetraalkyl titanate or partial hydrolyzate-condensate thereof and a tetraalkyl silicate or partial hydrolyzate-condensate thereof in an amount which is less than 80% of the amount theoretically necessary for the hydrolysis and condensation of all alkoxy groups on the tetraalkyl titanate or partial hydrolyzate-condensate thereof and the tetrallkyl silicate or partial hydrolyzate-condensate thereof, so that a partial cohydrolyzate-cocondensate forms; and

(2) reacting the partial cohydrolyzate-cocondensate with at least 1 silane compound with a formula $R^1_aR^2_{(3-a)}SiOR^3$, where R^1 is selected from the group consisting of a hydrogen atom and a monovalent organic group, R^2 is a monovalent organic group, R^3 is selected from the group consisting of a hydrogen atom and an acyl group having no more than 8 carbon atoms, and a is an integer with a value of 0 to 3.

5,548,051

SINGLE COMPONENT INORGANIC/ORGANIC NETWORK MATERIALS AND PRECURSORS THEREOF

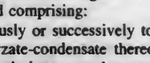
Michael J. Michalczyk, Wilmington, Del., and Kenneth G. Sharp, Landenburg, Pa., assignors to E. I Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 303,259, Sep. 8, 1994, abandoned, which is a division of Ser. No. 120,995, Sep. 13, 1993, Pat. No. 5,378,790, which is a continuation-in-part of Ser. No. 945,777, Sep. 16, 1992, abandoned. This application Aug. 7, 1995, Ser. No. 512,246

Int. Cl.[6] C08G *77/08*

U.S. Cl. 528—15 **14 Claims**

1. A compound of the formula (I):



(I)

wherein:

Q is alkoxy of 1 to about 8 carbon atoms, acyloxy of 1 to about 8 carbon atoms, or halogen;

n is an integer greater than or equal to 2; and

X is at least one flexible organic link selected from the group consisting of:

(a) $R^1_mSiY_{4-m}$;

(b) $R^1_mSi(OSi(CH_3)_2Y)_{4-m}$;

(c) $R^1_mSi(OY)_{4-m}$;

(d) $CH_3SiY_2—O—SiY_2CH_3$;

(e) $O[—C_6H_4—Si(CH_3)_2Y]_2$;

(f) $Y(CH_3)_2SiCH_2—CH_2Si(CH_3)_2Y$;

(g) $Y(CF_2)_pY$, provided that Y is other than ethylene;

(h) $Y_3SiOSiY_3$;

(i) $Y_3Si(CH_2)_6SiY_3$;

(j) $Y_3SiC_6H_4SiY_3$;

(k) substituted benzene selected from the group consisting of:

(i) $C_6H_3(SiZ_{3-a}Y_a)_3$;

(ii) $C_6H_2(SiZ_{3-a}Y_a)_4$;

(iii) $C_6H(SiZ_{3-a}Y_a)_5$; and

(iv) $C_6(SiZ_{3-a}Y_a)_6$; and

(l) substituted cyclohexane selected from the group consisting of:

(i) $1,2\text{-}C_6H_{10}(Y)_2$; $1,3\text{-}C_6H_{10}(Y)_2$; $1,4\text{-}C_6H_{10}(Y)_2$

(ii) $1,2,4\text{-}C_6H_9(Y)_3$; $1,2,3\text{-}C_6H_9(Y)_3$; $1,3,5\text{-}C_6H_9(Y)_3$;

(iii) $1,2,3,4\text{-}C_6H_8(Y)_4$; $1,2,4,5\text{-}C_6H_8(Y)_4$; $1,2,3,5\text{-}C_6H_8(Y)_4$;

(iv) $1,2,3,4,5\text{-}C_6H_7(Y)_5$; and

(v) $C_6H_6(Y)_6$;

wherein:

Z is an alkyl group of 1 to 4 carbon atoms, 3,3,3-trifluoropropyl, aralkyl or aryl;

Y is $—(CR^2R^3)_kCR^4R^5CR^6R^7(CR^8R^9)_h—$;

R^1 is alkyl of 1 to about 8 carbon atoms or aryl;

R^2 to R^9 are each independently hydrogen, alkyl of 1 to about 8 carbon atoms or aryl, provided that at least one of R^4 to R^7 is hydrogen;

m is 0, 1 or 2;

k and h are each independently an integer from 0 to 10, provided that at least one of k or h is zero; and

a is 1, 2 or 3;

p is an even integer from 4 to 10;

b is an integer from 1 to 10.

5,548,052

SILANE MODIFIED POLYOXOMETALATE ANIONS

Dimitris E. Katsoulis, Midland, and John R. Keryk, Rhodes, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 27, 1994, Ser. No. 364,336

Int. Cl.[6] C08G *77/22;77/398*

U.S. Cl. 528—10 **10 Claims**

1. A silane modified polyoxometalate anion represented by the formula

$$YZ(SiRR')_n$$

where Z is selected from the group consisting of $M_{11}O_{39}^{-12}$, $M_6O_{34}^{-14}$ and $M_{17}O_{61}^{-20}$, where M is tungsten or molybdenum; Y is As^{+5}, Si^{+4}, B^{+3}, Ge^{+4}, P^{+5} or Fe^{+3} when Z is $M_{11}O_{39}^{-12}$, Y is Si^{+4}, Ge^{+4}, or P^{+5} when Z is $M_6O_{34}^{-14}$ and Y is As_2^{+10} when P_2^{+10} when Z is $M_{17}O_{61}^{-20}$; R is selected from the group consisting of monovalent hydrocarbon radicals having from 1 to 24 carbon atoms, monovalent halogenated hydrocarbon or carbon radicals having from 1 to 24 carbon atoms and monovalent hydrocarbon radicals having from 1 to 24 carbon atoms substituted with an epoxy group, an amino group, a mercapto group or a methacrylo group; R' is selected from the group consisting of a hydrogen atom and R; and n represents the number of $(=SiRR')^{+2}$ groups bonding to the polyoxometalate anion and has a value from 1 to 3.

5,548,053

PROCESS FOR THE PREPARATION OF ORGANOPOLYSILOXANE RESIN

Richard Weidner, Burghausen; Konrad Mautnre, Kastl, and Reinhardt Mueller, Burghausen, all of, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

PCT No. PCT/EP93/01201, § 371 Date Oct. 12, 1994, § 102(e) Date Oct. 12, 1994, PCT Pub. No. WO93/23455, PCT Pub. Date Nov. 25, 1993

PCT Filed May 13, 1992, Ser. No. 313,192

Claims priority, application Germany, May 13, 1993, 42 16 139.8

Int. Cl.[6] C08G *77/06*

U.S. Cl. 528—14 **7 Claims**

1. A process for the preparation of an organopolysiloxane resin, which comprises

in a 1st stage

reacting at least one silane of the formula

$$R_3SiOR^1 \quad (I)$$

and/or a hydrolysate thereof of the formula $R_3SiOSiR_3$, in which

R is identical or different and is a monovalent organic radical and

R^1 is an alkyl radical,

and at least one silane of the formula

$$Si(OR^2)_4 \quad (II)$$

and/or a partial hydrolysate thereof, in which

R^2 is identical or different and is an alkyl radical, and optionally an organosilicon compound selected from the group consisting of silanes of the formula

$$R^3_aSi(OR^4)_{4-a} \quad (III)$$

in which

a is 1 or 2,

R^3 is identical or different and is a monovalent organic radical and

R^4 is identical or different and is an alkyl radical partial hydrolysates thereof, mixtures of silanes of the formula (III) and partial hydrolysates thereof, and organo (poly) siloxanes of the formula

$$(R^3_2SiO)_b \quad (IV)$$

in which

R^5 is identical or different and is a monovalent organic radical and

b is an integer having a value from 3 to 8,

with water in the presence of a hydrolysis affecting acid, to form a homogeneous reaction mass and distilling off at least part of the alcohol which is formed as a by-product of said reacting;

in a 2nd stage

reacting the homogeneous reaction mass obtained in the 1st stage in the presence of a base condensation catalyst and an amount of water-insoluble organic solvent sufficient to maintain the homogeneity of the reaction mass, and further removing water and alcobol by distillation;

in a 3rd stage

neutralizing the homogeneous reaction mass of the 2nd stage with an acid, thereby forming a salt, distilling off any water and alcohol still present in the reaction mass, and removing precipitated salt; and

optionally, in a 4th stage

freeing the homogeneous reaction mass of the 3rd stage from the water-insoluble organic solvent.

5,548,054

FLUORINE-MODIFIED SILICONE DERIVATIVE, PRODUCTION THEREOF AND COSMETIC CONTAINING THE SAME

Jouji Okada, Ichikai-machi; Akira Kawamata, Utsunomiya; Tadayuki Tokunaga, Chiba; Noboru Nagatani, Funabashi; Makoto Torizuka, Kawasaki, and Masahiko Asahi, Tokyo, all of, Japan, assignors to Kao Corporation, Tokyo, Japan

PCT No. PCT/JP93/00223, § 371 Date Aug. 29, 1994, § 102(e) Date Aug. 29, 1994, PCT Pub. No. WO93/18085, PCT Pub. Date Sep. 16, 1993

PCT Filed Feb. 23, 1993, Ser. No. 290,868

Claims priority, application Japan, Mar. 10, 1992, 4-051640; Dec. 15, 1992, 4-334143

Int. Cl.[6] C08G *77/385;77/24*

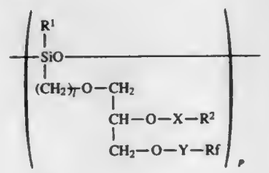
U.S. Cl. 528—25 **3 Claims**

1. A fluorine-modified silicone derivative (B) having polysiloxane units represented by the following general formula (4):

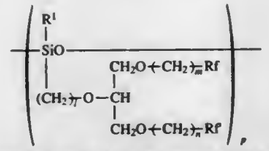


(4)

and at least one polysiloxane unit selected from the group consisting of structural units represented by the following general formulae (1) and (2):



(1)



(2)

wherein Rf and Rf' mean individually a perfluoroalkyl group having 6–20 carbon atoms or a ω-H-perfluoroalkyl group represented by the formula $H(CF_2)_t—$ in which t stands for an integer of 6–20, R^1, R^4 and R^5 are identical with or different from each other and mean individually a straight-chain or branched saturated aliphatic hydrocarbon group having 1–20 carbon atoms, or an alicyclic or aromatic hydrocarbon group having 5–10 carbon atoms, R^2 denotes a hydrogen atom, a straight-chain or branched aliphatic hydrocarbon group having 1–20 carbon atoms, an alicyclic or aromatic hydrocarbon group having 5–10 carbon atoms, a perfluoroalkyl group having 1–20 carbon atoms, or a ω-H-perfluoroalkyl group represented by the formula $H(CF_2)_u—$ in which u stands for

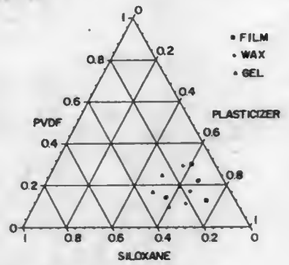
an integer of 1–20, X and Y mean individually a single bond, —CO— or a divalent hydrocarbon group having 1–6 carbon atoms, l stands for a number of 2–16, m and n are individually a number of 1–6, p is a number of 1–200, and s is a number of 0–200.

5,548,055

SINGLE-ION CONDUCTING SOLID POLYMER ELECTROLYTES

Subhash C. Narang, Redwood City, and Susanna C. Ventura, Los Alto, both of Calif., assignors to SRI International, Menlo Park, Calif.

Filed Jan. 13, 1995, Ser. No. 372,216
Int. Cl.[6] C08G *77/04*
U.S. Cl. 528—25 **20 Claims**



1. A polymer having the structure



(I)

wherein:

R^1 and R^2 are individually selected from the group consisting of moieties having the structure

$$—(CH_2)_{x1}(OCH_2CH_2)_{y1}(OCF_2CF_2)_{z1}SO_2R^3$$

in which R^3 is —OM, $—N(M)SO_2CF_3$ or $—C(M)(SO_2CF_3)_2$ and M is an alkali metal, or wherein one of R^1 and R^2 has the structure

$$—(CH_2)_{x1}(OCH_2CH_2)_{y1}(OCF_2CF_2)_{z1}SO_2R^3$$

and the other is selected from the group consisting of hydrogen, lower alkyl, fluorinated lower alkyl, lower alkenyl, fluorinated lower alkenyl, aryl, and aralkylene;

x1 and z1 may be the same or different and are integers in the range of 1 to 100 inclusive;

y1 is an integer in the range of 0 to 100 inclusive; and

n is an integer indicating the number of mer units in the polymer.

5,548,056

POLYUREAURETHANE PRIMERLESS ADHESIVE

Daniel A. Chung, Dublin, Ohio, assignor to Ashland Inc., Russell, Ky.

Continuation of Ser. No. 130,670, Oct. 1, 1993, abandoned, which is a continuation of Ser. No. 849,850, Mar. 12, 1992, abandoned. This application Oct. 31, 1994, Ser. No. 332,625
Int. Cl.[6] C08G *18/10*
U.S. Cl. 528—61 **1 Claim**

1. The method of making a laminate of a first untreated fiberglass reinforced polyester substrate and a second substrate selected from an untreated fiberglass reinforced polyester substrate and an untreated metal substrate, said first and second substrates adhered together with the dried residue of a polyureaurethane structural adhesive having up to 180 percent elongation comprising the steps of:

applying to said first substrate an adhesive composition consisting essentially of the mixture of

a. an isocyanate terminated prepolymer component prepared by reacting an excess of slowly reacting polyisocyanate mixture of 85 parts diphenyl methane—4,4'diisocyanate monomer and 15 parts uretonimine oligomer, and a polyol, and

b. a curative component comprising from 0.45 to 1.00 equivalents of an amine of less than 2315 molecular weight selected from the group of:

1-methyl-3,5-diethyl-2,6-diaminobenzene,

di(methylthio) toluene diamine,

isophorone diamine,

dicyclohexylmethane diamine,

piperazine,

2-methylpentamethylene diamine,

dialkylated diamino benzene,

dialkylated diamino diphenylmethane,

di-p-aminobenzoate, MW 250–2000, of trimethylene glycol or polytetramethylene ether glycol or

di-tertiary-butylethylene diamine, and

0 to 0.55 equivalents polyol per 1.00 equivalent curative, permitting such adhesive coated substrate to wait until further treatment up to as long as 85 minutes open time, said adhesive sagging less than 0.61 inch during said open time, affixing said second substrate, permitting said affixed substrates to wait unheated for as long as 72 hours, and curing said affixed substrates at room temperature or by postbaking at temperatures up to 177° C., whereby said fiberglass reinforced polyester substrate has a defect-free outer surface and a lap shear strength of 400 pounds per square inch measured at 82° C. is attained.

5,548,057

ONE-COMPONENT-TYPE COMPOSITION FOR POLYURETHANE ELASTOMER AND METHOD FOR PROCESSING THE SAME BY MOLDING

Shinji Hirayama, Hadano; Shin Konishi, Fujisawa; Takao Hidai, Anjo; Shinjiro Hama, Fujisawa; Sadako Hashimoto, Hadano, and Yukihiro Morikawa, Yokohama, all of, Japan, assignors to Inoac Corporation, and Nippon Polyurethane Industry Co., Ltd., both of, Japan

Filed Aug. 29, 1994, Ser. No. 294,835
Claims priority, application Japan, Aug. 31, 1993, 5-240581
Int. Cl.[6] C08L *75/04*
U.S. Cl. 528—67 **21 Claims**

1. A one-component composition for a polyurethane elastomer, comprising as a main component a polyurethane precursor containing a polyisocyanate component and a compound having active hydrogen groups,

in which said polyisocyanate component contains a polyisocyanate having at least one urethodione group, said compound having active hydrogen groups contains at least two active hydrogen groups in its molecule and has a molecular weight of 18 to 20000,

said polyurethane precursor is obtained by reacting said polyisocyanate component and said compound having active hydrogen groups under conditions where the equivalent ratio of an active hydrogen group in said compound having active hydrogen groups to an isocyanate group in said polyisocyanate component exceeds 1.0, and where the equivalent ratio of said urethodione group to said active hydrogen group in the polyurethane precursor is from 0.25 to 1.0,

and substantially no isocyanate group including a free polyisocyanate monomer exists in said one-component composition, wherein said composition is used for molding processing.

5,548,058

SPHERICAL CURING AGENT FOR EPOXY RESIN, CURING AGENT MASTERBATCH FOR EPOXY RESIN AND THEIR PREPARATION

Souichi Murol, Shizuoka-ken, and Hsi-Chuan Tsai, Kanagawa-ken, both of, Japan, assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Division of Ser. No. 22,607, Feb. 18, 1993, Pat. No. 5,480,957. This application Jun. 7, 1995, Ser. No. 478,067
Claims priority, application Japan, Jun. 8, 1990, 2-138176; Jun. 21, 1990, 2-163966; Mar. 11, 1991, 3-70615
Int. Cl.[6] C08G *59/68;65/00*
U.S. Cl. 528—93 **18 Claims**

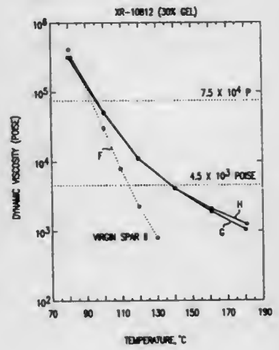
1. A method for the preparation of fine substantially spherical particles of a curing agent for epoxy resin which comprises reacting an amine compound, having at least one secondary amino group, with an epoxy compound in the presence of a dispersion stabilizer in an organic solvent capable of dissolving both said amine compound and said epoxy compound but incapable of dissolving the adduct formed therefrom at elevated temperatures with agitation and recovering the particles of the amine compound/epoxy compound adduct from the reaction mixture solution.

5,548,059

UNSATURATED POLYESTERS

Robert D. Bayley, Fairport; Carol A. Fox, Farmington; Thomas R. Hoffend, Webster, all of N.Y.; Hadi K. Mahabadi, Mississauga, Canada; Enno E. Agur, Toronto, Canada; Guerino Sacripante, Oakville, Canada, and Michael S. Hawkins, Cambridge, Canada, assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 159,176, Nov. 30, 1993, Pat. No. 5,407,772. This application Jan. 3, 1995, Ser. No. 367,609
Int. Cl.[6] C08G *63/18*
U.S. Cl. 528—194 **29 Claims**



1. An unsaturated linear polymer comprising: a reaction product comprising first residues of a first monomer, second residues of a second monomer and third residues of a third monomer, said first monomer being a diol having a molecular weight below about 200, said second monomer being selected from the group consisting of unsaturated dicarboxylic acids and diesters, and said third monomer being different from said second monomer and selected from the group consisting of aromatic dicarboxylic acids and diesters; a concentration of said second residues ranging from about 3 to about 15 wt. %, based on a total weight of the polymer, and a concentration of said third residues ranging from about 40 to about 50 wt. % based on a total weight of the polymer; said polymer having a glass transition temperature ranging from about 52° C. to about 61° C.

5,548,060

SULFONATION OF POLYPHOSPHAZENES

Harry R. Allock; Eric H. Klingenberg, both of State College, Pa., and Mark P. Weller, Los Alamos, N.M., assignors to Penn State Research Foundation, Inc., University Park, Pa.

Filed Aug. 8, 1994, Ser. No. 287,174
Int. Cl.[6] C08F *8/36*
U.S. Cl. 528—487 **16 Claims**

STARTING POLYMERS

$[NP(OCH_2CF_3)_x(OCH_2CH_2OCH_2CH_2NH_2)_y]_n$

compd	x	y
23	0	2
24	0.4	1.6
25	0.86	1.14
26	1.76	0.24
27	2	0

1. A method for the sulfonation of a polymeric or cyclic trimer polyphosphazene that includes reacting the polyphosphazene with a sultone.

5,548,061

HUMAN ENDOTHELIN-3 PRECURSOR PROTEIN

Tomoh Masaki; Masashi Yanagisawa, and Akihiro Inoue, all of Ibaraki, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 9,764, Jan. 27, 1993, Pat. No. 5,294,569, which is a division of Ser. No. 422,132, Oct. 16, 1989, Pat. No. 5,231,166. This application Dec. 6, 1993, Ser. No. 163,030
Int. Cl.[6] C07K *14/00;* **A61K** *38/16*
U.S. Cl. 530—324 **1 Claim**

1. A precursor protein of human endothelin-3, wherein said protein has an amino acid sequence represented by the following formula (4):

(4)

1	2	3	4	5	6	7	8	9	10
Glu	Gly	Ala	Pro	Glu	His	His	Arg	Ser	Arg
11	12	13	14	15	16	17	18	19	20
Arg	Cys	Thr	Cys	Phe	Thr	Tyr	Lys	Asp	Lys
21	22	23	24	25	26	27	28	29	30
Glu	Cys	Val	Tyr	Tyr	Cys	His	Leu	Asp	Ile
31	32	33	34	35	36	37			
Ile	Trp	Ile	Asn	Thr	Pro	Glu			

5,548,062

TUMOR CELL INVASION-INHIBITING PEPTIDES, PEPTIDE COMPLEXES AND CANCER METASTASIS INHIBITORS

Atsushi Isoai, Yokohama; Yuko Hama, Musashino, and Hiromichi Kumagai, Yokohama, all of, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Continuation of Ser. No. 916,118, Sep. 2, 1992, abandoned. This application Nov. 26, 1993, Ser. No. 157,437
Claims priority, application Japan, Nov. 30, 1990, 2-330612; Feb. 5, 1991, 3-035260; Mar. 29, 1991, 3-091305; Mar. 29, 1991, 3-091306
Int. Cl.[6] A61K *38/00;38/04;* **C07K** *5/00;7/00*
U.S. Cl. 530—326 **9 Claims**

1. A peptide or acid addition salt thereof, wherein said peptide has tumor cell invasion-inhibiting activity and has an amino acid sequence of any one of the following formulas (1) to (13);

(1) Ala-Glx-Lys-Ala-Glx-Gly

(2) Ala-Glx-Lys-Ala-Glx-Gly-Ala

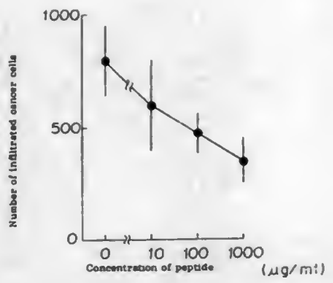
(3) Ala-Glx-Lys-Ala-Glx-Gly-Ala-Gly

(4) Ala-Glx-Lys-Ala-Glx-Gly-Ala-Gly-Asx

(5) Ala-Glx-Lys-Ala-Glx-Gly-Ala-Gly-Asx-Ala

(6) Ala-Glx-Lys-Ala-Glx-Gly-Ala-Gly-Asx-Ala-Lys

(7) Asx-Ala-Lys-Thr-Asx-Glx-Ala-Glx-Lys-Ala-Glx-Gly



(8) Ala-Lys-Thr-Asx-Glx-Ala-Glx-Lys-Ala-Glx-Gly
(9) Lys-Thr-Asx-Glx-Ala-Glx-Lys-Ala-Glx-Gly
(10) Thr-Asx-Glx-Ala-Glx-Lys-Ala-Glx-Gly
(11) Asx-Glx-Ala-Glx-Lys-Ala-Glx-Gly
(12) Glx-Ala-Glx-Lys-Ala-Glx-Gly
(13) Asx-Glx-Ala-Glx-Lys-Ala
wherein Glx is Gly or Gin, and Asx is Asn or Asp.

5,548,063

RETINOIC ACID RECEPTOR ALPHA PROTEINS

Ronald M. Evans, La Jolla; Estelita S. Ong; Prudimar S. Segui, both of San Diego; Catherine C. Thompson, La Jolla; Kazuhiko Umesono, San Diego, all of Calif., and Vincent Giguere, Etobicoke, Canada, assignors to The Salk Institute for Biological Studies, La Jolla, Calif.

Continuation of Ser. No. 845,857, Mar. 3, 1992, which is a division of Ser. No. 546,570, Aug. 6, 1990, abandoned, which is a division of Ser. No. 276,536, Nov. 30, 1988, Pat. No. 4,981,784, which is a continuation-in-part of Ser. No. 128,331, Dec. 2, 1987, abandoned. This application Jan. 11, 1994, Ser. No. 179,912

Int. Cl.[6] C07K *14/705*

U.S. Cl. 530—350 **5 Claims**

1. An isolated human retinoic acid receptor alpha protein, wherein said protein is encoded by DNA which has the sequence of DNA obtained from a human cDNA library, and wherein said DNA hybridizes under stringent conditions with the complementary strand of the DNA molecule having the sequence shown in FIG. 1B-1, 1B-2, and 1B-3;

or a polypeptide fragment of said protein, wherein said fragment comprises at least the DNA-binding domain or the ligand-binding domain of said receptor protein.

5,548,064

VITAMIN B12 CONJUGATES WITH EPO, ANALOGUES THEREOF AND PHARMACEUTICAL COMPOSITIONS

Gregory J. Russell-Jones, Middle Cove, and Steven W. Westwood, Ashfield, both of, Australia, assignors to Biotech Australia Pty Limited, Roseville, Australia

Filed May 24, 1993, Ser. No. 64,873

Int. Cl.[6] C07H *23/00;* **C07K** *2/00*

U.S. Cl. 530—380 **9 Claims**

1. A covalent conjugate comprising erythropoietin (EPO) and vitamin B_{12} or an analogue of vitamin B_{12}, said EPO being covalently bound to said vitamin B_{12} or analogue of vitamin B_{12} by a diradical spacer such that said conjugate binds to intrinsic factor with high affinity and maintains erythropoietin (EPO) bioactivity.

5,548,065

TYROSINE KINASE RECEPTOR HUMAN FLK-2-SPECIFIC ANTIBODIES

Ihor R. Lemischka, Princeton, N.J., assignor to The Trustees of Princeton University, Princeton, N.J.

Division of Ser. No. 55,269, Apr. 30, 1993, Pat. No. 5,367,057, which is a division of Ser. No. 977,451, Nov. 19, 1992, Pat. No. 5,270,458, which is a continuation-in-part of Ser. No. 975,049, Nov. 12, 1992, abandoned, which is a continuation-in-part of Ser. No. 906,397, Jun. 26, 1992, which is a continuation-in-part of Ser. No. 813,593, Dec. 24, 1991, Pat. No. 5,185,438, which is a continuation-in-part of Ser. No. 793,065, Nov. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 728,913, Jun. 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 679,666, Apr. 2, 1991, abandoned. This application Oct. 31, 1994, Ser. No. 252,517

Int. Cl.[6] C07K *16/18;16/28*

U.S. Cl. 530—388.22 **4 Claims**

1. Isolated antibodies raised against the extracellular portion of a protein tyrosine kinase that is flk-2, said extracellular portion defined by amino acids 1–517 of SEQ. ID. NO. 2 or defined by amino acids 1–516 of SEQ. ID. NO. 4.

5,548,066

FAILURE OF PASSIVE TRANSFER IMMUNE SERUM AND METHOD OF MAKING SAME

Harry Leneau, Aurora, Ill., and William G. Skelly, Kansas City, Mo., assignors to Central Biomedia, Inc., Irwin, Mo.

Filed Dec. 2, 1994, Ser. No. 349,010

Int. Cl.[6] C07K *16/00;1/34;* **A61K** *39/395*

U.S. Cl. 530—390.5 **22 Claims**

1. A method of producing an immunological serum for a recipient animal to immunize said recipient animal against one or more diseases, comprising the steps of:

drawing blood from at least one donor animal of the same species as that of the recipient animal, said donor animal having known immunity for said one or more diseases;

permitting said blood to clot in such a manner that white blood cells within said blood rupture while the majority of the red blood cells within the blood remain intact, thereby producing clotted blood comprised of liquid and cellular material;

separating the liquid material from the cellular material in such a manner as to retrieve ruptured white blood cell components within the separated liquid material, said separated liquid material comprising raw serum;

clarifying said raw serum to produce a clarified serum;

concentrating said clarified serum to produce a concentrated serum; and

sterilizing, without denaturing, said concentrated serum by subjecting the concentrated serum to gamma irradiation to produce the immunological serum.

5,548,067

Patent Not Issued For This Number

5,548,068

SOMATOTROPINS WITH ALTERATIONS IN THE ALPHA-HELIX 1 REGION, AND COMBINATIONS WITH OTHER MUTATIONS

Meir Fischer, Rehovot, Israel; Michael R. Lebens, Gotenberg, Sweden, and Deborah T. Chaleff, Mercer, N.J., assignors to Bio-Technology General Corp., Iselin, and American Cyanamid Company, Wayne, both of N.J.

Continuation of Ser. No. 10,405, Jan. 28, 1993, abandoned, which is a continuation of Ser. No. 621,656, Nov. 30, 1990, abandoned. This application Dec. 23, 1994, Ser. No. 363,982

Int. Cl.[6] A61K *38/27;* **C07K** *14/61*

U.S. Cl. 530—399 **12 Claims**

1. A somatotropin consisting of a double mutation of said somatotropin in the alpha-helix 1 region thereby making said somatotropin more soluble than the native form of said somatotropin while maintaining biological activity in a sustained release formulation and wherein said alpha-helix 1 double mutation is selected from the group consisting of A6TS11R or P8TS11R.

5,548,069

BENZYLATED LIGNOCELLULOSIC SUBSTANCE AND A PRODUCING METHOD THEREOF

Tetsuo Koshijima, Osaka; Nobuo Shiraishi, Kyoto; Tadashi Takahashi, Osaka; Toshiharu Hiraoka, Osaka, and Masami Ueda, Osaka, all of, Japan, assignors to Japan Chemical Engineering & Machinery Co., Ltd., Osaka, Japan

Division of Ser. No. 345,404, Nov. 21, 1994. This application Oct. 6, 1995, Ser. No. 539,760

Claims priority, application Japan, Nov. 19, 1993, 5-290839; Jun. 24, 1994, 6-143260

Int. Cl.[6] C07G *1/00;* **C08L** *97/00*

U.S. Cl. 530—500 **9 Claims**

1. A method of producing a benzylated lignocellulosic substance containing 46 to less than 97% of a lignin-carbohydrate complex (LCC) originally contained in a wood raw material, comprising the steps of:

(a) mercerizing the wood raw material; and

(b) benzylating the wood raw material which has undergone the mercerizing step, said mercerizing and benzylating being conducted under conditions sufficient to provide a benzylated substance containing 46 to less than 97% of the lignin carbohydrate complex (LCC) originally contained in the wood.

5,548,070

ORGANOSILICON COMPOUNDS HAVING TRIAZENE GROUPS

Jochen Dauth; Bernward Deubzer, both of Burghausen; Elfriede Mayer, Waldkraiburg; Oskar Nuyken, Munich; Brigitte Voit, Munich, and Ralf Kollefrath, Munich, all of, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed Jul. 19, 1994, Ser. No. 276,926

Claims priority, application Germany, Jul. 22, 1993, 43 24 685.0; May 26, 1994, 44 18 392.5

Int. Cl.[6] C07C *245/00*

U.S. Cl. 534—550 **13 Claims**

1. An organosilicon compound having at least one Si—C-bonded organic radical which contains at least one triazene group wherein the triazene group is bonded to the organosilicon compound by at least one divalent organic radical.

5,548,071

FIBER-REACTIVE TRIAZINE DYES WITH ONE AZO CHROMOPHORE HAVING A VINYLSULFONYL TYPE REACTIVE RADICAL AND A SECOND CHROMOPHORE

Rolf Deitz, Basle; Athanassios Tzikas, Prattein, and Paul Herzig, Basle, all of, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed May 13, 1994, Ser. No. 242,562

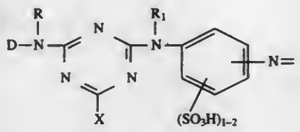
Claims priority, application Switzerland, May 17, 1993, 01493/93; Sep. 1, 1993, 02598/93

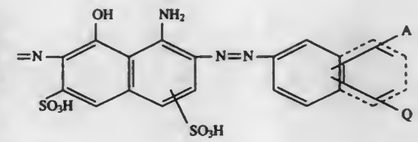
Int. Cl.[6] C09B *62/503;62/04;* **D06P** *1/38*

U.S. Cl. 534—612 **17 Claims**

1. A compound of the formula

(1a)





where

D is the radical of a monoazo, polyazo, metal complex azo, anthraquinone, triphendioxazine, phthalocyanine or formazan chromophore that contains at least one sulfo group,

A is hydrogen, halogen, C_1–C_4alkyl, C_1–C_4alkoxy, sulfo, carboxyl, trifluoromethyl, nitro, cyano, hydroxyl, carbamoyl, N-mono- or N,N-di-C_1–C_4alkylcarbamoyl, sulfamoyl, N-mono- or N,N-di-C_1–C_4alkylsulfamoyl, C_1–C_4alkylsulfonyl or C_1–C_4alkoxycarbonyl,

Q is a radical of the formula

$$-SO_2-Y \quad (2a)$$

$$-CONH-(CH_2)_n-SO_2-Y \quad (2b)$$

$$-CONH-(CH_2)_{n'}-O-(CH_2)_n-SO_2-Y \quad (2c)$$

or

$$-(O)_p-(CH_2)_m-CONH-(CH_2)_n-SO_2-Y, \quad (2d)$$

where n,n' and m are each independently of the others an integer from 1 to 6, p is 0 or 1, and Y is vinyl, β-bromoethyl, β-chloroethyl, β-acetoxyethyl, β-phenoxyethyl, β-phosphatoethyl, β-sulfatoethyl or β-thiosulfatoethyl,

X is fluorine, chlorine, bromine, 3-carboxy-1-pyridinyl or 3-carbamoyl-1-pyridinyl, and

R and R_1 are each independently of the other hydrogen or unsubstituted or halogen-, hydroxyl-, cyano-, C_1–C_4alkoxy-, C_1–C_4alkoxycarbonyl-, carboxyl-, sulfo- or sulfato-substituted C_1–C_4 alkyl, with the proviso that the radical —NR— is not bonded to an NH_2-substituted phenylene radical when D is the radical of a monoazo or disazo chromophore.

5,548,072

WATER-SOLUBLE PHENYL AZO AMINOAPHTOL AZO COMPOUNDS CONTAINING A FIBRE-REACTIVE GROUP OF THE VINYLSULFONE SERIES AND A MORPHOLINO-FLUOROTRIAZINYL GROUP, SUITABLE AS DYESTUFFS

Jörg Dannheim, Frankfurt am Main; Dieter Oehme, Flörsheim, and Horst Tappe, Dietzenbach, all of, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

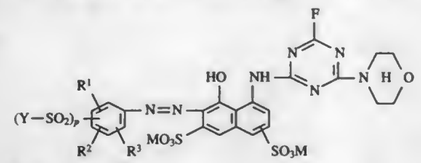
Continuation of Ser. No. 260,890, Jun. 16, 1994, abandoned. This application Jun. 5, 1995, Ser. No. 462,131

Claims priority, application Germany, Jun. 17, 1993, 43 20 151.2

Int. Cl.[6] **C09B** *62/085;62/51;* **D06P** *1/38*

U.S. Cl. 534—635 **6 Claims**

1. A monoazo compound conforming to the formula (1)



(1)

where

M is hydrogen or an alkali metal;

R^1 is hydrogen;

R^2 is hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms;

R^3 is hydrogen, halogen, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms;

Y is vinyl or is ethyl which contains in the β-position a substituent which is eliminable with alkali to form a vinyl group;

p is 1 or 2;

the one $—SO_3M$ group is attached to the naphthalene ring para or meta to the amino group.

5,548,073

WATER-SOLUBLE AZO COMPOUNDS

Tsutami Misawa; Akira Ogiso, both of Yokohama; Riboko Imai, Tokyo, and Hisato Itoh, Yokohama, all of, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

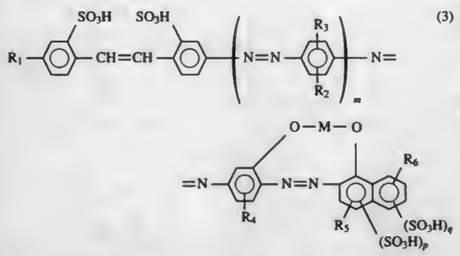
Division of Ser. No. 95,839, Jul. 23, 1993, Pat. No. 5,423,100. This application Mar. 15, 1995, Ser. No. 404,429

Claims priority, application Japan, Aug. 26, 1992, 4-226955

Int. Cl.[6] **C09B** *45/24;31/072*

U.S. Cl. 534—690 **3 Claims**

1. An azo compound, which is represented by the following formula (3):



(3)

wherein R_1 represents a hydrogen or halogen atom or a hydroxyl, C_{1-2} alkyl, C_{1-2} alkoxyl, C_{1-2} acylamino, cyano, carboxyl or sulfonic acid group; R_3 represents a hydrogen atom or a hydroxyl, C_{1-2} alkyl or C_{1-2} alkoxyl group; R_2 and R_4 individually represent a hydrogen atom or a hydroxyl, C_{1-2} alkyl, C_{1-2} alkoxyl or C_{1-2} acylamino group; R_5 represents a hydrogen atom or a carboxyl or C_{1-2} alkoxyl group; R_6 represents a hydrogen atom, a hydroxyl, amino, methylamino, β-hydroxyethylamino or C_{1-2} acylamino group, or a phenylamino or benzoylamino group which the phenyl nucleus may be substituted by one or more nitro, amino, hydroxyl, C_{1-2} alkyl, carboxyl and/or sulfonic acid groups and/or chlorine atoms; m stands for 0 or 1; p stands for 0 or 1; q stand for 0, 1 or 2; and M represents a copper, nickel, zinc and iron atom, with the proviso that if m is 0, R_1 is other than halogen atom.

5,548,074

Patent Not Issued For This Number

5,548,075

DNA CASSETTE AND TRANSGENIC ORGANISMS CARRYING LYTIC PEPTIDE-ENCODING GENES

William A. Reed, Benson, and Kenneth L. White, North Logan, both of Utah, assignors to Utah State University, Logan, Utah

Filed Aug. 30, 1993, Ser. No. 114,692

Int. Cl.[6] **C12N** *15/11;15/12;15/62*

U.S. Cl. 536—23.5 **20 Claims**

1. A DNA cassette for insertion into non-insect animal cells, having opposing ends whose sequences encode a functional portion of a restriction cut site, comprising:

a regulatory segment having a sequence which is a noncoding sequence normally found adjacent to, and operably linked to, a gene which codes for an interleukin protein, or a functional homologue of said noncoding sequence; and

a lytic peptide segment coding on expression for a lytic peptide and operably linked to said regulatory segment for control of expression by said regulatory segment.

5,548,076

METHOD OF MAKING OLIGONUCLEOTIDES, OLIGONUCLEOSIDE THIOPHOSPHATES AND OLIGONUCLEOSIDE PHOSPHOTRIESTERS USING H-PHOSPHONATE INTERMEDIATES

Brian C. Froehler, Belmont, and Mark D. Matteucci, Redwood City, both of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Division of Ser. No. 515,890, Apr. 26, 1990, Pat. No. 5,264,566, which is a continuation of Ser. No. 910,048, Sep. 19, 1986, Pat. No. 4,959,463, which is a continuation-in-part of Ser. No. 787,280, Oct. 15, 1985, abandoned. This application Aug. 13, 1993, Ser. No. 106,246

The portion of the term of this patent subsequent to Apr. 25, 2007, has been disclaimed.

Int. Cl.[6] **C07H** *21/00*

U.S. Cl. 536—25.34 **22 Claims**

1. A process for the synthesis of a polyribonucleotide or polydeoxyribonucleotide comprising:

(a) contacting a carrier-bound ribonucleotide or deoxyribonucleotide with a ribonucleoside H-phosphonate or deoxyribonucleoside H-phosphonate in the presence of a phosphorylating agent capable of exhibiting high fidelity in chain elongation under conditions for condensing the carrier-bound ribonucleotide or deoxyribonucleotide with the ribonucleoside H-phosphonate or deoxyribonucleoside H-phosphonate, wherein a hydroxyl of the ribonucleoside H-phosphonate or deoxyribonucleoside H-phosphonate is substituted with a blocking group for restricting the condensation reaction to the carrier-bound ribonucleotide or deoxyribonucleotide;

(b) removing the blocking group from the ribonucleotide or deoxyribonucleotide hydroxyl; and

(c) sequentially repeating step (a) and (b) until a polynucleotide H-phosphonate having greater than two nucleotides is obtained.

15. A process for the preparation of an polynucleotide triester, comprising:

(a) treating a carrier-bound polynucleoside H-phospbonate comprised of greater than two nucleosides with an alkanol having the formula ROH in which R is a member selected from the group consisting of alkyl, heteroalkyl, heteroaryl and aryl, to convert said polynucleoside H-phosphonate to a polynucleoside triester; and

(b) decoupling said polynucleoside triester from said carrier, thereby converting said polynucleoside triester to an polynucleotide triester.

5,548,077

METHOD OF PRODUCING A CONJUGATE UTILIZING A 2-AMINO-PYRIDINE COMPOUND

Shoichi Kusumoto; Koichi Fukase, both of Osaka, and Sumihiro Hase, Hyogo, all of, Japan, assignors to Seikagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 031,476, Mar. 15, 1993, Pat. No. 5,386,033. This application Sep. 23, 1994, Ser. No. 311,733

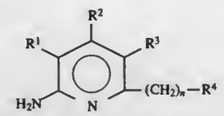
Claims priority, application Japan, Mar. 13, 1992, 4-88314

Int. Cl.[6] **C07D** *213/02;* **C07H** *17/02*

U.S. Cl. 536—55.3 **4 Claims**

1. A method of producing a conjugate which comprises the steps of:

reacting an amino group at position 2 of a 2-aminopyridine of formula (a)



(a)

wherein R^1, R^2 and R^3 are the same or different and each represents a hydrogen atom or a lower alkyl group containing 1 to 4 carbon atoms, R^4 represents a carboxyalkyl group of the formula $—(CH_2)_mCOOH$, a cyanoalkyl group of the formula $—(CH_2)_mCN$, an aminoalkyl group, an N-protected amino group selected from the group consisting of a butoxycarbonylamino group, a benzyloxycarbonylamino-qroup and a trifluoroacetylamino group, an alkyloxycarbonylamino group, an alkoxycarbonyl group, a mercapto group, a maleimido group, a hydroxyl group or a halogen atom, n is an integer of 2 to 20 and m is 0 or an integer of 1 to 3, or a salt thereof with a carbohydrate compound at least having a terminal reducing sugar moiety selected from the group consisting of a monosaccharide, an oligosaccharide, a polysaccharide, a glycosaminoglycan and mixtures thereof to form a Schiff base; and reducing said Schiff base.

5,548,078

PROCESS FOR THE PREPARATION OF ALKOXYIMINOACETAMIDE DERIVATIVES AND THEIR USE AS FUNGICIDES

Yoshio Hayase, Kameyama, Japan; Takahiro Katsuka, Clayton, Mo.; Hideyuki Takenaka, Shiga-ken, Japan; Mitsuhiro Ichinari, Shiga-ken, Japan; Michio Masuko, Shiga-ken, Japan; Toshio Takahashi, Nishinomiya, Japan, and Norihiko Tanimoto, Shiga-ken, Japan, assignors to Shionogi Seiyaku Kabushiki Kaisha, Japan

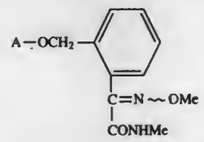
Division of Ser. No. 279,003, Jul. 22, 1994, Pat. No. 5,401,877, which is a division of Ser. No. 962,345, Oct. 16, 1992, Pat. No. 5,371,222, which is a division of Ser. No. 524,056, May 16, 1990, Pat. No. 5,185,342. This application Dec. 20, 1994, Ser. No. 359,639

Claims priority, application Japan, May 17, 1989, 1-124059; Dec. 29, 1989, 1-341175

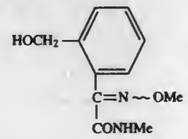
Int. Cl.[6] **C07D** *239/34;213/63*

U.S. Cl. 544—298 **4 Claims**

1. A process for preparing a compound of the formula:



wherein A is a pyridyl or pyrimidinyl, optionally substituted with not more than three substituents, which comprises reacting a compound of the formula:



with a compound of the formula AX, wherein A is as defined above, and X is halogen, in the presence of a base.

VOL
1189
ISS
3
AG
2 U
1996
UMI

5,548,079

MUSIC SEQUENCER WITH SKIP OPERATION TO RECORDED POSITIONS ASSOCIATED WITH TONE PARAMETER SETS

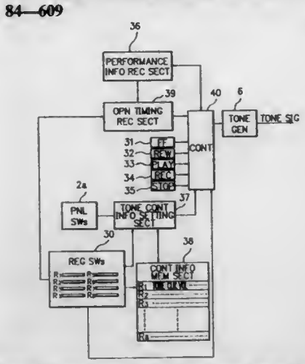
Yoshinobu Nakano, Saitama, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Shizuoka-Ken, Japan

Continuation of Ser. No. 87,292, Jul. 8, 1993, abandoned. This application Jan. 20, 1995, Ser. No. 376,648

Claims priority, application Japan, Oct. 14, 1992, 4-301733

Int. Cl.[6] G10H *1/06;1/46;7/00*

U.S. Cl. 84—609 **20 Claims**



14. A method for controlling sequencing of an electric musical instrument, comprising the steps of:

(a) selecting one of a fast-forward mode and a rewind mode of a recorder, the recorder including a recording media for recording performance data of the electronic musical instrument;

(b) operating a registration switch at a predetermined location on the recording media and a storing parameter data for tone generation of the performance data in a registration memory;

(c) controlling the recorder in the one of the fast-forward mode and the rewind mode until the predetermined location on the recording media has been reached and reading out the parameter data from the registration memory;

(d) recording location data representing of the predetermined location on the recording media, in response to an operation of the registration switch; and

(e) executing one of the fast-forward mode and the rewind mode in response to the registration switch after the one of the fast-forward mode and the rewind mode is selected.

5,548,080

APPARATUS FOR APPOXIMATING ENVELOPE DATA AND FOR EXTRACTING ENVELOPE DATA FROM A SIGNAL

Junichi Minamitaka, Fussa; Kunio Sato, Sagamihara, and Mayumi Ohya, Hamamatsu, all of, Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 943,301, Sep. 10, 1992, abandoned, which is a division of Ser. No. 758,529, Sep. 6, 1991, Pat. No. 5,200,567, which is a continuation of Ser. No. 521,736, May 10, 1990, abandoned, which is a division of Ser. No. 408,412, Sep. 14, 1989, Pat. No. 4,958,552, which is a continuation of Ser. No. 117,082, Nov. 3, 1987, abandoned. This application Apr. 25, 1994, Ser. No. 232,879

Claims priority, application Japan, Nov. 6, 1986, 61-170531 U; Nov. 6, 1986, 61-170532 U; Nov. 6, 1986, 61-170533 U; Nov. 6, 1986, 61-170534 U; Nov. 6, 1986, 61-170535 U; Nov. 6, 1986, 61-170536 U; Nov. 6, 1986, 61-170537 U; Nov. 6, 1986, 61-170538 U; Nov. 6, 1986, 61-170539 U; Nov. 6, 1986, 61-264205; Nov. 6, 1986, 61-264206; Nov. 6, 1986, 61-264207

Int. Cl.[6] G10H *1/057*

U.S. Cl. 84—627 **7 Claims**

2. An envelope extracting and approximating method comprising:



an envelope extracting step for extracting an envelope of a sampled waveform memorized in a sampled waveform memory;

a dividing step for dividing the envelope extracted by said envelope extracting step; and

an approximating step for generating a plurality of function waveforms which approximate a plurality of divided envelopes.

5,548,081

DUCT, PARTICULARLY FOR HIGH VOLTAGES WITH SPECIAL ELECTRODE HOLDER

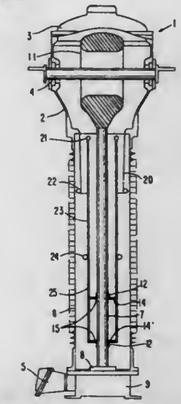
Peter Rost, Hamburg, Germany, assignor to Kommandidgesellschaft Ritz Messwandler GmbH & Co., Hamburg, Germany

Filed Nov. 30, 1993, Ser. No. 159,789

Claims priority, application Germany, Nov. 30, 1992, 42 40 118.6

Int. Cl.[6] H01B *9/06*

U.S. Cl. 174—14 BH **17 Claims**



1. A duct for connecting an electrical device insulated with gas with a terminal location located in atmospheric air, the duct comprising a gas filled bushing insulator; at least one tubular field control electrode located inside said bushing insulator; at least one insulating tube having an end facing a potential-guiding region of the duct, said at least one field control electrode being formed by a conducting portion on said end of said at least one insulating tube; a bushing conductor around which said at least one insulating tube is arranged coaxially, said at least one insulating tube having a ground potential-side end; and a holder which holds said insulating tube at said ground potential-side end outside a region loaded with high field intensity, said at least one insulating tube being formed longer than said at least one field control electrode.

5,548,082

PASSIVE SIGNAL SHIELDING STRUCTURE FOR SHORT-WIRE CABLE

Donald E. Palmer, 1275 Vicente Dr. #189, Sunnyvale, Calif. 94086

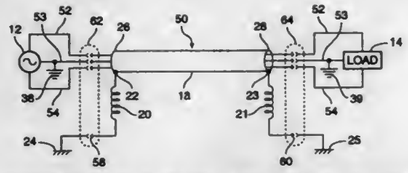
Filed Nov. 22, 1994, Ser. No. 343,698

Int. Cl.[6] H01B *11/02*

U.S. Cl. 174—34 **10 Claims**

8. A short-wire cable comprising:

at least one signal-carrying conductor for carrying signals;



electrical connectors at each end of said signal-carrying conductor for allowing electrical connection and disconnection of said signal-carrying conductor with external electrical equipment; and

a signal shielding structure for said signal-carrying conductor, said structure comprising:

a shielding sheath, said shielding sheath being an electrical conductor which is electrically insulated from and enclosing said signal-carrying conductor along said short-wire cable; and

at least one discrete inductor, said discrete inductor being electrically coupled between a selected discrete termination point at one end of said shielding sheath and an electrical contact for connection to ground to provide a path for d.c. signals to said electrical contact and to inhibit low impedance termination of r.f. signals, and wherein said shielding sheath is otherwise electrically isolated from power and signal sources and from ground connection.

5,548,083

SHIELDED MOLDED PLASTIC COVER

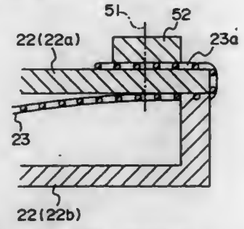
Takashi Yamamoto, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 17, 1995, Ser. No. 390,776

Claims priority, application Japan, Feb. 21, 1994, 6-022448; Feb. 23, 1994, 6-025588; Oct. 12, 1994, 6-246468

Int. Cl.[6] H05K *9/00*

U.S. Cl. 174—35 GC **19 Claims**



1. A molded plastic product comprising:

a molded plastic part of a predetermined size having a hollow space; and

a shielding part which, provided on the entirety of a plane in the bollow space of said molded plastic part, effects electromagnetic shielding.

5,548,084

INTEGRATED LIGHT PIPE FOR A SHIELDED HOUSING

James L. Tracy, Margate, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

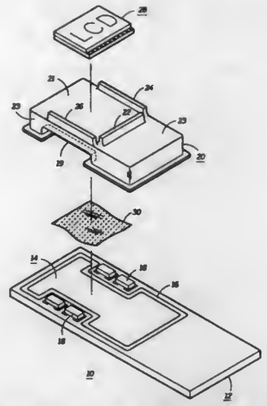
Filed Oct. 4, 1993, Ser. No. 131,353

Int. Cl.[6] H05K *9/00*

U.S. Cl. 174—35 R **18 Claims**

1. An integrated light pipe in a shielded housing, comprising:

a substantially clear housing, a portion of which is arranged and constructed to form the integrated light pipe;



plating, selectively applied to the substantially clear housing, to provide for effective electromagnetic interference shielding and to allow for sufficient light into the integrated light pipe; and

a conductive adhesive about the periphery of a bottom housing surface for mounting the housing on a matching grounded surface of a substrate.

5,548,085

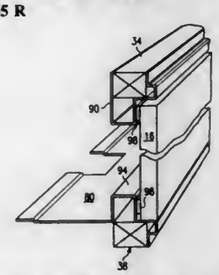
TRANSPORTABLE WEATHERTIGHT AND EMI SHIELDED CABINET ENCLOSURE

Michael A. Flores, Plano, Tex., assignor to DSC Communications Corporation, Plano, Tex.

Filed Nov. 21, 1994, Ser. No. 342,839

Int. Cl.[6] H05K *9/00*

U.S. Cl. 174—35 R **11 Claims**



1. A weathertight and EMI shielded door configuration for a cabinet, comprising:

a door frame having upper, lower, and two vertical frame members defining a door opening;

upper, lower and two vertical door skin members bonded to said door frame members and formed to substantially cover said upper, lower, and vertical frame members, and defining a door recess having a depth and a substantially vertical and planar door-frame mating surface generally parallel with a plane defined by said door skin members;

a generally flat environmental and EMI sealing gasket positioned and attached to said door-frame mating surface; and

a door having a thickness substantially equal to said depth of said door recess, being hung in said door opening and a perimeter of its interior surface meeting said upper, lower and two vertical door skin members at said door-frame mating surface, said door being operable to substantially close off said door opening, said door further comprises:

a first door section and a second door section;

a rigid beam bonded to one edge of said first door section, said rigid beam having a planar surface substantially level with said interior surface of both said door sections, and an extended planar door-door mating surface extending toward and meeting said second door section; and

an additional generally flat environmental and EMI sealing gasket positioned in said door-door mating surface completely blocking and sealing off any moisture and EMI entry point between said first and second door sections.

5,548,086

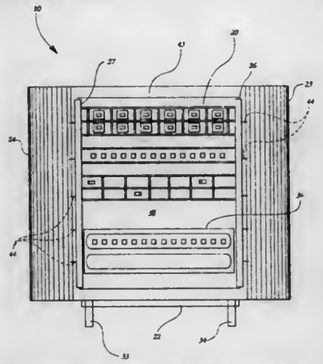
LOCAL DISTRIBUTION UTILITY CENTER FOR A RAISED FLOOR

Sherwood S. Greenfield, Charlotte, and Kevin J. Voll, Matthews, both of N.C., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Dec. 22, 1994, Ser. No. 361,640

Int. Cl.[6] H02G *3/00*

U.S. Cl. 174—48 **10 Claims**



6. A local distribution utility center for a raised floor comprising an assembly of floor modules positioned on a supporting subfloor, said utility center comprising:

(a) a self-supporting base for being freely positioned on the subfloor and for comprising at least one of the assembly of floor modules to define a section of the raised floor, said base comprising a top surface and a plurality of attached legs for locating the top surface above the subfloor, and defining an unobstructed space between the top surface and the subfloor for accommodating data and telecommunications wiring, and said base including an access opening formed in the top surface for receiving wiring from the communications wiring closet, and for delivering wiring from the utility center to the at least one work station of the work group;

(b) vertical support means connected to said base; and

(c) distribution panel means carried by said support means for operatively interconnecting wiring of the wiring closet and the communications equipment of the at least one work station.

5,548,087

MOLDED PLASTIC PACKAGING OF ELECTRONIC DEVICES

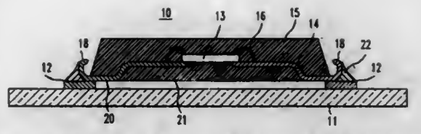
Donald W. Dahringer, Glen Ridge, N.J., assignor to AT&T Corp., Murray Hill, N.J.

Filed May 7, 1993, Ser. No. 59,044

Int. Cl.[6] H01L *23/02*

U.S. Cl. 174—52.4 **7 Claims**

1. A plastic molded circuit package, which comprises:



an integrated circuit (IC) unit, a plurality of leads projecting away from the IC unit, and plastic material encapsulating the IC unit and portions of the leads and forming a sealed package, wherein

each of said leads has an inner section immediately adjacent to and projecting away from the IC unit, a flat outer section for electrical connection to outside contacts, said outer section laying in a different plane than the inner section, and a central section interconnecting the inner and the outer sections, said inner and central sections being completely enclosed in the plastic material and said flat outer section being embedded in the plastic material such that only an outer conductive surface of each lead is exposed to permit said electrical connection, the outer conductive surface laying in a plane which is essentially coplanar with a bottom surface of the molded package, wherein an outermost end section of each lead forms an extension of the outer section, projects from the plastic material, and is bent away from said plane of the outer section, whereby said outer conductive surface is enabled to form an interconnection between the IC unit and contacts of an interconnect board by means of an interconnect material comprising solder or polymeric adhesive material.

5,548,088

ELECTRICAL CONDUCTOR TERMINATING ARRANGEMENTS

Ian J. Gray, and Melvin D. White, both of Winchester, Great Britain, assignors to ITT Industries, Limited, Basingstoke, United Kingdom

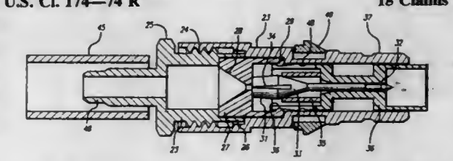
PCT No. PCT/GB93/00143, § 371 Date Aug. 12, 1994, § 102(e) Date Aug. 12, 1994, PCT Pub. No. WO93/16507, PCT Pub. Date Aug. 19, 1993

PCT Filed Jan. 22, 1993, Ser. No. 290,713

Claims priority, application United Kingdom, Feb. 14, 1992, 9203234; May 14, 1992, 9210375; Nov. 13, 1992, 9223825

Int. Cl.[6] H02G *15/02*

U.S. Cl. 174—74 R **18 Claims**



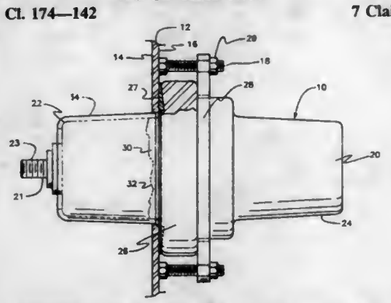
1. An electrical conductor terminating arrangement, comprising an electrically conductive contact-making means (31) for receiving and making electrical contact with an electrical conductor, an axially displaceable clamping means (35) which when displaced over the contact making means in a direction axially of the contact making means (31) exerts a radial force on the contact making means to secure a conductor when installed by pressure engagement, characterized in that the contact making means (31) and axially displaceable means (35) are adapted to ensure retentive mutual engagement therebetween when the axially displaceable means is displaced axially over the contact making means to provide ongoing radial pressure engagement between the contact making means (31) and the electrical conductor (44) when installed in order to maintain electrical and mechanical integrity therebetween without the need for continuance of axial pressure on the axially displaceable means (35).

5,548,089

BUSHING FOR GAS-INSULATED SWITCHGEAR

Miguel B. Yamat, Franklin, Wis., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Jan. 13, 1994, Ser. No. 182,790
Int. Cl.[6] H01B *17/50*
U.S. Cl. 174—142 7 Claims



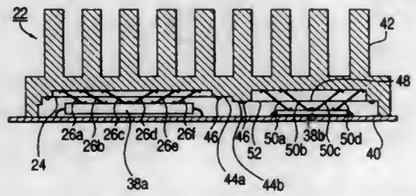
1. A bushing for use in connecting electrical switchgear, comprising:
a body having an inner shank and an outer shank, said body having a conducting core extending therethrough and protruding from said inner shank;
a semiconductive shielding layer on at least a portion of an outer surface of said body and axially spaced apart from said protruding conducting core;
an insulating layer affixed to and covering said inner shank between said shielding layer and said protruding conducting core and overlapping at least a portion of said shielding layer.

5,548,090

HEAT SINK AND PRINTED CIRCUIT BOARD COMBINATION

Mark R. Harris, Woodlawn, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Aug. 21, 1995, Ser. No. 517,327
Int. Cl.[6] H05K *1/00*
U.S. Cl. 174—252 6 Claims



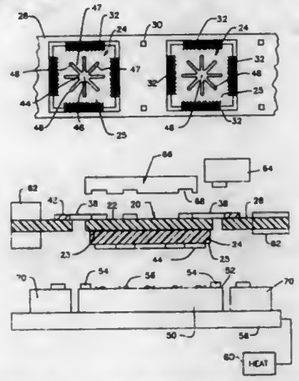
1. A heat sink and printed circuit board combination comprising:
a printed circuit board having at least one electronic component extending from one side surface thereof;
a heat sink mounted to face the one side surface of the board and spaced from the electronic component; and
a compliant heat conductor for conducting heat into the heat sink, the heat conductor disposed between the component on the board and the heat sink and including a sheet metal base and a resilient heat conductor element integrally connected to the base by two resilient neck portions disposed one at each end of the conductor element with the element pivoted relative to the base about an axis extending through the neck portions,
the heat conductor element extending between the heat sink and the electronic component and having two edge portions disposed one laterally on each side of the pivotal axis with one edge portion in contact with the heat sink and the other edge portion in contact with the electronic component, the edge portions being maintained in contact with the heat sink and the electronic component by resilient torsional action of the two neck portions about the pivotal axis.

5,548,091

SEMICONDUCTOR CHIP CONNECTION COMPONENTS WITH ADHESIVES AND METHODS FOR BONDING TO THE CHIP

Thomas H. DiStefano, Los Gatos, Calif.; Gus Karavakis, Coram, N.Y.; Zlata Kovac, Los Gatos, and Craig Mitchell, San Jose, both of Calif., assignors to Tessera, Inc., San Jose, Calif.

Filed Oct. 26, 1993, Ser. No. 143,080
Int. Cl.[6] H05K *1/14*
U.S. Cl. 174—260 16 Claims



1. A prefabricated connection component for a semiconductor chip comprising:
(a) a flexible sheetlike support structure having top and bottom surfaces;
(b) a plurality of electrical terminals and leads on said support structure, each said terminal being connected to one said lead, said leads being disposed on said support structure so that said leads can be engaged with contacts on a semiconductor chip when the bottom surface of the support structure is disposed on the chip, said terminals being disposed on the top surface of the support structure so that said terminals can be connected to a substrate when the bottom surface of the support structure is disposed on the chip and when the top surface of the support structure is juxtaposed with the substrate; and
(c) an adhesive disposed on said bottom surface of said support structure, said adhesive being adapted to bond said bottom surface of said support structure to the chip.

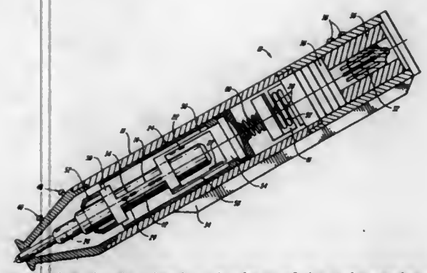
5,548,092

APPARATUS AND METHOD OF IMAGING WRITTEN INFORMATION

Stephen A. Shriver, 952 Beacon St., Newton, Mass. 02159

Continuation-in-part of Ser. No. 910,650, Jul. 8, 1992, abandoned. This application Nov. 14, 1994, Ser. No. 339,134
Int. Cl.[6] G08C *21/00*
U.S. Cl. 178—18 17 Claims

15. A method for imaging information as the information is traced on a surface comprising:
applying a stylus to make contact with a surface;
generating signals representative of an angle of inclination of the stylus relative to the surface,
monitoring deflections of said stylus element to generate signals related to the force of contact of the stylus with the surface, and;



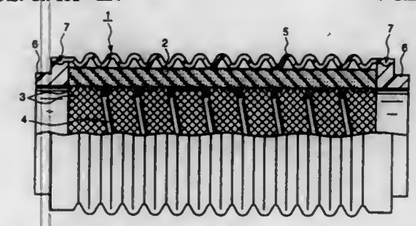
generating signals related to the force of the stylus against a surface along at least two axes in the plane of the surface, such that said signals can be resolved to determine a pattern of the stylus on the surface.

5,548,093

LOW NOISE HOSE

Jyunichi Sato, Kuwana, and Takahiro Komori, Inazawa, both of, Japan, assignors to Toyoda Gosei Co., Ltd., Nakashima-gun, Japan

Filed Apr. 29, 1994, Ser. No. 235,322
Claims priority, application Japan, Aug. 20, 1993, 5-228209
Int. Cl.[6] E04F *17/04*
U.S. Cl. 181—224 7 Claims



1. A low noise hose comprising:
a hollow cylindrical sound absorption member made from a foamed material;
a sound insulation tube covering an outer periphery of said sound absorption member, said insulation tube having at least portions thereof spaced outwardly from said sound absorption member so as to define a plurality of air spaces therebetween at such spaced portions; and
a net provided on an inner periphery of said sound absorption member for preventing shrinkage of the sound absorption member.

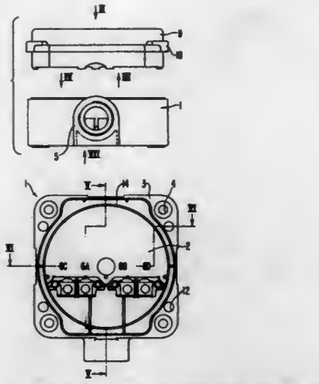
5,548,094

MOUNTING BASE FOR AN INDUCTIVE PROXIMITY SWITCH

Burkhard Tigges, Balve, Germany, assignor to Werner Turck GmbH & Co. KG, Halver, Germany

Filed Apr. 25, 1994, Ser. No. 231,915
Claims priority, application Germany, Jul. 7, 1993, 93 10 119.8
Int. Cl.[6] G01P *3/49*
U.S. Cl. 200—303 18 Claims

1. A mounting base for an associated inductive proximity switch comprising:



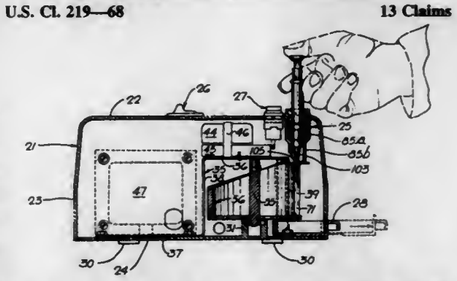
an approximately beaker-shaped plastic housing and a metal ring disposed internally at a base bottom of a mounting base with the ring having a diameter approximately equal to transverse dimensions of the inductive proximity switch.

5,548,095

ELECTRICAL BIO-HAZARDOUS NEEDLE DESTROYER WITH A SPIRAL ELECTRODE

Edward C. Cornell, 2518 Ridgeland Ave., Waukegan, Ill. 60085-2561

Filed Jul. 17, 1995, Ser. No. 502,969
Int. Cl.[6] B23K *11/22*; A61G *12/00*; A61L *11/00*
U.S. Cl. 219—68 13 Claims



1. Apparatus for destroying bio-haardous instruments having elongated sharp metallic needle portions, comprising:
a stationary, anode engageable with said needle portion to be destroyed;
a movable electrode having an annular body formed with an inclined edge defining a spiral ramp with a circular length;
electrical circuit means for selectively energizing said anode with positive energy and maintaining said electrode at ground potential;
means for positioning and maintaining said needle portion to be destroyed in circuit engagement with said anode so that said portion is positively charged thereby and extends beyond said anode for engagement by said ramp; and
means for progressively moving said ramp along the circular length to maintain contact with the outer end of said needle portion and thereby establish short circuit connection between

said electrode and anode productive of heat and electrical arcing of sufficient intensity to volatilize and disintegrate the axial needle portion extending between said anod and electrode.

5,548,096

METHOD AND APPARATUS FOR ASSEMBLING MOTOR VEHICLE BODY

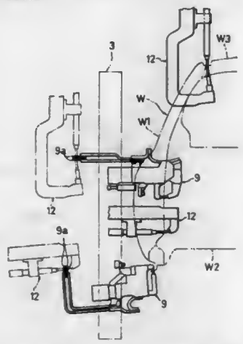
Yoshio Akasaka; Kenichi Kakijima; Takeshi Endoh; Goro Uchida; Masaaki Tanaka; Takefumi Fujie; Daiji Sukawa; Satoshi Endoh; Hideo Saitoh, and Takashi Kubo, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 21, 1994, Ser. No. 327,490

Claims priority, application Japan, Nov. 17, 1993, 5-288093; Nov. 17, 1993, 5-288094

Int. Cl.[6] B23K *11/11;11/24;37/00*

U.S. Cl. 219—117.1 9 Claims



1. In a method of assembling a motor vehicle body by fixing a relative positional relationship among a plurality of motor vehicle body constituent parts by means of positioning members provided in a welding jig which is disposed on each side of an assembly station and, in this condition, welding together the plurality of motor vehicle body constituent parts at a plurality of tack-welding locations,

the improvement comprising:

mounting on said welding jig first welding guns of indirect feeding type for welding at least some of said plurality of tack-welding locations on said body constituent parts;

disposing at least one welding robot at a position outside said welding jig disposed on each side of said assembly station, said welding robot having mounted thereon a second welding gun;

tack-welding said body constituent parts at said locations to be tack-welded by supplying electric power from said second welding gun to said first welding guns by pinching, by said second welding gun, a feeder terminal on each of said first welding guns, said electric power being supplied to said first welding guns in a condition in which said at least some of said plurality of tack-welding locations are being pinched by said first welding guns; and

thereafter welding a remaining number of said plurality of tack-welding locations by said second welding gun.

5,548,097

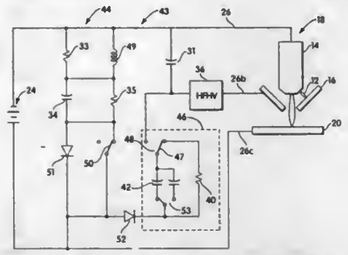
PLASMA ARC CUTTING TORCH IGNITION CIRCUIT AND METHOD PROVIDING A FORCED ARC TRANSFER FUNCTION

Richard W. Couch, Jr, Hanover, N.H.; Lifeng Luo, Mayfield Heights, Ohio, and Jeffrey L. Peterson, Lebanon, N.H., assignors to Hypertherm, Inc., Hanover, N.H.

Continuation-in-part of Ser. No. 39,898, Mar. 30, 1993, Pat. No. 5,416,297. This application Dec. 22, 1994, Ser. No. 361,730

Int. Cl.[6] B23K *10/00*

U.S. Cl. 219—121.57 21 Claims



1. A method of starting a plasma arc torch for cutting a workpiece using a pilot voltage to ionize a plasma gas and generate a pilot arc between an electrode and a nozzle, the method comprising:

connecting a power source to the electrode, the nozzle and the workpiece by a charge control network;

providing a signal between the nozzle and the workpiece having a magnitude which generally increases after the pilot arc has been generated to expedite transfer of the arc from the nozzle to the workpiece;

maintaining the signal after transfer of the arc to the workpiece at a generally constant magnitude sufficient to allow the transferred arc to stabilize; and

discharging the signal after the transferred arc has stabilized.

5,548,098

LASER CUTTING MACHINE

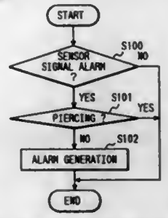
Masayuki Sugawara, and Toshihiro Mori, both of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 178,904, Jan. 7, 1994, Pat. No. 5,491,318. This application May 30, 1995, Ser. No. 453,368

Claims priority, application Japan, Mar. 25, 1993, 5-66625

Int. Cl.[6] B23K *26/00*

U.S. Cl. 219—121.67 8 Claims



2. A laser cutting method using a laser cutting machine for cutting a workpiece while concurrently measuring a distance between a cutting head and a workpiece and operating a copy control section which controls said distance between said cutting bead and said workpiece, said laser cutting method comprising the steps of:

(1) determining whether said laser cutting machine is in a piercing mode;

(2) when said laser cutting machine is in said piercing mode, invalidating an alarm signal which has been generated to prevent an alarm from being displayed and to continue cutting, wherein said invalidating step is performed even when said copy control section is not invalidated; and

(3) when said laser cutting machine is not piercing, displaying said alarm signal and stopping said cutting.

5,548,099

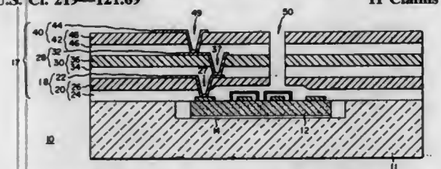
METHOD FOR MAKING AN ELECTRONICS MODULE HAVING AIR BRIDGE PROTECTION WITHOUT LARGE AREA ABLATION

Herbert S. Cole, Jr., Burnt Hills, and Theresa A. Sitnik-Nieters, Rexford, both of N.Y., assignors to Martin Marietta Corporation, King of Prussia, Pa.

Filed Sep. 13, 1994, Ser. No. 304,920

Int. Cl.[6] B23K *26/00;* H01L *21/60;* H05K *3/30*

U.S. Cl. 219—121.69 11 Claims



1. A method for making an electronics module, comprising the steps of:

(1) disposing a plurality of electronic chips on a substrate surface, at least some of the chips including contact pads, and at least one of the chips including a sensitive structure;

(2) encapsulating the sensitive structure with a sublimable protective layer thereby creating an encapsulating volume, the sublimable protective layer supporting the sensitive structure from all sides, and inhibiting the sensitive structure from processing contamination;

(3) applying at least one multilayer of a high density interconnect structure, comprising the steps of:

(a) applying a dielectric film layer over the chips and the substrate surface;

(b) providing a plurality of via openings in the dielectric film layer, the openings being disposed over at least some of the contact pads; and

(c) providing a pattern of electrical conductors on the film layer so that the conductors extend between the via openings so as to electrically connect selected contact pads;

(4) removing a portion of the multilayer of high density interconnect structure to provide a channel extending from the encapsulating volume through the high density interconnect structure to an exterior surface; and

(5) removing the protective layer from the encapsulating volume through the channel.

5,548,100

ARTICLE WARMER WITH HEATED FRAME AND FLEXIBLE ENCLOSURE

William R. Miller, P.O. Box 8534, Erie, Pa. 16505

Filed Dec. 30, 1994, Ser. No. 367,808

Int. Cl.[6] F24H *1/06*

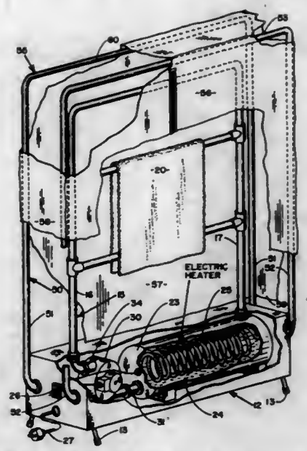
U.S. Cl. 219—521 4 Claims

1. Apparatus for warming articles that includes

a base supporting a tubular warming frame having interconnected members whereby a fluid can be circulated through the frame,

a flaccid bag passing over said frame to enclose said frame and an article to be warmed hanging upon said frame,

said bag being constructed of a material adapted to retain heat while at the same time allowing moisture to pass freely



therethrough whereby a warm dry atmosphere can be maintained within said bag, and

pumping means adapted to circulate a heated fluid through said frame to heat both an article bung upon said frame and the air contained inside the bag to maintain a warm dry atmosphere within the bag.

5,548,101

MICROWAVE OVEN WITH A FUNCTION OF INDUCTION HEATING AND THE CONTROL METHOD THEREOF

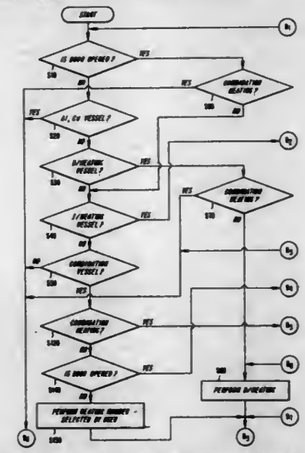
Eung H. Lee, Anyang, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 8, 1994, Ser. No. 355,198

Claims priority, application Rep. of Korea, Dec. 15, 1993, 93-27833

Int. Cl.[6] H05B *6/06;6/68*

U.S. Cl. 219—601 26 Claims



1. A microwave oven in which either induction heating or dielectric heating may be performed in a heating chamber, said microwave oven comprising:

an induction heating section including an induction coil;

a dielectric heating section including a magnetron;

a power supply section for generating high frequency power by switching D.C. power obtained by rectifying commercial A.C. power, said power supply section including a power transistor for switching the D.C. power;

a switching control section operationally connected to said power supply section for controlling the switching operation of said power supply section;

an automatic door sensing section for determining whether or not a door is open;

an automatic vessel material detecting means for sensing a material of a cooking vessel placed in the heating chamber; and,

a microprocessor operationally connected to said automatic door sensing section, said automatic vessel material detecting means, said power supply section, and said switching control section for controlling said high frequency power to be selectively connected to either of said heating sections based on the state of the door and the material of the cooking vessel,

wherein said automatic vessel material detecting means senses the material of the cooking vessel based on the amount of current flowing through said automatic vessel material detecting means as said induction heating section is in operation.

5,548,102

MICROWAVE OVEN HAVING ROTARY GRILL HEATER

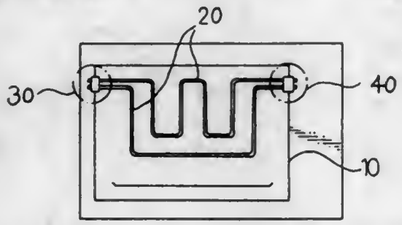
Chul-Ho Kwon, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 23, 1994, Ser. No. 363,072

Claims priority, application Rep. of Korea, Dec. 23, 1993, 1993-29247; Apr. 22, 1994, 1994-8659

Int. Cl.[6] H05B *6/64*

U.S. Cl. 219—685 **7 Claims**



1. A microwave oven having a rotary grill heater comprising:

a manually movable grill heater inside an oven cavity and having a mid-portion and opposite end sides, said mid-portion being bent and projected forward;

rotary means, which is connected with the end sides of the grill heater, for rotating the grill;

wherein said rotary means comprises;

first rotary means in which one end of the grill heater is inserted, for controlling a rotary angle of said inserted grill heater;

second rotary means in which the other end of the grill heater is inserted, and being rotated with the rotation of said first rotary means;

a first bushing mounted in a hole through a left wall of an oven cavity, one side of the grill heater being inserted in said first bushing, said first bushing having a cylindrical bushing portion and a circular holding member for preventing said first bushing from passing through the left wall of the oven cavity;

a cylindrical ring which is inserted on the cylindrical bushing portion of said first bushing and which is fixed at the wall of the oven cavity;

a stopper affixed to said first bushing for controlling the rotary angle of the joined bushing by rotating a knob formed at the stopper; and

a bracket for defining the rotary angle of the knob.

5,548,103

MICROWAVE OVEN WITH HEATING UNEVENNESS PREVENTING FUNCTION

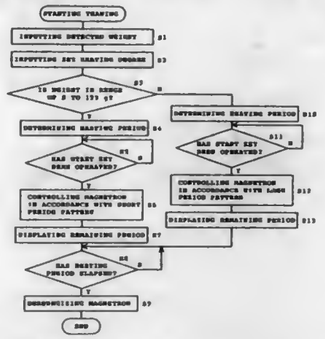
Mika Morita, Nagoya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 27, 1995, Ser. No. 379,156

Claims priority, application Japan, Jan. 28, 1994, 6-008513

Int. Cl.[6] H05B *6/68*

U.S. Cl. 219—703 **11 Claims**



1. A microwave oven comprising:

a) a magnetron for delivering microwave for heating frozen food;

b) control means electrically connected to the magnetron for controlling operation of the magnetron;

c) condition input means electrically connected to the control means for inputting conditioning data for conditioning a heating control to the control means;

d) storage means electrically connected to the control means storing data of two kinds of on-off patterns for on-off controlling the magnetron, either of the two kinds of on-off patterns being selected for a single thawing step executed during a period from a start to a completion of a thawing operation, one of the two kinds of on-off patterns being a long period pattern wherein each one period which is a total of an on-time and an off-time is relatively long, the other kind of on-off pattern being a short period pattern wherein each one period which is a total of the on-time and the off-time is shorter than that of the long period pattern; and

e) selecting means electrically connected to the control means for selecting one of the kinds of on-off patterns for the control means to use for controlling the magnetron, the selecting means selecting the short period pattern when the conditioning data input from the condition input means to the control means indicates that unevenness in the heating tends to occur in the frozen food so that the control means controls the magnetron in accordance with the selected short period pattern, the selecting means otherwise selecting the long period pattern so that the control means controls the magnetron in accordance with the selected long period pattern.

5,548,104

CONTROL APPARATUS OF MICROWAVE OVEN HAVING A MAGNETRON AND SEPERATE HEATING ELEMENT

Yeong-Cheol Ko, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

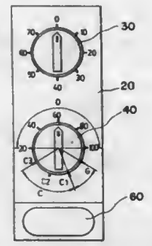
Filed Apr. 20, 1995, Ser. No. 425,203

Claims priority, application Rep. of Korea, Apr. 21, 1994, 94-8475

Int. Cl.[6] H05B *6/68*

U.S. Cl. 219—715 **8 Claims**

1. A microwave oven comprising a cooking chamber, a magnetron for supplying high frequency waves to said cooking chamber, an electric heater element disposed in said cooking chamber, and a



control apparatus for controlling operation of said magnetron and said heater element, said control apparatus comprising:

a control panel structure;

a manually actuable time control unit on said control panel structure for setting a cooking time;

a magnetron switch on said control panel structure for turning said magnetron on or off;

a magnetron power output control unit on said control panel structure for selecting a power output level of said magnetron;

a heater switch on said control panel structure for turning said heater element on or off; and

a function-setting mechanism on said control panel structure, comprising a single manual actuator operably connected to said magnetron switch, said output control unit, and said heater switch;

said single manual actuator being movable in a first range of movement for displacing said magnetron switch to an on condition with said heater switch disposed in an off condition, and for selecting a magnetron power outlet level; a second range of movement for displacing said heater switch to an on condition with said magnetron switch disposed in an off condition; and a third range of movement for displacing both of said magnetron and heater switches to an on condition and for selecting a magnetron power outlet level.

5,548,105

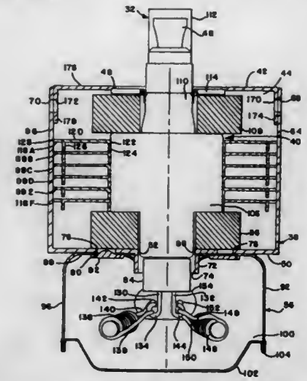
UNIVERSAL MAGNETRON ASSEMBLY FOR MICROWAVE OVEN

William Butterworth, Batavia, Ill., and Clyde H. Powell, Chattanooga, Tenn., assignors to Fidelitone Inc., Wauconda, Ill.

Filed Jul. 10, 1995, Ser. No. 499,859

Int. Cl.[6] H01J *23/10;* **H05B** *6/64*

U.S. Cl. 219—761 **20 Claims**



1. A magnetron assembly that is adapted to be mounted in a microwave oven, said magnetron assembly comprising:

an enclosure means in which is disposed a magnetron tube with cooling fins affixed to said magnetron tube, said enclosure means having a top end and side ends through which air can flow through said enclosure means and past said cooling fins;

mounting plate means disposed in said top end of said enclosure means, said mounting plate means having mounting means for securing said magnetron assembly in said microwave oven; and

filter box means mounted with respect to said enclosure means with said filter box means and said enclosure means being rotatable with respect to each other.

5,548,106

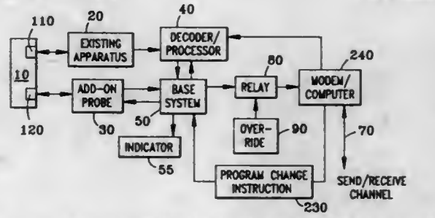
METHODS AND APPARATUS FOR AUTHENTICATING DATA STORAGE ARTICLES

Louis H. Liang, Los Altos, Calif.; Daniel A. Marinello, Burlington, Ky., and William J. Ryan, Underhill, Vt., assignors to Angstrom Technologies, Inc., Florence, Ky.

Filed Aug. 30, 1994, Ser. No. 298,387

Int. Cl.[6] G06K *7/10;7/14*

U.S. Cl. 235—454 **46 Claims**



1. A method for authenticating data storage cards for use in conjunction with existing card-reading means, comprising the steps of:

a) providing data storage cards bearing at least two sets of indicia including

first indicia that are invisible when irradiated with light in the visible spectrum but are detectable when irradiated with non-visible light and

second indicia readable by said existing card-reading means,

b) irradiating said data storage cards with said non-visible light,

c) detecting said first indicia to determine the authenticity or lack thereof for each of said data storage cards, and

d) optionally exposing each of said data storage cards to said existing card-reading means to read said second indicia.

5,548,107

SCANNER FOR RECONSTRUCTING OPTICAL CODES FROM A PLURALITY OF CODE FRAGMENTS

Charles Lapinski, Bethlehem; Charles Eckert, Telford; Richard Skokowski, Green Lane; James Cox, Quakertown; William Scott, Sellersville, and Edward Chaleff, Doylestown, all of Pa., assignors to Accu-Sort Systems, Inc., Telford, Pa.

Continuation-in-part of Ser. No. 902,574, Jun. 22, 1992, Pat. No. 5,466,921, which is a continuation of Ser. No. 586,545, Sep. 21, 1990, Pat. No. 5,124,538, which is a continuation-in-part of Ser. No. 237,517, Aug. 26, 1988, Pat. No. 5,028,772.

This application Jul. 2, 1993, Ser. No. 87,597

Int. Cl.[6] G06K *7/10*

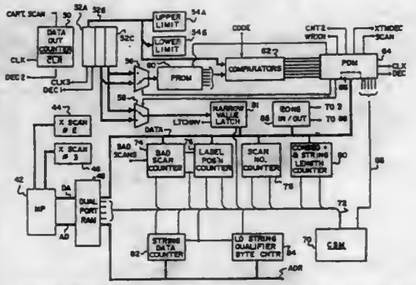
U.S. Cl. 235—462 **8 Claims**

1. A scanner for reading machine-readable code on an object, comprising:

scanning means for repetitively scanning the code and providing a plurality of scan signals, each including a code fragment and an associated code position value that corresponds to one of the successive scans of the code;

data means for receiving and storing the scan signals; and

reconstruction means coupled to the data means for reconstructing at least a portion of the code from two or more code fragments by determining whether the code position value



from a later scan signal corresponds to the code position value from an earlier scan signal, identifying a subinterval in the later and earlier code fragments, overlaying the code fragments and verifying that the subintervals are in registration.

5,548,108

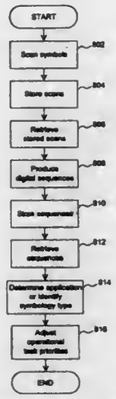
METHOD AND APPARATUS FOR SCANNING SYMBOLS

Walt Moldskred, Seattle, and Jon R. Ramberg, Lynnwood, both of Wash., assignors to Intermec Corporation, Everett, Wash.

Continuation of Ser. No. 739,622, Aug. 2, 1991, abandoned. This application Nov. 12, 1993, Ser. No. 152,257

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—462 **19 Claims**



1. A method of processing symbols with a symbology reader, under control of a single microprocessor within the reader, to perform a series of operational tasks with the reader, the operational tasks including reading tasks, decoding tasks, applications tasks and output tasks, the method comprising the steps of:

(a) scanning each of a series of regions containing the symbols in a sequential order with respective scans;

(b) storing each scan in a corresponding uniquely identified scan buffer;

(c) retrieving selected ones of the scans from the corresponding uniquely identified scan buffers in a selected order;

(d) producing respective digital sequences that each represent a respective one of the symbols;

(e) storing each of the digital sequences in a corresponding uniquely identified symbol buffer in a memory;

(f) retrieving selected ones of the selected digital sequences from the corresponding uniquely identified symbol buffers;

(g) decoding the retrieved digital sequences to determine the symbols represented by the decoded digital sequences;

(h) identifying an applications task represented by at least one of the determined symbols; and

(i) dynamically changing relative priorities of the operational tasks to perform the identified applications task before other operational tasks.

5,548,109

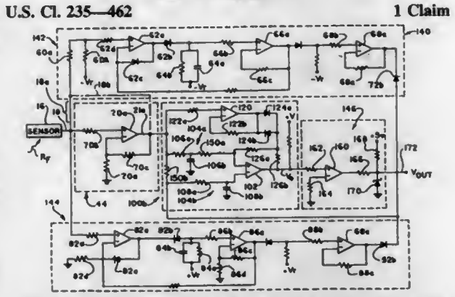
BAR CODE DETECTING CIRCUITRY

Randal S. Butturini, Ithaca, and Ernest W. Cooley, Rochester, both of N.Y., assignors to Johnson & Johnson Clinical Diagnostics, Inc., Rochester, N.Y.

Division of Ser. No. 959,208, Oct. 9, 1992, Pat. No. 5,861,223. This application May 18, 1995, Ser. No. 444,092

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—462 **1 Claim**



1. In a device for converting an analog input signal with varying peak values and transitions to a binary output signal wherein the device includes positive and negative peak detectors with peak hold circuits coupled thereto and a comparator circuit an improvement wherein each peak detector and respective peak hold circuit includes:

further circuitry for eliminating selected of the varying peak values from the input signal; and

slope sensing circuitry, coupled between said eliminating circuitry and the comparator for detecting transitions in the input signal and for generating the binary output signal therefrom.

5,548,110

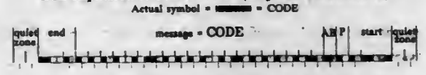
OPTICAL ERROR-DETECTING, ERROR-CORRECTING AND OTHER CODING AND PROCESSING, PARTICULARLY FOR BAR CODES, AND APPLICATIONS THEREFOR SUCH AS COUNTERFEIT DETECTION

Leonard Storch, and Ernst van Haagen, both of New York, N.Y., assignors to CIAS, Inc., New York, N.Y.

Division of Ser. No. 919,502, Jul. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 292,569, Dec. 30, 1988, abandoned, and Ser. No. 109,075, Oct. 16, 1987, which is a continuation-in-part of Ser. No. 853,745, Apr. 18, 1986, Pat. No. 4,814,589, said Ser. No. 292,569 is a continuation of Ser. No. 853,745. This application Apr. 11, 1994, Ser. No. 225,731

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—472 **32 Claims**



1. Coding of information comprising contrasting properties arranged to define first and second machine-detectable code elements, said code elements being arranged in overall patterns having opposed ends, said first and second code elements being interpretable to define contrasting logic levels, each of said patterns including a start pattern of code elements, an end pattern of code elements and a plurality of code elements representing given information between said start and end patterns, pairs of said plurality of code elements comprising both a first code element and a second code element which together define either a first character or a second character depending upon the order in the pair of the first and second code elements, said start pattern and said end pattern each including an end code element at each of said opposed ends of said overall pattern, both end code elements being either first code elements or second code elements, and said steal pattern of code elements and said end pattern of code elements being distinguishable from any part of the pattern of code elements of said plurality of code elements between said start pattern and said end pattern after being machine detected, said code elements between said start and end patterns being arranged so that after they are machine detected said given information may be obtained from them.

5,548,111

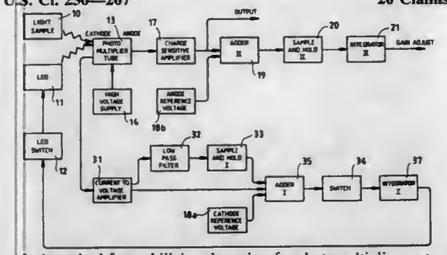
PHOTOMULTIPLIER HAVING GAIN STABILIZATION MEANS

Jarmo Nurmi, Kuusisto, and Timo Oikari, Turku, both of, Finland, assignors to Wallac Oy, Turku, Finland

Filed Feb. 22, 1995, Ser. No. 392,248

Int. Cl.[6] H01J *40/14*

U.S. Cl. 250—207 **20 Claims**



1. A method for stabilizing the gain of a photomultiplier system using a stabilizing light source, comprising:

detecting a signal of stabilization light source when the voltages of a photomultiplier tube are on, both at a cathode of the photomultiplier tube and at an output of the photomultiplier system, said detecting comprising a first phase and a second phase,

wherein in the first phase a first signal is detected at the cathode by measuring cathode current,

the cathode current caused by the stabilization light source being used for stabilization;

in the second phase a second signal is detected at the system output, and

the actual gain of the photomultiplier system is stabilized by keeping the ratio between said two signals constant.

5,548,112

PHOTODETECTING CIRCUIT USING AVALANCHE PHOTODIODE

Shigeki Nakase; Shigeyuki Nakamura, and Tsuyoshi Ohta, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Hamamatsu, Japan

Filed Dec. 20, 1994, Ser. No. 359,722

Claims priority, application Japan, Dec. 20, 1993, 5-319816

Int. Cl.[6] H01J *40/14*

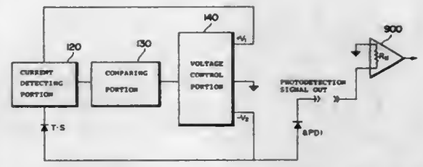
U.S. Cl. 250—214 C **18 Claims**

1. A photodetecting circuit, comprising:

a first avalanche photodiode for receiving an incident light and for outputting a corresponding photocurrent; and

bias control means for applying a bias voltage to said avalanche photodiode, said bias control means including:

a diode shielded from the incident light and thermally coupled to said first avalanche photodiode, said diode having a temperature dependence of a breakdown voltage substantially equal to that of said first avalanche photodiode; and



a control circuit for setting a first potential higher than a reference potential by a first voltage value at a cathode terminal of said diode and setting a second potential lower than the reference potential by a second voltage value at an anode terminal of said diode to generate a breakdown state in said diode, and for setting the first potential at a cathode of said first avalanche photodiode, setting a third potential higher than the second potential at an anode terminal of said first avalanche photodiode, detecting a current output from said diode and controlling the first and second voltage values corresponding to the current output from said diode, said control circuit maintaining the current output from said diode at a predetermined value.

5,548,113

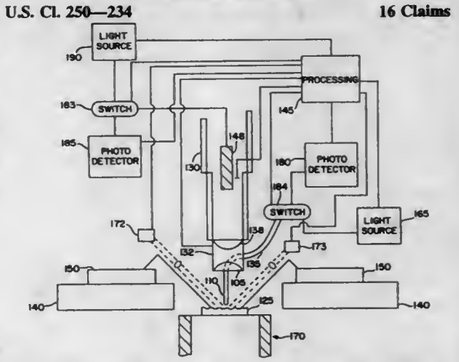
CO-AXIAL DETECTION AND ILLUMINATION WITH SHEAR FORCE DITHERING IN A NEAR-FIELD SCANNING OPTICAL MICROSCOPE

Bennett B. Goldberg, Newtonville, and Hadi F. Ghaemi, Brookline, both of Mass., assignors to Trustees of Boston University, Boston, Mass.

Filed Mar. 24, 1994, Ser. No. 216,887

Int. Cl.[6] H01J *3/14;5/16*

U.S. Cl. 250—234 **16 Claims**



1. A near-field microscope for examining a sample comprising:

an optical fiber probe having a probe tip;

a collection fiber distinct from said optical fiber probe, said collection fiber being disposed substantially co-axially with said probe tip and a portion of said sample being scanned;

detection means for detecting light reflected or emitted from said sample;

a first light source coupled to said optical fiber probe and a second light source coupled to said collection fiber;

wherein said near-field microscope may be selectively operated in either collection mode or illumination mode.

5,548,114

OPTICAL SCANNING DEVICE FOR SCANNING A RECORD CARRIER WITH A SCANNING SPOT WHICH DEVIATES IN A DIRECTION TRANSVERSE TO THE SCANNING DIRECTION BY AN AMOUNT LESS THAN A TRACE PITCH BECAUSE OF VIBRATION

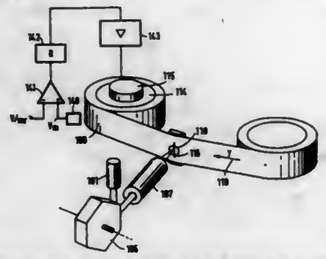
Gerard E. Van Rosmalen, and Josephus A. H. M. Kahlman, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 15, 1994, Ser. No. 356,949

Claims priority, application Belgium, Dec. 15, 1993, 09301395; European Pat. Off., Aug. 22, 1994, 94202393

Int. Cl.[6] H01J 3/14

U.S. Cl. 250—236 20 Claims



1. A device for scanning a layer of a medium in accordance with a track pattern formed by a longitudinal path of substantially parallel tracks which have a substantially constant track pitch and have a track direction transverse to the longitudinal direction of the path, the device comprising an optical system for focusing a radiation beam at the layer, which radiation beam causes a scanning spot to develop on the layer, scanning means for causing the scanning spot to be displaced with a specific repetition rate over the layer along a scanning path that has a specific scanning direction, driver means for causing the medium to be displaced relative to the scanning means with a certain velocity in a direction transverse to the scanning direction, in which device, when operative, vibrations occur which cause the scanning spot to be displaced over the layer in a direction transverse to the scanning direction, which displacements of the scanning spot have an amplitude that exceeds the track pitch, wherein the relation between velocity and repetition rate is selected such that the amplitude of the displacements of the scanning spot, which displacements have a frequency exceeding the repetition rate, is smaller than the track pitch.

5,548,115

PROBE DEVICE FOR DETECTING CONTAMINANTS IN SUBSURFACE MEDIA

John H. Ballard, Clinton; Stafford S. Cooper; John C. Morgan, both of Vicksburg, all of Miss.; William R. Lawrence, Dickinson, Tex., and Bobby E. Reed, Vicksburg, Miss., assignors to U.S. Army Corps of Engineers as Represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 29, 1995, Ser. No. 536,913

Int. Cl.[6] G01N 21/64;21/88

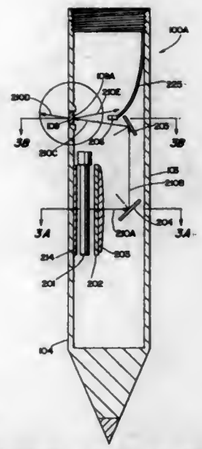
U.S. Cl. 250—253 21 Claims

1. A probe device for detecting contaminants in a subsurface media, the device comprising:

an elongated housing for penetrating the media, the housing comprising a generally tubular side wall and a penetrator tip at a bottom end of the housing, the housing comprising an interior portion so that the media is outside and surrounding the side wall when the device is inserted into the media;

an excitation source located in the interior portion of the housing, the excitation source emitting an excitation energy;

a window located in the side wall, the window being transparent to the excitation energy;



a first reflecting element located in the interior portion of the housing, the first reflecting element positioned in an optical path between the excitation source and the window to receive a first portion of the excitation energy from the excitation source and reflect a second portion of the excitation energy to the window, a third portion of the excitation energy being transmitted through the window and exciting the contaminants in the media outside of the housing; and

a radiation receiver positioned in the interior portion of the housing to receive radiation emitted by the contaminants in the media.

5,548,116

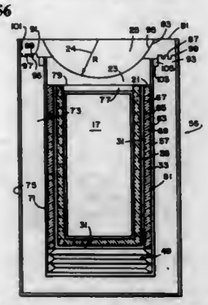
LONG LIFE OIL WELL LOGGING ASSEMBLY

Kiril A. Pandelisev, Mesa, Ariz., assignor to Optoscint, Inc., Scottsdale, Ariz.

Filed Mar. 1, 1994, Ser. No. 203,573

Int. Cl.[6] G01V 5/04

U.S. Cl. 250—256 68 Claims



1. Well logging scintillation detector apparatus, comprising a crystal, an optical system at one end of the crystal, a cladding layer surrounding a front and a back of the crystal except at the optical system, a reflective layer surrounding the cladding layer, an inner cushion surrounding the reflective layer, an inner housing surrounding the inner cushion, an outer cushion surrounding the inner housing, an outer housing, a thermal insulator surrounding the outer cushion within the outer housing, and a seal adjacent the optical system for sealing the detector against moisture.

5,548,117

PROBE FOR A SCANNING TUNNELING MICROSCOPE AND METHOD OF MANUFACTURING A PROBE

Tohru Nakagawa, Kusatsu, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

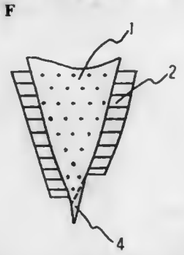
Division of Ser. No. 1,753, Jan. 7, 1993, Pat. No. 5,348,638.

This application Sep. 20, 1994, Ser. No. 308,914

Claims priority, application Japan, Jan. 16, 1992, 4-005609

Int. Cl.[6] H01J 37/26

U.S. Cl. 250—423 F 3 Claims



1. A probe for use in a scanning tunneling microscope, comprising a metallic probe body and a sharp metal tip, wherein the metallic probe body and sharp metal tip are connected together in an area of less than about 100 nm^2.

5,548,118

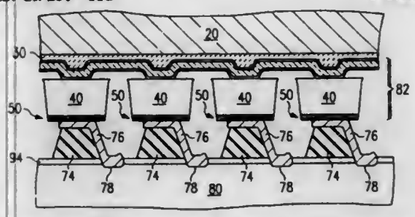
HYBRID INTEGRATED CIRCUIT

William K. Walker, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 381,693, Jan. 31, 1995. This application Jun. 7, 1995, Ser. No. 477,750

Int. Cl.[6] G01J 5/34

U.S. Cl. 250—332 8 Claims



1. An uncooled infrared detector, said detector comprising:

uncooled infrared elements on a first substrate;

internal IC structures on a second substrate to be connected to said uncooled infrared elements;

IC interlevel insulation on top of said internal IC structures;

IC top level metal connections on top of said IC interlevel insulation;

a protective overcoat over said IC top level metal and said IC interlevel insulation;

a dry etch protective layer over said protective overcoat;

thermal isolation mesas on said protective layer; and

local interconnects over said thermal isolation mesas and said substrate, wherein said uncooled infrared elements are connected to said internal IC structures through said local interconnects.

5,548,119

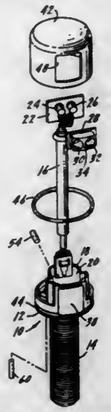
TOILET ROOM SENSOR ASSEMBLY

Richard A. Nortier, Westchester, Ill., assignor to Sloan Valve Company, Franklin Park, Ill.

Filed Apr. 25, 1995, Ser. No. 430,508

Int. Cl.[6] G01J 5/10; E03C 1/05

U.S. Cl. 250—341.1 6 Claims



1. A sensor assembly for use in a toilet room for detecting the adjacent presence of the user of a toilet room device, said assembly including a body having a hollow threaded mounting shank extending outwardly therefrom, said body including a platform, an upwardly extending wall on said platform and defining a chamber, an infrared transmitter and an adjacent infrared receiver positioned within said chamber, a mounting board within said chamber, said transmitter and receiver being attached to said mounting board, an electrical cable attached to said mounting board and extending through said threaded shank, a shroud extending about said transmitter and receiver and having a pair of adjacent openings in alignment with said transmitter and receiver, said wall including an infrared transparent window in alignment with the transmitter and receiver openings in said shroud, and a cap extending over said wall, chamber and window and seated upon said platform, said cap having an opening in alignment with said window whereby infrared signals from and to said infrared transmitter and receiver may pass through said cap opening and transparent window for use in detecting the presence of a person adjacent thereto.

5,548,120

LINEAR INTEGRATING CAVITY LIGHT SOURCE FOR INFRA-RED ILLUMINATION OF SENSITIZED MEDIA

H. Galen Parker, Rochester; Robert B. Bilborn, Webster; Martin C. Kaplan, and Russell J. Palum, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 14, 1994, Ser. No. 339,052

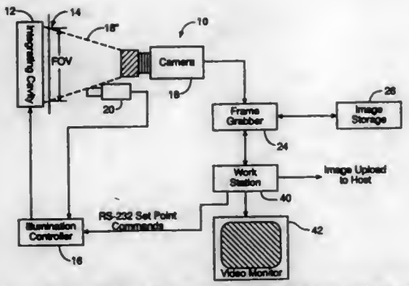
Int. Cl.[6] F21V 7/00;7/04

U.S. Cl. 250—341.7 23 Claims

1. A linear light integrator for use in illuminating a web with an elongated stripe of diffuse illumination comprising:

an elongated housing formed with side and end walls defining a light integrating cavity having diffusely reflecting interior wall surfaces, said housing side wall having a longitudinally extending slit through which diffuse light exits said cavity;

an elongated array comprising a plurality of discrete light sources supported with respect to the elongated housing to emit light into said cavity, whereby the emitted light is integrated within the cavity by reflection from the interior wall surfaces thereof and the integrated light forms a linear light beam exiting the elongated slit having a varying longitudinal intensity profile; and



means for modulating the intensity of the light emitted by said discrete light sources in a predetermined intensity pattern for altering the varying longitudinal intensity profile of the linear light beam to provide a desired longitudinal intensity profile of the stripe of diffuse illumination, said intensity modulating means further comprises:

means for providing a set point control signal defining an illumination intensity level of said stripe of illumination;

means for connecting said plurality of light sources into a further plurality of groups in a predetermined relationship; and

a plurality of drive circuits for driving each of said plurality of groups of light sources at a plurality of light intensities corresponding to said predetermined intensity pattern as a function of said set point control signal for altering the varying longitudinal intensity profile of the linear light beam to provide the desired longitudinal intensity profile of the stripe of diffuse illumination.

5,548,121

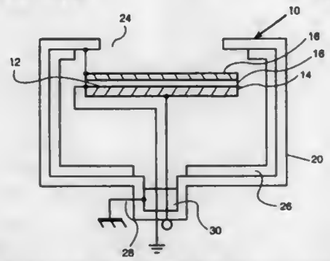
ELECTRONICALLY SHIELDED SOLID STATE CHARGED PARTICLE DETECTOR

David K. Balmer, 155 Coral Way, Broomfield, Colo. 80020; Thomas W. Haverty, 1173 Logan, Northglenn, Colo. 80233; Carl W. Nordin, 7203 W. 32nd Ave., Wheatridge, Colo. 80033, and William H. Tyree, 1977 Senda Rocosa, Boulder, Colo. 80303

Filed Jun. 27, 1995, Ser. No. 496,843

Int. Cl.[6] G01T *1/24*; H01J *37/04*

U.S. Cl. 250—370.01 **20 Claims**



1. An electronically shielded solid state charged particle detector system, comprising:

a) a conductive detector housing having a detector entrance window for receiving charged particles;

b) a charged particle detector having an active surface disposed within said conductive detector housing, said active surface facing said detector entrance window for providing electrical signals representative of said received charged particles when said received charged particles are applied to said active surface; and

c) a conductive layer disposed upon said active surface and electrically coupled to said conductive detector housing to provide a substantially continuous conductive electrical shield surrounding said active surface.

5,548,122

RADIATION DETECTOR

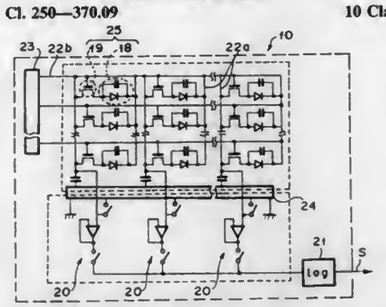
Takashi Shoji, Kanagawa-ken, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 1, 1994, Ser. No. 299,602

Claims priority, application Japan, Sep. 1, 1993, 5-217306

Int. Cl.[6] G01T *1/24*

U.S. Cl. 250—370.09 **10 Claims**



1. A radiation detector comprising:

a plurality of solid-state photo detecting devices arrayed in one or two dimensions; said photodetecting devices including a plurality of photoelectric conversion means and transfer means for temporarily storing image signal information for said photoelectric conversion means; wherein the solid-state photo detecting devices detect radiation, carrying image information, convert the radiation into an analog image signal, which represents the image information as a whole and output the analog image signal, and;

at least one logarithmic conversion means, said logarithmic conversion means being arranged for each group of a predetermined number of the solid state photo detecting devices and converting a group of image signal components of the analog image signal, which are fed out of the group of the predetermined number of the solid-state photo detecting devices, and outputting the group of the image signal components of the logarithmically converted analog image signal.

5,548,123

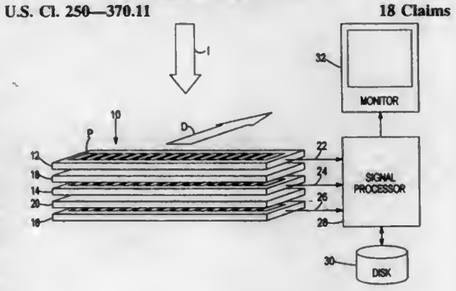
HIGH RESOLUTION, MULTIPLE-ENERGY LINEAR SWEEP DETECTOR FOR X-RAY IMAGING

Victor Perez-Mendez, Berkeley, and Claude A. Goodman, Kensington, both of Calif., assignors to Regents of the University of California, Oakland, Calif.

Filed Dec. 6, 1994, Ser. No. 350,854

Int. Cl.[6] G01T *1/16*

U.S. Cl. 250—370.11 **18 Claims**



1. Apparatus for generating, in a single scan and in response to incident X-rays received from an object, plural electrical signals, each electrical signal representing an image of the object at a different range of energies of the incident X-rays, the apparatus comprising:

a first X-ray detector, including:

a first light detector having a first surface disposed substantially parallel to the incident X-rays, wherein the first light detector has a linear array of first pixels, each of the first pixels producing an electrical output in response to the incident X-rays in a first range of energies,

a first scintillator layer comprising columns of scintillator material grown on the first surface, and

means for generating a first electrical signal in response to the electrical output of each of the first pixels;

a second X-ray detector stacked upstream of the first X-ray detector, the second X-ray detector including:

a second light detector having a second surface disposed substantially parallel to the incident X-rays, wherein the second light detector has a linear array of second pixels, each of the second pixels producing an electrical output in response to the incident X-rays in a second range of energies, broader than the first range of energies,

a second scintillator layer comprising columns of scintillator material grown on the second surface, and

means for generating a second electrical signal in response to the electrical output of each of the second pixels, wherein the first scintillator layer provides an energy-dependent absorption of the incident X-rays before said incident X-rays are incident at the second scintillator layer.

5,548,124

DECAY CHARACTERISTIC MEASURING APPARATUS

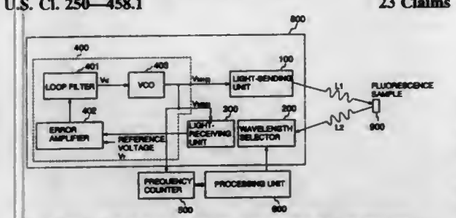
Akira Takeshima, and Musubu Koishi, both of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Hamamatsu, Japan

Filed Aug. 25, 1995, Ser. No. 519,422

Claims priority, application Japan, Sep. 19, 1994, 6-223628

Int. Cl.[6] G01N *21/64*

U.S. Cl. 250—458.1 **23 Claims**



1. A decay characteristic measuring apparatus comprising:

a light-sending unit for irradiating a first light beam having a first wavelength on a target measurement object, the first light beam being intensity-modulated with a first electrical signal changed in accordance with a first frequency, and having an intensity periodically changed in accordance with the first frequency;

a wavelength selector for receiving a second light beam as a scattered light beam of the first light beam on said target measurement object, and a third light beam having a second wavelength, the third light beam being generated on said target measurement object upon irradiation of the first light beam output from said light-sending unit on said target measurement object, and selecting and outputting one of the second and third light beams in accordance with a designation from an outside;

a light-receiving unit, having a photodetector for receiving a second electrical signal controlling a photoelectric conversion gain and having a second frequency, receiving the light beam output from said wavelength selector, and generating a third electrical signal containing a component having a third frequency corresponding to an absolute value of a difference between the first frequency and the second frequency, the third electrical signal being an electrical signal corresponding to a received light intensity and the set photoelectric conversion gain, for outputting a fourth signal reflecting the component of the third frequency from the third electrical signal; and

a measurement processing unit for outputting the first electrical signal to said light-sending unit, outputting the second electrical signal to said light-receiving unit, outputting a wavelength selection designation signal for designating a selected wavelength to said wavelength selector, and obtaining decay characteristics of the third light beam from a first measurement result of the fourth signal output from said light-receiving unit upon selection of the first wavelength and a second measurement result of the fourth signal output from said light-receiving unit upon selection of the second wavelength, on the basis of a phase difference between a phase of a change in intensity of the second light beam supplied to said light-receiving unit and a phase of a change in intensity of the third light beam supplied to said light-receiving unit.

5,548,125

RADIATION PROTECTIVE GLOVE

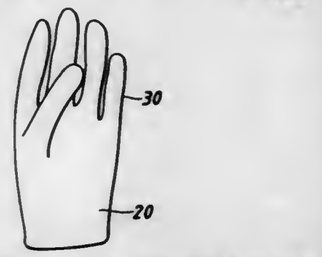
Barry M. Sandbank, Saltney, United Kingdom, assignor to Smith & Nephew plc, London, England

Filed Jan. 18, 1994, Ser. No. 182,057

Claims priority, application United Kingdom, Jul. 16, 1991, 9115343; Oct. 31, 1991, 9123121

Int. Cl.[6] G21F *3/02*

U.S. Cl. 250—519.1 **14 Claims**



1. A radiation protective glove for surgical and medical use comprising a layer of flexible polymer containing at least 25–90% by volume of particulate tungsten material and having a radiation absorbing capacity equivalent to that of at least 0.13 mm thickness of lead said layer of the glove being of a thickness of 0.1 to 1.3 mm and being sufficiently flexible to enable the wearer to bend finger portions of the glove without undue force, to hold instruments, and to obtain a sense of touch and feel through the walls of the glove.

5,548,126

APPARATUS FOR READING AN IMAGE FROM A STIMULABLE PHOSPHOR SHEET

Walter Exelmans, Merksem, and Gentil Verbeke, Edegem, both of, Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Aug. 31, 1995, Ser. No. 522,099

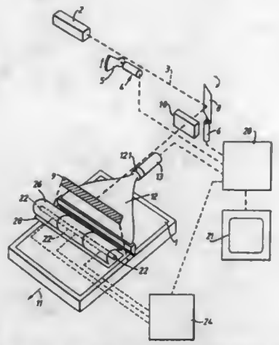
Claims priority, application European Pat. Off., Sep. 29, 1994, 94202815

Int. Cl.[6] G03B *42/02*

U.S. Cl. 250—588 **7 Claims**

1. An apparatus for reading an image from a stimulable phosphor sheet (1) carrying a radiation image thereon, said apparatus comprising:

exposing means (2) for exposing said sheet (1) to scanning stimulating radiation which causes said sheet (1) to emit light



in the pattern of the stored image, said stimulating radiation being deflected into the trace direction by means of galvanometric deflection;

detecting means (13) for photo-electrically detecting said emitted light; and

erasing means (22) for erasing any residual image on said sheet (1) to enable subsequent re-use thereof by exposure of said sheet (1) to erasing radiation,

characterised in that said erasing means (22) progressively exposes said sheet (1) to erasing radiation during the retrace steps of said galvanometric deflection.

5,548,127

SEMICONDUCTOR LIGHT EMITTING DEVICE AND ITS MANUFACTURING METHOD

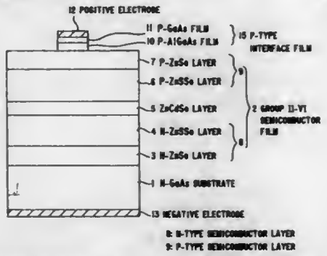
Yukio Shakuda, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Jun. 7, 1994, Ser. No. 255,933

Claims priority, application Japan, Jun. 8, 1993, 5-137133; Jun. 8, 1993, 5-137134; Jun. 8, 1993, 5-137135

Int. Cl.[6] H01L *29/161*

U.S. Cl. 257—13 **6 Claims**



1. A semiconductor light emitting device comprising:

a GaAs substrate;

a semiconductor film including an N-type semiconductor layer, an active layer and a P-type semiconductor layer which are formed in this order in lamination, said semiconductor film being formed so that the N-type semiconductor layer adjoins the GaAs substrate, and wherein said active layer emits light when electrons from said N-type semiconductor layer and holes from said P-type semiconductor layer come thereinto;

a P-type interface film having an energy band lower than an energy band of the P-type semiconductor layer, said P-type interface film being formed of two P-type films and on the P-type semiconductor layer of the semiconductor film; and

a positive electrode formed on the P-type interface film.

5,548,128

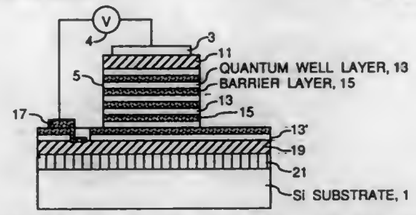
DIRECT-GAP GERMANIUM-TIN MULTIPLE-QUANTUM-WELL ELECTRO-OPTICAL DEVICES ON SILICON OR GERMANIUM SUBSTRATES

Richard A. Soref, Newton Centre, and Lionel Friedman, Holden, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 14, 1994, Ser. No. 355,464

Int. Cl.[6] H01L *29/06;33/00;31/0328;31/117*

U.S. Cl. 257—18 **25 Claims**



25. In an electro-optic semiconductor device, the improvement comprising an active region made up of a multiple quantum well stack having coherently strained germanium-tin alloy quantum wells, and germanium-tin alloy barriers, and wherein the quantum wells have an atomic percentage of tin of 5% to 15%, enabling a direct bandgap to exist between the n=1 conduction subband and the n=1 valence subband of the multiple quantum wells of said stack.

5,548,129

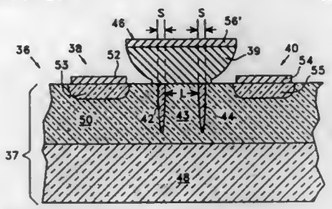
QUANTUM WELL STRUCTURE WITH SELF-ALIGNED GATE AND METHOD OF MAKING THE SAME

Randall L. Kubena, Agoura, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Division of Ser. No. 179,177, Jan. 10, 1994, Pat. No. 5,489,539. This application Aug. 1, 1995, Ser. No. 509,921

Int. Cl.[6] H01L *29/06;31/0328*

U.S. Cl. 257—24 **10 Claims**



1. A quantum well structure comprising:

a semiconductor substrate;

a source disposed in the semiconductor substrate;

a drain disposed in the semiconductor substrate and spaced from said source;

a plurality of spaced elongated implant barriers disposed in the semiconductor substrate between said source and said drain, said implant barriers defining a plurality of quantum wells therebetween, each of said barriers being disposed in the semiconductor substrate substantially parallel to the direction from said source to said drain; and

a T-gate spanning said plurality of quantum wells between said source and drain, said T-gate controllably biasing the potential of said quantum wells, whereby charge carriers travel from said source to said drain through said plurality of quantum wells when a voltage potential is applied across said source and said drain, said quantum wells being short enough to provide a substantially ballistic transport of charge carriers between said source and drain.

5,548,130

DC SUPERCONDUCTING QUANTUM INTERFERENCE DEVICE WITH SHIELD LAYER

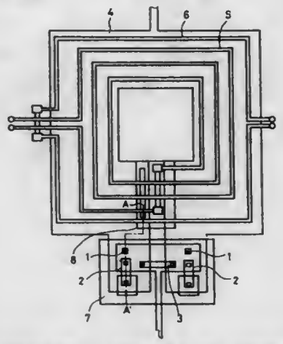
Nobuhiro Shimizu; Norio Chiba, and Satoru Yabe, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

Continuation of Ser. No. 101,192, Aug. 3, 1993, abandoned. This application Dec. 29, 1994, Ser. No. 366,363

Claims priority, application Japan, Aug. 11, 1992, 4-214246

Int. Cl.[6] G01R *33/035;* **H01L** *29/06*

U.S. Cl. 257—31 **38 Claims**



1. A low temperature DC superconducting quantum interference device comprising: a washer coil forming a superconducting ring; Josephson junctions coupled to both ends of the washer coil forming the superconducting ring; a shunting resistor connected in parallel to the Josephson junctions; a dampening resistor coupled to both ends of the washer coil; an input coil and a feedback modulation coil both magnetically coupled to the washer coil; a ground plane formed of a superconducting film and disposed to cover an area of the Josephson junctions without covering the washer coil for shielding the Josephson junctions from a magnetic noise without reducing the sensitivity of the device to an external magnetic field; and a washer cover formed of a superconducting film and disposed to cover only a slit portion of the washer coil to prevent leakage of a magnetic field from the slit portion; wherein the ground plane and the washer cover are formed in the same layer.

5,548,131

LIGHT-EMITTING DEVICE, OPTICAL RECORDING HEAD UTILIZING SAID DEVICE, AND OPTICAL PRINTER UTILIZING SAID OPTICAL RECORDING HEAD

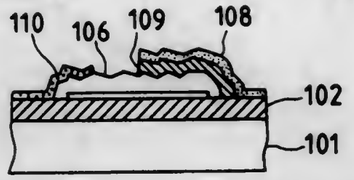
Hiroyuki Tokunaga, Kawasaki, and Hideshi Kawasaki, Yamato, both of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 885,613, May 19, 1992, abandoned. This application Sep. 12, 1994, Ser. No. 309,961

Claims priority, application Japan, May 23, 1991, 3-146557; Dec. 11, 1991, 3-327712

Int. Cl.[6] H01L *29/04;31/0368;31/12*

U.S. Cl. 257—64 **14 Claims**



1. A light-emitting device formed by applying a crystal formation process to a substrate with a free surface on which are provided, in mutually adjacent manner, a non-nucleation surface and a nucleation surface with a nucleation density larger than that of said non-nucleation surface, wherein said nucleation surface is formed into an elongated configuration of a width of 1–8 μm, comprising a first polycrystalline semiconductor layer of a first conductive type formed on said nucleation surface, a second polycrystalline semiconductor layer of a second conductive type which is opposite of said first conductive type formed on said first polycrystalline semiconductor layer so as to expose a portion of said first polycrystalline semiconductor layer, and a plurality of electrodes respectively formed on said exposed portion of said first polycrystalline layer and said second polycrystalline second layer.

5,548,132

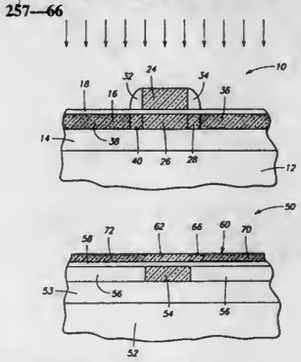
THIN FILM TRANSISTOR WITH LARGE GRAIN SIZE DRW OFFSET REGION AND SMALL GRAIN SIZE SOURCE AND DRAIN AND CHANNEL REGIONS

Shubneesh Batra, Boise; Monte Manning, Kuna, both of Id.; Sanjay Banerjee, and John Damiano, Jr., both of Austin, Tex., assignors to Micron Technology, Inc., Boise, Id.

Division of Ser. No. 328,096, Oct. 24, 1994. This application Jun. 7, 1995, Ser. No. 484,979

Int. Cl.[6] H01L *29/04;31/036*

U.S. Cl. 257—66 **6 Claims**



1. A thin film transistor comprising:

a thin film transistor layer comprising a source region, a channel region and a drain region; the thin film transistor layer further comprising a drain offset region positioned between the drain region and the channel region;

the source region, the drain region and the channel region being substantially polycrystalline and having a common first average crystalline grain size; and

the drain offset region being substantially polycrystalline and having a second average crystalline grain size, the second average crystalline grain size being larger than the first average crystalline grain size.

5,548,133

IGBT WITH INCREASED RUGGEDNESS

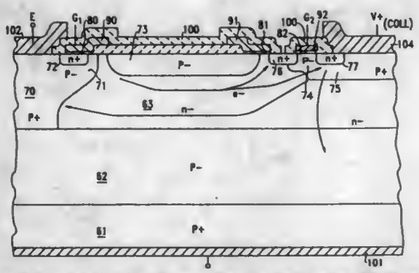
Daniel M. Kinzer, El Segundo, Calif., assignor to International Rectifier Corporation, El Segundo, Calif.

Filed Sep. 19, 1994, Ser. No. 308,556

Int. Cl.[6] H01L *29/74;31/111;23/58*

U.S. Cl. 257—155 **12 Claims**

1. An insulated gate bipolar transistor (IGBT) having improved ruggedness comprising a thin wafer of semiconductor material; said wafer having a P^+ substrate extending to a first surface of said wafer and a P^- body formed atop said P^+ substrate and extending to a second surface of said wafer; at least one P type base region diffused into said P^- body and an N type emitter diffusion region formed in said P type base region and defining a first invertible



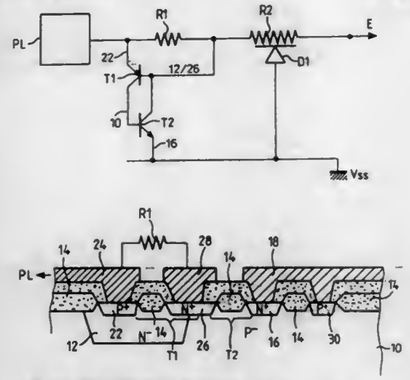
channel region in said P type base region; a first MOS-gate structure disposed atop said first invertible channel region for controllably inverting said channel region to turn said IGBT on; an N^- drift region diffused into the surface of said P^- body and extending from said P type base region; a relatively thick P^- resurf diffusion region formed into and contained within said N^- drift region; a P type collector diffusion formed in said N^- drift region at a location laterally spaced from said P^- resurf diffusion region an N^+ collector diffusion region formed in said P type collector diffusion region and defining a second invertible channel region in said P type collector diffusion region between said N^+ collector diffusion region and said N^- drift region; a second MOS-gate structure disposed above said second invertible channel for controllably inverting said second channel region; a first emitter contact connected to said P type base region; and a collector contact connected to said P type collector diffusion region and said N^+ collector diffusion region.

5,548,134

DEVICE FOR THE PROTECTION OF AN INTEGRATED CIRCUIT AGAINST ELECTROSTATIC DISCHARGES

Francois Tailliet, Epinay sur Seine, France, assignor to SGS-Thomson Microelectronics, S.A., Gentilly Cedex, France

Filed Apr. 27, 1993, Ser. No. 53,606
Claims priority, application France, Apr. 30, 1992, 92 05422
Int. Cl.[6] H01L *29/00*
U.S. Cl. 257—173 **32 Claims**



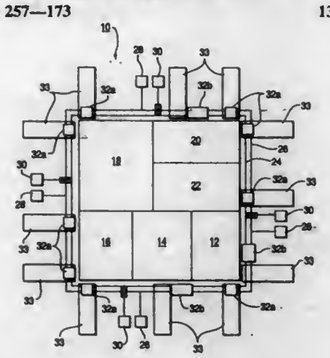
1. An integrated circuit, comprising:
a plurality of internal elements configured to provide a substantially predetermined electronic functionality; and a plurality of externally connectable contact pads; at least a respective one of said pads being operatively connected to a respective node of said internal elements through a protection structure which includes
a thyristor comprising
a first semiconductor region of a first conductivity type,
a second semiconductor region of a second conductivity type and abutting said first region,
a third semiconductor region of said first conductivity type and abutting said second region, and
a fourth semiconductor region of said second conductivity type and abutting said third region;
wherein said second region separates said first region from said third region, and said third region separates said second region from said fourth region;
said first semiconductor region of said thyristor being operatively connected to ground,
said third semiconductor region of said thyristor being operatively connected to a respective one of said nodes, and
said fourth semiconductor region of said thyristor being operatively connected to said respective contact pad; and
a thin-film first resistor which has a value of less than about 10 ohms and more than about 0.6 ohms, and which is electrically interposed between said respective pad and said respective node of said internal elements.

5,548,135

ELECTROSTATIC DISCHARGE PROTECTION FOR AN ARRAY OF MACRO CELLS

Leslie R. Avery, Flemington, N.J., assignor to David Sarnoff Research Center, Inc., Del.

Filed May 12, 1995, Ser. No. 439,929
Int. Cl.[6] H01L *29/74;31/111*
U.S. Cl. 257—173 **13 Claims**



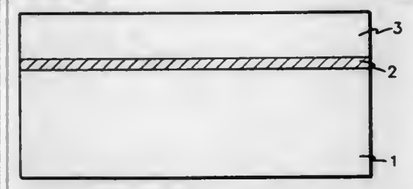
1. A circuit having electrostatic discharge (ESD) protection comprising:
a plurality of individual circuit cells electrically connected to one another, each circuit cell having an input-output connection (I/O pad);
a pair of conductive buss lines extending about the circuit cells;
means electrically connecting the circuit cells to the buss lines, and
a plurality of ESD protection circuit positioned between and electrically connected between the buss lines in a spaced apart relationship.

5,548,136

SUBSTRATE WITH A COMPOUND SEMICONDUCTOR SURFACE LAYER AND METHOD FOR PREPARING THE SAME

Shuji Asai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 8, 1994, Ser. No. 272,041
Claims priority, application Japan, Jul. 8, 1993, 5-193070
Int. Cl.[6] H01L *31/0328*
U.S. Cl. 257—190 **8 Claims**



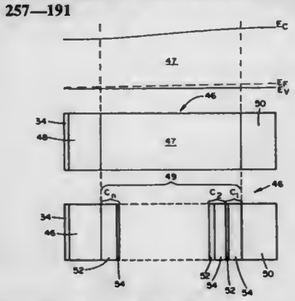
1. A semiconductor substrate comprising a substrate of a first material and a crystal growth layer formed on said substrate, said crystal growth layer being made of at least one compound semiconductor different from said first material, wherein said substrate has a surface diffusion region being doped with a doping element of said at least one compound semiconductor at a doping concentration within the range from 1×10^{20} atoms/cm^3 to 1×10^{21} atoms/cm^3, said doping element having a concentration at an interface of said surface diffusion region and said crystal growth layer higher than 1×10^{20} atoms/cm^3, said doping element being present at said interface in the form of fine crystal grains uniformly and finely dispersed at said interface, and said crystal growth layer having a mirror face.

5,548,137

GROUP II-VI COMPOUND SEMICONDUCTOR LIGHT EMITTING DEVICES AND AN OHMIC CONTACT THEREFOR

Yongping Fan; Jung Han, both of West Lafayette, Ind.; Arto V. Nurmikko, Providence, R.I.; Robert L. Gunshor, and Li He, both of West Lafayette, Ind., assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

Continuation-in-part of Ser. No. 995,454, Dec. 22, 1992, abandoned. This application Mar. 7, 1994, Ser. No. 207,327
Int. Cl.[6] H01L *31/0328;31/0336;31/072;31/109*
U.S. Cl. 257—191 **22 Claims**



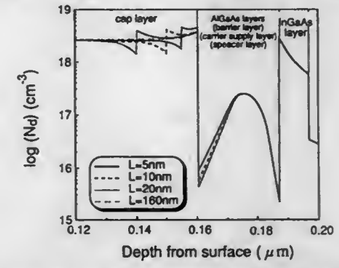
1. An ohmic contact comprising:
first p-type layer of a first II-IV compound semiconductor material;
second p-type layer of a second II-VI compound semiconductor material, and
a graded bandgap p-type region sandwiched between said first and second layers, wherein said graded bandgap p-type region comprises a third II-VI compound semiconductor material having a first group VI element from said first II-VI semiconductor material and a second VI element from said second II-VI semiconductor material, said first group VI element being different from said second group VI element.

5,548,138

SEMICONDUCTOR DEVICE WITH REDUCED TUNNEL RESISTANCE AND CIRCUITRY USING THE SAME

Takuma Tanimoto, Kokubunji; Makoto Kudo, Hachiohji; Tomoyoshi Mishima, Shiki; Akishige Nakajima, Kokubunji; Mitsuhiro Mori, Moriya-machi, and Masao Yamane, Takasaki, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 15, 1993, Ser. No. 120,818
Claims priority, application Japan, Sep. 18, 1992, 4-249185
Int. Cl.[6] H01L *31/0328;31/0336*
U.S. Cl. 257—192 **34 Claims**



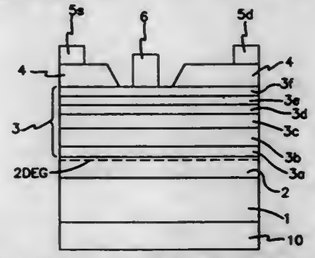
1. A semiconductor device wherein a third semiconductor layer is located between a doped first semiconductor layer and a second semiconductor layer, said first semiconductor layer being in contact with said third semiconductor layer, wherein potential for a carrier flowing between the first and second semiconductor layers is greater at the third semiconductor layer than that at the first and second semiconductor layers, and wherein the semiconductor device is operated to provide tunneling of the carrier between the first and second semiconductor layers, characterized in that carrier density distribution in at least one direction of thickness of the first semiconductor layer is higher in the vicinity of the third semiconductor layer than in other areas up to a predetermined depth of said first semiconductor layer away from the third semiconductor layer.

5,548,139

SCHOTTKY GATE FIELD EFFECT TRANSISTOR

Yuji Ando, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 28, 1994, Ser. No. 266,616
Claims priority, application Japan, Jun. 28, 1993, 5-155958
Int. Cl.[6] H01L *31/0328;31/0336;29/80*
U.S. Cl. 257—192 **39 Claims**



1. A semiconductor multi-layer structure comprising:
a superlattice structure comprising alternate potential barrier layers and quantum well layers, said potential barrier layers being made of a first compound semiconductor having a first

conduction band edge and said quantum well layers being made of a second compound semiconductor having a second conduction band edge being lower than said first conduction band edge;

a Schottky barrier layer having a first surface in contact with said superlattice structure, said Schottky barrier layer being made of a third compound semiconductor having a third conduction band edge being higher than said second conduction band edge;

a Schottky electrode formed on a first area in a second surface of said Schottky barrier layer to form a Schottky contact permitting said third conduction band edge to have such a sufficient large discontinuity as to prevent carriers from passing through said Schottky barrier layer; and

a cap layer formed on a second area separated from said first area in said second surface of said Schottky barrier layer, said cap layer being made of a fourth compound semiconductor being doped with a first conductivity type dopant at a sufficient high impurity concentration for permitting said fourth compound semiconductor to be in a degenerate state to permit tunneling of carriers at a high probability through said Schottky barrier layer and said superlattice structure.

5,548,140

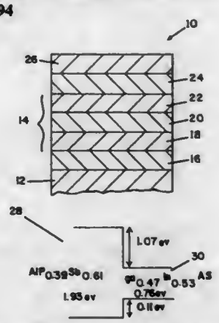
HIGH-SPEED, LOW-NOISE MILLIMETERWAVE HEMT AND PSEUDOMORPHIC HEMT

Chanh Nguyen; Takyiu Liu, both of Newbury Park, and Mehran Matloubian, Encino, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 6, 1995, Ser. No. 466,156

Int. Cl.[6] H01L *31/0328;29/06*

U.S. Cl. 257—194 **9 Claims**



1. An epitaxial structure for a field-effect transistor comprising:

a first quantum well barrier layer over a semiconductive support, said first quantum well barrier layer comprising a first wide-bandgap semiconductor material;

a channel layer over the first quantum well barrier layer, said channel layer comprising a narrow-bandgap semiconductor material;

a second quantum well barrier layer over the channel layer, said second quantum well barrier layer comprising a second wide-bandgap semiconductor material;

a barrier layer over the second quantum well barrier layer, said barrier layer comprising $AlP_{0.39-y}Sb_{0.61-y}$, wherein y has a value between about 0 and about 0.39.

5,548,141

A BIPOLAR TRANSISTOR HAVING A SELF EMITTER CONTACT ALIGNED

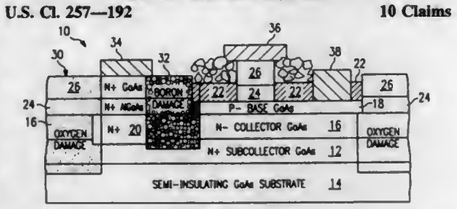
Francis J. Morris, Plano; Jau-Yuann Yang, Richardson; Donald L. Plumton, and Han-Tzong Yuan, both of Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 229,044, Apr. 18, 1994, Pat. No. 5,436,181.

This application May 16, 1995, Ser. No. 441,847.

Int. Cl.[6] H01L *29/161;29/205*

U.S. Cl. 257—192 **10 Claims**



1. A bipolar transistor, comprising:

a base layer having a first conductivity type formed over a portion of a collector layer;

an interface layer formed on said base layer such that a selected portion of said base layer is exposed;

an emitter layer having a second conductivity type formed on said selected portion of said base layer;

an emitter cap layer having said second conductivity type formed on the emitter layer at the selected portion of the base layer;

an insulating layer formed on the interface layer;

an emitter contact formed on the emitter cap layer, wherein the emitter contact overlaps the emitter cap layer and portions of the insulating layer; and

a base contact formed through the insulating layer and the interface layer for connection to the base layer; wherein said base layer, said emitter layer, and said emitter cap layer comprise materials that include Group III and Group V elements of the periodic table.

5,548,142

SOLID-STATE IMAGING DEVICE CAPABLE OF REMOVING INFLUENCE BY FALSE SIGNALS

Kenichi Arakawa, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa-Ken, Japan

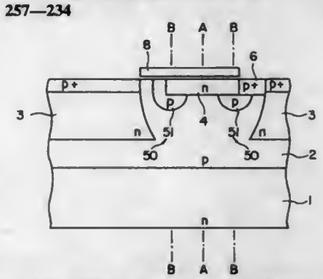
Continuation of Ser. No. 112,139, Aug. 26, 1993, abandoned.

This application May 17, 1995, Ser. No. 442,870

Claims priority, application Japan, Aug. 27, 1992, 4-228676

Int. Cl.[6] H01L *27/148;29/768*

U.S. Cl. 257—234 **5 Claims**



1. A solid-state imaging device capable of undesired influences caused by false signals added to a charge transfer path, comprising:

a semiconductor substrate formed in a plate shape from an impurity semiconductor material of a first conductivity type;

a well layer formed on at least one surface of said semiconductor substrate by an impurity semiconductor material having a second conductivity type;

a matrix, having two dimensions across the surface of the well layer, of photo-sensitive pixel regions formed of the impurity semiconductor material of the first conductivity type for generating signal charges corresponding to an incident light amount;

a plurality of transfer channels, formed in the well layer of the impurity semiconductor material of the first conductivity type, connecting each of the pixel regions formed along a first direction of the matrix and separated from pixel regions formed in a second direction of the matrix, and for transferring said signal charges generated by the pixel regions;

a plurality of electrodes, each above a respective transfer channel, and adding an electric field to said transfer channels; and

a plurality of barrier wells formed of the impurity semiconductor material of the second conductivity type, each of the barrier wells having a first impurity density portion greater than said well layer, such that the well layer may enter a depletion condition while the barrier wells remain in a non-depletion condition, and at least partially surrounding, in the first direction, each of said transfer channels for preventing an invasion of signal charges, occurring in said well layer, into said transfer channels,

each of said barrier wells having a second impurity density portion equal to the impurity density of the well layer and arranged beneath respective said transfer channels.

5,548,143

METAL OXIDE SEMICONDUCTOR TRANSISTOR AND A METHOD FOR MANUFACTURING THE SAME

Yong-hee Lee, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

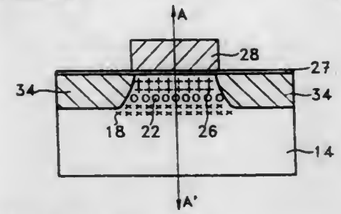
Continuation of Ser. No. 235,309, Apr. 29, 1994, abandoned.

This application Dec. 5, 1995, Ser. No. 567,718

Claims priority, application Rep. of Korea, Apr. 29, 1993, 93-7337

Int. Cl.[6] H01L *29/80;21/265*

U.S. Cl. 257—269 **16 Claims**



1. AMOS transistor, comprising:

a semiconductor substrate of a first conductivity type;

a gate insulating oxide formed on said semiconductor substrate;

a gate electrode of a first length formed on said gate insulating oxide;

a source region and a drain region formed spaced apart from each other in said semiconductor substrate, said source region and said drain region being of a second conductivity type; and

impurity regions formed in said semiconductor substrate between said source region and said drain region, said impurity regions including:

a first impurity region of impurities of said first conductivity type having a first impurity concentration and being formed to a first depth in said semiconductor substrate, to prevent punchthrough,

a second impurity region of impurities of said first conductivity type having a second impurity concentration and being formed on said first impurity region to a second depth in said semiconductor substrate shallower than said first depth, to serve as a diffusion barrier, and

a third impurity region of impurities of said second conductivity type having a third impurity concentration and being formed on said second impurity region to a third depth in said semiconductor substrate shallower than said second depth, to adjust a threshold voltage of said MOS transistor,

said first impurity concentration being ions having a first diffusion coefficient higher than a second diffusion coefficient of said second impurity concentration and

a buried channel region formed between said third impurity region and said second impurity region.

5,548,144

RECESSED GATE FIELD EFFECT TRANSISTOR

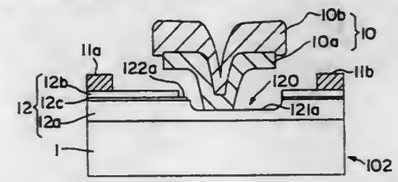
Yasutaka Kohno, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 3, 1994, Ser. No. 205,180

Claims priority, application Japan, Mar. 5, 1993, 5-044868

Int. Cl.[6] H01L *29/80;31/112*

U.S. Cl. 257—284 **3 Claims**



1. A field effect transistor comprising:

a semi-insulating semiconductor substrate;

a first conductivity type semiconductor layer disposed on said semi-insulating semiconductor substrate and comprising a first film of a first semiconductor material contacting said semiconductor semi-insulating substrate, a second film of a second semiconductor material different from said first semiconductor material disposed on said first film, and a third film of said first semiconductor material disposed on said second film, said first conductivity type semiconductor layer having an upper surface at said third film and having a gate recess with a first bottom surface exposing part of said first film;

a gate electrode disposed in the gate recess in contact with the first bottom surface; and

a source electrode and a drain electrode disposed on the upper surface of said semiconductor layer on opposite sides of the gate recess wherein the gate recess has a second bottom surface exposing part of said second film only at a side of the gate recess closest to said source electrode, the second bottom surface not contacting said gate electrode, and said gate electrode is farther from an edge of the gate recess closest to said drain electrode than from an edge of the gate recess closest to said source electrode.

5,548,145

SEMICONDUCTOR MEMORY APPARATUS

Takeshi Hamamoto, Kanagawa-ken; Takashi Yamada, Ebina, and Yutaka Ishibashi, Kawasaki, all of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 25, 1994, Ser. No. 328,526

Claims priority, application Japan, Oct. 25, 1993, 5-266089; Jun. 28, 1994, 6-146650; Oct. 20, 1994, 6-255125

Int. Cl.[6] H01L *27/108*

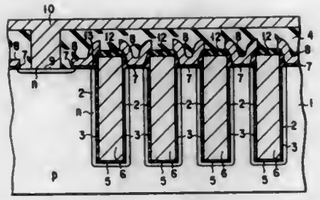
U.S. Cl. 257—301 **7 Claims**

1. A semiconductor memory device comprising:

a semiconductor substrate having a memory cell area of a first conductivity type;

a plurality of trenches selectively formed in the memory cell area aligning at certain intervals;

a plurality of memory cell arrays provided in the memory cell area, each of the memory cell arrays comprising a plurality of



MOS transistors arranged in a serial array and capacitors connected to the transistors respectively, wherein

the capacitors are provided in the trenches respectively, each of the capacitors including:

a charge storage layer of a second conductivity type formed on a inner wall of each of the trenches;

a capacitor insulating film formed on the charge storage layer;

a capacitor electrode formed on the capacitor insulating film so as to bury each of the trenches and extending to a surface of the substrate, the capacitor electrode of the surface being formed except for at least formation areas of the transistors; and

the transistors are arranged between adjacent ones of the trenches, each of the transistors including:

a gate electrode provided above the substrate with a gate insulating film formed therebetween;

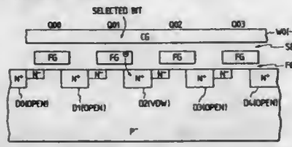
source and drain regions provided on both sides of the electrode in an aligned direction, the charge storage layer being used as each of the source and drain regions, wherein the capacitor electrode has a protruded portion above the surface of the substrate, having a width not larger than that of the trenches in a direction of the serial array, with a side insulating film formed on a side surface of the protruded portion and left by RIE method, and the gate electrode is provided so as to contact the side surface of the protruded portion of the capacitor electrode formed on each side of the gate electrode with the side insulating film interposed therebetween.

5,548,146

NONVOLATILE MEMORY DEVICE HAVING SOURCE AND DRAIN OF MEMORY CELLS INTEGRALLY FORMED WITH DATA SOURCE LINES

Kenichi Kuroda, Tachikawa; Kazuyoshi Shiba, Kodaira, and Akinori Matsuo, Higashiyamato, all of, Japan, assignors to Hitachi, Ltd., and Hitachi ULSI Engineering Corp., both of Tokyo, Japan

Continuation of Ser. No. 138,510, Oct. 20, 1993, abandoned.
This application Jun. 6, 1995, Ser. No. 470,008
Claims priority, application Japan, Oct. 29, 1992, 4-314014; Apr. 27, 1993, 5-123531
Int. Cl.[6] H01L *29/788*
U.S. Cl. 257—321 **16 Claims**



1. A semiconductor memory device comprising:

a semiconductor substrate having a main surface;

word lines formed over said main surface and extending in a first direction;

a plurality of memory cells, each comprised of a single MISFET which includes a floating gate electrode, a control gate electrode, first and second semiconductor regions formed in said substrate, and a channel forming region formed in said substrate and between said first and second semiconductor regions,

wherein said memory cells are arranged in said first direction and a second direction, perpendicular to said first direction,

wherein said floating gate electrode is formed over a first gate insulating film formed over said main surface,

wherein said control gate electrode is formed over a second gate insulating film formed over said floating gate electrode,

wherein the control gate electrodes of said memory cells arranged in said first direction are integrally formed with corresponding ones of said word lines,

wherein said first and second semiconductor regions are extended under said floating gate electrode, and

wherein an impurity concentration of said second semiconductor region is lower than that of said first semiconductor region; and

buried lines formed in said substrate and extending in said second direction,

wherein said buried lines are formed commonly for adjacent memory cells arranged in said first direction and are integrally formed with said first and second semiconductor regions in such a manner that a second semiconductor region of a memory cell is integrally formed, at a first end of said channel thereof, with a first semiconductor region of a memory cell adjacent to said memory cell in said first direction, that a first semiconductor region of said memory cell is integrally formed, at a second, opposite end of said channel thereof, with a second semiconductor region of another memory cell adjacent to said memory cell in said first direction, and that each first semiconductor region is formed under a floating gate electrode of a corresponding memory cell and is spaced apart, in said first direction, from a floating gate electrode of a memory cell adjacent to said memory cell in said first direction,

wherein said buried lines are extended in said second direction in such a manner that said buried lines are integrally formed with said first and second semiconductor regions of said memory cells arranged in said second direction,

wherein, when a first negative voltage, a first positive voltage and a second voltage, more positive than said first negative voltage, are applied to one word line, one buried line and other word lines, respectively, in a write operation, electrons are transferred from a floating gate electrode of a memory cell associated with said one word line to a first semiconductor region of said memory cell associated with said one buried line by electron tunneling through a first gate insulating film of said memory cell, and

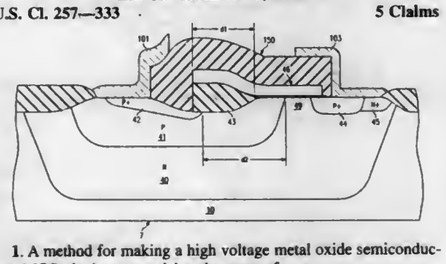
wherein, when a second positive voltage and a ground potential are applied to said word line and said buried lines, respectively, in an erasing operation, electrons are transferred from said substrate to said floating gate electrode by electron tunneling through said first gate insulating film.

5,548,147

EXTENDED DRAIN RESURF LATERAL DMOS DEVICES

Chia-Cu P. Mei, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 224,919, Apr. 8, 1994, abandoned.
This application Jan. 5, 1995, Ser. No. 369,973
Int. Cl.[6] H01L *29/76;21/265*
U.S. Cl. 257—333 **5 Claims**



1. A method for making a high voltage metal oxide semiconductor, MOS, device, comprising the steps of:

providing a high voltage MOS device having a lightly doped drift region;

growing a thick field oxide feature such that a width of the thick gate field oxide feature is equal to a minimum growing feature size;

removing a portion of the grown thick gate field oxide feature to expose a portion of the lightly doped drift region, such that the resultant width of the thick gate field oxide feature is smaller than the minimum grown feature size of the thick gate field oxide feature; and

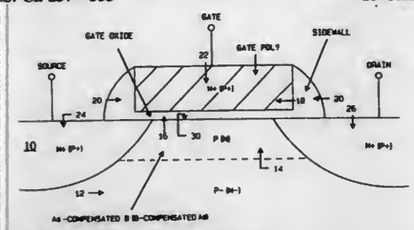
forming a drain in the exposed portion of the lightly doped drift region such that an extended portion of the drain is adjacent to the thick gate oxide feature.

5,548,148

MOS CHANNEL DEVICE WITH COUNTERDOPING OF ION IMPLANT FOR REDUCED SUBSTRATE SENSITIVITY

Ahmet Bindal, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 228,563, Apr. 15, 1994, abandoned.
This application Sep. 29, 1995, Ser. No. 537,258
Int. Cl.[6] H01L *29/76*
U.S. Cl. 257—335 **15 Claims**



1. A semiconductor device comprising:

a substrate of first conductivity type;

a gate oxide layer formed on said substrate carrying a polysilicon layer and a gate implant of opposite conductivity type of said substrate forming a gate;

source and drain implants in said substrate of opposite conductivity type of said substrate forming a source and a drain;

a threshold voltage (V_T) ion implant of said first conductivity type in said substrate between said source and drain implants below said gate;

a second implant of opposite conductivity type of said substrate for counterdoping said threshold voltage (V_T) ion implant for reducing substrate sensitivity by forming an abrupt reduction in net acceptor density or net donor density from a shallow level to a deep level and forming at said deep level a substantially constant net acceptor density or a substantially constant net donor density as a function of depth X below said gate oxide layer.

5,548,149

VARYING THE THICKNESS OF THE SURFACE SILICON LAYER IN A SILICON-ON-INSULATOR SUBSTRATE

Keith A. Joyner, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

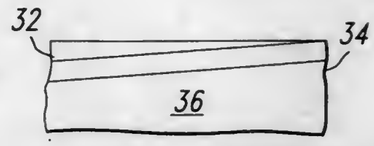
Division of Ser. No. 82,080, Jun. 24, 1993, Pat. No. 5,364,800.
This application Oct. 18, 1994, Ser. No. 324,939
Int. Cl.[6] H01L *27/01*
U.S. Cl. 257—347 **5 Claims**

1. A silicon-on-insulator structure comprising:

a silicon substrate;

a buried insulator layer overlying said substrate;

a surface silicon layer overlying said buried insulator, wherein said surface silicon layer comprises at least one area with a



continuously tapered thickness and a substantially horizontal too surface parallel to the bottom of the silicon substrate; and

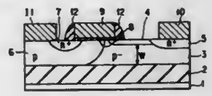
an active microelectronic device formed substantially entirely in said area of said surface silicon layer.

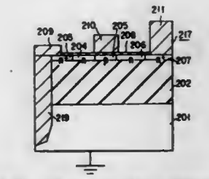
5,548,150

FIELD EFFECT TRANSISTOR

Ichiro Omura, Yokohama; Akio Nakagawa, Hiratsuka; Tadashi Sakai, Yokohama; Masayuki Sekimura, and Hideyuki Funaki, both of Tokyo, all of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 207,849, Mar. 9, 1994, abandoned.
This application Apr. 17, 1995, Ser. No. 425,246
Claims priority, application Japan, Mar. 10, 1993, 5-049537; Mar. 12, 1993, 5-079114; Sep. 13, 1993, 5-227064; Sep. 17, 1993, 5-231281
Int. Cl.[6] H01L *27/01;27/12*
U.S. Cl. 257—349 **20 Claims**





1. A high-frequency MOS field effect transistor comprising:

a substrate comprising a first layer of an insulator material and a second layer of a semiconductor material;

an active layer of said semiconductor material formed on a surface of said first layer;

a source layer of a first conductivity type formed on a surface of said active layer and extending to said first layer;

a source electrode connected to said source layer;

a drain layer of the first conductivity type formed in said active layer and extending from said active layer surface to said first layer and not in contact with said source layer;

a drain electrode connected to said drain layer;

a base layer of a second conductivity type formed in said active layer extending from said surface of said active layer to said first layer so as to induce an inverted layer of the first conductivity type between said source and drain layers;

a gate insulating film formed on said base layer;

a gate electrode formed on a surface of said gate insulating film over said base layer;

a short-circuiting layer formed in said active layer surface adjacent to said source layer to interconnect said base layer and said source electrode;

a connecting member of an electrically and thermally conductive material extending through said first layer to electrically and thermally connect said source electrode to said second layer; and

means for grounding said second layer.

5,548,151

HALL ELEMENT FOR DETECTING A MAGNETIC FIELD PERPENDICULAR TO A SUBSTRATE

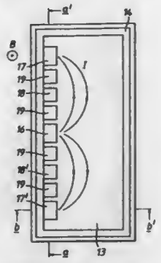
Hideyuki Funaki; Hiroshi Mochizuki, both of Tokyo; Ryoji Maruyama, and Kanae Fujii, both of Kanagawa-ken, all of, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Feb. 7, 1995, Ser. No. 385,058

Claims priority, application Japan, Mar. 9, 1994, 6-038667; Mar. 9, 1994, 6-038668

Int. Cl.[6] H01L *29/82*

U.S. Cl. 257—421 **23 Claims**



1. A Hall element comprising:
a semiconductor layer of a first conductivity type having an upper surface and a side surface;
an insulator portion having a side surface adjacent the side surface of the semiconductor layer;
a first current supply portion of the first conductivity type disposed adjacent the side surface of the insulator portion;
a pair of second current supply portions of the first conductivity type disposed adjacent the side surface of the insulator portion; and
a pair of sensor portions of the first conductivity type disposed adjacent the side surface of the insulator portion, wherein the first current supply portion is disposed between the sensor portions, the first current supply portion and the sensor portions are disposed between the second current supply portions, and the Hall element comprises means for inducing a Hall voltage between the sensor portions with magnetic flux perpendicular to the upper surface of the semiconductor layer during current flowing between the first and second current supply portions along a current path.

5,548,152

SEMICONDUCTOR DEVICE WITH PARALLEL-CONNECTED DIODES

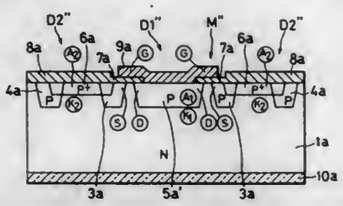
Takao Arai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 16, 1994, Ser. No. 260,832

Claims priority, application Japan, Jun. 17, 1993, 5-171202

Int. Cl.[6] H01L *23/62;29/861;29/76;31/107*

U.S. Cl. 257—360 **9 Claims**



1. A semiconductor device for electrostatic-charge protection comprising:
a semiconductor substrate of a first conductivity type;
an insulator film formed on a first main surface of said substrate, said insulator film having a window through which said first main surface is exposed;
a first voltage regulator diode composed of a first region of said first conductivity type and a second region of a second conductivity type, said first and second regions forming a first main P-N junction at their contact area;
a first electrode formed on said insulator film;
said second region being in contact with said first electrode through said window of said insulator film;
said first region being connected with said substrate;
a second voltage regulator diode composed of a third region of said first conductivity type and a fourth region of said second conductivity type, said third and fourth regions forming a second main P-N junction at their contact area;
said third region being in contact with said substrate;
said fourth region being adapted to be connected with said second region through a channel region;
said channel region being deposited between said second and fourth regions at said first main surface of said substrate, said channel region being deposited under said insulator film and said first electrode; and
a second electrode formed on a second main surface of said substrate;
wherein
an inversion layer of said second conductivity type is formed at said channel region when a voltage at least equal to a threshold voltage is applied across said first and second electrodes, so that said second and fourth regions are electrically connected through said inversion layer;
the breakdown voltage of said first P-N junction is higher than said threshold voltage and the breakdown voltage of said second P-N junction is lower than said threshold voltage;
and wherein
said first diode and second diode are electrically connected in parallel to said first electrode and said second electrode under application of said voltage at least equal to said threshold voltage across said first electrode and said second electrode, providing electrostatic energy absorption by both of said first diode and said second diode.

5,548,153

THIN FILM TRANSISTOR WITH MEANS TO PREVENT THRESHOLD VARIATIONS

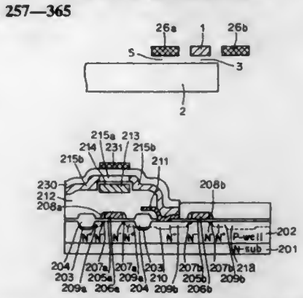
Takeo Muragishi, Hyogo, Japan, assignor to Mitsubhisi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 278,090, Jul. 20, 1994, abandoned. This application Nov. 27, 1995, Ser. No. 563,778

Claims priority, application Japan, Dec. 22, 1993, 5-324664

Int. Cl.[6] H01L *29/76;31/036*

U.S. Cl. 257—365 **19 Claims**



1. A semiconductor device having a thin film transistor, comprising:
a semiconductor layer forming source/drain regions and a channel region of said thin film transistor;
a conductive layer which is formed substantially on the same plane as said semiconductor layer with a predetermined space therebetween, a predetermined potential being applied to said conductive layer to prevent threshold voltage variations of said thin film transistor; and
a gate electrode formed on a surface of said semiconductor layer with a gate insulating layer therebetween, said gate electrode being electrically separated from said conductive layer.

5,548,154

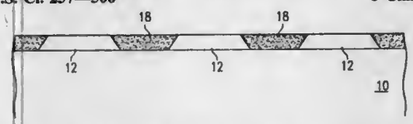
ISOPLANAR ISOLATED ACTIVE REGIONS

Robert O. Miller, The Colony, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation of Ser. No. 839,946, Feb. 21, 1992, abandoned, which is a division of Ser. No. 677,649, Mar. 28, 1991, Pat. No. 5,135,884. This application Oct. 15, 1993, Ser. No. 137,692

Int. Cl.[6] H01L *29/00*

U.S. Cl. 257—506 **3 Claims**



1. An integrated circuit structure, comprising:
a single, continuous silicon substrate having a planar upper surface;
a plurality of oxide regions, having planar upper surfaces, formed on the substrate upper surface and separated by spaces, wherein the oxide regions are wider at a bottom portion in contact with the substrate than at the planar upper surfaces, and wherein the oxide regions have physical characteristics of an oxide material formed from thermal oxidation of porous silicon; and
a plurality of epitaxial regions in contact with the substrate upper surface and filling the spaces between the oxide regions, wherein the epitaxial regions are wider at an upper portion spaced from the substrate than at a lower portion in contact with the substrate and have upper surfaces coplanar with the oxide region upper surfaces.

5,548,155

BIPOLAR TYPE SEMICONDUCTOR DEVICE HAVING SMALL PARASITIC CAPACITANCE SMALL DIMENSIONS, AND SMALL VARIATION IN TRANSISTOR CHARACTERISTICS

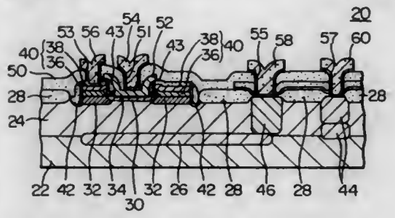
Ikuo Yoshihara, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. No. 164,794, Dec. 10, 1993. This application Nov. 14, 1994, Ser. No. 339,889

Claims priority, application Japan, Dec. 14, 1992, 4-353495

Int. Cl.[6] H01L *29/00*

U.S. Cl. 257—517 **6 Claims**



1. A bipolar type semiconductor device, comprising:
a collector region of a first conductivity type;
an intrinsic base region of a second conductivity type provided on said collector region;
an emitter region of the first conductivity type provided by self-alignment with respect to said intrinsic base region;
a base electrode layer structure provided around said intrinsic base region at a periphery thereof;
a base contact electrode above and in contact with a portion of said base electrode layer structure;
a trench-type element isolation region provided by self-alignment in contact with and around said base electrode layer at an outer circumference thereof; and
a graft base underlying and in contact with said base electrode layer structure and also around and in contact with a periphery of said intrinsic base region, and an outer periphery of said graft base terminating at said trench-type element isolation region.

5,548,156

METHOD AND APPARATUS FOR SOI TRANSISTOR

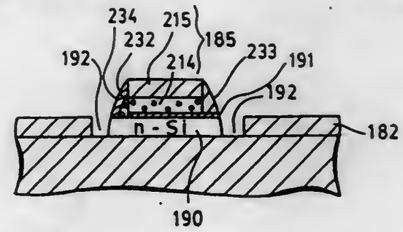
Hiroyuki Miwa; Takayuki Gomi, and Katsuyuki Kato, all of Kanagawa, Japan, assignors to Sony Corporation, Japan

Continuation of Ser. No. 51,765, Apr. 26, 1993, abandoned. This application Mar. 7, 1995, Ser. No. 400,447

Claims priority, application Japan, May 1, 1992, 4-112714; May 27, 1992, 4-160263; May 27, 1992, 4-160264; May 27, 1992, 4-160265; May 28, 1992, 4-162306

Int. Cl.[6] H01L *27/082;29/72*

U.S. Cl. 257—517 **19 Claims**



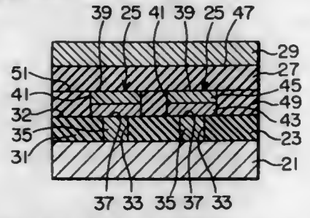
1. A semiconductor device comprising:
a substrate;
a thin film semiconductor formed over said substrate;
a laminate structure formed over said thin film semiconductor, said laminate structure including a first conductor formed as a layer, an insulating layer formed over said first conductor and a conductive side wall formed on a first portion of said thin film semiconductor and abutting said first conductor;
a first insulating side wall extending from a second portion of said thin film semiconductor over said conductive side wall of the laminate structure and abutting said insulating layer of the laminate structure;
a second insulating side wall provided over a third portion of said thin film semiconductor and abutting said insulating layer of the laminate structure;
a first volume and a second volume disposed on opposing sides of said thin film semiconductor, said first volume being defined by said substrate and said second portion of said thin film semiconductor and said second volume being defined by said substrate and said third portion of said thin film semiconductor;
a second conductor provided in said second volume so as to abut said third portion of said thin film semiconductor and to extend over at least a portion of said second insulating side wall; and
a third conductor provided in said first volume so as to abut said second portion of said thin film semiconductor and to extend over at least a portion of said first insulating side wall;
wherein said first portion of said thin film semiconductor is disposed between said second portion and said third portion of said thin film semiconductor.

5,548,157

SEMICONDUCTOR DEVICE CAPABLE OF INCREASING RELIABILITY

Masato Sakao, and Shuichi Ohya, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 116,569, Sep. 7, 1993, Pat. No. 5,466,964. This application May 15, 1995, Ser. No. 441,573
Claims priority, application Japan, Sep. 7, 1992, 4-237948
Int. Cl.[6] H01L *29/78*
U.S. Cl. 257—532 **1 Claim**



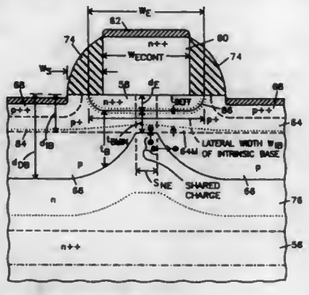
1. A semiconductor device comprising:
a semiconductor substrate having a principal surface;
a first insulator layer overlying said principal surface and having a first upper insulator surface;
a plurality of accumulation electrode layers overlying said first upper insulator surface with spaces being formed between adjacent ones of said accumulation electrode layers, said spaces exposing part surfaces of said first upper insulator surface, said accumulation electrode layers having upper electrode surfaces and side electrode surfaces;
a plurality of second insulator layers overlying said part surfaces and being in contact with said side electrode surfaces, said second insulator layers having second upper insulator surfaces, each of said second insulator layers having a primary dielectric constant;
a dielectric layer formed on and being in contact with said upper electrode surfaces and said second upper insulator surfaces and having an upper dielectric surface and a secondary dielectric constant which is higher than said primary dielectric constant; and
an opposed electrode layer overlying said upper dielectric surface.

5,548,158

STRUCTURE OF BIPOLAR TRANSISTORS WITH IMPROVED OUTPUT CURRENT-VOLTAGE CHARACTERISTICS

Constantin Bulucea, Milpitas, and Michael J. Grubisich, San Jose, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Sep. 2, 1994, Ser. No. 300,498
Int. Cl.[6] H01L *27/082;29/00;27/102*
U.S. Cl. 257—592 **22 Claims**



1. A bipolar transistor comprising:
an emitter situated in a semiconductor body and extending to an upper surface of the semiconductor body;
a collector situated in the semiconductor body and comprising a main collector region; and
a base situated in the semiconductor body between the emitter and the collector, the base comprising (a) a main intrinsic portion located below the emitter and above the main collector region and (b) a pair of encroaching base portions that are continuous with the main intrinsic base portion, have a lighter doping than the main intrinsic base portion, extend deeper into the semiconductor body than the main intrinsic base portion, extend below corresponding parts of the main intrinsic base portion, extend laterally outward beyond the emitter, and are laterally separated from each other below the main intrinsic base portion by a minimum spacing S_{NE} which is less than three times the minimum distance t_{BMIN} by which the main intrinsic base portion vertically separates the emitter and the main collector region.

5,548,159

POROUS INSULATOR FOR LINE-TO-LINE CAPACITANCE REDUCTION

Shin-Pun Jeng, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 250,137, May 27, 1994. This application May 23, 1995, Ser. No. 448,066
Int. Cl.[6] H01L *21/316;23/522*
U.S. Cl. 257—634 **18 Claims**



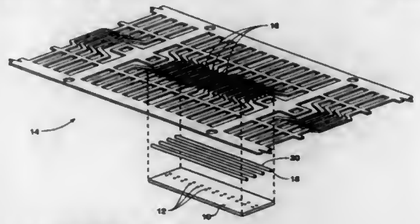
1. A semiconductor device comprising:
a plurality of transistors;
interconnection lines interconnecting at least portions of said plurality of transistors; and
a dielectric material in between said interconnection lines, wherein said dielectric material is more porous in between said interconnection lines and less porous in open fields.

5,548,160

METHOD AND STRUCTURE FOR ATTACHING A SEMICONDUCTOR DIE TO A LEAD FRAME

Tim J. Corbett, and Walter L. Moden, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Nov. 14, 1994, Ser. No. 337,912
Int. Cl.[6] H01L *23/495*
U.S. Cl. 257—666 **28 Claims**



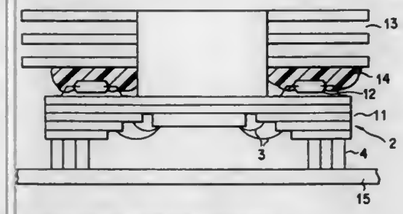
1. A semiconductor device comprising:
a) a semiconductor wafer section;
b) a lead frame;
c) a carrier having a generally circular cross section and an outside surface;
d) an adhesive coating said outside surface of said carrier,
wherein said carrier and said adhesive are interposed between said wafer section and said lead frame.

5,548,161

SEMICONDUCTOR APPARATUS CAPABLE OF COOLING A SEMICONDUCTOR ELEMENT WITH LOW RADIATION EFFICIENCY

Naohiko Hirano, and Yasuhiro Yamaji, both of Kawasaki, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 179,715, Jan. 11, 1994. This application Jun. 16, 1995, Ser. No. 491,240
Claims priority, application Japan, Apr. 5, 1993, 5-101911
Int. Cl.[6] H01L *23/24;23/10;23/34;23/02*
U.S. Cl. 257—722 **2 Claims**



1. A semiconductor apparatus comprising:
a circuit board;
at least one first semiconductor element mounted on said circuit board and exposed to a coolant flow;
a heat sink, attached in heat transfer contact to said first semiconductor element, for cooling said first semiconductor element by said coolant flow, said heat sink including a plurality of cooling fins to receive said coolant flow, wherein said cooling fins are spaced from a surface of the first semiconductor element;
a plurality of second semiconductor elements mounted on said first semiconductor element surface and below said cooling fins; and
a plurality of heat conductive auxiliary members formed of an organic material, wherein each of said plurality of heat conductive auxiliary members is formed by injecting said organic material into an entire space formed between a first one of said cooling fins and one of said second semiconductor elements, such that heat is transferred from said plurality of second semiconductor elements by heat conduction through said plurality of heat conductive auxiliary members to said first one of said cooling fins.

5,548,162

ELECTRONIC CIRCUIT HAVING COMPARATOR

Hidenobu Ito, Nakashima-gun; Katsuya Shimizu, Kasugai; Kenzo Hashikawa, and Yasuhiro Yamakawa, both of Kobe, all of, Japan, assignors to Fujitsu Limited, Kawasaki; Fujitsu VLSI Limited, Kasugai, and Fujitsu Ten Limited, Kobe, all of, Japan

Continuation of Ser. No. 72,874, Jun. 4, 1993, abandoned, which is a continuation of Ser. No. 844,923, Mar. 3, 1992, abandoned, which is a continuation of Ser. No. 397,834, Aug. 24, 1989, abandoned. This application Feb. 22, 1995, Ser. No. 392,300
Claims priority, application Japan, Aug. 26, 1988, 63-213367
Int. Cl.[6] G01R *19/00*
U.S. Cl. 307—10.1 **16 Claims**

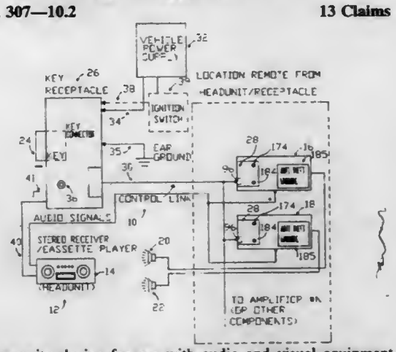
1. An electronic circuit comprising:
a comparator operated by a first power source voltage and having a reference terminal and a sense terminal, said reference terminal being supplied with a reference voltage which is formed by a voltage driver in response to said first power source voltage;
a detecting circuit operatively connected to the sense terminal of said comparator and a second power source voltage to detect a deviation of said second power source voltage and to output a compensation signal dependent on the deviation;
a device control circuit having an output terminal to output a signal from said output terminal to said sense terminal of said comparator;
a device having a first device terminal operatively connected to said second power source voltage and having a second device terminal coupled to the output terminal of said device control circuit to provide a voltage dependent upon the output from said device control circuit via said second device terminal; and
a voltage converting circuit operatively connected between the second device terminal of said device and said detecting circuit to receive an input signal from said second device terminal and convert a voltage on the sense terminal of said comparator dependent on a compensation signal from said detecting circuit for compensation for the rise of said second power source, said voltage converting circuit supplying a comparator input signal to the sense terminal of said comparator which outputs a control signal based on comparison between a voltage of the comparator input signal and the reference voltage.

5,548,163

DEVICE FOR SECURING CAR AUDIO EQUIPMENT

John B. French, Stouffville, Canada, assignor to Blade Technologies Inc., Markham, Canada

Filed Dec. 13, 1993, Ser. No. 165,612
Int. Cl.[6] B60R *25/00*
U.S. Cl. 307—10.2 **13 Claims**



1. A security device for use with audio and visual equipment mounted in a vehicle, said equipment having a head unit mounted in a passenger compartment of said vehicle so that said head unit is readily accessible to a user of the vehicle, said equipment having a further component mounted in a location, such as a trunk or under a seat of the vehicle, which is not readily accessible to said user at

the time when said user is driving the vehicle but is accessible by a thief for removal of said component, said security device comprising:

(a) securing means located within said compooent and having means connected to said component for disabling operation of said component;

(b) security control means for disarming said securing means and enabling operation of the component, said security control means being located in said passenger compartment and accessible to said user during use of said head unit and therefore being remote from said securing means;

(c) said security control means including a key and a key receptor, said key being removable and replaceable in conjunction with said receptor and said key having circuit means for producing an encoded security signal at said receptor, said security signal being a pulsed signal having a plurality of highs and lows and a plurality of transitions between said highs and lows,

(d) said securing means including decoding means for reading and responding to said encoded security signal for enabling operation of said component; and

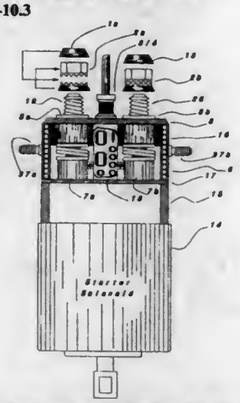
(e) connecting means for connecting said security control means to said securing means.

5,548,164

AUTOMOTIVE ADAPTABLE SECURITY MODULE FOR A STARTER SOLENOID

John N. Hillard, 251 N. Mountain Trail Ave., Sierra Madre, Calif. 91024, and Allan P. McDougall, 742 Mountain View Ave., Monrovia, Calif. 91016

Filed Oct. 7, 1992, Ser. No. 957,707
Int. Cl.[6] B60R *25/04*
U.S. Cl. 307—10.3 **6 Claims**



1. A mechanically adaptable security module circuit housing apparatus for use in conjunction with a motor vehicle electric starter motor solenoid, comprising, in combination:

a generally cylindrical housing arrangement having housing walls comprised of an axially rotatable bearing assembly;

a structural top plate attached to said axially rotatable bearing assembly, said top plate including a plane surface, a plurality of retainer lock rings fittingly connected to an interior surface of said top plate;

a solenoid with high-current input stud bolt means mounted to said housing arrangement

a plurality of electrical current conducting lock shaft assemblies mounted to and extending outwardly from said housing arrangement and connected to said solenoid high-current input stud bolt means, each said lock shaft assembly including a threaded and parallel grooved rigid shaft arrangement;

a rotatable radially adjustable terminal shaft having a compression spring and fastener means for mounting onto said solenoid high-current input stud bolt means;

a generally cylindrical weather sleeve mounted between said housing arrangement and said solenoid;

a plurality of torque-limiting fasteners affixed to certain of said threaded lock shaft assemblies for securing said housing arrangement to said lock shaft assemblies; and

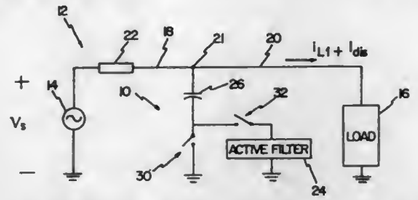
a plurality of locking fasteners mounted outboard of said torque-limiting fasteners.

5,548,165

HYBRID FILTER FOR REDUCING DISTORTION IN A POWER SYSTEM

Ned Mohan, St. Paul, and Mukul Rastogi, Minneapolis, both of Minn., assignors to Regents of The University of Minnesota, Minneapolis, Minn.

Filed Jul. 18, 1994, Ser. No. 276,543
Int. Cl.[6] H02J *1/02*; **H03H** *7/12*
U.S. Cl. 307—36 **22 Claims**



1. An apparatus for reducing distortion currents present in an alternating current power system supplying power to a load, the apparatus comprising:

a passive filter operably connected to the power system across the load;

an active filter; and

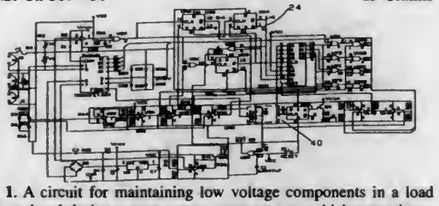
switching means for selectively connecting the passive filter to the active filter to form a series combination, the switching means further operably connecting the series combination to the power system across the load.

5,548,166

MOMENTARY POWER OUTAGE CARRYOVER DEVICE

Ralph Stolowicki, Port Jefferson, N.Y., assignor to Long Island Lighting Company, Hicksville, N.Y.

Filed Dec. 9, 1993, Ser. No. 164,465
Int. Cl.[6] H02J *15/00*
U.S. Cl. 307—50 **15 Claims**



1. A circuit for maintaining low voltage components in a load operational during a momentary power outage, which comprises:

(a) an input port for receiving AC power from an AC power source;

(b) an output port for delivering said AC power to said load;

(c) means for increasing the voltage of said AC power source, said means for increasing the voltage utilizing electrical magnetic fields present in said AC power source to increase said voltage as line voltage decreases during said power outage in said AC power device; and

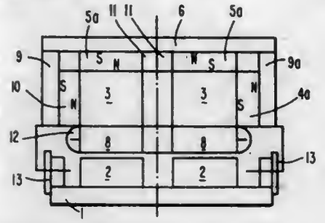
(d) switching means coupled to said increasing means for switching said AC power source to said increasing means when the line voltage of said AC power source is less than a predetermined voltage.

5,548,167

INDUCTIVE LINEAR ELECTRIC MOTOR

Victor Belikov, Odessa, Ukraine, assignor to Key Life Technologies Corp., South Orange, N.J.

Filed May 16, 1994, Ser. No. 243,240
Int. Cl.[6] H02K *41/02*
U.S. Cl. 310—12 **11 Claims**



1. An inductive linear electric motor comprising:

a stator comprising:

a ferromagnetic member; and

a plurality of spaced poles projecting from said ferromagnetic member in a checkerboard pattern;

a rotor in magnetomotive communication with said stator, said rotor comprising:

a ferromagnetic housing comprising a plurality of yokes that encompass said rotor;

a plurality of concentrators, each of said concentrators being disposed within said ferromagnetic housing, each of said concentrators having a segment, which segments together form an armature;

a first magnet coupled between a first of said plurality of concentrators and a first of said yokes;

a second magnet coupled between said first of said plurality of concentrators and said first of said yokes, such that said first and second magnets are adjacent to each other and have substantially different strengths;

other magnets;

an armature winding disposed about said armature such that said armature winding is in flux communication with said stator; and

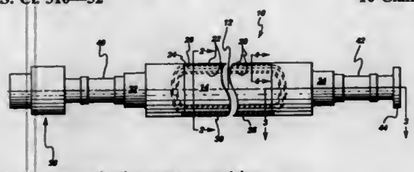
a plurality of support members slidably coupled between said rotor and said stator.

5,548,168

SUPERCONDUCTING ROTOR FOR AN ELECTRICAL MACHINE

Evangelos T. Laskaris, Schenectady, and Kenneth G. Herd, Niskayuna, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 29, 1994, Ser. No. 267,625
Int. Cl.[6] H02K *9/00*
U.S. Cl. 310—52 **10 Claims**



1. A superconductive rotor comprising:

a) a generally longitudinally-extending axis;

b) a generally cylindrical-shaped solid core generally coaxially aligned with said axis and having a pair of generally diametrically-opposed and generally longitudinally-extending slots;

c) a generally longitudinally-extending, racetrack-shaped superconductive coil surrounding said solid core and having generally straight portions disposed in said slots;

d) a generally longitudinally-extending, racetrack-shaped thermal shield generally enclosing said superconductive coil and having generally straight portions disposed in said slots, said thermal shield generally spaced apart from said superconductive coil and from said solid core; and

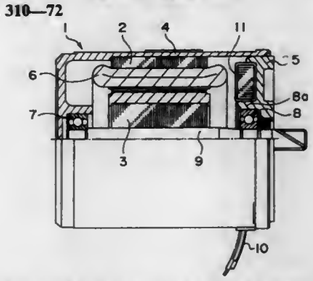
e) a pair of end shafts each attached to said solid core and generally spaced-apart from said thermal shield, one of said pair of end shafts having a cryogen transfer coupling.

5,548,169

MOTOR WITH BUILT-IN CAPACITOR

Takao Iwasa, and Takaji Kambayashi, both of Kashiwa, Japan, assignors to Oriental Motor Co., Ltd., Tokyo, Japan

Filed Feb. 22, 1995, Ser. No. 392,163
Claims priority, application Japan, Feb. 22, 1994, 6-022980
Int. Cl.[6] H02K *11/00*
U.S. Cl. 310—72 **2 Claims**



1. A motor with a built-in capacitor which is started by means of said capacitor and operates together with said capacitor at least during starting of the motor, wherein said capacitor is formed into a ring so that a shaft of said motor penetrates a central aperture of said capacitor and said capacitor is disposed within said motor so that the shaft of said motor penetrates the central aperture, and

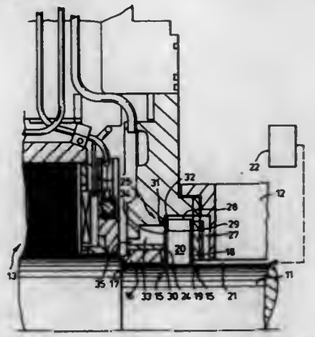
wherein said capacitor is disposed at an inner side of a case of said motor so that a radially inner surface of said capacitor which defines the periphery of said central aperture is in contact with an outer periphery of a bearing of said motor.

5,548,170

VIBRATION DAMPING ARRANGEMENT

Richard R. Shultz, Groton, Conn., assignor to Glacier RPB Inc., Mystic, Conn.

Filed Jul. 13, 1994, Ser. No. 274,432
Int. Cl.[6] H02K *7/09*; **F16C** *32/06*
U.S. Cl. 310—90.5 **15 Claims**



1. An axial thrust vibration damping arrangement for a rotor shaft rotatable within a housing,

VOL 1189 ISS 3 AG 2 U 19 96 UMI

said damping arrangement comprising at least one radially extending thrust face fixed with respect to the rotor shaft and facing along the axis of the shaft,

a gas supply arranged to feed gas to impinge upon said thrust face and flow in a radial direction along a face gap between said thrust face and the housing,

said face gap including adjacent the upstream entrance thereto a gas flow restrictor extending between the housing and thrust face, whereby the area of the gap entrance is a function of the axial position of the thrust face and shaft with respect to the housing, and, downstream of said gas flow restrictor,

(a) chamber means, comprising at least one chamber, opening at a chamber neck into said face gap adjacent the thrust face and

(b) exhaust passage means, comprising at least one passage, having a cross-section greater than the maximum area of gap entrance at the gas flow restrictor, extending from the chamber means to downstream of the face gap,

said gas supply being arranged to feed gas at such rate as to create a positive pressure within the chamber means to exert an axial thrust on the thrust face related to the neck area of the chamber means,

said gap entrance being varied by axial vibrational reciprocation of the thrust face, induced by disturbances of the shaft, to create a variation in said positive pressure within the chamber means advanced in phase with respect to the variation of shaft position within a predetermined frequency range to effect a corresponding variation in axial thrust on said thrust face to effect damping of the shaft reciprocation.

5,548,171

DIRECT-CURRENT MOTOR

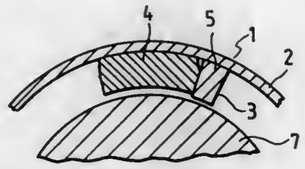
Yoshihiro Ogawa; Keisaku Zenmei, and Shuzo Isozumi, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 9, 1995, Ser. No. 385,840

Claims priority, application Japan, Sep. 16, 1994, 6-221812

Int. Cl.[6] H02K *21/26*

U.S. Cl. 310—154 **4 Claims**



1. A direct-current motor comprising:

a main magnetic pole having an axial length of Lm, inclusive of an axial length Ln of a straight section, the main magnetic pole having corner portions which are respectively located at both ends of the straight section; and

an armature core having an axial length Lc which is shorter than the axial length Lm of the main magnetic pole, which is rotatably supported opposite to the main magnetic pole;

wherein said corner portions are formed so that a relation between the axial length Ln of the straight section of the main magnetic pole and the axial length Lc of the armature core satisfies 1.15 Lc>Ln≧Lc.

5,548,172

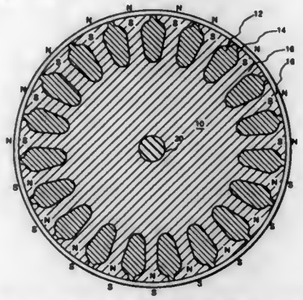
PERMANENT MAGNET LINE START MOTOR HAVING MAGNETS OUTSIDE THE STARTING CAGE

Gerald B. Kliman, Schenectady; Mark A. Preston, Niskayuna, and Donald W. Jones, Burnt Hills, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 228,784, Apr. 18, 1994, abandoned. This application Oct. 27, 1995, Ser. No. 537,500

Int. Cl.[6] H02K *21/12*

U.S. Cl. 310—156 **10 Claims**



1. A rotor for use in a line start permanent magnet motor, comprising:

a rotor core having a shaft and including teeth defining slots;

a rotor cage, at least a portion of which extends through said slots; and

a layer of permanent magnet material at least partially coating said core and comprising molded NdFeB composite material.

5,548,173

SWITCHED RELUCTANCE MOTORS

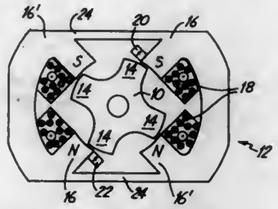
John M. Stephenson, Leeds, England, assignor to Switched Reluctance Drives Limited, Leeds, England

Continuation of Ser. No. 163,171, Dec. 7, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 479,793

Claims priority, application United Kingdom, Dec. 10, 1992, 9225846

Int. Cl.[6] H02K *37/02*

U.S. Cl. 310--181 **15 Claims**



1. A switched reluctance motor comprising:

(a) a stator defining working stator poles and having at least one stator winding, each stator winding for energizing a plurality of working stator poles;

(b) a rotor defining working rotor poles, rotational movement of the rotor in an angular direction being influenced by the working stator poles according to energization of the at least one stator winding such that energization of the at least one stator winding causes energization of each working stator pole to promote movement of the rotor;

(c) magnetizable means, attached to at least one host pole selected from the group consisting of the working stator poles and the working rotor poles, the magnetizable means being positioned to influence a rest position of the rotor when the at least one stator winding is not energized to maintain the rotor in a non-zero starting-torque position relative to the stator, the magnetizable means extending from said at least one host pole in an angular direction parallel to the angular direction of rotation of the rotor, the magnetizable means and said at least one host pole both being disposed in a common plane that is coplanar with or parallel to a plane of rotation of the rotor.

5,548,174

STEEL ROTOR SHAFTS OF ELECTRIC MACHINES

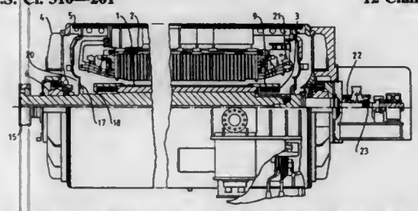
Masao Siga, Hitachi; Mitso Kuriyama, Ibaraki; Takanobu Mori, Hitachi; Yutaka Fukui, Hitachi, and Tatsuro Ishizuka, Hitachi, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 160,651, Dec. 2, 1993, Pat. No. 5,437,742, which is a continuation of Ser. No. 852,567, Mar. 17, 1992, Pat. No. 5,288,455. This application Feb. 15, 1995, Ser. No. 388,797

Claims priority, application Japan, Mar. 20, 1991, 3-057087

Int. Cl.[6] H02K *16/00*

U.S. Cl. 310—261 **12 Claims**



1. A rotor shaft of an electric rotary machine of large capacity, said rotor shaft including a body portion having a slot in which to embed a coil in an axial direction, and a flange portion for transmitting and receiving power,

wherein said body portion of said shaft has a diameter of more than 1 m and a length of 5.5 to 6.5 times the diameter of said body.

5,548,175

VIBRATION DRIVEN MOTOR

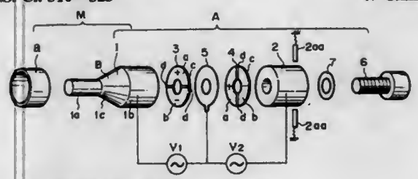
Jun Tamai, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 126,028, Sep. 24, 1993, abandoned, which is a continuation of Ser. No. 858,437, Mar. 24, 1992, abandoned, which is a continuation of Ser. No. 533,534, Jun. 5, 1990, abandoned. This application Apr. 6, 1995, Ser. No. 417,843

Claims priority, application Japan, Jun. 5, 1989, 1-142339

Int. Cl.[6] H02N *2/12*

U.S. Cl. 310—323 **47 Claims**



1. A vibration driven motor, comprising:

a bar-like vibration member;

a first two-section electro-mechanical energy conversion member, including a first section having a first polarity and a second section having a polarity opposite the first polarity, said energy conversion member being fixed functionally to said bar-like vibration member;

a second two-section electro-mechanical energy conversion member, including a first section having a first polarity and a second section having a polarity opposite the first polarity, said second energy conversion member being stacked with said first electro-mechanical energy conversion member, arranged with a spatial phase shift of substantially 90° relative to said first energy conversion member, and being fixed functionally to said bar-like vibration member;

a circuit for generating first and second electrical signals to be applied to said first and second electro-mechanical energy conversion members, respectively, including a common electrode member disposed between said first energy conversion member and said second energy conversion member such that a common electrical potential is applied to said common electrode member, wherein said first energy conversion member generates a first bending vibration having a first direction in said bar-like vibration member in response to the first applied electrical signal and said second energy conversion member generates a second bending vibration having a second direction different from the first direction in response to the second applied electrical signal, whereby a combined vibration of the first bending vibration and the second bending vibration is caused in said bar-like vibration member; and

a contact member contactable to said vibration member and having a center of rotation that is coaxial with said vibration member, said contact member being driven by frictional contact with said vibration member caused by the combined vibration in said vibration member.

5,548,176

ULTRASONIC MOTOR AND ULTRASONIC CONVEYING DEVICE

Takahiro Oda, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

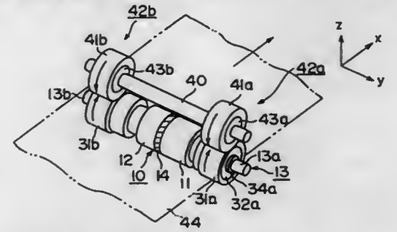
PCT No. PCT/JP94/00173, § 371 Date Sep. 22, 1994, § 102(e) Date Sep. 22, 1994, PCT Pub. No. WO94/18750, PCT Pub. Date Aug. 18, 1994

PCT Filed Feb. 4, 1994, Ser. No. 302,929

Claims priority, application Japan, Feb. 5, 1993, 5-018604

Int. Cl.[6] H02N *2/00*

U.S. Cl. 310—328 **9 Claims**



1. An ultrasonic motor, comprising:

a stepped cylindrical elastic body, said body having opposite ends, a center and attachment portions located on either side of and adjacent to said center of said stepped cylindrical elastic body, wherein said opposite ends comprise respective fixing portions, wherein said attachment portions have diameters larger than the diameters of said opposite ends and wherein said stepped cylindrical body is supported at said fixing portions;

an electro-mechanical energy transducer element fixed to said stepped cylindrical elastic body for generating modes of vibration in a plurality of planes;

a pair of cylindrical elastic bodies clamping said electro-mechanical energy transducer element therebetween, said pair of cylindrical elastic bodies having free ends and being fixed to said stepped cylindrical elastic body by said attachment portions;

means for applying to said electro-mechanical energy transducer element a plurality of alternating voltages that are different

from one another by a predetermined phase to thereby generate vibration at said free ends of said cylindrical elastic bodies; and

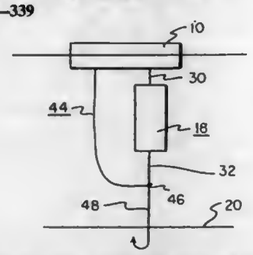
driving rollers pressed on said free ends of said cylindrical elastic bodies so as to be driven to rotate by vibration generated at said free ends.

5,548,177

PIEZOELECTRIC GENERATOR PROTECTION

Charles B. Carroll, W. Windsor Tsp., N.J., assignor to Ocean Power Technologies, Inc, Trenton, N.J.

Filed Feb. 14, 1995, Ser. No. 388,559
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—339 **12 Claims**



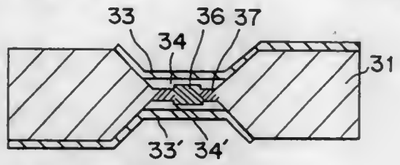
1. A piezoelectric power generating system for use in a body of water overlying a floor, the system comprising a float for vertical movements in response to passing waves on the surface of the water body, a piezoelectric power generating element for being suspended between said float and said floor and subject to vertical stresses caused by said float in response to passing waves tending to lift said float, and protective means for absorbing float caused vertical stresses for preventing straining of said element in excess of a preselected amount.

5,548,178

PIEZOELECTRIC VIBRATOR AND MANUFACTURING METHOD THEREOF

Kazuo Eda, Nara, and Takashi Nagata, Ikeda, both of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 87,041, Jul. 7, 1993, abandoned. This application Apr. 19, 1995, Ser. No. 424,648
Claims priority, application Japan, Jul. 8, 1992, 4-180856
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—349 **17 Claims**



1. A piezoelectric vibrator comprising:

a piezoelectric plate made of quartz and including a vibration portion and an electrode-supporting portion;

a pair of electrodes supported directly on said electrode-supporting portion of said piezoelectric plate on opposite sides of said piezoelectric plate;

wherein said electrodes are separated from said vibration portion of said piezoelectric plate such that gaps are formed on opposite sides of said vibration portion of said piezoelectric plate between said vibration portion of said piezoelectric plate and said electrodes, respectively;

wherein said electrode-supporting portion includes a thick portion having a thickness greater than a thickness of said vibration portion;

wherein said electrode-supporting portion further includes a transition portion integrally connecting between said thick portion and said vibration portion, said transition portion gradually narrowing from said thick portion to said vibration portion; and

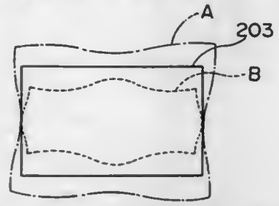
wherein said electrodes are supported directly on said transition portion of said electrode-supporting portion so as to span across said vibration portion with said gaps formed between said vibration portion and said electrodes, respectively.

5,548,179

CHIP-TYPE PIEZOELECTRIC RESONANCE COMPONENT

Hiroaki Kaida, Tonami, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Jun. 1, 1995, Ser. No. 459,185
Claims priority, application Japan, Oct. 17, 1994, 6-250409
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—367 **19 Claims**



1. A chip-type piezoelectric resonance component comprising:

a base substrate;

a piezo-resonator being directly or indirectly fixed onto said base substrate and provided with a piezoelectric resonance part having a rectangular sectional shape with pairs of shorter and longer sides at a ratio being set in the range of ±10% about a value satisfying the following equation:

$$b/a=n(-1.47\sigma+1.88) \quad (1)$$

(n: integer)

assuming that a and b represent the lengths of said shorter and longer sides respectively and σ represents the Poisson's ratio of the material forming said piezo-resonator; and

a cap member being fixed to said base substrate to enclose said piezo-resonator being fixed onto said base substrate.

5,548,180

VIBRATOR RESONATOR AND RESONANCE COMPONENT UTILIZING WIDTH EXPANSION MODE

Hiroaki Kaida, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

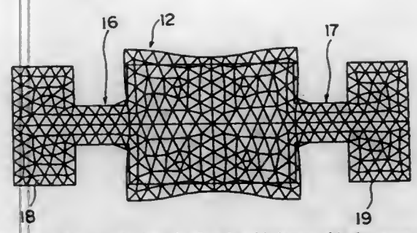
Continuation of Ser. No. 227,607, Apr. 14, 1994, abandoned. This application Sep. 6, 1995, Ser. No. 524,052
Claims priority, application Japan, Apr. 14, 1993, 5-087473; Sep. 28, 1993, 5-241747; Oct. 21, 1993, 5-263769
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—367 **20 Claims**

1. A vibrator of generally rectangular section for vibrating in a width-expansion vibration mode, the vibrator comprising:

a pair of shorter sides and a pair of longer sides,

a ratio b/a of a length of each said longer side to a length of each said shorter side being within a range of ±10% of the value:

$$[b/a=]n(-1.47\sigma+1.88) \quad (1)$$



where a represents the length of each said shorter side, b represents the length of each said longer side, σ represents the Poisson's ratio of a material forming said vibrator, and n represents an integer,

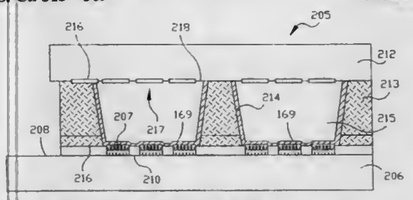
wherein when an electric charge is applied thereto a width-expansion vibration is generated in the vibrator with nodal points of vibration at respective central points of the shorter sides of the vibrator.

5,548,181

FIELD EMISSION DEVICE COMPRISING DIELECTRIC OVERLAYER

Gary W. Jones, Raleigh, N.C., assignor to FED Corporation, Hopewell Junction, N.Y.

Division of Ser. No. 29,880, Mar. 11, 1993. This application Jun. 5, 1995, Ser. No. 461,416
Int. Cl.[6] H01J *1/88*
U.S. Cl. 313—309 **3 Claims**



1. A field emission device, comprising:

a dielectric spacer frame to separate two separate plates, one plate including an electron emitter structure having offset anode and gate or emitter plate patterns, and the other plate being a phosphor plate, in which the spacer frame is sealed to the plates to from a vacuum-tight perimeter; and

a field emitter element, having anode structure and light emitting means, disposed on a substrate and overlyingly surrounded by a gate electrode structure; wherein

the gate electrode structure constitutes a part of a gate structure including gate metal lines, with an overlayer dielectric deposited on the gate metal lines to reduce voltage arc susceptibility and pickup of extraneous electrons by the gate metal; and

a getter material film deposited on the overlayer dielectric.

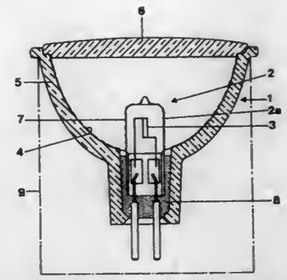
5,548,182

REFLECTOR LAMP SPECIFICALLY ADAPTED FOR COMBINATION WITH A REFLECTOR LAMP-LAMP LUMINAIRE OR FIXTURE

Axel Bunk, Munich; Ruediger Klam, Eichstaett; Elmar Ender, Augsburg, and Frank Gloeckler, Eichstaett, all of, Germany, assignors to Patent-Treuhand-Gesellschaft F. Elektrische Gluehlampen MBH, Muuich, Germany

Filed Jan. 17, 1995, Ser. No. 373,647
Claims priority, application Germany, Jan. 18, 1994, 44 01 270.5
Int. Cl.[6] H01K *1/32*
U.S. Cl. 313—113 **20 Claims**

1. A reflector lamp, having



a halogen incandescent lamp (**2**, **10**) having a filament (**3**) forming a source of light and radiant heat in form of infrared radiation, and a lamp bulb (**2***a*, **13**) transmitting visible light and emitting at least a portion of said radiant heat,

comprising,

a reflector (**4**) which reflects both visible light as well as at least a substantial proportion of infrared radiation, said reflector defining a lamp axis, said lamp (**2**, **10**) being located within the reflector and having the filament (**3**) located in the focal area of the reflector; and

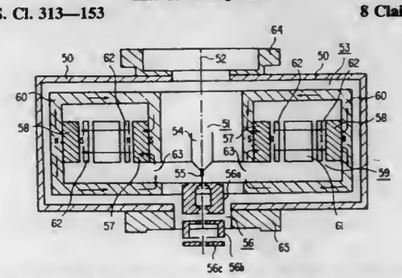
means in the path of said radiant heat from the filament to the reflector (**4**) for so influencing the infrared radiation generated by the filament so that it is diffusely emitted from the entire surface of the bulb.

5,548,183

MAGNETIC FIELD IMMERSION TYPE ELECTRON GUN

Motosuke Miyoshi, Tokyo, Japan; Katsuya Okumura, Poughkeepsie, N.Y., and Yuichiro Yamazaki, Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 27, 1994, Ser. No. 364,747
Claims priority, application Japan, Dec. 27, 1993, 5-331638
Int. Cl.[6] H01J *3/20*
U.S. Cl. 313—153 **8 Claims**



1. A magnetic field immersion type electron gun for controlling an electron beam by an electric field lens and a magnetic field lens in combination, comprising:

an electron gun body for emitting the electron beam;

an electric field lens system disposed under said electron gun body, for forming the electric field lens to control the electron beam emitted by said electron gun body; and

a coaxial ion pump including:

a cylindrical anode and at least one cathode;

a pair of cylindrical permanent magnets disposed coaxially with an optical axis of said electron gun body in such a way as to sandwich said cylindrical anode and cathode therebetween and magnetized in a mutually opposing direction; and

a hollow cylindrical yoke disposed also coaxially with the optical axis thereof in such a way as to enclose said two permanent magnets within a hollow portion thereof, said hollow cylindrical yoke being formed with an annular yoke gap in a radially inner circumferential surface thereof to

leak out a magnetic flux flowing through said hollow cylindrical yoke toward the optical axis thereof so that a magnetic field lens can be formed and further superimposed upon the electric field lens formed by said electric field lens system.

5,548,184

OXIDE CATHODE EMPLOYING BA EVAPORATION RESTRAINING LAYER

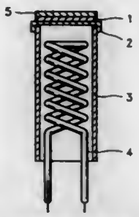
Kwi-seok Choi, Seoul; Jong-seo Choi, Anyang; Kyung-cheon Shon, Suwon; Gyu-nam Ju, Seoul, and Sang-won Lee, Kunpo, all of, Rep. of Korea, assignors to Samsung Display Devices Co., Ltd., Kyungki-do, Rep. of Korea

Continuation of Ser. No. 164,552, Dec. 10, 1993, abandoned. This application Aug. 7, 1995, Ser. No. 511,838

Claims priority, application Rep. of Korea, Aug. 23, 1993, 93-16347

Int. Cl.[6] H01J *1/14;19/06*

U.S. Cl. 313—346 R **10 Claims**



1. An oxide cathode comprising a metal base, an electron emissive material layer formed on said metal base and including barium as a main component, a heater for heating said electron emissive material layer, and a Ba evaporation restraining layer having a thickness ranging from 10Å to 10,000Å and consisting of at least one titanium compound formed on said electron emissive material layer.

5,548,185

TRIODE STRUCTURE FLAT PANEL DISPLAY EMPLOYING FLAT FIELD EMISSION CATHODE

Nalin Kumar, Austin, and Chenggang Xie, Cedar Park, both of Tex., assignors to Microelectronics and Computer Technology Corporation, Austin, Tex.

Continuation of Ser. No. 993,863, Dec. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 851,701, Mar. 16, 1992, abandoned. This application Jun. 2, 1995, Ser. No. 458,854

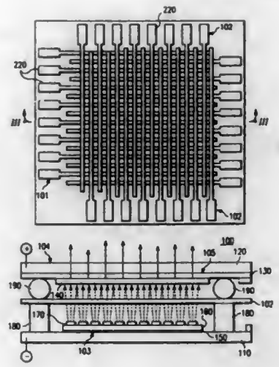
Int. Cl.[6] H01J *19/24*

U.S. Cl. 313—495 **43 Claims**

41. A flat panel display, comprising:

a plurality of corresponding light-emitting anodes and field-emission cathodes, each of said anodes emitting light in response to electron emission from each of said corresponding cathodes, each of said cathodes including a layer of low work function material having a relatively flat emission surface comprising a plurality of distributed localized electron emission sites, wherein said layer of low work function material is amorphic diamond film; and

a grid assembly positioned between said corresponding anodes and cathodes to thereby control emission levels to said anodes from said corresponding cathodes.



5,548,186

BUS ELECTRODE FOR USE IN A PLASMA DISPLAY PANEL

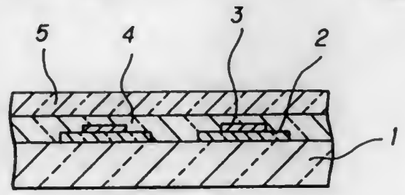
Tatsuki Ota, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 6, 1994, Ser. No. 300,804

Claims priority, application Japan, Sep. 6, 1993, 5-220745

Int. Cl.[6] H01J *17/49*

U.S. Cl. 313—583 **4 Claims**



(FIRED)

1. A bus electrode for use in a plasma display panel, comprising:

a transparent electrode formed on a glass substrate;

a thick film conductive paste electrode on said transparent electrode;

a thick film paste first dielectric layer covering said transparent electrode and said thick film conductive paste electrode, said first dielectric layer comprising a low melting point glass as its main component; and

a second dielectric layer formed over said first dielectric layer, said second dielectric layer comprising a low melting point glass having a softening point lower than that of said low melting point glass of said first dielectric layer.

5,548,187

METHOD OF FLICKER-FREE LIGHTING HOT-CATHODE LOW-PRESSURE RARE GAS DISCHARGE LAMP

Takashi Osawa, Kakegawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, and Osram-Melco Limited, Kanagawa, both of, Japan

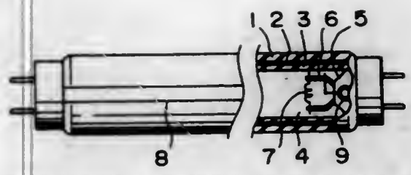
Filed Feb. 15, 1995, Ser. No. 388,842

Claims priority, application Japan, Mar. 30, 1994, 6-060673

Int. Cl.[6] H05B *39/00*

U.S. Cl. 315—94 **1 Claim**

1. A method of lighting a hot cathode low pressure rare gas discharge lamp including a glass tube containing a rare gas at a low pressure, and at least one cathode at an end of the glass tube, comprising:



passing a current I_L, in milliamperes, through the cathode in the glass tube of the discharge lamp and controlling a temperature T_c of the cathode so that when I_L is less than 55 milliamperes, T_c, in degrees centigrade, is less than (6.5 I_L+592.5), and when I_L is at least 55 milliamperes, T_c, in degrees centigrade, is less than (2 I_L+840) whereby flicker-free lighting of the discharge lamp is achieved.

5,548,188

APPARATUS AND METHOD FOR CONTROLLING ILLUMINATION OF LAMP

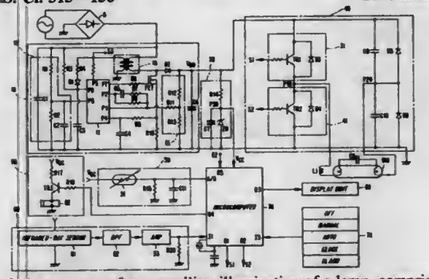
Eung-Hwa Lee, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Sep. 27, 1993, Ser. No. 126,779

Claims priority, application Rep. of Korea, Oct. 2, 1992, 92-18151; Oct. 16, 1992, 92-19057

Int. Cl.[6] H05B *37/02*

U.S. Cl. 315—156 **14 Claims**



1. An apparatus for controlling illumination of a lamp, comprising:

means for detecting an ambient illumination;

means for detecting an infrared-ray radiated from a body of the user to discriminate whether the user is present around the lamp and generating a signal indicative of presence of the user around the lamp in accordance with the detected result;

control means for comparing the detected ambient illumination from said illumination detecting means with an illumination preset therein and outputting a pair of first control signals and a second control signal in accordance with the compared result, each of the first control signals having a frequency which is varied according to the compared result, the second control signal having a first or second level according to the compared result, said control means discriminating in response to an output signal from said infrared-ray detecting means whether the user is present around the lamp and muting the output of the first control signals when the user is not present around the lamp as a result of the discrimination, so as to turn off the lamp;

means for rectifying a commercial AC voltage into a DC voltage;

power factor enhancing means having a smoothing capacitor charged with the DC voltage from said rectifying means, a switching signal generator enabled in response to the second control signal of the first level from said control means and disabled in response to the second control signal of the second level from said control means, for generating a switching signal when the voltage charged on said smoothing capacitor is out of phase with a drive current discharged from said smoothing capacitor to the lamp, a switching device driven in response to the switching signal from said switching signal generator and a transformer for generating a high voltage when said switching device is driven, said power factor enhancing means allowing the charged voltage on said smoothing capacitor and the drive current discharged therefrom to the lamp to be in phase with each other; and

lamp driving means having a pair of switching circuits for controlling the flow of the drive current from said smoothing capacitor in said power factor enhancing means to the lamp in response to the first control signals from said control means and a high voltage charging circuit charged with the drive current from said smoothing capacitor;

said control means outputting the first control signals of higher frequencies and the second control signal of the first level if it is discriminated that the preset illumination is higher than the detected ambient illumination from said illumination detecting means and outputting the first control signals of lower frequencies and the second control signal of the second level if it is discriminated that the preset illumination is lower than the detected ambient illumination from said illumination detecting means.

5,548,189

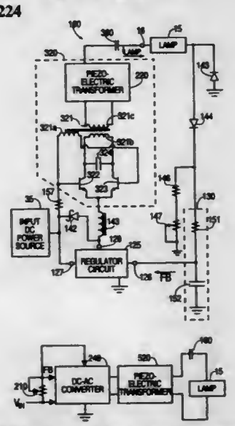
FLUORESCENT-LAMP EXCITATION CIRCUIT USING A PIEZOELECTRIC ACOUSTIC TRANSFORMER AND METHODS FOR USING SAME

James M. Williams, Palo Alto, Calif., assignor to Linear Technology Corp., Milpitas, Calif.

Continuation-in-part of Ser. No. 339,347, Nov. 14, 1994, which is a continuation of Ser. No. 43,152, Mar. 31, 1993, Pat. No. 5,408,162, which is a continuation of Ser. No. 857,734, Mar. 26, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 483,374

Int. Cl.[6] H05B *37/02*

U.S. Cl. 315—224 **36 Claims**



1. A circuit for operating a fluorescent lamp from a DC power source, the circuit comprising:

a regulator having an input coupled to the DC power source, an output, and a control terminal for receiving a feedback signal to control current produced at the output;

a DC-to-AC converter, having a ceramic transformer, coupled to the output of the regulator, for producing at an output terminal an AC signal sufficient to cause the fluorescent lamp to emit light; and

a monitoring element for monitoring a current indicative of current conducted by the fluorescent lamp and for generating a feedback signal indicative of current conducted by the

fluorescent lamp, the feedback signal being coupled to the regulator to cause the light emitted by the lamp to be regulated.

5,548,190

DEFLECTION YOKE AND CATHODE-RAY TUBE APPARATUS COMPRISING THE SAME

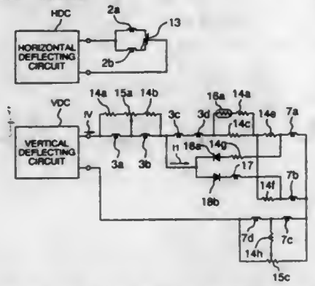
Nobutaka Okuyama; Soichi Sakurai; Kooji Fukuma, all of Yokohama; Hiroshi Yoshioka, Mobara; Masao Obara, Yokohama; Naoki Ito, Kitakami; Atsushi Takeyama, Odawara, and Yoshio Satoh, Chiba-ken, all of, Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Media Electronics Co., Ltd., Iwate-ken, both of, Japan

Filed Sep. 27, 1995, Ser. No. 533,994

Claims priority, application Japan, Sep. 28, 1994, 6-233328; Apr. 13, 1995, 7-088210

Int. Cl.[6] H01J *29/51;* **G09G** *1/28*

U.S. Cl. 315—368.26 **26 Claims**



1. A deflection yoke for use in a color cathode-ray tube having an electron gun for generating a multiplicity of electron beams in an inline array, comprising:

horizontal and vertical deflection coils; and

a main core,

wherein the vertical deflection coil is made up of at least a pair of saddle shaped coil halves each divided into at least 2 first and second coil parts, the first coil parts of the coil halves and the second coil parts thereof are connected respectively in series or in parallel, a subcore having a vertical auxiliary deflection coil is provided on a side of the electron gun, the vertical auxiliary deflection coil includes a first auxiliary coil for generating at least 4 polar magnetic field components and a second auxiliary coil for generating 4 polar magnetic field components directed opposite to the 4 polar magnetic field components of the first auxiliary coil, a series circuit of a first resistor and the first correction coil is connected in parallel to a series circuit of a second resistor and the second correction coil to form a parallel circuit, the parallel circuit is connected in series with the vertical deflection coil, and a shunt circuit is provided for shunting part of a vertical deflection current flowing through the second coil part of the coil halves when the vertical deflection current is equal to or higher than a constant value to cause a predetermined imbalance between currents flowing through the first and second correction coils according to the vertical deflection current.

5,548,191

VERTICAL DEFLECTION CIRCUIT FOR A TELEVISION RECEIVER

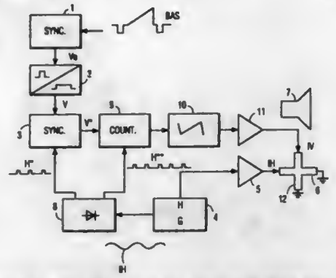
Gangolf Hirtz, Niederesrach, Germany, assignor to Deutsche Thomson-Brandt GmbH, Villigen-Schwenningen, Germany

Filed Jun. 16, 1993, Ser. No. 46,963

Claims priority, application Germany, May 4, 1992, 42 14 338.1

Int. Cl.[6] H01J *29/70;29/76*

U.S. Cl. 315—399 **9 Claims**



1. A vertical deflection circuit for a television apparatus having a horizontal deflection circuit of which is free-running and not synchronized by an input signal, a horizontal pulse being derived from a line deflection current of said horizontal deflection circuit, comprising:

means for deriving vertical pulses from a provided television signal and applying said vertical pulses to the vertical deflection circuit,

means for applying the horizontal pulse to a synchronizing inputs of the vertical deflection circuit so that the vertical deflection begins with a first horizontal pulse following an edge of one of the vertical pulses and ends in a pause preceding a next vertical pulse.

5,548,192

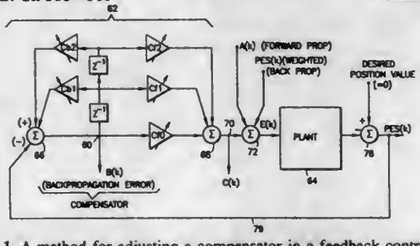
ADAPTIVE FEEDBACK SYSTEM FOR CONTROLLING HEAD/ARM POSITION IN A DISK DRIVE

D. Mitchel Hanks, Boise, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 14, 1995, Ser. No. 490,478

Int. Cl.[6] G05B *19/00*

U.S. Cl. 318—560 **7 Claims**



1. A method for adjusting a compensator in a feedback control system of a coupled plant, said compensator comprising an input summer, an output summer and first adjustable forward gain means for receiving signals from said input summer and providing signals to said output summer, at least one unit time segment delay means for receiving said signals from said input summer, at least second adjustable forward gain means for receiving signals from said at least one unit time segment delay means and for providing signals to said output summer, at least one adjustable back gain means for receiving signals from said at least one unit time segment delay means and for providing signals to said input summer, and an input to said input summer for receiving position error signals from an output of said plant, said method comprising the steps of:

a. deriving a plurality of forward error values from position error signals fed to said input summer from said plant in response to a disturbance of said plant, said position error signals determined at plural, increasingly forward, time segment values;

b. deriving a plurality of compensator output values from said output summer, said output values determined at said predetermined plural increasingly forward time segment values;

c. applying as an input to said plant, said derived forward error values in a back propagation order that is in reverse time order to a time order in which said forward error values were derived;

d. deriving plural back propagation error values in response to said applying of said derived forward error values in said back propagation order, said plural back propagation error values derived from output signals from said input summer; and

e. employing said plural back propagation error values, said compensator output values and said position error signals to derive altered compensator gain means values which enable a reduction of said forward error values.

5,548,193

ARM POSITION CONTROL DEVICE FOR USE IN AN INDUSTRIAL ROBOT

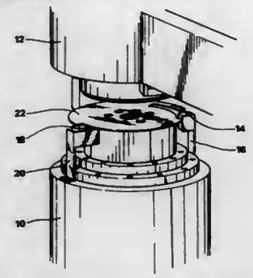
Kee S. Lee; Won G. Kim, and Yeong J. Park, all of Incheon, Rep. of Korea, assignors to Daewoo Heavy Industries Ltd., Incheon, Rep. of Korea

Filed Dec. 14, 1994, Ser. No. 355,775

Claims priority, application Rep. of Korea, Dec. 30, 1993, 93-31564

Int. Cl.[6] G05B *19/40*

U.S. Cl. 318—568.11 **6 Claims**



1. An arm position control device for use in an industrial robot including a cylindrical support body with a longitudinal axis and a rotary arm mounted on the support body for rotation within a permissible angular extent, the rotary arm having a rotational axis in alignment with the longitudinal axis of the support body, which comprises:

a home position sensor fixedly secured to the support body at a position of first radius from the longitudinal axis to detect a home position and direction of deviation from the home position of the rotary arm;

a limit sensor affixed to the support body at a position of second radius from the longitudinal axis in a diametrically opposing relationship with the home position sensor to detect undue rotation of the rotary arm beyond the permissible angular extent;

a sensor activator disk coaxially attached to the rotary arm for selectively interrupting and releasing the home position sensor and the limit sensor, the sensor activator disk having first and second radial flanks oppositely located along a diameter of the disk, a first sector extending from the first radial flank up to the second radial flank with a diameter enough to interrupt the home position sensor, a second sector provided at an opposite side of the first sector with a smaller diameter than the first sector to release the home position sensor, and an arcuate cutout provided radially inwardly of the first radial flank in an overlapping relationship with the first and second sectors to release the limit sensor as the rotary arm is caused to turn beyond the permissible angular extend; and

an arm actuator means operatively associated with the home position sensor and the limit sensor for causing the rotary arm to stop as the limit sensor is released and turn toward the home position in a first direction if the home position sensor remains interrupted with the limit sensor released and to turn toward the home position in a second direction if the home position sensor and the limit sensor are released.

5,548,194

CONTROL METHOD AND CONTROL DEVICE FOR A DEBURRING ROBOT

Masayuki Hamura, and Kenji Aztuma, both of Oshino-mura, Japan, assignors to Fanuc Ltd., Japan

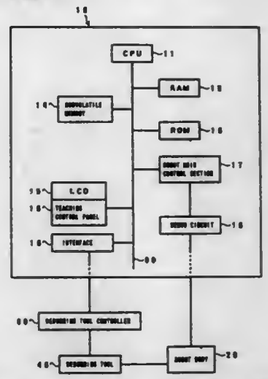
PCT No. PCT/JP94/00930, § 371 Date Feb. 7, 1995, § 102(e) Date Feb. 7, 1995, PCT Pub. No. WO94/29776, PCT Pub. Date Dec. 22, 1994

PCT Filed Jun. 8, 1994, Ser. No. 374,756

Claims priority, application Japan, Jun. 8, 1993, 5-163317

Int. Cl.[6] B25J *9/22*

U.S. Cl. 318—568.13 **20 Claims**



1. A method for controlling a deburring robot holding a deburring tool to successively move the deburring tool along a plurality of taught points of a workpiece as specified by a teaching program to remove burrs on the workpiece during a deburring operation, comprising the steps of:

(a) setting a relationship between a target moving speed of said deburring robot and a cutting resistance or pressing reaction of said deburring tool;

(b) monitoring a change in the cutting resistance or pressing reaction of said deburring tool during the deburring operation; and

(c) controlling an actual moving speed of said deburring robot to a speed corresponding to a value of the cutting resistance or pressing reaction of the deburring tool obtained by the monitoring step (b), based on the relationship.

5,548,195

COMPENSATED SERVO CONTROL STAGE POSITIONING APPARATUS

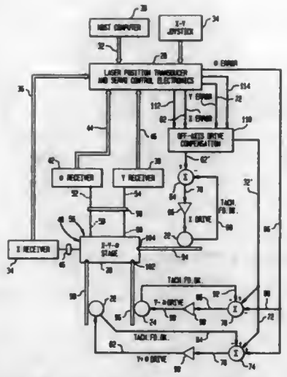
Samuel K. Doran, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1994, Ser. No. 362,676

Int. Cl.[6] G05D *11/08*

U.S. Cl. 318—568.19 **9 Claims**

1. A stage positioning apparatus including a stage and servo control system, said servo control system comprising:



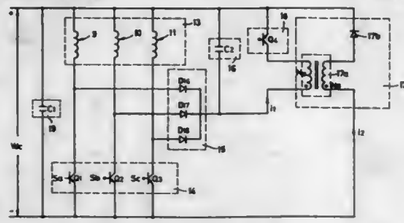
input means for selecting said stage's position;
monitoring means for monitoring and determining the stage's position;
means for generating a first error signal responsive to said selected stage position;
means for generating a second error signal responsive to said selected stage position; and
compensation means for offsetting said first error signal and said second error signal responsive to said determined position, said compensation means comprising:
means for determining a first voltage proportional to the cosine of a first drive bar angle with respect to a second direction of travel, and,
means for determining a second voltage proportional to the cosine of a second drive bar angle with respect to a first direction of travel.

5,548,196

SWITCHED RELUCTANCE MOTOR DRIVING CIRCUIT

Jun Y. Lim, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Feb. 28, 1994, Ser. No. 204,863
Claims priority, application Rep. of Korea, Feb. 27, 1993, 93-2876; Jan. 18, 1994, 94-843
Int. Cl.[6] H02P *7/05;* **H02K** *37/02*
U.S. Cl. 318—701 **19 Claims**



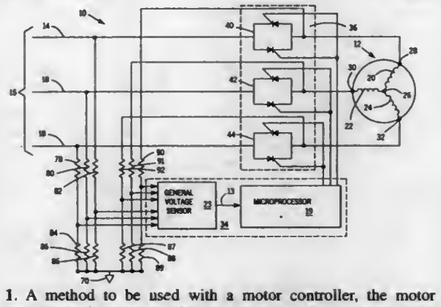
1. A switched reluctance motor driving circuit, comprising:
first switching means for performing switching operation by receiving a predetermined electric signal;
magnetic flux generating means for generating the magnetic flux according to the operation of the first switching means;
a diode array for transmitting the excitation current which flows through the magnetic flux generating means in one direction;
first energy storing means for accumulating the excitation current which passed through the diode array as electric energy;
energy conversion means for receiving the electric energy stored in the first energy storing means and converting it to magnetic energy;
second switching means for controlling the operation of the energy conversion means; and
second energy storing means for storing the output of the energy conversion means as electric energy;
wherein said first energy storing means comprise a capacitor; and
wherein said energy conversion means comprise an inductive coupling circuit and a diode.

5,548,197

METHOD AND APPARATUS FOR DETERMINING MOTOR SPEED USING ZERO CROSSING TIMES

Peter J. Unsworth, Lewis, England, and Yuan Wang, Shanghai, China, assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Sep. 28, 1994, Ser. No. 314,019
Int. Cl.[6] H02P *3/18*
U.S. Cl. 318—757 **15 Claims**



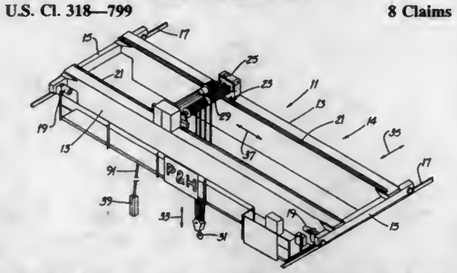
1. A method to be used with a motor controller, the motor controller providing stator winding currents at a frequency of X Hz and indicating zero crossing times when each current is zero, the controller also providing a sampling period, the motor being of a design having p poles, the method determining the speed of a motor rotor, the method comprising the steps of:
generating a plurality of error signals over the sampling period, each error signal indicating the deviation of consecutive current zero crossings from a constant interval, the plurality of error signals together forming an error signal sequence; and
analyzing the error signal sequence to determine an error signal sequence spectrum, a region of interest within said spectrum comprising a back emf signal generated by said rotor.

5,548,198

SHARED INVERTER ELECTRICAL DRIVE SYSTEM

Jon E. Backstrand, Oak Creek, Wis., assignor to Harnischfeger Corporation, Brookfield, Wis.

Filed Sep. 30, 1994, Ser. No. 315,615
Int. Cl.[6] H02P *7/00*
U.S. Cl. 318—799 **8 Claims**



1. In a drive system for an overhead crane, such system having (a) a control section, (b) an adjustable frequency drive unit coupled

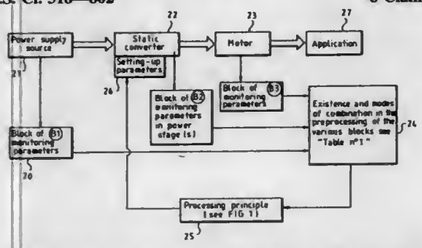
to the control section and providing electrical power, (c) a first motor powering a crane hoist, (d) a second motor providing horizontal motion, and (e) first and second multi-speed selection devices coupled to the control section and associated with the first and second motors, respectively, the improvement wherein:
the drive unit is connectable to the first motor or to the second motor and is the sole drive unit providing electrical power to the motors;
each motor is individually operable by a separate selection device;
the speed of the motor being powered is controlled by an operator manipulating one of the selection devices;
the system includes first and second electromagnetic lockout devices, each including an electrical contact; and
when the first motor is energized, the electrical contact of the first lockout device prevents energization of the second motor.

5,548,199

OPTIMAL POWER SUPPLY FOR AN ELECTRIC MOTOR

Francis Bidaud, Duclair; Sylvain Benoit, Artas; Jacques Plisson, Barentin; Gérard Morizot, Villingen; Harald Roth, Munchweller, and Adolf Huber, Bad Durrheim, all of, France, assignors to L'Unite Hermetique, La Verpilliere, France

Filed Dec. 28, 1993, Ser. No. 175,202
Claims priority, application France, Dec. 30, 1992, 92 15909
Int. Cl.[6] H02P *5/34*
U.S. Cl. 318—802 **8 Claims**



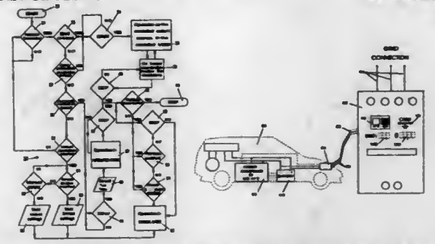
1. A method for supplying optimal power to an inductive-type load coupled to an application when the load is driven by a static converter controlled by an electronic module, said method comprising the steps of:
monitoring measurable physical parameters of at least one of said load, said static converter and a power supply source;
performing at least one of weighting and combining said physical parameters and providing a measurement of the direction of variation, around an extreme, corresponding to a minimum power absorbed by said load;
providing a number of set parameters applied to said converter which set parameters are a function of said direction of variation, around an extreme, corresponding to said minimum power absorbed by said load;
wherein said set parameters are changed on the basis of movement of said load from one operating point to another operating point whereby, if the change in the frequency of a voltage delivered to said load is negative, said change in the frequency is applied first and then said voltage is modified and, if the change in frequency is positive then the voltage is modified followed by modification of the frequency of the voltage.

5,548,200

UNIVERSAL CHARGING STATION AND METHOD FOR CHARGING ELECTRIC VEHICLE BATTERIES

Jiri K. Nor, Oakville, and Josef V. Soltys, Mississauga, both of, Canada, assignors to Norvik Traction Inc., Mississauga, Canada

Filed Jul. 6, 1994, Ser. No. 275,878
Int. Cl.[6] H02J *7/04*
U.S. Cl. 320—27 **20 Claims**



1. A method of charging a battery for an electric vehicle, where the battery is capable of accepting initial charging current at a rate greater than 1C, and where a charging station from which the charging current is delivered to the battery is capable of delivering that charging current at a preset voltage which is suitable for the battery being charged; wherein said method comprises the steps of:
(a) establishing a connection of lines between the battery to be charged and the charging station, including at least two wires capable of carrying the maximum value of charging current to be delivered, and further communication means capable of transferring data concerning the state of charge of the battery being charged between the battery and the charging station;
(b) interrogating the vehicle over said communication means to determine if there is present and associated with said battery in said vehicle a battery specific charging control module, or if there exists in said vehicle a personality module which identifies at least the criteria of maximum charging current and nominal charging voltage under which conditions the battery may by charged in the shortest possible time period; or in the absence of a battery specific charging module associated with said battery or a personality module which identifies at least the criteria of maximum charging current and nominal charging voltage under which conditions the battery may by charged in the shortest possible time period, to determine if there exists in said vehicle at least monitoring means to determine the value of terminal voltage of the battery being charged;
(c) in the event that a battery specific charging control module is present in said vehicle, charging said battery by delivering charging current thereto under the control of said battery specific charging control module, stopping the delivery of charging current to said battery in keeping with a signal to do so issued by said battery specific charging control module, and subsequently disconnecting the battery from said charging station; or
(d) in the event that a personality module which at least identifies the maximum charging current and nominal charging voltage is present in said vehicle, charging said battery by delivering charging current thereto initially at said maximum charging current and nominal charging voltage, periodically halting the delivery of charging current and determining the instantaneous resistance free terminal voltage of said battery during each interval of time when delivery of charging current has been halted and comparing said instantaneous resistance free terminal voltage to a reference voltage stored in a charge control module which is present in said charging station, reducing the charging current under control of said charge control module present in said charging station, stopping the delivery of charging current to said battery in keeping with a signal issued by said charge control module present in said charging station, and subsequently disconnecting the battery from said charging station; or

(e) in the event that there at least exists in said vehicle a monitoring means to determine the value of the terminal voltage of the battery being charged, presetting the charge station to predetermined allowable values of nominal charging voltage and maximum charging current and presetting a maximum value of charging energy to be permitted to be delivered to said battery, periodically halting the delivery of charging current and determining the instantaneous resistance free terminal voltage of said battery during each interval of time wben delivery of the charging current has been halted and comparing said instantaneous resistance free terminal voltage to a reference voltage stored in a charge control module which is present in said charging station, reducing the charging current under control of said charge control module present in said charging station, stopping the delivery of charging current to said battery in keeping with a signal issued by said charge control module present in said charging station or wben said preset maximum value of charging energy has been delivered to said battery, and subsequently disconnecting the battery from said charging station;

wherein, in each of steps (c), (d), and (e), the signal to stop delivery of charging current, and data which is indicative of the instantaneous terminal voltage of said battery, are transferred between said battery and said charging station over said communication means.

10. A charging station for charging a battery for an electric vehicle, where the battery is capable of accepting initial charging current at a rate greater than 1C, and where said charging station is capable of delivering that charging current at a preset voltage which is suitable for the battery being charged, comprising:

at least two wires capable of carrying the maximum value of charging current to be delivered to said battery, and communication means capable of transferring data concerning the state of charge of said battery being charged between the battery and the charging station;

means for interrogating the vehicle over said communication means to determine if there is present and associated with said battery in said vehicle a battery specific charging control module, or to determine if there exists in said vehicle a personality module which identifies at least the criteria of maximum charging current and nominal charging voltage under which conditions the battery may be charged in the shortest possible time period; or in the absence of a battery specific charging module associated with said battery or a personality module which identifies at least the criteria of maximum charging current and nominal charging voltage under which conditions the battery may by charged in the shortest possible time period, to determine if there exists in said vehicle at least monitoring means to determine the value of terminal voltage of the battery being charged;

means for charging said battery by delivering charging current thereto under the control of a battery specific charging control module in said vehicle in the event that a battery specific charging control module is present in said vehicle, and means for stopping the delivery of charging current to said battery in keeping with a signal to do so issued by said battery specific charging control module;

means for charging said battery by delivering charging current thereto, initially at a maximum charging current and a nominal charging voltage in the event that a personality module which at least identifies the maximum charging current and nominal charging voltage is present, means for periodically halting the delivery of charging current and determining the instantaneous resistance free terminal voltage of said battery during each interval of time when delivery of charging current has been halted, means for comparing said instantaneous resistance free terminal voltage to a reference voltage stored in a charge control module which is present in said charging station, means for reducing the charging current under control of said charge control module present in said charging station, and means for stopping the delivery of charging current to said battery in keeping with a signal issued by said charge control module present in said charging station; and

means for presetting the charge station to predetermined allowable values of nominal charging voltage and maximum charging current in the event that there at least exists in said vehicle monitoring means to determine the value of the terminal voltage of the battery being charged, means for presetting a maximum value of charging energy to be permitted to be delivered to said battery, means for periodically halting the delivery of charging current, means for determining the instantaneous resistance free terminal voltage of said battery during each interval of time when delivery of the charging current has been halted, means for comparing said instantaneous resistance free terminal voltage to a reference voltage stored in a charge control module which is present in said charging station, means for reducing the charging current under control of said charge control module present in said charging station, and means for stopping the delivery of charging current to said battery in keeping with a signal issued by said charge control module present in said charging station or when said preset maximum value of charging energy has been delivered to said battery;

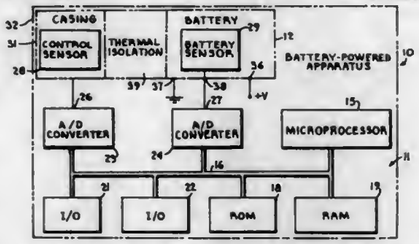
wherein the signal to stop delivery of charging current, and data which is indicative of the instantaneous terminal voltage of said battery, are transferred between said battery and said charging station over said communication means.

5,548,201

BATTERY CHARGING METHOD AND APPARATUS WITH THERMAL MASS EQUALIZATION

Robert J. Grabon, Cedar Rapids, Iowa, assignor to Norand Corporation, Cedar Rapids, Iowa

Filed Sep. 13, 1994, Ser. No. 304,989
Int. Cl.[6] H02J *7/04*
U.S. Cl. 320—35 **8 Claims**



1. A method of charging a battery including detection of an onset of an overcharge phase of a battery charging cycle, the method comprising:

prior to charging the battery, periodically measuring the temperature of the battery with a first temperature sensor and measuring the change in temperature of the battery's environment to determine a characteristic delay in temperature change at the battery in response to a temperature change of the environment of the battery;

as the battery is being charged, monitoring the temperature of the environment of the battery having an external temperature effect on the battery to determine temperature changes occurring in the monitored temperature of the environment;

determining an anticipated temperature change at the battery in response to the monitored temperature changes of the environment of the battery by adjusting the temperature changes determined by the temperature monitoring step for the characteristic delay in temperature at the battery;

measuring the actual temperature change at the battery with a temperature sensor;

comparing the anticipated temperature change at the battery with the actual temperature change at the battery during said monitoring intervals to determine whether the actual temperature measured at the battery is increased over the anticipated temperature change at the battery indicating an onset of an overcharge phase of the battery charging cycle; and

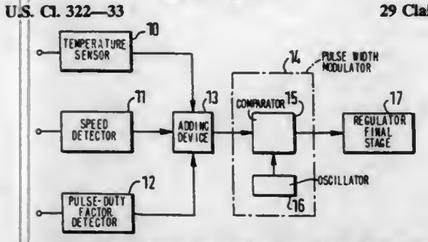
discontinuing charging of the battery.

5,548,202

REGULATABLE ALTERNATING DEVICE WITH MEANS FOR DETERMINING FINAL TEMPERATURE

Günter Schramm, Vaihingen-Enzweihingen; Walter Kohl, Bietigheim; Friedhelm Meyer, Illingen; Rainer Mittag, Kornwestheim, and Helmut Suelzle, Benningen, all of, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE92/00985, § 371 Date Aug. 18, 1993, § 102(e) Date Aug. 18, 1993, PCT Pub. No. WO93/12568, PCT Pub. Date Jun. 24, 1993
PCT Filed Nov. 26, 1992, Ser. No. 107,814
Claims priority, application Germany, Dec. 18, 1991, 41 41 837.9
Int. Cl.[6] H02J *7/14*
U.S. Cl. 322—33 **29 Claims**



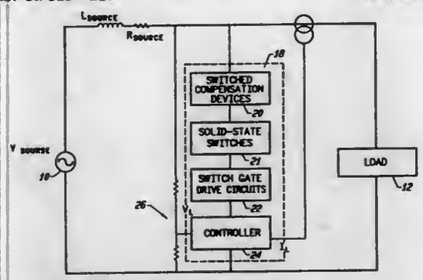
1. A regulatable alternating device, comprising an alternator having an exciter winding; a voltage regulator which includes means for regulating an output voltage of said alternator by influencing its exciter current and has means for detecting temperature of said voltage regulator; means for determining a final temperature of at least one predetermined component of the device, which final temperature occurs in stationary operation, and determining at least one of a temperature curve and an actual temperature of the component as a function of the final temperature and comparing it with the limiting temperature; and means for reducing the exciter current when at least one of a limiting temperature and a limiting temperature range is reached.

5,548,203

CAPACITOR POLARITY-BASED VAR CORRECTION CONTROLLER FOR RESONANT LINE CONDITIONS AND LARGE AMPLITUDE LINE HARMONICS

Ray S. Kemerer, and Martin J. Norman, both of Monroeville, Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jun. 29, 1994, Ser. No. 269,165
Int. Cl.[6] G05F *1/70*
U.S. Cl. 323—210 **20 Claims**



1. A static VAR compensator, comprising:

an output node connected to a power line carrying a power signal;

a reactive power compensation element connected to said output node, including

a compensating capacitor, and

a plurality of switching devices for selectively connecting said compensating capacitor to said output node for a predetermined compensation period, said predetermined compensation period being transformed into an incomplete compensation period under certain physical conditions;

a compensation assessment circuit connected to said reactive power compensation element; and

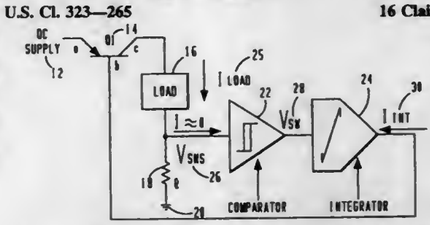
a controller connected to said compensation assessment circuit to identify said incomplete compensation period and to produce control signals for said plurality of switching devices of said reactive power compensation element such that said reactive power compensation element conditions said power signal to account for said incomplete compensation period.

5,548,204

LINEAR/SWITCHING REGULATOR CIRCUIT

Gene L. Armstrong, II, Garland, and David L. Freeman, Plano, both of Tex., assignors to Benchmarq Microelectronics, Dallas, Tex.

Filed Oct. 14, 1994, Ser. No. 323,035
Int. Cl.[6] G05F *1/575*
U.S. Cl. 323—265 **16 Claims**



1. A reconfigurable integrated circuit chip operable to be configured as either a linear regulator or a switching regulator, comprising:

an output terminal;

an input terminal for receiving a current sense signal indicating the level of current flow through an external load;

a converter for converting said current sense signal to a switched signal varying between first and second voltage levels at a repetitive rate that varies as a function of the current level through said external load as represented by said current sense signal, said switched signal output from said output terminal;

the reconfigurable integrated circuit chip configured as the linear regulator wherein a transconductance device having an input and an output and a control input connected between a DC supply and said external load and an integrator connected between said output terminal and said control input of said transconductance device for integrating said switched signal to provide a control current to said control input, the value of which controls the transconductance of said transconductance device; and

the reconfigurable integrated circuit chip configurable as the switching regulator wherein a gated switch is connected between said DC supply and a switching node, said gated switch gated by said switched signal output by said output terminal, said switched node connected to the cathode of a switching diode, the other side thereof connected to ground, and to one side of a switching inductance, the other side of said switching inductance connected to said load.

5,548,205

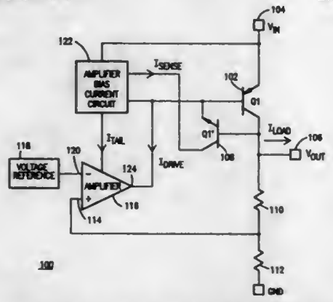
METHOD AND CIRCUIT FOR CONTROL OF SATURATION CURRENT IN VOLTAGE REGULATORS

Dennis M. Monticelli, Fremont, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 359,948, Dec. 20, 1994, abandoned, which is a continuation of Ser. No. 158,938, Nov. 24, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 480,958

Int. Cl.[6] G05F *1/44*

U.S. Cl. 323—274 **20 Claims**



20. A method of regulating the magnitude of current drawn by a voltage regulator from a voltage supply comprising the steps of:

coupling a voltage supply to a load through a vertical structure transistor formed within a substrate, the vertical structure transistor having an emitter, a base and a single collector, the emitter coupled to the voltage supply and the collector coupled to the load;

sensing a potential across the load, comparing the sensed potential to a reference potential, the reference potential representative of a desired potential, and generating a control signal from a control amplifier for controlling through the base of the vertical structure transistor, an amount of current flowing through the collector of the vertical structure transistor;

sensing saturation within the vertical structure transistor with a thermally coupled parasitic transistor, an emitter of the thermally coupled parasitic transistor also operating as the base of the vertical structure transistor, and in response to sensed saturation, rerouting at least a portion of the control signal; and

decreasing the total magnitude of the control signal in response to the rerouting of the signal by sensing the level of current flowing through a collector of the thermally coupled parasitic transistor, and in response to an increase in such level, decreasing a tail current fed to the control amplifier.

5,548,206

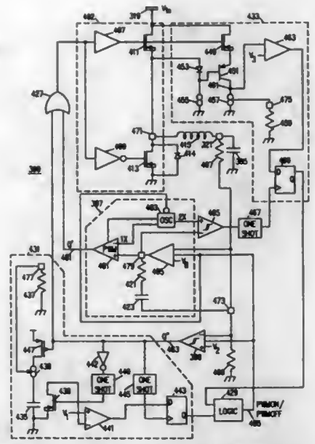
SYSTEM AND METHOD FOR DUAL MODE DC-PC POWER CONVERSION

David H. Soo, Sunnyville, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jun. 19, 1993, Ser. No. 130,092

Int. Cl.[6] G05F *1/40*

U.S. Cl. 323—284 **30 Claims**



17. A dual-mode power supply for a battery operated device having a first mode of operation for use during low current load and a second mode of operation for use during high current load, the dual-mode power supply comprising:

a first power MOSFET having a gate, a drain and a source wherein a voltage applied to said gate causes current to pass from said drain to said source;

a low-pass filter including an inductor connected to said power MOSFET and a capacitor connected to said inductor;

a PWM switch control circuit connected to said first power MOSFET and including:

a PWM connected to said power MOSFET and operable to switch said power MOSFET between an on state and an off state; and

an error amplifier connected to said PWM and operable to compare a voltage output from said low-pass filter to a reference voltage, said error amplifier being operable to control said PWM such that the voltage output from said low-pass filter is substantially equal to said reference voltage;

a hysteretic switch control circuit connected to said power MOSFET such that the output voltage from said low-pass filter remains within a predefined voltage range;

a sleep-out circuit connected to said hysteretic switch control circuit for determining whether the current load exceeds a threshold for deactivating said hysteretic switch control circuit and reactivating said PWM switch control circuit;

a sleep-in circuit connected to said PWM switch control circuit for determining whether the current load is lower than a threshold for deactivating said PWM switch control circuit and reactivating said hysteretic switch control circuit; and

control logic connected to said sleep-out circuit, to said sleep-in circuit, to said PWM switch control circuit and to said hysteretic switch control circuit, said control logic being operable to turn on said PWM switch control circuit during high current load and operable to turn off said PWM switch control circuit during low current load, said control logic being operable to turn on said hysteretic switch control circuit during low current load and operable to turn off said hysteretic switch control circuit during high current load.

5,548,207

MISSING PHASE DETECTOR

Gerald L. Smith, Torrance, Calif., assignor to Magl Power Inc., Torrance, Calif.

Filed May 8, 1995, Ser. No. 437,295

Int. Cl.[6] G01R *1/04*

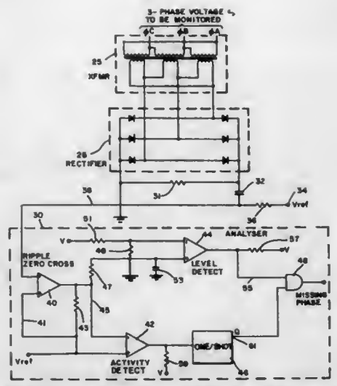
U.S. Cl. 324—86 **1 Claim**

1. A missing phase detector circuit for three-phase ac power equipment, comprising in combination:

(a) a three-phase isolation transformer adapted to step down monitored three phase ac power source voltages to low voltage levels;

(b) a three-phase rectifier circuit, said rectifier circuit being connected to the secondary windings of said isolation transformer;

(c) a first resistor, said first resistor being connected across the output of said rectifier circuit and connected to logic ground, said first resistor acting as a termination for the signal output



of said rectifier circuit, producing a three-phase rectified signal with respect to logic ground, said three-phase rectified signal having a ripple voltage waveform;

(d) a voltage center reference circuit comprising a first capacitor, a second resistor and a voltage reference terminating said second resistor; said first capacitor being connected to the positive terminal of said first resistor and said rectifier circuit, and providing AC coupling for said ripple voltage waveform to said second resistor, producing at a capacitor-resistor junction, a ripple voltage ac waveform which is centered, positive and negative, on said voltage reference; and

(e) an analyzer circuit connected to said capacitor-resistor junction, comprising a zero cross comparator circuit, a low pass filter, a level detector comparator circuit, an activity detector comparator circuit, a retriggerable one-shot and an AND gate;

said zero cross comparator circuit including a dc voltage reference and receiving said ripple voltage ac waveform, said zero cross comparator circuit switching at every zero crossing and producing a pulsed dc waveform having an amplitude corresponding to said dc voltage reference and pulse widths corresponding to the widths of the negative portions of said ripple voltage ac waveform, a wide pulse width being produced by a wide negative portion of ripple voltage and thereby a missing ac voltage phase;

said pulsed dc waveform being connected input to said low pass filter which integrates said pulsed dc waveform into an average dc level signal, said dc level signal being high if said pulsed dc waveform has any wide pulse widths;

said dc level signal being connected input to said level detector comparator circuit which outputs a high signal if said dc level signal exceeds a reference, said high signal being connected to an input terminal of said AND gate;

said pulsed dc waveform output of said zero cross comparator circuit also being connected to an input terminal of said activity detector comparator circuit; said activity detector circuit receiving said pulsed dc waveform and producing a high signal output which is connected input to said one-shot; said one-shot responding by producing a high signal at its Q terminal, said Q terminal being connected to an input terminal of said AND gate and said AND gate being enabled by the presence of said high signal from said Q terminal; said activity detector comparator circuit and said one-shot serving to disable said AND gate during periods of no power input;

said AND gate being activated by the receipt of a high signal from said level detector comparator circuit, and passing an output signal which may be used to illuminate a "Missing Phase" indicator or as input to control circuitry.

5,548,208

TERMINAL FOR CONNECTING LIVE CONDUCTORS

Karl-Heinz Lust, Lahnau-Waldgirmes, Germany, assignor to Lust Antriebstechnik GmbH, Lahnau, Germany

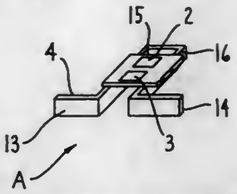
PCT No. PCT/EP94/01084, § 371 Date Dec. 19, 1994, § 102(e) Date Dec. 19, 1994, PCT Pub. No. WO94/24574, PCT Pub. Date Oct. 27, 1994

PCT Filed Apr. 12, 1994, Ser. No. 360,656

Claims priority, application Germany, Apr. 20, 1993, 43 12 760.6

Int. Cl.[6] G01R *1/04;1/22;33/00*

U.S. Cl. 324—117 H **15 Claims**



1. A test terminal for monitoring the signal through a conductor separated into two sections, said terminal comprising two clamping components for mechanically holding adjacent ends of the conductor sections, a connecting member connecting said two clamping components with one another so that the signal through the conductor-under-test flows through said connecting member, and at least one magnetic-field sensor positioned at a specified distance relative to said connecting member, said magnetic-field sensor configured to generate an output signal as a function of the signal through said connecting member.

5,548,209

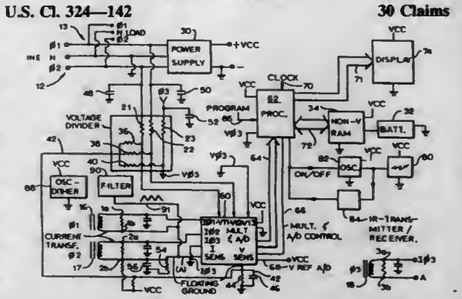
SOLID STATE ELECTRIC POWER USAGE METER AND METHOD FOR DETERMINING POWER USAGE

Bruce B. Lusignan, Stanford, and Behruz Rezvani, Cupertino, both of Calif., assignors to KC Corporation, New Rochelle, N.Y.

Division of Ser. No. 773,011, Oct. 8, 1991, Pat. No. 5,391,983. This application Aug. 25, 1994, Ser. No. 296,242

Int. Cl.[6] G01R *21/00*

U.S. Cl. 324—142 **30 Claims**



1. A method for determining electric power usage by a load attached to an electric power network, the method comprising:

sensing current in each phase of the electric power network;

detecting the voltage level of each phase of the electric power network;

receiving signals related to the current in each phase and signals related to the voltage on each phase;

sampling said current and voltage related signals at predetermined times at a rate where is non-synchronous with the network frequency such that samples defining a cycle of each of the current and voltage related signals are taken over a plurality of cycles of the network waveforms and are not made at the same points on a plurality of successive cycles of the network waveforms of the respective current and voltage related signals and converting said samples to digital signals representing said current and voltage levels at the predetermined times;

calculating instantaneous values of electric power at the predetermined times from the digital signals; and

accumulating said instantaneous values so as to form a value representative of electrical power usage by the load attached to the network.

5,548,210

SYSTEM AND PROCEDURE FOR THE CHECK-UP SOLENOID VALVES

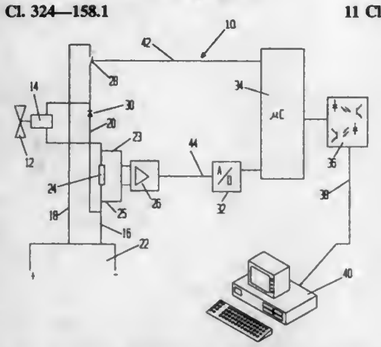
Ehrenfried Dittrich, Raiffeisenstr. 12, 73035 Goppingen, Germany

Filed May 18, 1994, Ser. No. 245,496.

Claims priority, application Germany, May 21, 1993, 43 17 109.5

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—158.1 **11 Claims**



1. The method to determine the operational solenoid valve having an actuating magnet for mechanical movement of the valve between open and closed positions, which comprises:

a. measuring the inductive current of the actuating magnet over the time period of movement of the valve between open and closed positions;

b. determining the control function of the valve as the differential of the measured current to the time of measurement and determining the logarithmic value of the control function; and

c. determining the starting time of mechanical movement of the valve by determining the time when the logarithmic values of the control function depart from linearity; and

d. determining the stopping time of the mechanical movement of said valve and determining the stroke time of mechanical movement as the difference between the starting and stopping time.

5,548,211

DYNAMIC FAULT IMAGING SYSTEM USING ELECTRON BEAM AND METHOD OF ANALYZING FAULT

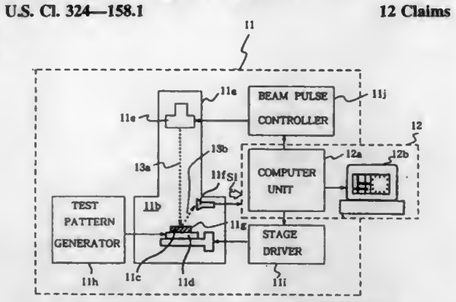
Tohru Tujide; Toyokazu Nakamura, and Kiyoshi Nikawa, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 854,570, Mar. 20, 1992, abandoned. This application Mar. 3, 1995, Ser. No. 400,199

Claims priority, application Japan, Mar. 22, 1991, 3-081182; Mar. 22, 1991, 3-081183; Mar. 22, 1991, 3-081184; Mar. 22, 1991, 3-081185

Int. Cl.[6] G01R *31/28*

U.S. Cl. 324—158.1 **12 Claims**



1. A method of analyzing a fault, comprising the steps of:

a) preparing a fault-free semiconductor integrated circuit device, a test semiconductor integrated circuit device and a layout pattern of multi-level wiring strips common to said fault-free and test semiconductor integrated circuit devices;

b) determining radiation spots on at least two wiring strips, respectively, of said multi-level wiring strips, said at least two wiring strips being different in depth from one another, and said determined radiation spots being able to be exposed to a radiation of a beam and being spaced apart from one another;

c) radiating an electron beam onto each of said determined radiation spots of said fault-free semiconductor integrated circuit device under application of a test pattern for allowing a first secondary electron beam to be produced at said determined radiation spots of said fault-free semiconductor integrated circuit device, the intensity of said first secondary electron beam being variable with a voltage level of said multi-level wiring strips and the depth of the wiring strips, and the intensity of said first secondary electron beam being measured;

d) a first forming step of forming an image of voltage contrast of said multi-level wiring strips of said fault-free semiconductor integrated circuit device from the measured intensity of said first secondary electron beam;

e) radiating electron beams onto said determined radiation spots of said test semiconductor integrated circuit device under application of said test pattern for allowing a second secondary electron beam to be produced at said determined radiation spots of said test semiconductor integrated circuit device, the intensity of said second secondary electron beam being variable with a voltage level and the depth of the wiring strips of said multi-level wiring strips of said test semiconductor integrated circuit device, and the intensity of said second secondary electron beam being measured;

f) a second forming step of forming an image of voltage contrast of said multi-level wiring strips of said test semiconductor integrated circuit device from the measured intensity of said second secondary electron beam; and

g) comparing said image of voltage contrast formed for said test semiconductor integrated circuit device with said image of voltage contrast formed for said fault-free semiconductor integrated circuit device so as to search for a discrepancy indicative of a failure origin of said test semiconductor integrated circuit device, and wherein said second forming step includes forming said image from the measured intensity of said second secondary electron beam such that said formed image is indicative of the topography of said test semiconductor integrated circuit device.

5,548,212

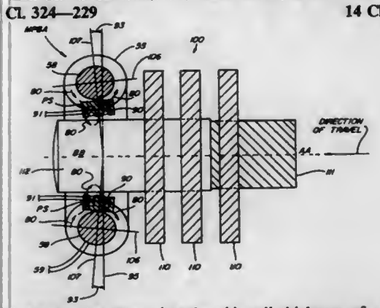
THICKNESS AND HARDNESS MEASUREMENT APPARATUS UTILIZING A ROTATING INDUCTION VECTOR

Delmar L. Logue, R.R. #1, Box 60, Herrick, Ill. 62431

Continuation-in-part of Ser. No. 142,933, Oct. 29, 1993. This application Feb. 15, 1995, Ser. No. 388,825

Int. Cl.[6] G01B *7/06;7/31;* **G01N** *27/80;* **B21C** *51/00*

U.S. Cl. 324—229 **14 Claims**



1. Apparatus for measuring the sidewall thickness of a non-ferrous cylindrical article having a central longitudinal axis with x-y centering coordinates during an in-process ram and die drawing operation, the said apparatus comprising:

a) a multiple polar sensor assembly for inducing eddy currents in the said article sidewall generating polar coordinates signals by the angular motion of a rotating magnetic field, each polar sensor coupling a rotating magnetic field to the workpiece and generating a sine wave signal, the phase angle of which primarily represents article sidewall thickness and the amplitude primarily represents sensor to workpiece distance, first and second polar sensors being disposed on the x-axis of the cylindrical article, third and fourth polar sensors disposed on the y-axis of the cylindrical article, said multiple polar sensor assembly further comprising:

i) a hollow toroid core formed of a high permeability ferromagnetic material having four bores in the inner circumference wall on the said x-y axes, the hollow toroid core also having an elliptical shaped toroidal cross-section, the minor elliptical axis of the toroidal cross-section being disposed at an acute angle to a plane drawn perpendicular to the central axis of the hollow toroid core, the said acute angle forming the sides of a cone, the said plane forming the base of the cone, the axes of said bores being disposed on the sides of the cone and on radial lines radiating from the central axis of the hollow toroid core, and also being disposed on the said minor elliptical axis;

ii) the four polar sensors being mounted partially within the four bores as to provide an extending portion outside the surface of the hollow toroid core for coupling the rotating magnetic field to the workpiece;

iii) a first excitation winding wound within the hollow toroid core for inducing a first magnetic field throughout the hollow toroid core;

iv) a second excitation winding wound around the outside of the hollow toroid core, being subdivided and wound between the extending portion of the mounted polar sensors for flux symmetry, said second excitation winding for inducing a second magnetic field throughout the hollow toroid core;

v) sine-cosine excitation being applied to the first and second excitation windings for inducing a rotating magnetic field throughout the hollow toroid core;

vi) the hollow toroid core being separable for assembly;

vii) signal processing means to receive the polar coordinates signals to determine the phase angle and amplitude indicating the thickness of said cylindrical article sidewall and determining the ram and die centering on the x-y axes of the cylindrical article.

5,548,213

METHOD AND SYSTEM FOR FORMING AND INSPECTING AN ELECTROCONDUCTIVE FILM ON OPTICAL FIBERS AND SUBSTRATES USING EDDY CURRENT TO MEASURE ELECTRICAL RESISTANCE

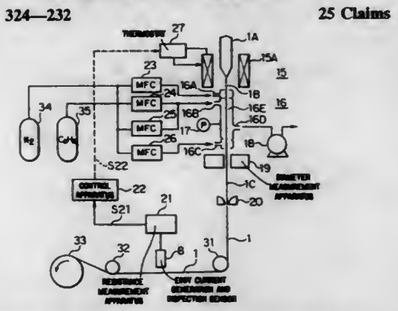
Yukio Kohmura, Chiba; Yoshinori Ishida, Ichihara, and Takashi Hibino, Urawa, all of, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Division of Ser. No. 707,744, May 30, 1991, Pat. No. 5,262,726. This application Sep. 14, 1993, Ser. No. 120,442

Claims priority, application Japan, May 30, 1990, 2-140332; Apr. 12, 1991, 3-108733; Apr. 12, 1991, 3-108734

Int. Cl.[6] G01N *27/72;* **G01R** *33/12*

U.S. Cl. 324—232 **25 Claims**



3. A system for adjustment of conditions for forming a hermetic coating, of an optical fiber cable comprising an optical fiber including a core and a cladding, and a coating provided on the cladding, in a system for production of said optical fiber by drawing an optical fiber preform and forming the optical fiber and generating an electroconductive eddy current on the surface of said cladding of said optical fiber, said system comprising:

an eddy current generation and detection sensor arranged near said hermetic coating;

a high frequency power source for generating a high frequency current which is applied to said eddy current generation and detection sensor and is of a frequency sufficiently high for generating the eddy current at said hermetic coating;

average magnetization-intensity changing means for applying said high frequency current from the high frequency power source to said eddy current generation and detection sensor while changing the average magnetization-intensity by a frequency sufficiently lower than the frequency of the high frequency current;

means for calculating an electrical resistance of said hermetic coating from the eddy current detected by said eddy current generation and detection sensor; and

control means for adjusting said hermetic coating forming conditions based on the electrical resistance from said electrical resistance calculating means.

VOL 1189 155 3 AG 2150 1996 UMI

5,548,214

ELECTROMAGNETIC INDUCTION INSPECTION APPARATUS AND METHOD EMPLOYING FREQUENCY SWEEP OF EXCITATION CURRENT

Kazuhiko Yasohama, Koganei, and Hiroaki Kohama, Tokyo, both of, Japan, assignors to Kaisei Engineer Co., Ltd., Tokyo, Japan

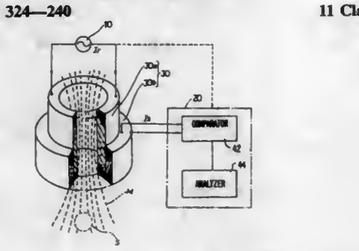
Filed Nov. 23, 1992, Ser. No. 980,562

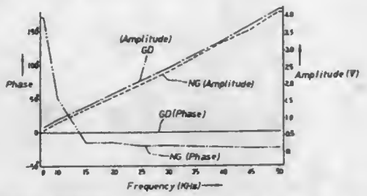
Claims priority, application Japan, Nov. 21, 1991, 3-306296; Nov. 29, 1991, 3-316969

The portion of the term of this patent subsequent to May 14, 2013, has been disclaimed.

Int. Cl.[6] G01N *27/82*

U.S. Cl. 324—240 **11 Claims**





1. An electromagnetic induction-type inspection device for discriminating defects of an object to be inspected, comprising:

a power source unit for issuing an alternating current and capable of continuously changing a frequency of the alternating current,

an inspection coil unit including an exciting coil for generating an electromagnetic field upon application of the alternating current from said power source unit, and an induction coil for inducing an electromotive induction current in the electromagnetic field generated by said exciting coil, said exciting coil being applied with the alternating current from said power source unit while continuously changing the frequency of the alternating current,

said electromotive induction current undergoing a change in amplitude and phase with the frequency of the alternating current applied to said exciting coil and in accordance with a configuration of a defect contained in an object placed in the electromagnetic field generated by said exciting coil,

a measuring unit for measuring the electromotive induction current derived from said induction coil, said electromotive induction current being obtained as a reference induction value by placing a reference body in the electromagnetic field generated by said exciting coil, and said electromotive induction current being obtained as a measured induction value by placing the object to be inspected in the electromagnetic field, and

means for discriminating a configuration of the defect of the object to be inspected by comparing said measured and reference induction values changing in amplitude and phase with the frequency of the alternating current applied to said exciting coil;

wherein said induction coil is wound closely around at least one part of said exciting coil while being electrically separated from said exciting coil so as to allow the magnetic field generated by said exciting coil to pass coaxially through said induction coil.

5,548,215

MR IMAGING APPARATUS

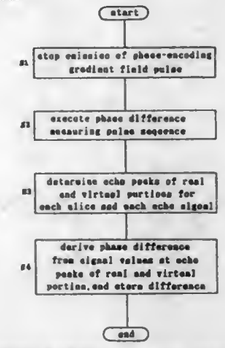
Satoru Kohno; Naoto Iijima, and Akihiro Ishikawa, all of Kyoto, Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Sep. 2, 1994, Ser. No. 299,119

Claims priority, application Japan, Sep. 30, 1993, 5-269889

Int. Cl.[6] G01V *3/00;3/14*

U.S. Cl. 324—309 **12 Claims**



1. An MR imaging apparatus using NMR phenomenon, comprising:

a main magnet for generating a uniform static magnetic field in an imaging space;

a first, a second and a third gradient field coils for generating three types of gradient field pulses, said three types of gradient field pulses including slice-selecting gradient field pulses, phase-encoding gradient field pulses, and reading gradient field pulses, with magnetic strengths varying in three orthogonal directions in said imaging space;

a RF coil for emitting an excitation RF pulse and a plurality of refocus RF pulses and detecting echo signals;

RF emitting means for modulating, with a predetermined carrier frequency, and successively emitting said excitation RF pulse and said refocus RF pulses with predetermined timing through said RF coil, said RF emitting means emitting said refocus RF pulses while alternately switching a phase polarity thereof;

slice-selecting gradient field pulse generating means for generating said slice-selecting gradient field pulses through said first gradient field coil for selecting slice planes, in timed relationship with said excitation RF pulse and said refocus RF pulses;

phase-encoding gradient field pulse generating means for generating said phase-encoding gradient field pulses through said second gradient field coil in timed relationship with said echo signals, said phase-encoding gradient field pulses being varied for the respective echo signals;

reading gradient field pulse generating means for generating said reading gradient field pulses through said third gradient field coil in timed relationship with said echo signals;

data collecting means for detecting, with a predetermined frequency (reference frequency), said echo signals detected by said RF coil, and collecting data therefrom;

phase detecting means for determining phase differences of echo peaks in said echo signals with respect to said reference frequency, respectively;

rotating means for rotating said data collected from said echo signals based on said phase differences to connect phases of said echo signals to be continuous; and

data processing means for reconstructing a sectional image based on said data rotated.

5,548,216

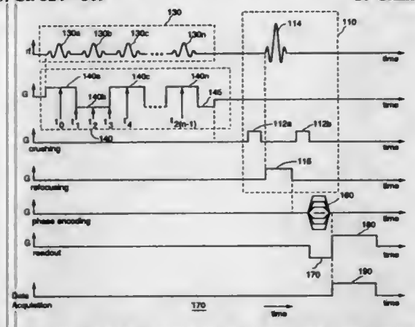
METHODS FOR THE SIMULTANEOUS DETECTION OF MULTIPLE MAGNETIC RESONANCE IMAGES USING PHASE MODULATED EXCITATION

Charles L. Dumoulin, Ballston Lake, and Christopher J. Hardy, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 15, 1995, Ser. No. 558,298

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—309 **10 Claims**



1. A method for the generation of image data from multiple portions of a subject with magnetic resonance, comprising the steps of:

a) placing said subject into a magnetic field to polarize nuclear spins;

b) applying to said subject a composite excitation radiofrequency (RF) pulse comprised of a series of N discrete RF pulses, each having a selected frequency and phase to outate nuclear spins within said subject for the purpose of creating transverse spin magnetization;

c) applying to said subject a composite excitation magnetic field gradient pulse substantially simultaneously with the application of the composite excitation RF pulse to constrain the creation of transverse spin magnetization to N selected portions within said subject;

d) applying to said subject at a selected time after the application of the composite excitation RF pulse, a refocusing RF pulse to generate a spin echo;

e) applying to said subject a refocusing magnetic field gradient pulse substantially simultaneously with the application of the refocusing RF pulse to limit the region of refocusing in said subject;

f) applying to said subject at a selected time after the application of the composite excitation RF pulse, a phase-encoding magnetic field gradient pulse of a selected amplitude in a first selected direction to cause transverse spin magnetization to be dephased by an amount proportional to the location of the transverse magnetization in the first direction;

g) applying to said subject at a selected time after the application of the composite excitation RF pulse, a readout dephasing magnetic field gradient pulse of a selected amplitude in a second selected direction substantially orthogonal to the first direction to cause transverse spin magnetization to be dephased by an amount proportional to the location of the transverse magnetization in the second direction;

h) applying a readout magnetic field gradient pulse in the second selected direction with a polarity substantially opposite that of the readout dephasing magnetic field gradient pulse;

i) detecting with a receiver operating at a selected frequency an MR response signal generated by the transverse spin magnetization in the presence of the readout magnetic field gradient pulse;

j) repeating steps 'b'–'i' a plurality, Y times, each repetition having a unique amplitude for the phase-encoding gradient pulse and each discrete RF excitation pulse having a phase shift proportional to the amplitude of the phase-encoding gradient pulse; and

k) creating a reconstructed MR image containing MR image data from each of the N excited portions of said subject by performing a two-directional Fourier transform of the detected MR response signals.

5,548,217

MICROWAVE SPECTROMETERS

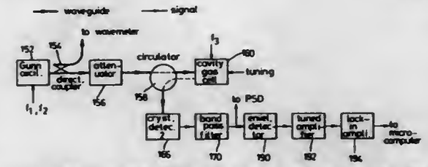
Colin Gibson, 2 Agincourt Road, Penylan, Cardiff, CF2 5BN; Ian P. Matthews, 1, Linden Avenue, Penylan, Cardiff, CF2 5HG; Alan H. Samuel, 22 Foreland Road, Whitchurch, Cardiff, CF4 7AR, and Zhangwhu Zhu, 50, Plantagenet Street, Riveside, Cardiff, CF1 8RP, all of, United Kingdom

Continuation of Ser. No. 613, Jan. 5, 1993, abandoned, which is a continuation-in-part of Ser. No. 662,325, Feb. 25, 1991, Pat. No. 5,209,902, which is a continuation of Ser. No. 893,544, Jul. 7, 1986, abandoned. This application May 15, 1995, Ser. No. 441,060

Claims priority, application United Kingdom, Nov. 10, 1984, 8428470

Int. Cl.[6] G01R *33/20*

U.S. Cl. 324—316 **7 Claims**



7. Apparatus for detecting at least a concentration of a fluid, which comprises:

a chamber into which fluid may be introduced;

microwave generating means for propagating microwave radiation into said chamber;

microwave sweep means for sweeping the frequency of the microwave radiation between preset limits using a relatively high microwave modulation frequency;

further modulation means for applying an independent frequency modulation at a relatively low modulation frequency to the frequency of a selected absorption peak in the absorption coefficient vs. frequency characteristic of said fluid;

detector means for detecting the microwave radiation reflected from said chamber;

first filter means for selecting the signal component from a high frequency band;

first demodulating means for demodulating said selected high frequency component with said relatively high microwave modulating frequency;

second filter means for selecting the signal component from a low frequency band of the output of said detector means corresponding to said relatively low modulation frequency;

second demodulating means for demodulating said selected relatively low frequency component; and

processor means responsive to the output of said second demodulating means to determine at least said concentration of said fluid.

5,548,218

FLEXIBLE RF COILS FOR MRI SYSTEM

Dongfeng Lu, Williston Park, N.Y., assignor to North Shore University Hospital Research Corporation, Manhasset, N.Y.

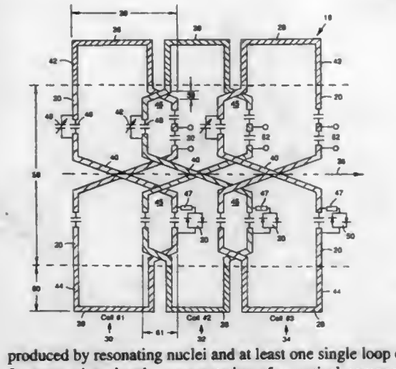
Filed Oct. 19, 1995, Ser. No. 545,081

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—318 **16 Claims**

1. A flexible RF coil construction for MRI over a field of view extending in a longitudinal direction, comprising:

(a) at least one butterfly coil for generating signals representative of a horizontal component of an RF magnetic field



produced by resonating nuclei and at least one single loop coil for generating signals representative of a vertical component of the RF magnetic field, the directions of said horizontal and vertical magnetic field components being orthogonal to said longitudinal direction,

(b) means for combining the signals from the butterfly and single loop coils in quadrature for subsequent processing to form a magnetic resonance image,

(c) said butterfly coil comprising a fixed first part arranged symmetrically with respect to the single loop coil and positioned to extend under a patient body part to be examined,

(d) said butterfly coil comprising opposed flexible second parts connected to the first part and configured to be wrapped over the body part of the patient to be examined.

5,548,219

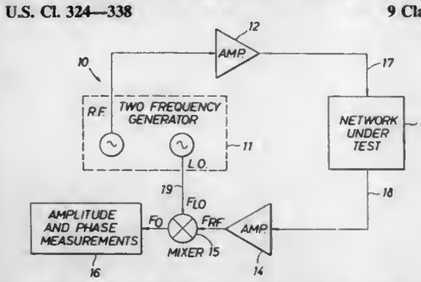
DIGITAL TWO FREQUENCY GENERATOR FOR USE IN BOREHOLE HETERODYNE MEASUREMENT SYSTEMS

Paul L. Sinclair, Kemah, Tex., assignor to Halliburton Company, Houston, Tex.

Filed Apr. 8, 1993, Ser. No. 43,716

Int. Cl.[6] G01V *3/30;* **H03B** *19/00;21/01;* **H03K** *3/02*

U.S. Cl. 324—338 **9 Claims**



7. A system for making phase measurements using a heterodyne frequency translation method, the system comprising:

(a) a master clock oscillator operating at a first frequency to generate a master clock signal;

(b) a multi-stage binary counter having as an input said master clock signal and as an output a N-binary digit address bus including N multi-stage binary output lines representative of an N binary digit number, N being an integer number, wherein one of said output lines is tapped to establish a local oscillator frequency signal (F_{LO});

(c) a read only memory having as an input the N-binary digit address bus and having as an output a K-binary digit parallel bus including K binary digit lines, where the K binary digit lines represent at any time the contents of a K binary digit memory word addressed by said N-binary digit address bus;

(d) a digital to analog converter connected to said K-binary digit parallel bus from said read only memory, said digital to analog converter having an output forming a RF measurement frequency signal (F_{RF}) for application to a network under test;

(e) a heterodyne mixing circuit connected to receive the local oscillator frequency signal (F_{LO}) and the RF measurement frequency signal (F_R) from the network under test, and operable to generate an intermediate clock output frequency signal by mixing the local oscillator frequency signal (F_{LO}) and the RF measurement frequency signal (F_{RF}); and

(f) a phase measurement circuit connected to receive the clock output frequency signal (F_o) and operable to make phase measurements in reference to said output frequency signal.

5,548,220

APPARATUS FOR DETECTING MISFIRE IN INTERNAL COMBUSTION ENGINE

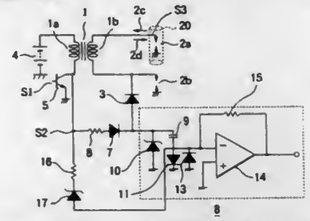
Atsunobu Kawamoto, and Yukio Yasuda, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 4, 1995, Ser. No. 433,755

Claims priority, application Japan, Nov. 8, 1994, 6-273990

Int. Cl.[6] F02P *17/00*

U.S. Cl. 324—399 **9 Claims**



1. An apparatus for detecting a misfire in an internal combustion engine, comprising:

an ignition coil having a primary coil, to an end of which a power source is connected and to another end of which a switching device, which is controlled so to be switched at the ignition timing of said internal combustion engine, is connected;

a spark plug connected to a secondary coil side of said ignition coil to generate discharge in a combustion chamber of said internal combustion engine when applied with high voltage to ignite a mixture of fuel and air;

a misfire detection circuit having a capacitor which is supplied with bias voltage from said primary coil of said ignition coil to be electrically charged, which applies the charged voltage to said spark plug at the discharge of said spark plug so as to cause an ionic current to flow, a first diode connected between a low-potential side of said capacitor and ground in a direction in which a charging electric current is supplied to said capacitor, a second diode connected in a direction in which the ionic current flows from said capacitor, a charging voltage setting Zener diode connected between a high-potential side of said capacitor and ground to set charging voltage into said capacitor, and an operational amplifier having an inverting input terminal adjacent to the low-potential side of said capacitor, a non-inverting input terminal which is ground, and a feedback resistor connected between said inverting input terminal and an output terminal, said misfire detection circuit being arranged to discriminate whether or not a misfire has taken place in accordance with detection of the ionic current; and

a discharge-period detecting portion which prevents transmission of output from said operational amplifier in a period in which said spark plug discharges electricity so as to prevent erroneous detection performed by said misfire detection current.

5,548,221

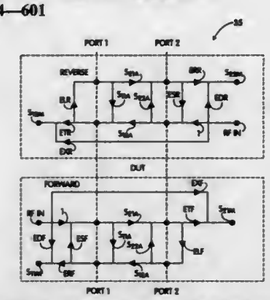
ELECTRONIC CALIBRATION METHOD AND APPARATUS

Vahe A. Adamian, Lexington; Michael T. Falcinelli, Andover, and Peter V. Phillips, Leominster, all of Mass., assignors to ATN Microwave, Inc., Billerica, Mass.

Division of Ser. No. 156,277, Nov. 22, 1993, Pat. No. 5,467,021, which is a continuation-in-part of Ser. No. 66,534, May 24, 1993, Pat. No. 5,434,511. This application Jun. 7, 1995, Ser. No. 473,724

Int. Cl.[6] G01R *27/04*

U.S. Cl. 324—601 **6 Claims**



1. A method for calibrating a network analyzer, having at least a first port and a second port, the method comprising the steps of:

presenting to a first port and a second port, three previously known reflection coefficients;

presenting a reciprocal through-condition to each of the first port and the second port;

measuring, with the network analyzer, the three previously known reflection coefficients and the through-condition;

evaluating an unwrapped phase of the through-condition; and

calculating calibration coefficients of the network analyzer.

5,548,222

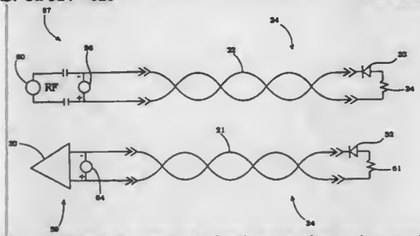
METHOD AND APPARATUS FOR MEASURING ATTENUATION AND CROSSTALK IN DATA AND COMMUNICATION CHANNELS

Gordon A. Jensen, and Stephen M. Ernst, both of Colorado Springs, Colo., assignors to Forte Networks, Colorado Springs, Colo.

Filed Sep. 29, 1994, Ser. No. 316,201

Int. Cl.[6] G01R *27/28;* **H04M** *3/26*

U.S. Cl. 324—628 **19 Claims**



1. A system for measuring signal attenuation and crosstalk, comprising:

a cable having a near end and a far end;

a transmitter circuit coupled at the near end of the cable for transmitting both a test signal and a control signal to the far end of the cable, the test signal and the control signal each having an associated frequency and amplitude;

a termination control circuit including a switching device coupled to the far end of the cable for modulating the test signal according to the associated amplitude and frequency of the control signal transmitted from the near end of the cable and a switchable impedance matching circuit coupled to the switching device that selectively matches a given impedance of the cable for operating the cable substantially as an antenna for monitoring crosstalk signals transmitted from a surrounding system, the termination control circuit generating an output signal having a side band frequency different than both the test signal and carrier signal frequencies and having an amplitude attenuated by substantially equal amounts as the test signal; and

a receiver for measuring attenuation in the output signal sideband frequencies thereby measuring substantially the same attenuation as the test signal, the receiver further measuring the crosstalk signals when the impedance matching circuit operates the cable substantially as an antenna.

5,548,223

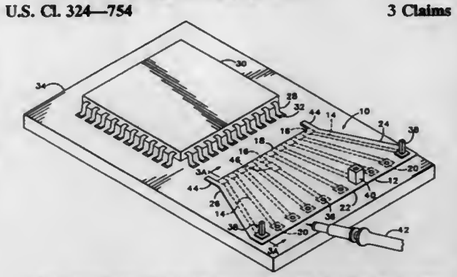
PROBE ADAPTER FOR ELECTRONIC DEVICE

Paul A. Cole; Emory J. Harry, both of Aloha, and Michael A. Wright, Portland, all of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Continuation of Ser. No. 954,618, Sep. 9, 1992, abandoned. This application Feb. 16, 1995, Ser. No. 390,459

Int. Cl.[6] G01R *1/073*

U.S. Cl. 324—754 **3 Claims**



1. An adapter for coupling an electrical test probe of a measurement test instrument to an electronic device having multiple electrical leads directly connected to a substrate with separation between the electrical leads defining a pitch geometry comprising a flexible dielectric substrate having electrically conductive runs formed thereon between first and second edge surfaces of the flexible substrate with one end of the runs forming first electrical contacts adjacent to the first edge surface having a pitch geometry corresponding to the pitch geometry of the electrical leads of the electronic device for connecting to the electrical leads of the device, and tabs extending from the first edge surface for engaging the electrical leads of the device for aligning the first electrical contacts with the electrical leads, the other end of the conductive runs forming second electrical contacts adjacent to the second edge surface having a pitch geometry compatible with the electrical probe of the measurement test instrument.

5,548,224

METHOD AND APPARATUS FOR WAFER LEVEL PREDICTION OF THIN OXIDE RELIABILITY

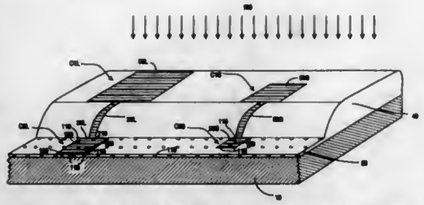
Calvin T. Gabriel, Cupertino, and Subhash R. Nariani, San Jose, both of Calif., assignors to VLSI Technology, Inc, S. J., Calif.

Filed Jan. 20, 1995, Ser. No. 376,590

Int. Cl.[6] G01R *31/26;* **H01L** *21/66*

U.S. Cl. 324—765 **20 Claims**

1. A method of examining a semiconductor wafer that includes a substrate, at least a region of thin oxide, and at least a region of thick field oxide and determining whether any defects in the thin oxide are due to weak oxide or are due to charge-damaged oxide, the method comprising the following steps:



(a) fabricating on said wafer first and second conductive regions overlying said thin oxide, the first conductive region defining a greater surface area than the second conductive region;

(b) applying a voltage between said first conductive region and a portion of said substrate, and measuring any first leakage current flow therebetween;

(c) applying a voltage between said second conductive region and a portion of said substrate, and measuring any second leakage current flow therebetween; and

(d) comparing said first leakage current and said second leakage current to ascertain a defect status of said thin oxide;

if the first and second leakage currents are each less in magnitude than a predetermined threshold value, said thin oxide is substantially defect free;

if only the first leakage current exceeds said predetermined threshold value, defects in said thin oxide are area-dependent and said thin oxide is weak oxide; and

if the first and second leakage currents each exceed said predetermined threshold value, defects in said thin oxide are area-independent and said thin oxide is charge-damaged.

5,548,225

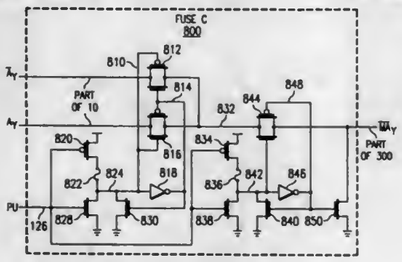
BLOCK SPECIFIC SPARE CIRCUIT

Robert N. Rountree; Dan Cline, both of Plano, Tex.; Darryl G. Walker, Sugar Land, Tex.; Francis Hii, Toa Payoh, Singapore, and David W. Bergman, Bedford, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 26, 1994, Ser. No. 249,499

Int. Cl.[6] H03K *19/003*

U.S. Cl. 326—13 **14 Claims**



7. A programmable circuit comprising:

a first memory element, arranged for storing a datum;

a second memory element, arranged for storing a first signal, the first signal having a first and a second logic state; and

a logic circuit, responsive to the datum, the first logic state and a second signal, for producing an output signal having a third logic state when the datum matches the second signal, the logic circuit, responsive to the second logic state, producing the output signal having only the third logic state.

5,548,226

FAST TRANSMISSION LINE IMPLEMENTED WITH RECEIVER, DRIVER, TERMINATOR AND IC ARRANGEMENTS

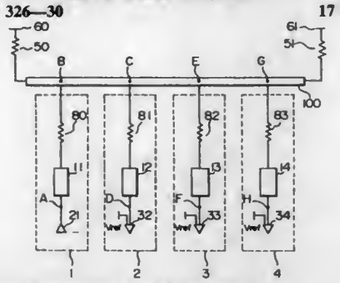
Toshitsugu Takekuma, Ebina; Ryoichi Kurihara, and Akira Yamagiwa, both of Hadano, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 30, 1994, Ser. No. 269,352

Claims priority, application Japan, Dec. 28, 1993, 5-334631

Int. Cl.[6] H03K *17/16;19/0175*

U.S. Cl. 326—30 **17 Claims**



1. A signal transmitting device comprising:

a main transmission line terminated by elements each having a resistance substantially equal to an impedance value of said main transmission line itself;

a first circuit block connected to said main transmission line, said first circuit block including a driving circuit for driving a signal, and a first intra-block transmission line with a predetermined impedance for transmitting the signal outputted from said driving circuit to said main transmission line, said first circuit block including an element having a resistance substantially equal to a value derived by subtracting a half of an impedance of said main transmission line from the predetermined impedance of said first intra-block transmission line; and

an at least one second circuit block connected to said main transmission line, said at least one second circuit block including a receiving circuit for receiving a signal; a second intra-block transmission line with a predetermined impedance for transmitting a signal inputted from said main transmission line to said receiving circuit, said second circuit block including an element having a resistance substantially equal to a value derived by subtracting a half of an impedance of said main transmission line from said predetermined impedance of said second intra-block transmission line.

5,548,227

DECISION CIRCUIT OPERABLE AT A WIDE RANGE OF VOLTAGES

Yoichiro Minami, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 364,276

Claims priority, application Japan, Dec. 28, 1993, 5-335276

Int. Cl.[6] H03K *19/086*

U.S. Cl. 326—33 **11 Claims**

1. A decision circuit, comprising:

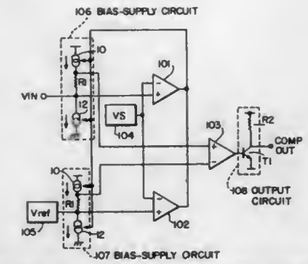
a first comparator which compares an input voltage with a reference voltage and judges whether said input voltage is higher than said reference voltage;

a controller for controlling a level of bias voltage added to each of said input voltage and said reference voltage in response to levels of said input voltage and said reference voltage; and

a generator which generates at least two levels of said bias voltage, said controller controlling which of said levels of said bias voltage is added to said input and reference voltages;

wherein said controller comprises:

a second comparator which compares said input voltage with a predetermined voltage; and



a third comparator which compares said reference voltage with said predetermined voltage.

5,548,228

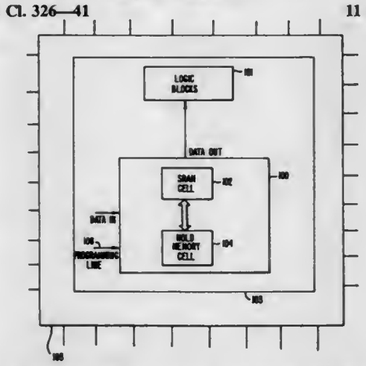
RECONFIGURABLE PROGRAMMABLE LOGIC DEVICE HAVING STATIC AND NON-VOLATILE MEMORY

Raminda Madurawe, Sunnyvale, Calif., assignor to Altera Corporation, San Jose, Calif.

Filed Sep. 28, 1994, Ser. No. 314,012

Int. Cl.[6] H03K *19/177*

U.S. Cl. 326—41 **11 Claims**



4. A programmable logic device in a single integrated circuit package comprising:

an integrated circuit package comprising leads and at least one die;

a plurality of logic cells in which logic functions are performed;

a plurality of volatile memory cells, each comprising a strong inverter and a weak inverter;

a plurality of non-volatile memory cells, each integrated with the weak inverter of each of the plurality of volatile memory cells, wherein the contents of the plurality of volatile memory cells are stored in the integrated non-volatile memory cells, and, in response to restoration of power to the programmable logic device, the plurality of volatile memory cells are automatically reconfigured with the contents of the integrated non-volatile memory cells;

a plurality of input lines for supplying signals to the plurality of logic cells; and

a plurality of output lines for receiving signals from the plurality of logic cells.

5,548,229

TRI-STATE OUTPUT BUFFER CIRCUIT

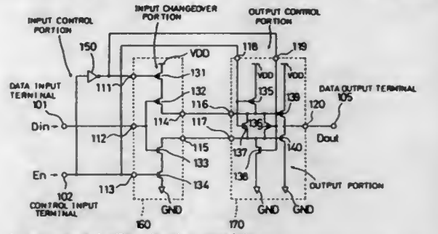
Reiji Segawa, and Tatsuhiko Nagahisa, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 27, 1994, Ser. No. 364,105

Claims priority, application Japan, Dec. 28, 1993, 5-337860

Int. Cl.[6] H03K *19/0948*

U.S. Cl. 326—57 **9 Claims**



1. An output buffer circuit comprising:

a data input terminal for receiving a data signal having a first value and a second value;

a control input terminal for receiving a control signal;

an output portion having a pair of output control terminals, said output portion being arranged for generating a data output signal comprising three values of first, second and high impedance values, said data output signal's value being determined in accordance with the signal states of said output control terminals which are in turn determined by the values of the data signal and the control signal;

a data output terminal for externally supplying said data output signal generated by said output portion;

an input changeover portion disposed at the signal lines between said data input terminal and said output control terminals and having (I) a conductive state where an inverse of said data signal can be entered into said output control terminals and (ii) a non-conductive state where said inverse of said data signal cannot be entered into said output control terminals;

wherein said input changeover portion receives said control signal supplied from said control input terminal which switches said input changeover portion to either said conductive state or said non-conductive state; and

an output control portion for receiving said control signal, wherein said data output signal is identical to said data signal applied to said data input terminal when said input changeover portion is in said conductive state and said data output signal is brought into said high impedance value when said input changeover portion is in said non-conductive state.

5,548,230

HIGH-SPEED CMOS PSEUDO-ECL OUTPUT DRIVER

Brian D. Gerson; Kevin Huscroft, both of Coquitlam, Canada, and Martin Mallinson, Billerica, Mass., assignors to PMC-Sierra, Inc., Burnaby, Canada

Filed Jun. 1, 1994, Ser. No. 251,960

Claims priority, application Canada, May 31, 1994, 2124745

Int. Cl.[6] H03K *19/0175*

U.S. Cl. 326—73 **6 Claims**

1. A complementary metal oxide silicon (CMOS) data to emitter coupled logic (ECL) data translator system comprising:

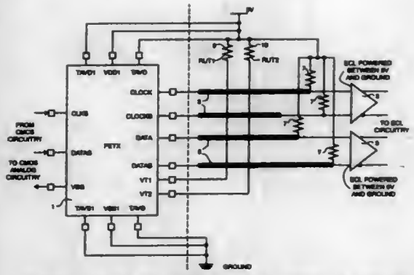
translator means for receiving data signals from a CMOS circuit, which CMOS circuit is powered from a CMOS voltage power source,

(b) means for powering an ECL circuit from said power source,

(c) a transmission line carrying output signals from the translator means to the ECL circuit, having a predetermined characteristic impedance,

(d) a load having said characteristic impedance connecting the transmission line to said power source,

(e) the translator means comprising means for outputting a data signal on the transmission line which corresponds to said received data signals but having an amplitude compatible with



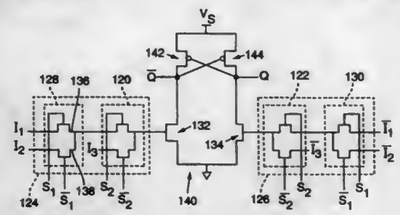
said ECL circuit and referenced to a voltage of said power source, and being formed of a one bit digital to analog converter (DAC) and is further comprised of a pair of programmable current steering switches a connected to the DAC for establishing higher and lower output currents for opposite logic values of the output signals, means for applying said data signals to the DAC and for receiving said output signals and applying them to said transmission line.

5,548,231

SERIAL DIFFERENTIAL PASS GATE LOGIC DESIGN

Joseph Tran, Hillsboro, Oreg., assignor to TransLogic Technology, Inc., Beaverton, Oreg.

Filed Jun. 2, 1995, Ser. No. 458,963
Int. Cl.[6] G01R *19/00;* **H03K** *17/16;19/12;* **G11C** *7/00*
U.S. Cl. 327—52 **19 Claims**



1. A serial differential multiplexer cell comprising:

a pass gate network including a positive network and a negative network, the positive network having two or more inputs complementary to the negative network, the positive network having an output, and the negative network having an output complementary to the output of the positive network, the positive and negative networks having select nodes for selecting an input in the positive network and the complement of the input in the negative network to pass through to the outputs of the positive and negative networks; and

a differential amplifier for receiving the outputs from the positive and negative network and producing a valid logic output at an output node of the differential amplifier; wherein the positive and negative networks each comprise at least one pass gate stage including two pass gates.

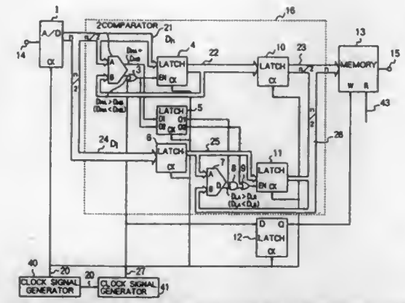
5,548,232

METHOD AND APPARATUS FOR DETECTING/STORING WAVEFORM PEAK VALUE

Akira Yamaura, and Masami Hosono, both of Tokyo, Japan, assignors to Hitachi Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 24, 1994, Ser. No. 327,878
Claims priority, application Japan, Oct. 25, 1993, 5-266269
Int. Cl.[6] H03K *5/153*
U.S. Cl. 327—60 **17 Claims**

1. A peak value detecting apparatus for detecting a peak value of an input waveform signal, comprising:



an A/D converter for sequentially sampling said input waveform signal and converting respective sampled values into consecutive trains of digital data, and dividing each train of said converted digital data into at least two groups of data having at least an upper sub-data set and a lower sub-data set;

a first comparator for comparing an upper sub-data set from said A/D converter with an upper sub-data set stored in a first latch and having a peak value among previous upper sub-data sets to judge which upper sub-data set has a peak value, and outputting a judgement result thereof;

a first logical circuit for supplying a first enable signal to said first latch when the judgement result by said first comparator indicates a first state that said upper sub-data set from said A/D converter has a peak value;

the first latch whose contents are updated by the upper sub-data set from said A/D converter in response to said first enable signal;

a second comparator for comparing a lower sub-data set from said A/D converter with a lower sub-data set stored in a second latch to judge which lower sub-data set has a peak value, and outputting a judgement result thereof;

a second logical circuit for supplying a second enable signal to said second latch circuit in accordance with the judgement results by said first and second comparators;

the second latch whose contents are updated by the lower sub-data set from said A/D converter in response to said second enable signal; and

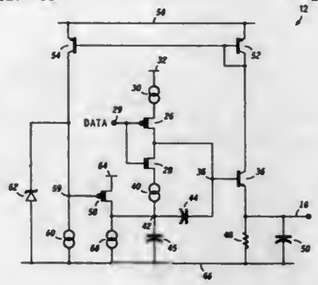
a memory for storing the upper and lower sub-data sets in said first and second comparators after each predetermined time lapse, as digital data having a peak value of the waveform signal input during said predetermined time.

5,548,233

CIRCUIT AND METHOD OF BIASING A DRIVE TRANSISTOR TO A DATA BUS

David M. Susak, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 28, 1995, Ser. No. 395,338
Int. Cl.[6] H03K *5/22*
U.S. Cl. 327—66 **16 Claims**



1. An integrated data communication circuit, comprising:

a drive transistor having an emitter coupled to a data bus, and a base coupled to a first node;

a current mirror having an input coupled to a collector of said drive transistor;

a first current source coupled to an output of said current mirror at a second node;

a first transistor having a gate coupled to said second node, a source coupled to a first power supply conductor, and a drain coupled to said first node for maintaining a minimum bias level of said drive transistor;

a second transistor having a gate coupled for receiving a data signal, and a drain coupled to said first node; and

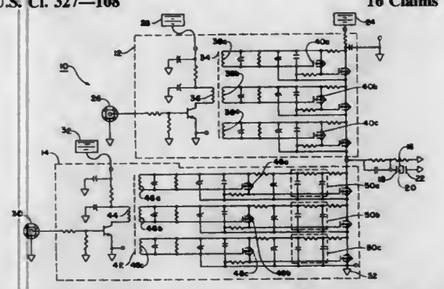
a second current source coupled between a second power supply conductor and a source of said second transistor.

5,548,234

SYSTEM AND METHOD FOR CONTROL OF A POCKEL'S CELL

Laszlo Turi; Richard Ujazdowski, both of San Diego, and Tibor Juhasz, Irvine, all of Calif., assignors to Intelligent Surgical Lasers, Inc., San Diego, Calif.

Filed Dec. 21, 1994, Ser. No. 361,739
Int. Cl.[6] H03K *3/00*
U.S. Cl. 327—108 **16 Claims**



1. A two-step solid state electro-optical switch driver system for rotating the polarization of a light beam which comprises:

a first voltage source for generating a first voltage;

an electro-optical material positioned along the path of said light beam, said electro-optical material being electrically connected between a first electrode and a second electrode, said second electrode being connected to ground;

an ON switch for selectively connecting said voltage source with said first electrode to place said first voltage across aid electro-optical material and change the optical characteristics thereof from a first state to a second stage to rotate the polarization of said light beam; and

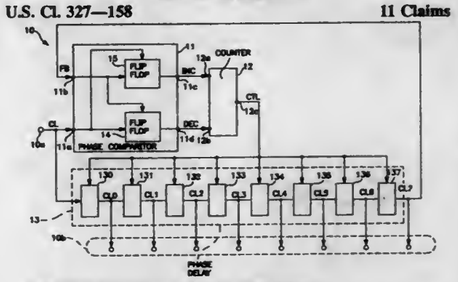
an OFF switch including a first plurality of field effect transistors for selectively connecting said first electrode of said electro-optical material to ground to remove said first voltage therefrom to return the optical characteristics of said electro-optical material to said first state, and a plurality of electronic filters, wherein each filter is connected across a corresponding one of each said field effect transistors.

5,548,235

PHASE-LOCKED LOOP AND RESULTING FREQUENCY MULTIPLIER

Rolland Marbot, Versailles, France, assignor to Bull, S.A., Paris, France

Continuation of Ser. No. 46,179, Apr. 14, 1993, abandoned, which is a continuation of Ser. No. 762,018, Sep. 18, 1991, Pat. No. 5,260,608. This application Oct. 3, 1994, Ser. No. 312,981
Claims priority, application France, Feb. 6, 1990, 90 01366
The portion of the term of this patent subsequent to Sep. 18, 2091, has been disclaimed.
Int. Cl.[6] H03K *5/00*
U.S. Cl. 327—158 **11 Claims**



1. A phase-locked loop circuit, comprising:

a phase comparator for comparing an input signal with a negative feedback signal to produce at least one comparator output signal;

a delay circuit having first and second inputs and at least one output, for producing at said at least one output the negative feedback signal, said first input connected to receive said input signal, said second input connected to receive a digital command signal;

a digital phase command device connected to the phase comparator and to the delay circuit for producing the digital command signal responsive to said at least one comparator output signal and for providing the command signal to said second input of said delay circuit; and

wherein said delay circuit introduces a controllable phase delay between the input signal applied to its first input and the negative feedback signal produced at its at least one output, causing said negative feedback signal to correspond in phase and frequency to said input signal.

5,548,236

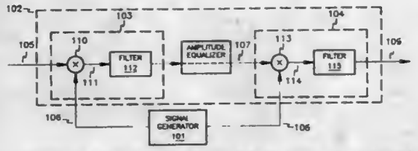
PHASE SHIFTING APPARATUS AND METHOD WITH FREQUENCY MULTIPLICATION

James C. Cooper, Monte Sereno, and Steven J. Anderson, Cupertino, both of Calif., assignors to Pixel Instruments, Los Gatos, Calif.

Continuation of Ser. No. 89,904, Jul. 6, 1993, abandoned, which is a continuation of Ser. No. 771,328, Oct. 2, 1991, abandoned, which is a continuation-in-part of Ser. No. 404,881, Sep. 8, 1989, Pat. No. 5,097,218, which is a continuation-in-part of Ser. No. 172,283, Mar. 23, 1988, Pat. No. 4,868,428, which is a continuation of Ser. No. 16,923, Feb. 20, 1987, Pat. No. 4,829,257. This application Feb. 28, 1995, Ser. No. 396,339
The portion of the term of this patent subsequent to Sep. 19, 2006, has been disclaimed.
Int. Cl.[6] H03H *11/16*
U.S. Cl. 327—237 **9 Claims**

1. An apparatus for shifting a phase of an input signal, said apparatus including means for generating at least a first selected repetitive offset signal and a second selected repetitive offset signal having a selected frequency and phase relationship,

and means for converting the phase of said input signal in response to said first and second selected repetitive offset



signals so as to provide at least a first output signal, said first and second selected repetitive offset signals coupled to said converting means which generates at least an internal signal having a frequency different from said input signal,

said output signal having a frequency the same as that of said input signal, and said output signal having a predetermined phase shift with respect to said input signal.

5,548,237

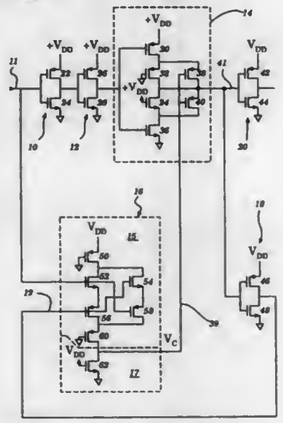
PROCESS TOLERANT DELAY CIRCUIT

Joseph A. Iadanza, Hinesburg, Vt., and Makoto Ueda, Kyoto, Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 10, 1995, Ser. No. 402,280

Int. Cl.[6] H03H *11/26*

U.S. Cl. 327—281 **2 Claims**



1. A process tolerant delay circuit comprising:

a plurality of inverters in series sequence, a first inverter of said sequence being coupled to an input terminal for receiving an input signal, at least one inverter of the plurality of inverters having FETs of minimum channel lengths, said channel lengths being dependent upon a parameter of a process by which they were fabricated, whereby a propagation delay through said at least one inverter is dependent upon said channel lengths;

delay compensation means for receiving a signal from the plurality of inverters and providing an output signal at an output terminal related to the received signal including a variable delay established in accordance with a control signal;

process sense means having an input terminal for receiving the input signal, the process sense means providing said control signal to said delay compensation means when a signal transition of said input signal is received by the process sense means, and in accordance with a channel length of a minimum channel length FET thereof, wherein the process sense means includes

gating means for gating a through channel during an interval between the signal transition of said input signal and a corresponding signal transition of the output signal, and

network means for receiving a fixed signal via said gated through channel and dividing said fixed signal to provide said control signal per a division factor dependant upon said channel length of said minimum channel length FET;

wherein the gating means of the process sense means includes

first and second nodes electrically coupled in series with said fixed signal and said network means,

first and second P-FETs having respective drains/sources coupled to the first node, and respective gates electrically coupled to receive said input signal and said output signal respectively, and

first and second N-FETs having respective sources/drains coupled to the source/drain of said first P-FET and the source/drain of said second P-FET respectively, respective gates electrically coupled to receive said output signal and said input signal respectively, and drain/sources coupled together to the second node;

whereby said first P-FET and said first N-FET as a pair, and said second P-FET and said second N-FET as a pair are off when said input signal and said output signal both are of the same high/low state, and one of said pairs is on so as to couple at least a portion of said fixed signal to said network means when said input signal and said output signal are of different high/low states.

5,548,238

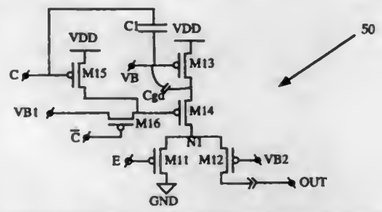
LOW POWER HIGH SPEED CMOS CURRENT SWITCHING CIRCUIT

Zhong-Xuan Zhang; Jyhfong Lin, and Yun-Ti Wang, all of Fremont, Calif., assignors to Cirrus Logic Inc., Fremont, Calif.

Continuation-in-part of Ser. No. 130,309, Oct. 1, 1993, Pat. No. 5,396,133. This application Jan. 5, 1995, Ser. No. 369,002

Int. Cl.[6] H03K *17/04*

U.S. Cl. 327—374 **12 Claims**



1. A high speed current switching circuit coupled and responsive to a digital signal having first and second signal levels, comprising:

first, second, third and fourth p-channel transistors, each having a source, a gate and a drain;

the source of the first transistor being coupled to a first voltage, the drain of the first transistor being coupled to the source of the second transistor;

the drain of the second transistor, the sources of the third and fourth transistors being coupled together;

the drain of the third transistor being coupled to a second voltage which is a lower voltage than the first voltage;

the drain of the fourth transistor being coupled to a current output for the current switching circuit;

the gate of the first transistor being coupled to a first bias voltage so that the gate to source voltage of the first transistor establishes a predetermined current through the first transistor when the second transistor is switched on;

the gate of the fourth transistor being coupled to a third voltage intermediate the first digital signal level and the second digital signal level of the digital signal; and

means responsive to the digital signal changing from said first digital signal level to said second digital signal level, for switching on the second transistor to direct the predetermined current through the third transistor, and then switching off the third transistor to steer the predetermined current from the third transistor to the fourth transistor;

said means also for switching the fourth transistor on to provide the predetermined current through the fourth transistor.

5,548,239

RADIO RECEIVER-TRANSMITTER APPARATUS AND SIGNAL CHANGEOVER SWITCH

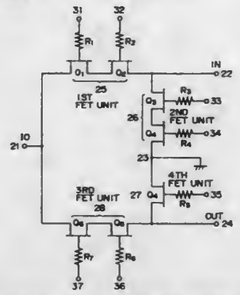
Kazumasa Kohama, Kanagawa, Japan, assignor to Sony Corporation, Japan

Filed May 10, 1994, Ser. No. 245,441

Claims priority, application Japan, May 21, 1993, 5-142721

Int. Cl.[6] H04B *1/44*

U.S. Cl. 327—408 **3 Claims**



1. A signal changeover switch having a signal input terminal, a signal output terminal and a signal input-output terminal, and comprising first, second, third and fourth units of field-effect transistors;

wherein one end of said first FET unit is connected to the signal input terminal while the other end thereof is connected to the signal input-output terminal;

one end of said second FET unit is connected to the signal input terminal while the other end thereof is grounded;

one end of said third FET unit is connected to the signal output terminal while the other end thereof is connected to the signal input-output terminal;

one end of said fourth FET unit is connected to the signal output terminal while the other end thereof is grounded;

each of the transistors constituting said first FET unit has a gate width so determined as to render the source-drain saturation current greater than the maximum current amplitude of the input signal fed from the signal input terminal;

said second FET unit consists of one or more transistor stages equal in number to the result of rounding up the numerical value which is obtained by dividing the maximum voltage amplitude of the input signal fed from the signal input terminal, by the withstand voltage of the transistors in said second FET unit; and

said third FET unit consists of one or more transistor stages equal in number to the result of rounding up the numerical value which is obtained by dividing the maximum voltage amplitude of the input signal fed from the signal input terminal, by the withstand voltage of the transistors in said third FET unit.

5,548,240

CIRCUIT ARRANGEMENT FOR DRIVING A MOS FIELD-EFFECT TRANSISTOR

Erich Bayer, Am Blankenfeld 15, 84030 Pfilas, Germany

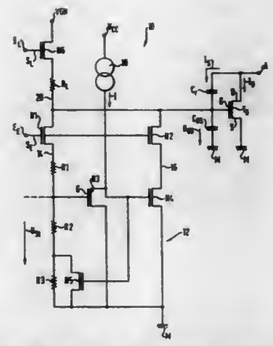
Continuation of Ser. No. 146,858, Nov. 3, 1993, abandoned. This application Mar. 1, 1995, Ser. No. 397,013

Claims priority, application Germany, Nov. 3, 1992, 4237125.2

Int. Cl.[6] H03K *3/01;5/12*

U.S. Cl. 327—432 **13 Claims**

1. A field effect transistor (FET) gate control circuit comprising:



a switchable discharge circuit connected between a source and a gate of said FET wherein said discharge circuit comprises:

a first current path and a second current path connected in parallel and coupled to said gate of said FET wherein said first current path has a substantially larger impedance than said second current path and during turn-off of said FET said first current path is selected and said second current path is deselected until the gate-source voltage of said FET drops below a predetermined value and said second current path is selected via a switching transistor when the gate-source voltage of said FET drops below said predetermined value such that the gate-source voltage of said FET is discharged essential only via said first current path prior to reaching said predetermined value and via said second current path after reaching said predetermined value.

5,548,241

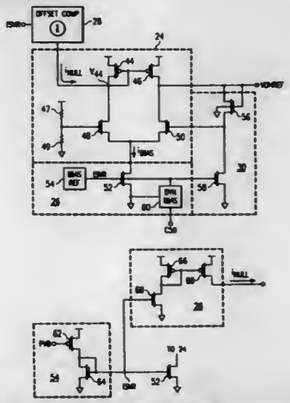
VOLTAGE REFERENCE CIRCUIT USING AN OFFSET COMPENSATING CURRENT SOURCE

David C. McClure, Denton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Dec. 20, 1994, Ser. No. 360,229

Int. Cl.[6] G05F *1/10*

U.S. Cl. 327—538 **18 Claims**



1. A voltage reference circuit, comprising:

a first reference transistor, having a source/drain path connected on a first end to a power supply voltage and having a gate connected to a drain end of its source/drain path;

a second reference transistor having a source/drain path connected between a second end of the source/drain path of the first reference transistor and a common node, and having a gate for receiving a reference voltage;

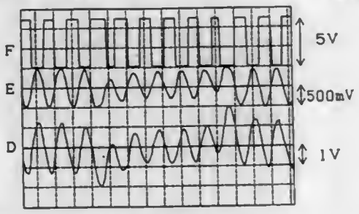
a first mirror transistor, having a source/drain path connected between the power supply voltage and an output node, and having a gate connected to the gate of the first reference transistor;
a second mirror transistor, having a source/drain path connected between the output node and the common node, and having a gate;
a bias current source, coupled to the common node, for conducting a current including the sum of the currents in the second reference transistor and the second mirror transistor; and
an offset compensating current source connected in a current mirror arrangement, having an output connected to direct current to the second end of the first reference transistor, for applying a nulling current thereto.

5,548,242

WAVEFORM SHAPING CIRCUIT

Yukio Yasuda, Itami, and Yutaka Ohashi, Himeji, both of, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 8, 1994, Ser. No. 224,885
Claims priority, application Japan, Apr. 12, 1993, 5-084950
Int. Cl.[6] H03K *5/00;* H04B *1/10*
U.S. Cl. 327—559 **6 Claims**



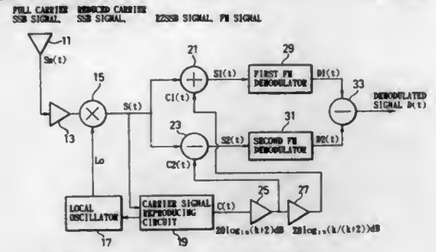
1. The waveform shaping circuit comprising:
an electromagnetic coil for generating an AC output signal that varies in amplitude in response to a change in an incident magnetic flux;
filter means coupled to said electromagnetic coil for removing low-frequency components having frequencies not higher than a cut-off frequency from the AC output signal of said electromagnetic coil, said filter means producing a filtered output signal and comprising:
a first high-pass filter coupled to said electromagnetic coil and said voltage limiting circuit and having a first attenuation characteristic for removing low-frequency components having frequencies not higher than a first cut-off frequency from the AC output signal of said electromagnetic coil, said first high-pass comprising a first resistor, a first capacitor, and a second resistor connected in series, said first resistor, first capacitor, and second resistor connected in series being connected in parallel with said electromagnetic coil; and
a second high-pass filter coupled to said electromagnetic coil and said voltage limiting circuit and having a second attenuation characteristic for removing low-frequency components having frequencies higher than the first cut-off frequency and lower than a second cut-off frequency, the second cut-off frequency being higher than the first cut-off frequency, from the AC output signal of said electromagnetic coil, said second high-pass filter comprising a third resistor and a second capacitor connected in series, said third resistor and second capacitor being connected in parallel with said first resistor;
a voltage limiting circuit coupled to said electromagnetic coil and said filter means for switching between the attenuation characteristics of said filter means in response to the amplitude of the AC output signal of said electromagnetic coil by limiting the amplitude of the AC output signal of said electromagnetic coil so that the AC output signal does not exceed a maximum voltage; and
a comparator having first and second input terminals for comparing the filtered output signal with a reference voltage and generating a shaped output signal in response, a node connecting said first capacitor to said second resistor being connected to the first input terminal of said comparator and a node connecting said electromagnetic coil to said second resistor being connected to the second input terminal of said comparator.

5,548,243

DEMODULATOR FOR DEMODULATING A SINGLE SIDE BAND SIGNAL, A REAL ZERO SINGLE SIDE BAND SIGNAL AND A FREQUENCY MODULATED SIGNAL, AND A CARRIER SIGNAL REPRODUCING CIRCUIT FOR THE DEMODULATOR

Weimin Sun, Ikoma-Gun, and Shigeki Kajimoto, Sakai, both of, Japan, assignors to Icom Incorporated, Osaka, Japan

Filed Jun. 7, 1995, Ser. No. 480,095
Claims priority, application Japan, Feb. 21, 1995, 7-032059
Int. Cl.[6] H03D *3/00;5/00;1/00*
U.S. Cl. 329—316 **27 Claims**



1. A demodulator comprising:
a receiver circuit for receiving a radio signal;
a carrier signal reproducing circuit for reproducing a carrier signal from the received signal of said receiver circuit;
a first amplifier for amplifying said carrier signal, reproduced by said carrier signal reproducing circuit, by a first value to produce a first reproduced carrier signal;
a second amplifier for amplifying said carrier signal, reproduced by said carrier signal reproducing circuit, by a second value to produce a second reproduced carrier signal;
an adder for adding said first reproduced carrier signal and said received signal from said receiver circuit;
a subtracter for obtaining a difference between said second reproduced carrier signal and said received signal from said receiver circuit;
a first FM demodulator for demodulating an output signal of said adder;
a second FM demodulator for demodulating an output signal of said subtracter; and
an arithmetic operation circuit for performing an operation on an output signal of said first FM demodulator and an output signal of said second FM demodulator to produce a demodulated signal of said received signal, and outputting said demodulated signal.

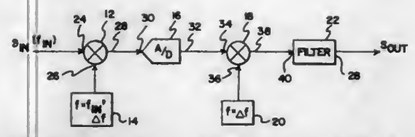
5,548,244

METHOD AND APPARATUS FOR ELIMINATING DC OFFSET FOR DIGITAL I/Q DEMODULATORS

Richard Clewer, Ijamsville, Md., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 14, 1994, Ser. No. 339,136
Int. Cl.[6] H03D *1/00;3/00;7/16;* H04B *1/26*
U.S. Cl. 329—318 **16 Claims**

1. A method for converting an input signal having a desired signal at intermediate frequency and an undesired DC offset to a baseband frequency signal in which the undesired DC offset is eliminated, comprising the steps of:



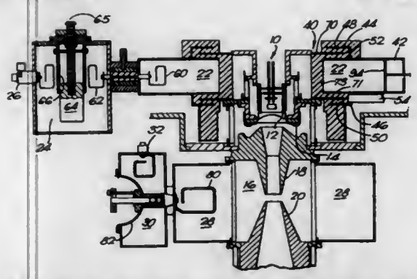
multiplying the input signal by a signal having substantially the same intermediate frequency plus an offset frequency (Δf) to produce a first output signal wherein the desired signal is shifted in frequency to the offset frequency (Δf) and the undesired DC offset is unaffected;
multiplying the first output signal by a signal having substantially the same offset frequency (Δf) to produce a second output signal wherein the desired signal is shifted to baseband frequency and the undesired DC offset is shifted to the offset frequency Δf; and
filtering the second output signal to remove the undesired DC offset while leaving the desired signal, now located at baseband frequency, intact.

5,548,245

ELECTRON BEAM TUBE ARRANGEMENTS HAVING THE INPUT CAVITY COMPRISED OF ELECTRICALLY INTERNAL AND EXTERNAL BODY PORTIONS

Heinz P. Bohlen; Edward S. Sobieradski; Mark Bridges, all of Chelmsford; Steven Bardell, Great-Dunmow; Alan H. Pickering, and Howard T. Pettas, both of Chelmsford, all of, England, assignors to EEV Limited, United Kingdom

Continuation-in-part of Ser. No. 664,572, Mar. 6, 1991, abandoned. This application May 13, 1993, Ser. No. 60,561
Claims priority, application United Kingdom, Mar. 9, 1990, 9005380; Mar. 9, 1990, 9005382; Apr. 13, 1993, 9307552; Apr. 19, 1993, 9308003
Int. Cl.[6] H01J *23/15;23/48;25/04*
U.S. Cl. 330—45 **51 Claims**



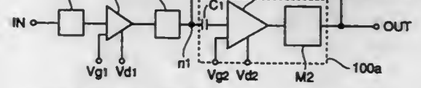
24. An electron beam tube amplifier arrangement comprising:
an input section including a centrally disposed electron gun incorporating a cathode and a grid, the input section being surrounded by an annular primary input cavity, the annular primary input cavity being coupled to a secondary input cavity, the secondary input cavity having a coupling for receiving radio frequency signals from an external source; and
an output section, operatively coupled to and interacting with said input section to provide for amplifying of the radio frequency signals, said output section incorporating at least one drift tube, the output section being surrounded by a primary output cavity, the primary output cavity being coupled to a secondary output cavity, the secondary output cavity having a coupling for outputting amplified radio frequency signals to an external device;
wherein said annular primary input cavity comprises:
an internal body portion comprising upper and lower annular metal plates, the upper plate being electrically connected with the cathode of the electron gun, and the lower plate being electrically connected with the grid of the electron gun;
an external body portion comprising upper and lower annular metal surfaces, and upper and lower flanges fixed to the upper and lower annular metal surfaces, respectively; and
an insulating portion comprised of a dielectric material, the insulating portion separating the upper and lower annular plates of the internal body portion, and separating the internal body portion from the external body portion and the flanges thereof;
wherein the internal body portion and the external body portion, including the flanges thereof, are interleaved in the insulating portion, whereby the internal body portion, the insulating portion, and the external body portion realizes the annular primary input cavity, overlapping channels disposed between the internal and external body portions in the insulating portion providing a relatively high impedance path for radio frequency signals to thereby minimize radio frequency leakage through the insulating portion.

5,548,246

POWER AMPLIFIER INCLUDING AN IMPEDANCE MATCHING CIRCUIT AND A SWITCH FET

Kazuya Yamamoto; Noriyuki Tanino, and Tetsuya Umemoto, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 10, 1995, Ser. No. 438,472
Claims priority, application Japan, Jun. 9, 1994, 6-127266
Int. Cl.[6] H03F *1/14;3/16;3/68;3/191*
U.S. Cl. 330—51 **7 Claims**



1. A power amplifier comprising:
an input terminal for receiving an input signal to be amplified;
an output terminal for supplying an amplified signal;
a first amplifier circuit connected between the input terminal and the output terminal and comprising 1) a first amplifier FET having an input end, an output end, and a first gate width, and 2) a first matching circuit having an input end and an output end, wherein the input terminal is connected to the input end of the first amplifier FET, the output end of the first amplifier FET is connected to the input end of the first matching circuit, and the output end of the first matching circuit is connected to the output terminal; and
a second amplifier circuit connected between the input terminal and the output terminal and comprising 1) a second amplifier FET having an input end, an output end, and a second gate width, 2) a second matching circuit having an input end and an output end, and 3) a first switching circuit having an input end and an output end, wherein the input terminal is connected to the input end of the second amplifier FET, the output end of the second amplifier FET is connected to the input end of the second matching circuit, the output end of the second matching circuit is connected to the input end of the first switching circuit, and the output end of the first switching circuit is connected to the output terminal and wherein the first gate width is greater than the second gate width whereby said first amplifier circuit outputs an output signal of a first power level with high efficiency when the first amplifier FET is operated, the second amplifier FET is not operated, and the first switching circuit is electrically open and the second

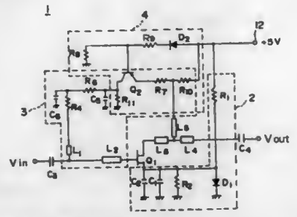
amplifier circuit outputs an output signal of a second power level with high efficiency when the first amplifier FET is not operated, the second amplifier FET is operated, and the first switching circuit is electrically closed.

5,548,247

AMPLIFIER HAVING A FIELD-EFFECT TRANSISTOR WITH GATE BIASED AT A POTENTIAL LOWER THAN SOURCE POTENTIAL

Toshikazu Ogino, and Ryoji Yamamoto, both of Atsugi, Japan, assignors to Mitsumi Electric Co., Ltd., Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 364,773
Claims priority, application Japan, Dec. 28, 1993, 5-70720 U
Int. Cl.[6] H03F *3/16*
U.S. Cl. 330—277 **5 Claims**



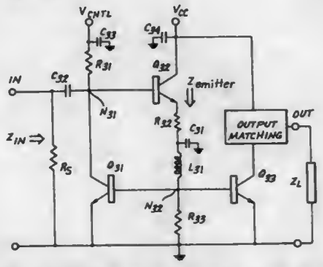
1. An amplifier comprising:
a FET having a source electrode, a gate electrode and a drain electrode, wherein an input signal input to the gate electrode is amplified by the FET, and an output signal indicating the amplified input signal is output from the drain electrode;
first voltage biasing means, coupled to said source electrode of said FET, for biasing the source electrode at a preset positive potential; and
second voltage biasing means, coupled to said gate electrode of said FET, for biasing the gate electrode at a potential lower than the potential of the source electrode during the operation of said FET, wherein said first voltage biasing means comprises a diode having a grounded cathode and an anode coupled to the source electrode of said FET.

5,548,248

RF AMPLIFIER CIRCUIT

Nan L. L. Wang, 1445 6th St., Alameda, Calif. 94501

Filed Jul. 30, 1995, Ser. No. 497,070
Int. Cl.[6] H03F *3/19*
U.S. Cl. 330—288 **15 Claims**



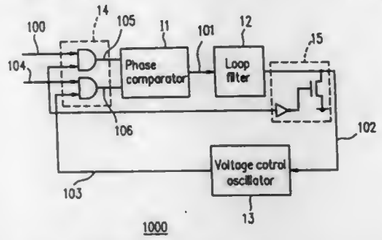
1. An amplifier circuit having an input terminal, an output terminal, a power supply terminal, and a control node, the amplifier circuit comprising:
means in the form of first, second, and third transistors interconnected in a modified current source configuration with first, second, and third resistors and a matching circuit for producing a desired bias current according to the magnitude of a control voltage coupled to the control node while producing an amplified output radio frequency signal at the output terminal from an input radio frequency signal coupled to the input terminal, each of the first, second, and third transistors having a base, an emitter, and a collector;
the first transistor having its collector connected to a first common node, its base connected to a second common node, and its emitter connected to a common ground;
the second transistor having its base connected to the first common node and its collector connected to the power supply terminal;
the third transistor having its base connected to the second common node and its emitter connected to the common ground;
the first resistor being connected between the first common node and the control node;
the second resistor being connected between the emitter of the second transistor and the second common node;
the third resistor being connected between the second common node and the common ground; and
the matching circuit including means connected to the collector of the third transistor, the power supply terminal, and the output terminal for presenting a desired impedance between the collector of the third transistor and the power supply terminal while matching that impedance to the impedance of a lead connected to the output terminal.

5,548,249

CLOCK GENERATOR AND METHOD FOR GENERATING A CLOCK

Masaya Sumita, Osaka; Toshinori Maeda, and Toru Kakiage, both of Neyagawa, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed May 17, 1995, Ser. No. 443,577
Claims priority, application Japan, May 24, 1994, 6-109664
Int. Cl.[6] H03L *7/08;7/16*
U.S. Cl. 331—1 A **23 Claims**



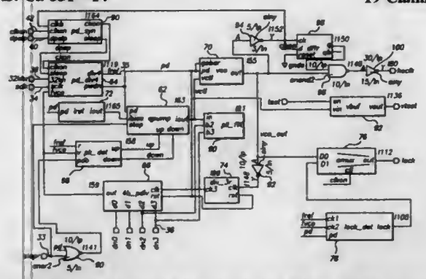
1. A clock generator comprising:
input shutoff control means for receiving a base clock and a reference clock and outputting a first signal and a second signal in response to a reset signal;
phase comparison means for outputting a phase difference signal indicating a phase difference between the first signal and the second signal;
voltage control oscillation means for outputting a frequency variable clock in correspondence with the phase difference signal; and
voltage fixing control means for controlling a voltage of the phase difference signal in response to the reset signal,
wherein, when the reset signal is in a first level, the input shutoff control means outputs the base clock to the phase comparison means as the first signal and outputs the reference clock to the phase comparison means as the second signal, and the voltage fixing control means bolds the voltage of the phase difference signal, and
when the reset signal is in a second level different from the first level, the input shutoff control means outputs two signals to the phase comparison means as the first signal and the second signal, the phase difference between the two signals being substantially zero, and the voltage fixing control means fixing the voltage of the phase difference signal to a predetermined voltage at which the voltage control oscillation means does not oscillate.

5,548,250

LOW POWER PHASE LOCK LOOP CLOCKING CIRCUIT FOR BATTERY POWERED SYSTEMS

Wen Fang, Fremont, Calif., assignor to Cirrus Logic, Inc., Fremont, Calif.

Filed Jan. 5, 1995, Ser. No. 368,863
Int. Cl.[6] H03L *7/07;7/08;7/10;7/16*
U.S. Cl. 331—14 **19 Claims**



1. A clock signal generating circuit including a phase locked loop circuit wherein the phase locked loop circuit includes a phase detector circuit having means for comparing an output clock signal to a reference signal comprising:
a. a first clock receiving circuit for receiving a first clock signal and coupling it to the phase locked loop circuit;
b. a second clock receiving circuit for receiving a second clock signal and coupling it to the phase locked loop circuit wherein the second clock signal has a lower frequency than the first clock signal;
c. a control circuit coupled for controlling the first phase locked loop circuit for selecting one of two operating modes including:
(1) a running mode wherein an output clock signal is generated as a function of the first signal; and
(2) an idle mode wherein a single compare operation is periodically performed in the phase detector circuit.

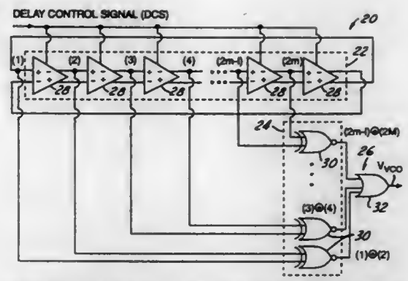
5,548,251

HIGH-FREQUENCY CLOCK GENERATOR USING LOWER FREQUENCY VOLTAGE CONTROLLED RING OSCILLATOR

Shu-Kuang Chou, Yungho City, and Jiunn-Fu Liou, Hsinchu, both of, Taiwan, assignors to Electronics Research & Service Organization, Hsinchu, Taiwan

Filed Jun. 23, 1995, Ser. No. 493,549
Int. Cl.[6] H03B *5/02;27/00*
U.S. Cl. 331—57 **7 Claims**

1. A low noise clock generator, comprising:
2m inversion elements connected in series, where m is an integer greater than zero, each inversion element inverting a respective input signal after a preselected delay d, an input of a first one of said 2m inversion elements being coupled to an output of a 2mth inversion element;
m comparison means each having first and second inputs, each said first and second inputs being respectively coupled to adjacent inversion elements, each one of said m comparison means having an output for providing a logic one signal when said respective first and second inputs match; and
conjunctive logic means responsive to said m comparison means for generating an oscillator output signal having a frequency defined as a function of d.

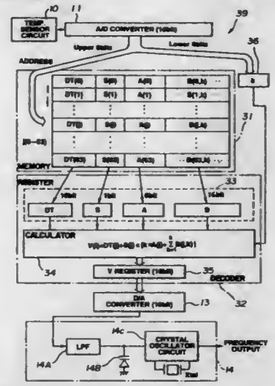


5,548,252

DIGITAL TEMPERATURE COMPENSATED CRYSTAL OSCILLATOR

Takao Watanabe; Mutsuo Hayashi; Kazunari Matsumoto, all of Tokyo; Chikara Tsuchiya; Takashi Matsui, both of Kawasaki, and Masaru Matsubayashi, Tokyo, all of, Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, and Fujitsu Limited, Kawasaki, both of, Japan

Filed Dec. 7, 1994, Ser. No. 350,965
Claims priority, application Japan, Dec. 7, 1993, 5-306166; Dec. 7, 1993, 5-306168; Dec. 8, 1993, 5-306925; Jun. 10, 1994, 6-128412
Int. Cl.[6] H03B *5/04;5/06;5/36;* **H03L** *1/02*
U.S. Cl. 331—176 **45 Claims**



1. A digital control system comprising:
an analog-to-digital converter for converting an analog input signal into a digital input signal;
a data supplying means for storing information items, receiving said digital input signal and producing a digital output information signal representing a selected information item selected in accordance with said digital input signal; and
a digital-to-analog converter for converting said digital output information signal into an analog output information signal;
wherein said digital input signal supplied from said analog-to-digital converter to said data supplying means is divided into a first signal portion and a second signal portion;
wherein said data supplying means comprises a storage device which stores a plurality of data sets each of which is identified by said first signal portion of said digital input signal, which receives said first signal portion, as an address input signal, from said analog-to-digital converter, and provides a selected data set specified by said signal portion; and

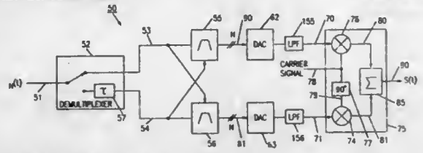
wherein said data supplying means further comprises a decoding means for receiving said selected data set from said storage device, further receiving said second signal portion of said digital input signal, and producing said information output signal in accordance with said selected data set and said second signal portion of said digital input signal.

5,548,253

SPECTRALLY EFFICIENT QUADRATURE AMPLITUDE MODULATOR

Randolph L. Durrant, Colorado Springs, Colo., assignor to Omnipoint Corporation, Colorado Springs, Colo.

Filed Apr. 17, 1995, Ser. No. 423,225
Int. Cl.[6] H03C *3/00;* **H04L** *27/20*
U.S. Cl. 332—103 **20 Claims**



1. A signal processor comprising:
a demultiplexor connected to a serial bit-stream, producing an I bit-stream and a Q bit-stream, said Q bit-stream staggered in time by one-half of a bit interval with respect to said I bit-stream,
a first set of latches connected to said I and Q bit-streams, producing first signals representing a current transition state of said I bit-stream along with previous and upcoming transition states of said Q bit-stream,
a second set of latches connected to said I and Q bit-streams, producing second signals representing a current transition state of said Q bit-stream along with previous and upcoming transition states of said I bit-stream,
a first memory device connected to said first signals representing a current transition state of said I bit-stream along with previous and upcoming transition states of said Q bit-stream, producing an n-bit $I_{digital}$ signal representing a bit transition waveform for said I bit-stream,
a secood memory device connected to said second signals representing a current transition state of said Q bit-stream along with previous and upcoming transition states of said I bit-stream, producing an n-bit $Q_{digital}$ signal representing a bit transition waveform for said Q bit-stream,
a first digital-to-analog converter connected to said $I_{digital}$ signal, producing an analog I signal,
a second digital-to-analog converter connected to said $Q_{digital}$ signal, producing an analog Q signal.

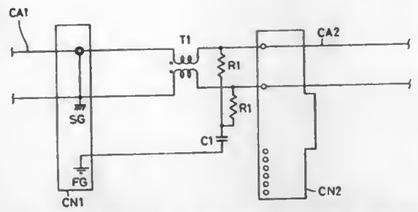
5,548,254

BALANCED-TO-UNBALANCED TRANSFORMER

Yoshiaki Ueno; Haruhiko Hyosu; Takao Sase; Koji Matsushita, and Koji Yamashita, all of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Feb. 27, 1995, Ser. No. 394,966
Claims priority, application Japan, Feb. 28, 1994, 6-029363
Int. Cl.[6] H03H *7/42*
U.S. Cl. 333—25 **11 Claims**

1. A balanced-to-unbalanced transformer circuit comprising:
an unbalanced coaxial cable including a signal line and a signal ground;
a balanced twisted cable having first and second lines twisted at least in a pair;
a transformer having a primary winding with first and second inputs, the first input being coupled to the signal line and the second input being coupled to the first line, and a secondary winding having third and fourth inputs, the third input being coupled to the signal ground and the fourth input being coupled to the second line; and



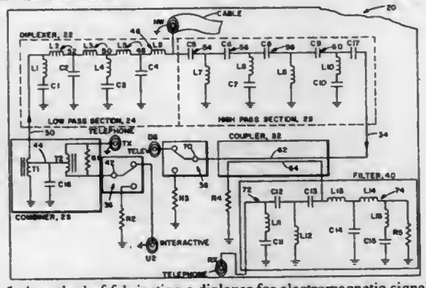
first and second impedance elements coupled in series across the first and second lines and including a center point connecting the first impedance element to the second impedance element, the center point being coupled to the signal ground, whereby mutual signal interconnection may be achieved between a balanced signal transmitted on the balanced twisted pair cable and an unbalanced signal transmitted on the unbalanced coaxial cable including a capacitor connected between the signal ground and the center point for coupling the center point to the signal ground.

5,548,255

COMPACT DIPLEXER CONNECTION CIRCUIT

Mark A. Spielman, South Norwalk, Conn., assignor to Microphase Corporation, Norwalk, Conn.

Filed Jun. 23, 1995, Ser. No. 494,279
Int. Cl.[6] H03H *7/46*
U.S. Cl. 333—132 **8 Claims**



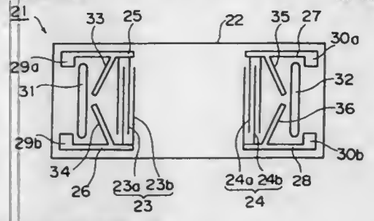
1. A method of fabricating a diplexer for electromagnetic signals on a dielectric support plate within a region of the plate having dimenstons less than approximately one-half wavelength of the shortest wavelength of said signals, the method comprising steps of:
providing a first filter on a first section of said plate, said plate being covered with a top electrically conductive sheet and a bottom electrically conductive sheet forming a stripline structure;
providing a second filter on a second section of said plate, and connecting each of said filters to a common terminal of the diplexer, said first section being separate from said second section, said first filter being operative to pass signals in a first part of the electromagnetic spectrum while attenuating signals in a second part of the electromagnetic spectrum, said second filter being operative to pass signals in the second part of the spectrum while attenuating signals in the first part of the spectrum;
wherein said step of providing said first filter includes a step of constructing said first filter of a series of filter stages having conductors and capacitors and being configured with an elongated configuration;
said step of providing said second filter includes a step of constructing said second filter of a series of filter stages having conductors and capacitors and being configured with an elongated configuration;
in each of said filters, inductors of consecutive ones of said series of filter sections are proximate each other while other ones of said inductors are distant from each other;
said method further comprises, in each of said filters, steps of forming each of said inductors by an electrically conductive wire wound about a core, said core extending along an axis of the core;
in each of said filters, forming each of a plurality of said capacitors as a laminate comprising an electrically conductive pad and a layer of dielectric material disposed between said pad and a portion of one of said sheets;
reducing a linear extent of said second filter by bending its linear configuration, said bending bringing a distant one of said inductors of said second filter into relative proximity to a group of proximate ones of said inductors of said second filter; and
in said second filter, orienting said one distant inductor to bring its core axis into a perpendicular relationship to other inductors of said group of proximate inductors.

5,548,256

SAW FILTER HAVING ELECTRODES FOR RELAXATION OF ELECTRIC FIELD CONCENTRATION

Toru Watanabe, and Kenichi Noto, both of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Jan. 13, 1995, Ser. No. 372,453
Claims priority, application Japan, Jan. 14, 1994, 6-002743
Int. Cl.[6] H03H *9/42;9/64*
U.S. Cl. 333—194 **20 Claims**



1. A SAW filter comprising:
an SAW substrate;
input and output interdigital transducers located on one major surface of said SAW substrate, each said interdigital transducer including a plurality of interdigitated electrode fingers and a pair of bus bars of different potentials; and
at least one pair of electric field concentration relaxation electrodes being arranged on said SAW substrate so as to be physically spaced and separate from the electrode fingers of the input and output interdigital transducers and extending from respective ones of said pair of bus bars toward each other in directions obliquely intersecting with a surface wave propagation direction on at least one end portion along said surface wave propagation direction in at least one of said input and output interdigital transducers.

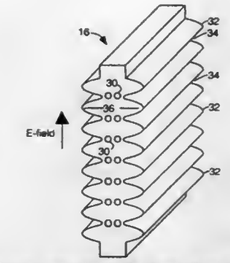
5,548,257

VACUUM-BARRIER WINDOW FOR WIDE-BANDWIDTH HIGH-POWER MICROWAVE TRANSMISSION

Malcolm Caplan, Fremont, and Clifford C. Shang, Tracy, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Sep. 18, 1995, Ser. No. 529,797
Int. Cl.[6] H01P *1/08;* **H01Q** *13/00*
U.S. Cl. 333—252 **8 Claims**

1. A barrier window for passing through broadband high-energy radiation, comprising:



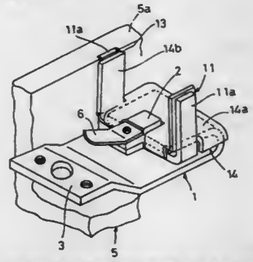
a planar dielectric material in the basic form of a window and having opposite first and second surfaces;
a system of parallel ridges and valleys disposed in at least one of said opposite first and second surfaces and formed of said planar dielectric material, wherein the depths of said valleys measured from said ridges are approximately the same and equal to at least one of the wavelengths included in a broadband radiation, and wherein the periods between adjacent valleys and the periods between adjacent ridges are approximately the same and equal to at least one of the wavelengths included in said broadband radiation; and
a system of liquid-coolant conduits disposed in the planar dielectric material and oriented to run in parallel proximate to said valleys in the system of parallel ridges and valleys in the thinnest linear parts of the planar dielectric material.

5,548,258

CIRCUIT BREAKER WITH INSULATION DEVICE

Katsunori Kuboyama; Koji Asakawa, and Naoshi Uchida, all of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Apr. 14, 1995, Ser. No. 422,518
Claims priority, application Japan, Apr. 26, 1994, 6-110423
Int. Cl.[6] H01H *75/00*
U.S. Cl. 335—16 **8 Claims**



1. A circuit breaker with an insulation device comprising:
a molded case having side walls to form a chamber, said side walls having vertical slots therein, said vertical slots facing and communicating with the chamber and being indented from respective inner surfaces of the side walls;
a stationary contact member situated in the chamber and fixed on said molded case, said stationary contact member having a contact point and an outer surface situated around the contact point and directly facing inwardly of the chamber;
a moving contact member movably connected to the molded case and having a distal end portion for contacting with and separating from said stationary contact member;
a U-shaped magnetic driving core attached to the stationary contact member and having a pair of arms projecting upwardly from said stationary contact member, said arms having inner and outer surfaces and being situated completely inside said slots so that the outer surfaces of the arms are entirely covered by the side walls of the molded case; and

an insulation cover having arm portions and a board portion and being attached onto said stationary contact member, said board portion substantially completely covering the outer surface of said stationary contact member except the contact point, said arm portions completely covering the inner surfaces of said arms of said magnetic driving core so that the inner surface of the magnetic driving core and the outer surface of said stationary contact member except the contact point facing inwardly of the chamber are substantially completely covered by the insulation cover.

5,548,259

ELECTROMAGNETIC RELAY HAVING AN IMPROVED RESISTIVITY TO SURGE

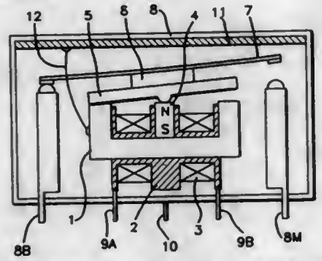
Tatsumi Ide, and Yasuhisa Nishi, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Sep. 21, 1994, Ser. No. 309,676

Claims priority, application Japan, Sep. 21, 1993, 5-234711

Int. Cl.[6] H01H *51/22*

U.S. Cl. 335—78 **19 Claims**



1. An electromagnetic relay having an improved resistivity to surge comprising:

an enclosure member accommodating said relay;

a U-shaped core provided in said enclosure member, said U-shaped core comprising a horizontal part and two vertical pats extending upward from opposite ends of said horizontal port;

a permanent magnet extending upward from a center of said horizontal part of said U-shaped core, and said permanent magnet having almost the same height as said vertical parts of said U-shaped core,

coils winding around said horizontal part of said core through a spool;

at least one coil terminal electrically connected to said coils, said coil terminal extending downward from said coils and penetrating through a bottom wall of said enclosure member to the outside of said enclosure member,

two fixed contact terminals vertically extending in said enclosure member, said two fixed contact terminals having bottom portions which penetrate through said bottom wall of said enclosure member to the outside of said enclosure member, said two fixed contact terminals being positioned outside said core;

an armature having a center portion in contact with a top portion of said permanent magnet, said armature exhibiting an alternate motion such that opposite ends of said armature are alternately brought into contact with and apart from top portions of said vertical parts of said U-shaped core;

a contact member having at least almost the same length as a horizontal distance between said two fixed contact terminals, said contact member being electrically separated from and mechanically connected to said armature through an insulating material having a sufficiently large dielectric constant for ensuring that a static capacitance between said armature and said coil terminal is larger than a static capacitance between said armature and said fixed contact terminals.

5,548,260

CONTACT ASSEMBLY FOR A MAGNETIC SWITCH

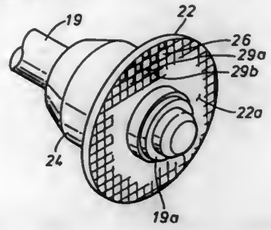
Mitsuhiro Kogure, Gumma-ken; Shinichi Nagashima, Tochigi-ken; Kazuhisa Wakabayashi, Gumma-ken; Shigeyuki Enkaku, Gumma-ken; Hitoshi Shimayama, Gumma-ken; Minoru Kimura, Gumma-ken; Shuji Shimoyama, Gumma-ken, and Tsugio Yokoo, Gumma-ken, all of, Japan, assignors to Mitsuba Electric Manufacturing Co., Ltd., Gumma-ken, Japan

Division of Ser. No. 167,954, Dec. 16, 1993, Pat. No. 5,467,632. This application May 25, 1995, Ser. No. 451,687

Claims priority, application Japan, May 6, 1992, 04-142099

Int. Cl.[6] H01H *67/02*

U.S. Cl. 335—126 **12 Claims**



1. A contact assembly for a magnetic switch comprising a pair of fixed contact members and a plate-shaped moveable contact member adapted to be selectively connected across the fixed contact members, said assembly comprising:

a contact surface of at least one of the fixed contact members and the moveable contact member including a first group of a plurality of spaced recesses and a second group of a plurality of spaced recesses in a checker board pattern, the groups being formed in a mutually staggered relationship.

5,548,261

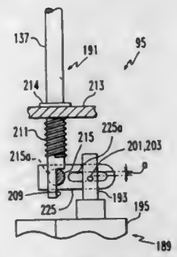
TRIP DEVICE FOR A CIRCUIT BREAKER

Phillip L. Ulerich, Pittsburgh; Kathryn M. Palmer, Monroeville, and Edward F. Docherty, Pittsburgh, all of Pa., assignors to Eaton Corporation, Cleveland, Ohio

Filed Mar. 3, 1995, Ser. No. 397,807

Int. Cl.[6] H01H *9/00*

U.S. Cl. 335—172 **11 Claims**



1. A circuit breaker having a set of electrical contacts which are opened by a circuit breaker mechanism activated by a trip mechanism which, in turn, is activated by a trip device when an overload or an abnormal condition occurs in said circuit breaker, said trip device, comprising:

solenoid means having slidable core means being in a first position when said circuit breaker is operating and being moved in a second position when said overload or abnormal condition occurs,

an actuating rod associated with said trip mechanism and positionable in a tripping position for operating said trip mechanism for opening of said electrical contacts,

shaft means operatively associated with said actuating rod,

latch arm means fixedly mounted to said shaft means and operatively associated with said core means of said solenoid means,

wherein said latch arm means includes slot means,

wherein said means of said core means are projection means extending into said slot means of said latch means and structured to form a gap in said slot means between said projection means and said latch arm means, and

said core means including means being structured to impact against said latch arm means upon said movement of said core means in said second position to effect movement of said latch means and said shaft means in a manner to effect said tripping position of said actuating rod for said operation of said trip mechanism for said opening of said set of electrical contacts.

5,548,262

FLUX TRANSFORMER FORMED OF AN OXIDE SUPERCONDUCTING THIN FILM AND METHOD FOR MANUFACTURING THE SAME

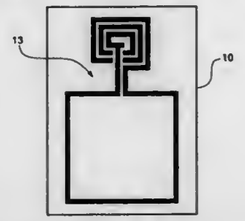
Hirokazu Kugai, and Tatsuoki Nagaishi, both of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Mar. 29, 1995, Ser. No. 412,906

Claims priority, application Japan, Mar. 29, 1994, 6-082404; Feb. 10, 1995, 7-046376

Int. Cl.[6] H01F *7/22*; **H01L** *39/24*; **G01R** *33/035*

U.S. Cl. 335—216 **7 Claims**



1. An oxide superconducting flux transformer comprising:

a pickup coil, an input coil, a first line connecting a first end of the input coil to a first end of the pickup coil and a second line including a bridge part connecting a second end of the pickup coil to a second end of the input coil; wherein

the input coil, the pickup coil, the first line and the second line are constructed from a first oxide superconducting thin film having a pattern which corresponds to the second line except the bridge part, the first line, the pickup coil and the input coil, a second oxide superconducting thin film having a pattern which corresponds to the input coil except a domain which is intersected by the bridge part, the pickup coil, the first line and the second line and a non-superconducting thin film formed in the domain in which the bridge part exists, between the first and the second oxide superconducting thin films, and

the second oxide superconducting thin film formed directly atop the first oxide superconducting thin film in all domains, except for the domain in which the bridge part exists.

5,548,263

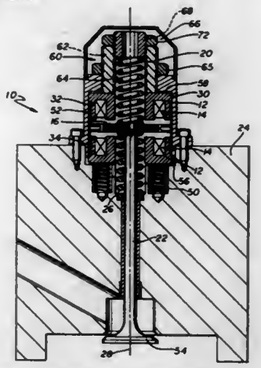
ELECTROMAGNETICALLY ACTUATED VALVE

Dennis C. Bulgatz, Reseda; Fernando B. Morinigo, Los Angeles, both of Calif.; Christopher Sortore, Charlottesville, Va., and Keith O. Stuart, Cypress, Calif., assignors to Aura Systems, Inc., El Segundo, Calif.

Continuation-in-part of Ser. No. 957,194, Oct. 5, 1992, Pat. No. 5,222,714. This application Jun. 28, 1993, Ser. No. 84,737

Int. Cl.[6] F09L *9/04*

U.S. Cl. 335—274 **8 Claims**



1. An electromagnetic actuator comprising:

at least one electromagnet;

at least one armature element, said armature element having a normally biased initial spaced apart first position distal from said electromagnet when said electromagnet is off and a fixed stop position proximal from said electromagnet when said electromagnet is on;

a first resilient member adapted to bias said armature element in said normally biased first position, said first resilient member having a first level of resiliency; and

a second resilient member adapted to bias said electromagnet away from said armature, said second resilient member having a second resiliency level, wherein said first resiliency level is greater than the second resiliency level, whereby said armature approaches said electromagnet when said electromagnet is on until said armature reaches said fixed stop position, and said electromagnet subsequently approaches said armature to said fixed stop position.

5. A temperature compensating electromagnetic actuator for an actuated valve, the valve having a closed position and having a valve stem exhibiting thermal expansion comprising:

at least one electromagnet;

at least one armature element adapted to be mounted to the valve stem, said armature element having a normally biased initial spaced apart first position distal from said electromagnet when said electromagnet is off and an indeterminate second position proximal from said electromagnet when said electromagnet is on, said indeterminate second position varying in relation to the thermal expansion of the valve stem and corresponding to the valve closed position;

a first resilient member adapted to bias said armature element in said normally biased first position, said first resilient member having a first level of resiliency; and

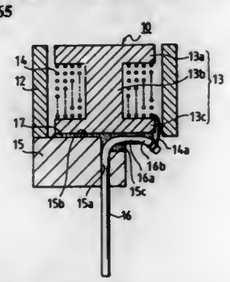
a second resilient member adapted to bias said electromagnet away from said armature, said second resilient member having a second resiliency level, wherein said first resiliency level is greater than the second resiliency level, whereby said armature approaches said electromagnet when said electromagnet is on until said armature reaches said second position, and said electromagnet subsequently approaches said armature to said second position.

5,548,264

COIL DEVICE

Katsuyoshi Teshima, Fukuoka; Hideo Kamoshita, Tokyo, and Masaaki Baba, Fukuoka, all of, Japan, assignors to Mitsumi Electric Co., Ltd., Tokyo, Japan

Filed Jan. 30, 1995, Ser. No. 380,861
Claims priority, application Japan, Jan. 31, 1994, 6-029004
Int. Cl.[6] H01F *15/10;27/30*
U.S. Cl. 336—65 **6 Claims**



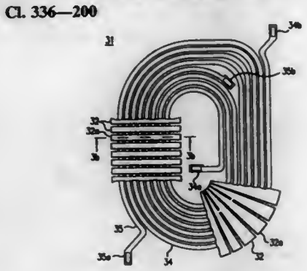
1. A coil device comprising:
an insulating board;
a drum core disposed on the board, the drum on which a coil is wound;
at least one lead terminal passing through the insulating board from the bottom surface of the insulating board, the lead terminal projecting sideways; and
an adhesive layer interposed between the insulating board and the drum core, the lead terminal projecting sideways positioned in the adhesive layer.

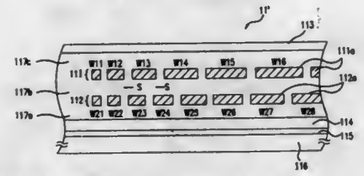
5,548,265

THIN FILM MAGNETIC ELEMENT

Akira Saito, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Division of Ser. No. 25,422, Mar. 1, 1993, Pat. No. 5,355,301.
This application Apr. 11, 1994, Ser. No. 313,933
Claims priority, application Japan, Feb. 28, 1992, 4-043607
Int. Cl.[6] H01F *5/02*
U.S. Cl. 336—200 **5 Claims**





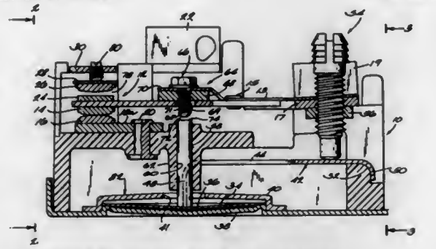
1. A thin-film magnetic element comprising:
a substrate with a surface,
a first thin film coil made of a conductive material and formed in a spiral shape on the surface of the substrate parallel thereto, and
a second thin-film coil made of a conductive material and formed in a spiral shape on the first thin-film coil parallel to the substrate, said first thin-film coil and said second thin-film coil occupying nearly a same position relative to said substrate surface, each of said first and second thin film coils changing a line width from an inner circumference to an outer circumference, a changing ratio of the line width at the first thin film coil being different from that at the second thin film coil, said spiral shapes of said first and second thin-film coil being shifted slightly away from each other in a direction parallel to the substrate surface.

5,548,266

THERMOSTAT CONSTRUCTION

Mark A. Murphy, Franklin, Tenn., assignor to Apcom, Inc., Franklin, Tenn.

Filed Sep. 8, 1994, Ser. No. 303,298
Int. Cl.[6] H01H *37/12;37/54;37/52*
U.S. Cl. 337—360 **13 Claims**



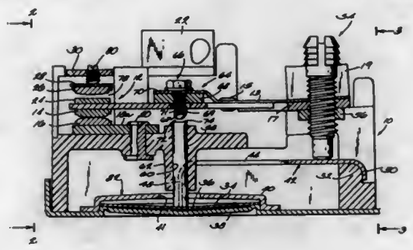
1. A thermostatic switch construction comprising:
(a) a housing means (**10**);
(b) a switch arm means (**12**) mounted for movement in said housing;
(c) a bi-metallic snap disk means (**34**) mounted in said housing and movable with snap action between two positions of stability;
(d) a switch arm actuating plunger means (**58**) adapted for movement by said snap disk means;
(e) a creep gap set means (**64**), including a creep gap set screw (**66**) threadably mounted in said switch arm means opposite one end of said plunger means, the space between said set screw and said one end of said plunger being adjustable by rotation of said set screw.

5,548,267

THERMOSTAT CONSTRUCTION WITH IMPROVED BI-METALLIC DISK MOUNTING ARRANGEMENT

Mark Murphy, Franklin, Tenn., assignor to Apcom, Inc., Franklin, Tenn.

Filed Sep. 8, 1994, Ser. No. 303,118
Int. Cl.[6] H01H *37/04;37/52*
U.S. Cl. 337—372 **8 Claims**



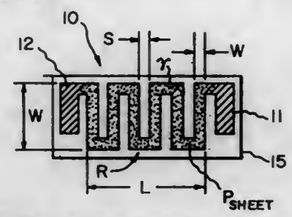
1. A thermostatic switch construction comprising:
(a) a switch housing means (**10**);
(b) a switch arm means (**12**) mounted for movement in said switch housing;
(c) a bi-metallic snap disk means (**34**) movable with snap action between two positions of stability to actuate said switch arm means;
(d) a bi-metallic disk housing assembly (**82**) in which said bi-metallic snap disk means is mounted, said bi-metallic disk housing assembly serving to isolate said bi-metallic snap disk from contact with any part of the switch housing means (**10**), said disk housing assembly is comprised of a metal platform member (**38**) and a metal cup-shaped cover member (**40**) mounted thereon to provide an enclosed space (**36**) in which said bi-metallic snap disk is mounted, said snap disk movable between its two positions of stability without making contact with said cup-shaped cover member.

5,548,268

FINE-LINE THICK FILM RESISTORS AND RESISTOR NETWORKS AND METHOD OF MAKING SAME

Franklyn M. Collins, 463 Morgan Dr., Lewiston, N.Y. 14092

Division of Ser. No. 132,480, Oct. 6, 1993. This application Jun. 2, 1995, Ser. No. 460,062
Int. Cl.[6] H01C *1/12*
U.S. Cl. 338—307 **4 Claims**



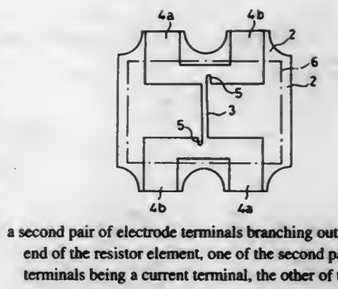
1. A method for providing a resistor and a resistor network, comprising the steps of:
furnishing an insulative substrate;
forming designated conductive terminations on the substrate;
selecting a directly writeable heterogeneous resistive composition having a sheet resistivity ρ_{sheet};
choosing a line pattern, a line width w and a total line length l of a resistive line to be deposited on said substrate between at least two of said terminations; and
writing directly and continuously between and onto at least two of said terminations an electrically resistive line of said chosen pattern, line width and total line length from said selected composition so as to achieve a desired value of resistance R of a resistor and a resistor of a resistor network in accordance with the relationship $R=\rho_{sheet}xl/w$.

5,548,269

CHIP RESISTOR AND METHOD OF ADJUSTING RESISTANCE OF THE SAME

Takafumi Katsuno, and Shigeru Kambara, both of Ukyo-ku, Japan, assignors to Rohm Co. Ltd., Kyoto, Japan

Filed Sep. 26, 1994, Ser. No. 313,922
Claims priority, application Japan, Nov. 17, 1993, 5-287995
Int. Cl.[6] H01C *1/12;1/148*
U.S. Cl. 338—325 **9 Claims**



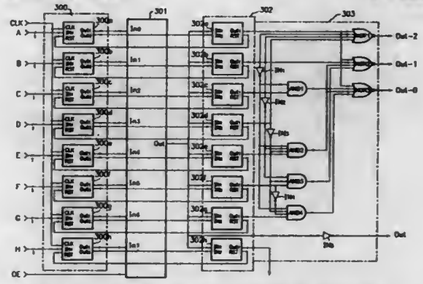
1. A chip resistor comprising:
an insulating chip substrate;
a resistor element formed on the chip substrate;
a first pair of electrode terminals branching out from one end of the resistor element, one of the first pair of electrode terminals being a current terminal, the other of the first pair of electrode terminals being a voltage terminal; and
a second pair of electrode terminals branching out from the other end of the resistor element, one of the second pair of electrode terminals being a current terminal, the other of the second pair of electrode terminals being a voltage terminal;
wherein at least one of the electrode terminals of the first and second pairs is formed with a trimmed portion extending along the resistor element at least at one end thereof.

5,548,270

BIT SEQUENTIAL TYPE PARALLEL COMPARATOR

Hyoung-Gon Kim; Young-Moo Kwon, and Young Hoon Lee, all of Seoul, Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea

Filed Jul. 24, 1995, Ser. No. 506,378
Claims priority, application Rep. of Korea, Jul. 26, 1994, 18129/1994
Int. Cl.[6] G06F *7/02*
U.S. Cl. 340—146.2 **10 Claims**



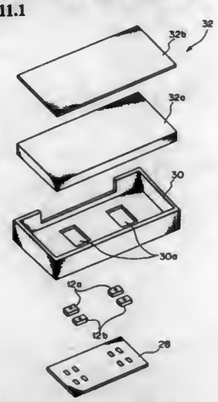
1. A bit sequential type parallel comparator, comprising:
minimum data detection means for detecting a minimum data by comparing a data of 'm' bits sequentially inputted from 'n' registers within 'm' clock cycles;
minimum data generation means for generating a 1's complementary value of the minimum data of 'n' bits detected by said minimum data detection means in response to an externally applied enable signal;
minimum location information detection means for detecting a location of a register having the minimum data value among said 'n' registers in accordance with the data generated by said minimum data generation means and the data detected by the minimum data detection means and for resetting the minimum data detection means upon location of the register having the minimum value using the detected minimum location information as a reset signal; and
minimum location generation means for locating a minimum value register's location by logically operating the data detected by said minimum location information detection means and for generating a minimum value location in accordance with a 1's complement of the data generated by the minimum data generation means.

5,548,271

DATA DISPLAY RADIO PAGER

Kinya Tsuchiyama, and Masahiro Matai, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Jun. 24, 1994, Ser. No. 265,668
Claims priority, application Japan, Jnn. 28, 1993, 5-178529
Int. Cl.[6] H04Q *1/30*; G08B *5/22*
U.S. Cl. 340—311.1 15 Claims



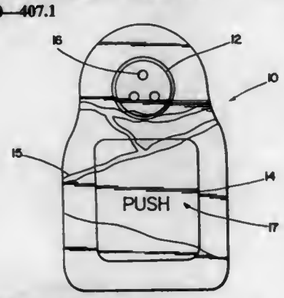
1. A data display radio pager comprising:
a liquid crystal display screen mounted at a periphery of one side of a pager housing;
at least one backlight light emitting diode mounted adjacent to and for providing illumination visible through said liquid crystal display screen; and
at least one alert light emitting diode mounted adjacent to and for providing illumination visible through said liquid crystal display screen for alerting a user of said radio pager to an incoming call; wherein
said at least one backlight light emitting diode and said at least one alert light emitting diode are both located within said pager housing and between said liquid crystal display screen and a housing side opposite said one side so that each of said at least one backlight light emitting diode and said at least one backlight light emitting diode illuminates said liquid crystal display.

5,548,272

TALKING POSTER

Aaron D. Clark, Reynoldsburg, Ohio, assignor to Inotrend, Inc., Reynoldsburg, Ohio

Filed Mar. 10, 1995, Ser. No. 402,195
Int. Cl.[6] H04B *3/36*
U.S. Cl. 340—407.1 5 Claims



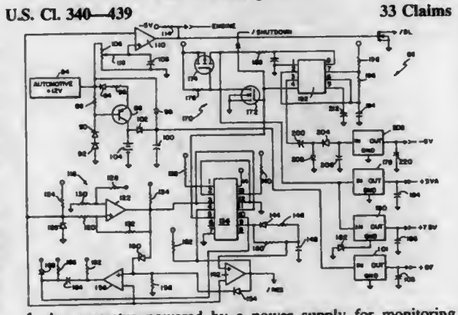
1. An assembly, comprising:
a poster comprised of a first material, said poster having a first surface, said first surface including poster art thereon;
a housing comprised of a second material, said housing attached to a portion of said first surface of said poster;
a speaker concealed between said housing and said first surface of said poster;
an electric circuit including a sound production component, operatively connected to said speaker and concealed between said housing and said first surface of said poster;
a trigger attached to said electric circuit and concealed within said housing, said trigger adapted to be actuated through said housing to produce said sound;
wherein a surface of said housing is prepared with a matching art which is substantially the same as that arca of said poster art which appears on said portion of said poster that said housing covers when said housing is attached to said poster, such that said housing artistically blends in with the surrounding poster art that is not covered by said housing.

5,548,273

VEHICLE DRIVING MONITOR APPARATUS

Geoffrey P. Nicol, Terth, Australia; Brian E. Kratz, and Allen J. Studer, both of Lawrence, Ind., assignors to Competition Components International Pty Ltd, Australia

Continuation of Ser. No. 84,512, Jun. 29, 1993, abandoned.
This application Oct. 11, 1995, Ser. No. 541,186
Int. Cl.[6] B60Q *1/00*
U.S. Cl. 340—439 33 Claims



1. An apparatus powered by a power supply for monitoring operation of a vehicle, the apparatus comprising:
a sensor configured to generate an output signal proportional to G-forces on the vehicle;
means coupled to the sensor for storing a value of the G-force output signal generated by the sensor when said value is greater than a selected limit;
means for detecting that the power supply for powering the apparatus has been disconnected, thereby providing an indication that the vehicle was driven without the sensor and storing means in operation; and
means coupled to the storing means for analyzing a password to determine whether a user is authorized to change said selected limit.

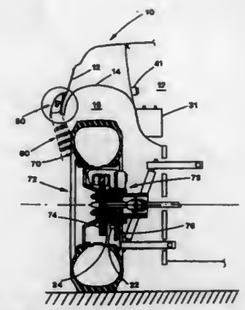
5,548,274

STROBE LIGHT FOR A VEHICLE TIRE AND WHEEL

Kent G. Anderson, 925 N. Griffin, bismarck, N. Dak. 58501, and Robert R. Reed, 104 Sweetbriar Rd., Greenville, S.C. 29615

Filed Jul. 20, 1995, Ser. No. 504,446
Int. Cl.[6] B60Q *1/26*
U.S. Cl. 340—468 16 Claims

1. A lighting device for a vehicle having at least one wheel and a direct current (DC) power supply, each wheel being located within a wheel well of said vehicle and having a rotating portion including a tire and a non-rotating portion including a hub, said tire being in rolling contact with a roadway when in use and removable for making repairs to said tire and said wheel, said lighting device comprising:
a light attached to said vehicle and having a stroboscopic flash tube to illuminate said wheel of said vehicle;
a pulse modulator energized by said DC power supply when activated by a first power switch for monitoring a first electrical signal from said rotating wheel and for generating a second electrical pulse signal at a modulated frequency and a modulated phase angle; and
a flash generator energized and activated by said second electrical pulse signal for triggering said flash tube at said modulated frequency and said modulated phase angle, wherein said wheel is illuminated by said lighting device at said modulated frequency.

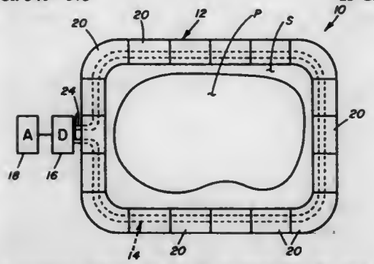


5,548,275

ALARM SYSTEM FOR ENCLOSING AND PROTECTING AN AREA

Ali Shambayati, 8143 E. Star Glory Dr., Tuscon, Ariz. 85715; Mohammad R. Ehasani, 5630 E. Via Arbolada, Tucson, Ariz. 85715, and Ali R. Ehsani, 4117 E. Bellevue St. #4, Tucson, Ariz. 85712

Filed Jan. 23, 1995, Ser. No. 376,783
Int. Cl.[6] G03B *23/20*
U.S. Cl. 340—573 13 Claims



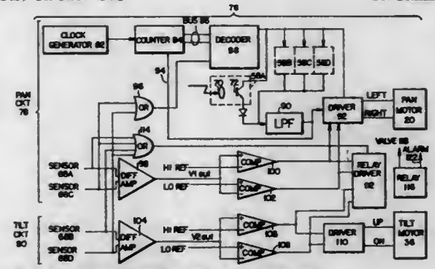
1. A protective alarm system for encompassing an area to be protected, said alarm system comprising:
(a) an arrangement including a plurality of flexible hose modules filled with fluid and interconnected in an end-to-end relationship with one another at opposite open ends of said hose modules such that the fluid filling each hose module communicates with the fluid filling adjacent hose modules interconnected thereto and the interconnected hose modules substantially surround a perimeter of the area to be protected so as to permit a person approaching the area surrounded by said interconnected hose modules to step thereon, each of said hose modules having means defining a plurality of compartments therein, said compartments of said each hose module extending between and being provided in communication with said opposite open ends of said each hose module and being partitioned to suppress generation of wave motion in said each hose module where said fluid filling said hose module is a liquid and to ensure pressure levels will remain substantially the same within each said compartment;
(b) means connected to said arrangement for detecting a change in pressure of said fluid filling said hose modules in response to transfer of the weight of the person stepping on at least one of said hose modules and to said fluid therein by compression of said hose module; and
(c) an alarm device connected to said detecting means for generating a warning signal in response to detection of said change in said fluid pressure in said hose module by said detecting means.

5,548,276

LOCALIZED AUTOMATIC FIRE EXTINGUISHING APPARATUS

Alan E. Thomas, 424 Atlantic Ave., Ocean City, N.J. 08226, assignor to Alan E. Thomas, Ocean City, N.J.

Filed Nov. 30, 1993, Ser. No. 158,989
Int. Cl.[6] G08B *17/12*
U.S. Cl. 340—578 18 Claims



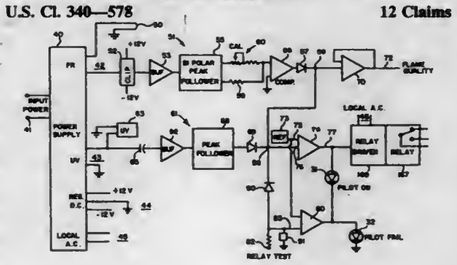
1. A fire extinguishing apparatus comprising;
a turret mounted in a preselected area;
sensor means for detecting a fire;
nozzle means mounted on said turret, said nozzle means being arranged and constructed to eject a fire extinguishing agent; and
aiming means coupled to said sensor for aiming said nozzle means toward said fire when said fire is detected by said sensor means;
wherein said sensor means includes a first set of sensors having optical axes disposed at a first angle with respect to a vertical line and a second set of axis disposed at a second angle with respect to said vertical line.

5,548,277

FLAME SENSOR MODULE

Gary G. Wild, Rockford, Ill., assignor to Eclipse, Inc., Rockford, Ill.

Filed Feb. 28, 1994, Ser. No. 203,170
Int. Cl.[6] G08B *17/12*
U.S. Cl. 340—578 12 Claims



1. A standalone modular flame sensor adapted for use with an ultraviolet transducer, a flame rod transducer, or both said transducers, and comprising, in combination:

(a) a single plug-in modular housing containing the following elements (b)–(g),

(b) a multi-function power supply having a flame rod output for driving a flame rod transducer when present and an ultraviolet output for driving an ultraviolet transducer when present;

(c) flame rod and ultraviolet interface means for connection to the flame rod transducer and ultraviolet transducer respectively when present, the interface means having a summing junction output for producing an output signal having a level dependent upon the quality of the flame sensed by the respective transducers when present;

(d) calibrating means for adjusting the output signal level so that the flame rod transducer when present and the ultraviolet transducer when present produce an output signal of about the same level for the same quality of flame;

(e) flame failure comparator means responsive to said output signal for producing a "flame-on" signal when either transducer is present and exposed to a flame, and a "flame-fail" signal when neither transducer is exposed to a flame;

(f) flame quality circuitry responsive to said output signal for producing a flame quality signal having a continuously variable level indicative of the quality of the flame sensed by either of said transducers; and

(g) a test point on the housing connected to the flame quality circuitry for rendering the flame quality signal accessible at the test point for measurement.

5,548,278

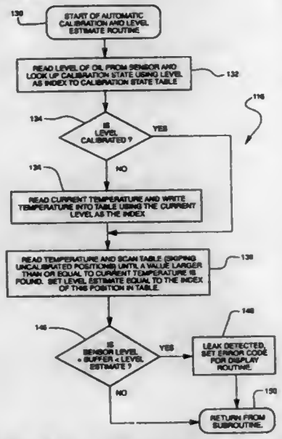
SELF-CALIBRATING HYDRAULIC FLUID LEAK DETECTION SYSTEM

Joseph J. Oliver, Lincoln, Nebr.; Christopher L. Young, Fargo, N. Dak., and Richard D. Bednar, Lake Mills, Wis., assignors to Ransomes America Corporation, Lincoln, Nebr.

Continuation-in-part of Ser. No. 191,518, Feb. 3, 1994, Pat. No. 5,402,110. This application Oct. 25, 1994, Ser. No. 328,929

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—605 **46 Claims**



1. A hydraulic fluid leak detection system for a self-propelled land vehicle or self-propelled machine including a hydraulically actuated device and a reservoir of hydraulic fluid, the system comprising:

an expansion tank disposed adjacent and in communication with the reservoir;

a first sensor disposed within the expansion tank, the first sensor operable for sensing the level of hydraulic fluid in the expansion tank and for producing a first electronic signal corresponding thereto;

a second sensor operable for sensing the temperature of the hydraulic fluid in the reservoir and for producing a second electronic signal corresponding thereto;

memory for storing the level of hydraulic fluid in the expansion tank and for storing the temperature of the hydraulic fluid in the reservoir;

processing means for receiving the electronic signals and for determining from the first and second electronic signals if a leak exists in the hydraulic fluid system; and

means for indicating to an operator that a leak exists in the hydraulic fluid system.

5,548,279

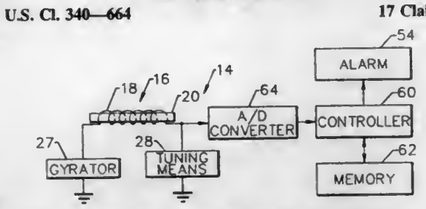
METHOD AND APPARATUS FOR DETECTING A POWER LINE

Robert B. Gaines, Florissant, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Jul. 22, 1994, Ser. No. 279,485

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—664 **17 Claims**



1. An apparatus for detecting a power line comprising:

sensing means for detecting a magnetic field generated by a current conducted by the power line and for producing a sense current in response to the detected magnetic field;

gyrating means, responsive to said sensing means, for generating a sense voltage in response to the sense current wherein said gyrating means has a predetermined inductance;

tuning means, responsive to said sensing means and said gyrating means, for tuning the power line detecting apparatus to a predetermined frequency and for producing a plurality of successive output voltages in response to the sense voltage such that a power line may be detected thereby;

power line direction determining means for sampling successive output voltages of said tuning means as the power line detecting apparatus moves relative to the power line to thereby differentiate between movement of the power line detecting apparatus in a direction generally toward the power line and movement of the power line detecting apparatus in a direction generally away from the power line, wherein said power line direction determining means detects movement in a direction generally toward the power line if the magnitude of any one of the successive output voltages is greater than the magnitude of the immediately preceding output voltage, and wherein said power line direction determining means detects movement in a direction generally away from the power line if the magnitude of any one of the successive output voltages is less than the magnitude of the immediately preceding output voltage; and

warning means, responsive to said power line direction determining means, for providing a warning signal in response to the detection of movement of the power line detecting apparatus in a direction generally toward the power line, but not in response to the detection of movement of the power line detecting apparatus in a direction generally away from the power line.

5,548,280

LOCAL AREA NETWORK HUB UNIT

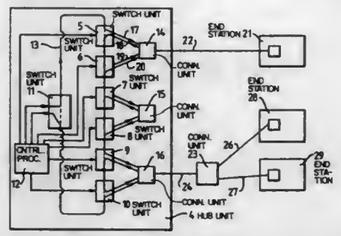
David Pearce, High Wycombe, United Kingdom, assignor to Madge Networks Limited, Bucks, United Kingdom

Filed May 11, 1994, Ser. No. 241,416

Claims priority, application United Kingdom, May 12, 1993, 9309786

Int. Cl.[6] H04Q *1/00*

U.S. Cl. 340—825.050 **7 Claims**



1. A local area network hub unit comprising a plurality of switch units connected in a ring; each switch unit being selectively connectable either to an adjacent switch unit or to a group of pins of a connector unit and each group of pins of the connector unit being connectable to a respective end station; wherein at least one group of two or more switch units is connected to a common connector unit, each switch unit of said group of switch units being connectable to a respective group of pins of said common connector unit, wherein end stations are connected to respective groups of pins of said common connector unit to communicate simultaneously and independently with the hub unit.

5,548,281

DATA TRANSMISSION SYSTEM

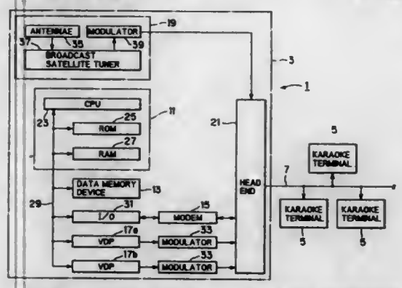
Yasuhiro Funahashi; Kazunori Ikami; Osamu Nishimura, all of Nagoya; Yoshihiko Hibino, Hashima-gun; Yuji Kiyohara, and Yuichi Yasutomo, both of Nagoya, all of, Japan, assignors to Brother Kogyo Kabushiki Kaisha, and Xing, Inc., both of Aichi-ken, Japan

Filed Jul. 14, 1994, Ser. No. 274,760

Claims priority, application Japan, Jul. 16, 1993, 5-177015

Int. Cl.[6] H04Q *1/00*

U.S. Cl. 340—825.080 **14 Claims**



1. A data transmission system for controlling transmission of information data via a transmission line from a central control unit to a plurality of terminals, the data transmission system comprising:

a central control unit; and

a plurality of terminals connected to said central control unit via a transmission line,

wherein said central control unit includes mode sense polling signal transmission means for transmitting a mode sense polling signal, via the transmission line, to each of the plurality of terminals for confirming an operation mode of each terminal said confirming occurring without determining whether each said terminal needs information or service;

wherein each of said plurality of terminals includes mode response signal transmission means for transmitting, in response to the mode sense polling signal, a mode response signal indicating a present operation mode of the each terminal to said central control unit via the transmission line,

wherein said central control unit further includes:

determination means for determining the operation mode of each terminal, based on the mode response signal transmitted from each terminal; and

request polling signal transmission means for selectively transmitting a request polling signal to a terminal that is determined by the determination means to be in the predetermined operation mode for detecting whether the terminal requests transmission of information data,

wherein each of said plurality of terminals further includes request response signal transmission means for transmitting a request response signal indicating whether or not the terminal requests the transmission of information data when the terminal receives the request polling signal transmitted from the request polling signal transmission means, and

wherein said central control unit further includes information data transmission means for selectively transmitting information data to a terminal that has transmitted the request response signal indicating that the terminal requests the transmission of the information data.

5,548,282

ELECTRONIC SHELF EDGE PRICE DISPLAY SYSTEM

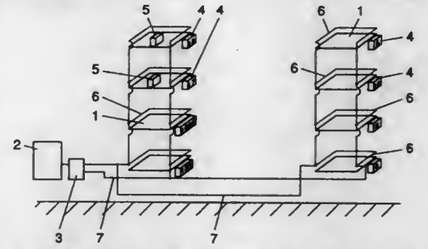
Chris Escritt, Buckinghamshire, United Kingdom, and Magnus Hellquist, Styrsö , Sweden, assignors to Pricer AB, Upsala, Sweden

Filed May 4, 1994, Ser. No. 237,755

Claims priority, application United Kingdom, May 5, 1993, 9309246

Int. Cl.[6] G06F *7/04*

U.S. Cl. 340—825.350 **20 Claims**



1. System for the electronic display of information on at least one shelf, said system comprising:

a plurality of display unite for displaying information, each of said plurality of display units comprising at least one shelf display unit;

means for transmitting power to said plurality of display units;

said transmitting means for being disposed apart from said plurality of display units;

each of said plurality of display units comprising:

means for receiving power from said transmitting means;

means for displaying information; and

means for powering said displaying means at least partly from the power received by said receiving means;

said receiving means comprising means for receiving power from said transmitting means solely upon said display unit being disposed substantially adjacent to at least a portion of said transmitting means;

said transmitting means comprising a transmitter for at least transmitting power;

said at least a portion of said transmitting means comprising at least one transmitter element, said at least one transmitter element being electrically conductive and being configured to receive power from said transmitter;

at least one of said plurality of display units having means for disposing said at least one display unit on a shelf;

said receiving means of said at least one of said plurality of display units comprising means for receiving power from said transmitting means solely upon said display unit being disposed substantially adjacent to, and substantially on the same shelf as, said at least one of said at least one transmitter element;

said means for powering said displaying means comprising rechargeable means for powering said displaying means;

said transmitting means comprising means for at least substantially continuously providing, to said receiving means of said at least one display unit:

data for the display of information on said displaying means; and

power for providing energy to said rechargeable means; said means for at least substantially continuously providing data and power to said at least one display unit comprising:

means for transmitting data to said at least one display unit in the form of intermittently transmitted data packets, the intermittent transmissions of data packets for being interrupted by pauses; end

means for transmitting power;

said means for transmitting power comprising means for transmitting power to said at least one display unit during the pauses between the intermittent transmissions of data packets;

said receiving means comprising means for receiving power from said transmitting means during the pauses between intermittent transmissions of data packets; and

said means for transmitting power during the pauses between the intermittent transmissions of data packets comprising means for transmitting power to said at least one display unit to recharge said rechargeable means during the pauses between the intermittent transmissions of data packets.

5,548,283

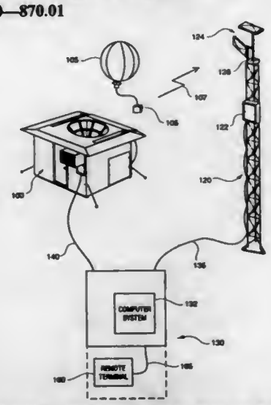
INTEGRATED CONTROL SYSTEM FOR PREPARING AND DEPLOYING SOUNDING DEVICES AND MANAGING TELEMETRY THEREFROM

Charles L. Martin, Boulder, Colo., assignor to University Corporation for Atmospbere Research, Boulder, Colo.

Filed Oct. 31, 1994, Ser. No. 332,353

Int. Cl.[6] G08C *19/16*

U.S. Cl. 340—870.01 **20 Claims**



1. An integrated control system for an upper-air sounding system wherein said upper-air sounding system includes a single structure for preparing therein and deploying therefrom a sounding device and a sounding device vehicle, and a telemetry receiving antenna for receiving telemetry from said sounding device, said integrated control system comprising:

means for storing parameters indicative of each of a plurality of sounding device types independent of each of a plurality of sounding device vehicle types in a memory that is accessible to said integrated control system;

means for selecting at preparation time any one of said plurality of sounding device types and any one of said plurality or sounding device vehicle types from said stored parameters;

means for generating a list of a plurality of tasks to prepare and deploy said sounding device of said selected sounding device type with said sounding device vehicle of said selected sounding device vehicle type in response to said means for selecting;

means for controlling manual execution of said plurality of tasks to prepare said sounding device and said sounding device vehicle for deployment wherein said plurality of tasks are executed inside said single structure;

means for restraining said sounding device vehicle within said single structure wben said sounding device vehicle is fully prepared as indicated by completion of said plurality of tasks;

means for automatically deploying said sounding device via said sounding device vehicle from within said single structure; and

means, responsive to said means for automatically deploying, for controlling said telemetry receiving antenna wherein said means for controlling includes:

means for automatically orienting said telemetry receiving antenna to receive said telemetry from said sounding device; and

means for overriding said means for automatically orienting said telemetry receiving antenna to manually orient said telemetry receiving antenna by a user input command to receive said telemetry from said sounding device.

5,548,284

INFORMATION RECORDING AND/OR REPRODUCTION APPARATUS

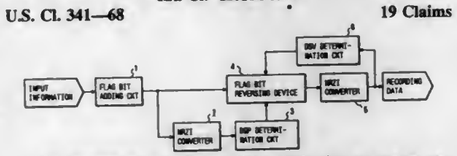
Makoto Hiramatsu, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 14, 1993, Ser. No. 165,847

Claims priority, application Japan, Dec. 16, 1992, 4-353876

Int. Cl.[6] H03M *5/00*

U.S. Cl. 341—68 **19 Claims**



1. An information recording and/or reproduction apparatus comprising:

detection means for detecting a reproduction signal read out from a recording medium as an (N+1)-value digital information signal (N is an integer equal to or larger than 2) by comparing the reproduction signal with N slice levels; and

control means for executing control so that an output of the reproduction signal crosses at least one of the slice levels at least once within a predetermined period.

5,548,285

CIRCUIT AND METHOD OF INDICATING DATA HOLD-TIME

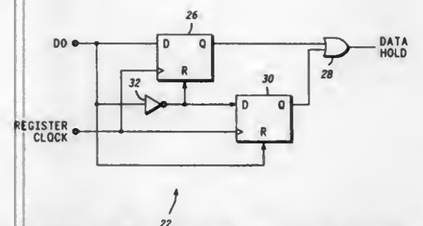
David K. Ford, Gilbert, and Bernard E. Weir, III, Chandler, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 18, 1994, Ser. No. 276,373

Int. Cl.[6] H03M *9/00*

U.S. Cl. 341—100 **16 Claims**

1. A data hold-time indicator circuit, comprising:



a first flipflop having a data input, a clock input, a reset input and an output, said data input being coupled for receiving a data input signal, said clock input being coupled for receiving a clock signal, said reset input being coupled for receiving an inverted data input signal;

a second flipflop having a data input, a clock input, a reset input and an output, said data input being coupled for receiving said inverted data input signal, said clock input being coupled for receiving said clock signal, said reset input being coupled for receiving said data input signal; and

a logic gate having first and second inputs and an output, said first input being coupled to said output of said first flipflop, said second input being coupled to said output of said second flipflop, said output providing a data hold-time signal.

5,548,286

ANALOGUE AND DIGITAL CONVERTORS USING PULSE EDGE MODULATORS WITH NON-LINEARITY ERROR CORRECTION

Peter G. Craven, Oxon, England, assignor to B&W Loudspeakers Ltd., Worthing, United Kingdom

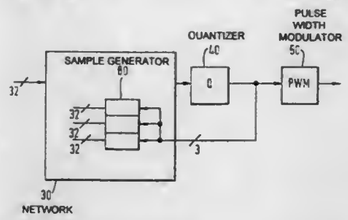
PCT No. PCT/GB92/00312, § 371 Date Aug. 25, 1993, § 102(e) Date Aug. 25, 1993, PCT Pub. No. WO92/15153, PCT Pub. Date Sep. 3, 1992

PCT Filed Feb. 21, 1992, Ser. No. 107,842

Claims priority, application United Kingdom, Feb. 22, 1991, 9103777

Int. Cl.[6] H03M *1/06;1/12;1/66;* H03K *7/08*

U.S. Cl. 341—126 **14 Claims**



1. A signal convertor comprising:

a pulse edge modulator having an input and providing an output, and means, responsive to any error in previous values of said modulator output, for modifying said input to said pulse edge modulator thereby reducing effects of said any error within a desired signal band.

5,548,287

ANALOG TO DIGITAL CONVERTER

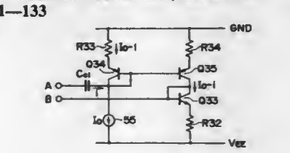
Yuji Gendai, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

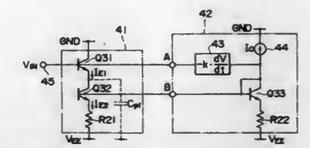
Filed Jun. 9, 1994, Ser. No. 257,150

Claims priority, application Japan, Jun. 17, 1993, 5-172595; Jun. 24, 1993, 5-180893; Jun. 24, 1993, 5-180895; Jun. 24, 1993, 5-180896

Int. Cl.[6] H03M *1/00;* H03F *1/14*

U.S. Cl. 341—133 **11 Claims**





1. An emitter follower circuit, comprising:

an emitter follower stage which has a variable current source connected as a load thereto and to which an input signal is supplied;

a differentiation circuit for differentiating the input signal; and

a current mirror circuit paired with said variable current source for supplying a current to said variable current source in response to a differentiation output of said differentiation circuit.

5,548,288

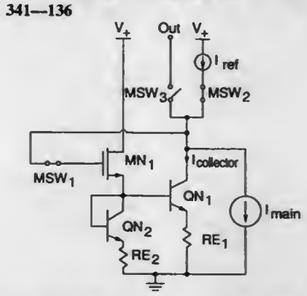
BICMOS CURRENT CELL AND SWITCH FOR DIGITAL-TO-ANALOG COVERTERS

Bosco Lueng, Waterloo, Canada, assignor to University of Waterloo, Canada

Filed Dec. 22, 1993, Ser. No. 174,165

Int. Cl.[6] H03M *1/66*

U.S. Cl. 341—136 **18 Claims**



1. A current steering digital-to-analog converter for generating an analog output voltage in response to receiving a digital input code, comprising:

(a) relative positive and relative negative power supply voltages;

(b) a pull-up resistor connected to said relative positive power supply voltage;

(c) an output terminal connected to said pull-up resistor for outputting said analog output voltage, wherein said analog output voltage is developed across said pull-up resistor in proportion to output current flowing therethrough;

(d) a plurality of current switches for receiving respective bits of said digital input code and in response selectively switching current from said relative negative power supply voltage through said pull-up resistor such that said output current

results from the sum of currents switched through individual ones of said current switches;

wherein each one of said plurality of current switches further comprises an inverter for receiving one of said respective bits of said digital input code and in response generating an inverted version thereof, a current cell for generating a constant bit current from said relative negative power supply voltage, a first BiCMOS pair of transistors for receiving said one of said respective bits of said digital input code and switching said constant current through said pull-up resistor in the event said one of said respective bits of said digital input code is logic high, and a second BiCMOS pair of transistors for receiving said inverted version of said one of said respective bits of said digital input code and switching said constant current to said relative positive power supply voltage in the event said inverted version of said one of said respective bits of said digital input code is logic high;

wherein said current cell further comprises:

(e) a source of constant reference current connected to said relative positive power supply voltage;

(f) an output connected to said first and second BiCMOS pairs of transistors;

(g) a MOS transistor having a drain terminal connected to said relative positive power supply voltage, and gate and source terminals;

(h) first switch means connected to said source of constant reference current;

(i) second switch means connected to said output and said first switch means;

(j) third switch means connected to said gate terminal and said first and second switch means;

(k) first circuit means configured as a level shifter and connected to said source terminal of said MOS transistor and to said relative negative power supply voltage; and

(l) second circuit means configured as a current calibrator connected to said source terminal of said MOS transistor, to said first circuit means, to said relative negative power supply voltage and to said first, second and third switch means;

whereby (i) in response to said first and third switch means being closed and said second switch means being open said MOS transistor is enabled which in response enables said second circuit means for conducting said constant reference current, and (ii) in response to said first switch and third switch means then being opened and said second switch means being closed said MOS transistor remains enabled, said second circuit means conducts said constant reference current through said second switch means to said output and said first circuit means is enabled for minimizing voltage variation at said output in response to opening said first and third switch means and closing said second switch means.

5,548,289

ANTI-SENSING METHOD AND DEVICE FOR RADAR

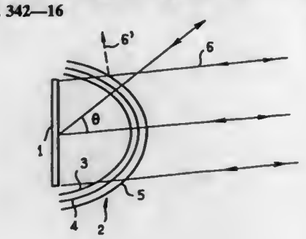
Claude Chekroun, Bures Sur Yvette, and Henri Sadones, Paris, both of, France, assignors to Contre Mesure Hyperfrequence C M H, Les Ulis, France

Filed Apr. 26, 1984, Ser. No. 623,290

Claims priority, application France, May 6, 1983, 83 07580

Int. Cl.[6] G01S *7/495*

U.S. Cl. 342—16 **16 Claims**



1. A method of preventing a radar from being sensed and of protecting the radar against disturbances caused by jammers, the jammers operating at frequencies outside the operational frequency band of the radar, the method comprising:

placing in front of the radar a radome having an active temporal space filter, the space filter including at least two hyperfrequency networks, at least one of the hyperfrequency networks being active and capable of taking on distinctive first and second states;

setting the active network to the first state when the filter is to be roughly transparent for the operational frequency band and roughly reflective outside the operational frequency band of the radar; and

setting the active network to the second state when the filter is to be roughly reflective for all radar frequencies.

5,548,290

METHOD OF DESIGNING TRANSMISSION POWER IN SYNTHETIC APERTURE RADAR

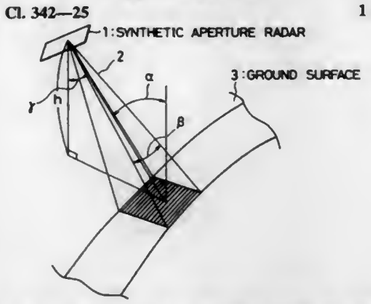
Toshihiro Sezai, Tokyo, Japan, assignor to National Space Development Agency of Japan, Tokyo, Japan

Filed Mar. 9, 1995, Ser. No. 401,437

Claims priority, application Japan, Mar. 23, 1994, 6-75479

Int. Cl.[6] G01S *13/90*

U.S. Cl. 342—25 **1 Claim**



1. A method of designing transmission power in a synthetic aperture radar installed on a flight object such as an artificial satellite, the method of designing transmission power in a synthetic aperture radar comprising the steps of:

designing a required transmission power for the synthetic aperture radar by using a radar equation

$$P_r=P_t\cdot\sigma\cdot A_p^2/(4\pi\lambda^2R^4),$$

[P_r: transmission power (W), σ: radar scattering cross section (m^2), A_p: antenna area (m^2), R:distance to an object to be observed (m), λ: wavelength of radio wave (m)] wherein P_r represents transmission power, σ represents radar scattering cross section, A_p represents antenna area, R represents distance to an object to be observed, and λ represents a wavelength of a radio wave, for setting the transmission power P_r so as to satisfy conditions required for the radar, and wherein the radar scattering cross section σ is set such that $\sigma=\sigma^0\cdot S^2\cdot 4\pi/\lambda^2$,

wherein σ^0 represents a scattering coefficient, and S represents an area of an irradiated domain [σ^0: scattering coefficient, S: area of irradiated domain (m^2)].

5,548,291

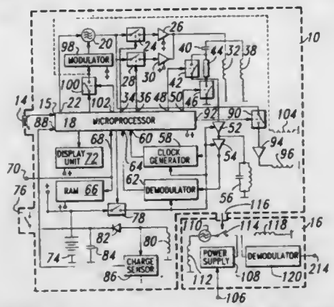
READ/WRITE TRANSPONDER ARRANGEMENT AND METHOD OF COMMUNICATION

Herbert Meier, Moosburg, and Martin Sellmeir, Neufinsing, both of, Germany, assignors to Texas Instruments Deutschland GmbH, Germany

Continuation of Ser. No. 981,635, Nov. 25, 1992, Pat. No. 5,450,088. This application Jun. 7, 1995, Ser. No. 475,115

Int. Cl.[6] G01S *13/75*

U.S. Cl. 342—51 **13 Claims**



1. A method of communicating between an interrogator and a transponder, said method comprising the steps of:

a. storing energy in a transponder energy accumulator in a contactless fashion by RF energy transmitted from said interrogator unit to said transponder;

b. transmitting at least one RF programming sequence from said interrogator to said transponder, said RF programming sequence comprising a first set of data pulses having at least a first and a second state, at least one of said first and second states having an "on" and an "off" phase, the "on" phase of said data pulse having a first modulation characteristic, and the "off" phase of said data pulse having a second modulation characteristic and having a duration of less than the "Pre-Bit-Time" that initiates a transponder read period;

c. receiving at said transponder said first set of data pulses; and

d. transmitting a pause from said interrogator to said transponder, said pause comprising a signal having said second modulation characteristic, but having a duration approximately equal to the "Pre-Bit-Time" whereby said transponder is notified of the beginning of the read period.

5,548,292

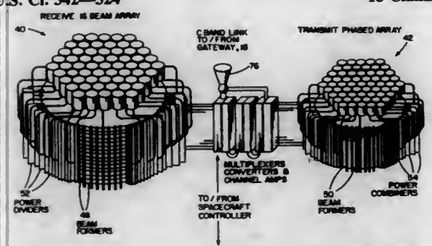
MOBILE COMMUNICATION SATELLITE PAYLOAD

Edward Hirshfield, Cupertino, and Chich-Hsing A. Tsao, Saratoga, both of Calif., assignors to Space Systems/Loral, Palo Alto, Calif.

Division of Ser. No. 60,207, May 7, 1993, Pat. No. 5,422,647. This application Feb. 2, 1995, Ser. No. 383,211

Int. Cl.[6] H04B *7/185*; H01G *3/22*

U.S. Cl. 342—324 **18 Claims**



1. A phased array transmitter antenna assembly, comprising:

n transmitter elements arranged in a predetermined pattern, each of said n transmitter elements having power amplifier means associated therewith, each of said power amplifier means having an output coupled into free space at said associated one of said n transmitter elements;

m beam forming circuit means, individual ones of said m beam forming circuit means being disposed one upon another in a stacked fashion beneath said n transmitter elements, each of said m beam forming circuit means having n outputs, an individual one of said m beam forming circuit means having an input for receiving one of m input signals and being comprised of a multi-level arrangement comprised of a plurality of cascaded one input/two output power dividers, wherein a first level has 2^0 power dividers, a second level has 2^1 power dividers, a third level has 2^2 power dividers and so forth until in a last level there are at least n/2 said power dividers having a total of at least n output ports forming said n outputs of said individual one said m beam forming circuit means; and

n m-way power combiner means coupled to said m beam forming circuit means, each of said m-way power combiner means having individual ones of m inputs coupled to an output of each one of said m beam forming circuit means, each of said n m-way power combiner means having an output coupled to one of said power amplifier means associated with one of said n transmitter elements.

5,548,293

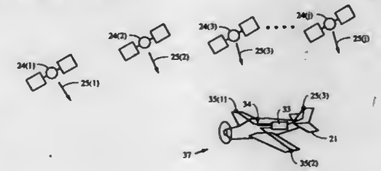
SYSTEM AND METHOD FOR GENERATING ATTITUDE DETERMINATIONS USING GPS

Clark E. Cohen, Palo Alto, Calif., assignor to LeLand Stanford Junior University, Palo Alto, Calif.

Continuation-in-part of Ser. No. 36,319, Mar. 24, 1993, abandoned. This application Dec. 10, 1993, Ser. No. 165,394

Int. Cl.[6] G01S *5/02*; H04B *7/19*

U.S. Cl. 342—357 **28 Claims**





1. A GPS attitude system for determining the attitude of a moving vehicle from a plurality of GPS carrier signals, the GPS attitude system comprising:

four antennas mounted to the moving vehicle, each of the antennas receiving the GPS carrier signals;

signal receiving means for receiving the GPS carrier signals from each of the antennas;

phase measuring means for making phase measurements for the GPS carrier signals received from each of the antennas at a plurality of epochs during an initialization period and at a plurality of epochs after the initialization period, wherein the vehicle is moving while the phase measurements are made during and after the initialization period, and wherein there is an integer wavelength ambiguity associated with the phase measurements made for each of the GPS carrier signals received from a first one and a second one of the antennas, there is an integer wavelength ambiguity associated with the phase measurements made for each of the GPS carrier signals received from the first one and a third one of the antennas, and there is an integer wavelength ambiguity associated with

the phase measurements made for each of the GPS carrier signals received from the first one and a fourth one of the antennas;

baseline computation means for computing baseline positions for the second, third, and fourth ones of the antennas with respect to the first one of the antennas at an initial one of the epochs during the initialization period and the changes in the baseline positions at subsequent ones of the epochs during the initialization period in response to the phase measurements made at the epochs during the initialization period and based on the constraint relationship at each of the subsequent ones of the epochs during the initialization period

$$\Delta b_z{}^T b_y + \Delta b_y{}^T b_z = -\Delta b_y{}^T \Delta b_z,$$

where b_y is the baseline position of the yth of the second, third, and fourth ones of the antennas, b_z is the baseline position of the zth of the second, third, and fourth ones of the antennas, Δb_y is the change in the baseline position of the yth of the second, third, and fourth ones of the antennas at a respective one of the subsequent epochs during the initialization period, Δb_z is the change in the baseline position of the zth of the second, third, and fourth ones of the antennas at the respective one of the subsequent epochs during the initialization period, and $\Delta b_y{}^T \Delta b_z$ is non-zero;

initial guess computation means for computing an initial guess of the attitude of the moving vehicle at each of the epochs during the initialization period in response to the computed baseline positions and the computed changes in the baseline positions;

ambiguity resolution means for resolving the integer wavelength ambiguities in response to the computed initial guesses and the phase measurements made at the epochs during the initialization period; and

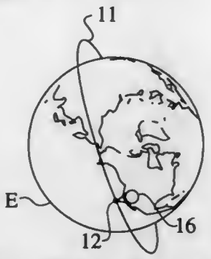
attitude computation means for computing the attitude of the moving vehicle at each respective one of the epochs after the initialization period in response to the resolved integer wavelength ambiguities and the phase measurements made at the respective one of the epochs after the initialization period.

5,548,294

DIELECTRIC LENS FOCUSED SCANNING BEAM ANTENNA FOR SATELLITE COMMUNICATION SYSTEM

Mark A. Sturza, Woodland Hills, Calif., assignor to Teledesic Corporation, Kirkland, Wash.

Filed Aug. 17, 1994, Ser. No. 292,148
Int. Cl.[6] H04B *7/185*
U.S. Cl. 342—372 **1 Claim**



1. A method for providing a plurality of beams transmitted and received from positions in Earth orbit, for communicating directly with a plurality of portable, mobile and fixed terminals and gateways comprising the steps of:

orbiting a constellation of satellites (**10**) in low Earth orbit (11);

creating an Earth-fixed grid (**20**) defining a plurality of Earth-fixed supercells (**22**); said plurality of Earth-fixed supercells (**22**) including a plurality of Earth-fixed cells (**26**);

deploying a plurality of scanning beam antennas (**28**) on each satellite (**12**) within said constellation (**10**) of satellites;

simultaneously receiving a plurality of beams (**30**) with one of said plurality of scanning beam antennas (**28**) and simultaneously transmitting a plurality of beams (**30**) with another of said plurality of said scanning beam antennas (**28**) and simultaneously receiving and transmitting a plurality of beams (**30**) with another one of said plurality of scanning beam antennas (**28**); said beams (**30**) having a footprint (**50**) on the surface of the Earth (E);

forming said plurality of beams (**30**) with each of said plurality of scanning beam antennas (**28**) and continuously illuminating said plurality of Earth-fixed cells (**26**) by focusing said plurality of beams (**30**) on each said cell (**26**) with a spherically-shaped dielectric lens (**60**);

electronically shaping and steering each one of said plurality of beams (**30**) by amplitude weighting an antenna feed element (**63**, **82**) at a nominal beam center position and a plurality of said antenna feed elements (**63**,**82**) at adjacent positions to keep each of said plurality of Earth-fixed cells (**26**) of said Earth-fixed grid (**20**) within said footprint (**50**) of each of a corresponding one of said plurality of beams (**30**) as said satellite (**12**) progresses along its said low Earth orbit (**11**); and

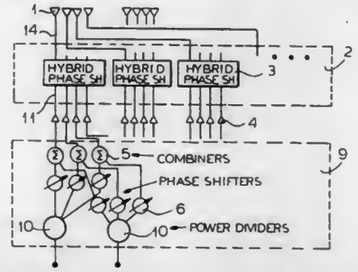
communicating with said terminals and gateways in each of said plurality of Earth-fixed cells (**26**) with signals carried on said plurality of beams (**30**), each of said plurality of beams (**30**) operating at one of nine frequencies (F_1–F_9), said nine frequencies (F_1–F_9) being reused one-hundred percent for communications in each one of said plurality of supercells (**22**).

5,548,295

MULTISHAPED BEAM DIRECT RADIATING ARRAY ANTENNA

Raimondo L Forti, Guidonia, and Marco Lisi, Roma, both of, Italy, assignors to Space Engineering Spa, Rome, Italy, and Alenia Spazio Spa, L'Aquila, Italy

Filed Feb. 28, 1995, Ser. No. 396,201
Int. Cl.[6] H01Q *3/22;3/24;3/26*
U.S. Cl. 342—373 **1 Claim**



1. A multibeam direct radiating array antenna for outputting a multiplicity of differently-shaped beams, comprising:

an array of radiating elements;

a passive network connected to said array and comprising a plurality of hybrid/phase shifter circuits having respective outputs each connected to a respective radiating element, each of said hybrid/phase shifter circuits comprising input terminals, first hybrids connected to said input terminals in pairs, phase shifters connected to outputs of said first hybrids, second hybrids connected to said phase shifters and to the first hybrids, and further phase shifters connected to said second hybrids and providing, along with a direct connection from one of said second hybrids, said outputs connected to the respective radiating elements;

a respective power amplifier connected to each of said input terminals, all of said power amplifiers being operated with the same radio frequency power amplitude; and

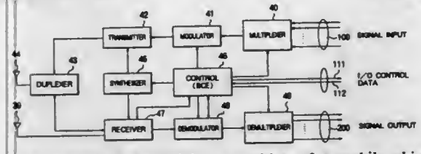
a feed network supplying said amplifier, said feed network comprising a plurality of power dividers, respective phase shifters connected to each of a multiplicity of outputs of each of said power dividers and connected in groups to respective power combiners, each of said power combiners being connected to a respective one of said power amplifiers for energizing same.

5,548,296

METHOD OF AND APPARATUS FOR DETERMINING POSITION OF MOBILE OBJECT AND MOBILE RADIO COMMUNICATION SYSTEM USING THE SAME

Keishi Matsuno, Tokyo, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Filed Mar. 24, 1994, Ser. No. 216,969
Claims priority, application Japan, Aug. 19, 1993, 5-226525
Int. Cl.[6] G01S *3/02*
U.S. Cl. 342—457 **16 Claims**



1. A method of determining a position of a mobile object, comprising the steps of:

transmitting a radio wave of a constant frequency from said mobile object;

receiving the radio wave transmitted from said mobile object and detecting the frequency of the received radio wave at each of a plurality of spaced positions in an area where said mobile object is movable;

determining a plurality of Doppler shift signals observed at the respective spaced positions, each Doppler shift signal being indicative of a Doppler shift value dependent on a movement of the mobile object, on the basis of frequencies of the received radio wave detected at the respective positions, respectively;

selecting at least two Doppler shift signals which satisfy predetermined two different conditions, respectively, among the plurality of Doppler shift signals;

obtaining the position of said mobile object from position data indicating the positions corresponding to the selected Doppler shift signals; and

wherein the selected Doppler shift signals comprise a first Doppler shift signal which provides a maximum value of upward Doppler shift values, a second Doppler shift signal which provides a maximum value of downward Doppler shift values and a third Doppler shift signal which provides a minimum value of the upward and downward Doppler shift values which are represented by the respective Doppler shift signals.

5,548,297

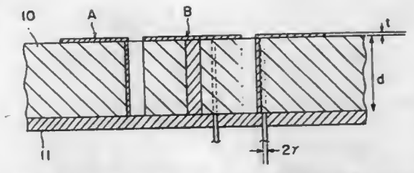
DOUBLE-CHANNEL COMMON ANTENNA

Hiroyuki Arai, Bunkyo-ku, Japan, assignor to Hiroyuki Arai, Tokyo-to, Japan, and Toko Kabushiki Kaisha, Tokyo-to, Japan

Filed Jul. 22, 1994, Ser. No. 279,159
Claims priority, application Japan, Jul. 23, 1993, 5-203005
Int. Cl.[6] H01Q *1/38*
U.S. Cl. 343—700 MS **4 Claims**

1. A double-channel common antenna comprising:

a first radiant electrode provided in a circular annular shape on a first surface of a dielectric substrate, an edge surface on a central side of said first radiant electrode being short-circuited to a ground electrode formed on a second surface of said dielectric substrate; and



a second circular radiant electrode provided within an inner edge of said first radiant electrode, a central portion of said second circular radiant electrode being short-circuited to said ground electrode,

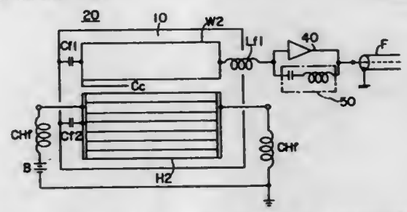
wherein said first and second electrodes are separately supplied with electrical power.

5,548,298

GLASS ANTENNA FOR AUTOMOBILES

Kazuhiko Nakase, Tokyo, Japan, assignor to Harada Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 831,424, Feb. 5, 1992, abandoned.
This application Nov. 29, 1993, Ser. No. 159,035
Int. Cl.[6] H01Q *1/32;1/02*
U.S. Cl. 343—704 **2 Claims**



1. A glass antenna for automobiles for receiving a first reception frequency band and a second reception frequency-band wherein said first reception frequency band is higher in frequency than said second reception frequency band, said antenna comprising:

a defogging heater wire which resonates in said first reception frequency band but not in said second reception frequency band,

a choking coil provided between an end terminal of said heater wire and a power supply circuit for choking off signals in said first reception frequency band; and

a conductor which is installed in said window glass and has an output terminal, said conductor being resonant in said first reception frequency band but not in said second reception frequency band,

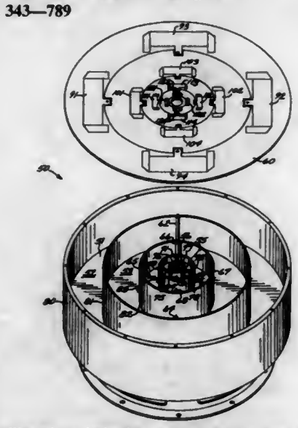
wherein said heater wire and conductor are installed in such a positional relationship that said heater wire and conductor are capacitively coupled together in said first reception frequency band so that said heater wire and conductor are respectively capable of reception in said first reception frequency band, and said heater wire and conductor are capacitively uncoupled in said second reception frequency band so that reception of said second reception frequency band is accomplished only by said conductor, and

wherein a resonance frequency adjusting inductor and a resonant frequency adjusting capacitor are coupled to said conductor for adjusting said conductor to resonate in said first reception frequency band.

5,548,299
COLLINEARLY POLARIZED NESTED CUP DIPOLE FEED

George I. Tsuda; Thomas A. Haeger, both of Fullerton, and William A. Leeper, Anaheim, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Feb. 25, 1992, Ser. No. 841,594
Int. Cl.[6] H01Q 1/42
U.S. Cl. 343—789 5 Claims



1. A collinearly polarized nested cup dipole feed system, comprising:

a plurality of coaxially disposed conductive cylinders of progressively larger diameters disposed about a common axis, said conductive cylinders being closed at one end thereof to define a plurality of nested annular cavities with common wails there between and having open ends, the open ends of said cavities being aligned along the common axis;

first and second pairs of dipole elements disposed adjacent the open ends of each of said cavities and electromagnetically coupled thereto, said first pair of elements being disposed orthogonal to said second pair of elements of each cavity, and wherein said first pair of dipole elements are disposed along a first axis transverse to the common axis, said first pair of dipole elements for each cavity being aligned along the first transverse axis in a collinear arrangement, and said second pairs of dipole elements are disposed along a second axis transverses to the common axis, said second pair of dipole elements for each cavity being aligned along the second transverse axis in a collinear arrangement;

wherein for each cavity, said first pair of dipole elements are larger than said second pair of dipole elements, whereby said antenna feed system is characterized by a staggered crossover capability;

means for exciting said dipole elements of each pair with electromagnetic energy,

wherein said feed system is characterized by dual linear polarization capabilities.

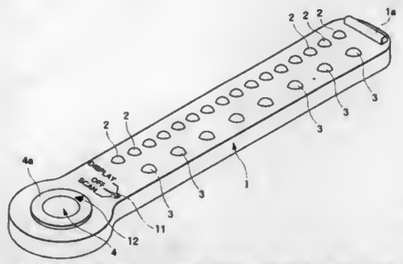
5,548,300
MANUAL ROTATION TYPE DISPLAY DEVICE

Tokimoto Toyotaro, Yokohama, Japan, assignor to Avix Inc., Yokohama, Japan

Filed Dec. 20, 1994, Ser. No. 359,363
Int. Cl.[6] G09G 3/14
U.S. Cl. 345—39 9 Claims

1. A manually operated rotary type display device comprising:

a device body of an elongated bar-shaped configuration having a plurality of light emitting cells provided on the surface of said device body, said light emitting cells being arranged in alignment along a longitudinal direction of said device body to form a light emitting cell array;



an operation fulcrum member mounted on one end of said device body and rotatable about an axis perpendicular to the longitudinal direction of said device body;

a rotary marker secured to said operation fulcrum member for co-rotation therewith and having at least one mark;

rotation detecting means for obtaining a relative angular position information between said device body and said operation fulcrum member and rotation speed information, by detecting said at least one mark of said rotary marker;

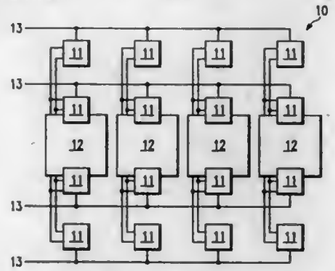
storage means for storing an image data to be displayed by scanning of said light emitting cell array; and

display control means for reading out the image data sequentially from said storage means in synchronism with a detection signal by said rotation detecting means.

5,548,301
PIXEL CONTROL CIRCUITRY FOR SPATIAL LIGHT MODULATOR

Kevin L. Kornher, Dallas; James L. Conner, Rowlett, and Claude E. Tew, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 2,627, Jan. 11, 1993, abandoned.
This application Sep. 2, 1994, Ser. No. 300,356
Int. Cl.[6] G09G 3/34
U.S. Cl. 345—85 6 Claims



1. A method of pulse-width modulating frames of multi-bit frame data used by a spatial light modulator, having an array of pixel elements, comprising the steps of:

dividing the time to display each frame of data into equal time units;

dividing a frame of data into split bit-frames, each split bit-frame containing data for pixel elements connected to an associated reset line;

delivering data representing said split bit-frame of data to memory cells, wherein each memory cell is connected to a set of said pixel elements and receives a data bit representing an on or off state of only one of its pixel elements;

loading said pixel elements, by using each memory cell to apply a data signal representing the data bit received by that memory cell to its associated pixel elements;

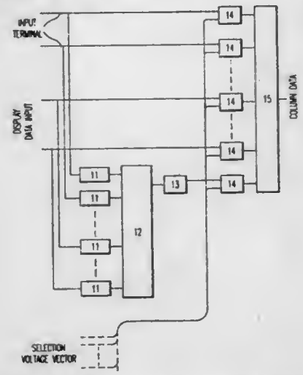
switching said pixel elements, by using a reset signal to change the state of all pixel elements connected to said reset line;

repeating the above delivering, loading, and switching steps for each split bit-frame of data within a data frame.

5,548,302
METHOD OF DRIVING DISPLAY ELEMENT AND ITS DRIVING DEVICE

Takeshi Kuwata; Temkar N. Ruckmongathan; Yutaka Nakagawa; Hidemasa Koh; Akira Nakazawa; Takanori Ohnishi, and Satoru Ihara, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Jul. 29, 1993, Ser. No. 98,812
Claims priority, application Japan, Jul. 29, 1992, 4-222053; Sep. 11, 1992, 4-269560; Feb. 9, 1993, 5-044565
Int. Cl.[6] G09G 3/36
U.S. Cl. 345—89 10 Claims



1. A method of driving a display element wherein a light transmittance of a pixel selected by a row electrode and a column electrode changes in accordance with a difference between voltages applied on the row electrode and the column electrode, which satisfies the following conditions;

(1) row electrodes are divided into a plurality of row electrode subgroups composed of L row electrodes which are selected simultaneously wherein L is an integer greater than 1;

(2) signals $\{\alpha_{mn}\}$ where α_{mn} is an element of a m-th row component and a n-th column component of an orthogonal matrix, m is an integer of 1 through L and n is a suffix showing that the n-th column component of the orthogonal matrix corresponds to a n-th selection signal in a single display cycle are applied on the selected row electrodes as row electrode signals; and

(3) first voltages proportional to two kinds of second voltages ($V_{d1,N}$ and $V_{d2,N}$) expressed by the following equations are substantially applied to a column electrode to provide a predetermined gray shade level $d_{(j\cdot L+i),k}$ which is a value between 1 showing an off state and −1 showing an on state in accordance with a degree of gray shade with respect to a pixel of a k-th column where k is an integer and an i-th row where i is an integer of 1 through L of a j-th row electrode subgroup where j is an integer:

$$V_{d1,n} = \sum_{i=1}^{L} \{\alpha_{in}(d_{(j\cdot L+i),k} + (1 - d^2_{(j\cdot L+i),k})^{1/2})\} \quad (3)$$

$$V_{d2,n} = \sum_{i=1}^{L} \{\alpha_{in}(d_{(j\cdot L+i),k} - (1 - d^2_{(j\cdot L+i),k})^{1/2})\} \quad (4)$$

where

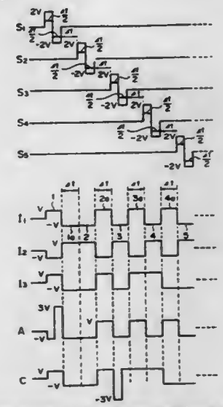
$$\sum_{i=1} \{\ \}$$

indicates a summing operation of a content of { } with respect to i=1 through L.

5,548,303
METHOD OF DRIVING OPTICAL MODULATION DEVICE

Junichiro Kanbe; Kazuharu Katagiri, both of Yokohama, and Syuzo Kaneko, Tokyo, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 139,162, Dec. 21, 1987, Pat. No. 5,448,383, which is a continuation of Ser. No. 7,408, Jan. 27, 1987, abandoned, which is a continuation of Ser. No. 598,800, Apr. 10, 1984, Pat. No. 4,655,561. This application May 19, 1995, Ser. No. 444,899
Claims priority, application Japan, Apr. 19, 1983, 58-68659; Apr. 19, 1983, 58-68660; Jul. 30, 1983, 58-138707; Jul. 30, 1983, 58-138710; Aug. 4, 1983, 58-142954
Int. Cl.[6] G09G 3/36
U.S. Cl. 345—95 25 Claims



1. An optical modulation apparatus having a matrix electrode arrangement comprising a group of scanning electrodes, and a group of signal electrodes oppositely spaced from the group of scanning electrodes, wherein scanning signals are selectively applied sequentially and periodically to said group of scanning electrodes and information signals are selectively applied to said group of signal electrodes in synchronism with said scanning signals, thereby to effect optical modulation of an optical modulation material showing a first stable state and a second stable state with respect to an electric field applied thereto interposed between said groups of scanning electrodes and signal electrodes;

the improvement wherein before or after an information signal is applied to a selected signal electrode among the group of signal electrodes in synchronism with a scanning signal applied to a selected scanning electrode among the group of scanning electrodes, an auxiliary signal different from the information signal is applied to the selected signal electrode in synchronism with the scanning signal, and an amplitude of a writing voltage applied to an intersection of the selected scanning electrode and the selected signal electrode is two or more times that of a first non-writing voltage applied to an intersection of a non-selected scanning electrode and the selected signal electrode, the amplitudes of said writing voltage and said first non-writing voltage being respectively determined with respect to a reference voltage determined as a difference between a voltage applied to a signal electrode

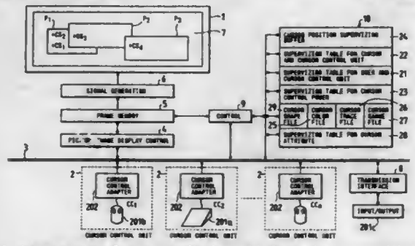
receiving no data signal, and a voltage applied to the non-selected scanning electrode.

5,548,304

METHOD AND APPARATUS FOR SCREEN DISPLAYING

Hitoshi Yoshino, Chiba; Keiji Oshima, Katsuta, and Hisanori Miyagaki, Hitachiohta, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 16, 1990, Ser. No. 568,484
Claims priority, application Japan, Aug. 18, 1989, 1-211352
Int. Cl.[6] G09G *5/08;5/14*
U.S. Cl. 345—145 10 Claims



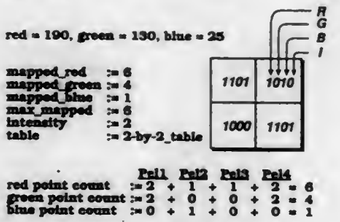
1. An apparatus for screen display of information, comprising:
means for displaying a plurality of cursors indicating access to information;
a plurality of input units for respectively operating said cursors;
means establishing access levels of the cursors;
means for establishing access acceptance levels corresponding to information on the display;
means for comparing an access acceptance level of information indicated by a cursor with an access level of the indicating cursor; and
means for controlling screen display based upon an access signal from one of the input units that falls within said access acceptance level.

5,548,305

METHOD AND APPARATUS FOR DISPLAYING COLOR ON A COMPUTER OUTPUT DEVICE USING DITHERING TECHNIQUES

Wesley O. Rupel, Bellevue, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 430,503, Oct. 31, 1989, Pat. No. 5,138,303. This application Jan. 9, 1992, Ser. No. 820,316
Int. Cl.[6] G09G *5/02*
U.S. Cl. 345—150 18 Claims



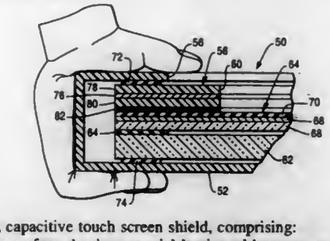
1. A method of filling an area in a color output device, the device being pel addressable, each pel having a red bit representing the color red, a green bit representing the color green, a blue bit representing the color blue, and an intensity level bit representing the intensity level, wherein the intensity level bit controls the intensity level of the color red, the color green, and the color blue for the pel, the device being logically divided into super-pels, comprising the steps of:
designating three intensity values, one intensity value associated with the color red, one intensity value associated with the color green, and one intensity value associated with the color blue;
mapping each designated intensity value to a mapped number representing a ratio of the designated intensity value to a maximum intensity value, one mapped number associated with the color red, one mapped number associated with the color green, and one mapped number associated with the color blue;
determining a number of intensity level bits in each super-pel to set based on a maximum mapped number of the three mapped numbers, wherein the number of intensity level bits to set is in proportion to an amount by which the maximum mapped number exceeds one half;
forming a fill pattern based on the intensity level bits, red bits, green bits, and blue bits of a super-pel; and
setting the intensity level bits, red bits, green bits, and blue bits of each super-pel to effect the filling of the area based on the fill pattern.

5,548,306

VISIBLE AND TOUCHABLE TOUCH SCREEN SHIELD

Joseph W. Yates, IV, Duluth, and Donald L. Forsythe, Dacula, both of Ga., assignors to AT&T Global Information Solutions Company, Dayton, Ohio

Filed Apr. 28, 1994, Ser. No. 234,807
Int. Cl.[6] G09G *1/00;3/00*
U.S. Cl. 345—174 18 Claims



1. A capacitive touch screen shield, comprising:
a layer of conductive material laminated between two layers of insulating material in which the insulating material is polycarbonite material.

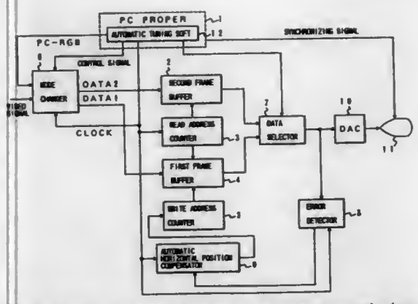
5,548,307

HORIZONTAL POSITION COMPENSATION CIRCUIT

Seiki Onagawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 19, 1994, Ser. No. 358,365
Claims priority, application Japan, Dec. 28, 1993, 5-336195
Int. Cl.[6] G09G *5/00;* H04N *17/00*
U.S. Cl. 345—213 4 Claims

1. A horizontal position compensation circuit for compensating horizontal position on a display of a first video signal produced by computer graphics in a host computer and displayed on a raster scanned display together with a second video signal which is not produced by computer graphics, comprising:
a first frame buffer for storing said first video signal;
a second frame buffer for storing said second video signal;
a read address counter for producing an address to write in said second frame buffer and to read from said first frame buffer and said second frame buffer, said address being produced from timing pulses delivered from said host computer, said timing pulses including a clock pulse, a horizontal synchronizing pulse and a vertical synchronizing pulse;
an automatic horizontal position compensator for producing delayed timing pulses having a controlled amount of delay from said timing pulses;



a write address counter for producing an address to write in said first frame buffer;
a data selector for selecting, in an address range determined by said host computer, data read out from said second frame buffer as an output, while selecting data read out from said first buffer as said output in other address ranges;
means for producing a horizontal line having a first test pattern produced by computer graphics in said host computer;
means for producing another horizontal line having a second test pattern, said another horizontal line being produced through means other than said computer graphics;
means for writing said first test pattern in lines of said first frame buffer;
means for writing said second test pattern in lines of said second frame buffer;
means for reading said first test pattern and said second test pattern simultaneously;
an error detector for detecting an interval between a first check point provided in said first test pattern and a second check point provided in said second test pattern;
and,
means for determining said controlled amount of delay from said interval detected by said error detector.

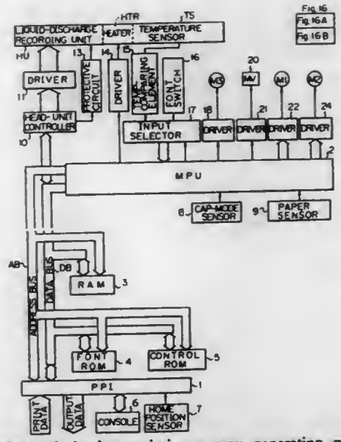
5,548,308

LIQUID DISCHARGE RECORDING APPARATUS HAVING APPARATUS FOR EFFECTING PREPARATORY EMISSION

Akira Nagatomo, Yokohama; Yoshifumi Hattori, Yamato; Isao Ebisawa, Tokyo; Tsutomu Abe, Isehara; Takashi Ohba, Atsugi; Hiroshi Iida, Machida, and Kenjiro Watanabe, Atsugi, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 223,129, Apr. 5, 1994, abandoned, which is a continuation of Ser. No. 905,111, Jun. 26, 1992, abandoned, which is a division of Ser. No. 746,217, Aug. 16, 1991, abandoned, which is a continuation of Ser. No. 603,252, Oct. 25, 1990, abandoned, which is a continuation of Ser. No. 455,765, Dec. 28, 1989, abandoned, which is a continuation of Ser. No. 332,385, Apr. 3, 1989, abandoned, which is a continuation of Ser. No. 136,441, Dec. 17, 1987, abandoned, which is a continuation of Ser. No. 809,774, Dec. 17, 1985, abandoned.
This application Feb. 14, 1995, Ser. No. 389,747
Claims priority, application Japan, Dec. 21, 1984, 59-268601; Dec. 21, 1984, 59-268602; Dec. 21, 1984, 59-268603; Dec. 21, 1984, 59-268604; Dec. 21, 1984, 59-268605; Dec. 21, 1984, 59-268606; Dec. 21, 1984, 59-268607; Dec. 21, 1984, 59-268608; Dec. 21, 1984, 59-268609; Dec. 21, 1984, 59-268610; Dec. 21, 1984, 59-268612; Dec. 21, 1984, 59-268613; Dec. 21, 1984, 59-268615
Int. Cl.[6] B41J *2/05;2/165*
U.S. Cl. 347—9 19 Claims

1. A liquid-discharge recording apparatus for emitting a liquid for recording on a recording medium in response to input printing data, said apparatus comprising:



a recording unit having emission energy generating means including an electrothermal energy generating device for heating a liquid according to an electrical signal so that a liquid droplet can be formed;
a microprocessing unit for processing the input printing data according to a program stored in a memory for outputting to said recording unit a recording signal for liquid emission, said microprocessing unit operable in a heating control mode and a recording control mode; and
a controller, coupled between said microprocessing unit and said recording unit, operable with a set electrical signal condition, for supplying said emission energy generating means with the electrical signal having the set electrical signal condition, thereby controlling heating of said emission energy generating means, wherein said microprocessing unit sets, in the heating control mode, within said controller, a condition for a limit wherein a liquid droplet is not formed, so that said controller controls preliminary heating, and said microprocessing unit sets, in the recording control mode, a condition for recording, within said controller, so that said controller controls an emission for recording.

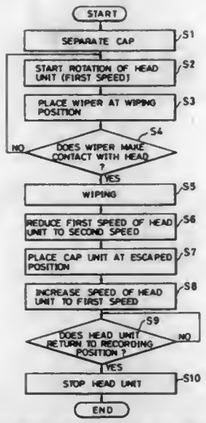
5,548,309

APPARATUS AND METHOD FOR WIPING AN INK JET RECORDING HEAD WITH CONTROL OF RELATIVE SPEED BETWEEN WIPER AND HEAD

Akio Okubo, Tokyo; Atsushi Saito, Yokohama, and Fumihiko Watanabe, Tokyo, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 30, 1991, Ser. No. 737,657
Claims priority, application Japan, Aug. 3, 1990, 2-206996; Nov. 29, 1990, 2-326028
Int. Cl.[6] B41J *2/165*
U.S. Cl. 347—33 31 Claims

1. A wiping apparatus for a recording head of an ink jet recording apparatus, said recording head having an ink ejection portion and said recording apparatus having a capping member for covering said ink ejection portion of said recording head at a capping location outside a recording area to which said recording head can move for ejecting ink onto a recording medium from ink ejection orifices arranged on said ink ejection portion, said wiping apparatus comprising:
wiping means, comprising a wiping member of an elastic material, for wiping said ink ejection portion by sliding a tip of said wiping means on said ink ejection portion;
moving means for moving said recording head and said wiping means relative to each other so that said wiping means slides on said ink ejection portion to wipe said ink ejection portion



when said recording head moves from said capping location toward said recording area; and

control means for controlling a relative speed between said recording head and said wiping means while said wiping means is wiping said ink ejection portion to reduce said relative speed from an end of a wiping of said ink ejection orifices to a departing of said wiping means from said ink ejection portion as compared with said relative speed from a beginning to the end of the wiping of said ink ejection orifices.

5,548,310

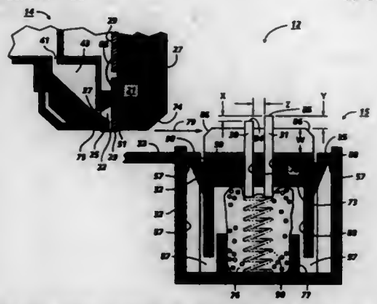
AUTOMATIC POSITIONING OF WIPER BLADES IN AN INK JET PRINTER MAINTENANCE STATION

Thomas R. Binnert, Hammondsport, and Michael Carlotta, Sodus, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 17, 1994, Ser. No. 324,207

Int. Cl.[6] B41J *2/165*

U.S. Cl. 347—33 **10 Claims**



1. A wiper blade cleaning assembly for cleaning the face of an ink jet printhead comprising:

a slotted blade holder for removably mounting at least one wiper blade in said slot, at least one blade having a distal end for slidingly engaging said printhead face passing thereby and

resilient means for urging said blade distal end into a predetermined minimum contact with said printhead face, said resilient means comprising a flexible foam.

5,548,311

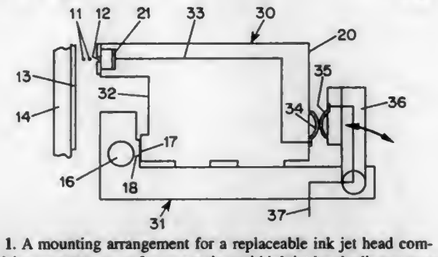
MOUNT FOR REPLACEABLE INK JET HEAD

Nathan P. Hine, South Strafford, Vt., assignor to Spectra, Inc., Hanover, N.H.

Filed Feb. 28, 1994, Ser. No. 204,463

Int. Cl.[6] B41J *2/235*

U.S. Cl. 347—50 **7 Claims**



1. A mounting arrangement for a replaceable ink jet head comprising support means for supporting said ink jet head adjacent to a surface of a substrate, said replaceable ink jet head removably mounted on the support means and arranged to project ink drops selectively in a first direction toward the substrate, mounting pad means on the support means and on the ink jet head, respectively, for engagement with each other in a direction generally parallel to the first direction when the ink jet head is supported on the support means and which are releasably engageable by relative motion of the ink jet head and the support means in an engagement direction which is in the same direction as the first direction, electrical contact means on the ink jet head facing in a direction opposite to the engagement direction, and clamping means to urge the mounting pad means into engagement.

5,548,312

INK JET RECORDING METHOD

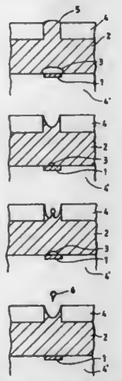
Akira Asai, Atsugi, Japan, assignor to Canon Kabusihiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 733,014, Jul. 19, 1991, abandoned, which is a continuation of Ser. No. 652,208, Feb. 5, 1991, abandoned, which is a continuation of Ser. No. 500,099, Mar. 21, 1990, abandoned, which is a continuation of Ser. No. 367,197, Jun. 15, 1989, abandoned. This application Sep. 12, 1994, Ser. No. 303,000

Claims priority, application Japan, Jun. 20, 1988, 150000

Int. Cl.[6] B41V *2/05*

U.S. Cl. 347—56 **39 Claims**



1. An ink jet recording method characterized in that an electrical signal is input to an electro-thermal converting member to cause heat generation by said electro-thermal converting member to thereby create a bubble in an ink liquid in a first bubble creation, an ink droplet is discharged by pressure when said bubble contracts and expands again in a second bubble creation after the expansion of said bubble has reached a maximum, and the discharged ink droplet is deposited on a recording medium to thereby accomplish recording,

so that in a given discharge operation said bubble is formed twice in said first bubble creation and said second bubble creation, and the ink liquid is not discharged in said first bubble creation and is discharged in said second bubble creation.

5,548,313

INKJET PRINTING HEAD

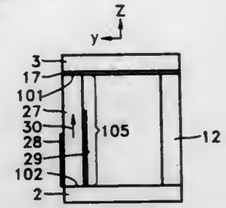
Ki-bang Lee, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Dec. 20, 1993, Ser. No. 169,400

Claims priority, application Rep. of Korea, May 31, 1993, 93-9737

Int. Cl.[6] B41J *2/045*

U.S. Cl. 347—68 **19 Claims**



1. An inkjet printing head comprising;

a upper and a lower plate having an interval therebetween;

an electrode disposed adjacent said upper plate;

a wall connecting said upper plate with said lower plate;

a nozzle for ejecting ink droplets and arranged on said wall;

a side wall disposed between said upper and lower plates and

a piezoelectric actuator disposed between said upper and lower plates having composite shear, tensile, and compressive modes, said actuator including a piezoelectric device polarized in a lengthwise direction, first and second electrodes having different lengths, the first and second electrodes being disposed on an upper or lower part of the piezoelectric device, and a third electrode on the upper or lower end of the piezoelectric device positioned a distance from the first and second electrodes.

5,548,314

INK JET RECORDING HEAD

Noriaki Okazawa; Takahiro Naka, and Shinji Yasukawa, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed May 12, 1994, Ser. No. 241,974

Claims priority, application Japan, May 12, 1993, 5-110342; May 12, 1993, 5-110343; May 9, 1994, 6-120579

Int. Cl.[6] B41J *2/45*

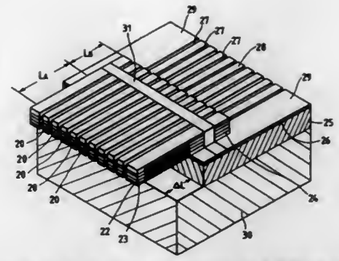
U.S. Cl. 347—71 **16 Claims**

1. An ink jet recording head for ejecting ink drops by expanding or shrinking a pressure generation chamber of an ink flow route forming member with vibrators, said ink flow route forming member having nozzle openings, the pressure generation chamber, an ink supply port, and a reservoir formed therein, said ink jet recording head comprising:

a piezoelectric element which is divided into a plurality of piezoelectric vibrators by slits formed in said piezoelectric element, said piezoelectric vibrators having a longitudinal axis and vibrating in a vertical vibration mode and being disposed and fixed in a row with a predetermined pitch to a piezoelectric vibrator support plate, said support plate having a longitudinal axis and being formed of a material having a resistance to cutting by a cutter which is the same as a resistance to cutting of said piezoelectric vibrators and having grooves formed in a surface thereof which correspond to the slits formed in said piezoelectric element, said piezoelectric vibrators having a non-active end portion that is supported by the vibrator support plate and an active portion which is not supported by the vibrator support plate, said active portion being coupled to said ink flow route forming member; and

a base having a longitudinal axis and being made of material having a rigidity which is higher than a rigidity of said support plate, said base being fixed to said support plate by an adhesive;

wherein said piezoelectric vibrators, said vibrator support plate and said base are laminated to one another so that said longitudinal axes are parallel to one another.



5,548,315

APPARATUS AND A METHOD FOR CREATING AN IMAGE BY APPLYING VOLTAGE SIGNALS AND NON-VISIBLE CHARGES TO A DIELECTRIC ELEMENT

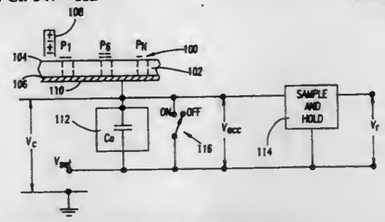
Albert Zur, Givat Savion, Israel, assignor to Cubital Ltd.

Continuation of Ser. No. 766,691, Sep. 27, 1991, Pat. No. 5,289,214, which is a continuation-in-part of Ser. No. 697,166, May 8, 1991, Pat. No. 5,157,423. This application Nov. 22, 1993, Ser. No. 157,345

The portion of the term of this patent subsequent to Oct. 20, 2009, has been disclaimed.

Int. Cl.[6] G01D *15/06*

U.S. Cl. 347—112 **8 Claims**



1. Apparatus for creating an image comprising:

at least one conductor for applying voltage in a time-dependent manner to given locations on a first surface of a two-dimensional dielectric element thereby causing positive and negative apparent surface voltages on a second surface of said dielectric element;

a charge source for supplying a flow of non-visible charges of either polarity to given locations on a second surface of said two-dimensional dielectric element wherein said flow is operative to temporarily neutralise the apparent surface voltages at said given locations of said second surface; and

wherein terminating the supply of charges at given locations on said two-dimensional dielectric element in a time-dependent manner, thereby freezes the charge at such given locations, the quantity of the charge retained at each given location being related to the voltage applied to said given location at

the time of terminating the supply of charges thereto, whereby the time relationship between the applying of the voltage and the terminating the supply of charges provides an imagewise charge pattern on the dielectric element.

5,548,316

STEREOSCOPIC IMAGE PROCESSING SYSTEM

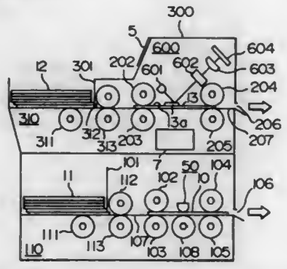
Yasunori Hamada, Tsuchiura, and Masataka Kawauchi, Nishinomiya, both of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 1, 1993, Ser. No. 24,230

Claims priority, application Japan, Feb. 27, 1992, 4-040954; Feb. 27, 1992, 4-040955; Feb. 27, 1992, 4-040956

Int. Cl.[6] B41J *2/32*

U.S. Cl. 347—171 **10 Claims**



7. A stereoscopic image processing system, comprising:

a housing section for housing media having a nature that a volume thereof expands when heated;

first conveying means for conveying a medium taken out of said housing section;

stereoscopic image output means having heating means and pressing means for pressing the medium against said heating means, in which the medium is partially heated so as to form a stereoscopic image;

second conveying means for conveying the medium on which the stereoscopic image is formed;

stereoscopic image reading means for reading any unevenness of the stereoscopic image formed on the medium by said second conveying means; and

information processing control means for processing information of said respective means and controlling operation thereof.

5,548,317

CEL PRODUCTION BY THERMAL TRANSFER PROCESSES

Richard S. Fisch, St. Paul, and David A. Larshus, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing, St. Paul, Minn.

Filed May 7, 1993, Ser. No. 65,746

Int. Cl.[6] B41J *2/325*

U.S. Cl. 347—171 **17 Claims**

1. A process for the formation of a cel for use in color animation motion picture production comprising the steps of providing electronic information of a color image to a thermal printer, thermally printing a first image having at least some opaque areas therein onto a transparent carrier sheet from said electronic information, and optically combining said first image with a second image on a separate transparent sheet, the composite of the first and second image forming a cel.

5,548,318

PAPER HOLDER OF VIDEO PRINTER

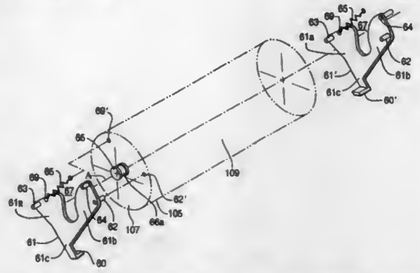
Kwang-Ho Ro, and Moon-Bae Park, both of Kyounggi-do, Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Division of Ser. No. 878,522, May 5, 1992, Pat. No. 5,353,049,. This application Sep. 30, 1994, Ser. No. 314,298

Claims priority, application Rep. of Korea, Jan. 21, 1991, 1991/367

Int. Cl.[6] B41J *11/02*

U.S. Cl. 347—174 **7 Claims**



1. A process for printing various colors in sequence by using a video printer having a platen drum, a thermal print head and a multi-colored ribbon, comprising the steps of:

inserting a leading edge of a sheet of paper between a circumferential surface of the platen drum and a paper holder, and holding the leading edge along opposite sides of said sheet of paper;

lowering the thermal print head to press the multi-colored ribbon against the sheet of paper to provide a frictional force between said sheet of paper and the surface of the platen drum;

rotating the platen drum and heating the thermal print head to print a first color from the multi-colored ribbon onto the sheet of paper until the sheet of paper is delivered to a first position;

stopping the platen drum, lifting the thermal print head, and rotating the platen drum to move the sheet of paper from the first position to a second position;

stopping the platen drum, lowering the thermal print head to press the multi-colored ribbon against the sheet of paper to provide a frictional force between said sheet of paper and the surface of the platen drum, rotating said platen drum and heating the thermal print head while the platen drum is rotated to move said sheet of paper from the second position to the first position to print a second color from the multi-colored ribbon onto the sheet of paper;

stopping the platen drum, lifting the thermal print head and rotating the platen drum to move said sheet of paper from the first position to the second position;

stopping rotation of the platen drum;

lowering said thermal print head to press the multi-colored ribbon against the sheet of paper to provide a frictional force between said sheet of paper and the surface of the platen drum;

rotating said paper holder to release the leading edge of the sheet of paper from said paper bolder to allow said leading edge of said sheet of paper to rise above the surface of the platen drum, said paper holder coming to rest on the surface of said platen drum;

rotating the platen drum and heating the thermal print head to print a third color from the multi-colored ribbon onto the sheet of paper; and

discharging the sheet of paper during the printing of the third color.

5,548,319

GRADATION DATA METHOD PROCESSING INCLUDING REPEATED READING AND RECORDING OF HIGH DENSITY DATA

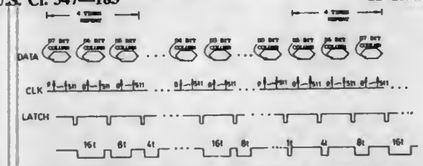
Sang-Chul Kwon, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Sep. 24, 1993, Ser. No. 126,395

Claims priority, application Rep. of Korea, Sep. 25, 1992, 1992-17524; Sep. 14, 1993, 93-18456

Int. Cl.[6] B41J *2/32*

U.S. Cl. 347—183 **11 Claims**



1. A gradation data processing method for a printer for printing lines, said printer having a heating element, said method comprising the steps of:

(a) storing, per line, an N-bit picture data for expressing 2^N gradations, wherein N is an integer >1;

(b) reading, per predetermined bit column, the N-bit picture data for expressing the 2^N gradations, wherein step b) comprises the steps of:

(d) repeatedly reading the picture data for expression of high gradation among the N-bit picture data at least more than one time per the predetermined bit column;

(e) reading the picture data for expression of low gradation among the N-bit picture data per the predetermined bit column after the first high gradation read step is completed; and

(f) repeatedly reading the picture data for expression of high gradation among the N-bit picture data at least more than one time per the predetermined bit column after the low gradation read step is completed; and

(c) printing with said heating element, per the predetermined bit column, the picture data read during said step (b), wherein the picture data represents a respective different heating time of said heating element per the predetermined bit column.

5,548,320

LASER DIODE PRINTING APPARATUS

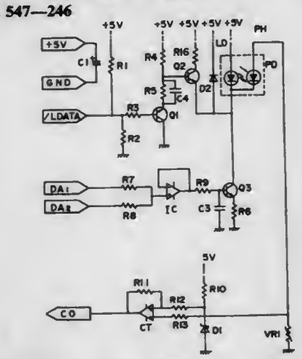
Toshihisa Yamanaka, and Eiji Okabayashi, both of Machida, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 23, 1993, Ser. No. 125,585

Claims priority, application Japan, Sep. 28, 1992, 4-283817

Int. Cl.[6] H04N *1/23*

U.S. Cl. 547—246 **17 Claims**



1. A printing apparatus comprising:

means for implementing a main power supply for the printing apparatus;

an image carrying member;

a light source which emits a light beam;

a control transistor which is serially connected to said light source to control the magnitude of the current for driving said light source so as to control the intensity of the light beam;

a switching circuit which is connected in parallel to said light source and switches said light source in accordance with image data to form an image on said image carrying member;

a base current supplying circuit for supplying an electrical current to the base terminal of said control transistor; and

control means for controlling said base current supplying circuit to supply an electrical current to the base terminal of said control transistor in response to implementation of the main power supply, so as to heat the control transistor prior to an image forming operation.

5,548,321

OPTICAL SCANNING APPARATUS FOR SCANNING LASER BEAM ON IMAGING SURFACE AND RECORDING IMAGE DATA ON IMAGING SURFACE IN UNITS OF DOTS

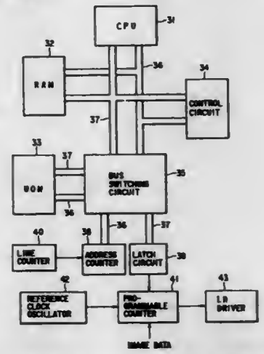
Kazunori Murakami, Shizuoka-ken; Tomonori Ikumi, Numazu; Atsushi Kubota, Shizuoka-ken; Nobuhiko Nakahara, Shizuoka-ken, and Nobuyuki Kato, Shizuoka-ken, all of, Japan, assignors to Kabushiki Kaisha TEC, Shizuoka, Japan

Filed Nov. 23, 1993, Ser. No. 157,396

Claims priority, application Japan, Nov. 27, 1992, 4-319017; Dec. 24, 1992, 4-344689; Oct. 7, 1993, 5-251357

Int. Cl.[6] H04N *1/21*

U.S. Cl. 347—256 **13 Claims**



1. An optical scanning apparatus for applying a laser beam onto an imaging surface to record image data thereon in units of dots, wherein a width of each of dots to be formed in one scanning operation is determined from a dot-width data item which is used to correct an f-θ error caused by a change in speed of the scanning operation, and wherein a period of applying the laser beam onto said imaging surface is changed in accordance with the dot-width data item, said optical scanning apparatus comprising:

storage means having addresses for storing dot-width data items which form a plurality of pattern data items, each pattern data item including data representing widths of dots forming a line to be formed in one scanning operation;

data read means for selecting and reading the dot-width data items forming a pattern data item for each scanning operation;

dot width determining means for determining the widths of the dots to be formed in the scanning operation, from the dot-width data items read from said storage means by said data read means; and

control means for controlling the period for applying the laser beam onto said imaging surface in accordance with each dot width determined by said dot width determining means.

5,548,322

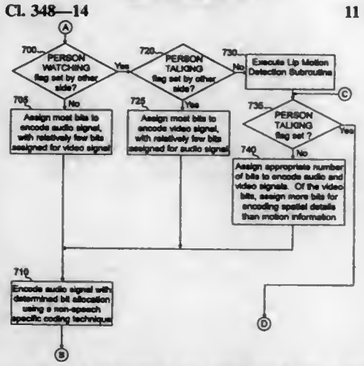
LOW BIT RATE AUDIO-VISUAL COMMUNICATION SYSTEM HAVING INTEGRATED PRECEPTUAL SPEECH AND VIDEO CODING

Yong Zhou, Washington Township, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Division of Ser. No. 223,903, Apr. 6, 1994. This application May 31, 1995, Ser. No. 455,809

Int. Cl.[6] H04N *7/14*

U.S. Cl. 348—14 **11 Claims**



1. A method of encoding a first audio signal and a first video signal in a transmitter of an audio-visual communication system associated with a first party for transmission utilizing a number of available bits to a receiver associated with a second party, said receiver decoding said first audio and video signals for presentation to said second party, said encoding method comprising the steps of:

detecting whether said second party is watching a display screen; and

allocating a predetermined minimal number of said number of available bits for encoding said first video signal if said detecting step determines that said second party is not watching said display screen.

5,548,323

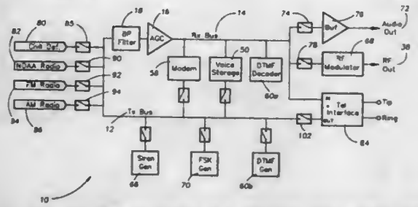
MULTIPLE INPUT PROCESSOR FOR CABLE TELEVISION HEAD END CONTROLLER

Martin E. Callahan, Greeley, Nebr., assignor to Hollyanne Corp., Greeley, Nebr.

Filed Mar. 30, 1994, Ser. No. 220,437

Int. Cl.[6] H04N *7/10*

U.S. Cl. 348—9 **7 Claims**



1. A multiple input processor for a cable television system, said cable television system of a type including a head end and plurality of receivers for receiving radio frequency signals from said head end, said receivers including means for converting said radio frequency signals to audible audio signals, comprising:

a first signal source means for providing at least one audio signal input for transmission to said receivers, connected to an audio bus means;

a second signal source means for providing at least one audio signal input for transmission to said receivers, connected to said audio bus means;

programmable processing means connected to said audio bus means, for processing said audio signal inputs from said first and second sources and selectively transmitting the processed signals to a modulator means;

modulator means for receiving processed audio signals and converting them into a radio frequency signal for broadcast to said receivers; and

voice storage means interfaced with said audio bus and said processing means, for storing audio signal inputs, said processing means programmed to selectively direct said audio signals to at least one of said voice storage means and said modulator means.

5,548,324

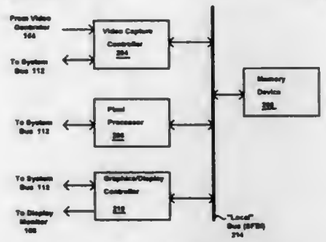
PROCESS, APPARATUS AND SYSTEM FOR DISPLAYING MULTIPLE VIDEO STREAMS USING LINKED CONTROL BLOCKS

Terry Downs, Forest Grove, and Judith A. Goldstein, Hillsboro, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed May 16, 1994, Ser. No. 243,204

Int. Cl.[6] H04N *7/10*; **G06F** *9/00*

U.S. Cl. 348—15 **33 Claims**



1. A computer-implemented process for displaying a plurality of video streams on a display monitor, the plurality of video streams comprising a video stream A and a video stream B, comprising the steps of:

(a) generating n bitmap signals A1, A2, . . . , An corresponding to the video stream A;

(b) storing the bitmap signals A1, A2, . . . , An in s memory positions of a memory device in a circular fashion:

(c) generating m bitmap signals B1, B2, . . . , Bm corresponding to the video stream B;

(d) storing the bitmap signals B1, B2, . . . , Bm in t memory positions of the memory device in a circular fashion;

(e) generating a plurality of data structures, each data structure comprising a plurality of control blocks each control block comprising information for controlling the display of one of the bitmap signals A1, A2, . . . , An and B1, B2, . . . , Bm; and

(f) displaying the bitmap signals A1, A2, . . . , An and B1, B2, . . . , Bm in accordance with the plurality of data structures, wherein the frame rate of the video stream A is different from the frame rate of the video stream B.

5,548,325

VIDEO CAMERA WITH DEVICE GENERATING A SHUTTER PULSE FOR A CAMERA OR THE LIKE

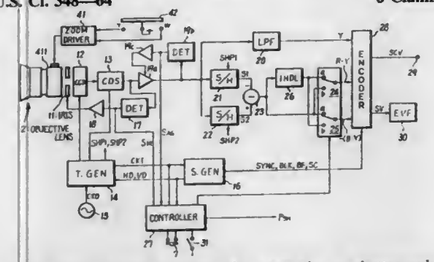
Hiroyuki Hashimoto, Souka; Satoshi Ishii, Kita-adachi-gun, and Haruo Saito, Kuki, all of, Japan, assignors to Aiwa Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 896,066, Jun. 9, 1992, abandoned. This application Jul. 19, 1994, Ser. No. 277,373

Claims priority, application Japan, Jun. 10, 1991, 3-138013; Jun. 13, 1991, 3-142136; Jun. 13, 1991, 3-142140; Jun. 13, 1991, 3-142144; Jun. 13, 1991, 3-142159; Jun. 18, 1991, 3-146335; Jun. 18, 1991, 3-146336; Jun. 18, 1991, 3-146339; Jun. 20, 1991, 3-148613; Jun. 20, 1991, 3-148625

Int. Cl.[6] H04N *5/225*

U.S. Cl. 348—64 **8 Claims**



1. A video camera apparatus for generating a shutter pulse capable of operating a still image recording means such as a photo-camera, said apparatus comprising:

image pick-up means for providing an image pick-up signal in accordance with a received image;

level detection means for detecting a level over time representative of an average level of the image pick-up signal and providing a level output signal in accordance with the said level detected, said level detected being representative of an average luminance across a field area of the received image;

level change detection means for detecting magnitude changes in said level output signal; and

shutter pulse generation means for generating said shutter pulse when said level change detection means detects more than a predetermined change in value of said level output signal over a predetermined period of time.

5,548,326

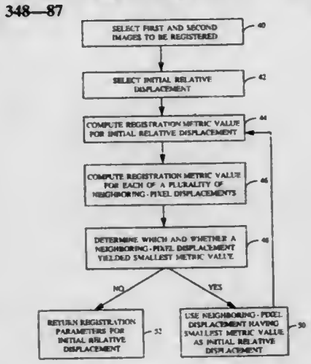
EFFICIENT IMAGE REGISTRATION

David Michael, Newton, Mass., assignor to Cognex Corporation, Natick, Mass.

Continuation-in-part of Ser. No. 132,532, Oct. 6, 1993, abandoned. This application Aug. 31, 1994, Ser. No. 299,015

Int. Cl.[6] H04N *7/18*

U.S. Cl. 348—87 **33 Claims**



1. A method for efficient registration of a pair of digitized images including a first image and a second image, each image including a plurality of pixels, each pixel being associated with at least one of a gray value and a don't-care symbol, the method comprising the steps of:

(A) selecting an initial relative displacement between said first image and said second image such that a plurality of pixels of said first image are in overlapping relationship with a plurality of pixels of said second image;

(B) computing a registration metric value corresponding to said initial relative displacement using a registration metric computation that includes the steps of:

computing the difference between the gray value of each pixel of said first image and the gray value of the pixel of said second image that is in overlapping relationship with said each pixel of said first image;

computing the absolute value of the difference between the gray value of each pixel of said first image and the gray value of each pixel of said second image that is in overlapping relationship with said each pixel of said first image; and

computing a sum of absolute differences by computing the summation of each absolute value computed for each pixel of said first image that is in overlapping relationship with a pixel of said second image;

(C) computing a registration metric value corresponding to each of a plurality of neighboring-pixel displacements using said registration metric computation;

(D) determining which displacement among the plurality of neighboring-pixel displacements and said initial relative displacement resulted in the smallest registration metric value;

(E) if the displacement that resulted in the smallest registration metric value is one of said plurality of neighboring-pixel displacements, repeating steps (A), (B), (C), (D), and (E) using said one displacement as said initial relative displacement; and

(F) else, provide registration parameters corresponding to the most recent version of said initial relative displacement for placing said pair of digitized images in registered relationship.

5,548,327

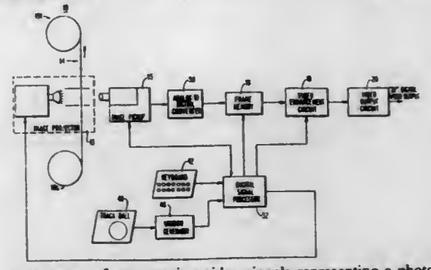
APPARATUS FOR SELECTIVELY GENERATING AND ENHANCING WITHIN A WINDOW OF SIGNAL VALUES, VIDEO SIGNALS REPRESENTING PHOTOGRAPHIC IMAGES PREVIOUSLY RECORDED IN A FILM ON A PHOTOGRAPHIC FILM-TYPE MEDIUM

Erhan H. Gunday, New York, N.Y.; Michael Doliton, Maywood; Paul Foung, Dumont, both of N.J., and John R. Lee, New York, N.Y., assignors to Sony Corporation, Tokyo, Japan, and Sony Electronics, Inc., Park Ridge, N.J.

Division of Ser. No. 66,969, May 24, 1993, Pat. No. 5,469,209, which is a division of Ser. No. 731,079, Jul. 16, 1991, Pat. No. 5,249,056. This application Jun. 5, 1995, Ser. No. 461,055

Int. Cl.[6] H04N *5/253*

U.S. Cl. 348—97 **8 Claims**



1. Apparatus for generating video signals representing a photographic image previously recorded in a frame on a photographic film-type medium, comprising:

image pickup means for producing video signals in response to a light image of said photographic image projected thereto;

window generating means selectively operable for generating a settable window with a range of video signal values in response to a user input to provide a user selected window of signal values;

processing means coupled to said window generating means including suppression means for suppressing video signals produced by said image pickup means having video signal values outside said user selected window of signal values so as to provide video data containing produced video signals having only signal values within said user selected window of signal values; and

enhancement means for enhancing said video data in accordance with a conversion function selected by a user.

5,548,328

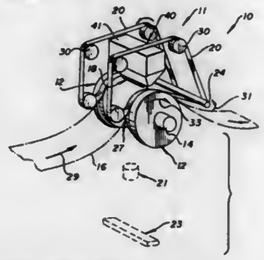
FILM SCANNER HAVING DRIVE BELTS FOR ADVANCING FILM THROUGH AN IMAGING STATION

Edward H. Wakefield, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 27, 1990, Ser. No. 559,249

Int. Cl.[6] H04N *5/253*

U.S. Cl. 348—98 **14 Claims**



1. A film scanner comprising:

roller means for supporting a film at an imaging station, said film having an image area;

belt means for urging said film against said roller means, said belt means contacting said film along an edge thereof and being free of contact with said image area;

illumination means for producing a line of light on said film as said film is contacted by said roller means and said belt means at said imaging station; and

means for driving said belt means to advance the film relative to said illumination means.

5,548,329

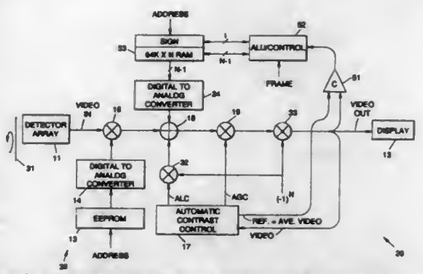
PERCEPTUAL DELTA FRAME PROCESSING

Robert W. Klatt, Rancho Palos Verdes, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 953,445, Sep. 29, 1992, abandoned. This application Jan. 17, 1995, Ser. No. 372,724

Int. Cl.[6] H04N *9/12*

U.S. Cl. 348—164 **6 Claims**



1. A perceptual delta frame processing system for use with a chopped detector array that produces an image substantially equivalent to that of an image difference processing system, wherein output signals of detector elements of the chopped detector array are the sum of offsets (α) that are constant from frame to frame, and an image signal ($\beta\Delta T$) that is proportional to the temperature difference between a scene and a chopper, wherein said perceptual delta frame processing system comprises:

responsivity equalization circuitry for processing the output signals from the detector array to equalize the relative response of the detector elements wherein said responsivity equalization circuitry comprises

a second multiplier;

a first memory comprising a look-up table comprising correction constants; and

a digital to analog converter coupled between the second multiplier and the first memory for converting addressed values in the look-up table into analog signals that are combined with the output signals from the detector array;

a first multiplier coupled to the responsivity equalization circuitry for inverting the polarity of alternate image frames and thus provide constant polarity signals, wherein the constant offsets (α) are canceled when viewed by an observer;

contrast control circuitry for processing the constant polarity signals to produce optimized video signals containing inverted and non-inverted offsets wherein said contrast control circuitry comprises

a contrast control circuit for providing automatic level control and automatic gain control signals;

a summing circuit coupled to the contrast control circuit and to the first multiplier for combining the automatic level control signal and the constant polarity signals to produce a level adjusted signal; and

a third multiplier coupled to the contrast control circuit and to the summing circuit for combining the automatic gain control signal and the level adjusted signals to provide the optimized video signals;

a noninterlaced video display that receives said optimized video signals at a repetition rate above its flicker fusion frequency;

a comparator for processing the optimized video signals and reference signals provided by the contrast control circuit, and for providing comparison output signals that are indicative of the difference therebetween;

an arithmetic logic and control unit for comparing a current comparison output signal and the comparison output signal for the previous field, and for providing a second output signal indicative of the comparison, which second output signal comprises an updated offset constant;

a memory coupled to the arithmetic logic and control unit for storing updated offset constants wherein the arithmetic logic and control unit is adapted to update the offset constants stored in the memory based upon an inter-field offset polarity change; and

a digital to analog converter coupled between the memory and the summing circuit,

wherein offsets in alternate video frames are averaged out by the eye-brain system of the observer, who perceives an image having the quality that is substantially equivalent to the image difference processing system.

5,548,330

IMAGE PICKUP DEVICE FOR GENERATING A CORRECTED LUMINANCE SIGNAL

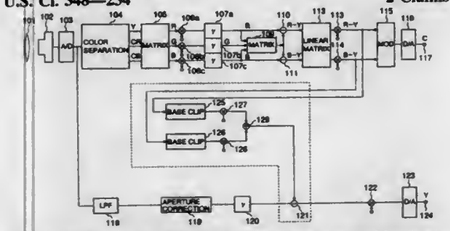
Teruo Hieda, Yokohama, and Makoto Shimokoriyama, Kawasaki, both of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1993, Ser. No. 171,178

Claims priority, application Japan, Dec. 24, 1992, 4-344555; Dec. 25, 1992, 4-358971

Int. Cl.[6] H04N *5/20*

U.S. Cl. 348—234 **2 Claims**



1. An image pickup device for generating a corrected luminance signal by subtracting two color difference signals, as correction signals, from a luminance signal, comprising:

means for generating a correction signal by base-clipping at least one of the two color difference signals without eliminating an entire negative portion thereof; and

correction operating means for correcting the luminance signal on the basis of the correction signal.

5,548,331

CLAMPING CIRCUIT

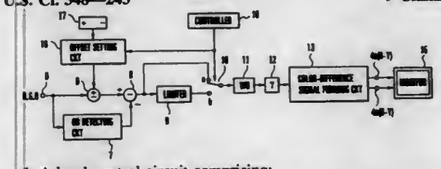
Norihiro Kawahara, and Yasuyuki Tanaka, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 23, 1993, Ser. No. 110,428

Claims priority, application Japan, Aug. 28, 1992, 4-253985; Aug. 31, 1992, 4-255674

Int. Cl.[6] H04N *9/64;5/21*

U.S. Cl. 348—243 **9 Claims**



1. A level control circuit comprising:

a) level control means for controlling the level of a predetermined part of an input signal, said level control means including an offset adjusting arithmetic circuit which is arranged to add or subtract a predetermined level value to or from said input signal, said predetermined part including an optical black part of the input signal;

b) limiter means for limiting an output signal of said level control means;

c) setting means for setting a control amount of the level control means;

d) switch means for selectively outputting an output of the level control means or an output of the limiter means; and

e) control means for controlling the setting means and the switch means in association with each other, said control means controlling the switch means in such a manner that the output of the level control means is outputted during the setting operation of the setting means.

5,548,332

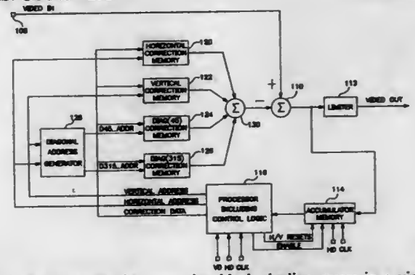
APPARATUS AND METHOD FOR BLACK SHADING CORRECTION

Robert J. Topper, Hatboro, Pa., and Lee R. Dischert, Burlington, N.J., assignors to Panasonic Technologies, Inc., Secaucus, N.J.

Continuation of Ser. No. 229,457, Apr. 18, 1994, abandoned. This application Apr. 21, 1995, Ser. No. 427,657

Int. Cl.[6] H04N *9/64;5/217*

U.S. Cl. 348—251 **11 Claims**



1. An apparatus for correcting black shading errors in a video camera comprising:

means for receiving a first video input signal representative of a capped-camera image and containing black shading errors;

means for calculating a plurality of correction signals from the first video input signal, wherein the plurality of correction signals includes at least one diagonal correction signal derived from a predetermined set of diagonally-oriented pixels;

means for combining the first video input signal with the plurality of correction signals to produce a video output signal with reduced black shading errors.

5,548,333

COLOR MIXING PREVENTION AND COLOR BALANCE SETTING DEVICE AND METHOD FOR A FIELD-SEQUENTIAL COLOR TELEVISION CAMERA

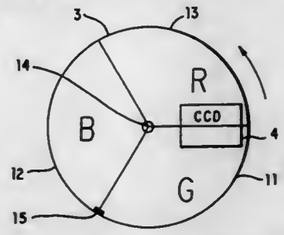
Kiyoshige Shibazaki, Tokyo, and Kenji Suzuki, Kanagawa, both of, Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Dec. 1, 1994, Ser. No. 352,797

Claims priority, application Japan, Dec. 10, 1993, 5-341491; Dec. 14, 1993, 5-342402; Dec. 15, 1993, 5-342907

Int. Cl.[6] H04N *9/04*

U.S. Cl. 348—270 **37 Claims**



1. An image processing system for a color television camera comprising:

a color filter that separates light from an object being photographed into a plurality of color images having different colors;

an imaging element that receives the plurality of color images from the color filter and outputs image signals based on an amount of charge that accumulates in said imaging element during an accumulation interval while said imaging element is receiving each of said plurality of color images; and

a timing regulation device that sets the accumulation interval of the imaging element based on color mixing intervals during which more than one of said color images simultaneously are received by said imaging element.

5,548,334

VIDEO CAMERA HAVING VIEWFINDER ROTATABLY MOUNTED ON CAMERA BODY

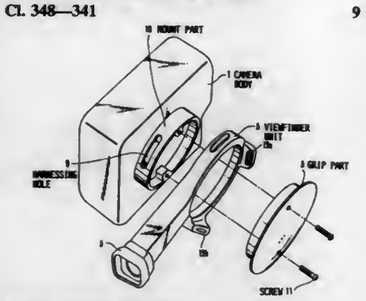
Hiroyuki Ichiyoshi, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 216,127, Mar. 22, 1994, abandoned, which is a continuation of Ser. No. 941,764, Sep. 4, 1992, abandoned, which is a continuation of Ser. No. 636,571, Jan. 2, 1991, abandoned. This application Dec. 15, 1994, Ser. No. 357,088

Claims priority, application Japan, Jan. 11, 1990, 2-2601; Jan. 11, 1990, 2-2602

Int. Cl.[6] H04N *5/225*

U.S. Cl. 348—341 **9 Claims**



1. A video camera comprising:

a) a camera body which contains therein converting means for converting an object image into an electrical video signal, said camera body being provided with an outwardly protruding part;

b) a rotary unit having a viewfinder capable of displaying an image related to said video signal, said rotary unit rotatably engaging said outwardly protruding part; and

c) a grip member to be grasped by a hand to hold said camera body and constituting a portion of an outer surface of the camera, said grip member being fixed to said outwardly protruding part in the state that the whole of said rotary unit is engaged to said outwardly protruding part, said grip member holding said rotary unit on the outer surface thereof.

5,548,335

DUAL DIRECTIONAL MICROPHONE VIDEO CAMERA HAVING OPERATOR VOICE CANCELLATION AND CONTROL

Yasuo Mitsuhashi, and Masaki Morita, both of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 300,520, Sep. 6, 1994, abandoned, which is a continuation of Ser. No. 99,407, Jul. 30, 1993, abandoned, which is a continuation of Ser. No. 727,003, Jul. 8, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 478,768

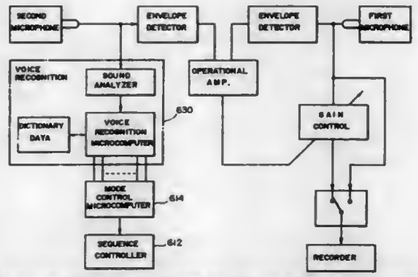
Claims priority, application Japan, Jul. 26, 1990, 2-199800; Oct. 24, 1990, 2-288240

Int. Cl.[6] H04N *5/225*

U.S. Cl. 348—373 **15 Claims**

1. A video camera including an optical system and capturing a video image of a subject comprising:

a first directional microphone having a directivity toward the subject, collecting sounds developed by the subject and converting the sounds into a first sound signal;



a second directional microphone having a directivity oriented generally toward an operator, collecting sounds from the operator and converting the sounds into said second sound signal;

sound generating means, operatively connected to said first and second directional microphones, for generating a third sound signal based on a difference between said first signal and said second signal; and

recording means, operatively connected to said sound generating means, for recording said third sound signal and for recording image data; wherein said sound generating means includes,

a first envelope detecting circuit for detecting the envelope of the first sound signal,

a second envelope detecting circuit for detecting the envelope of the second sound signal,

subtractor means for subtracting an output of said second envelope detecting circuit from an output of said first envelope detecting circuit to output a gain control signal, and

a gain control circuit modifying the level of said first sound signal in dependence on said gain control signal.

5,548,336

VIDEO CODE CONVERSION WITH AN OPTIMUM CONVERSION SPEED WHICH MATCHES A REPRODUCTION SPEED OF A REPRODUCING UNIT

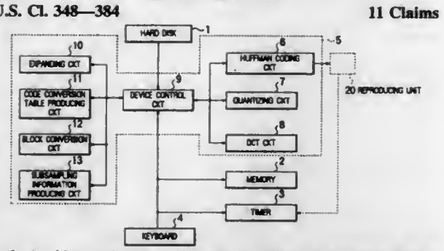
Hiroaki Ueda, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 29, 1994, Ser. No. 350,111

Claims priority, application Japan, Nov. 29, 1993, 5-297896

Int. Cl.[6] H04N *7/26*

U.S. Cl. 348—384 **11 Claims**



1. A video code conversion device which is supplied with a compression coded signal given by subjecting an original video signal comprising a predetermined number of frames to differential coding and which includes converting means for carrying out a converting operation of converting said compression coded signal into a DCT coded signal identical with a coded signal given by subjecting said original video signal to DCT coding, said video code conversion device being for use in combination with a reproducing unit for carrying out a reproducing operation of reproducing said original video signal from said DCT coded signal, said device comprising:

measuring means for measuring a total time interval as a measured time interval until said reproducing unit finishes the reproducing operation for a leading one of the frames of said original video signal from a time instant at which said converting means starts said converting operation; and

subsampling information producing means for producing optimum subsampling information with reference to said measured time interval to make said converting means carry out a optimum subsampled converting operation of converting remaining ones of the frames of said compression coded signal into said DCT coded signal in accordance with said optimum subsampling information.

5,548,337

VIDEO SIGNAL PROCESSING APPARATUS FOR A WIDE-ASPECT TELEVISION

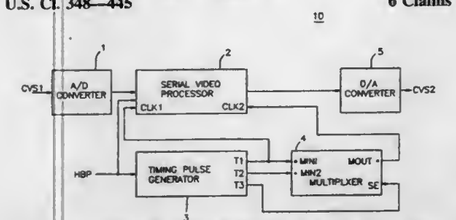
Kwon-Hag Kang, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Rep. of Korea

Filed Sep. 26, 1994, Ser. No. 311,859

Claims priority, application Rep. of Korea, Sep. 27, 1993, 93-19937

Int. Cl.[6] H04N *7/01*

U.S. Cl. 348—445 **6 Claims**



1. A video signal processing apparatus for a wide-aspect television for producing a wide-aspect display signal by processing a first composite video signal outputted from a video switching unit, said video signal processing apparatus comprising:

analog/digital (A/D) converter for converting to a first digitized composite video signal, said first composite video signal generated from said video switching unit;

a timing pulse generator for generating a first, a second and a third timing pulses, wherein a frequency of said second timing pulse is higher by a certain ratio with respect to a frequency of said first timing pulse;

a multiplexer for inputting said first, second, and third timing pulses and for outputting said first timing pulse or said second timing pulse in accordance with an input of said third timing pulse;

a serial video processor for inputting said first digitized composite video signal from said A/D converter in accordance with said first timing pulse from said multiplexer and for outputting a second digitized composite video signal in accordance with an input of said first timing pulse or said second timing pulse from said multiplexer; and

a digital/analog (D/A) converter for converting to a second composite video signal, said second digitized composite video signal outputted from said serial video processor.

5,548,338

COMPRESSION OF AN ELECTRONIC PROGRAMMING GUIDE

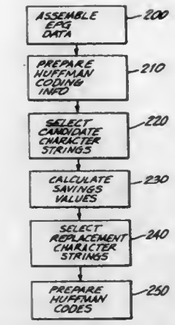
Michael D. Ellis, Boulder, Colo., and David B. Lazarus, Elkins Park, Pa., assignors to News American Publishing, Inc., New York, N.Y., and Telecommunications of Colorado, Inc., Englewood, Colo.

Filed Jun. 7, 1995, Ser. No. 476,208

Int. Cl.[6] H04N *7/08*

U.S. Cl. 348—473 **16 Claims**

1. A method for compressing an electronic programming guide, comprising:



assembling data representative of said electronic programming guide and comprising a plurality of characters;

determining a number of bits required to represent each of said characters in Huffman code;

selecting a plurality of candidate character strings from said data, said candidate character strings occurring more than a threshold number of times in said data and comprising at least two said characters;

calculating a savings value for each of said candidate character strings using at least said number of bits required to represent in Huffman code each of said characters comprising said candidate character string;

selecting at least one replacement character string from said candidate character strings based on said savings values;

preparing a Huffman table comprising Huffman codes for each of said plurality of characters and each of said at least one replacement character strings; and

compressing said electronic programming guide using said Huffman table.

5,548,339

DATA SEGMENT SYNC SIGNAL DETECTOR FOR HDTV

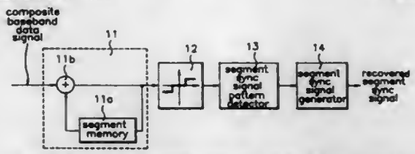
Key H. Kim, Kyungki-do, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

Filed Apr. 12, 1995, Ser. No. 420,739

Claims priority, application Rep. of Korea, Apr. 12, 1994, 7622/1994

Int. Cl.[6] H04N *5/08*

U.S. Cl. 348—525 **14 Claims**



1. A data segment sync signal detector for an HDTV comprising:

a segment accumulator for separating data corresponding to a segment sync signal from a composite baseband data signal by using a composite baseband data signal of the present segment to a composite baseband data signal of a previously input segment;

a quantizer for comparing the output signal of said segment accumulator with predetermined threshold values so as to output level values in a predetermined number of bits, corresponding to a plurality of fixed symbol streams, that is, segment sync signal data; and

a segment sync signal pattern detector for detecting the pattern of segment sync signal from the level values expressed in the predetermined number of bits output from said quantizer, thereby obtaining the phase information for respective seg-

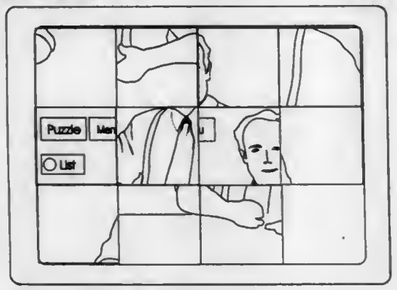
ments and making respective segment phase pulses according to the phase information.

5,548,340

INTELLIGENT TELEVISION RECEIVERS COMBINATIONS INCLUDING VIDEO DISPLAYS, AND METHODS FOR DIVERSION OF TELEVISION VIEWERS BY VISUAL IMAGE MODIFICATION

Randall L. Bertram, Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 31, 1995, Ser. No. 454,803
Int. Cl.[6] H04N *5/44*
U.S. Cl. 348—559 **26 Claims**



1. A combination comprising:
a television receiver having:
a video display device for displaying visual images to a human observer;
an audio transducer for emitting sound associated with displayed visual images; and
video/audio reception circuitry coupled to said video display device and to said audio transducer for receiving signals transmitted at frequencies which are outside direct sensing by the human observer and for delivering to said video display device video signals which drive said video display device to display said visual images and to said audio transducer audio signals which drive said audio transducer to emit said sound;
a remote control device usable at some distance of separation from said television receiver and having:
a housing sized to be held in the hand of the human observer;
a manually engagable input device mounted in said housing for manipulation by the human observer; and
control transmitter circuitry mounted in said housing and coupled to said input device for transmitting at a frequency which is outside direct sensing by the human observer command signals coordinated in a predetermined manner to manipulation of said input device by the human observer; and
a display controller having:
command receiver circuitry for receiving said command signals from said command transmitter circuitry and for deriving from said received command signals image directing signals directing modification of said visual images;
a microprocessor coupled to said command receiver circuitry and to said video reception circuitry
(a) for receiving said image directing signals,
(b) for executing control sequences in response to said image directing signals, and
(c) for modifying said visual images as directed by manipulation of said remote control device by the human observer;
memory devices coupled to said microprocessor for receiving and storing and delivering digitally encoded data used by said microprocessor in executing control programs; and
digitally encoded control program data stored in said memory devices and effective on execution by said microprocessor for modifying said video signals in predetermined manners in response to predetermined image directing signals;
said control program data comprising game program data for selectively manipulating said visual images to display intentional distortions of visual images otherwise displayed for purposes of diversion and further comprising menuing program data effective on execution by said microprocessor for controlling modification of said video signals.

9. A combination comprising:
a remote control device usable at some distance of separation from a television receiver and having:
a housing sized to be held in the hand of a human observer;
a manually engagable input device mounted in said housing for manipulation by the human observer; and
control transmitter circuitry mounted in said housing and coupled to said input device for transmitting at a frequency which is outside direct sensing by the human observer command signals coordinated in a predetermined manner to manipulation of said input device by the human observer; and
a display controller for coupling to a television receiver video display device and for delivering to a coupled television receiver video display device image directing signals, said display controller having:
command receiver circuitry for receiving said command signals from said command transmitter circuitry and for deriving from said received command signals image directing signals directing modification of visual images displayed to a human observer by the television receiver video display device, and;
a microprocessor coupled to said command receiver circuitry and to said video reception circuitry
(a) for receiving said image directing signals,
(b) for executing control sequences in response to said image directing signals, and
(c) for modifying said visual images as directed by manipulation of said remote control device by the human observer;
memory devices coupled to said microprocessor for receiving and storing and delivering digitally encoded data used by said microprocessor in executing control programs; and
digitally encoded control program data stored in said memory devices and effective on execution by said microprocessor for modifying said video signals in predetermined manners in response to predetermined image directing signals;
said control program data comprising game program data for selectively manipulating said visual images to display intentional distortions of visual images otherwise displayed for purposes of diversion menuing program data effective on execution by said microprocessor for controlling modification of said video signals.

17. An intelligent television receiver comprising:
a remote control device usable at some distance of separation from a television receiver and having:
a housing sized to be held in the hand of a human observer;
a manually engagable input device mounted in said housing for manipulation by the human observer; and
control transmitter circuitry mounted in said housing and coupled to said input device for transmitting at a frequency which is outside direct sensing by the human observer command signals coordinated in a predetermined manner to manipulation of said input device by the human observer;
a video display device for displaying visual images to a human observer;

video reception circuitry coupled to said video display device for receiving signals transmitted at frequencies which are outside direct sensing by the human observer and for delivering to said video display device video signals which drive said video display device to display visual images;
command receiver circuitry for receiving said command signals from said command transmitter circuitry and for deriving from said received command signals image directing signals directing modification of visual images displayed to a human observer by the television receiver video display device;
a microprocessor coupled to said command receiver circuitry and to said video reception circuitry
(a) for receiving said image directing signals,
(b) for executing control sequences in response to said image directing signals, and
(c) for modifying said visual images as directed by manipulation of said remote control device by the human observer;
memory devices coupled to said microprocessor for receiving and storing and delivering digitally encoded data used by said microprocessor in executing control programs; and
digitally encoded control program data stored in said memory devices and effective on execution by said microprocessor for modifying said video signals in predetermined manners in response to predetermined image directing signals;
said control program data comprising game program data for selectively manipulating said visual images to display intentional distortions of visual images otherwise displayed for purposes of diversion and menuing program data effective on execution by said microprocessor for controlling modification of said video signals.

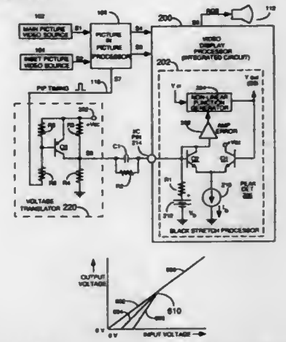
25. A method of displaying visual images to a human observer using a television video display device comprising the steps of:
receiving signals transmitted at frequencies which are outside direct sensing by the human observer;
delivering, to a television video display device, video signals which drive the television video display device to display visual images;
generating, with a manually engagable input device remote from the television video display device and manipulable by the human observer, command signals indicative of desired modifications of the displayed visual images and delivering generated signals to a command transmitter;
transmitting, from the command transmitter and at a frequency which is outside direct sensing by the human observer, command signals coordinated in a predetermined manner to manipulation of the input device by the human observer;
receiving command signals from the command transmitter and deriving from the received command signals image directing signals directing modification of the visual images; and
receiving the image directing signals and executing control sequences with a microprocessor in response to the image directing signals for modifying the visual images as directed by manipulation of the remote control device by the human observer; said step of executing control sequences comprising modifying visual images displayed to display intentional distortions of such images for purposes of diversion and further comprising:
receiving and storing and delivering digitally encoded data in memory devices and executing in a microprocessor coupled to the memory devices digitally encoded control programs stored in the memory devices and effective on execution by the microprocessor for modifying said video signals in predetermined manners in response to predetermined image directing signals; and
controlling modification of the video signals by execution of an application program.

5,548,341

TELEVISION RECEIVER WITH NON-LINEAR PROCESSING SELECTIVELY DISABLED DURING DISPLAY OF MULTI-IMAGE VIDEO SIGNAL

Kristopher A. Klink, Fishers, and Gene K. Sendelweck, Indianapolis, both of Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Aug. 5, 1994, Ser. No. 286,868
Int. Cl.[6] H04N *5/445;5/68;5/20*
U.S. Cl. 348—565 **13 Claims**



1. A method for processing a multi-picture television signal; comprising:
combining first and second video signals to produce a combined video signal and a picture identification signal for identifying the relative spatial positions of said first and second video signals;
coupling the combined video signal to a display device via a non-linear processor for subjecting the coupled signal to non-linear processing;
forming said non-linear processor in an integrated circuit provided with a pin for connection to a capacitor;
storing a charge in said capacitor representative of a luminance level of said coupled signal produced by said non-linear processor;
applying said identification signal to said capacitor for enabling said non-linear processor during display of one of said video signals in response to a first level of said identification signal and disabling the non-linear processor during display of the other of said video signals responsive to a second level of said identification signal.

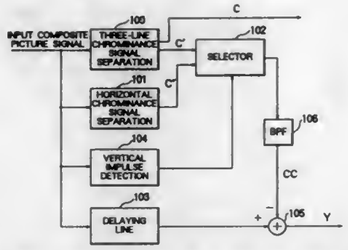
5,548,342

LUMINANCE/CHROMINANCE SEPARATING CIRCUIT USING PREDETERMINED SEPARATIONS

Kazumasa Ikeda, and Ken Hirata, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Continuation of Ser. No. 201,990, Feb. 25, 1994, abandoned. This application Jul. 11, 1995, Ser. No. 500,639
Claims priority, application Japan, Feb. 26, 1993, 5-037210; Aug. 19, 1993, 5-204968
Int. Cl.[6] H04N *9/78*
U.S. Cl. 348—668 **4 Claims**

1. A Y/C separating circuit for separating a luminance signal and a chrominance signal based on a low-frequency-band component of an input composite picture signal, comprising:
a three-line chrominance signal separating circuit for receiving said input composite picture signal and separating signal components for said chrominance signal from data of three horizontal lines of past, present, and future of said input composite picture signal;
a horizontal chrominance signal separating circuit for receiving said input composite picture signal and separating a function



of said signal components as a candidate signal for said chrominance signal from said input composite image signal;

a vertical impulse detecting circuit for receiving said low-frequency-band component of said input composite picture signal and detecting whether a signal level of the data of said present horizontal line is larger or smaller than each of signal levels of the data of said past horizontal line and the data of said future horizontal line to produce a detected output signal, said present horizontal line being spaced apart from each of said past horizontal line and said future horizontal line by at least one horizontal line;

a selector for selecting as a selected chrominance signal either a particular one of said signal components of said three-line chrominance signal separating circuit or said candidate signal of said horizontal chrominance signal separating circuit dependent upon said detected output signal of said vertical impulse detecting circuit;

a delaying circuit for delaying said input composite picture signal by a predetermined time period to produce a delayed signal; and

a subtracter for subtracting said selected chrominance signal of said selector from said delayed output signal of said delaying circuit to produce an output signal,

wherein said output signal of said subtracter becomes said luminance signal.

3. A Y/C separating circuit for separating a luminance signal and a chrominance signal based on a low-frequency-band component of an input composite picture signal, comprising:

a three-line chrominance signal separating circuit for receiving said input composite picture signal and separating signal components for said chrominance signal from data of three horizontal lines of present, a plurality of lines ahead, and of three horizontal lines of past, a plurality of lines behind, of said input composite picture signal;

a horizontal chrominance signal separating circuit for receiving said input composite picture signal and separating a function of said signal components as a candidate signal for said chrominance signal from said input composite image signal;

a vertical impulse detecting circuit for receiving said low-frequency-band component of said input composite picture signal and detecting whether a signal level of the data of said present horizontal line is larger or smaller than each of signal levels of the data of said plurality-of-line-ahead horizontal line and the data of said plurality-of-line-behind present horizontal line being spaced apart from each of said plurality-of-line-ahead horizontal line and said plurality-of-line-behind horizontal line by at least one horizontal line;

a selector for selecting as a selected chrominance signal either a particular one of said signal components of said three-line chrominance signal separating circuit or said candidate signal of said horizontal chrominance signal separating circuit dependent upon said detected output signal of said vertical impulse detecting circuit;

a delaying circuit for delaying said input composite picture signal by a predetermined time period to produce a delayed signal; and

a subtracter for subtracting said selected chrominance signal of said selector from said delayed signal of said delaying circuit to produce an output signal,

wherein said output signal of said subtracter becomes said luminance signal.

5,548,343

SIGNAL ALIGNMENT IN TELEVISION AND DEVICE FOR METHOD OF IMPLEMENTING IT

Jean-Luc Paquier, Eragny, and Dominique Guillevic, Montmorency, both of, France, assignors to Thomcast, Conflans Ste Honorine, France

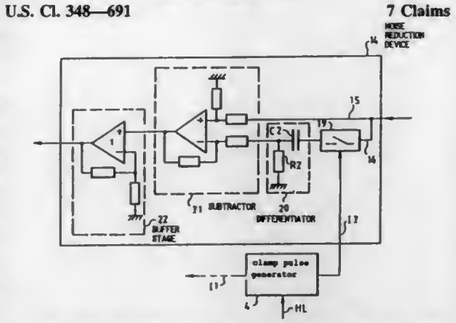
PCT No. PCT/FR93/00373, § 371 Date Dec. 5, 1994, § 102(e) Date Dec. 5, 1994, PCT Pub. No. WO93/21727, PCT Pub. Date Oct. 23, 1993

PCT Filed Apr. 14, 1993, Ser. No. 318,632

Claims priority, application France, Apr. 14, 1992, 92 04547

Int. Cl.[6] H04N *5/18*

U.S. Cl. 348—691 **7 Claims**



1. An alignment method in television using a feedback loop used to successively align, at each line of an image, a plateau at the start of a current line of a television signal on which transmission noise is superimposed, with a plateau of a preceding line, for restoring a DC component of the television signal, comprising the steps of:

distributing a sampled television signal into two branches of a noise-reduction device at an input of the feedback loop, said distributing step being performed during a first predetermined duration, in order to reduce low-frequency noise generated in the feedback loop and superimposed on a plateau of the television signal,

in a first branch, preserving the sampled television signal intact,

in a second branch, filtering the sampled television signal over the first predetermined duration so as to allow through only frequencies higher than a defined frequency and noise associated with these frequencies,

during a second predetermined duration, subtracting from the preserved signal restored on the first branch the filtered signal on the second branch, said second predetermined duration lying within the first predetermined duration,

estimating a level of the plateau of the current line from a level of the plateau of the preceding line, and

subtracting an estimate of the level of the plateau from the television signal **S1**(t), wherein said estimating step comprises the steps of:

during the second predetermined duration, integrating a level of the plateau of the current line,

storing a result of the integration of the level of the plateau corresponding to the current line over a whole duration of one line, and

successively adding the level of the plateau of the preceding line and of the current line.

5,548,344

DEMODULATING SYSTEM FOR HIGH-DEFINITION TELEVISION RECEIVER

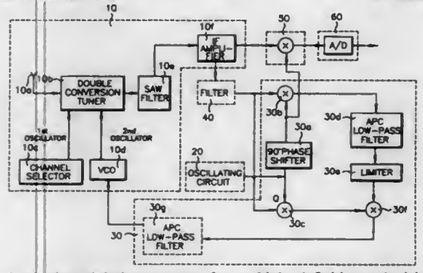
Hee B. Park, Kyungki-do, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

Filed Jan. 10, 1995, Ser. No. 371,069

Claims priority, application Rep. of Korea, Apr. 12, 1994, 1994-7632

Int. Cl.[6] H04N *5/455*

U.S. Cl. 348—726 **6 Claims**



1. A demodulating system for a high definition television (HDTV) comprising:

a tuning system for selecting one out of a plurality of received radio frequency (RF) signals and for converting the selected signal into an intermediate frequency (IF) signal according to an input loop-controlling signal;

an oscillating circuit for generating a sine wave signal;

filtering means for passing only a pilot signal containing HDTV carrier information filtered out of said IF signal and canceling any remaining signals; and

frequency and phase locked loop (FPLL) means for using a predetermined algorithm to determine a loop-controlling signal for synchronizing the frequency and phase of said pilot signal and the frequency and phase of said sine wave and outputting said loop-controlling signal to said tuning system.

5,548,345

VIDEO VIEWING CENSORING SUPERVISION SYSTEM

James M. Brian, Marina del Rey, and Joseph N. Jackson, Hawthorne, both of Calif., assignors to Protelcon, Inc., Califon, N.J.

Filed Jan. 5, 1995, Ser. No. 369,001

Int. Cl.[6] V04N *5/44*

U.S. Cl. 348—734 **11 Claims**

10. A video viewing supervision system, connected in combination with a video system including a viewing screen and video signal source means, for enabling an authorized user, to control viewing time of selected channels by another comprising:

an input means for accepting inputs of the commands from said user for the system;

a cable-compatible electrically controllable tuner receiving input from the signal source means;

a microprocessor controlling said tuner in a manner to enable said authorized user by entering commands on said input means, to control allowance and blocking of viewing of one or more selected channels during a predetermined time period;

graphic display generating means in said controller unit operating in conjunction with a microcontroller enabling said authorized user to view time and channels displayed on the viewing screen as a two-dimensional matrix of set-up cells, said microprocessor and said remote control unit being made able to display in each cell a symbol indicating a commanded action chosen from a group including blocking, clearing or VCR recording and enabling a selected channel for a predetermined time interval.

11. A method for video viewing supervision using a remote control unit and a controller unit, both with a keypad, used for supervising viewing of video on a video displaying device during a supervised viewing mode, said method comprising the steps of:

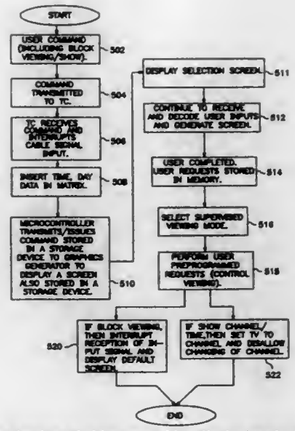
displaying a selection matrix on said video displaying device, said selection matrix having individual cells corresponding to time of the day and video tuning channel allowing a user to control viewing of selected time and channel;

transmitting supervision requests, said supervision requests being displayed on graphically displayed said selection matrix displayed on said video displaying device, said transmitting being performed through the keypad;

receiving supervision requests from the keypad as input through said graphically displayed selection matrix displayed on said video displaying device, said receiving being performed by said controller unit;

storing said supervision requests in said controller unit; and

controlling viewing of said video displaying device when said controller unit is in said supervised viewing mode.



5,548,346

APPARATUS FOR INTEGRALLY CONTROLLING AUDIO AND VIDEO SIGNALS IN REAL TIME AND MULTI-SITE COMMUNICATION CONTROL METHOD

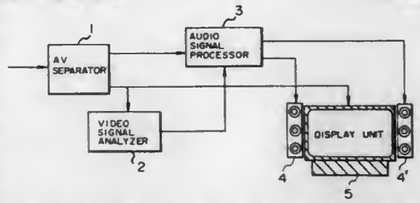
Itaru Mimura, Sayama; Hirotada Ueda, Kokubunji; Shiego Sumino, Chofu; Mitsuru Ikezawa, Kodaira; Toshiaki Suzuki, Musashino; Taizo Kinoshita, Tachikawa, and Katsumi Tada, Yokohama, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 4, 1994, Ser. No. 336,646

Claims priority, application Japan, Nov. 5, 1993, 5-276477; Dec. 6, 1993, 5-305129

Int. Cl.[6] H04N *5/60*

U.S. Cl. 348—738 **25 Claims**



1. An apparatus for integrally controlling in real time an audio signal and a video signal transmitted in real time, comprising:

a separator for receiving a video signal and an audio signal synchronous with said video signal and separating the received signals into said audio and video signals;

a display unit for displaying said video signal;

a sound output unit for outputting a sound of said audio signal; and

a control means for processing and controlling the output state of said audio signal in accordance with said video signal, said processing and controlling being conducted before said outputting of said audio signal.

5,548,347

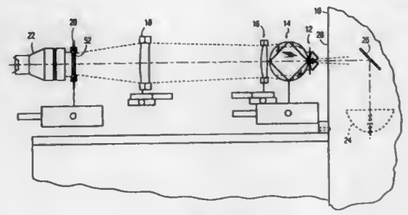
SINGLE PANEL COLOR PROJECTION VIDEO DISPLAY HAVING IMPROVED SCANNING

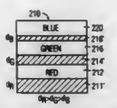
George A. Melnik, Montrose, and Peter J. Janssen, Scarborough, both of N.Y., assignors to Philips Electronics North America Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 218,853, Mar. 25, 1994, Pat. No. 5,410,370, which is a continuation of Ser. No. 990,776, Dec. 9, 1992, abandoned, which is a continuation-in-part of Ser. No. 927,782, Aug. 10, 1992, abandoned, which is a continuation of Ser. No. 634,366, Dec. 27, 1990, abandoned. This application Jul. 21, 1994, Ser. No. 278,366

Int. Cl.[6] H04N *9/31*

U.S. Cl. 348—761 **21 Claims**





1. A color video display system comprising:

a source of first, second and third colored bands of light, said first, second and third colored bands of light being separated by dark bands;

light valve means for modulating light impinging thereon in accordance with an input video signal;

means for moving said bands of a light sequentially across said light valve means, each of said colored bands being present on said light valve means at one time, said moving means including means such that the dark band between at least one of the first, second and third colored bands is different in size from that of the others; and

means for addressing the portions of said light valve means with video information corresponding to the color of the light band impinging thereon so as to modulate the light of the light bands with said input video signal.

5,548,348

DISTRIBUTED PROJECTION TYPE LIQUID CRYSTAL DISPLAY DEVICE

Hideyuki Kawabata, and Naoki Matsuzaka, both of Tokyo, Japan, assignors to Japan Aviation Electronics Industry Limited, Tokyo, Japan

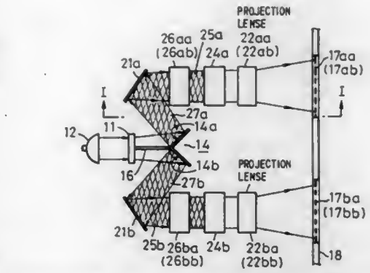
Filed Dec. 6, 1994, Ser. No. 354,046

Claims priority, application Japan, Dec. 10, 1993, 5-066076 U

Int. Cl.[6] H04N *5/7*

U.S. Cl. 348—766 **3 Claims**

1. A distributed projection type liquid crystal display device comprising:



a transmission type liquid crystal display panel for displaying an image;

a light source for irradiating said transmission type liquid crystal display panel with light;

a plurality of screens disposed at different places for displaying, respectively, different parts of the image displayed on said liquid crystal display panel, a plurality of optical paths being defined between the liquid crystal display panel and respective ones of said screens;

a first polygon mirror having a plurality of reflecting surfaces for reflecting light, transmitted through said transmission type liquid crystal display panel, in different directions;

projection lens means for projecting rays of light reflected by said first polygon mirror through said optical paths;

a first shield plate interposed between said liquid crystal display panel and said first polygon mirror for optically isolating portions of said optical paths between respective reflecting surfaces of said first polygon mirror and respective display areas of said liquid crystal display panel; and

a plurality of optical isolating means provided in cascade in the optical paths of rays of light reflected by said first polygon mirror, respectively, each of said optical isolating means comprising a second shield plate and a second polygon mirror for optically isolating other portions of said optical paths and for reflecting the rays of light in different directions,

said projection lens means including a plurality of projection lenses, disposed downstream of said second polygon mirrors, respectively, for projecting the rays of light reflected by said second polygon mirrors onto said plurality of screens.

5,548,349

TRANSMISSION TYPE COLOR LIQUID DISPLAY APPARATUS WITH FIRST AND SECOND LENS LAYERS LOCATED BETWEEN A WHITE LIGHT SOURCE AND THE DISPLAY DEVICE

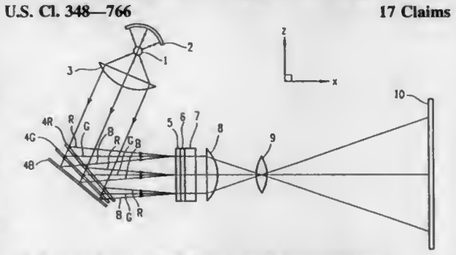
Yoshihiro Mizuguchi, Tenri, and Hiroshi Hamada, Nara, both of, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 21, 1994, Ser. No. 360,412

Claims priority, application Japan, Dec. 27, 1993, 5-333767

Int. Cl.[6] H04N *5/74;9/31;* **G02F** *1/1335;* **G03B** *21/60*

U.S. Cl. 348—766 **17 Claims**



1. A color liquid crystal display apparatus comprising:

a transmission type liquid crystal display device comprising a plurality of pixels arranged in a matrix along a first direction and a second direction perpendicular to the first direction, wherein incident light is spatially modulated by selecting at least one of the plurality of pixels,

light emitting means for emitting at least three bundles of rays of different wavelength bands at different angles;

lens means provided between the liquid crystal display device and the light emitting means, the lens means converging the bundles of rays emitted from the light emitting means onto different ones of the plurality of pixels depending on the wavelength bands thereof,

wherein the lens means comprises a first lenticular lens layer and a second lenticular lens layer, the first lenticular lens layer comprising a plurality of first lenticular lenses extending along the first direction, and the second lenticular lens layer comprising a plurality of second lenticular lenses extending along the second direction,

wherein the first lenticular lenses are arranged at a pitch which is at least three times as large as a pitch at which the plurality of pixels are arranged along the second direction, and the second lenticular lenses are arranged at a pitch which is equal to a pitch at which the plurality of pixels are arranged along the first direction, and

wherein the lens means is located between the light emitting means and the transmission type liquid crystal display device.

5,548,350

PROJECTION TYPE TELEVISON SCREEN MOUNTING STRUCTURE INCLUDING AN ELASTIC MATERIAL FOR HOLDING A SCREEN

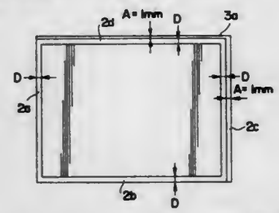
Tadayoshi Yamada, Osaka; Masahiro Tozuka; Katumi Goto, both of Takatsuki; Tuyoshi Simatani, Kyoto, and Yoshinobu Maeda, Katano, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 2, 1994, Ser. No. 236,347

Claims priority, application Japan, May 7, 1993, 5-106569

Int. Cl.[6] G03B *21/10;* **H04N** *5/74*

U.S. Cl. 348—839 **1 Claim**



1. A multi-screen type large screen video display apparatus including a plurality of a projection type television receivers arranged in multiple rows and columns for the purpose of displaying a large screen video image, each one of said plurality of projection type television receivers comprising:

a permeable screen;

a framework for bolding said permeable screen;

an elastic member between said permeable screen and said framework, said elastic member readily deformable according to expansion or contraction of said permeable screen, wherein said elastic member includes an attaching material, and a circumference of said permeable screen and said framework are attached to said elastic member by said attaching material,

a cabinet having an opening wherein said framework is installed, wherein a recessed slot is formed on a front surface of said opening of said cabinet and one end of said framework is placed inside said recessed slot, said framework being removably and moveably mounted in said opening, said framework and said opening in said cabinet having four sides, and a clearance between two adjacent sides of said framework and said recessed slot is larger than a clearance between the other two adjacent sides of said framework and said recessed slot, and

means for coupling each one of said plurality of television receivers to another one of said plurality of television receivers to form said multi-screen type large screen video display apparatus.

5,548,351

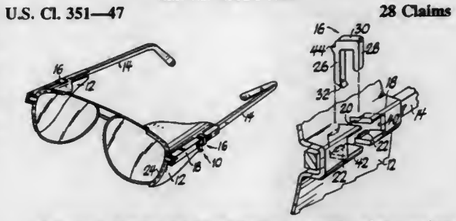
METHOD AND KIT FOR ATTACHING SIDE SHIELDS TO EYEGLASS TEMPLES

Richard Hirschman, Albertson, N.Y., and Chul W. Shin, Masan, Rep. of Korea, assignors to Hudson Optical Corporation, Bohemia, N.Y.

Filed Oct. 11, 1994, Ser. No. 320,447

Int. Cl.[6] G02C *9/00*

U.S. Cl. 351—47 **28 Claims**



1. A method of attaching a side shield to a temple of an eyeglass frame, said method comprising the steps of:

(a) placing said temple in a channel forming part of said side shield; and thereafter

(b) inserting a pin into an opening formed in said side shield to create a force fit between said temple, said channel and said pin which attaches said side shield to said temple.

5,548,352

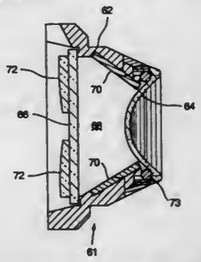
ANTI-ASTIGMATIC OPHTHALMIC CONTACT LENS FOR USE IN PERFORMING LASER SURGERY

David A. Dewey, Sunnyvale, Calif., assignor to Coherent, Inc., Santa Clara, Calif.

Filed Jan. 19, 1994, Ser. No. 183,530

Int. Cl.[6] G02C *7/04*

U.S. Cl. 351—160 H **28 Claims**



1. A contact lens for use in delivering laser light to a region of a patient's eye and for viewing the interior of the eye during a surgical procedure, the contact lens comprising:

a hollow lens body having an entrance and an opposite exit;

a front face sealed to the exit of the lens body, the front face allowing the transmission of visible and laser light into the patient's eye and having a curvature substantially the same as the patient's eye and affixed to the lens body so that the front face can be fitted over the eye;

a window sealed to the entrance of the lens body, the window allowing the transmission of visible and laser light into the lens;

a mirrored surface on the interior of the lens body positioned so that light entering the lens from the window reflects off of the mirrored surface and exits the lens at the front face at a sufficiently steep angle to illuminate a desired region of the patient's eye; and

a medium filling the lens body, the medium having an index of refraction in the range of 1.25 to 1.45.

5,548,353

OPHTHALMIC GLASS OF HIGH REFRACTIVE INDEX

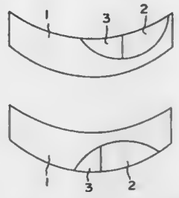
Reinhard Kassner, Alfeld, Germany, assignor to Deutsche Spezialglas A.G., Grunenplan, Germany

Filed Oct. 21, 1994, Ser. No. 326,888

Claims priority, application Germany, Oct. 22, 1993, 43 36 122.6

Int. Cl.[6] G02C *7/06*

U.S. Cl. 351—168 **13 Claims**



1. A multifocal spectacle lens comprising a relatively large segment (distance-vision part) and a smaller segment, fused thereto, of a glass of high refractive index (close-vision part),

wherein the close-vision part has a refractive index n_e of 1.66–1.81, a linear thermal expansion coefficient $\alpha_{20\text{-}300}$ of 5.7–6.8×10^{-6} K^{-1}, a softening point of 650° C.–700° C., and a glass transition temperature, Tg, of 520° C.–560° C., and

wherein said close-vision part is a glass composition comprising (in % by weight, based on oxide):

SiO_2	28–40
B_2O_3	0–8.5
Li_2O	0–1
Na_2O	0–2.5
K_2O	0–5
$\Sigma\ Li_2O + Na_2O + K_2O$	0–5
CaO	0–6
SrO	0–6
BaO	6–12
ZnO	9–16
PbO	32–40
TiO_2	0.3–7
ZrO_2	0.3–5.

5,548,354

METHOD FOR OBSERVING AND PHOTOGRAPHING A CORNEA AND APPARATUS FOR THE SAME

Tatsuya Kasahara, and Hamada Yoichi, both of Nishinomiya, Japan, assignors to Konan Common Co., Ltd., Hyogo, Japan

Filed Jun. 9, 1994, Ser. No. 257,374

Claims priority, application Japan, Jun. 10, 1993, 5-166132; Jul. 15, 1993, 5-198951; Oct. 29, 1993, 5-294177

Int. Cl.[6] A61B *3/14;3/10;* G03B *29/00*

U.S. Cl. 351—206 **19 Claims**

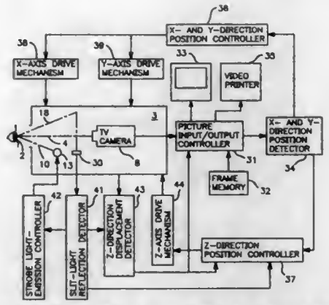
1. A method for observing and photographing a cornea comprising:

automatically moving an imaging system, as a whole, which comprises an eye-front observation optical system, an illuminating system which is formed integrally with the observation optical system and which illuminates through a slit an eyeball surface in a direction different from that in which the observation optical system does, and enlarged-imaging optical system capable of observing or photographing a subject part as it is enlarged by a TV camera based on the slit illuminating light with which the eyeball surface has been illuminated, depending on a position on a monitor screen of reflected light obtained by picking up by a TV camera cornea reflected light of alignment-use indicator light projected toward a subject eye coaxially with the optical axis of the eye-front observation optical system, in a direction perpendicular to the optical axis of the observation optical system, so that a light spot on the monitor screen by the reflected light is brought to a specified position on the screen;

driving the whole imaging system start to move forward in the direction toward the subject eye while continuing the movement in the direction perpendicular to the optical axis so that said light spot tracks the specified position on the screen, with a detection range of the light spot narrowed so as to eliminate detections of noises other than the light spot, when the light spot has come to around a specified area on the screen, and

detecting focusing of the enlarged-imaging optical system on the cornea subject part by a photo-detector having a light-receiving surface at such a position on the optical axis of the enlarged-imaging optical system that its optical path is other than that of the TV camera,

whereby an enlarged image of cornea cells of the subject part is photographed.



5,548,355

OPHTHALMOLOGIC APPARATUS DETECTING POSITION OF BRIGHT POINTS ON AN EYE TO BE EXAMINED

Yoichi Iki, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Nov. 1, 1993, Ser. No. 144,248

Claims priority, application Japan, Nov. 5, 1992, 4-296207

Int. Cl.[6] A61B *3/10*

U.S. Cl. 351—212 **15 Claims**

11. An ophthalmologic apparatus comprising:

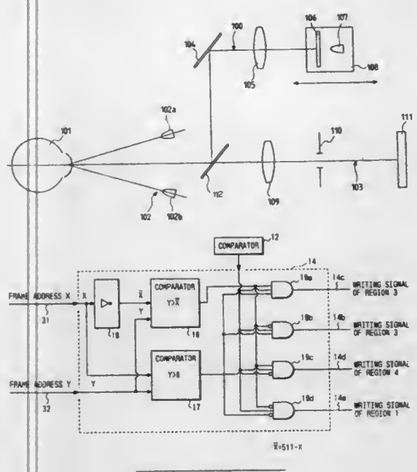
a light source to radiate light onto an eye to be examined;

a camera to obtain image information from light reflected by the eye to be examined, the image information including luminance data;

a comparator to compare the luminance data of the image information obtained by said camera with a threshold determined in advance for the luminance data of the image information;

an area memory to store the image information corresponding to the luminance data when said comparator determines that the luminance data exceeds the threshold; and

a calculator to calculate a measured value of the eye to be examined based on the image information stored in said area memory.



5,548,356

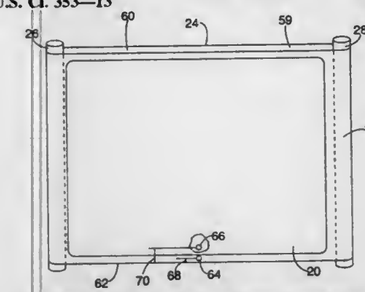
AUTOMATIC VIDEO PROJECTION SCREEN

John R. Portman, Anahiem, Calif., assignor to Sony Corporation, Tokyo, Japan, and Sony Transcom, Inc., Irvine, Calif.

Filed Oct. 4, 1995, Ser. No. 539,132

Int. Cl.[6] G03B *21/00*

U.S. Cl. 353—13 **19 Claims**



17. An aircraft video projection system, comprising:

a frame for attachment to an aircraft cabin surface;

first and second pulleys rotatably mounted to said frame and oriented substantially parallel relative to each other, said first and second pulleys each having a cylindrical shape and said first pulley further including an interior hollow for defining an inner wall;

projection means for generating a projected image;

a belt having a viewing surface and an indexing hole adjacent said viewing surface, wherein said belt is positioned in contact around said first and second pulleys and is moveable between a viewing position in which said viewing surface is exposed for display of said projected image and a stored position in which said viewing surface is hidden, said belt being fabricated from a flexible sheet of thin metal for further use of said belt as a heat absorption layer;

a sensor for detecting said indexing hole, said sensor being located opposite said belt wherein if said hole is opposite said sensor, light generated by said sensor is not reflected back to said sensor thus indicating that said viewing surface is exposed and wherein if said hole is not opposite said sensor, light generated by said sensor is reflected back to said sensor thus indicating that said viewing surface is hidden; and

a gearmotor having a disc element affixed to said inner wall, said gearmotor being adapted to rotate said disc element and thus said first pulley to move said belt to said viewing position upon detection that said viewing surface is hidden.

5,548,357

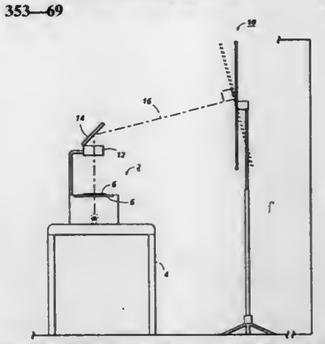
KEYSTONING AND FOCUS CORRECTION FOR AN OVERHEAD PROJECTOR

James J. Appel, Rochester, N.Y.; Daniel H. Greene, Sunnyvale, and J. Craig Mudge, Palo Alto, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 6, 1995, Ser. No. 469,034

Int. Cl.[6] G03B *21/00*

U.S. Cl. 353—69 **4 Claims**



1. A method for correcting for distortion of an image projected by an overhead projector at an oblique angle above a horizontal plane onto a projection screen comprising the steps of:

creating a transparency of an intentionally distorted image, the distortion compensating for the keystoning caused by the oblique angle of projection;

placing the transparency on an easel having an adjustable angle with respect to the horizontal;

adjusting the easel angle to correct for focus distortion; and

illuminating the transparency and projecting the illuminated image onto said projection screen to form an undistorted image thereon; and

compensating for keystone intensity variations across the transparency by placing a graded neutral density filter beneath the easel.

5,548,358

IMAGE PROJECTING DEVICE

Hiroshi Takahashi, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed May 31, 1995, Ser. No. 455,599

Claims priority, application Japan, Jun. 1, 1994, 6-120274; Oct. 13, 1994, 6-247893

Int. Cl.[6] G03B *21/28*

U.S. Cl. 353—122 **19 Claims**

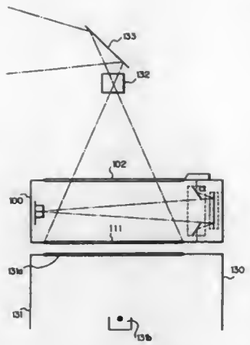
1. An image projecting device comprising: a film responsive to light and capable of changing, when illuminated, a state thereof for selectively transmitting or diffusing incident light;

at least three mirrors for reflecting a reflection from an image of a document while being moved;

a focusing lens for focusing light reflected from said at least three mirrors onto said film to thereby transfer the image of the document to said film;

illuminating means for illuminating said film; and

projecting means for projecting, in an enlarged scale, light issuing from said illuminating means and which is transmitted through said film.



5,548,359
CAMERA EQUIPPED WITH BAR CODE READING DEVICE

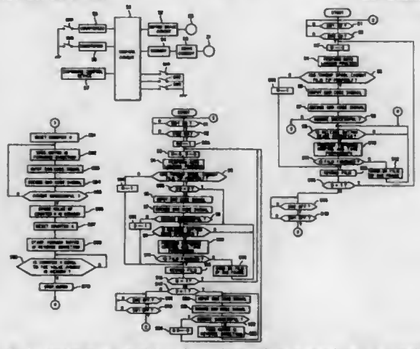
Tsutomu Wakabayashi, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 277,293, Jul. 21, 1994, abandoned, which is a continuation of Ser. No. 166,914, Dec. 15, 1993, abandoned, which is a continuation of Ser. No. 92,482, Jul. 16, 1993, abandoned. This application Jan. 23, 1995, Ser. No. 376,444

Claims priority, application Japan, Jul. 20, 1992, 4-192129

Int. Cl.[6] G03B *7/00;1/18*

U.S. Cl. 354—21 **25 Claims**



2. An apparatus capable of moving a film wound on a rotatable film spool located in a film cartridge that is loaded into said apparatus, the film spool including a bar code bearing element that rotates together with said film spool, said apparatus comprising:

(a) a film spool rotating mechanism that selectively rotates the film spool in a forward rotational direction to project a leading end of the film out from the film cartridge towards and against a film take up spool, and in a backward rotational direction to wind the film back into the film cartridge;

(b) a film winding mechanism that winds the film around the film take up spool by rotating said film take up spool in a forward rotational direction;

(c) a bar code reading device that reads the pattern of a bar code provided on the bar code bearing element and outputs a bar code signal when the film spool of the film cartridge is rotating; and

(d) a controller adapted to determine whether said bar code signal can be deciphered, and to control said film spool rotating mechanism to rotate the film spool in said backward rotational direction when said bar code signal cannot be deciphered, said controller being coupled to said film spool rotating mechanism, said film winding mechanism, and to said bar code reading device.

5,548,360
MECHANISM FOR DETECTING DX ENCODED FILM DATA OF CAMERA

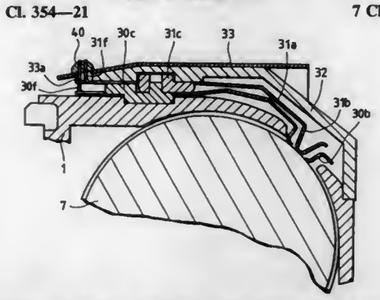
Kimio Uematsu, Tokyo, and Yoshinori Ishikawa, Sendai, both of, Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Sep. 5, 1995, Ser. No. 523,146

Claims priority, application Japan, Sep. 7, 1994, 6-213412

Int. Cl.[6] G03B *7/24*

U.S. Cl. 354—21 **7 Claims**



1. A DX encoded film data detecting mechanism of a camera, for detecting film data from a film data pattern on an outer periphery of a magazine for a DX encoded film, comprising:

a first contact member formed with an opening at a tip portion protruding by a predetermined amount so as to contact the film data pattern on the DX encoded film magazine disposed in a predetermined position in a magazine chamber from the opening formed in a wall of the film magazine of the camera; and

a second contact member disposed in the opening of said first contact member and protruding by a predetermined amount so as to contact the film data pattern.

5,548,361
CAMERA WITH DATA DISPLAY FUNCTION

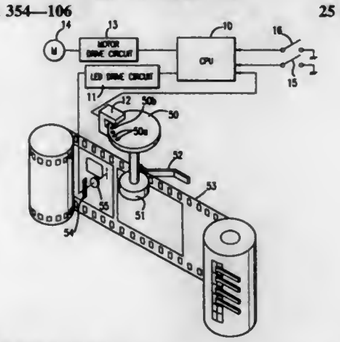
Isao Soshi, Shibuya-ku; Hidenori Miyamoto, Urayasu, and Toshiyuki Nakamura, Shinagawa-ku, all of, Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Jan. 27, 1994, Ser. No. 187,313

Claims priority, application Japan, Jan. 28, 1993, 5-012896

Int. Cl.[6] G03B *17/24*

U.S. Cl. 354—106 **25 Claims**



1. A camera comprising:

signal output means for producing a pulse signal from scrolling of film through the camera, said pulse signal being comprised of a continuous series of pulses, each pulse having a front edge and a rear edge, a first time period extending between a front edge and a subsequent rear edge, and a second time period extending between a rear edge and a subsequent front edge, said second time period being different from said first time period such that said continuous series of pulses is a continuous series of alternating long pulses and short pulses;

data display means for displaying a series of characters in a dot matrix form on the film as the film is scrolled through the camera; and

display drive control means for driving said data display means to form the series of characters on the film by forming dots linked to a series of consecutive front and rear edges of said pulse signal in accordance with character data, said display drive control means controlling a timing of a start of the display of every character formed on the film by said data display means so that every character in said series of characters is always started at the front edge of said pulse signal or every character in said series of characters is always started at the rear edge of said pulse signal.

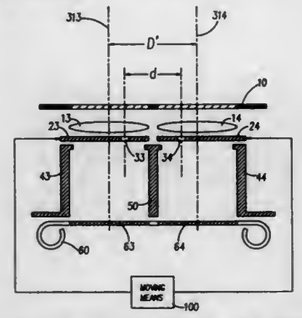
5,548,362
PARALLAX CONTROLLABLE MULTIPLE-LENS CAMERA

Allen K. Wah Lo, and Kenneth Q. Lao, both of Fulton County, Ga., assignors to Image Technology International, Inc., Norcross, Ga.

Filed May 9, 1994, Ser. No. 239,897

Int. Cl.[6] G03B *35/08*

U.S. Cl. 354—114 **17 Claims**



16. A method of acquiring and recording a plurality of 2D images of a single scene at different view angles with adjustable parallax in a 3D camera, said camera comprising a plurality of fixedly located taking lenses, a plurality of horizontally movable diaphragm stops having openings for transmitting light rays through said taking lenses to form said 2D images, a shutter for controlling transmission of light rays through said openings and said taking lenses, and fixedly located baffles for defining image frames of said 2D images, said method comprising moving said diaphragm stops horizontally, and thereby changing the spacing between said openings in said diaphragm stops to control parallax in said 2D images.

5,548,363
CAMERA WHICH SENSES IMPROPER FILM LOADING

Masanori Ohtsuka, Kanagawa-ken, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

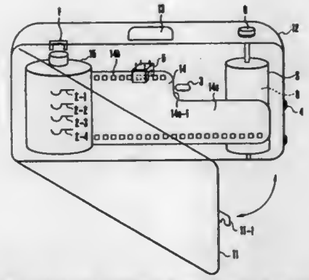
Continuation of Ser. No. 840,515, Feb. 25, 1992, abandoned. This application Feb. 24, 1995, Ser. No. 394,216

Claims priority, application Japan, Mar. 1, 1991, 3-036161

Int. Cl.[6] G03B *1/18*

U.S. Cl. 354—173.1 **28 Claims**

25. An optical apparatus comprising:



a) winding means for winding a film after a leader part of the film is pulled out from a cartridge;

b) discrimination means for discriminating whether a winding action of the film by said winding means is adequate by detecting an amount of winding action of the film by a detection device which detects the amount of winding action of the film by counting signals corresponding to a predetermined amount of winding action of the film; and

c) first control means for causing the film to be automatically rewound until the leader part of the film reaches a predetermined position outside the cartridge if the winding action of the film is determined to be inadequate by said discrimination means after an operation of said winding means.

5,548,364
LENS-FITTED PHOTOGRAPHIC FILM UNIT AND METHOD OF MANUFACTURING THE SAME

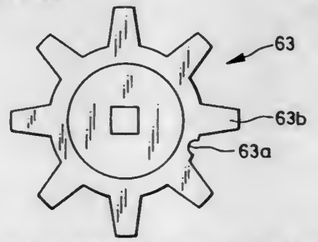
Katsuji Muramatsu, Tokyo, and Shoji Iwamoto, Kanagawa, both of, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 62,983, May 18, 1993, abandoned. This application Nov. 14, 1994, Ser. No. 340,370

Claims priority, application Japan, May 25, 1992, 4-132842; May 25, 1992, 4-132843; May 27, 1992, 4-135375; May 18, 1992, 4-124518

Int. Cl.[6] G03B *17/42*

U.S. Cl. 354—204 **20 Claims**



8. A lens-fitted photographic film unit having a main body incorporating a photo-taking mechanism, a rear of said main body being preloaded with unexposed photographic film and covered by a rear cover, said lens-fitted photographic film unit comprising:

a film passageway disposed between said main body and said rear cover for permitting passage of said film;

a sprocket extending into said film passageway and having teeth engaged with perforations in said photographic film and recesses formed between adjacent teeth, said sprocket rotating by a predetermined angle when said photographic film is advanced by one frame; and

a deeper recess formed in said sprocket between two of said teeth; and to fix an original position of rotation of said sprocket.

5,548,365

VIEW FINDER OF CAMERA

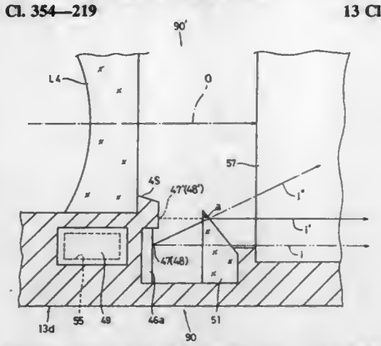
Kosei Kosako, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 12, 1993, Ser. No. 150,864

Claims priority, application Japan, Jan. 18, 1993, 5-000922 U

Int. Cl.[6] G03B *13/02*

U.S. Cl. 354—219 13 Claims



1. A view finder of a camera in which an image of an indication mark is observed through an eyepiece lens in a peripheral light intercepting portion of a field frame of a finder optical system, comprising:

at least one indicating member provided outside said field frame of said finder optical system and having at least one indication mark for projection; and,

at least one prism which is located between said eyepiece lens of said viewfinder and said indicating member and which has an apex protruding towards an optical axis of said finder optical system, wherein light emitted from said at least one indicating member is transmitted through said prism so as to shift said image of said indication mark viewed through said eyepiece lens towards said optical axis of said finder optical system.

5,548,366

CAMERA VIEWFINDER WITH UNIFORM COMPONENT POSITIONING REGARDLESS OF ANGLE OF VIEW OF ATTACHED LENS

Yuji Katano, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jul. 21, 1995, Ser. No. 505,075

Claims priority, application Japan, Aug. 31, 1994, 6-207141

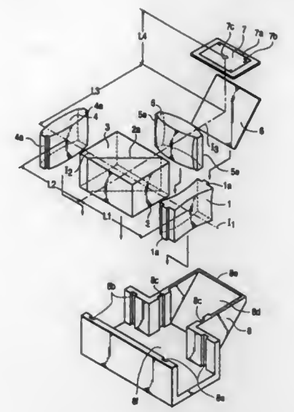
Int. Cl.[6] G03B *13/06;13/08*

U.S. Cl. 354—219 18 Claims

1. An optical device having an external lens connectable thereto and allowing an optical device user to view a subject through the external lens, the optical device comprising:

a viewing optical system allowing the user to view the subject through the external lens, the viewing optical system including an eye piece and an objective lens positioned between the eye piece and the external lens; and

a display optical system including a framework which displays information, the display optical system allowing the user to view the information displayed on the framework through the eyepiece, wherein the respective positions of the eye piece, the objective lens and the framework are fixed and do not require changing to allow the optical device to be useable with external lenses having different, respectively corresponding angles of view.



5,548,367

ELECTROMAGNET APPARATUS AND APPARATUS FOR ADJUSTING EXPOSURE OF CAMERA USING THE SAME

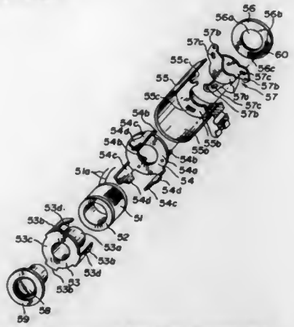
Moriya Katagiri, Tachikawa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Division of Ser. No. 258,094, Jun. 10, 1994. This application Sep. 28, 1995, Ser. No. 535,659

Claims priority, application Japan, Jun. 17, 1993, 5-146468; Jun. 18, 1993, 5-147878

Int. Cl.[6] G03B *9/08;9/07*

U.S. Cl. 354—234.1 7 Claims



1. An exposure controlling apparatus comprising:

a frame having a hole through which a photographing light beam reflected by an object is able to pass and having an outer surface around which a solenoid is wound;

a first ferromagnetic member fixed to and supported by said frame and having a covering portion for covering a portion of an outer surface of said solenoid and a first pole head formed on said covering portion;

a second ferromagnetic member rotatively disposed around a center of said solenoid, having a second pole head disposed to face said first pole head with a predetermined air gap interposed and rotating with respect to said first ferromagnetic member when an electric current is allowed to flow through said solenoid causing the first and second ferromagnetic members to be attracted to one another;

sector means for limiting passing of said photographing light beam through said hole responsive to rotation of said second ferromagnetic member; and

moving means for moving said second ferromagnetic member to a predetermined position when attractive forces between said first and second ferromagnetic members have been canceled.

5,548,368

FILM CASSETE SPOOL WITH EXPOSURE INDICATOR

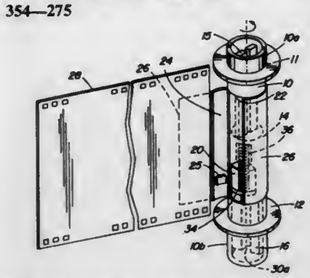
Bernard W. N. Lee, 1702 Laurelwood Place, Gloucester, Ontario, Canada, and John Tutton, North Gower, Canada, assignors to Bernard W. N. Lee, Gloucester, Ontario, Canada

Filed Jul. 27, 1995, Ser. No. 508,101

Claims priority, application Canada, Nov. 8, 1994, 2135324

Int. Cl.[6] G03B *17/26*

U.S. Cl. 354—275 13 Claims



1. A film spool of the type which is rotatable inside a cassette shell and having means attachable to one end portion of a length of photographic film to be wound thereon, and having film exposure indicator means for providing visible indication that the film has been exposed;

wherein the spool has a core at least a portion of which has a hollow interior, and wherein the indicator means comprises an element having an indicating part and movable within said hollow interior from a first position to a second position, in which second position said indicator part gives a visual indication of exposure, and further comprises spring means urging the element towards the second position, and retaining means with an operable connection to an end portion of a film held by said attachable means to prevent movement of the element to the second position when any film remains wound on the spool;

said operable connection allowing said retaining means to move outwardly from the hollow interior of the core when the film is wholly unwound from the spool to release the element and to allow the element to be moved by the spring means to its second position.

5,548,369

CAMERA

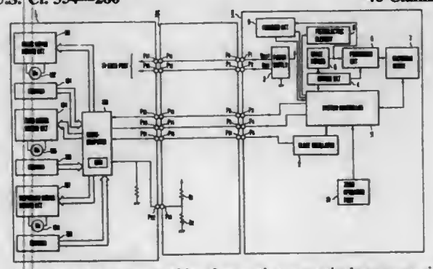
Ryunosuke Iijima, Kanagawa-ken, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 11, 1991, Ser. No. 654,074

Claims priority, application Japan, Feb. 17, 1990, 2-036720

Int. Cl.[6] G03B *17/00*

U.S. Cl. 354—286 46 Claims



1. A camera system capable of mounting an optical accessory in addition to a camera body and an interchangeable lens, comprising:

a) a diaphragm disposed within said interchangeable lens, said interchangeable lens provided with an electrical contact used for detecting the kind of said optical accessory;

b) detecting means for detecting aperture information corresponding to varying stopping down of said diaphragm;

c) correction means for correcting said aperture information obtained by said detecting means when said optical accessory is mounted and for supplying the corrected aperture information to said camera body; and

d) second detecting means for detecting the kind of said optical accessory.

5,548,370

VIBRATION COMPENSATION DEVICE FOR A CAMERA

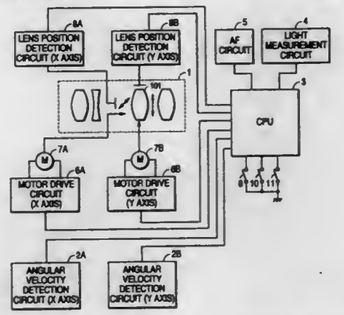
Toshiyuki Nakamura, Tokyo, and Yoshikazu Iida, Chigasaki, both of, Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Oct. 28, 1994, Ser. No. 330,802

Claims priority, application Japan, Oct. 29, 1993, 5-272627

Int. Cl.[6] G03B *7/08;13/36*

U.S. Cl. 354—402 24 Claims



1. A vibration compensation device to compensate for vibration in a camera during measurement of photographic information, comprising:

a light measurement device measuring brightness of a subject;

a focal point adjustment information detection device detecting focal point adjustment information;

a vibration detection device to detect whether vibration of the camera occurs during at least one of measurement of the brightness of the subject by the brightness measurement device and detection of focal point adjustment information by the focal point adjustment information detection device; and

a control unit to detect a light measurement value to be used during photography and to select a focal point adjustment information detection value to be used during photography based on whether vibration is detected during at least one of measurement of the brightness of the subject and detection of focal point adjustment information.

5,548,371

EXPOSURE CONTROL DEVICE

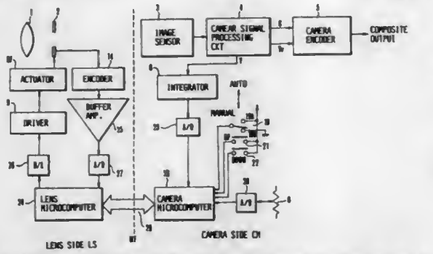
Hideo Kawahara, Saitama-ken, and Hideyuki Arai, Kanagawa-ken, both of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 287,463, Aug. 8, 1994, Pat. No. 5,428,421, which is a continuation of Ser. No. 26,274, Mar. 4, 1993, abandoned, which is a continuation of Ser. No. 906,042, Jun. 26, 1992, abandoned, which is a continuation of Ser. No. 484,539, Feb. 23, 1990, abandoned. This application Apr. 27, 1995, Ser. No. 432,433

Claims priority, application Japan, Feb. 27, 1989, 1-045710; Feb. 27, 1989, 1-045711; Mar. 30, 1989, 1-076563; Apr. 7, 1989, 1-088523

Int. Cl.[6] G03B *7/08*

U.S. Cl. 354—442 **21 Claims**



1. An exposure control device, for a camera system having a lens unit detachable from a camera body, having a plurality of exposure control modes, comprising:

a) exposure control mode setting means for selectively changing over said plurality of exposure control modes;

b) storing means in said lens unit for storing exposure information; and

c) control means arranged in said lens unit to cause said storing means to store exposure information obtained immediately before a change-over from one exposure control mode to another when said change-over occurs and to supply a value of said stored exposure information as initial information for use in the new exposure control mode after said change-over.

5,548,372

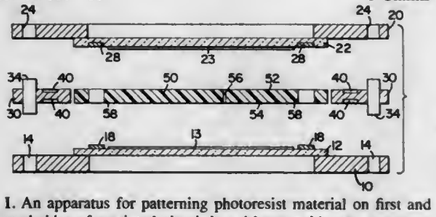
PCB TOOLING APPARATUS FOR FORMING PATTERNS ON BOTH SIDES OF A SUBSTRATE

Paul Schroeder, and Michael Tobkin, both of Chippewa Falls, Wis., assignors to Cray Research, Inc., Eagan, Minn.

Division of Ser. No. 104,794, Aug. 11, 1993, Pat. No. 5,403,684. This application Nov. 18, 1994, Ser. No. 342,258

Int. Cl.[6] G01B *11/00*

U.S. Cl. 355—53 **8 Claims**



1. An apparatus for patterning photoresist material on first and second sides of a printed circuit board layer, said apparatus comprising:

a) a first glass mask attached to a first frame, said first glass mask having a first pattern formed thereon;

b) a second glass mask attached to a second frame, said second glass mask having a second pattern formed thereon;

c) first alignment means for aligning said first frame with said second frame;

d) second alignment means for aligning said printed circuit board layer with said first and second glass masks, wherein the second alignment means comprises buttons formed on said first glass mask and corresponding relief holes formed on said second glass mask, wherein said buttons are of a length sufficient to penetrate through Z-axis voids extending between the first and second sides of the printer circuit board layer and to enter the relief holes in said second glass mask; and

e) registration means on said first and second glass masks for registering said first pattern to said second pattern in order to align said first and second frames; whereby said first and second sides of said printed circuit board layer can be patterned with said first and second patterns in registration with each other.

5,548,373

IMAGE READING APPARATUS

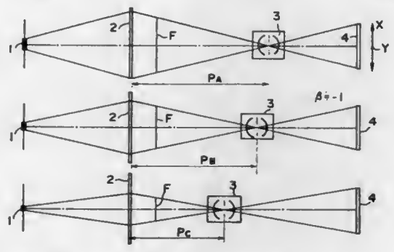
Toshihiko Ueda, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 11, 1994, Ser. No. 180,204

Claims priority, application Japan, Jan. 12, 1993, 5-003610

Int. Cl.[6] G03B *27/52*

U.S. Cl. 355—55 **23 Claims**



1. An image reading apparatus comprising:

image reading means having a plurality of reading elements arrayed in a main scanning direction;

illumination means including a light source and condenser elements having power in the main scanning direction;

projections means, having a pupil, for projecting an image of an original illuminated by said illumination means on said image reading means;

drive means for moving said projection means on an optical axis of the projection means; and

scan means for scanning the image of the original in a subscanning direction which is perpendicular to the main scanning direction with the original fixed at a predetermined position, wherein the scan means moves said image reading means in the subscanning direction.

5,548,374

IMAGE FORMING APPARATUS USING A PROCESS UNIT

Michihisa Iguchi, and Yukio Tsuda, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 412,083, Mar. 27, 1995, abandoned, which is a continuation of Ser. No. 80,207, Jun. 23, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 467,516

Claims priority, application Japan, Jun. 24, 1992, 4-165588

Int. Cl.[6] G03G *21/00;15/00*

U.S. Cl. 355—200 **20 Claims**

1. An image forming apparatus comprising:

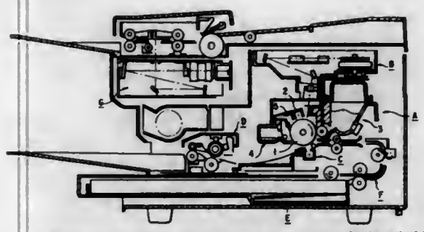
an image forming apparatus body:

a process unit detachably mounted on said body of the image forming apparatus and including a photosensitive member, a toner supplying section which supplies toner to the photosensitive member and to which a toner pack is detachably mounted, and a spent toner holding section for receiving spent toner from the photosensitive member, the photosensitive member, the toner supplying section, and the spent toner holding section being integral with the process unit so as to be removable together with the toner and the spent toner being sealed in the process unit when the process unit is detached from the body of the image forming apparatus;

first means for detecting whether or not said photosensitive member has reached its life limit;

second means for detecting whether or not said spent toner holding section has been filled with spent toner; and

means for informing a user of an operating status of said process unit when said first means detects that said photosensitive member has reached its life limit or when said second means detects that said spent toner holding section has been filled with spent toner.



5,548,375

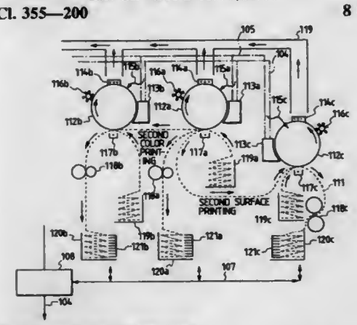
INTEGRATED PRINTING SYSTEM FOR AUTOMATED AND MAINTENANCE FREE OPERATION

Teruaki Mitsuya, Naka-machi; Hisao Okada, Hitachi, and Nobuyoshi Hoshi, Hitachinaka, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 6, 1995, Ser. No. 398,703

Int. Cl.[6] G03G *15/00;21/00*

U.S. Cl. 355—200 **8 Claims**



1. A printing system comprising:

at least two printing devices each of which print an image on a surface of a printing media using a coloring agent;

an expendable supply station which is provided separate from said at least two printing devices and supplies expendables to portions in each one of said at least two printing devices which need such expendables;

a supplies handler that transports said expendables from said expendable supply station to any one of said at least two printing devices;

a replacement mechanism provided in each of said at least two printing devices that replaces spent expendables with a new expendable received from said supplies handler;

a discharge station from which spent and replaced expendables are discharged;

spent material handler that transports spent expendables from said printing devices to said discharge station; and

a controller that monitors, instructs and controls each operation at said portions therein wherein each printing device receives a respective image from said controller.

5,548,376

MANAGING SYSTEM IN IMAGE FORMING APPARATUS

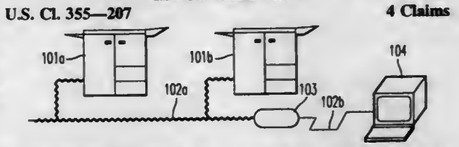
Mitsutoyo Kikuno, Tokyo, Japan, assignor to Ricoh Company Ltd., Tokyo, Japan

Filed Apr. 19, 1994, Ser. No. 229,588

Claims priority, application Japan, May 19, 1993, 5-141526

Int. Cl.[6] G03G *21/00*

U.S. Cl. 355—207 **4 Claims**



1. A managing system in a plurality of image forming apparatuses, comprising:

a managing device operatively connected to each of the plurality of image forming apparatuses via a communication line;

a jam recovery detector receiving a signal that a jam recovery operation has been performed after a paper jam occurs in one of said plurality of image forming apparatuses;

a timer responsive to a signal of a jam recovery operation in said plurality of image forming apparatuses and measuring an elapsed time since the jam recovery operation;

an alarm receiving a signal from said timer and automatically outputting an alarm signal to said managing device via said communication line when said elapsed time measured by said timer reaches an alarm transmitting level; and

an adjustable level setter providing a signal to said alarm for setting the alarm transmitting level.

5,548,377

METHOD OF CONTROLLING AN IMAGE FORMING APPARATUS WHEN AN EMERGENCY STOP SIGNAL IS GENERATED

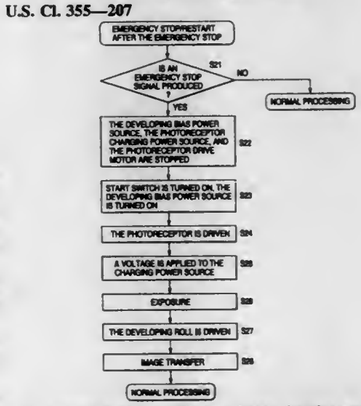
Masanori Kato, Kanagawa, Japan, assignor to Fuji Xerox Co., LTD., Tokyo, Japan

Filed Mar. 14, 1995, Ser. No. 404,274

Claims priority, application Japan, Apr. 19, 1994, 6-080161

Int. Cl.[6] G03G *15/00*

U.S. Cl. 355—207 **1 Claim**



1. A method of controlling an image forming apparatus which employs a two-component developing system in which toner is charged with the same polarity as a charging polarity of a photo-

receptor, and in which apparatus a charging voltage and a developing bias voltage are applied after said photoreceptor is driven, comprising the steps of:

stopping drive of said photoreceptor and application of the charging voltage and the developing bias voltage when an emergency stop signal is generated; and

raising the developing bias voltage before starting the drive of said photoreceptor, when said image forming apparatus is restarted.

5,548,378

IMAGE OPERATING APPARATUS PROVIDING IMAGE STABILIZATION CONTROL

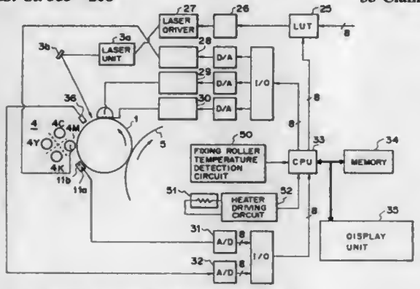
Takao Ogata, Yokohama; Koji Amemiya, Tokyo; Tatsuo Takeuchi, Kawasaki; Takashi Hasegawa, Ageo; Rie Saito, Yokohama, and Nobuatsu Sasanuma, Yamato, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 836,908, Feb. 19, 1992, abandoned. This application Dec. 27, 1993, Ser. No. 173,462

Claims priority, application Japan, Feb. 22, 1991, 3-028636

Int. Cl.[6] G03G *15/00*

U.S. Cl. 355—208 **35 Claims**



1. An image forming apparatus comprising:

image forming means for forming an image onto a recording medium;

a control circuit for controlling operation of said image forming apparatus;

a power supply switch for supplying power to said image forming means and to said control circuit when said power supply switch is turned on;

a switch, responsive to a position of a door attached to a housing of said image forming apparatus, for permitting power to be supplied to the control circuit regardless of the position of the door, and for cutting off the supply of power to said image forming means when said door is open;

measuring means for measuring a density of the image formed on the recording medium;

heating means for heating a load by a power supply to the image forming apparatus;

detecting means for detecting a temperature of the load which is heated by the heating means,

wherein the control circuit executes an image stabilizing control to determine image forming conditions of the image forming means on the basis of the image density measured by the measuring means, and

wherein said control circuit controls execution of the image stabilizing control in accordance with an output of the detecting means either when said power supply switch supplies power to said image forming means or when said switch responds to a closed position of the door.

5,548,379

IMAGE FORMING APPARATUS

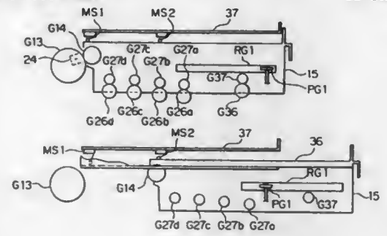
Masakazu Fukuchi; Shizuo Morita; Satoshi Haneda; Hiseo Satoh, and Tadayoshi Ikeda, all of Hachioji-shi, Japan, assignors to Konica Corporation, Japan

Continuation of Ser. No. 962,036, Oct. 15, 1992, abandoned, which is a continuation of Ser. No. 734,529, Jul. 23, 1991, abandoned. This application May 31, 1994, Ser. No. 251,622

Claims priority, application Japan, Jul. 26, 1990, 2-200789; Jul. 26, 1990, 2-200799; Oct. 2, 1990, 2-264530

Int. Cl.[6] G03G *21/16*

U.S. Cl. 355—210 **22 Claims**



1. An image forming apparatus for forming an image based on corresponding image signals, said apparatus comprising:

an image carrying member for carrying a latent image formed corresponding to said image signals;

a first driving device for rotating said image carrying member;

a first gear device mounted on said first driving device;

a developing device for developing said latent image to form a developed image on said image carrying member;

a transferrer for transferring said developed image to a transfer material;

a storage rack for storing said transfer material;

a carrier for carrying said transfer material to said transferrer from said storage rack;

a cleaner for cleaning residual toner from said image carrying member after said developed image is transferred to said transfer material;

a process cartridge enclosing said image carrying member, said first driving device, said first gear device, and at least one of said developing device and said cleaner;

a moving device for moving said process cartridge between a first position in which said process cartridge is within said apparatus, whereby said apparatus is operable to form said developed image on said image carrying member and to transfer said developed image to said transfer material, and a second position in which at least a part of said process cartridge is outside said apparatus, whereby said process cartridge can be detached from said apparatus;

a control for generating a command signal to instruct movement of said process cartridge between said first position and said second position; and

a second gear device provided on said apparatus, for transferring a driving power to said first gear device when said process cartridge is in said first position; wherein said moving device moves said process cartridge to said second position from said first position in response to said command signal whereby said process cartridge is separated from said transferrer, without moving said transferrer, or any part of said carrier, said first gear device separating from said second gear device when said process cartridge is in said second position.

5,548,380

CHARGING DEVICE AND AN IMAGE FORMING APPARATUS USING A CHARGING DEVICE

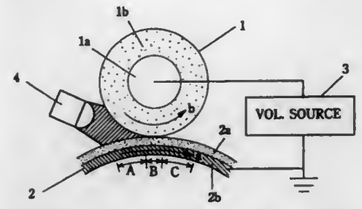
Teruyuki Naka, Izumi; Yoshio Umeda, Kobe; Toshiki Yamamura, Hirakata; Akira Kumon; Seiichi Suzuki, both of Katano; Junichi Nawama, Osaka, and Hisanori Nagase, Hirakata, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Dec. 28, 1994, Ser. No. 365,206

Claims priority, application Japan, Dec. 28, 1993, 5-336370; Jun. 7, 1994, 6-147003; Oct. 21, 1994, 6-281543; Dec. 2, 1994, 6-299347

Int. Cl.[6] G03G *15/02*

U.S. Cl. 355—219 **25 Claims**



1. A charging device for charging a movable object to be charged, comprising:

a charging member which contacts the object to be charged, and a power source for applying a voltage to the charging member,

wherein when a space frequency, f, of a profile of a surface of the charging member is analyzed, a power spectrum PS for a frequency higher than a predetermined frequency value is smaller than a predetermined power spectrum value.

5,548,381

DEVELOPING APPARATUS FORMING ALTERNATING ELECTRIC FIELD BETWEEN IMAGE BEARING MEMBER AND TONER CARRYING MEMBER

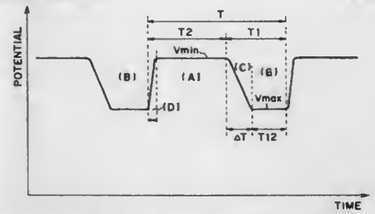
Yoshiro Saito; Haruo Fuji; Hiroshi Sasame, all of Yokohama; Tatsuhiko Hayakawa, Tokyo; Tatsuya Kobayashi, Sohka; Tetsuya Kobayashi, Kawasaki; Naoki Enomoto, Yokohama; Akihiko Uchiyama, Yokohama, and Youichirou Maebashi, Yokohama, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 14, 1994, Ser. No. 305,557

Claims priority, application Japan, Sep. 14, 1993, 5-250974; Sep. 13, 1994, 6-243463

Int. Cl.[6] G03G *15/06*

U.S. Cl. 355—245 **6 Claims**



1. A developing apparatus comprising:

a toner carrying member, disposable opposite an image bearing member for bearing an electrostatic image, for carrying toner to the image bearing member;

electric field forming means for forming an alternating electric field between said image bearing member and said toner carrying member, wherein the alternating electric field includes a first phase in which a constant electric field for urging toner from said image bearing member toward said toner carrying member continues for a predetermined period, a second phase in which a constant electric field for urging toner from said toner carrying member toward said image bearing member continues for a predetermined period, and a third phase in which the electric field gradually changes from the first phase to the second phase within a predetermined period $\Delta T>0$; and

means for changing a ratio of $\Delta T/T$, where T is one period of the alternating electric field.

5,548,382

DEVELOPING APPARATUS FOR IMPROVING THE DURABILITY OF THE LATENT IMAGE HOLDING MEMBER

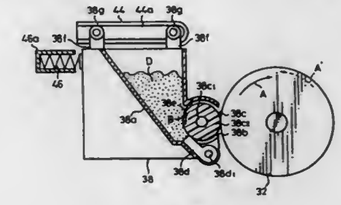
Makoto Koshi, Kawasaki; Yukio Nishio, Tama, and Kazunori Hirose, Hiratsuka, all of, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 66,272, Mar. 12, 1993, abandoned, which is a continuation of Ser. No. 557,057, Jul. 25, 1990, abandoned. This application Dec. 14, 1994, Ser. No. 355,983

Claims priority, application Japan, Aug. 1, 1989, 1-198004

Int. Cl.[6] G03G *15/08*

U.S. Cl. 355—259 **42 Claims**





1. A developing device using a one-component developer, which device comprises:

a vessel for holding a one-component developer composed of toner particles, said vessel being formed as a hopper having an opening formed therein such that the developer held in said hopper is moved toward said opening by gravity;

a developing roller rotatably provided within the opening of said hopper in such a manner that a portion of said developing roller is exposed therefrom and faces the surface of an electrostatic latent image carrying body to form a developing area therebetween, said developing roller being rotated in such a manner that the surface thereof moves upward at said developing area, during the rotation of said developing roller, the toner particles being entrained by the surface of said developing roller to form a developer layer therearound, and being carried to said developing area for a development of an electrostatic latent image formed on said electrostatic latent image carrying body;

a developer layer regulating means provided within the opening of said hopper and resiliently engaged with said developing roller for regulating a thickness of the developer layer formed around said developing roller, said developer layer regulating means being disposed below said developing roller to serve as a stopper for preventing a leakage of the toner particles from the opening of said hopper at an underside of said developing roller, and having an edge which is engaged with a moving surface of said developing roller as a leading edge for the regulation of the thickness of the developer layer;

said developing roller being formed of a conductive open-cell foam rubber material constituted such that a penetration of the toner particles to the open-cell foam structure thereof is prevented, and such that pore openings appear over a surface of said developing roller so that, during a rotation of said

developing roller, the toner particles are captured and held by the pore openings of said developing roller to form the developer layer therearound; and

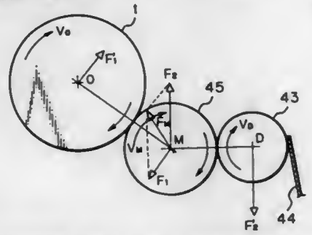
said developing roller having an Asker C-hardness of at most 50°, and is resiliently pressed against the surface of said electrostatic latent image carrying body, whereby the operating life of said electrostatic latent image carrying body can be prolonged.

5,548,383

DEVELOPING DEVICE FOR CONTROLLING PRESSURE BETWEEN TONER CONVEYING UNITS

Shuichi Endoh, Isehara, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 31, 1995, Ser. No. 414,595
Claims priority, application Japan, Apr. 1, 1994, 6-065017
Int. Cl.[6] G03G *15/8*
U.S. Cl. 355—259 **6 Claims**



2. A developing device for a developing apparatus and for developing a latent image electrostatically formed on an image carrier by toner, comprising:

first rotatable conveying means for causing the toner to deposit on a surface thereof;

regulating means for regulating an amount of the toner deposited on the surface of said first conveying means; and

second conveying means for causing the toner transferred from the surface of said first conveying means and regulated by said regulating means to deposit on said second conveying means, and for supplying said toner to the latent image;

wherein a resultant of a force exerted, during development, on an axis of said second conveying means by friction with the first conveying means and a force exerted on said axis of said second conveying means by friction between said second conveying means and the image carrier includes a component parallel to a line connecting an axis of said image carrier and said axis of said second conveying means, and directed from said axis of said second conveying means toward said axis of said image carrier.

5,548,384

TONER SUPPLY CARTRIDGE

John M. Weed, Murrysville, Pa., assignor to International Communications Materials, Inc., Connellsville, Pa.

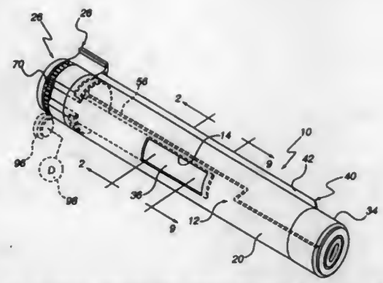
Filed Apr. 6, 1995, Ser. No. 417,954
Int. Cl.[6] G03G *15/08*
U.S. Cl. 355—260 **9 Claims**

1. Apparatus for dispensing toner comprising:

a generally cylindrical container for containing a quantity of toner, said container having a length, and including at least one end aperture and at least one toner discharge opening formed therein;

a first closure detachably, rotatably and sealingly secured to said cylindrical container for closing said end aperture;

a shutter member extending from said first closure for selectively opening and closing said toner discharge opening of said cylindrical container when said first closure is rotated;



a seal member overlying said shutter member in and beyond said toner discharge opening; and

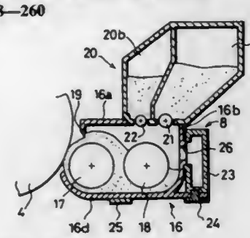
means for aligning said dispensing apparatus.

5,548,385

DEVELOPER DEVICE THAT GRADUALLY REPLACES DEGRADED DEVELOPER WITH FRESH DEVELOPER

Yasuhiro Takai, Sakurai; Atsushi Ueda, Shiki-gun; Hirokazu Tanaka, Osaka, and Hideo Yamasa, Ikoma, all of, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 22, 1993, Ser. No. 125,317
Claims priority, application Japan, Feb. 25, 1993, 5-036466; Jun. 8, 1993, 5-137620
Int. Cl.[6] G03G *15/06*
U.S. Cl. 358—260 **20 Claims**



4. A developer device comprising:

a developer vessel for storing therein a quantity of a developer material composed of toner particles;

toner concentration detection means for detecting a ratio of toner particles in said developer vessel;

toner particle supply means for supplying an additional quantity of toner particles in said developer vessel;

a discharge section for discharging therethrough an excessive developer material, said discharge section being provided in said developer vessel;

a developer material collecting section for storing therein discharged excessive developer material, said developer material collecting section being provided so as to communicate with said discharge section;

excessive developer material quantity detection means for detecting a quantity of the discharged excessive developer material; and

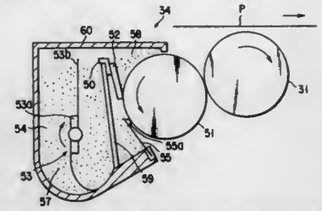
control means for computing a quantity of the developer material in said developer vessel in accordance with the discharged excessive developer material and the supplied developer material, and for computing a target concentration of toner particles corresponding to the computed quantity of developer material and for controlling the quantity of toner particles of the toner particle supply means so that the detected concentration of the toner particles is substantially equal to the target concentration of toner particles.

5,548,386

DEVELOPING APPARATUS AND IMAGE FORMING APPARATUS USING THE DEVELOPING APPARATUS

Yoshiyuki Fukuda, Shizuoka-ken, Japan, assignor to Kabushiki Kaisha TEC, Shizuoka, Japan

Filed Jul. 25, 1995, Ser. No. 507,650
Claims priority, application Japan, Jul. 26, 1994, 6-174216
Int. Cl.[6] G03G *15/08*
U.S. Cl. 355—259 **12 Claims**



1. A developing apparatus for developing an electrostatic latent image formed on an image bearing body, said apparatus comprising:

a storing unit for storing a developer;

a developing roller rotated about a horizontal axis to supply the developer to said image bearing body;

a guide member, put in contact with a downwardly moving upper peripheral surface of the developing roller, for defining a temporary storage space of the developer along with the developing roller and for adhering to the developing roller the developer moving downward within the storage space by the weight of the toner itself;

charging means for charging the developer adhered to the developing roller; and

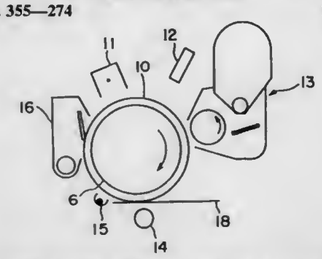
ejecting means for ejecting the developer from the storing unit into the storage space.

5,548,387

REVERSAL DEVELOPING SYSTEM PREVENTING OCCURRENCE OF IMAGE SPOTS

Toshiyuki Fukami, and Masashi Tanaka, both of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Feb. 25, 1994, Ser. No. 202,363
Claims priority, application Japan, Feb. 26, 1993, 5-38998
Int. Cl.[6] G03G *15/16*
U.S. Cl. 355—274 **11 Claims**



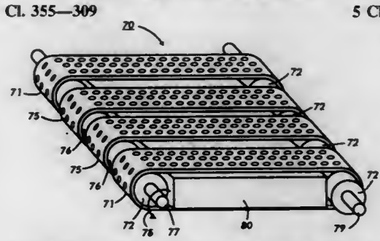
1. An image-forming apparatus comprising a reversal developing system having a photosensitive material, a main charger, a device for exposing an image, a reversal developing device, a transfer device and a discharger, wherein said transfer device has a transfer roller arranged to have a 0.3 to 0.7 mm gap between the transfer roller and the surface of the photosensitive material, wherein said photosensitive material has a charge start voltage, and a DC voltage more than 1.5 times as great as said charge start voltage is applied to the transfer roller when a transfer material is passing between the transfer roller and the photosensitive material so that a toner image formed on the surface of the photosensitive material is transferred onto the transfer material, and wherein said photosensitive material is of the type that can be electrically charged into both the positive polarity and the negative polarity, and the DC voltage applied to the transfer roller has a polarity opposite to that of a charged potential by the charger, is greater than a charge start voltage of the photosensitive material, and is so set that the potential on the surface of the photosensitive material after being discharged is 50 V or smaller in an absolute value, and wherein even when the photosensitive material is charged positively and negatively, light decay of the charge potential provided by the charge start voltage is carried out.

5,548,388

VACUUM TRANSPORT APPARATUS

Richard A. Schieck, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 25, 1995, Ser. No. 533,052
Int. Cl.[6] G03G *15/00*; B65H *05/02*
U.S. Cl. 355—309 **5 Claims**



1. A copier/printer including a photoreceptor having page images thereon, copy sheets for receiving the page images from the photoreceptor, a transfer apparatus for transferring the page images from the photoreceptor to the copy sheets and a fuser for fusing the page images on the copy sheets, comprising:

a limited slip prefuser vacuum transport apparatus positioned between the photoreceptor and fuser adapted to receive copy sheets from the photoreceptor and transport them to the laser, said limited slip prefuser vacuum transport apparatus including a vacuum plenum; a plurality of drive rolls and at least one idler roll; a plurality of perforated belts including at least four belts entrained around said drive rolls, idler roll and vacuum plenum; and means for driving at least two of said plurality of perforated belts at a slower speed than the remainder of said plurality of perforated belts to accommodate speed variations between the photoreceptor, fuser and vacuum transport and thereby maintain image copy quality.

5,548,389

VARIABLE POSITION STRIPPER SYSTEM FOR CURL REDUCTION

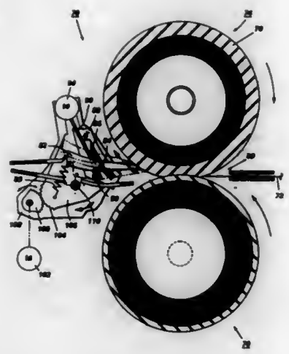
Edward F. Bowler, Jr., Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 19, 1994, Ser. No. 359,127
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—311 **5 Claims**

1. In a xerographic reproducing apparatus including a heat and pressure roll fuser for fixing toner images to copy sheets, the improvement comprising:

decurling means for removing curl induced into said copy sheets by roll forming a part of said roll fuser; and

substrate decurling means operable in various modes in accordance with the weight of a copy substrate and or the amount of toner forming Images thereon, said decurling means comprising means for separating copy sheets from said fuser roll.



5,548,390

DOUBLE-SIDED PRINTING SYSTEM FOR CONTINUOUS FORMS

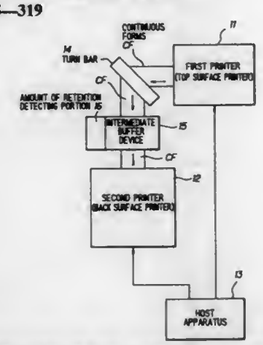
Eiichi Sugisaki, Kawasaki; Mitsuhiro Ino, Yokohama, and Masato Nagayama, Kawasaki, all of, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Dec. 9, 1994, Ser. No. 353,126

Claims priority, application Japan, Jan. 10, 1994, 6-000866; Oct. 26, 1994, 6-262257

Int. Cl.[6] G03G *21/00*

U.S. Cl. 355—319 **34 Claims**



1. A double-sided printing system for continuous forms for printing on both sides of continuous forms by sequentially operating two printers, comprising:

a first printer for printing on one side which is a first surface of said continuous forms;

a second printer provided at a subsequent stage to said first printer in the direction of paper feeding so as to print on the other side, which is a second surface of said continuous forms;

a host apparatus for transferring printing data which are to be printed on said first and second surfaces to said first and second printers, respectively;

an intermediate buffer device provided between said first and second printers so as to absorb a difference in paper feeding speeds between said first and second printers;

a detecting portion provided in said intermediate buffer device so as to detect the amount of retention of said continuous forms in said intermediate buffer device;

and a controlling means for stopping printing and paper feeding by said second printer when said amount of retention of said continuous forms falls below a first set value, and stopping paper feeding and printing by said first printer when said amount of retention of said continuous forms exceeds a second set value.

5,548,391

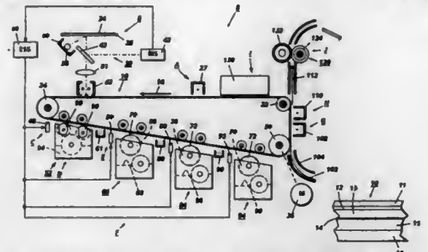
PROCESS COLOR USING LIGHT LENS SCANNING TECHNIQUES

Jeffrey J. Folkins, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 3, 1995, Ser. No. 368,128

Int. Cl.[6] G03G *15/01*

U.S. Cl. 355—326 R **5 Claims**



1. Apparatus for creating process color images on a charge retentive surface in a single pass, said apparatus comprising:

a. means supporting a charge retentive surface for movement in an endless path, said charge retentive surface comprising a sandwich comprising overcoat, charge generation and transport layers wherein the thickness of said transport layer is large compared to the thickness of said overcoat layer whereby an image voltage after exposure and recharge is not substantially less than an initial exposure voltage;

b. means for moving said charge retentive surface past a plurality of process stations including a charging station where said charge retentive surface is uniformly charged;

c. means for scanning a multi-color original document to selectively discharge said charge retentive surface for forming a plurality of balanced electrostatic images therein,

d. means for simultaneously, with the forming of said balanced images, scanning said multi-color original with a raster input scanner for producing series of raster scan lines;

e. illumination means for exposing one of said balanced images for rendering it unbalanced whereby there is an electrostatically developable voltage across said charge retentive surface;

f. means for using said series of scan lines for controlling operation of said illumination means such that only one of said balanced images becomes an unbalanced image;

g. means for developing said unbalanced image using electrostatically attractable toner particles;

h. means for recharging said charge retentive surface for neutralizing any voltage remaining across said charge retentive surface; and

i. means for illuminating another one of said balanced images for forming another unbalanced image;

j. means for developing said another unbalanced image.

5,548,392

OPTICAL POSITION DETECTOR HAVING SCALE PATTERN SPOT-ILLUMINATED TO INCREASE RESOLUTION

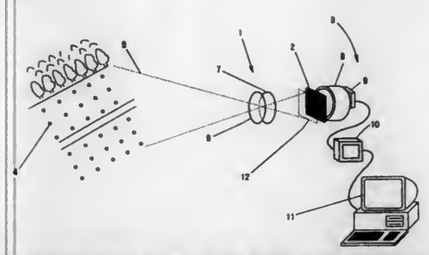
Yasuji Ogawa, Otone-machi, Japan, assignor to Kabushikikaisha Wacom, Japan

Filed Jan. 31, 1995, Ser. No. 381,184

Int. Cl.[6] G01J *3/30*

U.S. Cl. 356—3.13 **17 Claims**

1. An optical position detector for detecting the position of at least one object point, comprising receiving means for receiving a light emitted from at least one object point, comprising image forming means, a scale plate, and image pickup means, each being disposed along the same optical axis; and arithmetic operation means connected to the image pickup mean; wherein the scale plate has a plurality of pattern elements arranged periodically along a front coordinate plane perpendicularly intersecting the optical axis, the image forming means includes means for condensing a light beam emitted from an object point, converting the beam into a corresponding reference light converging into a corresponding image forming point which is displaced from the front coordinate plane of the scale plate, spot-illuminating a part of the scale plate with the and projecting at least one illuminated pattern element in a magnified scale, the image pickup means has a light receiving surface which is disposed along a rear coordinate plane perpendicularly intersecting the optical axis and which picks up a shadow of the at least one illuminated pattern element projected in the magnified scale and includes means for outputting corresponding image data, and the arithmetic operation means includes means for processing the image data, deriving a rear coordinate plane value of the shadow of the at least one illuminated pattern element, determining a position of the image forming point for the reference light on the basis of the respective rear coordinate plane value and a front coordinate plane value of the at least one illuminated pattern element, and determining a position of the object point on the basis of the position of the image forming point.



5,548,393

OIL DETERIORATION DETECTION APPARATUS AND APPARATUS FOR DETECTING PARTICLES IN LIQUID

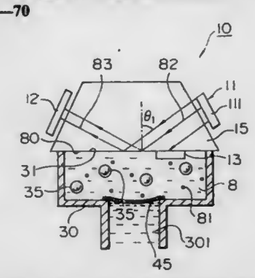
Masaei Nozawa, Okazaki; Yasuyoshi Toda, Anjo; Kiwamu Naito, Kariya; Yurio Nomura, Nagoya, and Rie Osaki, Anjo, all of, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 1, 1994, Ser. No. 269,587

Claims priority, application Japan, Jul. 5, 1993, 5-192005; Aug. 24, 1993, 5-209509; Nov. 29, 1993, 5-326055

Int. Cl.[6] G01N *21/15;33/30*

U.S. Cl. 356—70 **10 Claims**



1. An apparatus for detecting a deterioration of oil, comprising:

sensor means for detecting a condition of carbon particles in the oil and for outputting a signal representative that the concentration of the carbon particles is more than a predetermined level indicative of the deterioration of the oil performance or that the particle size of the carbon particles is more than a predetermined particle size indicative of the deterioration of the oil performance, said sensor means being an optical sensor for detecting the intensity of light reflected at a detection surface of the oil with Goos-Hänchen shift, the light intensity being changed in accordance with the concentration of the carbon particles in the oil,

said sensor comprising:

a light-emitting portion for emitting light toward the oil;

a photosensor for receiving the reflected light and for outputting a signal corresponding to an amount of reflected light received; and

cleaning members disposed in the oil which are moved throughout the oil by the flow of the oil and are capable contacting said detection surface;

flow-out prevention members constructed and arranged to prevent said cleaning members from flowing away from a location near said detection surface while allowing the oil to flow in the vicinity of said detection surface, said cleaning members being movable within an area defined by said flow-out prevention members; and

means for judging that the concentration of the carbon particles in the oil exceeds a predetermined concentration indicative of the deterioration of the oil performance when the output signal from said sensor means exceeds a predetermined value.

5,548,394

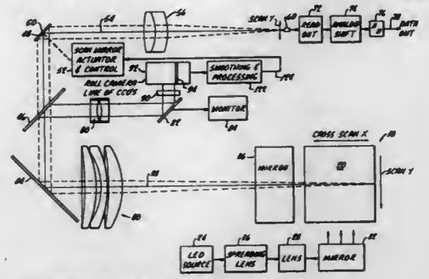
SCANNING FINGERPRINT READING

Richard M. Giles; Daniel J. Driscoll, both of Laguna Niguel; Eliseo Ranalli, Irvine, all of Calif.; John M. Tamkin, Tucson, Ariz., and Bradley Scott, Fountain Valley, Calif., assignors to Printrak International Inc., Anaheim, Calif.

Filed Mar. 16, 1995, Ser. No. 404,931

Int. Cl.[6] G06K *9/20*

U.S. Cl. 356—71 **25 Claims**



1. A fingerprint reader comprising:

an imaging system for generating an optical beam defining an optical image of a fingerprint;

a scanning mirror;

an array of sensors;

an optical system for directing said optical image at said scanning mirror for reflection to said array of sensors, said optical system having dual telecentricity and non-unity magnification; and

a mirror controller for scanning said mirror about a scan axis to scan said optical image across said array of sensors.

5,548,395

PARTICLE ANALYZER

Tokihiro Kosaka, Kakogawa, Japan, assignor to Toa Medical Electronics Co., Ltd., Japan

Filed Aug. 31, 1992, Ser. No. 937,340

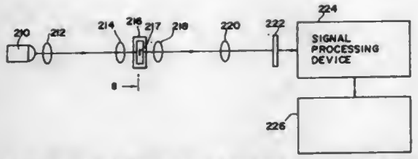
Claims priority, application Japan, Sep. 20, 1991, 3-270106; Sep. 20, 1991, 3-270107

Int. Cl.[6] G01N *15/14;21/23*

U.S. Cl. 356—73 **17 Claims**

1. A particle analyzer for analyzing particles by passing a sheath liquid around a liquid specimen containing particles to be analyzed, and means for emitting light to the liquid specimen flow,

the liquid specimen flow being a flat flow which is thin in thickness and broad in width,



a one-dimensional image sensor disposed to extend in a direction vertical to the particle flow direction, and producing a signal at every scanning cycle for the particle, and

signal processing means for processing the signal from the one-dimensional image sensor, wherein

the signal processing means obtains feature parameters of individual particles on the basis of the signal from said one-dimensional image sensor, by processing the signal from the one dimensional image sensor, thereby analyzing the particles on the basis of the difference of the feature parameters of each particles, said feature parameters containing at least one of particle morphological information and absorption information,

said signal processing means comprises:

background correction processing means for obtaining correction data Sc(i), by calculating the difference between background data Sa obtained from the signal from the one-dimensional image sensor in the absence of a particle, and measured data Sb(i) obtained from the signal from the one-dimensional image sensor when a particle is passing through the imaging region,

binarizing processing means for obtaining binary signal Sd(i) for detecting the specified portion of the particle by comparing the correction data Sc(i) from the background correction processing means with specified threshold data,

binary signal processing means for logical operation for the binary signal from the binarizing processing means, and

arithmetic means for calculating said feature parameters by using the binary signal from said binary signal processing means.

5,548,396

METHOD AND APPARATUS FOR MEASURING ECCENTRICITY OF ASPHERICAL LENS HAVING AN ASPHERICAL SURFACE ON ONLY ONE LENS FACE

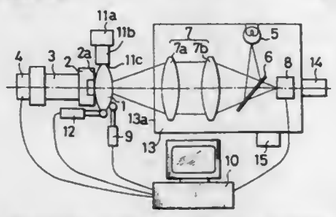
Nobuhiro Morita, Yokohama, and Takeshi Tada, Isehara, both of, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 26, 1994, Ser. No. 280,614

Claims priority, application Japan, Aug. 13, 1993, 5-201588; Oct. 18, 1993, 5-259966

Int. Cl.[6] G01B *9/00*

U.S. Cl. 356—127 **13 Claims**



4. An apparatus for measuring eccentricity of an aspherical lens, comprising:

means for holding a detected lens having an aspherical surface on only one lens face;

driving means for rotating the holding means around a rotating axis approximately overlapping an optical axis of the detected lens;

an angle sensor for detecting a rotating angle of the detected lens;

a light source for irradiating light onto the detected lens in a direction of the rotating axis;

an optical system for focusing and forming a spot image of reflected light from the detected lens;

means for detecting a position of the spot image and arranged on an image forming face of the optical system;

displacement measuring means for measuring a deflection of a detected face of the detected lens in a direction of the optical axis; and

a pressing face for moving the detected lens in a direction perpendicular to the optical axis in a state in which the pressing face comes in contact with an outer circumferential edge of the detected lens during rotation;

the pressing face being disposed in a position separated from the optical axis by a radius of the detected lens.

5,548,397

SYSTEM FOR POSITIONING A PILE DRIVING RIG OR SIMILAR INSTALLATION

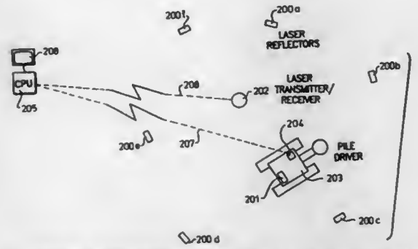
Anthonie F. Kool, Tienhoven; Michiel A. Van de Griendt, Delft; Bas H. de Bruin, Houten; G. Nicolaas Schepes, Gouda, and Willem J. Lucieer, Voorschoten, all of, Netherlands, assignors to Hollandsche Beton Groep N.V., Rijswijk, Netherlands

Filed Oct. 28, 1994, Ser. No. 331,172

Claims priority, application Netherlands, Oct. 28, 1993, 9301864

Int. Cl.[6] G01B *11/26*; E02F *3/76*

U.S. Cl. 356—141.1 **21 Claims**



1. System for positioning a vehicle within a predetermined area, which system is provided with a laser transmitter/receiver and three or more laser reflectors which are located outside and/or inside the predetermined area, the position of the laser transmitter/receiver with respect to the laser reflectors being determined continuously with the aid of a method known per se, characterised in that

the vehicle is provided with movable parts with which predetermined work can be carried out,

the position of a reference point on the vehicle with respect to the laser reflectors is determined continuously with the aid of the laser transmitter/receiver,

the vehicle is provided with sensors with which the position of a number of movable parts of the vehicle is measured continuously, which parts are determining for the relative position, with respect to the reference point, of the location where the said work is carried out,

a processor is present, which is designed and/or programmed in such a way that said processor processes the output signals from the said sensors and from the laser transmitter/receiver and on the basis of said signals determines the position of the location where the work is being carried out, with respect to the laser reflectors, and

there is a communication link between the sensors on the vehicle and the processor for the transfer of measured values from the sensors to the processor and in that there is a communication link between the laser transmitter/receiver and the processor for the transfer of measured values between the laser transmitter/receiver and the processor.

5,548,398

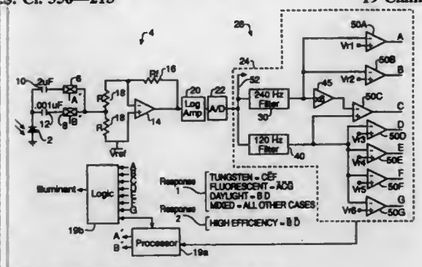
ILLUMINANT DISCRIMINATOR PROVING DETECTION OF HIGH EFFICIENCY ILLUMINATION

Michael J. Gaboury, Burnsville, Minn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 22, 1994, Ser. No. 343,167

Int. Cl.[6] G01J *1/42*

U.S. Cl. 356—218 **19 Claims**



8. An illuminant discriminator comprising:

photodetector means for converting an impinging illuminant into an analog signal:

a high pass filter circuit including a first passband including frequencies from a variety of artificial illuminants, and a second passband including frequencies from a particular artificial illuminant, and first and second switches for switching respective capacitances into the high pass filter circuit whereby one capacitance provides a low frequency cutoff for the first passband and a second capacitance provides a high frequency cutoff for the second passband;

a log means coupled to said high pass filter means for converting said analog signal into a signal having a DC component and a ratio component;

a first and a second filter means each having a filtering frequency corresponding to the harmonic frequencies of an artificial illuminant power source;

first and second comparator stages each having at least two inputs, one of which is coupled to receive an output from said first and said second filter means, respectfully, and an other of which is adapted to receive threshold signals corresponding in level to a level of different types of illuminants for providing at least one output indicating a magnitude of the outputs from said first and said second comparing means with respect to the threshold signals;

a third comparator stage for comparing the output of said first filter means with the output from said second filter means and for providing an output indicating which is greater;

means for setting an output of the high pass filter means to either the first passband or the second passband; and

logic means coupled to the outputs of said first, second, and third comparator stages and to said setting means for determining a type of illuminant impinging on said photodetector means from the outputs sensed by said comparing means, said logic means comprising means responsive to the switching of said first and second switches for first analyzing the analog signal passed by the first passband to determine if the illuminant is other than the particular artificial illuminant and, where this analysis is indeterminate, secondly analyzing the analog signal passed by the second passband to determine if the illuminant is the particular artificial illuminant.

5,548,399

METHOD AND APPARATUS FOR TESTING A DC COUPLED OPTICAL RECEIVER

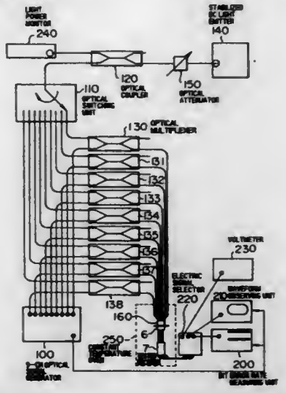
Atsushi Takai, Kokubunji, and Shoichi Hanatani, Yono, both of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 5, 1993, Ser. No. 131,826

Claims priority, application Japan, Oct. 8, 1992, 4-269977

Int. Cl.[6] G01J *1/42*

U.S. Cl. 356—218 **9 Claims**



1. A method of testing a characteristic of an optical receiver, including DC coupled circuits, comprising the steps of:

superimposing constant intensity light on an optical signal input to the optical receiver so as to shift an input-output characteristic of said optical receiver from a non-linear region to a linear region; and

measuring an output voltage of the receiver.

5,548,400

METHOD AND APPARATUS FOR INSPECTING HONEYCOMB STRUCTURES USING OPTICAL FIBRES

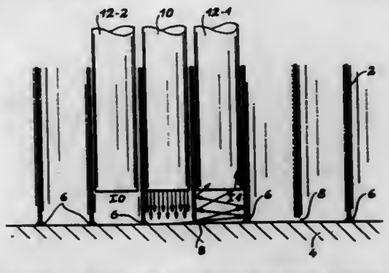
Jean C. M. Bourguinat, Meudon, France, assignor to Sochata, Velizy Villacoublay, France

Filed Feb. 16, 1995, Ser. No. 389,643

Claims priority, application France, Feb. 16, 1994, 94 01734

Int. Cl.[6] G01N *21/88*

U.S. Cl. 356—237 **22 Claims**



1. A method of inspecting the connection between a support and a honeycomb structure defining a network of parallel cells, including the steps of:

introducing one end of a first optical fiber, said fiber comprising an illuminating fiber, into a first cell of said cells of said honeycomb structure,

connecting said illuminating fiber at its other end to light emission means;

introducing one end of at least one second optical fiber, said second optical fiber comprising an observation fiber, into at lest one cell of said honeycomb structure adjacent said first cell,

connecting said observation fiber at its other end to detection means for converting light into an electrical signal;

transmitting a beam of on-off modulated light from said light emission means through said illuminating fiber to illuminate said first cell; and,

synchronously detecting and DC background suppressing any light which leaks from said illuminated first cell into said at least one adjacent cell containing said at least one observation fiber and which is transmitted by said observation fiber to said detection means connected thereto.

5,548,401

PHOTOMASK INSPECTING METHOD AND APPARATUS

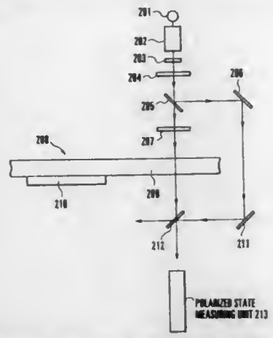
Yoshiharu Ozaki, Kanagawa, Japan, assignor to Nippon Telegraph and Telephone Public Corporation, Japan

Filed Aug. 19, 1994, Ser. No. 293,130

Claims priority, application Japan, Aug. 23, 1993, 5-207480; Aug. 23, 1993, 5-208072; Nov. 17, 1993, 5-288275; Dec. 1, 1993, 5-301488; Mar. 9, 1994, 6-038081; Mar. 9, 1994, 6-038083

Int. Cl.[6] G01N *21/88;* **G01J** *4/00;4/04*

U.S. Cl. 356—239 **19 Claims**



1. A photomask inspecting method comprising inspecting a photomask on the basis of a difference between a polarized state of elliptical light produced upon superposition of two linearly polarized light beams having orthogonal polarization directions and passing through two different optical paths and a polarized state of elliptical light produced when two linearly polarized light beams are superposed on each other after a target portion to be inspected of a photomask is set in the optical path of one of the linearly polarized light beams, wherein the optical path of the linearly polarized light beam, in which the photomask is set, is divided into a plurality of optical path portions, and target portions of at least one photomask are in the respective optical path portions to be simultaneously inspected.

5,548,402

OPTICAL SWEEP SIGNAL GENERATOR

Seiji Nogiwa, Tokyo, Japan, assignor to Ando Electric Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1995, Ser. No. 412,990

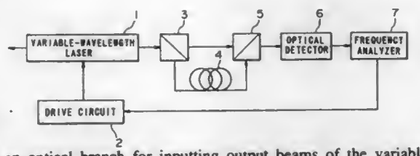
Claims priority, application Japan, Mar. 31, 1994, 6-085630

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—349 **3 Claims**

1. An optical sweep signal generator comprising:

a variable-wavelength laser for effecting a sweep, using a certain period, on oscillating optical frequency;



an optical branch for inputting output beams of the variable-wavelength laser so as to divide them into first and second beams;

an optical delay line for delaying the first beam, branched from the optical branch, to produce a delayed beam;

an optical mixer for mixing the second beam together with the delayed beam so as to produce a mixed beam;

an optical detector for performing heterodyne wave detection on the mixed beam;

a frequency analyzer for performing a frequency analysis on result of the heterodyne wave detection so as to detect heterodyne beat frequency; and

control means for controlling the variable-wavelength laser in such a way that the heterodyne beat frequency detected by the frequency analyzer does not vary with respect to time in a selected period of time,

whereby a sweep optical frequency to be realized is varied linearly with respect to time.

5,548,403

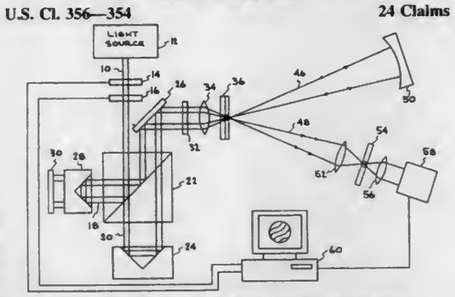
PHASE SHIFTING DIFFRACTION INTERFEROMETER

Gary E. Sommargren, Santa Cruz, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Filed Nov. 28, 1994, Ser. No. 345,878

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—354 **24 Claims**



1. A phase shifting diffraction interferometer, comprising:

means for separating a linearly polarized, collimated and coherent beam of light into two parallel, spatially separated, orthogonally polarized coherent beams of light;

means for introducing a phase shift between said two parallel, spatially separated, orthogonally polarized coherent beams of light;

a polarizer to orient said two parallel, spatially separated, orthogonally polarized coherent beams of light into two parallel, spatially separated, identically polarized coherent beams of light;

means for focusing said two parallel, spatially separated, identically polarized coherent beams of light to a focal point;

an interferometer plate comprising:

a glass substrate;

a highly reflective metallic film adherent to said glass substrate; and

at least one circular aperture through said glass substrate and said highly reflective metallic film, wherein said circular aperture is placed at said focal point and has a diameter of about the size of the wavelength of said coherent beam of light, wherein said interferometer plate diffracts said two parallel, spatially separated, identically polarized coherent beams of light at said focal point to produce a measurement beam and a reference beam; and

means for focusing said measurement beam onto said aperture and said highly reflective metallic film, wherein said measurement beam and said reference beam combine to form an interference pattern.

5,548,404

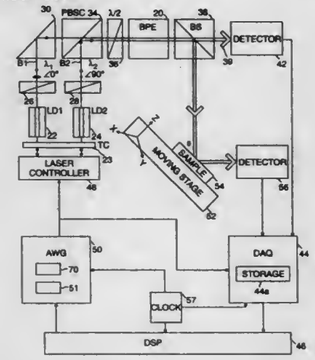
MULTIPLE WAVELENGTH POLARIZATION-MODULATED ELLIPSOMETER WITH PHASE-GENERATED CARRIER

Vladimir Kupershmidt, Pleasanton; Mikhail Kouchnir, Palo Alto, and Robert Petersen, Dublin, all of Calif., assignors to Sunshine Medical Instruments, Inc., Sausalito, Calif.

Filed Sep. 23, 1994, Ser. No. 311,263

Int. Cl.[6] G01J *4/00*

U.S. Cl. 356—368 **55 Claims**



1. A method of analyzing a sample comprising:

generating a first laser beam having a first wavelength, a first optical frequency modulation and a first intensity modulation by applying current modulation to a laser diode at a first wavelength;

generating a second laser beam having a second wavelength, a second optical frequency modulation and a second intensity modulation by applying current modulation to a laser diode at a second wavelength;

polarizing the first laser beam in a first direction and polarizing the second laser beam in a second direction perpendicular to the first direction;

modulating the optical phase difference between the polarized components of the first and second laser beams;

directing the intensity and optical phase difference modulated laser beams onto a sample;

synchronously demodulating signals derived from the detected laser beams; and

analyzing the demodulated signals.

5,548,405

OPTICAL THREE-DIMENSIONAL SHAPE MEASURING APPARATUS HAVING A DEVICE FOR ACCURATELY POSITIONING AND MEASURING AN OBJECT

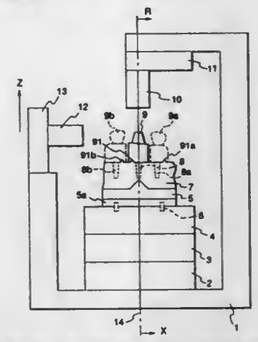
Kazutoshi Motosugi, Tama, Japan, assignor to Nikon Corporation, Tokyo, and Nikon Engineering Co., Ltd., Yokohama, both of, Japan

Filed Dec. 20, 1994, Ser. No. 360,040

Claims priority, application Japan, Dec. 22, 1993, 5-323471

Int. Cl.[6] G01B *11/24*

U.S. Cl. 356—376 **5 Claims**



1. An apparatus for measuring a three-dimensional shape of an object to be measured provided with a fitting portion, comprising:

a body base;

a rotation stage set on said base;

an XY stage set on said rotation stage and provided with a fitting portion, said XY stage being movable in a predetermined horizontal direction and in a horizontal direction perpendicular thereto independently of rotation of said rotation stage;

drive control means for independently driving and controlling said rotation stage and XY stage;

holding means for holding said object to be measured, said holding means being provided with a fit portion to fit with said fitting portion of said XY stage, and a fit portion to fit with said fitting portion of said object to be measured;

an R stage set above said holding means, said R stage being movable in a horizontal direction and in a direction of the diameter of said rotation stage;

a first optical displacement gage provided on a lower surface of said R stage so that an optical axis thereof becomes parallel to a rotational axis of said rotation stage;

a Z stage provided beside said holding means, said Z stage being movable in a direction parallel to said rotational axis; and

a second optical displacement gage provided on a side surface of said Z stage so that an optical axis thereof becomes perpendicular to the rotational axis of said rotation stage.

5,548,406

APPARATUS FOR PERFORMING RECORDING OPERATIONS BY USING STANDARD TYPE RECORDING PAPERS AND METHOD OF CONTROLLING SAID APPARATUS

Masayoshi Aihara, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

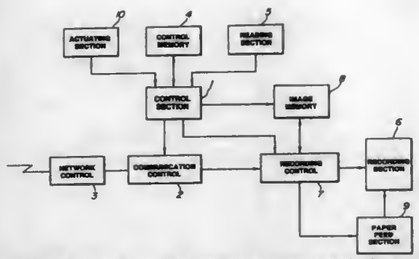
Continuation of Ser. No. 46,371, Apr. 13, 1993, abandoned, which is a continuation of Ser. No. 815,864, Jan. 2, 1992, abandoned, which is a continuation of Ser. No. 668,823, Mar. 13, 1991, abandoned. This application Jun. 2, 1995, Ser. No. 459,520

Claims priority, application Japan, Mar. 13, 1990, 2-60064

Int. Cl.[6] H04N *1/23;1/387*

U.S. Cl. 358—296 **10 Claims**

1. An apparatus for performing a recording operation by using standard type recording papers having plural sizes, comprising:



recording paper selecting means for selecting a desired one of a plurality of standard type recording papers, including a first standard size recording paper and a second standard size recording paper, each of the standard size recording papers having a different effective recordable length, the second standard size recording paper having an effective recording length larger than the first standard size recording paper;

determining means for determining whether recording image data to be recorded is a normal type image data or a special type image data;

first recording control means, if said recording image data is the normal type image data, for checking whether or not said normal recording image data is within the effective recordable length of the first standard size recording paper and, if said normal recording image data is within the effective recordable length, for recording said normal recording image data onto the first standard size recording paper and, if said normal recording image data exceeds said effective recordable length of the first standard size recording paper and if an exceeding part of said normal recording image data is less than a predetermined value, for discarding said exceeding part and recording a remaining part of said normal recording image data other than said exceeding part on the first standard size recording paper; and

second recording control means, if said recording data is the special type image data, for checking whether or not said special recording image data is within the effective recordable length of the first standard size recording paper and, if said special recording image data is within the effective recordable length, for recording said special recording image data onto the first standard size recording paper and, if said special recording image data exceeds said effective recordable length of the first standard size recording paper, for changing the first standard size recording paper to the second standard size recording paper on which said special recording image data can be completely recorded and recording said special recording image data on the second standard size recording paper.

5,548,407

PROCESS FOR ELECTRONIC PROCESSING OF MULTI-COLORED CONTINUOUS-TONE IMAGES

Albrecht J. von Kienlin, Schwalbach, and Peter Urban, Gorxheimertal, both of, Germany, assignors to Albrecht von Kienlin, Schwalbach, Germany

Filed May 20, 1993, Ser. No. 63,659

Claims priority, application Germany, May 22, 1992, 42 16 932.1; European Pat. Off., Apr. 24, 1993, 93106690

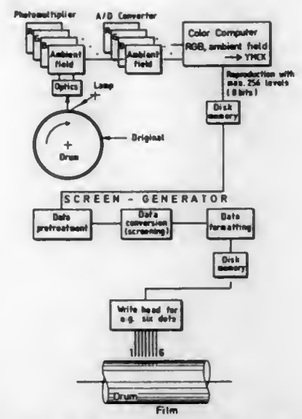
Int. Cl.[6] H04N *1/40;1/46;1/52*

U.S. Cl. 358—298 **6 Claims**

1. A method of electronically processing a multicolored continuous-tone original image, said method comprising:

scanning each of plural scan element areas of the original image on a line by line or column by column basis;

determining a brightness of each of said scan element areas for each of plural colors and converting each brightness into a corresponding digital tone value denoting a tone level of a respective one of plural recording fields of a to be reproduced



image, each of said plural recording fields formed by a plurality of recording element areas;

dividing each recording field into plural tiles each having an identical size and an identical number of recording element areas, wherein a number of tone levels that can be differentiated within each tile is specified by the number of recording element areas contained in each tile; and,

accessing a data memory and assigning a prestored dot pattern to each of said plural tiles of each recording field according to said digital tone value of said recording field to obtain a representation of the to be reproduced image;

wherein said assigning of each prestored dot pattern to each tile includes determining a plurality of different basic dot patterns for said respective plural colors, wherein said different basic dot patterns remain distinct from one another when any one or more of said basic dot patterns is translated, wherein each basic dot patterns has dots in 50% of said recording element areas of each tile, and wherein, upon superimposing pairs of said different basic dot patterns of each tile, a ratio ü/n of overlapping dots ü to non-overlapping dots n in each tile is substantially equal to at least one of 1 and a ratio n'/ü' of non-overlapping dots n' to overlapping dots ü' of an adjacent tile.

5,548,408

IMAGE PROCESSING SYSTEM

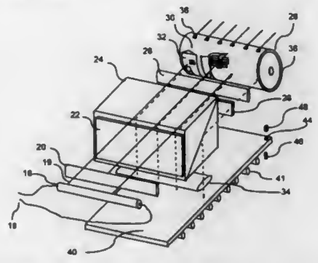
Doron Koren, 26 Habanim St., Kfar Sirkin, Israel

Filed Jan. 21, 1994, Ser. No. 184,045

Claims priority, application Israel, Jan. 27, 1993, 104529

Int. Cl.[6] H04N *1/23*

U.S. Cl. 358—300 **20 Claims**



2. An image processing system comprising:

at least one rotatable drum defining a light modulating optical memory on its outer surface; said optical memory being

characterized in that it constitutes the active read/write memory of a raster image processor for a digital image written thereon, and it modulates light illuminating said optical memory from a light source during imaging;

at least one read/write head arranged to receive digital data corresponding to an image and to write said received digital data on said optical memory;

a light source arranged to illuminate said optical memory;

holder means for holding photosensitive material, said holder means being arranged for synchronous movement with said drum; and

means for imaging the image from said optical memory onto photosensitive material in said holder.

5,548,409

PANORAMA IMAGE PRODUCING METHOD AND APPARTUS

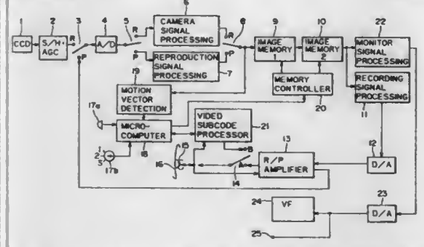
Masashi Ohta, Tokyo; Hiroshi Kobayashi, Chiba; Tsuneo Sekiya; Toshimichi Hamada, both of Tokyo; Kyoko Fukuda, and Koji Iijima, both of Kanagawa, all of, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 8, 1993, Ser. No. 133,377

Claims priority, application Japan, Oct. 9, 1992, 4-297771; Oct. 9, 1992, 4-297772; Oct. 9, 1992, 4-297773; Oct. 9, 1992, 4-297774; Oct. 23, 1992, 4-309451

Int. Cl.[6] H04N *5/76*

U.S. Cl. 358—335 **4 Claims**



1. An apparatus for recording and reproducing an image signal, comprising:

imaging means for imaging a subject to produce an image signal;

motion vector detecting means for detecting motion vector information from said image signal;

recording means for recording the motion vector information onto a recording medium together with the image signal produced by said imaging means;

reproducing means for reproducing the recorded image signal and the recorded motion vector information from the recording medium;

image forming means for forming a plurality of successive images from the reproduced image signal;

joining means for joining in accordance with the reproduced motion vector information at least portions of the successive images formed by said image forming means to produce a panorama image; and

control means for controlling the width of the portions of the images with which the images are joined together by said joining means.

5,548,410

ANALOG-CUM-DIGITAL VIDEO RECORDING AND REPRODUCING DEVICE

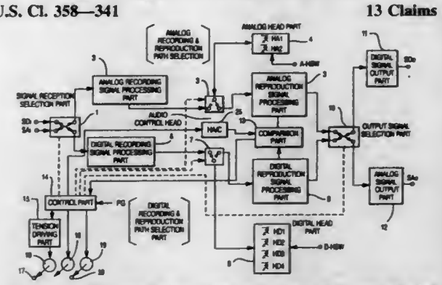
SooKyung Kim; Joong Kwon-Joh, and WeonKyoo Lee, all of Seoul, Rep. of Korea, assignors to LG Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Mar. 10, 1995, Ser. No. 401,491

Claims priority, application Rep. of Korea, Mar. 11, 1994, 4842/1994

Int. Cl.[6] H04N *5/76;* **G11B** *5/00;5/02;5/09*

U.S. Cl. 358—341 **13 Claims**



1. An analog-cum-digital video recording and reproduction device, comprising:

a signal reception selection part for selecting video signals to be recorded from applied analog video signals and digital video signals;

an analog recording signal processing part for processing analog video signals received from the signal reception selection part suitable to a recording format;

an analog head part for reproduction of the analog video signals recorded on a videotape and recording the analog video signals received from the analog recording signal processing part;

an analog recording and reproduction path selection part for applying the video signals processed at the analog recording signal processing part to the analog head part for recording, or transmitting the video signals reproduced at the analog head part;

an analog reproduction signal processing part for processing the reproduced video signals selected at, and received from, the analog recording and reproduction path selection part suitable to a reproduction format;

a digital recording signal processing part for processing the digital video signals received from the signal reception selection part suitable to a recording format;

a digital head part for reproduction of the digital video signals recorded on a videotape, and recording the digital video signals received from the digital recording signal processing part;

a digital recording and reproduction path selection part for applying the video signals processed at the digital recording signal processing part to the digital head part for recording, or transmitting the video signals reproduced at the digital head part;

a digital reproduction signal processing part for processing the reproduced video signals selected at, and received from, the digital recording and reproduction path selection part suitable to a reproduction format;

an output signal selection part for selection and transmission of one signal of the signals received from the analog reproduction signal processing part and the digital reproduction signal processing part;

an audio control head for recording and reproduction of audio and control signals on and from a videotape;

a comparison part for comparing the reproduced control signals received from the audio control head to the signals received from the analog reproduction signal processing part and the digital reproduction signal processing part; and

a control part for controlling the signal reception selection part, the audio control head, the analog recording and reproduction

path selection part, the digital recording and reproduction path selection part, the output signal selection part, the analog head part, and the digital head part in response to the signals received from the comparison part.

5,548,411

FACSIMILE APPARATUS

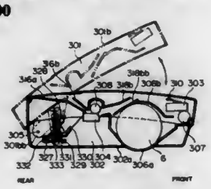
Kazutaka Sato, Kashiwa; Michihiro Watanabe, Tsuchiura; Masahisa Aoyagi, Ishioka; Taisaku Seino, Ibaraki-ken; Katsuo Ohki, Ibaraki-ken; Hiromitsu Fukuda, Ibaraki-ken; Hideyuki Kawase, Katsuta; Kimio Oga, Mito; Akira Shimizu, Katsuta; Youichi Narui, Katsuta; Tsuguo Suzuki, Owariasahi; Yasuo Otsuka, Chigasaki, and Kazutoshi Konno, Tokyo, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

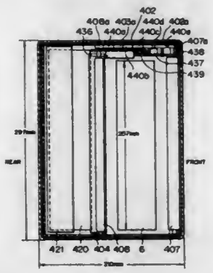
Division of Ser. No. 36,866, Mar. 25, 1993. This application Apr. 24, 1995, Ser. No. 427,279

Claims priority, application Japan, Apr. 17, 1992, 04-097675; Mar. 25, 1995, 04-067160

Int. Cl.[6] H04N *1/00;1/04*

U.S. Cl. 358—400 **6 Claims**





1. A facsimile apparatus having a function to convert image information into electric signals and to transmit the electric signals to a communication network and a function to receive electric signals from said communication network and to convert the received electric signals into image information, said facsimile apparatus comprising: a lower structure and an upper structure swingable about a pivot provided on a rear portion of said apparatus between a raised open position and a lowered close position; a spring fixed to one of said upper and lower structures and contacting the structure to which said spring is not fixed; a member having a slot formed therein and operably connected to one of said upper and lower structure; and a projection formed in the structure to which said member is not fixed, said projection being received in said slot in said member.

5,548,412

DATA COMMUNICATION DEVICE WITH TRANSMITTING CONDITION SET IN ACCORDANCE WITH NOISE LEVEL OF ACTIVATING MEANS

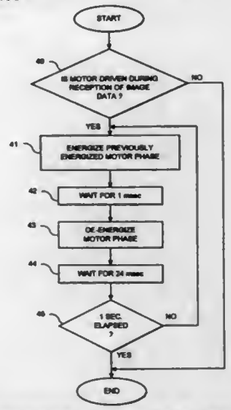
Fumihiro Minamizawa; Masayoshi Iguchi, and Koji Takeyama, all of Aichi-ken, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi-ken, Japan

Continuation-in-part of Ser. No. 118,418, Sep. 8, 1993, Pat. No. 5,406,385. This application Dec. 1, 1994, Ser. No. 347,963

Claims priority, application Japan, Sep. 14, 1992, 4-271194; Dec. 1, 1993, 5-301435; Oct. 7, 1994, 6-244144

Int. Cl.[6] H04N *1/32;1/327*

U.S. Cl. 358—406 **16 Claims**



1. A data communicating device for at least transmitting or receiving data, comprising:

an actuating means that can be driven;

means for determining whether said actuating means is to be driven to perform a predetermined operation when said data is transmitted/received;

means for performing a predetermined communication procedure prior to transmission/reception of said data, a transmission condition being set when said predetermined communication procedure is performed by said performing means,

wherein said transmission condition is set in accordance with a noise level of said actuating means that is generated when said actuating means is driven if said determining means determines that said actuating means is to be driven to perform said predetermined operation when said data is transmitted/received, and

wherein said data is transmitted/received in accordance with said transmission condition.

9. A data communication system for communicating data from a calling station to a called station over a communication line, comprising:

image reading means for reading data to be communicated from said calling station to said called station;

first actuating means for actuating said image reading means to read said data at said calling station;

image recording means for recording data communicated from said calling station to said called station;

second actuating means for actuating said image recording means to record said data at said called station;

means for determining whether at least one of said first and second actuating means is to be driven; and

means for performing a predetermined communication procedure prior to transmission/reception of said data,

means for setting a transmission condition when said predetermined communication procedure is performed by said performing means, said transmission condition being set in accordance with a noise level of said at least one of said first and second actuating means that is generated when said at least one of said first and second actuating means is driven if said determining means determines that said at least one of said first and second actuating means is to be driven to perform said predetermined operation when said data is transmitted/received, and

wherein said transmission condition is set in accordance with said transmission condition set by said setting means.

14. A method of transmitting/receiving data through a communication line employed in a data communicating device, said device having an actuating means which generates electrical noise, said method comprising the steps of:

determining whether said actuating means is to be driven when said data is transmitted/received;

setting a transmission condition based on a level of said electrical noise if said determining step determines that said actuating means is to be driven when said data is transmitted/received; and

transmitting/receiving said data in accordance with said set transmission condition set by setting step.

5,548,413

IMAGE SIGNAL PROCESSING APPARATUS FOR IMAGE SENSOR

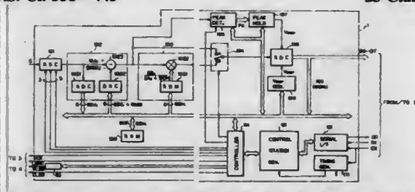
Hideaki Watanabe, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 24, 1994, Ser. No. 248,510

Claims priority, application Japan, May 24, 1993, 5-142537

Int. Cl.[6] H04N *1/40*

U.S. Cl. 358—445 **23 Claims**



1. An image signal processing apparatus for an image sensor associated with a light source, comprising:

an amplifier having a gain G, connected to an output of said image sensor, for amplifying an output signal of said image sensor;

black level correction means, connected to said amplifier, for correcting each pixel of the output signal of said amplifier with a black level correction value,

said black level correction means comprising:

a first A/D converter, connected to said amplifier, for performing an A/D conversion of the output signal of said amplifier when the output signal of said image sensor is a black level reference signal;

means for calculating a minimum value of the output signal of said first A/D converter;

means for calculating a black level correction value of a first pixel by subtracting said minimum value from the output signal of said first A/D converter;

means for storing the black level correction value;

means for reading the black level correction value from said storing means;

means for adding the minimum value to the black level correction value;

a D/A converter for performing a D/A conversion of a sum of the black level correction value and the minimum value; and

a subtractor, connected to said amplifier and said D/A converter, for subtracting the output signal of said D/A converter from the output signal of pixels subsequent to said first pixel,

a second A/D converter, for performing an A/D conversion of an output signal of said subtractor;

means, connected to said second A/D converter and said amplifier, for controlling the gain G of said amplifier so that the output signal of said second A/D converter is brought to a predetermined value, when the output signal of said image sensor is a white level reference signal,

said image signal processing apparatus further comprising means for reducing the number of bits of the black level correction value to obtain an effective black level correction value, said storing means storing the effective black level correction value.

5,548,414

IMAGE DATA INPUT APPARATUS

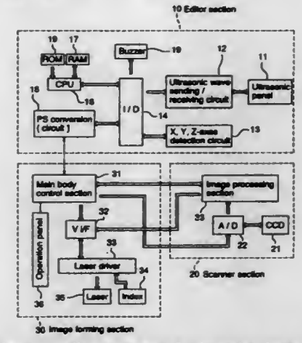
Masashi Sugano, and Kenichi Matsuo, both of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Sep. 30, 1993, Ser. No. 129,327

Claims priority, application Japan, Oct. 13, 1992, 4-274157

Int. Cl.[6] H04N *1/04;1/387*

U.S. Cl. 358—452 **10 Claims**



1. An image reading apparatus for inputting image data corresponding to an image on a document, comprising:

means having a transparent body for supporting the document;

means for scanning the image of said document through said transparent body of said supporting means;

a plurality of reflection slits provided outside an effective image reading area on said supporting means;

means for generating an oscillation signal toward said plurality of reflection slits;

means for receiving said oscillation signal which has been reflected by said plurality of reflection slits, and generating a receiving signal; and

means for determining a location of said document according to said receiving signal, and generating a positioning signal which designates the location of said document.

5,548,415

IMAGE PROCESSING APPARATUS

Kunio Tanaka, Ushiku, and Kouichi Hashimoto, Tokyo, both of, Japan, assignors to Riso Kagaku Corporation, Tokyo, Japan

Filed Jun. 2, 1995, Ser. No. 459,425

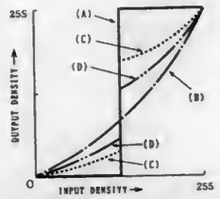
Claims priority, application Japan, Jun. 3, 1994, 6-145374

Int. Cl.[6] H04N *1/40*

U.S. Cl. 358—462 **6 Claims**

1. An image processing apparatus in which images on an original document captured by an image capturing means are classified into a binary image and a gradation image, and the densities of the images are then converted using density conversion curves, which are provided for binary images and gradation images, to output an image signal representing converted images, said image processing apparatus comprising:

means for judging the state of a certain pixel and classifying it as one of a plurality of states between binary images and gradation images; and



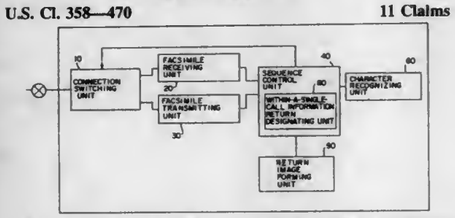
means for selecting, based on the results of the judgment, one curve from a first density conversion curve for binary images, a second density conversion curve for gradation images and at least one third density conversion curve which interpolates the first and second density conversion curves to convert the density of the certain pixel.

5,548,416

INPUT RECEIVING APPARATUS BY USING A FACSIMILE APPARATUS

Norio Kanemitsu, and Hajime Nonogaki, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 117,836, Sep. 8, 1993, abandoned.
This application Jun. 7, 1995, Ser. No. 475,183
Claims priority, application Japan, Sep. 9, 1992, 4-240668
Int. Cl.[6] H04N *1/32*
U.S. Cl. 358—470 **11 Claims**



1. A receiving apparatus for receiving an input from a facsimile apparatus and for returning information to the facsimile apparatus, comprising:

a facsimile receiving means for receiving the input from the facsimile apparatus;

a character recognizing means for recognizing a character included in the received image data;

return image forming means for forming a return image based on the recognition result obtained by said character recognizing means;

a facsimile transmitting means for transmitting a switching signal and the return image to the facsimile apparatus;

connection switching means, operably coupled to said facsimile receiving means and facsimile transmitting means, for performing switching between said facsimile receiving means and facsimile transmitting means by maintaining a line connection state between the facsimile receiving apparatus and the facsimile apparatus at the input source; and

control means for designating operation of said facsimile receiving means, character recognizing means, a return image forming means and facsimile transmitting means in a predetermined sequence,

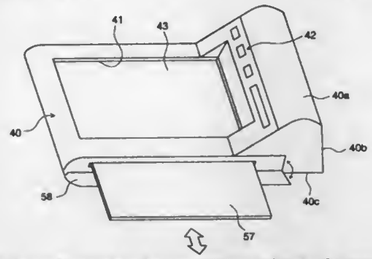
wherein said control means comprises a within-a-single-call information return designating means for instructing said connection switching means to perform switching of a connection and instructing said facsimile transmitting means to transmit the switching signal to the facsimile apparatus when the facsimile receiving apparatus receives a request signal designating a maintenance of the line connection state.

5,548,417

FACSIMILE APPARATUS INCLUDING A SUPPORTING FRAME MEMBER AND IMAGE HOLDING MEMBER AND IMAGE HOLDING MEMBER FORMED AS A DETACHABLE UNIT

Takashi Sekimoto; Yoichi Endo; Hirohiko Yamazaki; Masahiko Yamazaki; Yutaka Ohtani; Takeyoshi Iguchi; Kenji Matsumoto; Hiroyuki Yamazaki; Ryo Takimura, and Takao Tsuda, all of Tokyo, Japan, assignors to Konica Corporation, Japan

Filed Jul. 15, 1994, Ser. No. 275,961
Claims priority, application Japan, Jul. 16, 1993, 5-198922
Int. Cl.[6] H04N *1/04*
U.S. Cl. 385—474 **8 Claims**



1. A facsimile apparatus for transmitting an image, the apparatus comprising:

(a) an image holding member having an endless belt-shape, for holding said image on a surface thereof;

(b) a writing frame device for exposing a predetermined writing frame portion of said image holding member to an outside of said facsimile apparatus;

(c) a reading device in contact with said image holding member for reading said image on said predetermined writing frame portion of said image holding member and for generating image signals corresponding to said image,

wherein said reading device being located in an inside portion of said image holding member whereby said reading device reads said image from a backside of said holding member; and

(d) a transmitter for transmitting said image signals to a predetermined transmission address.

5,548,418

HOLOGRAPHIC STRUCTURED LIGHT GENERATOR

Edwin S. Gaynor, Gaithersburg, Md.; Michael S. Massimi; William P. Blase, both of Alexandria, Va., and Abraham Isser, Silver Spring, Md., assignors to DCS Corporation, Alexandria, Va.

Continuation of Ser. No. 183,279, Jan. 14, 1994, abandoned.
This application Sep. 12, 1995, Ser. No. 527,038
Int. Cl.[6] G02B *5/32;* **G03H** *1/02*
U.S. Cl. 359—20 **93 Claims**

1. An apparatus for generating an array of electromagnetic beamlets comprising:

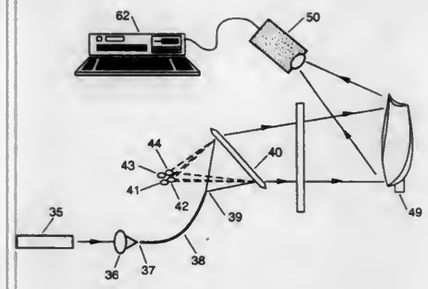
(a) a hologram having an image of three phase-controlled point sources;

(b) a reconstruction electromagnetic source producing a reconstruction beam;

(c) means for directing the reconstruction beam at the hologram; and

(d) means for aligning the reconstruction beam such that three phase-controlled beams are generated from the of the three phase-controlled point sources, said three phase-controlled beams overlapping each other and interfering with each other to produce an ordered array of electromagnetic beamlets,

wherein the three point sources are located at the corners of a triangle in a common plane.

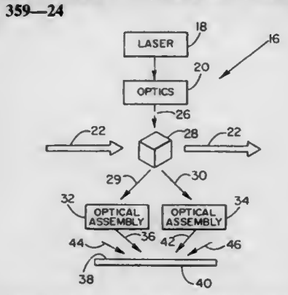


5,548,419

STEREO MULTIPLEXED HOLOGRAPHIC PARTICLE IMAGE VELOCIMETER

Ronald J. Adrian, Champaign; Donald H. Barnhart, and George A. Papen, both of Urbana, all of Ill., assignors to University of Illinois, Champaign/Urbana, Ill.

Filed Jun. 20, 1994, Ser. No. 262,232
Int. Cl.[6] G02B *27/22;* **G01B** *9/025;* **G03H** *1/28*
U.S. Cl. 359—24 **26 Claims**



1. A system for holographically recording images produced by a moving fluid, including:

a means for generating coherent illuminating energy in the form of temporally spaced pulses, and for directing the pulsed energy in a path that intersects a fluid stream including a fluid and light scattering elements carried in the fluid, said pulsed energy illuminating a volumetric region within the fluid stream whereby the elements within the volumetric region scatter the coherent energy;

a holographic recording means spaced apart from the volumetric region, for receiving, during each of said pulses, first and second images based on respective first and second different viewing perspectives relative to the volumetric region said holographic recording means comprising a single holographic film plate having a substantially planar receiving surface;

a referencing means for directing a first reference beam of coherent energy onto the holographic recording means during a first one of the pulses, and for directing a second reference beam of coherent energy onto the holographic recording means during a second one of the pulses, whereby the holographic recording means records four images including (i) first and second images based respectively on the first and second perspectives and corresponding to said first pulse, and (ii) third and fourth images based respectively on the first and second perspectives and corresponding to the second pulse;

an image forming optical assembly for collecting different first and second parts of the scattered coherent energy directing the collected energy toward the holographic film plate and focusing the collected energy to form said first and third images based on said first part of the scattered coherent energy, and said second and fourth images based on said second part of the scattered coherent energy, said images of the volumetric region being formed near the receiving surface;

said optical assembly collecting the first and second parts of the scattered coherent energy at respective first and second different locations to provide said first and second different viewing perspectives, and wherein the image forming optical assembly includes respective first and second subassemblies, each subassembly comprising a collection lens, a prism for selectively altering the direction of collected light received from the collecting lens, and a focusing lens receiving light from the prism and focusing the collected light near the receiving surface to form the associated image; and

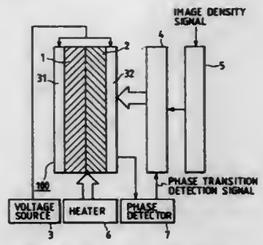
a means for distinguishing the images recorded during the first pulse from the images recorded during the second pulse.

5,548,420

LIQUID-CRYSTAL DISPLAY DEVICE AND METHOD FOR BOTH DISPLAYING FAST MOVING IMAGES AND HOLDING STATIC IMAGES

Minoru Koshimizu; Takeo Kakinuma, and Kensuke Ito, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 15, 1994, Ser. No. 212,764
Claims priority, application Japan, Mar. 16, 1993, 5-055568; Sep. 9, 1993, 5-248650
Int. Cl.[6] G02F *1/13*
U.S. Cl. 359—44 **23 Claims**



1. A liquid-crystal display device, comprising:

a light-controlling layer containing at least a liquid crystal as a component, said liquid crystal exhibiting a smectic A phase at a temperature of an environment of use and making a transition to a nematic phase at a higher temperature;

a photoconductive layer provided on one side of said light-controlling layer and the impedance of which varies in response to the light received;

voltage applying means for applying voltage to said light-controlling layer and said photoconductive layer;

exposing means for writing an image in said light-controlling layer by exposure of said photoconductive layer;

gradation control means for controlling the light transmittance of said light-controlling layer by modulating the output light from said exposing means according to a signal indicative of the multi-level density of said image;

heating means for heating said light-controlling layer until the liquid crystal in said light-controlling layer makes a transition to at least the nematic phase; and

detecting means for outputting a detection signal upon detecting the transition of the liquid crystal in said light-controlling layer from a liquid phase to the nematic phase, exposure of said photoconductive layer being performed on the basis of said detection signal,

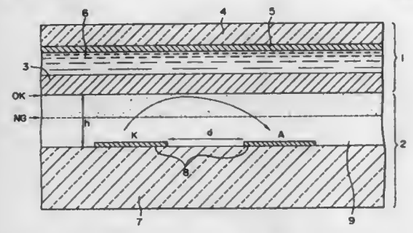
said heating means stopping heating to cool said light-controlling layer to change the state of said liquid crystal from the nematic phase to the smectic A phase, whereby information written in said liquid crystal while said liquid crystal is kept in the nematic phase is kept until the state of said liquid crystal changes again to the nematic phase.

5,548,421

PLASMA ADDRESSING ELECTRO-OPTICAL DEVICE HAVING ELECTRODES ON A PLANAR SURFACE

Shigeki Miyazaki, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 48,507, Apr. 20, 1993, abandoned. This application Apr. 18, 1995, Ser. No. 423,139
Claims priority, application Japan, Apr. 21, 1992, 4-128262
Int. Cl.[6] G02F *1/133;1/1333*
U.S. Cl. 359—54 8 Claims



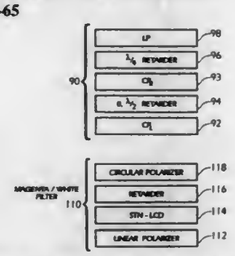
1. A plasma addressed electro-optical device, comprising:
a first substrate having a plurality of first electrodes on a major surface of said first substrate;
a dielectric material sheet spaced from said first substrate;
an electro-optical material layer sandwiched between said first substrate and said dielectric material sheet;
a second substrate having a plurality of second electrodes formed on a major planar surface of said second substrate, said second electrodes extending in substantially parallel relationship to each other, said second substrate and said dielectric material sheet being disposed face-to-face to form a plasma discharge chamber therebetween;
an ionizable gas within said plasma discharge chamber which forms a plasma discharge between adjacent ones of said second electrodes, said plasma discharge chamber having a height of at least about 75% of a distance between said adjacent ones of said second electrodes on said planar major surface to address display elements of the electro-optical device.

5,548,422

NOTCH FILTERS WITH CHOLESTERIC POLARIZERS WITH BIREFRINGENT FILM AND LINEAR POLARIZER

Arlie Conner, Tualatin; Jonathan R. Biles; Terry J. Scheffer, both of Portland, and Gary B. Kingsley, Tualatin, all of Oreg., assignors to In Focus Systems, Inc., Wilsonville, Oreg.

Filed Jun. 28, 1993, Ser. No. 84,874
Int. Cl.[6] G02F *1/1347;1/1335*
U.S. Cl. 359—65 7 Claims



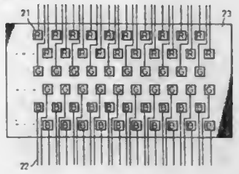
1. An optical notch filter having on and off states comprising:
a first cholesteric layer;
a liquid crystal layer operable in first and second states of birefringence;
a second cholesteric layer; and
at least one passive retardation layer stacked with the liquid crystal layer between the first and second cholesteric layers and operative to compensate the birefringence of the liquid crystal layer in the first state to effect zero retardation of light between the cholesteric layers.

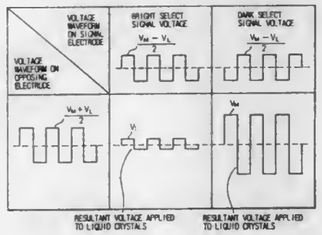
5,548,423

COLOR LIQUID-CRYSTAL SHUTTER ARRAY HAVING UNIQUE PIXEL ARRANGEMENT AND METHOD OF DRIVING THE SAME

Masaaki Natsunaga, Sayama, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Dec. 13, 1993, Ser. No. 165,703
Claims priority, application Japan, Dec. 15, 1992, 4-353771; Jan. 26, 1993, 5-28448
Int. Cl.[6] G02F *1/1335;1/1343;* G09G *3/36*
U.S. Cl. 359—68 8 Claims





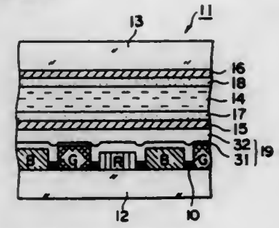
1. A color liquid crystal shutter array, comprising color pixels of a plurality of colors constituted by liquid crystal elements for optically writing a picture onto a photosensitive paper, the pixels being arranged in two rows for each of the colors in a direction at right angles to the direction in which the photosensitive paper moves, the pixels of each of the rows being spaced apart maintaining a pitch equal to the size of the pixel, the rows of pixels of the same color being deviated by one pitch relative to each other in the direction in which the pixels are arranged, and lead electrodes of the pixels extending between the pixels in the direction in which the photosensitive paper moves.

5,548,424

LIQUID CRYSTAL DEVICE HAVING TWO RESINS FILMS FORMED FROM SOLUTIONS OF DIFFERENT VISCOSITIES

Hideaki Takao, Sagamihara; Tatsuo Murata, Atsugi; Junichiro Kanbe; Miki Tamura, both of Yokohama; Masaru Kamio, Atsugi; Nobuyuki Sekimura, Kawasaki, Japan, and Yoshiki Kikuchi, Sagamihara, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 238,345, May 5, 1994, Pat. No. 5,398,126, which is a continuation of Ser. No. 806,099, Dec. 11, 1991, abandoned, which is a division of Ser. No. 416,034, Oct. 2, 1989, Pat. No. 5,101,289, which is a division of Ser. No. 90,703, Aug. 28, 1987, Pat. No. 4,917,471. This application Dec. 5, 1994, Ser. No. 352,756
Claims priority, application Japan, Aug. 30, 1986, 61-202746; Aug. 30, 1986, 61-202747; Aug. 30, 1986, 61-202748; Aug. 30, 1986, 61-202749; Nov. 20, 1986, 61-275352; Jan. 23, 1987, 62-014923
Int. Cl.[6] G02F *1/1335;1/1333;* C09K *19/02*
U.S. Cl. 359—68 26 Claims



1. A liquid crystal device comprising:
(a) a pair of transparent electrodes having a confronting portion formed therebetween;
(b) a pair of substrates, each of said substrates supporting one of said pair of transparent electrodes;
(c) color filters arranged on the inner side of at least one of the above pair of substrates and arranged at positions corresponding to said confronting portions;
(d) resin films arranged adjacent to said color filters, said resin films having a first resin film and a second resin film, said second resin film formed with a resin solution having a viscosity higher than a resin solution from which said first resin film was formed; and
(e) a ferroelectric liquid crystal arranged between said pair of substrates.

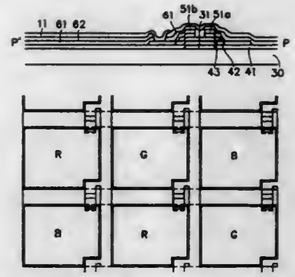
5,548,425

REFLECTIVE LCD HAVING A RESIN-DIFFUSER WITH DISPERSED METAL OXIDE PARTICLES BETWEEN PIXEL ELECTRODES AND SUBSTRATE

Masahiro Adachi, Nara, and Shinji Shimada, Kashihara, both of, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 20, 1994, Ser. No. 277,109
Claims priority, application Japan, Jul. 21, 1993, 5-180490
Int. Cl.[6] G02F *1/1335*
U.S. Cl. 359—69 18 Claims

1. A reflective type display apparatus having a plurality of pixels, comprising:
a first substrate;
a second substrate provided in parallel to the first substrate, the second substrate being transparent to external light;
a plurality of transparent pixel electrodes formed on the first substrate;
a transparent counter electrode layer formed on the second substrate;
a light modulating layer for modulating the external light in accordance with voltages between the plurality of transparent pixel electrodes and the transparent counter electrode, the light modulating layer being interposed between the plurality of transparent pixel electrodes and the transparent counter electrode; and
a light scattering layer in which fine particles are dispersed in a matrix made of a resin, said light scattering layer being interposed between the plurality of transparent pixel electrodes and the first substrate, the light scattering layer diffusely scatters the external light, thereby reducing glare.

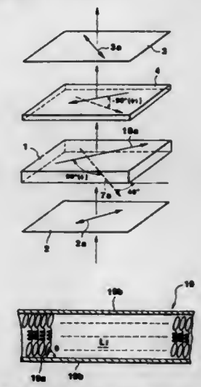


5,548,426

LIQUID CRYSTAL DISPLAY DEVICE

Takashi Miyashita; Yoshinaga Miyazawa, and Zenta Kikuchi, all of Tokyo, Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Jun. 16, 1993, Ser. No. 78,395
Claims priority, application Japan, Jun. 18, 1992, 4-182879; Jun. 18, 1992, 4-182880; Jun. 19, 1992, 4-184758; Jul. 8, 1992, 4-203199; Jul. 10, 1992, 4-206137
Int. Cl.[6] G02F *1/1335;1/1347*
U.S. Cl. 359—73 18 Claims



1. A liquid crystal display device comprising:
a pair of substrates having surfaces which oppose each other and on which electrodes and orientation films covering said electrodes and having undergone orientation processing in predetermined directions are formed;
a nematic liquid crystal layer which is present between said orientation films and in which the arrangement of liquid crystal molecules is twist-aligned within a predetermined range of angles from one substrate to the other;
a pair of polarizing plates arranged outside said pair of substrates to sandwich said substrates; and
at least one twist-aligned retardation plate which is arranged between said pair of polarizing plates and in which polymer molecules are oriented nearly perpendicular with respect to a surface of the plate and the arrangement of the polymer

molecules is twist-aligned over a predetermined range of angles in a direction from one surface to the other.

5,548,427

SWITCHABLE HOLOGRAPHIC APPARATUS

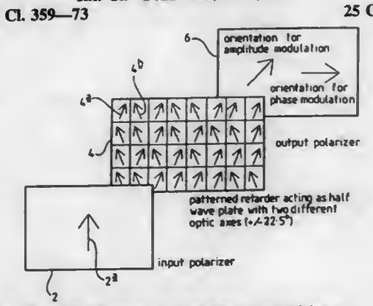
Paul May, Cambridge, United Kingdom, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 20, 1995, Ser. No. 375,595

Claims priority, application United Kingdom, Jan. 21, 1994, 9401194

Int. Cl.[6] G02F *1/13;1/135;1/1335*

U.S. Cl. 359—73 **25 Claims**



1. A switchable holographic apparatus, comprising:
a first polariser having a spatially varying direction of polarisation,
a switchable retarder switchable between first and second states, and
a second polariser, wherein
the switchable retarder is disposed in a radiation path between the first and second polarisers,
the first polariser comprises a plurality of first pixels having respective directions of polarisation arranged at a first angle to a first direction, and
the switchable retarder is pixellated and each pixel of the switchable retarder is associated with a plurality of pixels of the first polariser.

5,548,428

PROCESS FOR INJECTING FERROELECTRIC LIQUID CRYSTAL WITH INJECTION COMPLETED ABOVE ATMOSPHERIC PRESSURE

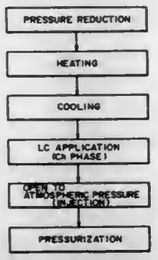
Yuichi Masaki, Kawasaki; Kenji Onuma, Isehara; Toshifumi Yoshioka, Hadano, and Mutsuo Mitsui, Hachiohji, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jnl. 14, 1993, Ser. No. 91,011

Claims priority, application Japan, Jul. 27, 1992, 4-218823; Jul. 27, 1992, 4-218824

Int. Cl.[6] G02F *1/13;1/1341*

U.S. Cl. 359—80 **6 Claims**



1. A process for injecting a liquid crystal showing cholesteric and smectic phases into a liquid crystal panel, comprising:
a first step of reducing pressure within the liquid crystal panel,
a second step of applying the liquid crystal to an injection port of the liquid crystal panel, said liquid crystal panel being maintained at a predetermined pressure,
a third step of causing the liquid crystal to enter into the liquid crystal panel under increasing pressure, and
a fourth step of completing injection of the liquid crystal into the liquid crystal panel under a pressure higher than atmospheric pressure, wherein the liquid crystal panel is held at a higher temperature in the first step than in the second step.

5,548,429

PROCESS FOR PRODUCING LIQUID CRYSTAL DEVICE WHEREBY CURING THE SEALANT TAKES PLACE AFTER PRE-BAKING THE SUBSTRATES

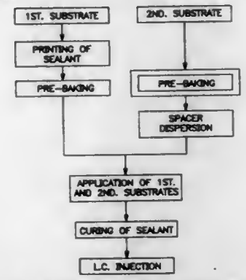
Chikako Tsujita, Atsugi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 14, 1994, Ser. No. 260,212

Claims priority, application Japan, Jun. 14, 1993, 5-165970

Int. Cl.[6] G02F *1/1339;1/13*

U.S. Cl. 359—80 **3 Claims**



1. A process for producing a liquid crystal device, comprising the steps of:
providing a pair of glass substrates including a first and a second substrate each having thereon transparent electrodes,
applying a thermosetting sealant onto a prescribed part of the first substrate and pre-baking the first substrate to pre-bake the thermosetting sealant,
pre-baking the second substrate under an identical condition as the pre-baking of the first substrate,
applying the pre-baked first and second substrates to each other with the pre-baked thermosetting sealant therebetween so that the electrodes thereon oppose each other,
curing the thermosetting sealant to form a blank panel, and
injecting a liquid crystal into the blank panel to form a liquid crystal device.

5,548,430

FLICKERPROOF RETAINING STRUCTURE FOR A LIQUID CRYSTAL DISPLAY HAVING A FRAME BELOW THE SEAL

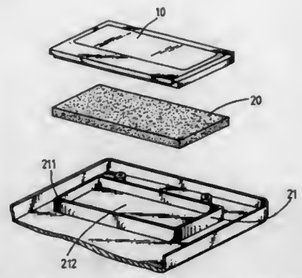
Chunge-De Kuo, Taipei, Taiwan, assignor to Kinpo Electroncis, Inc., Taipei, Taiwan

Filed Dec. 2, 1994, Ser. No. 348,429

Int. Cl.[6] G02F *1/1333;1/1339*

U.S. Cl. 359—80 **2 Claims**

1. A flickerproof retaining structure for a liquid crystal display, comprising a peripheral supporting frame which is on a housing and profiled corresponding to a peripheral sealed portion of said display, said peripheral supporting frame having an upper edge portion supporting and abutting against a bottom face of said sealed portion of said display, whereby a housing deforming force exerted on said housing will be only transmitted through said peripheral supporting frame to said peripheral sealed portion of said display without compressing a liquid crystal zone of said display so that no flickering of characters displayed on said display will take place.



5,548,431

BIDIRECTIONAL MULTI-CHANNEL OPTICAL RING NETWORK USING WDM TECHNIQUES

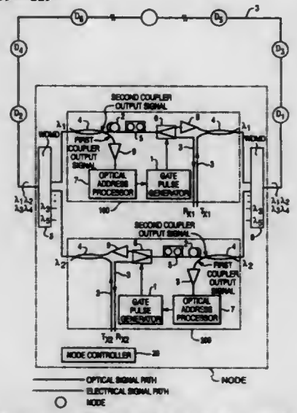
Jong-Dug Shin; Cheul-Shin Kang, and El-Hang Lee, all of Daejeon, Rep. of Korea, assignors to Electronics & Telecommunications Research Inst., Daejeon, Rep. of Korea

Filed Nov. 7, 1994, Ser. No. 335,454

Claims priority, application Rep. of Korea, May 14, 1994, 94-10564

Int. Cl.[6] H04B *10/20;* **H04J** *14/00*

U.S. Cl. 359—119 **4 Claims**



1. A bidirectional all-optical ring network comprising optical cables and a number of nodes linked by said optical cables, whereby optical signals are transferred on the basis of a packet or a cell which is comprised of an address field and a payload, a cell being a fixed size packet, each of said nodes having a first and a second port which are connected to a corresponding port in a next adjacent node, each node including
a first and a second wavelength division multiplexer/demultiplexer (WDM/WDDM) means respectively located at said first and said second ports, said WDM/WDDM means connected to said cables for combining a number of multichannel optical signals into a multiplexed optical signal and for dividing said multiplexed optical signal into a number of multichannel optical signals; and
a pair of packet switching means coupled to said first and second WDM/WDDM means for processing said optical signals,
each of said packet switching means comprising:
an address processor for producing a trigger pulse depending upon an address match of said address field with an address assigned to that node,
an optical switch for selectively transferring said demultiplexed optical signal in response to said trigger pulse, and
a delay line coupled in parallel to said address processor for providing an appropriate delay in the optical path so that said optical switch can be timely operated before the packet of optical signals arrives at the input port of the optical switch.

5,548,432

PASSIVE OPTICAL NETWORK SWITCHABLE BETWEEN AN OPERATIONAL MODE AND A DIAGNOSTIC MODE

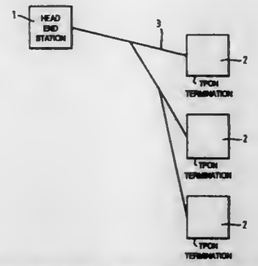
Donald E. A. Clarke; Michael A. Hale, both of Essex, and Jeremy B. Chuter, Suffolk, all of, England, assignors to British Telecommunications public limited comapany, London, England

Continuation of Ser. No. 39,488, Apr. 30, 1993, abandoned. This application Feb. 28, 1995, Ser. No. 395,539

Claims priority, application United Kingdom, Oct. 18, 1990, 9022681

Int. Cl.[6] H04B *9/00*

U.S. Cl. 359—137 **21 Claims**



1. A head-end station for a passive optical network system, the head-end station including means to transmit and receive diagnostic signals and TDMA data frames comprising a header portion and a plurality of basic frames, each basic frame comprising a plurality of traffic bits and a plurality of control bits, the head-end station further including means for detecting an abnormality in an operational mode and for causing the head-end station to switch between the operational mode in which it transmits and receives TDMA data frames and a diagnostic mode in which transmission of data frames is terminated and wherein said head-end station generates and transmits a diagnostic signal onto the passive optical network system and detects any return of the diagnostic signal.

5,548,433

OPTICAL CLOCK RECOVERY

Kevin Smith, Woodbridge, England, assignor to British Telecommunications public limited company, London, England

PCT No. PCT/GB93/00863, § 371 Date Nov. 8, 1994, § 102(e) Date Nov. 8, 1994, PCT Pub. No. WO93/22855, PCT Pub. Date Nov. 11, 1993

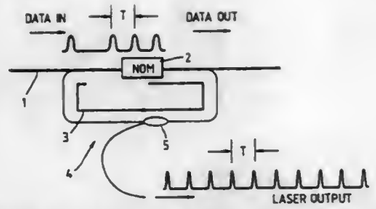
PCT Filed Apr. 26, 1993, Ser. No. 325,360

Claims priority, application European Pat. Off., Apr. 27, 1992, 92303786

Int. Cl.[6] H04B *10/12;10/17*

U.S. Cl. 359—158 **24 Claims**

1. A system for recovery of a clock from an optically encoded signal comprising:
a mode-locked laser including a cavity;
an optically controlled optical modulator in the optical path of the optical cavity of the mode-locked laser;
means for applying an optically encoded input signal to the optically controlled optical modulator; and
means for outputting an optical pulse stream from the system;



wherein the optically controlled optical modulator in response to the optically encoded signal modulates the phase and/or amplitude of light in the laser cavity thereby locking the phase and frequency of the output pulse stream to a timing wave of the optically encoded signal.

5,548,434

SPATIAL LIGHT TRANSMISSION APPARATUS

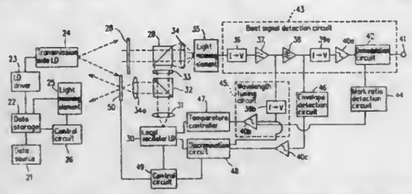
Atsushi Shimonaka, Ikoma; Mototaka Taneya; Hidenori Kawanishi, both of Nara, and Tatsuya Morioka, Tenri, all of, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 30, 1994, Ser. No. 351,224

Claims priority, application Japan, Dec. 1, 1993, 5-301748; Mar. 11, 1994, 6-041508

Int. Cl.[6] H04B *10/00*

U.S. Cl. 359—161 **32 Claims**



1. A spatial coherent light transmitting apparatus comprising:
a first device for emitting a data signal as first coherent light;
a second device for receiving the first coherent light and for producing second coherent light having a wavelength little different from that of the first coherent light, said second device mixing the first and second coherent lights, and performing a coherent detection of the data signal,
each of the first device and the second device having a detection means for detecting at least one of a coherent light transmission state and a coherent light detection state; and
a control means for controlling at least one of the first device and the second device in response to information of the state detected by the detection means.

5,548,435

OPTICAL TRANSMITTER

Yoko Tahara, and Yasunori Nagakubo, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

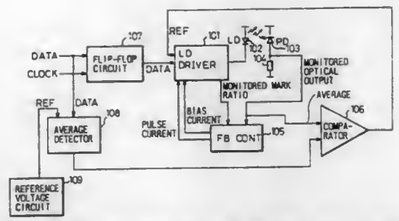
Filed Jan. 9, 1995, Ser. No. 370,165

Claims priority, application Japan, Jun. 22, 1994, 6-140127

Int. Cl.[6] H04B *10/04*

U.S. Cl. 359—180 **13 Claims**

1. An optical transmitter comprising:
optical signal output means for providing an optical output signal according to an electric signal;
monitor means for providing an output representative signal related to the optical output signal;
drive means for determining the logical value of each bit of an input data signal according to a reference voltage and driving the optical signal output means according to the determination;



input signal detection means for providing an input representative signal according to the input data signal; and

duty ratio control means for comparing the input and output representative signals with each other and controlling the reference voltage to the drive means such that the difference between the input and output representative signals is reduced, to thereby optimize the duty ratio of the optical output signal.

5,548,436

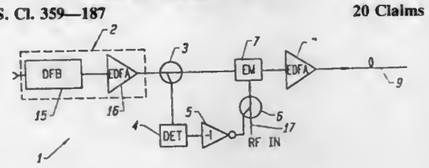
OPTICAL TRANSMISSION SYSTEM

Mani Ramachandran, and Hermann Gysel, both of San Jose, Calif., assignors to Synchronous Communications, Inc., San Jose, Calif.

Continuation of Ser. No. 397,551, Mar. 1, 1995, abandoned, which is a continuation of Ser. No. 97,490, Jul. 27, 1993, abandoned, which is a division of Ser. No. 904,375, Jun. 25, 1992, Pat. No. 5,359,450. This application Nov. 1, 1995, Ser. No. 551,542

Int. Cl.[6] H04B *10/04;10/18*

U.S. Cl. 359—187 **20 Claims**



1. An optical transmission system comprising:
a source of light;
means for providing an electrical noise signal corresponding to noise in the light from the source, but which is shifted 180 degrees relative to the noise in the light from the source; and
means responsive to the light from the source and said electrical noise signal for modulating the light from the source with a combination of said electrical noise signal and an input signal such that said electrical noise signal cancels the noise in the light from the source to provide a substantially noise free data signal for transmission.

5,548,437

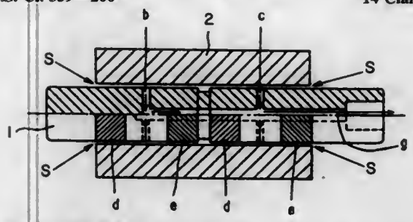
OPTICAL DEFLECTOR PROVIDED WITH SCANNING MIRROR ROTATABLE AROUND SHAFTBY DYNAMIC AIR PRESSURE

Shigeka Yoshimoto, No. 43-8-814, Kameido 1-chome, Koto-ku, Tokyo; Akiyoshi Takahashi, c/o Iruma Branch, Copal Electronics Co., Ltd., No. 110-1, Araku-shimoshinden, Iruma City, Saitama Prefecture; Toshiya Uchida, c/o Iruma Branch, Copal Electronics Co., Ltd., No. 110-1, Araku-shimoshinden, Iruma City, Saitama Prefecture, and Rie Wakashima, c/o Iruma Branch, Copal Electronics Co., Ltd., No. 110-1, Araku-shimoshinden, Iruma City, Saitama Prefecture, all of, Japan

Continuation-in-part of Ser. No. 121,616, Sep. 16, 1993, abandoned. This application Dec. 15, 1994, Ser. No. 356,894

Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—200 **14 Claims**



6. An optical deflector, comprising:
a motor case having an inside wall and a cover, and said motor case further having a shaft mounted therein;
a hub in said motor case, said hub having a scanning mirror thereon;
a cylindrical sleeve disposed so as to be rotatable around said shaft with a clearance between said shaft and said sleeve, said hub being fixed to said cylindrical sleeve, and said cylindrical sleeve having a lower portion with a spacer and magnetic supporting arrangement supporting said cylindrical sleeve in said motor case; and
a motor in said motor case, said motor comprising a ring magnet fitted around said cylindrical sleeve and a yoke having a coil wound therearound fixed to said inside wall of said motor case;
wherein said shaft has a periphery provided with a plurality of pairs of herringbone grooves engraved therein and provided with non-engraved portions between at least some of said pairs of herringbone grooves, a central passage extending through the center of said shaft, said central passage having an outlet at one end thereof communicating with the exterior of said motor case, and radial passages in said shaft each having two opposite ends including a first end thereof connected with said central passage and a second end thereof opening on said periphery of said shaft at central locations in respective said non-engraved portions; and
wherein suction intakes to said plurality of pairs of herringbone grooves are defined between said shaft and said sleeve at outer edges of outer ones of said herringbone grooves.

5,548,438

BIDIRECTIONAL OPTICAL AMPLIFIER

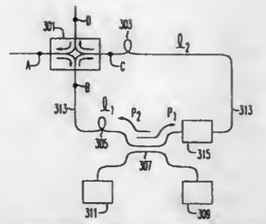
Jean-Marc P. Delavaux, Wescosville, Pa., assignor to AT&T Corp., Murray Hill, N.J.

Filed Dec. 23, 1993, Ser. No. 173,837

Int. Cl.[6] H04B *10/24;* **H01S** *3/30;* **G02B** *6/26*

U.S. Cl. 359—341 **7 Claims**

1. An optical amplifier comprising:
a first optical circulator having first, second, third, and fourth ports;
at least a first fiber amplifier optically connected to said second and third ports, respectively;
means for pumping said at least first fiber amplifier; and



a second fiber amplifier optically connected to said second and third ports.

5,548,439

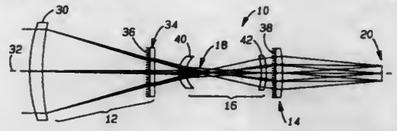
THREE FIELD OF VIEW REFRACTIVE INFRARED TELESCOPE WITH FIXED MEDIUM FILED OF VIEW

Richard R. Smith, Los Angeles, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 27, 1994, Ser. No. 363,846

Int. Cl.[6] G02B *5/30;23/00*

U.S. Cl. 359—353 **13 Claims**



10. A telescope for providing narrow, medium, and wide fields of view comprising:
a pair of objective lenses for receiving and focusing collimated radiation in the thermal infrared band of a viewed object, at least one lens of said objective lens group having a diffractive surface for correcting chromatic aberration;
switching lens group to selectively receive and transmit radiation from at least one of said objective lenses for changing magnification of the telescope and providing said fields of view; and
an eyepiece lens for receiving energy from said objective lens pair and for recollimating the radiation and forming an exit pupil, said eyepiece lens including a diffractive surface for correcting chromatic aberration, wherein said telescope has an entrance pupil having the same location and size for the medium and narrow fields of view to minimize the size of said telescope.

5,548,440

HIGH-REFLECTION SILVER MIRROR

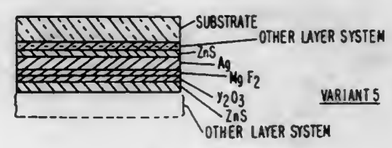
Karl Hohenegger, Balzers, Liechtenstein, and Peter Wierer, Bludenz, Austria, assignors to Balzers Aktiengesellschaft, Balzers, Liechtenstein

Filed Apr. 15, 1994, Ser. No. 228,402

Claims priority, application Switzerland, Apr. 15, 1993, 1139/93

Int. Cl.[6] G02B *5/08;5/26*

U.S. Cl. 359—360 **7 Claims**



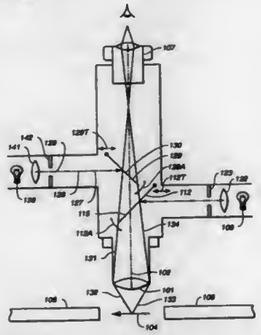
1. A high-reflection silver mirror comprising:
a substrate;
a first layer configuration containing at least one layer, on said substrate;
at least one silver layer on said first layer configuration;
a barrier layer configuration on said at least one silver layer, said barrier layer configuration containing at least one layer, said barrier layer configuration having a thickness of from 5 to 200 nm;
a zinc sulfide layer on said barrier layer configuration, said zinc sulfide layer having a thickness of from 5 to 500 nm; and
a second layer configuration containing at least one layer, on said zinc sulfide layer;
said barrier layer configuration having a thickness which is less than 100 nm, said at least one silver layer, said barrier layer configuration, said zinc sulfide layer and said second layer configuration being selected so that with a light angle of incidence of 45°, and across a light spectrum of 400 nm to 12,500 nm, the silver mirror has a reflection value greater than 96%.

5,548,441

ILLUMINATION SYSTEM AND METHOD FOR A HIGH DEFINITION LIGHT MICROSCOPE

Gary Greenberg, Los Angeles, Calif., assignor to Edge Scientific Instrument Corp., Los Angeles, Calif.

Continuation-in-part of Ser. No. 688,170, Apr. 19, 1991, Pat. No. 5,345,333. This application Mar. 11, 1993, Ser. No. 29,641
Int. Cl.[6] G02B *21/06;21/18*
U.S. Cl. 359—390 **53 Claims**



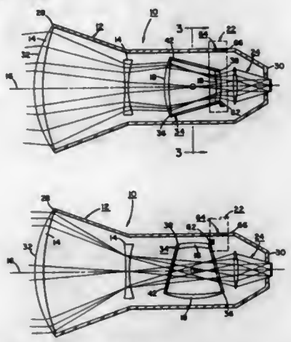
1. In a reflection microscope having a viewing means for viewing the image of a specimen in a field of view and having an objective lens with an optical axis and an aperture, the improvement comprising:
a plurality of independent illuminating light beams each of which passes through the objective lens and illuminates the entire specimen in the field of view, wherein the axis of each of said illuminating light beams follows an illuminating path to the specimen that is oblique to the optical axis of the objective lens, and wherein each of said independent illuminating light beams reflects from the specimen along a reflection path through the objective lens to the viewing means that is oblique to the optical axis of the objective lens and, further, wherein each of said independent illuminating light beams combines with the other said independent illuminating light beams to form the image to be viewed.

5,548,442

OPTICAL SIGHT ASSEMBLY

Gabor Devenyi, West Pentang, and Conrad Stenton, Midland, both of, Canada, assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 8, 1993, Ser. No. 73,824
Int. Cl.[6] G02B *23/00*
U.S. Cl. 359—432 **14 Claims**



1. An optical assembly comprising:
a housing;
a first plurality of optical elements, said first plurality of optical elements being disposed within said housing and defining an optical path;
at least one second optical element, said at least one second optical element being disposed within said housing;
means for selectively introducing or removing said at least one second optical element to or from said optical path, wherein said at least one second optical element is disposed within a support structure, wherein said means for selectively introducing or removing said support structure includes first and second shaft sections affixed to a wall of said support structure, said first shaft section and said second shaft section being disposed on said wall opposite each other such that said support structure can be rotated, wherein said support structure is adapted to be rotated within said housing by said selectively introducing or removing means such that said at least one second optical element is selectively introduced into or removed from said optical path; and
means for magnetically indicating the position of said at least one second optical element within said housing.

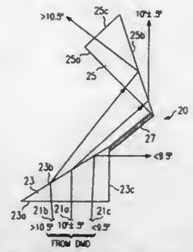
5,548,443

LIGHT SEPARATOR FOR TESTING DMD PERFORMANCE

Austin L. Huang, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 31, 1995, Ser. No. 454,755
Int. Cl.[6] G02B *27/14;5/04*
U.S. Cl. 359—638 **18 Claims**

1. A light separator for testing the tilt angles of one or more mirror elements of a digital micro-mirror device, said mirror elements having tilt angles within a range from under-tilted to over-tilted angles, comprising:
a triangular bottom prism having three faces, a first face for receiving light from individual ones of an away of mirror elements, and a second face angled with respect to the first face such that said second face transmits light from said mirror elements having correct-tilted angles and having over-tilted angles and internally reflects light from said mirror elements having under-tilted angles; and
a triangular top prism having three faces, a first face angled with respect to said second face of said bottom prism such that said second face of said bottom prism such that said first face receives said light transmitted from said face of said bottom



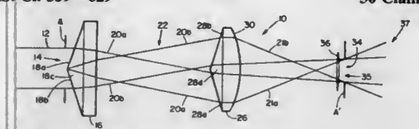
prism, said top prism also having a second face angled with respect to its first face such that said second face transmits said light from said mirror elements having correct-tilted angles and internally reflects said light from said mirror elements having over-tilted angles.

5,548,444

OPTICAL BEAM HOMOGENIZING APPARATUS AND METHOD

Joseph L. McLaughlin, Marblehead, Mass.; Mark R. Fernald, Amherst, N.H., and Kenneth J. Hart, Carlisle, Mass., assignors to Hughes Danbury Optical Systems, Inc., Danbury, Conn.

Filed Jul. 6, 1994, Ser. No. 271,029
Int. Cl.[6] G02B *27/12*
U.S. Cl. 359—629 **30 Claims**



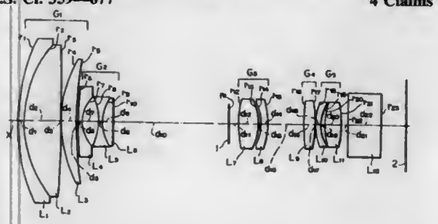
1. An optical beam homogenizer comprising:
an entrance pupil through which an optical beam propagates;
a first optical component having a plurality of flat surfaces for splitting the optical beam into a plurality of beamlets, each beamlet containing light from a respective segment of the entrance pupil; and
a second optical component for receiving the beamlets and forming an image of each segment of the entrance pupil at an image plane, the second optical component directing the beamlets such that images of segments of the entrance pupil are superimposed upon each other at the image plane.

5,548,445

ZOOM LENS SYSTEM

Satoshi Yahagi, Saitama-ken, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama-ken, Japan

Filed Mar. 6, 1995, Ser. No. 398,687
Claims priority, application Japan, Mar. 22, 1994, 6-050334
Int. Cl.[6] G02B *15/15;15/14*
U.S. Cl. 359—677 **4 Claims**



1. A zoom lens system arranged along an optical axis between an object side and an image-forming side to form an image at an image-forming position on the image-forming side, comprising: a first lens group G1 having a positive refracting power, a second lens group G2 having a negative refracting power, a stop, a third lens group G3 having a positive refracting power, a fourth lens group G4 having a positive refracting power and a fifth lens group G5 having a positive refracting power arranged in this order from the object side,
the second and fourth lens groups G2 and G4 being moved with the other lens groups G1, G3 and G5 fixed when zooming,
the second lens group G2 being moved along said optical axis to change focal length of said zoom lens system,
the fourth lens group G4 being moved to correct the image-forming position,
the following formulae (1) and (2) being satisfied,

$$1.1<f_{w(G4+G5)}/(f_w \cdot f_t)^{1/2}<1.3 \quad (1)$$

$$1.2<f_{G3}/(f_w \cdot f_t)^{1/2}<1.8 \quad (2)$$

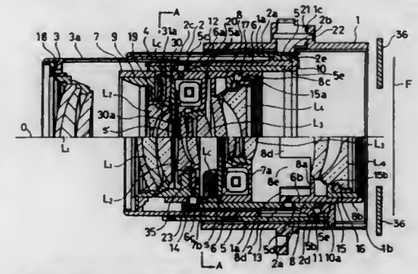
whereio $F_{w(G4+G5)}$ represents combined focal length of the fourth and fifth lens groups G4 and G5 at the wide-side end, f_w represents focal length of said zoom lens system at the wide-side end, f_t represents focal length of said zoom lens system at the tele-side end and f_{G3} represents focal length of the third lens group G3.

5,548,446

LENS BODY TUBE WITH BUILT-IN CONVERTER LENS

Kelji Enomoto, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 5, 1994, Ser. No. 177,398
Claims priority, application Japan, Jan. 13, 1993, 5-021726
Int. Cl.[6] G02B *15/14*
U.S. Cl. 359—695 **4 Claims**



1. A lens body tube comprising:
a built-in converter lens in which a focal length is obtained by detachably inserting the converter lens into a built-in zooming optical system to change its focal length while a plurality of lens groups are relatively moved along an optical axis of the zooming optical system;
a single lens group moving means for relatively moving said plurality of lens group;
said plurality of lens groups constituting said zooming optical system and including:
at least one rotating-moving lens group which is rotated around said optical axis when said lens group moving means is rotated in a predetermined direction; and
a straight moving lens group which is moved along said optical axis;
said converter lens being inserted into said zooming optical system from an escaping position to an acting position, said escaping position being located in said lens body tube;
a length of said lens body tube being sequentially changed in an order of a first state length, a second state length, a third state length and a fourth state length;

the first state leagth being longest and providing a focal length of each of said plurality of lens groups at a first end of a zooming region of said zooming optical system by rotating said lens group moving means in said predetermined direction;

the second state length being a second longest length and providing a focal length of each of said plurality of lens groups at a second end of the zooming region of said zooming optical system by subsequently rotating said lens group moving means;

the third state length being a third longest length set by subsequently rotating said lens group moving means; and

the fourth state length being a shortest focal length set by subsequently rotating said lens group moving means;

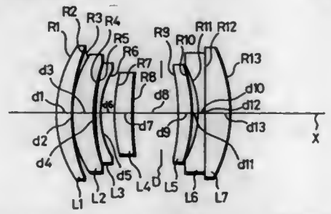
the lens body tube being constructed such that a focal length unable to be obtained within the zooming region of the zooming optical system is obtained by detachably inserting said converter lens via a relative rotating movement caused between said rotating-moving lens group and said straight moving lens group, except during a changing process from said first state length to said third state length, wherein a frame body for holding said converter lens is pivotally supported by a pivotal shaft arranged on a ground plate of a shutter unit which is fixedly attached to said frame body for holding the straight moving lens group opposite to said rotating-moving lens group.

5,548,447

PHOTOGRAPHIC LENS SYSTEM

Nobuaki Toyama, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama-ken, Japan

Filed Mar. 28, 1995, Ser. No. 411,877
Claims priority, application Japan, Mar. 29, 1994, 6-059060
Int. Cl.[6] G02B *9/62*
U.S. Cl. 359—759 **8 Claims**



1. A photographic lens system comprising, in order from an end of the lens system nearest an object to be photographed, a first positive power element having a concave image end surface, a second element having a concave image end surface, a negative power element, a fourth positive power element, a fifth meniscus element of a positive power having a concave object end surface, and a doublet comprising a sixth negative power element having a concave object end surface and a seventh positive power element having a convex image end surface, said photographic lens system satisfying the following conditions:

$$0.28<f/f4<2.55 \quad (1)$$

$$0<f/f5<1.80 \quad (2)$$

$$-1.15<f/f67<0.065 \quad (3)$$

$$-0.55<(R6-R7)/(R6+R7)<-0.17 \quad (4)$$

$$0.03<(R10-R11)/(R10+R11)<0.31 \quad (5)$$

$$-0.45<(R11-R14)/(R11+R14)<0.10 \quad (6)$$

where

f is the overall focal length of the photographic lens system;

f4 is the focal length of the fourth element;

f5 is the focal length of the fifth element;

f67 is the overall focal length of the doublet; and

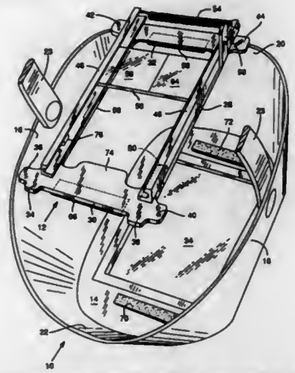
Rn is the radius of the n-th surface from the left of the photographic lens system.

5,548,448

WORK-MAGNIFYING FACE SHIELD

Otto W. Wagner, 10546 S.W. Boones Ferry Rd., Portland, Oreg. 97219

Filed Oct. 17, 1994, Ser. No. 325,771
Int. Cl.[6] G02B *27/02;7/02*
U.S. Cl. 359—802 **9 Claims**



1. A work-magnifying attachment in combination with a face-shielding helmet having front, side, top and bottom walls defining an interior recess having therein a work-viewing window, comprising:

a) a frame,

b) frame mounting means for removably mounting the frame in the recess, opposite the work-viewing window,

c) work-magnifying lens means for magnifying work and mounting means for mounting the work-magnifying lens means on the frame in working position relative to the window,

d) mounting means for mounting the work-magnifying lens means on the frame in working position relative to the window, and

e) the mounting means for mounting the work-magnifying lens means comprising a pair of spaced, substantially parallel rails arranged vertically in the working position of the helmet, the lens means being engaged releasably frictionally by the rails, and adjustment means associated with one of the rails for adjusting it in and out of engagement with the lens means, thereby permitting it to adjust between working and storage positions on the frame.

5,548,449

OBJECTIVE-LENS ACTUATOR

Tsutomu Matsui, and Yuki Fujimura, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jun. 7, 1994, Ser. No. 255,930
Claims priority, application Japan, Jun. 7, 1993, 5-135497
Int. Cl.[6] G02B *7/02*
U.S. Cl. 359—814 **6 Claims**

6. An actuator for an objective lens, comprising:

a lens holder for holding said objective lens;

focus and tracking drive coils mounted on said lens holder;

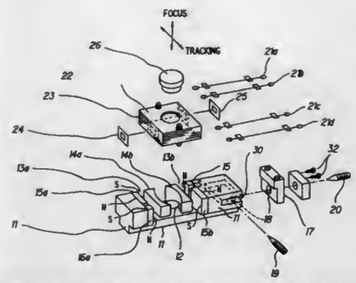
a magnet assembly provided on a base, said magnet assembly generating magnetic fields in opposite directions, and said magnetic fields interacting with a magnetic flux generated by an energized coil of said focus and tracking drive coils, thereby generating at least one of focus and tracking forces acting on said lens holder; and

a spring assembly for resiliently supporting said lens holder on said base;

wherein said focus drive coil is on a circumferential outer surface of said lens holder;

said tracking drive coil comprises first and second flat and rectangular coils provided on said focus coil to be positioned opposite relative to a central axis of said lens holder; and

said magnet assembly consists of first and second magnets positioned opposite relative to said central axis, each of said first and second magnet consisting of a wide magnet and a narrow magnet, said narrow magnet facing a half portion of a corresponding one of said first and second flat and rectangular coils, while said wide magnet facing a remaining half portion of said corresponding one and a portion of said focus coil.

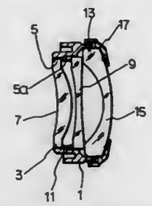


5,548,450

DEVICE FOR ADJUSTING AIR GAP BETWEEN LENSES

Geon-mo Kang, Kyeongsangnam-do, Rep. of Korea, assignor to Samsung Aerospace Industries, Ltd., Kyeongsangnam-do, Rep. of Korea

Filed Dec. 21, 1994, Ser. No. 360,287
Claims priority, application Rep. of Korea, Dec. 22, 1993, 93-29032
Int. Cl.[6] G02B *07/02*
U.S. Cl. 359—822 **4 Claims**



1. A device for adjusting an air gap between lenses, comprising:

a lens barrel;

first and second lenses within the lens barrel;

an elastic means within the lens barrel between the first and second lenses for maintaining an air gap between the first and second lenses; and

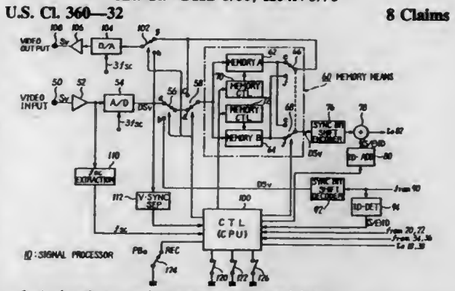
a retainer attachable to the lens barrel, the elastic means being compressed or expanded by tightening or loosening the retainer with respect to the lens barrel to adjust the air gap between the first and second lenses to an optimum value.

5,548,451

RECORDING AND REPRODUCING METHOD AND APPARATUS FOR A DIGITAL AUDIO SIGNAL AND A DIGITAL VIDEO SIGNAL

Mamoru Niki, Koshigaya; Yoshiaki Hosaka, Tokyo; Takao Mogi, Utsunomiya, and Haruo Saito, Kuki, all of, Japan, assignors to AIWA Co., Ltd., Tokyo, Japan

Division of Ser. No. 4,195, Jan. 13, 1993, Pat. No. 5,315,446, which is a continuation of Ser. No. 553,583, Jun. 5, 1990, abandoned. This application Mar. 10, 1994, Ser. No. 209,798
Claims priority, application Japan, Jun. 13, 1989, 1-151217; Jun. 13, 1989, 1-151220; Jun. 13, 1989, 1-151221; Jun. 13, 1989, 1-151222; Jun. 13, 1989, 1-151223
Int. Cl.[6] G11B *5/00;* **H04N** *5/76*
U.S. Cl. 360—32 **8 Claims**



1. A signal processing apparatus, comprising:

mixing means for forming an (N+M)-bit recording digital signal (N, M: positive integers) by mixing an N-bit digital audio signal as higher bits and an M-bit digital video signal, wherein the N-bit digital audio signal has been obtained by digitizing in response to a first sampling clock, and the M-bit digital video signal has been obtained by digitizing in response to a second sampling clock, said mixing means comprising a timing conversion means receiving said M-bit digital video signal for synchronizing the digital video signal with the digital audio signal; and

separation means for separating a retrieved (N+M)-bit digital signal into a separated N-bit digital audio signal and a separated M-bit digital video signal;

wherein the separated M-bit digital video signal from said separation means is processed by said timing conversion means,

said timing conversion means includes memory means having at least a pair of memories for digital data of fields of the digital video signal,

an input selection switch is provided at the input side of said memory means and is operative in a postrecording mode,

said input selection switch receives and selects an input video signal from a first one of said at least a pair of memories of said memory means,

the input video signal from said first memory of said memory means is written into a second one of said at least a pair of memories through said input selection switch when the postrecording mode is selected, and

the video signal read from said second memory and to be provided for recording is coincident with the video signal read from said first memory when the post recording mode is selected.

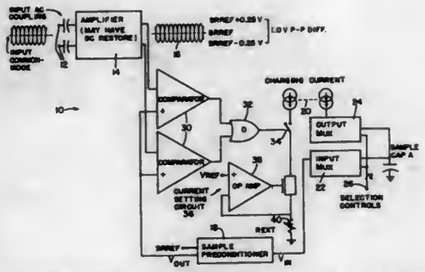
5,548,452

QUAD BURST SERVO DEMODULATOR WITH ADJUSTABLE SLEW RATE FOR HARD DISK DRIVES

Anthony R. Bonaccio, Shelburne, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 15, 1994, Ser. No. 356,984
Int. Cl.[6] G11B *5/09*
U.S. Cl. 360—46 **12 Claims**

1. A circuit in a controller comprising:



detecting means for detecting a peak voltage of an input signal occurring at a predetermined time interval, wherein said detecting means further includes:

an amplifier for converting said input signal to an amplified signal which is symmetric about a predetermined common-mode level;

a level shifter for shifting the voltage on said capacitive means to an output voltage referenced to said predetermined common-mode level;

comparator means for comparing the amplified signal produced by said amplifier to the output voltage of said level shifter;

capacitive means for holding a voltage proportional to said detected peak voltage; and

an adjustable current source, coupled to said detecting means and said capacitive means, for setting and producing a chafing current, said charging current charging said capacitive means to said proportional voltage.

5,548,453

REPRODUCING CIRCUIT FOR MAGNETO-RESISTIVE HEAD HAVING AN INITIAL AMPLIFYING STAGE, A DIFFERENTIAL AMPLIFYING STAGE, AND MEANS FOR CONTROLLING THE TIME OF OPERATION THEREOF

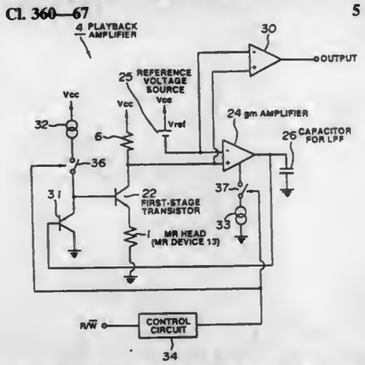
Yasuo Sasaki, Kanagawa; Munekatsu Fukuyama, Tokyo, and Kazuo Kurihara, Kanagawa, all of, Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 146,708, Nov. 1, 1993, abandoned. This application Jun. 23, 1994, Ser. No. 264,716

Claims priority, application Japan, Oct. 30, 1992, 4-293307; Mar. 18, 1993, 5-058675; Mar. 31, 1993, 5-097150

Int. Cl.[6] G11B *5/02*; H03F *1/02;3/45*

U.S. Cl. 360—67 **5 Claims**



1. A recording/reproducing apparatus for a magneto-resistive head comprising

an initial-stage amplifying means for amplifying an output signal from a magneto-resistive head,

a voltage-to-current converting amplifier for amplifying a differential signal between an output signal of said initial-stage amplifying means and a reference voltage,

feedback means for feeding back an output signal of said voltage-to-current converting amplifying means to an input side of said an initial-stage amplifying means, and

controlling means for causing a first on-off timing of said differential amplifier, and a second on-off timing of said an initial-stage amplifying means, said first and second timings being different with respect to each other.

5,548,454

INFORMATION RECORDING DISK, ITS PRODUCTION METHOD AND RECORDING APPARATUS

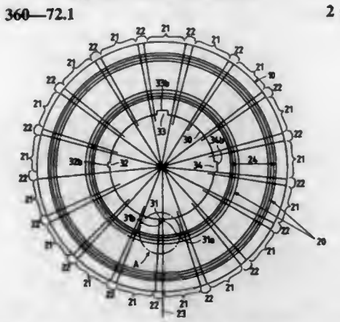
Youichi Kawakubo, Tokorozawa; Yoshio Kawamura, Kokubunji, and Yosuke Seo, Sagamihara, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 25, 1990, Ser. No. 470,335

Claims priority, application Japan, Jan. 27, 1989, 1-16443

Int. Cl.[6] G11B *15/18;5/596*

U.S. Cl. 360—72.1 **2 Claims**



1. A disk drive for rotatably driving an information recording disk of the type having inner and outer diameter edges and opposed surfaces, for carrying information to be read by an information convertor, comprising:

means establishing a center of rotation;

a plurality of positioning servo signal means for signaling track alignment information to an information convertor and being on one of the surfaces of the disk, and each being constructed of a permanent change of said one surface, said positioning servo signal means being spaced circumferentially about said disk sufficiently to define a signal center of symmetry, and each of said positioning servo signal means further being repeated in the radial direction with respect to said center of rotation, wherein the eccentric distance of said signal center of symmetry from said center of rotation is smaller than half the repeating unit length of said positioning servo signal means in the radial direction;

the information recording disk including a notch having two circumferentially-spaced opposed abutment surfaces on one of said inner and outer diameter edges for referencing said signal center of symmetry and for abutment reference with a disk mounting of the disk drive for determining said center of rotation, wherein said notch includes a third abutment surface for abutment reference with the disk mounting for determining the angular position of said positioning servo signal means; and

a hub mounting said disk.

5,548,455

MOTOR CONTROL APPARATUS USIGN SPEED AND PHASE CONTROL IN A FIRST LOOP AND PHASE CONTROL IN A SECOND LOOP SERIES WITH THE FIRST LOOP

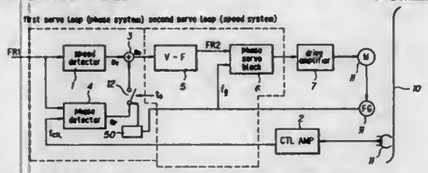
Tsugeo Sato, Kanagawa, Japan, assignor to Sony Corporation, Japan

Filed Apr. 12, 1994, Ser. No. 225,983

Claims priority, application Japan, Apr. 16, 1993, 5-112436

Int. Cl.[6] G11B *15/52*; G05B *1/02*

U.S. Cl. 360—73.11 **6 Claims**



1. An apparatus for controlling a motor, comprising:

a first servo loop for controlling a rotational phase of said motor and a second servo loop for controlling a speed of said motor wherein a first control signal output from said first servo loop is input to said second servo loop and said motor is controlled based upon a second control signal output from said second servo loop;

wherein said first servo loop comprises:

speed detecting means for outputting a voltage corresponding to a frequency of a first reference signal for setting the rotational speed of the motor;

phase comparing means for comparing a phase of said first reference signal with a phase of a control signal generated by a control head; and

adding means for adding an output of said speed detecting means to an output of said phase comparing means, an output signal of said adding means being said first control signal; and

wherein said second servo loop comprises:

a voltage-to-frequency converter for producing a second reference signal having a frequency higher than the frequency of said first reference signal; and

a phase servo block for comparing said second reference signal with a speed signal representative of the rotational speed of said motor to control the rotational speed of the motor, an output signal of said phase servo block being said second control signal.

5,548,456

DECK MECHANISM FOR MAGNETIC RECORD AND PLAYBACK DEVICE

Hong J. Jin, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 873,184, Apr. 24, 1992, abandoned. This application Dec. 12, 1994, Ser. No. 355,316

Claims priority, application Rep. of Korea, Apr. 24, 1991, 6600/1991

Int. Cl.[6] G11B *5/027;15/00*

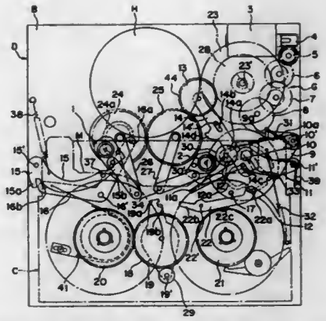
U.S. Cl. 360—85 **4 Claims**

1. A deck mechanism for a magnetic record and playback device comprising:

a pair of slant post assemblies provided to correspond to a supply reel and a take-up reel of a tape cassette for drawing a tape out of said tape cassette such that the tape is located along a predetermined travel path and return the tape to the tape cassette, respectively;

a pair of loading gears operatively connected to said slant post assemblies by means of a pair of loading levers for moving the slant post assemblies between their tape loading and unloading positions, according to rotations thereof, respectively;

a loading motor;



a capstan motor provided with a capstan shaft to which a driving gear is fixed by mounted;

a pinch roller pressed against said capstan shaft so as to pinch the tape therebetween;

a reel latch to selectively prevent said take-up reel of the tape cassette from rotating;

a cam gear operatively connected to both said loading motor and said reel latch so as to transmit a drive power of the loading motor to the reel latch;

clutch means for selectively transmitting/not transmitting a drive power of said capstan motor from said driving gear to a take-up reel-side one of said pair of loading gears; and

mode sensing means for sensing loading and unloading modes of said deck mechanism, wherein said mode sensing means comprises a pair of rotary type mode switches for stopping the rotation of said cam gear, driving said capstan motor so as to load or unload tape travel guide elements in accordance with a selected mode, and then sensing the rotated position of said loading gear so as to drive the cam gear by the drive power of the loading motor, said switches being disposed below the loading gear and the cam gear, respectively, wherein said mode sensing means senses the loading start and loading end states and senses an operation mode such as a playing mode;

wherein said deck mechanism moves the slant post assemblies by using the drive power of the capstan motor during loading and unloading mode intervals, simultaneously with locating slant post assemblies at loading completion positions thereof, while it transmits the drive power of the loading motor to said cam gear during other mode intervals.

5,548,457

DISK DRIVE DISK STACK CLAMP

Peter E. Brooks, Rochester, and David F. Glaess, Rochester, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 976,119, Nov. 13, 1992, abandoned. This application Sep. 28, 1994, Ser. No. 314,577

Int. Cl.[6] G11B *17/02*

U.S. Cl. 360—98.08 **23 Claims**

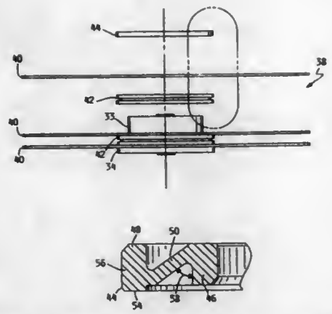
10. A disk drive comprising:

a hub having a first diameter;

at least one disk having an opening therein, said opening having a second diameter, said first diameter and said second diameter being nearly equal;

a one piece clamp ring for clamping the at least one disk to the hub to form a disk stack in a disk drive and wherein said clamp ring is thermally expanded, placed on at least one disk, and contracted to provide a clamping force, said clamp ring further comprising:

a first portion for gripping the outer surface of the hub at a portion having said first diameter and not extending above an upper surface of the hub;



a second portion, one of the first or second portions being more compliant in an axial direction than the other of said first or second portions; and

a disk clamping portion, said second portion attached to said first portion and to said disk clamping portion, wherein the second portion of the clamp ring is attached to the first portion at an angle which slopes downward from the first portion to said disk clamping portion.

5,548,458

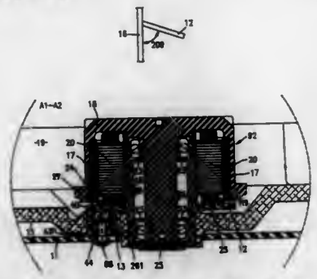
SUPPORT FLANGE HAVING ELECTRICAL CONTACTS TO PROVIDE ELECTRICAL CONTINUITY UPON SPINDLE MOTOR MOUNTING TO BASE

Robert M. Pelstring, Santa Cruz; Klaus D. Kloeppel, Watsonville; John C. Dunfield, Santa Cruz; Michael K. Andrews, Soquel, and Clifford T. Jue, Santa Cruz, all of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed May 4, 1994, Ser. No. 238,638

Int. Cl.[6] G11B *17/02*

U.S. Cl. 360—99.08 **1 Claim**



1. In a hard disc drive assembly includiog a base, a spindle motor, and a driver board, the spindle motor including a rotor, a stator, and a stator sleeve, the stator including coupling wires, an apparatus comprising:

a support flange located below the stator, the support flange being bonded to an outer diameter of the stator sleeve; the support flange including a circuit, the coupling wires for mating with solder pads on the support flange, the solder pads being in electrical continuity with traces of the circuit; and

a connector having contacting elements for electrical continuity mating with the traces of the circuit and with the driver board, the connector being disposed in and through the base;

the contacting elements of the connector being put into electrical continuity with the traces of the circuit by mechanical mounting of the spindle motor to the base;

the support flange being connected to the stator sleeve at a predetermined bias angle, the bias angle being other than ninety degrees to an axis of rotation of the spindle motor.

5,548,459

FLOATING MAGNETIC HEAD

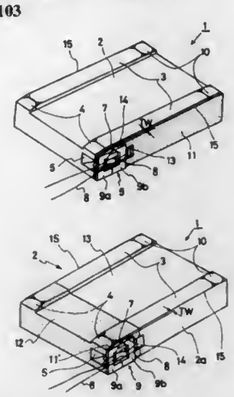
Motoji Egawa; Tetsuji Fujita; Akinobu Sano, and Kazutoshi Takayanagi, all of Shizuoka-ken, Japan, assignors to Minebea Co., Ltd., Nagano-ken, Japan

Continuation of Ser. No. 158,279, Nov. 29, 1993, abandoned. This application Feb. 21, 1995, Ser. No. 390,947

Claims priority, application Japan, Dec. 14, 1992, 4-353664; Dec. 25, 1992, 4-359659

Int. Cl.[6] G11B *5/60*

U.S. Cl. 360—103 **2 Claims**



1. A floating magnetic head comprising:

a substantially rectangular slider made of a magnetic substance and having leading and trailing ends, the slider being provided with a groove which gradually increases in depth along a side of the slider extending toward the trailing end, the groove forming a first opening in the trailing end and a second opening in the side;

rails mounted on a floating surface of the slider which is opposite to a magnetic recording medium to produce a floating force, the floating surface being substantially perpendicular to the side of the slider;

a spacer made from a non-magnetic substance and bonded to an outer surface of the side of the slider with glass;

a head core located on the spacer and having a first leg and a second leg, the second leg being located at the trailing end of the slider without protruding from the trailing end such that the first leg is located between the second leg and the leading end of the slider, the head core having a read/write gap;

a chamfered portion formed in the head core opposite to a bonding surface of the head core to create an inclined surface; and

a first coil wound around the first leg in a first sense and a second coil wound around the second leg in a second sense opposite to the first sense, the first and second coils being connected in series, the first coil and the second coil being at least partially in the groove, wherein a length of the spacer measured in a longitudinal direction of the slider is equal to or greater than a length of the head core measured in the longitudinal direction of the slider and a length of the groove measured in the longitudinal direction of the slider is greater than a length of the head core measured in the longitudinal direction of the slider.

5,548,460

TAPE CASSETTE HAVING AN ESCAPE SLOT ARRANGEMENT

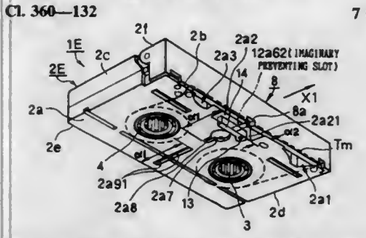
Tsunehisa Ohira; Hiroyuki Umeda, both of Sagamihara, and Toshio Imamura, Yokohama, all of, Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Aug. 25, 1994, Ser. No. 296,102

Claims priority, application Japan, Aug. 26, 1993, 5-234222; Aug. 31, 1993, 5-239167; Jan. 12, 1994, 6-014005

Int. Cl.[6] G11B *23/02*

U.S. Cl. 360—132 **7 Claims**



1. A tape cassette used for a magnetic recording and reproducing apparatus comprising:

a case being a rectangular box-like shape having front, rear and side portions, a length of the front and rear portions being longer than a length of the side portions, the case having a loading pocket provided along the front portion;

a magnetic tape wound on a pair of reels accommodated in the case and extended along the loading pocket;

a front lid provided at the front portion in opening and closing manners to respectively expose and cover the magnetic tape;

first slot means provided on said bottom of the case along a center line substantially equidistant from said side portions of said case and communicating with the loading pocket for preventing erroneous insertion of the tape cassette into the magnetic recording and reproducing apparatus, the first slot means extending along a normal insertion direction of the tape cassette for allowing the tape cassette to be inserted in the normal insertion direction, with the front lid being forward, into a cassette holder having an erroneous insertion preventing and detecting member provided in the magnetic recording and reproducing apparatus, causing the erroneous insertion preventing and detecting member to be engaged with the first slot means; and

second slot means having a predetermined depth provided on the bottom of the case and having a first and second end aligned with said first slot means with said second end being nearby the rear portion of said case, leaving a predetermined small space from a wall of the rear portion, the second slot means being disposed along an erroneous insertion direction of the tape cassette for allowing the erroneous insertion thereof, with the rear portion being forward into the cassette holder, causing the erroneous insertion preventing and detecting member to be inserted into the second slot means after the wall of the rear portion overriding the erroneous insertion preventing and detecting member upon further insertion of the tape cassette in the erroneous insertion direction, said second slot means having a tapered wall at said second end thereof, said tapered wall being inclined in the direction of said depth of said second slot means so as to allow the erroneous insertion preventing and detecting member to escape from the second slot means in a direction parallel to said side portion of said case.

2. An improved tape cassette for use in a magnetic recording and reproducing apparatus, said improved tape cassette comprising:

a case being a rectangular box-like shape having front and rear portions, a side portion, and a loading pocket provided along the front portion, said loading pocket having a front wall;

a magnetic tape for recording and reproducing information signals thereon, the magnetic tape being wound on a pair of reels accommodated in the case of said improved tape cassette and extended along the loading pocket;

a front lid provided at the front portion of said case in opening and closing manners to respectively expose and cover the magnetic tape, wherein said improved tape cassette can be inserted, with the front lid being forward, into a cassette holder of said magnetic recording and reproducing apparatus for said improved tape cassette;

an erroneous insertion preventing slot communicating with said loading pocket of said improved tape cassette, the erroneous insertion preventing slot having a length substantially identical to a length from the front portion of said case to said front wall of the loading pocket;

a door provided on the front wall of the loading pocket of said improved tape cassette and being mounted in opening and closing manners; and

an escaping slot provided on a bottom of the case of said improved tape cassette and behind said door, said escaping slot being arranged along a line including said erroneous insertion preventing slot, the escaping slot extending in an inserting direction of said improved tape cassette into the magnetic recording and reproducing apparatus, the magnetic recording and reproducing apparatus having an erroneous insertion preventing and detection member, means for allowing the door to open toward the front portion of the case and preventing said door from opening toward the rear portion of the improved tape cassette, wherein said improved tape cassette is allowed to be erroneously inserted into the cassette holder by causing said erroneous insertion preventing and detecting member of said apparatus to be inserted into the escaping slot after the door held in a closed state overrides the erroneous insertion preventing and detecting member, and the improved tape cassette is allowed to be retracted by causing the door to be opened when the tape cassette is ejected from the magnetic recording and reproducing apparatus.

5,548,461

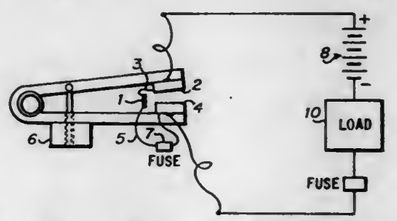
ARC SUPPRESSOR

Jesse C. James, Huntsville, Ala., assignor to McDonnell Douglas Corporation, Huntington Beach, Calif.

Continuation-in-part of Ser. No. 273,576, Jul. 11, 1994. This application Oct. 5, 1994, Ser. No. 318,442

Int. Cl.[6] H01H *9/30*

U.S. Cl. 361—13 **14 Claims**



1. An improved protective circuit for an electrical device supplied with electrical power from an electric source, said electrical device producing an electric arc, and said electric arc emitting radiant energy, and arc suppressing means for extinguishing said electric arc, the improvement wherein said arc suppressing means comprises:

photoconductor means, said photoconductor means being optically coupled to said electrical device for receiving radiant energy produced by said arc, said photoconductor means, normally being in an electrical non-conductive state, and being placed in an electrically conductive state in response to illumination from said arc; and

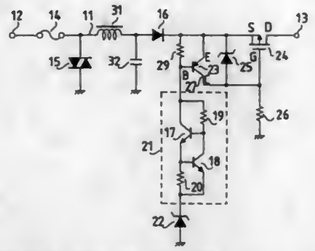
circuit means connecting said photoconductor means in shunt of said electric device, whereby, upon detection of light generated by said arc, electrical power is diverted from said electrical device to extinguish said arc.

5,548,462

PROTECTIVE CIRCUIT

Tetsuro Uchida, and Kazuhide Ohira, both of Kanagawa, Japan, assignors to Mitsumi Electric Co., Ltd., Tokyo, Japan

Filed Oct. 26, 1994, Ser. No. 329,703
Claims priority, application Japan, Dec. 29, 1993, 5-076031 U
Int. Cl.[6] H02H 7/10
U.S. Cl. 361—18 20 Claims



1. A protective circuit unit comprising:

an analog switch connected to a direct current (DC) power line which is connected to a power source circuit of an electronic device;

a main constant voltage diode connected to the DC power line, wherein an input applied to a control terminal of the analog switch is controlled by current flowing in the main constant voltage diode so as to turn off the analog switch when a supply voltage of said DC power line is higher than a predetermined value; and

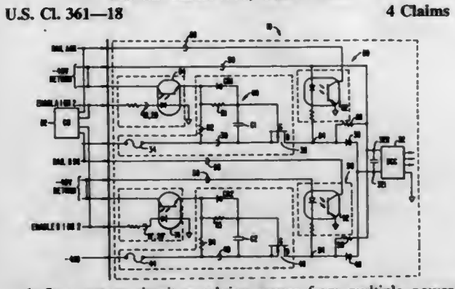
a current limitation circuit connected in series between said main constant voltage diode and said DC power line.

5,548,463

SYSTEM FOR SWITCHING POWER AND SCRUBBING POWER MIXING DEVICES FOR FAULTS

David L. Aldridge, Dripping Springs; William P. Bunton, Pflugerville; Stephen R. Bissell, Austin; David Brown, Austin; Daniel D. Gunn, Austin; Carl Kagy, Cedar Park, and David P. Sonnier, Austin, all of Tex., assignors to Tandem Computers Incorporated, Cupertino, Calif.

Continuation of Ser. No. 268,699, Jun. 30, 1994, abandoned. This application Jan. 11, 1996, Ser. No. 578,883
Int. Cl.[6] H02H 7/00; G01R 31/26
U.S. Cl. 361—18 4 Claims



1. In a power circuit supplying power from multiple power supplies to device having a power input port, a system for detecting latent faults in power mixing devices comprising:

a first power rail coupling a first power source to the power input port, said first power rail including a first power pass transistor and a first isolation diode coupled in series, and having a first test node between said first power pass transistor and said first isolation diode, with said first isolation diode for coupling said first test node to the power input port of the device and for isolating the first test node from other power sources unless said first isolation diode has a short circuit fault;

a second power rail coupling a second power source to the power input port, said second power rail including a second power pass transistor and a second isolation diode coupled in series, and having a second test node between said second power pass transistor and said second isolation diode, with said second isolation diode for coupling said second test node to the power input port of the device and for isolating the second test node from other power sources unless said second isolation diode has a short circuit fault;

a first switching circuit, coupled to receive a first enable signal and coupled to said first power pass transistor, for turning on said first power pass transistor when said first enable signal is asserted to couple said first power source to said first test node to energize said first test node unless said first power pass transistor has an open circuit fault;

a second switching circuit, coupled to receive a second enable signal and coupled to said second power pass transistor, for turning on said second power pass transistor when said second enable signal is asserted to couple said second power source to said second test node to energize said second test node unless said second power pass transistor has an open circuit fault;

a first test circuit, coupled to said first test node, for asserting a first OK signal if said first test node is energized;

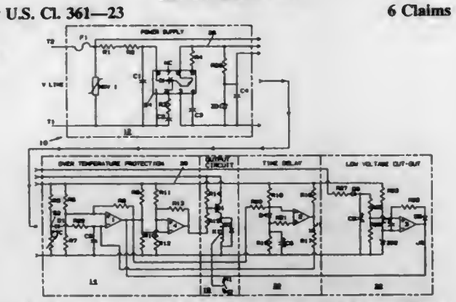
a second test circuit, coupled to said second test node, for asserting a second OK signal if said second test node is energized, where said first OK signal is negated in the case where said first enable signal is asserted and said power pass transistor has an open circuit fault so that a latent open circuit in the first power pass transistor can be detected, and where said first OK signal is asserted in the case where said first enable signal is negated, said second enable signal is asserted and said first isolation diode has a short circuit fault so that said first isolation diode can be scrubbed for faults.

5,548,464

ELECTRONIC MOTOR PROTECTION APPARATUS

William R. Manning, North Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 260,627, Jun. 16, 1994, abandoned, which is a continuation of Ser. No. 943,254, Sep. 10, 1992, abandoned. This application Dec. 7, 1994, Ser. No. 350,778
Int. Cl.[6] H02H 5/04
U.S. Cl. 361—23 6 Claims



1. An electronic motor protection system for de-energizing a motor upon the occurrence of selected conditions comprising a housing, the housing containing a power supply section, control circuitry for detecting the existence of the selected conditions and an output circuit responsive to a signal from the control circuitry for controlling the state of energization of the motor, the power supply section including solid state switch means, the solid state switch means having a switching pre-regulator connected across line voltage adapted to turn on every cycle for a portion of only one-half cycle beginning at zero crossing of the AC voltage wave,

the solid state switch means including an input pin connected externally to line voltage and internally to a rectifying diode and a serially connected first SCR, the first SCR having a gate, a second SCR having main electrodes connected to the gate of the first SCR and to an AC return line, an energy storage capacitor and a charging resistor connected to the first SCR and adapted to be charged by current flow through the first SCR, the storage capacitor coupled to a voltage regulator, the voltage regulator having an output voltage, means to compare the voltage of the storage capacitor with a reference and to turn on the second SCR when the voltage of the storage capacitor exceeds the reference plus the output voltage of the voltage regulator to thereby turn off the first SCR, the means to turn on the second SCR includes an anode gate connected to the second SCR, a diode connected between the anode gate and the AC return line, and a pull-up capacitor, the diode having a cathode, the cathode connected to the anode gate and to the pull-up capacitor, the other side of the capacitor connected to the input pin whereby a high impedance will be maintained at the anode gate by the pull-up capacitor and the diode together and will prevent current flow to the AC return line when subjected to transient noise conditions,

a feedback component external to the solid state switch means coupled to the voltage regulator to provide a preselected level of DC output voltage,

the output circuit comprising a relay coil serially connected to a solid state switch having a base, the coil and solid state switch being connected across the preselected level of DC output voltage,

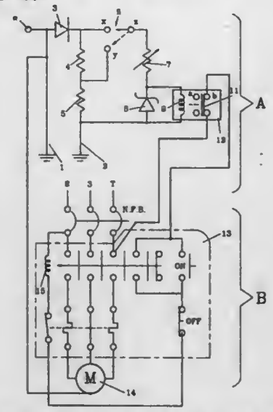
the control circuitry coupled to the power supply section comprising a voltage divider network including a temperature dependent resistor for developing a voltage which varies in accordance with the existence and non-existence of the selected conditions, first comparator means having a fixed reference voltage for comparing the developed voltage with a reference voltage, the first comparator means having an output coupled to the base of the solid state switch in the output circuit and being adapted to control the conduction of the solid state switch and concomitantly the energization of the relay coil in dependence upon whether the developed voltage is above or below the reference voltage.

5,548,465

LEAKAGE VOLTAGE INDUCTOR

Lin Lai-Chau, No. 53, Lane 211, Chung Shing Rd., Long Teng Shiang, Taoyuan, Taiwan

Filed Oct. 25, 1993, Ser. No. 142,206
Int. Cl.[6] H02H 3/16
U.S. Cl. 361—44 7 Claims



1. A leakage voltage inductor with a circuit structure comprising an input end C connected to the positive pole of a diode, the negative pole thereof being connected to the connecting point X of a switch and one end of a resistor 4, the other end of the resistor 4 being connected in series to a resistor 5, the other end of the resistor 5 being grounded, the serial connection between the resistors 4 and 5 being connected to the connecting point Y of the switch, the connecting point Z of the switch being connected to a variable resistor and connected in series to a Zener diode to be grounded, said Zener diode being in parallel with the coil of an electric appliance; characterized in that:

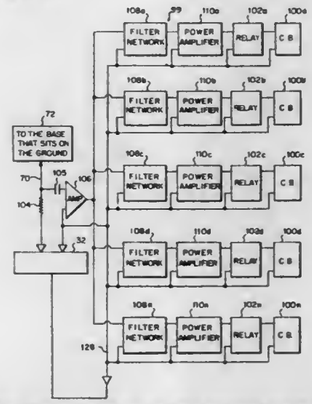
in said circuit structure, a voltage being detected on the housing of the leaking appliance with respect to the ground in the wiring circuit from the solenoid switch to the motor, said voltage being half-wave rectified by said diode with the switch being switched to the appropriate positions X, Y, the rectified voltage being lowered and divided by said variable resistor and the coil of a relay, such that when the variable resistor is adjusted, the coil operates as the voltage rises appropriately to switch off the connecting point b of the relay and the coil of the solenoid switch being deactivated at the same time, such that by adjusting the variable resistor, the coil of the relay can be adjusted to a mating voltage so as to set the actuating voltage within an appropriate range.

5,548,466

HAZARDOUS AMEPRAGE RECOGNITION AND RELAYING TECHNIQUES

Marcus A. Smith, 228 Manor Dr., Beckley, W. Va. 25801

Filed Nov. 4, 1994, Ser. No. 336,115
Int. Cl.[6] H02H 3/16
U.S. Cl. 361—44 14 Claims



1. A safety system for detecting and rendering harmless faults in an electrical power system which includes a power center for distributing electrical power to a plurality of machines wherein the power center receives current from a main power line and includes a primary winding and a secondary winding arrangement wherein the secondary winding arrangement is connected to a plurality of power cables which are in turn each connected to at least one electrical machine, the safety system including a current interrupter for interrupting power to a specific power cable; the safety system comprising:

oscillators for placing different frequencies on each cable connecting a machine to the power center;

a structure for electrically connecting the power center to the earth so as to provide an electrical path through a person should the person touch an exposed conductor of one of the cables;

a primary sensor circuit for sensing each of the frequencies applied to the cables, which primary sensor circuit is electrically located in a fault current sensing region; and

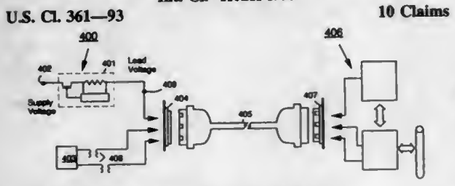
a circuit connected to the current interrupter for causing the current interrupter to interrupt power to the cable having an exposed conductor upon detecting the frequency applied to that cable.

5,548,467

LAN INTERFACE WITH SIMPLIFIED OVERCURRENT PROTECTION

James A. Heaney, Durham, and Todd M. Rasmus, Cary, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 14, 1994, Ser. No. 195,246
Int. Cl.[6] H02H *3/00*
U.S. Cl. 361—93 **10 Claims**



1. An overcurrent protection circuit comprising:
one input voltage terminal;
a load terminal;
a normally-on field-effect pass transistor and a sense resistor disposed in series between the input voltage terminal and the load terminal, the pass transistor being turned off by a voltage at a gate terminal;
a transistor array having first, second, third and fourth terminals, and having the second terminal connected to the load terminal;
a reference resistor connected between the first terminal of the transistor array and a point between the pass transistor and the sense resistor;
means for providing a constant reference current through the reference resistor, the means disposed between the third terminal of the transistor array and ground;
a resistor disposed to receive current flowing from the fourth terminal of the transistor array to ground;
a resistor disposed between the input voltage terminal and the gate of the pass transistor; and
one NPN transistor disposed for current sensing having an emitter terminal connected to ground, a base terminal connected to the resistor receiving current from the fourth terminal of the transistor array, and a collector terminal connected to apply a voltage to the gate terminal of the pass transistor so that when the current flowing from the fourth terminal of the transistor array to ground is substantially less than the constant current, the pass transistor is shut off.

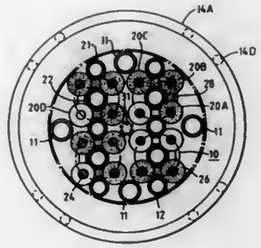
5,548,468

SURGE ARRESTER USING ZINC OXIDE ELEMENTS INSTALLED IN PARALLEL, AND METHOD OF FORMING THE SURGE ARRESTER

Shingo Shirakawa, and Satoshi Watahiki, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 7, 1994, Ser. No. 271,654 .
Claims priority, application Japan, Jul. 14, 1993, 5-173946
Int. Cl.[6] H04H *1/04*
U.S. Cl. 361—126 **19 Claims**

1. An arrester comprising a plurality of laminated columns arranged in parallel, each of said-plurality of laminated columns having a plurality of non-linear conduction elements, electrical connection members electrically connecting said plurality of laminated columns, and a support column extending parallel to said plurality of parallel laminated columns; wherein said plurality of parallel laminated columns are arranged around, and in contact with, said support column.

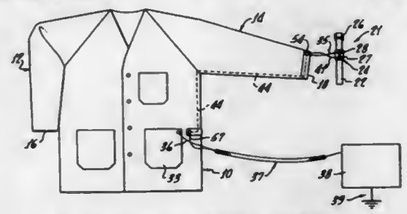


5,548,469

MULTI-PATH STATIC CONTROL GARMENT AND WRIST STRAP COMBINATION

Kay L. Adams, Carlsbad, Calif., assignor to Tech Wear, Inc., Carlsbad, Calif.

Continuation-in-part of Ser. No. 191,625, Feb. 4, 1994, Pat. No. 5,440,444. This application Apr. 28, 1995, Ser. No. 431,265
Int. Cl.[6] H05F *03/02*
U.S. Cl. 361—220 **20 Claims**



2. A multi-path static control garment, comprising:
a smock or shop jacket,
said smock having an electrically conductive cloth body, said smock also having at least one cloth sleeve that is electrically conductive,
a flexible conductive ribbon,
a nonconductive cloth sheath provided around said ribbon,
said ribbon and sheath combining with each other to form an insulated flexible conductor,
means to mount said insulated flexible conductor along said one sleeve, and past the region where said one sleeve connects to said body, and down at least part of said body, and
first and second electrical contact means on said body adapted to be connected to a dual grounding cord,
said first contact means being electrically connected to said ribbon and insulated from said body, and
said second contact means being electrically connected to said body.

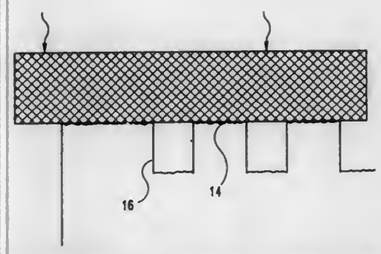
5,548,470

CHARACTERIZATION, MODELING, AND DESIGN OF AN ELECTROSTATIC CHUCK WITH IMPROVED WAFER TEMPERATURE UNIFORMITY

Anwar Husain, Pleasanton, Calif.; David E. Kotecki, Hopewell Junction; Stephan E. Lassig, Poughkeepsie, both of N.Y.; Kurt A. Olson, Sebastopol, Calif., and Anthony J. Ricci, Hopewell Junction, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 19, 1994, Ser. No. 277,552
Int. Cl.[6] H02N *13/00*
U.S. Cl. 361—234 **21 Claims**

1. An electrostatic chuck for holding a semiconductor wafer during processing thereof comprising



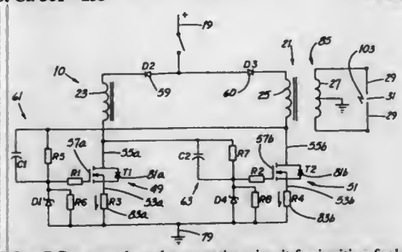
a dielectric layer on a front face of said electrostatic chuck for contacting said wafer, said dielectric layer having a nominal surface roughness and a pattern of grooves formed therein to a depth which is short relative to the mean free path of a gas disposed therein at a static pressure, said pattern of grooves having a central portion over which said pattern of grooves defines a substantially constant nominal contact area fraction and an outer, annular contact region having another nominal contact area fraction, said another nominal contact area fraction being greater than said constant nominal contact area fraction,
a cooling plate in thermal communication with said dielectric layer for removing heat from said electrostatic chuck,
an electrode for developing an electrostatic attraction force of said wafer against said front face of said electrostatic chuck,
said electrostatic chuck having a diameter less than the diameter of said wafer such that said wafer has an overhang region at an outer edge thereof which is reduced in temperature by said outer, annular contact region of said dielectric layer, and
said outer, annular contact region having a width determined in accordance with a distance by which a wafer radius exceeds a radius of said electrostatic chuck to control wafer temperature uniformity.

5,548,471

CIRCUIT AND METHOD FOR SPARK-IGNITING FUEL

David A. Roederer, Frankfort, Ky., assignor to Webster Heating and Specialty Products, Inc., Frankfort, Ky.

Filed Jul. 25, 1994, Ser. No. 279,552
Int. Cl.[6] H01T *15/00*
U.S. Cl. 361—253 **8 Claims**



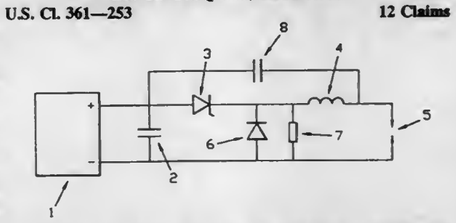
1. In a DC-powered spark-generating circuit for igniting fuel and including (a) a transformer with a primary winding and a secondary winding on a common core and (b) a transistor controlling power to the primary winding, the improvement wherein:
the primary winding is a first primary winding;
the transistor is a first transistor;
the transformer includes a second primary winding;
the circuit has a second transistor controlling power to the second primary winding;
each primary winding has a terminal connected through a separate blocking diode to a .positive voltage source;
each transistor has a gate and a drain;
the first primary winding has another terminal connected to the drain of the first transistor;
the second primary winding has another terminal connected to the drain of the second transistor;
the gate of the first transistor is coupled to the drain of the second transistor;
the secondary winding is the sole secondary winding and is center tapped to ground; and
both primary windings transfer electromagnetic flux through the core to the secondary winding.

5,548,472

HIGH ENERGY IGNITION GENERATOR, IN PARTICULAR FOR A GAS TURBINE

Patrick Balland, Rueil Malmaison, France, assignor to Eyquem, Cedex, France

Filed Sep. 1, 1994, Ser. No. 299,077
Claims priority, application France, Sep. 28, 1993, 93 11520
Int. Cl.[6] F23Q *3/00*; **H01T** *15/00*
U.S. Cl. 361—253 **12 Claims**



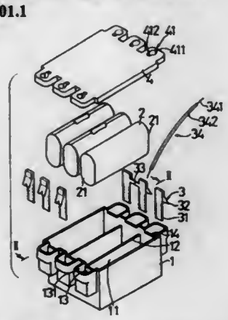
1. High energy ignition generator, said generator comprising in combination: a source of energy, an energy storage means charging circuit connected to said source of energy and comprising a first storage capacitor and connecting means, a discharging circuit comprising energy recovering inductance means and an ignition spark plug having electrodes connected in series, said connecting means connecting said storage means to said discharging circuit, free wheel means and a resistor connected in parallel to said discharging circuit so as to produce sparks between said electrodes of said spark plug, said energy storage means further comprising a second capacitor connected in parallel to a series connection of said connecting means and said inductance means.

5,548,473

CONDENSERS

Ching-Heng Wang, No. 12, 18th Road, Industry Park, Taichung City, Taiwan

Filed Sep. 12, 1995, Ser. No. 526,551
Int. Cl.[6] H01G *4/00; 4/224*
U.S. Cl. 361—301.1 **9 Claims**



1. A condenser comprising:
a casing, said casing comprising a plurality of open chambers longitudinally arranged in parallel and separated by partition walls, said open chambers being on a horizontal plane, a

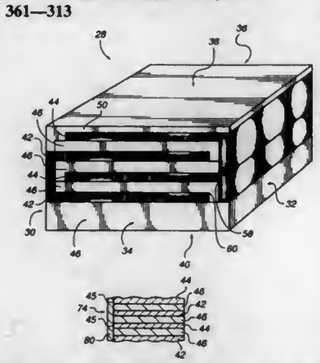
plurality of receptacles respectively disposed at two opposite ends of each open chamber and separated by walls;
a plurality of condenser elements respectively mounted in said open chambers;
a plurality of contact metal plates respectively mounted in said receptacles, each contact metal plate having one end inserted into one open chamber arid disposed in contact with one end of the corresponding condenser element, and an opposite end disposed in one receptacle for the connection of a lead wire which has a conductor and an insulator, a link being provided to connect two adjacent contact metal plates together so that the linked contact metal plates being connected in parallel by said link to form with the two opposite ends of said condenser elements into a parallel circuit; and a cover covered on said casing over said receptacles.

5,548,474

ELECTRICAL COMPONENTS SUCH AS CAPACITORS HAVING ELECTRODES WITH AN INSULATING EDGE

Chorng-Jeou Chen; Richard Ladew; Yong-Jian Qiu, all of Myrtle Beach, and Jeffrey Mevissen, Conway, all of S.C., assignors to AVX Corporation, Myrtle Beach, S.C.

Filed Mar. 1, 1994, Ser. No. 204,003
Int. Cl.[6] H01G *4/06;4/005*
U.S. Cl. 361—313 **19 Claims**



1. An electronic device having opposite facing top and bottom surfaces, opposite facing front and back surfaces, and opposite facing first and second side surfaces, comprising:
a marginless multilayer structure of electrode and dielectric layers, each layer having opposite facing top and bottom surfaces, opposite facing front and back edges, and opposite facing first and second sides, and
each electrode layer having an insulative coating on one of its front and back edges and being free of the insulative coating on the other of its front and back edges; wherein alternate electrode layers have the insulating coating on the same edge.

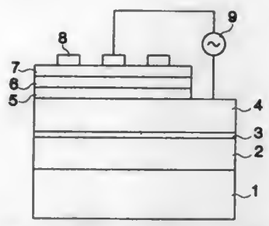
5,548,475

DIELECTRIC THIN FILM DEVICE

Mahe Ushikubo, Kashiwa, and Yasuyuki Itoh, Tenri, both of, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 2, 1994, Ser. No. 334,039
Claims priority, application Japan, Nov. 15, 1993, 5-284982; May 23, 1994, 6-108628
Int. Cl.[6] H01G *4/06;* **G11C** *11/22;11/24*
U.S. Cl. 361—321.4 **10 Claims**

1. A dielectric thin film device comprising:
at least one electrode; and
a dielectric thin film, said dielectric thin film being a laminate of at least three layers including an intermediate layer, the composition of each layer comprising atoms of like kind, including at least one volatile atom, the content of the at least one volatile atom being smaller in the intermediate layer than in at least two of the remaining layers, a first of the at least two remaining layers being disposed on a first side of the intermediate layer and a second of the at least two remaining layers being disposed on a second side of the intermediate layer opposite the first side.

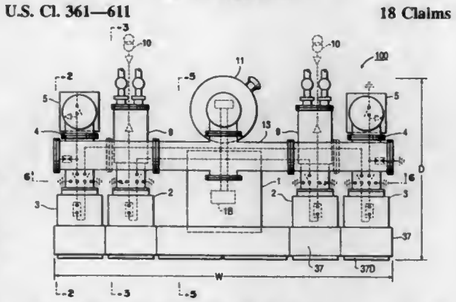


5,548,476

RECEIVING AND TRANSFORMING APPARATUS

Toyokazu Tanaka; Manabu Takamoto, both of Hitachi; Satoshi Miwada, Naka-gun; Noriyuki Tetsu, and Sadao Waizumi, both of Hitachi, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 79,798, Jun. 23, 1993, Pat. No. 5,450,281, which is a continuation-in-part of Ser. No. 935,405, Aug. 26, 1992, abandoned. This application Apr. 27, 1995, Ser. No. 431,566
Claims priority, application Japan, Aug. 28, 1991, 3-216885
Int. Cl.[6] H02B *1/20*
U.S. Cl. 361—611 **18 Claims**



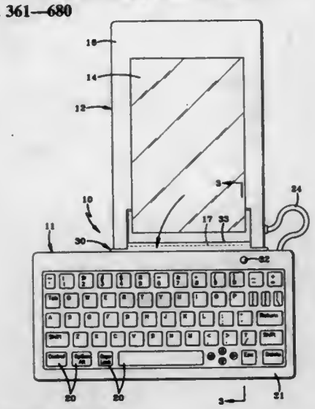
1. A receiving and transforming apparatus for receiving power from two power lines through at least one set of instrument potential and current transformers, wherein
first switching means and a primary side of power transformers are arranged at respective sides of said instrument potential and current transformers,
second switching means at a receiving side are respectively arranged at outer sides of the respective first switching means,
the first and second switching means along with receiving portions, connecting portions to the power transformers, and the instrument potential and current transformers are connected by a duct line connecting portion at a back side of said first and second switching means,
said first and second switching means respectively include interrupting portions and operating members,
the interrupting portions are accommodated in box-shaped cubicles, and
wherein the box-shaped cubicles are arranged in parallel so as to enable the interrupting to be accessible from a front portion of the box-shaped cubicles.

5,548,477

COMBINATION KEYBOARD AND COVER FOR A HANDHELD COMPUTER

Rajendra Kumar, and John W. Morrison, II, both of Akron, Ohio, assignors to Khyber Technologies Corporation, Fairlawn, Ohio

Filed Jan. 27, 1995, Ser. No. 379,254
Int. Cl.[6] G06F *1/16;* **H05K** *7/02*
U.S. Cl. 361—680 **7 Claims**



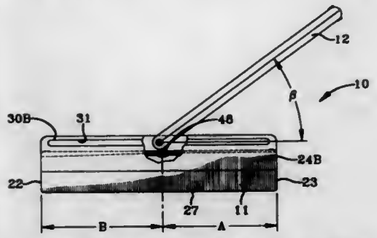
1. A device comprising:
a handheld apparatus having a display including a first surface from which at least a portion of the display may be viewed;
a first input to said handheld apparatus including a second surface, said first input movable between an operational position and a nonoperational position; and,
a planar motion mechanism carrying said first input and allowing planar motion between said second surface and said first surface whereby said first input may be selectably moved between said operational position and said nonoperational position.

5,548,478

PORTABLE COMPUTING DEVICE HAVING AN ADJUSTABLE HINGE

Rajendra Kumar, Akron, and Steven E. Brooks, Canton, both of Ohio, assignors to Khyber Technologies Corporation, Fairlawn, Ohio

Filed Jul. 25, 1994, Ser. No. 280,092
Int. Cl.[6] G06F *1/16;* **H05K** *7/16;* **E05D** *11/00*
U.S. Cl. 361—681 **6 Claims**



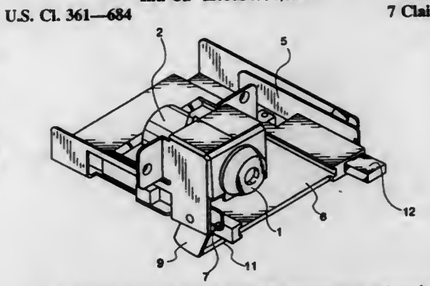
1. An improved portable computing device comprising:
a base portion;
a display portion containing a display screen and a touch input panel;
at least one channel disposed within said base portion;
at least one roller disposed within said channel; and
hinge pin means engaging said roller and said display portion whereby said display portion is slidably pivoted relative to said base portion;
at least one inclined groove disposed within said base portion;
at least one support tab extending from said display portion into said inclined groove to support said display portion at varying angles relative to said base position;
said channel and said inclined groove are carried within an end wall of said base, said channel being above said groove;
a second channel disposed within said base portion, opposite said first channel;
a roller disposed within said second channel;
hinge pins means engaging said roller within said second channel and said display portion whereby said display portion is slidably pivoted relative to said base portion;
a second inclined groove disposed within said base portion, opposite said first groove; and
a second support tab extending from said display portion into said second inclined groove to support said display portion at varying angles relative to said base position.

5,548,479

DEVICE FOR PROTECTING A MEMORY OR MICROCIRCUIT UNIT

Jukka Hyvärinen, Espoo, Finland, assignor to ICL Personal Systems OY, Helsinki, Finland

Filed Aug. 25, 1994, Ser. No. 295,932
Claims priority, application Finland, Sep. 2, 1993, 933846
Int. Cl.[6] H05K *7/14;5/00*
U.S. Cl. 361—684 **7 Claims**



1. A protective device for protecting a memory or microcircuit unit, the protective device comprising:
a mounting place for receiving the memory or microcircuit unit;
a locking mechanism having an OFF position and an ON position;
a protective lid pivotably attached to the locking mechanism, the lid being turnable to protect the memory or microcircuit unit positioned in the mounting place when the locking mechanism of the protective device is in the ON position
a cylinder having a groove, the cylinder being rigidly connected to the locking mechanism;
a sliding mechanism comprising a mounting carriage for receiving the memory or microcircuit unit; and
a guide pin arranged in the groove for moving the sliding mechanism.

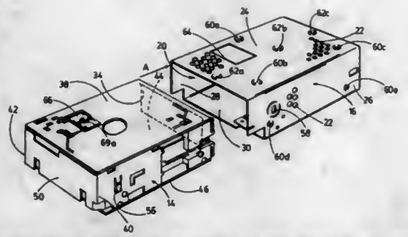
5,548,480

TAPE DRIVE WITH FLOATING SUPPORT FOR INSERT

Guttorm Rudi, Fjellhamar; Ornulf Jansen, Oslo; Halvor O. Kulfte, Haslum, and Petter Busengdal, Oslo, all of, Norway, assignors to Tandberg Data Storage AS, Oslo, Norway

Filed Nov. 15, 1994, Ser. No. 339,835
Int. Cl.[6] G06F *1/16;* **H05K** *7/14*
U.S. Cl. 361—685 **26 Claims**

5. A suspension for mounting a data storage drive into a computer housing, comprising:



a suspension frame having at least a first wall and a second wall defining a space therebetween, said space sized to receive a data storage drive;

a first resilient member mounted to said second wall and a first protrusion extending inwardly from said first wall, said first resilient member pressing the data storage drive against said first protrusion when the data storage drive is received within said space;

comprising second and third resilient members and second and third protrusions, said first, second and third resilient members and said first, second and third protrusions acting in respective resilient protrusion member pairs to provide a three-point planar suspension of the data storage drive in said frame; and

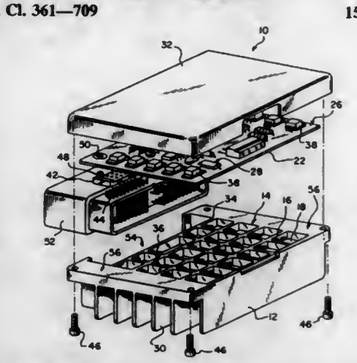
wherein said resilient members comprise leaf springs formed into said second wall and said protrusions comprise indents formed into said first wall.

5,548,481

ELECTRONIC MODULE CONTAINING AN INTERNALLY RIBBED, INTEGRAL HEAT SINK AND BONDED, FLEXIBLE PRINTED WIRING BOARD WITH TWO-SIDED COMPONENT POPULATION

Kenneth A. Salisbury, Livonia; Pawel Kalinowski, Birmingham, and Jay D. Baker, Dearborn, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 43,099, Apr. 5, 1993, abandoned.
This application Sep. 19, 1994, Ser. No. 308,875
Int. Cl.[6] H05K *7/20*
U.S. Cl. 361—709 **15 Claims**



1. An electronic module comprising:

a heat sink member having a first side defining a grid of ribs with cavities between said ribs, and a second side, opposite said first side, defining a plurality of protruding fins;

a flexible printed circuit board having a first side and an opposing second side, said circuit board being mounted on said heat sink member, with said first side of said circuit board facing said grid of ribs;

a plurality of electrical components mounted to both sides of said printed circuit board, a majority portion of at least one of said electrical components, mounted to said first side of said printed circuit board, being enclosed inside of at least one of said cavities; and

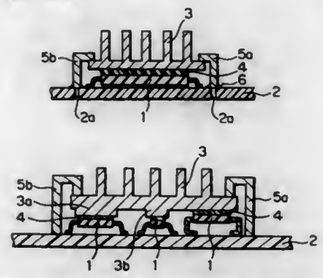
a protective cover enclosing the second side of said printed circuit board and mounted on said first side of said heat sink member.

5,548,482

SEMICONDUCTOR INTEGRATED CIRCUIT APPARATUS INCLUDING CLAMPED HEAT SINK

Kazushi Hatauchi, and Haruo Shimamoto, both of Kikuchigun, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 6, 1995, Ser. No. 466,929
Claims priority, application Japan, Aug. 26, 1994, 6-202335
Int. Cl.[6] H05K *7/20*
U.S. Cl. 361—720 **2 Claims**



1. A semiconductor integrated circuit apparatus having:

a board and a plurality of electronic parts, such as semiconductor integrated circuit devices, mounted on said board;

a cooling member disposed opposite said electronic parts;

a thermally conductive material disposed between and contacting said electronic parts and said cooling member; and

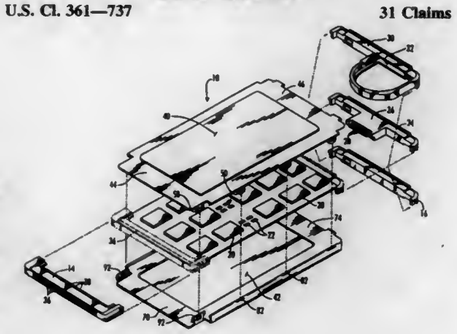
at least two thermally conductive clamps soldered to said board, clamping said cooling member at a periphery, and urging said cooling member against said thermally conductive material and toward said electronic parts wherein said board includes at least one thermal via and at least one of said clamps is soldered to said board at said at least one thermal via.

5,548,483

FRAMELESS IC CARD AND HOUSING THEREFOR

Steven Feldman, Huntingdon, Pa., assignor to Elco Corporation, Huntingdon, Pa.

Filed Jan. 24, 1995, Ser. No. 377,314
Int. Cl.[6] H05K *1/14*
U.S. Cl. 361—737 **31 Claims**



1. A frameless IC card adapted to be removably connected to an electronic host system such as a computer or computer peripheral, the IC card comprising:

a substrate carrying electronic circuit elements and including a transverse forward edge having a plurality of contacts connected to the electronic circuit elements;

a transversely extending bus connector disposed adjacent the forward edge of the substrate and having a plurality of contact members electrically coupled to the plurality of substrate contacts, the connector being adapted to connect the electronic circuit elements on the substrate to the host system; and

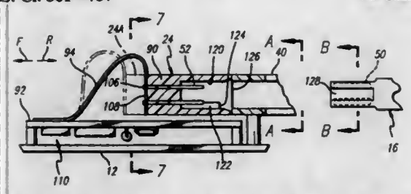
a housing enclosing the substrate, the housing including opposed top and bottom, substantially parallel covers having corresponding transverse forward and rear margins and longitudinal side margins, the corresponding longitudinal side margins along at least one side of the top and bottom covers being configured to interlock with each other.

5,548,484

IC CARD-RECEIVING HOST

Edward A. Kantner, Raleigh, N.C., assignor to ITT Corporation, New York, N.Y.

Filed Aug. 16, 1995, Ser. No. 515,718
Int. Cl.[6] H05K *1/14*
U.S. Cl. 361—737 **10 Claims**



1. A card-receiving host for receiving an IC card that has a card front connector with card contacts, comprising:

a host frame with a card-receiving slot that has an open rear end;

a host connector movably mounted on said frame to move in predetermined forward and rearward directions thereon, said host connector having a plurality of host contacts that are mateable to card contacts of a card front connector when the card is thrust forwardly fully into said slot;

a double-push mechanism coupled to said host connector, said mechanism biasing said host connector rearwardly and stopping rearward movement of the host connector alternately at first and second positions, with said first position lying rearward of said second position, at alternate forward thrusts of said host connector by a card.

5,548,485

IC CARD RIGIDIZED COVER

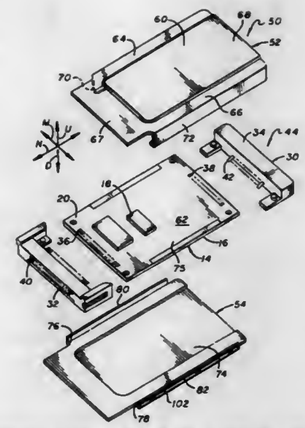
Gary C. Bethurum, Niguel, and Anthony J. Knights, Irvine, both of Calif., assignors to ITT Corporation, New York, N.Y.

Filed Sep. 29, 1995, Ser. No. 537,114
Int. Cl.[6] H05K *1/14*
U.S. Cl. 361—737 **9 Claims**

1. An IC card apparatus which comprises a circuit board assembly that includes a board with front and rear ends with said front end having a row of conductive traces, a body arrangement that is fastened to said circuit board and that includes a front connector having a row of contacts engaged with said row of conductive traces, and an electrically conductive cover assembly extending largely around said circuit board and having opposite cover sides, comprising:

said cover assembly includes top and bottom covers, said top cover having a top part that covers most of said circuit board and that has opposite sides at said cover sides, and said top cover having top side rails that each extends substantially downwardly from a different one of said top part sides, said bottom cover having a bottom part that lies below most of said circuit board and that has opposite sides at said cover sides, and said bottom cover having bottom side rails that each extend substantially upwardly from one of said bottom part sides, said top and bottom rails at each of said cover sides lying facewise adjacent to each other to form a pair of facewise adjacent rails;

a pair of layers of solder, each layer of solder lying between the rails of each of said pairs of facewise adjacent rails and bonded to both rails of the pair that it lies between.

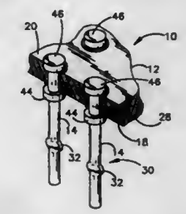


5,548,486

PINNED MODULE

Stephen J. Kman, Port Crane; John A. Stubecki, Nichols, and William R. Sondej, Vestal, all of N.Y., assignors to International Business Machines Corporation, Endicott, N.Y.

Filed Jan. 21, 1994, Ser. No. 185,182
Int. Cl.[6] H01R *23/68;9/09*
U.S. Cl. 361—791 **11 Claims**



1. A module comprising

(1) a substrate defining a first surface, a second surface spaced from said first surface and at least one hole communicating between said first and second surfaces for receiving an electrical connection pin, and

(2) an electrical connection pin having a substrate-engaging section received in said hole, said substrate-engaging section defining a first bulge engaging said first surface and a second bulge engaging said second surface, said first bulge being formed by compressive deformation while said pin is in said hole so that said first and second bulges securely fasten said pin to said substrate, said pin further defining a first compliant section spaced from said substrate-engaging section and projecting from said first bulge for affixing said pin to a carrier by compliant pin connection, said first compliant section defining at least one protrusion extending outwardly from the central

axis of said pin by a distance greater than the radius of the pin in the remainder of the pin body.

5,548,487

FLAT CIRCUIT MODULE MOUNTING USING AN ELASTIC PAD IN A DEPRESSION OF A CIRCUIT BOARD

Berhard Brabetz, Unterhaching, and Hermann Wessely, München, both of, Germany, assignors to Siemens Nixdorf Informationssysteme Aktiengesellchaft, Paderborn, Germany

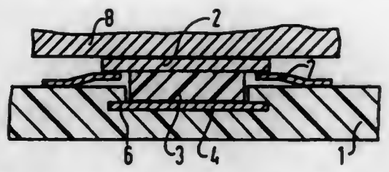
PCT No. PCT/DE92/00754, § 371 Date May 17, 1993, § 102(e) Date May 17, 1993, PCT Pub. No. WO93/06703, PCT Pub. Date Apr. 1, 1993

PCT Filed Sep. 7, 1992, Ser. No. 64,081

Claims priority, application Germany, Sep. 27, 1991, 9112099 U

Int. Cl.[6] H05K *7/02;7/06;7/20;* **H01L** *23/36*

U.S. Cl. 361—769 **1 Claim**



1. An assembly for circuit chip mounting and cooling, comprising:

a multi-layer circuit board having a surface and internal conductive layers;

a circuit chip having a lower surface and surface mountable leads extending from at least two sides adjoining said lower surface and bent in a direction toward said lower surface, free ends of said leads connected to said surface of said multi-layer circuit board;

means defining a depression in said surface of said multi-layer circuit board opposite said lower surface of said circuit chip, said depression extending into said multi-layer circuit board to one of said internal conductive layers;

an elastic pressure pad loosely mounted in said depression and extending against said lower surface of said circuit chip; and

means for removing heat from said circuit chip mounted against a surface of said circuit chip opposite said lower surface;

said elastic pressure pad pressing the lower surface of said circuit chip against said means for removing heat from said circuit chip.

5,548,488

ELECTRICAL COMPONET MOUNTING SYSTEM

Scott A. Hansen, Holland, Mich., assignor to Prince Corporation, Holland, Mich.

Filed Apr. 3, 1995, Ser. No. 415,699

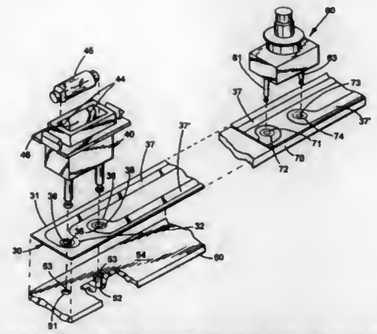
Int. Cl.[6] H05K *5/02*

U.S. Cl. 361—815 **21 Claims**

1. An electrical component mounting system comprising:

a substantially rigid substrate including at least one aperture formed therein for receiving a cylindrical electrical contact; and

a circuit comprising a flexible substrate having conductive material on at least one surface to define a conductor and a terminal having a terminal aperture therethrough, said flexible substrate positioned on said substantially rigid substrate such that said terminal aperture aligns with said at least one aperture in said substantially rigid substrate, said terminal aperture having a diameter smaller than the diameter of said at least one aperture in said substantially rigid substrate such that as the cylindrical contact is extended through said flexible substrate, said conductive material deforms into said at least one aperture of said substantially rigid substrate to provide a contact surface engaging the cylindrical contact.



5,548,489

WIRING CABINET HAVING VERTICALLY ALIGNED PATCH PANELS

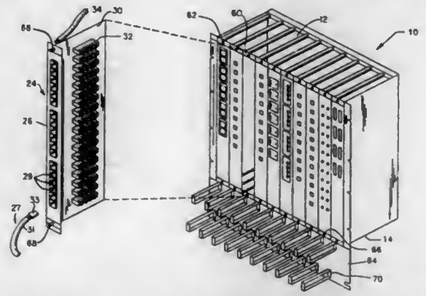
Steven J. Reed, Cordova; Robert L. Wallgren, Bartlett; Scott T. Davies, Germantown; George R. Wojtan, Germantown, and Paul Gazzara, Germantown, all of Tenn., assignors to Thomas & Betts Corporation, Memphis, Tenn.

Continuation of Ser. No. 131,833, Oct. 5, 1993, Pat. No. 5,396,405. This application Jan. 31, 1995, Ser. No. 382,456

The portion of the term of this patent subsequent to Oct. 5, 2013, has been disclaimed.

Int. Cl.[6] H02B *1/20*

U.S. Cl. 361—827 **15 Claims**



1. A wiring patch panel cabinet for connecting plural patch cables to termination devices comprising:

a support structure having spaced apart top and bottom walls and opposed side supports; and

a plurality of elongate patch panels supported by said support structure, each said patch panel including a panel face having a plurality of at least one type of termination device supported thereon, the at least one type of termination devices being arranged in at least one vertically extending column along said panel face, and wherein each of said patch panels includes termination devices of a different termination type from said termination devices of another patch panel;

said plurality of patch panels being supported by said support structure with one end of each said patch panels being supported by at least one of said top wall and said bottom wall;

whereby said patch cables connected to said termination devices of one said patch panel do not become intertwined with said patch cables terminated to said termination devices of an adjacent patch panel.

5,548,490

SUNLIGHT COLLECTING AND TRANSMITTING SYSTEM

Geoffrey B. Smith, Epping, and James B. Franklin, Sydney, both of, Australia, assignors to Skydome Industries Limited, and University of Technology, Sydney, both of NSW, Australia

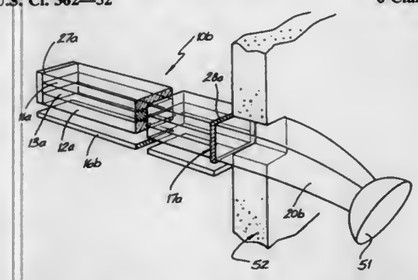
PCT No. PCT/AU92/00499, § 371 Date May 16, 1994, § 102(e) Date May 16, 1994, PCT Pub. No. WO93/06413, PCT Pub. Date Apr. 1, 1993

PCT Filed Sep. 21, 1992, Ser. No. 211,105

Claims priority, application Australia, Sep. 19, 1991, PK8471

Int. Cl.[6] F21V *8/00*

U.S. Cl. 362—32 **6 Claims**



1. A lighting system for an interior of a building and the like comprising:

(i) means for collecting and converting sunlight into concentrated light, said collecting means consisting of a stack of fluorescent sheets, the said stack being of a substantially rectangular prism shape having top and bottom surfaces, opposed side surfaces defining therebetween a width of the collecting means, and opposed end surfaces defining therebetween a length of the collecting means, wherein the length of the collecting means is greater than the width of the collecting means;

(ii) means for channelling the concentrated light to a light emitting fitting for the interior of the building or the like;

(iii) means for optically coupling the sunlight collecting and converting means with the channelling means through one of the said end surfaces of the collecting means, wherein the coupling means is formed such that its cross-sectional shape changes from the cross-section of the collecting means to the cross-section of the channelling means with an approximately constant cross-sectional area being maintained throughout the change of cross-sectional shape, and wherein the coupling means is an optical joint created by a medium having a refractive index close to that of the collecting means and channelling means; and

(iv) a compound parabolic concentrator for housing the collecting means, whereby sunlight is concentrated by the compound parabolic concentrator onto the collecting means.

5,548,491

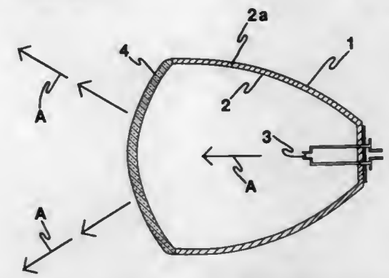
COLOR CORRECTED MOTOR VEHICLE HEADLIGHT

Daniel N. Karpen, 3 Harbor Hill Dr., Huntington, N.Y. 11743

Continuation-in-part of Ser. No. 160,693, Dec. 1, 1993, abandoned. This application Jan. 4, 1995, Ser. No. 368,763

Int. Cl.[6] B60Q *1/04*

U.S. Cl. 362—61 **13 Claims**



1. A vehicular headlight lamp for artificial illumination, comprising a filament generated light beam source, a generally concave inner reflector, an outer lens, said inner reflector being integral with said outer lens, said inner reflector and said lens comprising a bulb envelope for transmission of said filament generated light beam reflected off of said generally concave inner reflector through said outer lens of said bulb envelope, and a means for reducing the amount of transmitted yellow light in the range of 565 to 595 nanometers by up to 95% and promoting illumination, said means for reducing the amount of transmitted yellow light in the range of 565 to 595 nanometers and promoting illumination comprising said bulb envelope consisting of glass material containing Neodymium in the range of 5.0% –30% by weight as calculated in terms of Neodymium Oxide based upon the total weight of glass material.

5,548,492

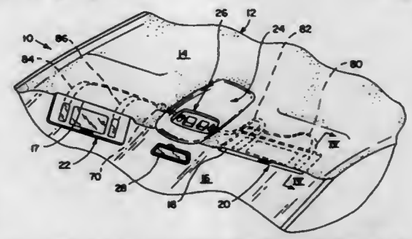
SLIDE-OUT FIBER-OPTIC ILLUMINATED VANITY MIRROR

Scott A. Hansen, Holland, and Russell L. Clark, West Olive, both of Mich., assignors to Prince Corporation, Holland, Mich.

Filed Apr. 12, 1995, Ser. No. 420,699

Int. Cl.[6] B60Q *3/02*

U.S. Cl. 362—83.1 **13 Claims**



1. An illuminated vanity mirror visor assembly comprising:

a visor defined by a panel, said panel including a mirror mounted thereto and at least one elongated fiber-optic cable having one end extending to said panel and located in a position adjacent said mirror; and

a light source coupled to said fiber-optic cable remote from said one end of said cable for supplying illumination for said mirror wherein said one end of said fiber-optic cable extending into said panel has a textured, planar surface means positioned for directing illumination outwardly from said planar surface in a direction generally orthogonal to said mirror.

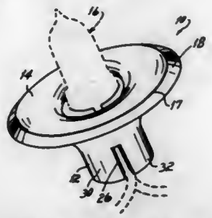
VOL 1189 ISS 3 AG 20 1996 UMI

5,548,493

PHOSPHORESCENT LIGHT COLLARS

Anthony R. Young, 5717 Newcut Rd., Louisville, Ky. 40214-5605

Continuation of Ser. No. 19,463, Feb. 18, 1993, abandoned.
This application Nov. 14, 1994, Ser. No. 337,964
Int. Cl.[6] F21V *9/16*
U.S. Cl. 362—84 **8 Claims**



8. Ornamental Christmas tree lights wherein said lights each include a light bulb held in a fixture and a collar surrounding said light bulb, said collar having a hollow, cylindrical portion opened at a first end and a second end permitting said light bulb to fit within said first end;

an outwardly extended annular flared portion at said second end, said light bulb extended through said first end and at least partially beyond said second end, and wherein said collar comprises a phosphorescent material;

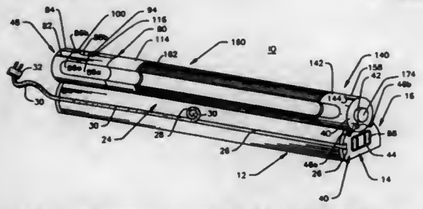
whereby a portion of light emitted from said light bulb causes said collar to fluoresce.

5,548,494

LIGHT FIXTURE HAVING THE COMBINATION OF A DETACHABLE FLASHLIGHT, A NIGHT LIGHT, AND A FLUORESCENT LIGHT CONTAINED THEREIN

Stephen B. Blackman, 248 Columbia Turnpike, Florham Park, N.J. 07932

Filed Sep. 11, 1995, Ser. No. 526,670
Int. Cl.[6] F21L *7/00*
U.S. Cl. 362—183 **20 Claims**



1. A lighting fixture for mounting on a surface, comprising:

a) a housing including means for mounting said housing on a surface;

b) a fluorescent light fixture mounted in said housing;

c) a night light mounted in said housing;

d) a battery-operated detachable flashlight assembly removably mounted in said housing and including a battery recharger, means for interconnecting said battery recharger and a power source, and means for sensing a power loss;

e) a flashlight electrical connection in said housing for connection to said means for interconnecting for supplying power from the power source to said battery recharger; and

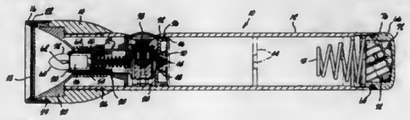
f) one or more diffusers for said housing.

5,548,495

FLASHLIGHT AND BULB HOLDER THEREFOR

Anthony Maglica, Anaheim, Calif., assignor to Mag Instrument, Inc., Ontario, Calif.

Division of Ser. No. 243,471, May 16, 1994, Pat. No. 5,390,091, which is a continuation of Ser. No. 91,071, Jul. 13, 1993, Pat. No. 5,315,494, which is a continuation-in-part of Ser. No. 866,714, Apr. 10, 1992, Pat. No. 5,226,722, which is a continuation-in-part of Ser. No. 719,156, Jun. 21, 1991, Pat. No. 5,113,326, which is a continuation-in-part of Ser. No. 553,977, Jul. 16, 1990, abandoned, which is a continuation of Ser. No. 356,361, May 23, 1989, Pat. No. 4,942,505, which is a continuation of Ser. No. 222,378, Jul. 19, 1988, Pat. No. 4,899,265, which is a continuation of Ser. No. 34,918, Apr. 6, 1987, abandoned, which is a continuation of Ser. No. 828,729, Feb. 11, 1986, Pat. No. 4,658,336, which is a continuation of Ser. No. 648,032, Sep. 6, 1984, Pat. No. 4,577,263, and a continuation-in-part of Ser. No. 832,857, Feb. 7, 1992, Pat. No. 5,260,858. This application Feb. 1, 1995, Ser. No. 382,289
Int. Cl.[6] F21L *15/00*
U.S. Cl. 362—207 **13 Claims**



1. A flashlight comprising

a barrel having a first end and a second end and constructed and arranged to retain one or more batteries;

a bead assembly on the first end of the barrel and including a reflector and a lens;

a bulb within the head assembly;

an electrical circuit including a switch and operatively connecting the bulb, the switch and one or more dry cell batteries;

a tail cap on the second end of the barrel and having a cavity open toward the barrel;

a spare bulb having a plug, a bulbous lens and a flange between the plug and the bulbous lens;

a bulb holder including a cylindrical resilient body having a peripheral wall, a slot to receive the spare bulb, the slot extending across the resilient body, being sized to receive the spare bulb in interference fit and being defined by a wall substantially U-shape in cross section, the body having ribs extending in substantially parallel planes outwardly of the U-shape wall to and within the peripheral wall, the slot having a first section to receive the plug of the spare bulb, a second section to receive the flange of the spare bulb and a third section to receive the bulbous lens of the spare bulb, the second section being a channel in the body extending about the slot in a plane normal to the slot.

5,548,496

PORTABLE LAMP ASSEMBLY

Don B. Hart, 1431 Via Plata, Long Beach, Calif. 90810-1462, and George Hillinger, 129 N. LeDoux Rd., Beverly Hills, Calif. 90211

Filed Dec. 27, 1994, Ser. No. 365,041
Int. Cl.[6] F21V *21/08*
U.S. Cl. 362—396 **21 Claims**

1. A portable lamp assembly comprising:

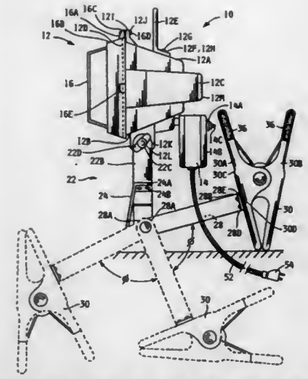
a) a lamp housing that includes a lower section,

b) a lamp-power junction box attached to said lamp housing,

c) a lamp housing support having a lower horizontal member having upwardly extending side members that are pivotally attached to the lower section of said lamp housing,

d) a pair of downwardly extending legs rigidly attached to each side member of said lamp housing support,

e) a support link having a first end and a second end, where the first end is swivelly attached to the lower horizontal member of said lamp housing support, and



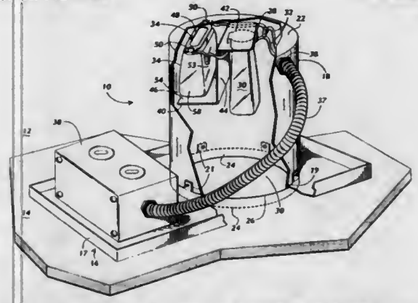
f) a spring-loaded clamp having a first handle and a second handle, where the first handle is rigidly attached to the second end of said support link, where said support link allows said clamp to be selectively positioned and attached to a lamp attachment structure and also functions as a third leg that when used in combination with the pair of downwardly extending legs allows said lamp assembly to be placed upon a substantially level surface.

5,548,497

RECESSED LIGHTING FIXTURE

Hyung R. Cho, Seoul, Rep. of Korea, assignor to Il Sung Moolsan Co., Ltd., Seoul, Rep. of Korea

Filed Feb. 3, 1995, Ser. No. 383,501
Int. Cl.[6] F21S *3/02*
U.S. Cl. 362—260 **15 Claims**



1. A recessed lighting fixture for installation in a space over a ceiling, comprising:

a housing with an opening in one end for passage of light;

means for mounting the housing above the ceiling having an opening for passage for light from the housing into the space below the ceiling;

a socket attached to the housing for receiving a lamp for emitting light through the opening in the housing;

a ballast having sides, a support end having at least one tab for securing the ballast to the housing, and a distal end, the ballast providing resistance to stabilize an electrical current communicated during operation of the lighting fixture from a source of electricity to the lamp received in the socket; and

an insulative casing that encloses the sides and distal end of the ballast,

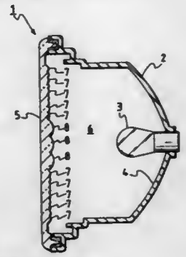
whereby the insulative casing restricts the communication of heat from the lamp to the ballast during operation of the fixture.

5,548,498

VEHICULAR LAMP HAVING APPEARANCE OF DEPTH

Tomokazu Murakami, Shizuoka, Japan, assignor to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Dec. 20, 1994, Ser. No. 359,999
Claims priority, application Japan, Dec. 20, 1993, 5-072836 U
Int. Cl.[6] B60Q *1/00*
U.S. Cl. 362—336 **13 Claims**



1. A vehicular lamp comprising:

a lamp body having a front opening and a central part;

a reflector disposed at an inner-rear surface of said lamp body;

a light source mounted at the central part of said lamp body for emitting a light beam; and

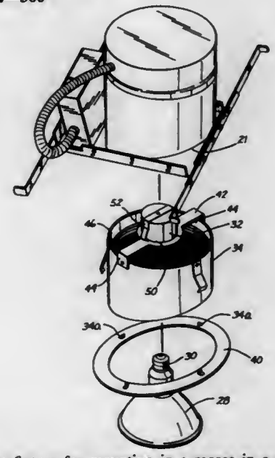
an outer lens covering said front opening of said lamp body, said outer lens comprising fisheye steps and cylindrical steps, said fisheye steps and said cylindrical steps being alternatingly arrayed.

5,548,499

LIGHT FIXTURE FOR RECESS IN SLOPED CEILING

Robollah E. Zadeh, Los Angeles, Calif., assignor to AMP Plus, Inc., Culver City, Calif.

Filed Aug. 19, 1994, Ser. No. 294,109
Int. Cl.[6] F21S *1/02*
U.S. Cl. 362—366 **4 Claims**



1. A light fixture for mounting in a recess in a sloped planar ceiling above which is a plenum, said recess being defined by the ceiling an outer cylindrical housing extending up from the sloped ceiling into the plenum, said outer cylindrical housing having an upper end and a lower end, and a cylindrical upper portion closed at the upper end of said housing, and a lower cylindrical portion terminating in the lower end which is angled with respect to the axis of the outer cylindrical housing to conform with the slope of

the ceiling, said upper portion of the outer cylindrical housing enclosing power carrying electrical wiring, said fixture comprising:

an inner cylindrical housing conforming to the shape of the outer housing, said inner housing being of a lesser altitude and lesser diameter than, and disposed coaxially within, the outer housing, said inner housing being open at both its upper and lower ends;

resilient means interposed between said inner housing and said outer housing, to removably support said inner housing coaxially within the outer housing, with the lower end of the inner housing being formed and disposed to conform with the slope of the ceiling,

a lamp and a receptacle to receive and support said lamp, said receptacle being connected to said electrical wiring,

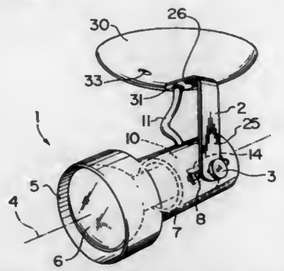
means to support and pivotally hold the receptacle in a disposition to direct the lamp toward the lower end of the inner housing, said means to support and pivotally comprising a pair of rigid elements pivotally secured to, and projecting oppositely from, the wall of the inner housing along a chord line and secured to the receptacle, whereby the downward orientation of the lamp within the inner housing may be varied in relation to the axis of the inner housing.

5,548,500

LAMP FIXTURE WITH ADJUSTABLE LAMP SOCKET

Iain N. B. MacKay, R.R. #2, Beeton, Canada

Filed Jul. 14, 1995, Ser. No. 502,716
Int. Cl.[6] F21S *3/02*
U.S. Cl. 362—427 **9 Claims**



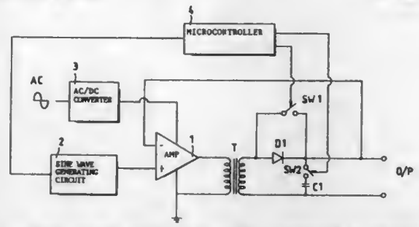
1. An electrical lamp fixture of the type having an elongate lamp receiving housing of unitary fixed length and which is open at one of its ends and closed at its other end, a housing axis, a housing sidewall at least a portion of which is coaxial with said housing axis, a lamp receiving socket located entirely within said lamp receiving housing, socket support means interior of said lamp receiving housing for maintaining said lamp receiving socket in alignment with said housing axis, housing support means exterior of said lamp receiving housing, and connector means for pivotally connecting said housing support means to said sidewall portion of said lamp receiving housing in selected angular relationship, said fixture being further characterized by an elongate slot provided in said portion of said housing sidewall and by said connector means which extends through said elongate slot so as to interconnect said socket support means to said housing support means and which is constrained to slidingly move to selected positions along said elongate slot and to thereby cause corresponding movement of said lamp receiving socket along a length of said housing axis interior of said lamp receiving housing.

5,548,501

HIGH-VOLTAGE POWER SUPPLY CIRCUIT WITH A VOLTAGE DISCHARGING CIRCUIT

Pin-Yi Chen, Taipel, Taiwan, assignor to Extech Electronics Co., Ltd, Taiwan

Filed Jul. 19, 1995, Ser. No. 504,262
Int. Cl.[6] H02M *3/335*
U.S. Cl. 363—21 **2 Claims**



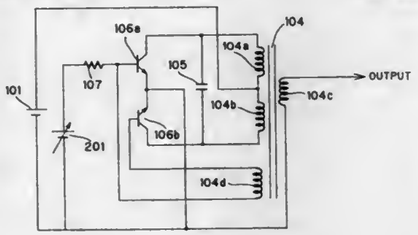
1. A high-voltage power supply circuit comprising an amplifier, a sine wave generating circuit, an AC/DC converter, a microcontroller, a transformer, a rectifier diode, a filter capacitor, a first switch, and a second switch, wherein: said sine wave generating circuit is controlled by said microcontroller to provide a sine wave signal of fixed amplitude and low distortion; said microcontroller is connected to the input terminal of said sine wave generating circuit and bridged to a respective contact on said first switch and said second switch, and controlled to drive said sine wave generating circuit and to set the frequency of the sine wave signal from said sine wave generating circuit, and to turn on/off said first switch and said second switch; the non-inverter terminal of said amplifier is connected to said sine wave generating circuit, and the output terminal thereof is connected to the primary side of said transformer, the secondary side of said transformer having a contact connected to the positive terminal of said rectifier diode, the inverter terminal of said amplifier being connected to the negative terminal of said rectifier diode, the negative terminal of said rectifier diode being connected to its positive terminal through said first switch and simultaneously connected to one end of said filter capacitor through said second switch, the opposite end of said filter capacitor being connected to another contact at the secondary side of said transformer; said amplifier is controlled by said microprocessor to amplify the sine wave signal from said sine wave generating circuit; said microcontroller is controlled to turn on/off said first switch and said second switch; and said filter capacitor is driven to discharge through said transformer when said first switch is turned on and said second switch is turned off.

5,548,502

PUSH-PULL, RESONANT TYPE SWITCHING POWER SUPPLY CIRCUIT

Mitsuo Kosugi, Hamamatsu, Japan, assignor to Hamamatsu Photonics K.K., Shizuoka-ken, Japan

Filed Aug. 29, 1994, Ser. No. 297,044
Claims priority, application Japan, Aug. 27, 1993, 5-213069
Int. Cl.[6] H02M *3/335;7/538*
U.S. Cl. 363—22 **16 Claims**



1. A switching power supply circuit comprising:

a transformer including a primary winding having an inductance, a feedback winding, and a secondary winding, said primary winding and said feedback winding being located at a primary side of said transformer, said secondary winding being located at a secondary side of said transformer, and said feedback winding having a first terminal and a second terminal;

a capacitor having a capacitance and connected in parallel to said primary winding to form a resonance circuit in combination with said primary winding, said resonance circuit resonating at a frequency determined by the capacitance of said capacitor and the inductance of said primary winding;

a rectifying circuit, connected to said secondary winding, rectifying a voltage developed across said secondary winding and producing a rectified voltage;

a transistor pair connected across said primary winding in push-pull configuration, said transistor pair including a first transistor having a control electrode connected to the first terminal of said feedback winding, and a second transistor having a control electrode connected to the second terminal of said feedback winding; and

a bias circuit connected to the control electrodes of said first and second transistors and applying a bias voltage thereto, said bias circuit including means for varying the bias voltage;

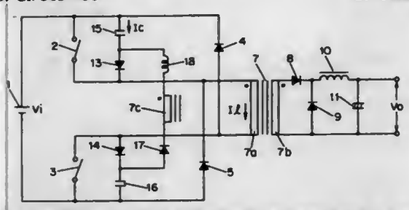
wherein said bias voltage varying means comprises means for generating a reference voltage, and comparison means for comparing the rectified voltage produced from said rectifying circuit with the reference voltage and for outputting a comparison result, the bias voltage being varied based on the comparison result.

5,548,503

SNUBBER CIRCUIT FOR SWITCHING POWER SUPPLY

Masahiro Motonobu, and Kouichi Ueki, both of Saitama, Japan, assignors to Fuji Electric Co., Ltd., Fujimachi, Japan

Filed Jun. 16, 1994, Ser. No. 260,046
Claims priority, application Japan, Jun. 17, 1993, 5-145273; Oct. 29, 1993, 5-271077
Int. Cl.[6] H02H *7/122*
U.S. Cl. 363—56 **17 Claims**



1. A snubber circuit for a switching power supply that incorporates two switching means for cyclically connecting and disconnecting an inductive load to a direct current power supply, said snubber circuit comprising:

a first pair of a first capacitor and a first diode connected in series, said first capacitor-and-diode pair being connected in parallel to a first of said two switching means;

a second pair .of a second capacitor and a second diode connected in series, said second capacitor-and-diode pair being connected in parallel to a second of said two switching means;

a voltage generating means having its first terminal ultimately connected to a connection point of said first capacitor with said first diode, and its second terminal ultimately connected to a connection point of said second capacitor with said second diode, said voltage generating means being electromagnetically coupled to said inductive load; and

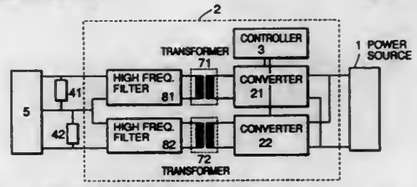
a third diode connected between said second capacitor and said second terminal of said voltage generating means, wherein said third diode forms a portion of a series circuit comprising said voltage generating means and said third diode, and said third diode being connected in a polarity configuration that prevents a current from flowing through said series circuit during off-period of said two switching means.

5,548,504

POWER LINE LINKING APPARATUS FOR LINKING A POWER GENERATOR TO A COMMERCIAL POWER LINE

Nobuyoshi Takehara, Kyoto, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 4, 1993, Ser. No. 130,919
Claims priority, application Japan, Oct. 19, 1992, 4-280172
Int. Cl.[6] H02M *7/23*
U.S. Cl. 363—65 **10 Claims**



1. A line linking apparatus comprising:

a DC power generator for generating power by solar cells;

a pair of DC/AC converters connected in parallel to output terminals of said DC power generator; and

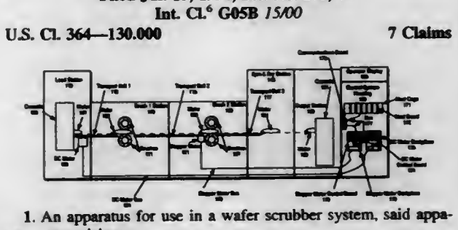
a wiring for interconnecting output terminals of said pair of DC/AC converters and terminals of a commercial power line in a single-phase, three-wire mode.

5,548,505

SCRUBBER CONTROL SYSTEM

Mark A. Simmons, San Jose; Martin J. McGrath, Sunnyvale, and David L. Thrasher, Santa Clara, all of Calif., assignors to OkTrak Systems, Inc., Milpitas, Calif.

Filed Jul. 15, 1994, Ser. No. 275,797
Int. Cl.[6] G05B *15/00*
U.S. Cl. 364—130.000 **7 Claims**



1. An apparatus for use in a wafer scrubber system, said apparatus comprising:

a first motor;

a host processor that controls the wafer scrubber system and that generates a message containing first motor control information in response to running a transmit process as part of controlling the wafer scrubber system to cause the first motor to perform a function related to operation of the wafer scrubber system;

a backplane, coupled to the host processor, communicating a control signal to said first motor in response to the message, wherein said backplane concentrates motor control signals for one or more motors into a single connection, said backplane comprising

a plurality of control board connectors adapted to receive separate control boards, wherein one of the plurality of control board connectors is coupled to said control board,

a control board that receives said message and generates the control signal, corresponding to said message, to said first motor,

a control signal connector coupling said backplane and said first motor, and

a bus connector;

a communications medium coupling said host processor and said control board via said backplane, said communications medium supporting a first communications path and a second communications path, said first communications path transmitting messages from said host processor to said control board, said second communications path transmitting messages from said control board to said host processor, wherein said bus connector couples said first communications path, said second communications path, and said backplane; and

a control system housing to maintain the host processor, the backplane and the communications medium separate from the first motor.

5,548,506

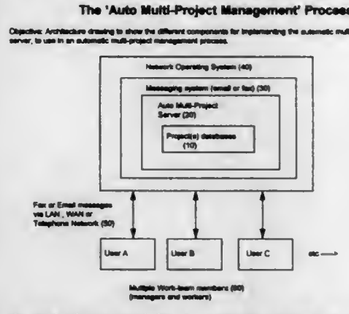
AUTOMATED, ELECTRONIC NETWORK BASED, PROJECT MANAGEMENT SERVER SYSTEM, FOR MANAGING MULTIPLE WORK-GROUPS

Sesban R. Srinivasan, 1524 Condor Way, Sunnyvale, Calif. 94087

Filed Mar. 17, 1994, Ser. No. 210,172

Int. Cl.[6] G06F *17/50;17/60;15/163*

U.S. Cl. 364—401 R **9 Claims**



1. A method executed by a computer system as part of a computer program, said system for coordinating the management of a project, said computer system to comprise of a central database server connected to a electronic network, said method using a two way electronic messaging system that allows different types of organizational work-group team members to send messages to the computer program and receive messages from the computer program via the said electronic network, said method storing and accessing data from a multi-project database, said method to be automatic in nature and with built in triggers which are based on the nature and status of said data without need for manual project management coordination, said project management coordination to involve all the steps of the project management cycle including planning, resource leveling, status reporting and reminding, tracking and updating plans, said method to be configurable for the said organizational work-group environment, said method comprising the steps of:

(a) identifying the owner of received message;

(b) identifying the nature of said received message;

(c) setting up said multi-project database and saving said received messages to said database according to the nature of said received message;

(d) receiving project plans and compiling project plans and saving project plans into said multi-project database;

(e) checking said project plans for resource requests against resource availability and reallocating resources if necessary based on inter-project priorities;

(f) recalculating and sending back said project plans based on resource reallocation;

(g) sending project status reports and reminders to organizational work-group team members based on the status of said triggers;

(h) receiving project updates and status changes and updating said project database;

(i) repeating steps (a) through (h) on a periodic basis, as desired by said organizational work-group team members.

5,548,507

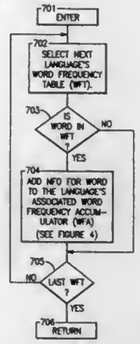
LANGUAGE IDENTIFICATION PROCESS USING CODED LANGUAGE WORDS

Michael J. Martino, Gardiner, and Robert C. Paulsen, Jr., Highland, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 14, 1994, Ser. No. 212,490

Int. Cl.[6] G06F *17/27*

U.S. Cl. 364—419.01 **9 Claims**



1. A machine process for identifying a human language used in a computer coded document from text in the document, comprising the steps of

reading a sequence of words from the document,

comparing each word obtained by the reading step to words in a plurality of Word Frequency Tables (WFTs) respectively associated with languages of interest, each WFT containing a set of most frequently used words in an associated language, and each word in a WFT having an associated numerical value representing a previously determined frequency of occurrence (FO) value for the word in a sample of documents written in the associated language,

associating a Word frequency Accumulator (WFA) with each WFT, and resetting each WFA to a predetermined WFA value prior to reading each document by the reading step,

outputting the FO value associated with each word matched by the comparing step with a word read by the reading step,

inputting each FO value provided by the outputting step to the associated WFA,

adding each FO value to a current sum contained in the associated WFA to generate an accumulated amount,

detecting which of the plural WFAs has the largest accumulated amount, and

identifying the human language associated with the WFA detected to have the largest accumulated value.

5,548,508

MACHINE TRANSLATION APPARATUS FOR TRANSLATING DOCUMENT WITH TAG

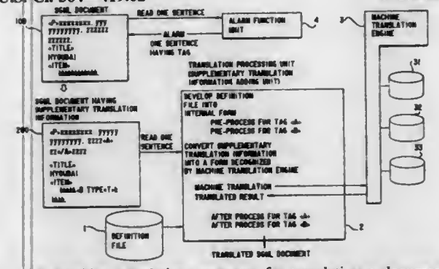
Wataru Nagami, Shizuoka, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 28, 1994, Ser. No. 330,849

Claims priority, application Japan, Jan. 20, 1994, 6-004729

Int. Cl.[6] G06F *17/28*

U.S. Cl. 364—419.02 **8 Claims**



1. A machine translation apparatus for translating a document including at least one tag, said machine translation apparatus comprising:

a definition file for converting said tag into supplementary translation information for a machine translation

a supplementary translation information adding means, operably connected to said definition file, for adding the supplementary translation information for said tag into said document in accordance with said definition file; and

a machine translation engine, operably connected to said supplementary translation information adding means, for carrying out the machine translation operation after accepting said document having the supplementary translation information, said supplementary translation information, which has been converted from said tag, being recognizable by said machine translation engine for carrying out said machine translation operation.

5,548,509

RECORDING MEDIUM AND INFORMATION READING APPARATUS

Koji Takagi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 930,014, Aug. 13, 1992. This application Dec. 19, 1994, Ser. No. 359,012

Claims priority, application Japan, Aug. 20, 1991, 3-232150

Int. Cl.[6] G06F *17/30*

U.S. Cl. 364—419.16 **12 Claims**

1. An apparatus for reading and displaying information recorded on a removable optical disc, comprising:

operation means for selecting information of operating descriptions expressed in a specified language from information of operating descriptions expressed in multiple languages;

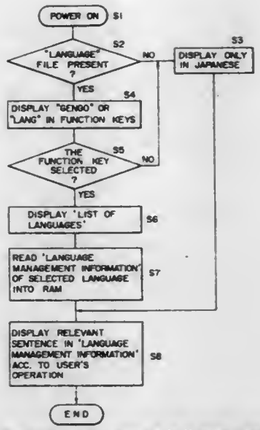
reading means for reading information recorded on a removable optical disc;

first memory means for storing therein the information of operating descriptions;

display means for displaying thereon the information of operating descriptions stored in the first memory means;

second memory means for storing therein operation programs for reading from said first memory means the information of operating descriptions;

control means for controlling the display means and for determining upon loading of the removable optical disc into the reading means and energization of the apparatus for reading and displaying whether the information of operating descriptions expressed in multiple languages is recorded on the removable optical disc, and when the information of operating descriptions expressed in multiple languages is recorded, to display on the display means an indication that the operating descriptions expressed in multiple languages are available, and when the information of operating descriptions expressed in multiple languages is not recorded on the removable optical disc, to display on the display means operating descriptions expressed in a single preselected language.



5,548,510

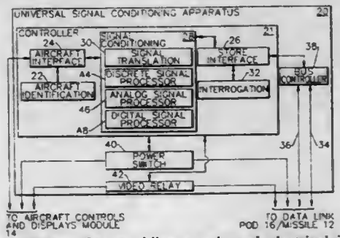
METHOD AND APPARATUS FOR PROVIDING A UNIVERSAL ELECTRICAL INTERFACE BETWEEN AN AIRCRAFT AND AN ASSOCIATED STORE

William J. Ebert, Catawissa; James V. Leonard, St. Charles, and Jeffrey L. Johnson, Chesterfield, all of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Oct. 28, 1994, Ser. No. 332,572

Int. Cl.[6] G06F *13/00;* **F41F** *3/06*

U.S. Cl. 364—443 **11 Claims**



1. An apparatus for providing a universal electrical interface between an aircraft and an associated store, the apparatus comprising:

aircraft identification means for determining the type of the aircraft wherein the type of aircraft is one of a plurality of predetermined types of aircraft, each type of aircraft being adapted to process signals formatted according to a different predetermined format;

aircraft interface means, responsive to said aircraft identification means, for bidirectionally communicating with the aircraft according to a first predetermined format wherein the type of aircraft identified by said aircraft identification means is adapted to process signals according to the first predetermined format;

store interrogation means for determining the type of store associated with the aircraft wherein the type of store is one of a plurality of predetermined types of stores, each predetermined type of store being adapted to process signals formatted according to a different predetermined format;

store interface means, responsive to said store interrogation means, for bidirectionally communicating with the associated store according to a second predetermined format that the associated store is adapted to process, the second predetermined format being different than the first predetermined format;

signal conditioning means, responsive to said aircraft interface means and said store interface means, for selectively processing signals received by both said aircraft interface means and said store interface means, said signal conditioning means including means for translating signals received from said aircraft interface means according to the first predetermined format to the second predetermined format of the associated store prior to transmitting the signals to the associated store, and means for translating signals received from said store interface means according to the second predetermined format to the first predetermined format of the aircraft prior to transmitting the signals to the aircraft, such that each of the plurality of different types of aircraft can bidirectionally communicate with each of the plurality of different types of stores, according to the predetermined formats that the aircraft and the associated store are adapted to process;

power switching means, responsive to said signal conditioning means, for coupling electrical power from the aircraft to the associated store; and

video relay means, responsive to said signal conditioning means, for transmitting video signals from the associated store to the aircraft.

5,548,511

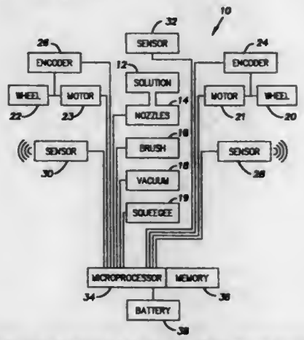
METHOD FOR CONTROLLING SELF-RUNNING CLEANING APPARATUS

Allen J. Bancroft, Elkhart, Ind., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Oct. 29, 1992, Ser. No. 968,290

Int. Cl.[6] G06F *7/70*

U.S. Cl. 364—424.02 **6 Claims**



1. A method for guiding a self-propelled autonomous cleaning robot having distance sensing means, obstacle sensing means, memory means and computing means, the method comprising:

a. starting a single-pass learning phase by said robot moving in a forward direction into an area to be cleaned having a left and right side boundary;

b. repeatedly contemporaneously sensing a distance to the right boundary, a distance to the left boundary, and a distance travelled;

c. storing said distances in said memory means;

d. adjusting the direction of said robot in response to said right and left boundary distances to maintain a desired distance from said left and right boundaries;

e. updating a plan of the area to be cleaned with said distances as the robot moves;

f. continuing steps b through e until an obstacle in the forward direction is detected by the robot, thereby ending said single-pass learning phase;

g. computing a cleaning path that will completely traverse said plan; and

h. performing a cleaning phase by said robot following said cleaning path as sensed by said distance sensing means.

5,548,512

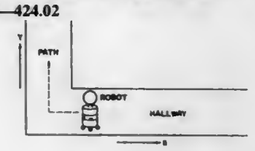
AUTONOMOUS NAVIGATION APPARATUS WITH NEURAL NETWORK FOR A MOBILE VEHICLE

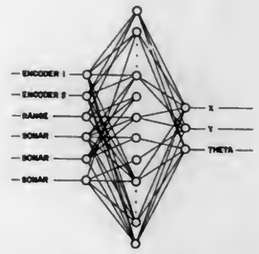
Naveed Quraishi, Houston, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 4, 1994, Ser. No. 317,443

Int. Cl.[6] G06F *165/00*

U.S. Cl. 364—424.02 **22 Claims**





1. Autonomous navigation apparatus for a mobile vehicle arranged to move within an environment that is delimited, at least in part, by a boundary, said apparatus comprising, in combination:

(a) a plurality of sensors arranged on said vehicle and adapted to determine the distance from said vehicle to said boundary, each sensor being operative to determine said distance in a prescribed direction, with respect to said vehicle, which is different from the direction of at least one other sensor;

(b) a neural network comprising an input layer coupled to said sensors, at least one hidden layer coupled to said input layer and an output layer coupled to one of said hidden layers for producing a first output representing an identification of the spacial position of said vehicle; and

at least one patch location within said environment for training said neural network to produce a correct first output in response to the distance from said vehicle to said boundary determined by said plurality of sensors and the actual position of said vehicle at the at least one patch location.

5,548,513

DRIVING-WHEEL TORQUE CONTROL SYSTEM FOR AUTOMOTIVE VEHICLES

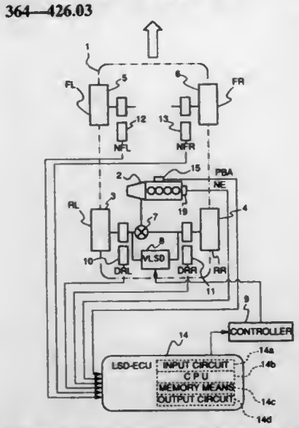
Katsuhiko Masuda; Jun Aoki, and Isamu Hashizume, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 8, 1993, Ser. No. 131,944

Claims priority, application Japan, Oct. 12, 1992, 4-299251; Oct. 14, 1992, 4-301870

Int. Cl.[6] B60K *23/04*

U.S. Cl. 364—426.03 **26 Claims**



1. A driving-wheel torque control system for an automotive vehicle having left and right driving wheels, including a variable limited slip differential torque-creating device arranged between said left and right driving wheels for generating a predetermined limited slip differential torque such that reduced torque is transmitted to a racing one of said left and right driving wheels and increased torque is transmitted to a non-racing one of said left and right driving wheels,

said driving-wheel torque control system comprising:

racing state-determining means for determining whether or not both said driving wheels are in a predetermined racing state; and

torque-holding means for holding said limited slip differential torque at a first value substantially equal to or close to a second value thereof based on the assumption that both said driving wheels are in said predetermined racing state, if it is determined by said racing state-determining means that both said driving wheels are in said predetermined racing state.

5,548,514

AIR/FUEL RATIO ESTIMATION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Yusuke Hasegawa; Isao Komoriya; Eisuke Kimura; Shusuke Akazaki, and Yoichi Nishimura, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 3, 1995, Ser. No. 383,204

Claims priority, application Japan, Feb. 4, 1994, 6-033202

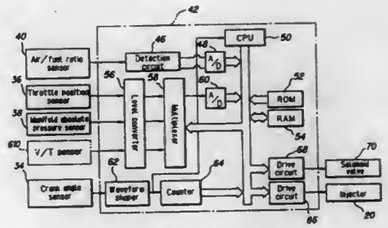
Int. Cl.[6] G06G *7/70;* **F02D** *41/00;* **F01N** *3/00*

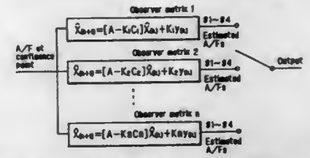
U.S. Cl. 364—431.05 **30 Claims**

1. A system for controlling air/fuel ratios of individual cylinders of a multicylinder internal combustion engine connected to an exhaust pipe via an exhaust manifold that constitutes an exhaust system of the engine, said system having:

an air/fuel ratio sensor installed at the exhaust system of the engine;

detection circuit for receiving an output of said air/fuel ratio sensor to determine an air/fuel ratio at a confluence point of the exhaust system;





modeling means for modeling a behavior of the exhaust system by an equation established based on an assumption that the air/fuel ratio at the confluence point is expressed as a sum of products of past firing histories of the individual cylinders and a weighting coefficient C each indicative of contribution thereto of the individual cylinders;

estimating means for estimating the air/fuel ratios in the individual cylinders from the equation;

fuel injection quantity determining means for determining a fuel injection quantity to be supplied to the engine at least based on a base value and the estimated air/fuel ratios of the individual cylinders; and

a fuel injector for injecting fuel based on the determined fuel injection quantity;

wherein the improvement comprises:

zero setting means for setting the weighting coefficient C to zero for a cylinder other than most recent m ($2 \leqq m < n$) cylinders when a number of cylinders to be estimated their air/fuel ratios is $3 \leqq n$.

5,548,515

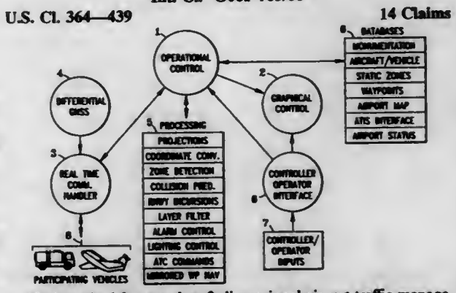
METHOD AND SYSTEM FOR AIRPORT CONTROL AND MANAGEMENT

Harold R. Pilley, and Lois V. Pilley, both of Reservoir Rd, Box 204, Deering, N.H. 03244

Continuation-in-part of Ser. No. 758,852, Sep. 12, 1991, abandoned, which is a continuation-in-part of Ser. No. 593,214, Oct. 9, 1990, Pat. No. 5,200,902. This application Sep. 7, 1993, Ser. No. 117,920

Int. Cl.[6] G06F *163/00*

U.S. Cl. 364—439 **14 Claims**



10. A method for seamless 3-dimensional airport traffic management from a central control facility using a computer system and incorporating collision detection processing between at least two vehicles of a plurality of vehicles said plurality of vehicles including aircraft and surface vehicular equipment operating at an airport, said method comprising the steps of:

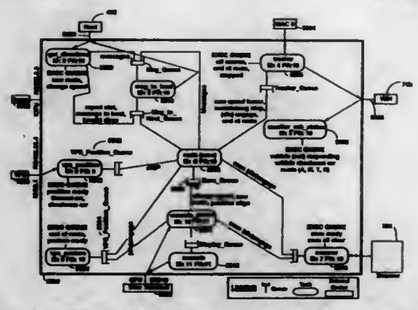
a. adopting an Earth Centered Earth Fixed coordinate frame for processing by said computer system;
b. selecting an airport, said selected airport refereneed to said Earth Centered Earth Fixed coordinate frame;
c. establishing a vehicle database, said vehicle database containing identification and position and velocity information referenced to said Earth Centered Earth Fixed coordinate frame for at least two vehicles operating at said selected airport;
d. determining a type classification for said at least two vehicles using said identification information contained in said vehicle database;
e. determining a manner of movement and of operation for said at least two vehicles, using information contained in said vehicle database;
f. constructing for said at least two vehicles dynamic zones, wherein each said dynamic zones is sized based on said type classification and said manner of movement and of operation of said at least two vehicles using said identification and position and velocity information in said vehicle database;
g. generating time-based projected positions for said at least two vehicles using said vehicle database;
h. generating projected dynamic zones for said at least two vehicles using said projected positions and said projected dynamic zones;
i. determining if at least two of said projected dynamic zones intersect; and
j. setting a collision flag for at least one of said at least two vehicles having said projected dynamic zones intersect with at least one other projected dynamic zone.

5,548,516

MULTI-TASKED NAVIGATION SYSTEM AND METHOD FOR AN AUTONOMOUS LAND BASED VEHICLE

Adam J. Gudat, Edelstein, Ill.; Prithvi N. Rao, Pittsburgh, Pa.; Gary K. Shaffer, Butler, Pa.; Wenfan Shi; Dong H. Shin, both of Pittsburgh, Pa.; James W. Sennott, Bloominton, Ill.; William L. Whittaker, Pittsburgh, Pa.; Karl W. Kleimenhagen, Peoria, Ill.; Jay H. West, Pittsburgh, Pa.; Richard G. Clow, Phoenix, Ariz.; Baoxin Wu; Sanjiv J. Singh, both of Pittsburgh, Pa.; Dana A. Christensen, Peoria, Ill.; Carl A. Kemner, Peoria Heights, Ill.; Walter J. Bradbury, Peoria, Ill.; Craig L. Koehrsen, Peoria, Ill.; Christos T. Kyrtsos, Peoria, Ill.; Norman K. Lay, Peoria, Ill.; Joel L. Peterson, Peoria, Ill.; Larry E. Schmidt, Peoria, Ill.; Darrell E. Stafford, Dunlap, Ill.; Louis J. Weinbeck, Peoria, Ill., and Lonnie J. Devier, Pittsburgh, Pa., assignors to Caterpillar Inc., Peoria, Ill.

Division of Ser. No. 487,980, Dec. 11, 1989. This application May 1, 1995, Ser. No. 432,247
Int. Cl.[6] G06F *165/00*
U.S. Cl. 364—443 **2 Claims**



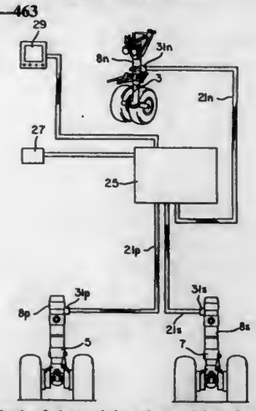
1. A computer based multi-tasked navigation system for an autonomous land based vehicle comprising:
(1) main task means for coordinating inter-task communications including means for performing high-level decision making;
(2) monitor vehicle task means for reading a communications port to said vehicle including means for reporting vehicle mode changes to said main task means and means for reporting system to vehicle communication state to said main task means, and further including means for writing a vehicle status message to a global memory structure;
(3) scanner task means for providing data from an obstacle detection system to said main task means;
(4) get directives task means for interfacing the system to a host, including means for receiving messages, means for decoding said messages from the host, and means for communicating a received decoded message to a corresponding task means in the system;
(5) message to host task means for interfacing the system to said host, including means for forming messages and means for communicating said messages from the system to said host;
(6) VPS position task means for interfacing a vehicle positioning system to the system, including means for reading output from the vehicle positioning system, checksum means for checking the output for correctness, writing means for putting checked output into a position buffer in a global memory structure, and fault indicating means for sending a message to the main task means whenever a position fault occurs;
(7) VPS posture task means for monitoring the vehicle's position while the vehicle is tracking, including means for maintaining a plurality of postures in a posture buffer of the global memory structure; and
(8) tracker task means for calculating steer and speed corrections for said vehicle, including means for reading position information from the position buffer of the global memory structure, means for reading posture information from the posture buffer of the global memory structure, and means for sending said steer and speed corrections to the vehicle to control the vehicle's course.

5,548,517

AIRCRAFT WEIGHT AND CENTER OF GRAVITY INDICATOR

C. Kirk Nance, P.O. Box 120605, Arlington, Tex. 76012

Continuation-in-part of Ser. No. 884,638, May 15, 1992, abandoned, which is a continuation-in-part of Ser. No. 832,470, Feb. 7, 1992, Pat. No. 5,214,586. This application Aug. 27, 1993, Ser. No. 113,286
Int. Cl.[6] G01L *19/04*
U.S. Cl. 364—463 **29 Claims**



28. A method of determining the weight of an aircraft, said aircraft being supported by plural pressurized landing gear struts, each of said landing gear struts experiencing friction/drag, such as friction caused by landing gear strut internal O-ring seals, said friction/drag distorting internal strut pressures as they relate to weights supported by said landing gear struts, said method comprising the steps of:

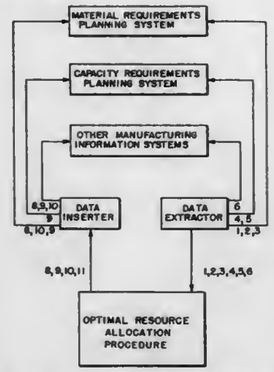
a) moving said respective landing gear strut seals to compensate for distortions caused by said respective strut friction/drag,
b) determining the amount of pressure within said respective landing gear struts,
c) determining the weight supported by each of said landing gear struts from said respective pressure determinations,
d) determining the weight of said aircraft from said respective landing gear strut weight determinations.

5,548,518

ALLOCATION METHOD FOR GENERATING A PRODUCTION SCHEDULE

Brenda L. Dietrich, Yorktown Heights, and Robert J. Wittrock, Ossining, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 31, 1994, Ser. No. 251,812
Int. Cl.[6] G06F *17/60*
U.S. Cl. 364—468.06 **12 Claims**



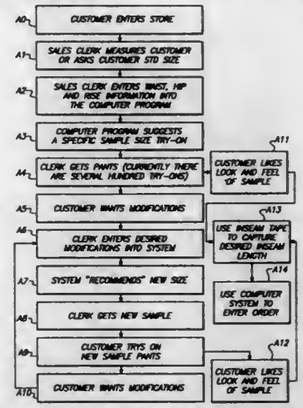
1. An allocation method for utilization within a computer for generating a feasible production schedule in response to a specified requirement q, the method comprising the computer implemented steps of:
(1) determining what quantity (r) of a product can be produced with a specified quantity of supply components;
(2) allocating a required quantity of supply components for filling a thus defined partial order; and
(3) filling a remainder of the requirement (q-r) at some later time; wherein the steps (1) and (2) and (3) are quantitatively determined by simultaneously solving within the computer a material balance constraint (MBC) inequality and a capacity availability constraint (CAC) inequality, wherein
(i) the MBC comprises a step of comparing
a) a quantity of product for external requirement (over an arbitrary time period) plus a total usage of parts in a production of other parts (over the same arbitrary time period), with
b) a total external availability of parts (over the arbitrary period) plus a total production of parts lover the arbitrary period); and
(ii) the CAC comprises a step of comparing
a) a total quantity of resource (used in the arbitrary time period) with
b) an availability of resource (in the arbitrary time period);
so that if there is not sufficient capacity or material available to meet every requirement, the solution allocates available resources in favor of requirements with high priority.

5,548,519

CUSTOM APPAREL MANUFACTURING APPARATUS AND METHOD

Sung K. Park, Jamaica Plain; Bethe M. Palmer, Marblehead, and Gerald S. Ruderman, Wellesley, all of Mass., assignors to Custom Clothing Technology Corporation, Newton, Mass.

Filed Aug. 12, 1994, Ser. No. 289,406
Int. Cl.[6] G06F *19/00*
U.S. Cl. 364—470.06 **94 Claims**



1. An apparatus for custom tailoring and manufacturing apparel of a selected design and configuration, comprising:
a plurality of try-on apparels, each try-on apparel having pre-determined dimensions differing from the dimensions of each other try-on apparel;
a system for storing and accessing said pre-determined dimensions of each of said try-on apparels and for entering fit information from a prospective buyer regarding those try-on apparels actually tried on by such buyer;
a device associated with said system for collecting the relative fit information of each of said plurality of try-on apparels actually tried on by a prospective buyer and reporting said fit information for identifying final approved pre-determined dimensions for manufacturing.

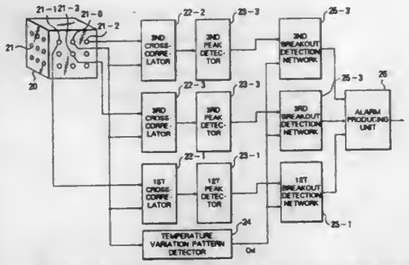
5,548,520

BREAKOUT PREDICTION SYSTEM IN A CONTINUOUS CASTING PROCESS

Tsuyoshi Nakamura, Tokyo; Kazuho Kodaira, Kanagawa, and Katsuhiro Higuchi, Ehime, all of, Japan, assignors to Topy Kogyo Kabushiki Kaisha, and Sumitomo Heavy Industries, Ltd., both of Tokyo, Japan

Filed Dec. 23, 1994, Ser. No. 363,352
Claims priority, application Japan, Dec. 24, 1993, 5-327851
Int. Cl.[6] B22D *11/16*
U.S. Cl. 364—472.02 **2 Claims**

1. A breakout prediction system for predicting breakout in a mold of a continuous casting machine with reference to detection signals produced from a plurality of temperature sensors located on said mold, wherein:
said temperature sensors are grouped into a plurality of units each of which comprises one of said temperature sensors and at least three adjacent temperature sensors adjacent to the one of said temperature sensors;
each unit being connected to a corresponding one of a plurality of prediction deciding sections;
each prediction deciding section comprising:
at least three cross-correlators which correspond to said at least three adjacent temperature sensors, respectively, and each of which is responsive to a detection signal from a corresponding one of said adjacent temperature sensors and



a detection signal from the one of said temperature sensors and carries out a predetermined normalization operation and a cross-correlation operation to produce an operation result;

a temperature variation pattern detector supplied with the detection signal from the one of said temperature sensors for detecting a temperature variation pattern indicative of a time sequential variation of a temperature;

at least three peak detectors which are connected to said at least three cross-correlators, respectively, and each of which is for detecting a peak value of said operation result; and

at least three breakout detection networks each of which is supplied with an output of a corresponding one of said at least three peak detectors and an output of said temperature variation pattern detector and carries out decision on breakout prediction;

said system further comprising an alarm producing unit for producing an alarm when one of outputs of said at least three breakout detection networks exceeds a predetermined threshold level.

5,548,521

METHOD AND APPARATUS FOR OPERATING AN AUTOMATIC DATA CARRIER LIBRARY

Werner F. Krayer, Durlangen, and Rolf Baur, deceased, late of Heubach-Lautern, Germany, assignors to Grau Sturage Systems CmbH & Co. KG, Germany

Continuation of Ser. No. 162,889, Dec. 8, 1993, abandoned, which is a continuation of Ser. No. 776,886, Oct. 17, 1991, Pat. No. 5,291,001, which is a continuation of Ser. No. 573,186, Aug. 16, 1990, abandoned. This application Dec. 16, 1994, Ser. No. 357,768

Claims priority, application Germany, Dec. 22, 1989, 38 43 218.8

Int. Cl.[6] G06F *15/20*

U.S. Cl. 364—478.02 **20 Claims**

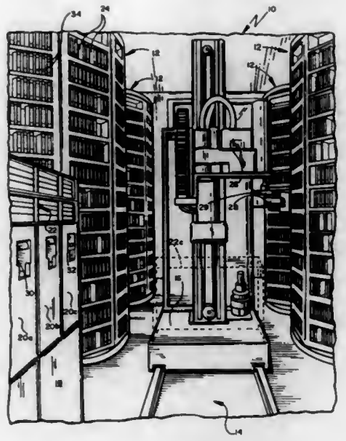
1. Automatic library system for providing a computer access to data carriers in said library system, said library system comprising:

a store for said data carriers,

at least one read/write station for said data carriers comprising an in/out opening,

an intermediate store arranged adjacent said in/out opening for an intermediate storage of said data carriers in at least one intermediate storage position, said intermediate store being arranged adjacent said in/out opening,

a controller capable of initiating transportation of one of said data carriers directly from said store to said in/out opening or from said store to said intermediate store, said controller further being capable of initiating transportation of one of said data carriers stored in said intermediate store to said in/out opening of said read/write station upon a request for said one of said data carriers by said computer.



5,548,522

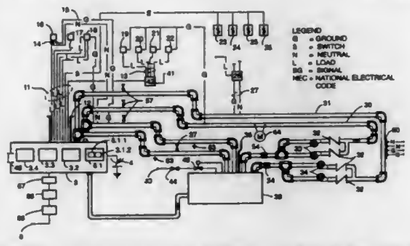
MODULAR WIRING AND LIQUID GROUND

Indru J. Primlani, 2616 NE. 19th St., Renton, Wash. 98056

Filed Oct. 24, 1994, Ser. No. 327,961

Int. Cl.[6] G01R *19/00;* **H02B** *1/20;* **C25B** *5/00*

U.S. Cl. 364—483 **20 Claims**



17. The method of wiring a building or other facility using a plurality of additional field interface devices each with a unique electronically-identifiable address interconnected to form a network of bundles of wires selectively connected at field interface devices as node points, a plurality of bundles of wires connected between field interface devices, switching means in each field interface device for selectively interconnecting wires between bundles of wires connected thereto, a load transfer module providing electrical power to field interface devices on a power line carrier through one or more bundles of wires connected therebetween, a computer control module in communication with the load transfer module and selective directing its connection through primary bundles of wires to field interface devices and also in communication with each field interface device, recognizing its unique address, and programmed to direct in the switching means selective electrical connection of a set of wires to wires within a bundle of wires between wires, comprising the following steps:

a. installing one or more selectively switchable field interface devices in the facility interconnected by a bundle of wires into a network,

b. installing the load transfer module providing electrical power to field interface devices on a power line carrier through one or more bundles of wires connected therebetween,

c. installing the computer control module in communication with the load transfer module

d. through the computer control module, selectively directing connection of the load transfer module to field interface devices through bundles of wires running therebetween.

5,548,523

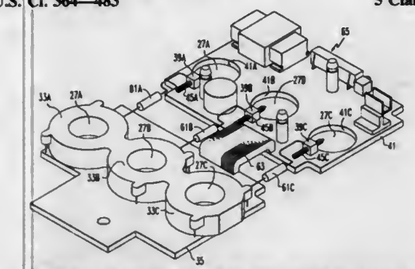
MONITORING DEVICE SECURED TO POWER DISTRIBUTION SYSTEM CONDUCTORS

Henry A. Wehrli, III, Monroeville, Pa.; James A. Bauer, and Denis A. Mueller, both of Asheville, N.C., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jun. 20, 1994, Ser. No. 262,166

Int. Cl.[6] G01R *21/06*

U.S. Cl. 364—483 **5 Claims**



1. Apparatus for monitoring voltage and current anywhere along electrical conductor means covered with electrical insulation in an ac power distribution system, said apparatus comprising:

a housing having through passage means through which said conductor means passes completely through said housing;

combined mounting and voltage tap means comprising elongated electrically conductive fastener means extending from said housing laterally into said through passage means and having a pointed end which penetrates said electrical insulation covering said electrical conductor means and electrically contacts and mechanically clamps said electrical conductor means in said through passage means to lock said housing on said electrical conductor means;

toroidal coil means within said housing and through which said through passage means and said electrical conductor means extend for sensing current flowing through said electrical conductor means; and

circuit means within said housing connected to said toroidal coil means for monitoring current flowing in said electrical conductor means and connected to said electrically conductive fastener means for measuring voltage on said electrical conductor means.

5,548,524

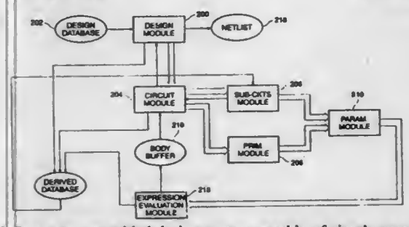
EXPRESSION PROMOTION FOR HIERARCHICAL NETLISTING

Celimo P. Hernandez, San Jose, and Robyn D. Coultas, Atherton, both of Calif., assignors to Cadence Design Systems, Inc., San Jose, Calif.

Filed Apr. 6, 1994, Ser. No. 223,924

Int. Cl.[6] G06F *17/50*

U.S. Cl. 364—489 **6 Claims**



1. In a computer aided design system capable of simple parameter passing, a method for generating a hierarchical netlist for a circuit schematic hierarchically diagramed from a leaf level to a top level, the method comprising machine executed steps of:

(a) starting from the leaf level;

(b) identifying all components having property values defined by algebraic expressions which contain references to variables defined at a higher level in the hierarchy;

(c) gathering all occurrences of said algebraic expressions in a list;

(d) replacing each algebraic expression in a line in the hierarchical netlist with a macro argument token, said token identifying an associated member of said list;

(e) evaluating an expression when said expression does not contain references to a variable on a higher level of hierarchy;

(f) moving up the hierarchy to a parent level above the leaf level, and repeating steps (b) through (e) until all expressions have been evaluated.

5,548,525

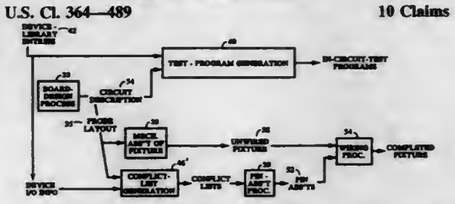
METHOD AND APPARATUS FOR PIN ASSIGNMENT IN AUTOMATIC CIRCUIT TESTERS

Alan J. Albee, Nashua, N.H.; Erik Duus, Acton, and Mark Ellis, Sudbury, both of Mass., assignors to Gen Rad, Inc., Concord, Mass.

Continuation of Ser. No. 48,414, Apr. 14, 1993, abandoned. This application Dec. 29, 1995, Ser. No. 580,795

Int. Cl.[6] G01R *1/02;1/067*

U.S. Cl. 364—489 **10 Claims**



1. A method of making electrical connections between board probes and system contacts of a test fixture associated with a given type of circuit board that includes board components to be tested, the test fixture including board probes so positioned with respect to each other as to enable them simultaneously to contact predetermined test nodes respectively associated therewith on a circuit board of the given circuit-board type, the test fixture also including a corresponding plurality of system contacts so positioned with respect to each other as to enable them simultaneously to contact respective system pins associated therewith in a multiplexed automatic circuit tester that includes system resources and the system pins, which are organized into pin groups, in each of which less than all of the pins in the pin group can be connected to separate system resources simultaneously, the method comprising the steps of:

A) generating, independently of the results of test generation for the circuit-board type, a conflict list for each of a plurality of board components to be tested;

B) employing the lists thus generated as inputs to a pin-assignment program to generate connection lists that pair board probes with system contacts; and

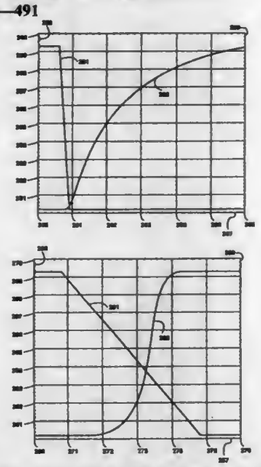
C) wiring the board probes to the system pins in accordance with the connection lists.

5,548,526

TIMING MODEL AND CHARACTERIZATION SYSTEM FOR LOGIC SIMULATION OF INTEGRATED CIRCUITS

Michael N. Misheloff, Dublin, Calif., assignor to VLSI Technology, Inc.

Filed Mar. 11, 1992, Ser. No. 849,242
Int. Cl.[6] G06F *17/10;17/17*
U.S. Cl. 364—491 **41 Claims**



I. A computer implemented method comprising the steps of:

(a) designing, under the direction of a computer user, logic circuitry; and,

(b) simulating, by a computer, function of the logic circuitry, including modeling propagation delay through a logic device within the logic circuitry, the modeling including the following substeps:

(b.1) dividing operation of the logic device into a first region and a second region, a boundary between the first region and the second region being based on duration of input ramp to the logic device and amount of capacitive load driven by the logic device,

(b.2) when the logic device operates in the first region, using a first formula to obtain a first value representing delay through the logic device, the first formula varying the first value based on the duration of the input ramp to the logic device and the capacitive load driven by the logic device, wherein the input ramp of the logic device is determined for an input of the logic device transitioning from a first voltage level to a second voltage level and wherein the first formula has a form as follows:

DT=A+B*(INPUT RAMP)+D*(LOAD)

where DT represents the first value, INPUT RAMP represents duration of the input ramp, LOAD represents capacitive load driven by the logic device, and A, B and D are coefficients determined using circuit simulations, and

(b.3) when the logic device operates in the second region, using a second formula to obtain the first value, the second formula varying the first value based on the duration of the input ramp to the logic device and the capacitive load driven by the logic device, wherein the input ramp of the logic device is determined for an input of the logic device transitioning from the first voltage level to the second voltage level, wherein the second formula has a form as follows:

DT=A+B*(CRITINRAMP)+D*(LOAD)+Z*(INPUT RAMP−CRITINRAMP)

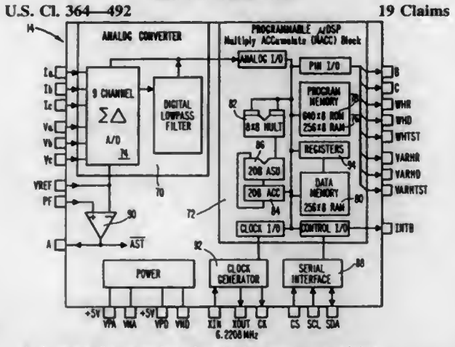
wherein CRITINRAMP represents INPUT RAMP at the border between the first region and the second region for the LOAD, and Z is a determined using circuit simulations.

5,548,527

PROGRAMMABLE ELECTRICAL ENERGY METER UTILIZING A NON-VOLATILE MEMORY

Rodney C. Hemminger, and Mark L. Munday, both of Raleigh, N.C., assignors to ABB Power T&D Company Inc., Raleigh, N.C.

Continuation of Ser. No. 259,578, Jun. 14, 1994, abandoned, which is a continuation of Ser. No. 839,182, Feb. 21, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 484,789
Int. Cl.[6] G06F *17/00*
U.S. Cl. 364—492 **19 Claims**



I. A meter for metering electrical energy, comprising:

a processing means having an associated memory for receiving an input of analog voltage and current signals and for processing said analog voltage and current signals to generate data representative of electricity measurements and related information; and

a non-volatile memory coupled to said processing means for storing calibration constants and energy formula associated with various meter forms, at least some of said energy formula and calibration constants being downloaded from said non-volatile memory to said associated memory, said electricity measurements being based on said energy formula and calibration constants downloaded to said associated memory.

5,548,528

VIRTUAL CONTINUOUS EMISSION MONITORING SYSTEM

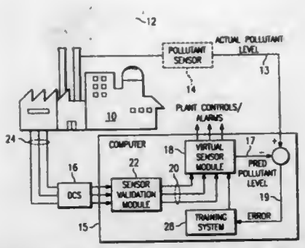
James D. Keeler; John P. Havener; Devendra Godbole, and Ralph B. Ferguson, all of Austin, Tex., assignors to Pavilion Technologies, Austin, Tex.

Continuation of Ser. No. 102,405, Aug. 5, 1993, Pat. No. 5,386,373. This application Jan. 30, 1995, Ser. No. 380,062
Int. Cl.[6] G05B *13/02*
U.S. Cl. 364—497 **11 Claims**

1. A method for monitoring select output parameters in a manufacturing plant that are generated as a byproduct of the operation of the plant, the manufacturing plant having controls operating in response to received control values to alter the operation of the plant, and sensors to measure the operating parameters of the plant and output associated sensor values, comprising the steps of:

determining at least once the level of the select output parameters output by the plant and the associated control values to the plant in addition to the associated sensor values, the step of determining at least once utilizing a predetermined determination process;

measuring on a substantially frequent basis the control values to the plant and the sensor values output by the sensors;



storing a representation of the plant in association with the determination process in a virtual sensor predictive network having as an output a predicted select output parameter level that corresponds to the actual select output parameter level determined by the determination process to be output by the manufacturing plant, the control values of the plant and the sensor values of the plant comprising inputs to the virtual sensor predictive network, the stored representation learned from the determined output parameter level by the determination process, the control values and the sensor values, the virtual sensor predictive network operable to be trained upon the determined level of the select output parameters, the measured control values and the sensor values to generate the stored representation; and

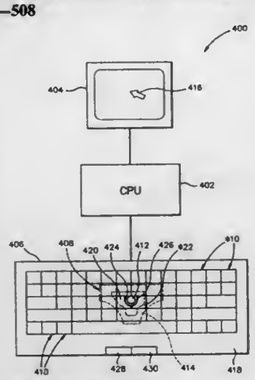
generating an error when the predicted output parameter level exceeds a predetermined threshold.

5,548,529

FORCE TRANSDUCER WITH SCREEN PRINTED STRAIN GAUGES

Edwin J. Selker, Palo Alto; Barton A. Smith, Campbell, and Boris Kamentser, Fountain Valley, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 14, 1994, Ser. No. 181,648
Int. Cl.[6] G06F *3/033;* **G01L** *1/18;* **H01C** *10/10*
U.S. Cl. 364—508 **48 Claims**



1. A force transducer comprising:

an elongated lever arm having a fixed end and a free end to which an external force is applied;

a sensing element that includes a substrate having a central portion at which the fixed end of the lever arm is attached and at least two substantially planar tab regions that project outwardly from the central portion along first and second orthogonal force detecting axes, the sensing element further including thick film strain gauge material printed onto the substrate in at least first and second locations and including conductive contacts on the substrate that are coupled to the strain gauge material to define a first electrical path and a second electrical path through the strain gauge material and are oriented along the first and second force detecting axes, respectively; and

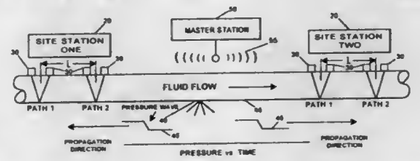
a support structure that supports the sensing element so that the substrate undergoes localized strain approximately at the junctions of the tab regions and the central portion when the external force is applied to the free end of the lever arm.

5,548,530

HIGH-PRECISION LEAK DETECTOR AND LOCATOR

Joseph Baumoel, c/o Controlotron Corporation, 155 Plant Ave., Hauppauge, N.Y. 11788

Filed Apr. 24, 1995, Ser. No. 427,411
Int. Cl.[6] G01F *1/66*
U.S. Cl. 364—509 **27 Claims**



10. Apparatus for detecting the presence of a leak in a segment of a pipeline comprising:

two site stations each having an ultra-sonic transducer assembly provided respectively at the beginning and end of the pipeline segment, each said assembly having two pairs of ultrasonic transducers for determining the sonic propagation velocity V_s of ultrasonic energy emitted by the transducers through fluid in the pipeline, each pair of ultrasonic transducers being displaced along the pipeline by a preset distance and each defining an ultrasonic energy flow path;

a computer for determining the value of V_s for each ultrasonic energy flow path through the fluid in the pipeline at each site station at predetermined time intervals, the computer further forming values ΔV_s defined as the difference between sequential values of V_s at said predetermined time intervals for each flow path at each site station;

a memory wherein said ΔV_s values are stored for each flow path having a predetermined number of memory cells, where a value of ΔV_s is stored in each cell;

the computer further determining if there is a correlation in the stored values of ΔV_s for each flow path and discriminating, if there is a correlation between the ΔV_s values for each path, between a correlation caused by zero values of ΔV_s stored in the memory for each path and a correlation of ΔV_s values reflecting that a transient in the fluid in the pipeline has arrived at each site station; and

the computer further determining, if there is a correlation wherein the ΔV_s values reflect that a transient has arrived at each site station, whether the correlation corresponds to a leak in the segment, and if so, indicating that a leak has occurred.

5,548,531
OPTICAL PROCESSING SYSTEM

Mohammed Shabeer, Glasgow, United Kingdom, assignor to British Telecommunications public limited company, London, England

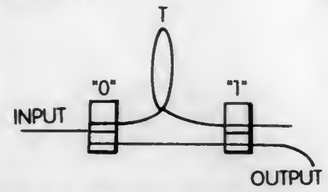
PCT No. PCT/GB91/02277, § 371 Date Oct. 20, 1993, § 102(e) Date Oct. 20, 1993, PCT Pub. No. WO92/11591, PCT Pub. Date Jul. 9, 1992

PCT Filed Dec. 19, 1991, Ser. No. 78,242

Claims priority, application United Kingdom, Dec. 20, 1990, 9027652

Int. Cl.[6] G01S *17/02*

U.S. Cl. 364—514 R **17 Claims**



1. An optical processing system for identifying when an incoming optical signal has reached its correct destination, said optical processing system comprising,

data transmission means for transmitting optical signal data, data encoding means coupled to said data transmission means and to an optical transmission medium, and a data receiver coupled to said optical transmission medium,

said data encoding means comprising first encoding means for encoding a binary '1' in the data into a first code sequence and for encoding a binary '0' in the data into a second code sequence, second encoding means for encoding each binary '1' in the first and second code sequences into a first pair of digits, and for encoding each binary zero in the first and second code sequences into a second pair of digits, the second pair of digits being the complement of the first pair of digits, the digits in each of said first and said second pair of digits being separated by time T,

said data receiver having at least one optical coupling stage, the or each optical coupling stage having an optical coupler with a '1' coupling ratio, the coupling stage having a principal channel with a time delay T and a coupled channel, the location of the time delay T relative to the optical coupler determining whether the receiver is a **10** or a **01** coupling stage,

each data receiver providing an output over a period of time at intervals of T and the arrangement being such that the data for optical coupling stages provides an odd number of 2N-1 outputs where N is the number of stages, and means for monitoring the value of Nth digit, to determine if the incoming Signal has reached its correct destination.

5,548,532
APPARATUS AND METHOD FOR FORMULATING AN INTERACTIVE TV SIGNAL

Jean-René Menand, Marina Del Rey, Calif.; Kuriacose Joseph, Plainsboro, and Ansley Wayne Jessup, Jr., Willingboro, both of N.J., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Apr. 28, 1994, Ser. No. 234,773

Int. Cl.[6] H04J *3/24;* **H04B** *1/66;* **H04N** *7/52*

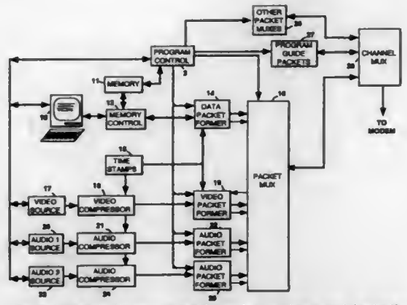
U.S. Cl. 364—514 C **22 Claims**

1. Apparatus for generating an interactive audio/visual program comprising:

a source (**18**) of transport packets of compressed video signal;

a source (**21**) of transport packets of compressed audio signal;

a computer (**10**) for generating an interactive program associated with said compressed audio and video signals, said interactive program being formed of different modules, respective said modules including executable codes or data, and including a directory module linking application modules;



error coding means (**79**) for generating error check bits over respective said modules and concatenating error check bits to corresponding modules;

transport processor apparatus (**14**) for packeting said modules into transport packets and grouping transport packets from respective modules into transmission units, and forming auxiliary transport packets including header information for respective transmission units;

means (**5**) for assigning first identifier codes $SCID_v$, to respective video transport packets, second different identifier codes $SCID_a$, to respective audio transport packets, and third different identifier codes $SCID_D$, to respective interactive program transport packets;

a multiplexer (**16**) for time division multiplexing said interactive program transport packets with said audio, and video transport packets in such fashion that said interactive program is repeated included with said compressed audio and compressed video signals.

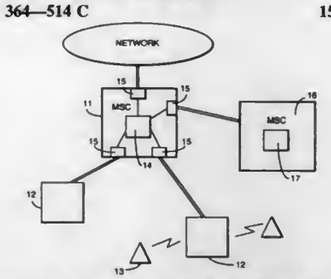
5,548,533
OVERLOAD CONTROL FOR A CENTRAL PROCESSOR IN THE SWITCHING NETWORK OF A MOBILE COMMUNICATIONS SYSTEM

Zhengping Gao, Gaithersburg, Md.; Steve Racz, Dallas, and Kalyan Basu, Plano, both of Tex., assignors to Northern Telecom Limited, Montreal, Canada

Filed Oct. 7, 1994, Ser. No. 319,678

Int. Cl.[6] H04B *1/60*

U.S. Cl. 364—514 C **15 Claims**



1. A method of controlling overload of a central processor in the switching network of a mobile communications system, in which network peripheral processors send messages to a central processor, which method comprises the steps of:

monitoring delay experienced by messages awaiting processing at the central processor;

using the monitored delay to compile central processor congestion reports indicative of congestion of the central processor;

broadcasting the central processor congestion reports from the central processor to the peripheral processors; and

maintaining, at the peripheral processors, variable message origination thresholds responsive to said central processor congestion reports.

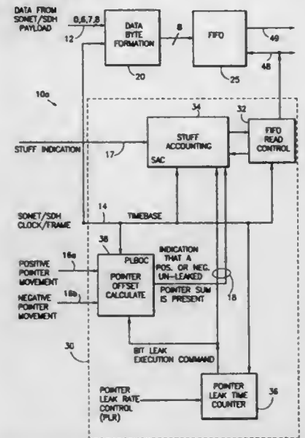
5,548,534
TWO STAGE CLOCK DEJITTER CIRCUIT FOR REGENERATING AN E4 TELECOMMUNICATIONS SIGNAL FROM THE DATA COMPONENT OF AN STS-3C SIGNAL

Daniel C. Upp, Southbury, Conn., assignor to TranSwitch Corporation, Shelton, Conn.

Filed Jul. 8, 1994, Ser. No. 272,259

Int. Cl.[6] H04J *3/06*

U.S. Cl. 364—514 R **19 Claims**



1. A desynchronizing apparatus which receives a gapped payload data component of an STS-3C (STM-1) telecommunications signal with an associated STS-3C clock, the gapped payload data component having bytes with six, seven, or eight bits of signal data, and provides therefrom a substantially ungapped DS-4NA (E4) telecommunications data signal with an associated DS-4NA clock, comprising:

a) data byte formation means for receiving the bits of the gapped payload data component and for generating therefrom eight bit bytes of data;

b) first FIFO means coupled to said data byte formation means, said first FIFO means for receiving and storing said eight bit bytes of data;

c) first FIFO read control means coupled to said first FIFO means and to the STS-3C clock, said first FIFO read control means for reading said eight bit bytes of data out of said first FIFO means according to a slightly gapped clock which substantially reduces jitter in the gapped payload data component, said slightly gapped clock running on a schedule causing either two hundred forty-one or two hundred forty-two bytes to be read out of said first FIFO means for each two hundred seventy cycles of the STS-3C clock, and said first FIFO read control means for determining whether a two hundred forty-second byte is to be read out of said first FIFO means based at least partially on pointer movements in the STS-3C signal and bit stuffs in the STS-3C signal;

d) second FIFO means coupled to said first FIFO means for receiving said eight bit bytes according to said slightly gapped clock, and for storing said eight bit bytes;

e) a FIFO fullness measurement means having said slightly gapped clock as a first input, and the DS-4NA clock as a second input, said FIFO fullness measurement means for providing an indication of relative fullness of said second FIFO means; and

f) a voltage controlled oscillator means coupled to said FIFO fullness measurement means for receiving said indication and for generating the DS-4NA clock signal at least partially in response thereto, wherein said eight bit bytes are clocked out of said second FIFO means at the rate of the DS-4NA clock signal, and together with the DS-4NA clock signal comprises the ungapped DS-4NA (E4) data signal.

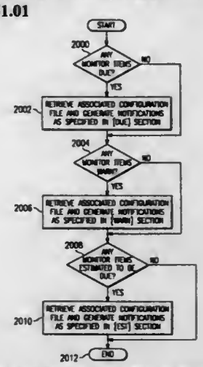
5,548,535
MONITOR UTILITY FOR USE IN MANUFACTURING ENVIRONMENT

John G. Zvonar, Austin, Tex., assignor to Advanced Micro Devices, Inc., Austin, Tex.

Filed Nov. 8, 1994, Ser. No. 335,994

Int. Cl.[6] G07C *03/00;* **G08B** *21/00;23/00*

U.S. Cl. 364—551.01 **30 Claims**



1. A method of operating a computer system to monitor, track and schedule monitor items associated with at least one entity employed in a manufacturing facility, the method comprising the steps of:

receiving data regarding performance of events in connection with an entity from a first input source;

updating a current status of each of said monitor items using said first input source data;

determining whether at least one of said monitor items is due;

responsive to a determination that at least one of said monitor items is due, notifying a designated user;

determining whether at least one of said monitor items will become due within a user-selected warning interval;

responsive to a determination that at least one of said monitor items will become due within said user-selected warning interval, issuing a warning to designated users via electronic mail; and

generating a report showing said current status of only user-selected ones of said monitor items.

5,548,536
METHOD FOR DETERMINING QUANTITIES WHICH CHARACTERIZE THE DRIVING BEHAVIOR

Dieter Ammon, Stuttgart, Germany, assignor to Daimler-Benz Ag, Stuttgart, Germany

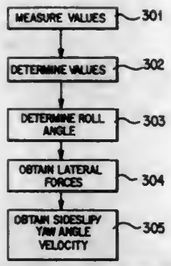
Continuation-in-part of Ser. No. 60,548, May 13, 1993, abandoned. This application Oct. 17, 1994, Ser. No. 322,530

Claims priority, application Germany, May 16, 1992, 42 16 301.3

Int. Cl.[6] G06F *17/00*

U.S. Cl. 364—565 **20 Claims**

1. Method for determining at least one quantity which characterizes driving behavior, using a computing device which is fed signals representing measured quantities of the steering angle, of the longitudinal speed of a vehicle that has tires and of two



transverse accelerations located one behind the other in the longitudinal direction of the vehicle, comprising the steps of:

deriving further quantities using vehicle-specific quantities and a vehicle model;

determining yaw-angle velocity using the measured quantities and the derived further quantities along with the vehicle model, wherein the vehicle model takes into account the transverse force buildup at the tires of the vehicle;

outputting the yaw-angle velocity to a vehicle control device; and

influencing driving behavior of the vehicle with the vehicle control device as a function of the yaw-angle velocity.

5,548,537

ADJUSTING METHOD FOR AN ELECTRONIC PART

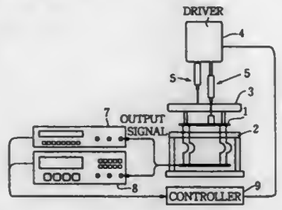
Minoru Taguchi, Saitama-ken, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jan. 18, 1995, Ser. No. 374,124

Claims priority, application Japan, Jan. 19, 1994, 6-003888

Int. Cl.[6] G06G *7/30;7/62*

U.S. Cl. 364—571.02 **5 Claims**



1. A method for adjusting an electronic part which has a characteristic changeable across a range of values, comprising the steps of:

sampling output signals corresponding to values of the characteristic of the electronic part, said values separated from one another at regular intervals;

calculating a function representing a relationship between the sampled output signals and said values of the characteristic with an interpolation formula:

calculating a changing value of the characteristic to set the output signal to a desired value using the calculated function; and

adjusting the characteristic of the electronic part in accordance with the calculated changing value.

5,548,538

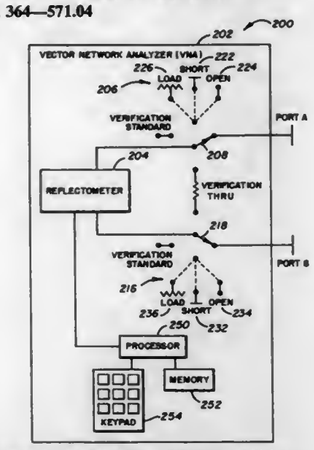
INTERNAL AUTOMATIC CALIBRATOR FOR VECTOR NETWORK ANALYZERS

Martin L Grace, San Jose, and William W. Oldfield, Redwood City, both of Calif., assignors to Wiltron Company, Morgan Hill, Calif.

Filed Dec. 7, 1994, Ser. No. 350,563

Int. Cl.[6] G01R *35/00*

U.S. Cl. 364—571.04 **13 Claims**



1. A vector network analyzer (VNA) comprising:

a reflectometer;

a measurement port A;

internal calibration standards;

a switch having a first end connected to the reflectometer and a second end rement port A;

a processor; and

a memory for storing a data structure comprising:

error terms of an error matrix to account for measurement error between the measurement port A and the reflectometer wherein the error matrix is defined as follows:

$$E_A = \begin{bmatrix} e00_A & e01_A \\ e10_A & e11_A \end{bmatrix}$$

and wherein the error terms comprise;

$a_A = -det(E_A)$;

$b_A = e00_A$; and

$c_A = e11_A$.

5,548,539

ANALYSIS MECHANISM FOR SYSTEM PERFORMANCE SIMULATOR

Martin Vlach, Portland; Ernst Christen, Beaverton; Darrell A. Teegarden, Lake Oswego, and David G. Bedrosian, Tigard, all of Oreg., assignors to Analogy, Inc., Beaverton, Oreg.

Filed Nov. 5, 1993, Ser. No. 148,697

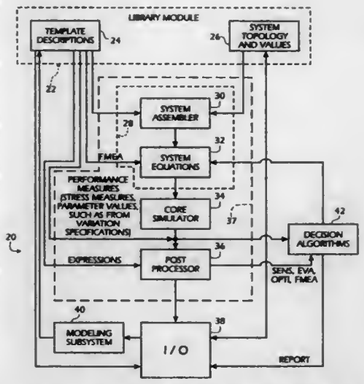
Int. Cl.[6] G06F *17/00*

U.S. Cl. 364—578 **20 Claims**

1. A system performance simulator (**20**) for simulating the performance of a physical, real-world system (**200, 240**), including an analysis mechanism (**50**) for analyzing system performance of the physical, real-world system (**200, 240**), comprising:

a simulator (**37**);

a template set (**24**), having plural templates therein, written in a hardware description language which represents physical, real-world devices;



an extraction mechanism for extracting indicators of design quality of at least one template in a represented system based on a specific analysis protocol (**56, 60, 66, 70, 74**) from a simulation of the physical, real-world system, wherein said extraction mechanism includes computer code segments for said specific analysis protocol (**56, 60, 66, 70, 74**), where part of said code segments is located in said template set, which template code segment includes a behavior protocol which represents the behavior characteristics of a device when the device is operated in accordance with a predefined parameter set, and wherein part of said code segments is located in said simulator (**37**) which simulator code segment includes a command protocol for implementing the code segment located in a template; and

a display interface (**62, 68, 72, 76**), connected to an I/O device (**38**) for displaying said indicators of design quality to a designer.

5,548,540

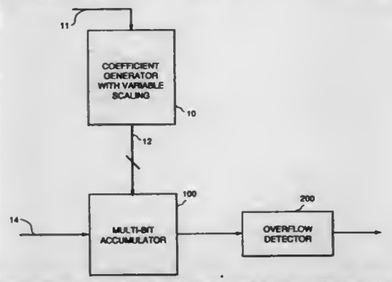
DECIMATION FILTER HAVING A SELECTABLE DECIMATION RATIO

Daniel A. Staver, and Donald T. McGrath, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 24, 1994, Ser. No. 265,475

Int. Cl.[6] G06F *15/31*

U.S. Cl. 364—724.1 **33 Claims**



1. A decimation filter having a selectable decimation ratio for filtering at least one externally derived stream of quantized electrical signals having a predetermined rate, said filter comprising:

a coefficient generator responsive to a set of externally derived decimation-ratio select signals to provide a separate predeterminedly normalized coefficient signal at each respective one of a plurality of output ports, said coefficient generator including a normalizer circuit for providing the separate normalized coefficient signal at each respective one of N+S−1 normalizer output ports wherein N is an integer chosen so that 2^N constitutes an upper decimation ratio bound of said decimation filter, and S is an integer corresponding to a number of selectable decimation ratios provided by said decimation filter and chosen so that $2^{N-(S-1)}$ constitutes a lower decimation ratio bound of said decimation filter, said N+S−1 normalizer output ports comprising the plurality of output ports of said coefficient generator; and

an accumulator coupled to said coefficient generator to receive each normalized coefficient signal generated therein, said accumulator further coupled to receive said at least one stream of quantized electrical signals so as to produce, upon masking with respective ones of the received normalized coefficient signals, a plurality of accumulator output signals.

5,548,541

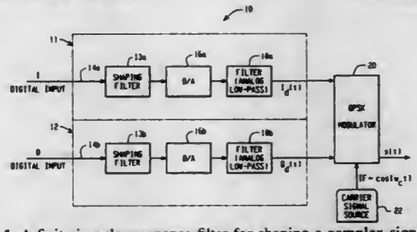
FINITE IMPULSE RESPONSE FILTER FOR MODULATOR IN DIGITAL DATA TRANSMISSION SYSTEM

Raymond E. Bierman, Cerritos; Paul C. Perryman, Laguna Niguel, and Jason T. Wright, Anaheim, all of Calif., assignors to Interstate Electronics Corporation, Anaheim, Calif.

Filed Aug. 8, 1994, Ser. No. 287,208

Int. Cl.[6] G06F *17/10;* **H03C** *3/00;* **H04L** *27/20*

U.S. Cl. 364—724.16 **18 Claims**



1. A finite impulse response filter for shaping a complex signal, in the form of s digital data pulse train having an in-phase channel and a quadrature channel, in a digital data transmission system, comprising:

a delay element for sequentially receiving in-phase and quadrature binary data bits in the data pulse train at fixed data cycle intervals and outputting simultaneously in parallel a plurality n of data bits for each of the in-phase and quadrature channels representing a most recent history of the past n data bits received by said delay element during the past n data cycle intervals;

an element for outputting m sampling bits per each data bit, said sampling bits corresponding to particular sampling points for said n data bits, and

a memory device having at least (n+m) address lines for providing at least $2^{(n+m)}$ address locations, said n data bits and m sampling bits providing an input to said address lines, said memory device providing a specific output value for each possible combination of address line inputs.

5,548,542

HALF-BAND FILTER AND METHOD

Cindy C. Ranth; Perry W. Frogge, and David H. Damerow, all of Palm Bay, Fla., assignors to Harris Corporation, Melbourne, Fla.

Continuation of Ser. No. 930,167, Aug. 14, 1992, abandoned. This application Sep. 12, 1994, Ser. No. 304,433

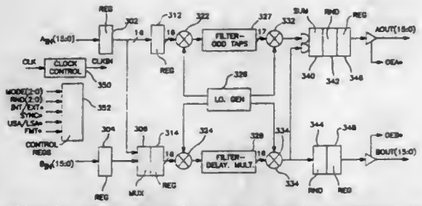
Int. Cl.[6] G06F *17/10*

U.S. Cl. 364—724.16 **12 Claims**

1. A digital filter comprising:

a first data stream input port for N-bit data samples;

first and second multipliers for downconverting said data samples;



adders for summing partial products of the downconverted data samples and filter coefficients, and with the K least significant bits of each partial product ignored for K a positive integer;

third and fourth multipliers for upconverting the summed partial products, said adders being connected between pairs of said multipliers; and

a local oscillator for providing sines and cosines to said multipliers for up and down conversion.

5,548,543

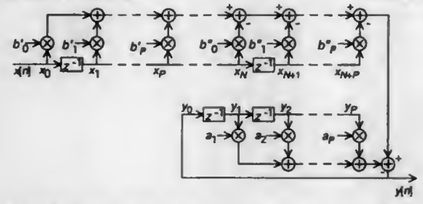
COMPUTATIONALLY EFFICIENT LINEAR-PHASE FINITE IMPULSE RESPONSE FILTER

Avery Li-Chun Wang, Redwood City, Calif., assignor to Stanford University, Stanford, Calif.

Filed Dec. 8, 1994, Ser. No. 352,382

Int. Cl.[6] G06F *17/10*

U.S. Cl. 364—724.16 **12 Claims**



1. A method of digital signal processing using a computational means for filtering an input signal to obtain an output signal in accordance with a desired filter response, the method comprising the steps of:

selecting a first filter response vector and a second filter response vector,

determining a third filter response vector from the first filter response vector and the second filter response vector by an algorithm including the synthetic division algorithm, and

generating the output signal from the input signal, the first filter response vector, the second filter response vector, and the third filter response vector by executing on the computational means a set of filter operation instructions.

5,548,544

METHOD AND APPARATUS FOR ROUNDING THE RESULT OF AN ARITHMETIC OPERATION

David T. Matheny; Paul K. Miller, and Michael P. Taborn, all of Austin, Tex., assignors to IBM Corporation, Armonk, N.Y.

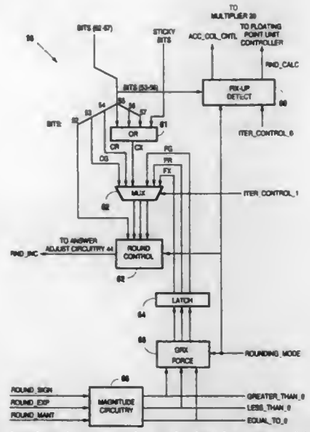
Filed Oct. 14, 1994, Ser. No. 323,484

Int. Cl.[6] G06F *7/38*

U.S. Cl. 364—745 **11 Claims**

1. An apparatus for rounding an approximate answer produced during the execution of an operation by a multiple stage execution pipeline, comprising:

first circuitry for determining if a rounding calculation is required wherein, when a rounding calculation is required, said second circuitry establishes a correction factor for the approximate answer and initiates the execution of the rounding calculation by the pipeline;



second circuitry for outputting calculated accuracy bits when no rounding calculation is required and for outputting forced accuracy bits when a rounding calculation is required;

third circuitry for determining the forced accuracy bits from the result of the rounding calculation; and

fourth circuitry for establishing a rounding signal from the calculated accuracy bits when no rounding calculation is required and for establishing the rounding signal from the forced accuracy bits when the rounding calculation is required.

5,548,545

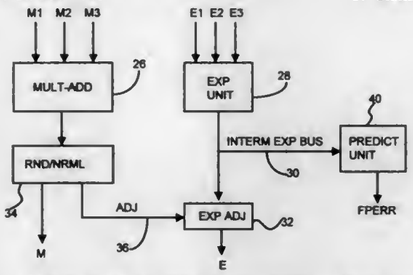
FLOATING POINT EXCEPTION PREDICTION FOR COMPOUND OPERATIONS AND VARIABLE PRECISION USING AN INTERMEDIATE EXPONENT BUS

Cheryl S. Brashears, Cupertino, and James S. Blomgren, San Jose, all of Calif., assignors to Exponential Technology, Inc., San Jose, Calif.

Filed Jan. 19, 1995, Ser. No. 375,352

Int. Cl.[6] G06F *7/38*

U.S. Cl. 364—748 **17 Claims**



1. A floating point processor for performing a floating point operation, the floating point processor comprising:

a plurality of inputs representing numbers in a floating point format, each input in the plurality of inputs having a mantissa portion and an exponent portion;

an exponent unit, receiving the exponent portions of the plurality of inputs, the exponent unit calculating an intermediate exponent;

a multiplier for multiplying the mantissa portions of at least two of the plurality of inputs, the multiplier producing an un-normalized output;

a normalizing and rounding unit, receiving the un-normalized output from the multiplier, the normalizing and rounding unit normalizing and rounding the un-normalized output to produce a normalized mantissa result, the normalizing and rounding unit determining an adjustment needed to the intermediate exponent, the adjustment needed being equivalent to a bit-position shifting for the normalizing and rounding performed on the un-normalized output, the normalizing and rounding unit outputting an adjust value indicating the adjustment needed to the intermediate exponent;

an intermediate exponent bus, receiving the intermediate exponent from the exponent unit, the intermediate exponent bus capable of holding a single exponent;

an exponent adjust unit, coupled to the intermediate exponent bus, the exponent adjust unit receiving the intermediate exponent on the intermediate exponent bus, the exponent unit receiving from the normalizing and rounding unit the adjust value indicating the adjustment needed to the intermediate exponent, the exponent adjust unit adjusting the intermediate exponent by the adjust value received from the normalizing and rounding unit, exponent adjust unit outputting a final exponent result; and

a prediction unit, coupled to the intermediate exponent bus and receiving the intermediate exponent, the prediction unit comparing the intermediate exponent to criteria indicating a range of exponent values that are in a safe range, the prediction unit signaling a floating point error if the intermediate exponent is outside the safe range indicated by the criteria,

whereby a floating point error is predicted by comparing a single intermediate exponent to criteria that is the same for all floating point operations.

5,548,546

HIGH-SPEED CARRY INCREMENT ADDING DEVICE

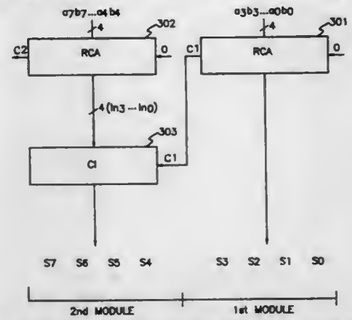
Hyun S. Jang, and Chul D. Oh, both of Bubaleub, Rep. of Korea, assignors to Hyundai Electronics Industries, Co., Ltd., Rep. of Korea

Continuation of Ser. No. 228,107, Apr. 15, 1994, abandoned. This application Oct. 24, 1995, Ser. No. 547,427

Claims priority, application Rep. of Korea, Apr. 16, 1993, 1993-6461

Int. Cl.[6] G06F *7/50*

U.S. Cl. 364—786 **4 Claims**



1. A high-speed carry increment adding device, comprising:

a first module including first adding means, said first adding means adding a desired number of first bit inputs and generating a plurality of partitioned sums and a partitioned carry as a result of the addition;

a second module including second adding means and conditional incrementing means, said second adding means adding a desired number of second bit inputs regardless of the partitioned carry from said first adding means and generating a plurality of partitioned sums and a partitioned carry as a result of the addition, said conditional incrementing means inputting the partitioned carry from said first adding means as an increment signal and incrementing the partitioned sums from said second adding means in response to the inputted increment signal;

wherein said second module further includes:

partitioned sum detection means for detecting whether all of the partitioned sums from said second adding means are "1" and generating a partitioned sum detect signal in accordance with the detected result; and

wherein said high-speed carry increment adding device further comprises:

at least one module arranged at a stage subsequent to and in parallel to said second module, said at least one module having the same construction as that of said second module; and

increment signal generation means for applying the partitioned carry from said first adding means of said first module as the increment signal to said conditional incrementing means of said second module when the partitioned carry is generated from said first adding means and, when the partitioned carry is generated from lower-order one of said second module and said at least one module, ANDing the partitioned carry from said lower-order module and the partitioned sum detect signals which are generated from said partitioned sum detection means from a module subsequent to said lower-order module to a given module and applying the increment signal to said conditional incrementing means of a module subsequent to said given module if the ANDed result is "1"; and

wherein said conditional incrementing means includes means for generating a first one of final partitioned sums by exclusive-ORing the increment signal and a least significant bit of the partitioned sums from said second adding means and means for generating each of the other final partitioned sums by ANDing the increment signal and lower-order bits of the partitioned sums from said second adding means and exclusive-ORing the ANDed result and a corresponding bit of the partitioned sums from said second adding means.

5,548,547

Patent Not Issued For This Number

5,548,548

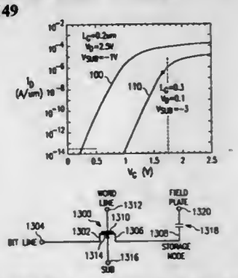
PASS TRANSISTOR FOR A 256 MEGABIT DRAM WITH NEGATIVELY BIASED SUBSTRATE

Amitava Chatterjee, Plano; Jiann Liu, Irving; Purnendu Mozumder, Plano; Mark S. Rodder, University Park, and Ih-Chin Chen, Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 215,241, Mar. 21, 1994, abandoned. This application Dec. 19, 1994, Ser. No. 358,647

Int. Cl.[6] G11C *11/401*

U.S. Cl. 365—149 **13 Claims**



1. A dynamic random access memory device formed in a substrate with a one transistor cell pass transistor having source and drain implant regions on either side of a channel region in the

substrate and a gate overlying and separated from the channel region by a dielectric, the pass transistor comprising a patterned gate length L of about 0.3 μm, a dielectric thickness of about 85 Å, the source and drain being lightly doped with arsenic, the gate carrying a wordline voltage of about 3.75 volts, the substrate being biased at about −1 volts and a boron concentration in the channel region of about $2.7\times10^{17}/cm^3$.

5,548,549

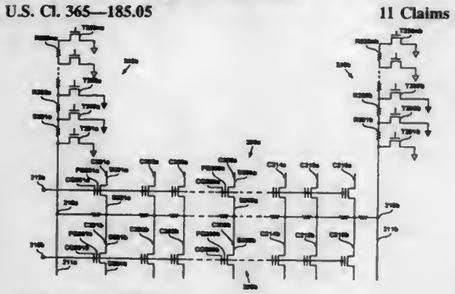
METHOD AND DEVICE FOR IMPROVED PROGRAMMING THRESHOLD VOLTAGE DISTRIBUTION IN ELECTRICALLY PROGRAMMABLE READ ONLY MEMORY ARRAY

Tong-Chern Ong, San Jose, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 129,986, Sep. 30, 1993, Pat. No. 5,422,845. This application Mar. 7, 1995, Ser. No. 399,777

Int. Cl.[6] G11C *11/34*

U.S. Cl. 365—185.05 **11 Claims**



1. An array of MOS devices comprising:

a plurality of MOS devices, each of said MOS devices having a first region and a control gate, wherein said first regions of said plurality of MOS devices are coupled in series to a first node;

a plurality of first resistors coupled to said first node and a first potential; and,

a plurality of first switches coupled to said first potential and said first node, and disposed between each of said plurality of said first resistors, such that said first node is switchably coupled to said first potential through one or more of said first resistors.

5,548,550

NONVOLATILE CONTROL ARCHITECTURE

Gary V. Zanders, Dallas; Francis A. Scherpenberg, Carrollton, both of Tex., and Kevin E. Deierling, Asten, Netherlands, assignors to Dallas Semiconductor Corp., Dallas, Tex.

Division of Ser. No. 928,507, Aug. 11, 1992, which is a continuation-in-part of Ser. No. 502,269, Mar. 30, 1990, Pat. No. 5,243,535, and a continuation-in-part of Ser. No. 502,469, Mar. 30, 1990, Pat. No. 5,297,056, and a continuation-in-part of Ser. No. 502,267, Mar. 30, 1990, Pat. No. 5,218,225. This application Feb. 10, 1995, Ser. No. 386,400

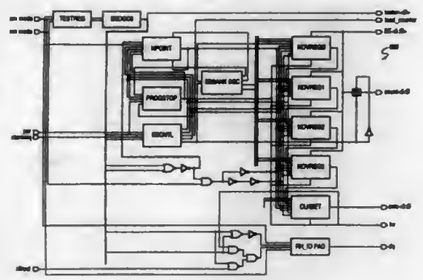
Int. Cl.[6] G11C *14/00*

U.S. Cl. 365—185.08 **10 Claims**

1. A nonvolatile memory, comprising:

a plurality of registers; and

means coupled to each of said plurality of registers for writing information to each of said plurality of registers one at a time, in a predetermined order.



5,548,551

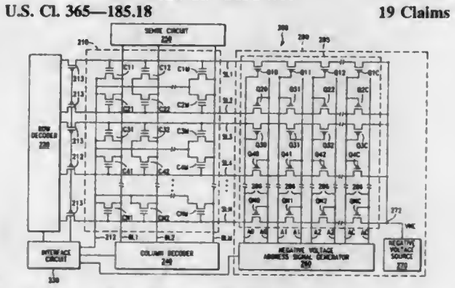
NEGATIVE VOLTAGE DECODING IN NON-VOLATILE MEMORIES

Chi-Ming Wang, Fremont; Anil Gupta, Cupertino, and Hiten D. S. Randhawa, Santa Clara, all of Calif., assignors to Catalyst Semiconductor Corp., Santa Clara, Calif.

Filed Mar. 24, 1995, Ser. No. 409,779

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—185.18 **19 Claims**



1. A non-volatile memory comprising:

a memory array containing rows of memory cells, each memory cell having a control gate;

a plurality of sense lines, each sense line being coupled to the control gates of memory cells in a corresponding row of the memory array;

a negative voltage source;

an array of P-channel transistors connected between the sense lines and the negative voltage source; and

a negative voltage address signal generator coupled to gates of the P-channel transistors and providing gate voltages which cause the array of P-channel transistor to conduct a first negative voltage from the negative voltage source to a selected one of the rows of memory cells.

5,548,552

RECONFIGURABLE PROGRAMMABLE LOGIC DEVICE

Raminda Madurawe, Sunnyvale, Calif., assignor to Altera Corporation, San Jose, Calif.

Division of Ser. No. 314,012, Sep. 28, 1994. This application May 31, 1995, Ser. No. 457,884

Int. Cl.[6] G11C *11/34*

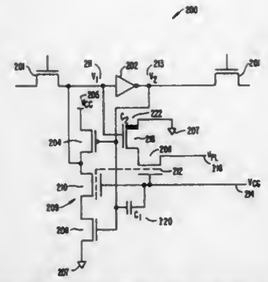
U.S. Cl. 365—185.33 **12 Claims**

1. In a programmable logic device in a single integrated circuit package, a reconfigurable memory comprising:

an inverter having an input and an output;

a PMOS transistor having a gate coupled to the output of the inverter, a drain coupled to the input of the inverter and a source coupled to a power supply potential;

an NMOS transistor having a gate coupled to the output of the inverter, a source coupled to a ground potential and a drain;



an Erasable Programmable Read Only Memory (EPROM) coupling the PMOS transistor to the NMOS transistor; and a charge circuit for selectively programming the EPROM.

5,548,553

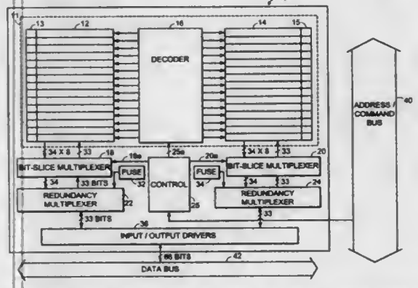
METHOD AND APPARATUS FOR PROVIDING HIGH-SPEED COLUMN REDUNDANCY

Elizabeth M. Cooper, Menlo Park, and Michael Leary, San Jose, both of Calif., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Dec. 12, 1994, Ser. No. 353,603

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—200 **10 Claims**



1. A method for correcting at least one defect in a memory device comprising the steps of:

providing at least one redundant column in a memory array having a plurality of columns, said plurality of columns coupled to a bus having a corresponding plurality of bit locations, each of said columns having an input path and an output path, wherein said output path further comprises a plurality of 2-input multiplexers corresponding to said plurality of bit locations, said input and output paths coupled to said corresponding bit location of said bus; and

rearranging the correspondence between said bits on said bus and columns of memory in response to one of said plurality of columns being defective, such that the redundant column stores data for one of said columns of said plurality of columns and another of said columns of said plurality of columns stores data for said defective column, said step of rearranging comprising the step of coupling neighboring pairs of said columns to the inputs of said plurality of 2-input multiplexers, including coupling said redundant column to the input of one said plurality of 2-input multiplexers, and wherein the output of said multiplexer provides output from either one of said pair of columns to said bus.

5,548,554

INTEGRATED PROGRAMMING CIRCUITRY FOR AN ELECTRICALLY PROGRAMMABLE SEMICONDUCTOR MEMORY DEVICE WITH REDUNDANCY

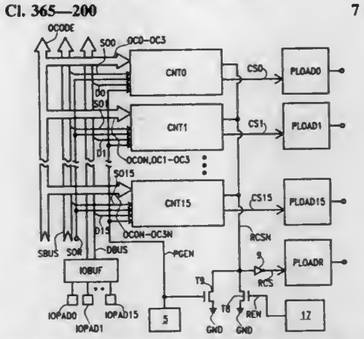
Luigi Pascucci, Milano; Silvia Padoan, Forli, and Marco Maccarrone, Pavia, all of, Italy, assignors to SGS-Thompson Microelectronics, S.r.l., Milan, Italy

Filed Dec. 28, 1994, Ser. No. 365,154

Claims priority, application European Pat. Off., Dec. 29, 1993, 93830528

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—200 **7 Claims**



1. Integrated programming circuitry for an electrically programmable semiconductor memory device which comprises a matrix of memory elements located at the intersection of rows and columns of the matrix, the columns being grouped together to form portions of the matrix associated with respective data input/output pads, and a redundancy circuitry which comprises programmable non-volatile memory registers associated with respective redundancy columns provided in the matrix and forming at least one group of redundancy columns, each non-volatile memory register being programmable to store an address of a defective column and an identifying code for identifying the matrix portion to which the defective column belongs, said programming circuitry comprising:

a plurality of programming load circuits, each one associated with a respective matrix portion for electrically connecting the columns of said portion to a programming voltage line when activated;

a plurality of programming load control circuits, each one controlling the activation of one respective programming load circuit according to the logic state of a respective data signal line carrying a datum to be programmed, and a redundancy programming load circuit associated with said group of redundancy columns, characterized in that each programming load control circuit comprises decoding means supplied with signals which, when a defective column address is supplied to the memory device during programming, are generated from the identifying code stored in the non-volatile register wherein the defective column address is stored, and switch means responsive to a decoded signal at the output of said decoding means to enable the activation of the redundancy programming load circuit according to the logic state of said data signal line and to cause the inhibition of the respective programming load circuit.

5,548,555

METHOD AND CIRCUIT FOR REPAIRING DEFECT IN A SEMICONDUCTOR MEMORY DEVICE

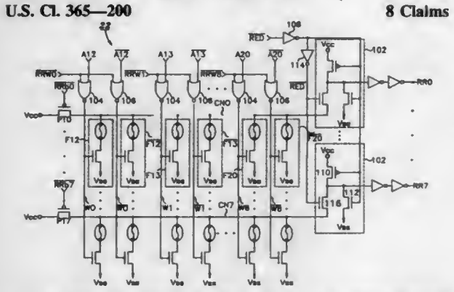
Sung-Soo Lee, and Jin-Ki Kim, both of Seoul, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon-city, Rep. of Korea

Filed Apr. 11, 1995, Ser. No. 420,835

Claims priority, application Rep. of Korea, Apr. 11, 1994, 7549/1994

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—200 **8 Claims**



1. A defective address storage circuit of a semiconductor memory device comprising:

a plurality of charging nodes connected in parallel, each charging node connected to a plurality of electrical fuses;

a circuit which outputs a defective address storage signal in response to an external control signal;

a current source input for supplying current to a selected one of said charging nodes in response to said defective address storage signal;

a redundant sense amplifier connected to each of said charging nodes for outputting a redundant block driving signal indicating that a defective address should be substituted when said charging node connected thereto is at a predetermined logic level during a normal access operation; and

a control circuit which decodes an externally generated address signal and sequentially creates a plurality of current paths for a a plurality of selected fuses so that only one fuse is blown at a time by current provided from said selected one charging node, said control circuit being activated by said defective address storage signal.

5,548,556

Patent Not Issued For This Number

5,548,557

NONVOLATILE SEMICONDUCTOR MEMORY DEVICE WITH A ROW REDUNDANCY CIRCUIT

Tomoshi Futatsuya; Masaaki Mihara; Yasushi Terada; Takeshi Nakayama; Yoshikazu Miyawaki; Shinichi Kobayashi, and Minoru Ohkawa, all of Hyogo-ken, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 11, 1994, Ser. No. 179,731

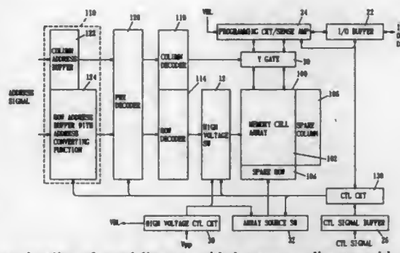
Claims priority, application Japan, Jan. 12, 1993, 5-003189; Jul. 16, 1993, 5-176502; Nov. 4, 1993, 5-275544

Int. Cl.[6] G11C *16/06*

U.S. Cl. 365—201 **39 Claims**

1. A nonvolatile semiconductor memory device, comprising:

a plurality of nonvolatile memory cells arranged in rows and columns;



a plurality of word lines provided corresponding to said rows, each said word line connecting nonvolatile memory cells arranged on a corresponding row; and

word line selection means responsive to a predetermined normal operation mode designation signal for selecting and driving into a selected state always at least two, but not all physically adjacent word lines simultaneously, the physically adjacent word lines each having an entire portion thereof driven into the selected state.

5,548,558

Patent Not Issued For This Number

5,548,559

SEMICONDUCTOR INTEGRATED CIRCUIT

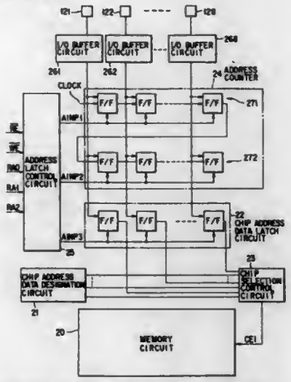
Yoshio Mochizuki; Hideo Kato, both of Kawasaki, and Nobutake Sugiura, Yokohama, all of, Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed May 24, 1995, Ser. No. 448,852

Claims priority, application Japan, May 25, 1994, 6-111156

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—230.08 **6 Claims**



1. A semiconductor integrated circuit comprising:

a chip address data designation circuit having one of nonvolatile circuit characteristic and nonvolatilely programmed wiring corresponding to a chip address assigned to a semiconductor chip, for outputting first chip address data corresponding to the chip address upon receiving an operation power supply voltage;

a chip address data latch circuit for latching second chip address data supplied from outside the semiconductor chip; and

a chip selection control circuit for comparing the first chip address data and the second chip address data, and generating a chip selection signal for activating the semiconductor chip when the first chip address data and the second chip address data coincide with each other.

5,548,560

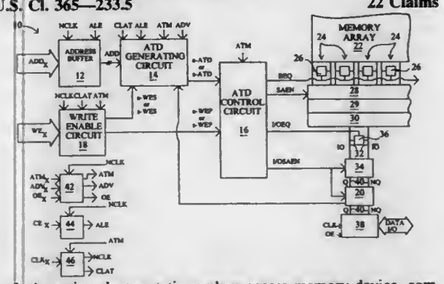
SYNCHRONOUS STATIC RANDOM ACCESS MEMORY HAVING ASYNCHRONOUS TEST MODE

Michael C. Stephens Jr; Ajit K. Medhekar, both of San Jose, and Chitranjan N. Reddy, Milpitas, all of Calif., assignors to Alliance Semiconductor Corporation, San Jose, Calif.

Filed Apr. 19, 1995, Ser. No. 423,822

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—233.5 **22 Claims**



1. A semiconductor static random access memory device, comprising:

at least one memory array, said array including a plurality of memory cells arranged in rows and columns;

a clock generating circuit for generating an internal clock signal in response to an external clock and an external mode signal, the internal clock signal being a synchronous clock corresponding to the external clock when said external mode signal is in a first logic state, the internal clock signal being an asynchronous control signal when said external mode signal is in a second logic state, the asynchronous control signal being at one logic state;

an asynchronous ATD signal generating circuit for receiving memory address signals and generating an asynchronous ATD signal (a-ATD) in response to a change in the memory address signals;

a synchronous ATD generating circuit responsive to the synchronous clock signal for generating a synchronous ATD signal (s-ATD); and

an ATD selection circuit for providing an ATD control signal (c-ATD) in response to the external mode signal, c-ATD being the s-ATD signal in response to the external mode signal of the first logic state, c-ATD being a-ATD in response to an external mode signal of the second logic state.

5,548,561

ULTRASOUND IMAGE ENHANCEMENT USING BEAM-NULLING

Moayyed A. Hussain, Menands; Kenneth W. Rigby, Clifton Park, and Koeunyi Bae, Ithaca, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 27, 1995, Ser. No. 395,143

Int. Cl.[6] G03B *42/06;* **H04R** *17/00*

U.S. Cl. 367—7 **11 Claims**

1. A method for reducing, in a digital imaging system, magnitude of an artifact in an ultrasound image caused by a highly reflective region outside a region of interest, comprising the steps of:

activating the elements of a transducer array using uncorrected transmit time delays which focus transmitted ultrasound beams in the region of interest located at a predetermined angle and at a predetermined range;

forming receive beams from the reflected ultrasound received by said transducer elements using uncorrected receive time delays which focus the receive beams in the region of interest;

displaying an image of the region of interest wherein said image contains an artifact resulting from a source of interference at an angle and range that correspond to a location outside the region of interest;

selecting parameters which approximate the angle and range of the source of interference;

computing time delay corrections which form a null in a region including the approximate location of the source of interference based on the selected parameters;

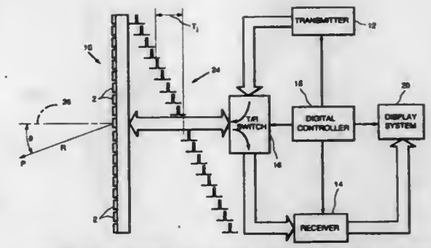
computing corrected transmit time delays as a function of said time delay corrections and said uncorrected transmit time delays;

computing corrected receive time delays as a function of said time delay corrections and said uncorrected receive time delays;

activating said transducer elements using said corrected transmit time delays;

forming receive beams from the reflected ultrasound received by said transducer elements using said corrected receive time delays; and

displaying an image of the region of interest derived from said receive beams formed using said corrected receive time delays so as to reduce prominence of the artifact resulting from the source of interference.



5,548,562

METHOD FOR SYNCHRONIZATION OF SYSTEMS FOR SEISMIC SURVEYS, TOGETHER WITH APPLICATIONS OF THE METHOD

Per Helgerud, Hokksund, and Helge Bragstad, Baerum, both of, Norway, assignors to GECO A.S., Stavanger, Norway

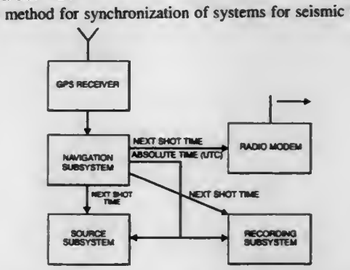
Filed May 10, 1993, Ser. No. 58,204

Claims priority, application Norway, Jun. 30, 1992, 922584

Int. Cl.[6] G01V *1/38;1/26*

U.S. Cl. 367—14 **54 Claims**

1. A method for synchronization of systems for seismic surveys



and of subsystems of said systems, said systems being selected from the group consisting of land-based systems, marine-based systems, and a combination thereof, and said subsystems being

selected from the group consisting of at least one navigation system, at least one seismic signal generating system and at least one recording system comprising:

supplying a survey system with an absolute time standard;

generating via a time code generator in said survey system a time code based on said absolute time standard;

providing at least one programmable event generator in said survey system;

connecting said event generator with said time code generator;

synchronizing said event generator with said absolute time standard;

predetermining the time for a defined event on the basis of given parameters;

providing the time for a defined event with said time code corresponding to a point in time;

supplying the time for said defined event to the respective subsystems;

continuously supplying said subsystems with said absolute time standard; and

executing said defined event in at least one respective subsystem on the basis of said continuously supplied absolute time standard.

5,548,563

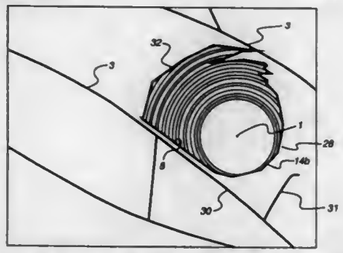
WELL TEST IMAGING

Bruce A. Slevinsky, Calgary, Canada, assignor to Petro-Canada, Calgary, Canada

Filed Sep. 17, 1993, Ser. No. 124,054

Int. Cl.[6] G01V *1/40*; E21B *49/00*

U.S. Cl. 367—25 **6 Claims**



1. A method for creating an image of an oil, gas, or water reservoir boundary from well pressure test data values comprising:

(a) obtaining reservoir pressure response values from a well pressure test selected from the group consisting of drawdown, build-up, fall-off and pulse tests;

(b) using the pressure response values obtained to calculate data values reflecting the rate of pressure change over time and the radius of investigation;

(c) extracting from the data values obtained in step (b) the response that is due to near-wellbore and matrix effects, to obtain residual values representative of boundary effects;

(d) calculating values from the residual values representative of an angle-of-view of the boundary as a function of time;

(e) determining values, by analyzing and applying the angle-of-view values obtained in step (d) and the radius of investigation values, indicative of the location and orientation of the boundaries of the reservoir; and

(f) forming visual images showing the reservoir boundaries relative to the location of the well, using the values determined in step (e).

5,548,564

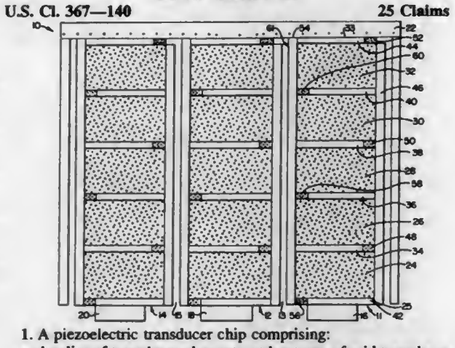
MULTI-LAYER COMPOSITE ULTRASONIC TRANSDUCER ARRAYS

Stephen W. Smith, Durham, N.C., assignor to Duke University, Durham, N.C.

Continuation-in-part of Ser. No. 962,455, Oct. 16, 1992, Pat. No. 5,329,496. This application Apr. 13, 1994, Ser. No. 227,046

Int. Cl.[6] H04R *17/00*

U.S. Cl. 367—140 **25 Claims**



1. A piezoelectric transducer chip comprising:

a plurality of transducer elements, at least one of said transducer elements being a multilayer element comprising a plurality of piezoelectric layers and a plurality of electrode layers forming a plurality of capacitative elements electrically connected in parallel, each of said plurality of piezoelectric layers being separated from the adjacent piezoelectric layers by one of said plurality of electrode layers, and said piezoelectric layers consisting of a first set of alternating electrode layers and a second set of alternating electrode layers interposed between said first set of alternating electrode layers; and

wherein each of said piezoelectric layers of said multilayer element is a piezoelectric composite material comprising a plurality of piezoelectric members formed between adjacent electrodes of said plurality of electrode layers each of said members being spaced apart from adjacent members to thereby form a gap between each of said plurality of piezoelectric members.

5,548,565

TIMEPIECE DEVICE

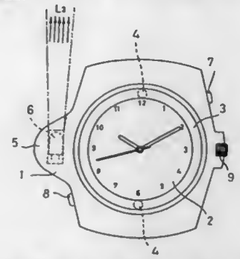
Tetsuzo Aoyama, Misato, and Yoshiyuki Hayami, Ageo, both of, Japan, assignors to Mansei Kogyo Kabushiki Kaisha, Saitama-ken, Japan

Filed Apr. 11, 1995, Ser. No. 419,917

Claims priority, application Japan, Sep. 27, 1994, 6-231453

Int. Cl.[6] F21V *33/00*; G04B *19/30*

U.S. Cl. 368—227 **15 Claims**



1. A timepiece device comprising a watch case, a dial face mounted in said case, said dial face having indices representing hours of the day, first illumination means in said case for illuminating said dial face, and second illuminating means in said case for producing a light beam extending from said case to illuminate external objects, said second illuminating means comprising an LED mounted in a cavity provided in said case outside said dial face adjacent to a 9 O'clock position on said dial face, said LED being disposed in said cavity substantially parallel to said dial face and with an orientation in which an axis of said LED extends substantially parallel to a line passing through the 12 and 6 O'clock positions of the dial face such that said light beam extends from said case substantially parallel to said line passing through the 12 and 6 O'clock positions of the dial face in a direction from said 6 O'clock position to said 12 O'clock position.

5,548,566

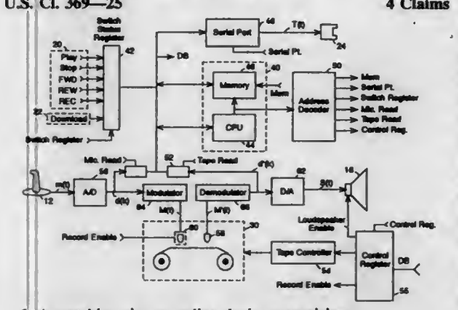
DICTATION RECORDING DEVICE HAVING MEANS FOR RAPIDLY TRANSMITTING RECORDED DICTATION TO A RECEIVING DEVICE

Bruce J. Barker, 160 Beverly Rd., South Huntington, N.Y. 1176

Continuation-in-part of Ser. No. 863,950, Apr. 6, 1992, Pat. No. 5,398,220. This application Apr. 13, 1994, Ser. No. 226,997

Int. Cl.[6] G11B *19/16*

U.S. Cl. 369—25 **4 Claims**



1. A portable voice recording device comprising:

a microphone for generating an electrical signal representative of an acoustic speech signal,

memory device for storing a memory signal representative of said electric signal, and

an output port controller for transmitting said memory signal to a voice processing computer device at a rate substantially more rapid than the rate at which said electrical signal was generated.

5,548,567

AUTOMATIC DISK PLAYER WITH STACKABLE DISK STORAGE BOXES

Kunio Sawai, Daito, Japan, assignor to Funai Electric Co., Ltd., Daito, Japan

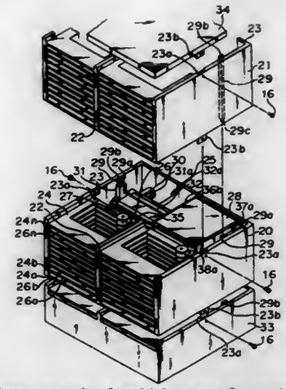
Continuation of Ser. No. 68,258, May 27, 1993, abandoned. This application Apr. 11, 1995, Ser. No. 419,838

Claims priority, application Japan, May 27, 1992, 4-160172; Oct. 13, 1992, 4-077794; Oct. 13, 1992, 4-077795; Oct. 14, 1992, 4-077796; Oct. 15, 1992, 4-078101; Oct. 16, 1992, 4-078465; Oct. 16, 1992, 4-078466; Oct. 16, 1992, 4-078468; Oct. 16, 1992, 4-304663; Oct. 19, 1992, 4-078854; Oct. 19, 1992, 4-078856

Int. Cl.[6] G11B *17/26*

U.S. Cl. 369—36 **17 Claims**

1. A disk player with a front facing control panel for preselecting stored disks, and for automatic disk selection, comprising a plurality of stackable disk storage boxes with front and rear areas, and



having at least one pair of multiple stages for storing disks one above the other on disk-carrying trays in disk-storing portions of said storage boxes having front access for ease of loading and changing disks by a user of said disk player, and rear access for playing one of said disks; each said tray being substantially U-shaped with a semi-circular shaped disk-mounting portion for supporting in place at the front area of said boxes a disk stored thereon, and each said disk-carrying tray having an opening at the rear area thereof; said openings at the rear areas facing a clear space extending throughout the total height of the storage boxes, and each storage box having a pair of rack members on the inner side surfaces of each said storage box forming continuous guide tracks; and said disk player including an electrical-mechanical system for powering said disk player and transferring sequentially a disk to and from a disk-playing device; said disk stackable storage boxes being stacked atop one another in alignment with a base box; a carrier, supporting said disk-playing device, vertically moveable through said clear space along said continuous guide tracks formed by said pairs rack members; each of said disk-storing portions having one of said disk-carrying trays and a disk-carrying tray retracting means; and said disk playing device mounted on said carrier so as to move both vertically in said clear space, and horizontally from right to left and vice-versa along the rear areas of said at least one pair of multiple stages of said storage boxes to respective positions corresponding to preselected stored disks, and being adapted for playing sequentially each preselected disk transferred from a disk-carrying tray in any one of said storage boxes to said disk-playing device, whereby said disk player is adapted to play automatically a continuous series of preselected disks in a manner similar to that of a "conventional juke box" playing in series a plurality of preselected records.

5,548,568

OPTICAL-INFORMATION-RECORDING APPARATUS HAVING FINE AND ROUGH DRIVING CONTROL

Kenji Hirose, Narashino, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 718,375, Jun. 20, 1991, abandoned. This application Feb. 23, 1995, Ser. No. 393,021

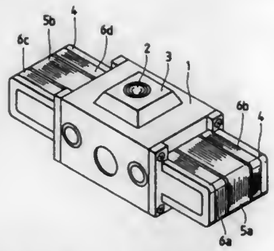
Claims priority, application Japan, Jun. 25, 1990, 2-167645

Int. Cl.[6] G11B *7/20*; G02B *7/02*

U.S. Cl. 369—44.14 **3 Claims**

1. An optical information recording and/or reproducing apparatus for effecting recording of information on and/or reproduction of information from a disk-like recording medium having a plurality of tracks thereon by using a laser light, including:

an objective lens for irradiating the recording medium with a laser light;



a holder for holding said objective lens;

a focusing coil which is the exclusive coil secured to said holder;

a carriage for movably supporting said holder such that said holder is movable in a focusing direction, relative to said carriage;

guide means for guiding the carriage radially of the recording medium;

a yoke and a permanent magnet being provided along said guide means and fixed to said apparatus, said permanent magnet being arranged to be apart from said yoke by a predetermined gap and fixed to said apparatus;

a seek coil and a tracking coil which are fixed to said carriage, respectively, to be incapable of moving relative to said carriage and a part of each of which is positioned within said predetermined gap, said seek coil and said tracking coil generating a drive force for moving said carriage in a direction along said guide means by cooperating with a magnetic field generated in said predetermined gap, an inductance of said tracking coil being smaller than that of said seek coil;

first current applying means for applying a current to said seek coil so as to access the laser light to a desired track on the recording medium; and

second current applying means for applying a current to said tracking coil so as to follow the laser light to said desired track on the recording medium.

5,548,569

TRACKING TRAVERSE CONTROL CIRCUIT FOR HEAD UNIT OF DISC PLAYER

Kazutoshi Shimizume; Mamoru Akita, and Yoshinori Tsuboi, all of Kanagawa, Japan, assignors to Sony Corporation, Japan

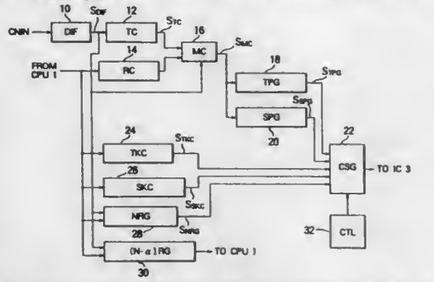
Filed Oct. 18, 1994, Ser. No. 324,982

Claims priority, application Japan, Oct. 22, 1993, 5-264638

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—44.28 **12 Claims**

1. A tracking traverse control circuit for making a head unit,



disposed so as to face a recording medium on which a plurality of tracks are formed, move from a current track to a target track, comprising:

a movement speed detection means for detecting the speed of movement of said head unit based on a signal obtained from said head unit at a time of track traverse; and

a movement speed control means for comparing the detected speed of movement and a preset target value of a speed of movement and controlling the speed of movement of said head unit so that the detected speed of movement converges with said preset target value; wherein:

said head unit has a tracking servo system and a sled servo system for making the entire head unit move; and

said movement speed control means sets said sled servo system to an acceleration state when said tracking servo system is set to the acceleration state and sets said sled servo system to a stopped state when the tracking servo system is set to a deceleration state in accordance with a comparison of said detected speed of movement and said preset target value.

5,548,570

OPTICAL REPRODUCING CIRCUIT HAVING, A BINARIZED SIGNAL PULSE COMPENSATION CIRCUIT

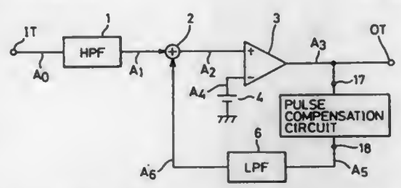
Hiroshige Hirajima, Tenri; Takeshi Yamaguchi, Sakai, and Hiroshi Fuji, Souraku-gun, all of, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 24, 1995, Ser. No. 547,313

Claims priority, application Japan, Nov. 30, 1994, 6-297060

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—59 **26 Claims**



1. An information reproducing circuit for reproducing digital information from a signal being read by scanning a medium previously recording said digital information, said information reproducing circuit comprising:

a high-pass filter receiving said read signal and removing a low-frequency component from the received read signal for outputting the same;

an adder receiving said signal being outputted from said high-pass filter, adding a feedback signal having an amplitude matching with half that of the received read signal for and outputting the same;

a comparator receiving said output signal from said adder, binarizing the received input signal with a threshold value signal, and outputting a binarized signal;

a compensation circuit receiving said binarized signal being outputted from said comparator and outputting the received binarized signal while compensating the same with a compensation signal for compensating a low-frequency component of said read signal; and

a low-pass filter receiving said signal being outputted from said compensation circuit, removing a high-frequency component from the receiving signal, and supplying the receiving signal to said adder as said feedback signal,

said compensation circuit comprising:

signal generation means for generating and outputting said compensation signal, and

control means receiving said binarized signal being outputted from said comparator and said compensation signal being outputted from said signal generation means and outputting said binarized signal to said low-pass filter in an ordinary period while outputting said compensation signai to said low-pass filter in a compensation period.

5,548,571

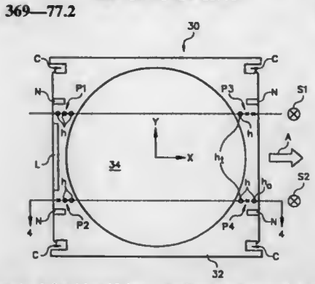
METHOD AND APPARATUS FOR IDENTIFYING DATA STORAGE DISKS

James C. Mistretta, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 3, 1994, Ser. No. 317,003

Int. Cl.[6] G11B *23/03*

U.S. Cl. 369—77.2 **17 Claims**



1. A method for identifying certain properties of a data storage disk supported in a protective housing by detecting (a) disk-manufacturer information and (b) disk-user information disposed on said housing, said method comprising the steps of:

(i) arranging said disk-manufacturing and disk-user information along a predetermined path on said protective housing, wherein said disk-manufacturing information comprises a plurality of hole patterns and said disk-user information comprises a plurality of hole patterns, wherein each of said plurality of hole patterns comprising said disk-manufacturing information and said disk-user information includes a plurality of hole position that define a binary code corresponding to a decimal digit ranging from at least zero to seven;

(ii) providing information-reading means adapted to read said disk-manufacturer and disk-user information;

(iii) reading said disk-manufacture, and disk-user information by producing relative movement between said reading means and said protective housing in a direction parallel to said path.

5,548,572

SPARE AND CALIBRATION SECTOR MANAGEMENT FOR OPTICAL WORM MEDIA

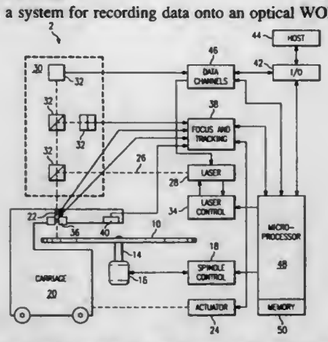
John E. Kulakowski; Judson A. McDowell, both of Tuscon, Ariz., and Kurt A. Rubin, Santa Clara, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 31, 1995, Ser. No. 414,825

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—116 **18 Claims**

15. In a system for recording data onto an optical WORM disk,



the disk having a plurality of data bands, each band having a first plurality of sectors in a user area and a second plurality of sectors in a reserved area, the system having a loader mechanism, a spindle motor on which the optical disk is mountable, an interface for transmitting/receiving data and instructions to/from a host device, a laser light source, an optical head for recording/reading data to/from the optical disk, an actuator for moving said optical head, and a controller for directing operations of said loader mechanism, said spindle motor, said interface, said optical head and said actuator, the improvement comprising:

a processor for determining when a laser write-power calibration is to be initiated;

means for directing a light beam from said laser light source onto a first predetermined sector in said reserved area if calibration is to be initiated;

means for writing a calibration pattern in said first predetermined sector;

means for reading the calibration pattern and determining an adjusted write-power level;

means for setting the write-power level to the adjusted write-power level;

means for recording first data on a predetermined data sector in said user area;

means for verifying the first data;

means for directing the light beam from said laser light source onto a second predetermined sector in said reserved area if the verification fails; and

means for re-recording the first data onto said second predetermined sector.

5,548,573

OPTICAL INFORMATION REPRODUCING APPARATUS PROVIDED WITH LASER POWER CONTROL MEANS FOR DETECTING REFLECTED LIGHT FROM DATA REGION

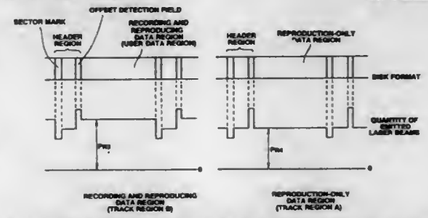
Toyoaki Takeuchi, Sagamihara, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 2, 1994, Ser. No. 334,351

Claims priority, application Japan, Nov. 4, 1993, 5-275594; Mar. 18, 1994, 6-048829

Int. Cl.[6] G11B *7/125*

U.S. Cl. 369—116 **16 Claims**



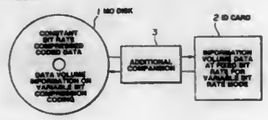
1. An optical information reproducing apparatus for reproducing information from an optical recording medium by irradiating said recording medium, said recording medium having a recording and reproducing and information-rewritable track region, which is composed of a header region having information, such as a sector start mark, track number and sector number, in a pit shape formed when said recording medium has been manufactured and a recording and reproducing user data region that has no pit and enables information to be recorded and reproduced, said optical information reproducing apparatus comprising;

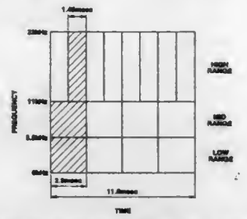
semiconductor laser output control means for controlling a quantity of a semiconductor laser beam to be emitted to a predetermined value such that a detected quantity of an emitted semiconductor laser beam is obtained in only said user data region when the quantity of the laser beam emitted by a semiconductor laser that irradiates said recording medium with a semiconductor laser beam is detected.

5,548,574
APPARATUS FOR HIGH-SPEED RECORDING COMPRESSED DIGITAL AUDIO DATA WITH TWO DIMENSIONAL BLOCKS AND ITS COMPRESSING PARAMETERS

Osamu Shimoyoshi; Kenzo Akagiri, both of Kanagawa; Hiroshi Suzuki, Saitama, and Makoto Mitsuno, Chiba, all of, Japan, assignors to Sony Corporation, Japan

Filed Mar. 3, 1994, Ser. No. 205,319
Claims priority, application Japan, Mar. 9, 1993, 5-047943
Int. Cl.[6] H03M *7/30*; **G11B** *7/00*
U.S. Cl. 369—124 **122 Claims**





1. An apparatus for recording, reproducing, transmitting and/or receiving compressed data in which digital signals are separated into signal components of plural frequency bands to produce signal components in plural two-dimensional blocks along time and frequency, the signal components being quantized and compressed for each of the two-dimensional blocks along time and frequency so as to be recorded or transmitted along with information compressing parameters for each of the two-dimensional blocks along time and frequency, and/or in which the information-compressed signal components within each of the two-dimensional blocks along time and frequency are reproduced or received using the information compressing parameters for each of the two-dimensional blocks along time and frequency, wherein the improvement comprises:

means for grouping for use in common the information compressing parameters for at least two of said two-dimensional blocks, prior to at least one of recording, transmitting, reproducing and receiving.

5,548,575
TRANSVERSE CONTROL DEVICE FOR OPTICAL HEAD HAVING A PULSE DRIVEN COARSE POSITIONING ACTUATOR AND A PRECISION ACTUATOR

Tsuyoshi Okada, Yokosuka, and Kazuo Shibuya, Yokohama, both of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

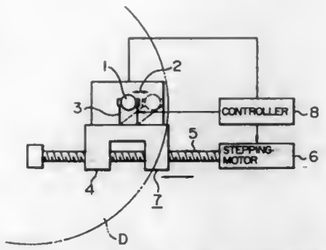
Continuation of Ser. No. 998,689, Dec. 30, 1992, abandoned.
This application Sep. 8, 1994, Ser. No. 302,393
Claims priority, application Japan, Jan. 10, 1992, 4-002689
Int. Cl.[6] G11B *17/30*
U.S. Cl. 369—219 **2 Claims**

1. An optical head feed device comprising:

a precision positioning actuator for precisely positioning an objective lens in a tracking direction;

a coarse positioning actuator for moving said objective lens and said precision positioning actuator; and

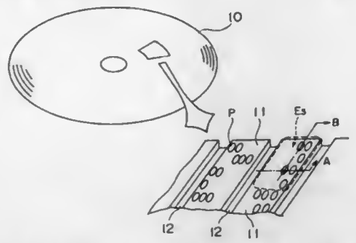
a coarse positioning actuator drive output means for detecting a low-frequency component of a relative displacement of said precision positioning actuator with respect to said coarse positioning actuator and for generating and supplying first drive pulses to said coarse positioning actuator at predetermined time periods to reduce said relative displacement to within a fixed range, said coarse positioning actuator drive output means comprising means for generating a modified drive pulse having a magnitude and a time width which are different from a magnitude and a time width of said first drive pulses and for supplying said modified drive pulse to said coarse positioning actuator when (i) a fixed time period has elapsed since the coarse positioning actuator drive output means outputted one of said first drive pulses for the coarse positioning actuator and (ii) after said fixed time period, the low-frequency component of displacement of the precision positioning actuator does not change or changes by an amount which is less than that which indicates that the low-frequency actuator is within said fixed range.



5,548,576
OPTICAL RECORDING MEDIUM AND DATA REPRODUCING APPARATUS FOR REPRODUCING DATA FROM SUCH OPTICAL RECORDING MEDIUM

Koji Matsumoto; Tsutomu Tanaka, and Keiji Shono, all of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

Filed Jun. 1, 1994, Ser. No. 252,332
Claims priority, application Japan, Jul. 8, 1993, 5-169384
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—275.300 **10 Claims**



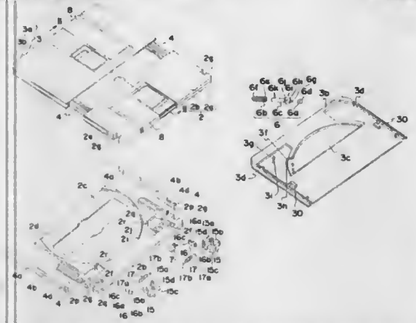
1. An optical recording medium from which data is reproduced by use of a light beam scanning said optical recording medium, said optical recording medium comprising:

a recording area on which marks are formed, each of said marks having an optical singularity at a density so that a plurality of marks are included in a spot area of the light beam, and an arrangement of said marks corresponding to the data recorded on said optical recording medium, wherein mark blocks are arranged on said recording area so that a plurality of mark blocks are included in the spot area of the light beam, each of said mark blocks corresponding to a data block into which the data to be recorded is divided into a predetermined number of bits, each of said mark blocks including a number of marks corresponding to information represented by a corresponding data block, and wherein said mark blocks are arranged in a direction substantially parallel to a scanning direction of the light beam, and said marks in each of said mark blocks being arranged in a direction different from the scanning direction of the light beam.

5,548,577
DISC CARTRIDGE

Benichi Miyazaki, Katano; Yukio Nishino, Nara-ken, and Kanji Wakabayashi, Kyoto, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Continuation of Ser. No. 987,221, Dec. 8, 1992, abandoned.
This application Nov. 1, 1994, Ser. No. 331,880
Claims priority, application Japan, Dec. 9, 1991, 3-324422; Jun. 25, 1992, 4-167173
Int. Cl.[6] G11B *23/02*
U.S. Cl. 369—291 **9 Claims**



8. A disc cartridge for supporting an information carrier disc for rotation, said cartridge comprising:

a first casing having a first cavity defined therein, an arcuate first wall surface delimiting a side of said first cavity, and a first disk holding segment which will directly face a first bottom part of the information carrier disk;

a second casing operatively coupled with said first casing so as to be movable in opposite directions relative to the first casing between extended and retracted positions to bring the disc cartridge into opened and closed positions, respectively, said first cavity having the shape of one segment of a circle having a center lying along the directions along which said second casing is movable relative to said first casing, the arcuate first wall surface delimiting the side of said first cavity being larger than a semicircle such that said first casing accommodates a major portion of the information carrier disc in said first cavity and such that the information carrier disc while directly facing the first disk holding segment is constrained by the arcuate first wall surface of said first casing to remain therewithin against forces acting on the disc in the direction in which the second casing is movable relative to the first casing as said second casing is so moved relative to said first casing to said extended position, and said second casing having a second cavity defined therein, an arcuate second wall surface delimiting a side of said second cavity, and a second disk holding segment which will directly face a second bottom part of the information carrier disk when said second disk casing is in the retracted position, said second cavity having the shape of the other remaining segment of the circle, said first arcuate wall surface of said first casing and said second arcuate wall surface of said second casing together forming said circle when said second casing is in said retracted position, whereby said second cavity will accommodate a remaining portion of the information carrier disc with the second bottom part of the information carrier disk directly facing the second disk holding segment while said second casing is in said retracted position;

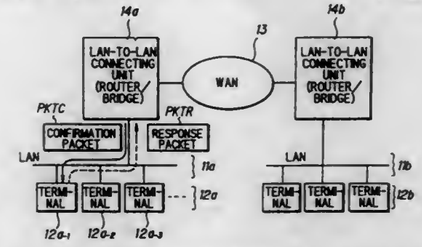
a guide fixed in position on one of the first and second casings and cooperating with the other of the first and second casings to guide the second casing in its movement relative to the first casing; and

a locking mechanism operatively coupled to said guide in the other of the first and second casings so as to detachably lock the second casing to the first casing.

5,548,578
LAN-TO-LAN COMMUNICATION METHOD, AND LAN-TO-LAN CONNECTING UNIT

Hideaki Matsune, and Koji Yamato, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Sep. 2, 1994, Ser. No. 300,793
Claims priority, application Japan, Nov. 5, 1993, 5-276541
Int. Cl.[6] H04J *3/14*
U.S. Cl. 370—13 **6 Claims**



1. A LAN-to-LAN communication method in which LA-to-LAN connecting units are provided between LANs and a WAN and LAN-to-LAN communication is performed by the LAN-to-LAN connecting unit via the WAN, the method comprising the steps of:

sending confirmation data from a LAN-to-LAN connecting unit to LAN terminals, which are under the command of said LAN-to-LAN connecting unit, in order to confirm the status of each LAN terminal;

identifying and storing information indicating whether a LAN terminal is in a reception possible/impossible state depending upon whether or not said LAN terminal responds to the confirmation data;

in a case where an incoming call from another party has been terminated at a prescribed LAN terminal, determining whether said prescribed LAN terminal is in the reception-possible state by referring to the stored information;

receiving data sent from said another party and sending said data to said prescribed LAN terminal in a case where said prescribed LAN terminal is in the reception-possible state;

disconnecting a line between said another party and said LAN-to-LAN connecting unit in a case where said prescribed LAN terminal is in the reception-impossible state;

in a case where an incoming call has been terminated at the prescribed LAN terminal, obtaining a LAN terminal which is a transfer destination by referring to the table when said prescribed LAN terminal is in the reception-impossible state; and

rewriting a MAC address contained in the received data to a MAC address of the transfer destination and then sending said MAC address to a LAN terminal at said transfer destination.

5,548,579

SYSTEM FOR EFFECTIVE ALLOCATION OF NETWORK-WIDE BANDWIDTH

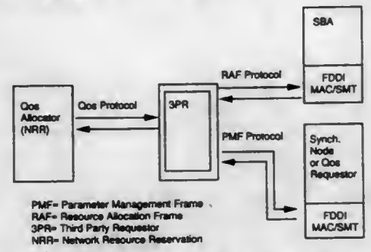
Eric Lebrun, Saint Jeannet; Pascal Francois, Vence; Frederic Raimbault, Cagnes-Sur-Mer, all of, France, and Jeff Warren, Apex, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 21, 1995, Ser. No. 493,066

Claims priority, application European Pat. Off., Jun. 23, 1994, 94109763

Int. Cl.[6] H04L *1/22*

U.S. Cl. 370—16 **3 Claims**



1. In a data communication network including at least one FDDI segment, a server connected to the FDDI segment, a Quality of Service (QoS) Requester application running on the server, a network bandwidth allocator comprising a QoS Allocator for receiving and responding to allocation requests from the QoS Requestor application, a first synchronous bandwidth allocator which normally operates in a master state to provide allocation services to on said FDDI segment, a second synchronous bandwidth allocator which normally operates in a backup state from which it can assume the master state upon the unavailability of said first synchronous bandwidth allocator, and a first 3rd Party Requestor for providing an interface between said first synchronous bandwidth allocator and each of said network bandwidth allocator and said server, an improvement for assuring high availability of network-wide bandwidth allocation capability comprising a second 3rd Party Requestor associated with said second synchronous bandwidth allocator, said second 3rd Party requestor maintaining the same state as the second synchronous bandwidth allocator.

5,548,580

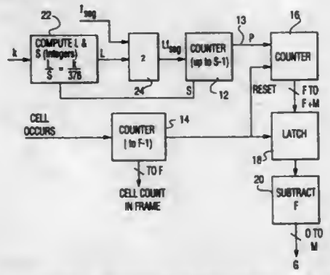
METHOD AND APARATUS FOR RECOVERING A VARIABLE BIT RATE SERVICE CLOCK

Kenneth M. Buckland, Burnaby, Canada, assignor to PMC-Sierra, Inc., B.C., Canada

Filed Dec. 7, 1994, Ser. No. 350,550

Int. Cl.[6] H04J *1/16;3/14*

U.S. Cl. 370—17 **17 Claims**



13. Apparatus for converting a variable bit rate of a transmitted sequence of cells transmitted at a service clock frequency having F cells per frame and a peak cell transmission rate P into an effective peak rate of transmitted cells for each frame, comprising:

(a) means for determining a number of ghost cells for each frame which, when carried through the ATM network and counted at a receiving end together with the F cells per frame, makes the effective peak cell transmission rate equal to P; and

(b) means for carrying in cells of a subsequent frame a number corresponding to the number of ghost cells determined for the preceding frame for use in deriving a recovered service clock freguency,

wherein a ghost cell is a virtual cell represented by bits in the first byte of an ATM Adaptation Layer 1 cell payload.

5,548,581

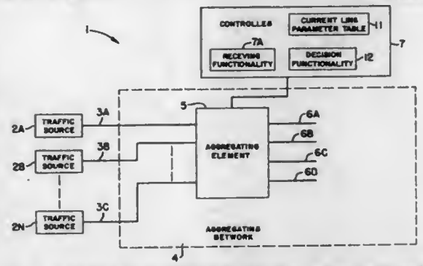
SYSTEM AND METHOD FOR MAKING CONNECTION ACCEPTANCE/REJECTION DECISIONS IN A COMMUNICATION SYSTEM

Brad A. Makrucki, Peachtree City, Ga., assignor to BellSouth Corporation, Atlanta, Ga.

Filed Aug. 17, 1994, Ser. No. 292,238

Int. Cl.[6] H04J *3/14;* **H04L** *12/56*

U.S. Cl. 370—17 **71 Claims**



1. A communication system for use with at least one traffic source, each said traffic source having basic traffic parameters including a parameter indicative of the burstiness of traffic from that traffic source, each said traffic source generating a connection request associated with the coupling of traffic from that traffic source to an outgoing link, the communication system comprising:

at least one outgoing link, each said outgoing link having a link rate;

an aggregating network coupled to each outgoing link and responsive to each traffic source, said aggregating network selectively coupling the traffic from a traffic source to an outgoing link in response to a connection request associated with that traffic source and with that outgoing link and in response to a connection acceptance/rejection decision associated with that connection request, said connection acceptance/rejection decision if a connection acceptance allowing said aggregating network to couple traffic from that traffic source to that outgoing link and if a connection rejection inhibiting said aggregating network from coupling that traffic from that traffic source to that outgoing link; and

a controller for making a connection acceptance/rejection decision for a connection request of a traffic source from parameters based on at least the basic traffic parameters of that traffic source, said basic traffic parameters including the sustainable rate of traffic from that traffic source, the peak rate of traffic from that traffic source and a burst length parameter of the traffic from that traffic source;

said controller maintaining first and second current link parameters for each outgoing link, said first current link parameter being indicative of the steady-state mean/average of traffic currently on that outgoing link and said second current link parameter being indicative of the steady-state variance/burstiness of traffic currently on that outgoing link, said second current link parameter being determined by said controller based on at least said basic traffic parameters of each traffic source whose traffic is currently coupled to that outgoing link and said first current link parameter being determined by said controller based on at least the sustainable rate of traffic of each traffic source whose traffic is currently coupled to that outgoing link and the link rate of that outgoing link;

and said controller in making a connection acceptance/rejection decision based on a connection request of a given traffic source and associated with a given outgoing link: calculating a second new link parameter based on the second current link parameter for that given outgoing link and the basic traffic parameters for that given traffic source; calculating a first new link parameter for that given outgoing link based on the first current link parameter for that given outgoing link and the sustainable rate of traffic for that given traffic source; and using said first and second new link parameters and the basic traffic parameters of that given traffic source in making said connection acceptance/rejection decision.

5,548,582

MULTICARRIER FREQUENCY HOPPING COMMUNICATIONS SYSTEM

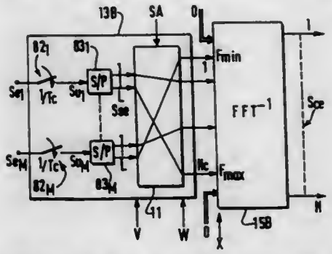
Américo Brajal, Villeneuve le Roi, and Antoine Chouly, Paris, both of, France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 21, 1994, Ser. No. 361,080

Claims priority, application France, Dec. 22, 1993, 93 15460

Int. Cl.[6] H04B *1/713*

U.S. Cl. 370—18 **6 Claims**



1. A multicarrier frequency hopping spread spectrum communications system comprising at least two stations each of which includes a transmitter section and a receiver section, communication between stations being via a communications channel between the transmitter section of one station and the receiver section of another station; characterized in that:

the transmitter section of each station comprises

encoding means for encoding data symbols of a signal to be transmitted, the encoding being in accordance with a constellation of code values;

mixing means coupled to said encoding means for assigning samples of the encoded data symbols to particular ones of a predetermined series of fixed carrier frequencies, the frequency assignments being periodically mixed in accordance with a frequency hopping code; and

multiplexing means coupled to said mixing means for combining the samples of encoded data symbols and their assigned carrier frequencies in accordance with an inverse Fourier transform, so as to multiplex the samples of encoded data symbols by an orthogonal frequency division modulation; and

the receiver section of each station comprises:

demultiplexing means for receiving multiplexed samples of encoded data symbols transmitted by the transmitter section of another station, and applying a direct Fourier transform to demodulate by reversing the orthogonal frequency division modulation performed on the samples of encoded data symbols in the transmitter section of said other station;

demixing means coupled to said demultiplexing means for combining the demodulated samples of encoded data symbols in accordance with the inverse of the frequency hopping code employed in the transmitter section of said other station, thereby recovering said samples of encoded data symbols; and

decoding means coupled to said demixing means for decoding the samples of encoded data symbols produced thereby in accordance with the inverse of the constellation of code values employed in the transmitter section of said other station.

5,548,583

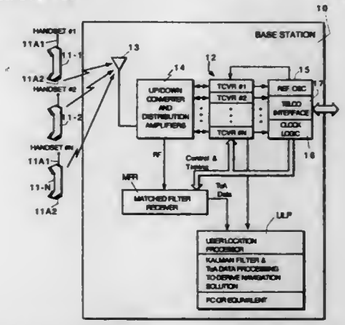
WIRELESS TELEPHONE USER LOCATION CAPABILITY FOR ENHANCED 911 APPLICATION

Herman A. Bustamante, Millbrae, Calif., assignor to Stanford Telecommunications, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 257,324, Jun. 19, 1994, which is a continuation-in-part of Ser. No. 980,957, Nov. 24, 1992, Pat. No. 5,375,140. This application Feb. 15, 1995, Ser. No. 388,688

Int. Cl.[6] H04L *27/30;* **H04M** *11/00*

U.S. Cl. 370—18 **4 Claims**



1. In a wireless OCDMA telephone communication system in which there is a cluster of base stations, one of which is a core base station, said OCDMA telephone communication system including frames of a time division duplex spread spectrum signal for two-way voice and/or data transmission, and a plurality of handsets, each adapted to communicate with said cluster of base stations using said OCDMA telephone communication system, the improvement for providing 911 handset position at said core base station comprising:

each handset including:

a voice/data coding means and PN/RW spreading/channelization means, demodulator means RF modulator means and a microcontroller for implementing communication in said OCDMA telephone communication system,

a 911 signalling system comprising said microcontroller, and switch means for disabling voice and data inputs to said modulator for a predetermined time interval within a frame of said time division duplex spread spectrum signal so that short bursts of spread spectrum signals without voice or data modulation constitute a 911 signal,

means at each base station in said cluster of base stations for receiving said time division duplex spread spectrum signal and including means for detecting the time of arrival (TOA) of said short bursts of spread spectrum signals without voice or data modulation constituting said 911 signal and producing a TOA signal, and means for transmitting said TOA signal from said base station to said core base station,

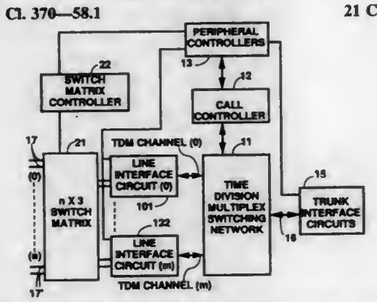
processor means at said core base station for receiving said TOA signal from at least three base stations for a given handset and deriving therefrom a navigation solution to the geographical location of the handset sending said 911 signal.

5,548,584

TELEPHONE SWITCHING SYSTEM WITH SWITCHED LINE CIRCUITS

David S. Beck, Kanata, and Bernard E. Bleuer, Nepean, both of, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed May 20, 1993, Ser. No. 64,281
Int. Cl.[6] H04R *11/04*
U.S. Cl. 370—58.1 **21 Claims**



1. A telecommunications switching system including, a plurality of line interface circuits for coupling communications signals between channels organized in periodically reoccurring frames in a time division multiplex (TDM) switching network and telephone lines served by the telecommunications switching system, and a call control means being responsive to signalling received from the telephone lines in association with telephone calls, for directing the operations of the time division switching network to provide communications paths via the TDM channels between ones of the telephone lines, the telecommunications switching system comprising:

means for coupling each of the line interface circuits with a predetermined one of the channels in the TDM switching network;

detector means being connected to each telephone line of a plurality of the telephone lines for detecting a transition from an ON HOOK state to an OFF HOOK state;

analog switch means being for connecting each of the telephone lines in the plurality of telephone lines to any one of a limited number of not more than a predetermined half of the line interface circuits, in the plurality of line interface circuits;

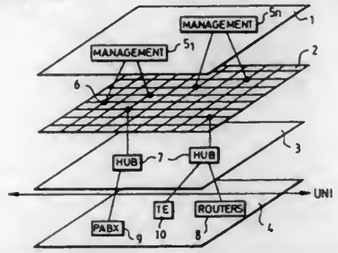
control means being responsive to a detected transition to the OFF HOOK state, in the state of any one of the plurality of telephone lines, for causing the analog switch means to switch said any one of the plurality of telephone lines to an idle one of said predetermined line interface circuits, and, in an event of none of said predetermined line interface circuits being idle, the control means being responsive to the detected transition to the OFF HOOK state, for causing the analog switch means to re-switch another telephone line, already having been connected to one of said predetermined line interface circuits, to an alternate line interface circuit not within said limited number of line interface circuits and to disconnect said another telephone line from the one of said predetermined line interface circuits, and thereafter for causing the analog switch means to connect said any one of the plurality of telephone lines with the one of said predetermined line interface circuits.

5,548,585

INTER-TERMINAL TELECOMMUNICATIONS NETWORK FOR THE TRANSMISSON OF DATA BY PACKETS

Pierre Lagoutie, Issy Les Moulineaux, and Alain Blanchard, La Queue-Lez-Yvelines, both of, France, assignors to Thomson-CSF, Paris, France

Continuation of Ser. No. 237,992, May 4, 1994, abandoned.
This application Jun. 23, 1995, Ser. No. 493,857
Claims priority, application France, May 4, 1993, 93 05289
Int. Cl.[6] H04J *3/02*
U.S. Cl. 370—60 **3 Claims**



1. An inter-terminal telecommunications network for transmitting data in packets, comprising:

a management layer having microprogrammed processing units;

an equipment layer having data processing equipment for conveying packets of data; and

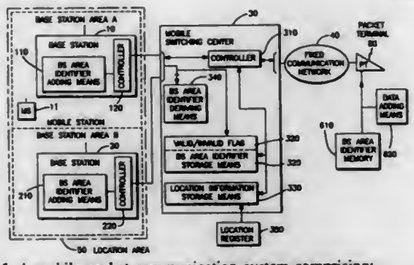
a transport layer having a plurality of interconnected transport lines and a micronode formed at each interconnection of said transport lines, said transport layer enabling communication of packets of data from said management layer to said equipment layer via an access layer interposed therebetween in accordance with information contained in cell headers of said packets of data received at each micronode from said microprogrammed processing units, and the communication of a status of each of said micronodes to said management layer, wherein each of said micronodes comprises a microcontroller coupled to a switching memory addressed by a discriminator, an identification register, and a set of input and output ports.

5,548,586

MOBILE PACKET COMMUNICATION SYSTEM AND A METHOD OF MOBILE PACKET COMMUNICATION

Eiji Kito, Tokyo, and Tetsuya Toyoda, Saitama, both of, Japan, assignors to NEC Coporation, Tokyo, Japan

Filed Aug. 14, 1995, Ser. No. 514,742
Claims priority, application Japan, Aug. 12, 1994, 6-190241
Int. Cl.[6] H04Q *7/22;* **H04L** *12/56*
U.S. Cl. 370—60 **7 Claims**



1. A mobile packet communication system comprising:

a plurality of base stations in a corresponding plurality of base station areas, said base stations communicating with a plurality of mobile stations by dedicated radio channels for packet communication, said base stations comprising base station

area identifier adding means for adding a base station area identifier indicating a base station area corresponding to each of said base stations to a response packet from said mobile stations;

a plurality of packet communication means for performing packet communication with said mobile stations;

a location register for registering location information of a location area of each of said mobile stations whenever said mobile stations change location area; and

a mobile switching center interconnecting said base stations and said packet communication means, being connected to said location register, comprising

first receiving means for receiving a first packet data from said packet communication means and for extracting a mobile station identification number supplied therewith;

location information storage means for retrieving a location information corresponding to said mobile station identification number from said location register and for storing said location information retrieved therefrom in correspondence with said mobile station identification number;

second receiving means for receiving a second packet data from said base station and for extracting a base station area identifier and a mobile station identification number supplied therewith;

base station area identifier storage means for storing said base station area identifier in correspondence with said mobile station identification number and for indicating validity of said base station area identifier; and

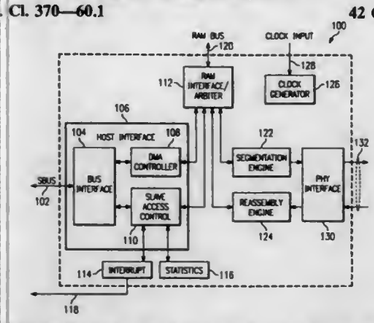
transferring means for transferring said first packet data to all of said base stations in said same location area indicated by said location information stored in said location information storage means when said base station area identifier stored in said base station area identifier storage means is invalid and for transferring said first packet data to a particular base station in accordance with said base station area identifier stored in said base station area identifier storage means when said base station area identifier is valid.

5,548,587

ASYNCHRONOUS TRANSFER MODE ADAPTER FOR DESKTOP APPLICATIONS

Chase B. Bailey, Highland Village; Klaus S. Fosmark, Dallas; Kenneth A. Lauffenberger, Carrollton; William A. Perry, Carrollton, and Kevin S. Dibble, Carrollton, all of Tex., assignors to Efficient Networks, Inc., Dallas, Tex.

Filed Sep. 12, 1994, Ser. No. 304,349
Int. Cl.[6] H04L *12/48;12/56*
U.S. Cl. 370—60.1 **42 Claims**



15. An ATM adapter for desktop applications having an ATM integrated circuit, said ATM integrated circuit comprising:

a host interface circuit for interfacing a host device, said host interface circuit comprising a host device bus interface circuit, a DMA control circuit, and a slave access control circuit;

said host device bus interface circuit for interfacing said host interface circuit with a host device data bus for communicating host device data between said host interface circuit and said host device data bus;

said DMA control circuit associated with said bus interface circuit for controlling DMA operations associated with said host device data;

said slave access control circuit associated with said bus interface circuit for controlling operations of said host interface circuit relating to host device bus interrupts and statistics;

a physical interface circuit associated with an ATM physical layer for communicating ATM formatted data with a local ATM network;

a segmentation engine associated with said physical interface circuit for transmitting ATM formatted data to said physical interface circuit, said segmentation engine associated further for receiving said host device data and segmenting said host device data to form outgoing ATM formatted data;

a reassembly engine associated with said physical interface circuit for receiving incoming ATM formatted data from said local ATM network and generating therefrom from host device data for transmission to said host interface circuit;

a RAM interface/arbiter circuit associated with a RAM bus for communicating with a RAM, said RAM interface/arbiter circuit further associated with said DMA control circuit, said slave access control circuit, said segmentation engine and said reassembly engine for interfacing and arbitrating access to said RAM of signals communicated with said DMA control circuit, said slave access control circuit, said segmentation engine, and said reassembly engine; and

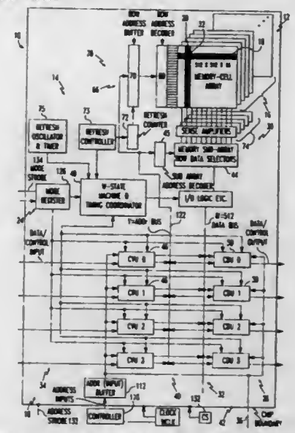
further wherein said host interface circuit, said physical interface circuit, said segmentation engine, said reassembly engine, and said RAM interface/arbiter circuit are formed as an integrated circuit.

5,548,588

METHOD AND APPARATUS FOR SWITCHING, MULTICASTING MULTIPLEXING AND DEMULTIPLEXING AN ATM CELL

Mahesh N. Ganmukhi, Wexford, and Brian L. Jordan, Pittsburgh, both of Pa., assignors to Fore Systems, Inc., Warrendale, Pa.

Filed Jan. 31, 1995, Ser. No. 381,112
Int. Cl.[6] H04L *12/56*
U.S. Cl. 370—60.1 **21 Claims**



1. A method for multicasting an ATM cell comprising the steps of:

receiving the ATM cell at a first input port of a switch from an ATM network;

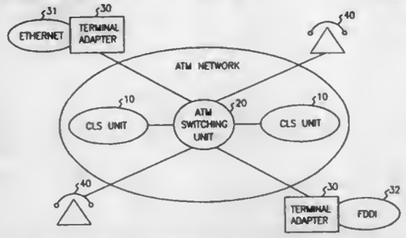
storing the ATM cell in one clock cycle in a memory array of the switch;
reading the ATM cell in the memory array in one clock cycle;
transmitting the ATM cell from the switch to the ATM network;
reading again the ATM cell in the memory array in one clock cycle; and
transmitting again the ATM cell from the switch to the ATM network.

5,548,589

CONNECTIONLESS COMMUNICATION SYSTEM AND METHOD OF CONNECTIONLESS COMMUNICATION

Byung C. Jeon; Mi S. Do; Young S. Kim, and Chi M. Han, all of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Seoul, Rep. of Korea

Filed Jan. 27, 1995, Ser. No. 379,292
Claims priority, application Rep. of Korea, Jul. 14, 1994, 1994-17019
Int. Cl.[6] H04L *12/56*
U.S. Cl. 370—60.1 **11 Claims**



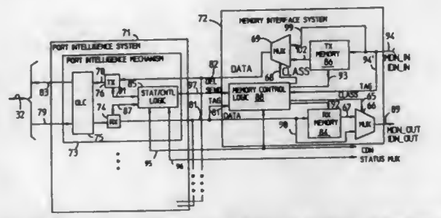
1. A connectionless communication system comprising:
a plurality of terminal means each adapted to perform a function of converting a connectionless frame received from a network into a cell and reversely converting a cell into an original frame, request setup of a virtual connection when a frame is generated, and output the cell with a virtual channel identifier value indicative of the associated set-up virtual connection, and each including
a mapping table in which the virtual channel identifier value indicative of the set-up virtual connection and a position information corresponding to the virtual channel identifier value are stored; and
a plurality of connectionless data service means each adapted to set up the virtual connection at the request of the terminal means, transfer the set-up virtual channel identifier value to the terminal means which has requested the virtual connection setup, and perform a function of switching the cell transferred from the terminal means, and each including:
a) a connectionless cell switching means adapted to perform a cell switching function on the basis of a virtual channel identifier value of a connectionless cell upon receiving the cell from one of the terminal means;
b) an address processing means connected to one port of the connectionless cell switching means and adapted to provide destination address and mapping information about virtual path identifier values and virtual channel identifier values to the cell-transferring terminal means; and
c) a header translating means adapted to connect another one of the ports of the connectionless cell switching means to another connectionless data service means and translate virtual path identifier values and virtual channel identifier values; and
wherein each of said connectionless data service means is connected to corresponding ones of said terminal means respectively via virtual paths each having a bidirectional cell transfer function.

5,548,590

HIGH PERFORMANCE FRAME TIME MONITORING SYSTEM AND METHOD FOR A FIBER OPTIC SWITCH FOR A FIBER OPTIC NETWORK

Robert H. Grant, Toronto; David Book, Thornhill, and Gregory T. Sullivan, Brampton, all of, Canada, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 30, 1995, Ser. No. 380,766
Int. Cl.[6] H04L *12/56*
U.S. Cl. 370—61 **16 Claims**



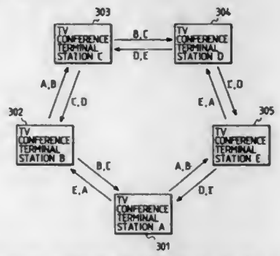
7. A frame time monitoring method for tracking with high performance the time in which data frames reside within a fiber optic switch for a fiber optic network, the switch for transferring the data frames from source ports to destination ports, comprising the steps of:
(a) implementing a timer in software with a processor;
(b) commencing said timer after receipt of a frame; and
(c) passing timer states from said timer to a logic network in hardware, said logic network performing the following steps:
(1) determining elapse of a predetermined delete time period based upon said timer states; and
(2) generating a delete signal after said elapse of said predetermined delete time period.

5,548,591

MULTI-POINT COMMUNICATION SYSTEM AND COMMUNICATION TERMINAL STATION APPARATUS

Hiroki Horikoshi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Obta-ku, Japan

Filed Dec. 23, 1994, Ser. No. 362,990
Claims priority, application Japan, Dec. 28, 1993, 5-337730
Int. Cl.[6] H04M *3/42*
U.S. Cl. 370—62 **12 Claims**



1. A multi-point communication system having a first plurality of communication terminal stations connected to a communication line constructing a loop, wherein each one of said communication terminal stations comprises:
a) recognizing means for recognizing connection formations to a second plurality of others of said communication terminal stations in the loop constructed by said communication line;
b) separating means for separating combined reception information received over said communication line from at least one of said second plurality of said communication terminal stations to provide respective separated reception information;

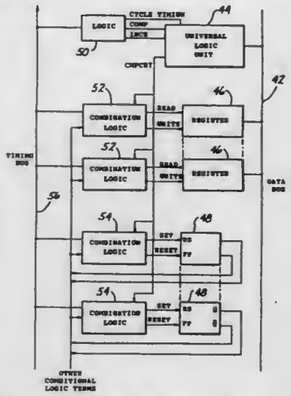
c) determination means for determining whether each of the separated reception information, separated by said separating means, is to be relayed and transmitted or not on the basis of each of the terminal station connection formations recognized by said recognizing means; and
d) transmitting means for selectively relaying and transmitting the separated reception information on the basis of the determination by said determination means.

5,548,592

HOME AND SMALL BUSINESS PHONE SYSTEM FOR OPERATION ON A SINGLE INTERNAL TWISTED PAIR LINE AND METHODOLOGY FOR OPERATING THE SAME

James A. Komarek, Newport Beach; Jack L. Minney, Irvine; Stephen P. Nordine, Santa Ana; Harold F. Lewis, Villa Park; Richard Wada, Santa Ana, and John F. Stockman, Costa Mesa, all of Calif., assignors to Creative Integrated Systems, Inc., Santa Ana, Calif.

Continuation of Ser. No. 43,790, Apr. 6, 1993, abandoned.
This application May 5, 1995, Ser. No. 435,282
Int. Cl.[6] H04J *3/02*
U.S. Cl. 370—85.1 **14 Claims**



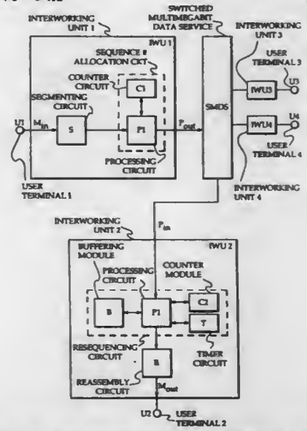
1. An improvement in a method for communicating over a single two-wire cable with a plurality of remote station units comprising the steps of:
bidirectionally serially communicating on a single twisted pair of wires with said plurality of remote station units by addressing a plurality of registers included within each of said remote station units in a sequence of time frames, each said time frame divided into a plurality of time slots corresponding to the said plurality of remote station units, each of said plurality of time slots being dedicated for communication to a specified one of said plurality of remote station units and an addressed one of said plurality of registers in said specified one of said remote station units, said step of bidirectionally serially communicating comprising the steps of communicating serial digital data to said plurality of remote station units only by means of communicating in at least one fixed portion of said plurality of time slots without handshake protocol and communicating control signaling data in at least another fixed portion of said plurality of time slots, each of said time frames having a frame sync included therein to which said remote station units synchronize communication on said two-wire cable.

5,548,593

RESEQUENCING METHOD AND RESEQUENCING DEVICE REALIZING SUCH A METHOD

Robert N. L. Peschi, Schaerbeek, Belgium, assignor to Alcatel N. V., Rijswijk, Netherlands

Filed Jun. 24, 1994, Ser. No. 265,388
Claims priority, application European Pat. Off., Jun. 29, 1993, 93201896
Int. Cl.[6] H04L *12/56*
U.S. Cl. 370—94.1 **21 Claims**



1. Method for resequencing information packets of an information packet stream (Min) transmitted from a transmitter station (IWU1) to a receiver station (IWU2) over a network (SMDS) and identified by sequence numbers, characterized in that, when said information packet stream (Min) includes first type packets of a multicast packet type which are received in said receiver station both in and out of sequence with respect to each other or with respect to second type packets of a point-to-point packet type which are always received in sequence, said method including the steps of:
in said transmitter station, allocating predetermined first sequence numbers in a monotonic series to said first type packets and allocating to each one of said second type packets following a packet of said first type packets a second sequence number which is related according to a predetermined relation to a predetermined first sequence number allocated to said packet of said first type packets by adding/subtracting to/from a value of a previously allocated first sequence number fixed, predetermined value; and
in said receiver station, resequencing said first type packets and said second type packets according to their first and second sequence number respectively.

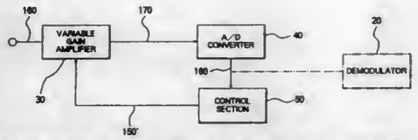
5,548,594

COMPACT AGC CIRCUIT WITH STABLE CHARACTERISTICS

Naoyuki Nakamura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 364,450
Claims priority, application Japan, Dec. 28, 1993, 5-336199
Int. Cl.[6] H04B *1/06*
U.S. Cl. 370—95.3 **3 Claims**

1. An automatic gain control circuit for use in a radio receiving apparatus supplied with input TDM (Time Division Multiplex) reception signals having each signal contained in each of a plurality of time slots one of which is a predetermined time slot assigned to a user of said radio receiving apparatus, said automatic gain control circuit comprising:



a variable gain amplifier for amplifying said input TDM reception signals in accordance with a controllable gain to produce amplified TDM reception signals;

an analog-to-digital converter for converting said amplified TDM reception signals into digital signals; and

control means for determining an optimized value of said controllable gain in response to said digital signals so as to supply said variable gain amplifier with said optimized value of said controllable gain by the use of a signal of the time slot immediately before said predetermined time slot when receiving said input TDM reception signals, wherein said control means comprises:

reading means for reading an input level of a reception signal contained in the time slot immediately before said predetermined time slot;

memorizing means for memorizing said input level;

determining means for determining an absolute value in said input level;

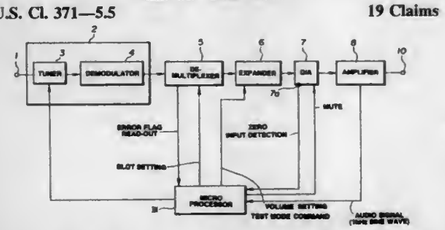
comparing means for comparing said absolute value with a previous maximum value of a previous input level to provide a new maximum value of the input levels;

deciding means for deciding a relative indication value with respect to an optimized reception gain which has already been supplied to said variable gain amplifier and with respect to said new maximum value;

adding means for adding said relative indication value to the optimized reception gain which has already been supplied to said variable gain amplifier to provide a new optimized reception gain; and

supplying means for supplying said new optimized reception gain to said variable gain amplifier.

5,548,595
SIGNAL RECEIVER
Masatoshi Hirayasu, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Feb. 24, 1994, Ser. No. 201,400
Claims priority, application Japan, Feb. 27, 1993, 5-063370
Int. Cl.[6] G06F *11/00*
U.S. Cl. 371—5.5 **19 Claims**



1. A signal receiving apparatus having a plurality of operating modes for receiving a digital input signal including an error detection code and for muting an output signal in response to a number of error flags detected by the error detection code, the apparatus comprising:

means for selecting an operating mode from the plurality of operating modes;

signal receiving means for receiving the digital input signal including the error detection code and producing a demodulated output signal;

means for decoding the demodulated output signal and producing a decoded demodulated output signal including error flags detected by the error detection code;

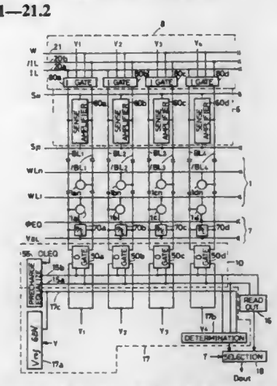
output means for converting the decoded demodulated output signal from the means for decoding into an analog output signal; and

processor means for receiving the error flags from the means for decoding and controlling the output means to mute or release muting of the analog output signal, wherein the processor means includes means for counting the error flags to determine the number of error flags detected by the error detection code and sets a determining period according to the operating mode selected from the plurality of the operating modes by the means for selecting such that

when the number of error flags exceeds a threshold number for the determining period of the operating mode the processor means mutes the analog output signal, and

when an operating mode having a shorter determining period than an immediately previous operating mode is selected the processor means releases muting.

5,548,596
SEMICONDUCTOR MEMORY DEVICE WITH READ OUT DATA TRANSMISSION BUS FOR SIMULTANEOUSLY TESTING A PLURALITY OF MEMORY CELLS AND TESTING METHODS THEREOF
Youichi Tobita, Hyogo-ken, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 11, 1991, Ser. No. 805,504
Claims priority, application Japan, Dec. 18, 1990, 2-403381
Int. Cl.[6] G11C *29/00*
U.S. Cl. 371—21.2 **19 Claims**



1. A semiconductor memory device capable of operating in a test operation mode, comprising:

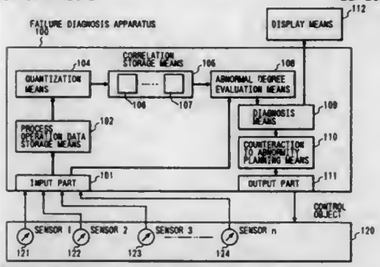
a memory cell array including a plurality of memory cells arranged in a matrix of rows and columns, each memory cell capable of storing data;

a read data bus including a read out data transmission line for transmitting stored data read out from at least one memory cell selected within said memory cell array as a signal potential in both a normal mode and the test operation mode;

read out means responsive to an address at the time of said test operation mode for simultaneously selecting a plurality of memory cells from said memory cell array and then simultaneously transmitting the stored data of the selected plurality of memory cells onto said read out data transmission line as the signal potential; and

determination means responsive to the signal potential on said read out data transmission line for making a determination as to whether there is a defective memory cell in the selected plurality of memory cells.

5,548,597
FAILURE DIAGNOSIS APPARATUS AND A METHOD THEREOF
Masahiro Kayama; Yasuo Morooka; Yoichi Sugita, and Masaaki Nakajima, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 13, 1994, Ser. No. 322,557
Claims priority, application Japan, Oct. 13, 1993, 5-255462
Int. Cl.[6] G06F *11/00*
U.S. Cl. 371—25.1 **12 Claims**



1. A failure diagnosis apparatus, comprising:

a memorizing means for storing process operation signals output from a plurality of sensors provided at a control object;

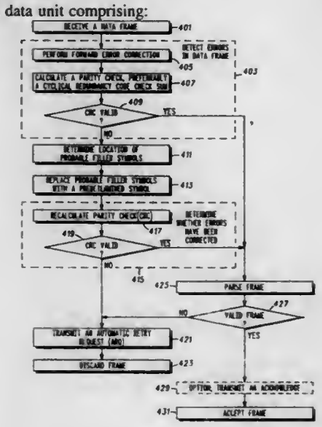
a quantization means for making up a group of quantization vectors representing correlations among said process operation signals from each predetermined group of sensors by using said process operation signals stored in said memorizing means;

a correlation memorizing means for storing said group of quantization vectors corresponding to each group of said sensors; and

an abnormal degree evaluation means for obtaining an abnormal degree of each group of said sensors by comparing present process operation signals from each group of said sensors and said group of quantization vectors corresponding to each group of said sensors.

5,548,598
IN A DATA COMMUNICATIONS SYSTEMS A METHOD OF FORWARD ERROR CORRECTION
Pierre Dupont, Whistler, Canada, assignor to Motorola, Schaumburg, Ill.
Filed Mar. 28, 1994, Ser. No. 218,401
Int. Cl.[6] H04L *1/00;1/16*
U.S. Cl. 371—35 **17 Claims**

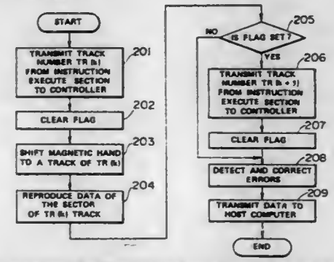
13. A data unit comprising:



a receiver operable for receiving a data frame; and

an error detector coupled to the receiver and operable for detecting when an error is present in said data frame and replacing a probable filler symbol of the data frame with a predetermined symbol.

5,548,599
METHOD AND APPARATUS FOR PROCESSING INFORMATION DATA
Makoto Furuhashi, Kanagawa, and Katsumi Yamaoka, Saitama, both of, Japan, assignors to Sony Corporation, Tokyo, Japan
Continuation of Ser. No. 580,332, Sep. 10, 1990, abandoned, which is a division of Ser. No. 201,414, Jun. 2, 1998, abandoned. This application Aug. 9, 1993, Ser. No. 103,824
Claims priority, application Japan, Jun. 3, 1987, 62-139122; Aug. 13, 1987, 62-201031; Jun. 3, 1993, 62-139124
Int. Cl.[6] G11B *20/18;21/08*
U.S. Cl. 371—40.1 **2 Claims**



2. An apparatus for reproducing error correction encoded information data recorded on tracks of a recording medium under the control of a host computer, comprising:

means for receiving from the host computer, at a first time, a first track number of a first track from which first recorded error correction encoded information data is to be reproduced, and, at a second time, a second track number of a second track from which second recorded error correction encoded information data is to be reproduced;

means for moving a reproducing pickup means with regard to the recording medium to the first track or to the second track;

means for reproducing the first recorded error correction encoded information data from the recording medium as a reproduced signal;

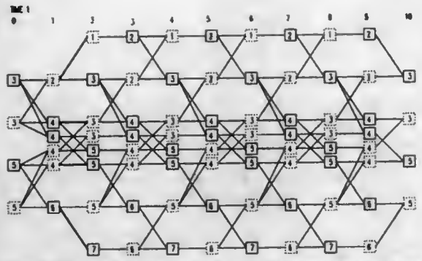
means for demodulating first error correction encoded information data from the reproduced signal;

a memory for storing the first error correction encoded information data; and

means for decoding error correction codes of the stored first error correction encoded information data during movement of the reproducing pickup means to the second track.

5,548,600
METHOD AND MEANS FOR GENERATING AND DETECTING SPECTRALLY CONSTRAINED CODED PARTIAL RESPONSE WAVEFORMS USING A TIME VARYING TRELLIS MODIFIED BY
Lisa Fredrickson, Sunnyvale; Razmik Karabed, San Jose; Paul H. Siegel, San Jose, and Hemant K. Thapar, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation-in-part of Ser. No. 289,811, Aug. 12, 1994. This application Sep. 29, 1994, Ser. No. 316,597
Int. Cl.[6] G06F *11/10;* H03M *13/12*
U.S. Cl. 371—43 **11 Claims**

1. A method for detecting spectral null sequences of a spectrally-constrained code from data samples in the form of digital electrical



signals generated at the output of a noisy communications channel, comprising the steps of:

(a) tracking the spectral content of said sequences of electrical signals with a Viterbi detector, the processing of said sequences by the Viterbi detector being governed according to an N stage trellis structure, each trellis stage including a plurality of states and edges; and

(b) mapping each spectral null sequence to a unique path of acyclic successive states and edges through said trellis by selectively output splitting counterpart states and pruning preselected states and edges at preselected times modulo N in said trellis such that no pair of unique paths support the same spectral null sequence.

5,548,601

APPARATUS AND METHOD FOR DIAGNOSING FAILURES IN CONTROL SYSTEM

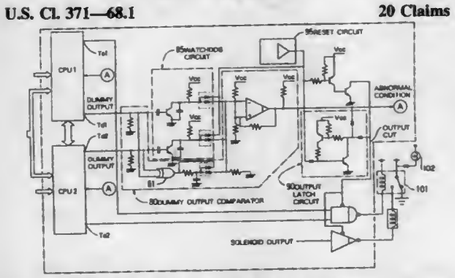
Shinji Kato, Tokyo; Chikashi Tagawa, Hiroshima-ken; Osamu Michihira, Hiroshima-ken, and Akira Sone, Hiroshima-ken, all of, Japan, assignors to Mazda Motor Corporation, Aki-gun, and Naldec Corporation, Hiroshima-ken, both of, Japan

Filed Dec. 2, 1993, Ser. No. 160,126

Claims priority, application Japan, Dec. 2, 1992, 4-323134

Int. Cl.[6] G06F *11/08*

U.S. Cl. 371—68.1 **20 Claims**



1. An apparatus for diagnosing failures in a plurality of control units provided in a control system comprising:

detection means, provided outside of the control units, for comparing dummy outputs output by the control units, representing processing results of the control units, to detect disparity of the dummy outputs, said dummy outputs being different from control outputs used for an actual control operation, being obtained as the control units carry out identical predetermined processes and not being output outside of the control system; and

determining means for determining that a failure has occurred in at least one of the control units when the detection means detects the disparity of the dummy outputs.

5,548,602

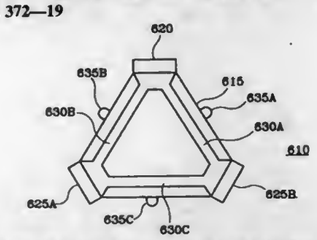
METHOD AND STRUCTURE FOR REFLECTING 633 NM RADIATION WHILE ELIMINATING 650 NM RADIATION IN RING LASER GYRO MIRRORS

Theodore J. Podgorski, St. Paul; Rod Thorland, Shoreview, and Robert M. Curran, Mendota Heights, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 269,461, Jun. 30, 1994, abandoned. This application Oct. 24, 1994, Ser. No. 327,724

Int. Cl.[6] H01S *3/083;* **G01B** *9/02*

U.S. Cl. 372—19 **8 Claims**



1. In a ring laser gyro which produces a gain for first and second counter propagating signals having a wavelength of λc and a signal having a wavelength of λd, a mode discrimination apparatus, comprising:

a first mirror comprised of alternating layers of materials having high and low indices of refraction respectively, each layer having an optical thickness proportional to λc/4; and

second and third mirrors comprised of alternating layers of materials having high and low indices of refraction respectively, each layer of said second mirror having an optical thickness proportional to λe/4, wherein λe is a wavelength chosen to create loss in the λd signal which is greater than the gain.

5,548,603

METHOD FOR THE GENERATION OF ULTRA-SHORT OPTICAL PULSES

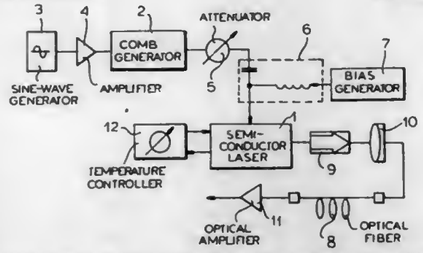
Riccardo Calvani, Pino Torinese; Renato Caponi, Turin; Francesco Cisternino, Turin, and Diego Roccato, Turin, all of, Italy, assignors to Cselt-Centro Studi E Laboratori Telecomunicazioni S.P.A., Turin, Italy

Filed Dec. 22, 1994, Ser. No. 362,153

Claims priority, application Italy, Feb. 22, 1994, TO94A0104

Int. Cl.[6] H01S *3/10*

U.S. Cl. 372—25 **8 Claims**



1. A method of generating ultrashort optical pulses, comprising the steps of:

(A) generating in a laser cavity of a semiconductor laser, laser pulses corresponding to a first peak of relaxation oscillations of said laser cavity and with a longer duration than a time of flight of the laser pulses inside said cavity so that within said cavity there is an overlapping between different overlapping pulse portions, each of said overlapping pulse portions corresponding to a time of flight;

(B) passing said laser pulse from said laser cavity through an optical Fiber with high negative dispersion to compensate for a phase effect chirping produced in said laser; and

(C) thermally tuning an optical length of said laser cavity to a value such that said overlapping pulse portions have fields that interfere in a manner enhancing a central peak of a selected pulse and minimizing remaining pulse queues thereof.

5,548,604

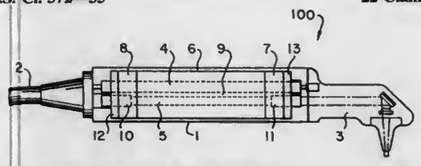
COMPACT HAND HELD MEDICAL DEVICE LASER

Michael P. Toepel, P.O. Box 343, Pittsfield, N.H. 03263

Continuation-in-part of Ser. No. 702, Mar. 19, 1993, abandoned. This application May 5, 1994, Ser. No. 238,712

Int. Cl.[6] G02B *6/32*

U.S. Cl. 372—35 **22 Claims**



1. A compact laser apparatus comprising:

a laser cavity housing having an interior and an exterior surface;

a laser resonator rod having anterior and posterior ends;

a flashlamp having anterior and posterior electrical connections;

a coupling means having an interior reflective surface disposed towards said resonator rod and said flashlamp and an exterior surface disposed towards said laser cavity housing;

first and second means for orienting and holding said resonator rod, said flashlamp and said coupling means to provide optical pumping of said resonator rod by said flashlamp;

a means for circulating a cooling medium through said laser apparatus in a first direction along said laser resonator rod and said flashlamp and in a second direction along the exterior surface of said coupling means and the interior surface of the laser cavity housing, for removing heat generated by said flashlamp during laser operation; and

a beam shaping/delivery apparatus removably connected to the laser cavity housing to receive the laser emissions of said laser resonator rod.

5,548,605

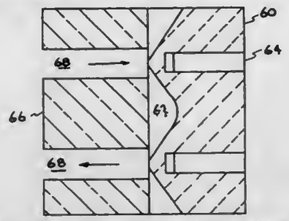
MONOLITHIC MICROCHANNEL HEATSINK

William J. Benett; Raymond J. Beach, and Dino R. Clarlo, all of Livermore, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed May 15, 1995, Ser. No. 440,595

Int. Cl.[6] H01S *3/04*

U.S. Cl. 372—36 **19 Claims**



1. A monolithic microchannel heatsink, comprising:

a substrate;

a plurality of parallel laser diode bar slots formed in a first side of said substrate; and

a plurality of parallel microchannels formed in a second side of said substrate;

wherein said plurality of parallel microchannels are oriented at an angle θ with respect to said plurality of parallel laser diode bar slots, where 90°>θ>0°.

5,548,606

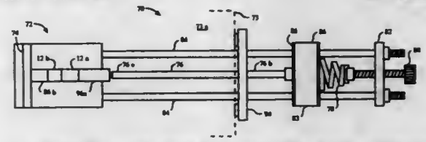
MULTIFORM CRYSTAL AND APPARATUS FOR FABRICATION

Robert H. Senn, Anaheim, and Loren E. Record, Redondo Beach, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Division of Ser. No. 190,347, Jan. 27, 1994, Pat. No. 5,394,420. This application Oct. 31, 1994, Ser. No. 331,984

Int. Cl.[6] H01S *3/14*

U.S. Cl. 372—39 **21 Claims**



1. A multiform crystal suitable for laser applications, comprising at least two single crystal segments fused together with a joint therebetween, the joint being formed from polished optically flat faces having a roughness of less than ½ the wavelength of light propagated through the crystal, and the joint comprising substantially no bonding agent, whereby the joint is substantially optically transparent to light propagating through the crystal.

5,548,607

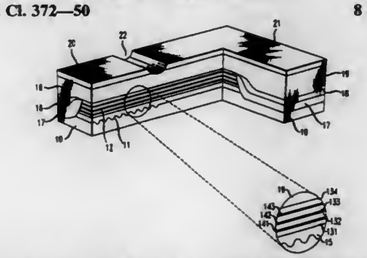
ARTICLE COMPRISING AN INTEGRATED LASER/MODULATOR COMBINATION

Won-Tien Tsang, Holmdel, N.J., assignor to Lucent Technologies, Inc., Murray Hill, N.J.

Filed Jun. 8, 1994, Ser. No. 255,589

Int. Cl.[6] H01S *3/18;3/10*

U.S. Cl. 372—50 **8 Claims**



1. An article comprising a semiconductor substrate and a semiconductor layer structure on the substrate, with said substrate and layer structure forming an integrated device combination comprising a laser section and a modulator section, the modulator section being aligned and optically coupled with the laser section, the article comprising laser contacts that facilitate flowing an electric current through the laser section, and further comprising modulator contacts that facilitate applying a voltage across the modulator section; said layer structure comprising an active region that comprises a first active region in the laser section and a second active region in the modulator section, associated with the first active region being a first bandgap energy E_{g1}, and associated with the second active region being a second bandgap energy E_{g2}; wherein

a) the first active region is continuous with the second active region, and has the same number of layers, of the same layer thicknesses and compositions, as the second active region, such that $Eg_1=E_{g2}$;

b) associated with the laser section is a gain peak wavelength λ_p, and the integrated device combination comprises a distributed feedback structure selected to result in a laser output wavelength $\lambda_o > \lambda_p$;

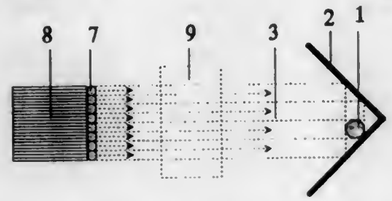
c) said first and second active regions each comprises a multiplicity of quantum wells of a first thickness, with a barrier layer of a second thickness separating any two adjacent quantum wells, wherein the second thickness is greater than the first thickness.

5,548,608

LASER HEAD AND TELESCOPIC CAVITY FOR DIODE-PUMPED SOLID-STATE LASERS

Tong Zhang, 245 S. 800 E., #6, Salt Lake City, Utah 84102

Filed Feb. 8, 1993, Ser. No. 14,715
Int. Cl.[6] H01S *3/0941*
U.S. Cl. 372—75 **17 Claims**



1. A solid-state laser head for producing coherent light, comprising: a solid-state laser material means with a largest cross sectional dimension d and a refractive index higher than the periphery, a diode bar means and a corner reflector means;

wherein

a) multiple micro-beams are produced by many individual emitters located within said diode bar means, based on the multiple micro-beams collective effect, serving as multiple incident beams;

b) said corner reflector means reflects and divides the compilation of said multiple incident beams to four equal portions, and produces 4-side uniform pumping light into said solid-state laser material means from four different directions of the top, back, front, and bottom; and said solid-state laser material means is mounted within said corner reflector means;

c) the absorption coefficient of said solid-state laser material at the pump wavelength is predetermined in the optimized condition, including the concentration of the pump power in the central lasing area, so as to obtain high pump density and laser gain in the central lasing area and high absorption efficiency of said laser material means, whereby resulting in a favorable condition for realizing the high quality laser operation, that is, mode-matched pumping, low order modes or TEM_{00} mode operation, good output beam quality and high efficiency; wherein said absorption coefficient in said optimized condition is chosen to be the value which leads to I(d)/I(O)=10%–13% around, where I(O) is the intensity of the pump light incident on the laser material means and I(d) is the intensity of the pump light emerging from the side of the laser material opposite the incident side;

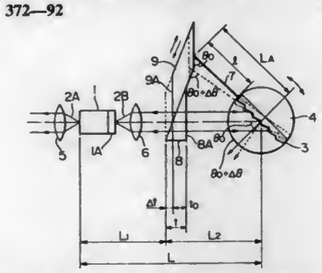
d) further comprising an optical conditioning means, so that said multiple incident beams are collimated at least in one dimension and whose compilation has a vertical dimension four times of said dimension d; each of said portions having a vertical dimension equal to said dimension d whereby resulting in said incident beams to converge inward from the surface toward the central lasing region.

5,548,609

EXTERNAL RESONATOR TYPE WAVELENGTH-VARIABLE SEMICONDUCTOR LASER LIGHT SOURCE

Atsushi Kitamura, Tokyo, Japan, assignor to Ando Electric Co., Ltd., Tokyo, Japan

Filed Feb. 27, 1995, Ser. No. 394,520
Claims priority, application Japan, Feb. 28, 1994, 6-054582
Int. Cl.[6] H01S *3/08*
U.S. Cl. 372—92 **6 Claims**



1. An external resonator type wavelength-variable semiconductor laser light source comprising:

a semiconductor laser having two end faces; one end face being coated with an antireflection film, the semiconductor laser generating a beam which is transmitted through the antireflection film as an outgoing beam;

a diffraction grating, inclined with respect to the optical axis of the semiconductor laser at an inclination angle, for reflecting the outgoing beam from the end face coated with antireflection film so as to form an external resonator with the other end face of the semiconductor laser, whereby a pumped laser beam is outputted from the other end face of the semiconductor laser as an output beam from the external resonator type wavelength-variable semiconductor laser light source;

a rotating stage which holds the diffraction grating;

a first prism having a slope, said prism being fixed at a position between the semiconductor laser and the diffraction grating, the outgoing beam from the end face coated with the antireflection film of the semiconductor laser being transmitted through the first prism; and

a second prism which is combined with the first prism in a manner such that the second prism slides on the slope of the first prism, the second prism being connected to the rotating stage via an arm, the outgoing beam from the end face coated with the antireflection film of the semiconductor laser being transmitted through the second prism, and the second prism having a shape such that an optical length of a beam transmitted through the second prism varies while the second prism slides on the slope;

wherein, when the second prism slides on the slope of the first prim, the arm cooperates with the second prism and rotates the rotating stage connected with the arm, and the diffraction grating fixed on the rotating stage also rotates to vary the inclination angle of the diffraction grating, whereby the wavelength of the output beam of the semiconductor laser light source varies.

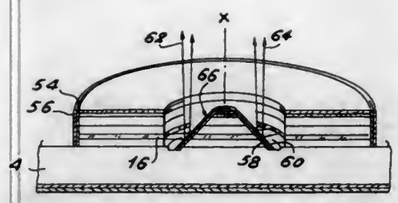
5,548,610

SURFACE-EMITTING POWER LASER AND PROCESS FOR FABRICATING THIS LASER

Nouredine Bouadma, Gentilly, and Louis Menigaux, Bures Sur Yvett, both of, France, assignors to France Telecon, Issy Les Moulineaux, France

Filed Mar. 6, 1992, Ser. No. 854,215
Claims priority, application France, Mar. 13, 1991, 91 03022
Int. Cl.[6] H01S *3/10;3/18*
U.S. Cl. 372—99 **9 Claims**

1. A surface-emitting power laser comprising, on a semiconductor substrate (4, 76),



a plurality of elementary semiconductor lasers (**68**), having a plurality of strips (**16, 86, 120**), and

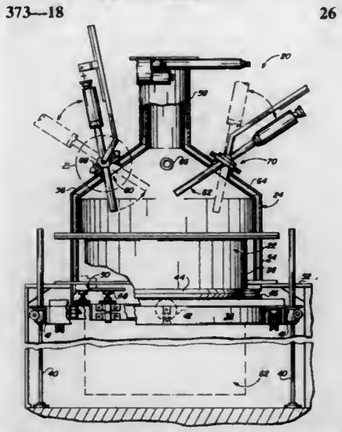
means (**66, 84, 122**) for reflecting, along a direction perpendicular to the substrate, the light generated by each of the elementary lasers (**68**), the power laser being characterized by the fact that the strips (**16, 86, 120**) of the elementary lasers (**68**) are disposed along radii of a circle whose axis (X) is parallel to said direction of reflection and in that the reflection means (**66, 84, 122**) are provided in order to reflect, along said axis (X), the light generated by each of the elementary lasers (**68**).

5,548,611

METHOD FOR THE MELTING, COMBUSTION OR INCINERATION OF MATERIALS AND APPARATUS THEREFOR

Michael J. Cusick, Englewood; Michael A. Weinstein, Boulder, and Leonard E. Olds, Castle Rock, all of Colo., assignors to Schuller International, Inc., Denver, Colo.

Continuation-in-part of Ser. No. 64,197, May 19, 1993, abandoned. This application May 5, 1994, Ser. No. 233,734
Int. Cl.[6] H05B *7/00*
U.S. Cl. 373—18 **26 Claims**



20. A plasma arc melter for melting materials comprising at least two transferred arc plasma torches of opposite polarities, one of said torches being a cathode torch comprising a cathode electrode and a nozzle for emitting a cathode plasma jet, and one of said torches being an anode torch comprising an anode electrode and a nozzle for emitting an anode plasma jet; means for locating a discharge end of the cathode nozzle and a discharge end of the anode nozzle relative to each other for the transfer of current between the torches through a coupling zone to heat the materials and means for supplying current to the torches; a rotatable, generally cylindrical melter shell for holding the materials, said melter shell having a vertical, longitudinal axis, said melter shell having a bottom wall, a sidewall and an open top; a non-rotating melter hood located over the open top of the melter shell, and the plasma torches being mounted in the melter hood; the improvement comprising:

the discharge end of the cathode torch nozzle being offset relative to the vertical, longitudinal axis of the melter shell;

the melter hood having a materials feed port offset relative to the vertical, longitudinal axis of the melter shell for introducing the materials to be heated into the melter shell at a location offset from the vertical, longitudinal axis; and

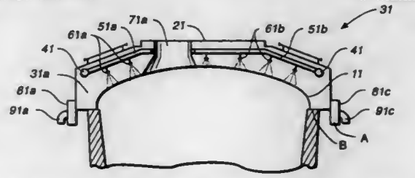
means for rotating the melter shell such that the materials introduced into the melter shell of the plasma arc melter through the feed port pass beneath the discharge end of the cathode torch nozzle before passing beneath the discharge end of the anode torch nozzle.

5,548,612

FURNACE COVER WITH A SPRAY COOLING SYSTEM

Kunio Matsuo, and Tamotsu Nomura, both of Aichi, Japan, assignors to Daido Tokushuko Kabushiki Kaisha, Japan

Filed Mar. 7, 1995, Ser. No. 399,988
Int. Cl.[6] F27D *1/02*
U.S. Cl. 373—73 **3 Claims**



3. The furnace cover for a main body of an electrical furnace, said main body structured so as to be tilted by a tilting angle in a specified tilting direction for discharging molten slag therefrom, said cover comprising;

a double-layered structure defining therein a hollow inner space and having a bottom surface and an outer circumferential part;

a plurality of spray nozzles disposed in said hollow inner space adapted to spray coolant therethrough; and

a coolant collecting box attached to said outer circumferential part of said double-layered structure and adapted to collect sprayed coolant therein, said coolant collecting box having a coolant outlet and a bottom surface which is below the bottom surface of said double-layered structure and is sloped opposite said tilting angle by an angle greater than said tilting angle of said main body, said coolant outlet being at a lower end part of said sloped bottom surface of said coolant collecting box.

5,548,613

DS/CDMA RECEIVER USING MOVING-AVERAGED PILOT SIGNALS FOR WEIGHTING AND PHASE ROTATION OF ORTHOGONAL DATA SYMBOL VECTORS

Tomoya Kaku, and Sean O'Regan, both of Tokyo, Japan, assignors to NEC Corporation, Japan

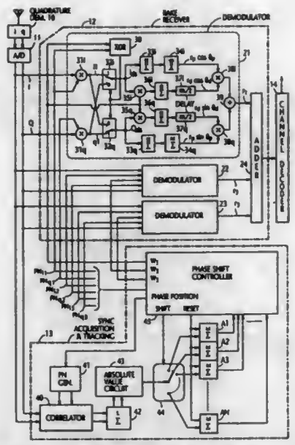
Filed Dec. 29, 1994, Ser. No. 365,962
Claims priority, application Japan, Dec. 30, 1993, 5-354553
Int. Cl.[6] H04B *1/707*
U.S. Cl. 375—208 **16 Claims**

1. A direct sequence spread spectrum receiver comprising:

first correlator means multiplying in-phase and quadrature spread data signals and in-phase and quadrature spread pilot signals with orthogonal despreading sequences at a chip rate to produce in-phase and quadrature orthogonal despread data signals and in-phase and quadrature despread pilot signals;

data integrator means integrating the in-phase and quadrature despread data signals at a symbol rate to produce in-phase and quadrature data symbols;

pilot integrator means integrating the in-phase and quadrature despread pilot signals at said symbol rate to produce in-phase and quadrature pilot symbols;



first and second moving average means successively summing a predetermined number of the in-phase and quadrature pilot symbols to produce first and second moving average values, respectively;

first and second multiplier means multiplying the in-phase and quadrature data symbols of the data integrator means with the first and second moving average values, respectively; and

means summing output signals of the first and second multiplier means.

5,548,614

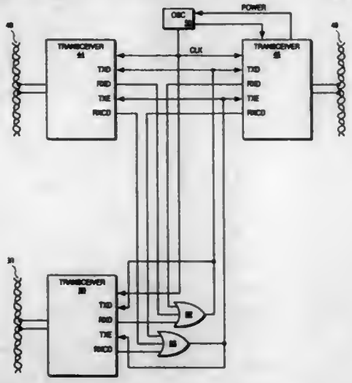
METHOD AND APPARATUS FOR INTERFACING BETWEEN A TWISTED PAIR AND AN INTELLIGENT CELL

Donald D. Baumann, San Jose; W. Mike Berke, Newark; Stephen F. Dreyer, Palo Alto; Rod G. Sinks, Cupertino, and Kurt A. Stoll, Fremont, all of Calif., assignors to Echelon Corporation, Palo Alto, Calif.

Continuation of Ser. No. 240,004, May 9, 1994, abandoned, which is a division of Ser. No. 49,534, Apr. 20, 1993, Pat. No. 5,347,549. This application Apr. 19, 1995, Ser. No. 425,715

Int. Cl.[6] **H04B** *3/36;* **H04L** *25/20*

U.S. Cl. 375—211 **6 Claims**



1. A repeater comprising:

n transceivers for connecting to n lines, each transceiver having a receive data terminal on which data from one of the n lines is coupled, a transmit data terminal for receiving data that is to be transmitted onto the one of the n lines, a transmit enable terminal for receiving a signal that enables transmission onto the one of the n lines, and a carrier detection terminal that provides a signal when a transmission is detected on the one of the n lines;

a first logic means interconnecting the receive data terminals of the n transceivers to the transmit data terminals of the n transceivers; and,

a second logic means interconnecting the carrier detection terminals of the n transceivers to the transmit enable terminals of the n transceivers.

5,548,615

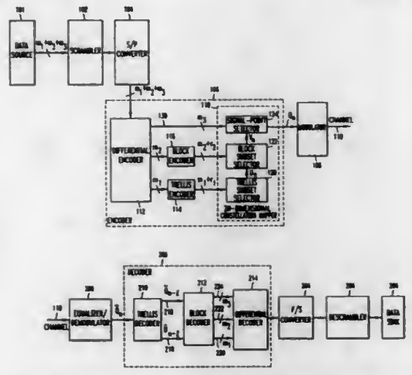
METHODS AND APPARATUS FOR ROTATIONALLY INVARIANT MULTILEVEL CODING

Lee-Fang Wei, Lincroft, N.J., assignor to AT&T Corp., Murray Hill, N.J.

Filed May 3, 1993, Ser. No. 57,060

Int. Cl.[6] **H04L** *27/10;25/34;5/12;* **G06F** *11/10*

U.S. Cl. 375—281 **26 Claims**



1. A rotationally invariant, multilevel coding method for selecting a sequence of signal points from a multilevel, 2N-dimensional constellation to represent a sequence of input bits, N representing a positive integer, the constellation having at least three phase symmetries and being partitioned into a first group of subsets, and each of the subsets of the first group being partitioned into a second group of subsets, the method comprising the steps of:

applying, during each 2N-dimensional signaling interval, first and second portions of the input bits to a first encoder and a second encoder, respectively, to generate first and second groups of encoded bits;

specifying, in response to the first group of encoded bits, a first subset from the first group of subsets of the constellation;

identifying, in response to the second group of encoded bits, a second subset from the second group of subsets of the specified first subset;

selecting, in response to a third portion of the input bits, a 2N-dimensional signal point from the identified second subset; and generating an output signal representing a sequence of successive, multilevel, 2N-dimensional signal points thus selected,

wherein the constellation is partitioned such that each of respective subsets in the first group of subsets has an intra-subset minimum square Euclidean distance (MSED) less than the MSEDs of each of the subsets in the corresponding second group of subsets into which the respective first group of subsets is partitioned;

the subsets in the first and second groups of subsets being rotationally invariant to the same amount of phase rotation of the 2N-dimensional constellation such that a valid sequence of signal points becomes another valid sequence of signal points after a rotation corresponding to a phase symmetry of the 2N-dimensional constellation.

5,548,616

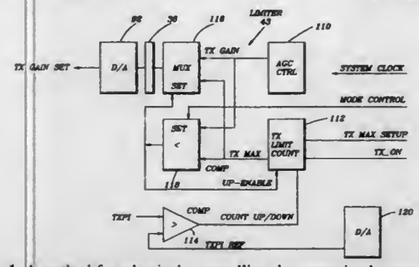
SPREAD SPECTRUM RADIOTELEPHONE HAVING ADAPTIVE TRANSMITTER GAIN CONTROL

Lars H. Mucke, San Diego, Calif., and Jarmo Helnonen, Salo, Finland, assignors to Nokia Mobile Phones Ltd., Salo, Finland

Filed Sep. 9, 1994, Ser. No. 303,619

Int. Cl.[6] **H04L** *27/04*

U.S. Cl. 375—295 **24 Claims**



1. A method for adaptively controlling the transmitted power of a transmitter, comprising the steps of:

setting a register means for storing a digital representation of an estimate of a value of a maximum transmitter gain signal, the register means having an output that is a representation of a maximum transmitter gain signal TX max;

deriving a transmitter gain signal TX gain from a received signal;

comparing TX max to TX gain and, if TX gain is greater than TX max,

applying a first transmitter gain control signal to the transmitter that is derived from TX max, and

enabling said register means to increase the stored digital representation of the estimate of the value of the maximum transmitter gain signal;

else, if TX gain is less than TX max, applying a second transmitter gain control signal to the transmitter that is derived from TX gain, and

disabling said register means from increasing the stored digital representation of the estimate of the value of the maximum transmitter gain signal.

5,548,617

DIGITAL VSB DETECTOR WITH BANDPASS PHASE TRACKER USING RADER FILTERS, AS FOR USE IN AN HDTV RECEIVER

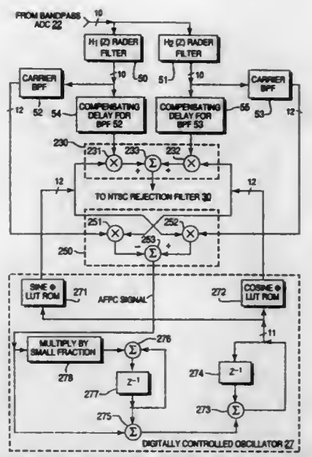
Chandrakant B. Patel, Hopewell, and Allen L. Limberg, Ringoes, both of N.J., assignors to Samsung Eletronics, Co., Ltd., Kyungki-do, Rep. of Korea

Filed May 19, 1994, Ser. No. 243,480

Int. Cl.[6] **H04L** *27/06;* **H03K** *1/00*

U.S. Cl. 375—316 **41 Claims**

1. A radio receiver comprising



a tuner for selecting one of channels at different locations in a frequency band and frequency converting the selected channel to a final intermediate-frequency signal in a final intermediate-frequency band;

an analog-to-digital converter for digitizing said final intermediate-frequency signal to generate as an output signal thereof digitized final intermediate-frequency signal; and

digital circuitry-for synchrodyning said digitized final intermediate-frequency signal to baseband, which said digital circuitry comprises:

a digitally controlled oscillator for generating digitized samples of a cosine wave of a controlled frequency and digitized samples of a sine wave of said controlled frequency, said controlled frequency being controllable over a range of frequencies including the carrier frequency of said final intermediate-frequency signal in response to a digital control signal indicative of the difference of said controlled frequency from a desired frequency;

first and second digital filters respectively generating first and second all-pass responses to frequencies throughout said final intermediate-frequency band, which first and second all-pass responses are substantially linear phase responses throughout said final intermediate-frequency band and exhibit substantially $\pi/2$ radians offset from each other at each frequency within said final intermediate-frequency band;

means for applying said digitized final intermediate-frequency signal to said first and second digital filters as a shared input signal to each of them;

a first digital multiplier, receptive of the digitized samples of said cosine wave of said controlled frequency as its multiplier signal, for generating a first product signal;

means for applying said all-pass response of said first digital filter to said first digital multiplier as its multiplicand signal;

a second digital multiplier, receptive of the digitized samples of said sine wave of said controlled frequency as its multiplier signal, for generating a second product signal;

means for applying said all-pass response of said second digital filter to said second digital multiplier as its multiplicand signal; and

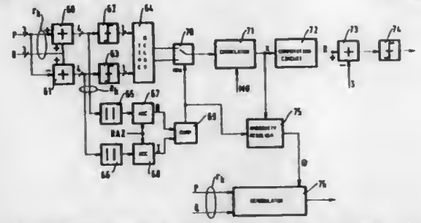
a first digital adder additively combining said first and second product signals for generating a first sum signal supplied as an output signal from said digital circuitry for synchrodyning said digitized final intermediate-frequency signal to baseband.

5,548,618

DEVICE FOR DETECTING BPSK MODULATED SINGULAR WORDS SUITABLE FOR A TDMA ANALOG MODEM AND DETECTION METHOD USED THEREIN

Philippe R. Sehier, Levallois-Perret, and Yannick L. Le Pape, Asnieres, both of, France, assignors to Alcatel Telspace, Nanterre Cedex, France

Filed Jun. 27, 1994, Ser. No. 266,458
Claims priority, application France, Jun. 29, 1993, 93 07905
Int. Cl.[6] H04J *3/24*
U.S. Cl. 375—343 **3 Claims**



1. A BPSK modulated singular word detector device for a TDMA modem comprising a device for recovering the carrier of a received signal and supplying the complex envelope of said received signal on a real channel and an imaginary channel, said device comprising:

means applying an angular offset of $\pi/4$ to the constellation of said complex envelope, said angular offset means supplying a complex signal on a main channel and on an auxiliary channel each comprising a real channel and an imaginary channel;

N sample delay means on said main channel supplying time-delayed samples to a multiplexer on a time-delayed real channel and a time-delayed imaginary channel;

estimator means on said auxiliary channel to estimate which of said real and imaginary channels of said auxiliary channel is conveying greater energy, said estimator means supplying information to said multiplexer so that the latter supplies at its output whichever of the time-delayed real or imaginary channels of said main channel corresponds to that of said channels of said auxiliary channel conveying the greater energy;

a correlator receiving a reference singular word and computing a correlation level between the output signal of said multiplexer and said reference singular word;

comparator means comparing said correlation level with a threshold value to indicate detection of said singular word in the signal of said channel applied to said correlator if said correlation level is greater than said threshold vale; and

ambiguity resolving means receiving said information supplied to said multiplexer and said correlation level and supplying to a demodulator the value of said angular offset of said constellation relative to a reference angle.

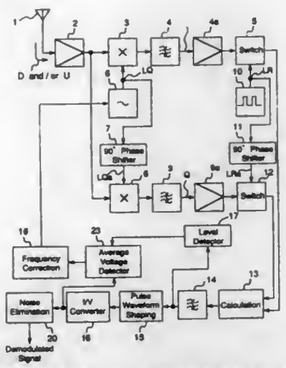
5,548,619

RADIO RECEIVER APPARATUS OF ORTHOGONAL DETECTION TYPE COMPRISING LOCAL OSCILLATOR MEANS WITH IMPROVED AUTOMATIC FREQUENCY CONTROL ARRANGEMENT

Yoshio Horiike, Shijonawate; Yasuo Yoshimura; Yoshiyuki Yokoajiro, both of Yamatokouriyama; Terue Matsumura, Nara; Makoto Hasegawa, and Masahiro Mimura, both of Tokyo, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 19, 1995, Ser. No. 374,915
Claims priority, application Japan, Jul. 20, 1993, 5-179006
Int. Cl.[6] H04L *27/06*
U.S. Cl. 375—344 **7 Claims**

1. A radio receiver apparatus of an orthogonal detection type, comprising:



voltage controlled first local oscillator means for generating a first local oscillation signal having a first local oscillation frequency, which is changed in response to an inputted voltage;

first phase shifter means for shifting a phase of the first local oscillation signal generated by said voltage controlled first local oscillator means by 90 degrees, and outputting a phase-shifted first local oscillation signal;

first mixer means for mixing an inputted reception signal with the first local oscillation signal generated by said voltage controlled first local oscillator means, and outputting a resulting mixed signal;

first band-pass filter means for passing therethrough a desired first intermediate frequency signal having a predetermined first intermediate frequency in response to the mixed signal outputted from said first mixer means, and outputting the first intermediate frequency signal;

second mixer means for mixing the inputted reception signal with the phase-shifted first local oscillation signal outputted from said first phase shifter means, and outputting another resulting mixed signal;

second band-pass filter means for passing therethrough another desired first intermediate frequency signal having the first intermediate frequency in response to the mixed signal outputted from said second mixer means, and outputting another first intermediate frequency signal;

second local oscillator means for generating a second local oscillation signal having a second local oscillation frequency;

second phase shifter means for shifting a phase of the second local oscillation signal generated by said second local oscillator means by 90 degrees, and outputting a phase-shifted second local oscillation signal;

third mixer means for mixing the first intermediate frequency signal outputted from said first band-pass filter means with the second local oscillation signal outputted from said second local oscillator means, and outputting a resulting mixed signal;

fourth mixer means for mixing the another first intermediate frequency signal outputted from said second band-pass filter means with the phase-shifted second local oscillation signal outputted from said phase shifter means, and outputting a further resulting mixed signal;

calculation means for calculating either one of a sum of and a difference between the resulting mixed signal outputted from said third mixer means and the further resulting mixed signal, and outputting a signal representing a resulting calculated result thereof;

third band-pass filter means for passing therethrough a second intermediate frequency signal having a center frequency which is apart from the second local oscillation frequency by a difference frequency between a frequency of the inputted reception signal and the first local oscillation frequency, in response to the signal outputted from said calculation means, and outputting the second intermediate frequency signal;

demodulation means for demodulating the second intermediate frequency signal outputted from said third band-pass filter means, and outputting a resulting demodulated signal;

average frequency detection means for detecting an average frequency of the second intermediate frequency signal outputted from said third band-pass filter means for a predetermined time interval; and

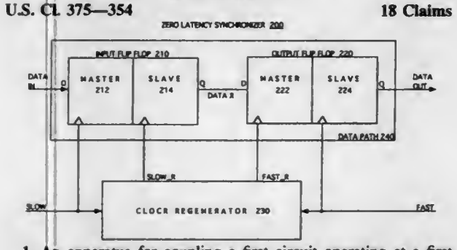
frequency correction means for controlling the first local oscillation frequency of the first local oscillation signal generated by said voltage controlled first local oscillator means so that a difference between the average frequency detected by said average frequency detection means and a predetermined frequency corresponding to a center frequency of the second intermediate frequency signal becomes substantially zero.

5,548,620

ZERO LATENCY SYNCHRONIZED METHOD AND APPARATUS FOR SYSTEM HAVING AT LEAST TWO CLOCK DOMAINS

Alan C. Rogers, Palo Alto, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Apr. 20, 1994, Ser. No. 230,489
Int. Cl.[6] H04L *7/00*
U.S. Cl. 375—354 **18 Claims**



1. An apparatus for coupling a first circuit operating at a first clock rate and a second circuit operating at a second clock rate, comprising:

a data path circuit coupling the first and the second circuit and transferring data from the first circuit to the second circuit in response to a regenerated clock signal, wherein the data path circuit includes:

an input flip flop having an input master and an input slave, the input master receiving an input signal from the first circuit, the input signal being under control of a first clock operating at the first clock rate, and

an output flip flop having an output master and an output slave, the output slave providing an output signal to the second circuit, the output signal being under control of a second clock operating at the second clock rate, the input slave providing an intermediate signal as input to the output master; and

a clock regenerator circuit, coupled to the data path circuit, generating the regenerated clock signal from a first clock signal operating at the first clock rate and a second clock signal operating at the second clock rate,

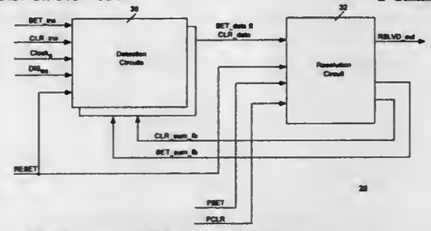
wherein the clock regenerator circuit is coupled to said input and output flip flops and generates a first regenerated clock to control the input slave and a second regenerated clock to control the output master, the first and second regenerated clocks being generated from a common source, the first regenerated clock having a rising edge synchronized with, and advanced from, the first clock, the first regenerated clock having a short pulse with a falling edge that follows the rising edge of the first clock but that precedes the falling edge of the first clock, the second regenerated clock having a rising edge synchronized with, and advanced from, the second clock, the second regenerated clock having a falling edge that follows the falling edge of the second clock.

5,548,621

DATA INSTRUMENTATION SYSTEM HAVING CIRCUITRY FOR RESOLVING MULTIPLE ASYNCHRONOUS STATE INPUTS

Gary W. Brady, Aloha, and David G. Ellis, Hillsboro, both of Oreg., assignors to INTEL Corporation, Santa Clara, Calif.

Continuation of Ser. No. 85,961, Jun. 30, 1993. This application Dec. 13, 1994, Ser. No. 354,945
Int. Cl.[6] H04N *7/00*
U.S. Cl. 375—354 **2 Claims**



1. A data instrumentation system comprising:

a) a plurality of trace boards having a plurality of state machines for asynchronously generating a plurality of control signal sets, each of said plurality of control signal sets having two control signals;

b) a plurality of detection circuits coupled to said state machines for receiving said plurality of control signal sets, detecting active control signals in said received plurality of control signal sets, and generating a plurality of detection signal sets, each of said plurality of detection signal sets having two detection signals corresponding to the two control signals of one of said plurality of control signal sets, each of said plurality of detection signal sets being used for identifying active control signals being detected in the corresponding control signal set; and

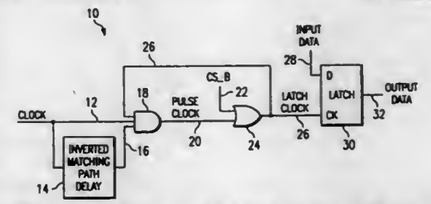
c) a resolution circuit coupled to said detection circuits and said state machines for receiving said plurality of detection signal sets, and generating an output signal having two possible output states, said output signal being generated based on a current state of said output signal and selected ones of said received detection signals that are applicable to the current state of said output signal.

5,548,622

METHOD AND STRUCTURE FOR SYNCHRONIZATION OF ASYNCHRONOUS SIGNALS

Herman H. Ma, Dallas, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Mar. 24, 1995, Ser. No. 409,744
Int. Cl.[6] H04L *7/00;7/02*
U.S. Cl. 375—354 **19 Claims**



10. A structure for ensuring that data of a transmitting device which is received by a receiving device is stable and not in transition, comprising:

a data of a transmitting device;

a clock signal corresponding to the data which is representative of an operating frequency of the transmitting device;

an inverted matching path delay block which has the clock signal as an input signal and which produces a derivative

clock signal having a minimum delay time required for the data to become stable as defined by the clock signal;

a first logic element which performs a logic operation on the clock signal, the derivative clock signal, and a latch signal to produce a pulse signal having a pulse time duration at least as long as the minimum delay time required for the data to become stable;

a second logic element which performs a logic operation on the pulse signal and a request signal from the receiving device requesting the data from the transmitting device and produces said latch signal which is an input signal to the first logic element; and

a latch element which has the data of the transmitting device as a data input signal, the latch signal produced by the second logic element as a clock input signal and which produces a data output signal, wherein when the data is stable as determined by the pulse signal the latch signal latches the data into the latch element and when the data is in transition as determined by the pulse signal the latch element samples the data and the data is not latched into the latch element.

5,548,623

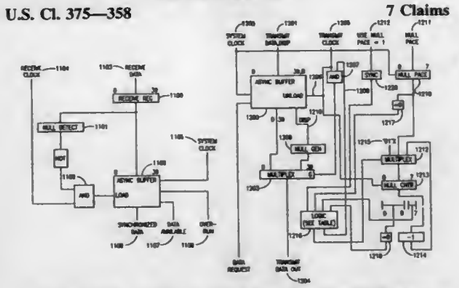
NULL WORDS FOR PACING SERIAL LINKS TO DRIVER AND RECEIVER SPEEDS

Daniel F. Casper, Poughkeepsie; Thomas A. Gregg, Highland; Gregory Salyer, Woodstock, and Douglass W. Westcott, Rhinebeck, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 839,657, Feb. 20, 1993, Pat. No. 5,357,608, and a continuation-in-part of Ser. No. 839,986, Feb. 20, 1992, Pat. No. 5,267,240, and a continuation-in-part of Ser. No. 839,652, Feb. 20, 1992, Pat. No. 5,412,803. This application Jun. 1, 1993, Ser. No. 71,150

Int. Cl.[6] H04L *7/00*

U.S. Cl. 375—358 **7 Claims**



1. In a data processing system with interconnected elements each of which can function as both a transmitter and a receiver of an information stream, a method for operating the elements at each end of a link wherein each of said elements and the link operates at its own operating rate and wherein said operating rates are independent from one another comprising the steps of:

receiving a frame which contains the maximum rate at which a receiver can receive said information stream;

determining an information rate equivalent to the maximum rate at which both the transmitter and the receiver can process said information stream;

setting the transmitter to transmit non-null words at the determined information rate by inserting null words at the transmitter, as needed, to reduce the effective rate of non-null words transmitted therefrom in accordance with said determined information rate; and

deleting null words as they are received at the receiver.

5,548,624

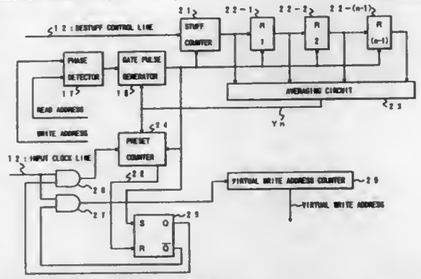
DESTUFF CIRCUIT FOR ASYNCHRONOUS DIGITAL SIGNALS

Norio Yoshida, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 14, 1995, Ser. No. 404,286

Int. Cl.[6] H04L *7/00*

U.S. Cl. 375—372 **5 Claims**



1. A destuff circuit comprising:

a buffer memory for temporarily storing received data of a channel after stuffed dummy data are eliminated from received data;

a read address counter for generating read address signals for reading data stored in said buffer memory; and

a virtual write address generator for generating a virtual write address signal based on an average value Yn wherein total number of destuff control pulses in a period T is assumed to be said average value Yn of actually occurred destuff control pulses over the latest n periods (that is in a duration nT), and change of output of said read address is phase-locked with change of output of said virtual write address generator.

5,548,625

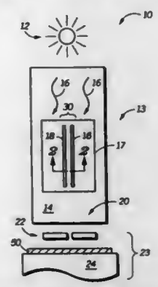
METHOD FOR PARALLEL MULTIPLE FIELD PROCESSING IN X-RAY LITHOGRAPHY

Whitson G. Waldo, III, Hutto, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 2, 1995, Ser. No. 398,191

Int. Cl.[6] G21K *5/00; 1/04*

U.S. Cl. 378—34 **20 Claims**



1. A method for performing parallel multiple field processing in x-ray lithography comprising the steps of:

a) placing a semiconductor wafer on a support stage for holding the semiconductor wafer;

b) providing an x-ray source;

c) providing a mirror assembly containing at least two mirrored surfaces each having a length;

d) providing means for containing the mirror assembly, wherein the length of the at least two mirrored surfaces is positioned along a length of the means for containing the mirror assembly to act as collimating mirrors;

e) providing a mask assembly containing a same number of masks as mirrored surfaces in the mirror assembly, wherein the mask assembly maintains a first fixed separation distance between each mask for forming multiple and separate image fields;

f) aligning the semiconductor wafer with respect to the mask assembly;

g) focusing a first surface portion of the semiconductor wafer with respect to the mask assembly;

h) exposing the first surface portion of the semiconductor wafer to at least two exiting x-ray beams formed by the collimating mirrors which collimate photons emitted by the x-ray source which is projected into a first end of the means for containing the mirror assembly such that the at least two exiting x-ray beams are collimated and reflected off the at least two mirrored surfaces to travel through the length of the means for containing the mirror assembly to exit a second end of the means for containing the mirror assembly, wherein the at least two mirrored surfaces form the at least two exiting x-ray beams having a second fixed separation distance between the at least two exiting x-ray beams such that each of the at least two exiting x-ray beams travels through a separate mask of the mask assembly to print the multiple and separate image fields on the semiconductor wafer; and

i) stepping to a next surface portion of the semiconductor wafer and repeating steps (g) through (i) until all desired surface portions of the semiconductor wafer are exposed.

5,548,626

APPARATUS FOR AND METHOD OF ESTABLISHING A DENSITY PROFILE THROUGH THE THICKNESS OF A PANEL

Thomas Warnecke, Alfeld, Germany, assignor to Fagus-Grecon Greten GmbH & Co. KG, Alfeld, Germany

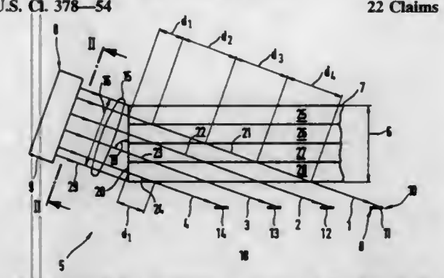
PCT No. PCT/EP93/02724, § 371 Date Aug. 22, 1994, § 102(e) Date Aug. 22, 1994, PCT Pub. No. WO94/15201, PCT Pub. Date Jul. 7, 1994

PCT Filed Jun. 10, 1993, Ser. No. 290,928

Claims priority, application Germany, Dec. 22, 1992, 42 43 454.8

Int. Cl.[6] G01B *15/02*

U.S. Cl. 378—54 **22 Claims**



10. A method for establishing a density profile through the thickness of a panel-like workpiece of non-homogeneous material, comprising the steps of:

(a) directing radiation from an emitter into a narrow face of the workpiece, said radiation being directed in a direction inclined at an angle between 90° and 0° relative to a narrow face over the full thickness of the workpiece in a plurality of adjacent measuring paths lying in one measuring plane and adjacent to one another,

(b) allowing the workpiece to be traversed by the radiation whereby the radiation is attenuated during the traverse of the workpiece,

(c) detecting the attenuated radiation traversing the workpiece in all said measuring paths with a detector,

(d) producing from the detector electrical signals corresponding to the output intensity of the attenuated radiation in each of said measuring paths, and

(e) using the electrical signals obtained from step (d) in an analyzer to establish the density profile, wherein the density profile is established by difference calculations on the output intensities of the attenuated radiation detected in respective adjacent measuring paths.

5,548,627

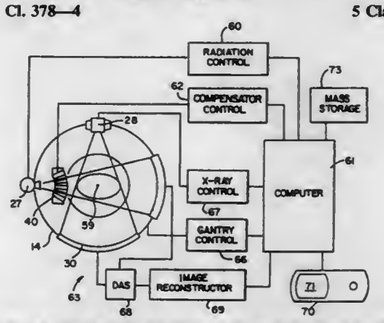
RADIATION THERAPY SYSTEM WITH CONSTRAINED ROTATIONAL FREEDOM

Stuart Swerdloff; Thomas R. Mackie, and Timothy Holmes, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation-in-part of Ser. No. 854,521, Mar. 19, 1992, Pat. No. 5,317,616. This application Jun. 9, 1993, Ser. No. 71,742

Int. Cl.[6] H05G *1/60*

U.S. Cl. 378—4 **5 Claims**



1. A radiation therapy machine for treating a patient having a treatment volume, the machine comprising:

a gantry for rotation with a gantry plane;

a radiation source disposed on the gantry for rotation with the gantry about an axis of rotation, the radiation source directing a radiation beam of a predetermined intensity appropriate to treat tumorous tissue toward the axis of rotation form a plurality of first gantry angles along the gantry plane;

an x-ray source disposed on the gantry for rotation with the gantry about the axis of rotation, the x-ray source for producing an x-ray beam directed toward the axis of rotation from a plurality of second gantry angles in a plane parallel to the gantry plane, the radiation source and the x-ray source positioned in separate parallel planes so that the radiation beam and x-ray beam do not intersect;

an x-ray detector disposed on the gantry and diametrically opposed to the x-ray source for receiving the x-ray beams therefrom and producing x-ray data; and

a computer means for receiving the x-ray data and generating a tomographic image therefrom.

5,548,628

TARGET/ROTOR CONNECTION FOR USE IN X-RAY TUBE ROTATING ANODE ASSEMBLIES

Michael R. Eggleston, Scotia; Mark G. Benz, Burnt Hills; Melvin R. Jackson, Niskayuna, and Robert J. Zabala, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 6, 1994, Ser. No. 321,024

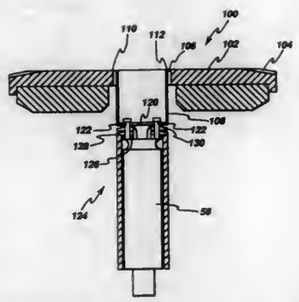
Int. Cl.[6] H01J *35/10*

U.S. Cl. 378—125 **32 Claims**

1. An x-ray tube comprising:

a glass envelope;

a cathode assembly, operatively positioned in the glass envelope;



an anode assembly including:

a rotor body assembly including a rotor and a stator, the stator being operatively positioned relative to the rotor body assembly; and

a target, operatively positioned relative to the cathode assembly, operatively connected to a tubular stem to form a target/stem assembly; and

a plate operatively positioned between the tubular stem and the rotor body assembly and a thermal washer operatively positioned between the plate and the rotor body assembly, for operatively connecting the target/stem assembly to the rotor body assembly.

5,548,629

ROTARY CATHODE X-RAY TUBE EQUIPMENT

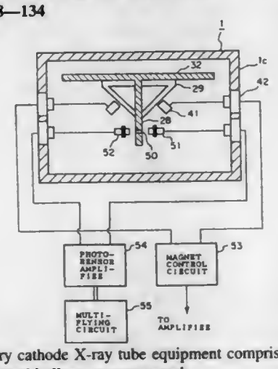
Yutaro Kimura; Tetsuhiko Ikeshima; Hiromichi Tonami, all of Kyoto; Ikuo Konishi, Nara; Hiroshi Horikawa, Kyoto; Akihiro Daikoku, Hyogo; Shigekazu Sakabe, Hyogo; Masao Inoue, Hyogo, and Akinori Yamasaki, Hyogo, all of, Japan, assignors to Shimadzu Corporation, Kyoto, and Mitsubishi Denki Kabushiki Kaisha, Tokyo, both of, Japan

Division of Ser. No. 434,171, May 3, 1995, Pat. No. 5,481,585, which is a continuation of Ser. No. 79,913, Jun. 23, 1993, abandoned. This application Sep. 21, 1995, Ser. No. 531,871

Claims priority, application Japan, Sep. 18, 1992, 4-249255

Int. Cl.[6] H01J *35/04*

U.S. Cl. 378—134 **3 Claims**



1. A rotary cathode X-ray tube equipment comprising:

a ring-shaped hollow vacuum vessel;

a ring-shaped anode target fixed within said vacuum vessel;

a ring-shaped rotary member rotatably disposed in an opposed relation to said anode target within said vacuum vessel;

at least one cathode portion attached to said rotary member on the side opposed to said anode target;

an X-ray radiation window for passing the X-ray generated at the anode target therethrough, said x-ray radiation window being mounted to said inner ring of said vacuum vessel;

a rotational angle detecting means for detecting a rotational angle of said rotary member;

a non-contact type displacement meter for detecting a position of said rotary member;

a memory section for storing a deformation quantity at every rotational angle of said rotary member; and

deformation correcting apparatus for correcting a deformation signal of said rotary member detected by said non-contact type displacement meter by means of said deformation quantity data at every rotational angle of said memory section.

5,548,630

X-RAY RADIATOR HAVING AN ELECTRON SOURCE FOR SENDING A BEAM OF ELECTRONS ALONG AN ELONGATED ANODE

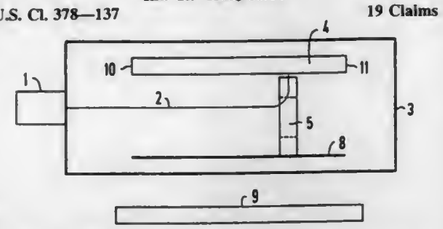
Erich Hell, Erlangen, and Manfred Fuchs, Nuernberg, both of, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 31, 1995, Ser. No. 521,365

Claims priority, application Germany, Sep. 16, 1994, 44 33 133.9

Int. Cl.[6] H01J *35/30*

U.S. Cl. 378—137 **19 Claims**



1. An x-ray radiator, comprising:

an electron source for generating a beam of electrons that are focussed along a longitudinal extent of an elongated anode;

at least one kicker magnet for generating a kicker magnetic field such that the electrons are deflected onto the elongated anode in a region of the kicker magnetic field; and

the kicker magnet being seated in mechanically adjustable fashion along the longitudinal extent of the elongated anode.

5,548,631

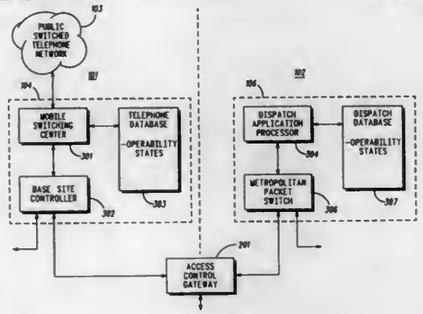
METHOD AND APPARATUS FOR SUPPORTING AT LEAST TWO COMMUNICATION SERVICES IN A COMMUNICATION SYSTEM

Jay Krebs, Crystal Lake, and Paul M. Erickson, Palatine, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 1, 1993, Ser. No. 131,535

Int. Cl.[6] H04Q *7/20*

U.S. Cl. 379—58 **19 Claims**



1. A communication system, comprising:

A) a plurality of base stations that support radio frequency communication channels that are used to support at least two communication services;

B) a communication agent processor operably coupled to a landline telephone network;

C) a dispatch call processor that is independent of the communication agent processor;

D) an access control gateway that is disposed between at least some of the base stations and the communication agent processor, and between the at least some of the base stations and the dispatch call processor, such that the communication agent processor and the dispatch call processor each operably couple to the at least some of the base stations through the access control gateway and wherein the access control gateway allocates the radio frequency communication channels.

5,548,632

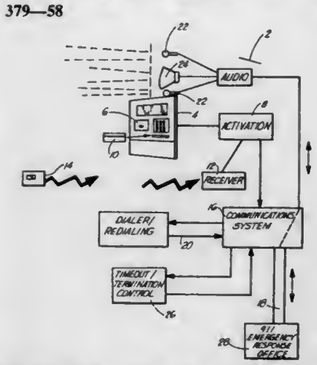
SAFE ALERT EMERGENCY ALERTING SYSTEM FOR REMOTELY LOCATED SITES

Frank P. Walsh, Gulfport; Paul N. Gergen, Christian, and David Hines, Ocean Springs, all of Miss., assignors to Lawrence Steelman, Gulfport, Miss.

Filed Nov. 30, 1993, Ser. No. 160,092

Int. Cl.[6] H04Q *7/24*

U.S. Cl. 379—58 **12 Claims**



1. An emergency alert system for use with an automatic teller machine located at an automatic teller machine location that is approached by an authorized user to obtain banking services from the teller machine, the system comprising:

a) activation means operated by the user for establishing both operation of the automatic teller machine for banking services and a two way communication between the user at the automatic teller machine location and an emergency dispatcher, wherein said two way communication is a direct interconnection of an alarm signal alert to a selected emergency "911" number;

b) said communication originating from a microphone positioned at the automatic teller machine location to pick up sounds from the vicinity of the automatic teller machine location;

c) said communication being to a speaker located at the automatic teller machine location to receive sound communication from the emergency dispatcher to the vicinity of the automatic teller machine location; and

d) termination means for allowing only the emergency dispatcher to terminate said two way communication.

5,548,633

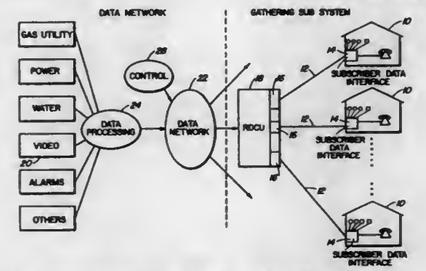
DATA COLLECTION NETWORK APPARATUS AND METHOD

Kim Kujawa, Regina; Erich Kirchner, Saskatoon; Michel Jarzab, Saskatoon, and Homer Robson, Saskatoon, all of, Canada, assignors to SaskTel, Regina, Canada

Continuation of Ser. No. 637,013, Jan. 3, 1991. This application Apr. 26, 1994, Ser. No. 233,498

Int. Cl.[6] H04J *1/14;3/12;* **H04M** *11/00*

U.S. Cl. 379—93 **10 Claims**



1. A data communications system comprising:

a plurality of subscriber data interface elements each having a data input port and a data output port for assembling a data frame, said data output port being electrically connectable to a telephone line, to continuously transmit said data frame thereon, using a carrier signal whose frequency is higher than the voice band;

a plurality of network data interface elements located within a short distance from the farthest subscriber data interface element, a said network data interface elements having a data input port and a data output port, said data input port being electrical connectable to said telephone line and in communication with an associate subscriber data interface element thereover;

a data collection unit having a data storage means for connection to a data output port of a corresponding network data interface element of said plurality of network data interface elements and capable of communicating therewith, for collecting and storing the data frames received from said plurality of network data interface elements;

a data communications network connected to said data collection unit for assembling an addressed data packet from the data frames received from said data collection unit; and

at least one data processing facility in connection with a plurality of service companies and with said data network, for processing said addressed data packet, extracting said subscriber data and transferring said subscriber data to a service company indicated in said addressed data packet.

5,548,634

ALPHANUMERIC REGISTRATION METHOD AND DEVICE OF A SYSTEM WITH ALPHANUMERIC ENTRY KEYS

Gu-Su Gahang, Kyungki-do; Bong-Seog Song, Seoul; Hyun-Jun Lee, Kyungki-do, and Ju-Yeong Ahn, Seoul, all of, Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jul. 5, 1994, Ser. No. 267,746

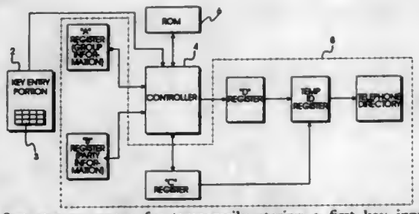
Claims priority, application Rep. of Korea, Nov. 27, 1993, 1993-25495

Int. Cl.[6] H04M *11/00*

U.S. Cl. 379—97 **22 Claims**

18. An alphanumeric registration device for use in a system having a push button telephone with alphanumeric entry keys, said alphanumeric registration device comprising:

alphanumeric registration control means for controlling alphanumeric registration within said system;



first storage means for temporarily storing a first key input entered as a first electrical signal through said alphanumeric entry keys, said first key input indicative of a group value;

second storage means for temporarily storing a second key input entered as a second electrical signal through said alphanumeric entry keys, said second key input indicative of a party value; and

alphanumeric information generation means for generating an alphanumeric symbol under control of said alphanumeric registratioo control means, said alphanumeric symbol corresponding to said group value and said party value, said alphanumeric symbol being one of a numeric symbol and an alphabetic symbol, said alphabetic symbol being in one of an upper case and a lower case;

said alphanumeric symbol generated being said numeric symbol whenever said group value is equal to a value represented by said numeric symbol and said party value is equal to a first value;

said alphanumeric symbol generated being said alphabetic symbol in said upper case whenever said group value is equal to a value indicated on said alphanumeric entry keys corresponding to said alphabetic symbol and said party value is equal to one of a second, third and fourth value;

said alphanumeric symbol generated being said alphabetic symbol in said lower case whenever said group value is equal to said value indicated on said alphanumeric entry keys corresponding to said alphabetic symbol and said party value is equal to one of a fifth, sixth and seventh value.

5,548,635

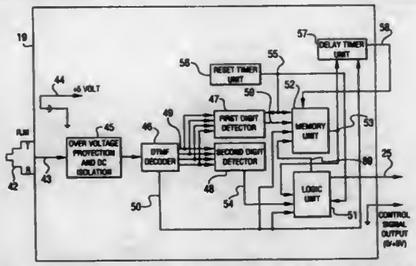
SYSTEM FOR CONTROLLING EQUIPMENT WITHIN A TELEPHONE SUBSCRIBER'S PREMISES USING DTMF TELEPHONES TONES

Graham C. Bradley, Regina, and Alton O. Stretton, Queretaro, both of, Canada, assignors to Sasktel, Canada

Filed Jan. 21, 1994, Ser. No. 184,833

Int. Cl.[6] H04M *11/00*

U.S. Cl. 379—102 **18 Claims**



1. A system for controlling a plurality of appliances at a station which is connected to a telephone switched network using DTMF telephone signals, wherein a number of appliances are TV appliances, said system comprising:

a like plurality of internal tone control devices, each for decoding a sequence of DTMF signals, verifying if said sequence of DTMF signals coincides with a preset identification code and converting said sequence into a control signal;

a like number of receiving-switching units each associated with a TV appliance and with an associated internal tone control device, for receiving said control signal from said associated internal tone control device and for selectively coupling the associated TV appliance to a conventional TV cable network and to an optical fiber TV cable network according to said control signal;

means for connecting each of said internal tone control devices to the telephone switched network for receiving said sequence of DTMF signals and transferring it to said internal tone control devices;

means for coupling each of said receiving-switching units to the conventional TV cable network and to the optical fiber TV cable network; and

means for transmitting said control signal from said internal tone control device to the non-TV appliances for activating/deactivating the non-TV appliances with said control signal wherein said internal tone control devices comprise:

an overvoltage protection and d.c. insulation unit for receiving said sequence of DTMF signals;

a DTMF decoder connected to said overvoltage protection and insulation unit, for decoding a first and a second signal from said sequence of DTMF signals and generating a first and a second digit therefrom;

a first digit detector having a first identification code, connected to said DTMF decoder for comparing said first identification code to said first digit and producing a first digit valid signal;

a second digit decoder having a second identification code, connected to said DTMF decoder for comparing said second identification code to said second digit and producing a said second digit valid signal;

a memory unit, connected to said first digit detector for storing said first digit;

a logic unit connected to said second digit detector and to said memory unit, for determining if said sequence of said first and second digits is valid and generating said d.c. control signal; and

a delay timer unit for resetting said memory if said second digit valid signal is not produced after a predetermined time.

5,548,636

METHOD AND APPARATUS FOR PROVIDING USER CONTROLLED CALL MANAGEMENT SERVICES

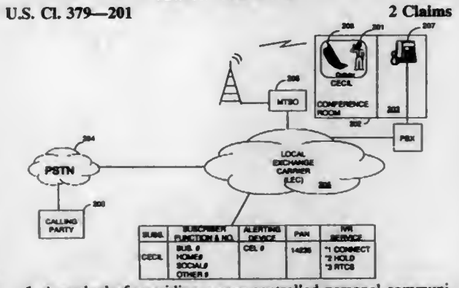
Cecil H. Bannister; Marco Marchetti, both of Plano; Richard C. Mo, Dallas; Tod W. Switzer, Allen, and Dhawal B. Moghe, Plano, all of Tex., assignors to Northern Telecom Limited, Montreal, Quebec, Canada

Continuation of Ser. No. 75,332, Jun. 11, 1993, abandoned.

This application Jun. 6, 1995, Ser. No. 466,189

Int. Cl.[6] H04M *3/42*

U.S. Cl. 379—201 **2 Claims**



1. A method of providing a user controlled personal communication service (PCS) for users of call alerting devices, wherein specified communication services can be invoked by the users prior to answering incoming calls from calling parties, comprising the steps of:

storing, in a database, at least one respective directory number for each respective user;

storing, in the database, for each respective user, a respective network address associated with a respective alerting device;

storing, in the database, for each respective user, a respective list of DTMF codes and associated services that the respective user can invoke prior to answering the incoming calls;

accessing said database when a calling party dials a respective directory number stored in said database;

determining from the database the respective network address of the respective alerting device associated with the respective directory number;

establishing a voice path between the respective alerting device and the calling party if the respective alerting device goes off-hook;

accessing said list of DTMF codes in said database if a respective DTMF code is received from said respective alerting device, to identify a respective service corresponding to the respective DTMF code; and

enabling the respective service,

wherein one of said associated services comprises a call on hold feature which is activated during the ringing of a respective user's alerting device by a call on hold DTMF code, wherein the calling party is placed on hold until the respective user of the respective alerting device is able to answer the calling party.

5,548,637

METHOD AND APPARATUS FOR LOCATING PERSONNEL AND OBJECTS IN RESPONSE TO TELEPHONE INQUIRIES

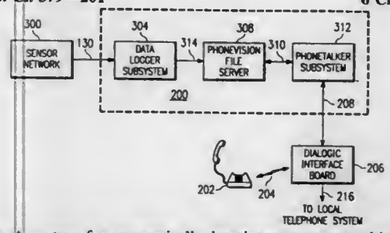
Alan C. Heller; Brian M. Evins, both of San Antonio, Tex.; and Robert G. Karp, Spring Valley, Ohio, assignors to Precision Tracking FM, Inc., Dallas, Tex.

Continuation of Ser. No. 118,566, Sep. 9, 1993, abandoned.

This application Jun. 7, 1995, Ser. No. 474,091

Int. Cl.[6] H04M *3/42*

U.S. Cl. 379—201 **6 Claims**



4. A system for automatically locating a person or object in response to a telephone inquiry by a caller over a telephone system, comprising:

at least one transmitter attached to a person or object whose movement is to be monitored at least within a defined area, said transmitter operable to transmit a signal including unique identification information associated with said person or object;

a plurality of receivers operable to receive said transmitted signal, each receiver of said plurality of receivers positioned at a respective predetermined location within said defined area;

first circuit operable to store said received identification information and respective location data of each said receiver;

second circuit associated with said first circuitry and operable to update the location data stored with said first circuitry in response to the movement of said person or object; and

third circuit operable to provide a message over the telephone system to the caller wherein the message content gives the location of said person or object from a plurality of locations in response to a determination of said updated location.

5,548,638

AUDIO TELECONFERENCING APPARATUS

Naoyuki Yamaguchi, and Tohru Abe, both of Tokyo-To, Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan

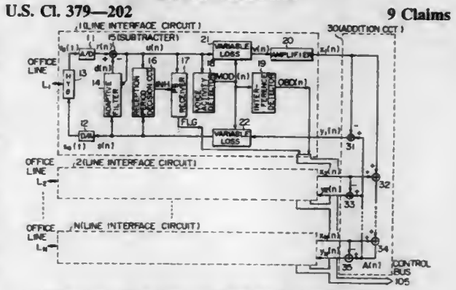
Continuation of Ser. No. 168,857, Dec. 16, 1993, abandoned.

This application Aug. 10, 1995, Ser. No. 513,416

Claims priority, application Japan, Dec. 21, 1992, 4-355443; Dec. 24, 1992, 4-357341; Dec. 24, 1992, 4-357342

Int. Cl.[6] H04M *3/56*

U.S. Cl. 379—202 **9 Claims**



1. An audio teleconferencing apparatus comprising:

more than two line interface circuits each connected at its line side to a communication line; and

an addition circuit provided for mutually interconnecting together said more than two line interface circuits at their interconnection sides;

each of said line interface circuits comprising:

line connection means connected to said communication line at said line side for receiving a speech signal from said communication line;

voice activity detection means connected to said line connection means for detecting the voice activity of the speech signal received;

receiving-speech variable loss means connected to said line connection means for attenuating said received speech signal by a predetermined value when it is detected by said voice activity detection means that said received speech signal is voice non-active;

sending-speech variable loss means connected between said interconnection side and said line connection means for attenuating a sending-speech signal applied from said interconnection side by a predetermined value when it is detected by said voice activity detection means that said received speech signal is voice active; and

amplification means inserted between said variable loss means and said interconnection side for amplifying said received speech signal attenuated by said received-speech variable loss means, by a predetermined value.

5,548,639

DISTRIBUTED CONTROL OF TELECOMMUNICATION NETWORK FOR SETTING UP AN ALTERNATIVE COMMUNICATION PATH

Takao Ogura; Shigeo Amemiya; Koji Tezuka, and Takafumi Chujo, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Oct. 22, 1992, Ser. No. 965,939

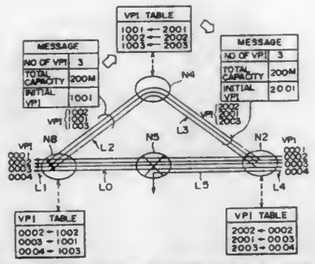
Claims priority, application Japan, Oct. 22, 1991, 3-302274

Int. Cl.[6] H04M *7/00*

U.S. Cl. 379—221 **8 Claims**

1. A method for restoring communication in case a communication failure has occurred in an original communication route set in a distributed control network which includes a plurality of nodes connected with each other by links, each link including a plurality of paths, the method comprising the steps of:

searching for an alternative communication route along which the communication can be restored such that said alternative



communication route will extend from a first end node of said plurality of nodes to a second node via an intermediate node;

providing a predetermined order for selection of paths in each link;

connecting, at said first end node, after said step of searching for said alternative communication route has been completed, paths in a first link extending from said first end node and forming a part of the original communication route, and paths in a second link extending from said first end node and forming a part of said alternative communication route, said paths in said second link being determined based upon said predetermined order for selection;

transmitting from said first end node a first path setup message which contains information about the number of paths in said second link, used for said alternative communication route, and an identification of a reference path which is included in said second link, used for said alternative communication route, said first path setup message being transmitted along said second link, said reference path being a first path in said second link that is selected for said alternative communication route;

identifying, in said intermediate node included in said alternative communication route and to which a second path setup message is transmitted via a third link that forms a part of said alternative communication route, the paths in said third link to be switched at said intermediate node for setting up said alternative communication route, based upon said second path setup message transmitted thereto, said second path setup message containing information about the number of the paths in said third link, to be used at said intermediate node for establishing said alternative communication route, and an identification of a reference path that is first selected in said third link for establishing said alternative communication route in accordance with said predetermined order for selection;

effecting switching at said intermediate node, for connecting the paths in said third link, identified based upon said second path setup message, to paths in a fourth link that extends from said intermediate node and forms a part of said alternative communication route according to said second path setup message, starting from said reference path identified in said second path setup message, said intermediate node further transmitting a modified path setup message via said fourth link such that said modified path setup message contains an identification of a reference path that is first selected in said fourth link for said alternative communication route, in addition to the information about the number of the paths for establishing the alternative communication route;

identifying, at said second end node to which a third path setup message is transmitted via a fifth link that forms a part of said alternative communication route, the paths in said fifth link to be switched at said second end node for setting up said alternative communication route, based upon said third path setup message transmitted thereto, said third path setup message containing information about a predetermined transmission capacity required for the alternative communication route, the number of paths in said fifth link to be used at said second end node for establishing said alternative communication route, and an identification of a reference virtual path in said fourth link which is first selected for establishing said alternative communication route in accordance with said predetermined order for selection; and

effecting switching, at said second end node for connecting the paths in said fifth link, identified based on said third path setup message, to paths in a sixth link that extends from said second end node and forms a part of the original communication route, according to said third path setup message starting from said reference virtual path, to thereby establish connections between all parts forming said alternative communication route to restore communication.

5,548,640

METHOD FOR UPDATING A SYSTEM PROGRAM IN A SWITCHING EQUIPMENT

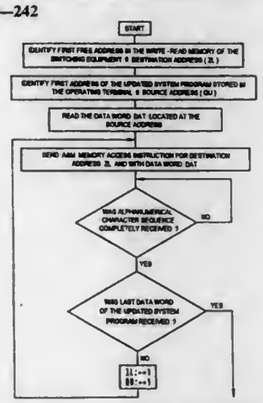
Erik Blondel, Ruiselede; Frans Verhulst, Destelbergen, both of, Belgium, and Johann Ulrich, Zeiselmauer, Austria, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jun. 27, 1994, Ser. No. 266,246

Claims priority, application Germany, Jun. 30, 1993, 43 217 74.5

Int. Cl.[6] H04M *3/00;1/24;3/08;3/22*

U.S. Cl. 379—242 **5 Claims**



1. A method for updating a system program deposited in read-only memories of a program-controlled switching equipment, the switching equipment having an administration and maintenance oriented system program part for execution of administration and maintenance orders, the orders being input by a data processing means connected to the switching equipment, and the switching equipment further having a read program module for read-controlled read-in of sequences of information units representing instructions communicated to the switching equipment, comprising the steps of: communicating from the data processing means instructions for writing an updated system program stored therein into a random access memory area of the switching equipment; and communicating from the data processing means to the switching equipment an order for writing in a program start address for the updated system program to a memory location for storing a return address to be addressed by a processor means of the switching equipment after an end of execution of the read program module.

5,548,641

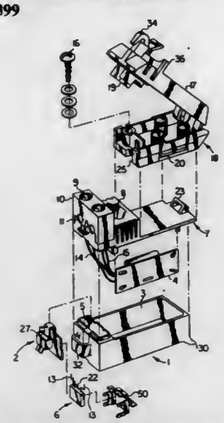
PROTECTED TELEPHONE NETWORK TERMINATION MODULE

Walter K. Butler, Sebago Lake; Mark P. Cote, Springvale; John J. Napiorkowski, Cape Elizabeth; Thomas W. Kroll, South Portland; Boyd G. Brower, and N. Peter Mickelson, both of Gorham, all of Me., assignors to Siecor Puerto Rico, Inc., Hickory, N.C.

Continuation-in-part of Ser. No. 523,457, May 15, 1990, Pat. No. 5,153,910. This application Oct. 5, 1992, Ser. No. 956,746

Int. Cl.[6] H04M *9/00*

U.S. Cl. 379—399 **16 Claims**



1. A network termination module comprising: a base structure having a means for grounding; an intermediate structure mounted above the base structure, the intermediate structure containing a telephone jack and also containing a pair of line terminals for connection to telephone jack and also containing a pair of line terminals for connection to telephone company wiring; a terminal strip mounted above the intermediate structure; an openable cover above the terminal strip, the openable cover containing a telephone plug which mates with the telephone jack; the line terminals being electrically connected to the telephone jack; and a protector element disposed in the base structure, the protector element being electrically connected to the means for grounding.

5,548,642

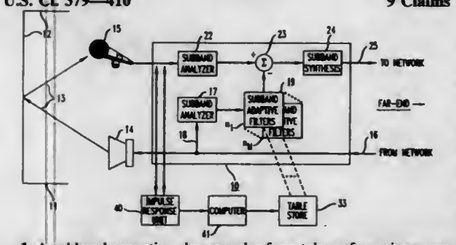
OPTIMIZATION OF ADAPTIVE FILTER TAP SETTINGS FOR SUBBAND ACOUSTIC ECHO CANCELERS IN TELECONFERENCING

Eric J. Diethorn, Morristown, N.J., assignor to AT&T Corp., Murray Hill, N.J.

Filed Dec. 23, 1994, Ser. No. 363,675

Int. Cl.[6] H04M *9/08*

U.S. Cl. 379—410 **9 Claims**



1. A subband acoustic echo canceler for a teleconferencing room hands-free audio telecommunications system, said system being connected to a far-end telecommunications station through incoming and outgoing signal paths, said room having an acoustic impulse response function with a component thereof being associated with each said subband, said subband acoustic echo canceler comprising:

a fixed number of adaptive filter taps associated with said subband acoustic echo canceler; and

means for allocating said adaptive filter taps among individual ones of said subbands, said allocating means comprising:

a data store connected to said adaptive filter taps allocating means;

means for inputting to said data store a first set of data comprising said component of said room acoustic impulse response function associated with each said subband;

means for inputting to said data store a second set of data comprising predetermined speech power spectra for male and female speakers, said speech power spectra having peak energy regions in frequency ranges contained by subbands of relatively lower frequency ranges; and

means for combining said first and second data sets to construct a tap allocation profile for said subbands which selectively increases the number of said taps in said lower frequency ranges.

5,548,643

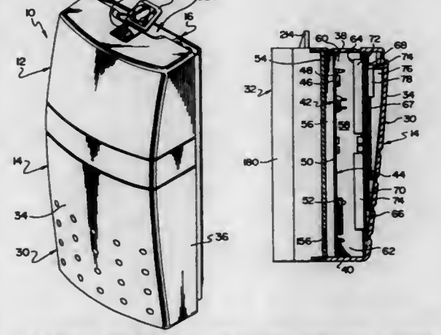
WIRELESS BASE STATION-HAVING COOLING PASSAGES

Kevin L. Dalgleish; Sei S. Hoe; Gregory R. Reinhart, all of Calgary; Vincent E. Somoza; Rodney D. Pike, both of Nepean; John S. Moss, Ottawa, and Michal Tencer, Nepean, all of, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jul. 22, 1994, Ser. No. 279,144

Int. Cl.[6] H04M *1/00*

U.S. Cl. 379—429 **16 Claims**



1. A wireless base station for outdoor use comprising a housing having a front wall and a passive heat control comprising a heat conductive upwardly extending vertical rear wall, and an upwardly extending forward air flow passage interconnected for air circulation at upper and lower positions to an upwardly extending rearward air flow passage defined partly by the rear wall, and at least one circuit pack extending upwardly within the housing and having electronic components which extend into the forward air flow passage and in operation, generate heat and heat the forward air flow passage whereby heat circulates between the forward and rearward air flow passages to distribute heat and maintain desired operating temperatures of the electronic components, the air being heated flowing upwards in the forward air flow passage and downwards in the rearward air flow passage as heat is transferred to the rear wall.

5,548,644

HANDSET FOR A TELEPHONE STATION

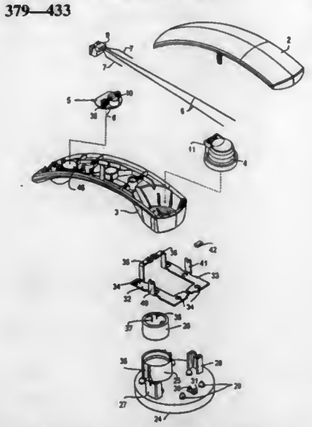
Gerd Boehnke, Bottrop; Juergen Reuschel, Bocholt; Heinz-Dieter Mueller, Emmerich, and Karl-Heinz Klauker, Dorsten, all of, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Nov. 10, 1994, Ser. No. 336,978

Claims priority, application Germany, Nov. 24, 1993, 9317982 U

Int. Cl.[6] H04M *1/00*

U.S. Cl. 379—433 **9 Claims**



1. A handset for a telephone station, comprising:

a housing formed of an upper shell joined to a lower shell;

a telephone receiver and a transmitter capsule arranged in the housing;

a connecting cord connected to the housing and having lines for connection to the telephone receiver and to the transmitter capsule, and wherein insulation displacement contacts are provided at least at the transmitter capsule for connection to the lines of the connecting cord for the transmitter capsule;

the transmitter capsule comprising an electret microphone mounted on a holder;

said holder having a contour on a lower surface for matching to a required antechamber volume of the handset and

said holder on an upper surface opposite said lower surface having two spaced apart contact springs mounted thereon, each contact spring at a first end having one of said insulation displacement contacts for connection to one of the respective lines of the connecting cord for the transmitter capsule, and at an opposite second end each contact spring having a slot-shaped contact receptacle into which one of the respective terminal pins of the microphone is received.

5,548,645

SECURE SOFTWARE RENTAL SYSTEM USING DISTRIBUTED SOFTWARE

Mohan Ananda, 15910 Ventura Blvd., Suite 800, Eucino, Calif. 91436

Continuation-in-part of Ser. No. 178,398, Dec. 22, 1903, Pat. No. 5,495,411. This application Jul. 7, 1994, Ser. No. 271,472

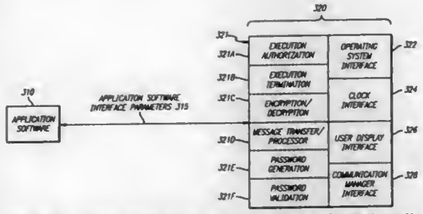
Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—4 **20 Claims**

8. A method of providing secure software rental, comprising the steps of:

transferring a communication manager from a central rental facility to a user computer:

initiating a rental session by accessing said central rental facility using said communication manager, said communication manager executing on said user computer;



selecting a rental application from a plurality of rental applications stored in a local storage device, said rental application comprising an application software and an asynchronous header;

loading said selected rental application from said local storage device to said user computer;

executing said rental application on said user computer;

said rental application initiating said asynchronous header for dynamic password verification to ensure continuous communication between said user computer and said central rental facility; and

continuously checking to determine if said dynamic password verification is successful using said beader, said header terminating said rental application when said dynamic password verification fails.

5,548,646

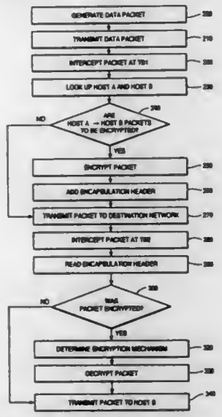
SYSTEM FOR SIGNATURELESS TRANSMISSION AND RECEPTION OF DATA PACKETS BETWEEN COMPUTER NETWORKS

Ashar Aziz; Geoffrey Mulligan, both of Fremont, Calif.; Martin Patterson, Grenoble, France, and Glenn Scott, Sunnyvale, Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Sep. 15, 1994, Ser. No. 306,337

Int. Cl.[6] H04K *1/00*

U.S. Cl. 380—23 **17 Claims**



1. A method for transmitting and receiving packets of data via an internetwork from a first host computer on a first computer network to a second host computer on a second computer network, the first and second computer networks including, respectively, first and second bridge computers, each of said first and second host computers and first and second bridge computers including a processor and a memory for storing instructions for execution by the processor, each of said first and second bridge computers further including memory storing at least one predetermined encryption/decryption mechanism and information identifying a predetermined plurality of host computers as hosts requiring security for packets transmitted between them, the method being carded out by means of the instructions stored in said respective memories and including the steps of:

(1) generating, by the first host computer, a first data packet for transmission to the second host computer, a portion of the data packet including information representing an internetwork address of the first host computer and an internetwork address of the second host computer;

(2) in the first bridge computer, intercepting the first data packet and determining whether the first and second host computers are among the predetermined plurality of host computers for which security is required, and if not, proceeding to step 5, and if so, proceeding to step 3;

(3) encrypting the first data packet in the first bridge computer;

(4) in the first bridge computer, generating and appending to the first data packet an enapsulation header, including:

(a) key management information identifying the predetermined encryption method, and

(b) a new address header representing the source and destination for the data packet,

thereby generating a modified data packet;

(5) transmitting the data packet from the first bridge computer via the internetwork to the second computer network;

(6) intercepting the data packet at the second bridge computer;

(7) in the second bridge computer, reading the encapsulation header, and determining therefrom whether the data packet was encrypted, and if not, proceeding to step 10, and if so, proceeding to step 8;

(8) in the second bridge computer, determining which encryption mechanism was used to encrypt the first data packet;

(9) decrypting the first data packet by the second bridge computer;

(10) transmitting the first data packet from the second bridge computer to the second host computer; and

(11) receiving the unencrypted data packet at the second host computer.

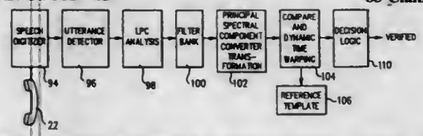
5,548,647

FIXED TEXT SPEAKER VERIFICATION METHOD AND APPARATUS

Jayant M. Naik, Dallas, and George R. Doddington, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 3, 1987, Ser. No. 34,315

U.S. Cl. 381—42 **83 Claims**



47. Apparatus for utilizing a speech utterance to verify an identity of a person, comprising:

a prompter responsive to an identity asserted by the person for prompting the person to utter a phrase having a predetermined sequence of words;

a converter for collecting a representation of an uttered phrase of a predetermined sequence of words, and converting the representation into data characteristic of the person's voice;

a comparator for comparing the characteristic data with other stored data characteristic of the phrase as spoken by the person to produce a match or a mismatch;

a decision circuit for confirming the identity of the person on a match of said comparison and denying the identity of the person on a mismatch of said comparison;

a comparator for comparing characteristic data of a repeated phrase on a second attempt by the person with said other data to again determine a match or mismatch;

a decision circuit for confirming or denying the identity of the person based upon said second comparison; and

means for updating said other stored data on determining said acceptance by averaging said characteristic data with said other stored data and means for storing the result thereof for use in subsequent comparisons.

5,548,648

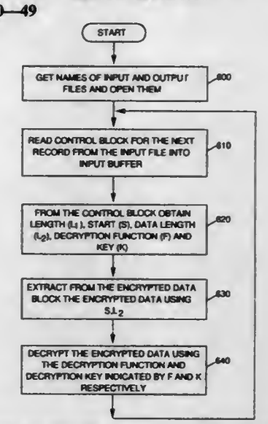
ENCRYPTION METHOD AND SYSTEM

Ian E. Yorke-Smith, Chandlers Ford, United Kingdom, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 15, 1994, Ser. No. 276,192

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—49 **18 Claims**



17. A system for encrypting data sets comprising of a plurality of data segments (DS_1 to DS_n) into a plurality of encrypted data blocks (EDB_1 to EDB_n) and associated control blocks (CB_1 to CB_n) comprising:

means for encrypting each data segment of a data set with a different encryption function selected from a plurality of encryption functions (F_1 to F_i); and

means for producing for each data segment an encrypted data block comprising the encrypted data segment.

5,548,649

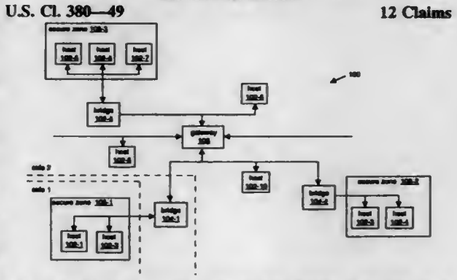
NETWORK SECURITY BRIDGE AND ASSOCIATED METHOD

Douglas W. Jacobson, Ames, Iowa, assignor to Iowa State University Research Foundation, Ames, Iowa

Filed Mar. 28, 1995, Ser. No. 412,164

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—49 **12 Claims**



4. A network local security bridge that bridges a first side of a network and a second side of the network, the first side of the network including local secure zone host devices within a local

secure zone established by the network local security bridge, the second side of the network including unsecure host devices, network remote security bridges that each establish a remote secure zone, and remote secure zone host devices within the remote secure zones, the network local security bridge comprising:

a first interface controller to receive from the first side of the network a first data packet that contains a source address, a destination address, and a data frame;

a second interface controller to receive from the second side of the network a second data packet that contains a source address, a destination address, and a data frame;

a data packet processor coupled to the first and second interfaces to process the received first and second side data packets by encrypting the data frame of the received first data packet when the source address of the received first data packet specifies one of the local secure zone host devices and the destination address of the received first data packet specifies one of the remote secure zone host devices, by leaving unchanged the data frame of the received first data packet when the source address of the received first data packet specifies one of the local secure zone host devices and the destination address of the received first data packet specifies one of the unsecure host devices, by decrypting the data frame of the received second data packet when the source address of the received second data packet specifies one of the remote secure zone host devices and the destination address of the received second data packet specifies one of the local secure zone host devices, and by leaving unchanged the data frame of the received second data packet when the source address of the received second data packet specifies one of the unsecure host devices and the destination address of the received second data packet specifies one of the local secure zone host devices;

the second interface controller transmitting the processed first data packet to the second side of the network; and

the first interface controller transmitting the processed second data packet to the first side of the network.

5,548,650

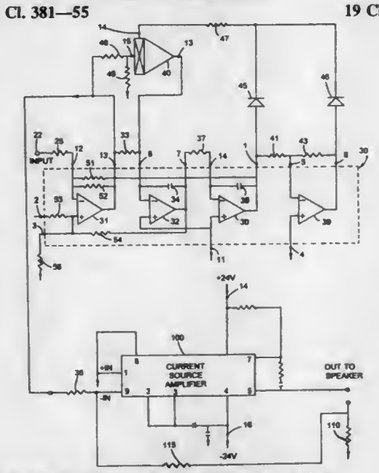
SPEAKER EXCURSION CONTROL SYSTEM

David L. Clark, Northville, Mich., assignor to Prince Corporation, Holland, Mich.

Filed Oct. 18, 1994, Ser. No. 325,042

Int. Cl.[6] H03G *11/00*

U.S. Cl. 381—55 **19 Claims**



1. A speaker excursion limiting circuit comprising:

a state-variable filter having an input for receiving audio frequency signals, a control input, a low pass output and a high pass output for coupling to a power amplifier; and

a voltage controlled amplifier circuit having a signal input coupled to said high pass output of said state-variable filter, an output terminal coupled to said control input of said state-variable filter and a control input coupled to said low pass output of said state-variable filter, wherein said state-variable filter responds to signals applied to said control input of said state-variable filter to limit the amplitude of signals at said high pass output to prevent over excursion of a speaker coupled to said high pass output of said state-variable filter through a power amplifier.

5,548,651

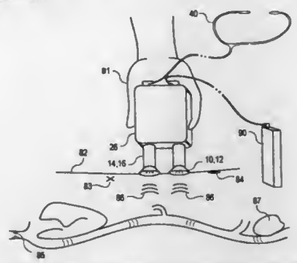
STEREOPHONIC STETHOSCOPE

Howard F. Long, 363 St Mary St., Pleasanton, Calif. 94566

Filed Mar. 28, 1994, Ser. No. 218,522

Int. Cl.[6] A61B *7/04;7/02;5/02*

U.S. Cl. 381—67 **3 Claims**



1. An electronically amplified, recording stereophonic stethoscope (EARSS) adapted to receive auscultatory sound from a patient, comprising:

a chestpiece sized to permit being held in a user's hand;

two separate acoustic support tubes, each having a skin contact on a respective distal end thereof; each proximal end thereof being fixed to said chestpiece and said each proximal end having a microphone mounted thereat for receiving sound from its respective tube;

said two acoustic support tubes are sufficiently rigid to permit both of said skin contacts to be firmly applied to a patient's body for monitoring auscultatory sound while the user holds only said chestpiece;

a stereo amplifier within said chestpiece for amplifying respective outputs of each said microphone to produce left and right electronically amplified output sounds;

at least one pair of stereo headphones receiving said left and right electronically amplified sounds.

5,548,652

SILENCING APPARATUS

Susumu Fujiwara; Masahiko Sakata, and Mikio Ishizuka, all of Kanagawa-ken, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 12, 1992, Ser. No. 974,976

Claims priority, application Japan, Mar. 11, 1992, 4-052710

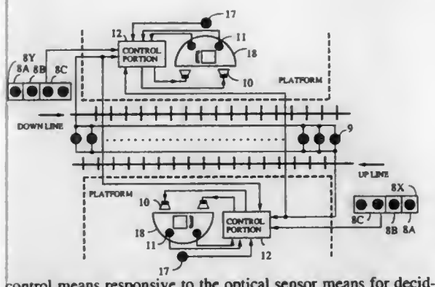
Int. Cl.[6] A61F *11/06;* **H03B** *29/00*

U.S. Cl. 381—71 **22 Claims**

1. A silencing apparatus comprising:

microphone sensor arrays for measuring acoustic characteristics of the noise which is generated by an approaching one of a plurality of different noise sources, when said approaching one is moving toward the silencing apparatus;

optical sensor means for detecting physical characteristics of the approaching one of the noise sources as it is moving toward the silencing apparatus;



control means responsive to the optical sensor means for deciding which of a plurality of predetermined noise source types the approaching one of the noise sources belongs to, according to the physical characteristics detected by the optical sensor means; and

noise reduction means responsive to the microphone sensor arrays, to the optical sensor means, and to the control means, for outputting a noise reduction signal which reduces the noise according to the type of the noise source as determined by the control means according to the characteristics of the noise source detected by said optical sensor means.

5,548,653

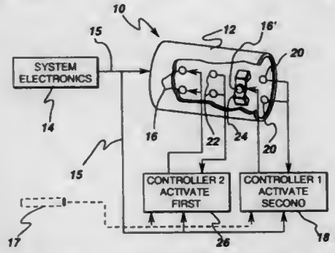
ACTIVE CONTROL OF NOISE AND VIBRATIONS IN MAGNETIC RESONANCE IMAGING SYSTEMS USING VIBRATIONAL INPUTS

Frederic C. Pla, Schenectady; Robert A. Hedeen, Clifton Park, and Imdad Imam, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 834,957, Feb. 14, 1992, abandoned. This application Aug. 20, 1993, Ser. No. 110,176

Int. Cl.[6] A61F *11/06*

U.S. Cl. 381—71 **20 Claims**



1. In a magnetic resonance imaging (MRI) device for imaging a subject, and having a cylindrical structure including a magnet, a radio frequency (RF) coil, gradient coils, a pulse signal generator, and system electronics which generate RF pulse signals applied to said RF coil, and gradient pulse signals to energize said gradient coils and thereby create structure-borne primary noise from in-plane structural vibration of said cylindrical structure, an improved MRI apparatus comprising:

means for inducing structural vibrations fixedly mounted on said noise and vibration producing structure to shake said structure and to effect a secondary noise field therefrom for canceling said primary noise to control vibrations in said MRI device to maintain image quality;

means for sensing noise generated by said device, said means for sensing noise producing an error signal corresponding to the level of noise sensed;

means for generating a reference signal representative of said primary noise; and

a controller having an input connected to said means for sensing noise, another input connected to said means for generating a reference signal, and an output connected to said means for inducing vibrations, said controller being responsive to said error signal and said reference signal to determine a control signal which is sent to said means for inducing vibrations in said structure, said control signal causing said means for inducing vibrations to vibrate and generate said secondary noise field.

5,548,654

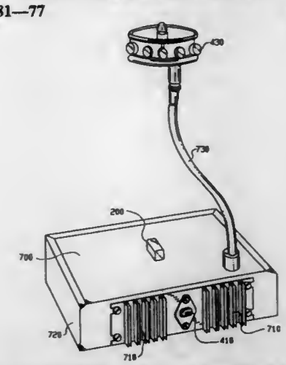
INFRARED AUDIO TRANSMITTER SYSTEM

Lawrence R. Fast, 498 Long Hill Rd., Gillette, N.J. 07933

Filed Apr. 7, 1994, Ser. No. 224,348

Int. Cl.[6] H04B *9/00;10/00;10/04*

U.S. Cl. 381—77 **40 Claims**



1. An assistive listening system for transmitting audio sound waves over an infrared signal, said system comprising:

means for converting said audio sound waves to an audio electrical signal, said audio electrical signal including upper and lower frequency signals;

oscillator means for generating a base carrier electrical signal;

means for modulating said base carrier electrical signal with said audio electrical signal so as to generate a modulated electrical signal, said modulated electrical signal having an associated duty cycle;

emitter means for converting said modulated electrical signal into a corresponding infrared light signal, said emitter means having an associated power dissipation varying with the duty cycle of said modulated electrical signal; and

means for adjusting the duty cycle of said modulated electrical signal so as to adjust the current through said emitter means and thereby limit the power dissipation of said emitter means.

5,548,655

SOUND PROCESSING APPARATUS

Katsunori Takahashi, Hokkaido, Japan, assignor to Hudson Soft Co., Ltd., Hokkaido, Japan

Filed Sep. 20, 1993, Ser. No. 122,942

Claims priority, application Japan, Oct. 1, 1992, 4-284988; Oct. 1, 1992, 4-284989; Oct. 1, 1992, 4-284990; Oct. 7, 1992, 4-293768

Int. Cl.[6] H03G *3/00*

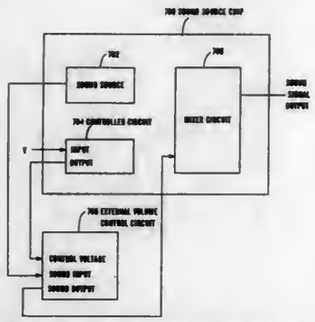
U.S. Cl. 381—104 **10 Claims**

1. A sound processing apparatus, which contains a sound source chip, comprising:

a sound source within the sound source chip for producing sound data;

an external volume control circuit, which is placed out of the sound source chip, and is supplied with the sound data from said sound source to control volume of output sound; and

an internal controller circuit, which is built in the sound source chip, for supplying a control signal to said external volume



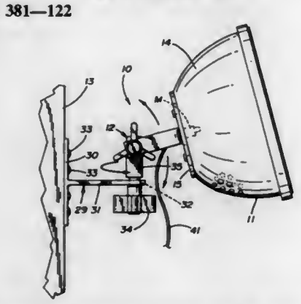
control circuit, and for controlling the output sound when said external volume control circuit does not operate.

5,548,656

REMOTE METHOD AND APPARATUS FOR LISTENING TO BIRDS

Charles Weisel, 147 Brookfield, Youngstown, Ohio 44512

Filed Aug. 29, 1994, Ser. No. 297,175
Int. Cl.[6] H04R *29/00*
U.S. Cl. 381—122 **3 Claims**



1. A method for remote monitoring and listening to bird songs outdoors from a separate location comprising;

a. placing a sound gathering dish outdoors, said sound gathering dish comprises and annular sidewall, a flat bottom portion defining an opening therein, a weather portion closure on said dish comprising an annular base portion, a pair of spaced overlapping apertured disks on said base portion, each of said disks having multiple openings within, a spacer between said disks, a sound diffuser cloth on one of said disks

b. securing a microphone within said dish such that said microphone is upstanding from said flat bottom portion and transmits sounds made by the birds to an amplifier receiver at a remote location

c. attaching a speaker assembly to said amplifier receiver

d. adjustably securing said sound gathering dish outdoors via a mounting bracket

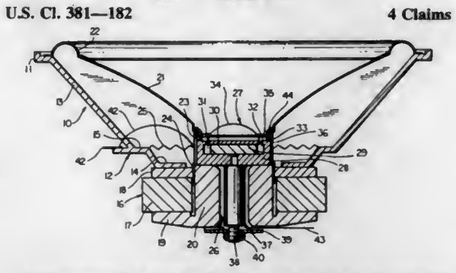
e. interconnecting said microphone to said amplifier receiver.

5,548,657

COMPOUND LOUDSPEAKER DRIVE UNIT

Lawrence R. Fincham, Tenterden, United Kingdom, assignor to KEF Audio (UK) Limited, Maidstone, England

Continuation of Ser. No. 970,542, Nov. 2, 1992, abandoned, which is a continuation of Ser. No. 870,231, Apr. 20, 1992, abandoned. This application Aug. 16, 1994, Ser. No. 291,721
Claims priority, application United Kingdom, May 9, 1988, 8810943
Int. Cl.[6] H04R *25/00*
U.S. Cl. 381—182 **4 Claims**



1. A compound loudspeaker drive unit including a low frequency conical diaphragm flaring outwardly and forwardly from a neck of said low frequency conical diaphragm to generate sound output in a low frequency range, said low frequency conical diaphragm having a first effective acoustic center and having a first directivity;

a high frequency diaphragm of domed form to generate sound output in a high frequency range, said high frequency diaphragm having a second effective acoustic center;

said low frequency range of sound and said high frequency range of sound overlapping in a cross-over region and both said low frequency conical diaphragm and said high frequency diaphragm being effective to make significant contributions to sound output in said cross over region;

said low frequency conical diaphragm and said high frequency diaphragm being located coaxially and said high frequency diaphragm being located adjacent said neck of said low frequency diaphragm so that said second effective acoustic center of said high frequency diaphragm is substantially coincident with said first effective acoustic center of said low frequency conical diaphragm and in said cross-over region where both said low frequency conical diaphragm and said high frequency diaphragm make significant contributions to the sound output the flaring of said low frequency conical diaphragm being effective to impose said first directivity upon said high frequency diaphragm so that said sound output from said high frequency diaphragm has a directivity matched to said first directivity of sound output from said low frequency conical diaphragm;

first magnetic means including a first magnetic flux path provided by a first central pole piece and a first outer pole piece extending around said first central pole piece with a first air gap between said first central pole piece and said first outer pole piece; and a first magnet to generate a first magnetic flux in said first flux path;

a cylindrical voice coil former secured to said neck of said low frequency conical diaphragm and extending rearwardly from said neck, said coil former including a first portion secured to the neck and a second portion extending rearwardly from said first portion in said first air gap and a first voice coil carried by said second portion of said cylindrical voice coil former, said first voice coil being located in said first air gap and electromagnetically coupled with said first magnetic flux;

second magnetic means including a second magnetic flux path provided by a second central pole piece and a second outer pole piece with a second air gap therebetween; said second outer pole piece being mounted on said first central pole piece and being located within said first portion of said coil former; said first magnetic flux path being separable from said second magnetic flux path; and a second magnet of neodymium iron boron compound to generate a second magnetic flux in said second flux path and said second air gap; and

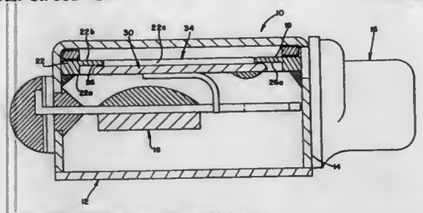
a second voice coil secured to a peripheral edge of the domed high frequency diaphragm and extending in said second air gap and electromagnetically coupled with said second magnetic flux.

5,548,658

ACOUSTIC TRANSDUCER

Eugene M. Ring, Evanston, and William J. Murphy, Carpentersville, both of Ill., assignors to Knowles Electronics, Inc., Itasca, Ill.

Filed Jun. 6, 1994, Ser. No. 254,583
Int. Cl.[6] H04R *25/00*
U.S. Cl. 381—191 **19 Claims**



1. An electret assembly comprising:

a motor ring having first and second opposing peripheral surfaces and an aperture extending therebetween, said motor ring including a plurality of co-planer ledges, said ledges having co-planer ledge surfaces being substantially parallel and recessed below said first opposing surface;

a charged plate disposed on said recessed ledge surfaces, said recessed ledge surfaces supporting said charged plate in spaced relationship from said second opposing surface; and

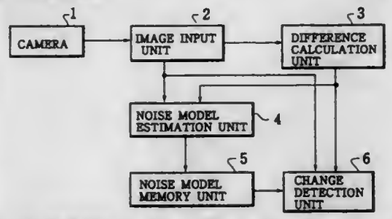
a flexible diaphragm secured to said second opposing surface and extending across said aperture.

5,548,659

METHOD AND APPARATUS FOR DETECTING CHANGES IN DYNAMIC IMAGES

Yasukazu Okamoto, Chiba-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 997,556, Dec. 28, 1992, abandoned. This application Sep. 23, 1994, Ser. No. 312,049
Claims priority, application Japan, Dec. 27, 1991, 3-345813
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—107 **16 Claims**



1. An apparatus for detecting a moving object in dynamic images, comprising:

image input means for sequentially taking input images of the moving object against a static background;

difference calculation means for obtaining difference images from successive input images taken by said image input means as picture elements;

noise model estimation means for estimating an appropriate noise model representing a lightness variation due to an image taking environmental condition under which the input images are taken by the image input means, the estimation being made according to the input images taken by the image input means and the difference images obtained by the difference calculation means by estimating values of noise model parameters in a regression model, and specifying a ratio of a difference in lightness at each picture element of each difference image with respect to an average difference in lightness over an entire imaging view field of each difference image as a function of lightness at each picture element in each input image expressed in terms of the noise model parameters;

change determining means for determining changed regions in the entire imaging view field by compensating for the lightness variation by subtracting from the difference images obtained by the difference calculation means an estimated lightness variation based on the noise model estimated by the noise model estimation means; and

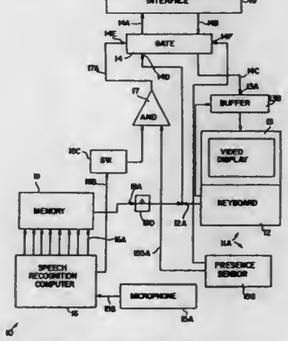
detecting means for detecting the moving object in the dynamic images according to the changed regions determined by the change determining means.

5,548,660

MACHINE SECURITY SYSTEMS

Jerome H. Lemelson, Suite 286, Unit 802, 930 Tahoe Blvd., Incline Village, Nev. 89451-9436

Continuation of Ser. No. 232,470, Apr. 22, 1994, Pat. No. 5,408,536, which is a continuation of Ser. No. 10,614, Jan. 28, 1993, abandoned, which is a continuation of Ser. No. 633,305, Nov. 6, 1984, Pat. No. 5,202,929, which is a continuation of Ser. No. 192,460, Sep. 30, 1980, abandoned, which is a continuation-in-part of Ser. No. 78,167, Sep. 24, 1979, abandoned. This application Apr. 6, 1995, Ser. No. 418,082
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—116 **22 Claims**



1. A security system comprising:

(a) an operating station of a machine;

(b) a personal identification system positioned to attempt to identify a person physically located at the operating station and having a first output for a control signal indicating confirmation of the identity of a person authorized to operate the machine;

(c) a detector positioned to detect entry to and departure from a select area in the vicinity of and containing the operating station;

(d) a circuit coupled to the detector, having a second output, and structured to issue a detection signal on the second output when the signals from the detector indicate that a person is alone in the select area; and

(e) a security device that is coupled to the first output and operable in response to the control signal to allow operation

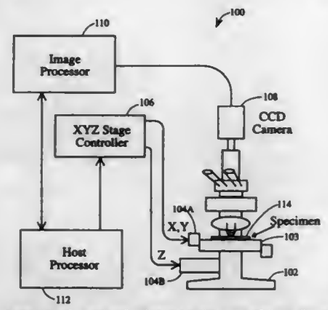
of the machine, and that is coupled to the second output and operable in response to the absence of the detection signal to deactivate the machine.

5,548,661

OPERATOR INDEPENDENT IMAGE CYTOMETER

Jeffrey H. Price, 3881 Camino Lindo, San Diego, Calif. 92122, and David Gough, 1435 Big Canyon Ter., Cardiff, Calif. 92007

Continuation of Ser. No. 17,321, Feb. 11, 1993, abandoned, which is a continuation of Ser. No. 729,383, Jul. 12, 1991, abandoned. This application Sep. 7, 1994, Ser. No. 302,044
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—133 **29 Claims**



1. An automated method of separating an object from a background in an image comprising pixels, the method comprising the steps of:

selecting a set of weights in a digital filter, wherein at least a portion of the weights is selected to enhance at least a portion of the object, said object portion characterized by a predetermined multispectral pattern comprising a plurality of spectral bands;

transforming the image with the digital filter to enhance pixels associated with the predetermined multispectral pattern of the object not contained in the background so as to produce a transformed image, wherein the multispectral pattern comprises a plurality of edge gradients and non-edge gradients, wherein at least a portion of non-edge gradient values falls within the range of the edge gradient values, and wherein the weights are selected so as to enhance both the edge and non-edge gradients which are included in the multispectral pattern, thereby allowing object identification with the use of said digital filter; and

thresholding the transformed image, wherein the thresholding step includes extracting object features from the transformed image and sorting the extracted object features so as to separate the object from the background.

5,548,662

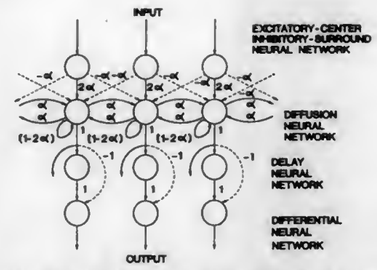
EDGE EXTRACTING METHOD AND APPARATUS USING DIFFUSION NEURAL NETWORK

Yool Kwon, Kyungki-Do, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

Filed Nov. 24, 1993, Ser. No. 156,716
Int. Cl.[6] G06K *9/62*
U.S. Cl. 382—158 **17 Claims**

7. An apparatus for extracting edges of an object from an image signal, comprising:

a distribution neural network including a plurality of neurons, each neuron inducing an excitatory response based on a first predetermined connection weight value according to an intensity of said image signal, and inducing an inhibitory response



based on a second predetermined weight value according to said intensity of said image signal; and

a diffusion neural network including a plurality of neurons for forming a Gaussian distribution representing a regularity of the excitatory and inhibitory responses, each neuron of said diffusion neural network superposing said excitatory response induced by a corresponding neuron of said distribution neural network and said inhibitory responses induced by neurons of said distribution neural network, which are adjacent to said corresponding neuron of said distribution neural network, and diffusing a superposed signal generated by said superposing to form said Gaussian distribution, and the diffusion neural network convolving the Gaussian distribution and the image signal;

a delay means for delaying an output signal from said diffusion neural network; and

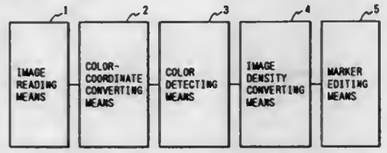
a differential means for obtaining a difference between said output signal from said diffusion neural network and a signal output from said delay means to detect edges of a moving object in an image represented by said image signal.

5,548,663

MULTI-COLOR MARKER EDITING SYSTEM

Hiroshi Sekine; Kazuyasu Sasuga; Kazuman Taniuchi; Yasuhiko Iwamoto; Yoshihiro Terada, and Kiyomasa Endoh, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed May 13, 1992, Ser. No. 882,137
Claims priority, application Japan, May 14, 1991, 3-109182
Int. Cl.[6] G06K *9/36*
U.S. Cl. 382—164 **6 Claims**



1. A multi-color marker editing system for editing a color image by reading a designated marker, comprising:

image reading means for reading color image data at a first pixel density;

color-coordinate converting means for converting the read color image data into color image data in a color coordinate system defined by optical density, hue and saturation;

color detecting means for detecting pixels having a designated marker color in the color-coordinate converted color image data and forming a first marker color image having the first pixel density;

image density converting means for converting first marker color image data associated with the first marker color image to second marker color image data having a second pixel density lower than the first pixel density, and for converting the second marker color image data to third marker color image data having the first pixel density, the conversions from

the first marker color image data to the third marker color image data by the image density converting means serving to remove ghosts from the first marker color image; and

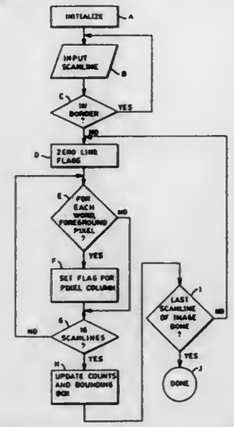
marker editing means for editing said second marker color image data before the second marker color image data is converted to the third marker color image data, wherein said marker editing means edits the second marker color image data so as to fill a first image portion corresponding to a closed area designated by a marker and a second image portion corresponding to an area other than the closed area with data different from each other, thereby removing any ghosts from both the first and second image portions of the second marker color image data.

5,548,664

AUTOMATIC DETERMINATION OF BLANK PAGES AND BINARY IMAGES' BOUNDING BOXES

Kenneth C. Knowlton, Merrimack, N.H., assignor to Wang Laboratories, Inc., Billerica, Mass.

Filed Jun. 29, 1994, Ser. No. 268,219
Int. Cl.[6] G06K *9/34*
U.S. Cl. 382—174 **17 Claims**



15. A method for processing digitized image data representative of a page, comprising the steps of:

setting a boundary specification of a bounding box to an initial condition so as to enclose the digitized image data;

partitioning the digitized image data into rows and columns of N×M arrays of image pixels while repetitively processing M pixels along N scanlines to detect occurrences, if any, of an image pixel having a foreground value;

for a detected occurrence of an image foreground pixel, indicating that the N×M array, within which the foreground pixel is located, is occupied by at least one foreground pixel;

for an indicated foreground-occupied N×M array of image pixels, incrementing a corresponding N×M array row count and a corresponding N×M array column count, and adjusting the boundary specification of the bounding box so as to enclose within the bounding box the indicated foreground-occupied N×M array of image pixels;

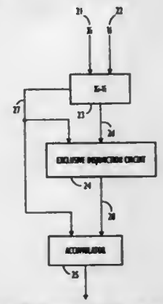
after processing a last scanline, examining the boundary specification of the bounding box; and, if the boundary specification is set at the initial condition, declaring the page to be blank.

5,548,665

VECTOR CORRELATION DETECTING CIRCUIT

Masahiro Gion, Kyoto, and Masaki Toyokura, Osaka, both of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 9, 1993, Ser. No. 124,658
Claims priority, application Japan, Sep. 9, 1992, 4-240531
Int. Cl.[6] G06F *17/15*
U.S. Cl. 382—276 **2 Claims**



1. A vector correlation detecting circuit for calculating a vector correlation value, comprising:

a subtracter, to which two inputs are inputted, for performing a subtraction per corresponding components of two sets of N-dimensional vector data, wherein N is a natural numeral;

an exclusive disjunction circuit for obtaining N data by selecting a result of subtraction by said subtracter when the result of subtraction is positive and by inverting bits of the result of subtraction by said subtracter and selecting an inverted data thereof when the result of subtraction is negative; and

an accumulator for obtaining a total sum of a previously-accumulated value, a value of a most significant bit out of N results of subtraction by said subtracter and values of the N data obtained by said exclusive disjunction circuit, thereby calculating the vector correlation value.

5,548,666

IMAGE FORMING APPARATUS WITH FILING FUNCTION WHICH CAN STORE IMAGE DATA AND CAN EFFICIENTLY PERFORM DOCUMENT FILING

Hitoshi Yoneda; Haruyoshi Hasegawa, both of Kawasaki; Takefumi Nosaki, Yokohama; Koji Tanimoto, Kawasaki; Hironobu Machida, and Hajime Nakamura, both of Tokyo, all of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 182,404, Jan. 18, 1994, abandoned, which is a continuation of Ser. No. 992,385, Dec. 17, 1992, abandoned, which is a continuation of Ser. No. 632,339, Dec. 21, 1990, Pat. No. 5,222,157. This application Dec. 9, 1994, Ser. No. 352,457
Claims priority, application Japan, Dec. 25, 1989, 1-336007
Int. Cl.[6] G06K *9/36*
U.S. Cl. 382—276 **5 Claims**

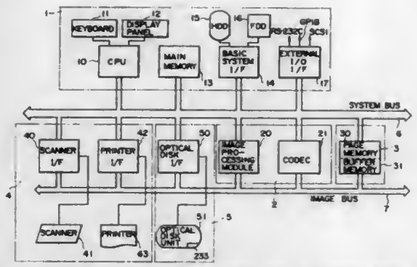
1. An image processing apparatus comprising:

document reading means for reading a plural-page document to obtain images;

image storage means for storing the images obtained by the document reading means;

first write means for writing an image in a page memory with an equal scale, the image written by the first write means being an image on a first page of the plural-page document and being included among the images which are obtained by the document reading means and which are stored in the image storage means;

retrieval code generating means for generating a retrieval code corresponding to the plural-page document read by the document reading means, said retrieval code being used for



retrieving the images of the plural-page document stored in the image storage means, so that the images of the plural-page document are automatically retrieved and output from the image storage means when the retrieval code is read;

second write means for writing the retrieval code generated by the retrieval code generating means in the page memory;

first print means for printing on a first side of a sheet of paper said image on the first page of the plural-page document, the image on the first page being printed along with the retrieval code written in the page memory by the second write means;

selection means for selecting the number of images printed on a second side of the sheet of paper in response to an input operation by an operator;

calculation means for calculating an image reduction factor on the basis of the number of images selected by the selection means, a size of the document, and a size of the sheet of paper;

third write means for writing images in the page memory after the images are reduced by the image reduction factor, the images written by the third write means being images on second and succeeding pages of the plural-page document and included among the images which are read by the document reading means and which are stored in the image storage means; and

second print means for printing on the second side of the sheet of paper the images which are shown on the second and succeeding pages of the plural-page document and the reduced images which are written in the page memory by the third write means.

5,548,667

IMAGE PROCESSING SYSTEM AND METHOD THEREOF IN WHICH THREE DIMENSIONAL SHAPE IS REPRODUCED FROM TWO DIMENSIONAL IMAGE DATA

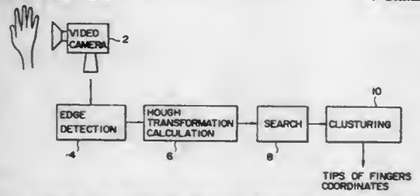
Peter Tu, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 885,626, May 18, 1992, abandoned. This application Sep. 7, 1994, Ser. No. 301,665

Claims priority, application Japan, May 24, 1991, 3-149784; Jul. 29, 1991, 3-211524

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—285 **4 Claims**



1. A method for detecting fingers of a human hand, comprising the steps of:

reading the hand and outputting image data of the hand in a form of two-dimensional pixel data;

detecting edges of the hand on the basis of said pixel data;

determining image lines as lines having the greatest number of edge pixels;

determining the orientation line of the hand as the line having the average slope and Y intercept of said image lines;

searching the pixel data for edge pixels wherein the search is statistically biased in a direction parallel to the orientation line; and

clustering edge pixels defining said finger tips;.

wherein said steps of determining image lines and determining the orientation line include

transforming a rectilinear coordinate system of said detected edges into a polar coordinate system,

accumulating edge points in the parameter space, and

obtaining the highest accumulated values for each of said lines to determine said orientation line of the hand.

5,548,668

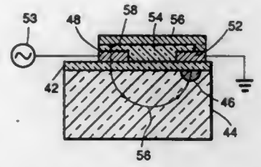
VELOCITY-MATCHED ELECTRODES FOR ELECTRO-OPTIC TRAVELLING-WAVE MODULATORS AND METHOD FOR FORMING THE SAME

James H. Schaffner, Chatsworth, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 25, 1994, Ser. No. 328,222

Int. Cl.[6] G02F *1/01*

U.S. Cl. 385—1 **16 Claims**



1. A velocity-matched electrode structure for modulating the propagation constant of an optical waveguide on an electro-optic substrate, comprising:

an active electrode and a ground electrode on said substrate for applying an alternating electric field across said waveguide to modulate the propagation constant of said waveguide,

a first dielectric layer deposited on said electrodes, said dielectric layer having a dielectric constant which is lower than the dielectric constant of the electro-optic substrate and a thickness such that the effective RF index of refraction for said alternating electric field substantially matches the effective index of refraction for an optical signal that is propagating along said waveguide, thereby velocity-matching said electric field with said optical signal, and

an electrically conductive layer on said dielectric layer that is electrically connected to said ground electrode.

5,548,669

OPTICAL FIBER LIGHT CONE SWITCH

Mark V. Anderson, and Daniel J. Mulally, Both of Rapid City, S. Dak., assignors to Wireless Control Systems, Rapid City, S. Dak.

Filed Oct. 11, 1995, Ser. No. 541,025

Int. Cl.[6] G02B *6/35*

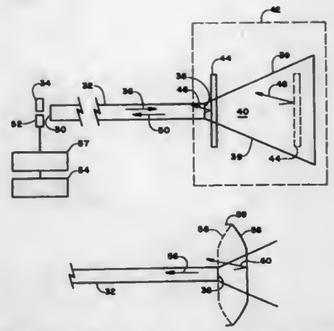
U.S. Cl. 385—19 **20 Claims**

1. A light cone optical switch system which comprises:

an optical fiber having at least one first end and a second end and a longitudinal axis;

emitter means for directing light into said first end of said optical fiber;

said second end shaped so that exiting light travels along a diverging path;



light reflector means adjacent to said second end of said optical fiber movable toward and away from said second end in a direction generally along said axis of said optical fiber to direct a variable proportion of light exiting said second end back into said second end; and

light detector means for receiving light exiting said at least one first end and responding to differences and variations in received light intensity.

5,548,670

LIGHT-SCATTERING LIGHT-GUIDING DEVICE

Yasuhiro Koike, 534-23 Ichigao-cho, Midori-ku, Yokohama-shi, Kanagawa, 225, Japan

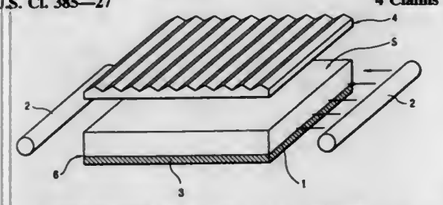
PCT No. PCT/JP93/01733, § 371 Date Jul. 25, 1994, § 102(e) Date Jul. 25, 1994, PCT Pub. No. WO94/12898, PCT Pub. Date Jun. 9, 1994

PCT Filed Nov. 29, 1993, Ser. No. 256,775

Claims priority, application Japan, Nov. 27, 1992, 4-341589

Int. Cl.[6] G02B *6/26*

U.S. Cl. 385—27 **4 Claims**



1. A light-scattering light-guiding device comprising:

a plate-shaped light-scattering light guide having at least one side surface region for receiving light, a light exit surface for emitting outgoing light in an oblique direction, and a volume region having a substantially uniform scattering power,

said volume region having an effective scattering illumination parameter E whose value lies in a range of 0.45 $cm^{-1} \leq E \leq 100\ cm^{-1}$, and a nonuniform refractive index structure for producing said scattering power, said nonuniform refractive index structure being expressed by a correlation function $\gamma(r)$ approximated by $\exp(-r/a)$, where r is a distance between two points in said volume region and a is a correlation distance whose value lies in a range of 0.01 $\mu m \leq a \leq 50\ \mu m$, and

said nonuniform refractive index structure being particulate material uniformly dispersed in a matrix, the refractive index of said particulate material being different from the refractive index of the matrix 0.001 or more.

5,548,671

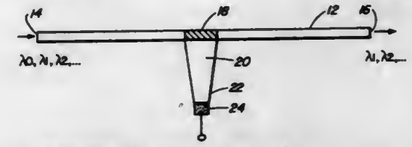
PROGRAMMABLE, DIFFERENTIAL WAVELENGTH DISCRIMINATOR

Chi Wu, Nepean, and Ernst A. Munter, Kanata, both of, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Oct. 13, 1994, Ser. No. 322,140

Int. Cl.[6] G02B *6/34*

U.S. Cl. 385—37 **10 Claims**



1. A wavelength discriminator comprising:

a y-branch optical switch having an input end adapted to receive an optical signal having a plurality of discrete wavelengths, and first and second output ends;

first and second waveguides connected to said first and second output ends respectively, said first and second waveguides having control means to control the refractive index thereof so as to direct the optical signal through one of said first and second waveguides;

an optical grating in one of said first and second waveguides, said optical grating having a grating period selected to reflect one of said plurality of discrete wavelengths; and

receiving means associated with said grating to receive the reflected wavelength.

5,548,672

REINFORCED MULTICORE OPTICAL FIBER COUPLER

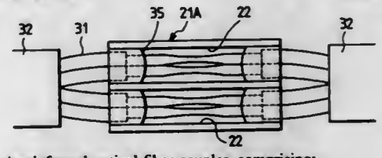
Tomoyuki Hattori; Hiroshi Suganuma; Eisuke Sasaoka, and Hiroaki Takimoto, all of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 188,824, Jan. 31, 1994, abandoned. This application Feb. 21, 1995, Ser. No. 391,687

Claims priority, application Japan, Feb. 2, 1993, 5-15134

Int. Cl.[6] G02B *6/26*

U.S. Cl. 385—43 **22 Claims**



1. A reinforced optical fiber coupler, comprising:

a reinforcing casing having a coefficient of linear expansion that is substantially the same as that of quartz, said casing having a plurality of grooves formed therein; and

a first multicore coated optical fiber having a plurality of optical fiber strands positioned in a substantially parallel arrangement to each other and collectively coated with a common coating resin to form a longitudinal coating resin, said coating resin being partially stripped to expose a portion of at least one of said optical fiber strands and to provide non-exposed portions located on opposite ends of said exposed portion in the longitudinal direction;

a second multicore coated optical fiber having a plurality of optical fiber strands positioned in a substantially parallel arrangement to each other and collectively coated with a common coating resin to form a longitudinal coating resin, said coating resin being partially stripped to expose a portion of at least one of said optical fiber strands and to provide non-exposed portions located on opposite ends of said exposed portion in the longitudinal direction;

a fused and extended portion having said exposed portion of at least one of said optical fiber strands of said first multicore

coated optical fiber fused and extended with said exposed portion of at least one of said optical fiber strands of said second multicore coated optical fiber so that exposed portions of corresponding optical fiber strands are fused and extended; and

adhesive for securing said first and second multicore coated optical fibers to said reinforcing casing, said adhesive being positioned to prevent direct contact between said fused and extended portion and said reinforcing casing;

wherein at least one of said corresponding optical fiber strands is accommodated in a respective groove of said reinforcing casing.

5,548,673

OPTICAL COUPLING DEVICE

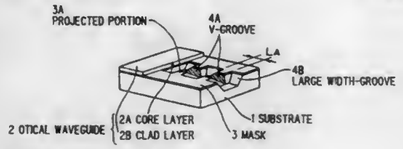
Naoki Kitamura, and Hiroshi Nishimoto, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Continuation of Ser. No. 276,405, Jul. 18, 1994, abandoned. This application Apr. 24, 1995, Ser. No. 427,486

Claims priority, application Japan, Jul. 19, 1993, 5-177735

Int. Cl.[6] G02B *6/30*

U.S. Cl. 385—49 **5 Claims**



1. An optical coupling device, comprising:

a crystalline substrate having a top plane;

an optical waveguide formed on said top plane;

a plurality of V-shaped grooves formed on said crystalline substrate, said V-shaped grooves being formed by anisotropic etching of said crystalline substrate, each of said V-shaped grooves having the same size and configuration with each other and having two inclined planes;

a plurality of second grooves formed on said crystalline substrate, each of said second grooves having two inclined planes; each of said V-shape grooves being formed between two adjacent second grooves; and

an optical fiber placed in said V-shaped grooves, a light axis of said optical fiber being aligned with a light axis of said optical waveguide to provide an optical coupling between said optical waveguide and said optical fiber;

wherein said optical fiber contact with said inclined planes of said V-shape grooves, and not contacted with said inclined planes of second grooves.

5,548,674

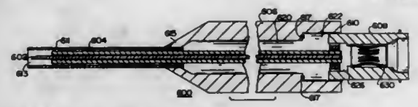
HIGH PRECISION FIBEROPTIC ALIGNMENT SPRING RECEPTACLE AND FIBEROPTIC PROBE

Michel Y. Rondeau, San Jose, Calif., assignor to Fibotech, Inc., San Jose, Calif., and Valquest Medical, Inc., San Antonio, Tex.

Continuation of Ser. No. 844,562, Feb. 28, 1992, abandoned, which is a division of Ser. No. 399,914, Aug. 29, 1989, abandoned. This application May 23, 1994, Ser. No. 247,472

Int. Cl.[6] G02B *6/30*

U.S. Cl. 385—72 **6 Claims**



1. A fiberoptic probe comprising:

a handle means having a handle bore formed therein;

an optical fiber passage means being disposed within said handle bore and an optical fiber is being held in said passage means;

an optical fiber receptacle being engaged to said handle, and including a receptacle housing;

said receptacle housing having a generally cylindrical receptacle bore disposed therethrough, and having a longitudinal central axis thereof; a ferrule of an optical fiber connector is being held in said receptacle bore;

said optical fiber passage means having a first end disposed within said handle means proximate said receptacle housing, such that an optical connection between said optical fiber and said ferrule may be accomplished upon the insertion of said ferrule within said receptacle bore;

a probe coolant passage being formed through said receptacle housing, said probe coolant passage having an inlet portion and an outlet portion, and functioning for the inletting and outletting of a coolant medium therethrough; and

said fiber optic further including an optical fiber connector means being engaged with said receptacle housing, said optical fiber connector means including a connector housing, said connector housing having a connector bore formed therein;

said ferrule being disposed within said connected bore and having an optical fiber being centrally disposed therewithin;

a connector coolant passage being formed through said connector housing, said connector coolant passage having an inlet portion and an outlet portion, and functioning for the inletting and outletting of a coolant medium therethrough.

5,548,675

MULTIFIBER CONNECTOR, A METHOD OF MANUFACTURING THE SAME, AND A CONSTRUCTION FOR CONNECTING THE MULTIFIBER CONNECTOR TO AN OPTICAL DEVICE

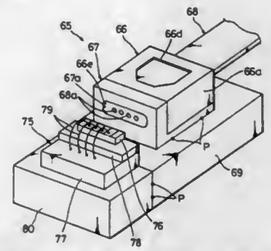
Takashi Shigematsu; Hisaharu Yanagawa; Takeo Shimizu; Shiro Nakamura; Kazuya Fukasawa, and Tomohiro Watanabe, all of Tokyo, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Nov. 8, 1994, Ser. No. 335,769

Claims priority, application Japan, Apr. 2, 1993, 5-76711; Dec. 7, 1993, 5-340446; Dec. 7, 1993, 5-340447; Jan. 28, 1994, 6-8162

Int. Cl.[6] G02B *6/00;6/36*

U.S. Cl. 385—80 **37 Claims**



1. A multifiber connector for connecting together a plurality of optical fibers, comprising:

a ferrule having:

a butting end face positioned opposite an optical device, and

a plurality of fiber holes formed in parallel at predetermined intervals and extending through said butting end face, one end of each optical fiber being inserted into and fixed in each of the fiber boles and being optically connected to said optical device, and

said ferrule being a single molded product made of synthetic resin; and

a connecting member arranged on at least a portion of said butting end face and connected one of (i) directly and (ii) indirectly to said optical device by one of (iii) an adhesive and (iv) by welding.

5,548,676

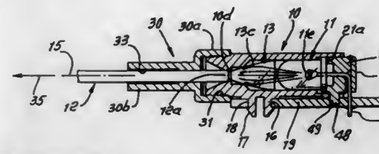
LIGHT PIPE OPTICAL COUPLING BETWEEN LED AND FIBER OPTICS CABLE

John M. Savage, Jr., 538-B Via De La Valle, Solana Beach, Calif. 90275

Continuation-in-part of Ser. No. 278,246, Jul. 21, 1994, Pat. No. 5,440,658, which is a continuation-in-part of Ser. No. 142,938, Oct. 29, 1993, Pat. No. 5,466,174, which is a continuation-in-part of Ser. No. 82,963, Jun. 29, 1993, Pat. No. 5,368,503. This application Feb. 21, 1995, Ser. No. 391,113

Int. Cl.[6] G02B *6/42*

U.S. Cl. 385—92 **30 Claims**



1. In combination,

a) a mounting means having a longitudinal axis,

b) an LED having a light emitter and a light-passing lens oriented along said axis,

c) a cable having optical fibers defining a light entrance end in a location facing longitudinally toward the LED and spaced therefrom, and

d) a light-reflecting light pipe located longitudinally between the LED lens and said cable entrance end,

e) and including a hollow connector connected to said mounting means and having a first portion to receive said cable and to position said cable entrance end at said location, the connector having grip means thereon to grip the cable and to resist endwise withdrawal of the cable relative to said connector and mounting means.

5,548,677

HOUSING STRUCTURE FOR COUPLING AND RELEASING OPTICAL MODULES

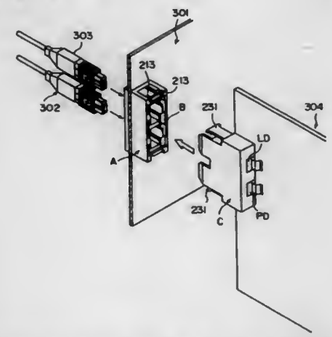
Toshiaki Kakii; Hidetoshi Ishida; Shinji Ogawa, and Kazumichi Miyabe, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Division of Ser. No. 356,380, Nov. 30, 1994. This application Jul. 11, 1995, Ser. No. 500,688

Claims priority, application Japan, Mar. 31, 1993, 5-95177; Jul. 23, 1993, 5-202014; Jan. 12, 1994, 6-13105; Jan. 18, 1994, 6-16922; Jan. 20, 1994, 6-18821; Jan. 20, 1994, 6-18824; Jan. 20, 1994, 6-18843

Int. Cl.[6] G02B *6/36*

U.S. Cl. 385—92 **7 Claims**



1. Housing structure for coupling and releasing optical modules; said housing structure comprising:

a first housing comprising a distal wall at one end, an opening at the other end, and said opening having a first protrusion part protruding toward inside of said opening;

a second housing for receiving and holding one optical module, provided in said first housing so as to be slidable, comprising a second protrusion part for engaging with said first protrusion part, sliding of said second housing being limited by said distal wall of said first housing and said first protrusion part; and

a third housing for holding an other optical module, comprising holding parts for selectively holding said second housing;

said second housing further comprising engaging means for engaging said holding parts of said third housing;

said third housing further comprising a contact part for touching said second housing, said contact part being provided at one end of said third housing;

whereby to couple said optical modules, said third housing is pushed into said first and second housings, whereby said second housing is pressed by said contact part of said third housing and said second protrusion part of said second housing is displaced across said first protrusion part,

whereby, the sliding limitation of said second housing is released, and said second and third housings are coupled together through said holding parts;

and whereby to release coupling of said optical modules, said third housing is separated from said first and second housings, whereby said holding parts engage with said engaging means of said second housing, and said second housing is displaced together with said third housing, and said second protrusion part of said second housing returns to an initial position thereof over said first protrusion part of said first housing,

whereby, sliding of said second housing is limited, and said holding parts of said third housing are displaced across said engaging means of said second housing, and said first and second housings are separated from said third housing.

5,548,678

OPTICAL FIBRE MANAGEMENT SYSTEM

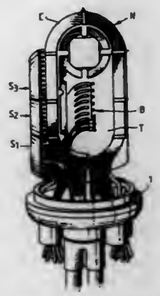
Peter L. J. Frost, and John Kerry, both of Suffolk, England, assignors to British Telecommunications public limited company, London, England

Filed Feb. 24, 1994, Ser. No. 202,190

Claims priority, application European Pat. Off., Sep. 10, 1993, 93307145

Int. Cl.[6] G02B *6/26*

U.S. Cl. 385—135 **38 Claims**



1. An optical fibre management system comprising:

a plurality of generally planar splice trays arranged in a stack, each splice tray having a main body portion for holding at least one splice and for storing fibres leading to each splice,

a fibre entry/exit portion for feeding fibre to/from the main body portion, and

each tray being mounted in the stack so as to be movable, in its own plane, from a stacked position, in which it is aligned with the other trays, to first and second operating positions wherein only the fibre entry/exit portion is accessible in the first

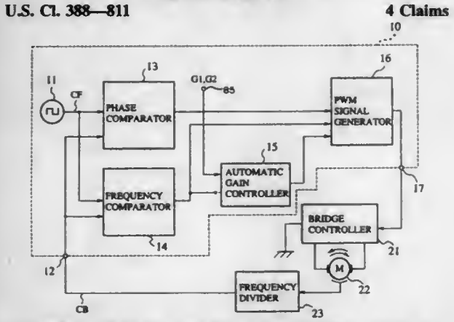
operating position and the main body portion and the fibre entry/exit portion are accessible in the second operating position.

5,548,679

DIGITAL PLL SYSTEM

Shinichi Kiyota, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 10, 1995, Ser. No. 386,656
Claims priority, application Japan, Feb. 10, 1994, 6-016283
Int. Cl.[6] H02P *5/17*
U.S. Cl. 388—811 **4 Claims**



1. A PLL system for controlling a load, the PLL system comprising:
(a) an oscillator for generating a reference clock signal;
(b) a phase comparative, connected to the oscillator, for converting the phase difference between the reference clock signal and a feedback clock signal from the load into a first digital signal;
(c) a frequency comparator, connected to the oscillator, for converting the frequency difference between the reference clock signal and a feedback clock signal into a second digital signal;
(d) an automatic gain controller, connected to the frequency comparator, for adjusting a loop gain of the PLL system to a given value whenever the second digital signal outputted from said frequency comparator reaches a change point, and outputting a third digital signal;
(e) a PWM signal generator, connected to the phase comparator, the frequency comparator and the automatic gain controller, for generating a PWM signal according to the digital signals outputted from said phase comparator, frequency comparator, and automatic gain controller; and
(f) a load controller, connected to the PWM signal generator, for controlling said load utilizing the PWM signal.

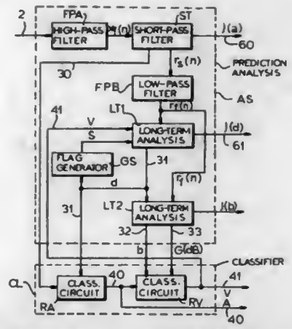
5,548,680

METHOD AND DEVICE FOR SPEECH SIGNAL PITCH PERIOD ESTIMATION AND CLASSIFICATION IN DIGITAL SPEECH CODERS

Luca Cellario, Turin, Italy, assignor to SIP-Societa Italiana Per L'Esercizio Delle Telecomunicazioni P.A., Turin, Italy

Filed May 17, 1994, Ser. No. 243,295
Claims priority, application Italy, Jun. 10, 1993, TO93A0419
Int. Cl.[6] G10L *3/02*
U.S. Cl. 395—2.28 **13 Claims**

1. A method of speech signal coding, comprising the steps of:
(a) dividing a speech signal to be coded into digital sample frames each containing the same number of samples:
(b) subjecting the samples of each frame to a predictive analysis for extracting from said signal parameters representative of long-term and short-term spectral characteristics and comprising at least a long-term analysis delay d, corresponding to a pitch period, and a long-term prediction coefficient b and gain G, and to a classification which indicates whether a respective



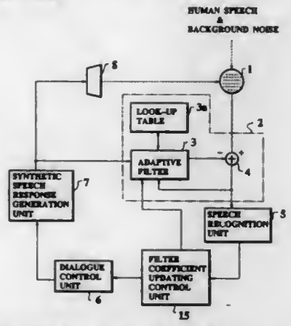
frame corresponds to an active or inactive speech signal segment and for an active signal segment, whether the segment corresponds to a voiced or an unvoiced sound, a segment being considered as voiced if a respective prediction coefficient and gain are both greater than or equal to respective thresholds;
(c) providing information on said parameters to coding units for insertion into a coded signal, together with signals indicative of the classification for selecting in said coding units different coding methods according to characteristics of respective speech segments; and
(d) during said long-term analysis, estimating said delay is as a maximum of covariance function, weighted with a weighting function which reduces a probability that the period computed is a multiple of an actual period, inside a window with a length not less than a maximum value admitted for the delay, said thresholds for prediction coefficient and gain being thresholds which are adapted at each frame, in order to follow a background noise but not of the speech signal, adaptation of said thresholds being enabled only in active speech signal segments.

5,548,681

SPEECH DIALOGUE SYSTEM FOR REALIZING IMPROVED COMMUNICATION BETWEEN USER AND SYSTEM

David Gleaves; Yoshifumi Nagata, and Yoichi Takebayashi, all of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 13, 1992, Ser. No. 929,106
Claims priority, application Japan, Aug. 13, 1991, 03-202957; Mar. 16, 1992, 04-058338
Int. Cl.[6] G10L *5/06;9/14;3/02*
U.S. Cl. 395—2.42 **16 Claims**



1. A speech dialogue system, comprising:
microphone means for receiving a speech input uttered by a human speaker and outputting microphone output signals;

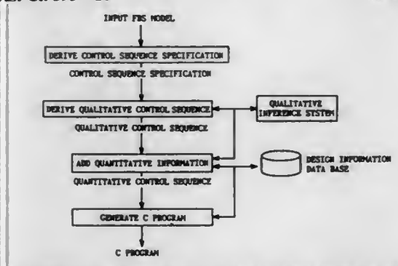
speech recognition means for receiving input signals and recognizing the speech input received by the microphone means;
synthetic speech response generation means for generating a synthetic speech response appropriate for the speech input recognized by the speech recognition means;
loudspeaker means for outputting the synthetic speech response to the human speaker; and
synthetic speech response cancellation means for cancelling the synthetic speech response, which is outputted from the loudspeaker means and then received by the microphone means, from the microphone output signals, to obtain input signals to be supplied to the speech recognition means from which the speech recognition means recognizes the speech input, the synthetic speech response cancellation means further comprising:
look-up table means for memorizing speech characteristic information on the synthetic speech response to be outputted from the loudspeaker means;
adaptive filter means for adapting the synthetic speech response generated by the synthetic speech response generation means by multiplying the synthetic speech response with filter coefficients calculated according to the speech characteristic information memorized in the look-up table means, to obtain an adapted synthetic speech response; and
subtractor means for subtracting the adapted synthetic speech response obtained by the adaptive filter means from the microphone output signals, to obtain the input signals supplied to the speech recognition means.

5,548,682

METHOD OF AUTOMATICALLY CREATING CONTROL SEQUENCE SOFTWARE AND APPARATUS THEREFOR

Yasushi Umeda, Tama; Tetsuo Tomiyama, Tokyo; Hiroyuki Yoshikawa, Tokyo; Tomohiko Sakao, Tokyo; Yoshiki Shimomura, and Sadao Tanigawa, both of Osaka, all of, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Feb. 9, 1994, Ser. No. 194,064
Claims priority, application Japan, Feb. 16, 1993, 5-026910
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—10 **10 Claims**



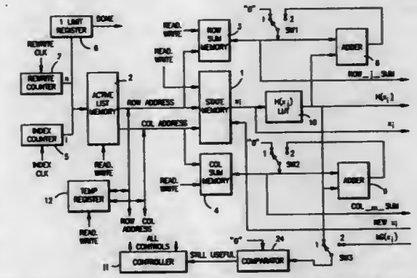
1. A method of automatically creating control sequence software for a computer that controls a machine system that has a machine portion, said method comprising the steps of:
storing design information data representative of the machine portion of the machine system;
storing knowledge data concerning functions of the machine system and knowledge concerning behaviors thereof;
representing the machine system by function, behavior and state model data (FBS model data) by an FBS representation which gives the relationship among functions, behaviors, states, and qualitative parameters of the machine system;
deriving derived state transition matrix data on the basis of time sequence relationships between said functions and said behaviors and said states contained in said FBS representation;
finding conditions of said qualitative parameters by qualitative inference on the basis of said knowledge data concerning said functions and said knowledge data concerning said behaviors so as to make said derived state transition matrix data physically noncontradictory;
adding a behavior or a state required to satisfy found conditions of said qualitative parameters to correct said noncontradictory state transition matrix data to provide corrected state transition matrix data;
determining determined times between a respective states in said corrected state transition matrix represented by said corrected state transition matrix data on the basis of said design information; and
generating a generated quantitative control sequence from said corrected state transition matrix data and said determined times.

5,548,683

DATA FUSION NEURAL NETWORK

Stephen J. Engel, East Northport, N.Y.; Clark Jeffries, Clemson, S.C., and Christopher Lee, Northfield, Minn., assignors to Grumman Aerospace Corporation, Los Angeles, Calif.

Filed May 5, 1994, Ser. No. 238,519
Int. Cl.[6] G06E *1/00;3/00;* **G06F** *15/18*
U.S. Cl. 395—21 **29 Claims**



1. Apparatus for forming a fast optimal or near optimal association based on satisfying global constraints expressed in an association matrix, comprising:
means including a state memory for storing signals representative of neuron values x_i by addresses corresponding to row and column indexes of the association matrix;
means including an active list memory for storing signals representative of a list of all active neurons that contribute to the formation of a change Δx_i in the neuron value signals stored in the state memory;
means for processing the signals representative of active neurons to approximate trajectories representing an evolution of neuron states at discrete intervals of time Δt to obtain signals representative of the change Δx_i in the neurons at said intervals;
means for replacing the neuron value signals stored in the state memory by signals representative of $x_i+\Delta x_i$;
means for writing the row and column address of x_i into the active list memory for a next iteration, if any Δx_i is less than zero;
means for replacing all neuron value signals corresponding to active neurons stored in the active list by a signal representative of 1.0 if, after any iteration, ΔX_i is zero or greater.

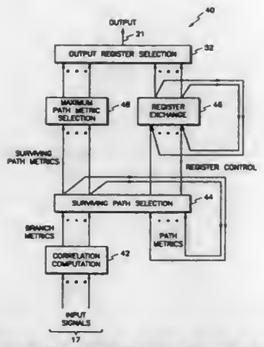
5,548,684

ARTIFICIAL NEURAL NETWORK VITERBI DECODING SYSTEM AND METHOD

Xiao-an Wang, Atlanta, Ga., and Stephen B. Wicker, Metz, France, assignors to Georgia Tech Research Corporation, Atlanta, Ga.

Filed Apr. 22, 1994, Ser. No. 232,812
Int. Cl.[6] G06E *1/00*
U.S. Cl. 395—21 **19 Claims**

10. A decoding system for high speed and efficient decoding of convolutionally-encoded data streams utilizing an artificial neural network and the Viterbi algorithm, comprising:



(a) a correlation computation means having first and second neurons, said first and second neurons being adapted to mathematically combine analog signals, said first neurons for receiving said convolutionally-encoded data stream and for generating branch metrics, said second neurons for mathematically combining said branch metrics from said first neurons with previous partial path metrics to derive current partial path metrics;

(b) a surviving path selection means in communication with said correlation computation means, said surviving path selection means having third and fourth neurons, said third neurons for identifying surviving partial path metrics, said fourth neurons for providing said surviving partial path metrics to said second neurons, said surviving partial path metrics being used by said second neurons as previous partial path metrics during a subsequent time increment;

(c) a maximum path metric selection means in communication with said surviving path selection means, said maximum path metric selection means for determining identities of largest surviving partial path metrics;

(d) a register exchange means in communication with said surviving path selection means, said register exchange means for storing and updating the magnitudes of surviving partial path metrics; and

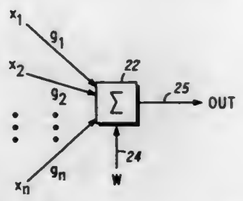
(e) an output register selection means in communication with said maximum path metric selection means and said register exchange means, said output register selection means for providing a convolutionally-decoded output data stream with digital values corresponding with said surviving partial path metrics.

5,548,685

ARTIFICIAL NEURON USING ADDER CIRCUIT AND METHOD OF USING SAME

Shay-Ping T. Wang, Long Grove, Ill., assignor to Motorola, Inc., Schaumberg, Ill.

Filed Jan. 3, 1994, Ser. No. 176,604
Int. Cl.[6] G06E *1/00;3/00*
U.S. Cl. 395—24 **12 Claims**



1. A neuron comprising:

an adder circuit responsive to a plurality of gated inputs and generating an output, said adder circuit including:

means for adding said gated inputs together to produce a sum; and

means for adding said sum to a predetermined weight to generate said output; and

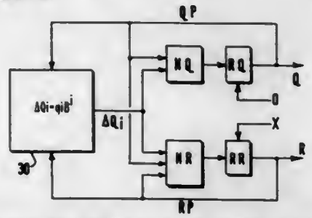
a latch/counter for generating said gated inputs from a plurality of inputs to said neuron, said latch/counter means transmitting a given input x_i to said adder circuit during g_i addition cycles of said adder circuit, wherein g_i represents a non-negative integer, said given input x_i being added during each of said g_i addition cycles resulting in a gated input having a form $g_i * x_i$.

5,548,686

NEURAL COMPRISING MEANS FOR CALCULATING A NORM OR A DISTANCE

Yannick Deville, Villecresnes, France, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 55,444, Apr. 29, 1993, abandoned. This application Dec. 21, 1994, Ser. No. 363,556
Claims priority, application France, Apr. 29, 1992, 92 05283
Int. Cl.[6] G06F *15/18*
U.S. Cl. 395—27 **15 Claims**



14. A neural processor for extracting a root Q of a quantity X, which root constitutes either a norm of a data or a distance between data, the processor comprising a first neuron (NA) for

calculating a plurality of quantities SD_j according to the following equation:

$$SD_j=X-(QP_{i-1}+j\cdot B^i)^d$$

said plurality of quantities resulting from B−1 operations performed by at least one neuron for an index j varying from 1 to B−1, i being an integer index initially equal to a predetermined maximum;

first determining a value $j=q_i$ for which:

$$sgn(SD_j)\neq sgn(SD_{j+1})$$

where $SD_0\geqq 0$, $SD_B<0$, sgn(0)=+1, B is 2, and d is the degree of the root; and a second neuron (NQ) for

second determining a contribution $\Delta Q_i=q_i\cdot B^i$;

third determining a new partial root such that:

$$QP_i=Qpi+1+\Delta Qi.$$

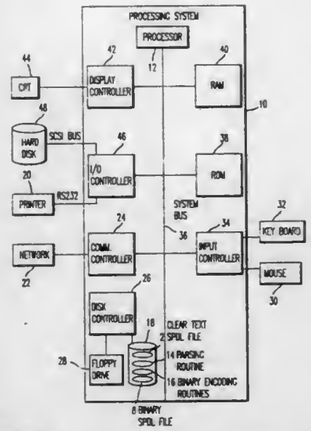
5,548,687

METHOD AND APPARATUS FOR CONTROLLING A PRINTER USING THE N/2[K] FORMAT

Tetsuro Motoyama, San Jose, Calif., assignor to Ricoh Company, Ltd., Tokyo, Japan, and Ricoh Corporation, San Jose, Calif.

Continuation-in-part of Ser. No. 931,808, Aug. 11, 1992, Pat. No. 5,416,896, which is a continuation-in-part of Ser. No. 876,601, Apr. 30, 1992, Pat. No. 5,319,748, and a continuation-in-part of Ser. No. 876,251, Apr. 30, 1992, Pat. No. 5,325,484. This application Dec. 8, 1992, Ser. No. 986,790
Int. Cl.[6] H03M *7/00*
U.S. Cl. 395—101 **25 Claims**

1. An apparatus for controlling a printer or presentation device by changing a textual representation to an N/2[r] binary format, comprising:



a system bus;

page description generating means connected to the bus for generating a textual representation of a page description file having numeric and non-numeric data;

a compressing and encoding apparatus including;

a first converting means connected to the bus for transforming non-numeric data of the page description file to a binary representation;

a second converting means for transforming numeric data of the page description file to a binary numeric representation, including;

memory means connected to the bus for storing a numeric variable r;

initializing means connected to the bus for initializing r as 0;

means connected to the bus for writing to a numeric variable X, a numeric representation of numeric data from the textual representation of the numeric data from the page description file;

a multiplier connected to the bus for multiplying X by 2

an adder connected to the bus for adding 1 to r;

means connected to the bus for determining if X is an integer after X was multiplied by 2 by the multiplier, and if X has become an integer, setting N=X and if X has not become an integer, invoking the multiplier and the adder until X becomes an integer or at least one of X and r go out of predefined ranges stored in a memory; and

said apparatus for controlling the printer or presentation device including transmitting means for transmitting a binary representation of numeric and nonnumeric data to the printer or presentation device including X and r such that the binary representation of the numeric and non-numeric data control the printer or presentation device.

5,548,688

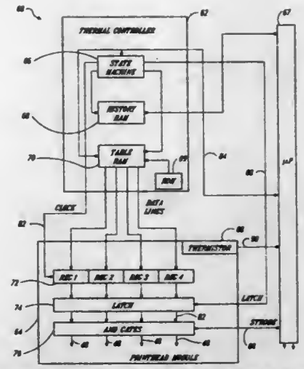
METHOD OF DATA HANDLING AND ACTIVATING THERMAL PRINT ELEMENTS IN A THERMAL PRINTHEAD

Christopher A. Wiklof, Everett, and Edward M. Millet, Seattle, both of Wash., assignors to Intermec Corporation, Everett, Wash.

Filed Dec. 23, 1993, Ser. No. 172,859
Int. Cl.[6] B41J *2/36*
U.S. Cl. 395—108 **32 Claims**

10. A method of producing a desired response in a first print element during a present activation time interval in a thermal printhead having an array of print elements, comprising:

establishing a desired print state for the first element during the present activation time interval;



determining printing schedules of the first print element and a second print element in the array;

generating printing activity data representative of the printing schedules of the first and second print elements corresponding to the present activation time interval and at least one other activation time interval;

compressing the printing activity data;

storing the compressed printing activity data in a first memory at a memory location associated with the first print element;

determining an energization schedule for the present activation time interval in response to the stored compressed printing activity data and the desired print state;

producing an energization signal representative of the energization schedule; and

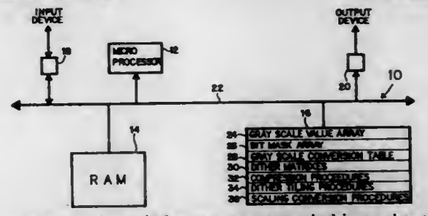
applying the energization signal to the first print element.

5,548,689

METHOD TO CONVERT BITMAPS TO MONOCHROME DATA

Burton H. Poppenga; Terrence M. Shannon, and Russell Campbell, all of Boise, Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 960,761, Oct. 13, 1992, Pat. No. 5,457,772. This application May 3, 1994, Ser. No. 238,277
Int. Cl.[6] G06K *15/00*
U.S. Cl. 395—109 **17 Claims**



1. In a processor unit that converts source pixel image data to rows of a monochrome rasterized bit map, said processor unit including random access memory, a processor, and a control memory containing a gray scale value conversion table, a plurality of dithering matrices, procedures for determining the location of an output pixel within an output image dither tile for the monochrome rasterized bit map, scaling conversion procedures for generating factored, scaled, output position bits in both an X and a Y direction, a method for converting source image data to output data for a monochrome rasterized bit map which comprises:

a. establishing in the random access memory an array of elements for storing gray scale values;

b. establishing in the random access memory an array of bit mask elements, each having a bit block for storing output position bits, each of said elements being indexed to a corresponding gray scale value element, and each being sized to

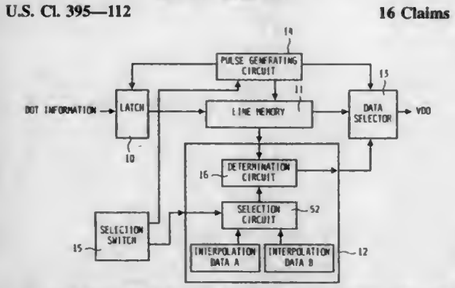
hold a plurality of output position bits equal to the number of bits in a row of an output image dither pattern tile;
c. converting the data information of a source pixel into a corresponding gray scale value;
d. generating scaled output position bits for the converted source pixel;
e. storing each different gray scale value obtained from conversion of said data information in a separate element of the gray scale value array;
f. storing said output position bits in the bit mask array element indexed to the gray scale array element for the source pixel from which output position bits were generated, said output position bits being stored within the bit mask element in the same relative location, relative to the other output position bits, as the relative position of the source pixel relative to the other converted source pixels;
g. repeating steps (c) through (f), until a sufficient number of source pixels have been converted to generate a plurality of output position bits equal to the number of bits in a row of an output image dither pattern tile;
h. testing to determine whether all of the output position bits are stored in one bit mask element;
i. if the test indicates all of the output position bits are stored in one bit mask element, then comparing unconverted source pixel data information for the next source pixel, to the unconverted data information for the last converted source pixel until either the end of the source row is encountered or until data information of unequal value is encountered;
j. saving the address of the last source pixel having data information of the same value as the data information of the last converted source pixel;
k. calculating the number of output position bits that would be generated from the tested, and counted, source pixels having the same value of data information;
i. dithering the stored output position bits stored in the bit mask element to generate bits of output data; and
m. if the test result indicates that output position bits are stored in more than one bit mask element, then dithering the stored output position bits in each element of the bit mask array holding stored output position bits to generate bits of output data.

5,548,690

PRINTING APPARATUS

Yasuo Shimada, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Apr. 30, 1993, Ser. No. 54,216
Claims priority, application Japan, Jul. 24, 1992, 4-218290
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—112 **16 Claims**



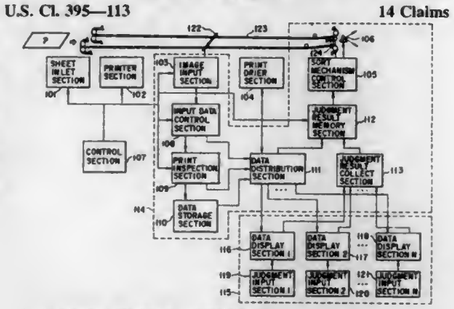
1. A printing apparatus capable of printing image dots for character data with a plurality of printing resolutions, comprising:
receiving means for receiving dot information according to an image input from a host computer;
first storing means for storing the dot information received by said receiving means;
printing resolution selection means for selecting one from the plurality of printing resolutions, an image dot formed with one printing resolution being different in size from an image dot formed with another printing resolution;
second storing means for storing a set of smoothing interpolation data for each printing resolution of the plurality of printing resolutions, respectively, a dot set by one set of smoothing interpolation data being different in size from a dot set by another set of smoothing interpolation data;
selecting means for selecting the set of smoothing interpolation data according to the printing resolution selected by said printing resolution selection means;
interpolation dot information generating means for generating smoothing interpolation dot information from the set of smoothing interpolation data selected by said selecting means from the sets of smoothing interpolation data stored in said second storing means; and
image data output means for outputting image data based on the dot information stored in said first storing means and the smoothing interpolation dot information generated by said interpolation dot information generating means.

5,548,691

PRINTING AND PRINT INSPECTION APPARATUS

Toshio Sato, and Hiroaki Kubota, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 28, 1994, Ser. No. 364,981
Claims priority, application Japan, Dec. 28, 1993, 5-354180
Int. Cl.[6] G06K *15/00*
U.S. Cl. 395—113 **14 Claims**



1. A printing apparatus comprising:
printing means for printing an image on a paper sheet;
reading means for reading the printed image on the paper sheet;
inspecting means for inspecting defects on the printed image supplied from the reading means to classify the printed image into one of acceptable print, unacceptable print, and judgment impossible;
data display means for displaying the image data outputted from said data inspecting means and classified as judgment impossible at said inspecting means;
evaluation data input means for inputting evaluation data about the image displayed on said data display means; and
sorting means for sorting printed sheets on the basis of the data outputted from said data inspecting means and the data outputted from said evaluation data input means..

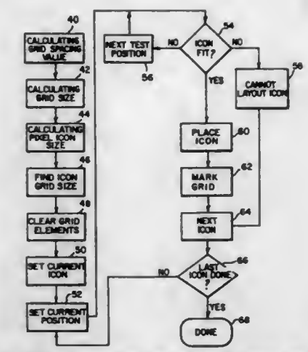
5,548,692

METHOD FOR LAYOUT OF ARBITRARILY SIZED AND SHAPED ICONS IN A DISPLAY

Ronald S. Cok, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 21, 1995, Ser. No. 391,736
Int. Cl.[6] G06T *3/00*
U.S. Cl. 395—133 **3 Claims**

1. An automated method for calculating the positions of arbitrarily sized and shaped icons in a display area, comprising the steps of:
(a) calculating a rectangular grid spacing based upon a preferred common size and spacing;



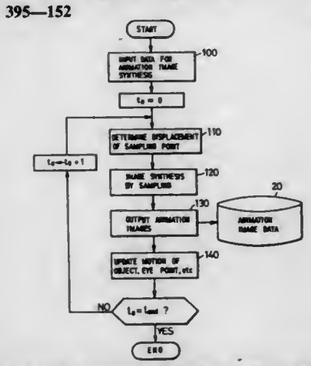
(b) selecting an icon from an ordered group of icons to be displayed;
(c) determining how many grids the icon requires for a rectangle which encompasses the icon using the minimum number of grids;
(d) locating the icon in an empty position following the last placed icon on the grid based on a predetermined ordered representation, which representation is linear and sequential in both the horizontal and vertical directions;
(e) testing to determine if the icon placement is possible in the located empty position and placing the icon if correct; if not correct, testing another empty position on the grid in accordance with the predetermined order by repeating steps (d)–(e); and
(f) placing the icon in correctly determined empty positions.

5,548,693

ANTI-ALIASING METHOD FOR ANIMATION

Mikio Shinya, Matsudo, Japan, assignor to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Apr. 1, 1994, Ser. No. 221,563
Claims priority, application Japan, Apr. 5, 1993, 5-078070
Int. Cl.[6] G06T *13/00*
U.S. Cl. 395—152 **11 Claims**



1. A method for eliminating aliasing which occurs in a time-series sequence of frames of images of an animation synthesized by sampling on a computer, said method comprising the steps of:
(1) synthesizing a time-series sequence of frames of images of an animation by sampling at sample points on an object seen from an eye point for each frame;
(2) computing a motion $s(t;x_0,t_0)$ of each of image points at time t on a screen corresponding to one of the sample points on the object through utilization of the motion of said object and the eye point used in the synthesis of said animation, said motion $s(t;x_0,t_0)$ representing the position of each image point at time t whose position was x_0 at time t_0;
(3) computing a kernel $g(x,t;x_0,t_0)$ of a linear spatio-temporal filtering by the following equation

$$g(x,t;x_0,t_0)=Cw(x_0-s(t_0;x,t))\partial s/\partial x$$

where C denotes a normalization constant, w(x) denotes a spatial anti-aliasing filter; and
(4) subjecting each image f(x,t) of animation to spatio-temporal filtering by calculating the following equation

$$\iint f(x,t)g(x,t;x_0,t_0)dxdy$$

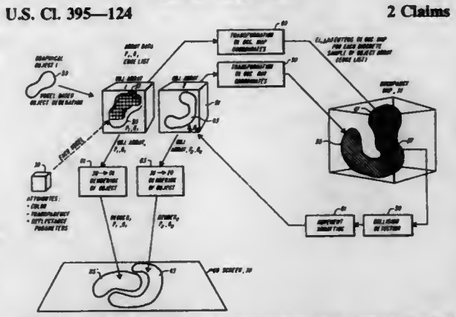
whereby spatial aliasing in the image f(x,t) of animation is eliminated.

5,548,694

COLLISION AVOIDANCE SYSTEM FOR VOXEL-BASED OBJECT REPRESENTATION

Sarah F. Frisken Gibson, Arlington, Mass., assignor to Mitsubishi Electric Information Technology Center America, Inc., Cambridge, Mass.

Filed Jan. 31, 1995, Ser. No. 381,108
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—124 **2 Claims**

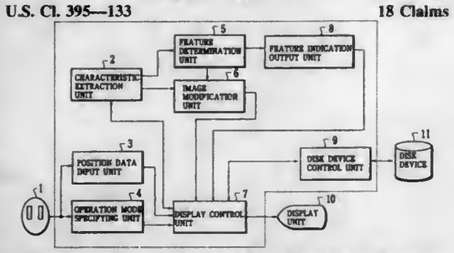


1. A system for detecting the exact location of the intersection of moving voxel-based graphical objects prior to their intersection when said objects are moved about a display screen, comprising:
means for generating voxel-based objects for display on said screen including a memory array representing the virtual space through which said objects are to be moved, with objects in said virtual space having a corresponding on-screen object at a corresponding on-screen location, and means for storing voxel-based data corresponding to voxel-based objects in said memory array, a portion of said memory representing a voxel-based occupancy map of said stored objects, said voxel-based occupancy map representing said virtual space;
means for mapping individual objects into said occupancy map as data at a corresponding memory location within said memory array;
means for moving said objects in said virtual space;
means for updating said occupancy map every time any object moves about said virtual space by writing data corresponding to a given object into a location different from that previously occupied by said data;
means for detecting when prior to writing of data into said different location corresponding to movement of said given object about said virtual space data associated with said given object is to be written into a memory location for which data from another one of said objects already exists, thus to identify the exact voxel at which said penetration is to occur; and,
means for preventing on-screen movement of the associated on-screen representation of said given object upon detection of an occupied occupancy map location into which data for said object is to be written to effectuate said move.

5,548,695
IMAGE FIGURE EDITING SYSTEM FOR MANIPULATING FIGURE ELEMENTS GIVEN IN TERMS OF IMAGE DATA

Mieko Asano, and Osamu Hori, both of Kanagawa-ken, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 28, 1993, Ser. No. 69,108
Claims priority, application Japan, May 29, 1992, 4-138183
Int. Cl.[6] G06T *5/00*
U.S. Cl. 395—133 **18 Claims**



1. An image figure editing system for manipulating figure elements of a figure to be edited given in terms of image data, comprising:

position data input means for inputting position data to specify the figure elements to be operated in the image data of the figure;

operation mode specifying means for specifying operation modes, each operation mode indicating one of operations applicable to the image data of the figure which include measurement operations and editing operations;

characteristic extraction means for extracting characteristics indicative of a shape of the figure from the image data of the figure;

feature determination means for determining features indicative of a configuration of the image data of the figure according to the characteristics extracted by the characteristic extraction means, by carrying out a measurement operation indicated by the operation mode specified at the operation mode specifying means to the image data of the figure elements specified by the position data inputted at the position data input means; and

image modification means for modifying an image of the figure according to the features determined by the feature determination means and the characteristics extracted by the characteristic extraction means, by carrying out an editing operation indicated by the operation mode specified by the operation mode specifying means to the figure elements specified by the position data inputted by the position data input means.

5,548,696
IMAGE PROCESSING APPARATUS

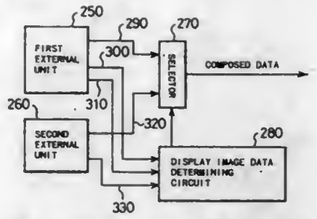
Shinji Kubota, and Hiroaki Nasu, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Oct. 6, 1993, Ser. No. 132,557
Claims priority, application Japan, Oct. 6, 1992, 4-267618; Mar. 25, 1993, 5-66830
Int. Cl.[6] G06F *15/62*
U.S. Cl. 395—135 **19 Claims**

1. An image processing apparatus for receiving and processing a batch of pixels originating from a plurality of image data, said batch of pixels having image information intended to be superimposed in time and space to generate a single displayable pixel, said apparatus comprising:

input means for inputting said plurality of image data pixel by pixel from said batch of pixels;

image data selecting means for dividing an input time period for inputting one pixel into a plurality of divisions such that each of said divisions may be associated on a one to one basis with said plurality of image data thereby enabling each pixel of said batch of pixels to be input one at a time yet all within said input time period;



pixel processing means for executing a predetermined operation on a most recently input pixel in one division of said input time period thereby generating a specified image data;

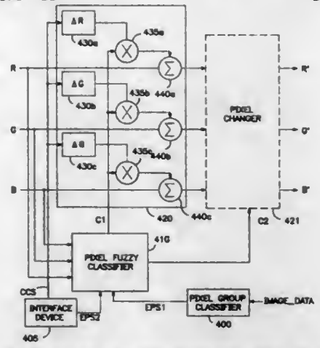
divisional processed data storing means for latching said specific image data for use in a subsequent operation of said pixel processing means operating on a next input pixel, said next input pixel being a one of said batch of pixels which has not yet been processed by said pixel processing means; and

output means for outputting contents of said divisional processed data storing means once each of said batch of pixels has been processed by said pixel processing means, said contents corresponding to said single displayable pixel.

5,548,697
NON-LINEAR COLOR CORRECTOR HAVING A NEURAL NETWORK AND USING FUZZY MEMBERSHIP VALUES TO CORRECT COLOR AND A METHOD THEREOF

Anthony E. Zortea, Pipersville, Pa., assignor to Panasonic Technologies, Inc., Princeton, N.J.

Filed Dec. 30, 1994, Ser. No. 367,798
Int. Cl.[6] G06E *1/00;* **G05B** *13/00;* **H04N** *9/64;* **G03F** *3/08*
U.S. Cl. 395—22 **13 Claims**



1. A color corrector for transforming an image having pixels representing different color values in the image, said color corrector comprising:

means for identifying a grouping of pixels in the image to be transformed from a first group of color values towards a second color value;

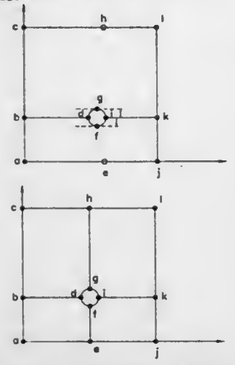
neural fuzzy classifier means for only generating a membership data value for a pixel in the image defining a degree of membership of the pixel in the grouping of pixels, the neural fuzzy classifier means comprising a first neural network; and

transforming means for transforming the pixel by a specified amount in response to the membership data value toward the second color value where the transforming means is not a neural network.

5,548,698
RULE BASED PARAMETRIC DESIGN APPARATUS AND METHOD

Randall W. Smith, Naperville, Ill.; Jason Bright, St. Paul, and Thomas Varghese, Minneapolis, both of Minn., assignors to Andersen Corporation, Bayport, Minn.

Filed Feb. 14, 1994, Ser. No. 194,922
Int. Cl.[6] G06F *15/20*
U.S. Cl. 395—139 **22 Claims**



1. A method of automatically resizing a design, the design being of the type created by a CAD system, comprising the steps of:

(a) entering a design, the design including a plurality of draw primitives having predetermined relationships to one another, each draw primitive having at least one point locating the draw primitive, wherein each point has coordinates and at least one parent draw primitive;

(b) entering a set of rules related to resizing the design, wherein the rules form a hierarchical structure; whereby placement of certain draw primitives in the design occurs first and allows placement of other draw primitives within the hierarchical structure; and

(c) resizing the design automatically in accordance with the rules, wherein the design is reconfigured to a different two-dimensional size without operator intervention, wherein the resizing step includes the step of placing the draw primitives based upon the hierarchical structure formed by the rules, the placing step including the steps of:

(1) placing a coordinate of a point on a first draw primitive; and

(2) notifying each other parent draw primitive of the point on the first draw primitive of the placement of the coordinate; whereby common points on different draw primitives are collectively updated.

5,548,699
APPARATUS FOR PRESENTING INFORMATION ACCORDING TO EVALUATIONS OF UNITS OF THE INFORMATION

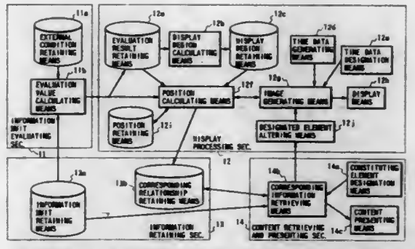
Eiji Ishida, and Yoshifumi Matsunaga, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 19, 1994, Ser. No. 325,936
Claims priority, application Japan, Oct. 26, 1993, 5-288834; Oct. 26, 1993, 5-288835; Oct. 26, 1993, 5-289973; Oct. 27, 1993, 5-289762
Int. Cl.[6] G06F *17/00*
U.S. Cl. 395—140 **6 Claims**

1. An information presenting apparatus comprising:

information unit retaining means for retaining a plurality of information units and accompanying keywords;

item data retaining means for retaining items that constitute rows or columns of a table, and conditions, each of which includes a combination of the keywords retained by said information unit retaining means and a value, corresponding to the items;



tabulation value calculating means for reading the information units from the information unit retaining means, and for calculating values to be used for arranging image elements representing the respective information units to form a table based on the conditions retained by said item data retaining means and the keywords read from said information unit retaining means;

position calculating means for determining positions of the respective image elements based on the values calculated by the tabulation value calculating means;

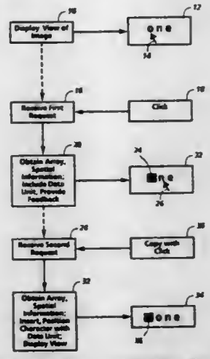
image generating means for generating a table image in which the image elements are arranged at the determined positions; and

display means for displaying the generated table image.

5,548,700
EDITING TEXT IN AN IMAGE

Steven C. Bagley, Palo Alto, and Gary E. Kopec, Belmont, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 459,022, Dec. 29, 1989, abandoned.
This application Mar. 29, 1993, Ser. No. 39,553
The portion of the term of this patent subsequent to Dec. 29, 2009, has been disclaimed.
Int. Cl.[6] G06F *17/00*
U.S. Cl. 395—144 **79 Claims**



1. A method of operating a processor, the processor being connected for accessing an edit data structure, the edit data structure including a first two-dimensional array of data that defines a region of an image, the region including two or more elements in a first line, the elements including a first element; the processor further being connected for receiving requests for text editing operations; the method comprising the steps of:

receiving a request for a character level text editing operation affecting the first element;

in response to the request, accessing the edit data structure to perform the character level text editing operation, the step of

accessing the edit data structure to perform the operation comprising the substeps of:
accessing the first two-dimensional array of data;
obtaining a second two-dimensional array of data from the first two-dimensional array, the second two-dimensional array defining the first element and not defining any of the elements other than the first element; and
performing the operation using the second two-dimensional array.

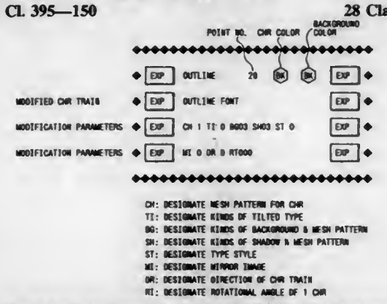
5,548,701

CHARACTER PROCESSING METHOD AND APPARATUS

Masayuki Yoshida, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 679,110, Apr. 2, 1991, abandoned.
This application Sep. 30, 1994, Ser. No. 312,935
Claims priority, application Japan, Apr. 4, 1990, 2-89605
Int. Cl.[6] G06T *11/00*

U.S. Cl. 395—150 **28 Claims**



1. A character processing apparatus to which output apparatuses of different scanning types can be connected, said character processing apparatus comprising:
generating means for generating dot form data in accordance with vector form data, said generating means being constructed to be able to generate the dot form data using, selectively, either a first process, in which the dot form data is generated in a first direction, or a second process, in which the dot form data is generated in a second direction;
memory means for storing the generated dot form data; and
discriminating means for discriminating the scanning type of an output apparatus connected to said character processing apparatus,
wherein said generating means generates the dot form data using the first or the second process, respectively, in accordance with a discrimination result produced by said discriminating means, such that the dot form data is generated in a direction corresponding to the scanning type of the connected output apparatus discriminated by said discriminating means.

5,548,702

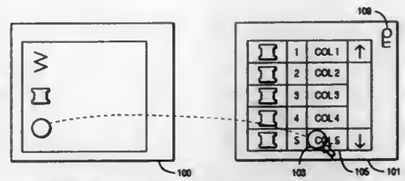
SCROLLING A TARGET WINDOW DURING A DRAG AND DROP OPERATION

Shih-Gong Li, and Theodore J. L. Shrader, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1993, Ser. No. 174,507
Int. Cl.[6] G06F *3/14*

U.S. Cl. 395—155 **16 Claims**

1. A method for transferring graphical objects in a graphical user interface on a computer display from a source window to a target window, comprising the steps of:
during a first drag and drop operation in a first mode, determining that a first graphical object from the source window has hit an interior boundary of the target window, scrolling the target window so long as the first graphical object continues to hit the interior boundary and locating the first graphical object at a target location at a conclusion of the first drag and drop operation; and
during a second drag and drop operation in a second mode, which prevents the scrolling of the target window, dragging a second graphical object from the source window past an interior boundary of the target window.



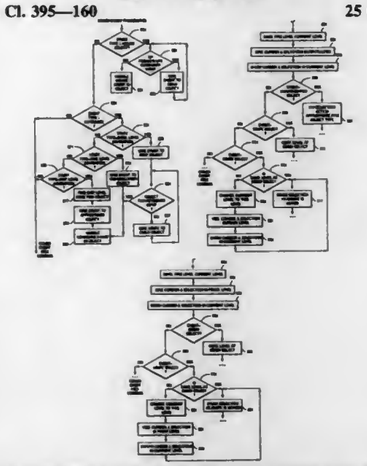
5,548,703

NAVIGATION WITHIN A COMPOUND GRAPHICAL OBJECT IN A GRAPHICAL USER INTERFACE

Richard E. Berry, Georgetown, Tex.; Susan F. Hensbaw, Cary, N.C., and David J. Roberts, Stockton, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 30, 1993, Ser. No. 159,873
Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—160 **25 Claims**



1. A method for navigating within a compound graphical object in a graphical user interface presented on a display using a pointing device or keyboard, comprising the steps of:
determining whether a first command to move user focus from a current active graphical object to a next graphical object both within the compound graphical object was issued from the keyboard;
finding a next graphical object in the same level within the compound graphical object as the current active graphical object at a current cursor position;
passing the first command to the next graphical object to determine whether the next graphical object accepts keyboard input;
responsive to a determination that the next graphical object does not accept keyboard input, passing the first command to a lower level graphical object which does accept keyboard input within the next graphical object; and
making the lower level graphical object the current active graphical object in the graphical user interface to position a cursor therein.

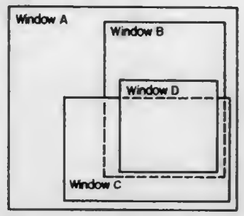
5,548,704

METHOD FOR WINDOWING USING MAINFRAME HOSTED CICS

John E. Steiner, and Michael P. Egbert, both of West Palm Bch., Fla., assignors to The Consulting Team, Inc., West Palm Beach, Fla.

Filed Nov. 8, 1994, Ser. No. 336,843
Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—158 **7 Claims**



1. A method of managing a plurality of video display windows which partially or completely overlap each other as manifested by native-mode 3270 data streams originating from the execution of BMS maps, relying solely on the standard video display facilities of BMS plus support for extended attributes, as a representation of nested or cascaded user interface input/output contexts within a CICS application program, said method comprising:
preventing a video display image of a base pane from interfering with a video display of an overlay pane;
preserving critical field attribute values of a base map created from said overlay panes;
managing a data entry cursor so that it is active on either said base pane or said overlay pane in accordance with a switching of user interface contexts during creation and subsequent destruction of said overlay pane;
representing BMS field attribute values and processing control variable values as bit patterns;
means for storing said bit patterns as bit map files in accordance with a specific ordering of overlay panes and their associated user interface contexts;
means for restoring said bit patterns as bit map files in accordance with a specific ordering of overlay panes and their associated user interface contexts;
allowing dynamic changes to the contents of said overlay pane as performed by users of the CICS application program and for said overlay pane changes to be stored for subsequent retrieval;
means for sequencing BMS maps which maintains a synchronization of a native-mode 3270 data streams produced by the execution of said maps and the corresponding user interface contexts as presented to the user during windowing which employs said method for managing the data entry cursor, said methods of bit map file construction and their subsequent rapid storage and retrieval and accommodates changes to the contents of overlay panes for producing, storing and retrieving such changes.

5,548,705

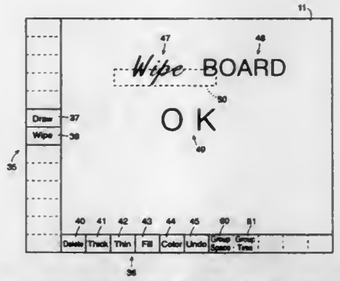
WIPING METAPHOR AS A USER INTERFACE FOR OPERATING ON GRAPHICAL OBJECTS ON AN INTERACTIVE GRAPHICAL DISPLAY

Thomas P. Moran, Palo Alto, Calif.; Elin R. Pedersen, Copenhagen, Denmark; Michael K. McCall, Menlo Park, and Frank G. Halasz, Santa Cruz, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 869,554, Apr. 15, 1992, abandoned.
This application Feb. 27, 1995, Ser. No. 394,919.
Int. Cl.[6] G06T *11/80*

U.S. Cl. 395—159 **27 Claims**

1. A computer-based method for dynamically identifying and operating on objects displayed on a computer-controlled display device by a user manipulating an input device, said displayed objects comprising one or more objects stored as a set of object-based data structures each representative of one of said objects, comprising the steps:
(a) providing means for the user to access an applicator, said applicator being a computer object capable of following a spatial movement having a characteristic shape drawn by the user manipulating the input device,
(b) providing computer means to operatively link one of a plurality of operators with said applicator, said operator being capable when applied to a displayed object to influence or modify a property of the whole object,
(c) in response to the user's spatial movement with the input device, moving the applicator with operatively-linked operator, independently of which operator is linked to said applicator, along an actual path across a portion of the display, said actual path indicating the characteristic shape made by the spatial movement of the user, said step of moving causing the computer to generate a sequence of wiping segments, each of said wiping segments representing consecutive positions of the actual path followed by the applicator across the display portion, said sequence of wiping segments forming a spatial wiping path for the applicator over said display portion, said computer identifying and storing the position of each of the wiping segments making up the spatial wiping path relative to the positions of the displayed objects,
(d) as each segment in the sequence of wiping segments is generated computer-identifying all displayed objects within a predefined distance of the segment on the display whereby, after said objects are identified, the identification of said objects may not be reversed during the formation of said spatial wiping path, said predefined distance being based on user-determined or default criteria,
(e) computer-applying said operatively-linked operator only to each of the displayed objects identified in step (d), the application of said operator affecting the whole of each object identified in step (d), the application of said operator to a displayed object modifying the data structure representing the displayed object in a manner visible to the user.



5,548,706

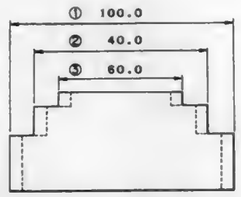
CAD SYSTEM WITH PARALLEL DIMENSION-LINE EDITING FUNCTION

Ayako Koizumi; Yukiko Mori, and Tomomi Aoki, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 29, 1993, Ser. No. 128,134
Claims priority, application Japan, Sep. 29, 1992, 4-259398; Sep. 29, 1992, 4-259399; Sep. 29, 1992, 4-259400
Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—161 **15 Claims**

15. A computer aided design (CAD) process for managing a drawing involving dimension lines, displaying said drawing on a display means connected to a terminal, and editing said drawing according to a specified one of said dimension lines designated as an objective dimension line, wherein said process comprises:



interactively designating the objective dimension line through said terminal;

retrieving, in said drawing, dimension lines that are in parallel with said objective dimension line; and

editing drawing data corresponding to said objective and parallel dimension lines based on only a change quantity entered for said objective dimension line and the designating.

5,548,707

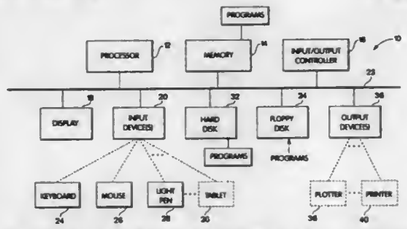
METHOD AND SYSTEM FOR DESIGN AND DRAFTING

Rene LoNegro, Meudon, France, and Stuart Wells, Watertown, Mass., assignors to Adra Systems, Inc., Chelmsford, Mass.

Filed Nov. 9, 1993, Ser. No. 150,388

Int. Cl.[6] G06F *19/00*

U.S. Cl. 395—161 **32 Claims**



21. A computer-aided design and drafting system, comprising:

a computer having at least a memory and a processor;

a display device coupled to the computer;

a cursor controlling device, manipulated by a user and coupled to the computer, for generating signals indicative of desired movement on the display device; and

programming means for operating the computer, comprising:

(a) means for providing to the user on the display device a menu having options selectable by the user with the cursor controlling device;

(b) means for entering into, upon the user selecting a particular one of the options, a mode in which dimension indicator types are automatically chosen for the user by the computer;

(c) means for displaying at least one geometric object on the display device;

(d) means for displaying a cursor on the display device, in response to the signals generated by the cursor controlling device, at the displayed object to indicate a selection of the displayed object;

(e) means for identifying the geometry of a selected object from a plurality of possible geometries;

(f) means for choosing, based on the identification made by the geometry identifying means, a dimension indicator type for the selected object from a plurality of possible dimension indicator types stored in the memory;

(g) means for displaying an image of the chosen dimension indicator type on the display device, in response to the signals generated by the cursor controlling device, until a placement location is selected for the chosen dimension indicator type on the display device via the cursor controlling device; and

(h) means for displaying, on the display device in the vicinity of the placement location, the chosen dimension indicator type and a numerical value associated with the chosen dimension indicator type and with the selected object,

wherein the functions of at least the means (e), (f), (g), and (h) are performed automatically by the computer-aided design and drafting system.

5,548,708

IMAGE EDITING USING HIERARCHICAL CODING TO ENHANCE PROCESSING SPEED

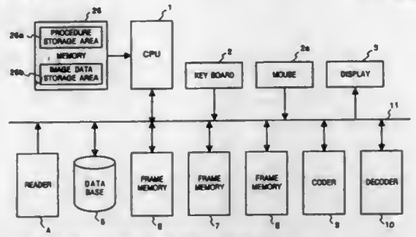
Yukihiko Sakashita, Hadano, and Akira Ishizaki, Atsugi, both of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 24, 1993, Ser. No. 64,885

Claims priority, application Japan, May 27, 1992, 4-134767

Int. Cl.[6] G06F *15/00;12/00*

U.S. Cl. 395—162 **28 Claims**



1. A data processing apparatus comprising:

storage means for storing at least image data having a low level of resolution and image data having a high level of resolution;

display means for displaying a first image using the image data having low resolution;

obtaining means for obtaining an object image by magnifying an image extracted from the first image;

control means for causing said display means to display the object image together with the first image;

indicating means for indicating a desired edit process using the object image displayed by said display means, wherein said control means causes said display means to display a result of performing the indicated edit process, said display means displaying that result on the object image and on a modification of the first image, the modification of the first image being the first image changed to reflect the result of the indicated edit process;

memory means for storing information indicating the edit process indicated by the indicating means; and

processing means for editing the image data having high resolution in accordance with the information stored in said memory means.

5,548,709

APPARATUS AND METHOD FOR INTEGRATING TEXTURE MEMORY AND INTERPOLATION LOGIC IN A COMPUTER SYSTEM

Marc R. Hannah, Los Altos, and Michael B. Nagy, San Ramon, both of Calif., assignors to Silicon Graphics, Inc., Mountain View, Calif.

Filed Mar. 7, 1994, Ser. No. 206,959

Int. Cl.[6] G06F *12/00*

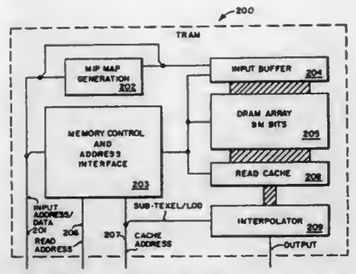
U.S. Cl. 395—164 **18 Claims**

1. In a computer system, a semiconductor chip for performing texture mapping, said semiconductor chip comprising:

an input for inputting textures to said semiconductor chip;

a main memory coupled to said input for storing said textures;

a cache memory coupled to said main memory for storing a recently used texture;



a memory controller coupled to said main memory and said cache memory for controlling data transfers between said main memory and said cache memory;

an interpolator coupled to said main memory and said cache memory for producing an output rendered pixel by interpolating from said recently used texture stored in said cache memory;

an output coupled to said interpolator for outputting said output rendered pixel, wherein said input, said main memory, said cache memory, said memory controller, and said interpolator reside on a same substrate.

5,548,710

METHOD AND APPARATUS FOR AN ISDN COMMUNICATION SYSTEM USING ACTIVE AND STAND-BY ISDN COMMUNICATION ADAPTORS TO MAINTAIN OPERATION WHEN TROUBLE OCCURS

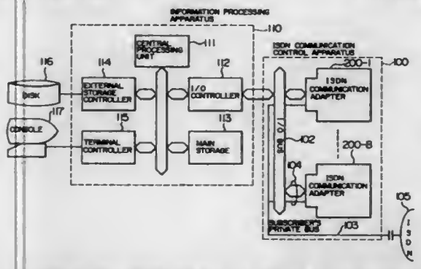
Shuuji Oono, Kawasaki; Katsumi Tadamura, Sbobara, and Syoji Yamaguchi, Hitachi, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 5, 1991, Ser. No. 788,319

Claims priority, application Japan, Nov. 7, 1990, 2-301674

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—181 **17 Claims**



1. A trouble processing method for an ISDN communication system connected to an ISDN, said ISDN communication system having a plurality of ISDN communication adapters, wherein at least one of said ISDN communication adapters is an active ISDN communication adapter being in an active state and having assigned thereto a certain terminal endpoint identifier (TEI) value and at least another one of said ISDN communication adapters is a stand-by ISDN communication adapter being in an inactive state, said method comprising the steps of:

assigning a same TEI value as that of said active ISDN communication adapter to said stand-by ISDN communication adapter;

making said stand-by ISDN communication adapter, when activated, to operate in the same way as said active ISDN communication adapter and causing an interruption of transmission of an LAPD frame from said stand-by ISDN communication adapter to said ISDN;

maintaining said stand-by ISDN communication adapter in, while in the inactive state, a same communication state as that of said active ISDN communication adapter; and

upon occurrence of trouble in said active ISDN communication adapter, releasing, in said stand-by ISDN communication adapter, interruption of transmission of an LAPD frame from said stand-by ISDN communication adapter to said ISDN and activating said stand-by ISDN communication adapter to operate as the active ISDN communication adapter.

11. A control apparatus for controlling communication with an ISDN, comprising:

an information processing apparatus for creating, processing and storing communication data;

an ISDN communication control apparatus, connected to said information processing apparatus by an input/output (I/O) bus which is a transfer route of data, said ISDN communication control apparatus having a plurality of ISDN communication adapters, each ISDN communication adapter having layer 1 and layer 2 controllers of Open Systems Interconnect (OSI) reference model for controlling at least ISDN communication processing with one ISDN subscriber line of said ISDN and said I/O bus;

means, included in said information processing apparatus, for requesting setup/release processing of ISDN communication to an active ISDN communication adapter of said plurality of ISDN communication adapters included in said ISDN communication control apparatus and sending an outgoing call/disconnect instruction requesting said processing of ISDN communication from said information processing apparatus to said active ISDN communication adapter, said active ISDN communication adapter having set therein a certain TEI value; and

means included in said information processing apparatus, after sending said outgoing call/disconnect instruction requesting said processing of ISDN communication from said information processing apparatus to said active ISDN communication adapter of said plurality of ISDN communication adapters included in said ISDN communication control apparatus, for sending a same outgoing call/disconnect instruction being sent to said active ISDN communication adapter to a stand-by communication adapter, said stand-by ISDN communication adapter having set therein a same identifying value or TEI value as that of said active ISDN communication adapter.

5,548,711

METHOD AND APPARATUS FOR FAULT TOLERANT FAST WRITES THROUGH BUFFER DUMPING

William A. Brant; Gary Neben, both of Boulder; Michael E. Nielson, Broomfield, and David C. Stallmo, Boulder, all of Colo., assignors to EMC Corporation, Hopkinton, Mass.

Continuation-in-part of Ser. No. 112,791, Aug. 26, 1993. This application Dec. 22, 1994, Ser. No. 363,655

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—182.03 **9 Claims**

1. An array controller system for controlling a Write operation for an array of data storage units, including:

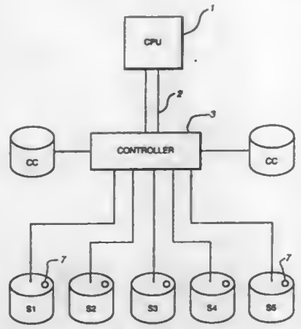
(a) an array controller processor for controlling the Writing of pending Write data to the array of data storage units;

(b) a first communications adapter, coupled to the array controller processor, for receiving pending Write data from a host over a first communications bus and writing the pending Write data to the array of data storage units over the first communications bus under the control of the array controller processor;

(c) a first memory device for storing pending Write data;

(d) a first memory interface, coupled to the first memory device, the array controller processor, the communications adapter, and a second communications bus, for:

(I) receiving pending Write data from the first communications adapter and storing in the first memory device the received pending Write data;



(2) reading, under control of the array controller processor, pending Write data from the first memory device and coupling the read pending Write data to the first communications adapter for completing the Write to the array of data storage units;

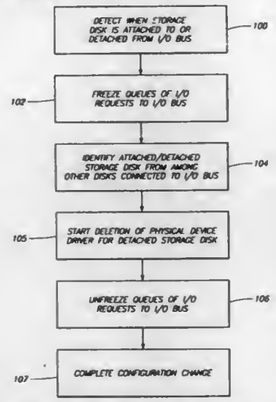
(3) controlling communications with an external device, the communications being sent over the second communications bus, such that pending Write data stored within the first memory device can be read and communicated to the external device via the second communications bus upon a failure of the array controller processor.

5,548,712

DATA STORAGE SYSTEM AND METHOD FOR MANAGING ASYNCHRONOUS ATTACHMENT AND DETACHMENT OF STORAGE DISKS

Susan L. Larson, Kuna; Douglas L. Voigt, Boise; Steven D. Messinger, Boise, and Michael B. Jacobson, Boise, all of Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 19, 1995, Ser. No. 376,179
Int. Cl.[6] G01R *31/28*; G06F *11/00*
U.S. Cl. 395—182.05 **13 Claims**



10. A disk array data storage system comprising:

a plurality of storage disks;

multiple I/O buses, individual ones of the internal I/O buses being connected to a set of storage disks;

the storage disks being detachably connected to the I/O buses at interfacing slots whereby individual storage disks can be asynchronously attached to or detached from corresponding interfacing slots of the I/O buses;

a plurality of physical device drivers for corresponding storage disks, the physical device drivers representing the storage disks with respect to their connections to the interfacing slots of the I/O buses;

a plurality of physical device managers for corresponding storage disks, the physical device managers representing data kept on the storage disks, the physical device managers being associated with corresponding physical device drivers that represent the same storage disks;

interface drivers to manage I/O transfers through corresponding I/O buses;

when a particular storage disk is attached to or detached from an interfacing slot of one of the I/O buses, the interface driver corresponding to said one I/O bus freezing I/O requests that came from the physical device drivers that represent the storage disks in the set connected to said one I/O bus;

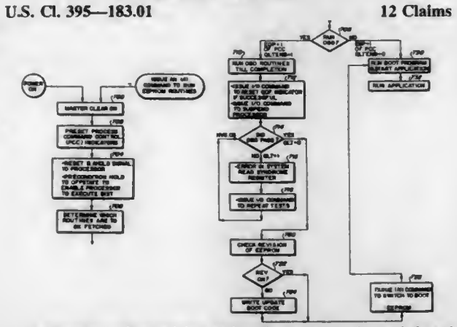
a configuration manager to manage operation of the disk array data storage system when said particular storage disk is attached to or detached from said one I/O bus, the configuration manager first determining which interfacing slot the particular storage disk has been attached to or detached from and then subsequently instructing the interface driver to unfreeze the I/O requests and flush the I/O requests back to the physical device drivers associated with the other storage disks in the set of storage disks connected to said one I/O bus.

5,548,713

ON-BOARD DIAGNOSTIC TESTING

Keith L. Petry, North Reading; Thomas S. Hirsch, Bedford, both of Mass., and James W. Keeley, Nashua, N.H., assignors to Bull HN Information Systems Inc., Billerica, Mass.

Continuation of Ser. No. 776,953, Oct. 15, 1991, abandoned. This application Jul. 8, 1994, Ser. No. 272,893
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—183.01 **12 Claims**



1. A method of organizing and testing a processing unit board within either a system or a factory test environment, said board when installed in said system environment, being coupled to a system bus of the system in common with a number of other processing units, said board including a plurality of major parts, one of which is a high speed microprocessor, said microprocessor having an internal cache memory, memory management unit and a control read only memory for issuing commands locally and externally to said system bus, an internal register accessible only by said microprocessor and a local memory coupled to said microprocessor and to said system bus, said method comprising the steps of:

(a) including in said processing unit board, an electrically erasable programmable read only (EEPROM) unit which is connected to said microprocessor and to said system bus when installed in said system;

(b) storing in said EEPROM unit, a plurality of on-board diagnostic (OBD) routines organized in a predetermined manner for extensively testing the operability of said processing unit board, each OBD routine containing a number of tests containing a number of software instructions;

(c) accessing each of said plurality of OBD routines in a predetermined ordered sequence by said microprocessor at high speed for carrying out a different phase and subphases of testing on a predetermined part of one of said major parts of said processing unit board upon being powered on by said system or in response to a command from said system bus specifying running of said OBD routines;

(d) generating a different predetermined code at a beginning of each OBD routine for designating the phase and subphase of testing being executed by said processing unit board, said different predetermined code having a numerical value which indicates the amount of testing which has been completed;

(e) storing said each different predetermined code generated in step (d) in said internal register during execution of a corresponding one of said OBD routines; and,

(f) connecting said internal register to an indicator panel for visually displaying said different predetermined code for both indicating which phase of testing could not be successfully executed by said microprocessor and the extent to which said testing has been completed enabling an operator to make a visual determination as to whether said processing unit board or major part is to be replaced.

(g) executing a local memory test routine by said microprocessor for verifying the operability of a small area within said local memory; and,

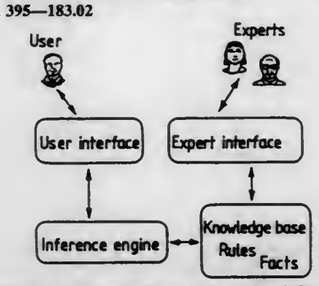
(h) copying said OBD routines into said small area of local memory verified as good in step (g) for enabling execution of subsequent OBD routines to proceed at maximum speed.

5,548,714

MEANS FOR STRUCTURING TECHNICAL INFORMATION IN ESTABLISHING A KNOWLEDGE BASE AND TROUBLESHOOTING IN TECHNICAL EQUIPMENT

Hans Becker, Sollentuna, Sweden, assignor to Televerket, Farsta, Sweden

PCT No. PCT/SE91/00625, § 371 Date Apr. 2, 1993, § 102(e) Date Apr. 2, 1993, PCT Pub. No. WO92/05503, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 18, 1991, Ser. No. 30,068
Claims priority, application Sweden, Sep. 21, 1990, 9003009
Int. Cl.[6] G06F *11/34*
U.S. Cl. 395—183.02 **1 Claim**



1. A system for structuring technical and other information in a knowledge base in order to troubleshoot computer equipment and provide directions and training with technical equipment, comprising;

means for storing a knowledge base;

means for defining required concepts describing states in the knowledge base using definition functions, each definition function including node types indicating at least one of a type of information and an instruction that a node is to contain;

reading means for reading into the knowledge base views containing pictures or graphic descriptions of technical equipment;

input means for inputting plural nodes into the views to create points where at least one of additional information about various parts of the technical equipment and tests for various parts of the technical equipment are available, the input means inputting at least one node of said plural nodes as a rule node containing at least one rule having a condition part and a conclusion part, the condition part consisting of conditions for the technical equipment and the conclusion part containing measures to be taken if the conditions are fulfilled, and the means for storing the knowledge base comprising means to divide the knowledge base into a base block and other blocks, the base block containing information common to all the blocks and information about linking the blocks; and

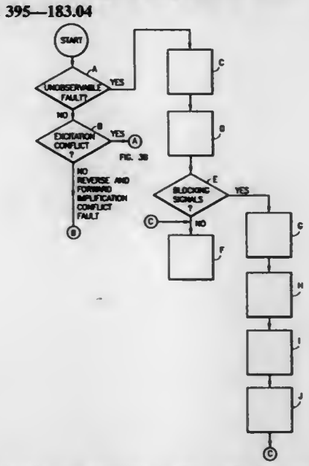
initiating means for choosing the base block as a current block arranged to display a starting view, the initiating means being arranged to select a new block, whereupon at least one of a new starting view is sbown, a new view is selected within the current block, and a node is selected in a current view, the initiating means selecting at least one of a text node, a picture node and a rule node, wherein selected rule nodes obtain at least one of measurements and information from a user and wherein the selected rule nodes provide instructions about what measures are to be taken, further measurements and information being obtained and further instructions being provided by means of the initiating means until a conclusion can be drawn.

5,548,715

ANALYSIS OF UNTESTABLE FAULTS USING DISCRETE NODE SETS

William B. Maloney, Nichols; Robert M. Mesnard, Vestal, and Joseph M. Swenton, Owego, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 10, 1994, Ser. No. 258,166
Int. Cl.[6] G01R *31/28*
U.S. Cl. 395—183.04 **3 Claims**



1. A method for analyzing a fault within a model of a logic circuit, comprising the computer executed steps of:

building a fault model of the circuit model;

for each modelled fault that is determined to be untestable,

building a discrete node set comprised of nodes of the circuit model that are relevant to the untestable fault; and

outputting the discrete node set for analysis;

wherein for a fault classified as an unobservable fault, the step of building the discrete node set includes the steps of:

identifying all terminal nodes associated with the unobservable fault;

starting at the site of the unobservable fault, adding to the discrete node set all nodes occurring on paths to the identified terminal nodes;

determining if any terminal nodes exist due to blocking signals and, if no, executing the step of outputting the discrete node set for analysis, else, if yes,

identifying all origins for the blocking signals;

starting at the terminal nodes, adding to the discrete node set all nodes occurring on paths from the identified blocking signal origins;

starting at the determined blocking signal origins that are circuit objectives required for exciting the unobservable fault, adding to the discrete node set all nodes, occurring on paths to the site of the unobservable fault, that contain signals required for exciting the unobservable fault;

and starting at blocking signal origins that are circuit objectives required for propagating the unobservable fault, adding to the discrete node set all nodes that occur on paths to the fault propagation paths and which contain signals required for fault propagation; and

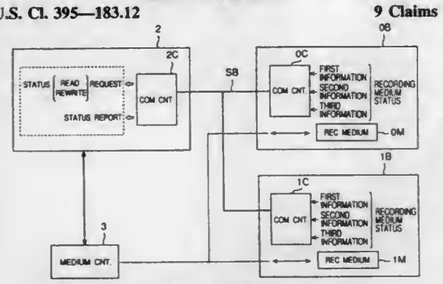
executing the step of outputting the discrete node set for analysis.

5,548,716

RECORDING MEDIUM DUALIZING SYSTEM

Takumi Maruyama, and Noriyuki Yokoshi, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Aug. 1, 1994, Ser. No. 283,780
Claims priority, application Japan, Dec. 17, 1993, 5-318359
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—183.12 **9 Claims**



1. A recording medium dualization system comprising:

medium boards each including a recording medium and a communication controller, one medium board belonging to a master system and another medium board belonging to a slave system;

at least one main controller including a communication controller connected to said communication controllers of said medium boards;

a medium controller for transferring operation information between the recording mediums and said main controller; and

at least one power supplying unit for supplying power to the medium boards, the main controller and the medium controller

said main controller instructing, when power supplied from said at least one power supplying unit is turned on, said communication controller thereof to read first information indicating whether or not the recording medium of any of said medium boards can be used, from the communication controllers included in the medium boards, to read second information indicating which one of the recording mediums is or was used in an active system, and to read third information indicating whether or not the power for the recording medium is turned on, whereupon said main controller designates the master system as the active system, sets said first through third information in the active system, and executes a mirroring process such that said first and third information of the slave system is made to be identical to corresponding first and third information in the master system,

the slave system being switched to become the active system and said first through third information being set in the active system when it is determined by said main controller, on the basis of the first and second information, that the recording medium of the master system is removed therefrom, and

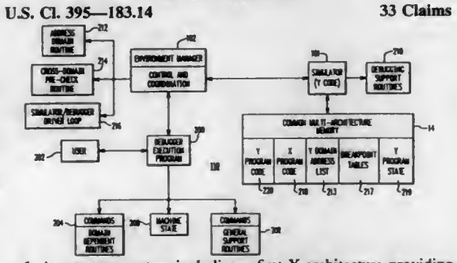
said first through third information of the slave system being mirrored to the master system when it is determined by said main controller, on the basis of said third information, that the recording medium of the master system is mounted therein.

5,548,717

SOFTWARE DEBUGGING SYSTEM AND METHOD ESPECIALLY ADAPTED FOR CODE DEBUGGING WITHIN A MULTI-ARCHITECTURE ENVIRONMENT

James A. Wooldridge, Amherst; Ronald F. Brender, and Henry N. Grieb, III, both of Hollis, all of N.H., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 665,888, Mar. 7, 1991, abandoned.
This application Feb. 14, 1995, Ser. No. 389,089
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—183.14 **33 Claims**



1. A computer system including a first X architecture providing an X domain associated with X code for executing and debugging code associated with both said X domain and a Y domain, the system comprising:

means for receiving calls for debugging code in a selected domain, said selected domain being one of said X domain or said Y domain, said calls being received from said X domain and said Y domain;

a simulator which simulates at least one second Y architecture providing said Y domain associated with Y code;

a memory system for storing said X code and said Y code;

means, responsive to the call receiving means, for initiating debugging in said selected domain;

means, responsive to said initiating means, for generating commands, said commands controlling debugging of said code in said X domain and said Y domain; and

means, responsive to said command generating means, for performing said commands in said computer system in order to control debugging of said code.

5,548,718

METHOD AND SYSTEM FOR DETERMINING SOFTWARE RELIABILITY

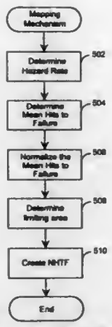
Matthew R. Siegel, Seattle, and John I. Ferrell, Bellevue, both of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Jan. 7, 1994, Ser. No. 178,930
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—183.14 **13 Claims**

1. In a computer system having a processor, a memory containing a software product, and a storage device, the software product having areas, wherein each area is a grouping of commands recognized by the software product, a method of creating a software reliability metric for the software product comprising the steps of:

executing the software product on the processor at least once by testers;

for each execution of the software product,



storing tester data generated by the testers into the storage device wherein the tester data contains a number of times an area is used; and

storing a number of failures per area of the software product into the storage device;

storing an operational profile for a group of users into the storage device wherein the operational profile indicates a frequency of use for each area of the software product by the group of users;

calculating a software reliability metric that weighs the stored tester data to reflect the stored operational profile and the stored number of failures per area;

determining whether the software product is reliable by examining the software readability metric; and

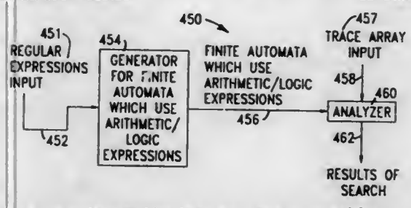
testing the software product to reveal deficiencies therein when it is determined that the software product is unreliable.

5,548,719

SYSTEM AND METHOD FOR ANALYZING LARGE LOGIC TRACE ARRAY

Charles J. DeVane, Maynard, and Arthur J. Beaverson, Milford, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 781,987, Oct. 24, 1991, abandoned.
This application Apr. 14, 1995, Ser. No. 422,742
Int. Cl.[6] G01R *31/28*; G06F *11/00*
U.S. Cl. 395—183.15 **12 Claims**



1. A system for searching large trace arrays, comprising:

first input means for receiving regular expressions, with the regular expressions defining desired patterns to be searched for in a large trace array;

generator means connected to the input means for receiving the regular expression input at the input means and generating finite automata that use arithmetic/logic expressions;

second input means for receiving the large trace array; and

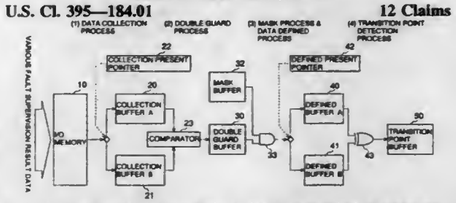
analyzer means that is connected to the second input means and an output of the generator means for searching for predetermined patterns of data in the trace array based on the finite automata which use arithmetic/logic expressions.

5,548,720

FAULT SUPERVISION METHOD FOR TRANSMISSION APPARATUS

Yasuo Fujii, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

PCT No. PCT/JP93/00649, § 371 Date Jan. 19, 1994, § 102(e) Date Jan. 19, 1994, PCT Pub. No. WO93/23808, PCT Pub. Date Nov. 25, 1993
PCT Filed May 18, 1993, Ser. No. 182,189
Claims priority, application Japan, May 19, 1992, 4-125177
Int. Cl.[6] G06F *11/34;15/40*
U.S. Cl. 395—184.01 **12 Claims**



1. A fault supervision method for a transmission apparatus, notifying a change in a fault/recovery state based on fault supervision result data indicating a plurality of fault supervision items to be supervised, set in a memory of the transmission apparatus, said fault supervision method comprising the steps of:

(a) alternately setting the fault supervision result data at an arbitrary point in time and the fault supervision result data at a next point in time from the memory into a first collection buffer and a second collection buffer;

(b) setting present fault supervision result data into a double guard buffer only when the previous and present fault supervision result data set in the first and second collection buffers match for all fault supervision items of said plurality of fault supervision items; and

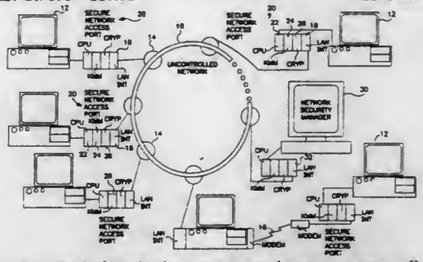
(c) setting data indicating the fault supervision items for which the fault/recovery state changed into a transition point buffer based on the data set in the double guard buffer.

5,548,721

METHOD OF CONDUCTING SECURE OPERATIONS ON AN UNCONTROLLED NETWORK

David L. Denslow, Rochester, N.Y., assignor to Harris Corporation, Melbourne, Fla.

Filed Apr. 28, 1994, Ser. No. 234,947
Int. Cl.[6] G06F *11/34*
U.S. Cl. 395—187.01 **11 Claims**



1. A method of conducting secure operations on an uncontrolled network of computer workstations that has a network manager for authorizing conduct of secure operations on the network and plural secure computer workstations, each for communicating with the network manager and with other workstations in the network, the method comprising the steps of:

establishing a personal identifier for a first authorized network user;

providing the first authorized user with a cryptographic ignition key (CIK) card that contains an electronically readable, randomly selected portion of an authorization record, wherein the

authorization record is a combination of the personal identifier and a system key created by a first workstation;

providing each of the secure workstations with a secure network access port (SNAP) that includes,

a reader for reading the CIK card, and

means for storing the portion of the system key not stored on the CIK card and for storing a workstation-unique initialization key for enabling encrypted communication with the network manager but not with other secure workstations in the network;

storing the complete authorization record and system key for the first authorized user in the network manager;

requesting access to the network from the first workstation by providing the first authorized user's personal identifier to the SNAP of the first workstation and reading the first authorized user's CIK card at the reader of the first workstation;

evaluating at the SNAP of the first workstation whether the received personal identifier and portions of the system key from the CIK card and from the SNAP identify the first authorized user, and if the first authorized user is identified,

providing the authorization record and system key of the first authorized user to the network manager in an encrypted communication from the first workstation using the first workstation's initialization key for validation that the first authorized user is to be given access to the network; and

in the event the first authorized user is validated by the network manager, providing an operational key from the network manager to the SNAP of the first workstation using the first workstation's initialization key, wherein the operational key enables secure operations from the first workstation on the network.

5,548,722

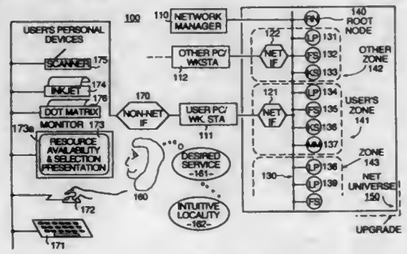
USER-CENTRIC SYSTEM FOR CHOOSING NETWORKED SERVICES

Afshin Jalalian, Cupretino, and Christopher R. Bingham, Sunnyvale, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Oct. 14, 1993, Ser. No. 137,280

Int. Cl.[6] H01J *13/00*

U.S. Cl. 395—200.1 **31 Claims**



1. An interconnect system for creating logical interconnections between a user's computer and service-providing devices disposed on a network to which the user's computer is coupled, where said network has a first given plurality of service-providing devices disposed thereon and where the computer's user is apt to utilize a first subset of said first given plurality of service-providing devices more frequently than a second subset of said first given plurality of service-providing devices, said system comprising:

a service-category cache for storing a first plurality of service-type definitions corresponding to said first subset of the service-providing devices of the network, where each service-type definition of said first plurality of service-type definitions in the service-category cache defines a type of service that is provided on the network by the first subset of service-providing devices; and

a plurality of device-choosing caches each corresponding to a service-type definition found in the service-category cache;

wherein for each of said stored service-type definitions, the service-category cache further includes a corresponding pointer for linking the service-type definition to the corresponding device-choosing cache; and

wherein one or more of the device-choosing caches contains a machine-recognizable alias defining a location on the network where there is available a service-providing device that provides a service defined by the corresponding service-type definition.

5,548,723

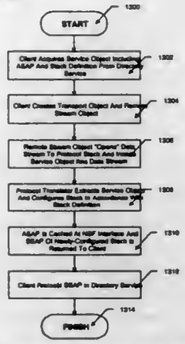
OBJECT-ORIENTED NETWORK PROTOCOL CONFIGURATION SYSTEM UTILIZING A DYNAMICALLY CONFIGURABLE PROTOCOL STACK

Christopher E. Pettus, San Francisco, Calif., assignor to Taligent, Inc., Cupertino, Calif.

Filed Dec. 17, 1993, Ser. No. 169,863

Int. Cl.[6] G06F *15/16*

U.S. Cl. 395—200.01 **4 Claims**



3. A method for connecting a client node and a server node via a network so that the client node may request services from the server node via a remote procedure call over the network, the network having a predefined network protocol characterized by a plurality of protocol layers and each node having at least one processor with an attached memory wherein the client node includes a directory service containing a plurality of service objects, each corresponding to a remote service and each including a reference to a stack definition, the method comprising the steps of:

(a) the client node determining a protocol definition of the network protocol by accessing the directory service to obtain a service object and thereby obtaining a reference to a stack definition as the protocol definition;

(b) defining a plurality of layer objects in the client node memory, each layer object corresponding to one of the protocol layers;

(c) configuring the layer objects into a reconfigurable protocol stack indicative of the network protocol by instantiating a plurality of layer objects to form a protocol stack corresponding to the protocol definition, including

providing a session service access point for referencing the protocol stack; and

storing the session service access point in the directory service so that subsequent accesses of the corresponding remote service may use the session service access point to access the corresponding protocol stack; and

(d) the client node issuing a remote procedure call to the server node over the network under the control of the protocol stack to request a service from the server node.

5,548,724

FILE SERVER SYSTEM AND FILE ACCESS CONTROL METHOD OF THE SAME

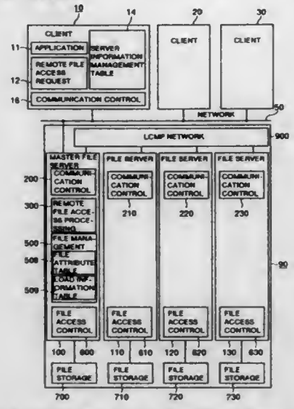
Mitsuru Akizawa, Hachioji; Hirofumi Yamashita, Yokohama; Hisamitsu Kawaguchi, Sagamihara; Katsumi Tada; Kanji Kato, both of Yokohama; Akira Kito, Ebina, and Hidenori Yamada, Hadano, all of, Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Computer Engineering Co., Ltd., Kanagawa, both of, Japan

Filed Mar. 21, 1994, Ser. No. 216,047

Claims priority, application Japan, Mar. 22, 1993, 5-061602

Int. Cl.[6] H01J *13/00*

U.S. Cl. 395—200.03 **21 Claims**



1. A file server system having a plurality of file servers connected in parallel on a network and sharing files placed distributedly in said file servers among a plurality of client computers, comprising in each of said plurality of file servers;

a file storage means for storing files;

a first communication control means for controlling communication with another file server through said network; and

a file access control means for receiving a file access request and making file access to said file storage means; and further comprising in a specific file server among said plurality of file servers;

a second communication control means for controlling communication with said client computers;

a remote file access processing means for controlling communication protocol of a file access request issued from said client computers;

a load information monitoring means for measuring respective loads of said plurality of file servers; and

a file access request distributing means for referring to the loads measured by said load information monitoring means so as to select a file server making file access from said plurality of file servers, issuing a file access request to the file access control means of its own file server when the selected file server is its own file server, and issuing a file access request to the file access control means of the selected file server through said first communication control means when the selected file server is another file server.

5,548,725

SYSTEM FOR TRANSMITTING COMMAND AND/OR DATA IN A SINGLE PACKET AND AUTOMATICALLY REPORTING STATUS A PREDETERMINED TIME AFTER RECEIVING A COMMAND

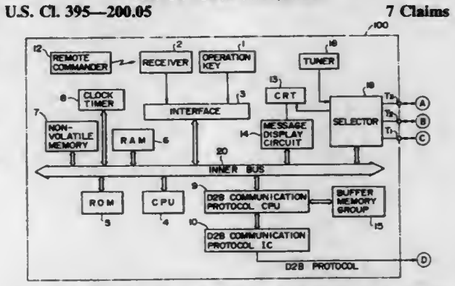
Shigeo Tanaka, Tokyo; Hiroshi Yamazaki, Kanagawa; Noriko Kotabe, Chiba; Koichi Sugiyama, Kanagwa; Makoto Sato, Kanagawa; Akira Katsuyama, Kanagawa; Yoshio Osakabe, Kanagawa, and Yasuo Kusagaya, Tokyo, all of, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 21, 1993, Ser. No. 170,797

Claims priority, application Japan, Dec. 28, 1992, 4-360171

Int. Cl.[6] G06F *11/00;11/26*

U.S. Cl. 395—200.05 **7 Claims**



1. An audio visual control apparatus for communication between a plurality of devices, comprising:

a master device having first communication processing means for processing command and data to be transmitted by said master device;

at least one slave device having second communication processing means for processing command and data received by said slave device and for generating a status report to be transmitted by said slave device to said master device a predetermined time after said slave device receives a command from said master device, said status report describing a status of a processing of said command from said master device by said second communication processing means, and said slave device being connected to said master device by way of a digital control bus line between said first communication processing means and said second communication processing means;

wherein said second communication processing means does not generate a status report if said processing of said command from said master device is completed by said second communication processing means prior to said predetermined time after said command is received;

first transmission means for transmitting command and/or data to be transmitted by said master device to said slave device, each command transmitted from said master device to said slave device being in a single packet; and

second transmission means for transmitting said status report from said slave device to said master device through said digital control bus line.

5,548,726

SYSTEM FOR ACTIVATING NEW SERVICE IN CLIENT SERVER NETWORK BY RECONFIGURING THE MULTILAYER NETWORK PROTOCOL STACK DYNAMICALLY WITHIN THE SERVER NODE

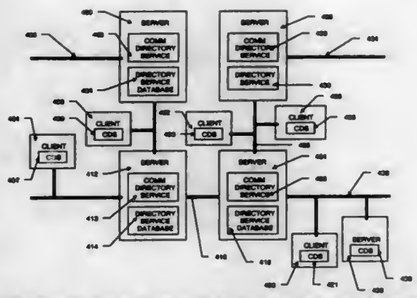
Christopher E. Pettus, San Francisco, Calif., assignor to Taligeni, Inc., Cupertino, Calif.

Filed Dec. 17, 1993, Ser. No. 169,867

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.09 **19 Claims**

1. A method for activating a new service in a client-server network system having a plurality of communications links, a server node with a memory therein connectable to each of the plurality of communications links by a multilayer dynamically



reconfigurable network protocol stack, a service program in the server node memory, a communications directory service program in the server node memory and a networking service program in the server node memory, the method comprising the steps of:

(a) storing a plurality of stack definitions in the server node memory wherein each of the plurality of stack definitions corresponds to one of the plurality of communication links and the each stack definition includes a set of layer definitions for controlling the processing of data in each layer of the multilayer network protocol stack from a transport layer through a physical layer and the interactions between layers;

(b) storing in the server node memory service object class information including information for defining a data structure for holding a reference to one of the plurality of stack definitions and logic which is responsive to type and quality of service information for inserting a reference to at least one of the plurality of stack definitions into the data structure and for constructing a session layer of the multilayer network protocol stack;

(c) creating a service object from the service object class information by passing in a type of service to the communications directory service and executing the logic to insert a reference to a stack definition and construct a session layer;

(d) sending the service object to the networking service program; and

(e) using the reference to the stack definition and the session layer in the service object to reconfigure the multilayer network protocol stack.

5,548,727

SYSTEM FOR SELECTIVELY USING DEFAULT PROTOCOL WITHOUT NEGOTIATION FOR FIRST REGULAR COMMUNICATION AND APPROPRIATE PROTOCOL AFTER RECEIVING PROTOCOL INFORMATION EMBEDDED IN THE ESTABLISHED COMMUNICATION

Patrick Meehan, Leopardstown, Ireland, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 19, 1993, Ser. No. 95,575

Claims priority, application United Kingdom, Nov. 17, 1992, 9224076

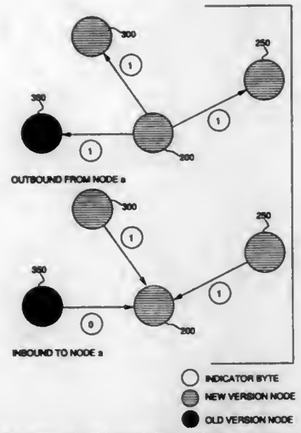
Int. Cl.[6] G06F *13/14;* **H04L** *12/00*

U.S. Cl. 395—200.13 **5 Claims**

1. A computer network having a plurality of nodes which communicates with each other over a network, a communication involving the transfer of data from a transmitting node to a receiving node, the plurality of nodes including a set of nodes programmed to communicate via a first or a second protocol, the plurality of nodes further including at least one node programmed to communicate via said first protocol but not said second protocol, and each node in said set comprising:

a storage device for storing states of the plurality of nodes;

each node in said set being arranged that, when acting as a transmitting node, accessing the storage device for determining the state of the receiving node;



(a) if the state of said receiving node in the storage device is not known, or the state indicates that the receiving node is said at least one node, the communication protocol is the first protocol;

(b) if the state of the receiving node is a member of said set, the communication protocol is the second protocol;

indication means, operative when the node is acting as a transmitting node, for producing an output signal indicating state of the transmitting node, and for including the output signal in the data being communicated to the receiving node selected from said plurality of nodes; and

receiving means, operative when the node is acting as a receiving node, for extracting the output signal from the data being communicated, and for storing in said storage device the state of said transmitting node as indicated by said output signal, the node retaining details of the state of the transmitting node thereby enabling the node having said receiving means to use the stored state in subsequent communications with said transmitting node, whereby the output signal being ignored by the receiving node if the receiving node is said at least one node.

5,548,728

SYSTEM FOR REDUCING BUS CONTENTION USING COUNTER OF OUTSTANDING ACKNOWLEDGEMENT IN SENDING PROCESSOR AND ISSUING OF ACKNOWLEDGEMENT SIGNAL BY RECEIVING PROCESSOR TO INDICATE AVAILABLE SPACE IN SHARED MEMORY

Daniel A. Danknick, Orange, Calif., assignor to Canon Information Systems, Inc., Costa Mesa, Calif.

Filed Nov. 4, 1994, Ser. No. 336,641

Int. Cl.[6] G06F *12/00;13/00*

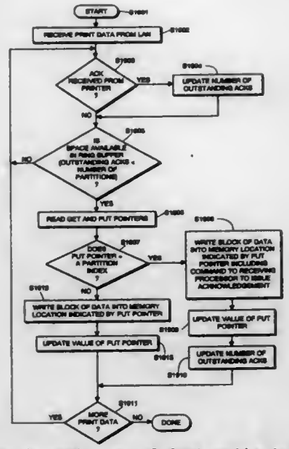
U.S. Cl. 395—200.14 **18 Claims**

1. A data transfer method in which a sending processor sends data to a receiving processor via a shared memory using a put pointer stored in the shared memory, the value of which indicates a next location in the shared memory to which the sending processor is to write, and a get pointer also stored in shared memory, the value of which indicates a next location in the shared memory from which the receiving processor is to read, said data transfer method comprising the steps of:

executing a data-sending process with the sending processor, the data-sending process including the steps of

(1) reading a counter of outstanding acknowledgements, the counter being stored in local memory of the sending processor, so as to determine whether there is available space in shared memory,

(2) if there is available space, reading the get and put pointers from shared memory and determining whether the put



pointer is equal to one of plural partition indices which correspond to a number of partitions into which the shared memory is divided,

(3) in a case where the put pointer is equal to one of the plural predetermined partition indices, the data-sending process writing a command requesting the receiving processor to issue an acknowledgement over a signal line that is independent of and external to the shared memory, and updating the counter of outstanding acknowledgements in said local memory of said sending processor by adding one,

(4) writing a block of data into the shared memory at a location of the put pointer, and

(5) updating the put pointer;

suspending the data-sending process in a case where the counter of outstanding acknowledgements indicates that there is insufficient space available in the shared memory;

receiving at the sending processor an acknowledgement over the signal line from the receiving processor, and updating the counter of outstanding acknowledgements by reducing the counter by one; and

re-executing the data-sending process after the receiving processor issues the acknowledgement.

5,548,729

SYSTEM FOR AUTOMATICALLY GENERATING AND SAVING CONTROL INFORMATION IN A SERVER IF REQUESTED BY A CLIENT AT SYSTEM INITIALIZATION FOR OPERATING IN A NETWORK

Takashi Akiyoshi, Osaka, and Tetsuo Matsuse, Ikoma-gun, both of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 18, 1992, Ser. No. 900,906

Claims priority, application Japan, Jun. 21, 1991, 3-150024

Int. Cl.[6] G06F *13/00;13/14*

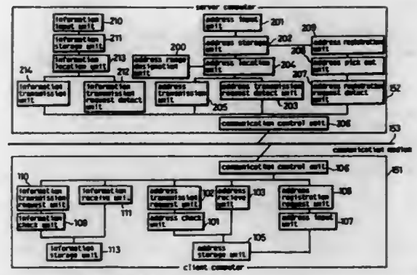
U.S. Cl. 395—200.16 **19 Claims**

1. An apparatus for setting control information in a client computer to enable the initialization and operation of the client computer in a network of multiple computers, the apparatus comprising:

client storage means in the client computer for storing the control information in the client computer for use when stored and when the client computer system is later booted;

client storage check means in the client computer for checking if the control information is already stored in the client storage means when the client computer is booted;

client request means in the client computer for automatically requesting a server computer connected over the network to transmit the control information when the client storage



means is judged not to stored the control information means by the client storage check means;

server storage means in the server computer for storing the control information for transmission to the client computer upon request;

server storage check means in the server computer for checking if the control information is already stored in the server storage means when the client request means requests the control information;

server generation means in the server computer for automatically generating the control information for transmission to the client computer upon request if the server storage check means determines that the server storage means does not already have the control information;

server storage update means for automatically storing the control information generated by the server generation means in the server storage means for later use;

server transmission means for transmitting the control information that was obtained from the server storage means or the server generation means to the client computer;

client receive means in the client computer for receiving the control information transmitted from the server computer; and

client storage update means for automatically storing the control information received from the server computer in the client storage means for both immediate use and later use,

whereby control information for allowing the client computer to operate in the network is automatically requested by the client computer, but only if not already available in the client computer, is automatically generated by the server computer, but only if not already available in the server computer, is automatically provided to the client computer, and is automatically stored in the client storage means for immediate and later use.

5,548,730

INTELLIGENT BUS BRIDGE FOR INPUT/OUTPUT SUBSYSTEMS IN A COMPUTER SYSTEM

Bruce Young, Tigard, and Rick Coulson, Portland, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Sep. 20, 1994, Ser. No. 309,106

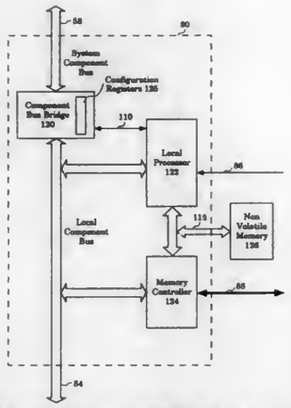
Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—280 **8 Claims**

1. An intelligent bus bridge contained in an integrated circuit chip, comprising:

a local processor coupled for communication over a local component bus wherein the local processor senses a mode control input to the intelligent bus bridge that indicates whether the intelligent bus bridge functions in a local master mode by configuring bus agents coupled to the local component bus or functions in a host master mode wherein the bus agents coupled to the local component bus are configured via the system component bus;

a local memory controller that enables access to a local memory from the local component bus wherein the local memory controller includes a port that enables access to the local



memory from the local component bus and a port that enables access to the local memory from a local processor bus of the local processor; and

a component bus bridge that propagates accesses between the local component bus and a system component bus wherein the component bus bridge enables a hierarchical configuration space access mechanism from the system component bus to the local component bus, the component bus bridge containing configuration registers that the local processor writes to, the configuration registers then enabling the hierarchical configuration space access mechanism if the mode control input indicates the host master mode.

5,548,731

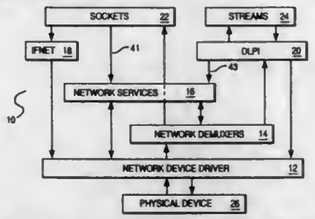
SYSTEM FOR FORWARDING DATA PACKETS WITH DIFFERENT FORMATS TO DIFFERENT SOFTWARE ENTITLES RESPECTIVELY BASED UPON MATCH BETWEEN PORTION OF DATA PACKET AND FILTER

Kyusun Chang; Lon E. Hall; Gregory S. Joyce; Paul D. Mazzurana, all of Austin, and Lance W. Russell, Fredericksburg, all of Tex., assignors to International Business Machines Coporation, Armonk, N.Y.

Continuation of Ser. No. 4,145, Jan. 13, 1993, abandoned. This application Aug. 17, 1995, Ser. No. 516,112

Int. Cl.[6] G06F *13/00;13/14;12/02*

U.S. Cl. 395—280 **2 Claims**



1. A computer implemented method for exchanging data packets having end user data and protocol encapsulation data, between a plurality of software entities that send and receive the data packets in diverse formats, and at least one device of a particular device type, wherein the method is independent of operating system type and device type, comprising the steps of:

(a) registering the device and a demuxer corresponding to the device with network services;

(b) allocating use of the device by a first software entity with the network services;

(c) returning by the network services a handle to the first software entity defining a path from the first software entity to the device, thereby defining the path for directly transmitting at least one data packet from the first software entity to the device;

(d) registering by the first software entity a filter with the demuxer, the filter for identifying data packets belonging to the first software entity and received by the demuxer from the device;

(e) repeating steps (a) through (d) for each of the plurality of software entities;

(f) receiving at least one data packet by the demuxer from the device, whereby the demuxer forwards the received data packet from the device to the appropriate software entity without modifying the data packet based on a match of a portion of the data packet with the filter; and

wherein the device comprises an adapter and a corresponding device driver;

wherein the adapter comprises an ethernet, token ring, FDDI, FSC, SCSI, or ATM adapter; and

wherein each of the software entities comprise TCP/IP, IPX, SPX, NetBios, OSI, SNA, or SCSI formats.

5,548,732

BUS ADAPTER FOR TRANSFERRING SIGNALS BETWEEN A MASTER UNIT AND A SLAVE UNIT, AND SYSTEM INCLUDING THE BUS ADAPTER

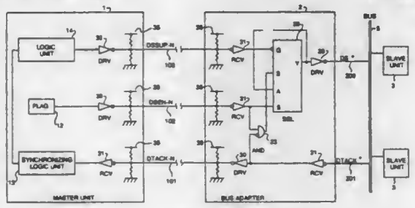
Kouich Hoashi; Akinori Aoki, and Isamu Suzuki, all of Hadano, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 19, 1993, Ser. No. 5,274

Claims priority, application Japan, Jan. 16, 1992, 4-005762

Int. Cl.[6] G06F *13/00;13/42*

U.S. Cl. 395—285 **26 Claims**



1. A computer system, comprising:

a master unit;

a bus adapter;

an expansion bus connected directly between said master unit and said bus adapter;

a slave unit; and

a main bus connecting said slave unit with said bus adapter;

said master unit having means for sending a data strobe enable signal over said expansion bus to said bus adapter;

said bus adapter having means responsive to receipt of a first data acknowledgment signal from said slave unit over the main bus for sending a second data acknowledgment signal over the expansion bus to the master unit;

said master unit having means responsive to said second data acknowledgment signal received from said bus adapter for sending a data strobe suppression signal over said expansion bus to said bus adapter; and

said bus adapter having means responsive to the data strobe enable signal from said master unit and at least one of the first data acknowledgment signal from said slave unit and the data strobe suppression signal from said master unit for generating and transmitting a data strobe over said main bus to said slave unit.

5,548,733

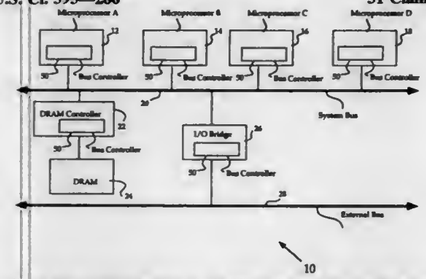
METHOD AND APPARATUS FOR DYNAMICALLY CONTROLLING THE CURRENT MAXIMUM DEPTH OF A PIPE LINED COMPUTER BUS SYSTEM

Nitin Sarangdhar; Michael Rhodehamel, and Matthew Fisch, all of Beaverton, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Mar. 1, 1994, Ser. No. 206,093

Int. Cl.[6] G06F *13/42;13/00*

U.S. Cl. 395—286 **31 Claims**



21. A bus system having a plurality of interconnected agents, said bus system comprising:

a bus for transmitting pipelined bus transactions up to a current maximum pipeline depth; and

means within each of the plurality of agents connected to the bus for unilaterally and dynamically changing the current maximum pipeline depth, including within each of said agents

transmitter means for transmitting a signal through said bus to all other agents on said bus for restricting further bus transactions; and

receiver means for receiving signals from said other agents through the bus indicating that one of said other agents has restricted further transactions on said bus.

5,548,734

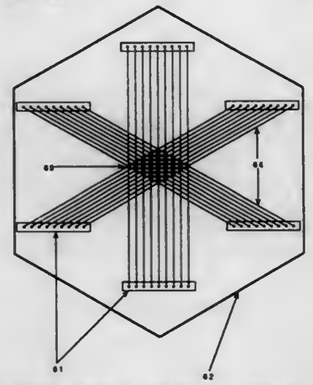
EQUAL LENGTH SYMMETRIC COMPUTER BUS TOPOLOGY

Jerzy Kolinski, Portland; John Sprietsma, Hillsboro; Stephen Pawlowski, Beaverton, and Henry Schaechterle, Hillsboro, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 38,235, Mar. 26, 1993, abandoned. This application Jan. 4, 1995, Ser. No. 368,716

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—306 **20 Claims**



1. In a computer system, a computer bus system for transmitting a plurality of bus signals, said computer bus system comprising:

a single multi-layered printed circuit board;

a plurality of physically parallel bus connectors on said single multi-layered printed circuit board, each of said physically parallel bus connectors for transmitting and receiving said plurality of bus signals;

a plurality of bus signal paths on said single multi-layered printed circuit board, each bus signal path carrying one of said bus signals, each of said bus signal paths comprising,

a passive central junction point; and

a plurality of transmission paths, said plurality of transmission paths extending from said passive central junction point to each of said physically parallel bus connectors such that every bus connector is coupled to said passive central junction point, each of said transmission paths having an equal length.

5,548,735

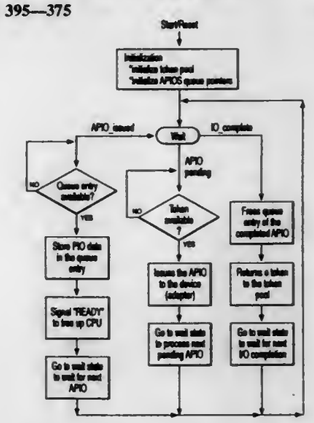
SYSTEM AND METHOD FOR ASYNCHRONOUSLY PROCESSING STORE INSTRUCTIONS TO I/O SPACE

Wen-Tzer T. Chen; Steven M. Thurber, and Gary Y. Tsao, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 15, 1993, Ser. No. 122,040

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—375 **5 Claims**



1. An interface system for coupling a main processor to multiple bus controllers, said interface system comprising:

an I/O queue for receiving and storing multiple I/O storage instructions received from said main processor;

means for releasing said main processor for resumption of execution of program instructions in response to storage of an I/O storage instruction within said I/O queue;

means for uniquely relating each I/O storage instruction within said I/O queue to a particular bus controller utilizing a token pool; and

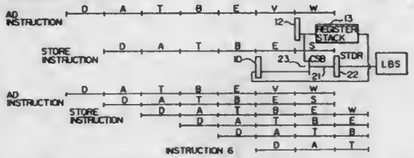
means for initiating asychronous issuance of an I/O storage instruction from said I/O queue to said particular bus controller wherein said main processor is not delayed awaiting completion of said I/O storage instruction.

5,548,736

METHOD AND APPARATUS OVERCOMING DELAY INTRODUCED BY INSTRUCTION INTERLOCKING IN PIPELINED INSTRUCTION EXECUTION

Takeo Asakawa, and Aiichiro Inoue, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 261,236, Jun. 14, 1994, abandoned, which is a continuation of Ser. No. 851,557, Mar. 13, 1992, abandoned. This application Dec. 23, 1994, Ser. No. 364,384
Claims priority, application Japan, Mar. 14, 1991, 3-049730
Int. Cl.[6] G06F *9/30;9/46*
U.S. Cl. 395—375 **3 Claims**



1. A pipeline operation control system executing a plurality of instructions, comprising first and second instructions, by a pipeline process, each of said instructions having an address and a sequence of a plurality of states including a final state and at least one calculating state before the final state, when said first instruction includes at least two calculating states before the final state, a second instruction following said first instruction includes a special state as the final state of said second instruction, said special state does not conflict with the final state of said first instruction and the special state of said second instruction are carried out at the same time, said pipeline operation control system receiving an interrupt and comprising:

a program status word instruction address register storing one of the address of said second instruction after the execution of said second instruction, unless the interrupt is received after the execution of said first instruction, and the address of said first instruction when the interrupt is received after the execution of said first instruction;

a first register storing one of an instruction length code of said first instruction when said first instruction has at least two calculating states immediately before the final state, and an instruction length code of said second instruction when said second instruction does not have said special state;

a second register storing an instruction length of said second instruction only when said second instruction has said special state;

first adding means for adding the contents in said first register and the contents in said second register;

selecting means for selecting one of the output of said first register when said second instruction does not have said special state, and the output of said adding means when said second instruction has said special state; and

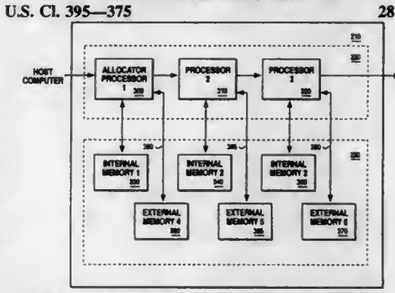
second adding means for adding the output of said selecting means and the output of said program status word instruction address register.

5,548,737

DYNAMIC LOAD BALANCING FOR A MULTIPROCESSOR PIPELINE BY SORTING INSTRUCTIONS BASED ON PREDETERMINED EXECUTION TIME

Jimmie D. Edrington, Georgetown; Mark A. Einkauf, Leander; Allen P. Jensen, and Michael T. Vanover, both of Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 184,894, Jan. 21, 1994, abandoned, which is a continuation of Ser. No. 727,790, Jul. 10, 1991, abandoned. This application Apr. 11, 1995, Ser. No. 421,632
Int. Cl.[6] G06F *9/445;* **G06T** *1/20*
U.S. Cl. 395—375 **28 Claims**



1. An apparatus for processing high level instructions comprising:

a) a plurality of processing units including at least a first processsing unit and a second processing unit:

b) means for generating a plurality of instructions to perform a high level instruction;

c) means for predetermining a length of time for processing each said generated instruction; and

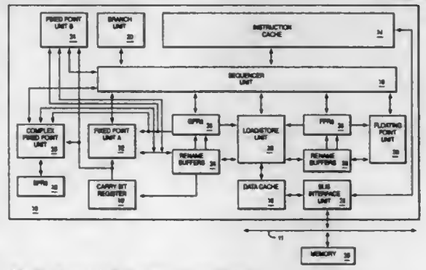
means, coupled to the predetermining means, for dynamically organizing said generated instructions into at least a first group and a second group based on the predetermined length of time for processing each instruction, each instruction in said first group to be processed by said first processing unit prior to any instructions of said second group being processed by said second processing unit, each group including at least one instruction to be processed by one of said plurality of processing units.

5,548,738

SYSTEM AND METHOD FOR PROCESSING AN INSTRUCTION IN A PROCESSING SYSTEM

Seungyoon P. Song, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 221,329, Mar. 31, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 483,905
Int. Cl.[6] G06F *9/38*
U.S. Cl. 395—375 **55 Claims**



46. A processing system, comprising:

execution circuitry for executing a sequence of instructions;

dispatch circuitry coupled to said execution circuitry for:

dispatching said sequence of instructions to said execution circuitry for execution; and

for each said instruction, prior to said execution circuitry finishing execution of said instruction,

outputting a first signal if said instruction is for execution by said execution circuitry in an imprecise nonrecoverable exception mode, and

outputting a second signal in response to determining an exception is an impossible consequence of said execution circuitry executing said instruction; and

said execution circuitry being operable to:

for each said instruction, after said execution circuitry finishing execution of said instruction, output a third signal if an exception does not actually result from said execution circuitry executing said instruction; and

initiate execution of a particular instruction in response to said first, second and third signals, independent of whether said execution circuitry has finished executing each preceding instruction which precedes said particular instruction in said sequence, only if at least one of the following conditions (a), (b) and (c) is true for each said preceding instruction:

(a) said preceding instruction is for execution by said execution circuitry in said imprecise nonrecoverable exception mode;

(b) an exception is an impossible consequence of said execution circuitry executing said preceding instruction; and

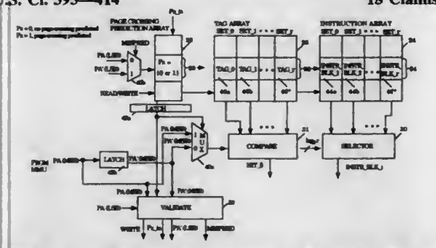
(c) an exception does not actually result from said execution circuitry executing said preceding instruction.

5,548,739

METHOD AND APPARATUS FOR RAPIDLY RETRIEVING DATA FROM A PHYSICALLY ADDRESSED DATA STORAGE STRUCTURE USING ADDRESS PAGE CROSSING PREDICTIVE ANNOTATIONS

Robert Yung, Fremont, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Nov. 4, 1993, Ser. No. 148,685
Int. Cl.[6] G06F *12/10;12/02;12/06;13/28*
U.S. Cl. 395—414 **18 Claims**



10. In a computer system comprising a first storage unit for storing a data storage structure having a plurality of data vectors, said data storage structure being physically addressed with physical addresses of a physical address space partitioned into a plurality of address pages, and each of said plurality of data vectors having a plurality of data blocks, wherein said first storage unit outputs a currently addressed one of said data vectors during a current access in response to a first portion of a current physical address of the current access, an apparatus for rapidly retrieving data from said physically addressed data storage structure, said apparatus comprising:

a) a second storage unit for storing a plurality of description vectors corresponding to plurality of in a description storage structure, the description storage structure being physically addressed with said physical addresses also, and each of said plurality of description vectors comprising a plurality of descriptors corresponding to said plurality of data blocks, wherein said second storage unit outputs a corresponding one of said plurality of descriptor vectors concurrently with the outputting of the currently addressed data vector by said first storage unit in response to the first portion of the current physical address;

b) a third storage unit for storing a plurality of predictive annotations corresponding to said plurality of data vectors of a predictive annotation storage structure corresponding to said data storage structure, said predictive annotation storage structure being physically addressed with said physical addresses also, and each of said plurality of predictive annotations predicting whether a next access will cross into a new address page, wherein said third storage unit outputs a corresponding one of said plurality of predictive annotations concurrently with the outputting of the currently addressed data vector output by said first storage unit in response to the first portion of the current physical address; and

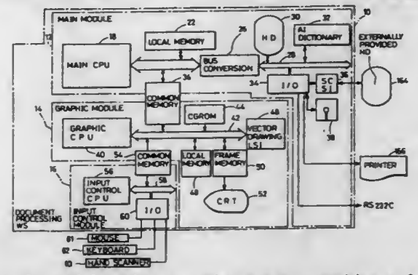
c) selection circuitry coupled to said first, second and third storage units for selecting a data block from the currently retrieved data vector based on either a second portion of the current physical address of the current access or a second portion of a prior physical address of a prior access, depending on whether a retrieved predictive annotation predicts address page crossing or not, the retrieved predictive annotation being retrieved during either the current or an earlier access, and whether the retrieved predictive annotation of the current access or the retrieved predictive annotation of an earlier access, including which particular earlier access, is to be used for the data block selection is predetermined.

5,548,740

INFORMATION PROCESSOR EFFICIENTLY USING A PLURALITY OF STORAGE DEVICES HAVING DIFFERENT ACCESS SPEEDS AND A METHOD OF OPERATION THEREOF

Toshimi Kiyohara, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 9, 1993, Ser. No. 15,866
Claims priority, application Japan, Feb. 10, 1992, 4-023781; Feb. 17, 1992, 4-29398; Feb. 24, 1992, 4-036025
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—427 **26 Claims**



1. In an information processing system comprising a first memory accessible at a predetermined first access speed, a second memory independent of said first memory and accessible at a predetermined second access speed, a third memory and accessible at a third access speed slower than both said first and second access speeds, a first processor primarily using said first memory as a storage area of information, and a second processor apart from said first processor primarily using said second as a storage area of information, a method of providing an auxiliary storage area of said first comprises the steps of:

determining whether the storage capacity of an available storage area of said first memory is insufficient to accommodate a storage request of said first processor, and

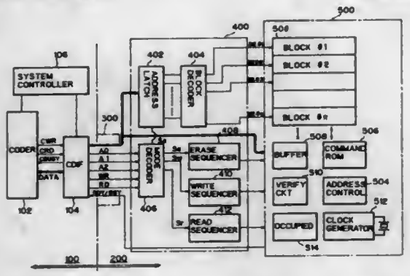
reserving the requested storage first in said second memory if possible, and then in said third memory.

5,548,741

IC MEMORY CARD SYSTEM HAVING A HOST PROCESSOR SELECTIVELY OPERABLE WITH AN IC MEMORY CARD INCLUDING EITHER AN SRAM OR AN EEPROM

Mikio Watanabe, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 828,675, Jan. 31, 1992, abandoned.
This application Feb. 13, 1995, Ser. No. 387,376
Claims priority, application Japan, Feb. 7, 1991, 3-036539
Int. Cl.[6] G06F *13/26*
U.S. Cl. 395—442 15 Claims



1. A processor system alternatively cooperating with first and second types of IC memory card having an SRAM and an EEPROM, respectively, built in the first and second types of IC memory card, comprising:

a host processor having a bus for writing data in a storage location of either the first type or the second type of IC memory card designated by an address, said host processor generating the data and the address alternatively on the bus and a state signal for distinguishing the data from the address; and

a connector for detachably connecting said host processor to either the first type or the second type of IC memory card, said host processor generating, when the second type of IC memory card is connected, an erase signal for erasing data stored in the storage location of the second type of IC memory card,

said connector including,

a plurality of data/address terminals to which the bus is connected for transferring the data and the address to either the first type or the second type of IC memory card connected to said connector,

a state terminal connected to said host processor for transferring the state signal to either the first type or the second type of IC memory card connected to said connector, and

an erase signal terminal connected to said host processor for transferring the erase signal to the second type of IC memory card,

said erase signal terminal being disposed in said connector in a terminal position in which any signal appearing on said erase signal terminal is neglected by the first type of IC memory card when the first type of IC memory card is connected to said connector,

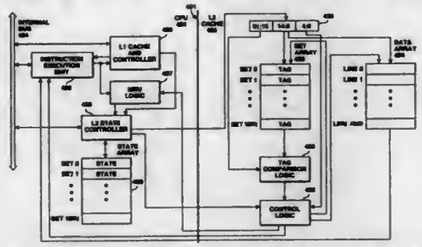
said host processor producing the erase signal prior to rewriting data stored in a particular storage location of the second type of IC memory card, when the second type of IC memory card is connected to said connector, to command the second type of IC memory card to erase the data stored at least in the particular storage location of the second type of IC memory card corresponding to the address transferred from said data/address terminals.

5,548,742

METHOD AND APPARATUS FOR COMBINING A DIRECT-MAPPED CACHE AND A MULTIPLE-WAY CACHE IN A CACHE MEMORY

Wen-Hann Wang, Portland, and Konrad K. Lai, Aloha, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Aug. 11, 1994, Ser. No. 288,923
Int. Cl.[6] G06F *13/14*
U.S. Cl. 395—455 32 Claims



8. A cache memory subsystem for use in a computer system, said computer system having a central processing unit (CPU), said cache memory subsystem comprising:

a data array having a plurality of elements; and

a set array including,

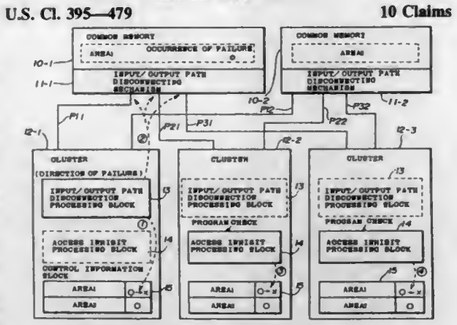
a plurality of sets, wherein each set of said plurality of sets corresponds to a single element of said data array, a first set including a first tag field and a first state field, and a second set including a second tag field and a second state field, and wherein said first state field indicates a number of cache lines mapped into said first set and said second state field indicates a number of cache lines mapped into said second set.

5,548,743

DATA PROCESSING SYSTEM WITH DUPLEX COMMON MEMORY HAVING PHYSICAL AND LOGICAL PATH DISCONNECTION UPON FAILURE

Hitoshi Sugiyama, Fujieda; Toshinori Hiraishi, Mishima, and Tuyoshi Kumano, Kawasaki, all of, Japan, assignors to Fujitsu Limited, Japan

Continuation of Ser. No. 701,883, May 17, 1991, abandoned.
This application May 24, 1994, Ser. No. 249,046
Claims priority, application Japan, May 18, 1990, 2-128324; Jun. 29, 1990, 2-171068
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—479 10 Claims



1. A data processing system, comprising:

two common memories comprising a duplex memory;

processors each accessing said common memories and detecting whether said common memories are valid or invalid with invalid indicating the common memories have a failure;

input/output paths separately connecting said common memories and said processors; and

input/output path disconnecting means for physically disconnecting said input/output paths from said invalid common memories to all said processors upon indication of invalidity,

each of said processors comprising:

control information storing means for storing control information showing whether each of said common memories is valid or invalid;

input/output path disconnection processing means for writing control information, showing that a corresponding one of the common memories is invalid, into said control information storing means when said input/output path disconnection processing means is informed of an occurrence of the failure in one of said common memories by said processor and said control information for indicating to said input/output path disconnecting means to disconnect the input/output paths connected to said corresponding one of said common memories which is invalid; and

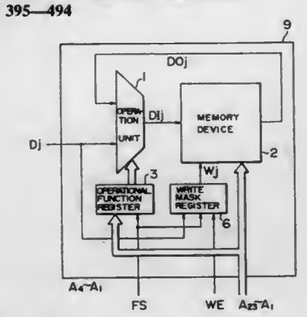
access inhibit processing means for writing control information upon indication of physical disconnection determined via an access attempt, showing that said corresponding one of said common memories is disconnected, into corresponding control information storing means and when each of said processors, other than a one of said processors informed of the occurrence of the failure, has attempted access to said one of the common memories via said input/output paths which have been disconnected from said common memories by said input/output disconnecting means, said control information inhibiting further access attempts by said processors.

5,548,744

MEMORY CIRCUIT AND METHOD FOR SETTING AN OPERATION MODE

Toshihiko Ogura, Ebina; Hiroaki Aotsu; Kolchi Kimura, both of Yokohama; Hiromichi Enomoto, and Tadashi Kyoda, both of Hadano, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 123,357, Sep. 17, 1993, abandoned, and a continuation-in-part of Ser. No. 349,403, May 8, 1989, Pat. No. 5,175,838, which is a continuation of Ser. No. 240,380, Aug. 29, 1988, Pat. No. 4,868,781, which is a continuation of Ser. No. 779,676, Sep. 24, 1985, abandoned, said Ser. No. 123,357is a continuation of Ser. No. 13,174, Jan. 29, 1993, Pat. No. 5,265,234, which is a continuation of Ser. No. 816,583, Jan. 3, 1992, abandoned, which is a continuation of Ser. No. 314,238, Feb. 22, 1989, Pat. No. 5,113,487, which is a continuation of Ser. No. 864,502, May 19, 1986, abandoned.
This application Dec. 12, 1994, Ser. No. 354,934
Claims priority, application Japan, May 20, 1985, 60-105844; May 20, 1985, 60-105845
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—494 8 Claims



1. A memory device comprising:

a plurality of memory elements;

an address port which inputs address data during a second cycle and data for presetting an access mode during a first cycle;

a register which stores the data for presetting the access mode during the first cycle;

a read/write unit which accesses the memory elements in accordance with the address data inputted from the address port during the second cycle and the data for presetting the access mode stored in the register during the first cycle;

wherein the data for presetting the access mode inputted from the address port is stored in the register during the first cycle prior to the second cycle during which accesses by the read/write unit to the memory elements are performed, while the address data is presented onto the address port during the second cycle, and all of the address data is used for specifying an address location at a memory access during the second cycle; and

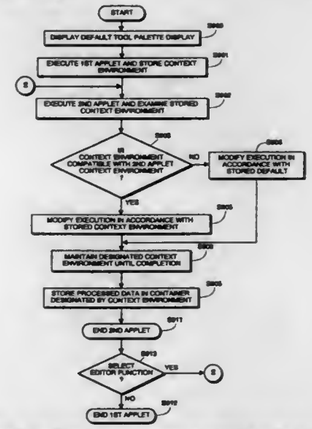
wherein the first cycle during which the data for presetting the access mode is stored in the register does not overlap the second cycle during which the address data used for the accesses by the read/write unit to the memory elements are performed.

5,548,745

METHOD AND APPARATUS FOR DESIGNATING CONTEXT IN A WINDOWING ENVIRONMENT

Alistair Egan, Lake Forest, and Thomas S. Tullis, Laguna, both of Calif., assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 19, 1993, Ser. No. 5,450
Int. Cl.[6] G06F *9/00*
U.S. Cl. 395—500 29 Claims



1. Method for defining a context environment of a second applet which has been launched from within a first applet and which processes data in conjunction with the first applet, the method comprising the steps of:

first executing step for executing the first applet;

storing a context environment indicative of functional capabilities of the first applet;

second executing step for launching, from within the first applet, the second applet;

examining the stored context environment indicative of the functional capabilities of the first applet; and

modifying both functional capabilities of the second applet to be presented to a user and data processing capabilities of the second applet so as to be compatible with the context environment of the first applet examined in the examining step.

5,548,746

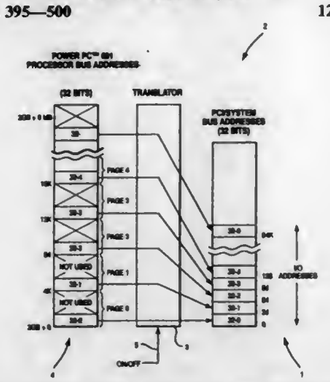
NON-CONTIGUOUS MAPPING OF I/O ADDRESSES TO USE PAGE PROTECTION OF A PROCESS

Gary D. Carpenter, Pflugerville; Mark E. Dean, Austin, both of Tex.; Marc R. Faucher, South Burlington, Vt.; James C. Peterson, and Howard C. Tanner, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 12, 1993, Ser. No. 158,059

Int. Cl.[6] G06F *3/00;9/26*

U.S. Cl. 395—500 **12 Claims**



1. In a computer having a processor with processor address space and a system bus with system bus address space, a system bus address space protection system, comprising:

means within the processor for selectively inhibiting access to individual pages or blocks of the processor address space;

means for translating non-contiguous segments in individual pages or blocks of the processor address space into a band of contiguous segments of the system bus address space; and

means for preventing access to individually selected segments from the band of contiguous segments of the system bus address space by inhibiting access within the processor to pages or blocks of the processor address space relating to the individually selected segments.

5,548,747

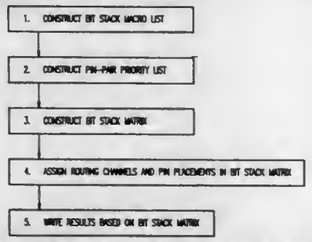
BIT STACK WIRING CHANNEL OPTIMIZATION WITH FIXED MACRO PLACEMENT AND VARIABLE PIN PLACEMENT

Jeffrey Rudolph, Lamoille County, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 10, 1995, Ser. No. 385,294

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—500 **13 Claims**



6. A method for automatically optimizing bit stack channel wiring for very large scale integrated (VLSI) bit stack design on a computer comprising the steps of:

inputting data files defining bit stack macros of a VLSI chip;

constructing a bit stack macro list sorted by y-axis position in the VLSI bit stack design;

constructing a net list including each pin in an overall VLSI bit stack design;

defining a VLSI chip structure to represent a problem space using two layers, one for pins and the other for wiring channels, the problem space being defined as an N×M bit stack matrix, where N is the number of nets and M is the number of pins;

assigning routing channels and pin placements in the bit stack matrix by determining whether pins already exist in the chip structure for each pin-pair in the priority queue, and if pins already exist, then creating pin rails for each pin and routing with a "pattern matching" router to obtain a shortest connecting path; and

generating an output results file by writing a net map, including wires and pins, and writing net wires.

5,548,748

ONE-CHIP SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING A DIGITAL SIGNAL PROCESSING CIRCUIT AND AN ANALOG SIGNAL PROCESSING CIRCUIT

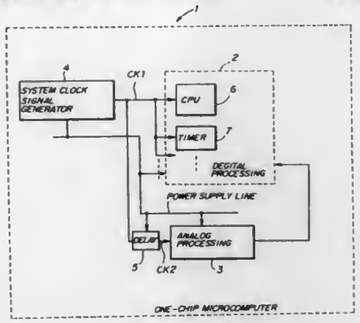
Takeshi Fuse, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 14, 1990, Ser. No. 567,495

Claims priority, application Japan, Aug. 18, 1989, 1-213459

Int. Cl.[6] G06F *1/04*

U.S. Cl. 395—550 **30 Claims**



1. A one-chip semiconductor integrated circuit device comprising:

digital signal processing means for processing a digital signal in synchronism with a first clock signal; and

analog signal processing means for sampling an analog input signal in synchronism with a second clock signal having a phase different from that of said first clock signal,

said analog signal processing means comprising an analog-to-digital converter having a sample and hold circuit, and a latch circuit,

said sample and hold circuit operating in synchronism with said second clock signal, and

said latch circuit latching an output signal of said sample and hold circuit in synchronism with a third clock signal having a phase different from the phases of the first and second clock signals.

5,548,749

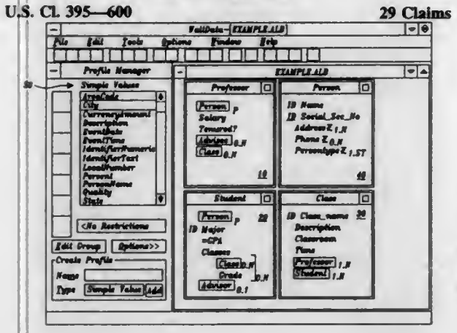
SEMANTIC ORBJECT MODELING SYSTEM FOR CREATING RELATIONAL DATABASE SCHEMAS

David M. Kroenke; Christopher C. Olds; Kenji Kawai, all of Seattle, and Lee I. Eggebroten, Vashon, all of Wash., assignors to Wall Data Incorporated, Kirkland, Wash.

Filed Oct. 29, 1993, Ser. No. 145,997

Int. Cl.[6] G06F *15/40*

U.S. Cl. 395—600 **29 Claims**



1. A method of operating a computer system to create a relational database schema from a semantic object model, comprising the steps of:

creating, in response to a user input, one or more semantic objects each of which represents an item about which data is stored in one or more tables of a relational database;

creating, in response to a user input, one or more attributes and associating the attributes with one or more semantic objects, each of the attributes representing data stored in the relational database for the item represented by the semantic object with which the attribute is associated, the attributes including simple value attributes that represent the data entry in a single column of the relational database, group attributes having one or more member attributes that represent a logical collection of attributes and object link attributes that represent relationships between the semantic objects in the semantic object mode each of the attributes having one or more properties and wherein each attribute is associated with a corresponding simple value, group or object link profile that defines default values for the one or more properties of the associated attribute;

storing in the computer system an indication for each attribute whether the attribute is multivalued, thereby representing multiple data entries in a column of a relational database;

translating the semantic objects and their associated attributes into the one or more relational database tables, by operating the computer system to perform the steps of:

automatically generating a relational database table for each semantic object in the semantic object mode;

automatically analyzing each attribute associated with a semantic object to determine whether the semantic object is associated with a multivalued group attribute having a multivalued attribute as a member attribute, and if so:

a) creating a second relational database table for the multivalued group attribute and linking the second relational database table to the relational database table created for the semantic object by a foreign key; and

b) creating a third relational database table for the multivalued attribute that is a member attribute of the multivalued group attribute and linking the third relational database table to the second relational database table by another foreign key.

5,548,750

SYSTEM FOR TAKING BACKUP IN A DATA BASE

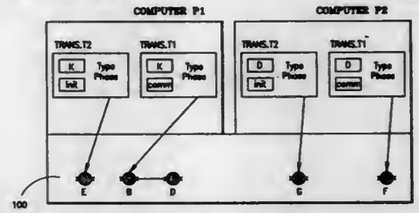
Bo E. S. Larsson, Huddinge, and Iván M. Sanchez, Stockholm, both of, Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Dec. 8, 1993, Ser. No. 162,899

Claims priority, application Sweden, Dec. 8, 1992, 9203691

Int. Cl.[6] G06F *15/40;11/00*

U.S. Cl. 395—600 **12 Claims**



1. A backup system for a real time data base on primary memory in operation, said data base being distributed over a number of processors which execute a plurality of functionalities, said backup system comprising:

a plurality of logic data bases, of which each is able to extend over several of said processors, and each has a backup functionality associated with it, wherein all data in said real time data bases is distributed over said logic data bases,

a central backup handler, which has information regarding processors, over which the backup system extends,

a local database handler for each processor, and

activating functionality for activating said backup functionality of a current one of said logic data bases by sending a message to said central backup handler to perform synchronization of the backup functionality over processors over which said current logic data base extends,

said synchronization including that the local data base handlers are informed that backup will be started and that a new transaction log should be created, in which all transactions which shall not be included in the backup are logged, and backup will only contain changes of transactions in an earlier transaction log.

5,548,751

DYNAMIC DATA STORAGE SYSTEM ALLOWING VARIABLE SIZE RECORDS AND FIELDS BY USING LINKED RECORD SEGMENTS

Tadamitsu Ryu, Yokohama; Yoshio Mogi, Tochigi; Masao Tomita, Omiya, and Takanori Fukatsu, Kawasaki, all of, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 665,586, Mar. 6, 1991, abandoned. This application Feb. 14, 1994, Ser. No. 198,396

Claims priority, application Japan, Mar. 16, 1990, 2-66152

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—600 **2 Claims**

1. A dynamic data storage and access system, comprising:

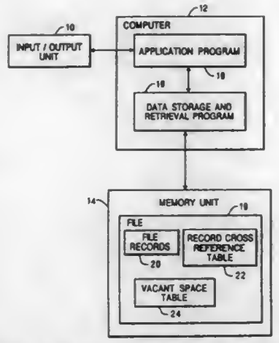
storage storing a file of contiguous records including a first record segment of a record, stored at a first location and including data having a stored length and a next address field and storing a cross reference index table including a record number and the first location address;

a processor connected to said storage and said processor:

determining whether an input length of input data is less than, equal to or greater than the stored length,

reducing the stored length to the input length and storing the input data in the first record segment of the record and having the reduced stored length and designating resulting vacant space in the file when the input length is less than the stored length,

storing the input data in the first record segment of the record and in a second record segment of the record at a first



available vacant second location in the file and storing an address of the second record segment of the record in the next address field different from the address of the first location address when the input length is greater than the stored length,

combining the first and second record segments of the record into a single record segment of the record when a vacant area in the file equal to a size of the first and second record segments of the record combined becomes available;

storing an address of the vacant area as the first location address in said table when the first and second record segments are combined into the single record segment;

accessing the record using the first location address when the stored length is reduced;

accessing the record comprising the first and second record segments using the first location address and the address in the next address field when the input length is greater than the stored length; and

accessing the record comprising the single record segment using the first location address when the first and second record segments are combined.

5,548,752

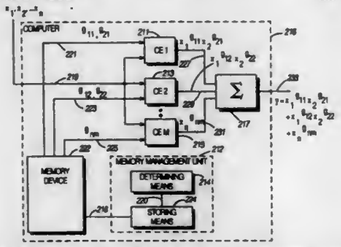
METHOD AND SYSTEM FOR STORING DATA IN A MEMORY DEVICE

Scott E. Lloyd, Hoffman Estates, and Shay-Ping T. Wang, Long Grove, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 10, 1994, Ser. No. 288,673

Int. Cl.[6] G06F *7/00;13/00*

U.S. Cl. 395—600 **33 Claims**



27. In a computer which includes a computer memory, a memory management unit for storing a plurality of instruction blocks in the computer memory, the memory management unit comprising:

determining means for determining if a common computer-executable instruction exists between two of the plurality of instruction blocks, each of the instruction blocks having a plurality of computer-executable instructions usable by a computer program for directing the computer to perform a specific function; and

storing means, operatively coupled to the computer memory and responsive to the determining means, for storing the plurality of instruction blocks in the computer memory such that if the common computer-executable instruction exists between the two of the plurality of instruction blocks, the common computer-executable instruction of the two of the plurality of instruction blocks is stored in a single area in the computer memory.

5,548,753

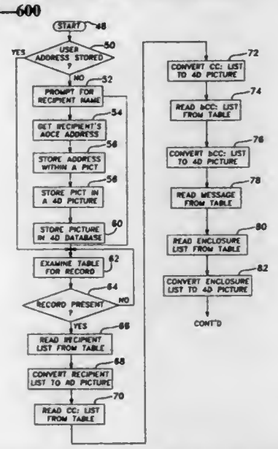
AUTOMATIC ELECTRONIC MAIL NOTIFICATION OF DATABASE EVENTS

Steven A. Linstead, North Prairie, and Gregory B. James, Milwaukee, both of Wis., assignors to Johnson Service Company, Milwaukee, Wis.

Filed Sep. 14, 1994, Ser. No. 305,773

Int. Cl.[6] G06F *15/167;15/17;3/14*

U.S. Cl. 395—600 **17 Claims**



1. A method for providing an indication of the occurrence of a predetermined event within a database system, said database system storing data, said data being accessible by a plurality of users, said data being stored in a plurality of data formats, said plurality of data formats including a first data format, the method comprising the steps of:

using a daemon process operating independently from said database system to automatically and repetitively read a predetermined storage location within said database;

detecting a data structure having said first data format stored in said predetermined storage location;

reading said data structure;

converting said data structure from said first data format to a second data format; and

providing said indication to at least one user of said plurality of users, said indication including at least a portion of said data structure.

5,548,754

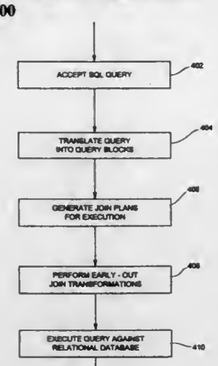
OPTIMIZATION OF SQL QUERIES USING EARLY-OUT JOIN TRANSFORMATIONS

Mir H. Pirahesh; Ting Y. Leung; Guy M. Lohman; Eugene J. Shekita, and David E. Simmen, all of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 7, 1995, Ser. No. 385,177

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—600 **9 Claims**



1. A method of optimizing an SQL query in a computer having a memory, the SQL query being performed by the computer to retrieve data from a relational database stored in an electronic storage device coupled to the computer, and the SQL query including a join operation for an outer table and an inner table in the relational database, the method comprising the steps of:

(a) examining the query in the memory of the computer to determine whether the query includes a requirement for distinctiveness in one or more result columns of the join operation;

(b) examining the query in the memory of the computer to determine whether one or more columns of the inner table are referenced in the query after the join operation is performed by the computer; and

(c) performing, in the memory of the computer, an early-out join operation in place of the join operation when the query includes the requirement for distinctiveness and no columns of the inner table are referenced after the join operation, further comprising the steps of scanning the inner table for a match for each row of the outer table and terminating the scanning step when the match is found.

5,548,755

SYSTEM FOR OPTIMIZING CORELATED SQL QUERIES IN A RELATIONAL DATABASE USING MAGIC DECORRELATION

Ting Y. Leung; Mir H. Pirahesh, both of San Jose, Calif., and Praveen Seshadri, Madison, Wis., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 17, 1995, Ser. No. 390,832

Int. Cl.[6] G06F *17/30*

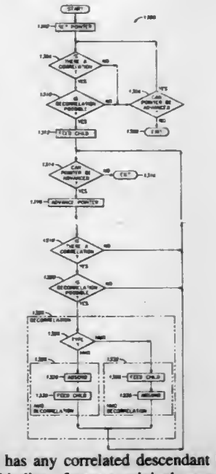
U.S. Cl. 395—600 **39 Claims**

1. A method of optimizing an SQL query that includes at least one subquery, wherein said query is executable by a computer to retrieve data from a relational database stored in electronic storage coupled to the computer, the method comprising the steps of:

representing the query in storage as a query box representation comprising a hierarchical assembly of multiple data structures corresponding to the at least one subquery, each data structure being referred to as a "box";

examining each box individually, the box under examination being referred to as the current box, to determine whether the current box has any correlated descendant box that receives correlation bindings from an original source comprising the current box or an ancestor box of the current box; and

determining whether the correlated descendant box can be decorrelated, and if so creating an optimized query by applying a magic decorrelation process to create a different source for the correlation bindings and substitute the different source for the original source, said different source being hierarchically inferior to the current box.



5,548,756

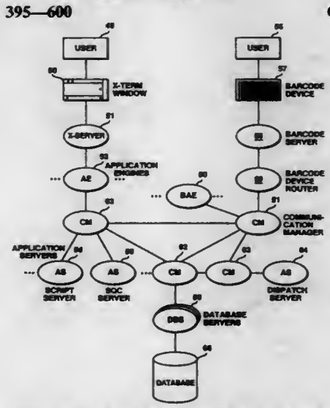
OBJECT-ORIENTED ARCHITECTURE FOR FACTORY FLOOR MANAGEMENT

Subhash B. Tantry; Rajesh U. Mashruwala, both of Palo Alto; Barry A. Lozier, Sunnyvale, and Richard L. Hess, Palo Alto, all of Calif., assignors to Consilium, Inc., Mountain View, Calif.

Continuation of Ser. No. 93,307, Jul. 16, 1993, Pat. No. 5,398,336, which is a continuation of Ser. No. 598,078, Oct. 16, 1990, abandoned. This application Mar. 9, 1995, Ser. No. 401,633

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—600 **6 Claims**



1. An object-oriented distributed computer system for factory floor management, the distributed computer system comprising:

a plurality of processing nodes, each processing node of the plurality of processing nodes including a processor and a

memory, each processing node of the plurality of processing nodes being communicatively coupled to other nodes of the plurality of processing nodes;

the plurality of processing nodes including a plurality of database nodes, each database node of the plurality of database nodes storing a portion of a single relational database, the relational database including a plurality of factory objects which represent factory floor entities of a factory floor management system, wherein each factory floor object of the plurality of factory floor objects belongs to an object class of a plurality of object classes, wherein the plurality of object classes are related according to a predetermined class hierarchy; and

wherein each processing node of the plurality of processing nodes executes at least one of the following:

an interface server receiving input from a user and initiating a server request in response to the input;

an application engine receiving the server request and generating one or more application service requests responsive to the server request;

an application server processing an application service request of the one or more application service requests and generating one or more database service requests to access the factory objects in the relational database responsive to the application service request; and

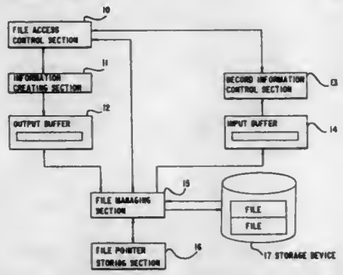
a database server accessing the factory objects in the relational database in response to a data service request of the one or more database service requests wherein each of the interface server, application engine, application server and database server is executed on at least one processing node.

5,548,757

METHOD AND APPARATUS FOR APPENDING INFORMATION TO DATA FILES, ENSURING PROPER END-OF-FILE INDICATION

Tsutoshi Matsuyama, and Hideyuki Takahashi, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 266,380, Jun. 27, 1994, abandoned. This application May 23, 1995, Ser. No. 448,297
Claims priority, application Japan, Oct. 14, 1993, 5-256814
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—600 **4 Claims**



4. A record appending apparatus for appending new data to a file having first end-of-file information at an end thereof, comprising:

file access control means for controlling read and write operationls of information and operation of a file pointer with respect to the file;

information creating means for creating a record length, a record, second end-of-file information, and continuation information to be written in the file;

output buffer means for storing the record length, the record, the second end-of-file information, and the continuation information created by said information creating means according to respective write units;

record information control means for detecting continuation information and a record length to identify a record when information is read from the file;

input buffer means for temporarily storing any length of information read from the file;

file managing means for writing the information stored in said output buffer means to the file, and for reading the information into said input buffer means;

file pointer storing means for storing a data write or read position of the file; and

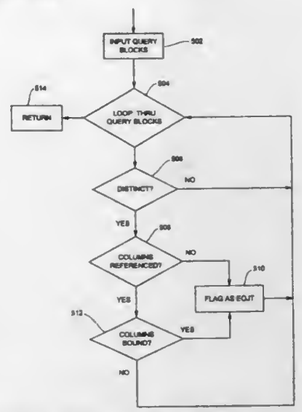
storage means for storing the file.

5,548,758

OPTIMIZATION OF SQL QUERIES USING EARLY-OUT JOIN TRANSFORMATIONS OF COLUMN-BOUND RELATIONAL TABLES

Mir H. Pirahesh; Ting Y. Leung; Guy M. Lohman; Eugene J. Shekita, and David E. Simmen, all of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 385,177, Feb. 7, 1995. This application Jun. 5, 1995, Ser. No. 463,968
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—600 **21 Claims**



1. A method of optimizing an SQL query in a computer having a memory, the SQL query being performed by the computer to retrieve data from a relational database stored in an electronic storage device coupled to the computer, and the SQL query including a join operation for an outer table and an inner table in the relational database, the method comprising the steps of:

(a) examining the query in the memory of the computer to determine whether the query includes a requirement for distinctiveness in one or more result columns of the join operation;

(b) examining the query in the memory of the computer to determine whether one or more columns of the inner table are referenced in the query after the join operation is performed by the computer and whether each referenced column of the inner table is bound and is not involved in any length-sensitive expressions yet to be evaluated; and

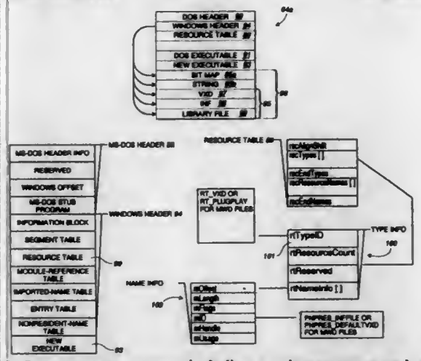
(c) performing, in the memory of the computer, an early-out join operation in place of the join operation when the query includes the requirement for distinctiveness and the referenced columns of the inner table are bound and are not involved in any length-sensitive expressions yet to be evaluated, further comprising the steps of scanning the inner table for a match for each row of the outer table and terminating the scanning step when the match is found.

5,548,759

SYSTEM FOR STORING EXECUTABLE CODE WITHIN A RESOURCE DATA SECTION OF AN EXECUTABLE FILE

Ralph A. Lipe, Woodinville, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 271,058, Jul. 5, 1994, abandoned. This application Jan. 11, 1996, Ser. No. 584,824
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—600 **24 Claims**



1. In a computer system including a microprocessor and an operating system for controlling said computer system, a memory device connectable to said computer system, said memory device storing an executable file formatted in a predetermined format and accessible by said operating system, said executable file including a resources section containing data associated with resources of said computer system, said memory device further comprising:

an executable code section containing executable code for controlling a peripheral device; and

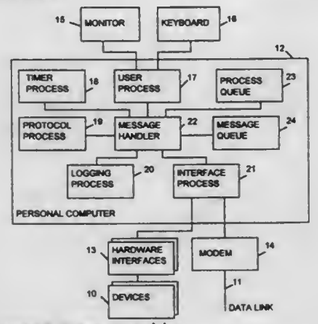
a non-executable text section containing data defining selected characteristics of said peripheral device and identifying that said executable code section is located within said resources section.

5,548,760

MESSAGE HANDLER

Roger K. Healey, Manchester, England, assignor to International Computers Limited, London, England

Continuation of Ser. No. 315,826, Sep. 30, 1994, abandoned. This application Aug. 10, 1995, Ser. No. 513,662
Claims priority, application United Kingdom, Nov. 11, 1993, 932324
Int. Cl.[6] G06F *9/46*
U.S. Cl. 395—650 **2 Claims**



1. A computer system comprising:

(a) means for running a plurality of processes;

(b) a message queue, having a head and a tail;

(c) a process queue, having a head and a tail; and

(d) a message handler comprising:

(i) means responsive to a request from a source process having a message to send, for adding said message to the tail of the message queue along with a destination process identity for said message;

(ii) means responsive to a request from a destination process, indicating that said destination process is ready to receive a message, for adding an entry identifying said destination process to the tail of said process queue and then suspending said destination process;

(iii) means for performing a scan of the process queue, starting from the head of the process queue and, for each process in the process queue, performing a scan of the message queue, starting from the head of the message queue, until a message/process pair is found comprising a particular process and a particular message that is destined for said particular process; and

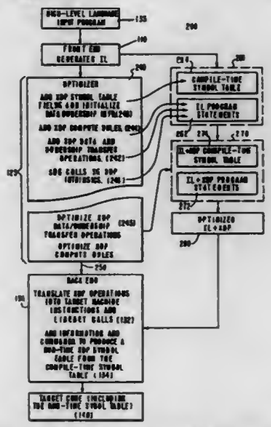
(iv) means for activating said particular process and for passing said particular message to said particular process.

5,548,761

COMPILER FOR TARGET MACHINE INDEPENDENT OPTIMIZATION OF DATA MOVEMENT, OWNERSHIP TRANSFER AND DEVICE CONTROL

Vasanth Balasundaram, Peekskill; John L. Carter, and Jeanne Ferrante, Both of Briarcliff Manor, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 9, 1993, Ser. No. 28,493
Int. Cl.[6] G06F *9/45*
U.S. Cl. 395—700 **10 Claims**



1. A method of compiling and executing a computer program on a general purpose target computer system, comprising the steps of:

translating a high level source language into an intermediate language, the intermediate language stored in a computer memory;

inserting one or more transfer statements into the intermediate language during one or more initial passes of an optimizer through the intermediate language, the transfer statements identifying a transfer of information, each of the transfer statements having a transfer operation and a transfer resolution, the transfer operation being a target machine independent part of the transfer of information and the transfer resolution being a target machine dependent part of the transfer of information;

inserting compute rules into the intermediate language in one or more passes of the optimizer through a plurality of statements of the intermediate language, each of the compute rules deter-

mining which of one or more of the statements to execute during the executing of the computer program, the intermediate language with the inserted transfer statements and compute rules being an intermediate language plus XDP form;

optimizing the intermediate language plus XDP form, including the transfer operations and compute rules by using the optimizer of the compiler;

translating the optimized intermediate language plus XDP form into a target code in a back end of the compiler, the back end using one or more operations of the target computer system to resolve the transfer resolutions so that the target computer system can perform each transfer of information identified by the respective transfer statement, the transfer statement including the optimization of the transfer operation;

updating a run-time table on each of one or more devices with run-time table information resulting from the execution of one or more target code representations of the transfer operations; and

executing the target code on one or more devices of the computer system, the executing referencing one or more target code representations of the compute rules and one or more entries in a run-time table to control the execution of the target code.

5,548,762

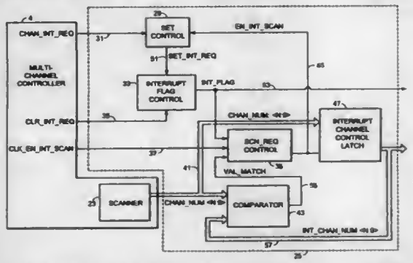
IMPLEMENTATION EFFICIENT INTERRUPT SELECT MECHANISM

Tadhg Creedon; John Hickey, and Eugene G. O'Neil, all of Galway, Ireland, assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 828,342, Jan. 30, 1992, abandoned. This application Apr. 14, 1994, Ser. No. 227,867

Int. Cl.[6] G06F *13/22*

U.S. Cl. 395—733 **2 Claims**



1. An apparatus for allocating an interrupt flag to a plurality of interrupt requesters comprising:

a plurality of interrupt requester channels;

a scanner continuously round robin scanning said plurality of interrupt requester channels;

a storage device for storing an identification of a channel requesting an interrupt, said scanner first writing an identification of said channel into said storage device and said scanner secondly locking said storage device, said scanner prevented from writing into said storage device while said storage device is locked;

means for a CPU to service an interrupt indicated by said storage device, and to clear said storage device to enable said scanner to again write into said storage device on a subsequent round robin scan of said plurality of interrupt requester channels, said means for a CPU to service an interrupt is a request flag device coupled to an interrupt flag device and a controller operates to controllably assert a flag clear signal to clear the interrupt flag output of said interrupt flag device;

a control device coupled to said storage device, said control device to lock said storage in response to a first signal from said scanner, said control device coupled to the output of said interrupt flag device and operates to unlock said storage device only when the output of said request flag device is clear;

said controller controlling said scanner, said controller coupled to said means for a CPU to service an interrupt, said controller to unlock said storage device in response to a second signal from said means for a CPU to service an interrupt;

a comparator coupled to said storage device and also coupled to said scanner, said comparator producing a match signal when there is a match between a current identification of a channel being scanned by said scanner and an identification of a channel stored in said storage device, said match signal being applied to said control device; and

said control device has an AND gate having a first input coupled to said match signal of said comparator and a second negated input coupled to the output of said interrupt flag device, and an output,

a flip-flop having an input coupled to the output of said AND gate and an enable input coupled to a request enable signal of said controller, said flip-flop having an output comprising the output of said control device such that said control device enables said storage device when said match signal is produced by said comparator, the output of said request flag device is clear and the request enable signal is asserted by said controller.

5,548,763

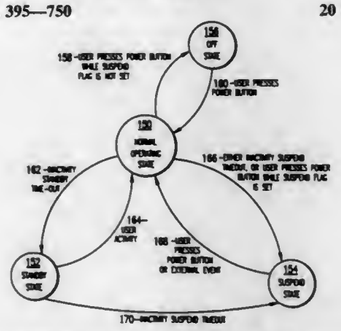
DESK TOP COMPUTER SYSTEM HAVING MULTI-LEVEL POWER MANAGEMENT

James L. Combs; Dwayne T. Crump, and Steven T. Pancoast, all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 26, 1993, Ser. No. 97,251

Int. Cl.[6] G06F *1/32*

U.S. Cl. 395—750 **20 Claims**



1. A computer system comprising a central processing unit (CPU) in circuit communication with a control unit, said CPU and said control unit cooperating to provide said computer system with at least four states of power management, namely a normal operating state in which code is executed normally by said CPU, a standby state, a suspend state, and an off state, said control unit actively controlling transitions of said computer system between each of said states and at least one other of said states in response to at least one of a plurality of preselected events.

5,548,764

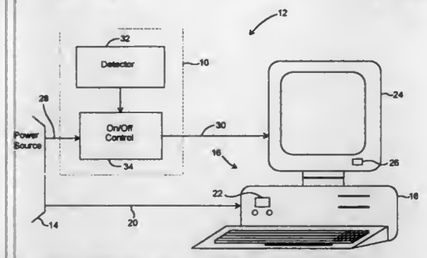
POWER INTERRUPT DEVICE WITH REMOTE ACTIVITY DETECTOR

Raymond S. Duley, Buda, and Ashfaq R. Khan, Austin, both of Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Apr. 30, 1993, Ser. No. 56,112

Int. Cl.[6] G06F *1/32*

U.S. Cl. 395—750 **20 Claims**



1. A power interrupt device comprising:

a detector for sensing an activity remote from said detector and for producing an electrical signal, wherein said electrical signal conveys a first voltage during times in which said activity is present and wherein said electrical signal conveys a second voltage during times in which said activity ceases;

a clocking circuit configured with an input signal connection for receiving said electrical signal from said detector, and wherein said clocking circuit is further configured for producing a clocking output upon receiving said second voltage of said electrical signal;

a counter circuit configured with an input signal connection wherein said input signal connection receives said clocking output of said clocking circuit, and wherein said counter circuit produces a pulse after a number of transitions of said clocking output have occurred;

a latching circuit connected to said counter circuit for latching said pulse at a steady state until said electrical signal conveys said first voltage; and

a switch having a conductive path wherein said conductive path is disconnected during times in which said pulse is latched at a steady state and wherein said conductive path is connected during times in which said pulse is not latched at a steady state.

5,548,765

POWER SAVING DISPLAY SUBSYSTEM FOR PORTABLE COMPUTERS

Takeo Tsunoda; Hitomi Aizawa, and Yuji Hama, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo-to, Japan

Continuation of Ser. No. 741,016, Aug. 6, 1991, abandoned. This application Mar. 2, 1994, Ser. No. 205,336

Claims priority, application Japan, Aug. 28, 1990, 2-225709

Int. Cl.[6] G06F *1/00*

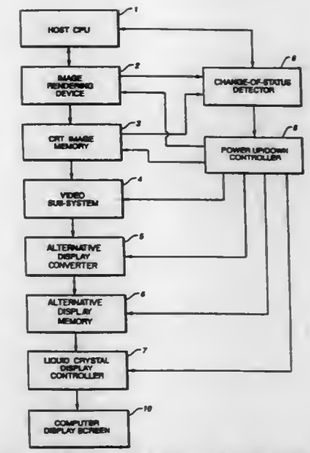
U.S. Cl. 395—750 **28 Claims**

1. A display control system for controlling display on a liquid crystal display device of image data which can be changed due to user operation, comprising:

an image memory for storing said image data; display control means for reading out said image data from said image memory and producing display data for said liquid crystal display device;

detecting means for detecting whether or not said image data stored in said image memory is to be changed and producing a detection signal indicative thereof;

a power source for supplying power to said display control means; and



power control means, which receives said detection signal, for controlling said power supplied to the display control means in response to the received detection signal, thereby saving an amount of power consumed by said display control means.

5,548,766

MICROPROCESSOR FOR SELECTING DATA BUS TERMINAL WIDTH REGARDLESS OF DATA TRANSFER MODE

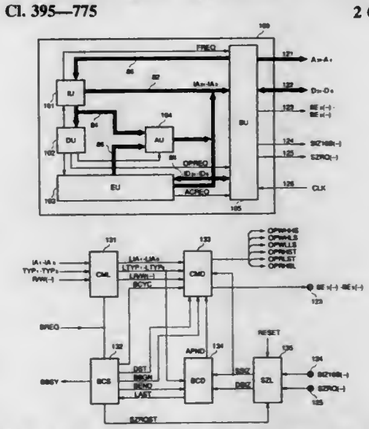
Hiroaki Kaneko, and Yumiko Horiguchi, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 919,485, Jul. 24, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 478,113

Claims priority, application Japan, Jul. 24, 1991, 3-184253

Int. Cl.[6] G06F *15/76*

U.S. Cl. 395—775 **2 Claims**



1. A microprocessor having a function of dynamically selecting, for each bus cycle, either a first data transfer mode in which data is transferred through the whole of a data bus terminal or a second data transfer mode in which data is transferred through only a portion of the data bus terminal, the microprocessor comprising:

a data bus terminal having a width of a plurality of bits,

a command register for receiving a first external signal indicating a change of data transfer mode between said first data transfer mode and said second data transfer mode,

a sizing register for receiving a second external signal indicating that only one portion of said data bus terminal is fixedly used for data transfer,

a command decoder connected to said command register and to said sizing register for generating control signals,

an operand write register and an operand read register connected to said data bus terminal for exchanging data that should be transferred through said one portion of said data bus terminal with data that should be transferred through the other portion of said data bus terminal, and

buffer means, connected to said operand write register and to said operand read register and responsive to said control signals, for bringing the other portion of said data bus terminal into a high impedance condition when data is transferred through said one portion of said data bus terminal,

so that when said sizing register receives said second external signal indicating that said one portion of said data bus terminal is fixedly used for data transfer and said one portion of said data bus terminal is signaled and an address to which data are to be transferred is signaled, data is transferred through said one portion of said data bus terminal under control of said command decoder regardless of receipt of said first external signal by said command register, and the other portion of said data bus terminal is maintained in a high impedance condition by said buffer means.

5,548,767

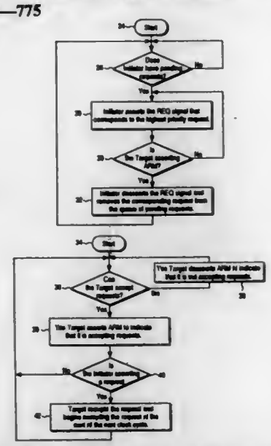
METHOD AND APPARATUS FOR STREAMLINED HANDSHAKING BETWEEN STATE MACHINES

Brian K. Langendorf, El Dorado Hills, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Oct. 6, 1993, Ser. No. 132,521

Int. Cl.[6] G06F *9/40;13/14*

U.S. Cl. 395—775 **15 Claims**



13. A method of handshaking between an initiator state machine and a target state machine, the method comprising the steps of:

generating a request by the initiator state machine;

sending the request to the target state machine;

generating by the target state machine a handshake signal having either a first value or a second value, the first value indicating that the target state machine will begin executing a task a predetermined delay of at least one cycle of a clock signal after receiving the request, the second value indicating that the target state machine Will not execute the request: and

receiving the handshake signal by the initiator state machine.

5,548,768

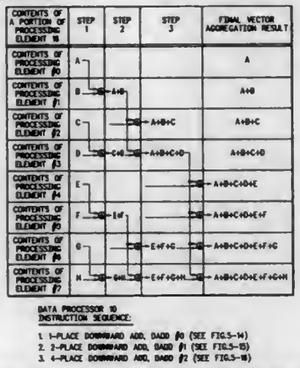
DATA PROCESSING SYSTEM AND METHOD THEREOF

Michael G. Gallup; L. Rodney Goke; Robert W. Seaton, Jr.; Terry G. Lawell; Stephen G. Osborn, and Thomas J. Tomazin, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 40,779, Mar. 31, 1993, abandoned. This application Apr. 6, 1995, Ser. No. 419,861

Int. Cl.[6] G06F *15/16*

U.S. Cl. 395—375 **40 Claims**



1. A method for executing a data processing instruction in a data processor having a plurality of processing elements, comprising the steps of:

receiving the data processing instruction;

accessing a downward shift value in response to the data processing instruction;

selectively accessing a first data value from a first portion of the plurality of processing elements, the first portion of the plurality of processing elements being determined in response to the downward shift value;

transferring the first data value to each of a second portion of the plurality of processing elements, the second portion of the plurality of processing elements being determined in response to the downward shift value;

performing a data processing operation using the first data value in each of the second portion of the plurality of processing elements; and

storing a result of the data processing operation in each of the second portion of the plurality of processing elements.

5,548,769

DATABASE ENGINE

Richard I. Baum, Poughkeepsie; Glen A. Brent, Fishkill; Donald H. Gibson, Salt Point, and David B. Lindquist, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 499,844, Mar. 27, 1990, Pat. No. 5,210,870. This application Dec. 18, 1992, Ser. No. 993,253

Int. Cl.[6] G06F *15/00;7/08*

U.S. Cl. 395—800 **10 Claims**

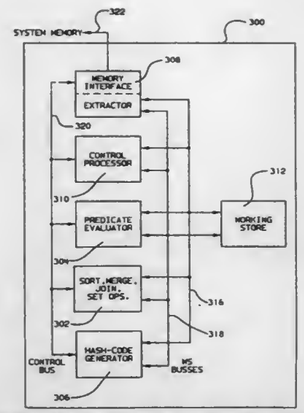
1. An attached coprocessor for processing database records stored in a system memory of a host system, responsive to database processing commands stored in the system memory and generated by a database processing program, said coprocessor comprising:

first bus means for carrying control information;

second bus means for carrying data;

extractor means for extracting fields from the records and for reordering said fields based on said commands, the extractor means being in communication with the system memory, the first bus means and the second bus means;

controls means communicating with said host system, for providing control information on the first bus means responsive



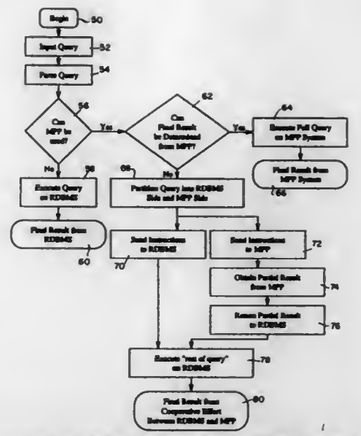
to the commands, the control means being in communication with the first bus means and the second bus means;

search means for processing search queries responsive to the control means, the search means being in communication with the first bus means and the second bus means;

sort means for performing sort and merge operations on the database records responsive to the control means, the sort means being in communication with the first bus means and the second bus means;

hash generator means for generating a hash code from keys provided in the database processing commands the hash generator means being responsive to the control means and in communication with the first bus means and the second bus means; and

memory means for temporarily storing internal data, the memory means being in communication with the second bus means whereby said search means, said sort means, and said hash generator means utilize said memory means in common.



determiniog whether a final result to the query can be determined from the parallel computer using only data stored in the index data structures in the parallel disk array;

executing the query on the parallel computer;

sending a final result from the parallel computer to the user upon determining that the parallel computer can be used to determine the final result using only data stored in the index data structures in the parallel disk array;

sending a partial result to the database management system from the parallel computer upon determining that the parallel computer cannot be used to determine the final result using only data stored in the index data structures in the parallel disk array;

obtaining the final result on the database management system using the partial result received from the parallel computer; and

sending the final result from the database management system to the user.

5,548,770

METHOD AND APPARATUS FOR IMPROVING RETRIEVAL OF DATA FROM A DATABASE

Timothy R. Bridges, Bloomington, Ind., assignor to Data Parallel Systems, Inc., Bloomington, Ind.

Filed Feb. 25, 1993, Ser. No. 22,183

Int. Cl.[6] G06F *15/40*

U.S. Cl. 395—800 **4 Claims**

1. A method for improving retrieval of data based on a query from a user from a database management system including a main computer, means coupled to the main computer for storing the data, a parallel computer coupled to the main computer, and a parallel disk array coupled to the parallel computer, the method comprising the steps of:

storing record based data on the storing means of the database management system;

storing a value based index data structures of selected attributes related to the record based data in the parallel disk array;

determining whether the parallel computer can be used to execute the query using only data stored in the index data structures in the parallel disk array;

sending the query to the database management system and executing the query on the database management system to produce a final result upon determining that the parallel computer cannot be used to execute the query;

sending the query to the parallel computer upon determining that the parallel computer can be used to execute the query using only data stored in the index data structures in the parallel disk array;

5,548,771

MULTI-PROCESSOR DATA PROCESSING SYSTEM HAVING MULTIPLE PORTS COUPLED TO MULTIPLE INTERFACE CIRCUITS

Jack R. Davis; Michael G. Gallup; L. Rodney Goke; Erik L. Welty, all of Austin, and Michael F. Wiles, Round Rock, all of Tex., assignors to Motorola Inc., Schaumburg, Ill.

Filed Nov. 2, 1993, Ser. No. 144,378

Int. Cl.[6] G06F *15/80*

U.S. Cl. 395—800 **16 Claims**

1. A multi-processor data processing system, comprising:

a processor array comprising a plurality of processors, the processor array having a north array port, an east array port, a south array port, and a west array port;

first interface circuitry, coupled to the east array port;

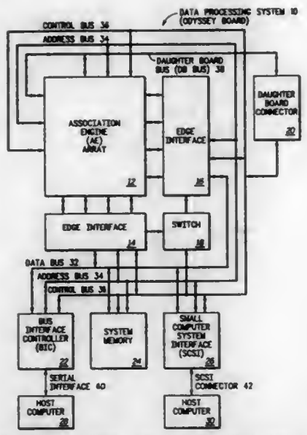
second interface circuitry, coupled to the south array port;

an address bus, coupled to said first interface circuitry, to said second interface circuitry, to said north array port, and to said west array port;

a data bus, coupled to said first interface circuitry and to said second interface circuitry, but not coupled to said north array port and said west array port;

a control bus, coupled to said first interface circuitry, to said second interface circuitry, to said north array port, and to said west array port; and

a bus interface controller, coupled to said address bus, to said data bus, and to said control bus, said bus interface controller initiating a first transfer of information in the multi-processor data processing system,



wherein the multi-processor data processing system has a data transfer mode in which addresses are received by the processor array at the north and west array ports and not at the south and east array ports, and in which data corresponding to said addresses is received by the processor array at the south and east array ports and not at the north and west array ports, said addresses indicating a source or destination of the data within the processor array.

5,548,772

PARALLEL PROCESSING SYSTEM WITH PROGRAMMABLE OPTICAL INTERCONNECTS

Tsen-Hwang Lin, Dallas, and Falvey Malarcher, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 809,780, Dec. 18, 1991, abandoned.
This application Oct. 14, 1994, Ser. No. 323,427
Int. Cl.[6] G03H *1/00;1/12;* **G02F** *1/00;* **G06F** *15/00*
U.S. Cl. 395—800 **8 Claims**

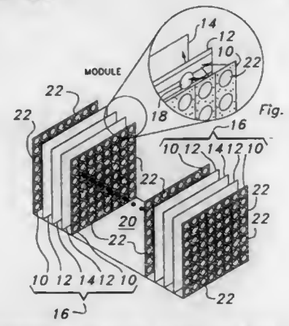


Fig.

1. A programmable processing system comprising:

one or more computer networks each of said networks comprising:

a. at least one population of processor nodes comprising:

i. a plurality of processing modules each processing module comprising:

(1) processors for sending and receiving data wherein at least one processor resides on a first side of said module and at least one processor resides on a second opposing side of said module;

(2) spatial light modulators in proximity to said processors operable to select paths of communication for said data sent and received by said processors; and

(3) at least one hologram in proximity to said spatial light modulators operable to provide several said paths of communication from which said spatial light modulators select said paths of communication between said processors; and

(4) at least one dear spot on said hologram to allow for external communication;

b. at least one population of storage nodes external to said processor nodes; and

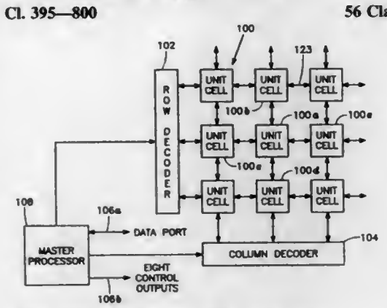
c. at least one optical crossbar switch to provide transfer of information between said processor nodes and said storage nodes, among said processor nodes, and among said storage nodes.

5,548,773

DIGITAL PARALLEL PROCESSOR ARRAY FOR OPTIMUM PATH PLANNING

Sabrina E. Kemeny; Eric R. Fossum, both of La Crescenta, and Robert H. Nixon, Shadow Hills, all of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 30, 1993, Ser. No. 42,486
Int. Cl.[6] G06F *15/00;15/20*
U.S. Cl. 395—800 **56 Claims**



1. A path planning parallel processor, comprising:

(A) a two dimensional array of processor cells, each of said processor cells comprising:

(1) plural direction input means for receiving stimulus signals from neighboring processor cells along corresponding directions in said array,

(2) direction memory means for determining and storing the identity of a direction along which a stimulus signal is first received,

(3) means for broadcasting a subsequent stimulus signal to said neighboring processor cells after a locally stored predetermined delay time, wherein said predetermined delay time corresponds to a topology, whereby stimulus signals propagate throughout said array from a starting one of said processor cells;

(B) link means for carrying stimulus signals between neighboring processor cells; and

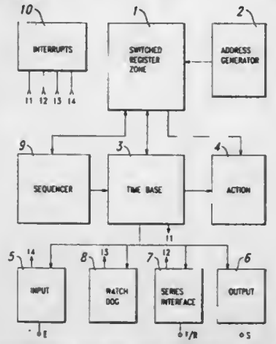
(C) means for tracing back from a user selected destination one of said processor cells to said starting cell along an optimum path of said processor cells in accordance with said identity of a direction stored in each of said processor cells.

5,548,774

MICROCOMPUTER SYSTEM PROVIDING TIME MANAGEMENT ENABLING CONTROL AND ACQUISITION OF DATA INDICATIVE OF CONDITION CHANGES OCCURRING AT HIGH SPEED

Georges Maurel, Villeneuve-Loubet, France, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 21, 1989, Ser. No. 326,754
Claims priority, application France, Mar. 22, 1988, 88 03730
Int. Cl.[6] G06F *3/00*
U.S. Cl. 395—800 **16 Claims**



1. A microcomputer system for providing time management enabling control and acquisition of data indicative of condition changes occurring at high speed, said system comprising:

memory means providing a dedicated data storage zone temporally shiftable between memory control logic and a processor respectively to define a switched register zone serving as a computation register zone of the processor;

an address generator connected to said switched register zone for providing respective addresses thereto in response to an access by the memory control logic;

sequencer means connected to said switched register zone;

a time base circuit connected to said switched register zone and to said sequencer means, said time base circuit receiving outputs from said switched register zone as commands indicative of external events and synchronizable in response thereto;

said sequencer means enabling respective time intervals to be used in the operation of said memory means defining said switched register zone;

an action unit connected to said switched register zone and to said time base circuit for receiving an output as a control command from said switched register zone and decoding the control command under the control of said time base circuit;

an input unit responsive to the receipt of data from a device being monitored to detect a change in condition occurring during the operation thereof for generating capture request signals to said address generator and event signals to said time base circuit;

an output unit connected to the output of said action unit and to said time base circuit for producing output signals in a desequenced succession;

said switched register zone and said time base circuit interacting with said input unit to provide an acquisition function and with said output unit to provide a control function;

a serial interface circuit connected to said time base circuit and driven thereby for providing data reception and transmission functions; and

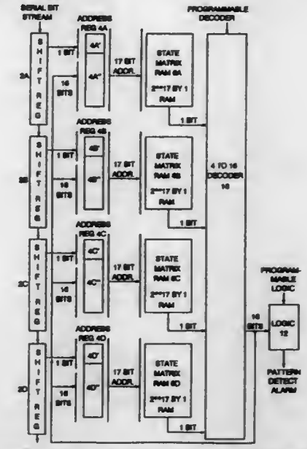
an interrupt unit for receiving interrupt requests from the programmable control function, the programmable acquisition function, or from said serial interface circuit and placing the interrupt requests in a dynamic hierarchy in determining the priorities of the interrupt requests.

5,548,775

SYSTEM AND METHOD FOR ADAPTIVE ACTIVE MONITORING OF HIGH SPEED DATA STREAMS USING FINITE STATE MACHINES

Paul C. Hershey, Manassas, Va., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1993, Ser. No. 175,854
Int. Cl.[6] G06F *7/02;7/64;11/28;11/08*
U.S. Cl. 395—800 **22 Claims**



1. A system for adaptive, active monitoring of a serial stream of data having a characteristic pattern using a plurality of finite state machines, comprising:

a shift register, having an input coupled to said serial bit stream and at least two sequential bit stages in cascade, a first stage for buffering a first occurring binary bit and a second stage for buffering a sequentially second occurring binary bit;

a first n-bit address register having in sequential order a first portion with n-1 bits indicative of a previous address in a first finite state machine and a second portion with one bit and an input to said second portion coupled to said first stage of said shift register, for receiving a bit from said serial bit stream;

first addressable memory having a plurality of data storage locations, said first memory having an n-bit address input coupled to the first and second portions for receiving from said first and second portions as an output of said first address register, said first memory configured with data stored in first and second ones of said data storage locations in sequential order to represent at least a first portion of a digital filter for said characteristic pattern;

logic means having an input coupled to an output of said first memory, for converting said data output from said first data storage location into feedback data output on a feedback path to said first register, for transferring said feedback data to said first portion of said first address register, for concatenation with said bit from said first stage to form an address for said second one of said data storage locations of said first memory;

a second n-bit address register having in sequential order a first portion with n-1 bits indicative of a previous address in a second finite state machine and a second portion with one bit and an input to said second portion thereof coupled to said second stage of said shift register, for receiving a bit from said serial bit stream;

second addressable memory having a plurality of data storage locations, said second memory having an n-bit address input coupled to the first and second portions for receiving from said first and second portions as an output of said second address register, said second memory configured with data stored in first and second ones of said data storage locations in sequential order, to represent at least a second portion of a digital filter for said characteristic pattern;

said logic means having an input coupled to an output of said second memory, for converting said data output from said first data storage location therein, into said feedback data output on said feedback path to said second register, for transferring said feedback data to said first portion of said second address register, for concatenation with said bit from said second stage to form an address for said second one of said data storage locations of said second memory; and

output signal generation means coupled to said feedback path, for outputting a pattern detection alarm in response to said digital filter detecting said characteristic pattern.

5,548,776

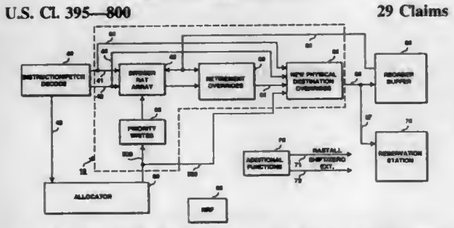
N-WIDE BYPASS FOR DATA DEPENDENCIES WITHIN REGISTER ALIAS TABLE

Robert P. Colwell, Portland, and Andrew F. Glew, Hillsboro, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Sep. 30, 1993, Ser. No. 129,867

Int. Cl.[6] G06F *9/00;12/02*

U.S. Cl. 395—800 **29 Claims**



17. In a mechanism for renaming a set of logical source registers associated with a current set of operations to a set of physical registers of an extended register set, said current set of operations comprising a first, a second, and a third operation issued within a common clock cycle and issued in program code order, an apparatus far processing intra-cycle data dependencies within said current set of operations, said apparatus comprising:

array memory for renaming a first logical source register, a second logical source register and a third logical source register associated with said first, said second, and said third operation to a first physical source register, a second physical source register and a third physical source register, respectively, wherein individual operations of said current set of operations comprise at least one logical source register and at least one logical destination register and wherein said array memory renames said current set of logical source registers simultaneously;

comparison logic for comparing a logical source register of each operation of said current set of operations with a logical destination register of each preceding operation of said current set of operations;

a multiplexer for bypassing a physical source register associated with said logical source register of each operation having a logical source register matching with a logical destination register of a preceding operation with a newly allocated physical destination register allocated for said preceding operation in response to said comparison logic, said multiplexer coupled to said comparison logic and coupled to receive data from said array memory; and

allocation logic for allocating a separate newly allocated physical destination register for individual operations of said current set of operations.

5,548,777

INTERFACE CONTROL SYSTEM FOR A CD-ROM DRIVER BY MEMORY MAPPED I/O METHOD HAVING A PREDETERMINED BASE ADDRESS USING AN ISA BUS STANDARD

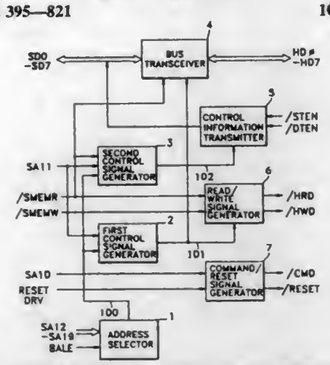
Tae-jin Woo, Incheon, Rep. of Korea, assignor to Samsung Electronics Co. Ltd., Kyungki-do, Rep. of Korea

Filed Dec. 28, 1993, Ser. No. 174,025

Claims priority, application Rep. of Korea, Dec. 31, 1992, 92-27543

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—821 **10 Claims**



1. A CD-ROM interface control system which interfaces between a PC and a CD-ROM driver by a memory mapped I/O method using an ISA BUS standard, comprising:

an address selector activated by a buffer address latch enabling signal for generating a select signal when address signals correspond with a predetermined base address;

a first control signal generator activated by said select signal for generating a first control signal according to an address signal;

a second control signal generator activated by said select signal for generating a second control signal according to said address signal and a memory read signal;

a bus transceiver activated by said first control signal for transmitting data, commands and status signals in either of two directions after deciding a transmission direction according to said memory read signal;

a control information transmitter for transmitting control information in the direction of said PC according to said second control signal;

a read/write signal generator activated by said first control signal for generating drive read and write signals by receiving memory read and write signals; and

a command/reset signal generator for generating a command signal and a reset signal by receiving an address signal and a reset driver signal.

5,548,778

SYSTEM FOR ASSIGNING DEVICE TO BE CONNECTED TO COMPUTER WHEN ADDRESS FROM COMPUTER IS EFFECTIVE BY COMPARING ADDRESS FOR ENTIRE MEMORY SPACE AND FOUND COINCIDED

Katsuhiko Hirayama, Morioka, Japan, assignor to Vorax Incorporated, Moriokashi, Japan

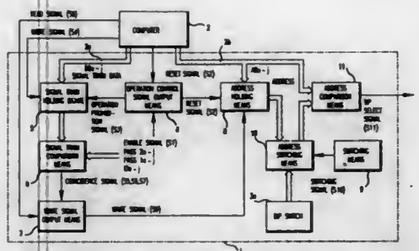
Filed May 31, 1994, Ser. No. 252,005

Claims priority, application Japan, Jun. 1, 1993, 5-130776

Int. Cl.[6] G06F *15/40*

U.S. Cl. 395—823 **4 Claims**

1. In an assignment apparatus of input-output memory space for selectively assigning a plurality of input-output devices to be connected to a computer to the memory space in a predetermined range, said assignment apparatus comprising:



signal train holding means wherein a signal train data group comprising a combination of signal train data deliberately determined for every system of said computer outputted on a data bus from said computer through an operational input and signal train data at a time when a system is set up by any of said plurality of input-output devices, is written in a storage area of the input-output device and stored to hold therein;

signal train comparison means for outputting a coincidence signal when the signal train data group stored and held in said signal train holding means and a signal train data group previously set in the input-output device are compared and coincide with each other;

address holding means for writing and storing an address on an address bus according to timing of a read-out signal from said computer when the coincidence signal is being inputted from the signal train comparison means; and

address comparison means for outputting a tip selecting signal showing that the address is effective for said input-output device when the address stored and held in said address holding means and an address for an entire area of the input-output memory space are compared and coincide with each other.

5,548,779

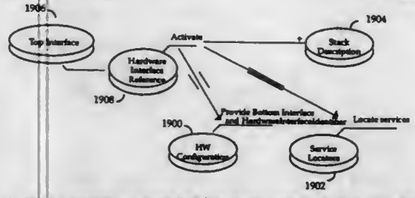
SYSTEM FOR PROVIDING SYSTEM SERVICES FOR A DEVICE TO A CLIENT USING STACK DEFINITION AND STACK DESCRIPTION OF A STACK HAVING TOP, INTERMEDIATE, AND BOTTOM SERVICE OBJECTS

Glenn P. Andert, Cupertino, and George W. Norman, Fremont, both of Calif., assignors to Taugent, Cupertino, Calif.

Filed Dec. 21, 1993, Ser. No. 171,721

Int. Cl.[6] G06F *13/00;13/14;13/20*

U.S. Cl. 395—823 **10 Claims**



1. In a computer system having a processor, a memory, and a device connected to the computer system via a communication medium, an interface reference framework for providing system services for the device to a client application executing on the computer system, while insulating the client application from the details of how the device is connected to the computer system and how the system services, which access the device, are created, the interface reference framework comprising:

(a) a plurality of service class definitions, each service class defining a service object having means for communicating according to a predefined interface;

(b) a plurality of service maker class definitions in the memory, each service maker class defining a service maker object having means for creating in the memory a corresponding service object from one of the service class definitions; and

(c) means for providing to the client application an interface reference object corresponding to the device, wherein the interface reference object includes

means for receiving from the client application a top interface for defining a protocol for the system services for the device;

means for creating a stack description in the memory, identifying a bottom service for communicating with the device, a top service for communicating with the client application according to the top interface, and an intermediate service for communicating with the top and bottom services over the communication medium according to their predefined interfaces;

means for making from the stack definition a service stack in the memory and for returning a reference to the service stack to the client application so that the client application can use the service stack to communicate with the device according to the service protocol defined by the top interface, the means for making the service stack including

means for iterating through the stack description and creating a corresponding service maker object in the memory from one of the service maker class definitions for each of the services identified in the stack definition;

means for polymorphically activating the service maker objects to create a corresponding service object from one of the service class definitions to create the service stack having a top service object communicating with an intermediate service object, which, in turn, communicates with a bottom service object.

5,548,780

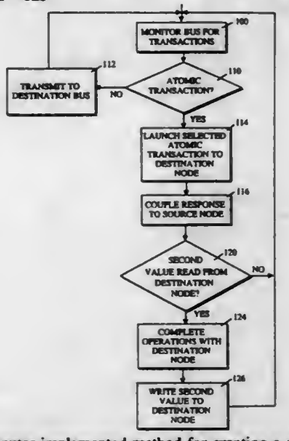
METHOD FOR SEMAPHORE COMMUNICATION BETWEEN INCOMPATIBLE BUS LOCKING ARCHITECTURES

William T. Krein, San Jose, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Jul. 21, 1994, Ser. No. 278,264

Int. Cl.[6] G06F *13/00;13/38*

U.S. Cl. 395—825 **15 Claims**



1. A computer implemented method for granting a source node on a first bus exclusive access to a destination node on a second bus that is coupled to the first bus, the method comprising the steps of:

monitoring the first bus to detect a first selected atomic transaction launched by the source node to the destination node;

launching a second selected atomic transaction to the destination node on the second bus in response to detecting the first selected atomic transaction;

coupling to the source node a value read from the destination node in response to receipt of the second selected atomic transaction at the destination node;

writing a first preselected value to the destination node in response to receipt of the second selected atomic transaction at the destination node, the first preselected value being effective to prevent another source node from gaining access to the destination node; and

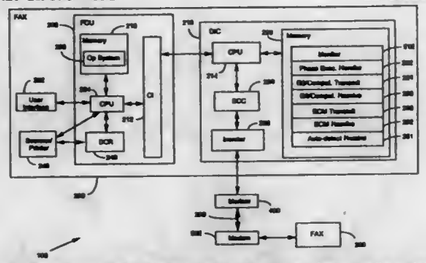
granting ownership of the destination node to the source node if the value coupled to the source node from the destination node is a second preselected value.

5,548,781

DATA COMMUNICATION APPARATUS AND METHOD FOR SWITCHING FROM G3 AND COMPATIBLE MODE TO ECM MODE BY INVERTING PROTOCOL MESSAGE SIGNAL

Yu E. Huang, San Jose, Calif., assignor to Ricoh Corporation, San Jose, Calif.

Filed Jul. 8, 1993, Ser. No. 88,843
Int. Cl.[6] H04N *1/00;1/42*
U.S. Cl. 395—831 **12 Claims**



1. A method for transmitting image data from a first data communication apparatus to a second data communication apparatus, said first communication apparatus including inverting means, said method comprising the steps of:

selecting a mode of operation for said first data communication apparatus from one of a G3 mode and Compatible mode;

receiving with said first data communication apparatus a protocol message transmitted by said second data communication apparatus in accordance with said selected mode;

when said selected mode is said Compatible mode, enabling said inverting means of said first data communication apparatus and inverting with said enabled inverting means the polarity of said received protocol message so that said received protocol message is formatted in accordance with said G3 mode;

when said selected mode is said G3 mode, disabling said inverting means of said first data communication apparatus so that the polarity of said received protocol message is not inverted and remains formatted in accordance with said G3 mode;

determining with said first data communication apparatus from said received protocol message formatted in accordance with said G3 mode that said second data communication apparatus will receive said image data if said image data is formatted in accordance with an ECM mode of operation;

after said determining step:

switching said first data communication apparatus from said selected mode to said ECM mode;

generating said image data with said first data communication apparatus in accordance with said G3 mode;

formatting said generated image from being formatted in accordance with said G3 mode to being formatted in accordance with said ECM mode;

when said selected mode is said Compatible mode, disabling said inverting means of said first communication apparatus so that the polarity of said generated image data is not inverted and remains formatted in accordance with said ECM mode;

when said selected mode is said G3 mode, keeping said inverting means of said first data communication apparatus disabled so that the polarity of said generated image data is not inverted and remains formatted in accordance with said ECM mode;

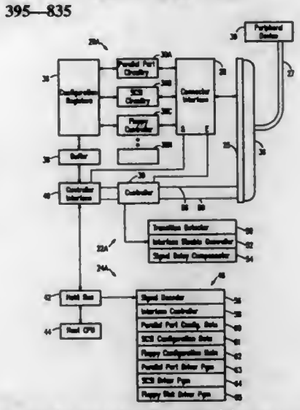
transmitting said image data formatted in accordance with said ECM mode to said second data communication apparatus with said first data communication apparatus.

5,548,782

APPARATUS FOR PREVENTING TRANSFERRING OF DATA WITH PERIPHERAL DEVICE FOR PERIOD OF TIME IN RESPONSE TO CONNECTION OR DISCONNECTION OF THE DEVICE WITH THE APPARATUS

Martin S. Michael, Los Gatos, and Frederick K. Leung, Cupertino, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 7, 1993, Ser. No. 58,397
Int. Cl.[6] G06F *15/02*
U.S. Cl. 395—835 **14 Claims**



1. Apparatus for automatically recognizing and operating cooperatively with a plurality of predefined different types of peripheral devices, said apparatus comprising:

a connector interface for transmitting and receiving peripheral device data signals to and from a peripheral device coupled thereto, and for receiving a plurality of peripheral identification signals from said peripheral device;

interface cootrol circuits coupled to said connector interface;

a plurality of configuration registers coupled to said plurality of interface control circuits, said configuration registers storing values that govern operation of said interface control circuits;

a transition detector, coupled to said connector interface, for identifying a change in signal value in said plurality of peripheral identification signals, said change in signal value indicating connection or disconnection of a peripheral device to said connector interfacer said transition detector responding solely to said change in signal value;

an interface disable generator and signal delay compensator, activated by said transition detector, for temporarily applying a disable signal to said connector interface, said disable signal creating a disable state preventing said connector interface from transmitting and receiving said peripheral device data signals to and from any peripheral device coupled thereto for a period of at least 0.2 seconds;

a signal decoder, coupled to said connector interface, for identifying the type of peripheral device, if any, connected to said connector interface, based upon said plurality of peripheral identification signals; and

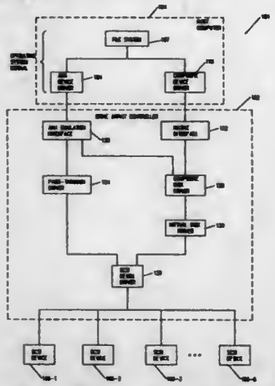
means, coupled to said configuration registers and said transition detector, for loading configuration data into said configuration registers, in accordance with said identified peripheral device type during said disable state.

5,548,783

COMPOSITE DRIVE CONTROLLER INCLUDING COMPOSITE DISK DRIVER FOR SUPPORTING COMPOSITE DRIVE ACCESSES AND A PASS-THROUGH DRIVER FOR SUPPORTING ACCESSES TO STAND-ALONE SCSI PERIPHERALS

Craig S. Jones, and Alan Davis, both of Austin, Tex., assignors to Dell USA, L.P., Austin, Tex.

Filed Oct. 28, 1993, Ser. No. 145,008
Int. Cl.[6] G06F *11/16;15/16*
U.S. Cl. 395—836 **14 Claims**



1. A drive array controller connectable to a host computer, wherein the host computer includes a first device driver configured to generate a peripheral access request having a SCSI command descriptor block embedded therein and a second device driver configured to generate a composite drive access request, said drive array controller comprising:

a first request interface coupled to receive said peripheral access request from said first device driver;

a pass-through driver coupled to said first request interface, wherein said pass-through driver is configured to extract said SCSI command descriptor block from said peripheral access request;

a second request interface coupled to receive said composite drive access request from said second device driver and configured to generate a composite command block containing information for accessing a composite drive;

a composite disk driver coupled to said second request interface and configured to translate a composite drive location indicated within said composite command block to a physical drive location, wherein said composite disk driver is further configured to provide the physical drive location within a physical drive control block;

a SCSI device driver coupled to receive said SCSI command descriptor block from said pass-through driver and configured to provide said SCSI command descriptor block to a SCSI bus having a plurality of SCSI peripherals coupled thereto during a first mode, and wherein said SCSI device driver is further coupled to receive said physical drive control block and is configured to derive a separate SCSI command descriptor block from said physical drive control block and is configured to provide said separate SCSI command descriptor block to said SCSI bus during a second mode; and

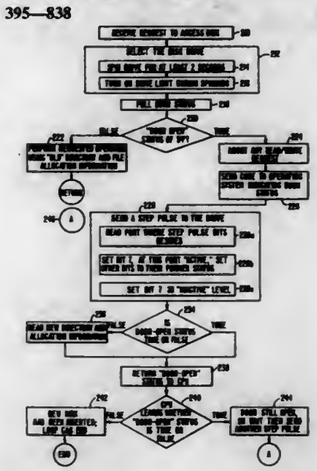
a virtual disk driver configured to generate a command block containing information for storing redundant data within said composite drive and coupled to provide said command block to said SCSI device driver.

5,548,784

AUTOMATIC DISK CHANGE DETECTION WITHOUT CAUSING HEAD MOVEMENT BY STEP PULSES

Ellis Easley, Jr., Ft. Worth; Patricia Gray, Hurst; Johannes Suwandhaputra, Ft. Worth, and Julie Wolf, Crowley, all of Tex., assignors to Tandy Corporation, Ft. Worth, Tex.

Continuation of Ser. No. 722,759, Jun. 27, 1991, abandoned. This application Jun. 21, 1994, Ser. No. 263,173
Int. Cl.[6] G06F *11/30*
U.S. Cl. 395—838 **10 Claims**



1. A method for detecting a disk change in a disk drive coupled to a computer, said computer having a processing unit and a disk controller, said disk drive having input signal lines including a step pulse signal line and a direction signal line, and an output signal line for indicating the opened/closed status of a drive door, said status resettable from an opened status to a closed status only after receipt of a step pulse signal, said disk drive capable of receiving a removable disk and reading from or writing to said disk, said disk drive having at least one head movable among a plurality of cylinder locations and having means for preventing outward head movement from the outermost cylinder location, the method comprising the steps of:

a. moving said at least one head to a clearance position where said disk can be safely removed or inserted without damage to said at least one head when said drive door is open;

b. receiving, in said processing unit, an indication that a signal on said output signal line indicates that said door is opened;

c. preventing subsequent movement of said at least one head, said preventing step including:

i. moving said at least one head to said outmost cylinder location; and

ii. maintaining a direction signal on said direction signal line indicating outward direction of said at least one head of said disk drive;

d. sending a step pulse over said step pulse signal line, while said at least one head is positioned at said outmost cylinder location and while maintaining said direction signal on said direction signal line, said sending step producing no movement of said at least one head;

e. receiving, in said processing unit, an indication of the status of said drive door responsive to said step pulse; and

f. repeating steps d and e until said status indicates said drive door is closed.

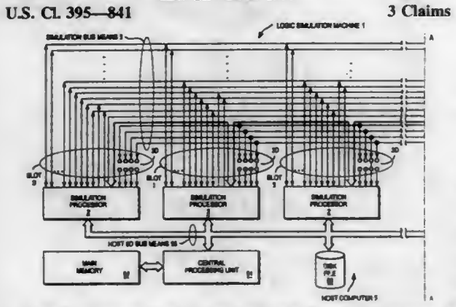
VOL 1189 ISS 3 AG 20 1996 UMI

5,548,785

INTERFACE FOR LOGIC SIMULATION USING PARALLEL BUS FOR CONCURRENT TRANSFERS AND HAVING FIFO BUFFERS FOR SENDING DATA TO RECEIVING UNITS WHEN READY

Richard G. Fogg, Jr., and Mark D. Sweet, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 502,147, Mar. 30, 1990, abandoned.
This application Jul. 14, 1993, Ser. No. 91,521
Int. Cl.[6] G06F *3/00*
U.S. Cl. 395—841 **3 Claims**



1. A host interface for a logic simulation machine having a plurality of simulation processors for transferring data between the logic simulation machine and a host computer, comprising:

a parallel simulation bus means provided in the logic simulation machine coupled to each of the simulation processors in parallel for providing concurrent transfer of data by each of the simulation processors with the host computer, said host computer including an I/O bus means for communicating with the logic simulation machine and each simulation processor generating simulation data and concurrently transferring said simulation data on a different portion of the parallel simulation bus;

a First-In First-Out buffer means provided between the parallel simulation bus means and the I/O bus means, said First-In First-Out buffer means including:

a host to simulation First-In First-Out buffer for storing on demand data from the host computer and sending the data to the logic simulation machine; and

a simulation to host First-In First-Out buffer for storing on demand data from the logic simulation machine and sending the data to the host computer; and

a control means coupled to the First-In First-Out buffer means for controlling the First-In First-Out buffer means such that on demand data being concurrently transferred between a plurality of the simulation processors in the logic simulation machine and the host computer is temporarily stored until a receiver of the data is ready to receive the data.

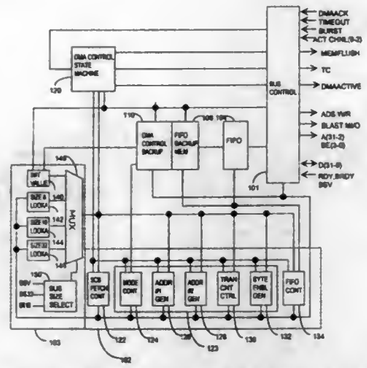
5,548,786

DYNAMIC BUS SIZING OF DMA TRANSFERS

Nader Amini; Bechara F. Boury; Sherwood Brannon; Ian A. Concilio; Richard G. Hofmann, and Terence J. Lohman, all of Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 776,924, Oct. 15, 1991, abandoned.
This application Apr. 6, 1994, Ser. No. 224,123
Int. Cl.[6] G06F *13/28;13/00;13/40*
U.S. Cl. 395—842 **10 Claims**

1. A direct memory access (DMA) controller for controlling transfers of data between devices in an information handling system; the transfers being conducted, over an input/output (I/O) bus of the system, (a) between memory devices in the system, (b) between input/output (I/O) devices in the system, and (c) between memory and I/O devices in the system; the I/O bus connecting the DMA controller with the memory and I/O devices, and certain of



the transfers being conducted during a plurality of consecutive cycles of operation of the I/O bus in which the DMA controller has continuous access to the I/O bus; the I/O bus being configured to be able to transfer plural bytes of data in parallel between the DMA controller operating during the consecutive bus cycles to receive data in parallel form, from a selected one of the memory and I/O devices (hereafter a "source" device) and to transfer received data in parallel form to another selected one of the memory and I/O devices (hereafter a "destination" device) via the I/O bus; the DMA controller comprising:

a bus control circuit for receiving bus size information from a selected one of said source and destination devices at the beginning of each of the consecutive cycles of bus operation, said bus size information indicating the parallel data transfer capacity of the respective device relative to the bus;

a look ahead circuit responsive to said bus size information received at the beginning of each of the consecutive bus cycles for providing a bus size control information signal necessary for completing a data transfer relative to said respective device in a respective bus cycle, said look ahead circuit including:

a plurality of bus size control information generator circuits for generating a plurality of bus size control information signals, each bus size control information signal being necessary for completing data transfer for a corresponding bus size;

and a bus size selection circuit for selecting one of said plurality of bus size control information signals in response to said bus size information; and

a direct memory access control generator responsive to said bus size control information signal in each said bus cycle for controlling said bus, later in the respective bus cycle to transfer data in parallel over said bus, between the DMA controller and the respective device, with a parallel width corresponding to said bus size control information.

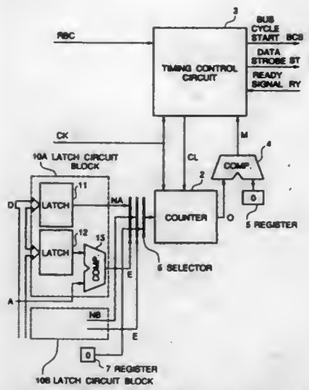
5,548,787

BUS CYCLE TIMING CONTROL CIRCUIT HAVING BUS CYCLE ENABLE/DISABLE SIGNAL DICTATED BY COUNT MEANS USING COMPARISON OF PREDETERMINED AND DESTINATION ADDRESSES FOR INITIAL COUNT

Atsushi Okamura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 27, 1993, Ser. No. 144,975
Claims priority, application Japan, Oct. 27, 1992, 4-288041
Int. Cl.[6] G06F *9/00*
U.S. Cl. 395—845 **3 Claims**

1. A bus cycle timing control circuit, comprising:



a timing control circuit for generating, in response to a data request from a central processing unit, a plurality of read/write control signals, said read/write control signals controlling a bus cycle:

a first circuit for receiving a predetermined first value from said central processing unit;

a second circuit, operatively coupled to said timing control circuit, for storing a predetermined second value; and

a counting circuit, operatively coupled to said first circuit, for, in response to a completion of said plurality of read/write control signals, starting a counting operation from said first value to said second value,

said timing control circuit including a bus cycle start enable/disable signal generating means for generating a bus cycle start disable signal which inhibits a start of a next bus cycle, corresponding to a next data request from said central processing unit, until the count value of said counting circuit is equivalent to said second value,

said bus cycle start enable/disable signal generating means generating a bus cycle start enable signal for starting said next bus cycle when the count value of said counting circuit is equivalent to said second value,

wherein, said central processing unit outputs a destination address to be accessed,

wherein, said first circuit includes a first latch circuit for storing said first value, a second latch circuit for storing a predetermined address, and an address comparator for comparing said predetermined address stored in said second latch circuit with said destination address, and

wherein, when said address comparator indicates that said predetermined address coincides with said destination address, said first value stored in said first latch circuit is supplied to said counting circuit.

5,548,788

DISK CONTROLLER HAVING HOST PROCESSOR CONTROLS THE TIME FOR TRANSFERRING DATA TO DISK DRIVE BY MODIFYING CONTENTS OF THE MEMORY TO INDICATE DATA IS STORED IN THE MEMORY

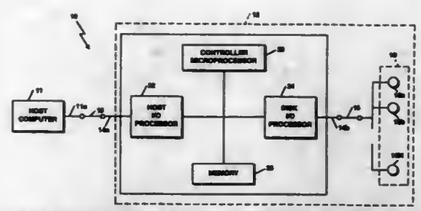
James M. McGillis, Franklin, and Jeffrey M. Lasker, Marlboro, both of Mass., assignors to EMC Corporation, Hopkinton, Mass.

Filed Oct. 27, 1994, Ser. No. 330,193
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—851 **31 Claims**

1. A disk controller, adapted to couple a host computer to a disk drive, the disk controller comprising:

a controller microprocessor;

a memory;



a host processor adapted to couple to the host computer, said host processor coupled to said controller microprocessor and to said memory, said host processor for transferring data to said memory and for receiving data from said memory; and

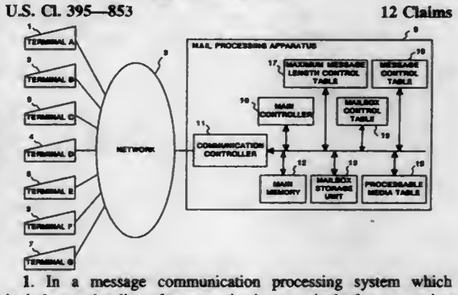
a disk processor adapted to couple to the disk drive, said disk processor coupled to said controller microprocessor and to said memory, said disk processor for transferring data to said memory and for receiving data from said memory wherein in response to a predetermined command generated by the host computer, said host processor transfers information to said memory and said disk processor transfers data from said memory to the disk drive wherein said host processor controls when the disk processor transfers the data to the disk drive.

5,548,789

MESSAGE COMMUNICATION PROCESSING APPARATUS FOR SELECTIVELY CONVERTING STORING AND TRANSMITTING MESSAGES OF DIFFERENT LENGTHS

Yasuo Nakanura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 823,465, Jan. 22, 1992, abandoned.
This application Mar. 13, 1995, Ser. No. 403,117
Claims priority, application Japan, Jan. 24, 1991, 3-007061; Nov. 14, 1991, 3-299267
Int. Cl.[6] G06F *15/167*
U.S. Cl. 395—853 **12 Claims**



1. In a message communication processing system which includes a plurality of communication terminals for processing media information and a center apparatus having a storage and forward exchange function for communication messages sent from the communication terminals, the messages comprising media information, said center apparatus comprising:

discriminating means for determining whether a message length of a message sent from a first terminal is greater than a predetermined length;

memory means for storing the message if said discriminating means determines that the message length of the message is not greater than the predetermined length;

first transmitting means for transmitting the message stored in said memory means to a second terminal in response to an instruction from said second terminal; and

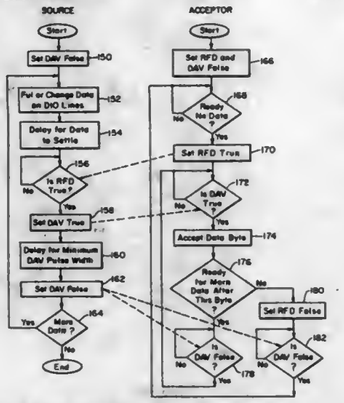
second transmitting means for transmitting the message sent from said first terminal directly to the second terminal without storing the message into said memory means if said discriminating means determines that the message length of the message is greater than the predetermined length.

5,548,790

HIGH SPEED IEEE 488 BUS DATA TRANSFER SYSTEM

Sidney H. Mayer, Winchester, Mass., assignor to Capital Equipment Corporation, Burlington, Mass.

Filed Feb. 10, 1993, Ser. No. 16,069
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—855 7 Claims



6. A high speed data transfer process comprising:

providing data signals from a source means to a plurality of data receivers for operating on said applied data signals from the source;

producing a first output indication of the operability thereof of said data receivers on applied data signals from the source and providing a second output indication of the inoperability thereof on applied data signals if a said receiver cannot accept additional data signals;

coupling data signals from the source means to each of the data receivers;

producing a third output indication, for a fixed period of time, of the availability of data signals from the source; and

delaying the production of said third output indication, upon the appearance of said first output indication.

5,548,791

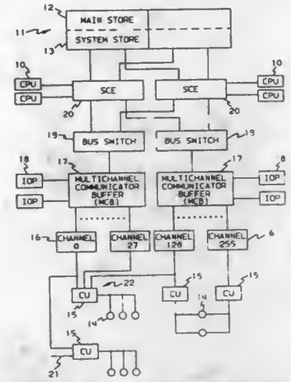
INPUT/OUTPUT CONTROL SYSTEM WITH PLURAL CHANNEL PATHS TO I/O DEVICES

Daniel F. Casper, Poughkeepsie; Steven G. Glassen, Wallkill; Marten J. Halma, Poughquag, all of N.Y., and Sandra K. Ryan, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 25, 1994, Ser. No. 279,581
Int. Cl.[6] G06F *13/14*
U.S. Cl. 395—858 8 Claims

1. A system for controlling input/output (I/O) operations between a host computer including a host processor and host memory, in communication with one or more I/O devices each identified by a unique number specified as part of I/O instructions executed by the host processor and communicating with the host computer through one or more channels, the host memory having a control area including control data associated with each of the one or more I/O devices, the control data including identification of the operation to be performed between the host computer and I/O device and identification of one or more channels available to establish a physical path between the I/O device and host computer (CHPID), said system comprising:

a queue in each channel for storing an indication of work to be performed by the channel for an I/O device after completing work for an I/O device currently in progress;



work indicating means in the control area of the host memory for indicating work to be performed with specified I/O devices and thereby identifying the control areas associated with the I/O devices, the indication of work being stored in said work indicating means by the host processor in response to execution of an I/O instruction;

busy indicator means for indicating the busy/not busy status of each channel;

queue status means for indicating the use status of said queues in the channels;

channel communication means including a plurality of locations, one for each channel, for storing an indication of work for the associated channel;

I/O controller means connected to the host computer for controlling the initiation of work to be performed between the host computer and I/O devices;

said I/O controller means including;

means for accessing said work indicating means, and thereby the control data associated with an associated I/O device, for determining the channels having a physical path to the I/O device;

means for accessing said busy indicator means and said queue status means;

initiating means, responsive to said busy indicator means and said queue status means indicating the non busy status of a channel, or if all channels are busy, a channel having a said queue, creating a physical path to the I/O device, for transferring the indication of the work to said channel communication means location associated with the channel of the available physical path and removing the indication of work from said work indicating means; and

means, responsive to said busy indicator means and said queue status means indicating the unavailability of any channel, and thus a physical path to the I/O device, for returning the indication of work to said work indicating means.

5,548,792

MULTI-USER INFORMATION RETRIEVAL SYSTEM WITH TRANSFER DELAY AND HIGH BIT RATE

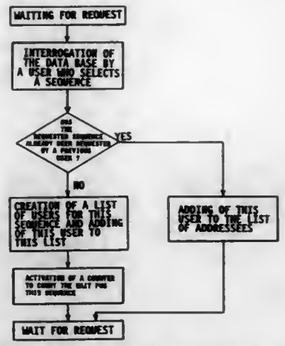
Gérard Babonneau, Betton, France, assignor to France Telecom, Paris, France

Filed Jun. 4, 1993, Ser. No. 72,972
Claims priority, application France, Jun. 6, 1992, 92 06885
Int. Cl.[6] G06F *13/14*
U.S. Cl. 395—859 20 Claims

1. A method of transmitting a data sequence from a data base to a plurality of users, the method comprising the steps of:

storing the data sequence in the data base, the storing step including the steps of

dividing the data sequence into a plurality of data blocks, and



storing the data blocks in a plurality of carriers;

receiving a first request from a first user for the sequence;

extracting data blocks from the plurality of carriers of the data base, the data blocks being extracted in an order which is different from the order in which the data blocks are to be transmitted;

rearranging the data blocks into the order in which the data blocks are to be transmitted;

delaying the transmission of the sequence to the first user;

receiving a second request from a second user for the sequence, the receiving step occurring during the delaying step, the receiving step including a list compiling step wherein a list of users who have requested the data sequence is compiled; and

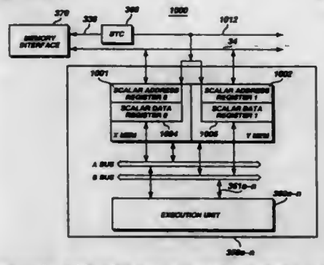
simultaneously transmitting the data sequence to the all of the users on the compiled list of users after the delaying step.

5,548,793

SYSTEM FOR CONTROLLING ARBITRATION USING THE MEMORY REQUEST SIGNAL TYPES GENERATED BY THE PLURALITY OF DATAPATHS

David L. Sprague, Trenton, N.J.; Kevin Harney, Brooklyn, N.Y.; Eiichi Kowashi, Lawrenceville, N.J.; Michael Keith, Holland, Pa.; Allen H. Simon, Belle Meade, N.J.; Gregory M. Papadopoulos, Burlinton, Mass.; Walter P. Hays, Brookline, Mass.; George F. Salem, Cambridge, Mass.; Shih-Wei Shiue, Lexington, Mass.; Anthony P. Bertapelli, Ayer, Mass., and Vitaly H. Shilman, Brookline, Mass., assignors to Intel Corporation, Santa Clara, Calif.

Division of Ser. No. 782,332, Oct. 24, 1991, Pat. No. 5,361,370.
This application Apr. 21, 1994, Ser. No. 230,899
Int. Cl.[6] G06F *13/00;15/16*
U.S. Cl. 395—860 18 Claims



1. A system for arbitrating among memory requests, comprising:

(a) global memory means;

(b) a plurality of datapaths, each datapath comprising:

datapath processing means for executing instructions of an instruction sequence and for providing a plurality of memory request signal types in accordance with the instructions;

local memory means;

global port means for transferring data between the local memory means and the global memory means; and

dual port means comprising first and second local port means for transferring data between the local memory means and the datapath processing means, wherein the first and second local port means permit simultaneous transfer of data between the local memory means and the datapath processing means;

(c) data bus means coupled to the global memory means for transferring data to and from the global memory means; and

(d) transfer controller means connected to the plurality of data paths and to the global memory means for controlling block transfer and scalar data transfers between the local memory means and the global memory means over the data bus means and for controlling arbitration among competing datapaths of the plurality of datapaths to grant to a selected datapath access to the data bus means in accordance with the memory request signal types generated by the datapaths of the plurality of datapaths;

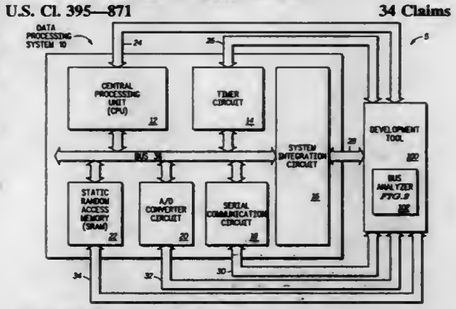
wherein the plurality of memory request signal types comprises instruction memory request signals, scalar memory request signals, first-in and first-out memory request signals, statistical decoder memory request signals, and block transfer memory request signals; further wherein instruction memory request signals have a first arbitration priority, scalar memory request signals, first-in and first-out memory request signals, and statistical decoder memory request have a second arbitration priority, and block transfer memory request signals have a third arbitration priority, wherein the first arbitration priority is higher priority than the second arbitration priority and the second arbitration priority is higher priority than the third arbitration priority.

5,548,794

DATA PROCESSOR AND METHOD FOR PROVIDING SHOW CYCLES ON A FAST MULTIPLEXED BUS

Oded Yishay; Joseph Jelemensky, and Alexander L. Iles, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 5, 1994, Ser. No. 349,286
Int. Cl.[6] G06F *13/40;9/34*
U.S. Cl. 395—871 34 Claims



1. A data processor, comprising:

a central processing unit for providing a plurality of control signals, a plurality of address values, and a plurality of data values; and

a system integration circuit coupled to the data processor for receiving the plurality of control signals, the plurality of address values, and the plurality of data values, the system integration circuit generating a first control signal enabling the data processor to execute a show cycle, the system integration circuit providing the plurality of address values and the plurality of data values in a first predetermined format on a multiplexed bus when the first one of the plurality of control signals indicates the data processor is executing the show cycle, the first predetermined format including a first one of the plurality of data values which is associated with a first

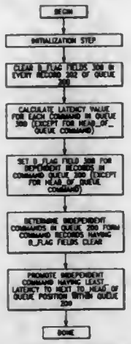
address value and is accessed during a first bus cycle, the system integration circuit providing the first one of the plurality of data values to the multiplexed bus during a second cycle in which a second one of the plurality of address values is provided to the multiplexed bus.

5,548,795

METHOD FOR DETERMINING COMMAND EXECUTION DEPENDENCIES WITHIN COMMAND QUEUE REORDERING PROCESS

Wing Y. Au, Sunnyvale, Calif., assignor to Quantum Corporation, Milpitas, Calif.

Filed Mar. 28, 1994, Ser. No. 218,567
Int. Cl.[6] G06F *12/02*
U.S. Cl. 395—872 **11 Claims**



10. A method for reordering presently unexecuted user data block access commands in relation to detected execution dependencies therebetween in a command queue within a data storage device providing a multiplicity of logical block address (LBA) storage locations for storing blocks of user data, the method comprising the steps of:

maintaining a plurality of user data block access command records, a particular record representing a particular command of the user data block access command queue, and the particular record including an LBA range, a dependency flag field, a queue pointer field, and a dependency list, the dependency list representing rearward members of the command queue having execution dependency upon the particular command, the queue pointer field maintaining position of the particular command within the command queue, the dependency flag indicating an execution dependency of the particular command upon a more forward command in the command queue, and

reordering the command queue by:

first clearing all dependency flags of records of the commands therein,

traversing the plurality of command records, and calculating execution latency values for the commands therein in relation to the head-of-queue command,

setting the dependency flags of the records of rearward members having execution dependencies upon each record traversed,

restricting command reordering to a next-to-head-of-queue position to those commands having records with command dependency flags clear, and

promoting one of those command determined to have a least execution latency value to the next-to-head-of-queue position within the command queue

building dependency lists of each record for each member of said command queue as new records are appended to said plurality of user data block access command records; and

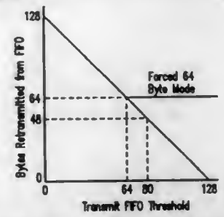
deleting a record representing the top-of-queue command from said plurality of user data block access command records upon completion of execution of the top-of-queue command and thereby automatically removing dependency upon the executed command from the dependency lists of all other records remaining in the plurality of user data block access command records.

5,548,796

METHOD OF AUTOMATIC RETRANSMISSION OF FRAMES IN A LOCAL AREA NETWORK

Kevin D. Ketchum, Folsom, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 147,348, Nov. 2, 1993, abandoned. This application May 4, 1994, Ser. No. 237,822
Int. Cl.[6] G06F *13/376;* **H04J** *3/02*
U.S. Cl. 395—872 **1 Claim**



1. A method of retransmitting a selected number of initial elements of an information frame from a first station in a local area network after a transmission collision occurs between an initial attempt to transmit the information frame from the first station and a simultaneous attempt to transmit an information frame from a second station in the local area network, the second station having transmit priority over the first station; the method comprising:

providing a storage device having a number Y of storage locations for sequentially storing individual information frame elements;

selecting one of the following retransmission modes:

(i) a low latency mode wherein a storage device threshold location Z is designated in the O-Y sequence of storage locations such that storage locations O-Z may be overwritten with new information elements after the transmission collision, but storage locations (Z+1)–Y may not be overwritten until the first to occur of either successful retransmission of the information elements stored in storage locations (Z+1)–Y or a predefined number of unsuccessful attempts at retransmission of said information elements, where Z may be less than, greater than or equal to X, and

(ii) a high latency mode wherein the storage device threshold location Z=X, and wherein mode (i) is selected following successful retransmission of the information stored in storage locations (X+1)–Y.

5,548,797

DIGITAL CLOCK PULSE POSITIONING CIRCUIT FOR DELAYING A SIGNAL INPUT BY A FIST TIME DURATION AND A SECOND TIME DURATION TO PROVIDE A POSITIONED CLOCK SIGNAL

Ravi K. Arimilli, Round Rock; John S. Dodson, Pflugerville, and Jerry D. Lewis, Round Rock, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 3, 1994, Ser. No. 316,976
Int. Cl.[6] G06F *1/04;13/14*
U.S. Cl. 395—880 **12 Claims**

1. A data processing system comprising:

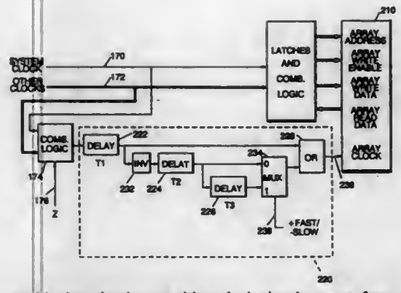
one or more processors;

a system bus;

a memory system;

a system control unit;

one or more input/output channel control units (IOCC), each of said IOCC units comprising a storage array and a digital clock



positioning circuit to position clock signals output from said digital clock pulse positioning circuit to be active when information inputs to said array are stable;

wherein said digital clock pulse positioning circuit further comprises:

a first digital delay circuit for delaying an input signal by a first time duration T1;

a second digital delay circuit responsive to an output of said first digital delay circuit for delaying a signal input to said second digital delay circuit by a second time duration T2; and

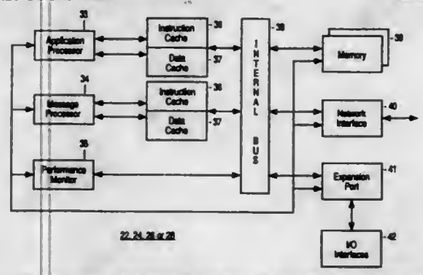
circuit means responsive to an output of said first digital delay circuit and an output of said second digital delay circuit for providing a positioned clock signal for said array.

5,548,798

METHOD AND APPARATUS FOR SOLVING DENSE SYSTEMS OF LINEAR EQUATIONS WITH AN ITERATIVE METHOD THAT EMPLOYS PARTIAL MULTIPLICATIONS USING RANK COMPRESSED SVD BASIS MATRICES OF THE PARTITIONED SUBMATRICES OF THE COEFFICIENT MATRIX

Adrian S. King, Albuquerque, N.M., assignor to Intel Corporation, Santa Clara, Calif.

Filed Nov. 10, 1994, Ser. No. 337,246
Int. Cl.[6] G06F *7/52;9/345*
U.S. Cl. 395—888 **32 Claims**



1. A computer implemented method for solving dense systems of linear equations on a parallel processing computer system comprising the steps of:

a) partitioning a coefficient matrix of a dense system of linear equations into a plurality of submatrices by processor means of the parallel processing computer system, and storing the submatrices by the processor means onto storage means of the parallel processing computer system in electromagnetic/optical representations;

b) generating in parallel a plurality of sets of singular value decomposed (SVD) basis matrices for the submatrices by the processor means, one set of SVD basis matrices for each submatrix, and rank compressing in parallel the SVD basis matrices in accordance to a calculation error tolerance limit by the processor means, and storing in parallel the rank compressed SVD basis matrices by the processor means onto the storage means of the parallel processing computer system in electromagnetic/optical representations; and

c) iteratively solving the dense system of linear equations by the processor means, performing all matrix multiplications involving the coefficient matrix indirectly by performing in parallel partial matrix multiplications using the rank compressed SVD basis matrices of the partitioned submatrices, and accumulating the partial matrix multiplication results.

5,548,799

MOBILE COMMUNICATION SYSTEM HAVING A CONTROL FOR LIMITING THE NUMBER OF CARRIERS BASED ON THE LEVEL OF INTERMODULATION DISTORTION

Fumihiko Kobayashi, and Junichi Hasegawa, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 25, 1994, Ser. No. 186,334
Claims priority, application Japan, Aug. 2, 1993, 5-191018
Int. Cl.[6] H04B *1/60;17/00;17/02;* **H03C** *1/62*
U.S. Cl. 455—8 **6 Claims**

1. A mobile communication system, comprising:

an exchange;

a radio base station connected to said exchange for establishing a communication interface with a mobile terminals, said radio base station including a modulation apparatus including a plurality of modulation circuits for outputting carriers different from each other, an amplification apparatus including a plurality of amplification circuits connected in parallel with each other, and failure supervision means for supervising a failed condition of said amplification circuits of said amplification apparatus; and

output carrier number control means for controlling the number of output carriers of said modulation apparatus in response to amplification circuit failure information detected by said failure supervision means,

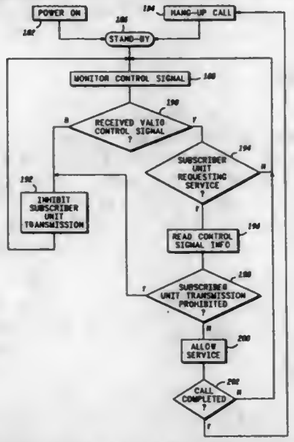
wherein said output carrier number control means includes failed amplification circuit number detection means for detecting the number of failed ones of said amplification circuits, upper limit carrier number determination means for determining the upper limit number of carriers from the failed amplification circuit number detected by said failed amplification circuit number detection means, and modulation circuit stopping instruction means for outputting a stopping instruction to a required number of ones of said modulation circuits so that the number of effective ones of said modulation circuits may not exceed the upper limit carrier number determined by said upper limit carrier number determination means.

5,548,800

SATELLITE TELECOMMUNICATION SYSTEM WITH APPARATUS FOR PROTECTING RADIO ASTRONOMY AND METHOD OF USING SAME

Keith A. Olds, Mesa, Ariz., and Christopher N. Kurby, Elmhurst, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 3, 1994, Ser. No. 254,012
Int. Cl.[6] H04B 7/185
U.S. Cl. 455—12.1 18 Claims



1. A method of inhibiting a subscriber unit in a satellite communications system from transmitting within a protection zone, said method comprising the steps of:

(a) transmitting a beacon control signal synchronously with a satellite control signal to said subscriber unit within said protection zone, said beacon control signal comprising a transmission-prohibiting parameter;

(b) receiving at said subscriber unit said beacon control signal synchronously with said satellite control signal, said beacon control signal containing said transmission-prohibiting parameter and dominating said satellite control signal; and

(c) inhibiting said subscriber unit's transmission capability in response to reception of said transmission-prohibiting parameter in said beacon control signal.

5,548,801

SYSTEM FOR DETERMINING AND REGISTERING LOCATION OF MOBILE TERMINAL FOR COMMUNICATION SYSTEM WITH NON-GEOSYNCHRONOUS SATELLITES

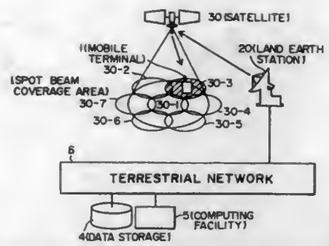
Noriyuki Araki, Ohmiya; Hideyuki Shinonaga, Hanno, and Yasuhiko Itoh, Tokyo, all of, Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 1, 1994, Ser. No. 189,891
Claims priority, application Japan, Feb. 10, 1993, 5-044390; Feb. 10, 1993, 5-044391
Int. Cl.[6] H04B 7/185
U.S. Cl. 455—13.1 7 Claims

1. A system for determining and registering locations of mobile terminals for a communication system with non-geosynchronous satellites and a terrestrial network wherein:

said non-geosynchronous satellites are disposed and the terrestrial network on the earth has a plurality of land earth stations so that each of said mobile terminals in a selected service area on the earth is allowed to communicate with at least one of said land earth stations via at least one of said satellites;

each of said non-geosynchronous satellites irradiates at least one corresponding spot beam to each of smaller areas into which a coverage area of the system is divided, whereby each of said satellites selectively communicates with said mobile terminals in said coverage area through said at least one corresponding spot beam;



identification information on any of said land earth stations, of said non-geosynchronous satellites and of each spot beam irradiated to communicate with a corresponding one of said non-geosynchronous satellites is transmitted through said each spot beam irradiated from a corresponding one of said non-geosynchronous satellites; and

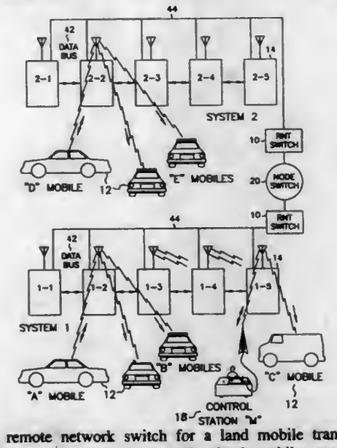
each of said mobile terminals in said selected area effectively registers information on its location in said terrestrial network using said identification information received via said non-geosynchronous satellites.

5,548,802

METHOD AND APPARATUS FOR A REMOTE NETWORK SWITCH FOR A LAND MOBILE TRANSMISSION TRUNKED COMMUNICATION SYSTEM

Keith W. Barnes; Donald R. Bauman; Howard N. Brace; Philip A. Keefer, and Micheal E. Mihelich, all of Waseca, Minn., assignors to E. F. Johnson Company, Burnsville, Minn.

Continuation of Ser. No. 903,050, Jun. 23, 1992, abandoned, which is a continuation of Ser. No. 716,757, Jun. 18, 1991, Pat. No. 5,159,701, which is a continuation of Ser. No. 332,675, Mar. 31, 1989, abandoned. This application Mar. 28, 1995, Ser. No. 412,098
Int. Cl.[6] H04B 7/14
U.S. Cl. 455—15 16 Claims



1. A remote network switch for a land mobile transmission trunked communication system, the land mobile transmission trunked communication system having a plurality of transceiver means for transmitting and receiving transmission trunked radio communications over one or more radio channels, the transmission trunked radio communications comprising an information signal having either voice information, data information, or both, and a control signal, and one or more repeater sites, each repeater site having a plurality of repeater means, each repeater means for establishing transmission trunked radio communications on a pre-assigned one of the radio channels between the repeater means and one or more transceiver means, and all of the repeater means at a repeater site operably connected together by a first bus means for synchronously communicating the control signals among the repeater means, the land mobile transmission trunked communication system further including access to an external communication network having one or more remote transceivers., the remote network switch comprising:

a plurality of repeater interface means, each repeater interface means operably connected to a unique one of the repeater means and to a second bus means separate from the first bus means for synchronously communicating both control and information signals between the remote network switch and the unique one of the repeater means;

one or more remote communication interface means for providing control and data information for establishing a remote communication between one or more of the transceiver means and the one or more remote transceivers in the external communication network; and

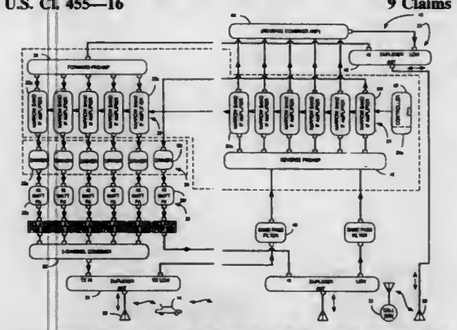
control means operably connected to all of the repeater interface means via the second bus means and to all of the remote communication interface means via a third bus means and responsive to the control and information signals received from both the interface means and the remote communication interface means for selectively interconnecting two or more of the repeater means, or one or more of the repeater means and one or more of the remote communication interface means.

5,548,803

DUAL-MODE BOOSTER SYSTEM

Michael W. Evans, Forest, Va., assignor to Orion Industries, Inc., Cleveland, Ohio

Filed Mar. 31, 1992, Ser. No. 861,209
Int. Cl.[6] H04B 7/155
U.S. Cl. 455—16 9 Claims



1. A method of providing service in a radio telephone system to analog and digital subscriber units comprising:

detecting the presence an electromagnetic signal of a first frequency carrying at least one digitized communication between the system and one of the digital subscriber units;

establishing amplification paths between the system and the unit;

sending a control message to the unit directing it to communicate with the system at a second frequency;

repeating the digitized communication from the unit to the system without interfering with the other digitized communications carried by the electromagnetic signal; and

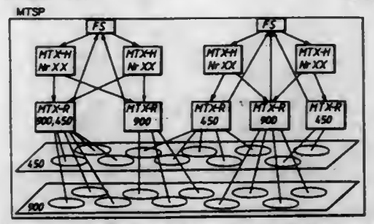
repeating at least one analog communication between the system and an analog subscriber unit simultaneously with repeating a digitized communication.

5,548,804

METHOD AND ARRANGEMENT FOR INCREASING THE CAPACITY IN A MOBILE TELEPHONE SYSTEM

Henrik Rosenlund, Haninge, Sweden, assignor to Televerket, Farsta, Sweden

Continuation of Ser. No. 768,597, Nov. 18, 1991, abandoned. This application Mar. 21, 1994, Ser. No. 214,674
Claims priority, application Sweden, Feb. 2, 1990, 9000375
Int. Cl.[6] H04Q 7/20
U.S. Cl. 455—33.1 6 Claims



1. A method of expanding the number of mobile hosts that a Mobile Telephone Exchange (MTX) can handle, comprising the steps of:

storing information about plural mobile stations in a first home register of a first MTX, the first MTX belonging to a coverage area of a mobile telephone service provider and the first MTX handling radio traffic from plural base stations in the coverage area;

subscribing a new mobile station to the mobile telephone service provider for the coverage area serviced by the first MTX;

determining, at the mobile telephone service provider, a second MTX with a second home register, the second home register storing information about fewer mobile stations than the first home register; and

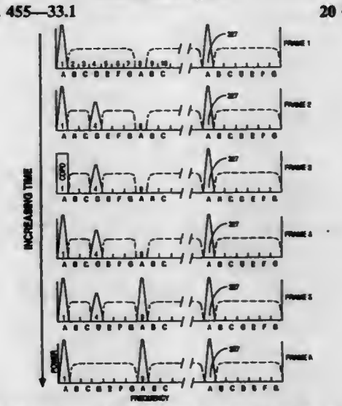
storing information about the new mobile station in the second home register of the second MTX determined in the determining step.

5,548,805

DATA COMMUNICATION SYSTEM USING SPECTRAL OVERLAY

Isaac Shpantzer, Edina; J Eric. Dunn, St. Paul, both of Minn., and Yehnda Meiman, Rishon Lezion, Israel, assignors to Racotek, Inc., Minneapolis, Minn.

Filed Aug. 23, 1994, Ser. No. 294,489
Int. Cl.[6] H04Q 7/00
U.S. Cl. 455—33.1 20 Claims



1. A data communication method for use in a radio system in which information is transmitted over channelized frequencies,

each of which channels is adapted to carry a single stream of information, comprising the steps of:

notching predetermined channels in a selected physical area; and

transmitting a single data stream divided across a plurality of channels simultaneously, but not transmitting said single data stream on the channels that are notched.

5,548,806

MOBILE COMMUNICATION SYSTEM HAVING A CELL STRUCTURE CONSTITUTED BY INTEGRATING MACRO CELLS AND MICRO CELLS

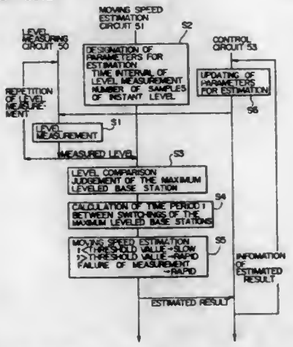
Akira Yamaguchi, Tokyo; Hideo Kobayashi, and Toshio Mizuno, both of Saitama, all of, Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Jan. 24, 1994, Ser. No. 185,022

Claims priority, application Japan, Jan. 25, 1993, 5-027112; Feb. 10, 1993, 5-045731

Int. Cl.[6] H04Q *7/36*

U.S. Cl. 455—33.1 **17 Claims**



1. A mobile communication system having a cell structure constituted by integrating macro cells and micro cells, said system including at least one mobile station, said cell structure covering a unit service area by a plurality of the micro cells each having a predetermined size and covering the same unit service area by the single macro cell having a larger size than the size of said micro cell,

each of said micro cells including a micro cell base station for transmitting at least radio control channel at a predetermined frequency and slot,

said mobile station including means for repeatedly measuring received level of the radio control channels from said micro cell base stations, means for estimating its moving speed in accordance with changing rate of the measured level, and means for selecting, in accordance with the estimated moving speed, a radio link control between the mobile station and the base station to be executed by the micro cell or by the macro cell; and

wherein said moving speed estimation means includes means for judging the maximum leveled base station in accordance with the measured received level, means for calculating a period between times at each of which the maximum leveled base station changes, and means for judging whether the moving speed is high or low by comparing the calculated period with a threshold value.

5,548,807

MOBILE COMMUNICATION SYSTEM COMPRISING BASE STATIONS EACH HAVING OMNIDIRECTIONAL ANTENNA FOR RECEPTION OF INTERFERENCE WAVE

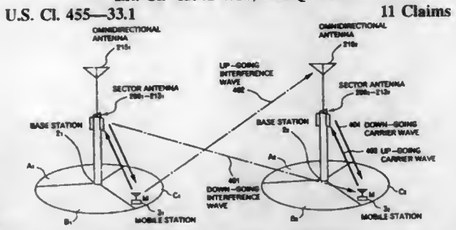
Tetsuro Ueda, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 7, 1994, Ser. No. 319,526

Claims priority, application Japan, Oct. 7, 1993, 5-251889

Int. Cl.[6] H04B *7/26;* **H04Q** *7/20*

U.S. Cl. 455—33.1 **11 Claims**



1. A mobile communication system comprising:

a plurality of base stations each having a plurality of sectors, each sector having an antenna and a plurality of communication channels previously allocated thereto; and

a plurality of mobile stations each communicating with a neighboring base station through one of said communication channels;

each base station further including,

an omnidirectional receiving antenna other than said sector antennas, said omnidirectional receiving antenna configured to receive interference waves;

a receiver coupled to said omnidirectional receiving antenna and configured to receive said interference waves through said omnidirectional receiving antenna on all communication channels previously allocated to said each base station in all directions to detect interference wave levels;

sector receiving means for receiving a calling signal from one of said mobile stations through an antenna of one of said sectors to detect a carrier wave level for communication with said one of said mobile stations;

estimating means for estimating a channel quality of each of unused communication channels of said communication channels previously allocated to said one of said sectors, based upon said detected interference wave levels and said detected carrier wave level; and

channel designating means for designating one of said unused communication channels having an estimated channel quality satisfying a predetermined reference quality.

5,548,808

METHOD FOR PERFORMING A HANDOFF IN A COMMUNICATION SYSTEM

Eugene J. Bruckert, Arlington Heights, and Richard J. Vilmur, Palatine, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 8, 1993, Ser. No. 162,922

Int. Cl.[6] H04Q *7/00*

U.S. Cl. 455—33.2 **4 Claims**

1. A method of performing a handoff in a communication system, said method comprising the steps of:

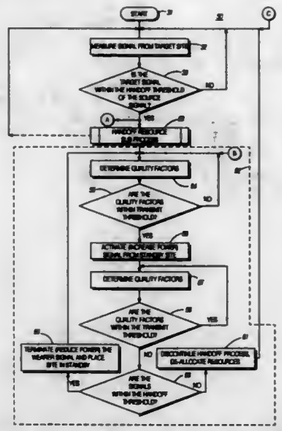
A) measuring a power of a first signal of a first site at a subscriber being served by a second site;

B) determining if said power of said first signal meets a handoff threshold;

C) entering a handoff procedure if said first signal meets said handoff threshold;

D) estimating a first signal quality for a signal transmitted from said first site received by said subscriber;

E) activating a traffic signal from said first site to said subscriber if said first signal quality estimated for said signal transmitted from said first site meets a transmit threshold;



F) terminating said traffic signal from said first site to said subscriber if said first signal quality estimated for said signal transmitted from said first site fails to meet said transmit threshold;

G) reactivating said traffic signal from said first site to said subscriber if said first signal quality estimated for said signal transmitted from said first site meets said transmit threshold;

H) estimating a second signal quality for a signal transmitted from a second site;

I) terminating a traffic signal from said second site to said subscriber if said second signal quality estimated for said signal transmitted from said second site fails to meet said transmit threshold;

J) measuring a power of said second signal of said second site at said subscriber;

K) determining if said power of said second signal of said second site meets said handoff threshold; and

L) exiting said handoff procedure if said second signal of said second site fails to meet said handoff threshold.

5,548,809

SPECTRUM SHARING COMMUNICATIONS SYSTEM AND SYSTEM FOR MONITORING AVAILABLE SPECTRUM

Paul H. Lemson, St. Louis, Mo., assignor to Southwestern Bell Technology Resources, Inc., St. Louis, Mo.

Filed Jul. 15, 1992, Ser. No. 913,341

Int. Cl.[6] H04Q *7/34*

U.S. Cl. 455—34.1 **28 Claims**

1. A method for allocating one or more ranges of transmission frequency to a mobile communications network that shares a common block of frequency spectrum with an incumbent radio system having a plurality of incumbent radio stations, said mobile communications network having at least one base station and at least one user terminal capable of transmitting and receiving signals to and from said base station, said mobile communications network assigning frequencies on which said user terminal transmits and receives said signals, periodically receiving parameters representative of ranges of frequencies which can be assigned, and controlling the assignment of frequencies so that only frequencies within said ranges of frequencies which can be assigned are assigned, said method comprising:

measuring, at a measuring location within a general area of said mobile communications network, a plurality of signal levels of signals falling within a plurality of frequency segments of said common block of said frequency spectrum, said plurality of frequency segments comprising segments that are needed in order to identify any frequency ranges to be used by said mobile communications network which will conflict with any frequency ranges used by said incumbent radio system;

thereafter identifying which of said plurality of incumbent radio stations are nearby incumbent radio stations, by determining which incumbent radio stations have a geographic location within a certain range of the measurement location and have a transmit or receipt frequency that is within a certain range of said frequency segment, and by using the results of the previous step of measuring;

thereafter calculating whether, for a specified range of frequencies to be assigned to said mobile communications network, interference is likely to occur between said mobile communications network and at least one of the identified nearby incumbent radio stations as a function of the geographic location and the transmit and receive frequencies of said at least one nearby incumbent radio station; and

thereafter setting said parameters using the results of the previous step of calculating to values which prevent said communications network from assigning ranges of frequencies for which a calculation was made indicating that interference is likely to occur, said parameters being periodically received by said mobile communications network, said setting step comprising creating all of said parameters when said parameters are set.

5,548,810

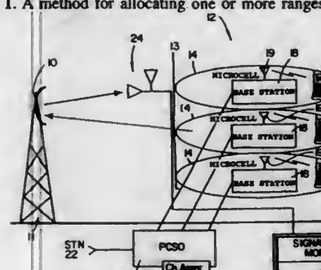
HANDS-FREE TWO-WAY RADIO COMUNICATION SYSTEM

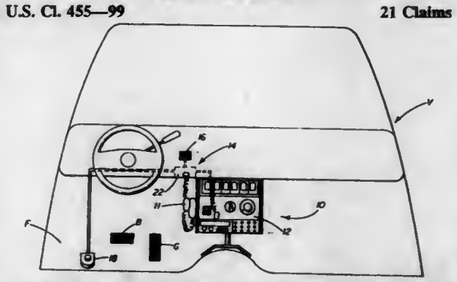
Donnie L. Riddell, Winchester, and Fred R. Shepherd, Versailles, both of Ky., assignors to Safe Pursuit, Inc., Winchester, Ky.

Filed Mar. 30, 1994, Ser. No. 221,131

Int. Cl.[6] H04B *1/34*

U.S. Cl. 455—99 **21 Claims**





1. A radio allowing hands-free, two-way communication, comprising:

a multiple channel transmitter/receiver, having one channel designated a primary communication channel, operable in a scan mode to scan multiple channels for communication signals;

an interface operatively connected to said multiple channel transmitter/receiver;

a hands-free microphone operatively connected to said multiple channel transmitter/receiver through said interface;

a foot pedal actuator for keying said hands-free microphone to allow transmission of a message over said multiple channel transmitter/receiver; and

means operative in response to said foot-pedal actuator for providing a control signal to said multiple channel transmitter/receiver resulting in said multiple channel transmitter/receiver switching to said primary communication channel for transmission of the message.

5,548,811

AUTOMATIC FREQUENCY CONTROL CIRCUIT SELECTIVELY USING FREQUENCY-DIVIDED LOCAL OSCILLATOR SIGNAL OR PILOT SIGNAL

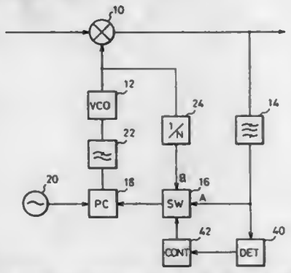
Yoshiaki Kumagai; Eiji Itaya, and Yoichi Endo, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 901,150, Jun. 19, 1992, abandoned. This application Nov. 3, 1994, Ser. No. 336,205

Claims priority, application Japan, Jun. 19, 1991, 3-147257; Jun. 21, 1991, 3-150381

Int. Cl.[6] H04B *01/18*

U.S. Cl. 455—192.2 **13 Claims**



1. An automatic frequency control circuit in a radio communication apparatus, said circuit being supplied with input signals, comprising:

frequency conversion means for converting the input signals into converted signals having frequencies different than the frequencies of the input signals by mixing a local oscillation signal with the input signals;

extraction means for extracting and outputting a pilot signal having a specific frequency from the converted signals;

oscillation means for outputting a reference signal having a reference frequency;

phase comparison means having first and second input terminals for comparing a first frequency and a first phase of the reference signal input to the first input terminal with a second frequency and a second phase of a selected signal input to the second input terminal, to output a comparison result;

variable oscillation means for outputting the local oscillation signal having a frequency varying in accordance with the comparison result to the frequency conversion means;

frequency division means for dividing the frequency of the local oscillation signal by a division number to the output a frequency-divided local oscillation signal; and

switch means for selecting the pilot signal when the pilot signal is included in the converted signals and for selecting the frequency-divided local oscillation signal when the pilot signal is not included in the converted signals, to output the selected signal to the second input terminal of the phase comparison means.

5,548,812

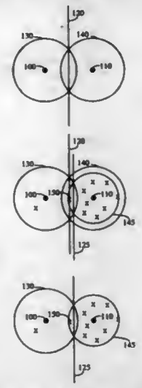
METHOD AND APPARATUS FOR BALANCING THE FORWARD LINK HANDOFF BOUNDARY TO THE REVERSE LINK HANDOFF BOUNDARY IN A CELLULAR COMMUNICATION SYSTEM

Roberto Padovani, San Diego, Calif.; Lindsay A. Weaver, Jr., Boulder, Colo., and Paul E. Bender, San Diego, Calif., assignors to Qualcomm Incorporated, San Diego, Calif.

Filed Jul. 21, 1994, Ser. No. 278,347

Int. Cl.[6] H04B *7/26*; **H04Q** *7/22;7/36*

U.S. Cl. 455—33.2 **20 Claims**



1. In a system having a plurality of base stations for bi-directional communication with a mobile unit wherein information is communicated to said mobile unit from said plurality of base stations on a forward link and information is communicated to said plurality of base stations from said mobile unit on a reverse link and wherein each base station defines a forward link coverage area and a reverse link coverage area, a method of controlling said base station coverage areas comprising the steps of:

measuring a reverse link power level received at a first base station and at a second base station; and

adjusting a forward link power level at said first base station and at said second base station based on said reverse link power level measurement at said first and second base stations to preserve a balance of a location of equivalent forward link performance in relation to a location of equivalent reverse link performance between said first and said second base stations.

5,548,813

PHASED ARRAY CELLULAR BASE STATION AND ASSOCIATED METHODS FOR ENHANCED POWER EFFICIENCY

Philippe M. Charas, Videvägen, and Paul W. Dent, Stehag, both of, Sweden, assignors to Ericsson Inc., Research Triangle Park, N.C.

Filed Mar. 24, 1994, Ser. No. 217,301

Int. Cl.[6] H04B *7/06*

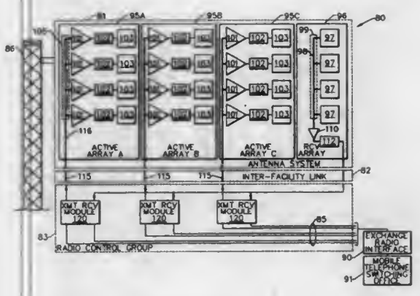
U.S. Cl. 455—33.3 **58 Claims**

1. A base station for a cellular communications system including a plurality of coverage areas, said base station comprising:

radio channel generating means for generating a plurality of individual cellular radio channel signals each at a different frequency from one another;

at least four individual phased array antennas, positioned such that at least two of said at least four phased array antennas illuminate at least one common coverage area of the plurality of coverage areas; and

linking means operatively connecting said radio channel generating means and said phased array antennas so that each individual phased array antenna transmits only one individual cellular radio channel signal.



5,548,814

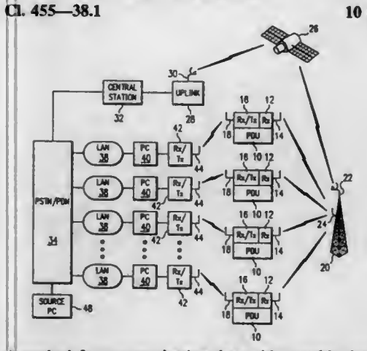
PERSONAL INFORMATION MANAGEMENT SYSTEM WITH PAGING LINK

Malcolm M. Lorang, and Roger D. Lindquist, both of Dallas, Tex., assignors to Pagemart, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 661,079, Feb. 25, 1991, and a continuation-in-part of Ser. No. 661,078, Feb. 25, 1991. This application Oct. 28, 1992, Ser. No. 967,451

Int. Cl.[6] H04B *7/00*

U.S. Cl. 455—38.1 **10 Claims**



1. A method for communicating data with portable data units, comprising the steps of:

providing a plurality of network nodes interconnected by a network communication link, each of the network nodes having a memory associated therewith for storing information and a transmitter associated therewith for transmitting information over a wireless communication link within a predetermined RF range about the associated network node;

providing a receiver at each of the network nodes for receiving over the wireless communication link information from a sending one of the personal data units within the RF range of the associated network node, and storing the received information in the memory of the associated one of the network nodes;

receiving predetermined recipient information for a predetermined recipient portable data unit at one of the network nodes;

locating the one of the network nodes in which transmit range the predetermined recipient portable data unit is disposed, the step of locating comprising the steps of:

storing predetermined recipient information at one of the network nodes in the associated memory,

generating a paging message having associated therewith routing information as to which of the network nodes has the predetermined recipient information stored thereat,

transmitting the paging message over a paging channel that has an RF range substantially greater than the transmit range of each of the network nodes,

receiving the paging message over the paging channel at the recipient portable data unit,

generating a Ready-to-Receive message at the recipient portable data unit, the Ready-to-Receive message having associated therewith routing information extracted from the paging message defining the one of the network nodes having the predetermined recipient information stored thereat,

transmitting the Ready-to-Receive message over the wireless communication link to the one of the network nodes in whose RF range the recipient portable data trait is disposed, and

the one of the network nodes receiving the Ready-to-Receive message comprising the located the of said network nodes and transmitting a Request-to-Send message to the one of the network nodes at which the predetermined recipient information is stored, indicating that the transmitting network node is the located one of the network nodes;

transferring the predetermined recipient information to the located one of the network nodes for storage in the associated memory thereof, and

transferring the stored predetermined recipient information to the predetermined recipient portable data unit from the transmitter associated with the located one of the network nodes over the associated wireless communication link.

5,548,815

INDUCTIVE RADIO COMMUNICATION SYSTEM

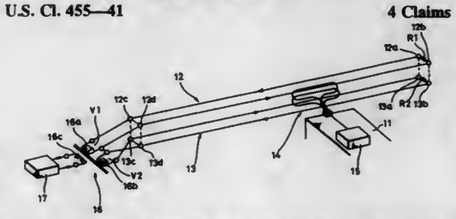
Masato Takayama, Kanagawa, and Yasurumi Amari, Tokyo, both of, Japan, assignors to Sony Corporation, and Secom Corporation Kimited, both of Tokyo, Japan

Filed Jan. 27, 1995, Ser. No. 379,952

Claims priority, application Japan, Jan. 28, 1994, 6-026106

Int. Cl.[6] H04B *5/02*

U.S. Cl. 455—41 **4 Claims**



1. An inductive radio communication system for transmitting/receiving a signal between a mobile unit and a ground station comprising:

at least two sets of parallel lines separated from each other by a predetermined distance and installed along a track of said mobile unit;

an antenna attached on said mobile unit and disposed between said parallel lines; and

a signal transmission means for transmitting a signal between said ground station and said parallel lines.

5,548,816

METHOD AND SYSTEM FOR LOCATING MOBILE UNITS IN A CELLULAR TELEPHONE SYSTEM BY USE OF VIRTUAL LOCATION AREAS

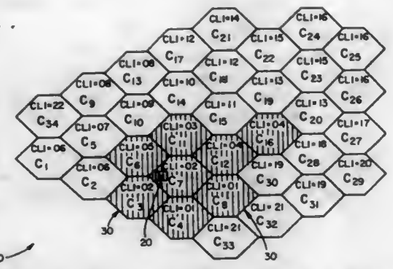
David B. DeVaney, Longwood, Fla., assignor to Astronet, Lake Mary, Fla.

Filed Nov. 16, 1993, Ser. No. 153,811

Int. Cl.[6] H04B *1/00*

U.S. Cl. 455—53.1 **34 Claims**

19. A mobile radio transmission system having a mobile switching center (MSC) connected to a plurality of distributed radio base



stations, each radio base station (RBS) defining a cell of the system, for communicating with mobile units within the cells, the system comprising:

means including a memory at the MSC for accumulating historical information on registration locations of the mobile unit and for determining from the historical information a customized group of cell identifiers for the mobile unit corresponding to a local one of the cells that is the cell within which the mobile unit is located;

means at the MSC for communicating information to each RBS in the system;

a transceiver at each RBS for transmitting information including a cell identifier associated with the cell defined by each RBS;

at least one mobile unit including a transceiver for transmitting information therefrom and receiving the information transmitted by the RBS of the local cell, a memory for containing a group of cell identifiers, a processor for comparing the local cell identifier with the group of cell identifiers from the mobile unit memory; and

circuitry responsive to the comparison by the processor for:

(1) informing the RBS of the local cell that the mobile unit is within the cell,

(2) receiving at the mobile unit information representing the customized group of cell identifiers; and

(3) updating the mobile unit memory with a new group of cell identifiers corresponding to the customized group of cell identifiers;

if the local cell identifier does not match one of the identifiers in the group of cell identifiers stored in the mobile unit memory.

5,548,817

MOBILE STATION WITH A FUNCTION WHICH ENABLES A USER TO EASILY RECOGNIZE A CURRENT POSITION

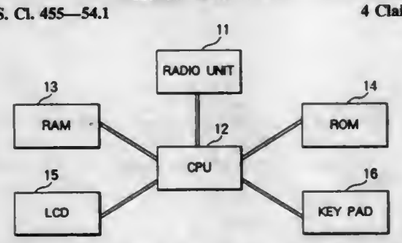
Takeshi Ishida, and Noriko Norimatsu, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jun. 11, 1993, Ser. No. 74,500

Claims priority, application Japan, Jun. 11, 1992, 4-177630

Int. Cl.[6] H04B *7/26*

U.S. Cl. 455—54.1 **4 Claims**



1. A mobile station for use in radio communication with a selected station selected from a plurality of base stations which are placed at different positions and which are assigned with station numbers, respectively, said selected station transmitting a particular signal representative of an assigned one of said station numbers, said mobile station including displaying means for displaying a display datum, said mobile station further comprising:

a position data memory for storing position data in a form in which said position data are dependent on said station numbers, respectively, said position data representing said positions, respectively;

particular reading means connected to said position data memory for reading, as a particular datum, one of said position data in accordance with said particular signal; and

particular making means connected to said displaying means and said particular reading means for making said displaying means display said particular datum as said display datum,

said particular making means comprising:

a local memory connected to said particular reading means for storing said particular datum;

particular command signal producing means for producing a particular command signal; and

means connected to said local memory and said displaying means and said particular command signal producing means for making said displaying means display said particular datum as said display datum in response to said particular command signal.

5,548,818

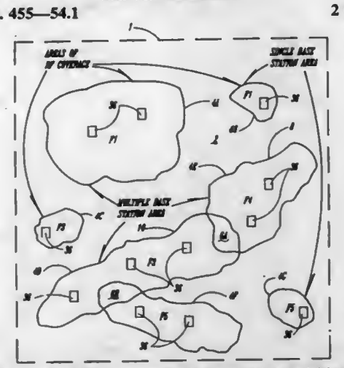
NETWORK ACQUISITION MECHANISM FOR MOBILE RF DATA

James G. Sawyer; Bruce S. Kloster; Ralph L. Kitson, all of Cedar Rapids; Randall M. Kovatch, Marion; Daniel C. Roepke, and M. Frank Wilson, both of Cedar Rapids, all of Iowa, assignors to Rockwell International, Seal Beach, Calif.

Filed Aug. 25, 1992, Ser. No. 934,980

Int. Cl.[6] H04B *1/00*

U.S. Cl. 455—54.1 **2 Claims**



1. A system for RF communication network acquisition for RF communication between one or more mobile units and a plurality of base stations of a network having a plurality of RF broadcast regions distributed over a geographic area comprising:

means for issuing an RF beacon of selected frequency, beacon messages and data content from the base stations;

means at base stations for adjusting periodic rate of issuance of the RF beacon according to data traffic at the base stations;

means on the mobile units for scanning a list of frequencies;

means on the mobile units for discerning if an RF beacon at a frequency from the list has been received; and

means on the mobile units for discerning if a beacon is of sufficient quality to carry on RF communication with the network;

wherein the means for discerning if the beacon is of sufficient quality includes timing means for determining if a threshold level of a number of beacon messages is received over a given time period;

means for continuing scanning the list of frequencies if the timer means determines the threshold level of number of beacon messages was not received within the given time period.

5,548,819

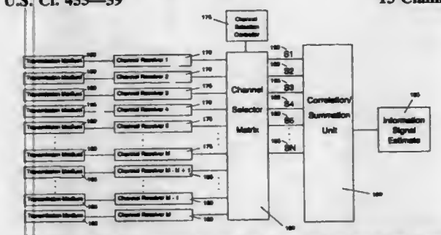
METHOD AND APPARATUS FOR COMMUNICATION OF INFORMATION

David C. Robb, Menlo Park, Calif., assignor to Spectraplex, Inc., Menlo, Calif.

Continuation of Ser. No. 801,527, Dec. 2, 1991, abandoned. This application Aug. 7, 1995, Ser. No. 512,265

Int. Cl.[6] H04B *7/02*

U.S. Cl. 455—59 **13 Claims**



1. A method for communication of a common information signal from a transmitter to a receiver comprising the steps of:

(a) selecting as a set of size greater than two, a plurality of channel carrier means, from a larger pool of available carrier means, such that no more than half of the carrier means in the set are shared with any other selected set from the same pool of available carrier means, said set being unique to an intended recipient of the common information signal to be communicated;

(b) simultaneously modulating said plurality of channel carrier means with the common information signal to be communicated, to form a plurality of modulated carrier means;

(c) transmitting simultaneously via said plurality of modulated carder means, a plurality of copies of said common information signal;

(d) receiving and demodulating said plurality of modulated carder means to obtain a plurality of received demodulated signals each containing a copy of the common information signal;

(e) forming a plurality of pairs of said received demodulated signals and correlating one member of each pair with all the other received demodulated signals to form a plurality of outputs, one output per each pair, such that the information in common between each received demodulated signal is reinforced in each output, and such that information not in common between each received demodulated signal is reduced in each output, said outputs forming a plurality of correlated common information signals;

(f) summing said plurality of correlated common information signals instant by instant to form an estimate of the original common information signal.

5,548,820

ANTENNA AND FEEDER CABLE TESTER

John A. Victorin, Stockholm, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

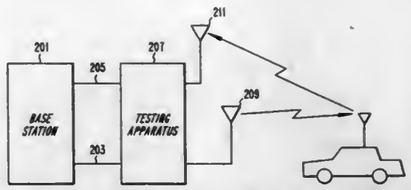
Filed Jul. 26, 1994, Ser. No. 280,654

Int. Cl.[6] H04B *17/00*

U.S. Cl. 455—67.4 **35 Claims**

1. In a communications system including a base station coupled to a transmission antenna by means of a transmission feeder cable having a top end that is substantially at or near the transmission antenna, a testing apparatus comprising:.

first means for measuring incident power of a signal at the top end of the transmission feeder;



a processor, coupled to the first means, for controlling an incident power measurement operation and receiving an incident power measurement value; and

communication means, coupled to the processor, for sending information from the processor to the base station, and for receiving information from the base station and supplying the received information to the processor,

wherein in response to the received information being a first command, the processor initiates the incident power measurement operation, and

wherein the communication means comprises a digital communications interface, coupled to the processor and having an interface for coupling to the top end of the transmission feeder cable, the communications means using the transmission feeder cable as a communications medium.

5,548,821

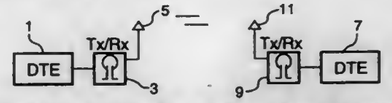
ADAPTIVE SYSTEM FOR SELF-TUNING AND SELECTING A CARRIER FREQUENCY IN A RADIO FREQUENCY COMMUNICATION SYSTEM

Michael Coveley, Suite 101, #16 Passy Crescent, North York, Ontario, Canada

Continuation-in-part of Ser. No. 195,026, Feb. 14, 1994, Pat. No. 5,438,699, which is a continuation-in-part of Ser. No. 895,593, Jun. 9, 1992, abandoned. This application Sep. 22, 1994, Ser. No. 310,702

Int. Cl.[6] H04B *17/00*

U.S. Cl. 455—67.4 **1 Claim**



1. For use with a transmitter adapted to transmit an information signal on an optimal one of a plurality of carrier frequencies and a receiver adapted to receive said information signal, a method for selecting said optimal one of said plurality of carrier frequencies and self-tuning said receiver relative to said optimal one of said carrier frequencies, comprising the steps of:

a) storing within said receiver a plurality of test sequences;

b) generating within said transmitter and transmitting identical versions of said plurality of test sequences at one of said plurality carrier frequencies;

c) selecting within said receiver respective ones of a predetermined number of tuning impedances equal in number to said plurality of test sequences for tuning said receiver to receive respective ones of said test sequences at respective centre operating frequencies in a narrow frequency band around said one of said plurality of carrier frequencies;

d) comparing within said receiver said test sequences received at said respective centre operating frequencies with said test sequences stored within said receiver, determining which one of said tuning impedances results in a least mismatch between said received test sequences and said stored test sequences, and selecting said one of said tuning impedances for receiving said information signal at an associated one of said centre operating frequencies which is optimally matched with said one of said plurality of carrier frequencies;

e) generating within said transmitter said information signal at said one of said plurality of carrier frequencies;

f) receiving within said receiver said information signal at said associated one of said centre operating frequencies and detecting whether said information signal has been correctly received, and in the event said information signal has been correctly received transmitting an acknowledgement signal to said transmitter, and in the event said information signal has not been correctly received monitoring for a subsequent transmission from said transmitter at a further one of said plurality of carrier frequencies;

g) detecting within said transmitter the presence of said acknowledgement signal from said receiver, and

i) in the event of detection of said acknowledgement signal then confirming the selection of said one of said plurality of cartier frequencies as said optimal carrier frequency, and

ii) in the event of an absence of detection of said acknowledgement signal then selecting said further one of said plurality of cartier frequencies and repeating steps b) through g).

5,548,822

MOBILE STATION MONITORING SYSTEM

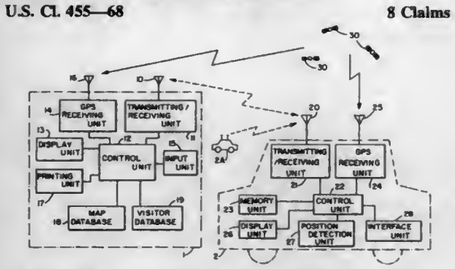
Hiroyuki Yogo, Aichi Pref., Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jun. 15, 1994, Ser. No. 260,743

Claims priority, application Japan, Jun. 15, 1993, 5-143950

Int. Cl.[6] H04B *1/00;7/00*

U.S. Cl. 455—68 **8 Claims**



1. A mobile station monitoring system comprising:

an order station which is a fixed station having communicating means for periodically transmitting a reply demand to a plurality of mobile stations; and

a plurality of mobile stations each of which has

position detecting means for detecting its current position,

communicating means for transmitting information regarding its current position and operation condition when the reply demand is received and for receiving the current condition and operation condition of other mobile stations,

memory means for storing the current position and operation condition of other mobile stations, and

displaying means for displaying the current position and operation condition of other mobile stations in such a manner that the current position and operation condition of other mobile stations are read from the memory means and imposed on a map corresponding to the vicinity of the current position of other mobile stations.

5,548,823

PORTABLE TELEPHONE HAVING A RECEIVER SECTION CAPABLE OF RECEIVING POWER FROM MULTIPLE EXTERNAL POWER SOURCES

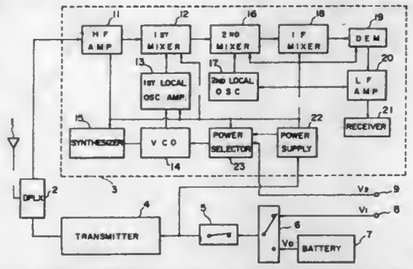
Naoki Hirasawa, Tokyo, and Shinichi Kobayashi, Saitama, both of, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 19, 1991, Ser. No. 810,036

Claims priority, application Japan, Dec. 26, 1990, 2-406395

Int. Cl.[6] H04B *1/38*

U.S. Cl. 455—89 **11 Claims**



1. A portable telephone containing a synthesized local oscillator using a voltage controlled oscillator in a receiver section, said voltage controlled oscillator receiving its operation power from either a built-in battery or an external power source comprising:

a first external power input terminal through which either an output voltage of said built-in battery or an external power of a first voltage substantially equal to the output voltage of said built-in battery is supplied;

a second external power input terminal through which an external power of a predetermined second voltage higher than said first voltage may be supplied; and

a power selector for selectively supplying to said voltage controlled oscillator either the output from said first external power input terminal in the absence of said predetermined second voltage applied to said second external power input terminal, or alternatively the output from said second external power input terminal in the presence of said predetermined second voltage applied thereto.

5,548,824

PORTABLE RADIO COMMUNICATION DEVICE HOUSING HAVING A BATTERY STORAGE UNIT

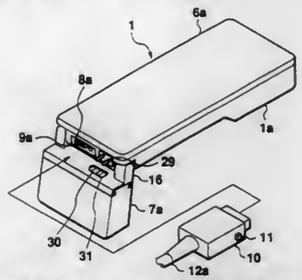
Toshiya Inubushi; Yoshio Toko, and Atsushi Musha, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 18, 1994, Ser. No. 292,775

Claims priority, application Japan, Aug. 25, 1993, 5-210520

Int. Cl.[6] H04B *1/38*

U.S. Cl. 455—90 **11 Claims**



1. A portable radio communication device having a portable radio communication device main unit comprising electronic equipment housed in a housing thereof and a battery storage unit fitted to said portable radio communication device main unit for supplying power thereto,

said battery storage unit being rotatably fitted to said portable radio communication device main unit,

said portable radio communication main unit comprising:

a battery power connector section for receiving a power supply from a battery and an external power connector section for receiving a power supply from an external power source, located on a battery storage unit side of said main unit,

when said battery storage unit is positioned at a predetermined battery connection position to said portable radio communication device main unit, said battery power connector section comes into contact with a fixed terminal of said battery storage unit,

said battery storage unit being rotatable by a predetermined amount from the battery connection position to expose said external power connector section for connection of said external power source to said portable radio communication device main unit through said external power connector section.

5,548,825

RADIO TRANSMITTER WITH ACTIVE BAND-PASS FILTERING

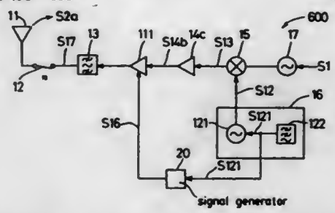
Kosei Maemura, and Kazuya Yamamoto, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 30, 1994, Ser. No. 269,219

Claims priority, application Japan, Jul. 6, 1993, 5-166620

Int. Cl.[6] H03C *1/62*

U.S. Cl. 455—115 **3 Claims**



3. A transmitter of a radio communication apparatus including:

means for receiving and for converting an input signal having a voltage input to the transmitter into a frequency signal having a frequency indicative of the voltage;

a signal synthesizer including a loop filter for generating a signal having a synthesized frequency;

means for receiving, connected to the means for receiving and for converting and to the signal synthesizer and for mixing the signal having a synthesized frequency with the frequency signal and for generating a mixed signal for transmission that has a transmission frequency at which communication is carried out;

a power amplifier, connected to the means for receiving and for mixing, for amplifying signals within a frequency range that varies in response to an applied voltage signal for amplifying the mixed signal;

means for controlling the amplification frequency range of the power amplifier to coincide with the transmission frequency according to an output signal from the loop filter, connected to the power amplifier and to the signal synthesizer, for controlling the frequency range, in response to the output signal, to include the transmission frequency.

5,548,826

POWER AMPLIFIER AND A TRANSMITTER INCLUDING THE POWER AMPLIFIER

Anthony D. Sayers, Crawley, England, assignor to U.S. Philips Corporation, New York, N.Y.

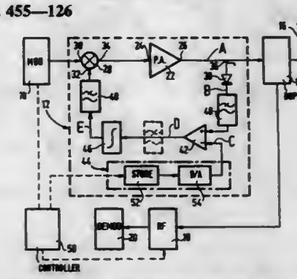
Continuation of Ser. No. 116,479, Sep. 2, 1993, abandoned.

This application May 30, 1995, Ser. No. 456,009

Claims priority, application United Kingdom, Sep. 18, 1992, 9219825

Int. Cl.[6] H04B *1/04*

U.S. Cl. 455—126 **12 Claims**



1. A transceiver for transmitting a signal burst at a predetermined carrier frequency only during a transmission time without significant momentary widening of the transmitted frequency spectrum at the beginning and ending of the transmission time, comprising transmitting means, receiving means and control means for generating a reference control signal corresponding to the transmission time for controlling the operation of the transmitting means, the reference control signal comprising a step function of a predetermined amplitude, the transmitting means comprising

power amplifying means having an input for a signal to be amplified and an output for an output power signal and

a control loop having means for sampling the output power signal, means for detecting the sampled output power signal, and means for comparing the detected sampled output power with the reference control signal,

characterised in that

the control loop further comprises means for integrating an output of the comparing means and low pass filtering means and

in that there is provided multiplying means having first and second signal inputs and an output coupled to the input of the power amplifying means, a signal to be amplified being applied to the first signal input and the control loop being connected to the second input.

5,548,827

PORTABLE RADIO COMMUNICATION DEVICE CAPABLE OF TRANSMITTING THE SAME LEVEL OF ELECTRICAL ENERGY WHEN THE ANTENNA IS STORED OR EXTENDED

Tetsuya Hanawa; Yuji Kuga; Yutaka Takashima; Yoshihiro Matsumoto, and Masayuki Ono, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 15, 1994, Ser. No. 196,461

Claims priority, application Japan, Sep. 16, 1993, 5-229818

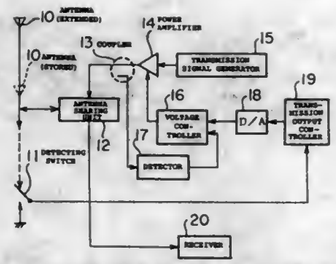
Int. Cl.[6] H04B *1/04*

U.S. Cl. 455—129 **15 Claims**

1. A portable radio communication device having an antenna which can be extended for use and retracted for storage, comprising:

antenna detecting means for detecting a condition in which the antenna is stored, and producing a stored condition signal representing the detected condition;

output detecting means for detecting a transmission output level which indicates a level of an output power signal to be transmitted through the antenna;



transmission output control means responsive to the stored condition signal from said antenna detecting means, for producing an increased transmission output signal which is larger than a transmission output signal in a normal operating condition in which the antenna is extended;

amplification control means responsive to said increased transmission output signal received as a reference signal, for generating an amplification control signal so that said transmission output level agrees with said reference signal; and

amplification means for amplifying a transmission signal in accordance with said amplification control signal and supplying the amplified transmission signal to the antenna as said output power signal.

5,548,828

RDS AUDIO RECEIVER HAVING INTERRUPT MODE

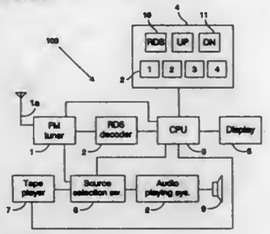
Kengo Kozaki, Urawa; Nobuyuki Ohyachi, Ageo; Seiji Tanaka, Ohmiya; Akira Morisawa, Urawa, and Tosiyuki Nakazaki, Malaysia Penang, all of, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Dec. 14, 1993, Ser. No. 167,223

Claims priority, application Japan, Dec. 14, 1992, 4-354036; Feb. 9, 1993, 5-008994 U

Int. Cl.[6] H04B *17/02*

U.S. Cl. 455—161.2 **10 Claims**



1. An RDS receiver, comprising:

means for storing a desired category item;

means for receiving broadcast transmission signals each having a program and a category;

controller means for tuning said means for receiving to receive a first one of said broadcast transmission signals after receiving a second one of said broadcast transmission signals when a category item of said second one of said broadcast transmission signals matches said stored desired category item;

said controller means including means for activating an interrupt mode of said controller means;

means for deactivating said interrupt mode when a category of said first one of said broadcast transmission signals changes;

said controller means including means for confirming a receivability of said second one of said broadcast transmission signals after a category of said first one of said broadcast transmission signals changes; and

said controller means including means for subsequently tuning said means for receiving to receive said second one of said broadcast transmission signals when said receivability is confirmed.

5,548,829

PLL CIRCUIT HAVING A LOW-PASS PASSIVE FILTER COUPLED TO A VARACTOR DIODE

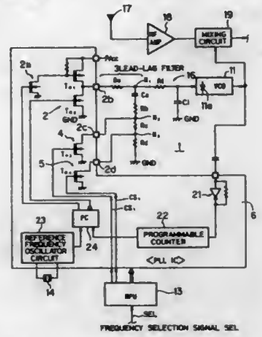
Tamotsu Suzuki, and Yoshikazu Shimada, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Nov. 29, 1994, Ser. No. 350,039

Claims priority, application Japan, Dec. 1, 1993, 5-329652; Dec. 1, 1993, 5-329653

Int. Cl.[6] H04B *1/06*

U.S. Cl. 455—180.3 **8 Claims**



1. A phase-locked loop circuit comprising:

a voltage-controlled oscillating circuit that has a varactor diode and a frequency of oscillation which varies in accordance with a terminal voltage of said varactor diode;

a phase comparator circuit that compares a phase of either an output signal from a reference signal oscillator or an externally supplied input signal with a phase of an output signal from said voltage-controlled oscillating circuit;

a push-pull output circuit that has an upstream transistor connected directly to a supply line and which, in response to a signal from said phase comparator circuit that is iodicative of a result of the comparison, allows a current to flow out of said supply line to an output terminal and then sink to ground; and

a low-pass passive filter that has a series circuit provided between said output terminal and said ground, with a first resistor, a capacitor, a second resistor and a third resistor connected in that order, that generates a signal for the terminal voltage of said varactor diode in accordance with a terminal voltage of said capacitor, and wherein blocking characteristics of said filter are changed by selective inclusion of said second and third resistors.

5,548,830

DUAL-BAND FREQUENCY-SELECTIVE ATTENUATOR FOR AUTOMATIC GAIN CONTROL

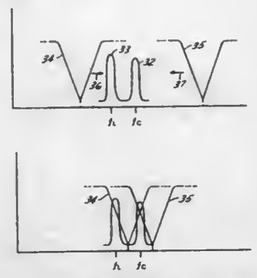
John F. Kennedy, and Timothy S. Klepaczyk, both of Dearborn, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 27, 1993, Ser. No. 173,026

Int. Cl.[6] H04B *1/16*

U.S. Cl. 455—200.1 **15 Claims**

1. A circuit for automatic gain control of an electrical signal in response to an AGC signal, said electrical signal having a selected center frequency and said electrical signal being applied to a signal processor, said circuit comprising:



a first attenuator coupled to said signal processor having a first adjustable resonant frequency which is below said center frequency;

a second attenuator coupled to said signal processor having a second adjustable resonant frequency which is above said center frequency;

a first control circuit coupled to said first and second attenuators adjusting the frequencies of said first and second resonant frequencies to be symmetrical about said center frequency; and

a second control circuit coupled to said first and second attenuators adjusting the spacing between said first and second resonant frequencies in response to said AGC signal to provide controlled attenuation of said electrical signal.

5,548,831

FM RECEIVER HAVING MULTIPLE IF STAGES

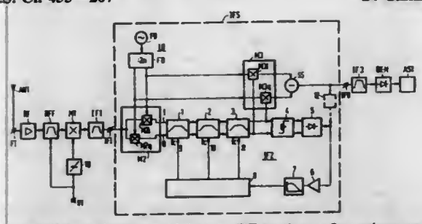
Wolter Bijker; Wolfdietrich G. Kasperkovitz; Hendricus C. De Ruyter, and Willem A. Sloof, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 8, 1993, Ser. No. 73,922

Claims priority, application European Pat. Off., Jun. 26, 1992, 92201908

Int. Cl.[6] H04B *1/16*

U.S. Cl. 455—207 **24 Claims**



1. An FM receiver comprising; an RF section, a first mixer stage for converting a desired RF reception signal into a first IF signal having a carrier frequency located on average at a first intermediate frequency, a first IF section for selecting the first IF signal, a second mixer stage having a fixed frequency oscillator coupled to the second mixer stage for fixedly converting the first IF signal to a second IF signal having a carrier frequency located on average at a second intermediate frequency below the first intermediate frequency and such that the frequency difference between the first IF signal and the second IF signal is substantially constant, a second IF section for selecting the second IF signal, said second IF section being coupled to an FM demodulator for demodulating the baseband modulation signal of said desired RF reception signal and followed by a low-pass filter for selecting the baseband modulation signal, and a third mixer stage having a fixed frequency oscillator coupled to the second mixer stage coupled between the second IF section and the FM demodulator for fixedly converting the second IF signal to a third IF signal having a carrier frequency located on average at a third intermediate frequency above the second intermediate frequency and such that the frequency difference between the second and third intermediate frequencies is substantially constant.

5,548,832

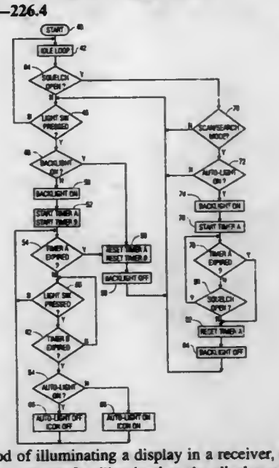
AUTOMATIC DISPLAY ILLUMINATION IN A RECEIVER

Anthony J. Karam, Irving, Tex., assignor to Uniden America Corporation, Fort Worth, Tex.

Filed Jul. 28, 1994, Ser. No. 281,744

Int. Cl.[6] H04B *1/16*

U.S. Cl. 455—226.4 **6 Claims**



1. A method of illuminating a display in a receiver, the receiver having a light source for illuminating the display and a signal present output having a first state indicating the presence of a received signal the method comprising the steps of:

detecting the first state at the signal present output;

in response to detecting the first state illuminating said light source and starting a first timer defining a first time interval;

testing for the end of said first time interval and testing for continued detection of the first state at the signal present output; and

upon detecting the end of said first time interval, or upon detecting the cessation of the first state at the signal present output, extinguishing said light source.

5,548,833

DATA INDEPENDENT AUTOMATIC GAIN CONTROL CIRCUIT FOR TELECOMMUNICATION APPLICATIONS

Jeffrey A. Townsend, North Chelmsford, Mass., assignor to TranSwitch Corporation, Shelton, Conn.

Filed Jun. 3, 1994, Ser. No. 253,378

Int. Cl.[6] H04B *1/06;* **H03G** *3/20*

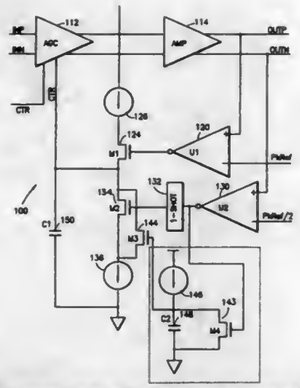
U.S. Cl. 455—234.1 **21 Claims**

1. A data independent automatic gain control apparatus which amplifies an incoming data signal and provides an amplified output signal, comprising:

a) a first amplifier means with an adjustable gain and having a data input which receives said incoming data signal, a control input which controls said adjustable gain of said first amplifier means, and a data output;

b) charge storage means coupled to said control input of said first amplifier means for supplying a control voltage to said control input;

c) a first control circuit means coupled to said data output of said first amplifier means and to said charge storage means, said first control circuit means for changing the charge on said



charge storage means in a first direction when a voltage of said amplified output signal exceeds a desired peak voltage level;

d) a second control circuit means coupled to said data output of said first amplifier means and to said charge storage means, said second control circuit means for changing the charge on said charge storage means in a second direction when said voltage of said amplified output signal exceeds a predetermined threshold voltage level, said predetermined threshold voltage level being set lower than said desired peak voltage level and higher than ground; and

e) a third control circuit means coupled to said second control circuit means and to said charge storage means, said third control circuit means for changing the charge on said charge storage means in said second direction when said voltage of said amplified output signal falls below said threshold voltage level for a predetermined length of time,

wherein said voltage of said amplified output signal of said automatic gain control apparatus is substantially independent of the values of said incoming data signal.

5,548,834

RADIO TELECOMMUNICATION SYSTEM WITH A MULTI-SENSOR RECEIVER STATION AND A PLURALITY OF EMITTER STATIONS TRANSMITTING DATA PACKETS

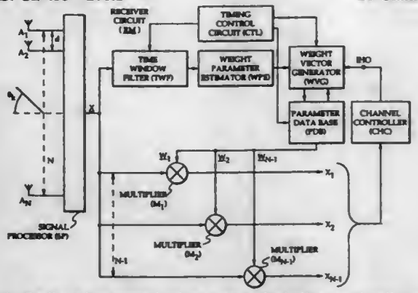
Bruno P. Suard, Neuilly, and Vinod Kumar, Paris, both of, France, assignors to Alcatel N.V., Rijswijk, Netherlands

Filed Jul. 29, 1994, Ser. No. 282,888

Claims priority, application European Pat. Off., Aug. 3, 1993, 93202291.

Int. Cl.[6] H04B *7/02*

U.S. Cl. 455—276.1 **20 Claims**



1. Radio telecommunication system including a plurality of emitter stations adapted to transmit packets of data in predetermined channels of a radio link to a receiver station provided with an array of sensors for capturing the transmitted data and with receiver means coupled to said array of sensors and adapted to generate array output signals at array output terminals of said receiver station, said receiver means including a weight vector supplier means coupled to said array of sensors and adapted to derive weight vectors from the captured data, and a plurality of multiplier means coupled to said array of sensors and to said weight vector supplier means for providing said array output signals as a function of the product of said captured data and weight vectors, wherein said receiver means further includes signal processing means coupled between said array of sensors and both said weight vector supplier means and said plurality of multiplier means and adapted to generate from said captured data a signal vector from which said weight vector supplier means derives a plurality of weight vectors, and wherein such weight vectors are applied to distinct ones of said multiplier means.

5,548,835

TRAIN RADIO COMMUNICATION SYSTEM

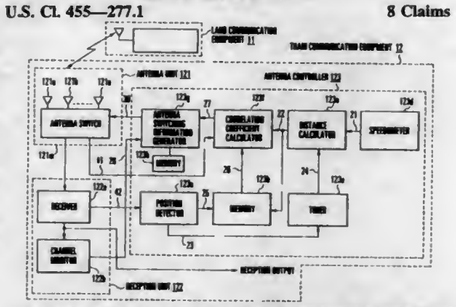
Yasutaka Sasaki, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Dec. 2, 1994, Ser. No. 349,068

Claims priority, application Japan, Jun. 12, 1993, 5-305553

Int. Cl.[6] H04B *1/06;7/00*

U.S. Cl. 455—277.1 **8 Claims**



1. A train radio communication system comprising a plurality of land communication equipments, arranged at predetermined intervals along a railroad on which a train travels, for outputting transmission signals having different frequencies, and a train communication equipment, arranged in the train, for setting a radio channel between said train communication equipment and one of said land communication equipments during travel of the train,

said train communication equipment including:

a plurality of antennas for respectively receiving the transmission signals from said land communication equipments;

an antenna switch for selecting one of said antennas;

a receiver for demodulating an output from said antenna selected by said antenna switch and outputting a reception signal; and

antenna control means, including current position detecting means for detecting a current traveling position of the train, for controlling said antenna switch in accordance with a current traveling position from said current position detecting means.

5,548,836

DIVERSITY RECEIVER

Makoto Taromaru, Fukuoka-ken, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 24, 1994, Ser. No. 265,214

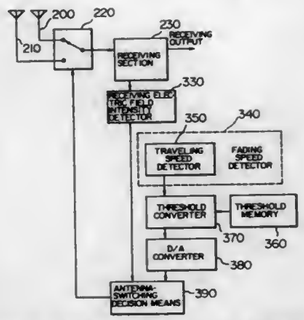
Claims priority, application Japan, Jul. 27, 1993, 5-184926

Int. Cl.[6] H04B *7/08*

U.S. Cl. 455—277.1 **7 Claims**

1. A diversity receiver for receiving a burst wave, comprising:

at least two antennas;



an antenna switch for selecting one of the antennas and thus switching the antennas;

a receiving section for receiving a radio wave using the antenna selected by the antenna switch and producing a receiving output;

a receiving electric field intensity detector for detecting an instantaneous receiving electric field intensity at the receiving section;

a fading speed detector for detecting a fading speed which is a temporal change rate of the instantaneous receiving electric field intensity of the radio wave received by the antennas;

a threshold memory for storing an antenna-switching threshold level corresponding to each fading speed detected by the fading speed detector;

a threshold converter for producing the antenna-switching threshold level corresponding to the fading speed detected by the fading speed detector with reference to the threshold memory; and

antenna-switching decision means for switching the antennas through the antenna switch in the case where the instantaneous receiving electric field intensity detected by the receiving electric field intensity detector decreases below the antenna-switching threshold level produced from the threshold converter.

5,548,837

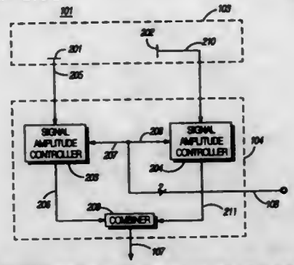
METHOD AND APPARATUS FOR PRODUCING DIVERSITY GAIN OF A RECEIVED SIGNAL

Garry C. Hess, 38W711 Hogan Hill, Elgin, Ill. 60123, and Allen L. Davidson, 3502 Crystal Lake Ave., Crystal Lake, Ill. 60014

Filed Mar. 28, 1994, Ser. No. 218,385

Int. Cl.[6] H04B *7/08*

U.S. Cl. 455—278.1 **24 Claims**



1. In a receiver that includes an antenna, the antenna being characterized by a predetermined antenna pattern oriented at a first orientation angle and being used to receive signals that are subject to a time-variant fading condition, the antenna including a first antenna element and a second antenna element, the first antenna element being characterized by a first antenna pattern and the second antenna element being characterized by a second antenna pattern, the first antenna pattern and the second antenna pattern together producing the predetermined antenna pattern, a method for producing diversity gain of a signal received by the antenna, the method comprising the steps of:

a) determining a signal quality metric of the signal;

b) comparing the signal quality metric to a quality threshold; when the signal quality metric is below the quality threshold:

c) adjusting an amplitude of the signal received by the first antenna element based on a rotation angle to produce a first signal;

d) adjusting an amplitude of the signal received by the second antenna element based on the rotation angle to produce a second signal; and

e) combining the first signal and the second signal to produce a combined signal, such that the predetermined antenna pattern is effectively rotated from the first orientation angle by the rotation angle.

5,548,838

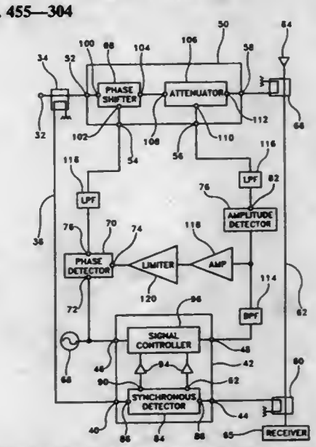
INTERFERENCE CANCELLATION SYSTEM EMPLOYING A POLAR VECTOR MODULATOR

Ashok K. Talwar, Westlake Village, and Roy C. Monzello, Agoura Hills, both of Calif., assignors to American Nucleonics Corporation, Westlake Village, Calif.

Filed Jul. 7, 1994, Ser. No. 271,511

Int. Cl.[6] H04B *1/00*

U.S. Cl. 455—304 **7 Claims**



1. An interference cancellation system for reducing an interfering signal in a received signal on a transmission line to provide a desired signal on the transmission line, the interference cancellation system comprising:

a reference input port for receiving a reference signal substantially corresponding to the interfering signal;

a reference coupler having at least an input port and an output port, the at least an input port of the reference coupler being operatively coupled to the reference input port, at least a portion of the reference signal being provided to the input port of the reference coupler, the at least one reference coupler output port generating thereon a reference coupler output signal substantially corresponding to the at least a portion of the reference signal;

an error coupler having at least an input port and an output port, the input port of the error coupler being operatively coupled to the transmission line for receiving a sample of the received signal, the received signal substantially corresponding to a combination of the desired signal and the interfering signal,

the error coupler output port generating thereon an error coupler output signal substantially corresponding to the received signal;

a signal correlator circuit having first, second and third input ports and an output port, the signal correlator circuit first input port being operatively coupled to the at least one reference coupler output port, the signal correlator second input port being operatively coupled to the at least one error coupler output port;

a signal generator having an output port being operatively coupled and providing an auxiliary signal to the signal correlator circuit third input port;

a phase detector having first and second input ports and an output port, the phase detector first input port being operatively coupled to the signal correlator circuit third input port, the phase detector second input port being coupled to the signal correlator circuit output port, the phase detector output port providing a phase detector output signal;

an amplitude detector having an input port and an output port, the amplitude detector input port being operatively coupled to the signal correlator circuit output port, the amplitude detector output port providing an amplitude detector output signal;

a polar vector modulator, the polar vector modulator having first, second and third input ports and an output port, the polar vector modulator first input port being operatively coupled to the reference input port, the polar vector modulator second input port being operatively coupled to the phase detector output port and receiving the phase detector output signal, the polar vector modulator third input port being operatively coupled to the amplitude detector output port and receiving the amplitude detector output signal, the polar vector modulator output port providing a cancellation signal; and

a summing coupler having at least an input port and an output port, the at least one summing coupler input port being operatively coupled to the polar vector modulator output port, the summing coupler output port providing the cancellation signal to the transmission line.

5,548,839

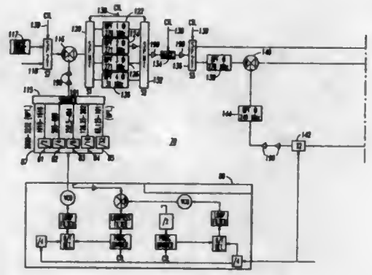
WIDE BAND RADIO-FREQUENCY CONVERTER HAVING MULTIPLE USE OF INTERMEDIATE FREQUENCY TRANSLATORS

Stephen P. Caldwell, 5273 Bright Dawn Ct., Columbia, Md. 21045; Marvine Harris Jr., 5903 Highgate Dr., Baltimore, Md. 21215; Demetrios J. Matsakis, 2560 Ashbrook Dr., Ellicott City, Md. 21042; Ronald W. Minarik, 902 W. Seminary Ave., Lutherville, Md. 21093; Kenneth M. Schmidt, 2739 Thornbrook Rd., Ellicott City, Md. 21042; Benjamin F. Weigand, 4735 Ilkley Moor La., Baltimore, Md. 21215; Robert S. Prill, 3019 Tangier Dr., Allenwood, N.J. 08720, and Arnold B. Siegel, 4 Kingsberry Dr., Somerset, N.J. 08873

Filed Oct. 14, 1994, Ser. No. 322,513

Int. Cl.[6] H04B *1/26*

U.S. Cl. 455—313 **11 Claims**



1. A frequency converter comprising:

a first frequency-converting stage to which a received radio frequency signal is applied, said first frequency-converting stage including:

a first frequency translator having an input for the received radio frequency signal an input for a local oscillator signal and an output;

a source of a tunable radio-frequency signal coupled to the input for the local oscillator signal;

means for coupling the output of the first frequency translator to any one of a first plurality of bandpass filters;

a second frequency-converting stage including a second frequency translator having:

an input including a switch for selecting any of a plurality of the outputs of said first plurality of bandpass filters, an input for a local oscillator signal and an output;

a by-pass path coupled to the switch to bypass the second frequency translator;

a second source of a local oscillator signal coupled to the input for the local oscillator signal of the second frequency translator;

means for selectively coupling the output of the second frequency translator or the output of the bypass path to a third frequency translator or to one of a plurality of further paths in the frequency converter; and

a third frequency-converting stage including:

the third frequency translator having an input coupled to the means for selectively coupling, and input for a third local oscillator signal and an output;

a plurality of third stage bypass paths coupling to the means for selectively coupling for bypassing the third frequency translator; and

means for selectively transmitting the output of the third frequency translator or the output of any one of the plurality of the third stage bypass paths.

5,548,840

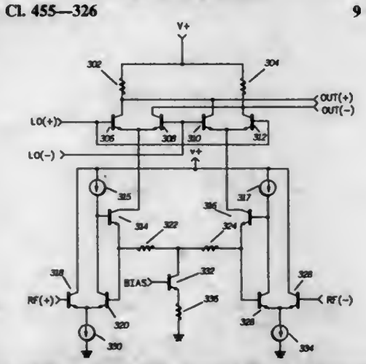
BALANCED MIXER CIRCUIT WITH IMPROVED LINEARITY

Joseph P. Heck, Ft. Lauderdale, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 829,828, Feb. 3, 1992, abandoned. This application Mar. 28, 1994, Ser. No. 219,813

Int. Cl.[6] H04B *1/26*

U.S. Cl. 455—326 **9 Claims**



1. A balanced mixer circuit having a pair of differential inputs (RF+, RF–), the balanced mixer circuit comprising:

balanced mixer means having outputs (Out+, Out–) for differentially mixing a first differential radio frequency signal, received at a first pair of differential inputs (RF+, RF–), with a second differential local oscillator signal received at a second pair of differential inputs (LO+, LO–) to produce a differential output signal; and

coupler means for coupling the pair of differential inputs (RF+, RF–) of the balanced mixer circuit to the first pair of differential inputs (RF+, RF–) of the balanced mixer means, the coupler means including a pair of transconductance amplifiers differentially coupled to each other, each amplifier having a feedback circuit containing a current source and an active component coupled to each of the pair of transconductance amplifiers for forcing the amplifiers to operate more linearly in order to improve intermodulation performance of the balanced mixer without degrading the noise figure.

VOL 1189 ISS 3 AG 20 1996 UMI

372,791

PET FOOD SUPPLEMENT

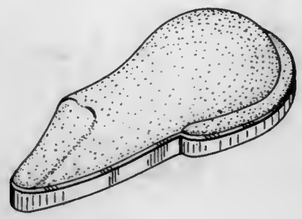
Paul Berendsen, Emmerich, Germany; Hans-Kervin Bruins, Stokkum, Netherlands, and Werner Gerhardt, Emmerich, Germany, assignors to H. von Gimborn GmbH, Emmerich, Germany

Filed Mar. 27, 1995, Ser. No. 36,795

Claims priority, application Germany, Sep. 27, 1994, 94 07 706.1

Term of patent 14 years

U.S. Cl. D1—107



372,792

1CECREAM CONE

Nada Haas, Wildpretmarkt 1/12, A-1010 Wien, Austria

Filed Oct. 21, 1993, Ser. No. 14,433

Claims priority, application Austria, Apr. 22, 1993, MU1264/93; Aug. 30, 1993, MU2416/93; Aug. 30, 1993, MU2417/93; Aug. 30, 1993, MU2421/93

Term of patent 14 years

U.S. Cl. D1—118



372,793

COMBINED TIE AND FASTENER

Melvin J. Carlson, 11851 Haven Rd., Madera, Calif. 93638

Filed Mar. 7, 1994, Ser. No. 19,630

Term of patent 14 years

U.S. Cl. D2—607



372,794

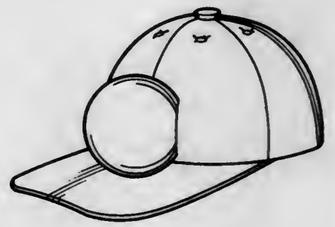
BASEBALL CAP WITH ICON

Al Virzi, Troy, Mich., assignor to G&D Communications Corporation, Bloomfield Hills, Mich.

Filed Apr. 17, 1995, Ser. No. 37,536

Term of patent 14 years

U.S. Cl. D2—866



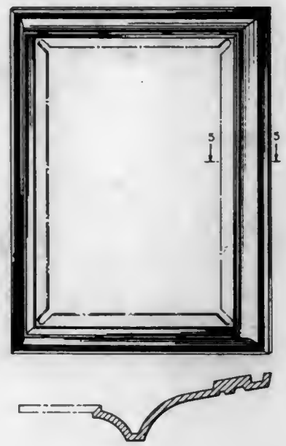
372,795
CARRYING AND LUNCH BAG
Karen J. Swinford, Schaumburg, Ill.; John Davison, Columbus, Ohio; Kelly Mooney, both of Columbus, Ohio, and Keith Kresge, Worthington, Ohio, assignors to The Thermos Company, Freeport, Ill.
Filed Nov. 2, 1993, Ser. No. 14,913
Term of patent 14 years
U.S. Cl. D3—243



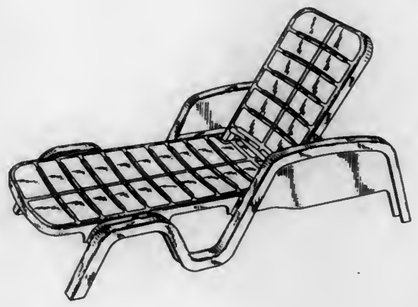
372,796
SUITCASE
Ian Ferris, Wokingham, England, assignor to Samsonite Corporation, Denver, Colo.
Filed Jan. 12, 1995, Ser. No. 33,396
Claims priority, application United Kingdom, Jul. 12, 1994, 2040282; Jul. 12, 1994, 2040283
Term of patent 14 years
U.S. Cl. D3—282



372,797
FRAME
Peter V. Ilaria, East Hanover, and William Macowski, Caldwell, both of N.J., assignors to Tropar Manufacturing Company, Inc., Florham Park, N.J.
Filed Sep. 7, 1995, Ser. No. 43,616
Term of patent 14 years
U.S. Cl. D6—300



372,798
CHILD'S CHAISE LOUNGE
Edward J. Robertson, Winchester, and Norbert Lyons, Middleton, both of Mass., assignors to Syroco, Inc., Baldwinsville, N.Y.
Filed Jul. 31, 1995, Ser. No. 42,029
Term of patent 14 years
U.S. Cl. D6—361



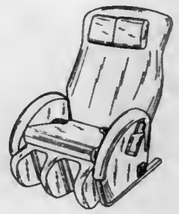
372,799
PEDESTAL BASED EXECUTIVE CHAIR
Randall M. Orians, Chicago, Ill., and Duane M. Perpich, Monroe, Mich., assignors to La-Z-boy Chair Company, Monroe, Mich.
Filed Jun. 7, 1995, Ser. No. 39,934
Term of patent 14 years
U.S. Cl. D6—366



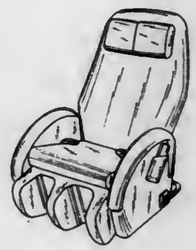
372,800
MASSAGE CHAIR
Yoshikiyo Yamasaki, Osaka, Japan, assignor to Kabushiki Kaisha Fuji Iryoki, Osaka, Japan
Filed Apr. 7, 1995, Ser. No. 37,249
Term of patent 14 years
U.S. Cl. D6—367



372,801
MASSAGE CHAIR
Shinichiro Fujimoto, and Yoshikiyo Yamasaki, both of Osaka, Japan, assignors to Kabushiki Kaisha Fuji Iryoki, Osaka, Japan
Filed May 3, 1995, Ser. No. 38,462
The portion of the term of this patent subsequent to Aug. 20, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—367



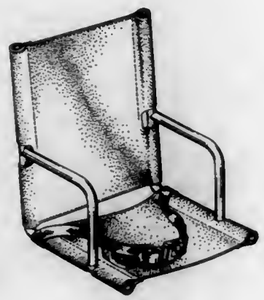
372,802
MASSAGE CHAIR
Shinichiro Fujimoto, and Yoshikiyo Yamasaki, both of Osaka, Japan, assignors to Kabushiki Kaisha Fuji Iryoki, Osaka, Japan
Filed May 3, 1995, Ser. No. 38,781
Term of patent 14 years
U.S. Cl. D6—367



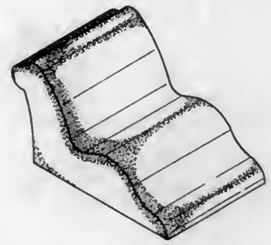
372,803
COMBINED CHAIR AND FOOTSTOOL
Phillip H. Tucker, 2028 Radcliff Ave. SE., Grand Rapids, Mich. 49546
Filed Aug. 31, 1995, Ser. No. 43,325
Term of patent 14 years
U.S. Cl. D6—359



372,804
FOLDING SEAT
Jack McNamara, Phoenix, and Mark W. Thomas, Scottsdale, both of Ariz., assignors to RedBarn Enterprises, Inc., Phoenix, Ariz.
Filed Sep. 28, 1995, Ser. No. 44,642
Term of patent 14 years
U.S. Cl. D6—368



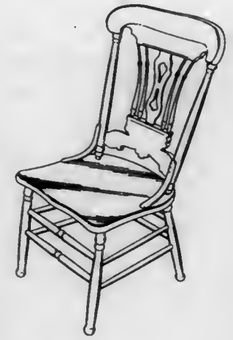
372,805
SEAT
Vincenzo A. Bonaddio, Boothwyn, Pa., and Jose D. M. Contreras, Apple Valley, Calif., assignors to Foamex L.P., Linwood, Pa.
Filed Aug. 10, 1995, Ser. No. 42,449
Term of patent 14 years
U.S. Cl. D6—375



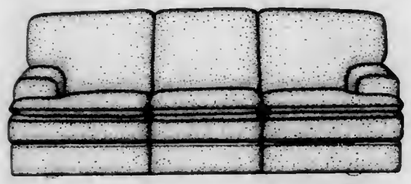
372,806
ARM CHAIR
Leo Martin, Coconut Grove, Fla., assignor to Miami Metal Products, Inc., Miami, Fla.
Filed Aug. 25, 1995, Ser. No. 43,087
Term of patent 14 years
U.S. Cl. D6—379



372,807
SIDE CHAIN
Ching-Fu Huang, Kaohsiung Hsien, Taiwan, assignor to Leefu Wood Products Co., Ltd., Kaohsiung, Taiwan
Filed Oct. 2, 1995, Ser. No. 44,824
Term of patent 14 years
U.S. Cl. D6—380



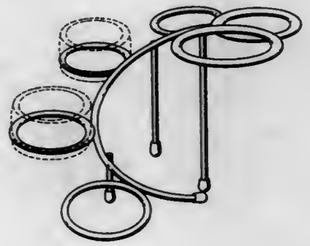
372,808
SEAT
Pasquale Natuzzi, and Raffaella Lucarelli, both of Santeramo In Colle, Italy, assignors to Industrie Natuzzi, SpA, Bari, Italy
Filed Sep. 11, 1995, Ser. No. 43,737
Term of patent 14 years
U.S. Cl. D6—381



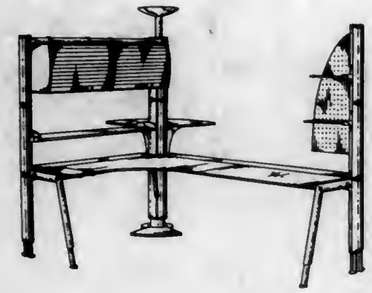
372,809
BED
H. Thomas Keller, High Point, N.C., assignor to Henredon Furniture Industries, Inc., Morganton, N.C.
Filed Sep. 8, 1994, Ser. No. 28,133
Term of patent 14 years
U.S. Cl. D6—389



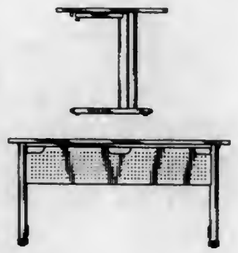
372,810
CANDLE HOLDER BASE
Christopher Hardy, Springfield, Ill., assignor to Design Ideas, Ltd., Springfield, Ill.
Filed Jan. 10, 1995, Ser. No. 33,331
Term of patent 14 years
U.S. Cl. D6—396



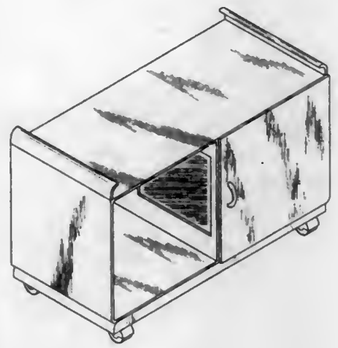
372,811
TABLE WORK STATION
Wolfgang Muller-Deisig, Berlin, Germany, and Alexander H. A. M. Dankers, Berkel-Enshot, Netherlands, assignors to Assenburg, B.V., EA Tilburg, Netherlands
Filed Apr. 18, 1995, Ser. No. 37,695
Claims priority, application Benelux TM/Des. Off., Oct. 19, 1994, 70186-01/11
Term of patent 14 years
U.S. Cl. D6—399



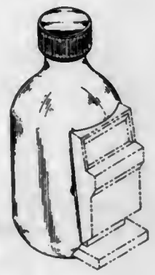
372,812
FOLDING TABLE
Salvatore S. Graziano, Western Springs; Mark Stenftenagel, Elmhurst, and Frank Lakeberg, LaGrange Park, all of Ill., assignors to Bretford Manufacturing, Inc., Franklin Park, Ill.
Filed Jun. 6, 1995, Ser. No. 39,834
Term of patent 14 years
U.S. Cl. D6—429



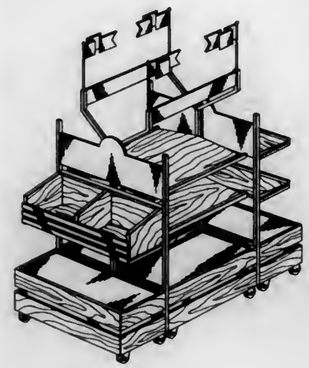
372,813
KITTY LITTER CABINET
Teresa L. Walter, 26001 L. Brigadier Pl., Damascus, Md. 20872
Filed Feb. 9, 1995, Ser. No. 34,678
Term of patent 14 years
U.S. Cl. D6—436



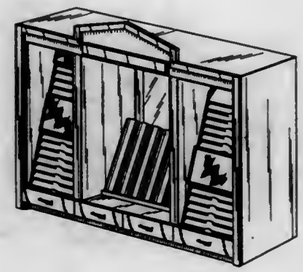
372,814
SUPPORT FOR SLOT MACHINES
Brian Hartmann, Absecon, N.J., assignor to Atlantic City Coin & Slot Service Company, Inc., Pleasantville, N.J.
Filed Aug. 31, 1995, Ser. No. 43,314
Term of patent 14 years
U.S. Cl. D6—450



372,815
MERCHANDISE DISPLAY UNIT
Gordon J. Bird, and William Rietkerk, both of Los Angeles, Calif., assignors to Country Home Bakers, Inc., Bridgeport, Conn.
Filed Apr. 18, 1995, Ser. No. 37,642
Term of patent 14 years
U.S. Cl. D6—476



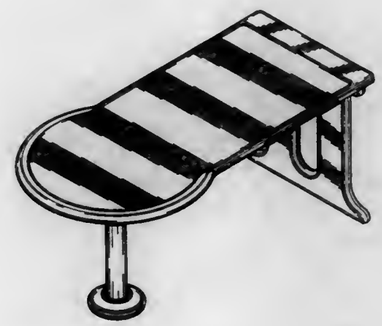
372,816
CENTER DISPLAY UNIT FOR FLOOR COVERING SAMPLES
Deborah H. Rose, Lititz, Pa.; James D. Adams, Seattle, Wash., and Steven Thole, Madison, Wis., assignors to Armstrong World Industries, Inc., Lancaster, Pa.
Filed Apr. 27, 1995, Ser. No. 38,053
Term of patent 14 years
U.S. Cl. D6—473



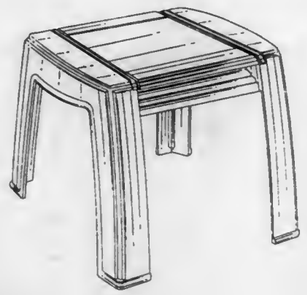
372,817
TWO-TIER SERVICE TABLE
Kenneth V. Stevens, Brooklyn, N.Y., assignor to King Arthur Div., Shelby Williams Industries, Statesville, N.C.
Continuation-in-part of Ser. No. 1,125, Nov. 4, 1992, abandoned. This application May 17, 1995, Ser. No. 38,952
Term of patent 14 years
U.S. Cl. D6—474



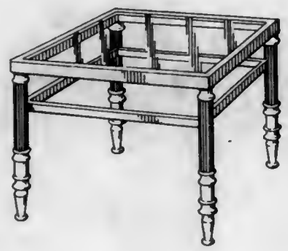
372,818
DESK EXTENSION
Rusty B. Snell, Maryville, Tenn., assignor to Rubbermaid Office Products Inc., Maryville, Tenn.
Filed Jun. 6, 1995, Ser. No. 39,848
Term of patent 14 years
U.S. Cl. D6—483



372,819
TABLE
Drew Maple, Carmel, Ind., assignor to Sunbeam Products, Inc., Fort Lauderdale, Fla.
Filed Jun. 1, 1995, Ser. No. 39,635
Term of patent 14 years
U.S. Cl. D6—484



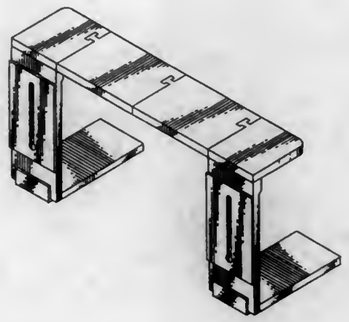
372,820
TABLE
Leo Martin, Coconut Grove, Fla., assignor to Miami Metal Products, Inc., Miami, Fla.
Filed Jun. 2, 1995, Ser. No. 39,708
Term of patent 14 years
U.S. Cl. D6—484



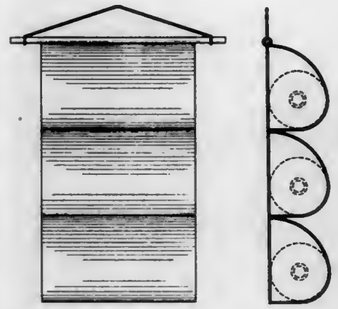
372,821
CHAIR SUPPORT CONNECTOR FOR A ROCKING CHAIR
Waterson Chen, No. 477, Kuo-Kuang Rd., Nan Dist., Taichung City, Taiwan
Filed Apr. 21, 1995, Ser. No. 37,819
Term of patent 14 years
U.S. Cl. D6—491



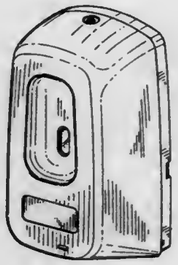
372,822
ATTACHMENT FOR A BED FOOTBOARD TO RAISE BEDCOVERS
Joseph I. O'Brien, 925 S. 11th St., Richmond, Ind. 47374
Filed Jul. 12, 1995, Ser. No. 41,365
Term of patent 14 years
U.S. Cl. D6—503



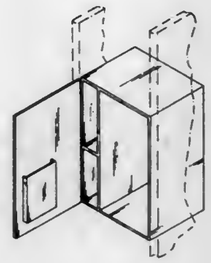
372,823
THREE-ROLL DECORATIVE TOILET PAPER HOLDER
Helmut W. Kerschreiter, #8, Fracc., Villas Pelicanos, Ixtapa-Zihuatanejo, Mexico
Filed Aug. 31, 1995, Ser. No. 43,301
Term of patent 14 years
U.S. Cl. D6—520



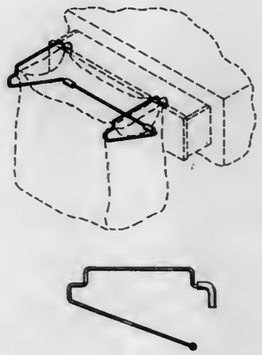
372,824
SOAP DISPENSER
Moses B. Lin; Daniel E. Clouatre, and Jen-Feng Chang, Taipei, all of, Taiwan, assignors to Impact Products, Inc., Toledo, Ohio
Filed Nov. 9, 1995, Ser. No. 46,198
Term of patent 14 years
U.S. Cl. D6—545



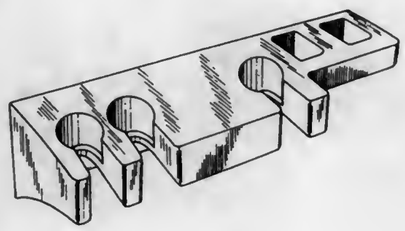
372,825
EMERGENCY TOOL BOX
Gordon L. Hood, P.O. Box 783, Pacific City, Oreg. 97135
Filed Feb. 2, 1995, Ser. No. 34,413
Term of patent 14 years
U.S. Cl. D6—559



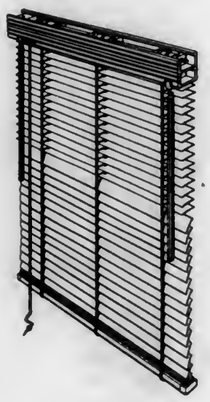
372,826
PLASTIC BAG HOLDER
Raymond G. Hecker, 300 Twin Dr., Caseyville, Ill. 62232
Filed Jun. 5, 1995, Ser. No. 39,754
Term of patent 14 years
U.S. Cl. D6—566



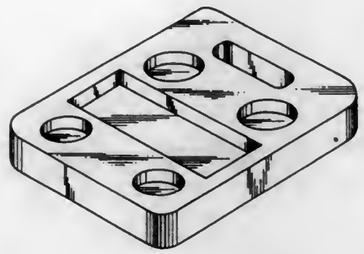
372,827
WALL-MOUNTABLE RACK FOR BRUSHES, AND CLEANING MATERIALS
Roderick C. Roche, Enniskerry; Niall A. O'Sullivan, Dublin; Colin A. Deevy, Dublin, and Brendan A. Rankin, Dublin, all of, Ireland, assignors to Kerry Gardens Limited, Cork, Ireland
Filed Nov. 24, 1993, Ser. No. 15,674
Term of patent 14 years
U.S. Cl. D6—567



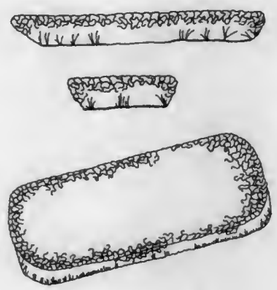
372,828
VENETIAN BLIND, SUNLIGHT AND PRIVACY
William T. Sticker, 17 Live Oaks Rd., East Harwich, Mass. 02645
Filed Feb. 27, 1995, Ser. No. 35,425
Term of patent 14 years
U.S. Cl. D6—577



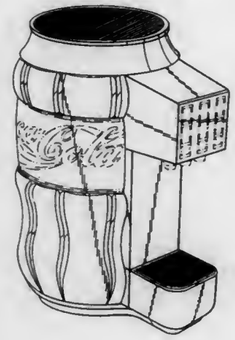
372,829
SEAT CUSHION
Mark L. Sircy, 575 Anchor Dr., Lenoir City, Tenn. 37771
Filed Jun. 22, 1995, Ser. No. 40,614
Term of patent 14 years
U.S. Cl. D6—601



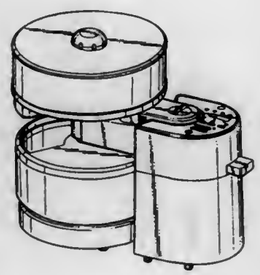
372,830
FITTED QUILTED SHEET
Dennis Gaitley, and Colleen M. Gaitley, both of 141 Hampden Rd., Upper Darby, Pa. 19082
Continuation of Ser. No. 16,346, Dec. 14, 1993, abandoned, which is a continuation of Ser. No. 747,098, Aug. 19, 1991, abandoned. This application Jun. 6, 1995, Ser. No. 39,836
Term of patent 14 years
U.S. Cl. D6—602



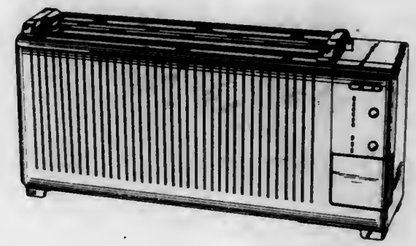
372,831
HOUSING FOR A BEVERAGE DISPENSER
William S. Credle, Jr., Stone Mountain, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.
Filed Jun. 5, 1995, Ser. No. 39,732
Term of patent 14 years
U.S. Cl. D7—301



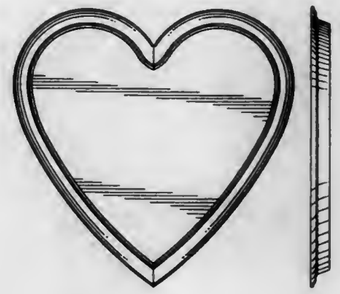
372,832
AUTOMATIC COOKING MACHINE
Don M. Wong, 2296 Bunker Hill Dr., San Mateo, Calif. 94402
Filed Jan. 13, 1995, Ser. No. 33,451
Term of patent 14 years
U.S. Cl. D7—323



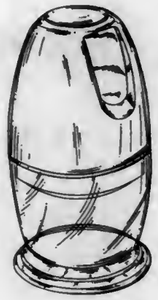
372,833
ELECTRIC TOASTER
Jean-Louis Barrault, Boulogne, France, assignor to Robert Krups GmbH & Co., KG, Solingen, Germany
Filed Aug. 16, 1995, Ser. No. 42,646
Claims priority, application France, Feb. 17, 1995, 95 0990
Term of patent 14 years
U.S. Cl. D7—330



372,834
PIZZA PAN
James M. Wagner, 12236 SE. Huron, Clackamas, Oreg. 97015
Filed Aug. 23, 1994, Ser. No. 27,529
Term of patent 14 years
U.S. Cl. D7—354



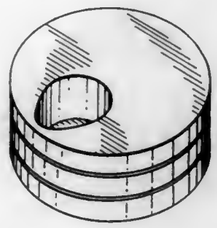
372,835
ELECTRIC KITCHEN FOOD MINCER
Bruno Leverrier, Lassay Les Chateaux, France, assignor to Moulinex S.A., Bagnolet, France
Filed Mar. 20, 1995, Ser. No. 36,367
Claims priority, application France, Oct. 5, 1994, 94 5490
Term of patent 14 years
U.S. Cl. D7—372



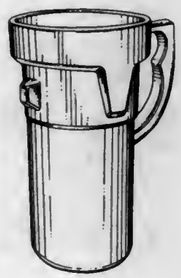
372,836
DRINK CONTAINER IN THE SHAPE OF A BASEBALL
Dwayne S. Hurst, Tampa, and Charles B. Williams, Odessa, both of Fla., assignors to Palomino Sports, Inc., Odessa, Fla.
Filed Feb. 2, 1994, Ser. No. 18,253
The portion of the term of this patent subsequent to Jan. 31, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—515



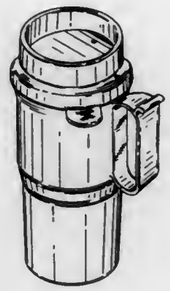
372,837
HOCKEY PUCK SHOT GLASS
Scott Ballin, 228 W. 71st St., New York, N.Y. 10023
Filed Apr. 27, 1995, Ser. No. 38,058
Term of patent 14 years
U.S. Cl. D7—515



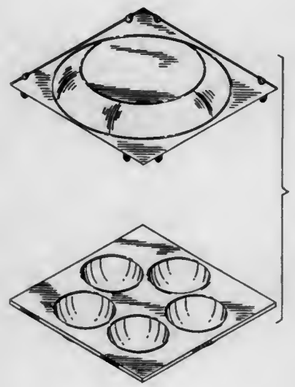
372,838
ROUND COFFEE MUG
Charles H. Feitman, San Luis Obispo, and Jan B. Zweig, Venice, both of Calif., assignors to The Feitman-Langer Company, Inc., Venice, Calif.
Filed Dec. 7, 1994, Ser. No. 31,843
Term of patent 14 years
U.S. Cl. D7—536



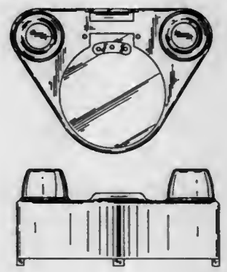
372,839
COMMUTER MUG
Douglas M. Laib, Orlando, Fla., assignor to Dart Industries Inc., Deerfield, Ill.
Filed Aug. 23, 1995, Ser. No. 43,021
Term of patent 14 years
U.S. Cl. D7—536



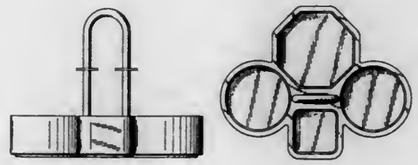
372,840
COVERED SERVING TRAY
Morison S. Cousins, Winter Park, Fla., assignor to Dart Industries, Inc., Deerfield, Ill.
Filed Apr. 26, 1995, Ser. No. 38,043
Term of patent 14 years
U.S. Cl. D7—541



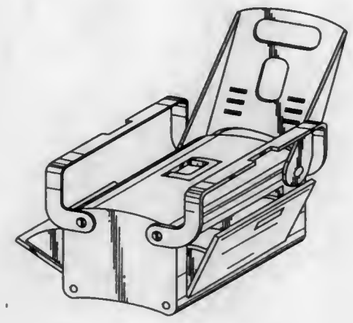
372,841
SUGAR-BOWL WITH TWO TEASPOON-HOLDERS
Fiorentino De Simone, Largo Olgiata 15 - Isola 2E - 00123, Rome, Italy
Filed Jun. 1, 1995, Ser. No. 39,661
Term of patent 14 years
U.S. Cl. D7—590



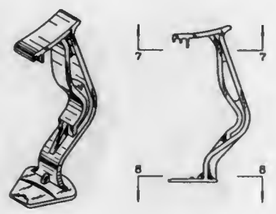
372,842
CONDIMENT CADDY
Wayne Cleary; Sharon Austin, both of Pittsburgh, and Charles Stewart, Ligonier, all of Pa., assignors to H. J. Heinz Company, Pittsburgh, Pa.
Filed Jul. 11, 1995, Ser. No. 41,319
Term of patent 14 years
U.S. Cl. D7—600

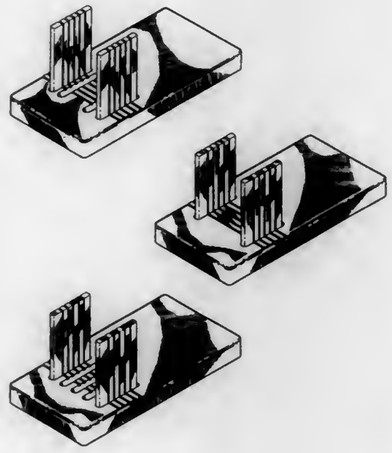


372,843
MULTI-PURPOSE ICE CHEST
Eddie G. Trent; Christine Trent, and Mike Carver, all of 8510 E 17 Ave., Anchorage, Ak. 99504
Filed Oct. 30, 1995, Ser. No. 45,787
Term of patent 14 years
U.S. Cl. D7—605

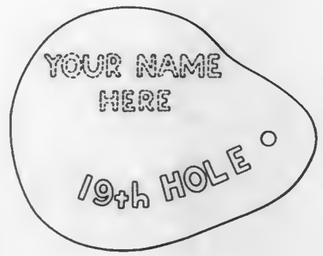


372,844
REUSABLE BEVERAGE CAN GRIP
James Nunes, 12129 Arrowwood Dr., Austin, Tex. 78727
Continuation-in-part of Ser. No. 327,199, Oct. 21, 1994. This application May 17, 1995, Ser. No. 38,943
Term of patent 14 years
U.S. Cl. D7—622



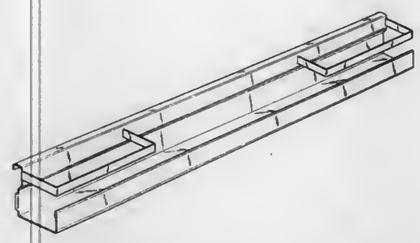


372,845
BEVERAGE CONTAINER COASTER
Michael L. Meier, 1203 Pocahontas Dr., Madison, Wis. 53716
Filed May 31, 1995, Ser. No. 39,593
Term of patent 14 years
U.S. Cl. D7—625

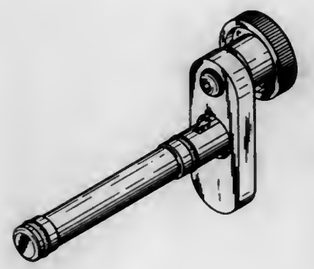


372,846
COMBINED BREAD HOLDER AND SLICING GUIDE
Roger D. Fortney, 6421 Keelson Dr., Madison, Wis. 53705
Continuation-in-part of Ser. No. 373,618, Jan. 17, 1995. This application May 24, 1995, Ser. No. 39,329
Term of patent 14 years
U.S. Cl. D7—673

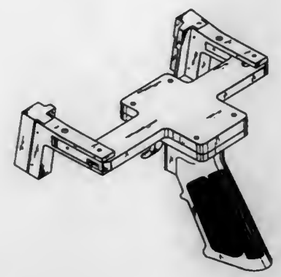
372,847
COOKING RANGE MOUNTED SPICE RACK
Walton E. Sparks, Dublin, Ohio, assignor to White Consolidated Industries, Inc., Cleveland, Ohio
Filed Sep. 25, 1995, Ser. No. 44,454
Term of patent 14 years
U.S. Cl. D7—701



372,848
WRENCH FOR INSTALLING AND REMOVING SHOTGUN CHOKES
Daniel L. Bechtel, 4701 Inwood Rd., Ft. Worth, Tex. 76110
Filed Sep. 27, 1991, Ser. No. 767,087
Term of patent 14 years
U.S. Cl. D8—21



372,849
CASSETTE GRIPPER
John R. Noble, Raleigh; Jeffrey A. Harber, Durham; Thanh-Binh N. Nguyen, Cary, and Luis G. Andrade, Durham, all of N.C., assignors to Mitsubishi Semiconductor America, Inc., Durham, N.C.
Filed Dec. 19, 1994, Ser. No. 34,981
Term of patent 14 years
U.S. Cl. D8—51



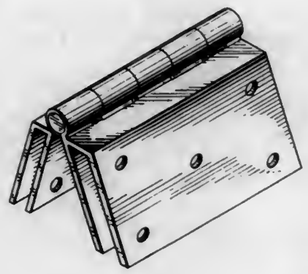
372,850
ELECTRIC MOTOR DRIVEN ANGLE HEAD NUTRUNNER
Kenneth J. Dubnque, Athens; John A. McCallops, Sayre, both of Pa.; David J. Baker, Waverly, N.Y., and Robert H. Bruno, Avon, Conn., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Jan. 9, 1995, Ser. No. 33,304
Term of patent 14 years
U.S. Cl. D8—61



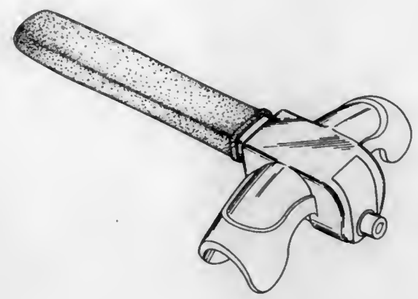
372,851
HANDLE
Petter Chen, Taichung Hsien, Taiwan, assignor to World-Wide Travelware Mfg. Co., Ltd., Taichung Hsien, Taiwan
Filed Mar. 14, 1995, Ser. No. 36,183
Term of patent 14 years
U.S. Cl. D8—319



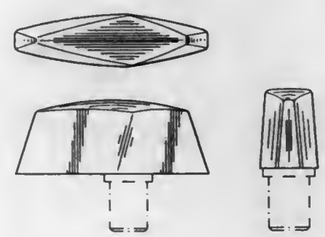
372,852
FLANGED HINGE
Bradley C. Noll, Marietta, and John H. Spencer, Atlanta, both of Ga., assignors to Roger K. Patterson, Jr., Atlanta, Ga.
Filed May 18, 1995, Ser. No. 38,984
Term of patent 14 years
U.S. Cl. D8—328



372,853
AUTOMOBILE STEERING LOCK
Shih-Yu Chen, Tainan Hsien, and Shu-Hwa Lin, Taichung Hsien, both of, Taiwan, assignors to All Ship Enterprise Co., Ltd., Tainan Hsien, Taiwan
Filed Nov. 28, 1995, Ser. No. 47,153
Term of patent 14 years
U.S. Cl. D8—331



372,854
DEADBOLT THUMBTURN
Eduardo J. Jimenez, Colorado Springs, Colo., assignor to Schlage Lock Company, San Francisco, Calif.
Filed May 8, 1995, Ser. No. 38,627
Term of patent 14 years
U.S. Cl. D8—343



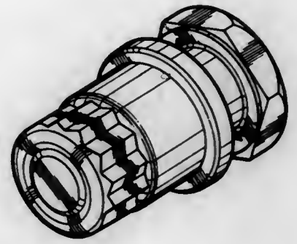
372,855
SHACKLE
Timothy Tylaska, 138 N. Stonington Rd., Mystic, Conn. 06355
Filed Apr. 4, 1995, Ser. No. 37,105
Term of patent 14 years
U.S. Cl. D8—367



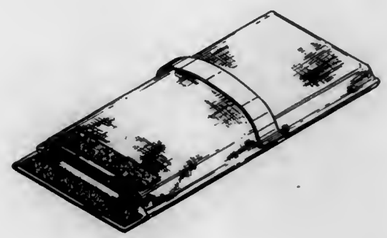
372,856
PEGBOARD HOOK
Howard B. Friedman, La Habra Heights, Calif., assignor to Hartin International, Northridge, Calif.
Filed Jul. 3, 1995, Ser. No. 41,026
Term of patent 14 years
U.S. Cl. D8—367



372,857
BOLT AND NUT ASSEMBLY
Masanori Hirai, Inbagun, Japan, assignor to Huck International, Inc., Irvine, Calif.
Filed Oct. 11, 1994, Ser. No. 29,595
Term of patent 14 years
U.S. Cl. D8—387



372,858
SAND BAG
Pete Sunley, 1909 Zelzah Ave., Granda Hills, Calif. 91344
Filed Jan. 31, 1995, Ser. No. 34,279
Term of patent 14 years
U.S. Cl. D8—499



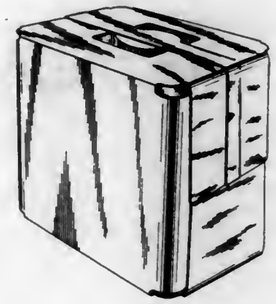
372,859
BOTTLE
Gregory A. Lathrop, Manchester; Mark D. Gerhart, Westminster; David F. Gnadt, Owings Mills; Kevin J. Markey, Westminster, all of Md.; Frank E. Gonda, Fairfield, Conn., and David S. Laubach, New York, N.Y., assignors to Lever Brothers Company, New York, N.Y.
Filed May 19, 1995, Ser. No. 39,052
The portion of the term of this patent subsequent to Jun. 4, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—300



372,860
BOTTLE
Gregory A. Lathrop, Manchester; Mark D. Gerhart, Westminster; David F. Gnadt, Owings Mills; Kevin J. Markey, Westminster, all of Md.; Frank E. Gonda, Fairfield, Conn., and David S. Laubach, New York, N.Y., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.
Filed May 19, 1995, Ser. No. 39,394
Term of patent 14 years
U.S. Cl. D9—300



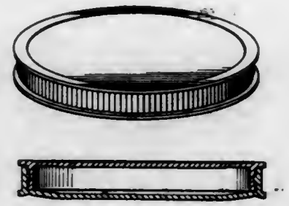
372,861
TWO LAYER CAN CARTON
Norbert Hoell, Southgate, Ky., and Charles A. Miller, Williamsburg, Ohio, assignors to The C. W. Zumbiel Co., Cincinnati, Ohio
Filed Dec. 28, 1994, Ser. No. 32,794
Term of patent 14 years
U.S. Cl. D9—418



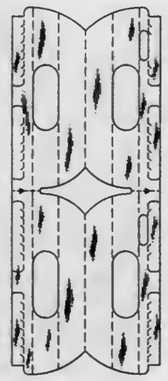
372,862
CIRCULAR PIZZA BOX
Mark V. Fiori, 28 Amethyst Crescent, Armadale, Australia
Filed Jul. 6, 1994, Ser. No. 25,586
Claims priority, application Australia, Jan. 6, 1994, 13/94; Jan. 6, 1994, 14/94; Jan. 6, 1994, 15/94; Jan. 6, 1994, 16/94; Jan. 6, 1994, 17/94
Term of patent 14 years
U.S. Cl. D9—428



372,863
RIGID CONTAINER FOR CONDOMS AND ASSOCIATED PRODUCTS
William L. Gatewood, Slocomb; George Kaczmarczyk, and Lawrence J. Povlacs, both of Dothan, all of Ala., assignors to Aladan Corporation, Dothan, Ala.
Filed Jun. 8, 1995, Ser. No. 40,023
Term of patent 14 years
U.S. Cl. D9—429



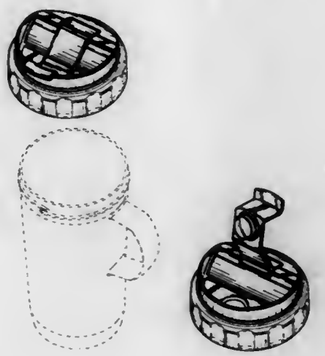
372,864
CARRIER/JOINING MEANS FOR A SERIES OF PACKAGES
Finn R. Hansen, Hønefoss, and Björn Björge, Asker, both of, Norway, assignors to Norpapp Industri A/S, Baerums Verk, Norway
Filed Feb. 15, 1995, Ser. No. 34,919
Claims priority, application Denmark, Aug. 18, 1994, MA 0718 1994
Term of patent 14 years
U.S. Cl. D9—434



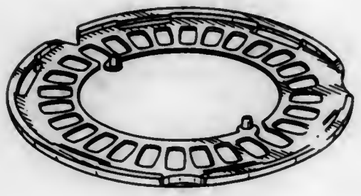
372,865
BAG HANDLE
Davin Stowell, and Scott Bolden, both of New York, N.Y., assignors to General Housewares Corp., Terre Haute, Ind.
Filed Sep. 28, 1995, Ser. No. 44,648
Term of patent 14 years
U.S. Cl. D9—434



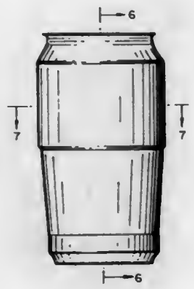
372,866
BEVERAGE CONTAINER LID
Richard B. Ahern, Jr., Akron, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Jun. 7, 1995, Ser. No. 39,983
Term of patent 14 years
U.S. Cl. D9—449



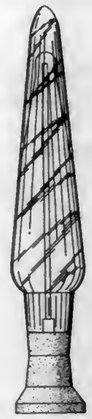
372,867
PLATFORM FOR A TABLET DISPENSER PACKAGE INSERT
Lawrence E. Lambelet, Jr., Flemington, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.
Filed Jul. 29, 1994, Ser. No. 26,511
Term of patent 14 years
U.S. Cl. D9—456



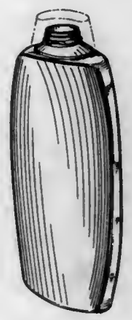
372,868
CONTAINER
Tomomi Kobayashi; Katsuhiro Imazu, both of Yokohama, and Akira Kobayashi, Chigasaki, all of, Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan
Filed Mar. 31, 1995, Ser. No. 36,999
Term of patent 14 years
U.S. Cl. D9—500



372,869
BOTTLE
Veit Mahlmann; Lutz Herrmann, and Andrea Brandt, all of Hamburg, Germany, assignors to Joh. A. Benckiser GmbH, Ludwigshafen, Germany
Filed Jan. 26, 1995, Ser. No. 34,064
Claims priority, application Germany, Aug. 8, 1994, GM9406094; Canada, Sep. 22, 1994, 1994-1823; United Kingdom, Oct. 6, 1994, 2042452; Austria, Oct. 21, 1994, MU4042/94; Portugal, Dec. 7, 1994, 26578
Term of patent 14 years
U.S. Cl. D9—504



372,870
CONTAINER
Hedley Westerhout, Kew, England, assignor to Helene Curtis, Inc., Chicago, Ill.
Filed Mar. 21, 1994, Ser. No. 20,199
Claims priority, application United Kingdom, Nov. 1, 1993, 2034908
Term of patent 14 years
U.S. Cl. D9—516



372,871
GASOLINE CONTAINER
John H. Thiermann, and Gary J. Gracyalny, both of Milwaukee, Wis., assignors to Briggs & Stratton Corporation, Wauwatosa, Wis.
Continuation-in-part of Ser. No. 864,623, Apr. 7, 1992, Pat. No. Des. 356,951, which is a continuation-in-part of Ser. No. 823,564, Jan. 22, 1992, abandoned. This application Mar. 22, 1995, Ser. No. 36,506
Term of patent 14 years
U.S. Cl. D9—527



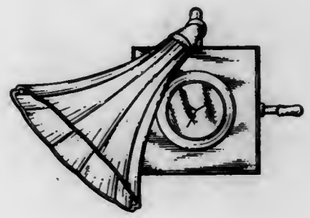
372,872
CONTAINER
John C. Crawford, Mahopac, N.Y., assignor to Colgate-Palmolive Co., New York, N.Y.
Filed May 2, 1995, Ser. No. 38,262
Term of patent 14 years
U.S. Cl. D9—529



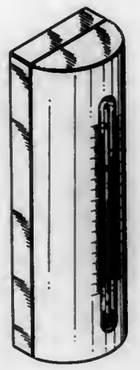
372,873
COMBINED BOTTLE AND CAP
Gregory A. Lathrop, Manchester; Mark D. Gerhart, Westminster; David F. Gnadt, Owings Mills; Kevin J. Markey, Westminster, all of Md.; Frank E. Gonda, Fairfield, Conn., and David S. Laubach, New York, N.Y., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.
Filed May 19, 1995, Ser. No. 39,289
Term of patent 14 years
U.S. Cl. D9—558



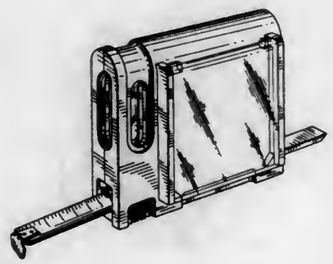
372,874
CLOCK
Sai-Wing Wong, Kowloon, Hong Kong, assignor to Eastman Time Ltd., Hong Kong, Hong Kong
Filed Jun. 23, 1995, Ser. No. 40,648
Term of patent 14 years
U.S. Cl. D10—6



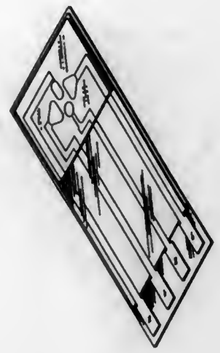
372,875
KEY SAFE THERMOMETER
Fred Hollinger, Kings Park, N.Y., assignor to E & B Giftware, Inc., Mt. Vernon, N.Y.
Filed Sep. 7, 1995, Ser. No. 43,591
Term of patent 14 years
U.S. Cl. D10—58



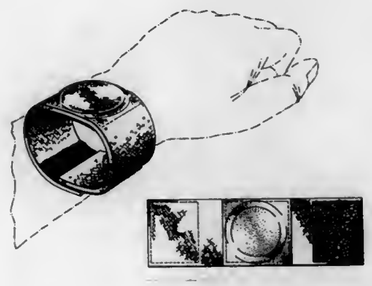
372,876
FOUR-WAY RULER
Fred Hollinger, Kings Park, N.Y., assignor to E & B Giftware, Inc., Mt. Vernon, N.Y.
Filed Sep. 7, 1995, Ser. No. 43,594
Term of patent 14 years
U.S. Cl. D10—72



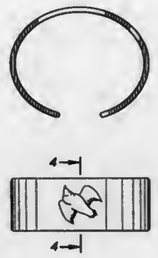
372,877
SOLID STATE PLANAR SENSOR
Paul A. D'Orazio, Mendon, and James E. Flaherty, Attleboro, both of Mass., assignors to Ciba Corning Diagnostics Corp., Medfield, Mass.
Continuation-in-part of Ser. No. 25,128, Jun. 27, 1994, Pat. No. Des. 367,235. This application Jul. 19, 1995, Ser. No. 41,609
Term of patent 14 years
U.S. Cl. D10—81



372,878
WORKMAN'S MAGNETIC WRIST BAND FOR HOLDING SMALL METAL OBJECTS
Danny Finnegan, 6840 Hickory Ave., Orangevale, Calif. 95662
Filed May 9, 1995, Ser. No. 38,613
Term of patent 14 years
U.S. Cl. D11—3



372,879
BRACELET
Cynthia A. Partridge, 1600 Jones St., Apt. 228, Arlington, Tex. 76013
Filed Feb. 2, 1995, Ser. No. 34,342
Term of patent 14 years
U.S. Cl. D11—4



372,880
WATCH BRACELET
Philippe Charriol, 66, Black's Link, Hong Kong, Hong Kong
Filed Apr. 17, 1995, Ser. No. 37,663
Claims priority, application WIPO, Oct. 19, 1994, DM/031 037
Term of patent 14 years
U.S. Cl. D11—19



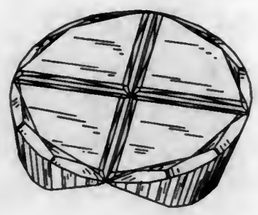
372,881
MULTI-STONE RING
Paul Morelli, 132 Chestnut St., Philadelphia, Pa. 19106
Division of Ser. No. 11,044, Jul. 23, 1993. This application Jan. 23, 1995, Ser. No. 33,908
Term of patent 14 years
U.S. Cl. D11—34



372,882
COMBINED BROOCH AND GOLF BALL MARKER
Carol Goldman, 106 Enos Dr., Salinas, Calif. 93908, and Steve Schell, Dayton, Ohio, assignors to Carol Goldman, Salinas, Calif.
Filed Jun. 12, 1995, Ser. No. 40,158
Term of patent 14 years
U.S. Cl. D11—40



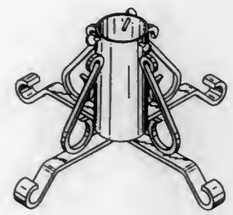
372,883
GEMSTONE
Oded Adler, 550 S. Hill St. #1384, Los Angeles, Calif. 90013
Filed Mar. 10, 1995, Ser. No. 36,041
Claims priority, application Israel, Sep. 12, 1994, 23273
Term of patent 14 years
U.S. Cl. D11—89



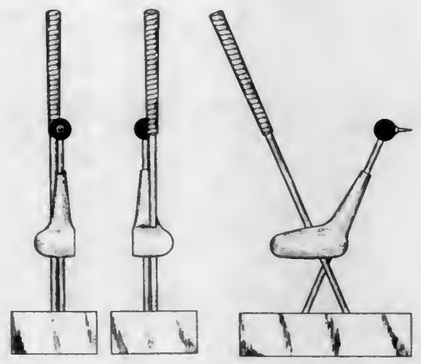
372,884
ARTICLE OF JEWELRY
John W. Belote, 342 E. Columbus Ave., West Harrison, N.Y. 10604
Filed Jun. 27, 1995, Ser. No. 40,798
Term of patent 14 years
U.S. Cl. D11—96



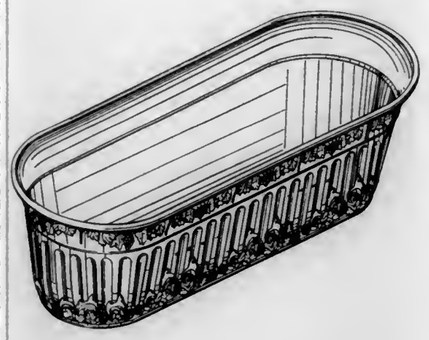
372,885
CHRISTMAS TREE STAND
Jon Ludwig, 722 N. Third St., Stillwater, Minn. 55082, assignor to Jon Ludwig, Stillwater, Minn.
Filed Aug. 4, 1995, Ser. No. 42,254
Term of patent 14 years
U.S. Cl. D11—130.1



372,886
ROADRUNNER GOLF TROPHY
Robert D. Walker, 88875 Bayberry La., #10, Florence, Oreg. 97439
Filed Oct. 16, 1995, Ser. No. 45,277
Term of patent 14 years
U.S. Cl. D11—131



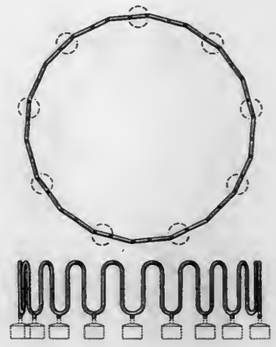
372,887
BALCONY FLOWER/PLANT BOX
R. J. Deelen, Zwanenburg, Netherlands, assignor to Ypma International B.V., Zwanenburg, Netherlands
Filed Mar. 27, 1995, Ser. No. 36,753
Claims priority, application Hague Agreement, Sep. 26, 1994, DM/030 769
Term of patent 14 years
U.S. Cl. D11—152



372,888
DOUBLE CHAIN COLLAR JEWELRY
Richard H. Sprick, R.R. 3, Box 105, Lake City, Minn. 55041
Filed Mar. 6, 1995, Ser. No. 35,692
Term of patent 14 years
U.S. Cl. D11—213



372,889
BICYCLE RACK
Michael B. Fox, Aloha, Oreg., assignor to Columbia Cascade Company, Portland, Oreg.
Filed Sep. 27, 1995, Ser. No. 44,643
Term of patent 14 years
U.S. Cl. D12—115



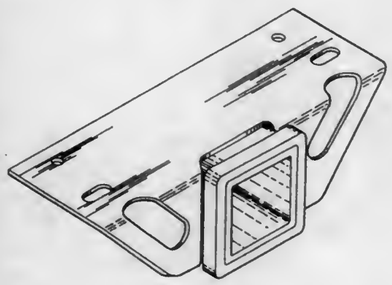
372,890
ROLLING WALKER
Morgan Ferm, Lund, and Per Elvinsson, Gnosjoe, both of, Sweden, assignors to Etac AB, Anderstorp, Sweden
Filed Apr. 28, 1995, Ser. No. 38,109
Claims priority, application Sweden, Dec. 1, 1994, 94-2439
Term of patent 14 years
U.S. Cl. D12—130



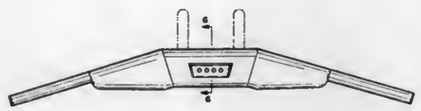
372,891
TIRE
Eileen A. McKisson, Richfield, Ohio, assignor to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland
Filed Mar. 8, 1995, Ser. No. 36,015
Term of patent 14 years
U.S. Cl. D12—146



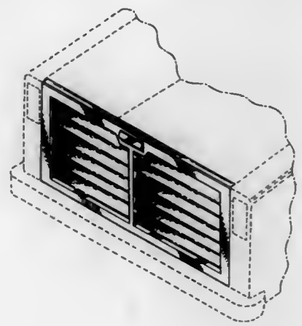
372,892
STEP BUMPER HITCH RECEIVER
Richard McCoy, Granger, Ind.; Marvin L. Hanson, Vandalia, and Jon L. Krager, Cassopolis, both of Mich., assignors to Reese Products, Inc., Elkhart, Ind.
Filed Aug. 14, 1995, Ser. No. 42,614
Term of patent 14 years
U.S. Cl. D12—162



372,893
MOTORCYCLE HANDLEBAR
Bruce Harris, 4000 Spenard Rd., Anchorage, Ak. 99503
Filed Oct. 16, 1995, Ser. No. 45,287
Term of patent 14 years
U.S. Cl. D12—178



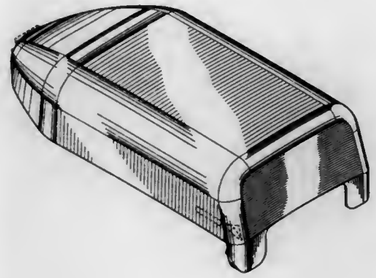
372,894
LOUVERED TAILGATE
Joe A. Bernal, and Renee E. Bernal, both of 100 Comanchero Trail, New Castle, Colo. 81647-9727
Filed Feb. 3, 1995, Ser. No. 34,409
Term of patent 14 years
U.S. Cl. D12—196



372,895
TOP SIDES AND SUPERSTRUCTURE OF A BOAT
Luther H. Blount, One Shipyard La., Warren, R.I. 02885
Filed Oct. 5, 1995, Ser. No. 44,983
Term of patent 14 years
U.S. Cl. D12—318



372,896
BATTERY HOUSING
Albert L. Nagele, Wilmette, and James R. Brunette, Wheeling, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jun. 13, 1995, Ser. No. 40,221
Term of patent 14 years
U.S. Cl. D13—103



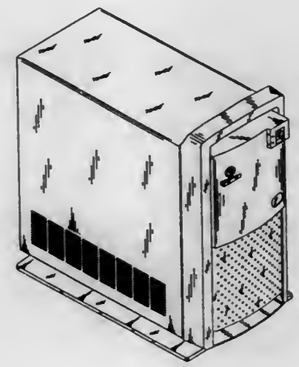
372,897
FIBER OPTIC SPLICE TRAY
William J. Curry, Apex; William N. Beauchamp, Raleigh, and John A. Kizis, Fuquay-Varina, all of N.C., assignors to Raychem Corporation, Menlo Park, Calif.
Filed Apr. 17, 1995, Ser. No. 37,591
Term of patent 14 years
U.S. Cl. D13—184



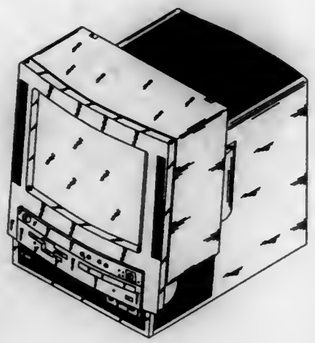
372,898
ELECTRONIC ORGANIZER HOUSING
Joe T. K. Shan, Central, Hong Kong, assignor to Tiger Electronics, Inc., Vernon Hills, Ill.
Filed Jan. 18, 1995, Ser. No. 33,707
Term of patent 14 years
U.S. Cl. D14—100



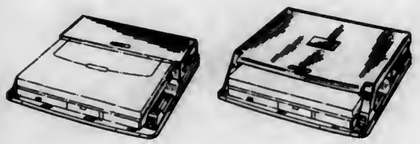
372,899
DESKTOP PERSONAL COMPUTER
John D. Swansey, Durham, N.C., and John W. Lai, San Francisco, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jul. 21, 1995, Ser. No. 41,712
Term of patent 14 years
U.S. Cl. D14—100



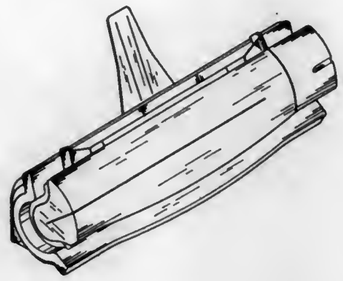
372,900
PERSONAL COMPUTER WITH INTEGRAL VIDEO DISPLAY
Kazuo Nakada, Sagamihara; Nariaki Mieki, Yokohama; Kazuhiko Yamazaki, Hiratuka, all of, Japan; Gary L. Switser, Boulder, Colo.; Markus Oates, Glasgow, Scotland, and Richard Sapper, Milan, Italy, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 11, 1995, Ser. No. 42,491
Claims priority, application Japan, Feb. 10, 1995, 7-3507
Term of patent 14 years
U.S. Cl. D14—100



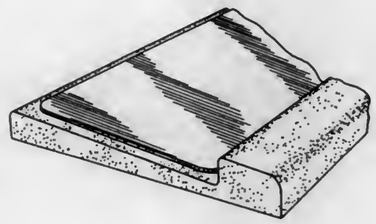
372,901
EXPANSION BASE FOR A NOTEBOOK PERSONAL COMPUTER
Chi-Tsong Chu, Taipei, Taiwan, assignor to Compaq Computer Corporation, Houston, Tex.
Filed Aug. 22, 1995, Ser. No. 43,138
Term of patent 14 years
U.S. Cl. D14—107



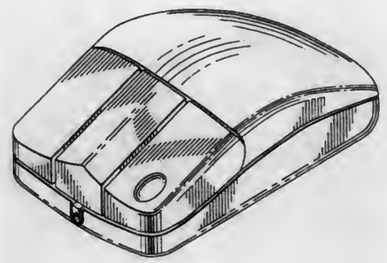
372,902
SCANNER
I-Ke Yu, Taipei Hsien, Taiwan, assignor to Silitek Corporation, Taipei, Taiwan
Filed Aug. 29, 1995, Ser. No. 43,198
Term of patent 14 years
U.S. Cl. D14—107



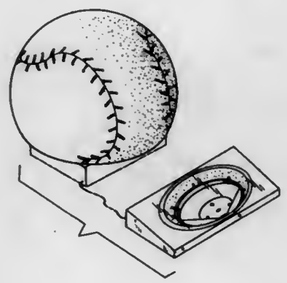
372,903
ERGONOMIC MOUSE PAD
Robert W. Juster, Chappaqua, N.Y., assignor to Sterling Plastics, Inc., Rockford, Ill.
Filed Apr. 5, 1994, Ser. No. 20,951
Term of patent 14 years
U.S. Cl. D14—114



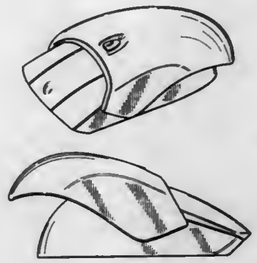
372,904
COMPUTER MOUSE
Johnson Lo, Taipei, Taiwan, assignor to Primax Electronics Ltd., Taipei, Taiwan
Filed Oct. 18, 1994, Ser. No. 29,860
Term of patent 14 years
U.S. Cl. D14—114



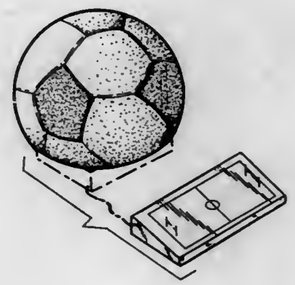
372,905
BASEBALL MOTIF COMPUTER DUST COVER KIT
Virgil L. Samborsky, 5202 Hahn Ave., Fairborn, Ohio 45324
Filed Jan. 13, 1995, Ser. No. 33,452
Term of patent 14 years
U.S. Cl. D14—114



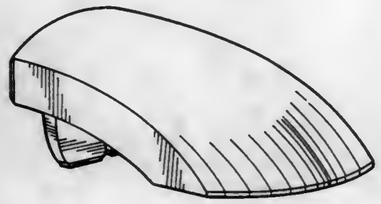
372,906
ADJUSTABLE MOUSE
Masahiko Kawauchi, Sunnyvale; J. Scott Petermann, San Jose; Tark Abed, Palo Alto, and Jay Wilson, Portola Valley, all of Calif., assignors to Alps Electric (USA) Inc., San Jose, Calif.
Filed May 9, 1995, Ser. No. 38,710
Term of patent 14 years
U.S. Cl. D14—114



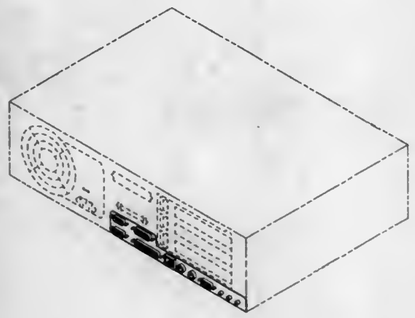
372,907
SOCCER MOTIF COMPUTER DUST COVER KIT
Virgil L. Samborsky, 5202 Hahn Ave., Fairborn, Ohio 45324
Filed May 19, 1995, Ser. No. 39,061
Term of patent 14 years
U.S. Cl. D14—114



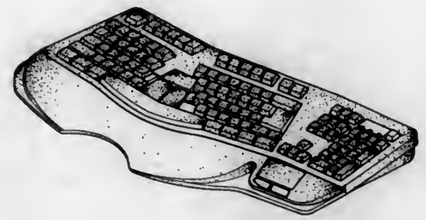
372,908
COMPUTER MOUSE
Daniel Aeschbacher, Montreaux, and Wolfgang Jönsson, La Tour-de-Peilz, both of, Switzerland, assignors to Logitech SA, Romanel s/Morges, Switzerland
Division of Ser. No. 23,693, May 31, 1994. This application Aug. 21, 1995, Ser. No. 43,131
Claims priority, application WIPO, Nov. 30, 1993, DM/028570
Term of patent 14 years
U.S. Cl. D14—114



372,909
COMPUTER BACKPANEL PORTION
Naufel C. Naufel, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Jun. 28, 1995, Ser. No. 41,841
Term of patent 14 years
U.S. Cl. D14—115



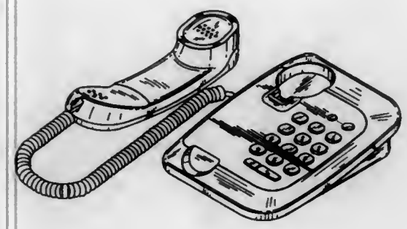
372,910
KEYBOARD
Frank Chen, Taipei, Taiwan, assignor to Silitek Corporation, Taipei, Taiwan
Filed Aug. 29, 1995, Ser. No. 43,197
Term of patent 14 years
U.S. Cl. D14—115



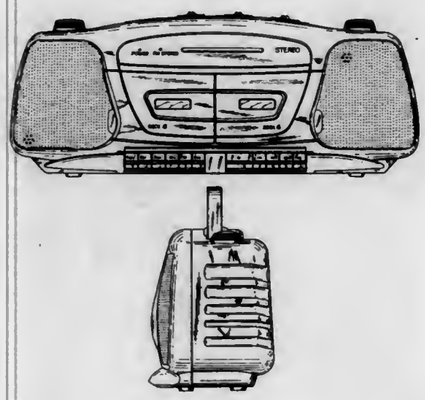
372,911
KEYBOARD
Daniel Wang, 10F, 15, Keelung Rd., Sec. 2, Taipei, Taiwan, and Kuo-an Chen, 4F, 11, Alley 4, Lane 95, Yu-Hsi St., Yung-Ho, Taipei, Taiwan
Filed Sep. 6, 1995, Ser. No. 43,523
Term of patent 14 years
U.S. Cl. D14—115



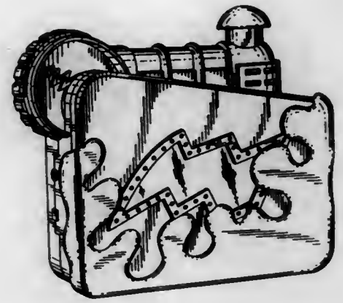
372,912
TELEPHONE
Yoshinori Yamada, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jul. 19, 1995, Ser. No. 41,605
Term of patent 14 years
U.S. Cl. D14—151



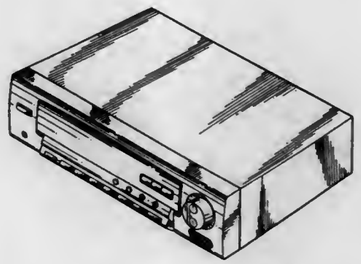
372,913
COMBINED RADIO, CASSETTE PLAYER AND CASSETTE RECORDER
Josh Zeitman, Brooklyn, N.Y., assignor to Lenoxx Electronics Corp., Brooklyn, N.Y.
Filed Jan. 5, 1995, Ser. No. 33,088
Term of patent 14 years
U.S. Cl. D14—163



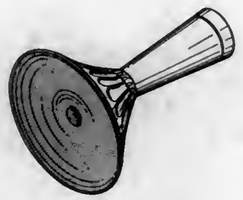
372,914
PERSONAL STEREO CASSETTE PLAYER
Marc H. Segan, New York, N.Y.; Vint Gonser, Essex, Mass.; Gary Strauss, Mamaroneck, N.Y., and Jerry Cummings, Marlton, N.J., assignors to Long Hall Technologies, L.L.C., New York, N.Y.
Filed Apr. 6, 1995, Ser. No. 37,206
Term of patent 14 years
U.S. Cl. D14—163



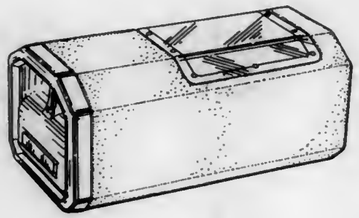
372,915
COMBINED TUNER AND AMPLIFIER
Masafumi Ito; Shigeru Hasegawa; Minoru Sube; Haruki Takita; Hiroyuki Watanabe, and Yukio Iikura, all of Musashino, Japan, assignors to TEAC Corporation, Musashino, Japan
Filed Jun. 20, 1995, Ser. No. 40,486
Claims priority, application Japan, Dec. 20, 1994, 6-38786
Term of patent 14 years
U.S. Cl. D14—188



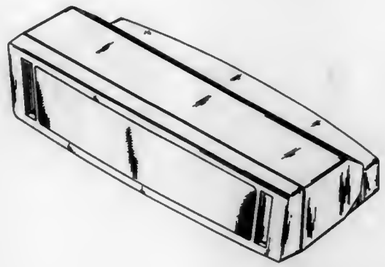
372,916
RADIO APPARATUS
Philippe Starck, Paris, France, assignor to Thomson Consumer Electronics (Societe Anonyme), Courbevole, France
Division of Ser. No. 26,661, Aug. 2, 1994. This application Sep. 1, 1995, Ser. No. 43,416
Claims priority, application France, Feb. 2, 1994, 94 0627
Term of patent 14 years
U.S. Cl. D14—195



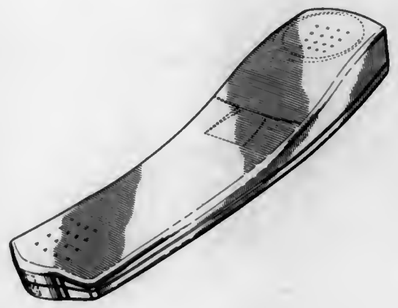
372,917
LOUDSPEAKER
Tomohiko Kobayashi, Tokyo, Japan, assignor to Pioneer Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 4, 1995, Ser. No. 37,128
Claims priority, application Japan, Oct. 7, 1994, 6-30636
Term of patent 14 years
U.S. Cl. D14—214



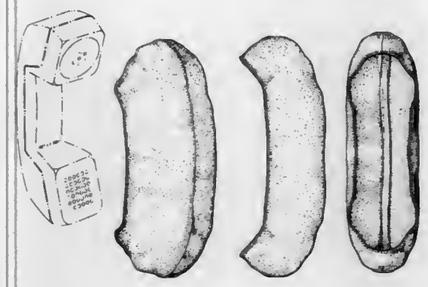
372,918
SPEAKER ENCLOSURE
Michael A. Manganese, West Peabody, Mass., and Maximilian Wolf, Lustenau, Austria, assignors to PictureTel Corporation, Danvers, Mass.
Filed Apr. 14, 1995, Ser. No. 37,497
Term of patent 14 years
U.S. Cl. D14—214



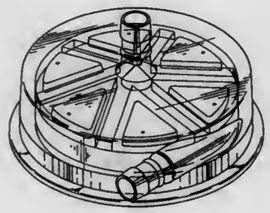
372,919
CORDED TELEPHONE HANDSET
Albert L. Nagele, Wilmette, and Leonid Soren, Lincolnwood, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Oct. 3, 1995, Ser. No. 44,916
Term of patent 14 years
U.S. Cl. D14—248



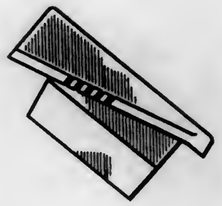
372,920
SANITARY FABRIC TELEPHONE HANDSET COVER
Darrell Bragg, 1278 Old Jackson Rd., Locust Grove, Ga. 30248, and Jerry Bragg, 10934 Clearwater Dr., Hampton, Ga. 30229
Filed Aug. 28, 1995, Ser. No. 43,163
Term of patent 14 years
U.S. Cl. D14—250



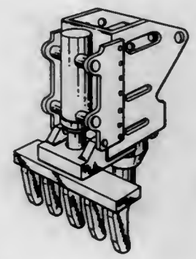
372,921
CENTRIFUGAL PUMP
Tomonori Ijiri, Tokyo; Nobuhiko Amano, and Toshihiko Nojiri, both of Kanagawa-Ken, all of, Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 24,620, Jun. 17, 1994, abandoned. This application Jni. 3, 1995, Ser. No. 43,930
Claims priority, application Japan, Dec. 20, 1993, 5-38191
Term of patent 14 years
U.S. Cl. D15—7



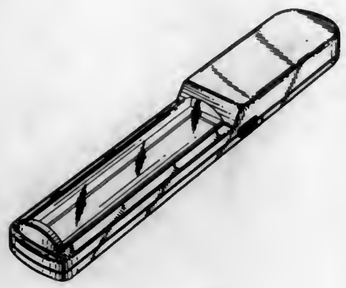
372,922
CHUTE GUARD FOR A COMBINED CHIPPER AND SHREDDER
David A. Tiedeman, Conyers, Ga., and Charles S. Henninger, Humboldt, Tenn., assignors to Murray, Inc., Brentwood, Tenn.
Division of Ser. No. 17,648, Jan. 9, 1994, Pat. No. Des. 358,399, which is a continuation-in-part of Ser. No. 2,680, Dec. 16, 1992, abandoned. This application Mar. 9, 1995, Ser. No. 35,952
Term of patent 14 years
U.S. Cl. D15—10



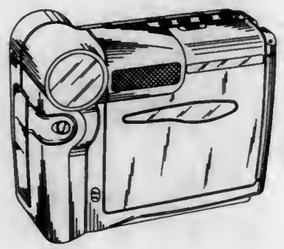
372,923
HYDRAULIC RAKE APPARATUS
Steven Theoharidis, R.R. 1, Box 3760, Sedgwick, Me. 04676
Filed Apr. 13, 1995, Ser. No. 38,155
Term of patent 14 years
U.S. Cl. D15—128



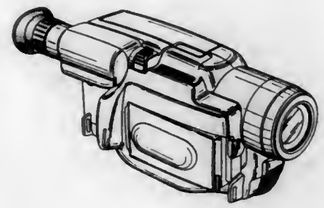
372,924
LIGHTED BAR MAGNIFIER
Carl Fisherman, 725 McCoy Rd., Franklin Lakes, N.J. 07417
Filed Apr. 21, 1995, Ser. No. 37,866
Term of patent 14 years
U.S. Cl. D16—135



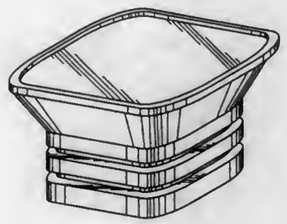
372,925
CAMCORDER
Hyun C. Choi, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea
Filed Apr. 3, 1995, Ser. No. 37,047
Term of patent 14 years
U.S. Cl. D16—202



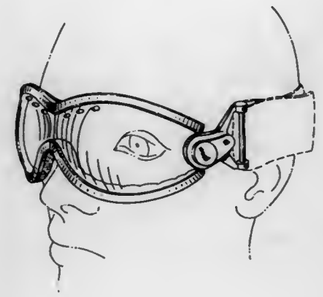
372,926
VIDEO CAMERA WITH VIDEO TAPE RECORDER
Yoshiyuki Matsumura, Yokosuka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed May 12, 1995, Ser. No. 38,726
Claims priority, application Japan, Nov. 14, 1994, 6-34664
Term of patent 14 years
U.S. Cl. D16—202



372,927
CAMCORDER VIEWING SCREEN ATTACHMENT
Wyneta J. Elmore, and Carl Mitchell, both of 213 Garnet Ave., San Carlos, Calif. 94070
Filed Sep. 25, 1995, Ser. No. 44,448
Term of patent 14 years
U.S. Cl. D16—220



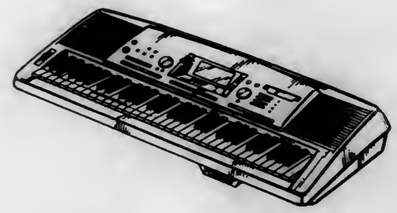
372,928
GOGGLE FACE
Henri Brune, Rochester, and Simon M. Conway, Lima, both of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Oct. 28, 1994, Ser. No. 30,418
Term of patent 14 years
U.S. Cl. D16—311



372,929
PAIR OF SUNGLASSES
Simon M. Conway, Lima, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Division of Ser. No. 10,988, Jul. 22, 1993, Pat. No. Des. 358,160. This application Nov. 2, 1994, Ser. No. 30,565
Term of patent 14 years
U.S. Cl. D16—326



372,930
ELECTRONIC KEYBOARD MUSICAL INSTRUMENT
Hidehiko Miura, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan
Filed Jul. 7, 1995, Ser. No. 41,183
Claims priority, application Japan, Jan. 10, 1995, 247/1995
Term of patent 14 years
U.S. Cl. D17—1



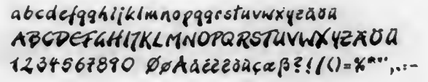
372,931
ELECTRONIC KEYBOARD MUSICAL INSTRUMENT
Hidehiko Miura, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan
Filed Jul. 7, 1995, Ser. No. 41,188
Claims priority, application Japan, Jan. 10, 1995, 246/1995
Term of patent 14 years
U.S. Cl. D17—1



372,932
ELECTRONIC CALCULATOR HAVING THE FUNCTIONS OF TELEPHONE BOOK, ADDRESS BOOK, CALENDAR, SCHEDULE BOOK AND MEMO BOOK
Kenji Tamura, and Yukinori Ido, both of Tokyo, Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan
Filed Aug. 28, 1995, Ser. No. 43,192
Term of patent 14 years
U.S. Cl. D18—2



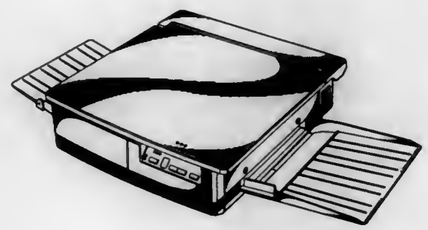
372,934
TYPE FACE
Thomas Goletz, Kastanienstrasse 3, D-97084 Würzburg, Germany
Filed Mar. 3, 1995, Ser. No. 36,409
Claims priority, application Germany, Sep. 6, 1994, M 94 06 904.2
Term of patent 14 years
U.S. Cl. D18—24



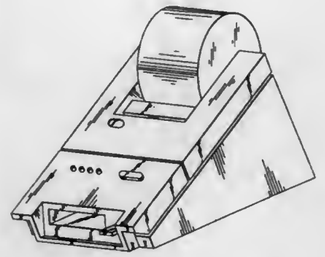
372,933
STAMP PAD AND CONTAINER COMBINATION
Jeffrey M. Winston, 658 W. Shore Dr., Anacortes, Wash. 98221
Continuation-in-part of Ser. No. 258,468, Jun. 10, 1994. This application Nov. 1, 1994, Ser. No. 30,525
Term of patent 14 years
U.S. Cl. D18—17



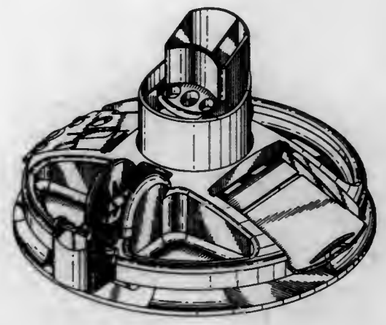
372,935
COPYING MACHINE
David Quijano; Charles L. Jones, both of Fairport, and William T. Clark, West Henrietta, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Nov. 13, 1995, Ser. No. 46,378
Term of patent 14 years
U.S. Cl. D18—36



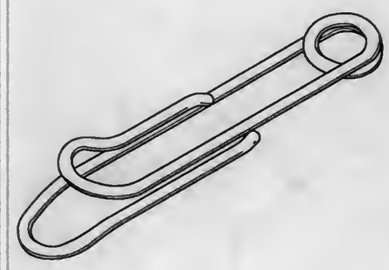
372,936
CONTROL UNIT WITH A PRINTER
Harmut Droege, Stuttgart; Ludwig Fischer, Herrenberg; Wolfgang Fischer, Boeblingen; Walter Hinz, Garching; Tayssir Scheib, Schondorf, and Dieter Sonnentag, Schoenaich, all of, Germany, assignors to IBM Corporation, Armonk, N.Y.
Filed May 23, 1995, Ser. No. 39,198
Claims priority, application Germany, Dec. 8, 1994, M 94 09 514.0
Term of patent 14 years
U.S. Cl. D18—54



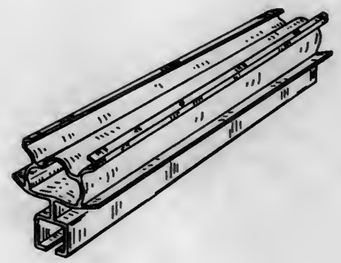
372,938
ROTARY ORGANIZER
James A. Wilson, North St. Paul; Jason R. Jacobson, St. Paul, and David C. Windorski, Woodbury, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Sep. 15, 1995, Ser. No. 44,014
Term of patent 14 years
U.S. Cl. D19—75



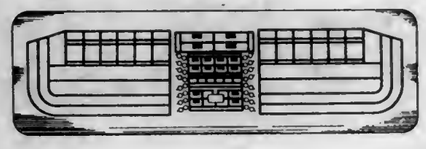
372,937
FLEXI-GRAB PAPER CLIP
Irving Anders, 54 Crossway, Scarsdale, N.Y. 10583
Filed Aug. 9, 1995, Ser. No. 43,234
Term of patent 14 years
U.S. Cl. D19—65



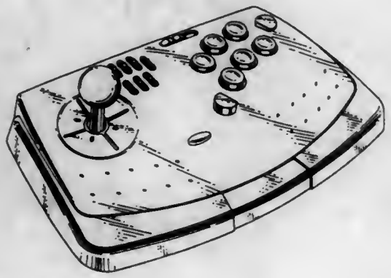
372,939
SIGN HOLDER
Mike T. Callas, 120 Gideons Point Rd., Tonka Bay, Minn. 55331
Filed Jun. 12, 1995, Ser. No. 40,137
Term of patent 14 years
U.S. Cl. D20—43



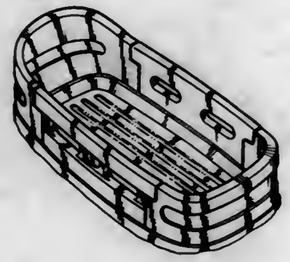
372,940
GAME LAYOUT MAT
Kirk Ryan, 1907 Merritt Dr., Northfield, N.J. 08225
Filed Jul. 31, 1995, Ser. No. 42,014
Term of patent 14 years
U.S. Cl. D21—37



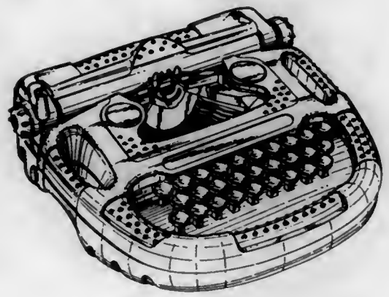
372,941
CONTROLLER FOR VIDEO GAME MACHINE
Akitoshi Oikawa, Tokyo, Japan, assignor to Sega Enterprises, Ltd., Japan
Filed Sep. 25, 1995, Ser. No. 44,481
Term of patent 14 years
U.S. Cl. D21—48



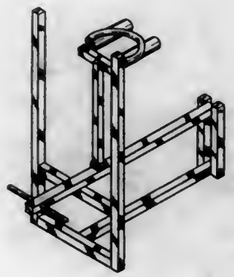
372,942
TOY WAGON TOP
Thomas E. Fish, Jr., Willoughby, Ohio, assignor to The Little Tikes Company, Hudson, Ohio
Filed Jan. 7, 1994, Ser. No. 17,232
Term of patent 14 years
U.S. Cl. D21—71



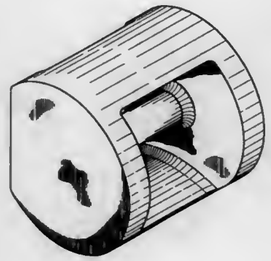
372,943
TOY TYPEWRITER
Martin J. Richards, Gedling, England, assignor to Britains Petite Limited, United Kingdom
Filed Jan. 3, 1995, Ser. No. 33,006
Term of patent 14 years
U.S. Cl. D21—127



372,944
EXERCISE DEVICE FOR LOWER BACK INJURIES
Gary B. Clegg, 704 N. 75th Ave., Pensacola, Fla. 32506
Filed Jun. 20, 1995, Ser. No. 40,480
Term of patent 14 years
U.S. Cl. D21—191



372,945
HAND-HELD EXERCISE DEVICE
Burton D. Morgan, 325 Aurora St., Hudson, Ohio 44236
Filed Jun. 14, 1995, Ser. No. 40,294
Term of patent 14 years
U.S. Cl. D21—197



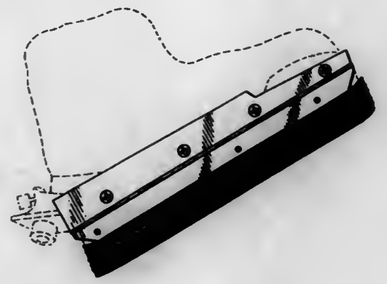
372,946
FOOT TOY
Marty M. Sedighzadeh, P.O. Box 36250, Denver, Colo. 80236
Filed Jul. 3, 1995, Ser. No. 41,049
Term of patent 14 years
U.S. Cl. D21—203



372,947
GOLF PUTTER
Moctezuma Rodriguez, 10210 Trading Post Dr., Houston, Tex. 77064
Filed May 5, 1995, Ser. No. 38,511
Term of patent 14 years
U.S. Cl. D21—215



372,948
WALKING SOLE FOR IN-LINE SKATE
Vincent Marasco, Sherman Oaks, Calif., assignor to Edward Mazzarino, Sherman Oaks, Calif.
Filed Apr. 3, 1995, Ser. No. 37,032
Term of patent 14 years
U.S. Cl. D21—226

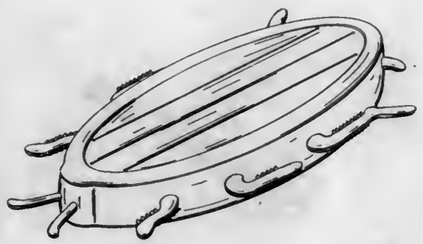


170-653 O.G.-96-27: QL3

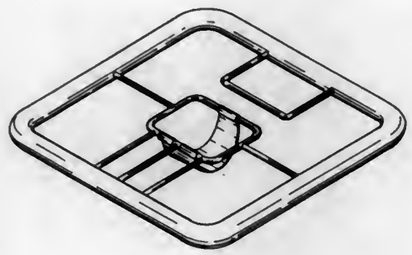
372,949
IN-LINE SKATE
Raymond Losi, II, Westlake Village, Calif., assignor to Variflex, Inc., Moorpark, Calif.
Filed May 8, 1995, Ser. No. 38,533
Term of patent 14 years
U.S. Cl. D21—226



372,950
POOL FLOAT
Lee Nicholson, 1377 Benning Pl., Apt. No. 3, Atlanta, Ga. 30307
Continuation-in-part of Ser. No. 30,925, Nov. 14, 1994, Pat. No. Des. 362,895. This application Jun. 19, 1995, Ser. No. 40,446
Term of patent 14 years
U.S. Cl. D21—237



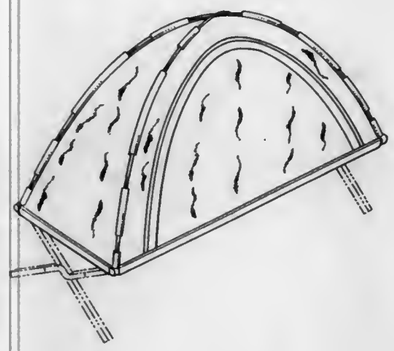
372,951
FLOTATION DEVICE
Terry D. Barth, 6720 E. Bay Blvd., Navarre, Fla. 32566
Filed Nov. 6, 1995, Ser. No. 46,067
Term of patent 14 years
U.S. Cl. D21—237



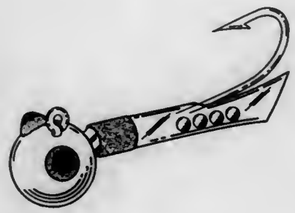
372,952
PLAYGROUND DECK LADDER
Terry V. Parrish, 329 S. Cedarbrook, Monett, Mo. 65708
Filed Jan. 11, 1995, Ser. No. 33,369
Term of patent 14 years
U.S. Cl. D21—245



372,953
ONE PERSON DOME SHAPED ARMY COT TENT
Mike Florez, P.O. Box 46, Waimanalo, Hi. 96795
Filed Oct. 7, 1994, Ser. No. 26,946
Term of patent 14 years
U.S. Cl. D21—253



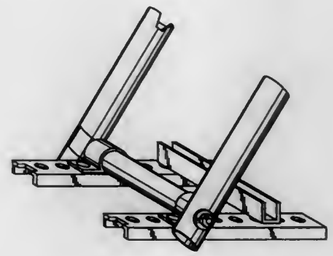
372,954
RATTLING GLO-EYES JIG
James Coniglio, 2107 S. Kenilworth, and Vincent J. Coniglio, 2113 Wisconsin, both of Berwyn, Ill. 60402
Filed Feb. 13, 1995, Ser. No. 34,794
Term of patent 14 years
U.S. Cl. D22—126



372,955
SURFACE FISHING LURE
Everett R. Gill, 403 Rapides Station Rd., Alexandria, La. 71303, and Jerry Jenson, 814 10th St., Eldora, Iowa 50627
Filed Apr. 19, 1995, Ser. No. 37,697
Term of patent 14 years
U.S. Cl. D22—128



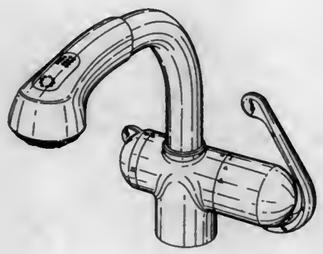
372,956
FISHING ROD HOLDER
Jonathan Mills, 32 Lantern La., Acushnet, Mass. 02743
Filed Sep. 15, 1995, Ser. No. 44,057
Term of patent 14 years
U.S. Cl. D22—147



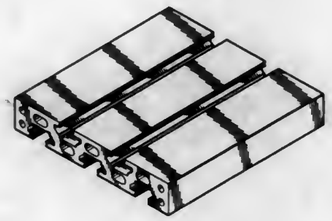
372,957
FOUNTAIN
Joseph P. Ceresko, Mt. Cobb, Pa., assignor to Space Age Plastics, Inc., Mt. Cobb, Pa.
Filed Jun. 1, 1995, Ser. No. 39,640
Term of patent 14 years
U.S. Cl. D23—201



372,958
FAUCET
Adolf Gottwald, Iserlohn, Germany, assignor to Friedrich Grohe Aktiengesellschaft, Hemer, Germany
Filed Apr. 13, 1995, Ser. No. 37,457
Claims priority, application Germany, Oct. 31, 1994, 94 08 465.3
The portion of the term of this patent subsequent to Jul. 2, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D23—238



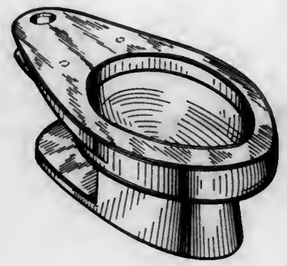
372,959
FRAME FOR PRESSURIZED FLUID-OPERATING DEVICES
Shigekazu Nagai, and Koji Sugano, both of Ibaraki-ken, Japan, assignors to SMC Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 18, 1995, Ser. No. 37,641
Claims priority, application Japan, Oct. 19, 1993, 6-31721
Term of patent 14 years
U.S. Cl. D23—249



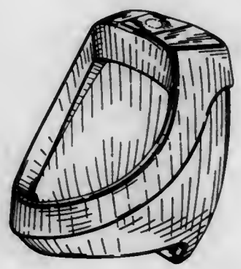
372,960
PRESSED-IN PIPE PLUG
James A. Allmon, Danville; Allen A. Spielberger, San Jose, and Douglas E. Weiland, Milpitas, all of Calif., assignors to Lord and Sons, Inc., San Jose, Calif.
Filed Apr. 17, 1995, Ser. No. 35,919
Term of patent 14 years
U.S. Cl. D23—260



372,961
WATER CLOSET
Thomas A. Bonnell, Sheboygan, Wis., and Basil M. Freeman, Webberville, Mich., assignors to Kohler Co., Kohler, Wis.
Filed Apr. 26, 1995, Ser. No. 38,042
Term of patent 14 years
U.S. Cl. D23—295



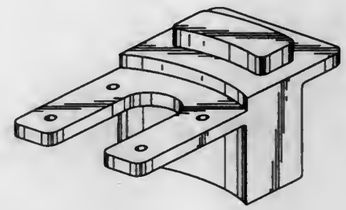
372,962
URINAL
Carter J. Thomas, Port Washington, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Sep. 25, 1995, Ser. No. 44,799
Term of patent 14 years
U.S. Cl. D23—302



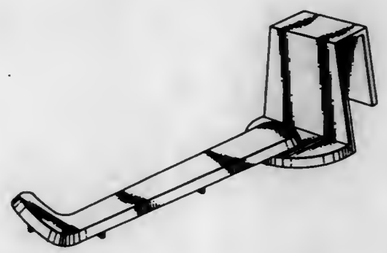
372,963
SHOWER BAR
Thomas J. Luca, Jr., Cranston, R.I., and Daniel W. Hoskin, Northboro, Mass., assignors to Kenney Manufacturing Company, Warwick, R.I.
Filed May 30, 1995, Ser. No. 39,421
Term of patent 14 years
U.S. Cl. D23—304



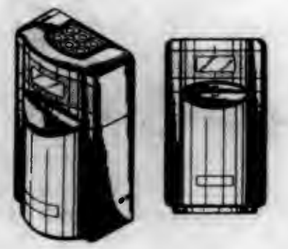
372,964
MAGNETIC TOILET SEAT RETAINER
Mark Gryner, P.O. Box 3352, Bay Saint Louis, Miss. 39520
Filed Sep. 11, 1995, Ser. No. 43,698
Term of patent 14 years
U.S. Cl. D23—309



372,965
TOILET SEAT HOLDER
Marcel Villeneuve, 318 Shakespeare Street, Vanier, Ontario, K1L 5M2, Canada
Filed Sep. 1, 1995, Ser. No. 43,566
Term of patent 14 years
U.S. Cl. D23—311



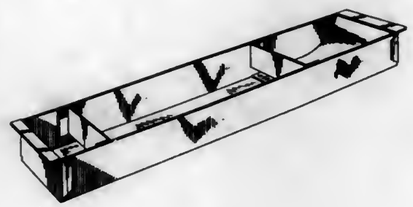
372,966
AIR FRESHENER
Chen-Feng Chen, Taipei, Taiwan, assignor to Bobson Hygiene International Inc., Taipei, Taiwan
Filed Mar. 22, 1995, Ser. No. 36,567
Term of patent 14 years
U.S. Cl. D23—366



372,967
COMBINED CEILING FAN AND STAND THEREFOR
William D. Mitchell, 230 Oak Crest Dr., Sharpsburg, Ga. 30277
Filed May 19, 1995, Ser. No. 39,084
Term of patent 14 years
U.S. Cl. D23—377



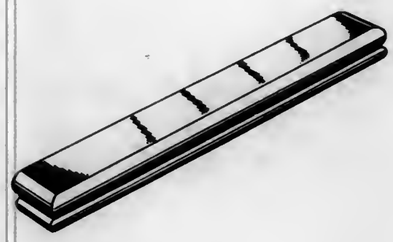
372,968
TRAY
Joe White, Calgary, Canada, assignor to Infra-Red Sauna Systems, Ltd., Calgary, Canada
Filed Nov. 28, 1994, Ser. No. 31,589
Term of patent 14 years
U.S. Cl. D23—386



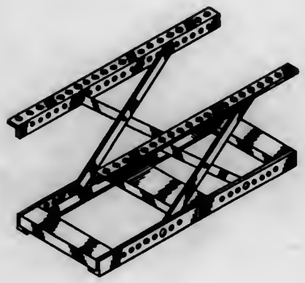
372,969
COMBINED STARTER VENT AND WATER SHEDDING VENTILATION STRIP
Robert M. Hicks, 124 Main St., Westford, Mass. 01886
Filed Apr. 12, 1995, Ser. No. 37,428
Term of patent 14 years
U.S. Cl. D23—393



372,970
FIREPLACE MANTEL
Edward Franco, 268 Cattail Cir., Brea, Calif. 92621
Filed May 17, 1995, Ser. No. 38,944
Term of patent 14 years
U.S. Cl. D23—404



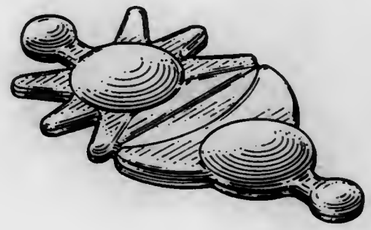
372,971
FAN SUPPORT
Donald J. Chescavage, 526 Fairview St., Pottsville, Pa. 17901
Filed Apr. 10, 1995, Ser. No. 37,267
Term of patent 14 years
U.S. Cl. D23—411



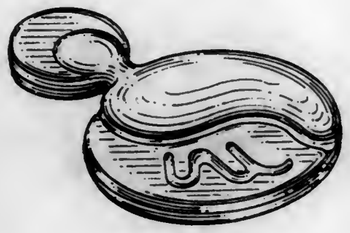
372,972
SOFTGEL CAPSULE
Gregory A. Schurig, Clearwater, and David G. Williams, Palm Harbor, both of Fla., assignors to R. P. Scherer Corporation, St. Petersburg, Fla.
Filed Apr. 21, 1995, Ser. No. 37,830
Term of patent 14 years
U.S. Cl. D24—104



372,973
SOFTGEL CAPSULE
David G. Williams, Palm Harbor, Fla., assignor to R.P. Scherer Corporation, Troy, Mich.
Filed Aug. 14, 1995, Ser. No. 42,613
Term of patent 14 years
U.S. Cl. D24—104



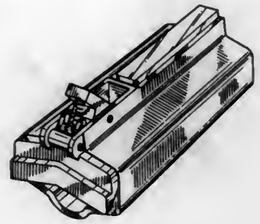
372,974
SOFTGEL CAPSULE
David G. Williams, Palm Harbor, Fla., assignor to R.P. Scherer Corporation, Troy, Mich.
Filed Aug. 14, 1995, Ser. No. 42,616
Term of patent 14 years
U.S. Cl. D24—104



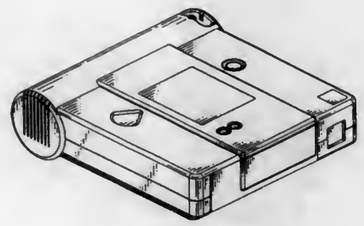
372,975
ELECTRIC BREAST PUMP
Brenda J. Meyers; Donald W. Herritz; Jean L. Johansen, all of Reedsburg, Wis.; William B. Hudson, Jr., Fremont, Mich.; Randall P. Bell, River Forest, Ill.; Gary F. Prokop, Wheaton, Ill.; James F. Caruso, Chicago, Ill., and James L. Allen, Lake Villa, Ill., assignors to Gerber Products Company, Fremont, Mich.
Filed Nov. 4, 1994, Ser. No. 30,681
Term of patent 14 years
U.S. Cl. D24—109



372,976
RADIO-NUCLIDE SYRINGE SHIELD
Don E. Reich, 2051 Dewberry Ct., Westlake Village, Calif. 21361
Filed Jun. 27, 1995, Ser. No. 40,818
Term of patent 14 years
U.S. Cl. D24—130



372,977
DEFIBRILLATOR
Jon M. Bishay, Woodinville, Wash., assignor to Heartstream, Inc., Seattle, Wash.
Filed May 11, 1995, Ser. No. 38,858
Term of patent 14 years
U.S. Cl. D24—167



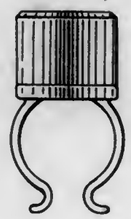
372,978
SCRATCHING IMPLEMENT FOR CASTED AND INACCESSIBLE MEMBERS
Alan W. Harvey, 1712 S. Charles St., Baltimore, Md. 21230
Filed Nov. 17, 1994, Ser. No. 31,090
Term of patent 14 years
U.S. Cl. D24—147



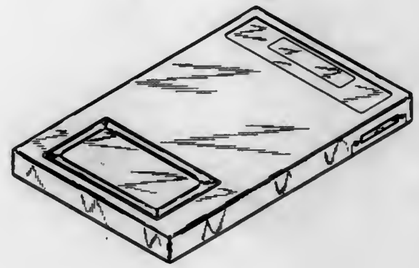
372,979
DENTAL TOOL FINGER GRIP
Ronald G. Coss, Newport Beach, Calif., assignor to Micro Motors, Inc., Santa Ana, Calif.
Filed May 31, 1995, Ser. No. 39,563
Term of patent 14 years
U.S. Cl. D24—176



372,980
WAXING RING
Robert P. Berger, Encino, Calif., assignor to belie de st. claire, Chatsworth, Calif.
Filed Aug. 1, 1995, Ser. No. 42,119
Term of patent 14 years
U.S. Cl. D24—176



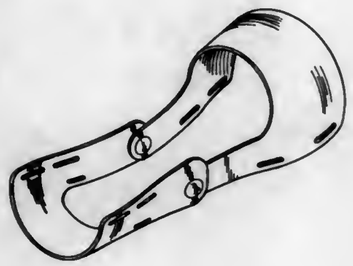
372,981
THERAPEUTIC IMPACT SENSOR
Robert K. McMahan, Jr., Mebane, and Robert H. Hart, Cary, both of N.C., assignors to McMahan Electro-optics, Incorporated, Winter Park, Fla.
Filed May 11, 1994, Ser. No. 22,771
Term of patent 14 years
U.S. Cl. D24—186



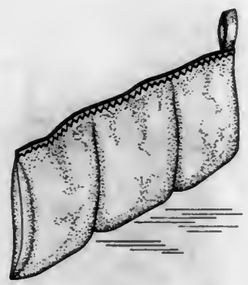
372,982
OVERHEAD HOIST
Raymond C. Williams, Gloucester, England, assignor to ARJO Limited, Gloucester, England
Filed Mar. 3, 1995, Ser. No. 35,681
Claims priority, application United Kingdom, Sep. 23, 1994, 2042048
Term of patent 14 years
U.S. Cl. D24—188



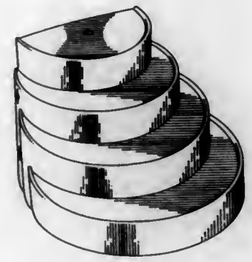
372,983
KNEE BRACE SHELL
Joseph F. Nebolon, Del Mar, Calif., assignor to Smith & Nephew Donjoy Inc., Carlsbad, Calif.
Division of Ser. No. 17,032, Feb. 12, 1993, Pat. No. 5,583,845.
This application May 13, 1994, Ser. No. 22,845
Term of patent 14 years
U.S. Cl. D24—190



372,984
HEATING PAD
Luanne S. Jordan, P.O. Box 1733, Davis, Calif. 95617
Filed May 9, 1995, Ser. No. 38,619
Term of patent 14 years
U.S. Cl. D24—206



372,985
STAIRS FOR SWIMMING POOL
Jean Bourgault, 1, Bercy Street, Candiac, Quebec, Canada
Filed May 25, 1995, Ser. No. 39,266
Term of patent 14 years
U.S. Cl. D25—2



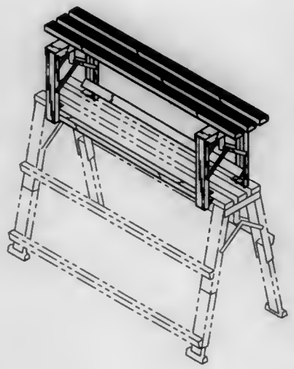
372,986
COMBINATION TREE STAND AND GAME CARRIER
John K. Oerther, 608 Montclair Rd., Frankfort, Ky. 40601
Filed Jul. 12, 1995, Ser. No. 41,361
Term of patent 14 years
U.S. Cl. D25—62



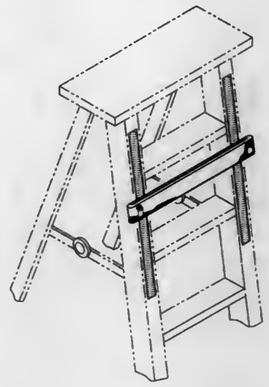
372,987
LADDER
Ernest Eason, 19 Rte-. 52, Cochecton, N.Y. 12726-5417
Filed Aug. 4, 1995, Ser. No. 42,248
Term of patent 14 years
U.S. Cl. D25—64



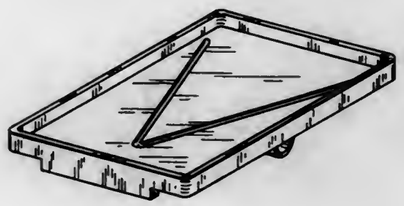
372,988
COLLAPSIBLE SCAFFOLDING EXTENSION
Richard Schulz, 845 N. L St., Livermore, Calif. 94550
Filed Jan. 17, 1995, Ser. No. 33,576
Term of patent 14 years
U.S. Cl. D25—68



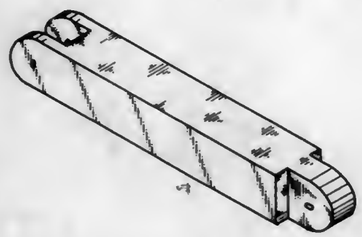
372,989
SHIN PAD FOR A LADDER
Jess S. Gile, 7006 Totem Branch Loop Rd., Marysville, Wash. 98271, and Leslie Jensen-Gile, 7006 Totem Branch Loop Rd., Marysville, Wash. 98271
Filed Feb. 22, 1995, Ser. No. 35,206
Term of patent 14 years
U.S. Cl. D25—68



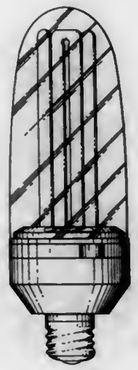
372,990
SHELF PLATFORM
Larry L. Sweeney, 422 W. Haskell St. #15, Winnemucca, Nev. 89445
Filed May 26, 1995, Ser. No. 39,365
Term of patent 14 years
U.S. Cl. D25—68



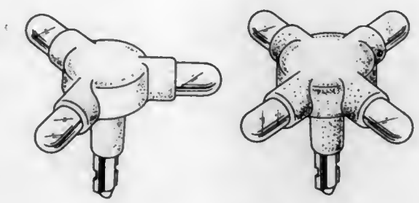
372,991
INTERCONNECTING STACKABLE LANDSCAPE TIMBER
Robert L. Ramsey, Morrilton, Ark., assignor to Thompson Industries, Inc., Russellville, Ark.
Continuation of Ser. No. 577,599, Sep. 4, 1990, abandoned. This application Aug. 6, 1993, Ser. No. 11,525
Term of patent 14 years
U.S. Cl. D25—164



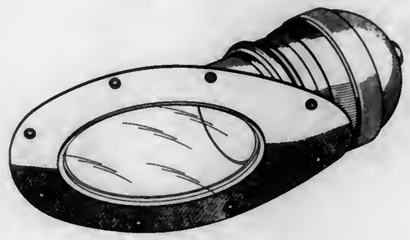
372,992
FLUORESCENT LAMP
Mark E. Martich, Hanover, and Thomas Tedham, West Peabody, both of Mass., assignors to Pacific Scientific Company, Weymouth, Mass.
Filed Apr. 29, 1994, Ser. No. 22,187
Term of patent 14 years
U.S. Cl. D26—3



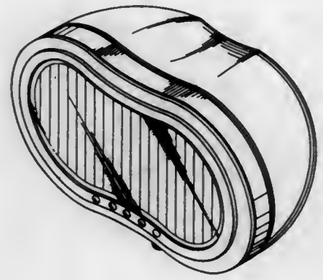
372,993
DECORATIVE LAMP
Kazuaki Murata, Tokyo, Japan, assignor to Moriyama Sangyo Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 17,909, Jan. 25, 1994, Pat. No. Des. 363,560. This application Jun. 12, 1995, Ser. No. 40,153
Term of patent 14 years
U.S. Cl. D26—25



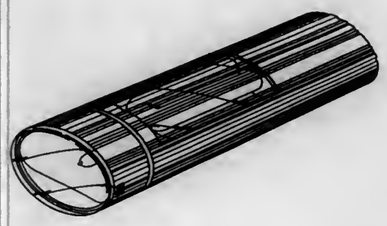
372,994
BOAT LIGHT
Theodore Ziaylek, Jr., 140 Riverview Dr., and Michael P. Ziaylek, 15 Cold Spring Ave., both of Yardley, Pa. 19067
Filed May 17, 1995, Ser. No. 39,105
Term of patent 14 years
U.S. Cl. D26—28



372,995
ADDITIONAL LIGHT FOR AUTOMOBILES
Jung-Chun Huang, No. 160, Sec. 1, Erh Jen Road, Pao An Village, Jen Te Hsiang, Taiwan
Filed Jun. 26, 1995, Ser. No. 40,727
Term of patent 14 years
U.S. Cl. D26—28



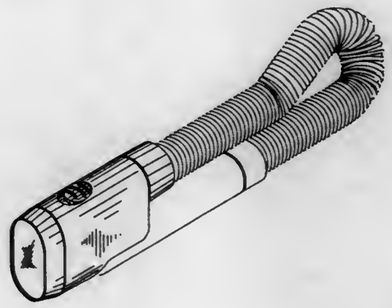
372,996
FLASHLIGHT
Udo M. Geissler, Henrik-Ibsen-Strasse 5, D-80638 Munich, Germany
Filed May 18, 1995, Ser. No. 39,004
Claims priority, application Germany, Dec. 19, 1994, 94 09 956.1
Term of patent 14 years
U.S. Cl. D26—42



372,997
SECURITY LAMP
Rudy B. Meoli, Placentia, Calif., assignor to Vernon M. Hildebrant, Santa Fe Spring, Calif.
Filed Jul. 5, 1995, Ser. No. 41,075
Term of patent 14 years
U.S. Cl. D26—42



372,998
HEAD FOR A FLASHLIGHT
Richard J. Carbone, Southbury, Conn., assignor to Black & Decker Inc., Newark, Del.
Filed May 22, 1995, Ser. No. 39,170
Term of patent 14 years
U.S. Cl. D26—43



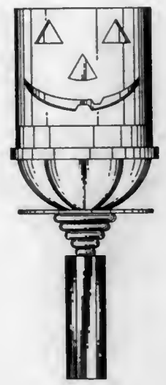
372,999
STAND ALONE TORCHIERE LAMP WITH TRAY
Dennis K. Swanson, Woodland Hills, Calif., assignor to Lamps Plus Inc., Chatsworth, Calif.
Filed Apr. 7, 1995, Ser. No. 37,262
Term of patent 14 years
U.S. Cl. D26—58



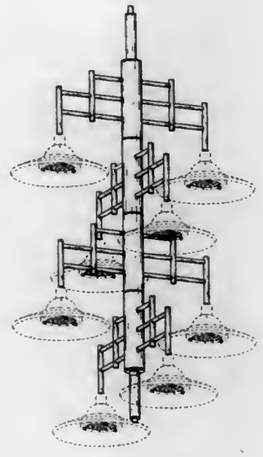
373,000
LIGHTING FIXTURE
Van B. Brady, 6301 S. Lakeview St., Littleton, Colo. 80120
Filed Aug. 18, 1994, Ser. No. 27,297
Term of patent 14 years
U.S. Cl. D26—68



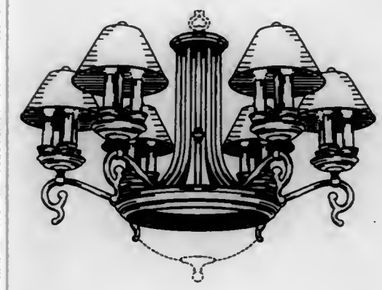
373,001
DECORATIVE SEASONAL OUTDOOR LIGHT
Michael P. O'Donnell, 33440 Lancashire, Westland, Mich. 48185
Filed Aug. 11, 1995, Ser. No. 42,549
Term of patent 14 years
U.S. Cl. D26—68



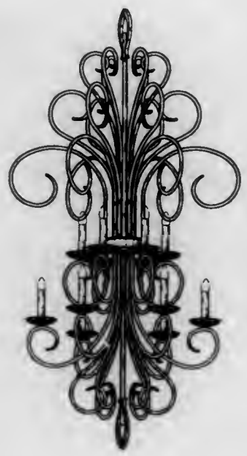
373,002
CHANDELIER
David H. Porter, Chagrin Falls, Ohio, assignor to The L. D. Kichler Co., Cleveland, Ohio
Filed Jun. 20, 1995, Ser. No. 40,493
Term of patent 14 years
U.S. Cl. D26—81



373,003
CHANDELIER
Patrick S. Dolan, 1901 NW. Upshur St., Portland, Oreg. 97209
Filed Apr. 25, 1995, Ser. No. 38,116
Term of patent 14 years
U.S. Cl. D26—84



373,004
CHANDELIER
David H. Porter, Chagrin Falls, and Libbe A. Milicia, Garfield Heights, both of Ohio, assignors to The L. D. Kichler Co., Cleveland, Ohio
Filed Jun. 20, 1995, Ser. No. 40,496
Term of patent 14 years
U.S. Cl. D26—84



373,005
LAMP
Ken Hsu, Taichung, Taiwan, assignor to Bright Yin Huey Co., Ltd., Taichung, Taiwan
Filed Sep. 26, 1995, Ser. No. 44,532
Term of patent 14 years
U.S. Cl. D26—86



373,006
LAMP
Daniel Chelsea, New York, N.Y., assignor to C.N. Burman Co., Paterson, N.J.
Filed Sep. 11, 1995, Ser. No. 43,686
Term of patent 14 years
U.S. Cl. D26—110

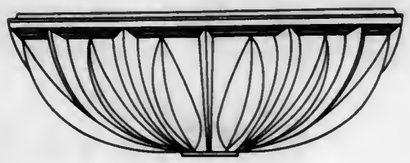


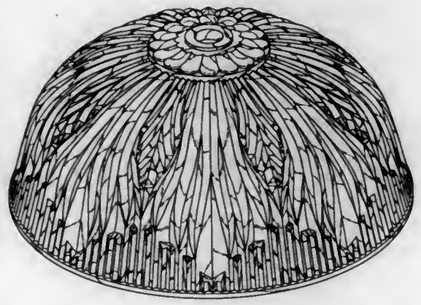
VOL 1189 ISS 3 AUG 20 1996 UMI

373,007
LAMP
Daniel Chelsea, New York, N.Y., assignor to C.N. Burman Co., Paterson, N.J.
Filed Sep. 11, 1995, Ser. No. 43,716
Term of patent 14 years
U.S. Cl. D26—110

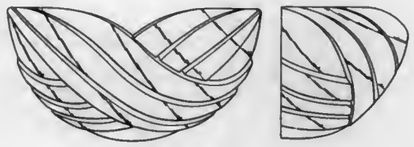


373,008
DOME SHAPE LAMP COVER WITH RADIAL BEADS
Francisco R. Miquel, Barcelona, Spain, assignor to Jimway, Inc., Bell, Calif.
Filed Apr. 12, 1995, Ser. No. 37,449
Term of patent 14 years
U.S. Cl. D26—134





373,009
LAMP SHADE
Ken Hsu, Taichung, Taiwan, assignor to Bright Yin Huey Co., Ltd., Taichung, Taiwan
Filed Sep. 26, 1995, Ser. No. 44,533
Term of patent 14 years
U.S. Cl. D26—134



373,010
PRESSED GLASS BOWL
Libbe A. Milicia, Garfield Heights, Ohio, assignor to The L. D. Kichler Co., Cleveland, Ohio
Filed Oct. 30, 1995, Ser. No. 45,805
Term of patent 14 years
U.S. Cl. D26—134

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 20th DAY OF AUGUST, 1996

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Corporation: *See*—
Alajääski, Timo; Laakso, Kalevi; Laine, Antero; and Ljokkoi, Risto, 5,547,083, Cl. 209-273.000.

Aaronson, Alan M.: *See*—
Fesman, Gerald; and Aaronson, Alan M., 5,547,614, Cl. 252-609.000.

AB Volvo Penta: *See*—
Skyman, Lars, 5,547,408, Cl. 440-73.000.

Abass, Hazim H.: *See*—
McDaniel, Billy W.; and Abass, Hazim H., 5,547,023, Cl. 166-280.000.

ABB Patent GmbH: *See*—
Lipsius, Johann M.; and Auer, Wolfgang, 5,546,867, Cl. 105-168.000.

ABB Power T&D Company Inc.: *See*—
Hemminger, Rodney C.; and Munday, Mark L., 5,548,527, Cl. 364-492.000.

Abbema, Wiliam D.; and Lewis, John K. Cylindrical corrosion barrier for pipe connections. 5,547,228, Cl. 285-22.000.

Abbott Laboratories: *See*—
Cope, Frederick O.; DeWille, Normanella T.; Richards, Ernest W.; Mazer, Terrence B.; Abbruzzese, Bonnie C.; Snowden, Gregory A.; Parlet, Nickki L.; and Pease, Laura A., 5,547,927, Cl. 514-2.000.
Dhaon, Madhup K.; Lundell, Edwin O.; Sarin, Virender K.; Baxter, Constance H.; and Absolom, Darryl R., 5,547,937, Cl. 514-12.000.
Johnson, Noel L.; Huang, Jyh-Yi T.; and Burnside, Robert R., 5,547,470, Cl. 604-67.000.

Abbruzzese, Bonnie C.: *See*—
Cope, Frederick O.; DeWille, Normanella T.; Richards, Ernest W.; Mazer, Terrence B.; Abbruzzese, Bonnie C.; Snowden, Gregory A.; Parlet, Nickki L.; and Pease, Laura A., 5,547,927, Cl. 514-2.000.

Abe, Hiroko: *See*—
Ye, Guoji; Kajihara, Jun-ichi; Kirihara, Sei; Kato, Kazuo; and Abe, Hiroko, 5,547,945, Cl. 514-54.000.

Abe, Mitsutoshi: *See*—
Kamada, Shinya; Yokota, Hiroaki; Nagayama, Shigeru; Nakahara, Yuji; Nakano, Shin; Marusue, Toshihisa; Abe, Mitsutoshi; and Matsumoto, Hiroyuki, 5,547,437, Cl. 477-143.000.

Abe, Tohru: *See*—
Yamaguchi, Naoyuki; and Abe, Tohru, 5,548,638, Cl. 379-202.000.

Abe, Tomoaki: *See*—
Iwamoto, Shinji; Mizuno, Toshiaki; Muramatsu, Toshihiko; Nakashima, Kazushi; Abe, Tomoaki; Yonekawa, Masao; and Sakashita, Yoshihiro, 5,546,911, Cl. 123-497.000.

Abe, Tsugio: *See*—
Nishimori, Yoshiki; Abe, Tsugio; and Suzuki, Yuriko, 5,547,800, Cl. 430-110.000.

Abe, Tsutomu: *See*—
Imanishi, Takashi; Abe, Tsutomu; and Kokubu, Hideki, 5,547,432, Cl. 476-40.000.
Nagatomo, Akira; Hattori, Yoshifumi; Ebisawa, Isao; Abe, Tsutomu; Ohba, Takashi; Iida, Hiroshi; and Watanabe, Kenjiro, 5,548,308, Cl. 347-9.000.

Abeyta, Alan. Neck and cervical spine protector device for dispersing axial compressive forces. 5,546,601, Cl. 2-2.000.

Abrams, Michael J.; Bossard, Gerald E.; Brooks, Robert C.; Henson, Geoffrey W.; and Vollano, Jean F., to Johnson Matthey, Inc. Anti-tumor platinum complexes. 5,547,982, Cl. 514-492.000.

Absolom, Darryl R.: *See*—
Dhaon, Madhup K.; Lundell, Edwin O.; Sarin, Virender K.; Baxter, Constance H.; and Absolom, Darryl R., 5,547,937, Cl. 514-12.000.

Accu-Sort Systems, Inc.: *See*—
Lapinski, Charles; Eckert, Charles; Skokowski, Richard; Cox, James; Scott, William; Chaleff, Edward; and Wagh, Meghanad D., 5,548,107, Cl. 235-462.000.
Wurz, Albert; Scott, William; and Skokowski, Richard, 5,547,034, Cl. 177-25.130.

Acker, Duane R.: *See*—
Weimer, Ralph; and Acker, Duane R., 5,546,967, Cl. 134-65.000.

Acker, Richard M.; Brunelli, Brian T.; and Kautzer, Douglas H., to Briggs & Stratton Corporation. Engine housing for an engine-device assembly. 5,546,901, Cl. 123-195.00C.

Ackerman, John F., to General Electric Company. Optical thin films and method for their production. 5,547,706, Cl. 427-166.000.

Adachi, Masahiro; and Shimada, Shinji, to Sharp Kabushiki Kaisha. Reflective LCD having a resin-diffuser with dispersed metal oxide particles between pixel electrodes and substrate. 5,548,425, Cl. 359-69.000.

Adamek, Peter; Kopec, Eduard; and Ludmann, Armin, to Filterwerk Mann & Hummel GmbH. Intake assembly for a multi-cylinder internal-combustion engine. 5,546,900, Cl. 123-184.550.

Adamian, Vahe A.; Falcinelli, Michael T.; and Phillips, Peter V., to ATN Microwave, Inc. Electronic calibration method and apparatus. 5,548,221, Cl. 324-601.000.

Adams, Kay L., to Tech Wear, Inc. Multi-path static control garment and wrist strap combination. 5,548,469, Cl. 361-220.000.

Adams, Lowell J.; Leffel, Kevin L.; Tenison, Gary V.; and Weisend, Norbert A., Jr., to B.F. Goodrich Company, The. Mechanical deicer having decoupled skin segments. 5,547,150, Cl. 244-134.00R.

Adolf Lony KG Flexible Verpackungen: *See*—
Berwian, Werner; Frohs, Thomas; and Rafflenbeul, Rolf, 5,547,491, Cl. 95-12.000.

Adra Systems, Inc.: *See*—
LoNegro, Rene; and Wells, Stuart, 5,548,707, Cl. 395-161.000.

Adriaensens, Albert D.: *See*—
Leblans, Paul; Adriaensens, Albert D.; Tecotzky, Melvin; and Van den Bogaert, Jan A., 5,547,807, Cl. 430-139.000.

Adrian, Ronald J.; Barnhart, Donald H.; and Papen, George A., to University of Illinois. Stereo multiplexed holographic particle image velocimeter. 5,548,419, Cl. 359-24.000.

Advanced Cardiovascular Systems, Inc.: *See*—
Williams, Michael S.; Lau, Lilip; Khosravi, Farhad; Hartigan, William; and Hernando, Avegel, 5,546,646, Cl. 29-407.080.

Advanced Extraction Technologies, Inc.: *See*—
Mehra, Yuv R., 5,546,764, Cl. 62-625.000.

Advanced Genetic Technologies Corporation: *See*—
Seed, John; and Seed, Brian, 5,547,660, Cl. 424-61.000.

Advanced Micro Devices, Inc.: *See*—
Duley, Raymond S.; and Khan, Ashfaq R., 5,548,764, Cl. 395-750.000.
Rohner, Don, 5,547,902, Cl. 437-187.000.
Zvonar, John G., 5,548,535, Cl. 364-551.010.

Advanced Technology Laboratories, Inc.: *See*—
Souquet, Jacques, 5,546,946, Cl. 128-662.030.

Aerometrics, Inc.: *See*—
Bachalo, William D.; and Isakovic, Adam, 5,547,327, Cl. 414-137.100.

Affinito, John D., to Battelle Memorial Institute. Vacuum deposition and curing of liquid monomers apparatus. 5,547,508, Cl. 118-50.000.

Affymax Technologies N.V.: *See*—
Dower, William J.; and Fodor, Stephen P. A., 5,547,839, Cl. 435-6.000.

Afzali-Ardakani, Ali; Gotro, Jeffrey T.; Hedrick, Jeffrey C.; Papathomas, Konstantinos; Patel, Niranjan M.; Shaw, Jane M.; and Viehbeck, Alfred, to International Business Machines Corporation. Modified dicyanate ester resins having enhanced fracture toughness. 5,548,034, Cl. 525-390.000.

Agfa-Gevaert: *See*—
Defieuw, Geert; and Van Damme, Marc, 5,547,917, Cl. 503-227.000.

Agfa Gevaert AG: *See*—
Lapp, Otto; Schmuck, Arno; Schmidt, Wolfgang; and Siegel, Jörg, 5,547,818, Cl. 430-505.000.
Maerz, Karin; Matz, Volker; Seip, Detlev; and Platzer, Stephen J. W., 5,547,811, Cl. 430-257.000.

Agfa-Gevaert, N.V.: *See*—
De Meutter, Stefaan; Van Goethem, Eugeen; Schuerwegen, Ronald; and Horsten, Bartholmeus, 5,547,914, Cl. 503-210.000.
Defieuw, Geert; Janssens, Wilhelmus; Vanmaele, Luc; Dewanckele, Jean-Marie; and Uytterhoeven, Herman, 5,547,809, Cl. 430-200.000.
Exelmans, Walter; and Verbeke, Gentil, 5,548,126, Cl. 250-588.000.
Leblans, Paul; Adriaensens, Albert D.; Tecotzky, Melvin; and Van den Bogaert, Jan A., 5,547,807, Cl. 430-139.000.
Vanmaele, Luc, 5,547,815, Cl. 430-338.000.
Wouters, Paul; and Dirx, Lieven, 5,547,298, Cl. 400-692.000.

Agur, Enno E.: *See*—
Bayley, Robert D.; Fox, Carol A.; Hoffend, Thomas R.; Mahabadi, Hadi K.; Agur, Enno E.; Sacripante, Guerino; and Hawkins, Michael S., 5,548,059, Cl. 528-194.000.

Ahdoot, Ned M. Leveling and locking profile transfer device. 5,546,668, Cl. 33-527.000.

Ahlstrom Machinery Inc.: *See*—
Nykanen, Tuomo S.; Greenwood, Brian F.; Gullichsen, Johan; Kiiskila, Erkki; Mattelmaki, Esko; Phillips, Joseph R.; Richardsen, Jan; Ryham, Rolf; Soderman, Jarmo; and Wiklund, Karl, 5,547,543, Cl. 162-31.000.
Prough, J. Robert; and Phillips, Joseph R., 5,547,546, Cl. 162-238.000.

Ahmed, Iqbal; and Moradi-Araghi, Ahmad, to Phillips Petroleum Company. Process for treating oil-bearing formation. 5,547,025, Cl. 166-295.000.

Ahn, Ju-Yeong: *See*—
Gahang, Gu-Su; Song, Bong-Seog; Lee, Hyun-Jun; and Ahn, Ju-Yeong, 5,548,634, Cl. 379-97.000.

Aigner, Josef: *See*—

Krönauer, Karlhans; Aigner, Josef; Klein, Franz; Weber, Karsten; Schmid, Monika; and Pfab, Robert, 5,546,640, Cl. 24-510.000.

Aihara, Masayoshi, to Kabushiki Kaisha Toshiba. Apparatus for performing recording operations by using standard type recording papers and method of controlling said apparatus. 5,548,406, Cl. 358-296.000.

Air Flow Research Heads, Inc.: *See*—
Sperling, Kenneth R.; and Tripp, Guy L., 5,546,899, Cl. 123-90.500.

Air Products and Chemicals, Inc.: *See*—
DiStefano, Frank V., 5,548,017, Cl. 524-514.000.
Slavejkov, Aleksandar G.; Broadway, Lee; Joshi, Mahendra L.; and Nabors, James K., 5,547,368, Cl. 431-8.000.

Aisin AW Co., Ltd.: *See*—
Hayabuchi, Masahiro; Nishida, Masaaki; Yamamoto, Yoshihisa; Mikami, Kazuhiro; Tsutsui, Hiroshi; and Iwata, Akihito, 5,547,436, Cl. 477-114.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Hirabayashi, Katsumi; and Usa, Daigo, 5,547,429, Cl. 474-110.000.
Hoshihara, Naoaki, 5,547,254, Cl. 297-367.000.
Ito, Yoshitaka; Ishii, Masami; Nishio, Takayuki; Mizutani, Uichiro; Yamada, Yuh; Ogasawara, Fumihiko; and Suganuma, Motohiro, 5,547,924, Cl. 505-500.000.
Kimura, Ichiro; and Miyazaki, Hisashi, 5,547,349, Cl. 417-282.000.
Tozu, Kenji; Asano, Kenji; and Hattori, Noriaki, 5,547,264, Cl. 303-9.620.
Yogo, Hiroyuki, 5,548,822, Cl. 455-68.000.

Aiwa Co., Ltd.: *See*—
Hashimoto, Hiroyuki; Ishii, Satoshi; and Saito, Haruo, 5,548,325, Cl. 348-64.000.
Niki, Mamoru; Hosaka, Yoshiaki; Mogi, Takao; and Saito, Haruo, 5,548,451, Cl. 360-32.000.

Aizawa, Hiroyuki; and Tobisawa, Seiichi, to Konica Corporation. Coating apparatus. 5,547,510, Cl. 118-410.000.

Aizawa, Hitomi: *See*—
Tsunoda, Takeo; Aizawa, Hitomi; and Hama, Yuji, 5,548,765, Cl. 395-750.000.

Aizawa, Jyun-ichi; Nakagawa, Kunihiko; Nakao, Hiroshi; Ezaki, Hitoshi; and Sunaga, Kouhei, to Mitsubishi Denki Kabushiki Kaisha. Printer having a speed reduction mechanism with integral and non-integral gear ratios. 5,547,297, Cl. 400-567.000.

Aizawa, Yuichi; Kimura, Mahito; and Imai, Yasuto, to Daiwa Seiko, Inc. Golf club head. 5,547,194, Cl. 473-350.000.

Ajinomoto Co., Inc.: *See*—
Kawasaki, Hisashi; Tsuchiya, Makoto; Miwa, Kiyoshi; and Kawahara, Yoshio, 5,547,864, Cl. 435-170.000.
Maruyama, Shogo; and Kumon, Satoshi, 5,547,857, Cl. 435-87.000.
Nagano, Yoshimi; Suganuma, Takao; Satoh, Kazuhiro; and Ikeda, Masao, 5,547,858, Cl. 435-89.000.

Akagiri, Kenzo: *See*—
Shimoyoshi, Osamu; Akagiri, Kenzo; Suzuki, Hiroshi; and Mitsuno, Makoto, 5,548,574, Cl. 369-124.000.

Akasaka, Yoshio; Kakijima, Kenichi; Endoh, Takeshi; Uchida, Goro; Tanaka, Masaaki; Fujie, Takefumi; Sukawa, Daiji; Endoh, Satoshi; Saitoh, Hideo; and Kubo, Takashi, to Honda Giken Kogyo Kabushiki Kaisha. Method and apparatus for assembling motor vehicle body. 5,548,096, Cl. 219-117.100.

Akazaki, Shusuke: *See*—
Hasegawa, Yusuke; Komoriya, Isao; Kimura, Eisuke; Akazaki, Shusuke; and Nishimura, Yoichi, 5,548,514, Cl. 364-431.050.
Komoriya, Isao; Hasegawa, Yusuke; Akazaki, Shusuke; and Maki, Hidetaka, 5,546,907, Cl. 123-478.000.

Akiko Ishikawa: *See*—
Ishikawa, Kiyoshi, 5,547,460, Cl. 601-23.000.

Akita, Mamoru: *See*—
Shimizume, Kazutoshi; Akita, Mamoru; and Tsuboi, Yoshinori, 5,548,569, Cl. 369-44.280.

Akiyama, Atsushi: *See*—
Maruyama, Tsutomu; Akiyama, Atsushi; Sanada, Kazuo; Chigira, Sadao; and Hidaka, Masanobu, 5,547,501, Cl. 106-21.00R.

Akiyoshi, Takashi; and Matsuse, Tetsuo, to Matsushita Electric Industrial Co., Ltd. System for automatically generating and saving control information in a server if requested by a client at system initialization for operating in a network. 5,548,729, Cl. 395-200.160.

Akizawa, Mitsuru; Yamashita, Hirofumi; Kawaguchi, Hisamitsu; Tada, Katsumi; Kato, Kanji; Kito, Akira; and Yamada, Hidenori, to Hitachi, Ltd.; and Hitachi Computer Engineering Co., Ltd. File server system and file access control method of the same. 5,548,724, Cl. 395-200.030.

Akutsu, Norikatsu: *See*—
Okawa, Takashi; Enokido, Masashi; Tsuda, Shingo; and Akutsu, Norikatsu, 5,547,784, Cl. 429-218.000.

Akzo Nobel N.V.: *See*—
Fesman, Gerald; and Aaronson, Alan M., 5,547,614, Cl. 252-609.000.

Alajääski, Timo; Laakso, Kalevi; Laine, Antero; and Ljokkoi, Risto, to A. Ahlstrom Corporation. Apparatus for treating fiber suspension. 5,547,083, Cl. 209-273.000.

Albany International Corp.: *See*—
Hawes, John M.; Sims, Joe W.; and Lee, Don, 5,546,643, Cl. 26-11.000.

Albatros System S.p.A.: *See*—
Sandrin, Gianni, 5,546,617, Cl. 4-541.600.

Albee, Alan J.; Duus, Erik; and Ellis, Mark, to Gen Rad, Inc. Method and apparatus for pin assignment in automatic circuit testers. 5,548,525, Cl. 364-489.000.

Albert Frankenthal Aktiengesellschaft: *See*—
Kepert, Manfred; and Zeiler, Karl H., 5,547,452, Cl. 493-427.000.

Albertin, Marc S.: *See*—
Riley, William C.; Albertin, Marc S.; and May, James B., 5,547,348, Cl. 417-273.000.

Albus, Udo: *See*—
Weichert, Andreas; Kleemann, Heinz-Werner; Lang, Hans-Jochen; Schwark, Jan-Robert; Albus, Udo; and Scholz, Wolfgang, 5,547,953, Cl. 514-226.500.

Alcatel N. V.: *See*—
Peschi, Robert N. L., 5,548,593, Cl. 370-94.100.
Suard, Bruno P.; and Kumar, Vinod, 5,548,834, Cl. 455-276.100.

Alcatel Telspace: *See*—
Sehier, Philippe R.; and Le Pape, Yannick L., 5,548,618, Cl. 375-343.000.

Alco Industries Kabushiki Kaisha: *See*—
Goto, Hisashi, 5,546,851, Cl. 99-446.000.

Alcon Laboratories, Inc.: *See*—
Holloman, Edward C.; Kyba, Evan P.; and Park, Joon S., 5,547,663, Cl. 424-78.040.

Aldous, Stephen C.; and Dake, Guy M., to Megahertz Corporation. Media connector interface for use with a thin-architecture communications card. 5,547,401, Cl. 439-676.000.

Aldridge, David L.; Bunton, William P.; Bissell, Stephen R.; Brown, David; Gunn, Daniel D.; Kagy, Carl; and Sonnier, David P., to Tandem Computers Incorporated. System for switching power and scrubbing power mixing devices for faults. 5,548,463, Cl. 361-18.000.

Alenia Spazio Spa: *See*—
Lo Forti, Raimondo; and Lisi, Marco, 5,548,295, Cl. 342-373.000.

Alexander, Donald H. Method for separating contaminants from solution employing an organic-stabilized metal-hydroxy gel. 5,547,583, Cl. 210-666.000.

Alexander Machinery, Inc.: *See*—
Summey, Shala W., III; and Alexander, William J., III, 5,546,993, Cl. 139-311.000.

Alexander, William J., III: *See*—
Summey, Shala W., III; and Alexander, William J., III, 5,546,993, Cl. 139-311.000.

Ali, Dawood A., to Eaton Corporation. Controlling an electrically actuated refrigerant expansion valve. 5,546,756, Cl. 62-204.000.

Allcock, Harry R.; Klingenberg, Eric H.; and Weller, Mark P., to Penn State Research Foundation, Inc. Sulfonation of polyphosphazenes. 5,548,060, Cl. 528-487.000.

Allelix Biopharmaceuticals Inc.: *See*—
Kamboj, Rajender; Elliott, Candace E.; and Nutt, Stephen L., 5,547,855, Cl. 435-69.100.

Allen-Bradley Company, Inc.: *See*—
Unsworth, Peter J.; and Wang, Yuan, 5,548,197, Cl. 318-757.000.

Allen, Charles: *See*—
Jansen, Janice, 5,547,393, Cl. 439-501.000.

Allen, Patrick J.; Bross-Kelly, Beverly J.; Viltro, Louis J.; Vinnage, William R., Jr.; and Weirich, David M., to Proctor & Gamble Company, The. Nonwoven female component for refastenable fastening device and method of making the same. 5,547,531, Cl. 156-164.000.

Allenbaugh, Howard M., to M.A.G. Eng. & Mfg. Inc. Latch guard for center hung doors. 5,547,239, Cl. 292-346.000.

Alliance Semiconductor Corporation: *See*—
Stephens, Michael C., Jr.; Medhekar, Ajit K.; and Reddy, Chitranjan N., 5,548,560, Cl. 365-233.500.

Allied Colloids Limited: *See*—
Moody, Gillian M.; and Happs, Clive, 5,547,647, Cl. 423-121.000.

AlliedSignal Inc.: *See*—
Degrassi, Alfieri; and Furrer, William W., 5,547,765, Cl. 428-474.700.
Furseth, John P.; Heydrich, Frank; Hover, Forest H.; Little, Ian; Mackin, Steven G.; Stenard, Steven C.; Thompson, James L.; White, Ellen; and Wilson, Bruce D., 5,547,342, Cl. 415-200.000.
Miller, Harold J., III; and Dybro, Niels, 5,547,143, Cl. 242-379.100.
Perkey, Russell C.; Ramey, Bruce S.; and Wieger, George S., 5,546,988, Cl. 137-625.660.
Shekhawat, Sampat; Tumpey, John J.; and Widdis, James C., 5,546,742, Cl. 60-39.142.
Zimmerman, Ronald A., II; and Hofer, John C., 5,547,214, Cl. 280-730.100.

Allison, Mark R. Rifle mounted ballistic chart. 5,546,691, Cl. 42-90.000.

Allwörden, Wilhelm V., to SAME S.p.A. Harvester for green fodder preparation. 5,546,736, Cl. 56-16.40B.

Alrama Enterprises, Inc.: *See*—
Mora, Raul, 5,547,441, Cl. 482-46.000.

Alt, Christian: *See*—
Treichl, Markus; and Alt, Christian, 5,547,159, Cl. 248-429.000.

Altera Corporation: *See*—
Madurawe, Raminda, 5,548,228, Cl. 326-41.000.
Madurawe, Raminda, 5,548,552, Cl. 365-185.330.

Althausen, Ferdinand: *See*—
Sulzbach, Hans-Michael; Raffel, Reiner; Althausen, Ferdinand; and Wirth, Jürgen, 5,547,276, Cl. 366-139.000.

Aluminum Company of America: *See*—
Platt, Grayeme E.; Anderson, Robert D.; and Mueller, P. Michael, 5,546,785, Cl. 72-450.000.

Alvarado, Julio M., to International Business Machines Corporation. Dual cure epoxy backseal formulation. 5,547,713, Cl. 427-493.000.

Amano, Takashi; and Okabayashi, Makoto, to Technova, Inc. Thermoelectric semiconductor material. 5,547,598, Cl. 252-62.30T.

Amari, Yasufumi: *See*—
Takayama, Masato; and Amari, Yasufumi, 5,548,815, Cl. 455-41.000.

Amato, Michael. Animal umbrella. 5,546,970, Cl. 135-16.000.

Ambion Inc.: *See*—
Meador, James; McElroy, Hoyt E.; Herrmann, Michelle L.; and Winkler, Matthew, 5,547,862, Cl. 435-91.300.

Ambrosius, Steven G.; and Van Boxtel, Neil J. Nail/staple clip holster. 5,547,115, Cl. 224-240.000.

Amemiya, Koji: *See*—
Ogata, Takao; Amemiya, Koji; Takeuchi, Tatsuo; Hasegawa, Takashi; Saito, Rie; and Sasanuma, Nobuatsu, 5,548,378, Cl. 355-208.000.

Amemiya, Shigeo: *See*—
Ogura, Takao; Amemiya, Shigeo; Tezuka, Koji; and Chujo, Takafumi, 5,548,639, Cl. 379-221.000.

American Cyanamid Company: *See*—
Black, Bruce C.; and Summers, Max D., 5,547,871, Cl. 435-240.100.
Fischer, Meir; Lebens, Michael R.; and Chaleff, Deborah T., 5,548,068, Cl. 530-399.000.

American Home Products Corporation: *See*—
Armstrong, Jay J.; and Sehgal, Surendra N., 5,547,959, Cl. 514-291.000.
Barcomb, Reginald J., 5,547,948, Cl. 514-170.000.

American Machine & Tool Company, Inc.: *See*—
Pollak, Henry, 5,547,319, Cl. 408-90.000.

American Nucleonics Corporation: *See*—
Talwar, Ashok K.; and Monzello, Roy C., 5,548,838, Cl. 455-304.000.

Ames, Thomas J., to Marathon Oil Company. Offshore system and method for storing and tripping a continuous length of jointed tubular conduit. 5,547,314, Cl. 405-165.000.

Amin, Sanjaykumar, to Entropy Systems, Inc. Device for thermal transfer using air as the working medium. 5,547,341, Cl. 415-143.000.

Amini, Nader; Boury, Bechara F.; Brannon, Sherwood; Concilio, Ian A.; Hofmann, Richard G.; and Lohman, Terence J., to International Business Machines Corporation. Dynamic bus sizing of DMA transfers. 5,548,786, Cl. 395-842.000.

Ammon, Dieter, to Daimler-Benz Ag. Method for determining quantities which characterize the driving behavior. 5,548,536, Cl. 364-565.000.

Amoco Corporation: *See*—
Warren, Tommy M.; and Mount, Houston B., 5,547,031, Cl. 175-61.000.

AMP Plus, Inc.: *See*—
Zadeh, Rohollah E., 5,548,499, Cl. 362-366.000.

AMSTED Industries Incorporated: *See*—
Nassar, Rami V., 5,546,869, Cl. 105-206.100.

Amtico Company Limited, The: *See*—
Wilson, Gary J., 5,547,741, Cl. 428-215.000.

Analogy, Inc.: *See*—
Vlach, Martin; Christen, Ernst; Teegarden, Darrell A.; and Bedrosian, David G., 5,548,539, Cl. 364-578.000.

Ananda, Mohan. Secure software rental system using distributed software. 5,548,645, Cl. 380-4.000.

Anchor Group, The: *See*—
Russell, William C., 5,547,169, Cl. 256-67.000.

Anchor Hocking Corporation: *See*—
Schiffer, Larry W., 5,547,112, Cl. 222-571.000.

Andelman, Marc D. Method of separating ionic fluids with a flow through capacitor. 5,547,581, Cl. 210-656.000.

Andersen Corporation: *See*—
Smith, Randall W.; Bright, Jason; and Varghese, Thomas, 5,548,698, Cl. 395-139.000.

Anderson, Charles C.: *See*—
Melpolder, Sharon M.; Anderson, Charles C.; Cowdery-Corvan, Peter J.; and DeCory, John F., 5,547,821, Cl. 430-527.000.

Anderson, James H., Jr.; De Felippis, Michael R.; Frank, Bruce H.; and Havel, Henry A., to Eli Lilly and Company. Insulin analog formulations. 5,547,929, Cl. 514-3.000.

Anderson, Jane E.: *See*—
Swartz, Harold L.; and Anderson, Jane E., 5,546,805, Cl. 73-514.020.

Anderson, Kent G.; and Reed, Robert R. Strobe light for a vehicle tire and wheel. 5,548,274, Cl. 340-468.000.

Anderson, Mark V.; and Mulally, Daniel J., to Wireless Control Systems. Optical fiber light cone switch. 5,548,669, Cl. 385-19.000.

Anderson, Robert D.: *See*—
Platt, Grayeme E.; Anderson, Robert D.; and Mueller, P. Michael, 5,546,785, Cl. 72-450.000.

Anderson, Steven J.: *See*—
Cooper, James C.; and Anderson, Steven J., 5,548,236, Cl. 327-237.000.

Andert, Glenn P.; and Norman, George W., to Taligent. System for providing system services for a device to a client using stack definition and stack description of a stack having top, intermediate, and bottom service objects. 5,548,779, Cl. 395-823.000.

Ando Electric Co., Ltd.: *See*—
Kitamura, Atsushi, 5,548,609, Cl. 372-92.000.
Nogiwa, Seiji, 5,548,402, Cl. 356-349.000.

Ando, Kazuhiro: *See*—
Kuramoto, Shinichi; Takahashi, Sadao; Kimura, Yoshiyuki; Ando, Kazuhiro; Saito, Tadashi; Asaba, Youichi; Tanikawa, Kiyoshi; Miyashita, Yoshiaki; and Shinguryo, Satoshi, 5,547,793, Cl. 430-97.000.

Ando, Mikio; Yogo, Isao; and Kikawa, Takanobu, to Nissan Chemical Industries, Ltd. Stable aqueous alumina sol and method for preparing the same. 5,547,607, Cl. 252-313.100.

Ando, Takao: *See*—
Niimura, Koichi; Ando, Takao; Nitta, Toyohiko; and Ikeda, Yuko, 5,547,973, Cl. 514-399.000.

Ando, Yuji, to NEC Corporation. Schottky gate field effect transistor. 5,548,139, Cl. 257-192.000.

Andosova, Ideya G.: *See*—
Vainberg, Yuri P.; Kaplina, Elli N.; and Andosova, Ideya G., 5,547,684, Cl. 424-561.000.

Andrews, Michael K.: *See*—
Pelstring, Robert M.; Kloeppel, Klaus D.; Dunfield, John C.; Andrews, Michael K.; and Jue, Clifford T., 5,548,458, Cl. 360-99.080.

Angeler, Alois; Kaune, Harald; and Scheuten, Theo, to Didier-Werke AG. Gas and/or solid material blasting device for a metallurgical vessel and method of manufacture thereof. 5,547,170, Cl. 266-47.000.

Angelucci, Francesco; Bersani, Laura; Caruso, Michele; Ripamonti, Marina; Ruggieri, Daniela; and Suarato, Antonino, to Farmitalia Carlo Erba S.r.l. Linker for bioactive agents. 5,547,667, Cl. 424-181.100.

Angstrom Technologies, Inc.: *See*—
Liang, Louis H.; Marinello, Daniel A.; and Ryan, William J., 5,548,106, Cl. 235-454.000.

Anitox Corporation: *See*—
Bland, Bobby J.; and Richardson, Kurt E., 5,547,987, Cl. 514-557.000.

Anno, Masahiro; Nakamura, Minoru; Kobayashi, Makoto; and Hakumoto, Shigeyuki, to Minolta Co., Ltd. Developer for developing electrostatic latent images. 5,547,797, Cl. 430-106.600.

Anscher, Joseph, to National Molding Corporation. Side-release buckle fastener. 5,546,642, Cl. 24-625.000.

Answer Products, Inc.: *See*—
Herting, Eric, 5,547,155, Cl. 248-219.200.

Anthony, Paul, to Perrot Bremsen GmbH. Mechanism for disc brake. 5,547,048, Cl. 188-72.900.

Anton, Peter A.; Reeve, Joseph R., Jr.; Walsh, John H.; and Faull, Kym F., to University of California, The Regents of the. *Helicobacter pylori* bacterial derived factor. 5,547,844, Cl. 435-7.100.

Antonacakis, Georges: *See*—
Haberstroh, Rudolf; and Antonacakis, Georges, 5,547,403, Cl. 439-763.000.

Antonov, Dmitry V.: *See*—
Zege, Sergei O.; Zege, Irina A.; Antonov, Dmitry V.; Sedov, Igor I.; Makovsky, Lev V.; Pokladok, Igor A.; and Mikhailov, Arkady J., 5,547,316, Cl. 405-267.000.

Anzawa, Teruaki: *See*—
Kami, Yozo; Anzawa, Teruaki; Oku, Yasunori; and Hinosawa, Shinji, 5,547,224, Cl. 280-834.000.

Aoki, Akinori: *See*—
Hoashi, Kouich; Aoki, Akinori; and Suzuki, Isamu, 5,548,732, Cl. 395-285.000.

Aoki, Jun: *See*—
Masuda, Katsuhiko; Aoki, Jun; and Hashizume, Isamu, 5,548,513, Cl. 364-426.030.

Aoki, Masahiro, to Suzuki Motor Corporation. Evaporative fuel discharge-preventing device for engine. 5,546,913, Cl. 123-520.000.

Aoki, Tomomi: *See*—
Koizumi, Ayako; Mori, Yukiko; and Aoki, Tomomi, 5,548,706, Cl. 395-161.000.

Aotsu, Hiroaki: *See*—
Ogura, Toshihiko; Aotsu, Hiroaki; Kimura, Koichi; Enomoto, Hiromichi; and Kyoda, Tadashi, 5,548,744, Cl. 395-494.000.

Aoyagi, Masahisa: *See*—
Sato, Kazutaka; Watanabe, Michihiro; Aoyagi, Masahisa; Seino, Taisaku; Ohki, Katsuo; Fukuda, Hiromitsu; Kawase, Hideyuki; Oga, Kimio; Shimizu, Akira; Narui, Youichi; Suzuki, Tsuguo; Otsuka, Yasuo; and Konno, Kazutoshi, 5,548,411, Cl. 358-400.000.

Aoyama, Tetsuzo; and Hayami, Yoshiyuki, to Mansei Kogyo Kabushiki Kaisha. Timepiece device. 5,548,565, Cl. 368-227.000.

Apcom, Inc.: *See*—
Murphy, Mark, 5,548,267, Cl. 337-372.000.
Murphy, Mark A., 5,548,266, Cl. 337-360.000.

Appel, James J.; Greene, Daniel H.; and Mudge, J. Craig, to Xerox Corporation. Keystoning and focus correction for an overhead projector. 5,548,357, Cl. 353-69.000.

Apple Computer, Inc.: *See*—
Jalalian, Afshin; and Bingham, Christopher R., 5,548,722, Cl. 395-200.100.
Krein, William T., 5,548,780, Cl. 395-825.000.

APV Baker, Inc.: *See*—
Snell, Richard E., 5,547,373, Cl. 432-72.000.

Arai, Hideyuki: *See*—
Kawahara, Hideo; and Arai, Hideyuki, 5,548,371, Cl. 354-442.000.

Arai, Hiroyuki, to Arai, Hiroyuki; and Toko Kabushiki Kaisha. Double-Channel common antenna. 5,548,297, Cl. 343-700.0MS.

Arai, Sachio: *See*—
Kageyama, Shuhei; Arai, Sachio; Yamamoto, Tadashi; and Ebinuma, Tadayoshi, 5,547,301, Cl. 401-116.000.

Arai, Takao, to NEC Corporation. Semiconductor device with parallel-connected diodes. 5,548,152, Cl. 257-360.000.

Arakawa, Kenichi, to Kabushiki Kaisha Toshiba. Solid-state imaging device capable of removing influence by false signals. 5,548,142, Cl. 257-234.000.

VOI
1189
ISS
3
AG
20
19 96
UMI

Araki, Noriyuki; Shinonaga, Hideyuki; and Itoh, Yasuhiko, to Kokusai Denshin Denwa Kabushiki Kaisha. System for determining and registering location of mobile terminal for communication system with non-geosynchronous satellites. 5,548,801, Cl. 455-13.100.

Arasawa, Masashi; Ono, Katsuhiko; Nishikawa, Hiroshi; and Tsuchiya, Kazuo, to Tokyo Electron Limited; and Tokyo Electron Yamanashi Limited. Plasma processing apparatus and method. 5,547,539, Cl. 156-626.100.

Arcaro, David J., to Hewlett-Packard Company. Bellows-type, low spillage, quick disconnect unit. 5,546,984, Cl. 137-614.030.

Ardissone, Jean-Paul: *See—*
Haentjens, Stéphen; Chappet, Philippe; Tessier, Jean-Luc; Ardissone, Jean-Paul; and Guibergia, Jean-Pierre, 5,546,865, Cl. 105-1.200.

Arikawa, Yasuo; and Miyazawa, Eiichi, to Seiko Epson Corporation. Pressure measuring device and method using quartz resonators. 5,546,810, Cl. 73-702.000.

Arimilli, Ravi K.; Dodson, John S.; and Lewis, Jerry D., to International Business Machines Corporation. Digital clock pulse positioning circuit for delaying a signal input by a fist time duration and a second time duration to provide a positioned clock signal. 5,548,797, Cl. 395-880.000.

Aritake, Masanori: *See—*
Yamamoto, Keisaku; Ikeda, Kiyoshi; Fukuyama, Masahiro; Naito, Takeshi; and Aritake, Masanori, 5,548,012, Cl. 524-433.000.

Armco Inc.: *See—*
Murphy, Robin A., 5,547,519, Cl. 148-113.000.

Armstrong, Gene L., II; and Freeman, David L., to Benchmarq Microelectronics. Linear/switching regulator circuit. 5,548,204, Cl. 323-265.000.

Armstrong, Jay J.; and Sehgal, Surendra N., to American Home Products Corporation. Innovative technique for immunosuppression involving administration of rapamycin loaded formed blood elements. 5,547,959, Cl. 514-291.000.

Armstrong World Industries, Inc.: *See—*
Remar, Joseph F.; and Sideman, Carl E., 5,548,003, Cl. 523-160.000.

Arndt, Robin S.: *See—*
Rector, Charles E.; Wells, Steven R.; Mather, Daniel T.; and Arndt, Robin S., 5,546,847, Cl. 91-403.000.

Arrow Art Finishers, Inc.: *See—*
Smith, Michael J., 5,547,073, Cl. 206-45.240.

Arthur D. Little, Inc.: *See—*
Fauteux, Denis G.; Van Buren, Martin; and Shi, Jie, 5,547,778, Cl. 429-81.000.

Artilux Herzig AG: *See—*
Herzig, Kurt; and Herzig, Hugo, 5,546,610, Cl. 2-422.000.

Asaba, Tetsuo; and Makino, Kenji, to Canon Kabushiki Kaisha. Chemical vapor deposition method for forming a deposited film with the use of liquid raw material. 5,547,708, Cl. 427-248.100.

Asaba, Youichi: *See—*
Kuramoto, Shinichi; Takahashi, Sadao; Kimura, Yoshiyuki; Ando, Kazuhiro; Saito, Tadashi; Asaba, Youichi; Tanikawa, Kiyoshi; Miyashita, Yoshiaki; and Shinguryo, Satoshi, 5,547,793, Cl. 430-97.000.

Asahi Denka Kogyo Kabushiki Kaisha: *See—*
Nakagawa, Kenichi; Sugioka, Michiyoshi; and Ito, Koichi, 5,547,592, Cl. 508-511.000.

Asahi Glass Coat & Resin Co., Ltd.: *See—*
Kawakami, Shoichi; Okamoto, Toru; Miyazaki, Nobuyuki; Uchino, Bunji; Nomura, Kazuyoshi; and Kato, Hiroyuki, 5,548,019, Cl. 524-591.000.

Asahi Glass Company Ltd.: *See—*
Chiba, Jiro; and Taguchi, Syuji, 5,547,749, Cl. 428-323.000.
Isoai, Atsushi; Hama, Yuko; and Kumagai, Hiromichi, 5,548,062, Cl. 530-326.000.
Ito, Katsuji; and Kamata, Satoshi, 5,548,022, Cl. 524-839.000.
Kawakami, Shoichi; Okamoto, Toru; Miyazaki, Nobuyuki; Uchino, Bunji; Nomura, Kazuyoshi; and Kato, Hiroyuki, 5,548,019, Cl. 524-591.000.
Kuwata, Takeshi; Ruckmongathan, Temkar N.; Nakagawa, Yutaka; Koh, Hidemasa; Nakazawa, Akira; Ohnishi, Takanori; and Ihara, Satoru, 5,548,302, Cl. 345-89.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Sanechika, Kenichi; Fukui, Hiroyuki; and Ikeda, Masanori, 5,547,593, Cl. 508-207.000.
Tanaka, Jun; and Himematsu, Fumio, 5,547,627, Cl. 264-210.500.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Kosako, Kosei, 5,548,365, Cl. 354-219.000.
Tamura, Toshiharu, 5,547,183, Cl. 271-264.000.

Asahi, Masahiko: *See—*
Okada, Jouji; Kawamata, Akira; Tokunaga, Tadayuki; Nagatani, Noboru; Torizuka, Makoto; and Asahi, Masahiko, 5,548,054, Cl. 528-25.000.

Asahi Medical Co., Ltd.: *See—*
Hagihara, Takeaki; and Torii, Maho, 5,547,591, Cl. 210-782.000.

Asai, Akira, to Canon Kabusihiki Kaisha. Ink jet recording method. 5,548,312, Cl. 347-56.000.

Asai, Hiroki; and Omata, Yuji, to Matsushita Electric Industrial Co., Ltd. Formation of electroconductive thin-film pattern. 5,547,557, Cl. 205-118.000.

Asai, Shuji, to NEC Corporation. Substrate with a compound semiconductor surface layer and method for preparing the same. 5,548,136, Cl. 257-190.000.

Asakawa, Koji: *See—*
Kuboyama, Katsunori; Asakawa, Koji; and Uchida, Naoshi, 5,548,258, Cl. 335-16.000.

Asakawa, Takeo; and Inoue, Aiichiro, to Fujitsu Limited. Method and apparatus overcoming delay introduced by instruction interlocking in pipelined instruction execution. 5,548,736, Cl. 395-375.000.

Asami, Masahiro, to Fuji Photo Film Co., Ltd. Silver halide photographic material comprising iron containing silver halide grains and method for forming images using the same. 5,547,830, Cl. 430-603.000.

Asanae, Masumi: *See—*
Ochiai, Masahisa; Saitoh, Tsutomu; and Asanae, Masumi, 5,547,795, Cl. 430-106.600.

Asano, Kenji: *See—*
Tozu, Kenji; Asano, Kenji; and Hattori, Noriaki, 5,547,264, Cl. 303-9.620.

Asano, Mieko; and Hori, Osamu, to Kabushiki Kaisha Toshiba. Image figure editing system for manipulating figure elements given in terms of image data. 5,548,695, Cl. 395-133.000.

Asanuma, Tadashi; Kimura, Shigeru; Uchikawa, Nobutaka; and Shiomura, Tetsunosuke, to Mitsui Toatsu Chemicals, Inc. Radiation-resistant polypropylene resin composition. 5,548,007, Cl. 524-99.000.

Asanuma, Tadashi; Kimura, Shigeru; Uchikawa, Nobutaka; and Shiomura, Tetsunosuke, to Mitsui Toatsu Chemicals, Inc. Radiation-resistant polypropylene resin composition. 5,548,008, Cl. 524-99.000.

Ashland Inc.: *See—*
Chung, Daniel A., 5,548,056, Cl. 528-61.000.

Asia Industry Co., Ltd.: *See—*
Kawakami, Shoichi; Okamoto, Toru; Miyazaki, Nobuyuki; Uchino, Bunji; Nomura, Kazuyoshi; and Kato, Hiroyuki, 5,548,019, Cl. 524-591.000.

Aslam, Muhammed: *See—*
Chen, Jiann-Hsing; Demejo, Lawrence P.; Roberts, Gary F.; Kosakowski, Richard J.; Aslam, Muhammed; and Derimiggio, John E., 5,547,759, Cl. 428-421.000.

Assell, Robert L.: *See—*
Thorud, Michael S.; and Assell, Robert L., 5,546,958, Cl. 128-772.000.

Associated Universities, Inc.: *See—*
Studier, F. William; Kieleczawa, Jan; and Dunn, John J., 5,547,843, Cl. 435-6.000.

Astral, Sociedad Anónima de Construcciones Metálicas: *See—*
Morral Gispert, Jaime, 5,547,041, Cl. 182-228.000.

Astronet: *See—*
DeVaney, David B., 5,548,816, Cl. 455-53.100.

Asyst Technologies, Inc.: *See—*
Bonora, Anthony C.; Guerre, Gilles; Parikh, Mihir; Rosenquist, Frederick T., Jr.; and Jain, Sudhir, 5,547,328, Cl. 414-217.000.

AT&T Corp.: *See—*
Dahringer, Donald W., 5,548,087, Cl. 174-52.400.
Delavaux, Jean-Marc P., 5,548,438, Cl. 359-341.000.
Diethorn, Eric J., 5,548,642, Cl. 379-410.000.
Wei, Lee-Fang, 5,548,615, Cl. 375-281.000.

AT&T Global Information Solutions Company: *See—*
Paterson, Robert W.; and Stephan, Werner B., 5,547,272, Cl. 312-223.200.
Yates, Joseph W., IV; and Forsythe, Donald L., 5,548,306, Cl. 345-174.000.

Athalye, Atul M.: *See—*
Sethna, Rustam H.; and Athalye, Atul M., 5,547,347, Cl. 417-250.000.

Athletic Images, Inc.: *See—*
Lawhorne, Charles S.; Lawhorne, Kerry B.; and Helyer, Laura M., 5,546,603, Cl. 2-181.000.

ATN Microwave, Inc.: *See—*
Adamian, Vahe A.; Falcinelli, Michael T.; and Phillips, Peter V., 5,548,221, Cl. 324-601.000.

Atochem: *See—*
Clair, Rene; and Gallet, Alain, 5,547,637, Cl. 422-129.000.

Atohaas Holding C.V.: *See—*
Rigamonti, Marco; Marciandi, Franco; and Cesana, Massimo, 5,547,750, Cl. 428-329.000.

Atoma International, Inc.: *See—*
Dukatz, Matthew E.; Harland, Charles E.; Kresky, Fred C.; McCarthy, Jay P.; and Sharples, Stephen A., 5,547,242, Cl. 296-65.100.
Golarz, B. Paul, 5,546,828, Cl. 74-512.000.

Atsugi Unisia Corporation: *See—*
Kakizaki, Shinobu; and Kasajima, Kimihisa, 5,546,644, Cl. 29-25.350.

Atwal, Karnail S.; Ferrara, Francis N.; and Ding, Charles Z., to Bristol-Myers Squibb Company. Aryl urea and related compounds. 5,547,966, Cl. 514-352.000.

Au, Wing Y., to Quantum Corporation. Method for determining command execution dependencies within command queue reordering process. 5,548,795, Cl. 395-872.000.

Auber, Philippe: *See—*
Rawal, Dharamendra N.; and Auber, Philippe, 5,547,350, Cl. 417-354.000.

Auer, Wolfgang: *See—*
Lipsius, Johann M.; and Auer, Wolfgang, 5,546,867, Cl. 105-168.000.

Auger, Raymond N., to Hunter Douglas Inc. Roll-up cellular shades. 5,547,006, Cl. 160-84.010.

Ault, Marshall G.: *See—*
Brannon, Harold D.; Rickards, Allan R.; Beall, Brian B.; and Ault, Marshall G., 5,547,026, Cl. 166-295.000.

Aura Systems, Inc.: *See—*
Bulgatz, Dennis C.; Morinigo, Fernando B.; Sortore, Christopher; and Stuart, Keith O., 5,548,263, Cl. 335-274.000.

Austin, Anne-Marie B.; Carrier, Allen M.; and Standish, Michael L., to National Starch and Chemical Investment Holding Corporation. Compositions of water soluble polymers containing allyloxybenzenesulfonic acid monomer and methallyl sulfonic acid monomer and methods for use in aqueous systems. 5,547,612, Cl. 134-22.190.

Automatic Handling Inc.: *See—*
Pienta, David J., 5,546,729, Cl. 53-211.000.

Automotive Systems Laboratory, Inc.: *See—*
Zelenak, Daniel G.; and Stratton, Rickey L., 5,547,217, Cl. 280-741.000.

Avco Corporation: *See—*
Scaringella, David T.; Connors, Donald E., Jr.; and Thurston, Garrett S., 5,547,717, Cl. 427-590.000.

Avery Dennison Corp.: *See—*
Merser, F. Gerard, 5,546,688, Cl. 40-663.000.

Avery, Leslie R., to David Sarnoff Research Center, Inc. Electrostatic discharge protection for an array of macro cells. 5,548,135, Cl. 257-173.000.

Aviles, Gladys M.: *See—*
Harrison, Richard P.; Brown, Bari W.; Rossio, Richard C.; Aviles, Gladys M.; Dexheimer, Edward M.; and Ho, David, 5,547,608, Cl. 252-357.000.

Avix Inc.: *See—*
Tokimoto, Toyotaro, 5,548,300, Cl. 345-39.000.

AVX Corporation: *See—*
Chen, Chorng-Jeou; Ladew, Richard; Qiu, Yong-Jian; and Mevissen, Jeffrey, 5,548,474, Cl. 361-313.000.

Axelson, Peter W., to Beneficial Designs, Inc. Back support adjusting apparatus for chair with backrest flexible upholstery. 5,547,251, Cl. 297-284.500.

Aziz, Ashar; Mulligan, Geoffrey; Patterson, Martin; and Scott, Glenn, to Sun Microsystems, Inc. System for signatureless transmission and reception of data packets between computer networks. 5,548,646, Cl. 380-23.000.

Aztuma, Kenji: *See—*
Hamura, Masayuki; and Aztuma, Kenji, 5,548,194, Cl. 318-568.130.

B.F. Goodrich Company, The: *See—*
Adams, Lowell J.; Leffel, Kevin L.; Tenison, Gary V.; and Weisend, Norbert A., Jr., 5,547,150, Cl. 244-134.00R.

B&W Loudspeakers Ltd.: *See—*
Craven, Peter G., 5,548,286, Cl. 341-126.000.

Baba, Masaaki: *See—*
Teshima, Katsuyoshi; Kamoshita, Hideo; and Baba, Masaaki, 5,548,264, Cl. 336-65.000.

Baba, Norimasa: *See—*
Matsuo, Hiroki; Yamanaka, Yasushi; Baba, Norimasa; Yamamoto, Michiyasu; and Yamamoto, Ken, 5,546,761, Cl. 62-509.000.

Babcock & Wilcox Company, The: *See—*
Hand, Bryan, 5,547,521, Cl. 148-522.000.
Topolski, Mark J.; and Tanzosh, James M., 5,547,768, Cl. 428-632.000.

Babonneau, Gérard, to France Telecom. Multi-user information retrieval system with transfer delay and high bit rate. 5,548,792, Cl. 395-859.000.

Bachalo, William D.; and Isakovic, Adam, to Aerometrics, Inc. Method and apparatus for continuously determining the inclination and draft of a waterborne floating vessel to enable automatic loading of the vessel. 5,547,327, Cl. 414-137.100.

Bachtler, Wulf: *See—*
Bartels, Frank; Bachtler, Wulf; Dunne, Stephen T.; Eicher, Joachim; Freund, Bernhard; Hart, William B.; and Lessmoellmann, Christoph, 5,547,094, Cl. 216-33.000.

Backstrand, Jon E., to Harnischfeger Corporation. Shared inverter electrical drive system. 5,548,198, Cl. 318-799.000.

Badie, Karl H.; Gruber, Walter; and Simuttis, Anold, to Firma Carl Freudenberg. Bearing. 5,547,174, Cl. 267-154.000.

Badehi, Pierre. Methods for producing integrated circuit devices. 5,547,906, Cl. 437-227.000.

Badiali, Roberto: *See—*
Claut, Demetrio; Marangone, Nereo; and Badiali, Roberto, 5,547,138, Cl. 242-36.000.

Bae, Koeunyi: *See—*
Hussain, Moayyed A.; Rigby, Kenneth W.; and Bae, Koeunyi, 5,548,561, Cl. 367-7.000.

Baer, Thomas M.; Dietz, Louis J.; Dubrow, Robert S.; Hayter, Paul G.; Hodges, Michael; Manian, Bala S.; and Shartle, Robert J., to Biometric Imaging, Inc. Apparatus and method for volumetric capillary cytometry. 5,547,849, Cl. 435-7.240.

Bagdasarian, Samuel L.: *See—*
Wolfrey, Austin A.; and Bagdasarian, Samuel L., 5,547,599, Cl. 252-62.540.

Bagley, Steven C.; and Kopec, Gary E., to Xerox Corporation. Editing text in an image. 5,548,700, Cl. 395-144.000.

Bahar, Bamdad; Hobson, Alex R.; Kolde, Jeffrey A.; and Zuckerbrod, David, to W. L. Gore & Associates, Inc. Ultra-thin integral composite membrane. 5,547,551, Cl. 204-296.000.

Baier, John L.: *See—*
Barma, Tarachand S.; and Baier, John L., 5,546,680, Cl. 36-108.000.

Bailey, Chase B.; Fosmark, Klaus S.; Lauffenberger, Kenneth A.; Perry, William A.; and Dibble, Kevin S., to Efficient Networks, Inc. Asynchronous transfer mode adapter for desktop applications. 5,548,587, Cl. 370-60.100.

Bainbridge, Robert C.: *See—*
Zeimer, Ran C.; Jost, George J.; Bainbridge, Robert C.; Schwarzbach, Richard; Ware, Charles; and Zebrowski, Kathleen D., 5,546,941, Cl. 128-652.000.

Baird, Donald G.: *See—*
Brandom, Donald K.; DeSouza, Jose P.; Baird, Donald G.; and Wilkes, Garth L., 5,547,996, Cl. 521-134.000.

Baker, Colin A. Tooling for facing a wall. 5,547,361, Cl. 425-171.000.

Baker Hughes Incorporated: *See—*
Collee, Pierre E.; and Enright, Dorothy P., 5,546,798, Cl. 73-152.090.

Baker, Jay D.: *See—*
Salisbury, Kenneth A.; Kalinowski, Pawel; and Baker, Jay D., 5,548,481, Cl. 361-709.000.

Baker, Paul: *See—*
Mullock, Daniel; Baker, Paul; and Knight, John, 5,547,081, Cl. 206-504.000.

Balasundaram, Vasanth; Carter, John L.; and Ferrante, Jeanne, to International Business Machines Corporation. Compiler for target machine independent optimization of data movement, ownership transfer and device control. 5,548,761, Cl. 395-700.000.

Baldwin Filters, Inc.: *See—*
Biere, David A.; McConaughey, O. Troy; and Brown, Gene W., 5,547,565, Cl. 210-86.000.

Bales, Daniel A.: *See—*
Hartman, Mark L.; Melnick, Russell J.; and Bales, Daniel A., 5,546,656, Cl. 29-890.010.

Balke, David J.; and Hoffmann, Jacques E., to InterTech Development Company. Leakage detection system. 5,546,789, Cl. 73-40.000.

Balland, Patrick, to Eyquem. High energy ignition generator, in particular for a gas turbine. 5,548,472, Cl. 361-253.000.

Ballard, John H.; Cooper, Stafford S.; Morgan, John C.; Lawrence, William R.; and Reed, Bobby E., to United States of America, Army. Probe device for detecting contaminants in subsurface media. 5,548,115, Cl. 250-253.000.

Ballard Power Systems Inc.: *See—*
Fletcher, Nicholas J.; Chow, Clarence Y.; Pow, Eric G.; Wozniczka, Boguslav M.; Voss, Henry H.; and Hornburg, Gerald, 5,547,776, Cl. 429-13.000.

Balmer, David K.; Haverty, Thomas W.; Nordin, Carl W.; and Tyree, William H. Electronically shielded solid state charged particle detector. 5,548,121, Cl. 250-370.010.

Balogh, Gábor: *See—*
Mahó, Sándor; Tuba, Zoltán; Gere, Anikó; Vittay, Pal; Kiss, Béla; Pálosi, Éva; Szporny, László; Francsicsné, Erzsébet C.; Boórné, Anna M.; Balogh, Gábor; and Görög, Sándor, 5,547,949, Cl. 514-176.000.

Balon Corporation: *See—*
Scaramucci, John P., 5,546,973, Cl. 137-15.000.

Balschmidt, Per, to Novo Nordisk A/S. Asp(B28) insulin crystals. 5,547,930, Cl. 514-3.000.

Balzers Aktiengesellschaft: *See—*
Hohenegger, Karl; and Wierer, Peter, 5,548,440, Cl. 359-360.000.

Balzers-Pfeiffer GmbH: *See—*
Conrad, Armin; and Lembke, Torbjörn, 5,547,338, Cl. 415-90.000.

Bancroft, Allen J., to White Consolidated Industries, Inc. Method for controlling self-running cleaning apparatus. 5,548,511, Cl. 364-424.020.

Banerjee, Sanjay: *See—*
Batra, Shubneesh; Manning, Monte; Banerjee, Sanjay; and Damiano, John, Jr., 5,548,132, Cl. 257-66.000.

Bank, Michael D.; and Hawkins, Thomas W., to Lamson & Sessions Co., The. Joint for variable wall thickness conduit. 5,547,230, Cl. 285-110.000.

Bannister, Cecil H.; Marchetti, Marco; Mo, Richard C.; Switzer, Tod W.; and Moghe, Dhawal B., to Northern Telecom Limited. Method and apparatus for providing user controlled call management services. 5,548,636, Cl. 379-201.000.

Banski, Hans: *See—*
Discher, Heinz-Peter; Greinacher, Ekkehard; and Banski, Hans, 5,547,490, Cl. 75-665.000.

Baracuda International Corp.: *See—*
Clark, William T.; Scott, James D., II; Barton, Graham M.; Rice, Chris A.; and McLaughlin, Shawn M., 5,546,982, Cl. 137-557.000.

Barbachyn, Michael R.: *See—*
Hutchinson, Douglas K.; Barbachyn, Michael R.; Brickner, Steven J.; Gammill, Ronald B.; and Patel, Mahesh V., 5,547,950, Cl. 514-252.000.

Barbee, Troy W., Jr.; and Weihs, Timothy, to University of California, The Regents of the. Method for fabricating an ignitable heterogeneous stratified metal structure. 5,547,715, Cl. 427-561.000.

Barberich, Timothy J.; and Young, James W., to Sepracor, Inc. Method for treating asthma using optically pure R(−) albuterol. 5,547,994, Cl. 514-649.000.

Barbo, Vincent: *See—*
Mehta, Parag J.; Callas, Gunter; Barbo, Vincent; and Marcou, Jean-Claude, 5,546,657, Cl. 29-884.000.

Barcomb, Reginald J., to American Home Products Corporation. Controlled release of steroids from sugar coatiugs. 5,547,948, Cl. 514-170.000.

Bardell, Steven: *See—*
Bohlen, Heinz P.; Sobieradski, Edward S.; Bridges, Mark; Bardell, Steven; Pickering, Alan H.; and Pettas, Howard T., 5,548,245, Cl. 330-45.000.

Baril, Albert F., to New Holland North America, Inc. Method of forming a stack of bales of crop material. 5,547,334, Cl. 414-786.000.

Barker, Bruce J. Dictation recording device having means for rapidly transmitting recorded dictation to a receiving device. 5,548,566, Cl. 369-25.000.

Barma, Tarachand S.; and Baier, John L., to LaCrosse Footwear, Inc. Safety footwear. 5,546,680, Cl. 36-108.000.

VOI 1189 155 3 AG 20 19 96 UMI

Barnard, Thomas D., to Dow Corning Corporation. Method for continuous spinning and pyrolysis of ceramic filaments from a resin. 5,547,623, Cl. 264-82.000.

Barnes, Keith W.; Bauman, Donald R.; Brace, Howard N.; Keefer, Philip A.; and Mihelich, Michael E., to E. F. Johnson Company. Method and apparatus for a remote network switch for a land mobile transmission trunked communication system. 5,548,802, Cl. 455-15.000.

Barnhart, Donald H.: *See—*
Adrian, Ronald J.; Barnhart, Donald H.; and Papen, George A., 5,548,419, Cl. 359-24.000.

Barns, Christopher E.: *See—*
Breivogel, Joseph R.; Price, Matthew J.; and Barns, Christopher E., 5,547,417, Cl. 451-58.000.

Barone, Ralph P.: *See—*
Del Monte, Berardino; and Barone, Ralph P., 5,547,148, Cl. 244-104.0FP.

Barrick, Rodney R.: *See—*
Wernersbach, Arthur W., Jr.; Skaritka, John R.; Yager, Billy P.; Barrick, Rodney R.; and Ligier, John D., 5,547,532, Cl. 156-172.000.

Barrows, Lawrence; Lowden, Gerald; Cassetta, Carmen; and Ozari, Yehuda, to tesa tape Inc. Production of a novel sculptured strip of plastic foam. 5,547,725, Cl. 428-43.000.

Barry, David J. Customized memorial. 5,546,710, Cl. 52-104.000.

Bartels, Frank; Bachtler, Wulf; Dunne, Stephen T.; Eicher, Joachim; Freund, Bernhard; Hart, William B.; and Lessmoellmann, Christoph, to DMW (Technology) Ltd.; and Boehringer Ingelheim International GmbH. Method for producing atomizing nozzle assemblies. 5,547,094, Cl. 216-33.000.

Bartholomew, Donald D., to Proprietary Technology, Inc. Quick connect fluid coupling. 5,546,985, Cl. 137-614.040.

Bartlett, Robert R.: *See—*
Weithmann, Klaus U.; and Bartlett, Robert R., 5,547,970, Cl. 514-378.000.
Weithmann, Klaus U.; and Bartlett, Robert R., 5,547,971, Cl. 514-378.000.

Barton, Graham M.: *See—*
Clark, William T.; Scott, James D., II; Barton, Graham M.; Rice, Chris A.; and McLaughlin, Shawn M., 5,546,982, Cl. 137-557.000.

Barton, Robert L.: *See—*
Hollopeter, James E.; Estline, Tsvi H.; and Barton, Robert L., 5,546,651, Cl. 29-722.000.

Bartsch, Dusan; Gissmann, Lutz; and Müller, Martin, to Behringwerke Aktiengesellschaft. Immunogenic regions on the E7 protein of human papillomavirus type 16. 5,547,846, Cl. 435-7.100.

Bartscht, Martin D.; and Gibbens, Morgan S. Protective luggage tote bag and method. 5,547,051, Cl. 190-26.000.

BASF Aktiengesellschaft: *See—*
Kroner, Matthias; Hartmann, Heinrich; Schornick, Gunnar; Baur, Richard; Potthoff-Karl, Birgit; Schwendemann, Volker; and Kud, Alexander, 5,548,036, Cl. 525-419.000.
Lange, Arno; Degen, Helmut; Lamm, Gunther; Reichelt, Helmut; and Wegerle, Dieter, 5,547,477, Cl. 8-639.000.

BASF Corporation: *See—*
Harrison, Richard P.; Brown, Bari W.; Rossio, Richard C.; Aviles, Gladys M.; Dexheimer, Edward M.; and Ho, David, 5,547,608, Cl. 252-357.000.
Hoyt, Matthew B.; Coons, Andrew M., III; and Dickson, David N., 5,548,037, Cl. 525-426.000.
White, Walter R., III; and Mullins, James A., 5,547,998, Cl. 521-131.000.

Bashor, Daryl W.: *See—*
Rogers, Lynn; Maneval, Robert D.; Bashor, Daryl W.; and Johnson, David J., 5,547,133, Cl. 241-9.000.

Basu, Kalyan: *See—*
Gao, Zhengping; Racz, Steve; and Basu, Kalyan, 5,548,533, Cl. 364-514.00C.

Batra, Shubneesh; Manning, Monte; Banerjee, Sanjay; and Damiano, John, Jr., to Micron Technology, Inc. Thin film transistor with large grain size DRW offset region and small grain size source and drain and channel regions. 5,548,132, Cl. 257-66.000.

Battelle Memorial Institute: *See—*
Affinito, John D., 5,547,508, Cl. 118-50.000.

Battistini, Carlo; Fustinoni, Silvia; Brasca, Maria G.; and Ungheri, Domenico, to Farmitalia Carlo Erba S.R.L. Cyclic dinucleoside diphosphorothioates, related compounds and pharmaceutical compositions. 5,547,941, Cl. 514-44.000.

Bauer, Bernhard: *See—*
Südholt, Michael; Wier, Manfred; Krebs, Stephan; Bauer, Bernhard; and Reupke, Wolfgang, 5,546,916, Cl. 123-674.000.

Bauer, James A.: *See—*
Wehrli, Henry A., III; Bauer, James A.; and Mueller, Denis A., 5,548,523, Cl. 364-483.000.

Bauer, Jurgen, to ITT Automotive Europe GmbH. Vacuum brake power booster for automotive vehicles. 5,546,846, Cl. 91-376.00R.

Baughman, Gene A. Mounting tool for polycap fence top. 5,546,645, Cl. 29-235.000.

Baum, Richard I.; Brent, Glen A.; Gibson, Donald H.; and Lindquist, David B., to International Business Machines Corporation. Database engine. 5,548,769, Cl. 395-800.000.

Bauman, Donald R.: *See—*
Barnes, Keith W.; Bauman, Donald R.; Brace, Howard N.; Keefer, Philip A.; and Mihelich, Michael E., 5,548,802, Cl. 455-15.000.

Baumoel, Joseph. High-precision leak detector and locator. 5,548,530, Cl. 364-509.000.

Baur, Helga, heiress: *See—*
Krayer, Werner F.; Baur, Rolf, deceased, 5,548,521, Cl. 364-478.020.

Baur, Richard: *See—*
Kroner, Matthias; Hartmann, Heinrich; Schornick, Gunnar; Baur, Richard; Potthoff-Karl, Birgit; Schwendemann, Volker; and Kud, Alexander, 5,548,036, Cl. 525-419.000.

Baur, Rolf, deceased (by Helga Baur, heiress): *See—*
Krayer, Werner F.; Baur, Rolf, deceased, 5,548,521, Cl. 364-478.020.

Baxter, Constance H.: *See—*
Dhaon, Madhup K.; Lundell, Edwin O.; Sarin, Virender K.; Baxter, Constance H.; and Absolom, Darryl R., 5,547,937, Cl. 514-12.000.

Baxter International Inc.: *See—*
Di Perna, Paul M., 5,547,453, Cl. 494-60.000.
Thompson, Stacey S.; McShane, James; Wong, Joseph; and Wood, Ray W., 5,547,471, Cl. 604-87.000.

Baxter, James T.: *See—*
Vick, Doug M.; Baxter, James T.; and Gibbs, George S., 5,547,636, Cl. 422-124.000.

Bayer AG: *See—*
Köhler, Burkhard; Ebert, Wolfgang; Horn, Klaus; Weider, Richard; and Scholl, Thomas, 5,548,011, Cl. 524-267.000.

Bayer Aktiengesellschaft: *See—*
Drope, Rüdiger, 5,547,646, Cl. 423-53.000.
Köcher, Jürgen; Springer, Wolfgang; Kuckert, Eberhard; and Böcker, Thomas, 5,547,860, Cl. 435-91.200.
Kirchmeyer, Stephan; Pohmer, Klaus; and Hassel, Tillmann, 5,547,711, Cl. 427-386.000.
Krüger, Bernd-Wieland; Maurer, Fritz; Methfessel, Christoph; Tietjen, Klaus; Maelicke, Alfred; Schmidt, Bernard; and Shiokawa, Kozo, 5,547,965, Cl. 514-342.000.
Weber, Wilhelm; Sockel, Karl-Heinz; and Moretto, Hans-Heinrich, 5,548,009, Cl. 524-157.000.

Bayer, Erich. Circuit arrangement for driving a MOS field-effect transistor. 5,548,240, Cl. 327-432.000.

Bayley, Robert D.; Fox, Carol A.; Hoffend, Thomas R.; Mahabadi, Hadi K.; Agur, Enno E.; Sacripante, Guerino; and Hawkins, Michael S., to Xerox Corporation. Unsaturated polyesters. 5,548,059, Cl. 528-194.000.

BDAG Balcke-Dürr Aktiengesellschaft: *See—*
Ruscheweyh, Hans, 5,547,540, Cl. 159-4.080.

Beach, Raymond J.: *See—*
Benett, William J.; Beach, Raymond J.; and Ciarlo, Dino R., 5,548,605, Cl. 372-36.000.

Beall, Brian B.: *See—*
Brannon, Harold D.; Rickards, Allan R.; Beall, Brian B.; and Ault, Marshall G., 5,547,026, Cl. 166-295.000.

Beaverson, Arthur J.: *See—*
DeVane, Charles J.; and Beaverson, Arthur J., 5,548,719, Cl. 395-183.150.

Beck, David S.; and Bleuer, Bernard E., to Northern Telecom Limited. Telephone switching system with switched line circuits. 5,548,584, Cl. 370-58.100.

Beck, Donald D.; and Siegel, Richard W., to United States of America, Energy; and General Motors Corp. Hydrogen sulfide conversion with nanophase titania. 5,547,649, Cl. 423-230.000.

Beck, Erhard; Dinkel, Dieter; and Haupt, Karlheinz, to ITT Automotive Europe GmbH. Brake pressure controller for a hydraulic vehicle brake system. 5,547,266, Cl. 303-113.200.

Beck, Hubert, to Fichtel & Sachs AG. Shock absorber having a piston permanently attached to its piston rod. 5,547,050, Cl. 188-322.150.

Becker, Hans, to Televerket. Means for structuring technical information in establishing a knowledge base and troubleshooting in technical equipment. 5,548,714, Cl. 395-183.020.

Becker, Harold L., to Becker, Harold L. Computerized sonic portable testing laboratory. 5,546,792, Cl. 73-64.530.

Becton, Dickinson and Company: *See—*
Khan, Mohammad A.; and Hoang, Minh Q., 5,547,662, Cl. 424-78.030.
Nadeau, James G.; and Walker, George T., 5,547,861, Cl. 435-91.200.
Vogler, Erwin A.; Shepard, Thomas A.; and Graper, Jane C., 5,547,577, Cl. 210-511.000.
Williams, Joel L.; Burkett, Susan L.; and McGuire, Shel, 5,547,723, Cl. 428-35.700.

Bednar, Richard D.: *See—*
Oliver, Joseph J.; Young, Christopher L.; and Bednar, Richard D., 5,548,278, Cl. 340-605.000.

Bedrosian, David G.: *See—*
Vlach, Martin; Christen, Ernst; Teegarden, Darrell A.; and Bedrosian, David G., 5,548,539, Cl. 364-578.000.

Beedy, Robert G.; and Lutz, Raymond A. Ventilated mattress for infants. 5,546,618, Cl. 5-725.000.

Behrend, Ulrich: *See—*
Cordes, Hans; Krumm, Helmut; Schwartz, Ludwig; Kahn, Ilan; Cornils, Gerd; and Behrend, Ulrich, 5,547,359, Cl. 425-125.000.

Behringwerke Aktiengesellschaft: *See—*
Bartsch, Dusan; Gissmann, Lutz; and Müller, Martin, 5,547,846, Cl. 435-7.100.
Seiler, Friedrich-Robert; Kurrle, Roland; and Langner, Klaus-Dieter, 5,547,852, Cl. 435-29.000.

Beisner, Connie K.: *See—*
Ricke, Roy R.; and Beisner, Connie K., 5,547,695, Cl. 426-496.000.

Belikov, Victor, to Key Life Technologies Corp. Inductive linear electric motor. 5,548,167, Cl. 310-12.000.

Bell, Gregory B.: *See—*
Paluch, John W. D.; Malss, Stephen R.; Gildersleeve, Lyle A.; Schlunke, Christopher K.; Bell, Gregory B.; and Smith, Darren A., 5,546,902, Cl. 123-304.000.

Bello, James L.: *See—*
Yarmey, Marianne; Bello, James L.; Mitchell, Gary F.; Pearce, Glenn T.; Bowman, Wayne A.; and Sterman, Melvin, 5,547,832, Cl. 430-623.000.

BellSouth Corporation: *See—*
Makrucki, Brad A., 5,548,581, Cl. 370-17.000.

Beloit Technologies, Inc.: *See—*
McGraw, William R.; and Pulkowski, Jeffrey H., 5,546,675, Cl. 34-113.000.

Belokin, Martin P.: *See—*
Belokin, Paul; Belokin, Martin P.; and Belokin, Norman P., 5,547,088, Cl. 211-87.000.

Belokin, Norman P.: *See—*
Belokin, Paul; Belokin, Martin P.; and Belokin, Norman P., 5,547,088, Cl. 211-87.000.

Belokin, Paul; Belokin, Martin P.; and Belokin, Norman P. Removable display rack assembly. 5,547,088, Cl. 211-87.000.

Belt, James S.: *See—*
Haubert, Thomas D.; and Belt, James S., 5,547,707, Cl. 427-188.000.

Bemis, Jon L.: *See—*
Goldston, Mark R.; Bemis, Jon L.; and Robinson, William J., 5,546,681, Cl. 36-137.000.

Benchmarq Microelectronics: *See—*
Armstrong, Gene L., II; and Freeman, David L., 5,548,204, Cl. 323-265.000.

Bender, Paul E.: *See—*
Padovani, Roberto; Weaver, Lindsay A., Jr.; and Bender, Paul E., 5,548,812, Cl. 455-33.200.

Beneficial Designs, Inc.: *See—*
Axelson, Peter W., 5,547,251, Cl. 297-284.500.

Benes, Kevin C.; and Pawlicki, Jeffrey J., to Molex Incorporated. Commoning electrical connector. 5,547,391, Cl. 439-399.000.

Benett, William J.; Beach, Raymond J.; and Ciarlo, Dino R., to University of California, The Regents of the. Monolithic microchannel heatsink. 5,548,605, Cl. 372-36.000.

Benetti, Marco: *See—*
Stehr, Roger; Blume, Peter; and Benetti, Marco, 5,547,356, Cl. 418-189.000.

Bengtson, Alan D.: *See—*
Bloemer, John M.; Kurth, Michael J.; Bengtson, Alan D.; Giese, Robert C.; Dannenberg, Todd D.; Thomas, Carter J.; Potter, Edwin R., Jr.; Bonnell, Thomas A.; Halloran, Daniel N.; and Clarke, Thomas W., 5,546,616, Cl. 4-541.200.

Bengtsson, Roland, to Valmet-Karlstad AB. Compact frame assembly for a press in a papermaking or boardmaking. 5,547,547, Cl. 162-272.000.

Ben-Haim, Shlomo, to Biosense, Inc. Method and apparatus for studying cardiac arrhythmias. 5,546,951, Cl. 128-702.000.

Bening, Robert C., to Shell Oil Company. Alkoxy silyl capping agents for making terminally functionalized polymers. 5,548,025, Cl. 515-105.000.

Benjamin, Karen E., to Whitaker Corporation, The. Electrical connector with surface mount contacts. 5,547,384, Cl. 439-79.000.

Benmakroha, Yazid M.: *See—*
Vadgama, Pankaj M.; Christie, Ian M.; and Benmakroha, Yazid M., 5,547,561, Cl. 205-793.000.

Bennett, Brian D.: *See—*
Henrie, Robert N., II; Peake, Clinton J.; Cullen, Thomas G.; Chaguturu, Munirathnam K.; Ray, Partha S.; and Bennett, Brian D., 5,547,954, Cl. 514-258.000.

Bennett, Michael: *See—*
Horton, Todd; and Bennett, Michael, 5,546,752, Cl. 60-464.000.

Bennett, S. John; and Hamilton, R. Scott, to Thiokol Corporation. Electrostatic discharge reduction in energetic compositions. 5,547,525, Cl. 149-19.100.

Benoit, Sylvain: *See—*
Bidaud, Francis; Benoit, Sylvain; Plisson, Jacques; Morizot, Gérard; Roth, Harald; and Huber, Adolf, 5,548,199, Cl. 318-802.000.

Benz, Mark G.: *See—*
Eggleston, Michael R.; Benz, Mark G.; Jackson, Melvin R.; Hughes, John R.; and Raber, Thomas R., 5,547,410, Cl. 445-28.000.
Eggleston, Michael R.; Benz, Mark G.; Jackson, Melvin R.; and Zabala, Robert J., 5,548,628, Cl. 378-125.000.
Johnson, Neil A.; Raber, Thomas R.; Hibbs, Louis E., Jr.; Murray, Melissa L.; and Benz, Mark G., 5,547,518, Cl. 148-98.000.

Bergendahl, Hans-Georg, to Maschinenfabrik Koppern GmbH & Co. KG. Apparatus for hot-briquetting iron sponge. 5,547,357, Cl. 425-79.000.

Berger, John G.; Long, Robert E.; and Leeds, Darryl T., to New Holland North America, Inc. Security and safety interlocks for a loader. 5,547,039, Cl. 180-287.000.

Berglund, Kurt, to Composite Scandinavia AB. Method for manufacturing glass-fibre reinforced plastic container. 5,547,533, Cl. 156-175.000.

Bergman, David W.: *See—*
Rountree, Robert N.; Cline, Dan; Walker, Darryl G.; Hii, Francis; and Bergman, David W., 5,548,225, Cl. 326-13.000.

Bergoin, Max: *See—*
Dumas, Bruno; Gervais, Monica; Bergoin, Max; Jourdan, Mireille; and Jousset, Francoise X., 5,547,869, Cl. 435-252.330.

Bergqvist, Håkan: *See—*
Jansson, Conny; Bergqvist, Håkan; and Himbert, Hans, 5,546,816, Cl. 73-862.210.

Berky, Craig B.: *See—*
Hamblin, Steven W.; Witt, David A.; Sierocuk, Thomas J.; Nicola, Kirk M.; Otten, Matthew R.; and Berky, Craig B., 5,547,117, Cl. 227-175.200.

Berlien, John H., Jr.: *See—*
Dierschke, Eugene G.; and Berlien, John H., Jr., 5,547,879, Cl. 437-2.000.

Bernecker, Erwin; and Rainer, Josef. Switch and display panel for electrical monitoring and control systems. 5,547,269, Cl. 312-111.000.

Berry, Blane P. Powered hand truck. 5,547,035, Cl. 180-19.200.

Berry, Richard E.; Henshaw, Susan F.; and Roberts, David J., to International Business Machines Corporation. Navigation within a compound graphical object in a graphical user interface. 5,548,703, Cl. 395-160.000.

Bersani, Laura: *See—*
Angelucci, Francesco; Bersani, Laura; Caruso, Michele; Ripamonti, Marina; Ruggieri, Daniela; and Suarato, Antonino, 5,547,667, Cl. 424-181.100.

Bertapelli, Anthony P.: *See—*
Sprague, David L.; Harney, Kevin; Kowashi, Eiichi; Keith, Michael; Simon, Allen H.; Papadopoulos, Gregory M.; Hays, Walter P.; Salem, George F.; Shiue, Shih-Wei; Bertapelli, Anthony P.; and Shilman, Vitaly H., 5,548,793, Cl. 395-860.000.

Bertenshaw, Stephen R.: *See—*
Talley, John J.; Bertenshaw, Stephen R.; Graneto, Matthew J.; and Rogier, Donald J., 5,547,975, Cl. 514-406.000.

Bertram, Randall L., to International Business Machines Corporation. Intelligent television receivers combinations including video displays, and methods for diversion of television viewers by visual image modification. 5,548,340, Cl. 348-559.000.

Berwian, Werner; Frohs, Thomas; and Rafflenbeul, Rolf, to Adolf Lony KG Flexible Verpackungen; and Rafflenbeul & Partner. Procedure for the selective recovery of solvents from solvent gas mixtures and device for the realization of the procedure. 5,547,491, Cl. 95-12.000.

Bespak plc: *See—*
Brace, Geoffrey, 5,547,131, Cl. 239-309.000.

Bessho, Yoshihiro: *See—*
Nakamura, Yoshifumi; Bessho, Yoshihiro; Yuhaku, Satoru; Hakotani, Yasuhiko; Itagaki, Minehiro; and Miura, Kazuhiro, 5,547,530, Cl. 156-89.000.

Bethke, Jürgen: *See—*
Herding, Walter; Bethke, Jürgen; and Rabenstein, Klaus, 5,547,481, Cl. 55-523.000.

Bethurum, Gary C.; and Knights, Anthony J., to ITT Corporation. IC card rigidized cover. 5,548,485, Cl. 361-737.000.

BF Goodrich Company, The: *See—*
Ronyak, David M; and Leffel, Kevin L., 5,546,880, Cl. 112-475.010.

Bhatt, Bharat: *See—*
Greiner, Leonard; Moard, David M.; and Bhatt, Bharat, 5,546,701, Cl. 48-108.000.

Bianchini, Pietro: *See—*
Mascellani, Giuseppe; and Bianchini, Pietro, 5,547,944, Cl. 514-54.000.

Bidaud, Francis; Benoit, Sylvain; Plisson, Jacques; Morizot, Gérard; Roth, Harald; and Huber, Adolf, 5,548,199, Cl. 318-802.000.

Bidwell, Robert E. Food preparation assembly. 5,546,852, Cl. 99-446.000.

Bielenberg, Willi: *See—*
Kehrbach, Wolfgang; Mlinaric, Michael; Ziegler, Dieter; Brueckner, Reinhard; and Bielenberg, Willi, 5,547,967, Cl. 514-361.000.

Bieman, Donald N.: *See—*
Silerman, Jules; and Bieman, Donald N., 5,547,955, Cl. 514-275.000.

Biere, David A.; McConaughey, O. Troy; and Brown, Gene W., to Baldwin Filters, Inc. Fuel/water separator with adaptor plate for drain valve and water detector. 5,547,565, Cl. 210-86.000.

Bierman, Raymond E.; Perryman, Paul C.; and Wright, Jason T., to Interstate Electronics Corporation. Finite impulse response filter for modulator in digital data transmission system. 5,548,541, Cl. 364-724.160.

Bigelow, Louis K.: *See—*
Kapoor, Rakesh R.; Nagy, Bela G.; and Bigelow, Louis K., 5,547,121, Cl. 228-121.000.

Bijker, Wolter; Kasperkovitz, Wolfdietrich G.; De Ruyter, Hendricus C.; and Sloof, Willem A., to U.S. Philips Corporation. FM Receiver having multiple IF stages. 5,548,831, Cl. 455-207.000.

Biles, Jonathan R.: *See—*
Conner, Arlie; Biles, Jonathan R.; Scheffer, Terry J.; and Kingsley, Gary B., 5,548,422, Cl. 359-65.000.

Bilhorn, Robert B.: *See—*
Parker, H. Galen; Bilhorn, Robert B.; Kaplan, Martin C.; and Palum, Russell J., 5,548,120, Cl. 250-341.700.

Billgren, Tomas, to Molnlycke AB. Surgical drape. 5,546,960, Cl. 128-849.000.

Billings, David P. Golf club and club shaft constructions. 5,547,189, Cl. 473-305.000.

Bindal, Ahmet, to International Business Machines Corporation. MOS channel device with counterdoping of ion implant for reduced substrate sensitivity. 5,548,148, Cl. 257-335.000.

Binford, John D., to Dana Corporation. Segmented ceramic inlay piston ring. 5,547,203, Cl. 277-224.000.

Bingham, Christopher R.: *See—*
Jalalian, Afshin; and Bingham, Christopher R., 5,548,722, Cl. 395-200.100.

Binnert, Thomas R.; and Carlotta, Michael, to Xerox Corporation. Automatic positioning of wiper blades in an ink jet printer maintenance station. 5,548,310, Cl. 347-33.000.

Bio-Technology General Corp.: *See—*
Fischer, Meir; Lebens, Michael R.; and Chaleff, Deborah T., 5,548,068, Cl. 530-399.000.

Bioanalytical Systems, Inc.: *See—*
Jayaratna, Husantha G., 5,547,553, Cl. 204-413.000.

Biogen, Inc.: *See—*
Wallner, Barbara P.; Miller, Glenn T.; and Rosa, Margaret D., 5,547,853, Cl. 435-69.100.

Biometric Imaging, Inc.: *See—*
Baer, Thomas M.; Dietz, Louis J.; Dubrow, Robert S.; Hayter, Paul G.; Hodges, Michael; Manian, Bala S.; and Shartle, Robert J., 5,547,849, Cl. 435-7.240.

Bionda, John P., Jr.: *See—*
Breen, Bernard P.; Bionda, John P., Jr.; Gabrielson, James E.; Glickert, Roger W.; and Hallo, Anthony, 5,546,874, Cl. 110-261.000.

BioQuest, Incorporated: *See—*
Chagnon, Mark S.; Burkle, Stephen E.; Carter, Michelle J.; Hamilton, Tracy J.; Havelick, John, Jr.; Kaplan, Deborah A.; and Marzloff, Kristin L., 5,547,682, Cl. 424-497.000.

Biosense, Inc.: *See—*
Ben-Haim, Shlomo, 5,546,951, Cl. 128-702.000.

Biotech Australia Pty Limited: *See—*
Russell-Jones, Gregory J.; and Westwood, Steven W., 5,548,064, Cl. 530-380.000.

Bireley, Richard L. Moisture monitoring system. 5,546,974, Cl. 137-78.300.

Birnstiel, Max L.: *See—*
Curiel, David T.; Birnstiel, Max L.; Cotten, Matthew; Wagner, Ernst; Zatloukal, Kurt; Plank, Christian; Oberhauser, Berndt; and Schmidt, Walter G. M., 5,547,932, Cl. 435-65.000.

Bissell, Stephen R.: *See—*
Aldridge, David L.; Bunton, William P.; Bissell, Stephen R.; Brown, David; Gunn, Daniel D.; Kagy, Carl; and Sonnier, David P., 5,548,463, Cl. 361-18.000.

Bixby, Joseph A. System and method of constructing a skylight. 5,546,712, Cl. 52-200.000.

BJ Services Co: *See—*
Di Lullo Arias, Gino F., 5,547,024, Cl. 166-292.000.

BJ Services Company: *See—*
Brannon, Harold D.; Rickards, Allan R.; Beall, Brian B.; and Ault, Marshall G., 5,547,026, Cl. 166-295.000.
Rae, Philip; and Johnston, Neil, 5,547,506, Cl. 106-730.000.

Black, Bruce C.; and Summers, Max D., to American Cyanamid Company. Heterologous signal sequences for secretion of insect controlling proteins. 5,547,871, Cl. 435-240.100.

Black, Stephen M.: *See—*
Miller, Walter L.; Harikrishna, Jennifer A.; and Black, Stephen M., 5,547,868, Cl. 435-189.000.

Blackman, Ralph G.: *See—*
Dibble, Gary E.; Morehouse, Wallace F.; and Blackman, Ralph G., 5,546,837, Cl. 82-169.000.

Blackman, Stephen B. Light fixture having the combination of a detachable flashlight, a night light, and a fluorescent light contained therein. 5,548,494, Cl. 362-183.000.

Blade Technologies Inc.: *See—*
French, John B., 5,548,163, Cl. 307-10.200.

Blais, Marcia; and Knoerzer, Anthony R., to Mobil Oil Corporation. Method of producing PVOH coatings with enhanced properties. 5,547,764, Cl. 428-461.000.

Blake, John F.: *See—*
Hanser, Paul E.; Boddicker, Daniel J.; and Blake, John F., 5,547,040, Cl. 182-88.000.

Blakeney, Andrew J.; Medina, Arturo N.; Toukhy, Medhat A.; Ferreira, Lawrence; and Tadros, Sobhy, to OCG Microelectronic Materials, Inc. O-quinonediazide sulfonic acid esters of phenolic compounds and their use in forming positive images. 5,547,814, Cl. 430-326.000.

Blaker, David M.: *See—*
Oxaal, John T.; Van Ramm, Olaf T.; Blaker, David M.; and Smith, Robert S., 5,546,807, Cl. 73-606.000.

Blako Inc.: *See—*
Vilen, Erik O., 5,546,969, Cl. 134-188.000.

Blanchard, Alain: *See—*
Lagoutte, Pierre; and Blanchard, Alain, 5,548,585, Cl. 370-60.000.

Bland, Bobby J.; and Richardson, Kurt E., to Anitox Corporation. Pathogen inhibitor for animal feeds. 5,547,987, Cl. 514-557.000.

Blaney, Jeffrey M.: *See—*
Mullenbach, Guy T.; Blaney, Jeffrey M.; and Rosenberg, Steven, 5,547,935, Cl. 514-12.000.

Blankenship, Charles P., Jr.; and Henry, Michael F., to General Electric Company. Retained strain forging of ni-base superalloys. 5,547,523, Cl. 148-677.000.

Blase, William P.: *See—*
Gaynor, Edwin S.; Massimi, Michael S.; Blase, William P.; and Isser, Abraham, 5,548,418, Cl. 359-20.000.

Blaurock, Günter: *See—*
Hutzel, Bernhard; Blaurock, Günter; and Klein, Michael, 5,547,285, Cl. 384-15.000.

Bleiweis, Sol: *See—*
Rolfe, Richard B., 5,547,651, Cl. 423-235.000.

Bleuer, Bernard E.: *See—*
Beck, David S.; and Bleuer, Bernard E., 5,548,584, Cl. 370-58.100.

Blevins, Robert E.: *See—*
Mays, David S.; and Blevins, Robert E., 5,547,062, Cl. 194-206.000.

Bligh, Roger P.: *See—*
Mak, King K.; Bligh, Roger P.; Ross, Hayes E., Jr.; and Sicking, Dean L., 5,547,309, Cl. 404-6.000.

Bloemer, John M.; Kurth, Michael J.; Bengtson, Alan D.; Giese, Robert C.; Dannenberg, Todd D.; Thomas, Carter J.; Potter, Edwin R., Jr.; Bonnell, Thomas A.; Halloran, Daniel N.; and Clarke, Thomas W., to Kohler Co. Head rest assembly. 5,546,616, Cl. 4-541.200.

Blomgren, James S.: *See—*
Brashears, Cheryl S.; and Blomgren, James S., 5,548,545, Cl. 364-748.000.

Blondel, Erik; Verhulst, Frans; and Ulrich, Johann, to Siemens Aktiengesellschaft. Method for updating a system program in a switching equipment. 5,548,640, Cl. 379-242.000.

Blonsky, Peter M.; and Tuttle, Mark E., to Micron Communications, Inc. Button-type battery with improved separator and gasket construction. 5,547,781, Cl. 429-174.000.

Blum, Michael E.; Boerman, Gary L.; Fekete, Thomas M.; Horak, Donald L.; Kovneristy, Yulig K.; and Orillion, Michael T., to FMC Corporation. Amorphous metal alloy and method of producing same. 5,547,487, Cl. 75-10.150.

Blume, Peter: *See—*
Stehr, Roger; Blume, Peter; and Benetti, Marco, 5,547,356, Cl. 418-189.000.

Board of Regents, The University of Texas System: *See—*
Garfield, Robert E., 5,546,953, Cl. 128-733.000.

Board of Trustees operating Michigan State University: *See—*
Soroushian, Parviz, 5,547,504, Cl. 106-697.000.

BOC Group, Inc., The: *See—*
Sethna, Rustam H.; and Athalye, Atul M., 5,547,347, Cl. 417-250.000.

BOC Group plc, The: *See—*
Higginbotham, Paul, 5,546,766, Cl. 62-645.000.

Bock, Robert T., to Sonex International Corporation. Apparatus to selectively couple ultransonic energy in a therapeutic ultransonic toothbrush. 5,546,624, Cl. 15-22.100.

Böcker, Thomas: *See—*
Köcher, Jürgen; Springer, Wolfgang; Kuckert, Eberhard; and Böcker, Thomas, 5,547,860, Cl. 435-91.200.

Boczkiewicz, Bruce: *See—*
Straub, William; Hosking, Jack; Topal, Mickey; and Boczkiewicz, Bruce, 5,546,864, Cl. 104-17.200.

Boddicker, Daniel J.: *See—*
Hanser, Paul E.; Boddicker, Daniel J.; and Blake, John F., 5,547,040, Cl. 182-88.000.

Boehnke, Gerd; Reuschel, Juergen; Mueller, Heinz-Dieter; and Klauker, Karl-Heinz, to Siemens Aktiengesellschaft. Handset for a telephone station. 5,548,644, Cl. 379-433.000.

Boehringer Ingelheim International GmbH: *See—*
Bartels, Frank; Bachler, Wulf; Dunne, Stephen T.; Eicher, Joachim; Freund, Bernhard; Hart, William B.; and Lessmoellmann, Christoph, 5,547,094, Cl. 216-33.000.
Curiel, David T.; Birnstiel, Max L.; Cotten, Matthew; Wagner, Ernst; Zatloukal, Kurt; Plank, Christian; Oberhauser, Berndt; and Schmidt, Walter G. M., 5,547,932, Cl. 435-65.000.

Boehringer Ingelheim Pharamceuticals, Inc.: *See—*
Hargrave, Karl D.; Schmidt, Gunther, deceased, 5,547,951, Cl. 514-211.000.

Boehringer Mannheim GmbH: *See—*
Friebe, Walter-Gunar; Reinholz, Erhard; and Wilhelms, Henning, 5,547,980, Cl. 514-443.000.

Boerman, Gary L.: *See—*
Blum, Michael E.; Boerman, Gary L.; Fekete, Thomas M.; Horak, Donald L.; Kovneristy, Yulig K.; and Orillion, Michael T., 5,547,487, Cl. 75-10.150.

Boers, Arie: *See—*
Decker, Matthew J.; Eustice, Todd C.; Rau, Douglas; and Boers, Arie, 5,546,709, Cl. 52-66.000.

Bogauchi, Takehito: *See—*
Kishimoto, Tomonori; Yamane, Mitsuo; Bogauchi, Takehito; and Eguchi, Yoshihiro, 5,547,779, Cl. 429-144.000.

Bogrand, George E., IV; Kenny, Andrew A.; and Rosaz, Francois O., to Eaton Corporation. Ring angle thermally responsive expansion valve. 5,547,126, Cl. 236-92.00B.

Bohlen, Heinz P.; Sobieradski, Edward S.; Bridges, Mark; Bardell, Steven; Pickering, Alan H.; and Pettas, Howard T., to EEV Limited. Electron beam tube arrangements having the input cavity comprised of electrically internal and external body portions. 5,548,245, Cl. 330-45.000.

Boiardi, Mario, to Package Research, Inc. Dispenser for flowable materials. 5,547,107, Cl. 222-1.000.

Bombardelli, Ezio, to Indena S.p.A. Extracts of cucurbita sp., process for their preparation and their use in medicaments and in cosmetics. 5,547,673, Cl. 424-195.100.

Bomze, Daniel. Adjustable picture frame. 5,546,689, Cl. 40-741.000.

Bonaccio, Anthony R., to International Business Machines Corporation. Quad burst servo demodulator with adjustable slew rate for hard disk drives. 5,548,452, Cl. 360-46.000.

Bonar, George D. Combination clothes & dish washer & dryer. 5,546,771, Cl. 68-4.000.

Bond, Julian F.: *See—*
Rogers, Bruce L.; Morgenstern, Jay P.; Bond, Julian F.; Garman, Richard D.; Greenstein, Julia L.; Kuo, Mei-chang; and Morville, Malcolm, 5,547,669, Cl. 424-185.100.

Bonnell, Thomas A.: *See—*
Bloemer, John M.; Kurth, Michael J.; Bengtson, Alan D.; Giese, Robert C.; Dannenberg, Todd D.; Thomas, Carter J.; Potter, Edwin R., Jr.; Bonnell, Thomas A.; Halloran, Daniel N.; and Clarke, Thomas W., 5,546,616, Cl. 4-541.200.

Bonnet, Henri, to United Parcel Service of America Inc. Apparatus and method of sorting objects. 5,547,063, Cl. 198-370.020.

Bonnet, Henri, to United Parcel Service of America, Inc. Material conveying apparatus and method. 5,547,070, Cl. 198-812.000.

Bonora, Anthony C.; Guerre, Gilles; Parikh, Mihir; Rosenquist, Frederick T., Jr.; and Jain, Sudhir, to Asyst Technologies, Inc. Method and apparatus for transferring articles between two controlled environments. 5,547,328, Cl. 414-217.000.

Book, David: *See—*
Grant, Robert H.; Book, David; and Sullivan, Gregory T., 5,548,590, Cl. 370-61.000.

Boórné, Anna M.: *See—*
Mahó, Sándor; Tuba, Zoltán; Gere, Anikó; Vittay, Pal; Kiss, Béla; Pálosi, Éva; Szporny, László; Francsicsné, Erzsébet C.; Boórné, Anna M.; Balogh, Gábor; and Görög, Sándor, 5,547,949, Cl. 514-176.000.

Boots Company PLC, The: *See—*
Clegg, Lawrence S.; Hunneyball, Ian M.; Jones, Colin G. P.; Rafferty, Paul; and Steele, Leslie, 5,547,972, Cl. 514-399.000.

Boral Resources (QLD) pty Limited: *See—*
Daniells, Norman G., 5,546,721, Cl. 52-606.000.

Bors, Daniel A.: *See—*
Lavoie, Alvin C.; Bors, Daniel A.; and Brown, Ward T., 5,548,024, Cl. 525-102.000.

Bossard, Gerald E.: *See—*
Abrams, Michael J.; Bossard, Gerald E.; Brooks, Robert C.; Henson, Geoffrey W.; and Vollano, Jean F., 5,547,982, Cl. 514-492.000.

Boston Scientific Corporation: *See—*
Hamm, Mark A.; and Crowley, Robert J., 5,546,948, Cl. 128-662.060.
Rowland, Christopher A.; Vergano, Michael G.; Eddy, Bryan P.; and Cotton, Peter B., 5,547,469, Cl. 604-22.000.

Bouadma, Noureddine; and Menigaux, Louis, to France Telecon. Surface-emitting power laser and process for fabricating this laser. 5,548,610, Cl. 372-99.000.

Bouldin, Brett: *See—*
Owens, Steve; and Bouldin, Brett, 5,547,028, Cl. 166-302.000.

Boundin, Brett W.: *See—*
Rubbo, Richard P.; Boundin, Brett W.; and Owens, Steven C., 5,547,029, Cl. 166-375.000.

Bourguinat, Jean C. M., to Sochata. Method and apparatus for inspecting honeycomb structures using optical fibres. 5,548,400, Cl. 356-237.000.

Bourlier, Ken A.; and Mulrenin, Peggy S., to Georgia-Pacific Resins, Inc. Aqueous phenolic resin dispersions. 5,548,015, Cl. 524-503.000.

Boury, Bechara F.: *See—*
Amini, Nader; Boury, Bechara F.; Brannon, Sherwood; Concilio, Ian A.; Hofmann, Richard G.; and Lohman, Terence J., 5,548,786, Cl. 395-842.000.

Bouvier, Frédéric: *See—*
Ribadeau-Dumas, Guillaume; Bouvier, Frédéric; and Serpelloni, Michel, 5,547,689, Cl. 426-3.000.

Boveri, Giuseppina: *See—*
Ghisolfi, Guido; Giordano, Dario; and Boveri, Giuseppina, 5,547,652, Cl. 423-245.300.

Böwe Systec AG: *See—*
Gleich, Werner; Rothacker, Fritz D.; Brückel, Dieter; and Schmid, Eduard, 5,547,161, Cl. 248-678.000.

Bowes, William G., to Bunzl Plastics, Inc. Weatherproof flange protective cover and method for protecting a machined surface of a pipe flange using same. 5,546,989, Cl. 138-96.00R.

Bowler, Edward F., Jr., to Xerox Corporation. Variable position stripper system for curl reduction. 5,548,389, Cl. 355-311.000.

Bowles Fluidics Corporation: *See—*
Heil, Fred; and Lombardo, Michael, 5,546,853, Cl. 99-447.000.

Bowman, Wayne A.: *See—*
Yarmey, Marianne; Bello, James L.; Mitchell, Gary F.; Pearce, Glenn T.; Bowman, Wayne A.; and Sterman, Melvin, 5,547,832, Cl. 430-623.000.

BP Chemicals Limited: *See—*
Cloke, Frederick G. N., 5,548,044, Cl. 526-127.000.

Brabetz, Berhard; and Wessely, Hermann, to Siemens Nixdorf Informationssysteme Aktiengesellchaft. Flat circuit module mounting usieg an elastic pad in a depression of a circuit board. 5,548,487, Cl. 361-769.000.

Brace, Geoffrey, to Bespak plc. Dispensing device with spray nozzle and driven piston. 5,547,131, Cl. 239-309.000.

Brace, Howard N.: *See—*
Barnes, Keith W.; Bauman, Donald R.; Brace, Howard N.; Keefer, Philip A.; and Mihelich, Michael E., 5,548,802, Cl. 455-15.000.

Brackett, Douglas C. Motion arrester for a conjugate drive mechanism. 5,546,821, Cl. 74-49.000.

Brackett, Douglas C. Internal combustion engine with stroke specialized cylinders. 5,546,897, Cl. 123-70.00R.

Bradbury, Walter J.: *See—*
Gudat, Adam J.; Rao, Prithvi N.; Shaffer, Gary K.; Shi, Wenfan; Shin, Dong H.; Sennott, James W.; Whittaker, William L.; Kleimenhagen, Karl W.; West, Jay H.; Clow, Richard G.; Wu, Baoxin; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,548,516, Cl. 364-443.000.

Bradco (Japan) Ltd.: *See—*
Coombs, Peter M.; Thogersen, Klaus; and Seibel, Edward, 5,547,184, Cl. 271-297.000.

Bradley, Graham C.; and Stretton, Alton O., to Sasktel. System for controlling equipment within a telephone subscriber's premises using DTMF telephone tones. 5,548,635, Cl. 379-102.000.

Bradley, Jerald A.: *See—*
Jané, Rodney B.; Bradley, Jerald A.; and Longan, John, 5,547,615, Cl. 261-24.000.

Brady, Gary W.; and Ellis, David G., to INTEL Corporation. Data instrumentation system having circuitry for resolving multiple asynchronous state inputs. 5,548,621, Cl. 375-354.000.

Bragstad, Helge: *See—*
Helgerud, Per; and Bragstad, Helge, 5,548,562, Cl. 367-14.000.

Brajal, Américo; and Chouly, Antoine, to U.S. Philips Corporation. Multi-carrier frequency hopping communications system. 5,548,582, Cl. 370-18.000.

Brandom, Donald K.; DeSouza, Jose P.; Baird, Donald G.; and Wilkes, Garth L., to Center for Innovative Technology, The. Method of producing foamed polymer materials. 5,547,996, Cl. 521-134.000.

Brandstetter, Robert W.; and Fonneland, Nils J., to Northrop Grumman Corporation. System and method of fabricating multiple holographic elements. 5,547,786, Cl. 430-1.000.

Brannon, Harold D.; Rickards, Allan R.; Beall, Brian B.; and Ault, Marshall G., to BJ Services Company. Crosslinked guar based blocking gel system for use at low to high temperatures. 5,547,026, Cl. 166-295.000.

Brannon, Sherwood: *See—*
Amini, Nader; Boury, Bechara F.; Brannon, Sherwood; Concilio, Ian A.; Hofmann, Richard G.; and Lohman, Terence J., 5,548,786, Cl. 395-842.000.

Brant, William A.; Neben, Gary; Nielson, Michael E.; and Stallmo, David C., to EMC Corporation. Method and apparatus for fault tolerant fast writes through buffer dumping. 5,548,711, Cl. 395-182.030.

Brasca, Maria G.: *See—*
Battistini, Carlo; Fustinoni, Silvia; Brasca, Maria G.; and Ungheri, Domenico, 5,547,941, Cl. 514-44.000.

Brashears, Cheryl S.; and Blomgren, James S., to Exponential Technology, Inc. Floating point exception prediction for compound operations and variable precision using an intermediate exponent bus. 5,548,545, Cl. 364-748.000.

Braun Aktiengesellschaft: *See—*
Lange, Klaus-Peter; and Janouch, Peter, 5,546,674, Cl. 34-97.000.

Braun, Ernst; and Braun, Gert, to DBT Deutsche Bergau-Technik GmbH. Guide rail for scraper conveyor of mining machine. 5,547,262, Cl. 299-43.000.

Braun, Gert: *See—*
Braun, Ernst; and Braun, Gert, 5,547,262, Cl. 299-43.000.

Braun, Mary J. Head supporting device for use while suntanning. 5,546,619, Cl. 5-638.000.

Braun, Mathias: *See—*
Wössner, Ernst; and Braun, Mathias, 5,546,845, Cl. 89-35.010.

Braun, Serge: *See—*
Poindron, Philippe; Braun, Serge; and Ferzaz, Badia, 5,547,963, Cl. 514-317.000.

Breen, Bernard P.; Bionda, John P., Jr.; Gabrielson, James E.; Glickert, Roger W.; and Hallo, Anthony, to Duquesne Light Company; and Energy Systems Associates. Low nox inter-tube burner for roof-fired furnaces. 5,546,874, Cl. 110-261.000.

Brehm, Helmut; Dahmen, Kurt; and Mertens, Richard, to Chemishe Fabrik Stockhausen GmbH. Copolymers of allyliminodiacetic acid with unsaturated carboxylic acids and their use as complexing agents, peroxide stabilizers, builders in washing and cleaning products and dispersing agents. 5,548,049, Cl. 526-312.000.

Brehm, Werner; Keuerleber, Horst; Koepff, Georg; and Deeg, Markus, to Robert Bosch GmbH. Electromagnetically operated proportional valve. 5,547,165, Cl. 251-129.160.

Breivogel, Joseph R.; Price, Matthew J.; and Barns, Christopher E., to Intel Corporation. Method and apparatus for conditioning a semiconductor polishing pad. 5,547,417, Cl. 451-58.000.

Brender, Ronald F.: *See—*
Wooldridge, James A.; Brender, Ronald F.; and Grieb, Henry N., III, 5,548,717, Cl. 395-183.140.

Brennan, Thomas M. Cylinder positioning apparatus for offset presses and duplications. 5,546,669, Cl. 33-620.000.

Brent, Glen A.: *See—*
Baum, Richard I.; Brent, Glen A.; Gibson, Donald H.; and Lindquist, David B., 5,548,769, Cl. 395-800.000.

Brian, James M.; and Jackson, Joseph N., to Protelcon, Inc. Video viewing censoring supervision system. 5,548,345, Cl. 348-734.000.

VOL 1189 ISS 3 AG 20 1996 UMI

Brickner, Steven J.: *See*—
Hutchinson, Douglas K.; Barbachyn, Michael R.; Brickner, Steven J.; Gammill, Ronald B.; and Patel, Mahesh V., 5,547,950, Cl. 514-252.000.

Bridges, Mark: *See*—
Bohlen, Heinz P.; Sobieradski, Edward S.; Bridges, Mark; Bardell, Steven; Pickering, Alan H.; and Pettas, Howard T., 5,548,245, Cl. 330-45.000.

Bridges, Timothy R., to Data Parallel Systems, Inc. Method and apparatus for improving retrieval of data from a database. 5,548,770, Cl. 395-800.000.

Bridgestone Corporation: *See*—
Niwa, Hideyuki; Sasaki, Kiyomi; Yoshida, Kyoei; Tanuma, Itsuo; Naito, Kazuo; Morimura, Yasuhiro; and Koga, Takahiko, 5,547,762, Cl. 428-442.000.
Siegenthaler, Karl J., 5,547,538, Cl. 156-415.000.

Briggs & Stratton Corporation: *See*—
Acker, Richard M.; Brunelli, Brian T.; and Kautzer, Douglas H., 5,546,901, Cl. 123-195.00C.

Bright, Jason: *See*—
Smith, Randall W.; Bright, Jason; and Varghese, Thomas, 5,548,698, Cl. 395-139.000.

Brindoepke, Gerhard: *See*—
Kurth, Inge; Brindoepke, Gerhard; and Marten, Manfred, 5,548,005, Cl. 523-414.000.

Bristol-Myers Squibb Company: *See*—
Atwal, Karnail S.; Ferrara, Francis N.; and Ding, Charles Z., 5,547,966, Cl. 514-352.000.

British Gas plc: *See*—
Smith, Colin, 5,547,372, Cl. 431-328.000.

British Nuclear Fuels plc: *See*—
Tarrant, Colin D., 5,546,648, Cl. 29-598.000.

British Telecommunications public limited company: *See*—
Clarke, Donald E. A.; Hale, Michael A.; and Chuter, Jeremy B., 5,548,432, Cl. 359-137.000.
Frost, Peter L. J.; and Kerry, John, 5,548,678, Cl. 385-135.000.
Shabeer, Mohammed, 5,548,531, Cl. 364-514.00R.
Smith, Kevin, 5,548,433, Cl. 359-158.000.

Broadway, Lee: *See*—
Slavejkov, Aleksandar G.; Broadway, Lee; Joshi, Mahendra L.; and Nabors, James K., 5,547,368, Cl. 431-8.000.

Bronstein, Irena Y.; Edwards, Brooks; and Voyta, John C., to Tropix, Inc. Enhancement of chemiluminescent assays. 5,547,836, Cl. 435-6.000.

Brooks, Carleton. Horse hoof sandal. 5,546,735, Cl. 54-82.000.

Brooks, John R., to Phillips Petroleum Company. Apparatus and process for preparing fluids. 5,547,281, Cl. 366-340.000.

Brooks, Peter E.; and Glaess, David F., to International Business Machines Corporation. Disk drive disk stack clamp. 5,548,457, Cl. 360-98.080.

Brooks, Robert C.: *See*—
Abrams, Michael J.; Bossard, Gerald E.; Brooks, Robert C.; Henson, Geoffrey W.; and Vollano, Jean F., 5,547,982, Cl. 514-492.000.

Brooks, Steven E.: *See*—
Kumar, Rajendra; and Brooks, Steven E., 5,548,478, Cl. 361-681.000.

Brose Fahrzeugteile GmbH & Co. KG: *See*—
Treichl, Markus; and Alt, Christian, 5,547,159, Cl. 248-429.000.

Bross-Kelly, Beverly J.: *See*—
Allen, Patrick J.; Bross-Kelly, Beverly J.; Viltro, Louis J.; Vinnage, William R., Jr.; and Weirich, David M., 5,547,531, Cl. 156-164.000.

Brosson, Jacques: *See*—
Haquin, Michel; and Brosson, Jacques, 5,547,101, Cl. 220-561.000.

Brother Kogyo Kabushiki Kaisha: *See*—
Funahashi, Yasuhiro; Ikami, Kazunori; Nishimura, Osamu; Hibino, Yoshihiko; Kiyohara, Yuji; and Yasutomo, Yuichi, 5,548,281, Cl. 340-825.080.
Minamizawa, Fumihiro; Iguchi, Masayoshi; and Takeyama, Koji, 5,548,412, Cl. 358-406.000.
Shimada, Yasuo, 5,548,690, Cl. 395-112.000.

Brotherston, Colin P., to De La Rue Systems Limited. Sheet feed and presenting assemblies and method. 5,547,180, Cl. 271-96.000.

Brouillette, Steven: *See*—
Dumontier, Franck; Guibaud, Jean-Marc; Peters, Mike; and Brouillette, Steven, 5,547,188, Cl. 473-287.000.

Brower, Boyd G.: *See*—
Butler, Walter K.; Cote, Mark P.; Napiorkowski, John J.; Kroll, Thomas W.; Brower, Boyd G.; and Mickelson, N. Peter, 5,548,641, Cl. 379-399.000.

Brown, Bari W.: *See*—
Harrison, Richard P.; Brown, Bari W.; Rossio, Richard C.; Aviles, Gladys M.; Dexheimer, Edward M.; and Ho, David, 5,547,608, Cl. 252-357.000.

Brown, Charles A.; Rieck, George C.; and Moore, Charles E., to Hewlett-Packard Company. Method of making a CMOS output pad driver with variable drive currents, ESD protection and improved leakage current behavior. 5,547,887, Cl. 437-51.000.

Brown, Craig J., to Eco-Tec Limited. Process and apparatus for purification of contaminated acids. 5,547,579, Cl. 210-651.000.

Brown, David: *See*—
Aldridge, David L.; Bunton, William P.; Bissell, Stephen R.; Brown, David; Gunn, Daniel D.; Kagy, Carl; and Sonnier, David P., 5,548,463, Cl. 361-18.000.

Brown, Gene W.: *See*—
Biere, David A.; McConaughey, O. Troy; and Brown, Gene W., 5,547,565, Cl. 210-86.000.

Brown, Thomas E. Grooming brush pet door. 5,546,895, Cl. 119-484.000.

Brown, Ward T.: *See*—
Lavoie, Alvin C.; Bors, Daniel A.; and Brown, Ward T., 5,548,024, Cl. 525-102.000.

Brown-Skrobot, Susan K.; and Irving, Mary R., to McNeil-PPC, Inc. Additives to feminine products. 5,547,985, Cl. 514-546.000.

Broxon Marketing Group, Inc., The: *See*—
Schuler, William H., 5,547,602, Cl. 510-152.000.

Broxterman, Donald J.; and Broxterman, Kevin M. Joist bridge. 5,546,716, Cl. 52-220.100.

Broxterman, Kevin M.: *See*—
Broxterman, Donald J.; and Broxterman, Kevin M., 5,546,716, Cl. 52-220.100.

Broxton, Lawrence E.: *See*—
Ginn, Michael W.; Cobb, Gary L.; Broxton, Lawrence E.; and McNeely, Kelly R., 5,547,574, Cl. 210-388.000.

Broyles, Bruce R.; Kipke, Cary A.; and George, William R., to Minnesota Mining and Manufacturing Company. Dispensing cartridge refilling system. 5,546,996, Cl. 141-18.000.

Brückel, Dieter: *See*—
Gleich, Werner; Rothacker, Fritz D.; Brückel, Dieter; and Schmid, Eduard, 5,547,161, Cl. 248-678.000.

Bruckert, Eugene J.; and Vilmur, Richard J., to Motorola, Inc. Method for performing a handoff in a communication system. 5,548,808, Cl. 455-33.200.

Brückner, Dieter: *See*—
Graf, Friedrich; and Brückner, Dieter, 5,547,434, Cl. 477-109.000.

Brückner, Raimund; and Gimpera, José, to Didier-Werke AG. Assembly of mold and immersion nozzle with improved discharge channel. 5,547,014, Cl. 164-437.000.

Brueckner, Reinhard: *See*—
Kehrbach, Wolfgang; Mlinaric, Michael; Ziegler, Dieter; Brueckner, Reinhard; and Bielenberg, Willi, 5,547,967, Cl. 514-361.000.

Bruening, Ronald L.: *See*—
Tarbet, Bryon J.; Bruening, Ronald L.; Di Leo, Anthony J.; Goddard, Philip M.; and Scarmoutzos, Louis M., 5,547,760, Cl. 428-471.000.

Brumby, Thomas: *See*—
Sauer, Gerhard; Brumby, Thomas; Wachtel, Helmut; Turner, Jonathan; and Löschmann, Peter-Andreas, 5,547,958, Cl. 514-288.000.

Brun, Michel: *See*—
Paidassi, Serge; Ernoult, Jacques; Brun, Michel; Monge-Cadet, Pierre; Pauleau, Yves; and Farges, Guy, 5,547,767, Cl. 428-610.000.

Brunelli, Brian T.: *See*—
Acker, Richard M.; Brunelli, Brian T.; and Kautzer, Douglas H., 5,546,901, Cl. 123-195.00C.

Bryne, Richard M., to Speedplay, Inc. Clipless bicycle pedal system. 5,546,829, Cl. 74-594.600.

Bucha, Elke: *See*—
Nowak, Götz; Bucha, Elke; and Hoffman, Jutta, 5,547,850, Cl. 435-13.000.

Buchanan, John S.; Mathias, Mark F.; Sodomin, Joseph F., III; and Teitman, Gerald J., to Mobil Oil Corporation. Removing SO_x, NO_x and CO from flue gases. 5,547,648, Cl. 423-210.000.

Buck Knives, Inc.: *See*—
Seber, Brett P.; and Helton, Roy L., Jr., 5,546,662, Cl. 30-161.000.

Buckland, Kenneth M., to PMC-Sierra, Inc. Method and aparatus for recovering a variable bit rate service clock. 5,548,580, Cl. 370-17.000.

Bulgatz, Dennis C.; Morinigo, Fernando B.; Sortore, Christopher; and Stuart, Keith O., to Aura Systems, Inc. Electromagnetically actuated valve. 5,548,263, Cl. 335-274.000.

Bull HN Information Systems Inc.: *See*—
Petry, Keith L.; Hirsch, Thomas S.; and Keeley, James W., 5,548,713, Cl. 395-183.010.

Bull, S.A.: *See*—
Marbot, Rolland, 5,548,235, Cl. 327-158.000.

Bulot, Carl E., to Bulot, Carl E. Arrow-out. 5,546,621, Cl. 7-138.000.

Bulucea, Constantin; and Grubisich, Michael J., to National Semiconductor Corporation. Structure of bipolar transistors with improved output current-voltage characteristics. 5,548,158, Cl. 257-592.000.

Bunce, Keith T.: *See*—
Hagan, Russell M.; and Bunce, Keith T., 5,547,964, Cl. 514-329.000.

Bunk, Axel; Klam, Ruediger; Ender, Elmar; and Gloeckler, Frank, to Patent-Treuhand-Gesellschaft F. Elektrische Gluehlampen mbH. Reflector lamp specifically adapted for combination with a reflector lamp-lamp luminaire or fixture. 5,548,182, Cl. 313-113.000.

Buntain, Ian G.: *See*—
Hatton, Leslie R.; Buntain, Ian G.; Hawkins, David W.; Parnell, Edgar W.; Pearson, Christopher J.; and Roberts, David A., 5,547,974, Cl. 514-406.000.

Bunton, William P.: *See*—
Aldridge, David L.; Bunton, William P.; Bissell, Stephen R.; Brown, David; Gunn, Daniel D.; Kagy, Carl; and Sonnier, David P., 5,548,463, Cl. 361-18.000.

Bunzl Plastics, Inc.: *See*—
Bowes, William G., 5,546,989, Cl. 138-96.00R.

Bunzow, James R.; Civelli, Olivier; Grandy, David K.; and Zhou, Qun Y., to Duke University; and Oregon Health Sciences Univ. Aqueous solution containing D_1 dopamine receptor. 5,547,845, Cl. 435-7.100.

Burgers, Phillip, to Comair Rotron, Inc. Turbulator for a fluid impelling device. 5,547,339, Cl. 415-119.000.

Burgess, A. W.: *See*—
Nice, Edouard C.; James, R.; Simpson, R.; Burgess, A. W.; and Whitehead, Robert H., 5,547,940, Cl. 514-21.000.

Burgett, Inc.: *See*—
Pimentel, Robert L., 5,546,842, Cl. 84-461.000.

Burke Group, The: *See*—
Kelly, David L.; and Francies, Sidney E., III, 5,546,727, Cl. 52-704.000.
Kelly, David L., 5,547,168, Cl. 254-30.000.

Burkett, Susan L.: *See*—
Williams, Joel L.; Burkett, Susan L.; and McGuire, Shel, 5,547,723, Cl. 428-35.700.

Burkle, Stephen E.: *See*—
Chagnon, Mark S.; Burkle, Stephen E.; Carter, Michelle J.; Hamilton, Tracy J.; Havelick, John, Jr.; Kaplan, Deborah A.; and Marzloff, Kristin L., 5,547,682, Cl. 424-497.000.

Burns Aerospace Corporation: *See*—
Dixon, Richard W., 5,547,247, Cl. 297-145.000.

Burnside, Robert R.: *See*—
Johnson, Noel L.; Huang, Jyh-Yi T.; and Burnside, Robert R., 5,547,470, Cl. 604-67.000.

Burout, Charles; and Ortiz, Ernest, to Warner-Lambert Company. Dynamic razor head. 5,546,660, Cl. 30-50.000.

Burroughs Wellcome Co.: *See*—
Charles, Ian G.; Chatfield, Steven N.; and Fairweather, Neil F., 5,547,664, Cl. 424-93.200.
Slater, Martin J.; Cockerill, George S.; Littler, Edward; and Yeates, Clive L., 5,547,976, Cl. 514-410.000.

Burton, Larry: *See*—
Lee, Adam T.; Wu, Kuang; and Burton, Larry, 5,547,617, Cl. 261-114.500.

Burton, Robert M., Sr., to Kimberly-Clark Corporation. High strength fine spunbound fiber and fabric. 5,547,746, Cl. 428-288.000.

Busengdal, Petter: *See*—
Rudi, Guttorm; Jansen, Ornulf; Kuifte, Halvor O.; and Busengdal, Petter, 5,548,480, Cl. 361-685.000.

Bustamante, Herman A., to Stanford Telecommuncations, Inc. Wireless telephone user location capability for enhanced 911 application. 5,548,583, Cl. 370-18.000.

Butler, Thomas J.: *See*—
Coleman, Charles P.; Garberg, Dennis D.; and Butler, Thomas J., 5,546,732, Cl. 53-450.000.

Butler, Walter K.; Cote, Mark P.; Napiorkowski, John J.; Kroll, Thomas W.; Brower, Boyd G.; and Mickelson, N. Peter, to Siecor Puerto Rico, Inc. Protected telephone network termination module. 5,548,641, Cl. 379-399.000.

Butterworth, William; and Powell, Clyde H., to Fidelitone Inc. Universal magnetron assembly for microwave oven. 5,548,105, Cl. 219-761.000.

Butturini, Randal S.; and Cooley, Ernest W., to Johnson & Johnson Clinical Diagnostics, Inc. Bar code detecting circuitry. 5,548,109, Cl. 235-462.000.

Buxhofer, Horst: *See*—
Gossen, Ralf; Buxhofer, Horst; and Onusseit, Hermann, 5,547,712, Cl. 427-421.000.

Byers, Mark D. Deer Decoy. 5,546,692, Cl. 43-2.000.

Cabelli, Michael D.: *See*—
Schwartz, Jerome L.; Cabelli, Michael D.; Silvia, John C.; and Dahlin, Craig D. T., 5,547,555, Cl. 204-418.000.

Cadence Design Systems, Inc.: *See*—
Hernandez, Celimo P.; and Coultas, Robyn D., 5,548,524, Cl. 364-489.000.

Cahill, John: *See*—
Mero, Christopher; and Cahill, John, 5,547,631, Cl. 264-521.000.

Caldon, Inc.: *See*—
Hastings, Calvin R.; Hauser, Ernest M.; and Miller, Robert C., 5,546,813, Cl. 73-861.290.

Caldwell Manufacturing Company: *See*—
deNormand, Richard S.; and Milligan, Patrick E., 5,546,702, Cl. 49-161.000.

Caldwell, Stephen P.; Harris Jr., Marvine; Matsakis, Demetrios J.; Minarik, Ronald W.; Schmidt, Kenneth M.; Weigand, Benjamin F.; Prill, Robert S.; and Siegel, Arnold B. Wide band radio-frequency converter having multiple use of intermediate frequency translators. 5,548,839, Cl. 455-313.000.

Calhoun, Christopher A. Method of playing a sentence forming game. 5,547,199, Cl. 273-299.000.

Callahan, Martin E., to Hollyanne Corp. Multiple input processor for cable television head end controller. 5,548,323, Cl. 348-9.000.

Callanan, Sean P. Golf swing training device and method. 5,547,195, Cl. 473-227.000.

Callas, Gunter: *See*—
Mehta, Parag J.; Callas, Gunter; Barbo, Vincent; and Marcou, Jean-Claude, 5,546,657, Cl. 29-884.000.

Callaway Golf Company: *See*—
Schmidt, Glenn, 5,547,630, Cl. 264-297.200.

Calmar Inc.: *See*—
Grogan, R. Pat, 5,547,132, Cl. 239-333.000.

Calvani, Riccardo; Caponi, Renato; Cisternino, Francesco; and Roccato, Diego, to Cselt-Centro Studi E Laboratori Telecomunicazioni S.P.A. Method for the generation of ultra-short optical pulses. 5,548,603, Cl. 372-25.000.

Cameron, Robert W. Emergency whistle. 5,546,887, Cl. 116-137.00R.

Camilletti, Robert C.; Dall, Fredric C.; and Dunn, Diana K., to Dow Corning Corporation. Method of forming si-o containing coatings. 5,547,703, Cl. 427-126.300.

Campbell, Heather A.; Mayhugh, Terry L.; Rasmussen, Marvin W.; and Vachon, Guy, to Schlumberger Technology Corporation. Magnetic mark detection. 5,546,672, Cl. 33-716.000.

Campbell, Russell: *See*—
Poppenga, Burton H.; Shannon, Terrence M.; and Campbell, Russell, 5,548,689, Cl. 395-109.000.

Campos, Harry M., Jr., to Dresser Industries, Inc. Rotary cone drill bit and method for enhanced lifting of fluids and cuttings. 5,547,033, Cl. 175-331.000.

Candiracci, Angelo. Quick-adjustment slewing device for inserting and cutting cross wires in automatic equipment for prefabricating building panels. 5,547,118, Cl. 228-5.100.

Canich, Jo Ann M., to Exxon Chemical Patents Inc. Modified monocyclopentadienyl transition metal/alumoxane catalyst system for polymerization of olefins. 5,547,675, Cl. 502-117.000.

Cann, Kevin J.; Hussein, Fathi D.; Zilker, Daniel P., Jr.; and Lee, Kiu H., to Union Carbide Chemicals & Plastics Technology Corporation. Process for passivation of a reactor after shutdown of alpha olefin polymerization processes. 5,548,040, Cl. 526-62.000.

Canon Information Systems, Inc.: *See*—
Danknick, Daniel A., 5,548,728, Cl. 395-200.140.

Canon Kabushiki Kaisha: *See*—
Asaba, Tetsuo; and Makino, Kenji, 5,547,708, Cl. 427-248.100.
Egan, Alistair; and Tullis, Thomas S., 5,548,745, Cl. 395-500.000.
Fukui, Tetsuro; Kobayashi, Motokazu; Ohi, Takehiko; Ueno, Kazunori; Kagami, Kenji; Suzuki, Masao; and Nishino, Katsuya, 5,547,831, Cl. 430-619.000.
Hieda, Teruo; and Shimokoriyama, Makoto, 5,548,330, Cl. 348-234.000.
Hiramatsu, Makoto, 5,548,284, Cl. 341-68.000.
Hirose, Kenji, 5,548,568, Cl. 369-44.140.
Horikoshi, Hiroki, 5,548,591, Cl. 370-62.000.
Ichiyoshi, Hiroyuki, 5,548,334, Cl. 348-341.000.
Iijima, Ryunosuke, 5,548,369, Cl. 354-286.000.
Kanbe, Junichiro; Katagiri, Kazuharu; and Kaneko, Syuzo, 5,548,303, Cl. 345-95.000.
Kanemitsu, Shinji, 5,547,295, Cl. 400-279.000.
Kawahara, Hideo; and Arai, Hideyuki, 5,548,371, Cl. 354-442.000.
Kawahara, Norihiro; and Tanaka, Yasuyuki, 5,548,331, Cl. 348-243.000.
Kohtaki, Takaaki; Taya, Masaaki; and Fujimoto, Masami, 5,547,796, Cl. 430-106.600.
Kuribayashi, Tetsuya, 5,547,724, Cl. 428-35.800.
Masaki, Yuichi; Onuma, Kenji; Yoshioka, Toshifumi; and Mitsui, Mutsuo, 5,548,428, Cl. 359-80.000.
Miyakoshi, Toshimori, 5,547,773, Cl. 428-634.0ML.
Nagatomo, Akira; Hattori, Yoshifumi; Ebisawa, Isao; Abe, Tsutomu; Ohba, Takashi; Iida, Hiroshi; and Watanabe, Kenjiro, 5,548,308, Cl. 347-9.000.
Nakanura, Yasuo. 5,548,789, Cl. 395-853.000.
Ogata, Takao; Amemiya, Koji; Takeuchi, Tatsuo; Hasegawa, Takashi; Saito, Rie; and Sasanuma, Nobuatsu, 5,548,378, Cl. 355-208.000.
Ohtsuka, Masanori, 5,548,363, Cl. 354-173.100.
Okubo, Akio; Saito, Atsushi; and Watanabe, Fumihiko, 5,548,309, Cl. 347-33.000.
Saito, Yoshiro; Fujii, Haruo; Sasame, Hiroshi; Hayakawa, Tatsuhiko; Kobayashi, Tatsuya; Kobayashi, Tetsuya; Enomoto, Naoki; Uchiyama, Akihiko; and Maebashi, Youichirou, 5,548,381, Cl. 355-245.000.
Sakashita, Yukihiko; and Ishizaki, Akira, 5,548,708, Cl. 395-162.000.
Shimamune, Masayuki; Enomoto, Takashi; Murata, Tatsuo; and Mitsui, Mutsuo, 5,546,998, Cl. 141-82.000.
Takao, Hideaki; Murata, Tatsuo; Kanbe, Junichiro; Tamura, Miki; Kamio, Masaru; Sekimura, Nobuyuki; and Kikuchi, Yoshiki, 5,548,424, Cl. 359-68.000.
Takehara, Nobuyoshi, 5,548,504, Cl. 363-65.000.
Tamai, Jun, 5,548,175, Cl. 310-323.000.
Tokunaga, Hiroyuki; and Kawasaki, Hideshi, 5,548,131, Cl. 257-64.000.
Tsujita, Chikako, 5,548,429, Cl. 359-80.000.
Yoshida, Masayuki, 5,548,701, Cl. 395-150.000.

Canon Kabusihiki Kaisha: *See*—
Asai, Akira, 5,548,312, Cl. 347-56.000.

Capehart, Jimmie D., to Electronic Drilling Control, Inc. Transportable, self-contained water purification system and method. 5,547,584, Cl. 210-669.000.

Capehart, Jimmie D.: *See*—
Taylor, P. A.; Futrell, Todd O.; Dunn, Neil M., Jr.; Jusko, Michael P.; DuBois, Casey R.; and Capehart, Jimmie D., 5,547,644, Cl. 422-186.180.

Capital Equipment Corporation: *See*—
Mayer, Sidney H., 5,548,790, Cl. 395-855.000.

Caplan, Malcolm; and Shang, Clifford C., to University of California, The Regents of the. Vacuum-barrier window for wide-bandwidth high-power microwave transmission. 5,548,257, Cl. 333-252.000.

Caponi, Renato: *See*—
Calvani, Riccardo; Caponi, Renato; Cisternino, Francesco; and Roccato, Diego, 5,548,603, Cl. 372-25.000.

Capps, Mark J.: *See*—
Eberhardt, Carol E.; Capps, Mark J.; and Salazar, Luis, 5,546,820, Cl. 73-866.400.

Carballosa, Hector; and Kairus, Enrique A. Multiple effect exercise device. 5,547,442, Cl. 482-46.000.
Cardin, Alan D.; Jackson, Richard L.; and Mullins, Michael J., to Dow Chemical Co., The; and Merrell Pharmaceuticals Inc. Anti-herpes virus and cytomegalovirus polycarbonate oligomers. 5,547,992, Cl. 514-648.000.
Care Technologies, Inc.: *See—*
Upton, Harry F., 5,547,665, Cl. 424-94.610.
Carey, John G.: *See—*
Satgurunathan, Rajasingham; Hinde, David C.; Padget, John C.; and Carey, John G., 5,547,710, Cl. 427-386.000.
Carlotta, Michael: *See—*
Binnert, Thomas R.; and Carlotta, Michael, 5,548,310, Cl. 347-33.000.
Carlson, LeRoy W., to Phillips Petroleum Company. Regeneration of hydrogen fluoride alkylation catalyst. 5,547,909, Cl. 502-20.000.
Carney, Frederick T., Jr.: *See—*
Detrick, John H.; and Carney, Frederick T., Jr., 5,547,486, Cl. 71-28.000.
Carpenter, Gary D.; Dean, Mark E.; Faucher, Marc R.; Peterson, James C.; and Tanner, Howard C., to International Business Machines Corporation. Non-contiguous mapping of I/O addresses to use page protection of a process. 5,548,746, Cl. 395-500.000.
Carra, Robert: *See—*
Lanigan, William T.; and Carra, Robert, 5,547,462, Cl. 602-19.000.
Carrier, Allen M.: *See—*
Austin, Anne-Marie B.; Carrier, Allen M.; and Standish, Michael L., 5,547,612, Cl. 134-22.190.
Carrier Corporation: *See—*
Downey, Sandra J., 5,547,600, Cl. 252-68.000.
Waterman, Timothy J., 5,547,232, Cl. 285-236.000.
Carroll, Charles B., to Ocean Power Technologies, Inc. Piezoelectric generator protection. 5,548,177, Cl. 310-339.000.
Carroll, Paul L., II. Water recovery from a septic tank. 5,547,589, Cl. 210-747.000.
Carter, Anthony E.: *See—*
Wass, Donald J.; and Carter, Anthony E., 5,546,990, Cl. 138-44.000.
Carter, John L.: *See—*
Balasundaram, Vasanth; Carter, John L.; and Ferrante, Jeanne, 5,548,761, Cl. 395-700.000.
Carter, Michelle J.: *See—*
Chagnon, Mark S.; Burkle, Stephen E.; Carter, Michelle J.; Hamilton, Tracy J.; Havelick, John, Jr.; Kaplan, Deborah A.; and Marzloff, Kristin L., 5,547,682, Cl. 424-497.000.
Caruso, Michele: *See—*
Angelucci, Francesco; Bersani, Laura; Caruso, Michele; Ripamonti, Marina; Ruggieri, Daniela; and Suarato, Antonino, 5,547,667, Cl. 424-181.100.
Caruso, Vincent C. Polyethelene inflatable tube construction device. 5,546,707, Cl. 52-213.000.
Cascade Engineering, Inc.: *See—*
Parker, Brian G., 5,547,104, Cl. 220-772.000.
Cascio, Franco, to IF-1 S.r.l. Connector unit, particularly of the multiple-connection rapid-engagement type. 5,547,304, Cl. 403-13.000.
Casio Computer Co., Ltd.: *See—*
Doi, Yuji; Kato, Yoshiya; Kanezashi, Takanobu; and Masuda, Yuichi, 5,547,076, Cl. 206-301.000.
Minamitaka, Junichi; Sato, Kunio; and Ohya, Mayumi, 5,548,080, Cl. 84-627.000.
Miyashita, Takashi; Miyazawa, Yoshinaga; and Kikuchi, Zenta, 5,548,426, Cl. 359-73.000.
Caspelherr, Heinz; and Hüwel, Ulrich, to Klöckner-Humboldt-Deutz AG. Preheating screw. 5,547,277, Cl. 366-146.000.
Casper, Daniel F.; Gregg, Thomas A.; Salyer, Gregory; and Westcott, Douglas W., to International Business Machines Corporation. Null words for pacing serial links to driver and receiver speeds. 5,548,623, Cl. 375-358.000.
Casper, Daniel F.; Glassen, Steven G.; Halma, Marten J.; and Ryan, Sandra K., to International Business Machines Corporation. Input/output control system with plural channel paths to I/O devices. 5,548,791, Cl. 395-858.000.
Cassetta, Carmen: *See—*
Barrows, Lawrence; Lowden, Gerald; Cassetta, Carmen; and Ozari, Yehuda, 5,547,725, Cl. 428-43.000.
Catalyst Semiconductor Corp.: *See—*
Wang, Chi-Ming; Gupta, Anil; and Randhawa, Hiten D. S., 5,548,551, Cl. 365-185.180.
Caterpillar Inc.: *See—*
Gudat, Adam J.; Rao, Prithvi N.; Shaffer, Gary K.; Shi, Wenfan; Shin, Dong H.; Sennott, James W.; Whittaker, William L.; Kleimenhagen, Karl W.; West, Jay H.; Clow, Richard G.; Wu, Baoxin; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,548,516, Cl. 364-443.000.
Rector, Charles E.; Wells, Steven R.; Mather, Daniel T.; and Arndt, Robin S., 5,546,847, Cl. 91-403.000.
Smith, Aaron L.; and White, Scott T., 5,547,641, Cl. 422-181.000.
Stone, Dwight V.; and Whalen, Charles E., 5,547,056, Cl. 192-51.000.
Cavazza, Claudio: *See—*
Tinti, Maria O.; Misiti, Domenico; and Cavazza, Claudio, 5,547,986, Cl. 514-547.000.
CDS Technologies, L.L.C.: *See—*
Zeimer, Ran C.; Jost, George J.; Bainbridge, Robert C.; Schwarzbach, Richard; Ware, Charles; and Zebrowski, Kathleen D., 5,546,941, Cl. 128-652.000.
Cedal S.R.L.: *See—*
Ceraso, Bruno, 5,547,535, Cl. 156-272.200.
Cellario, Luca, to SIP-Societa Italiana Per L'Esercizio Delle Telecomunicazioni P.A. Method and device for speech signal pitch period estimation and classification in digital speech coders. 5,548,680, Cl. 395-2.280.
Center for Innovative Technology, The: *See—*
Brandom, Donald K.; DeSouza, Jose P.; Baird, Donald G.; and Wilkes, Garth L., 5,547,996, Cl. 521-134.000.
Williams, Patricia B.; and Crouch, Earl R., Jr., 5,547,680, Cl. 424-427.000.
Central Biomedia, Inc.: *See—*
Leneau, Harry; and Skelly, William G., 5,548,066, Cl. 530-390.500.
Centre International de Recherches Dermatologiques Galderma (CIRD Galderma): *See—*
Charpentier, Bruno, 5,547,983, Cl. 514-535.000.
Centro Sviluppo Materiali S.p.A.: *See—*
Colletta, Angelo; and Pinti, Medardo, 5,546,747, Cl. 60-275.000.
Ceraso, Bruno, to Cedal S.R.L. Process for producing plastic laminates from continuously fed bands. 5,547,535, Cl. 156-272.200.
Cesana, Massimo: *See—*
Rigamonti, Marco; Marciandi, Franco; and Cesana, Massimo, 5,547,750, Cl. 428-329.000.
Chaen, Hiroto: *See—*
Iritani, Satoshi; Mitsuhashi, Masakazu; Chaen, Hiroto; and Miyake, Toshio, 5,547,692, Cl. 426-53.000.
Chagnon, Mark S.; Burkle, Stephen E.; Carter, Michelle J.; Hamilton, Tracy J.; Havelick, John, Jr.; Kaplan, Deborah A.; and Marzloff, Kristin L., to BioQuest, Incorporated. Preparation and use of novel injectable RES avoiding inorganic particles for medical application. 5,547,682, Cl. 424-497.000.
Chaguturu, Munirathnam K.: *See—*
Henrie, Robert N., II; Peake, Clinton J.; Cullen, Thomas G.; Chaguturu, Munirathnam K.; Ray, Partha S.; and Bennett, Brian D., 5,547,954, Cl. 514-258.000.
Chalasani, Devi; Friske, Mark S.; and Johnson, Ronald E., to Corning Incorporated. Binder for fiber reinforced composites. 5,547,622, Cl. 264-60.000.
Chaleff, Deborah T.: *See—*
Fischer, Meir; Lebens, Michael R.; and Chaleff, Deborah T., 5,548,068, Cl. 530-399.000.
Chaleff, Edward: *See—*
Lapinski, Charles; Eckert, Charles; Skokowski, Richard; Cox, James; Scott, William; Chaleff, Edward; and Wagh, Meghanad D., 5,548,107, Cl. 235-462.000.
Chalk, Julie B.; Rowe, Jonathan C.; Schermerhorn, Paul M.; and Shoup, Robert D. Method of making fused silica articles. 5,547,482, Cl. 65-17.200.
Chambon, Michael D. Waterless container cleaner monitoring system. 5,546,631, Cl. 15-319.000.
Chamness, Gary M., to Waste Management & Design, Inc. Method and device for providing an insulated cover over a pool. 5,546,615, Cl. 4-503.000.
Chamness, Thomas W., to Schering-Plough Healthcare Products, Inc. Compositions for treating corns and calluses. 5,547,989, Cl. 514-558.000.
Champeau, Eugene J., to MedAmicus, Inc. Endotracheal tube mounted pressure transducer. 5,546,935, Cl. 128-205.230.
Champion International Corporation: *See—*
Neider, Thomas M.; and Rudt, Robert J., 5,547,509, Cl. 118-68.000.
Chan, Keng S.; and Griffin, Thomas J., Jr., to Dowell, a division of Schlumberger Technology Corporation. Low temperature, low rheology synthetic cement. 5,547,027, Cl. 166-295.000.
Chaney, David A., to Conley Corporation. Dual containment valve system. 5,546,977, Cl. 137-312.000.
Chang, Bobby, to R. R. Donnelley & Sons Company. Gathering chain pin. 5,547,066, Cl. 198-644.000.
Chang, Chun-Hsiung; and Chen, I-Heng, to Chen, Chin-Fa. Unidirectional roller bearing with roller retaining structure. 5,547,055, Cl. 192-45.000.
Chang, Kyusun; Hall, Lon E.; Joyce, Gregory S.; Mazzurana, Paul D.; and Russell, Lance W., to International Business Machines Corporation. System for forwarding data packets with different formats to different software entities respectively based upon match between portion of data packet and filter. 5,548,731, Cl. 395-280.000.
Chang, Mong-Shiang. Cover assembly for permitting access into a container without removal therefrom. 5,547,099, Cl. 220-212.500.
Chang, San-Jung: *See—*
Juang, Miin-Horng; Chang, San-Jung; and Wang, Chin-Hsien, 5,547,882, Cl. 437-40.000.
Chang, Sreter. Weighting device for exercise purposes. 5,547,445, Cl. 482-105.000.
Chang, Yihua: *See—*
Nielsen, Steven J.; Chang, Yihua; and Rentmeester, Tammy J., 5,547,701, Cl. 427-2.300.
Chapman, George R., Jr.; Morgan, Richard A.; Stewart, Charles W.; Tuminello, William H.; Van Alsten, John G.; Vogel, Randall A.; and Wagman, Mark E., to Du Pont de Nemours, E. I., and Company. Low melting tetrafluoroethylene copolymer and its uses. 5,547,761, Cl. 428-422.000.

Chapman, Leslie J., to KHS Group Limited. Pallet system wherein an array of vertical sockets mate with module side elements. 5,546,871, Cl. 108-54.100.
Chappell, Dennis L. (executor of said John W. Chappell, deceased): *See—*
Chappell, John W.; Shangler, Anthony; Chappell, Dennis L., 5,547,208, Cl. 180-281.000.
Chappell, executor of said John W., deceased: *See—*
Chappell, John W.; Shangler, Anthony; Chappell, Dennis L., 5,547,208, Cl. 180-281.000.
Chappell, John W.; Shangler, Anthony; Chappell, Dennis L. (executor of said John W. Chappell, deceased), to Chappell, Dennis L. Vehicle safety exit apparatus. 5,547,208, Cl. 180-281.000.
Chappet, Philippe: *See—*
Haentjens, Stéphen; Chappet, Philippe; Tessier, Jean-Luc; Ardissone, Jean-Paul; and Guibergia, Jean-Pierre, 5,546,865, Cl. 105-1.200.
Charas, Philippe M.; and Dent, Paul W., to Ericsson Inc. Phased array cellular base station and associated methods for enhanced power efficiency. 5,548,813, Cl. 455-33.300.
Charles, Ian G.; Chatfield, Steven N.; and Fairweather, Neil F., to Burroughs Wellcome Co. Expression of recombinant proteins in attenuated bacteria. 5,547,664, Cl. 424-93.200.
Charles Machine Works, Inc., The: *See—*
Holdeman, R. Brian; Kohman, Fred H.; Harrison, Greg T.; and Hise, Bradley W., 5,546,833, Cl. 81-52.000.
Charpentier, Bruno, to Centre International de Recherches Dermatologiques Galderma (CIRD Galderma). Aromatic and polycyclic compounds and their use in human or veterinary medicine and in cosmetics. 5,547,983, Cl. 514-535.000.
Chasse, R. Fred: *See—*
Marcoccia, Bruno S.; Prough, J. Robert; Laakso, Richard O.; Phillips, Joseph R.; Ryham, Rolf C.; Richardsen, Jan T.; and Chasse, R. Fred, 5,547,012, Cl. 162-42.000.
Chatfield, Steven N.: *See—*
Charles, Ian G.; Chatfield, Steven N.; and Fairweather, Neil F., 5,547,664, Cl. 424-93.200.
Chatterjee, Amitava; Liu, Jiann; Mozumder, Purnendu; Rodder, Mark S.; and Chen, Ih-Chin, to Texas Instruments Incorporated. Pass transistor for a 256 megabit dram with negatively biased substrate. 5,548,548, Cl. 365-149.000.
Cheatham, Samuel D.; Jacobs, Lynn C.; Janssen, Donovan M.; Leonhardt, Michael L.; Milligan, Charles A.; and Todd, Christian A., to Storage Technology Corporation. Tape cassette with internal tape cleaning and locking. 5,547,142, Cl. 242-338.100.
Cherma-Dhadli, Surinder: *See—*
Halperin, Mitchell L.; and Cherma-Dhadli, Surinder, 5,547,586, Cl. 210-686.000.
Chekroun, Claude; and Sadones, Henri, to Contre Mesure Hyperfrequence C M H. Anti-sensing method and device for radar. 5,548,289, Cl. 342-16.000.
Chemisches Laboratorium Dr. Kurt Richter GmbH: *See—*
Kludas, Martin, 5,547,997, Cl. 514-773.000.
Chemische Fabrik Stockhausen GmbH: *See—*
Brehm, Helmut; Dahmen, Kurt; and Mertens, Richard, 5,548,049, Cl. 526-312.000.
Chen, Benjamin T.; and Lok, Roger, to Eastman Kodak Company. Iodochloride emulsions containing quinones having high sensitivity and low fog. 5,547,827, Cl. 430-567.000.
Chen, Chin-Fa: *See—*
Chang, Chun-Hsiung; and Chen, I-Heng, 5,547,055, Cl. 192-45.000.
Chen, Ching-Fong; and Guerra, Carlos, to Leco Corporation. Combustion accelerators, processes for their production and processes for their use in elemental analysis. 5,547,876, Cl. 436-159.000.
Chen, Chong-Jeou; Ladew, Richard; Qiu, Yong-Jian; and Mevissen, Jeffrey, to AVX Corporation. Electrical components such as capacitors having electrodes with an insulating edge. 5,548,474, Cl. 361-313.000.
Chen, David. Rocking exercise device with two seats. 5,547,443, Cl. 482-72.000.
Chen, David T.: *See—*
McKenna, Michael A.; Rosen, Joseph M.; Chen, David T.; Pieper, Steven D.; and Robbie, Peter J., 5,547,455, Cl. 600-113.000.
Chen, Elaine; Eberman, Brian; and Marcus, Beth A. Multimode feedback display technology. 5,546,959, Cl. 128-782.000.
Chen, Hui-Huang. Video compact disk storage rack. 5,547,086, Cl. 211-40.000.
Chen, Ih-Chin: *See—*
Chatterjee, Amitava; Liu, Jiann; Mozumder, Purnendu; Rodder, Mark S.; and Chen, Ih-Chin, 5,548,548, Cl. 365-149.000.
Chen, I-Heng: *See—*
Chang, Chun-Hsiung; and Chen, I-Heng, 5,547,055, Cl. 192-45.000.
Chen, Jiann-Hsing; Demejo, Lawrence P.; Roberts, Gary F.; Kosakowski, Richard J.; Aslam, Muhammed; and Derimiggio, John E., to Eastman Kodak Company. Coated fuser members and methods of making coated fuser members. 5,547,759, Cl. 428-421.000.
Chen, Jun W.: *See—*
Williams, Richard K.; Yilmaz, Hamza; Cornell, Michael E.; and Chen, Jun W., 5,547,880, Cl. 437-15.000.
Chen, Liang-Ynan. Adjustable length windshield wiper. 5,546,627, Cl. 15-250.390.
Chen, Ming J. Automatic feed supply machine. 5,547,113, Cl. 222-642.000.
Chen, Ming-Hawi. Drum assembly. 5,546,841, Cl. 84-411.00R.
Chen, Pin-Yi, to Extech Electronics Co., Ltd. High–voltage power supply circuit with a voltage discharging circuit. 5,548,501, Cl. 363-21.000.
Chen, Wen-Tzer T.; Thurber, Steven M.; and Tsao, Gary Y., to International Business Machines Corporation. System and method for asynchronously processing store instructions to I/O space. 5,548,735, Cl. 395-375.000.
Chen, Yi-Lin: *See—*
Chou, Tse-Chaun; and Chen, Yi-Lin, 5,547,655, Cl. 423-531.000.
Chen, Zen-Ming. Brake mechanism for bicycle. 5,547,046, Cl. 188-24.210.
Cheng, Tzu-Ling: *See—*
Cheng, You-Jen; and Cheng, Tzu-Ling, 5,547,392, Cl. 439-419.000.
Cheng, Wu-Cheng; and Rajagopalan, Kuppuswamy, to W. R. Grace & Co.-Conn. Catalytic Cracking. 5,547,564, Cl. 208-122.000.
Cheng, You-Jen; and Cheng, Tzu-Ling. Structure of lamp socket. 5,547,392, Cl. 439-419.000.
Cherne Industries Incorporated: *See—*
Mathison, Allen D.; and Smith, Randy D., 5,546,991, Cl. 138-93.000.
Chevallier, Yvonick; and Rabeyrin, Michel, to Rhone-Poulenc Chimie. Dispersible silica particulates and reinforcement of elastomer/rubber matrices therewith. 5,547,502, Cl. 106-287.100.
Chevron U.S.A. Inc.: *See—*
Juprasert, Max S.; and Davis, Bruce W., 5,547,022, Cl. 166-263.000.
Chiabrera, Alessandro E.: *See—*
Kaufman, Jonathan J.; and Chiabrera, Alessandro E., 5,547,459, Cl. 601-2.000.
Chiang, Michael Y.: *See—*
Hall, Larry; Chiang, Michael Y.; and Meyer, Judith M., 5,547,990, Cl. 514-563.000.
Chiang, Vance. Multi-purpose measuring instrument for wood working machines. 5,546,670, Cl. 33-640.000.
Chiang, Yulin: *See—*
Hamer, Richard L.; Helsley, Grover C.; Glamkowski, Edward J.; and Chiang, Yulin, 5,547,977, Cl. 514-41.100.
Chiba, Jiro; and Taguchi, Syuji, to Asahi Glass Company Ltd. Colored ceramic composition and method for producing glass plate using the same. 5,547,749, Cl. 428-323.000.
Chiba, Norio: *See—*
Shimizu, Nobuhiro; Chiba, Norio; and Yabe, Satoru, 5,548,130, Cl. 257-31.000.
Chick, Douglas K.; and Driver, F. Thomas, to Insituform (Netherlands) B.V. Dual containment pipe rehabilitation system. 5,546,992, Cl. 138-98.000.
Chigira, Sadao: *See—*
Maruyama, Tsutomu; Akiyama, Atsushi; Sanada, Kazuo; Chigira, Sadao; and Hidaka, Masanobu, 5,547,501, Cl. 106-21.00R.
Childers, Shirley A. Cart caddy for shopping carts. 5,547,250, Cl. 297-256.170.
Chingdar Enterprise Co., Ltd.: *See—*
Way, Hsiao, 5,546,718, Cl. 52-238.100.
Chiodaroli, Michelangelo, to I.M.L. Industria Meccanica Lombarda S.R.L. Sheet clamp. 5,546,638, Cl. 24-67.900.
Chiquita Brands, Inc.: *See—*
Mullock, Daniel; Baker, Paul; and Knight, John, 5,547,081, Cl. 206-504.000.
Chiron Corporation: *See—*
Mullenbach, Guy T.; Blaney, Jeffrey M.; and Rosenberg, Steven, 5,547,935, Cl. 514-12.000.
Spaete, Richard R.; and Pachl, Carol A., 5,547,834, Cl. 435-5.000.
Cho, Hyung R., to Il Sung Moolsan Co., Ltd. Recessed lighting fixture. 5,548,497, Cl. 362-260.000.
Cho, Soon-Haeng; Chue, Kuck-Tack; Kim, Jong-Nam; Kim, Kwon-Il; You, Youn-Jong; and Lee, Seng-Go, to Korea Institute of Energy Research. Method for adsorbing and separating argon and hydrogen gases in high concentration from waste ammonia purge gas, and apparatus therefor. 5,547,492, Cl. 95-100.000.
Choi, Jong-seo: *See—*
Choi, Kwi-seok; Choi, Jong-seo; Shon, Kyung-cheon; Ju, Gyu-nam; and Lee, Sang-won, 5,548,184, Cl. 313-346.00R.
Choi, Kwi-seok; Choi, Jong-seo; Shon, Kyung-cheon; Ju, Gyu-nam; and Lee, Sang-won, to Samsung Display Devices Co., Ltd. Oxide cathode employing Ba evaporation restraining layer. 5,548,184, Cl. 313-346.00R.
Choi, Young S., to Daewoo Electronics Co., Ltd. Lathe with an auxiliary transverse table. 5,546,836, Cl. 82-132.000.
Chou, Shu-Kuang; and Liou, Jiunn-Fu, to Electronics Research & Service Organization. High-frequency clock generator using lower frequency voltage controlled ring oscillator. 5,548,251, Cl. 331-57.000.
Chou, Tse-Chaun; and Chen, Yi-Lin. Recovery and regeneration of sulfuric acid. 5,547,655, Cl. 423-531.000.
Chouly, Antoine: *See—*
Brajal, Américo; and Chouly, Antoine, 5,548,582, Cl. 370-18.000.
Chow, Clarence Y.: *See—*
Fletcher, Nicholas J.; Chow, Clarence Y.; Pow, Eric G.; Wozniczka, Boguslav M.; Voss, Henry H.; and Hornburg, Gerald, 5,547,776, Cl. 429-13.000.
Christen, Ernst: *See—*
Vlach, Martin; Christen, Ernst; Teegarden, Darrell A.; and Bedrosian, David G., 5,548,539, Cl. 364-578.000.
Christensen, Burton G.; Egawa, Takashi; Ichimaru, Yasuyuki; Ohuchi, Shokichi; Okonogi, Tsuneo; Patchett, Arthur A.; Shibahara, Seiji; and Tsutsumni, Seiji, to Meiji Seika Kaisha, Ltd. Derivatives of pyrrolidin-2-ylcarbonylheterocyclic compounds. 5,547,978, Cl. 514-422.000.
Christensen, Dana A.: *See—*

Gudat, Adam J.; Rao, Prithvi N.; Shaffer, Gary K.; Shi, Wenfan; Shin, Dong H.; Sennott, James W.; Whittaker, William L.; Kleimenhagen, Karl W.; West, Jay H.; Clow, Richard G.; Wu, Baoxin; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,548,516, Cl. 364-443.000.

Christensen, Richard N.: *See—*
Cook, F. Bert; Petty, Stephen E.; Meacham, Howard C., Jr.; Christensen, Richard N.; and McGahey, Kevin R., 5,546,760, Cl. 62-497.000.

Christensen, Roy W.: *See—*
Miller, Steven A.; Miller, Russell S.; and Christensen, Roy W., 5,547,171, Cl. 266-78.000.

Christensen, Siegfried B., IV; Esser, Klaus M.; and Simon, Philip L., to SmithKline Beecham. TNF inhibition. 5,547,979, Cl. 514-424.000.

Christie, Ian M.: *See—*
Vadgama, Pankaj M.; Christie, Ian M.; and Benmakroha, Yazid M., 5,547,561, Cl. 205-793.000.

Chromatofast, Inc.: *See—*
Klemp, Mark A.; and Peters, Anita J., 5,547,497, Cl. 96-104.000.

Chrysler Corporation: *See—*
Dukatz, Matthew E.; Harland, Charles E.; Kresky, Fred C.; McCarthy, Jay P.; and Sharples, Stephen A., 5,547,242, Cl. 296-65.100.
Gawaskar, Sadanand; Norris, Frank J.; Vitous, Joseph; and Young, Kevin L., 5,547,036, Cl. 180-68.500.
Hennessee, Robert P.; Huetteman, Steven C.; and Markowitz, Ron M., 5,547,125, Cl. 236-49.300.

Chrzan, Michael J.: *See—*
Weiss, Keith D.; Duclos, Theodore G.; Chrzan, Michael J.; and Yanyo, Lynn C., 5,547,049, Cl. 188-267.000.

Chuang, Wen-Hao. Fan blade mold. 5,547,365, Cl. 425-577.000.

Chue, Kuck-Tack: *See—*
Cho, Soon-Haeng; Chue, Kuck-Tack; Kim, Jong-Nam; Kim, Kwon-Il; You, Youn-Jong; and Lee, Seng-Go, 5,547,492, Cl. 95-100.000.

Chugai Seiyaku Kabushiki Kaisha: *See—*
Iida, Yoshimitsu; and Machida, Minoru, 5,547,943, Cl. 514-53.000.

Chujo, Takafumi: *See—*
Ogura, Takao; Amemiya, Shigeo; Tezuka, Koji; and Chujo, Takafumi, 5,548,639, Cl. 379-221.000.

Chung, Chin-Fu. Toothbrush with movable bundles of bristles. 5,546,626, Cl. 15-167.100.

Chung, Daniel A., to Ashland Inc. Polyureaurethane primerless adhesive. 5,548,056, Cl. 528-61.000.

Chung, T-C.: *See—*
Powers, Kenneth W.; Wang, Hsien-Chang; Chung, T-C.; Dias, Anthony J.; and Olkusz, Joseph A., 5,548,023, Cl. 525-69.000.
Powers, Kenneth W.; Wang, Hsien-Chang; Chung, T-C.; Dias, Anthony J.; and Olkusz, Joseph A., 5,548,029, Cl. 525-195.000.

Chuter, Jeremy B.: *See—*
Clarke, Donald E. A.; Hale, Michael A.; and Chuter, Jeremy B., 5,548,432, Cl. 359-137.000.

Ciaramita, Charles F., to Too Sweet, Ltd. Electromechanical cake decorating apparatus. 5,547,507, Cl. 118-13.000.

Ciarlo, Dino R.: *See—*
Benett, William J.; Beach, Raymond J.; and Ciarlo, Dino R., 5,548,605, Cl. 372-36.000.

CIAS, Inc.: *See—*
Storch, Leonard; and van Haagen, Ernst, 5,548,110, Cl. 235-472.000.

Ciba-Geigy Corporation: *See—*
Deitz, Rolf; Tzikas, Athanassios; and Herzig, Paul, 5,548,071, Cl. 534-612.000.
Traber, Rainer H., 5,547,475, Cl. 8-110.000.

Ciccarone, Jay: *See—*
Izett, George G.; and Ciccarone, Jay, 5,547,196, Cl. 473-242.000.

Ciluffo, Gary. Audio controlled gun locking mechanism. 5,546,690, Cl. 42-70.110.

Cirrus Logic, Inc.: *See—*
Fang, Wen, 5,548,250, Cl. 331-14.000.
Zhang, Zhong-Xuan; Lin, Jyhfong; and Wang, Yun-Ti, 5,548,238, Cl. 327-374.000.

Cisneros-Zevallos, Luis: *See—*
Krochta, John M.; Saltveit, Mikal; and Cisneros-Zevallos, Luis, 5,547,693, Cl. 426-90.000.

Cisternino, Francesco: *See—*
Calvani, Riccardo; Caponi, Renato; Cisternino, Francesco; and Roccato, Diego, 5,548,603, Cl. 372-25.000.

Citizen Watch Co., Ltd.: *See—*
Nanya, Takanori, 5,546,770, Cl. 66-116.000.
Natsunaga, Masaaki, 5,548,423, Cl. 359-68.000.

City University of New York, Mount Sinai School of Medicine of the: *See—*
Kaminski, Ram, 5,547,969, Cl. 514-370.000.

Civelli, Olivier: *See—*
Bunzow, James R.; Civelli, Olivier; Grandy, David K.; and Zhou, Qun Y., 5,547,845, Cl. 435-7.100.

Claas Saulgau GmbH: *See—*
Moosbrucker, Karl, 5,546,737, Cl. 56-94.000.

Clair, Rene; and Gallet, Alain, to Atochem. Production of concentrated aqueous solutions of ferric chloride. 5,547,637, Cl. 422-129.000.

Clapperton, Richard M.: *See—*
Newton, Jill E.; Clapperton, Richard M.; and Nicholson, William J., 5,547,918, Cl. 504-116.000.

Clare, Manamohan, to Friedrich Grohe Aktiengesellschaft. Shut-off valve. 5,546,983, Cl. 137-607.000.

Clarion Co., Ltd.: *See—*
Kozaki, Kengo; Ohyachi, Nobuyuki; Tanaka, Seiji; Morisawa, Akira; and Nakazaki, Toshyuki, 5,548,828, Cl. 455-161.200.

Clark, Aaron D., to Inotrend, Inc. Talking poster. 5,548,272, Cl. 340-407.100.

Clark, David L., to Prince Corporation. Speaker excursion control system. 5,548,650, Cl. 381-55.000.

Clark, Elke M. A.; Marlin, Lawrence; Fan, You-Ling; and Shah, Harshad M., to Union Carbide Chemicals & Plastics Technology Corporation. Dermal patch. 5,547,681, Cl. 424-449.000.

Clark, George J. Bucket attachment device with remote controlled retractable pins. 5,546,683, Cl. 37-468.000.

Clark, James E., II; and Van Santen, Poul, to Clark Technology Systems, Inc. Device for draining fluid from a container. 5,546,979, Cl. 137-318.000.

Clark, James E., II; and Van Santen, Poul, to Clark Technology Systems, Inc. Leakproof dual action fluid transfer valve. 5,546,986, Cl. 137-614.050.

Clark, Richard S.: *See—*
Dalton, William S.; Clark, Richard S.; and Trunkett, Kevin S., 5,547,340, Cl. 415.00-121.200.

Clark, Russell L.: *See—*
Hansen, Scott A.; and Clark, Russell L., 5,548,492, Cl. 362-83.100.

Clark Technology Systems, Inc.: *See—*
Clark, James E., II; and Van Santen, Poul, 5,546,979, Cl. 137-318.000.
Clark, James E., II; and Van Santen, Poul, 5,546,986, Cl. 137-614.050.

Clark, William T.; Scott, James D., II; Barton, Graham M.; Rice, Chris A.; and McLaughlin, Shawn M., to Baracuda International Corp. Automatic swimming pool cleaners and associated components. 5,546,982, Cl. 137-557.000.

Clarke, Donald E. A.; Hale, Michael A.; and Chuter, Jeremy B., to British Telecommunications public limited company. Passive optical network switchable between an operational mode and a diagnostic mode. 5,548,432, Cl. 359-137.000.

Clarke, Graham H.: *See—*
Howell, Mark; and Clarke, Graham H., 5,547,317, Cl. 405-288.000.

Clarke, Margaret A.: *See—*
Han, Youn W.; and Clarke, Margaret A., 5,547,863, Cl. 435-101.000.

Clarke, Thomas W.: *See—*
Bloemer, John M.; Kurth, Michael J.; Bengtson, Alan D.; Giese, Robert C.; Dannenberg, Todd D.; Thomas, Carter J.; Potter, Edwin R., Jr.; Bonnell, Thomas A.; Halloran, Daniel N.; and Clarke, Thomas W., 5,546,616, Cl. 4-541.200.

Claut, Demetrio; Marangone, Nereo; and Badiali, Roberto, to Savio Macchine Tessili S.r.l. Bobbin winding method and winding machines for yarn winding after controlled cutting of the yarn. 5,547,138, Cl. 242-36.000.

CLECIM: *See—*
Haquin, Michel; and Brosson, Jacques, 5,547,101, Cl. 220-561.000.

Clegg, Lawrence S.; Hunneyball, Ian M.; Jones, Colin G. P.; Rafferty, Paul; and Steele, Leslie, to Boots Company PLC, The. Therapeutic agents useful for treating inflammatory diseases. 5,547,972, Cl. 514-399.000.

Clemson University: *See—*
Jenkins, Thomas C., 5,547,686, Cl. 426-2.000.

Clewer, Richard, to Hughes Aircraft Company. Method and apparatus for eliminating DC offset for digital I/Q demodulators. 5,548,244, Cl. 329-318.000.

Cline, Dan: *See—*
Rountree, Robert N.; Cline, Dan; Walker, Darryl G.; Hii, Francis; and Bergman, David W., 5,548,225, Cl. 326-13.000.

Clipps, Inc.: *See—*
Radvin, Bill; and Schmitt, Steve, 5,546,641, Cl. 24-557.000.

Cloke, Frederick G. N., to BP Chemicals Limited. Polymerization catalysts. 5,548,044, Cl. 526-127.000.

Clorox Company, The: *See—*
Silerman, Jules; and Bieman, Donald N., 5,547,955, Cl. 514-275.000.

Clow, Richard G.: *See—*
Gudat, Adam J.; Rao, Prithvi N.; Shaffer, Gary K.; Shi, Wenfan; Shin, Dong H.; Sennott, James W.; Whittaker, William L.; Kleimenhagen, Karl W.; West, Jay H.; Clow, Richard G.; Wu, Baoxin; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,548,516, Cl. 364-443.000.

Cobb, Gary L.: *See—*
Ginn, Michael W.; Cobb, Gary L.; Broxton, Lawrence E.; and McNeely, Kelly R., 5,547,574, Cl. 210-388.000.

Coca-Cola Company, The: *See—*
North, Thomas G., III; Graham, Thomas; and Wang, Yushan, 5,547,345, Cl. 417-63.000.

Cockerill, George S.: *See—*
Slater, Martin J.; Cockerill, George S.; Littler, Edward; and Yeates, Clive L., 5,547,976, Cl. 514-410.000.

Cognex Corporation: *See—*
Michael, David, 5,548,326, Cl. 348-87.000.

Cohen, Clark E., to LeLand Stanford Junior University. System and method for generating attitude determinations using GPS. 5,548,293, Cl. 342-357.000.

Coherent, Inc.: *See—*
Dewey, David A., 5,548,352, Cl. 351-160.00H.

Cok, Ronald S., to Eastman Kodak Company. Method for layout of arbitrarily sized and shaped icons in a display. 5,548,692, Cl. 395-133.000.

Cole, Herbert S., Jr.; and Sitnik-Nieters, Theresa A., to Martin Marietta Corporation. Method for making an electronics module having air bridge protection without large area ablation. 5,548,099, Cl. 219-121.690.

Cole, Paul A.; Harry, Emory J.; and Wright, Michael A., to Tektronix, Inc. Probe adapter for electronic device. 5,548,223, Cl. 324-754.000.

Colebrand Limited: *See—*
Tusch, Klaus N., 5,547,734, Cl. 428-102.000.

Coleman, Charles P.; Garberg, Dennis D.; and Butler, Thomas J., to Dennis Garberg & Associates, Inc. Method and apparatus for making and filling bags. 5,546,732, Cl. 53-450.000.

Coleman, Thomas A. Rate controlled fluid delivery in dental applications. 5,547,374, Cl. 433-85.000.

Coles, Harry J.; Hannington, Jonathon P.; and Thomas, David R., to Dow Corning Limited. Liquid crystal siloxanes. 5,547,604, Cl. 252-299.010.

Colgate-Palmolive Company: *See—*
Neveras, George J.; McKinney, James C.; Sherman, Adam; Lohrman, Richard L.; and Ziegenhorn, David, 5,547,091, Cl. 215-237.000.

Collee, Pierre E.; and Enright, Dorothy P., to Baker Hughes Incorporated. Method and composition for preserving core sample integrity using a water soluble encapsulating material. 5,546,798, Cl. 73-152.090.

Colletta, Angelo; and Pinti, Medardo, to Centro Sviluppo Materiali S.p.A. Device for the precipitation of particulate in exhaust gases. 5,546,747, Cl. 60-275.000.

Collins, Franklyn M. Fine-line thick film resistors and resistor networks and method of making same. 5,548,268, Cl. 338-307.000.

Collins, James P.; Dorn, Judy; Pahey, James T.; Linehan, Leo; Miller, William J.; Moreau, Wayne; Puttlitz, Erik A.; Smith, Randolph; and Spinillo, Gary, to International Business Machines Corporation. Composition for eliminating microbridging in chemically amplified photoresists comprising a polymer blend of a poly(hydroxystyrene) and a copolymer made of hydroxystyrene and an acrylic monomer. 5,547,812, Cl. 430-270.100.

Color & Design Exhibits: *See—*
LaBruzza, Gabriel M., 5,546,720, Cl. 52-587.100.

Coltrain, Bradley K.: *See—*
Scozzafava, Michael; and Coltrain, Bradley K., 5,547,763, Cl. 428-447.000.

Columbia Gas of Ohio, Inc.: *See—*
Cook, F. Bert; Petty, Stephen E.; Meacham, Howard C., Jr.; Christensen, Richard N.; and McGahey, Kevin R., 5,546,760, Cl. 62-497.000.

Colwell, Robert P.; and Glew, Andrew F., to Intel Corporation. N-wide bypass for data dependencies within register alias table. 5,548,776, Cl. 395-800.000.

Comair Rotron, Inc.: *See—*
Burgers, Phillip, 5,547,339, Cl. 415-119.000.

Combisafe International Aktiebolag: *See—*
Reinklou, Lars A., 5,546,724, Cl. 52-698.000.

Combs, James L.; Crump, Dwayne T.; and Pancoast, Steven T., to International Business Machines Corporation. Desk top computer system having multi-level power management. 5,548,763, Cl. 395-750.000.

Combustion, Tec. Inc.: *See—*
Slavejkov, Aleksandar G.; Broadway, Lee; Joshi, Mahendra L.; and Nabors, James K., 5,547,368, Cl. 431-8.000.

Comision Nacional de Energia Atomica: *See—*
Huck, Hugo A.; Jech, Alberto E.; Righini, Raúl; Halac, Emilia B.; de Benyacar, Maria A. R.; and Hicolai, Julio A., 5,547,714, Cl. 427-523.000,

Commet, Benoit: *See—*
Sainfort, Pierre; Vichery, Hervé; and Commet, Benoît, 5,547,524, Cl. 148-688.000.

Commissariat A L'Energie Atomique: *See—*
Paidassi, Serge; Ernoult, Jacques; Brun, Michel; Monge-Cadet, Pierre; Pauleau, Yves; and Farges, Guy, 5,547,767, Cl. 428-610.000.

Competition Components International Pty Ltd: *See—*
Nicol, Geoffrey P.; Kratz, Brian E.; and Studer, Allen J., 5,548,273, Cl. 340-439.000.

Competition Composites, Inc.: *See—*
Diesen, David; and Olsen, William R., Jr., 5,547,629, Cl. 264-257.000.

Composite Scandinavia AB: *See—*
Berglund, Kurt, 5,547,533, Cl. 156-175.000.

Comstock, Gary M., to Molex Incorporated. Panel mounted electrical connector. 5,547,394, Cl. 439-557.000.

Conair Group, Inc., The: *See—*
Weagraff, Jon J.; and Tavakoli, Kaihan, 5,546,673, Cl. 34-80.000.

Concilio, Ian A.: *See—*
Amini, Nader; Boury, Bechara F.; Brannon, Sherwood; Concilio, Ian A.; Hofmann, Richard G.; and Lohman, Terence J., 5,548,786, Cl. 395-842.000.

Conforti, Robert M.; Kim, Sun-Wook; and Yao, Being-Kung, to Polaroid Corporation. Protected image, and process for the production thereof. 5,547,534, Cl. 156-230.000.

Conley Corporation: *See—*
Chaney, David A., 5,546,977, Cl. 137-312.000.

Connection Systems Group: *See—*
Krock, Albert W., 5,547,152, Cl. 248-74.100.

Conner, Arlie; Biles, Jonathan R.; Scheffer, Terry J.; and Kingsley, Gary B., to In Focus Systems, Inc. Notch filters with cholesteric polarizers with birefringent film and linear polarizer. 5,548,422, Cl. 359-65.000.

Conner, James L.: *See—*
Kornher, Kevin L.; Conner, James L.; and Tew, Claude E., 5,548,301, Cl. 345-85.000.

Conner, John P.; Ross, James W.; Youngs, Bradley D.; Haigh, Paul; and Small, William C., to Steelcase Inc. Furniture worksurface unit and method. 5,546,873, Cl. 108-153.000.

Conner, Paul H. Electron propulsion unit. 5,546,743, Cl. 60-202.000.

Connors, Donald E., Jr.: *See—*
Scaringella, David T.; Connors, Donald E., Jr.; and Thurston, Garrett S., 5,547,717, Cl. 427-590.000.

Conrad, Armin; and Lembke, Torbjörn, to Balzers-Pfeiffer GmbH. Friction pump with magnetic bearings disposed in the impeller. 5,547,338, Cl. 415-90.000.

Consilium, Inc.: *See—*
Tantry, Subhash B.; Mashruwala, Rajesh U.; Lozier, Barry A.; and Hess, Richard L., 5,548,756, Cl. 395-600.000.

Consulting Team, Inc., The: *See—*
Steiner, John E.; and Egbert, Michael P., 5,548,704, Cl. 395-158.000.

Contre Mesure Hyperfrequence C M H: *See—*
Chekroun, Claude; and Sadones, Henri, 5,548,289, Cl. 342-16.000.

Conway, James M. Pivotable safety gate. 5,546,703, Cl. 49-197.000.

Coowell, Stanley L.; and Wood, William P., to Minnesota Mining and Manufacturing Company. Alpha abrasive alumina-based grain having an as sintered outer surface. 5,547,479, Cl. 51-309.000.

Cook, F. Bert; Petty, Stephen E.; Meacham, Howard C., Jr.; Christensen, Richard N.; and McGahey, Kevin R., to Columbia Gas of Ohio, Inc. Generator for absorption heat pumps. 5,546,760, Cl. 62-497.000.

Cooke, Michael P., to Lucas Industries. Fuel injection pump. 5,546,906, Cl. 123-447.000.

Cooley, Ernest W.: *See—*
Butturini, Randal S.; and Cooley, Ernest W., 5,548,109, Cl. 235-462.000.

Coombs, Peter M.; Thogersen, Klaus; and Seibel, Edward, to Bradco (Japan) Ltd. Resilient sheet transport system. 5,547,184, Cl. 271-297.000.

Coons, Andrew M., III: *See—*
Hoyt, Matthew B.; Coons, Andrew M., III; and Dickson, David N., 5,548,037, Cl. 525-426.000.

Cooper, Elizabeth M.; and Leary, Michael, to Digital Equipment Corporation. Method and apparatus for providing high-speed column redundancy. 5,548,553, Cl. 365-200.000.

Cooper Industries, Inc.: *See—*
Yamat, Miguel B., 5,548,089, Cl. 174-142.000.

Cooper, James C.; and Anderson, Steven J., to Pixel Instruments. Phase shifting apparatus and method with frequency multiplication. 5,548,236, Cl. 327-237.000.

Cooper, Lloyd B.: *See—*
MacLeod, David L.; Sayler, Jack M., Jr.; and Cooper, Lloyd B., 5,546,658, Cl. 30-28.000.

Cooper, Stafford S.: *See—*
Ballard, John H.; Cooper, Stafford S.; Morgan, John C.; Lawrence, William R.; and Reed, Bobby E., 5,548,115, Cl. 250-253.000.

Cope, Frederick O.; DeWille, Normanella T.; Richards, Ernest W.; Mazer, Terrence B.; Abbruzzese, Bonnie C.; Snowden, Gregory A.; Parlet, Nickki L.; and Pease, Laura A., to Abbott Laboratories. Enteral nutritional product for patients undergoing radiation therapy and/or chemotherapy. 5,547,927, Cl. 514-2.000.

Corbett, Tim J.; and Moden, Walter L., to Micron Technology, Inc. Method and structure for attaching a semiconductor die to a lead frame. 5,548,160, Cl. 257-666.000.

Corcoran, Patrick E., to Hutchinson. Hydraulic antivibration supports, and to methods of manufacturing them. 5,547,172, Cl. 267-140.130.

Cordes, Hans; Krumm, Helmut; Schwartz, Ludwig; Kahn, Ilan; Cornils, Gerd; and Behrend, Ulrich, to Saint Gobain Virtage International. Apparatus for producing a glazing equipped with a peripheral frame based on a polymer. 5,547,359, Cl. 425-125.000.

Cornell, Edward C. Electrical bio-hazardous needle destroyer with a spiral electrode. 5,548,095, Cl. 219-68.000.

Cornell, Michael E.: *See—*
Williams, Richard K.; Yilmaz, Hamza; Cornell, Michael E.; and Chen, Jun W., 5,547,880, Cl. 437-15.000.

Cornell, Ralph E.: *See—*
Higdon, William D.; Mack, Susan A.; and Cornell, Ralph E., 5,547,740, Cl. 428-209.000.

Cornils, Gerd: *See—*
Cordes, Hans; Krumm, Helmut; Schwartz, Ludwig; Kahn, Ilan; Cornils, Gerd; and Behrend, Ulrich, 5,547,359, Cl. 425-125.000.

Corning Incorporated: *See—*
Chalasani, Devi; Friske, Mark S.; and Johnson, Ronald E., 5,547,622, Cl. 264-60.000.
Rittler, Hermann L., 5,547,720, Cl. 428-34.000.

Cory, Mark D.: *See—*
Van Doorn, Donald W.; Hawkins, James B.; and Cory, Mark D., 5,546,855, Cl. 100-11.000.

Costa, Peter F.: *See—*
Kloeckl, Terrance; Thompson, Todd; Costa, Peter F.; Holmes, William A.; and Daulton, Jay, 5,547,474, Cl. 606-143.000.

Costello, Mark, to Xerox Corporation. Printer mailbox split jobs overflow banner sheet indicator system. 5,547,178, Cl. 270-52.020.

Cote, Mark P.: *See—*
Butler, Walter K.; Cote, Mark P.; Napiorkowski, John J.; Kroll, Thomas W.; Brower, Boyd G.; and Mickelson, N. Peter, 5,548,641, Cl. 379-399.000.

Cotten, Matthew: *See—*

Curiel, David T.; Birnstiel, Max L.; Cotten, Matthew; Wagner, Ernst; Zatloukal, Kurt; Plank, Christian; Oberhauser, Berndt; and Schmidt, Walter G. M., 5,547,932, Cl. 435-65.000.

Cotton, Harvey E., to Houston Industries Incorporated. Vibration monitor mounting block. 5,546,809, Cl. 73-644.000.

Cotton, Peter B.: *See*—
Rowland, Christopher A.; Vergano, Michael G.; Eddy, Bryan P.; and Cotton, Peter B., 5,547,469, Cl. 604-22.000.

Couch, Richard W., Jr; Luo, Lifeng; and Peterson, Jeffrey L., to Hypertherm, Inc. Plasma arc cutting torch ignition circuit and method providing a forced arc transfer function. 5,548,097, Cl. 219-121.570.

Couchee, Kent. Nail gun handle extension. 5,546,749, Cl. 60-370.000.

Coulonvaux, Paul R., to Donaldson Company, Inc. Cylindrical air filter with radially directed seal. 5,547,480, Cl. 55-498.000.

Coulson, Rick: *See*—
Young, Bruce; and Coulson, Rick, 5,548,730, Cl. 395-280.000.

Coultas, Robyn D.: *See*—
Hernandez, Celimo P.; and Coultas, Robyn D., 5,548,524, Cl. 364-489.000.

Council of Scientific & Industrial Research: *See*—
Kulsrestha, Girindra N.; Saxena, Mahendra P.; Gupta, Ashok K.; Goyal, Hari B.; Prasad, Rameshwar; Prasada Rao, Turuga S. R.; and Patel, Prakash D., 5,547,905, Cl. 502-66.000.

Coupet, Jean–Marie. Sliding device for a sliding panel. 5,546,706, Cl. 49-420.000.

Coveley, Michael. Adaptive system for self-tuning and selecting a carrier frequency in a radio frequency communication system. 5,548,821, Cl. 455-67.400.

Cowdery-Corvan, Peter J.: *See*—
Melpolder, Sharon M.; Anderson, Charles C.; Cowdery-Corvan, Peter J.; and DeCory, John F., 5,547,821, Cl. 430-527.000.

Cox, James: *See*—
Lapinski, Charles; Eckert, Charles; Skokowski, Richard; Cox, James; Scott, William; Chaleff, Edward; and Wagh, Meghanad D., 5,548,107, Cl. 235-462.000.

Coyote Engineering Services, Inc.: *See*—
Swartz, Harold L.; and Anderson, Jane E., 5,546,805, Cl. 73-514.020.

CPS - Chemical Products & Services A/S: *See*—
Madsen, Claus H., 5,547,567, Cl. 210-167.000.

Crafton, Eddie L.: *See*—
McAlister, Ronald E.; Crafton, Eddie L.; and Keever, Ervin N., 5,546,622, Cl. 8-151.000.

Craig, Franklin J.: *See*—
Weder, Donald E.; Weder, E. H.; Dunn, R. E. Jack; and Craig, Franklin J., 5,546,699, Cl. 47-72.000.

Craig, Gerald W.: *See*—
Eberle, Martin; Schaub, Fritz; and Craig, Gerald W., 5,547,919, Cl. 504-242.000.

Craven, Peter G., to B&W Loudspeakers Ltd. Analogue and digital convertors using pulse edge modulators with non-linearity error correction. 5,548,286, Cl. 341-126.000.

Cray Research, Inc.: *See*—
Schroeder, Paul; and Tobkin, Michael, 5,548,372, Cl. 355-53.000.

Creative Integrated Systems, Inc.: *See*—
Komarek, James A.; Minney, Jack L.; Nordine, Stephen P.; Lewis, Harold F.; Wada, Richard; and Stockman, John F., 5,548,592, Cl. 370-85.100.

Creedon, Tadhg; Hickey, John; and O'Neil, Eugene G., to Digital Equipment Corporation. Implementation efficient interrupt select mechanism. 5,548,762, Cl. 395-733.000.

Cross, Virginia R.: *See*—
Tse, Mun F.; Cross, Virginia R.; and Trudell, Barry C., 5,548,014, Cl. 524-477.000.

Croto, John F.: *See*—
Miller, Frank S.; and Croto, John F., 5,546,824, Cl. 74-421.00R.

Crouch, Earl R., Jr.: *See*—
Williams, Patricia B.; and Crouch, Earl R., Jr., 5,547,680, Cl. 424-427.000.

Crowley, Robert J.: *See*—
Hamm, Mark A.; and Crowley, Robert J., 5,546,948, Cl. 128-662.060.

Crump, Dwayne T.: *See*—
Combs, James L.; Crump, Dwayne T.; and Pancoast, Steven T., 5,548,763, Cl. 395-750.000.

Cselt-Centro Studi E Laboratori Telecomunicazioni S.P.A.: *See*—
Calvani, Riccardo; Caponi, Renato; Cisternino, Francesco; and Roccato, Diego, 5,548,603, Cl. 372-25.000.

Cubital Ltd.: *See*—
Zur, Albert, 5,548,315, Cl. 347-112.000.

Cullen, Thomas G.: *See*—
Henrie, Robert N., II; Peake, Clinton J.; Cullen, Thomas G.; Chaguturu, Munirathnam K.; Ray, Partha S.; and Bennett, Brian D., 5,547,954, Cl. 514-258.000.

Cullinan, George J., to Eli Lilly and Company. Methods for inhibiting bone loss with vanadyl sulfate. 5,547,685, Cl. 424-600.000.

Cumming, Ronald F.; and Fraser, Donald A. Kindling wood splitter device. 5,547,001, Cl. 144-195.400.

Cunningham, Elwood L.: *See*—
Steffens, Hermann J.; and Cunningham, Elwood L., 5,547,136, Cl. 241-73.000.

Cunningham, Michael P.; and Evans, Steven, to Eastman Kodak Company. Optical recording elements having recording layers containing mixtures of formazan and cyanine dyes. 5,547,728, Cl. 428-64.100.

Cunningham, Michael P.: *See*—
Shuttleworth, Leslie; Weidner, Charles H.; and Cunningham, Michael P., 5,547,727, Cl. 428-64.100.

Curiel, David T.; Birnstiel, Max L.; Cotten, Matthew; Wagner, Ernst; Zatloukal, Kurt; Plank, Christian; Oberhauser, Berndt; and Schmidt, Walter G. M., to Boehringer Ingelheim International GmbH; and Genentech, Inc. Composition for introducing nucleic acid complexes into higher eucaryotic cells. 5,547,932, Cl. 435-65.000.

Curran, Robert M.: *See*—
Podgorski, Theodore J.; Thorland, Rod; and Curran, Robert M., 5,548,602, Cl. 372-19.000.

Curtin, Shawn T.: *See*—
Robinson, Anthony D.; and Curtin, Shawn T., 5,546,632, Cl. 16-54.000.

Cushing, John A.: *See*—
Grutter, Peter J.; Gerhart, Matthew J.; Gladd, Matthew J.; and Cushing, John A., 5,547,435, Cl. 477-110.000.

Cusick, Michael J.; Weinstein, Michael A.; and Olds, Leonard E., to Schuller International, Inc. Method for the melting, combustion or incineration of materials and apparatus therefor. 5,548,611, Cl. 373-18.000.

Custom Clothing Technology Corporation: *See*—
Park, Sung K.; Palmer, Bethe M.; and Ruderman, Gerald S., 5,548,519, Cl. 364-470.060.

Cytec Technology Corp.: *See*—
Santini, John J.; and Yankie, N. Alan, 5,548,020, Cl. 524-801.000.
Szita, Jeno G.; and Waterman, Paul S., 5,547,753, Cl. 428-357.000.

Daenen, Robert H. C. M.: *See*—
Lillelund, Stig; Heiberg, Jakob; and Daenen, Robert H. C. M., 5,547,275, Cl. 366-130.000.

Daewoo Electronics Co., Ltd.: *See*—
Choi, Young S., 5,546,836, Cl. 82-132.000.
Kang, Kwon-Hag, 5,548,337, Cl. 348-445.000.

Daewoo Heavy Industries Ltd.: *See*—
Lee, Kee S.; Kim, Won G.; and Park, Yeong J., 5,548,193, Cl. 318-568.110.
Lee, Seung K., 5,547,244, Cl. 296-102.000.

Daftary, Fereidoun. Anatomical restoration dental implant system with interlockable various shaped healing cap assembly and matching abutment member. 5,547,377, Cl. 433-172.000.

Dahlin, Craig D. T.: *See*—
Schwartz, Jerome L.; Cabelli, Michael D.; Silvia, John C.; and Dahlin, Craig D. T., 5,547,555, Cl. 204-418.000.

Dahmen, Kurt: *See*—
Brehm, Helmut; Dahmen, Kurt; and Mertens, Richard, 5,548,049, Cl. 526-312.000.

Dahringer, Donald W., to AT&T Corp. Molded plastic packaging of electronic devices. 5,548,087, Cl. 174-52.400.

Dai Nippon Printing Co., Ltd.: *See*—
Nishizawa, Masumi; Iijima, Masayuki; and Miyama, Takashi, 5,547,804, Cl. 430-114.000.

Daicel Chemical Industries, Ltd.: *See*—
Yamato, Tsutomu; Oshino, Yasuhiro; Fukuda, Yutaka; Kanno, Tatsuya; Kuwana, Takaaki; and Okano, Yoshimichi, 5,548,041, Cl. 526-62.000.

Daido Tokushuko Kabushiki Kaisha: *See*—
Inagaki, Yoshio; Shinkai, Motoshi; Tsuno, Masahide; and Nagatani, Akihiro, 5,547,489, Cl. 75-512.000.
Matsuo, Kunio; and Nomura, Tamotsu, 5,548,612, Cl. 373-73.000.

Daikoku, Akihiro: *See*—
Kimura, Yutaro; Ikeshima, Tetsuhiko; Tonami, Hiromichi; Konishi, Ikuo; Horikawa, Hiroshi; Daikoku, Akihiro; Sakabe, Shigekazu; Inoue, Masao; and Yamasaki, Akinori, 5,548,629, Cl. 378-134.000.

Daimler-Benz Aerospace AG: *See*—
Wanninger, Paul; Wild, Richard; Kleinschmidt, Ernst; and Späth, Helmut, 5,547,526, Cl. 149-19.200.

Daimler-Benz Ag: *See*—
Ammon, Dieter, 5,548,536, Cl. 364-565.000.
Fletcher, Nicholas J.; Chow, Clarence Y.; Pow, Eric G.; Wozniczka, Boguslaw M.; Voss, Henry H.; and Hornburg, Gerald, 5,547,776, Cl. 429-13.000.

Daiwa Seiko, Inc.: *See*—
Aizawa, Yuichi; Kimura, Mahito; and Imai, Yasuto, 5,547,194, Cl. 473-350.000.
Kaneko, Kyoichi, 5,547,139, Cl. 242-231.000.

Dake, Guy M.: *See*—
Aldous, Stephen C.; and Dake, Guy M., 5,547,401, Cl. 439-676.000.

Dalgleish, Kevin L.; Hoe, Sei S.; Reinhart, Gregory R.; Somoza, Vincent E.; Pike, Rodney D.; Moss, John S.; and Tencer, Michal, to Northern Telecom Limited. Wireless base station-having cooling passages. 5,548,643, Cl. 379-429.000.

Dall, Fredric C.: *See*—
Camilletti, Robert C.; Dall, Fredric C.; and Dunn, Diana K., 5,547,703, Cl. 427-126.300.

Dallas Semiconductor Corp.: *See*—
Zanders, Gary V.; Scherpenberg, Francis A.; and Deierling, Kevin E., 5,548,550, Cl. 365-185.080.

Dalton, William S.; Clark, Richard S.; and Trunkett, Kevin S., to IMO Industries, Inc. Spillstrip design for elastic fluid turbines. 5,547,340, Cl. 415.00-121.200.

Damerow, David H.: *See*—

Rauth, Cindy C.; Frogge, Perry W.; and Damerow, David H., 5,548,542, Cl. 364-724.160.

Damiano, John, Jr.: *See*—
Batra, Shubneesh; Manning, Monte; Banerjee, Sanjay; and Damiano, John, Jr., 5,548,132, Cl. 257-66.000.

Dana Corporation: *See*—
Binford, John D., 5,547,203, Cl. 277-224.000.

Dancs, Imre J.; and Savage, Frank, to S. C. Johnson & Son, Inc. Device for dispensing a volatile active ingredient. 5,547,616, Cl. 261-26.000.

Dang, Anh H. Compact desk with locking enclosure. 5,547,270, Cl. 312-194.000.

Daniel, Bernard. Early warning tornado detector. 5,546,800, Cl. 73-170.160.

Daniel Industires, Inc.: *See*—
Wass, Donald J.; and Carter, Anthony E., 5,546,990, Cl. 138-44.000.

Danieli & C. Officine Meccaniche SpA: *See*—
Di Giusto, Bruno, 5,546,782, Cl. 72-240.000.

Danieli United, Inc.: *See*—
Ginzburg, Vladimir B., 5,546,779, Cl. 72-11.400.

Daniells, Norman G., to Boral Resources (QLD) pty Limited. Clean out block assembly. 5,546,721, Cl. 52-606.000.

Danknick, Daniel A., to Canon Information Systems, Inc. System for reducing bus contention using counter of outstanding acknowledgement in sending processor and issuing of acknowledgement signal by receiving processor to indicate available space in shared memory. 5,548,728, Cl. 395-200.140.

Dannenberg, Todd D.: *See*—
Bloemer, John M.; Kurth, Michael J.; Bengtson, Alan D.; Giese, Robert C.; Dannenberg, Todd D.; Thomas, Carter J.; Potter, Edwin R., Jr.; Bonnell, Thomas A.; Halloran, Daniel N.; and Clarke, Thomas W., 5,546,616, Cl. 4-541.200.

Dannheim, Jörg; Oehme, Dieter; and Tappe, Horst, to Hoechst Aktiengesellschaft. Water-soluble phenyl azo aminoaphtol azo compounds containing a fibre-reactive group of the vinylsulfone series and a morpholino-fluorotriazinyl group, suitable as dyestuffs. 5,548,072, Cl. 534-635.000.

Dansk Industri Syndikat A/S: *See*—
Johansen, Jan B., 5,547,015, Cl. 164-456.000.

D'Antuono, Robert A.; and Kirk, William J. Child's seating device. 5,547,256, Cl. 297-377.000.

Dart Industries Inc.: *See*—
Lillelund, Stig; Heiberg, Jakob; and Daenen, Robert H. C. M., 5,547,275, Cl. 366-130.000.

Dasgupta, Sankar; and Jacobs, James K. Current collector for lithium ion battery. 5,547,782, Cl. 429-194.000.

Data Parallel Systems, Inc.: *See*—
Bridges, Timothy R., 5,548,770, Cl. 395-800.000.

Datta, Asis; Mehta, Anuradha; and Natarajan, K., to Zeneca Limited. Oxalate decarboxylate. 5,547,870, Cl. 435-240.400.

Daugherty Jr., David W.; Kanjo, Wajih; and Hawryszkow, Michael G., to Westinghouse Air Brake Company. Slackless drawbar assembly utilizing a ball and race assembly. 5,547,089, Cl. 213-62.00R.

Daulton, Jay: *See*—
Kloeckl, Terrance; Thompson, Todd; Costa, Peter F.; Holmes, William A.; and Daulton, Jay, 5,547,474, Cl. 606-143.000.

Dauth, Jochen; Deubzer, Bernward; Mayer, Elfriede; Nuyken, Oskar; Voit, Brigitte; and Kollefrath, Ralf, to Wacker-Chemie GmbH. Organosilicon compounds having triazene groups. 5,548,070, Cl. 534-550.000.

Davenport, Clyde F. Multi-purpose water pressure plunger. 5,546,613, Cl. 4-255.050.

David Sarnoff Research Center, Inc.: *See*—
Avery, Leslie R., 5,548,135, Cl. 257-173.000.

Davidson, Allen L.: *See*—
Hess, Garry C.; and Davidson, Allen L., 5,548,837, Cl. 455-278.100.

Davies, Scott T.: *See*—
Reed, Steven J.; Wallgren, Robert L.; Davies, Scott T.; Wojtan, George R.; and Gazzara, Paul, 5,548,489, Cl. 361-827.000.

Davies, Stephen H., to Lucas Industries public limited company. Lock for an engine thrust reverser. 5,547,130, Cl. 239-265.290.

Davis, Alan: *See*—
Jones, Craig S.; and Davis, Alan, 5,548,783, Cl. 395-836.000.

Davis, Bruce W.: *See*—
Juprasert, Max S.; and Davis, Bruce W., 5,547,022, Cl. 166-263.000.

Davis, Jack R.; Gallup, Michael G.; Goke, L. Rodney; Welty, Erik L.; and Wiles, Michael F., to Motorola Inc. Multi-processor data processing system having multiple ports coupled to multiple interface circuits. 5,548,771, Cl. 395-800.000.

Dawe, David J.: *See*—
Lyon, John C., 5,547,097, Cl. 220-23.830.

DBT Deutsche Bergau-Technik GmbH: *See*—
Braun, Ernst; and Braun, Gert, 5,547,262, Cl. 299-43.000.

DCI Marketing, Inc.: *See*—
Zakrajsek, Jerry, 5,547,306, Cl. 403-202.000.

DCS Corporation: *See*—
Gaynor, Edwin S.; Massimi, Michael S.; Blase, William P.; and Isser, Abraham, 5,548,418, Cl. 359-20.000.

De La Rue Systems Limited: *See*—
Brotherston, Colin P., 5,547,180, Cl. 271-96.000.

Dean, Mark E.: *See*—
Carpenter, Gary D.; Dean, Mark E.; Faucher, Marc R.; Peterson, James C.; and Tanner, Howard C., 5,548,746, Cl. 395-500.000.

DeAngelis, Andrew V. Printing method and apparatus. 5,547,225, Cl. 281-211.000.

de Benyacar, Maria A. R.: *See*—
Huck, Hugo A.; Jech, Alberto E.; Righini, Raúl; Halac, Emilia B.; de Benyacar, Maria A. R.; and Hicolai, Julio A., 5,547,714, Cl. 427-523.000.

de Bruin, Bas H.: *See*—
Kool, Anthonie F.; Van de Griendt, Michiel A.; de Bruin, Bas H.; Schepes, Gerardus N.; and Lucieer, Willem J., 5,548,397, Cl. 356-141.100.

Decker, Jean, to ProfilARBED S.A. Process for effecting sealed sheet pile construction and device for application of the sealant resulting in an impermeable sealed sheet pile construction. 5,547,318, Cl. 405-303.000.

Decker, Matthew J.; Eustice, Todd C.; Rau, Douglas; and Boers, Arie, to Wenger Corporation. Portable performance platform with rain exclusion means and hydraulic actuator. 5,546,709, Cl. 52-66.000.

Decore, Bertrand; and Jadaud, Alain, to Legrand; and Legrand SNC. Device for butt-jointing perforated cable tray sections. 5,547,307, Cl. 403-294.000.

DeCory, John F.: *See*—
Melpolder, Sharon M.; Anderson, Charles C.; Cowdery-Corvan, Peter J.; and DeCory, John F., 5,547,821, Cl. 430-527.000.

Dee, Richard H., to Storage Technology Corporation. Method of manufacturing a multiple track thin film recording head. 5,546,650, Cl. 29-603.160.

Deeg, Markus: *See*—
Brehm, Werner; Keuerleber, Horst; Koepff, Georg; and Deeg, Markus, 5,547,165, Cl. 251-129.160.

De Felippis, Michael R.: *See*—
Anderson, James H., Jr.; De Felippis, Michael R.; Frank, Bruce H.; and Havel, Henry A., 5,547,929, Cl. 514-3.000.

Defieuw, Geert; Janssens, Wilhelmus; Vanmaele, Luc; Dewanckele, Jean-Marie; and Uytterhoeven, Herman, to Agfa-Gevaert, N.V. Thermal transfer imaging system based on the heat transfer of a reducing agent for reducing a silver source to metallic silver. 5,547,809, Cl. 430-200.000.

Defieuw, Geert; and Van Damme, Marc, to Agfa-Gevaert. Method for cleaning a thermal head. 5,547,917, Cl. 503-227.000.

DeFrance, Robert V.: *See*—
Nellis, Robert A., Jr.; DeFrance, Robert V.; and Matlock, Richard R., 5,547,404, Cl. 439-803.000.

Degaard, John. Piano key identification system. 5,546,843, Cl. 84-478.000.

Degen, Helmut: *See*—
Lange, Arno; Degen, Helmut; Lamm, Gunther; Reichelt, Helmut; and Wegerle, Dieter, 5,547,477, Cl. 8-639.000.

Degrassi, Alfieri; and Furrer, William W., to AlliedSignal Inc. Retortable polymeric films. 5,547,765, Cl. 428-474.700.

Degussa Aktiengesellschaft: *See*—
Gleissner, Karlheinz; Ringelstein, Hans-Martin; and Lange, Ekkehard, 5,547,625, Cl. 264-122.000.

De Haas, Peter W.: *See*—
Haisma, Jan; Kamerbeek, Evert M. H.; Spierings, Gijsbertus A. C. M.; and De Haas, Peter W., 5,547,119, Cl. 228-116.000.

Deierling, Kevin E.: *See*—
Zanders, Gary V.; Scherpenberg, Francis A.; and Deierling, Kevin E., 5,548,550, Cl. 365-185.080.

Deitz, Rolf; Tzikas, Athanassios; and Herzig, Paul, to Ciba-Geigy Corporation. Fiber-reactive triazine dyes with one AZO chromophore having a vinylsulfonyl type reactive radical and a second chromophore. 5,548,071, Cl. 534-612.000.

Dejeux, Philippe: *See*—
Perthuis, Hervé; Feraud, Jean-Pierre; Dejeux, Philippe; and Maroy, Pierre, 5,547,926, Cl. 507-258.000.

Dekeyser, Michel. Device forming packaging for quantities of a glutinous substance. 5,546,728, Cl. 53-133.100.

Delamotte, Jean C., to Raychem S.A. Coaxial cable termination arrangement. 5,547,395, Cl. 439-578.000.

Delavaux, Jean-Marc P., to AT&T Corp. Bidirectional optical amplifier. 5,548,438, Cl. 359-341.000.

Delco Electronics Corporation: *See*—
Higdon, William D.; Mack, Susan A.; and Cornell, Ralph E., 5,547,740, Cl. 428-209.000.
Skiver, Steven G.; and Leung, Mankong H., 5,546,888, Cl. 116-286.000.
Sparks, Douglas R., 5,547,093, Cl. 216-2.000.

Dell USA, L.P.: *See*—
Jones, Craig S.; and Davis, Alan, 5,548,783, Cl. 395-836.000.

Del Monte, Berardino; and Barone, Ralph P., to United Technologies Corporation. Crashworthy landing gear. 5,547,148, Cl. 244-104.0FP.

Demejo, Lawrence P.: *See*—
Chen, Jiann-Hsing; Demejo, Lawrence P.; Roberts, Gary P.; Kosakowski, Richard J.; Aslam, Muhammed; and Derimiggio, John E., 5,547,759, Cl. 428-421.000.

De Meutter, Stefaan; Van Goethem, Eugeen; Schuerwegen, Ronald; and Horsten, Bartholmeus, to Agfa-Gevaert, N.V. Direct thermal imaging material. 5,547,914, Cl. 503-210.000.

Demizu, Ichiro; Nagai, Yasuki; Nakamura, Mitsutoshi; Tanigami, Yukio; and Ueda, Hideaki, to Minolta Co., Ltd. Toner for electrostatic latent image developing. 5,547,794, Cl. 430-106.000.

Demmel, Edward J.; and Owen, Hartley, to Mobil Oil Corporation. Method and system for controlling the activity of a crystalline zeolite cracking catalyst. 5,547,910, Cl. 502-42.000.

Demmer, Wolfgang; Hörl, Hans-Heinrich; Nussbaumer, Dietmar; Weiss, Abdul R.; and Winn, Eberhard, to Sartorius AG. Method for the surface modification of formed bodies and formed bodies produced thereby. 5,547,575, Cl. 210-490.000.

Denham, Lilibeth K.: *See*—

Dorval, Brent L.; Denham, Lilibeth K.; and Klibanov, Alexander M., 5,547,833, Cl. 435-5.000.

Denki Kagaku Kogyo Kabushiki Kaisha: *See*—
Watanabe, Chiharu; Nakano, Tatsuo; and Kato, Kazuo, 5,547,758, Cl. 428-413.000.

Dennis Garberg & Associates, Inc.: *See*—
Coleman, Charles P.; Garberg, Dennis D.; and Butler, Thomas J., 5,546,732, Cl. 53-450.000.

deNormand, Richard S.; and Milligan, Patrick E., to Caldwell Manufacturing Company. Adjustable brace for window sash. 5,546,702, Cl. 49-161.000.

Denslow, David L., to Harris Corporation. Method of conducting secure operations on an uncontrolled network. 5,548,721, Cl. 395-187.010.

Dent, Paul W.: *See*—
Charas, Philippe M.; and Dent, Paul W., 5,548,813, Cl. 455-33.300.

Derimiggio, John E.: *See*—
Chen, Jiann-Hsing; Demejo, Lawrence P.; Roberts, Gary F.; Kosakowski, Richard J.; Aslam, Muhammed; and Derimiggio, John E., 5,547,759, Cl. 428-421.000.

DeRoyal Industries, Inc.: *See*—
Luttrell, Tammy C.; and Hollendorfer, Paul, 5,547,464, Cl. 602-26.000.

De Ruyter, Hendricus C.: *See*—
Bijker, Wolter; Kasperkovitz, Wolfdietrich G.; De Ruyter, Hendricus C.; and Sloof, Willem A., 5,548,831, Cl. 455-207.000.

DeSouza, Jose P.: *See*—
Brandom, Donald K.; DeSouza, Jose P.; Baird, Donald G.; and Wilkes, Garth L., 5,547,996, Cl. 521-134.000.

Detrick, John H.; and Carney, Frederick T., Jr., to RLC Technologies, L.L.C. Machine system and process for producing attrition resistant slow release fertilizers. 5,547,486, Cl. 71-28.000.

Dettmering, Todd J.: *See*—
Graushar, William T.; and Dettmering, Todd J., 5,547,175, Cl. 270-037.000.

Deubzer, Bernward: *See*—
Dauth, Jochen; Deubzer, Bernward; Mayer, Elfriede; Nuyken, Oskar; Voit, Brigitte; and Kollefrath, Ralf, 5,548,070, Cl. 534-550.000.

Deutsche Spezialglas A.G.: *See*—
Kassner, Reinhard, 5,548,353, Cl. 351-168.000.

Deutsche Star GmbH: *See*—
Hutzel, Bernhard; Blaurock, Günter; and Klein, Michael, 5,547,285, Cl. 384-15.000.

Deutsche Thomson-Brandt GmbH: *See*—
Hirtz, Gangolf, 5,548,191, Cl. 315-399.000.

DeVane, Charles J.; and Beaverson, Arthur J., to Digital Equipment Corporation. System and method for analyzing large logic trace array. 5,548,719, Cl. 395-183.150.

DeVaney, David B., to Astronet. Method and system for locating mobile units in a cellular telephone system by use of virtual location areas. 5,548,816, Cl. 455-53.100.

Devenyi, Gabor; and Stenton, Conrad, to Hughes Aircraft Company. Optical sight assembly. 5,548,442, Cl. 359-432.000.

Devier, Lonnie J.: *See*—
Gudat, Adam J.; Rao, Prithvi N.; Shaffer, Gary K.; Shi, Wenfan; Shin, Dong H.; Sennott, James W.; Whittaker, William L.; Kleimenhagen, Karl W.; West, Jay H.; Clow, Richard G.; Wu, Baoxin; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,548,516, Cl. 364-443.000.

Deville, Yannick, to U.S. Philips Corporation. Neural comprising means for calculating a norm or a distance. 5,548,686, Cl. 395-27.000.

Dewanckele, Jean-Marie: *See*—
Defieuw, Geert; Janssens, Wilhelmus; Vanmaele, Luc; Dewanckele, Jean-Marie; and Uytterhoeven, Herman, 5,547,809, Cl. 430-200.000.

Dewey, David A., to Coherent, Inc. Anti-astigmatic ophthalmic contact lens for use in performing laser surgery. 5,548,352, Cl. 351-160.00H.

DeWille, Normanella T.: *See*—
Cope, Frederick O.; DeWille, Normanella T.; Richards, Ernest W.; Mazer, Terrence B.; Abbruzzese, Bonnie C.; Snowden, Gregory A.; Parlet, Nickki L.; and Pease, Laura A., 5,547,927, Cl. 514-2.000.

Dexheimer, Edward M.: *See*—
Harrison, Richard P.; Brown, Bari W.; Rossio, Richard C.; Aviles, Gladys M.; Dexheimer, Edward M.; and Ho, David, 5,547,608, Cl. 252-357.000.

Dhaemers, Gregory L. Armoire adaptable to a sauna, drum dryer, and tubular lighted clothing dryer with humidity damper control of exhaust gases. 5,546,678, Cl. 34-275.000.

Dhaon, Madhup K.; Lundell, Edwin O.; Sarin, Virender K.; Baxter, Constance H.; and Absolom, Darryl R., to Abbott Laboratories. Pulmonary surfactant protein fragments. 5,547,937, Cl. 514-12.000.

Dias, Anthony J.: *See*—
Powers, Kenneth W.; Wang, Hsien-Chang; Chung, T-C.; Dias, Anthony J.; and Olkusz, Joseph A., 5,548,023, Cl. 525-69.000.
Powers, Kenneth W.; Wang, Hsien-Chang; Chung, T-C.; Dias, Anthony J.; and Olkusz, Joseph A., 5,548,029, Cl. 525-195.000.

Dibble, Gary E.; Morehouse, Wallace F.; and Blackman, Ralph G., to Dresser-Rand. Ring support assembly. 5,546,837, Cl. 82-169.000.

Dibble, Kevin S.: *See*—
Bailey, Chase B.; Fosmark, Klaus S.; Lauffenberger, Kenneth A.; Perry, William A.; and Dibble, Kevin S., 5,548,587, Cl. 370-60.100.

Dibble, Robert W.: *See*—
Edgar, Bradley; and Dibble, Robert W., 5,547,650, Cl. 423-235.000.

Dickow, Achim, to Pierburg GmbH. Method and apparatus for measuring the concentration of solid particles (soot) in the exhaust gases of internal combustion engines. 5,546,788, Cl. 73-28.010.

Dickson, David N.: *See*—
Hoyt, Matthew B.; Coons, Andrew M., III; and Dickson, David N., 5,548,037, Cl. 525-426.000.

Didier-Werke AG: *See*—
Angeler, Alois; Kaune, Harald; and Scheuten, Theo, 5,547,170, Cl. 266-47.000.
Brückner, Raimund; and Gimpera, José, 5,547,014, Cl. 164-437.000.

DiDonato, Anthony: *See*—
McEwen, John; Tolzman, David; and DiDonato, Anthony, 5,546,879, Cl. 112-282.000.

Diehl, Joel C. Imitation ceremonial rice. 5,547,719, Cl. 428-15.000.

Dienes Werke für Maschinenteile GmbH & Co. KG: *See*—
Supe-Dienes, Rudolf, 5,546,840, Cl. 83-478.000.

Dierschke, Eugene G.; and Berlien, John H., Jr. Method of making position sensing photosensor device. 5,547,879, Cl. 437-2.000.

Diesen, David; and Olsen, William R., Jr., to Competition Composites, Inc. Method for manufacturing a one-piece molded composite airfoil. 5,547,629, Cl. 264-257.000.

Diethorn, Eric J., to AT&T Corp. Optimization of adaptive filter tap settings for subband acoustic echo cancelers in teleconferencing. 5,548,642, Cl. 379-410.000.

Dietrich, Brenda L.; and Wittrock, Robert J., to International Business Machines Corporation. Allocation method for generating a production schedule. 5,548,518, Cl. 364-468.060.

Dietz, Louis J.: *See*—
Baer, Thomas M.; Dietz, Louis J.; Dubrow, Robert S.; Hayter, Paul G.; Hodges, Michael; Manian, Bala S.; and Shartle, Robert J., 5,547,849, Cl. 435-7.240.

Digital Control Corp.: *See*—
Parker, Donald R., 5,546,799, Cl. 73-170.110.

Digital Equipment Corporation: *See*—
Cooper, Elizabeth M.; and Leary, Michael, 5,548,553, Cl. 365-200.000.
Creedon, Tadhg; Hickey, John; and O'Neil, Eugene G., 5,548,762, Cl. 395-733.000.
DeVane, Charles J.; and Beaverson, Arthur J., 5,548,719, Cl. 395-183.150.
Wooldridge, James A.; Brender, Ronald F.; and Grieb, Henry N., III, 5,548,717, Cl. 395-183.140.

Di Giusto, Bruno, to Danieli & C. Officine Meccaniche SpA. Machine to sharpen bars to a point. 5,546,782, Cl. 72-240.000.

Di Leo, Anthony J.: *See*—
Tarbet, Bryon J.; Bruening, Ronald L.; Di Leo, Anthony J.; Goddard, Philip M.; and Scarmoutzos, Louis M., 5,547,760, Cl. 428-471.000.

Di Lullo Arias, Gino F., to BJ Services Co. Method of using construction grade cement in oil and gas wells. 5,547,024, Cl. 166-292.000.

Ding, Charles Z.: *See*—
Atwal, Karnail S.; Ferrara, Francis N.; and Ding, Charles Z., 5,547,966, Cl. 514-352.000.

Dingler, Gerhard. Construction element. 5,547,726, Cl. 428-57.000.

Dinkel, Dieter: *See*—
Beck, Erhard; Dinkel, Dieter; and Haupt, Karlheinz, 5,547,266, Cl. 303-113.200.

Dinkelmann, Friedrich; Vetter, Dieter; and Samp, Manfred, to Zinser Textilmaschinen GmbH. Actuating linkage for bobbin changer. 5,546,740, Cl. 57-266.000.

Di Perna, Paul M., to Baxter International Inc. Centrifuge with sloped rotational axis and functional components mounted on complementing sloped panel. 5,547,453, Cl. 494-60.000.

Dirx, Lieven: *See*—
Wouters, Paul; and Dirx, Lieven, 5,547,298, Cl. 400-692.000.

Discher, Heinz-Peter; Greinacher, Ekkehard; and Banski, Hans, to Sudwestfahl GmbH. Method and installation for removing lead and zinc from foundry dust. 5,547,490, Cl. 75-665.000.

Dischert, Lee R.: *See*—
Topper, Robert J.; and Dischert, Lee R., 5,548,332, Cl. 348-251.000.

Discovery Zone, Inc.: *See*—
Weimer, Ralph; and Acker, Duane R., 5,546,967, Cl. 134-65.000.

DiStefano, Frank V., to Air Products and Chemicals, Inc. Release coating for pressure sensitive adhesives. 5,548,017, Cl. 524-514.000.

DiStefano, Thomas H.; Karavakis, Gus; Kovac, Zlata; and Mitchell, Craig, to Tessera, Inc. Semiconductor chip connection components with adhesives and methods for bonding to the chip. 5,548,091, Cl. 174-260.000.

Dittrich, Ehrenfried. System and procedure for the check-up solenoid valves. 5,548,210, Cl. 324-158.100.

Diversified Technologies, Inc.: *See*—
Mays, David S.; and Blevins, Robert E., 5,547,062, Cl. 194-206.000.

Dixon, Richard W., to Burns Aerospace Corporation. Passenger tray table with ingress/egress position. 5,547,247, Cl. 297-145.000.

Djuric, Zoran. Sliding holder for a curtain. 5,547,156, Cl. 248-307.000.

DMW (Technology) Ltd.: *See*—
Bartels, Frank; Bachtler, Wulf; Dunne, Stephen T.; Eicher, Joachim; Freund, Bernhard; Hart, William B.; and Lessmoellmann, Christoph, 5,547,094, Cl. 216-33.000.

Do, Mi S.: *See*—
Jeon, Byung C.; Do, Mi S.; Kim, Young S.; and Han, Chi M., 5,548,589, Cl. 370-60.100.

Doan, Alpha N.: *See*—
Wilcox, Darren W.; and Doan, Alpha N., 5,547,179, Cl. 271-3.200.

Docherty, Edward F.: *See*—
Ulerich, Phillip L.; Palmer, Kathryn M.; and Docherty, Edward F., 5,548,261, Cl. 335-172.000.

Doddington, George R.: *See*—
Naik, Jayant M.; and Doddington, George R., 5,548,647, Cl. 381-42.000.

Dodson, John S.: *See*—
Arimilli, Ravi K.; Dodson, John S.; and Lewis, Jerry D., 5,548,797, Cl. 395-880.000.

Doi, Toru, to Tosoh Corporation. Copolymer production process. 5,548,031, Cl. 525-327.400.

Doi, Yuji; Kato, Yoshiya; Kanezashi, Takanobu; and Masuda, Yuichi, to Casio Computer Co., Ltd. Packaging structure. 5,547,076, Cl. 206-301.000.

Doliton, Michael: *See*—
Gunday, Erhan H.; Doliton, Michael; Foung, Paul; and Lee, John R., 5,548,327, Cl. 348-97.000.

Domansky, Philippe: *See*—
Plaxico, Bob E.; Wright, James W.; and Domansky, Philippe, 5,547,074, Cl. 206-193.000.

Donahoe, Patricia K.; Gustafson, Michael; and He, Wei W., to General Hospital Corporation, The. DNA encoding a receptor for Müllerian inhibitory substance, misr1, and corresponding vectors, cells, probes, and recombinant methods. 5,547,854, Cl. 435-69.100.

Donaldson Company, Inc.: *See*—
Coulonvaux, Paul R., 5,547,480, Cl. 55-498.000.

Doody, Michael C. Surgical hand and arm protector. 5,546,963, Cl. 128-878.000.

Doran, Samuel K., to International Business Machines Corporation. Compensated servo control stage positioning apparatus. 5,548,195, Cl. 318-568.190.

Dore, Benoit T.; Momparler, Richard L.; and Uskokovic, Milan R., to Hoffmann-La Roche Inc. Methods of treatment. 5,547,947, Cl. 514-167.000.

Dorman, Donald R.: *See*—
Taskar, Nikhil R.; Gallagher, Dennis; and Dorman, Donald R., 5,547,897, Cl. 437-108.000.

Dorn, Judy: *See*—
Collins, James P.; Dorn, Judy; Fahey, James T.; Linehan, Leo; Miller, William J.; Moreau, Wayne; Puttlitz, Erik A.; Smith, Randolph; and Spinillo, Gary, 5,547,812, Cl. 430-270.100.

Dornbusch, Arthur H.; and Smith, Scott E., to Procter & Gamble Company, The. Twist-up product dispenser having conformable apertured applicator surface. 5,547,302, Cl. 401-172.000.

do Rosario Sousa de Cabedo, Maria. Luggage cart with attached seat. 5,547,205, Cl. 280-30.000.

Dorso Trailer Sales Inc.: *See*—
Villella, Paul A.; and Teigen, Jerry T., 5,547,241, Cl. 296-24.100.

Dorval, Brent L.; Denham, Lilibeth K.; and Klibanov, Alexander M., to Intracel Corporation. Radial flow assay, delivering member, test kit, and methods. 5,547,833, Cl. 435-5.000.

Dosaka, Kenji: *See*—
Gunji, Takahiro; Tabata, Masamune; Dosaka, Kenji; and Hirose, Kenji, 5,547,771, Cl. 428-687.000.

Dotson, Cynthia; and George, Danny, to SLI, Inc. Window screen apparatus. 5,547,011, Cl. 160-381.000.

Dow Chemical Co., The: *See*—
Cardin, Alan D.; Jackson, Richard L.; and Mullins, Michael J., 5,547,992, Cl. 514-648.000.

Dow Corning Corporation: *See*—
Barnard, Thomas D., 5,547,623, Cl. 264-82.000.
Camilletti, Robert C.; Dall, Fredric C.; and Dunn, Diana K., 5,547,703, Cl. 427-126.300.
Katsoulis, Dimitris E.; and Keryk, John R., 5,548,052, Cl. 528-10.000.
Kemp, Daniel N.; Mitin, Timothy W.; Rohman, Kenneth J.; Shirk, Christopher C.; and Wieck, Ronald W., 5,547,000, Cl. 141-104.000.
Liles, Donald T.; and Murray, David L., 5,548,021, Cl. 524-837.000.

Dow Corning Limited: *See*—
Coles, Harry J.; Hannington, Jonathon P.; and Thomas, David R., 5,547,604, Cl. 252-299.010.

Dow Corning Toray Silicone Co., Ltd.: *See*—
Enami, Hiroji; and Saiki, Takeaki, 5,548,038, Cl. 525-478.000.

Dow Cornings Asia, Ltd.: *See*—
Kushibiki, Nobuo; Sugata, Yoko; and Suzuki, Toshio, 5,548,050, Cl. 528-9.000.

Dowa Iron Powder Co., Ltd.: *See*—
Watanabe, Masatsugu; Nagano, Yasuhisa; Shimoyama, Hajime; and Osaka, Tomohiro, 5,547,488, Cl. 75-335.000.

Dowell, a division of Schlumberger Technology Corporation: *See*—
Chan, Keng S.; and Griffin, Thomas J., Jr., 5,547,027, Cl. 166-295.000.
Perthuis, Hervé; Feraud, Jean-Pierre; Dejeux, Philippe; and Maroy, Pierre, 5,547,926, Cl. 507-258.000.

Dower, William J.; and Fodor, Stephen P. A., to Affymax Technologies N.V. Sequencing of surface immobilized polymers utilizing microflourescence detection. 5,547,839, Cl. 435-6.000.

Downey, Sandra J., to Carrier Corporation. Absorption refrigeration system working fluid with molybdate, borate, silicate inhibitor blend. 5,547,600, Cl. 252-68.000.

Downs, Terry; and Goldstein, Judith A., to Intel Corporation. Process, apparatus and system for displaying multiple video streams using linked control blocks. 5,548,324, Cl. 348-15.000.

Doyle, Barney L.: *See*—
Horn, Kevin M.; and Doyle, Barney L., 5,547,454, Cl. 600-1.000.

Drägerwerk Aktiengesellschaft: *See*—
Kiesele, Herbert, 5,547,554, Cl. 204-415.000.

Dray, James R.; Parsnick, David R.; Fisher, Theodore F.; and Wisz, Michael W., to Praxair Technology, Inc. Cryogenic rectification system for producing dual purity oxygen. 5,546,767, Cl. 62-646.000.

Drenthen, Jan G., to Servex B.V. Method and device for determining characteristics of the flow of a medium. 5,546,812, Cl. 73-861.290.

Dresser Industries, Inc.: *See*—
Campos, Harry M., Jr., 5,547,033, Cl. 175-331.000.

Dresser-Rand: *See*—
Dibble, Gary E.; Morehouse, Wallace F.; and Blackman, Ralph G., 5,546,837, Cl. 82-169.000.

Dresser-Rand Company: *See*—
Rawal, Dharamendra N.; and Auber, Philippe, 5,547,350, Cl. 417-354.000.

Driscoll, Daniel J.: *See*—
Giles, Richard M.; Driscoll, Daniel J.; Ranalli, Eliseo; Tamkin, John M.; and Scott, Bradley, 5,548,394, Cl. 356-71.000.

Driver, F. Thomas: *See*—
Chick, Douglas K.; and Driver, F. Thomas, 5,546,992, Cl. 138-98.000.

Drope, Rüdiger, to Bayer Aktiengesellschaft. Process for the decomposition of chrome ore by alkaline oxidation. 5,547,646, Cl. 423-53.000.

Drummond, Michael T.; Hill, Calvin G.; Lowman, Richard M., Jr.; Suski, William C.; Roberts, Rodney W.; and Lowry, James W., to Sonoco Products Company. Easy-open container having directionally-oriented label tear. 5,547,451, Cl. 493-299.000.

DSC Communications Corporation: *See*—
Flores, Michael A., 5,548,085, Cl. 174-35.00R.

Du Pont de Nemours, E. I., and Company: *See*—
Chapman, George R., Jr.; Morgan, Richard A.; Stewart, Charles W.; Tuminello, William H.; Van Alsten, John G.; Vogel, Randall A.; and Wagman, Mark E., 5,547,761, Cl. 428-422.000.
Edwards, Donald W.; Odle, James K.; Popper, Peter; Sadler, Donald M.; Savidge, Todd J.; Staunton, Harold F.; Walker, William C.; and Yngve, Paul W., 5,547,732, Cl. 428-85.000.
Grot, Walther G., 5,547,911, Cl. 502-101.000.
Shah, Ashok H., 5,547,624, Cl. 264-103.000.
Tabb, David L., 5,548,028, Cl. 525-194.000.
Webster, James L.; and Jackson, Scott C., 5,547,653, Cl. 423-445.00R.

DuBois, Casey R.: *See*—
Taylor, P. A.; Futrell, Todd O.; Dunn, Neil M., Jr.; Jusko, Michael P.; DuBois, Casey R.; and Capehart, Jimmie D., 5,547,644, Cl. 422-186.180.

Dubrow, Robert S.: *See*—
Baer, Thomas M.; Dietz, Louis J.; Dubrow, Robert S.; Hayter, Paul G.; Hodges, Michael; Manian, Bala S.; and Shartle, Robert J., 5,547,849, Cl. 435-7.240.

Duclos, Theodore G.: *See*—
Weiss, Keith D.; Duclos, Theodore G.; Chrzan, Michael J.; and Yanyo, Lynn C., 5,547,049, Cl. 188-267.000.

Dugger, James B., to Hitchquick, Inc. Trailer hitch. 5,547,210, Cl. 280-477.000.

Dukatz, Matthew E.; Harland, Charles E.; Kresky, Fred C.; McCarthy, Jay P.; and Sharples, Stephen A., to Atoma International, Inc.; and Chrysler Corporation. Latch/unlatch indicator for vehicle seat-to floor latch mechanism. 5,547,242, Cl. 296-65.100.

Duke University: *See*—
Bunzow, James R.; Civelli, Olivier; Grandy, David K.; and Zhou, Qun Y., 5,547,845, Cl. 435-7.100.
Smith, Stephen W., 5,548,564, Cl. 367-140.000.

Duley, Raymond S.; and Khan, Ashfaq R., to Advanced Micro Devices, Inc. Power interrupt device with remote activity detector. 5,548,764, Cl. 395-750.000.

Dumas, Bruno; Gervais, Monica; Bergoin, Max; Jourdan, Mireille; and Jousset, Francoise X., to Roussel Uclaf. Plasmids. 5,547,869, Cl. 435-252.330.

Dumontier, Franck; Guibaud, Jean-Marc; Peters, Mike; and Brouillette, Steven, to Taylor Made Golf Company, Inc. Series of golf clubs. 5,547,188, Cl. 473-287.000.

Dumoulin, Charles L.; and Hardy, Christopher J., to General Electric Company. Methods for the simultaneous detection of multiple magnetic resonance images using phase modulated excitation. 5,548,216, Cl. 324-309.000.

Duncan, Douglas J. Take-down archery bow. 5,546,923, Cl. 124-23.100.

Duncan, William M., Jr., to Integrity Industries, Inc. Low toxicity terpene drilling fluid and drilling fluid additive. 5,547,925, Cl. 507-103.000.

Dunfield, John C.: *See*—
Pelstring, Robert M.; Kloeppel, Klaus D.; Dunfield, John C.; Andrews, Michael K.; and Jue, Clifford T., 5,548,458, Cl. 360-99.080.

Dunlop Limited: *See*—
Evans, Maurice J.; Faulkner, Sharon L.; Fisher, Ronald; Wells, Trevor C.; and Hadlum, Paul, 5,547,737, Cl. 428-178.000.

Dunn, Diana K.: *See*—
Camilletti, Robert C.; Dall, Fredric C.; and Dunn, Diana K., 5,547,703, Cl. 427-126.300.

Dunn, J. Eric: *See*—
Shpantzer, Isaac; Dunn, J. Eric; and Meiman, Yehuda, 5,548,805, Cl. 455-33.100.

Dunn, John J.: *See*—
Studier, F. William; Kieleczawa, Jan; and Dunn, John J., 5,547,843, Cl. 435-6.000.

VOL 1189 ISS 3 AG 20 1996 UMI

Dunn, Neil M., Jr.: *See—*
Taylor, P. A.; Futrell, Todd O.; Dunn, Neil M., Jr.; Jusko, Michael P.; DuBois, Casey R.; and Capehart, Jimmie D., 5,547,644, Cl. 422-186.180.

Dunn, R. E. Jack: *See—*
Weder, Donald E.; Weder, E. H.; Dunn, R. E. Jack; and Craig, Franklin J., 5,546,699, Cl. 47-72.000.

Dunne, Stephen T.: *See—*
Bartels, Frank; Bachtler, Wulf; Dunne, Stephen T.; Eicher, Joachim; Freund, Bernhard; Hart, William B.; and Lessmoellmann, Christoph, 5,547,094, Cl. 216-33.000.

Dupont, Pierre, to Motorola. In a data communications systems a method of forward error correction. 5,548,598, Cl. 371-35.000.

Duquesne Light Company: *See—*
Breen, Bernard P.; Bionda, John P., Jr.; Gabrielson, James E.; Glickert, Roger W.; and Hallo, Anthony, 5,546,874, Cl. 110-261.000.

Duracraft Corporation: *See—*
Jané, Rodney B.; Bradley, Jerald A.; and Longan, John, 5,547,615, Cl. 261-24.000.
Jané, Rodney; Longan, John; Wang, Jui-Shang; and Gresens, Stanley, 5,547,343, Cl. 416-246.000.

Dürr, Walter; and Kirsch, Axel, to Eberle Medizintechnische Elemente GmbH; and IMZ Fertigungs-und Vertriebsgesellschaft für dentale Technologie mbH. Member provided with an external screw thread. 5,547,324, Cl. 411-304.000.

Durrant, Randolph L., to Omnipoint Corporation. Spectrally efficient quadrature amplitude modulator. 5,548,253, Cl. 332-103.000.

Durzan, Don J.; and Ventimiglia, Frank F., to University of California, The Regents of the. Taxane production in haploid-derived cell cultures. 5,547,866, Cl. 435-123.000.

Duschen, Ernest A.: *See—*
Torok, Robert J.; and Duschen, Ernest A., 5,547,167, Cl. 251-187.000.

Düsterhus, Richard; Petermann, Udo; Selke, Reimund; and Flügge, Ruprecht, to Siemens Nixdorf informationssysteme Aktiengesellschaft. Device for the exact positioning of a printing head in relation to a recording substrate. 5,547,299, Cl. 400-708.000.

Duthie, Robert E., Jr. Sterilization method and apparatus. 5,547,635, Cl. 422-24.000.

Duthinh, Phu. Anti-intoxication composition. 5,547,671, Cl. 424-195.100.

Dutschke, Joachim: *See—*
Vetter, Heinz; Hoess, Werner; Dutschke, Joachim; and Schikowsky, Hartmut, 5,548,033, Cl. 525-378.000.

Dutta, Indranath; and Lascurain, David P., to United States of America, Navy. Constant-depth scratch test for the quantification of interfacial shear strength at film-substrate interfaces. 5,546,797, Cl. 73-150.00A.

Duus, Erik: *See—*
Albee, Alan J.; Duus, Erik; and Ellis, Mark, 5,548,525, Cl. 364-489.000.

Dybro, Niels: *See—*
Miller, Harold J., III; and Dybro, Niels, 5,547,143, Cl. 242-379.100.

Dyer, David J.; and Gunn, Brian D., to Morton International, Inc. Passenger side airbag inflator with flanged mounting adapter. 5,547,212, Cl. 280-728.200.

Dyer, Mark J.: *See—*
Ruoff, Rodney S.; Lorents, Donald C.; Malhotra, Ripudaman; and Dyer, Mark J., 5,547,748, Cl. 428-323.000.

Dziuk, Richard; and Jäger, Horst, to HEWI Heinrich Wilke GmbH. Gearing for a door lock, in particular for a panic or smoke-protection door lock. 5,547,235, Cl. 292-92.000.

Dzus Fastener Europe Limited: *See—*
Wright, Andrew C. W., 5,547,308, Cl. 403-325.000.

E. F. Johnson Company: *See—*
Barnes, Keith W.; Bauman, Donald R.; Brace, Howard N.; Keefer, Philip A.; and Mihelich, Michael E., 5,548,802, Cl. 455-15.000.

E. I Du Pont de Nemours and Company: *See—*
Michalczyk, Michael J.; and Sharp, Kenneth G., 5,548,051, Cl. 528-15.000.

E M S: *See—*
Georges, Pierre, 5,547,147, Cl. 242-607.100.

Easley, Ellis, Jr.; Gray, Patricia; Suwandhaputra, Johannes; and Wolf, Julie, to Tandy Corporation. Automatic disk change detection without causing head movement by step pulses. 5,548,784, Cl. 395-838.000.

Eastern Virginia Medical School: *See—*
Williams, Patricia B.; and Crouch, Earl R., Jr., 5,547,680, Cl. 424-427.000.

Eastman Chemical Company: *See—*
Singleton, Andy H.; Kendrick, Crystal L.; Riemer, Reinhold L., II; and Minga, Robin L., 5,547,657, Cl. 424-49.000.

Eastman Kodak Company: *See—*
Chen, Benjamin T.; and Lok, Roger, 5,547,827, Cl. 430-567.000.
Chen, Jiann-Hsing; Demejo, Lawrence P.; Roberts, Gary F.; Kosakowski, Richard J.; Aslam, Muhammed; and Derimiggio, John E., 5,547,759, Cl. 428-421.000.
Cok, Ronald S., 5,548,692, Cl. 395-133.000.
Cunningham, Michael P.; and Evans, Steven, 5,547,728, Cl. 428-64.100.
Fyson, John R.; and Marsden, Peter D., 5,547,816, Cl. 430-393.000.
Gaboury, Michael J., 5,548,398, Cl. 356-218.000.
Melpolder, Sharon M.; Anderson, Charles C.; Cowdery-Corvan, Peter J.; and DeCory, John F., 5,547,821, Cl. 430-527.000.
Mistretta, James C., 5,548,571, Cl. 369-77.200.
Pagano, Daniel M.; and Klees, Kevin J., 5,547,145, Cl. 242-536.000.
Parker, H. Galen; Bilhorn, Robert B.; Kaplan, Martin C.; and Palum, Russell J., 5,548,120, Cl. 250-341.700.
Scozzafava, Michael; and Coltrain, Bradley K., 5,547,763, Cl. 428-447.000.
Shuttleworth, Leslie; Weidner, Charles H.; and Cunningham, Michael P., 5,547,727, Cl. 428-64.100.
Wakefield, Edward H., 5,548,328, Cl. 348-98.000.
Wilson, John C.; and Tyagi, Dinesh, 5,547,803, Cl. 430-110.000.
Yarmey, Marianne; Bello, James L.; Mitchell, Gary F.; Pearce, Glenn T.; Bowman, Wayne A.; and Sterman, Melvin, 5,547,832, Cl. 430-623.000.

Eaton Corporation: *See—*
Ali, Dawood A., 5,546,756, Cl. 62-204.000.
Bogrand, George E., IV; Kenny, Andrew A.; and Rosaz, Francois O., 5,547,126, Cl. 236-92.00B.
Riley, Thomas N.; and Morris, Philip A., 5,546,825, Cl. 74-477.000.
Stine, Alan C.; and Reynolds, Joseph D., 5,546,823, Cl. 74-331.000.
Ulerich, Phillip L.; Palmer, Kathryn M.; and Docherty, Edward F., 5,548,261, Cl. 335-172.000.
Wehrli, Henry A., III; Bauer, James A.; and Mueller, Denis A., 5,548,523, Cl. 364-483.000.

Ebara Corporation: *See—*
Nomoto, Masao; Fujita, Kenji; and Hayashi, Hideo, 5,547,643, Cl. 422-186.040.

Eberhardt, Carol E.; Capps, Mark J.; and Salazar, Luis, to Medtronic, Inc. Method and apparatus for testing of circumferentially compliant bioprosthetic valve. 5,546,820, Cl. 73-866.400.

Eberle, Martin; Schaub, Fritz; and Craig, Gerald W., to Sandoz Ltd. α-pyrimidinyl acrylic acid derivatives. 5,547,919, Cl. 504-242.000.

Eberle Medizintechnische Elemente GmbH: *See—*
Dürr, Walter; and Kirsch, Axel, 5,547,324, Cl. 411-304.000.

Eberman, Brian: *See—*
Chen, Elaine; Eberman, Brian; and Marcus, Beth A., 5,546,959, Cl. 128-782.000.

Ebert, William J.; Leonard, James V.; and Johnson, Jeffrey L., to McDonnell Douglas Corporation. Method and apparatus for providing a universal electrical interface between an aircraft and an associated store. 5,548,510, Cl. 364-443.000.

Ebert, Wolfgang: *See—*
Köhler, Burkhard; Ebert, Wolfgang; Horn, Klaus; Weider, Richard; and Scholl, Thomas, 5,548,011, Cl. 524-267.000.

Ebinuma, Tadayoshi: *See—*
Kageyama, Shuhei; Arai, Sachio; Yamamoto, Tadashi; and Ebinuma, Tadayoshi, 5,547,301, Cl. 401-116.000.

Ebisawa, Isao: *See—*
Nagatomo, Akira; Hattori, Yoshifumi; Ebisawa, Isao; Abe, Tsutomu; Ohba, Takashi; Iida, Hiroshi; and Watanabe, Kenjiro, 5,548,308, Cl. 347-9.000.

ECC International Inc.: *See—*
Ginn, Michael W.; Cobb, Gary L.; Broxton, Lawrence E.; and McNeely, Kelly R., 5,547,574, Cl. 210-388.000.

Echelon Corporation: *See—*
Stoll, Kurt A.; and Osterlund, Karl F., 5,548,614, Cl. 375-211.000.

Eckert, Charles: *See—*
Lapinski, Charles; Eckert, Charles; Skokowski, Richard; Cox, James; Scott, William; Chaleff, Edward; and Wagh, Meghanad D., 5,548,107, Cl. 235-462.000.

Eckhart, Richard A. Bracket for mounting a carrier on a vehicle. 5,547,116, Cl. 224-509.000.

Eclipse, Inc.: *See—*
Wild, Gary G., 5,548,277, Cl. 340-578.000.

Eco-Tec Limited: *See—*
Brown, Craig J., 5,547,579, Cl. 210-651.000.

Eda, Kazuo; and Nagata, Takashi, to Matsushita Electric Industrial Co., Ltd. Piezoelectric vibrator and manufacturing method thereof. 5,548,178, Cl. 310-349.000.

Eddy, Bryan P.: *See—*
Rowland, Christopher A.; Vergano, Michael G.; Eddy, Bryan P.; and Cotton, Peter B., 5,547,469, Cl. 604-22.000.

Edgar, Bradley; and Dibble, Robert W., to University of California, The Regents of the. Process for removal of oxides of nitrogen. 5,547,650, Cl. 423-235.000.

Edge Scientific Instrument Corp.: *See—*
Greenberg, Gary, 5,548,441, Cl. 359-390.000.

Edrington, Jimmie D.; Einkauf, Mark A.; Jensen, Allen P.; and Vanover, Michael T., to International Business Machines Corporation. Dynamic load balancing for a multiprocessor pipeline by sorting instructions based on predetermined execution time. 5,548,737, Cl. 395-375.000.

Edstrom, Melvin G. Fabricated jamb or the like. 5,546,715, Cl. 52-215.000.

Edwards, Brooks: *See—*
Bronstein, Irena Y.; Edwards, Brooks; and Voyta, John C., 5,547,836, Cl. 435-6.000.

Edwards, Donald W.; Odle, James K.; Popper, Peter; Sadler, Donald M.; Savidge, Todd J.; Staunton, Harold F.; Walker, William C.; and Yngve, Paul W., to Du Pont de Nemours, E. I., and Company. Method and apparatus for making a pile article and the products thereof. 5,547,732, Cl. 428-85.000.

EEV Limited: *See—*
Bohlen, Heinz P.; Sobieradski, Edward S.; Bridges, Mark; Bardell, Steven; Pickering, Alan H.; and Pettas, Howard T., 5,548,245, Cl. 330-45.000.

Efficient Networks, Inc.: *See—*

Bailey, Chase B.; Fosmark, Klaus S.; Lauffenberger, Kenneth A.; Perry, William A.; and Dibble, Kevin S., 5,548,587, Cl. 370-60.100.

Efstratis, Eleftherios T.; and Watnee, Dale E. Self-leveling countertop underlayment. 5,546,708, Cl. 52-36.200.

Egami, Hirotaka: *See—*
Shimizu, Izuru; Fukanuma, Tetsuhiko; Yamaguchi, Tetsuya; Goto, Kunifumi; Hisanaga, Shigeru; and Egami, Hirotaka, 5,547,354, Cl. 418-55.500.

Egan, Alistair; and Tullis, Thomas S., to Canon Kabushiki Kaisha. Method and apparatus for designating context in a windowing environment. 5,548,745, Cl. 395-500.000.

Egawa, Motoji; Fujita, Tetsuji; Sano, Akinobu; and Takayanagi, Kazutoshi, to Minebea Co., Ltd. Floating magnetic head. 5,548,459, Cl. 360-103.000.

Egawa, Takashi: *See—*
Christensen, Burton G.; Egawa, Takashi; Ichimaru, Yasuyuki; Ohuchi, Shokichi; Okonogi, Tsuneo; Patchett, Arthur A.; Shibahara, Seiji; and Tsutsumni, Seiji, 5,547,978, Cl. 514-422.000.

Egbert, Michael P.: *See—*
Steiner, John E.; and Egbert, Michael P., 5,548,704, Cl. 395-158.000.

Eggebroten, Lee I.: *See—*
Kroenke, David M.; Olds, Christopher C.; Kawai, Kenji; and Eggebroten, Lee I., 5,548,749, Cl. 395-600.000.

Eggleston, Michael R.; Benz, Mark G.; Jackson, Melvin R.; Hughes, John R.; and Raber, Thomas R., to General Electric Company. Method of making an improved target/stem connection for x-ray tube anode assemblies. 5,547,410, Cl. 445-28.000.

Eggleston, Michael R.; Benz, Mark G.; Jackson, Melvin R.; and Zabala, Robert J., to General Electric Company. Target/rotor connection for use in x-ray tube rotating anode assemblies. 5,548,628, Cl. 378-125.000.

Egi, Hiroshi; and Toyama, Kazuhisa, to Kabushiki Kaisha Toshiba. Digester temperature distribution control system. 5,547,545, Cl. 162-238.000.

Ego, Tomomichi; and Kinoshita, Hiroshi, to Nikkiso Co., Ltd. Apparatus for dissolving an adjusting agent of a dialytic solution. 5,547,645, Cl. 422-264.000.

Eguchi, Yasuhito; Sato, Masayuki; Narushima, Toshio; Sanpei, Akira; and Murano, Kanji, to Sony Corporation. Circuit for preventing overcharge and overdischarge of secondary batteries. 5,547,775, Cl. 429-7.000.

Eguchi, Yoshihiro: *See—*
Kishimoto, Tomonori; Yamane, Mitsuo; Bogauchi, Takehito; and Eguchi, Yoshihiro, 5,547,779, Cl. 429-144.000.

Ehasani, Mohammad R.: *See—*
Shambayati, Ali; Ehasani, Mohammad R.; and Ehsani, Ali R., 5,548,275, Cl. 340-573.000.

Ehrhardt, Johannes: *See—*
Krumm, Herbert; Nordmann, Adolf; Ehrhardt, Johannes; Lorenz, Johann; and Stoffler, Günter, 5,546,844, Cl. 89-8.000.

Ehsani, Ali R.: *See—*
Shambayati, Ali; Ehasani, Mohammad R.; and Ehsani, Ali R., 5,548,275, Cl. 340-573.000.

Eicher, Joachim: *See—*
Bartels, Frank; Bachtler, Wulf; Dunne, Stephen T.; Eicher, Joachim; Freund, Bernhard; Hart, William B.; and Lessmoellmann, Christoph, 5,547,094, Cl. 216-33.000.

Eidsmore, Paul G. Fluid coupling assembly. 5,547,229, Cl. 285-93.000.

Eikyu, Takuya: *See—*
Okada, Nobuyuki; and Eikyu, Takuya, 5,547,084, Cl. 209-583.000.

Einkauf, Mark A.: *See—*
Edrington, Jimmie D.; Einkauf, Mark A.; Jensen, Allen P.; and Vanover, Michael T., 5,548,737, Cl. 395-375.000.

Eisai Chemical Co., Ltd.: *See—*
Tsujii, Masahiko; Kuroda, Hirofumi; Furusawa, Yoshikazu; and Hirota, Katsuhiko, 5,547,580, Cl. 210-656.000.

Eisermann, Armin, to Schulte-Schlagbaum Aktiengesellschaft. Locking system composed of a lock and several keys. 5,546,778, Cl. 70-276.000.

Ejnar Jensen & Son A/S: *See—*
Jensen, Jørn M., 5,546,684, Cl. 38-143.000.

Eka Nobel AB: *See—*
Landfors, Johan, 5,547,542, Cl. 162-29.000.
Sörensson, Olle; and Severinsson, Krister, 5,547,603, Cl. 510-509.000.

Elco Corporation: *See—*
Feldman, Steven, 5,548,483, Cl. 361-737.000.

Electric Power Research Institute, Inc.: *See—*
Kemerer, Ray S.; and Norman, Martin J., 5,548,203, Cl. 323-210.000.

Electronic Drilling Control, Inc.: *See—*
Capehart, Jimmie D., 5,547,584, Cl. 210-669.000.
Taylor, P. A.; Futrell, Todd O.; Dunn, Neil M., Jr.; Jusko, Michael P.; DuBois, Casey R.; and Capehart, Jimmie D., 5,547,644, Cl. 422-186.180.

Electronics & Telecommunications Research Inst.: *See—*
Shin, Jong-Dug; Kang, Cheul-Shin; and Lee, El-Hang, 5,548,431, Cl. 359-119.000.

Electronics and Telecommunications Research Institute: *See—*
Jeon, Byung C.; Do, Mi S.; Kim, Young S.; and Han, Chi M., 5,548,589, Cl. 370-60.100.

Electronics Research & Service Organization: *See—*
Chou, Shu-Kuang; and Liou, Jiunn-Fu, 5,548,251, Cl. 331-57.000.

Electrovac, Fabrikation elektrotechnischer Spezialartikel Gesellschaft m.b.H.: *See—*
Schmitt, Theodore, 5,547,120, Cl. 228-121.000.

Elektroschmelzwerk Kempten GmbH: *See—*
Lukschandel, Jörg; Patzon, Rudolf; and Hassler, Jürgen, 5,547,709, Cl. 427-299.000.

Elf Atochem North America, Inc.: *See—*
Sanchez, Jose, 5,548,046, Cl. 526-230.500.

Eli Lilly and Company: *See—*
Anderson, James H., Jr.; De Felippis, Michael R.; Frank, Bruce H.; and Havel, Henry A., 5,547,929, Cl. 514-3.000.
Cullinan, George J., 5,547,685, Cl. 424-600.000.

Elliott, Candace E.: *See—*
Kamboj, Rajender; Elliott, Candace E.; and Nutt, Stephen L., 5,547,855, Cl. 435-69.100.

Ellis, David G.: *See—*
Brady, Gary W.; and Ellis, David G., 5,548,621, Cl. 375-354.000.

Ellis, Mark: *See—*
Albee, Alan J.; Duus, Erik; and Ellis, Mark, 5,548,525, Cl. 364-489.000.

Ellis, Michael D.; and Lazarus, David B., to News American Publishing, Inc.; and Telecommunications of Colorado, Inc. Compression of an electronic programming guide. 5,548,338, Cl. 348-473.000.

Elpatronic AG: *See—*
Meyer, Meinrad; and Summermatter, Peter, 5,547,064, Cl. 198-468.100.

EMC Corporation: *See—*
Brant, William A.; Neben, Gary; Nielson, Michael E.; and Stallmo, David C., 5,548,711, Cl. 395-182.030.
McGillis, James M.; and Lasker, Jeffrey M., 5,548,788, Cl. 395-851.000.

EMCO Enterprises, Inc.: *See—*
Kenkel, Terry, 5,546,714, Cl. 52-204.500.

Emhart Glass Machinery Investments Inc.: *See—*
Jones, Stanley P., 5,547,485, Cl. 65-260.000.

Emi, Shigenori: *See—*
Hattori, Shizuo; Kishimoto, Takahide; Sogabe, Yukihiro; and Emi, Shigenori, 5,547,851, Cl. 435-26.000.

Enami, Hiroji; and Saiki, Takeaki, to Dow Corning Toray Silicone Co., Ltd. Organosiloxane compositions yielding optically clear, non-yellowing organosiloxane gels. 5,548,038, Cl. 525-478.000.

Ender, Elmar: *See—*
Bunk, Axel; Klam, Ruediger; Ender, Elmar; and Gloeckler, Frank, 5,548,182, Cl. 313-113.000.

Endo, Hideki: *See—*
Nakatsu, Kazuya; Goto, Takaharu; Higaki, Toru; Endo, Hideki; Hirose, Satoru; and Yamazaki, Yukinori, 5,547,505, Cl. 106-713.000.

Endo, Yoichi: *See—*
Kumagai, Yoshiaki; Itaya, Eiji; and Endo, Yoichi, 5,548,811, Cl. 455-192.200.
Sekimoto, Takashi; Endo, Yoichi; Yamazaki, Hirohiko; Yamazaki, Masahiko; Ohtani, Yutaka; Iguchi, Takeyoshi; Matsumoto, Kenji; Yamazaki, Hiroyuki; Takimura, Ryo; and Tsuda, Takao, 5,548,417, Cl. 385-474.000.

Endoh, Kiyomasa: *See—*
Sekine, Hiroshi; Sasuga, Kazuyasu; Taniuchi, Kazuman; Iwamoto, Yasuhiko; Terada, Yoshihiro; and Endoh, Kiyomasa, 5,548,663, Cl. 382-164.000.

Endoh, Satoshi: *See—*
Akasaka, Yoshio; Kakijima, Kenichi; Endoh, Takeshi; Uchida, Goro; Tanaka, Masaaki; Fujie, Takefumi; Sukawa, Daiji; Endoh, Satoshi; Saitoh, Hideo; and Kubo, Takashi, 5,548,096, Cl. 219-117.100.

Endoh, Shuichi, to Ricoh Company, Ltd. Developing device for controlling pressure between toner conveying units. 5,548,383, Cl. 355-259.000.

Endoh, Takeshi: *See—*
Akasaka, Yoshio; Kakijima, Kenichi; Endoh, Takeshi; Uchida, Goro; Tanaka, Masaaki; Fujie, Takefumi; Sukawa, Daiji; Endoh, Satoshi; Saitoh, Hideo; and Kubo, Takashi, 5,548,096, Cl. 219-117.100.

Energy and Environmental Research Center Foundation: *See—*
Selle, Stanley J.; Hajicek, Douglas R.; Mann, Michael D.; and Grewal, Nanak S., 5,546,875, Cl. 110-342.000.

Energy Systems Associates: *See—*
Breen, Bernard P.; Bionda, John P., Jr.; Gabrielson, James E.; Glickert, Roger W.; and Hallo, Anthony, 5,546,874, Cl. 110-261.000.

Engdahl, Björn. Hose coupling for compressed air. 5,547,166, Cl. 251-149.600.

Engel, Stephen J.; Jeffries, Clark; and Lee, Christopher, to Grumman Aerospace Corporation. Data fusion neural network. 5,548,683, Cl. 395-21.000.

Engstrom Medical Aktiebolag: *See—*
Wikefeldt, Per, 5,546,930, Cl. 128-201.130.

Enkaku, Shigeyuki: *See—*
Kogure, Mitsuhiro; Nagashima, Shinichi; Wakabayashi, Kazuhisa; Enkaku, Shigeyuki; Shimayama, Hitoshi; Kimura, Minoru; Shimoyama, Shuji; and Yokoo, Tsugio, 5,548,260, Cl. 335-126.000.

Enkotec A/S: *See—*
Nielsen, Ove, 5,547,424, Cl. 470-11.000.

Enokido, Masashi: *See—*
Okawa, Takashi; Enokido, Masashi; Tsuda, Shingo; and Akutsu, Norikatsu, 5,547,784, Cl. 429-218.000.

Enokido, Nobuo: *See—*
Uehara, Yumito; Enokido, Nobuo; Fujioka, Kiyotoshi; Shimizu, Nobuyuki; and Ueda, Motonori, 5,547,722, Cl. 428-35.700.

Enomoto, Hiromichi: *See—*
Ogura, Toshihiko; Aotsu, Hiroaki; Kimura, Koichi; Enomoto, Hiromichi; and Kyoda, Tadashi, 5,548,744, Cl. 395-494.000.

Enomoto, Keiji, to Ricoh Company, Ltd. Lens body tube with built-in converter lens. 5,548,446, Cl. 359-695.000.

Enomoto, Naoki: *See—*

Saito, Yoshiro; Fujii, Haruo; Sasame, Hiroshi; Hayakawa, Tatsuhiko; Kobayashi, Tatsuya; Kobayashi, Tetsuya; Enomoto, Naoki; Uchiyama, Akihiko; and Maebashi, Youichirou, 5,548,381, Cl. 355-245.000.

Enomoto, Takashi: *See*—
Shimamune, Masayuki; Enomoto, Takashi; Murata, Tatsuo; and Mitsui, Mutsuo, 5,546,998, Cl. 141-82.000.

Enright, Dorothy P.: *See*—
Collee, Pierre E.; and Enright, Dorothy P., 5,546,798, Cl. 73-152.090.

Enroth, Ulf: *See*—
Lilja, Lars; and Enroth, Ulf, 5,547,322, Cl. 411-60.000.

Ensys Environmental Products, Inc.: *See*—
Friedman, Stephen B.; Studabaker, William B.; and Mize, Patrick D., 5,547,877, Cl. 436-126.000.

Entropy Systems, Inc.: *See*—
Amin, Sanjaykumar, 5,547,341, Cl. 415-143.000.

Enzon, Inc.: *See*—
Greenwald, Richard B.; and Pendri, Annapurna, 5,547,981, Cl. 514-449.000.

EP Technologies, Inc.: *See*—
Panescu, Dorin; and Swanson, David K., 5,546,940, Cl. 128-642.000.

Erdrich, Albert: *See*—
Nagel, Joachim; and Erdrich, Albert, 5,548,000, Cl. 523-115.000.

Erickson, Donald J., to Medtronic, Inc. Method and apparatus for detection of a respiratory waveform. 5,546,952, Cl. 128-716.000.

Erickson, Jack A.; Kramer, Robert L.; and Hallis, John M., to Federal-Hoffman, Inc. Non-toxic primer. 5,547,528, Cl. 149-92.000.

Erickson, Paul M.: *See*—
Krebs, Jay; and Erickson, Paul M., 5,548,631, Cl. 379-58.000.

Ericsson Inc.: *See*—
Charas, Philippe M.; and Dent, Paul W., 5,548,813, Cl. 455-33.300.

Ernoult, Jacques: *See*—
Paidassi, Serge; Ernoult, Jacques; Brun, Michel; Monge-Cadet, Pierre; Pauleau, Yves; and Farges, Guy, 5,547,767, Cl. 428-610.000.

Ernst Grob AG: *See*—
Krapfenbauer, Hans, 5,546,781, Cl. 72-191.000.

Ernst Paul Lehmann Patentwerk: *See*—
Richter, Michael, 5,547,090, Cl. 213-75.00A.

Ernst, Stephen M.: *See*—
Jensen, Gordon A.; and Ernst, Stephen M., 5,548,222, Cl. 324-628.000.

Escritt, Chris; and Hellquist, Magnus, to Pricer AB. Electronic shelf edge price display system. 5,548,282, Cl. 340-825.350.

Esselte Meto International GmbH: *See*—
Koch, Ulf; and Schneider, Peter, 5,547,293, Cl. 400-120.170.

Esser, Klaus M.: *See*—
Christensen, Siegfried B., IV; Esser, Klaus M.; and Simon, Philip L., 5,547,979, Cl. 514-424.000.

Essilor International Compagnie Generale d'Optique: *See*—
Magne, Jean-Francois, 5,547,618, Cl. 264-1.360.

Estline, Tsvi H.: *See*—
Hollopeter, James E.; Estline, Tsvi H.; and Barton, Robert L., 5,546,651, Cl. 29-722.000.

Etablissments Bubendorff (Societe Anonyme): *See*—
Plumer, Louis, 5,547,009, Cl. 160-310.000.

Etat Francais represented by the Delegue General Pour L'Armement: *See*—
Le Guyader, Hervé, 5,547,560, Cl. 205-732.000.

Ethicon Endo-Surgery: *See*—
Hamblin, Steven W.; Witt, David A.; Sierocuk, Thomas J.; Nicola, Kirk M.; Otten, Matthew R.; and Berky, Craig B., 5,547,117, Cl. 227-175.200.

Ethicon, Inc.: *See*—
Ortiz, Mark S.; and Failla, Stephen J., 5,547,458, Cl. 600-204.000.

Euclid Industries, Inc.: *See*—
Quinn, Paul R.; Kempski, Richard R.; and King, Douglas J., 5,547,288, Cl. 384-207.000.

Eurofours S.A.: *See*—
Lancelot, Pierre, 5,546,927, Cl. 126-194.000.

Eustice, Todd C.: *See*—
Decker, Matthew J.; Eustice, Todd C.; Rau, Douglas; and Boers, Arie, 5,546,709, Cl. 52-66.000.

Evans, Maurice J.; Faulkner, Sharon L.; Fisher, Ronald; Wells, Trevor C.; and Hadlum, Paul, to Dunlop Limited. Light-weight, high-strength, stiff panels. 5,547,737, Cl. 428-178.000.

Evans, Michael W., to Orion Industries, Inc. Dual-mode booster system. 5,548,803, Cl. 455-16.000.

Evans, Ronald M.; Ong, Estelita S.; Segui, Prudimar S.; Thompson, Catherine C.; Umesono, Kazuhiko; and Giguere, Vincent, to Salk Institute for Biological Studies, The. Retinoic acid receptor alpha proteins. 5,548,063, Cl. 530-350.000.

Evans, Steven: *See*—
Cunningham, Michael P.; and Evans, Steven, 5,547,728, Cl. 428-64.100.

Evins, Brian M.: *See*—
Heller, Alan C.; Evins, Brian M.; and Karp, Robert G., 5,548,637, Cl. 379-201.000.

Exelmans, Walter; and Verbeke, Gentil, to Agfa-Gevaert, N.V. Apparatus for reading an image from a stimulable phosphor sheet. 5,548,126, Cl. 250-588.000.

Exponential Technology, Inc.: *See*—
Brashears, Cheryl S.; and Blomgren, James S., 5,548,545, Cl. 364-748.000.

Extech Electronics Co., Ltd: *See*—
Chen, Pin-Yi, 5,548,501, Cl. 363-21.000.

Extech/Exterior Technologies, Inc.: *See*—
Voegele, William P., Jr.; Ramsey, Douglas A.; Lohr, Alan D.; and Kamphaus, Carl E., 5,546,713, Cl. 52-202.000.

Exxon Chemical Patents Inc.: *See*—
Canich, Jo Ann M., 5,547,675, Cl. 502-117.000.
Powers, Kenneth W.; Wang, Hsien-Chang; Chung, T-C.; Dias, Anthony J.; and Olkusz, Joseph A., 5,548,023, Cl. 525-69.000.
Powers, Kenneth W.; Wang, Hsien-Chang; Chung, T-C.; Dias, Anthony J.; and Olkusz, Joseph A., 5,548,029, Cl. 525-195.000.
Tse, Mun F.; Cross, Virginia R.; and Trudell, Barry C., 5,548,014, Cl. 524-477.000.

Eyquem: *See*—
Balland, Patrick, 5,548,472, Cl. 361-253.000.

Ezaki, Hitoshi: *See*—
Aizawa, Jyun-ichi; Nakagawa, Kunihiko; Nakao, Hiroshi; Ezaki, Hitoshi; and Sunaga, Kouhei, 5,547,297, Cl. 400-567.000.

Fagus-Grecon Greten GmbH & Co. KG: *See*—
Warnecke, Thomas, 5,548,626, Cl. 378-54.000.

Fahey, James T.: *See*—
Collins, James P.; Dorn, Judy; Fahey, James T.; Linehan, Leo; Miller, William J.; Moreau, Wayne; Puttlitz, Erik A.; Smith, Randolph; and Spinillo, Gary, 5,547,812, Cl. 430-270.100.

Failla, Stephen J.: *See*—
Ortiz, Mark S.; and Failla, Stephen J., 5,547,458, Cl. 600-204.000.

Fairweather, Neil F.: *See*—
Charles, Ian G.; Chatfield, Steven N.; and Fairweather, Neil F., 5,547,664, Cl. 424-93.200.

Falcinelli, Michael T.: *See*—
Adamian, Vahe A.; Falcinelli, Michael T.; and Phillips, Peter V., 5,548,221, Cl. 324-601.000.

Fan, Yongping; Han, Jung; Nurimikko, Arto V.; Gunshor, Robert L.; and He, Li, to Research Corporation Technologies, Inc. Group II-VI compound semiconductor light emitting devices and an ohmic contact therefor. 5,548,137, Cl. 257-191.000.

Fan, You-Ling: *See*—
Clark, Elke M. A.; Marlin, Lawrence; Fan, You-Ling; and Shah, Harshad M., 5,547,681, Cl. 424-449.000.

Fang, Steven. Threaded bush. 5,547,323, Cl. 411-178.000.

Fang, Wen, to Cirrus Logic, Inc. Low power phase lock loop clocking circuit for battery powered systems. 5,548,250, Cl. 331-14.000.

Fanuc Ltd.: *See*—
Hamura, Masayuki; and Aztuma, Kenji, 5,548,194, Cl. 318-568.130.

Farges, Guy: *See*—
Paidassi, Serge; Ernoult, Jacques; Brun, Michel; Monge-Cadet, Pierre; Pauleau, Yves; and Farges, Guy, 5,547,767, Cl. 428-610.000.

Fargo Mfg. Company Inc.: *See*—
Nellis, Robert A., Jr.; DeFrance, Robert V.; and Matlock, Richard R., 5,547,404, Cl. 439-803.000.

Farmer, Peter H.: *See*—
Simon, Robert H. M.; and Farmer, Peter H., 5,547,736, Cl. 428-143.000.

Farmin S.r.l.: *See*—
Molinari, Giuliano, 5,547,946, Cl. 514-129.000.

Farmitalia Carlo Erba S.r.l.: *See*—
Angelucci, Francesco; Bersani, Laura; Caruso, Michele; Ripamonti, Marina; Ruggieri, Daniela; and Suarato, Antonino, 5,547,667, Cl. 424-181.100.
Battistini, Carlo; Fustinoni, Silvia; Brasca, Maria G.; and Ungheri, Domenico, 5,547,941, Cl. 514-44.000.

Farquhar, Keith, to Spirax-Sarco Limited. Condensate trap installations. 5,546,976, Cl. 137-183.000.

Farrington, Eric K.: *See*—
Merlin, Jean-Paul D.; Sharp, Brenner M.; Farrington, Eric K.; and Johnston, Vonda K., 5,546,772, Cl. 68-24.000.

Fassbinder, Hans-Georg, to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation des Procedes Georges Claude. Method for heating a gas in a regenerator. 5,547,016, Cl. 165-9.400.

Fast, Lawrence R. Infrared audio transmitter system. 5,548,654, Cl. 381-77.000.

Faucher, Marc R.: *See*—
Carpenter, Gary D.; Dean, Mark E.; Faucher, Marc R.; Peterson, James C.; and Tanner, Howard C., 5,548,746, Cl. 395-500.000.

Faulkner, Sharon L.: *See*—
Evans, Maurice J.; Faulkner, Sharon L.; Fisher, Ronald; Wells, Trevor C.; and Hadlum, Paul, 5,547,737, Cl. 428-178.000.

Faull, Kym F.: *See*—
Anton, Peter A.; Reeve, Joseph R., Jr.; Walsh, John H.; and Faull, Kym F., 5,547,844, Cl. 435-7.100.

Fauteux, Denis G.; Van Buren, Martin; and Shi, Jie, to Arthur D. Little, Inc. Cavitand electrolytic cell and electrolytic process. 5,547,778, Cl. 429-81.000.

Fay, Ralph M.: *See*—
Rumiesz, Joseph, Jr.; Walker, Dixon R.; and Fay, Ralph M., 5,547,743, Cl. 428-224.000.

FDK Corporation: *See*—
Kawai, Hirotaka; Fujii, Shinzo; and Umezawa, Hiromitsu, 5,547,613, Cl. 252-584.000.

FED Corporation: *See*—
Jones, Gary W., 5,548,181, Cl. 313-309.000.

Federal-Hoffman, Inc.: *See*—

Erickson, Jack A.; Kramer, Robert L.; and Hallis, John M., 5,547,528, Cl. 149-92.000.

Feger, Claudius; Graham, Teresita O.; Grebe, Kurt R.; Lanzetta, Alphonso P.; Liukus, John J.; Matthew, Linda C.; Palmer, Michael J.; Tanner, Nelson R.; Tong, Ho-Ming; Wilson, Charles H.; and Yeh, Helen L., to International Business Machines Corporation. Method of applying flex tape protective coating onto a flex product. 5,546,655, Cl. 29-846.000.

Fekete, Thomas M.: *See*—
Blum, Michael E.; Boerman, Gary L.; Fekete, Thomas M.; Horak, Donald L.; Kovneristy, Yulig K.; and Orillion, Michael T., 5,547,487, Cl. 75-10.150.

Feldman, Steven, to Elco Corporation. Frameless IC card and housing therefor. 5,548,483, Cl. 361-737.000.

Feraud, Jean-Pierre: *See*—
Perthuis, Hervé; Feraud, Jean-Pierre; Dejeux, Philippe; and Maroy, Pierre, 5,547,926, Cl. 507-258.000.

Ferguson, Gregory A.: *See*—
Jorissen, Steven A.; Ferguson, Gregory A.; and Imirowicz, Krystyna, 5,548,026, Cl. 525-113.000.

Ferguson, Ralph B.: *See*—
Keeler, James D.; Havener, John P.; Godbole, Devendra; and Ferguson, Ralph B., 5,548,528, Cl. 364-497.000.

Fernald, Mark R.: *See*—
McLaughlin, Joseph L.; Fernald, Mark R.; and Hart, Kenneth J., 5,548,444, Cl. 359-629.000.

Ferrante, Jeanne: *See*—
Balasundaram, Vasanth; Carter, John L.; and Ferrante, Jeanne, 5,548,761, Cl. 395-700.000.

Ferrara, Francis N.: *See*—
Atwal, Karnail S.; Ferrara, Francis N.; and Ding, Charles Z., 5,547,966, Cl. 514-352.000.

Ferreira, Lawrence: *See*—
Blakeney, Andrew J.; Medina, Arturo N.; Toukhy, Medhat A.; Ferreira, Lawrence; and Tadros, Sobhy, 5,547,814, Cl. 430-326.000.

Ferrell, John I.: *See*—
Siegel, Matthew R.; and Ferrell, John I., 5,548,718, Cl. 395-183.140.

Ferro Corporation: *See*—
Mandel, Frederick S.; Green, Charles D.; and Scheibelhoffer, Anthony S., 5,548,004, Cl. 523-342.000.

Ferzaz, Badia: *See*—
Poindron, Philippe; Braun, Serge; and Ferzaz, Badia, 5,547,963, Cl. 514-317.000.

Fesman, Gerald; and Aaronson, Alan M., to Akzo Nobel N.V. Flame retardant mixture of polybrominated diphenyl oxide and organic diphosphate. 5,547,614, Cl. 252-609.000.

Fibotech, Inc.: *See*—
Rondeau, Michel Y., 5,548,674, Cl. 385-72.000.

Fibox Oy AB: *See*—
Sonntag, John-Erik; and Ropponen, Matti, 5,547,095, Cl. 220-3.800.

Fichtel & Sachs AG: *See*—
Beck, Hubert, 5,547,050, Cl. 188-322.150.

Fidelitone Inc.: *See*—
Butterworth, William; and Powell, Clyde H., 5,548,105, Cl. 219-761.000.

Filhol, Marie-Sophie; and Pobel, Thierny G., to Sanofi Sante Nutrition Animale. Use of Selegilene in veterinary medicine. 5,547,995, Cl. 514-654.000.

Filterwerk Mann & Hummel GmbH: *See*—
Adamek, Peter; Kopec, Eduard; and Ludmann, Armin, 5,546,900, Cl. 123-184.550.

Filtration Japan Co., Ltd.: *See*—
Hara, Keiichi, 5,547,496, Cl. 96-79.000.

Fincham, Lawrence R., to KEF Audio (UK) Limited. Compound loudspeaker drive unit. 5,548,657, Cl. 381-182.000.

Finocchiaro, Eugene T.: *See*—
Mallee, Francis M.; Stone, Joel A.; and Finocchiaro, Eugene T., 5,547,513, Cl. 127-38.000.

Firma Carl Freudenberg: *See*—
Bade, Karl H.; Gruber, Walter; and Simuttis, Anold, 5,547,174, Cl. 267-154.000.

Fisch, Matthew: *See*—
Sarangdhar, Nitin; Rhodehamel, Michael; and Fisch, Matthew, 5,548,733, Cl. 395-286.000.

Fisch, Richard S.; and Larshus, David A., to Minnesota Mining and Manufacturing. Cel production by thermal transfer processes. 5,548,317, Cl. 347-171.000.

Fischer, Jon E.; Walmsley, Don; and Wapman, P. Derek, to United States of America, Energy. Crimp sealing of tubes flush with or below a fixed surface. 5,546,783, Cl. 72-325.000.

Fischer, Meir; Lebens, Michael R.; and Chaleff, Deborah T., to Bio-Technology General Corp.; and American Cyanamid Company. Somatotropins with alterations in the alpha-helix 1 region, and combinations with other mutations. 5,548,068, Cl. 530-399.000.

fischerwerke, Artur Fischer GMBH & Co KG: *See*—
Haug, Willi, 5,546,725, Cl. 52-698.000.

Fisher, Robert W.: *See*—
Vianco, Paul T.; Fisher, Robert W.; Hosking, Floyd M.; and Zanner, Frank J., 5,547,484, Cl. 65-42.000.

Fisher, Ronald: *See*—
Evans, Maurice J.; Faulkner, Sharon L.; Fisher, Ronald; Wells, Trevor C.; and Hadlum, Paul, 5,547,737, Cl. 428-178.000.

Fisher, Theodore F.: *See*—
Dray, James R.; Parsnick, David R.; Fisher, Theodore F.; and Wisz, Michael W., 5,546,767, Cl. 62-646.000.

Fitton, John E.: *See*—
Kara, Bhupendra V.; Hockney, Robert C.; and Fitton, John E., 5,547,867, Cl. 435-199.000.

Fletcher, Nicholas J.; Chow, Clarence Y.; Pow, Eric G.; Wozniczka, Bogusiav M.; Voss, Henry H.; and Hornburg, Gerald, to Ballard Power Systems Inc.; and Daimler-Benz AG. Electrochemical fuel cell stack with concurrently flowing coolant and oxidant streams. 5,547,776, Cl. 429-13.000.

Flight Safety Systems Inc.: *See*—
Kalberer, Robert C.; and Goor, Dan, 5,547,149, Cl. 244-121.000.

Flo-Dynamics, Inc.: *See*—
Parker, Zachary T., 5,546,999, Cl. 141-98.000.

Flores, Michael A., to DSC Communications Corporation. Transportable weathertight and EMI shielded cabinet enclosure. 5,548,085, Cl. 174-35.00R.

Flügge, Ruprecht: *See*—
Düsterhus, Richard; Petermann, Udo; Selke, Reimund; and Flügge, Ruprecht, 5,547,299, Cl. 400-708.000.

FMC Corporation: *See*—
Blum, Michael E.; Boerman, Gary L.; Fekete, Thomas M.; Horak, Donald L.; Kovneristy, Yulig K.; and Orillion, Michael T., 5,547,487, Cl. 75-10.150.
Henrie, Robert N., II; Peake, Clinton J.; Cullen, Thomas G.; Chaguturu, Munirathnam K.; Ray, Partha S.; and Bennett, Brian D., 5,547,954, Cl. 514-258.000.

Fodor, Stephen P. A.: *See*—
Dower, William J.; and Fodor, Stephen P. A., 5,547,839, Cl. 435-6.000.

Fogg, Richard G., Jr.; and Sweet, Mark D., to International Business Machines Corporation. Interface for logic simulation using parallel bus for concurrent transfers and having fifo buffers for sending data to receiving units when ready. 5,548,785, Cl. 395-841.000.

Folk, Herbert: *See*—
Parzefall, Walter; and Folk, Herbert, 5,547,058, Cl. 192-85.0CA.

Folkins, Jeffrey J., to Xerox Corporation. Process color using light lens scanning techniques. 5,548,391, Cl. 355-326.00R.

Fonneland, Nils J.: *See*—
Brandstetter, Robert W.; and Fonneland, Nils J., 5,547,786, Cl. 430-1.000.

Forbo Industries, Inc.: *See*—
Mortensen, Kelly J., 5,547,610, Cl. 252-514.000.

Ford, David K.; and Weir, Bernard E., III, to Motorola, Inc. Circuit and method of indicating data hold-time. 5,548,285, Cl. 341-100.000.

Ford Motor Company: *See*—
Grutter, Peter J.; Gerhart, Matthew J.; Gladd, Matthew J.; and Cushing, John A., 5,547,435, Cl. 477-110.000.
Kennedy, John F.; and Klepaczyk, Timothy S., 5,548,830, Cl. 455-200.100.
Messih, Isis A.; and Mingo, Paul C., 5,546,909, Cl. 123-492.000.
Messih, Isis A.; and Linenberg, Mark T., 5,546,910, Cl. 123-492.000.
Salisbury, Kenneth A.; Kalinowski, Pawel; and Baker, Jay D., 5,548,481, Cl. 361-709.000.

Fore Systems, Inc.: *See*—
Ganmukhi, Mahesh N.; and Jordan, Brian L., 5,548,588, Cl. 370-60.100.

Forestier, Serge: *See*—
Hansenne, Isabelle; Forestier, Serge; and N'Guyen, Quang L., 5,547,658, Cl. 424-59.000.

Fork, Kurt; and Krutemeier, Frank, to Siemens Aktiengesellschaft. Method and closed-loop control device for the closed-loop control of a turbine-generator configuration. 5,547,337, Cl. 415-1.000.

Forsström, Christer, to Pellonpaja Oy. Apparatus for separating milk and air from each other at an early stage in a pipe milking machine. 5,546,892, Cl. 119-14.080.

Forsythe, Donald L.: *See*—
Yates, Joseph W., IV; and Forsythe, Donald L., 5,548,306, Cl. 345-174.000.

Forte Networks: *See*—
Jensen, Gordon A.; and Ernst, Stephen M., 5,548,222, Cl. 324-628.000.

Fortunato, Fred A.; Shadle, Barry L.; and Franz, Helmut, to PPG Industries, Inc. Low profile spray assembly. 5,547,129, Cl. 239-132.300.

Fosmark, Klaus S.: *See*—
Bailey, Chase B.; Fosmark, Klaus S.; Lauffenberger, Kenneth A.; Perry, William A.; and Dibble, Kevin S., 5,548,587, Cl. 370-60.100.

Fosselman, Donald C.: *See*—
Kuhrau, Michael K.; and Fosselman, Donald C., 5,546,768, Cl. 66-9.00B.

Fossum, Eric R.: *See*—
Kemeny, Sabrina E.; Fossum, Eric R.; and Nixon, Robert H., 5,548,773, Cl. 395-800.000.

Foster, Raymond K. Reciprocating floor conveyor with liquid collecting base structure. 5,547,067, Cl. 198-750.300.

Foundation: The Research Institute of Electric and Magnetic Alloys, The: *See*—
Murakami, Yuetsu; and Masumoto, Katashi, 5,547,520, Cl. 148-120.000.

Foung, Paul: *See*—
Gunday, Erhan H.; Doliton, Michael; Foung, Paul; and Lee, John R., 5,548,327, Cl. 348-97.000.

Fowler, John E. Variable speed torque multiplying transmission. 5,546,822, Cl. 74-113.000.

Fox, Carol A.: *See*—

Bayley, Robert D.; Fox, Carol A.; Hoffend, Thomas R.; Mahabadi, Hadi K.; Agur, Enno E.; Sacripante, Guerino; and Hawkins, Michael S., 5,548,059, Cl. 528-194.000.

Foxboro Company, The: *See*—
Mattar, Wade M.; and Hildreth, Norman G., 5,546,814, Cl. 73-861.355.

Fraas, Arthur P. Vibrating bed coal pyrolysis system. 5,547,549, Cl. 202-99.000.

France Telecom: *See*—
Babonneau, Gérard, 5,548,792, Cl. 395-859.000.

France Telecon: *See*—
Bouadma, Noureddine; and Menigaux, Louis, 5,548,610, Cl. 372-99.000.

Francescbelli, Luciano; and Mancini, Angelo. Craft with rigid tubulars, having watertight, non-communicating compartments. 5,546,886, Cl. 114-360.000.

Francies, Sidney E., III: *See*—
Kelly, David L.; and Francies, Sidney E., III, 5,546,727, Cl. 52-704.000.

Francois, Pascal: *See*—
Lebrun, Eric; Francois, Pascal; Raimbault, Frederic; and Warren, Jeff, 5,548,579, Cl. 370-16.000.

Francsicsné, Erzsébet C.: *See*—
Mahó, Sándor; Tuba, Zoltán; Gere, Anikó; Vittay, Pal; Kiss, Béla; Pálosi, Éva; Szporny, László; Francsicsné, Erzsébet C.; Boórné, Anna M.; Balogh, Gábor; and Görög, Sándor, 5,547,949, Cl. 514-176.000.

Franer, Victor R. Color dissipatable paint. 5,548,010, Cl. 524-198.000.

Frank, Bruce H.: *See*—
Anderson, James H., Jr.; De Felippis, Michael R.; Frank, Bruce H.; and Havel, Henry A., 5,547,929, Cl. 514-3.000.

Franklia, James B.: *See*—
Smith, Geoffrey B.; and Franklin, James B., 5,548,490, Cl. 362-32.000.

Fransen, A. A. Joseph, to Klockner Hansel Tevopharm B.V. Method and device for arranging a stream of products. 5,547,004, Cl. 198-419.300.

Franz, Helmut: *See*—
Fortunato, Fred A.; Shadle, Barry L.; and Franz, Helmut, 5,547,129, Cl. 239-132.300.

Fraser, Donald A.: *See*—
Cumming, Ronald F.; and Fraser, Donald A., 5,547,001, Cl. 144-195.400.

Fraunhofer Gesellschaft zur Forderung der angewandten Forderung der angewandten Forschung e.V.: *See*—
Müller, Dietmar; Helfrich, Mathial; and Mandt, Michael, 5,547,527, Cl. 149-19.920.

Frazin, Leon; and Voresh, Michael J. Method and apparatus of logicalizing and determining orientation of an insertion end of a probe within a biotic structure. 5,546,949, Cl. 128-662.060.

Fredberg, Sven T., to Telefonaktiebolaget L M Ericsson. Apparatus adapted for coaction with a number of circuit boards. 5,547,386, Cl. 439-61.000.

Frederiksen, Gert H. Track system to be fastened to a groove in a spar. 5,546,881, Cl. 114-112.000.

Fredrick, Mark D., to Mitchell Corporation of Owosso, Inc. Modular automotive seat frame. 5,547,259, Cl. 297-452.180.

Fredrickson, Lisa; Karabed, Razmik; Siegel, Paul H.; and Thapar, Hemant K., to International Business Machines Corporation. Method and means for generating and detecting spectrally constrained coded partial response waveforms using a time varying trellis modified by selective output state splitting. 5,548,600, Cl. 371-43.000.

Freeman, David L.: *See*—
Armstrong, Gene L., II; and Freeman, David L., 5,548,204, Cl. 323-265.000.

French, John B., to Blade Technologies Inc. Device for securing car audio equipment. 5,548,163, Cl. 307-10.200.

French, Ronald. Emergency tracheostomy apparatus. 5,546,939, Cl. 128-207.290.

Frenco Verzahnungslehren GmbH: *See*—
Och, Rudolf, 5,546,666, Cl. 33-501.700.

Freund, Bernhard: *See*—
Bartels, Frank; Bachtler, Wulf; Dunne, Stephen T.; Eicher, Joachim; Freund, Bernhard; Hart, William B.; and Lessmoellmann, Christoph, 5,547,094, Cl. 216-33.000.

Friebe, Walter–Gunar; Reinholz, Erhard; and Wilhelms, Henning, to Boehringer Mannheim GmbH. Bicyclic sulfones, processes for their production and pharmaceutical agents containing them. 5,547,980, Cl. 514-443.000.

Friedman, Lionel: *See*—
Soref, Richard A.; and Friedman, Lionel, 5,548,128, Cl. 257-18.000.

Friedman, Stephen B.; Studabaker, William B.; and Mize, Patrick D., to Ensys Environmental Products, Inc. Methods for the rapid detection of toxic halogenated hydrocarbons and kits useful in performing the same. 5,547,877, Cl. 436-126.000.

Friedrich Grohe Aktiengesellschaft: *See*—
Clare, Manamohan, 5,546,983, Cl. 137-607.000.

Friske, Mark S.: *See*—
Chalasani, Devi; Friske, Mark S.; and Johnson, Ronald E., 5,547,622, Cl. 264-60.000.

Frisken Gibson, Sarah F., to Mitsubishi Electric Information Technology Center America, Inc. Collision avoidance system for voxel-based object representation. 5,548,694, Cl. 395-124.000.

Froehler, Brian C.; and Matteucci, Mark D., to Genentech, Inc. Method of making oligonucleotides, oligonucleoside thiophosphates and oligonucleoside phosphotriesters using H-phosphonate intermediates. 5,548,076, Cl. 536-25.340.

Frogge, Perry W.: *See*—
Rauth, Cindy C.; Frogge, Perry W.; and Damerow, David H., 5,548,542, Cl. 364-724.160.

Frohs, Thomas: *See*—
Berwian, Werner; Frohs, Thomas; and Rafflenbeul, Rolf, 5,547,491, Cl. 95-12.000.

Frost, Peter L. J.; and Kerry, John, to British Telecommunications public limited company. Optical fibre management system. 5,548,678, Cl. 385-135.000.

Fuchs, Manfred: *See*—
Hell, Erich; and Fuchs, Manfred, 5,548,630, Cl. 378-137.000.

Fugel, Martin, to MV Marketing und Vertriebs - GmbH & Co. KG. Shaping device. 5,546,786, Cl. 72-457.000.

Fuhrmann, Jürgen: *See*—
Pinhack, Hubert; Fuhrmann, Jürgen; and Gegg, Rolf, 5,547,282, Cl. 374-36.000.

Fuji Electric Co., Ltd.: *See*—
Kuboyama, Katsunori; Asakawa, Koji; and Uchida, Naoshi, 5,548,258, Cl. 335-16.000.
Motonobu, Masahiro; and Ueki, Kouichi, 5,548,503, Cl. 363-56.000.
Saito, Akira, 5,548,265, Cl. 336-200.000.

Fuji, Hiroshi: *See*—
Hirajima, Hiroshige; Yamaguchi, Takeshi; and Fuji, Hiroshi, 5,548,570, Cl. 369-59.000.

Fuji Photo Film Co., Ltd.: *See*—
Asami, Masahiro, 5,547,830, Cl. 430-603.000.
Hioki, Takanori; Oya, Toyohisa; and Nishiyama, Shingo, 5,547,828, Cl. 430-597.000.
Ito, Takayuki; Shimada, Yasuhiro; Matsuoka, Koushin; and Yoshioka, Yasuhiro, 5,547,826, Cl. 430-558.000.
Kamikawa, Hiroshi; and Ishige, Sadao, 5,547,806, Cl. 430-138.000.
Kita, Akihisa, 5,547,146, Cl. 242-548.400.
Kojima, Tetsuro; Yagihara, Morio; Sasaki, Hirotomo; Mifune, Hiroyuki; and Kato, Shinji, 5,547,829, Cl. 430-603.000.
Matsuki, Masaya; Sawada, Hirokazu; and Uesugi, Akio, 5,547,522, Cl. 148-551.000.
Mihayashi, Keiji; and Ohkawa, Atsuhiro, 5,547,824, Cl. 430-544.000.
Miyamoto, Hajime, 5,547,820, Cl. 430-523.000.
Muramatsu, Katsuji; and Iwamoto, Shoji, 5,548,364, Cl. 354-204.000.
Nagashima, Yasuo; and Shirahata, Ryuji, 5,547,704, Cl. 427-130.000.
Ohno, Shigeru; and Hattori, Yasushi, 5,547,819, Cl. 430-522.000.
Okada, Hisashi; Inaba, Tadashi; Suzuki, Ryo; and Nomura, Hideaki, 5,547,817, Cl. 430-393.000.
Saito, Shinji; Ogawa, Hiroshi; Kakuta, Takeshi; and Noguchi, Hitoshi, 5,547,772, Cl. 428-694.00B.
Shinoki, Hiroshi; Hiraoka, Toshikage; and Ogawa, Masashi, 5,547,848, Cl. 435-7.900.
Shoji, Takashi, 5,548,122, Cl. 250-370.090.
Takahashi, Osamu; and Ohki, Nobutaka, 5,547,825, Cl. 430-551.000.
Terashima, Masaaki, 5,547,874, Cl. 436-12.000.
Watanabe, Mikio, 5,548,741, Cl. 395-442.000.

Fuji Photo Optical Co., Ltd.: *See*—
Toyama, Nobuaki, 5,548,447, Cl. 359-759.000.
Yahagi, Satoshi, 5,548,445, Cl. 359-677.000.

Fuji Xerox Co., Ltd.: *See*—
Ishida, Eiji; and Matsunaga, Yoshifumi, 5,548,699, Cl. 395-140.000.
Kato, Masanori, 5,548,377, Cl. 355-207.000.
Koshimizu, Minoru; Kakinuma, Takeo; and Ito, Kensuke, 5,548,420, Cl. 359-44.000.
Moriya, Hiroyuki; Tomonaga, Junichi; Hashimoto, Kiyoshi; and Muraoka, Kazunari, 5,547,135, Cl. 241-40.000.
Sekine, Hiroshi; Sasuga, Kazuyasu; Taniuchi, Kazuman; Iwamoto, Yasuhiko; Terada, Yoshihiro; and Endoh, Kiyomasa, 5,548,663, Cl. 382-164.000.

Fujie, Akihiko; Takase, Shigehiro; Yamashita, Michio; Sato, Tomoko; Hashimoto, Seiji; and Okuhara, Masakuni, to Fujisawa Pharmaceutical Co., Ltd. WF11243 substance. 5,547,934, Cl. 514-11.000.

Fujie, Takefumi: *See*—
Akasaka, Yoshio; Kakijima, Kenichi; Endoh, Takeshi; Uchida, Goro; Tanaka, Masaaki; Fujie, Takefumi; Sukawa, Daiji; Endoh, Satoshi; Saitoh, Hideo; and Kubo, Takashi, 5,548,096, Cl. 219-117.100.

Fujii, Haruo: *See*—
Saito, Yoshiro; Fujii, Haruo; Sasame, Hiroshi; Hayakawa, Tatsuhiko; Kobayashi, Tatsuya; Kobayashi, Tetsuya; Enomoto, Naoki; Uchiyama, Akihiko; and Maebashi, Youichirou, 5,548,381, Cl. 355-245.000.

Fujii, Kanae: *See*—
Funaki, Hideyuki; Mochizuki, Hiroshi; Maruyama, Ryoji; and Fujii, Kanae, 5,548,151, Cl. 257-421.000.

Fujii, Masahiro: *See*—
Satake, Sunao; Yatsuyanagi, Yoshimi; Fujii, Masahiro; and Imagawa, Ippei, 5,547,999, Cl. 522-122.000.

Fujii, Nariaki; and Kimura, Tatsuya, to Mitsubishi Denki Kabushiki Kaisha. Method for making a semiconductor device. 5,547,899, Cl. 437-151.000.

Fujii, Shinzo: *See*—
Kawai, Hirotaka; Fujii, Shinzo; and Umezawa, Hiromitsu, 5,547,613, Cl. 252-584.000.

Fujii, Takeshi; and Ishikawa, Manabu, to Sumitomo Chemical Company, Limited. Electroconductive resin composition, antistatic coating and molded article. 5,547,609, Cl. 252-511.000.

Fujii, Takeshi; and Yamamoto, Masashi, to Sumitomo Chemical Company, Limited. Thermoplastic resin composition. 5,548,013, Cl. 524-449.000.

Fujii, Yasuo, to Fujitsu Limited. Fault supervision method for transmission apparatus. 5,548,720, Cl. 395-184.010.

Fujii, Yoshio; Tokunaga, Takashi; Nakaki, Yoshiyuki; Tsutsumi, Kazuhiko; Hashima, Kazuo; Fukami, Tatsuya; and Kawano, Yuji, to Mitsubishi Denki Kabushiki Kaisha. Magneto-optical recording medium and method of manufacturing the same. 5,547,751, Cl. 428-332.000.

Fujikura Ltd.: *See*—
Maruyama, Tsutomu; Akiyama, Atsushi; Sanada, Kazuo; Chigira, Sadao; and Hidaka, Masanobu, 5,547,501, Cl. 106-21.00R.

Fujimoto, Masami: *See*—
Kohtaki, Takaaki; Taya, Masaaki; and Fujimoto, Masami, 5,547,796, Cl. 430-106.600.

Fujimoto, Tamiji: *See*—
Yano, Yoshiaki; Fujimoto, Tamiji; and Hidaka, Takayoshi, 5,547,683, Cl. 424-501.000.

Fujimura, Akira: *See*—
Hara, Fumio; Fujimura, Akira; Hara, Yoshihisa; and Sakanushi, Masahiro, 5,546,922, Cl. 123-698.000.

Fujimura, Yuki: *See*—
Matsui, Tsutomu; and Fujimura, Yuki, 5,548,449, Cl. 359-814.000.

Fujioka, Kiyotoshi: *See*—
Uehara, Yumito; Enokido, Nobuo; Fujioka, Kiyotoshi; Shimizu, Nobuyuki; and Ueda, Motonori, 5,547,722, Cl. 428-35.700.

Fujisawa Pharmaceutical Co., Ltd.: *See*—
Fujie, Akihiko; Takase, Shigehiro; Yamashita, Michio; Sato, Tomoko; Hashimoto, Seiji; and Okuhara, Masakuni, 5,547,934, Cl. 514-11.000.

Fujishima, Akira: *See*—
Murasawa, Sadao; Murakami, Hajime; Fukui, Yasuro; Watanabe, Mitsuru; Fujishima, Akira; and Hashimoto, Kazuhito, 5,547,823, Cl. 430-531.000.

Fujita, Akifumi: *See*—
Nakatani, Masayuki; Sengoku, Koji; and Fujita, Akifumi, 5,546,854, Cl. 99-470.000.

Fujita, Kenji: *See*—
Nomoto, Masao; Fujita, Kenji; and Hayashi, Hideo, 5,547,643, Cl. 422-186.040.

Fujita, Tetsuji: *See*—
Egawa, Motoji; Fujita, Tetsuji; Sano, Akinobu; and Takayanagi, Kazutoshi, 5,548,459, Cl. 360-103.000.

Fujitsu General Limited: *See*—
Takahashi, Tomomi; Takata, Masahisa; Kogure, Masayoshi; Taira, Ritsushi; and Hamano, Hiroyuki, 5,547,018, Cl. 165-267.000.

Fujitsu Limited: *See*—
Asakawa, Takeo; and Inoue, Aiichiro, 5,548,736, Cl. 395-375.000.
Fujii, Yasuo, 5,548,720, Cl. 395-184.010.
Fuse, Takeshi, 5,548,748, Cl. 395-550.000.
Hanawa, Tetsuya; Kuga, Yuji; Takashima, Yutaka; Matsumoto, Yoshihiro; and Ono, Masayuki, 5,548,827, Cl. 455-129.000.
Ito, Hidenobu; Shimizu, Katsuya; Hashikawa, Kenzo; and Yamakawa, Yasuhiro, 5,548,162, Cl. 307-10.100.
Kanemitsu, Norio; and Nonogaki, Hajime, 5,548,416, Cl. 358-470.000.
Kobayashi, Fumihiko; and Hasegawa, Junichi, 5,548,799, Cl. 455-8.000.
Koizumi, Ayako; Mori, Yukiko; and Aoki, Tomomi, 5,548,706, Cl. 395-161.000.
Koshi, Makoto; Nishio, Yukio; and Hirose, Kazunori, 5,548,382, Cl. 355-259.000.
Kumagai, Yoshiaki; Itaya, Eiji; and Endo, Yoichi, 5,548,811, Cl. 455-192.200.
Maruyama, Takumi; and Yokoshi, Noriyuki, 5,548,716, Cl. 395-183.120.
Matsumoto, Koji; Tanaka, Tsutomu; and Shono, Keiji, 5,548,576, Cl. 369-275.300.
Matsune, Hideaki; and Yamato, Koji, 5,548,578, Cl. 370-13.000.
Matsuyama, Tsutoshi; and Takahashi, Hideyuki, 5,548,757, Cl. 395-600.000.
Nagami, Wataru, 5,548,508, Cl. 364-419.020.
Ogura, Takao; Amemiya, Shigeo; Tezuka, Koji; and Chujo, Takafumi, 5,548,639, Cl. 379-221.000.
Ryu, Tadamitsu; Mogi, Yoshio; Tomita, Masao; and Fukatsu, Takanori, 5,548,751, Cl. 395-600.000.
Sugisaki, Eiichi; Ino, Mitsuhiro; and Nagayama, Masato, 5,548,390, Cl. 355-319.000.
Sugiyama, Hitoshi; Hiraishi, Toshinori; and Kumano, Tuyoshi, 5,548,743, Cl. 395-479.000.
Tahara, Yoko; and Nagakubo, Yasunori, 5,548,435, Cl. 359-180.000.
Watanabe, Takao; Hayashi, Mutsuo; Matsumoto, Kazunari; Tsuchiya, Chikara; Matsui, Takashi; and Matsubayashi, Masaru, 5,548,252, Cl. 331-176.000.
Yamamoto, Takashi, 5,548,083, Cl. 174-35.0GC.

Fujitsu Ten Limited: *See*—
Ito, Hidenobu; Shimizu, Katsuya; Hashikawa, Kenzo; and Yamakawa, Yasuhiro, 5,548,162, Cl. 307-10.100.

Fujitsu VLSI Limited: *See*—
Ito, Hidenobu; Shimizu, Katsuya; Hashikawa, Kenzo; and Yamakawa, Yasuhiro, 5,548,162, Cl. 307-10.100.

Fujiura, Ryuji: *See*—
Machida, Isao; Fujiura, Ryuji; Kojima, Takashi; and Sakamoto, Hitoshi, 5,547,654, Cl. 423-445.00R.

Fujiwara, Susumu; Sakata, Masahiko; and Ishizuka, Mikio, to Mitsubishi Denki Kaibushiki Kaisha. Silencing apparatus. 5,548,652, Cl. 381-71.000.

Fujiwara, Yoshio: *See*—
Ito, Kengo; and Fujiwara, Yoshio, 5,547,739, Cl. 428-207.000.

Fukami, Tatsuya: *See*—
Fujii, Yoshio; Tokunaga, Takashi; Nakaki, Yoshiyuki; Tsutsumi, Kazuhiko; Hashima, Kazuo; Fukami, Tatsuya; and Kawano, Yuji, 5,547,751, Cl. 428-332.000.

Fukami, Toshiyuki; and Tanaka, Masashi, to Mita Industrial Co., Ltd. Reversal developing system preventing occurrence of image spots. 5,548,387, Cl. 355-274.000.

Fukanuma, Tetsuhiko: *See*—
Shimizu, Izuru; Fukanuma, Tetsuhiko; Yamaguchi, Tetsuya; Goto, Kunifumi; Hisanaga, Shigeru; and Egami, Hirotaka, 5,547,354, Cl. 418-55.500.
Yamaguchi, Tetsuya; Watanabe, Yasushi; Fukanuma, Tetsuhiko; Oki, Yasuhiro; and Yamamoto, Yuuji, 5,547,353, Cl. 418-55.200.

Fukasawa, Kazuya: *See*—
Shigematsu, Takashi; Yanagawa, Hisaharu; Shimizu, Takeo; Nakamura, Shiro; Fukasawa, Kazuya; and Watanabe, Tomohiro, 5,548,675, Cl. 385-80.000.

Fukase, Koichi: *See*—
Kusumoto, Shoichi; Fukase, Koichi; and Hase, Sumihiro, 5,548,077, Cl. 536-55.300.

Fukatsu, Takanori: *See*—
Ryu, Tadamitsu; Mogi, Yoshio; Tomita, Masao; and Fukatsu, Takanori, 5,548,751, Cl. 395-600.000.

Fukuchi, Masakazu; Morita, Shizuo; Haneda, Satoshi; Satoh, Hiseo; and Ikeda, Tadayoshi, to Konica Corporation. Image forming apparatus. 5,548,379, Cl. 355-210.000.

Fukuda, Hiromitsu: *See*—
Sato, Kazutaka; Watanabe, Michihiro; Aoyagi, Masahisa; Seino, Taisaku; Ohki, Katsuo; Fukuda, Hiromitsu; Kawase, Hideyuki; Oga, Kimio; Shimizu, Akira; Narui, Youichi; Suzuki, Tsuguo; Otsuka, Yasuo; and Konno, Kazutoshi, 5,548,411, Cl. 358-400.000.

Fukuda, Ichiro: *See*—
Itako, Eiji; and Fukuda, Ichiro, 5,547,061, Cl. 194-203.000.

Fukuda, Kyoko: *See*—
Ohta, Masashi; Kobayashi, Hiroshi; Sekiya, Tsuneo; Hamada, Toshimichi; Fukuda, Kyoko; and Iijima, Koji, 5,548,409, Cl. 358-335.000.

Fukuda, Yoshiyuki, to Kabushiki Kaisha TEC. Developing apparatus and image forming apparatus using the developing apparatus. 5,548,386, Cl. 355-259.000.

Fukuda, Yutaka: *See*—
Yamato, Tsutomu; Oshino, Yasuhiro; Fukuda, Yutaka; Kanno, Tatsuya; Kuwana, Takaaki; and Okano, Yoshimichi, 5,548,041, Cl. 526-62.000.

Fukui, Hiroyuki: *See*—
Sanechika, Kenichi; Fukui, Hiroyuki; and Ikeda, Masanori, 5,547,593, Cl. 508-207.000.

Fukui, Tetsuro; Kobayashi, Motokazu; Ohi, Takehiko; Ueno, Kazunori; Kagami, Kenji; Suzuki, Masao; and Nishino, Katsuya, to Canon Kabushiki Kaisha. Dry process silver salt photosensitive material and image forming method making use of this dry process silver salt photosensitive material. 5,547,831, Cl. 430-619.000.

Fukui, Toshinori; Katsuda, Nobuyuki; Yabushita, Shinichi; and Hashizume, Shuhei, to Sumitomo Chemical Company, Limited. Compositions containing benzodifuranone compounds and methods for dyeing hydrophobic materials using the same. 5,547,478, Cl. 8-643.000.

Fukui, Wataru, to Mitsubishi Denki Kabushiki Kaisha. Control apparatus for controlling the ignition timing of an internal combustion engine. 5,546,905, Cl. 123-25.000.

Fukui, Yasuro: *See*—
Murasawa, Sadao; Murakami, Hajime; Fukui, Yasuro; Watanabe, Mitsuru; Fujishima, Akira; and Hashimoto, Kazuhito, 5,547,823, Cl. 430-531.000.

Fukui, Yutaka: *See*—
Siga, Masao; Kuriyama, Mitso; Mori, Takanobu; Fukui, Yutaka; and Ishizuka, Tatsuro, 5,548,174, Cl. 310-261.000.

Fukuma, Kooji: *See*—
Okuyama, Nobutaka; Sakurai, Soichi; Fukuma, Kooji; Yoshioka, Hiroshi; Obara, Masao; Ito, Naoki; Takeyama, Atsushi; and Satoh, Yoshio, 5,548,190, Cl. 315-368.260.

Fukuyama, Masahiro: *See*—
Yamamoto, Keisaku; Ikeda, Kiyoshi; Fukuyama, Masahiro; Naito, Takeshi; and Aritake, Masanori, 5,548,012, Cl. 524-433.000.

Fukuyama, Munekatsu: *See*—
Sasaki, Yasuo; Fukuyama, Munekatsu; and Kurihara, Kazuo, 5,548,453, Cl. 360-67.000.

Fukuzawa, Tadashi; Kano, Satoru S.; Kumata, Kiyoshi; Lee, Victor Y.; Schellenberg, Franklin M.; and Takahashi, Yutaka, to International Business Machine Corporation. Nonlinear optical device and method of manufacturing same. 5,547,705, Cl. 427-162.000.

Fun World: *See*—
Geller, Alan, 5,546,604, Cl. 2-202.000.

Funahashi, Yasuhiro; Ikarni, Kazunori; Nishimura, Osamu; Hibino, Yoshihiko; Kiyohara, Yuji; and Yasutomo, Yuichi, to Brother Kogyo Kabushiki Kaisha; and Xing, Inc. Data transmission system. 5,548,281, Cl. 340-825.080.

Funai Electric Co., Ltd.: *See*—
Sawai, Kunio, 5,548,567, Cl. 369-36.000.

Funaki, Hideyuki; Mochizuki, Hiroshi; Maruyama, Ryoji; and Fujii, Kanae, to Kabushiki Kaisha Toshiba. Hall element for detecting a magnetic field perpendicular to a substrate. 5,548,151, Cl. 257-421.000.

Funaki, Hideyuki: *See*—

Omura, Ichiro; Nakagawa, Akio; Sakai, Tadashi; Sekimura, Masayuki; and Funaki, Hideyuki, 5,548,150, Cl. 257-349.000.

Funato, Takayuki; and Takahashi, Katsuhiro, to Japan Storage Battery Company, Limited. Valve-regulated lead-acid battery. 5,547,783, Cl. 429-212.000.

Fung Kon Yin, John S.: *See—*
Lipsch, Michael H.; Van Beek, Marinus J.; and Fung Kon Yin, John S., 5,547,697, Cl. 426-565.000.

Furrer, William W.: *See—*
Degrassi, Alfieri; and Furrer, William W., 5,547,765, Cl. 428-474.700.

Furseth, John P.; Heydrich, Frank; Hover, Forest H.; Little, Ian; Mackin, Steven G.; Stenard, Steven C.; Thompson, James L.; White, Ellen; and Wilson, Bruce D., to AlliedSignal Inc. Insertable stator vane assembly. 5,547,342, Cl. 415-200.000.

Furuhashi, Makoto; and Yamaoka, Katsumi, to Sony Corporation. Method and apparatus for processing information data. 5,548,599, Cl. 371-40.100.

Furukawa Electric Co., Ltd., The: *See—*
Kohmura, Yukio; Ishida, Yoshinori; and Hibino, Takashi, 5,548,213, Cl. 324-232.000.
Shigematsu, Takashi; Yanagawa, Hisaharu; Shimizu, Takeo; Nakamura, Shiro; Fukasawa, Kazuya; and Watanabe, Tomohiro, 5,548,675, Cl. 385-80.000.

Furusawa, Yoshikazu: *See—*
Tsujii, Masahiko; Kuroda, Hirofumi; Furusawa, Yoshikazu; and Hirota, Katsuhiko, 5,547,580, Cl. 210-656.000.

Furuzawa, Akira; Sata, Akifumi; Kubota, Takeshi; and Shikata, Kunihide, to Kyocera Corporation. Dielectric ceramic composition and package made of the same composition for packaging semiconductor. 5,547,908, Cl. 501-136.000.

Fuse, Takeshi, to Fujitsu Limited. One-chip semiconductor integrated circuit device having a digital signal processing circuit and an analog signal processing circuit. 5,548,748, Cl. 395-550.000.

Fuss, Robert; Manero, Javier; and Jungbauer, Dietmar, to Hoechst Aktiengesellschaft. 2-Aryloxytetrafluoropropionic esters, process for their preparation, and their use in liquid-crystalline mixtures. 5,547,605, Cl. 252-299.600.

Fustinoni, Silvia: *See—*
Battistini, Carlo; Fustinoni, Silvia; Brasca, Maria G.; and Ungheri, Domenico, 5,547,941, Cl. 514-44.000.

Futami, Toshihiko: *See—*
Sugiyama, Akihiko; Tsuchiyama, Hideaki; Futami, Toshihiko; Kato, Hisataka; and Hoshi, Takao, 5,547,344, Cl. 417-32.000.

Futatsuya, Tomoshi; Mihara, Masaaki; Terada, Yasushi; Nakayama, Takeshi; Miyawaki, Yoshikazu; Kobayashi, Shinichi; and Ohkawa, Minoru, to Mitsubishi Denki Kabushiki Kaisha. Nonvolatile semiconductor memory device with a row redundancy circuit. 5,548,557, Cl. 365-201.000.

Futrell, Todd O.: *See—*
Taylor, P. A.; Futrell, Todd O.; Dunn, Neil M., Jr.; Jusko, Michael P.; DuBois, Casey R.; and Capehart, Jimmie D., 5,547,644, Cl. 422-186.180.

Fyson, John R.; and Marsden, Peter D., to Eastman Kodak Company. Photographic processing method using bleach solution comprising hydrogen peroxide and halide ions. 5,547,816, Cl. 430-393.000.

G. M. Pfaff Aktiengesellschaft: *See—*
Schilling, Lothar; and Schmidt, Gottfried, 5,546,876, Cl. 112-102.500.

G. Siempelkamp GmbH & Co.: *See—*
Gerhardt, Klaus; Sebastian, Lothar; and Weiss, Horst, 5,546,857, Cl. 100-93.00P.

Gable, Jack; and Harrington, Doug. Tool for removing threaded fasteners. 5,546,834, Cl. 81-53.200.

Gabor, Thomas; and O'Kelly, James M., to Minnesota Mining and Manufacturing Company. Continuous atomspheric pressure CVD coating of fibers. 5,547,512, Cl. 118-718.000.

Gaboury, Michael J., to Eastman Kodak Company. Illuminant discriminator providing detection of high efficiency illumination. 5,548,398, Cl. 356-218.000.

Gabriel, Calvin T.; and Nariani, Subhash R., to VLSI Technology, Inc. Method and apparatus for wafer level prediction of thin oxide reliability. 5,548,224, Cl. 324-765.000.

Gabrielson, James E.: *See—*
Breen, Bernard P.; Bionda, John P., Jr.; Gabrielson, James E.; Glickert, Roger W.; and Hallo, Anthony, 5,546,874, Cl. 110-261.000.

Gagnebien-Cabanne, Francoise, to L'Oreal. Compositions and methods for combating blemishes and/or ageing of the skin. 5,547,678, Cl. 424-401.000.

Gahang, Gu-Su; Song, Bong-Seog; Lee, Hyun-Jun; and Ahn, Ju-Yeong, to SamSung Electronics Co., Ltd. Alphanumeric registration method and device of a system with alphanumeric entry keys. 5,548,634, Cl. 379-97.000.

Gaines, Robert B., to McDonnell Douglas Corporation. Method and apparatus for detecting a power line. 5,548,279, Cl. 340-664.000.

Galbi, Duane: *See—*
Mandelman, Jack A.; Galbi, Duane; Slinkman, James A.; and Tonti, William R., 5,547,894, Cl. 437-56.000.

Gallagher, Dennis: *See—*
Taskar, Nikhil R.; Gallagher, Dennis; and Dorman, Donald R., 5,547,897, Cl. 437-108.000.

Gallagher, Gerald B. Display apparatus for desired items with easy exchange of desired items, and with protection from ultra-violet light. 5,546,685, Cl. 40-768.000.

Galleguillos, Ramiro: *See—*
Sun, Wei-Mei; Ma, Zhu-ning; Panitch, Maximo M.; and Galleguillos, Ramiro, 5,547,661, Cl. 424-66.000.

Gallet, Alain: *See—*
Clair, Rene; and Gallet, Alain, 5,547,637, Cl. 422-129.000.

Galli, Rosaria, to Tebro SA. Powder jet dispenser for medicament inhalation therapies. 5,546,932, Cl. 128-203.150.

Gallup, Michael G.; and Goke, L. Rodney, to Motorola, Inc. Data processing system and method thereof. 5,548,768, Cl. 395-375.000.

Gallup, Michael G.: *See—*
Davis, Jack R.; Gallup, Michael G.; Goke, L. Rodney; Welty, Erik L.; and Wiles, Michael F., 5,548,771, Cl. 395-800.000.

Gammill, Ronald B.: *See—*
Hutchinson, Douglas K.; Barbachyn, Michael R.; Brickner, Steven J.; Gammill, Ronald B.; and Patel, Mahesh V., 5,547,950, Cl. 514-252.000.

Gamzo, Israel. Multipurpose mobile device with open sided foot engagement. 5,547,204, Cl. 280-11.190.

Ganmukhi, Mahesh N.; and Jordan, Brian L., to Fore Systems, Inc. Method and apparatus for switching, multicasting multiplexing and demultiplexing an ATM cell. 5,548,588, Cl. 370-60.100.

Gao, Zhengping; Racz, Steve; and Basu, Kalyan, to Northern Telecom Limited. Overload control for a central processor in the switching network of a mobile communications system. 5,548,533, Cl. 364-514.00C.

Garberg, Dennis D.: *See—*
Coleman, Charles P.; Garberg, Dennis D.; and Butler, Thomas J., 5,546,732, Cl. 53-450.000.

Garcia, Michel; and Pepi, Richard, to Pixel International. Spacers for flat display screens. 5,547,483, Cl. 65-42.000.

Gardiner, Richard. Pneumatic ejector. 5,546,839, Cl. 83-128.000.

Garfield, Robert E., to Board of Regents, The University of Texas System. Method and apparatus for the recording and analysis of uterine electrical activity from the abdominal surface. 5,546,953, Cl. 128-733.000.

Garman, Richard D.: *See—*
Rogers, Bruce L.; Morgenstern, Jay P.; Bond, Julian F.; Garman, Richard D.; Greenstein, Julia L.; Kuo, Mei-chang; and Morville, Malcolm, 5,547,669, Cl. 424-185.100.

Gas Research Institute: *See—*
Hassett, David J.; and Thompson, Jeffrey S., 5,547,588, Cl. 210-724.000.

Gasch, Christian, to GKN Vicsodrive GmbH. Drive assembly for a four wheel drive vehicle having a first and second viscous coupling. 5,547,430, Cl. 475-89.000.

Gasner, John T.: *See—*
Linn, Jack H.; Gasner, John T.; Gaul, Stephen J.; and McCarty, Chris A., 5,547,896, Cl. 437-60.000.

Gasser, Oswald: *See—*
Schwabe, Peter; Schlak, Ottfried; Winkel, Jens; Guggenberger, Rainer; and Gasser, Oswald, 5,548,002, Cl. 523-118.000.

Gaul, Stephen J.: *See—*
Linn, Jack H.; Gasner, John T.; Gaul, Stephen J.; and McCarty, Chris A., 5,547,896, Cl. 437-60.000.

Gaus, Douglas M. Storage carousel for compact disc recording and the like. 5,547,085, Cl. 211-40.000.

Gawaskar, Sadanand; Norris, Frank J.; Vitous, Joseph; and Young, Kevin L., to Chrysler Corporation. Battery support device. 5,547,036, Cl. 180-68.500.

Gaynor, Edwin S.; Massimi, Michael S.; Blase, William P.; and Isser, Abraham, to DCS Corporation. Holographic structured light generator. 5,548,418, Cl. 359-20.000.

Gazzara, Paul: *See—*
Reed, Steven J.; Wallgren, Robert L.; Davies, Scott T.; Wojtan, George R.; and Gazzara, Paul, 5,548,489, Cl. 361-827.000.

GDS Seating, Inc.: *See—*
Lavender, Donald C., 5,547,257, Cl. 297-411.320.

GEC Alsthom Transport S.A.: *See—*
Haentjens, Stéphen; Chappet, Philippe; Tessier, Jean-Luc; Ardissone, Jean-Paul; and Guibergia, Jean-Pierre, 5,546,865, Cl. 105-1.200.

GECO A.S.: *See—*
Helgerud, Per; and Bragstad, Helge, 5,548,562, Cl. 367-14.000.

Gegg, Rolf: *See—*
Pinhack, Hubert; Fuhrmann, Jürgen; and Gegg, Rolf, 5,547,282, Cl. 374-36.000.

Gehlsen, Kurt R.: *See—*
Ruoslahti, Erkki I.; Pierschbacher, Michael D.; and Gehlsen, Kurt R., 5,547,936, Cl. 514-12.000.

Geiger, Reinold; and Tartaglione, André. Device to close a side dispensing orifice by axial sliding with push button element. 5,547,111, Cl. 222-505.000.

Geke, Juergen: *See—*
Molz, Thomas; Rehm, Hans-Joergen; Vogt, Toni; and Geke, Juergen, 5,547,587, Cl. 210-696.000.

Geller, Alan, to Fun World. Hood with a concealing face mask. 5,546,604, Cl. 2-202.000.

Gen-Probe Incorporated: *See—*
Hogan, James; Smith, Richard; and Kop, Joann, 5,547,842, Cl. 435-6.000.

Gen Rad, Inc.: *See—*
Albee, Alan J.; Duus, Erik; and Ellis, Mark, 5,548,525, Cl. 364-489.000.

Gendai, Yuji, to Sony Corporation. Analog to digital converter. 5,548,287, Cl. 341-133.000.

Genentech, Inc.: *See—*

Curiel, David T.; Birnstiel, Max L.; Cotten, Matthew; Wagner, Ernst; Zatloukal, Kurt; Plank, Christian; Oberhauser, Berndt; and Schmidt, Walter G. M., 5,547,932, Cl. 435-65.000.

Frochler, Brian C.; and Matteucci, Mark D., 5,548,076, Cl. 536-25.340.

Godowski, Paul J.; Lokker, Natalie A.; and Mark, Melanie R., 5,547,856, Cl. 435-694.000.

General Electric Company: *See—*
Ackerman, John F., 5,547,706, Cl. 427-166.000.
Blankenship, Charles P., Jr.; and Henry, Michael F., 5,547,523, Cl. 148-677.000.
Dumoulin, Charles L.; and Hardy, Christopher J., 5,548,216, Cl. 324-309.000.
Eggleston, Michael R.; Benz, Mark G.; Jackson, Melvin R.; Hughes, John R.; and Raber, Thomas R., 5,547,410, Cl. 445-28.000.
Eggleston, Michael R.; Benz, Mark G.; Jackson, Melvin R.; and Zabala, Robert J., 5,548,628, Cl. 378-125.000.
Hussain, Moayyed A.; Rigby, Kenneth W.; and Bae, Koeunyi, 5,548,561, Cl. 367-7.000.
Johnson, Neil A.; Raber, Thomas R.; Hibbs, Louis E., Jr.; Murray, Melissa L.; and Benz, Mark G., 5,547,518, Cl. 148-98.000.
Kliman, Gerald B.; Preston, Mark A.; and Jones, Donald W., 5,548,172, Cl. 310-156.000.
Kutschenreuter, Paul H., Jr., 5,546,745, Cl. 60-270.100.
Laskaris, Evangelos T.; and Herd, Kenneth G., 5,548,168, Cl. 310-52.000.
Miller, Steven A.; Miller, Russell S.; and Christensen, Roy W., 5,547,171, Cl. 266-78.000.
Pla, Frederic C.; Hedeen, Robert A.; and Imam, Imdad, 5,548,653, Cl. 381-71.000.
Staver, Daniel A.; and McGrath, Donald T., 5,548,540, Cl. 364-724.100.
Whipple, Walter, III, 5,546,757, Cl. 62-225.000.
Wojnarowski, Robert J.; and Gorczyca, Thomas B., 5,546,654, Cl. 29-841.000.

General Hospital Corporation, The: *See—*
Donahoe, Patricia K.; Gustafson, Michael; and He, Wei W., 5,547,854, Cl. 435-69.100.

General Motors Corp.: *See—*
Beck, Donald D.; and Siegel, Richard W., 5,547,649, Cl. 423-230.000.

General Signal Corporation: *See—*
Torok, Robert J.; and Duschen, Ernest A., 5,547,167, Cl. 251-187.000.

Genevray, Henri, to N. Schlumberger et Cie, S.A. Cylinder distance adjusting device for carding machine. 5,546,634, Cl. 19-101.000.

Genzyme Corporation: *See—*
Magneson, Gerald R.; and Reichenbach, David L., 5,547,873, Cl. 436-18.000.

George, Danny: *See—*
Dotson, Cynthia; and George, Danny, 5,547,011, Cl. 160-381.000.

George, Randy R.: *See—*
Newell, Gregory A.; George, Randy R.; Lancaster, Patrick R., III; and Janes, Robert D., 5,546,730, Cl. 53-399.000.

George, William R.: *See—*
Broyles, Bruce R.; Kipke, Cary A.; and George, William R., 5,546,996, Cl. 141-18.000.

Georges, Pierre, to E M S. Collapsible drum. 5,547,147, Cl. 242-607.100.

Georgia-Pacific Resins, Inc.: *See—*
Bourlier, Ken A.; and Mulrenin, Peggy S., 5,548,015, Cl. 524-503.000.

Georgia Tech Research Corporation: *See—*
Wang, Xiao-an; and Wicker, Stephen B., 5,548,684, Cl. 395-21.000.

Gere, Anikó: *See—*
Mahó, Sándor; Tuba, Zoltán; Gere, Anikó; Vittay, Pal; Kiss, Béla; Pálosi, Éva; Szporny, László; Francsicsné, Erzsébet C.; Boórné, Anna M.; Balogh, Gábor; and Görög, Sándor, 5,547,949, Cl. 514-176.000.

Gergen, Paul N.: *See—*
Walsh, Frank P.; Gergen, Paul N.; and Hines, David, 5,548,632, Cl. 379-58.000.

Gerhardt, Klaus; Sebastian, Lothar; and Weiss, Horst, to G. Siempelkamp GmbH & Co. Steel belt press with inlet mouth contour adjustability. 5,546,857, Cl. 100-93.00P.

Gerhart, Matthew J.: *See—*
Grutter, Peter J.; Gerhart, Matthew J.; Gladd, Matthew J.; and Cushing, John A., 5,547,435, Cl. 477-110.000.

Gerson, Brian D.; Huscroft, Kevin; and Mallinson, Martin, to PMC-Sierra, Inc. High-speed CMOS pseudo-ECL output driver. 5,548,230, Cl. 326-73.000.

Gervais, Monica: *See—*
Dumas, Bruno; Gervais, Monica; Bergoin, Max; Jourdan, Mireille; and Jousset, Francoise X., 5,547,869, Cl. 435-252.330.

Ghaemi, Hadi F.: *See—*
Goldberg, Bennett B.; and Ghaemi, Hadi F., 5,548,113, Cl. 250-234.000.

Ghiasi, Katy: *See—*
Perry, Michael R.; Huang, Victor T.; Rosenwald, Diane R.; Johnson, Andrew H.; and Ghiasi, Katy, 5,547,694, Cl. 426-118.000.

Ghisolfi, Guido; Giordano, Dario; and Boveri, Giuseppina, to Sinco Engineering S.p.A. Process for the purification of inert gases. 5,547,652, Cl. 423-245.300.

Gibbens, Morgan S.: *See—*
Bartscht, Martin D.; and Gibbens, Morgan S., 5,547,051, Cl. 190-26.000.

Gibbs, George S.: *See—*
Vick, Doug M.; Baxter, James T.; and Gibbs, George S., 5,547,636, Cl. 422-124.000.

Gibson, Colin; Matthews, Ian P.; Samuel, Alan H.; and Zhu, Zhangwhu. Microwave spectrometers. 5,548,217, Cl. 324-316.000.

Gibson, Donald H.: *See—*
Baum, Richard I.; Brent, Glen A.; Gibson, Donald H.; and Lindquist, David B., 5,548,769, Cl. 395-800.000.

Giese, Peter, to INA Walzlager Schaeffler KG. Pressurized radial bearings. 5,547,060, Cl. 192-110.00B.

Giese, Robert C.: *See—*
Bloemer, John M.; Kurth, Michael J.; Bengtson, Alan D.; Giese, Robert C.; Dannenberg, Todd D.; Thomas, Carter J.; Potter, Edwin R., Jr.; Bonnell, Thomas A.; Halloran, Daniel N.; and Clarke, Thomas W., 5,546,616, Cl. 4-541.200.

Giguere, Vincent: *See—*
Evans, Ronald M.; Ong, Estelita S.; Segui, Prudimar S.; Thompson, Catherine C.; Umesono, Kazuhiko; and Giguere, Vincent, 5,548,063, Cl. 530-350.000.

Gilbarco, Inc.: *See—*
Li, Y. Christian; Poleshuk, Edward S.; and McMordie, James R., 5,546,981, Cl. 137-493.300.

Gildersleeve, Lyle A.: *See—*
Paluch, John W. D.; Malss, Stephen R.; Gildersleeve, Lyle A.; Schlunke, Christopher K.; Bell, Gregory B.; and Smith, Darren A., 5,546,902, Cl. 123-304.000.

Giles, Richard M.; Driscoll, Daniel J.; Ranalli, Eliseo; Tamkin, John M.; and Scott, Bradley, to Printrak International Inc. Scanning fingerprint reading. 5,548,394, Cl. 356-71.000.

Gimmler, Helmut; Nester, Ulrich; Kurz, Gerhard; and Huhn, Werner, to Mercedes-Benz AG. Process for determining gas-force transmitted torque to an internal-combustion engine crankshaft. 5,546,793, Cl. 73-116.000.

Gimpera, José: *See—*
Brückner, Raimund; and Gimpera, José, 5,547,014, Cl. 164-437.000.

Gimzewski, James; Parrinello, Michele; and Reihl, Bruno, to International Business Machines Corporation. Molecular recording/reproducing method and recording medium. 5,547,774, Cl. 428-694.0ML.

Ginn, Michael W.; Cobb, Gary L.; Broxton, Lawrence E.; and McNeely, Kelly R., to ECC International Inc. Apparatus for filtering mineral slurries. 5,547,574, Cl. 210-388.000.

Ginzburg, Vladimir B., to Danieli United, Inc.; and International Rolling Mill Consultants, Inc. Interstand strip gauge and profile conrol. 5,546,779, Cl. 72-11.400.

Gion, Masahiro; and Toyokura, Masaki, to Matsushita Electric Industrial Co., Ltd. Vector correlation detecting circuit. 5,548,665, Cl. 382-276.000.

Giordano, Dario: *See—*
Ghisolfi, Guido; Giordano, Dario; and Boveri, Giuseppina, 5,547,652, Cl. 423-245.300.

Giras, Theo C.; Profeta, Joseph A.; and Romano, Dario, to Union Switch & Signal Inc. Railway switch mechanism. 5,547,151, Cl. 246-227.000.

Girsberger Holding AG: *See—*
Pfenniger, Reto, 5,547,252, Cl. 297-300.300.

Gissmann, Lutz: *See—*
Bartsch, Dusan; Gissmann, Lutz; and Müller, Martin, 5,547,846, Cl. 435-7.100.

Gist-Brocades, N.V.: *See—*
Vaisanen, Seppo; Haarasilta, Sampsa; and Scott, Don, 5,547,690, Cl. 426-10.000.

GKN Vicsodrive GmbH: *See—*
Gasch, Christian, 5,547,430, Cl. 475-89.000.

Glacier RPB Inc.: *See—*
Shultz, Richard R., 5,548,170, Cl. 310-90.500.

Gladd, Matthew J.: *See—*
Grutter, Peter J.; Gerhart, Matthew J.; Gladd, Matthew J.; and Cushing, John A., 5,547,435, Cl. 477-110.000.

Glaess, David F.: *See—*
Brooks, Peter E.; and Glaess, David F., 5,548,457, Cl. 360-98.080.

Glamkowski, Edward J.: *See—*
Hamer, Richard L.; Helsley, Grover C.; Glamkowski, Edward J.; and Chiang, Yulin, 5,547,977, Cl. 514-41.100.

Glassen, Steven G.: *See—*
Casper, Daniel F.; Glassen, Steven G.; Halma, Marten J.; and Ryan, Sandra K., 5,548,791, Cl. 395-858.000.

Glaxo Group Limited: *See—*
Hagan, Russell M.; and Bunce, Keith T., 5,547,964, Cl. 514-329.000.

Gleaves, David; Nagata, Yoshifumi; and Takebayashi, Yoichi, to Kabushiki Kaisha Toshiba. Speech dialogue system for realizing improved communication between user and system. 5,548,681, Cl. 395-2.420.

Gleich, Werner; Rothacker, Fritz D.; Brückel, Dieter; and Schmid, Eduard, to Böwe Systec AG. Base for machines and the like. 5,547,161, Cl. 248-678.000.

Gleisner, John M., to Polymer Technology International Corporation. Method for continuous manufacture of diagnostic test strips. 5,547,702, Cl. 427-2.130.

Gleissner, Karlheinz; Ringelstein, Hans-Martin; and Lange, Ekkehard, to Degussa Aktiengesellschaft. Method of producing flexible plastic bands compounded with hard-material powders and/or soldering powders. 5,547,625, Cl. 264-122.000.

Glew, Andrew F.: *See—*
Colwell, Robert P.; and Glew, Andrew F., 5,548,776, Cl. 395-800.000.

Glickert, Roger W.: *See—*
Breen, Bernard P.; Bionda, John P., Jr.; Gabrielson, James E.; Glickert, Roger W.; and Hallo, Anthony, 5,546,874, Cl. 110-261.000.

Glitsch, Inc.: *See—*

Lee, Adam T.; Wu, Kuang; and Burton, Larry, 5,547,617, Cl. 261-114.500.

Gloeckler, Frank: *See—*
Bunk, Axel; Klam, Ruediger; Ender, Elmar; and Gloeckler, Frank, 5,548,182, Cl. 313-113.000.

Gobran, Ramsis, to Minnesota Mining and Manufacturing Company. Non-yellowing tape article. 5,547,766, Cl. 428-515.000.

Godbole, Devendra: *See—*
Keefer, James D.; Havener, John P.; Godbole, Devendra; and Ferguson, Ralph B., 5,548,528, Cl. 364-497.000.

Goddard, Philip M.: *See—*
Tarbet, Bryon J.; Bruening, Ronald L.; Di Leo, Anthony J.; Goddard, Philip M.; and Scarmoutzos, Louis M., 5,547,760, Cl. 428-471.000.

Godowski, Paul J.; Lokker, Natalie A.; and Mark, Melanie R., to Genentech, Inc. Hepatocyte growth factor variants. 5,547,856, Cl. 435-694.000.

Goke, L. Rodney: *See—*
Davis, Jack R.; Gallup, Michael G.; Goke, L. Rodney; Welty, Erik L.; and Wiles, Michael F., 5,548,771, Cl. 395-800.000.
Gallup, Michael G.; and Goke, L. Rodney, 5,548,768, Cl. 395-375.000.

Golarz, B. Paul, to Atoma International Inc. Parking brake. 5,546,828, Cl. 74-512.000.

Goldberg, Bennett B.; and Ghaemi, Hadi F., to Trustees of Boston University. Co-axial detection and illumination with shear force dithering in a near-field scanning optical microscope. 5,548,113, Cl. 250-234.000.

Goldstar Co., Ltd.: *See—*
Jeon, Si M.; and Kang, Seong K., 5,546,968, Cl. 134-179.000.
Jin, Hong J., 5,548,456, Cl. 360-85.000.
Kwon, Chul-Ho, 5,548,102, Cl. 219-685.000.
Lim, Jun Y., 5,548,196, Cl. 318-701.000.

Goldstein, Judith A.: *See—*
Downs, Terry; and Goldstein, Judith A., 5,548,324, Cl. 348-15.000.

Goldstein, Neil I.; and Tackney, Charles T., to Imclone Systems Incorporated. Recombinant hybrid porin epitopes. 5,547,670, Cl. 424-192.100.

Goldston, Mark R.; Bemis, Jon L.; and Robinson, William J., to L.A. Gear, Inc. Footwear with flashing lights. 5,546,681, Cl. 36-137.000.

Gomi, Takayuki: *See—*
Miwa, Hiroyuki; Gomi, Takayuki; and Kato, Katsuyuki, 5,548,156, Cl. 257-517.000.

Goode, Mark G., to Union Carbide Chemical & Plastics Technology Corporation. Process for the production of polypropylene. 5,548,042, Cl. 526-65.000.

Goodman, Claude A.: *See—*
Perez-Mendez, Victor; and Goodman, Claude A., 5,548,123, Cl. 250-370.110.

Goodman, Jack. Method of using ultrasonic dental tool. 5,547,380, Cl. 433-215.000.

Goodman, Myron F.; and Reha-Krantz, Linda J. Chain-terminating nucleotides for DNA sequencing methods. 5,547,859, Cl. 435-91.100.

Goor, Dan: *See—*
Kalberer, Robert C.; and Goor, Dan, 5,547,149, Cl. 244-121.000.

Gorczyca, Thomas B.: *See—*
Wojnarowski, Robert J.; and Gorczyca, Thomas B., 5,546,654, Cl. 29-841.000.

Gormley, Glenn J.; Kaufman, Keith D.; Stoner, Elizabeth; and Waldstreicher, Joanne, to Merck & Co., Inc. Method of treating androgenic alopecia with 5-α reductase inhibitors. 5,547,957, Cl. 514-284.000.

Görög, Sándor: *See—*
Mahó, Sándor; Tuba, Zoltán; Gere, Anikó; Vittay, Pal; Kiss, Béla; Pálosi, Éva; Szpony, László; Francsicsné, Erzsébet C.; Boórné, Anna M.; Balogh, Gábor; and Görög, Sándor, 5,547,949, Cl. 514-176.000.

Gossen, Ralf; Buxhofer, Horst; and Onusseit, Hermann, to Henkel Kommanditgesellschaft auf Aktien. Antislip preparation. 5,547,712, Cl. 427-421.000.

Goto, Hisashi, to Alco Industries Kabushiki Kaisha. Electric cooking apparatus. 5,546,851, Cl. 99-446.000.

Goto, Katumi: *See—*
Yamada, Tadayoshi; Tozuka, Masahiro; Goto, Katumi; Simatani, Tuyoshi; and Maeda, Yoshinobu, 5,548,350, Cl. 348-839.000.

Goto, Kenji: *See—*
Kataoka, Takuo; and Goto, Kenji, 5,547,912, Cl. 502-154.000.

Goto, Kohei; Hattori, Iwakazu; Ogasahara, Shoji; Shibata, Masahiro; Michino, Yoshiyuki; Soga, Kazuo; and Shiono, Takeshi, to Japan Synthetic Rubber Co., Ltd. Process for producing polybutadiene. 5,548,045, Cl. 526-161.000.

Goto, Kunifumi: *See—*
Shimizu, Izuru; Fukanuma, Tetsuhiko; Yamaguchi, Tetsuya; Goto, Kunifumi; Hisanaga, Shigeru; and Egami, Hirotaka, 5,547,354, Cl. 418-55.500.

Goto, Takaharu: *See—*
Nakatsu, Kazuya; Goto, Takaharu; Higaki, Toru; Endo, Hideki; Hirose, Satoru; and Yamazaki, Yukinori, 5,547,505, Cl. 106-713.000.

Gotro, Jeffrey T.: *See—*
Afzali-Ardakani, Ali; Gotro, Jeffrey T.; Hedrick, Jeffrey C.; Papathomas, Konstantinos; Patel, Niranjan M.; Shaw, Jane M.; and Viehbeck, Alfred, 5,548,034, Cl. 525-390.000.

Gottzmann, Christian F.: *See—*
Prasad, Ravi; and Gottzmann, Christian F., 5,547,494, Cl. 95-54.000.

Gough, David: *See—*
Price, Jeffrey H.; and Gough, David, 5,548,661, Cl. 382-133.000.

Gould, Duncan K. Stimulating a beneficial human response by using visualization of medical scan data to achieve psychoneuroimmunological virtual reality. 5,546,943, Cl. 128-653.100.

Goyal, Hari B.: *See—*
Kulsrestha, Girindra N.; Saxena, Mahendra P.; Gupta, Ashok K.; Goyal, Hari B.; Prasad, Rameshwar; Prasada Rao, Turuga S. R.; and Patel, Prakash D., 5,547,905, Cl. 502-66.000.

Grabon, Robert J., to Norand Corporation. Battery charging method and apparatus with thermal mass equalization. 5,548,201, Cl. 320-35.000.

Grace, Martin I.; and Oldfield, William W., to Wiltron Company. Internal automatic calibrator for vector network analyzers. 5,548,538, Cl. 364-571.040.

Grady, Hugh N., Jr.: *See—*
Walimaa, Edsel J.; and Grady, Hugh N., Jr., 5,547,330, Cl. 414-749.000.

Graf, Friedrich; and Brückner, Dieter, to Siemens Aktiengesellschaft. Control for a motor vehicle drive having an automatic transmission. 5,547,434, Cl. 477-109.000.

Graf, Walter; and Immisch, Ulrich, to Satzinger GmbH & Co. Electrochemically reactive element for lubricant dispenser. 5,547,043, Cl. 184-39.000.

Graham, Teresita O.: *See—*
Feger, Claudius; Graham, Teresita O.; Grebe, Kurt R.; Lanzetta, Alphonso P.; Liutkus, John J.; Matthew, Linda C.; Palmer, Michael J.; Tanner, Nelson R.; Tong, Ho-Ming; Wilson, Charles H.; and Yeh, Helen L., 5,546,655, Cl. 29-846.000.

Graham, Thomas: *See—*
North, Thomas G., III; Graham, Thomas; and Wang, Yushan, 5,547,345, Cl. 417-63.000.

Grandy, David K.: *See—*
Bunzow, James R.; Civelli, Olivier; Grandy, David K.; and Zhou, Qun Y., 5,547,845, Cl. 435-7.100.

Graneto, Matthew J.: *See—*
Talley, John J.; Bertenshaw, Stephen R.; Graneto, Matthew J.; and Rogier, Donald J., 5,547,975, Cl. 514-406.000.

Grant, Frederic F.: *See—*
Grant, Katherine M., deceased; and Grant, Frederic F., 5,546,831, Cl. 81-3.440.

Grant, Frederic F., legal representative: *See—*
Grant, Katherine M., deceased; and Grant, Frederic F., 5,546,831, Cl. 81-3.440.

Grant, Katherine M., deceased (by Frederic F. Grant, legal representative); and Grant, Frederic F. Gripping system for rotary objects. 5,546,831, Cl. 81-3.440.

Grant, Robert H.; Book, David; and Sullivan, Gregory T., to Hewlett-Packard Company. High performance frame time monitoring system and method for a fiber optic switch for a fiber optic network. 5,548,590, Cl. 370-61.000.

Graper, Jane C.: *See—*
Vogler, Erwin A.; Shepard, Thomas A.; and Graper, Jane C., 5,547,577, Cl. 210-511.000.

Grapha-Holding AG: *See—*
Merkli, Peter; and Linder, Heinz, 5,547,177, Cl. 270-52.050.

Gratzer, Franz, to Steyr-Daimler-Puch AG. Free-wheeling coupling sensitive to the direction of rotation. 5,547,054, Cl. 192-35.000.

Grau Sturage Systems CmBH & Co. KG: *See—*
Krayer, Werner F.; Baur, Rolf, deceased, 5,548,521, Cl. 364-478.020.

Graushar, William T.; and Dettmering, Todd J., to Quad/Tech, Inc. Apparatus and method for preparing mail products. 5,547,175, Cl. 270-037.000.

Grawenhof, Peter: *See—*
Lindenthal, Hans; and Grawenhof, Peter, 5,547,423, Cl. 464-136.000.

Gray, Ian J.; and White, Melvin D., to ITT Industries, Limited. Electrical conductor terminating arrangements. 5,548,088, Cl. 174-74.00R.

Gray, Patricia: *See—*
Easley, Ellis, Jr.; Gray, Patricia; Suwandhaputra, Johannes; and Wolf, Julie, 5,548,784, Cl. 395-838.000.

Grebe, Kurt R.: *See—*
Feger, Claudius; Graham, Teresita O.; Grebe, Kurt R.; Lanzetta, Alphonso P.; Liutkus, John J.; Matthew, Linda C.; Palmer, Michael J.; Tanner, Nelson R.; Tong, Ho-Ming; Wilson, Charles H.; and Yeh, Helen L., 5,546,655, Cl. 29-846.000.

Green, Charles D.: *See—*
Mandel, Frederick S.; Green, Charles D.; and Scheibelhoffer, Anthony S., 5,548,004, Cl. 523-342.000.

Greenberg, Gary, to Edge Scientific Instrument Corp. Illumination system and method for a high definition light microscope. 5,548,441, Cl. 359-390.000.

Greene, Daniel H.: *See—*
Appel, James J.; Greene, Daniel H.; and Mudge, J. Craig, 5,548,357, Cl. 353-69.000.

Greenfield, Sherwood S.; and Voll, Kevin J., to Whitaker Corporation, The. Local distribution utility center for a raised floor. 5,548,086, Cl. 174-48.000.

Greenstein, Julia L.: *See—*
Rogers, Bruce L.; Morgenstern, Jay P.; Bond, Julian F.; Garman, Richard D.; Greenstein, Julia L.; Kuo, Mei-chang; and Morville, Malcolm, 5,547,669, Cl. 424-185.100.

Greenwald, Richard B.; and Pendri, Annapurna, to Enzon, Inc. Taxol-7-carbazates. 5,547,981, Cl. 514-449.000.

Greenwood, Brian F.: *See—*
Nykanen, Tuomo S.; Greenwood, Brian F.; Gullichsen, Johan; Kiiskila, Erkki; Mattelmaki, Esko; Phillips, Joseph R.; Richardsen, Jan; Ryham, Rolf; Soderman, Jarmo; and Wiklund, Karl, 5,547,543, Cl. 162-31.000.

Gregg, Thomas A.: *See—*

Casper, Daniel F.; Gregg, Thomas A.; Salyer, Gregory; and Westcott, Douglas W., 5,548,623, Cl. 375-358.000.

Gregory, John E. Removable door lock. 5,547,236, Cl. 292-148.000.

Greinacher, Ekkehard: *See—*
Discher, Heinz-Peter; Greinacher, Ekkehard; and Banski, Hans, 5,547,490, Cl. 75-665.000.

Greiner, Leonard; Moard, David M.; and Bhatt, Bharat, to Hydrogen Burner Technology, Inc. Underoxidized burner utilizing improved injectors. 5,546,701, Cl. 48-108.000.

Gresens, Stanley: *See—*
Jané, Rodney; Longan, John; Wang, Jui-Shang; and Gresens, Stanley, 5,547,343, Cl. 416-246.000.

Grewal, Nanak S.: *See—*
Selle, Stanley J.; Hajicek, Douglas R.; Mann, Michael D.; and Grewal, Nanak S., 5,546,875, Cl. 110-342.000.

Grewal, Rupinder S.; Joyce, Michael E.; and Nord, Randall F., to Nalco/Exxon Energy Chemicals, L.P. Oil dewaxing method. 5,547,562, Cl. 208-24.000.

Grieb, Henry N., III: *See—*
Wooldridge, James A.; Brender, Ronald F.; and Grieb, Henry N., III, 5,548,717, Cl. 395-183.140.

Griffin, Thomas J., Jr.: *See—*
Chan, Keng S.; and Griffin, Thomas J., Jr., 5,547,027, Cl. 166-295.000.

Grimm, Dennis: *See—*
Moncrief, Frank; Ziegler, Kelly W.; Hiney, Michael; and Grimm, Dennis, 5,546,734, Cl. 53-534.000.

Grodzinski, Piotr; Lee, Hsing-Chung; and Shieh, Chan-Long, to Motorola. Method for p-doping of a light-emitting device. 5,547,898, Cl. 437-129.000.

Grogan, R. Pat, to Calmar Inc. Sprayer having variable spray pattern. 5,547,132, Cl. 239-333.000.

Grot, Walther G., to Du Pont de Nemours, E. I., and Company. Process of imprinting catalytically active particles on membrane. 5,547,911, Cl. 502-101.000.

Gruber, Walter: *See—*
Bade, Karl H.; Gruber, Walter; and Simuttis, Anold, 5,547,174, Cl. 267-154.000.

Grubisich, Michael J.: *See—*
Bulucea, Constantin; and Grubisich, Michael J., 5,548,158, Cl. 257-592.000.

Grumman Aerospace Corporation: *See—*
Engel, Stephen J.; Jeffries, Clark; and Lee, Christopher, 5,548,683, Cl. 395-21.000.
Haas, Edwin G.; and Kesselman, Martin, 5,546,784, Cl. 72-413.000.

Gruppo Lepetit SpA: *See—*
Selva, Enrico; and Tavecchia, Paolo, 5,547,666, Cl. 424-123.000.

Grutter, Peter J.; Gerhart, Matthew J.; Gladd, Matthew J.; and Cushing, John A., to Ford Motor Company. Automatic transmission gear shift control during power reduction. 5,547,435, Cl. 477-110.000.

Grutzner, Hans, to K. Bratschi, Silent Gliss. Actuating device for curtain strips. 5,547,007, Cl. 160-168.100.

Gsell, Thomas C.; Pascale, Frank R.; and Lipari, Charles, to Pall Corporation. Expressor. 5,547,108, Cl. 222-95.000.

Gudat, Adam J.; Rao, Prithvi N.; Shaffer, Gary K.; Shi, Wenfan; Shin, Dong H.; Sennott, James W.; Whittaker, William L.; Kleimenhagen, Karl W.; West, Jay H.; Clow, Richard G.; Wu, Baoxin; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., to Caterpillar Inc. Multi-tasked navigation system and method for an autonomous land based vehicle. 5,548,516, Cl. 364-443.000.

Guerra, Carlos: *See—*
Chen, Ching-Fong; and Guerra, Carlos, 5,547,876, Cl. 436-159.000.

Guerre, Gilles: *See—*
Bonora, Anthony C.; Guerre, Gilles; Parikh, Mihir; Rosenquist, Frederick T., Jr.; and Jain, Sudhir, 5,547,328, Cl. 414-217.000.

Guggenberger, Rainer: *See—*
Schwabe, Peter; Schlak, Ottfried; Winkel, Jens; Guggenberger, Rainer; and Gasser, Oswald, 5,548,002, Cl. 523-118.000.

Guibaud, Jean-Marc: *See—*
Dumontier, Franck; Guibaud, Jean-Marc; Peters, Mike; and Brouillette, Steven, 5,547,188, Cl. 473-287.000.

Guibergia, Jean-Pierre: *See—*
Haentjens, Stéphen; Chappet, Philippe; Tessier, Jean-Luc; Ardissone, Jean-Paul; and Guibergia, Jean-Pierre, 5,546,865, Cl. 105-1.200.

Guillevic, Dominique: *See—*
Paquier, Jean-Luc; and Guillevic, Dominique, 5,548,343, Cl. 348-691.000.

Guiotto, Dino. Method of manufacturing a footwear insole having an integrated comfort and support pad. 5,547,620, Cl. 264-46.400.

Guldi, Richard L., to Texas Instruments Incorporated. Structural modification to enhance DRAM gate oxide quality. 5,547,891, Cl. 437-52.000.

Gullichsen, Johan: *See—*
Nykanen, Tuomo S.; Greenwood, Brian F.; Gullichsen, Johan; Kiiskila, Erkki; Mattelmaki, Esko; Phillips, Joseph R.; Richardsen, Jan; Ryham, Rolf; Soderman, Jarmo; and Wiklund, Karl, 5,547,543, Cl. 162-31.000.

Gumbert, Hans, to U.S. Philips Corporation. Method of securing an apparatus part. 5,547,123, Cl. 228-173.600.

Gunday, Erhan H.; Doliton, Michael; Foung, Paul; and Lee, John R., to Sony Corporation; and Sony Electronics, Inc. Apparatus for selectively generating and enhancing within a window of signal values, video signals representing photographic images previously recorded in a film on a photographic film-type medium. 5,548,327, Cl. 348-97.000.

Gunji, Takahiro; Tabata, Masamune; Dosaka, Kenji; and Hirose, Kenji, to Honda Giken Kogyo Kabushiki Kaisha. High-hardness metal skin film. 5,547,771, Cl. 428-687.000.

Gunn, Brian D.: *See—*
Dyer, David J.; and Gunn, Brian D., 5,547,212, Cl. 280-728.200.

Gunn, Daniel D.: *See—*
Aldridge, David L.; Bunton, William P.; Bissell, Stephen R.; Brown, David; Gunn, Daniel D.; Kagy, Carl; and Sonnier, David P., 5,548,463, Cl. 361-18.000.

Gunshor, Robert L.: *See—*
Fan, Yongping; Han, Jung; Nurimikko, Arto V.; Gunshor, Robert L.; and He, Li, 5,548,137, Cl. 257-191.000.

Gupta, Anil: *See—*
Wang, Chi-Ming; Gupta, Anil; and Randhawa, Hiten D. S., 5,548,551, Cl. 365-185.180.

Gupta, Ashok K.: *See—*
Kulsrestha, Girindra N.; Saxena, Mahendra P.; Gupta, Ashok K.; Goyal, Hari B.; Prasad, Rameshwar; Prasada Rao, Turuga S. R.; and Patel, Prakash D., 5,547,905, Cl. 502-66.000.

Gustafson, Michael: *See—*
Donahoe, Patricia K.; Gustafson, Michael; and He, Wei W., 5,547,854, Cl. 435-69.100.

Gysel, Hermann: *See—*
Ramachandran, Mani; and Gysel, Hermann, 5,548,436, Cl. 359-187.000.

H. B. Fuller Company: *See—*
Jorissen, Steven A.; Ferguson, Gregory A.; and Imirowicz, Krystyna, 5,548,026, Cl. 525-113.000.

Ha, Jin S. Crash net safety device for an automobile. 5,547,219, Cl. 280-749.000.

Haarasilta, Sampsa: *See—*
Vaisanen, Seppo; Haarasilta, Sampsa; and Scott, Don, 5,547,690, Cl. 426-10.000.

Haas, Edwin G.; and Kesselman, Martin, to Grumman Aerospace Corporation. Adjustable form die. 5,546,784, Cl. 72-413.000.

Haberstroh, Rudolf; and Antonacakis, Georges, to Mercedes-Benz AG. Battery terminal clamp. 5,547,403, Cl. 439-763.000.

Hacias, Kenneth J., to Henkel Corporation. Aqueous lubricant and process for cold forming metal, particularly pointing thick-walled metal tubes. 5,547,595, Cl. 508-156.000.

Hadlum, Paul: *See—*
Evans, Maurice J.; Faulkner, Sharon L.; Fisher, Ronald; Wells, Trevor C.; and Hadlum, Paul, 5,547,737, Cl. 428-178.000.

Haeger, Thomas A.: *See—*
Tsuda, George I.; Haeger, Thomas A.; and Leeper, William A., 5,548,299, Cl. 343-789.000.

Haentjens, Stéphen; Chappet, Philippe; Tessier, Jean-Luc; Ardissone, Jean-Paul; and Guibergia, Jean-Pierre, to GEC Alsthom Transport S.A. Device for reducing the aerodynamic drag of a cavity in a flow, and a vehicle, in particular a rail vehicle, provided with such a device. 5,546,865, Cl. 105-1.200.

Häfele, Edelbert; and Seeger, Walter, to Roth-Technik GmbH & Co. Housing for gas sensors. 5,546,787, Cl. 73-23.310.

Hagan, Russell M.; and Bunce, Keith T., to Glaxo Group Limited. Medical use for tachykinin antagonists. 5,547,964, Cl. 514-329.000.

Hagihara, Takeaki; and Torii, Maho, to Asahi Medical Co., Ltd. Method for separating a blood material into blood components by centrifugation, and centrifugal apparatus. 5,547,591, Cl. 210-782.000.

Hagopian, William; Lernmark, Ake; Karlsen, Allan E.; and Landin-Olsson, Mona, to University of Washington. Diagnosis of insulin-dependent diabetes. 5,547,847, Cl. 435-7.400.

Hahn, Norbert, to Rite-Hite Corporation. Maintenance strut for dock leveler. 5,546,623, Cl. 14-69.500.

Haigh, Paul: *See—*
Conner, John P.; Ross, James W.; Youngs, Bradley D.; Haigh, Paul; and Small, William C., 5,546,873, Cl. 108-153.000.

Haisma, Jan; Kamerbeek, Evert M. H.; Spierings, Gijsbertus A. C. M.; and De Haas, Peter W., to U.S. Philips Corporation. Electrical machine and method of manufacturing the electrical machine. 5,547,119, Cl. 228-116.000.

Hajicek, Douglas R.: *See—*
Seile, Stanley J.; Hajicek, Douglas R.; Mann, Michael D.; and Grewal, Nanak S., 5,546,875, Cl. 110-342.000.

Hakotani, Yasuhiko: *See—*
Nakamura, Yoshifumi; Bessho, Yoshihiro; Yuhaku, Satoru; Hakotani, Yasuhiko; Itagaki, Minehiro; and Miura, Kazuhiro, 5,547,530, Cl. 156-89.000.

Hakumoto, Shigeyuki: *See—*
Anno, Masahiro; Nakamura, Minoru; Kobayashi, Makoto; and Hakumoto, Shigeyuki, 5,547,797, Cl. 430-106.600.

Halac, Emilia B.: *See—*
Huck, Hugo A.; Jech, Alberto E.; Righini, Raúl; Halac, Emilia B.; de Benyacar, Maria A. R.; and Hicolai, Julio A., 5,547,714, Cl. 427-523.000.

Halasz, Frank G.: *See—*
Moran, Thomas P.; Pedersen, Elin R.; McCall, Michael K.; and Halasz, Frank G., 5,548,705, Cl. 395-159.000.

Hale, Michael A.: *See—*

Clarke, Donald E. A.; Hale, Michael A.; and Chuter, Jeremy B., 5,548,432, Cl. 359-137.000.
Hale, Reggie D. Protective gear. 5,546,602, Cl. 2-2.000.
Haleen, Len W., to Mallinckrodt Medical, Inc. Aggressive convective drying in an agitated pan type dryer. 5,546,676, Cl. 34-187.000.
Hall, Larry; Chiang, Michael Y.; and Meyer, Judith M., to Lonza, Inc. Disinfectants and sanitizers with reduced eye irritation potential. 5,547,990, Cl. 514-563.000.
Hall, Lon E.: *See—*
Chang, Kyusun; Hall, Lon E.; Joyce, Gregory S.; Mazzurana, Paul D.; and Russell, Lance W., 5,548,731, Cl. 395-280.000.
Halliburton Company: *See—*
McDaniel, Billy W.; and Abass, Hazim H., 5,547,023, Cl. 166-280.000.
Sinclair, Paul L., 5,548,219, Cl. 324-338.000.
Hallis, John M.: *See—*
Erickson, Jack A.; Kramer, Robert L.; and Hallis, John M., 5,547,528, Cl. 149-92.000.
Hallo, Anthony: *See—*
Breen, Bernard P.; Bionda, John P., Jr.; Gabrielson, James E.; Glickert, Roger W.; and Hallo, Anthony, 5,546,874, Cl. 110-261.000.
Halloran, Charles F., Jr. Post anchor. 5,547,315, Cl. 405-244.000.
Halloran, Daniel N.: *See—*
Bloemer, John M.; Kurth, Michael J.; Bengtson, Alan D.; Giese, Robert C.; Dannenberg, Todd D.; Thomas, Carter J.; Potter, Edwin R., Jr.; Bonnell, Thomas A.; Halloran, Daniel N.; and Clarke, Thomas W., 5,546,616, Cl. 4-541.200.
Halma, Marten J.: *See—*
Casper, Daniel F.; Glassen, Steven G.; Halma, Marten J.; and Ryan, Sandra K., 5,548,791, Cl. 395-858.000.
Halperin, Mitchell L.; and Cheema-Dhadli, Surinder, to Rossmark Medical Publishers, Inc. Method and apparatus for the desalination of salt containing water. 5,547,586, Cl. 210-686.000.
Hama, Shinjiro: *See—*
Hirayama, Shinji; Konishi, Shin; Hidai, Takao; Hama, Shinjiro; Hashimoto, Sadako; and Morikawa, Yukihiro, 5,548,057, Cl. 528-67.000.
Hama, Yuji: *See—*
Tsunoda, Takeo; Aizawa, Hitomi; and Hama, Yuji, 5,548,765, Cl. 395-750.000.
Hama, Yuko: *See—*
Isoai, Atsushi; Hama, Yuko; and Kumagai, Hiromichi, 5,548,062, Cl. 530-326.000.
Hamada, Hiroshi: *See—*
Mizuguchi, Yoshihiro; and Hamada, Hiroshi, 5,548,349, Cl. 348-766.000.
Hamada, Toshimichi: *See—*
Ohta, Masashi; Kobayashi, Hiroshi; Sekiya, Tsuneo; Hamada, Toshimichi; Fukuda, Kyoko; and Iijima, Koji, 5,548,409, Cl. 358-335.000.
Hamada, Yasunori; and Kawauchi, Masataka, to Hitachi, Ltd. Stereoscopic image processing system. 5,548,316, Cl. 347-171.000.
Hamamatsu Photonics K.K.: *See—*
Kosugi, Mitsuo, 5,548,502, Cl. 363-22.000.
Nakase, Shigeki; Nakamura, Shigeyuki; and Ohta, Tsuyoshi, 5,548,112, Cl. 250-214.00C.
Takeshima, Akira; and Koishi, Musnbu, 5,548,124, Cl. 250-458.100.
Hamamoto, Takeshi; Yamada, Takashi; and Ishibashi, Yutaka, to Kabushiki Kaisha Toshiba. Semiconductor memory apparatus. 5,548,145, Cl. 257-301.000.
Hamano, Hiroyuki: *See—*
Takahashi, Tomomi; Takata, Masahisa; Kogure, Masayoshi; Taira, Ritsushi; and Hamano, Hiroyuki, 5,547,018, Cl. 165-267.000.
Hamblin, Steven W.; Witt, David A.; Sierocuk, Thomas J.; Nicola, Kirk M.; Otten, Matthew R.; and Berky, Craig B., to Ethicon Endo-Surgery. Handle actuator for surgical instrument having clamp lock and emergency release. 5,547,117, Cl. 227-175.200.
Hamer, Richard L.; Helsley, Grover C.; Glamkowski, Edward J.; and Chiang, Yulin, to Hoechst-Roussel Pharmaceuticals, Inc. Memory enhancing and analgesic 1,2,3,3A,8,8A-hexahydro-3A,8(and 1,3A,8)-di (and Tri) methylpyrrolo (2,3-B) indoles. 5,547,977, Cl. 514-41.100.
Hamilton, R. Scott: *See—*
Bennett, S. John; and Hamilton, R. Scott, 5,547,525, Cl. 149-19.100.
Hamilton, Tracy J.: *See—*
Chagnon, Mark S.; Burkle, Stephen E.; Carter, Michelle J.; Hamilton, Tracy J.; Havelick, John, Jr.; Kaplan, Deborah A.; and Marzloff, Kristin L., 5,547,682, Cl. 424-497.000.
Hamm, Mark A.; and Crowley, Robert J., to Boston Scientific Corporation. Ultrasound imaging guidewire. 5,546,948, Cl. 128-662.060.
Hamura, Masayuki; and Azuma, Kenji, to Fanuc Ltd. Control method and control device for a deburring robot. 5,548,194, Cl. 318-568.130.
Hamuro, Mitsuro; Higuchi, Hirokazu; Nakagawa, Tadahiro; and Takahashi, Akihiko, to Murata Manufacturing Co., Ltd. Electrode forming system for chip components. 5,547,511, Cl. 118-423.000.
Han, Chi M.: *See—*
Jeon, Byung C.; Do, Mi S.; Kim, Young S.; and Han, Chi M., 5,548,589, Cl. 370-60.100.
Han, Jung: *See—*
Fan, Yongping; Han, Jung; Nurimikko, Arto V.; Gunshor, Robert L.; and He, Li, 5,548,137, Cl. 257-191.000.
Han, Woo-sung; and Sohn, Chang-jin, to Samsung Electronic Co., Ltd. Mask and method for manufacturing the same. 5,547,788, Cl. 430-5.000.
Han, Youn W.; and Clarke, Margaret A., to United States of America, Agriculture. Production of fructan (levan) polyfructose polymers using bacillus polymyxa. 5,547,863, Cl. 435-101.000.
Hanasaki, Yasuaki; Tsukuda, Kazuaki; Watanabe, Hiroyuki; Tsuzuki, Kenji; Murakami, Mitsuyuki; and Niimi, Noritoshi, to Tosoh Corporation. Thiadizole derivatives and herbicide compositions containing the same. 5,547,920, Cl. 504-261.000.
Hanatani, Shoichi: *See—*
Takai, Atsushi; and Hanatani, Shoichi, 5,548,399, Cl. 356-218.000.
Hanawa, Tetsuya; Kuga, Yuji; Takashima, Yutaka; Matsumoto, Yoshihiro; and Ono, Masayuki, to Fujitsu Limited. Portable radio communication device capable of transmitting the same level of electrical energy when the antenna is stored or extended. 5,548,827, Cl. 455-129.000.
Hand, Bryan, to Babcock & Wilcox Company, The. Heat treatment method for lost foam cast materials. 5,547,521, Cl. 148-522.000.
Haneda, Satoshi: *See—*
Fukuchi, Masakazu; Morita, Shizuo; Haneda, Satoshi; Satoh, Hiseo; and Ikeda, Tadayoshi, 5,548,379, Cl. 355-210.000.
Hanks, D. Mitchel, to Hewlett-Packard Company. Adaptive feedback system for controlling head/arm position in a disk drive. 5,548,192, Cl. 318-560.000.
Hannah, Marc R.; and Nagy, Michael B., to Silicon Graphics, Inc. Apparatus and method for integrating texture memory and interpolation logic in a computer system. 5,548,709, Cl. 395-164.000.
Hannington, Jonathon P.: *See—*
Coles, Harry J.; Hannington, Jonathon P.; and Thomas, David R., 5,547,604, Cl. 252-299.010.
Hansberger Precision Golf Incorporated: *See—*
Pocklington, Terence W., 5,547,197, Cl. 473-384.000.
Hansen, David W. Traction device for tracked vehicle. 5,547,268, Cl. 305-191.000.
Hansen, Michael R.; and Young, Richard H., Sr., to Weyerhaeuser Company. Method for densifying fibers using a densifying agent. 5,547,541, Cl. 162-12.000.
Hansen, Michael R.; and Young, Richard H., Sr., to Weyerhaeuser Company. Particle binders. 5,547,745, Cl. 428-283.000.
Hansen, Scott A., to Prince Corporation. Electrical componet mounting system. 5,548,488, Cl. 361-815.000.
Hansen, Scott A.; and Clark, Russell L., to Prince Corporation. Slide-out fiber-optic illuminated vanity mirror. 5,548,492, Cl. 362-83.100.
Hansenne, Isabelle; Forestier, Serge; and N'Guyen, Quang L., to L'Oreal. Cosmetic composition containing melaninlike pigments in combination with certain tocopherols, and process for protecting the skin, hair, mucosae and cosmetic compositions. 5,547,658, Cl. 424-59.000.
Hanser, Paul E.; Boddicker, Daniel J.; and Blake, John F., to HWH Corporation. Automatic step for recreational vehicles. 5,547,040, Cl. 182-88.000.
Hanus, James P., to United States of America, Health and Human Services. Low pressure low volume liquid pump. 5,547,351, Cl. 417-386.000.
Happs, Clive: *See—*
Moody, Gillian M.; and Happs, Clive, 5,547,647, Cl. 423-121.000.
Haquin, Michel; and Brosson, Jacques, to CLECIM. Acid tank closing device. 5,547,101, Cl. 220-561.000.
Hara, Fumio; Fujimura, Akira; Hara, Yoshihisa; and Sakanushi, Masahiro, to Honda Giken Kogyo Kabushiki Kaisha. Control system for internal combustion engines. 5,546,922, Cl. 123-698.000.
Hara, Keiichi, to Filtration Japan Co., Ltd. Electrostatic precipitator. 5,547,496, Cl. 96-79.000.
Hara, Yoshihisa: *See—*
Hara, Fumio; Fujimura, Akira; Hara, Yoshihisa; and Sakanushi, Masahiro, 5,546,922, Cl. 123-698.000.
Harada, Hiroyuki, to Seikosha Co., Ltd. Printing apparatus. 5,547,292, Cl. 400-58.000.
Harada Kogyo Kabushiki Kaisha: *See—*
Nakase, Kazuhiko, 5,548,298, Cl. 343-704.000.
Harada, Masana, to Mitsubishi Denki Kabushiki Kaisha. Method of producing a semiconductor device. 5,547,886, Cl. 437-51.000.
Haraoka, Mutsumu: *See—*
Koketsu, Eiji; Sato, Koki; Muromachi, Tetsushi; Haraoka, Mutsumu; Nagata, Toshio; Yanagihara, Michihiro; and Oma, Kuniaki, 5,547,223, Cl. 280-805.000.
Hardesty, Michael P.: *See—*
Susnjara, Kenneth J.; and Hardesty, Michael P., 5,547,003, Cl. 144-368.000.
Hardy, Christopher J.: *See—*
Dumoulin, Charles L.; and Hardy, Christopher J., 5,548,216, Cl. 324-309.000.
Hargrave, Karl D.; Schmidt, Gunther, deceased (by Margaret Schmidt, legal representative), to Boehringer Ingelheim Pharamceuticals, Inc. Pyrido{2,3-b][1,4]benzoxazepin (and thiazepin)-6(5H)-ones and -thiones and their use in the prevention or treatment of HIV-1 infection. 5,547,951, Cl. 514-211.000.
Harikrishna, Jennifer A.: *See—*
Miller, Walter L.; Harikrishna, Jennifer A.; and Black, Stephen M., 5,547,868, Cl. 435-189.000.
Harima, Kenji: *See—*
Osanai, Akinori; Nagai, Toshinari; Kanai, Hiroshi; Harima, Kenji; Iwano, Kazuhiko; and Yuda, Shuji, 5,546,917, Cl. 123-674.000.
Harju, Matti: *See—*
Outinen, Marko T.; Tossavainen, Olli; Harju, Matti; and Linko, Pekka, 5,547,687, Cl. 426-2.000.
Harland, Charles E.: *See—*

Dukatz, Matthew E.; Harland, Charles E.; Kresky, Fred C.; McCarthy, Jay P.; and Sharples, Stephen A., 5,547,242, Cl. 296-65.100.
Harlen Metal Products, Inc.: *See—*
Jones, Robert G., 5,546,723, Cl. 52-698.000.
Harney, Kevin: *See—*
Sprague, David L.; Harney, Kevin; Kowashi, Eiichi; Keith, Michael; Simon, Allen H.; Papadopoulos, Gregory M.; Hays, Walter P.; Salem, George F.; Shiue, Shih-Wei; Bertapelli, Anthony P.; and Shilman, Vitaly H., 5,548,793, Cl. 395-860.000.
Harnischfeger Corporation: *See—*
Backstrand, Jon E., 5,548,198, Cl. 318-799.000.
Harrel, Stephen K. Methods and apparatus for containing and recovering abrasive powders from an abrasive polisher. 5,547,376, Cl. 433-116.000.
Harrington, Doug: *See—*
Gable, Jack; and Harrington, Doug, 5,546,834, Cl. 81-53.200.
Harris, Alan L.; and Turner, Dennis, to Lucas Industries PLC. Anti-lock braking system. 5,547,265, Cl. 303-10.000.
Harris Corporation: *See—*
Denslow, David L., 5,548,721, Cl. 395-187.010.
Linn, Jack H.; Gasner, John T.; Gaul, Stephen J.; and McCarty, Chris A., 5,547,896, Cl. 437-60.000.
Rauth, Cindy C.; Frogge, Perry W.; and Damerow, David H., 5,548,542, Cl. 364-724.160.
Harris, David E., to Harris Instrument Corporation. Apparatus and method for binocular measurement system. 5,546,808, Cl. 73-618.000.
Harris Instrument Corporation: *See—*
Harris, David E., 5,546,808, Cl. 73-618.000.
Harris, Mark R., to Northern Telecom Limited. Heat sink and printed circuit board combination. 5,548,090, Cl. 174-252.000.
Harris Jr., Marvine: *See—*
Caldwell, Stephen P.; Harris Jr., Marvine; Matsakis, Demetrios J.; Minarik, Ronald W.; Schmidt, Kenneth M.; Weigand, Benjamin F.; Prill, Robert S.; and Siegel, Arnold B., 5,548,839, Cl. 455-313.000.
Harrison, Greg T.: *See—*
Holdeman, R. Brian; Kohman, Fred H.; Harrison, Greg T.; and Hise, Bradley W., 5,546,833, Cl. 81-52.000.
Harrison, Richard P.; Brown, Bari W.; Rossio, Richard C.; Aviles, Gladys M.; Dexheimer, Edward M.; and Ho, David, to BASF Corporation. Polyurethane SRIM compositions having internal mold release properties. 5,547,608, Cl. 252-357.000.
Harrison, Samuel W. Sterility maintenance cover and instrument support. 5,546,961, Cl. 128-849.000.
Harry, Emory J.: *See—*
Cole, Paul A.; Harry, Emory J.; and Wright, Michael A., 5,548,223, Cl. 324-754.000.
Hart, Don B.; and Hillinger, George. Portable lamp assembly. 5,548,496, Cl. 362-396.000.
Hart, Kenneth J.: *See—*
McLaughlin, Joseph L.; Fernald, Mark R.; and Hart, Kenneth J., 5,548,444, Cl. 359-629.000.
Hart, William B.: *See—*
Bartels, Frank; Bachtler, Wulf; Dunne, Stephen T.; Eicher, Joachim; Freund, Bernhard; Hart, William B.; and Lessmoellmann, Christoph, 5,547,094, Cl. 216-33.000.
Hartigan, William: *See—*
Williams, Michael S.; Lau, Lilip; Khosravi, Farhad; Hartigan, William; and Hernando, Avegel, 5,546,646, Cl. 29-407.080.
Hartke, Jeffery J.: *See—*
Laurash, David F.; Huddleston, Joey V.; Konkol, Patrick A.; Hartke, Jeffery J.; and Skees, Hugh B., 5,547,227, Cl. 283-81.000.
Hartman, Mark L.; Melnick, Russell J.; and Bales, Daniel A., to United Technologies Corporation. Fabrication of rocket thrust chambers. 5,546,656, Cl. 29-890.010.
Hartmann, Heinrich: *See—*
Kroner, Matthias; Hartmann, Heinrich; Schornick, Gunnar; Baur, Richard; Potthoff-Karl, Birgit; Schwendemann, Volker; and Kud, Alexander, 5,548,036, Cl. 525-419.000.
Hartshorn, Gordon K.; and Pyrtek, Karen A. Hand-held trowel with an accessible hollow handle compartment. 5,547,240, Cl. 294-49.000.
Harwood, Ray E.: *See—*
Ward, Stephen W.; and Harwood, Ray E., 5,547,514, Cl. 134-22.100.
Hase, Sumihiro: *See—*
Kusumoto, Shoichi; Fukase, Koichi; and Hase, Sumihiro, 5,548,077, Cl. 536-55.300.
Hasegawa, Fumihiko; Ohtani, Tatsuo; and Kuroda, Yasuyoshi, to Shin-Etsu Handotai Co., Ltd. Method and apparatus for wafer chamfer polishing. 5,547,415, Cl. 451-44.000.
Hasegawa, Haruyoshi: *See—*
Yoneda, Hitoshi; Hasegawa, Haruyoshi; Nosaki, Takefumi; Tanimoto, Koji; Machida, Hironobu; and Nakamura, Hajime, 5,548,666, Cl. 382-276.000.
Hasegawa, Jun; Isomura, Shigenori; Mizoguchi, Tomomichi; and Nakamori, Yasutaka, to Nippondenso Co., Ltd. Oxygen concentration detecting apparatus. 5,547,552, Cl. 204-406.000.
Hasegawa, Junichi: *See—*
Kobayashi, Fumihiko; and Hasegawa, Junichi, 5,548,799, Cl. 455-8.000.
Hasegawa, Makoto: *See—*
Horiike, Yoshio; Yoshimura, Yasuo; Yokoajiro, Yoshiyuki; Matsumura, Terue; Hasegawa, Makoto; and Mimura, Masahiro, 5,548,619, Cl. 375-344.000.
Hasegawa, Takashi: *See—*
Ogata, Takao; Amemiya, Koji; Takeuchi, Tatsuo; Hasegawa, Takashi; Saito, Rie; and Sasanuma, Nobuatsu, 5,548,378, Cl. 355-208.000.
Hasegawa, Yusuke; Komoriya, Isao; Kimura, Eisuke; Akazaki, Shusuke; and Nishimura, Yoichi, to Honda Giken Kogyo Kabushiki Kaisha. Air/fuel ratio estimation system for internal combustion engine. 5,548,514, Cl. 364-431.050.
Hasegawa, Yusuke: *See—*
Komoriya, Isao; Hasegawa, Yusuke; Akazaki, Shusuke; and Maki, Hidetaka, 5,546,907, Cl. 123-478.000.
Hasel, Robert W. Method of restoring a tooth. 5,547,379, Cl. 433-212.100.
Hashikawa, Kenzo: *See—*
Ito, Hidenobu; Shimizu, Katsuya; Hashikawa, Kenzo; and Yamakawa, Yasuhiro, 5,548,162, Cl. 307-10.100.
Hashima, Kazuo: *See—*
Fujii, Yoshio; Tokunaga, Takashi; Nakaki, Yoshiyuki; Tsutsumi, Kazuhiko; Hashima, Kazuo; Fukami, Tatsuya; and Kawano, Yuji, 5,547,751, Cl. 428-332.000.
Hashimoto, Hiroyuki; Ishii, Satoshi; and Saito, Haruo, to Aiwa Co., Ltd. Video camera with device generating a shutter pulse for a camera or the like. 5,548,325, Cl. 348-64.000.
Hashimoto, Kazuhito: *See—*
Murasawa, Sadao; Murakami, Hajime; Fukui, Yasuro; Watanabe, Mitsuru; Fujishima, Akira; and Hashimoto, Kazuhito, 5,547,823, Cl. 430-531.000.
Hashimoto, Kiyoshi: *See—*
Moriya, Hiroyuki; Tomonaga, Junichi; Hashimoto, Kiyoshi; and Muraoka, Kazunari, 5,547,135, Cl. 241-40.000.
Hashimoto, Kouichi: *See—*
Tanaka, Kunio; and Hashimoto, Kouichi, 5,548,415, Cl. 358-462.000.
Hashimoto, Sadako: *See—*
Hirayama, Shinji; Konishi, Shin; Hidai, Takao; Hama, Shinjiro; Hashimoto, Sadako; and Morikawa, Yukihiro, 5,548,057, Cl. 528-67.000.
Hashimoto, Seiji: *See—*
Fujie, Akihiko; Takase, Shigehiro; Yamashita, Michio; Sato, Tomoko; Hashimoto, Seiji; and Okuhara, Masakuni, 5,547,934, Cl. 514-11.000.
Hashizume, Isamu: *See—*
Masuda, Katsuhiko; Aoki, Jun; and Hashizume, Isamu, 5,548,513, Cl. 364-426.030.
Hashizume, Shuhei: *See—*
Fukui, Toshinori; Katsuda, Nobuyuki; Yabushita, Shinichi; and Hashizume, Shuhei, 5,547,478, Cl. 8-643.000.
Hassel, Tillmann: *See—*
Kirchmeyer, Stephan; Pohmer, Klaus; and Hassel, Tillmann, 5,547,711, Cl. 427-386.000.
Hassett, David J.; and Thompson, Jeffrey S., to Gas Research Institute. Enhanced ettringite formation for the treatment of hazardous liquid waste. 5,547,588, Cl. 210-724.000.
Hassler, Jürgen: *See—*
Lukschandel, Jörg; Patzon, Rudolf; and Hassler, Jürgen, 5,547,709, Cl. 427-299.000.
Hastings, Calvin R.; Hauser, Ernest M.; and Miller, Robert C., to Caldon, Inc. Apparatus for determining fluid flow. 5,546,813, Cl. 73-861.290.
Hatauchi, Kazushi; and Shimamoto, Haruo, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor integrated circuit apparatus including clamped heat sink. 5,548,482, Cl. 361-720.000.
Hatton, Leslie R.; Buntain, Ian G.; Hawkins, David W.; Parnell, Edgar W.; Pearson, Christopher J.; and Roberts, David A., to Rhone-Poulenc Agriculture Ltd. Derivatives of N-phenylpyrazoles. 5,547,974, Cl. 514-406.000.
Hattori, Iwakazu: *See—*
Goto, Kohei; Hattori, Iwakazu; Ogasahara, Shoji; Shibata, Masahiro; Michino, Yoshiyuki; Soga, Kazuo; and Shiono, Takeshi, 5,548,045, Cl. 526-161.000.
Hattori, Noriaki: *See—*
Tozu, Kenji; Asano, Kenji; and Hattori, Noriaki, 5,547,264, Cl. 303-9.620.
Hattori, Shizuo; Kishimoto, Takahide; Sogabe, Yukihiro; and Emi, Shigenori, to Toyo Boseki Kabushiki Kaisha. Method for measuring carbon dioxide and reagent therefor. 5,547,851, Cl. 435-26.000.
Hattori, Tomoyuki; Suganuma, Hiroshi; Sasaoka, Eisuke; and Takimoto, Hiroaki, to Sumitomo Electric Industries, Ltd. Reinforced multicore optical fiber coupler. 5,548,672, Cl. 385-43.000.
Hattori, Yasushi: *See—*
Ohno, Shigeru; and Hattori, Yasushi, 5,547,819, Cl. 430-522.000.
Hattori, Yoshifumi: *See—*
Nagatomo, Akira; Hattori, Yoshifumi; Ebisawa, Isao; Abe, Tsutomu; Ohba, Takashi; Iida, Hiroshi; and Watanabe, Kenjiro, 5,548,308, Cl. 347-9.000.
Haubert, Thomas D.; and Belt, James S., to Owens Corning Fiberglas Technology, Inc. Method and apparatus for applying granules to strip asphaltic roofing material to form variegated shingles. 5,547,707, Cl. 427-188.000.
Haug, Willi, to fischerwerke, Artur Fischer GMBH & Co KG. Composite anchor. 5,546,725, Cl. 52-698.000.
Haupt, Karlheinz: *See—*
Beck, Erhard; Dinkel, Dieter; and Haupt, Karlheinz, 5,547,266, Cl. 303-113.200.
Hauser, Ernest M.: *See—*
Hastings, Calvin R.; Hauser, Ernest M.; and Miller, Robert C., 5,546,813, Cl. 73-861.290.
Havel, Henry A.: *See—*

Anderson, James H., Jr.; De Felippis, Michael R.; Frank, Bruce H.; and Havel, Henry A., 5,547,929, Cl. 514-3.000.

Havelick, John, Jr.: *See*—
Chagnon, Mark S.; Burkle, Stephen E.; Carter, Michelle J.; Hamilton, Tracy J.; Havelick, John, Jr.; Kaplan, Deborah A.; and Marzloff, Kristin L., 5,547,682, Cl. 424-497.000.

Havener, John P.: *See*—
Keeler, James D.; Havener, John P.; Godbole, Devendra; and Ferguson, Ralph B., 5,548,528, Cl. 364-497.000.

Haverty, Thomas W.: *See*—
Balmer, David K.; Haverty, Thomas W.; Nordin, Carl W.; and Tyree, William H., 5,548,121, Cl. 250-370.010.

Hawes, John M.; Sims, Joe W.; and Lee, Don, to Albany International Corp. Method to reduce forming fabric edge curl. 5,546,643, Cl. 26-11.000.

Hawkins, David W.: *See*—
Hatton, Leslie R.; Buntain, Ian G.; Hawkins, David W.; Parnell, Edgar W.; Pearson, Christopher J.; and Roberts, David A., 5,547,974, Cl. 514-406.000.

Hawkins, James B.: *See*—
Van Doorn, Donald W.; Hawkins, James B.; and Cory, Mark D., 5,546,855, Cl. 100-11.000.

Hawkins, Michael S.: *See*—
Bayley, Robert D.; Fox, Carol A.; Hoffend, Thomas R.; Mahabadi, Hadi K.; Agur, Enno E.; Sacripante, Guerino; and Hawkins, Michael S., 5,548,059, Cl. 528-194.000.

Hawkins, Thomas W.: *See*—
Bank, Michael D.; and Hawkins, Thomas W., 5,547,230, Cl. 285-110.000.

Hawryszkow, Michael G.: *See*—
Daugherty Jr., David W.; Kanjo, Wajih; and Hawryszkow, Michael G., 5,547,089, Cl. 213-62.00R.

Hayabuchi, Masahiro; Nishida, Masaaki; Yamamoto, Yoshihisa; Mikami, Kazuhiro; Tsutsui, Hiroshi; and Iwata, Akihito, to Aisin AW Co., Ltd. Control system for automatic transmission. 5,547,436, Cl. 477-114.000.

Hayakawa, Tatsuhiko: *See*—
Saito, Yoshiro; Fujii, Haruo; Sasame, Hiroshi; Hayakawa, Tatsuhiko; Kobayashi, Tatsuya; Kobayashi, Tetsuya; Enomoto, Naoki; Uchiyama, Akihiko; and Maebashi, Youichirou, 5,548,381, Cl. 355-245.000.

Hayami, Yoshiyuki: *See*—
Aoyama, Tetsuzo; and Hayami, Yoshiyuki, 5,548,565, Cl. 368-227.000.

Hayase, Tooru: *See*—
Tani, Makoto; Hayase, Tooru; Shimizu, Hideki; and Matsuda, Kazuyuki, 5,547,921, Cl. 505-124.000.

Hayase, Yoshio; Kataoka, Takahiro; Takenaka, Hideyuki; Ichinari, Mitsuhiro; Masuko, Michio; Takahashi, Toshio; and Tanimoto, Norihiko, to Shionogi Seiyaku Kabushiki Kaisha. Process for the preparation of alkoxyiminoacetamide derivatives and their use as fungicides. 5,548,078, Cl. 544-298.000.

Hayashi, Hideo: *See*—
Nomoto, Masao; Fujita, Kenji; and Hayashi, Hideo, 5,547,643, Cl. 422-186.040.

Hayashi, Mutsuo: *See*—
Watanabe, Takao; Hayashi, Mutsuo; Matsumoto, Kazunari; Tsuchiya, Chikara; Matsui, Takashi; and Matsubayashi, Masaru, 5,548,252, Cl. 331-176.000.

Hays, Walter P.: *See*—
Sprague, David L.; Harney, Kevin; Kowashi, Eiichi; Keith, Michael; Simon, Allen H.; Papadopoulos, Gregory M.; Hays, Walter P.; Salem, George F.; Shiue, Shih-Wei; Bertapelli, Anthony P.; and Shilman, Vitaly H., 5,548,793, Cl. 395-860.000.

Hayter, Paul G.: *See*—
Baer, Thomas M.; Dietz, Louis J.; Dubrow, Robert S.; Hayter, Paul G.; Hodges, Michael; Manian, Bala S.; and Shartle, Robert J., 5,547,849, Cl. 435-7.240.

Hazama, Hiroyuki; Tsutsumi, Masahiro; and Watanabe, Masaru, to Mita Industrial Co., Ltd. Electrophotographic method using amorphous silicon photosensitive material. 5,547,805, Cl. 430-125.000.

He, Li: *See*—
Fan, Yongping; Han, Jung; Nurimikko, Arto V.; Gunshor, Robert L.; and He, Li, 5,548,137, Cl. 257-191.000.

He, Wei W.: *See*—
Donahoe, Patricia K.; Gustafson, Michael; and He, Wei W., 5,547,854, Cl. 435-69.100.

Healey, Roger K., to International Computers Limited. Message handler. 5,548,760, Cl. 395-650.000.

Heaney, James A.; and Rasmus, Todd M., to International Business Machines Corporation. LAN interface with simplified overcurrent protection. 5,548,467, Cl. 361-93.000.

Heck, Joseph P., to Motorola, Inc. Balanced mixer circuit with improved linearity. 5,548,840, Cl. 455-326.000.

Heckler & Koch GmbH: *See*—
Wössner, Ernst; and Braun, Mathias, 5,546,845, Cl. 89-35.010.

Hedeen, Robert A.: *See*—
Pla, Frederic C.; Hedeen, Robert A.; and Imam, Imdad, 5,548,653, Cl. 381-71.000.

Hedrick, Jeffrey C.: *See*—
Afzali-Ardakani, Ali; Gotro, Jeffrey T.; Hedrick, Jeffrey C.; Papathomas, Konstantinos; Patel, Niranjan M.; Shaw, Jane M.; and Viehbeck, Alfred, 5,548,034, Cl. 525-390.000.

Hehl, Karl. Mold closing unit for use in an injection molding machine for processing synthetic materials. 5,547,366, Cl. 425-589.000.

Heiberg, Jakob: *See*—
Lillelund, Stig; Heiberg, Jakob; and Daenen, Robert H. C. M., 5,547,275, Cl. 366-130.000.

Heidelberg-Harris GmbH: *See*—
Hern, Joel C., 5,546,859, Cl. 101-226.000.

Heidelberger Druckmaschinen AG: *See*—
Löffler, Gerhard, 5,546,861, Cl. 101-484.000.

Heidelberger Druckmaschinen Aktiengesellschaft: *See*—
Stephan, Günter, 5,546,858, Cl. 101-142.000.

Heil Company, The: *See*—
Smith, Fred P.; and Johnson, William R., 5,547,332, Cl. 414-786.000.

Heil, Fred; and Lombardo, Michael, to Bowles Fluidics Corporation. Barbecue grill with fluidic burner and heat distribution system. 5,546,853, Cl. 99-447.000.

Heiman, Stephen M., to Liberty Technologies, Inc. Stem torque sensor. 5,546,817, Cl. 73-862.333.

Heimscheidt Maschinentechnik Schwerwin GmbH & Co.: *See*—
Stein, Walter, 5,547,367, Cl. 425-589.000.

Heinonen, Jarmo: *See*—
Mucke, Lars H.; and Heinonen, Jarmo, 5,548,616, Cl. 375-295.000.

Helene Curtis, Inc.: *See*—
Sun, Wei-Mei; Ma, Zhu-ning; Panitch, Maximo M.; and Galleguillos, Ramiro, 5,547,661, Cl. 424-66.000.

Helfrich, Mathial: *See*—
Müller, Dietmar; Helfrich, Mathial; and Mandt, Michael, 5,547,527, Cl. 149-19.920.

Helgerud, Per; and Bragstad, Helge, to GECO A.S. Method for synchronization of systems for seismic surveys, together with applications of the method. 5,548,562, Cl. 367-14.000.

Helix Limited: *See*—
Warwicker, Clive W., 5,546,663, Cl. 33-27.020.

Hell, Erich; and Fuchs, Manfred, to Siemens Aktiengesellschaft. X-ray radiator having an electron source for sending a beam of electrons along an elongated anode. 5,548,630, Cl. 378-137.000.

Heller, Alan C.; Evins, Brian M.; and Karp, Robert G., to Precision Tracking FM, Inc. Method and apparatus for locating personnel and objects in response to telephone inquiries. 5,548,637, Cl. 379-201.000.

Heller, Paul S. Base isolator fire barrier system. 5,546,711, Cl. 52-167.100.

Hellquist, Magnus: *See*—
Escritt, Chris; and Hellquist, Magnus, 5,548,282, Cl. 340-825.350.

Helsley, Grover C.: *See*—
Hamer, Richard L.; Helsley, Grover C.; Glamkowski, Edward J.; and Chiang, Yulin, 5,547,977, Cl. 514-41.100.

Helton, Roy L., Jr.: *See*—
Seber, Brett P.; and Helton, Roy L., Jr., 5,546,662, Cl. 30-161.000.

Helyer, Laura M.: *See*—
Lawhorne, Charles S.; Lawhorne, Kerry B.; and Helyer, Laura M., 5,546,603, Cl. 2-181.000.

Hemminger, Rodney C.; and Munday, Mark L., to ABB Power T&D Company Inc. Programmable electrical energy meter utilizing a non-volatile memory. 5,548,527, Cl. 364-492.000.

Hemscheidt Fahrwerktechnik GmbH & Co.: *See*—
Runkel, Walter L., 5,547,211, Cl. 280-708.000.

Henkel Corporation: *See*—
Hacias, Kenneth J., 5,547,595, Cl. 508-156.000.

Henkel Kommanditgesellschaft auf Aktien: *See*—
Gossen, Ralf; Buxhofer, Horst; and Onusseit, Hermann, 5,547,712, Cl. 427-421.000.
Heucher, Reimar; Wichelhaus, Juergen; Schueller, Kurt; Kopannia, Siegfried; and Rossini, Angela, 5,548,027, Cl. 525-179.000.
Molz, Thomas; Rehm, Hans-Joergen; Vogt, Toni; and Geke, Juergen, 5,547,587, Cl. 210-696.000.

Hennessee, Robert P.; Huetteman, Steven C.; and Markowitz, Ron M., to Chrysler Corporation. Vehicle climate control system and operating method. 5,547,125, Cl. 236-49.300.

Henrie, Robert N., II; Peake, Clinton J.; Cullen, Thomas G.; Chaguturu, Munirathnam K.; Ray, Partha S.; and Bennett, Brian D., to FMC Corporation. 2,4-Diamino-5,6-disubstituted-and 5,6,7-trisubstituted-5-deazapteridines as insecticides. 5,547,954, Cl. 514-258.000.

Henry, Michael F.: *See*—
Blankenship, Charles P., Jr.; and Henry, Michael F., 5,547,523, Cl. 148-677.000.

Henshaw, Susan F.: *See*—
Berry, Richard E.; Henshaw, Susan F.; and Roberts, David J., 5,548,703, Cl. 395-160.000.

Henson, Geoffrey W.: *See*—
Abrams, Michael J.; Bossard, Gerald E.; Brooks, Robert C.; Henson, Geoffrey W.; and Vollano, Jean F., 5,547,982, Cl. 514-492.000.

Heraeus Kulzer GmbH: *See*—
Nagel, Joachim; and Erdrich, Albert, 5,548,000, Cl. 523-115.000.

Heraeus Kulzer GmbH & Co. KG: *See*—
Podszun, Wolfgang; Winkel, Jens; and Müller, Michael, 5,548,001, Cl. 523-116.000.
Schwabe, Peter; Schlak, Ottfried; Winkel, Jens; Guggenberger, Rainer; and Gasser, Oswald, 5,548,002, Cl. 523-118.000.

Herd, Kenneth G.: *See*—
Laskaris, Evangelos T.; and Herd, Kenneth G., 5,548,168, Cl. 310-52.000.

Herding GmbH Entstaubungsanlagen: *See*—
Herding, Walter; Bethke, Jürgen; and Rabenstein, Klaus, 5,547,481, Cl. 55-523.000.

Herding, Walter; Bethke, Jürgen; and Rabenstein, Klaus, to Herding GmbH Entstaubungsanlagen. Filter element having an inherently stable, permeably porous plastic body. 5,547,481, Cl. 55-523.000.

Hern, Joel C., to Heidelberg-Harris GmbH. Device for presetting a cut-off register in a folder of a web-fed printing press. 5,546,859, Cl. 101-226.000.

Hernandez, Celimo P.; and Coultas, Robyn D., to Cadence Design Systems, Inc. Expression promotion for hierarchical netlisting. 5,548,524, Cl. 364-489.000.

Hernando, Avegel: *See*—
Williams, Michael S.; Lau, Lilip; Khosravi, Farhad; Hartigan, William; and Hernando, Avegel, 5,546,646, Cl. 29-407.080.

Herrmann, Michelle L.: *See*—
Meador, James; McElroy, Hoyt E.; Herrmann, Michelle L.; and Winkler, Matthew, 5,547,862, Cl. 435-91.300.

Hershey, Paul C., to International Business Machines Corporation. System and method for adaptive active monitoring of high speed data streams using finite state machines. 5,548,775, Cl. 395-800.000.

Herting, Eric, to Answer Products, Inc. Adjustable seat post adaptor assembly for bicycles and like cycles. 5,547,155, Cl. 248-219.200.

Herzig, Hugo: *See*—
Herzig, Kurt; and Herzig, Hugo, 5,546,610, Cl. 2-422.000.

Herzig, Kurt; and Herzig, Hugo, to Artilux Herzig AG. Fastening system for fastening a face-protection sheild and/or hearing protection caps to a work helmet. 5,546,610, Cl. 2-422.000.

Herzig, Paul: *See*—
Deitz, Rolf; Tzikas, Athanassios; and Herzig, Paul, 5,548,071, Cl. 534-612.000.

Heske, Norbert, to Heske, Norbert. Biopsy needle. 5,546,957, Cl. 128-754.000.

Hess, Garry C.; and Davidson, Allen L. Method and apparatus for producing diversity gain of a received signal. 5,548,837, Cl. 455-278.100.

Hess, Richard L.: *See*—
Tantry, Subhash B.; Mashruwala, Rajesh U.; Lozier, Barry A.; and Hess, Richard L., 5,548,756, Cl. 395-600.000.

Hettich, Allen J. Radial rake device. 5,546,739, Cl. 56-367.000.

Heucher, Reimar; Wichelhaus, Juergen; Schueller, Kurt; Kopannia, Siegfried; and Rossini, Angela, to Henkel Kommanditgesellschaft auf Aktien. Hot-melt adhesive. 5,548,027, Cl. 525-179.000.

HEWI Heinrich Wilke GmbH: *See*—
Dziuk, Richard; and Jäger, Horst, 5,547,235, Cl. 292-92.000.

Hewlett-Packard Company: *See*—
Arcaro, David J., 5,546,984, Cl. 137-614.030.
Brown, Charles A.; Rieck, George C.; and Moore, Charles E., 5,547,887, Cl. 437-51.000.
Grant, Robert H.; Book, David; and Sullivan, Gregory T., 5,548,590, Cl. 370-61.000.
Hanks, D. Mitchel, 5,548,192, Cl. 318-560.000.
Larson, Susan L.; Voigt, Douglas L.; Messinger, Steven D.; and Jacobson, Michael B., 5,548,712, Cl. 395-182.050.
Poppenga, Burton H.; Shannon, Terrence M.; and Campbell, Russell, 5,548,689, Cl. 395-109.000.
Underwood, John A., 5,547,181, Cl. 271-114.000.
Wilcox, Darren W.; and Doan, Alpha N., 5,547,179, Cl. 271-3.200.

Heydrich, Frank: *See*—
Furseth, John P.; Heydrich, Frank; Hover, Forest H.; Little, Ian; Mackin, Steven G.; Stenard, Steven C.; Thompson, James L.; White, Ellen; and Wilson, Bruce D., 5,547,342, Cl. 415-200.000.

Hibbins, Stephen G.; Timpano, Fernando A.; and Zuliani, Douglas J., to Timminco Limited. Method for adding aluminum and calcium to molten lead. 5,547,634, Cl. 420-564.000.

Hibbs, Louis E., Jr.: *See*—
Johnson, Neil A.; Raber, Thomas R.; Hibbs, Louis E., Jr.; Murray, Melissa L.; and Benz, Mark G., 5,547,518, Cl. 148-98.000.

Hibino, Takashi: *See*—
Kohmura, Yukio; Ishida, Yoshinori; and Hibino, Takashi, 5,548,213, Cl. 324-232.000.

Hibino, Yoshihiko: *See*—
Funahashi, Yasuhiro; Ikami, Kazunori; Nishimura, Osamu; Hibino, Yoshihiko; Kiyohara, Yuji; and Yasutomo, Yuichi, 5,548,281, Cl. 340-825.080.

Hickey, John: *See*—
Creedon, Tadhg; Hickey, John; and O'Neil, Eugene G., 5,548,762, Cl. 395-733.000.

Hicolai, Julio A.: *See*—
Huck, Hugo A.; Jech, Alberto E.; Righini, Raúl; Halac, Emilia B.; de Benyacar, Maria A. R.; and Hicolai, Julio A., 5,547,714, Cl. 427-523.000.

Hidai, Takao: *See*—
Hirayama, Shinji; Konishi, Shin; Hidai, Takao; Hama, Shinjiro; Hashimoto, Sadako; and Morikawa, Yukihiro, 5,548,057, Cl. 528-67.000.

Hidaka, Masanobu: *See*—
Maruyama, Tsutomu; Akiyama, Atsushi; Sanada, Kazuo; Chigira, Sadao; and Hidaka, Masanobu, 5,547,501, Cl. 106-21.00R.

Hidaka, Takayoshi: *See*—
Yano, Yoshiaki; Fujimoto, Tamiji; and Hidaka, Takayoshi, 5,547,683, Cl. 424-501.000.

Hieda, Teruo; and Shimokoriyama, Makoto, to Canon Kabushiki Kaisha. Image pickup device for generating a corrected luminance signal. 5,548,330, Cl. 348-234.000.

Higaki, Toru: *See*—
Nakatsu, Kazuya; Goto, Takaharu; Higaki, Toru; Endo, Hideki; Hirose, Satoru; and Yamazaki, Yukinori, 5,547,505, Cl. 106-713.000.

Higdon, William D.; Mack, Susan A.; and Cornell, Ralph E., to Delco Electronics Corporation. Solderable contacts for flip chip integrated circuit devices. 5,547,740, Cl. 428-209.000.

Higginbotham, Paul, to BOC Group plc, The. Air separation. 5,546,766, Cl. 62-645.000.

Higuchi, Hirokazu: *See*—
Hamuro, Mitsuro; Higuchi, Hirokazu; Nakagawa, Tadahiro; and Takahashi, Akihiko, 5,547,511, Cl. 118-423.000.

Higuchi, Katsuhiro: *See*—
Nakamura, Tsuyoshi; Kodaira, Kazuho; and Higuchi, Katsuhiro, 5,548,520, Cl. 364-472.020.

Hii, Francis: *See*—
Rountree, Robert N.; Cline, Dan; Walker, Darryl G.; Hii, Francis; and Bergman, David W., 5,548,225, Cl. 326-13.000.

Hildreth, Norman G.: *See*—
Mattar, Wade M.; and Hildreth, Norman G., 5,546,814, Cl. 73-861.355.

Hill, Calvin G.: *See*—
Drummond, Michael T.; Hill, Calvin G.; Lowman, Richard M., Jr.; Suski, William C.; Roberts, Rodney W.; and Lowry, James W., 5,547,451, Cl. 493-299.000.

Hill, Mark G., to Yazaki Corporation. Connector cover having a squeeze release. 5,547,388, Cl. 439-135.000.

Hillard, John N.; and McDougall, Allan P. Automotive adaptable security module for a starter solenoid. 5,548,164, Cl. 307-10.300.

Hillinger, George: *See*—
Hart, Don B.; and Hillinger, George, 5,548,496, Cl. 362-396.000.

Hillman, Darrel D.; and Russell, Charles T., Jr. Crankshaft driven reciprocating piston pump having plural guide rods. 5,547,352, Cl. 417-569.000.

Himbert, Hans: *See*—
Jansson, Conny; Bergqvist, Håkan; and Himbert, Hans, 5,546,816, Cl. 73-862.210.

Himematsu, Fumio: *See*—
Tanaka, Jun; and Himematsu, Fumio, 5,547,627, Cl. 264-210.500.

Hinchliffe, Peter W. J.; Pappalardo, Dawn J.; Larsen, Scott; Tovey, Ian J.; and McDonnell, Christopher, to United States Surgical Corporation. Surgical hand support apparatus. 5,547,463, Cl. 602-20.000.

Hinde, David C.: *See*—
Satgurunathan, Rajasingham; Hinde, David C.; Padget, John C.; and Carey, John G., 5,547,710, Cl. 427-386.000.

Hine, Nathan P., to Spectra, Inc. Mount for replaceable ink jet head. 5,548,311, Cl. 347-50.000.

Hines, David: *See*—
Walsh, Frank P.; Gergen, Paul N.; and Hines, David, 5,548,632, Cl. 379-58.000.

Hiney, Michael: *See*—
Moncrief, Frank; Ziegler, Kelly W.; Hiney, Michael; and Grimm, Dennis, 5,546,734, Cl. 53-534.000.

Hinkle Contracting Corporation: *See*—
Spencer, Donald R., 5,547,569, Cl. 210-206.000.

Hinosawa, Shinji: *See*—
Kami, Yozo; Anzawa, Teruaki; Oku, Yasunori; and Hinosawa, Shinji, 5,547,224, Cl. 280-834.000.

Hintermeier, Heinrich. Container. 5,546,758, Cl. 62-259.100.

Hioki, Takanori; Oya, Toyohisa; and Nishiyama, Shingo, to Fuji Photo Film Co., Ltd. Direct positive type silver halide photographic material comprising a mixture of dyes. 5,547,828, Cl. 430-597.000.

Hirabayashi, Katsumi; and Usa, Daigo, to Aisin Seiki Kabushiki Kaisha. Auto-tensioner. 5,547,429, Cl. 474-110.000.

Hirabayashi, Satao; and Nakamura, Tsutomu, to Shin-Etsu Chemical Co., Ltd. Silicone rubber compositions. 5,548,006, Cl. 524-82.000.

Hirai, Osamu; Tamura, Keiji; and Ichihashi, Hajime, to Kirin Beer Kabushiki Kaisha. Roller bottle handling system. 5,547,329, Cl. 414-222.000.

Hirai, Takayuki: *See*—
Kamo, Jun; Hirai, Takayuki; Takahashi, Hiroshi; and Kondou, Kenji, 5,547,756, Cl. 428-394.000.

Hirai, Yuji, to Honda Tsushin Kogyo Kabushiki Kaisha. PC card connector and PC card. 5,547,397, Cl. 439-607.000.

Hiraishi, Toshinori: *See*—
Sugiyama, Hitoshi; Hiraishi, Toshinori; and Kumano, Tuyoshi, 5,548,743, Cl. 395-479.000.

Hirajima, Hiroshige; Yamaguchi, Takeshi; and Fuji, Hiroshi, to Sharp Kabushiki Kaisha. Optical reproducing circuit having, a binarized signal pulse compensation circuit. 5,548,570, Cl. 369-59.000.

Hiramatsu, Makoto, to Canon Kabushiki Kaisha. Information recording and/or reproduction apparatus. 5,548,284, Cl. 341-68.000.

Hirano, Naohiko; and Yamaji, Yasuhiro, to Kabushiki Kaisha Toshiba. Semiconductor apparatus capable of cooling a semiconductor element with low radiation efficiency. 5,548,161, Cl. 257-722.000.

Hiraoka, Toshiharu: *See*—
Koshijima, Tetsuo; Shiraishi, Nobuo; Takahashi, Tadashi; Hiraoka, Toshiharu; and Ueda, Masami, 5,548,069, Cl. 530-500.000.

Hiraoka, Toshikage: *See*—
Shinoki, Hiroshi; Hiraoka, Toshikage; and Ogawa, Masashi, 5,547,848, Cl. 435-7.900.

Hirasawa, Naoki; and Kobayashi, Shinichi, to NEC Corporation. Portable telephone having a receiver section capable of receiving power from multiple external power sources. 5,548,823, Cl. 455-89.000.

Hirata, Ken: *See*—

Ikeda, Kazumasa; and Hirata, Ken, 5,548,342, Cl. 348-668.000.

Hirayama, Katsuhiko, to Vorax Incorporated. System for assigning device to be connected to computer when address from computer is effective by comparing address for entire memory space and found coincided. 5,548,778, Cl. 395-823.000.

Hirayama, Shinji; Konishi, Shin; Hidai, Takao; Hama, Shinjiro; Hashimoto, Sadako; and Morikawa, Yukihiro, to Inoac Corporation; and Nippon Polyurethane Industry Co., Ltd. One-component-type composition for polyurethane elastomer and method for processing the same by molding. 5,548,057, Cl. 528-67.000.

Hirayasu, Masatoshi, to Sony Corporation. Signal receiver. 5,548,595, Cl. 371-5.500.

Hirose, Kazunori: *See*—
Koshi, Makoto; Nishio, Yukio; and Hirose, Kazunori, 5,548,382, Cl. 355-259.000.

Hirose, Kenji, to Canon Kabushiki Kaisha. Optical-information-recording apparatus having fine and rough driving control. 5,548,568, Cl. 369-44.140.

Hirose, Kenji: *See*—
Gunji, Takahiro; Tabata, Masamune; Dosaka, Kenji; and Hirose, Kenji, 5,547,771, Cl. 428-687.000.

Hirose, Satoru: *See*—
Nakatsu, Kazuya; Goto, Takaharu; Higaki, Toru; Endo, Hideki; Hirose, Satoru; and Yamazaki, Yukinori, 5,547,505, Cl. 106-713.000.

Hirota, Katsuhiko: *See*—
Tsujii, Masahiko; Kuroda, Hirofumi; Furusawa, Yoshikazu; and Hirota, Katsuhiko, 5,547,580, Cl. 210-656.000.

Hirsch, Thomas S.: *See*—
Petry, Keith L.; Hirsch, Thomas S.; and Keeley, James W., 5,548,713, Cl. 395-183.010.

Hirschman, Richard; and Shin, Chul W., to Hudson Optical Corporation. Method and kit for attaching side shields to eyeglass temples. 5,548,351, Cl. 351-47.000.

Hirshfield, Edward; and Tsao, Chich-Hsing A., to Space Systems/Loral. Mobile communication satellite payload. 5,548,292, Cl. 342-324.000.

Hirtsiefer, Artur, to Huwil-Werke GmbH. Support for holding a closing element. 5,546,705, Cl. 49-386.000.

Hirtz, Gangolf, to Deutsche Thomson-Brandt GmbH. Vertical deflection circuit for a television receiver. 5,548,191, Cl. 315-399.000.

Hisanaga, Shigeru: *See*—
Shimizu, Izuru; Fukanuma, Tetsuhiko; Yamaguchi, Tetsuya; Goto, Kunifumi; Hisanaga, Shigeru; and Egami, Hirotaka, 5,547,354, Cl. 418-55.500.

Hise, Bradley W.: *See*—
Holdeman, R. Brian; Kohman, Fred H.; Harrison, Greg T.; and Hise, Bradley W., 5,546,833, Cl. 81-52.000.

Hitachi Computer Engineering Co., Ltd.: *See*—
Akizawa, Mitsuru; Yamashita, Hirofumi; Kawaguchi, Hisamitsu; Tada, Katsumi; Kato, Kanji; Kito, Akira; and Yamada, Hidenori, 5,548,724, Cl. 395-200.030.

Hitachi Denshi Kabushiki Kaisha: *See*—
Yamaura, Akira; and Hosono, Masami, 5,548,232, Cl. 327-60.000.

Hitachi, Ltd.: *See*—
Akizawa, Mitsuru; Yamashita, Hirofumi; Kawaguchi, Hisamitsu; Tada, Katsumi; Kato, Kanji; Kito, Akira; and Yamada, Hidenori, 5,548,724, Cl. 395-200.030.
Hamada, Yasunori; and Kawauchi, Masataka, 5,548,316, Cl. 347-171.000.
Hoashi, Kouich; Aoki, Akinori; and Suzuki, Isamu, 5,548,732, Cl. 395-285.000.
Kawakubo, Youichi; Kawamura, Yoshio; and Seo, Yosuke, 5,548,454, Cl. 360-72.100.
Kayama, Masahiro; Morooka, Yasuo; Sugita, Yoichi; and Nakajima, Masaaki, 5,548,597, Cl. 371-25.100.
Kuroda, Kenichi; Shiba, Kazuyoshi; and Matsuo, Akinori, 5,548,146, Cl. 257-321.000.
Mimura, Itaru; Ueda, Hirotada; Sumino, Shigeo; Ikezawa, Mitsuru; Suzuki, Toshiaki; Kinoshita, Taizo; and Tada, Katsumi, 5,548,346, Cl. 348-738.000.
Mitsuya, Teruaki; Okada, Hisao; and Hoshi, Nobuyoshi, 5,548,375, Cl. 355-200.000.
Ogata, Toshio; Yoshizaki, Masanori; and Taguchi, Kenji, 5,546,652, Cl. 29-738.000.
Ogura, Toshihiko; Aotsu, Hiroaki; Kimura, Koichi; Enomoto, Hiromichi; and Kyoda, Tadashi, 5,548,744, Cl. 395-494.000.
Okuyama, Nobutaka; Sakurai, Soichi; Fukuma, Kooji; Yoshioka, Hiroshi; Obara, Masao; Ito, Naoki; Takeyama, Atsushi; and Satoh, Yoshio, 5,548,190, Cl. 315-368.260.
Oono, Shuuji; Tadamura, Katsumi; and Yamaguchi, Syoji, 5,548,710, Cl. 395-181.000.
Sato, Kazutaka; Watanabe, Michihiro; Aoyagi, Masahisa; Seino, Taisaku; Ohki, Katsuo; Fukuda, Hiromitsu; Kawase, Hideyuki; Oga, Kimio; Shimizu, Akira; Narui, Youichi; Suzuki, Tsuguo; Otsuka, Yasuo; and Konno, Kazutoshi, 5,548,411, Cl. 358-400.000.
Shirakawa, Shingo; and Watahiki, Satoshi, 5,548,468, Cl. 361-126.000.
Siga, Masao; Kuriyama, Mitso; Mori, Takanobu; Fukui, Yutaka; and Ishizuka, Tatsuro, 5,548,174, Cl. 310-261.000.
Sohma, Kenichi; Itoh, Kazuyuki; Kuroda, Michio; and Murakami, Tadayoshi, 5,547,369, Cl. 431-75.000.
Takai, Atsushi; and Hanatani, Shoichi, 5,548,399, Cl. 356-218.000.
Takekuma, Toshitsugu; Kurihara, Ryoichi; and Yamagiwa, Akira, 5,548,226, Cl. 326-30.000.
Tanaka, Toyokazu; Takamoto, Manabu; Miwada, Satoshi; Tetsu, Noriyuki; and Waizumi, Sadao, 5,548,476, Cl. 361-611.000.
Tanimoto, Takuma; Kudo, Makoto; Mishima, Tomoyoshi; Nakajima, Akishige; Mori, Mitsuhiro; and Yamane, Masao, 5,548,138, Cl. 257-192.000.
Yoshino, Hitoshi; Oshima, Keiji; and Miyagaki, Hisanori, 5,548,304, Cl. 345-145.000.

Hitachi Maxell, Ltd.: *See*—
Yumiba, Hideaki; Matsumoto, Kazunobu; and Kawakami, Akira, 5,547,785, Cl. 429-220.000.

Hitachi Media Electronics Co., Ltd.: *See*—
Okuyama, Nobutaka; Sakurai, Soichi; Fukuma, Kooji; Yoshioka, Hiroshi; Obara, Masao; Ito, Naoki; Takeyama, Atsushi; and Satoh, Yoshio, 5,548,190, Cl. 315-368.260.

Hitachi Metals, Ltd.: *See*—
Ochiai, Masahisa; Saitoh, Tsutomu; and Asanae, Masumi, 5,547,795, Cl. 430-106.600.

Hitachi ULSI Engineering Corp.: *See*—
Kuroda, Kenichi; Shiba, Kazuyoshi; and Matsuo, Akinori, 5,548,146, Cl. 257-321.000.

Hitchquick, Inc.: *See*—
Dugger, James B., 5,547,210, Cl. 280-477.000.

HL&H Timber Products (Pty) Limited: *See*—
Howell, Mark; and Clarke, Graham H., 5,547,317, Cl. 405-288.000.

Ho, David: *See*—
Harrison, Richard P.; Brown, Bari W.; Rossio, Richard C.; Aviles, Gladys M.; Dexheimer, Edward M.; and Ho, David, 5,547,608, Cl. 252-357.000.

Hoang, Minh Q.: *See*—
Khan, Mohammad A.; and Hoang, Minh Q., 5,547,662, Cl. 424-78.030.

Hoashi, Kouich; Aoki, Akinori; and Suzuki, Isamu, to Hitachi, Ltd. Bus adapter for transferring signals between a master unit and a slave unit, and system including the bus adapter. 5,548,732, Cl. 395-285.000.

Hobson, Alex R.: *See*—
Bahar, Bamdad; Hobson, Alex R.; Kolde, Jeffrey A.; and Zuckerbrod, David, 5,547,551, Cl. 204-296.000.

Hock, Christopher: *See*—
Rink, Linda M.; and Hock, Christopher, 5,547,638, Cl. 422-164.000.

Hockney, Robert C.: *See*—
Kara, Bhuphendra V.; Hockney, Robert C.; and Fitton, John E., 5,547,867, Cl. 435-199.000.

Hodges, Douglas. Vehicle dolly apparatus. 5,547,206, Cl. 280-47.150.

Hodges, Michael: *See*—
Baer, Thomas M.; Dietz, Louis J.; Dubrow, Robert S.; Hayter, Paul G.; Hodges, Michael; Manian, Bala S.; and Shartle, Robert J., 5,547,849, Cl. 435-7.240.

Hoe, Sei S.: *See*—
Dalgleish, Kevin L.; Hoe, Sei S.; Reinhart, Gregory R.; Somoza, Vincent E.; Pike, Rodney D.; Moss, John S.; and Tencer, Michal, 5,548,643, Cl. 379-429.000.

Hoechst Aktiengesellschaft: *See*—
Dannheim, Jörg; Oehme, Dieter; and Tappe, Horst, 5,548,072, Cl. 534-635.000.
Fuss, Robert; Manero, Javier; and Jungbauer, Dietmar, 5,547,605, Cl. 252-299.600.
Kurth, Inge; Brindoepke, Gerhard; and Marten, Manfred, 5,548,005, Cl. 523-414.000.
Weichert, Andreas; Kleemann, Heinz-Werner; Lang, Hans-Jochen; Schwark, Jan-Robert; Albus, Udo; and Scholz, Wolfgang, 5,547,953, Cl. 514-226.500.
Weithmann, Klaus U.; and Bartlett, Robert R., 5,547,970, Cl. 514-378.000.
Weithmann, Klaus U.; and Bartlett, Robert R., 5,547,971, Cl. 514-378.000.

Hoechst-Roussel Pharmaceuticals, Inc.: *See*—
Hamer, Richard L.; Helsley, Grover C.; Glamkowski, Edward J.; and Chiang, Yulin, 5,547,977, Cl. 514-41.100.

Hoegger, Bruce A., to Remanco Hydraulics, Inc. Hydraulic swivel having selectively hardened portions. 5,547,233, Cl. 285-276.000.

Hoess, Werner: *See*—
Vetter, Heinz; Hoess, Werner; Dutschke, Joachim; and Schikowsky, Hartmut, 5,548,033, Cl. 525-378.000.

Hofer, John C.: *See*—
Zimmerman, Ronald A., II; and Hofer, John C., 5,547,214, Cl. 280-730.100.

Hoffend, Thomas R.: *See*—
Bayley, Robert D.; Fox, Carol A.; Hoffend, Thomas R.; Mahabadi, Hadi K.; Agur, Enno E.; Sacripante, Guerino; and Hawkins, Michael S., 5,548,059, Cl. 528-194.000.

Hoffman, Jutta: *See*—
Nowak, Götz; Bucha, Elke; and Hoffman, Jutta, 5,547,850, Cl. 435-13.000.

Hoffmann, Jacques E.: *See*—
Balke, David J.; and Hoffmann, Jacques E., 5,546,789, Cl. 73-40.000.

Hoffmann-La Roche Inc.: *See*—
Dore, Benoit T.; Momparler, Richard L.; and Uskokovic, Milan R., 5,547,947, Cl. 514-167.000.

Hofmann, Richard G.: *See*—

Amini, Nader; Boury, Bechara F.; Brannon, Sherwood; Concilio, Ian A.; Hofmann, Richard G.; and Lohman, Terence J., 5,548,786, Cl. 395-842.000.

Hogan, James; Smith, Richard; and Kop, Joann, to Gen-Probe Incorporated. Nucleic acid probes for detection and/or quantitation of non-viral organisms. 5,547,842, Cl. 435-6.000.

Hoheneggger, Karl; and Wierer, Peter, to Balzers Aktiengesellschaft. High-reflection silver mirror. 5,548,440, Cl. 359-360.000.

Holdeman, R. Brian; Kohman, Fred H.; Harrison, Greg T.; and Hise, Bradley W., to Charles Machine Works, Inc., The. Screw drive tool joint wrench. 5,546,833, Cl. 81-52.000.

Holland, Herbert W. Marine fueling facility spill containment system. 5,547,313, Cl. 405-63.000.

Hollandsche Beton Groep N.V.: *See*—
Kool, Anthonie F.; Van de Griendt, Michiel A.; de Bruin, Bas H.; Schepes, Gerardus N.; and Lucieer, Willem J., 5,548,397, Cl. 356-141.100.

Hollendorfer, Paul: *See*—
Luttrell, Tammy C.; and Hollendorfer, Paul, 5,547,464, Cl. 602-26.000.

Holloman, Edward C.; Kyba, Evan P.; and Park, Joon S., to Alcon Laboratories, Inc. Absolute molecular weight polymers and methods for their use. 5,547,663, Cl. 424-78.040.

Hollopeter, James E.; Estline, Tsvi H.; and Barton, Robert L., to Lockheed Martin Corporation. Apparatus for encapsulating space launch payloads. 5,546,651, Cl. 29-722.000.

Hollyanne Corp.: *See*—
Callahan, Martin E., 5,548,323, Cl. 348-9.000.

Holmes, Timothy: *See*—
Swerdloff, Stuart; Mackie, Thomas R.; and Holmes, Timothy, 5,548,627, Cl. 378-4.000.

Holmes, William A.: *See*—
Kloeckl, Terrance; Thompson, Todd; Costa, Peter F.; Holmes, William A.; and Daulton, Jay, 5,547,474, Cl. 606-143.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Akasaka, Yoshio; Kakijima, Kenichi; Endoh, Takeshi; Uchida, Goro; Tanaka, Masaaki; Fujie, Takefumi; Sukawa, Daiji; Endoh, Satoshi; Saitoh, Hideo; and Kubo, Takashi, 5,548,096, Cl. 219-117.100.
Gunji, Takahiro; Tabata, Masamune; Dosaka, Kenji; and Hirose, Kenji, 5,547,771, Cl. 428-687.000.
Hara, Fumio; Fujimura, Akira; Hara, Yoshihisa; and Sakanushi, Masahiro, 5,546,922, Cl. 123-698.000.
Hasegawa, Yusuke; Komoriya, Isao; Kimura, Eisuke; Akazaki, Shusuke; and Nishimura, Yoichi, 5,548,514, Cl. 364-431.050.
Horimura, Hiroyuki; Okamoto, Kenji; Minemi, Masahiko; Kaji, Toshihiko; Takeda, Yoshinobu; and Takano, Yoshishige, 5,547,632, Cl. 419-28.000.
Komoriya, Isao; Hasegawa, Yusuke; Akazaki, Shusuke; and Maki, Hidetaka, 5,546,907, Cl. 123-478.000.
Masuda, Katsuhiko; Aoki, Jun; and Hashizume, Isamu, 5,548,513, Cl. 364-426.030.
Yamasaki, Gorou; Mitsuru, Iseno; and Miyamaru, Yukio, 5,547,382, Cl. 434-61.000.

Honda Tsushin Kogyo Kabushiki Kaisha: *See*—
Hirai, Yuji, 5,547,397, Cl. 439-607.000.

Hondo Giken Kogyo Kabushiki Kaisha: *See*—
Kami, Yozo; Anzawa, Teruaki; Oku, Yasunori; and Hinosawa, Shinji, 5,547,224, Cl. 280-834.000.

Honeywell Inc.: *See*—
Podgorski, Theodore J.; Thorland, Rod; and Curran, Robert M., 5,548,602, Cl. 372-19.000.

Honeywill, Roberta L. Career game. 5,547,201, Cl. 463-9.000.

Hoogerwoord, Ronald P., to Nederlandse Pillo-Pak Maatschappij B.V. Multipurpose mailing envelope. 5,547,075, Cl. 206-204.000.

Horak, Donald L.: *See*—
Blum, Michael E.; Boerman, Gary L.; Fekete, Thomas M.; Horak, Donald L.; Kovneristy, Yulig K.; and Orillion, Michael T., 5,547,487, Cl. 75-10.150.

Hori, Osamu: *See*—
Asano, Mieko; and Hori, Osamu, 5,548,695, Cl. 395-133.000.

Horiguchi, Yumiko: *See*—
Kaneko, Hiroaki; and Horiguchi, Yumiko, 5,548,766, Cl. 395-775.000.

Horiike, Yoshio; Yoshimura, Yasuo; Yokoajiro, Yoshiyuki; Matsumura, Teruo; Hasegawa, Makoto; and Mimura, Masahiro, to Matsushita Electric Industrial Co., Ltd. Radio receiver apparatus of orthogonal detection type comprising local oscillator means with improved automatic frequency control arrangement. 5,548,619, Cl. 375-344.000.

Horikawa, Hiroshi: *See*—
Kimura, Yutaro; Ikeshima, Tetsuhiko; Tonami, Hiromichi; Konishi, Ikuo; Horikawa, Hiroshi; Daikoku, Akihiro; Sakabe, Shigekazu; Inoue, Masao; and Yamasaki, Akinori, 5,548,629, Cl. 378-134.000.

Horikoshi, Hiroki, to Canon Kabushiki Kaisha. Multi-point communication system and communication terminal station apparatus. 5,548,591, Cl. 370-62.000.

Horimura, Hiroyuki; Okamoto, Kenji; Minemi, Masahiko; Kaji, Toshihiko; Takeda, Yoshinobu; and Takano, Yoshishige, to Sumitomo Electric Industries, Ltd.; and Honda Giken Kogyo Kabushiki Kaisha. Powder forging process. 5,547,632, Cl. 419-28.000.

Hörl, Hans-Heinrich: *See*—
Demmer, Wolfgang; Hörl, Hans-Heinrich; Nussbaumer, Dietmar; Weiss, Abdul R.; and Wünn, Eberhard, 5,547,575, Cl. 210-490.000.

Horn, Kevin M.; and Doyle, Barney L., to Sandia Corporation. Ion-induced nuclear radiotherapy. 5,547,454, Cl. 600-1.000.

Horn, Klaus: *See*—
Köhler, Burkhard; Ebert, Wolfgang; Horn, Klaus; Weider, Richard; and Scholl, Thomas, 5,548,011, Cl. 524-267.000.

Hornburg, Gerald: *See*—
Fletcher, Nicholas J.; Chow, Clarence Y.; Pow, Eric G.; Wozniczka, Bogusiav M.; Voss, Henry H.; and Hornburg, Gerald, 5,547,776, Cl. 429-13.000.

Horsten, Bartholmeus: *See*—
De Meutter, Stefaan; Van Goethem, Eugeen; Schuerwegen, Ronald; and Horsten, Bartholmeus, 5,547,914, Cl. 503-210.000.

Horton, Duane L.: *See*—
Virag, Robert A.; Nye, Richard V.; and Horton, Duane L., 5,546,936, Cl. 128-207.140.

Horton, Todd; and Bennett, Michael, to Hydro-Gear Ltd. Partnership. Combination valve including improved neutral valve for use in hydrostatic transmission. 5,546,752, Cl. 60-464.000.

Horuriku Seiyaku Co., Ltd.: *See*—
Ito, Yasuo; Kato, Hideo; Yasuda, Singo; Kado, Noriyuki; Yoshida, Toshihiko; and Yamamoto, Yoichi, 5,547,962, Cl. 514-312.000.

Hosaka, Yoshiaki: *See*—
Niki, Mamoru; Hosaka, Yoshiaki; Mogi, Takao; and Saito, Haruo, 5,548,451, Cl. 360-32.000.

Hoshi, Nobuyoshi: *See*—
Mitsuya, Teruaki; Okada, Hisao; and Hoshi, Nobuyoshi, 5,548,375, Cl. 355-200.000.

Hoshi, Takao: *See*—
Sugiyama, Akihiko; Tsuchiyama, Hideaki; Futami, Toshihiko; Kato, Hisataka; and Hoshi, Takao, 5,547,344, Cl. 417-32.000.

Hoshihara, Naoaki, to Aisin Seiki Kabushiki Kaisha. Pawl and ratchet type seat tilt control apparatus. 5,547,254, Cl. 297-367.000.

Hosking, Floyd M.: *See*—
Vianco, Paul T.; Fisher, Robert W.; Hosking, Floyd M.; and Zanner, Frank J., 5,547,484, Cl. 65-42.000.

Hosking, Jack: *See*—
Straub, William; Hosking, Jack; Topal, Mickey; and Boczkiewicz, Bruce, 5,546,864, Cl. 104-17.200.

Hosono, Masami: *See*—
Yamaura, Akira; and Hosono, Masami, 5,548,232, Cl. 327-60.000.

Hotta, Shu: *See*—
Wakita, Katsuya; Hotta, Shu; Sonoda, Nobuo; and Yang, Yang, 5,546,889, Cl. 117-84.000.

Hotta, Yoshihiko: *See*—
Suzuki, Akira; Hotta, Yoshihiko; and Uemura, Hiroyuki, 5,547,915, Cl. 503-227.000.

House Foods Corporation: *See*—
Nakatani, Masayuki; Sengoku, Koji; and Fujita, Akifumi, 5,546,854, Cl. 99-470.000.

Houston Industries Incorporated: *See*—
Cotton, Harvey E., 5,546,809, Cl. 73-644.000.

Hover, Forest H.: *See*—
Furseth, John P.; Heydrich, Frank; Hover, Forest H.; Little, Ian; Mackin, Steven G.; Stenard, Steven C.; Thompson, James L.; White, Ellen; and Wilson, Bruce D., 5,547,342, Cl. 415-200.000.

Howell, Mark; and Clarke, Graham H., to HL&H Timber Products (Pty) Limited. Mine support system. 5,547,317, Cl. 405-288.000.

Hoxmeier, Ronald J., to Shell Oil Company. Block copolymer of polyalkylene and halogenated poly(vinyl aromatic). 5,548,030, Cl. 525-314.000.

Hoyt, Matthew B.; Coons, Andrew M., III; and Dickson, David N., to BASF Corporation. Acid dye resistant pigmented polymer. 5,548,037, Cl. 525-426.000.

Hsiao, Louis. Display apparatus for supporting in-line skates. 5,547,157, Cl. 248-309.100.

Hsu, Chen-Chung, to United Microelectronics Corporation. Method of elimination of junction punchthrough leakage via buried sidewall isolation. 5,547,903, Cl. 437-203.000.

Hsu, Feng-chien. Integrated circuit chip socket. 5,547,389, Cl. 439-342.000.

Huang, Austin L., to Texas Instruments Incorporated. Light separator for testing DMD performance. 5,548,443, Cl. 359-638.000.

Huang, Ching-Lien. Multipurpose exercise device. 5,547,444, Cl. 482-72.000.

Huang, Jyh-Yi T.: *See*—
Johnson, Noel L.; Huang, Jyh-Yi T.; and Burnside, Robert R., 5,547,470, Cl. 604-67.000.

Huang, Victor T.: *See*—
Perry, Michael R.; Huang, Victor T.; Rosenwald, Diane R.; Johnson, Andrew H.; and Ghiasi, Katy, 5,547,694, Cl. 426-118.000.

Huang, Yen T. Modular roof structure. 5,546,722, Cl. 52-646.000.

Huang, Yu E., to Ricoh Corporation. Data communication apparatus and method for switching from g3 and compatible mode to ecm mode by inverting protocol message signal. 5,548,781, Cl. 395-831.000.

Huber, Adolf: *See*—
Bidaud, Francis; Benoit, Sylvain; Plisson, Jacques; Morizot, Gérard; Roth, Harald; and Huber, Adolf, 5,548,199, Cl. 318-802.000.

Hubner Gummi- und Kunststoff GmbH: *See*—
Koch, Robert, 5,546,866, Cl. 105-8.100.

Huck, Hugo A.; Jech, Alberto E.; Righini, Raúl; Halac, Emilia B.; de Benyacar, Maria A. R.; and Nicolai, Julio A., to Comision Nacional de Energia Atomica. Ion beam deposition of diamond-like carbon films. 5,547,714, Cl. 427-523.000.

VOL 1189 155 3 AUG 20 1996 UMI

Huddleston, Joey V.: *See*—
Laurash, David F.; Huddleston, Joey V.; Konkol, Patrick A.; Hartke, Jeffery J.; and Skees, Hugh B., 5,547,227, Cl. 283-81.000.

Hudnall, Walter E. Rotary file and storage cabinet. 5,547,273, Cl. 312-305.000.

Hudson Optical Corporation: *See*—
Hirschman, Richard; and Shin, Chul W., 5,548,351, Cl. 351-47.000.

Hudson Soft Co., Ltd.: *See*—
Takahashi, Katsunori, 5,548,655, Cl. 381-104.000.

Huetteman, Steven C.: *See*—
Hennessee, Robert P.; Huetteman, Steven C.; and Markowitz, Ron M., 5,547,125, Cl. 236-49.300.

Huffaker, Joey W.: *See*—
Knight, John T.; Huffaker, Joey W.; and Rinke, Michael B., 5,546,925, Cl. 126-110.00R.

Huffstutler, M. Conrad, Jr.: *See*—
Meacham, Patrick E.; Zeilinger, Michael S.; Meacham, Clifford B.; and Huffstutler, M. Conrad, Jr., 5,546,870, Cl. 105-355.000.

Hughes Aircraft Company: *See*—
Clewer, Richard, 5,548,244, Cl. 329-318.000.
Devenyi, Gabor; and Stenton, Conrad, 5,548,442, Cl. 359-432.000.
Klatt, Robert W., 5,548,329, Cl. 348-164.000.
Kubena, Randall L., 5,548,129, Cl. 257-24.000.
Nguyen, Chanh; Liu, Takyiu; and Matloubian, Mehran, 5,548,140, Cl. 257-194.000.
Schaffner, James H., 5,548,668, Cl. 385-1.000.
Smith, Richard R., 5,548,439, Cl. 359-353.000.
Tsuda, George I.; Haeger, Thomas A.; and Leeper, William A., 5,548,299, Cl. 343-789.000.

Hughes Danbury Optical Systems, Inc.: *See*—
McLaughlin, Joseph L.; Fernald, Mark R.; and Hart, Kenneth J., 5,548,444, Cl. 359-629.000.

Hughes, John R.: *See*—
Eggleston, Michael R.; Benz, Mark G.; Jackson, Melvin R.; Hughes, John R.; and Raber, Thomas R., 5,547,410, Cl. 445-28.000.

Huhn, Werner: *See*—
Gimmler, Helmut; Nester, Ulrich; Kurz, Gerhard; and Huhn, Werner, 5,546,793, Cl. 73-116.000.

Hulnicki, Andrew M. Knives and scissors sharpener. 5,547,419, Cl. 451-321.000.

Hunneyball, Ian M.: *See*—
Clegg, Lawrence S.; Hunneyball, Ian M.; Jones, Colin G. P.; Rafferty, Paul; and Steele, Leslie, 5,547,972, Cl. 514-399.000.

Hunter Douglas Inc.: *See*—
Auger, Raymond N., 5,547,006, Cl. 160-84.010.

Hunter, Louis G., Jr.: *See*—
Winfree, Don D.; and Hunter, Louis G., Jr., 5,546,744, Cl. 60-247.000.

Husain, Anwar; Kotecki, David E.; Lassig, Stephan E.; Olson, Kurt A.; and Ricci, Anthony J., to International Business Machines Corporation. Characterization, modeling, and design of an electrostatic chuck with improved wafer temperature uniformity. 5,548,470, Cl. 361-234.000.

Huscroft, Kevin: *See*—
Gerson, Brian D.; Huscroft, Kevin; and Mallinson, Martin, 5,548,230, Cl. 326-73.000.

Hussain, Moayyed A.; Rigby, Kenneth W.; and Bae, Koeunyi, to General Electric Company. Ultrasound image enhancement using beam-nulling. 5,548,561, Cl. 367-7.000.

Hussein, Fathi D.: *See*—
Cann, Kevin J.; Hussein, Fathi D.; Zilker, Daniel P., Jr.; and Lee, Kiu H., 5,548,040, Cl. 526-62.000.

Hutchinson: *See*—
Corcoran, Patrick E., 5,547,172, Cl. 267-140.130.

Hutchinson, Douglas K.; Barbachyn, Michael R.; Brickner, Steven J.; Gammill, Ronald B.; and Patel, Mahesh V., to Upjohn Company, The. Oxazolidinone antimicrobials containing substituted diazine moieties. 5,547,950, Cl. 514-252.000.

Hutzel, Bernhard; Blaurock, Günter; and Klein, Michael, to Deutsche Star GmbH. Linear guide means. 5,547,285, Cl. 384-15.000.

Hüwel, Ulrich: *See*—
Caspelherr, Heinz; and Hüwel, Ulrich, 5,547,277, Cl. 366-146.000.

Huwil-Werke GmbH: *See*—
Hirtsiefer, Artur, 5,546,705, Cl. 49-386.000.

Hwang, Ing F. Safety striker wheel assembly for gas lighters. 5,547,370, Cl. 431-276.000.

HWH Corporation: *See*—
Hanser, Paul E.; Boddicker, Daniel J.; and Blake, John F., 5,547,040, Cl. 182-88.000.

Hydro-Gear Ltd. Partnership: *See*—
Horton, Todd; and Bennett, Michael, 5,546,752, Cl. 60-464.000.

Hydrogen Burner Technology, Inc.: *See*—
Greiner, Leonard; Moard, David M.; and Bhatt, Bharat, 5,546,701, Cl. 48-108.000.

Hyosu, Haruhiko: *See*—
Ueno, Yoshiaki; Hyosu, Haruhiko; Sase, Takao; Matsushita, Koji; and Yamashita, Koji, 5,548,254, Cl. 333-25.000.

Hypertherm, Inc.: *See*—
Couch, Richard W., Jr; Luo, Lifeng; and Peterson, Jeffrey L., 5,548,097, Cl. 219-121.570.

Hyundai Electronics Industries, Co., Ltd.: *See*—
Jang, Hyun S.; and Oh, Chul D., 5,548,546, Cl. 364-786.000.

Hyundai Motor Company: *See*—
Kim, Yoonsuk, 5,546,898, Cl. 123-90.100.

Hyvärinen, Jukka, to ICL Personal Systems OY. Device for protecting a memory or microcircuit unit. 5,548,479, Cl. 361-684.000.

I. Krüger Systems A/S: *See*—
Nielsen, Marinus K., 5,547,578, Cl. 210-614.000.

I.M.L. Industria Meccanica Lombarda S.R.L.: *See*—
Chiodaroli, Michelangelo, 5,546,638, Cl. 24-67.900.

Iacullo, Robert S. Thermoelectric intercooler cooling turbocharged air. 5,547,019, Cl. 165-51.000.

Iadanza, Joseph A.; and Ueda, Makoto, to International Business Machines Corporation. Process tolerant delay circuit. 5,548,237, Cl. 327-281.000.

Ibaraki Seiki Machinery Co., Ltd.: *See*—
Tolson, Sidney S., 5,546,677, Cl. 34-216.000.

IBC Advanced Technologies, Inc.: *See*—
Tarbet, Bryon J.; Bruening, Ronald L.; Di Leo, Anthony J.; Goddard, Philip M.; and Scarmoutzos, Louis M., 5,547,760, Cl. 428-471.000.

IBM Corporation: *See*—
Matheny, David T.; Miller, Paul K.; and Taborn, Michael P., 5,548,544, Cl. 364-745.000.

Ichihashi, Hajime: *See*—
Hirai, Osamu; Tamura, Keiji; and Ichihashi, Hajime, 5,547,329, Cl. 414-222.000.

Ichikawa, Shouzou; and Matsuura, Naoya, to Molex Incorporated. Shielded electrical connector. 5,547,398, Cl. 439-607.000.

Ichimaru, Yasuyuki: *See*—
Christensen, Burton G.; Egawa, Takashi; Ichimaru, Yasuyuki; Ohuchi, Shokichi; Okonogi, Tsuneo; Patchett, Arthur A.; Shibahara, Seiji; and Tsutsumni, Seiji, 5,547,978, Cl. 514-422.000.

Ichinari, Mitsuhiro: *See*—
Hayase, Yoshio; Kataoka, Takahiro; Takenaka, Hideyuki; Ichinari, Mitsuhiro; Masuko, Michio; Takahashi, Toshio; and Tanimoto, Norihiko, 5,548,078, Cl. 544-298.000.

Ichiyoshi, Hiroyuki, to Canon Kabushiki Kaisha. Video camera having viewfinder rotatably mounted on camera body. 5,548,334, Cl. 348-341.000.

ICL Personal Systems OY: *See*—
Hyvärinen, Jukka, 5,548,479, Cl. 361-684.000.

Icom Incorporated: *See*—
Snn, Weimin; and Kajimoto, Shigeki, 5,548,243, Cl. 329-316.000.

Ide, Tatsumi; and Nishi, Yasuhisa, to NEC Corporation. Electromagnetic relay having an improved resistivity to surge. 5,548,259, Cl. 335-78.000.

Idemitsu Kosan Co., Ltd.: *See*—
Omiya, Yasunori, 5,547,596, Cl. 508-188.000.

IF-1 S.r.l.: *See*—
Cascio, Franco, 5,547,304, Cl. 403-13.000.

Igarashi, Yoshiaki; and Ito, Yoshiro, to Precision Fukuhara Works, Ltd. Apparatus for knitting a double-knit fabric having non-run and stretchability characteristics. 5,546,769, Cl. 66-20.000.

Iguchi, Masayoshi: *See*—
Minamizawa, Fumihiro; Iguchi, Masayoshi; and Takeyama, Koji, 5,548,412, Cl. 358-406.000.

Iguchi, Michihisa; and Tsuda, Yukio, to Kabushiki Kaisha Toshiba. Image forming apparatus using a process unit. 5,548,374, Cl. 355-200.000.

Iguchi, Takeyoshi: *See*—
Sekimoto, Takashi; Endo, Yoichi; Yamazaki, Hirohiko; Yamazaki, Masahiko; Ohtani, Yutaka; Iguchi, Takeyoshi; Matsumoto, Kenji; Yamazaki, Hiroyuki; Takimura, Ryo; and Tsuda, Takao, 5,548,417, Cl. 385-474.000.

Ihara, Satoru: *See*—
Kuwata, Takeshi; Ruckmongathan, Temkar N.; Nakagawa, Yutaka; Koh, Hidemasa; Nakazawa, Akira; Ohnishi, Takanori; and Ihara, Satoru, 5,548,302, Cl. 345-89.000.

Iida, Hiroshi: *See*—
Nagatomo, Akira; Hattori, Yoshifumi; Ebisawa, Isao; Abe, Tsutomu; Ohba, Takashi; Iida, Hiroshi; and Watanabe, Kenjiro, 5,548,308, Cl. 347-9.000.

Iida, Yoshiaki. Housing for accommodating one or more disks. 5,547,078, Cl. 206-308.100.

Iida, Yoshikatsu; Kurihara, Noriyuki; and Suzuki, Toshio, to Yamaha Hatsudoki Kabushiki Kaisha. Operating arrangement for gaseous fueled engine. 5,546,919, Cl. 123-682.000.

Iida, Yoshikazu: *See*—
Nakamura, Toshiyuki; and Iida, Yoshikazu, 5,548,370, Cl. 354-402.000.

Iida, Yoshimitsu; and Machida, Minoru, to Chugai Seiyaku Kabushiki Kaisha. Sucralfate preparation. 5,547,943, Cl. 514-53.000.

Iijima, Koji: *See*—
Ohta, Masashi; Kobayashi, Hiroshi; Sekiya, Tsuneo; Hamada, Toshimichi; Fukuda, Kyoko; and Iijima, Koji, 5,548,409, Cl. 358-335.000.

Iijima, Masayuki: *See*—
Nishizawa, Masumi; Iijima, Masayuki; and Miyama, Takashi, 5,547,804, Cl. 430-114.000.

Iijima, Naoto: *See*—
Kohno, Satoru; Iijima, Naoto; and Ishikawa, Akihiro, 5,548,215, Cl. 324-309.000.

Iijima, Ryunosuke, to Canon Kabushiki Kaisha. Camera. 5,548,369, Cl. 354-286.000.

Iiyama, Michitomo: *See*—
Nakamura, Takao; Inada, Hiroshi; and Iiyama, Michitomo, 5,547,923, Cl. 505-330.000.

Iizuka, Tokio; Uehara, Kenichi; and Takeuchi, Daizo, to Kawasaki Steel Corporation. Marine micro-algae food material containing docosahexaenoic acid, food containing the same and manufacturing method therefor. 5,547,699, Cl. 426-615.000.

Ika-Analysentechnik GmbH: *See*—
Pinhack, Hubert; Fuhrmann, Jürgen; and Gegg, Rolf, 5,547,282, Cl. 374-36.000.

Ikami, Kazunori: *See*—
Funahashi, Yasuhiro; Ikami, Kazunori; Nishimura, Osamu; Hibino, Yoshihiko; Kiyohara, Yuji; and Yasutomo, Yuichi, 5,548,281, Cl. 340-825.080.

Ikeda, Kazumasa; and Hirata, Ken, to Kabushiki Kaisha Toshiba. Luminance/chrominance separating circuit using predetermined separations. 5,548,342, Cl. 348-668.000.

Ikeda, Kiyoshi: *See*—
Yamamoto, Keisaku; Ikeda, Kiyoshi; Fukuyama, Masahiro; Naito, Takeshi; and Aritake, Masanori, 5,548,012, Cl. 524-433.000.

Ikeda, Masanori: *See*—
Sanechika, Kenichi; Fukui, Hiroyuki; and Ikeda, Masanori, 5,547,593, Cl. 508-207.000.

Ikeda, Masao: *See*—
Nagano, Yoshimi; Suganuma, Takao; Satoh, Kazuhiro; and Ikeda, Masao, 5,547,858, Cl. 435-89.000.

Ikeda, Tadayoshi: *See*—
Fukuchi, Masakazu; Morita, Shizuo; Haneda, Satoshi; Satoh, Hiseo; and Ikeda, Tadayoshi, 5,548,379, Cl. 355-210.000.

Ikeda, Yuko: *See*—
Niimura, Koichi; Ando, Takao; Nitta, Toyohiko; and Ikeda, Yuko, 5,547,973, Cl. 514-399.000.

Ikeshima, Tetsuhiko: *See*—
Kimura, Yutaro; Ikeshima, Tetsuhiko; Tonami, Hiromichi; Konishi, Ikuo; Horikawa, Hiroshi; Daikoku, Akihiro; Sakabe, Shigekazu; Inoue, Masao; and Yamasaki, Akinori, 5,548,629, Cl. 378-134.000.

Ikezawa, Mitsuru: *See*—
Mimura, Itaru; Ueda, Hirotada; Sumino, Shigeo; Ikezawa, Mitsuru; Suzuki, Toshiaki; Kinoshita, Taizo; and Tada, Katsumi, 5,548,346, Cl. 348-738.000.

Iki, Yoichi, to Nikon Corporation. Ophthalmologic apparatus detecting position of bright points on an eye to be examined. 5,548,355, Cl. 351-212.000.

Ikumi, Tomonori: *See*—
Murakami, Kazunori; Ikumi, Tomonori; Kubota, Atsushi; Nakahara, Nobuhiko; and Kato, Nobuyuki, 5,548,321, Cl. 347-256.000.

Ikuta, Toshio: *See*—
Tanahashi, Masao; Shiba, Takeshi; and Ikuta, Toshio, 5,546,659, Cl. 30-43.920.

Il Sung Moolsan Co., Ltd.: *See*—
Cho, Hyung R., 5,548,497, Cl. 362-260.000.

Iles, Alexander L.: *See*—
Yishay, Oded; Jelemensky, Joseph; and Iles, Alexander L., 5,548,794, Cl. 395-871.000.

Imagawa, Ippei: *See*—
Satake, Sunao; Yatsuyanagi, Yoshimi; Fujii, Masahiro; and Imagawa, Ippei, 5,547,999, Cl. 522-122.000.

Image Technology International, Inc.: *See*—
Wah Lo, Allen K.; and Lao, Kenneth Q., 5,548,362, Cl. 354-114.000.

Imai, Rihoko: *See*—
Misawa, Tsutami; Ogiso, Akira; Imai, Rihoko; and Itoh, Hisato, 5,548,073, Cl. 534-690.000.

Imai, Shinichi: *See*—
Tamaki, Tokuhiko; and Imai, Shinichi, 5,546,890, Cl. 117-102.000.

Imai, Yasuto: *See*—
Aizawa, Yuichi; Kimura, Mahito; and Imai, Yasuto, 5,547,194, Cl. 473-350.000.

Imam, Imdad: *See*—
Pia, Frederic C.; Hedeen, Robert A.; and Imam, Imdad, 5,548,653, Cl. 381-71.000.

Imamura, Toshio: *See*—
Ohira, Tsunehisa; Umeda, Hiroyuki; and Imamura, Toshio, 5,548,460, Cl. 360-132.000.

Imanishi, Takashi; Abe, Tsutomu; and Kokubu, Hideki, to Nsk Ltd. Toroidal-type continuously variable transmission. 5,547,432, Cl. 476-40.000.

Imarx Pharmaceutical Corp.: *See*—
Unger, Evan C., 5,547,656, Cl. 424-9.400.

Imclone Systems Incorporated: *See*—
Goldstein, Neil I.; and Tackney, Charles T., 5,547,670, Cl. 424-192.100.

Imer, Rodney H. Bag for liquids, pastes, or granulates and method of manufacturing. 5,547,284, Cl. 383-104.000.

Imirowicz, Krystyna: *See*—
Jorissen, Steven A.; Ferguson, Gregory A.; and Imirowicz, Krystyna, 5,548,026, Cl. 525-113.000.

Immisch, Ulrich: *See*—
Graf, Walter; and Immisch, Ulrich, 5,547,043, Cl. 184-39.000.

Immutech International Inc.: *See*—
Potempa, Lawrence A., 5,547,931, Cl. 514-2.000.

IMO Industries, Inc.: *See*—
Dalton, William S.; Clark, Richard S.; and Trunkett, Kevin S., 5,547,340, Cl. 415.00-121.200.
Miller, Frank S.; and Croto, John F., 5,546,824, Cl. 74-421.00R.

Imperial Chemical Industries PLC: *See*—
Kara, Bhupbendra V.; Hockney, Robert C.; and Fitton, John E., 5,547,867, Cl. 435-199.000.
Morrison, Gary W., 5,547,916, Cl. 503-227.000.

IMZ Fertigungs-und Vertriebsgesellschaft für dentale Technologie mbH: *See*—
Dürr, Walter; and Kirsch, Axel, 5,547,324, Cl. 411-304.000.

In Focus Systems, Inc.: *See*—
Conner, Arlie; Biles, Jonathan R.; Scheffer, Terry J.; and Kingsley, Gary B., 5,548,422, Cl. 359-65.000.

INA Walzlager Schaeffler KG: *See*—
Giese, Peter, 5,547,060, Cl. 192-110.00B.
Parzefall, Walter; and Folk, Herbert, 5,547,058, Cl. 192-85.0CA.

Inaba, Tadashi: *See*—
Okada, Hisashi; Inaba, Tadashi; Suzuki, Ryo; and Nomura, Hideaki, 5,547,817, Cl. 430-393.000.

Inada, Hiroshi: *See*—
Nakamura, Takao; Inada, Hiroshi; and Iiyama, Michitomo, 5,547,923, Cl. 505-330.000.

Inagaki, Yoshio; Shinkai, Motoshi; Tsuno, Masahide; and Nagatani, Akihiro, to Daido Tokushuko Kabushiki Kaisha. Process for producing low-carbon chromium-containing steel. 5,547,489, Cl. 75-512.000.

Indena S.p.A.: *See*—
Bombardelli, Ezio, 5,547,673, Cl. 424-195.100.

Industrial Technology Research Institute: *See*—
Wong, Chang-Ming; and Liour, Shihn-Juh, 5,547,364, Cl. 425-384.000.

Ino, Mitsuhiro: *See*—
Sugisaki, Eiichi; Ino, Mitsuhiro; and Nagayama, Masato, 5,548,390, Cl. 355-319.000.

Inoac Corporation: *See*—
Hirayama, Shinji; Konishi, Shin; Hidai, Takao; Hama, Shinjiro; Hashimoto, Sadako; and Morikawa, Yukihiro, 5,548,057, Cl. 528-67.000.

Inotrend, Inc.: *See*—
Clark, Aaron D., 5,548,272, Cl. 340-407.100.

Inoue, Aiichiro: *See*—
Asakawa, Takeo; and Inoue, Aiichiro, 5,548,736, Cl. 395-375.000.

Inoue, Akihiro: *See*—
Masaki, Tomoh; Yanagisawa, Masashi; and Inoue, Akihiro, 5,548,061, Cl. 530-324.000.

Inoue, Junsuke: *See*—
Uchimoto, Daisuke; Monmasu, Hiroshi; Tomita, Toshihiko; and Inoue, Junsuke, 5,547,158, Cl. 248-396.000.

Inoue, Masao: *See*—
Kimura, Yutaro; Ikeshima, Tetsuhiko; Tonami, Hiromichi; Konishi, Ikuo; Horikawa, Hiroshi; Daikoku, Akihiro; Sakabe, Shigekazu; Inoue, Masao; and Yamasaki, Akinori, 5,548,629, Cl. 378-134.000.

Insituform (Netherlands) B.V.: *See*—
Chick, Douglas K.; and Driver, F. Thomas, 5,546,992, Cl. 138-98.000.

Integrity Industries, Inc.: *See*—
Duncan, William M., Jr., 5,547,925, Cl. 507-103.000.

INTEL Corporation: *See*—
Brady, Gary W.; and Ellis, David G., 5,548,621, Cl. 375-354.000.
Breivogel, Joseph R.; Price, Matthew J.; and Barns, Christopher E., 5,547,417, Cl. 451-58.000.
Colwell, Robert P.; and Glew, Andrew F., 5,548,776, Cl. 395-800.000.
Downs, Terry; and Goldstein, Judith A., 5,548,324, Cl. 348-15.000.
King, Adrian S., 5,548,798, Cl. 395-888.000.
Kolinski, Jerzy; Sprietsma, John; Pawlowski, Stephen; and Schaechterle, Henry, 5,548,734, Cl. 395-306.000.
Langendorf, Brian K., 5,548,767, Cl. 395-775.000.
Ong, Tong-Chern, 5,548,549, Cl. 365-185.050.
Sarangdhar, Nitin; Rhodehamel, Michael; and Fisch, Matthew, 5,548,733, Cl. 395-286.000.
Sprague, David L.; Harney, Kevin; Kowashi, Eiichi; Keith, Michael; Simon, Allen H.; Papadopoulos, Gregory M.; Hays, Walter P.; Salem, George F.; Shiue, Shih-Wei; Bertapelli, Anthony P.; and Shilman, Vitaly H., 5,548,793, Cl. 395-860.000.
Wang, Wen-Hann; and Lai, Konrad K., 5,548,742, Cl. 395-455.000.
Young, Bruce; and Coulson, Rick, 5,548,730, Cl. 395-280.000.

Intelligent Surgical Lasers, Inc.: *See*—
Turi, Laszlo; Ujazdowski, Richard; and Juhasz, Tibor, 5,548,234, Cl. 327-108.000.

Intermec Corporation: *See*—
Moldskred, Walt; and Ramberg, Jon R., 5,548,108, Cl. 235-462.000.
Wiklof, Christopher A.; and Millet, Edward M., 5,548,688, Cl. 395-108.000.

International Business Machine Corporation: *See*—
Fukuzawa, Tadashi; Kano, Satoru S.; Kumata, Kiyoshi; Lee, Victor Y.; Schellenberg, Franklin M.; and Takahashi, Yutaka, 5,547,705, Cl. 427-162.000.

International Business Machines Corporation: *See*—
Afzali-Ardakani, Ali; Gotro, Jeffrey T.; Hedrick, Jeffrey C.; Papathomas, Konstantinos; Patel, Niranjan M.; Shaw, Jane M.; and Viehbeck, Alfred, 5,548,034, Cl. 525-390.000.
Alvarado, Julio M., 5,547,713, Cl. 427-493.000.
Amini, Nader; Boury, Bechara F.; Brannon, Sherwood; Concilio, Ian A.; Hofmann, Richard G.; and Lohman, Terence J., 5,548,786, Cl. 395-842.000.
Arimilli, Ravi K.; Dodson, John S.; and Lewis, Jerry D., 5,548,797, Cl. 395-880.000.
Balasundaram, Vasanth; Carter, John L.; and Ferrante, Jeanne, 5,548,761, Cl. 395-700.000.
Baum, Richard I.; Brent, Glen A.; Gibson, Donald H.; and Lindquist, David B., 5,548,769, Cl. 395-800.000.

Berry, Richard E.; Henshaw, Susan F.; and Roberts, David J., 5,548,703, Cl. 395-160.000.
Bertram, Randall L., 5,548,340, Cl. 348-559.000.
Bindal, Ahmet, 5,548,148, Cl. 257-335.000.
Bonaccio, Anthony R., 5,548,452, Cl. 360-46.000.
Brooks, Peter E.; and Glaess, David F., 5,548,457, Cl. 360-98.080.
Carpenter, Gary D.; Dean, Mark E.; Faucher, Marc R.; Peterson, James C.; and Tanner, Howard C., 5,548,746, Cl. 395-500.000.
Casper, Daniel F.; Gregg, Thomas A.; Salyer, Gregory; and Westcott, Douglas W., 5,548,623, Cl. 375-358.000.
Casper, Daniel F.; Glassen, Steven G.; Halma, Marten J.; and Ryan, Sandra K., 5,548,791, Cl. 395-858.000.
Chang, Kyusun; Hall, Lon E.; Joyce, Gregory S.; Mazzurana, Paul D.; and Russell, Lance W., 5,548,731, Cl. 395-280.000.
Chen, Wen-Tzer T.; Thurber, Steven M.; and Tsao, Gary Y., 5,548,735, Cl. 395-375.000.
Collins, James P.; Dorn, Judy; Fahey, James T.; Linehan, Leo; Miller, William J.; Morean, Wayne; Puttlitz, Erik A.; Smith, Randolph; and Spinillo, Gary, 5,547,812, Cl. 430-270.100.
Combs, James L.; Crump, Dwayne T.; and Pancoast, Steven T., 5,548,763, Cl. 395-750.000.
Dietrich, Brenda L.; and Wittrock, Robert J., 5,548,518, Cl. 364-468.060.
Doran, Samuel K., 5,548,195, Cl. 318-568.190.
Edrington, Jimmie D.; Einkauf, Mark A.; Jensen, Allen P.; and Vanover, Michael T., 5,548,737, Cl. 395-375.000.
Feger, Claudius; Graham, Teresita O.; Grebe, Kurt R.; Lanzetta, Alphonso P.; Liutkus, John J.; Matthew, Linda C.; Palmer, Michael J.; Tanner, Nelson R.; Tong, Ho-Ming; Wilson, Charles H.; and Yeh, Helen L., 5,546,655, Cl. 29-846.000.
Fogg, Richard G., Jr.; and Sweet, Mark D., 5,548,785, Cl. 395-841.000.
Fredrickson, Lisa; Karabed, Razmik; Siegel, Paul H.; and Thapar, Hemant K., 5,548,600, Cl. 371-43.000.
Gimzewski, James; Parrinello, Michele; and Reihl, Bruno, 5,547,774, Cl. 428-694.0ML.
Heaney, James A.; and Rasmus, Todd M., 5,548,467, Cl. 361-93.000.
Hershey, Paul C., 5,548,775, Cl. 395-800.000.
Husain, Anwar; Kotecki, David E.; Lassig, Stephan E.; Olson, Kurt A.; and Ricci, Anthony J., 5,548,470, Cl. 361-234.000.
Iadanza, Joseph A.; and Ueda, Makoto, 5,548,237, Cl. 327-281.000.
Jordhamo, George M., 5,547,396, Cl. 439-604.000.
Kman, Stephen J.; Stubecki, John A.; and Sondej, William R., 5,548,486, Cl. 361-791.000.
Kulakowski, John E.; McDowell, Judson A.; and Rubin, Kurt A., 5,548,572, Cl. 369-116.000.
Lebrun, Eric; Francois, Pascal; Raimbault, Frederic; and Warren, Jeff, 5,548,579, Cl. 370-16.000.
Leung, Ting Y.; Pirahesh, Mir H.; and Seshadri, Praveen, 5,548,755, Cl. 395-600.000.
Li, Shih-Gong; and Shrader, Theodore J. L., 5,548,702, Cl. 395-155.000.
Maloney, William B.; Mesnard, Robert M.; and Swenton, Joseph M., 5,548,715, Cl. 395-183.040.
Mandelman, Jack A.; Galbi, Duane; Slinkman, James A.; and Tonti, William R., 5,547,894, Cl. 437-56.000.
Martino, Michael J.; and Paulsen, Robert C., Jr., 5,548,507, Cl. 364-419.010.
Meehan, Patrick, 5,548,727, Cl. 395-200.130.
Pirahesh, Mir H.; Leung, Ting Y.; Lohman, Guy M.; Shekita, Eugene J.; and Simmen, David E., 5,548,754, Cl. 395-600.000.
Pirahesh, Mir H.; Leung, Ting Y.; Lohman, Guy M.; Shekita, Eugene J.; and Simmen, David E., 5,548,758, Cl. 395-600.000.
Rudolph, Jeffrey, 5,548,747, Cl. 395-500.000.
Selker, Edwin J.; Smith, Barton A.; and Kamentser, Boris, 5,548,529, Cl. 364-508.000.
Song, Seungyoon P., 5,548,738, Cl. 395-375.000.
Yorke-Smith, Ian E., 5,548,648, Cl. 380-49.000.
International Communications Materials, Inc.: *See*—
Weed, John M., 5,548,384, Cl. 355-260.000.
International Computers Limited: *See*—
Healey, Roger K., 5,548,760, Cl. 395-650.000.
International Rectifier Corporation: *See*—
Kinzer, Daniel M., 5,548,133, Cl. 257-155.000.
International Rolling Mill Consultants, Inc.: *See*—
Ginzburg, Vladimir B., 5,546,779, Cl. 72-11.400.
Interstate Electronics Corporation: *See*—
Bierman, Raymond E.; Perryman, Paul C.; and Wright, Jason T., 5,548,541, Cl. 364-724.160.
InterTech Development Company: *See*—
Balke, David J.; and Hoffmann, Jacques E., 5,546,789, Cl. 73-40.000.
Intracel Corporation: *See*—
Dorval, Brent L.; Denham, Lilibeth K.; and Klibanov, Alexander M., 5,547,833, Cl. 435-5.000.
Inubushi, Toshiya; Toko, Yoshio; and Musha, Atsushi, to Mitsubishi Denki Kabushiki Kaisha. Portable radio communication device housing having a battery storage unit. 5,548,824, Cl. 455-90.000.
Inventa Laboratory, Inc.: *See*—
Miramon, Eric J., 5,546,997, Cl. 141-65.000.
Ionode Pty Ltd.: *See*—
Petty, John D.; and Peachey, Russell M., 5,547,875, Cl. 436-8.000.
Iorfida, Paul. Apparatus for displaying an illuminated image including light intensifier and method therefor. 5,546,687, Cl. 40-546.000.
Iowa State University Research Foundation: *See*—
Jacobson, Douglas W., 5,548,649, Cl. 380-49.000.
Iritani, Satoshi; Mitsuhashi, Masakazu; Chaen, Hiroto; and Miyake, Toshio, to Kabushiki Kaisha Hayashibara Seitbutsu Kagaku Kenkyujo. Fermented bagasse feed, and its preparation and uses. 5,547,692, Cl. 426-53.000.
Iriyama, Masahiro: *See*—
Satou, Eiichi; and Iriyama, Masahiro, 5,546,903, Cl. 123-399.000.
Irving, Mary R.: *See*—
Brown-Skrobot, Susan K.; and Irving, Mary R., 5,547,985, Cl. 514-546.000.
Isaka, Kazumi: *See*—
Matsumoto, Yoshiro; Isaka, Kazumi; Mizuguchi, Masaaki; Oshima, Yoshimitsu; and Takatsu, Osamu, 5,547,450, Cl. 492-54.000.
Isakovic, Adam: *See*—
Bachalo, William D.; and Isakovic, Adam, 5,547,327, Cl. 414-137.100.
Isco, Inc.: *See*—
Keefer, Richard E., 5,546,818, Cl. 73-863.000.
Ishibashi, Kazuyoshi, to Universal Sales Co., Ltd. Display apparatus for gaming machine. 5,547,192, Cl. 463-26.000.
Ishibashi, Yutaka: *See*—
Hamamoto, Takeshi; Yamada, Takashi; and Ishibashi, Yutaka, 5,548,145, Cl. 257-301.000.
Ishida, Eiji; and Matsunaga, Yoshifumi, to Fuji Xerox Co., Ltd. Apparatus for presenting information according to evaluations of units of the information. 5,548,699, Cl. 395-140.000.
Ishida, Hidetoshi: *See*—
Kakii, Toshiaki; Ishida, Hidetoshi; Ogawa, Shinji; and Miyabe, Kazumichi, 5,548,677, Cl. 385-92.000.
Ishida, Takeshi; and Norimatsu, Noriko, to NEC Corporation. Mobile station with a function which enables a user to easily recognize a current position. 5,548,817, Cl. 455-54.100.
Ishida, Tatsuya: *See*—
Iwata, Hitoshi; and Ishida, Tatsuya, 5,547,216, Cl. 280-734.000.
Ishida, Yoshinori: *See*—
Kohmura, Yukio; Ishida, Yoshinori; and Hibino, Takashi, 5,548,213, Cl. 324-232.000.
Ishige, Sadao: *See*—
Kamikawa, Hiroshi; and Ishige, Sadao, 5,547,806, Cl. 430-138.000.
Ishihara Sangyo Kaisha, Ltd.: *See*—
Murasawa, Sadao; Murakami, Hajime; Fukui, Yasuro; Watanabe, Mitsuru; Fujishima, Akira; and Hashimoto, Kazuhito, 5,547,823, Cl. 430-531.000.
Ishihara, Toshiaki: *See*—
Miyamoto, Yasuhiro; Ishihara, Toshiaki; and Uda, Minoru, 5,547,544, Cl. 162-199.000.
Ishii, Masami: *See*—
Ito, Yoshitaka; Ishii, Masami; Nishio, Takayuki; Mizutani, Uichiro; Yamada, Yuh; Ogasawara, Fumihiko; and Suganuma, Motohiro, 5,547,924, Cl. 505-500.000.
Ishii, Satoshi: *See*—
Hashimoto, Hiroyuki; Ishii, Satoshi; and Saito, Haruo, 5,548,325, Cl. 348-64.000.
Ishii, Toshiaki: *See*—
Watanabe, Eiki; Ishii, Toshiaki; Mizuno, Masamoto; and Sugita, Kazuhiko, 5,547,059, Cl. 187-289.000.
Ishikawa, Akihiro: *See*—
Kohno, Satoru; Iijima, Naoto; and Ishikawa, Akihiro, 5,548,215, Cl. 324-309.000.
Ishikawa, Kenji: *See*—
Onishi, Makoto; and Ishikawa, Kenji, 5,547,472, Cl. 604-93.000.
Ishikawa, Kiyoshi, to Akiko Ishikawa. Rotary platform for medical treatment. 5,547,460, Cl. 601-23.000.
Ishikawa, Manabu: *See*—
Fujii, Takeshi; and Ishikawa, Manabu, 5,547,609, Cl. 252-511.000.
Ishikawa, Yoshinori: *See*—
Uematsu, Kimio; and Ishikawa, Yoshinori, 5,548,360, Cl. 354-21.000.
Ishio, Kozo; and Murayama, Tetsuo, to Mitsubishi Chemical Corporation. Electrophotographic photoreceptor. 5,547,791, Cl. 430-59.000.
Ishizaki, Akira: *See*—
Sakashita, Yukihiko; and Ishizaki, Akira, 5,548,708, Cl. 395-162.000.
Ishizu, Makoto: *See*—
Sakaue, Akinori; Mise, Nobutake; and Ishizu, Makoto, 5,547,498, Cl. 106-20.00C.
Ishizuka, Mikio: *See*—
Fujiwara, Susumu; Sakata, Masahiko; and Ishizuka, Mikio, 5,548,652, Cl. 381-71.000.
Ishizuka, Tatsuro: *See*—
Siga, Masao; Kuriyama, Mitso; Mori, Takanobu; Fukui, Yutaka; and Ishizuka, Tatsuro, 5,548,174, Cl. 310-261.000.
Isoai, Atsushi; Hama, Yuko; and Kumagai, Hiromichi, to Asahi Glass Company Ltd. Tumor cell invasion-inhibiting peptides, peptide complexes and cancer metastasis inhibitors. 5,548,062, Cl. 530-326.000.
Isobe, Daiji, to Nippondenso Co., Ltd. Exhaust gas recirculating system with reduced deposit. 5,546,915, Cl. 123-570.000.
Isomura, Shigenori: *See*—
Hasegawa, Jun; Isomura, Shigenori; Mizoguchi, Tomomichi; and Nakamori, Yasutaka, 5,547,552, Cl. 204-406.000.
Isozumi, Shuzo: *See*—
Ogawa, Yoshihiro; Zenmei, Keisaku; and Isozumi, Shuzo, 5,548,171, Cl. 310-154.000.
Isser, Abraham: *See*—

Gaynor, Edwin S.; Massimi, Michael S.; Blase, William P.; and Isser, Abraham, 5,548,418, Cl. 359-20.000.
Itagaki, Minehiro: *See*—
Nakamura, Yoshifumi; Bessho, Yoshihiro; Yuhaku, Satoru; Hakotani, Yasuhiko; Itagaki, Minehiro; and Miura, Kazuhiro, 5,547,530, Cl. 156-89.000.
Itako, Eiji; and Fukuda, Ichiro, to Nippon Conlux Co., Ltd. Currency-identifying apparatus. 5,547,061, Cl. 194-203.000.
Itaya, Eiji: *See*—
Kumagai, Yoshiaki; Itaya, Eiji; and Endo, Yoichi, 5,548,811, Cl. 455-192.200.
Ito, Hidenobu; Shimizu, Katsuya; Hashikawa, Kenzo; and Yamakawa, Yasuhiro, to Fujitsu Limited; Fujitsu VLSI Limited; and Fujitsu Ten Limited. Electronic circuit having comparator. 5,548,162, Cl. 307-10.100.
Ito, Katsuji; and Kamata, Satoshi, to Asahi Glass Company Ltd. Aqueous dispersion type stain-proofing agent and method for its production. 5,548,022, Cl. 524-839.000.
Ito, Kengo; and Fujiwara, Yoshio, to Sony Corporation. Recording medium for heat sensitive transfer printing. 5,547,739, Cl. 428-207.000.
Ito, Kensuke: *See*—
Koshimizu, Minoru; Kakinuma, Takeo; and Ito, Kensuke, 5,548,420, Cl. 359-44.000.
Ito, Kiichi; Yada, Shuhei; Oomori, Miho; and Nakamura, Toshiko, to Mitsubishi Chemical Corporation. Process for the production of highly water absorptive polymers. 5,548,047, Cl. 526-240.000.
Ito, Koichi: *See*—
Nakagawa, Kenichi; Sugioka, Michiyoshi; and Ito, Koichi, 5,547,592, Cl. 508-511.000.
Ito, Naoki: *See*—
Okuyama, Nobutaka; Sakurai, Soichi; Fukuma, Kooji; Yoshioka, Hiroshi; Obara, Masao; Ito, Naoki; Takeyama, Atsushi; and Satoh, Yoshio, 5,548,190, Cl. 315-368.260.
Ito, Shinichi; Okano, Haruo; Watanabe, Toru; and Okumura, Katsuya, to Kabushiki Kaisha Toshiba. Exposure mask, exposure mask substrate, method for fabricating the same, and method for forming pattern based on exposure mask. 5,547,787, Cl. 430-5.000.
Ito, Takahide: *See*—
Watanabe, Kazuhide; Takada, Kimiharu; Sekita, Masumi; Ito, Takahide; and Tani, Kazuya, 5,547,355, Cl. 418-55.500.
Ito, Takayuki; Shimada, Yasuhiro; Matsuoka, Koushin; and Yoshioka, Yasuhiro, to Fuji Photo Film Co., Ltd. Silver halide color photographic material. 5,547,826, Cl. 430-558.000.
Ito, Tatsuro; Oae, Keiichi; and Shiota, Seijiro, to Toyota Shatai Kabushiki Kaisha. Reclining device for vehicle. 5,547,255, Cl. 297-367.000.
Ito, Yasuo; Kato, Hideo; Yasuda, Singo; Kado, Noriyuki; Yoshida, Toshihiko; and Yamamoto, Yoichi, to Horuriku Seiyaku Co., Ltd. 5-amino-8-methyl-7-pyrrolidinylquinoline-3-carboxylic acid derivative. 5,547,962, Cl. 514-312.000.
Ito, Yoshiro: *See*—
Igarashi, Yoshiaki; and Ito, Yoshiro, 5,546,769, Cl. 66-20.000.
Ito, Yoshitaka; Ishii, Masami; Nishio, Takayuki; Mizutani, Uichiro; Yamada, Yuh; Ogasawara, Fumihiko; and Suganoma, Motohiro, to Aisin Seiki Kabushiki Kaisha. Superconductive ceramic composite material. 5,547,924, Cl. 505-500.000.
Itoh, Hisato: *See*—
Misawa, Tsutami; Ogiso, Akira; Imai, Rihoko; and Itoh, Hisato, 5,548,073, Cl. 534-690.000.
Itoh, Kazuyuki: *See*—
Sohma, Kenichi; Itoh, Kazuyuki; Kuroda, Michio; and Murakami, Tadayoshi, 5,547,369, Cl. 431-75.000.
Itoh, Yasuhiko: *See*—
Araki, Noriyuki; Shinonaga, Hideyuki; and Itoh, Yasuhiko, 5,548,801, Cl. 455-13.100.
Itoh, Yasuyuki: *See*—
Ushikubo, Maho; and Itoh, Yasuyuki, 5,548,475, Cl. 361-321.400.
ITT Automotive Europe GmbH: *See*—
Bauer, Jurgen, 5,546,846, Cl. 91-376.00R.
Beck, Erhard; Dinkel, Dieter; and Haupt, Karlheinz, 5,547,266, Cl. 303-113.200.
ITT Corporation: *See*—
Bethurum, Gary C.; and Knights, Anthony J., 5,548,485, Cl. 361-737.000.
Kantner, Edward A., 5,548,484, Cl. 361-737.000.
ITT Industries, Limited: *See*—
Gray, Ian J.; and White, Melvin D., 5,548,088, Cl. 174-74.00R.
Pinney, David R.; and Stanton, Kevin, 5,547,405, Cl. 439-894.000.
Iwai, Ichiro, to Showa Aluminum Corporation. Brazing agent and a brazing sheet both comprising an aluminum alloy containing a flux. 5,547,517, Cl. 148-24.000.
Iwai, Tomio; and Tanaka, Seiichi, to Sanshin Kogyo Kabushiki Kaisha. Exhaust system for outboard motor. 5,546,748, Cl. 60-302.000.
Iwamoto, Shinji; Mizuno, Toshiaki; Muramatsu, Toshihiko; Nakashima, Kazushi; Abe, Tomoaki; Yonekawa, Masao; and Sakashita, Yoshihiro, to Nippondenso Co., Ltd. Fuel injection control apparatus. 5,546,911, Cl. 123-497.000.
Iwamoto, Shoji: *See*—
Muramatsu, Katsuji; and Iwamoto, Shoji, 5,548,364, Cl. 354-204.000.
Iwamoto, Yasuhiko: *See*—
Sekine, Hiroshi; Sasuga, Kazuyasu; Taniuchi, Kazuman; Iwamoto, Yasuhiko; Terada, Yoshihiro; and Endoh, Kiyomasa, 5,548,663, Cl. 382-164.000.
Iwano, Kazuhiko: *See*—
Osanai, Akinori; Nagai, Toshinari; Kanai, Hiroshi; Harima, Kenji; Iwano, Kazuhiko; and Yuda, Shuji, 5,546,917, Cl. 123-674.000.
Iwasa, Takao; and Kambayashi, Takaji, to Oriental Motor Co., Ltd. Motor with built-in capacitor. 5,548,169, Cl. 310-72.000.
Iwata, Akihito: *See*—
Hayabuchi, Masahiro; Nishida, Masaaki; Yamamoto, Yoshihisa; Mikami, Kazuhiro; Tsutsui, Hiroshi; and Iwata, Akihito, 5,547,436, Cl. 477-114.000.
Iwata, Hitoshi; and Ishida, Tatsuya, to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho. Crush sensor. 5,547,216, Cl. 280-734.000.
Iwatsu Electric Co., Ltd.: *See*—
Yamaguchi, Naoyuki; and Abe, Tohru, 5,548,638, Cl. 379-202.000.
Iwatsuki, Kunihiro: *See*—
Nozaki, Kazutoshi; Iwatsuki, Kunihiro; and Matsubara, Tooru, 5,547,438, Cl. 477-169.000.
Iwazawa, Naotoshi, to NEC Corporation. Method of controlling a printhead carriage velocity of a serial printer. 5,547,296, Cl. 400-322.000.
Izett, George G.; and Ciccarone, Jay. Two-shafted golf wedge club and method for using same. 5,547,196, Cl. 473-242.000.
J.M. Voith GmbH: *See*—
Lindenthal, Hans; and Grawenhof, Peter, 5,547,423, Cl. 464-136.000.
Jack M. Berry Inc.: *See*—
Scheffler, Edward D., 5,547,128, Cl. 239-77.000.
Jackmauh, John A. Motorcycle rear wheel alignment system. 5,546,665, Cl. 33-203.000.
Jackson, Joseph N.: *See*—
Brian, James M.; and Jackson, Joseph N., 5,548,345, Cl. 348-734.000.
Jackson, Melvin R.: *See*—
Eggleston, Michael R.; Benz, Mark G.; Jackson, Melvin R.; Hughes, John R.; and Raber, Thomas R., 5,547,410, Cl. 445-28.000.
Eggleston, Michael R.; Benz, Mark G.; Jackson, Melvin R.; and Zabala, Robert J., 5,548,628, Cl. 378-125.000.
Jackson, Richard L.: *See*—
Cardin, Alan D.; Jackson, Richard L.; and Mullins, Michael J., 5,547,992, Cl. 514-648.000.
Jackson, Scott C.: *See*—
Webster, James L.; and Jackson, Scott C., 5,547,653, Cl. 423-445.00R.
Jacobs, James K.: *See*—
Dasgupta, Sankar; and Jacobs, James K., 5,547,782, Cl. 429-194.000.
Jacobs, Lynn C.: *See*—
Cheatham, Samuel D.; Jacobs, Lynn C.; Janssen, Donovan M.; Leonhardt, Michael L.; Milligan, Charles A.; and Todd, Christian A., 5,547,142, Cl. 242-338.100.
Jacobson, Douglas W., to Iowa State University Research Foundation. Network security bridge and associated method. 5,548,649, Cl. 380-49.000.
Jacobson, Michael B.: *See*—
Larson, Susan L.; Voigt, Douglas L.; Messinger, Steven D.; and Jacobson, Michael B., 5,548,712, Cl. 395-182.050.
Jadaud, Alain: *See*—
Decore, Bertrand; and Jadaud, Alain, 5,547,307, Cl. 403-294.000.
Jäger, Horst: *See*—
Dziuk, Richard; and Jäger, Horst, 5,547,235, Cl. 292-92.000.
Jain, Sudhir: *See*—
Bonora, Anthony C.; Guerre, Gilles; Parikh, Mihir; Rosenquist, Frederick T., Jr.; and Jain, Sudhir, 5,547,328, Cl. 414-217.000.
Jalalian, Afshin; and Bingham, Christopher R., to Apple Computer, Inc. User-centric system for choosing networked services. 5,548,722, Cl. 395-200.100.
James, Gregory B.: *See*—
Linstead, Steven A.; and James, Gregory B., 5,548,753, Cl. 395-600.000.
James, Jesse C., to McDonnell Douglas Corporation. Arc suppressor. 5,548,461, Cl. 361-13.000.
James, R.: *See*—
Nice, Edouard C.; James, R.; Simpson, R.; Burgess, A. W.; and Whitehead, Robert H., 5,547,940, Cl. 514-21.000.
James River Paper Company, Inc.: *See*—
Yanidis, Apostol, 5,547,752, Cl. 428-349.000.
Jané, Rodney; Longan, John; Wang, Jui-Shang; and Gresens, Stanley, to Duracraft Corporation. Table fan with vise clamp. 5,547,343, Cl. 416-246.000.
Jané, Rodney B.; Bradley, Jerald A.; and Longan, John, to Duracraft Corporation. Portable humidifier with bacteriastat dispenser. 5,547,615, Cl. 261-24.000.
Janes, Robert D.: *See*—
Newell, Gregory A.; George, Randy R.; Lancaster, Patrick R., III; and Janes, Robert D., 5,546,730, Cl. 53-399.000.
Jang, Hyun S.; and Oh, Chul D., to Hyundai Electronics Industries, Co., Ltd. High-speed carry increment adding device. 5,548,546, Cl. 364-786.000.
Janke & Kunkel GmbH & Co. KG IKA-Labortechnik: *See*—
Wanninger, Alfred, deceased; and Wanninger, by Peter, heir, 5,547,280, Cl. 366-274.000.
Janouch, Peter: *See*—
Lange, Klaus-Peter; and Janouch, Peter, 5,546,674, Cl. 34-97.000.
Jansen, Janice, to Allen, Charles. Beauty salon appliance workstation. 5,547,393, Cl. 439-501.000.
Jansen, Ornulf: *See*—
Rudi, Guttorm; Jansen, Ornulf; Kuifte, Halvor O.; and Busengdal, Petter, 5,548,480, Cl. 361-685.000.
Janssen, Donovan M.: *See*—

VOL 1189 ISS 3 AG 211 1996 UMI

Cheatham, Samuel D.; Jacobs, Lynn C.; Janssen, Donovan M.; Leonhardt, Michael L.; Milligan, Charles A.; and Todd, Christian A., 5,547,142, Cl. 242-338.100.

Janssen, Peter J.: *See—*
Melnik, George A.; and Janssen, Peter J., 5,548,347, Cl. 348-761.000.

Janssens, Wilhelmus: *See—*
Defieuw, Geert; Janssens, Wilhelmus; Vanmaele, Luc; Dewanckele, Jean-Marie; and Uytterhoeven, Herman, 5,547,809, Cl. 430-200.000.

Jansson, Conny; Bergqvist, Håkan; and Himbert, Hans, to Sandvick AB. Lockable spring tightening device. 5,546,816, Cl. 73-862.210.

Japan Aviation Electronics Industry Limited: *See—*
Kawabata, Hideyuki; and Matsuzaka, Naoki, 5,548,348, Cl. 348-766.000.

Japan Chemical Engineering & Machinery Co., Ltd.: *See—*
Koshijima, Tetsuo; Shiraishi, Nobuo; Takahashi, Tadashi; Hiraoka, Toshiharu; and Ueda, Masami, 5,548,069, Cl. 530-500.000.

Japan Steel Works, Ltd., The: *See—*
Obayashi, Tadanori, 5,547,619, Cl. 264-40.100.

Japan Storage Battery Company, Limited: *See—*
Funato, Takayuki; and Takahashi, Katsuhiro, 5,547,783, Cl. 429-212.000.

Japan Synthetic Rubber Co., Ltd.: *See—*
Goto, Kohei; Hattori, Iwakazu; Ogasahara, Shoji; Shibata, Masahiro; Michino, Yoshiyuki; Soga, Kazuo; and Shiono, Takeshi, 5,548,045, Cl. 526-161.000.

Jarzab, Michel: *See—*
Kujawa, Kim; Kirchner, Erich; Jarzab, Michel; and Robson, Homer, 5,548,633, Cl. 379-93.000.

Jayaratna, Husantha G., to Bioanalytical Systems, Inc. Mercury thread electrode. 5,547,553, Cl. 204-413.000.

JCR Pharmaceuticals Co., Ltd.: *See—*
Ye, Guoji; Kajihara, Jun-ichi; Kirihara, Sei; Kato, Kazuo; and Abe, Hiroko, 5,547,945, Cl. 514-54.000.

Jech, Alberto E.: *See—*
Huck, Hugo A.; Jech, Alberto E.; Righini, Raúl; Halac, Emilia B.; de Benyacar, Maria A. R.; and Hicolai, Julio A., 5,547,714, Cl. 427-523.000.

Jeffries, Clark: *See—*
Engel, Stephen J.; Jeffries, Clark; and Lee, Christopher, 5,548,683, Cl. 395-21.000.

Jelemensky, Joseph: *See—*
Yishay, Oded; Jelemensky, Joseph; and Iles, Alexander L., 5,548,794, Cl. 395-871.000.

Jenaer Glaswerk GmbH: *See—*
Watzke, Eckhart; and Kloss, Thomas, 5,547,904, Cl. 501-66.000.

Jeng, Shin-Puu, to Texas Instruments Incorporated. Porous insulator for line-to-line capacitance reduction. 5,548,159, Cl. 257-634.000.

Jenkins, Thomas C., to Clemson University. Feed supplements for ruminants and method for using same. 5,547,686, Cl. 426-2.000.

Jensen, Allen P.: *See—*
Edrington, Jimmie D.; Einkauf, Mark A.; Jensen, Allen P.; and Vanover, Michael T., 5,548,737, Cl. 395-375.000.

Jensen, Gordon A.; and Ernst, Stephen M., to Forte Networks. Method and apparatus for measuring attenuation and crosstalk in data and communication channels. 5,548,222, Cl. 324-628.000.

Jensen, Jørn M., to Ejnar Jensen & Son A/S. Method and an apparatus for feeding a laundry article to a laundry processing apparatus. 5,546,684, Cl. 38-143.000.

Jeon, Byung C.; Do, Mi S.; Kim, Young S.; and Han, Chi M., to Electronics and Telecommunications Research Institute. Connectionless communication system and method of connectionless communication. 5,548,589, Cl. 370-60.100.

Jeon, Si M.; and Kang, Seong K., to Goldstar Co., Ltd. Supplementary washing device of a dish washer. 5,546,968, Cl. 134-179.000.

Jessup, Ansley W., Jr.: *See—*
Menand, Jean-René; Joseph, Kuriacose; and Jessup, Ansley W., Jr., 5,548,532, Cl. 364-514.00C.

JGC Corporation: *See—*
Kikuchi, Kazuo; Umino, Hiroshi; Shibuya, Hiromitsu; Makino, Masahito; Sakakura, Yasuyuki; and Takahashi, Kiyoshi, 5,546,763, Cl. 62-532.000.

Jin, Hong J., to Goldstar Co., Ltd. Deck mechanism for magnetic record and playback device. 5,548,456, Cl. 360-85.000.

JMR Research Inc.: *See—*
Wang, Jin S., 5,547,077, Cl. 206-307.100.

JNJ Industries, Inc.: *See—*
Volpe, John J., 5,547,601, Cl. 15-104.930.

Johansen, Jan B., to Dansk Industri Syndikat A/S. Method and apparatus for manufacturing moulds or mould parts by blowing particulate material into a mould chamber. 5,547,015, Cl. 164-456.000.

Johansson, Anders, to Saab Automobile Aktiebolag. Starting system for internal combustion engines which can be driven by different fuels. 5,546,920, Cl. 123-685.000.

Johnson & Johnson Clinical Diagnostics, Inc.: *See—*
Butturini, Randal S.; and Cooley, Ernest W., 5,548,109, Cl. 235-462.000.

Johnson, Andrew H.: *See—*
Perry, Michael R.; Huang, Victor T.; Rosenwald, Diane R.; Johnson, Andrew H.; and Ghiasi, Katy, 5,547,694, Cl. 426-118.000.

Johnson, Bernard W.: *See—*
Luckevich, Mark; Johnson, Bernard W.; and Negrin, Dan, 5,547,267, Cl. 303-165.000.

Johnson, David J.: *See—*
Rogers, Lynn; Maneval, Robert D.; Bashor, Daryl W.; and Johnson, David J., 5,547,133, Cl. 241-9.000.

Johnson, Jeffrey L.: *See—*
Ebert, William J.; Leonard, James V.; and Johnson, Jeffrey L., 5,548,510, Cl. 364-443.000.

Johnson, Jerome, to Quick Cable Corporation. Battery holddown. 5,547,160, Cl. 248-503.000.

Johnson, John D.; and Kirkpatrick, William R., to Rosemount Inc. Transmitter with moisture draining housing and improved method of mounting RFI filters. 5,546,804, Cl. 73-431.000.

Johnson Matthey, Inc.: *See—*
Abrams, Michael J.; Bossard, Gerald E.; Brooks, Robert C.; Henson, Geoffrey W.; and Vollano, Jean F., 5,547,982, Cl. 514-492.000.

Johnson, Michael D. Beverage can insect cover. 5,547,100, Cl. 220-253.000.

Johnson, Neil A.; Raber, Thomas R.; Hibbs, Louis E., Jr.; Murray, Melissa L.; and Benz, Mark G., to General Electric Company. Enhanced method for cleaning foil. 5,547,518, Cl. 148-98.000.

Johnson, Noel L.; Huang, Jyh-Yi T.; and Burnside, Robert R., to Abbott Laboratories. Automated drug infusion system. 5,547,470, Cl. 604-67.000.

Johnson, Oriz W. Automatic domestic toilet seat lowering apparatus and disc brake assembly. 5,546,612, Cl. 4-248.000.

Johnson, Ronald E.: *See—*
Chalasani, Devi; Friske, Mark S.; and Johnson, Ronald E., 5,547,622, Cl. 264-60.000.

Johnson Service Company: *See—*
Linstead, Steven A.; and James, Gregory B., 5,548,753, Cl. 395-600.000.

Johnson, William R.: *See—*
Smith, Fred P.; and Johnson, William R., 5,547,332, Cl. 414-786.000.

Johnson Worldwide Assocites, Inc.: *See—*
Peirce, James G., 5,547,407, Cl. 440-61.000.

Johnston, B. Keith: *See—*
Swarup, Shanti; Sharma, Brij N.; and Johnston, B. Keith, 5,547,757, Cl. 428-413.000.

Johnston, Neil: *See—*
Rae, Philip; and Johnston, Neil, 5,547,506, Cl. 106-730.000.

Johnston, Vonda K.: *See—*
Merlin, Jean-Paul D.; Sharp, Brenner M.; Farrington, Eric K.; and Johnston, Vonda K., 5,546,772, Cl. 68-24.000.

Jones, Alan T.: *See—*
Meelu, Mehar C.; Jones, Alan T.; and McMordie, Bruce G., 5,547,770, Cl. 428-678.000.

Jones, Colin G. P.: *See—*
Clegg, Lawrence S.; Hunneyball, Ian M.; Jones, Colin G. P.; Rafferty, Paul; and Steele, Leslie, 5,547,972, Cl. 514-399.000.

Jones, Craig S.; and Davis, Alan, to Dell USA, L.P. Composite drive controller including composite disk driver for supporting composite drive accesses and a pass-through driver for supporting accesses to stand-alone SCSI peripherals. 5,548,783, Cl. 395-836.000.

Jones, Donald W.: *See—*
Kliman, Gerald B.; Preston, Mark A.; and Jones, Donald W., 5,548,172, Cl. 310-156.000.

Jones, Gary W., to FED Corporation. Field emission device comprising dielectric overlayer. 5,548,181, Cl. 313-309.000.

Jones, Robert G., to Harlen Metal Products, Inc. Wood sill reinforcement plate. 5,546,723, Cl. 52-698.000.

Jones, Stanley P., to Emhart Glass Machinery Investments Inc. Parison transfer mechanism. 5,547,485, Cl. 65-260.000.

Jordan, Brian L.: *See—*
Ganmukhi, Mahesh N.; and Jordan, Brian L., 5,548,588, Cl. 370-60.100.

Jordan, Raymond L. Container with stackable trays and adjustable partitions. 5,547,098, Cl. 220-23.860.

Jordhamo, George M., to International Business Machines Corporation. Use of semi-interpenetrating polymer networks for cable/fiber retention. 5,547,396, Cl. 439-604.000.

Jorissen, Steven A.; Ferguson, Gregory A.; and Imirowicz, Krystyna, to H. B. Fuller Company. Epoxy compound blend with di(aminoalkyl)ether of diethylene glycol. 5,548,026, Cl. 525-113.000.

Joseph, Anthony W.: *See—*
Oldiges, Donald A.; and Joseph, Anthony W., 5,547,503, Cl. 106-287.180.

Joseph, Kuriacose: *See—*
Menand, Jean-René; Joseph, Kuriacose; and Jessup, Ansley W., Jr., 5,548,532, Cl. 364-514.00C.

Joshi, Mahendra L.: *See—*
Slavejkov, Aleksandar G.; Broadway, Lee; Joshi, Mahendra L.; and Nabors, James K., 5,547,368, Cl. 431-8.000.

Joslyn, Edward, to O. F. Mossberg & Sons, Inc. Line carrying projectile. 5,546,863, Cl. 102-504.000.

Jost, George J.: *See—*
Zeimer, Ran C.; Jost, George J.; Bainbridge, Robert C.; Schwarzbach, Richard; Ware, Charles; and Zebrowski, Kathleen D., 5,546,941, Cl. 128-652.000.

Jourdan, Mireille: *See—*
Dumas, Bruno; Gervais, Monica; Bergoin, Max; Jourdan, Mireille; and Jousset, Francoise X., 5,547,869, Cl. 435-252.330.

Jousset, Francoise X.: *See—*
Dumas, Bruno; Gervais, Monica; Bergoin, Max; Jourdan, Mireille; and Jousset, Francoise X., 5,547,869, Cl. 435-252.330.

Jouvance, Daniel: *See—*
Rocher, Daniel; and Noel, Hugues, 5,547,676, Cl. 424-401.000.

Joyce, Gregory S.: *See—*
Chang, Kyusun; Hall, Lon E.; Joyce, Gregory S.; Mazzurana, Paul D.; and Russell, Lance W., 5,548,731, Cl. 395-280.000.

Joyce, Michael E.: *See—*
Grewal, Rupinder S.; Joyce, Michael E.; and Nord, Randall F., 5,547,562, Cl. 208-24.000.

Joyner, Keith A., to Texas Instruments Incorporated. Varying the thickness of the surface silicon layer in a silicon-on-insulator substrate. 5,548,149, Cl. 257-347.000.

Ju, Gyu-nam: *See—*
Choi, Kwi-seok; Choi, Jong-seo; Shon, Kyung-cheon; Ju, Gyu-nam; and Lee, Sang-won, 5,548,184, Cl. 313-346.00R.

Juang, Miin-Horng; Chang, San-Jung; and Wang, Chin-Hsien, to Mosel Vitelic Inc. Method for forming retrograde channel profile by phosphorus implantation through polysilicon gate. 5,547,882, Cl. 437-40.000.

Jue, Clifford T.: *See—*
Pelstring, Robert M.; Kloeppel, Klaus D.; Dunfield, John C.; Andrews, Michael K.; and Jue, Clifford T., 5,548,458, Cl. 360-99.080.

Juhasz, Tibor: *See—*
Turi, Laszlo; Ujazdowski, Richard; and Juhasz, Tibor, 5,548,234, Cl. 327-108.000.

Jungbauer, Dietmar: *See—*
Fuss, Robert; Manero, Javier; and Jungbauer, Dietmar, 5,547,605, Cl. 252-299.600.

Juprasert, Max S.; and Davis, Bruce W., to Chevron U.S.A. Inc. Heavy oil well stimulation composition and process. 5,547,022, Cl. 166-263.000.

Jusko, Michael P.: *See—*
Taylor, P. A.; Futrell, Todd O.; Dunn, Neil M., Jr.; Jusko, Michael P.; DuBois, Casey R.; and Capehart, Jimmie D., 5,547,644, Cl. 422-186.180.

K. Bratschi, Silent Gliss: *See—*
Grutzner, Hans, 5,547,007, Cl. 160-168.100.

Kabushiki Kaisha Hayashibara Seitbutsu Kagaku Kenkyujo: *See—*
Iritani, Satoshi; Mitsuhashi, Masakazu; Chaen, Hiroto; and Miyake, Toshio, 5,547,692, Cl. 426-53.000.

Kabushiki Kaisha Kawai Gakki Seisakusho: *See—*
Nakano, Yoshinobu, 5,548,079, Cl. 84-609.000.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Kawai, Kazunari; and Mitani, Norio, 5,547,260, Cl. 299-33.000.

Kabushiki Kaisha Kyowa Kogyosho: *See—*
Naramura, Michiyuki, 5,546,848, Cl. 99-326.000.

Kabushiki Kaisha Meidensha: *See—*
Watanabe, Takao; Hayashi, Mutsuo; Matsumoto, Kazunari; Tsuchiya, Chikara; Matsui, Takashi; and Matsubayashi, Masaru, 5,548,252, Cl. 331-176.000.

Kabushiki Kaisha TEC: *See—*
Fukuda, Yoshiyuki, 5,548,386, Cl. 355-259.000.
Murakami, Kazunori; Ikumi, Tomonori; Kubota, Atsushi; Nakahara, Nobuhiko; and Kato, Nobuyuki, 5,548,321, Cl. 347-256.000.

Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho: *See—*
Iwata, Hitoshi; and Ishida, Tatsuya, 5,547,216, Cl. 280-734.000.
Koketsu, Eiji; Sato, Koki; Muromachi, Tetsushi; Haraoka, Mutsumu; Nagata, Toshio; Yanagihara, Michihiro; and Oma, Kuniaki, 5,547,223, Cl. 280-805.000.

Kabushiki Kaisha Toshiba: *See—*
Aihara, Masayoshi, 5,548,406, Cl. 358-296.000.
Arakawa, Kenichi, 5,548,142, Cl. 257-234.000.
Asano, Mieko; and Hori, Osamu, 5,548,695, Cl. 395-133.000.
Egi, Hiroshi; and Toyama, Kazuhisa, 5,547,545, Cl. 162-238.000.
Funaki, Hideyuki; Mochizuki, Hiroshi; Maruyama, Ryoji; and Fujii, Kanae, 5,548,151, Cl. 257-421.000.
Gleaves, David; Nagata, Yoshifumi; and Takebayashi, Yoichi, 5,548,681, Cl. 395-2.420.
Hamamoto, Takeshi; Yamada, Takashi; and Ishibashi, Yutaka, 5,548,145, Cl. 257-301.000.
Hirano, Naohiko; and Yamaji, Yasuhiro, 5,548,161, Cl. 257-722.000.
Iguchi, Michihisa; and Tsuda, Yukio, 5,548,374, Cl. 355-200.000.
Ikeda, Kazumasa; and Hirata, Ken, 5,548,342, Cl. 348-668.000.
Ito, Shinichi; Okano, Haruo; Watanabe, Toru; and Okumura, Katsuya, 5,547,787, Cl. 430-5.000.
Kiyota, Shinichi, 5,548,679, Cl. 388-811.000.
Miyoshi, Motosuke; Okumura, Katsuya; and Yamazaki, Yuichiro, 5,548,183, Cl. 313-153.000.
Mochizuki, Yoshio; Kato, Hideo; and Sugiura, Nobutake, 5,548,559, Cl. 365-230.080.
Morita, Mika, 5,548,103, Cl. 219-703.000.
Okamoto, Yasukazu, 5,548,659, Cl. 382-107.000.
Omura, Ichiro; Nakagawa, Akio; Sakai, Tadashi; Sekimura, Masayuki; and Funaki, Hideyuki, 5,548,150, Cl. 257-349.000.
Sato, Toshio; and Kubota, Hiroaki, 5,548,691, Cl. 395-113.000.
Shimanuki, Machio, 5,546,649, Cl. 29-603.030.
Sugiyama, Akihiko; Tsuchiyama, Hideaki; Futami, Toshihiko; Kato, Hisataka; and Hoshi, Takao, 5,547,344, Cl. 417-32.000.
Yamaguchi, Yoshiko; and Ohshima, Yoichi, 5,547,884, Cl. 437-43.000.
Yoneda, Hitoshi; Hasegawa, Haruyoshi; Nosaki, Takefumi; Tanimoto, Koji; Machida, Hironobu; and Nakamura, Hajime, 5,548,666, Cl. 382-276.000.

Kabushiki Kaisha Toyo Seat: *See—*
Uchimoto, Daisuke; Monmasu, Hiroshi; Tomita, Toshihiko; and Inoue, Junsuke, 5,547,158, Cl. 248-396.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Kanzaki, Shigeki; Kawaguchi, Masahiro; Sonobe, Masanori; and Yokono, Tomohiko, 5,547,346, Cl. 417-222.200.
Shimizu, Izuru; Fukanuma, Tetsuhiko; Yamaguchi, Tetsuya; Goto, Kunifumi; Hisanaga, Shigeru; and Egami, Hirotaka, 5,547,354, Cl. 418-55.500.
Yamaguchi, Tetsuya; Watanabe, Yasushi; Fukanuma, Tetsuhiko; Oki, Yasuhiro; and Yamamoto, Yuuji, 5,547,353, Cl. 418-55.200.

Kabushikikaisha Wacom: *See—*
Ogawa, Yasuji, 5,548,392, Cl. 356-3.130.

Kado, Noriyuki: *See—*
Ito, Yasuo; Kato, Hideo; Yasuda, Singo; Kado, Noriyuki; Yoshida, Toshihiko; and Yamamoto, Yoichi, 5,547,962, Cl. 514-312.000.

Kagami, Kenji: *See—*
Fukui, Tetsuro; Kobayashi, Motokazu; Ohi, Takehiko; Ueno, Kazunori; Kagami, Kenji; Suzuki, Masao; and Nishino, Katsuya, 5,547,831, Cl. 430-619.000.

Kagawa, Hiroshi; Kato, Shiro; and Murata, Kazuo, to Yuasa Corporation. Battery precursor and a battery. 5,547,780, Cl. 429-149.000.

Kageyama, Shuhei; Arai, Sachio; Yamamoto, Tadashi; and Ebinuma, Tadayoshi, to Kotobuki & Co., Ltd. Writing instrument with rotatable advancement and retraction. 5,547,301, Cl. 401-116.000.

Kagy, Carl: *See—*
Aldridge, David L.; Bunton, William P.; Bissell, Stephen R.; Brown, David; Gunn, Daniel D.; Kagy, Carl; and Sonnier, David P., 5,548,463, Cl. 361-18.000.

Kahlman, Josephus A. H. M.: *See—*
Van Rosmalen, Gerard E.; and Kahlman, Josephus A. H. M., 5,548,114, Cl. 250-236.000.

Kahn, Ilan: *See—*
Cordes, Hans; Krumm, Helmut; Schwartz, Ludwig; Kahn, Ilan; Cornils, Gerd; and Behrend, Ulrich, 5,547,359, Cl. 425-125.000.

Kaida, Hiroaki, to Murata Manufacturing Co., Ltd. Chip-type piezoelectric resonance component. 5,548,179, Cl. 310-367.000.

Kaida, Hiroaki, to Murata Manufacturing Co., Ltd. Vibrator resonator and resonance component utilizing width expansion mode. 5,548,180, Cl. 310-367.000.

Kaigler, William J.; and Lordo, Richard J., to Respironics, Inc. Resuscitator. 5,546,934, Cl. 128-205.130.

Kain, Aron Z. Microwave vector displacement and acceleration transducer. 5,546,806, Cl. 73-514.310.

Kairus, Enrique A.: *See—*
Carballosa, Hector; and Kairus, Enrique A., 5,547,442, Cl. 482-46.000.

Kaisei Engineer Co., Ltd.: *See—*
Yasohama, Kazuhiko; and Kohama, Hiroaki, 5,548,214, Cl. 324-240.000.

Kaiser, Burton. Jewelry box with removable display platform. 5,547,072, Cl. 206-765.000.

Kaiser, Ronald A. Coloring board game and apparatus therefor. 5,547,198, Cl. 273-243.000.

Kaji, Toshihiko: *See—*
Horimura, Hiroyuki; Okamoto, Kenji; Minemi, Masahiko; Kaji, Toshihiko; Takeda, Yoshinobu; and Takano, Yoshishige, 5,547,632, Cl. 419-28.000.

Kajihara, Jun-ichi: *See—*
Ye, Guoji; Kajihara, Jun-ichi; Kirihara, Sei; Kato, Kazuo; and Abe, Hiroko, 5,547,945, Cl. 514-54.000.

Kajimoto, Shigeki: *See—*
Sun, Weimin; and Kajimoto, Shigeki, 5,548,243, Cl. 329-316.000.

Kakiage, Toru: *See—*
Sumita, Masaya; Maeda, Toshinori; and Kakiage, Toru, 5,548,249, Cl. 331-1.00A.

Kakii, Toshiaki; Ishida, Hidetoshi; Ogawa, Shinji; and Miyabe, Kazumichi, to Sumitomo Electric Industries, Ltd. Housing structure for coupling and releasing optical modules. 5,548,677, Cl. 385-92.000.

Kakijima, Kenichi: *See—*
Akasaka, Yoshio; Kakijima, Kenichi; Endoh, Takeshi; Uchida, Goro; Tanaka, Masaaki; Fujie, Takefumi; Sukawa, Daiji; Endoh, Satoshi; Saitoh, Hideo; and Kubo, Takashi, 5,548,096, Cl. 219-117.100.

Kakinuma, Takeo: *See—*
Koshimizu, Minoru; Kakinuma, Takeo; and Ito, Kensuke, 5,548,420, Cl. 359-44.000.

Kakizaki, Shinobu; and Kasajima, Kimihisa, to Atsugi Unisia Corporation. Method of making an acceleration sensor. 5,546,644, Cl. 29-25.350.

Kaku, Junichi: *See—*
Yamada, Masaichi; and Kaku, Junichi, 5,546,912, Cl. 123-511.000.

Kaku, Tomoya; and O'Regan, Sean, to NEC Corporation. DS/CDMA receiver using moving-averaged pilot signals for weighting and phase rotation of orthogonal data symbol vectors. 5,548,613, Cl. 375-208.000.

Kakuta, Takeshi: *See—*
Saito, Shinji; Ogawa, Hiroshi; Kakuta, Takeshi; and Noguchi, Hitoshi, 5,547,772, Cl. 428-694.00B.

Kalberer, Robert C.; and Goor, Dan, to Flight Safety Systems Inc. Aircraft airbag protection apparatus and method. 5,547,149, Cl. 244-121.000.

Kalbfleisch, Edmund B.: *See—*
Penczak, John P.; and Kalbfleisch, Edmund B., 5,546,717, Cl. 52-220.500.

Kali-Chemie Pharma GmbH: *See—*
Kehrbach, Wolfgang; Milnaric, Michael; Ziegler, Dieter; Brueckner, Reinhard; and Bielenberg, Willi, 5,547,967, Cl. 514-361.000.

Kalinowski, Pawel: *See—*

Salisbury, Kenneth A.; Kalinowski, Pawel; and Baker, Jay D., 5,548,481, Cl. 361-709.000.
Kaltenbrunn, Peter: *See*—
Mayer, Ulrich; Wild, Ernst; and Kaltenbrunn, Peter, 5,546,918, Cl. 123-674.000.
Kamada, Shinya; Yokota, Hiroaki; Nagayama, Shigeru; Nakahara, Yuji; Nakano, Shin; Marusue, Toshihisa; Abe, Mitsutoshi; and Matsumoto, Hiroyuki, to Mazda Motor Corporation. Adaptive pressure control based on difference between target and actual shift times during a shift. 5,547,437, Cl. 477-143.000.
Kamata, Satoshi: *See*—
Ito, Katsuji; and Kamata, Satoshi, 5,548,022, Cl. 524-839.000.
Kambara, Shigeru: *See*—
Katsuno, Takafumi; and Kambara, Shigeru, 5,548,269, Cl. 338-325.000.
Kambayashi, Takaji: *See*—
Iwasa, Takao; and Kambayashi, Takaji, 5,548,169, Cl. 310-72.000.
Kamboj, Rajender; Elliott, Candace E.; and Nutt, Stephen L., to Allelix Biopharmaceuticals Inc. Kainate-binding human CNS glutamate receptors EAA3C and EAA3D, DNA encoding them, and expression of the DNA in transformed cells. 5,547,855, Cl. 435-69.100.
Kamei, Kazuaki: *See*—
Watanabe, Souichi; and Kamei, Kazuaki, 5,547,065, Cl. 198-604.000.
Kamentser, Boris: *See*—
Selker, Edwin J.; Smith, Barton A.; and Kamentser, Boris, 5,548,529, Cl. 364-508.000.
Kamerbeek, Evert M. H.: *See*—
Haisma, Jan; Kamerbeek, Evert M. H.; Spierings, Gijsbertus A. C. M.; and De Haas, Peter W., 5,547,119, Cl. 228-116.000.
Kami, Yozo; Anzawa, Teruaki; Oku, Yasunori; and Hinosawa, Shinji, to Hondo Giken Kogyo Kabushiki Kaisha. Automotive subframe for supporting a vehicle suspension system. 5,547,224, Cl. 280-834.000.
Kamikawa, Hiroshi; and Ishige, Sadao, to Fuji Photo Film Co., Ltd. Process for producing microcapsule containing diazonium salt compound and photo- and heat-sensitive recording material produced using the same. 5,547,806, Cl. 430-138.000.
Kaminski, Ram, to City University of New York, Mount Sinai School of Medicine of the. Method for the treatment of bradyphrenia in Parkinson's disease patients. 5,547,969, Cl. 514-370.000.
Kamio, Masaru: *See*—
Takao, Hideaki; Murata, Tatsuo; Kanbe, Junichiro; Tamura, Miki; Kamio, Masaru; Sekimura, Nobuyuki; and Kikuchi, Yoshiki, 5,548,424, Cl. 359-68.000.
Kamo, Jun; Hirai, Takayuki; Takahashi, Hiroshi; and Kondou, Kenji, to Mitsubishi Rayon Co., Ltd. Porous polypropylene hollow fiber membrane of large pore diameter, production process thereof, and hydrophilized porous hollow fiber membranes. 5,547,756, Cl. 428-394.000.
Kamoshita, Hideo: *See*—
Teshima, Katsuyoshi; Kamoshita, Hideo; and Baba, Masaaki, 5,548,264, Cl. 336-65.000.
Kamphaus, Carl E.: *See*—
Voegele, William P., Jr.; Ramsey, Douglas A.; Lohr, Alan D.; and Kamphaus, Carl E., 5,546,713, Cl. 52-202.000.
Kamyr, Inc.: *See*—
Marcoccia, Bruno S.; Prough, J. Robert; Laakso, Richard O.; Phillips, Joseph R.; Ryham, Rolf C.; Richardsen, Jan T.; and Chasse, R. Fred, 5,547,012, Cl. 162-42.000.
Kanai, Hiroshi: *See*—
Osanai, Akinori; Nagai, Toshinari; Kanai, Hiroshi; Harima, Kenji; Iwano, Kazuhiko; and Yuda, Shuji, 5,546,917, Cl. 123-674.000.
Kanaya, Osamu: *See*—
Katsumata, Masaaki; Kanaya, Osamu; Katsuki, Nobuharu; and Takami, Akihiro, 5,547,907, Cl. 501-76.000.
Kanbe, Junichiro; Katagiri, Kazuharu; and Kaneko, Syuzo, to Canon Kabushiki Kaisha. Method of driving optical modulation device. 5,548,303, Cl. 345-95.000.
Kanbe, Junichiro: *See*—
Takao, Hideaki; Murata, Tatsuo; Kanbe, Junichiro; Tamura, Miki; Kamio, Masaru; Sekimura, Nobuyuki; and Kikuchi, Yoshiki, 5,548,424, Cl. 359-68.000.
Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Yano, Yoshiaki; Fujimoto, Tamiji; and Hidaka, Takayoshi, 5,547,683, Cl. 424-501.000.
Kaneko, Hiroaki; and Horiguchi, Yumiko, to NEC Corporation. Microprocessor for selecting data bus terminal width regardless of data transfer mode. 5,548,766, Cl. 395-775.000.
Kaneko, Kyoichi, to Daiwa Seiko, Inc. Fishline guide mechanism for spinning reel. 5,547,139, Cl. 242-231.000.
Kaneko, Syuzo: *See*—
Kanbe, Junichiro; Katagiri, Kazuharu; and Kaneko, Syuzo, 5,548,303, Cl. 345-95.000.
Kaneko, Tatsushi: *See*—
Kinsho, Takeshi; Kaneko, Tatsushi; Shimizu, Takaaki; Ogihara, Tsutomu; Saito, Ryuichi; and Kurihara, Hideshi, 5,547,606, Cl. 252-299.610.
Kaneko, Yoshikazu: *See*—
Kawase, Hiromitsu; Kaneko, Yoshikazu; and Maruyama, Shoji, 5,547,802, Cl. 430-110.000.
Kanemitsu, Norio; and Nonogaki, Hajime, to Fujitsu Limited. Input receiving apparatus by using a facsimile apparatus. 5,548,416, Cl. 358-470.000.
Kanemitsu, Shinji, to Canon Kabushiki Kaisha. Carriage driving method and apparatus for efficiently accelerating to a constant speed. 5,547,295, Cl. 400-279.000.
Kanezashi, Takanobu: *See*—
Doi, Yuji; Kato, Yoshiya; Kanezashi, Takanobu; and Masuda, Yuichi, 5,547,076, Cl. 206-301.000.
Kang, Cheul-Shin: *See*—
Shin, Jong-Dug; Kang, Cheul-Shin; and Lee, El-Hang, 5,548,431, Cl. 359-119.000.
Kang, Geon-mo, to Samsung Aerospace Industries, Ltd. Device for adjusting air gap between lenses. 5,548,450, Cl. 359-822.000.
Kang, Kwon-Hag, to Daewoo Electronics Co., Ltd. Video signal processing apparatus for a wide-aspect television. 5,548,337, Cl. 348-445.000.
Kang, Seong K.: *See*—
Jeon, Si M.; and Kang, Seong K., 5,546,968, Cl. 134-179.000.
Kanjo, Wajih: *See*—
Daugherty Jr., David W.; Kanjo, Wajih; and Hawryszkow, Michael G., 5,547,089, Cl. 213-62.00R.
Kanno, Tatsuya: *See*—
Yamato, Tsutomu; Oshino, Yasuhiro; Fukuda, Yutaka; Kanno, Tatsuya; Kuwana, Takaaki; and Okano, Yoshimichi, 5,548,041, Cl. 526-62.000.
Kano, Satoru S.: *See*—
Fukuzawa, Tadashi; Kano, Satoru S.; Kumata, Kiyoshi; Lee, Victor Y.; Schellenberg, Franklin M.; and Takahashi, Yutaka, 5,547,705, Cl. 427-162.000.
Kansai Paint Co., Ltd.: *See*—
Maruyama, Tsutomu; Akiyama, Atsushi; Sanada, Kazuo; Chigira, Sadao; and Hidaka, Masanobu, 5,547,501, Cl. 106-21.00R.
Kantner, Edward A., to ITT Corporation. IC card-receiving host. 5,548,484, Cl. 361-737.000.
Kanzaki, Shigeki; Kawaguchi, Masahiro; Sonobe, Masanori; and Yokono, Tomohiko, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Variable displacement compressor. 5,547,346, Cl. 417-222.200.
Kao Corporation: *See*—
Okada, Jouji; Kawamata, Akira; Tokunaga, Tadayuki; Nagatani, Noboru; Torizuka, Makoto; and Asahi, Masahiko, 5,548,054, Cl. 528-25.000.
Kaplan, Deborah A.: *See*—
Chagnon, Mark S.; Burkle, Stephen E.; Carter, Michelle J.; Hamilton, Tracy J.; Havelick, John, Jr.; Kaplan, Deborah A.; and Marzloff, Kristin L., 5,547,682, Cl. 424-497.000.
Kaplan, Martin C.: *See*—
Parker, H. Galen; Bilhorn, Robert B.; Kaplan, Martin C.; and Palum, Russell J., 5,548,120, Cl. 250-341.700.
Kaplina, Elli N.: *See*—
Vainberg, Yuri P.; Kaplina, Elli N.; and Andosova, Ideya G., 5,547,684, Cl. 424-561.000.
Kapoor, Rakesh R.; Nagy, Bela G.; and Bigelow, Louis K., to Saint-Gobain/Norton Industrial Ceramics Corp. Brazing of diamond film to tungsten carbide. 5,547,121, Cl. 228-121.000.
Kara, Bhuphendra V.; Hockney, Robert C.; and Fitton, John E., to Imperial Chemical Industries PLC. Fermentation processes for preparing soluble ricin A. 5,547,867, Cl. 435-199.000.
Karabed, Razmik: *See*—
Fredrickson, Lisa; Karabed, Razmik; Siegel, Paul H.; and Thapar, Hemant K., 5,548,600, Cl. 371-43.000.
Karam, Anthony J., to Uniden America Corporation. Automatic display illumination in a receiver. 5,548,832, Cl. 455-226.400.
Karavakis, Gus: *See*—
DiStefano, Thomas H.; Karavakis, Gus; Kovac, Zlata; and Mitchell, Craig, 5,548,091, Cl. 174-260.000.
Karhu, Raimo, to Nokia-Maillefer Oy. Reverse stranding apparatus and methods. 5,546,741, Cl. 57-293.000.
Karl Storz GmbH & Co.: *See*—
Strobl, Karlheinz; and Metras, Steven, 5,547,456, Cl. 600-133.000.
Karlsen, Allan E.: *See*—
Hagopian, William; Lernmark, Ake; Karlsen, Allan E.; and Landin-Olsson, Mona, 5,547,847, Cl. 435-7.400.
Karp, Robert G.: *See*—
Heller, Alan C.; Evins, Brian M.; and Karp, Robert G., 5,548,637, Cl. 379-201.000.
Karpen, Daniel N. Color corrected motor vehicle headlight. 5,548,491, Cl. 362-61.000.
Karydas, Athanasios. Fluorinated disulfide lubricants for polyethylene snow sliders. 5,547,594, Cl. 508-112.000.
Kasahara, Tatsuya; and Yoichi, Hamada, to Konan Common Co., Ltd. Method for observing and photographing a cornea and apparatus for the same. 5,548,354, Cl. 351-206.000.
Kasajima, Kimihisa: *See*—
Kakizaki, Shinobu; and Kasajima, Kimihisa, 5,546,644, Cl. 29-25.350.
Kasperkovitz, Wolfdietrich G.: *See*—
Bijker, Wolter; Kasperkovitz, Wolfdietrich G.; De Ruyter, Hendricus C.; and Sloof, Willem A., 5,548,831, Cl. 455-207.000.
Kassner, Reinhard, to Deutsche Spezialglas A.G. Ophthalmic glass of high refractive index. 5,548,353, Cl. 351-168.000.
Katagiri, Kazuharu: *See*—
Kanbe, Junichiro; Katagiri, Kazuharu; and Kaneko, Syuzo, 5,548,303, Cl. 345-95.000.
Katagiri, Moriya, to Olympus Optical Co., Ltd. Electromagnet apparatus and apparatus for adjusting exposure of camera using the same. 5,548,367, Cl. 354-234.100.

Katano, Yuji, to Nikon Corporation. Camera viewfinder with uniform component positioning regardless of angle of view of attached lens. 5,548,366, Cl. 354-219.000.
Kataoka, Takahiro: *See*—
Hayase, Yoshio; Kataoka, Takahiro; Takenaka, Hideyuki; Ichinari, Mitsuhiro; Masuko, Michio; Takahashi, Toshio; and Tanimoto, Norihiko, 5,548,078, Cl. 544-298.000.
Kataoka, Takuo; and Goto, Kenji, to Toho Titanium Co., Ltd. Solid catalyst component for polymerizing olefins and catalyst containing the same. 5,547,912, Cl. 502-154.000.
Kato, Hideo: *See*—
Ito, Yasuo; Kato, Hideo; Yasuda, Singo; Kado, Noriyuki; Yoshida, Toshihiko; and Yamamoto, Yoichi, 5,547,962, Cl. 514-312.000.
Mochizuki, Yoshio; Kato, Hideo; and Sugiura, Nobutake, 5,548,559, Cl. 365-230.080.
Kato, Hiroyuki: *See*—
Kawakami, Shoichi; Okamoto, Toru; Miyazaki, Nobuyuki; Uchino, Bunji; Nomura, Kazuyoshi; and Kato, Hiroyuki, 5,548,019, Cl. 524-591.000.
Kato, Hisataka: *See*—
Sugiyama, Akihiko; Tsuchiyama, Hideaki; Futami, Toshihiko; Kato, Hisataka; and Hoshi, Takao, 5,547,344, Cl. 417-32.000.
Kato, Kanji: *See*—
Akizawa, Mitsuru; Yamashita, Hirofumi; Kawaguchi, Hisamitsu; Tada, Katsumi; Kato, Kanji; Kito, Akira; and Yamada, Hidenori, 5,548,724, Cl. 395-200.030.
Kato, Katsuyuki: *See*—
Miwa, Hiroyuki; Gomi, Takayuki; and Kato, Katsuyuki, 5,548,156, Cl. 257-517.000.
Kato, Kazuo: *See*—
Watanabe, Chiharu; Nakano, Tatsuo; and Kato, Kazuo, 5,547,758, Cl. 428-413.000.
Ye, Guoji; Kajihara, Jun-ichi; Kirihara, Sei; Kato, Kazuo; and Abe, Hiroko, 5,547,945, Cl. 514-54.000.
Kato, Masanori, to Fuji Xerox Co., LTD. Method of controlling an image forming apparatus when an emergency stop signal is generated. 5,548,377, Cl. 355-207.000.
Kato, Nobuyuki: *See*—
Murakami, Kazunori; Ikumi, Tomonori; Kubota, Atsushi; Nakahara, Nobuhiko; and Kato, Nobuyuki, 5,548,321, Cl. 347-256.000.
Kato, Shinji; Tagawa, Chikashi; Michihira, Osamu; and Sone, Akira, to Mazda Motor Corporation; and Naldec Corporation. Apparatus and method for diagnosing failures in control system. 5,548,601, Cl. 371-68.100.
Kato, Shinji: *See*—
Kojima, Tetsuro; Yagihara, Morio; Sasaki, Hirotomo; Mifune, Hiroyuki; and Kato, Shinji, 5,547,829, Cl. 430-603.000.
Kato, Shiro: *See*—
Kagawa, Hiroshi; Kato, Shiro; and Murata, Kazuo, 5,547,780, Cl. 429-149.000.
Kato, Takefumi; Morita, Shigeru; and Sato, Kiminori, to NOK Corporation. Molding machine. 5,547,362, Cl. 425-297.000.
Kato, Yoshiya: *See*—
Doi, Yuji; Kato, Yoshiya; Kanezashi, Takanobu; and Masuda, Yuichi, 5,547,076, Cl. 206-301.000.
Katoh, Kazutaka: *See*—
Taguchi, Masahiro; Katoh, Kazutaka; and Yoshida, Masatada, 5,547,215, Cl. 280-732.000.
Katsoulis, Dimitris E.; and Keryk, John R., to Dow Corning Corporation. Silane modified polyoxometalate anions. 5,548,052, Cl. 528-10.000.
Katsuda, Nobuyuki: *See*—
Fukui, Toshinori; Katsuda, Nobuyuki; Yabushita, Shinichi; and Hashizume, Shuhei, 5,547,478, Cl. 8-643.000.
Katsuki, Nobuharu: *See*—
Katsumata, Masaaki; Kanaya, Osamu; Katsuki, Nobuharu; and Takami, Akihiro, 5,547,907, Cl. 501-76.000.
Katsumata, Masaaki; Kanaya, Osamu; Katsuki, Nobuharu; and Takami, Akihiro, to Matsushita Electric Industrial Co., Ltd. Crystallized glass composition for coating oxide based ceramics. 5,547,907, Cl. 501-76.000.
Katsuno, Takafumi; and Kambara, Shigeru, to Rohm Co. Ltd. Chip resistor and method of adjusting resistance of the same. 5,548,269, Cl. 338-325.000.
Katsuyama, Akira: *See*—
Tanaka, Shigeo; Yamazaki, Hiroshi; Kotabe, Noriko; Sugiyama, Koichi; Sato, Makoto; Katsuyama, Akira; Osakabe, Yoshio; and Kusagaya, Yasuo, 5,548,725, Cl. 395-200.050.
Kaufman, Jonathan J.; and Chiabrera, Alessandro E., to Orthologic Corporation. Ultrasonic bone-therapy apparatus and method. 5,547,459, Cl. 601-2.000.
Kaufman, Keith D.: *See*—
Gormley, Glenn J.; Kaufman, Keith D.; Stoner, Elizabeth; and Waldstreicher, Joanne, 5,547,957, Cl. 514-284.000.
Kaune, Harald: *See*—
Angeler, Alois; Kaune, Harald; and Scheuten, Theo, 5,547,170, Cl. 266-47.000.
Kautzer, Douglas H.: *See*—
Acker, Richard M.; Brunelli, Brian T.; and Kautzer, Douglas H., 5,546,901, Cl. 123-195.00C.
Kawabata, Hideyuki; and Matsuzaka, Naoki, to Japan Aviation Electronics Industry Limited. Distributed projection type liquid crystal display device. 5,548,348, Cl. 348-766.000.
Kawabe, Yuzo; and Sakaguchi, Noboru, to Shimano, Inc. Spinning reel having an anti-reverse mechanism. 5,547,140, Cl. 242-247.000.
Kawaguchi, Hisamitsu: *See*—
Akizawa, Mitsuru; Yamashita, Hirofumi; Kawaguchi, Hisamitsu; Tada, Katsumi; Kato, Kanji; Kito, Akira; and Yamada, Hidenori, 5,548,724, Cl. 395-200.030.
Kawaguchi, Masahiro: *See*—
Kanzaki, Shigeki; Kawaguchi, Masahiro; Sonobe, Masanori; and Yokono, Tomohiko, 5,547,346, Cl. 417-222.200.
Kawahara, Hideo; and Arai, Hideyuki, to Canon Kabushiki Kaisha. Exposure control device. 5,548,371, Cl. 354-442.000.
Kawahara, Norihiro; and Tanaka, Yasuyuki, to Canon Kabushiki Kaisha. Clamping circuit. 5,548,331, Cl. 348-243.000.
Kawahara, Yoshio: *See*—
Kawasaki, Hisashi; Tsuchiya, Makoto; Miwa, Kiyoshi; and Kawahara, Yoshio, 5,547,864, Cl. 435-170.000.
Kawai, Hirotaka; Fujii, Shinzo; and Umezawa, Hiromitsu, to FDK Corporation. Magneto-optical element material formed of magnetic garnet single crystals. 5,547,613, Cl. 252-584.000.
Kawai, Kazunari; and Mitani, Norio, to Kabushiki Kaisha Komatsu Seisakusho. Auxiliary cutter units of a shield machine. 5,547,260, Cl. 299-33.000.
Kawai, Kenji: *See*—
Kroenke, David M.; Olds, Christopher C.; Kawai, Kenji; and Eggebroten, Lee L., 5,548,749, Cl. 395-600.000.
Kawakami, Akira: *See*—
Yumiba, Hideaki; Matsumoto, Kazunobu; and Kawakami, Akira, 5,547,785, Cl. 429-220.000.
Kawakami, Shoichi; Okamoto, Toru; Miyazaki, Nobuyuki; Uchino, Bunji; Nomura, Kazuyoshi; and Kato, Hiroyuki, to Asahi Glass Company Ltd; Asahi Glass Coat & Resin Co., Ltd.; and Asia Industry Co., Ltd. Composition for an aqueous coating material. 5,548,019, Cl. 524-591.000.
Kawakubo, Youichi; Kawamura, Yoshio; and Seo, Yosuke, to Hitachi, Ltd. Information recording disk, its production method and recording apparatus. 5,548,454, Cl. 360-72.100.
Kawamata, Akira: *See*—
Okada, Jouji; Kawamata, Akira; Tokunaga, Tadayuki; Nagatani, Noboru; Torizuka, Makoto; and Asahi, Masahiko, 5,548,054, Cl. 528-25.000.
Kawamoto, Atsunobu; and Yasuda, Yukio, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for detecting misfire in internal combustion engine. 5,548,220, Cl. 324-399.000.
Kawamura, Toshifumi: *See*—
Takai, Yasuyuki; Yamada, Tetsuo; Kawamura, Toshifumi; Shimizu, Susumu; and Yamasaki, Haruki, 5,547,363, Cl. 425-376.100.
Kawamura, Yoshio: *See*—
Kawakubo, Youichi; Kawamura, Yoshio; and Seo, Yosuke, 5,548,454, Cl. 360-72.100.
Kawanishi, Hidenori: *See*—
Shimonaka, Atsushi; Taneya, Mototaka; Kawanishi, Hidenori; and Morioka, Tatsuya, 5,548,434, Cl. 359-161.000.
Kawano, Yuji: *See*—
Fujii, Yoshio; Tokunaga, Takashi; Nakaki, Yoshiyuki; Tsutsumi, Kazuhiko; Hashima, Kazuo; Fukami, Tatsuya; and Kawano, Yuji, 5,547,751, Cl. 428-332.000.
Kawasaki, Hideshi: *See*—
Tokunaga, Hiroyuki; and Kawasaki, Hideshi, 5,548,131, Cl. 257-64.000.
Kawasaki, Hisashi; Tsuchiya, Makoto; Miwa, Kiyoshi; and Kawahara, Yoshio, to Ajinomoto Co., Inc. Coryneform bacteria deficient in a cell surface protein. 5,547,864, Cl. 435-170.000.
Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Sugimoto, Sunao; Yoshino, Mitsuji; and Kobayashi, Noboru, 5,546,868, Cl. 105-178.000.
Kawasaki Steel Corporation: *See*—
Iizuka, Tokio; Uehara, Kenichi; and Takeuchi, Daizo, 5,547,699, Cl. 426-615.000.
Kawase, Hideyuki: *See*—
Sato, Kazutaka; Watanabe, Michihiro; Aoyagi, Masahisa; Seino, Taisaku; Ohki, Katsuo; Fukuda, Hiromitsu; Kawase, Hideyuki; Oga, Kimio; Shimizu, Akira; Narui, Youichi; Suzuki, Tsuguo; Otsuka, Yasuo; and Konno, Kazutoshi, 5,548,411, Cl. 358-400.000.
Kawase, Hiromitsu; Kaneko, Yoshikazu; and Maruyama, Shoji, to Ricoh Company, Ltd. Image formation materials and image fading prevention method. 5,547,802, Cl. 430-110.000.
Kawashima, Yoichi; Ota, Atsutoshi; Morikawa, Yuko; and Mibu, Hiroyuki, to Santen Pharmaceutical Co., Ltd. 3-oxo-1,4-benzothiazine derivatives. 5,547,952, Cl. 514-224.200.
Kawasumi, Toshimitsu; and Ueda, Hiroaki, to Sakura Color Products Corporation. Aqueous ink composition. 5,547,499, Cl. 106-20.00R.
Kawauchi, Masataka: *See*—
Hamada, Yasunori; and Kawauchi, Masataka, 5,548,316, Cl. 347-171.000.
Kayama, Masahiro; Morooka, Yasuo; Sugita, Yoichi; and Nakajima, Masaaki, to Hitachi, Ltd. Failure diagnosis apparatus and a method thereof. 5,548,597, Cl. 371-25.100.
KC Corporation: *See*—
Lusignan, Bruce B.; and Rezvani, Behruz, 5,548,209, Cl. 324-142.000.
Keefer, Philip A.: *See*—
Barnes, Keith W.; Bauman, Donald R.; Brace, Howard N.; Keefer, Philip A.; and Mihelich, Michael E., 5,548,802, Cl. 455-15.000.
Keefer, Richard E., to Isco, Inc. Fluid sampling apparatus having a universal base. 5,546,818, Cl. 73-863.000.

Keeler, James D.; Havener, John P.; Godbole, Devendra; and Ferguson, Ralph B., to Pavilion Technologies. Virtual continuous emission monitoring system. 5,548,528, Cl. 364-497.000.

Keeley, James W.: *See*—
Petry, Keith L.; Hirsch, Thomas S.; and Keeley, James W., 5,548,713, Cl. 395-183.010.

Keesee, Susan K.: *See*—
Wu, Ying-Jye; and Keesee, Susan K., 5,547,928, Cl. 514-2.000.

Keever, Ervin N.: *See*—
McAlister, Ronald E.; Crafton, Eddie L.; and Keever, Ervin N., 5,546,622, Cl. 8-151.000.

KEF Audio (UK) Limited: *See*—
Fincham, Lawrence R., 5,548,657, Cl. 381-182.000.

Kehoe, Ted P. Multi-purpose roofing tool kit. 5,546,671, Cl. 33-648.000.

Kehrbach, Wolfgang; Mlinaric, Michael; Ziegler, Dieter; Brueckner, Reinhard; and Bielenberg, Willi, to Kali-Chemie Pharma GmbH. (Phenylalkylaminoalkyloxy)-heteroaryl-compounds, processes and intermediates for their production and pharmaceutical compositions containing them. 5,547,967, Cl. 514-361.000.

Keith, Michael: *See*—
Sprague, David L.; Harney, Kevin; Kowashi, Eiichi; Keith, Michael; Simon, Allen H.; Papadopoulos, Gregory M.; Hays, Walter P.; Salem, George F.; Shiue, Shih-Wei; Bertapelli, Anthony P.; and Shilman, Vitaly H., 5,548,793, Cl. 395-860.000.

Kell, Michael. Method of monitoring patient compliance with medications prescriptions. 5,547,878, Cl. 436-111.000.

Keller, Alfred, to Weitmann & Konrad GmbH & Co. Installation for the thermal drying of strips, sheets, etc., of material. 5,546,679, Cl. 34-278.000.

Keller, Wilhelm A.; and Penn, Laurence R., to Keller, Wilhelm A. Metering device for fluids. 5,547,110, Cl. 222-219.000.

Kelly, David L.; and Francies, Sidney E., III, to Burke Group, The. Concrete structure having load transferring insert and method for making same. 5,546,727, Cl. 52-704.000.

Kelly, David L., to Burke Group, The. Stake puller attachment for pry bars. 5,547,168, Cl. 254-30.000.

Kelsey-Hayes Company: *See*—
Luckevich, Mark; Johnson, Bernard W.; and Negrin, Dan, 5,547,267, Cl. 303-165.000.

Kemeny, Sabrina E.; Fossum, Eric R.; and Nixon, Robert H., to United States of America, National Aeronautics and Space Administration. Digital parallel processor array for optimum path planning. 5,548,773, Cl. 395-800.000.

Kemerer, Ray S.; and Norman, Martin J., to Electric Power Research Institute, Inc. Capacitor polarity-based var correction controller for resonant line conditions and large amplitude line harmonics. 5,548,203, Cl. 323-210.000.

Kemner, Carl A.: *See*—
Gudat, Adam J.; Rao, Prithvi N.; Shaffer, Gary K.; Shi, Wenfan; Shin, Dong H.; Sennott, James W.; Whittaker, William L.; Kleimenhagen, Karl W.; West, Jay H.; Clow, Richard G.; Wu, Baoxin; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,548,516, Cl. 364-443.000.

Kemp, Daniel N.; Mitin, Timothy W.; Rohman, Kenneth J.; Shirk, Christopher C.; and Wieck, Ronald W., to Dow Corning Corporation. Method and apparatus for color matching of silicone sealants. 5,547,000, Cl. 141-104.000.

Kempski, Richard R.: *See*—
Quinn, Paul R.; Kempski, Richard R.; and King, Douglas J., 5,547,288, Cl. 384-207.000.

Kenda, William P. Cathodic protection, leak detection, and thermal remediation system. 5,547,311, Cl. 405-52.000.

Kendrick, Crystal L.: *See*—
Singleton, Andy H.; Kendrick, Crystal L.; Riemer, Reinhold L., II; and Minga, Robin L., 5,547,657, Cl. 424-49.000.

Kenkel, Terry, to EMCO Enterprises, Inc. Glazing seal and door frame. 5,546,714, Cl. 52-204.500.

Kennedy, John F.; and Klepaczyk, Timothy S., to Ford Motor Company. Dual-band frequency-selective attenuator for automatic gain control. 5,548,830, Cl. 455-200.100.

Kenny, Andrew A.: *See*—
Bogrand, George E., IV; Kenny, Andrew A.; and Rosaz, Francois O., 5,547,126, Cl. 236-92.00B.

Kepert, Manfred; and Zeiler, Karl H., to Albert Frankenthal Aktiengesellschaft. Method and apparatus for cross-folding signatures. 5,547,452, Cl. 493-427.000.

Kerry, John: *See*—
Frost, Peter L. J.; and Kerry, John, 5,548,678, Cl. 385-135.000.

Keryk, John R.: *See*—
Katsoulis, Dimitris E.; and Keryk, John R., 5,548,052, Cl. 528-10.000.

Kesselman, Martin: *See*—
Haas, Edwin G.; and Kesselman, Martin, 5,546,784, Cl. 72-413.000.

Ketchum, Kevin D., to National Semiconductor Corporation. Method of automatic retransmission of frames in a local area network. 5,548,796, Cl. 395-872.000.

Keuerleber, Horst: *See*—
Brehm, Werner; Keuerleber, Horst; Koepff, Georg; and Deeg, Markus, 5,547,165, Cl. 251-129.160.

Key Life Technologies Corp.: *See*—
Belikov, Victor, 5,548,167, Cl. 310-12.000.

Khan, Ashfaq R.: *See*—
Duley, Raymond S.; and Khan, Ashfaq R., 5,548,764, Cl. 395-750.000.

Khan, Mohammad A.; and Hoang, Minh Q., to Becton, Dickinson and Company. Preparation of a skin surface for a surgical procedure. 5,547,662, Cl. 424-78.030.

Khosravi, Farhad: *See*—
Williams, Michael S.; Lau, Lilip; Khosravi, Farhad; Hartigan, William; and Hernando, Avegel, 5,546,646, Cl. 29-407.080.

KHS Group Limited: *See*—
Chapman, Leslie J., 5,546,871, Cl. 108-54.100.

Khwaja, Tasneem A., to University of Southern California. Pharmaceutical preparations derived from European mistletoe. 5,547,674, Cl. 424-195.100.

Khyber Technologies Corporation: *See*—
Kumar, Rajendra; and Morrison, John W., II, 5,548,477, Cl. 361-680.000.
Kumar, Rajendra; and Brooks, Steven E., 5,548,478, Cl. 361-681.000.

Kieleczawa, Jan: *See*—
Studier, F. William; Kieleczawa, Jan; and Dunn, John J., 5,547,843, Cl. 435-6.000.

Kiesele, Herbert, to Drägerwerk Aktiengesellschaft. Electrochemical measuring cell having a gas-permeable housing. 5,547,554, Cl. 204-415.000.

Kihara, Takeshi: *See*—
Sakamoto, Yoshito; Kihara, Takeshi; and Saen, Haruo, 5,547,144, Cl. 242-402.000.

Kiiskila, Erkki: *See*—
Nykanen, Tuomo S.; Greenwood, Brian F.; Gullichsen, Johan; Kiiskila, Erkki; Mattelmaki, Esko; Phillips, Joseph R.; Richardsen, Jan; Ryham, Rolf; Soderman, Jarmo; and Wiklund, Karl, 5,547,543, Cl. 162-31.000.

Kikawa, Takanobu: *See*—
Ando, Mikio; Yogo, Isao; and Kikawa, Takanobu, 5,547,607, Cl. 252-313.100.

Kikuchi, Akira: *See*—
Tsuyuki, Hiroshi; and Kikuchi, Akira, 5,547,457, Cl. 600-175.000.

Kikuchi, Kazuo; Umino, Hiroshi; Shibuya, Hiromitsu; Makino, Masahito; Sakakura, Yasuyuki; and Takahashi, Kiyoshi, to JGC Corporation. Method of and apparatus for crystallization. 5,546,763, Cl. 62-532.000.

Kikuchi, Yoshiki: *See*—
Takao, Hideaki; Murata, Tatsuo; Kanbe, Junichiro; Tamura, Miki; Kamio, Masaru; Sekimura, Nobuyuki; and Kikuchi, Yoshiki, 5,548,424, Cl. 359-68.000.

Kikuchi, Zenta: *See*—
Miyashita, Takashi; Miyazawa, Yoshinaga; and Kikuchi, Zenta, 5,548,426, Cl. 359-73.000.

Kikuno, Mitsutoyo, to Ricoh Company Ltd. Managing system in image forming apparatus. 5,548,376, Cl. 355-207.000.

Kim, Dae S. Compact high temperature air purifier. 5,547,640, Cl. 422-177.000.

Kim, Ho H.; Yeo, Guw D.; and Yi, Yil W., to Sam Yang Co., Ltd. Biodegradable copolymer as drug delivery matrix comprising polyethyleneoxide and aliphatic polyester blocks. 5,548,035, Cl. 525-408.000.

Kim, Hyoung-Gon; Kwon, Young-Moo; and Lee, Young Hoon, to Korea Institute of Science and Technology. Bit sequential type parallel comparator. 5,548,270, Cl. 340-146.200.

Kim, Hyoung-sub, to Samsung Electronics Co. Ltd. Method of forming a semiconductor device having vertical conduction transistors and cylindrical cell gates. 5,547,889, Cl. 437-52.000.

Kim, In, to Lg Semicon Co., Ltd. Method for fabricating thin film transistor. 5,547,883, Cl. 437-40.000.

Kim, Jin-Ki: *See*—
Lee, Sung-Soo; and Kim, Jin-Ki, 5,548,555, Cl. 365-200.000.

Kim, Jong-Nam: *See*—
Cho, Soon-Haeng; Chue, Kuck-Tack; Kim, Jong-Nam; Kim, Kwon-Il; You, Youn-Jong; and Lee, Seng-Go, 5,547,492, Cl. 95-100.000.

Kim, Jun K.; and Lee, Kyung I., to LG Semicon Co., Ltd. Method for forming a copper metal wiring with aluminum containing oxidation barrier. 5,547,901, Cl. 437-187.000.

Kim, Key H., to LG Electronics Inc. Data segment sync signal detector for HDTV. 5,548,339, Cl. 348-525.000.

Kim, Kwon-Il: *See*—
Cho, Soon-Haeng; Chue, Kuck-Tack; Kim, Jong-Nam; Kim, Kwon-Il; You, Youn-Jong; and Lee, Seng-Go, 5,547,492, Cl. 95-100.000.

Kim, SooKyung; Kwon-Joh, Joong; and Lee, WeonKyoo, to LG Electronics Co., Ltd. Analog-cum-digital video recording and reproducing device. 5,548,410, Cl. 358-341.000.

Kim, Sun-Wook: *See*—
Conforti, Robert M.; Kim, Sun-Wook; and Yao, Being-Kung, 5,547,534, Cl. 156-230.000.

Kim, Won G.: *See*—
Lee, Kee S.; Kim, Won G.; and Park, Yeong J., 5,548,193, Cl. 318-568.110.

Kim, Yoonsuk, to Hyundai Motor Company. Device for controlling the flow of intake and exhaust gases in an internal combustion engine. 5,546,898, Cl. 123-90.100.

Kim, Young S.: *See*—
Jeon, Byung C.; Do, Mi S.; Kim, Young S.; and Han, Chi M., 5,548,589, Cl. 370-60.100.

Kimberly-Clark Corporation: *See*—
Burton, Robert M., Sr., 5,547,746, Cl. 428-288.000.

Nielsen, Steven J.; Chang, Yihua; and Rentmeester, Tammy J., 5,547,701, Cl. 427-2.300.

Kimura, Eisuke: *See*—
Hasegawa, Yusuke; Komoriya, Isao; Kimura, Eisuke; Akazaki, Shusuke; and Nishimura, Yoichi, 5,548,514, Cl. 364-431.050.

Kimura, Ichiro; and Miyazaki, Hisashi, to Aisin Seiki Kabushiki Kaisha. Oil pump system. 5,547,349, Cl. 417-282.000.

Kimura, Koichi: *See*—
Ogura, Toshihiko; Aotsu, Hiroaki; Kimura, Koichi; Enomoto, Hiromichi; and Kyoda, Tadashi, 5,548,744, Cl. 395-494.000.

Kimura, Mahito: *See*—
Aizawa, Yuichi; Kimura, Mahito; and Imai, Yasuto, 5,547,194, Cl. 473-350.000.

Kimura, Minoru: *See*—
Kogure, Mitsuhiro; Nagashima, Shinichi; Wakabayashi, Kazuhisa; Enkaku, Shigeyuki; Shimayama, Hitoshi; Kimura, Minoru; Shimoyama, Shuji; and Yokoo, Tsugio, 5,548,260, Cl. 335-126.000.

Kimura, Shigeru: *See*—
Asanuma, Tadashi; Kimura, Shigeru; Uchikawa, Nobutaka; and Shiomura, Tetsunosuke, 5,548,007, Cl. 524-99.000.
Asanuma, Tadashi; Kimura, Shigeru; Uchikawa, Nobutaka; and Shiomura, Tetsunosuke, 5,548,008, Cl. 524-99.000.

Kimura, Tatsuya: *See*—
Fujii, Nariaki; and Kimura, Tatsuya, 5,547,899, Cl. 437-151.000.

Kimura, Yoshiharu: *See*—
Kudo, Hideo; Uchiyama, Isao; Kimura, Yoshiharu; Suzuki, Morie; and Tanakajima, Takashi, 5,547,515, Cl. 134-21.000.

Kimura, Yoshiyuki: *See*—
Kuramoto, Shinichi; Takahashi, Sadao; Kimura, Yoshiyuki; Ando, Kazuhiro; Saito, Tadashi; Asaba, Youichi; Tanikawa, Kiyoshi; Miyashita, Yoshiaki; and Shinguryo, Satoshi, 5,547,793, Cl. 430-97.000.

Kimura, Yutaro; Ikeshima, Tetsuhiko; Tonami, Hiromichi; Konishi, Ikuo; Horikawa, Hiroshi; Daikoku, Akihiro; Sakabe, Shigekazu; Inoue, Masao; and Yamasaki, Akinori, to Shimadzu Corporation; and Mitsubishi Denki Kabushiki Kaisha. Rotary cathode x-ray tube equipment. 5,548,629, Cl. 378-134.000.

King, Adrian S., to Intel Corporation. Method and apparatus for solving dense systems of linear equations with an iterative method that employs partial multiplications using rank compressed SVD basis matrices of the partitioned submatrices of the coefficient matrix. 5,548,798, Cl. 395-888.000.

King, David E., II. Refuse collector drainpipe insert. 5,546,614, Cl. 4-256.100.

King, Douglas J.: *See*—
Quinn, Paul R.; Kempski, Richard R.; and King, Douglas J., 5,547,288, Cl. 384-207.000.

Kingsley, Gary B.: *See*—
Conner, Arlie; Biles, Jonathan R.; Scheffer, Terry J.; and Kingsley, Gary B., 5,548,422, Cl. 359-65.000.

Kinnunen, Matti, to Valmet Automotive. Locking device for locking the openable top of an open automobile. 5,547,234, Cl. 292-25.000.

Kinoshita, Hiroshi: *See*—
Ego, Tomomichi; and Kinoshita, Hiroshi, 5,547,645, Cl. 422-264.000.

Kinoshita, Taizo: *See*—
Mimura, Itaru; Ueda, Hirotada; Sumino, Shigeo; Ikezawa, Mitsuru; Suzuki, Toshiaki; Kinoshita, Taizo; and Tada, Katsumi, 5,548,346, Cl. 348-738.000.

Kinpo Electroncis, Inc.: *See*—
Kuo, Chunge-De, 5,548,430, Cl. 359-80.000.

Kinsho, Takeshi; Kaneko, Tatsushi; Shimizu, Takaaki; Ogihara, Tsutomu; Saito, Ryuichi; and Kurihara, Hideshi, to Shin-Etsu Chemical Co., Ltd. Silacyclohexane compound, a method of preparing it and a liquid crystal composition containing it. 5,547,606, Cl. 252-299.610.

Kinzer, Daniel M., to International Rectifier Corporation. IGBT with increased ruggedness. 5,548,133, Cl. 257-155.000.

Kipke, Cary A.: *See*—
Broyles, Bruce R.; Kipke, Cary A.; and George, William R., 5,546,996, Cl. 141-18.000.

Kirchhoff, Kenneth J.; and Wolf, Robert J., to Minnesota Mining and Manufacturing Company. Wrist rest assembly. 5,547,154, Cl. 248-118.300.

Kirchmeyer, Stephan; Pohmer, Klaus; and Hassel, Tillmann, to Bayer Aktiengesellschaft. Self-crosslinking preparations, production and use thereof. 5,547,711, Cl. 427-386.000.

Kirchner, Erich: *See*—
Kujawa, Kim; Kirchner, Erich; Jarzab, Michel; and Robson, Homer, 5,548,633, Cl. 379-93.000.

Kirihara, Sei: *See*—
Ye, Guoji; Kajihara, Jun-ichi; Kirihara, Sei; Kato, Kazuo; and Abe, Hiroko, 5,547,945, Cl. 514-54.000.

Kirin-Amgen, Inc.: *See*—
Lin, Fu-Kuen, 5,547,933, Cl. 514-8.000.

Kirin Beer Kabushiki Kaisha: *See*—
Hirai, Osamu; Tamura, Keiji; and Ichihashi, Hajime, 5,547,329, Cl. 414-222.000.

Kirk, William J.: *See*—
D'Antuono, Robert A.; and Kirk, William J., 5,547,256, Cl. 297-377.000.

Kirkpatrick, William R.: *See*—
Johnson, John D.; and Kirkpatrick, William R., 5,546,804, Cl. 73-431.000.

Kirsch, Axel: *See*—
Dürr, Walter; and Kirsch, Axel, 5,547,324, Cl. 411-304.000.

Kishimoto, Takahide: *See*—
Hattori, Shizuo; Kishimoto, Takahide; Sogabe, Yukihiro; and Emi, Shigenori, 5,547,851, Cl. 435-26.000.

Kishimoto, Tomonori; Yamane, Mitsuo; Bogauchi, Takehito; and Eguchi, Yoshihiro, to Yuasa Corporation. Separator for alkali-zinc battery. 5,547,779, Cl. 429-144.000.

Kiss, Béla: *See*—
Mahó, Sándor; Tuba, Zoltán; Gere, Anikó; Vittay, Pal; Kiss, Béla; Pálosi, Éva; Szporny, László; Francsicsné, Erzsébet C.; Boómé, Anna M.; Balogh, Gábor; and Görög, Sándor, 5,547,949, Cl. 514-176.000.

Kita, Akihisa, to Fuji Photo Film Co., Ltd. Apparatus for winding a magnetic tape on a flanged reel. 5,547,146, Cl. 242-548.400.

Kitagawa, Motonobu: *See*—
Kuretake, Masato; Zushi, Takayasu; Kitagawa, Motonobu; Yamakawa, Kazuhiko; Okamoto, Yoshimi; and Uda, Sawayo, 5,547,218, Cl. 280-743.100.

Kitahara, Daijiro: *See*—
Miyazaki, Seizo; Saito, Shiro; and Kitahara, Daijiro, 5,547,291, Cl. 384-512.000.

Kitamura, Atsushi, to Ando Electric Co., Ltd. External resonator type wavelength-variable semiconductor laser light source. 5,548,609, Cl. 372-92.000.

Kitamura, Naoki; and Nishimoto, Hiroshi, to NEC Corporation. Optical coupling device. 5,548,673, Cl. 385-49.000.

Kitano, Toshiaki: *See*—
Seiwa, Yoshito; Kitano, Toshiaki; Kohno deceased, Yasutaka, 5,547,642, Cl. 422-186.300.

Kito, Akira: *See*—
Akizawa, Mitsuru; Yamashita, Hirofumi; Kawaguchi, Hisamitsu; Tada, Katsumi; Kato, Kanji; Kito, Akira; and Yamada, Hidenori, 5,548,724, Cl. 395-200.030.

Kito, Eiji; and Toyoda, Tetsuya, to NEC Corporation. Mobile packet communication system and a method of mobile packet communication. 5,548,586, Cl. 370-60.000.

Kitson, Ralph L.: *See*—
Sawyer, James G.; Kloster, Bruce S.; Kitson, Ralph L.; Kovatch, Randall M.; Roepke, Daniel C.; and Wilson, M. Frank, 5,548,818, Cl. 455-54.100.

Kiyohara, Toshimi, to Sharp Kabushiki Kaisha. Information processor efficiently using a plurality of storage devices having different access speeds and a method of operation thereof. 5,548,740, Cl. 395-427.000.

Kiyohara, Yuji: *See*—
Funahashi, Yasuhiro; Ikami, Kazunori; Nishimura, Osamu; Hibino, Yoshihiko; Kiyohara, Yuji; and Yasutomo, Yuichi, 5,548,281, Cl. 340-825.080.

Kiyota, Shinichi, to Kabushiki Kaisha Toshiba. Digital PLL system. 5,548,679, Cl. 388-811.000.

Kjaer, Bjarne; Pedersen, Bent; and Kjaer, Jens B., to Tetra Laval Holdings & Finance S.A. Method of producing cheese and product thereof. 5,547,691, Cl. 426-36.000.

Kjaer, Jens B.: *See*—
Kjaer, Bjarne; Pedersen, Bent; and Kjaer, Jens B., 5,547,691, Cl. 426-36.000.

Klam, Ruediger: *See*—
Bunk, Axel; Klam, Ruediger; Ender, Elmar; and Gloeckler, Frank, 5,548,182, Cl. 313-113.000.

Klatt, Robert W., to Hughes Aircraft Company. Perceptual delta frame processing. 5,548,329, Cl. 348-164.000.

Klauker, Karl-Heinz: *See*—
Boehnke, Gerd; Reuschel, Juergen; Mueller, Heinz-Dieter; and Klauker, Karl-Heinz, 5,548,644, Cl. 379-433.000.

Kleemann, Heinz-Werner: *See*—
Weichert, Andreas; Kleemann, Heinz-Werner; Lang, Hans-Jochen; Schwark, Jan-Robert; Albus, Udo; and Scholz, Wolfgang, 5,547,953, Cl. 514-226.500.

Klees, Kevin J.: *See*—
Pagano, Daniel M.; and Klees, Kevin J., 5,547,145, Cl. 242-536.000.

Kleimenhagen, Karl W.: *See*—
Gudat, Adam J.; Rao, Prithvi N.; Shaffer, Gary K.; Shi, Wenfan; Shin, Dong H.; Sennott, James W.; Whittaker, William L.; Kleimenhagen, Karl W.; West, Jay H.; Clow, Richard G.; Wu, Baoxin; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,548,516, Cl. 364-443.000.

Klein, Franz: *See*—
Krönauer, Karlhans; Aigner, Josef; Klein, Franz; Weber, Karsten; Schmid, Monika; and Pfab, Robert, 5,546,640, Cl. 24-510.000.

Klein, Michael: *See*—
Hutzel, Bernhard; Blaurock, Günter; and Klein, Michael, 5,547,285, Cl. 384-15.000.

Kleinschmidt, Ernst: *See*—
Wanninger, Paul; Wild, Richard; Kleinschmidt, Ernst; and Späth, Helmut, 5,547,526, Cl. 149-19.200.

Klemp, Mark A.; and Peters, Anita J., to Chromatofast, Inc. Apparatus for gas chromatography. 5,547,497, Cl. 96-104.000.

Klepaczyk, Timothy S.: *See*—
Kennedy, John F.; and Klepaczyk, Timothy S., 5,548,830, Cl. 455-200.100.

Kleyn Die Engravers, Inc.: *See*—
Kleyn, Hendrik, 5,547,096, Cl. 220-4.140.

Kleyn, Hendrik, to Kleyn Die Engravers, Inc. Plated polymeric fuel tank. 5,547,096, Cl. 220-4.140.

Klibanov, Alexander M.: *See—*
Dorval, Brent L.; Denham, Lilibeth K.; and Klibanov, Alexander M., 5,547,833, Cl. 435-5.000.

Kliman, Gerald B.; Preston, Mark A.; and Jones, Donald W., to General Electric Company. Permanent magnet lioe start motor having magnets outside the starting cage. 5,548,172, Cl. 310-156.000.

Klimas, Joseph J. Suspendible tool box. 5,547,080, Cl. 206-373.000.

Klingenberg, Eric H.: *See—*
Allcock, Harry R.; Klingenberg, Eric H.; and Weller, Mark P., 5,548,060, Cl. 528-487.000.

Klink, Kristopher A.; and Sendelweck, Gene K., to Thomson Consumer Electronics, Inc. Television receiver with non-linear processing selectively disabled during display of multi-image video signal. 5,548,341, Cl. 348-565.000.

Klockner Hansel Tevopharm B.V.: *See—*
Fransen, A. A. Joseph, 5,547,004, Cl. 198-419.300.

Klöckner-Humboldt-Deutz AG: *See—*
Caspelherr, Heinz; and Hüwel, Ulrich, 5,547,277, Cl. 366-146.000.

Kloeckl, Terrance; Thompson, Todd; Costa, Peter F.; Holmes, William A.; and Daulton, Jay, to Origin Medsystems, Incorporated. Surgical cbp closure apparatus with safety stop. 5,547,474, Cl. 606-143.000.

Kloeppel, Klaus D.: *See—*
Pelstring, Robert M.; Kloeppel, Klaus D.; Dunfield, John C.; Andrews, Michael K.; and Jue, Clifford T., 5,548,458, Cl. 360-99.080.

Kloss, Thomas: *See—*
Watzke, Eckhart; and Kloss, Thomas, 5,547,904, Cl. 501-66.000.

Kloster, Bruce S.: *See—*
Sawyer, James G.; Kloster, Bruce S.; Kitson, Ralph L.; Kovatch, Randall M.; Roepke, Daniel C.; and Wilson, M. Frank, 5,548,818, Cl. 455-54.100.

Kludas, Martin, to Chemisches Laboratorium Dr. Kurt Richter GmbH. Plant-derived cosmetic composition and method of treatment of skin. 5,547,997, Cl. 514-773.000.

Kman, Stephen J.; Stubecki, John A.; and Sondej, William R., to International Business Machines Corporation. Pinned module. 5,548,486, Cl. 361-791.000.

KMC, Inc.: *See—*
Zeidan, Fouad Y., 5,547,287, Cl. 384-117.000.

Knight, John: *See—*
Mullock, Daniel; Baker, Paul; and Knight, John, 5,547,081, Cl. 206-504.000.

Knight, John T.; Huffaker, Joey W.; and Rinke, Michael B., to Rheem Manufacturing Company. Inshot fuel burner Nox reduction device with integral positioning support structure. 5,546,925, Cl. 126-110.00R.

Knights, Anthony J.: *See—*
Bethurum, Gary C.; and Knights, Anthony J., 5,548,485, Cl. 361-737.000.

Knoerzer, Anthony R.: *See—*
Blais, Marcia; and Knoerzer, Anthony R., 5,547,764, Cl. 428-461.000.

Knouse, Bobby W. Recliner chair. 5,547,245, Cl. 297-85.000.

Knowles Electronics, Inc.: *See—*
Ring, Eugene M.; and Murphy, William J., 5,548,658, Cl. 381-191.000.

Knowlton, Kenneth C., to Wang Laboratories, Inc. Automatic determination of blank pages and binary images' bounding boxes. 5,548,664, Cl. 382-174.000.

Ko, Yeong-Cheol, to Samsung Electronics Co., Ltd. Control apparatus of microwave oven having a magnetron and seperate heating element. 5,548,104, Cl. 219-715.000.

Kobayashi, Fumihiko; and Hasegawa, Junichi, tc Fujitsu Limited. Mobile communication system having a control for limiting the number of carriers based on the level of intermodulation distortion. 5,548,799, Cl. 455-8.000.

Kobayashi, Hideo: *See—*
Yamaguchi, Akira; Kobayashi, Hideo; and Mizuno, Toshio, 5,548,806, Cl. 455-33.100.

Kobayashi, Hiroshi: *See—*
Ohta, Masashi; Kobayashi, Hiroshi; Sekiya, Tsuneo; Hamada, Toshimichi; Fukuda, Kyoko; and Iijima, Koji, 5,548,409, Cl. 358-335.000.

Kobayashi, Makoto: *See—*
Anno, Masahiro; Nakamura, Minoru; Kobayashi, Makoto; and Hakumoto, Shigeyuki, 5,547,797, Cl. 430-106.600.

Kobayashi, Motokazu: *See—*
Fukui, Tetsuro; Kobayashi, Motokazu; Ohi, Takehiko; Ueno, Kazunori; Kagami, Kenji; Suzuki, Masao; and Nishino, Katsuya, 5,547,831, Cl. 430-619.000.

Kobayashi, Noboru: *See—*
Sugimoto, Sunao; Yoshino, Mitsuji; and Kobayashi, Noboru, 5,546,868, Cl. 105-178.000.

Kobayashi, Shinichi: *See—*
Futatsuya, Tomoshi; Mihara, Masaaki; Terada, Yasushi; Nakayama, Takeshi; Miyawaki, Yoshikazu; Kobayashi, Shinichi; and Ohkawa, Minoru, 5,548,557, Cl. 365-201.000.
Hirasawa, Naoki; and Kobayashi, Shinichi, 5,548,823, Cl. 455-89.000.

Kobayashi, Tatsuya: *See—*
Saito, Yoshiro; Fujii, Haruo; Sasame, Hiroshi; Hayakawa, Tatsuhiko; Kobayashi, Tatsuya; Kobayashi, Tetsuya; Enomoto, Naoki; Uchiyama, Akihiko; and Maebashi, Youichirou, 5,548,381, Cl. 355-245.000.

Kobayashi, Tetsuya: *See—*
Saito, Yoshiro; Fujii, Haruo; Sasame, Hiroshi; Hayakawa, Tatsuhiko; Kobayashi, Tatsuya; Kobayashi, Tetsuya; Enomoto, Naoki; Uchiyama, Akihiko; and Maebashi, Youichirou, 5,548,381, Cl. 355-245.000.

Kobayashi, Tsuyoshi; and Saitoh, Misa, to Shinko Electric Industries Co., Ltd. Solid electrolyte gas sensor and process of producing joined body of ceramics and hard-to-sinter oxyacid salt. 5,547,556, Cl. 204-426.000.

Kobayashi, Yoshinao, to Sumitomo Wiring Systems, Ltd. Joint construction for ignition system. 5,547,387, Cl. 439-125.000.

Koch, Robert, to Hubner Gummi- und Kunststoff GmbH. Bellows. 5,546,866, Cl. 105-8.100.

Koch, Ulf; and Schneider, Peter, to Esselte Meto International GmbH. Label printer such as a printer for printing self-adhesive labels. 5,547,293, Cl. 400-120.170.

Köcher, Jürgen; Springer, Wolfgang; Kuckert, Eberhard; and Böcker, Thomas, to Bayer Aktiengesellschaft. Snlphocoumarin-containing nucleotides and their use in processes for detecting nucleic acids. 5,547,860, Cl. 435-91.200.

Kodaira, Kazuho: *See—*
Nakamura, Tsuyoshi; Kodaira, Kazuho; and Higuchi, Katsuhiro, 5,548,520, Cl. 364-472.020.

Koehrsen, Craig L.: *See—*
Gudat, Adam J.; Rao, Prithvi N.; Shaffer, Gary K.; Shi, Wenfan; Shin, Dong H.; Sennott, James W.; Whittaker, William L.; Kleimenhagen, Karl W.; West, Jay H.; Clow, Richard G.; Wu, Baoxin; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,548,516, Cl. 364-443.000.

Koepff, Georg: *See—*
Brehm, Werner; Keuerleber, Horst; Koepff, Georg; and Deeg, Markus, 5,547,165, Cl. 251-129.160.

Koga, Takahiko: *See—*
Niwa, Hideyuki; Sasaki, Kiyomi; Yoshida, Kyoei; Tanuma, Itsuo; Naito, Kazuo; Morimura, Yasuhiro; and Koga, Takahiko, 5,547,762, Cl. 428-442.000.

Koganei, Katsuya; Nomura, Takeshi; Kuribayasbi, Toshiaki; and Umemoto, Noboru, to Tonen Corporation. Lubricating oil composition for two-cycle engines. 5,547,597, Cl. 508-409.000.

Kogure, Masayoshi: *See—*
Takahashi, Tomomi; Takata, Masahisa; Kogure, Masayoshi; Taira, Ritsushi; and Hamano, Hiroyuki, 5,547,018, Cl. 165-267.000.

Kogure, Mitsuhiro; Nagashima, Shinichi; Wakabayashi, Kazuhisa; Enkaku, Shigeyuki; Shimayama, Hitoshi; Kimura, Minoru; Shimoyama, Shuji; and Yokoo, Tsugio, to Mitsuba Electric Manufacturing Co., Ltd. Contact assembly for a magnetic switch. 5,548,260, Cl. 335-126.000.

Koh, Hidemasa: *See—*
Kuwata, Takeshi; Ruckmongathan, Temkar N.; Nakagawa, Yutaka; Koh, Hidemasa; Nakazawa, Akira; Ohnishi, Takanori; and Ihara, Satoru, 5,548,302, Cl. 345-89.000.

Kohama, Hiroaki: *See—*
Yasohama, Kazuhiko; and Kohama, Hiroaki, 5,548,214, Cl. 324-240.000.

Kohama, Kazumasa, to Sony Corporation. Radio receiver-transmitter apparatus and signal changeover switch. 5,548,239, Cl. 327-408.000.

Kohar, Richard; and McLaughlin, Brian M., to New York Air Brake Corporation. Brake caliper shock and vibration isolation system. 5,547,047, Cl. 188-59.000.

Kohl, Walter: *See—*
Schramm, Günter; Kohl, Walter; Meyer, Friedhelm; Mittag, Rainer; and Suelzle, Helmut, 5,548,202, Cl. 322-33.000.

Köhler, Burkhard; Ebert, Wolfgang; Horn, Klaus; Weider, Richard; and Scholl, Thomas, to Bayer AG. Blends of polycarbonates, dimeric fatty acid polyesters and PIB rubbers, silicones or mineral oils. 5,548,011, Cl. 524-267.000.

Kohler Co.: *See—*
Bloemer, John M.; Kurth, Michael J.; Bengtson, Alan D.; Giese, Robert C.; Dannenberg, Todd D.; Thomas, Carter J.; Potter, Edwin R., Jr.; Bonnell, Thomas A.; Halloran, Daniel N.; and Clarke, Thomas W., 5,546,616, Cl. 4-541.200.

Kohman, Fred H.: *See—*
Holdeman, R. Brian; Kohman, Fred H.; Harrison, Greg T.; and Hise, Bradley W., 5,546,833, Cl. 81-52.000.

Kohmura, Yukio; Ishida, Yoshinori; and Hibino, Takashi, to Furukawa Electric Co., Ltd., The. Method and system for forming and inspecting an electroconductive film on optical fibers and substrates using eddy current to measure electrical resistance. 5,548,213, Cl. 324-232.000.

Kohno, Satoru; Iijima, Naoto; and Ishikawa, Akihiro, to Shimadzu Corporation. MR imaging apparatus. 5,548,215, Cl. 324-309.000.

Kohno, Yasutaka, to Mitsubishi Denki Kabushiki Kaisha. Recessed gate field effect transistor. 5,548,144, Cl. 257-284.000.

Kohno deceased, Yasutaka (by Yoko Kohno Legal Representor): *See—*
Seiwa, Yoshito; Kitano, Toshiaki; Kohno deceased, Yasutaka, 5,547,642, Cl. 422-186.300.

Kohno Legal Representor, Yoko: *See—*
Seiwa, Yoshito; Kitano, Toshiaki; Kohno deceased, Yasutaka, 5,547,642, Cl. 422-186.300.

Kohtaki, Takaaki; Taya, Masaaki; and Fujimoto, Masami, to Canon Kabushiki Kaisha. Developer containing insulating magnetic toner flowability-improving agent and inorganic fine powder. 5,547,796, Cl. 430-106.600.

Koike, Yasuhiro. Light-scattering light-guiding device. 5,548,670, Cl. 385-27.000.

Koishi, Musubu: *See—*
Takeshima, Akira; and Koishi, Musubu, 5,548,124, Cl. 250-458.100.

Koito Manufacturing Co., Ltd.: *See—*
Murakami, Tomokazu, 5,548,498, Cl. 362-336.000.

Koizumi, Ayako; Mori, Yukiko; and Aoki, Tomomi, to Fujitsu Limited. CAD system with parallel dimension-line editing function. 5,548,706, Cl. 395-161.000.

Kojima, Takashi: *See—*
Machida, Isao; Fujiura, Ryuji; Kojima, Takashi; and Sakamoto, Hitoshi, 5,547,654, Cl. 423-445.00R.

Kojima, Tetsuro; Yagihara, Morio; Sasaki, Hirotomo; Mifune, Hiroyuki; and Kato, Shinji, to Fuji Photo Film Co., Ltd. Silver halide photographic material containing selenium or tellurium compound. 5,547,829, Cl. 430-603.000.

Kojima, Yoshiki: *See—*
Nakatani, Mitsunori; Kojima, Yoshiki; and Minami, Hiroyuki, 5,547,789, Cl. 430-5.000.

Koketsu, Eiji; Sato, Koki; Muromachi, Tetsushi; Haraoka, Mutsumu; Nagata, Toshio; Yanagihara, Michihiro; and Oma, Kuniaki, to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho; and Toyota Shatai Kabushiki Kaisha. Webbing for restraining a vehicle occupant. 5,547,223, Cl. 280-805.000.

Kokubu, Hideki: *See—*
Imanishi, Takashi; Abe, Tsutomu; and Kokubu, Hideki, 5,547,432, Cl. 476-40.000.

Kokusai Denshin Denwa Co., Ltd.: *See—*
Yamaguchi, Akira; Kobayashi, Hideo; and Mizuno, Toshio, 5,548,806, Cl. 455-33.100.

Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
Araki, Noriyuki; Shinonaga, Hideyuki; and Itoh, Yasuhiko, 5,548,801, Cl. 455-13.100.

Kölbi, Hans J. Movable rack system for longwall conveyor means. 5,547,261, Cl. 299-43.000.

Kolde, Jeffrey A.: *See—*
Bahar, Bamdad; Hobson, Alex R.; Kolde, Jeffrey A.; and Zuckerbrod, David, 5,547,551, Cl. 204-296.000.

Kolinski, Jerzy; Sprietsma, John; Pawlowski, Stephen; and Schaechterle, Henry, to Intel Corporation. Equal length symmetric computer bus topology, 5,548,734, Cl. 395-306.000.

Kollefrath, Ralf: *See—*
Dauth, Jochen; Deubzer, Bernward; Mayer, Elfriede; Nuyken, Oskar; Voit, Brigitte; and Kollefrath, Ralf, 5,548,070, Cl. 534-550.000.

Komarek, James A.; Minney, Jack L.; Nordine, Stephen P.; Lewis, Harold F.; Wada, Richard; and Stockman, John F., to Creative Integrated Systems, Inc. Home and small business phone system for operation on a single internal twisted pair line and methodology for operating the same. 5,548,592, Cl. 370-85.100.

Kommanditgesellschaft Ritz Messwandler GmbH & Co.: *See—*
Rost, Peter, 5,548,081, Cl. 174-14.0BH.

Komori, Takahiro: *See—*
Sato, Jyunichi; and Komori, Takahiro, 5,548,093, Cl. 181-224.000.

Komoriya, Isao; Hasegawa, Yusuke; Akazaki, Shusuke; and Maki, Hidetaka, to Honda Giken Kogyo Kabushiki Kaisha. Fuel metering control system in internal combustion engine. 5,546,907, Cl. 123-478.000.

Komoriya, Isao: *See—*
Hasegawa, Yusuke; Komoriya, Isao; Kimura, Eisuke; Akazaki, Shusuke; and Nishimura, Yoichi, 5,548,514, Cl. 364-431.050.

Konan Common Co., Ltd.: *See—*
Kasahara, Tatsuya; and Yoichi, Hamada, 5,548,354, Cl. 351-206.000.

Kondou, Kenji: *See—*
Kamo, Jun; Hirai, Takayuki; Takahashi, Hiroshi; and Kondou, Kenji, 5,547,756, Cl. 428-394.000.

Konica Corporation: *See—*
Aizawa, Hiroyuki; and Tobisawa, Seiichi, 5,547,510, Cl. 118-410.000.
Fukuchi, Masakazu; Morita, Shizuo; Haneda, Satoshi; Satoh, Hiseo; and Ikeda, Tadayoshi, 5,548,379, Cl. 355-210.000.
Morimoto, Hitoshi; Miyazawa, Kazuhiro; and Tsuchiya, Masaru, 5,547,810, Cl. 430-203.000.
Nishimori, Yoshiki; Abe, Tsugio; and Suzuki, Yuriko, 5,547,800, Cl. 430-110.000.
Sekimoto, Takashi; Endo, Yoichi; Yamazaki, Hirohiko; Yamazaki, Masahiko; Ohtani, Yutaka; Iguchi, Takeyoshi; Matsumoto, Kenji; Yamazaki, Hiroyuki; Takimura, Ryo; and Tsuda, Takao, 5,548,417, Cl. 385-474.000.
Sugano, Masashi; and Matsuo, Kenichi, 5,548,414, Cl. 358-452.000.

Konishi, Ikuo: *See—*
Kimura, Yutaro; Ikeshima, Tetsuhiko; Tonami, Hiromichi; Konishi, Ikuo; Horikawa, Hiroshi; Daikoku, Akihiro; Sakabe, Shigekazu; Inoue, Masao; and Yamasaki, Akinori, 5,548,629, Cl. 378-134.000.

Konishi, Shin: *See—*
Hirayama, Shinji; Konishi, Shin; Hidai, Takao; Hama, Shinjiro; Hashimoto, Sadako; and Morikawa, Yukihiro, 5,548,057, Cl. 528-67.000.

Konkol, Patrick A.: *See—*
Laurash, David P.; Huddleston, Joey V.; Konkol, Patrick A.; Hartke, Jeffery J.; and Skees, Hugh B., 5,547,227, Cl. 283-81.000.

Konno, Kazutoshi: *See—*
Sato, Kazutaka; Watanabe, Michihiro; Aoyagi, Masahisa; Seino, Taisaku; Ohki, Katsuo; Fukuda, Hiromitsu; Kawase, Hideyuki; Oga, Kimio; Shimizu, Akira; Narui, Youichi; Suzuki, Tsuguo; Otsuka, Yasuo; and Konno, Kazutoshi, 5,548,411, Cl. 358-400.000.

Konzelmann, Uwe: *See—*
Kuhn, Ulrich; Tank, Dieter; and Konzelmann, Uwe, 5,546,794, Cl. 73-118.200.

Kool, Anthonie F.; Van de Griendt, Michiel A.; de Bruin, Bas H.; Schepes, Gerardus N.; and Lucieer, Willem J., to Hollandsche Beton Groep N.V. System for positioning a pile driving rig or similar installation. 5,548,397, Cl. 356-141.100.

Kop, Joann: *See—*
Hogan, James; Smith, Richard; and Kop, Joann, 5,547,842, Cl. 435-6.000.

Kopannia, Siegfried: *See—*
Heucher, Reimar; Wichelhaus, Juergen; Schueller, Kurt; Kopannia, Siegfried; and Rossini, Angela, 5,548,027, Cl. 525-179.000.

Kopec, Eduard: *See—*
Adamek, Peter; Kopec, Eduard; and Ludmann, Armin, 5,546,900, Cl. 123-184.550.

Kopec, Gary E.: *See—*
Bagley, Steven C.; and Kopec, Gary E., 5,548,700, Cl. 395-144.000.

Korea Institute of Energy Research: *See—*
Cho, Soon-Haeng; Chue, Kuck-Tack; Kim, Jong-Nam; Kim, Kwon-Il; You, Youn-Jong; and Lee, Seng-Go, 5,547,492, Cl. 95-100.000.

Korea Institute of Science and Technology: *See—*
Kim, Hyoung-Gon; Kwon, Young-Moo; and Lee, Young Hoon, 5,548,270, Cl. 340-146.200.

Koren, Doron. Image processing system. 5,548,408, Cl. 358-300.000.

Kornher, Kevin L.; Conner, James L.; and Tew, Claude E., to Texas Instruments Incorporated. Pixel control circuitry for spatial light modulator. 5,548,301, Cl. 345-85.000.

Kosaka, Tokihiro, to Toa Medical Electronics Co., Ltd. Particle analyzer. 5,548,395, Cl. 356-73.000.

Kosako, Kosei, to Asahi Kogaku Kogyo Kabushiki Kaisha. View finder of camera. 5,548,365, Cl. 354-219.000.

Kosakowski, Richard J.: *See—*
Chen, Jiann-Hsing; Demejo, Lawrence P.; Roberts, Gary F.; Kosakowski, Richard J.; Aslam, Muhammed; and Derimiggio, John E., 5,547,759, Cl. 428-421.000.

Kosarzecki, Constantine. Floating cage cartridge valve and knob. 5,546,980, Cl. 137-454.500.

Koshi, Makoto; Nishio, Yukio; and Hirose, Kazunori, to Fujitsu Limited. Developing apparatus for improving the durability of the latent image holding member. 5,548,382, Cl. 355-259.000.

Koshijima, Tetsuo; Shiraishi, Nobuo; Takahashi, Tadashi; Hiraoka, Toshiharu; and Ueda, Masami, to Japan Chemical Engineering & Machinery Co., Ltd. Benzylated lignocellulosic substance and a producing method thereof. 5,548,069, Cl. 530-500.000.

Koshimizu, Minoru; Kakinuma, Takeo; and Ito, Kensuke, to Fuji Xerox Co., Ltd. Liquid-crystal display device and method for both displaying fast moving images and holding static images. 5,548,420, Cl. 359-44.000.

Köster, Hubert, to Sequenom, Inc. DNA sequencing by mass spectrometry. 5,547,835, Cl. 435-6.000.

Kosugi, Mitsuo, to Hamamatsu Photonics K.K. Push-pull, resonant type switching power supply circuit. 5,548,502, Cl. 363-22.000.

Kotabe, Noriko: *See—*
Tanaka, Shigeo; Yamazaki, Hiroshi; Kotabe, Noriko; Sugiyama, Koichi; Sato, Makoto; Katsuyama, Akira; Osakabe, Yoshio; and Kusagaya, Yasuo, 5,548,725, Cl. 395-200.050.

Kotecki, David E.: *See—*
Husain, Anwar; Kotecki, David E.; Lassig, Stephan E.; Olson, Kurt A.; and Ricci, Anthony J., 5,548,470, Cl. 361-234.000.

Kotobuki & Co., Ltd.: *See—*
Kageyama, Shuhei; Arai, Sachio; Yamamoto, Tadashi; and Ebinuma, Tadayoshi, 5,547,301, Cl. 401-116.000.

Kouchnir, Mikhail: *See—*
Kupershmidt, Vladimir; Kouchnir, Mikhail; and Petersen, Robert, 5,548,404, Cl. 356-368.000.

Kovac, Zlata: *See—*
DiStefano, Thomas H.; Karavakis, Gus; Kovac, Zlata; and Mitchell, Craig, 5,548,091, Cl. 174-260.000.

Kovatch, Randall M.: *See—*
Sawyer, James G.; Kloster, Bruce S.; Kitson, Ralph L.; Kovatch, Randall M.; Roepke, Daniel C.; and Wilson, M. Frank, 5,548,818, Cl. 455-54.100.

Kovneristy, Yulig K.: *See—*
Blum, Michael E.; Boerman, Gary L.; Fekete, Thomas M.; Horak, Donald L.; Kovneristy, Yulig K.; and Orillion, Michael T., 5,547,487, Cl. 75-10.150.

Kowashi, Eiichi: *See—*
Sprague, David L.; Harney, Kevin; Kowashi, Eiichi; Keith, Michael; Simon, Allen H.; Papadopoulos, Gregory M.; Hays, Walter P.; Salem, George F.; Shiue, Shih-Wei; Bertapelli, Anthony P.; and Shilman, Vitaly H., 5,548,793, Cl. 395-860.000.

Kozaki, Kengo; Ohyachi, Nobuyuki; Tanaka, Seiji; Morisawa, Akira; and Nakazaki, Tosiyuki, to Clarion Co., Ltd. RDS audio receiver having interrupt mode. 5,548,828, Cl. 455-161.200.

Kozikowski, Alan P.; and Tückmantel, Werner, to Mayo Foundation for Medical Education and Research. C-10 analogs of huperzine a. 5,547,960, Cl. 514-295.000.

Kramer, Robert L.: *See—*
Erickson, Jack A.; Kramer, Robert L.; and Hallis, John M., 5,547,528, Cl. 149-92.000.

VOL 1189 ISS 3 AG 2 01 19 96 UMI

Kranz, David M.; Roy, Edward J.; and Patrick, Todd A., to University of Illinois, The Board of Trustees of The. Conjugates of folate anti-effector cell antibodies. 5,547,668, Cl. 424-181.100.

Krapfenbauer, Hans, to Ernst Grob AG. Process for the production of a toothed rack via cold forming, the rack produced thereby, and an apparatus for practicing the process. 5,546,781, Cl. 72-191.000.

Kratz, Brian E.: *See—*
Nicol, Geoffrey P.; Kratz, Brian E.; and Studer, Allen J., 5,548,273, Cl. 340-439.000.

Krayenhagen, Dan. Flexible roll. 5,547,449, Cl. 492-44.000.

Krayer, Werner F.; Baur, Rolf, deceased (by Helga Baur, heiress), to Grau Sturage Systems CmBH & Co. KG. Method and apparatus for operating an automatic data carrier library. 5,548,521, Cl. 364-478.020.

Krebs, Jay; and Erickson, Paul M., to Motorola, Inc. Method and apparatus for supporting at least two communication services in a communication system. 5,548,631, Cl. 379-58.000.

Krebs, Stephan: *See—*
Südholt, Michael; Wier, Manfred; Krebs, Stephan; Bauer, Bernhard; and Reupke, Wolfgang, 5,546,916, Cl. 123-674.000.

Krein, William T., to Apple Computer, Inc. Method for semaphore communication between incompatible bus locking architectures. 5,548,780, Cl. 395-825.000.

Kresky, Fred C.: *See—*
Dukatz, Matthew E.; Harland, Charles E.; Kresky, Fred C.; McCarthy, Jay P.; and Sharples, Stephen A., 5,547,242, Cl. 296-65.100.

Krhs, Gre; and Spector, George. Future toder recreational device. 5,547,425, Cl. 472-110.000.

Krieger, Todd N. Automatic air conditioner shutoff system. 5,546,755, Cl. 62-133.000.

Krigmont, Henry V. Electrostatic precipitator. 5,547,493, Cl. 96-54.000.

Krochta, John M.; Saltveit, Mikal; and Cisneros-Zevallos, Luis, to University of California, The Regents of the. Method of preserving natural color on fresh and minimally processed fruits and vegetables. 5,547,693, Cl. 426-90.000.

Krock, Albert W., to Connection Systems Group. Pipe mounting bracket. 5,547,152, Cl. 248-74.100.

Kroenke, David M.; Olds, Christopher C.; Kawai, Kenji; and Eggebroten, Lee I., to Wall Data Incorporated. Semantic orbject modeling system for creating relational database schemas. 5,548,749, Cl. 395-600.000.

Kroll, Thomas W.: *See—*
Butler, Walter K.; Cote, Mark P.; Napiorkowski, John J.; Kroll, Thomas W.; Brower, Boyd G.; and Mickelson, N. Peter, 5,548,641, Cl. 379-399.000.

Krönauer, Karlhans; Aigner, Josef; Klein, Franz; Weber, Karsten; Schmid, Monika; and Pfab, Robert, to Mawa Metallwarenfabrik Wagner GmbH. Clamp. 5,546,640, Cl. 24-510.000.

Kronberg, James W. Optical temperature sensor using thermochromic semiconductors. 5,547,283, Cl. 374-162.000.

Kroner, Matthias; Hartmann, Heinrich; Schornick, Gunnar; Baur, Richard; Potthoff-Karl, Birgit; Schwendemann, Volker; and Kud, Alexander, to BASF Aktiengesellschaft. Preparation of polymers of aspartic acid and their use. 5,548,036, Cl. 525-419.000.

Krüger, Bernd-Wieland; Maurer, Fritz; Methfessel, Christoph; Tietjen, Klaus; Maelicke, Alfred; Schmidt, Bernard; and Shiokawa, Kozo, to Bayer Aktiengesellschaft. Use of substituted amines for the treatment of brain function disorders. 5,547,965, Cl. 514-342.000.

Krüger Systems AS: *See—*
Madsen, Søren M.; and Stromvig, Jan, 5,547,127, Cl. 237-12.100.

Krumm, Helmut: *See—*
Cordes, Hans; Krumm, Helmut; Schwartz, Ludwig; Kahn, Ilan; Cornils, Gerd; and Behrend, Ulrich, 5,547,359, Cl. 425-125.000.

Krumm, Herbert; Nordmann, Adolf; Ehrhardt, Johannes; Lorenz, Johann; and Stoffler, Günter, to Rheinmetall Industrie GmbH. Hybrid propellant/electrothermal gun. 5,546,844, Cl. 89-8.000.

Krutemeier, Frank: *See—*
Fork, Kurt; and Krutemeier, Frank, 5,547,337, Cl. 415-1.000.

KSB Aktiengesellschaft: *See—*
Urban, Jörg, 5,547,289, Cl. 384-215.000.

Kubena, Randall L., to Hughes Aircraft Company. Quantum well structure with self-aligned gate and method of making the same. 5,548,129, Cl. 257-24.000.

Kubo, Takashi: *See—*
Akasaka, Yoshio; Kakijima, Kenichi; Endoh, Takeshi; Uchida, Goro; Tanaka, Masaaki; Fujie, Takefumi; Sukawa, Daiji; Endoh, Satoshi; Saitoh, Hideo; and Kubo, Takashi, 5,548,096, Cl. 219-117.100.

Kubota, Atsushi: *See—*
Murakami, Kazunori; Ikumi, Tomonori; Kubota, Atsushi; Nakahara, Nobuhiko; and Kato, Nobuyuki, 5,548,321, Cl. 347-256.000.

Kubota, Hiroaki: *See—*
Sato, Toshio; and Kubota, Hiroaki, 5,548,691, Cl. 395-113.000.

Kubota, Shinji; and Nasu, Hiroaki, to Seiko Epson Corporation. Image processing apparatus. 5,548,696, Cl. 395-135.000.

Kubota, Takeshi: *See—*
Furuzawa, Akira; Sata, Akifumi; Kubota, Takeshi; and Shikata, Kunihide, 5,547,908, Cl. 501-136.000.

Kuboyama, Katsunori; Asakawa, Koji; and Uchida, Naoshi, to Fuji Electric Co., Ltd. Circuit breaker with insulation device. 5,548,258, Cl. 335-16.000.

Kuche, Hans-Walter, to Petroleum Geo-Services A/S. Arrangement for towing. 5,546,882, Cl. 114-244.000.

Kuckert, Eberhard: *See—*
Köcher, Jürgen; Springer, Wolfgang; Kuckert, Eberhard; and Böcker, Thomas, 5,547,860, Cl. 435-91.200.

Kud, Alexander: *See—*
Kroner, Matthias; Hartmann, Heinrich; Schornick, Gunnar; Baur, Richard; Potthoff-Karl, Birgit; Schwendemann, Volker; and Kud, Alexander, 5,548,036, Cl. 525-419.000.

Kudo, Hideo; Uchiyama, Isao; Kimura, Yoshiharu; Suzuki, Morie; and Tanakajima, Takashi, to Shin-Etsu Handotai Co., Ltd. Method for handling or processing semiconductor wafers. 5,547,515, Cl. 134-21.000.

Kudo, Makoto: *See—*
Tanimoto, Takuma; Kudo, Makoto; Mishima, Tomoyoshi; Nakajima, Akishige; Mori, Mitsuhiro; and Yamane, Masao, 5,548,138, Cl. 257-192.000.

Kudo, Toshio; Nagai, Masaaki; and Shiraiwa, Yasuo, to Mitsubishi Cable Industries, Ltd.; and Tatsuno Corporation. Low molecular weight organic liquid leakage detection system. 5,546,790, Cl. 73-40.500.00R.

Kuga, Yuji: *See—*
Hanawa, Tetsuya; Kuga, Yuji; Takashima, Yutaka; Matsumoto, Yoshihiro; and Ono, Masayuki, 5,548,827, Cl. 455-129.000.

Kugai, Hirokazu; and Nagaishi, Tatsuoki, to Sumitomo Electric Industries, Ltd. Flux transformer formed of an oxide superconducting thin film and method for manufacturing the same. 5,548,262, Cl. 335-216.000.

Kuhn, Ulrich; Tank, Dieter; and Konzelmann, Uwe, to Robert Bosch GmbH. Device for measuring the mass of a flowing medium. 5,546,794, Cl. 73-118.200.

Kuhrau, Michael K.; and Fosselman, Donald C., to Mayer Industries, Inc. Circular sliver knitting machine having a manifold for controlling multidirectional airflow. 5,546,768, Cl. 66-9.00B.

Kuifte, Halvor O.: *See—*
Rudi, Guttorm; Jansen, Ornulf; Kuifte, Halvor O.; and Busengdal, Petter, 5,548,480, Cl. 361-685.000.

Kujawa, Kim; Kirchner, Erich; Jarzab, Michel; and Robson, Homer, to SaskTel. Data collection network apparatus and method. 5,548,633, Cl. 379-93.000.

Kukanskis, Peter; Yakobson, Ernest; and Taytsas, Lev, to MacDermid, Incorporated. Process for plating metals onto various substrates in an adherent fashion. 5,547,559, Cl. 205-125.000.

Kulakowski, John E.; McDowell, Judson A.; and Rubin, Kurt A., to International Business Machines Corporation. Spare and calibration sector management for optical WORM media. 5,548,572, Cl. 369-116.000.

Kulicke & Soffa, Investments, Inc.: *See—*
Reynolds, Edward P.; Tinnerino, Natale F.; and Schiefele, Walter P., 5,547,537, Cl. 156-351.000.

Kulsrestha, Girindra N.; Saxena, Mahendra P.; Gupta, Ashok K.; Goyal, Hari B.; Prasad, Rameshwar; Prasada Rao, Turuga S. R.; and Patel, Prakash D., to Council of Scientific & Industrial Research. Catalyst and a process for preparing carboxylic acids using the catalyst. 5,547,905, Cl. 502-66.000.

Kumagai, Hiromichi: *See—*
Isoai, Atsushi; Hama, Yuko; and Kumagai, Hiromichi, 5,548,062, Cl. 530-326.000.

Kumagai, Yoshiaki; Itaya, Eiji; and Endo, Yoichi, to Fujitsu Limited. Automatic frequency control circuit selectively using frequency-divided local oscillator signal or pilot signal. 5,548,811, Cl. 455-192.200.

Kumano, Tuyoshi: *See—*
Sugiyama, Hitoshi; Hiraishi, Toshinori; and Kumano, Tuyoshi, 5,548,743, Cl. 395-479.000.

Kumar, Nalin; and Xie, Chenggang, to Microelectronics and Computer Technology Corporation. Triode structure flat panel display employing flat field emission cathode. 5,548,185, Cl. 313-495.000.

Kumar, Rajendra; and Morrison, John W., II, to Khyber Technologies Corporation. Combination keyboard and cover for a handheld computer. 5,548,477, Cl. 361-680.000.

Kumar, Rajendra; and Brooks, Steven E., to Khyber Technologies Corporation. Portable computing device having an adjustable hinge. 5,548,478, Cl. 361-681.000.

Kumar, Vinod: *See—*
Suard, Bruno P.; and Kumar, Vinod, 5,548,834, Cl. 455-276.100.

Kumata, Kiyoshi: *See—*
Fukuzawa, Tadashi; Kano, Satoru S.; Kumata, Kiyoshi; Lee, Victor Y.; Schellenberg, Franklin M.; and Takahashi, Yutaka, 5,547,705, Cl. 427-162.000.

Kumon, Akira: *See—*
Naka, Teruyuki; Umeda, Yoshio; Yamamura, Toshiki; Kumon, Akira; Suzuki, Seiichi; Nawama, Junichi; and Nagase, Hisanori, 5,548,380, Cl. 355-219.000.

Kumon, Satoshi: *See—*
Maruyama, Shogo; and Kumon, Satoshi, 5,547,857, Cl. 435-87.000.

Kumpf, William J. Fluid level control system. 5,546,700, Cl. 47-79.000.

Kuntzburger, Frédéric; and Magne, Jean-Claude, to Rhone-Poulenc Chimie. Preparation process for a microporous diaphragm and the diaphragm produced thereby. 5,547,550, Cl. 204-252.000.

Kuo, Chunge-De, to Kinpo Electroncis, Inc. Flickerproof retaining structure for a liquid crystal display having a frame below the seal. 5,548,430, Cl. 359-80.000.

Kuo, Hsin H. Flower vase. 5,547,721, Cl. 428-34.100.

Kuo, Mei-chang: *See—*
Rogers, Bruce L.; Morgenstern, Jay P.; Bond, Julian F.; Garman, Richard D.; Greenstein, Julia L.; Kuo, Mei-chang; and Morville, Malcolm, 5,547,669, Cl. 424-185.100.

Kuo, Ming-Shish. Compass able to draw any-size ellipses. 5,546,664, Cl. 33-30.300.

Kupershmidt, Vladimir; Kouchnir, Mikhail; and Petersen, Robert, to Sunshine Medical Instruments, Inc. Multiple wavelength polarization-modulated ellipsometer with phase-generated carrier. 5,548,404, Cl. 356-368.000.

Kuramoto, Shinichi; Takahashi, Sadao; Kimura, Yoshiyuki; Ando, Kazuhiro; Saito, Tadashi; Asaba, Youichi; Tanikawa, Kiyoshi; Miyashita, Yoshiaki; and Shinguryo, Satoshi, to Ricoh Company, Ltd. Method for using image support regeneratively and tool for forming image on image support. 5,547,793, Cl. 430-97.000.

Kuraya, Michinori: *See—*
Tokunaga, Terumitsu; and Kuraya, Michinori, 5,548,032, Cl. 525-352.000.

Kurby, Christopher N.: *See—*
Olds, Keith A.; and Kurby, Christopher N., 5,548,800, Cl. 455-12.100.

Kureha Chemical Industry Co., Ltd.: *See—*
Niimura, Koichi; Ando, Takao; Nitta, Toyohiko; and Ikeda, Yuko, 5,547,973, Cl. 514-399.000.

Kuretake, Masato; Zushi, Takayasu; Kitagawa, Motonobu; Yamakawa, Kazuhiko; Okamoto, Yoshimi; and Uda, Sawayo, to Takata Corporation. Air bag and air bag device. 5,547,218, Cl. 280-743.100.

Kuribayashi, Tetsuya, to Canon Kabushiki Kaisha. Developer carrying member, developing device unit. 5,547,724, Cl. 428-35.800.

Kuribayashi, Toshiaki: *See—*
Koganei, Katsuya; Nomura, Takeshi; Kuribayashi, Toshiaki; and Umemoto, Noboru, 5,547,597, Cl. 508-409.000.

Kurihara, Hideshi: *See—*
Kinsho, Takeshi; Kaneko, Tatsushi; Shimizu, Takaaki; Ogihara, Tsutomu; Saito, Ryuichi; and Kurihara, Hideshi, 5,547,606, Cl. 252-299.610.

Kurihara, Kazuo: *See—*
Sasaki, Yasuo; Fukuyama, Munekatsu; and Kurihara, Kazuo, 5,548,453, Cl. 360-67.000.

Kurihara, Noriyuki: *See—*
Iida, Yoshikatsu; Kurihara, Noriyuki; and Suzuki, Toshio, 5,546,919, Cl. 123-682.000.

Kurihara, Ryoichi: *See—*
Takekuma, Toshitsugu; Kurihara, Ryoichi; and Yamagiwa, Akira, 5,548,226, Cl. 326-30.000.

Kuriyama, Mitso: *See—*
Siga, Masao; Kuriyama, Mitso; Mori, Takanobu; Fukui, Yutaka; and Ishizuka, Tatsuro, 5,548,174, Cl. 310-261.000.

Kuroda, Hirofumi: *See—*
Tsujii, Masahiko; Kuroda, Hirofumi; Furusawa, Yoshikazu; and Hirota, Katsuhiko, 5,547,580, Cl. 210-656.000.

Kuroda, Kenichi; Shiba, Kazuyoshi; and Matsuo, Akinori, to Hitachi, Ltd.; and Hitachi ULSI Engineering Corp. Nonvolatile memory device having source and drain of memory cells integrally formed with data-source lines. 5,548,146, Cl. 257-321.000.

Kuroda, Michio: *See—*
Sohma, Kenichi; Itoh, Kazuyuki; Kuroda, Michio; and Murakami, Tadayoshi, 5,547,369, Cl. 431-75.000.

Kuroda, Yasuyoshi: *See—*
Hasegawa, Fumihiko; Ohtani, Tatsuo; and Kuroda, Yasuyoshi, 5,547,415, Cl. 451-44.000.

Kuroki, Tadao: *See—*
Ohta, Yasuo; Kuroki, Tadao; and Oie, Yoshinobu, 5,547,626, Cl. 264-203.000.

Kurrle, Roland: *See—*
Seiler, Friedrich-Robert; Kurrle, Roland; and Langner, Klaus-Dieter, 5,547,852, Cl. 435-29.000.

Kurth, Inge; Brindoepke, Gerhard; and Marten, Manfred, to Hoechst Aktiengesellschaft. Aqueous, radiation-curable binder dispersions. 5,548,005, Cl. 523-414.000.

Kurth, Michael J.: *See—*
Bloemer, John M.; Kurth, Michael J.; Bengtson, Alan D.; Giese, Robert C.; Dannenberg, Todd D.; Thomas, Carter J.; Potter, Edwin R., Jr.; Bonnell, Thomas A.; Halloran, Daniel N.; and Clarke, Thomas W., 5,546,616, Cl. 4-541.200.

Kurtz, James H., Jr.: *See—*
Murphy, Peter F.; Kurtz, James H., Jr.; Whitehead, Ross; and Szasz, David A., 5,547,103, Cl. 220-709.000.

Kurz, Gerhard: *See—*
Gimmler, Helmut; Nester, Ulrich; Kurz, Gerhard; and Huhn, Werner, 5,546,793, Cl. 73-116.000.

Kusagaya, Yasuo: *See—*
Tanaka, Shigeo; Yamazaki, Hiroshi; Kotabe, Noriko; Sugiyama, Koichi; Sato, Makoto; Katsuyama, Akira; Osakabe, Yoshio; and Kusagaya, Yasuo, 5,548,725, Cl. 395-200.050.

Kusano, Katsuya: *See—*
Terao, Tadayoshi; and Kusano, Katsuya, 5,546,754, Cl. 62-133.000.

Kushibiki, Nobuo; Sugata, Yoko; and Suzuki, Toshio, to Dow Cornings Asia, Ltd. Method for the preparation of organic solvent-soluble polytitanosiloxanes. 5,548,050, Cl. 528-9.000.

Kusumoto, Shoichi; Fukase, Koichi; and Hase, Sumihiro, to Seikagaku Kogyo Kabushiki Kaisha. Method of producing a conjugate utilizing a 2-amino-pyridine compound. 5,548,077, Cl. 536-55.300.

Kutschenreuter, Paul H., Jr., to General Electric Company. Scramjet combustor having a two-part, aft-facing step with primary and secondary fuel injector discharge orifices. 5,546,745, Cl. 60-270.100.

Kuwana, Takaaki: *See—*
Yamato, Tsutomu; Oshino, Yasuhiro; Fukuda, Yutaka; Kanno, Tatsuya; Kuwana, Takaaki; and Okano, Yoshimichi, 5,548,041, Cl. 526-62.000.

Kuwata, Takeshi; Ruckmongathan, Temkar N.; Nakagawa, Yutaka; Koh, Hidemasa; Nakazawa, Akira; Ohnishi, Takanori; and Ihara, Satoru, to Asahi Glass Company Ltd. Method of driving display element and its driving device. 5,548,302, Cl. 345-89.000.

Kvaerner Pulping Technologies AB: *See—*
Richter, Ole, 5,547,570, Cl. 210-209.000.

Kvarnberg, Lee: *See—*
McRoberts, Samuel J.; and Kvarnberg, Lee, 5,547,466, Cl. 602-70.000.

KVP Systems, Inc.: *See—*
Palmaer, Karl V.; and Palmaer, Eric K., 5,547,071, Cl. 198-853.000.

Kwon, Chul-Ho, to Goldstar Co., Ltd. Microwave oven having rotary grill heater. 5,548,102, Cl. 219-685.000.

Kwon, Sang-Chul, to Samsung Electronics Co., Ltd. Gradation data method processing including repeated reading and recording of high density data. 5,548,319, Cl. 347-183.000.

Kwon, Yool, to LG Electronics Inc. Edge extracting method and apparatus using diffusion neural network. 5,548,662, Cl. 382-158.000.

Kwon, Young-Moo: *See—*
Kim, Hyoung-Gon; Kwon, Young-Moo; and Lee, Young Hoon, 5,548,270, Cl. 340-146.200.

Kwon-Joh, Joong: *See—*
Kim, SooKyung; Kwon-Joh, Joong; and Lee, WeonKyoo, 5,548,410, Cl. 358-341.000.

Kyba, Evan P.: *See—*
Holloman, Edward C.; Kyba, Evan P.; and Park, Joon S., 5,547,663, Cl. 424-78.040.

Kyocera Corporation: *See—*
Furuzawa, Akira; Sata, Akifumi; Kubota, Takeshi; and Shikata, Kunihide, 5,547,908, Cl. 501-136.000.

Kyoda, Tadashi: *See—*
Ogura, Toshihiko; Aotsu, Hiroaki; Kimura, Koichi; Enomoto, Hiromichi; and Kyoda, Tadashi, 5,548,744, Cl. 395-494.000.

Kyrtsos, Christos T.: *See—*
Gudat, Adam J.; Rao, Prithvi N.; Shaffer, Gary K.; Shi, Wenfan; Shin, Dong H.; Sennott, James W.; Whittaker, William L.; Kleimenhagen, Karl W.; West, Jay H.; Clow, Richard G.; Wu, Baoxin; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,548,516, Cl. 364-443.000.

L.A. Gear, Inc.: *See—*
Goldston, Mark R.; Bemis, Jon L.; and Robinson, William J., 5,546,681, Cl. 36-137.000.

La Jolla Cancer Research Foundation: *See—*
Ruoslahti, Erkki I.; Pierschbacher, Michael D.; and Gehlsen, Kurt R., 5,547,936, Cl. 514-12.000.

Laakso, Kalevi: *See—*
Alajääski, Timo; Laakso, Kalevi; Laine, Antero; and Ljokkoi, Risto, 5,547,083, Cl. 209-273.000.

Laakso, Richard O.: *See—*
Marcoccia, Bruno S.; Prough, J. Robert; Laakso, Richard O.; Phillips, Joseph R.; Ryham, Rolf C.; Richardsen, Jan T.; and Chasse, R. Fred, 5,547,012, Cl. 162-42.000.

LaBruzza, Gabriel M., to Color & Design Exhibits. Panel assembly system. 5,546,720, Cl. 52-587.100.

Lack, Clarence A. Wedged tiewire assembled plyform panel to I-beam stakes. 5,547,163, Cl. 249-5.000.

Lacombe, Alain; and Rouges, Jean-Michel, to Societe Europeenne de Propulsion. Method of manufacturing thermal shielding elements for space planes. 5,547,628, Cl. 264-257.000.

Lacore, Ernest H.; and Weaver, Thomas S., to Wecor. Shock cord hooks. 5,546,639, Cl. 24-265.00H.

LaCrosse Footwear, Inc.: *See—*
Barma, Tarachand S.; and Baier, John L., 5,546,680, Cl. 36-108.000.

Ladew, Richard: *See—*
Chen, Chorng-Jeou; Ladew, Richard; Qiu, Yong-Jian; and Mevissen, Jeffrey, 5,548,474, Cl. 361-313.000.

Lagoutte, Pierre; and Blanchard, Alain, to Thomson-CSF. Inter-terminal telecommunications network for the transmisson of data by packets. 5,548,585, Cl. 370-60.000.

Lagsdin, Andry. Stabilizer pad for vehicles. 5,547,220, Cl. 280-763.100.

Laherty, Mark E. Electrical plug securing device. 5,547,390, Cl. 439-373.000.

Lai, Konrad K.: *See—*
Wang, Wen-Hann; and Lai, Konrad K., 5,548,742, Cl. 395-455.000.

Lai-Chau, Lin. Leakage voltage inductor. 5,548,465, Cl. 361-44.000.

Laine, Antero: *See—*
Alajääski, Timo; Laakso, Kalevi; Laine, Antero; and Ljokkoi, Risto, 5,547,083, Cl. 209-273.000.

L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation des Procedes Georges Claude: *See—*
Fassbinder, Hans-Georg, 5,547,016, Cl. 165-9.400.
Nagamura, Takashi; and Tomita, Shinji, 5,546,765, Cl. 62-643.000.

Lake, Jared L. Whole house humidifier for use with hot air heating systems. 5,546,926, Cl. 126-113.000.

Lake Region Manufacturing Company, Inc.: *See—*
Thorud, Michael S.; and Assell, Robert L., 5,546,958, Cl. 128-772.000.

Lamb, Leon; and Redd, John A. Truck cover protector. 5,547,243, Cl. 296-98.000.

170–653 O.G.–96–29: QL3

Lambert, Michael. Combined canoe carrier and chair. 5,547,246, Cl. 297-129.000.
Lamm, Gunther: *See*—
Lange, Arno; Degen, Helmut; Lamm, Gunther; Reichelt, Helmut; and Wegerle, Dieter. 5,547,477, Cl. 8-639.000.
Lamson & Sessions Co., The: *See*—
Bank, Michael D.; and Hawkins, Thomas W., 5,547,230, Cl. 285-110.000.
Lancaster, Patrick R., III: *See*—
Newell, Gregory A.; George, Randy R.; Lancaster, Patrick R., III; and Janes, Robert D., 5,546,730, Cl. 53-399.000.
Lancelot, Pierre, to Eurofours S.A. Oven door. 5,546,927, Cl. 126-194.000.
Landfors, Johan, to Eka Nobel AB. Process for purification and recycle of solutions. 5,547,542, Cl. 162-29.000.
Landin-Olsson, Mona: *See*—
Hagopian, William; Lernmark, Ake; Karlsen, Allan E.; and Landin-Olsson, Mona, 5,547,847, Cl. 435-7.400.
Lang, Gregory J.; and Marjanski, George C., to Morton International, Inc. Press-on inflator mount. 5,547,213, Cl. 280-728.200.
Lang, Hans-Jochen: *See*—
Weichert, Andreas; Kleemann, Heinz-Werner; Lang, Hans-Jochen; Schwark, Jan-Robert; Albus, Udo; and Scholz, Wolfgang, 5,547,953, Cl. 514-226.500.
Langan, Joseph W.: *See*—
Mitchell, Nancy G.; Langan, Joseph W.; Shipston, Adele C.; Russ, Timothy J.; and Smith, Douglas M., 5,547,738, Cl. 428-195.000.
Lange, Arno; Degen, Helmut; Lamm, Gunther; Reichelt, Helmut; and Wegerle, Dieter, to BASF Aktiengesellschaft. Dye mixtures with pyridoneazo dyes. 5,547,477, Cl. 8-639.000.
Lange, Ekkehard: *See*—
Gleissner, Karlheinz; Ringelstein, Hans-Martin; and Lange, Ekkehard, 5,547,625, Cl. 264-122.000.
Lange, Klaus-Peter; and Janouch, Peter, to Braun Aktiengesellschaft. Air-moving appliance for drying or styling hair. 5,546,674, Cl. 34-97.000.
Langendorf, Brian K., to Intel Corporation. Method and apparatus for streamlined handshaking between state machines. 5,548,767, Cl. 395-775.000.
Langer, Alexander G. Fishing line and reel. 5,546,695, Cl. 43-44.980.
Langer, Robert S.: *See*—
Pliquett, Uwe; Prausnitz, Mark R.; Weaver, James C.; and Langer, Robert S., 5,547,467, Cl. 604-20.000.
Langner, Klaus-Dieter: *See*—
Seiler, Friedrich-Robert; Kurrle, Roland; and Langner, Klaus-Dieter, 5,547,852, Cl. 435-29.000.
Lanigan, William T.; and Carra, Robert. Back brace. 5,547,462, Cl. 602-19.000.
Lansbergen, Adrianus J.; and Schijf, Robert, to Van Den Bergh Foods Co. Division of Conopco Inc. Edible fats. 5,547,698, Cl. 426-602.000.
Lantech, Inc.: *See*—
Newell, Gregory A.; George, Randy R.; Lancaster, Patrick R., III; and Janes, Robert D., 5,546,730, Cl. 53-399.000.
Lanzetta, Alphonso P.: *See*—
Feger, Claudius; Graham, Teresita O.; Grebe, Kurt R.; Lanzetta, Alphonso P.; Liutkus, John J.; Matthew, Linda C.; Palmer, Michael J.; Tanner, Nelson R.; Tong, Ho-Ming; Wilson, Charles H.; and Yeh, Helen L., 5,546,655, Cl. 29-846.000.
Lao, Kenneth Q.: *See*—
Wah Lo, Allen K.; and Lao, Kenneth Q., 5,548,362, Cl. 354-114.000.
Lapinski, Charles; Eckert, Charles; Skokowski, Richard; Cox, James; Scott, William; Chaleff, Edward; and Wagh, Meghanad D., to Accu-Sort Systems, Inc. Scanner for reconstructing optical codes from a plurality of code fragments. 5,548,107, Cl. 235-462.000.
Lapp, Otto; Schmuck, Arno; Schmidt, Wolfgang; and Siegel, Jörg, to Agfa Gevaert AG. Colour print material with variable gradation. 5,547,818, Cl. 430-505.000.
Larsen, Flemming: *See*—
Larsen, Jarl F.; and Larsen, Flemming, 5,547,153, Cl. 248-76.000.
Larsen, Jarl F.; and Larsen, Flemming, to Ole Bjerre. Protector for a hose and a hose provided with such protector. 5,547,153, Cl. 248-76.000.
Larsen, Scott: *See*—
Hinchliffe, Peter W. J.; Pappalardo, Dawn J.; Larsen, Scott; Tovey, Ian J.; and McDonnell, Christopher, 5,547,463, Cl. 602-20.000.
Larshus, David A.: *See*—
Fisch, Richard S.; and Larshus, David A., 5,548,317, Cl. 347-171.000.
Larson, Susan L.; Voigt, Douglas L.; Messinger, Steven D.; and Jacobson, Michael B., to Hewlett-Packard Company. Data storage system and method for managing asynchronous attachment and detachment of storage disks. 5,548,712, Cl. 395-182.050.
Larsson, Bo E. S.; and Sanchez, Iván M., to Telefonaktiebolaget LM Ericsson. System for taking backup in a data base. 5,548,750, Cl. 395-600.000.
Lascurain, David P.: *See*—
Dutta, Indranath; and Lascurain, David P., 5,546,797, Cl. 73-150.00A.
Laskaris, Evangelos T.; and Herd, Kenneth G., to General Electric Company. Superconducting rotor for an electrical machine. 5,548,168, Cl. 310-52.000.
Lasker, Jeffrey M.: *See*—
McGillis, James M.; and Lasker, Jeffrey M., 5,548,788, Cl. 395-851.000.
Lassig, Stephan E.: *See*—
Husain, Anwar; Kotecki, David E.; Lassig, Stephan E.; Olson, Kurt A.; and Ricci, Anthony J., 5,548,470, Cl. 361-234.000.
Last, Harry J. Anti-cavitation manifold for drive coupled, dual motor, reversible hydraulic drive systems. 5,546,751, Cl. 60-424.000.
Lathrop, Kim N. High performance swim goggle structure. 5,546,611, Cl. 2-428.000.
Latshaw, Ricky J., to Purdy Neat Things Company, Inc. Modular wheeled luggage system, wheeled luggage, garment bag and connector for same. 5,547,052, Cl. 190-108.000.
Lau, Lilip: *See*—
Williams, Michael S.; Lau, Lilip; Khosravi, Farhad; Hartigan, William; and Hernando, Avegel, 5,546,646, Cl. 29-407.080.
Lauffenberger, Kenneth A.: *See*—
Bailey, Chase B.; Fosmark, Klaus S.; Lauffenberger, Kenneth A.; Perry, William A.; and Dibble, Kevin S., 5,548,587, Cl. 370-60.100.
Laurash, David F.; Huddleston, Joey V.; Konkol, Patrick A.; Hartke, Jeffery J.; and Skees, Hugh B., to Standard Register Company, The. Laminated label form with removable portions. 5,547,227, Cl. 283-81.000.
Lavender, Donald C., to GDS Seating, Inc. Retractable armrest. 5,547,257, Cl. 297-411.320.
Lavoie, Alvin C.; Bors, Daniel A.; and Brown, Ward T., to Rohm and Haas Company. Functionalization of polymers via enamine of acetoacetate. 5,548,024, Cl. 525-102.000.
Lawhorne, Charles S.; Lawhorne, Kerry B.; and Helyer, Laura M., to Athletic Images, Inc. Headband with ponytail-receiving feature. 5,546,603, Cl. 2-181.000.
Lawhorne, Kerry B.: *See*—
Lawhorne, Charles S.; Lawhorne, Kerry B.; and Helyer, Laura M., 5,546,603, Cl. 2-181.000.
Lawrence, William R.: *See*—
Ballard, John H.; Cooper, Stafford S.; Morgan, John C.; Lawrence, William R.; and Reed, Bobby E., 5,548,115, Cl. 250-253.000.
Lay, Norman K.: *See*—
Gudat, Adam J.; Rao, Prithvi N.; Shaffer, Gary K.; Shi, Wenfan; Shin, Dong H.; Sennott, James W.; Whittaker, William L.; Kleimenhagen, Karl W.; West, Jay H.; Clow, Richard G.; Wu, Baoxin; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,548,516, Cl. 364-443.000.
Lazarus, David B.: *See*—
Ellis, Michael D.; and Lazarus, David B., 5,548,338, Cl. 348-473.000.
Leaf, David T. Chill separation system. 5,546,762, Cl. 62-532.000.
Leary, Michael: *See*—
Cooper, Elizabeth M.; and Leary, Michael, 5,548,553, Cl. 365-200.000.
Lebens, Michael R.: *See*—
Fischer, Meir; Lebens, Michael R.; and Chaleff, Deborah T., 5,548,068, Cl. 530-399.000.
Leblans, Paul; Adriaensens, Albert D.; Tecotzky, Melvin; and Van den Bogaert, Jan A., to AGFA-Gevaert, N.V. Photostimulable phosphors. 5,547,807, Cl. 430-139.000.
Lebrun, Eric; Francois, Pascal; Raimbault, Frederic; and Warren, Jeff, to International Business Machines Corporation. System for effective allocation of network-wide bandwidth. 5,548,579, Cl. 370-16.000.
Leco Corporation: *See*—
Chen, Ching-Fong; and Guerra, Carlos, 5,547,876, Cl. 436-159.000.
Lee, Adam T.; Wu, Kuang; and Burton, Larry, to Glitsch, Inc. Apparatus for increasing effective active area. 5,547,617, Cl. 261-114.500.
Lee, Bernard W. N.; and Turton, John, to Lee, Bernard W. N. Film cassete spool with exposure indicator. 5,548,368, Cl. 354-275.000.
Lee, Byeong-yong, to Samsung Display Devices Co., Ltd. Method of manufacturing color cathode ray tube screen. 5,547,411, Cl. 445-52.000.
Lee, Chi-Yuan. Locking device for the automatic shift lever of a car. 5,546,775, Cl. 70-201.000.
Lee, Christopher: *See*—
Engel, Stephen J.; Jeffries, Clark; and Lee, Christopher, 5,548,683, Cl. 395-21.000.
Lee, Don: *See*—
Hawes, John M.; Sims, Joe W.; and Lee, Don, 5,546,643, Cl. 26-11.000.
Lee, El-Hang: *See*—
Shin, Jong-Dug; Kang, Cheul-Shin; and Lee, El-Hang, 5,548,431, Cl. 359-119.000.
Lee, Eung H., to Samsung Electronics Co., Ltd. Microwave oven with a function of induction heating and the control method thereof. 5,548,101, Cl. 219-601.000.
Lee, Eung-Hwa, to Samsung Electronics Co., Ltd. Apparatus and method for controlling illumination of lamp. 5,548,188, Cl. 315-156.000.
Lee, Ho-Chul, to Samsung Electronics Co., Ltd. Method and apparatus for forming a lubricant, conducting groove in a cylindrical surface of a bearing member. 5,546,780, Cl. 72-75.000.
Lee, Hsing-Chung: *See*—
Grodzinski, Piotr; Lee, Hsing-Chung; and Shieh, Chan-Long, 5,547,898, Cl. 437-129.000.
Lee, Hyun-Jun: *See*—
Gahang, Gu-Su; Song, Bong-Seog; Lee, Hyun-Jun; and Ahn, Ju-Yeong, 5,548,634, Cl. 379-97.000.
Lee, John R.: *See*—
Gunday, Erhan H.; Doliton, Michael; Foung, Paul; and Lee, John R., 5,548,327, Cl. 348-97.000.
Lee, Kee S.; Kim, Won G.; and Park, Yeong J., to Daewoo Heavy Industries Ltd. Arm position control device for use in an industrial robot. 5,548,193, Cl. 318-568.110.

Lee, Keun-Byung, to Samsung Electronics Co., Ltd. Door opening/closing apparatus for a washing machine. 5,546,773, Cl. 68-196.000.
Lee, Ki-bang, to Samsung Electronics Co., Ltd. Inkjet printing head. 5,548,313, Cl. 347-68.000.
Lee, Kiu H.: *See*—
Cann, Kevin J.; Hussein, Fathi D.; Zilker, Daniel P., Jr.; and Lee, Kiu H., 5,548,040, Cl. 526-62.000.
Lee, Kyung I.: *See*—
Kim, Jun K.; and Lee, Kyung I., 5,547,901, Cl. 437-187.000.
Lee, Sang-won: *See*—
Choi, Kwi-seok; Choi, Jong-seo; Shon, Kyung-cheon; Ju, Gyu-nam; and Lee, Sang-won, 5,548,184, Cl. 313-346.00R.
Lee, Seng-Go: *See*—
Cho, Soon-Haeng; Chue, Kuck-Tack; Kim, Jong-Nam; Kim, Kwon-Il; You, Youn-Jong; and Lee, Seng-Go, 5,547,492, Cl. 95-100.000.
Lee, Seung K., to Daewoo Heavy Industries Ltd. Canopy mounting device for a skid steer loader. 5,547,244, Cl. 296-102.000.
Lee, Sun G., to Samsung Electronics Co., Ltd. Refrigerator having a vegetable compartment and a separate kimchi chamber. 5,546,759, Cl. 62-441.000.
Lee, Sung-Soo; and Kim, Jin-Ki, to Samsung Electronics Co., Ltd. Method and circuit for repairing defect in a semiconductor memory device. 5,548,555, Cl. 365-200.000.
Lee, Victor Y.: *See*—
Fukuzawa, Tadashi; Kano, Satoru S.; Kumata, Kiyoshi; Lee, Victor Y.; Schellenberg, Franklin M.; and Takahashi, Yutaka, 5,547,705, Cl. 427-162.000.
Lee, WeonKyoo: *See*—
Kim, SooKyung; Kwon-Joh, Joong; and Lee, WeonKyoo, 5,548,410, Cl. 358-341.000.
Lee, William G.: *See*—
Simon, Gabriel; Lee, William G.; and Parel, Jean-Marie A., 5,547,468, Cl. 604-21.000.
Lee, Yong-hee, to Samsung Electronics Co., Ltd. Metal oxide semiconductor transistor and a method for manufacturing the same. 5,548,143, Cl. 257-269.000.
Lee, Young Hoon: *See*—
Kim, Hyoung-Gon; Kwon, Young-Moo; and Lee, Young Hoon, 5,548,270, Cl. 340-146.200.
Leeds, Darryl T.: *See*—
Berger, John G.; Long, Robert E.; and Leeds, Darryl T., 5,547,039, Cl. 180-287.000.
Leeper, William A.: *See*—
Tsuda, George I.; Haeger, Thomas A.; and Leeper, William A., 5,548,299, Cl. 343-789.000.
Leffel, Kevin L.: *See*—
Adams, Lowell J.; Leffel, Kevin L.; Tenison, Gary V.; and Weisend, Norbert A., Jr., 5,547,150, Cl. 244-134.00R.
Ronyak, David M; and Leffel, Kevin L., 5,546,880, Cl. 112-475.010.
Legrand: *See*—
Decore, Bertrand; and Jadaud, Alain, 5,547,307, Cl. 403-294.000.
Legrand SNC: *See*—
Decore, Bertrand; and Jadaud, Alain, 5,547,307, Cl. 403-294.000.
Le Guyader, Hervé, to Etat Francais represented by the Delegue General Pour L'Armement. Consumable anode for cathodic protection, made of aluminum-based alloy. 5,547,560, Cl. 205-732.000.
Leifeld, Ferdinand, to Trützschler GmbH & Co. KG. Apparatus for cleaning and opening fiber tufts. 5,546,635, Cl. 19-200.000.
LeLand Stanford Junior University: *See*—
Cohen, Clark E., 5,548,293, Cl. 342-357.000.
Lembke, Torbjörn: *See*—
Conrad, Armin; and Lembke, Torbjörn, 5,547,338, Cl. 415-90.000.
Lemelson, Jerome H. Machine security systems. 5,548,660, Cl. 382-116.000.
Lemischka, Ihor R., to Trustees of Princeton University, The. Tyrosine kinase receptor human flk-2-specific antibodies. 5,548,065, Cl. 530-388.220.
Lemson, Paul H., to Southwestern Bell Technology Resources, Inc. Spectrum sharing communications system and system for monitoring available spectrum. 5,548,809, Cl. 455-34.100.
Leneau, Harry; and Skelly, William G., to Central Biomedia, Inc. Failure of passive transfer immune serum and method of making same. 5,548,066, Cl. 530-390.500.
Leonard, James V.: *See*—
Ebert, William J.; Leonard, James V.; and Johnson, Jeffrey L., 5,548,510, Cl. 364-443.000.
Leonhardt, Michael L.: *See*—
Cheatham, Samuel D.; Jacobs, Lynn C.; Janssen, Donovan M.; Leonhardt, Michael L.; Milligan, Charles A.; and Todd, Christian A., 5,547,142, Cl. 242-338.100.
Leonhardt, William G. Foldable shelter. 5,546,971, Cl. 135-127.000.
Le Pape, Yannick L.: *See*—
Sehier, Philippe R.; and Le Pape, Yannick L., 5,548,618, Cl. 375-343.000.
Lernmark, Ake: *See*—
Hagopian, William; Lernmark, Ake; Karlsen, Allan E.; and Landin-Olsson, Mona, 5,547,847, Cl. 435-7.400.
Lessmoellmann, Christoph: *See*—
Bartels, Frank; Bachtler, Wulf; Dunne, Stephen T.; Eicher, Joachim; Freund, Bernhard; Hart, William B.; and Lessmoellmann, Christoph, 5,547,094, Cl. 216-33.000.
Leung, Frederick K.: *See*—
Michael, Martin S.; and Leung, Frederick K., 5,548,782, Cl. 395-835.000.
Leung, Mankong H.: *See*—
Skiver, Steven G.; and Leung, Mankong H., 5,546,888, Cl. 116-286.000.
Leung, Ting Y.; Pirahesh, Mir H.; and Seshadri, Praveen, to International Business Machines Corporation. System for optimizing correlated SQL queries in a relational database using magic decorrelation. 5,548,755, Cl. 395-600.000.
Leung, Ting Y.: *See*—
Pirahesh, Mir H.; Leung, Ting Y.; Lohman, Guy M.; Shekita, Eugene J.; and Simmen, David E., 5,548,754, Cl. 395-600.000.
Pirahesh, Mir H.; Leung, Ting Y.; Lohman, Guy M.; Shekita, Eugene J.; and Simmen, David E., 5,548,758, Cl. 395-600.000.
Levis, Jeffrey D., to Mountain Equipment, Inc. Inflatable lumbar support for backpack. 5,547,461, Cl. 602-19.000.
Lewis, Anthony: *See*—
Lewis, Dan; and Lewis, Anthony, 5,546,928, Cl. 126-214.00D.
Lewis, Dan; and Lewis, Anthony. Grease splatter guard. 5,546,928, Cl. 126-214.00D.
Lewis, Harold F.: *See*—
Komarek, James A.; Minney, Jack L.; Nordine, Stephen P.; Lewis, Harold F.; Wada, Richard; and Stockman, John F., 5,548,592, Cl. 370-85.100.
Lewis, Jerry D.: *See*—
Arimilli, Ravi K.; Dodson, John S.; and Lewis, Jerry D., 5,548,797, Cl. 395-880.000.
Lewis, John K.: *See*—
Abbema, Wiliam D.; and Lewis, John K., 5,547,228, Cl. 285-22.000.
LG Electronics Co., Ltd.: *See*—
Kim, SooKyung; Kwon-Joh, Joong; and Lee, WeonKyoo, 5,548,410, Cl. 358-341.000.
LG Electronics Inc.: *See*—
Kim, Key H., 5,548,339, Cl. 348-525.000.
Kwon, Yool, 5,548,662, Cl. 382-158.000.
Park, Hee B., 5,548,344, Cl. 348-726.000.
Lg Semicon Co., Ltd.: *See*—
Kim, In, 5,547,883, Cl. 437-40.000.
Kim, Jun K.; and Lee, Kyung I., 5,547,901, Cl. 437-187.000.
Li, Shih-Gong; and Shrader, Theodore J. L., to International Business Machines Corporation. Scrolling a target window during a drag and drop operation. 5,548,702, Cl. 395-155.000.
Li, Y. Christian; Poleshuk, Edward S.; and McMordie, James R., to Gilbarco, Inc. Check valve. 5,546,981, Cl. 137-493.300.
Liang, Fa-Kuang. Exercising apparatus for twisting exercises. 5,547,447, Cl. 482-146.000.
Liang, Joseph. Spring loaded luggage handle. 5,547,053, Cl. 190-115.000.
Liang, Louis H.; Marinello, Daniel A.; and Ryan, William J., to Angstrom Technologies, Inc. Methods and apparatus for authenticating data storage articles. 5,548,106, Cl. 235-454.000.
Liang, Mong-Song: *See*—
Wuu, Shou-Gwo; Liang, Mong-Song; Su, Chung-Hui; and Wang, Chen-Jong, 5,547,892, Cl. 437-52.000.
Liberty Technologies, Inc.: *See*—
Heiman, Stephen M., 5,546,817, Cl. 73-862.333.
Licari, Yaffa. Device for holding flatware and utensils. 5,547,087, Cl. 211-41.000.
Lie, William: *See*—
Rock, Moshe; Lumb, Douglas; and Lie, William, 5,547,733, Cl. 428-91.000.
Liebermann, George: *See*—
Saban, Marko; Liebermann, George; and McAneney, Thomas B., 5,548,043, Cl. 526-84.000.
Life Technologies, Inc.: *See*—
Nisson, Paul E.; and Sacchi, Nicoletta, 5,547,838, Cl. 435-6.000.
Ligier, John D.: *See*—
Wernersbach, Arthur W., Jr.; Skaritka, John R.; Yager, Billy P.; Barrick, Rodney R.; and Ligier, John D., 5,547,532, Cl. 156-172.000.
Liles, Donald T.; and Murray, David L., to Dow Corning Corporation. Trialkyl endcapped polyorganosiloxane emulsions. 5,548,021, Cl. 524-837.000.
Lilja, Lars; and Enroth, Ulf. Fastening member for fastening an object such as a net, a steel wire, cable or the like to a carrier such as a post. 5,547,322, Cl. 411-60.000.
Lillelund, Stig; Heiberg, Jakob; and Daenen, Robert H. C. M., to Dart Industries Inc. Shaker and blender. 5,547,275, Cl. 366-130.000.
Lim, Jun Y., to Goldstar Co., Ltd. Switched reluctance motor driving circuit. 5,548,196, Cl. 318-701.000.
Limberg, Allen L.: *See*—
Patel, Chandrakant B.; and Limberg, Allen L., 5,548,617, Cl. 375-316.000.
Lin, Chih-Lung: *See*—
Liu, Chao-Ming; and Lin, Chih-Lung, 5,546,777, Cl. 70-257.000.
Lin, Fu-Kuen, to Kirin-Amgen, Inc. Production of erythropoietin. 5,547,933, Cl. 514-8.000.
Lin, Jengping, to United Microelectronics Corporation. Method of fabricating a self-aligned contact using a liquid-phase oxide-deposition process. 5,547,900, Cl. 437-187.000.
Lin, Jyhfong: *See*—
Zhang, Zhong-Xuan; Lin, Jyhfong; and Wang, Yun-Ti, 5,548,238, Cl. 327-374.000.
Lin, Steve. Deck chair assembly. 5,547,258, Cl. 297-440.220.

Lin, Tsen-Hwang; and Malarcher, Falvey, to Texas Instruments Incorporated. Parallel processing system with programmable optical interconnects. 5,548,772, Cl. 395-800.000.
Lin, Wang-Hsing: *See*—
Sun, Min-Hsiung; and Lin, Wang-Hsing, 5,546,776, Cl. 70-233.000.
Lin, Yeong-Bin. Hair clip. 5,546,966, Cl. 132-279.000.
Lindenthal, Hans; and Grawenhof, Peter, to J.M. Voith GmbH. Universal joint of a cardan shaft suited for transmission of high torques. 5,547,423, Cl. 464-136.000.
Linder, Heinz: *See*—
Merkli, Peter; and Linder, Heinz, 5,547,177, Cl. 270-52.050.
Lindquist, David B.: *See*—
Baum, Richard I.; Brent, Glen A.; Gibson, Donald H.; and Lindquist, David B., 5,548,769, Cl. 395-800.000.
Lindquist, Roger D.: *See*—
Lorang, Malcolm M.; and Lindquist, Roger D., 5,548,814, Cl. 455-38.100.
Linear Technology Corp.: *See*—
Williams, James M., 5,548,189, Cl. 315-224.000.
Linehan, Leo: *See*—
Collins, James P.; Dorn, Judy; Fahey, James T.; Linehan, Leo; Miller, William J.; Moreau, Wayne; Puttlitz, Erik A.; Smith, Randolph; and Spinillo, Gary, 5,547,812, Cl. 430-270.100.
Linenberg, Mark T.: *See*—
Messih, Isis A.; and Linenberg, Mark T., 5,546,910, Cl. 123-492.000.
Linko, Pekka: *See*—
Outinen, Marko T.; Tossavainen, Olli; Harju, Matti; and Linko, Pekka, 5,547,687, Cl. 426-2.000.
Linkow, Leonard I. Apparatus and method for closing a sinus opening during a dental implant operation. 5,547,378, Cl. 433-173.000.
Linn, Jack H.; Gasner, John T.; Gaul, Stephen J.; and McCarty, Chris A., to Harris Corporation. Direct etch for thin film resistor using a hard mask. 5,547,896, Cl. 437-60.000.
Linstead, Steven A.; and James, Gregory B., to Johnson Service Company. Automatic electronic mail notification of database events. 5,548,753, Cl. 395-600.000.
Liou, Jiunn-Fu: *See*—
Chou, Shu-Kuang; and Liou, Jiunn-Fu, 5,548,251, Cl. 331-57.000.
Liour, Shihn-Juh: *See*—
Wong, Chang-Ming; and Liour, Shihn-Juh, 5,547,364, Cl. 425-384.000.
Lipari, Charles: *See*—
Gsell, Thomas C.; Pascale, Frank R.; and Lipari, Charles, 5,547,108, Cl. 222-95.000.
Lipe, Ralph A., to Microsoft Corporation. System for storing executable code within a resource data section of an executable file. 5,548,759, Cl. 395-600.000.
Lipsch, Michael H.; Van Beek, Marinus J.; and Fung Kon Yin, John S., to Unilever Patent Holdings B.V. Zero fat whipped frozen dessert product. 5,547,697, Cl. 426-565.000.
Lipsius, Johann M.; and Auer, Wolfgang, to ABB Patent GmbH. Truck frame for a railborne vehicle. 5,546,867, Cl. 105-168.000.
Lisi, Marco: *See*—
Lo Forti, Raimondo; and Lisi, Marco, 5,548,295, Cl. 342-373.000.
Little, Ian: *See*—
Furseth, John P.; Heydrich, Frank; Hover, Forest H.; Little, Ian; Mackin, Steven G.; Stenard, Steven C.; Thompson, James L.; White, Ellen; and Wilson, Bruce D., 5,547,342, Cl. 415-200.000.
Littler, Edward: *See*—
Slater, Martin J.; Cockerill, George S.; Littler, Edward; and Yeates, Clive L., 5,547,976, Cl. 514-410.000.
Liu, Chao-Ming; and Lin, Chih-Lung. Remote-controlled lock device for motor vehicles. 5,546,777, Cl. 70-257.000.
Liu, Jiann: *See*—
Chatterjee, Amitava; Liu, Jiann; Mozumder, Purnendu; Rodder, Mark S.; and Chen, Ih-Chin, 5,548,548, Cl. 365-149.000.
Liu, Sunny. Hinge. 5,546,633, Cl. 16-278.000.
Liu, Takyiu: *See*—
Nguyen, Chanh; Liu, Takyiu; and Matloubian, Mehran, 5,548,140, Cl. 257-194.000.
Liutkus, John J.: *See*—
Feger, Claudius; Graham, Teresita O.; Grebe, Kurt R.; Lanzetta, Alphonso P.; Liutkus, John J.; Matthew, Linda C.; Palmer, Michael J.; Tanner, Nelson R.; Tong, Ho-Ming; Wilson, Charles H.; and Yeh, Helen L., 5,546,655, Cl. 29-846.000.
Ljokkoi, Risto: *See*—
Alajääski, Timo; Laakso, Kalevi; Laine, Antero; and Ljokkoi, Risto, 5,547,083, Cl. 209-273.000.
Lloyd, Scott E.; and Wang, Shay-Ping T., to Motorola, Inc. Method and system for storing data in a memory device. 5,548,752, Cl. 395-600.000.
Lockheed Martin: *See*—
Winfree, Don D.; and Hunter, Louis G., Jr., 5,546,744, Cl. 60-247.000.
Lockheed Martin Corporation: *See*—
Hollopeter, James E.; Estline, Tsvi H.; and Barton, Robert L., 5,546,651, Cl. 29-722.000.
Löffler, Gerhard, to Heidelberger Druckmaschinen AG. Method of controlling inking in a printing press. 5,546,861, Cl. 101-484.000.
Lo Forti, Raimondo; and Lisi, Marco, to Space Engineering Spa; and Alenia Spazio Spa. Multishaped beam direct radiating array antenna. 5,548,295, Cl. 342-373.000.
Logue, Delmar L. Thickness and hardness measurement apparatus utilizing a rotating induction vector. 5,548,212, Cl. 324-229.000.
Lohman, Guy M.: *See*—
Pirahesh, Mir H.; Leung, Ting Y.; Lohman, Guy M.; Shekita, Eugene J.; and Simmen, David E., 5,548,754, Cl. 395-600.000.
Pirahesh, Mir H.; Leung, Ting Y.; Lohman, Guy M.; Shekita, Eugene J.; and Simmen, David E., 5,548,758, Cl. 395-600.000.
Lohman, Terence J.: *See*—
Amini, Nader; Boury, Bechara F.; Brannon, Sherwood; Concilio, Ian A.; Hofmann, Richard G.; and Lohman, Terence J., 5,548,786, Cl. 395-842.000.
Lohr, Alan D.: *See*—
Voegele, William P., Jr.; Ramsey, Douglas A.; Lohr, Alan D.; and Kamphaus, Carl E., 5,546,713, Cl. 52-202.000.
Lohrman, Richard L.: *See*—
Neveras, George J.; McKinney, James C.; Sherman, Adam; Lohrman, Richard L.; and Ziegenhorn, David, 5,547,091, Cl. 215-237.000.
Lok, Roger: *See*—
Chen, Benjamin T.; and Lok, Roger, 5,547,827, Cl. 430-567.000.
Lokker, Natalie A.: *See*—
Godowski, Paul J.; Lokker, Natalie A.; and Mark, Melanie R., 5,547,856, Cl. 435-694.000.
Lombardo, Michael: *See*—
Heil, Fred; and Lombardo, Michael, 5,546,853, Cl. 99-447.000.
LoNegro, Rene; and Wells, Stuart, to Adra Systems, Inc. Method and system for design and drafting. 5,548,707, Cl. 395-161.000.
Long, Andre. Blast wiper for motor vehicle lights. 5,546,630, Cl. 15-313.000.
Long, Howard F. Stereophonic stethoscope. 5,548,651, Cl. 381-67.000.
Long Island Lighting Company: *See*—
Stolowicki, Ralph, 5,548,166, Cl. 307-50.000.
Long, Robert E.: *See*—
Berger, John G.; Long, Robert E.; and Leeds, Darryl T., 5,547,039, Cl. 180-287.000.
Longan, John: *See*—
Jané, Rodney B.; Bradley, Jerald A.; and Longan, John, 5,547,615, Cl. 261-24.000.
Jané, Rodney; Longan, John; Wang, Jui-Shang; and Gresens, Stanley, 5,547,343, Cl. 416-246.000.
Longwell, Michael V., to Upper Deck Company, The. Notch timing device and method for card slitting machine. 5,546,838, Cl. 83-37.000.
Lonza, Inc.: *See*—
Hall, Larry; Chiang, Michael Y.; and Meyer, Judith M., 5,547,990, Cl. 514-563.000.
Lorang, Malcolm M.; and Lindquist, Roger D., to Pagemart, Inc. Personal information management system with paging link. 5,548,814, Cl. 455-38.100.
Lord Corporation: *See*—
Weiss, Keith D.; Duclos, Theodore G.; Chrzan, Michael J.; and Yanyo, Lynn C., 5,547,049, Cl. 188-267.000.
Lordo, Richard J.: *See*—
Kaigler, William J.; and Lordo, Richard J., 5,546,934, Cl. 128-205.130.
L'Oreal: *See*—
Gagnebien-Cabanne, Francoise, 5,547,678, Cl. 424-401.000.
Hansenne, Isabelle; Forestier, Serge; and N'Guyen, Quang L., 5,547,658, Cl. 424-59.000.
Lorents, Donald C.: *See*—
Ruoff, Rodney S.; Lorents, Donald C.; Malhotra, Ripudaman; and Dyer, Mark J., 5,547,748, Cl. 428-323.000.
Lorenz, Johann: *See*—
Krumm, Herbert; Nordmann, Adolf; Ehrhardt, Johannes; Lorenz, Johann; and Stoffler, Günter, 5,546,844, Cl. 89-8.000.
Löschmann, Peter-Andreas: *See*—
Sauer, Gerhard; Brumby, Thomas; Wachtel, Helmut; Turner, Jonathan; and Löschmann, Peter-Andreas, 5,547,958, Cl. 514-288.000.
Lovett, David E.; and O'Brien, Richard, to Webber Manufacturing Co., Inc. Handle orienter for buckets. 5,547,335, Cl. 414-795.600.
Lowden, Gerald: *See*—
Barrows, Lawrence; Lowden, Gerald; Cassetta, Carmen; and Ozari, Yehuda, 5,547,725, Cl. 428-43.000.
Lowman, Richard M., Jr.: *See*—
Drummond, Michael T.; Hill, Calvin G.; Lowman, Richard M., Jr.; Suski, William C.; Roberts, Rodney W.; and Lowry, James W., 5,547,451, Cl. 493-299.000.
Lowry, James W.: *See*—
Drummond, Michael T.; Hill, Calvin G.; Lowman, Richard M., Jr.; Suski, William C.; Roberts, Rodney W.; and Lowry, James W., 5,547,451, Cl. 493-299.000.
Lozier, Barry A.: *See*—
Tantry, Subhash B.; Mashruwala, Rajesh U.; Lozier, Barry A.; and Hess, Richard L., 5,548,756, Cl. 395-600.000.
Lu, Dongfeng, to North Shore University Hospital Research Corporation. Flexible RF coils for MRI system. 5,548,218, Cl. 324-318.000.
Lucas Industries: *See*—
Cooke, Michael P., 5,546,906, Cl. 123-447.000.
Lucas Industries PLC: *See*—
Harris, Alan L.; and Turner, Dennis, 5,547,265, Cl. 303-10.000.
Lucas Industries public limited company: *See*—
Davies, Stephen H., 5,547,130, Cl. 239-265.290.
Lucent Technologies, Inc.: *See*—
Tsang, Won-Tien, 5,548,607, Cl. 372-50.000.
Zhou, Yong, 5,548,322, Cl. 348-14.000.

Luch, Daniel. Substrate structures for integrated series connected photovoltaic arrays and process of manufacture of such arrays. 5,547,516, Cl. 136-244.000.
Lucieer, Willem J.: *See*—
Kool, Anthonie F.; Van de Griendt, Michiel A.; de Bruin, Bas H.; Schepes, Gerardus N.; and Lucieer, Willem J., 5,548,397, Cl. 356-141.100.
Luckabaugh, Thelma J. Adjustable bridal train. 5,546,606, Cl. 2-217.000.
Luckevich, Mark; Johnson, Bernard W.; and Negrin, Dan, to Kelsey-Hayes Company. Method and system for antilock braking on a deformable surface. 5,547,267, Cl. 303-165.000.
Ludmann, Armin: *See*—
Adamek, Peter; Kopec, Eduard; and Ludmann, Armin, 5,546,900, Cl. 123-184.550.
Ludwig Institute for Cancer Research: *See*—
Nice, Edouard C.; James, R.; Simpson, R.; Burgess, A. W.; and Whitehead, Robert H., 5,547,940, Cl. 514-21.000.
Lueng, Bosco, to University of Waterloo. BiCMOS current cell and switch for digital-to-analog coverters. 5,548,288, Cl. 341-136.000.
Luette, Herman J., III: *See*—
Mackewich, Frank A., Jr.; and Luette, Herman J., III, 5,547,190, Cl. 273-84.00R.
Lukschandel, Jörg; Patzon, Rudolf; and Hassler, Jürgen, to Elektroschmelzwerk Kempten GmbH. Surface treatment of opening rollers for open end spinning. 5,547,709, Cl. 427-299.000.
Lumb, Douglas: *See*—
Rock, Moshe; Lumb, Douglas; and Lie, William, 5,547,733, Cl. 428-91.000.
Lummus Corporation: *See*—
Van Doorn, Donald W.; Hawkins, James B.; and Cory, Mark D., 5,546,855, Cl. 100-11.000.
Lundell, Edwin O.: *See*—
Dhaon, Madhup K.; Lundell, Edwin O.; Sarin, Virender K.; Baxter, Constance H.; and Absolom, Darryl R., 5,547,937, Cl. 514-12.000.
L'Unite Hermetique: *See*—
Bidaud, Francis; Benoit, Sylvain; Plisson, Jacques; Morizot, Gérard; Roth, Harald; and Huber, Adolf, 5,548,199, Cl. 318-802.000.
Luo, Lifeng: *See*—
Couch, Richard W., Jr; Luo, Lifeng; and Peterson, Jeffrey L., 5,548,097, Cl. 219-121.570.
Lusignan, Bruce B.; and Rezvani, Behruz, to KC Corporation. Solid state electric power usage meter and method for determining power usage. 5,548,209, Cl. 324-142.000.
Lust Antriebstechnik GmbH: *See*—
Lust, Karl-Heinz, 5,548,208, Cl. 324-117.00H.
Lust, Karl-Heinz, to Lust Antriebstechnik GmbH. Terminal for connecting live conductors. 5,548,208, Cl. 324-117.00H.
Luttrell, Tammy C.; and Hollendorfer, Paul, to DeRoyal Industries, Inc. Joint device. 5,547,464, Cl. 602-26.000.
Lutz, Raymond A.: *See*—
Beedy, Robert G.; and Lutz, Raymond A., 5,546,618, Cl. 5-725.000.
Lymberis, Dimitrios: *See*—
Lymberis, Vlasios; and Lymberis, Dimitrios, 5,546,697, Cl. 47-41.150.
Lymberis, Vlasios; and Lymberis, Dimitrios. Floral water tube for mounting a flower at a selected elevation. 5,546,697, Cl. 47-41.150.
Lyon, John C., to Dawe, David J.; and Munnelly, Philip A. Container assembly for waste. 5,547,097, Cl. 220-23.830.
M.A.G. Eng. & Mfg. Inc.: *See*—
Allenbaugh, Howard M., 5,547,239, Cl. 292-346.000.
Ma, Herman H., to SGS-Thomsom Microelectronics, Inc. Method and structure for synchronization of asynchronous signals. 5,548,622, Cl. 375-354.000.
Ma, Qi Y., to University of British Columbia, The. Fabrication of oxide superconductor devices and circuits by impurity ion implantation. 5,547,922, Cl. 505-325.000.
Ma, Zhu-ning: *See*—
Sun, Wei-Mei; Ma, Zhu-ning; Panitch, Maximo M.; and Galleguillos, Ramiro, 5,547,661, Cl. 424-66.000.
Maag Pump Systems AG: *See*—
Stehr, Roger; Blume, Peter; and Benetti, Marco, 5,547,356, Cl. 418-189.000.
Maccarrone, Marco: *See*—
Pascucci, Luigi; Padoan, Silvia; and Maccarrone, Marco, 5,548,554, Cl. 365-200.000.
MacDermid, Incorporated: *See*—
Kukanskis, Peter; Yakobson, Ernest; and Taytsas, Lev, 5,547,559, Cl. 205-125.000.
Machida, Hironobu: *See*—
Yoneda, Hitoshi; Hasegawa, Haruyoshi; Nosaki, Takefumi; Tanimoto, Koji; Machida, Hironobu; and Nakamura, Hajime, 5,548,666, Cl. 382-276.000.
Machida, Isao; Fujiura, Ryuji; Kojima, Takashi; and Sakamoto, Hitoshi, to Mitsubishi Gas Chemical Co., Ltd. Self-adhesive carbonaceous grains and high density carbon artifacts derived therefrom. 5,547,654, Cl. 423-445.00R.
Machida, Junji: *See*—
Yoshie, Naoki; and Machida, Junji, 5,547,799, Cl. 430-110.000.
Machida, Minoru: *See*—
Iida, Yoshimitsu; and Machida, Minoru, 5,547,943, Cl. 514-53.000.
Mack, Susan A.: *See*—
Higdon, William D.; Mack, Susan A.; and Cornell, Ralph E., 5,547,740, Cl. 428-209.000.
MacKay, Iain N. B. Lamp fixture with adjustable lamp socket. 5,548,500, Cl. 362-427.000.
Mackewich, Frank A., Jr.; and Luette, Herman J., III. Lighted nunchakus. 5,547,190, Cl. 273-84.00R.
Mackie, Thomas R.: *See*—
Swerdloff, Stuart; Mackie, Thomas R.; and Holmes, Timothy, 5,548,627, Cl. 378-4.000.
Mackin, Steven G.: *See*—
Furseth, John P.; Heydrich, Frank; Hover, Forest H.; Little, Ian; Mackin, Steven G.; Stenard, Steven C.; Thompson, James L.; White, Ellen; and Wilson, Bruce D., 5,547,342, Cl. 415-200.000.
MacLeod, David L.; Sayler, Jack M., Jr.; and Cooper, Lloyd B., to MacLeod, David L.; and Sayler, Jr., John M. Nail clipping and collecting device. 5,546,658, Cl. 30-28.000.
Madge Networks Limited: *See*—
Pearce, David, 5,548,280, Cl. 340-825.050.
Madler, Herman J. Rough terrain vehicle. 5,547,207, Cl. 280-104.000.
Madsen, Claus H., to CPS - Chemical Products & Services A/S. Apparatus for washing-down serigraphical frames and filterpart for the apparatus. 5,547,567, Cl. 210-167.000.
Madsen, Søren M.; and Stromvig, Jan, to Krüger Systems AS. Method for utilization of heat energy in a district heating network from a generating plant with an air-cooled generator powered by an internal combustion engine, and a generating plant performing the method. 5,547,127, Cl. 237-12.100.
Madurawe, Raminda, to Altera Corporation. Reconfigurable programmable logic device having static and non-volatile memory. 5,548,228, Cl. 326-41.000.
Madurawe, Raminda, to Altera Corporation. Reconfigurable programmable logic device. 5,548,552, Cl. 365-185.330.
Madwed, Albert. Wheeled chassis having independently pivotable drive-wheels for omnidirectional motion. 5,547,038, Cl. 180-253.000.
Maebashi, Youichirou: *See*—
Saito, Yoshiro; Fujii, Haruo; Sasame, Hiroshi; Hayakawa, Tatsuhiko; Kobayashi, Tatsuya; Kobayashi, Tetsuya; Enomoto, Naoki; Uchiyama, Akihiko; and Maebashi, Youichirou, 5,548,381, Cl. 355-245.000.
Maeda, Toshinori: *See*—
Sumita, Masaya; Maeda, Toshinori; and Kakiage, Toru, 5,548,249, Cl. 331-1.00A.
Maeda, Yoshinobu: *See*—
Yamada, Tadayoshi; Tozuka, Masahiro; Goto, Katumi; Simatani, Tuyoshi; and Maeda, Yoshinobu, 5,548,350, Cl. 348-839.000.
Maekawa, Jun: *See*—
Yagami, Hiroyuki; Sato, Naoto; Yamashita, Hideaki; Nakagawa, Satoshi; and Maekawa, Jun, 5,546,947, Cl. 128-662.060.
Maekawa, Masao, to National Starch and Chemical Investment Holding Corporation. Aqueous primer composition. 5,548,018, Cl. 524-517.000.
Maelicke, Alfred: *See*—
Krüger, Bernd-Wieland; Maurer, Fritz; Methfessel, Christoph; Tietjen, Klaus; Maelicke, Alfred; Schmidt, Bernard; and Shiokawa, Kozo, 5,547,965, Cl. 514-342.000.
Maemura, Kosei; and Yamamoto, Kazuya, to Mitsubishi Denki Kabushiki Kaisha. Radio transmitter with active band-pass filtering. 5,548,825, Cl. 455-115.000.
Maerz, Karin; Matz, Volker; Seip, Detlev; and Platzer, Stephen J. W., to Agfa-Gevaert AG. Photosensitive material and method for making color-proofing films. 5,547,811, Cl. 430-257.000.
Mag Instrument, Inc.: *See*—
Maglica, Anthony, 5,548,495, Cl. 362-207.000.
Magl Power Inc.: *See*—
Smith, Gerald L., 5,548,207, Cl. 324-86.000.
Maglica, Anthony, to Mag Instrument, Inc. Flashlight and bulb holder therefor. 5,548,495, Cl. 362-207.000.
Magne, Jean-Claude: *See*—
Kuntzburger, Frédéric; and Magne, Jean-Claude, 5,547,550, Cl. 204-252.000.
Magne, Jean-Francois, to Essilor International Compagnie Generale d'Optique. Method and device for manufacturing an optical lens from a polymerizable synthetic material. 5,547,618, Cl. 264-1.360.
Magneson, Gerald R.; and Reichenbach, David L., to Genzyme Corporation. Compositions for stabilizing proteins for long term dry storage and methods of making and using the compositions. 5,547,873, Cl. 436-18.000.
Mahabadi, Hadi K.: *See*—
Bayley, Robert D.; Fox, Carol A.; Hoffend, Thomas R.; Mahabadi, Hadi K.; Agur, Enno E.; Sacripante, Guerino; and Hawkins, Michael S., 5,548,059, Cl. 528-194.000.
Mahle GmbH: *See*—
Zaiser, Dieimar, 5,546,896, Cl. 123-193.600.
Mahó, Sándor; Tuba, Zoltán; Gere, Anikó; Vittay, Pal; Kiss, Béla; Pálosi, Éva; Szporny, László; Francsicsné, Erzsébet C.; Boórné, Anna M.; Balogh, Gábor; and Görög, Sándor, to Richter Gedeon Vegyeszeti Gyar Rt. Steroids with pregnane skeleton, pharmaceutical compositions containing them. 5,547,949, Cl. 514-176.000.
Maiers, Charles P.; and Maiers, Gerald J. Waterproof decking method and apparatus. 5,546,719, Cl. 52-408.000.
Maiers, Gerald J.: *See*—
Maiers, Charles P.; and Maiers, Gerald J., 5,546,719, Cl. 52-408.000.

Mak, King K.; Bligh, Roger P.; Ross, Hayes E., Jr.; and Sicking, Dean L., to Texas A&M University System, The. Thrie-beam terminal with breakaway post cable release. 5,547,309, Cl. 404-6.000.

Maki, Hidetaka: *See*—
Komoriya, Isao; Hasegawa, Yusuke; Akazaki, Shusuke; and Maki, Hidetaka, 5,546,907, Cl. 123-478.000.

Makino, Kenji: *See*—
Asaba, Tetsuo; and Makino, Kenji, 5,547,708, Cl. 427-248.100.

Makino, Masahito: *See*—
Kikuchi, Kazuo; Umino, Hiroshi; Shibuya, Hiromitsu; Makino, Masahito; Sakakura, Yasuyuki; and Takahashi, Kiyoshi, 5,546,763, Cl. 62-532.000.

Makovsky, Lev V.: *See*—
Zege, Sergei O.; Zege, Irina A.; Antonov, Dmitry V.; Sedov, Igor I.; Makovsky, Lev V.; Pokladok, Igor A.; and Mikhailov, Arkady J., 5,547,316, Cl. 405-267.000.

Makrucki, Brad A., to BellSouth Corporation. System and method for making connection acceptance/rejection decisions in a communication system. 5,548,581, Cl. 370-17.000.

Malarcher, Falvey: *See*—
Lin, Tsen-Hwang; and Malarcher, Falvey, 5,548,772, Cl. 395-800.000.

Malden Mills Industries, Inc.: *See*—
Rock, Moshe; Lumb, Douglas; and Lie, William, 5,547,733, Cl. 428-91.000.

Male Pouch, Inc.: *See*—
McRoberts, Samuel J.; and Kvarnberg, Lee, 5,547,466, Cl. 602-70.000.

Malhotra, Ripudaman: *See*—
Ruoff, Rodney S.; Lorents, Donald C.; Malhotra, Ripudaman; and Dyer, Mark J., 5,547,748, Cl. 428-323.000.

Mallardi, Maret L. Protective strap cover for a cap. 5,546,605, Cl. 2-209.130.

Mallee, Francis M.; Stone, Joel A.; and Finocchiaro, Eugene T., to Opta Food Ingredients, Inc. Starch-based texturizing agent. 5,547,513, Cl. 127-38.000.

Mallinckrodt Medical, Inc.: *See*—
Haleen, Len W., 5,546,676, Cl. 34-187.000.
Virag, Robert A.; Nye, Richard V.; and Horton, Duane L., 5,546,936, Cl. 128-207.140.

Mallinson, Martin: *See*—
Gerson, Brian D.; Huscroft, Kevin; and Mallinson, Martin, 5,548,230, Cl. 326-73.000.

Maloney, William B.; Mesnard, Robert M.; and Swenton, Joseph M., to International Business Machines Corporation. Analysis of untestable faults using discrete node sets. 5,548,715, Cl. 395-183.040.

Malss, Stephen R.: *See*—
Paluch, John W. D.; Malss, Stephen R.; Gildersleeve, Lyle A.; Schlunke, Christopher K.; Bell, Gregory B.; and Smith, Darren A., 5,546,902, Cl. 123-304.000.

Mancini, Angelo: *See*—
Franceschelli, Luciano; and Mancini, Angelo, 5,546,886, Cl. 114-360.000.

Mandel, Frederick S.; Green, Charles D.; and Scheibelhoffer, Anthony S., to Ferro Corporation. Method of preparing coating materials. 5,548,004, Cl. 523-342.000.

Mandelman, Jack A.; Galbi, Duane; Slinkman, James A.; and Tonti, William R., to International Business Machines Corporation. CMOS processing with low and high-current FETs. 5,547,894, Cl. 437-56.000.

Mandl, Gerhard; and Meile, Hans-Peter. Comber machine. 5,546,636, Cl. 19-231.000.

Mandt, Michael: *See*—
Müller, Dietmar; Helfrich, Mathial; and Mandt, Michael, 5,547,527, Cl. 149-19.920.

Manero, Javier: *See*—
Fuss, Robert; Manero, Javier; and Jungbauer, Dietmar, 5,547,605, Cl. 252-299.600.

Maneval, Robert D.: *See*—
Rogers, Lynn; Maneval, Robert D.; Bashor, Daryl W.; and Johnson, David J., 5,547,133, Cl. 241-9.000.

Manian, Bala S.: *See*—
Baer, Thomas M.; Dietz, Louis J.; Dubrow, Robert S.; Hayter, Paul G.; Hodges, Michael; Manian, Bala S.; and Shartle, Robert J., 5,547,849, Cl. 435-7.240.

Mann, Michael D.: *See*—
Selle, Stanley J.; Hajicek, Douglas R.; Mann, Michael D.; and Grewal, Nanak S., 5,546,875, Cl. 110-342.000.

Manning, Monte: *See*—
Batra, Shubneesh; Manning, Monte; Banerjee, Sanjay; and Damiano, John, Jr., 5,548,132, Cl. 257-66.000.

Manning, William R., to Texas Instruments Incorporated. Electronic motor protection apparatus. 5,548,464, Cl. 361-23.000.

Mansei Kogyo Kabushiki Kaisha: *See*—
Aoyama, Tetsuzo; and Hayami, Yoshiyuki, 5,548,565, Cl. 368-227.000.

Marangone, Nereo: *See*—
Claut, Demetrio; Marangone, Nereo; and Badiali, Roberto, 5,547,138, Cl. 242-36.000.

Marathon Oil Company: *See*—
Ames, Thomas J., 5,547,314, Cl. 405-165.000.

Marbot, Rolland, to Bull, S.A. Phase-locked loop and resulting frequency multiplier. 5,548,235, Cl. 327-158.000.

Marchetti, Marco: *See*—
Bannister, Cecil H.; Marchetti, Marco; Mo, Richard C.; Switzer, Tod W.; and Moghe, Dhawal B., 5,548,636, Cl. 379-201.000.

Marciandi, Franco: *See*—
Rigamonti, Marco; Marciandi, Franco; and Cesana, Massimo, 5,547,750, Cl. 428-329.000.

Marcoccia, Bruno S.; Prough, J. Robert; Laakso, Richard O.; Phillips, Joseph R.; Ryham, Rolf C.; Richardsen, Jan T.; and Chasse, R. Fred, to Kamyr, Inc. Dissolved solids control in pulp production. 5,547,012, Cl. 162-42.000.

Marcou, Jean-Claude: *See*—
Mehta, Parag J.; Callas, Gunter; Barbo, Vincent; and Marcou, Jean-Claude, 5,546,657, Cl. 29-884.000.

Marcus, Beth A.: *See*—
Chen, Elaine; Eberman, Brian; and Marcus, Beth A., 5,546,959, Cl. 128-782.000.

Marechal, Robert R., to Societe Industrielle et Commerciale De Materiel Aeronautique. Passenger seat for a public transport vehicle, the seat including a video display which can be retracted into an armrest. 5,547,248, Cl. 297-188.170.

Marinello, Daniel A.: *See*—
Liang, Louis H.; Marinello, Daniel A.; and Ryan, William J., 5,548,106, Cl. 235-454.000.

Marjanski, George C.: *See*—
Lang, Gregory J.; and Marjanski, George C., 5,547,213, Cl. 280-728.200.

Mark, Melanie R.: *See*—
Godowski, Paul J.; Lokker, Natalie A.; and Mark, Melanie R., 5,547,856, Cl. 435-694.000.

Markowitz, Ron M.: *See*—
Hennessee, Robert P.; Huetteman, Steven C.; and Markowitz, Ron M., 5,547,125, Cl. 236-49.300.

Marlin, Lawrence: *See*—
Clark, Elke M. A.; Marlin, Lawrence; Fan, You-Ling; and Shah, Harshad M., 5,547,681, Cl. 424-449.000.

Marotta, Charles A.; and Zain, Sayeeda, to McLean Hospital Corporation, The; and University of Rochester. In vitro method for screening for drugs that inhibit production or degradation of human A4-amyloid. 5,547,841, Cl. 435-6.000.

Maroy, Pierre: *See*—
Perthuis, Hervé; Feraud, Jean-Pierre; Dejeux, Philippe; and Maroy, Pierre, 5,547,926, Cl. 507-258.000.

Marsden, Peter D.: *See*—
Fyson, John R.; and Marsden, Peter D., 5,547,816, Cl. 430-393.000.

Marten, Manfred: *See*—
Kurth, Inge; Brindoepke, Gerhard; and Marten, Manfred, 5,548,005, Cl. 523-414.000.

Martin, Charles L., to University Corporation for Atmosphere Research. Integrated control system for preparing and deploying sounding devices and managing telemetry therefrom. 5,548,283, Cl. 340-870.010.

Martin Marietta Corporation: *See*—
Cole, Herbert S., Jr.; and Sitnik-Nieters, Theresa A., 5,548,099, Cl. 219-121.690.

Martin, Michel, to Robatel. Device for removing cake or residual layer in a centrifuge. 5,547,573, Cl. 210-350.000.

Martino, Michael J.; and Paulsen, Robert C., Jr., to International Business Machines Corporation. Language identification process using coded language words. 5,548,507, Cl. 364-419.010.

Maruoka, Hiroyuki, to NIFCO Inc. Glass holder. 5,546,704, Cl. 49-375.000.

Marusue, Toshihisa: *See*—
Kamada, Shinya; Yokota, Hiroaki; Nagayama, Shigeru; Nakahara, Yuji; Nakano, Shin; Marusue, Toshihisa; Abe, Mitsutoshi; and Matsumoto, Hiroyuki, 5,547,437, Cl. 477-143.000.

Maruyama, Ryoji: *See*—
Funaki, Hideyuki; Mochizuki, Hiroshi; Maruyama, Ryoji; and Fujii, Kanae, 5,548,151, Cl. 257-421.000.

Maruyama, Shogo; and Kumon, Satoshi, to Ajinomoto Co., Inc. Process for producing 5-methyluridine and purification by sedimentation velocity. 5,547,857, Cl. 435-87.000.

Maruyama, Shoji: *See*—
Kawase, Hiromitsu; Kaneko, Yoshikazu; and Maruyama, Shoji, 5,547,802, Cl. 430-110.000.

Maruyama, Takumi; and Yokoshi, Noriyuki, to Fujitsu Limited. Recording medium dualizing system. 5,548,716, Cl. 395-183.120.

Maruyama, Tsukasa: *See*—
Yamamoto, Takakazu; and Maruyama, Tsukasa, 5,548,048, Cl. 526-265.000.

Maruyama, Tsutomu; Akiyama, Atsushi; Sanada, Kazuo; Chigira, Sadao; and Hidaka, Masanobu, to Kansai Paint Co., Ltd.; Fujikura Ltd.; and Matsuo Sangyo Co., Ltd. Method for formation of invisible marking and method for reading of invisible marking. 5,547,501, Cl. 106-21.00R.

Marzloff, Kristin L.: *See*—
Chagnon, Mark S.; Burkle, Stephen E.; Carter, Michelle J.; Hamilton, Tracy J.; Havelick, John, Jr.; Kaplan, Deborah A.; and Marzloff, Kristin L., 5,547,682, Cl. 424-497.000.

Masaki, Tomoh; Yanagisawa, Masashi; and Inoue, Akihiro, to Takeda Chemical Industries, Ltd. Human endothelin-3 precursor protein. 5,548,061, Cl. 530-324.000.

Masaki, Yuichi; Onuma, Kenji; Yoshioka, Toshifumi; and Mitsui, Mutsuo, to Canon Kabushiki Kaisha. Process for injecting ferroelectric liquid crystal with injection completed above atmospheric pressure. 5,548,428, Cl. 359-80.000.

Masaoka, Tsunehiro: *See*—
Suzuki, Tatsuo; and Masaoka, Tsunehiro, 5,547,801, Cl. 430-115.000.

Mascellani, Giuseppe; and Bianchini, Pietro, to Opocrin S.p.A. Dermatan sulphate possessing a thrombolytic activity, and pharmaceutical forms containing it. 5,547,944, Cl. 514-54.000.

Maschinenfabrik Hennecke GmbH: *See*—
Sulzbach, Hans-Michael; Raffel, Reiner; Althausen, Ferdinand; and Wirth, Jürgen, 5,547,276, Cl. 366-139.000.

Maschinenfabrik Koppern GmbH & Co. KG: *See*—
Bergendahl, Hans-Georg, 5,547,357, Cl. 425-79.000.

Mashruwala, Rajesh U.: *See*—
Tantry, Subhash B.; Mashruwala, Rajesh U.; Lozier, Barry A.; and Hess, Richard L., 5,548,756, Cl. 395-600.000.

Massachusettes Institute of Technology: *See*—
Pliquett, Uwe; Prausnitz, Mark R.; Weaver, James C.; and Langer, Robert S., 5,547,467, Cl. 604-20.000.

Massachusetts Institue of Technology: *See*—
Rogers, John A.; and Nelson, Keith A., 5,546,811, Cl. 73-800.000.

Massimi, Michael S.: *See*—
Gaynor, Edwin S.; Massimi, Michael S.; Blase, William P.; and Isser, Abraham, 5,548,418, Cl. 359-20.000.

Masuda, Katsuhiko; Aoki, Jun; and Hashizume, Isamu, to Honda Giken Kogyo Kabushiki Kaisha. Driving-wheel torque control system for automotive vehicles. 5,548,513, Cl. 364-426.030.

Masuda, Yuichi: *See*—
Doi, Yuji; Kato, Yoshiya; Kanezashi, Takanobu; and Masuda, Yuichi, 5,547,076, Cl. 206-301.000.

Masuko, Michio: *See*—
Hayase, Yoshio; Kataoka, Takahiro; Takenaka, Hideyuki; Ichinari, Mitsuhiro; Masuko, Michio; Takahashi, Toshio; and Tanimoto, Norihiko, 5,548,078, Cl. 544-298.000.

Masumoto, Katashi: *See*—
Murakami, Yuetsu; and Masumoto, Katashi, 5,547,520, Cl. 148-120.000.

Matai, Masahiro: *See*—
Tsuchiyama, Kinya; and Matai, Masahiro, 5,548,271, Cl. 340-311.100.

Matheny, David T.; Miller, Paul K.; and Taborn, Michael P., to IBM Corporation. Method and apparatus for rounding the result of an arithmetic operation. 5,548,544, Cl. 364-745.000.

Mather, Daniel T.: *See*—
Rector, Charles E.; Wells, Steven R.; Mather, Daniel T.; and Arndt, Robin S., 5,546,847, Cl. 91-403.000.

Mathias, Mark F.: *See*—
Buchanan, John S.; Mathias, Mark F.; Sodomin, Joseph F., III; and Teitman, Gerald J., 5,547,648, Cl. 423-210.000.

Mathison, Allen D.; and Smith, Randy D., to Cherne Industries Incorporated. Inflatable fabric bag plug. 5,546,991, Cl. 138-93.000.

Matlock, Richard R.: *See*—
Nellis, Robert A., Jr.; DeFrance, Robert V.; and Matlock, Richard R., 5,547,404, Cl. 439-803.000.

Matloubian, Mehran: *See*—
Nguyen, Chanh; Liu, Takyiu; and Matloubian, Mehran, 5,548,140, Cl. 257-194.000.

Matritech, Inc.: *See*—
Wu, Ying-Jye; and Keesee, Susan K., 5,547,928, Cl. 514-2.000.

Matsakis, Demetrios J.: *See*—
Caldwell, Stephen P.; Harris Jr., Marvine; Matsakis, Demetrios J.; Minarik, Ronald W.; Schmidt, Kenneth M.; Weigand, Benjamin F.; Prill, Robert S.; and Siegel, Arnold B., 5,548,839, Cl. 455-313.000.

Matsubara, Tooru: *See*—
Nozaki, Kazutoshi; Iwatsuki, Kunihiro; and Matsubara, Tooru, 5,547,438, Cl. 477-169.000.

Matsubayashi, Masaru: *See*—
Watanabe, Takao; Hayashi, Mutsuo; Matsumoto, Kazunari; Tsuchiya, Chikara; Matsui, Takashi; and Matsubayashi, Masaru, 5,548,252, Cl. 331-176.000.

Matsuda, Kazuyuki: *See*—
Tani, Makoto; Hayase, Tooru; Shimizu, Hideki; and Matsuda, Kazuyuki, 5,547,921, Cl. 505-124.000.

Matsuda, Yutaka; and Shimizu, Kaoru, to Matsushita Electric Industrial Co., Ltd. Transmission. 5,547,428, Cl. 474-51.000.

Matsui, Takashi: *See*—
Watanabe, Takao; Hayashi, Mutsuo; Matsumoto, Kazunari; Tsuchiya, Chikara; Matsui, Takashi; and Matsubayashi, Masaru, 5,548,252, Cl. 331-176.000.

Matsui, Tsutomu; and Fujimura, Yuki, to NEC Corporation. Objective-lens actuator. 5,548,449, Cl. 359-814.000.

Matsuki, Masaya; Sawada, Hirokazu; and Uesugi, Akio, to Fuji Photo Film Co., Ltd. Support for a planographic printing plate and method for producing same. 5,547,522, Cl. 148-551.000.

Matsumoto, Hiroyuki: *See*—
Kamada, Shinya; Yokota, Hiroaki; Nagayama, Shigeru; Nakahara, Yuji; Nakano, Shin; Marusue, Toshihisa; Abe, Mitsutoshi; and Matsumoto, Hiroyuki, 5,547,437, Cl. 477-143.000.

Matsumoto, Kazunari: *See*—
Watanabe, Takao; Hayashi, Mutsuo; Matsumoto, Kazunari; Tsuchiya, Chikara; Matsui, Takashi; and Matsubayashi, Masaru, 5,548,252, Cl. 331-176.000.

Matsumoto, Kazunobu: *See*—
Yumiba, Hideaki; Matsumoto, Kazunobu; and Kawakami, Akira, 5,547,785, Cl. 429-220.000.

Matsumoto, Kenji: *See*—
Sekimoto, Takashi; Endo, Yoichi; Yamazaki, Hirohiko; Yamazaki, Masahiko; Ohtani, Yutaka; Iguchi, Takeyoshi; Matsumoto, Kenji; Yamazaki, Hiroyuki; Takimura, Ryo; and Tsuda, Takao, 5,548,417, Cl. 385-474.000.

Matsumoto, Koji; Tanaka, Tsutomu; and Shono, Keiji, to Fujitsu Limited. Optical recording medium and data reproducing apparatus for reproducing data from such optical recording medium. 5,548,576, Cl. 369-275.300.

Matsumoto, Yoshihiro: *See*—
Hanawa, Tetsuya; Kuga, Yuji; Takashima, Yutaka; Matsumoto, Yoshihiro; and Ono, Masayuki, 5,548,827, Cl. 455-129.000.

Matsumoto, Yoshiro; Isaka, Kazumi; Mizuguchi, Masaaki; Oshima, Yoshimitsu; and Takatsu, Osamu, to Sumitomo Metal Industries, Ltd. Hearth roller with suppressed heat crown. 5,547,450, Cl. 492-54.000.

Matsumura, Terue: *See*—
Horiike, Yoshio; Yoshimura, Yasuo; Yokoajiro, Yoshiyuki; Matsumura, Terue; Hasegawa, Makoto; and Mimura, Masahiro, 5,548,619, Cl. 375-344.000.

Matsunaga, Yoshifumi: *See*—
Ishida, Eiji; and Matsunaga, Yoshifumi, 5,548,699, Cl. 395-140.000.

Matsune, Hideaki; and Yamato, Koji, to Fujitsu Limited. LAN-to-LAN communication method, and LAN-to-LAN connecting unit. 5,548,578, Cl. 370-13.000.

Matsuno, Keishi, to Nippon Steel Corporation. Method of and apparatus for determining position of mobile object and mobile radio communication system using the same. 5,548,296, Cl. 342-457.000.

Matsuno, Seiki; Sasaki, Iwao; Ohneda, Akira; Sasaki, Kazuyuki; Natori, Yohei; and Nagasaki, Tomohisa, to Nisshin Flour Milling Co., Ltd. Therapeutic agent for digestive tract diseases using glicentin. 5,547,938, Cl. 514-012.000.

Matsuo, Akinori: *See*—
Kuroda, Kenichi; Shiba, Kazuyoshi; and Matsuo, Akinori, 5,548,146, Cl. 257-321.000.

Matsuo, Hiroki; Yamanaka, Yasushi; Baba, Norimasa; Yamamoto, Michiyasu; and Yamamoto, Ken, to Nippondenso Co., Ltd. Receiver-integrated refrigerant condenser. 5,546,761, Cl. 62-509.000.

Matsuo, Kenichi: *See*—
Sugano, Masashi; and Matsuo, Kenichi, 5,548,414, Cl. 358-452.000.

Matsuo, Kunio; and Nomura, Tamotsu, to Daido Tokushuko Kabushiki Kaisha. Furnace cover with a spray cooling system. 5,548,612, Cl. 373-73.000.

Matsuo Sangyo Co., Ltd.: *See*—
Maruyama, Tsutomu; Akiyama, Atsushi; Sanada, Kazuo; Chigira, Sadao; and Hidaka, Masanobu, 5,547,501, Cl. 106-21.00R.

Matsuoka, Koushin: *See*—
Ito, Takayuki; Shimada, Yasuhiro; Matsuoka, Koushin; and Yoshioka, Yasuhiro, 5,547,826, Cl. 430-558.000.

Matsuse, Tetsuo: *See*—
Akiyoshi, Takashi; and Matsuse, Tetsuo, 5,548,729, Cl. 395-200.160.

Matsushita Electric Industrial Co., Ltd.: *See*—
Akiyoshi, Takashi; and Matsuse, Tetsuo, 5,548,729, Cl. 395-200.160.
Asai, Hiroki; and Omata, Yuji, 5,547,557, Cl. 205-118.000.
Eda, Kazuo; and Nagata, Takashi, 5,548,178, Cl. 310-349.000.
Gion, Masahiro; and Toyokura, Masaki, 5,548,665, Cl. 382-276.000.
Horiike, Yoshio; Yoshimura, Yasuo; Yokoajiro, Yoshiyuki; Matsumura, Terue; Hasegawa, Makoto; and Mimura, Masahiro, 5,548,619, Cl. 375-344.000.
Katsumata, Masaaki; Kanaya, Osamu; Katsuki, Nobuharu; and Takami, Akihiro, 5,547,907, Cl. 501-76.000.
Matsuda, Yutaka; and Shimizu, Kaoru, 5,547,428, Cl. 474-51.000.
Miyazaki, Benichi; Nishino, Yukio; and Wakabayashi, Kanji, 5,548,577, Cl. 369-291.000.
Naka, Teruyuki; Umeda, Yoshio; Yamamura, Toshiki; Kumon, Akira; Suzuki, Seiichi; Nawama, Junichi; and Nagase, Hisanori, 5,548,380, Cl. 355-219.000.
Nakagawa, Tohru, 5,548,117, Cl. 250-423.00F.
Nakamura, Yoshifumi; Bessho, Yoshihiro; Yuhaku, Satoru; Hakotani, Yasuhiko; Itagaki, Minehiro; and Miura, Kazuhiro, 5,547,530, Cl. 156-89.000.
Okada, Tsuyoshi; and Shibuya, Kazuo, 5,548,575, Cl. 369-219.000.
Okawa, Takashi; Enokido, Masashi; Tsuda, Shingo; and Akutsu, Norikatsu, 5,547,784, Cl. 429-218.000.
Segawa, Reiji; and Nagahisa, Tatsuhiko, 5,548,229, Cl. 326-57.000.
Sumita, Masaya; Maeda, Toshinori; and Kakiage, Toru, 5,548,249, Cl. 331-1.00A.
Tamaki, Tokuhiko; and Imai, Shinichi, 5,546,890, Cl. 117-102.000.
Taromaru, Makoto, 5,548,836, Cl. 455-277.100.
Wakita, Katsuya; Hotta, Shu; Sonoda, Nobuo; and Yang, Yang, 5,546,889, Cl. 117-84.000.
Yamada, Tadayoshi; Tozuka, Masahiro; Goto, Katumi; Simatani, Tuyoshi; and Maeda, Yoshinobu, 5,548,350, Cl. 348-839.000.

Matsushita Electric Works, Ltd.: *See*—
Tanahashi, Masao; Shiba, Takeshi; and Ikuta, Toshio, 5,546,659, Cl. 30-43.920.
Ueno, Yoshiaki; Hyosu, Haruhiko; Sase, Takao; Matsushita, Koji; and Yamashita, Koji, 5,548,254, Cl. 333-25.000.

Matsushita Electronics Corporation: *See*—
Watanabe, Hisashi, 5,547,808, Cl. 430-176.000.

Matsushita, Koji: *See*—
Ueno, Yoshiaki; Hyosu, Haruhiko; Sase, Takao; Matsushita, Koji; and Yamashita, Koji, 5,548,254, Cl. 333-25.000.

Matsuura, Naoya: *See*—

Ichikawa, Shouzou; and Matsuura, Naoya, 5,547,398, Cl. 439-607.000.
Matsuyama, Tsutoshi; and Takahashi, Hideyuki, to Fujitsu Limited. Method and apparatus for appending information to data files, ensuring proper end-of-file indication. 5,548,757, Cl. 395-600.000.
Matsuzaka, Naoki: *See—*
Kawabata, Hideyuki; and Matsuzaka, Naoki, 5,548,348, Cl. 348-766.000.
Mattar, Wade M.; and Hildreth, Norman G., to Foxboro Company, The. Parallel-flow coriolis-type mass flowmeter with flow-dividing manifold. 5,546,814, Cl. 73-861.355.
Mattelmaki, Esko: *See—*
Nykanen, Tuomo S.; Greenwood, Brian F.; Gullichsen, Johan; Kiiskila, Erkki; Mattelmaki, Esko; Phillips, Joseph R.; Richardsen, Jan; Ryham, Rolf; Soderman, Jarmo; and Wiklund, Karl, 5,547,543, Cl. 162-31.000.
Matteucci, Mark D.: *See—*
Froehler, Brian C.; and Matteucci, Mark D., 5,548,076, Cl. 536-25.340.
Matthew, Linda C.: *See—*
Feger, Claudius; Graham, Teresita O.; Grebe, Kurt R.; Lanzetta, Alphonso P.; Liutkus, John J.; Matthew, Linda C.; Palmer, Michael J.; Tanner, Nelson R.; Tong, Ho-Ming; Wilson, Charles H.; and Yeh, Helen L., 5,546,655, Cl. 29-846.000.
Matthews, Ian P.: *See—*
Gibson, Colin; Matthews, Ian P.; Samuel, Alan H.; and Zhu, Zhangwhu, 5,548,217, Cl. 324-316.000.
Matthews, Susan H. Baby support with interconnectable play toys. 5,546,620, Cl. 5-655.000.
Mattousch, Arthur C.: *See—*
Roebroeks, Gerardus H. J. J.; and Mattousch, Arthur C., 5,547,735, Cl. 428-110.000.
Matz, Volker: *See—*
Maerz, Karin; Matz, Volker; Seip, Detlev; and Platzer, Stephen J. W., 5,547,811, Cl. 430-257.000.
Maurel, Georges, to Texas Instruments Incorporated. Microcomputer system providing time management enabling control and acquisition of data indicative of condition changes occurring at high speed. 5,548,774, Cl. 395-800.000.
Maurer, Fritz: *See—*
Krüger, Bernd-Wieland; Maurer, Fritz; Methfessel, Christoph; Tietjen, Klaus; Maelicke, Alfred; Schmidt, Bernard; and Shiokawa, Kozo, 5,547,965, Cl. 514-342.000.
Mautner, Konrad: *See—*
Weidner, Richard; Mautner, Konrad; and Moeller, Reinhardt, 5,548,053, Cl. 528-14.000.
Mawa Metallwarenfabrik Wagner GmbH: *See—*
Krönauer, Karlhans; Aigner, Josef; Klein, Franz; Weber, Karsten; Schmid, Monika; and Pfab, Robert, 5,546,640, Cl. 24-510.000.
Max-Planck-Gesellschaft: *See—*
Nowak, Götz; Bucha, Elke; and Hoffman, Jutta, 5,547,850, Cl. 435-13.000.
May, James B.: *See—*
Riley, William C.; Albertin, Marc S.; and May, James B., 5,547,348, Cl. 417-273.000.
May, Paul, to Sharp Kabushiki Kaisha. Switchable holographic apparatus. 5,548,427, Cl. 359-73.000.
Mayer, Elfriede: *See—*
Dauth, Jochen; Deubzer, Bernward; Mayer, Elfriede; Nuyken, Oskar; Voit, Brigitte; and Kollefrath, Ralf, 5,548,070, Cl. 534-550.000.
Mayer Industries, Inc.: *See—*
Kuhrau, Michael K.; and Fosselman, Donald C., 5,546,768, Cl. 66-9.00B.
Mayer, Sidney H., to Capital Equipment Corporation. High speed IEEE 488 bus data transfer system. 5,548,790, Cl. 395-855.000.
Mayer, Ulrich; Wild, Ernst; and Kaltenbrunn, Peter, to Robert Bosch GmbH. Method of adjusting the composition of the operating mixture for an internal combustion engine. 5,546,918, Cl. 123-674.000.
Mayhugh, Terry L.: *See—*
Campbell, Heather A.; Mayhugh, Terry L.; Rasmussen, Marvin W.; and Vachon, Guy, 5,546,672, Cl. 33-716.000.
Mayo Foundation for Medical Education and Research: *See—*
Kozikowski, Alan P.; and Tückmantel, Werner, 5,547,960, Cl. 514-295.000.
Mays, David S.; and Blevins, Robert E., to Diversified Technologies, Inc. Universal currency acceptor. 5,547,062, Cl. 194-206.000.
Mazda Motor Corporation: *See—*
Kamada, Shinya; Yokota, Hiroaki; Nagayama, Shigeru; Nakahara, Yuji; Nakano, Shin; Marusue, Toshihisa; Abe, Mitsutoshi; and Matsumoto, Hiroyuki, 5,547,437, Cl. 477-143.000.
Kato, Shinji; Tagawa, Chikashi; Michihira, Osamu; and Sone, Akira, 5,548,601, Cl. 371-68.100.
Uchimoto, Daisuke; Monmasu, Hiroshi; Tomita, Toshihiko; and Inoue, Junsuke, 5,547,158, Cl. 248-396.000.
Mazer, Terrence B.: *See—*
Cope, Frederick O.; DeWille, Normanella T.; Richards, Ernest W.; Mazer, Terrence B.; Abbruzzese, Bonnie C.; Snowden, Gregory A.; Parlet, Nickki L.; and Pease, Laura A., 5,547,927, Cl. 514-2.000.
Mazzurana, Paul D.: *See—*
Chang, Kyusun; Hall, Lon E.; Joyce, Gregory S.; Mazzurana, Paul D.; and Russell, Lance W., 5,548,731, Cl. 395-280.000.
McAlister, Ronald E.; Crafton, Eddie L.; and Keever, Ervin N. Fabric processing apparatus and method of treating a continous length of tubular-knit fabric in tubular form. 5,546,622, Cl. 8-151.000.
McAneney, Thomas B.: *See—*
Saban, Marko; Liebermann, George; and McAneney, Thomas B., 5,548,043, Cl. 526-84.000.
McCall, Michael K.: *See—*
Moran, Thomas P.; Pedersen, Elin R.; McCall, Michael K.; and Halasz, Frank G., 5,548,705, Cl. 395-159.000.
McCarthy, Jay P.: *See—*
Dukatz, Matthew E.; Harland, Charles E.; Kresky, Fred C.; McCarthy, Jay P.; and Sharples, Stephen A., 5,547,242, Cl. 296-65.100.
McCarty, Chris A.: *See—*
Linn, Jack H.; Gasner, John T.; Gaul, Stephen J.; and McCarty, Chris A., 5,547,896, Cl. 437-60.000.
McClung-Sable Partnership: *See—*
Sable, Donald E.; and Sable, Donald E., II, 5,547,020, Cl. 166-65.100.
McClure, David C., to SGS-Thomson Microelectronics, Inc. Voltage reference circuit using an offset compensating current source. 5,548,241, Cl. 327-538.000.
McConaughey, O. Troy: *See—*
Biere, David A.; McConaughey, O. Troy; and Brown, Gene W., 5,547,565, Cl. 210-86.000.
McCoy, Bill R.: *See—*
Smeggil, John G.; Rasley, Elizabeth A.; and McCoy, Bill R., 5,547,122, Cl. 228-173.300.
McDaniel, Billy W.; and Abass, Hazim H., to Halliburton Company. Sand control well completion methods for poorly consolidated formations. 5,547,023, Cl. 166-280.000.
McDonald, Ian A.: *See—*
Palfreyman, Michael G.; McDonald, Ian A.; Salituro, Francesco G.; and Schwarcz, Robert, 5,547,991, Cl. 514-564.000.
McDonnell, Christopher: *See—*
Hinchliffe, Peter W. J.; Pappalardo, Dawn J.; Larsen, Scott; Tovey, Ian J.; and McDonnell, Christopher, 5,547,463, Cl. 602-20.000.
McDonnell Douglas Corporation: *See—*
Ebert, William J.; Leonard, James V.; and Johnson, Jeffrey L., 5,548,510, Cl. 364-443.000.
Gaines, Robert B., 5,548,279, Cl. 340-664.000.
James, Jesse C., 5,548,461, Cl. 361-13.000.
Thaler, Stephen L., 5,547,716, Cl. 427-577.000.
McDougall, Allan P.: *See—*
Hillard, John N.; and McDougall, Allan P., 5,548,164, Cl. 307-10.300.
McDowell, Judson A.: *See—*
Kulakowski, John E.; McDowell, Judson A.; and Rubin, Kurt A., 5,548,572, Cl. 369-116.000.
McElroy, Hoyt E.: *See—*
Meador, James; McElroy, Hoyt E.; Herrmann, Michelle L.; and Winkler, Matthew, 5,547,862, Cl. 435-91.300.
McEwen, John; Tolzman, David; and DiDonato, Anthony, to Sara Lee Corporation. Lint barrier for a sewing machine. 5,546,879, Cl. 112-282.000.
MCG Closures Limited: *See—*
Thompson, Nigel, 5,547,092, Cl. 215-252.000.
McGahey, Kevin R.: *See—*
Cook, F. Bert; Petty, Stephen E.; Meacham, Howard C., Jr.; Christensen, Richard N.; and McGahey, Kevin R., 5,546,760, Cl. 62-497.000.
McGillis, James M.; and Lasker, Jeffrey M., to EMC Corporation. Disk controller having host processor controls the time for transferring data to disk drive by modifying contents of the memory to indicate data is stored in the memory. 5,548,788, Cl. 395-851.000.
McGrath, Donald T.: *See—*
Staver, Daniel A.; and McGrath, Donald T., 5,548,540, Cl. 364-724.100.
McGrath, Martin J.: *See—*
Simmons, Mark A.; McGrath, Martin J.; and Thrasher, David L., 5,548,505, Cl. 364-130.000.
McGraw, William R.; and Pulkowski, Jeffrey H., to Beloit Technologies, Inc. Single tier drying section apparatus. 5,546,675, Cl. 34-113.000.
McGuire, Shel: *See—*
Williams, Joel L.; Burkett, Susan L.; and McGuire, Shel, 5,547,723, Cl. 428-35.700.
McKeithan, Jerry R., Jr.: *See—*
Stikeleather, Larry F.; and McKeithan, Jerry R., Jr., 5,547,420, Cl. 452-138.000.
McKenna, Michael A.; Rosen, Joseph M.; Chen, David T.; Pieper, Steven D.; and Robbie, Peter J., to Medical Media Systems. Electronically steerable endoscope. 5,547,455, Cl. 600-113.000.
McKenzie, Shirley T. ICU patients ventilator tube holding device. 5,546,938, Cl. 128-207,170.
McKinney, James C.: *See—*
Neveras, George J.; McKinney, James C.; Sherman, Adam; Lohrman, Richard L.; and Ziegenhorn, David, 5,547,091, Cl. 215-237.000.
McLaughlin, Brian M.: *See—*
Kohar, Richard; and McLaughlin, Brian M., 5,547,047, Cl. 188-59.000.
McLaughlin, Joseph L.; Fernald, Mark R.; and Hart, Kenneth J., to Hughes Danbury Optical Systems, Inc. Optical beam homogenizing apparatus and method. 5,548,444, Cl. 359-629.000.
McLaughlin, Shawn M.: *See—*
Clark, William T.; Scott, James D., II; Barton, Graham M.; Rice, Chris A.; and McLaughlin, Shawn M., 5,546,982, Cl. 137-557.000.
McLean Hospital Corporation, The: *See—*

Marotta, Charles A.; and Zain, Sayeeda, 5,547,841, Cl. 435-6.000.
McMordie, Bruce G.: *See—*
Meelu, Mehar C.; Jones, Alan T.; and McMordie, Bruce G., 5,547,770, Cl. 428-678.000.
McMordie, James R.: *See—*
Li, Y. Christian; Poleshuk, Edward S.; and McMordie, James R., 5,546,981, Cl. 137-493.300.
McNeely, Kelly R.: *See—*
Ginn, Michael W.; Cobb, Gary L.; Broxton, Lawrence E.; and McNeely, Kelly R., 5,547,574, Cl. 210-388.000.
McNeil-PPC, Inc.: *See—*
Brown-Skrobot, Susan K.; and Irving, Mary R., 5,547,985, Cl. 514-546.000.
McRoberts, Samuel J.; and Kvarnberg, Lee, to Male Pouch, Inc. Male genitalia support. 5,547,466, Cl. 602-70.000.
McShane, James: *See—*
Thompson, Stacey S.; McShane, James; Wong, Joseph; and Wood, Ray W., 5,547,471, Cl. 604-87.000.
Meacham, Clifford B.: *See—*
Meacham, Patrick E.; Zeilinger, Michael S.; Meacham, Clifford B.; and Huffstutler, M. Conrad, Jr., 5,546,870, Cl. 105-355.000.
Meacham, Howard C., Jr.: *See—*
Cook, F. Bert; Petty, Stephen E.; Meacham, Howard C., Jr.; Christensen, Richard N.; and McGahey, Kevin R., 5,546,760, Cl. 62-497.000.
Meacham, Patrick E.; Zeilinger, Michael S.; Meacham, Clifford B.; and Huffstutler, M. Conrad, Jr. 2D and 3D pilot-channel arrays. 5,546,870, Cl. 105-355.000.
Mead Corporation, The: *See—*
Plaxico, Bob E.; Wright, James W.; and Domansky, Philippe, 5,547,074, Cl. 206-193.000.
Meador, James; McElroy, Hoyt E.; Herrmann, Michelle L.; and Winkler, Matthew, to Ambion Inc. Vectors containing multiple promoters in the same orientation. 5,547,862, Cl. 435-91.300.
Mealey, Eddie H., Sr. Multipurpose painter's tool. 5,546,625, Cl. 15-105.000.
MEC Co., Ltd.: *See—*
Sakamoto, Yoshihiro; and Tanimura, Toshio, 5,547,558, Cl. 205-125.000.
MedAmicus, Inc.: *See—*
Champeau, Eugene J., 5,546,935, Cl. 128-205.230.
Medhekar, Ajit K.: *See—*
Stephens, Michael C., Jr.; Medhekar, Ajit K.; and Reddy, Chitranjan N., 5,548,560, Cl. 365-233.500.
Medical Media Systems: *See—*
McKenna, Michael A.; Rosen, Joseph M.; Chen, David T.; Pieper, Steven D.; and Robbie, Peter J., 5,547,455, Cl. 600-113.000.
Medical Research Council: *See—*
Thornton, Arthur R. D., 5,546,956, Cl. 128-746.000.
Medina, Arturo N.: *See—*
Blakeney, Andrew J.; Medina, Arturo N.; Toukhy, Medhat A.; Ferreira, Lawrence; and Tadros, Sobhy, 5,547,814, Cl. 430-326.000.
Medtronic, Inc.: *See—*
Eberhardt, Carol E.; Capps, Mark J.; and Salazar, Luis, 5,546,820, Cl. 73-866.400.
Erickson, Donald J., 5,546,952, Cl. 128-716.000.
Meehan, Patrick, to International Business Machines Corporation. System for selectively using default protocol without negotiation for first regular communication and appropriate protocol after receiving protocol information embedded in the established communication. 5,548,727, Cl. 395-200.130.
Meelu, Mehar C.; Jones, Alan T.; and McMordie, Bruce G., to Sermatech International, Inc.; and Rolls Royce plc. Multiplex aluminide-silicide coating. 5,547,770, Cl. 428-678.000.
Meeten, Gerald H., to Schlumberger Technology Corporation. Rheometer. 5,546,791, Cl. 73-54.280.
Megahertz Corporation: *See—*
Aldous, Stephen C.; and Dake, Guy M., 5,547,401, Cl. 439-676.000.
Mehra, Yuv R., to Advanced Extraction Technologies, Inc. Absorption process for recovering ethylene and hydrogen from refinery and petrochemical plant off-gases. 5,546,764, Cl. 62-625.000.
Mehta, Anuradha: *See—*
Datta, Asis; Mehta, Anuradha; and Natarajan, K., 5,547,870, Cl. 435-240.400.
Mehta, Parag J.; Callas, Gunter; Barbo, Vincent; and Marcou, Jean-Claude, to Pass & Seymour, Inc. Method of assembling wiring devices in continuous succession. 5,546,657, Cl. 29-884.000.
Mei, Chia-Cu P., to Texas Instruments Incorporated. Extended drain resurf lateral DMOS devices. 5,548,147, Cl. 257-333.000.
Meier, Herbert; and Sellmeir, Martin, to Texas Instruments Deutschland GmbH. Read/write transponder arrangement and method of communication. 5,548,291, Cl. 342-51.000.
Meiji Seika Kaisha, Ltd.: *See—*
Christensen, Burton G.; Egawa, Takashi; Ichimaru, Yasuyuki; Ohuchi, Shokichi; Okonogi, Tsuneo; Patchett, Arthur A.; Shibahara, Seiji; and Tsutsumni, Seiji, 5,547,978, Cl. 514-422.000.
Meile, Hans-Peter: *See—*
Mandl, Gerhard; and Meile, Hans-Peter, 5,546,636, Cl. 19-231.000.
Meiman, Yehuda: *See—*
Shpantzer, Isaac; Dunn, J. Eric; and Meiman, Yehuda, 5,548,805, Cl. 455-33.100.
Melnick, Russell J.: *See—*
Hartman, Mark L.; Melnick, Russell J.; and Bales, Daniel A., 5,546,656, Cl. 29-890.010.
Melnik, George A.; and Janssen, Peter J., to Philips Electronics North America Corporation. Single panel color projection video display having improved scanning. 5,548,347, Cl. 348-761.000.
Melpolder, Sharon M.; Anderson, Charles C.; Cowdery-Corvan, Peter J.; and DeCory, John F., to Eastman Kodak Company. Thermally processable imaging element comprising a surface layer that is electroconductive. 5,547,821, Cl. 430-527.000.
Menand, Jean-René; Joseph, Kuriacose; and Jessup, Ainsley W., Jr., to Thomson Consumer Electronics, Inc. Apparatus and method for formulating an interactive TV signal. 5,548,532, Cl. 364-514.00C.
Menigaux, Louis: *See—*
Bouadma, Noureddine; and Menigaux, Louis, 5,548,610, Cl. 372-99.000.
Mercedes-Benz: *See—*
Sperber, Rolf, 5,547,057, Cl. 192-53.340.
Mercedes-Benz AG: *See—*
Gimmler, Helmut; Nester, Ulrich; Kurz, Gerhard; and Huhn, Werner, 5,546,793, Cl. 73-116.000.
Haberstroh, Rudolf; and Antonacakis, Georges, 5,547,403, Cl. 439-763.000.
Papenhagen, Dieter; and Meyer, Thorsten, 5,546,904, Cl. 123-400.000.
Scheinert, Helmut, 5,546,914, Cl. 123-569.000.
Merck & Co., Inc.: *See—*
Gormley, Glenn J.; Kaufman, Keith D.; Stoner, Elizabeth; and Waldstreicher, Joanne, 5,547,957, Cl. 514-284.000.
Merkli, Peter; and Linder, Heinz, to Grapha-Holding AG. Method and apparatus for replacing incomplete printed products in the production of newspapers, magazines and similar products. 5,547,177, Cl. 270-52.050.
Merlin, Jean-Paul D.; Sharp, Brenner M.; Farrington, Eric K.; and Johnston, Vonda K., to Whirlpool Corporation. Tub door system for a top loading horizontal axis automatic washer. 5,546,772, Cl. 68-24.000.
Mero, Christopher; and Cahill, John, to PepsiCo., Inc. Process for annealing biaxially oriented hollow shaped thermoplastic articles. 5,547,631, Cl. 264-521.000.
Merrell Pharmaceuticals Inc.: *See—*
Cardin, Alan D.; Jackson, Richard L.; and Mullins, Michael J., 5,547,992, Cl. 514-648.000.
Palfreyman, Michael G.; McDonald, Ian A.; Salituro, Francesco G.; and Schwarcz, Robert, 5,547,991, Cl. 514-564.000.
Merser, F. Gerard, to Avery Dennison Corp. Clothing tag and method of use. 5,546,688, Cl. 40-663.000.
Mertens, Richard: *See—*
Brehm, Helmut; Dahmen, Kurt; and Mertens, Richard, 5,548,049, Cl. 526-312.000.
Mesnard, Robert M.: *See—*
Maloney, William B.; Mesnard, Robert M.; and Swenton, Joseph M., 5,548,715, Cl. 395-183.040.
Messih, Isis A.; and Mingo, Paul C., to Ford Motor Company. Method and system for generating a fuel pulse waveform. 5,546,909, Cl. 123-492.000.
Messih, Isis A.; and Linenberg, Mark T., to Ford Motor Company. Air/fuel controller with compensation for secondary intake throttle transients. 5,546,910, Cl. 123-492.000.
Messinger, Steven D.: *See—*
Larson, Susan L.; Voigt, Douglas L.; Messinger, Steven D.; and Jacobson, Michael B., 5,548,712, Cl. 395-182.050.
Methfessel, Christoph: *See—*
Krüger, Bernd-Wieland; Maurer, Fritz; Methfessel, Christoph; Tietjen, Klaus; Maelicke, Alfred; Schmidt, Bernard; and Shiokawa, Kozo, 5,547,965, Cl. 514-342.000.
Metras, Steven: *See—*
Strobl, Karlheinz; and Metras, Steven, 5,547,456, Cl. 600-133.000.
Mevissen, Jeffrey: *See—*
Chen, Chorng-Jeou; Ladew, Richard; Qiu, Yong-Jian; and Mevissen, Jeffrey, 5,548,474, Cl. 361-313.000.
Meyer, Friedhelm: *See—*
Schramm, Günter; Kohl, Walter; Meyer, Friedhelm; Mittag, Rainer; and Suelzle, Helmut, 5,548,202, Cl. 322-33.000.
Meyer, Judith M.: *See—*
Hall, Larry; Chiang, Michael Y.; and Meyer, Judith M., 5,547,990, Cl. 514-563.000.
Meyer, Meinrad; and Summermatter, Peter, to Elpatronic AG. Apparatus for serially transferring objects between two conveyor means. 5,547,064, Cl. 198-468.100.
Meyer, Thorsten: *See—*
Papenhagen, Dieter; and Meyer, Thorsten, 5,546,904, Cl. 123-400.000.
Mibu, Hiroyuki: *See—*
Kawashima, Yoichi; Ota, Atsutoshi; Morikawa, Yuko; and Mibu, Hiroyuki, 5,547,952, Cl. 514-224.200.
Michael, David, to Cognex Corporation. Efficient image registration. 5,548,326, Cl. 348-87.000.
Michael Hoerauf Maschinenfabrik GmbH & Co. KG: *See—*
Mueller, Berthold, 5,547,124, Cl. 229-403.000.
Michael, Martin S.; and Leung, Frederick K., to National Semiconductor Corporation. Apparatus for preventing transferring of data with peripheral device for period of time in response to connection or disconnection of the device with the apparatus. 5,548,782, Cl. 395-835.000.
Michalczyk, Michael J.; and Sharp, Kenneth G., to E. I Du Pont de Nemours and Company. Single component inorganic/organic network materials and precursors thereof. 5,548,051, Cl. 528-15.000.
Michihira, Osamu: *See—*

Kato, Shinji; Tagawa, Chikashi; Michihira, Osamu; and Sone, Akira, 5,548,601, Cl. 371-68.100.

Michino, Yoshiyuki: *See*—
Goto, Kohei; Hattori, Iwakazu; Ogasahara, Shoji; Shibata, Masahiro; Michino, Yoshiyuki; Soga, Kazuo; and Shiono, Takeshi, 5,548,045, Cl. 526-161.000.

Mickelson, N. Peter: *See*—
Butler, Walter K.; Cote, Mark P.; Napiorkowski, John J.; Kroll, Thomas W.; Brower, Boyd G.; and Mickelson, N. Peter, 5,548,641, Cl. 379-399.000.

Microelectronics and Computer Technology Corporation: *See*—
Kumar, Nalin; and Xie, Chenggang, 5,548,185, Cl. 313-495.000.

Micron Communications, Inc.: *See*—
Blonsky, Peter M.; and Tuttle, Mark E., 5,547,781, Cl. 429-174.000.

Micron Technology, Inc.: *See*—
Batra, Shubneesh; Manning, Monte; Banerjee, Sanjay; and Damiano, John, Jr., 5,548,132, Cl. 257-66.000.
Corbett, Tim J.; and Moden, Walter L., 5,548,160, Cl. 257-666.000.

Microphase Corporation: *See*—
Spielman, Mark A., 5,548,255, Cl. 333-132.000.

Microsoft Corporation: *See*—
Lipe, Ralph A., 5,548,759, Cl. 395-600.000.
Rupel, Wesley O., 5,548,305, Cl. 345-150.000.
Siegel, Matthew R.; and Ferrell, John I., 5,548,718, Cl. 395-183.140.

Midwest Brake Bond Company: *See*—
Sommer, Gordon M., 5,547,431, Cl. 475-154.000.

Mifune, Hiroyuki: *See*—
Kojima, Tetsuro; Yagihara, Morio; Sasaki, Hirotomo; Mifune, Hiroyuki; and Kato, Shinji, 5,547,829, Cl. 430-603.000.

Mihara, Masaaki: *See*—
Futatsuya, Tomoshi; Mihara, Masaaki; Terada, Yasushi; Nakayama, Takeshi; Miyawaki, Yoshikazu; Kobayashi, Shinichi; and Ohkawa, Minoru, 5,548,557, Cl. 365-201.000.

Mihayashi, Keiji; and Ohkawa, Atsuhiro, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material containing compounds capable of releasing photographically useful groups and a specific silver iodobromide. 5,547,824, Cl. 430-544.000.

Mihelich, Michael E.: *See*—
Barnes, Keith W.; Bauman, Donald R.; Brace, Howard N.; Keefer, Philip A.; and Mihelich, Michael E., 5,548,802, Cl. 455-15.000.

Mikami, Kazuhiro: *See*—
Hayabuchi, Masahiro; Nishida, Masaaki; Yamamoto, Yoshihisa; Mikami, Kazuhiro; Tsutsui, Hiroshi; and Iwata, Akihito, 5,547,436, Cl. 477-114.000.

Mikhailov, Arkady J.: *See*—
Zege, Sergei O.; Zege, Irina A.; Antonov, Dmitry V.; Sedov, Igor I.; Makovsky, Lev V.; Pokladok, Igor A.; and Mikhailov, Arkady J., 5,547,316, Cl. 405-267.000.

Miki, Hirohiko, to Mitsubishi Chemical Corporation. Therapeutic agent for glaucoma. 5,547,993, Cl. 514-648.000.

Miller, Frank S.; and Croto, John F., to Imo Industries Inc. Visual method and apparatus for adjusting gears and pinions. 5,546,824, Cl. 74-421.00R.

Miller, Glenn T.: *See*—
Wallner, Barbara P.; Miller, Glenn T.; and Rosa, Margaret D., 5,547,853, Cl. 435-69.100.

Miller, Harold J., III; and Dybro, Niels, to AlliedSignal Inc. Seat belt retractor with integrated load limiter. 5,547,143, Cl. 242-379.100.

Miller, Paul K.: *See*—
Matheny, David T.; Miller, Paul K.; and Taborn, Michael P., 5,548,544, Cl. 364-745.000.

Miller, Robert C.: *See*—
Hastings, Calvin R.; Hauser, Ernest M.; and Miller, Robert C., 5,546,813, Cl. 73-861.290.

Miller, Robert O., to SGS-Thomson Microelectronics, Inc. Isoplanar isolated active regions. 5,548,154, Cl. 257-506.000.

Miller, Russell S.: *See*—
Miller, Steven A.; Miller, Russell S.; and Christensen, Roy W., 5,547,171, Cl. 266-78.000.

Miller, Steven A.; Miller, Russell S.; and Christensen, Roy W., to General Electric Company. Apparatus and method for atomizing liquid metal with viewing instrument. 5,547,171, Cl. 266-78.000.

Miller, Walter L.; Harikrishna, Jennifer A.; and Black, Stephen M., to University of California, Regents of the. Cholesterol disposal fusion enzymes. 5,547,868, Cl. 435-189.000.

Miller, William J.: *See*—
Collins, James P.; Dorn, Judy; Fahey, James T.; Linehan, Leo; Miller, William J.; Moreau, Wayne; Puttlitz, Erik A.; Smith, Randolph; and Spinillo, Gary, 5,547,812, Cl. 430-270.100.

Miller, William R. Article warmer with heated frame and flexible enclosure. 5,548,100, Cl. 219-521.000.

Millet, Edward M.: *See*—
Wiklof, Christopher A.; and Millet, Edward M., 5,548,688, Cl. 395-108.000.

Milligan, Charles A.: *See*—
Cheatham, Samuel D.; Jacobs, Lynn C.; Janssen, Donovan M.; Leonhardt, Michael L.; Milligan, Charles A.; and Todd, Christian A., 5,547,142, Cl. 242-338.100.

Milligan, Patrick E.: *See*—
deNormand, Richard S.; and Milligan, Patrick E., 5,546,702, Cl. 49-161.000.

Millipore Corporation: *See*—
Tarbet, Bryon J.; Bruening, Ronald L.; Di Leo, Anthony J.; Goddard, Philip M.; and Scarmoutzos, Louis M., 5,547,760, Cl. 428-471.000.

Mimura, Itaru; Ueda, Hirotada; Sumino, Shigeo; Ikezawa, Mitsuru; Suzuki, Toshiaki; Kinoshita, Taizo; and Tada, Katsumi, to Hitachi, Ltd. Apparatus for integrally controlling audio and video signals in real time and multi-site communication control method. 5,548,346, Cl. 348-738.000.

Mimura, Masahiro: *See*—
Horiike, Yoshio; Yoshimura, Yasuo; Yokoajiro, Yoshiyuki; Matsumura, Terue; Hasegawa, Makoto; and Mimura, Masahiro, 5,548,619, Cl. 375-344.000.

Minami, Hiroyuki: *See*—
Nakatani, Mitsunori; Kojima, Yoshiki; and Minami, Hiroyuki, 5,547,789, Cl. 430-5.000.

Minami, Yoichiro, to NEC Corporation. Decision circuit operable at a wide range of voltages. 5,548,227, Cl. 326-33.000.

Minamitaka, Junichi; Sato, Kunio; and Ohya, Mayumi, to Casio Computer Co., Ltd. Apparatus for appoximating envelope data and for extracting envelope data from a signal. 5,548,080, Cl. 84-627.000.

Minamizawa, Fumihiro; Iguchi, Masayoshi; and Takeyama, Koji, to Brother Kogyo Kabushiki Kaisha. Data communication device with transmitting condition set in accordance with noise level of activating means. 5,548,412, Cl. 358-406.000.

Minarik, Ronald W.: *See*—
Caldwell, Stephen P.; Harris Jr., Marvine; Matsakis, Demetrios J.; Minarik, Ronald W.; Schmidt, Kenneth M.; Weigand, Benjamin F.; Prill, Robert S.; and Siegel, Arnold B., 5,548,839, Cl. 455-313.000.

Minebea Co., Ltd.: *See*—
Egawa, Motoji; Fujita, Tetsuji; Sano, Akinobu; and Takayanagi, Kazutoshi, 5,548,459, Cl. 360-103.000.

Minemi, Masahiko: *See*—
Horimura, Hiroyuki; Okamoto, Kenji; Minemi, Masahiko; Kaji, Toshihiko; Takeda, Yoshinobu; and Takano, Yoshishige, 5,547,632, Cl. 419-28.000.

Minga, Robin L.: *See*—
Singleton, Andy H.; Kendrick, Crystal L.; Riemer, Reinhold L., II; and Minga, Robin L., 5,547,657, Cl. 424-49.000.

Mingo, Paul C.: *See*—
Messih, Isis A.; and Mingo, Paul C., 5,546,909, Cl. 123-492.000.

Minnesota Mining and Manufacturing: *See*—
Fisch, Richard S.; and Larshus, David A., 5,548,317, Cl. 347-171.000.

Minnesota Mining and Manufacturing Company: *See*—
Broyles, Bruce R.; Kipke, Cary A.; and George, William R., 5,546,996, Cl. 141-18.000.
Conwell, Stanley L.; and Wood, William P., 5,547,479, Cl. 51-309.000.
Gabor, Thomas; and O'Kelly, James M., 5,547,512, Cl. 118-718.000.
Gobran, Ramsis, 5,547,766, Cl. 428-515.000.
Kirchhoff, Kenneth J.; and Wolf, Robert J., 5,547,154, Cl. 248-118.300.
Royer, Leon D.; Skrtic, Thomas; and Zach, Mark J., 5,547,082, Cl. 206-725.000.

Minney, Jack L.: *See*—
Komarek, James A.; Minney, Jack L.; Nordine, Stephen P.; Lewis, Harold F.; Wada, Richard; and Stockman, John F., 5,548,592, Cl. 370-85.100.

Minolta Camera Kabushiki Kaisha: *See*—
Ueda, Toshihiko, 5,548,373, Cl. 355-55.000.
Yamanaka, Toshihisa; and Okabayashi, Eiji, 5,548,320, Cl. 547-246.000.

Minolta Co., Ltd.: *See*—
Anno, Masahiro; Nakamura, Minoru; Kobayashi, Makoto; and Hakumoto, Shigeyuki, 5,547,797, Cl. 430-106.600.
Demizu, Ichiro; Nagai, Yasuki; Nakamura, Mitsutoshi; Tanigami, Yukio; and Ueda, Hideaki, 5,547,794, Cl. 430-106.000.
Yoshie, Naoki; and Machida, Junji, 5,547,799, Cl. 430-110.000.

Miramon, Eric J., to Invental Laboratory, Inc. Easily-cleaned reusable lid including an evacuating pump. 5,546,997, Cl. 141-65.000.

Misawa, Tsutami; Ogiso, Akira; Imai, Rihoko; and Itoh, Hisato, to Mitsui Toatsu Chemicals, Inc. Water-soluble azo compounds. 5,548,073, Cl. 534-690.000.

Mise, Nobutake: *See*—
Sakaue, Akinori; Mise, Nobutake; and Ishizu, Makoto, 5,547,498, Cl. 106-20.00C.

Misheloff, Michael N., to VLSI Technology, Inc. Timing model and characterization system for logic simulation of integrated circuits. 5,548,526, Cl. 364-491.000.

Mishima, Tomoyoshi: *See*—
Tanimoto, Takuma; Kudo, Makoto; Mishima, Tomoyoshi; Nakajima, Akishige; Mori, Mitsuhiro; and Yamane, Masao, 5,548,138, Cl. 257-192.000.

Misiti, Domenico: *See*—
Tinti, Maria O.; Misiti, Domenico; and Cavazza, Claudio, 5,547,986, Cl. 514-547.000.

Mistretta, James C., to Eastman Kodak Company. Method and apparatus for identifying data storage disks. 5,548,571, Cl. 369-77.200.

Mita Industrial Co., Ltd.: *See*—
Fukami, Toshiyuki; and Tanaka, Masashi, 5,548,387, Cl. 355-274.000.
Hazama, Hiroyuki; Tsutsumi, Masahiro; and Watanabe, Masaru, 5,547,805, Cl. 430-125.000.
Umeda, Yasushi; Tomiyama, Tetsuo; Yoshikawa, Hiroyuki; Sakao, Tomohiko; Shimomura, Yoshiki; and Tanigawa, Sadao, 5,548,682, Cl. 395-10.000.

Mitani, Norio: *See*—
Kawai, Kazunari; and Mitani, Norio, 5,547,260, Cl. 299-33.000.

Mitchell Corporation of Owosso, Inc.: *See*—
Fredrick, Mark D., 5,547,259, Cl. 297-452.180.

Mitchell, Craig: *See*—
DiStefano, Thomas H.; Karavakis, Gus; Kovac, Zlata; and Mitchell, Craig, 5,548,091, Cl. 174-260.000.

Mitchell, Gary F.: *See*—
Yarmey, Marianne; Bello, James L.; Mitchell, Gary F.; Pearce, Glenn T.; Bowman, Wayne A.; and Sterman, Melvin, 5,547,832, Cl. 430-623.000.

Mitchell, Martin. Apparatus for breaking in athletic gloves. 5,547,114, Cl. 223-78.000.

Mitchell, Nancy G.; Langan, Joseph W.; Shipston, Adele C.; Russ, Timothy J.; and Smith, Douglas M., to Moore Business Forms, Inc. Linerless labels with tie coat. 5,547,738, Cl. 428-195.000.

Mitin, Timothy W.: *See*—
Kemp, Daniel N.; Mitin, Timothy W.; Rohman, Kenneth J.; Shirk, Christopher C.; and Wieck, Ronald W., 5,547,000, Cl. 141-104.000.

Mitsuba Electric Manufacturing Co., Ltd.: *See*—
Kogure, Mitsuhiro; Nagashima, Shinichi; Wakabayashi, Kazuhisa; Enkaku, Shigeyuki; Shimayama, Hitoshi; Kimura, Minoru; Shimoyama, Shuji; and Yokoo, Tsugio, 5,548,260, Cl. 335-126.000.

Mitsubhisi Denki Kabushiki Kaisha: *See*—
Muragishi, Takeo, 5,548,153, Cl. 257-365.000.

Mitsubishi Cable Industries, Ltd.: *See*—
Kudo, Toshio; Nagai, Masaaki; and Shiraiwa, Yasuo, 5,546,790, Cl. 73-40.500.00R.

Mitsubishi Chemical Corporation: *See*—
Ishio, Kozo; and Murayama, Tetsuo, 5,547,791, Cl. 430-59.000.
Ito, Kiichi; Yada, Shuhei; Oomori, Miho; and Nakamura, Toshiko, 5,548,047, Cl. 526-240.000.
Miki, Hirohiko, 5,547,993, Cl. 514-648.000.
Sakaue, Akinori; Mise, Nobutake; and Ishizu, Makoto, 5,547,498, Cl. 106-20.00C.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Aizawa, Jyun-ichi; Nakagawa, Kunihiko; Nakao, Hiroshi; Ezaki, Hitoshi; and Sunaga, Kouhei, 5,547,297, Cl. 400-567.000.
Fujii, Nariaki; and Kimura, Tatsuya, 5,547,899, Cl. 437-151.000.
Fujii, Yoshio; Tokunaga, Takashi; Nakaki, Yoshiyuki; Tsutsumi, Kazuhiko; Hashima, Kazuo; Fukami, Tatsuya; and Kawano, Yuji, 5,547,751, Cl. 428-332.000.
Fukui, Wataru, 5,546,905, Cl. 123-25.000.
Futatsuya, Tomoshi; Mihara, Masaaki; Terada, Yasushi; Nakayama, Takeshi; Miyawaki, Yoshikazu; Kobayashi, Shinichi; and Ohkawa, Minoru, 5,548,557, Cl. 365-201.000.
Harada, Masana, 5,547,886, Cl. 437-51.000.
Hatauchi, Kazushi; and Shimamoto, Haruo, 5,548,482, Cl. 361-720.000.
Inubushi, Toshiya; Toko, Yoshio; and Musha, Atsushi, 5,548,824, Cl. 455-90.000.
Kawamoto, Atsunobu; and Yasuda, Yukio, 5,548,220, Cl. 324-399.000.
Kimura, Yutaro; Ikeshima, Tetsuhiko; Tonami, Hiromichi; Konishi, Ikuo; Horikawa, Hiroshi; Daikoku, Akihiro; Sakabe, Shigekazu; Inoue, Masao; and Yamasaki, Akinori, 5,548,629, Cl. 378-134.000.
Kohno, Yasutaka, 5,548,144, Cl. 257-284.000.
Maemura, Kosei; and Yamamoto, Kazuya, 5,548,825, Cl. 455-115.000.
Mitsuhashi, Yasuo; and Morita, Masaki, 5,548,335, Cl. 348-373.000.
Nakamura, Koji; and Yazu, Tetsushin, 5,547,409, Cl. 445-8.000.
Nakatani, Mitsunori; Kojima, Yoshiki; and Minami, Hiroyuki, 5,547,789, Cl. 430-5.000.
Ogawa, Yoshihiro; Zenmei, Keisaku; and Isozumi, Shuzo, 5,548,171, Cl. 310-154.000.
Ogoh, Ikuo, 5,547,885, Cl. 437-44.000.
Osawa, Takashi, 5,548,187, Cl. 315-94.000.
Seiwa, Yoshito; Kitano, Toshiaki; Kohno deceased, Yasutaka, 5,547,642, Cl. 422-186.300.
Sugawara, Masayuki; and Mori, Toshihiro, 5,548,098, Cl. 219-121.670.
Tobita, Youichi, 5,548,596, Cl. 371-21.200.
Tsujita, Kouichirou, 5,547,813, Cl. 430-325.000.
Watanabe, Eiki; Ishii, Toshiaki; Mizuno, Masamoto; and Sugita, Kazuhiko, 5,547,059, Cl. 187-289.000.
Yamamoto, Kazuya; Tanino, Noriyuki; and Umemoto, Tetsuya, 5,548,246, Cl. 330-51.000.
Yamasaki, Shinji, 5,547,044, Cl. 187-254.000.
Yasuda, Yukio; and Ohashi, Yutaka, 5,548,242, Cl. 327-559.000.

Mitsubishi Denki Kaibushiki Kaisha: *See*—
Fujiwara, Susumu; Sakata, Masahiko; and Ishizuka, Mikio, 5,548,652, Cl. 381-71.000.

Mitsubishi Electric Information Technology Center America, Inc.: *See*—
Frisken Gibson, Sarah F., 5,548,694, Cl. 395-124.000.

Mitsubishi Gas Chemical Co., Ltd.: *See*—
Machida, Isao; Fujiura, Ryuji; Kojima, Takashi; and Sakamoto, Hitoshi, 5,547,654, Cl. 423-445.00R.

Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Watanabe, Kazuhide; Takada, Kimiharu; Sekita, Masumi; Ito, Takahide; and Tani, Kazuya, 5,547,355, Cl. 418-55.500.

Mitsubishi Kasei Corporation: *See*—
Uehara, Yumito; Enokido, Nobuo; Fujioka, Kiyotoshi; Shimizu, Nobuyuki; and Ueda, Motonori, 5,547,722, Cl. 428-35.700.

Mitsubishi Paper Mills: *See*—
Noda, Touru; Uno, Akira; and Muraoka, Kazuyoshi, 5,547,822, Cl. 430-531.000.

Mitsubishi Rayon Co., Ltd.: *See*—
Kamo, Jun; Hirai, Takayuki; Takahashi, Hiroshi; and Kondou, Kenji, 5,547,756, Cl. 428-394.000.

Mitsuhashi, Masakazu: *See*—
Iritani, Satoshi; Mitsuhashi, Masakazu; Chaen, Hiroto; and Miyake, Toshio, 5,547,692, Cl. 426-53.000.

Mitsuhashi, Yasuo; and Morita, Masaki, to Mitsubishi Denki Kabushiki Kaisha. Dual directional microphone video camera having operator voice cancellation and control. 5,548,335, Cl. 348-373.000.

Mitsui, Mutsuo: *See*—
Masaki, Yuichi; Onuma, Kenji; Yoshioka, Toshifumi; and Mitsui, Mutsuo, 5,548,428, Cl. 359-80.000.
Shimamune, Masayuki; Enomoto, Takashi; Murata, Tatsuo; and Mitsui, Mutsuo, 5,546,998, Cl. 141-82.000.

Mitsui Toatsu Chemicals, Inc.: *See*—
Asanuma, Tadashi; Kimura, Shigeru; Uchikawa, Nobutaka; and Shiomura, Tetsunosuke, 5,548,007, Cl. 524-99.000.
Asanuma, Tadashi; Kimura, Shigeru; Uchikawa, Nobutaka; and Shiomura, Tetsunosuke, 5,548,008, Cl. 524-99.000.
Misawa, Tsutami; Ogiso, Akira; Imai, Rihoko; and Itoh, Hisato, 5,548,073, Cl. 534-690.000.

Mitsumi Electric Co., Ltd.: *See*—
Ogino, Toshikazu; and Yamamoto, Ryoji, 5,548,247, Cl. 330-277.000.
Teshima, Katsuyoshi; Kamoshita, Hideo; and Baba, Masaaki, 5,548,264, Cl. 336-65.000.
Uchida, Tetsuro; and Ohira, Kazuhide, 5,548,462, Cl. 361-18.000.

Mitsuno, Makoto: *See*—
Shimoyoshi, Osamu; Akagiri, Kenzo; Suzuki, Hiroshi; and Mitsuno, Makoto, 5,548,574, Cl. 369-124.000.

Mitsuru, Iseno: *See*—
Yamasaki, Gorou; Mitsuru, Iseno; and Miyamaru, Yukio, 5,547,382, Cl. 434-61.000.

Mitsuya, Teruaki; Okada, Hisao; and Hoshi, Nobuyoshi, to Hitachi, Ltd. Integrated printing system for automated and maintenance free operation. 5,548,375, Cl. 355-200.000.

Mittag, Rainer: *See*—
Schramm, Günter; Kohl, Walter; Meyer, Friedhelm; Mittag, Rainer; and Suelzle, Helmut, 5,548,202, Cl. 322-33.000.

Miura, Kazuhiro: *See*—
Nakamura, Yoshifumi; Bessho, Yoshihiro; Yuhaku, Satoru; Hakotani, Yasuhiko; Itagaki, Minehiro; and Miura, Kazuhiro, 5,547,530, Cl. 156-89.000.

Miwa, Hiroyuki; Gomi, Takayuki; and Kato, Katsuyuki, to Sony Corporation. Method and apparatus for SOI transistor. 5,548,156, Cl. 257-517.000.

Miwa, Kiyoshi: *See*—
Kawasaki, Hisashi; Tsuchiya, Makoto; Miwa, Kiyoshi; and Kawahara, Yoshio, 5,547,864, Cl. 435-170.000.

Miwada, Satoshi: *See*—
Tanaka, Toyokazu; Takamoto, Manabu; Miwada, Satoshi; Tetsu, Noriyuki; and Waizumi, Sadao, 5,548,476, Cl. 361-611.000.

Miyabe, Kazumichi: *See*—
Kakii, Toshiaki; Ishida, Hidetoshi; Ogawa, Shinji; and Miyabe, Kazumichi, 5,548,677, Cl. 385-92.000.

Miyagaki, Hisanori: *See*—
Yoshino, Hitoshi; Oshima, Keiji; and Miyagaki, Hisanori, 5,548,304, Cl. 345-145.000.

Miyake, Toshio: *See*—
Iritani, Satoshi; Mitsuhashi, Masakazu; Chaen, Hiroto; and Miyake, Toshio, 5,547,692, Cl. 426-53.000.

Miyakoshi, Toshimori, to Canon Kabushiki Kaisha. Magnetooptic recording medium. 5,547,773, Cl. 428-634.0ML.

Miyama, Takashi: *See*—
Nishizawa, Masumi; Iijima, Masayuki; and Miyama, Takashi, 5,547,804, Cl. 430-114.000.

Miyamaru, Yukio: *See*—
Yamasaki, Gorou; Mitsuru, Iseno; and Miyamaru, Yukio, 5,547,382, Cl. 434-61.000.

Miyamoto, Hajime, to Fuji Photo Film Co., Ltd. Silver halide photographic material comprising emulsion layer and backing layer provided on support. 5,547,820, Cl. 430-523.000.

Miyamoto, Hidenori: *See*—
Soshi, Isao; Miyamoto, Hidenori; and Nakamura, Toshiyuki, 5,548,361, Cl. 354-106.000.

Miyamoto, Yasuhiro; Ishihara, Toshiaki; and Uda, Minoru, to NGK Insulators, Ltd. Method of molding shaped pulp articles from fiber pulp. 5,547,544, Cl. 162-199.000.

Miyashita, Takashi; Miyazawa, Yoshinaga; and Kikuchi, Zenta, to Casio Computer Co., Ltd. Liquid crystal display device. 5,548,426, Cl. 359-73.000.

Miyashita, Yoshiaki: *See*—
Kuramoto, Shinichi; Takahashi, Sadao; Kimura, Yoshiyuki; Ando, Kazuhiro; Saito, Tadashi; Asaba, Youichi; Tanikawa, Kiyoshi; Miyashita, Yoshiaki; and Shinguryo, Satoshi, 5,547,793, Cl. 430-97.000.

Miyata, Keiji: *See*—
Ohta, Mitsuaki; Suzuki, Takeshi; Ohmori, Jun-ya; Miyata, Keiji; and Yanagisawa, Isao, 5,547,961, Cl. 514-300.000.

Miyawaki, Yoshikazu: *See*—
Futatsuya, Tomoshi; Mihara, Masaaki; Terada, Yasushi; Nakayama, Takeshi; Miyawaki, Yoshikazu; Kobayashi, Shinichi; and Ohkawa, Minoru, 5,548,557, Cl. 365-201.000.

Miyazaki, Benichi; Nishino, Yukio; and Wakabayashi, Kanji, to Matsushita Electric Industrial Co., Ltd. Disc cartridge. 5,548,577, Cl. 369-291.000.

Miyazaki, Hisashi: *See*—
Kimura, Ichiro; and Miyazaki, Hisashi, 5,547,349, Cl. 417-282.000.
Miyazaki, Nobuyuki: *See*—
Kawakami, Shoichi; Okamoto, Toru; Miyazaki, Nobuyuki; Uchino, Bunji; Nomura, Kazuyoshi; and Kato, Hiroyuki, 5,548,019, Cl. 524-591.000.
Miyazaki, Seizo; Saito, Shiro; and Kitahara, Daijiro, to NSK, Ltd. Preloaded rolling bearing units. 5,547,291, Cl. 384-512.000.
Miyazaki, Shigeki, to Sony Corporation. Plasma addressing electro-optical device having electrodes on a planar surface. 5,548,421, Cl. 359-54.000.
Miyazawa, Eiichi: *See*—
Arikawa, Yasuo; and Miyazawa, Eiichi, 5,546,810, Cl. 73-702.000.
Miyazawa, Kazuhiro: *See*—
Morimoto, Hitoshi; Miyazawa, Kazuhiro; and Tsuchiya, Masaru, 5,547,810, Cl. 430-203.000.
Miyazawa, Yoshinaga: *See*—
Miyashita, Takashi; Miyazawa, Yoshinaga; and Kikuchi, Zenta, 5,548,426, Cl. 359-73.000.
Miyoshi, Motosuke; Okumura, Katsuya; and Yamazaki, Yuichiro, to Kabushiki Kaisha Toshiba. Magnetic field immersion type electron gun. 5,548,183, Cl. 313-153.000.
Mize, Patrick D.: *See*—
Friedman, Stephen B.; Studabaker, William B.; and Mize, Patrick D., 5,547,877, Cl. 436-126.000.
Mizoguchi, Tomomichi: *See*—
Hasegawa, Jun; Isomura, Shigenori; Mizoguchi, Tomomichi; and Nakamori, Yasutaka, 5,547,552, Cl. 204-406.000.
Mizuguchi, Masaaki: *See*—
Matsumoto, Yoshiro; Isaka, Kazumi; Mizuguchi, Masaaki; Oshima, Yoshimitsu; and Takatsu, Osamu, 5,547,450, Cl. 492-54.000.
Mizuguchi, Yoshihiro; and Hamada, Hiroshi, to Sharp Kabushiki Kaisha. Transmission type color liquid display apparatus with first and second lens layers located between a white light source and the display device. 5,548,349, Cl. 348-766.000.
Mizuno, Masamoto: *See*—
Watanabe, Eiki; Ishii, Toshiaki; Mizuno, Masamoto; and Sugita, Kazuhiko, 5,547,059, Cl. 187-289.000.
Mizuno, Toshiaki: *See*—
Iwamoto, Shinji; Mizuno, Toshiaki; Muramatsu, Toshihiko; Nakashima, Kazushi; Abe, Tomoaki; Yonekawa, Masao; and Sakashita, Yoshihiro, 5,546,911, Cl. 123-497.000.
Mizuno, Toshio: *See*—
Yamaguchi, Akira; Kobayashi, Hideo; and Mizuno, Toshio, 5,548,806, Cl. 455-33.100.
Mizutani, Uichiro: *See*—
Ito, Yoshitaka; Ishii, Masami; Nishio, Takayuki; Mizutani, Uichiro; Yamada, Yuh; Ogasawara, Fumihiko; and Suganuma, Motohiro, 5,547,924, Cl. 505-500.000.
Mlinaric, Michael: *See*—
Kehrbach, Wolfgang; Mlinaric, Michael; Ziegler, Dieter; Brueckner, Reinhard; and Bielenberg, Willi, 5,547,967, Cl. 514-361.000.
Mo, Richard C.: *See*—
Bannister, Cecil H.; Marchetti, Marco; Mo, Richard C.; Switzer, Tod W.; and Moghe, Dhawal B., 5,548,636, Cl. 379-201.000.
Moard, David M.: *See*—
Greiner, Leonard; Moard, David M.; and Bhatt, Bharat, 5,546,701, Cl. 48-108.000.
Mobil Oil Corporation: *See*—
Blais, Marcia; and Knoerzer, Anthony R., 5,547,764, Cl. 428-461.000.
Buchanan, John S.; Mathias, Mark F.; Sodomin, Joseph F., III; and Teitman, Gerald J., 5,547,648, Cl. 423-210.000.
Demmel, Edward J.; and Owen, Hartley, 5,547,910, Cl. 502-42.000.
Mochizuki, Hiroshi: *See*—
Funaki, Hideyuki; Mochizuki, Hiroshi; Maruyama, Ryoji; and Fujii, Kanae, 5,548,151, Cl. 257-421.000.
Mochizuki, Yoshio; Kato, Hideo; and Sugiura, Nobutake, to Kabushiki Kaisha Toshiba. Semiconductor integrated circuit. 5,548,559, Cl. 365-230.080.
Moden, Walter L.: *See*—
Corbett, Tim J.; and Moden, Walter L., 5,548,160, Cl. 257-666.000.
Moghe, Dhawal B.: *See*—
Bannister, Cecil H.; Marchetti, Marco; Mo, Richard C.; Switzer, Tod W.; and Moghe, Dhawal B., 5,548,636, Cl. 379-201.000.
Mogi, Takao: *See*—
Niki, Mamoru; Hosaka, Yoshiaki; Mogi, Takao; and Saito, Haruo, 5,548,451, Cl. 360-32.000.
Mogi, Yoshio: *See*—
Ryu, Tadamitsu; Mogi, Yoshio; Tomita, Masao; and Fukatsu, Takanori, 5,548,751, Cl. 395-600.000.
Mohan, Ned; and Rastogi, Mukul, to University of Minnesota, Regents of The. Hybrid filter for reducing distortion in a power system. 5,548,165, Cl. 307-36.000.
Moldskred, Walt; and Ramberg, Jon R., to Intermec Corporation. Method and apparatus for scanning symbols. 5,548,108, Cl. 235-462.000.
Molex Incorporated: *See*—
Benes, Kevin C.; and Pawlicki, Jeffrey J., 5,547,391, Cl. 439-399.000.
Comstock, Gary M., 5,547,394, Cl. 439-557.000.
Ichikawa, Shouzou; and Matsuura, Naoya, 5,547,398, Cl. 439-607.000.
Watanabe, Souichi; and Kamei, Kazuaki, 5,547,065, Cl. 198-604.000.
Molinari, Giuliano, to Farmin S.r.l. Topical pharmaceutical compositions for respiratory allergies. 5,547,946, Cl. 514-129.000.
Molnlycke AB: *See*—
Billgren, Tomas, 5,546,960, Cl. 128-849.000.
Molz, Thomas; Rehm, Hans-Joergen; Vogt, Toni; and Geke, Juergen, to Henkel Kommanditgesellschaft auf Aktien. Process for denaturing and coagulating paints. 5,547,587, Cl. 210-696.000.
Momparler, Richard L.: *See*—
Dore, Benoit T.; Momparler, Richard L.; and Uskokovic, Milan R., 5,547,947, Cl. 514-167.000.
Monash University: *See*—
Muddle, Barry C.; and Nie, Jianfeng, 5,547,633, Cl. 420-552.000.
Moncrief, Frank; Ziegler, Kelly W.; Hiney, Michael; and Grimm, Dennis, to Riverhood International Corporation. Packaging machine and method of packaging articles. 5,546,734, Cl. 53-534.000.
Monge-Cadet, Pierre: *See*—
Paidassi, Serge; Ernoult, Jacques; Brun, Michel; Monge-Cadet, Pierre; Pauleau, Yves; and Farges, Guy, 5,547,767, Cl. 428-610.000.
Monmasu, Hiroshi: *See*—
Uchimoto, Daisuke; Monmasu, Hiroshi; Tomita, Toshihiko; and Inoue, Junsuke, 5,547,158, Cl. 248-396.000.
Monsanto Company: *See*—
Simon, Robert H. M.; and Farmer, Peter H., 5,547,736, Cl. 428-143.000.
Monticelli, Dennis M., to National Semiconductor Corporation. Method and circuit for control of saturation current in voltage regulators. 5,548,205, Cl. 323-274.000.
Monzello, Roy C.: *See*—
Talwar, Ashok K.; and Monzello, Roy C., 5,548,838, Cl. 455-304.000.
Moody, Gillian M.; and Happs, Clive, to Allied Colloids Limited. Production of alumina. 5,547,647, Cl. 423-121.000.
Moore Business Forms, Inc.: *See*—
Mitchell, Nancy G.; Langan, Joseph W.; Shipston, Adele C.; Russ, Timothy J.; and Smith, Douglas M., 5,547,738, Cl. 428-195.000.
Moore, Charles E.: *See*—
Brown, Charles A.; Rieck, George C.; and Moore, Charles E., 5,547,887, Cl. 437-51.000.
Moore, Leo M., to Mutual Holdings Inc. Fabric securing device including adhesive and needle lubrication. 5,546,877, Cl. 112-103.000.
Moosbrucker, Karl, to Claas Saulgau GmbH. Mowing device for stalky stem products. 5,546,737, Cl. 56-94.000.
Mora, Raul, to Alrama Enterprises, Inc. Adjustable resistance cord winding exercise method. 5,547,441, Cl. 482-46.000.
Moradi-Araghi, Ahmad: *See*—
Ahmed, Iqbal; and Moradi-Araghi, Ahmad, 5,547,025, Cl. 166-295.000.
Moran, Thomas P.; Pedersen, Elin R.; McCall, Michael K.; and Halasz, Frank G., to Xerox Corporation. Wiping metaphor as a user interface for operating on graphical objects on an interactive graphical display. 5,548,705, Cl. 395-159.000.
Moreau, Wayne: *See*—
Collins, James P.; Dorn, Judy; Fahey, James T.; Linehan, Leo; Miller, William J.; Moreau, Wayne; Puttlitz, Erik A.; Smith, Randolph; and Spinillo, Gary, 5,547,812, Cl. 430-270.100.
Morehouse, Wallace F.: *See*—
Dibble, Gary E.; Morehouse, Wallace F.; and Blackman, Ralph G., 5,546,837, Cl. 82-169.000.
Moretto, Hans-Heinrich: *See*—
Weber, Wilhelm; Sockel, Karl-Heinz; and Moretto, Hans-Heinrich, 5,548,009, Cl. 524-157.000.
Morgan, John C.: *See*—
Ballard, John H.; Cooper, Stafford S.; Morgan, John C.; Lawrence, William R.; and Reed, Bobby E., 5,548,115, Cl. 250-253.000.
Morgan, Richard A.: *See*—
Chapman, George R., Jr.; Morgan, Richard A.; Stewart, Charles W.; Tuminello, William H.; Van Alsten, John G.; Vogel, Randall A.; and Wagman, Mark E., 5,547,761, Cl. 428-422.000.
Morgenstern, Jay P.: *See*—
Rogers, Bruce L.; Morgenstern, Jay P.; Bond, Julian F.; Garman, Richard D.; Greenstein, Julia L.; Kuo, Mei-chang; and Morville, Malcolm, 5,547,669, Cl. 424-185.100.
Mori, Mitsuhiro: *See*—
Tanimoto, Takuma; Kudo, Makoto; Mishima, Tomoyoshi; Nakajima, Akishige; Mori, Mitsuhiro; and Yamane, Masao, 5,548,138, Cl. 257-192.000.
Mori, Takanobu: *See*—
Siga, Masao; Kuriyama, Mitso; Mori, Takanobu; Fukui, Yutaka; and Ishizuka, Tatsuro, 5,548,174, Cl. 310-261.000.
Mori, Toshihiro: *See*—
Sugawara, Masayuki; and Mori, Toshihiro, 5,548,098, Cl. 219-121.670.
Mori, Yukiko: *See*—
Koizumi, Ayako; Mori, Yukiko; and Aoki, Tomomi, 5,548,706, Cl. 395-161.000.
Morikawa, Yukihiro: *See*—
Hirayama, Shinji; Konishi, Shin; Hidai, Takao; Hama, Shinjiro; Hashimoto, Sadako; and Morikawa, Yukihiro, 5,548,057, Cl. 528-67.000.
Morikawa, Yuko: *See*—
Kawashima, Yoichi; Ota, Atsutoshi; Morikawa, Yuko; and Mibu, Hiroyuki, 5,547,952, Cl. 514-224.200.
Morimoto, Hitoshi; Miyazawa, Kazuhiro; and Tsuchiya, Masaru, to Konica Corporation. Image forming method with alkali precursor. 5,547,810, Cl. 430-203.000.
Morimura, Yasuhiro: *See*—

Niwa, Hideyuki; Sasaki, Kiyomi; Yoshida, Kyoei; Tanuma, Itsuo; Naito, Kazuo; Morimura, Yasuhiro; and Koga, Takahiko, 5,547,762, Cl. 428-442.000.
Morinigo, Fernando B.: *See*—
Bulgatz, Dennis C.; Morinigo, Fernando B.; Sortore, Christopher; and Stuart, Keith O., 5,548,263, Cl. 335-274.000.
Morioka, Tatsuya: *See*—
Shimonaka, Atsushi; Taneya, Mototaka; Kawanishi, Hidenori; and Morioka, Tatsuya, 5,548,434, Cl. 359-161.000.
Morisawa, Akira: *See*—
Kozaki, Kengo; Ohyachi, Nobuyuki; Tanaka, Seiji; Morisawa, Akira; and Nakazaki, Tosiyuki, 5,548,828, Cl. 455-161.200.
Morita, Masaki: *See*—
Mitsuhashi, Yasuo; and Morita, Masaki, 5,548,335, Cl. 348-373.000.
Morita, Mika, to Kabushiki Kaisha Toshiba. Microwave oven with heating unevenness preventing function. 5,548,103, Cl. 219-703.000.
Morita, Nobuhiro; and Tada, Takeshi, to Ricoh Company, Ltd. Method and apparatus for measuring eccentricity of aspherical lens having an aspherical surface on only one lens face. 5,548,396, Cl. 356-127.000.
Morita, Shigeru: *See*—
Kato, Takefumi; Morita, Shigeru; and Sato, Kiminori, 5,547,362, Cl. 425-297.000.
Morita, Shizuo: *See*—
Fukuchi, Masakazu; Morita, Shizuo; Haneda, Satoshi; Satoh, Hiseo; and Ikeda, Tadayoshi, 5,548,379, Cl. 355-210.000.
Moriya, Hiroyuki; Tomonaga, Junichi; Hashimoto, Kiyoshi; and Muraoka, Kazunari, to Fuji Xerox Co., Ltd. Micromilling apparatus. 5,547,135, Cl. 241-40.000.
Moriyama, Seiichi: *See*—
Tomaru, Masaki; Moriyama, Seiichi; and Sadakata, Kiyoshi, 5,547,221, Cl. 280-777.000.
Morizot, Gérard: *See*—
Bidaud, Francis; Benoit, Sylvain; Plisson, Jacques; Morizot, Gérard; Roth, Harald; and Huber, Adolf, 5,548,199, Cl. 318-802.000.
Morooka, Yasuo: *See*—
Kayama, Masahiro; Morooka, Yasuo; Sugita, Yoichi; and Nakajima, Masaaki, 5,548,597, Cl. 371-25.100.
Morral Gispert, Jaime, to Astral, Sociedad Anónima de Construcciones Metálicas. Ladder. 5,547,041, Cl. 182-228.000.
Morris, Francis J.; Yang, Jau-Yuann; Plumton, Donald L.; and Yuan, Han-Tzong, to Texas Instruments Incorporated. Bipolar transistor having a self emitter contact aligned. 5,548,141, Cl. 257-192.000.
Morris, Philip A.: *See*—
Riley, Thomas N.; and Morris, Philip A., 5,546,825, Cl. 74-477.000.
Morrison, Gary W., to Imperial Chemical Industries PLC. Thermal transfer printing receiver. 5,547,916, Cl. 503-227.000.
Morrison, John W., II: *See*—
Kumar, Rajendra; and Morrison, John W., II, 5,548,477, Cl. 361-680.000.
Mortara, David W.: *See*—
Schoeckert, Kurt P.; and Mortara, David W., 5,546,950, Cl. 128-696.000.
Mortara Instrument, Inc.: *See*—
Schoeckert, Kurt P.; and Mortara, David W., 5,546,950, Cl. 128-696.000.
Mortensen, Kelly J., to Forbo Industries, Inc. Conductive polymeric adhesive for flooring containing silver-coated non-conductive fiber cores. 5,547,610, Cl. 252-514.000.
Morton International, Inc.: *See*—
Dyer, David J.; and Gunn, Brian D., 5,547,212, Cl. 280-728.200.
Lang, Gregory J.; and Marjanski, George C., 5,547,213, Cl. 280-728.200.
Rink, Linda M.; and Hock, Christopher, 5,547,638, Cl. 422-164.000.
Morville, Malcolm: *See*—
Rogers, Bruce L.; Morgenstern, Jay P.; Bond, Julian F.; Garman, Richard D.; Greenstein, Julia L.; Kuo, Mei-chang; and Morville, Malcolm, 5,547,669, Cl. 424-185.100.
Mosel Vitelic Inc.: *See*—
Juang, Miin-Horng; Chang, San-Jung; and Wang, Chin-Hsien, 5,547,882, Cl. 437-40.000.
Moss, John S.: *See*—
Dalgleish, Kevin L.; Hoe, Sei S.; Reinhart, Gregory R.; Somoza, Vincent E.; Pike, Rodney D.; Moss, John S.; and Tencer, Michal, 5,548,643, Cl. 379-429.000.
Motonobu, Masahiro; and Ueki, Kouichi, to Fuji Electric Co., Ltd. Snubber circuit for switching power supply. 5,548,503, Cl. 363-56.000.
Motorola: *See*—
Dupont, Pierre, 5,548,598, Cl. 371-35.000.
Grodzinski, Piotr; Lee, Hsing-Chung; and Shieh, Chan-Long, 5,547,898, Cl. 437-129.000.
Motorola, Inc.: *See*—
Bruckert, Eugene J.; and Vilmur, Richard J., 5,548,808, Cl. 455-33.200.
Davis, Jack R.; Gallup, Michael G.; Goke, L. Rodney; Welty, Erik L.; and Wiles, Michael F., 5,548,771, Cl. 395-800.000.
Ford, David K.; and Weir, Bernard E., III, 5,548,285, Cl. 341-100.000.
Gallup, Michael G.; and Goke, L. Rodney, 5,548,768, Cl. 395-375.000.
Heck, Joseph P., 5,548,840, Cl. 455-326.000.
Krebs, Jay; and Erickson, Paul M., 5,548,631, Cl. 379-58.000.
Lloyd, Scott E.; and Wang, Shay-Ping T., 5,548,752, Cl. 395-600.000.
Olds, Keith A.; and Kurby, Christopher N., 5,548,800, Cl. 455-12.100.
Susak, David M., 5,548,233, Cl. 327-66.000.
Tracy, James L., 5,548,084, Cl. 174-35.00R.
Waldo, Whitson G., III, 5,548,625, Cl. 378-34.000.
Wang, Shay-Ping T., 5,548,685, Cl. 395-24.000.
Yishay, Oded; Jelemensky, Joseph; and Iles, Alexander L., 5,548,794, Cl. 395-871.000.
Motosugi, Kazutoshi, to Nikon Corporation; and Nikon Engineering Co., Ltd. Optical three-dimensional shape measuring apparatus having a device for accurately positioning and measuring an object. 5,548,405, Cl. 356-376.000.
Motoyama, Tetsuro, to Ricoh Company, Ltd.; and Ricoh Corporation. Method and apparatus for controlling a printer using the N/2^n format. 5,548,687, Cl. 395-101.000.
Mount, Houston B.: *See*—
Warren, Tommy M.; and Mount, Houston B., 5,547,031, Cl. 175-61.000.
Mountain Equipment, Inc.: *See*—
Levis, Jeffrey D., 5,547,461, Cl. 602-19.000.
Mozumder, Purnendu: *See*—
Chatterjee, Amitava; Liu, Jiann; Mozumder, Purnendu; Rodder, Mark S.; and Chen, Ih-Chin, 5,548,548, Cl. 365-149.000.
Muchin, Jerome D. Nasal dilator. 5,546,929, Cl. 128-200.240.
Mucke, Lars H.; and Heinonen, Jarmo, to Nokia Mobile Phones Ltd. Spread spectrum radiotelephone having adaptive transmitter gain control. 5,548,616, Cl. 375-295.000.
Muddle, Barry C.; and Nie, Jianfeng, to Monash University. Aluminum-titanium alloy. 5,547,633, Cl. 420-552.000.
Mudge, J. Craig: *See*—
Appel, James J.; Greene, Daniel H.; and Mudge, J. Craig, 5,548,357, Cl. 353-69.000.
Mueller, Armin: *See*—
Reinthaler, Peter; and Mueller, Armin, 5,547,755, Cl. 428-364.000.
Mueller, Berthold, to Michael Hoerauf Maschinenfabrik GmbH & Co. KG. Heat insulating container. 5,547,124, Cl. 229-403.000.
Mueller, Denis A.: *See*—
Wehrli, Henry A., III; Bauer, James A.; and Mueller, Denis A., 5,548,523, Cl. 364-483.000.
Mueller, Heinz-Dieter: *See*—
Boehnke, Gerd; Reuschel, Juergen; Mueller, Heinz-Dieter; and Klauker, Karl-Heinz, 5,548,644, Cl. 379-433.000.
Mueller, P. Michael: *See*—
Platt, Grayeme E.; Anderson, Robert D.; and Mueller, P. Michael, 5,546,785, Cl. 72-450.000.
Mueller, Reinhardt: *See*—
Weidner, Richard; Mautner, Konrad; and Mueller, Reinhardt, 5,548,053, Cl. 528-14.000.
Mulally, Daniel J.: *See*—
Anderson, Mark V.; and Mulally, Daniel J., 5,548,669, Cl. 385-19.000.
Mullenbach, Guy T.; Blaney, Jeffrey M.; and Rosenberg, Steven, to Chiron Corporation. Muteins of human epidermal growth factor exhibiting enhanced binding at low PH. 5,547,935, Cl. 514-12.000.
Müller, Dietmar; Helfrich, Mathial; and Mandt, Michael, to Fraunhofer Gesellschaft zur Forderung der angewandten Forderung der angewandten Forschung e.V. Process for the production of desensitized explosives. 5,547,527, Cl. 149-19.920.
Muller, Franz M. R. Barrier construction for removably closing road passages. 5,547,310, Cl. 404-6.000.
Müller, Martin: *See*—
Bartsch, Dusan; Gissmann, Lutz; and Müller, Martin, 5,547,846, Cl. 435-7.100.
Müller, Michael: *See*—
Podszun, Wolfgang; Winkel, Jens; and Müller, Michael, 5,548,001, Cl. 523-116.000.
Mulligan, Geoffrey: *See*—
Aziz, Ashar; Mulligan, Geoffrey; Patterson, Martin; and Scott, Glenn, 5,548,646, Cl. 380-23.000.
Mullins, James A.: *See*—
White, Walter R., III; and Mullins, James A., 5,547,998, Cl. 521-131.000.
Mullins, Michael J.: *See*—
Cardin, Alan D.; Jackson, Richard L.; and Mullins, Michael J., 5,547,992, Cl. 514-648.000.
Mullock, Daniel; Baker, Paul; and Knight, John, to Chiquita Brands, Inc. Unitized, stable stacking system with tier sheet stabilizer, and method. 5,547,081, Cl. 206-504.000.
Mulrenin, Peggy S.: *See*—
Bourlier, Ken A.; and Mulrenin, Peggy S., 5,548,015, Cl. 524-503.000.
Munday, Mark L.: *See*—
Hemminger, Rodney C.; and Munday, Mark L., 5,548,527, Cl. 364-492.000.
Munnelly, Philip A.: *See*—
Lyon, John C., 5,547,097, Cl. 220-23.830.
Munter, Ernst A.: *See*—
Wu, Chi; and Munter, Ernst A., 5,548,671, Cl. 385-37.000.
Muragishi, Takeo, to Mitsubhisi Denki Kabushiki Kaisha. Thin film transistor with means to prevent threshold variations. 5,548,153, Cl. 257-365.000.
Murakami, Hajime: *See*—
Murasawa, Sadao; Murakami, Hajime; Fukui, Yasuro; Watanabe, Mitsuru; Fujishima, Akira; and Hashimoto, Kazuhito, 5,547,823, Cl. 430-531.000.
Murakami, Kazunori; Ikumi, Tomonori; Kubota, Atsushi; Nakahara, Nobuhiko; and Kato, Nobuyuki, to Kabushiki Kaisha TEC. Optical scanning apparatus for scanning laser beam on imaging surface and recording image data on imaging surface in units of dots. 5,548,321, Cl. 347-256.000.
Murakami, Mitsuyuki: *See*—

VOL 1189 ISS 3 AUG 20 1996 UMI

Hanasaki, Yasuaki; Tsukuda, Kazuaki; Watanabe, Hiroyuki; Tsuzuki, Kenji; Murakami, Mitsuyuki; and Niimi, Noritoshi, 5,547,920, Cl. 504-261.000.

Murakami, Tadayoshi: *See*—
Sohma, Kenichi; Itoh, Kazuyuki; Kuroda, Michio; and Murakami, Tadayoshi, 5,547,369, Cl. 431-75.000.

Murakami, Tomokazu, to Koito Manufacturing Co., Ltd. Vehicular lamp having appearance of depth. 5,548,498, Cl. 362-336.000.

Murakami, Yuetsu; and Masumoto, Katashi, to Foundation: The Research Institute of Electric and Magnetic Alloys, The. Wear-resistant high permeability magnetic alloy and method of manufacturing the same. 5,547,520, Cl. 148-120.000.

Muramatsu, Katsuji; and Iwamoto, Shoji, to Fuji Photo Film Co., Ltd. Lens-fitted photographic film unit and method of manufacturing the same. 5,548,364, Cl. 354-204.000.

Muramatsu, Toshihiko: *See*—
Iwamoto, Shinji; Mizuno, Toshiaki; Muramatsu, Toshihiko; Nakashima, Kazushi; Abe, Tomoaki; Yonekawa, Masao; and Sakashita, Yoshihiro, 5,546,911, Cl. 123-497.000.

Muramoto, Riemi, to Toyota Jidosha Kabushiki Kaisha. Process for producing exhaust-gases-purifying catalyst. 5,547,913, Cl. 502-328.000.

Murano, Kanji: *See*—
Eguchi, Yasuhito; Sato, Masayuki; Narushima, Toshio; Sanpei, Akira; and Murano, Kanji, 5,547,775, Cl. 429-7.000.

Muraoka, Kazunari: *See*—
Moriya, Hiroyuki; Tomonaga, Junichi; Hashimoto, Kiyoshi; and Muraoka, Kazunari, 5,547,135, Cl. 241-40.000.

Muraoka, Kazuyoshi: *See*—
Noda, Touru; Uno, Akira; and Muraoka, Kazuyoshi, 5,547,822, Cl. 430-531.000.

Murasawa, Sadao; Murakami, Hajime; Fukui, Yasuro; Watanabe, Mitsuru; Fujishima, Akira; and Hashimoto, Kazuhito, to Ishihara Sangyo Kaisha, Ltd.; Fujishima, Akira; and Hashimoto, Kazuhito. Photocatalyst composite and process for producing the same. 5,547,823, Cl. 430-531.000.

Murata, Kazuo: *See*—
Kagawa, Hiroshi; Kato, Shiro; and Murata, Kazuo, 5,547,780, Cl. 429-149.000.

Murata Manufacturing Co., Ltd.: *See*—
Hamuro, Mitsuro; Higuchi, Hirokazu; Nakagawa, Tadahiro; and Takahashi, Akihiko, 5,547,511, Cl. 118-423.000.
Kaida, Hiroaki, 5,548,179, Cl. 310-367.000.
Kaida, Hiroaki, 5,548,180, Cl. 310-367.000.
Watanabe, Toru; and Noto, Kenichi, 5,548,256, Cl. 333-194.000.

Murata, Tatsuo: *See*—
Shimamune, Masayuki; Enomoto, Takashi; Murata, Tatsuo; and Mitsui, Mutsuo, 5,546,998, Cl. 141-82.000.
Takao, Hideaki; Murata, Tatsuo; Kanbe, Junichiro; Tamura, Miki; Kamio, Masaru; Sekimura, Nobuyuki; and Kikuchi, Yoshiki, 5,548,424, Cl. 359-68.000.

Murayama, Tetsuo: *See*—
Ishio, Kozo; and Murayama, Tetsuo, 5,547,791, Cl. 430-59.000.

Muroi, Souichi; and Tsai, Hsi-Chuan, to W. R. Grace & Co.-Conn. Spherical curing agent for epoxy resin, curing agent masterbatch for epoxy resin and their preparation. 5,548,058, Cl. 528-93.000.

Muromachi, Tetsushi: *See*—
Koketsu, Eiji; Sato, Koki; Muromachi, Tetsushi; Haraoka, Mutsumu; Nagata, Toshio; Yanagihara, Michihiro; and Oma, Kuniaki, 5,547,223, Cl. 280-805.000.

Murphy, Charles F., III. Apparatus for feeding distorted documents. 5,547,182, Cl. 271-179.000.

Murphy, Mark, to Apcom, Inc. Thermostat construction with improved bi-metallic disk mounting arrangement. 5,548,267, Cl. 337-372.000.

Murphy, Mark A., to Apcom, Inc. Thermostat construction. 5,548,266, Cl. 337-360.000.

Murphy, Peter F.; Kurtz, James H., Jr.; Whitehead, Ross; and Szasz, David A., to PopStraw Company, LLC, The. Beverage container with self-contained drinking straw. 5,547,103, Cl. 220-709.000.

Murphy, Robin A., to Armco Inc. Magnesia coating and process for producing grain oriented electrical steel for punching quality. 5,547,519, Cl. 148-113.000.

Murphy, William J.: *See*—
Ring, Eugene M.; and Murphy, William J., 5,548,658, Cl. 381-191.000.

Murray, David L.: *See*—
Liles, Donald T.; and Murray, David L., 5,548,021, Cl. 524-837.000.

Murray, Melissa L.: *See*—
Johnson, Neil A.; Raber, Thomas R.; Hibbs, Louis E., Jr.; Murray, Melissa L.; and Benz, Mark G., 5,547,518, Cl. 148-98.000.

Murray, Robert H. Heat-staked tether for toy balloons. 5,547,413, Cl. 446-220.000.

Musha, Atsushi: *See*—
Inubushi, Toshiya; Toko, Yoshio; and Musha, Atsushi, 5,548,824, Cl. 455-90.000.

Mutual Holdings Inc.: *See*—
Moore, Leo M., 5,546,877, Cl. 112-103.000.

MV Marketing und Vertriebs - GmbH & Co. KG.: *See*—
Fugel, Martin, 5,546,786, Cl. 72-457.000.

N. Schlumberger et Cie, S.A.: *See*—
Genevray, Henri, 5,546,634, Cl. 19-101.000.

Nabors, James K.: *See*—
Slavejkov, Aleksandar G.; Broadway, Lee; Joshi, Mahendra L.; and Nabors, James K., 5,547,368, Cl. 431-8.000.

Nadeau, James G.; and Walker, George T., to Becton, Dickinson and Company. Detection of nucleic acid amplification. 5,547,861, Cl. 435-91.200.

Nagahisa, Tatsuhiko: *See*—
Segawa, Reiji; and Nagahisa, Tatsuhiko, 5,548,229, Cl. 326-57.000.

Nagai, Masaaki: *See*—
Kudo, Toshio; Nagai, Masaaki; and Shiraiwa, Yasuo, 5,546,790, Cl. 73-40.500.00R.

Nagai, Toshinari: *See*—
Osanai, Akinori; Nagai, Toshinari; Kanai, Hiroshi; Harima, Kenji; Iwano, Kazuhiko; and Yuda, Shuji, 5,546,917, Cl. 123-674.000.

Nagai, Yasuki: *See*—
Demizu, Ichiro; Nagai, Yasuki; Nakamura, Mitsutoshi; Tanigami, Yukio; and Ueda, Hideaki, 5,547,794, Cl. 430-106.000.

Nagaishi, Tatsuoki: *See*—
Kugai, Hirokazu; and Nagaishi, Tatsuoki, 5,548,262, Cl. 335-216.000.

Nagakubo, Yasunori: *See*—
Tahara, Yoko; and Nagakubo, Yasunori, 5,548,435, Cl. 359-180.000.

Nagami, Wataru, to Fujitsu Limited. Machine translation apparatus for translating document with tag. 5,548,508, Cl. 364-419.020.

Nagamura, Takashi; and Tomita, Shinji, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Air separating unit. 5,546,765, Cl. 62-643.000.

Nagano, Yasuhisa: *See*—
Watanabe, Masatsugu; Nagano, Yasuhisa; Shimoyama, Hajime; and Osaka, Tomohiro, 5,547,488, Cl. 75-335.000.

Nagano, Yoshimi; Suganuma, Takao; Satoh, Kazuhiro; and Ikeda, Masao, to Ajinomoto Co., Inc. Method for purification of amino acids, nucleic acids using a hydrocyclone. 5,547,858, Cl. 435-89.000.

Nagasaki, Tomohisa: *See*—
Matsuno, Seiki; Sasaki, Iwao; Ohneda, Akira; Sasaki, Kazuyuki; Natori, Yohei; and Nagasaki, Tomohisa, 5,547,938, Cl. 514-012.000.

Nagase, Hisanori: *See*—
Naka, Teruyuki; Umeda, Yoshio; Yamamura, Toshiki; Kumon, Akira; Suzuki, Seiichi; Nawama, Junichi; and Nagase, Hisanori, 5,548,380, Cl. 355-219.000.

Nagashima, Shinichi: *See*—
Kogure, Mitsuhiro; Nagashima, Shinichi; Wakabayashi, Kazuhisa; Enkaku, Shigeyuki; Shimayama, Hitoshi; Kimura, Minoru; Shimoyama, Shuji; and Yokoo, Tsugio, 5,548,260, Cl. 335-126.000.

Nagashima, Yasuo; and Shirahata, Ryuji, to Fuji Photo Film Co., Ltd. Method for producing a magnetic disk. 5,547,704, Cl. 427-130.000.

Nagata, Takashi: *See*—
Eda, Kazuo; and Nagata, Takashi, 5,548,178, Cl. 310-349.000.

Nagata, Toshio: *See*—
Koketsu, Eiji; Sato, Koki; Muromachi, Tetsushi; Haraoka, Mutsumu; Nagata, Toshio; Yanagihara, Michihiro; and Oma, Kuniaki, 5,547,223, Cl. 280-805.000.

Nagata, Yoshifumi: *See*—
Gleaves, David; Nagata, Yoshifumi; and Takebayashi, Yoichi, 5,548,681, Cl. 395-2.420.

Nagatani, Akihiro: *See*—
Inagaki, Yoshio; Shinkai, Motoshi; Tsuno, Masahide; and Nagatani, Akihiro, 5,547,489, Cl. 75-512.000.

Nagatani, Noboru: *See*—
Okada, Jouji; Kawamata, Akira; Tokunaga, Tadayuki; Nagatani, Noboru; Torizuka, Makoto; and Asahi, Masahiko, 5,548,054, Cl. 528-25.000.

Nagatomo, Akira; Hattori, Yoshifumi; Ebisawa, Isao; Abe, Tsutomu; Ohba, Takashi; Iida, Hiroshi; and Watanabe, Kenjiro, to Canon Kabushiki Kaisha. Liquid discharge recording apparatus having apparatus for effecting preparatory emission. 5,548,308, Cl. 347-9.000.

Nagayama, Masato: *See*—
Sugisaki, Eiichi; Ino, Mitsuhiro; and Nagayama, Masato, 5,548,390, Cl. 355-319.000.

Nagayama, Shigeru: *See*—
Kamada, Shinya; Yokota, Hiroaki; Nagayama, Shigeru; Nakahara, Yuji; Nakano, Shin; Marusue, Toshihisa; Abe, Mitsutoshi; and Matsumoto, Hiroyuki, 5,547,437, Cl. 477-143.000.

Nagel, Joachim; and Erdrich, Albert, to Heraeus Kulzer GmbH. Artificial tooth. 5,548,000, Cl. 523-115.000.

Naghi, David E.: *See*—
Naghi, Herschel; and Naghi, David E., 5,547,399, Cl. 439-623.000.

Naghi, Herschel; and Naghi, David E. Universal AC adaptor for consumer electronics. 5,547,399, Cl. 439-623.000.

Nagy, Bela G.: *See*—
Kapoor, Rakesh R.; Nagy, Bela G.; and Bigelow, Louis K., 5,547,121, Cl. 228-121.000.

Nagy, Michael B.: *See*—
Hannah, Marc R.; and Nagy, Michael B., 5,548,709, Cl. 395-164.000.

Naik, Jayant M.; and Doddington, George R., to Texas Instruments Incorporated. Fixed text speaker verification method and apparatus. 5,548,647, Cl. 381-42.000.

Naito, Kazuo: *See*—
Niwa, Hideyuki; Sasaki, Kiyomi; Yoshida, Kyoei; Tanuma, Itsuo; Naito, Kazuo; Morimura, Yasuhiro; and Koga, Takahiko, 5,547,762, Cl. 428-442.000.

Naito, Kiwamu: *See*—
Nozawa, Masaei; Toda, Yasuyoshi; Naito, Kiwamu; Nomura, Yurio; and Osaki, Rie, 5,548,393, Cl. 356-70.000.

Naito, Takeshi: *See*—
Yamamoto, Keisaku; Ikeda, Kiyoshi; Fukuyama, Masahiro; Naito, Takeshi; and Aritake, Masanori, 5,548,012, Cl. 524-433.000.

Naka, Takahiro: *See*—
Okazawa, Noriaki; Naka, Takahiro; and Yasukawa, Shinji, 5,548,314, Cl. 347-71.000.

Naka, Teruyuki; Umeda, Yoshio; Yamamura, Toshiki; Kumon, Akira; Suzuki, Seiichi; Nawama, Junichi; and Nagase, Hisanori, to Matsushita Electric Industrial Co., Ltd. Charging device and an image forming apparatus using a charging device. 5,548,380, Cl. 355-219.000.

Nakagawa, Akio: *See*—
Omura, Ichiro; Nakagawa, Akio; Sakai, Tadashi; Sekimura, Masayuki; and Funaki, Hideyuki, 5,548,150, Cl. 257-349.000.

Nakagawa, Kenichi; Sugioka, Michiyoshi; and Ito, Koichi, to Asahi Denka Kogyo Kabushiki Kaisha. Lubricant for metallurgy. 5,547,592, Cl. 508-511.000.

Nakagawa, Kunihiko: *See*—
Aizawa, Jyun-ichi; Nakagawa, Kunihiko; Nakao, Hiroshi; Ezaki, Hitoshi; and Sunaga, Kouhei, 5,547,297, Cl. 400-567.000.

Nakagawa, Satoshi: *See*—
Yagami, Hiroyuki; Sato, Naoto; Yamashita, Hideaki; Nakagawa, Satoshi; and Maekawa, Jun, 5,546,947, Cl. 128-662.060.

Nakagawa, Tadahiro: *See*—
Hamuro, Mitsuro; Higuchi, Hirokazu; Nakagawa, Tadahiro; and Takahashi, Akihiko, 5,547,511, Cl. 118-423.000.

Nakagawa, Tohru, to Matsushita Electric Industrial Co., Ltd. Probe for a scanning tunneling microscope and method of manufacturing a probe. 5,548,117, Cl. 250-423.00F.

Nakagawa, Yutaka: *See*—
Kuwata, Takeshi; Ruckmongathan, Temkar N.; Nakagawa, Yutaka; Koh, Hidemasa; Nakazawa, Akira; Ohnishi, Takanori; and Ihara, Satoru, 5,548,302, Cl. 345-89.000.

Nakahara, Nobuhiko: *See*—
Murakami, Kazunori; Ikumi, Tomonori; Kubota, Atsushi; Nakahara, Nobuhiko; and Kato, Nobuyuki, 5,548,321, Cl. 347-256.000.

Nakahara, Yuji: *See*—
Kamada, Shinya; Yokota, Hiroaki; Nagayama, Shigeru; Nakahara, Yuji; Nakano, Shin; Marusue, Toshihisa; Abe, Mitsutoshi; and Matsumoto, Hiroyuki, 5,547,437, Cl. 477-143.000.

Nakajima, Akishige: *See*—
Tanimoto, Takuma; Kudo, Makoto; Mishima, Tomoyoshi; Nakajima, Akishige; Mori, Mitsuhiro; and Yamane, Masao, 5,548,138, Cl. 257-192.000.

Nakajima, Masaaki: *See*—
Kayama, Masahiro; Morooka, Yasuo; Sugita, Yoichi; and Nakajima, Masaaki, 5,548,597, Cl. 371-25.100.

Nakaki, Yoshiyuki: *See*—
Fujii, Yoshio; Tokunaga, Takashi; Nakaki, Yoshiyuki; Tsutsumi, Kazuhiko; Hashima, Kazuo; Fukami, Tatsuya; and Kawano, Yuji, 5,547,751, Cl. 428-332.000.

Nakamori, Yasutaka: *See*—
Hasegawa, Jun; Isomura, Shigenori; Mizoguchi, Tomomichi; and Nakamori, Yasutaka, 5,547,552, Cl. 204-406.000.

Nakamura, Hajime: *See*—
Yoneda, Hitoshi; Hasegawa, Haruyoshi; Nosaki, Takefumi; Tanimoto, Koji; Machida, Hironobu; and Nakamura, Hajime, 5,548,666, Cl. 382-276.000.

Nakamura, Koji; and Yazu, Tetsushin, to Mitsubishi Denki Kabushiki Kaisha. Manufacturing method of picture tube. 5,547,409, Cl. 445-8.000.

Nakamura, Minoru: *See*—
Anno, Masahiro; Nakamura, Minoru; Kobayashi, Makoto; and Hakumoto, Shigeyuki, 5,547,797, Cl. 430-106.600.

Nakamura, Mitsutoshi: *See*—
Demizu, Ichiro; Nagai, Yasuki; Nakamura, Mitsutoshi; Tanigami, Yukio; and Ueda, Hideaki, 5,547,794, Cl. 430-106.000.

Nakamura, Naoyuki, to NEC Corporation. Compact AGC circuit with stable characteristics. 5,548,594, Cl. 370-95.300.

Nakamura, Shigeyuki: *See*—
Nakase, Shigeki; Nakamura, Shigeyuki; and Ohta, Tsuyoshi, 5,548,112, Cl. 250-214.00C.

Nakamura, Shiro: *See*—
Shigematsu, Takashi; Yanagawa, Hisaharu; Shimizu, Takeo; Nakamura, Shiro; Fukasawa, Kazuya; and Watanabe, Tomohiro, 5,548,675, Cl. 385-80.000.

Nakamura, Takao; Inada, Hiroshi; and Iiyama, Michitomo, to Sumitomo Electric Industries, Ltd. Method for manufacturing superconducting device having a reduced thickness of oxide superconducting layer. 5,547,923, Cl. 505-330.000.

Nakamura, Toshiko: *See*—
Ito, Kiichi; Yada, Shuhei; Oomori, Miho; and Nakamura, Toshiko, 5,548,047, Cl. 526-240.000.

Nakamura, Toshiyuki; and Iida, Yoshikazu, to Nikon Corporation. Vibration compensation device for a camera. 5,548,370, Cl. 354-402.000.

Nakamura, Toshiyuki: *See*—
Sobi, Isao; Miyamoto, Hidenori; and Nakamura, Toshiyuki, 5,548,361, Cl. 354-106.000.

Nakamura, Toyokazu: *See*—
Tujide, Tohru; Nakamura, Toyokazu; and Nikawa, Kiyoshi, 5,548,211, Cl. 324-158.100.

Nakamura, Tsutomu: *See*—
Hirabayashi, Satao; and Nakamura, Tsutomu, 5,548,006, Cl. 524-82.000.

Nakamura, Tsuyoshi; Kodaira, Kazuho; and Higuchi, Katsuhiro, to Topy Kogyo Kabushiki Kaisha; and Sumitomo Heavy Industries, Ltd. Breakout prediction system in a continuous casting process. 5,548,520, Cl. 364-472.020.

Nakamura, Yoshifumi; Bessho, Yoshihiro; Yuhaku, Satoru; Hakotani, Yasuhiko; Itagaki, Minehiro; and Miura, Kazuhiro, to Matsushita Electric Industrial Co., Ltd. Method of manufacturing a ceramic substrate. 5,547,530, Cl. 156-89.000.

Nakano, Shin: *See*—
Kamada, Shinya; Yokota, Hiroaki; Nagayama, Shigeru; Nakahara, Yuji; Nakano, Shin; Marusue, Toshihisa; Abe, Mitsutoshi; and Matsumoto, Hiroyuki, 5,547,437, Cl. 477-143.000.

Nakano, Tatsuo: *See*—
Watanabe, Chiharu; Nakano, Tatsuo; and Kato, Kazuo, 5,547,758, Cl. 428-413.000.

Nakano, Yoshinobu, to Kabushiki Kaisha Kawai Gakki Seisakusho. Music sequencer with skip operation to recorded positions associated with tone parameter sets. 5,548,079, Cl. 84-609.000.

Nakanura, Yasuo, to Canon Kabushiki Kaisha. Message communication processing apparatus for selectively converting storing and transmitting messages of different lengths. 5,548,789, Cl. 395-853.000.

Nakao, Hiroshi: *See*—
Aizawa, Jyun-ichi; Nakagawa, Kunihiko; Nakao, Hiroshi; Ezaki, Hitoshi; and Sunaga, Kouhei, 5,547,297, Cl. 400-567.000.

Nakase, Kazuhiko, to Harada Kogyo Kabushiki Kaisha. Glass antenna for automobiles. 5,548,298, Cl. 343-704.000.

Nakase, Shigeki; Nakamura, Shigeyuki; and Ohta, Tsuyoshi, to Hamamatsu Photonics K.K. Photodetecting circuit using avalanche photodiode. 5,548,112, Cl. 250-214.00C.

Nakashima, Kazushi: *See*—
Iwamoto, Shinji; Mizuno, Toshiaki; Muramatsu, Toshihiko; Nakashima, Kazushi; Abe, Tomoaki; Yonekawa, Masao; and Sakashita, Yoshihiro, 5,546,911, Cl. 123-497.000.

Nakatani, Masayuki; Sengoku, Koji; and Fujita, Akifumi, to House Foods Corporation. Apparatus for heating and sterilizing food. 5,546,854, Cl. 99-470.000.

Nakatani, Mitsunori; Kojima, Yoshiki; and Minami, Hiroyuki, to Mitsubishi Denki Kabushiki Kaisha. Pattern transfer mask. 5,547,789, Cl. 430-5.000.

Nakatsu, Kazuya; Goto, Takaharu; Higaki, Toru; Endo, Hideki; Hirose, Satoru; and Yamazaki, Yukinori, to Nihon Cement Co., Ltd. Compositions for low heat cements. 5,547,505, Cl. 106-713.000.

Nakayama, Ichirou; and Ookawa, Masami, to Seiko Epson Corporation. Method and apparatus for controlling serial printer. 5,547,294, Cl. 400-145.000.

Nakayama, Takeshi: *See*—
Futatsuya, Tomoshi; Mihara, Masaaki; Terada, Yasushi; Nakayama, Takeshi; Miyawaki, Yoshikazu; Kobayashi, Shinichi; and Ohkawa, Minoru, 5,548,557, Cl. 365-201.000.

Nakazaki, Tosiyuki: *See*—
Kozaki, Kengo; Ohyachi, Nobuyuki; Tanaka, Seiji; Morisawa, Akira; and Nakazaki, Tosiyuki, 5,548,828, Cl. 455-161.200.

Nakazawa, Akira: *See*—
Kuwata, Takeshi; Ruckmongathan, Temkar N.; Nakagawa, Yutaka; Koh, Hidemasa; Nakazawa, Akira; Ohnishi, Takanori; and Ihara, Satoru, 5,548,302, Cl. 345-89.000.

Nalco/Exxon Energy Chemicals, L.P.: *See*—
Grewal, Rupinder S.; Joyce, Michael E.; and Nord, Randall F., 5,547,562, Cl. 208-24.000.

Naldec Corporation: *See*—
Kato, Shinji; Tagawa, Chikashi; Michihira, Osamu; and Sone, Akira, 5,548,601, Cl. 371-68.100.

Nance, C. Kirk. Aircraft weight and center of gravity indicator. 5,548,517, Cl. 364-463.000.

Nanya, Takanori, to Citizen Watch Co., Ltd. Knitting parts of knitting machine. 5,546,770, Cl. 66-116.000.

Napiorkowski, John J.: *See*—
Butler, Walter K.; Cote, Mark P.; Napiorkowski, John J.; Kroll, Thomas W.; Brower, Boyd G.; and Mickelson, N. Peter, 5,548,641, Cl. 379-399.000.

Naramura, Michiyuki, to Kabushiki Kaisha Kyowa Kogyosho. Sandwich preparation apparatus. 5,546,848, Cl. 99-326.000.

Narang, Subhash C.; and Ventura, Susanna C., to SRI International. Single-ion conducting solid polymer electrolytes. 5,548,055, Cl. 528-25.000.

Nariani, Subhash R.: *See*—
Gabriel, Calvin T.; and Nariani, Subhash R., 5,548,224, Cl. 324-765.000.

Naritomi, Masanori, to Taisei Plas Co., Ltd. Cavity expanding and contracting foam injection molding method. 5,547,621, Cl. 264-51.000.

Narui, Youichi: *See*—
Sato, Kazutaka; Watanabe, Michihiro; Aoyagi, Masahisa; Seino, Taisaku; Ohki, Katsuo; Fukuda, Hiromitsu; Kawase, Hideyuki; Oga, Kimio; Shimizu, Akira; Narui, Youichi; Suzuki, Tsuguo; Otsuka, Yasuo; and Konno, Kazutoshi, 5,548,411, Cl. 358-400.000.

Narushima, Toshio: *See*—
Eguchi, Yasuhito; Sato, Masayuki; Narushima, Toshio; Sanpei, Akira; and Murano, Kanji, 5,547,775, Cl. 429-7.000.

Nassar, Rami V., to AMSTED Industries Incorporated. Lightweight railcar truck sideframe with increased resistance to lateral twisting. 5,546,869, Cl. 105-206.100.

Nasu, Hiroaki: *See*—
Kubota, Shinji; and Nasu, Hiroaki, 5,548,696, Cl. 395-135.000.

VOL 1189 ISS 3 AG 20 1996 UMI

Natarajan, K.: *See*—
Datta, Asis; Mehta, Anuradha; and Natarajan, K., 5,547,870, Cl. 435-240.400.
National Molding Corporation: *See*—
Anscher, Joseph, 5,546,642, Cl. 24-625.000.
National Semiconductor Corporation: *See*—
Bulucea, Constantin; and Grubisich, Michael J., 5,548,158, Cl. 257-592.000.
Ketchum, Kevin D., 5,548,796, Cl. 395-872.000.
Michael, Martin S.; and Leung, Frederick K., 5,548,782, Cl. 395-835.000.
Monticelli, Dennis M., 5,548,205, Cl. 323-274.000.
Soo, David H., 5,548,206, Cl. 323-284.000.
National Space Development Agency of Japan: *See*—
Sezai, Toshihiro, 5,548,290, Cl. 342-25.000.
National Starch and Chemical Investment Holding Corporation: *See*—
Austin, Anne-Marie B.; Carrier, Allen M.; and Standish, Michael L., 5,547,612, Cl. 134-22.190.
Maekawa, Masao, 5,548,018, Cl. 524-517.000.
Natori, Yohei: *See*—
Matsuno, Seiki; Sasaki, Iwao; Ohneda, Akira; Sasaki, Kazuyuki; Natori, Yohei; and Nagasaki, Tomohisa, 5,547,938, Cl. 514-012.000.
Natsunaga, Masaaki, to Citizen Watch Co., Ltd. Color liquid–crystal shutter array having unique pixel arrangement and method of driving the same. 5,548,423, Cl. 359-68.000.
Nawama, Junichi: *See*—
Naka, Teruyuki; Umeda, Yoshio; Yamamura, Toshiki; Kumon, Akira; Suzuki, Seiichi; Nawama, Junichi; and Nagase, Hisanori, 5,548,380, Cl. 355-219.000.
Neben, Gary: *See*—
Brant, William A.; Neben, Gary; Nielson, Michael E.; and Stallmo, David C., 5,548,711, Cl. 395-182.030.
NEC Corporation: *See*—
Ando, Yuji, 5,548,139, Cl. 257-192.000.
Arai, Takao, 5,548,152, Cl. 257-360.000.
Asai, Shuji, 5,548,136, Cl. 257-190.000.
Hirasawa, Naoki; and Kobayashi, Shinichi, 5,548,823, Cl. 455-89.000.
Ide, Tatsumi; and Nishi, Yasuhisa, 5,548,259, Cl. 335-78.000.
Ishida, Takeshi; and Norimatsu, Noriko, 5,548,817, Cl. 455-54.100.
Iwazawa, Naotoshi, 5,547,296, Cl. 400-322.000.
Kaku, Tomoya; and O'Regan, Sean, 5,548,613, Cl. 375-208.000.
Kaneko, Hiroaki; and Horiguchi, Yumiko, 5,548,766, Cl. 395-775.000.
Kitamura, Naoki; and Nishimoto, Hiroshi, 5,548,673, Cl. 385-49.000.
Kito, Eiji; and Toyoda, Tetsuya, 5,548,586, Cl. 370-60.000.
Matsui, Tsutomu; and Fujimura, Yuki, 5,548,449, Cl. 359-814.000.
Minami, Yoichiro, 5,548,227, Cl. 326-33.000.
Nakamura, Naoyuki, 5,548,594, Cl. 370-95.300.
Okamura, Atsushi, 5,548,787, Cl. 395-845.000.
Onagawa, Seiki, 5,548,307, Cl. 345-213.000.
Ota, Tatsuki, 5,548,186, Cl. 313-583.000.
Sakao, Masato; and Ohya, Shuichi, 5,548,157, Cl. 257-532.000.
Sasaki, Yasutaka, 5,548,835, Cl. 455-277.100.
Tsuchiyama, Kinya; and Matai, Masahiro, 5,548,271, Cl. 340-311.100.
Tujide, Tohru; Nakamura, Toyokazu; and Nikawa, Kiyoshi, 5,548,211, Cl. 324-158.100.
Ueda, Hiroaki, 5,548,336, Cl. 348-384.000.
Ueda, Tetsuro, 5,548,807, Cl. 455-33.100.
Watanabe, Hideaki, 5,548,413, Cl. 358-445.000.
Yamazaki, Yasushi, 5,547,888, Cl. 437-52.000.
Yoshida, Norio, 5,548,624, Cl. 375-372.000.
Nederlandse Pillo-Pak Maatschappij B.V.: *See*—
Hoogerwoord, Ronald P., 5,547,075, Cl. 206-204.000.
Negrin, Dan: *See*—
Luckevich, Mark; Johnson, Bernard W.; and Negrin, Dan, 5,547,267, Cl. 303-165.000.
Neider, Thomas M.; and Rudt, Robert J. Method for finishing a continuous sheet of paper. 5,546,856, Cl. 100-38.000.
Neider, Thomas M.; and Rudt, Robert J., to Champion International Corporation. Method and apparatus for continuous support of a paper web through a coating installation. 5,547,509, Cl. 118-68.000.
Nellis, Robert A., Jr.; DeFrance, Robert V.; and Matlock, Richard R., to Fargo Mfg. Company Inc. Fixed spacer hot line tap. 5,547,404, Cl. 439-803.000.
Nelson, Keith A.: *See*—
Rogers, John A.; and Nelson, Keith A., 5,546,811, Cl. 73-800.000.
Nester, Ulrich: *See*—
Gimmler, Helmut; Nester, Ulrich; Kurz, Gerhard; and Huhn, Werner, 5,546,793, Cl. 73-116.000.
Neveras, George J.; McKinney, James C.; Sherman, Adam; Lohrman, Richard L.; and Ziegenhorn, David, to Colgate-Palmolive Company. Dispensing container snap hinge closure. 5,547,091, Cl. 215-237.000.
New Holland North America, Inc.: *See*—
Baril, Albert F., 5,547,334, Cl. 414-786.000.
Berger, John G.; Long, Robert E.; and Leeds, Darryl T., 5,547,039, Cl. 180-287.000.
New Ideas International, Inc.: *See*—
Vick, Doug M.; Baxter, James T.; and Gibbs, George S., 5,547,636, Cl. 422-124.000.
New York Air Brake Corporation: *See*—
Kohar, Richard; and McLaughlin, Brian M., 5,547,047, Cl. 188-59.000.
New York University: *See*—
Rapoport, David M.; and Norman, Robert G., 5,546,933, Cl. 128-204.230.
Newell, Gregory A.; George, Randy R.; Lancaster, Patrick R., III; and Janes, Robert D., to Lantech, Inc. Method and apparatus for placing corner boards and stretch wrapping a load. 5,546,730, Cl. 53-399.000.
News American Publishing, Inc.: *See*—
Ellis, Michael D.; and Lazarus, David B., 5,548,338, Cl. 348-473.000.
Newton, Jill E.; Clapperton, Richard M.; and Nicholson, William J. Biocidal and agrochemical suspensions comprising a structured surfactant with an oil component. 5,547,918, Cl. 504-116.000.
NGK Insulators, Ltd.: *See*—
Miyamoto, Yasuhiro; Ishihara, Toshiaki; and Uda, Minoru, 5,547,544, Cl. 162-199.000.
Tani, Makoto; Hayase, Tooru; Shimizu, Hideki; and Matsuda, Kazuyuki, 5,547,921, Cl. 505-124.000.
Nguyen, Chanh; Liu, Takyiu; and Matloubian, Mehran, to Hughes Aircraft Company. High-Speed, low-noise millimeterwave hemt and pseudomorphic hemt. 5,548,140, Cl. 257-194.000.
N'Guyen, Quang L.: *See*—
Hansenne, Isabelle; Forestier, Serge; and N'Guyen, Quang L., 5,547,658, Cl. 424-59.000.
Nice, Edouard C.; James, R.; Simpson, R.; Burgess, A. W.; and Whitehead, Robert H., to Ludwig Institute for Cancer Research. Method for stimulating proliferatioo of colon cells using $POMC_{76-103}$. 5,547,940, Cl. 514-21.000.
Nicholson, William J.: *See*—
Newton, Jill E.; Clapperton, Richard M.; and Nicholson, William J., 5,547,918, Cl. 504-116.000.
Nicol, Geoffrey P.; Kratz, Brian E.; and Studer, Allen J., to Competition Components International Pty Ltd. Vehicle driving monitor apparatus. 5,548,273, Cl. 340-439.000.
Nicola, Kirk M.: *See*—
Hamblin, Steven W.; Witt, David A.; Sierocuk, Thomas J.; Nicola, Kirk M.; Otten, Matthew R.; and Berky, Craig B., 5,547,117, Cl. 227-175.200.
Nie, Jianfeng: *See*—
Muddle, Barry C.; and Nie, Jianfeng, 5,547,633, Cl. 420-552.000.
Niedecker, Herbert. Two-part plastic clip for closing sausage casings, bags or the like. 5,546,637, Cl. 24-30.50R.
Nielsen, Marinus K., to I. Krüger Systems A/S. Method of controlling waste water purification plants using quality evaluation of measuring data. 5,547,578, Cl. 210-614.000.
Nielsen, Ove, to Enkotec A/S. Method and an apparatus for making an elongate object. 5,547,424, Cl. 470-11.000.
Nielsen, Steven J.; Chang, Yihua; and Rentmeester, Tammy J., to Kimberly-Clark Corporation. Method of forming a paper applicator containing a water insoluble coating. 5,547,701, Cl. 427-2.300.
Nielson, Michael E.: *See*—
Brant, William A.; Neben, Gary; Nielson, Michael E.; and Stallmo, David C., 5,548,711, Cl. 395-182.030.
NIFCO Inc.: *See*—
Maruoka, Hiroyuki, 5,546,704, Cl. 49-375.000.
Sasaki, Noriyoshi, 5,547,568, Cl. 210-172.000.
Nihon Cement Co., Ltd.: *See*—
Nakatsu, Kazuya; Goto, Takaharu; Higaki, Toru; Endo, Hideki; Hirose, Satoru; and Yamazaki, Yukinori, 5,547,505, Cl. 106-713.000.
Niimi, Noritoshi: *See*—
Hanasaki, Yasuaki; Tsukuda, Kazuaki; Watanabe, Hiroyuki; Tsuzuki, Kenji; Murakami, Mitsuyuki; and Niimi, Noritoshi, 5,547,920, Cl. 504-261.000.
Niimi, Tatsuya: *See*—
Umeda, Minoru; and Niimi, Tatsuya, 5,547,790, Cl. 430-58.000.
Niimura, Koichi; Ando, Takao; Nitta, Toyohiko; and Ikeda, Yuko, to Kureha Chemical Industry Co., Ltd. Method of inhibiting aromatase. 5,547,973, Cl. 514-399.000.
Nikawa, Kiyoshi: *See*—
Tujide, Tohru; Nakamura, Toyokazu; and Nikawa, Kiyoshi, 5,548,211, Cl. 324-158.100.
Niki, Mamoru; Hosaka, Yoshiaki; Mogi, Takao; and Saito, Haruo, to AIWA Co., Ltd. Recording and reproducing method and apparatus for a digital audio signal and a digital video signal. 5,548,451, Cl. 360-32.000.
Nikkiso Co., Ltd.: *See*—
Ego, Tomomichi; and Kinoshita, Hiroshi, 5,547,645, Cl. 422-264.000.
Nikon Corporation: *See*—
Iki, Yoichi, 5,548,355, Cl. 351-212.000.
Katano, Yuji, 5,548,366, Cl. 354-219.000.
Motosugi, Kazutoshi, 5,548,405, Cl. 356-376.000.
Nakamura, Toshiyuki; and Iida, Yoshikazu, 5,548,370, Cl. 354-402.000.
Shibazaki, Kiyoshige; and Suzuki, Kenji, 5,548,333, Cl. 348-270.000.
Soshi, Isao; Miyamoto, Hidenori; and Nakamura, Toshiyuki, 5,548,361, Cl. 354-106.000.
Uematsu, Kimio; and Ishikawa, Yoshinori, 5,548,360, Cl. 354-21.000.
Wakabayashi, Tsutomu, 5,548,359, Cl. 354-21.000.
Nikon Engineering Co., Ltd.: *See*—
Motosugi, Kazutoshi, 5,548,405, Cl. 356-376.000.
Nippon Conlux Co., Ltd.: *See*—
Itako, Eiji; and Fukuda, Ichiro, 5,547,061, Cl. 194-203.000.
Nippon Polyurethane Industry Co., Ltd.: *See*—
Hirayama, Shinji; Konishi, Shin; Hidai, Takao; Hama, Shinjiro; Hashimoto, Sadako; and Morikawa, Yukihiro, 5,548,057, Cl. 528-67.000.
Nippon Steel Corporation: *See*—
Matsuno, Keishi, 5,548,296, Cl. 342-457.000.

Nippon Telegraph and Telephone Corporation: *See*—
Shinya, Mikio, 5,548,693, Cl. 395-152.000.
Nippon Telegraph and Telephone Public Corporation: *See*—
Ozaki, Yoshiharu, 5,548,401, Cl. 356-239.000.
Nippondenso Co., Ltd.: *See*—
Hasegawa, Jun; Isomura, Shigenori; Mizoguchi, Tomomichi; and Nakamori, Yasutaka, 5,547,552, Cl. 204-406.000.
Isobe, Daiji, 5,546,915, Cl. 123-570.000.
Iwamoto, Shinji; Mizuno, Toshiaki; Muramatsu, Toshihiko; Nakashima, Kazushi; Abe, Tomoaki; Yonekawa, Masao; and Sakashita, Yoshihiro, 5,546,911, Cl. 123-497.000.
Matsuo, Hiroki; Yamanaka, Yasushi; Baba, Norimasa; Yamamoto, Michiyasu; and Yamamoto, Ken, 5,546,761, Cl. 62-509.000.
Nozawa, Masaei; Toda, Yasuyoshi; Naito, Kiwamu; Nomura, Yurio; and Osaki, Rie, 5,548,393, Cl. 356-70.000.
Shimizu, Izuru; Fukanuma, Tetsuhiko; Yamaguchi, Tetsuya; Goto, Kunifumi; Hisanaga, Shigeru; and Egami, Hirotaka, 5,547,354, Cl. 418-55.500.
Taguchi, Masahiro; Katoh, Kazutaka; and Yoshida, Masatada, 5,547,215, Cl. 280-732.000.
Terao, Tadayoshi; and Kusano, Katsuya, 5,546,754, Cl. 62-133.000.
Torii, Yoshinari, 5,547,037, Cl. 180-178.000.
Yamaguchi, Tetsuya; Watanabe, Yasushi; Fukanuma, Tetsuhiko; Oki, Yasuhiro; and Yamamoto, Yuuji, 5,547,353, Cl. 418-55.200.
Nishi, Yasuhisa: *See*—
Ide, Tatsumi; and Nishi, Yasuhisa, 5,548,259, Cl. 335-78.000.
Nishida, Masaaki: *See*—
Hayabuchi, Masahiro; Nishida, Masaaki; Yamamoto, Yoshihisa; Mikami, Kazuhiro; Tsutsui, Hiroshi; and Iwata, Akihito, 5,547,436, Cl. 477-114.000.
Nishikawa, Hiroshi: *See*—
Arasawa, Masashi; Ono, Katsuhiko; Nishikawa, Hiroshi; and Tsuchiya, Kazuo, 5,547,539, Cl. 156-626.100.
Nishimori, Yoshiki; Abe, Tsugio; and Suzuki, Yuriko, to Konica Corporation. Toner and electrophotographic image forming method using the same. 5,547,800, Cl. 430-110.000.
Nishimoto, Hiroshi: *See*—
Kitamura, Naoki; and Nishimoto, Hiroshi, 5,548,673, Cl. 385-49.000.
Nishimura, Osamu: *See*—
Funahashi, Yasuhiro; Ikami, Kazunori; Nishimura, Osamu; Hibino, Yoshihiko; Kiyohara, Yuji; and Yasutomo, Yuichi, 5,548,281, Cl. 340-825.080.
Nishimura, Yoichi: *See*—
Hasegawa, Yusuke; Komoriya, Isao; Kimura, Eisuke; Akazaki, Shusuke; and Nishimura, Yoichi, 5,548,514, Cl. 364-431.050.
Nishino, Katsuya: *See*—
Fukui, Tetsuro; Kobayashi, Motokazu; Ohi, Takehiko; Ueno, Kazunori; Kagami, Kenji; Suzuki, Masao; and Nishino, Katsuya, 5,547,831, Cl. 430-619.000.
Nishino, Yukio: *See*—
Miyazaki, Benichi; Nishino, Yukio; and Wakabayashi, Kanji, 5,548,577, Cl. 369-291.000.
Nishio, Takayuki: *See*—
Ito, Yoshitaka; Ishii, Masami; Nishio, Takayuki; Mizutani, Uichiro; Yamada, Yuh; Ogasawara, Fumihiko; and Suganuma, Motohiro, 5,547,924, Cl. 505-500.000.
Nishio, Yukio: *See*—
Koshi, Makoto; Nishio, Yukio; and Hirose, Kazunori, 5,548,382, Cl. 355-259.000.
Nishiyama, Shingo: *See*—
Hioki, Takanori; Oya, Toyohisa; and Nishiyama, Shingo, 5,547,828, Cl. 430-597.000.
Nishizawa, Masumi; Iijima, Masayuki; and Miyama, Takashi, to Dai Nippon Printing Co., Ltd. Liquid toner, ink composition, and methods of producing the same. 5,547,804, Cl. 430-114.000.
Nissan Chemical Industries, Ltd.: *See*—
Ando, Mikio; Yogo, Isao; and Kikawa, Takanobu, 5,547,607, Cl. 252-313.100.
Nissan Motor Co., Ltd.: *See*—
Satou, Eiichi; and Iriyama, Masahiro, 5,546,903, Cl. 123-399.000.
Tsutsumida, Joji; Suzuki, Yasuhiro; and Uozumi, Tetsuo, 5,547,173, Cl. 267-140.150.
Nisshin Flour Milling Co., Ltd.: *See*—
Matsuno, Seiki; Sasaki, Iwao; Ohneda, Akira; Sasaki, Kazuyuki; Natori, Yohei; and Nagasaki, Tomohisa, 5,547,938, Cl. 514-012.000.
Nisson, Paul E.; and Sacchi, Nicoletta, to Life Technologies, Inc. Method for the rapid and ultra-sensitive detection of leukemic cells. 5,547,838, Cl. 435-6.000.
Nitta, Toyohiko: *See*—
Niimura, Koichi; Ando, Takao; Nitta, Toyohiko; and Ikeda, Yuko, 5,547,973, Cl. 514-399.000.
Niwa, Hideyuki; Sasaki, Kiyomi; Yoshida, Kyoei; Tanuma, Itsuo; Naito, Kazuo; Morimura, Yasuhiro; and Koga, Takahiko, to Bridgestone Corporation. Sandwich glasses. 5,547,762, Cl. 428-442.000.
Nixon, Robert H.: *See*—
Kemeny, Sabrina E.; Fossum, Eric R.; and Nixon, Robert H., 5,548,773, Cl. 395-800.000.
Noda, Touru; Uno, Akira; and Muraoka, Kazuyoshi, to Mitsubishi Paper Mills; and Tohkam Products. Process for producing titanium dioxide pigment for photograph and photographic support comprising same. 5,547,822, Cl. 430-531.000.
Noel, Hugues: *See*—
Rocher, Daniel; and Noel, Hugues, 5,547,676, Cl. 424-401.000.
Nogiwa, Seiji, to Ando Electric Co., Ltd. Optical sweep signal generator. 5,548,402, Cl. 356-349.000.
Noguchi, Hitoshi: *See*—
Saito, Shinji; Ogawa, Hiroshi; Kakuta, Takeshi; and Noguchi, Hitoshi, 5,547,772, Cl. 428-694.00B.
NOK Corporation: *See*—
Kato, Takefumi; Morita, Shigeru; and Sato, Kiminori, 5,547,362, Cl. 425-297.000.
Nokia-Maillefer Oy: *See*—
Karhu, Raimo, 5,546,741, Cl. 57-293.000.
Nokia Mobile Phones Ltd.: *See*—
Mucke, Lars H.; and Heinonen, Jarmo, 5,548,616, Cl. 375-295.000.
Nomoto, Masao; Fujita, Kenji; and Hayashi, Hideo, to Ebara Corporation. Apparatus for treating flue gases by irradiation with electron beams. 5,547,643, Cl. 422-186.040.
Nomura, Hideaki: *See*—
Okada, Hisashi; Inaba, Tadashi; Suzuki, Ryo; and Nomura, Hideaki, 5,547,817, Cl. 430-393.000.
Nomura, Kazuyoshi: *See*—
Kawakami, Shoichi; Okamoto, Toru; Miyazaki, Nobuyuki; Uchino, Bunji; Nomura, Kazuyoshi; and Kato, Hiroyuki, 5,548,019, Cl. 524-591.000.
Nomura, Takeshi: *See*—
Koganei, Katsuya; Nomura, Takeshi; Kuribayashi, Toshiaki; and Umemoto, Noboru, 5,547,597, Cl. 508-409.000.
Nomura, Tamotsu: *See*—
Matsuo, Kunio; and Nomura, Tamotsu, 5,548,612, Cl. 373-73.000.
Nomura, Yurio: *See*—
Nozawa, Masaei; Toda, Yasuyoshi; Naito, Kiwamu; Nomura, Yurio; and Osaki, Rie, 5,548,393, Cl. 356-70.000.
Nonogaki, Hajime: *See*—
Kanemitsu, Norio; and Nonogaki, Hajime, 5,548,416, Cl. 358-470.000.
Nor, Jiri K.; and Soltys, Josef V., to Norvik Traction Inc. Universal charging station and method for charging electric vehicle batteries. 5,548,200, Cl. 320-27.000.
Norand Corporation: *See*—
Grabon, Robert J., 5,548,201, Cl. 320-35.000.
Nord, Randall F.: *See*—
Grewal, Rupinder S.; Joyce, Michael E.; and Nord, Randall F., 5,547,562, Cl. 208-24.000.
Nordin, Carl W.: *See*—
Balmer, David K.; Haverty, Thomas W.; Nordin, Carl W.; and Tyree, William H., 5,548,121, Cl. 250-370.010.
Nordine, Stephen P.: *See*—
Komarek, James A.; Minney, Jack L.; Nordine, Stephen P.; Lewis, Harold F.; Wada, Richard; and Stockman, John F., 5,548,592, Cl. 370-85.100.
Nordmann, Adolf: *See*—
Krumm, Herbert; Nordmann, Adolf; Ehrhardt, Johannes; Lorenz, Johann; and Stoffler, Günter, 5,546,844, Cl. 89-8.000.
Norimatsu, Noriko: *See*—
Ishida, Takeshi; and Norimatsu, Noriko, 5,548,817, Cl. 455-54.100.
Norman, George W.: *See*—
Andert, Glenn P.; and Norman, George W., 5,548,779, Cl. 395-823.000.
Norman, Martin J.: *See*—
Kemerer, Ray S.; and Norman, Martin J., 5,548,203, Cl. 323-210.000.
Norman, Robert G.: *See*—
Rapoport, David M.; and Norman, Robert G., 5,546,933, Cl. 128-204.230.
Norris, Frank J.: *See*—
Gawaskar, Sadanand; Norris, Frank J.; Vitous, Joseph; and Young, Kevin L., 5,547,036, Cl. 180-68.500.
North Carolina State University: *See*—
Shefet, Sarid M., 5,546,849, Cl. 99-330.000.
Stikeleather, Larry F.; and McKeithan, Jerry R., Jr., 5,547,420, Cl. 452-138.000.
North Shore University Hospital Research Corporation: *See*—
Lu, Dongfeng, 5,548,218, Cl. 324-318.000.
North, Thomas G., III; Graham, Thomas; and Wang, Yushan, to Standard Keil Industries, Inc.; and Coca-Cola Company, The. Counter for a plural-chamber pneumatic pump. 5,547,345, Cl. 417-63.000.
Northern Telecom Limited: *See*—
Bannister, Cecil H.; Marchetti, Marco; Mo, Richard C.; Switzer, Tod W.; and Moghe, Dhawal B., 5,548,636, Cl. 379-201.000.
Beck, David S.; and Bleuer, Bernard E., 5,548,584, Cl. 370-58.100.
Dalgleish, Kevin L.; Hoe, Sei S.; Reinhart, Gregory R.; Somoza, Vincent E.; Pike, Rodney D.; Moss, John S.; and Tencer, Michal, 5,548,643, Cl. 379-429.000.
Gao, Zhengping; Racz, Steve; and Basu, Kalyan, 5,548,533, Cl. 364-514.00C.
Harris, Mark R., 5,548,090, Cl. 174-252.000.
Wu, Chi; and Munter, Ernst A., 5,548,671, Cl. 385-37.000.
Northrop Grumman Corporation: *See*—
Brandstetter, Robert W.; and Fonneland, Nils J., 5,547,786, Cl. 430-1.000.
Nortier, Richard A., to Sloan Valve Company. Toilet room sensor assembly. 5,548,119, Cl. 250-341.100.
Norvik Traction Inc.: *See*—
Nor, Jiri K.; and Soltys, Josef V., 5,548,200, Cl. 320-27.000.

VOI 1189 ISS 3 AG 20 1996 UMI

Nosaki, Takefumi: *See*—
Yoneda, Hitoshi; Hasegawa, Haruyoshi; Nosaki, Takefumi; Tanimoto, Koji; Machida, Hironobu; and Nakamura, Hajime, 5,548,666, Cl. 382-276.000.

Noto, Kenichi: *See*—
Watanabe, Toru; and Noto, Kenichi, 5,548,256, Cl. 333-194.000.

Novavax, Inc.: *See*—
Wright, D. Craig, 5,547,677, Cl. 424-401.000.

Novo Nordisk A/S: *See*—
Balschmidt, Per, 5,547,930, Cl. 514-3.000.
Sørensen, Hans H., 5,547,696, Cl. 424-499.000.

Nowak, Götz; Bucha, Elke; and Hoffman, Jutta, to Max-Planck-Gesellschaft. Process for determining hirudin and synthetic thrombin inhibitors. 5,547,850, Cl. 435-13.000.

Nozaki, Kazutoshi; Iwatsuki, Kunihiro; and Matsubara, Tooru, to Toyota Jidosha Kabushiki Kaisha. Control apparatus for raising the idle speed (ISC value) after the lockup clutch is unlocked. 5,547,438, Cl. 477-169.000.

Nozawa, Masaei; Toda, Yasuyoshi; Naito, Kiwamu; Nomura, Yurio; and Osaki, Rie, to Nippondenso Co., Ltd. Oil deterioration detection apparatus and apparatus for detecting particles in liquid. 5,548,393, Cl. 356-70.000.

Nsk Ltd.: *See*—
Imanishi, Takashi; Abe, Tsutomu; and Kokubu, Hideki, 5,547,432, Cl. 476-40.000.
Miyazaki, Seizo; Saito, Shiro; and Kitahara, Daijiro, 5,547,291, Cl. 384-512.000.
Ouchi, Hideo; and Takei, Kenji, 5,547,290, Cl. 384-448.000.
Tomaru, Masaki; Moriyama, Seiichi; and Sadakata, Kiyoshi, 5,547,221, Cl. 280-777.000.

Nurimikko, Arto V.: *See*—
Fan, Yongping; Han, Jung; Nurimikko, Arto V.; Gunshor, Robert L.; and He, Li, 5,548,137, Cl. 257-191.000.

Nurmi, Jarmo; and Oikari, Timo, to Wallac Oy. Photomultiplier having gain stabilization means. 5,548,111, Cl. 250-207.000.

Nussbaumer, Dietmar: *See*—
Demmer, Wolfgang; Hörl, Hans-Heinrich; Nussbaumer, Dietmar; Weiss, Abdul R.; and Wünn, Eberhard, 5,547,575, Cl. 210-490.000.

Nutt, Stephen L.: *See*—
Kamboj, Rajender; Elliott, Candace E.; and Nutt, Stephen L., 5,547,855, Cl. 435-69.100.

Nutting, Donald W. Fangs and application thereof. 5,547,381, Cl. 433-219.000.

Nuyken, Oskar: *See*—
Dauth, Jochen; Deubzer, Bernward; Mayer, Elfriede; Nuyken, Oskar; Voit, Brigitte; and Kollefrath, Ralf, 5,548,070, Cl. 534-550.000.

Nye, Richard V.: *See*—
Virag, Robert A.; Nye, Richard V.; and Horton, Duane L., 5,546,936, Cl. 128-207.140.

Nykanen, Tuomo S.; Greenwood, Brian F.; Gullichsen, Johan; Kiiskila, Erkki; Mattelmaki, Esko; Phillips, Joseph R.; Richardsen, Jan; Ryham, Rolf; Soderman, Jarmo; and Wiklund, Karl, to Ahlstrom Machinery Inc. Apparatus for minimizing effluent discharges and recovering chemicals in a pulp mill. 5,547,543, Cl. 162-31.000.

O. F. Mossberg & Sons, Inc.: *See*—
Joslyn, Edward, 5,546,863, Cl. 102-504.000.

Oae, Keiichi: *See*—
Ito, Tatsuro; Oae, Keiichi; and Shiota, Seijiro, 5,547,255, Cl. 297-367.000.

Oak Industries, Inc.: *See*—
Straub, William; Hosking, Jack; Topal, Mickey; and Boczkiewicz, Bruce, 5,546,864, Cl. 104-17.200.

Obara, Masao: *See*—
Okuyama, Nobutaka; Sakurai, Soichi; Fukuma, Kooji; Yoshioka, Hiroshi; Obara, Masao; Ito, Naoki; Takeyama, Atsushi; and Satoh, Yoshio, 5,548,190, Cl. 315-368.260.

Obayashi, Tadanori, to Japan Steel Works, Ltd., The. Toggle type injection molding process. 5,547,619, Cl. 264-40.100.

Oberhauser, Berndt: *See*—
Curiel, David T.; Birnstiel, Max L.; Cotten, Matthew; Wagner, Ernst; Zatloukal, Kurt; Plank, Christian; Oberhauser, Berndt; and Schmidt, Walter G. M., 5,547,932, Cl. 435-65.000.

O'Brien, Richard: *See*—
Lovett, David E.; and O'Brien, Richard, 5,547,335, Cl. 414-795.600.

Ocean Power Technologies, Inc: *See*—
Carroll, Charles B., 5,548,177, Cl. 310-339.000.

OCG Microelectronic Materials, Inc.: *See*—
Blakeney, Andrew J.; Medina, Arturo N.; Toukhy, Medhat A.; Ferreira, Lawrence; and Tadros, Sobby, 5,547,814, Cl. 430-326.000.

Och, Rudolf, to Frenco Verzahnungslehren GmbH. Toothing testing apparatus. 5,546,666, Cl. 33-501.700.

Ochiai, Masahisa; Saitoh, Tsutomu; and Asanae, Masumi, to Hitachi Metals, Ltd. Magnetic carrier for developer. 5,547,795, Cl. 430-106.600.

Oda, Takahiro, to Oki Electric Industry Co., Ltd. Ultrasonic motor and ultrasonic conveying device. 5,548,176, Cl. 310-328.000.

Oden, Kenneth W.; and Ring, Michael D., to Royal Vendors, Inc. Can vending mechanism. 5,547,105, Cl. 221-181.000.

Odle, James K.: *See*—
Edwards, Donald W.; Odle, James K.; Popper, Peter; Sadler, Donald M.; Savidge, Todd J.; Staunton, Harold F.; Walker, William C.; and Yngve, Paul W., 5,547,732, Cl. 428-85.000.

Oehme, Dieter: *See*—
Dannheim, Jörg; Oehme, Dieter; and Tappe, Horst, 5,548,072, Cl. 534-635.000.

Oga, Kimio: *See*—
Sato, Kazutaka; Watanabe, Michihiro; Aoyagi, Masahisa; Seino, Taisaku; Ohki, Katsuo; Fukuda, Hiromitsu; Kawase, Hideyuki; Oga, Kimio; Shimizu, Akira; Narui, Youichi; Suzuki, Tsuguo; Otsuka, Yasuo; and Konno, Kazutoshi, 5,548,411, Cl. 358-400.000.

Ogasahara, Shoji: *See*—
Goto, Kohei; Hattori, Iwakazu; Ogasahara, Shoji; Shibata, Masahiro; Michino, Yoshiyuki; Soga, Kazuo; and Shiono, Takeshi, 5,548,045, Cl. 526-161.000.

Ogasawara, Fumihiko: *See*—
Ito, Yoshitaka; Ishii, Masami; Nishio, Takayuki; Mizutani, Uichiro; Yamada, Yuh; Ogasawara, Fumihiko; and Suganuma, Motohiro, 5,547,924, Cl. 505-500.000.

Ogata, Takao; Amemiya, Koji; Takeuchi, Tatsuo; Hasegawa, Takashi; Saito, Rie; and Sasanuma, Nobuatsu, to Canon Kabushiki Kaisha. Image operating apparatus providing image stabilization control. 5,548,378, Cl. 355-208.000.

Ogata, Toshio; Yoshizaki, Masanori; and Taguchi, Kenji, to Hitachi, Ltd. Amorphos core/coil assembling apparatus. 5,546,652, Cl. 29-738.000.

Ogawa, Hiroshi: *See*—
Saito, Shinji; Ogawa, Hiroshi; Kakuta, Takeshi; and Noguchi, Hitoshi, 5,547,772, Cl. 428-694.00B.

Ogawa, Masashi: *See*—
Shinoki, Hiroshi; Hiraoka, Toshikage; and Ogawa, Masashi, 5,547,848, Cl. 435-7.900.

Ogawa, Shinji, to Sumitomo Wiring Systems, Ltd. Bulb socket. 5,547,402, Cl. 439-699.200.

Ogawa, Shinji: *See*—
Kakii, Toshiaki; Ishida, Hidetoshi; Ogawa, Shinji; and Miyabe, Kazumichi, 5,548,677, Cl. 385-92.000.

Ogawa, Yasuji, to Kabushikikaisha Wacom. Optical position detector having scale pattern spot-illuminated to increase resolution. 5,548,392, Cl. 356-3.130.

Ogawa, Yoshihiro; Zenmei, Keisaku; and Isozumi, Shuzo, to Mitsubishi Denki Kabushiki Kaisha. Direct-current motor. 5,548,171, Cl. 310-154.000.

Ogihara, Tsutomu: *See*—
Kinsho, Takeshi; Kaneko, Tatsushi; Shimizu, Takaaki; Ogihara, Tsutomu; Saito, Ryuichi; and Kurihara, Hideshi, 5,547,606, Cl. 252-299.610.

Ogino, Toshikazu; and Yamamoto, Ryoji, to Mitsumi Electric Co., Ltd. Amplifier having a field-effect transistor with gate biased at a potential lower than source potential. 5,548,247, Cl. 330-277.000.

Ogiso, Akira: *See*—
Misawa, Tsutami; Ogiso, Akira; Imai, Rihoko; and Itoh, Hisato, 5,548,073, Cl. 534-690.000.

Ogoh, Ikuo, to Mitsubishi Denki Kabushiki Kaisha. Method of making asymmetric LDD transistor. 5,547,885, Cl. 437-44.000.

Ogura, Takao; Amemiya, Shigeo; Tezuka, Koji; and Chujo, Takafumi, to Fujitsu Limited. Distributed control of telecommunication network for setting up an alternative communication path. 5,548,639, Cl. 379-221.000.

Ogura, Toshihiko; Aotsu, Hiroaki; Kimura, Koichi; Enomoto, Hiromichi; and Kyoda, Tadashi, to Hitachi, Ltd. Memory circuit and method for setting an operation mode. 5,548,744, Cl. 395-494.000.

Oh, Chul D.: *See*—
Jang, Hyun S.; and Oh, Chul D., 5,548,546, Cl. 364-786.000.

Ohashi, Yutaka: *See*—
Yasuda, Yukio; and Ohashi, Yutaka, 5,548,242, Cl. 327-559.000.

Ohba, Takashi: *See*—
Nagatomo, Akira; Hattori, Yoshifumi; Ebisawa, Isao; Abe, Tsutomu; Ohba, Takashi; Jida, Hiroshi; and Watanabe, Kenjiro, 5,548,308, Cl. 347-9.000.

Ohi, Takehiko: *See*—
Fukui, Tetsuro; Kobayashi, Motokazu; Ohi, Takehiko; Ueno, Kazunori; Kagami, Kenji; Suzuki, Masao; and Nishino, Katsuya, 5,547,831, Cl. 430-619.000.

Ohira, Kazuhide: *See*—
Uchida, Tetsuro; and Ohira, Kazuhide, 5,548,462, Cl. 361-18.000.

Ohira, Tsunehisa; Umeda, Hiroyuki; and Imamura, Toshio, to Victor Company of Japan, Ltd. Tape cassette having an escape slot arrangement. 5,548,460, Cl. 360-132.000.

Ohkawa, Atsuhiro: *See*—
Mihayashi, Keiji; and Ohkawa, Atsuhiro, 5,547,824, Cl. 430-544.000.

Ohkawa, Minoru: *See*—
Futatsuya, Tomoshi; Mihara, Masaaki; Terada, Yasushi; Nakayama, Takeshi; Miyawaki, Yoshikazu; Kobayashi, Shinichi; and Ohkawa, Minoru, 5,548,557, Cl. 365-201.000.

Ohki, Katsuo: *See*—
Sato, Kazutaka; Watanabe, Michihiro; Aoyagi, Masahisa; Seino, Taisaku; Ohki, Katsuo; Fukuda, Hiromitsu; Kawase, Hideyuki; Oga, Kimio; Shimizu, Akira; Narui, Youichi; Suzuki, Tsuguo; Otsuka, Yasuo; and Konno, Kazutoshi, 5,548,411, Cl. 358-400.000.

Ohki, Nobutaka: *See*—
Takahashi, Osamu; and Ohki, Nobutaka, 5,547,825, Cl. 430-551.000.

Ohmicron Technology, Inc.: *See*—
Schwartz, Jerome L.; Cabelli, Michael D.; Silvia, John C.; and Dahlin, Craig D. T., 5,547,555, Cl. 204-418.000.

Ohmori, Hitoshi, to Rikagaku Kenkyusho. Method and apparatus for grinding with electrolytic dressing. 5,547,414, Cl. 451-21.000.

Ohmori, Jun-ya: *See*—
Ohta, Mitsuaki; Suzuki, Takeshi; Ohmori, Jun-ya; Miyata, Keiji; and Yanagisawa, Isao, 5,547,961, Cl. 514-300.000.

Ohmura, Yoshitaka: *See*—
Onishi, Makoto; Ohwada, Takashi; Tatebe, Ken; Ohmura, Yoshitaka; and Shimura, Kenichi, 5,547,576, Cl. 210-500.370.

Ohneda, Akira: *See*—
Matsuno, Seiki; Sasaki, Iwao; Ohneda, Akira; Sasaki, Kazuyuki; Natori, Yohei; and Nagasaki, Tomohisa, 5,547,938, Cl. 514-012.000.

Ohnishi, Takanori: *See*—
Kuwata, Takeshi; Ruckmongathan, Temkar N.; Nakagawa, Yutaka; Koh, Hidemasa; Nakazawa, Akira; Ohnishi, Takanori; and Ihara, Satoru, 5,548,302, Cl. 345-89.000.

Ohno, Shigeru; and Hattori, Yasushi, to Fuji Photo Film Co., Ltd. Silver halide photographic material. 5,547,819, Cl. 430-522.000.

Ohshima, Yoichi: *See*—
Yamaguchi, Yoshiko; and Ohshima, Yoichi, 5,547,884, Cl. 437-43.000.

Ohta, Masashi; Kobayashi, Hiroshi; Sekiya, Tsuneo; Hamada, Toshimichi; Fukuda, Kyoko; and Iijima, Koji, to Sony Corporation. Panorama image producing method and appartus. 5,548,409, Cl. 358-335.000.

Ohta, Mitsuaki; Suzuki, Takeshi; Ohmori, Jun-ya; Miyata, Keiji; and Yanagisawa, Isao, to Yamanouchi Pharmaceutical Co., Ltd. Method of treatment of intestinal diseases. 5,547,961, Cl. 514-300.000.

Ohta, Tsuyoshi: *See*—
Nakase, Shigeki; Nakamura, Shigeyuki; and Ohta, Tsuyoshi, 5,548,112, Cl. 250-214.00C.

Ohta, Yasuo; Kuroki, Tadao; and Oie, Yoshinobu, to Toyo Boseki Kabushiki Kaisha. LBT process of making high-tenacity polyethylene fiber. 5,547,626, Cl. 264-203.000.

Ohtani, Tatsuo: *See*—
Hasegawa, Fumihiko; Ohtani, Tatsuo; and Kuroda, Yasuyoshi, 5,547,415, Cl. 451-44.000.

Ohtani, Yutaka: *See*—
Sekimoto, Takashi; Endo, Yoichi; Yamazaki, Hirohiko; Yamazaki, Masahiko; Ohtani, Yutaka; Iguchi, Takeyoshi; Matsumoto, Kenji; Yamazaki, Hiroyuki; Takimura, Ryo; and Tsuda, Takao, 5,548,417, Cl. 385-474.000.

Ohtsuka, Masanori, to Canon Kabushiki Kaisha. Camera which senses improper film loading. 5,548,363, Cl. 354-173.100.

Ohuchi, Shokichi: *See*—
Christensen, Burton G.; Egawa, Takashi; Ichimaru, Yasuyuki; Ohuchi, Shokichi; Okonogi, Tsuneo; Patchett, Arthur A.; Shibahara, Seiji; and Tsutsumni, Seiji, 5,547,978, Cl. 514-422.000.

Ohwada, Takashi: *See*—
Onishi, Makoto; Ohwada, Takashi; Tatebe, Ken; Ohmura, Yoshitaka; and Shimura, Kenichi, 5,547,576, Cl. 210-500.370.

Ohya, Mayumi: *See*—
Minamitaka, Junichi; Sato, Kunio; and Ohya, Mayumi, 5,548,080, Cl. 84-627.000.

Ohya, Shuichi: *See*—
Sakao, Masato; and Ohya, Shuichi, 5,548,157, Cl. 257-532.000.

Ohyachi, Nobuyuki: *See*—
Kozaki, Kengo; Ohyachi, Nobuyuki; Tanaka, Seiji; Morisawa, Akira; and Nakazaki, Tosiyuki, 5,548,828, Cl. 455-161.200.

Oie, Yoshinobu: *See*—
Ohta, Yasuo; Kuroki, Tadao; and Oie, Yoshinobu, 5,547,626, Cl. 264-203.000.

Oikari, Timo: *See*—
Nurmi, Jarmo; and Oikari, Timo, 5,548,111, Cl. 250-207.000.

Okabayashi, Eiji: *See*—
Yamanaka, Toshihisa; and Okabayashi, Eiji, 5,548,320, Cl. 547-246.000.

Okabayashi, Makoto: *See*—
Amano, Takashi; and Okabayashi, Makoto, 5,547,598, Cl. 252-62.30T.

Okada, Hisao: *See*—
Mitsuya, Teruaki; Okada, Hisao; and Hoshi, Nobuyoshi, 5,548,375, Cl. 355-200.000.

Okada, Hisashi; Inaba, Tadashi; Suzuki, Ryo; and Nomura, Hideaki, to Fuji Photo Film Co., Ltd. Photographic processing using a novel chelating complex. 5,547,817, Cl. 430-393.000.

Okada, Jouji; Kawamata, Akira; Tokunaga, Tadayuki; Nagatani, Noboru; Torizuka, Makoto; and Asahi, Masahiko, to Kao Corporation. Fluorine-modified silicone derivative, production thereof and cosmetic containing the same. 5,548,054, Cl. 528-25.000.

Okada, Ken-ya: *See*—
Ueda, Minoru; and Okada, Ken-ya, 5,547,679, Cl. 424-402.000.

Okada, Nobuyuki; and Eikyu, Takuya, to Toyokanetsu Kabushiki Kaisha. Article sorting method and system. 5,547,084, Cl. 209-583.000.

Okada, Tsuyoshi; and Shibuya, Kazuo, to Matsushita Electric Industrial Co., Ltd. Transverse control device for optical head having a pulse-driven coarse positioning actuator and a precision actuator. 5,548,575, Cl. 369-219.000.

Okami, Takehide: *See*—
Satoh, Makoto; Okami, Takehide; and Shimamoto, Noboru, 5,547,742, Cl. 428-215.000.

Okamoto, Kenji: *See*—
Horimura, Hiroyuki; Okamoto, Kenji; Minemi, Masahiko; Kaji, Toshihiko; Takeda, Yoshinobu; and Takano, Yoshishige, 5,547,632, Cl. 419-28.000.

Okamoto, Toru: *See*—
Kawakami, Shoichi; Okamoto, Toru; Miyazaki, Nobuyuki; Uchino, Bunji; Nomura, Kazuyoshi; and Kato, Hiroyuki, 5,548,019, Cl. 524-591.000.

Okamoto, Yasukazu, to Kabushiki Kaisha Toshiba. Method and apparatus for detecting changes in dynamic images. 5,548,659, Cl. 382-107.000.

Okamoto, Yoshimi: *See*—
Kuretake, Masato; Zushi, Takayasu; Kitagawa, Motonobu; Yamakawa, Kazuhiko; Okamoto, Yoshimi; and Uda, Sawayo, 5,547,218, Cl. 280-743.100.

Okamura, Atsushi, to NEC Corporation. Bus cycle timing control circuit having bus cycle enable/disable signal dictated by count means using comparison of predetermined and destination addresses for initial count. 5,548,787, Cl. 395-845.000.

Okanagan House Inc.: *See*—
Pyrozyk, Ronald R., 5,547,303, Cl. 401-270.000.

Okano, Haruo: *See*—
Ito, Shinichi; Okano, Haruo; Watanabe, Toru; and Okumura, Katsuya, 5,547,787, Cl. 430-5.000.

Okano, Yoshimichi: *See*—
Yamato, Tsutomu; Oshino, Yasuhiro; Fukuda, Yutaka; Kanno, Tatsuya; Kuwana, Takaaki; and Okano, Yoshimichi, 5,548,041, Cl. 526-62.000.

Okawa, Takashi; Enokido, Masashi; Tsuda, Shingo; and Akutsu, Norikatsu, to Matsushita Electric Industrial Co., Ltd. Alkaline storage battery and method for producing the same. 5,547,784, Cl. 429-218.000.

Okazawa, Noriaki; Naka, Takahiro; and Yasukawa, Shinji, to Seiko Epson Corporation. Ink jet recording head. 5,548,314, Cl. 347-71.000.

O'Kelly, James M.: *See*—
Gabor, Thomas; and O'Kelly, James M., 5,547,512, Cl. 118-718.000.

Oki Electric Industry Co., Ltd.: *See*—
Oda, Takahiro, 5,548,176, Cl. 310-328.000.

Oki, Yasuhiro: *See*—
Yamaguchi, Tetsuya; Watanabe, Yasushi; Fukanuma, Tetsuhiko; Oki, Yasuhiro; and Yamamoto, Yuuji, 5,547,353, Cl. 418-55.200.

Okonogi, Tsuneo: *See*—
Christensen, Burton G.; Egawa, Takashi; Ichimaru, Yasuyuki; Ohuchi, Shokichi; Okonogi, Tsuneo; Patchett, Arthur A.; Shibahara, Seiji; and Tsutsumni, Seiji, 5,547,978, Cl. 514-422.000.

OkTrak Systems, Inc.: *See*—
Simmons, Mark A.; McGrath, Martin J.; and Thrasher, David L., 5,548,505, Cl. 364-130.000.

Oku, Yasunori: *See*—
Kami, Yozo; Anzawa, Teruaki; Oku, Yasunori; and Hinosawa, Shinji, 5,547,224, Cl. 280-834.000.

Okubo, Akio; Saito, Atsushi; and Watanabe, Fumihiko, to Canon Kabushiki Kaisha. Apparatus and method for wiping an ink jet recording head with control of relative speed between wiper and head. 5,548,309, Cl. 347-33.000.

Okuhara, Masakuni: *See*—
Fujie, Akihiko; Takase, Shigehiro; Yamashita, Michio; Sato, Tomoko; Hashimoto, Seiji; and Okuhara, Masakuni, 5,547,934, Cl. 514-11.000.

Okumura, Katsuya: *See*—
Ito, Shinichi; Okano, Haruo; Watanabe, Toru; and Okumura, Katsuya, 5,547,787, Cl. 430-5.000.
Miyoshi, Motosuke; Okumura, Katsuya; and Yamazaki, Yuichiro, 5,548,183, Cl. 313-153.000.

Okuyama, Nobutaka; Sakurai, Soichi; Fukuma, Kooji; Yoshioka, Hiroshi; Obara, Masao; Ito, Naoki; Takeyama, Atsushi; and Satoh, Yoshio, to Hitachi, Ltd.; and Hitachi Media Electronics Co., Ltd. Deflection yoke and cathode-ray tube apparatus comprising the same. 5,548,190, Cl. 315-368.260.

Oldfield, William W.: *See*—
Grace, Martin I.; and Oldfield, William W., 5,548,538, Cl. 364-571.040.

Oldiges, Donald A.; and Joseph, Anthony W. Coating and bonding composition. 5,547,503, Cl. 106-287.180.

Olds, Christopher C.: *See*—
Kroenke, David M.; Olds, Christopher C.; Kawai, Kenji; and Eggebroten, Lee I., 5,548,749, Cl. 395-600.000.

Olds, Keith A.; and Kurby, Christopher N., to Motorola, Inc. Satellite telecommunication system with apparatus for protecting radio astronomy and method of using same. 5,548,800, Cl. 455-12.100.

Olds, Leonard E.: *See*—
Cusick, Michael J.; Weinstein, Michael A.; and Olds, Leonard E., 5,548,611, Cl. 373-18.000.

Ole Bjerre: *See*—
Larsen, Jarl F.; and Larsen, Flemming, 5,547,153, Cl. 248-76.000.

Oliver, Joseph J.; Young, Christopher L.; and Bednar, Richard D., to Ransomes America Corporation. Self-calibrating hydraulic fluid leak detection system. 5,548,278, Cl. 340-605.000.

Olkusz, Joseph A.: *See*—
Powers, Kenneth W.; Wang, Hsien-Chang; Chung, T-C.; Dias, Anthony J.; and Olkusz, Joseph A., 5,548,023, Cl. 525-69.000.
Powers, Kenneth W.; Wang, Hsien-Chang; Chung, T-C.; Dias, Anthony J.; and Olkusz, Joseph A., 5,548,029, Cl. 525-195.000.

Olsen, William R., Jr.: *See*—
Diesen, David; and Olsen, William R., Jr., 5,547,629, Cl. 264-257.000.

Olson, Kurt A.: *See*—
Husain, Anwar; Kotecki, David E.; Lassig, Stephan E.; Olson, Kurt A.; and Ricci, Anthony J., 5,548,470, Cl. 361-234.000.

Olympus Optical Co., Ltd.: *See*—
Katagiri, Moriya, 5,548,367, Cl. 354-234.100.
Takeuchi, Toyoaki, 5,548,573, Cl. 369-116.000.

Tsuyuki, Hiroshi; and Kikuchi, Akira, 5,547,457, Cl. 600-175.000.

Oma, Kuniaki: *See*—
Koketsu, Eiji; Sato, Koki; Muromachi, Tetsushi; Haraoka, Mutsumu; Nagata, Toshio; Yanagihara, Michihiro; and Oma, Kuniaki, 5,547,223, Cl. 280-805.000.

Omata, Yuji: *See*—
Asai, Hiroki; and Omata, Yuji, 5,547,557, Cl. 205-118.000.

Omiya, Yasunori, to Idemitsu Kosan Co., Ltd. Lubricant composition for limited slip differential of car. 5,547,596, Cl. 508-188.000.

Omnipoint Corporation: *See*—
Durrant, Randolph L., 5,548,253, Cl. 332-103.000.

Omron Corporation: *See*—
Taniguchi, Kunio, 5,546,796, Cl. 73-146.000.

Omura, Ichiro; Nakagawa, Akio; Sakai, Tadashi; Sekimura, Masayuki; and Funaki, Hideyuki, to Kabushiki Kaisha Toshiba. Field effect transistor. 5,548,150, Cl. 257-349.000.

Onagawa, Seiki, to NEC Corporation. Horizontal position compensation circuit. 5,548,307, Cl. 345-213.000.

O'Neil, Eugene G.: *See*—
Creedon, Tadhg; Hickey, John; and O'Neil, Eugene G., 5,548,762, Cl. 395-733.000.

Ong, Estelita S.: *See*—
Evans, Ronald M.; Ong, Estelita S.; Segui, Prudimar S.; Thompson, Catherine C.; Umesono, Kazuhiko; and Giguere, Vincent, 5,548,063, Cl. 530-350.000.

Ong, Tong-Chern, to Intel Corporation. Method and device for improved programming threshold voltage distribution in electrically programmable read only memory array. 5,548,549, Cl. 365-185.050.

Onishi, Makoto; and Ishikawa, Kenji, to Terumo Kabushiki Kaisha. Catheter with medicament injection pores. 5,547,472, Cl. 604-93.000.

Onishi, Makoto; Ohwada, Takashi; Tatebe, Ken; Ohmura, Yoshitaka; and Shimura, Kenichi, to Terumo Kabushiki Kaisha. Pathogenic substance removing material and a blood filter containing the material. 5,547,576, Cl 210-500.370.

Ono, Katsuhiko: *See*—
Arasawa, Masashi; Ono, Katsuhiko; Nishikawa, Hiroshi; and Tsuchiya, Kazuo, 5,547,539, Cl. 156-626.100.

Ono, Masayuki: *See*—
Hanawa, Tetsuya; Kuga, Yuji; Takashima, Yutaka; Matsumoto, Yoshihiro; and Ono, Masayuki, 5,548,827, Cl. 455-129.000.

Onuma, Kenji: *See*—
Masaki, Yuichi; Onuma, Kenji; Yoshioka, Toshifumi; and Mitsui, Mutsuo, 5,548,428, Cl. 359-80.000.

Onusseit, Hermann: *See*—
Gossen, Ralf; Buxhofer, Horst; and Onusseit, Hermann, 5,547,712, Cl. 427-421.000.

Ookawa, Masami: *See*—
Nakayama, Ichirou; and Ookawa, Masami, 5,547,294, Cl. 400-145.000.

Oomori, Miho: *See*—
Ito, Kiichi; Yada, Shuhei; Oomori, Miho; and Nakamura, Toshiko, 5,548,047, Cl. 526-240.000.

Oono, Shuuji; Tadamura, Katsumi; and Yamaguchi, Syoji, to Hitachi, Ltd. Method and apparatus for an ISDN communication system using active and stand-by ISDN communication adaptors to maintain operation when trouble occurs. 5,548,710, Cl. 395-181.000.

Opocrin S.p.A.: *See*—
Mascellani, Giuseppe; and Bianchini, Pietro, 5,547,944, Cl. 514-54.000.

Opta Food Ingredients, Inc.: *See*—
Mallee, Francis M.; Stone, Joel A.; and Finocchiaro, Eugene T., 5,547,513, Cl. 127-38.000.

Optoscint, Inc.: *See*—
Pandelisev, Kiril A., 5,548,116, Cl. 250-256.000.

Orbital Engine Company (Australia) Pty. Limited: *See*—
Paluch, John W. D.; Malss, Stephen R.; Gildersleeve, Lyle A.; Schlunke, Christopher K.; Bell, Gregory B.; and Smith, Darren A., 5,546,902, Cl. 123-304.000.

Orbital Sciences Corporation: *See*—
Robinson, Anthony D.; and Curtin, Shawn T., 5,546,632, Cl. 16-54.000.

Orchard Communications Inc.: *See*—
Plastow, Robert J., 5,547,274, Cl. 385-15.000.

O'Regan, Sean: *See*—
Kaku, Tomoya; and O'Regan, Sean, 5,548,613, Cl. 375-208.000.

Oregon Health Sciences Univ.: *See*—
Bunzow, James R.; Civelli, Olivier; Grandy, David K.; and Zhou, Qun Y., 5,547,845, Cl. 435-7.100.

Oriental Motor Co., Ltd.: *See*—
Iwasa, Takao; and Kambayashi, Takaji, 5,548,169, Cl. 310-72.000.

Origin Medsystems, Incorporated: *See*—
Kloeckl, Terrance; Thompson, Todd; Costa, Peter F.; Holmes, William A.; and Daulton, Jay, 5,547,474, Cl. 606-143.000.

Orillion, Michael T.: *See*—
Blum, Michael E.; Boerman, Gary L.; Fekete, Thomas M.; Horak, Donald L.; Kovneristy, Yulig K.; and Orillion, Michael T., 5,547,487, Cl. 75-10.150.

Orion Industries, Inc.: *See*—
Evans, Michael W., 5,548,803, Cl. 455-16.000.

Orthologic Corporation: *See*—
Kaufman, Jonathan J.; and Chiabrera, Alessandro E., 5,547,459, Cl. 601-2.000.

Ortiz, Ernest: *See*—
Burout, Charles; and Ortiz, Ernest, 5,546,660, Cl. 30-50.000.

Ortiz, Mark S.; and Failla, Stephen J., to Ethicon, Inc. T-shaped abdominal wall lift with telescoping member. 5,547,458, Cl. 600-204.000.

Osaka, Tomohiro: *See*—
Watanabe, Masatsugu; Nagano, Yasuhisa; Shimoyama, Hajime; and Osaka, Tomohiro, 5,547,488, Cl. 75-335.000.

Osakabe, Yoshio: *See*—
Tanaka, Shigeo; Yamazaki, Hiroshi; Kotabe, Noriko; Sugiyama, Koichi; Sato, Makoto; Katsuyama, Akira; Osakabe, Yoshio; and Kusagaya, Yasuo, 5,548,725, Cl. 395-200.050.

Osaki, Rie: *See*—
Nozawa, Masaei; Toda, Yasuyoshi; Naito, Kiwamu; Nomura, Yurio; and Osaki, Rie, 5,548,393, Cl. 356-70.000.

Osanai, Akinori; Nagai, Toshinari; Kanai, Hiroshi; Harima, Kenji; Iwano, Kazuhiko; and Yuda, Shuji, to Toyota Jidosha Kabushiki Kaisha. Apparatus for disposing of fuel vapor. 5,546,917, Cl. 123-674.000.

Osawa, Takashi, to Mitsubishi Denki Kabushiki Kaisha; and Osram-Melco Limited. Method of flicker-free lighting hot-cathode low-pressure rare gas discharge lamp. 5,548,187, Cl. 315-94.000.

Oshima, Keiji: *See*—
Yoshino, Hitoshi; Oshima, Keiji; and Miyagaki, Hisanori, 5,548,304, Cl. 345-145.000.

Oshima, Yoshimitsu: *See*—
Matsumoto, Yoshiro; Isaka, Kazumi; Mizuguchi, Masaaki; Oshima, Yoshimitsu; and Takatsu, Osamu, 5,547,450, Cl. 492-54.000.

Oshino, Yasuhiro: *See*—
Yamato, Tsutomu; Oshino, Yasuhiro; Fukuda, Yutaka; Kanno, Tatsuya; Kuwana, Takaaki; and Okano, Yoshimichi, 5,548,041, Cl. 526-62.000.

Osram-Melco Limited: *See*—
Osawa, Takashi, 5,548,187, Cl. 315-94.000.

Osram Sylvania Inc.: *See*—
Wright, John O., 5,547,400, Cl. 439-668.000.

Ossid Corporation: *See*—
Tolson, Sidney S., 5,546,677, Cl. 34-216.000.

Osterlund, Karl F.: *See*—
Stoll, Kurt A.; and Osterlund, Karl F., 5,548,614, Cl. 375-211.000.

Ota, Atsutoshi: *See*—
Kawashima, Yoichi; Ota, Atsutoshi; Morikawa, Yuko; and Mibu, Hiroyuki, 5,547,952, Cl. 514-224.200.

Ota, Tatsuki, to NEC Corporation. Bus electrode for use in a plasma display panel. 5,548,186, Cl. 313-583.000.

Otsuka, Yasuo. *See*—
Sato, Kazutaka; Watanabe, Michihiro; Aoyagi, Masahisa; Seino, Taisaku; Ohki, Katsuo; Fukuda, Hiromitsu; Kawase, Hideyuki; Oga, Kimio; Shimizu, Akira; Narui, Youichi; Suzuki, Tsuguo; Otsuka, Yasuo; and Konno, Kazutoshi, 5,548,411, Cl. 358-400.000.

Otten, Matthew R.: *See*—
Hamblin, Steven W.; Witt, David A.; Sierocuk, Thomas J.; Nicola, Kirk M.; Otten, Matthew R.; and Berky, Craig B., 5,547,117, Cl. 227-175.200.

Ouchi, Hideo; and Takei, Kenji, to NSK Ltd. Rolling bearing unit with rotational speed sensor. 5,547,290, Cl. 384-448.000.

Outinen, Marko T.; Tossavainen, Olli; Harju, Matti; and Linko, Pekka, to Valio Oy. Method for removing phenylalanine from proteinaceous compositions, a product so obtained and use thereof. 5,547,687, Cl. 426-2.000.

Overhues, Egon, to Teckentrup GmbH & Co. KG. Spring washer for the securing of screws, nuts, or the like. 5,547,326, Cl. 411-544.000.

Owen, Hartley: *See*—
Demmel, Edward J.; and Owen, Hartley, 5,547,910, Cl. 502-42.000.

Owens Corning Fiberglas Technology, Inc.: *See*—
Haubert, Thomas D.; and Belt, James S., 5,547,707, Cl. 427-188.000.

Owens, Steve; and Bouldin, Brett, to PES, Inc. Downhole system for extending the life span of electronic components. 5,547,028, Cl. 166-302.000.

Owens, Steven C.: *See*—
Rubbo, Richard P.; Boundin, Brett W.; and Owens, Steven C., 5,547,029, Cl. 166-375.000.

Oxaal, John T.; Van Ramm, Olaf T.; Blaker, David M.; and Smith, Robert S. High speed volumetric ultrasound imaging system. 5,546,807, Cl. 73-606.000.

Oya, Toyohisa: *See*—
Hioki, Takanori; Oya, Toyohisa; and Nishiyama, Shingo, 5,547,828, Cl. 430-597.000.

Ozaki, Yoshiharu, to Nippon Telegraph and Telephone Public Corporation. Photomask inspecting method and apparatus. 5,548,401, Cl. 356-239.000.

Ozari, Yehuda: *See*—
Barrows, Lawrence; Lowden, Gerald; Cassetta, Carmen; and Ozari, Yehuda, 5,547,725, Cl. 428-43.000.

Pachl, Carol A.: *See*—
Spaete, Richard R.; and Pachl, Carol A., 5,547,834, Cl. 435-5.000.

Pacific Gas and Electric Company: *See*—
Ward, Stephen W.; and Harwood, Ray E., 5,547,514, Cl. 134-22.100.

Package Research, Inc.: *See*—
Boiardi, Mario, 5,547,107, Cl. 222-1.000.

Padget, John C.: *See*—
Satgurunathan, Rajasingham; Hinde, David C.; Padget, John C.; and Carey, John G., 5,547,710, Cl. 427-386.000.

Padoan, Silvia: *See*—
Pascucci, Luigi; Padoan, Silvia; and Maccarrone, Marco, 5,548,554, Cl. 365-200.000.

Padovani, Roberto; Weaver, Lindsay A., Jr.; and Bender, Paul E., to Qualcomm Incorporated. Method and apparatus for balancing the forward link handoff boundary to the reverse link handoff boundary in a cellular communication system. 5,548,812, Cl. 455-33.200.

Pagano, Daniel M.; and Klees, Kevin J., to Eastman Kodak Company. Automatic processing reel for use in photofinishing. 5,547,145, Cl. 242-536.000.

Pagemart, Inc.: *See*—
Lorang, Malcolm M.; and Lindquist, Roger D., 5,548,814, Cl. 455-38.100.

Paidassi, Serge; Ernoult, Jacques; Brun, Michel; Monge-Cadet, Pierre; Pauleau, Yves; and Farges, Guy, to Commissariat A L'Energie Atomique. Multilayer material, anti-erosion and anti-abrasion coating incorporating said multilayer material and process for producing said multilayer material. 5,547,767, Cl. 428-610.000.

Palfreyman, Michael G.; McDonald, Ian A.; Salituro, Francesco G.; and Schwarcz, Robert, to Merrell Pharmaceuticals Inc. NMDA antagonism method. 5,547,991, Cl. 514-564.000.

Pall Corporation: *See*—
Gsell, Thomas C.; Pascale, Frank R.; and Lipari, Charles, 5,547,108, Cl. 222-95.000.

Palmaer, Eric K.: *See*—
Palmaer, Karl V.; and Palmaer, Eric K., 5,547,071, Cl. 198-853.000.

Palmaer, Karl V.; and Palmaer, Eric K., to KVP Systems, Inc. Plastic conveyor belt. 5,547,071, Cl. 198-853.000.

Palmer, Bethe M.: *See*—
Park, Sung K.; Palmer, Bethe M.; and Ruderman, Gerald S., 5,548,519, Cl. 364-470.060.

Palmer, Donald E. Passive signal shielding structure for short-wire cable. 5,548,082, Cl. 174-34.000.

Palmer, Kathryn M.: *See*—
Ulerich, Phillip L.; Palmer, Kathryn M.; and Docherty, Edward F., 5,548,261, Cl. 335-172.000.

Palmer, Michael J.: *See*—
Feger, Claudius; Graham, Teresita O.; Grebe, Kurt R.; Lanzetta, Alphonso P.; Liutkus, John J.; Matthew, Linda C.; Palmer, Michael J.; Tanner, Nelson R.; Tong, Ho-Ming; Wilson, Charles H.; and Yeh, Helen L., 5,546,655, Cl. 29-846.000.

Pálosi, Éva: *See*—
Mahó, Sándor; Tuba, Zoltán; Gere, Anikó; Vittay, Pal; Kiss, Béla; Pálosi, Éva; Szporny, László; Francsicsné, Erzsébet C.; Boórné, Anna M.; Balogh, Gábor; and Görög, Sándor, 5,547,949, Cl. 514-176.000.

Paltrinieri, Roberto, to Tetra Laval Holdings & Finance S.A. Method and an apparatus for registering a level of contents. 5,546,733, Cl. 53-503.000.

Paluch, John W. D.; Malss, Stephen R.; Gildersleeve, Lyle A.; Schlunke, Christopher K.; Bell, Gregory B.; and Smith, Darren A., to Orbital Engine Company (Australia) Pty. Limited. Fuel/gas delivery system for internal combustion engines. 5,546,902, Cl. 123-304.000.

Palum, Russell J.: *See*—
Parker, H. Galen; Bilhorn, Robert B.; Kaplan, Martin C.; and Palum, Russell J., 5,548,120, Cl. 250-341.700.

Panasonic Technologies, Inc.: *See*—
Topper, Robert J.; and Dischert, Lee R., 5,548,332, Cl. 348-251.000.
Zortea, Anthony E., 5,548,697, Cl. 395-22.000.

Pancoast, Steven T.: *See*—
Combs, James L.; Crump, Dwayne T.; and Pancoast, Steven T., 5,548,763, Cl. 395-750.000.

Pandelisev, Kiril A., to Optoscint, Inc. Long life oil well logging assembly. 5,548,116, Cl. 250-256.000.

Panescu, Dorin; and Swanson, David K., to EP Technologies, Inc. System and method for matching electrical characteristics and propagation velocities in cardiac tissue to locate potential ablation sites. 5,546,940, Cl. 128-642.000.

Panitch, Maximo M.: *See*—
Sun, Wei-Mei; Ma, Zhu-ning; Panitch, Maximo M.; and Galleguillos, Ramiro, 5,547,661, Cl. 424-66.000.

Papadopoulos, Gregory M.: *See*—
Sprague, David L.; Harney, Kevin; Kowashi, Eiichi; Keith, Michael; Simon, Allen H.; Papadopoulos, Gregory M.; Hays, Walter P.; Salem, George F.; Shiue, Shih-Wei; Bertapelli, Anthony P.; and Shilman, Vitaly H., 5,548,793, Cl. 395-860.000.

Papathomas, Konstantinos: *See*—
Afzali-Ardakani, Ali; Gotro, Jeffrey T.; Hedrick, Jeffrey C.; Papathomas, Konstantinos; Patel, Niranjan M.; Shaw, Jane M.; and Viehbeck, Alfred, 5,548,034, Cl. 525-390.000.

Papen, George A.: *See*—
Adrian, Ronald J.; Barnhart, Donald H.; and Papen, George A., 5,548,419, Cl. 359-24.000.

Papenhagen, Dieter; and Meyer, Thorsten, to Mercedes-Benz AG. Motion transmission mechanism for controlling an internal combustion engine. 5,546,904, Cl. 123-400.000.

Papp, Michael J.; and Whalen, Kevin W. Limited space golf driving range. 5,547,186, Cl. 473-168.000.

Pappalardo, Dawn J.: *See*—
Hinchliffe, Peter W. J.; Pappalardo, Dawn J.; Larsen, Scott; Tovey, Ian J.; and McDonnell, Christopher, 5,547,463, Cl. 602-20.000.

Paquier, Jean-Luc; and Guillevic, Domimique, to Thomcast. Method of signal alignment in television and device for implementing it. 5,548,343, Cl. 348-691.000.

Parel, Jean-Marie A.: *See*—
Simon, Gabriel; Lee, William G.; and Parel, Jean-Marie A., 5,547,468, Cl. 604-21.000.

Parikh, Mihir: *See*—
Bonora, Anthony C.; Guerre, Gilles; Parikh, Mihir; Rosenquist, Frederick T., Jr.; and Jain, Sudhir, 5,547,328, Cl. 414-217.000.

Park, Andrew D. Method for fabricating a ballistic laminate structure. 5,547,536, Cl. 156-292.000.

Park, Hee B., to LG Electronics Inc. Demodulating system for high-definition television receiver. 5,548,344, Cl. 348-726.000.

Park, Joon S.: *See*—
Holloman, Edward C.; Kyba, Evan P.; and Park, Joon S., 5,547,663, Cl. 424-78.040.

Park, Moon-Bae: *See*—
Ro, Kwang-Ho; and Park, Moon-Bae, 5,548,318, Cl. 347-174.000.

Park, Sung K.; Palmer, Bethe M.; and Ruderman, Gerald S., to Custom Clothing Technology Corporation. Custom apparel manufacturing apparatus and method. 5,548,519, Cl. 364-470.060.

Park, Yeong J.: *See*—
Lee, Kee S.; Kim, Won G.; and Park, Yeong J., 5,548,193, Cl. 318-568.110.

Parker, Brian G., to Cascade Engineering, Inc. Waste container with dump handle. 5,547,104, Cl. 220-772.000.

Parker, Donald R., to Digital Control Corp. Draft monitoring device mounted on motor vehicle to determine wind speed relative to ground. 5,546,799, Cl. 73-170.110.

Parker Hannifin Corporation: *See*—
Stone, Walter H., 5,547,572, Cl. 210-232.000.

Parker, H. Galen; Bilhorn, Robert B.; Kaplan, Martin C.; and Palum, Russell J., to Eastman Kodak Company. Linear integrating cavity light source for infra-red illumination of sensitized media. 5,548,120, Cl. 250-341.700.

Parker, Kenneth B., Jr. Animal trap composite bait material and methods of use. 5,546,696, Cl. 43-58.000.

Parker, Thomas W., to Plumbmaster, Inc. Replacement faucet spayer hose installation kit. 5,546,978, Cl. 137-315.000.

Parker, Zachary T., to Flo-Dynamics, Inc. External transmission filter adapter. 5,546,999, Cl. 141-98.000.

Parlet, Nickki L.: *See*—
Cope, Frederick O.; DeWille, Normanella T.; Richards, Ernest W.; Mazer, Terrence B.; Abbruzzese, Bonnie C.; Snowden, Gregory A.; Parlet, Nickki L.; and Pease, Laura A., 5,547,927, Cl. 514-2.000.

Parnell, Edgar W.: *See*—
Hatton, Leslie R.; Buntain, Ian G.; Hawkins, David W.; Parnell, Edgar W.; Pearson, Christopher J.; and Roberts, David A., 5,547,974, Cl. 514-406.000.

Parrinello, Michele: *See*—
Gimzewski, James; Parrinello, Michele; and Reihl, Bruno, 5,547,774, Cl. 428-694.0ML.

Parsnick, David R.: *See*—
Dray, James R.; Parsnick, David R.; Fisher, Theodore F.; and Wisz, Michael W., 5,546,767, Cl. 62-646.000.

Parzefall, Walter; and Folk, Herbert, to INA Walzlager Schaeffler KG. Hydraulically actuatable device for disengaging a gearshift clutch of an automotive vehicle. 5,547,058, Cl. 192-85.0CA.

Pascale, Frank R.: *See*—
Gsell, Thomas C.; Pascale, Frank R.; and Lipari, Charles, 5,547,108, Cl. 222-95.000.

Pascucci, Luigi; Padoan, Silvia; and Maccarrone, Marco, to SGS-Thompson Microelectronics, S.r.l. Integrated programming circuitry for an electrically programmable semiconductor memory device with redundancy. 5,548,554, Cl. 365-200.000.

Pass & Seymour, Inc.: *See*—
Mehta, Parag J.; Callas, Gunter; Barbo, Vincent; and Marcou, Jean-Claude, 5,546,657, Cl. 29-884.000.

Patchett, Arthur A.: *See*—
Christensen, Burton G.; Egawa, Takashi; Ichimaru, Yasuyuki; Ohuchi, Shokichi; Okonogi, Tsuneo; Patchett, Arthur A.; Shibahara, Seiji; and Tsutsumni, Seiji, 5,547,978, Cl. 514-422.000.

Patel, Chandrakant B.; and Limberg, Allen L., to Samsung Elctronics, Co., Ltd. Digital VSB detector with bandpass phase tracker using rader filters, as for use in an HDTV receiver. 5,548,617, Cl. 375-316.000.

Patel, Mahesh V.: *See*—
Hutchinson, Douglas K.; Barbachyn, Michael R.; Brickner, Steven J.; Gammill, Ronald B.; and Patel, Mahesh V., 5,547,950, Cl. 514-252.000.

Patel, Niranjan M.: *See*—
Afzali-Ardakani, Ali; Gotro, Jeffrey T.; Hedrick, Jeffrey C.; Papathomas, Konstantinos; Patel, Niranjan M.; Shaw, Jane M.; and Viehbeck, Alfred, 5,548,034, Cl. 525-390.000.

Patel, Prakash D.: *See*—
Kulsrestha, Girindra N.; Saxena, Mahendra P.; Gupta, Ashok K.; Goyal, Hari B.; Prasad, Rameshwar; Prasada Rao, Turuga S. R.; and Patel, Prakash D., 5,547,905, Cl. 502-66.000.

Patent-Treuhand-Gesellschaft F. Elektrische Gluehlampen mbH: *See*—
Bunk, Axel; Klam, Ruediger; Ender, Elmar; and Gloeckler, Frank, 5,548,182, Cl. 313-113.000.

Paterson, Robert W.; and Stephan, Werner B., to AT&T Global Information Solutions Company. Modular cabinet bezel. 5,547,272, Cl. 312-223.200.

Patrick, Todd A.: *See*—
Kranz, David M.; Roy, Edward J.; and Patrick, Todd A., 5,547,668, Cl. 424-181.100.

Patterson, Martin: *See*—
Aziz, Ashar; Mulligan, Geoffrey; Patterson, Martin; and Scott, Glenn, 5,548,646, Cl. 380-23.000.

Patzon, Rudolf: *See—*
Lukschandel, Jörg; Patzon, Rudolf; and Hassler, Jürgen, 5,547,709, Cl. 427-299.000.

Pauleau, Yves: *See—*
Paidassi, Serge; Ernoult, Jacques; Brun, Michel; Monge-Cadet, Pierre; Pauleau, Yves; and Farges, Guy, 5,547,767, Cl. 428-610.000.

Paulsen, Robert C., Jr.: *See—*
Martino, Michael J.; and Paulsen, Robert C., Jr., 5,548,507, Cl. 364-419.010.

Pavilion Technologies: *See—*
Keeler, James D.; Havener, John P.; Godbole, Devendra; and Ferguson, Ralph B., 5,548,528, Cl. 364-497.000.

Pawlicki, Jeffrey J.: *See—*
Benes, Kevin C.; and Pawlicki, Jeffrey J., 5,547,391, Cl. 439-399.000.

Pawlowski, Stephen: *See—*
Kolinski, Jerzy; Sprietsma, John; Pawlowski, Stephen; and Schaechterle, Henry, 5,548,734, Cl. 395-306.000.

Payette, Richard. Circular disk doorstop. 5,547,238, Cl. 292-343.000.

Peachey, Russell M.: *See—*
Petty, John D.; and Peachey, Russell M., 5,547,875, Cl. 436-8.000.

Peake, Clinton J.: *See—*
Henrie, Robert N., II; Peake, Clinton J.; Cullen, Thomas G.; Chaguturu, Munirathnam K.; Ray, Partha S.; and Bennett, Brian D., 5,547,954, Cl. 514-258.000.

Pearce, David, to Madge Networks Limited. Local area network hub unit. 5,548,280, Cl. 340-825.050.

Pearce, Glenn T.: *See—*
Yarmey, Marianne; Bello, James L.; Mitchell, Gary F.; Pearce, Glenn T.; Bowman, Wayne A.; and Sterman, Melvin, 5,547,832, Cl. 430-623.000.

Pearson, Christopher J.: *See—*
Hatton, Leslie R.; Buntain, Ian G.; Hawkins, David W.; Parnell, Edgar W.; Pearson, Christopher J.; and Roberts, David A., 5,547,974, Cl. 514-406.000.

Pease, Laura A.: *See—*
Cope, Frederick O.; DeWille, Normanella T.; Richards, Ernest W.; Mazer, Terrence B.; Abbruzzese, Bonnie C.; Snowden, Gregory A.; Parlet, Nickki L.; and Pease, Laura A., 5,547,927, Cl. 514-2.000.

Pedersen, Bent: *See—*
Kjaer, Bjarne; Pedersen, Bent; and Kjaer, Jens B., 5,547,691, Cl. 426-36.000.

Pedersen, Elin R.: *See—*
Moran, Thomas P.; Pedersen, Elin R.; McCall, Michael K.; and Halasz, Frank G., 5,548,705, Cl. 395-159.000.

Peirce, James G., to Johnson Worldwide Assocites, Inc. Boat motor trim and tilt assembly. 5,547,407, Cl. 440-61.000.

Pellonpaja Oy: *See—*
Forsström, Christer, 5,546,892, Cl. 119-14.080.

Pelstring, Robert M.; Kloeppel, Klaus D.; Dunfield, John C.; Andrews, Michael K.; and Jue, Clifford T., to Seagate Technology, Inc. Support flange having electrical contacts to provide electrical continuity upon spindle motor mounting to base. 5,548,458, Cl. 360-99.080.

Penczak, John P.; and Kalbfleisch, Edmund B., to Walker Systems, Inc. Access floor trench raceway. 5,546,717, Cl. 52-220.500.

Pendri, Annapurna: *See—*
Greenwald, Richard B.; and Pendri, Annapurna, 5,547,981, Cl. 514-449.000.

Penn, Laurence R.: *See—*
Keller, Wilhelm A.; and Penn, Laurence R., 5,547,110, Cl. 222-219.000.

Penn State Research Foundation, Inc.: *See—*
Allcock, Harry R.; Klingenberg, Eric H.; and Weller, Mark P., 5,548,060, Cl. 528-487.000.

Pepi, Richard: *See—*
Garcia, Michel; and Pepi, Richard, 5,547,483, Cl. 65-42.000.

PepsiCo., Inc.: *See—*
Mero, Christopher; and Cahill, John, 5,547,631, Cl. 264-521.000.

Perez-Mendez, Victor; and Goodman, Claude A., to University of California, Regents of the. High resolution, multiple-energy linear sweep detector for x-ray imaging. 5,548,123, Cl. 250-370.110.

Perkey, Russell C.; Ramey, Bruce S.; and Wieger, George S., to AlliedSignal Inc. Servo multiplexing system. 5,546,988, Cl. 137-625.660.

Pernet, Jean-Paul, to Renault Vehicules Industriels. Control device for a fluid passing through a bypass and system equipped with such a device to regulate the supercharging air of an internal combustion engine. 5,546,975, Cl. 137-115.160.

Perrot Bremsen GmbH: *See—*
Anthony, Paul, 5,547,048, Cl. 188-72.900.

Perry, Michael R.; Huang, Victor T.; Rosenwald, Diane R.; Johnson, Andrew H.; and Ghiasi, Katy, to Pillsbury Company, The. Container for refrigeratable yeast-leavened doughs. 5,547,694, Cl. 426-118.000.

Perry, William A.: *See—*
Bailey, Chase B.; Fosmark, Klaus S.; Lauffenberger, Kenneth A.; Perry, William A.; and Dibble, Kevin S., 5,548,587, Cl. 370-60.100.

Perryman, Paul C.: *See—*
Bierman, Raymond E.; Perryman, Paul C.; and Wright, Jason T., 5,548,541, Cl. 364-724.160.

Perthuis, Hervé; Feraud, Jean-Pierre; Dejeux, Philippe; and Maroy, Pierre, to Dowell, a division of Schlumberger Technology Corporation. New compositions for iron control in acid treatments for oil wells. 5,547,926, Cl. 507-258.000.

PES, Inc.: *See—*
Owens, Steve; and Bouldin, Brett, 5,547,028, Cl. 166-302.000.

Peschi, Robert N. L., to Alcatel N. V. Resequencing method and resequencing device realizing such a method. 5,548,593, Cl. 370-94.100.

Petermann, Udo: *See—*
Düsterhus, Richard; Petermann, Udo; Selke, Reimund; and Flügge, Ruprecht, 5,547,299, Cl. 400-708.000.

Peters, Anita J.: *See—*
Klemp, Mark A.; and Peters, Anita J., 5,547,497, Cl. 96-104.000.

Peters, Mike: *See—*
Dumontier, Franck; Guibaud, Jean-Marc; Peters, Mike; and Brouillette, Steven, 5,547,188, Cl. 473-287.000.

Petersen, Robert: *See—*
Kupershmidt, Vladimir; Kouchnir, Mikhail; and Petersen, Robert, 5,548,404, Cl. 356-368.000.

Peterson, James C.: *See—*
Carpenter, Gary D.; Dean, Mark E.; Faucher, Marc R.; Peterson, James C.; and Tanner, Howard C., 5,548,746, Cl. 395-500.000.

Peterson, Jeffrey L.: *See—*
Couch, Richard W., Jr; Luo, Lifeng; and Peterson, Jeffrey L., 5,548,097, Cl. 219-121.570.

Peterson, Joel L.: *See—*
Gudat, Adam J.; Rao, Prithvi N.; Shaffer, Gary K.; Shi, Wenfan; Shin, Dong H.; Sennott, James W.; Whittaker, William L.; Kleimenhagen, Karl W.; West, Jay H.; Clow, Richard G.; Wu, Baoxin; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,548,516, Cl. 364-443.000.

Petoca, Ltd.: *See—*
Takai, Yasuyuki; Yamada, Tetsuo; Kawamura, Toshifumi; Shimizu, Susumu; and Yamasaki, Haruki, 5,547,363, Cl. 425-376.100.

Petro-Canada: *See—*
Slevinsky, Bruce A., 5,548,563, Cl. 367-25.000.

Petroleum Geo-Services A/S: *See—*
Kuche, Hans-Walter, 5,546,882, Cl. 114-244.000.

Petry, Keith L.; Hirsch, Thomas S.; and Keeley, James W., to Bull HN Information Systems Inc. On-board diagnostic testing. 5,548,713, Cl. 395-183.010.

Pettas, Howard T.: *See—*
Bohlen, Heinz P.; Sobieradski, Edward S.; Bridges, Mark; Bardell, Steven; Pickering, Alan H.; and Pettas, Howard T., 5,548,245, Cl. 330-45.000.

Pettus, Christopher E., to Taligent, Inc. Object-oriented network protocol configuration system utilizing a dynamically configurable protocol stack. 5,548,723, Cl. 395-200.010.

Pettus, Christopher E., to Taligeni, Inc. System for activating new service in client server network by reconfiguring the multilayer network protocol stack dynamically within the server node. 5,548,726, Cl. 395-200.090.

Petty, John D.; and Peachey, Russell M., to Ionode Pty Ltd. Recalibrating apparatus and method. 5,547,875, Cl. 436-8.000.

Petty, Stephen E.: *See—*
Cook, F. Bert; Petty, Stephen E.; Meacham, Howard C., Jr.; Christensen, Richard N.; and McGahey, Kevin R., 5,546,760, Cl. 62-497.000.

Peyman, Gholam A., to Syntec, Inc. Pneumatic vitrectomy for retinal attachment. 5,547,473, Cl. 604-27.000.

Pfab, Robert: *See—*
Krönauer, Karlhans; Aigner, Josef; Klein, Franz; Weber, Karsten; Schmid, Monika; and Pfab, Robert, 5,546,640, Cl. 24-510.000.

Pfenniger, Reto, to Girsberger Holding AG. Office chair. 5,547,252, Cl. 297-300.300.

Phan, Dean V.: *See—*
Trokhan, Paul D.; and Phan, Dean V., 5,547,747, Cl. 428-320.200.

Pharmec Company: *See—*
Vainberg, Yuri P.; Kaplina, Elli N.; and Andosova, Ideya G., 5,547,684, Cl. 424-561.000.

Philips Electronics North America Corporation: *See—*
Melnik, George A.; and Janssen, Peter J., 5,548,347, Cl. 348-761.000.
Taskar, Nikhil R.; Gallagher, Dennis; and Dorman, Donald R., 5,547,897, Cl. 437-108.000.

Phillips, Joseph R.: *See—*
Marcoccia, Bruno S.; Prough, J. Robert; Laakso, Richard O.; Phillips, Joseph R.; Ryham, Rolf C.; Richardsen, Jan T.; and Chasse, R. Fred, 5,547,012, Cl. 162-42.000.
Nykanen, Tuomo S.; Greenwood, Brian F.; Gullichsen, Johan; Kiiskila, Erkki; Mattelmaki, Esko; Phillips, Joseph R.; Richardsen, Jan; Ryham, Rolf; Soderman, Jarmo; and Wiklund, Karl, 5,547,543, Cl. 162-31.000.
Prough, J. Robert; and Phillips, Joseph R., 5,547,546, Cl. 162-238.000.

Phillips, Peter V.: *See—*
Adamian, Vahe A.; Falcinelli, Michael T.; and Phillips, Peter V., 5,548,221, Cl. 324-601.000.

Phillips Petroleum Company: *See—*
Ahmed, Iqbal; and Moradi-Araghi, Ahmad, 5,547,025, Cl. 166-295.000.
Brooks, John R., 5,547,281, Cl. 366-340.000.
Carlson, LeRoy W., 5,547,909, Cl. 502-20.000.

Pickering, Alan H.: *See—*
Bohlen, Heinz P.; Sobieradski, Edward S.; Bridges, Mark; Bardell, Steven; Pickering, Alan H.; and Pettas, Howard T., 5,548,245, Cl. 330-45.000.

Pienaar, Salmon. Method for packing vehicle bodies in a transport container. 5,547,333, Cl. 414-786.000.

Pienta, David J., to Automatic Handling Inc. Wrapping machine. 5,546,729, Cl. 53-211.000.

Pieper, Steven D.: *See—*
McKenna, Michael A.; Rosen, Joseph M.; Chen, David T.; Pieper, Steven D.; and Robbie, Peter J., 5,547,455, Cl. 600-113.000.

Pierburg GmbH: *See—*
Dickow, Achim, 5,546,788, Cl. 73-28.010.

Pierschbacher, Michael D.: *See—*
Ruoslahti, Erkki I.; Pierschbacher, Michael D.; and Gehlsen, Kurt R., 5,547,936, Cl. 514-12.000.

Pike, Rodney D.: *See—*
Dalgleish, Kevin L.; Hoe, Sei S.; Reinhart, Gregory R.; Somoza, Vincent E.; Pike, Rodney D.; Moss, John S.; and Tencer, Michal, 5,548,643, Cl. 379-429.000.

Pilley, Harold R.; and Pilley, Lois V. Method and system for airport control and management. 5,548,515, Cl. 364-439.000.

Pilley, Lois V.: *See—*
Pilley, Harold R.; and Pilley, Lois V., 5,548,515, Cl. 364-439.000.

Pillsbury Company, The: *See—*
Perry, Michael R.; Huang, Victor T.; Rosenwald, Diane R.; Johnson, Andrew H.; and Ghiasi, Katy, 5,547,694, Cl. 426-118.000.

Pimentel, Robert L., to Burgett, Inc. Recording sensor mounting rail for keyboard operated musical instrument. 5,546,842, Cl. 84-461.000.

Pinhack, Hubert; Fuhrmann, Jürgen; and Gegg, Rolf, to Ika-Analysentechnik GmbH. Calorimetric measuring apparatus. 5,547,282, Cl. 374-36.000.

Pinney, David R.; and Stanton, Kevin, to ITT Industries Limited. Crosstalk suppressing connector. 5,547,405, Cl. 439-894.000.

Pino, Victoria R. Fishing rod and accessories carrying case. 5,547,079, Cl. 206-315.110.

Pinti, Medardo: *See—*
Colletta, Angelo; and Pinti, Medardo, 5,546,747, Cl. 60-275.000.

Pioneer Electronic Corporation: *See—*
Taguchi, Minoru, 5,548,537, Cl. 364-571.020.

Pirahesh, Mir H.; Leung, Ting Y.; Lohman, Guy M.; Shekita, Eugene J.; and Simmen, David E., to International Business Machines Corporation. Optimization of SQL queries using early-out join transformations. 5,548,754, Cl. 395-600.000.

Pirahesh, Mir H.; Leung, Ting Y.; Lohman, Guy M.; Shekita, Eugene J.; and Simmen, David E., to International Business Machines Corporation. Optimization of SQL queries using early-out join transformations of column-bound relational tables. 5,548,758, Cl. 395-600.000.

Pirahesh, Mir H.: *See—*
Leung, Ting Y.; Pirahesh, Mir H.; and Seshadri, Praveen, 5,548,755, Cl. 395-600.000.

Pixel Instruments: *See—*
Cooper, James C.; and Anderson, Steven J., 5,548,236, Cl. 327-237.000.

Pixel International: *See—*
Garcia, Michel; and Pepi, Richard, 5,547,483, Cl. 65-42.000.

Pla, Frederic C.; Hedeen, Robert A.; and Imam, Imdad, to General Electric Company. Active control of noise and vibrations in magnetic resonance imaging systems using vibrational inputs. 5,548,653, Cl. 381-71.000.

Plank, Christian: *See—*
Curiel, David T.; Birnstiel, Max L.; Cotten, Matthew; Wagner, Ernst; Zatloukal, Kurt; Plank, Christian; Oberhauser, Berndt; and Schmidt, Walter G. M., 5,547,932, Cl. 435-65.000.

Plastow, Robert J., to Orchard Communications Inc. Modulated light source with a linear transfer function. 5,547,274, Cl. 385-15.000.

Platt, Grayeme E.; Anderson, Robert D.; and Mueller, P. Michael, to Aluminum Company of America. Crank mechanism for can body maker apparatus. 5,546,785, Cl. 72-450.000.

Platt, Richard B. Crank case drain plug structure and method. 5,547,042, Cl. 184-1.500.

Platzer, Stephen J. W.: *See—*
Maerz, Karin; Matz, Volker; Seip, Detlev; and Platzer, Stephen J. W., 5,547,811, Cl. 430-257.000.

Plaxico, Bob E.; Wright, James W.; and Domansky, Philippe, to Mead Corporation, The. Article carrier. 5,547,074, Cl. 206-193.000.

Pliquett, Uwe; Prausnitz, Mark R.; Weaver, James C.; and Langer, Robert S., to Massachusettes Institute of Technology. Method for rapid temporal control of molecular transport across tissue. 5,547,467, Cl. 604-20.000.

Plisson, Jacques: *See—*
Bidaud, Francis; Benoit, Sylvain; Plisson, Jacques; Morizot, Gérard; Roth, Harald; and Haber, Adolf, 5,548,199, Cl. 318-802.000.

Plop Golf Company: *See—*
Wood, Donald C., 5,547,426, Cl. 473-290.000.

Plumbmaster, Inc.: *See—*
Parker, Thomas W., 5,546,978, Cl. 137-315.000.

Plumet, Louis, to Etablissments Bubendorff (Societe Anonyme). Driving and tensioning device for a flexible protective member such as a strip, curtain or skirt. 5,547,009, Cl. 160-310.000.

Plumton, Donald L.: *See—*
Morris, Francis J.; Yang, Jau-Yuann; Plumton, Donald L.; and Yuan, Han-Tzong, 5,548,141, Cl. 257-192.000.

PMC-Sierra, Inc.: *See—*
Buckland, Kenneth M., 5,548,580, Cl. 370-17.000.
Gerson, Brian D.; Huscroft, Kevin; and Mallinson, Martin, 5,548,230, Cl. 326-73.000.

Pobel, Thierny G.: *See—*
Filhol, Marie-Sophie; and Pobel, Thierny G., 5,547,995, Cl. 514-654.000.

Pocklington, Terence W., to Hansberger Precision Golf Incorporated. Golf ball dimple construction. 5,547,197, Cl. 473-384.000.

Podd, Stephen D.; and Podd, Victor I. Method for loading bulk material into a cargo container with an aeration/vacuum liner pad system. 5,547,331, Cl. 414-786.000.

Podd, Victor I.: *See—*
Podd, Stephen D.; and Podd, Victor I., 5,547,331, Cl. 414-786.000.

Podgorski, Theodore J.; Thorland, Rod; and Curran, Robert M., to Honeywell Inc. Method and structure for reflecting 633 nm radiation while eliminating 650 nm radiation in ring laser gyro mirrors. 5,548,602, Cl. 372-19.000.

Podszun, Wolfgang; Winkel, Jens; and Müller, Michael, to Heraeus Kulzer GmbH & Co. KG. Swellable bead polymer containing fillers. 5,548,001, Cl. 523-116.000.

Pohmer, Klaus: *See—*
Kirchmeyer, Stephan; Pohmer, Klaus; and Hassel, Tillmann, 5,547,711, Cl. 427-386.000.

Poindron, Philippe; Braun, Serge; and Ferzaz, Badia, to Synthelabo. Method for stimulating nerve regeneration. 5,547,963, Cl. 514-317.000.

Pokladok, Igor A.: *See—*
Zege, Sergei O.; Zege, Irina A.; Antonov, Dmitry V.; Sedov, Igor I.; Makovsky, Lev V.; Pokladok, Igor A.; and Mikhailov, Arkady J., 5,547,316, Cl. 405-267.000.

Polaroid Corporation: *See—*
Conforti, Robert M.; Kim, Sun-Wook; and Yao, Being-Kung, 5,547,534, Cl. 156-230.000.

Poleshuk, Edward S.: *See—*
Li, Y. Christian; Poleshuk, Edward S.; and McMordie, James R., 5,546,981, Cl. 137-493.300.

Pollak, Henry, to American Machine & Tool Company, Inc. Machine tool apparatus having a work piece support table supported by an articulating arm. 5,547,319, Cl. 408-90.000.

Polymer Technology International Corporation: *See—*
Gleisner, John M., 5,547,702, Cl. 427-2.130.

Poppenga, Burton H.; Shannon, Terrence M.; and Campbell, Russell, to Hewlett-Packard Company. Method to convert bitmaps to monochrome data. 5,548,689, Cl. 395-109.000.

Popper, Peter: *See—*
Edwards, Donald W.; Odle, James K.; Popper, Peter; Sadler, Donald M.; Savidge, Todd J.; Staunton, Harold F.; Walker, William C.; and Yngve, Paul W., 5,547,732, Cl. 428-85.000.

PopStraw Company, LLC, The: *See—*
Murphy, Peter F.; Kurtz, James H., Jr.; Whitehead, Ross; and Szasz, David A., 5,547,103, Cl. 220-709.000.

Porada, William M. Collapsible scuba tank supports for an inflatable dinghy. 5,546,885, Cl. 114-345.000.

Portman, John R., to Sony Corporation; and Sony Transcom, Inc. Automatic video projection screen. 5,548,356, Cl. 353-13.000.

Pospisil, Joseph, to Teleflex Incorporated. Core element wiper suspended boot. 5,546,827, Cl. 74-502.400.

Potempa, Lawrence A., to Immtech International Inc. Methods of stimulatory thrombocytopoiesis using modified C-reactive protein. 5,547,931, Cl. 514-2.000.

Potter, Edwin R., Jr.: *See—*
Bloemer, John M.; Kurth, Michael J.; Bengtson, Alan D.; Giese, Robert C.; Dannenberg, Todd D.; Thomas, Carter J.; Potter, Edwin R., Jr.; Bonnell, Thomas A.; Halloran, Daniel N.; and Clarke, Thomas W., 5,546,616, Cl. 4-541.200.

Potthoff-Karl, Birgit: *See—*
Kroner, Matthias; Hartmann, Heinrich; Schornick, Gunnar; Baur, Richard; Potthoff-Karl, Birgit; Schwendemann, Volker; and Kud, Alexander, 5,548,036, Cl. 525-419.000.

Pow, Eric G.: *See—*
Fletcher, Nicholas J.; Chow, Clarence Y.; Pow, Eric G.; Wozniczka, Boguslav M.; Voss, Henry H.; and Hornburg, Gerald, 5,547,776, Cl. 429-13.000.

Powell, Clyde H.: *See—*
Butterworth, William; and Powell, Clyde H., 5,548,105, Cl. 219-761.000.

Powell, Dorothy J. Finger patch with adhesive backing. 5,547,465, Cl. 602-54.000.

Power, Michael D. Physical restraint device. 5,546,962, Cl. 128-869.000.

Powers, Kenneth W.; Wang, Hsien-Chang; Chung, T-C.; Dias, Anthony J.; and Olkusz, Joseph A., to Exxon Chemical Patents, Inc. Graft copolymers of para-alkylstyrene/isoolefin copolymers as blend compatibilizers. 5,548,023, Cl. 525-69.000.

Powers, Kenneth W.; Wang, Hsien-Chang; Chung, T-C.; Dias, Anthony J.; and Olkusz, Joseph A., to Exxon Chemical Patents Inc. Graft copolymers of para-alkylstyrene/isoolefin copolymers. 5,548,029, Cl. 525-195.000.

Powers, Ronald J. Cosmetic pencil with threads positioned on flexible arms. 5,547,300, Cl. 401-68.000.

PPG Industries, Inc.: *See—*
Fortunato, Fred A.; Shadle, Barry L.; and Franz, Helmut, 5,547,129, Cl. 239-132.300.
Swarup, Shanti; Sharma, Brij N.; and Johnston, B. Keith, 5,547,757, Cl. 428-413.000.

Prasad, Rameshwar: *See—*
Kulsrestha, Girindra N.; Saxena, Mahendra P.; Gupta, Ashok K.; Goyal, Hari B.; Prasad, Rameshwar; Prasada Rao, Turuga S. R.; and Patel, Prakash D., 5,547,905, Cl. 502-66.000.

Prasad, Ravi; and Gottzmann, Christian F., to Praxair Technology, Inc. Staged electrolyte membrane. 5,547,494, Cl. 95-54.000.

Prasada Rao, Turuga S. R.: *See—*
Kulsrestha, Girindra N.; Saxena, Mahendra P.; Gupta, Ashok K.; Goyal, Hari B.; Prasad, Rameshwar; Prasada Rao, Turuga S. R.; and Patel, Prakash D., 5,547,905, Cl. 502-66.000.

Prausnitz, Mark R.: *See—*
Pliquett, Uwe; Prausnitz, Mark R.; Weaver, James C.; and Langer, Robert S., 5,547,467, Cl. 604-20.000.

Praxair Technology, Inc.: *See—*
Dray, James R.; Parsnick, David R.; Fisher, Theodore F.; and Wisz, Michael W., 5,546,767, Cl. 62-646.000.
Prasad, Ravi; and Gottzmann, Christian F., 5,547,494, Cl. 95-54.000.

Precision Fukuhara Works, Ltd.: *See—*
Igarashi, Yoshiaki; and Ito, Yoshiro, 5,546,769, Cl. 66-20.000.

Precision Tracking FM, Inc.: *See—*
Heller, Alan C.; Evins, Brian M.; and Karp, Robert G., 5,548,637, Cl. 379-201.000.

Premark FEG Corporation: *See—*
Xie, Mark M., 5,547,278, Cl. 366-203.000.

Prescient Partners, L.P.: *See—*
Riley, Paula; and Stevens, Kenneth V., 5,547,249, Cl. 297-228.130.

Preston, Mark A.: *See—*
Kliman, Gerald B.; Preston, Mark A.; and Jones, Donald W., 5,548,172, Cl. 310-156.000.

Price, Jeffrey H.; and Gough, David. Operator independent image cytometer. 5,548,661, Cl. 382-133.000.

Price, Matthew J.: *See—*
Breivogel, Joseph R.; Price, Matthew J.; and Barns, Christopher E., 5,547,417, Cl. 451-58.000.

Pricer AB: *See—*
Escritt, Chris; and Hellquist, Magnus, 5,548,282, Cl. 340-825.350.

Prill, Robert S.: *See—*
Caldwell, Stephen P.; Harris Jr., Marvine; Matsakis, Demetrios J.; Minarik, Ronald W.; Schmidt, Kenneth M.; Weigand, Benjamin F.; Prill, Robert S.; and Siegel, Arnold B., 5,548,839, Cl. 455-313.000.

Primlani, Indru J. Modular wiring and liquid ground. 5,548,522, Cl. 364-483.000.

Prince Corporation: *See—*
Clark, David L., 5,548,650, Cl. 381-55.000.
Hansen, Scott A., 5,548,488, Cl. 361-815.000.
Hansen, Scott A.; and Clark, Russell L., 5,548,492, Cl. 362-83.100.
Spykerman, David J., 5,547,187, Cl. 296-37.160.

Printrak International Inc.: *See—*
Giles, Richard M.; Driscoll, Daniel J.; Ranalli, Eliseo; Tamkin, John M.; and Scott, Bradley, 5,548,394, Cl. 356-71.000.

Pritchard, Robert J., to Teleflex Incorporated. Modular cargo drive unit for a conveyor. 5,547,069, Cl. 198-782.000.

Procter & Gamble Company, The: *See—*
Dornbusch, Arthur H.; and Smith, Scott E., 5,547,302, Cl. 401-172.000.
Siklosi, Michael P.; and Roetker, Timothy C., 5,547,476, Cl. 8-142.000.
Trokhan, Paul D.; and Phan, Dean V., 5,547,747, Cl. 428-320.200.

Proctor & Gamble Company, The: *See—*
Allen, Patrick J.; Bross-Kelly, Beverly J.; Viltro, Louis J.; Vinnage, William R., Jr.; and Weirich, David M., 5,547,531, Cl. 156-164.000.

Profeta, Joseph A.: *See—*
Giras, Theo C.; Profeta, Joseph A.; and Romano, Dario, 5,547,151, Cl. 246-227.000.

ProfilARBED S.A.: *See—*
Decker, Jean, 5,547,318, Cl. 405-303.000.

Proprietary Technology, Inc.: *See—*
Bartholomew, Donald D., 5,546,985, Cl. 137-614.040.

Protelcon, Inc.: *See—*
Brian, James M.; and Jackson, Joseph N., 5,548,345, Cl. 348-734.000.

Prough, J. Robert; and Phillips, Joseph R., to Ahlstrom Machinery Inc. Chip bin with steaming control and a gas vent containing a vacuum and pressure relief device. 5,547,546, Cl. 162-238.000.

Prough, J. Robert: *See—*
Marcoccia, Bruno S.; Prough, J. Robert; Laakso, Richard O.; Phillips, Joseph R.; Ryham, Rolf C.; Richardsen, Jan T.; and Chasse, R. Fred, 5,547,012, Cl. 162-42.000.

Provenzola, Robert M., to Tremco, Inc. Water-borne flexible parts primer. 5,548,016, Cl. 524-507.000.

Pruna, Alberto N. Method of making an ejector tube for molds. 5,546,647, Cl. 29-527.400.

Pulkowski, Jeffrey H.: *See—*
McGraw, William R.; and Pulkowski, Jeffrey H., 5,546,675, Cl. 34-113.000.

Purdy Neat Things Company, Inc.: *See—*
Latshaw, Ricky J., 5,547,052, Cl. 190-108.000.

Puttlitz, Erik A.: *See—*
Collins, James P.; Dorn, Judy; Fahey, James T.; Linehan, Leo; Miller, William J.; Moreau, Wayne; Puttlitz, Erik A.; Smith, Randolph; and Spinillo, Gary, 5,547,812, Cl. 430-270.100.

Pyrozyk, Ronald R., to Okanagan House Inc. Apparatus for dispensing and applying fluid. 5,547,303, Cl. 401-270.000.

Pyrtek, Karen A.: *See—*
Hartshorn, Gordon K.; and Pyrtek, Karen A., 5,547,240, Cl. 294-49.000.

Qiu, Yong-Jian: *See—*
Chen, Chorng-Jeou; Ladew, Richard; Qiu, Yong-Jian; and Mevissen, Jeffrey, 5,548,474, Cl. 361-313.000.

Qu, Peng: *See—*
Qu, Yueqian; and Qu, Peng, 5,547,956, Cl. 514-279.000.

Qu, Yueqian; and Qu, Peng, to Qu, Yueqian. Pharmaceutical composition and the method for treating drug addicts' withdrawal syndromes and detoxifying addicts by the same. 5,547,956, Cl. 514-279.000.

Quad/Tech, Inc.: *See—*
Graushar, William T.; and Dettmering, Todd J., 5,547,175, Cl. 270-037.000.

Qualcomm Incorporated: *See—*
Padovani, Roberto; Weaver, Lindsay A., Jr.; and Bender, Paul E., 5,548,812, Cl. 455-33.200.

Quantum Corporation: *See—*
Au, Wing Y., 5,548,795, Cl. 395-872.000.

Quick Cable Corporation: *See—*
Johnson, Jerome, 5,547,160, Cl. 248-503.000.

Quinn, Paul R.; Kempski, Richard R.; and King, Douglas J., to Euclid Industries, Inc. Camshaft bushing assembly. 5,547,288, Cl. 384-207.000.

Quraishi, Naveed, to United States of America, National Aeronautics and Space Administration. Autonomous navigation apparatus with neural network for a mobile vehicle. 5,548,512, Cl. 364-424.020.

R. J. Reynolds Tobacco Company: *See—*
White, Jackie L., 5,546,965, Cl. 131-194.000.

R. R. Donnelley & Sons Company: *See—*
Chang, Bobby, 5,547,066, Cl. 198-644.000.

R. Schmidt GmbH: *See—*
Schmidt, Reinhard, 5,547,222, Cl. 280-801.200.

R-Tech Ueno, Ltd.: *See—*
Ueno, Ryuji, 5,547,968, Cl. 514-363.000.

Rabenstein, Klaus: *See—*
Herding, Walter; Bethke, Jürgen; and Rabenstein, Klaus, 5,547,481, Cl. 55-523.000.

Raber, Thomas R.: *See—*
Eggleston, Michael R.; Benz, Mark G.; Jackson, Melvin R.; Hughes, John R.; and Raber, Thomas R., 5,547,410, Cl. 445-28.000.
Johnson, Neil A.; Raber, Thomas R.; Hibbs, Louis E., Jr.; Murray, Melissa L.; and Benz, Mark G., 5,547,518, Cl. 148-98.000.

Rabeyrin, Michel: *See—*
Chevallier, Yvonick; and Rabeyrin, Michel, 5,547,502, Cl. 106-287.100.

Racotek, Inc.: *See—*
Shpantzer, Isaac; Dunn, J. Eric; and Meiman, Yehuda, 5,548,805, Cl. 455-33.100.

Racz, Steve: *See—*
Gao, Zhengping; Racz, Steve; and Basu, Kalyan, 5,548,533, Cl. 364-514.00C.

Raden, Dennis P. Method and apparatus for fluid production from a wellbore. 5,547,021, Cl. 166-250.070.

Radvin, Bill; and Schmitt, Steve, to Clipps, Inc. Clip for retaining shirt sleeves or cuffs in a folded position. 5,546,641, Cl. 24-557.000.

Rae, Philip; and Johnston, Neil, to BJ Services Company. Storable liquid cementitious slurries for cementing oil and gas wells. 5,547,506, Cl. 106-730.000.

Raffel, Reiner: *See—*
Sulzbach, Hans-Michael; Raffel, Reiner; Althausen, Ferdinand; and Wirth, Jürgen, 5,547,276, Cl. 366-139.000.

Rafferty, Paul: *See—*
Clegg, Lawrence S.; Hunneyball, Ian M.; Jones, Colin G. P.; Rafferty, Paul; and Steele, Leslie, 5,547,972, Cl. 514-399.000.

Rafflenbeul & Partner: *See—*
Berwian, Werner; Frohs, Thomas; and Rafflenbeul, Rolf, 5,547,491, Cl. 95-12.000.

Rafflenbeul, Rolf: *See—*
Berwian, Werner; Frohs, Thomas; and Rafflenbeul, Rolf, 5,547,491, Cl. 95-12.000.

Raimbault, Frederic: *See—*
Lebrun, Eric; Francois, Pascal; Raimbault, Frederic; and Warren, Jeff, 5,548,579, Cl. 370-16.000.

Rainer, Josef: *See—*
Bernecker, Erwin; and Rainer, Josef, 5,547,269, Cl. 312-111.000.

Rajagopalan, Kuppuswamy: *See—*
Cheng, Wu-Cheng; and Rajagopalan, Kuppuswamy, 5,547,564, Cl. 208-122.000.

Ramachandran, Mani; and Gysel, Hermann, to Synchronous Communications, Inc. Optical transmission system. 5,548,436, Cl. 359-187.000.

Ramberg, Jon R.: *See—*
Moldskred, Walt; and Ramberg, Jon R., 5,548,108, Cl. 235-462.000.

Ramey, Bruce S.: *See—*
Perkey, Russell C.; Ramey, Bruce S.; and Wieger, George S., 5,546,988, Cl. 137-625.660.

Ramsey, Douglas A.: *See—*
Voegele, William P., Jr.; Ramsey, Douglas A.; Lohr, Alan D.; and Kamphaus, Carl E., 5,546,713, Cl. 52-202.000.

Ranalli, Eliseo: *See—*
Giles, Richard M.; Driscoll, Daniel J.; Ranalli, Eliseo; Tamkin, John M.; and Scott, Bradley, 5,548,394, Cl. 356-71.000.

Randhawa, Hiten D. S.: *See—*
Wang, Chi-Ming; Gupta, Anil; and Randhawa, Hiten D. S., 5,548,551, Cl. 365-185.180.

Rangel, Louis. Arrow nock and shaft insert. 5,547,200, Cl. 273-416.000.

Ransomes America Corporation: *See—*
Oliver, Joseph J.; Young, Christopher L.; and Bednar, Richard D., 5,548,278, Cl. 340-605.000.

Rao, Prithvi N.: *See—*

Godat, Adam J.; Rao, Prithvi N.; Shaffer, Gary K.; Shi, Wenfan; Sbin, Dong H.; Sennott, James W.; Whittaker, William L.; Kleimenhagen, Karl W.; West, Jay H.; Clow, Richard G.; Wu, Baoxin; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,548,516, Cl. 364-443.000.

Rapaport, Eliezer. Method of treatment of diabetes mellitus by administration of adenosine 5'-triphosphate and other adenine nucleotides. 5,547,942, Cl. 514-47.000.

Rapoport, David M.; and Norman, Robert G., to New York University. Method for optimizing the continuous positive airway pressure for treating obstructive sleep apnea. 5,546,933, Cl. 128-204.230.

Rasley, Elizabeth A.: *See—*
Smeggil, John G.; Rasley, Elizabeth A.; and McCoy, Bill R., 5,547,122, Cl. 228-173.300.

Rasmus, Todd M.: *See—*
Heaney, James A.; and Rasmus, Todd M., 5,548,467, Cl. 361-93.000.

Rasmussen, Marvin W.: *See—*
Campbell, Heather A.; Mayhugh, Terry L.; Rasmussen, Marvin W.; and Vachon, Guy, 5,546,672, Cl. 33-716.000.

Rastogi, Mukul: *See—*
Mohan, Ned; and Rastogi, Mukul, 5,548,165, Cl. 307-36.000.

Ratnik, H. Ronald; and Ulbing, Otmar, to Ratnik Industries, Inc. Motorized water hydrant with manual override. 5,547,164, Cl. 251-129.030.

Ratnik Industries, Inc.: *See—*
Ratnik, H. Ronald; and Ulbing, Otmar, 5,547,164, Cl. 251-129.030.

Rau, Douglas: *See—*
Decker, Matthew J.; Eustice, Todd C.; Rau, Douglas; and Boers, Arie, 5,546,709, Cl. 52-66.000.

Rauth, Cindy C.; Frogge, Perry W.; and Damerow, David H., to Harris Corporation. Half-band filter and method. 5,548,542, Cl. 364-724.160.

Rawal, Dharamendra N.; and Auber, Philippe, to Dresser-Rand Company. Modular shaftless compressor. 5,547,350, Cl. 417-354.000.

Rawls, R. Lee; Wierlo, Steven J.; and Wade, Cathy L., to StairMaster Sports/Medical Products, Inc. Exercise system. 5,547,439, Cl. 482-5.000.

Ray, Partha S.: *See—*
Henrie, Robert N., II; Peake, Clinton J.; Cullen, Thomas G.; Chaguturu, Munirathnam K.; Ray, Partha S.; and Bennett, Brian D., 5,547,954, Cl. 514-258.000.

Raychem S.A.: *See—*
Delamotte, Jean C., 5,547,395, Cl. 439-578.000.

Raytheon Company: *See—*
Wolfrey, Austin A.; and Bagdasarian, Samuel L., 5,547,599, Cl. 252-62.540.

Record, Loren E.: *See—*
Senn, Robert H.; and Record, Loren E., 5,548,606, Cl. 372-39.000.

Rector, Charles E.; Wells, Steven R.; Mather, Daniel T.; and Arndt, Robin S., to Caterpillar Inc. Hydraulic cylinder snubbing arrangement. 5,546,847, Cl. 91-403.000.

Redd, John A.: *See—*
Lamb, Leon; and Redd, John A., 5,547,243, Cl. 296-98.000.

Reddy, Chitranjan N.: *See—*
Stephens, Michael C., Jr.; Medhekar, Ajit K.; and Reddy, Chitranjan N., 5,548,560, Cl. 365-233.500.

Reed, Bobby E.: *See—*
Ballard, John H.; Cooper, Stafford S.; Morgan, John C.; Lawrence, William R.; and Reed, Bobby E., 5,548,115, Cl. 250-253.000.

Reed, Robert R.: *See—*
Anderson, Kent G.; and Reed, Robert R., 5,548,274, Cl. 340-468.000.

Reed, Steven J.; Wallgren, Robert L.; Davies, Scott T.; Wojtan, George R.; and Gazzara, Paul, to Thomas & Betts Corporation. Wiring cabinet having vertically aligned patch panels. 5,548,489, Cl. 361-827.000.

Reed, William A.; and White, Kenneth L., to Utah State University. DNA cassette and transgenic organisms carrying lytic peptide-encoding genes. 5,548,075, Cl. 536-23.500.

Reeve, Joseph R., Jr.: *See—*
Anton, Peter A.; Reeve, Joseph R., Jr.; Walsh, John H.; and Faull, Kym F., 5,547,844, Cl. 435-7.100.

Reha-Krantz, Linda J.: *See—*
Goodman, Myron F.; and Reha-Krantz, Linda J., 5,547,859, Cl. 435-91.100.

Rehm, Hans-Joergen: *See—*
Molz, Thomas; Rehm, Hans-Joergen; Vogt, Toni; and Geke, Juergen, 5,547,587, Cl. 210-696.000.

Reichelt, Helmut: *See—*
Lange, Arno; Degen, Helmut; Lamm, Gunther; Reichelt, Helmut; and Wegerle, Dieter, 5,547,477, Cl. 8-639.000.

Reichenbach, David L.: *See—*
Magneson, Gerald R.; and Reichenbach, David L., 5,547,873, Cl. 436-18.000.

Reihl, Bruno: *See—*
Gimzewski, James; Parrinello, Michele; and Reihl, Bruno, 5,547,774, Cl. 428-694.0ML.

Reinhart, Gregory R.: *See—*
Dalgleish, Kevin L.; Hoe, Sei S.; Reinhart, Gregory R.; Somoza, Vincent E.; Pike, Rodney D.; Moss, John S.; and Tencer, Michal, 5,548,643, Cl. 379-429.000.

Reinholz, Erhard: *See—*
Friebe, Walter-Gunar; Reinholz, Erhard; and Wilhelms, Henning, 5,547,980, Cl. 514-443.000.

Reinklou, Lars A., to Combisafe International Aktiebolag. Beam anchoring device. 5,546,724, Cl. 52-698.000.

Reinthaler, Peter; and Mueller, Armin, to Rhone-Poulenc Viscosuisse SA. Pre-adherized polyester filament yarn for tire cord. 5,547,755, Cl. 428-364.000.

Remanco Hydraulics, Inc.: *See—*
Hoegger, Bruce A., 5,547,233, Cl. 285-276.000.

Remar, Joseph F.; and Sideman, Carl E., to Armstrong World Industries, Inc. Azole-aldehyde addition product embossing inhibitors and the use thereof. 5,548,003, Cl. 523-160.000.

Renault Vehicules Industriels: *See—*
Pernet, Jean-Paul, 5,546,975, Cl. 137-115.160.

Rentmeester, Tammy J.: *See—*
Nielsen, Steven J.; Chang, Yihua; and Rentmeester, Tammy J., 5,547,701, Cl. 427-2.300.

Research Corporation Technologies, Inc.: *See—*
Fan, Yongping; Han, Jung; Nurimikko, Arto V.; Gunshor, Robert L.; and He, Li, 5,548,137, Cl. 257-191.000.

Respironics, Inc.: *See—*
Kaigler, William J.; and Lordo, Richard J., 5,546,934, Cl. 128-205.130.

Reupke, Wolfgang: *See—*
Südholt, Michael; Wier, Manfred; Krebs, Stephan; Bauer, Bernhard; and Reupke, Wolfgang, 5,546,916, Cl. 123-674.000.

Reuschel, Juergen: *See—*
Boehnke, Gerd; Reuschel, Juergen; Mueller, Heinz-Dieter; and Klauker, Karl-Heinz, 5,548,644, Cl. 379-433.000.

Rexroth-Sigma: *See—*
Richer, Emmanuel, 5,546,750, Cl. 60-426.000.

Reynolds, Edward P.; Tinnerino, Natale F.; and Schiefele, Walter P., to Kulicke & Soffa, Investments, Inc. Ceramic carrier transport for die attach equipment. 5,547,537, Cl. 156-351.000.

Reynolds, James R. Scoop for compacting and molding masonary mixtures. 5,546,803, Cl. 73-427.000.

Reynolds, Joseph D.: *See—*
Stine, Alan C.; and Reynolds, Joseph D., 5,546,823, Cl. 74-331.000.

Rezvani, Behruz: *See—*
Lusignan, Bruce B.; and Rezvani, Behruz, 5,548,209, Cl. 324-142.000.

Rheem Manufacturing Company: *See—*
Knight, John T.; Huffaker, Joey W.; and Rinke, Michael B., 5,546,925, Cl. 126-110.00R.

Rheinmetall Industrie GmbH: *See—*
Krumm, Herbert; Nordmann, Adolf; Ehrhardt, Johannes; Lorenz, Johann; and Stoffler, Günter, 5,546,844, Cl. 89-8.000.

Rhodehamel, Michael: *See—*
Sarangdhar, Nitin; Rhodehamel, Michael; and Fisch, Matthew, 5,548,733, Cl. 395-286.000.

Rhone-Poulenc Agriculture Ltd.: *See—*
Hatton, Leslie R.; Buntain, Ian G.; Hawkins, David W.; Parnell, Edgar W.; Pearson, Christopher J.; and Roberts, David A., 5,547,974, Cl. 514-406.000.

Rhone-Poulenc Chimie: *See—*
Chevallier, Yvonick; and Rabeyrin, Michel, 5,547,502, Cl. 106-287.100.
Kuntzburger, Frédéric; and Magne, Jean-Claude, 5,547,550, Cl. 204-252.000.

Rhone-Poulenc Viscosuisse SA: *See—*
Reinthaler, Peter; and Mueller, Armin, 5,547,755, Cl. 428-364.000.

Ribadeau-Dumas, Guillaume; Bouvier, Frédéric; and Serpelloni, Michel, to Roquette Freres. Chewing-gum composition of improved organoleptic quality and process enabling such a chewing-gum to be prepared. 5,547,689, Cl. 426-3.000.

Ricci, Anthony J.: *See—*
Husain, Anwar; Kotecki, David E.; Lassig, Stephan E.; Olson, Kurt A.; and Ricci, Anthony J., 5,548,470, Cl. 361-234.000.

Rice, Chris A.: *See—*
Clark, William T.; Scott, James D., II; Barton, Graham M.; Rice, Chris A.; and McLaughlin, Shawn M., 5,546,982, Cl. 137-557.000.

Richards Engineering: *See—*
Richards, William R., 5,547,777, Cl. 429-32.000.

Richards, Ernest W.: *See—*
Cope, Frederick O.; DeWille, Normanella T.; Richards, Ernest W.; Mazer, Terrence B.; Abbruzzese, Bonnie C.; Snowden, Gregory A.; Parlet, Nickki L.; and Pease, Laura A., 5,547,927, Cl. 514-2.000.

Richards, William R., to Richards Engineering. Fuel cell having uniform compressive stress distribution over active area. 5,547,777, Cl. 429-32.000.

Richardsen, Jan: *See—*
Nykanen, Tuomo S.; Greenwood, Brian F.; Gullichsen, Johan; Kiiskila, Erkki; Mattelmaki, Esko; Phillips, Joseph R.; Richardsen, Jan; Ryham, Rolf; Soderman, Jarmo; and Wiklund, Karl, 5,547,543, Cl. 162-31.000.

Richardsen, Jan T.: *See—*
Marcoccia, Bruno S.; Prough, J. Robert; Laakso, Richard O.; Phillips, Joseph R.; Ryham, Rolf C.; Richardsen, Jan T.; and Chasse, R. Fred, 5,547,012, Cl. 162-42.000.

Richardson, Kurt E.: *See—*
Bland, Bobby J.; and Richardson, Kurt E., 5,547,987, Cl. 514-557.000.

Richardson-Vicks Inc.: *See—*
Rinaldi, Marie A.; and Robinson, Larry R., 5,547,659, Cl. 424-59.000.

Richer, Emmanuel, to Rexroth-Sigma. Hydraulic circuit for pressure-controlling a hydraulic distributor of the open-center type. 5,546,750, Cl. 60-426.000.

Richter Gedeon Vegyeszeti Gyar Rt.: *See—*

Mahó, Sándor; Tuba, Zoltán; Gere, Anikó; Vittay, Pal; Kiss, Béla; Pálosi, Éva; Szporny, László; Francsicsné, Erzsébet C.; Boórné, Anna M.; Balogh, Gábor; and Görög, Sándor, 5,547,949, Cl. 514-176.000.
Richter, Michael, to Ernst Paul Lehmann Patentwerk. Apparatus for uncoupling track-guided toy vehicles. 5,547,090, Cl. 213-75.00A.
Richter, Ole, to Kvaerner Pulping Technologies AB. Screening device. 5,547,570, Cl. 210-209.000.
Rickards, Allan R.: *See*—
Brannon, Harold D.; Rickards, Allan R.; Beall, Brian B.; and Ault, Marshall G., 5,547,026, Cl. 166-295.000.
Ricke, Roy R.; and Beisner, Connie K., to Schwan's Sales Enterprises, Inc. Method of forming dough into desired configurations. 5,547,695, Cl. 426-496.000.
Ricoh Company, Ltd.: *See*—
Endoh, Sbuichi, 5,548,383, Cl. 355-259.000.
Enomoto, Keiji, 5,548,446, Cl. 359-695.000.
Kawase, Hiromitsu; Kaneko, Yoshikazu; and Maruyama, Shoji, 5,547,802, Cl. 430-110.000.
Kikuno, Mitsutoyo, 5,548,376, Cl. 355-207.000.
Kuramoto, Shinichi; Takahashi, Sadao; Kimura, Yoshiyuki; Ando, Kazuhiro; Saito, Tadashi; Asaba, Youichi; Tanikawa, Kiyoshi; Miyashita, Yoshiaki; and Shinguryo, Satoshi, 5,547,793, Cl. 430-97.000.
Morita, Nobuhiro; and Tada, Takeshi, 5,548,396, Cl. 356-127.000.
Motoyama, Tetsuro, 5,548,687, Cl. 395-101.000.
Shimada, Tomoyuki; Sasaki, Masaomi; and Tanaka, Chiaki, 5,547,792, Cl. 430-59.000.
Suzuki, Akira; Hotta, Yoshihiko; and Uemura, Hiroyuki, 5,547.915, Cl. 503-227.000.
Takahashi, Hiroshi, 5,548,358, Cl. 353-122.000.
Tsutsui, Kyohji, 5,547,500, Cl. 106-21.00A.
Umeda, Minoru; and Niimi, Tatsuya, 5,547,790, Cl. 430-58.000.
Ricoh Corporation: *See*—
Huang, Yu E., 5,548,781, Cl. 395-831.000.
Motoyama, Tetsuro, 5,548,687, Cl. 395-101.000.
Ricos Co., Ltd.: *See*—
Tsumura, Mihoji, 5,547,202, Cl. 463-29.000.
Riddell, Donnie L.; and Shepherd, Fred R., to Safe Pursuit, Inc. Hands-free two-way radio communication system. 5,548,810, Cl. 455-99.000.
Riemer, Reinhold L., II: *See*—
Singleton, Andy H.; Kendrick, Crystal L.; Riemer, Reinhold L., II; and Minga, Robin L., 5,547,657, Cl. 424-49.000.
Rigal, Jean-Pierre; and Vincent, Benoit, to Taylor Made Golf Company, Inc. Golf club head having a hollow plastic body and a metallic sealing element. 5,547,427, Cl. 473-345.000.
Rigamonti, Marco; Marciandi, Franco; and Cesana, Massimo, to Atohaas Holding C.V. No drop films or plates consisting of acrylic polymers and process for their preparation. 5,547,750, Cl. 428-329.000.
Rigby, Kenneth W.: *See*—
Hussain, Moayyed A.; Rigby, Kenneth W.; and Bae, Koeunyi, 5,548,561, Cl. 367-7.000.
Righini, Raúl: *See*—
Huck, Hugo A.; Jech, Alberto E.; Righini, Raúl; Halac, Emilia B.; de Benyacar, Maria A. R.; and Hicolai, Julio A., 5,547,714, Cl. 427-523.000.
Riis, Einar K., to Werner Kammann Maschinenfabrik GmbH. Device for adjusting distances between axes of cylinders in a printing machine. 5,546,860, Cl. 101-247.000.
Rikagaku Kenkyusho: *See*—
Ohmori, Hitoshi, 5,547,414, Cl. 451-21.000.
Riley, Paula; and Stevens, Kenneth V., to Prescient Partners, L.P. Stabilizing device for use with covers and cushions on seating and upholstered furniture. 5,547,249, Cl. 297-228.130.
Riley, Thomas N.; and Morris, Philip A., to Eaton Corporation. Change gear transmission and shift rod interlock therefor. 5,546,825, Cl. 74-477.000.
Riley, William C.; Albertin, Marc S.; and May, James B., to WhiteMoss, Inc. Radial piston fluid machine and/or adjustable rotor. 5,547,348, Cl. 417-273.000.
Rinaldi, Marie A.; and Robinson, Larry R., to Richardson-Vicks Inc. Photoprotection compositions. 5,547,659, Cl. 424-59.000.
Ring, Eugene M.; and Murphy, William J., to Knowles Electronics, Inc. Acoustic Transducer. 5,548,658, Cl. 381-191.000.
Ring, Michael D.: *See*—
Oden, Kenneth W.; and Ring, Michael D., 5,547,105, Cl. 221-181.000.
Ringelstein, Hans-Martin: *See*—
Gleissner, Karlheinz; Ringelstein, Hans-Martin; and Lange, Ekkehard, 5,547,625, Cl. 264-122.000.
Rink, Linda M.; and Hock, Christopher, to Morton International, Inc. Pyrotechnic air bag inflator with unitary filter. 5,547,638, Cl. 422-164.000.
Rinke, Michael B.: *See*—
Knight, John T.; Huffaker, Joey W.; and Rinke, Michael B., 5,546,925, Cl. 126-110.00R.
Ripamonti, Marina: *See*—
Angelucci, Francesco; Bersani, Laura; Caruso, Michele; Ripamonti, Marina; Ruggieri, Daniela; and Suarato, Antonino, 5,547,667, Cl. 424-181.100.
Riso Kagaku Corporation: *See*—
Tanaka, Kunio; and Hashimoto, Kouichi, 5,548,415, Cl. 358-462.000.
Rite-Hite Corporation: *See*—
Hahn, Norbert, 5,546,623, Cl. 14-69.500.
Rittler, Hermann L., to Corning Incorporated. Transparent, protective glazing unit. 5,547,720, Cl. 428-34.000.
Riverhood International Corporation: *See*—
Moncrief, Frank; Ziegler, Kelly W.; Hiney, Michael; and Grimm, Dennis, 5,546,734, Cl. 53-534.000.
Riverwood International Corporation: *See*—
Whiteman, Ronald, 5,547,336, Cl. 414-798.900.
RLC Technologies, L.L.C.: *See*—
Detrick, John H.; and Carney, Frederick T., Jr., 5,547,486, Cl. 71-28.000.
Rleck, George C.: *See*—
Brown, Charles A.; Rleck, George C.; and Moore, Charles E., 5,547,887, Cl. 437-51.000.
Ro, Kwang-Ho; and Park, Moon-Bae, to SamSung Electronics Co., Ltd. Paper holder of video printer. 5,548,318, Cl. 347-174.000.
Robatel: *See*—
Martin, Michel, 5,547,573, Cl. 210-350.000.
Robb, David C., to SpectraPlex, Inc. Method and apparatus for communication of information. 5,548,819, Cl. 455-59.000.
Robbie, Peter J.: *See*—
McKenna, Michael A.; Rosen, Joseph M.; Chen, David T.; Pieper, Steven D.; and Robbie, Peter J., 5,547,455, Cl. 600-113.000.
Robbins, Edward S., III. Container and measuring/dispensing cap assembly. 5,547,109, Cl. 222-158.000.
Robert Bosch GmbH: *See*—
Brehm, Werner; Keuerleber, Horst; Koepff, Georg; and Deeg, Markus, 5,547,165, Cl. 251-129.160.
Kuhn, Ulrich; Tank, Dieter; and Konzelmann, Uwe, 5,546,794, Cl. 73-118.200.
Mayer, Ulrich; Wild, Ernst; and Kaltenbrunn, Peter, 5,546,918, Cl. 123-674.000.
Schramm, Günter; Kohl, Walter; Meyer, Friedhelm; Mittag, Rainer; and Suelzle, Helmut, 5,548,202, Cl. 322-33.000.
Weiblen, Kurt; and Woessner, Bertram, 5,547,730, Cl. 428-76.000.
Roberts, David A.: *See*—
Hatton, Leslie R.; Buntain, Ian G.; Hawkins, David W.; Parnell, Edgar W.; Pearson, Christopher J.; and Roberts, David A., 5,547,974, Cl. 514-406.000.
Roberts, David J.: *See*—
Berry, Richard E.; Henshaw, Susan F.; and Roberts, David J., 5,548,703, Cl. 395-160.000.
Roberts, Gary F.: *See*—
Chen, Jiann-Hsing; Demejo, Lawrence P.; Roberts, Gary F.; Kosakowski, Richard J.; Aslam, Muhammed; and Derimiggio, John E., 5,547,759, Cl. 428-421.000.
Roberts, Mary K. Hygienic panty. 5,546,607, Cl. 2-406.000.
Roberts, Rodney W.: *See*—
Drummond, Michael T.; Hill, Calvin G.; Lowman, Richard M., Jr.; Suski, William C.; Roberts, Rodney W.; and Lowry, James W., 5,547,451, Cl. 493-299.000.
Robertson, Grant W., to Robertson, Grant W. Journal equipped rotational devices and methods of making and balancing the same. 5,547,448, Cl. 492-16.000.
Robinson, Anthony D.; and Curtin, Shawn T., to Orbital Sciences Corporation. Shear viscous damped hinge. 5,546,632, Cl. 16-54.000.
Robinson, Larry R.: *See*—
Rinaldi, Marie A.; and Robinson, Larry R., 5,547,659, Cl. 424-59.000.
Robinson, William J.: *See*—
Goldston, Mark R.; Bernis, Jon L.; and Robinson, William J., 5,546,681, Cl. 36-137.000.
Robson, Homer: *See*—
Kujawa, Kim; Kirchner, Erich; Jarzab, Michel; and Robson, Homer, 5,548,633, Cl. 379-93.000.
Roccato, Diego: *See*—
Calvani, Riccardo; Caponi, Renato; Cisternino, Francesco; and Roccato, Diego, 5,548,603, Cl. 372-25.000.
Rocher, Daniel; and Noel, Hugues, to Jouvance, Daniel. Cosmetic product having a stabilized redox potential. 5,547,676, Cl. 424-401.000.
Rock, Moshe; Lumb, Douglas; and Lie, William, to Maiden Mills Industries, Inc. Plaited double-knit fabric. 5,547,733, Cl. 428-91.000.
Rock, Terry R. Self-rotating hanging plant support. 5,546,698, Cl. 47-67.000.
Rockwell International: *See*—
Sawyer, James G.; Kloster, Bruce S.; Kitson, Ralph L.; Kovatch, Randall M.; Roepke, Daniel C.; and Wilson, M. Frank, 5,548,818, Cl. 455-54.100.
Rodder, Mark S.: *See*—
Chatterjee, Amitava; Liu, Jiann; Mozumder, Purnendu; Rodder, Mark S.; and Chen, Ih-Chin, 5,548,548, Cl. 365-149.000.
Roebroeks, Gerardus H. J. J.; and Mattousch, Arthur C., to Structural Laminates Company. Impact resistant laminate. 5,547,735, Cl. 428-110.000.
Roederer, David A., to Webster Heating and Specialty Products, Inc. Circuit and method for spark-igniting fuel. 5,548,471, Cl. 361-253.000.
Roehm GmbH Chemische Fabrik: *See*—
Vetter, Heinz; Hoess, Werner; Dutschke, Joachim; and Schikowsky, Hartmut, 5,548,033, Cl. 525-378.000.
Roepke, Daniel C.: *See*—
Sawyer, James G.; Kloster, Bruce S.; Kitson, Ralph L.; Kovatch, Randall M.; Roepke, Daniel C.; and Wilson, M. Frank, 5,548,818, Cl. 455-54.100.
Roetker, Timothy C.: *See*—

Siklosi, Michael P.; and Roetker, Timothy C., 5,547,476, Cl. 8-142.000.
Rogers, Alan C., to Sun Microsystems, Inc. Zero latency synchronized method and apparatus for system having at least two clock domains. 5,548,620, Cl. 375-354.000.
Rogers, Bruce L.; Morgenstern, Jay P.; Bond, Julian F.; Garman, Richard D.; Greenstein, Julia L.; Kuo, Mei-chang; and Morville, Malcolm. Recombinant peptides comprising T cell epitopes of the cat allergen, Fel d I. 5,547,669, Cl. 424-185.100.
Rogers, John A.; and Nelson, Keith A., to Massachusetts Institue of Technology. Optical measurements of stress in thin film materials. 5,546,811, Cl. 73-800.000.
Rogers, Lynn; Maneval, Robert D.; Bashor, Daryl W.; and Johnson, David J. Manufacture process for ground oat cereal. 5,547,133, Cl. 241-9.000.
Rogier, Donald J.: *See*—
Talley, John J.; Bertenshaw, Stephen R.; Graneto, Matthew J.; and Rogier, Donald J., 5,547,975, Cl. 514-406.000.
Rohm and Haas Company: *See*—
Lavoie, Alvin C.; Bors, Daniel A.; and Brown, Ward T., 5,548,024, Cl. 525-102.000.
Sharma, Ashok K., 5,547,984, Cl. 514-541.000.
Rohm Co. Ltd.: *See*—
Katsuno, Takafumi; and Kambara, Shigeru, 5,548,269, Cl. 338-325.000.
Shakuda, Yukio, 5,548,127, Cl. 257-13.000.
Suzuki, Tamotsu; and Shimada, Yoshikazu, 5,548,829, Cl. 455-180.300.
Rohman, Kenneth J.: *See*—
Kemp, Daniel N.; Mitin, Timothy W.; Rohman, Kenneth J.; Shirk, Christopher C.; and Wieck, Ronald W., 5,547,000, Cl. 141-104.000.
Rohner, Don, to Advanced Micro Devices, Inc. Post hot working process for semiconductors. 5,547,902, Cl. 437-187.000.
Rolfe, Richard B., to Bleiweis, Sol. Process for production and use of deactivated gaseous atomic nitrogen for post combustion gas nitric oxide emissions control. 5,547,651, Cl. 423-235.000.
Rolls Royce plc.: *See*—
Meelu, Mehar C.; Jones, Alan T.; and McMordie, Bruce G., 5,547,770, Cl. 428-678.000.
Romano, Dario: *See*—
Giras, Theo C.; Profeta, Joseph A.; and Romano, Dario, 5,547,151, Cl. 246-227.000.
Rondeau, Michel Y., to Fibotech, Inc.; and Valquest Medical, Inc. High precision fiberoptic alignment spring receptacle and fiberoptic probe. 5,548,674, Cl. 385-72.000.
Ronyak, David M; and Leffel, Kevin L., to BF Goodrich Company, The. Annular filamentary structures and methods of making. 5,546,880, Cl. 112-475.010.
Ropponen, Matti: *See*—
Sonntag, John-Erik; and Ropponen, Matti, 5,547,095, Cl. 220-3.800.
Roquette Freres: *See*—
Ribadeau-Dumas, Guillaume; Bouvier, Frédéric; and Serpelloni, Michel, 5,547,689, Cl. 426-3.000.
Rosa, Margaret D.: *See*—
Wallner, Barbara P.; Miller, Glenn T.; and Rosa, Margaret D., 5,547,853, Cl. 435-69.100.
Rosaz, Francois O.: *See*—
Bogrand, George E., IV; Kenny, Andrew A.; and Rosaz, Francois O., 5,547,126, Cl. 236-92.00B.
Rose, M. Fred. Variable torch apparatus. 5,547,371, Cl. 431-320.000.
Rosemount Inc.: *See*—
Johnson, John D.; and Kirkpatrick, William R., 5,546,804, Cl. 73-431.000.
Rosen, Joseph M.: *See*—
McKenna, Michael A.; Rosen, Joseph M.; Chen, David T.; Pieper, Steven D.; and Robbie, Peter J., 5,547,455, Cl. 600-113.000.
Rosenberg, Steven: *See*—
Mullenbach, Guy T.; Blaney, Jeffrey M.; and Rosenberg, Steven, 5,547,935, Cl. 514-12.000.
Rosenlund, Henrik, to Televerket. Method and arrangement for increasing the capacity in a mobile telephone system. 5,548,804, Cl. 455-33.100.
Rosenquist, Frederick T., Jr.: *See*—
Bonora, Anthony C.; Guerre, Gilles; Parikh, Mihir; Rosenquist, Frederick T., Jr.; and Jain, Sudhir, 5,547,328, Cl. 414-217.000.
Rosenwald, Diane R.: *See*—
Perry, Michael R.; Huang, Victor T.; Rosenwald, Diane R.; Johnson, Andrew H.; and Ghiasi, Katy, 5,547,694, Cl. 426-118.000.
Roskos, David M.: *See*—
Sobolewski, Eugene R.; and Roskos, David M., 5,547,162, Cl. 248-688.000.
Ross, Hayes E., Jr.: *See*—
Mak, King K.; Bligh, Roger P.; Ross, Hayes E., Jr.; and Sicking, Dean L., 5,547,309, Cl. 404-6.000.
Ross, James W.: *See*—
Conner, John P.; Ross, James W.; Youngs, Bradley D.; Haigh, Paul; and Small, William C., 5,546,873, Cl. 108-153.000.
Rossini, Angela: *See*—
Heucher, Reimar; Wichelhaus, Juergen; Schueller, Kurt; Kopannia, Siegfried; and Rossini, Angela, 5,548,027, Cl. 525-179.000.
Rossio, Richard C.: *See*—
Harrison, Richard P.; Brown, Bari W.; Rossio, Richard C.; Aviles, Gladys M.; Dexheimer, Edward M.; and Ho, David, 5,547,608, Cl. 252-357.000.
Rossmark Medical Publishers, Inc.: *See*—
Halperin, Mitchell L.; and Cheema-Dhadli, Surinder, 5,547,586, Cl. 210-686.000.
Rost, Peter, to Kommandidgesellschaft Ritz Messwandler GmbH & Co. Duct, particularly for high voltages with special electrode holder. 5,548,081, Cl. 174-14.0BH.
Roth, Harald: *See*—
Bidaud, Francis; Benoit, Sylvain; Plisson, Jacques; Morizot, Gérard; Roth, Harald; and Huber, Adolf, 5,548,199, Cl. 318-802.000.
Roth-Technik GmbH & Co.: *See*—
Häfele, Edelbert; and Seeger, Walter, 5,546,787, Cl. 73-23.310.
Rothacker, Fritz D.: *See*—
Gleich, Werner; Rothacker, Fritz D.; Brückel, Dieter; and Schmid, Eduard, 5,547,161, Cl. 248-678.000.
Rouges, Jean-Michel: *See*—
Lacombe, Alain; and Rouges, Jean-Michel, 5,547,628, Cl. 264-257.000.
Rountree, Robert N.; Cline, Dan; Walker, Darryl G.; Hii, Francis; and Bergman, David W., to Texas Instruments Incorportated. Block specific spare circuit. 5,548,225, Cl. 326-13.000.
Roussel Uclaf: *See*—
Dumas, Bruno; Gervais, Monica; Bergoin, Max; Jourdan, Mireille; and Jousset, Francoise X., 5,547,869, Cl. 435-252.330.
Rowe, Jonathan C.: *See*—
Chalk, Julie B.; Rowe, Jonathan C.; Schermerhorn, Paul M.; and Shoup, Robert D., 5,547,482, Cl. 65-17.200.
Rowland, Christopher A.; Vergano, Michael G.; Eddy, Bryan P.; and Cotton, Peter B., to Boston Scientific Corporation. Apparatus for performing diagnostic and therapeutic modalities in the biliary tree. 5,547,469, Cl. 604-22.000.
Roy, Edward J.: *See*—
Kranz, David M.; Roy, Edward J.; and Patrick, Todd A., 5,547,668, Cl. 424-181.100.
Royal Vendors, Inc.: *See*—
Oden, Kenneth W.; and Ring, Michael D., 5,547,105, Cl. 221-181.000.
Royer, Leon D.; Skrtic, Thomas; and Zach, Mark J., to Minnesota Mining and Manufacturing Company. Component tray with removable insert. 5,547,082, Cl. 206-725.000.
RTA Associates, Inc.: *See*—
Tokoro, Toru, 5,547,688, Cl. 426-2.000.
Rubbo, Richard P.; Boundin, Brett W.; and Owens, Steven C. Surface controlled reservoir analysis and management system. 5,547,029, Cl. 166-375.000.
Rubens, Jane R.: *See*—
Rubens, Louis C.; and Rubens, Jane R., 5,547,440, Cl. 482-13.000.
Rubens, Louis C.; and Rubens, Jane R. Lung exerciser. 5,547,440, Cl. 482-13.000.
Rubenstein, Julius. Method of processing and recovery of electronic and electric scrap. 5,547,134, Cl. 241-23.000.
Rubin, Kurt A.: *See*—
Kulakowski, John E.; McDowell, Judson A.; and Rubin, Kurt A., 5,548,572, Cl. 369-116.000.
Ruckmongathan, Temkar N.: *See*—
Kuwata, Takeshi; Ruckmongathan, Temkar N.; Nakagawa, Yutaka; Koh, Hidemasa; Nakazawa, Akira; Ohnishi, Takanori; and Ihara, Satoru, 5,548,302, Cl. 345-89.000.
Rudd, Armin, to University of Central Florida. Air distribution fan recycling control. 5,547,017, Cl. 165-244.000.
Ruderman, Gerald S.: *See*—
Park, Sung K.; Palmer, Bethe M.; and Ruderman, Gerald S., 5,548,519, Cl. 364-470.060.
Rudi, Guttorm; Jansen, Ornulf; Kuifte, Halvor O.; and Busengdal, Petter, to Tandberg Data Storage AS. Tape drive with floating support for insert. 5,548,480, Cl. 361-685.000.
Rudolph, Jeffrey, to International Business Machines Corporation. Bit stack wiring channel optimization with fixed macro placement and variable pin placement. 5,548,747, Cl. 395-500.000.
Rudt, Robert J.: *See*—
Neider, Thomas M.; and Rudt, Robert J., 5,546,856, Cl. 100-38.000.
Neider, Thomas M.; and Rudt, Robert J., 5,547,509, Cl. 118-68.000.
Ruggieri, Daniela: *See*—
Angelucci, Francesco; Bersani, Laura; Caruso, Michele; Ripamonti, Marina; Ruggieri, Daniela; and Suarato, Antonino, 5,547,667, Cl. 424-181.100.
Rule, David D.; and Rule, Toby D. Plastic tank manway bulge restrictor. 5,547,102, Cl. 220-648.000.
Rule, Toby D.: *See*—
Rule, David D.; and Rule, Toby D., 5,547,102, Cl. 220-648.000.
Rumiesz, Joseph, Jr.; Walker, Dixon R.; and Fay, Ralph M. Thin high density glass fiber panel. 5,547,743, Cl. 428-224.000.
Runkel, Walter L., to Hemscheidt Fahrwerktechnik GmbH & Co. Hydropneumatic suspension system with stabilization. 5,547,211, Cl. 280-708.000.
Runnebaum, Larry J. Press machine. 5,547,002, Cl. 144-332.000.
Ruoff, Rodney S.; Lorents, Donald C.; Malhotra, Ripudaman; and Dyer, Mark J., to SRI International. Carbon nanoencapsulates. 5,547,748, Cl. 428-323.000.
Ruoslahti, Erkki I.; Pierschbacher, Michael D.; and Gehlsen, Kurt R., to La Jolla Cancer Research Foundation. Inhibition of cell migration with synthetic peptides. 5,547,936, Cl. 514-12.000.
Rupel, Wesley O., to Microsoft Corporation. Method and apparatus for displaying color on a computer output device using dithering techniques. 5,548,305, Cl. 345-150.000.

Ruscheweyh, Hans, to BDAG Balcke-Dürr Aktiengesellschaft Device for cooling gases and optionally drying solid particles added to the gas. 5,547,540, Cl. 159-4.080.

Rush, Gus A., III. Helmet. 5,546,609, Cl. 2-413.000.

Russ, Timothy J.: *See*—
Mitchell, Nancy G.; Langan, Joseph W.; Shipston, Adele C.; Russ, Timothy J.; and Smith, Douglas M., 5,547,738, Cl. 428-195.000.

Russano, Jama K. Undergarment. 5,546,608, Cl. 2-408.000.

Russell, Charles T., Jr.: *See*—
Hillman, Darrel D.; and Russell, Charles T., Jr., 5,547,352, Cl. 417-569.000.

Russell, Lance W.: *See*—
Chang, Kyusun; Hall, Lon E.; Joyce, Gregory S.; Mazzurana, Paul D.; and Russell, Lance W., 5,548,731, Cl. 395-280.000.

Russell, William C., to Anchor Group, The. Fence assembly with swivel bracket. 5,547,169, Cl. 256-67.000.

Russell-Jones, Gregory J.; and Westwood, Steven W., to Biotech Ausuralia Pty Limited. Vitamin B12 conjugates with EPO, analogues thereof and pharmaceutical compositions. 5,548,064, Cl. 530-380.000.

Rusz, Tibor. Anesthetic-vapor delivery apparatus with an ambient-referenced pressure regulator. 5,546,931, Cl. 128-203.120.

Rüth, Gregor; Wirtz, Ulrich; and Tholen, Leo, to W. Schlafhorst AG & Co. Bobbin winding machine with a multiplicity of winding stations. 5,547,137, Cl. 242-35.50R.

Ryan, Sandra K.: *See*—
Casper, Daniel F.; Glassen, Steven G.; Halma, Marten J.; and Ryan, Sandra K., 5,548,791, Cl. 395-858.000.

Ryan, William J.: *See*—
Liang, Louis H.; Marinello, Daniel A.; and Ryan, William J., 5,548,106, Cl. 235-454.000.

Rydell, Susan M. Laundry sorting and storage device and method. 5,547,271, Cl. 312-211.000.

Ryham, Rolf: *See*—
Nykanen, Tuomo S.; Greenwood, Brian F.; Gullichsen, Johan; Kiiskila, Erkki; Mattelmaki, Esko; Phillips, Joseph R.; Richardsen, Jan; Ryham, Rolf; Soderman, Jarmo; and Wiklund, Karl, 5,547,543, Cl. 162-31.000.

Ryham, Rolf C.: *See*—
Marcoccia, Bruno S.; Prough, J. Robert; Laakso, Richard O.; Phillips, Joseph R.; Ryham, Rolf C.; Richardsen, Jan T.; and Chasse, R. Fred, 5,547,012, Cl. 162-42.000.

Ryu, Tadamitsu; Mogi, Yoshio; Tomita, Masao; and Fukatsu, Takanori, to Fujitsu Limited. Dynamic data storage system allowing variable size records and fields by using linked record segments. 5,548,751, Cl. 395-600.000.

S. C. Johnson & Son, Inc.: *See*—
Dancs, Imre J.; and Savage, Frank, 5,547,616, Cl. 261-26.000.

Saab Automobile Aktiebolag: *See*—
Johansson, Anders, 5,546,920, Cl. 123-685.000.

Saban, Marko; Liebermann, George; and McAneney, Thomas B., to Xerox Corporation. Processes for producing bimodal toner resins. 5,548,043, Cl. 526-84.000.

Sable, Donald E.; and Sable, Donald E., II, to McClung-Sable Partnership. Corrosion control well installation. 5,547,020, Cl. 166-65.100.

Sable, Donald E., II: *See*—
Sable, Donald E.; and Sable, Donald E., II, 5,547,020, Cl. 166-65.100.

Sacchi, Nicoletta: *See*—
Nisson, Paul E.; and Sacchi, Nicoletta, 5,547,838, Cl. 435-6.000.

Sacripante, Guerino: *See*—
Bayley, Robert D.; Fox, Carol A.; Hoffend, Thomas R.; Mahabadi, Hadi K.; Agur, Enno E.; Sacripante, Guerino; and Hawkins, Michael S., 5,548,059, Cl. 528-194.000.

Sadakata, Kiyoshi: *See*—
Tomaru, Masaki; Moriyama, Seiichi; and Sadakata, Kiyoshi, 5,547,221, Cl. 280-777.000.

Sadler, Donald M.: *See*—
Edwards, Donald W.; Odle, James K.; Popper, Peter; Sadler, Donald M., Savidge, Todd J.; Staunton, Harold F.; Walker, William C.; and Yngve, Paul W., 5,547,732, Cl. 428-85.000.

Sadones, Henri: *See*—
Chekroun, Claude; and Sadones, Henri, 5,548,289, Cl. 342-16.000.

Saen, Haruo: *See*—
Sakamoto, Yoshito; Kihara, Takeshi; and Saen, Haruo, 5,547,144, Cl. 242-402.000.

Safe Pursuit, Inc.: *See*—
Riddell, Donnie L.; and Shepherd, Fred R., 5,548,810, Cl. 455-99.000.

Saiki, Takeaki: *See*—
Enami, Hiroji; and Saiki, Takeaki, 5,548,038, Cl. 525-478.000.

Sainfort, Pierre; Vichery, Hervé; and Commet, Benoit. Hardened aluminum alloy stock materials having continuous variation in properties and process for producing. 5,547,524, Cl. 148-688.000.

Saint Gobain Virtage International: *See*—
Cordes, Hans; Krumm, Helmut; Schwartz, Ludwig; Kahn, Ilan; Cornils, Gerd; and Behrend, Ulrich, 5,547,359, Cl. 425-125.000.

Saint-Gobain/Norton Industrial Ceramics Corp.: *See*—
Kapoor, Rakesh R.; Nagy, Bela G.; and Bigelow, Louis K., 5,547,121, Cl. 228-121.000.

Saito, Akira, to Fuji Electric Co., Ltd. Thin film magnetic element. 5,548,265, Cl. 336-200.000.

Saito, Atsushi: *See*—
Okubo, Akio; Saito, Atsushi; and Watanabe, Fumihiko, 5,548,309, Cl. 347-33.000.

Saito, Haruo: *See*—
Hashimoto, Hiroyuki; Ishii, Satoshi; and Saito, Haruo, 5,548,325, Cl. 348-64.000.
Niki, Mamoru; Hosaka, Yoshiaki; Mogi, Takao; and Saito, Haruo, 5,548,451, Cl. 360-32.000.

Saito, Rie: *See*—
Ogata, Takao; Amemiya, Koji; Takeuchi, Tatsuo; Hasegawa, Takashi; Saito, Rie; and Sasanuma, Nobuatsu, 5,548,378, Cl. 355-208.000.

Saito, Ryuichi: *See*—
Kinsho, Takeshi; Kaneko, Tatsushi; Shimizu, Takaaki; Ogihara, Tsutomu; Saito, Ryuichi; and Kurihara, Hideshi, 5,547,606, Cl. 252-299.610.

Saito, Shinji; Ogawa, Hiroshi; Kakuta, Takeshi; and Noguchi, Hitoshi, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 5,547,772, Cl. 428-694.00B.

Saito, Shiro: *See*—
Miyazaki, Seizo; Saito, Shiro; and Kitahara, Daijiro, 5,547,291, Cl. 384-512.000.

Saito, Tadashi: *See*—
Kuramoto, Shinichi; Takahashi, Sadao; Kimura, Yoshiyuki; Ando, Kazuhiro; Saito, Tadashi; Asaba, Youichi; Tanikawa, Kiyoshi; Miyashita, Yoshiaki; and Shinguryo, Satoshi, 5,547,793, Cl. 430-97.000.

Saito, Yoshiro; Fujii, Haruo; Sasame, Hiroshi; Hayakawa, Tatsuhiko; Kobayashi, Tatsuya; Kobayashi, Tetsuya; Enomoto, Naoki; Uchiyama, Akihiko; and Maebashi, Youichirou, to Canon Kabushiki Kaisha. Developing apparatus forming alternating electric field between image bearing member and toner carrying member. 5,548,381, Cl. 355-245.000.

Saitoh, Hideo: *See*—
Akasaka, Yoshio; Kakijima, Kenichi; Endoh, Takeshi; Uchida, Goro; Tanaka, Masaaki; Fujie, Takefumi; Sukawa, Daiji; Endoh, Satoshi; Saitoh, Hideo; and Kubo, Takashi, 5,548,096, Cl. 219-117.100.

Saitoh, Misa: *See*—
Kobayashi, Tsuyoshi; and Saitoh, Misa, 5,547,556, Cl. 204-426.000.

Saitoh, Tsutomu: *See*—
Ochiai, Masahisa; Saitoh, Tsutomu; and Asanae, Masumi, 5,547,795, Cl. 430-106.600.

Sakabe, Shigekazu: *See*—
Kimura, Yutaro; Ikeshima, Tetsuhiko; Tonami, Hiromichi; Konishi, Ikuo; Horikawa, Hiroshi; Daikoku, Akihiro; Sakabe, Shigekazu; Inoue, Masao; and Yamasaki, Akinori, 5,548,629, Cl. 378-134.000.

Sakaguchi, Noboru: *See*—
Kawabe, Yuzo; and Sakaguchi, Noboru, 5,547,140, Cl. 242-247.000.

Sakai, Tadashi: *See*—
Omura, Ichiro; Nakagawa, Akio; Sakai, Tadashi; Sekimura, Masayuki; and Funaki, Hideyuki, 5,548,150, Cl. 257-349.000.

Sakakura, Yasuyuki: *See*—
Kikuchi, Kazuo; Umino, Hiroshi; Shibuya, Hiromitsu; Makino, Masahito; Sakakura, Yasuyuki; and Takahashi, Kiyoshi, 5,546,763, Cl. 62-532.000.

Sakamoto, Hitoshi: *See*—
Machida, Isao; Fujiura, Ryuji; Kojima, Takashi; and Sakamoto, Hitoshi, 5,547,654, Cl. 423-445.00R.

Sakamoto, Yoshihiro; and Tanimura, Toshio, to MEC Co., Ltd. Process for electroplating nonconductive surface. 5,547,558, Cl. 205-125.000.

Sakamoto, Yoshito; Kihara, Takeshi; and Saen, Haruo, to Sumitomo Electric Industries, Ltd. Cable reel of electric signal transmission apparatus. 5,547,144, Cl. 242-402.000.

Sakanushi, Masahiro: *See*—
Hara, Fumio; Fujimura, Akira; Hara, Yoshihisa; and Sakanushi, Masahiro, 5,546,922, Cl. 123-698.000.

Sakao, Masato; and Ohya, Shuichi, to NEC Corporation. Semiconductor device capable of increasing reliability. 5,548,157, Cl. 257-532.000.

Sakao, Tomohiko: *See*—
Umeda, Yasushi; Tomiyama, Tetsuo; Yoshikawa, Hiroyuki; Sakao, Tomohiko; Shimomura, Yoshiki; and Tanigawa, Sadao, 5,548,682, Cl. 395-10.000.

Sakashita, Yoshihiro: *See*—
Iwamoto, Shinji; Mizuno, Toshiaki; Muramatsu, Toshihiko; Nakashima, Kazushi; Abe, Tomoaki; Yonekawa, Masao; and Sakashita, Yoshihiro, 5,546,911, Cl. 123-497.000.

Sakashita, Yukihiko; and Ishizaki, Akira, to Canon Kabushiki Kaisha. Image editing using hierarchical coding to enhance processing speed. 5,548,708, Cl. 395-162.000.

Sakata, Masahiko: *See*—
Fujiwara, Susumu; Sakata, Masahiko; and Ishizuka, Mikio, 5,548,652, Cl. 381-71.000.

Sakaue, Akinori; Mise, Nobutake; and Ishizu, Makoto, to Mitsubishi Chemical Corporation. Easily dispersible coloring carbon black and process for preparing an ink. 5,547,498, Cl. 106-20.00C.

Sakuma, Kouichi, to Suzuki Manufacturing Co., Ltd. Looper drive mechanism for sewing machine. 5,546,878, Cl. 112-162.000.

Sakura Color Products Corporation: *See*—
Kawasumi, Toshimitsu; and Ueda, Hiroaki, 5,547,499, Cl. 106-20.00R.

Sakurai, Soichi: *See*—
Okuyama, Nobutaka; Sakurai, Soichi; Fukuma, Kooji; Yoshioka, Hiroshi; Obara, Masao; Ito, Naoki; Takeyama, Atsushi; and Satoh, Yoshio, 5,548,190, Cl. 315-368.260.

Salazar, Luis: *See*—

Eberhardt, Carol E.; Capps, Mark J.; and Salazar, Luis, 5,546,820, Cl. 73-866.400.

Salem, George F.: *See*—
Sprague, David L.; Harney, Kevin; Kowashi, Eiichi; Keith, Michael; Simon, Allen H.; Papadopoulos, Gregory M.; Hays, Walter P.; Salem, George F.; Shiue, Shih-Wei; Bertapelli, Anthony P.; and Shilman, Vitaly H., 5,548,793, Cl. 395-860.000.

Salisbury, Kenneth A.; Kalinowski, Pawel; and Baker, Jay D., to Ford Motor Company. Electronic module containing an internally ribbed, integral heat sink and bonded, flexible printed wiring board with two-sided component population. 5,548,481, Cl. 361-709.000.

Salituro, Francesco G.: *See*—
Palfreyman, Michael G.; McDonald, Ian A.; Salituro, Francesco G.; and Schwarcz, Robert, 5,547,991, Cl. 514-564.000.

Salk Institute for Biological Studies, The: *See*—
Evans, Ronald M.; Ong, Estelita S.; Segui, Prudimar S.; Thompson, Catherine C.; Umesono, Kazuhiko; and Giguere, Vincent, 5,548,063, Cl. 530-350.000.

Saltveit, Mikal: *See*—
Krechta, John M.; Saltveit, Mikal; and Cisneros-Zevallos, Luis, 5,547,693, Cl. 426-90.000.

Salyer, Gregory: *See*—
Casper, Daniel F.; Gregg, Thomas A.; Salyer, Gregory; and Westcott, Douglas W., 5,548,623, Cl. 375-358.000.

Sam Yang Co., Ltd.: *See*—
Kim, Ho H.; Yeo, Guw D.; and Yi, Yil W., 5,548,035, Cl. 525-408.000.

SAME S.p.A.: *See*—
Allwörden, Wilhelm V., 5,546,736, Cl. 56-16.40B.

Samonsky, R. Lynn. Apparatus for dispensing objects. 5,547,106, Cl. 221-193.000.

Samp, Manfred: *See*—
Dinkelmann, Friedrich; Vetter, Dieter; and Samp, Manfred, 5,546,740, Cl. 57-266.000.

Samsung Aerospace Industries, Ltd.: *See*—
Kang, Geon-mo, 5,548,450, Cl. 359-822.000.

Samsung Display Devices Co., Ltd.: *See*—
Choi, Kwi-seok; Choi, Jong-seo; Shon, Kyung-cheon; Ju, Gyu-nam; and Lee, Sang-won, 5,548,184, Cl. 313-346.00R.
Lee, Byeong-yong, 5,547,411, Cl. 445-52.000.

Samsung Elctronics, Co., Ltd.: *See*—
Patel, Chandrakant B.; and Limberg, Allen L., 5,548,617, Cl. 375-316.000.

Samsung Electronic Co., Ltd.: *See*—
Han, Woo-sung; and Sohn, Chang-jin, 5,547,788, Cl. 430-5.000.

SamSung Electronics Co., Ltd.: *See*—
Gahang, Gu-Su; Song, Bong-Seog; Lee, Hyun-Jun; and Ahn, Ju-Yeong, 5,548,634, Cl. 379-97.000.
Kim, Hyoung-sub, 5,547,889, Cl. 437-52.000.
Ko, Yeong-Cheol, 5,548,104, Cl. 219-715.000.
Kwon, Sang-Chul, 5,548,319, Cl. 347-183.000.
Lee, Eung H., 5,548,101, Cl. 219-601.000.
Lee, Eung-Hwa, 5,548,188, Cl. 315-156.000.
Lee, Ho-Chul, 5,546,780, Cl. 72-75.000.
Lee, Keun-Byung, 5,546,773, Cl. 68-196.000.
Lee, Ki-bang, 5,548,313, Cl. 347-68.000.
Lee, Sun G., 5,546,759, Cl. 62-441.000.
Lee, Sung-Soo; and Kim, Jin-Ki, 5,548,555, Cl. 365-200.000.
Lee, Yong-hee, 5,548,143, Cl. 257-269.000.
Ro, Kwang-Ho; and Park, Moon-Bae, 5,548,318, Cl. 347-174.000.
Woo, Tae-jin, 5,548,777, Cl. 395-821.000.

Samuel, Alan H.: *See*—
Gibson, Colin; Matthews, Ian P.; Samuel, Alan H.; and Zhu, Zhangwhu, 5,548,217, Cl. 324-316.000.

Sanada, Kazuo: *See*—
Maruyama, Tsutomu; Akiyama, Atsushi; Sanada, Kazuo; Chigira, Sadao; and Hidaka, Masanobu, 5,547,501, Cl. 106-21.00R.

Sanchez, Iván M.: *See*—
Larsson, Bo E. S.; and Sanchez, Iván M., 5,548,750, Cl. 395-600.000.

Sanchez, Jose, to Elf Atochem North America, Inc. Stabilized dialkyl peroxydicarbonate compositions and their uses. 5,548,046, Cl. 526-230.500.

Sandbank, Barry M., to Smith & Nephew plc. Radiation protective glove. 5,548,125, Cl. 250-519.100.

Sander, Robert F., to Sports Systems Inc. Golf club cover. 5,547,193, Cl. 473-252.000.

Sandia Corporation: *See*—
Horn, Kevin M.; and Doyle, Barney L., 5,547,454, Cl. 600-1.000.
Vianco, Paul T.; Fisher, Robert W.; Hosking, Floyd M.; and Zanner, Frank J., 5,547,484, Cl. 65-42.000.

Sandoz Ltd.: *See*—
Eberle, Martin; Schaub, Fritz; and Craig, Gerald W., 5,547,919, Cl. 504-242.000.

Sandrin, Gianni, to Albatros System S.p.A. Water fixture for bathtubs or similar vessels and method of installing the same. 5,546,617, Cl. 4-541.600.

Sandvick AB: *See*—
Jansson, Conny; Bergqvist, Håkan; and Himbert, Hans, 5,546,816, Cl. 73-862.210.

Sanechika, Kenichi; Fukui, Hiroyuki; and Ikeda, Masanori, to Asahi Kasei Kogyo Kabushiki Kaisha. Lubricant oil composition comprising a fluorine-containing aromatic compound and an alkyl- or alkyl derivative-substituted aromatic compound, and a refrigerant composition containing the same. 5,547,593, Cl. 508-207.000.

Sano, Akinobu: *See*—
Egawa, Motoji; Fujita, Tetsuji; Sano, Akinobu; and Takayanagi, Kazutoshi, 5,548,459, Cl. 360-103.000.

Sanofi Sante Nutrition Animale: *See*—
Filhol, Marie-Sophie; and Pobel, Thierny G., 5,547,995, Cl. 514-654.000.

Sanpei, Akira: *See*—
Eguchi, Yasuhito; Sato, Masayuki; Narushima, Toshio; Sanpei, Akira; and Murano, Kanji, 5,547,775, Cl. 429-7.000.

Sanshin Kogyo Kabushiki Kaisha: *See*—
Iwai, Tomio; and Tanaka, Seiichi, 5,546,748, Cl. 60-302.000.

Santen Pharmaceutical Co., Ltd.: *See*—
Kawashima, Yoichi; Ota, Atsutoshi; Morikawa, Yuko; and Mibu, Hiroyuki, 5,547,952, Cl. 514-224.200.

Santini, John J.; and Yankie, N. Alan, to Cytec Technology Corp. Stabilized polyacrylamide emulsions and methods of making same. 5,548,020, Cl. 524-801.000.

Sara Lee Corporation: *See*—
McEwen, John; Tolzman, David; and DiDonato, Anthony, 5,546,879, Cl. 112-282.000.

Sarangdhar, Nitin; Rhodehamel, Michael; and Fisch, Matthew, to Intel Corporation. Method and apparatus for dynamically controlling the current maximum depth of a pipe lined computer bus system. 5,548,733, Cl. 395-286.000.

Sarfati, Alberto G., to Sobrevin Société de brevets industriels-Etablissement. Thread storage drum with frustoconical brake strip. 5,546,994, Cl. 139-452.000.

Sarin, Virender K.: *See*—
Dhaon, Madhup K.; Lundell, Edwin O.; Sarin, Virender K.; Baxter, Constance H.; and Absolom, Darryl R., 5,547,937, Cl. 514-12.000.

Sartorius AG: *See*—
Demmer, Wolfgang; Hörl, Hans-Heinrich; Nussbaumer, Dietmar; Weiss, Abdul R.; and Wünn, Eberhard, 5,547,575, Cl. 210-490.000.

Sasaki, Hirotomo: *See*—
Kojima, Tetsuro; Yagihara, Morio; Sasaki, Hirotomo; Mifune, Hiroyuki; and Kato, Shinji, 5,547,829, Cl. 430-603.000.

Sasaki, Iwao: *See*—
Matsuno, Seiki; Sasaki, Iwao; Ohneda, Akira; Sasaki, Kazuyuki; Natori, Yohei; and Nagasaki, Tomohisa, 5,547,938, Cl. 514-012.000.

Sasaki, Kazuyuki: *See*—
Matsuno, Seiki; Sasaki, Iwao; Ohneda, Akira; Sasaki, Kazuyuki; Natori, Yohei; and Nagasaki, Tomohisa, 5,547,938, Cl. 514-012.000.

Sasaki, Kiyomi: *See*—
Niwa, Hideyuki; Sasaki, Kiyomi; Yoshida, Kyoei; Tanuma, Itsuo; Naito, Kazuo; Morimura, Yasuhiro; and Koga, Takahiko, 5,547,762, Cl. 428-442.000.

Sasaki, Masaomi: *See*—
Shimada, Tomoyuki; Sasaki, Masaomi; and Tanaka, Chiaki, 5,547,792, Cl. 430-59.000.

Sasaki, Noriyoshi, to NIFCO Inc. Fuel filter. 5,547,568, Cl. 210-172.000.

Sasaki, Yasuo; Fukuyama, Munekatsu; and Kurihara, Kazuo, to Sony Corporation. Reproducing circuit for magneto-resistive head having an initial amplifying stage, a differential amplifying stage, and means for controlling the time of operation thereof. 5,548,453, Cl. 360-67.000.

Sasaki, Yasutaka, to NEC Corporation. Train radio communication system. 5,548,835, Cl. 455-277.100.

Sasame, Hiroshi: *See*—
Saito, Yoshiro; Fujii, Haruo; Sasame, Hiroshi; Hayakawa, Tatsuhiko; Kobayashi, Tatsuya; Kobayashi, Tetsuya; Enomoto, Naoki; Uchiyama, Akihiko; and Maebashi, Youichirou, 5,548,381, Cl. 355-245.000.

Sasanuma, Nobuatsu: *See*—
Ogata, Takao; Amemiya, Koji; Takeuchi, Tatsuo; Hasegawa, Takashi; Saito, Rie; and Sasanuma, Nobuatsu, 5,548,378, Cl. 355-208.000.

Sasaoka, Eisuke: *See*—
Hattori, Tomoyuki; Suganuma, Hiroshi; Sasaoka, Eisuke; and Takimoto, Hiroaki, 5,548,672, Cl. 385-43.000.

Sase, Takao: *See*—
Ueno, Yoshiaki; Hyosu, Haruhiko; Sase, Takao; Matsushita, Koji; and Yamashita, Koji, 5,548,254, Cl. 333-25.000.

Sasktel: *See*—
Bradley, Graham C.; and Stretton, Alton O., 5,548,635, Cl. 379-102.000.
Kujawa, Kim; Kirchner, Erich; Jarzab, Michel; and Robson, Homer, 5,548,633, Cl. 379-93.000.

Sasuga, Kazuyasu: *See*—
Sekine, Hiroshi; Sasuga, Kazuyasu; Taniuchi, Kazuman; Iwamoto, Yasuhiko; Terada, Yoshihiro; and Endoh, Kiyomasa, 5,548,663, Cl. 382-164.000.

Sata, Akifumi: *See*—
Furuzawa, Akira; Sata, Akifumi; Kubota, Takeshi; and Shikata, Kunihide, 5,547,908, Cl. 501-136.000.

Satake, Sunao; Yatsuyanagi, Yoshimi; Fujii, Masahiro; and Imagawa, Ippei, to Toyolink Manufacturing Co., Ltd. Reactive microgel and photosensitive resin composition containing the reactive microgel for flexographic printing plate. 5,547,999, Cl. 522-122.000.

VOL 1189 ISS 3 AG 20 1996 UMI

Satgurunathan, Rajasingham; Hinde, David C.; Padget, John C.; and Carey, John G., to Zeneca Limited. Aqueous coating compositions. 5,547,710, Cl. 427-386.000.

Sato, Jyunichi; and Komori, Takahiro, to Toyoda Gosei Co., Ltd. Low noise hose. 5,548,093, Cl. 181-224.000.

Sato, Kazutaka; Watanabe, Michihiro; Aoyagi, Masahisa; Seino, Taisaku; Ohki, Katsuo; Fukuda, Hiromitsu; Kawase, Hideyuki; Oga, Kimio; Shimizu, Akira; Narui, Youichi; Suzuki, Tsuguo; Otsuka, Yasuo; and Konno, Kazutoshi, to Hitachi, Ltd. Facsimile apparatus. 5,548,411, Cl. 358-400.000.

Sato, Kiminori: *See—*
Kato, Takefumi; Morita, Shigeru; and Sato, Kiminori, 5,547,362, Cl. 425-297.000.

Sato, Koki: *See—*
Koketsu, Eiji; Sato, Koki; Muromachi, Tetsushi; Haraoka, Mutsumu; Nagata, Toshio; Yanagihara, Michihiro; and Oma, Kuniaki, 5,547,223, Cl. 280-805.000.

Sato, Kunio: *See—*
Minamitaka, Junichi; Sato, Kunio; and Ohya, Mayumi, 5,548,080, Cl. 84-627.000.

Sato, Makoto: *See—*
Tanaka, Shigeo; Yamazaki, Hiroshi; Kotabe, Noriko; Sugiyama, Koichi; Sato, Makoto; Katsuyama, Akira; Osakabe, Yoshio; and Kusagaya, Yasuo, 5,548,725, Cl. 395-200.050.

Sato, Masayuki: *See—*
Eguchi, Yasuhito; Sato, Masayuki; Narushima, Toshio; Sanpei, Akira; and Murano, Kanji, 5,547,775, Cl. 429-7.000.

Sato, Naoto: *See—*
Yagami, Hiroyuki; Sato, Naoto; Yamashita, Hideaki; Nakagawa, Satoshi; and Maekawa, Jun, 5,546,947, Cl. 128-662.060.

Sato, Tomoko: *See—*
Fujie, Akihiko; Takase, Shigehiro; Yamashita, Michio; Sato, Tomoko; Hashimoto, Seiji; and Okuhara, Masakuni, 5,547,934, Cl. 514-11.000.

Sato, Toshio; and Kubota, Hiroaki, to Kabushiki Kaisha Toshiba. Printing and print inspection apparatus. 5,548,691, Cl. 395-113.000.

Sato, Tsuguo, to Sony Corporation. Motor control apparatus using speed and phase control in a first loop and phase control in a second loop series with the first loop. 5,548,455, Cl. 360-73.110.

Satoh, Hiseo: *See—*
Fukuchi, Masakazu; Morita, Shizuo; Haneda, Satoshi; Satoh, Hiseo; and Ikeda, Tadayoshi, 5,548,379, Cl. 355-210.000.

Satoh, Kazuhiro: *See—*
Nagano, Yoshimi; Suganuma, Takao; Satoh, Kazuhiro; and Ikeda, Masao, 5,547,858, Cl. 435-89.000.

Satoh, Makoto; Okami, Takehide; and Shimamoto, Noboru, to Shin-Etsu Chemical Co., Ltd. Fuser roll. 5,547,742, Cl. 428-215.000.

Satoh, Yoshio: *See—*
Okuyama, Nobutaka; Sakurai, Soichi; Fukuma, Kooji; Yoshioka, Hiroshi; Obara, Masao; Ito, Naoki; Takeyama, Atsushi; and Satoh, Yoshio, 5,548,190, Cl. 315-368.260.

Satou, Eiichi; and Iriyama, Masahiro, to Nissan Motor Co., Ltd. Throttle valve control device of internal combustion engine. 5,546,903, Cl. 123-399.000.

Satzinger GmbH & Co.: *See—*
Graf, Walter; and Immisch, Ulrich, 5,547,043, Cl. 184-39.000.

Sauer, Gerhard; Brumby, Thomas; Wachtel, Helmut; Turner, Jonathan; and Löschmann, Peter-Andreas, to Schering Aktiengesellschaft. N-(8α-ergolinyl)-amides. 5,547,958, Cl. 514-288.000.

Savage, Frank: *See—*
Dancs, Imre J.; and Savage, Frank, 5,547,616, Cl. 261-26.000.

Savage, John M., Jr. Light pipe optical coupling between led and fiber optics cable. 5,548,676, Cl. 385-92.000.

Savidge, Todd J.: *See—*
Edwards, Donald W.; Odle, James K.; Popper, Peter; Sadler, Donald M.; Savidge, Todd J.; Staunton, Harold F.; Walker, William C.; and Yngve, Paul W., 5,547,732, Cl. 428-85.000.

Savio Macchine Tessili S.r.l.: *See—*
Claut, Demetrio; Marangone, Nereo; and Badiali, Roberto, 5,547,138, Cl. 242-36.000.

Sawada, Hirokazu: *See—*
Matsuki, Masaya; Sawada, Hirokazu; and Uesugi, Akio, 5,547,522, Cl. 148-551.000.

Sawai, Kunio, to Funai Electric Co., Ltd. Automatic disk player with stackable disk storage boxes. 5,548,567, Cl. 369-36.000.

Sawyer, James G.; Kloster, Bruce S.; Kitson, Ralph L.; Kovatch, Randall M.; Roepke, Daniel C.; and Wilson, M. Frank, to Rockwell International. Network acquisition mechanism for mobile RF data. 5,548,818, Cl. 455-54.100.

Saxena, Mahendra P.: *See—*
Kulsrestha, Girindra N.; Saxena, Mahendra P.; Gupta, Ashok K.; Goyal, Hari B.; Prasad, Rameshwar; Prasada Rao, Turuga S. R.; and Patel, Prakash D., 5,547,905, Cl. 502-66.000.

Sayers, Anthony D., to U.S. Philips Corporation. Power amplifier and a transmitter including the power amplifier. 5,548,826, Cl. 455-126.000.

Sayler, Jack M., Jr.: *See—*
MacLeod, David L.; Sayler, Jack M., Jr.; and Cooper, Lloyd B., 5,546,658, Cl. 30-28.000.

Sayler, Jr., John M.: *See—*
MacLeod, David L.; Sayler, Jack M., Jr.; and Cooper, Lloyd B., 5,546,658, Cl. 30-28.000.

Scaramucci, John P., to Balon Corporation. Threaded valve with safety joint. 5,546,973, Cl. 137-15.000.

Scaringella, David T.; Connors, Donald E., Jr.; and Thurston, Garrett S., to Avco Corporation. Method for densifying and refurbishing brakes. 5,547,717, Cl. 427-590.000.

Scarmoutzos, Louis M.: *See—*
Tarbet, Bryon J.; Bruening, Ronald L.; Di Leo, Anthony J.; Goddard, Philip M.; and Scarmoutzos, Louis M., 5,547,760, Cl. 428-471.000.

Schabdach, Paul G., to United States of America, Army. Remote control adaptor for a detonator system. 5,546,862, Cl. 102-302.000.

Schaechterle, Henry: *See—*
Kolinski, Jerzy; Sprietsma, John; Pawlowski, Stephen; and Schaechterle, Henry, 5,548,734, Cl. 395-306.000.

Schaffner, James H., to Hughes Aircraft Company. Velocity-matched electrodes for electro-optic travelling-wave modulators and method for forming the same. 5,548,668, Cl. 385-1.000.

Schalkowsky, Samuel; and Scher, Frances M., to Spiral Biotech, Inc. Method and apparatus for cleaning the sample delivery stylus of microprocessor controlled spiral platers. 5,547,872, Cl. 436-49.000.

Schaub, Fritz: *See—*
Eberle, Martin; Schaub, Fritz; and Craig, Gerald W., 5,547,919, Cl. 504-242.000.

Scheetz, Scott. Environmentally controlled storage containers. 5,547,421, Cl. 454-250.000.

Scheffer, Terry J.: *See—*
Conner, Arlie; Biles, Jonathan R.; Scheffer, Terry J.; and Kingsley, Gary B., 5,548,422, Cl. 359-65.000.

Scheffler, Edward D., to Jack M. Berry Inc. Sprayer. 5,547,128, Cl. 239-77.000.

Scheibelhoffer, Anthony S.: *See—*
Mandel, Frederick S.; Green, Charles D.; and Scheibelhoffer, Anthony S., 5,548,004, Cl. 523-342.000.

Scheinert, Helmut, to Mercedes-Benz AG. Arrangement for recirculating exhaust gas in an internal combustion engine. 5,546,914, Cl. 123-569.000.

Schellenberg, Franklin M.: *See—*
Fukuzawa, Tadashi; Kano, Satoru S.; Kumata, Kiyoshi; Lee, Victor Y.; Schellenberg, Franklin M.; and Takahashi, Yutaka, 5,547,705, Cl. 427-162.000.

Schepes, Gerardus N.: *See—*
Kool, Anthonie F.; Van de Griendt, Michiel A.; de Bruin, Bas H.; Schepes, Gerardus N.; and Lucieer, Willem J., 5,548,397, Cl. 356-141.100.

Scher, Frances M.: *See—*
Schalkowsky, Samuel; and Scher, Frances M., 5,547,872, Cl. 436-49.000.

Schering Aktiengesellschaft: *See—*
Sauer, Gerhard; Brumby, Thomas; Wachtel, Helmut; Turner, Jonathan; and Löschmann, Peter-Andreas, 5,547,958, Cl. 514-288.000.

Schering-Plough Healthcare Products, Inc.: *See—*
Chamness, Thomas W., 5,547,989, Cl. 514-558.000.

Schermerhorn, Paul M.: *See—*
Chalk, Julie B.; Rowe, Jonathan C.; Schermerhorn, Paul M.; and Shoup, Robert D., 5,547,482, Cl. 65-17.200.

Scherpenberg, Francis A.: *See—*
Zanders, Gary V.; Scherpenberg, Francis A.; and Deierling, Kevin E., 5,548,550, Cl. 365-185.080.

Scheuten, Theo: *See—*
Angeler, Alois; Kaune, Harald; and Scheuten, Theo, 5,547,170, Cl. 266-47.000.

Schieck, Richard A., to Xerox Corporation. Vacuum transport apparatus. 5,548,388, Cl. 355-309.000.

Schiefele, Walter P.: *See—*
Reynolds, Edward P.; Tinnerino, Natale F.; and Schiefele, Walter P., 5,547,537, Cl. 156-351.000.

Schiffer, Larry W., to Anchor Hocking Corporation. Pouring edge structure for eliminating dribble. 5,547,112, Cl. 222-571.000.

Schijf, Robert: *See—*
Lansbergen, Adrianus J.; and Schijf, Robert, 5,547,698, Cl. 426-602.000.

Schikowsky, Hartmut: *See—*
Vetter, Heinz; Hoess, Werner; Dutschke, Joachim; and Schikowsky, Hartmut, 5,548,033, Cl. 525-378.000.

Schilling, Lothar; and Schmidt, Gottfried, to G. M. Pfaff Aktiengesellschaft. Sewing unit with a fabric bolder displaceable relative to a thread-guiding needle and with a fabric presser foot with an asymetrically widened opening. 5,546,876, Cl. 112-102.500.

Schlak, Ottfried: *See—*
Schwabe, Peter; Schlak, Ottfried; Winkel, Jens; Guggenberger, Rainer; and Gasser, Oswald, 5,548,002, Cl. 523-118.000.

Schlumberger Industries, Inc.: *See—*
Swinson, Thierry W.; and Walden, Brent M., 5,546,801, Cl. 73-273.000.

Schlumberger Technology Corporation: *See—*
Campbell, Heather A.; Mayhugh, Terry L.; Rasmussen, Marvin W.; and Vachon, Guy, 5,546,672, Cl. 33-716.000.
Meeten, Gerald H., 5,546,791, Cl. 73-54.280.

Schlunke, Christopher K.: *See—*
Paluch, John W. D.; Malss, Stephen R.; Gildersleeve, Lyle A.; Schlunke, Christopher K.; Bell, Gregory B.; and Smith, Darren A., 5,546,902, Cl. 123-304.000.

Schmid, Eduard: *See—*
Gleich, Werner; Rothacker, Fritz D.; Brückel, Dieter; and Schmid, Eduard, 5,547,161, Cl. 248-678.000.

Schmid, Monika: *See—*
Krönauer, Karlhans; Aigner, Josef; Klein, Franz; Weber, Karsten; Schmid, Monika; and Pfab, Robert, 5,546,640, Cl. 24-510.000.

Schmidt, Bernard: *See—*
Krüger, Bernd-Wieland; Maurer, Fritz; Methfessel, Christoph; Tietjen, Klaus; Maelicke, Alfred; Schmidt, Bernard; and Shiokawa, Kozo, 5,547,965, Cl. 514-342.000.

Schmidt, Glenn, to Callaway Golf Company. Wax pattern molding process. 5,547,630, Cl. 264-297.200.

Schmidt, Gottfried: *See—*
Schilling, Lothar; and Schmidt, Gottfried, 5,546,876, Cl. 112-102.500.

Schmidt, Gunther, deceased (by Margaret Schmidt, legal representative): *See—*
Hargrave, Karl D.; Schmidt, Gunther, deceased, 5,547,951, Cl. 514-211.000.

Schmidt, Kenneth M.: *See—*
Caldwell, Stephen P.; Harris Jr., Marvine; Matsakis, Demetrios J.; Minarik, Ronald W.; Schmidt, Kenneth M.; Weigand, Benjamin F.; Prill, Robert S.; and Siegel, Arnold B., 5,548,839, Cl. 455-313.000.

Schmidt, Larry E.: *See—*
Gudat, Adam J.; Rao, Prithvi N.; Shaffer, Gary K.; Shi, Wenfan; Shin, Dong H.; Sennott, James W.; Whittaker, William L.; Kleimenhagen, Karl W.; West, Jay H.; Clow, Richard G.; Wu, Baoxin; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,548,516, Cl. 364-443.000.

Schmidt, Margaret, legal representative: *See—*
Hargrave, Karl D.; Schmidt, Gunther, deceased, 5,547,951, Cl. 514-211.000.

Schmidt, Reinhard, to R. Schmidt GmbH. Safety belt system for a vehicle. 5,547,222, Cl. 280-801.200.

Schmidt, Walter G. M.: *See—*
Curiel, David T.; Birnstiel, Max L.; Cotten, Matthew; Wagner, Ernst; Zatloukal, Kurt; Plank, Christian; Oberhauser, Berndt; and Schmidt, Walter G. M., 5,547,932, Cl. 435-65.000.

Schmidt, Wolfgang: *See—*
Lapp, Otto; Schmuck, Arno; Schmidt, Wolfgang; and Siegel, Jörg, 5,547,818, Cl. 430-505.000.

Schmitt, Steve: *See—*
Radvin, Bill; and Schmitt, Steve, 5,546,641, Cl. 24-557.000.

Schmitt, Theodore, to Electrovac, Fabrikation elektrotechnischer Spezialartikel Gesellschaft m.b.H. Method of making a gastight connection between a conductor and an insulation in form of a tube. 5,547,120, Cl. 228-121.000.

Schmitz, Friedhelm, to Siemens Aktiengesellschaft. Method and coating for protecting against corrosive and erosive attacks. 5,547,769, Cl. 428-653.000.

Schmitz, John W., Jr. Apparatus for containing run-off produced after washing vehicles and the like. 5,547,312, Cl. 405-52.000.

Schmuck, Arno: *See—*
Lapp, Otto; Schmuck, Arno; Schmidt, Wolfgang; and Siegel, Jörg, 5,547,818, Cl. 430-505.000.

Schneider, Hans-Georg. Suction device for dental treatment units. 5,547,375, Cl. 433-96.000.

Schneider, Peter: *See—*
Koch, Ulf; and Schneider, Peter, 5,547,293, Cl. 400-120.170.

Schoeckert, Kurt P.; and Mortara, David W., to Mortara Instrument, Inc. Electrocardiograpic patient lead cable apparatus. 5,546,950, Cl. 128-696.000.

Scholl, Thomas: *See—*
Köhler, Burkhard; Ebert, Wolfgang; Horn, Klaus; Weider, Richard; and Scholl, Thomas, 5,548,011, Cl. 524-267.000.

Scholz, Wolfgang: *See—*
Weichert, Andreas; Kleemann, Heinz-Werner; Lang, Hans-Jochen; Schwark, Jan-Robert; Albus, Udo; and Scholz, Wolfgang, 5,547,953, Cl. 514-226.500.

Schornick, Gunnar: *See—*
Kroner, Matthias; Hartmann, Heinrich; Schornick, Gunnar; Baur, Richard; Potthoff-Karl, Birgit; Schwendemann, Volker; and Kud, Alexander, 5,548,036, Cl. 525-419.000.

Schramm, Günter; Kohl, Walter; Meyer, Friedhelm; Mittag, Rainer; and Suetzle, Helmut, to Robert Bosch GmbH. Regulatable alternating device with means for determining final temperature. 5,548,202, Cl. 322-33.000.

Schroeder, Paul; and Tobkin, Michael, to Cray Research, Inc. PCB tooling apparatus for forming patterns on both sides of a substrate. 5,548,372, Cl. 355-53.000.

Schueller, Kurt: *See—*
Heucher, Reimar; Wichelhaus, Juergen; Schueller, Kurt; Kopannia, Siegfried; and Rossini, Angela, 5,548,027, Cl. 525-179.000.

Schuerwegen, Ronald: *See—*
De Meutter, Stefaan; Van Goethem, Eugeen; Schuerwegen, Ronald; and Horsten, Bartholmeus, 5,547,914, Cl. 503-210.000.

Schuler, William H., to Broxon Marketing Group, Inc., The. Moisturizing soap bar. 5,547,602, Cl. 510-152.000.

Schuller International, Inc.: *See—*
Cusick, Michael J.; Weinstein, Michael A.; and Olds, Leonard E., 5,548,611, Cl. 373-18.000.

Schulte-Schlagbaum Aktiengesellschaft: *See—*
Eisermann, Armin, 5,546,778, Cl. 70-276.000.

Schwabe, Peter; Schlak, Ottfried; Winkel, Jens; Guggenberger, Rainer; and Gasser, Oswald, to Heraeus Kulzer GmbH & Co. KG. Provisional luting materials. 5,548,002, Cl. 523-118.000.

Schwan's Sales Enterprises, Inc.: *See—*
Ricke, Roy R.; and Beisner, Connie K., 5,547,695, Cl. 426-496.000.

Schwarcz, Robert: *See—*
Palfreyman, Michael G.; McDonald, Ian A.; Salituro, Francesco G.; and Schwarcz, Robert, 5,547,991, Cl. 514-564.000.

Schwark, Jan-Robert: *See—*
Weichert, Andreas; Kleemann, Heinz-Werner; Lang, Hans-Jochen; Schwark, Jan-Robert; Albus, Udo; and Scholz, Wolfgang, 5,547,953, Cl. 514-226.500.

Schwartz, by Nancy L., administratrix: *See—*
Schwartz, Edward M., deceased; and Schwartz, by Nancy L., administratrix, 5,547,253, Cl. 297-338.000.

Schwartz, Edward M., deceased; and Schwartz, by Nancy L., administratrix. Sit/stand adjustable, tower chair. 5,547,253, Cl. 297-338.000.

Schwartz, Jerome L.; Cabelli, Michael D.; Silvia, John C.; and Dahlin, Craig D. T., to Ohmicron Technology, Inc. Electrochemical sensor cartridge. 5,547,555, Cl. 204-418.000.

Schwartz, Ludwig: *See—*
Cordes, Hans; Krumm, Helmut; Schwartz, Ludwig; Kahn, Ilan; Cornils, Gerd; and Behrend, Ulrich, 5,547,359, Cl. 425-125.000.

Schwarzbach, Richard: *See—*
Zeimer, Ran C.; Jost, George J.; Bainbridge, Robert C.; Schwarzbach, Richard; Ware, Charles; and Zebrowski, Kathleen D., 5,546,941, Cl. 128-652.000.

Schwendemann, Volker: *See—*
Kroner, Matthias; Hartmann, Heinrich; Schornick, Gunnar; Baur, Richard; Potthoff-Karl, Birgit; Schwendemann, Volker; and Kud, Alexander, 5,548,036, Cl. 525-419.000.

Scott, Bradley: *See—*
Giles, Richard M.; Driscoll, Daniel J.; Ranalli, Eliseo; Tamkin, John M.; and Scott, Bradley, 5,548,394, Cl. 356-71.000.

Scott, Don: *See—*
Vaisanen, Seppo; Haarasilta, Sampsa; and Scott, Don, 5,547,690, Cl. 426-10.000.

Scott, Glenn: *See—*
Aziz, Ashar; Mulligan, Geoffrey; Patterson, Martin; and Scott, Glenn, 5,548,646, Cl. 380-23.000.

Scott, James D., II: *See—*
Clark, William T.; Scott, James D., II; Barton, Graham M.; Rice, Chris A.; and McLaughlin, Shawn M., 5,546,982, Cl. 137-557.000.

Scott, William: *See—*
Lapinski, Charles; Eckert, Charles; Skokowski, Richard; Cox, James; Scott, William; Chaleff, Edward; and Wagh, Meghanad D., 5,548,107, Cl. 235-462.000.
Wurz, Albert; Scott, William; and Skokowski, Richard, 5,547,034, Cl. 177-25.130.

Scozzafava, Michael; and Coltrain, Bradley K., to Eastman Kodak Company. Organic nonlinear optical article with improved transmission enhancement layer. 5,547,763, Cl. 428-447.000.

Seagate Technology, Inc.: *See—*
Pelstring, Robert M.; Kloeppel, Klaus D.; Dunfield, John C.; Andrews, Michael K.; and Jue, Clifford T., 5,548,458, Cl. 360-99.080.

Sebastian, Lothar: *See—*
Gerhardt, Klaus; Sebastian, Lothar; and Weiss, Horst, 5,546,857, Cl. 100-93.00P.

Seber, Brett P.; and Helton, Roy L., Jr., to Buck Knives, Inc. Knife with lockable blade. 5,546,662, Cl. 30-161.000.

Seboldt, David A. Accessory vent duct outlet protector auxiliary. 5,547,422, Cl. 454-359.000.

Secom Corporation Limited: *See—*
Takayama, Masato; and Amari, Yasufumi, 5,548,815, Cl. 455-41.000.

Sedov, Igor I.: *See—*
Zege, Sergei O.; Zege, Irina A.; Antonov, Dmitry V.; Sedov, Igor I.; Makovsky, Lev V.; Pokladok, Igor A.; and Mikhailov, Arkady J., 5,547,316, Cl. 405-267.000.

Seed, Brian: *See—*
Seed, John; and Seed, Brian, 5,547,660, Cl. 424-61.000.

Seed, John; and Seed, Brian, to Advanced Genetic Technologies Corporation. Nail lacquer composition containing poly-hydroxystyrene. 5,547,660, Cl. 424-61.000.

Seeger, Walter: *See—*
Häfele, Edelbert; and Seeger, Walter, 5,546,787, Cl. 73-23.310.

Sega Enterprises, Ltd.: *See—*
Yamaguchi, Toshiya, 5,547,383, Cl. 434-62.000.

Segawa, Reiji; and Nagahisa, Tatsuhiko, to Matsushita Electric Industrial Co., Ltd. Tri-state output buffer circuit. 5,548,229, Cl. 326-57.000.

Segui, Prudimar S.: *See—*
Evans, Ronald M.; Ong, Estelita S.; Segui, Prudimar S.; Thompson, Catherine C.; Umesono, Kazuhiko; and Giguere, Vincent, 5,548,063, Cl. 530-350.000.

Seguier, Stéphane: *See—*
Tournier, Gilles; and Seguier, Stéphane, 5,546,653, Cl. 29-751.000.

Sehgal, Surendra N.: *See—*
Armstrong, Jay J.; and Sehgal, Surendra N., 5,547,959, Cl. 514-291.000.

Sehier, Philippe R.; and Le Pape, Yannick L., to Alcatel Telspace. Device for detecting BPSK modulated singular words suitable for a TDMA analog modem and detection method used therein. 5,548,618, Cl. 375-343.000.

Seibel, Edward: *See—*

VOI
1189
AG
19 96
UMI

Coombs, Peter M.; Thogersen, Klaus; and Seibel, Edward, 5,547,184, Cl. 271-297.000.
Seikagaku Kogyo Kabushiki Kaisha: *See*—
Kusumoto, Shoichi; Fukase, Koichi; and Hase, Sumihiro, 5,548,077, Cl. 536-55.300.
Seiko Epson Corporation: *See*—
Arikawa, Yasuo; and Miyazawa, Eiichi, 5,546,810, Cl. 73-702.000.
Kubota, Shinji; and Nasu, Hiroaki, 5,548,696, Cl. 395-135.000.
Nakayama, Ichirou; and Ookawa, Masami, 5,547,294, Cl. 400-145.000.
Okazawa, Noriaki; Naka, Takahiro; and Yasukawa, Shinji, 5,548,314, Cl. 347-71.000.
Tsunoda, Takeo; Aizawa, Hitomi; and Hama, Yuji, 5,548,765, Cl. 395-750.000.
Seiko Instruments Inc.: *See*—
Shimizu, Nobuhiro; Chiba, Norio; and Yabe, Satoru, 5,548,130, Cl. 257-31.000.
Seikoh Giken Co., Ltd.: *See*—
Takahashi, Mitsuo, 5,547,418, Cl. 451-278.000.
Seikosha Co., Ltd.: *See*—
Harada, Hiroyuki, 5,547,292, Cl. 400-58.000.
Seile, John A. Flexible hose joining tool. 5,546,835, Cl. 81-426.500.
Seiler, Friedrich-Robert; Kurrle, Roland; and Langner, Klaus-Dieter, to Behringwerke Aktiengesellschaft. Composition containing the P40 subunit of interleukin-12. 5,547,852, Cl. 435-29.000.
Seino, Taisaku: *See*—
Sato, Kazutaka; Watanabe, Michihiro; Aoyagi, Masahisa; Seino, Taisaku; Ohki, Katsuo; Fukuda, Hiromitsu; Kawase, Hideyuki; Oga, Kimio; Shimizu, Akira; Narui, Youichi; Suzuki, Tsuguo; Otsuka, Yasuo; and Konno, Kazutoshi, 5,548,411, Cl. 358-400.000.
Seip, Detlev: *See*—
Maerz, Karin; Matz, Volker; Seip, Detlev; and Platzer, Stephen J. W., 5,547,811, Cl. 430-257.000.
Seiwa, Yoshito; Kitano, Toshiaki; Kohno deceased, Yasutaka (by Yoko Kohno Legal Representor), to Mitsubishi Denki Kabushiki Kaisha. Light ozone asher, light ashing method, and manufacturing method of semiconductor device. 5,547,642, Cl. 422-186.300.
Sekimoto, Takashi; Endo, Yoichi; Yamazaki, Hirohiko; Yamazaki, Masahiko; Ohtani, Yutaka; Iguchi, Takeyoshi; Matsumoto, Kenji; Yamazaki, Hiroyuki; Takimura, Ryo; and Tsuda, Takao, to Konica Corporation. Facsimile apparatus including a supporting frame member and image holding member and image holding member formed as a detachable unit. 5,548,417, Cl. 385-474.000.
Sekimura, Masayuki: *See*—
Omura, Ichiro; Nakagawa, Akio; Sakai, Tadashi; Sekimura, Masayuki; and Funaki, Hideyuki, 5,548,150, Cl. 257-349.000.
Sekimura, Nobuyuki: *See*—
Takao, Hideaki; Murata, Tatsuo; Kanbe, Junichiro; Tamura, Miki; Kamio, Masaru; Sekimura, Nobuyuki; and Kikuchi, Yoshiki, 5,548,424, Cl. 359-68.000.
Sekine, Hiroshi; Sasuga, Kazuyasu; Taniuchi, Kazuman; Iwamoto, Yasuhiko; Terada, Yoshihiro; and Endoh, Kiyomasa, to Fuji Xerox Co., Ltd. Multi-color marker editing system. 5,548,663, Cl. 382-164.000.
Sekisui Chemical Co., Ltd.: *See*—
Suzuki, Tatsuo; Tanaka, Susumu; and Ueyama, Takashi, 5,547,798, Cl. 430-109.000.
Suzuki, Tatsuo; and Masaoka, Tsunehiro, 5,547,801, Cl. 430-115.000.
Sekita, Masumi: *See*—
Watanabe, Kazuhide; Takada, Kimiharu; Sekita, Masumi; Ito, Takahide; and Tani, Kazuya, 5,547,355, Cl. 418-55.500.
Sekiya, Tsuneo: *See*—
Ohta, Masashi; Kobayashi, Hiroshi; Sekiya, Tsuneo; Hamada, Toshimichi; Fukuda, Kyoko; and Iijima, Koji, 5,548,409, Cl. 358-335.000.
Selke, Reimund: *See*—
Düsterhus, Richard; Petermann, Udo; Selke, Reimund; and Flügge, Ruprecht, 5,547,299, Cl. 400-708.000.
Selker, Edwin J.; Smith, Barton A.; and Kamentser, Boris, to International Business Machines Corporation. Force transducer with screen printed strain gauges. 5,548,529, Cl. 364-508.000.
Selle, Stanley J.; Hajicek, Douglas R.; Mann, Michael D.; and Grewal, Nanak S., to Energy and Environmental Research Center Foundation. Controlled spontaneous reactor system. 5,546,875, Cl. 110-342.000.
Sellmeir, Martin: *See*—
Meier, Herbert; and Sellmeir, Martin, 5,548,291, Cl. 342-51.000.
Selsted, Michael E., to University of California, The Regents of the. Broad spectrum antimicrobial compounds and methods of use. 5,547,939, Cl. 514-14.000.
Selva, Enrico; and Tavecchia, Paolo, to Gruppo Lepetit SpA. Antibiotic GE 2270 factors A_1, A_2, A_3 and H. 5,547,666, Cl. 424-123.000.
Sendelweck, Gene K.: *See*—
Klink, Kristopher A.; and Sendelweck, Gene K., 5,548,341, Cl. 348-565.000.
Sengoku, Koji: *See*—
Nakatani, Masayuki; Sengoku, Koji; and Fujita, Akifumi, 5,546,854, Cl. 99-470.000.
Senn, Robert H.; and Record, Loren E., to TRW Inc. Multiform crystal and apparatus for fabrication. 5,548,606, Cl. 372-39.000.
Sennott, James W.: *See*—
Gudat, Adam J.; Rao, Prithvi N.; Shaffer, Gary K.; Shi, Wenfan; Shin, Dong H.; Sennott, James W.; Whittaker, William L.; Kleimenhagen, Karl W.; West, Jay H.; Clow, Richard G.; Wu, Baoxin; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,548,516, Cl. 364-443.000.
Seo, Yosuke: *See*—
Kawakubo, Youichi; Kawamura, Yoshio; and Seo, Yosuke, 5,548,454, Cl. 360-72.100.
Sepracor, Inc.: *See*—
Barberich, Timothy J.; and Young, James W., 5,547,994, Cl. 514-649.000.
Sequenom, Inc.: *See*—
Köster, Hubert, 5,547,835, Cl. 435-6.000.
Sermatech International, Inc.: *See*—
Meetu, Mehar C.; Jones, Alan T.; and McMordie, Bruce G., 5,547,770, Cl. 428-678.000.
Serpelloni, Michel: *See*—
Ribadeau-Dumas, Guillaume; Bouvier, Frédéric; and Serpelloni, Michel, 5,547,689, Cl. 426-3.000.
Servex B.V.: *See*—
Drenthen, Jan G., 5,546,812, Cl. 73-861.290.
Seshadri, Praveen: *See*—
Leung, Ting Y.; Pirahesh, Mir H.; and Seshadri, Praveen, 5,548,755, Cl. 395-600.000.
Sethna, Rustam H.; and Athalye, Atul M., to BOC Group, Inc., The. Gas injection apparatus and method. 5,547,347, Cl. 417-250.000.
Severinsson, Krister: *See*—
Sörensson, Olle; and Severinsson, Krister, 5,547,603, Cl. 510-509.000.
Sezai, Toshihiro, to National Space Development Agency of Japan. Method of designing transmission power in synthetic aperture radar. 5,548,290, Cl. 342-25.000.
SGS-Thompson Microelectronics, S.r.l.: *See*—
Pascucci, Luigi; Padoan, Silvia; and Maccarrone, Marco, 5,548,554, Cl. 365-200.000.
SGS-Thomsom Microelectronics, Inc.: *See*—
Ma, Herman H., 5,548,622, Cl. 375-354.000.
SGS-Thomson Microelectronics, Inc.: *See*—
McClure, David C., 5,548,241, Cl. 327-538.000.
Miller, Robert O., 5,548,154, Cl. 257-506.000.
SGS-Thomson Microelectronics, S.A.: *See*—
Tailliet, François, 5,548,134, Cl. 257-173.000.
Shabeer, Mohammed, to British Telecommunications public limited company. Optical processing system. 5,548,531, Cl. 364-514.00R.
Shadle, Barry L.: *See*—
Fortunato, Fred A.; Shadle, Barry L.; and Franz, Helmut, 5,547,129, Cl. 239-132.300.
Shaffer, Gary K.: *See*—
Gudat, Adam J.; Rao, Prithvi N.; Shaffer, Gary K.; Shi, Wenfan; Shin, Dong H.; Sennott, James W.; Whittaker, William L.; Kleimenhagen, Karl W.; West, Jay H.; Clow, Richard G.; Wu, Baoxin; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,548,516, Cl. 364-443.000.
Shah, Ashok H., to Du Pont de Nemours, E. I., and Company. Process of making and collecting continuous fibers in the form of a rod-shaped batt. 5,547,624, Cl. 264-103.000.
Shah, Harshad M.: *See*—
Clark, Elke M. A.; Marlin, Lawrence; Fan, You-Ling; and Shah, Harshad M., 5,547,681, Cl. 424-449.000.
Shakuda, Yukio, to Rohm Co., Ltd. Semiconductor light emitting device and its manufacturing method. 5,548,127, Cl. 257-13.000.
Shambayati, Ali; Ehsani, Mohammad R.; and Ehsani, Ali R. Alarm system for enclosing and protecting an area. 5,548,275, Cl. 340-573.000.
Shang, Clifford C.: *See*—
Caplan, Malcolm; and Shang, Clifford C., 5,548,257, Cl. 333-252.000.
Shangler, Anthony: *See*—
Chappell, John W.; Shangler, Anthony; Chappell, Dennis L., 5,547,208, Cl. 180-281.000.
Shannon, Terrence M.: *See*—
Poppenga, Burton H.; Shannon, Terrence M.; and Campbell, Russell, 5,548,689, Cl. 395-109.000.
Shapiro, Ted S. Motorized spinning illusion device. 5,547,718, Cl. 428-13.000.
Sharma, Ashok K., to Rohm and Haas Company. N-Acetonyl-substituted-amides. 5,547,984, Cl. 514-541.000.
Sharma, Brij N.: *See*—
Swarup, Shanti; Sharma, Brij N.; and Johnston, B. Keith, 5,547,757, Cl. 428-413.000.
Sharp, Brenner M.: *See*—
Merlin, Jean-Paul D.; Sharp, Brenner M.; Farrington, Eric K.; and Johnston, Vonda K., 5,546,772, Cl. 68-24.000.
Sharp, Bruce R. Fittings for use with double wall pipeline systems having support fins. 5,547,231, Cl. 285-133.100.
Sharp Kabushiki Kaisha: *See*—
Adachi, Masahiro; and Shimada, Shinji, 5,548,425, Cl. 359-69.000.
Hirajima, Hiroshige; Yamaguchi, Takeshi; and Fuji, Hiroshi, 5,548,570, Cl. 369-59.000.
Kiyohara, Toshimi, 5,548,740, Cl. 395-427.000.

May, Paul, 5,548,427, Cl. 359-73.000.
Mizuguchi, Yoshihiro; and Hamada, Hiroshi, 5,548,349, Cl. 348-766.000.
Shimonaka, Atsushi; Taneya, Mototaka; Kawanishi, Hidenori; and Morioka, Tatsuya, 5,548,434, Cl. 359-161.000.
Takai, Yasuhiro; Ueda, Atsushi; Tanaka, Hirokazu; and Yamasa, Hideo, 5,548,385, Cl. 355-260.000.
Ushikubo, Maho; and Itoh, Yasuyuki, 5,548,475, Cl. 361-321.400.
Sharp, Kenneth G.: *See*—
Michalczyk, Michael J.; and Sharp, Kenneth G., 5,548,051, Cl. 528-15.000.
Sharples, Stephen A.: *See*—
Dukatz, Matthew E.; Harland, Charles E.; Kresky, Fred C.; McCarthy, Jay P.; and Sharples, Stephen A., 5,547,242, Cl. 296-65.100.
Shartle, Robert J.: *See*—
Baer, Thomas M.; Dietz, Louis J.; Dubrow, Robert S.; Hayter, Paul G.; Hodges, Michael; Manian, Bala S.; and Shartle, Robert J., 5,547,849, Cl. 435-7.240.
Shaw, Jane M.: *See*—
Afzali-Ardakani, Ali; Gotro, Jeffrey T.; Hedrick, Jeffrey C.; Papathomas, Konstantinos; Patel, Niranjan M.; Shaw, Jane M.; and Viehbeck, Alfred, 5,548,034, Cl. 525-390.000.
Shefet, Sarid M., to North Carolina State University. Hydrostatic heating apparatus. 5,546,849, Cl. 99-330.000.
Shekhawat, Sampat; Tumpey, John J.; and Widdis, James C., to AlliedSignal Inc. Aircraft engine electric start system without a separate exciter field inverter. 5,546,742, Cl. 60-39.142.
Shekita, Eugene J.: *See*—
Pirahesh, Mir H.; Leung, Ting Y.; Lohman, Guy M.; Shekita, Eugene J.; and Simmen, David E., 5,548,754, Cl. 395-600.000.
Pirahesh, Mir H.; Leung, Ting Y.; Lohman, Guy M.; Shekita, Eugene J.; and Simmen, David E., 5,548,758, Cl. 395-600.000.
Shell Oil Company: *See*—
Bening, Robert C., 5,548,025, Cl. 515-105.000.
Hoxmeier, Ronald J., 5,548,030, Cl. 525-314.000.
Shepard, Thomas A.: *See*—
Vogler, Erwin A.; Shepard, Thomas A.; and Graper, Jane C., 5,547,577, Cl. 210-511.000.
Shepherd, Fred R.: *See*—
Riddell, Donnie L.; and Shepherd, Fred R., 5,548,810, Cl. 455-99.000.
Shepherd, Samuel L.; and Wachinski, Anthony M. Process for the removal of contaminants from a fluid stream. 5,547,585, Cl. 210-673.000.
Sherman, Adam: *See*—
Neveras, George J.; McKinney, James C.; Sherman, Adam; Lohrman, Richard L.; and Ziegenhorn, David, 5,547,091, Cl. 215-237.000.
Sherwood, William L. Rotary wheel casting machine. 5,547,013, Cl. 164-416.000.
Shi, Jie: *See*—
Fauteux, Denis G.; Van Buren, Martin; and Shi, Jie, 5,547,778, Cl. 429-81.000.
Shi, Wenfan: *See*—
Gudat, Adam J.; Rao, Prithvi N.; Shaffer, Gary K.; Shi, Wenfan; Shin, Dong H.; Sennott, James W.; Whittaker, William L.; Kleimenhagen, Karl W.; West, Jay H.; Clow, Richard G.; Wu, Baoxin; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,548,516, Cl. 364-443.000.
Shiba, Kazuyoshi: *See*—
Kuroda, Kenichi; Shiba, Kazuyoshi; and Matsuo, Akinori, 5,548,146, Cl. 257-321.000.
Shiba, Takeshi: *See*—
Tanahashi, Masao; Shiba, Takeshi; and Ikuta, Toshio, 5,546,659, Cl. 30-43.920.
Shibahara, Seiji: *See*—
Christensen, Burton G.; Egawa, Takashi; Ichimaru, Yasuyuki; Ohuchi, Shokichi; Okonogi, Tsuneo; Patchett, Arthur A.; Shibahara, Seiji; and Tsutsumni, Seiji, 5,547,978, Cl. 514-422.000.
Shibata, Masahiro: *See*—
Goto, Kohei; Hattori, Iwakazu; Ogasahara, Shoji; Shibata, Masahiro; Michino, Yoshiyuki; Soga, Kazuo; and Shiono, Takeshi, 5,548,045, Cl. 526-161.000.
Shibazaki, Kiyoshige; and Suzuki, Kenji, to Nikon Corporation. Color mixing prevention and color balance setting device and method for a field-sequential color television camera. 5,548,333, Cl. 348-270.000.
Shibuya, Hiromitsu: *See*—
Kikuchi, Kazuo; Umino, Hiroshi; Shibuya, Hiromitsu; Makino, Masahito; Sakakura, Yasuyuki; and Takahashi, Kiyoshi, 5,546,763, Cl. 62-532.000.
Shibuya, Kazuo: *See*—
Okada, Tsuyoshi; and Shibuya, Kazuo, 5,548,575, Cl. 369-219.000.
Shieh, Chan-Long: *See*—
Grodzinski, Piotr; Lee, Hsing-Chung; and Shieh, Chan-Long, 5,547,898, Cl. 437-129.000.
Shieh, Pi-Chen: *See*—
Wang, Jau-Jey; Shieh, Pi-Chen; and Tseng, Pin-Nan, 5,547,881, Cl. 437-24.000.
Shigematsu, Takashi; Yanagawa, Hisaharu; Shimizu, Takeo; Nakamura, Shiro; Fukasawa, Kazuya; and Watanabe, Tomohiro, to Furukawa Electric Co., Ltd., The. Multifiber connector, a method of manufacturing the same, and a construction for connecting the multifiber connector to an optical device. 5,548,675, Cl. 385-80.000.
Shikata, Kunihide: *See*—
Furuzawa, Akira; Sata, Akifumi; Kubota, Takeshi; and Shikata, Kunihide, 5,547,908, Cl. 501-136.000.
Shilman, Vitaly H.: *See*—
Sprague, David L.; Harney, Kevin; Kowashi, Eiichi; Keith, Michael; Simon, Allen H.; Papadopoulos, Gregory M.; Hays, Walter P.; Salem, George F.; Shiue, Shih-Wei; Bertapelli, Anthony P.; and Shilman, Vitaly H., 5,548,793, Cl. 395-860.000.
Shim, Sang B. Ball cleaning device. 5,546,629, Cl. 15-302.000.
Shimada, Shinji: *See*—
Adachi, Masahiro; and Shimada, Shinji, 5,548,425, Cl. 359-69.000.
Shimada, Tomoyuki; Sasaki, Masaomi; and Tanaka, Chiaki, to Ricoh Company, Ltd. Electrophotographic photoconductor, carbonate compound for use in the same, and intermediate compound for producing the carbonate compound. 5,547,792, Cl. 430-59.000.
Shimada, Yasuhiro: *See*—
Ito, Takayuki; Shimada, Yasuhiro; Matsuoka, Koushin; and Yoshioka, Yasuhiro, 5,547,826, Cl. 430-558.000.
Shimada, Yasuo, to Brother Kogyo Kabushiki Kaisha. Printing apparatus. 5,548,690, Cl. 395-112.000.
Shimada, Yoshikazu: *See*—
Suzuki, Tamotsu; and Shimada, Yoshikazu, 5,548,829, Cl. 455-180.300.
Shimadzu Corporation: *See*—
Kimura, Yutaro; Ikeshima, Tetsuhiko; Tonami, Hiromichi; Konishi, Ikuo; Horikawa, Hiroshi; Daikoku, Akihiro; Sakabe, Shigekazu; Inoue, Masao; and Yamasaki, Akinori, 5,548,629, Cl. 378-134.000.
Kohno, Satoru; Iijima, Naoto; and Ishikawa, Akihiro, 5,548,215, Cl. 324-309.000.
Shimamoto, Haruo: *See*—
Hatauchi, Kazushi; and Shimamoto, Haruo, 5,548,482, Cl. 361-720.000.
Shimamoto, Noboru: *See*—
Satoh, Makoto; Okami, Takehide; and Shimamoto, Noboru, 5,547,742, Cl. 428-215.000.
Shimamune, Masayuki; Enomoto, Takashi; Murata, Tatsuo; and Mitsui, Mutsuo, to Canon Kabushiki Kaisha. Apparatus for vacuum injecting liquid crystal. 5,546,998, Cl. 141-82.000.
Shimano, Inc.: *See*—
Kawabe, Yuzo; and Sakaguchi, Noboru, 5,547,140, Cl. 242-247.000.
Shimanuki, Machio, to Kabushiki Kaisha Toshiba. Assembly method of carriage assembly of magnetic disk drive. 5,546,649, Cl. 29-603.030.
Shimayama, Hitoshi: *See*—
Kogure, Mitsuhiro; Nagashima, Shinichi; Wakabayashi, Kazuhisa; Enkaku, Shigeyuki; Shimayama, Hitoshi; Kimura, Minoru; Shimoyama, Shuji; and Yokoo, Tsugio, 5,548,260, Cl. 335-126.000.
Shimizu, Akira: *See*—
Sato, Kazutaka; Watanabe, Michihiro; Aoyagi, Masahisa; Seino, Taisaku; Ohki, Katsuo; Fukuda, Hiromitsu; Kawase, Hideyuki; Oga, Kimio; Shimizu, Akira; Narui, Youichi; Suzuki, Tsuguo; Otsuka, Yasuo; and Konno, Kazutoshi, 5,548,411, Cl. 358-400.000.
Shimizu, Hideki: *See*—
Tani, Makoto; Hayase, Tooru; Shimizu, Hideki; and Matsuda, Kazuyuki, 5,547,921, Cl. 505-124.000.
Shimizu, Izuru; Fukanuma, Tetsuhiko; Yamaguchi, Tetsuya; Goto, Kunifumi; Hisanaga, Shigeru; and Egami, Hirotaka, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho; and Nippondenso Co., Ltd. Scroll compressor balancing. 5,547,354, Cl. 418-55.500.
Shimizu, Kaoru: *See*—
Matsuda, Yutaka; and Shimizu, Kaoru, 5,547,428, Cl. 474-51.000.
Shimizu, Katsuya: *See*—
Ito, Hidenobu; Shimizu, Katsuya; Hashikawa, Kenzo; and Yamakawa, Yasuhiro, 5,548,162, Cl. 307-10.100.
Shimizu, Nobuhiro; Chiba, Norio; and Yabe, Satoru, to Seiko Instruments Inc. DC superconducting quantum interference device with shield layer. 5,548,130, Cl. 257-31.000.
Shimizu, Nobuyuki: *See*—
Uehara, Yumito; Enokido, Nobuo; Fujioka, Kiyotoshi; Shimizu, Nobuyuki; and Ueda, Motonori, 5,547,722, Cl. 428-35.700.
Shimizu, Susumu: *See*—
Takai, Yasuyuki; Yamada, Tetsuo; Kawamura, Toshifumi; Shimizu, Susumu; and Yamasaki, Haruki, 5,547,363, Cl. 425-376.100.
Shimizu, Takaaki: *See*—
Kinsho, Takeshi; Kaneko, Tatsushi; Shimizu, Takaaki; Ogihara, Tsutomu; Saito, Ryuichi; and Kurihara, Hideshi, 5,547,606, Cl. 252-299.610.
Shimizu, Takeo: *See*—
Shigematsu, Takashi; Yanagawa, Hisaharu; Shimizu, Takeo; Nakamura, Shiro; Fukasawa, Kazuya; and Watanabe, Tomohiro, 5,548,675, Cl. 385-80.000.
Shimizu, Toshihide; and Watanabe, Mikio, to Shin-Etsu Chemical Co., Ltd. Polymer scale deposition preventive agent. 5,548,039, Cl. 526-62.000.
Shimizume, Kazutoshi; Akita, Mamoru; and Tsuboi, Yoshinori, to Sony Corporation. Tracking traverse control circuit for head unit of disc player. 5,548,569, Cl. 369-44.280.
Shimokoriyama, Makoto: *See*—
Hieda, Teruo; and Shimokoriyama, Makoto, 5,548,330, Cl. 348-234.000.
Shimomura, Yoshiki: *See*—

Umeda, Yasushi; Tomiyama, Tetsuo; Yoshikawa, Hiroyuki; Sakao, Tomohiko; Shimomura, Yoshiki; and Tanigawa, Sadao, 5,548,682, Cl. 395-10.000.

Shimonaka, Atsushi; Taneya, Mototaka; Kawanishi, Hidenori; and Morioka, Tatsuya, to Sharp Kabushiki Kaisha. Spatial light transmission apparatus. 5,548,434, Cl. 359-161.000.

Shimoyama, Hajime: *See*—
Watanabe, Masatsugu; Nagano, Yasuhisa; Shimoyama, Hajime; and Osaka, Tomohiro, 5,547,488, Cl. 75-335.000.

Shimoyama, Shuji: *See*—
Kogure, Mitsuhiro; Nagashima, Shinichi; Wakabayashi, Kazuhisa; Enkaku, Shigeyuki; Shimayama, Hitoshi; Kimura, Minoru; Shimoyama, Shuji; and Yokoo, Tsugio, 5,548,260, Cl. 335-126.000.

Shimoyoshi, Osamu; Akagiri, Kenzo; Suzuki, Hiroshi; and Mitsuno, Makoto, to Sony Corporation. Apparatus for high-speed recording compressed digital audio data with two dimensional blocks and its compressing parameters. 5,548,574, Cl. 369-124.000.

Shimura, Kenichi: *See*—
Onishi, Makoto; Ohwada, Takashi; Tatebe, Ken; Ohmura, Yoshitaka; and Shimura, Kenichi, 5,547,576, Cl. 210-500.370.

Shin, Chul W.: *See*—
Hirschman, Richard; and Shin, Chul W., 5,548,351, Cl. 351-47.000.

Shin, Dong H.: *See*—
Gudat, Adam J.; Rao, Prithvi N.; Shaffer, Gary K.; Shi, Wenfan; Shin, Dong H.; Sennott, James W.; Whittaker, William L.; Kleimenhagen, Karl W.; West, Jay H.; Clow, Richard G.; Wu, Baoxin; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,548,516, Cl. 364-443.000.

Shin-Etsu Chemical Co., Ltd.: *See*—
Hirabayashi, Satao; and Nakamura, Tsutomu, 5,548,006, Cl. 524-82.000.
Kinsho, Takeshi; Kaneko, Tatsushi; Shimizu, Takaaki; Ogihara, Tsutomu; Saito, Ryuichi; and Kurihara, Hideshi, 5,547,606, Cl. 252-299.610.
Satoh, Makoto; Okami, Takehide; and Shimamoto, Noboru, 5,547,742, Cl. 428-215.000.
Shimizu, Toshihide; and Watanabe, Mikio, 5,548,039, Cl. 526-62.000.

Shin-Etsu Handotai Co., Ltd.: *See*—
Hasegawa, Fumihiko; Ohtani, Tatsuo; and Kuroda, Yasuyoshi, 5,547,415, Cl. 451-44.000.
Kudo, Hideo; Uchiyama, Isao; Kimura, Yoshiharu; Suzuki, Morie; and Tanakajima, Takashi, 5,547,515, Cl. 134-21.000.

Shin, Jong-Dug; Kang, Cheul-Shin; and Lee, El-Hang, to Electronics & Telecommunications Research Inst. Bidirectional multi-channel optical ring network using WDM techniques. 5,548,431, Cl. 359-119.000.

Shinguryo, Satoshi: *See*—
Kuramoto, Shinichi; Takahashi, Sadao; Kimura, Yoshiyuki; Ando, Kazuhiro; Saito, Tadashi; Asaba, Youichi; Tanikawa, Kiyoshi; Miyashita, Yoshiaki; and Shinguryo, Satoshi, 5,547,793, Cl. 430-97.000.

Shinkai, Motoshi: *See*—
Inagaki, Yoshio; Shinkai, Motoshi; Tsuno, Masahide; and Nagatani, Akihiro, 5,547,489, Cl. 75-512.000.

Shinko Electric Industries Co., Ltd.: *See*—
Kobayashi, Tsuyoshi; and Saitoh, Misa, 5,547,556, Cl. 204-426.000.

Shinoki, Hiroshi; Hiraoka, Toshikage; and Ogawa, Masashi, to Fuji Photo Film Co., Ltd. Immunoassay element containing a pulverized water-insoluble polysaccharide and process for immunoassay. 5,547,848, Cl. 435-7.900.

Shinonaga, Hideyuki: *See*—
Araki, Noriyuki; Shinonaga, Hideyuki; and Itoh, Yasuhiko, 5,548,801, Cl. 455-13.100.

Shinya, Mikio, to Nippon Telegraph and Telephone Corporation. Anti-aliasing method for animation. 5,548,693, Cl. 395-152.000.

Shiokawa, Kozo: *See*—
Krüger, Bernd-Wieland; Maurer, Fritz; Methfessel, Christoph; Tietjen, Klaus; Maelicke, Alfred; Schmidt, Bernard; and Shiokawa, Kozo, 5,547,965, Cl. 514-342.000.

Shiomura, Tetsunosuke: *See*—
Asanuma, Tadashi; Kimura, Shigeru; Uchikawa, Nobutaka; and Shiomura, Tetsunosuke, 5,548,007, Cl. 524-99.000.
Asanuma, Tadashi; Kimura, Shigeru; Uchikawa, Nobutaka; and Shiomura, Tetsunosuke, 5,548,008, Cl. 524-99.000.

Shiono, Takeshi: *See*—
Goto, Kohei; Hattori, Iwakazu; Ogasahara, Shoji; Shibata, Masahiro; Michino, Yoshiyuki; Soga, Kazuo; and Shiono, Takeshi, 5,548,045, Cl. 526-161.000.

Shionogi Seiyaku Kabushiki Kaisha: *See*—
Hayase, Yoshio; Kataoka, Takahiro; Takenaka, Hideyuki; Ichinari, Mitsuhiro; Masuko, Michio; Takahashi, Toshio; and Tanimoto, Norihiko, 5,548,078, Cl. 544-298.000.

Shiota, Seijiro: *See*—
Ito, Tatsuro; Oae, Keiichi; and Shiota, Seijiro, 5,547,255, Cl. 297-367.000.

Shipston, Adele C.: *See*—
Mitchell, Nancy G.; Langan, Joseph W.; Shipston, Adele C.; Russ, Timothy J.; and Smith, Douglas M., 5,547,738, Cl. 428-195.000.

Shirahata, Ryuji: *See*—
Nagashima, Yasuo; and Shirahata, Ryuji, 5,547,704, Cl. 427-130.000.

Shiraishi, Nobuo: *See*—
Koshijima, Tetsuo; Shiraishi, Nobuo; Takahashi, Tadashi; Hiraoka, Toshiharu; and Ueda, Masami, 5,548,069, Cl. 530-500.000.

Shiraiwa, Yasuo: *See*—
Kudo, Toshio; Nagai, Masaaki; and Shiraiwa, Yasuo, 5,546,790, Cl. 73-40.500.00R.

Shirakawa, Shingo; and Watahiki, Satoshi, to Hitachi, Ltd. Surge arrester using zinc oxide elements installed in parallel, and method of forming the surge arrester. 5,548,468, Cl. 361-126.000.

Shirk, Christopher C.: *See*—
Kemp, Daniel N.; Mitin, Timothy W.; Rohman, Kenneth J.; Shirk, Christopher C.; and Wieck, Ronald W., 5,547,000, Cl. 141-104.000.

Shiue, Shih-Wei: *See*—
Sprague, David L.; Harney, Kevin; Kowashi, Eiichi; Keith, Michael; Simon, Allen H.; Papadopoulos, Gregory M.; Hays, Walter P.; Salem, George F.; Shiue, Shih-Wei; Bertapelli, Anthony P.; and Shilman, Vitaly H., 5,548,793, Cl. 395-860.000.

Shoji, Takashi, to Fuji Photo Film Co., Ltd. Radiation detector. 5,548,122, Cl. 250-370.090.

Shon, Kyung-cheon: *See*—
Choi, Kwi-seok; Choi, Jong-seo; Shon, Kyung-cheon; Ju, Gyu-nam; and Lee, Sang-won, 5,548,184, Cl. 313-346.00R.

Shono, Keiji: *See*—
Matsumoto, Koji; Tanaka, Tsutomu; and Shono, Keiji, 5,548,576, Cl. 369-275.300.

Shoup, Robert D.: *See*—
Chalk, Julie B.; Rowe, Jonathan C.; Schermerhorn, Paul M.; and Shoup, Robert D., 5,547,482, Cl. 65-17.200.

Showa Aluminum Corporation: *See*—
Iwai, Ichiro, 5,547,517, Cl. 148-24.000.

Showers, Nancy: *See*—
Tucker, Pamela S.; and Showers, Nancy, 5,547,325, Cl. 411-442.000.

Shpantzer, Isaac; Dunn, J. Eric; and Meiman, Yehuda, to Racotek, Inc. Data communication system using spectral overlay. 5,548,805, Cl. 455-33.100.

Shrader, Theodore J. L.: *See*—
Li, Shih-Gong; and Shrader, Theodore J. L., 5,548,702, Cl. 395-155.000.

Shriver, Stephen A. Apparatus and method of imaging written information. 5,548,092, Cl. 178-18.000.

Shultz, Richard R., to Glacier RPB Inc. Vibration damping arrangement. 5,548,170, Cl. 310-90.500.

Shuttleworth, Leslie; Weidner, Charles H.; and Cunningham, Michael P., to Eastman Kodak Company. Optical recording elements having recording layers containing cationic azo dyes. 5,547,727, Cl. 428-64.100.

Sicking, Dean L.: *See*—
Mak, King K.; Bligh, Roger P.; Ross, Hayes E., Jr.; and Sicking, Dean L., 5,547,309, Cl. 404-6.000.

Siddoway, Mark A., to Tek-Kol. Pyrolysis process water utilization. 5,547,548, Cl. 201-29.000.

Sideman, Carl E.: *See*—
Remar, Joseph F.; and Sideman, Carl E., 5,548,003, Cl. 523-160.000.

Siecor Puerto Rico, Inc.: *See*—
Butler, Walter K.; Cote, Mark P.; Napiorkowski, John J.; Kroll, Thomas W.; Brower, Boyd G.; and Mickelson, N. Peter, 5,548,641, Cl. 379-399.000.

Siegel, Arnold B.: *See*—
Caldwell, Stephen P.; Harris Jr., Marvine; Matsakis, Demetrios J.; Minarik, Ronald W.; Schmidt, Kenneth M.; Weigand, Benjamin F.; Prill, Robert S.; and Siegel, Arnold B., 5,548,839, Cl. 455-313.000.

Siegel, Jörg: *See*—
Lapp, Otto; Schmuck, Arno; Schmidt, Wolfgang; and Siegel, Jörg, 5,547,818, Cl. 430-505.000.

Siegel, Matthew R.; and Ferrell, John I., to Microsoft Corporation. Method and system for determining software reliability. 5,548,718, Cl. 395-183.140.

Siegel, Paul H.: *See*—
Fredrickson, Lisa; Karabed, Razmik; Siegel, Paul H.; and Thapar, Hemant K., 5,548,600, Cl. 371-43.000.

Siegel, Richard W.: *See*—
Beck, Donald D.; and Siegel, Richard W., 5,547,649, Cl. 423-230.000.

Siegenthaler, Karl J., to Bridgestone Corporation. Metal forming module for a building drum. 5,547,538, Cl. 156-415.000.

Siemens Aktiengesellschaft: *See*—
Blondel, Erik; Verhulst, Frans; and Ulrich, Johann, 5,548,640, Cl. 379-242.000.
Boehnke, Gerd; Reuschel, Juergen; Mueller, Heinz-Dieter; and Klauker, Karl-Heinz, 5,548,644, Cl. 379-433.000.
Fork, Kurt; and Krutemeier, Frank, 5,547,337, Cl. 415-1.000.
Graf, Friedrich; and Brückner, Dieter, 5,547,434, Cl. 477-109.000.
Hell, Erich; and Fuchs, Manfred, 5,548,630, Cl. 378-137.000.
Südholt, Michael; Wier, Manfred; Krebs, Stephan; Bauer, Bernhard; and Reupke, Wolfgang, 5,546,916, Cl. 123-674.000.
Schmitz, Friedhelm, 5,547,769, Cl. 428-653.000.
Soldner, Richard, 5,546,945, Cl. 128-661.020.

Siemens Nixdorf Informationssysteme Aktiengesellschaft: *See*—
Brabetz, Berhard; and Wessely, Hermann, 5,548,487, Cl. 361-769.000.

Siemens Nixdorf Informationssysteme Aktiengesellschaft: *See*—
Düsterhus, Richard; Petermann, Udo; Selke, Reimund; and Flügge, Ruprecht, 5,547,299, Cl. 400-708.000.

Sierocuk, Thomas J.: *See*—
Hamblin, Steven W.; Witt, David A.; Sierocuk, Thomas J.; Nicola, Kirk M.; Otten, Matthew R.; and Berky, Craig B., 5,547,117, Cl. 227-175.200.

Siga, Masao; Kuriyama, Mitso; Mori, Takanobu; Fukui, Yutaka; and Ishizuka, Tatsuro, to Hitachi, Ltd. Steel rotor shafts of electric machines. 5,548,174, Cl. 310-261.000.

Sigma-Tau Industrie Farmaceutiche Riunite S.p.A.: *See*—
Tinti, Maria O.; Misiti, Domenico; and Cavazza, Claudio, 5,547,986, Cl. 514-547.000.

Siklosi, Michael P.; and Roetker, Timothy C., to Procter & Gamble Company, The. Dry cleaning process. 5,547,476, Cl. 8-142.000.

Silerman, Jules; and Bieman, Donald N., to Clorox Company, The. High fructose insecticide bait compositions. 5,547,955, Cl. 514-275.000.

Silicon Graphics, Inc.: *See*—
Hannah, Marc R.; and Nagy, Michael B., 5,548,709, Cl. 395-164.000.

Siliconix Incorporated: *See*—
Williams, Richard K.; Yilmaz, Hamza; Cornell, Michael E.; and Chen, Jun W., 5,547,880, Cl. 437-15.000.

Silvera, Rudolph. Versatile paint carrier with support baskets. 5,546,628, Cl. 15-257.060.

Silvia, John C.: *See*—
Schwartz, Jerome L.; Cabelli, Michael D.; Silvia, John C.; and Dahlin, Craig D. T., 5,547,555, Cl. 204-418.000.

Simatani, Tuyoshi: *See*—
Yamada, Tadayoshi; Tozuka, Masahiro; Goto, Katumi; Simatani, Tuyoshi; and Maeda, Yoshinobu, 5,548,350, Cl. 348-839.000.

Simmen, David E.: *See*—
Pirahesh, Mir H.; Leung, Ting Y.; Lohman, Guy M.; Shekita, Eugene J.; and Simmen, David E., 5,548,754, Cl. 395-600.000.
Pirahesh, Mir H.; Leung, Ting Y.; Lohman, Guy M.; Shekita, Eugene J.; and Simmen, David E., 5,548,758, Cl. 395-600.000.

Simmons, Mark A.; McGrath, Martin J.; and Thrasher, David L., to OkTrak Systems, Inc. Scrubber control system. 5,548,505, Cl. 364-130.000.

Simon, Allen H.: *See*—
Sprague, David L.; Harney, Kevin; Kowashi, Eiichi; Keith, Michael; Simon, Allen H.; Papadopoulos, Gregory M.; Hays, Walter P.; Salem, George F.; Shiue, Shih-Wei; Bertapelli, Anthony P.; and Shilman, Vitaly H., 5,548,793, Cl. 395-860.000.

Simon, Gabriel; Lee, William G.; and Parel, Jean-Marie A., to University of Miami. Instruments for use in performing gel injection adjustable keratoplasty. 5,547,468, Cl. 604-21.000.

Simon, Philip L.: *See*—
Christensen, Siegfried B., IV; Esser, Klaus M.; and Simon, Philip L., 5,547,979, Cl. 514-424.000.

Simon, Robert H. M.; and Farmer, Peter H., to Monsanto Company. Block-resistant partial polyvinyl butyval. 5,547,736, Cl. 428-143.000.

Simpson, R.: *See*—
Nice, Edouard C.; James, R.; Simpson, R.; Burgess, A. W.; and Whitehead, Robert H., 5,547,940, Cl. 514-21.000.

Sims, Joe W.: *See*—
Hawes, John M.; Sims, Joe W.; and Lee, Don, 5,546,643, Cl. 26-11.000.

Simuttis, Anold: *See*—
Bade, Karl H.; Gruber, Walter; and Simuttis, Anold, 5,547,174, Cl. 267-154.000.

Sinclair, Paul L., to Halliburton Company. Digital two frequency generator for use in borehole heterodyne measurement systems. 5,548,219, Cl. 324-338.000.

Sinco Engineering S.p.A.: *See*—
Ghisolfi, Guido; Giordano, Dario; and Boveri, Giuseppina, 5,547,652, Cl. 423-245.300.

Singh, Sanjiv J.: *See*—
Gudat, Adam J.; Rao, Prithvi N.; Shaffer, Gary K.; Shi, Wenfan; Shin, Dong H.; Sennott, James W.; Whittaker, William L.; Kleimenhagen, Karl W.; West, Jay H.; Clow, Richard G.; Wu, Baoxin; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,548,516, Cl. 364-443.000.

Singleton, Andy H.; Kendrick, Crystal L.; Riemer, Reinhold L., II; and Minga, Robin L., to Eastman Chemical Company. Low-irritation anesthetic and antiseptic mouth rinse. 5,547,657, Cl. 424-49.000.

SIP-Societa Italiana Per L'Esercizio Delle Telecomunicazioni P.A.: *See*—
Cellario, Luca, 5,548,680, Cl. 395-2.280.

Sitnik-Nieters, Theresa A.: *See*—
Cole, Herbert S., Jr.; and Sitnik-Nieters, Theresa A., 5,548,099, Cl. 219-121.690.

Skaritka, John R.: *See*—
Wernersbach, Arthur W., Jr.; Skaritka, John R.; Yager, Billy P.; Barrick, Rodney R.; and Ligier, John D., 5,547,532, Cl. 156-172.000.

Skees, Hugh B.: *See*—
Laurash, David F.; Huddleston, Joey V.; Konkol, Patrick A.; Hartke, Jeffery J.; and Skees, Hugh B., 5,547,227, Cl. 283-81.000.

Skelly, William G.: *See*—
Leneau, Harry; and Skelly, William G., 5,548,066, Cl. 530-390.500.

Skerry, Eric. Sediment relocation machine. 5,546,682, Cl. 37-322.000.

Skiver, Steven G.; and Leung, Mankong H., to Delco Electronics Corporation. Surface mounted gauge with illuminated pointer. 5,546,888, Cl. 116-286.000.

Skokowski, Richard: *See*—
Lapinski, Charles; Eckert, Charles; Skokowski, Richard; Cox, James; Scott, William; Chaleff, Edward; and Wagh, Meghanad D., 5,548,107, Cl. 235-462.000.
Wurz, Albert; Scott, William; and Skokowski, Richard, 5,547,034, Cl. 177-25.130.

Skrtic, Thomas: *See*—
Royer, Leon D.; Skrtic, Thomas; and Zach, Mark J., 5,547,082, Cl. 206-725.000.

Skydome Industries Limited: *See*—
Smith, Geoffrey B.; and Franklin, James B., 5,548,490, Cl. 362-32.000.

Skyman, Lars, to AB Volvo Penta. Compression washer assembly with line cutter for a boat propeller shaft. 5,547,408, Cl. 440-73.000.

Slater, Martin J.; Cockerill, George S.; Littler, Edward; and Yeates, Clive L., to Burroughs Wellcome Co. Further indole derivatives with antiviral activity. 5,547,976, Cl. 514-410.000.

Slavejkov, Aleksandar G.; Broadway, Lee; Joshi, Mahendra L.; and Nabors, James K., to Air Products and Chemicals, Inc.; and Combustion, Tec. Inc. Process and device for combustion-enhanced atomization and vaporization of liquid fuels. 5,547,368, Cl. 431-8.000.

Slevinsky, Bruce A., to Petro-Canada. Well test imaging. 5,548,563, Cl. 367-25.000.

SLI, Inc.: *See*—
Dotson, Cynthia; and George, Danny, 5,547,011, Cl. 160-381.000.

Slinkman, James A.: *See*—
Mandelman, Jack A.; Galbi, Duane; Slinkman, James A.; and Tonti, William R., 5,547,894, Cl. 437-56.000.

Sloan Valve Company: *See*—
Nortier, Richard A., 5,548,119, Cl. 250-341.100.

Sloof, Willem A.: *See*—
Bijker, Wolter; Kasperkovitz, Wolfdietrich G.; De Ruyter, Hendricus C.; and Sloof, Willem A., 5,548,831, Cl. 455-207.000.

Small, William C.: *See*—
Conner, John P.; Ross, James W.; Youngs, Bradley D.; Haigh, Paul; and Small, William C., 5,546,873, Cl. 108-153.000.

Smeggil, John G.; Rasley, Elizabeth A.; and McCoy, Bill R., to United Technologies Motor Systems, Inc. Joints in bonding of electrical wires. 5,547,122, Cl. 228-173.300.

Smith, Aaron L.; and White, Scott T., to Caterpillar Inc. Catalytic converter exhaust section for an internal combustion engine. 5,547,641, Cl. 422-181.000.

Smith & Nephew plc: *See*—
Sandbank, Barry M., 5,548,125, Cl. 250-519.100.

Smith, Barton A.: *See*—
Selker, Edwin J.; Smith, Barton A.; and Kamentser, Boris, 5,548,529, Cl. 364-508.000.

Smith, Colin, to British Gas plc. Fuel fired burners. 5,547,372, Cl. 431-328.000.

Smith, Darren A.: *See*—
Paluch, John W. D.; Malss, Stephen R.; Gildersleeve, Lyle A.; Schlunke, Christopher K.; Bell, Gregory B.; and Smith, Darren A., 5,546,902, Cl. 123-304.000.

Smith, Douglas M.: *See*—
Mitchell, Nancy G.; Langan, Joseph W.; Shipston, Adele C.; Russ, Timothy J.; and Smith, Douglas M., 5,547,738, Cl. 428-195.000.

Smith, Fred P.; and Johnson, William R., to Heil Company, The. Top mounted container handling apparatus. 5,547,332, Cl. 414-786.000.

Smith, Geoffrey B.; and Franklin, James B., to Skydome Industries Limited; and University of Technology, Sydney. Sunlight collecting and transmitting system. 5,548,490, Cl. 362-32.000.

Smith, Gerald L., to Magl Power Inc. Missing phase detector. 5,548,207, Cl. 324-86.000.

Smith, Kevin, to British Telecommunications public limited company. Optical clock recovery. 5,548,433, Cl. 359-158.000.

Smith, Marcus A. Hazardous ameprage recognition and relaying techniques. 5,548,466, Cl. 361-44.000.

Smith, Michael J., to Arrow Art Finishers, Inc. Display stand erectable from shipping container. 5,547,073, Cl. 206-45.240.

Smith, Randall W.; Bright, Jason; and Varghese, Thomas, to Andersen Corporation. Rule based parametric design apparatus and method. 5,548,698, Cl. 395-139.000.

Smith, Randolph: *See*—
Collins, James P.; Dorn, Judy; Fahey, James T.; Linehan, Leo; Miller, William J.; Moreau, Wayne; Puttlitz, Erik A.; Smith, Randolph; and Spinillo, Gary, 5,547,812, Cl. 430-270.100.

Smith, Randy D.: *See*—
Mathison, Allen D.; and Smith, Randy D., 5,546,991, Cl. 138-93.000.

Smith, Richard: *See*—
Hogan, James; Smith, Richard; and Kop, Joann, 5,547,842, Cl. 435-6.000.

Smith, Richard R., to Hughes Aircraft Company. Three field of view refractive infrared telescope with fixed medium filed of view. 5,548,439, Cl. 359-353.000.

Smith, Robert S.: *See*—
Oxaal, John T.; Van Ramm, Olaf T.; Blaker, David M.; and Smith, Robert S., 5,546,807, Cl. 73-606.000.

Smith, Scott E.: *See*—
Dornbusch, Arthur H.; and Smith, Scott E., 5,547,302, Cl. 401-172.000.

Smith-Steffens, Kathleen M.: *See*—
Steffens, Hermann J.; and Cunningham, Elwood L., 5,547,136, Cl. 241-73.000.

Smith, Stephen W., to Duke University. Multi-layer composite ultrasonic transducer arrays. 5,548,564, Cl. 367-140.000.

SmithKline Beecham: *See*—
Christensen, Siegfried B., IV; Esser, Klaus M.; and Simon, Philip L., 5,547,979, Cl. 514-424.000.

Snell, Richard E., to APV Baker, Inc. Baking oven with integral emissions control apparatus. 5,547,373, Cl. 432-72.000.

Snowden, Gregory A.: *See—*
Cope, Frederick O.; DeWille, Normanella T.; Richards, Ernest W.; Mazer, Terrence B.; Abbruzzese, Bonnie C.; Snowden, Gregory A.; Parlet, Nickki L.; and Pease, Laura A., 5,547,927, Cl. 514-2.000.

Sobieradski, Edward S.: *See—*
Bohlen, Heinz P.; Sobieradski, Edward S.; Bridges, Mark; Bardell, Steven; Pickering, Alan H.; and Pettas, Howard T., 5,548,245, Cl. 330-45.000.

Sobolewski, Eugene R.; and Roskos, David M. Archery bow stand. 5,547,162, Cl. 248-688.000.

Sobrevin Société de brevets industriels-Etablissement: *See—*
Sarfati, Alberto G., 5,546,994, Cl. 139-452.000.

Sochata: *See—*
Bourguinat, Jean C. M., 5,548,400, Cl. 356-237.000.

Societe Europeenne de Propulsion: *See—*
Lacombe, Alain; and Rouges, Jean-Michel, 5,547,628, Cl. 264-257.000.

Societe Industrielle et Commerciale De Materiel Aeronautique: *See—*
Marechal, Robert R., 5,547,248, Cl. 297-188.170.

Societe Nationale Aerospatiale Industrielle: *See—*
Tournier, Gilles; and Seguier, Stéphane, 5,546,653, Cl. 29-751.000.

Sockel, Karl-Heinz: *See—*
Weber, Wilhelm; Sockel, Karl-Heinz; and Moretto, Hans-Heinrich, 5,548,009, Cl. 524-157.000.

Soderman, Jarmo: *See—*
Nykanen, Tuomo S.; Greenwood, Brian F.; Gullichsen, Johan; Kiiskila, Erkki; Mattelmaki, Esko; Phillips, Joseph R.; Richardsen, Jan; Ryham, Rolf; Soderman, Jarmo; and Wiklund, Karl, 5,547,543, Cl. 162-31.000.

Sodi, Paolo; and Sodi, Roberto. Device for detecting and measuring continuously surfactant substances in water. 5,547,566, Cl. 210-87.000.

Sodi, Roberto: *See—*
Sodi, Paolo; and Sodi, Roberto, 5,547,566, Cl. 210-87.000.

Sodomin, Joseph F., III: *See—*
Buchanan, John S.; Mathias, Mark F.; Sodomin, Joseph F., III; and Teitman, Gerald J., 5,547,648, Cl. 423-210.000.

Soga, Kazuo: *See—*
Goto, Kohei; Hattori, Iwakazu; Ogasahara, Shoji; Shibata, Masahiro; Michino, Yoshiyuki; Soga, Kazuo; and Shiono, Takeshi, 5,548,045, Cl. 526-161.000.

Sogabe, Yukihiro: *See—*
Hattori, Shizuo; Kishimoto, Takahide; Sogabe, Yukihiro; and Emi, Shigenori, 5,547,851, Cl. 435-26.000.

Sohma, Kenichi; Itoh, Kazuyuki; Kuroda, Michio; and Murakami, Tadayoshi, to Hitachi, Ltd. Camera, spectrum analysis system, and combustion evaluation apparatus employing them. 5,547,369, Cl. 431-75.000.

Sohn, Chang-jin: *See—*
Han, Woo-sung; and Sohn, Chang-jin, 5,547,788, Cl. 430-5.000.

Soldner, Richard, to Siemens Aktiengesellschaft. Method and apparatus for displaying acoustic signal transit times. 5,546,945, Cl. 128-661.020.

Soltys, Josef V.: *See—*
Nor, Jiri K.; and Soltys, Josef V., 5,548,200, Cl. 320-27.000.

Sommargren, Gary E., to University of California, The Regents of the. Phase shifting diffraction interferometer. 5,548,403, Cl. 356-354.000.

Sommer, Gordon M., to Midwest Brake Bond Company. Electrically energized oil shear drive system. 5,547,431, Cl. 475-154.000.

Somoza, Vincent E.: *See—*
Dalgleish, Kevin L.; Hoe, Sei S.; Reinhart, Gregory R.; Somoza, Vincent E.; Pike, Rodney D.; Moss, John S.; and Tencer, Michal, 5,548,643, Cl. 379-429.000.

Sondej, William R.: *See—*
Kman, Stephen J.; Stubecki, John A.; and Sondej, William R., 5,548,486, Cl. 361-791.000.

Sone, Akira: *See—*
Kato, Shinji; Tagawa, Chikashi; Michihira, Osamu; and Sone, Akira, 5,548,601, Cl. 371-68.100.

Sonex International Corporation: *See—*
Bock, Robert T., 5,546,624, Cl. 15-22.100.

Song, Bong-Seog: *See—*
Gahang, Gu-Su; Song, Bong-Seog; Lee, Hyun-Jun; and Ahn, Ju-Yeong, 5,548,634, Cl. 379-97.000.

Song, Seungyoon P., to International Business Machines Corporation. System and method for processing an instruction in a processing system. 5,548,738, Cl. 395-375.000.

Sonnier, David P.: *See—*
Aldridge, David L.; Bunton, William P.; Bissell, Stephen R.; Brown, David; Gunn, Daniel D.; Kagy, Carl; and Sonnier, David P., 5,548,463, Cl. 361-18.000.

Sonntag, John-Erik; and Ropponen, Matti, to Fibox Oy AB. Electronics and instrumentation enclosure and a frame therefor. 5,547,095, Cl. 220-3.800.

Sonobe, Masanori: *See—*
Kanzaki, Shigeki; Kawaguchi, Masahiro; Sonobe, Masanori; and Yokono, Tomohiko, 5,547,346, Cl. 417-222.200.

Sonoco Products Company: *See—*
Drummond, Michael T.; Hill, Calvin G.; Lowman, Richard M., Jr.; Suski, William C.; Roberts, Rodney W.; and Lowry, James W., 5,547,451, Cl. 493-299.000.

Sonoda, Nobuo: *See—*
Wakita, Katsuya; Hotta, Shu; Sonoda, Nobuo; and Yang, Yang, 5,546,889, Cl. 117-84.000.

Sony Corporation: *See—*
Eguchi, Yasuhito; Sato, Masayuki; Narushima, Toshio; Sanpei, Akira; and Murano, Kanji, 5,547,775, Cl. 429-7.000.
Furuhashi, Makoto; and Yamaoka, Katsumi, 5,548,599, Cl. 371-40.100.
Gendai, Yuji, 5,548,287, Cl. 341-133.000.
Gunday, Erhan H.; Doliton, Michael; Foung, Paul; and Lee, John R., 5,548,327, Cl. 348-97.000.
Hirayasu, Masatoshi, 5,548,595, Cl. 371-5.500.
Ito, Kengo; and Fujiwara, Yoshio, 5,547,739, Cl. 428-207.000.
Kohama, Kazumasa, 5,548,239, Cl. 327-408.000.
Miwa, Hiroyuki; Gomi, Takayuki; and Kato, Katsuyuki, 5,548,156, Cl. 257-517.000.
Miyazaki, Shigeki, 5,548,421, Cl. 359-54.000.
Ohta, Masashi; Kobayashi, Hiroshi; Sekiya, Tsuneo; Hamada, Toshimichi; Fukuda, Kyoko; and Iijima, Koji, 5,548,409, Cl. 358-335.000.
Portman, John R., 5,548,356, Cl. 353-13.000.
Sasaki, Yasuo; Fukuyama, Munekatsu; and Kurihara, Kazuo, 5,548,453, Cl. 360-67.000.
Sato, Tsuguo, 5,548,455, Cl. 360-73.110.
Shimizume, Kazutoshi; Akita, Mamoru; and Tsuboi, Yoshinori, 5,548,569, Cl. 369-44.280.
Shimoyoshi, Osamu; Akagiri, Kenzo; Suzuki, Hiroshi; and Mitsuno, Makoto, 5,548,574, Cl. 369-124.000.
Takagi, Koji, 5,548,509, Cl. 364-419.160.
Takayama, Masato; and Amari, Yasufumi, 5,548,815, Cl. 455-41.000.
Tanaka, Shigeo; Yamazaki, Hiroshi; Kotabe, Noriko; Sugiyama, Koichi; Sato, Makoto; Katsuyama, Akira; Osakabe, Yoshio; and Kusagaya, Yasuo, 5,548,725, Cl. 395-200.050.
Tu, Peter, 5,548,667, Cl. 382-285.000.
Yoshihara, Ikuo, 5,548,155, Cl. 257-517.000.

Sony Electronics, Inc.: *See—*
Gunday, Erhan H.; Doliton, Michael; Foung, Paul; and Lee, John R., 5,548,327, Cl. 348-97.000.

Sony Transcom, Inc.: *See—*
Portman, John R., 5,548,356, Cl. 353-13.000.

Soo, David H., to National Semiconductor Corporation. System and method for dual mode DC-DC power conversion. 5,548,206, Cl. 323-284.000.

Soref, Richard A.; and Friedman, Lionel, to United States of America, Air Force. Direct-gap germanium-tin multiple-quantum-well electro-optical devices on silicon or germanium substrates. 5,548,128, Cl. 257-18.000.

Sørensen, Hans H., to Novo Nordisk A/S. Pharmaceutical formulation. 5,547,696, Cl. 424-499.000.

Sörensson, Olle; and Severinsson, Krister, to Eka Nobel AB. Silicate composition. 5,547,603, Cl. 510-509.000.

Soroushian, Parviz, to Board of Trustees operating Michigan State University. Non-shrink grout composition with gas forming additive. 5,547,504, Cl. 106-697.000.

Sortore, Christopher: *See—*
Bulgatz, Dennis C.; Morinigo, Fernando B.; Sortore, Christopher; and Stuart, Keith O., 5,548,263, Cl. 335-274.000.

Soshi, Isao; Miyamoto, Hidenori; and Nakamura, Toshiyuki, to Nikon Corporation. Camera with data display function. 5,548,361, Cl. 354-106.000.

Souquet, Jacques, to Advanced Technology Laboratories, Inc. Ultrasonic diagnostic transducer array with elevation focus. 5,546,946, Cl. 128-662.030.

Southpac Trust International, Inc.: *See—*
Weder, Donald E.; Weder, E. H.; Dunn, R. E. Jack; and Craig, Franklin J., 5,546,699, Cl. 47-72.000.

Southwestern Bell Technology Resources, Inc.: *See—*
Lemson, Paul H., 5,548,809, Cl. 455-34.100.

Space Engineering Spa: *See—*
Lo Forti, Raimondo; and Lisi, Marco, 5,548,295, Cl. 342-373.000.

Space Systems/Loral: *See—*
Hirshfield, Edward; and Tsao, Chich-Hsing A., 5,548,292, Cl. 342-324.000.

Spaete, Richard R.; and Pachl, Carol A., to Chiron Corporation. Recombinant CMV neutralizing proteins. 5,547,834, Cl. 435-5.000.

Spangler, Todd M., to Whitaker Corporation, The. Blind mating guides on backwards compatible connector. 5,547,385, Cl. 439-101.000.

Sparks, Douglas R., to Delco Electronics Corporation. Method for forming a micromachine motion sensor. 5,547,093, Cl. 216-2.000.

Späth, Helmut: *See—*
Wanninger, Paul; Wild, Richard; Kleinschmidt, Ernst; and Späth, Helmut, 5,547,526, Cl. 149-19.200.

Spector, George: *See—*
Krhs, Gre; and Spector, George, 5,547,425, Cl. 472-110.000.

Spectra, Inc.: *See—*
Hine, Nathan P., 5,548,311, Cl. 347-50.000.

SpectraPlex, Inc.: *See—*
Robb, David C., 5,548,819, Cl. 455-59.000.

Speedplay, Inc.: *See—*
Bryne, Richard M., 5,546,829, Cl. 74-594.600.

Spencer, Donald R., to Hinkle Contracting Corporation. Multiple stage water clarifier. 5,547,569, Cl. 210-206.000.

Sperber, Rolf, to Mercedes-Benz. Change-speed gearbox shift device. 5,547,057, Cl. 192-53.340.

Sperliig, Kenneth R.; and Tripp, Guy L., to Air Flow Research Heads, Inc. Valve train load transfer device for use with hydraulic roller lifters. 5,546,899, Cl. 123-90.500.

Spielman, Mark A., to Microphase Corporation. Compact diplexer connection circuit. 5,548,255, Cl. 333-132.000.

Spierings, Gijsbertus A. C. M.: *See—*
Haisma, Jan; Kamerbeek, Evert M. H.; Spierings, Gijsbertus A. C. M.; and De Haas, Peter W., 5,547,119, Cl. 228-116.000.

Spinillo, Gary: *See—*
Coltins, James P.; Dorn, Judy; Fahey, James T.; Linehan, Leo; Miller, William J.; Moreau, Wayne; Puttlitz, Erik A.; Smith, Randolph; and Spinillo, Gary, 5,547,812, Cl. 430-270.100.

Spiral Biotech, Inc.: *See—*
Schalkowsky, Samuel; and Scber, Frances M., 5,547,872, Cl. 436-49.000.

Spirax-Sarco Limited: *See—*
Farquhar, Keith, 5,546,976, Cl. 137-183.000.

Spitzer Sr., Harry L. Stir-Wipe cooking vessels. 5,547,279, Cl. 366-251.000.

Sports Systems Inc.: *See—*
Sander, Robert F., 5,547,193, Cl. 473-252.000.

Sprague, David L.; Harney, Kevin; Kowashi, Eiichi; Keith, Michael; Simon, Allen H.; Papadopoulos, Gregory M.; Hays, Walter P.; Salem, George F.; Shiue, Shih-Wei; Bertapelli, Anthony P.; and Shilman, Vitaly H., to Intel Corporation. System for controlling arbitration using the memory request signal types generated by the plurality of datapaths. 5,548,793, Cl. 395-860.000.

Sprietsma, John: *See—*
Kolinski, Jerzy; Sprietsma, John; Pawlowski, Stephen; and Schaechterle, Henry, 5,548,734, Cl. 395-306.000.

Springer, Wolfgang: *See—*
Köcher, Jürgen; Springer, Wolfgang; Kuckert, Eberhard; and Böcker, Thomas, 5,547,860, Cl. 435-91.200.

Spurlin, W. V. Center beam two mass vibratory device. 5,547,068, Cl. 198-760.000.

Spykerman, David J., to Prince Corporation. Multi-function cover. 5,547,187, Cl. 296-37.160.

SRI International: *See—*
Narang, Subhash C.; and Ventura, Susanna C., 5,548,055, Cl. 528-25.000.
Ruoff, Rodney S.; Lorents, Donald C.; Malhotra, Ripudaman; and Dyer, Mark J., 5,547,748, Cl. 428-323.000.

Srinivasan, Seshan R. Automated, electronic network based, project management server system, for managing multiple work-groups. 5,548,506, Cl. 364-401.00R.

Stafford, Darrell E.: *See—*
Gudat, Adam J.; Rao, Prithvi N.; Shaffer, Gary K.; Shi, Wenfan; Shin, Dong H.; Sennott, James W.; Whittaker, William L.; Kleimenhagen, Karl W.; West, Jay H.; Clow, Richard G.; Wu, Baoxin; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,548,516, Cl. 364-443.000.

StairMaster Sports/Medical Products, Inc.: *See—*
Rawls, R. Lee; Wierlo, Steven J.; and Wade, Cathy L., 5,547,439, Cl. 482-5.000.

Stallmo, David C.: *See—*
Brant, William A.; Neben, Gary; Nielson, Michael E.; and Stallmo, David C., 5,548,711, Cl. 395-182.030.

Stalzer, Michael E. Rafter-to-support-member connection apparatus. 5,546,726, Cl. 52-702.000.

Standard Keil Industries, Inc.: *See—*
North, Thomas G., III; Graham, Thomas; and Wang, Yushan, 5,547,345, Cl. 417-63.000.

Standard Register Company, The: *See—*
Laurash, David F.; Huddleston, Joey V.; Konkol, Patrick A.; Hartke, Jeffery J.; and Skees, Hugh B., 5,547,227, Cl. 283-81.000.

Standish, Michael L.: *See—*
Austin, Anne-Marie B.; Carrier, Allen M.; and Standish, Michael L., 5,547,612, Cl. 134-22.190.

Stanford Telecommuncations, Inc.: *See—*
Bustamante, Herman A., 5,548,583, Cl. 370-18.000.

Stanford University: *See—*
Wang, Avery Li-Chun, 5,548,543, Cl. 364-724.160.

Stangerup, Sven-Eric. Method for treating a bleeding nose. 5,546,964, Cl. 128-898.000.

Stanton, Kevio: *See—*
Pinney, David R.; and Stanton, Kevin, 5,547,405, Cl. 439-894.000.

Stap and a Half Toys: *See—*
Wilcox, James J., 5,547,412, Cl. 446-73.000.

Staunton, Harold F.: *See—*
Edwards, Donald W.; Odle, James K.; Popper, Peter; Sadler, Donald M.; Savidge, Todd J.; Staunton, Harold F.; Walker, William C.; and Yngve, Paul W., 5,547,732, Cl. 428-85.000.

Staver, Daniel A.; and McGrath, Donald T., to General Electric Company. Decimation filter having a selectable decimation ratio. 5,548,540, Cl. 364-724.100.

Steelcase Inc.: *See—*
Conner, John P.; Ross, James W.; Youngs, Bradley D.; Haigh, Paul; and Small, William C., 5,546,873, Cl. 108-153.000.

Steele, Leslie: *See—*
Clegg, Lawrence S.; Hunneyball, Ian M.; Jones, Colin G. P.; Rafferty, Paul; and Steele, Leslie, 5,547,972, Cl. 514-399.000.

Steelman, Lawrence: *See—*
Walsh, Frank P.; Gergen, Paul N.; and Hines, David, 5,548,632, Cl. 379-58.000.

Steffens, Hermann J.; and Cunningham, Elwood L., to Smith-Steffens, Kathleen M. Rotary grinding apparatus for recycling waste materials. 5,547,136, Cl. 241-73.000.

Stehr, Roger; Blume, Peter; and Benetti, Marco, to Maag Pump Systems AG. Gear pump and method of using same. 5,547,356, Cl. 418-189.000.

Stein, Walter, to Heimscheidt Maschinentechnik Schwerwin GmbH & Co. Mechanism for closing a mold in plastic injection-molding machinery that accommodates a large and heavy molding tool. 5,547,367, Cl. 425-589.000.

Steiner, John E.; and Egbert, Michael P., to Consulting Team, Inc., The. Method for windowing using mainframe hosted CICS. 5,548,704, Cl. 395-158.000.

Stenard, Steven C.: *See—*
Furseth, John P.; Heydrich, Frank; Hover, Forest H.; Little, Ian; Mackin, Steven G.; Stenard, Steven C.; Thompson, James L.; White, Ellen; and Wilson, Bruce D., 5,547,342, Cl. 415-200.000.

Stenton, Conrad: *See—*
Devenyi, Gabor; and Stenton, Conrad, 5,548,442, Cl. 359-432.000.

Stephan, Günter, to Heidelberger Druckmaschinen Aktiengesellschaft. Printing press. 5,546,858, Cl. 101-142.000.

Stephan, Werner B.: *See—*
Paterson, Robert W.; and Stephan, Werner B., 5,547,272, Cl. 312-223.200.

Stephens, Michael C., Jr.; Medhekar, Ajit K.; and Reddy, Chitranjan N., to Alliance Semiconductor Corporation. Synchronous static random access memory having asynchronous test mode. 5,548,560, Cl. 365-233.500.

Stephenson, John M., to Switched Reluctance Drives Limited. Switched reluctance motors. 5,548,173, Cl. 310-181.000.

Sterman, Melvin: *See—*
Yarmey, Marianne; Bello, James L.; Mitchell, Gary F.; Pearce, Glenn T.; Bowman, Wayne A.; and Sterman, Melvin, 5,547,832, Cl. 430-623.000.

Stevens, Kenneth V.: *See—*
Riley, Paula; and Stevens, Kenneth V., 5,547,249, Cl. 297-228.130.

Stewart, Charles W.: *See—*
Chapman, George R., Jr.; Morgan, Richard A.; Stewart, Charles W.; Tuminello, William H.; Van Alsten, John G.; Vogel, Randall A.; and Wagman, Mark E., 5,547,761, Cl. 428-422.000.

Steyr-Daimler-Puch AG: *See—*
Gratzer, Franz, 5,547,054, Cl. 192-35.000.

Stikeleather, Larry F.; and McKeithan, Jerry R., Jr., to North Carolina State University. Apparatus for pulverizing animal carcasses. 5,547,420, Cl. 452-138.000.

Stine, Alan C.; and Reynolds, Joseph D., to Eaton Corporation. High-capacity compound transmission. 5,546,823, Cl. 74-331.000.

Stockman, John F.: *See—*
Komarek, James A.; Minney, Jack L.; Nordine, Stephen P.; Lewis, Harold F.; Wada, Richard; and Stockman, John F., 5,548,592, Cl. 370-85.100.

Stockton, Mary J.: *See—*
Stockton, Stanley C.; and Stockton, Mary J., 5,546,693, Cl. 43-21.200.

Stockton, Stanley C.; and Stockton, Mary J. Hinged fishing rod holder. 5,546,693, Cl. 43-21.200.

Stoffler, Günter: *See—*
Krumm, Herbert; Nordmann, Adolf; Ehrhardt, Johannes; Lorenz, Johann; and Stoffler, Günter, 5,546,844, Cl. 89-8.000.

Stokes, Richard A. Plural fuel system for internal combustion engine. 5,546,908, Cl. 123-480.000.

Stoll, Kurt A.; and Osterlund, Karl F., to Echelon Corporation. Method and apparatus for interfacing between a twisted pair and an intelligent cell. 5,548,614, Cl. 375-211.000.

Stolowicki, Ralph, to Long Island Lighting Company. Momentary power outage carryover device. 5,548,166, Cl. 307-50.000.

Stone, Dwight V.; and Whalen, Charles E., to Caterpillar Inc. Oil dam coupling. 5,547,056, Cl. 192-51.000.

Stone, Joel A.: *See—*
Mallee, Francis M.; Stone, Joel A.; and Finocchiaro, Eugene T., 5,547,513, Cl. 127-38.000.

Stone, Roger H. Bird enclosures. 5,546,893, Cl. 119-464.000.

Stone, Walter H., to Parker Hannifin Corporation. Fuel Filter. 5,547,572, Cl. 210-232.000.

Stoner, Elizabeth: *See—*
Gormley, Glenn J.; Kaufman, Keith D.; Stoner, Elizabeth; and Waldstreicher, Joanne, 5,547,957, Cl. 514-284.000.

Storage Technology Corporation: *See—*
Cheatham, Samuel D.; Jacobs, Lynn C.; Janssen, Donovan M.; Leonhardt, Michael L.; Milligan, Charles A.; and Todd, Christian A., 5,547,142, Cl. 242-338.100.
Dee, Richard H., 5,546,650, Cl. 29-603.160.

Storch, Leonard; and van Haagen, Ernst, to CIAS, Inc. Optical error-detecting, error-correcting and other coding and processing, particularly for bar codes, and applications therefor such as counterfeit detection. 5,548,110, Cl. 235-472.000.

Stowe, Lawrence R. Method of conversion of heavy hydrocarbon feedstocks. 5,547,563, Cl. 208-106.000.

St-Pierre, Roger. Self-closable food container assembly for an animal with a muzzle. 5,546,894, Cl. 119-61.000.

Stratton, Rickey L.: *See—*
Zelenak, Daniel G.; and Stratton, Rickey L., 5,547,217, Cl. 280-741.000.

Straub, William; Hosking, Jack; Topal, Mickey; and Boczkiewicz, Bruce, to Oak Industries, Inc. Rail anchor remover. 5,546,864, Cl. 104-17.200.

Stretton, Alton O.: *See*—
Bradley, Graham C.; and Stretton, Alton O., 5,548,635, Cl. 379-102.000.

Strobl, Karlheinz; and Metras, Steven, to Karl Storz GmbH & Co. Vent system for endoscopes. 5,547,456, Cl. 600-133.000.

Stromvig, Jan: *See*—
Madsen, Søren M.; and Stromvig, Jan, 5,547,127, Cl. 237-12.100.

Structural Laminates Company: *See*—
Roebroeks, Gerardus H. J. J.; and Mattousch, Arthur C., 5,547,735, Cl. 428-110.000.

Struziak, Ronald M., to United Technologies Corporation. Hydrodynamic air thrust bearing with offset bump foils. 5,547,286, Cl. 384-105.000.

Stuart, J. Michael; and Uding, Jeff G. Obturator and tracheostomy tube containing the obturator. 5,546,937, Cl. 128-207.150.

Stuart, Keith O.: *See*—
Bulgatz, Dennis C.; Morinigo, Fernando B.; Sortore, Christopher; and Stuart, Keith O., 5,548,263, Cl. 335-274.000.

Stuart, Leigh S. Adjustable curtain frame. 5,547,010, Cl. 160-335.000.

Stubecki, John A.: *See*—
Kman, Stephen J.; Stubecki, John A.; and Sondej, William R., 5,548,486, Cl. 361-791.000.

Studabaker, William B.: *See*—
Friedman, Stephen B.; Studabaker, William B.; and Mize, Patrick D., 5,547,877, Cl. 436-126.000.

Studer, Allen J.: *See*—
Nicol, Geoffrey P.; Kratz, Brian E.; and Studer, Allen J., 5,548,273, Cl. 340-439.000.

Studier, F. William; Kieleczawa, Jan; and Dunn, John J., to Associated Universities, Inc. Method for promoting specific alignment of short oligonucleotides on nucleic acids. 5,547,843, Cl. 435-6.000.

Sturza, Mark A., to Teledesic Corporation. Dielectric lens focused scanning beam antenna for satellite communication system. 5,548,294, Cl. 342-372.000.

Stutzman, Jay. Adjustable wheel chocks for tandem wheeled vehicles. 5,547,045, Cl. 188-2.00R.

Su, Chung-Hui: *See*—
Wuu, Shou-Gwo; Liang, Mong-Song; Su, Chung-Hui; and Wang, Chen-Jong, 5,547,892, Cl. 437-52.000.

Suarato, Antonino: *See*—
Angelucci, Francesco; Bersani, Laura; Caruso, Michele; Ripamonti, Marina; Ruggieri, Daniela; and Suarato, Antonino, 5,547,667, Cl. 424-181.100.

Suard, Bruno P.; and Kumar, Vinod, to Alcatel N.V. Radio telecommunication system with a multi-sensor receiver station and a plurality of emitter stations transmitting data packets. 5,548,834, Cl. 455-276.100.

Südholt, Michael; Wier, Manfred; Krebs, Stephan; Bauer, Bernhard; and Reupke, Wolfgang, to Siemens Aktiengesellschaft. Method and apparatus for adapting air values from a performance graph. 5,546,916, Cl. 123-674.000.

Sudweststahl GmbH: *See*—
Discher, Heinz-Peter; Greinacher, Ekkehard; and Banski, Hans, 5,547,490, Cl. 75-665.000.

Suelzle, Helmut: *See*—
Schramm, Günter; Kohl, Walter; Meyer, Friedhelm; Mittag, Rainer; and Suelzle, Helmut, 5,548,202, Cl. 322-33.000.

Sugano, Masashi; and Matsuo, Kenichi, to Konica Corporation. Image data input apparatus. 5,548,414, Cl. 358-452.000.

Suganuma, Hiroshi: *See*—
Hattori, Tomoyuki; Suganuma, Hiroshi; Sasaoka, Eisuke; and Takimoto, Hiroaki, 5,548,672, Cl. 385-43.000.

Suganuma, Motohiro: *See*—
Ito, Yoshitaka; Ishii, Masami; Nishio, Takayuki; Mizutani, Uichiro; Yamada, Yuh; Ogasawara, Fumihiko; and Suganuma, Motohiro, 5,547,924, Cl. 505-500.000.

Suganuma, Takao: *See*—
Nagano, Yoshimi; Suganuma, Takao; Satoh, Kazuhiro; and Ikeda, Masao, 5,547,858, Cl. 435-89.000.

Sugata, Yoko: *See*—
Kushibiki, Nobuo; Sugata, Yoko; and Suzuki, Toshio, 5,548,050, Cl. 528-9.000.

Sugawara, Masayuki; and Mori, Toshihiro, to Mitsubishi Denki Kabushiki Kaisha. Laser cutting machine. 5,548,098, Cl. 219-121.670.

Sugimoto, Sunao; Yoshino, Mitsuji; and Kobayashi, Noboru, to Kawasaki Jukogyo Kabushiki Kaisha. Variable wheel-spacing truck. 5,546,868, Cl. 105-178.000.

Sugioka, Michiyoshi: *See*—
Nakagawa, Kenichi; Sugioka, Michiyoshi; and Ito, Koichi, 5,547,592, Cl. 508-511.000.

Sugisaki, Eiichi; Ino, Mitsuhiro; and Nagayama, Masato, to Fujitsu Limited. Double-sided printing system for continuous forms. 5,548,390, Cl. 355-319.000.

Sugita, Kazuhiko: *See*—
Watanabe, Eiki; Ishii, Toshiaki; Mizuno, Masamoto; and Sugita, Kazuhiko, 5,547,059, Cl. 187-289.000.

Sugita, Yoichi: *See*—
Kayama, Masahiro; Morooka, Yasuo; Sugita, Yoichi; and Nakajima, Masaaki, 5,548,597, Cl. 371-25.100.

Sugiura, Nobutake: *See*—
Mochizuki, Yoshio; Kato, Hideo; and Sugiura, Nobutake, 5,548,559, Cl. 365-230.080.

Sugiyama, Akihiko; Tsuchiyama, Hideaki; Futami, Toshihiko; Kato, Hisataka; and Hoshi, Takao, to Kabushiki Kaisha Toshiba. Fluid compressor with selector valve. 5,547,344, Cl. 417-32.000.

Sugiyama, Hitoshi; Hiraishi, Toshinori; and Kumano, Tuyoshi, to Fujitsu Limited. Data processing system with duplex common memory having physical and logical path disconnection upon failure. 5,548,743, Cl. 395-479.000.

Sugiyama, Koichi: *See*—
Tanaka, Shigeo; Yamazaki, Hiroshi; Kotabe, Noriko; Sugiyama, Koichi; Sato, Makoto; Katsuyama, Akira; Osakabe, Yoshio; and Kusagaya, Yasuo, 5,548,725, Cl. 395-200.050.

Sukawa, Daiji: *See*—
Akasaka, Yoshio; Kakijima, Kenichi; Endoh, Takeshi; Uchida, Goro; Tanaka, Masaaki; Fujie, Takefumi; Sukawa, Daiji; Endoh, Satoshi; Saitoh, Hideo; and Kubo, Takashi, 5,548,096, Cl. 219-117.100.

Sule, Akos. Solenoid valve. 5,546,987, Cl. 137-625.500.

Sullivan, Gregory T.: *See*—
Grant, Robert H.; Book, David; and Sullivan, Gregory T., 5,548,590, Cl. 370-61.000.

Sullivan, Kenneth J. Mini blind and vertical blind actuator. 5,547,008, Cl. 160-176.100.

Sulzbach, Hans-Michael; Raffel, Reiner; Althausen, Ferdinand; and Wirth, Jürgen, to Maschinenfabrik Hennecke GmbH. Method and apparatus for continuously dispersing fine particle-sized solids in a liquid. 5,547,276, Cl. 366-139.000.

Sumino, Shigeo: *See*—
Mimura, Itaru; Ueda, Hirotada; Sumino, Shigeo; Ikezawa, Mitsuru; Suzuki, Toshiaki; Kinoshita, Taizo; and Tada, Katsumi, 5,548,346, Cl. 348-738.000.

Sumita, Masaya; Maeda, Toshinori; and Kakiage, Toru, to Matsushita Electric Industrial Co., Ltd. Clock generator and method for generating a clock. 5,548,249, Cl. 331-1.00A.

Sumitomo Chemical Company, Limited: *See*—
Fujii, Takeshi; and Ishikawa, Manabu, 5,547,609, Cl. 252-511.000.
Fujii, Takeshi; and Yamamoto, Masashi, 5,548,013, Cl. 524-449.000.
Fukui, Toshinori; Katsuda, Nobuyuki; Yabushita, Shinichi; and Hashizume, Shuhei, 5,547,478, Cl. 8-643.000.
Ueda, Minoru; and Okada, Ken-ya, 5,547,679, Cl. 424-402.000.
Yamamoto, Keisaku; Ikeda, Kiyoshi; Fukuyama, Masahiro; Naito, Takeshi; and Aritake, Masanori, 5,548,012, Cl. 524-433.000.

Sumitomo Electric Industries, Ltd.: *See*—
Hattori, Tomoyuki; Suganuma, Hiroshi; Sasaoka, Eisuke; and Takimoto, Hiroaki, 5,548,672, Cl. 385-43.000.
Horimura, Hiroyuki; Okamoto, Kenji; Minemi, Masahiko; Kaji, Toshihiko; Takeda, Yoshinobu; and Takano, Yoshishige, 5,547,632, Cl. 419-28.000.
Kakii, Toshiaki; Ishida, Hidetoshi; Ogawa, Shinji; and Miyabe, Kazumichi, 5,548,677, Cl. 385-92.000.
Kugai, Hirokazu; and Nagaishi, Tatsuoki, 5,548,262, Cl. 335-216.000.
Nakamura, Takao; Inada, Hiroshi; and Iiyama, Michitomo, 5,547,923, Cl. 505-330.000.
Sakamoto, Yoshito; Kihara, Takeshi; and Saen, Haruo, 5,547,144, Cl. 242-402.000.

Sumitomo Heavy Industries, Ltd.: *See*—
Nakamura, Tsuyoshi; Kodaira, Kazuho; and Higuchi, Katsuhiro, 5,548,520, Cl. 364-472.020.

Sumitomo Metal Industries, Ltd.: *See*—
Matsumoto, Yoshiro; Isaka, Kazumi; Mizuguchi, Masaaki; Oshima, Yoshimitsu; and Takatsu, Osamu, 5,547,450, Cl. 492-54.000.

Sumitomo Rubber Industries, Ltd.: *See*—
Ueyoko, Kiyoshi; and Takatsu, Mikio, 5,547,005, Cl. 152-209.00R.

Sumitomo Wiring Systems, Ltd.: *See*—
Kobayashi, Yoshinao, 5,547,387, Cl. 439-125.000.
Ogawa, Shinji, 5,547,402, Cl. 439-699.200.

Summermatter, Peter: *See*—
Meyer, Meinrad; and Summermatter, Peter, 5,547,064, Cl. 198-468.100.

Summers, Max D.: *See*—
Black, Bruce C.; and Summers, Max D., 5,547,871, Cl. 435-240.100.

Summey, Shala W., III; and Alexander, William J., III, to Alexander Machinery, Inc. Web tension apparatus with sensor switch arrangement for oscilliating dancer roll and method. 5,546,993, Cl. 139-311.000.

Sun Microsystems, Inc.: *See*—
Aziz, Ashar; Mulligan, Geoffrey; Patterson, Martin; and Scott, Glenn, 5,548,646, Cl. 380-23.000.
Rogers, Alan C., 5,548,620, Cl. 375-354.000.
Yung, Robert, 5,548,739, Cl. 395-414.000.

Sun, Min-Hsiung; and Lin, Wang-Hsing. Padlock and lock holder unit. 5,546,776, Cl. 70-233.000.

Sun, Wei-Mei; Ma, Zhu-ning; Panitch, Maximo M.; and Galleguillos, Ramiro, to Helene Curtis, Inc. Antiperspirant deodorant compositions. 5,547,661, Cl. 424-66.000.

Sun, Weimin; and Kajimoto, Shigeki, to Icom Incorporated. Demodulator for demodulating a single side band signal, a real zero single side band signal and a frequency modulated signal, and a carrier signal reproducing circuit for the demodulator. 5,548,243, Cl. 329-316.000.

Sunaga, Kouhei: *See*—
Aizawa, Jyun-ichi; Nakagawa, Kunihiko; Nakao, Hiroshi; Ezaki, Hitoshi; and Sunaga, Kouhei, 5,547,297, Cl. 400-567.000.

Sung, JanMye, to Vanguard International Semiconductor Corp. method for fabricating an embedded vertical bipolar transistor and a memory cell. 5,547,893, Cl. 437-52.000.

Sunshine Medical Instruments, Inc.: *See*—
Kupershmidt, Vladimir; Kouchnir, Mikhail; and Petersen, Robert, 5,548,404, Cl. 356-368.000.

Supe-Dienes, Rudolf, to Dienes Werke für Maschinenteile GmbH & Co. KG. Slitting machine with position check of the cutting edges. 5,546,840, Cl. 83-478.000.

Susak, David M., to Motorola, Inc. Circuit and method of biasing a drive transistor to a data bus. 5,548,233, Cl. 327-66.000.

Suski, William C.: *See*—
Drummond, Michael T.; Hill, Calvin G.; Lowman, Richard M., Jr.; Suski, William C.; Roberts, Rodney W.; and Lowry, James W., 5,547,451, Cl. 493-299.000.

Susnjara, Kenneth J.; and Hardesty, Michael P., to Thermwood Corporation. Device and method for forming square inside corners on raised panels formed of single workpieces. 5,547,003, Cl. 144-368.000.

Suwandhaputra, Johannes: *See*—
Easley, Ellis, Jr.; Gray, Patricia; Suwandhaputra, Johannes; and Wolf, Julie, 5,548,784, Cl. 395-838.000.

Suzuki, Akira; Hotta, Yoshihiko; and Uemura, Hiroyuki, to Ricoh Company, Ltd. Information recording medium and printing method using the same. 5,547,915, Cl. 503-227.000.

Suzuki, Hiroshi: *See*—
Shimoyoshi, Osamu; Akagiri, Kenzo; Suzuki, Hiroshi; and Mitsuno, Makoto, 5,548,574, Cl. 369-124.000.

Suzuki, Isamu: *See*—
Hoashi, Kouich; Aoki, Akinori; and Suzuki, Isamu, 5,548,732, Cl. 395-285.000.

Suzuki, Kenji: *See*—
Shibazaki, Kiyoshige; and Suzuki, Kenji, 5,548,333, Cl. 348-270.000.

Suzuki Manufacturing Co., Ltd.: *See*—
Sakuma, Kouichi, 5,546,878, Cl. 112-162.000.

Suzuki, Masao: *See*—
Fukui, Tetsuro; Kobayashi, Motokazu; Ohi, Takehiko; Ueno, Kazunori; Kagami, Kenji; Suzuki, Masao; and Nishino, Katsuya, 5,547,831, Cl. 430-619.000.

Suzuki, Morie: *See*—
Kudo, Hideo; Uchiyama, Isao; Kimura, Yoshiharu; Suzuki, Morie; and Tanakajima, Takashi, 5,547,515, Cl. 134-21.000.

Suzuki Motor Corporation: *See*—
Aoki, Masahiro, 5,546,913, Cl. 123-520.000.

Suzuki, Ryo: *See*—
Okada, Hisashi; Inaba, Tadashi; Suzuki, Ryo; and Nomura, Hideaki, 5,547,817, Cl. 430-393.000.

Suzuki, Seiichi: *See*—
Naka, Teruyuki; Umeda, Yoshio; Yamamura, Toshiki; Kumon, Akira; Suzuki, Seiichi; Nawama, Junichi; and Nagase, Hisanori, 5,548,380, Cl. 355-219.000.

Suzuki, Takeshi: *See*—
Ohta, Mitsuaki; Suzuki, Takeshi; Ohmori, Jun-ya; Miyata, Keiji; and Yanagisawa, Isao, 5,547,961, Cl. 514-300.000.

Suzuki, Tamotsu; and Shimada, Yoshikazu, to Rohm Co., Ltd. PLL circuit having a low-pass passive filter coupled to a varactor diode. 5,548,829, Cl. 455-180.300.

Suzuki, Tatsuo; Tanaka, Susumu; and Ueyama, Takashi, to Sekisui Chemical Co., Ltd. Toner composition and toner with low and high M.W. vinyl polymers. 5,547,798, Cl. 430-109.000.

Suzuki, Tatsuo; and Masaoka, Tsunehiro, to Sekisui Chemical Co., Ltd. Toner resin composition and toner. 5,547,801, Cl. 430-115.000.

Suzuki, Toshiaki: *See*—
Mimura, Itaru; Ueda, Hirotada; Sumino, Shigeo; Ikezawa, Mitsuru; Suzuki, Toshiaki; Kinoshita, Taizo; and Tada, Katsumi, 5,548,346, Cl. 348-738.000.

Suzuki, Toshio: *See*—
Iida, Yoshikatsu; Kurihara, Noriyuki; and Suzuki, Toshio, 5,546,919, Cl. 123-682.000.
Kushibiki, Nobuo; Sugata, Yoko; and Suzuki, Toshio, 5,548,050, Cl. 528-9.000.

Suzuki, Tsuguo: *See*—
Sato, Kazutaka; Watanabe, Michihiro; Aoyagi, Masahisa; Seino, Taisaku; Ohki, Katsuo; Fukuda, Hiromitsu; Kawase, Hideyuki; Oga, Kimio; Shimizu, Akira; Narui, Youichi; Suzuki, Tsuguo; Otsuka, Yasuo; and Konno, Kazutoshi, 5,548,411, Cl. 358-400.000.

Suzuki, Yasuhiro: *See*—
Tsutsumida, Joji; Suzuki, Yasuhiro; and Uozumi, Tetsuo, 5,547,173, Cl. 267-140.150.

Suzuki, Yuriko: *See*—
Nishimori, Yoshiki; Abe, Tsugio; and Suzuki, Yuriko, 5,547,800, Cl. 430-110.000.

Swanson, David K.: *See*—
Panescu, Dorin; and Swanson, David K., 5,546,940, Cl. 128-642.000.

Swartz, Harold L.; and Anderson, Jane E., to Coyote Engineering Services, Inc. Angle and angular acceleration sensors. 5,546,805, Cl. 73-514.020.

Swarup, Shanti; Sharma, Brij N.; and Johnston, B. Keith, to PPG Industries, Inc. Color-clear composite coatings having improved intercoat adhesion. 5,547,757, Cl. 428-413.000.

Sweet, Mark D.: *See*—
Fogg, Richard G., Jr.; and Sweet, Mark D., 5,548,785, Cl. 395-841.000.

Swenton, Joseph M.: *See*—
Maloney, William B.; Mesnard, Robert M.; and Swenton, Joseph M., 5,548,715, Cl. 395-183.040.

Swerdloff, Stuart; Mackie, Thomas R.; and Holmes, Timothy, to Wisconsin Alumni Research Foundation. Radiation therapy system with constrained rotational freedom. 5,548,627, Cl. 378-4.000.

Swinson, Thierry W.; and Walden, Brent M., to Schlumberger Industries, Inc. Water flow meter adapter for residential fire service sprinkler systems. 5,546,801, Cl. 73-273.000.

Switched Reluctance Drives Limited: *See*—
Stephenson, John M., 5,548,173, Cl. 310-181.000.

Switzer, Tod W.: *See*—
Bannister, Cecil H.; Marchetti, Marco; Mo, Richard C.; Switzer, Tod W.; and Moghe, Dhawal B., 5,548,636, Cl. 379-201.000.

Synchronous Communications, Inc.: *See*—
Ramachandran, Mani; and Gysel, Hermann, 5,548,436, Cl. 359-187.000.

Syntec, Inc.: *See*—
Peyman, Gholam A., 5,547,473, Cl. 604-27.000.

Synthelabo: *See*—
Poindron, Philippe; Braun, Serge; and Ferzaz, Badia, 5,547,963, Cl. 514-317.000.

Szabo, Louis. UV-based water decontamination system with dimmer-control. 5,547,590, Cl. 210-748.000.

Szabo, William J. Exercise device. 5,547,446, Cl. 482-121.000.

Szasz, David A.: *See*—
Murphy, Peter F.; Kurtz, James H., Jr.; Whitehead, Ross; and Szasz, David A., 5,547,103, Cl. 220-709.000.

Szita, Jeno G.; and Waterman, Paul S., to Cytec Technology Corp. Aminoplast-anchored ultraviolet light stabilizers. 5,547,753, Cl. 428-357.000.

Szporny, László: *See*—
Mahó, Sándor; Tuba, Zoltán; Gere, Anikó; Vittay, Pal; Kiss, Béla; Pálosi, Éva; Szporny, László; Francsicsné, Erzsébet C.; Boórné, Anna M.; Balogh, Gábor; and Görög, Sándor, 5,547,949, Cl. 514-176.000.

Tabata, Masamune: *See*—
Gunji, Takahiro; Tabata, Masamune; Dosaka, Kenji; and Hirose, Kenji, 5,547,771, Cl. 428-687.000.

Tabb, David L., to Du Pont de Nemours, E. I., and Company. Curable elastomeric blend with vulcanized fluoroelastomer. 5,548,028, Cl. 525-194.000.

Taborn, Michael P.: *See*—
Matheny, David T.; Miller, Paul K.; and Taborn, Michael P., 5,548,544, Cl. 364-745.000.

Tackney, Charles T.: *See*—
Goldstein, Neil I.; and Tackney, Charles T., 5,547,670, Cl. 424-192.100.

Tada, Katsumi: *See*—
Akizawa, Mitsuru; Yamashita, Hirofumi; Kawaguchi, Hisamitsu; Tada, Katsumi; Kato, Kanji; Kito, Akira; and Yamada, Hidenori, 5,548,724, Cl. 395-200.030.
Mimura, Itaru; Ueda, Hirotada; Sumino, Shigeo; Ikezawa, Mitsuru; Suzuki, Toshiaki; Kinoshita, Taizo; and Tada, Katsumi, 5,548,346, Cl. 348-738.000.

Tada, Takeshi: *See*—
Morita, Nobuhiro; and Tada, Takeshi, 5,548,396, Cl. 356-127.000.

Tadamura, Katsumi: *See*—
Oono, Shuuji; Tadamura, Katsumi; and Yamaguchi, Syoji, 5,548,710, Cl. 395-181.000.

Tadros, Sobhy: *See*—
Blakeney, Andrew J.; Medina, Arturo N.; Toukhy, Medhat A.; Ferreira, Lawrence; and Tadros, Sobhy, 5,547,814, Cl. 430-326.000.

Tagawa, Chikashi: *See*—
Kato, Shinji; Tagawa, Chikashi; Michihira, Osamu; and Sone, Akira, 5,548,601, Cl. 371-68.100.

Taguchi, Kenji: *See*—
Ogata, Toshio; Yoshizaki, Masanori; and Taguchi, Kenji, 5,546,652, Cl. 29-738.000.

Taguchi, Masahiro; Katoh, Kazutaka; and Yoshida, Masatada, to Nippondenso Co., Ltd. Airbag system. 5,547,215, Cl. 280-732.000.

Taguchi, Minoru, to Pioneer Electronic Corporation. Adjusting method for an electronic part. 5,548,537, Cl. 364-571.020.

Taguchi, Syuji: *See*—
Chiba, Jiro; and Taguchi, Syuji, 5,547,749, Cl. 428-323.000.

Tahara, Yoko; and Nagakubo, Yasunori, to Fujitsu Limited. Optical Transmitter. 5,548,435, Cl. 359-180.000.

Taiho Industries Co., Ltd.: *See*—
Tsubakino, Motohiro, 5,547,571, Cl. 210-232.000.

Tailliet, François, to SGS-Thomson Microelectronics, S.A. Device for the protection of an integrated circuit against electrostatic discharges. 5,548,134, Cl. 257-173.000.

Taira, Ritsushi: *See*—
Takahashi, Tomomi; Takata, Masahisa; Kogure, Masayoshi; Taira, Ritsushi; and Hamano, Hiroyuki, 5,547,018, Cl. 165-267.000.

Taisei Plas Co., Ltd.: *See*—
Naritomi, Masanori, 5,547,621, Cl. 264-51.000.

Taiwan Semiconductor Manufacturing Company: *See*—
Wuu, Shou-Gwo; Liang, Mong-Song; Su, Chung-Hui; and Wang, Chen-Jong, 5,547,892, Cl. 437-52.000.

Taiwan Semiconductor Manufacturing Company LTD: *See*—
Wang, Jau-Jey; Shieh, Pi-Chen; and Tseng, Pin-Nan, 5,547,881, Cl. 437-24.000.

Takada, Kimiharu: *See*—
Watanabe, Kazuhide; Takada, Kimiharu; Sekita, Masumi; Ito, Takahide; and Tani, Kazuya, 5,547,355, Cl. 418-55.500.

Takagi, Koji, to Sony Corporation. Recording medium and information reading apparatus. 5,548,509, Cl. 364-419.160.

Takahashi, Akihiko: *See—*
Hamuro, Mitsuro; Higuchi, Hirokazu; Nakagawa, Tadahiro; and Takahashi, Akihiko, 5,547,511, Cl. 118-423.000.

Takahashi, Akiyoshi: *See—*
Yoshimoto, Shigeka; Takahashi, Akiyoshi; Uchida, Toshiya; and Wakashima, Rie, 5,548,437, Cl. 359-200.000.

Takahashi, Hideyuki: *See—*
Matsuyama, Tsutoshi; and Takahashi, Hideyuki, 5,548,757, Cl. 395-600.000.

Takahashi, Hiroshi, to Ricoh Company, Ltd. Image projecting device. 5,548,358, Cl. 353-122.000.

Takahashi, Hiroshi: *See—*
Kamo, Jun; Hirai, Takayuki; Takahashi, Hiroshi; and Kondou, Kenji, 5,547,756, Cl. 428-394.000.

Takahashi, Katsuhiro: *See—*
Funato, Takayuki; and Takahashi, Katsuhiro, 5,547,783, Cl. 429-212.000.

Takahashi, Katsunori, to Hudson Soft Co., Ltd. Sound processing apparatus. 5,548,655, Cl. 381-104.000.

Takahashi, Kiyoshi: *See—*
Kikuchi, Kazuo; Umino, Hiroshi; Shibuya, Hiromitsu; Makino, Masahito; Sakakura, Yasuyuki; and Takahashi, Kiyoshi, 5,546,763, Cl. 62-532.000.

Takahashi, Mitsuo, to Seikoh Giken Co., Ltd. Optical fiber end-surface polishing device. 5,547,418, Cl. 451-278.000.

Takahashi, Osamu; and Ohki, Nobutaka, to Fuji Photo Film Co., Ltd. Silver halide color photographic material. 5,547,825, Cl. 430-551.000.

Takahashi, Sadao: *See—*
Kuramoto, Shinichi; Takahashi, Sadao; Kimura, Yoshiyuki; Ando, Kazuhiro; Saito, Tadashi; Asaba, Youichi; Tanikawa, Kiyoshi; Miyashita, Yoshiaki; and Shinguryo, Satoshi, 5,547,793, Cl. 430-97.000.

Takahashi, Tadashi: *See—*
Koshijima, Tetsuo; Shiraishi, Nobuo; Takahashi, Tadashi; Hiraoka, Toshiharu; and Ueda, Masami, 5,548,069, Cl. 530-500.000.

Takahashi, Tomomi; Takata, Masahisa; Kogure, Masayoshi; Taira, Ritsushi; and Hamano, Hiroyuki, to Fujitsu General Limited. Air conditioner. 5,547,018, Cl. 165-267.000.

Takahashi, Toshio: *See—*
Hayase, Yoshio; Kataoka, Takahiro; Takenaka, Hideyuki; Ichinari, Mitsuhiro; Masuko, Michio; Takahashi, Toshio; and Tanimoto, Norihiko, 5,548,078, Cl. 544-298.000.

Takahashi, Yutaka: *See—*
Fukuzawa, Tadashi; Kano, Satoru S.; Kumata, Kiyoshi; Lee, Victor Y.; Schellenberg, Franklin M.; and Takahashi, Yutaka, 5,547,705, Cl. 427-162.000.

Takai, Atsushi; and Hanatani, Shoichi, to Hitachi, Ltd. Method and apparatus for testing a DC coupled optical receiver. 5,548,399, Cl. 356-218.000.

Takai, Yasuhiro; Ueda, Atsushi; Tanaka, Hirokazu; and Yamasa, Hideo, to Sharp Kabushiki Kaisha. Developer device that gradually replaces degraded developer with fresh developer. 5,548,385, Cl. 355-260.000.

Takai, Yasuyuki; Yamada, Tetsuo; Kawamura, Toshifumi; Shimizu, Susumu; and Yamasaki, Haruki, to Petoca, Ltd.; and Tanaka Kikinzoku Kogyo K.K. Nozzle for spinning pitch-based carbon fibers. 5,547,363, Cl. 425-376.100.

Takami, Akihiro: *See—*
Katsumata, Masaaki; Kanaya, Osamu; Katsuki, Nobuharu; and Takami, Akihiro, 5,547,907, Cl. 501-76.000.

Takamoto, Manabu: *See—*
Tanaka, Toyokazu; Takamoto, Manabu; Miwada, Satoshi; Tetsu, Noriyuki; and Waizumi, Sadao, 5,548,476, Cl. 361-611.000.

Takano, Yoshishige: *See—*
Horimura, Hiroyuki; Okamoto, Kenji; Minemi, Masahiko; Kaji, Toshihiko; Takeda, Yoshinobu; and Takano, Yoshishige, 5,547,632, Cl. 419-28.000.

Takao, Hideaki; Murata, Tatsuo; Kanbe, Junichiro; Tamura, Miki; Kamio, Masaru; Sekimura, Nobuyuki; and Kikuchi, Yoshiki, to Canon Kabushiki Kaisha. Liquid crystal device having two resins films formed from solutions of different viscosities. 5,548,424, Cl. 359-68.000.

Takase, Shigehiro: *See—*
Fujie, Akihiko; Takase, Shigehiro; Yamashita, Michio; Sato, Tomoko; Hashimoto, Seiji; and Okuhara, Masakuni, 5,547,934, Cl. 514-11.000.

Takashima, Yutaka: *See—*
Hanawa, Tetsuya; Kuga, Yuji; Takashima, Yutaka; Matsumoto, Yoshihiro; and Ono, Masayuki, 5,548,827, Cl. 455-129.000.

Takata Corporation: *See—*
Kuretake, Masato; Zushi, Takayasu; Kitagawa, Motonobu; Yamakawa, Kazuhiko; Okamoto, Yoshimi; and Uda, Sawayo, 5,547,218, Cl. 280-743.100.

Takata, Masahisa: *See—*
Takahashi, Tomomi; Takata, Masahisa; Kogure, Masayoshi; Taira, Ritsushi; and Hamano, Hiroyuki, 5,547,018, Cl. 165-267.000.

Takatsu, Mikio: *See—*
Ueyoko, Kiyoshi; and Takatsu, Mikio, 5,547,005, Cl. 152-209.00R.

Takatsu, Osamu: *See—*
Matsumoto, Yoshiro; Isaka, Kazumi; Mizuguchi, Masaaki; Oshima, Yoshimitsu; and Takatsu, Osamu, 5,547,450, Cl. 492-54.000.

Takayama, Hidehiko: *See—*
Takayama, Kazuya; and Takayama, Hidehiko, 5,547,030, Cl. 172-30.000.

Takayama, Kazuya; and Takayama, Hidehiko. Brushing apparatus. 5,547,030, Cl. 172-30.000.

Takayama, Masato; and Amari, Yasufumi, to Sony Corporation; and Secom Corporation Limited. Inductive radio communication system. 5,548,815, Cl. 455-41.000.

Takayanagi, Kazutoshi: *See—*
Egawa, Motoji; Fujita, Tetsuji; Sano, Akinobu; and Takayanagi, Kazutoshi, 5,548,459, Cl. 360-103.000.

Takebayashi, Yoichi: *See—*
Gleaves, David; Nagata, Yoshifumi; and Takebayashi, Yoichi, 5,548,681, Cl. 395-2.420.

Takeda Chemical Industries, Ltd.: *See—*
Masaki, Tomoh; Yanagisawa, Masashi; and Inoue, Akihiro, 5,548,061, Cl. 530-324.000.

Takeda, Yoshinobu: *See—*
Horimura, Hiroyuki; Okamoto, Kenji; Minemi, Masahiko; Kaji, Toshihiko; Takeda, Yoshinobu; and Takano, Yoshishige, 5,547,632, Cl. 419-28.000.

Takehara, Nobuyoshi, to Canon Kabushiki Kaisha. Power line linking apparatus for linking a power generator to a commercial power line. 5,548,504, Cl. 363-65.000.

Takei, Kenji: *See—*
Ouchi, Hideo; and Takei, Kenji, 5,547,290, Cl. 384-448.000.

Takekuma, Toshitsugu; Kurihara, Ryoichi; and Yamagiwa, Akira, to Hitachi, Ltd. Fast transmission line implemented with receiver, driver, terminator and IC arrangements. 5,548,226, Cl. 326-30.000.

Takenaka, Hideyuki: *See—*
Hayase, Yoshio; Kataoka, Takahiro; Takenaka, Hideyuki; Ichinari, Mitsuhiro; Masuko, Michio; Takahashi, Toshio; and Tanimoto, Norihiko, 5,548,078, Cl. 544-298.000.

Takeshima, Akira; and Koishi, Musubu, to Hamamatsu Photonics K.K. Decay characteristic measuring apparatus. 5,548,124, Cl. 250-458.100.

Takeuchi, Daizo: *See—*
Iizuka, Tokio; Uehara, Kenichi; and Takeuchi, Daizo, 5,547,699, Cl. 426-615.000.

Takeuchi, Tatsuo: *See—*
Ogata, Takao; Amemiya, Koji; Takeuchi, Tatsuo; Hasegawa, Takashi; Saito, Rie; and Sasanuma, Nobuatsu, 5,548,378, Cl. 355-208.000.

Takeuchi, Toyoaki, to Olympus Optical Co., Ltd. Optical information reproducing apparatus provided with laser power control means for detecting reflected light from data region. 5,548,573, Cl. 369-116.000.

Takeyama, Atsushi: *See—*
Okuyama, Nobutaka; Sakurai, Soichi; Fukuma, Kooji; Yoshioka, Hiroshi; Obara, Masao; Ito, Naoki; Takeyama, Atsushi; and Satoh, Yoshio, 5,548,190, Cl. 315-368.260.

Takeyama, Koji: *See—*
Minamizawa, Fumihiro; Iguchi, Masayoshi; and Takeyama, Koji, 5,548,412, Cl. 358-406.000.

Takimoto, Hiroaki: *See—*
Hattori, Tomoyuki; Suganuma, Hiroshi; Sasaoka, Eisuke; and Takimoto, Hiroaki, 5,548,672, Cl. 385-43.000.

Takimura, Ryo: *See—*
Sekimoto, Takashi; Endo, Yoichi; Yamazaki, Hirohiko; Yamazaki, Masahiko; Ohtani, Yutaka; Iguchi, Takeyoshi; Matsumoto, Kenji; Yamazaki, Hiroyuki; Takimura, Ryo; and Tsuda, Takao, 5,548,417, Cl. 385-474.000.

Taligeni, Inc.: *See—*
Pettus, Christopher E., 5,548,726, Cl. 395-200.090.

Taligent: *See—*
Andert, Glenn P.; and Norman, George W., 5,548,779, Cl. 395-823.000.

Taligent, Inc.: *See—*
Pettus, Christopher E., 5,548,723, Cl. 395-200.010.

Talley, John J.; Bertenshaw, Stephen R.; Graneto, Matthew J.; and Rogier, Donald J. Benzopyranopyrazolyl derivatives for the treatment of inflammation. 5,547,975, Cl. 514-406.000.

Talwar, Ashok K.; and Monzello, Roy C., to American Nucleonics Corporation. Interference cancellation system employing a polar vector modulator. 5,548,838, Cl. 455-304.000.

Tamagawa Machinery Co., Ltd.: *See—*
Yokoyama, Tatsuichi, 5,547,360, Cl. 425-149.000.

Tamai, Jun, to Canon Kabushiki Kaisha. Vibration driven motor. 5,548,175, Cl. 310-323.000.

Tamaki, Tokuhiko; and Imai, Shinichi, to Matsushita Electric Industrial Co., Ltd. Removing interhalogen compounds from semiconductor manufacturing equipment. 5,546,890, Cl. 117-102.000.

Tamkin, John M.: *See—*
Giles, Richard M.; Driscoll, Daniel J.; Ranalli, Eliseo; Tamkin, John M.; and Scott, Bradley, 5,548,394, Cl. 356-71.000.

Tamura, Keiji: *See—*
Hirai, Osamu; Tamura, Keiji; and Ichihashi, Hajime, 5,547,329, Cl. 414-222.000.

Tamura, Miki: *See—*
Takao, Hideaki; Murata, Tatsuo; Kanbe, Junichiro; Tamura, Miki; Kamio, Masaru; Sekimura, Nobuyuki; and Kikuchi, Yoshiki, 5,548,424, Cl. 359-68.000.

Tamura, Toshiharu, to Asahi Kogaku Kogyo Kabushiki Kaisha. Imaging device. 5,547,183, Cl. 271-264.000.

Tanahashi, Masao; Shiba, Takeshi; and Ikuta, Toshio, to Matsushita Electric Works, Ltd. Reciprocatory dry shaver. 5,546,659, Cl. 30-43.920.

Tanaka, Chiaki: *See—*

Shimada, Tomoyuki; Sasaki, Masaomi; and Tanaka, Chiaki, 5,547,792, Cl. 430-59.000.

Tanaka, Hirokazu: *See—*
Takai, Yasuhiro; Ueda, Atsushi; Tanaka, Hirokazu; and Yamasa, Hideo, 5,548,385, Cl. 355-260.000.

Tanaka, Jun; and Himematsu, Fumio, to Asahi Kasei Kogyo Kabushiki Kaisha. Method of making polyester fiber. 5,547,627, Cl. 264-210.500.

Tanaka Kikinzoku Kogyo K.K.: *See—*
Takai, Yasuyuki; Yamada, Tetsuo; Kawamura, Toshifumi; Shimizu, Susumu; and Yamasaki, Haruki, 5,547,363, Cl. 425-376.100.

Tanaka, Kunio; and Hashimoto, Kouichi, to Riso Kagaku Corporation. Image processing apparatus. 5,548,415, Cl. 358-462.000.

Tanaka, Masaaki: *See—*
Akasaka, Yoshio; Kakijima, Kenichi; Endoh, Takeshi; Uchida, Goro; Tanaka, Masaaki; Fujie, Takefumi; Sukawa, Daiji; Endoh, Satoshi; Saitoh, Hideo; and Kubo, Takashi, 5,548,096, Cl. 219-117.100.

Tanaka, Masashi: *See—*
Fukami, Toshiyuki; and Tanaka, Masashi, 5,548,387, Cl. 355-274.000.

Tanaka, Seiichi: *See—*
Iwai, Tomio; and Tanaka, Seiichi, 5,546,748, Cl. 60-302.000.

Tanaka, Seiji: *See—*
Kozaki, Kengo; Ohyachi, Nobuyuki; Tanaka, Seiji; Morisawa, Akira; and Nakazaki, Tosiyuki, 5,548,828, Cl. 455-161.200.

Tanaka, Shigeo; Yamazaki, Hiroshi; Kotabe, Noriko; Sugiyama, Koichi; Sato, Makoto; Katsuyama, Akira; Osakabe, Yoshio; and Kusagaya, Yasuo, to Sony Corporation. System for transmitting command and/or data in a single packet and automatically reporting status a predetermined time after receiving a command. 5,548,725, Cl. 395-200.050.

Tanaka, Susumu: *See—*
Suzuki, Tatsuo; Tanaka, Susumu; and Ueyama, Takashi, 5,547,798, Cl. 430-109.000.

Tanaka, Toyokazu; Takamoto, Manabu; Miwada, Satoshi; Tetsu, Noriyuki; and Waizumi, Sadao, to Hitachi, Ltd. Receiving and transforming apparatus. 5,548,476, Cl. 361-611.000.

Tanaka, Tsutomu: *See—*
Matsumoto, Koji; Tanaka, Tsutomu; and Shono, Keiji, 5,548,576, Cl. 369-275.300.

Tanaka, Yasuyuki: *See—*
Kawahara, Norihiro; and Tanaka, Yasuyuki, 5,548,331, Cl. 348-243.000.

Tanakajima, Takashi: *See—*
Kudo, Hideo; Uchiyama, Isao; Kimura, Yoshiharu; Suzuki, Morie; and Tanakajima, Takashi, 5,547,515, Cl. 134-21.000.

Tandberg Data Storage AS: *See—*
Rudi, Guttorm; Jansen, Ornulf; Kuifte, Halvor O.; and Busengdal, Petter, 5,548,480, Cl. 361-685.000.

Tandem Computers Incorporated: *See—*
Aldridge, David L.; Bunton, William P.; Bissell, Stephen R.; Brown, David; Gunn, Daniel D.; Kagy, Carl; and Sonnier, David P., 5,548,463, Cl. 361-18.000.

Tandy Corporation: *See—*
Easley, Ellis, Jr.; Gray, Patricia; Suwandhaputra, Johannes; and Wolf, Julie, 5,548,784, Cl. 395-838.000.

Taneya, Mototaka: *See—*
Shimonaka, Atsushi; Taneya, Mototaka; Kawanishi, Hidenori; and Morioka, Tatsuya, 5,548,434, Cl. 359-161.000.

Tani, Kazuya: *See—*
Watanabe, Kazuhide; Takada, Kimiharu; Sekita, Masumi; Ito, Takahide; and Tani, Kazuya, 5,547,355, Cl. 418-55.500.

Tani, Makoto; Hayase, Tooru; Shimizu, Hideki; and Matsuda, Kazuyuki, to NGK Insulators, Ltd. Rare earth superconducting composition and process for production thereof. 5,547,921, Cl. 505-124.000.

Tanigami, Yukio: *See—*
Demizu, Ichiro; Nagai, Yasuki; Nakamura, Mitsutoshi; Tanigami, Yukio; and Ueda, Hideaki, 5,547,794, Cl. 430-106.000.

Tanigawa, Sadao: *See—*
Umeda, Yasushi; Tomiyama, Tetsuo; Yoshikawa, Hiroyuki; Sakao, Tomohiko; Shimomura, Yoshiki; and Tanigawa, Sadao, 5,548,682, Cl. 395-10.000.

Taniguchi, Kunio, to Omron Corporation. Method and apparatus for measuring axle load of a running vehicle. 5,546,796, Cl. 73-146.000.

Tanikawa, Kiyoshi: *See—*
Kuramoto, Shinichi; Takahashi, Sadao; Kimura, Yoshiyuki; Ando, Kazuhiro; Saito, Tadashi; Asaba, Youichi; Tanikawa, Kiyoshi; Miyashita, Yoshiaki; and Shinguryo, Satoshi, 5,547,793, Cl. 430-97.000.

Tanimoto, Koji: *See—*
Yoneda, Hitoshi; Hasegawa, Haruyoshi; Nosaki, Takefumi; Tanimoto, Koji; Machida, Hironobu; and Nakamura, Hajime, 5,548,666, Cl. 382-276.000.

Tanimoto, Norihiko: *See—*
Hayase, Yoshio; Kataoka, Takahiro; Takenaka, Hideyuki; Ichinari, Mitsuhiro; Masuko, Michio; Takahashi, Toshio; and Tanimoto, Norihiko, 5,548,078, Cl. 544-298.000.

Tanimoto, Takuma; Kudo, Makoto; Mishima, Tomoyoshi; Nakajima, Akishige; Mori, Mitsuhiro; and Yamane, Masao, to Hitachi, Ltd. Semiconductor device with reduced tunnel resistance and circuitry using the same. 5,548,138, Cl. 257-192.000.

Tanimura, Toshio: *See—*
Sakamoto, Yoshihiro; and Tanimura, Toshio, 5,547,558, Cl. 205-125.000.

Tanino, Noriyuki: *See—*
Yamamoto, Kazuya; Tanino, Noriyuki; and Umemoto, Tetsuya, 5,548,246, Cl. 330-51.000.

Taniuchi, Kazuman: *See—*
Sekine, Hiroshi; Sasuga, Kazuyasu; Taniuchi, Kazuman; Iwamoto, Yasuhiko; Terada, Yoshihiro; and Endoh, Kiyomasa, 5,548,663, Cl. 382-164.000.

Tank, Dieter: *See—*
Kuhn, Ulrich; Tank, Dieter; and Konzelmann, Uwe, 5,546,794, Cl. 73-118.200.

Tanner, Howard C.: *See—*
Carpenter, Gary D.; Dean, Mark E.; Faucher, Marc R.; Peterson, James C.; and Tanner, Howard C., 5,548,746, Cl. 395-500.000.

Tanner, Nelson R.: *See—*
Feger, Claudius; Graham, Teresita O.; Grebe, Kurt R.; Lanzetta, Alphonso P.; Liutkus, John J.; Matthew, Linda C.; Palmer, Michael J.; Tanner, Nelson R.; Tong, Ho-Ming; Wilson, Charles H.; and Yeh, Helen L., 5,546,655, Cl. 29-846.000.

Tantry, Subhash B.; Mashruwala, Rajesh U.; Lozier, Barry A.; and Hess, Richard L., to Consilium, Inc. Object-oriented architecture for factory floor management. 5,548,756, Cl. 395-600.000.

Tanuma, Itsuo: *See—*
Niwa, Hideyuki; Sasaki, Kiyomi; Yoshida, Kyoei; Tanuma, Itsuo; Naito, Kazuo; Morimura, Yasuhiro; and Koga, Takahiko, 5,547,762, Cl. 428-442.000.

Tanzosh, James M.: *See—*
Topolski, Mark J.; and Tanzosh, James M., 5,547,768, Cl. 428-632.000.

Tappe, Horst: *See—*
Dannheim, Jörg; Oehme, Dieter; and Tappe, Horst, 5,548,072, Cl. 534-635.000.

Tarbet, Bryon J.; Bruening, Ronald L.; Di Leo, Anthony J.; Goddard, Philip M.; and Scarmoutzos, Louis M., to IBC Advanced Technologies, Inc.; and Millipore Corporation. Compositions and processes for separating and concentrating certain ions from mixed ion solutions using ion-binding ligands bonded to membranes. 5,547,760, Cl. 428-471.000.

Taromaru, Makoto, to Matsushita Electric Industrial Co., Ltd. Diversity receiver. 5,548,836, Cl. 455-277.100.

Tarrant, Colin D., to British Nuclear Fuels plc. Method of making a rotor. 5,546,648, Cl. 29-598.000.

Tartaglione, André: *See—*
Geiger, Reinold; and Tartaglione, André, 5,547,111, Cl. 222-505.000.

Taskar, Nikhil R.; Gallagher, Dennis; and Dorman, Donald R., to Philips Electronics North America Corporation. Photo-assisted nitrogen doping of II-VI semiconductor compounds during epitaxial growth using an amine. 5,547,897, Cl. 437-108.000.

Tatebe, Ken: *See—*
Onishi, Makoto; Ohwada, Takashi; Tatebe, Ken; Ohmura, Yoshitaka; and Shimura, Kenichi, 5,547,576, Cl. 210-500.370.

Tatsuno Corporation: *See—*
Kudo, Toshio; Nagai, Masaaki; and Shiraiwa, Yasuo, 5,546,790, Cl. 73-40.500.00R.

Tavakoli, Kaihan: *See—*
Weagraff, Jon J.; and Tavakoli, Kaihan, 5,546,673, Cl. 34-80.000.

Tavecchia, Paolo: *See—*
Selva, Enrico; and Tavecchia, Paolo, 5,547,666, Cl. 424-123.000.

Taya, Masaaki: *See—*
Kohtaki, Takaaki; Taya, Masaaki; and Fujimoto, Masami, 5,547,796, Cl. 430-106.600.

Taylor Made Golf Company, Inc.: *See—*
Dumontier, Franck; Guibaud, Jean-Marc; Peters, Mike; and Brouillette, Steven, 5,547,188, Cl. 473-287.000.
Rigal, Jean-Pierre; and Vincent, Benoit, 5,547,427, Cl. 473-345.000.

Taylor, P. A.; Futrell, Todd O.; Dunn, Neil M., Jr.; Jusko, Michael P.; DuBois, Casey R.; and Capehart, Jimmie D., to Electronic Drilling Control, Inc. Ozone generation system. 5,547,644, Cl. 422-186.180.

Taytsas, Lev: *See—*
Kukanskis, Peter; Yakobson, Ernest; and Taytsas, Lev, 5,547,559, Cl. 205-125.000.

TDK Corporation: *See—*
Yoshimura, Emiko; and Tezuka, Shin-ichi, 5,546,802, Cl. 73-335.050.

Tebro SA: *See—*
Galli, Rosaria, 5,546,932, Cl. 128-203.150.

Tech Wear, Inc.: *See—*
Adams, Kay L., 5,548,469, Cl. 361-220.000.

Technova, Inc.: *See—*
Amano, Takashi; and Okabayashi, Makoto, 5,547,598, Cl. 252-62.30T.

Teckentrup GmbH & Co. KG: *See—*
Overhues, Egon, 5,547,326, Cl. 411-544.000.

Tecotzky, Melvin: *See—*
Leblans, Paul; Adriaensens, Albert D.; Tecotzky, Melvin; and Van den Bogaert, Jan A., 5,547,807, Cl. 430-139.000.

Teegarden, Darrell A.: *See—*
Vlach, Martin; Christen, Ernst; Teegarden, Darrell A.; and Bedrosian, David G., 5,548,539, Cl. 364-578.000.

Teigen, Jerry T.: *See—*
Villella, Paul A.; and Teigen, Jerry T., 5,547,241, Cl. 296-24.100.

Teisan K.K.: *See—*
Yokogi, Kazuo, 5,546,753, Cl. 62-48.100.

Teitman, Gerald J.: *See—*
Buchanan, John S.; Mathias, Mark F.; Sodomin, Joseph F., III; and Teitman, Gerald J., 5,547,648, Cl. 423-210.000.

Tek-Kol: *See—*

Siddoway, Mark A., 5,547,548, Cl. 201-29.000.

Tektronix, Inc.: *See—*
Cole, Paul A.; Harry, Emory J.; and Wright, Michael A., 5,548,223, Cl. 324-754.000.

Telecommunications of Colorado, Inc.: *See—*
Ellis, Michael D.; and Lazarus, David B., 5,548,338, Cl. 348-473.000.

Teledesic Corporation: *See—*
Sturza, Mark A., 5,548,294, Cl. 342-372.000.

Teleflex Incorporated: *See—*
Pospisil, Joseph, 5,546,827, Cl. 74-502.400.
Pritchard, Robert J., 5,547,069, Cl. 198-782.000.

Telefonaktiebolaget L M Ericsson: *See—*
Fredberg, Sven T., 5,547,386, Cl. 439-61.000.

Telefonaktiebolaget LM Ericsson: *See—*
Larsson, Bo E. S.; and Sanchez, Iván M., 5,548,750, Cl. 395-600.000.
Victorin, John A., 5,548,820, Cl. 455-67.400.

Televerket: *See—*
Becker, Hans, 5,548,714, Cl. 395-183.020.
Rosenlund, Henrik, 5,548,804, Cl. 455-33.100.

Tencer, Michal: *See—*
Dalgleish, Kevin L.; Hoe, Sei S.; Reinhart, Gregory R.; Somoza, Vincent E.; Pike, Rodney D.; Moss, John S.; and Tencer, Michal, 5,548,643, Cl. 379-429.000.

Tenison, Gary V.: *See—*
Adams, Lowell J.; Leffel, Kevin L.; Tenison, Gary V.; and Weisend, Norbert A., Jr., 5,547,150, Cl. 244-134.00R.

Terada, Yasushi: *See—*
Futatsuya, Tomoshi; Mihara, Masaaki; Terada, Yasushi; Nakayama, Takeshi; Miyawaki, Yoshikazu; Kobayashi, Shinichi; and Ohkawa, Minoru, 5,548,557, Cl. 365-201.000.

Terada, Yoshihiro: *See—*
Sekine, Hiroshi; Sasuga, Kazuyasu; Taniuchi, Kazuman; Iwamoto, Yasuhiko; Terada, Yoshihiro; and Endoh, Kiyomasa, 5,548,663, Cl. 382-164.000.

Terao, Tadayoshi; and Kusano, Katsuya, to Nippondenso Co., Ltd. Air-conditioning apparatus for vehicle use. 5,546,754, Cl. 62-133.000.

Terashima, Masaaki, to Fuji Photo Film Co., Ltd. Method for control or calibration in a chemical analytical determination. 5,547,874, Cl. 436-12.000.

Terumo Kabushiki Kaisha: *See—*
Onishi, Makoto; and Ishikawa, Kenji, 5,547,472, Cl. 604-93.000.
Onishi, Makoto; Ohwada, Takashi; Tatebe, Ken; Ohmura, Yoshitaka; and Shimura, Kenichi, 5,547,576, Cl. 210-500.370.
Yagami, Hiroyuki; Sato, Naoto; Yamashita, Hideaki; Nakagawa, Satoshi; and Maekawa, Jun, 5,546,947, Cl. 128-662.060.

tesa tape Inc.: *See—*
Barrows, Lawrence; Lowden, Gerald; Cassetta, Carmen; and Ozari, Yehuda, 5,547,725, Cl. 428-43.000.

Tesch, Gunter. Needled carpet and a process for producing it. 5,547,731, Cl. 428-85.000.

Teshima, Katsuyoshi; Kamoshita, Hideo; and Baba, Masaaki, to Mitsumi Electric Co., Ltd. Coil device. 5,548,264, Cl. 336-65.000.

Tessera, Inc.: *See—*
DiStefano, Thomas H.; Karavakis, Gus; Kovac, Zlata; and Mitchell, Craig, 5,548,091, Cl. 174-260.000.

Tessier, Jean-Luc: *See—*
Haentjens, Stéphen; Chappet, Philippe; Tessier, Jean-Luc; Ardissone, Jean-Paul; and Guibergia, Jean-Pierre, 5,546,865, Cl. 105-1.200.

Tetra Laval Holdings & Finance S.A.: *See—*
Kjaer, Bjarne; Pedersen, Bent; and Kjaer, Jens B., 5,547,691, Cl. 426-36.000.
Paltrinieri, Roberto, 5,546,733, Cl. 53-503.000.

Tetsu, Noriyuki: *See—*
Tanaka, Toyokazu; Takamoto, Manabu; Miwada, Satoshi; Tetsu, Noriyuki; and Waizumi, Sadao, 5,548,476, Cl. 361-611.000.

Tew, Claude E.: *See—*
Kornher, Kevin L.; Conner, James L.; and Tew, Claude E., 5,548,301, Cl. 345-85.000.

Texas A&M University System, The: *See—*
Mak, King K.; Bligh, Roger P.; Ross, Hayes E., Jr.; and Sicking, Dean L., 5,547,309, Cl. 404-6.000.

Texas Instruments Deutschland GmbH: *See—*
Meier, Herbert; and Sellmeir, Martin, 5,548,291, Cl. 342-51.000.

Texas Instruments Incorporated: *See—*
Chatterjee, Amitava; Liu, Jiann; Mozumder, Purnendu; Rodder, Mark S.; and Chen, Ih-Chin, 5,548,548, Cl. 365-149.000.
Guldi, Richard L., 5,547,891, Cl. 437-52.000.
Huang, Austin L., 5,548,443, Cl. 359-638.000.
Jeng, Shin-Puu, 5,548,159, Cl. 257-634.000.
Joyner, Keith A., 5,548,149, Cl. 257-347.000.
Kornher, Kevin L.; Conner, James L.; and Tew, Claude E., 5,548,301, Cl. 345-85.000.
Lin, Tsen-Hwang; and Malarcher, Falvey, 5,548,772, Cl. 395-800.000.
Manning, William R., 5,548,464, Cl. 361-23.000.
Maurel, Georges, 5,548,774, Cl. 395-800.000.
Mei, Chia-Cu P., 5,548,147, Cl. 257-333.000.
Morris, Francis J.; Yang, Jau-Yuann; Plumton, Donald L.; and Yuan, Han-Tzong, 5,548,141, Cl. 257-192.000.
Naik, Jayant M.; and Doddington, George R., 5,548,647, Cl. 381-42.000.
Walker, William K., 5,548,118, Cl. 250-332.000.

Texas Instruments Incorportated: *See—*
Rountree, Robert N.; Cline, Dan; Walker, Darryl G.; Hii, Francis; and Bergman, David W., 5,548,225, Cl. 326-13.000.

Tezuka, Koji: *See—*
Ogura, Takao; Amemiya, Shigeo; Tezuka, Koji; and Chujo, Takafumi, 5,548,639, Cl. 379-221.000.

Tezuka, Shin-ichi: *See—*
Yoshimura, Emiko; and Tezuka, Shin-ichi, 5,546,802, Cl. 73-335.050.

Thaler, Stephen L., to McDonnell Douglas Corporation. Laser absorption wave deposition process and apparatus. 5,547,716, Cl. 427-577.000.

Thalhammer, Franz. Adjustable cartridge case gauge. 5,546,667, Cl. 33-506.000.

Thapar, Hemant K.: *See—*
Fredrickson, Lisa; Karabed, Razmik; Siegel, Paul H.; and Thapar, Hemant K., 5,548,600, Cl. 371-43.000.

Thermwood Corporation: *See—*
Susnjara, Kenneth J.; and Hardesty, Michael P., 5,547,003, Cl. 144-368.000.

Thiokol Corporation: *See—*
Bennett, S. John; and Hamilton, R. Scott, 5,547,525, Cl. 149-19.100.

Thogersen, Klaus: *See—*
Coombs, Peter M.; Thogersen, Klaus; and Seibel, Edward, 5,547,184, Cl. 271-297.000.

Tholen, Leo: *See—*
Rüth, Gregor; Wirtz, Ulrich; and Tholen, Leo, 5,547,137, Cl. 242-35.50R.

Thomas, Alan E., to Thomas, Alan E. Localized automatic fire extinguishing apparatus. 5,548,276, Cl. 340-578.000.

Thomas & Betts Corporation: *See—*
Reed, Steven J.; Wallgren, Robert L.; Davies, Scott T.; Wojtan, George R.; and Gazzara, Paul, 5,548,489, Cl. 361-827.000.

Thomas, Carter J.: *See—*
Bloemer, John M.; Kurth, Michael J.; Bengtson, Alan D.; Giese, Robert C.; Dannenberg, Todd D.; Thomas, Carter J.; Potter, Edwin R., Jr.; Bonnell, Thomas A.; Halloran, Daniel N.; and Clarke, Thomas W., 5,546,616, Cl. 4-541.200.

Thomas, David R.: *See—*
Coles, Harry J.; Hannington, Jonathon P.; and Thomas, David R., 5,547,604, Cl. 252-299.010.

Thomas, James D., to United States of America, Army. Combined sidewall and tie-down for pallet. 5,547,321, Cl. 410-102.000.

Thomcast: *See—*
Paquier, Jean-Luc; and Guillevic, Dominique, 5,548,343, Cl. 348-691.000.

Thompson, Catherine C.: *See—*
Evans, Ronald M.; Ong, Estelita S.; Segui, Prudimar S.; Thompson, Catherine C.; Umesono, Kazuhiko; and Giguere, Vincent, 5,548,063, Cl. 530-350.000.

Thompson, James L.: *See—*
Furseth, John P.; Heydrich, Frank; Hover, Forest H.; Little, Ian; Mackin, Steven G.; Stenard, Steven C.; Thompson, James L.; White, Ellen; and Wilson, Bruce D., 5,547,342, Cl. 415-200.000.

Thompson, Jeffrey S.: *See—*
Hassett, David J.; and Thompson, Jeffrey S., 5,547,588, Cl. 210-724.000.

Thompson, Matilda; and Williams, W. Grey, to Thompson, Matilda. Pre-rinse dispenser. 5,546,774, Cl. 68-208.000.

Thompson, Nigel, to MCG Closures Limited. Container closure with frangible bridges. 5,547,092, Cl. 215-252.000.

Thompson, Stacey S.; McShane, James; Wong, Joseph; and Wood, Ray W., to Baxter International Inc. In-line drug delivery device for use with a standard IV administration set and a method for delivery. 5,547,471, Cl. 604-87.000.

Thompson, Todd: *See—*
Kloeckl, Terrance; Thompson, Todd; Costa, Peter F.; Holmes, William A.; and Daulton, Jay, 5,547,474, Cl. 606-143.000.

Thomson Consumer Electronics, Inc.: *See—*
Klink, Kristopher A.; and Sendelweck, Gene K., 5,548,341, Cl. 348-565.000.
Menand, Jean-René; Joseph, Kuriacose; and Jessup, Ansley W., Jr., 5,548,532, Cl. 364-514.00C.

Thomson-CSF: *See—*
Lagoutte, Pierre; and Blanchard, Alain, 5,548,585, Cl. 370-60.000.

Thorland, Rod: *See—*
Podgorski, Theodore J.; Thorland, Rod; and Curran, Robert M., 5,548,602, Cl. 372-19.000.

Thornton, Arthur R. D., to Medical Research Council. Testing hearing. 5,546,956, Cl. 128-746.000.

Thorud, Michael S.; and Assell, Robert L., to Lake Region Manufacturing Company, Inc. Guidewire extension system with tactile connection indication. 5,546,958, Cl. 128-772.000.

Thrasher, David L.: *See—*
Simmons, Mark A.; McGrath, Martin J.; and Thrasher, David L., 5,548,505, Cl. 364-130.000.

Thurber, Steven M.: *See—*
Chen, Wen-Tzer T.; Thurber, Steven M.; and Tsao, Gary Y., 5,548,735, Cl. 395-375.000.

Thurston, Garrett S.: *See—*
Scaringella, David T.; Connors, Donald E., Jr.; and Thurston, Garrett S., 5,547,717, Cl. 427-590.000.

Tietjen, Klaus: *See—*

Krüger, Bernd-Wieland; Maurer, Fritz; Methfessel, Christoph; Tietjen, Klaus; Maelicke, Alfred; Schmidt, Bernard; and Shiokawa, Kozo, 5,547,965, Cl. 514-342.000.

Tigges, Burkhard, to Werner Turck GmbH & Co. KG. Mounting base for an inductive proximity switch. 5,548,094, Cl. 200-303.000.

Timminco Limited: *See—*
Hibbins, Stephen G.; Timpano, Fernando A.; and Zuliani, Douglas J., 5,547,634, Cl. 420-564.000.

Timms, Alfred R. Skate sharpening gauge. 5,547,416, Cl. 451-45.000.

Timpano, Fernando A.: *See—*
Hibbins, Stephen G.; Timpano, Fernando A.; and Zuliani, Douglas J., 5,547,634, Cl. 420-564.000.

Tingley, Daniel A. Glue-laminated wood structural member with synthetic fiber reinforcement. 5,547,729, Cl. 428-74.000.

Tinnerino, Natale F.: *See—*
Reynolds, Edward P.; Tinnerino, Natale F.; and Schiefele, Walter P., 5,547,537, Cl. 156-351.000.

Tinti, Maria O.; Misiti, Domenico; and Cavazza, Claudio, to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A. Ester of L-carnitine with gamma-hydroxybutyric acid and pharmaceutical compositions containing it for inhibiting neuronal degeneration and for the treatment of coma. 5,547,986, Cl. 514-547.000.

Toa Medical Electronics Co., Ltd.: *See—*
Kosaka, Tokihiro, 5,548,395, Cl. 356-73.000.

Tobisawa, Seiichi: *See—*
Aizawa, Hiroyuki; and Tobisawa, Seiichi, 5,547,510, Cl. 118-410.000.

Tobita, Youichi, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device with read out data transmission bus for simultaneously testing a plurality of memory cells and testing method thereof. 5,548,596, Cl. 371-21.200.

Tobkin, Michael: *See—*
Schroeder, Paul; and Tobkin, Michael, 5,548,372, Cl. 355-53.000.

Toda, Yasuyoshi: *See—*
Nozawa, Masaei; Toda, Yasuyoshi; Naito, Kiwamu; Nomura, Yurio; and Osaki, Rie, 5,548,393, Cl. 356-70.000.

Todd, Christian A.: *See—*
Cheatham, Samuel D.; Jacobs, Lynn C.; Janssen, Donovan M.; Leonhardt, Michael L.; Milligan, Charles A.; and Todd, Christian A., 5,547,142, Cl. 242-338.100.

Todd, Gary J. Bow string release device. 5,546,924, Cl. 124-35.200.

Toepel, Michael P. Compact hand held medical device laser. 5,548,604, Cl. 372-35.000.

Tohkam Products: *See—*
Noda, Touru; Uno, Akira; and Muraoka, Kazuyoshi, 5,547,822, Cl. 430-531.000.

Toho Titanium Co., Ltd.: *See—*
Kataoka, Takuo; and Goto, Kenji, 5,547,912, Cl. 502-154.000.

Tokai Rubber Industries, Ltd.: *See—*
Tsutsumida, Joji; Suzuki, Yasuhiro; and Uozumi, Tetsuo, 5,547,173, Cl. 267-140.150.

Tokimoto, Toyotaro, to Avix Inc. Manual rotation type display device. 5,548,300, Cl. 345-39.000.

Toko Kabushiki Kaisha: *See—*
Arai, Hiroyuki, 5,548,297, Cl. 343-700.0MS.

Toko, Yoshio: *See—*
Inubushi, Toshiya; Toko, Yoshio; and Musha, Atsushi, 5,548,824, Cl. 455-90.000.

Tokoro, Toru, to RTA Associates, Inc. Method for feeding an animal ubidecarenone to prevent discoloration of meat and fish. 5,547,688, Cl. 426-2.000.

Tokunaga, Hiroyuki; and Kawasaki, Hideshi, to Canon Kabushiki Kaisha. Light-emitting device, optical recording head utilizing said device, and optical printer utilizing said optical recording head. 5,548,131, Cl. 257-64.000.

Tokunaga, Tadayuki: *See—*
Okada, Jouji; Kawamata, Akira; Tokunaga, Tadayuki; Nagatani, Noboru; Torizuka, Makoto; and Asahi, Masahiko, 5,548,054, Cl. 528-25.000.

Tokunaga, Takashi: *See—*
Fujii, Yoshio; Tokunaga, Takashi; Nakaki, Yoshiyuki; Tsutsumi, Kazuhiko; Hashima, Kazuo; Fukami, Tatsuya; and Kawano, Yuji, 5,547,751, Cl. 428-332.000.

Tokunaga, Terumitsu; and Kuraya, Michinori, to Toyo Seal Kogyo Kabushiki Kaisha. Crosslinking agent for acrylic rubber. 5,548,032, Cl. 525-352.000.

Tokyo Electron Limited: *See—*
Arasawa, Masashi; Ono, Katsuhiko; Nishikawa, Hiroshi; and Tsuchiya, Kazuo, 5,547,539, Cl. 156-626.100.

Tokyo Electron Yamanashi Limited: *See—*
Arasawa, Masashi; Ono, Katsuhiko; Nishikawa, Hiroshi; and Tsuchiya, Kazuo, 5,547,539, Cl. 156-626.100.

Tokyo Institute of Technology: *See—*
Yamamoto, Takakazu; and Maruyama, Tsukasa, 5,548,048, Cl. 526-265.000.

Tolson, Sidney S., to Ossid Corporation; and Ibaraki Seiki Machinery Co., Ltd. Apparatus and method for shrinking film wrapped around a product. 5,546,677, Cl. 34-216.000.

Tolzman, David: *See—*
McEwen, John; Tolzman, David; and DiDonato, Anthony, 5,546,879, Cl. 112-282.000.

Tomaru, Masaki; Moriyama, Seiichi; and Sadakata, Kiyoshi, to NSK, Ltd. Energy absorbing member for shock absorbing steering column apparatus. 5,547,221, Cl. 280-777.000.

Tomita, Masao: *See—*
Ryu, Tadamitsu; Mogi, Yoshio; Tomita, Masao; and Fukatsu, Takanori, 5,548,751, Cl. 395-600.000.

Tomita, Shinji: *See—*
Nagamura, Takashi; and Tomita, Shinji, 5,546,765, Cl. 62-643.000.

Tomita, Toshihiko: *See—*
Uchimoto, Daisuke; Monmasu, Hiroshi; Tomita, Toshihiko; and Inoue, Junsuke, 5,547,158, Cl. 248-396.000.

Tomiyama, Tetsuo: *See—*
Umeda, Yasushi; Tomiyama, Tetsuo; Yoshikawa, Hiroyuki; Sakao, Tomohiko; Shimomura, Yoshiki; and Tanigawa, Sadao, 5,548,682, Cl. 395-10.000.

Tomonaga, Junichi: *See—*
Moriya, Hiroyuki; Tomonaga, Junichi; Hashimoto, Kiyoshi; and Muraoka, Kazunari, 5,547,135, Cl. 241-40.000.

Tonami, Hiromichi: *See—*
Kimura, Yutaro; Ikeshima, Tetsuhiko; Tonami, Hiromichi; Konishi, Ikuo; Horikawa, Hiroshi; Daikoku, Akihiro; Sakabe, Shigekazu; Inoue, Masao; and Yamasaki, Akinori, 5,548,629, Cl. 378-134.000.

Tonen Corporation: *See—*
Koganei, Katsuya; Nomura, Takeshi; Kuribayashi, Toshiaki; and Umemoto, Noboru, 5,547,597, Cl. 508-409.000.

Tong, Ho-Ming: *See—*
Feger, Claudius; Graham, Teresita O.; Grebe, Kurt R.; Lanzetta, Alphonso P.; Liutkus, John J.; Matthew, Linda C.; Palmer, Michael J.; Tanner, Nelson R.; Tong, Ho-Ming; Wilson, Charles H.; and Yeh, Helen L., 5,546,655, Cl. 29-846.000.

Tonti, William R.: *See—*
Mandelman, Jack A.; Galbi, Duane; Slinkman, James A.; and Tonti, William R., 5,547,894, Cl. 437-56.000.

Too Sweet, Ltd.: *See—*
Ciaramita, Charles F., 5,547,507, Cl. 118-13.000.

Topal, Mickey: *See—*
Straub, William; Hosking, Jack; Topal, Mickey; and Boczkiewicz, Bruce, 5,546,864, Cl. 104-17.200.

Topolski, Mark J.; and Tanzosh, James M., to Babcock & Wilcox Company, The. Corrosion resistant nickel oxide surface coating. 5,547,768, Cl. 428-632.000.

Topper, Robert J.; and Dischert, Lee R., to Panasonic Technologies, Inc. Apparatus and method for black shading correction. 5,548,332, Cl. 348-251.000.

Topy Kogyo Kabushiki Kaisha: *See—*
Nakamura, Tsuyoshi; Kodaira, Kazuho; and Higuchi, Katsuhiro, 5,548,520, Cl. 364-472.020.

Torii, Maho: *See—*
Hagihara, Takeaki; and Torii, Maho, 5,547,591, Cl. 210-782.000.

Torii, Yoshinari, to Nippondenso Co., Ltd. Constant-speed cruise control device for a vehicle. 5,547,037, Cl. 180-178.000.

Torizuka, Makoto: *See—*
Okada, Jouji; Kawamata, Akira; Tokunaga, Tadayuki; Nagatani, Noboru; Torizuka, Makoto; and Asahi, Masahiko, 5,548,054, Cl. 528-25.000.

Torok, Robert J.; and Duschen, Ernest A., to General Signal Corporation. Gate valve for fluidized particular material. 5,547,167, Cl. 251-187.000.

Tosoh Corporation: *See—*
Doi, Toru, 5,548,031, Cl. 525-327.400.
Hanasaki, Yasuaki; Tsukuda, Kazuaki; Watanabe, Hiroyuki; Tsuzuki, Kenji; Murakami, Mitsuyuki; and Niimi, Noritoshi, 5,547,920, Cl. 504-261.000.

Tossavainen, Olli: *See—*
Outinen, Marko T.; Tossavainen, Olli; Harju, Matti; and Linko, Pekka, 5,547,687, Cl. 426-2.000.

Toukhy, Medhat A.: *See—*
Blakeney, Andrew J.; Medina, Arturo N.; Toukhy, Medhat A.; Ferreira, Lawrence; and Tadros, Sobhy, 5,547,814, Cl. 430-326.000.

Tournier, Gilles; and Seguier, Stéphane, to Societe Nationale Aerospatiale Industrielle. Crimping tool for the connection of an electric cable in an end element. 5,546,653, Cl. 29-751.000.

Tovey, Ian J.: *See—*
Hinchliffe, Peter W. J.; Pappalardo, Dawn J.; Larsen, Scott; Tovey, Ian J.; and McDonnell, Christopher, 5,547,463, Cl. 602-20.000.

Townsend, Jeffrey A., to TranSwitch Corporation. Data independent automatic gain control circuit for telecommunication applications. 5,548,833, Cl. 455-234.100.

Townsend, Kevin P. Striking apparatus having an interchangeable head. 5,546,832, Cl. 81-25.000.

Toyama, Kazuhisa: *See—*
Egi, Hiroshi; and Toyama, Kazuhisa, 5,547,545, Cl. 162-238.000.

Toyama, Nobuaki, to Fuji Photo Optical Co., Ltd. Photographic lens system. 5,548,447, Cl. 359-759.000.

Toyo Boseki Kabushiki Kaisha: *See—*
Hattori, Shizuo; Kishimoto, Takahide; Sogabe, Yukihiro; and Emi, Shigenori, 5,547,851, Cl. 435-26.000.
Ohta, Yasuo; Kuroki, Tadao; and Oie, Yoshinobu, 5,547,626, Cl. 264-203.000.

Toyo Seal Kogyo Kabushiki Kaisha: *See—*
Tokunaga, Terumitsu; and Kuraya, Michinori, 5,548,032, Cl. 525-352.000.

Toyoda Goesi Co., Ltd.: *See—*
Yamamoto, Keisaku; Ikeda, Kiyoshi; Fukuyama, Masahiro; Naito, Takeshi; and Aritake, Masanori, 5,548,012, Cl. 524-433.000.

Toyoda Gosei Co., Ltd.: *See—*

Sato, Jyunichi; and Komori, Takahiro, 5,548,093, Cl. 181-224.000.

Toyoda, Tetsuya: *See*—
Kito, Eiji; and Toyoda, Tetsuya, 5,548,586, Cl. 370-60.000.

Toyokanetsu Kabushiki Kaisha: *See*—
Okada, Nobuyuki; and Eikyu, Takuya, 5,547,084, Cl. 209-583.000.

Toyokura, Masaki: *See*—
Gion, Masahiro; and Toyokura, Masaki, 5,548,665, Cl. 382-276.000.

Toyolink Manufacturing Co., Ltd.: *See*—
Satake, Sunao; Yatsuyanagi, Yoshimi; Fujii, Masahiro; and Imagawa, Ippei, 5,547,999, Cl. 522-122.000.

Toyota Jidosha Kabushiki Kaisha: *See*—
Muramoto, Riemi, 5,547,913, Cl. 502-328.000.
Nozaki, Kazutoshi; Iwatsuki, Kunihiro; and Matsubara, Tooru, 5,547,438, Cl. 477-169.000.
Osanai, Akinori; Nagai, Toshinari; Kanai, Hiroshi; Harima, Kenji; Iwano, Kazuhiko; and Yuda, Shuji, 5,546,917, Cl. 123-674.000.

Toyota Shatai Kabushiki Kaisha: *See*—
Ito, Tatsuro; Oae, Keiichi; and Shiota, Seijiro, 5,547,255, Cl. 297-367.000.
Koketsu, Eiji; Sato, Koki; Muromachi, Tetsushi; Haraoka, Mutsumu; Nagata, Toshio; Yanagihara, Michihiro; and Oma, Kuniaki, 5,547,223, Cl. 280-805.000.

Tozu, Kenji; Asano, Kenji; and Hattori, Noriaki, to Aisin Seiki Kabushiki Kaisha. Braking force distribution control system. 5,547,264, Cl. 303-9.620.

Tozuka, Masahiro: *See*—
Yamada, Tadayoshi; Tozuka, Masahiro; Goto, Katumi; Simatani, Tuyoshi; and Maeda, Yoshinobu, 5,548,350, Cl. 348-839.000.

Traber, Rainer H., to Ciba-Geigy Corporation. Phosphate-free reduction bleaching formulation. 5,547,475, Cl. 8-110.000.

Tracy, James L., to Motorola, Inc. Integrated light pipe for a shielded housing. 5,548,084, Cl. 174-35.00R.

Tran, Joseph, to TransLogic Technology, Inc. Serial differential pass gate logic design. 5,548,231, Cl. 327-52.000.

TransLogic Technology, Inc.: *See*—
Tran, Joseph, 5,548,231, Cl. 327-52.000.

TranSwitch Corporation: *See*—
Townsend, Jeffrey A., 5,548,833, Cl. 455-234.100.
Upp, Daniel C., 5,548,534, Cl. 364-514.00R.

Treche, Ronald, to Whitaker Corporation, The. Rapid, tool-less adjusting system for hotstick tooling. 5,547,305, Cl. 403-97.000.

Treichl, Markus; and Alt, Christian, to Brose Fahrzeugteile GmbH & Co. KG. Manually operable mechanical memory device. 5,547,159, Cl. 248-429.000.

Tremco, Inc.: *See*—
Provenzola, Robert M., 5,548,016, Cl. 524-507.000.

Tripp, Guy L.: *See*—
Sperling, Kenneth R.; and Tripp, Guy L., 5,546,899, Cl. 123-90.500.

Tristrata Technology, Inc.: *See*—
Yu, Ruey J.; and Van Scott, Eugene J., 5,547,988, Cl. 514-557.000.

Trokhan, Paul D.; and Phan, Dean V., to Procter & Gamble Company, The. Process of making absorbent structures and absorbent strutures produced thereby. 5,547,747, Cl. 428-320.200.

Tropix, Inc.: *See*—
Bronstein, Irena Y.; Edwards, Brooks; and Voyta, John C., 5,547,836, Cl. 435-6.000.

Trudell, Barry C.: *See*—
Tse, Mun F.; Cross, Virginia R.; and Trudell, Barry C., 5,548,014, Cl. 524-477.000.

Trunkett, Kevin S.: *See*—
Dalton, William S.; Clark, Richard S.; and Trunkett, Kevin S., 5,547,340, Cl. 415.00-121.200.

Trustees of Boston University: *See*—
Goldberg, Bennett B.; and Ghaemi, Hadi F., 5,548,113, Cl. 250-234.000.

Trustees of Princeton University, The: *See*—
Lemischka, Ihor R., 5,548,065, Cl. 530-388.220.

Trützschler GmbH & Co. KG: *See*—
Leifeld, Ferdinand, 5,546,635, Cl. 19-200.000.

TRW Inc.: *See*—
Senn, Robert H.; and Record, Loren E., 5,548,606, Cl. 372-39.000.

Tsai, Hsi-Chuan: *See*—
Muroi, Souichi; and Tsai, Hsi-Chuan, 5,548,058, Cl. 528-93.000.

Tsang, Won-Tien, to Lucent Technologies, Inc. Article comprising an integrated laser/modulator combination. 5,548,607, Cl. 372-50.000.

Tsao, Chich-Hsing A.: *See*—
Hirshfield, Edward; and Tsao, Chich-Hsing A., 5,548,292, Cl. 342-324.000.

Tsao, Gary Y.: *See*—
Chen, Wen-Tzer T.; Thurber, Steven M.; and Tsao, Gary Y., 5,548,735, Cl. 395-375.000.

Tse, Mun F.; Cross, Virginia R.; and Trudell, Barry C., to Exxon Chemical Patents Inc. Blends of ethylene copolymers for hot melt adhesives. 5,548,014, Cl. 524-477.000.

Tseng, Horng-Huei, to Vanguard International Semiconductor Corporation. DRAM cell with a cradle-type capacitor. 5,547,890, Cl. 437-52.000.

Tseng, Pin-Nan: *See*—
Wang, Jau-Jey; Shieh, Pi-Chen; and Tseng, Pin-Nan, 5,547,881, Cl. 437-24.000.

Tsubakino, Motohiro, to Taiho Industries Co., Ltd. Method for mounting specimens using filter sheet. 5,547,571, Cl. 210-232.000.

Tsuboi, Yoshinori: *See*—
Shimizume, Kazutoshi; Akita, Mamoru; and Tsuboi, Yoshinori, 5,548,569, Cl. 369-44.280.

Tsuchiya, Chikara: *See*—
Watanabe, Takao; Hayashi, Mutsuo; Matsumoto, Kazunari; Tsuchiya, Chikara; Matsui, Takashi; and Matsubayashi, Masaru, 5,548,252, Cl. 331-176.000.

Tsuchiya, Kazuo: *See*—
Arasawa, Masashi; Ono, Katsuhiko; Nishikawa, Hiroshi; and Tsuchiya, Kazuo, 5,547,539, Cl. 156-626.100.

Tsuchiya, Makoto: *See*—
Kawasaki, Hisashi; Tsuchiya, Makoto; Miwa, Kiyoshi; and Kawahara, Yoshio, 5,547,864, Cl. 435-170.000.

Tsüchiya, Masaru: *See*—
Morimoto, Hitoshi; Miyazawa, Kazuhiro; and Tsuchiya, Masaru, 5,547,810, Cl. 430-203.000.

Tsuchiyama, Hideaki: *See*—
Sugiyama, Akihiko; Tsuchiyama, Hideaki; Futami, Toshihiko; Kato, Hisataka; and Hoshi, Takao, 5,547,344, Cl. 417-32.000.

Tsuchiyama, Kinya; and Matai, Masahiro, to NEC Corporation. Data display radio pager. 5,548,271, Cl. 340-311.100.

Tsuda, George I.; Haeger, Thomas A.; and Leeper, William A., to Hughes Aircraft Company. Collinearly polarized nested cup dipole feed. 5,548,299, Cl. 343-789.000.

Tsuda, Shingo: *See*—
Okawa, Takashi; Enokido, Masashi; Tsuda, Shingo; and Akutsu, Norikatsu, 5,547,784, Cl. 429-218.000.

Tsuda, Takao: *See*—
Sekimoto, Takashi; Endo, Yoichi; Yamazaki, Hirohiko; Yamazaki, Masahiko; Ohtani, Yutaka; Iguchi, Takeyoshi; Matsumoto, Kenji; Yamazaki, Hiroyuki; Takimura, Ryo; and Tsuda, Takao, 5,548,417, Cl. 385-474.000.

Tsuda, Yukio: *See*—
Iguchi, Michihisa; and Tsuda, Yukio, 5,548,374, Cl. 355-200.000.

Tsujii, Masahiko; Kuroda, Hirofumi; Furusawa, Yoshikazu; and Hirota, Katsuhiko, to Eisai Chemical Co., Ltd. Purification method of crude product. 5,547,580, Cl. 210-656.000.

Tsujita, Chikako, to Canon Kabushiki Kaisha. Process for producing liquid crystal device whereby curing the sealant takes place after pre-baking the substrates. 5,548,429, Cl. 359-80.000.

Tsujita, Kouichirou, to Mitsubishi Denki Kabushiki Kaisha. Method of forming a fine resist pattern of high resolution using a contrast enhancement layer. 5,547,813, Cl. 430-325.000.

Tsukuda, Kazuaki: *See*—
Hanasaki, Yasuaki; Tsukuda, Kazuaki; Watanabe, Hiroyuki; Tsuzuki, Kenji; Murakami, Mitsuyuki; and Niimi, Noritoshi, 5,547,920, Cl. 504-261.000.

Tsumura, Mihoji, to Ricos Co., Ltd. Computer game device. 5,547,202, Cl. 463-29.000.

Tsuno, Masahide: *See*—
Inagaki, Yoshio; Shinkai, Motoshi; Tsuno, Masahide; and Nagatani, Akihiro, 5,547,489, Cl. 75-512.000.

Tsunoda, Takeo; Aizawa, Hitomi; and Hama, Yuji, to Seiko Epson Corporation. Power saving display subsystem for portable computers. 5,548,765, Cl. 395-750.000.

Tsutsui, Hiroshi: *See*—
Hayabuchi, Masahiro; Nishida, Masaaki; Yamamoto, Yoshihisa; Mikami, Kazuhiro; Tsutsui, Hiroshi; and Iwata, Akihito, 5,547,436, Cl. 477-114.000.

Tsutsui, Kyohji, to Ricoh Company, Ltd. Reversible thermal coloring compositions, and recording media and methods usiog the same. 5,547,500, Cl. 106-21.00A.

Tsutsumi, Kazuhiko: *See*—
Fujii, Yoshio; Tokunaga, Takashi; Nakaki, Yoshiyuki; Tsutsumi, Kazuhiko; Hashima, Kazuo; Fukami, Tatsuya; and Kawano, Yuji, 5,547,751, Cl. 428-332.000.

Tsutsumi, Masahiro: *See*—
Hazama, Hiroyuki; Tsutsumi, Masahiro; and Watanabe, Masaru, 5,547,805, Cl. 430-125.000.

Tsutsumida, Joji; Suzuki, Yasuhiro; and Uozumi, Tetsuo, to Tokai Rubber Industries, Ltd.; and Nissan Motor Company, Ltd. Fluid-filled cylindrical elastic mount having three fluid chambers and three orifices, with one valve means provided in one orifice. 5,547,173, Cl. 267-140.150.

Tsutsumni, Seiji: *See*—
Christensen, Burton G.; Egawa, Takashi; Ichimaru, Yasuyuki; Ohuchi, Shokichi; Okonogi, Tsuneo; Patchett, Arthur A.; Shibahara, Seiji; and Tsutsumni, Seiji, 5,547,978, Cl. 514-422.000.

Tsuyuki, Hiroshi; and Kikuchi, Akira, to Olympus Optical Co., Ltd. Objective optical system for endoscopes. 5,547,457, Cl. 600-175.000.

Tsuzuki, Kenji: *See*—
Hanasaki, Yasuaki; Tsukuda, Kazuaki; Watanabe, Hiroyuki; Tsuzuki, Kenji; Murakami, Mitsuyuki; and Niimi, Noritoshi, 5,547,920, Cl. 504-261.000.

Tu, Peter, to Sony Corporation. Image processiog system and method thereof in which three dimensional shape is reproduced from two dimensional image data. 5,548,667, Cl. 382-285.000.

Tuba, Zoltán: *See*—
Mahó, Sándor; Tuba, Zoltán; Gere, Anikó; Vittay, Pal; Kiss, Béla; Pálosi, Éva; Szporny, László; Francsicsné, Erzsébet C.; Boórné, Anna M.; Balogh, Gábor; and Görög, Sándor, 5,547,949, Cl. 514-176.000.

Tucker, Pamela S.; and Showers, Nancy, to Utility Composites, Inc. Nail packs made of composites having high compressive strength and flexural modules. 5,547,325, Cl. 411-442.000.

Tückmantel, Werner: *See*—
Kozikowski, Alan P.; and Tückmantel, Werner, 5,547,960, Cl. 514-295.000.

Tujide, Tohru; Nakamura, Toyokazu; and Nikawa, Kiyoshi, to NEC Corporation. Dynamic fault imaging system using electron beam and method of analyzing fault. 5,548,211, Cl. 324-158.100.

Tullis, Thomas S.: *See*—
Egan, Alistair; and Tullis, Thomas S., 5,548,745, Cl. 395-500.000.

Tumiello, William H.: *See*—
Chapman, George R., Jr.; Morgan, Richard A.; Stewart, Charles W.; Tumiello, William H.; Van Alsten, John G.; Vogel, Randall A.; and Wagman, Mark E., 5,547,761, Cl. 428-422.000.

Tumpey, John J.: *See*—
Shekhawat, Sampat; Tumpey, John J.; and Widdis, James C., 5,546,742, Cl. 60-39.142.

Turi, Laszlo; Ujazdowski, Richard; and Juhasz, Tibor, to Intelligent Surgical Lasers, Inc. System and method for control of a Pockel's cell. 5,548,234, Cl. 327-108.000.

Turner, Bruce A. Device for collecting lawn debris. 5,546,738. Cl. 56-202.000.

Turner, Dennis: *See*—
Harris, Alan L.; and Turner, Dennis, 5,547,265, Cl. 303-10.000.

Turner, Jonathan: *See*—
Sauer, Gerhard; Brumby, Thomas; Wachtel, Helmut; Turner, Jonathan; and Löschmann, Peter-Andreas, 5,547,958, Cl. 514-288.000.

Tusch, Klaus N., to Colebrand Limited. Cover. 5,547,734, Cl. 428-102.000.

Tuttle, Mark E.: *See*—
Blonsky, Peter M.; and Tuttle, Mark E., 5,547,781, Cl. 429-174.000.

Tutton, John: *See*—
Lee, Bernard W. N.; and Tutton, John, 5,548,368, Cl. 354-275.000.

Tyagi, Dinesh: *See*—
Wilson, John C.; and Tyagi, Dinesh, 5,547,803, Cl. 430-110.000.

Tyree, William H.: *See*—
Balmer, David K.; Haverty, Thomas W.; Nordin, Carl W.; and Tyree, William H., 5,548,121, Cl. 250-370.010.

Tzikas, Athanassios: *See*—
Deitz, Rolf; Tzikas, Athanassios; and Herzig, Paul, 5,548,071, Cl. 534-612.000.

Uchida, Goro: *See*—
Akasaka, Yoshio; Kakijima, Kenichi; Endoh, Takeshi; Uchida, Goro; Tanaka, Masaaki; Fujie, Takefumi; Sukawa, Daiji; Endoh, Satoshi; Saitoh, Hideo; and Kubo, Takashi, 5,548,096, Cl. 219-117.100.

Uchida, Naoshi: *See*—
Kuboyama, Katsunori; Asakawa, Koji; and Uchida, Naoshi, 5,548,258, Cl. 335-16.000.

Uchida, Tetsuro; and Ohira, Kazuhide, to Mitsumi Electric Co., Ltd. Protective circuit. 5,548,462, Cl. 361-18.000.

Uchida, Toshiya: *See*—
Yoshimoto, Shigeka; Takahashi, Akiyoshi; Uchida, Toshiya; and Wakashima, Rie, 5,548,437, Cl. 359-200.000.

Uchikawa, Akira, to Unisia Jecs Corporation. Air-fuel ratio control system. 5,546,921, Cl. 123-694.000.

Uchikawa, Nobutaka: *See*—
Asanuma, Tadashi; Kimura, Shigeru; Uchikawa, Nobutaka; and Shiomura, Tetsunosuke, 5,548,007, Cl. 524-99.000.
Asanuma, Tadashi; Kimura, Shigeru; Uchikawa, Nobutaka; and Shiomura, Tetsunosuke, 5,548,008, Cl. 524-99.000.

Uchimoto, Daisuke; Monmasu, Hiroshi; Tomita, Toshihiko; and Inoue, Junsuke, to Kabushiki Kaisha Toyo Seat; and Mazda Motor Corporation. Device for adjusting the seating level of a vehicle seat. 5,547,158, Cl. 248-396.000.

Uchino, Bunji: *See*—
Kawakami, Shoichi; Okamoto, Toru; Miyazaki, Nobuyuki; Uchino, Bunji; Nomura, Kazuyoshi; and Kato, Hiroyuki, 5,548,019, Cl. 524-591.000.

Uchiyama, Akihiko: *See*—
Saito, Yoshiro; Fujii, Haruo; Sasame, Hiroshi; Hayakawa, Tatsuhiko; Kobayashi, Tatsuya; Kobayashi, Tetsuya; Enomoto, Naoki; Uchiyama, Akihiko; and Maebashi, Youichirou, 5,548,381, Cl. 355-245.000.

Uchiyama, Isao: *See*—
Kudo, Hideo; Uchiyama, Isao; Kimura, Yoshiharu; Suzuki, Morie; and Tanakajima, Takashi, 5,547,515, Cl. 134-21.000.

Uda, Minoru: *See*—
Miyamoto, Yasuhiro; Ishihara, Toshiaki; and Uda, Minoru, 5,547,544, Cl. 162-199.000.

Uda, Sawayo: *See*—
Kuretake, Masato; Zushi, Takayasu; Kitagawa, Motonobu; Yamakawa, Kazuhiko; Okamoto, Yoshimi; and Uda, Sawayo, 5,547,218, Cl. 280-743.100.

Uding, Jeff G.: *See*—
Stuart, J. Michael; and Uding, Jeff G., 5,546,937, Cl. 128-207.150.

Ueda, Atsushi: *See*—
Takai, Yasuhiro; Ueda, Atsushi; Tanaka, Hirokazu; and Yamasa, Hideo, 5,548,385, Cl. 355-260.000.

Ueda, Hideaki: *See*—
Demizu, Ichiro; Nagai, Yasuki; Nakamura, Mitsutoshi; Tanigami, Yukio; and Ueda, Hideaki, 5,547,794, Cl. 430-106.000.

Ueda, Hiroaki, to NEC Corporation. Video code conversion with an optimum conversion speed which matches a reproduction speed of a reproducing unit. 5,548,336, Cl. 348-384.000.

Ueda, Hiroaki: *See*—
Kawasumi, Toshimitsu; and Ueda, Hiroaki, 5,547,499, Cl. 106-20.00R.

Ueda, Hirotada: *See*—
Mimura, Itaru; Ueda, Hirotada; Sumino, Shigeo; Ikezawa, Mitsuru; Suzuki, Toshiaki; Kinoshita, Taizo; and Tada, Katsumi, 5,548,346, Cl. 348-738.000.

Ueda, Makoto: *See*—
Iadanza, Joseph A.; and Ueda, Makoto, 5,548,237, Cl. 327-281.000.

Ueda, Masami: *See*—
Koshijima, Tetsuo; Shiraishi, Nobuo; Takahashi, Tadashi; Hiraoka, Toshiharu; and Ueda, Masami, 5,548,069, Cl. 530-500.000.

Ueda, Minoru; and Okada, Ken-ya, to Sumitomo Chemical Company, Limited. Tape for heat vaporization of active agents and method for vaporizing active agents by heating. 5,547,679, Cl. 424-402.000.

Ueda, Motonori: *See*—
Uehara, Yumito; Enokido, Nobuo; Fujioka, Kiyotoshi; Shimizu, Nobuyuki; and Ueda, Motonori, 5,547,722, Cl. 428-35.700.

Ueda, Tetsuro, to NEC Corporation. Mobile communication system comprising base stations each having omnidirectional antenna for reception of interference wave. 5,548,807, Cl. 455-33.100.

Ueda, Toshihiko, to Minolta Camera Kabushiki Kaisha. Image reading apparatus. 5,548,373, Cl. 355-55.000.

Uehara, Kenichi: *See*—
Iizuka, Tokio; Uehara, Kenichi; and Takeuchi, Daizo, 5,547,699, Cl. 426-615.000.

Uehara, Yumito; Enokido, Nobuo; Fujioka, Kiyotoshi; Shimizu, Nobuyuki; and Ueda, Motonori, to Mitsubishi Kasei Corporation. Ethylene polymer and fuel tank comprising the same. 5,547,722. Cl. 428-35.700.

Ueki, Kouichi: *See*—
Motonobu, Masahiro; and Ueki, Kouichi, 5,548,503, Cl. 363-56.000.

Uematsu, Kimio; and Ishikawa, Yoshinori, to Nikon Corporation. Mechanism for detecting DX encoded film data of camera. 5,548,360, Cl. 354-21.000.

Uemura, Hiroyuki: *See*—
Suzuki, Akira; Hotta, Yoshihiko; and Uemura, Hiroyuki, 5,547,915, Cl. 503-227.000.

Ueno, Kazunori: *See*—
Fukui, Tetsuro; Kobayashi, Motokazu; Ohi, Takehiko; Ueno, Kazunori; Kagami, Kenji; Suzuki, Masao; and Nishino, Katsuya, 5,547,831. Cl. 430-619.000.

Ueno, Ryuji, to R-Tech Ueno, Ltd. Treatment of ocular hypertension with a synergistic combination. 5,547,968. Cl. 514-363.000.

Ueno, Yoshiaki; Hyosu, Haruhiko; Sase, Takao; Matsushita, Koji; and Yamashita, Koji, to Matsushita Electric Works, Ltd. Balanced-to-unbalanced transformer. 5,548,254, Cl. 333-25.000.

Uesugi, Akio: *See*—
Matsuki, Masaya; Sawada, Hirokazu; and Uesugi, Akio, 5,547,522, Cl. 148-551.000.

Ueyama, Takashi: *See*—
Suzuki, Tatsuo; Tanaka, Susumu; and Ueyama, Takashi, 5,547,798, Cl. 430-109.000.

Ueyoko, Kiyoshi; and Takatsu, Mikio, to Sumitomo Rubber Industries, Ltd. Radial tire with enhanced bead durability. 5,547,005, Cl. 152-209.00R.

Ujazdowski, Richard: *See*—
Turi, Laszlo; Ujazdowski, Richard; and Juhasz, Tibor, 5,548,234, Cl. 327-108.000.

Ulbing, Otmar: *See*—
Ratnik, H. Ronald; and Ulbing, Otmar, 5,547,164, Cl. 251-129.030.

Ulerich, Phillip L.; Palmer, Kathryn M.; and Docherty, Edward F., to Eaton Corporation. Trip device for a circuit breaker. 5,548,261, Cl. 335-172.000.

Ulrich, Johann: *See*—
Blondel, Erik; Verhulst, Frans; and Ulrich, Johann, 5,548,640, Cl. 379-242.000.

Umeda, Hiroyuki: *See*—
Ohira, Tsunehisa; Umeda, Hiroyuki; and Imamura, Toshio, 5,548,460, Cl. 360-132.000.

Umeda, Minoru; and Niimi, Tatsuya, to Ricoh Company, Ltd. Electrophotographic photoconductor containing polymeric charge transporting material in charge generating and transporting layers. 5,547,790, Cl. 430-58.000.

Umeda, Yasushi; Tomiyama, Tetsuo; Yoshikawa, Hiroyuki; Sakao, Tomohiko; Shimomura, Yoshiki; and Tanigawa, Sadao, to Mita Industrial Co., Ltd. Method of automatically creating control sequence software and apparatus therefor. 5,548,682, Cl. 395-10.000.

Umeda, Yoshio: *See*—
Naka, Teruyuki; Umeda, Yoshio; Yamamura, Toshiki; Kumon, Akira; Suzuki, Seiichi; Nawama, Junichi; and Nagase, Hisanori, 5,548,380, Cl. 355-219.000.

Umemoto, Noboru: *See*—
Koganei, Katsuya; Nomura, Takeshi; Kuribayashi, Toshiaki; and Umemoto, Noboru, 5,547,597, Cl. 508-409.000.

Umemoto, Tetsuya: *See*—
Yamamoto, Kazuya; Tanino, Noriyuki; and Umemoto, Tetsuya, 5,548,246, Cl. 330-51.000.

Umesono, Kazuhiko: *See*—
Evans, Ronald M.; Ong, Estelita S.; Segui, Prudimar S.; Thompson, Catherine C.; Umesono, Kazuhiko; and Giguere, Vincent, 5,548,063, Cl. 530-350.000.

Umezawa, Hiromitsu: *See*—

Kawai, Hirotaka; Fujii, Shinzo; and Umezawa, Hiromitsu, 5,547,613, Cl. 252-584.000.
Umino, Hiroshi: *See*—
Kikuchi, Kazuo; Umino, Hiroshi; Shibuya, Hiromitsu; Makino, Masahito; Sakakura, Yasuyuki; and Takahashi, Kiyoshi, 5,546,763, Cl. 62-532.000.
Underwood, John A., to Hewlett-Packard Company. Media sheet pick and feed system. 5,547,181, Cl. 271-114.000.
Unger, Evan C., to Imarx Pharmaceutical Corp. Low density microspheres and their use as contrast agents for computed tomography, and in other applications. 5,547,656, Cl. 424-9.400.
Ungheri, Domenico: *See*—
Battistini, Carlo; Fustinoni, Silvia; Brasca, Maria G.; and Ungheri, Domenico, 5,547,941, Cl. 514-44.000.
Uniden America Corporation: *See*—
Karam, Anthony J., 5,548,832, Cl. 455-226.400.
Unilever Patent Holdings B.V.: *See*—
Lipsch, Michael H.; Van Beek, Marinus J.; and Fung Kon Yin, John S., 5,547,697, Cl. 426-565.000.
Union Carbide Chemical & Plastics Technology Corporation: *See*—
Goode, Mark G., 5,548,042, Cl. 526-65.000.
Union Carbide Chemicals & Plastics Technology Corporation: *See*—
Cann, Kevin J.; Hussein, Fathi D.; Zilker, Daniel P., Jr.; and Lee, Kiu H., 5,548,040, Cl. 526-62.000.
Clark, Elke M. A.; Marlin, Lawrence; Fan, You-Ling; and Shah, Harshad M., 5,547,681, Cl. 424-449.000.
Union Switch & Signal Inc.: *See*—
Giras, Theo C.; Profeta, Joseph A.; and Romano, Dario, 5,547,151, Cl. 246-227.000.
Unisia Jecs Corporation: *See*—
Uchikawa, Akira, 5,546,921, Cl. 123-694.000.
Yamagishi, Yoichiro, 5,546,795, Cl. 73-118.200.
United Microelectronics Corporation: *See*—
Hsu, Chen-Chung, 5,547,903, Cl. 437-203.000.
Lin, Jengping, 5,547,900, Cl. 437-187.000.
Yang, Sheng-Hsing, 5,547,895, Cl. 437-57.000.
United Parcel Service of America Inc.: *See*—
Bonnet, Henri, 5,547,063, Cl. 198-370.020.
Bonnet, Henri, 5,547,070, Cl. 198-812.000.
United States of America
Agriculture: *See*—
Han, Youn W.; and Clarke, Margaret A., 5,547,863, Cl. 435-101.000.
Air Force: *See*—
Soref, Richard A.; and Friedman, Lionel, 5,548,128, Cl. 257-18.000.
Army: *See*—
Ballard, John H.; Cooper, Stafford S.; Morgan, John C.; Lawrence, William R.; and Reed, Bobby E., 5,548,115, Cl. 250-253.000.
Schabdach, Paul G., 5,546,862, Cl. 102-302.000.
Thomas, James D., 5,547,321, Cl. 410-102.000.
Energy: *See*—
Beck, Donald D.; and Siegel, Richard W., 5,547,649, Cl. 423-230.000.
Fischer, Jon E.; Walmsley, Don; and Wapman, P. Derek, 5,546,783, Cl. 72-325.000.
Health and Human Services: *See*—
Hanus, James P., 5,547,351, Cl. 417-386.000.
National Aeronautics and Space Administration: *See*—
Kemeny, Sabrina E.; Fossum, Eric R.; and Nixon, Robert H., 5,548,773, Cl. 395-800.000.
Quraishi, Naveed, 5,548,512, Cl. 364-424.020.
Navy: *See*—
Dutta, Indranath; and Lascurain, David P., 5,546,797, Cl. 73-150.00A.
U.S. Philips Corporation: *See*—
Bijker, Wolter; Kasperkovitz, Wolfdietrich G.; De Ruyter, Hendricus C.; and Sloof, Willem A., 5,548,831, Cl. 455-207.000.
Brajal, Américo; and Chouly, Antoine, 5,548,582, Cl. 370-18.000.
Deville, Yannick, 5,548,686, Cl. 395-27.000.
Gumbert, Hans, 5,547,123, Cl. 228-173.600.
Haisma, Jan; Kamerbeek, Evert M. H.; Spierings, Gijsbertus A. C. M.; and De Haas, Peter W., 5,547,119, Cl. 228-116.000.
Sayers, Anthony D., 5,548,826, Cl. 455-126.000.
Van Rosmalen, Gerard E.; and Kahlman, Josephus A. H. M., 5,548,114, Cl. 250-236.000.
United States Surgical Corporation: *See*—
Hinchliffe, Peter W. J.; Pappalardo, Dawn J.; Larsen, Scott; Tovey, Ian J.; and McDonnell, Christopher, 5,547,463, Cl. 602-20.000.
United Technologies Corporation: *See*—
Del Monte, Berardino; and Barone, Ralph P., 5,547,148, Cl. 244-104.0FP.
Hartman, Mark L.; Melnick, Russell J.; and Bales, Daniel A., 5,546,656, Cl. 29-890.010.
Struziak, Ronald M., 5,547,286, Cl. 384-105.000.
United Technologies Motor Systems, Inc.: *See*—
Smeggil, John G.; Rasley, Elizabeth A.; and McCoy, Bill R., 5,547,122, Cl. 228-173.300.
Universal Sales Co., Ltd.: *See*—
Ishibashi, Kazuyoshi, 5,547,192, Cl. 463-26.000.
Universities Research Association, Inc.: *See*—
Wernersbach, Arthur W., Jr.; Skaritka, John R.; Yager, Billy P.; Barrick, Rodney R.; and Ligier, John D., 5,547,532, Cl. 156-172.000.
University Corporation for Atmosphere Research: *See*—
Martin, Charles L., 5,548,283, Cl. 340-870.010.
University of British Columbia, The: *See*—
Ma, Qi Y., 5,547,922, Cl. 505-325.000.
University of California, The Regents of the: *See*—
Anton, Peter A.; Reeve, Joseph R., Jr.; Walsh, John H.; and Faull, Kym F., 5,547,844, Cl. 435-7.100.
Barbee, Troy W., Jr.; and Weihs, Timothy, 5,547,715, Cl. 427-561.000.
Benett, William J.; Beach, Raymond J.; and Ciarlo, Dino R., 5,548,605, Cl. 372-36.000.
Caplan, Malcolm; and Shang, Clifford C., 5,548,257, Cl. 333-252.000.
Durzan, Don J.; and Ventimiglia, Frank F., 5,547,866, Cl. 435-123.000.
Edgar, Bradley; and Dibble, Robert W., 5,547,650, Cl. 423-235.000.
Krochta, John M.; Saltveit, Mikal; and Cisneros-Zevallos, Luis, 5,547,693, Cl. 426-90.000.
Miller, Walter L.; Harikrishna, Jennifer A.; and Black, Stephen M., 5,547,868, Cl. 435-189.000.
Perez-Mendez, Victor; and Goodman, Claude A., 5,548,123, Cl. 250-370.110.
Selsted, Michael E., 5,547,939, Cl. 514-14.000.
Sommargren, Gary E., 5,548,403, Cl. 356-354.000.
University of Central Florida: *See*—
Rudd, Armin, 5,547,017, Cl. 165-244.000.
University of Illinois: *See*—
Adrian, Ronald J.; Barnhart, Donald H.; and Papen, George A., 5,548,419, Cl. 359-24.000.
University of Illinois, The Board of Trustees of The: *See*—
Kranz, David M.; Roy, Edward J.; and Patrick, Todd A., 5,547,668, Cl. 424-181.100.
University of Miami: *See*—
Simon, Gabriel; Lee, William G.; and Parel, Jean-Marie A., 5,547,468, Cl. 604-21.000.
University of Minnesota, Regents of The: *See*—
Mohan, Ned; and Rastogi, Mukul, 5,548,165, Cl. 307-36.000.
University of Rochester: *See*—
Marotta, Charles A.; and Zain, Sayeeda, 5,547,841, Cl. 435-6.000.
University of Southern California: *See*—
Khwaja, Tasneem A., 5,547,674, Cl. 424-195.100.
University of Technology, Sydney: *See*—
Smith, Geoffrey B.; and Franklin, James B., 5,548,490, Cl. 362-32.000.
University of Washington: *See*—
Hagopian, William; Lernmark, Ake; Karlsen, Allan E.; and Landin-Olsson, Mona, 5,547,847, Cl. 435-7.400.
University of Waterloo: *See*—
Lueng, Bosco, 5,548,288, Cl. 341-136.000.
Uno, Akira: *See*—
Noda, Touru; Uno, Akira; and Muraoka, Kazuyoshi, 5,547,822, Cl. 430-531.000.
Unsworth, Peter J.; and Wang, Yuan, to Allen-Bradley Company, Inc. Method and apparatus for determining motor speed using zero crossing times. 5,548,197, Cl. 318-757.000.
Uozumi, Tetsuo: *See*—
Tsutsumida, Joji; Suzuki, Yasuhiro; and Uozumi, Tetsuo, 5,547,173, Cl. 267-140.150.
Upjohn Company, The: *See*—
Hutchinson, Douglas K.; Barbachyn, Michael R.; Brickner, Steven J.; Gammill, Ronald B.; and Patel, Mahesh V., 5,547,950, Cl. 514-252.000.
Upp, Daniel C., to TranSwitch Corporation. Two stage clock dejitter circuit for regenerating an E4 telecommunications signal from the data component of an STS–3C signal. 5,548,534, Cl. 364-514.00R.
Upper Deck Company, The: *See*—
Longwell, Michael V., 5,546,838, Cl. 83-37.000.
Upton, Harry F., to Care Technologies, Inc. Method for removing nits from hair. 5,547,665, Cl. 424-94.610.
Urban, Jörg, to KSB Aktiengesellschaft. Bearing system. 5,547,289, Cl. 384-215.000.
Urban, Peter: *See*—
von Kienlin, Albrecht J.; and Urban, Peter, 5,548,407, Cl. 358-298.000.
Usa, Daigo: *See*—
Hirabayashi, Katsumi; and Usa, Daigo, 5,547,429, Cl. 474-110.000.
Ushikubo, Maho; and Itoh, Yasuyuki, to Sharp Kabushiki Kaisha. Dielectric thin film device. 5,548,475, Cl. 361-321.400.
Uskokovic, Milan R.: *See*—
Dore, Benoit T.; Momparler, Richard L.; and Uskokovic, Milan R., 5,547,947, Cl. 514-167.000.
Utah State University: *See*—
Reed, William A.; and White, Kenneth L., 5,548,075, Cl. 536-23.500.
Utility Composites, Inc.: *See*—
Tucker, Pamela S.; and Showers, Nancy, 5,547,325, Cl. 411-442.000.
Uytterhoeven, Herman: *See*—
Defieuw, Geert; Janssens, Wilhelmus; Vanmaele, Luc; Dewanckele, Jean-Marie; and Uytterhoeven, Herman, 5,547,809, Cl. 430-200.000.
Vachon, Guy: *See*—
Campbell, Heather A.; Mayhugh, Terry L.; Rasmussen, Marvin W.; and Vachon, Guy, 5,546,672, Cl. 33-716.000.
Vadgama, Pankaj M.; Christie, Ian M.; and Benmakroha, Yazid M., to Victoria University Of Manchester, The. Sensor devices and method of using same. 5,547,561, Cl. 205-793.000.
Vainberg, Yuri P.; Kaplina, Elli N.; and Andosova, Ideya G., to Pharmec Company. Cosmetic composition containing a DNA-sodium salt and methods of making and using the same. 5,547,684, Cl. 424-561.000.

Vaisanen, Seppo; Haarasilta, Sampsa; and Scott, Don, to Gist-Brocades, N.V. Compositions and method for improving flour dough. 5,547,690, Cl. 426-10.000.
Valio Oy: *See*—
Outinen, Marko T.; Tossavainen, Olli; Harju, Matti; and Linko, Pekka, 5,547,687, Cl. 426-2.000.
Valmet Automotive: *See*—
Kinnanen, Matti, 5,547,234, Cl. 292-25.000.
Valmet-Karlstad AB: *See*—
Bengtsson, Roland, 5,547,547, Cl. 162-272.000.
Valquest Medical, Inc.: *See*—
Rondeau, Michel Y., 5,548,674, Cl. 385-72.000.
Van Den Bergh Foods Co. Division of Conopco Inc.: *See*—
Lansbergen, Adrianus J.; and Schijf, Robert, 5,547,698, Cl. 426-602.000.
Van Alsten, John G.: *See*—
Chapman, George R., Jr.; Morgan, Richard A.; Stewart, Charles W.; Tuminello, William H.; Van Alsten, John G.; Vogel, Randall A.; and Wagman, Mark E., 5,547,761, Cl. 428-422.000.
Van Beek, Marinus J.: *See*—
Lipsch, Michael H.; Van Beek, Marinus J.; and Fung Kon Yin, John S., 5,547,697, Cl. 426-565.000.
VanBortel, David P.: *See*—
Williams, Geoffrey C.; and VanBortel, David P., 5,547,176, Cl. 270-37.000.
Van Boxtel, Neil J.: *See*—
Ambrosius, Steven G.; and Van Boxtel, Neil J., 5,547,115, Cl. 224-240.000.
Van Buren, Martin: *See*—
Fauteux, Denis G.; Van Buren, Martin; and Shi, Jie, 5,547,778, Cl. 429-81.000.
Van Damme, Marc: *See*—
Defieuw, Geert; and Van Damme, Marc, 5,547,917, Cl. 503-227.000.
Van de Griendt, Michiel A.: *See*—
Kool, Anthonie F.; Van de Griendt, Michiel A.; de Bruin, Bas H.; Schepes, Gerardus N.; and Lucieer, Willem J., 5,548,397, Cl. 356-141.100.
Van den Bogaert, Jan A.: *See*—
Leblans, Paul; Adriaensens, Albert D.; Tecotzky, Melvin; and Van den Bogaert, Jan A., 5,547,807, Cl. 430-139.000.
Van Den Haak, Rob, to Vrijof Ankers Beheer B.V. Anchor, anchorfluke and methods for anchoring. 5,546,884, Cl. 114-301.000.
van der Haak, Rob, to Vrijhof Ankers Beheer B.V. Anchor, anchorfluke and methods for anchoring. 5,546,883, Cl. 114-301.000.
Vanderlinde, Robert L. Device for boat transport. 5,547,209, Cl. 280-414.200.
Van Doorn, Donald W.; Hawkins, James B.; and Cory, Mark D., to Lummus Corporation. Automatic bale tying apparatus. 5,546,855, Cl. 100-11.000.
Van Etten, Larry W. Pressurized canister recycling apparatus and methods. 5,546,995, Cl. 141-7.000.
Van Goethem, Eugeen: *See*—
De Meutter, Stefaan; Van Goethem, Eugeen; Schuerwegen, Ronald; and Horsten, Bartholmeus, 5,547,914, Cl. 503-210.000.
Vanguard International Semiconductor Corp.: *See*—
Sung, JanMye, 5,547,893, Cl. 437-52.000.
Tseng, Horng-Huei, 5,547,890, Cl. 437-52.000.
van Haagen, Ernst: *See*—
Storch, Leonard; and van Haagen, Ernst, 5,548,110, Cl. 235-472.000.
Vanmaele, Luc, to Agfa-Gevaert, N.V. Dye donor element for use in a thermal dye transfer method. 5,547,815, Cl. 430-338.000.
Vanmaele, Luc: *See*—
Defieuw, Geert; Janssens, Wilhelmus; Vanmaele, Luc; Dewanckele, Jean-Marie; and Uytterhoeven, Herman, 5,547,809, Cl. 430-200.000.
Vanover, Michael T.: *See*—
Edrington, Jimmie D.; Einkauf, Mark A.; Jensen, Allen P.; and Vanover, Michael T., 5,548,737, Cl. 395-375.000.
Van Ramm, Olaf T.: *See*—
Oxaal, John T.; Van Ramm, Olaf T.; Blaker, David M.; and Smith, Robert S., 5,546,807, Cl. 73-606.000.
Van Rosmalen, Gerard E.; and Kahlman, Josephus A. H. M., to U.S. Philips Corporation. Optical scanning device for scanning a record carrier with a scanning spot which deviates in a direction transverse to the scanning direction by an amount less than a trace pitch because of vibration. 5,548,114, Cl. 250-236.000.
Van Santen, Poul: *See*—
Clark, James E., II; and Van Santen, Poul, 5,546,979, Cl. 137-318.000.
Clark, James E., II; and Van Santen, Poul, 5,546,986, Cl. 137-614.050.
Van Scott, Eugene J.: *See*—
Yu, Ruey J.; and Van Scott, Eugene J., 5,547,988, Cl. 514-557.000.
Varghese, Thomas: *See*—
Smith, Randall W.; Bright, Jason; and Varghese, Thomas, 5,548,698, Cl. 395-139.000.
Vassiliou, Eustathios. Devices for making artificial egg yolks in the form of discs. 5,547,358, Cl. 425-96.000.
Ventimiglia, Frank F.: *See*—
Durzan, Don J.; and Ventimiglia, Frank F., 5,547,866, Cl. 435-123.000.
Ventura, Susanna C.: *See*—
Narang, Subhash C.; and Ventura, Susanna C., 5,548,055, Cl. 528-25.000.
Verbeke, Gentil: *See*—
Exelmans, Walter; and Verbeke, Gentil, 5,548,126, Cl. 250-588.000.
Vergano, Michael G.: *See*—
Rowland, Christopher A.; Vergano, Michael G.; Eddy, Bryan P.; and Cotton, Peter B., 5,547,469, Cl. 604-22.000.
Verhulst, Frans: *See*—
Blondel, Erik; Verhulst, Frans; and Ulrich, Johann, 5,548,640, Cl. 379-242.000.
Vetter, Dieter: *See*—
Dinkelmann, Friedrich; Vetter, Dieter; and Samp, Manfred, 5,546,740, Cl. 57-266.000.
Vetter, Heinz; Hoess, Werner; Dutschke, Joachim; and Schikowsky, Hartmut, to Roehm GmbH Chemische Fabrik. Process for the short-time treatment of a plastic melt with a liquid treatment agent and the plastic thus produced. 5,548,033, Cl. 525-378.000.
Vianco, Paul T.; Fisher, Robert W.; Hosking, Floyd M.; and Zanner, Frank J., to Sandia Corporation. Methods of making metallic glass foil laminate composites. 5,547,484, Cl. 65-42.000.
Vichery, Hervé: *See*—
Sainfort, Pierre; Vichery, Hervé; and Commet, Benoit, 5,547,524, Cl. 148-688.000.
Vick, Doug M.; Baxter, James T.; and Gibbs, George S., to New Ideas International, Inc. Scented air refreshening device and method of making same. 5,547,636, Cl. 422-124.000.
Victor Company of Japan, Ltd.: *See*—
Ohira, Tsunehisa; Umeda, Hiroyuki; and Imamura, Toshio, 5,548,460, Cl. 360-132.000.
Victoria University Of Manchester, The: *See*—
Vadgama, Pankaj M.; Christie, Ian M.; and Benmakroha, Yazid M., 5,547,561, Cl. 205-793.000.
Victorin, John A., to Telefonaktiebolaget LM Ericsson. Antenna and feeder cable tester. 5,548,820, Cl. 455-67.400.
Viehbeck, Alfred: *See*—
Afzali-Ardakani, Ali; Gotro, Jeffrey T.; Hedrick, Jeffrey C.; Papathomas, Konstantinos; Patel, Niranjan M.; Shaw, Jane M.; and Viehbeck, Alfred, 5,548,034, Cl. 525-390.000.
Vilen, Erik O., to Blako Inc. Dishwashing machine with integrated recycling system. 5,546,969, Cl. 134-188.000.
Villella, Paul A.; and Teigen, Jerry T., to Dorso Trailer Sales Inc. Shock-corded articulated door. 5,547,241, Cl. 296-24.100.
Vilmur, Richard J.: *See*—
Bruckert, Eugene J.; and Vilmur, Richard J., 5,548,808, Cl. 455-33.200.
Viltro, Louis J.: *See*—
Allen, Patrick J.; Bross-Kelly, Beverly J.; Viltro, Louis J.; Vinnage, William R., Jr.; and Weirich, David M., 5,547,531, Cl. 156-164.000.
Vincent, Benoit: *See*—
Rigal, Jean-Pierre; and Vincent, Benoit, 5,547,427, Cl. 473-345.000.
Vinnage, William R., Jr.: *See*—
Allen, Patrick J.; Bross-Kelly, Beverly J.; Viltro, Louis J.; Vinnage, William R., Jr.; and Weirich, David M., 5,547,531, Cl. 156-164.000.
Virag, Robert A.; Nye, Richard V.; and Horton, Duane L., to Mallinckrodt Medical, Inc. Tracheal tube with reinforced flexible segment. 5,546,936, Cl. 128-207.140.
Vitous, Joseph: *See*—
Gawaskar, Sadanand; Norris, Frank J.; Vitous, Joseph; and Young, Kevin L., 5,547,036, Cl. 180-68.500.
Vittay, Pal: *See*—
Mahó, Sándor; Tuba, Zoltán; Gere, Anikó; Vittay, Pal; Kiss, Béla; Pálosi, Éva; Szporny, László; Francsicsné, Erzsébet C.; Boórné, Anna M.; Balogh, Gábor; and Görög, Sándor, 5,547,949, Cl. 514-176.000.
Vlach, Martin; Christen, Ernst; Teegarden, Darrell A.; and Bedrosian, David G., to Analogy, Inc. Analysis mechanism for system performance simulator. 5,548,539, Cl. 364-578.000.
VLSI Technology, Inc: *See*—
Gabriel, Calvin T.; and Nariani, Subhash R., 5,548,224, Cl. 324-765.000.
VLSI Technology, Inc.: *See*—
Misheloff, Michael N., 5,548,526, Cl. 364-491.000.
Voegele, William P., Jr.; Ramsey, Douglas A.; Lohr, Alan D.; and Kamphaus, Carl E., to Extech/Exterior Technologies, Inc. Overlapping framing system for glazing elements. 5,546,713, Cl. 52-202.000.
Vogel, Randall A.: *See*—
Chapman, George R., Jr.; Morgan, Richard A.; Stewart, Charles W.; Tuminello, William H.; Van Alsten, John G.; Vogel, Randall A.; and Wagman, Mark E., 5,547,761, Cl. 428-422.000.
Vogler, Erwin A.; Shepard, Thomas A.; and Graper, Jane C., to Becton, Dickinson and Company. Blood compatible, shear sensitive gels. 5,547,577, Cl. 210-511.000.
Vogt, Toni: *See*—
Molz, Thomas; Rehm, Hans-Joergen; Vogt, Toni; and Geke, Juergen, 5,547,587, Cl. 210-696.000.
Voigt, Douglas L.: *See*—
Larson, Susan L.; Voigt, Douglas L.; Messinger, Steven D.; and Jacobson, Michael B., 5,548,712, Cl. 395-182.050.
Voit, Brigitte: *See*—
Dauth, Jochen; Deubzer, Bernward; Mayer, Elfriede; Nuyken, Oskar; Voit, Brigitte; and Kollefrath, Ralf, 5,548,070, Cl. 534-550.000.
Voll, Kevin J.: *See*—
Greenfield, Sherwood S.; and Voll, Kevin J., 5,548,086, Cl. 174-48.000.
Vollano, Jean F.: *See*—
Abrams, Michael J.; Bossard, Gerald E.; Brooks, Robert C.; Henson, Geoffrey W.; and Vollano, Jean F., 5,547,982, Cl. 514-492.000.
Volpe, John J., to JNJ Industries, Inc. CFC-free solvent for solvating solder flux. 5,547,601, Cl. 15-104.930.
von Kienlin, Albrecht: *See*—

von Kienlin, Albrecht J.; and Urban, Peter, 5,548,407, Cl. 358-298.000.
von Kienlin, Albrecht J.; and Urban, Peter, to von Kienlin, Albrecht. Process for electronic processing of multi-colored continuous-tone images. 5,548,407, Cl. 358-298.000.
Vorax Incorporated: *See*—
Hirayama, Katsuhiko, 5,548,778, Cl. 395-823.000.
Voresh, Michael J.: *See*—
Frazin, Leon; and Voresh, Michael J., 5,546,949, Cl. 128-662.060.
Voss, Henry H.: *See*—
Fletcher, Nicholas J.; Chow, Clarence Y.; Pow, Eric G.; Wozniczka, Boguslav M.; Voss, Henry H.; and Hornburg, Gerald, 5,547,776, Cl. 429-13.000.
Voyta, John C.: *See*—
Bronstein, Irena Y.; Edwards, Brooks; and Voyta, John C., 5,547,836, Cl. 435-6.000.
Vrijhof Ankers Beheer B.V.: *See*—
van der Haak, Rob, 5,546,883, Cl. 114-301.000.
Vrijof Ankers Beheer B.V.: *See*—
Van Den Haak, Rob, 5,546,884, Cl. 114-301.000.
W. L. Gore & Associates, Inc.: *See*—
Bahar, Bamdad; Hobson, Alex R.; Kolde, Jeffrey A.; and Zuckerbrod, David, 5,547,551, Cl. 204-296.000.
W. R. Grace & Co.-Conn.: *See*—
Cheng, Wu-Cheng; and Rajagopalan, Kuppuswamy, 5,547,564, Cl. 208-122.000.
Muroi, Souichi; and Tsai, Hsi-Chuan, 5,548,058, Cl. 528-93.000.
Whittenberger, William A.; and Woodruff, Edward T., 5,546,746, Cl. 60-274.000.
W. Schlafhorst AG & Co.: *See*—
Rüth, Gregor; Wirtz, Ulrich; and Tholen, Leo, 5,547,137, Cl. 242-35.50R.
Wachinski, Anthony M.: *See*—
Shepherd, Samuel L.; and Wachinski, Anthony M., 5,547,585, Cl. 210-673.000.
Wachtel, Helmut: *See*—
Sauer, Gerhard; Brumby, Thomas; Wachtel, Helmut; Turner, Jonathan; and Löschmann, Peter-Andreas, 5,547,958, Cl. 514-288.000.
Wacker-Chemie GmbH: *See*—
Dauth, Jochen; Deubzer, Bernward; Mayer, Elfriede; Nuyken, Oskar; Voit, Brigitte; and Kollefrath, Ralf, 5,548,070, Cl. 534-550.000.
Weidner, Richard; Mautner, Konrad; and Mueller, Reinhardt, 5,548,053, Cl. 528-14.000.
Wada, Richard: *See*—
Komarek, James A.; Minney, Jack L.; Nordine, Stephen P.; Lewis, Harold F.; Wada, Richard; and Stockman, John F., 5,548,592, Cl. 370-85.100.
Wade, Cathy L.: *See*—
Rawls, R. Lee; Wierlo, Steven J.; and Wade, Cathy L., 5,547,439, Cl. 482-5.000.
Wagh, Meghanad D.: *See*—
Lapinski, Charles; Eckert, Charles; Skokowski, Richard; Cox, James; Scott, William; Chaleff, Edward; and Wagh, Meghanad D., 5,548,107, Cl. 235-462.000.
Wagman, Mark E.: *See*—
Chapman, George R., Jr.; Morgan, Richard A.; Stewart, Charles W.; Tuminello, William H.; Van Alsten, John G.; Vogel, Randall A.; and Wagman, Mark E., 5,547,761, Cl. 428-422.000.
Wagner, Anita: *See*—
Wagner, Glenn; and Wagner, Anita, 5,547,185, Cl. 273-1.50R.
Wagner, Ernst: *See*—
Curiel, David T.; Birnstiel, Max L.; Cotten, Matthew; Wagner, Ernst; Zatloukal, Kurt; Plank, Christian; Oberhauser, Berndt; and Schmidt, Walter G. M., 5,547,932, Cl. 435-65.000.
Wagner, Glenn; and Wagner, Anita. Adjustable basketball goal. 5,547,185, Cl. 273-1.50R.
Wagner, Otto W. Work-magnifying face shield. 5,548,448, Cl. 359-802.000.
Wah Lo, Allen K.; and Lao, Kenneth Q., to Image Technology International, Inc. Parallax controllable multiple-lens camera. 5,548,362, Cl. 354-114.000.
Waibel, Peter J. Process for the collection and treatment of biological waste. 5,547,582, Cl. 210-664.000.
Waizumi, Sadao: *See*—
Tanaka, Toyokazu; Takamoto, Manabu; Miwada, Satoshi; Tetsu, Noriyuki; and Waizumi, Sadao, 5,548,476, Cl. 361-611.000.
Wakabayashi, Kanji: *See*—
Miyazaki, Benichi; Nishino, Yukio; and Wakabayashi, Kanji, 5,548,577, Cl. 369-291.000.
Wakabayashi, Kazuhisa: *See*—
Kogure, Mitsuhiro; Nagashima, Shinichi; Wakabayashi, Kazuhisa; Enkaku, Shigeyuki; Shimayama, Hitoshi; Kimura, Minoru; Shimoyama, Shuji; and Yokoo, Tsugio, 5,548,260, Cl. 335-126.000.
Wakabayashi, Tsutomu, to Nikon Corporation. Camera equipped with bar code reading device. 5,548,359, Cl. 354-21.000.
Wakashima, Rie: *See*—
Yoshimoto, Shigeka; Takahashi, Akiyoshi; Uchida, Toshiya; and Wakashima, Rie, 5,548,437, Cl. 359-200.000.
Wakefield, Edward H., to Eastman Kodak Company. Film scanner having drive belts for advancing film through an imaging station. 5,548,328, Cl. 348-98.000.
Wakita, Katsuya; Hotta, Shu; Sonoda, Nobuo; and Yang, Yang, to Matsushita Electric Industrial Co., Ltd. Method of manufacturing organic oriented film and method of manufacturing electronic device. 5,546,889, Cl. 117-84.000.
Walden, Brent M.: *See*—
Swinson, Thierry W.; and Walden, Brent M., 5,546,801, Cl. 73-273.000.
Waldo, Whitson G., III, to Motorola, Inc. Method for parallel multiple field processing in X-ray lithography. 5,548,625, Cl. 378-34.000.
Waldstreicher, Joanne: *See*—
Gormley, Glenn J.; Kaufman, Keith D.; Stoner, Elizabeth; and Waldstreicher, Joanne, 5,547,957, Cl. 514-284.000.
Walimaa, Edsel J.; and Grady, Hugh N., Jr. Ergonomic three axis positioner. 5,547,330, Cl. 414-749.000.
Walker, Darryl G.: *See*—
Rountree, Robert N.; Cline, Dan; Walker, Darryl G.; Hii, Francis; and Bergman, David W., 5,548,225, Cl. 326-13.000.
Walker, Dixon R.: *See*—
Rumiesz, Joseph, Jr.; Walker, Dixon R.; and Fay, Ralph M., 5,547,743, Cl. 428-224.000.
Walker, George T.: *See*—
Nadeau, James G.; and Walker, George T., 5,547,861, Cl. 435-91.200.
Walker Systems, Inc.: *See*—
Penczak, John P.; and Kalbfleisch, Edmund B., 5,546,717, Cl. 52-220.500.
Walker, William C.: *See*—
Edwards, Donald W.; Odle, James K.; Popper, Peter; Sadler, Donald M.; Savidge, Todd J.; Staunton, Harold F.; Walker, William C.; and Yngve, Paul W., 5,547,732, Cl. 428-85.000.
Walker, William K., to Texas Instruments Incorporated. Hybrid integrated circuit. 5,548,118, Cl. 250-332.000.
Wall Data Incorporated: *See*—
Kroenke, David M.; Olds, Christopher C.; Kawai, Kenji; and Eggebroten, Lee I., 5,548,749, Cl. 395-600.000.
Wallac Oy: *See*—
Nurmi, Jarmo; and Oikari, Timo, 5,548,111, Cl. 250-207.000.
Wallgren, Robert L.: *See*—
Reed, Steven J.; Wallgren, Robert L.; Davies, Scott T.; Wojtan, George R.; and Gazzara, Paul, 5,548,489, Cl. 361-827.000.
Wallner, Barbara P.; Miller, Glenn T.; and Rosa, Margaret D., to Biogen, Inc. CD2-binding domain of lymphocyte function associated antigen 3. 5,547,853, Cl. 435-69.100.
Walmsley, Don: *See*—
Fischer, Jon E.; Walmsley, Don; and Wapman, P. Derek, 5,546,783, Cl. 72-325.000.
Walsh, Frank P.; Gergen, Paul N.; and Hines, David, to Steelman, Lawrence. Safe alert emergency alerting system for remotely located sites. 5,548,632, Cl. 379-58.000.
Walsh, John H.: *See*—
Anton, Peter A.; Reeve, Joseph R., Jr.; Walsh, John H.; and Faull, Kym F., 5,547,844, Cl. 435-7.100.
Wang, Avery Li-Chun, to Stanford University. Computationally efficient linear-phase finite impulse response filter. 5,548,543, Cl. 364-724.160.
Wang, Chen-Jong: *See*—
Wuu, Shou-Gwo; Liang, Mong-Song; Su, Chung-Hui; and Wang, Chen-Jong, 5,547,892, Cl. 437-52.000.
Wang, Chi-Ming; Gupta, Anil; and Randhawa, Hiten D. S., to Catalyst Semiconductor Corp. Negative voltage decoding in non-volatile memories. 5,548,551, Cl. 365-185.180.
Wang, Ching-Heng. Condensers. 5,548,473, Cl. 361-301.100.
Wang, Chin-Hsien: *See*—
Juang, Miin-Horng; Chang, San-Jung; and Wang, Chin-Hsien, 5,547,882, Cl. 437-40.000.
Wang, Hsien-Chang: *See*—
Powers, Kenneth W.; Wang, Hsien-Chang; Chung, T-C.; Dias, Anthony J.; and Olkusz, Joseph A., 5,548,023, Cl. 525-69.000.
Powers, Kenneth W.; Wang, Hsien-Chang; Chung, T-C.; Dias, Anthony J.; and Olkusz, Joseph A., 5,548,029, Cl. 525-195.000.
Wang, Jau-Jey; Shieh, Pi-Chen; and Tseng, Pin-Nan, to Taiwan Semiconductor Manufacturing Company LTD. Method of forming a resistor for ESD protection in a self aligned silicide process. 5,547,881, Cl. 437-24.000.
Wang, Jin S., to JMR Research Inc. Compact disk display and storage package. 5,547,077, Cl. 206-307.100.
Wang, Jui-Shang: *See*—
Jané, Rodney; Longan, John; Wang, Jui-Shang; and Gresens, Stanley, 5,547,343, Cl. 416-246.000.
Wang Laboratories, Inc.: *See*—
Knowlton, Kenneth C., 5,548,664, Cl. 382-174.000.
Wang, Nan L. L. RF amplifier circuit. 5,548,248, Cl. 330-288.000.
Wang, Shay-Ping T., to Motorola, Inc. Artificial neuron using adder circuit and method of using same. 5,548,685, Cl. 395-24.000.
Wang, Shay-Ping T.: *See*—
Lloyd, Scott E.; and Wang, Shay-Ping T., 5,548,752, Cl. 395-600.000.
Wang, Wen-Hann; and Lai, Konrad K., to Intel Corporation. Method and apparatus for combining a direct-mapped cache and a multiple-way cache in a cache memory. 5,548,742, Cl. 395-455.000.
Wang, Xiao-an; and Wicker, Stephen B., to Georgia Tech Research Corporation. Artificial neural network viterbi decoding system and method. 5,548,684, Cl. 395-21.000.
Wang, Yuan: *See*—
Unsworth, Peter J.; and Wang, Yuan, 5,548,197, Cl. 318-757.000.
Wang, Yun-Ti: *See*—

Ziang, Zhong-Xuan; Lin, Jyhfong; and Wang, Yun-Ti, 5,548,238, Cl. 327-374.000.
Wang, Yushan: *See*—
North, Thomas G., III; Graham, Thomas; and Wang, Yushan, 5,547,345, Cl. 417-63.000.
Wanninger, Alfred, deceased (by Hanna M. Wanninger, heiress); and Wanninger, by Peter, heir, to Janke & Kunkel GmbH & Co. KG IKA-Labortechnik. Magnetic stirrer with a sealed glass housing. 5,547,280, Cl. 366-274.000.
Wanninger, by Peter, heir: *See*—
Wanninger, Alfred, deceased; and Wanninger, by Peter, heir, 5,547,280, Cl. 366-274.000.
Wanninger, Hanna M., heiress: *See*—
Wanninger, Alfred, deceased; and Wanninger, by Peter, heir, 5,547,280, Cl. 366-274.000.
Wanninger, Paul; Wild, Richard; Kleinschmidt, Ernst; and Späth, Helmut, to Daimler-Benz Aerospace AG. Pressable explosive granular product and pressed explosive charge. 5,547,526, Cl. 149-19.200.
Wapman, P. Derek: *See*—
Fischer, Jon E.; Walmsley, Don; and Wapman, P. Derek, 5,546,783, Cl. 72-325.000.
Ward, Stephen W.; and Harwood, Ray E., to Pacific Gas and Electric Company. Apparatus for cleaning sub-surface electrical enclosures and the like. 5,547,514, Cl. 134-22.100.
Wardell, Allison E.: *See*—
Wardell, Jacqueline R.; Wardell, James R.; and Wardell, Allison E., 5,546,972, Cl. 135-129.000.
Wardell, Jacqueline R.; Wardell, James R.; and Wardell, Allison E. Kit cover systems for swimming pools, hot tubs and patios. 5,546,972, Cl. 135-129.000.
Wardell, James R.: *See*—
Wardell, Jacqueline R.; Wardell, James R.; and Wardell, Allison E., 5,546,972, Cl. 135-129.000.
Ware, Charles: *See*—
Zeimer, Ran C.; Jost, George J.; Bainbridge, Robert C.; Schwarzbach, Richard; Ware, Charles; and Zebrowski, Kathleen D., 5,546,941, Cl. 128-652.000.
Warnecke, Thomas, to Fagus-Grecon Greten GmbH & Co. KG. Apparatus for and method of establishing a density profile through the thickness of a panel. 5,548,626, Cl. 378-54.000.
Warner-Lambert Company: *See*—
Burout, Charles; and Ortiz, Ernest, 5,546,660, Cl. 30-50.000.
Warren, Jeff: *See*—
Lebrun, Eric; Francois, Pascal; Raimbault, Frederic; and Warren, Jeff, 5,548,579, Cl. 370-16.000.
Warren, Tommy M.; and Mount, Houston B., to Amoco Corporation. Orientation control mechanism. 5,547,031, Cl. 175-61.000.
Warwicker, Clive W., to Helix Limited. Compass having a squat tip. 5,546,663, Cl. 33-27.020.
Wass, Donald J.; and Carter, Anthony E., to Daniel Industires, Inc. Method of measuring flow through a fitting with an orifice plate for reducing eccentricity. 5,546,990, Cl. 138-44.000.
Waste Management & Design, Inc.: *See*—
Chamness, Gary M., 5,546,615, Cl. 4-503.000.
Watahiki, Satoshi: *See*—
Shirakawa, Shingo; and Watahiki, Satoshi, 5,548,468, Cl. 361-126.000.
Watanabe, Chiharu; Nakano, Tatsuo; and Kato, Kazuo, to Denki Kagaku Kogyo Kabushiki Kaisha. Insulating material and a circuit substrate in use thereof. 5,547,758, Cl. 428-413.000.
Watanabe, Eiki; Ishii, Toshiaki; Mizuno, Masamoto; and Sugita, Kazuhiko, to Mitsubishi Denki Kabushiki Kaisha. Linear motor elevator system. 5,547,059, Cl. 187-289.000.
Watanabe, Fumihiko: *See*—
Okubo, Akio; Saito, Atsushi; and Watanabe, Fumihiko, 5,548,309, Cl. 347-33.000.
Watanabe, Hideaki, to NEC Corporation. Image signal processing apparatus for image sensor. 5,548,413, Cl. 358-445.000.
Watanabe, Hiroyuki: *See*—
Hanasaki, Yasuaki; Tsukuda, Kazuaki; Watanabe, Hiroyuki; Tsuzuki, Kenji; Murakami, Mitsuyuki; and Niimi, Noritoshi, 5,547,920, Cl. 504-261.000.
Watanabe, Hisashi, to Matsushita Electronics Corporation. Resist composition having a siloxane-bond structure. 5,547,808, Cl. 430-176.000.
Watanabe, Kazuhide; Takada, Kimiharu; Sekita, Masumi; Ito, Takahide; and Tani, Kazuya, to Mitsubishi Jukogyo Kabushiki Kaisha. Scroll type machine having means to prevent or suppress deflection of legs of scroll-supporting frame. 5,547,355, Cl. 418-55.500.
Watanabe, Kenjiro: *See*—
Nagatomo, Akira; Hattori, Yoshifumi; Ebisawa, Isao; Abe, Tsutomu; Ohba, Takashi; Iida, Hiroshi; and Watanabe, Kenjiro, 5,548,308, Cl. 347-9.000.
Watanabe, Masaru: *See*—
Hazama, Hiroyuki; Tsutsumi, Masahiro; and Watanabe, Masaru, 5,547,805, Cl. 430-125.000.
Watanabe, Masatsugu; Nagano, Yasuhisa; Shimoyama, Hajime; and Osaka, Tomohiro, to Dowa Iron Powder Co., Ltd. Method of making ejection powder for mechanical plating. 5,547,488, Cl. 75-335.000.
Watanabe, Michihiro: *See*—
Sato, Kazutaka; Watanabe, Michihiro; Aoyagi, Masahisa; Seino, Taisaku; Ohki, Katsuo; Fukuda, Hiromitsu; Kawase, Hideyuki; Oga, Kimio; Shimizu, Akira; Narui, Youichi; Suzuki, Tsuguo; Otsuka, Yasuo; and Konno, Kazutoshi, 5,548,411, Cl. 358-400.000.
Watanabe, Mikio, to Fuji Photo Film Co., Ltd. IC memory card system having a host processor selectively operable with an IC memory card including either an SRAM or an EEPROM. 5,548,741, Cl. 395-442.000.
Watanabe, Mikio: *See*—
Shimizu, Toshihide; and Watanabe, Mikio, 5,548,039, Cl. 526-62.000.
Watanabe, Mitsuru: *See*—
Murasawa, Sadao; Murakami, Hajime; Fukui, Yasuro; Watanabe, Mitsuru; Fujishima, Akira; and Hashimoto, Kazuhito, 5,547,823, Cl. 430-531.000.
Watanabe, Souichi; and Kamei, Kazuaki, to Molex Incorporated. Multi-wire feeding apparatus. 5,547,065, Cl. 198-604.000.
Watanabe, Takao; Hayashi, Mutsuo; Matsumoto, Kazunari; Tsuchiya, Chikara; Matsui, Takashi; and Matsubayashi, Masaru, to Kabushiki Kaisha Meidensha; and Fujitsu Limited. Digital temperature compensated crystal oscillator. 5,548,252, Cl. 331-176.000.
Watanabe, Tomohiro: *See*—
Shigematsu, Takashi; Yanagawa, Hisaharu; Shimizu, Takeo; Nakamura, Shiro; Fukasawa, Kazuya; and Watanabe, Tomohiro, 5,548,675, Cl. 385-80.000.
Watanabe, Toru; and Noto, Kenichi, to Murata Manufacturing Co., Ltd. Saw filter having electrodes for relaxation of electric field concentration. 5,548,256, Cl. 333-194.000.
Watanabe, Toru: *See*—
Ito, Shinichi; Okano, Haruo; Watanabe, Toru; and Okumura, Katsuya, 5,547,787, Cl. 430-5.000.
Watanabe, Yasushi: *See*—
Yamaguchi, Tetsuya; Watanabe, Yasushi; Fukanuma, Tetsuhiko; Oki, Yasuhiro; and Yamamoto, Yuuji, 5,547,353, Cl. 418-55.200.
Waterman, Paul S.: *See*—
Szita, Jeno G.; and Waterman, Paul S., 5,547,753, Cl. 428-357.000.
Waterman, Timothy J., to Carrier Corporation. Reusable sealed coupling for two pipes. 5,547,232, Cl. 285-236.000.
Watnee, Dale E.: *See*—
Efstratis, Eleftherios T.; and Watnee, Dale E., 5,546,708, Cl. 52-36.200.
Watzke, Eckhart; and Kloss, Thomas, to Jenaer Glaswerk GmbH. Borosilicate glass having improved UV transmission, thermal and chemical properities and methods of making and using same. 5,547,904, Cl. 501-66.000.
Way, Hsiao, to Chingdar Enterprise Co., Ltd. Partition wall. 5,546,718, Cl. 52-238.100.
Weagraff, Jon J.; and Tavakoli, Kaihan, to Conair Group, Inc., The. Plastic pellet dryer control system equipped with a temperature protection device for the heating unit. 5,546,673, Cl. 34-80.000.
Weaver, James C.: *See*—
Pliquett, Uwe; Prausnitz, Mark R.; Weaver, James C.; and Langer, Robert S., 5,547,467, Cl. 604-20.000.
Weaver, Lindsay A., Jr.: *See*—
Padovani, Roberto; Weaver, Lindsay A., Jr.; and Bender, Paul E., 5,548,812, Cl. 455-33.200.
Weaver, Thomas S.: *See*—
Lacore, Ernest H.; and Weaver, Thomas S., 5,546,639, Cl. 24-265.00H.
Webber Manufacturing Co., Inc.: *See*—
Lovett, David E.; and O'Brien, Richard, 5,547,335, Cl. 414-795.600.
Weber, Karsten: *See*—
Krönauer, Karlhans; Aigner, Josef; Klein, Franz; Weber, Karsten; Schmid, Monika; and Pfab, Robert, 5,546,640, Cl. 24-510.000.
Weber, Wilhelm; Sockel, Karl-Heinz; and Moretto, Hans-Heinrich, to Bayer Aktiengesellschaft. Stabilization of acetate systems. 5,548,009, Cl. 524-157.000.
Webster Heating and Specialty Products, Inc.: *See*—
Roederer, David A., 5,548,471, Cl. 361-253.000.
Webster, James L.; and Jackson, Scott C., to Du Pont de Nemours, E. I., and Company. Carbonization of halocarbons. 5,547,653, Cl. 423-445.00R.
Wecor: *See*—
Lacore, Ernest H.; and Weaver, Thomas S., 5,546,639, Cl. 24-265.00H.
Weder, Donald E.; Weder, E. H.; Dunn, R. E. Jack; and Craig, Franklin J., to Southpac Trust International, Inc. Article forming system. 5,546,699, Cl. 47-72.000.
Weder, E. H.: *See*—
Weder, Donald E.; Weder, E. H.; Dunn, R. E. Jack; and Craig, Franklin J., 5,546,699, Cl. 47-72.000.
Weed, John M., to International Communications Materials, Inc. Toner supply cartridge. 5,548,384, Cl. 355-260.000.
Wegerle, Dieter: *See*—
Lange, Arno; Degen, Helmut; Lamm, Gunther; Reichelt, Helmut; and Wegerle, Dieter, 5,547,477, Cl. 8-639.000.
Wehrli, Henry A., III; Bauer, James A.; and Mueller, Denis A., to Eaton Corporation. Monitoring device secured to power distribution system conductors. 5,548,523, Cl. 364-483.000.
Wei, Lee-Fang, to AT&T Corp. Methods and apparatus for rotationally invariant multilevel coding. 5,548,615, Cl. 375-281.000.
Weiblen, Kurt; and Woessner, Bertram, to Robert Bosch GmbH. Device having a mounting board and method for applying a passivating gel. 5,547,730, Cl. 428-76.000.

170–653 O.G.–96–31: QL3

VOI
1189
ISS
3
AG
20
1996

Weichert, Andreas; Kleemann, Heinz-Werner; Lang, Hans-Jochen; Schwark, Jan-Robert; Albus, Udo; and Scholz, Wolfgang, to Hoechst Aktiengesellschaft. Substituted 1-oxo-1,2-dihydroisoquinolinoylguanidines and 1,1-dioxo-2H-1,2-benzothiazinoylguanidines, a process for their preparation, their use as medicaments or diagnostic agents, and medicaments containing them. 5,547,953, Cl. 514-226.500.

Weider, Richard: *See—*
Köhler, Burkhard; Ebert, Wolfgang; Horn, Klaus; Weider, Richard; and Scholl, Thomas, 5,548,011, Cl. 524-267.000.

Weidner, Charles H.: *See—*
Shuttleworth, Leslie; Weidner, Charles H.; and Cunningham, Michael P., 5,547,727, Cl. 428-64.100.

Weidner, Richard; Mautner, Konrad; and Mueller, Reinhardt, to Wacker-Chemie GmbH. Process for the preparation of organopolysiloxane resin. 5,548,053, Cl. 528-14.000.

Weigand, Benjamin F.: *See—*
Caldwell, Stephen P.; Harris Jr., Marvine; Matsakis, Demetrios J.; Minarik, Ronald W.; Schmidt, Kenneth M.; Weigand, Benjamin F.; Prill, Robert S.; and Siegel, Arnold B., 5,548,839, Cl. 455-313.000.

Weihs, Timothy: *See—*
Barbee, Troy W., Jr.; and Weihs, Timothy, 5,547,715, Cl. 427-561.000.

Weimer, Ralph; and Acker, Duane R., to Discovery Zone, Inc. Apparatus and method for washing balls. 5,546,967, Cl. 134-65.000.

Weinbeck, Louis J.: *See—*
Gudat, Adam J.; Rao, Prithvi N.; Shaffer, Gary K.; Shi, Wenfan; Shin, Dong H.; Sennott, James W.; Whittaker, William L.; Kleimenhagen, Karl W.; West, Jay H.; Clow, Richard G.; Wu, Baoxin; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,548,516, Cl. 364-443.000.

Weinstein, Michael A.: *See—*
Cusick, Michael J.; Weinstein, Michael A.; and Olds, Leonard E., 5,548,611, Cl. 373-18.000.

Weir, Bernard E., III: *See—*
Ford, David K.; and Weir, Bernard E., III, 5,548,285, Cl. 341-100.000.

Weirich, David M.: *See—*
Allen, Patrick J.; Bross-Kelly, Beverly J.; Viltro, Louis J.; Vinnage, William R., Jr.; and Weirich, David M., 5,547,531, Cl. 156-164.000.

Weisel, Charles. Remote method and apparatus for listening to birds. 5,548,656, Cl. 381-122.000.

Weisend, Norbert A., Jr.: *See—*
Adams, Lowell J.; Leffel, Kevin L.; Tenison, Gary V.; and Weisend, Norbert A., Jr., 5,547,150, Cl. 244-134.00R.

Weiss, Abdul R.: *See—*
Demmer, Wolfgang; Hörl, Hans-Heinrich; Nussbaumer, Dietmar; Weiss, Abdul R.; and Wünn, Eberhard, 5,547,575, Cl. 210-490.000.

Weiss, Horst: *See—*
Gerhardt, Klaus; Sebastian, Lothar; and Weiss, Horst, 5,546,857, Cl. 100-93.00P.

Weiss, Keith D.; Duclos, Theodore G.; Chrzan, Michael J.; and Yanyo, Lynn C., to Lord Corporation. Magnetorheological fluid composite structures. 5,547,049, Cl. 188-267.000.

Weithmann, Klaus U.; and Bartlett, Robert R., to Hoechst Aktiengesellschaft. Use of leflunomide for inhibiting tumor necrosis factor alpha. 5,547,970, Cl. 514-378.000.

Weithmann, Klaus U.; and Bartlett, Robert R., to Hoechst Aktiengesellschaft. Use of leflunomide for inhibiting interleukin 8. 5,547,971, Cl. 514-378.000.

Weitmann & Konrad GmbH & Co.: *See—*
Keller, Alfred, 5,546,679, Cl. 34-278.000.

Weller, Mark P.: *See—*
Allcock, Harry R.; Klingenberg, Eric H.; and Weller, Mark P., 5,548,060, Cl. 528-487.000.

Wells, Steven R.: *See—*
Rector, Charles E.; Wells, Steven R.; Mather, Daniel T.; and Arndt, Robin S., 5,546,847, Cl. 91-403.000.

Wells, Stuart: *See—*
LoNegro, Rene; and Wells, Stuart, 5,548,707, Cl. 395-161.000.

Wells, Trevor C.: *See—*
Evans, Maurice J.; Faulkner, Sharon L.; Fisher, Ronald; Wells, Trevor C.; and Hadlum, Paul, 5,547,737, Cl. 428-178.000.

Welty, Erik L.: *See—*
Davis, Jack R.; Gallup, Michael G.; Goke, L. Rodney; Welty, Erik L.; and Wiles, Michael F., 5,548,771, Cl. 395-800.000.

Wenger Corporation: *See—*
Decker, Matthew J.; Eustice, Todd C.; Rau, Douglas; and Boers, Arie, 5,546,709, Cl. 52-66.000.

Wentworth, Claudia H. Household filing system. 5,547,226, Cl. 283-36.000.

Wenzel, William R. Apparatus for drilling curved sections of well holes. 5,547,032, Cl. 175-73.000.

Werner Kammann Maschinenfabrik GmbH: *See—*
Riis, Einar K., 5,546,860, Cl. 101-247.000.

Werner Turck GmbH & Co. KG: *See—*
Tigges, Burkhard, 5,548,094, Cl. 200-303.000.

Wernersbach, Arthur W., Jr.; Skaritka, John R.; Yager, Billy P.; Barrick, Rodney R.; and Ligier, John D., to Universities Research Association, Inc. Direct wind coil winding head assembly. 5,547,532, Cl. 156-172.000.

Wessely, Hermann: *See—*
Brabetz, Berhard; and Wessely, Hermann, 5,548,487, Cl. 361-769.000.

West, Jay H.: *See—*
Gudat, Adam J.; Rao, Prithvi N.; Shaffer, Gary K.; Shi, Wenfan; Shin, Dong H.; Sennott, James W.; Whittaker, William L.; Kleimenhagen, Karl W.; West, Jay H.; Clow, Richard G.; Wu, Baoxin; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,548,516, Cl. 364-443.000.

Westcott, Douglas W.: *See—*
Casper, Daniel F.; Gregg, Thomas A.; Salyer, Gregory; and Westcott, Douglas W., 5,548,623, Cl. 375-358.000.

Westinghouse Air Brake Company: *See—*
Daugherty Jr., David W.; Kanjo, Wajih; and Hawryszkow, Michael G., 5,547,089, Cl. 213-62.00R.

Westwood, Steven W.: *See—*
Russell-Jones, Gregory J.; and Westwood, Steven W., 5,548,064, Cl. 530-380.000.

Weyerhaeuser Company: *See—*
Hansen, Michael R.; and Young, Richard H., Sr., 5,547,541, Cl. 162-12.000.
Hansen, Michael R.; and Young, Richard H., Sr., 5,547,745, Cl. 428-283.000.

Whalen, Charles E.: *See—*
Stone, Dwight V.; and Whalen, Charles E., 5,547,056, Cl. 192-51.000.

Whalen, Kevin W.: *See—*
Papp, Michael J.; and Whalen, Kevin W., 5,547,186, Cl. 473-168.000.

Whipple, Walter, III, to General Electric Company. Refrigeration system with electrically controlled expansion valve. 5,546,757, Cl. 62-225.000.

Whirlpool Corporation: *See—*
Merlin, Jean-Paul D.; Sharp, Brenner M.; Farrington, Eric K.; and Johnston, Vonda K., 5,546,772, Cl. 68-24.000.

Whitaker Corporation, The: *See—*
Benjamin, Karen E., 5,547,384, Cl. 439-79.000.
Greenfield, Sherwood S.; and Voll, Kevin J., 5,548,086, Cl. 174-48.000.
Spangler, Todd M., 5,547,385, Cl. 439-101.000.
Treche, Ronald, 5,547,305, Cl. 403-97.000.

White Consolidated Industries, Inc.: *See—*
Bancroft, Allen J., 5,548,511, Cl. 364-424.020.

White, Ellen: *See—*
Furseth, John P.; Heydrich, Frank; Hover, Forest H.; Little, Ian; Mackin, Steven G.; Stenard, Steven C.; Thompson, James L.; White, Ellen; and Wilson, Bruce D., 5,547,342, Cl. 415-200.000.

White, Jackie L., to R. J. Reynolds Tobacco Company. Cigarette with improved fuel element insulator. 5,546,965, Cl. 131-194.000.

White, Kenneth L.: *See—*
Reed, William A.; and White, Kenneth L., 5,548,075, Cl. 536-23.500.

White, Melvin D.: *See—*
Gray, Ian J.; and White, Melvin D., 5,548,088, Cl. 174-74.00R.

White, Robert D. Floatation device with propeller and rudder driven by a bicycle. 5,547,406, Cl. 440-12.000.

White, Scott T.: *See—*
Smith, Aaron L.; and White, Scott T., 5,547,641, Cl. 422-181.000.

White, Walter R., III; and Mullins, James A., to BASF Corporation. Insulating rigid polyurethane foam compositions. 5,547,998, Cl. 521-131.000.

Whitehead, Robert H.: *See—*
Nice, Edouard C.; James, R.; Simpson, R.; Burgess, A. W.; and Whitehead, Robert H., 5,547,940, Cl. 514-21.000.

Whitehead, Ross: *See—*
Murphy, Peter F.; Kurtz, James H., Jr.; Whitehead, Ross; and Szasz, David A., 5,547,103, Cl. 220-709.000.

Whiteman, Ronald, to Riverwood International Corporation. Magazine release assembly. 5,547,336, Cl. 414-798.900.

WhiteMoss, Inc.: *See—*
Riley, William C.; Albertin, Marc S.; and May, James B., 5,547,348, Cl. 417-273.000.

Whittaker, William L.: *See—*
Gudat, Adam J.; Rao, Prithvi N.; Shaffer, Gary K.; Shi, Wenfan; Shin, Dong H.; Sennott, James W.; Whittaker, William L.; Kleimenhagen, Karl W.; West, Jay H.; Clow, Richard G.; Wu, Baoxin; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,548,516, Cl. 364-443.000.

Whittenberger, William A.; and Woodruff, Edward T., to W. R. Grace & Co.-Conn. Core element useful in a combined electrically heatable and light-off converter. 5,546,746, Cl. 60-274.000.

Wichelhaus, Juergen: *See—*
Heucher, Reimar; Wichelhaus, Juergen; Schueller, Kurt; Kopannia, Siegfried; and Rossini, Angela, 5,548,027, Cl. 525-179.000.

Wicker, Stephen B.: *See—*
Wang, Xiao-an; and Wicker, Stephen B., 5,548,684, Cl. 395-21.000.

Widdis, James C.: *See—*
Shekhawat, Sampat; Tumpey, John J.; and Widdis, James C., 5,546,742, Cl. 60-39.142.

Wieck, Ronald W.: *See—*
Kemp, Daniel N.; Mitin, Timothy W.; Rohman, Kenneth J.; Shirk, Christopher C.; and Wieck, Ronald W., 5,547,000, Cl. 141-104.000.

Wieger, George S.: *See—*
Perkey, Russell C.; Ramey, Bruce S.; and Wieger, George S., 5,546,988, Cl. 137-625.660.

Wier, Manfred: *See—*
Südholt, Michael; Wier, Manfred; Krebs, Stephan; Bauer, Bernhard; and Reupke, Wolfgang, 5,546,916, Cl. 123-674.000.

Wierer, Peter: *See—*
Hohenegger, Karl; and Wierer, Peter, 5,548,440, Cl. 359-360.000.

Wierlo, Steven J.: *See—*
Rawls, R. Lee; Wierlo, Steven J.; and Wade, Cathy L., 5,547,439, Cl. 482-5.000.

Wikefeldt, Per, to Engstrom Medical Aktiebolag. Patient connector with HME, filter, and nebulizer connection. 5,546,930, Cl. 128-201.130.

Wiklof, Christopher A.; and Millet, Edward M., to Intermec Corporation. Method of data handling and activating thermal print elements in a thermal printhead. 5,548,688, Cl. 395-108.000.

Wiklund, Karl: *See—*
Nykanen, Tuomo S.; Greenwood, Brian F.; Gullichsen, Johan; Kiiskila, Erkki; Mattelmaki, Esko; Phillips, Joseph R.; Richardsen, Jan; Ryham, Rolf; Soderman, Jarmo; and Wiklund, Karl, 5,547,543, Cl. 162-31.000.

Wilcox, Darren W.; and Doan, Alpha N., to Hewlett-Packard Company. Scanning unit with independent spring-loaded document control components mounted on an integrated chassis. 5,547,179, Cl. 271-3.200.

Wilcox, James J., to Step and a Half Toys. Children's stepstool with automatic electronic message mechanism. 5,547,412, Cl. 446-73.000.

Wild, Ernst: *See—*
Mayer, Ulrich; Wild, Ernst; and Kaltenbrunn, Peter, 5,546,918, Cl. 123-674.000.

Wild, Gary G., to Eclipse, Inc. Flame sensor module. 5,548,277, Cl. 340-578.000.

Wild, Richard: *See—*
Wanninger, Paul; Wild, Richard; Kleinschmidt, Ernst; and Späth, Helmut, 5,547,526, Cl. 149-19.200.

Wiles, Michael F.: *See—*
Davis, Jack R.; Gallup, Michael G.; Goke, L. Rodney; Welty, Erik L.; and Wiles, Michael F., 5,548,771, Cl. 395-800.000.

Wilhelm Environmental Technologies, Inc.: *See—*
Wright, Robert A., 5,547,495, Cl. 96-74.000.

Wilhelms, Henning: *See—*
Friebe, Walter–Gunar; Reinholz, Erhard; and Wilhelms, Henning, 5,547,980, Cl. 514-443.000.

Wilk, Peter J. Medical stocking for temperature detection. 5,546,955, Cl. 128-736.000.

Wilkes, Garth L.: *See—*
Brandom, Donald K.; DeSouza, Jose P.; Baird, Donald G.; and Wilkes, Garth L., 5,547,996, Cl. 521-134.000.

Wilkinson, F. Charles. Simulated crab lure. 5,546,694, Cl. 43-42.390.

Williams, Geoffrey C.; and VanBortel, David P., to Xerox Corporation. Apparatus and method for binding pseudo-signatures into a booklet. 5,547,176, Cl. 270-37.000.

Williams, James M., to Linear Technology Corp. Fluorescent-lamp excitation circuit using a piezoelectric acoustic transformer and methods for using same. 5,548,189, Cl. 315-224.000.

Williams, Joel L.; Burkett, Susan L.; and McGuire, Shel, to Becton, Dickinson and Company. Plastic articles of reduced gas transmission and method therefor. 5,547,723, Cl. 428-35.700.

Williams, Michael S.; Lau, Lilip; Khosravi, Farhad; Hartigan, William; and Hernando, Avegel, to Advanced Cardiovascular Systems, Inc. Method for mounting an intravascular stent on a catheter. 5,546,646, Cl. 29-407.080.

Williams, Patricia B.; and Crouch, Earl R., Jr., to Eastern Virginia Medical School; and Center for Innovative Technology, The. Method for preparing a topical, aminocaproic acid containing ophthalmic gel. 5,547,680, Cl. 424-427.000.

Williams, Richard K.; Yilmaz, Hamza; Cornell, Michael E.; and Chen, Jun W., to Siliconix Incorporated. Method for forming a zener diode region and an isolation region. 5,547,880, Cl. 437-15.000.

Williams, W. Grey: *See—*
Thompson, Matilda; and Williams, W. Grey, 5,546,774, Cl. 68-208.000.

Wilson, Bruce D.: *See—*
Furseth, John P.; Heydrich, Frank; Hover, Forest H.; Little, Ian; Mackin, Steven G.; Stenard, Steven C.; Thompson, James L.; White, Ellen; and Wilson, Bruce D., 5,547,342, Cl. 415-200.000.

Wilson, Charles H.: *See—*
Feger, Claudius; Graham, Teresita O.; Grebe, Kurt R.; Lanzetta, Alphonso P.; Liutkus, John J.; Matthew, Linda C.; Palmer, Michael J.; Tanner, Nelson R.; Tong, Ho-Ming; Wilson, Charles H.; and Yeh, Helen L., 5,546,655, Cl. 29-846.000.

Wilson, Gary J., to Amtico Company Limited, The. Floor coverings. 5,547,741, Cl. 428-215.000.

Wilson, John C.; and Tyagi, Dinesh, to Eastman Kodak Company. Quaternary phosphonium trihalocuprate salts as charge-control agents for toners and developers. 5,547,803, Cl. 430-110.000.

Wilson, M. Frank: *See—*
Sawyer, James G.; Kloster, Bruce S.; Kitson, Ralph L.; Kovatch, Randall M.; Roepke, Daniel C.; and Wilson, M. Frank, 5,548,818, Cl. 455-54.100.

Wiltron Company: *See—*
Grace, Martin I.; and Oldfield, William W., 5,548,538, Cl. 364-571.040.

Winfree, Don D.; and Hunter, Louis G., Jr., to Lockheed Martin. Pulse detonation apparatus with spherical seals. 5,546,744, Cl. 60-247.000.

Winkel, Jens: *See—*
Podszun, Wolfgang; Winkel, Jens; and Müller, Michael, 5,548,001, Cl. 523-116.000.

Schwabe, Peter; Schlak, Ottfried; Winkel, Jens; Guggenberger, Rainer; and Gasser, Oswald, 5,548,002, Cl. 523-118.000.

Winkler, Matthew: *See—*
Meador, James; McElroy, Hoyt E.; Herrmann, Michelle L.; and Winkler, Matthew, 5,547,862, Cl. 435-91.300.

Wireless Control Systems: *See—*
Anderson, Mark V.; and Mulally, Daniel J., 5,548,669, Cl. 385-19.000.

Wirth, Jürgen: *See—*
Sulzbach, Hans-Michael; Raffel, Reiner; Althausen, Ferdinand; and Wirth, Jürgen, 5,547,276, Cl. 366-139.000.

Wirtz, Ulrich: *See—*
Rüth, Gregor; Wirtz, Ulrich; and Tholen, Leo, 5,547,137, Cl. 242-35.50R.

Wisconsin Alumni Research Foundation: *See—*
Swerdloff, Stuart; Mackie, Thomas R.; and Holmes, Timothy, 5,548,627, Cl. 378-4.000.

Wisz, Michael W.: *See—*
Dray, James R.; Parsnick, David R.; Fisher, Theodore F.; and Wisz, Michael W., 5,546,767, Cl. 62-646.000.

Witt, David A.: *See—*
Hamblin, Steven W.; Witt, David A.; Sierocuk, Thomas J.; Nicola, Kirk M.; Otten, Matthew R.; and Berky, Craig B., 5,547,117, Cl. 227-175.200.

Wittrock, Robert J.: *See—*
Dietrich, Brenda L.; and Wittrock, Robert J., 5,548,518, Cl. 364-468.060.

Wittry, David B. Digital wind-speed meter. 5,546,815, Cl. 73-861.770.

Woessner, Bertram: *See—*
Weiblen, Kurt; and Woessner, Bertram, 5,547,730, Cl. 428-76.000.

Wojnarowski, Robert J.; and Gorczyca, Thomas B., to General Electric Company. Vacuum fixture and method for fabricating electronic assemblies. 5,546,654, Cl. 29-841.000.

Wojtan, George R.: *See—*
Reed, Steven J.; Wallgren, Robert L.; Davies, Scott T.; Wojtan, George R.; and Gazzara, Paul, 5,548,489, Cl. 361-827.000.

Wolf, Julie: *See—*
Easley, Ellis, Jr.; Gray, Patricia; Suwandhaputra, Johannes; and Wolf, Julie, 5,548,784, Cl. 395-838.000.

Wolf, Robert J.: *See—*
Kirchhoff, Kenneth J.; and Wolf, Robert J., 5,547,154, Cl. 248-118.300.

Wolfrey, Austin A.; and Bagdasarian, Samuel L., to Raytheon Company. Ferrite/epoxy film. 5,547,599, Cl. 252-62.540.

Wong, Chang-Ming; and Liour, Shihn-Juh, to Industrial Technology Research Institute. Tipping device and method of producing medical catheters. 5,547,364, Cl. 425-384.000.

Wong, Joseph: *See—*
Thompson, Stacey S.; McShane, James; Wong, Joseph; and Wood, Ray W., 5,547,471, Cl. 604-87.000.

Woo, Tae-jin, to Samsung Electronics Co. Ltd. Interface control system for a CD-ROM driver by memory mapped I/O method having a predetermined base address using an ISA BUS standard. 5,548,777, Cl. 395-821.000.

Wood, Donald C., to Plop Golf Company. Progressive golf club having a diagonally balanced slot back. 5,547,426, Cl. 473-290.000.

Wood, Ray W.: *See—*
Thompson, Stacey S.; McShane, James; Wong, Joseph; and Wood, Ray W., 5,547,471, Cl. 604-87.000.

Wood, William P.: *See—*
Conwell, Stanley L.; and Wood, William P., 5,547,479, Cl. 51-309.000.

Woodruff, Edward T.: *See—*
Whittenberger, William A.; and Woodruff, Edward T., 5,546,746, Cl. 60-274.000.

Wooldridge, James A.; Brender, Ronald F.; and Grieb, Henry N., III, to Digital Equipment Corporation. Software debugging system and method especially adapted for code debugging within a multi-architecture environment. 5,548,717, Cl. 395-183.140.

Woolf, David L. Process for fabricating false eyelash system. 5,547,529, Cl. 156-61.000.

Wössner, Ernst; and Braun, Mathias, to Heckler & Koch GmbH. Cartridge belt. 5,546,845, Cl. 89-35.010.

Wouters, Paul; and Dirx, Lieven, to Agfa-Gevaert N. V. Dye ribbon package for thermal printers. 5,547,298, Cl. 400-692.000.

Wozniczka, Boguslav M.: *See—*
Fletcher, Nicholas J.; Chow, Clarence Y.; Pow, Eric G.; Wozniczka, Boguslav M.; Voss, Henry H.; and Hornburg, Gerald, 5,547,776, Cl. 429-13.000.

Wright, Andrew C. W., to Dzus Fastener Europe Limited. Fastening device. 5,547,308, Cl. 403-325.000.

Wright, D. Craig, to Novavax, Inc. Antimicrobial oil-in-water emulsions. 5,547,677, Cl. 424-401.000.

Wright, James W.: *See—*
Plaxico, Bob E.; Wright, James W.; and Domansky, Philippe, 5,547,074, Cl. 206-193.000.

Wright, Jason T.: *See—*
Bierman, Raymond E.; Perryman, Paul C.; and Wright, Jason T., 5,548,541, Cl. 364-724.160.

Wright, John O., to Osram Sylvania Inc. Connector module. 5,547,400, Cl. 439-668.000.

Wright, Michael A.: *See—*
Cole, Paul A.; Harry, Emory J.; and Wright, Michael A., 5,548,223, Cl. 324-754.000.

UMI

VOL 1189 ISS 3 AG 2 U 1996 UMI

Wright, Robert A., to Wilhelm Environmental Technologies, Inc. Flue gas conditioning system. 5,547,495, Cl. 96-74.000.

Wu, Baoxin: *See—*
Gudat, Adam J.; Rao, Prithvi N.; Shaffer, Gary K.; Shi, Wenfan; Shin, Dong H.; Sennott, James W.; Whittaker, William L.; Kleimenhagen, Karl W.; West, Jay H.; Clow, Richard G.; Wu, Baoxin; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,548,516, Cl. 364-443.000.

Wu, Chi; and Munter, Ernst A., to Northern Telecom Limited. Programmable, differential wavelength discriminator. 5,548,671, Cl. 385-37.000.

Wu, Kuang: *See—*
Lee, Adam T.; Wu, Kuang; and Burton, Larry, 5,547,617, Cl. 261-114.500.

Wu, Ying-Jye; and Keesee, Susan K., to Matritech, Inc. Methods and compositions for the detection of colon cancers. 5,547,928, Cl. 514-2.000.

Wünn, Eberhard: *See—*
Demmer, Wolfgang; Hörl, Hans-Heinrich; Nussbaumer, Dietmar; Weiss, Abdul R.; and Wünn, Eberhard, 5,547,575, Cl. 210-490.000.

Wurz, Albert; Scott, William; and Skokowski, Richard, to Accu-Sort Systems, Inc. Conveyor friction scale. 5,547,034, Cl. 177-25.130.

Wuu, Shou-Gwo; Liang, Mong-Song; Su, Chung-Hui; and Wang, Chen-Jong, to Taiwan Semiconductor Manufacturing Company. Process for forming stacked contacts and metal contacts on static random access memory having thin film transistors. 5,547,892, Cl. 437-52.000.

Wyslotsky, Ihor, to Wyslotsky, Ihor. Method of extending shelf life of a comestible product while providing a locally packaged appearance. 5,546,731, Cl. 53-400.000.

Xerox Corporation: *See—*
Appel, James J.; Greene, Daniel H.; and Mudge, J. Craig, 5,548,357, Cl. 353-69.000.
Bagley, Steven C.; and Kopec, Gary E., 5,548,700, Cl. 395-144.000.
Bayley, Robert D.; Fox, Carol A.; Hoffend, Thomas R.; Mahabadi, Hadi K.; Agur, Enno E.; Sacripante, Guerino; and Hawkins, Michael S., 5,548,059, Cl. 528-194.000.
Binnert, Thomas R.; and Carlotta, Michael, 5,548,310, Cl. 347-33.000.
Bowler, Edward F., Jr., 5,548,389, Cl. 355-311.000.
Costello, Mark, 5,547,178, Cl. 270-52.020.
Folkins, Jeffrey J., 5,548,391, Cl. 355-326.00R.
Moran, Thomas P.; Pedersen, Elin R.; McCall, Michael K.; and Halasz, Frank G., 5,548,705, Cl. 395-159.000.
Saban, Marko; Liebermann, George; and McAneney, Thomas B., 5,548,043, Cl. 526-84.000.
Schieck, Richard A., 5,548,388, Cl. 355-309.000.
Williams, Geoffrey C.; and VanBortel, David P., 5,547,176, Cl. 270-37.000.

Xie, Chenggang: *See—*
Kumar, Nalin; and Xie, Chenggang, 5,548,185, Cl. 313-495.000.

Xie, Mark M., to Premark FEG Corporation. Mixing machine bowl support lock. 5,547,278, Cl. 366-203.000.

Xing, Inc.: *See—*
Funahashi, Yasuhiro; Ikami, Kazunori; Nishimura, Osamu; Hibino, Yoshihiko; Kiyohara, Yuji; and Yasutomo, Yuichi, 5,548,281, Cl. 340-825.080.

Xiu, Rui-Juan. Accelerated wound healing. 5,547,672, Cl. 424-195.100.

Yabe, Satoru: *See—*
Shimizu, Nobuhiro; Chiba, Norio; and Yabe, Satoru, 5,548,130, Cl. 257-31.000.

Yabushita, Shinichi: *See—*
Fukui, Toshinori; Katsuda, Nobuyuki; Yabushita, Shinichi; and Hashizume, Shuhei, 5,547,478, Cl. 8-643.000.

Yada, Shuhei: *See—*
Ito, Kiichi; Yada, Shuhei; Oomori, Miho; and Nakamura, Toshiko, 5,548,047, Cl. 526-240.000.

Yagami, Hiroyuki; Sato, Naoto; Yamashita, Hideaki; Nakagawa, Satoshi; and Maekawa, Jun, to Terumo Kabushiki Kaisha. Ultrasonic endoprobe. 5,546,947, Cl. 128-662.060.

Yager, Billy P.: *See—*
Wernersbach, Arthur W., Jr.; Skaritka, John R.; Yager, Billy P.; Barrick, Rodney R.; and Ligier, John D., 5,547,532, Cl. 156-172.000.

Yagihara, Morio: *See—*
Kojima, Tetsuro; Yagihara, Morio; Sasaki, Hirotomo; Mifune, Hiroyuki; and Kato, Shinji, 5,547,829, Cl. 430-603.000.

Yahagi, Satoshi, to Fuji Photo Optical Co., Ltd. Zoom lens system. 5,548,445, Cl. 359-677.000.

Yakobson, Ernest: *See—*
Kukanskis, Peter; Yakobson, Ernest; and Taytsas, Lev, 5,547,559, Cl. 205-125.000.

Yamada, Hidenori: *See—*
Akizawa, Mitsuru; Yamashita, Hirofumi; Kawaguchi, Hisamitsu; Tada, Katsumi; Kato, Kanji; Kito, Akira; and Yamada, Hidenori, 5,548,724, Cl. 395-200.030.

Yamada, Mamoru, to Yugen Kaisha Toyo Igaku. Method and apparatus of applying high-frequency wave current to reactive electro-permeable point of patient. 5,546,954, Cl. 128-735.000.

Yamada, Masaichi; and Kaku, Junichi, to Yamaha Hatsudoki Kabushiki Kaisha. Fuel supply device. 5,546,912, Cl. 123-511.000.

Yamada, Tadayoshi; Tozuka, Masahiro; Goto, Katumi; Simatani, Tuyoshi; and Maeda, Yoshinobu, to Matsushita Electric Industrial Co., Ltd. Projection type televison screen mounting structure including an elastic material for holding a screen. 5,548,350, Cl. 348-839.000.

Yamada, Takashi: *See—*
Hamamoto, Takeshi; Yamada, Takashi; and Ishibashi, Yutaka, 5,548,145, Cl. 257-301.000.

Yamada, Tetsuo: *See—*
Takai, Yasuyuki; Yamada, Tetsuo; Kawamura, Toshifumi; Shimizu, Susumu; and Yamasaki, Haruki, 5,547,363, Cl. 425-376.100.

Yamada, Yuh: *See—*
Ito, Yoshitaka; Ishii, Masami; Nishio, Takayuki; Mizutani, Uichiro; Yamada, Yuh; Ogasawara, Fumihiko; and Suganuma, Motohiro, 5,547,924, Cl. 505-500.000.

Yamagishi, Yoichiro, to Unisia Jecs Corporation. Method and apparatus for diagnosis of trouble in supercharging pressure sensor. 5,546,795, Cl. 73-118.200.

Yamagiwa, Akira: *See—*
Takekuma, Toshitsugu; Kurihara, Ryoichi; and Yamagiwa, Akira, 5,548,226, Cl. 326-30.000.

Yamaguchi, Akira; Kobayashi, Hideo; and Mizuno, Toshio, to Kokusai Denshin Denwa Co., Ltd. Mobile communication system having a cell structure constituted by integrating macro cells and micro cells. 5,548,806, Cl. 455-33.100.

Yamaguchi, Naoyuki; and Abe, Tohru, to Iwatsu Electric Co., Ltd. Audio teleconferencing apparatus. 5,548,638, Cl. 379-202.000.

Yamaguchi, Syoji: *See—*
Oono, Shuuji; Tadamura, Katsumi; and Yamaguchi, Syoji, 5,548,710, Cl. 395-181.000.

Yamaguchi, Takeshi: *See—*
Hirajima, Hiroshige; Yamaguchi, Takeshi; and Fuji, Hiroshi, 5,548,570, Cl. 369-59.000.

Yamaguchi, Tetsuya; Watanabe, Yasushi; Fukanuma, Tetsuhiko; Oki, Yasuhiro; and Yamamoto, Yuuji, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho; and Nippondenso Co., Ltd. Scroll type compressor with elliptical spiral element. 5,547,353, Cl. 418-55.200.

Yamaguchi, Tetsuya: *See—*
Shimizu, Izuru; Fukanuma, Tetsuhiko; Yamaguchi, Tetsuya; Goto, Kunifumi; Hisanaga, Shigeru; and Egami, Hirotaka, 5,547,354, Cl. 418-55.500.

Yamaguchi, Toshiya, to Sega Enterprises, Ltd. Simulated steering apparatus for use in a vehicle simulator. 5,547,383, Cl. 434-62.000.

Yamaguchi, Yoshiko; and Ohshima, Yoichi, to Kabushiki Kaisha Toshiba. Method of manufacturing a semiconductor memory device having a common source region. 5,547,884, Cl. 437-43.000.

Yamaha Hatsudoki Kabushiki Kaisha: *See—*
Iida, Yoshikatsu; Kurihara, Noriyuki; and Suzuki, Toshio, 5,546,919, Cl. 123-682.000.
Yamada, Masaichi; and Kaku, Junichi, 5,546,912, Cl. 123-511.000.

Yamaji, Yasuhiro: *See—*
Hirano, Naohiko; and Yamaji, Yasuhiro, 5,548,161, Cl. 257-722.000.

Yamakawa, Kazuhiko: *See—*
Kuretake, Masato; Zushi, Takayasu; Kitagawa, Motonobu; Yamakawa, Kazuhiko; Okamoto, Yoshimi; and Uda, Sawayo, 5,547,218, Cl. 280-743.100.

Yamakawa, Yasuhiro: *See—*
Ito, Hidenobu; Shimizu, Katsuya; Hashikawa, Kenzo; and Yamakawa, Yasuhiro, 5,548,162, Cl. 307-10.100.

Yamamoto, Kazuya; Tanino, Noriyuki; and Umemoto, Tetsuya, to Mitsubishi Denki Kabushiki Kaisha. Power amplifier including an impedance matching circuit and a switch FET. 5,548,246, Cl. 330-51.000.

Yamamoto, Kazuya: *See—*
Maemura, Kosei; and Yamamoto, Kazuya, 5,548,825, Cl. 455-115.000.

Yamamoto, Keisaku; Ikeda, Kiyoshi; Fukuyama, Masahiro; Naito, Takeshi; and Aritake, Masanori, to Sumitomo Chemical Company, Ltd.; and Toyoda Goesi Co., Ltd. Automotive weather strip. 5,548,012, Cl. 524-433.000.

Yamamoto, Ken: *See—*
Matsuo, Hiroki; Yamanaka, Yasushi; Baba, Norimasa; Yamamoto, Michiyasu; and Yamamoto, Ken, 5,546,761, Cl. 62-509.000.

Yamamoto, Masashi: *See—*
Fujii, Takeshi; and Yamamoto, Masashi, 5,548,013, Cl. 524-449.000.

Yamamoto, Michiyasu: *See—*
Matsuo, Hiroki; Yamanaka, Yasushi; Baba, Norimasa; Yamamoto, Michiyasu; and Yamamoto, Ken, 5,546,761, Cl. 62-509.000.

Yamamoto, Ryoji: *See—*
Ogino, Toshikazu; and Yamamoto, Ryoji, 5,548,247, Cl. 330-277.000.

Yamamoto, Tadashi: *See—*
Kageyama, Shuhei; Arai, Sachio; Yamamoto, Tadashi; and Ebinuma, Tadayoshi, 5,547,301, Cl. 401-116.000.

Yamamoto, Takakazu; and Maruyama, Tsukasa, to Tokyo Institute of Technology. Process for manufacturing alkyl-substituted poly (2,2'-diyl) bipyridine-5,5'-diyl. 5,548,048, Cl. 526-265.000.

Yamamoto, Takashi, to Fujitsu Limited. Shielded molded plastic cover. 5,548,083, Cl. 174-35.0GC.

Yamamoto, Yoichi: *See—*
Ito, Yasuo; Kato, Hideo; Yasuda, Singo; Kado, Noriyuki; Yoshida, Toshihiko; and Yamamoto, Yoichi, 5,547,962, Cl. 514-312.000.

Yamamoto, Yoshihisa: *See—*
Hayabuchi, Masahiro; Nishida, Masaaki; Yamamoto, Yoshihisa; Mikami, Kazuhiro; Tsutsui, Hiroshi; and Iwata, Akihito, 5,547,436, Cl. 477-114.000.

Yamamoto, Yuuji: *See—*
Yamaguchi, Tetsuya; Watanabe, Yasushi; Fukanuma, Tetsuhiko; Oki, Yasuhiro; and Yamamoto, Yuuji, 5,547,353, Cl. 418-55.200.

Yamamura, Toshiki: *See—*
Naka, Teruyuki; Umeda, Yoshio; Yamamura, Toshiki; Kumon, Akira; Suzuki, Seiichi; Nawama, Junichi; and Nagase, Hisanori, 5,548,380, Cl. 355-219.000.

Yamanaka, Toshihisa; and Okabayashi, Eiji, to Minolta Camera Kabushiki Kaisha. Laser diode printing apparatus. 5,548,320, Cl. 547-246.000.

Yamanaka, Yasushi: *See—*
Matsuo, Hiroki; Yamanaka, Yasushi; Baba, Norimasa; Yamamoto, Michiyasu; and Yamamoto, Ken, 5,546,761, Cl. 62-509.000.

Yamane, Masao: *See—*
Tanimoto, Takuma; Kudo, Makoto; Mishima, Tomoyoshi; Nakajima, Akishige; Mori, Mitsuhiro; and Yamane, Masao, 5,548,138, Cl. 257-192.000.

Yamane, Mitsuo: *See—*
Kishimoto, Tomonori; Yamane, Mitsuo; Bogauchi, Takehito; and Eguchi, Yoshihiro, 5,547,779, Cl. 429-144.000.

Yamanouchi Pharmaceutical Co., Ltd.: *See—*
Ohta, Mitsuaki; Suzuki, Takeshi; Ohmori, Jun-ya; Miyata, Keiji; and Yanagisawa, Isao, 5,547,961, Cl. 514-300.000.

Yamaoka, Katsumi: *See—*
Furuhashi, Makoto; and Yamaoka, Katsumi, 5,548,599, Cl. 371-40.100.

Yamasa, Hideo: *See—*
Takai, Yasuhiro; Ueda, Atsushi; Tanaka, Hirokazu; and Yamasa, Hideo, 5,548,385, Cl. 355-260.000.

Yamasaki, Akinori: *See—*
Kimura, Yutaro; Ikeshima, Tetsuhiko; Tonami, Hiromichi; Konishi, Ikuo; Horikawa, Hiroshi; Daikoku, Akihiro; Sakabe, Shigekazu; Inoue, Masao; and Yamasaki, Akinori, 5,548,629, Cl. 378-134.000.

Yamasaki, Gorou; Mitsuru, Iseno; and Miyamaru, Yukio, to Honda Giken Kogyo Kabushiki Kaisha. Riding simulation system for motorcycles. 5,547,382, Cl. 434-61.000.

Yamasaki, Haruki: *See—*
Takai, Yasuyuki; Yamada, Tetsuo; Kawamura, Toshifumi; Shimizu, Susumu; and Yamasaki, Haruki, 5,547,363, Cl. 425-376.100.

Yamasaki, Shinji, to Mitsubishi Denki Kabushiki Kaisha. Elevator hoist apparatus and manufacturing method therefor. 5,547,044, Cl. 187-254.000.

Yamashita, Hideaki: *See—*
Yagami, Hiroyuki; Sato, Naoto; Yamashita, Hideaki; Nakagawa, Satoshi; and Maekawa, Jun, 5,546,947, Cl. 128-662.060.

Yamashita, Hirofumi: *See—*
Akizawa, Mitsuru; Yamashita, Hirofumi; Kawaguchi, Hisamitsu; Tada, Katsumi; Kato, Kanji; Kito, Akira; and Yamada, Hidenori, 5,548,724, Cl. 395-200.030.

Yamashita, Koji: *See—*
Ueno, Yoshiaki; Hyosu, Haruhiko; Sase, Takao; Matsushita, Koji; and Yamashita, Koji, 5,548,254, Cl. 333-25.000.

Yamashita, Michio: *See—*
Fujie, Akihiko; Takase, Shigehiro; Yamashita, Michio; Sato, Tomoko; Hashimoto, Seiji; and Okuhara, Masakuni, 5,547,934, Cl. 514-11.000.

Yamat, Miguel B., to Cooper Industries, Inc. Bushing for gas-insulated switchgear. 5,548,089, Cl. 174-142.000.

Yamato, Koji: *See—*
Matsune, Hideaki; and Yamato, Koji, 5,548,578, Cl. 370-13.000.

Yamato, Tsutomu; Oshino, Yasuhiro; Fukuda, Yutaka; Kanno, Tatsuya; Kuwana, Takaaki; and Okano, Yoshimichi, to Daicel Chemical Industries, Ltd. Process for producing polycarbonate. 5,548,041, Cl. 526-62.000.

Yamaura, Akira; and Hosono, Masami, to Hitachi Denshi Kabushiki Kaisha. Method and apparatus for detecting/storing waveform peak value. 5,548,232, Cl. 327-60.000.

Yamazaki, Hirohiko: *See—*
Sekimoto, Takashi; Endo, Yoichi; Yamazaki, Hirohiko; Yamazaki, Masahiko; Ohtani, Yutaka; Iguchi, Takeyoshi; Matsumoto, Kenji; Yamazaki, Hiroyuki; Takimura, Ryo; and Tsuda, Takao, 5,548,417, Cl. 385-474.000.

Yamazaki, Hiroshi: *See—*
Tanaka, Shigeo; Yamazaki, Hiroshi; Kotabe, Noriko; Sugiyama, Koichi; Sato, Makoto; Katsuyama, Akira; Osakabe, Yoshio; and Kusagaya, Yasuo, 5,548,725, Cl. 395-200.050.

Yamazaki, Hiroyuki: *See—*
Sekimoto, Takashi; Endo, Yoichi; Yamazaki, Hirohiko; Yamazaki, Masahiko; Ohtani, Yutaka; Iguchi, Takeyoshi; Matsumoto, Kenji; Yamazaki, Hiroyuki; Takimura, Ryo; and Tsuda, Takao, 5,548,417, Cl. 385-474.000.

Yamazaki, Masahiko: *See—*
Sekimoto, Takashi; Endo, Yoichi; Yamazaki, Hirohiko; Yamazaki, Masahiko; Ohtani, Yutaka; Iguchi, Takeyoshi; Matsumoto, Kenji; Yamazaki, Hiroyuki; Takimura, Ryo; and Tsuda, Takao, 5,548,417, Cl. 385-474.000.

Yamazaki, Yasushi, to NEC Corporation. Method for manufacturing a SRAM cell having asymmetrical LDD type MIS device. 5,547,888, Cl. 437-52.000.

Yamazaki, Yuichiro: *See—*
Miyoshi, Motosuke; Okumura, Katsuya; and Yamazaki, Yuichiro, 5,548,183, Cl. 313-153.000.

Yamazaki, Yukinori: *See—*
Nakatsu, Kazuya; Goto, Takaharu; Higaki, Toru; Endo, Hideki; Hirose, Satoru; and Yamazaki, Yukinori, 5,547,505, Cl. 106-713.000.

Yanagawa, Hisaharu: *See—*
Shigematsu, Takashi; Yanagawa, Hisaharu; Shimizu, Takeo; Nakamura, Shiro; Fukasawa, Kazuya; and Watanabe, Tomohiro, 5,548,675, Cl. 385-80.000.

Yanagihara, Michihiro: *See—*
Koketsu, Eiji; Sato, Koki; Muromachi, Tetsushi; Haraoka, Mutsumu; Nagata, Toshio; Yanagihara, Michihiro; and Oma, Kuniaki, 5,547,223, Cl. 280-805.000.

Yanagisawa, Isao: *See—*
Ohta, Mitsuaki; Suzuki, Takeshi; Ohmori, Jun-ya; Miyata, Keiji; and Yanagisawa, Isao, 5,547,961, Cl. 514-300.000.

Yanagisawa, Ken. Drive system. 5,546,826, Cl. 74-490.090.

Yanagisawa, Masashi: *See—*
Masaki, Tomoh; Yanagisawa, Masashi; and Inoue, Akihiro, 5,548,061, Cl. 530-324.000.

Yang, Chung-Jeng. Gardening shears. 5,546,661, Cl. 30-146.000.

Yang, Jau-Yuann: *See—*
Morris, Francis J.; Yang, Jau-Yuann; Plumton, Donald L.; and Yuan, Han-Tzong, 5,548,141, Cl. 257-192.000.

Yang, Sheng-Hsing, to United Microelectronics Corp. Method of fabricating a metal gate MOS transistor with self-aligned first conductivity type source and drain regions and second conductivity type contact regions. 5,547,895, Cl. 437-57.000.

Yang, Tai-Her. Distributed differential coupling combined power system. 5,547,433, Cl. 477-5.000.

Yang, Yang: *See—*
Wakita, Katsuya; Hotta, Shu; Sonoda, Nobuo; and Yang, Yang, 5,546,889, Cl. 117-84.000.

Yanidis, Apostol, to James River Paper Company, Inc. Blend of polybutylene and ionomer forming easy-open heatseal. 5,547,752, Cl. 428-349.000.

Yankie, N. Alan: *See—*
Santini, John J.; and Yankie, N. Alan, 5,548,020, Cl. 524-801.000.

Yano, Yoshiaki; Fujimoto, Tamiji; and Hidaka, Takayoshi, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Method for producing microgranulated particle. 5,547,683, Cl. 424-501.000.

Yanyo, Lynn C.: *See—*
Weiss, Keith D.; Duclos, Theodore G.; Chrzan, Michael J.; and Yanyo, Lynn C., 5,547,049, Cl. 188-267.000.

Yao, Being-Kung: *See—*
Conforti, Robert M.; Kim, Sun-Wook; and Yao, Being-Kung, 5,547,534, Cl. 156-230.000.

Yarmey, Marianne; Bello, James L.; Mitchell, Gary F.; Pearce, Glenn T.; Bowman, Wayne A.; and Sterman, Melvin, to Eastman Kodak Company. Method for hardening photographic materials. 5,547,832, Cl. 430-623.000.

Yasohama, Kazuhiko; and Kohama, Hiroaki, to Kaisei Engineer Co., Ltd. Electromagnetic induction inspection apparatus and method employing frequency sweep of excitation current. 5,548,214, Cl. 324-240.000.

Yasuda, Singo: *See—*
Ito, Yasuo; Kato, Hideo; Yasuda, Singo; Kado, Noriyuki; Yoshida, Toshihiko; and Yamamoto, Yoichi, 5,547,962, Cl. 514-312.000.

Yasuda, Yukio; and Ohashi, Yutaka, to Mitsubishi Denki Kabushiki Kaisha. Waveform shaping circuit. 5,548,242, Cl. 327-559.000.

Yasuda, Yukio: *See—*
Kawamoto, Atsunobu; and Yasuda, Yukio, 5,548,220, Cl. 324-399.000.

Yasukawa, Shinji: *See—*
Okazawa, Noriaki; Naka, Takahiro; and Yasukawa, Shinji, 5,548,314, Cl. 347-71.000.

Yasutomo, Yuichi: *See—*
Funahashi, Yasuhiro; Ikami, Kazunori; Nishimura, Osamu; Hibino, Yoshihiko; Kiyohara, Yuji; and Yasutomo, Yuichi, 5,548,281, Cl. 340-825.080.

Yates, Joseph W., IV; and Forsythe, Donald L., to AT&T Global Information Solutions Company. Visible and touchable touch screen shield. 5,548,306, Cl. 345-174.000.

Yatsuyanagi, Yoshimi: *See—*
Satake, Sunao; Yatsuyanagi, Yoshimi; Fujii, Masahiro; and Imagawa, Ippei, 5,547,999, Cl. 522-122.000.

Yazaki Corporation: *See—*
Hill, Mark G., 5,547,388, Cl. 439-135.000.

Yazu, Tetsushin: *See—*
Nakamura, Koji; and Yazu, Tetsushin, 5,547,409, Cl. 445-8.000.

Ye, Guoji; Kajihara, Jun-ichi; Kirihara, Sei; Kato, Kazuo; and Abe, Hiroko, to JCR Pharmaceuticals Co., Ltd. Remitting agent for nephrotic syndrome and hepatopathy symptoms. 5,547,945, Cl. 514-54.000.

Yeates, Clive L.: *See—*
Slater, Martin J.; Cockerill, George S.; Littler, Edward; and Yeates, Clive L., 5,547,976, Cl. 514-410.000.

Yeh, Helen L.: *See—*
Feger, Claudius; Graham, Teresita O.; Grebe, Kurt R.; Lanzetta, Alphonso P.; Liutkus, John J.; Matthew, Linda C.; Palmer, Michael J.; Tanner, Nelson R.; Tong, Ho-Ming; Wilson, Charles H.; and Yeh, Helen L., 5,546,655, Cl. 29-846.000.

Yeh, Shih-yuan. Fishhing reel with an ambidextrous handle. 5,547,141, Cl. 242-270.000.

Yeo, Guw D.: *See—*
Kim, Ho H.; Yeo, Guw D.; and Yi, Yil W., 5,548,035, Cl. 525-408.000.

Yi, Yil W.: *See—*
Kim, Ho H.; Yeo, Guw D.; and Yi, Yil W., 5,548,035, Cl. 525-408.000.

Yilmaz, Hamza: *See—*
Williams, Richard K.; Yilmaz, Hamza; Cornell, Michael E.; and Chen, Jun W., 5,547,880, Cl. 437-15.000.

Yishay, Oded; Jelemensky, Joseph; and Iles, Alexander L., to Motorola, Inc. Data processor and method for providing show cycles on a fast multiplexed bus. 5,548,794, Cl. 395-871.000.

Yngve, Paul W.: *See—*
Edwards, Donald W.; Odle, James K.; Popper, Peter; Sadler, Donald M.; Savidge, Todd J.; Staunton, Harold P.; Walker, William C.; and Yngve, Paul W., 5,547,732, Cl. 428-85.000.

Yogo, Hiroyuki, to Aisin Seiki Kabushiki Kaisha. Mobile station monitoring system. 5,548,822, Cl. 455-68.000.

Yogo, Isao: *See—*
Ando, Mikio; Yogo, Isao; and Kikawa, Takanobu, 5,547,607, Cl. 252-313.100.

Yoichi, Hamada: *See—*
Kasahara, Tatsuya; and Yoichi, Hamada, 5,548,354, Cl. 351-206.000.

Yokoajiro, Yoshiyuki: *See—*
Horiike, Yoshio; Yoshimura, Yasuo; Yokoajiro, Yoshiyuki; Matsumura, Terue; Hasegawa, Makoto; and Mimura, Masahiro, 5,548,619, Cl. 375-344.000.

Yokogi, Kazuo, to Teisan K.K. Evaporated gas supply method. 5,546,753, Cl. 62-48.100.

Yokono, Tomohiko: *See—*
Kanzaki, Shigeki; Kawaguchi, Masahiro; Sonobe, Masanori; and Yokono, Tomohiko, 5,547,346, Cl. 417-222.200.

Yokoo, Tsugio: *See—*
Kogure, Mitsuhiro; Nagashima, Shinichi; Wakabayashi, Kazuhisa; Enkaku, Shigeyuki; Shimayama, Hitoshi; Kimura, Minoru; Shimoyama, Shuji; and Yokoo, Tsugio, 5,548,260, Cl. 335-126.000.

Yokoshi, Noriyuki: *See—*
Maruyama, Takumi; and Yokoshi, Noriyuki, 5,548,716, Cl. 395-183.120.

Yokota, Hiroaki: *See—*
Kamada, Shinya; Yokota, Hiroaki; Nagayama, Shigeru; Nakahara, Yuji; Nakano, Shin; Marusue, Toshihisa; Abe, Mitsutoshi; and Matsumoto, Hiroyuki, 5,547,437, Cl. 477-143.000.

Yokoyama, Tatsuichi, to Tamagawa Machinery Co., Ltd. Powder molding press. 5,547,360, Cl. 425-149.000.

Yoneda, Hitoshi; Hasegawa, Haruyoshi; Nosaki, Takefumi; Tanimoto, Koji; Machida, Hironobu; and Nakamura, Hajime, to Kabushiki Kaisha Toshiba. Image forming apparatus with filing function which can store image data and can efficiently perform document filing. 5,548,666, Cl. 382-276.000.

Yonekawa, Masao: *See—*
Iwamoto, Shinji; Mizuno, Toshiaki; Muramatsu, Toshihiko; Nakashima, Kazushi; Abe, Tomoaki; Yonekawa, Masao; and Sakashita, Yoshihiro, 5,546,911, Cl. 123-497.000.

Yorke-Smith, Ian E., to International Business Machines Corporation. Encryption method and system. 5,548,648, Cl. 380-49.000.

Yoshida, Kyoei: *See—*
Niwa, Hideyuki; Sasaki, Kiyomi; Yoshida, Kyoei; Tanuma, Itsuo; Naito, Kazuo; Morimura, Yasuhiro; and Koga, Takahiko, 5,547,762, Cl. 428-442.000.

Yoshida, Masatada: *See—*
Taguchi, Masahiro; Katoh, Kazutaka; and Yoshida, Masatada, 5,547,215, Cl. 280-732.000.

Yoshida, Masayuki, to Canon Kabushiki Kaisha. Character processing method and apparatus. 5,548,701, Cl. 395-150.000.

Yoshida, Norio, to NEC Corporation. Destuff circuit for asynchronous digital signals. 5,548,624, Cl. 375-372.000.

Yoshida, Toshihiko: *See—*
Ito, Yasuo; Kato, Hideo; Yasuda, Singo; Kado, Noriyuki; Yoshida, Toshihiko; and Yamamoto, Yoichi, 5,547,962, Cl. 514-312.000.

Yoshie, Naoki; and Machida, Junji, to Minolta Co., Ltd. Electrophotographic toner with Fischer-Tropsch wax having mean molecular weight of not less than 1,000. 5,547,799, Cl. 430-110.000.

Yoshihara, Ikuo, to Sony Corporation. Bipolar type semiconductor device having small parasitic capacitance, small dimensions, and small variation in transistor characteristics. 5,548,155, Cl. 257-517.000.

Yoshikawa, Hiroyuki: *See—*
Umeda, Yasushi; Tomiyama, Tetsuo; Yoshikawa, Hiroyuki; Sakao, Tomohiko; Shimomura, Yoshiki; and Tanigawa, Sadao, 5,548,682, Cl. 395-10.000.

Yoshimoto, Shigeka; Takahashi, Akiyoshi; Uchida, Toshiya; and Wakashima, Rie. Optical deflector provided with scanning mirror rotatable around shaft by dynamic air pressure. 5,548,437, Cl. 359-200.000.

Yoshimura, Emiko; and Tezuka, Shin-ichi, to TDK Corporation. Humidity sensor and method for making. 5,546,802, Cl. 73-335.050.

Yoshimura, Yasuo: *See—*
Horiike, Yoshio; Yoshimura, Yasuo; Yokoajiro, Yoshiyuki; Matsumura, Terue; Hasegawa, Makoto; and Mimura, Masahiro, 5,548,619, Cl. 375-344.000.

Yoshino, Hitoshi; Oshima, Keiji; and Miyagaki, Hisanori, to Hitachi, Ltd. Method and apparatus for screen displaying. 5,548,304, Cl. 345-145.000.

Yoshino, Mitsuji: *See—*
Sugimoto, Sunao; Yoshino, Mitsuji; and Kobayashi, Noboru, 5,546,868, Cl. 105-178.000.

Yoshioka, Hiroshi: *See—*
Okuyama, Nobutaka; Sakurai, Soichi; Fukuma, Kooji; Yoshioka, Hiroshi; Obara, Masao; Ito, Naoki; Takeyama, Atsushi; and Satoh, Yoshio, 5,548,190, Cl. 315-368.260.

Yoshioka, Toshifumi: *See—*
Masaki, Yuichi; Onuma, Kenji; Yoshioka, Toshifumi; and Mitsui, Mutsuo, 5,548,428, Cl. 359-80.000.

Yoshioka, Yasuhiro: *See—*
Ito, Takayuki; Shimada, Yasuhiro; Matsuoka, Koushin; and Yoshioka, Yasuhiro, 5,547,826, Cl. 430-558.000.

Yoshizaki, Masanori: *See—*
Ogata, Toshio; Yoshizaki, Masanori; and Taguchi, Kenji, 5,546,652, Cl. 29-738.000.

You, Young Kwan. Electromotive device for exhibiting pictures. 5,546,686, Cl. 40-476.000.

You, Youn-Jong: *See—*
Cho, Soon-Haeng; Chue, Kuck-Tack; Kim, Jong-Nam; Kim, Kwon-Il; You, Youn-Jong; and Lee, Seng-Go, 5,547,492, Cl. 95-100.000.

Young, Anthony R. Phosphorescent light collars. 5,548,493, Cl. 362-84.000.

Young, Bruce; and Coulson, Rick, to Intel Corporation. Intelligent bus bridge for input/output subsystems in a computer system. 5,548,730, Cl. 395-280.000.

Young, Christopher L.: *See—*
Oliver, Joseph J.; Young, Christopher L.; and Bednar, Richard D., 5,548,278, Cl. 340-605.000.

Young, James W.: *See—*
Barberich, Timothy J.; and Young, James W., 5,547,994, Cl. 514-649.000.

Young, Joseph R. Plastic pallet. 5,546,872, Cl. 108-56.100.

Young, Kevin L.: *See—*
Gawaskar, Sadanand; Norris, Frank J.; Vitous, Joseph; and Young, Kevin L., 5,547,036, Cl. 180-68.500.

Young, Richard H., Sr.: *See—*
Hansen, Michael R.; and Young, Richard H., Sr., 5,547,541, Cl. 162-12.000.
Hansen, Michael R.; and Young, Richard H., Sr., 5,547,745, Cl. 428-283.000.

Youngs, Bradley D.: *See—*
Conner, John P.; Ross, James W.; Youngs, Bradley D.; Haigh, Paul; and Small, William C., 5,546,873, Cl. 108-153.000.

Yu, Ruey J.; and Van Scott, Eugene J., to Tristrata Technology, Inc. Alleviating signs of dermatological aging with glycolic acid, lactic acid or citric acid. 5,547,988, Cl. 514-557.000.

Yuan, Han-Tzong: *See—*
Morris, Francis J.; Yang, Jau-Yuann; Plumton, Donald L.; and Yuan, Han-Tzong, 5,548,141, Cl. 257-192.000.

Yuasa Corporation: *See—*
Kagawa, Hiroshi; Kato, Shiro; and Murata, Kazuo, 5,547,780, Cl. 429-149.000.
Kishimoto, Tomonori; Yamane, Mitsuo; Bogauchi, Takehito; and Eguchi, Yoshihiro, 5,547,779, Cl. 429-144.000.

Yuda, Shuji: *See—*
Osanai, Akinori; Nagai, Toshinari; Kanai, Hiroshi; Harima, Kenji; Iwano, Kazuhiko; and Yuda, Shuji, 5,546,917, Cl. 123-674.000.

Yuen, Kenneth H. Ink cartridge opener. 5,546,830, Cl. 81-3.390.

Yugen Kaisha Toyo Igaku: *See—*
Yamada, Mamoru, 5,546,954, Cl. 128-735.000.

Yuhaku, Satoru: *See—*
Nakamura, Yoshifumi; Bessho, Yoshihiro; Yuhaku, Satoru; Hakotani, Yasuhiko; Itagaki, Minehiro; and Miura, Kazuhiro, 5,547,530, Cl. 156-89.000.

Yumiba, Hideaki; Matsumoto, Kazunobu; and Kawakami, Akira, to Hitachi Maxell, Ltd. Lithium cell. 5,547,785, Cl. 429-220.000.

Yung, Robert, to Sun Microsystems, Inc. Method and apparatus for rapidly retrieving data from a physically addressed data storage structure using address page crossing predictive annotations. 5,548,739, Cl. 395-414.000.

Zabala, Robert J.: *See—*
Eggleston, Michael R.; Benz, Mark G.; Jackson, Melvin R.; and Zabala, Robert J., 5,548,628, Cl. 378-125.000.

Zach, Mark J.: *See—*
Royer, Leon D.; Skrtic, Thomas; and Zach, Mark J., 5,547,082, Cl. 206-725.000.

Zadeh, Rohollah E., to AMP Plus, Inc. Light fixture for recess in sloped ceiling. 5,548,499, Cl. 362-366.000.

Zain, Sayeeda: *See—*
Marotta, Charles A.; and Zain, Sayeeda, 5,547,841, Cl. 435-6.000.

Zaiser, Dieimar, to Mahle GmbH. Articulated, oil-cooled piston for internal combustion engines. 5,546,896, Cl. 123-193.600.

Zakrajsek, Jerry, to DCI Marketing, Inc. Fastener assembly. 5,547,306, Cl. 403-202.000.

Zanders, Gary V.; Scherpenberg, Francis A.; and Deierling, Kevin E., to Dallas Semiconductor Corp. Nonvolatile control architecture. 5,548,550, Cl. 365-185.080.

Zanner, Frank J.: *See—*
Vianco, Paul T.; Fisher, Robert W.; Hosking, Floyd M.; and Zanner, Frank J., 5,547,484, Cl. 65-42.000.

Zatloukal, Kurt: *See—*
Curiel, David T.; Birnstiel, Max L.; Cotten, Matthew; Wagner, Ernst; Zatloukal, Kurt; Plank, Christian; Oberhauser, Berndt; and Schmidt, Walter G. M., 5,547,932, Cl. 435-65.000.

Zaveri, Vikram H. Electric rolling pin apparatus for making discs of dough. 5,546,850, Cl. 99-349.000.

Zebrowski, Kathleen D.: *See—*
Zeimer, Ran C.; Jost, George J.; Bainbridge, Robert C.; Schwarzbach, Richard; Ware, Charles; and Zebrowski, Kathleen D., 5,546,941, Cl. 128-652.000.

Zege, Irina A.: *See—*

Zege, Sergei O.; Zege, Irina A.; Antonov, Dmitry V.; Sedov, Igor I.; Makovsky, Lev V.; Pokladok, Igor A.; and Mikhailov, Arkady J., 5,547,316, Cl. 405-267.000.

Zege, Sergei O.; Zege, Irina A.; Antonov, Dmitry V.; Sedov, Igor I.; Makovsky, Lev V.; Pokladok, Igor A.; and Mikhailov, Arkady J., to Zege, Sergei Olegovich. Prefabricated members of sectional monolithic wall in ground, design of wall built up of said members, and method for erection of said wall. 5,547,316, Cl. 405-267.000.

Zege, Sergei Olegovich: *See—*
Zege, Sergei O.; Zege, Irina A.; Antonov, Dmitry V.; Sedov, Igor I.; Makovsky, Lev V.; Pokladok, Igor A.; and Mikhailov, Arkady J., 5,547,316, Cl. 405-267.000.

Zeidan, Fouad Y., to KMC, Inc. Method and bearing construction for control of hot oil carryover and loss of lubricant. 5,547,287, Cl. 384-117.000.

Zeiler, Karl H.: *See—*
Kepert, Manfred; and Zeiler, Karl H., 5,547,452, Cl. 493-427.000.

Zeilinger, Michael S.: *See—*
Meacham, Patrick E.; Zeilinger, Michael S.; Meacham, Clifford B.; and Huffstutler, M. Conrad, Jr., 5,546,870, Cl. 105-355.000.

Zeimer, Ran C.; Jost, George J.; Bainbridge, Robert C.; Schwarzbach, Richard; Ware, Charles; and Zebrowski, Kathleen D., to CDS Technologies, L.L.C. Patient operated tonometers. 5,546,941, Cl. 128-652.000.

Zelenak, Daniel G.; and Stratton, Rickey L., to Automotive Systems Laboratory, Inc. Air bag inflator and method of manufacture thereof. 5,547,217, Cl. 280-741.000.

Zeneca Limited: *See—*
Datta, Asis; Mehta, Anuradha; and Natarajan, K., 5,547,870, Cl. 435-240.400.
Satgurunathan, Rajasingham; Hinde, David C.; Padget, John C.; and Carey, John G., 5,547,710, Cl. 427-386.000.

Zenmei, Keisaku: *See—*
Ogawa, Yoshihiro; Zenmei, Keisaku; and Isozumi, Shuzo, 5,548,171, Cl. 310-154.000.

Zhang, Tong. Laser head and telescopic cavity for diode-pumped solid-state lasers. 5,548,608, Cl. 372-75.000.

Zhang, Zhongman. Orthopedic robot and method for reduction of long-bone fractures. 5,546,942, Cl. 128-653.100.

Zhang, Zhong-Xuan; Lin, Jyhfong; and Wang, Yun-Ti, to Cirrus Logic Inc. Low power high speed CMOS current switching circuit. 5,548,238, Cl. 327-374.000.

Zhou, Qun Y.: *See—*
Bunzow, James R.; Civelli, Olivier; Grandy, David K.; and Zhou, Qun Y., 5,547,845, Cl. 435-7.100.

Zhou, Yong, to Lucent Technologies Inc. Low bit rate audio-visual communication system having integrated preceptual speech and video coding. 5,548,322, Cl. 348-14.000.

Zhu, Zhangwhu: *See—*
Gibson, Colin; Matthews, Ian P.; Samuel, Alan H.; and Zhu, Zhangwhu, 5,548,217, Cl. 324-316.000.

Ziegenhorn, David: *See—*
Neveras, George J.; McKinney, James C.; Sherman, Adam; Lohrman, Richard L.; and Ziegenborn, David, 5,547,091, Cl. 215-237.000.

Ziegler, Dieter: *See—*
Kehrbach, Wolfgang; Mlinaric, Michael; Ziegler, Dieter; Brueckner, Reinhard; and Bielenberg, Willi, 5,547,967, Cl. 514-361.000.

Ziegler, Kelly W.: *See—*
Moncrief, Frank; Ziegler, Kelly W.; Hiney, Michael; and Grimm, Dennis, 5,546,734, Cl. 53-534.000.

Zilker, Daniel P., Jr.: *See—*
Cann, Kevin J.; Hussein, Fathi D.; Zilker, Daniel P., Jr.; and Lee, Kiu H., 5,548,040, Cl. 526-62.000.

Zimmerman, Ronald A., II; and Hofer, John C., to AlliedSignal Inc. Side impact soft pack air bag module. 5,547,214, Cl. 280-730.100.

Zinser Textilmaschinen GmbH: *See—*
Dinkelmann, Friedrich; Vetter, Dieter; and Samp, Manfred, 5,546,740, Cl. 57-266.000.

Zodrow, Rudolf. Bottle inspection machine. 5,546,819, Cl. 73-865.800.

Zortea, Anthony E., to Panasonic Technologies, Inc. Non-linear color corrector having a neural network and using fuzzy membership values to correct color and a method thereof. 5,548,697, Cl. 395-22.000.

Zuckerbrod, David: *See—*
Bahar, Bamdad; Hobson, Alex R.; Kolde, Jeffrey A.; and Zuckerbrod, David, 5,547,551, Cl. 204-296.000.

Zuliani, Douglas J.: *See—*
Hibbins, Stephen G.; Timpano, Fernando A.; and Zuliani, Douglas J., 5,547,634, Cl. 420-564.000.

Zur, Albert, to Cubital Ltd. Apparatus and a method for creating an image by applying voltage signals and non-visible charges to a dielectric element. 5,548,315, Cl. 347-112.000.

Zushi, Takayasu: *See—*
Kuretake, Masato; Zushi, Takayasu; Kitagawa, Motonobu; Yamakawa, Kazuhiko; Okamoto, Yoshimi; and Uda, Sawayo, 5,547,218, Cl. 280-743.100.

Zvonar, John G., to Advanced Micro Devices, Inc. Monitor utility for use in manufacturing environment. 5,548,535, Cl. 364-551.010.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 20th DAY OF AUGUST, 1996

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Atari Games Corporation: *See—*
Logg, George E., Re. 35,314, Cl. 463-2.000.

Logg, George E., to Atari Games Corporation. Multi-player, multi-character cooperative play video game with independent player entry and departure. Re. 35,314, Cl. 463-2.000.

Okamoto, Yoshihiko. Mask for manufacturing semiconductor device and method of manufacture thereof. Re. 35,315, Cl. 430-5.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Clark, William T., Ill. Method for automatically indexing cast field shaping blocks to a radiation therapy treatment tray and a cooling tray for cast blocks. B1 4,700,451, Cl. 29-527.500.

Goodman, Sidney R. Method and apparatus for vending customized documents. B1 5,038,293, Cl. 364-479.000.

LIST OF DESIGN PATENTEES

Abed, Tark: *See—*
Kawauchi, Masahiko; Petermann, J. Scott; Abed, Tark; and Wilson, Jay, 372,906, Cl. D14-114.000.

Adams, James D.: *See—*
Rose, Deborah H.; Adams, James D.; and Thole, Steven, 372,816, Cl. D6-473.000.

Adler, Oded. Gemstone. 372,883, Cl. D11-89.000.

Aeschbacher, Daniel; and Jönsson, Wolfgang, to Logitech SA. Computer mouse. 372,908, Cl. D14-114.000.

Ahern, Richard B., Jr., to Rubbermaid Incorporated. Beverage container lid. 372,866, Cl. D9-449.000.

Aladan Corporation: *See—*
Gatewood, William L.; Kaczmarczyk, George; and Povlacs, Lawrence J., 372,863, Cl. D9-429.000.

All Ship Enterprise Co., Ltd.: *See—*
Chen, Shih-Yu; and Lin, Shu-Hwa, 372,853, Cl. D8-331.000.

Allen, James L.: *See—*
Meyers, Brenda J.; Herritz, Donald W.; Johansen, Jean L.; Hudson, William B., Jr.; Bell, Randall P.; Prokop, Gary F.; Caruso, James F.; and Allen, James L., 372,975, Cl. D24-109.000.

Allmon, James A.; Spielberger, Allen A.; and Weiland, Douglas E., to Lord and Sons, Inc. Pressed-in pipe plug. 372,960, Cl. D23-260.000.

Alps Electric (USA) Inc.: *See—*
Kawauchi, Masahiko; Petermann, J. Scott; Abed, Tark; and Wilson, Jay, 372,906, Cl. D14-114.000.

Amano, Nobuhiko: *See—*
Ijiri, Tomonori; Amano, Nobuhiko; and Nojiri, Toshihiko, 372,921, Cl. D15-7.000.

Anders, Irving. Flexi-grab paper clip. 372,937, Cl. D19-65.000.

Andrade, Luis G.: *See—*
Noble, John R.; Harber, Jeffrey A.; Nguyen, Thanh-Binh N.; and Andrade, Luis G., 372,849, Cl. D8-51.000.

ARJO Limited: *See—*
Williams, Raymond C., 372,982, Cl. D24-188.000.

Armstrong World Industries, Inc.: *See—*
Rose, Deborah H.; Adams, James D.; and Thole, Steven, 372,816, Cl. D6-473.000.

Assenburg, B.V.: *See—*
Muller-Deisig, Wolfgang; and Dankers, Alexander H. A. M., 372,811, Cl. D6-399.000.

Atlantic City Coin & Slot Service Company, Inc.: *See—*
Hartmann, Brian, 372,814, Cl. D6-450.000.

Austin, Sharon: *See—*
Cleary, Wayne; Austin, Sharon; and Stewart, Charles, 372,842, Cl. D7-600.000.

Baker, David J.: *See—*
Dubuque, Kenneth J.; McCallops, John A.; Baker, David J.; and Bruno, Robert H., 372,850, Cl. D8-61.000.

Ballin, Scott. Hockey puck shot glass. 372,837, Cl. D7-515.000.

Barrault, Jean-Louis, to Robert Krups GmbH & Co., KG. Electric toaster. 372,833, Cl. D7-330.000.

Barth, Terry D. Flotation device. 372,951, Cl. D21-237.000.

Bausch & Lomb Incorporated: *See—*
Brune, Henri; and Conway, Simon M., 372,928, Cl. D16-311.000.
Conway, Simon M., 372,929, Cl. D16-326.000.

Beauchamp, William N.: *See—*
Curry, William J.; Beauchamp, William N.; and Kizis, John A., 372,897, Cl. D13-184.000.

Bechtel, Daniel L. Wrench for installing and removing shotgun chokes. 372,848, Cl. D8-21.000.

Bell, Randall P.: *See—*
Meyers, Brenda J.; Herritz, Donald W.; Johansen, Jean L.; Hudson, William B., Jr.; Bell, Randall P.; Prokop, Gary F.; Caruso, James F.; and Allen, James L., 372,975, Cl. D24-109.000.

belle de st. claire: *See—*
Berger, Robert P., 372,980, Cl. D24-176.000.

Belote, John W. Article of jewelry. 372,884, Cl. D11-96.000.

Berendsen, Paul; Bruins, Hans-Kervin; and Gerhardt, Werner, to H. von Gimborn GmbH. Pet food supplement. 372,791, Cl. D1-107.000.

Berger, Robert P., to belle de st. claire. Waxing ring. 372,980, Cl. D24-176.000.

Bernal, Joe A.; and Bernal, Renee E. Louvered tailgate. 372,894, Cl. D12-196.000.

Bernal, Renee E.: *See—*
Bernal, Joe A.; and Bernal, Renee E., 372,894, Cl. D12-196.000.

Bird, Gordon J.; and Rietkerk, William, to Country Home Bakers, Inc. Merchandise display unit. 372,815, Cl. D6-476.000.

Bishay, Jon M., to Heartstream, Inc. Defibrillator. 372,977, Cl. D24-167.000.

Björge, Björn: *See—*
Hansen, Finn R.; and Björge, Björn, 372,864, Cl. D9-434.000.

Black & Decker Inc.: *See—*
Carbone, Richard J., 372,998, Cl. D26-43.000.

Blount, Luther H. Top sides and superstructure of a boat. 372,895, Cl. D12-318.000.

Bobson Hygiene International Inc.: *See—*
Chen, Chen-Feng, 372,966, Cl. D23-366.000.

Bolden, Scott: *See—*
Stowell, Davin; and Bolden, Scott, 372,865, Cl. D9-434.000.

Bonaddio, Vincenzo A.; and Contreras, Jose D. M., to Foamex L.P. Seat. 372,805, Cl. D6-375.000.

Bonnell, Thomas A.; and Freeman, Basil M., to Kohler Co. Water closet. 372,961, Cl. D23-295.000.

Bourgault, Jean. Stairs for swimming pool. 372,985, Cl. D25-2.000.

Brady, Van B. Lighting fixture. 373,000, Cl. D26-68.000.

Bragg, Darrell; and Bragg, Jerry. Sanitary fabric telephone handset cover. 372,920, Cl. D14-250.000.

Bragg, Jerry: *See—*
Bragg, Darrell; and Bragg, Jerry, 372,920, Cl. D14-250.000.

Brandt, Andrea: *See—*
Mahlmann, Veit; Herrmann, Lutz; and Brandt, Andrea, 372,869, Cl. D9-504.000.

Bretford Manufacturing, Inc.: *See—*
Graziano, Salvatore S.; Stenftenagel, Mark; and Lakeberg, Frank, 372,812, Cl. D6-429.000.

Briggs & Stratton Corporation: *See—*
Thiermann, John H.; and Gracyalny, Gary J., 372,871, Cl. D9-527.000.

Bright Yin Huey Co., Ltd.: *See—*
Hsu, Ken, 373,005, Cl. D26-86.000.

Hsu, Ken, 373,009, Cl. D26-134.000.

Britains Petite Limited: *See—*
Richards, Martin J., 372,943, Cl. D21-127.000.

Bruins, Hans-Kervin: *See—*
Berendsen, Paul; Bruins, Hans-Kervin; and Gerhardt, Werner, 372,791, Cl. D1-107.000.

Brune, Henri; and Conway, Simon M., to Bausch & Lomb Incorporated. Goggle face. 372,928, Cl. D16-311.000.

Brunette, James R.: *See—*
Nagele, Albert L.; and Brunette, James R., 372,896, Cl. D13-103.000.

Bruno, Robert H.: *See—*
Dubuque, Kenneth J.; McCallops, John A.; Baker, David J.; and Bruno, Robert H., 372,850, Cl. D8-61.000.

C.N. Burman Co.: *See—*
Chelsea, Daniel, 373,006, Cl. D26-110.000.
Chelsea, Daniel, 373,007, Cl. D26-110.000.

C. W. Zumbiel Co., The: *See—*
Hoell, Norbert; and Miller, Charles A., 372,861, Cl. D9-418.000.

Callas, Mike T. Sign holder. 372,939, Cl. D20-43.000.

Canon Kabushiki Kaisha: *See—*
Matsumura, Yoshiyuki, 372,926, Cl. D16-202.000.

Carbone, Richard J., to Black & Decker Inc. Head for a flashlight. 372,998, Cl. D26-43.000.

Carlson, Melvin J. Combined tie and fastener. 372,793, Cl. D2-607.000.

Caruso, James F.: *See—*
Meyers, Brenda J.; Herritz, Donald W.; Johansen, Jean L.; Hudson, William B., Jr.; Bell, Randall P.; Prokop, Gary F.; Caruso, James F.; and Allen, James L., 372,975, Cl. D24-109.000.

Carver, Mike: *See—*
Trent, Eddie G.; Trent, Christine; and Carver, Mike, 372,843, Cl. D7-605.000.

Casio Computer Co., Ltd.: *See—*
Tamura, Kenji; and Ido, Yukinori, 372,932, Cl. D18-2.000.

Ceresko, Joseph P., to Space Age Plastics, Inc. Fountain. 372,957, Cl. D23-201.000.

Chang, Jen-Feng: *See—*
Lin, Moses B.; Clouatre, Daniel E.; and Chang, Jen-Feng, 372,824, Cl. D6-545.000.

Charriol, Philippe. Watch bracelet. 372,880, Cl. D11-19.000.

Chelsea, Daniel, to C.N. Burman Co. Lamp. 373,006, Cl. D26-110.000.

Chelsea, Daniel, to C.N. Burman Co. Lamp. 373,007, Cl. D26-110.000.

Chen, Chen-Feng, to Bobson Hygiene International Inc. Air freshener. 372,966, Cl. D23-366.000.

Chen, Frank, to Silitek Corporation. Keyboard. 372,910, Cl. D14-115.000.

Chen, Kuo-an: *See—*
Wang, Daniel; and Chen, Kuo-an, 372,911, Cl. D14-115.000.

Chen, Petter, to World-Wide Travelware Mfg. Co., Ltd. Handle. 372,851, Cl. D8-319.000.

Chen, Shih-Yu; and Lin, Shu-Hwa, to All Ship Enterprise Co., Ltd. Automobile steering lock. 372,853, Cl. D8-331.000.

Chen, Waterson. Chair support connector for a rocking chair. 372,821, Cl. D6-491.000.

Chescavage, Donald J. Fan support. 372,971, Cl. D23-411.000.

Choi, Hyun C., to Samsung Electronics Co., Ltd. Camcorder. 372,925, Cl. D16-202.000.

Chu, Chi-Tsong, to Compaq Computer Corporation. Expansion base for a notebook personal computer. 372,901, Cl. D14-107.000.

Ciba Corning Diagnostics Corp.: *See—*
D'Orazio, Paul A.; and Flaherty, James E., 372,877, Cl. D10-81.000.

Clark, William T.: *See—*
Quijano, David; Jones, Charles L.; and Clark, William T., 372,935, Cl. D18-36.000.

Cleary, Wayne; Austin, Sharon; and Stewart, Charles, to H. J. Heinz Company. Condiment caddy. 372,842, Cl. D7-600.000.

Clegg, Gary B. Exercise device for lower back injuries. 372,944, Cl. D21-191.000.

Clouatre, Daniel E.: *See—*
Lin, Moses B.; Clouatre, Daniel E.; and Chang, Jen-Feng, 372,824, Cl. D6-545.000.

Coca-Cola Company, The: *See—*
Credle, William S., Jr., 372,831, Cl. D7-301.000.

Colgate-Palmolive Co.: *See—*
Crawford, John C., 372,872, Cl. D9-529.000.

Columbia Cascade Company: *See—*
Fox, Michael B., 372,889, Cl. D12-115.000.

Compaq Computer Corporation: *See—*
Chu, Chi-Tsong, 372,901, Cl. D14-107.000.

Coniglio, James; and Coniglio, Vincent J. Rattling glo-eyes jig. 372,954, Cl. D22-126.000.

Coniglio, Vincent J.: *See—*
Coniglio, James; and Coniglio, Vincent J., 372,954, Cl. D22-126.000.

Contreras, Jose D. M.: *See—*
Bonaddio, Vincenzo A.; and Contreras, Jose D. M., 372,805, Cl. D6-375.000.

Conway, Simon M., to Bausch & Lomb Incorporated. Pair of sunglasses. 372,929, Cl. D16-326.000.

Conway, Simon M.: *See—*
Brune, Henri; and Conway, Simon M., 372,928, Cl. D16-311.000.

Coss, Ronald G., to Micro Motors, Inc. Dental tool finger grip. 372,979, Cl. D24-176.000.

Country Home Bakers, Inc.: *See—*
Bird, Gordon J.; and Rietkerk, William, 372,815, Cl. D6-476.000.

Cousins, Morison S., to Dart Industries, Inc. Covered serving tray. 372,840, Cl. D7-541.000.

Crawford, John C., to Colgate-Palmolive Co. Container. 372,872, Cl. D9-529.000.

Credle, William S., Jr., to Coca-Cola Company, The. Housing for a beverage dispenser. 372,831, Cl. D7-301.000.

Cummings, Jerry: *See—*
Segan, Marc H.; Gonser, Vint; Strauss, Gary; and Cummings, Jerry, 372,914, Cl. D14-163.000.

Curry, William J.; Beauchamp, William N.; and Kizis, John A., to Raychem Corporation. Fiber optic splice tray. 372,897, Cl. D13-184.000.

Dankers, Alexander H. A. M.: *See—*
Muller-Deisig, Wolfgang; and Dankers, Alexander H. A. M., 372,811, Cl. D6-399.000.

Dart Industries, Inc.: *See—*
Cousins, Morison S., 372,840, Cl. D7-541.000.
Laib, Douglas M., 372,839, Cl. D7-536.000.

Davison, John: *See—*
Swinford, Karen J.; Davison, John; Mooney, Kelly; and Kresge, Keith, 372,795, Cl. D3-243.000.

Deelen, R. J., to Ypma International B.V. Balcony flower/plant box. 372,887, Cl. D11-152.000.

Deevy, Colin A.: *See—*
Roche, Roderick C.; O'Sullivan, Niall A.; Deevy, Colin A.; and Rankin, Brendan A., 372,827, Cl. D6-567.000.

Design Ideas, Ltd.: *See—*
Hardy, Christopher, 372,810, Cl. D6-396.000.

De Simone, Fiorentino. Sugar-bowl with two teaspoon-holders. 372,841, Cl. D7-590.000.

Dolan, Patrick S. Chandelier. 373,003, Cl. D26-84.000.

D'Orazio, Paul A.; and Flaherty, James E., to Ciba Corning Diagnostics Corp. Solid state planar sensor. 372,877, Cl. D10-81.000.

Droege, Harmut; Fischer, Ludwig; Fischer, Wolfgang; Hinz, Walter; Scheib, Tayssir; and Sonnentag, Dieter, to IBM Corporation. Control unit with a printer. 372,936, Cl. D18-54.000.

Dubuque, Kenneth J.; McCallops, John A.; Baker, David J.; and Bruno, Robert H., to Ingersoll-Rand Company. Electric motor driven angle head nutrunner. 372,850, Cl. D8-61.000.

E & B Giftware, Inc.: *See—*
Hollinger, Fred, 372,875, Cl. D10-58.000.
Hollinger, Fred, 372,876, Cl. D10-72.000.

Eason, Ernest. Ladder. 372,987, Cl. D25-64.000.

Eastman Time Ltd.: *See—*
Wong, Sai-Wing, 372,874, Cl. D10-6.000.

Elmore, Wyneta J.; and Mitchell, Carl. Camcorder viewing screen attachment. 372,927, Cl. D16-220.000.

Elvinsson, Per: *See—*
Ferm, Morgan; and Elvinsson, Per, 372,890, Cl. D12-130.000.

Etac AB: *See—*
Ferm, Morgan; and Elvinsson, Per, 372,890, Cl. D12-130.000.

Feltman, Charles H.; and Zweig, Jan B., to Feltman-Langer Company, Inc., The. Round coffee mug. 372,838, Cl. D7-536.000.

Feltman-Langer Company, Inc., The: *See—*
Feltman, Charles H.; and Zweig, Jan B., 372,838, Cl. D7-536.000.

Ferm, Morgan; and Elvinsson, Per, to Etac AB. Rolling walker. 372,890, Cl. D12-130.000.

Ferris, Ian, to Samsonite Corporation. Suitcase. 372,796, Cl. D3-282.000.

Finnegan, Danny. Workman's magnetic wrist band for holding small metal objects. 372,878, Cl. D11-3.000.

Fiori, Mark V. Circular pizza box. 372,862, Cl. D9-428.000.

Fischer, Ludwig: *See—*
Droege, Harmut; Fischer, Ludwig; Fischer, Wolfgang; Hinz, Walter; Scheib, Tayssir; and Sonnentag, Dieter, 372,936, Cl. D18-54.000.

Fischer, Wolfgang: *See—*
Droege, Harmut; Fischer, Ludwig; Fischer, Wolfgang; Hinz, Walter; Scheib, Tayssir; and Sonnentag, Dieter, 372,936, Cl. D18-54.000.

Fish, Thomas E., Jr., to Little Tikes Company, The. Toy wagon top. 372,942, Cl. D21-71.000.

Fisherman, Carl. Lighted bar magnifier. 372,924, Cl. D16-135.000.

Flaherty, James E.: *See—*
D'Orazio, Paul A.; and Flaherty, James E., 372,877, Cl. D10-81.000.

Florez, Mike. One person dome shaped army cot tent. 372,953, Cl. D21-253.000.

Foamex L.P.: *See—*
Bonaddio, Vincenzo A.; and Contreras, Jose D. M., 372,805, Cl. D6-375.000.

Fortney, Roger D. Combined bread holder and slicing guide. 372,846, Cl. D7-673.000.

Fox, Michael B., to Columbia Cascade Company. Bicycle rack. 372,889, Cl. D12-115.000.

Franco, Edward. Fireplace mantel. 372,970, Cl. D23-404.000.

Freeman, Basil M.: *See—*
Bonnell, Thomas A.; and Freeman, Basil M., 372,961, Cl. D23-295.000.

Friedman, Howard B., to Hartin International. Pegboard hook. 372,856, Cl. D8-367.000.

Friedrich Grohe Aktiengesellschaft: *See—*
Gottwald, Adolf, 372,958, Cl. D23-238.000.

Fujimoto, Shinichiro; and Yamasaki, Yoshikiyo, to Kabushiki Kaisha Fuji Iryoki. Massage chair. 372,801, Cl. D6-367.000.

Fujimoto, Shinichiro; and Yamasaki, Yoshikiyo, to Kabushiki Kaisha Fuji Iryoki. Massage chair. 372,802, Cl. D6-367.000.
G&D Communications Corporation: *See*—
Virzi, Al, 372,794, Cl. D2-866.000.
Gaitley, Colleen M.: *See*—
Gaitley, Dennis; and Gaitley, Colleen M., 372,830, Cl. D6-602.000.
Gaitley, Dennis; and Gaitley, Colleen M. Fitted quilted sheet. 372,830, Cl. D6-602.000.
Gatewood, William L.; Kaczmarczyk, George; and Povlacs, Lawrence J., to Aladan Corporation. Rigid container for condoms and associated products. 372,863, Cl. D9-429.000.
Geissler, Udo M. Flashlight. 372,996, Cl. D26-42.000.
General Housewares Corp.: *See*—
Stowell, Davin; and Bolden, Scott, 372,865, Cl. D9-434.000.
Gerber Products Company: *See*—
Meyers, Brenda J.; Herritz, Donald W.; Johansen, Jean L.; Hudson, William B., Jr.; Bell, Randall P.; Prokop, Gary F.; Caruso, James F.; and Allen, James L., 372,975, Cl. D24-109.000.
Gerhardt, Werner: *See*—
Berendsen, Paul; Bruins, Hans-Kervin; and Gerhardt, Werner, 372,791, Cl. D1-107.000.
Gerhart, Mark D.: *See*—
Lathrop, Gregory A.; Gerhart, Mark D.; Gnadt, David F.; Markey, Kevin J.; Gonda, Frank E.; and Laubach, David S., 372,859, Cl. D9-300.000.
Lathrop, Gregory A.; Gerhart, Mark D.; Gnadt, David F.; Markey, Kevin J.; Gonda, Frank E.; and Laubach, David S., 372,860, Cl. D9-300.000.
Lathrop, Gregory A.; Gerhart, Mark D.; Gnadt, David F.; Markey, Kevin J.; Gonda, Frank E.; and Laubach, David S., 372,873, Cl. D9-558.000.
Gile, Jess S.; and Jensen-Gile, Leslie. Shin pad for a ladder. 372,989, Cl. D25-68.000.
Gill, Everett R.; and Jenson, Jerry. Surface fishing lure. 372,955, Cl. D22-128.000.
Gnadt, David F.: *See*—
Lathrop, Gregory A.; Gerhart, Mark D.; Gnadt, David F.; Markey, Kevin J.; Gonda, Frank E.; and Laubach, David S., 372,859, Cl. D9-300.000.
Lathrop, Gregory A.; Gerhart, Mark D.; Gnadt, David F.; Markey, Kevin J.; Gonda, Frank E.; and Laubach, David S., 372,860, Cl. D9-300.000.
Lathrop, Gregory A.; Gerhart, Mark D.; Gnadt, David F.; Markey, Kevin J.; Gonda, Frank E.; and Laubach, David S., 372,873, Cl. D9-558.000.
Goldman, Carol; and Schell, Steve, to Goldman, Carol. Combined brooch and golf ball marker. 372,882, Cl. D11-40.000.
Goletz, Thomas. Type face. 372,934, Cl. D18-24.000.
Gonda, Frank E.: *See*—
Lathrop, Gregory A.; Gerhart, Mark D.; Gnadt, David F.; Markey, Kevin J.; Gonda, Frank E.; and Laubach, David S., 372,859, Cl. D9-300.000.
Lathrop, Gregory A.; Gerhart, Mark D.; Gnadt, David F.; Markey, Kevin J.; Gonda, Frank E.; and Laubach, David S., 372,860, Cl. D9-300.000.
Lathrop, Gregory A.; Gerhart, Mark D.; Gnadt, David F.; Markey, Kevin J.; Gonda, Frank E.; and Laubach, David S., 372,873, Cl. D9-558.000.
Gonser, Vint: *See*—
Segan, Marc H.; Gonser, Vint; Strauss, Gary; and Cummings, Jerry, 372,914, Cl. D14-163.000.
Gottwald, Adolf, to Friedrich Grohe Aktiengesellschaft. Faucet. 372,958, Cl. D23-238.000.
Gracyalny, Gary J.: *See*—
Thiermann, John H.; and Gracyalny, Gary J., 372,871, Cl. D9-527.000.
Graziano, Salvatore S.; Stenftenagel, Mark; and Lakeberg, Frank, to Bretford Manufacturing, Inc. Folding table. 372,812, Cl. D6-429.000.
Gryner, Mark. Magnetic toilet seat retainer. 372,964, Cl. D23-309.000.
H. J. Heinz Company: *See*—
Cleary, Wayne; Austin, Sharon; and Stewart, Charles, 372,842, Cl. D7-600.000.
H. von Gimborn GmbH: *See*—
Berendsen, Paul; Bruins, Hans-Kervin; and Gerhardt, Werner, 372,791, Cl. D1-107.000.
Haas, Nada. Icecream cone. 372,792, Cl. D1-118.000.
Hansen, Finn R.; and Björge, Björn, to Norpapp Industri A/S. Carrier/joining means for a series of packages. 372,864, Cl. D9-434.000.
Hanson, Marvin L.: *See*—
McCoy, Richard; Hanson, Marvin L.; and Krager, Jon L., 372,892, Cl. D12-162.000.
Harber, Jeffrey A.: *See*—
Noble, John R.; Harber, Jeffrey A.; Nguyen, Thanh-Binh N.; and Andrade, Luis G., 372,849, Cl. D8-51.000.
Hardy, Christopher, to Design Ideas, Ltd. Candle holder base. 372,810, Cl. D6-396.000.
Harris, Bruce. Motorcycle handlebar. 372,893, Cl. D12-178.000.
Hart, Robert H.: *See*—
McMahan, Robert K., Jr.; and Hart, Robert H., 372,981, Cl. D24-186.000.
Hartin International: *See*—
Friedman, Howard B., 372,856, Cl. D8-367.000.
Hartmann, Brian, to Atlantic City Coin & Slot Service Company, Inc. Support for slot machines. 372,814, Cl. D6-450.000.
Harvey, Alan W. Scratching implement for casted and inaccessible members. 372,978, Cl. D24-147.000.
Hasegawa, Shigeru: *See*—
Ito, Masafumi; Hasegawa, Shigeru; Sube, Minoru; Takita, Haruki; Watanabe, Hiroyuki; and Iikura, Yukio, 372,915, Cl. D14-188.000.
Heartstream, Inc.: *See*—
Bishay, Jon M., 372,977, Cl. D24-167.000.
Hecker, Raymond G. Plastic bag holder. 372,826, Cl. D6-566.000.
Helene Curtis, Inc.: *See*—
Westerhout, Hedley, 372,870, Cl. D9-516.000.
Henninger, Charles S.: *See*—
Tiedeman, David A.; and Henninger, Charles S., 372,922, Cl. D15-10.000.
Henredon Furniture Industries, Inc.: *See*—
Keller, H. Thomas, 372,809, Cl. D6-389.000.
Herritz, Donald W.: *See*—
Meyers, Brenda J.; Herritz, Donald W.; Johansen, Jean L.; Hudson, William B., Jr.; Bell, Randall P.; Prokop, Gary F.; Caruso, James F.; and Allen, James L., 372,975, Cl. D24-109.000.
Herrmann, Lutz: *See*—
Mahlmann, Veit; Herrmann, Lutz; and Brandt, Andrea, 372,869, Cl. D9-504.000.
Hicks, Robert M. Combined starter vent and water shedding ventilation strip. 372,969, Cl. D23-393.000.
Hildebrant, Vernon M.: *See*—
Meoli, Rudy B., 372,997, Cl. D26-42.000.
Hinz, Walter: *See*—
Droege, Harmut; Fischer, Ludwig; Fischer, Wolfgang; Hinz, Walter; Scheib, Tayssir; and Sonnentag, Dieter, 372,936, Cl. D18-54.000.
Hirai, Masanori, to Huck International, Inc. Bolt and nut assembly. 372,857, Cl. D8-387.000.
Hoell, Norbert; and Miller, Charles A., to C. W. Zumbiel Co., The. Two layer can carton. 372,861, Cl. D9-418.000.
Hollinger, Fred, to E & B Giftware, Inc. Key safe thermometer. 372,875, Cl. D10-58.000.
Hollinger, Fred, to E & B Giftware, Inc. Four-way ruler. 372,876, Cl. D10-72.000.
Hood, Gordon L. Emergency tool box. 372,825, Cl. D6-559.000.
Hoskin, Daniel W.: *See*—
Luca, Thomas J., Jr.; and Hoskin, Daniel W., 372,963, Cl. D23-304.000.
Hsu, Ken, to Bright Yin Huey Co., Ltd. Lamp. 373,005, Cl. D26-86.000.
Hsu, Ken, to Bright Yin Huey Co., Ltd. Lamp shade. 373,009, Cl. D26-134.000.
Huang, Ching-Fu, to Leefu Wood Products Co., Ltd. Side chain. 372,807, Cl. D6-380.000.
Huang, Jung-Chun. Additional light for automobiles. 372,995, Cl. D26-28.000.
Huck International, Inc.: *See*—
Hirai, Masanori, 372,857, Cl. D8-387.000.
Hudson, William B., Jr.: *See*—
Meyers, Brenda J.; Herritz, Donald W.; Johansen, Jean L.; Hudson, William B., Jr.; Bell, Randall P.; Prokop, Gary F.; Caruso, James F.; and Allen, James L., 372,975, Cl. D24-109.000.
Hurst, Dwayne S.; and Williams, Charles B., to Palomino Sports, Inc. Drink container in the shape of a baseball. 372,836, Cl. D7-515.000.
IBM Corporation: *See*—
Droege, Harmut; Fischer, Ludwig; Fischer, Wolfgang; Hinz, Walter; Scheib, Tayssir; and Sonnentag, Dieter, 372,936, Cl. D18-54.000.
Ido, Yukinori: *See*—
Tamura, Kenji; and Ido, Yukinori, 372,932, Cl. D18-2.000.
Iikura, Yukio: *See*—
Ito, Masafumi; Hasegawa, Shigeru; Sube, Minoru; Takita, Haruki; Watanabe, Hiroyuki; and Iikura, Yukio, 372,915, Cl. D14-188.000.
Ijiri, Tomonori; Amano, Nobuhiko; and Nojiri, Toshihiko, to Terumo Kabushiki Kaisha. Centrifugal pump. 372,921, Cl. D15-7.000.
Ilaria, Peter V.; and Macowski, William, to Tropar Manufacturing Company, Inc. Frame. 372,797, Cl. D6-300.000.
Imazu, Katsuhiro: *See*—
Kobayashi, Tomomi; Imazu, Katsuhiro; and Kobayashi, Akira, 372,868, Cl. D9-500.000.
Impact Products, Inc.: *See*—
Lin, Moses B.; Clouatre, Daniel E.; and Chang, Jen-Feng, 372,824, Cl. D6-545.000.
Industrie Natuzzi, SpA: *See*—
Natuzzi, Pasquale; and Lucarelli, Raffaella, 372,808, Cl. D6-381.000.
Infra-Red Sauna Systems, Ltd.: *See*—
White, Joe, 372,968, Cl. D23-386.000.
Ingersoll-Rand Company: *See*—
Dubuque, Kenneth J.; McCallops, John A.; Baker, David J.; and Bruno, Robert H., 372,850, Cl. D8-61.000.
International Business Machines Corporation: *See*—
Nakada, Kazuo; Mieki, Nariaki; Yamazaki, Kazuhiko; Switser, Gary L.; Oates, Markus; and Sapper, Richard, 372,900, Cl. D14-100.000.
Swansey, John D.; and Lai, John W., 372,899, Cl. D14-100.000.
Ito, Masafumi; Hasegawa, Shigeru; Sube, Minoru; Takita, Haruki; Watanabe, Hiroyuki; and Iikura, Yukio, to TEAC Corporation. Combined tuner and amplifier. 372,915, Cl. D14-188.000.
Jacobson, Jason R.: *See*—
Wilson, James A.; Jacobson, Jason R.; and Windorski, David C., 372,938, Cl. D19-75.000.
Jensen-Gile, Leslie: *See*—
Gile, Jess S.; and Jensen-Gile, Leslie, 372,989, Cl. D25-68.000.
Jenson, Jerry: *See*—
Gill, Everett R.; and Jenson, Jerry, 372,955, Cl. D22-128.000.
Jimenez, Eduardo J., to Schlage Lock Company. Deadbolt thumbturn. 372,854, Cl. D8-343.000.
Jimway, Inc.: *See*—
Miquel, Francisco R., 373,008, Cl. D26-134.000.

Joh. A. Benckiser GmbH: *See*—
Mahlmann, Veit; Herrmann, Lutz; and Brandt, Andrea, 372,869, Cl. D9-504.000.
Johansen, Jean L.: *See*—
Meyers, Brenda J.; Herritz, Donald W.; Johansen, Jean L.; Hudson, William B., Jr.; Bell, Randall P.; Prokop, Gary F.; Caruso, James F.; and Allen, James L., 372,975, Cl. D24-109.000.
Jones, Charles L.: *See*—
Quijano, David; Jones, Charles L.; and Clark, William T., 372,935, Cl. D18-36.000.
Jönsson, Wolfgang: *See*—
Aeschbacher, Daniel; and Jönsson, Wolfgang, 372,908, Cl. D14-114.000.
Jordan, Luanne S. Heating pad. 372,984, Cl. D24-206.000.
Juster, Robert W., to Sterling Plastics, Inc. Ergonomic mouse pad. 372,903, Cl. D14-114.000.
Kabushiki Kaisha Fuji Iryoki: *See*—
Fujimoto, Shinichiro; and Yamasaki, Yoshikiyo, 372,801, Cl. D6-367.000.
Fujimoto, Shinichiro; and Yamasaki, Yoshikiyo, 372,802, Cl. D6-367.000.
Yamasaki, Yoshikiyo, 372,800, Cl. D6-367.000.
Kaczmarczyk, George: *See*—
Gatewood, William L.; Kaczmarczyk, George; and Povlacs, Lawrence J., 372,863, Cl. D9-429.000.
Kawauchi, Masahiko; Petermann, J. Scott; Abed, Tark; and Wilson, Jay, to Alps Electric (USA) Inc. Adjustable mouse. 372,906, Cl. D14-114.000.
Keller, H. Thomas, to Henredon Furniture Industries, Inc. Bed. 372,809, Cl. D6-389.000.
Kenney Manufacturing Company: *See*—
Luca, Thomas J., Jr.; and Hoskin, Daniel W., 372,963, Cl. D23-304.000.
Kerry Gardens Limited: *See*—
Roche, Roderick C.; O'Sullivan, Niall A.; Deevy, Colin A.; and Rankin, Brendan A., 372,827, Cl. D6-567.000.
Kerschreiter, Helmut-Walter. Three-roll decorative toilet paper holder. 372,823, Cl. D6-520.000.
King Arthur Div., Shelby Williams Industries: *See*—
Stevens, Kenneth V., 372,817, Cl. D6-474.000.
Kizis, John A.: *See*—
Curry, William J.; Beauchamp, William N.; and Kizis, John A., 372,897, Cl. D13-184.000.
Kobayashi, Akira: *See*—
Kobayashi, Tomomi; Imazu, Katsuhiro; and Kobayashi, Akira, 372,868, Cl. D9-500.000.
Kobayashi, Tomohiko, to Pioneer Kabushiki Kaisha. Loudspeaker. 372,917, Cl. D14-214.000.
Kobayashi, Tomomi; Imazu, Katsuhiro; and Kobayashi, Akira, to Toyo Seikan Kaisha, Ltd. Container. 372,868, Cl. D9-500.000.
Kohler Co.: *See*—
Bonnell, Thomas A.; and Freeman, Basil M., 372,961, Cl. D23-295.000.
Thomas, Carter J., 372,962, Cl. D23-302.000.
Krager, Jon L.: *See*—
McCoy, Richard; Hanson, Marvin L.; and Krager, Jon L., 372,892, Cl. D12-162.000.
Kresge, Keith: *See*—
Swinford, Karen J.; Davison, John; Mooney, Kelly; and Kresge, Keith, 372,795, Cl. D3-243.000.
L. D. Kichler Co., The: *See*—
Milicia, Libbe A., 373,010, Cl. D26-134.000.
Porter, David H., 373,002, Cl. D26-81.000.
Porter, David H.; and Milicia, Libbe A., 373,004, Cl. D26-84.000.
La-Z-boy Chair Company: *See*—
Orians, Randall M.; and Perpich, Duane M., 372,799, Cl. D6-366.000.
Lai, John W.: *See*—
Swansey, John D.; and Lai, John W., 372,899, Cl. D14-100.000.
Laib, Douglas M., to Dart Industries Inc. Commuter mug. 372,839, Cl. D7-536.000.
Lakeberg, Frank: *See*—
Graziano, Salvatore S.; Stenftenagel, Mark; and Lakeberg, Frank, 372,812, Cl. D6-429.000.
Lambelet, Lawrence E., Jr., to Ortho Pharmaceutical Corporation. Platform for a tablet dispenser package insert. 372,867, Cl. D9-456.000.
Lamps Plus Inc.: *See*—
Swanson, Dennis K., 372,999, Cl. D26-58.000.
Lathrop, Gregory A.; Gerhart, Mark D.; Gnadt, David F.; Markey, Kevin J.; Gonda, Frank E.; and Laubach, David S., to Lever Brothers Company, Division of Conopco, Inc. Bottle. 372,859, Cl. D9-300.000.
Lathrop, Gregory A.; Gerhart, Mark D.; Gnadt, David F.; Markey, Kevin J.; Gonda, Frank E.; and Laubach, David S., to Lever Brothers Company, Division of Conopco, Inc. Bottle. 372,860, Cl. D9-300.000.
Lathrop, Gregory A.; Gerhart, Mark D.; Gnadt, David F.; Markey, Kevin J.; Gonda, Frank E.; and Laubach, David S., to Lever Brothers Company, Division of Conopco, Inc. Combined bottle and cap. 372,873, Cl. D9-558.000.
Laubach, David S.: *See*—
Lathrop, Gregory A.; Gerhart, Mark D.; Gnadt, David F.; Markey, Kevin J.; Gonda, Frank E.; and Laubach, David S., 372,859, Cl. D9-300.000.
Lathrop, Gregory A.; Gerhart, Mark D.; Gnadt, David F.; Markey, Kevin J.; Gonda, Frank E.; and Laubach, David S., 372,860, Cl. D9-300.000.
Lathrop, Gregory A.; Gerhart, Mark D.; Gnadt, David F.; Markey, Kevin J.; Gonda, Frank E.; and Laubach, David S., 372,873, Cl. D9-558.000.
Leefu Wood Products Co., Ltd.: *See*—
Huang, Ching-Fu, 372,807, Cl. D6-380.000.
Lenoxx Electronics Corp.: *See*—
Zeitman, Josh, 372,913, Cl. D14-163.000.
Lever Brothers Company, Division of Conopco, Inc.: *See*—
Lathrop, Gregory A.; Gerhart, Mark D.; Gnadt, David F.; Markey, Kevin J.; Gonda, Frank E.; and Laubach, David S., 372,859, Cl. D9-300.000.
Lathrop, Gregory A.; Gerhart, Mark D.; Gnadt, David F.; Markey, Kevin J.; Gonda, Frank E.; and Laubach, David S., 372,860, Cl. D9-300.000.
Lathrop, Gregory A.; Gerhart, Mark D.; Gnadt, David F.; Markey, Kevin J.; Gonda, Frank E.; and Laubach, David S., 372,873, Cl. D9-558.000.
Leverrier, Bruno, to Moulinex S.A. Electric kitchen food mincer. 372,835, Cl. D7-372.000.
Lin, Moses B.; Clouatre, Daniel E.; and Chang, Jen-Feng, to Impact Products, Inc. Soap dispenser. 372,824, Cl. D6-545.000.
Lin, Shu-Hwa: *See*—
Chen, Shih-Yu; and Lin, Shu-Hwa, 372,853, Cl. D8-331.000.
Little Tikes Company, The: *See*—
Fish, Thomas E., Jr., 372,942, Cl. D21-71.000.
Lo, Johnson, to Primax Electronics Ltd. Computer mouse. 372,904, Cl. D14-114.000.
Logitech SA: *See*—
Aeschbacher, Daniel; and Jönsson, Wolfgang, 372,908, Cl. D14-114.000.
Long Hall Technologies, L.L.C.: *See*—
Segan, Marc H.; Gonser, Vint; Strauss, Gary; and Cummings, Jerry, 372,914, Cl. D14-163.000.
Lord and Sons, Inc.: *See*—
Allmon, James A.; Spielberger, Allen A.; and Weiland, Douglas E., 372,960, Cl. D23-260.000.
Losi, Raymond, II, to Variflex, Inc. In-line skate. 372,949, Cl. D21-226.000.
Luca, Thomas J., Jr.; and Hoskin, Daniel W., to Kenney Manufacturing Company. Shower bar. 372,963, Cl. D23-304.000.
Lucarelli, Raffaella: *See*—
Natuzzi, Pasquale; and Lucarelli, Raffaella, 372,808, Cl. D6-381.000.
Ludwig, Jon, to Ludwig, Jon. Christmas tree stand. 372,885, Cl. D11-130.100.
Lyons, Norbert: *See*—
Robertson, Edward J.; and Lyons, Norbert, 372,798, Cl. D6-361.000.
Macowski, William: *See*—
Ilaria, Peter V.; and Macowski, William, 372,797, Cl. D6-300.000.
Mahlmann, Veit; Herrmann, Lutz; and Brandt, Andrea, to Joh. A. Benckiser GmbH. Bottle. 372,869, Cl. D9-504.000.
Manganese, Michael A.; and Wolf, Maximilian, to PictureTel Corporation. Speaker enclosure. 372,918, Cl. D14-214.000.
Maple, Drew, to Sunbeam Products, Inc. Table. 372,819, Cl. D6-484.000.
Marasco, Vincent, to Mazzarino, Edward. Walking sole for in-line skate. 372,948, Cl. D21-226.000.
Markey, Kevin J.: *See*—
Lathrop, Gregory A.; Gerhart, Mark D.; Gnadt, David F.; Markey, Kevin J.; Gonda, Frank E.; and Laubach, David S., 372,859, Cl. D9-300.000.
Lathrop, Gregory A.; Gerhart, Mark D.; Gnadt, David F.; Markey, Kevin J.; Gonda, Frank E.; and Laubach, David S., 372,860, Cl. D9-300.000.
Lathrop, Gregory A.; Gerhart, Mark D.; Gnadt, David F.; Markey, Kevin J.; Gonda, Frank E.; and Laubach, David S., 372,873, Cl. D9-558.000.
Martich, Mark E.; and Tedham, Thomas, to Pacific Scientific Company. Fluorescent lamp. 372,992, Cl. D26-3.000.
Martin, Leo, to Miami Metal Products, Inc. Arm chair. 372,806, Cl. D6-379.000.
Martin, Leo, to Miami Metal Products, Inc. Table. 372,820, Cl. D6-484.000.
Matsumura, Yoshiyuki, to Canon Kabushiki Kaisha. Video camera with video tape recorder. 372,926, Cl. D16-202.000.
Mazzarino, Edward: *See*—
Marasco, Vincent, 372,948, Cl. D21-226.000.
McCallops, John A.: *See*—
Dubuque, Kenneth J.; McCallops, John A.; Baker, David J.; and Bruno, Robert H., 372,850, Cl. D8-61.000.
McCoy, Richard; Hanson, Marvin L.; and Krager, Jon L., to Reese Products, Inc. Step bumper hitch receiver. 372,892, Cl. D12-162.000.
McKisson, Eileen A., to Michelin Recherche et Technique S.A. Tire. 372,891, Cl. D12-146.000.
McMahan Electro-optics, Incorporated: *See*—
McMahan, Robert K., Jr.; and Hart, Robert H., 372,981, Cl. D24-186.000.
McMahan, Robert K., Jr.; and Hart, Robert H., to McMahan Electro-optics, Incorporated. Therapeutic impact sensor. 372,981, Cl. D24-186.000.
McNamara, Jack; and Thomas, Mark W., to RedBarn Enterprises, Inc. Folding seat. 372,804, Cl. D6-368.000.
Meier, Michael L. Beverage container coaster. 372,845, Cl. D7-625.000.
Meoli, Rudy B., to Hildebrant, Vernon M. Security lamp. 372,997, Cl. D26-42.000.
Meyers, Brenda J.; Herritz, Donald W.; Johansen, Jean L.; Hudson, William B., Jr.; Bell, Randall P.; Prokop, Gary F.; Caruso, James F.; and Allen, James L., to Gerber Products Company. Electric breast pump. 372,975, Cl. D24-109.000.
Miami Metal Products, Inc.: *See*—
Martin, Leo, 372,806, Cl. D6-379.000.
Martin, Leo, 372,820, Cl. D6-484.000.
Michelin Recherche et Technique S.A.: *See*—
McKisson, Eileen A., 372,891, Cl. D12-146.000.
Micro Motors, Inc.: *See*—

Coss, Ronald G., 372,979, Cl. D24-176.000.
Mieki, Nariaki: *See—*
Nakada, Kazuo; Mieki, Nariaki; Yamazaki, Kazuhiko; Switser, Gary L.; Oates, Markus; and Sapper, Richard, 372,900, Cl. D14-100.000.
Milicia, Libbe A., to L. D. Kichler Co., The. Pressed glass bowl. 373,010, Cl. D26-134.000.
Milicia, Libbe A.: *See—*
Porter, David H.; and Milicia, Libbe A., 373,004, Cl. D26-84.000.
Miller, Charles A.: *See—*
Hoell, Norbert; and Miller, Charles A., 372,861, Cl. D9-418.000.
Mills, Jonathan. Fishing rod holder. 372,956, Cl. D22-147.000.
Minnesota Mining and Manufacturing Company: *See—*
Wilson, James A.; Jacobson, Jason R.; and Windorski, David C., 372,938, Cl. D19-75.000.
Miquel, Francisco R., to Jimway, Inc. Dome shape lamp cover with radial beads. 373,008, Cl. D26-134.000.
Mitchell, Carl: *See—*
Elmore, Wyneta J.; and Mitchell, Carl, 372,927, Cl. D16-220.000.
Mitchell, William D. Combined ceiling fan and stand therefor. 372,967, Cl. D23-377.000.
Mitsubishi Semiconductor America, Inc.: *See—*
Noble, John R.; Harber, Jeffrey A.; Nguyen, Thanh-Binh N.; and Andrade, Luis G., 372,849, Cl. D8-51.000.
Miura, Hidehiko, to Yamaha Corporation. Electronic keyboard musical instrument. 372,930, Cl. D17-1.000.
Miura, Hidehiko, to Yamaha Corporation. Electronic keyboard musical instrument. 372,931, Cl. D17-1.000.
Mooney, Kelly: *See—*
Swinford, Karen J.; Davison, John; Mooney, Kelly; and Kresge, Keith, 372,795, Cl. D3-243.000.
Morelli, Paul. Multi-stone ring. 372,881, Cl. D11-34.000.
Morgan, Burton D. Hand-held exercise device. 372,945, Cl. D21-197.000.
Moriyama Sangyo Kabushiki Kaisha: *See—*
Murata, Kazuaki, 372,993, Cl. D26-25.000.
Motorola, Inc.: *See—*
Nagele, Albert L.; and Brunette, James R., 372,896, Cl. D13-103.000.
Nagele, Albert L.; and Soren, Leonid, 372,919, Cl. D14-248.000.
Naufel, Naufel C., 372,909, Cl. D14-115.000.
Moulinex S.A.: *See—*
Leverrier, Bruno, 372,835, Cl. D7-372.000.
Muller-Deisig, Wolfgang; and Dankers, Alexander H. A. M., to Assenburg, B.V. Table work station. 372,811, Cl. D6-399.000.
Murata, Kazuaki, to Moriyama Sangyo Kabushiki Kaisha. Decorative lamp. 372,993, Cl. D26-25.000.
Murray, Inc.: *See—*
Tiedeman, David A.; and Henninger, Charles S., 372,922, Cl. D15-10.000.
Nagai, Shigekazu; and Sugano, Koji, to SMC Kabushiki Kaisha. Frame for pressurized fluid-operating devices. 372,959, Cl. D23-249.000.
Nagele, Albert L.; and Brunette, James R., to Motorola, Inc. Battery housing. 372,896, Cl. D13-103.000.
Nagele, Albert L.; and Soren, Leonid, to Motorola, Inc. Corded telephone handset. 372,919, Cl. D14-248.000.
Nakada, Kazuo; Mieki, Nariaki; Yamazaki, Kazuhiko; Switser, Gary L.; Oates, Markus; and Sapper, Richard, to International Business Machines Corporation. Personal computer with integral video display. 372,900, Cl. D14-100.000.
Natuzzi, Pasquale; and Lucarelli, Raffaella, to Industrie Natuzzi, SpA. Seat. 372,808, Cl. D6-381.000.
Naufel, Naufel C., to Motorola, Inc. Computer backpanel portion. 372,909, Cl. D14-115.000.
Nebolon, Joseph F., to Smith & Nephew Donjoy Inc. Knee brace shell. 372,983, Cl. D24-190.000.
Nguyen, Thanh-Binh N.: *See—*
Noble, John R.; Harber, Jeffrey A.; Nguyen, Thanh-Binh N.; and Andrade, Luis G., 372,849, Cl. D8-51.000.
Nicholson, Lee. Pool float. 372,950, Cl. D21-237.000.
Noble, John R.; Harber, Jeffrey A.; Nguyen, Thanh-Binh N.; and Andrade, Luis G., to Mitsubishi Semiconductor America, Inc. Cassette gripper. 372,849, Cl. D8-51.000.
Nojiri, Toshihiko: *See—*
Ijiri, Tomonori; Amano, Nobuhiko; and Nojiri, Toshihiko, 372,921, Cl. D15-7.000.
Noll, Bradley C.; and Spencer, John H., to Patterson, Jr., Roger K. Flanged hinge. 372,852, Cl. D8-328.000.
Norpapp Industri A/S: *See—*
Hansen, Finn R.; and Björge, Björn, 372,864, Cl. D9-434.000.
Nunes, James. Reusable beverage can grip. 372,844, Cl. D7-622.000.
Oates, Markus: *See—*
Nakada, Kazuo; Mieki, Nariaki; Yamazaki, Kazuhiko; Switser, Gary L.; Oates, Markus; and Sapper, Richard, 372,900, Cl. D14-100.000.
O'Brien, Joseph I. Attachment for a bed footboard to raise bedcovers. 372,822, Cl. D6-503.000.
O'Donnell, Michael P. Decorative seasonal outdoor light. 373,001, Cl. D26-68.000.
Oerther, John K. Combination tree stand and game carrier. 372,986, Cl. D25-62.000.
Oikawa, Akitoshi, to Sega Enterprises, Ltd. Controller for video game machine. 372,941, Cl. D21-48.000.
Orians, Randall M.; and Perpich, Duane M., to La-Z-boy Chair Company. Pedestal based executive chair. 372,799, Cl. D6-366.000.
Ortho Pharmaceutical Corporation: *See—*
Lambelet, Lawrence E., Jr., 372,867, Cl. D9-456.000.
O'Sullivan, Niall A.: *See—*
Roche, Roderick C.; O'Sullivan, Niall A.; Deevy, Colin A.; and Rankin, Brendan A., 372,827, Cl. D6-567.000.
Pacific Scientific Company: *See—*
Martich, Mark E.; and Tedham, Thomas, 372,992, Cl. D26-3.000.
Palomino Sports, Inc.: *See—*
Hurst, Dwayne S.; and Williams, Charles B., 372,836, Cl. D7-515.000.
Parrish, Terry V. Playground deck ladder. 372,952, Cl. D21-245.000.
Partridge, Cynthia A. Bracelet. 372,879, Cl. D11-4.000.
Patterson, Jr., Roger K.: *See—*
Noll, Bradley C.; and Spencer, John H., 372,852, Cl. D8-328.000.
Perpich, Duane M.: *See—*
Orians, Randall M.; and Perpich, Duane M., 372,799, Cl. D6-366.000.
Petermann, J. Scott: *See—*
Kawauchi, Masahiko; Petermann, J. Scott; Abed, Tark; and Wilson, Jay, 372,906, Cl. D14-114.000.
PictureTel Corporation: *See—*
Manganese, Michael A.; and Wolf, Maximilian, 372,918, Cl. D14-214.000.
Pioneer Kabushiki Kaisha: *See—*
Kobayashi, Tomohiko, 372,917, Cl. D14-214.000.
Porter, David H., to L. D. Kichler Co., The. Chandelier. 373,002, Cl. D26-81.000.
Porter, David H.; and Milicia, Libbe A., to L. D. Kichler Co., The. Chandelier. 373,004, Cl. D26-84.000.
Povlacs, Lawrence J.: *See—*
Gatewood, William L.; Kaczmarczyk, George; and Povlacs, Lawrence J., 372,863, Cl. D9-429.000.
Primax Electronics Ltd.: *See—*
Lo, Johnson, 372,904, Cl. D14-114.000.
Prokop, Gary F.: *See—*
Meyers, Brenda J.; Herritz, Donald W.; Johansen, Jean L.; Hudson, William B., Jr.; Bell, Randall P.; Prokop, Gary F.; Caruso, James F.; and Allen, James L., 372,975, Cl. D24-109.000.
Quijano, David; Jones, Charles L.; and Clark, William T., to Xerox Corporation. Copying machine. 372,935, Cl. D18-36.000.
R. P. Scherer Corporation: *See—*
Scburig, Gregory A.; and Williams, David G., 372,972, Cl. D24-104.000.
Williams, David G., 372,973, Cl. D24-104.000.
Williams, David G., 372,974, Cl. D24-104.000.
Ramsey, Robert L., to Thompson Industries, Inc. Interconnecting stackable landscape timber. 372,991, Cl. D25-164.000.
Rankin, Brendan A.: *See—*
Roche, Roderick C.; O'Sullivan, Niall A.; Deevy, Colin A.; and Rankin, Brendan A., 372,827, Cl. D6-567.000.
Raychem Corporation: *See—*
Curry, William J.; Beauchamp, William N.; and Kizis, John A., 372,897, Cl. D13-184.000.
RedBarn Enterprises, Inc.: *See—*
McNamara, Jack; and Thomas, Mark W., 372,804, Cl. D6-368.000.
Reese Products, Inc.: *See—*
McCoy, Richard; Hanson, Marvin L.; and Krager, Jon L., 372,892, Cl. D12-162.000.
Reich, Don E. Radio-nuclide syringe shield. 372,976, Cl. D24-130.000.
Richards, Martin J., to Britains Petite Limited. Toy typewriter. 372,943, Cl. D21-127.000.
Rietkerk, William: *See—*
Bird, Gordon J.; and Rietkerk, William, 372,815, Cl. D6-476.000.
Robert Krups GmbH & Co., KG: *See—*
Barrault, Jean-Louis, 372,833, Cl. D7-330.000.
Robertson, Edward J.; and Lyons, Norbert, to Syroco, Inc. Child's chaise lounge. 372,798, Cl. D6-361.000.
Roche, Roderick C.; O'Sullivan, Niall A.; Deevy, Colin A.; and Rankin, Brendan A., to Kerry Gardens Limited. Wall-mountable rack for brushes, brooms and cleaning materials. 372,827, Cl. D6-567.000.
Rodriguez, Moctezuma. Golf putter. 372,947, Cl. D21-215.000.
Rose, Deborah H.; Adams, James D.; and Thole, Steven, to Armstrong World Industries, Inc. Center display unit for floor covering samples. 372,816, Cl. D6-473.000.
Rubbermaid Incorporated: *See—*
Ahern, Richard B., Jr., 372,866, Cl. D9-449.000.
Rubbermaid Office Products Inc.: *See—*
Snell, Rusty B., 372,818, Cl. D6-483.000.
Ryan, Kirk. Game layout mat. 372,940, Cl. D21-37.000.
Samborsky, Virgil L. Baseball motif computer dust cover kit. 372,905, Cl. D14-114.000.
Samborsky, Virgil L. Soccer motif computer dust cover kit. 372,907, Cl. D14-114.000.
Samsonite Corporation: *See—*
Ferris, Ian, 372,796, Cl. D3-282.000.
Samsung Electronics Co., Ltd.: *See—*
Choi, Hyun C., 372,925, Cl. D16-202.000.
Sapper, Richard: *See—*
Nakada, Kazuo; Mieki, Nariaki; Yamazaki, Kazuhiko; Switser, Gary L.; Oates, Markus; and Sapper, Richard, 372,900, Cl. D14-100.000.
Scheib, Tayssir: *See—*
Droege, Harmut; Fischer, Ludwig; Fischer, Wolfgang; Hinz, Walter; Scheib, Tayssir; and Sonnentag, Dieter, 372,936, Cl. D18-54.000.

Schell, Steve: *See—*
Goldman, Carol; and Schell, Steve, 372,882, Cl. D11-40.000.
Schlage Lock Company: *See—*
Jimenez, Eduardo J., 372,854, Cl. D8-343.000.
Schulz, Richard. Collapsible scaffolding extension. 372,988, Cl. D25-68.000.
Schurig, Gregory A.; and Williams, David G., to R. P. Scherer Corporation. Softgel capsule. 372,972, Cl. D24-104.000.
Sedighzadeh, Marty M. Foot toy. 372,946, Cl. D21-203.000.
Sega Enterprises, Ltd.: *See—*
Oikawa, Akitoshi, 372,941, Cl. D21-48.000.
Segan, Marc H.; Gonser, Vint; Strauss, Gary; and Cummings, Jerry, to Long Hall Technologies, L.L.C. Personal stereo cassette player. 372,914, Cl. D14-163.000.
Shan, Joe T. K., to Tiger Electronics, Inc. Electronic organizer housing. 372,898, Cl. D14-100.000.
Silitek Corporation: *See—*
Chen, Frank, 372,910, Cl. D14-115.000.
Yu, I-Ke, 372,902, Cl. D14-107.000.
Sircy, Mark L. Seat cushion. 372,829, Cl. D6-601.000.
SMC Kabushiki Kaisha: *See—*
Nagai, Shigekazu; and Sugano, Koji, 372,959, Cl. D23-249.000.
Smith & Nephew Donjoy Inc.: *See—*
Nebolon, Joseph F., 372,983, Cl. D24-190.000.
Snell, Rusty B., to Rubbermaid Office Products Inc. Desk extension. 372,818, Cl. D6-483.000.
Sonnentag, Dieter: *See—*
Droege, Harmut; Fischer, Ludwig; Fischer, Wolfgang; Hinz, Walter; Scheib, Tayssir; and Sonnentag, Dieter, 372,936, Cl. D18-54.000.
Sony Corporation: *See—*
Yamada, Yoshinori, 372,912, Cl. D14-151.000.
Soren, Leonid: *See—*
Nagele, Albert L.; and Soren, Leonid, 372,919, Cl. D14-248.000.
Space Age Plastics, Inc.: *See—*
Ceresko, Joseph P., 372,957, Cl. D23-201.000.
Sparks, Walton E., to White Consolidated Industries, Inc. Cooking range mounted spice rack. 372,847, Cl. D7-701.000.
Spencer, John H.: *See—*
Noll, Bradley C.; and Spencer, John H., 372,852, Cl. D8-328.000.
Spielberger, Allen A.: *See—*
Allmon, James A.; Spielberger, Allen A.; and Weiland, Douglas E., 372,960, Cl. D23-260.000.
Sprick, Richard H. Double chain collar jewelry. 372,888, Cl. D11-213.000.
Starck, Philippe, to Thomson Consumer Electronics (Societe Anonyme). Radio apparatus. 372,916, Cl. D14-195.000.
Stenftenagel, Mark: *See—*
Graziano, Salvatore S.; Stenftenagel, Mark; and Lakeberg, Frank, 372,812, Cl. D6-429.000.
Sterling Plastics, Inc.: *See—*
Juster, Robert W., 372,903, Cl. D14-114.000.
Stevens, Kenneth V., to King Arthur Div., Shelby Williams Industries. Two-tier service table. 372,817, Cl. D6-474.000.
Stewart, Charles: *See—*
Cleary, Wayne; Austin, Sharon; and Stewart, Charles, 372,842, Cl. D7-600.000.
Sticker, William T. Venetian blind, sunlight and privacy. 372,828, Cl. D6-577.000.
Stowell, Davin; and Bolden, Scott, to General Housewares Corp. Bag handle. 372,865, Cl. D9-434.000.
Strauss, Gary: *See—*
Segan, Marc H.; Gonser, Vint; Strauss, Gary; and Cummings, Jerry, 372,914, Cl. D14-163.000.
Sube, Minoru: *See—*
Ito, Masafumi; Hasegawa, Shigeru; Sube, Minoru; Takita, Haruki; Watanabe, Hiroyuki; and Iikura, Yukio, 372,915, Cl. D14-188.000.
Sugano, Koji: *See—*
Nagai, Shigekazu; and Sugano, Koji, 372,959, Cl. D23-249.000.
Sunbeam Products, Inc.: *See—*
Maple, Drew, 372,819, Cl. D6-484.000.
Sunkey, Pete. Sand bag. 372,858, Cl. D8-499.000.
Swainsey, John D.; and Lai, John W., to International Business Machines Corporation. Desktop personal computer. 372,899, Cl. D14-100.000.
Swanson, Dennis K., to Lamps Plus Inc. Stand alone torchiere lamp with tray. 372,999, Cl. D26-58.000.
Sweeney, Larry L. Shelf platform. 372,990, Cl. D25-68.000.
Swinford, Karen J.; Davison, John; Mooney, Kelly; and Kresge, Keith, to Thermos Company, The. Carrying and lunch bag. 372,795, Cl. D3-243.000.
Switser, Gary L.: *See—*
Nakada, Kazuo; Mieki, Nariaki; Yamazaki, Kazuhiko; Switser, Gary L.; Oates, Markus; and Sapper, Richard, 372,900, Cl. D14-100.000.
Syroco, Inc.: *See—*
Robertson, Edward J.; and Lyons, Norbert, 372,798, Cl. D6-361.000.
Takita, Haruki: *See—*
Ito, Masafumi; Hasegawa, Shigeru; Sube, Minoru; Takita, Haruki; Watanabe, Hiroyuki; and Iikura, Yukio, 372,915, Cl. D14-188.000.
Tamura, Kenji; and Ido, Yukinori, to Casio Computer Co., Ltd. Electronic calculator having the functions of telephone book, address book, calendar, schedule book and memo book. 372,932, Cl. D18-2.000.
TEAC Corporation: *See—*
Ito, Masafumi; Hasegawa, Shigeru; Sube, Minoru; Takita, Haruki; Watanabe, Hiroyuki; and Iikura, Yukio, 372,915, Cl. D14-188.000.
Tedham, Thomas: *See—*
Martich, Mark E.; and Tedham, Thomas, 372,992, Cl. D26-3.000.
Terumo Kabushiki Kaisha: *See—*
Ijiri, Tomonori; Amano, Nobuhiko; and Nojiri, Toshihiko, 372,921, Cl. D15-7.000.
Theoharidis, Steven. Hydraulic rake apparatus. 372,923, Cl. D15-128.000.
Thermos Company, The: *See—*
Swinford, Karen J.; Davison, John; Mooney, Kelly; and Kresge, Keith, 372,795, Cl. D3-243.000.
Thiermann, John H.; and Gracyalny, Gary J., to Briggs & Stratton Corporation. Gasoline container. 372,871, Cl. D9-527.000.
Thole, Steven: *See—*
Rose, Deborah H.; Adams, James D.; and Thole, Steven, 372,816, Cl. D6-473.000.
Thomas, Carter J., to Kohler Co. Urinal. 372,962, Cl. D23-302.000.
Thomas, Mark W.: *See—*
McNamara, Jack; and Thomas, Mark W., 372,804, Cl. D6-368.000.
Thompson Industries, Inc.: *See—*
Ramsey, Robert L., 372,991, Cl. D25-164.000.
Thomson Consumer Electronics (Societe Anonyme): *See—*
Starck, Philippe, 372,916, Cl. D14-195.000.
Tiedeman, David A.; and Henninger, Charles S., to Murray, Inc. Chute guard for a combined chipper and shredder. 372,922, Cl. D15-10.000.
Tiger Electronics, Inc.: *See—*
Shan, Joe T. K., 372,898, Cl. D14-100.000.
Toyo Seikan Kaisha, Ltd.: *See—*
Kobayashi, Tomomi; Imazu, Katsuhiro; and Kobayashi, Akira, 372,868, Cl. D9-500.000.
Trent, Christine: *See—*
Trent, Eddie G.; Trent, Christine; and Carver, Mike, 372,843, Cl. D7-605.000.
Trent, Eddie G.; Trent, Christine; and Carver, Mike. Multi-purpose ice chest. 372,843, Cl. D7-605.000.
Tropar Manufacturing Company, Inc.: *See—*
Ilaria, Peter V.; and Macowski, William, 372,797, Cl. D6-300.000.
Tucker, Phillip H. Combined chair and footstool. 372,803, Cl. D6-359.000.
Tylaska, Timothy. Shackle. 372,855, Cl. D8-367.000.
Variflex, Inc.: *See—*
Losi, Raymond, II, 372,949, Cl. D21-226.000.
Villeneuve, Marcel. Toilet seat holder. 372,965, Cl. D23-311.000.
Virzi, Al, to G&D Communications Corporation. Baseball cap with icon. 372,794, Cl. D2-866.000.
Wagner, James M. Pizza pan. 372,834, Cl. D7-354.000.
Walker, Robert D. Roadrunner golf trophy. 372,886, Cl. D11-131.000.
Walter, Teresa L. Kitty litter cabinet. 372,813, Cl. D6-436.000.
Wang, Daniel; and Chen, Kuo-an. Keyboard. 372,911, Cl. D14-115.000.
Watanabe, Hiroyuki: *See—*
Ito, Masafumi; Hasegawa, Shigeru; Sube, Minoru; Takita, Haruki; Watanabe, Hiroyuki; and Iikura, Yukio, 372,915, Cl. D14-188.000.
Weiland, Douglas E.: *See—*
Allmon, James A.; Spielberger, Allen A.; and Weiland, Douglas E., 372,960, Cl. D23-260.000.
Westerbout, Hedley, to Helene Curtis, Inc. Container. 372,870, Cl. D9-516.000.
White Consolidated Industries, Inc.: *See—*
Sparks, Walton E., 372,847, Cl. D7-701.000.
White, Joe, to Infra-Red Sauna Systems, Ltd. Tray. 372,968, Cl. D23-386.000.
Williams, Charles B.: *See—*
Hurst, Dwayne S.; and Williams, Charles B., 372,836, Cl. D7-515.000.
Williams, David G., to R.P. Scherer Corporation. Softgel capsule. 372,973, Cl. D24-104.000.
Williams, David G., to R.P. Scherer Corporation. Softgel capsule. 372,974, Cl. D24-104.000.
Williams, David G.: *See—*
Schurig, Gregory A.; and Williams, David G., 372,972, Cl. D24-104.000.
Williams, Raymond C., to ARJO Limited. Overhead hoist. 372,982, Cl. D24-188.000.
Wilson, James A.; Jacobson, Jason R.; and Windorski, David C., to Minnesota Mining and Manufacturing Company. Rotary organizer. 372,938, Cl. D19-75.000.
Wilson, Jay: *See—*
Kawauchi, Masahiko; Petermann, J. Scott; Abed, Tark; and Wilson, Jay, 372,906, Cl. D14-114.000.
Windorski, David C.: *See—*
Wilson, James A.; Jacobson, Jason R.; and Windorski, David C., 372,938, Cl. D19-75.000.
Winston, Jeffrey M. Stamp pad and container combination. 372,933, Cl. D18-17.000.
Wolf, Maximilian: *See—*
Manganese, Michael A.; and Wolf, Maximilian, 372,918, Cl. D14-214.000.
Wong, Don M. Automatic cooking machine. 372,832, Cl. D7-323.000.
Wong, Sai-Wing, to Eastman Time Ltd. Clock. 372,874, Cl. D10-6.000.
World-Wide Travelware Mfg. Co., Ltd.: *See—*
Chen, Petter, 372,851, Cl. D8-319.000.
Xerox Corporation: *See—*
Quijano, David; Jones, Charles L.; and Clark, William T., 372,935, Cl. D18-36.000.

Yamada, Yoshinori, to Sony Corporation. Telephone. 372,912, Cl. D14-151.000.
Yamaha Corporation: *See*—
Miura, Hidehiko, 372,930, Cl. D17-1.000.
Miura, Hidehiko, 372,931, Cl. D17-1.000.
Yamasaki, Yoshikiyo, to Kabushiki Kaisha Fuji Iryoki. Massage chair. 372,800, Cl. D6-367.000.
Yamasaki, Yoshikiyo: *See*—
Fujimoto, Shinichiro; and Yamasaki, Yoshikiyo, 372,801, Cl. D6-367.000.
Fujimoto, Shinichiro; and Yamasaki, Yoshikiyo, 372,802, Cl. D6-367.000.
Yamazaki, Kazuhiko: *See*—
Nakada, Kazuo; Mieki, Nariaki; Yamazaki, Kazuhiko; Switser, Gary L.; Oates, Markus; and Sapper, Richard, 372,900, Cl. D14-100.000.
Ypma International B.V.: *See*—
Deelen, R. J., 372,887, Cl. D11-152.000.
Yu, I-Ke, to Silitek Corporation. Scanner. 372,902, Cl. D14-107.000.
Zeitman, Josh, to Lenoxx Electronics Corp. Combined radio, cassette player and cassette recorder. 372,913, Cl. D14-163.000.
Ziaylek, Michael P.: *See*—
Ziaylek, Theodore, Jr.; and Ziaylek, Michael P., 372,994, Cl. D26-28.000.
Ziaylek, Theodore, Jr.; and Ziaylek, Michael P. Boat light. 372,994, Cl. D26-28.000.
Zweig, Jan B.: *See*—
Feltman, Charles H.; and Zweig, Jan B., 372,838, Cl. D7-536.000.

LIST OF PLANT PATENTEES

Geo. J. Ball, Inc.: *See*—
Trees, Scott C., 9,632, Cl. Plt.-86.400.
Gruppe, Werner; and Schmidt, Hanna, to Inter-Plant Patent Marketing, Inc. Cherry rootstock GI 195/1. 9,630, Cl. Plt.-37.000.
Gruppe, Werner; and Schmidt, Hanna, to Inter-Plant Patent Marketing, Inc. Cherry rootstock GI 195/2. 9,631, Cl. Plt.-37.000.
Inter-Plant Patent Marketing, Inc.: *See*—
Gruppe, Werner; and Schmidt, Hanna, 9,630, Cl. Plt.-37.000.
Gruppe, Werner; and Schmidt, Hanna, 9,631, Cl. Plt.-37.000.
Nor'East Miniature Roses, Inc.: *See*—
Saville, F. Harmon, 9,628, Cl. Plt.-10.000.
Piet Schreurs Holding B.V.: *See*—
Schreurs, Petrus N. J., 9,629, Cl. Plt.-23.000.
Saville, F. Harmon, to Nor'East Miniature Roses, Inc. Miniature rose plant named 'Savacrim' . 9,628, Cl. Plt.-10.000.
Schmidt, Hanna: *See*—
Gruppe, Werner; and Schmidt, Hanna, 9,630, Cl. Plt.-37.000.
Gruppe, Werner; and Schmidt, Hanna, 9,631, Cl. Plt.-37.000.
Schreurs, Petrus N. J., to Piet Schreurs Holding B.V. Floribunda rose plant named 'Schovian'. 9,629, Cl. Plt.-23.000.
Trees, Scott C., to Geo. J. Ball, Inc. Poinsettia plant named 'Red Splendor'. 9,632, Cl. Plt.-86.400.

VOL 1189 ISS 6 AUG 21 1996 UMI

VOL 1189 ISS 3 AG 2 0 19 96 UMI

CLASSIFICATION OF PATENTS

ISSUED AUGUST 20, 1996

NOTE—First number, class; second number, subclass; third number, patent number

CLASS 2

2 5,546,601
5,546,602
181 5,546,603
202 5,546,604
209.13 5,546,605
217 5,546,606
406 5,546,607
408 5,546,608
413 5,546,609
422 5,546,610
428 5,546,611

CLASS 4

248 5,546,612
255.05 5,546,613
256.1 5,546,614
503 5,546,615
541.200 5,546,616
541.6 5,546,617

CLASS 5

638 5,546,619
655 5,546,620
725 5,546,618

CLASS 7

138 5,546,621

CLASS 8

110 5,547,475
142 5,547,476
151 5,546,622
639 5,547,477
643 5,547,478

CLASS 14

69.5 5,546,623

CLASS 15

22.1 5,546,624
104.93 5,547,601
105 5,546,625
167.1 5,546,626
250.39 5,546,627
257.06 5,546,628
302 5,546,629
313 5,546,630
319 5,546,631

CLASS 16

54 5,546,632
278 5,546,633

CLASS 19

101 5,546,634
200 5,546,635
231 5,546,636

CLASS 24

30.5R 5,546,637
67.9 5,546,638
265 H 5,546,639
510 5,546,640
557 5,546,641
625 5,546,642

CLASS 26

11 5,546,643

CLASS 29

25.35 5,546,644
235 5,546,645
407.08 5,546,646
527.4 5,546,647
527.5 B1 4,700,451
598 5,546,648
603.03 5,546,649
603.16 5,546,650
722 5,546,651
738 5,546,652
751 5,546,653
841 5,546,654
846 5,546,655
884 5,546,657
890.01 5,546,656

CLASS 30

28 5,546,658
43.92 5,546,659
50 5,546,660
146 5,546,661
161 5,546,662

CLASS 33

27.02 5,546,663
30.3 5,546,664
203 5,546,665
501.7 5,546,666
506 5,546,667
527 5,546,668
620 5,546,669
640 5,546,670
648 5,546,671
716 5,546,672

CLASS 34

80 5,546,673
97 5,546,674
113 5,546,675
187 5,546,676
216 5,546,677
275 5,546,678
278 5,546,679

CLASS 36

108 5,546,680
137 5,546,681

CLASS 37

322 5,546,682
468 5,546,683

CLASS 38

143 5,546,684

CLASS 40

476 5,546,686
546 5,546,687
663 5,546,688
741 5,546,689
768 5,546,685

CLASS 42

70.11 5,546,690
90 5,546,691

CLASS 43

2 5,546,692
21.2 5,546,693
42.39 5,546,694
44.98 5,546,695
58 5,546,696

CLASS 47

41.15 5,546,697
67 5,546,698
72 5,546,699
79 5,546,700

CLASS 48

108 5,546,701

CLASS 49

161 5,546,702
197 5,546,703
375 5,546,704
386 5,546,705
420 5,546,706

CLASS 51

309 5,547,479

CLASS 52

36.2 5,546,708
66 5,546,709
104 5,546,710
167.1 5,546,711
200 5,546,712
202 5,546,713
204.5 5,546,714
213 5,546,707
215 5,546,715
220.1 5,546,716
220.5 5,546,717
238.1 5,546,718
408 5,546,719
587.1 5,546,720
606 5,546,721
646 5,546,722
698 5,546,723
5,546,724
5,546,725
702 5,546,726
704 5,546,727

CLASS 53

133.1 5,546,728
211 5,546,729
399 5,546,730
400 5,546,731
450 5,546,732
503 5,546,733
534 5,546,734

CLASS 54

82 5,546,735

CLASS 55

498 5,547,480
523 5,547,481

CLASS 56

16.4 B 5,546,736
94 5,546,737
202 5,546,738
367 5,546,739

CLASS 57

266 5,546,740
293 5,546,741

CLASS 60

39.142 5,546,742
202 5,546,743
247 5,546,744
270.1 5,546,745
274 5,546,746
275 5,546,747
302 5,546,748
370 5,546,749
424 5,546,751
426 5,546,750
464 5,546,752

CLASS 62

48.1 5,546,753
133 5,546,754
5,546,755
5,546,756
204 5,546,757
225 5,546,758
259.1 5,546,759
441 5,546,760
497 5,546,761
509 5,546,762
532 5,546,763
5,546,764
625 5,546,765
643 5,546,766
645 5,546,767
646

CLASS 65

17.2 5,547,482
42 5,547,483
5,547,484
260 5,547,485

CLASS 66

9.B 5,546,768
20 5,546,769
116 5,546,770

CLASS 68

4 5,546,771
24 5,546,772
196 5,546,773
208 5,546,774

CLASS 70

201 5,546,775
233 5,546,776
257 5,546,777
276 5,546,778

CLASS 71

28 5,547,486

CLASS 72

11.4 5,546,779
75 5,546,780
191 5,546,781
240 5,546,782
325 5,546,783
413 5,546,784
450 5,546,785
457 5,546,786

CLASS 73

23.31 5,546,787
28.01 5,546,788
40 5,546,789
40.500 R 5,546,790
54.28 5,546,791
64.53 5,546,792
116 5,546,793
118.2 5,546,794
5,546,795
146 5,546,796
150 A 5,546,797
152.09 5,546,798
170.11 5,546,799
170.16 5,546,800
273 5,546,801
335.05 5,546,802
427 5,546,803
431 5,546,804
514.02 5,546,805
514.31 5,546,806
606 5,546,807
618 5,546,808
644 5,546,809
702 5,546,810
800 5,546,811
861.29 5,546,812
5,546,813
861.355 5,546,814
861.77 5,546,815
862.21 5,546,816
862.333 5,546,817
863 5,546,818
865.8 5,546,819
866.4 5,546,820

CLASS 74

49 5,546,821
113 5,546,822
331 5,546,823
421 R 5,546,824
477 5,546,825
490.09 5,546,826
502.4 5,546,827
512 5,546,828
594.6 5,546,829

CLASS 75

10.15 5,547,487
335 5,547,488
512 5,547,489
665 5,547,490

CLASS 81

3.39 5,546,830
3.44 5,546,831
25 5,546,832
52 5,546,833
53.2 5,546,834
426.5 5,546,835

CLASS 82

132 5,546,836
169 5,546,837

CLASS 83

37 5,546,838
128 5,546,839
478 5,546,840

CLASS 84

411 R 5,546,841
461 5,546,842
478 5,546,843
609 5,548,079
627 5,548,080

CLASS 89

8 5,546,844
35.01 5,546,845

CLASS 91

376 R 5,546,846
403 5,546,847

CLASS 95

12 5,547,491
54 5,547,494
100 5,547,492

CLASS 96

54 5,547,493
74 5,547,495
79 5,547,496
104 5,547,497

CLASS 99

326 5,546,848
330 5,546,849
349 5,546,850
446 5,546,851
5,546,852
447 5,546,853
470 5,546,854

CLASS 100

11 5,546,855
38 5,546,856
93 P 5,546,857

CLASS 101

142 5,546,858
226 5,546,859
247 5,546,860
484 5,546,861

CLASS 102

302 5,546,862
504 5,546,863

CLASS 104

17.2 5,546,864

CLASS 105

1.2 5,546,865
8.1 5,546,866
168 5,546,867
178 5,546,868
206.1 5,546,869
355 5,546,870

CLASS 106

20 C 5,547,498
20 R 5,547,499
21 A 5,547,500
21 R 5,547,501
287.1 5,547,502
287.18 5,547,503
697 5,547,504
713 5,547,505
730 5,547,506

CLASS 108

54.1 5,546,871
56.1 5,546,872
153 5,546,873

CLASS 110

261 5,546,874
342 5,546,875

CLASS 112

102.5 5,546,876
103 5,546,877
162 5,546,878
282 5,546,879
475.01 5,546,880

CLASS 114

112 5,546,881
244 5,546,882
301 5,546,883
5,546,884
345 5,546,885
360 5,546,886

CLASS 116

137 R 5,546,887
286 5,546,888

CLASS 117

84 5,546,889
102 5,546,890

CLASS 118

13 5,547,507
50 5,547,508
68 5,547,509
410 5,547,510
423 5,547,511
718 5,547,512

CLASS 119

14.08 5,546,892
61 5,546,894
464 5,546,893
484 5,546,895

CLASS 123

25 5,546,905
70 R 5,546,897
90.1 5,546,898
90.5 5,546,899
184.55 5,546,900
193.6 5,546,896
195 C 5,546,901
304 5,546,902
399 5,546,903
400 5,546,904
447 5,546,906
478 5,546,907
480 5,546,908
492 5,546,909
5,546,910
497 5,546,911
511 5,546,912
520 5,546,913
569 5,546,914
570 5,546,915
674 5,546,916
5,546,917
5,546,918
682 5,546,919
685 5,546,920
694 5,546,921
698 5,546,922

CLASS 124

23.1 5,546,923
35.2 5,546,924

CLASS 126

110 R 5,546,925
113 5,546,926
194 5,546,927
214 D 5,546,928

CLASS 127

38 5,547,513

CLASS 128

200.24 5,546,929
201.13 5,546,930
203.12 5,546,931
203.15 5,546,932
204.23 5,546,933
205.13 5,546,934
205.23 5,546,935
207.14 5,546,936
207.15 5,546,937
207.17 5,546,938
207.29 5,546,939
642 5,546,940
652 5,546,941
653.1 5,546,942
5,546,943
661.020 5,546,945
662.03 5,546,946
662.06 5,546,947
5,546,948
5,546,949
696 5,546,950
702 5,546,951
716 5,546,952
733 5,546,953
735 5,546,954
736 5,546,955
746 5,546,956
754 5,546,957
772 5,546,958
782 5,546,959
849 5,546,960
5,546,961
869 5,546,962
878 5,546,963
898 5,546,964

CLASS 131

194 5,546,965

CLASS 132

279 5,546,966

CLASS 134

21 5,547,515
22.1 5,547,514
22.19 5,547,612
65 5,546,967
179 5,546,968

188 5,546,969

CLASS 135

16 5,546,970
127 5,546,971
129 5,546,972

CLASS 136

244 5,547,516

CLASS 137

15 5,546,973
78.3 5,546,974
115.16 5,546,975
183 5,546,976
312 5,546,977
315 5,546,978
318 5,546,979
454.5 5,546,980
493.3 5,546,981
557 5,546,982
607 5,546,983
614.03 5,546,984
614.04 5,546,985
614.05 5,546,986
625.5 5,546,987
625.66 5,546,988

CLASS 138

44 5,546,990
93 5,546,991
96 R 5,546,989
98 5,546,992

CLASS 139

311 5,546,993
452 5,546,994

CLASS 141

7 5,546,995
18 5,546,996
65 5,546,997
82 5,546,998
98 5,546,999
104.000 5,547,000

CLASS 144

195.4 5,547,001
332 5,547,002
368 5,547,003

CLASS 148

24 5,547,517
98 5,547,518
113 5,547,519
120 5,547,520
522 5,547,521
551 5,547,522
677 5,547,523
688 5,547,524

CLASS 149

19.1 5,547,525
19.2 5,547,526
19.92 5,547,527
92 5,547,528

CLASS 152

209 R 5,547,005

CLASS 156

61 5,547,529
89 5,547,530
164 5,547,531
172 5,547,532
175 5,547,533
230 5,547,534
272.2 5,547,535
292 5,547,536
351 5,547,537
415 5,547,538
626.1 5,547,539

CLASS 159

4.08 5,547,540

CLASS 160

84.01 5,547,006
168.1 5,547,007
176.1 5,547,008
310 5,547,009
335 5,547,010
381 5,547,011

CLASS 162

12 5,547,541
29 5,547,542
31 5,547,543
42 5,547,012
199 5,547,544
238 5,547,545
5,547,546
272 5,547,547

CLASS 164

416 5,547,013
437 5,547,014
456 5,547,015

CLASS 165

9.4 5,547,016
51 5,547,019
244 5,547,017
267 5,547,018

CLASS 166

65.1 5,547,020
250.07 5,547,021
263 5,547,022
280 5,547,023
292 5,547,024
295 5,547,025
5,547,026
5,547,027
302 5,547,028
375 5,547,029

CLASS 172

30 5,547,030

CLASS 174

14 BH 5,548,081
34 5,548,082
35 GC 5,548,083
35 R 5,548,084
5,548,085
48 5,548,086
52.4 5,548,087
74 R 5,548,088
142 5,548,089
252 5,548,090
260 5,548,091

CLASS 175

61 5,547,031
73 5,547,032
331 5,547,033

CLASS 177

25.13 5,547,034

CLASS 178

18 5,548,092

CLASS 180

19.2 5,547,035
68.5 5,547,036
178 5,547,037
253 5,547,038
281 5,547,208
287 5,547,039

CLASS 181

224 5,548,093

CLASS 182

88 5,547,040
228 5,547,041

CLASS 184

1.5 5,547,042
39 5,547,043

CLASS 187

254 5,547,044
289 5,547,059

CLASS 188

2 R 5,547,045
24.21 5,547,046
59 5,547,047
72.9 5,547,048
267 5,547,049
322.15 5,547,050

CLASS 190

26 5,547,051
108 5,547,052
115 5,547,053

CLASS 192

35 5,547,054
45 5,547,055
51 5,547,056
53.34 5,547,057
85 CA 5,547,058
110 B 5,547,060

CLASS 194

203 5,547,061
206 5,547,062

CLASS 198

370.02 5,547,063
419.3 5,547,004
468.1 5,547,064
604 5,547,065
644 5,547,066
750.3 5,547,067
760 5,547,068
782 5,547,069
812 5,547,070
853 5,547,071

CLASS 200

303 5,548,094

CLASS 201

29 5,547,548

CLASS 202

99 5,547,549

CLASS 204

252 5,547,550
296 5,547,551
406 5,547,552
413 5,547,553
415 5,547,554
418 5,547,555
426 5,547,556

CLASS 205

118 5,547,557
125 5,547,558
5,547,559
732 5,547,560
793 5,547,561

CLASS 206

45.24 5,547,073
193 5,547,074
204 5,547,075
301 5,547,076
307.1 5,547,077
308.1 5,547,078
315.11 5,547,079
373 5,547,080
504 5,547,081
725 5,547,082
765 5,547,072

CLASS 208

24 5,547,562
106 5,547,563
122 5,547,564

CLASS 209

273 5,547,083
583 5,547,084

CLASS 210

86 5,547,565
87 5,547,566
167 5,547,567
172 5,547,568
206 5,547,569
209 5,547,570
232 5,547,571
5,547,572
350 5,547,573
388 5,547,574
490 5,547,575
500.37 5,547,576
511 5,547,577
614 5,547,578
651 5,547,579
656 5,547,580
5,547,581
664 5,547,582
666 5,547,583
669 5,547,584
673 5,547,585
686 5,547,586
696 5,547,587
724 5,547,588
747 5,547,589
748 5,547,590
782 5,547,591

CLASS 211

40 5,547,085
5,547,086
41 5,547,087
87 5,547,088

CLASS 213

62 R 5,547,089
75 A 5,547,090

CLASS 215

237 5,547,091
252 5,547,092

CLASS 216

2 5,547,093
33 5,547,094

CLASS 219

68 5,548,095
117.1 5,548,096
121.57 5,548,097
121.67 5,548,098
121.69 5,548,099
521 5,548,100
601 5,548,101
685 5,548,102
703 5,548,103
715 5,548,104
761 5,548,105

CLASS 220

3.8 5,547,095
4.14 5,547,096
23.83 5,547,097
23.86 5,547,098
212.5 5,547,099
253 5,547,100
561 5,547,101
648 5,547,102
709 5,547,103
772 5,547,104

CLASS 221

181 5,547,105
193 5,547,106

CLASS 222

1 5,547,107
95 5,547,108
158 5,547,109
219 5,547,110
505 5,547,111
571 5,547,112
642 5,547,113

CLASS 223

78 5,547,114

CLASS 224

240 5,547,115
509 5,547,116

CLASS 227

175.2 5,547,117

CLASS 228

5.1 5,547,118
116 5,547,119
121 5,547,120
5,547,121
173.3 5,547,122
173.6 5,547,123

CLASS 229

403 5,547,124

CLASS 235

454 5,548,106
462 5,548,107
5,548,108
5,548,109
472 5,548,110

CLASS 236

49.3 5,547,125
92 B 5,547,126

CLASS 237

12.1 5,547,127

CLASS 239

77 5,547,128
132.3 5,547,129
265.29 5,547,130
309 5,547,131
333 5,547,132

CLASS 241

9 5,547,133
23 5,547,134
40 5,547,135
73 5,547,136

CLASS 242

35.5 R 5,547,137
36 5,547,138
231 5,547,139
247 5,547,140
270 5,547,141
338.1 5,547,142
379.100 5,547,143
402 5,547,144
536 5,547,145
548.4 5,547,146
607.1 5,547,147

CLASS 244

104 FP 5,547,148
121 5,547,149
134 R 5,547,150

CLASS 246

227 5,547,151

CLASS 248

74.1 5,547,152
76 5,547,153
118.3 5,547,154
219.2 5,547,155
307 5,547,156
309.1 5,547,157
396 5,547,158
429 5,547,159
503 5,547,160
678 5,547,161
688 5,547,162

CLASS 249

5 5,547,163

CLASS 250

207 5,548,111
214 C 5,548,112
234 5,548,113
236 5,548,114
253 5,548,115
256 5,548,116
332 5,548,118
341.1 5,548,119
341.7 5,548,120
370.01 5,548,121
370.09 5,548,122
370.11 5,548,123
423 F 5,548,117
458.1 5,548,124
519.1 5,548,125
588 5,548,126

CLASS 251

129.03 5,547,164
129.16 5,547,165
149.6 5,547,166
187 5,547,167

CLASS 252

62.3 T 5,547,598
62.54 5,547,599
68 5,547,600
299.01 5,547,604
299.6 5,547,605
299.61 5,547,606
313.1 5,547,607
357 5,547,608
511 5,547,609
514 5,547,610
584 5,547,613
609 5,547,614

CLASS 254

30 5,547,168

CLASS 256

67 5,547,169

CLASS 257

13 5,548,127
18 5,548,128
24 5,548,129
31 5,548,130
64 5,548,131
66 5,548,132
155 5,548,133
173 5,548,134
5,548,135
190 5,548,136
191 5,548,137
192 5,548,138
5,548,139
5,548,141
194 5,548,140
234 5,548,142
269 5,548,143
284 5,548,144
301 5,548,145
321 5,548,146
333 5,548,147
335 5,548,148
347 5,548,149
349 5,548,150
360 5,548,152
365 5,548,153
421 5,548,151
506 5,548,154
517 5,548,155
5,548,156
532 5,548,157
592 5,548,158
634 5,548,159
666 5,548,160
722 5,548,161

CLASS 261

24 5,547,615
26 5,547,616
114.5 5,547,617

CLASS 264

1.360 5,547,618
40.1 5,547,619
46.4 5,547,620
51 5,547,621
60 5,547,622
82 5,547,623
103 5,547,624
122 5,547,625
203 5,547,626
210.5 5,547,627
257 5,547,628
5,547,629
297.2 5,547,630
521 5,547,631

CLASS 266

47 5,547,170
78 5,547,171

CLASS 267

140.13 5,547,172
140.15 5,547,173
154 5,547,174

CLASS 270

037 5,547,175
5,547,176
52.02 5,547,178
52.05 5,547,177

CLASS 271

3.2 5,547,179
96 5,547,180
114 5,547,181
179 5,547,182
264 5,547,183
297 5,547,184

CLASS 273

1.5 R 5,547,185
84 R 5,547,190
243 5,547,198
299 5,547,199
416 5,547,200

CLASS 277

224 5,547,203

CLASS 280

11.19 5,547,204
30 5,547,205
47.15 5,547,206
104 5,547,207
414.2 5,547,209
477 5,547,210
708 5,547,211
728.2 5,547,212
5,547,213
730.1 5,547,214
732 5,547,215
734 5,547,216
741 5,547,217
743.1 5,547,218
749 5,547,219
763.1 5,547,220
777 5,547,221
801.2 5,547,222
805 5,547,223
834 5,547,224

CLASS 281

211 5,547,225

CLASS 283

36 5,547,226
81 5,547,227

CLASS 285

22 5,547,228
93 5,547,229
110 5,547,230
133.1 5,547,231
236 5,547,232
276 5,547,233

CLASS 292

25 5,547,234
92 5,547,235
148 5,547,236
343 5,547,238
346 5,547,239

CLASS 294

49 5,547,240

CLASS 296

24.1 5,547,241
37.16 5,547,187
65.1 5,547,242
98 5,547,243

102 5,547,244

CLASS 297

85 5,547,245
129 5,547,246
145 5,547,247
188.17 5,547,248
228.13 5,547,249
256.17 5,547,250
284.5 5,547,251
300.3 5,547,252
338 5,547,253
367 5,547,254
5,547,255
377 5,547,256
411.32 5,547,257
440.22 5,547,258
452.18 5,547,259

CLASS 299

33 5,547,260
43 5,547,261
5,547,262

CLASS 303

9.62 5,547,264
10 5,547,265
113.2 5,547,266
165 5,547,267

CLASS 305

191 5,547,268

CLASS 307

10.1 5,548,162
10.2 5,548,163
10.3 5,548,164
36 5,548,165
50 5,548,166

CLASS 310

12 5,548,167
52 5,548,168
72 5,548,169
90.5 5,548,170
154 5,548,171
156 5,548,172
181 5,548,173
261 5,548,174
323 5,548,175
328 5,548,176
339 5,548,177
349 5,548,178
367 5,548,179
5,548,180

CLASS 312

111 5,547,269
194 5,547,270
211 5,547,271
223.2 5,547,272
305 5,547,273

CLASS 313

113 5,548,182
153 5,548,183
309 5,548,181
346 R 5,548,184
495 5,548,185
583 5,548,186

CLASS 315

94 5,548,187
156 5,548,188
224 5,548,189
368.26 5,548,190
399 5,548,191

CLASS 318

560 5,548,192
568.11 5,548,193
568.13 5,548,194
568.19 5,548,195
701 5,548,196
757 5,548,197
799 5,548,198
802 5,548,199

CLASS 320

27 5,548,200
35 5,548,201

CLASS 322

33 5,548,202

CLASS 323

210 5,548,203
265 5,548,204
274 5,548,205
284 5,548,206

CLASS 324

86 5,548,207
117 H 5,548,208
142 5,548,209
158.1 5,548,210
5,548,211
229 5,548,212
232 5,548,213
240 5,548,214
309 5,548,215
5,548,216
316 5,548,217
318 5,548,218
338 5,548,219
399 5,548,220
601 5,548,221
628 5,548,222
754 5,548,223
765 5,548,224

CLASS 326

13 5,548,225
30 5,548,226
33 5,548,227
41 5,548,228
57 5,548,229
73 5,548,230

CLASS 327

52 5,548,231
60 5,548,232
66 5,548,233
108 5,548,234
158 5,548,235
237 5,548,236
281 5,548,237
374 5,548,238
408 5,548,239
432 5,548,240
538 5,548,241
559 5,548,242

CLASS 329

316 5,548,243
318 5,548,244

CLASS 330

45 5,548,245
51 5,548,246
277 5,548,247
288 5,548,248

CLASS 331

1 A 5,548,249
14 5,548,250
57 5,548,251
176 5,548,252

CLASS 332

103 5,548,253

CLASS 333

25 5,548,254
132 5,548,255
194 5,548,256
252 5,548,257

CLASS 335

16 5,548,258
78 5,548,259
126 5,548,260
172 5,548,261
216 5,548,262
274 5,548,263

CLASS 336

65 5,548,264
200 5,548,265

CLASS 337

360 5,548,266
372 5,548,267

CLASS 338

307 5,548,268
325 5,548,269

CLASS 340

146.2 5,548,270
311.1 5,548,271
407.1 5,548,272
439 5,548,273
468 5,548,274
573 5,548,275
578 5,548,276
5,548,277
605 5,548,278
664 5,548,279
825.050 5,548,280
825.080 5,548,281
825.350 5,548,282
870.01 5,548,283

CLASS 341

68 5,548,284
100 5,548,285
126 5,548,286
133 5,548,287
136 5,548,288

CLASS 342

16 5,548,289
25 5,548,290
51 5,548,291
324 5,548,292
357 5,548,293
372 5,548,294
373 5,548,295
457 5,548,296

CLASS 343

700 MS 5,548,297
704 5,548,298
789 5,548,299

CLASS 345

39 5,548,300
85 5,548,301
89 5,548,302
95 5,548,303
145 5,548,304
150 5,548,305
174 5,548,306
213 5,548,307

CLASS 347

9 5,548,308
33 5,548,309
5,548,310
50 5,548,311
56 5,548,312
68 5,548,313
71 5,548,314
112 5,548,315
171 5,548,316
5,548,317
174 5,548,318
183 5,548,319
256 5,548,321

CLASS 348

9 5,548,323
14 5,548,322
15 5,548,324
64 5,548,325
87 5,548,326
97 5,548,327
98 5,548,328
164 5,548,329
234 5,548,330
243 5,548,331
251 5,548,332
270 5,548,333
341 5,548,334
373 5,548,335
384 5,548,336
445 5,548,337
473 5,548,338
525 5,548,339
559 5,548,340
565 5,548,341
668 5,548,342
691 5,548,343
726 5,548,344
734 5,548,345
738 5,548,346
761 5,548,347
766 5,548,348
5,548,349
839 5,548,350

CLASS 351

47 5,548,351
160 H 5,548,352
168 5,548,353
206 5,548,354
212 5,548,355

CLASS 353

13 5,548,356
69 5,548,357
122 5,548,358

CLASS 354

21 5,548,359
5,548,360
106 5,548,361
114 5,548,362
173.1 5,548,363
204 5,548,364
219 5,548,365
5,548,366
234.1 5,548,367
275 5,548,368
286 5,548,369
402 5,548,370
442 5,548,371
44 5,548,465
5,548,466
93 5,548,467
126 5,548,468
220 5,548,469
234 5,548,470
253 5,548,471
5,548,472
301.1 5,548,473
313 5,548,474
321.4 5,548,475
611 5,548,476
680 5,548,477
681 5,548,478
684 5,548,479
685 5,548,480
709 5,548,481
720 5,548,482
737 5,548,483
5,548,484
5,548,485
769 5,548,487
791 5,548,486
815 5,548,488
827 5,548,489

CLASS 362

32 5,548,490
61 5,548,491
83.1 5,548,492
84 5,548,493
183 5,548,494
207 5,548,495
260 5,548,497
336 5,548,498
366 5,548,499
396 5,548,496
427 5,548,500

CLASS 363

21 5,548,501
22 5,548,502
56 5,548,503
65 5,548,504

CLASS 364

130.000 5,548,505
401 R 5,548,506
419.01 5,548,507
419.02 5,548,508
419.16 5,548,509
424.02 5,548,511
5,548,512
426.03 5,548,513
431.05 5,548,514
439 5,548,515
443 5,548,510
5,548,516
463 5,548,517
468.06 5,548,518
470.06 5,548,519
472.02 5,548,520
478.02 5,548,521
479 B1 5,038,293
483 5,548,522
5,548,523
489 5,548,524
5,548,525
491 5,548,526
492 5,548,527
497 5,548,528
508 5,548,529
509 5,548,530
514 C 5,548,532
5,548,533
514 R 5,548,531
5,548,534
551.01 5,548,535
565 5,548,536
571.02 5,548,537
571.04 5,548,538
578 5,548,539
724.1 5,548,540
724.16 5,548,541
5,548,542
5,548,543
745 5,548,544
748 5,548,545
786 5,548,546

CLASS 365

149 5,548,548
185.05 5,548,549
185.08 5,548,550
185.18 5,548,551
185.33 5,548,552
200 5,548,553
5,548,554
5,548,555
5,548,557
230.08 5,548,559
233.5 5,548,560

CLASS 366

130 5,547,275
139 5,547,276
146 5,547,277
203 5,547,278
251 5,547,279
274 5,547,280
340 5,547,281

CLASS 367

7 5,548,561
14 5,548,562
25 5,548,563
140 5,548,564

CLASS 368

227 5,548,565

CLASS 369

25 5,548,566
36 5,548,567
44.14 5,548,568
44.28 5,548,569
59 5,548,570
77.2 5,548,571
116 5,548,572
5,548,573
124 5,548,574
219 5,548,575
275.300 5,548,576
291 5,548,577

CLASS 370

13 5,548,578
16 5,548,579
17 5,548,580
5,548,581
18 5,548,582
5,548,583
58.1 5,548,584
60 5,548,585
5,548,586
60.1 5,548,587
5,548,588
5,548,589
61 5,548,590
62 5,548,591
85.1 5,548,592
94.1 5,548,593
95.3 5,548,594

CLASS 371

5.5 5,548,595
21.2 5,548,596
25.1 5,548,597
35 5,548,598
40.1 5,548,599
43 5,548,600
68.1 5,548,601

CLASS 372

19 5,548,602
25 5,548,603
35 5,548,604
36 5,548,605
39 5,548,606
50 5,548,607
75 5,548,608
92 5,548,609
99 5,548,610

CLASS 373

18 5,548,611
73 5,548,612

CLASS 374

36 5,547,282
162 5,547,283

CLASS 375

208 5,548,613
211 5,548,614
281 5,548,615
295 5,548,616
316 5,548,617
343 5,548,618
344 5,548,619
354 5,548,620
5,548,621
5,548,622
358 5,548,623
372 5,548,624

CLASS 378

4 5,548,627
34 5,548,625
54 5,548,626
125 5,548,628
134 5,548,629
137 5,548,630

CLASS 379

58 5,548,631

5,548,632
93 5,548,633
97 5,548,634
102 5,548,635
201 5,548,636
5,548,637
202 5,548,638
221 5,548,639
242 5,548,640
399 5,548,641
410 5,548,642
429 5,548,643
433 5,548,644

CLASS 380

4 5,548,645
23 5,548,646
49 5,548,648
5,548,649

CLASS 381

42 5,548,647
55 5,548,650
67 5,548,651
71 5,548,652
5,548,653
77 5,548,654
104 5,548,655
122 5,548,656
182 5,548,657
191 5,548,658

CLASS 382

107 5,548,659
116 5,548,660
133 5,548,661
158 5,548,662
164 5,548,663
174 5,548,664
276 5,548,665
5,548,666
285 5,548,667

CLASS 383

104 5,547,284

CLASS 384

15 5,547,285
105 5,547,286
117 5,547,287
207 5,547,288
215 5,547,289
448 5,547,290
512 5,547,291

CLASS 385

1 5,548,668
15 5,547,274
19 5,548,669
27 5,548,670
37 5,548,671
43 5,548,672
49 5,548,673
72 5,548,674
80 5,548,675
92 5,548,676
5,548,677
135 5,548,678
474 5,548,417

CLASS 388

811 5,548,679

CLASS 395

2.28 5,548,680
2.42 5,548,681
10 5,548,682
21 5,548,683
5,548,684
22 5,548,697
24 5,548,685
27 5,548,686
101 5,548,687
108 5,548,688
109 5,548,689
112 5,548,690
113 5,548,691
124 5,548,694
133 5,548,692
5,548,695
135 5,548,696
139 5,548,698
140 5,548,699
144 5,548,700
150 5,548,701
152 5,548,693
155 5,548,702
158 5,548,704
159 5,548,705
160 5,548,703
161 5,548,706
5,548,707
162 5,548,708
164 5,548,709
181 5,548,710
182.03 5,548,711
182.05 5,548,712
183.01 5,548,713
183.02 5,548,714
183.04 5,548,715
183.12 5,548,716
183.14 5,548,717
5,548,718
183.15 5,548,719
184.01 5,548,720
187.01 5,548,721
200.01 5,548,723
200.03 5,548,724
200.05 5,548,725
200.09 5,548,726
200.1 5,548,722
200.13 5,548,727
200.14 5,548,728
200.16 5,548,729
280 5,548,730
285 5,548,732
286 5,548,733
306 5,548,734
375 5,548,735
5,548,736
5,548,737
5,548,738
5,548,768
414 5,548,739
427 5,548,740
442 5,548,741
455 5,548,742
479 5,548,743
494 5,548,744
500 5,548,745
5,548,746
5,548,747
550 5,548,748
600 5,548,749
5,548,750
5,548,751
5,548,752
5,548,753
5,548,754
5,548,755
5,548,756
5,548,757
5,548,758
5,548,759
650 5,548,760
700 5,548,761
733 5,548,762
750 5,548,763
5,548,764
5,548,765
775 5,548,766
5,548,767
800 5,548,769
5,548,770
5,548,771
5,548,772
5,548,773
5,548,774
5,548,775
5,548,776
821 5,548,777
823 5,548,778
5,548,779
825 5,548,780
831 5,548,781
835 5,548,782
836 5,548,783
838 5,548,784
841 5,548,785
842 5,548,786
845 5,548,787
851 5,548,788
853 5,548,789
855 5,548,790
858 5,548,791
859 5,548,792
860 5,548,793
871 5,548,794
872 5,548,795
5,548,796
880 5,548,797
888 5,548,798

CLASS 400

58 5,547,292
120.17 5,547,293
145 5,547,294
279 5,547,295
322 5,547,296
567 5,547,297
692 5,547,298
708 5,547,299

CLASS 401

68 5,547,300
116 5,547,301
172 5,547,302
270 5,547,303

CLASS 403

13 5,547,304
97 5,547,305
202 5,547,306
294 5,547,307
325 5,547,308

CLASS 404

6 5,547,309
5,547,310

CLASS 405

52 5,547,311
5,547,312
63 5,547,313
165 5,547,314
244 5,547,315
267 5,547,316
288 5,547,317
303 5,547,318

CLASS 408

90 5,547,319

CLASS 410

102 5,547,321

CLASS 411

60 5,547,322
178 5,547,323
304 5,547,324
442 5,547,325
544 5,547,326

CLASS 414

137.1 5,547,327
217 5,547,328
222 5,547,329
749 5,547,330
786 5,547,331
5,547,332
5,547,333
5,547,334
795.6 5,547,335
798.9 5,547,336

CLASS 415

1 5,547,337
90 5,547,338
119 5,547,339
121.2 5,547,340
143 5,547,341
200 5,547,342

CLASS 416

246 5,547,343

CLASS 417

32 5,547,344
63 5,547,345
222.2 5,547,346
250 5,547,347
273 5,547,348
282 5,547,349
354 5,547,350
386 5,547,351
369 5,547,352

CLASS 418

55.2 5,547,353
55.5 5,547,354
5,547,355
189 5,547,356

CLASS 419

28 5,547,632

CLASS 420

552 5,547,633
564 5,547,634

CLASS 422

24 5,547,635
124 5,547,636
129 5,547,637
164 5,547,638
177 5,547,640
181 5,547,641
186.04 5,547,643
186.18 5,547,644
186.3 5,547,642
264 5,547,645

CLASS 423

53 5,547,646
121 5,547,647
210 5,547,648
230 5,547,649
235 5,547,650
245.3 5,547,652
445 R 5,547,653
5,547,654
531 5,547,655

CLASS 424

9.4 5,547,656
49 5,547,657
59 5,547,658
5,547,659
61 5,547,660
66 5,547,661
78.03 5,547,662
78.04 5,547,663
93.2 5,547,664
94.61 5,547,665
123 5,547,666
181.1 5,547,667
5,547,668
185.1 5,547,669
192.1 5,547,670
195.1 5,547,671
5,547,672
5,547,673
5,547,674
401 5,547,676
5,547,677
5,547,678
402 5,547,679
427 5,547,680
449 5,547,681
497 5,547,682
499 5,547,696
501 5,547,683
561 5,547,684
600 5,547,685

CLASS 425

79 5,547,357
96 5,547,358
125 5,547,359
149 5,547,360
171 5,547,361
297 5,547,362
376.1 5,547,363
384 5,547,364
577 5,547,365
589 5,547,366
5,547,367

CLASS 426

2 5,547,686
5,547,687
5,547,688
3 5,547,689
10 5,547,690
36 5,547,691
53 5,547,692
90 5,547,693
118 5,547,694
496 5,547,695
565 5,547,697
602 5,547,698
615 5,547,699

CLASS 427

2.13 5,547,702
2.3 5,547,701
126.3 5,547,703
130 5,547,704
162 5,547,705
166 5,547,706
188 5,547,707
248.1 5,547,708
299 5,547,709
386 5,547,710
5,547,711
421 5,547,712
493 5,547,713
523 5,547,714
561 5,547,715
577 5,547,716
590 5,547,717

CLASS 428

13 5,547,718
15 5,547,719
34 5,547,720
34.1 5,547,721
35.7 5,547,722
5,547,723
5,547,724
43 5,547,725
57 5,547,726
64.1 5,547,727
5,547,728
74 5,547,729
76 5,547,730
85 5,547,731
5,547,732
91 5,547,733
102 5,547,734
110 5,547,735
143 5,547,736
178 5,547,737
195 5,547,738
207 5,547,739
209 5,547,740
215 5,547,741
5,547,742
224 5,547,743
283 5,547,745
288 5,547,746
320.2 5,547,747
323 5,547,748
5,547,749
329 5,547,750
332 5,547,751
349 5,547,752
357 5,547,753
364 5,547,755
394 5,547,756
413 5,547,757
5,547,758
421 5,547,759
422 5,547,761
442 5,547,762
447 5,547,763
461 5,547,764
471 5,547,760
474.7 5,547,765
515 5,547,766
610 5,547,767
632 5,547,768
634 ML 5,547,773
653 5,547,769
678 5,547,770
687 5,547,771
694 B 5,547,772
694 ML 5,547,774

CLASS 429

7 5,547,775
13 5,547,776
32 5,547,777
81 5,547,778
144 5,547,779
149 5,547,780
174 5,547,781
194 5,547,782
212 5,547,783
218 5,547,784
220 5,547,785

CLASS 430

1 5,547,786
5 Re.35,315
5,547,787
5,547,788
5,547,789
58 5,547,790
59 5,547,791
5,547,792
97 5,547,793
106 5,547,794
106.6 5,547,795
5,547,796
5,547,797
109 5,547,798
110 5,547,799
5,547,800
5,547,802
5,547,803
114 5,547,804
115 5,547,801
125 5,547,805
138 5,547,806
139 5,547,807
176 5,547,808
200 5,547,809
203 5,547,810
257 5,547,811
270.1 5,547,812
325 5,547,813
326 5,547,814
338 5,547,815
393 5,547,816
5,547,817
505 5,547,818
522 5,547,819
523 5,547,820
527 5,547,821
531 5,547,822
5,547,823
544 5,547,824
551 5,547,825
558 5,547,826
567 5,547,827
597 5,547,828
603 5,547,829
5,547,830
619 5,547,831
623 5,547,832

CLASS 431

8 5,547,368
75 5,547,369
276 5,547,370
320 5,547,371
328 5,547,372

CLASS 432

72 5,547,373

CLASS 433

85 5,547,374
96 5,547,375
116 5,547,376
172 5,547,377
173 5,547,378
212.1 5,547,379
215 5,547,380
219 5,547,381

CLASS 434

61 5,547,382
62 5,547,383

CLASS 435

5 5,547,833
5,547,834
6 5,547,835
5,547,836
5,547,838
5,547,839
5,547,841
5,547,842
5,547,843
7.1 5,547,844
5,547,845
5,547,846
7.24 5,547,849
7.4 5,547,847
7.9 5,547,848
13 5,547,850
26 5,547,851
29 5,547,852
65 5,547,932
69.1 5,547,853
5,547,854
5,547,855
87 5,547,857
89 5,547,858
91.1 5,547,859
91.2 5,547,860
5,547,861
91.3 5,547,862
101 5,547,863
123 5,547,866
170 5,547,864
189 5,547,868
199 5,547,867
240.1 5,547,871
240.4 5,547,870
252.33 5,547,869
694 5,547,856

CLASS 436

8 5,547,875
12 5,547,874
18 5,547,873
49 5,547,872
111 5,547,878
126 5,547,877
159 5,547,876

CLASS 437

2 5,547,879
15 5,547,880
24 5,547,881
40 5,547,882
5,547,883
43 5,547,884
44 5,547,885
51 5,547,886
5,547,887
52 5,547,888
5,547,889
5,547,890
5,547,891
5,547,892
5,547,893
56 5,547,894
57 5,547,895
60 5,547,896
108 5,547,897
129 5,547,898
151 5,547,899
187 5,547,900
5,547,901
5,547,902
203 5,547,903
227 5,547,906

CLASS 439

61 5,547,386
79 5,547,384

101 5,547,385
125 5,547,387
135 5,547,388
342 5,547,389
373 5,547,390
399 5,547,391
419 5,547,392
501 5,547,393
557 5,547,394
578 5,547,395
604 5,547,396
607 5,547,397
5,547,398
623 5,547,399
668 5,547,400
676 5,547,401
699.2 5,547,402
763 5,547,403
803 5,547,404
894 5,547,405

CLASS 440

12 5,547,406
61 5,547,407
73 5,547,408

CLASS 445

8 5,547,409
28 5,547,410
52 5,547,411

CLASS 446

73 5,547,412
220 5,547,413

CLASS 451

21 5,547,414
44 5,547,415
45 5,547,416
58 5,547,417
278 5,547,418
321 5,547,419

CLASS 452

138 5,547,420

CLASS 454

250 5,547,421
359 5,547,422

CLASS 455

8 5,548,799
12.1 5,548,800
13.1 5,548,801
15 5,548,802
16 5,548,803
33.1 5,548,804
5,548,805
5,548,806
5,548,807
33.2 5,548,808
5,548,812
33.3 5,548,813
34.1 5,548,809
38.1 5,548,814
41 5,548,815
53.1 5,548,816
54.1 5,548,817
5,548,818
59 5,548,819
67.4 5,548,820
5,548,821
68 5,548,822
89 5,548,823
90 5,548,824
99 5,548,810
115 5,548,825
126 5,548,826
129 5,548,827
161.2 5,548,828
180.3 5,548,829
192.2 5,548,811
200.1 5,548,830
207 5,548,831
226.4 5,548,832
234.1 5,548,833
276.1 5,548,834
277.1 5,548,835
5,548,836
5,548,837
278.1 5,548,838
304 5,548,839
313 5,548,840
326

CLASS 463

2 Re.35,314
9 5,547,201
26 5,547,192
29 5,547,202

CLASS 464

136 5,547,423

CLASS 470

11 5,547,424

CLASS 472

110 5,547,425

CLASS 473

168 5,547,186
227 5,547,195
242 5,547,196
252 5,547,193
287 5,547,188
290 5,547,426
305 5,547,189
345 5,547,427
350 5,547,194
384 5,547,197

CLASS 474

51 5,547,428
110 5,547,429

CLASS 475

89 5,547,430
154 5,547,431

CLASS 476

40 5,547,432

CLASS 477

5 5,547,433
109 5,547,434
110 5,547,435
114 5,547,436
143 5,547,437
169 5,547,438

CLASS 482

5 5,547,439
13 5,547,440
46 5,547,441
5,547,442
72 5,547,443
5,547,444
105 5,547,445
121 5,547,446
146 5,547,447

CLASS 492

16 5,547,448
44 5,547,449
54 5,547,450

CLASS 493

299 5,547,451
427 5,547,452

CLASS 494

60 5,547,453

CLASS 501

66 5,547,904
76 5,547,907
136 5,547,908

CLASS 502

20 5,547,909
42 5,547,910
66 5,547,905
101 5,547,911
117 5,547,675
154 5,547,912
328 5,547,913

CLASS 503

210 5,547,914
227 5,547,915
5,547,916
5,547,917

CLASS 504

116 5,547,918
242 5,547,919
261 5,547,920

CLASS 505

124 5,547,921
325 5,547,922
330 5,547,923
500 5,547,924

CLASS 507

103 5,547,925
258 5,547,926

CLASS 508

112 5,547,594
156 5,547,595
188 5,547,596
207 5,547,593
409 5,547,597
511 5,547,592

CLASS 510

152 5,547,602
509 5,547,603

CLASS 514

2 5,547,927

CLASS 515

105 5,548,025

CLASS 521

131 5,547,998
134 5,547,996

CLASS 522

122 5,547,999

CLASS 523

115 5,548,000
116 5,548,001
118 5,548,002
160 5,548,003
342 5,548,004
414 5,548,005

CLASS 524

82 5,548,006
99 5,548,007
5,548,008
157 5,548,009
198 5,548,010
267 5,548,011
433 5,548,012
449 5,548,013
477 5,548,014
503 5,548,015
507 5,548,016
514 5,548,017
517 5,548,018
591 5,548,019
801 5,548,020
837 5,548,021
839 5,548,022

CLASS 525

69 5,548,023
102 5,548,024
113 5,548,026
179 5,548,027
194 5,548,028
195 5,548,029
314 5,548,030
327.4 5,548,031
352 5,548,032
378 5,548,033
390 5,548,034
408 5,548,035
419 5,548,036
426 5,548,037
478 5,548,038

CLASS 526

62 5,548,039
5,548,040
5,548,041
5,548,042
65 5,548,043
84 5,548,044
127 5,548,045
161 5,548,046
230.5 5,548,047
240 5,548,048
265 5,548,049
312 5,548,050
773 5,547,997

CLASS 528

9 5,548,050
10 5,548,052
14 5,548,053
15 5,548,051
25 5,548,054
5,548,055
61 5,548,056
67 5,548,057
93 5,548,058
194 5,548,059
487 5,548,060

CLASS 530

324 5,548,061
326 5,548,062
350 5,548,063
380 5,548,064
388.22 5,548,065
390.5 5,548,066
399 5,548,068
500 5,548,069

CLASS 534

550 5,548,070
612 5,548,071
635 5,548,072
690 5,548,073

CLASS 536

23.5 5,548,075
23.34 5,548,076
55.3 5,548,077

CLASS 544

298 5,548,078

CLASS 547

246 5,548,320

CLASS 600

1 5,547,454
113 5,547,455
133 5,547,456
175 5,547,457
204 5,547,458

CLASS 601

2 5,547,459
23 5,547,460

CLASS 602

19 5,547,461
5,547,462
20 5,547,463
26 5,547,464
54 5,547,465
70 5,547,466

CLASS 604

20 5,547,467
21 5,547,468
22 5,547,469
27 5,547,473
67 5,547,470
87 5,547,471
93 5,547,472

CLASS 606

143 5,547,474

CLASSIFICATION OF DESIGNS

D1— 107 372,791
118 372,792
D2— 607 372,793
866 372,794
D3— 243 372,795
282 372,796
D6— 300 372,797
359 372,803
361 372,798
366 372,799
367 372,800
372,801
372,802
368 372,804
375 372,805
379 372,806
380 372,807
381 372,808
389 372,809
396 372,810
399 372,811
429 372,812
436 372,813
450 372,814
473 372,816
474 372,817
476 372,815
483 372,818
484 372,819
372,820
491 372,821
503 372,822
520 372,823
545 372,824
559 372,825
566 372,826
567 372,827
577 372,828
601 372,829
602 372,830
D7— 301 372,831
323 372,832
330 372,833
354 372,834
372 372,835
515 372,836
536 372,838
372,839
541 372,840
590 372,841
600 372,842
605 372,843
622 372,844
625 372,845
673 372,846
701 372,847
D8— 21 372,848
51 372,849
61 372,850
319 372,851
328 372,852
331 372,853
343 372,854
367 372,855
372,856
387 372,857
499 372,858
D9— 300 372,859
372,860
418 372,861
428 372,862
429 372,863
434 372,864
372,865
449 372,866
D12— 115 372,889
456 372,867
500 372,868
504 372,869
516 372,870
527 372,871
529 372,872
558 372,873
D13— 103 372,896
184 372,897
100 372,898
372,899
372,900
107 372,901
372,902
114 372,903
372,904
372,905
89 372,883
96 372,884
130.1 372,885
131 372,886
152 372,887
213 372,888
151 372,912
163 372,913
188 372,915
195 372,916
214 372,917
372,918
248 372,919
250 372,920
D15— 7 372,921
10 372,922
128 372,923
D16— 135 372,924
202 372,925
372,926
220 372,927
311 372,928
372,906
372,907
372,908
115 372,909
372,910
372,911
372,912
372,914
D10— 6 372,874
58 372,875
72 372,876
81 372,877
D11— 3 372,878
4 372,879
19 372,880
34 372,881
40 372,882

	326	372,929		191	372,944		249	372,959			372,974			372,989			373,004
D17—	1	372,930		197	372,945		260	372,960		109	372,975			372,990		86	373,005
		372,931		203	372,946		295	372,961		130	372,976		164	372,991		110	373,006
D18—	2	372,932		215	372,947		302	372,962		147	372,978	D26—	3	372,992			373,007
	17	372,933		226	372,948		304	372,963		167	372,977		25	372,993		134	373,008
	24	372,934			372,949		309	372,964		176	372,979		28	372,994			373,009
	36	372,935		237	372,950		311	372,965			372,980			372,995			373,010
	54	372,936			372,951		366	372,966		186	372,981		42	372,996			
D19—	65	372,937		245	372,952		377	372,967		188	372,982			372,997			
	75	372,938		253	372,953		386	372,968		190	372,983		43	372,998			
D20—	43	372,939	D22—	126	372,954		393	372,969		206	372,984		58	372,999			
D21—	37	372,940		128	372,955		404	372,970	D25—	2	372,985		68	373,000			
	48	372,941		147	372,956		411	372,971		62	372,986			373,001			
	71	372,942	D23—	201	372,957	D24—	104	372,972		64	372,987		81	373,002			
	127	372,943		238	372,958			372,973		68	372,988		84	373,003			

CLASSIFICATION OF PLANTS

P.—	10	9,628		23	9,629		37	9,630			9,631		86.4	9,632			

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01	: 5,546,658		5,546,831		5,547,399		5,548,189		5,548,560		5,547,006						
	5,546,801		5,546,834		5,547,425		5,548,205		5,548,583		5,547,142						
	5,547,109		5,546,838		5,547,426		5,548,206		5,548,592		5,547,149						
	5,547,486		5,546,842		5,547,446		5,548,207		5,548,600		5,547,240						
	5,548,020		5,546,885		5,547,461		5,548,209		5,548,605		5,547,381						
	5,548,461		5,546,889		5,547,470		5,548,224		5,548,606		5,547,464						
04	: 5,546,755		5,546,899		5,547,474		5,548,228		5,548,614		5,547,743						
	5,546,805		5,546,929		5,547,487		5,548,234		5,548,616		5,548,121						
	5,546,822		5,546,937		5,547,493		5,548,236		5,548,620		5,548,222						
	5,547,210		5,546,940		5,547,514		5,548,238		5,548,645		5,548,253						
	5,547,305		5,546,943		5,547,516		5,548,248		5,548,646		5,548,283						
	5,547,330		5,546,974		5,547,572		5,548,250		5,548,651		5,548,338						
	5,547,342		5,546,978		5,547,630		5,548,257		5,548,661		5,548,611						
	5,547,629		5,546,979		5,547,650		5,548,263		5,548,668		5,548,711						
	5,547,656		5,546,986		5,547,651		5,548,292		5,548,674		09	: 5,546,625					
	5,547,898		5,546,997		5,547,674		5,548,293		5,548,676			5,546,639					
	5,548,116		5,546,999		5,547,693		5,548,294		5,548,687			5,546,665					
	5,548,233		5,547,022		5,547,705		5,548,299		5,548,700			5,547,038					
	5,548,275		5,547,066		5,547,715		5,548,329		5,548,705			5,547,122					
	5,548,285		5,547,071		5,547,721		5,548,345		5,548,709			5,547,148					
	5,548,572		5,547,077		5,547,748		5,548,352		5,548,722			5,547,182					
	5,548,800		5,547,085		5,547,752		5,548,356		5,548,723			5,547,186					
05	: 5,546,602		5,547,116		5,547,834		5,548,394		5,548,726			5,547,419					
	5,546,925		5,547,132		5,547,839		5,548,403		5,548,728			5,547,463					
	5,546,942		5,547,133		5,547,842		5,548,404		5,548,739			5,547,559					
	5,547,393		5,547,155		5,547,844		5,548,436		5,548,745			5,547,631					
06	: Re.35,314		5,547,157		5,547,849		5,548,439		5,548,754			5,547,659					
	5,546,651		5,547,163		5,547,856		5,548,441		5,548,755			5,547,665					
	5,546,662		5,547,168		5,547,859		5,548,458		5,548,756			5,547,753					
	5,546,668		5,547,179		5,547,866		5,548,469		5,548,758			5,547,951					
	5,546,671		5,547,184		5,547,868		5,548,470		5,548,767			5,548,170					
	5,546,681		5,547,188		5,547,880		5,548,485		5,548,773			5,548,255					
	5,546,689		5,547,204		5,547,933		5,548,495		5,548,779			5,548,534					
	5,546,696		5,547,205		5,547,935		5,548,496		5,548,780		10	: 5,546,694					
	5,546,701		5,547,206		5,547,936		5,548,499		5,548,781			5,547,358					
	5,546,708		5,547,219		5,547,939		5,548,505		5,548,782			5,547,555					
	5,546,711		5,547,226		5,547,955		5,548,506		5,548,795			5,547,732					
	5,546,723		5,547,229		5,548,055		5,548,524		5,548,796			5,548,028					
	5,546,727		5,547,236		5,548,063		5,548,526		5,548,812			5,548,051					
	5,546,735		5,547,239		5,548,076		5,548,529		5,548,819		12	: 5,546,603					
	5,546,749		5,547,245		5,548,082		5,548,532		5,548,838			5,546,656					
	5,546,751		5,547,251		5,548,091		5,548,538		5,038,293			5,546,693					
	5,546,783		5,547,300		5,548,106		5,548,541		08	: 5,546,601			5,546,719				
	5,546,797		5,547,327		5,548,123		5,548,543			5,546,619			5,546,799				
	5,546,806		5,547,328		5,548,129		5,548,545			5,546,620			5,546,821				
	5,546,815		5,547,339		5,548,133		5,548,549			5,546,650			5,546,835				
	5,546,820		5,547,371		5,548,140		5,548,551			5,546,691			5,546,897				
	5,546,829		5,547,377		5,548,158		5,548,552			5,546,785			5,546,982				
	5,546,830		5,547,390		5,548,164		5,548,553			5,546,811			5,546,995				

5,547,017
5,547,128
5,547,195
5,547,231
5,547,279
5,547,441
5,547,442
5,547,466
5,547,468
5,547,589
5,547,896
5,548,084
5,548,542
5,548,704
5,548,786
5,548,816
5,548,840
13 : 5,546,734
5,546,855
5,547,010
5,547,063
5,547,070
5,547,074
5,547,243
5,547,345
5,547,574
5,547,636
5,547,746
5,547,878
5,547,987
5,548,306
5,548,362
5,548,581
5,548,684
16 : 5,546,984
5,547,781
5,548,132
5,548,160
5,548,192
5,548,689
5,548,712
17 : 5,546,618
5,546,676
5,546,699
5,546,731
5,546,752
5,546,756
5,546,789
5,546,869
5,546,949
5,546,967
5,546,969
5,546,980
5,547,056
5,547,072
5,547,080
5,547,089
5,547,207
5,547,348
5,547,391
5,547,394
5,547,406
5,547,421
5,547,453
5,547,471
5,547,641
5,547,661
5,547,668
5,547,690
5,547,931
5,547,937
5,548,066
5,548,095
5,548,105
5,548,119
5,548,212
5,548,277
5,548,419
5,548,516
5,548,631
5,548,658
5,548,685
5,548,698
5,548,752
5,548,808
5,548,837
18 : 5,546,690
5,546,710
5,546,888
5,546,928
5,546,988
5,547,003
5,547,045
5,547,093
5,547,203
5,547,232
5,547,271
5,547,335
5,547,422
5,547,495
5,547,553
5,547,685
5,547,740

5,547,929
5,548,137
5,548,273
5,548,341
5,548,511
5,548,770
19 : 5,546,615
5,546,714
5,547,040
5,548,201
5,548,649
5,548,818
20 : 5,546,716
5,546,732
5,547,002
21 : 5,546,730
5,547,100
5,547,569
5,547,602
5,548,471
5,548,493
5,548,763
5,548,810
22 : 5,546,621
5,546,631
5,546,872
5,546,939
5,546,961
5,546,963
5,547,473
5,547,548
5,547,863
4,700,451
23 : 5,546,688
5,548,641
24 : 5,546,606
5,546,853
5,546,862
5,546,941
5,547,107
5,547,169
5,547,551
5,547,564
5,547,660
5,547,677
5,547,838
5,547,872
5,548,244
5,548,418
5,548,533
5,548,839
25 : 5,546,672
5,546,685
5,546,695
5,546,703
5,546,814
5,546,824
5,546,948
5,546,959
5,547,008
5,547,121
5,547,220
5,547,274
5,547,286
5,547,340
5,547,343
5,547,455
5,547,456
5,547,467
5,547,469
5,547,513
5,547,534
5,547,581
5,547,599
5,547,601
5,547,615
5,547,640
5,547,669
5,547,671
5,547,717
5,547,733
5,547,736
5,547,778
5,547,814
5,547,832
5,547,833
5,547,835
5,547,836
5,547,841
5,547,853
5,547,854
5,547,873
5,547,928
5,547,942
5,547,994
5,548,092
5,548,113
5,548,128
5,548,221
5,548,230
5,548,326
5,548,444
5,548,464

5,548,519
5,548,694
5,548,707
5,548,713
5,548,719
5,548,788
5,548,790
5,548,833
26 : 5,546,683
5,546,692
5,546,698
5,546,729
5,546,772
5,546,823
5,546,825
5,546,827
5,546,850
5,546,873
5,546,909
5,546,910
5,546,924
5,546,985
5,547,000
5,547,036
5,547,042
5,547,096
5,547,103
5,547,104
5,547,125
5,547,143
5,547,152
5,547,172
5,547,187
5,547,214
5,547,217
5,547,225
5,547,242
5,547,257
5,547,259
5,547,267
5,547,321
5,547,388
5,547,431
5,547,435
5,547,440
5,547,497
5,547,504
5,547,595
5,547,608
5,547,623
5,547,649
5,547,703
5,547,725
5,547,876
5,547,950
5,547,998
5,548,016
5,548,021
5,548,050
5,548,052
5,548,481
5,548,488
5,548,492
5,548,650
5,548,830
27 : 5,546,678
5,546,709
5,546,804
5,546,847
5,546,870
5,546,875
5,546,935
5,546,952
5,546,958
5,546,991
5,546,996
5,547,082
5,547,154
5,547,233
5,547,241
5,547,336
5,547,379
5,547,407
5,547,479
5,547,512
5,547,528
5,547,694
5,547,695
5,547,766
5,548,010
5,548,026
5,548,148
5,548,165
5,548,317
5,548,398
5,548,457
5,548,602
5,548,802
5,548,805
28 : 5,546,609
5,547,197
5,547,270
5,548,115

5,548,632
29 : 5,546,641
5,546,726
5,546,936
5,546,938
5,547,052
5,547,208
5,547,716
5,547,975
5,548,078
5,548,279
5,548,510
5,548,809
31 : 5,546,818
5,547,565
5,548,278
5,548,323
32 : 5,547,098
5,548,660
33 : 5,546,859
5,547,238
5,547,682
5,548,097
5,548,515
5,548,525
5,548,604
5,548,664
5,548,717
34 : 5,546,742
5,546,843
5,546,852
5,546,987
5,547,053
5,547,087
5,547,091
5,547,114
5,547,250
5,547,347
5,547,378
5,547,412
5,547,614
5,547,648
5,547,670
5,547,681
5,547,807
5,547,811
5,547,910
5,547,947
5,547,954
5,547,957
5,547,960
5,547,977
5,547,978
5,547,981
5,547,985
5,548,015
5,548,023
5,548,029
5,548,040
5,548,065
5,548,068
5,548,087
5,548,135
5,548,177
5,548,276
5,548,322
5,548,494
5,548,607
5,548,615
5,548,617
5,548,642
5,548,654
5,548,793
35 : 5,546,931
5,547,079
5,547,190
5,547,454
5,547,484
5,548,798
36 : 5,546,604
5,546,605
5,546,608
5,546,624
5,546,628
5,546,642
5,546,654
5,546,655
5,546,657
5,546,697
5,546,700
5,546,702
5,546,757
5,546,767
5,546,771
5,546,784
5,546,837
5,546,856
5,546,933
5,546,955
5,546,970
5,547,012
5,547,035
5,547,047

5,547,073
5,547,108
5,547,145
5,547,164
5,547,171
5,547,176
5,547,178
5,547,249
5,547,253
5,547,331
5,547,396
5,547,404
5,547,410
5,547,413
5,547,459
5,547,462
5,547,482
5,547,494
5,547,509
5,547,518
5,547,523
5,547,529
5,547,543
5,547,546
5,547,582
5,547,594
5,547,600
5,547,622
5,547,635
5,547,713
5,547,718
5,547,720
5,547,727
5,547,728
5,547,738
5,547,759
5,547,763
5,547,764
5,547,786
5,547,803
5,547,821
5,547,827
5,547,843
5,547,894
5,547,897
5,547,948
5,547,969
5,548,034
5,548,046
5,548,059
5,548,099
5,548,109
5,548,110
5,548,120
5,548,166
5,548,168
5,548,172
5,548,183
5,548,195
5,548,216
5,548,218
5,548,268
5,548,310
5,548,327
5,548,328
5,548,347
5,548,351
5,548,357
5,548,388
5,548,389
5,548,391
5,548,486
5,548,491
5,548,507
5,548,518
5,548,530
5,548,540
5,548,561
5,548,566
5,548,571
5,548,623
5,548,628
5,548,653
5,548,683
5,548,692
5,548,715
5,548,721
5,548,761
5,548,769
5,548,791
37 : 5,546,622
5,546,646
5,546,677
5,546,807
5,546,849
5,546,879
5,546,965
5,546,981
5,547,049
5,547,136
5,547,247
5,547,373
5,547,385

5,547,420
5,547,449
5,547,507
5,547,577
5,547,723
5,547,861
5,547,877
5,547,932
5,547,964
5,548,037
5,548,086
5,548,181
5,548,340
5,548,467
5,548,484
5,548,527
5,548,564
5,548,579
38 : 5,547,588
5,548,274
39 : 5,546,612
5,546,645
5,546,687
5,546,745
5,546,746
5,546,760
5,546,808
5,546,880
5,546,972
5,547,062
5,547,081
5,547,117
5,547,150
5,547,167
5,547,198
5,547,227
5,547,230
5,547,278
5,547,288
5,547,302
5,547,341
5,547,458
5,547,476
5,547,519
5,547,521
5,547,531
5,547,707
5,547,747
5,547,768
5,547,927
5,547,991
5,547,992
5,548,004
5,548,056
5,548,272
5,548,477
5,548,478
5,548,656
40 : 5,546,833
5,546,973
5,546,977
5,547,023
5,547,025
5,547,031
5,547,185
5,547,273
5,547,465
5,547,909
41 : 5,546,611
5,546,720
5,547,067
5,547,417
5,547,729
5,547,845
5,547,887
5,548,223
5,548,231
5,548,324
5,548,422
5,548,448
5,548,539
5,548,621
5,548,730
5,548,733
5,548,734
5,548,742
5,548,776
42 : 5,546,669
5,546,673
5,546,707
5,546,713
5,546,774
5,546,779
5,546,813
5,546,817
5,546,874
5,546,934
5,546,989
5,547,034
5,547,039
5,547,068
5,547,069

5,547,129
5,547,151
5,547,162
5,547,196
5,547,312
5,547,319
5,547,334
5,547,368
5,547,384
5,547,400
5,547,448
5,547,537
5,547,610
5,547,757
5,547,761
5,547,765
5,547,770
5,547,871
5,547,911
5,547,959
5,547,966
5,547,979
5,547,982
5,547,984
5,547,988
5,547,990
5,548,003
5,548,017
5,548,024
5,548,060
5,548,100
5,548,107
5,548,203
5,548,261
5,548,332
5,548,384
5,548,438
5,548,483
5,548,523
5,548,588
5,548,697
44 : 5,547,256

5,547,287
45 : 5,546,613
5,546,768
5,546,863
5,546,993
5,547,106
5,547,272
5,547,283
5,547,451
5,547,686
5,548,474
46 : 5,546,739
5,547,209
5,548,669
47 : 5,546,607
5,546,660
5,546,992
5,547,315
5,547,549
5,547,612
5,547,657
5,547,989
5,548,266
5,548,267
5,548,489
48 : 5,546,712
5,546,722
5,546,744
5,546,764
5,546,792
5,546,798
5,546,800
5,546,809
5,546,953
5,546,990
5,547,020
5,547,021
5,547,026
5,547,027
5,547,028
5,547,029
5,547,033

5,547,051
5,547,088
5,547,189
5,547,193
5,547,228
5,547,281
5,547,309
5,547,311
5,547,313
5,547,314
5,547,325
5,547,351
5,547,352
5,547,376
5,547,503
5,547,532
5,547,562
5,547,563
5,547,584
5,547,585
5,547,617
5,547,644
5,547,663
5,547,675
5,547,719
5,547,862
5,547,879
5,547,891
5,547,902
5,547,925
5,548,014
5,548,025
5,548,030
5,548,085
5,548,118
5,548,141
5,548,147
5,548,149
5,548,154
5,548,159
5,548,185
5,548,204

5,548,219
5,548,225
5,548,241
5,548,301
5,548,443
5,548,463
5,548,512
5,548,517
5,548,528
5,548,535
5,548,544
5,548,548
5,548,550
5,548,587
5,548,622
5,548,625
5,548,636
5,548,637
5,548,647
5,548,702
5,548,703
5,548,731
5,548,735
5,548,737
5,548,738
5,548,746
5,548,764
5,548,768
5,548,771
5,548,772
5,548,783
5,548,784
5,548,785
5,548,794
5,548,797
5,548,814
5,548,832
49 : 5,546,962
5,547,200
5,547,212
5,547,213
5,547,268

5,547,332
5,547,401
5,547,525
5,547,638
5,547,662
5,547,760
5,548,075
5,548,608
50 : 5,547,374
5,547,812
5,548,237
5,548,311
5,548,452
5,548,747
51 : 5,546,632
5,546,743
5,546,762
5,546,877
5,546,895
5,546,926
5,547,199
5,547,380
5,547,536
5,547,624
5,547,680
5,547,777
5,547,996
5,548,775
5,548,803
53 : 5,546,614
5,546,715
5,546,803
5,546,887
5,546,908
5,546,946
5,547,019
5,547,102
5,547,181
5,547,439
5,547,508
5,547,541
5,547,583

5,547,702
5,547,745
5,547,847
5,548,108
5,548,305
5,548,522
5,548,688
5,548,718
5,548,749
5,548,759
54 : 5,546,717
5,547,011
5,547,105
5,547,653
5,548,042
5,548,466
55 : 5,546,616
5,546,623
5,546,643
5,546,675
5,546,680
5,546,738
5,546,864
5,546,901
5,546,923
5,546,950
5,547,112
5,547,115
5,547,126
5,547,160
5,547,175
5,547,306
5,547,350
5,547,616
5,547,701
5,548,089
5,548,198
5,548,372
5,548,627
5,548,753
56 : 5,547,706

DESIGN PATENTS

01 : 372,863
02 : 372,843
372,893
04 : 372,804
372,909
05 : 372,991
06 : 372,793
372,815
372,832
372,838
372,856
372,858
372,878
372,882
372,883
372,906
372,927
372,948
372,949
372,960
372,970
372,976
372,979
372,980
372,983
372,984
372,988

372,997
372,999
08 : 372,854
372,894
372,900
372,946
373,000
09 : 372,855
372,998
12 : 372,806
372,820
372,836
372,839
372,840
372,944
372,951
372,972
372,973
372,974
13 : 372,831
372,852
372,920
372,922
372,950
372,967
15 : 372,953
17 : 372,795

372,799
372,810
372,812
372,826
372,896
372,919
372,954
18 : 372,819
372,822
372,892
21 : 372,861
372,986
22 : 372,955
23 : 372,923
24 : 372,813
372,859
372,860
372,873
372,978
25 : 372,798
372,828
372,877
372,918
372,956
372,969
372,992
26 : 372,794

372,803
373,001
27 : 372,885
372,888
372,938
372,939
372,964
29 : 372,952
32 : 372,990
34 : 372,797
372,814
372,867
372,884
372,924
372,940
36 : 372,817
372,837
372,865
372,872
372,875
372,876
372,903
372,913
372,914
372,928
372,929
372,935

372,937
372,987
373,006
373,007
37 : 372,809
372,849
372,897
372,899
372,981
39 : 372,847
372,866
372,891
372,905
372,907
372,942
372,945
373,002
373,004
373,010
41 : 372,825
372,834
372,886
372,889
373,003
42 : 372,805
372,816
372,830

372,842
372,850
372,881
372,957
372,971
372,994
44 : 372,895
372,963
47 : 372,818
372,829
48 : 372,844
372,848
372,879
372,947
372,933
372,977
372,989
55 : 372,845
372,846
372,871
372,961
372,962
372,975

PLANT PATENTS

06 : 9,632 | 25 : 9,628

U.S. GOVERNMENT PRINTING OFFICE : 1996 O - 170-653 : QL 3

1189

AG

19 96

UMI

CHANGE OF ADDRESS FORM

NAME– FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

Mail this form to: NEW ADDRESS

Superintendent of Documents
Government Printing Office SSOM
Washington, D.C. 20402

Attach last subscription label here.

UMI
1189
AG
1996
UMI

Superintendent of Documents **Subscription** Order Form

Order Processing Code:
*** 5606**

❑ **YES,** enter _____ subscription(s) to **Official Gazette of the U.S. Patent and Trademark Office: Patents** (OG) for $549 per year ($686.25 foreign).

The total cost of my order is $_____. Price includes regular shipping and handling and is subject to change. International customers please add 25%.

Company or personal name (Please type or print)

Additional address/attention line

Street address

City, State, Zip code

Daytime phone including area code

Purchase order number (optional)

Charge your order. It's easy!

MasterCard

VISA

Fax your orders (202) 512–2250

For privacy protection, check the box below:
❑ Do not make my name available to other mailers

Check method of payment:
❑ Check payable to Superintendent of Documents
❑ GPO Deposit Account ☐☐☐☐☐☐–☐
❑ VISA ❑ MasterCard

Phone your orders (202) 512–1800

☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐
☐☐☐☐ (expiration date)

Thank you for your order!

Authorizing signature 4/95

Mail To: Superintendent of Documents
P.O. Box 371954, Pittsburgh, PA 15250–7954

Important: Please be sure to include this completed order form with your remittance.

V(J
1189
S S
3
AG
2 (
1996
UMI

Superintendent of Documents **Subscription** Order Form

Order Processing Code:
*** 5606**

❑ **YES,** enter _____ subscription(s) to **Official Gazette of the U.S. Patent and Trademark Office: Patents** (OG) for $549 per year ($686.25 foreign).

The total cost of my order is $_____. Price includes regular shipping and handling and is subject to change. International customers please add 25%.

Company or personal name (Please type or print)

Additional address/attention line

Street address

City, State, Zip code

Daytime phone including area code

Purchase order number (optional)

Charge your order. It's easy!

MasterCard

VISA

Fax your orders (202) 512–2250

For privacy protection, check the box below:
❑ Do not make my name available to other mailers

Check method of payment:
❑ Check payable to Superintendent of Documents
❑ GPO Deposit Account ☐☐☐☐☐☐–☐
❑ VISA ❑ MasterCard

☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

☐☐☐☐ (expiration date)

Phone your orders (202) 512–1800

Thank you for your order!

Authorizing signature 4/95

Mail To: Superintendent of Documents
P.O. Box 371954, Pittsburgh, PA 15250–7954

Important: Please be sure to include this completed order form with your remittance.

VOL
1189
AG
19 96
UMI

VOL
1189

ISS
3

AG
20

1996

U.S. DEPARTMENT OF COMMERCE
Michael Kantor, *Secretary*
PATENT AND TRADEMARK OFFICE
Bruce Lehman, *Commissioner*

UMI

VOL
1189

ISS
4

AG
27
1996

UMI

Vol. 1189 Number 4

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

ute to:

PATENTS

August 27 1996



U.S.
DEPARTMENT
OF COMMERCE

Patent
and
Trademark
Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

VOL
1189
ISS
4
AUG
27
1996
UMI

OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
August 27, 1996 Volume 1189 Number 4

CONTENTS

			Page
Patent and Trademark Office Notices			
Patent Cooperation Treaty (PCT) Information	1189	OG	79
Notice of Maintenance Fees Payable	1189	OG	79
Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee	1189	OG	80
Patents Reinstated Due To The Acceptance of a Late Maintenance Fee From 6/07/96	1189	OG	86
Patents Reinstated Due To The Acceptance of a Late Maintenance Fee From 6/14/96	1189	OG	86
Reissue Applications Filed	1189	OG	87
Requests for Reexaminations Filed	1189	OG	87
Notice of Expiration of Trademark Registrations Due to Failure to Renew	1189	OG	88
Service by Publication	1189	OG	89
Registration To Practice	1189	OG	90
Trademark Search Tools Now Available on CD-ROM	1189	OG	90
Patent Certificate of Correction	1189	OG	90
United States Postal Service Non-Delivery of Mail	1189	OG	92
Summary of Final Decisions Issued by the Trademark Trial and Appeal Board	1189	OG	94
Special Boxes for Mail	1189	OG	96
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1189	OG	98
Patent Examining Corps	1189	OG	100
Condition of Trademark Applications	1189	OG	101
Reexaminations			2433
Reissue Patents Granted (35,316)			2435
Plant Patents Granted (9,633)			2437
Patents Granted			
General and Mechanical (5,548,841)			2439
Chemical (5,549,715)			2743
Electrical (5,550,319)			2929
Design Patents Granted (373,011)			3195
Index of Patentees		PI	1
Indices of Reissue, Reexaminations, Design and Plant Patents		PI	100
Classification of			
Patents (Including Reissues and Reexaminations)		PI	109
Designs and Plants Applications		PI	113
Geographical Index of Residence of Inventors			
Patents (Including Reissues and Reexaminations)		PI	115
Designs and Plants Applications		PI	117
Change of Address Form		PI	119
Subscription Order Form		PI	121

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402, to whom all subscriptions should be made payable and all communications addressed. VISA or MasterCard may be used for telephone orders, (202)-512-1800.
THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly. Stock No. 703-033-00000-8
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly. Stock No. 703-034-00000-4
PATENT AND TRADEMARK OFFICE NOTICES, issued weekly. Stock No. 703-035-00000-1
GENERAL INFORMATION concerning PATENTS. Stock No. 003-004-00661-7

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $3.00 each; PLANT PATENTS in color, $12.00 each; copies of TRADEMARKS at $3.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S.P.T.O.

For sale by the U.S. Government Printing Office
Superintendent of Documents, Mail Stop: SSOP; Washington, DC 20402-9328

170-654 O.G.-96-1: QL3

VOL
1189
ISS
4
AG
27
1996
UMI

Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1187 O.G. 49, on June 18, 1996.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective July 1, 1996, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1187 O.G. 73, on June 25, 1996.

International fees were changed, effective on January 1, 1996, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1181 O.G. 49, on December 19, 1995.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1995, and were announced in the *Official Gazette* at 1177 O.G. 171, on August 29, 1995.

The schedule of PCT fees (in U.S. dollars), effective July 1, 1996, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	220.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed	660.00
— Corresponding prior U.S. national application filed	430.00
— Supplemental search fee, per additional invention (payable only upon invitation)	190.00
European Patent Office as ISA	1585.00
International fees	
Basic fee	677.00
Basic supplemental fee (for each page over 30)	13.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	164.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	164.00
— Confirmation fee	82.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	207.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	470.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	710.00
— Additional examination fee, per additional invention (payable only upon invitation)	250.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	47.00	94.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	340.00	680.00
USPTO was ISA but not IPEA	375.00	750.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	505.00	1010.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	440.00	880.00
Other National fees		
— For each independent claim in excess of 3	39.00	78.00
— For each claim in excess of 20.	11.00	22.00
— For each application containing a multiple dependent claim	125.00	250.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(l)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(l)	130.00	130.00

June 4, 1996

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

---

Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on August 24, 1993 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,237,703 through 5,239,702
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on August 22, 1989 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,858,245 through 4,860,380
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on August 20, 1985 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,535,477 through 4,536,888
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1994, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $495.00
By other than a small entity $990.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $995.00
By other than a small entity $1,990.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,495.00
By other than a small entity $2,990.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $660.00
(2) unintentional $1,550.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED June 19, 1996
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 33,667	06/829,798	08/20/91
(4,454,953)	(06/365,968)	(06/19/84)
Re. 33,914	07/533,445	05/05/92
(4,751,387)	(06/815,810)	(06/14/88)
Re. 33,946	07/313,717	06/02/92
(4,750,762)	(07/112,286)	(06/14/88)
Re. 34,048	07/480,028	09/01/92
(4,750,929)	(07/081,148)	(06/14/88)
4,454,611	06/393,586	06/19/84
4,454,612	06/291,427	06/19/84
4,454,629	06/438,976	06/19/84
4,454,645	06/345,503	06/19/84
4,454,649	06/352,821	06/19/84
4,454,659	06/385,711	06/19/84
4,454,666	06/363,216	06/19/84
4,454,669	06/322,646	06/19/84
4,454,670	06/327,461	06/19/84
4,454,674	06/449,345	06/19/84
4,454,676	06/248,506	06/19/84
4,454,688	06/358,157	06/19/84
4,454,695	06/342,467	06/19/84
4,454,706	06/412,132	06/19/84
4,454,710	06/434,899	06/19/84
4,454,711	06/316,326	06/19/84
4,454,721	06/417,635	06/19/84
4,454,724	06/428,483	06/19/84
4,454,725	06/427,406	06/19/84
4,454,732	06/491,405	06/19/84
4,454,735	06/272,790	06/19/84
4,454,737	06/373,795	06/19/84
4,454,756	06/442,849	06/19/84
4,454,757	06/415,740	06/19/84
4,454,763	06/407,568	06/19/84
4,454,766	06/299,600	06/19/84
4,454,768	06/360,322	06/19/84
4,454,771	06/318,361	06/19/84
4,454,776	06/318,892	06/19/84
4,454,781	06/395,300	06/19/84
4,454,784	06/317,342	06/19/84
4,454,802	06/311,314	06/19/84
4,454,803	06/400,987	06/19/84
4,454,808	06/376,579	06/19/84
4,454,810	06/367,440	06/19/84
4,454,813	06/506,954	06/19/84
4,454,817	06/339,238	06/19/84
4,454,821	06/317,305	06/19/84
4,454,828	06/460,190	06/19/84
4,454,833	06/517,158	06/19/84
4,454,836	06/498,441	06/19/84
4,454,839	06/404,430	06/19/84
4,454,867	06/486,931	06/19/84
4,454,869	06/402,608	06/19/84
4,454,870	06/408,733	06/19/84
4,454,883	06/348,888	06/19/84
4,454,885	06/275,854	06/19/84
4,454,891	06/356,389	06/19/84
4,454,894	06/314,338	06/19/84
4,454,904	06/385,924	06/19/84
4,454,911	06/401,115	06/19/84

Patent Number	Serial Number	Issue Date
4,454,912	06/291,147	06/19/84
4,454,915	06/391,473	06/19/84
4,454,919	06/326,282	06/19/84
4,454,922	06/382,375	06/19/84
4,454,927	06/332,789	06/19/84
4,454,936	06/364,509	06/19/84
4,454,956	06/494,854	06/19/84
4,454,962	06/330,934	06/19/84
4,454,976	06/256,056	06/19/84
4,454,981	06/258,319	06/19/84
4,454,989	06/325,658	06/19/84
4,454,991	06/351,373	06/19/84
4,454,997	06/354,775	06/19/84
4,454,998	06/295,992	06/19/84
4,454,999	06/255,898	06/19/84
4,455,002	06/405,146	06/19/84
4,455,016	06/423,058	06/19/84
4,455,017	06/438,317	06/19/84
4,455,020	06/356,250	06/19/84
4,455,035	06/349,674	06/19/84
4,455,039	06/391,690	06/19/84
4,455,042	06/383,100	06/19/84
4,455,044	06/264,914	06/19/84
4,455,051	06/273,865	06/19/84
4,455,052	06/290,846	06/19/84
4,455,054	06/359,710	06/19/84
4,455,055	06/350,612	06/19/84
4,455,058	06/364,152	06/19/84
4,455,074	06/477,770	06/19/84
4,455,077	06/432,860	06/19/84
4,455,079	06/441,795	06/19/84
4,455,085	06/292,930	06/19/84
4,455,096	06/319,978	06/19/84
4,455,101	06/278,530	06/19/84
4,455,110	06/350,941	06/19/84
4,455,111	06/278,060	06/19/84
4,455,116	06/320,159	06/19/84
4,455,121	06/438,038	06/19/84
4,455,137	06/424,514	06/19/84
4,455,144	06/424,095	06/19/84
4,455,152	06/468,852	06/19/84
4,455,155	06/403,783	06/19/84
4,455,157	06/421,568	06/19/84
4,455,158	06/477,561	06/19/84
4,455,164	06/366,141	06/19/84
4,455,169	06/371,848	06/19/84
4,455,170	06/475,795	06/19/84
4,455,175	06/518,896	06/19/84
4,455,177	06/417,553	06/19/84
4,455,178	06/512,524	06/19/84
4,455,179	06/315,136	06/19/84
4,455,190	06/495,301	06/19/84
4,455,193	06/508,911	06/19/84
4,455,200	06/394,939	06/19/84
4,455,201	06/480,061	06/19/84
4,455,208	06/516,296	06/19/84
4,455,209	06/500,874	06/19/84
4,455,212	06/353,163	06/19/84
4,455,217	06/324,793	06/19/84
4,455,223	06/416,288	06/19/84
4,455,231	06/411,102	06/19/84
4,455,232	06/361,205	06/19/84
4,455,237	06/434,266	06/19/84
4,455,239	06/535,558	06/19/84
4,455,241	06/349,277	06/19/84
4,455,244	06/385,457	06/19/84
4,455,246	06/383,212	06/19/84
4,455,249	06/435,794	06/19/84
4,455,254	06/359,000	06/19/84
4,455,256	06/260,726	06/19/84
4,455,260	06/461,468	06/19/84
4,455,262	06/368,037	06/19/84
4,455,265	06/354,336	06/19/84
4,455,266	06/396,742	06/19/84
4,455,277	06/342,982	06/19/84
4,455,278	06/406,901	06/19/84
4,455,279	06/400,833	06/19/84
4,455,282	06/415,268	06/19/84
4,455,285	06/251,119	06/19/84
4,455,290	06/250,173	06/19/84
4,455,291	06/341,553	06/19/84
4,455,295	06/492,076	06/19/84
4,455,302	06/359,192	06/19/84
4,455,306	06/333,182	06/19/84
4,455,312	06/409,761	06/19/84
4,455,313	06/409,793	06/19/84
4,455,315	06/318,982	06/19/84
4,455,317	06/276,465	06/19/84
4,455,321	06/522,000	06/19/84
4,455,337	06/248,047	06/19/84
4,455,339	06/398,188	06/19/84
4,455,343	06/220,349	06/19/84
4,455,348	06/517,768	06/19/84
4,455,352	06/440,119	06/19/84
4,455,355	06/405,935	06/19/84
4,455,364	06/439,427	06/19/84
4,455,369	06/435,150	06/19/84
4,455,371	06/354,303	06/19/84
4,455,376	06/251,956	06/19/84
4,455,377	06/375,936	06/19/84
4,455,389	06/477,185	06/19/84
4,455,395	06/409,888	06/19/84
4,455,396	06/330,695	06/19/84
4,455,399	06/460,690	06/19/84
4,455,401	06/375,242	06/19/84
4,455,402	06/455,763	06/19/84
4,455,407	06/473,272	06/19/84
4,455,408	06/407,014	06/19/84
4,455,411	06/504,215	06/19/84
4,455,417	06/395,432	06/19/84
4,455,418	06/404,809	06/19/84
4,455,422	06/366,335	06/19/84
4,455,423	06/432,872	06/19/84
4,455,432	06/360,819	06/19/84
4,455,444	06/441,142	06/19/84
4,455,445	06/451,525	06/19/84
4,455,451	06/397,175	06/19/84
4,455,454	06/440,660	06/19/84
4,455,455	06/445,861	06/19/84
4,455,457	06/384,124	06/19/84
4,455,458	06/409,871	06/19/84
4,455,467	06/304,278	06/19/84
4,455,468	06/282,297	06/19/84
4,455,470	06/292,759	06/19/84
4,455,471	06/340,431	06/19/84
4,455,480	06/354,791	06/19/84
4,455,497	06/387,482	06/19/84
4,455,498	06/409,766	06/19/84
4,455,501	06/429,230	06/19/84
4,455,505	06/299,792	06/19/84
4,455,510	06/380,463	06/19/84
4,455,513	06/401,420	06/19/84
4,455,541	06/408,999	06/19/84
4,455,542	06/471,973	06/19/84
4,455,545	06/439,501	06/19/84
4,455,549	06/306,975	06/19/84
4,455,561	06/443,710	06/19/84
4,455,569	06/337,409	06/19/84
4,455,579	06/387,413	06/19/84
4,455,580	06/360,171	06/19/84
4,455,581	06/293,838	06/19/84
4,455,591	06/348,401	06/19/84
4,455,592	06/477,046	06/19/84
4,455,593	06/477,050	06/19/84
4,455,598	06/343,936	06/19/84
4,455,606	06/302,902	06/19/84
4,455,611	06/411,906	06/19/84
4,455,612	06/343,356	06/19/84
4,455,632	06/315,692	06/19/84
4,455,636	06/431,445	06/19/84
4,455,640	06/424,912	06/19/84
4,455,646	06/412,013	06/19/84
4,455,647	06/388,087	06/19/84
4,455,654	06/270,926	06/19/84
4,455,655	06/306,634	06/19/84
4,455,666	06/369,789	06/19/84

VOL
1189
ISS
4
AG
27
1996
UMI

Patent Number	Serial Number	Issue Date
4,455,674	06/349,340	06/19/84
4,455,682	06/365,819	06/19/84
4,750,220	06/865,425	06/14/88
4,750,227	06/924,216	06/14/88
4,750,237	06/926,134	06/14/88
4,750,240	06/941,222	06/14/88
4,750,243	06/790,203	06/14/88
4,750,244	07/022,825	06/14/88
4,750,249	06/904,393	06/14/88
4,750,251	07/014,283	06/14/88
4,750,253	06/944,116	06/14/88
4,750,254	06/812,753	06/14/88
4,750,255	07/022,663	06/14/88
4,750,259	06/911,586	06/14/88
4,750,263	06/741,303	06/14/88
4,750,266	07/009,086	06/14/88
4,750,268	07/039,315	06/14/88
4,750,270	07/064,528	06/14/88
4,750,272	06/927,705	06/14/88
4,750,275	07/058,042	06/14/88
4,750,278	07/137,643	06/14/88
4,750,279	06/898,245	06/14/88
4,750,284	06/875,236	06/14/88
4,750,286	07/007,773	06/14/88
4,750,291	07/011,807	06/14/88
4,750,292	07/037,124	06/14/88
4,750,293	06/905,154	06/14/88
4,750,294	07/073,100	06/14/88
4,750,296	07/016,537	06/14/88
4,750,299	07/011,967	06/14/88
4,750,300	07/011,000	06/14/88
4,750,302	06/935,208	06/14/88
4,750,304	06/897,847	06/14/88
4,750,307	07/115,560	06/14/88
4,750,311	06/895,889	06/14/88
4,750,312	07/017,188	06/14/88
4,750,314	07/012,111	06/14/88
4,750,316	07/068,149	06/14/88
4,750,318	07/086,494	06/14/88
4,750,324	07/006,111	06/14/88
4,750,326	07/003,422	06/14/88
4,750,329	06/945,616	06/14/88
4,750,337	07/107,813	06/14/88
4,750,341	07/057,946	06/14/88
4,750,345	07/043,477	06/14/88
4,750,353	07/018,659	06/14/88
4,750,359	06/295,460	06/14/88
4,750,361	07/004,866	06/14/88
4,750,363	06/879,262	06/14/88
4,750,366	06/843,894	06/14/88
4,750,367	07/007,144	06/14/88
4,750,369	06/895,892	06/14/88
4,750,379	07/032,224	06/14/88
4,750,380	06/901,497	06/14/88
4,750,382	06/923,221	06/14/88
4,750,389	06/903,479	06/14/88
4,750,394	07/030,567	06/14/88
4,750,397	06/897,388	06/14/88
4,750,401	07/014,487	06/14/88
4,750,402	07/026,069	06/14/88
4,750,403	07/006,849	06/14/88
4,750,404	07/034,905	06/14/88
4,750,406	06/924,796	06/14/88
4,750,410	07/115,163	06/14/88
4,750,412	07/041,415	06/14/88
4,750,423	07/025,046	06/14/88
4,750,424	07/023,024	06/14/88
4,750,426	07/061,097	06/14/88
4,750,439	06/900,932	06/14/88
4,750,442	06/889,282	06/14/88
4,750,444	07/012,818	06/14/88
4,750,448	06/947,103	06/14/88
4,750,453	06/397,525	06/14/88
4,750,454	06/922,795	06/14/88
4,750,458	06/946,011	06/14/88
4,750,460	06/877,096	06/14/88
4,750,462	06/873,002	06/14/88
4,750,463	07/004,903	06/14/88
4,750,471	06/879,232	06/14/88
4,750,472	06/613,452	06/14/88
4,750,474	06/863,945	06/14/88
4,750,479	07/030,240	06/14/88
4,750,485	06/938,616	06/14/88
4,750,486	06/895,831	06/14/88
4,750,491	06/670,396	06/14/88
4,750,496	07/007,776	06/14/88
4,750,497	06/825,796	06/14/88
4,750,500	06/903,338	06/14/88
4,750,501	06/931,798	06/14/88
4,750,502	06/893,923	06/14/88
4,750,505	06/856,938	06/14/88
4,750,506	06/945,823	06/14/88
4,750,508	06/894,263	06/14/88
4,750,520	07/107,293	06/14/88
4,750,531	06/926,931	06/14/88
4,750,538	06/946,155	06/14/88
4,750,539	06/927,715	06/14/88
4,750,540	06/842,232	06/14/88
4,750,541	06/881,631	06/14/88
4,750,543	07/032,679	06/14/88
4,750,544	06/901,441	06/14/88
4,750,545	06/942,767	06/14/88
4,750,552	06/905,462	06/14/88
4,750,556	06/924,484	06/14/88
4,750,559	06/738,213	06/14/88
4,750,560	07/037,811	06/14/88
4,750,571	06/916,507	06/14/88
4,750,574	07/009,888	06/14/88
4,750,575	07/026,795	06/14/88
4,750,576	06/937,834	06/14/88
4,750,577	06/893,932	06/14/88
4,750,580	06/928,561	06/14/88
4,750,582	07/064,871	06/14/88
4,750,585	07/057,776	06/14/88
4,750,587	07/109,090	06/14/88
4,750,592	07/028,390	06/14/88
4,750,594	06/891,219	06/14/88
4,750,608	06/854,148	06/14/88
4,750,611	06/785,154	06/14/88
4,750,618	06/865,880	06/14/88
4,750,619	07/083,485	06/14/88
4,750,621	07/019,559	06/14/88
4,750,631	06/887,667	06/14/88
4,750,633	07/100,338	06/14/88
4,750,634	06/858,931	06/14/88
4,750,635	07/093,694	06/14/88
4,750,636	07/100,624	06/14/88
4,750,638	07/139,585	06/14/88
4,750,644	06/897,988	06/14/88
4,750,650	06/741,159	06/14/88
4,750,651	07/055,424	06/14/88
4,750,653	06/940,157	06/14/88
4,750,654	07/051,251	06/14/88
4,750,655	06/913,706	06/14/88
4,750,661	06/873,803	06/14/88
4,750,663	06/909,176	06/14/88
4,750,671	07/106,448	06/14/88
4,750,674	06/901,311	06/14/88
4,750,677	06/907,307	06/14/88
4,750,678	07/009,465	06/14/88
4,750,682	07/013,508	06/14/88
4,750,685	06/906,991	06/14/88
4,750,690	07/025,180	06/14/88
4,750,692	07/035,326	06/14/88
4,750,694	06/854,089	06/14/88
4,750,695	07/049,837	06/14/88
4,750,696	07/038,678	06/14/88
4,750,702	06/889,269	06/14/88
4,750,703	07/088,401	06/14/88
4,750,707	07/098,019	06/14/88
4,750,721	06/925,479	06/14/88
4,750,723	07/093,423	06/14/88
4,750,724	07/043,854	06/14/88
4,750,728	06/804,519	06/14/88
4,750,730	06/936,742	06/14/88
4,750,735	06/917,163	06/14/88

Patent Number	Serial Number	Issue Date
4,750,737	06/890,416	06/14/88
4,750,740	06/803,223	06/14/88
4,750,742	06/875,439	06/14/88
4,750,744	06/869,710	06/14/88
4,750,756	07/020,601	06/14/88
4,750,758	06/931,037	06/14/88
4,750,761	07/018,300	06/14/88
4,750,763	06/864,515	06/14/88
4,750,767	07/028,391	06/14/88
4,750,768	06/863,308	06/14/88
4,750,773	07/051,280	06/14/88
4,750,775	07/049,842	06/14/88
4,750,777	06/930,670	06/14/88
4,750,778	07/089,078	06/14/88
4,750,783	06/898,355	06/14/88
4,750,784	07/067,277	06/14/88
4,750,786	07/046,287	06/14/88
4,750,788	06/884,195	06/14/88
4,750,789	07/035,258	06/14/88
4,750,790	06/944,242	06/14/88
4,750,795	06/744,502	06/14/88
4,750,797	06/886,860	06/14/88
4,750,803	06/841,131	06/14/88
4,750,805	07/013,525	06/14/88
4,750,807	06/932,123	06/14/88
4,750,818	06/809,214	06/14/88
4,750,834	07/106,913	06/14/88
4,750,841	07/090,048	06/14/88
4,750,843	06/797,427	06/14/88
4,750,850	07/045,838	06/14/88
4,750,858	06/768,537	06/14/88
4,750,862	06/936,046	06/14/88
4,750,866	06/945,819	06/14/88
4,750,890	07/063,652	06/14/88
4,750,892	07/004,081	06/14/88
4,750,899	06/774,347	06/14/88
4,750,904	06/846,705	06/14/88
4,750,909	06/946,945	06/14/88
4,750,910	07/004,708	06/14/88
4,750,911	06/911,720	06/14/88
4,750,914	07/062,087	06/14/88
4,750,924	07/070,226	06/14/88
4,750,930	07/060,212	06/14/88
4,750,931	06/787,824	06/14/88
4,750,933	06/914,509	06/14/88
4,750,939	06/937,034	06/14/88
4,750,945	07/018,460	06/14/88
4,750,946	06/828,522	06/14/88
4,750,955	07/027,375	06/14/88
4,750,956	06/943,452	06/14/88
4,750,959	06/808,994	06/14/88
4,750,960	06/904,623	06/14/88
4,750,965	06/845,858	06/14/88
4,750,968	07/059,740	06/14/88
4,750,969	06/878,548	06/14/88
4,750,975	06/840,134	06/14/88
4,750,977	06/943,254	06/14/88
4,750,983	06/834,309	06/14/88
4,750,990	06/932,052	06/14/88
4,750,992	06/849,875	06/14/88
4,750,993	06/714,544	06/14/88
4,750,998	06/871,677	06/14/88
4,751,003	06/858,408	06/14/88
4,751,017	06/843,404	06/14/88
4,751,018	07/024,005	06/14/88
4,751,023	06/884,255	06/14/88
4,751,028	07/082,112	06/14/88
4,751,031	06/924,278	06/14/88
4,751,038	07/057,379	06/14/88
4,751,041	06/819,086	06/14/88
4,751,042	06/830,776	06/14/88
4,751,043	06/912,664	06/14/88
4,751,044	06/766,323	06/14/88
4,751,049	07/047,591	06/14/88
4,751,050	06/927,814	06/14/88
4,751,052	06/850,941	06/14/88
4,751,055	06/799,066	06/14/88
4,751,061	07/044,170	06/14/88
4,751,064	06/643,622	06/14/88
4,751,066	06/860,963	06/14/88
4,751,067	06/932,004	06/14/88
4,751,068	06/648,952	06/14/88
4,751,070	06/852,470	06/14/88
4,751,077	06/676,900	06/14/88
4,751,078	06/751,706	06/14/88
4,751,086	06/888,779	06/14/88
4,751,092	07/001,832	06/14/88
4,751,093	06/918,630	06/14/88
4,751,095	06/721,342	06/14/88
4,751,104	06/678,745	06/14/88
4,751,111	06/858,997	06/14/88
4,751,112	07/102,787	06/14/88
4,751,113	06/481,412	06/14/88
4,751,129	07/085,744	06/14/88
4,751,130	07/064,572	06/14/88
4,751,132	06/942,715	06/14/88
4,751,133	07/053,496	06/14/88
4,751,135	06/944,173	06/14/88
4,751,144	07/093,103	06/14/88
4,751,148	06/849,602	06/14/88
4,751,151	06/939,610	06/14/88
4,751,152	07/034,454	06/14/88
4,751,155	07/092,043	06/14/88
4,751,157	07/059,346	06/14/88
4,751,158	07/082,776	06/14/88
4,751,161	06/870,213	06/14/88
4,751,162	06/898,478	06/14/88
4,751,168	06/852,198	06/14/88
4,751,172	06/891,609	06/14/88
4,751,189	06/838,512	06/14/88
4,751,202	06/876,441	06/14/88
4,751,203	06/876,805	06/14/88
4,751,216	07/083,437	06/14/88
4,751,217	06/790,266	06/14/88
4,751,219	06/698,325	06/14/88
4,751,226	06/901,371	06/14/88
4,751,228	07/007,691	06/14/88
4,751,229	07/071,672	06/14/88
4,751,230	07/074,131	06/14/88
4,751,231	07/096,999	06/14/88
4,751,233	06/833,853	06/14/88
4,751,245	06/878,445	06/14/88
4,751,246	06/402,732	06/14/88
4,751,248	07/069,149	06/14/88
4,751,249	06/811,041	06/14/88
4,751,250	06/863,229	06/14/88
4,751,252	07/050,792	06/14/88
4,751,255	07/027,956	06/14/88
4,751,260	06/857,491	06/14/88
4,751,264	07/054,334	06/14/88
4,751,269	07/034,409	06/14/88
4,751,271	07/032,830	06/14/88
4,751,274	07/002,236	06/14/88
4,751,275	06/919,707	06/14/88
4,751,276	07/078,455	06/14/88
4,751,277	06/525,668	06/14/88
4,751,278	07/043,893	06/14/88
4,751,292	06/751,619	06/14/88
4,751,299	06/671,076	06/14/88
4,751,302	06/739,061	06/14/88
4,751,303	06/717,098	06/14/88
4,751,308	07/009,802	06/14/88
4,751,310	07/092,010	06/14/88
4,751,313	07/072,531	06/14/88
4,751,316	07/038,787	06/14/88
4,751,318	06/861,391	06/14/88
4,751,319	07/009,430	06/14/88
4,751,324	06/874,255	06/14/88
4,751,325	07/034,387	06/14/88
4,751,327	06/914,218	06/14/88
4,751,329	06/861,776	06/14/88
4,751,335	07/009,833	06/14/88
4,751,341	07/097,374	06/14/88
4,751,342	07/099,888	06/14/88
4,751,356	07/000,764	06/14/88
4,751,358	07/047,335	06/14/88

VOL
1189
ISS
4
AUG
27
1996
UMI

Patent Number	Serial Number	Issue Date
4,751,363	06/834,378	06/14/88
4,751,364	06/886,060	06/14/88
4,751,366	06/861,888	06/14/88
4,751,368	06/931,542	06/14/88
4,751,383	06/846,519	06/14/88
4,751,390	06/942,651	06/14/88
4,751,391	06/944,483	06/14/88
4,751,398	06/840,896	06/14/88
4,751,401	07/028,959	06/14/88
4,751,403	06/743,079	06/14/88
4,751,408	06/900,484	06/14/88
4,751,410	06/746,625	06/14/88
4,751,412	07/020,041	06/14/88
4,751,414	07/042,401	06/14/88
4,751,415	07/044,018	06/14/88
4,751,422	06/942,658	06/14/88
4,751,428	06/884,857	06/14/88
4,751,429	06/863,493	06/14/88
4,751,430	06/942,291	06/14/88
4,751,432	06/841,902	06/14/88
4,751,433	06/384,659	06/14/88
4,751,435	06/681,012	06/14/88
4,751,438	06/810,854	06/14/88
4,751,440	07/121,172	06/14/88
4,751,441	06/739,880	06/14/88
4,751,442	06/893,305	06/14/88
4,751,443	06/888,558	06/14/88
4,751,449	06/911,012	06/14/88
4,751,456	06/860,518	06/14/88
4,751,459	06/909,762	06/14/88
4,751,469	07/052,968	06/14/88
4,751,471	06/945,857	06/14/88
4,751,473	06/924,631	06/14/88
4,751,475	07/046,916	06/14/88
4,751,484	07/021,265	06/14/88
4,751,485	07/084,585	06/14/88
4,751,488	06/270,471	06/14/88
4,751,489	06/897,689	06/14/88
4,751,497	06/853,688	06/14/88
4,751,498	06/838,595	06/14/88
4,751,505	06/877,045	06/14/88
4,751,508	06/820,563	06/14/88
4,751,509	06/870,189	06/14/88
4,751,513	06/858,771	06/14/88
4,751,514	06/848,519	06/14/88
4,751,517	07/010,100	06/14/88
4,751,527	06/868,112	06/14/88
4,751,540	07/082,843	06/14/88
4,751,551	07/081,077	06/14/88
4,751,556	07/065,134	06/14/88
4,751,568	06/878,357	06/14/88
4,751,572	06/947,925	06/14/88
4,751,576	06/903,558	06/14/88
4,751,579	07/031,128	06/14/88
4,751,582	06/887,628	06/14/88
4,751,585	07/020,195	06/14/88
4,751,592	07/009,860	06/14/88
4,751,596	06/899,686	06/14/88
4,751,597	06/922,587	06/14/88
4,751,601	06/929,267	06/14/88
4,751,602	06/871,471	06/14/88
4,751,610	06/869,687	06/14/88
4,751,611	06/888,866	06/14/88
4,751,613	07/054,080	06/14/88
4,751,616	07/001,080	06/14/88
4,751,631	06/463,936	06/14/88
4,751,635	06/852,622	06/14/88
4,751,644	06/792,069	06/14/88
4,751,646	06/863,451	06/14/88
4,751,647	06/911,535	06/14/88
4,751,648	06/847,397	06/14/88
4,751,649	06/867,921	06/14/88
4,751,657	06/752,883	06/14/88
4,751,662	06/887,418	06/14/88
4,751,664	06/841,933	06/14/88
4,751,671	06/919,795	06/14/88
4,751,685	06/941,873	06/14/88
4,751,687	06/883,990	06/14/88
4,751,691	07/068,548	06/14/88
4,751,699	06/907,146	06/14/88
4,751,700	06/938,301	06/14/88
4,751,705	06/916,344	06/14/88
4,751,714	07/002,608	06/14/88
4,751,720	07/034,342	06/14/88
4,751,722	07/056,295	06/14/88
4,751,723	06/910,535	06/14/88
4,751,724	06/874,769	06/14/88
4,751,727	06/876,409	06/14/88
4,751,733	06/862,949	06/14/88
4,751,734	07/056,014	06/14/88
4,751,736	06/697,082	06/14/88
5,121,505	07/614,147	06/16/92
5,121,507	07/595,142	06/16/92
5,121,515	07/777,592	06/16/92
5,121,516	07/623,793	06/16/92
5,121,517	07/628,100	06/16/92
5,121,518	07/432,748	06/16/92
5,121,519	07/690,565	06/16/92
5,121,528	07/600,918	06/16/92
5,121,536	07/643,525	06/16/92
5,121,542	07/692,342	06/16/92
5,121,547	07/733,436	06/16/92
5,121,549	07/789,256	06/16/92
5,121,550	07/621,515	06/16/92
5,121,551	07/749,672	06/16/92
5,121,556	07/742,325	06/16/92
5,121,558	07/578,574	06/16/92
5,121,559	07/625,443	06/16/92
5,121,565	07/694,134	06/16/92
5,121,567	07/698,999	06/16/92
5,121,568	07/644,533	06/16/92
5,121,572	07/783,396	06/16/92
5,121,574	07/550,857	06/16/92
5,121,576	07/520,559	06/16/92
5,121,578	07/647,458	06/16/92
5,121,590	07/532,887	06/16/92
5,121,593	07/645,208	06/16/92
5,121,602	07/633,674	06/16/92
5,121,603	07/600,440	06/16/92
5,121,605	07/492,068	06/16/92
5,121,606	07/622,365	06/16/92
5,121,612	07/685,205	06/16/92
5,121,614	07/685,136	06/16/92
5,121,618	07/736,075	06/16/92
5,121,620	07/732,900	06/16/92
5,121,622	07/686,595	06/16/92
5,121,624	07/726,706	06/16/92
5,121,627	07/525,648	06/16/92
5,121,631	07/652,103	06/16/92
5,121,634	07/626,372	06/16/92
5,121,636	07/774,533	06/16/92
5,121,641	07/531,167	06/16/92
5,121,643	07/620,560	06/16/92
5,121,645	07/651,451	06/16/92
5,121,650	07/710,869	06/16/92
5,121,651	07/505,352	06/16/92
5,121,652	07/404,867	06/16/92
5,121,658	07/368,406	06/16/92
5,121,660	07/773,221	06/16/92
5,121,661	07/693,139	06/16/92
5,121,664	07/628,698	06/16/92
5,121,679	07/790,818	06/16/92
5,121,680	07/651,956	06/16/92
5,121,681	07/728,259	06/16/92
5,121,692	07/395,544	06/16/92
5,121,693	07/590,400	06/16/92
5,121,695	07/627,830	06/16/92
5,121,698	07/509,516	06/16/92
5,121,702	07/663,088	06/16/92
5,121,705	07/745,415	06/16/92
5,121,706	07/586,513	06/16/92
5,121,708	07/655,334	06/16/92
5,121,711	07/621,788	06/16/92
5,121,713	07/800,217	06/16/92
5,121,716	07/715,812	06/16/92
5,121,721	07/448,100	06/16/92

Patent Number	Serial Number	Issue Date
5,121,731	07/717,960	06/16/92
5,121,737	07/436,433	06/16/92
5,121,743	07/622,929	06/16/92
5,121,745	07/555,844	06/16/92
5,121,753	07/374,913	06/16/92
5,121,755	07/773,812	06/16/92
5,121,759	07/677,447	06/16/92
5,121,762	07/553,225	06/16/92
5,121,765	07/549,118	06/16/92
5,121,768	07/765,051	06/16/92
5,121,770	07/505,784	06/16/92
5,121,772	07/591,979	06/16/92
5,121,773	07/585,430	06/16/92
5,121,776	07/657,417	06/16/92
5,121,780	07/460,660	06/16/92
5,121,784	07/475,758	06/16/92
5,121,785	07/200,035	06/16/92
5,121,789	07/738,898	06/16/92
5,121,791	07/763,635	06/16/92
5,121,797	07/726,582	06/16/92
5,121,798	07/624,628	06/16/92
5,121,804	07/668,227	06/16/92
5,121,809	07/582,975	06/16/92
5,121,811	07/467,426	06/16/92
5,121,813	07/602,307	06/16/92
5,121,819	07/479,784	06/16/92
5,121,833	07/699,578	06/16/92
5,121,834	07/722,173	06/16/92
5,121,837	07/324,244	06/16/92
5,121,842	07/729,192	06/16/92
5,121,843	07/692,915	06/16/92
5,121,845	07/598,048	06/16/92
5,121,849	07/464,232	06/16/92
5,121,850	07/561,193	06/16/92
5,121,851	07/605,553	06/16/92
5,121,854	07/674,240	06/16/92
5,121,857	07/378,590	06/16/92
5,121,858	07/579,359	06/16/92
5,121,861	07/691,356	06/16/92
5,121,864	07/571,199	06/16/92
5,121,865	07/731,649	06/16/92
5,121,876	07/775,508	06/16/92
5,121,877	07/563,254	06/16/92
5,121,885	07/636,701	06/16/92
5,121,893	07/682,837	06/16/92
5,121,899	07/617,699	06/16/92
5,121,903	07/667,332	06/16/92
5,121,906	07/596,773	06/16/92
5,121,910	07/644,612	06/16/92
5,121,921	07/764,250	06/16/92
5,121,923	07/783,378	06/16/92
5,121,925	07/786,568	06/16/92
5,121,929	07/719,742	06/16/92
5,121,938	07/664,100	06/16/92
5,121,942	07/644,207	06/16/92
5,121,952	07/730,027	06/16/92
5,121,956	07/733,447	06/16/92
5,121,958	07/716,503	06/16/92
5,121,962	07/421,424	06/16/92
5,121,965	07/348,580	06/16/92
5,121,971	07/732,813	06/16/92
5,121,974	07/699,573	06/16/92
5,121,976	07/493,548	06/16/92
5,121,984	07/488,892	06/16/92
5,121,991	07/685,751	06/16/92
5,121,996	07/476,456	06/16/92
5,122,014	07/710,971	06/16/92
5,122,015	07/663,715	06/16/92
5,122,018	07/733,326	06/16/92
5,122,020	07/512,943	06/16/92
5,122,023	07/654,898	06/16/92
5,122,024	07/613,600	06/16/92
5,122,052	07/773,224	06/16/92
5,122,055	07/726,117	06/16/92
5,122,062	07/599,724	06/16/92
5,122,070	07/662,301	06/16/92
5,122,071	07/586,296	06/16/92
5,122,084	07/396,123	06/16/92
5,122,087	07/735,444	06/16/92
5,122,097	07/666,790	06/16/92
5,122,098	07/647,348	06/16/92
5,122,108	07/734,236	06/16/92
5,122,117	07/533,734	06/16/92
5,122,125	07/514,213	06/16/92
5,122,129	07/521,186	06/16/92
5,122,131	07/669,651	06/16/92
5,122,132	07/739,336	06/16/92
5,122,135	07/417,703	06/16/92
5,122,145	07/612,606	06/16/92
5,122,147	07/681,091	06/16/92
5,122,152	07/314,737	06/16/92
5,122,157	07/630,334	06/16/92
5,122,160	07/620,549	06/16/92
5,122,162	07/496,873	06/16/92
5,122,163	07/655,699	06/16/92
5,122,165	07/715,992	06/16/92
5,122,166	07/550,377	06/16/92
5,122,168	07/640,223	06/16/92
5,122,169	07/580,777	06/16/92
5,122,195	07/545,899	06/16/92
5,122,198	07/713,804	06/16/92
5,122,203	07/535,460	06/16/92
5,122,211	07/419,650	06/16/92
5,122,216	07/503,732	06/16/92
5,122,233	07/512,955	06/16/92
5,122,241	07/391,507	06/16/92
5,122,242	07/612,866	06/16/92
5,122,245	07/527,036	06/16/92
5,122,246	07/721,303	06/16/92
5,122,247	07/444,817	06/16/92
5,122,249	07/372,182	06/16/92
5,122,250	07/752,960	06/16/92
5,122,254	07/348,013	06/16/92
5,122,257	07/671,136	06/16/92
5,122,259	07/542,816	06/16/92
5,122,260	07/295,006	06/16/92
5,122,265	07/728,897	06/16/92
5,122,272	07/636,181	06/16/92
5,122,278	07/558,925	06/16/92
5,122,285	07/535,593	06/16/92
5,122,288	07/671,192	06/16/92
5,122,289	07/455,710	06/16/92
5,122,290	07/651,608	06/16/92
5,122,294	07/619,289	06/16/92
5,122,297	07/691,275	06/16/92
5,122,303	07/442,103	06/16/92
5,122,315	07/516,432	06/16/92
5,122,316	07/419,723	06/16/92
5,122,324	07/514,543	06/16/92
5,122,329	07/673,423	06/16/92
5,122,331	07/699,120	06/16/92
5,122,337	07/634,065	06/16/92
5,122,341	07/599,165	06/16/92
5,122,346	07/521,579	06/16/92
5,122,352	07/567,492	06/16/92
5,122,359	07/557,928	06/16/92
5,122,364	07/469,223	06/16/92
5,122,365	07/582,899	06/16/92
5,122,372	07/047,916	06/16/92
5,122,374	07/367,708	06/16/92
5,122,379	07/350,701	06/16/92
5,122,380	07/637,361	06/16/92
5,122,398	07/618,331	06/16/92
5,122,400	07/476,379	06/16/92
5,122,401	07/259,599	06/16/92
5,122,407	07/540,714	06/16/92
5,122,408	07/606,589	06/16/92
5,122,417	07/246,127	06/16/92
5,122,423	07/326,641	06/16/92
5,122,424	07/417,296	06/16/92
5,122,436	07/514,776	06/16/92
5,122,450	07/075,744	06/16/92
5,122,454	07/549,538	06/16/92
5,122,457	07/423,839	06/16/92
5,122,462	07/670,437	06/16/92
5,122,472	07/418,129	06/16/92

VOL 1189 ISS 4 AUG 27 1996

Patent Number	Serial Number	Issue Date
5,122,484	07/704,864	06/16/92
5,122,498	07/565,182	06/16/92
5,122,504	07/486,042	06/16/92
5,122,505	07/591,036	06/16/92
5,122,510	07/605,564	06/16/92
5,122,511	07/485,920	06/16/92
5,122,515	07/525,450	06/16/92
5,122,519	07/371,948	06/16/92
5,122,520	07/659,788	06/16/92
5,122,529	07/588,644	06/16/92
5,122,531	07/586,154	06/16/92
5,122,543	07/453,103	06/16/92
5,122,547	07/628,298	06/16/92
5,122,552	07/449,006	06/16/92
5,122,560	07/449,007	06/16/92
5,122,569	07/670,370	06/16/92
5,122,571	07/406,428	06/16/92
5,122,581	07/506,581	06/16/92
5,122,587	07/392,301	06/16/92
5,122,588	07/480,663	06/16/92
5,122,592	07/402,164	06/16/92
5,122,593	07/313,700	06/16/92
5,122,597	07/182,191	06/16/92
5,122,610	07/467,719	06/16/92
5,122,619	07/723,787	06/16/92
5,122,622	07/654,795	06/16/92
5,122,627	07/664,633	06/16/92
5,122,628	07/529,180	06/16/92
5,122,629	07/571,758	06/16/92
5,122,632	07/598,537	06/16/92
5,122,639	07/594,660	06/16/92
5,122,652	07/581,552	06/16/92
5,122,653	07/564,741	06/16/92
5,122,666	07/581,829	06/16/92
5,122,673	07/591,437	06/16/92
5,122,676	07/620,681	06/16/92
5,122,678	07/420,878	06/16/92
5,122,689	07/577,472	06/16/92
5,122,691	07/616,580	06/16/92
5,122,730	07/730,139	06/16/92
5,122,732	07/656,904	06/16/92
5,122,733	07/628,328	06/16/92
5,122,736	07/628,702	06/16/92
5,122,741	07/587,303	06/16/92
5,122,745	07/386,506	06/16/92
5,122,753	07/631,111	06/16/92
5,122,762	07/630,890	06/16/92
5,122,766	07/453,843	06/16/92
5,122,771	07/653,388	06/16/92
5,122,773	07/415,287	06/16/92
5,122,782	07/647,612	06/16/92
5,122,786	07/544,757	06/16/92
5,122,787	07/465,864	06/16/92
5,122,793	07/479,677	06/16/92
5,122,797	07/666,994	06/16/92
5,122,800	07/381,065	06/16/92
5,122,810	07/397,383	06/16/92
5,122,868	07/599,554	06/16/92
5,122,877	07/576,329	06/16/92
5,122,889	07/455,259	06/16/92
5,122,898	07/696,500	06/16/92
5,122,909	07/720,717	06/16/92
5,122,911	07/567,723	06/16/92
5,122,917	07/531,832	06/16/92
5,122,918	07/573,728	06/16/92
5,122,920	07/236,110	06/16/92
5,122,928	07/715,981	06/16/92
5,122,935	07/755,876	06/16/92
5,122,942	07/787,231	06/16/92
5,122,944	07/541,799	06/16/92
5,122,950	07/430,449	06/16/92
5,122,958	07/552,087	06/16/92
5,122,965	07/481,565	06/16/92
5,122,983	07/464,103	06/16/92
5,122,994	07/610,167	06/16/92
5,123,006	07/330,814	06/16/92
5,123,011	07/414,496	06/16/92
5,123,035	07/565,334	06/16/92
5,123,043	07/357,028	06/16/92
5,123,044	07/462,756	06/16/92
5,123,046	07/609,291	06/16/92
5,123,047	07/649,210	06/16/92
5,123,070	07/579,594	06/16/92
5,123,075	07/556,450	06/16/92
5,123,080	07/462,569	06/16/92
5,123,083	07/720,876	06/16/92
5,123,089	07/368,190	06/16/92

Patents Reinstated Due To The Acceptance of a Late Maintenance Fee From 6/07/96

Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
4,603,142	06/616,478	06/01/84	07/29/86	06/12/96
4,664,114	06/764,788	08/12/85	05/12/87	06/11/96
4,694,589	06/939,746	12/09/86	09/22/87	06/14/96
4,874,549	07/186,186	04/26/88	10/17/89	06/12/96
4,907,604	07/185,848	04/25/88	03/13/90	06/11/96
4,918,471	07/325,360	03/17/89	04/17/90	06/10/96
4,929,351	07/357,685	05/26/89	05/29/90	06/11/96
5,020,872	07/460,761	01/04/90	06/04/91	06/12/96
5,042,337	07/396,341	08/21/89	08/27/91	06/14/96
5,060,242	07/314,749	02/24/89	10/22/91	06/14/96
5,062,419	07/637,907	01/07/91	11/05/91	06/12/96

Patents Reinstated Due To The Acceptance of a Late Maintenance Fee From 6/14/96

Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
Re. 32,723	07/011,333	02/04/87	08/02/88	06/19/96
4,357,324	06/237,617	02/24/81	11/02/82	06/20/96
4,402,388	06/261,186	05/19/81	09/06/83	06/17/96
4,461,891	06/471,395	03/02/83	07/24/84	06/17/96
4,522,518	06/511,741	07/07/83	06/11/85	06/17/96
4,571,232	06/595,649	04/02/84	02/18/86	06/20/96
4,585,482	06/614,231	05/25/84	04/29/86	06/17/96

Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
4,609,475	06/582,994	02/24/84	09/02/86	06/21/96
4,609,886	06/715,308	03/25/85	09/02/86	06/17/96
4,639,322	06/644,593	08/27/84	01/27/87	06/20/96
4,694,589	06/939,746	12/09/86	09/22/87	06/14/96
4,719,683	06/814,234	12/30/85	01/19/88	06/19/96
4,731,028	07/031,796	03/30/87	03/15/88	06/20/96
4,800,475	07/113,715	10/27/87	01/24/89	06/20/96
4,882,210	07/248,935	09/26/88	11/21/89	06/17/96
4,906,058	07/158,944	02/22/88	03/06/90	06/19/96
4,927,085	07/288,321	12/21/88	05/22/90	06/20/96
4,943,974	07/260,614	10/21/88	07/24/90	06/17/96
4,943,980	07/346,069	05/02/89	07/24/90	06/20/96
4,947,826	07/464,329	01/12/90	08/14/90	06/17/96
4,960,351	06/922,899	10/24/86	10/02/90	06/20/96
4,974,658	07/313,429	02/22/89	12/04/90	06/20/96
4,995,344	07/440,520	11/22/89	02/26/91	06/20/96
5,033,223	07/403,925	09/07/89	07/23/91	06/17/96
5,033,744	07/477,626	02/09/90	07/23/91	06/17/96
5,033,829	07/480,265	02/15/90	07/23/91	06/20/96
5,036,523	07/416,402	10/03/89	07/30/91	06/19/96
5,042,337	07/396,341	08/21/89	08/27/91	06/14/96
5,060,242	07/314,749	02/24/89	10/22/91	06/14/96
5,064,050	07/660,726	02/25/91	11/12/91	06/17/96
5,064,414	07/642,930	01/18/91	11/12/91	06/19/96
5,069,001	07/616,642	11/21/90	12/03/91	06/20/96
5,073,678	07/570,626	08/21/90	12/17/91	06/19/96
5,076,822	07/519,905	05/07/90	12/31/91	06/20/96
5,079,831	07/652,134	02/07/91	01/14/92	06/19/96
5,105,354	07/299,140	01/23/89	04/14/92	06/17/96

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

5,147,042, Re. S.N. 08/642,124, May 1, 1996, Cl. 206/456, HOLDER FOR MEDICAL SPECIMEN SLIDE, Abner Levy, Owner of Record: *Inventor,* Attorney or Agent: Natan Epstein, Ex. Gp.: 3208

5,185,667, Re. S.N. 08/662,410, July 12, 1996, Cl. 348/207, OMNIVIEW MOTIONLESS CAMERA ORIENTATION SYSTEM, Steven D. Zimmermann, et. al., Owner of Record: *Omniview Inc., Knox, Tenn.,* Attorney or Agent: Nina L. Medlock, Ex. Gp.: 2613

5,186,327, Re. S.N. 08/629,909, Apr. 9, 1996, Cl. 206/313, COMPACT DISC RETAINING SHEET, Daniel K. McCafferty, et. al., Owner of Record: *Inventors,* Attorney or Agent: Frank J. DeRosa, Ex. Gp.: 3208

5,306,165, Re. S.N. 08/637,529, Apr. 25, 1996, Cl. 439/115, ELECTRIC DISTRIBUTION SYSTEM, Jacques Nadeau, Owner of Record: *Inventor,* Attorney or Agent: Frank J. Kozak, Esq., Ex. Gp.: 3202

5,319,468, Re. S.N. 08/675,148, May 29, 1996, Cl. 358/426, IMAGE SIGNAL RECORDING AND REPRODUCING SYSTEM WITH USE OF BANDWIDTH COMPRESSION CODING, Masahiro Honjo, Owner of Record: *Matsushita Electric Industrial Co., Kadoma, Japan,* Attorney or Agent: Brian E. Ferguson, Ex. Gp.: 2612

5,378,800, Re. S.N. 08/636,216, Apr. 22, 1996, Cl. 528/349, TEREPHTHALIC ACID COPOLYAMIDES, Rolando Pagilagan, Owner of Record: *E.I. Du Pont De Nemours And Co., Wilmington, Del.,* Attorney or Agent: P. Michael Walker, Ex. Gp.: 1207

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

D. 366,378, Reexam. No. 90/004,297, July 3, 1996, Cl. D6/505, BED HEADBOARD, Carlo Bargagli-Stoffi, Owner of Record: *San Giacomo, Ltd., Union, N.J.,* Attorney or Agent: C. Robert Rhodes, Rhodes, Coats & Bennett, Greensboro, N.C., Ex. Gp.: 2903, Requester: Owner

4,988,494, Reexam. No. 90/004,298, July 9, 1996, Cl. 420/574.1, PROCESS FOR RECOVERING SULFUR FROM SULFUR-CONTAINING GASES, Jan A. Lagas, et. al., Owner of Record: *Veg-Gasinstituut, NV, Appeldoorn, The Netherlands; Comprimo BV Amsterdam, The Netherlands,* Attorney or Agent: Lyon & Lyon, Hope E. Melville, Los Angeles, Calif., Ex. Gp.: 1103, Requester: Owner

5,346,699, Reexam. No. 90/004,299, July 8, 1996, Cl. 424/40.5, METHOD FOR CONTROLLING PESTS BY A PESTICIDAL FOAM, Barbara H. Tiernan, et. al., Owner of Record: *Foam Innovations, Pleasanton, Calif.,* Attorney or Agent: Hubert E. Dubb, Fliesler Dubb Meyer & Lovejoy, San Francisco, Calif., Ex. Gp.: 1502, Requester: Richway Industries, Ltd., Janesville, Iowa; Kirk M. Hartung, Larley McKee Thomte Vorhees & Sease, Des Moines, Iowa

5,385,092, Reexam. No. 90/004,300, July 11, 1996, Cl. 101/467, LASER DRIVEN METHOD AND APPARATUS FOR LITHOGRAPHIC IMAGING, Thomas E. Lewis, et. al., Owner of Record: *Presstek, Inc., Hudson, N.H.,* Attorney or Agent: Cesari & McKenna, Boston, Mass., Ex. Gp.: 3307, Requester: Anonymous, c/o Joseph W. Berenato III, Bethesda, Md.

5,421,580, Reexam. No. 90/004,302, July 15, 1996, Cl. 473/354, THREAD WOUND GOLF BALLS, Kazushige Sugimoto,

UMI

et. al., Owner of Record: *Sumitomo Rubber Industries, Ltd., Kohe-Shi, Japan,* Attorney or Agent: Birch Stewart Kolasch & Birch, Falls Church, Calif., Ex. Gp.: 3304, Requester: J. Warren Lytle, Jr., Olney, Md.

5,437,880, Reexam. No. 90/004,303, July 16, 1996, Cl. 426/073, HEALTH DRINK COMPOSITION, Akihisa Takaichi, et. al., Owner of Record: *Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan,* Attorney or Agent: Waddell A. Biggart, Chugru, Mion, Zinn, MacPeak & Seas, Wash., D.C., Ex. Gp.: 1302, Requester: Cushman, Darby & Cushman, Washington, D.C.

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED APRIL 08, 1996 DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
105,053	71/074,850	07/06/1915
105,115	71/082,803	07/06/1915
313,612	71/344,849	06/05/1934
325,608	71/361,930	07/02/1935
325,659	71/362,510	07/02/1935
325,691	71/362,298	07/02/1935
325,716	71/360,160	07/02/1935
325,729	71/361,646	07/02/1935
325,737	71/361,444	07/02/1935
325,745	71/360,971	07/02/1935
325,760	71/361,932	07/02/1935
325,764	71/361,936	07/02/1935
325,776	71/358,278	07/02/1935
325,795	71/359,217	07/02/1935
325,796	71/359,216	07/02/1935
325,800	71/361,123	07/02/1935
325,803	71/361,069	07/02/1935
607,100	71/659,814	06/07/1955
608,162	71/672,006	07/05/1955
608,175	71/666,582	07/05/1955
608,180	71/672,217	07/05/1955
608,189	71/668,136	07/05/1955
608,200	71/652,970	07/05/1955
608,204	71/668,518	07/05/1955
608,206	71/671,586	07/05/1955
608,211	71/654,433	07/05/1955
608,212	71/654,434	07/05/1955
608,215	71/669,534	07/05/1955
608,229	71/666,187	07/05/1955
608,230	71/668,322	07/05/1955
608,238	71/676,444	07/05/1955
608,250	71/671,285	07/05/1955
608,255	71/641,468	07/05/1955
608,256	71/642,617	07/05/1955
608,264	71/666,691	07/05/1955
608,265	71/666,692	07/05/1955
608,268	71/670,077	07/05/1955
608,272	71/670,499	07/05/1955
608,281	71/637,960	07/05/1955
608,296	71/669,826	07/05/1955
608,302	71/672,061	07/05/1955
608,319	71/671,443	07/05/1955
608,333	71/676,372	07/05/1955
608,340	71/673,024	07/05/1955
608,342	71/674,247	07/05/1955
608,343	71/674,377	07/05/1955
608,350	71/674,604	07/05/1955
608,351	71/674,906	07/05/1955
608,379	71/672,870	07/05/1955
608,385	71/669,851	07/05/1955
608,392	71/670,314	07/05/1955
608,395	71/668,314	07/05/1955
608,400	71/577,984	07/05/1955
608,401	71/589,958	07/05/1955
608,403	71/622,116	07/05/1955
608,405	71/642,747	07/05/1955
608,407	71/649,123	07/05/1955
608,410	71/655,802	07/05/1955
608,460	71/664,870	07/05/1955
608,461	71/669,905	07/05/1955
608,465	71/648,949	07/05/1955
608,467	71/654,300	07/05/1955
608,470	71/664,695	07/05/1955
608,473	71/668,847	07/05/1955
608,477	71/671,838	07/05/1955
608,487	71/665,546	07/05/1955
608,502	71/624,695	07/05/1955
608,507	71/667,098	07/05/1955
936,644	72/389,685	06/27/1972
972,378	72/440,981	11/06/1973
974,067	72/425,618	11/27/1973
980,976	72/414,528	03/26/1974
985,667	72/452,689	06/04/1974
986,563	72/465,263	06/18/1974
992,491	72/461,099	09/03/1974
993,137	72/462,381	09/10/1974
994,221	72/459,077	09/24/1974
998,285	72/460,936	11/12/1974
1,008,501	73/005,558	04/08/1975
1,014,480	73/011,869	07/01/1975
1,014,490	73/036,560	07/01/1975
1,014,493	73/037,512	07/01/1975
1,014,497	73/003,992	07/01/1975
1,014,505	73/034,232	07/01/1975
1,014,508	73/015,498	07/01/1975
1,014,509	73/016,975	07/01/1975
1,014,510	73/017,417	07/01/1975
1,014,517	73/021,936	07/01/1975
1,014,519	73/022,485	07/01/1975
1,014,526	73/022,858	07/01/1975
1,014,527	73/022,859	07/01/1975
1,014,528	73/023,019	07/01/1975
1,014,529	73/024,299	07/01/1975
1,014,533	73/031,603	07/01/1975
1,014,534	73/035,286	07/01/1975
1,014,535	73/038,054	07/01/1975
1,014,537	73/038,057	07/01/1975
1,014,538	73/038,691	07/01/1975
1,014,544	73/017,068	07/01/1975
1,014,545	73/022,334	07/01/1975
1,014,549	73/026,868	07/01/1975
1,014,550	73/027,453	07/01/1975
1,014,554	73/029,728	07/01/1975
1,014,555	73/029,756	07/01/1975
1,014,558	73/031,738	07/01/1975
1,014,560	73/009,300	07/01/1975
1,014,568	73/003,728	07/01/1975
1,014,569	73/006,751	07/01/1975
1,014,570	73/006,800	07/01/1975
1,014,571	73/010,457	07/01/1975
1,014,572	73/014,178	07/01/1975
1,014,575	73/019,603	07/01/1975
1,014,576	73/019,807	07/01/1975
1,014,577	73/020,002	07/01/1975
1,014,579	73/023,690	07/01/1975
1,014,585	73/022,151	07/01/1975
1,014,587	73/032,209	07/01/1975
1,014,588	73/032,745	07/01/1975
1,014,594	73/013,078	07/01/1975
1,014,596	73/016,658	07/01/1975
1,014,598	73/018,798	07/01/1975
1,014,601	73/020,262	07/01/1975

Reg. Number	Serial Number	Reg. Date
1,014,602	73/021,843	07/01/1975
1,014,603	73/021,967	07/01/1975
1,014,607	73/026,018	07/01/1975
1,014,608	73/026,340	07/01/1975
1,014,611	73/031,327	07/01/1975
1,014,612	73/007,538	07/01/1975
1,014,617	73/034,461	07/01/1975
1,014,619	73/001,876	07/01/1975
1,014,621	73/016,480	07/01/1975
1,014,624	73/026,050	07/01/1975
1,014,625	73/027,944	07/01/1975
1,014,626	73/027,945	07/01/1975
1,014,627	73/027,946	07/01/1975
1,014,628	73/027,947	07/01/1975
1,014,629	73/027,952	07/01/1975
1,014,630	73/028,195	07/01/1975
1,014,631	73/028,198	07/01/1975
1,014,632	73/028,199	07/01/1975
1,014,633	73/028,205	07/01/1975
1,014,634	73/028,206	07/01/1975
1,014,635	73/028,207	07/01/1975
1,014,636	73/028,451	07/01/1975
1,014,637	73/028,811	07/01/1975
1,014,638	73/028,976	07/01/1975
1,014,642	73/011,247	07/01/1975
1,014,643	73/019,872	07/01/1975
1,014,648	73/032,565	07/01/1975
1,014,649	73/033,008	07/01/1975
1,014,650	73/033,819	07/01/1975
1,014,651	73/034,442	07/01/1975
1,014,654	73/037,174	07/01/1975
1,014,656	73/027,069	07/01/1975
1,014,657	73/001,275	07/01/1975
1,014,659	73/023,593	07/01/1975
1,014,661	73/000,713	07/01/1975
1,014,663	73/001,005	07/01/1975
1,014,664	73/001,877	07/01/1975
1,014,668	73/007,269	07/01/1975
1,014,676	73/016,648	07/01/1975
1,014,678	73/017,171	07/01/1975
1,014,684	73/028,786	07/01/1975
1,014,686	73/022,071	07/01/1975
1,014,688	73/030,829	07/01/1975
1,014,695	73/029,567	07/01/1975
1,014,699	73/015,453	07/01/1975
1,014,705	73/008,942	07/01/1975
1,014,709	73/023,814	07/01/1975
1,014,711	73/033,233	07/01/1975
1,014,716	73/031,982	07/01/1975
1,014,718	73/010,596	07/01/1975
1,014,720	73/028,066	07/01/1975
1,014,721	73/032,356	07/01/1975
1,014,722	73/034,152	07/01/1975
1,014,723	73/038,681	07/01/1975
1,014,724	73/000,250	07/01/1975
1,014,725	73/000,879	07/01/1975
1,014,726	73/003,656	07/01/1975
1,014,732	73/018,518	07/01/1975
1,014,735	73/021,614	07/01/1975
1,014,741	73/025,257	07/01/1975
1,014,743	73/026,660	07/01/1975
1,014,745	73/027,425	07/01/1975
1,014,749	73/029,599	07/01/1975
1,014,750	73/029,748	07/01/1975
1,014,753	73/032,298	07/01/1975
1,014,754	73/032,300	07/01/1975
1,014,755	73/035,215	07/01/1975
1,014,756	73/035,259	07/01/1975
1,014,764	73/025,429	07/01/1975
1,014,766	73/009,566	07/01/1975
1,014,767	73/009,992	07/01/1975
1,014,769	73/011,821	07/01/1975
1,014,773	73/015,829	07/01/1975
1,014,774	73/017,092	07/01/1975
1,014,775	73/017,668	07/01/1975
1,014,776	73/021,892	07/01/1975
1,014,778	73/026,766	07/01/1975
1,014,779	73/026,976	07/01/1975
1,014,780	73/027,868	07/01/1975
1,014,784	73/028,337	07/01/1975
1,014,787	73/004,778	07/01/1975
1,014,790	73/030,536	07/01/1975
1,014,792	73/002,340	07/01/1975
1,014,796	73/021,878	07/01/1975
1,014,798	73/026,312	07/01/1975
1,014,804	73/010,811	07/01/1975
1,014,805	73/021,153	07/01/1975
1,014,807	73/013,401	07/01/1975
1,014,808	73/032,934	07/01/1975
1,014,811	73/011,697	07/01/1975
1,014,813	73/021,174	07/01/1975
1,014,814	73/021,795	07/01/1975
1,014,816	73/007,784	07/01/1975
1,014,821	73/029,917	07/01/1975
1,014,824	73/002,328	07/01/1975
1,014,830	73/009,158	07/01/1975
1,014,836	73/014,830	07/01/1975
1,014,837	73/015,685	07/01/1975
1,014,838	73/015,686	07/01/1975
1,014,839	73/015,687	07/01/1975
1,014,850	73/005,890	07/01/1975
1,014,852	73/008,209	07/01/1975
1,014,855	73/022,847	07/01/1975
1,014,858	73/032,712	07/01/1975
1,014,859	73/008,739	07/01/1975
1,014,862	73/017,682	07/01/1975
1,014,865	73/018,751	07/01/1975
1,014,867	73/036,073	07/01/1975
1,014,871	73/006,015	07/01/1975
1,014,872	73/007,934	07/01/1975
1,014,875	73/012,619	07/01/1975
1,014,884	73/002,759	07/01/1975
1,014,887	73/011,076	07/01/1975
1,014,898	73/029,761	07/01/1975
1,014,900	73/032,688	07/01/1975
1,014,901	73/033,024	07/01/1975
1,014,903	72/467,115	07/01/1975
1,014,906	72/448,760	07/01/1975
1,014,908	72/449,326	07/01/1975
1,014,911	72/425,979	07/01/1975
1,014,913	72/433,506	07/01/1975
1,014,916	72/435,760	07/01/1975
1,014,922	72/435,203	07/01/1975
1,014,923	72/443,155	07/01/1975
1,014,933	72/395,584	07/01/1975
1,014,939	72/439,306	07/01/1975
1,014,940	72/443,600	07/01/1975
1,014,941	72/447,762	07/01/1975
1,014,945	72/453,263	07/01/1975
1,014,950	72/443,619	07/01/1975
1,014,951	72/449,702	07/01/1975
1,014,952	72/455,880	07/01/1975
1,014,954	72/438,333	07/01/1975
1,014,955	72/420,217	07/01/1975
1,014,962	72/452,657	07/01/1975
1,014,963	72/462,749	07/01/1975
1,014,965	72/436,105	07/01/1975
1,014,967	72/466,115	07/01/1975
1,014,968	72/423,258	07/01/1975
1,014,983	72/446,188	07/01/1975
1,014,987	72/456,236	07/01/1975
1,014,991	73/018,341	07/01/1975
1,014,992	73/020,471	07/01/1975
1,014,999	73/026,285	07/01/1975
1,015,003	73/005,033	07/01/1975
1,015,004	73/017,572	07/01/1975

Service by Publication

A petition to cancel the registrations identified below having been filed, and the notice of such proceeding sent by certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal

VOL 1189 ISS 4 AUG 27 1996 UMI

representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

OWP Inc., Nashua, N.H., Reg. No. 1,689,920 for the mark "GREAT AMERICAN SOFTWARE, INC.", Canc. No. 25,108.

Susan & Michelle Watson, Sonoma, Calif., Reg. No. 1,615,090, for the mark "SUSAN'S SECRET SAUCE", Canc. No. 24,704.

George Willsher & Co., Ltd., Dundee, Ireland, Reg. No. 1,071,580 for the mark "RED BULL", Canc. No. 24,800.

Testmaster Incorporated, Costa Mesa, Calif., Reg. No. 1,071,788 for the mark "TEST MASTER", Canc. No. 24,808.

Phillippe Monet Ltd., New York, N.Y., Reg. No. 1,729,444, for the mark "PHILIPPE MONET (Stylized)", Canc. No. 24,622.

JEAN BROWN
Technical Support Manager,
Trademark Trial
and Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner
for Trademarks

Registration To Practice

The following list contains the names of persons who successfully passed the registration examination that was held May 3, 1995 and have been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office until their registration certificates are mailed to them. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before October 11, 1996.

Cubert, Jeremy Adam, 13702 Lambertina Ln., Rockville, Md. 20850

Ellis, Edward J., 288 Wethersfield St., Rowley, Mass. 01969

Englund, Lanny Milton, 1472 Ashover Dr., Bloomfield Hills, Mich. 48304

Harrison, James A., 1504 Woodoak, Richardson, Tex. 75082

Hooper, Kevin C., 242 W. Hanover Ave., Morris Township, N.J. 07960

Pace, Gary M., 306 Oregon Circle, Cary, N.C. 27511

Powell, Mary Howard, 20185 Lichfield, Detroit, Mich. 48221-1329

Roth, Carl A., 109 W. Lee St., Baltimore, Md. 21201-2420

Russell, Valerie Lynn, 4159 El Camino Way, #N, Palo Alto, Calif. 94306

July 23, 1996

KAREN L. BOVARD
Office of Enrollment and Discipline

Trademark Search Tools Now Available on CD-ROM

A variety of trademark search tools and references are now available for purchase from the U.S. Patent and Trademark Office on the *Trademarks ASSIST* CD-ROM. This new product offers the following text searchable applications:

- Trademark Manual of Examining Procedure
- Goods and Services Manual
- Trademark Trial and Appeal Board Manual of Procedure
- Trademark Statute and Rules (Trademark Law of 1946, as amended)
- Trademark Examination Guide and Notes
- Trademark Telephone Index
- Information Dissemination Organizations Products & Services Catalog

This product is available on a single-disc basis for $50. Updated editions will issue on an irregular basis when significant changes occur to the applications included.

For further information or to request an order form, please contact:

U.S. Patent and Trademark Office
Office of Electronic Information Products
Crystal Park 3, Suite 441
Washington, D.C. 20231

Phone: (703) 306-2600
Fax: (703) 306-2737

Certificate of Correction For Week of August 27, 1996

B1 5,014,066	5,347,199	5,455,904	5,485,020
Re. 35,126	5,348,421	5,456,667	5,485,325
Re. 35,210	5,352,771	5,458,883	5,486,085
D. 352,526	5,353,908	5,462,409	5,486,456
D. 363,124	5,364,764	5,462,717	5,486,520
D. 366,630	5,366,793	5,463,359	5,487,516
D. 369,567	5,377,734	5,463,425	5,487,875
D. 370,188	5,378,884	5,463,738	5,488,476
D. 370,189	5,379,241	5,464,279	5,488,918
D. 370,956	5,383,946	5,464,895	5,489,995
D. 371,094	5,390,781	5,465,088	5,489,578
4,793,147	5,398,114	5,465,250	5,490,132
4,843,136	5,399,284	5,465,753	5,490,709
4,916,113	5,399,366	5,469,203	5,490,919
4,950,532	5,399,954	5,470,154	5,491,026
5,102,117	5,401,626	5,470,706	5,491,138
5,108,467	5,405,966	5,470,918	5,491,181
5,134,058	5,406,139	5,471,861	5,491,244
5,141,802	5,406,153	5,472,100	5,491,305
5,161,896	5,406,217	5,472,266	5,491,311
5,169,414	5,413,864	5,472,643	5,491,375
5,175,770	5,417,782	5,473,114	5,492,830
5,176,261	5,418,867	5,473,247	5,492,950
5,195,057	5,419,957	5,473,344	5,493,071
5,196,334	5,419,979	5,475,004	5,493,668
5,196,406	5,422,671	5,475,606	5,493,727
5,202,190	5,425,718	5,475,824	5,494,070
5,202,982	5,427,937	5,476,494	5,494,452
5,211,832	5,428,146	5,476,631	5,494,504
5,222,217	5,428,621	5,476,723	5,495,771
5,230,374	5,430,204	5,476,845	5,496,146
5,248,782	5,430,500	5,476,945	5,496,167
5,260,492	5,430,741	5,477,531	5,496,364
5,272,605	5,432,534	5,477,867	5,496,371
5,273,825	5,437,282	5,478,223	5,496,507
5,282,106	5,438,443	5,478,416	5,496,800
5,287,914	5,440,583	5,478,503	5,496,926
5,298,532	5,441,156	5,478,804	5,497,138
5,303,939	5,441,506	5,480,494	5,497,609
5,308,041	5,444,523	5,480,679	5,497,757
5,321,188	5,445,506	5,482,803	5,497,966
5,324,811	5,446,638	5,482,893	5,498,296
5,326,161	5,448,695	5,483,327	5,498,402
5,330,471	5,451,897	5,483,558	5,498,494
5,340,490	5,453,158	5,484,508	5,498,595
5,346,699	5,453,995	5,484,557	5,498,685

5,499,043	5,502,092	5,505,690	5,508,586	5,511,196	5,514,430	5,519,888	5,522,815
5,499,350	5,502,172	5,505,724	5,508,629	5,511,333	5,514,487	5,519,890	5,523,078
5,499,534	5,502,174	5,505,925	5,508,721	5,512,460	5,514,498	5,519,957	5,523,617
5,500,085	5,502,463	5,505,998	5,508,731	5,512,677	5,514,842	5,520,014	5,523,721
5,500,676	5,502,548	5,506,223	5,508,782	5,512,824	5,515,122	5,520,048	5,524,057
5,500,919	5,502,612	5,506,392	5,508,863	5,512,927	5,515,721	5,520,176	5,524,321
5,500,968	5,503,293	5,506,669	5,508,874	5,513,138	5,516,159	5,520,305	5,524,384
5,501,163	5,503,331	5,506,923	5,508,887	5,513,232	5,516,496	5,520,436	5,524,534
5,501,184	5,503,382	5,507,042	5,509,040	5,513,611	5,516,515	5,521,106	5,524,562
5,501,394	5,503,549	5,507,567	5,509,189	5,513,856	5,516,651	5,521,432	5,524,925
5,501,405	5,503,654	5,507,720	5,509,397	5,513,945	5,517,826	5,521,547	5,525,022
5,501,533	5,504,002	5,507,884	5,509,975	5,514,009	5,517,916	5,521,604	5,525,123
5,501,578	5,504,558	5,508,083	5,510,432	5,514,031	5,518,451	5,521,671	5,525,561
5,501,684	5,504,672	5,508,204	5,510,438	5,514,063	5,518,578	5,521,839	5,526,200
5,501,710	5,505,283	5,508,299	5,510,795	5,514,079	5,518,672	5,521,858	5,526,236
5,501,832	5,505,616	5,508,363	5,510,825	5,514,273	5,518,842	5,522,585	5,526,376
5,501,913	5,505,674	5,508,550	5,511,165	5,514,413	5,519,321	5,522,768	5,526,615

VOL
1189
ISS
4
AG
27
1996
UMI

UNITED STATES POSTAL SERVICE NON-DELIVERY OF MAIL

This notice is to advise the public of a mail disruption which occurred for correspondence mailed in late July 1996, directed to the Patent and Trademark Office (PTO) Zip Code 20231. As a result of a United States Postal Service (USPS) error, some mail directed to Zip Code 20231 was returned to the sender as "undeliverable." The USPS has now corrected the problem and mail directed to Zip Code 20231 is presently being delivered as usual. This disruption did not affect mail addressed to the Assistant Commissioner for Trademarks, 2900 Crystal Drive, Arlington, VA 22202-3513.

The PTO has been advised by the USPS that any mail returned as a result of this particular USPS error will be accepted by the USPS if resubmitted at a service window in the same envelope. No additional postage will be required. It is suggested that the USPS employee at the service window be consulted about crossing out any "undeliverable" notation on the envelope. Any problems associated with the resubmission should be immediately called to the attention of the USPS, particularly, Ms. Cynthia McMullen at (202) 636-1278/1279 or by way of the Internet at cmcmull2@email.usps.gov.

1. Papers Filed Pursuant To 37 CFR 1.8

Any correspondence mailed by first class mail with a certificate of mailing thereon in compliance with 37 CFR 1.8 which was returned to the sender as a result of this particular USPS error and which is either resubmitted to the USPS for delivery or delivered to the PTO by private courier will be stamped by the PTO with the actual date of receipt in the PTO. The correspondence will, however, be accorded the benefit of any certificate of mailing under 37 CFR 1.8.

2. Papers Filed Pursuant To 37 CFR 1.10

Any correspondence mailed by "Express Mail" with the "Express Mail" label number placed thereon in accordance with 37 CFR 1.10 which was returned to the sender as a result of this particular USPS error and which is either resubmitted to the USPS for delivery or delivered to the PTO by private courier will be stamped with the original date of deposit as "Express Mail" with the USPS or the next business day, if the date of deposit is a Saturday, Sunday, or Federal holiday within the District of Columbia. 37 CFR 1.6(a)(2). The correspondence must be received by the PTO in the original "Express Mail" envelope or be accompanied by either the original "Express Mail" label or a legible copy thereof.

3. Paper Not Filed Pursuant To 37 CFR 1.8 or 1.10

Section 21(a) of title 35, United States Code, provides that "[t]he Commissioner may by rule prescribe that any paper or fee required to be filed in the Patent and Trademark Office will be considered filed in the Office on the date on which it was deposited with the United States Postal Service . . . ."

Therefore, in order to minimize the impact of this particular USPS error, any correspondence deposited with the USPS which was returned as a result of the error and which was originally mailed by first class mail without a certificate of mailing under 37 CFR 1.8 or by "Express Mail" without the "Express Mail" label number placed on the correspondence will be stamped by the PTO with the original postmark date, rather than the date of receipt in the PTO, or the next business day, if the original postmark date is a Saturday, Sunday, or Federal holiday within the District of Columbia.

In order to take advantage of this temporary practice, any patent or trademark correspondence affected by this disruption must be promptly resubmitted to the PTO in a new envelope addressed to the

Assistant Commissioner for Patents
Box Postal Disruption
Washington, DC 20231

Such correspondence must be accompanied by the original mailing envelope or a copy thereof showing the original postmark date and by a certificate demonstrating the original mailing date. Applicant should retain a copy of the original mailing envelope in his or her file in case a question is later raised concerning the original date of mailing.

A suggested certificate is as follows:

The undersigned certifies that the attached correspondence was deposited as first class mail/"Express Mail" with the U.S. Postal Service with sufficient postage addressed to the PTO at Washington, DC 20231 on _____ and was returned as a result of a Postal Service error.

Accordingly, it is requested that the filing date of _____ be accorded the correspondence.

_____
(Printed Name)

_____
(Signed)

_____
(Date)

Papers which were returned to the sender and forwarded to the PTO prior to this notice or papers promptly returned to the PTO in the original envelope after this notice will be given the postmark date to the extent possible.

Any review of these matters would be by way of petition (no petition fee required) providing whatever arguments and evidence petitioner has that the application/correspondence is entitled to a different filing date.

Questions concerning this notice should be directed to John F. Gonzales, Senior Legal Advisor, (703) 305-9285.

Bruce A. Lehman
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

August 9, 1996

VOL 1189 ISS 4 AG 27 1996 UMI

Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

June 10—14, 1996

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
6-10	EX	74/427,086	BonaKemi AB	2(d)	Refusal Affirmed		"PACIFIC STRONG" [wood floor finishes for professional use in the nature of a coating]	"PACIFIC" [protective and decorative coatings, namely, stains]	No
6-10	EX	74/054,207	Professional Training Institute, Inc.	2(e)(4); 2(d)	Refusal Affirmed [on both grounds—although the refusal under Sec. 2(d) was affirmed only on the basis of the two cited registrations in which "educational services" appear in the recitation of goods and/or services]		"WRIGHT BUSINESS SCHOOL" [educational services, namely, conducting classes, workshops, seminars, and conferences in the field of business]	"WRIGHT STATE" [educational services, namely, providing university level courses of instruction to others; entertainment services]; "WRIGHT STATE" [clothing and various promotional items]; "WRIGHT STATE" (and Viking design) and "WRIGHT STATE RAIDERS" (and Viking design) [both marks for conducting and sponsoring collegiate athletic competitions and activities]; "WRIGHT STATE UNIVERSITY 1967—ADDOCENDUM, INVESTIGANDUM, SERVIENDUM" (and design) [educational services, namely, providing university level courses of instruction to others]	No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
6-11	EX	74/389,110	Vertigo Development Group, Inc.	2(e)(1)	Refusal Affirmed		"ACTIVE-INFORMATION" [computer software for use in data and information presentation and management, and for delivering expert advice to the user from collections of associated data]		No
6-13	EX	74/306,662	Wilcher Corp.	2(a) [scandalous]	Refusal Affirmed		"DICK HEADS'" (and design) [restaurant and bar services]		Yes
6-14	EX	74/412,623	Northern Manufacturing Co., Inc.	2(d)	Refusal Reversed		"VERSAGAGE" [linear measuring devices]	"VERSA GAUGE" (and design) [pressure and temperature gauges and parts therefor]	No
6-14	EX	74/395,164	Ohio Blenders Inc.	2(d)	Refusal Affirmed		"ALFA-CHUNKS" [animal feed, namely, dehydrated alfalfa	"ALFA-BITS" [alfalfa hay diet supplement for animals]	No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION

VOL
1189
ISS
4
AG
27
1996
UMI

SPECIAL BOXES FOR PATENT MAIL

Special box designations should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special boxes. If any documents other than the specified type identified for each special box are addressed to that box, they will be significantly delayed in reaching the appropriate area for which they are intended.

Please address mail as follows:

Box _____
Assistant Commissioner for Patents
Washington, D.C. 20231

Box Designations	Explanation
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 12	Contributions to the Examiner Education Program.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or materials related to the Disclosure Document Program.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	All communications following the receipt of a PTOL–85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box Missing Parts	Response to the Notice to File Missing Parts of Application and associated papers and fees.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent applications and associated papers and fees.
Box Patent Ext.	Applications for patent term extension and any communications relating thereto.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filing of all provisional patent applications and any communications relating thereto.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

SPECIAL BOXES FOR TRADEMARK MAIL

Special box designations should be used to allow forwarding of particular types of trademark mail to the appropriate areas as quickly as possible. In addition to these box designations, filers are encouraged to indicate whether the contents of the envelope contain a fee. Envelopes containing a fee should be marked "FEE;" envelopes not containing a fee should be marked "NO FEE." Box designations and "FEE/NO FEE" indicators should appear on the envelope as well as on the cover sheet or first page of any document.

Please address mail as follows:

Box _____
FEE (or NO FEE)
Assistant Commissioner for Trademarks
2900 Crystal Drive
Arlington, Virginia 22202-3513

Box Designations	Explanation
Box NEW APP FEE	New trademark applications and fees.
Box ITU FEE	Statements of Use (SOUs) and extension requests.
Box TTAB FEE	Oppositions, cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions, and extension requests.
Box STATUS NO FEE	Written status inquiries.
Box POST REG FEE	Affidavits, renewals, corrections and amendments.
Box RESPONSES NO FEE	Responses to Examining Attorneys' Office actions and Post Registration actions.

SPECIAL BOXES APPLICABLE TO *BOTH* PATENT AND TRADEMARK MAIL

The following special box designations are applicable to both patent and trademark related mail, and the recommendations for "Special Boxes for Patent Mail" (above) should be followed for the types of mail listed below.

Please address mail as follows:

Box _____
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Box Designations	Explanation
Box 3	Mail for the Office of Personnel from NFC.
Box 4	Mail for the Deputy Assistant Secretary of Commerce and Deputy Commissioner of Patents and Trademarks; Office of Legislative and International Affairs.
Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation and disciplinary proceedings*; papers relating to pending litigation in court cases shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box M Fee	Correspondence regarding patent maintenance fees and related matter.
Box OED	Mail for the Office of Enrollment and Discipline.

VOL
1189
ISS
4
AUG
27
1996
UMI

Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries

The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information in various formats from the U.S. Patent and Trademark Office. Many PTDLs have on file all full-text patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PTDLs have both the patent and trademark sections of the *Official Gazette of the U.S. Patent and Trademark Office*. The full-text utility and design patents are distributed numerically on 16 mm microfilm, and plant patents on color microfiche. Patent and trademark search systems on CD-ROM (Compact Disc-Read Only) format are available at all PTDLs to increase utilization of and enhance access to the information found in patents and trademarks. It is through the CD-ROM systems that preliminary patent and trademark searches can be conducted through the numerically arranged collections.

All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 844-1747
	Birmingham Public Library	(205) 226-3620
Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4488
	Sunnyvale Center for Innovation, Invention and Ideas	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6249
Connecticut	New Haven: Science Park Library	(203) 786-5447
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(317) 494-2872
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
Kansas	Wichita: Ablah Library, Wichita State University	(316) 689-3155
Kentucky	Louisville Free Public Library	(502) 574-1611
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maine	Orono: Raymond H. Fogler Library, University of Maine	(207) 581-1678
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Media Union Library, University of Michigan	(313) 647-5735
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit: Great Lakes Patent and Trademark Center	(313) 833-3379
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada, Reno Library	(702) 784-6579
New Hampshire	Concord: New Hampshire State Library	Not Yet Operational
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
New York	Albany: New York State Library	(518) 474-5355
	Buffalo and Erie County Public Library	(716) 858-7101

Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries—(continued)

State	*Name of Library*	*Telephone Contact*
	New York Public Library (The Research Libraries)	(212) 592-7000
North Carolina	Raleigh: D.H. Hill Library, North Carolina State University	(919) 515-3280
North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Akron - Summit County Public Library	Not Yet Operational
	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Portland: Paul L. Boley Law Library, Lewis & Clark College	(503) 768-6786
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Puerto Rico	Mayaquez General Library, University of Puerto Rico	Not Yet Operational
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Clemson University Libraries	(803) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	(605) 394-6822
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
	Lubbock: Texas Tech University	Not Yet Operational
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3051
Wyoming	Casper: Natrona County Public Library	(307) 237-4935

VOL 1189 ISS 4 AG 27 1996 UMI

PATENT EXAMINING CORPS

BRUCE A. LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
EDWARD R. KAZENSKE, Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—JOHN E. KITTLE, Director	308-0661	10/13/94
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200—RICHARD V. FISHER, Director	308-1235	07/19/94
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—BARRY S. RICHMAN, Director	308-0651	09/16/94
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	01/05/95
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	07/22/94
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	08/30/94
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	01/03/95
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—BOBBY R. GRAY, Director	305-9600	10/14/93
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3800	08/01/94
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	01/06/95
TELECOMMUNICATIONS, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	11/29/94
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	01/02/95
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	06/01/94
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—CARLTON R. CROYLE, Director	308-1148	09/22/94
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	05/08/95
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	04/06/95
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	10/11/94

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Philip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of July 1, 1996

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 101—Ron Williams, Managing Attorney, (703) 308–9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/30/95	03/15/96
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308–9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/19/95	01/06/96
Law Office 103—Kathryn Erskine, Managing Attorney, (703) 308–9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/26/95	05/28/96
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/05/96	04/13/96
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/26/96	04/03/96
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/03/96	03/07/96
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/16/96	03/21/96
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/13/96	03/22/96
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308–9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/28/96	04/12/96
**Collective Marks—Class 200 **Certification Marks—Classes A & B		
Office of Trademark Services—Vacant (703) 308-9100 Trademark Assistance Center—(703) 308-9000 Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188 Intent-To-Use—(ITU)—(703) 308-9500 Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126		
Affidavits Under Sections 8 & 15 (All Classes)	01/15/96	—0—
Renewals (All Classes)	04/15/96	—0—
Section 12(c) Publications (All Classes)	01/25/96	—0—

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

VOL
1189
155
4
AG
27
1996
UMI

REEXAMINATIONS

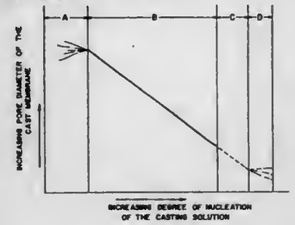
AUGUST 27, 1996

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,340,479 (2976th)
PROCESS FOR PREPARING HYDROPHILIC POLYAMIDE MEMBRANE FILTER MEDIA AND PRODUCT

David B. Pall, Roslyn Estates, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.

Reexamination Request No. 90/004,007, Oct. 20, 1995.
Reexamination Certificate for Patent 4,340,479, issued Jul. 20, 1982, Ser. No. 198,569, Oct. 20, 1980.
Continuation of Ser. No. 905,698, May 15, 1978, abandoned.
Int. Cl.[6] B01D *71/56*
U.S. Cl. 210—490



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–162** is confirmed.

34. A hydrophilic skinless alcohol-insoluble polyamide resin membrane sheet of alcohol-insoluble hydrophobic polyamide resin selected from the group consisting of polyhexamethylene adipamide, polyhexamethylene sebacate, and poly-ε-caprolactam, and capable when completely immersed in water of being wetted through within no more than one second, and reverting when heated to a temperature just below the softening temperature of the membrane to a hydrophobic material which is no longer wetted by water.

1. Apparatus for aerating waste water in a basin, said apparatus comprising:

a main supply pipe for receiving the air under pressure;

a plurality of branch pipes each communicating with said main supply pipe to receive air therefrom, each branch pipe extending generally along the bottom of the basin and each branch pipe being a plastic pipe subject to longitudinal expansion and contraction in response to temperature changes in the waste water;

a plurality of eaerators for each branch pipe, each aerator and being adapted to release a plurality of fine air bubbles when air is supplied to the aerator and each aerator being provided with ballast to hold the aerator down on the bottom of the basin;

a flexible conduit connecting each aerator with the corresponding branch line to provide communication between the branch lines and the corresponding aerators, thereby applying air to the aerators for release of air bubbles therefrom to effect aeration of the waste water, wherein each flexible conduit has a length at least as great as the distance between the corresponding branch pipe and the surface of the waste water to permit each aerator to be raised to the surface of the waste water while the corresponding branch pipe remains on the bottom of the basin and connected to the flexible conduit;

a flexible line for each aerator connected therewith at one end and having an opposite end disposed at the surface of the waste water;

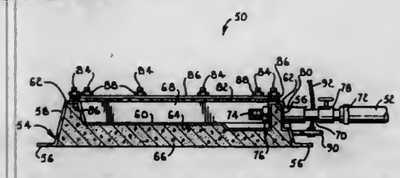
a float for each lien connected with said opposite end thereof, said floats floating on the surface of the waste water to maintain said lines accessible from the surface for lifting of the aerators to the surface of the waste water; and

at least one hold down bracket for each branch pipe provided with ballast to hold the bracket down on the bottom of the basin, said bracket having means for holding down the branch pipe while permitting the branch pipe to longitudinally expand and contract, whereby said brackets accommodate thermally induced expansion and contraction of the branch pipes and said flexible conduits allow the aerators to remain stationary as the branch pipes expand and contract.

B1 4,563,277 (2977th)
APPARATUS FOR AERATING AND MIXING WASTE WATER

Charles E. Tharp, Boone County, Mo., assignor to Environmental Dynamics, Inc., Columbia, Mo.

Reexamination Request No. 90/004,087, Dec. 26, 1995.
Reexamination Certificate for Patent 4,563,277, issued Jan. 7, 1986, Ser. No. 675,992, Nov. 28, 1994.
Continuation-in-part of Ser. No. 434,848, Oct. 18, 1982, abandoned.
Int. Cl.[6] C02F *3/02*
U.S. Cl. 210—220



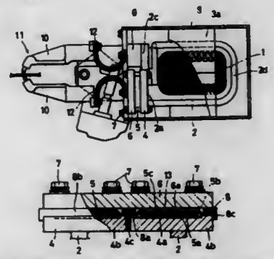
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1–7 is confirmed.

B1 4,571,669 (2978th)
TRANSFORMER WITH RECTIFIER

Gen Tsujii, and Takashi Yanagisawa, both of Saitama, Japan, assignors to Honda Giken Kogyok Kabushiki Kaisha, Tokyo, Japan

Reexamination Request No. 90/004,105, Dec. 29, 1995.
Reexamination Certificate for Patent 4,571,669, issued Feb. 18, 1986, Ser. No. 590,383, Mar. 16, 1984.
Claims priority, application Japan, Sep. 13, 1983, 58-140867
Int. Cl.[6] H02M *7/06; 1/00*
U.S. Cl. 363—144



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim 2 is cancelled.

Claims 1 and 3 are determined to be patentable as amended.

Claims 4–12, dependent on an amended claim, are determined to be patentable.

1. A transformer and rectifier in combination, said combination comprising:

a transformer main body;

a primary coil mounted on said main body;

a secondary coil mounted on said main body and being operatively connected with said primary coil;

a secondary electrode plate having front and rear surfaces and being connected on its rear surface to said secondary coil and disposed at a front surface of said main body;

wherein said secondary electrode plate comprises two half portions, each of which is connected to a separate end of said secondary coil, said two half portions being juxtaposed one with another in front of said transformer main body such that said half portions are in parallel with the turning axis of said secondary coil;

a terminal plate;

a rectifier providing a connection between said terminal plate and the front surface of said secondary electrode, said rectifier having semiconductor means for rectifying electrical current including,

a semiconductor layer having front and rear holding plates, and

a circumferential seal ring surrounding said holding plates;

means for fastening said terminal plate and said secondary electrode plate together, said terminal plate and said secondary electrode plate having plated metallic layers facing each other and in contact with said semiconductor means held therebetween; and

a frame seal member surrounding said semiconductor means and held between said terminal plate and said secondary electrode plate.

B1 5,287,272 (2979th)

AUTOMATED CYTOLOGICAL SPECIMEN CLASSIFICATION SYSTEM AND METHOD

Mark R. Rutenberg, Monsey, N.Y.; Thomas L. Hall, Pasadena, Calif.; Robert Domes, Newbury Park, Calif.; Richard Chaban, Ventura, Calif.; Thomas Dulak, Newhall, Calif.; James M. Herriman; John Porzio, both of New York, N.Y.; Randall L. Luck, Brooklyn, N.Y., and James Knapp, New York, N.Y., assignors to Neuromedical Systems, Inc., Monsey, N.Y.

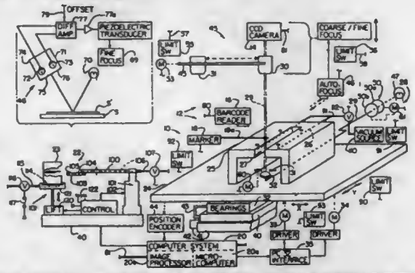
Reexamination Request No. 90/003,817, May 1, 1995.

Reexamination Certificate for Patent 5,287,272, issued Feb. 15, 1994, Ser. No. 420,105, Oct. 11, 1989.

Continuation-in-part of Ser. No. 179,060, Apr. 8, 1988, Pat. No. 4,965,725.

Int. Cl.[6] G06F *15/18;* **G06K** *9/62*

U.S. Cl. 364—413.01



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–27** is confirmed.

New claims **28–41** are added and determined to be patentable.

1. A cytological specimen classifier, comprising:

a) microscope means for obtaining a view of at least part of a cytological specimen,

b) camera means for creating an image of such view,

c) image digitizing means for producing a digital representation of such image,

d) a primary classifier for identification of objects in such digital representation based on a detectable feature, and

e) secondary adaptive classifier means for recognition of cells having patterns atypical of patterns in cells expected in the specimen among the objects identified by the primary classifier.

REISSUES

AUGUST 27, 1996

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,316

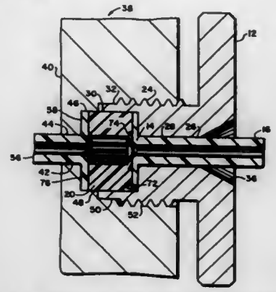
METHOD FOR FILTERING A FLUID SAMPLE USING AN IN-LINE FLUID FILTER FOR AN AUTOMATED ANALYZER

Kent M. Negersmith, Carmel, N.Y., and Gregory A. Farrell, Ridgewood, N.J., assignors to Bayer Corporation, Tarrytown, N.Y.

Original No. 5,064,542, dated Nov. 12, 1991, Ser. No. 490,197, Mar. 8, 1990. Application for reissue Nov. 2, 1992, Ser. No. 970,044

Int. Cl.[6] B01D *29/62*

U.S. Cl. 210—798 **11 Claims**



1. A method for filtering a [whole blood] *fluid* sample comprising the steps of:

a) flowing said [whole blood] *fluid* through a filter arrangement which filter arrangement includes a generally cylindrical body portion having opposed first and second faces and provided with a multiplicity of passageways substantially parallel to the longitudinal axis of said body portion extending between said opposed first and second faces, said passageways constructed and arranged to entrap fibrous matter carried in the [whole blood] *fluid* sample as the sample flows through said passageways from said first opposed face, said first and second opposed faces spaced apart a distance at least as great as the average length of said fibrous matter so that said fibrous matter will not extend beyond said second face and can be dislodged from said passageways by backflushing;

b) entrapping said fibrous matter within said filter arrangement; and

c) backflushing said filter arrangement to dislodge said entrapped fibrous matter from said passageways.

Re. 35,317

POTENTIOSTATIC PREPARATION OF MOLECULAR ADSORBATES FOR SCANNING PROBE MICROSCOPY

Stuart M. Lindsay, Tempe, Ariz., assignor to The Arizona Board of Regents, Tempe, Ariz.

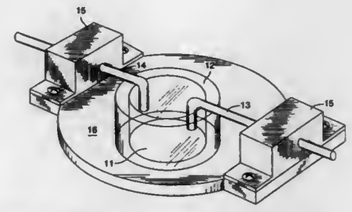
Original No. 5,155,361, dated Oct. 13, 1992, Ser. No. 736,095, Jul. 26, 1991. Application for reissue Oct. 11, 1994, Ser. No. 321,649

Int. Cl.[6] H01J *37/26;37/20;* **G01N** *1/28*

U.S. Cl. 250—307 **40 Claims**

12. A method of preparing molecular adsorbates for scanning probe microscopy comprising:

loading a substrate into a cell;



placing the cell on a scanning probe microscope;

placing a clean reference electrode in said cell;

placing a clean counter electrode in said cell in spaced relationship to said reference electrode;

dissolving a polymer containing charged molecules into a buffer solution that is inert relative to said substrate;

filling said cell with said polymer containing buffer solution;

activating said reference electrode and said counter electrode; and

applying a potential between said substrate and said counter electrode to deposit and secure said polymer onto said substrate for examination by said microscope.

Re. 35,318

VIEWING SCREEN PROTECTIVE SHIELD

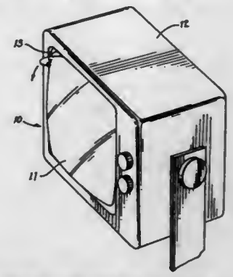
William J. Warman, 210 N. 86th St., Mesa, Ariz. 85207

Original No. 5,132,588, dated Jul. 21, 1992, Ser. No. 309,486, Feb. 13, 1989. Application for reissue Jul. 19, 1994, Ser. No. 276,983

Int. Cl.[6] H04N *5/72*

U.S. Cl. 313—479 **8 Claims**

2. A method of using a thin film to protectively shield an



electronic instrument comprising the steps of:

providing an electronic instrument having a face plate having an outermost major surface portion,

providing a thin, flexible, transparent, plastic film of generally constant thickness having a major surface portion, and

completely applying and releasably adhering the major surface portion of the film to the outermost major surface portion of the face plate.

Re. 35,319

PRINTER ACCOMMODATING TWO TYPES OF PRINTING SHEETS

Masahiko Yamada; Yoshikazu Ito, and Naoki Asai, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

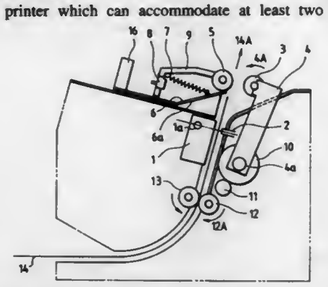
Original No. 5,152,623, dated Oct. 6, 1992, Ser. No. 610,661, Nov. 8, 1990. Application for reissue Oct. 3, 1994, Ser. No. 316,469

Claims priority, application Japan, Nov. 9, 1989, 1-292054

Int. Cl.[6] B41J *15/20*

U.S. Cl. 400—605 **7 Claims**

1. A printer which can accommodate at least two kinds of



recording sheets including both a first recording sheet as a continuous sheet and a second recording sheet as a cut sheet, comprising:

a first recording sheet path for passing therethrough said first recording sheet;

a second recording sheet path for passing therethrough said second recording sheet;

a recording sheet conveyance mechanism for individually or simultaneously conveying said first and second recording sheets;

a printing section Provided in common for said first and second recording sheets, said printing section individually or simultaneously holding said first and second recording sheets;

a continuous sheet guide plate provided in an upper portion of said printing section, said continuous sheet guide plate being manually [slidable] *movable* between a first, rest position and a second position;

spring means for exclusively urging said continuous sheet guide plate to said first position; and

a detector for detecting an operational position of said continuous sheet guide plate;

wherein said first and second recording sheet paths are open to allow said first and second recording sheets to be covered therethrough when said continuous sheet guide plate is in said first position, said continuous sheet guide plate being [slidable] *movable* to said second position so that only said first recording sheet path is open and said second recording sheet path is closed, and wherein said detector detects the operation of said continuous sheet guide plate.

Re. 35,320

METHOD FOR REGULATING PLANT GROWTH

Alan M. Kinnersley, Knoxville, Tenn.; Taylor C. Scott, III; John H. Yopp, both of Carbondale, Ill., and George H. Whitten, Woodridge, Ill., assignors to CPC International Inc., Englewood Cliffs, N.J.

Original No. 4,813,997, dated Mar. 21, 1989, Ser. No. 52,824, May 22, 1987. Continuation-in-part of Ser. No. 34,191, Apr. 6, 1987, abandoned. Application for reissue Jan. 6, 1995, Ser. No. 369,604

Int. Cl.[6] A01N *37/12*

U.S. Cl. 504—161 **8 Claims**

18. A process for increasing the rate of growth of a plant which comprises supplying to the roots and stems and foliage an effective amount of a condensation product of glycolic acid having from two to eleven acid units per molecule.

Re. 35,321

TETRAZOLEACETIC ACID DERIVATIVES HAVING ALDOSE REDUCTASE INHIBITORY ACTIVITY

Sinji Inukai, Hatano; Mitsuzi Agata, Kanagawa; Manami Umezawa, Morinosato; Yoshihiro Horio, Hatano; Yasuhiro Ootake, Minami-ashigara; Shobei Sawaki, Kanagawa, and Masayoshi Goto, Isehara, all of, Japan, assignors to Wakamoto Pharmaceutical Co., Ltd., Tokyo, Japan

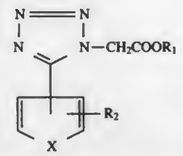
Original No. 5,068,239, dated Nov. 26, 1991, Ser. No. 588,057, Sep. 24, 1990. Application for reissue Sep. 25, 1992, Ser. No. 951,720

Claims priority, application Japan, Sep. 24, 1990, 1-257086

Int. Cl.[6] C07D *257/04;* **A61K** *31/41*

U.S. Cl. 514—381 **20 Claims**

1. A tetrazoleacetic acid derivative represented by the following general formula (I):



[[Formula (I)] *wherein,* R_1 represents a hydrogen atom or an alkyl group; R_2 represents a hydrogen atom, an alkyl group, an aralkyl group, a halogen atom, a haloalkyl group, a hydroxyl group, an alkoxy group, an alkoxyalkyl group, an amino group, [an aryl group,] an alkyl or aryl thio group, an alkyl or aryl carbonylamino group, an alkyl or aryl aminosulfonyl group, an alkyl or aryl aminosulfonyl group, an alkyl or aryl sulfonyl group or an alkyl or aryl sulfinyl group; and X represents —O— or —S—[]] except for [[](5-(2-(thienyl)tetrazol-1-yl)[]] acetic acid, [[](5-(2-(furyl)tetrazol-1-yl)[]] acetic acid, *(5-(5-bromo-2-furyl)tetrazol-1- acetic acid, (5-(5-phenylthio-2-furyl)tetrazol-1-yl)acetic acid, (5-(5-phenylsulfonyl-2-furyl)tetrazol-1-yl)acetic acid* and ethyl esters thereof, or a *pharmaceutically acceptable* salt thereof.

PLANT PATENTS

GRANTED AUGUST 27, 1996

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,633

MINIATURE ROSE PLANT NAMED 'RUIDODO'

Antonius A. Pouw, Ab Hazerswoude, Netherlands, assignor to DeRuiter's New Roses, De Kwakel, Netherlands

Filed Oct. 30, 1995, Ser. No. 549,952

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct miniature rose plant named Ruidodo, as illustrated and described.

9,634

MINIATURE ROSE PLANT NAMED 'RUIKALLA'

Antonius A. Pouw, AB Hazerswoude, Netherlands, assignor to De Ruiter's New Roses, De Kwakel, Netherlands

Filed Oct. 30, 1995, Ser. No. 549,953

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct miniature rose plant named Ruikalla, as illustrated and described.

9,635

MINIATURE ROSE PLANT NAMED 'RUIJEF'

Antonius A. Pouw, Hazerswoude, Netherlands, assignor to De Ruiter's New Roses, De Kwakel, Netherlands

Filed Oct. 30, 1995, Ser. No. 550,189

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct miniature rose plant named Ruijef, as illustrated and described.

9,636

HYBRID TEA ROSE PLANT NAMED MEIBOLNAY

Alain A. Meilland, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Jun. 19, 1995, Ser. No. 492,450

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—20 **1 Claim**

1. A new and distinct variety of Hybrid Tea rose plant characterized by the following combination of characteristics:

(a) forms in abundance attractive very large long-lasting deep velvet red blossoms,
(b) forms long erect strong stems,
(c) forms large medium green foliage, and
(d) is particularly well suited for cut flower production;

substantially as herein shown and described.

VOL
1189
ISS
4
AUG
27
1996
UMI

PATENTS

GRANTED August 27, 1996

ERRATA

For CLASS	See PATENT NO.
473–290	5,549,296
473–290	5,549,297
473–272	5,549,298
473–133	5,549,299
267–149	5,549,370
416–093	5,549,455
404–084	5,549,457
477–125	5,549,519
482–047	5,549,520
452–118	5,549,521
604–022	5,549,644
604–029	5,549,645
604–283	5,549,651
604–283	5,549,657
604–317	5,549,707
604–110	5,549,708
508–204	5,549,835
508–183	5,549,836
510–365	5,549,839
510–365	5,549,840
510–191	5,549,842
510–299	5,549,852
436–008	5,540,053
548–226	5,540,159
568–014	5,540,295
364–490	5,540,714

170–654 O.G.–96–2: QL3

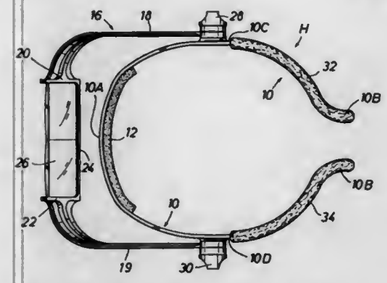
VOL 1189 ISS 4 AUG 27 1996 UMI

PATENTS

GRANTED AUGUST 27, 1996

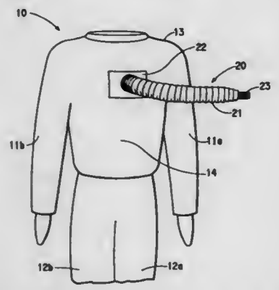
GENERAL AND MECHANICAL

5,548,841
HEADBAND MAGNIFIER
Mary F. Sherlock; Marnie C. Averitt, both of Kerrville, and Thomas W. Dowling, El Paso, all of Tex., assignors to MFd Enterprises, Inc., Kerrville, Tex.
Continuation-in-part of Ser. No. 14,845, Oct. 29, 1993, Pat. No. Des. 359,060. This application Jul. 25, 1994, Ser. No. 279,548
Int. Cl.[6] A61F *9/00*
U.S. Cl. 2—15 **15 Claims**



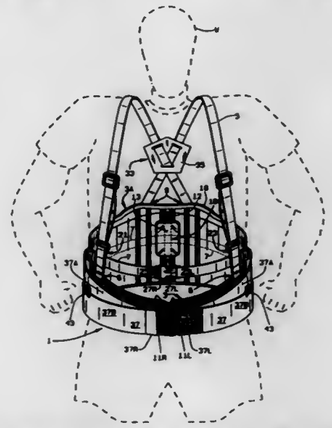
5. Apparatus for magnifying an image, comprising,
a one-piece headband fabricated from polypropylene having a front portion, a back portion and two opposed sides, said headband being movable between an at rest position and a compression position wherein said headband provides a compressive force while said headband back portion is disengaged,
a U-shaped member having two arms and a holding member, one end of each of said arms being movably positioned on said opposed sides of said headband and the other end of each of said arms supporting said holding member, and
a magnifying lens positioned in said holding member.

5,548,842
PROTECTIVE GARMENT WITH HARNESS ACCESS
Timothy R. Wiseman, Sr., Richmond, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Apr. 6, 1994, Ser. No. 223,565
Int. Cl.[6] A41D *13/00*
U.S. Cl. 2—69 **3 Claims**



1. In a protective garment having an inside and an outside, two arm sections, a neck section, and a torso section, a support harness conduit comprising:
(a) an opening in the torso section between the arm sections and below the neck section;
(b) a flexible harness conduit having two ends with the first end attached to the torso section at the opening;
(c) a sphincter means at the second end of the harness conduit to close the conduit and reduce interchange of fluids between the inside and the outside of the garment,
whereby a wearer of the protective garment can also wear a support harness underneath the garment with a support line for the harness; the support line extending from the harness through the opening in the torso section of the garment, through the harness conduit, and out the sphincter means.

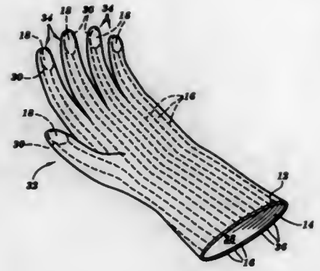
5,548,843
BACK SUPPORT WITH MEANS TO SECURE THE BELT ON THE WEARER WHILE IN AN OPEN POSITION
David D. Chase; Gary D. Shumate, both of Albuquerque, N.M.; Joel A. Joslin, Sunset Hills, Mo., and Paul K. Meunchen, Holland, Mich., assignors to Chase Ergonomics Inc., Albuquerque, N.M.
Filed Jan. 12, 1994, Ser. No. 180,898
Int. Cl.[6] A41D *13/00*
U.S. Cl. 2—102 **14 Claims**



1. A back support for a human user comprising an elastic support belt having first and second free ends, means secured to the support belt for releasably joining said free ends for maintaining said support belt in a closed position in which the support belt forms a closed surface adapted to encircle a human user, and means secured to the support belt for releasably maintaining said belt in an open position in which the support belt free ends are unattached to each other, said means for maintaining the back support in said open position including means for releasably securing said first free end to a point of the support belt spaced from the first free end and means for releasably securing said second free end to a point of the support belt spaced from the second free end.

5,548,844
PROTECTIVE GLOVE
Norma J. Ceresia, 808 Beech Dr., Niskayuna, N.Y. 12309
Filed Sep. 29, 1995, Ser. No. 536,690
Int. Cl.[6] A41D *13/10;19/00*
U.S. Cl. 2—161.7 **18 Claims**

7. A protective glove for improving tactile sensitivity between a wearer's hand and a selected object, said glove having a plurality



of finger stalls extending away from dorsal and palmar surfaces of said glove, said protective glove comprising:

an outer glove layer and an inner glove layer attached to said outer glove layer within said outer glove layer, said outer and inner glove layers having inner and outer surfaces;

a plurality of elongated adhesive members securing said inner surface of said outer glove layer and said outer surface of said inner glove layer;

a channel formed between a pair of successive elongated adhesive members of said plurality of elongated adhesive members; and

at least one opening selectively formed on said inner glove layer so as to expose a corresponding portion of the inner surface of said outer glove layer through said at least one opening.

5,548,845

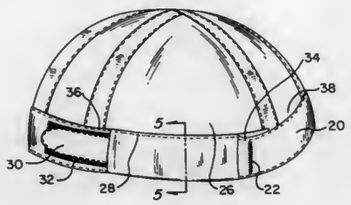
ADJUSTABLE CLOSED-BACK CAP

James A. Gallup, Boulder, Colo., assignor to Colorado Leisure Sportswear Corporation, Denver, Colo.

Filed Sep. 27, 1995, Ser. No. 534,727

Int. Cl.[6] A42B *1/22*

U.S. Cl. 2—195.2 **7 Claims**



1. A closed-back cap, adjustable in size to fit a broad assortment of sizes of wearer's heads, comprising:

a plurality of panels, including a back panel, each panel having side edges and a bottom edge, the side edges of adjacent panels being attached together to form a cap, the cap having a front side and a rear side;

a fabric tunnel provided along the bottom edge of the back panel;

a flexible strap having a fixed end and a free end, the strap being slidably received within the fabric tunnel and attached at the fixed end to the cap adjacent to the back panel, the strap having a portion of a releasable connector provided on the free end thereof; and

a matching portion of the releasable connector attached to the cap adjacent to the back panel and on an opposite side of the back panel from the attachment point of the fixed end of the strap to the cap.

5,548,846

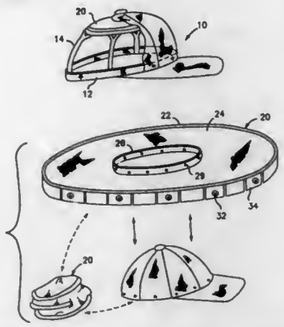
HEADWEAR WITH DETACHABLE BRIM

George Bianchetti, 1146 Second Ave. B-4, New York, N.Y. 10021

Filed Dec. 30, 1994, Ser. No. 366,829

Int. Cl.[6] A42B *1/18*

U.S. Cl. 2—209.12 **4 Claims**



4. A cap for selectively providing a wearer with protection from the environment, said cap including a removable protective device adapted to be stored within said cap, support means within said cap comprising a frame formed from a band and a plurality of upwardly extending support elements for supporting said protective device within said cap during storage, and a first part of a releasable fastening device provided about the outer periphery of said cap for securing said protective device to said cap during use, said removable protective device including:

a sweat band defining an open center portion, said sweat band including a second part of the releasable fastening device adapted to engage the first part of the releasable fastening device on said cap to removably secure said protective device to said cap;

a continuous, flexible outer spring wire frame; and

a weather-proof cover stretched between said sweat band and said wire frame to form a protective brim for said cap; wherein said protective cover may be removed from and store within said cap during periods of non-use by unfastening said first part of the releasable fastening device from the second part of the releasable fastening device, twisting said protective device in a figure eight configuration about said continuous wire frame, and folding said twisted protective device into a flat arrangement for storage within said cap where it is supported by said support means.

5,548,847

CAP WITH A PICTURE RETAINING POCKET

John Spicijaric, 150-11 95th St., Ozone Park, N.Y. 11417

Filed Dec. 9, 1994, Ser. No. 352,359

Int. Cl.[6] A42B *1/24*

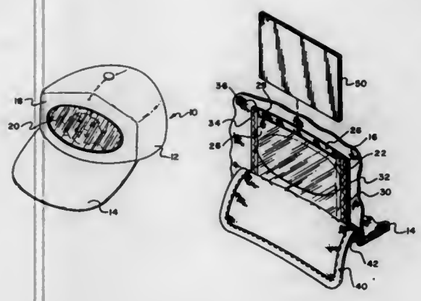
U.S. Cl. 2—209.13 **6 Claims**

1. A picture cap for retaining a picture or the like and visually displaying the same comprising:

a head covering portion having a window opening formed therein and having an inside surface and an outside surface;

a picture retaining pocket being secured to said inside surface of said head covering portion, said picture retaining pocket having a bottom end, inner and outer walls extending upwardly from said bottom end and an open top end, said bottom end and said walls providing a space therebetween, said outer wall of said pocket extending around the periphery of said window opening and being comprised of a transparent material, and

a foldable protective flap having one end secured to said inside surface of said head covering portion, said flap being adapted to cover said inner wall of said retaining pocket.



5,548,848

MOULDABLE COMPOSITION AND METHOD OF MAKING IT

Robert Huybrechts, 18484 Keele St. North, Newmarket, Ontario, Canada

Division of Ser. No. 271,993, Jul. 8, 1994, Pat. No. 5,431,563, which is a continuation-in-part of Ser. No. 992,752, Dec. 18, 1992, abandoned. This application Jun. 2, 1995, Ser. No. 458,249

Int. Cl.[6] A42B *3/00;* **A43B** *13/38*

U.S. Cl. 2—425 **7 Claims**

1. A re-mouldable settable personal hand conforming article forming part of a personally portable hand held device, said article being located on the exterior of said device for contact with the person and being capable of daily repeated reheating and remoulding for repeated daily customization to the shape of a hand of the person by a user, and comprising, a thermoplastic polymerised composition which is set hard at ambient temperatures up to about 37° C. and which may be repeatedly rendered conformably mouldable at elevated temperatures of between about 50° C. and 95° C. to be repeatedly re-moulded during daily use to conform to the hand of the person, and which remains hard when in contact with the person and cooled to body temperature, said thermoplastic polymerised composition in turn comprising;

a liquid mixture of,

a first predetermined quantity of liquid methyl methacrylate monomer in an amount of about 27 to 76 parts per hundred of said liquid mixture;

a second predetermined quantity of liquid butyl methacrylate monomer in an amount of about 2.5 to 8 parts per hundred of said liquid mixture, and,

a third predetermined quantity of a plasticizer mixture, in an amount of about 20 to 63 parts per hundred of said liquid mixture; and,

a powdered polyethyl methacrylate polymer together with a polymerisation initiator, mixed with said liquid mixture in a ratio of about from one part to about two parts by weight of powdered polyethyl methacrylate polymer, to about one part by weight of said liquid mixture, said powdered polyethyl methacrylate polymer being at least substantially set at temperatures below about 95° C., said liquid mixture and said powdered polyethyl methacrylate polymer in said composition being polymerised, whereby said polymerised composition remains set after polymerisation at temperatures in the region up to about 37° C. and which may be repeatedly rendered substantially manually re-mouldable in daily use at temperatures between about 50° C. and 95° C.

5,548,849

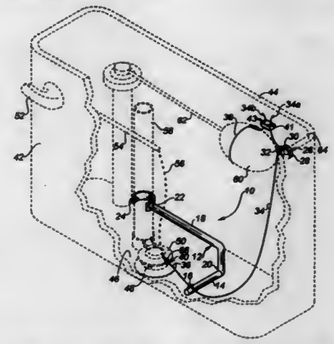
WATER CONSERVATION DEVICE AND A METHOD OF INSTALLING THE SAME IN A TOILET TANK

Antonio M. Sulit, 3919 - 54 Street, Edmonton, Alberta, Canada

Filed Apr. 28, 1995, Ser. No. 430,844

Int. Cl.[6] E03D *1/14*

U.S. Cl. 4—325 **7 Claims**



1. A method of conserving water in a toilet tank having a peripheral sidewall, a bottom, a drain passageway through the bottom, and a flapper valve movable between an open position and a closed position to control the flow of water through the drain passageway, comprising the steps of:

providing a line having a first end and a second end;

securing the first end of the line to adjacent a peripheral edge of the flapper valve;

securing the second end of the line to a float floating in the water of the toilet tank; and

using a plurality of direction altering line guides to guide the line at specific points in the tank such that when the flapper valve is in the open position and the water in the tank flows through the drain passageway, the lowering of the float exerts a force upon the line thereby pulling the line past said points to move the flapper valve into the closed position.

5,548,850

TOILET WITH TWO FLUSH MODALITES

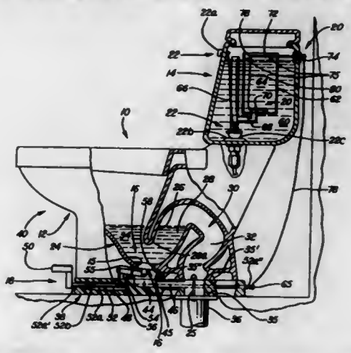
Calvin T. Geeham, 12761 138th La. North, Largo, Fla. 34644

Filed Jan. 24, 1995, Ser. No. 377,209

Int. Cl.[6] E03D *1/14*

U.S. Cl. 4—326 **14 Claims**

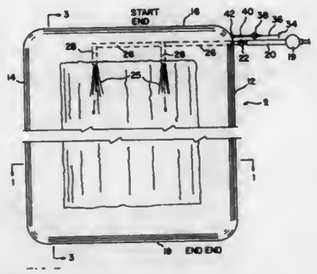
1. A toilet having two flush modalities, the toilet being structured



for connecting to a drain and to a source of pressurized water, the toilet comprising:

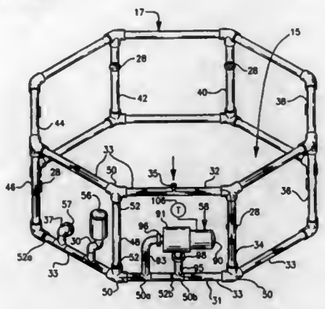
a tank having an overflow tube;
tank fill means connected with said tank for filling said tank with a preselected amount of water derived from a source of pressurized water;
a bowl connected with said tank, said bowl having a trap formed therein for holding liquid, said trap having a lowest point, said bowl having a bowl outlet connected with said trap, wherein the overflow tube is connected with said bowl;
conventional flush modality means connected with said tank for selectively delivering a first predetermined amount of water from said tank into said bowl to thereby both flush said bowl through said bowl outlet and refill said trap with water; and
urinal flush modality means comprising:
bowl valve means connected with said trap at said lowest point thereof for retaining liquid in said trap when in a closed state and for draining therethrough liquid in said trap into the drain when in an open state;
bowl valve control means for selecting said open and closed states of said bowl valve means;
drain connection means for connecting said bowl outlet and said bowl valve means to a drain so that water therefrom enters the drain; and
auxiliary flush control means for selectively delivering a second predetermined amount of water to said bowl, wherein said second predetermined amount of water is substantially just sufficient to thereby refill said trap with water after substantially all liquid in said bowl has been drained by said bowl valve means when said bowl valve means is in said closed state;
wherein said tank and said tank fill means collectively provide a source of said first predetermined amount of water.

5,548,851
AQUATIC SAFETY SLIDE AND WADING POOL
Joshua D. Wien, and Noah E. Wien, both of 11990 SW. 94th Ct., Miami, Fla. 33176
Filed Sep. 22, 1994, Ser. No. 310,910
Int. Cl.[6] E04H *4/00*
U.S. Cl. 4—506 **18 Claims**



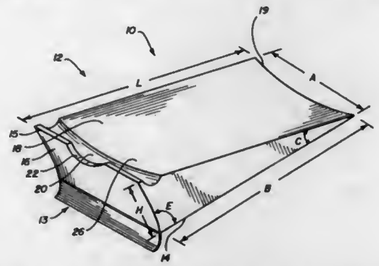
1. An aquatic safety slide and wading pool comprising:
(a) an elongated rectangular frame comprising a first and a second side and a first and a second end, said ends and sides being inflatable and being cylindrical in shape; inflatable cylindrical tubes located in a side by side array between said ends and sides;
(b) means for inflating said inflatable ends, sides and tubes comprising a source of gas;
(c) a slide surface positioned on said tubes, spaces located between said slide surface and portions of adjacent tubes;
(d) said inflatable tubes comprising means for cushioning said slide surface; and
(e) means for lubricating said slide surface comprising means for applying water to said slide surface and said water filling said spaces to provide an additional cushioning effect.

5,548,852
PORTABLE SPA UNIT
Lee R. Rowe, 20050 Wellborn Rd., North Fort Myers, Fla. 33917
Filed Sep. 13, 1994, Ser. No. 305,208
Int. Cl.[6] E04H *4/12*; A47K *3/02*
U.S. Cl. 4—509 **21 Claims**



1. A spa unit comprising:
a floor portion;
a wall portion sealably connected to and extending upwardly from said floor portion and defining an enclosed area for holding water; said wall portion including an internal tubular framework and an outer skin that is supported by said framework, said framework including spaced apart upper and lower peripheral tubular sections that generally surround said enclosed area of said spa and a plurality of transverse tubular elements that interconnect said upper and lower peripheral sections;
inlet means and jet means each for communicably interconnecting said tubular framework and said enclosed area of said spa; and
means for circulating water from the enclosed area of said spa into said framework through said inlet means and then back into said enclosed area through said jet means, said means for circulating including a pump that is at least partly enclosed by said tubular framework.

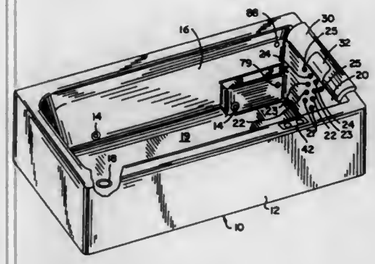
5,548,853
SHAMPOOING DEVICE
Loraine Johnson, 608 Woodpecker St., Baton Rouge, La. 70807
Filed Jan. 11, 1995, Ser. No. 371,421
Int. Cl.[6] A45D *44/10*
U.S. Cl. 4—523 **15 Claims**



1. A device for supporting the neck and back of a person over a water receiving receptacle which has a lip defining a top opening and a substantially planar surface adjacent, to said lip, said device comprising:
a wedge member having a base portion, a first inclined surface, and a second inclined surface;

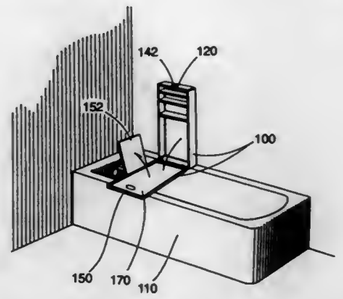
said base portion having at least one contact surface positionable on said substantially planar surface and a first edge portion positionable adjacent to said lip when said contact surface is positioned on said substantially planar surface;
said first inclined surface having a first and second end, said first end being in mechanical connection with said first edge portion of said base portion in a manner such that, when said first edge portion is positioned adjacent to said lip, said second end of said first inclined surface is positioned over and above said top opening of said water receiving receptacle, said second end of said first inclined surface having a collar cavity means formed therein for receiving the neck of a person; and
a second inclined surface, positioned above said base portion, having a first connecting end in mechanical connection with said second edge of said first inclined surface, said second inclined surface including a support surface extending from said first connecting end in a direction away from said first inclined surface and toward said base portion, said second inclined surface having formed therein a towel channel means for receiving at least a portion of a rolled towel, said towel channel means being located on said second inclined surface at a location toward said first connecting end and oriented in a direction substantially parallel to and edge of said first connecting end.

5,548,854
HYDRO-MASSAGE TUB CONTROL SYSTEM
John M. Bloemer, Madison; Isadore Balan, Mequon; Thomas A. Bonnell, Sheboygan; Alan D. Bengtson, Milwaukee; Robert C. Giese; Mary J. Reid, both of Sheboygan; John A. Flumefreddo, Plymouth, and Michael J. Kurth, Fond du Lac, all of Wis., assignors to Kohler Co., Kohler, Wis.
Filed Aug. 16, 1993, Ser. No. 107,404
Int. Cl.[6] A61H *33/02*
U.S. Cl. 4—541.6 **21 Claims**



1. A hydro-massage apparatus comprising:
a tub having a wall on one side of the tub and a drain opening;
a first plurality nozzles located in the wall of said tub to direct a flow of water into the tub, said first plurality of nozzles comprise first, second, third, fourth and fifth pairs of nozzles, the first, second, third and fourth pairs of nozzles being arranged vertically with respect to each other in the wall with the fifth air of nozzles arranged substantially horizontally between the fourth pair of nozzles;
a pump with an inlet connected to the drain opening; and
a first pulser mechanism coupled to receive water from said pump and having a plurality of outlets connected to said first plurality of nozzles with each outlet being connected to a different pair of the first, second, third, fourth and fifth pairs of nozzles, said first pulser mechanism directing a pulse of water sequentially through each outlet to produce a jet of water sequentially at different ones of said first plurality nozzles and thereby creating a pulsating pattern of water flow that has a massaging effect in the tub.

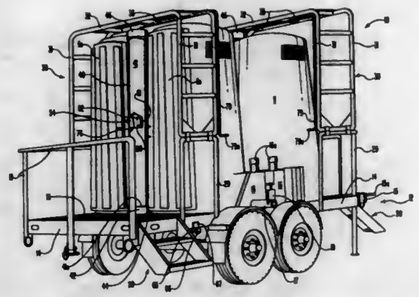
5,548,855
VANITY FOR USE WITH A BATHTUB
Colleen J. Jackson, 64 Golfview La., Carpentersville, Ill. 60110
Filed Dec. 7, 1994, Ser. No. 350,610
Int. Cl.[6] A47K *3/00*
U.S. Cl. 4—559 **10 Claims**



1. A vanity for use in combination with a bathtub, comprising:
a) the vanity including a cabinet and a door;
b) the door having an up position in order to close the cabinet of the vanity;
c) the door having a down position in order to serve as a tray supported by the cabinet and the bathtub;
d) the vanity further including a fastening means to secure the vanity adjacent to the bathtub;
e) the fastening means being a temporary positioning device;
f) the bathtub including a water control means adjacent to the vanity;
g) the bathtub having a generally rectangular shape with a first long side oppositely disposed from a second long side, and a first short side oppositely disposed from a second short side;
h) the first long side being adjacent to a wall;
i) the water control means being adjacent to the vanity and the wall;
j) the temporary positioning device being suction cups;
k) the suction cups being mounted on a rear exterior panel of the cabinet;
l) the rear exterior panel of the cabinet being oppositely disposed from the door;
m) the door having a mirror situated thereon for use in the down position;
n) the cabinet having a hollow rectangular shape with a long open side;
o) the door being of sufficient length to close the long open side, when in the up position;
q) a top of the cabinet may including a soap holding means;
r) the cabinet and the door being joined with a hinge on one edge; and
s) the cabinet having at least two shelves therein.

5,548,856
MOBILE SANITATION STATION
Vincent D. Julian, 220 E. Crusader Dr., Murray, Utah 84107
Filed Apr. 24, 1995, Ser. No. 426,680
Int. Cl.[6] A47K *4/00*
U.S. Cl. 4—664 **12 Claims**

1. A mobile sanitation system comprising, a trailer having a frame covered by a flat bed and including means for connection to a towing vehicle; at least one self-contained chemical toilet mounted on said trailer flat bed; a hand washing system that includes a housing that is a straight cylinder mounted at a lower end onto said trailer flat bed and includes an opening formed into mid-portion of said cylinder interior to receive a person's hands passed therein into said cylinder interior, with an upper portion of said cylinder formed as a fresh water reservoir to gravity feed



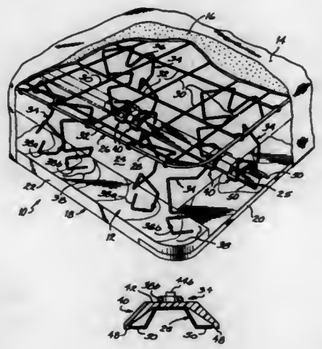
clean water through a hose to a manually operated valve located within said cylinder mid-portion that is operated to dispense said clean water through a nozzle, and said cylinder mid-portion includes a washing section base plate secured across as a top of a cylinder closed bottom section and wherein a dirty water drain is formed; and a door for fitting over the opening into the cylinder mid-portion that is a rectangular plate formed to the shape of the straight tube outer surface and has opposing parallel sides that are formed to fit into so as to slide along a pair of straight tracks that are secured along opposite vertical sides of said opening and extend below said washing section base plate.

5,548,857

BOX SPRING HAVING SNAP-ON CLIP FOR SPRING SECUREMENT

Darrell A. Richmond, Carthage, Mo., assignor to L & P Property Management Company, Chicago, Ill.

Filed Oct. 11, 1994, Ser. No. 320,138
Int. Cl.[6] A47C *23/057*
U.S. Cl. 5—263 **22 Claims**



21. In a box spring having a frame grid and a wire grid interconnected to the frame grid in parallel relationship therewith via springs, the frame grid having an opening therethrough and at least one slat spanning the opening, the improvement comprising:

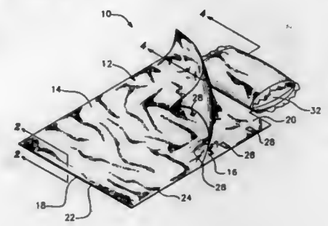
at least one clip, each said clip having a first side snap-connected to a slat for removable securement thereto and a second side with a two-portion hook sized to snap-fit a spring therein for removable securement of the spring between the wire grid and the frame grid, thereby to facilitate securement of the wire grid to the frame grid.

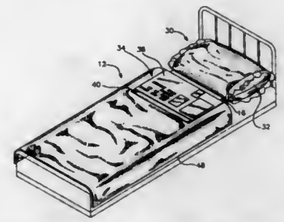
5,548,858

INFORMATION EXHIBITING SINGLE USE SLEEPING BAG

Yong F. Shoa, 1215 Summit Rd., McLean, Va. 22101

Filed Apr. 21, 1995, Ser. No. 426,274
Int. Cl.[6] A47G *9/08*
U.S. Cl. 5—413 R **9 Claims**





1. In combination, a lightweight disposable sleeping bag and an information panel section comprising:

a sleeping bag having a closed foot end and an open head end, a body section having opposing top and bottom single sheets, each sheet prepared from a single flat blank of nonwoven soft paper,

said top sheet and bottom sheet joined together at their foot end and along their lower side edges by a continuous seal at their adjacent outer edges formed by joining their adjacent peripheral edges together, said top sheet and bottom sheet being releasably joined together, by releasable means, along their upper side edges,

said top sheet provided with an information panel section attached thereto,

a pillow case section having open sides formed by the bottom sheet at the head end of the sleeping bag said pillow case section being formed by folding the extended bottom sheet underneath and securing it to the underside of the bottom sheet,

said seal at said adjacent outer edges conserving body heat and said body section and pillow case section completely insulates a user from contacting a support upon which the sleeping bag rests.

5,548,859

METHOD AND APPARATUS FOR PREVENTING SOILED CLOTHES FROM BECOMING PERMANENTLY STAINED

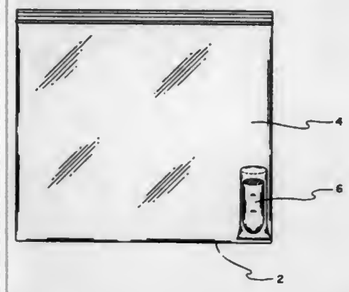
Lorri Oberg, 3417 Ione Dr., Los Angeles, Calif. 90068, and Pamela R. Weiss, 24943 Kit Carson Rd., Hidden Hills, Calif. 91302

Filed May 30, 1995, Ser. No. 454,544
Int. Cl.[6] D06B *19/00;* **B65D** *81/32*
U.S. Cl. 8—150 **7 Claims**

1. An apparatus for saving soiled clothes from being permanently stained comprising:

a) a resealable flexible container suitable for holding clothing articles; and

b) a rupturable container within the resealable flexible container, wherein the rupturable container contains a presoak formula.



7. A method of saving soiled clothes from being permanently stained, the method comprising the steps of:

a) placing the soiled clothes in a resealable flexible container having stain-removing solution inside a sealed but rupturable container disposed within the flexible container;

b) sealing the resealable flexible container; and

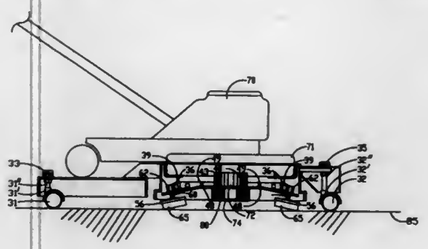
c) rupturing the rupturable container to release the stain-removing solution onto the soiled clothes.

5,548,860

ULTRA-SPEED CONVERSION MEANS FOR FLOOR TREATING MACHINES

Larry E. Weltikol, Minot, and Paul T. Grossman, Hazen, both of N. Dak., assignors to Dakota Way, Hazen, N. Dak.

Filed May 31, 1994, Ser. No. 251,722
Int. Cl.[6] A47L *11/16*
U.S. Cl. 15—50.1 **4 Claims**



1. Ultra-speed conversion means for a floor treating machine comprising:

a height adjustable and moveable frame supported on wheels and having a stator means, for supporting a floor treating machine;

an impeller member received in said stator means and securely fastenable to a rotatable floor treating drive means of said floor treating machine for rotation therewith, said impeller member having a top side and a bottom side and further having a clutch member extending upward from said top side thereof, said clutch member having an aperture therein for receiving said floor treating drive means for rotation therewith;

a plurality of floor treating element holders rotatably journaled through said impeller member and rotatably engageable with said stator means, for ultra-speed rotation relative to said impeller member; and

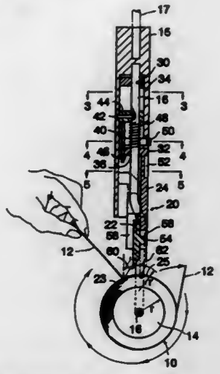
a plurality of floor treating elements each on a respective one of said floor treating element holders for engageably treating floors.

5,548,861

ADHERING CLEANING TOOL

Hiroshi Hukuba, No. 914-1, Nazukari, Nagareyama, Chiba, Japan

Filed Feb. 24, 1994, Ser. No. 201,328
Claims priority, application Japan, Feb. 25, 1993, 5-059299; Mar. 19, 1993, 5-085377; Jul. 7, 1993, 5-192848; Sep. 9, 1993, 5-247317; Sep. 24, 1993, 5-261524
Int. Cl.[6] A47L *25/00*
U.S. Cl. 15—104.002 **11 Claims**



11. An adhering cleaning tool, comprising:

(a) an adhering roller formed by winding an adhesive sheet in layers, said adhesive sheet being peelable from a portion of the adhesive sheet forming the layer thereunder and easily torn at least along the direction of the width thereof;

(b) supporting means for supporting in a rotatable manner said adhering roller;

(c) a handle connected to said supporting means; and

(d) tearing means for tearing the adhesive sheet along the widthwise direction of the adhesive sheet, said tearing means comprising a pressing member that is movable toward and away from the surface of the adhering roller;

wherein the pressing member is supported in a slidable manner on a supporting member connected with the handle which extends substantially perpendicular to the axial line of the adhering roller, is urged in the direction moving away from the adhering roller and presses against the adhering roller when pressed by the user.

5,548,862

CLEANING UTENSIL

Sandra Curtis, 1516 Huntington Dr., Glenview, Ill. 60025

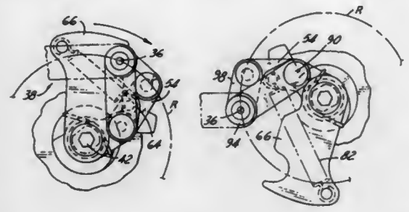
Filed Sep. 22, 1995, Ser. No. 532,239
Int. Cl.[6] A47L *13/12*
U.S. Cl. 15—118 **20 Claims**



VOL 1189 ISS 4 AG 27 1996 UMI

1. A cleaning utensil comprising:
an elongated handle having proximal and distal ends;
a substantially spherical sponge having a cavity for fixedly receiving and retaining the distal portion of the elongated handle;
said sponge being of a first predetermined level of abrasiveness;
at least one abrasive scouring element fixedly attached to a portion of a surface of the spherical sponge;
said at least one abrasive scouring element being of a second predetermined level of abrasiveness;
said second predetermined level of abrasiveness being greater than said first predetermined level of abrasiveness to facilitate cleaning of lightly and heavily soiled areas, respectively; and
said at least one abrasive scouring element including a linear strip of scouring material affixed about the surface of the spherical sponge.

5,548,863
INTEGRATED DEPRESSED PARK AND SNOW PACK MECHANISM FOR WINDSHIELD WIPER SYSTEM
Xiaoming Deng, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Apr. 6, 1995, Ser. No. 417,538
Int. Cl.[6] A47L *1/00*
U.S. Cl. 15—250.16 **17 Claims**



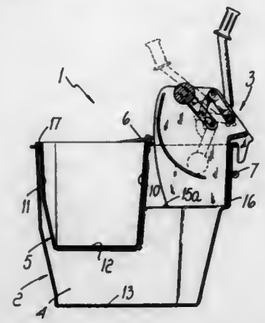
17. A wiper system for a vehicle window, the system comprising:
(1) a dual direction motor having a shaft rotatable thereby, in a predetermined direction, surrounded by a stop base;
(2) a crank mounted on the shaft for rotation therewith;
(3) a drivepin linkedly connected to the crank;
(4) a base plate biasedly connected by a torsional spring to the crank, mounted for rotation around the shaft on a first baseplate end between the stop base and the crank, and pivotally linked to the drivepin on a second baseplate end;
(5) a snow pack plate biasedly connected by a tension spring to the crank, mounted for rotation around the shaft on a first packplate end between the crank and the base plate, and pivotally linked to the drivepin on a second packplate end;
(6) a first link pivotally connected on one end to the second baseplate end and pivotally connected on the other end to the drivepin;
(7) a second link pivotally connected on one end to the second packplate end and pivotally connected on the other end to the drivepin;
(8) a stop link carried on a stop base side of the base plate which interacts with a catch on the stop for restraining the base plate from rotation when the shaft reaches a first predetermined position upon reversal of motor direction to thereby separate the crank from the baseplate by overcoming the bias force of the torsional spring so that the drivepin pivots to a new radius of rotation about the shaft as the first link and the second link pivot about the first baseplate end and the first packplate end, respectively, through rotation of the snow pack plate with the crank to a second predetermined position;
(9) the snow pack plate separating from the crank by overcoming the bias force of the tension spring when the drivepin is prevented from changing radius of rotation upon reversal of motor direction so that the shaft and the crank can rotate to the second predetermined position; and
(10) at least one means for transforming the rotary motion of the drivepin to oscillatory motion of at least one window wiper.

5,548,864
TUBE AND BIASED DRIFT PIN COMBINATION AND DUSTPAN INCORPORATING SAME
Peter Vosbikcian, Cinnaminson, N.J., and Haig Vartanian, Cheltenham, Pa., assignors to Quickie Manufacturing Corporation, Cinnaminson, N.J.
Filed Jan. 30, 1995, Ser. No. 380,300
Int. Cl.[6] A47L *13/52*; B25G *3/38*
U.S. Cl. 15—257.7 **16 Claims**



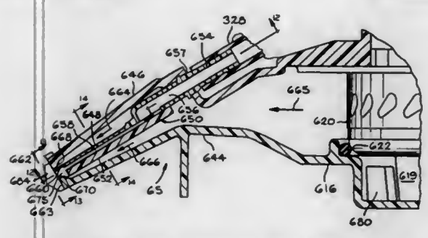
9. A locking hinged-dustpan, comprising:
a pan having a bottom that has front and rear edges spaced between side edges, a rear flange and two side flanges extending upwardly from the rear and side edges respectively, wherein the front edge defines a scoop;
a bracket on the rear flange having at least one sidewall;
a handle formed from a tube having a wall extending between opposite end portions, one end portion being pivotably connected to the bracket to pivot about an axis generally perpendicular to the bracket sidewall, said one end portion including two axially spaced holes, the opposite end portion being arranged as a hand grip;
a leaf spring that has a base portion and a cantilever portion joined to the base portion for relative flexion therebetween, the base portion being formed with an abutment surface;
a drift pin and spaced push pin arranged and fixed on the cantilever portion; and,
a separate cartridge, formed with an abutment surface;
said leaf spring being arranged in the handle tube with the drift and push pins aligned to extend and retract through respective ones of the axially spaced holes;
said cartridge being sized and shaped to permit sliding insertion in the handle tube relative to the leaf spring to a stationary position where the respective abutment surfaces are mated and the cartridge wedges the base portion of the leaf spring relatively immobile against the tube wall such that the push and drift pins are normally biased to extend through the respective holes and that the push pin can be depressed to induce full retraction of the drift pin;
wherein the leaf spring is maintained from moving axially in the tube by the arrangement of the push pin constantly occupying its respective hole for all angles of flexion and extension of the cantilever portion, the leaf spring further including retaining means for retaining the cartridge in said stationary position.

5,548,865
FLOOR CLOTH BUCKET AND WRINGER DEVICE
Elio Pagani, Arese, Italy, assignor to VDM S.r.l., Arese, Italy
Filed Dec. 7, 1994, Ser. No. 350,768
Claims priority, application Italy, Dec. 22, 1993, MI930988 U
Int. Cl.[6] A47L *13/58*
U.S. Cl. 15—262 **2 Claims**



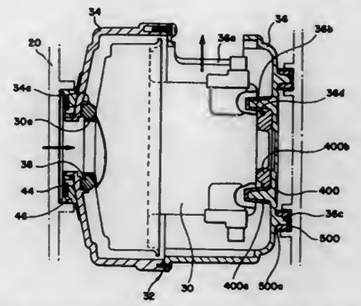
1. Device for collecting dirty washing liquid and for containing liquid for wetting a floor-cloth, for washing floors by hand, wherein said device comprises a main container, which supports a wringer and forms a compartment for collecting liquid produced by wringing a floor-cloth used for washing, and a secondary container, connected to said main container for containing liquid for wetting a floor-cloth,
wherein said main container has a bottom, a front wall, a rear wall, two opposite side walls extending between said front wall and said rear wall and an interior portion, and
wherein said main container has raised portions, in the interior portion of said main container between top and bottom portions thereof, for supporting the wringer on said rear wall and on said two opposite side walls proximate to said rear wall.

5,548,866
CLEANING SOLUTION APPLICATOR
Gary A. Reed, Massillon, and Kenneth L. Symensma, Canton, both of Ohio, assignors to The Hoover Company, North Canton, Ohio
Filed Jan. 14, 1994, Ser. No. 183,287
Int. Cl.[6] A47L *7/00*
U.S. Cl. 15—320 **13 Claims**



1. In a carpet cleaning extractor having a fluid distributor for applying cleaning fluid to the carpet surface, the improvement wherein said fluid distributor comprises:
a) a flat plate-like body having first and second plate-like body halves,
b) said first plate-like body half having recessed in one surface thereof a multiplicity of fluid supply channels extending from a recessed manifold, said channels terminating along a lateral edge of said body,
c) said second plate-like body half affixed to said first body haft whereby said first and second body halves cooperate to form, therebetween, an enclosed fluid supply manifold having a multiplicity of enclosed fluid distributing channels emanating therefrom and terminating as fluid emitting orifices along said lateral edge, and
d) means for supplying cleaning fluid to said manifold.

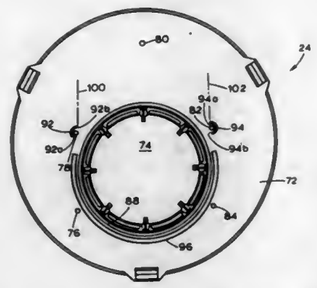
5,548,867
VIBROISOLATING APPARATUS OF VACUUM CLEANER
Jin-Sung Hwang, Anyang, and Jin-Seung Sohn, Seoul, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Mar. 3, 1995, Ser. No. 397,989
Claims priority, application Rep. of Korea, Mar. 3, 1994, 94-4046 U; May 26, 1994, 94-11836 U
Int. Cl.[6] A47L *9/22*
U.S. Cl. 15—339 **8 Claims**



1. A vacuum cleaner which includes a vibroisolating apparatus comprising:
a suction motor adapted to be mounted within a vacuum cleaner body to generate suction force, said motor having a front surface and a rear surface;
a motor case disposed about the suction motor;
a vibroisolating ring provided at the front surface of the suction motor and a rear surface packing provided at the rear surface of the suction motor to absorb and inhibit vibrations generated by the suction motor from being transmitted to the motor case; and
a front surface packing arranged at an external front surface of the motor case to absorb and inhibit vibrations from being transmitted to the body of the vacuum cleaner, said front surface packing being provided at an inner surface of the packing with a buffering plate for buffering impact forces resulting from vibration of the suction motor.

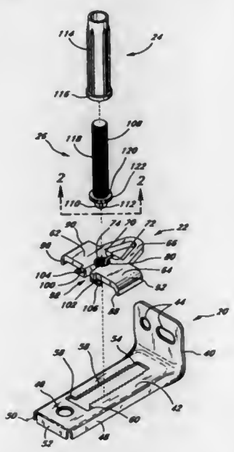
5,548,868
PILOT AND DETENT APPARATUS FOR A VACUUM DEVICE
Robert C. Berfield, Jersey Shore, and Alan D. Kaufman, South Williamsport, both of Pa., assignors to Shop Vac Corporation, Williamsport, Pa.
Filed Jul. 13, 1995, Ser. No. 502,273
Int. Cl.[6] A47L *5/36*
U.S. Cl. 15—339 **30 Claims**

1. A vacuum apparatus comprising:



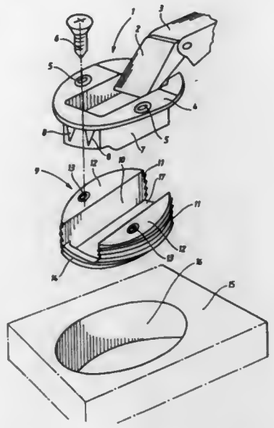
a holding tank for holding debris picked up by the vacuum apparatus;
a lid cage for holding a filter;
a motor housing for housing a motor as a source of vacuum;
attaching means for attaching the lid cage and the motor housing to the holding tank; and,
a detent cooperating with the motor housing and the lid cage for providing an indication to an assembler that the lid cage and the motor have been properly seated with respect to one another.

5,548,869
ADJUSTABLE PIVOT DOOR ASSEMBLY
William F. Ryczek, Bristol, Conn., assignor to Arthur Cox & Sons, Inc., City of Industry, Calif.
Filed Mar. 31, 1994, Ser. No. 220,742
Int. Cl.[6] E05D *15/26;7/04*
U.S. Cl. 16—93 R **22 Claims**



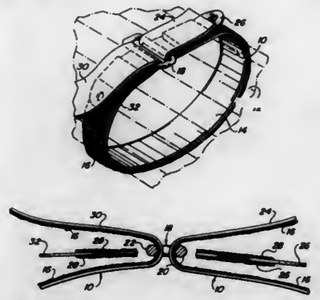
1. A pivot block for a pivot assembly for pivotally anchoring a vertically oriented door, said block comprising:
two block halves;
a resilient connection at one end of the halves connecting the halves, but normally holding them spaced from each other by a slight gap, each of said block halves having a mating recess forming a portion of a socket for receiving the head of a pivot pin depending from a lower edge of said door, said pin head having exterior splines;
a plurality of grooves in each of the socket portions sized to receive the pivot pin splines; and
an anchor depending from each block half and having a plurality of serrations extending laterally outward to mate with serrations in a slot in a mounting bracket to prevent movement of the block along the slot when the pin head, under the weight of the door, is pressed into said socket portions and urges said halves laterally outwardly.

5,548,870
HINGE CUP WITH RELEASABLE FASTENER IN A CABINET COMPONENT
Alfred Grass, sen., Höchst/Vlbg., Austria, assignor to Grass AG, Hochst/Vlbg, Austria
Filed May 11, 1994, Ser. No. 241,279
Claims priority, application Germany, May 12, 1993, 93 07 211.2
Int. Cl.[6] E05D *7/10*
U.S. Cl. 16—254 **6 Claims**



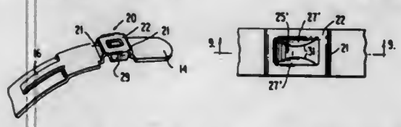
1. A hinge cup with releasable fastener for use with a cabinet component provided with a bore bole, comprising:
an assembly component receivable in the bore hole of the cabinet component, the assembly component including means for anchoring the assembly component in the bore hole of the cabinet component, the assembly component having portions defining a receptacle, and at least one bore hole formed in the assembly component for receiving a fastener;
a cup casing receivable in the receptacle of the assembly component and having an upper portion provided with a screw-down plate, and at least one bore bole formed in the screw-down plate, corresponding to the at least one bore hole of the assembly component, for receiving the fastener through the bore hole of the screw-down plate and into the at least one bore hole of the assembly component;
said assembly component having a transverse axis lying in a transverse plane of substantial symmetry of the assembly component, the assembly component having a front wall and a bottom plate and having two opposing body portions, each of the body portions including a side wall, and said receptacle of the assembly component is defined at least in part by the side walls of the opposing body portions of the assembly component, the front wall of the assembly component, and the bottom plate of the assembly component; and
at least one prong extending from said screw-down plate of said cup casing for engaging said cabinet component.

5,548,871
BUNDLING STRAP
Brig E. A. Trethewey, S14 CBI RR6, Vernon, British Columbia, Canada
Filed Dec. 7, 1994, Ser. No. 350,687
Int. Cl.[6] A44B *18/00;* **B65D** *63/00*
U.S. Cl. 24—16 R **11 Claims**



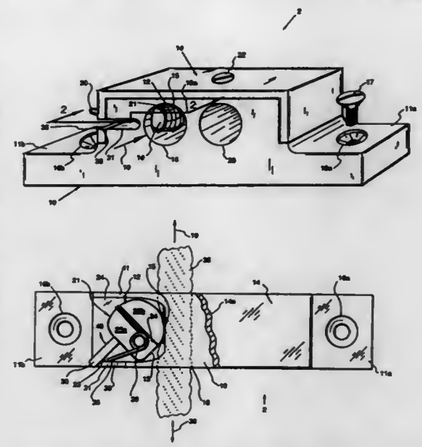
1. A bundling strap, said bundling strap comprising in combination:
a) an anchor;
b) a strap for extending about one or more elements, said strap including a first end engageable with said anchor and folded back upon said strap and a second end engageable with said anchor and folded back upon said strap;
c) a first tab separate from said strap and positionable intermediate said first end and said strap to secure said first end with said strap and a second tab separate from said strap and positionable intermediate said second end and said strap to secure said end with said strap; and
d) a first hook and loop fastening apparatus for retaining said first tab adjacent said strap and said first end folded back upon said first tab and a second hook and loop fastening apparatus for retaining said second tab adjacent said strap and said second end folded back upon said second tab.

5,548,872
REINFORCED EAR STRUCTURE FOR CLAMPS
Hans Oetiker, Horgen, Switzerland, assignor to Hans Oetiker AG Maschinen- und Apparatefabrik, Switzerland
Division of Ser. No. 629,716, Dec. 18, 1990, which is a continuation-in-part of Ser. No. 567,085, Aug. 14, 1990, Pat. No. 5,070,580, and Ser. No. 922,408, Oct. 23, 1986, abandoned, which is a continuation of Ser. No. 622,764, Jun. 20, 1984, abandoned. This application May 17, 1993, Ser. No. 61,265
The portion of the term of this patent subsequent to Feb. 1, 2011, has been disclaimed.
Int. Cl.[6] B65D *63/02*
U.S. Cl. 24—20 CW **10 Claims**



1. A reinforced ear structure for use in a clamp whose clamping band is intended to be contracted by relatively large tightening forces, which includes two outwardly extending leg portions and a bridging portion connecting said leg portions and provided with reinforcing means, characterized in that the reinforcing means includes a shallow depression means surrounded on all sides by a remaining non-depressed bridging portion, said depression means having a bottom part and being of a dimension in the longitudinal and transverse directions of the clamp such that the area of said depression means is at least about 35% of the total area of the bridging portion in its non-reinforced condition, which corresponds substantially to the sum of the areas of the depression means and of the remaining non-depressed bridging portion, the bottom part of the depression means and the remaining non-depressed bridging portion being connected by way of connecting portions, and the bottom part of said depression means being of concave configuration whose radius of curvature is greater than the length of the leg portions, and wherein said bottom part is substantially rectilinear in every axial cross-sectional plane through the bottom part.

5,548,873
SELF-LOCKING CLEAT FOR ROPE, CABLE AND THE LIKE
Isreal A. Macias, 325 Spring Park Cir., San Jose, Calif. 95136
Filed Dec. 8, 1993, Ser. No. 164,017
Int. Cl.[6] F16G *11/00*
U.S. Cl. 24—134 R **4 Claims**



1. An improved rope cleat device comprising:
a) a housing including a first passageway extending therethrough and a chamber formed adjacent to and connected with said first passageway, said first passageway for receiving therethrough a length of rope drawn through said passageway in either a first direction or an oppositely directed second direction, and a second passageway formed generally parallel to said first passageway and not connected with either of said chamber or said first passageway, said second passageway providing a guideway or tie down for the rope;
b) an engaging member pivotally mounted within said chamber and eccentrically rotatable between either a first position or a second position, such that in said first position said member partially blocks said passageway and engagingly contacts said rope and prevents it from being drawn in said second direction, and in said second position said member does not block said passageway and does not engagingly contact said rope, said member including a first surface having a plurality of gripping teeth or lugs formed thereon for embedding into said rope, and a second generally flat surface, whereby when said member is in said first position said first surface is disposed within said first passageway engagingly contacting said rope such that when an attempt is made to draw said rope through said first passageway in said second direction said teeth or lugs are embedded into said rope so as to prevent movement thereof, and when said rope is drawn in said first direction said teeth or lugs are disembedded from said rope so as to allow movement of said rope in said first direction, and when

said member is in said second position said second flat surface is disposed within said first passageway, said rope is free to move through said first passageway in either of said first or said second directions;

c) means including a coil spring for resiliently biasing said member into said first position, said spring extending between a portion of said housing and a portion of said cam;

d) lever means extending from said cam and through a first slotted opening formed in a wall of said chamber for rotating said member toward said second position in opposition to said biasing means to release engagement with said rope; and

(e) a lid for covering said chamber, said lid having a second slotted opening formed therethrough and aligned with said first slotted opening such that said lever means can freely move from said first slotted opening to said second slotted opening,

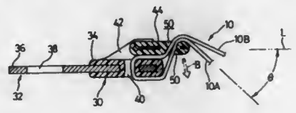
whereby when said member is in said first position said rope may be freely pulled through said passageway in said first direction but not said second direction, and when said member is in said second position said rope may be freely pulled through said passageway in either of said first or said second directions.

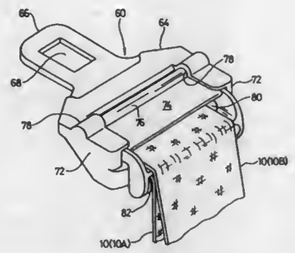
5,548,874

TONGUE ASSEMBLY FOR SEAT BELT DEVICE

Jyoji Mishina, and Masahiro Tanabe, both of Shiga, Japan, assignors to Takata Corporation, Tokyo, Japan

Filed May 2, 1995, Ser. No. 432,696
Claims priority, application Japan, May 10, 1994, 6-096249
Int. Cl.[6] A44B *11/00*
U.S. Cl. 24—170 **9 Claims**





1. A tongue assembly for a seat belt device with a belt webbing, comprising:

a tongue body having an elongated shape and including a first front end adapted to be inserted into a buckle, a first slit extending perpendicular to a longitudinal direction of the tongue body and situated away from the first front end, and a first rear portion situated between the first slit and a first rear edge of the tongue body, and

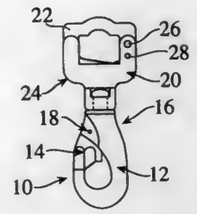
a locking plate disposed above the tongue body, said locking plate including a second front end pivotally connected to the tongue body, a second slit extending substantially parallel to the first slit, a second front portion situated between the second front end and the second slit and located above the first rear portion of the tongue body, a second rear portion situated between the second slit and a second rear edge of the locking plate and disposed laterally away from the first rear edge, and a cutout located in the second rear portion, said belt webbing extending between the first rear portion and the second front portion and passing through the first slit so that when the belt webbing does pass the second slit, the tongue plate moves smoothly along the belt webbing, and when said belt webbing passes the second slit and is pulled, the belt webbing is frictionally held between the first rear portion and the second front portion to restrict movement of the tongue plate along the belt webbing.

5,548,875

SAFETY SNAP

Courtney L. Hart, 23400 Old Santa Cruz Hwy., Los Gatos, Calif. 95030; Brian F. Tischer, 3600 Stage Rd., Pescadero, Calif. 94060, and David G. Lloyd, 135 Molina Dr., Santa Cruz, Calif. 95060

Filed Jan. 18, 1995, Ser. No. 375,491
Int. Cl.[6] A44B *13/00*
U.S. Cl. 24—265 H **11 Claims**



1. A safety snap, comprising:

a first clasp member;

a second clasp member movably attached to said first clasp member to form a clasp, such that, in a first closed position, said first and second clasp members are positioned wherein said second clasp member is biased against said first clasp member, and in a second open position wherein application of pressure to said second clasp member urges said second clasp member away from said first clasp member;

a first latch member rotatably attached to said first clasp member;

a second latch member pivotally attached to said first latch member to form a latch;

a shear pin, adapted to break upon the application of a selected amount of force, for securing said first latch member to said second latch member in fixed attachment in a closed position; and

a resilient member, affixed to said first latch member and upwardly biasing said shear pin;

wherein upon the breaking of said shear pin, said second latch member is pulled away and released from said first latch member, thereby opening the latch.

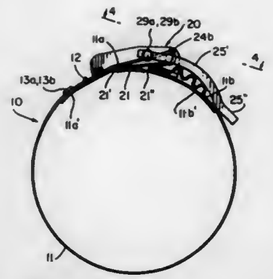
5,548,876

LEVER-TYPE CLAMP

Hans Oetiker, Horgen, Switzerland, assignor to Hans Oetiker AG Maschinen- und Apparatefabrik, Switzerland

Filed Mar. 1, 1995, Ser. No. 396,255
Int. Cl.[6] B65D *63/00*
U.S. Cl. 24—271 **20 Claims**

1. A clamp structure, comprising clamping band means, a lever-type band tightening closure mechanism including a relatively fixed part and a lever part relatively movable with respect to said relatively fixed part, said relatively fixed part having a base portion and two side wall portions integral with and extending upwardly from said base portion at substantially right angle, said base portion being provided with two slots extending transversely to the longitudinal direction of the clamping band means, said lever part having two leg portions defining an elongated opening interrupted intermediate its ends by a transversely extending cross web, two



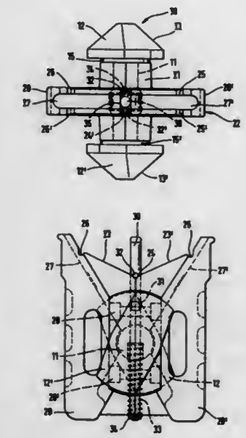
mutually oppositely and outwardly directed pivot members in the area of the open end of said elongated opening which are adapted to pivotally engage in corresponding pivot openings in said side wall portions, one end section of said clamping band means including tolerance compensating undulation means and extending through one of said slots from above, said undulation means being so located in said end section that when the end section is bent back upon itself, the undulation means come to lie on the outside ahead of the bent-back area and are covered from below by the remaining underlying bent-back end section of said clamping band means.

5,548,877

ROTARY LOCK FOR RELEASABLY CONNECTING CORNER FITTINGS OF CONTAINERS STACKED ONE UPON THE OTHER

Torsten M. Nitsche, Langemarckstr. 226-228, D28199 Bremen, Germany, assignor to Torsten M. Nitsche, Bremen, Germany

Filed Feb. 10, 1995, Ser. No. 387,138
Claims priority, application Germany, Feb. 11, 1994, 44 04 392.9
Int. Cl.[6] B65D *21/02*
U.S. Cl. 24—287 **24 Claims**



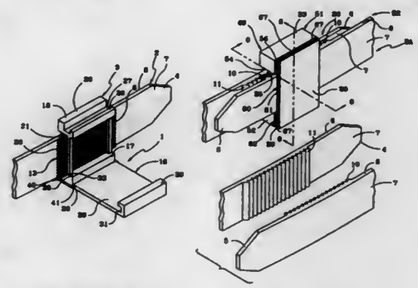
1. A rotary lock comprising a locking pin mounted for rotation in a housing on a longitudinal axis of the pin, said pin having a shank with a transverse latch at each end and being connected to a hand lever, the rotary lock being adapted to be brought basically into three positions relatively to the corner fittings of a container for the purpose of releasably connecting two containers one upon the other, said three positions being the locking position of one transverse latch and the unlocking of the other latch, unlocking position of the one transverse latch and the locking of the other transverse latch and a locking position of both transverse latches, the improvement comprising only one spring means being provided and being connected between the hand lever and the locking pin, and the housing having detent means to lock the hand lever and the locking pin in each of the three positions of the transverse latches, the locking position of both transverse latches being a basic position of the rotary lock and any rotation of the locking pin out of the basic position, irrespectively of whether to the left or right, is against the force of the spring means which stores energy for subsequent return to the basic position for automatic locking.

5,548,878

LOAD SPREADING BELT WITH BUCKLE CLOSURE

Joseph D. Romagnoli, 1014 Conley Cir., Ocean Springs, Miss. 39564

Filed Dec. 16, 1994, Ser. No. 357,915
Int. Cl.[6] A44B *11/00*
U.S. Cl. 24—306 **18 Claims**



1. A belt comprising:

an elongated strap having first and second ends and front and rear surfaces;

a locking catch attached to the front surface of the strap adjacent the first end of said strap;

a catch receiver for engaging the locking catch attached to the rear surface of the strap adjacent the second end of said strap such that the ends of the strap are adapted to overlap, with said locking catch in mating engagement with said catch receiver in a latching area;

a buckle having a body and a door movably mounted on said body for movement between open and closed positions, said body having a base, a top and a rear plate, and a pair of posts extending between said base and top and spaced from said rear plate and defining a passage between said rear plate and said posts sized to accept the first end of the strap and locking catch therein for retaining the body of the buckle on said first end of the strap; said posts and door defining a slot therebetween when the door is in the closed position for receiving the second end of the strap and catch receiver therein for mating engagement with the locking catch in the latching area between said posts.

5,548,879

FASTENER DEVICE

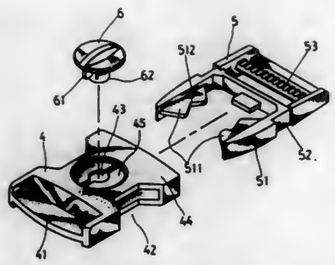
Chen-Chuan Wu, 4F, No. 56, Lane 296, Sec. 6, Ming Chuan E. Rd., Taipei, Taiwan

Filed May 8, 1995, Ser. No. 436,533
Int. Cl.[6] A44B *11/25*
U.S. Cl. 24—625 **1 Claim**

1. A fastener device comprising:

a male fastener having a belt connecting portion, a pair of opposite outward projecting pressing latch boards integrally

VOL 1189 ISS 4 AG 27 1996 UMI



formed at two front ends of said belt connecting portion, and a pair of recesses behind said pressing latch boards, each pressing latch board having an integral inward projecting latch lug formed with a middle notch;

a female fastener having belt connecting portion, an integral latch seat being formed at a front end of said belt connecting portion of side female fastener, two latch sockets being respectively formed on two sides of said latch seat and a circular depression being formed on an upper face of said latch seat, a key hole being formed on a central portion of said circular depression; and

a swivel lock knob received in said circular depression of said female fastener characteristically having a central boss integrally formed with a pair of opposite lock blocks for rotatably fitting into said key hole of said circular depression of said latch seat, whereby after said male fastener is assembled with said female fastener, said swivel lock knob can be rotated and pushed to make said lock blocks of said boss thereof engaged into said middle notches of said latch lugs of said male fastener, so that said pressing latch boards of the male fastener are prevented from being withdrawn and unlocked from said latch seat of said female fastener by unexpected external force.

5,548,880

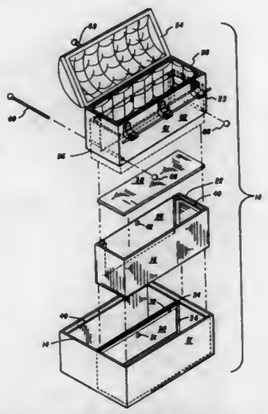
BURIAL COMPARTMENT

Mitchell A. Harb, Lexington, N.C.

Filed Jul. 13, 1995, Ser. No. 501,868

Int. Cl.[6] A61G *17/00*

U.S. Cl. 27—2 **15 Claims**



1. A burial compartment for two bodies, comprising:

a first inner container and a second inner container, each inner container being dimensioned and configured to contain a supine body, each inner container having an open top side, inner lid receiving ledges disposed in said top side, an open communication side, and privacy panel receiving slots disposed in said open communication side;

two privacy panels slidably insertable into said privacy panel receiving slots;

two inner lids dimensioned and configured to engage said lid receiving ledges in said inner containers, thereby covering said open top side of each of said inner containers;

an outer container dimensioned and configured to bold and surround said inner containers, said outer container having an open top side and outer lid receiving ledges disposed in said top side of said outer container;

two outer lids dimensioned and configured to fit together in said outer lid receiving ledges, thereby covering said open top side of said outer container;

a stabilizing cross bar and an elongated C-shaped panel receiving member connected internally and centrally to the outer container, said stabilizing cross bar and said panel receiving member having central panel receiving slots disposed therein; and

a central panel dimensioned and configured to slidably insert into said central panel receiving slots.

5,548,881

APPARATUS FOR NEEDLING A NONWOVEN WEB WITH A ROCKING NEEDLE BOARD

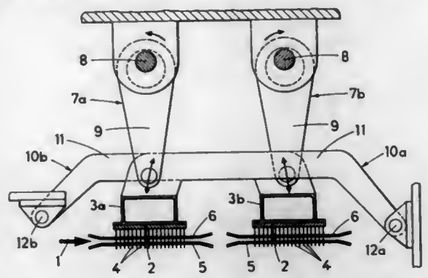
Legi Ludwig, Buchkirchen, Austria, assignor to Textilmaschinenfabrik Dr. Ernst Fehrer Aktiengesellschaft, Leonding, Austria

Filed Apr. 14, 1995, Ser. No. 423,012

Claims priority, application Austria, Apr. 28, 1994, 890/94

Int. Cl.[6] D04H *18/00*

U.S. Cl. 28—114 **2 Claims**



1. In an apparatus for needling a nonwoven web as it moves in a predetermined direction of travel, comprising

needle beam means,

needle board means carried by said needle beam means,

slider-crank mechanism means connected to said needle beam means and comprising crankshaft means operable to actuate said needle beam means, and

rocker means arranged to guide said needle beam means as needle beam means are actuated by said crankshaft means,

the improvement residing in that

said needle beam means comprise a leading needle beam and a trailing needle beam with respect to said direction of travel,

said needle board means comprise first and second needle boards respectively carried by said leading and trailing needle beams,

said rocker means comprise first and second rockers respectively connected to said leading and trailing needle beams,

said slider-crank mechanism means comprise first and second slider-crank mechanisms respectively connected to said leading and trailing needle beams, and

said crankshaft means comprise parallel first and second crankshafts respectively included in said first and second slider-crank mechanisms and operable to rotate in opposite senses.

5,548,882

STORAGE OVEN FOR THIN SLAB CASTING

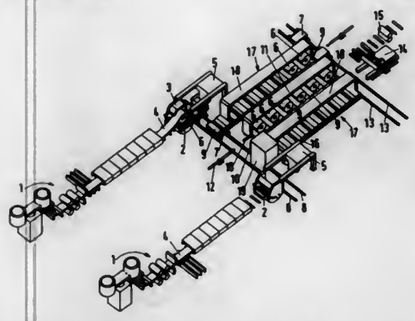
Ernst Windhaus, Duisburg; Bernard Seiler, Mülheim; Peter Meyer, Duisburg; Peter Erwig, Essen; Horst W. Matheija, Dortmund; Heinrich Patalon, Bochum, and Peter Holz, deceased, late of Esson, all of, Germany, assignors to Didier OFU Engineering GmbH, Essen, Germany

Filed May 18, 1994, Ser. No. 167,933

Claims priority, application Germany, Jun. 25, 1991, 41 21 489.7

Int. Cl.[6] B23P *23/06;* **B21B** *1/46;* **B22D** *47/00*

U.S. Cl. 29—336 **10 Claims**



1. An oven installation as intermediate storage between a non-mandrel type coiling device for a strip-shaped slab located downstream of a thin-slab casting installation and an uncoiling device corresponding to a downstream rolling mill, comprising: an oven having an input and an output; and pallet circulating means including pallet cars transportable cyclically through the oven and displaceable transversely at the input and output of the oven and guidable back laterally in a region alongside the oven, the pallet cars having platforms made of refractory material and end sides that directly abut one another so as to form a hearth bottom of the oven, the platforms each further having a saddle produced from a material with poor thermal conductivity, in which saddle a coiled slab bundle is receivable.

5,548,883

APPARATUS FOR EXECUTING HEMMING PROCESS

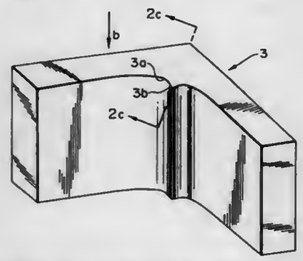
Juzo Saijo, and Koji Ochiai, both of Nagoya, Japan, assignors to Sanyo Machine Works, Ltd., Aichi-ken, Japan

Division of Ser. No. 93,945, Jul. 21, 1993. This application Aug. 22, 1994, Ser. No. 293,302

Claims priority, application Japan, Nov. 19, 1992, 4-309929

Int. Cl.[6] B23P *11/00*

U.S. Cl. 29—243.5 **3 Claims**



1. An apparatus for hemming a panel assembly together, the assembly including an inner panel, having a rounded corner, and positioned on an outer panel which also has a rounded corner, the rounded corners of the panels overlapping, and the rounded corner of the inner panel butted against a rounded, corner hem flange of the outer panel, the apparatus comprising:

creasing blade means, having a concave rounded corner and a medially located single projecting cusp formation which extends from the top to the bottom of the concave rounded corner, for pressing a single cuspal crease into a corresponding corner in the outer surface of the hem flange, the crease being perpendicular to the inner panel, the creasing blade means preliminarily folding the outer panel hem flange inwardly over the inner panel by an acute angle; and

final folding blade means having a flat surface for pressing against the acutely angled hem flange for crimping the inner panel.

5,548,884

METHOD OF MANUFACTURING A KNOWN GOOD DIE ARRAY

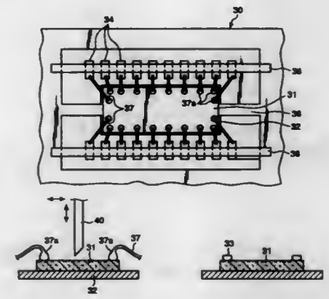
Il U. Kim, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Apr. 7, 1994, Ser. No. 224,020

Claims priority, application Rep. of Korea, Apr. 7, 1993, 1993-5769

Int. Cl.[6] H05K *3/34;* **H01R** *43/04;43/00*

U.S. Cl. 29—593 **12 Claims**



1. A method for manufacturing a known good die array, comprising the steps of:

providing a lead frame having a plurality of die pads supported on said lead frame by a corresponding tie bar, wherein each die pad is associated with a plurality of leads provided on said lead frame;

adhesively applying an adhesive tape to each said plurality of leads associated with each die pad of said lead frame;

mounting a plurality of semiconductor chips on respective die pads of said plurality of die pads using an adhesive interposed between each semiconductor chip and a respective die pad, wherein each semiconductor chip has a plurality of electrode pads provided thereon;

connecting electrode pads of each semiconductor chip to respective leads of said respective plurality of leads using wires, wherein each wire is ball-bonded to a respective electrode pad so as to form a conductive ball portion;

separating each plurality of leads associated with each respective die pad from said lead frame, whereby each said separated plurality of leads are fixed by said adhesive tape;

connecting said lead frame with said separated plurality of leads to a test jig;

testing said plurality of mounted semiconductor chips; and

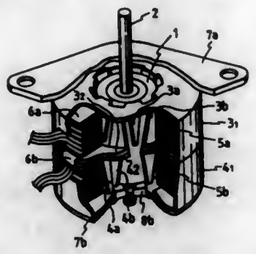
after said testing step, cutting each conductive ball portion on each semiconductor chip, whereby a portion of each conductive ball portion is left on each respective semiconductor ship.

5,548,885

METHOD OF MANUFACTURING STATOR FOR STEPPING MOTOR

Takahisa Yamada, Sagamihara, Japan, assignor to Canon Seiki Kabushiki Kaisha, Tokyo, Japan, and Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 28, 1994, Ser. No. 218,255
Int. Cl.[6] H02K *15/02*
U.S. Cl. 29—596 9 Claims



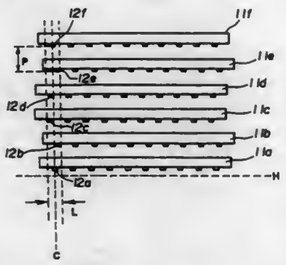
1. A method of manufacturing a stator for a stepping motor, comprising the steps of:
bending a plate so as to form a flat section and a cylindrical section around an outer periphery of the flat section by a first drawing process;
cutting a plurality of comb teeth from the flat portion and bending the comb teeth;
reducing the thickness of the comb teeth so as to make the thickness of the comb teeth uniform;
reducing the diameter of the cylindrical portion by a second drawing process after said thickness reducing step; and
bending the comb teeth further to form a right angle with respect to the flat section.

5,548,886

METHOD OF MANUFACTURING FLOATING MAGNETIC HEAD DEVICE

Naoto Kojima; Takashi Watanabe; Hiroyuki Takahashi, all of Miyagi, and Akio Mishima, Kanagawa, all of, Japan, assignors to Sony Corporation, Japan

Filed Aug. 25, 1994, Ser. No. 295,431
Claims priority, application Japan, Aug. 31, 1993, 5-216760
Int. Cl.[6] G11B *5/127*
U.S. Cl. 29—603.1 11 Claims



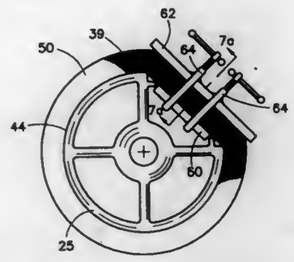
1. A method of manufacturing a floating magnetic head device comprising the steps of:
forming a pedestal on a substrate by individually positioning and adhering a plurality of blocks, each having a plurality of magnetic head elements loaded thereon, onto the substrate in such a manner that magnetic gaps of the magnetic head elements on each of the plurality of blocks are linearly arrayed and so that the plurality of blocks are parallel to one another and spaced at equal intervals;
forming a resistant mask having a plurality of predetermined slider surface shapes on the pedestal formed comprised of the plurality of blocks;
injecting a solid/gaseous two-phase current of free abrasive grains and a carrier gas onto surfaces of the blocks exposed by the resist mask through an injection nozzle; and
slicing the pedestal into sliders of predetermined size.

5,548,887

METHOD OF MAKING A TRANSFORMER CORE FROM STRIPS OF AMORPHOUS STEEL

Willi Klappert, Hickory, N.C., assignor to General Electric Company, Plainville, Conn.

Filed Nov. 22, 1994, Ser. No. 344,093
Int. Cl.[6] H01F *41/02*
U.S. Cl. 29—609 6 Claims



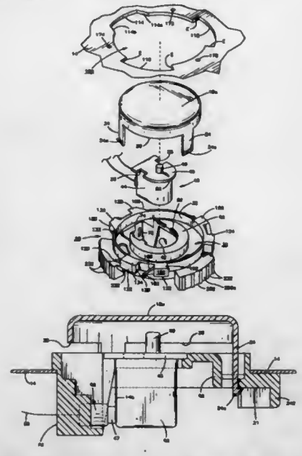
1. A method of making a transformer core from strips of amorphous steel, comprising the following steps:
(a) providing a rotatable mandrel having a circular outer peripheral portion comprising a section that is removably held in place within said peripheral portion, said section having an arcuate outer surface that forms a part of said circular outer peripheral portion,
(b) forming about said circular outer peripheral portion a toroidal core form that comprises laminations of amorphous steel strip encircling said mandrel and having ends that meet in a joint region that extends angularly about a restricted zone of said toroidal core form, said forming step being effected by rotating said mandrel while feeding said laminations onto said circular outer peripheral portion of the mandrel,
(c) controlling the forming step in such a manner that said restricted zone angularly aligns with said removable section,
(d) removing said removable section, thereby exposing an inner peripheral portion of said toroidal core form that angularly aligns with said restricted zone,
(e) inserting a forming member into the space vacated by removal of said removable section,
(f) clamping the portion of said core form in said joint region to said forming member with a clamping mechanism applied in said joint region,
(g) removing from said mandrel the core form together with said applied clamping mechanism, and
(h) shaping said core form into a rectangular configuration by applying radially-outward directed force to said forming member and to a portion of said core form diametrically opposed to said joint region.

5,548,888

METHOD OF SECURING A QUICK-INSTALL SEAT SWITCH

Thomas D. Williams, Hudson, Ohio, assignor to Delta Systems, Inc., Streetsboro, Ohio

Division of Ser. No. 97,518, Jul. 27, 1993, Pat. No. 5,424,502.
This application Feb. 17, 1995, Ser. No. 390,082
Int. Cl.[6] H01H *11/00*
U.S. Cl. 29—622 5 Claims



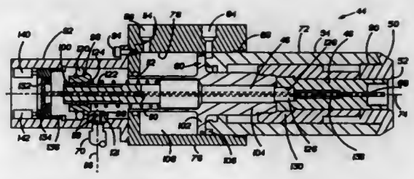
2. A method of securing a seat switch assembly to a seat switch pan, said seat switch pan including a cutout having a central portion and a plurality of slots extending outwardly from said central portion, said seat switch assembly including a base having a switch actuator extending therefrom, said base including a first portion and second portion spaced apart from said first portion, said first portion including a plurality of outwardly extending projections sized to pass through the cutout slots when said base is in an alignment position with respect to said seat pan cutout, said second portion of said base sized to abut said seat pan when said upper portion is passed through said seat pan cutout, the steps of the method comprising:
a) positioning the base in the alignment position;
b) inserting the base through the seat pan cutout until the second portion of the base abuts the seat pan; and,
c) rotating the base with respect to the seat pan to move the projections on the base away from the alignment position.

5,548,889

FASTENER SYSTEM INCLUDING A SWAGE FASTENER AND TOOL FOR INSTALLING SAME

Walter J. Smith, and David J. Fulbright, both of Waco, Tex., assignors to Huck Patents, Inc., Wilmington, Del.

Division of Ser. No. 765,399, Sep. 24, 1991, Pat. No. 5,315,755, which is a continuation of Ser. No. 654,412, Feb. 11, 1991, abandoned, which is a continuation of Ser. No. 359,482, May 31, 1989, abandoned. This application Feb. 1, 1994, Ser. No. 189,871
Int. Cl.[6] F16B *19/08*
U.S. Cl. 29—715 29 Claims



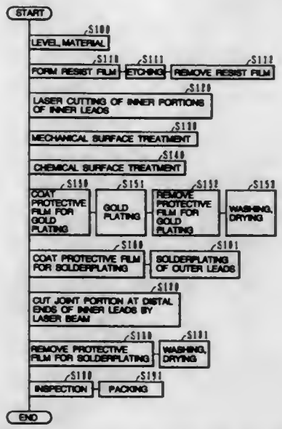
1. A tool for securing a plurality of workpieces with a multi-piece swage type fastener which includes a pin adapted to extend through aligned openings in the workpieces and a tubular collar adapted to be located on the pin and swaged into locking grooves on the pin with the pin having a pull portion with helical pull grooves, said tool comprising:
a rotary nut member threadable onto the pull portion of the pin to exert an axial pulling force thereon,
an annular swage anvil having a swage cavity with an inner diameter less than the outer diameter of the collar,
said rotary nut member located radially inwardly of said swage anvil and adapted to rotate relative to said swage anvil and to move axially relative to said swage anvil,
rotary means for rotating said nut member,
force means for applying a relative axial force between said nut member and said swage anvil and for applying such axial force of a first magnitude after said nut member has been threaded onto the pull portion of the pin to move said swage anvil axially to radially overengage the collar to swage the collar onto the locking grooves on the pin,
control means operatively connected with said rotary means for halting rotary motion of said nut member by said rotary means when said nut member is threaded to a predetermined position on the pull portion of the pin.

5,548,890

LEAD FRAME PROCESSING METHOD

Nobuhiko Tada, Ushiku; Naoki Miyanagi, Ibaraki-ken; Yoshiaki Shimomura, Ibaraki-ken; Shigeyuki Sakurai, Ibaraki-ken; Shinya Okumura, Ibaraki-ken, and Yoshinari Nagano, Ibaraki-ken, all of, Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 256,476, Jul. 7, 1994, abandoned.
This application Oct. 23, 1995, Ser. No. 553,742
Claims priority, application Japan, Nov. 24, 1992, 4-313615; Jul. 7, 1993, 5-167940
Int. Cl.[6] H01R *43/02;* H01L *21/60;23/495;* B23K *26/00*
U.S. Cl. 29—827 20 Claims



1. A lead frame processing method in which a metallic plate (11) is subject to laser cutting to form a lead frame (1) comprising a number of inner leads (3) and a number of outer leads (4) positioned outwardly of said inner leads in continuous relation, wherein the number of inner leads (3) is sufficiently great and of sufficiently small pitch so as to be subjected to thermal deforma-

VOL 1189 ISS 4 AG 27 1996 UMI

tion forces when inner portions (3*a*) of the inner leads (3) are formed by laser cutting, said method comprises the steps of:

(a) forming the inner portions (3*a*) of said inner leads by said laser cutting under the condition that a joint portion (7) is left so as to interconnect said inner leads (3) at their distal ends in order to prevent thermal deformation forces incidental to said laser cutting from deforming said inner leads (3),

(b) forming outer portions (3*b*) of said inner leads and said outer leads (4), and

(c) cutting off said joint portion (7) to complete said inner leads (3).

5,548,891

METHOD OF AUTOMATICALLY MOUNTING ELECTRONIC CONNECTOR ONTO AN END OF PRINTED CIRCUIT BOARD

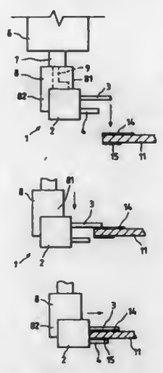
Shoji Sakemi, Fukuoka, and Teruaki Nishinaka, Kasuga, both of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 20, 1994, Ser. No. 360,071

Claims priority, application Japan, Dec. 22, 1993, 5-324631

Int. Cl.[6] H05K *3/00;* **H01R** *9/00*

U.S. Cl. 29—842 **15 Claims**



1. A method of automatically mounting a connector on an end of a printed circuit board comprising the steps of:

preparing a connector having first leads protruding forward from a front surface of a connector main body, and second leads shorter than said first leads and protruding forward from the front surface of said connector main body, said first leads being parallel to said second leads to define a space for receiving an end portion of a printed circuit board;

positioning said connector in a bolding means at a position where a protruding distal end of the first lead is brought into contact with a surface of a printed circuit board at said end portion but a protruding end of the second lead is spaced from said end portion of the printed circuit board; and

advancing said holding means supporting said connector toward said printed circuit board until said end of the printed circuit board is clamped between said first and second leads.

5,548,892

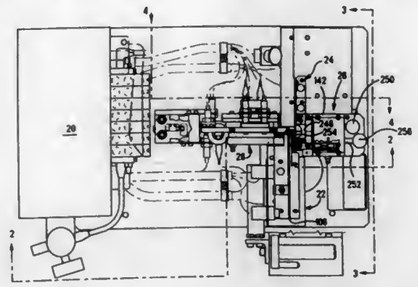
MACHINE FOR ASSEMBLING AN INSULATION DISPLACEMENT CONNECTOR AND TERMINATING A CONDUCTOR THERETO

Charles E. Fitz, Jr., Harrisburg, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Jan. 19, 1995, Ser. No. 374,079

Int. Cl.[6] H01R *43/04;* **B23P** *19/00*

U.S. Cl. 29—866 **13 Claims**



1. A machine for severing an insulation displacement contact from a carrier strip, inserting said contact into a connector housing while concurrently terminating a wire to said contact, and trimming said wire to a predetermined length, said machine comprising a frame and an inserter coupled to said frame and arranged to hold and move said contact in a first direction into inserted engagement with said housing and into terminated engagement with said wire, and

a trimming mechanism attached to said frame and operable by said inserter for severing said wire to said predetermined length during said moving of said contact in said first direction.

12. In a method of severing an insulation displacement contact from a carrier strip, inserting said contact into a connector housing while concurrently terminating a wire of an electrical component to said contact, and trimming said wire to a predetermined length where said method is performed by a machine having a frame, an inserter coupled to said frame and including a clamp, arranged to hold and move said contact in a first direction into inserted engagement with said housing and into terminated engagement with said wire, and a trimming mechanism operable by said inserter for severing said wire to length during said moving of said contact in said first direction,

the steps comprising:

(1) clamping said contact in said clamp;

(2) moving said inserter in a direction perpendicular to said first direction, thereby severing said contact from said carrier strip and aligning said contact with said housing;

(3) moving said inserter in said first direction so that said contact interferingly engages said wire;

(4) then cutting said wire to length concurrently with further moving said inserter in said first direction until said contact is seated in said housing and said wire is terminated to said contact.

5,548,893

SPIN-ON OIL FILTER REPLACEMENT ELEMENT

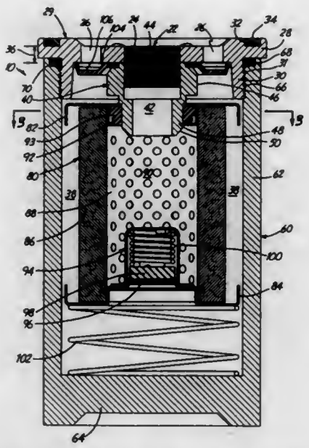
Douglas F. Koelfgen, 21595 County Rd. 83, Big Lake, Minn. 55309

Filed Mar. 20, 1995, Ser. No. 407,208

Int. Cl.[6] B01D *35/02*

U.S. Cl. 29—888.01 **16 Claims**

15. A method of attaching an oil filter element to an engine having an oil inlet port with external threading and an oil outlet port adjacent the oil inlet port, the method comprising:



screwing an annular adapter having internal threads extending therethrough onto an inner portion of external threading on the oil inlet port of the engine;

screwing a lock nut onto an outer portion of external threading on the oil inlet port, thereby retaining the annular adapter on the oil inlet port, the lock nut having a seal shoulder extending opposite the annular adapter;

placing an oil filter element within a canister, the oil filter element having an annular front end cap defining an axis, a rear end cap opposing the front end cap, and filtration material attached between the front end cap and the rear end cap and having an elongated annular shape about the axis and defining a clean oil chamber along the axis within the filter element, the canister having a peripheral wall and an end wall attached to the peripheral wall;

removably attaching the canister to an outer periphery of the adapter, thereby sealing the oil filter element against the seal shoulder of the lock nut.

5,548,894

INK JET HEAD HAVING INK-JET HOLES PARTIALLY FORMED BY LASER-CUTTING, AND METHOD OF MANUFACTURING THE SAME

Mitsuru Muto, Kasugai, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed May 31, 1994, Ser. No. 252,167

Claims priority, application Japan, Jun. 3, 1993, 5-133573; Oct. 26, 1993, 5-266904; May 20, 1994, 6-106802

Int. Cl.[6] B41J *2/135*

U.S. Cl. 29—890.1 **22 Claims**

1. A method of manufacturing an ink jet head including an ink-chamber member having a plurality of ink chambers to be filled with an ink, and a nozzle plate which is secured to a front end face of said ink-chamber member and which has a plurality of ink-jet holes communicating with said plurality of ink chambers, respectively, said method comprising the steps of:

forming by injection molding a blank for said nozzle plate, said blank having a plurality of blind holes formed in one of opposite surfaces thereof which corresponds to a surface of said nozzle plate at which said nozzle plate is secured to said front end face of said ink-chamber member, said blank having bottom walls each defining a bottom of said blind holes, respectively, each of said blind holes having a varying-area portion whose cross sectional area decreases in a direction from said one of opposite surfaces toward said bottom;

laser-cutting said blank, with at least one laser beam, to remove at least a portion of each of said bottom walls and thereby form a plurality of orifice holes which cooperate with said blind holes to form said ink-jet holes, whereby said nozzle plate is prepared; and

securing said blank to said front end face of said ink-chamber member before said blank is laser-cut, or securing said nozzle plate to said front end face of said ink-chamber member after said nozzle plate is prepared by laser-cutting said blank.

5,548,895

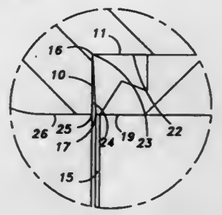
METHOD OF CONNECTING A CLEAN SOCKET FIT CONNECTION

Charles Grenci, 205 Brown Rd., Montrose, Colo. 81401, and R. Dallas Clayton, 501 Alvarado Dr., Albuquerque, N.M. 87108

Division of Ser. No. 342,625, Nov. 21, 1994, which is a continuation-in-part of Ser. No. 894,464, Jun. 5, 1992, Pat. No. 5,341,567. This application Jun. 6, 1995, Ser. No. 469,654

Int. Cl.[6] B23P *11/02*

U.S. Cl. 29—890.141 **2 Claims**



1. A method of connecting an end of a plastic, male vacuum-component to a female component in a vacuum system, comprising:

a) attaching an elastomeric sealing member to the end of the male vacuum-component;

b) after said step (a), inserting the end of the male vacuum-component into a female vacuum-component until the elastomeric sealing member is in at least partial contact with a mating surface-portion of the female vacuum-component;

c) creating a vacuum in the vacuum-system in which the male vacuum-component has become part of during said step (b);

d) said step (c) causing the elastomeric sealing member to be drawn completely against the mating surface-portion of the female vacuum-component;

(e) repeating said steps (a) and (b) a plurality of times for other mating male and female vacuum-components; said step (c) creating a vacuum in the other mating male and female vacuum-components for causing the elastomeric sealing member at each end of each male vacuum-component to be drawn completely against the mating surface-portion of the female vacuum-component;

said steps (a) through (e) comprising erecting a stand-alone structure which is held firmly together by binding forces formed by the vacuum of said step (c), said binding forces being dependent upon the difference between the pressure on

the exterior surface of said stand-alone structure and the pressure on the interior surface of said stand-alone structure, said pressure on the interior surface of said stand-alone structure being determined by the vacuum formed during said step (c).

5,548,896

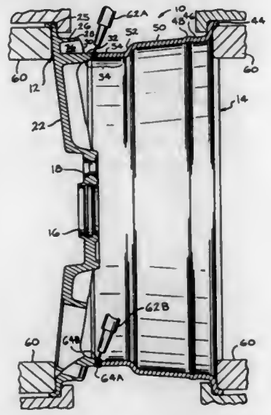
METHOD OF MANUFACTURING A FULL FACE WHEEL ASSEMBLY

Kenneth R. Archibald, Canton, Mich., and Melvyn L. Scott, Jr., Huntington, Ind., assignors to Hayes Wheels International, Inc., Romulus, Mich.

Continuation of Ser. No. 711,498, May 31, 1991, Pat. No. 5,360,261, which is a continuation of Ser. No. 442,123, Nov. 28, 1989, abandoned, which is a continuation-in-part of Ser. No. 407,983, Sep. 15, 1989, abandoned. This application Jan. 7, 1994, Ser. No. 179,010

Int. Cl.[6] B60B *3/10;* **B23P** *19/00*

U.S. Cl. 29—894.322 **14 Claims**



1. A method for producing a full face vehicle wheel which defines a rotating axis, the method comprising the steps of:

(a) forming a full face wheel disc having an inboard facing, axially extending annular lightener cavity formed therein during a forming process selected from the group consisting of casting and forging, the wheel disc having a full outboard face and an inboard face, and including an outboard tire bead retaining flange, a first circumferential wall extending axially inwardly from the inboard face and defining an outboard tire bead seat, and a second circumferential wall spaced radially inwardly from the first circumferential wall and extending axially inwardly from the inboard face and terminating in an inner annular edge, the first and second circumferential walls having facing surfaces which are substantially parallel to the wheel axis and which cooperate to define the annular lightener cavity;

(b) forming a partial wheel rim including an inboard bead retaining flange, an inboard bead seat, an inboard bead hump, an inboard leg, an inboard well side and a deep well bottom portion terminating in an outer annular edge;

(c) positioning the outer annular edge of the partial wheel rim deep well bottom portion adjacent to the inner annular edge of the wheel disc second circumferential wall to produce a wheel assembly having the outboard bead seat coaxial with the inboard bead seat and the outboard bead retaining flange parallel to the inboard bead retaining flange; and

(d) welding the outer annular edge of the rim deep well bottom portion to the inner annular edge of the disc second circumferential wall, the weld forming an air-tight seal therebetween.

5,548,897

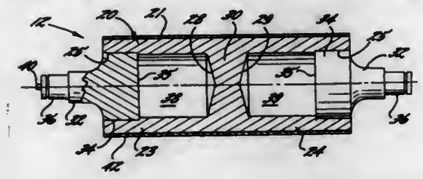
METHOD OF FABRICATING LIGHTWEIGHT INK TRANSFER ROLL

Terry G. Link, 421 Hempstead Pl., Charlotte, N.C. 28207

Division of Ser. No. 114,136, Aug. 30, 1993, Pat. No. 5,411,462. This application Mar. 20, 1995, Ser. No. 407,214

Int. Cl.[6] B23P *15/00*

U.S. Cl. 29—895.32 **18 Claims**



1. A method of fabricating a lightweight roll comprising the steps of

providing a metallic solid base roll which includes an outer cylindrical surface and opposite ends,

removing material from each of the ends of said base roll so as to form tubular opposite end portions which are coaxial with each other, and so that a solid medial portion of said base roll remains between said tubular end portions and said solid medial portion defines an outwardly facing inner end wall for each of said tubular end portions,

providing a pair of metallic headers, with each of said headers including a cylindrical mounting end portion which defines a transverse inner end surface, and a journal at the opposite end portion of said header, and with the mounting end portion and the journal of each header being coaxial with each other so as to define a central axis for each header,

assembling said mounting end portions of said pair of headers in respective ones of said tubular opposite end portions of said base roll to form an assembly thereof and so that said central axes of said headers are coaxial with each other and define a central axis for said assembly, and wherein said inner end surface of each of said headers opposes said inner end wall of the associated tubular end portion and said journals extend outwardly from said base roll, and such that said inner end surface of each of said headers is axially spaced from the inner end wall of the associated tubular end portion a substantial distance so as to leave an open void therebetween.

5,548,898

METHOD FOR PROVIDING A FLEXIBLE COVERING FOR A PORTION OF A TAPERED COIL SPRING

Robert A. Noll, Jr., Florence, Ky., assignor to Hoesch Suspensions, Inc., Hamilton, Ohio

Division of Ser. No. 944,517, Sep. 14, 1992, Pat. No. 5,310,167. This application Apr. 29, 1994, Ser. No. 235,424

Int. Cl.[6] B23P *11/02;13/00*

U.S. Cl. 29—896.91 **11 Claims**

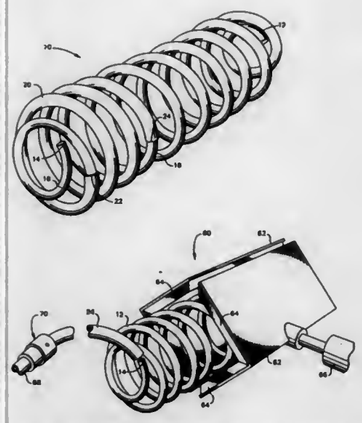
1. A method for assembling a hose onto the wire of a coil spring, comprising the steps of:

(a) providing a coil spring, said coil spring comprising a wire of more than one winding, said wire having a first end and a second end, and a middle portion between said first and second ends;

(b) placing said coil spring into an assembly fixture such that said first end of the wire of the coil spring and at least one winding of the coil spring is accessible, said at least one winding being proximal to said first end of the wire of the coil spring;

(c) applying lubricant to said at least one winding of the coil spring;

(d) providing a non-tapered flexible hose, said hose having a first end, a second end, and a middle portion between said first and second ends, said hose having a substantially hollow interior portion;



(e) applying lubricant to said hollow interior portion at the first and second ends of said hose;

(f) providing a gas fitting which is attached to a source of compressed gas;

(g) attaching the first end of said hose to said gas fitting such that compressed gas is provided to the hollow interior of said hose; and

(h) placing the second end of said hose over the first end of the wire of said coil spring and thereafter advancing the second end of said hose up the wire of said coil spring until the first end of said hose is telescoped over the first end of the wire of said coil spring.

5,548,899

RECIPROCATORY DRY SHAVER

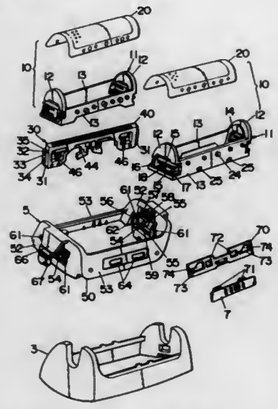
Masao Tanahashi; Tekeshi Shiba, and Toshio Ikuta, all of Hikone, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Division of Ser. No. 377,361, Jan. 24, 1995, which is a division of Ser. No. 47,501, Apr. 19, 1993, Pat. No. 5,398,412. This application Apr. 25, 1995, Ser. No. 428,623

Claims priority, application Japan, Apr. 23, 1992, 4-103330; Dec. 22, 1992, 4-342204

Int. Cl.[6] B26B *19/04;19/06*

U.S. Cl. 30—43.92 **1 Claim**



1. A reciprocatory dry shaver comprising:

a shaver housing having a head frame which carries three elongated cutter heads each having a longitudinal axis, said three elongated cutter heads composed of a center cutter head and two outer cutter heads arranged on opposite sides of said center cutter head with the individual longitudinal axes substantially parallel to each other, each of said two outer cutter heads comprising an outer foil and an outer movable cutter driven to reciprocate along said longitudinal axis of each of said two outer cutter heads in hair shearing engagement with said outer foil of each of said two outer cutter heads, said center head comprising a stationary cutter and a center movable cutter driven to reciprocate along said longitudinal axis of said center cutter head in hair shearing engagement with said stationary cutter of said center cutter head; and

reciprocating means for imparting a reciprocating motion to said three elongated cutter heads;

wherein said stationary cutter of said center cutter head is of a generally U-shaped configuration with a top wall and a pair of side walls depending from opposed lateral sides of said top wall,

said top wall being formed with a plurality of slits which are spaced along the longitudinal axis of said center cutter head and are opened into said opposed side walls,

said center movable cutter being disposed in shearing engagement with a lower surface of said top wall between said side walls of said stationary cutter and being provided at a longitudinal center of said center movable cutter with a coupler which projects between said side walls for coupling with said reciprocating means,

said stationary cutter being secured at its longitudinal ends respectively to L-shaped holders disposed between said opposed side walls, said L-shaped holders formed respectively with connections for connection with said head frame,

at least one spring being held between said L-shaped holders and center movable cutter for biasing said center movable cutter against said stationary cutter,

said opposed side walls being formed with openings in a portion adjacent to said at least one spring through which said at least one spring is exposed.

5,548,900

MEASURING INSTRUMENTS

Robert H. Hunt-Grubbe, Glencote, Lower Common, Eversely Hampshire, RG27 OQU, England

Filed Sep. 16, 1994, Ser. No. 308,799

Claims priority, application United Kingdom, Sep. 20, 1993, 9319402

Int. Cl.[6] G01B *5/12;* **E21B** *47/08*

U.S. Cl. 33—302 **21 Claims**



1. A sensing finger for a measuring instrument, said finger comprising:

a tip whose position is to be measured when it abuts an object;

a locating portion for cooperating with a mount for the finger so that the finger can move along a path with respect to the mount;

a reference point which moves according to movement of the tip; and

resilient means integral with the finger for moving the finger.

VOL 1189 ISS 4 AUG 27 1996 UMI

5,548,901

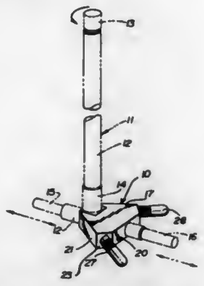
CENTERING TOOL FOR CYLINDER GAUGE

David J. Isler, 113 W. Church, Newton Falls, Ohio 44444

Continuation of Ser. No. 54,288, Apr. 30, 1993, Pat. No. 5,377,421. This application Nov. 1, 1994, Ser. No. 333,060

Int. Cl.[6] G01B *5/12*

U.S. Cl. 33—542.1 **11 Claims**



1. A centering tool for use with cylinder wall gauges of the type having a telescopically extensible plunger extending from a mounting body,

said centering tool comprising:

a mounting base having spaced angularly disposed apertured pin mounting surfaces;

centering pins in fixed relation within said respective mounting surfaces; and,

means for aligning and securing said centering tool on said mounting body of said cylinder wall gauge.

5,548,902

MULTI-COORDINATE PROBE

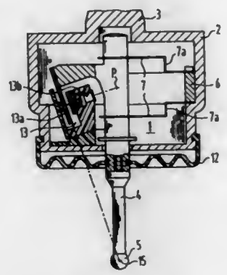
Alfons Erast, Traunreut, Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Germany

Filed Jul. 26, 1994, Ser. No. 280,863

Claims priority, application Germany, Jul. 31, 1993, 43 25 743.7

Int. Cl.[6] G01B *5/016*

U.S. Cl. 33—561 **6 Claims**



1. A multi-coordinate probe, comprising:

a housing;

at least one tracer pin for scanning an object;

resilient means for supporting the tracer pin in the housing with a possibility of deflection of the tracer pin in a plurality of coordinate directions upon engagement with the object, said resilient supporting means comprising a plurality of multi-arm leaf springs with each arm of at least one of said leaf springs having an axially extending spring component spaced from both ends of the arm;

a plurality of sensors supported in the housing for detecting displacement of the tracer pin upon the engagement of the tracer pin with the object;

wherein the tracer pin has at an end thereof a feeler ball having a center which defines a scanning pole, and wherein the sensors have respective measuring axes which intersect at the scanning pole.

5,548,903

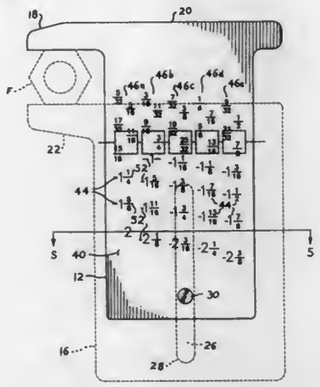
WRENCH SELECTOR

George H. Johnson, and Lillian D. Johnson, both of 398 NE. Camelot Dr., Port St. Lucie, Fla. 34983

Filed Dec. 20, 1995, Ser. No. 575,622

Int. Cl.[6] G01B *3/20;5/02*

U.S. Cl. 33—810 **20 Claims**



1. A wrench selector adapted for the determination of the size of a threaded fastener of a group of fasteners having a limited number of different standard sizes and for selection of a correspondingly sized wrench for use therewith, said wrench selector comprising:

a flat, thin, wide, and elongated slide scale, said slide scale including a first end having a first jaw extending laterally therefrom and a first face having a plurality of fastener size numbers disposed substantially diagonally thereacross to form a plurality of vertical columns and a plurality of diagonal rows of fastener size numbers thereon, with each of said numbers corresponding to a standard fastener size, and;

a flat, thin, and wide body sleeve including a slot extending therethrough adapted to fit closely about said slide scale, said sleeve having a first end with a second jaw extending therefrom and opposite said first jaw of said slide scale, and a first face having a plurality of windows therethrough in a lateral array, with each of said windows being aligned with a corresponding one of said vertical columns of said fastener size numbers when said slide is placed within said slot of said body sleeve, whereby;

said first jaw and said second jaw are closed about each side of a fastener placed therebetween by sliding said slide scale within said slot of said body sleeve, and the size of the fastener is read within the single one of said windows having an exact alignment with a corresponding single one of said fastener size numbers, thereby providing an unambiguous readout of the size of the fastener and the corresponding wrench size required.

5,548,904

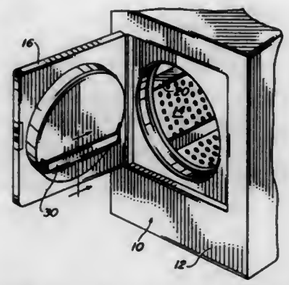
ARTICLE CATCHER FOR CLOTHES DRYER

John D. Rood, Fountain Hills, Ariz., assignor to Innoventions, Fountain Hills, Ariz.

Filed May 1, 1995, Ser. No. 432,598

Int. Cl.[6] F26B *21/06*

U.S. Cl. 34—82 **10 Claims**



1. In a clothes dryer of the type having a cabinet with a rotatable drum therein in which heated air passes through the clothes tumbled by the drum, the cabinet having a door with an interior surface and opening into the open end of the drum, the improvement comprising an article catcher for collecting loose articles in the dryer, said article catcher comprising:

(a) a tray having a wall defining a generally elongate collection area;

(b) attachment means securing said tray against the interior surface of said door with said collection area being generally upwardly disposed and in a horizontal position extending substantially across the said door opening whereby said loose articles migrating toward said door during tumbling will be caught and retained in said tray.

5,548,905

RAPID DEHYDRATING AND DRYING METHOD AND DEVICE USABLE IN LOW TEMPERATURE

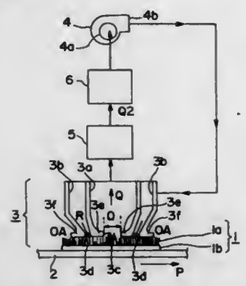
Toshimi Kuma, Fukuoka, and Shinji Kakuya, Sayama, both of, Japan, assignors to Kabushiki Kaisha Seibu Giken, Fukuoka, Japan

Filed Apr. 28, 1995, Ser. No. 430,852

Claims priority, application Japan, Apr. 30, 1994, 6-126742; Dec. 8, 1994, 6-222403

Int. Cl.[6] F26B *13/30*

U.S. Cl. 34—92 **30 Claims**



1. A rapid dehydrating and drying device usable at a low temperature, comprising:

a component including a blowing nozzle and a sucking-out nozzle;

a wet article to be dried placed close to and sliding on tips of said sucking-out nozzle and said blowing nozzle; and

a high speed air jet stream and a high speed negative pressure air stream simultaneously applied by said blowing nozzle and said sucking-out nozzle, respectively, to said wet article to be dried, for directly sucking out water drops and water vapor from said wet article to be dried.

5,548,906

VAPORIZING AND CONCENTRATION DRYING APPARATUS AND METHOD

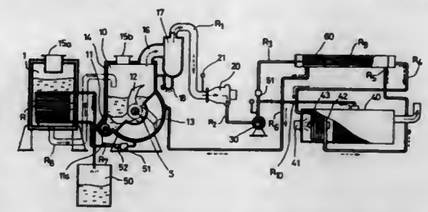
Dae Sung Lee, B-307, Yangji Apt. #275, Nonhyun-Dong, Kangnam-Ku, Seoul, Rep. of Korea, and Ho Keun Shin, 40 Manri-Dong 2-ga, Chung-Ku, Seoul, Rep. of Korea

Filed Nov. 25, 1994, Ser. No. 344,984

Claims priority, application Rep. of Korea, Oct. 17, 1994, 26474/94

Int. Cl.[6] F26B *3/00*

U.S. Cl. 34—338 **3 Claims**



1. Vaporizing and concentration drying apparatus, wherein the improvement comprises:

a container for containing wet material therein, said container having a double structure wall and equipped with a coiled tube therein, and provided on its top with a first inlet port for charging the wet material in the container, said coiled tube being connected to a condensed water tank;

an agitating type vaporizer for recovering latent heat of vapor and vaporizing the wet material using recovered latent heat, said vaporizer being connected to a bottom of said container through a conduit for receiving the wet material from the container, and said vaporizer including:

a second inlet port provided on a top of the vaporizer;

a rounded bottom;

a recess provided in a side wall near the rounded bottom and equipped with a screw for discharging sludge to an outside of the vaporizer;

a plurality of panel type semicircular steam chambers communicating with each other, each of said panel type steam chambers being vertically placed in an interior of the vaporizer, so that the panel type chambers are horizontally arranged and regularly spaced out, and said panel type chambers being connected to said coiled tube of the container through a conduit having both a pressure regulator and a drain valve;

a plurality of agitating blades for agitating the wet material in the vaporizer, said blades being placed between said panel type chambers and each blade being rotated in opposed directions so as to evenly agitate the wet material;

a blade shaft lengthwise extending in the center of said vaporizer and supporting the agitating blades thereon; and

an overflow preventing chamber for preventing overflow of liquid out of said vaporizer during vaporization, said overflow preventing chamber being connected to the top of the vaporizer through a connection pipe and having a U-shaped trap extending from its bottom to the interior of the vaporizer;

a heat recovering unit for recovering latent heat of vapor and for preheating low temperature vapor introduced thereto from the vaporizer, said unit being connected to said vaporizer and to an inlet of a coiled vapor heating tube surrounding a vapor heating chamber of an auxiliary boiler and to said panel type steam chambers of the vaporizer and to an outlet of the coiled vapor heating tube through associated conduits, and said unit including:

a plurality of horizontally extending steam conduits, said horizontally extending steam conduits passing the low temperature vapor therethrough; and

a plurality of partitions vertically placed in the unit and regularly spaced out;

said auxiliary boiler for receiving the preheated vapor from the heat recovering unit and heating the preheated vapor to a high temperature so as to oxidize or carbonize the vapor, said auxiliary boiler being connected to the heat recovering unit and having a burner, the coiled vapor heating tube and the vapor heating chamber;

a vapor compressing turbine and a vapor compressing pump for compressing the vapor supplied from the vaporizer so as to increase the vapor pressure, both of the turbine and the pump being provided on a conduit extending from the overflow preventing chamber of the vaporizer to the heat recovering unit; and

a preheated air supply control valve provided on the conduit in front of said vapor compressing turbine, said valve being adapted for controlling preheated air supplied to vapor flowing from the vaporizer to the heat recovering unit through the conduit.

5,548,907

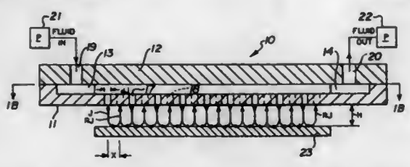
METHOD AND APPARATUS FOR TRANSFERRING HEAT, MASS, AND MOMENTUM BETWEEN A FLUID AND A SURFACE

Meredith C. Gourdine, Houston, Tex., assignor to Energy Innovations, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 397,989, Aug. 24, 1989, abandoned. This application Aug. 30, 1993, Ser. No. 113,350

Int. Cl.[6] F26B *3/00*

U.S. Cl. 34—448 **28 Claims**



1. A method for transferring heat, mass, and momentum between a target surface and at least one fluid using a multiplicity of tiny fluid jets comprising the steps of;

providing at least one plate having a first plurality of adjacent closely spaced outlet perforations extending to an exterior surface and interconnected by at least one fluid supply channel to cause fluid passing therethrough to be discharged as a series of small separate outlet jets and a second plurality of adjacent closely spaced return perforations extending to an exterior surface and interconnected by at least one fluid return channel to draw fluid therethrough as a series of small separate return jets,

introducing a fluid at a predetermined large volumetric flow rate into said first plurality of outlet perforations to form a series of small separate outlet jets which travel a predetermined distance in a direction toward a target surface and impinge thereon,

allowing said impinged fluid to flow on said target surface a predetermined distance sufficiently short to coalesce and form a thin laminar boundary layer, and

withrawing said impinged coalesced fluid from said target surface through said return perforations as a series of small separate return jets which travel in a direction away from said target surface,

said return perforations being spaced apart relative to said outlet perforations a distance sufficiently short to withdraw said impinged fluid flowing on said target surface before it forms a thick laminar boundary layer thereon and thereby create a very thin laminar boundary layer sufficiently thin to transfer heat, mass, and momentum from said target surface at a high transfer rate relative to that achieved by a thicker laminar boundary layer.

5,548,908

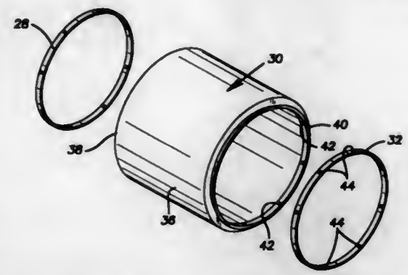
BULKHEAD AND EXPANDED DRUM WITHOUT ROLLERS

Kevin Torborg, and Victor E. Jelinek, both of Webster City, Iowa, assignors to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Jun. 13, 1995, Ser. No. 489,843

Int. Cl.[6] F26B *11/02*

U.S. Cl. 34—601 **14 Claims**



1. An assembly for rotatably supporting a clothes dryer drum and for sealing a space between an annular lip of the drum and a support ring extending from a bulkhead, said assembly comprising a wear ring and a plurality of wear pins, said wear pins securing said wear ring to one of said annular lip or said support ring, wherein said wear ring seals the space between said annular lip and said support ring and rotatably supports the drum, and wherein said wear pins are formed from a low friction material.

5,548,909

SPORTS SHOE HAVING AN ASYMMIETRICAL OPENING

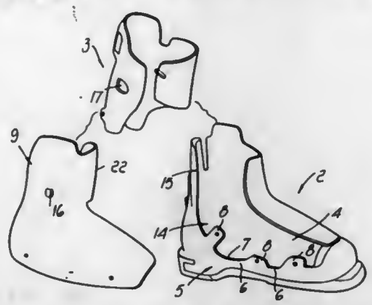
Massimo Foffano; Giancarlo Foscaro, and Faustino Lucchetta, all of Treviso, Italy, assignors to Nordica S.p.A., Trevignano, Italy

Filed Apr. 6, 1994, Ser. No. 223,882

Claims priority, application Italy, Apr. 9, 1993, TV93A0041

Int. Cl.[6] A43B *5/04;5/16*

U.S. Cl. 36—117.6 **21 Claims**



1. A sports shoe comprising a shell and a quarter, said shell and said quarter being mutually interconnected to form the sports shoe into which a user's foot and lower leg are insertable, the sports shoe comprising:

a sole region for surrounding a sole of a user's foot;

a toe region extending upwardly from a front region of said sole region for surrounding toes of a user's foot;

a heel region extending upwardly from a rear region of said sole region for surrounding a heel of a user's foot;

a medial arch region extending upwardly from an internal region of said sole region and extending between said toe region and said heel region for surrounding a medial arch of a user's foot;

a lateral arch region extending upwardly from an external region of said sole region and extending between said toe region and said heel region for surrounding a lateral arch of a user's foot;

a foot instep region extending from said toe region between said lateral and medial arch regions for surrounding an instep of a user's foot;

a front lower leg region extending upwardly from said foot instep region for surrounding a front portion of a user's lower leg;

a rear lower leg region extending upwardly from said heel region for surrounding a rear portion of a user's lower leg;

a medial lower leg region extending between said front and rear lower leg regions for surrounding a medial portion of a user's lower leg; and

a lateral lower leg region extending between said front and rear lower leg regions for surrounding a lateral portion of a user's lower leg;

wherein said shell comprises:

a sole element arranged at said sole region for supporting a sole of a user's foot;

a front toe element arranged at said toe region for supporting toes of a user's foot;

a rear heel element arranged at said heel region for supporting a heel of a user's foot;

a first side element arranged at a first one of said medial and lateral arch regions, said first side element extending upwardly from said sole element between said heel element and said toe element and entirely over said first one of said medial and lateral arch regions, said first side element furthermore being arranged at and extending over at least a portion of said foot instep region, said first side element furthermore being arranged at and extending over at least a portion of a first one of said medial and lateral lower leg regions;

a second side element arranged at a second one of said medial and lateral arch regions, said second one of said medial and lateral arch regions being arranged opposite said first one of said medial and lateral arch regions, said second side element extending upwardly from said sole element between said heel element and said toe element and exclusively at a lower portion of said second one of said medial and lateral arch regions;

such that a longitudinal opening is provided in said shell, said longitudinal opening extending from said toe region towards said heel region and to a second one of said medial and lateral lower leg regions wherein said second one of said medial and lateral lower leg regions is arranged opposite said first one of said medial and lateral lower leg regions, said longitudinal opening extending between said first side element and said second side element at at least an upper portion of said second one of said medial and lateral arch regions, said longitudinal opening furthermore extending at at least a portion of said second one of said medial and lateral lower leg regions;

and wherein the sports shoe further comprises at least one flap element which is connected to said shell and which is arranged for releasably covering said longitudinal opening;

the sports shoe further comprising closure elements for releasably connecting said flap element in the shoe over said longitudinal opening.

5,548,910

SPIKE GUARD FOR GOLF SHOES

James E. Klingseis, 26271 Via De Gavilan, San Juan Capistrano, Calif. 92675

Filed Dec. 12, 1994, Ser. No. 354,223

Int. Cl.[6] A43B *5/00;1/10*

U.S. Cl. 36—135 **3 Claims**



1. A spike guard for shoes having spikes, said spike guard comprising:

an elastomeric body having a top surface, a bottom surface, a front portion including a front end, a rear portion including a rear end and a thickness;

a plurality of discretely arranged and spaced apart finger-like elastomeric projections extending upwardly from said top surface of the elastomeric body for universally receiving the spikes of a shoe disposed directly above said top surface;

a rear elastomeric wall extending upwardly from said rear end of the top surface of said elastomeric body for receiving the rear end of a spiked shoe and a front elastomeric wall extending upwardly from said front end of the top surface of said elastomeric body for receiving the toe portion of a spiked shoe; and

wherein the elastomeric body has an inner contoured side portion and an outer contoured side portion and wherein said elastomeric projections are disposed between and above the inner and outer contoured side portions and said inner and outer contoured side portions are disposed rearwardly of the front elastomeric wall.

5,548,911

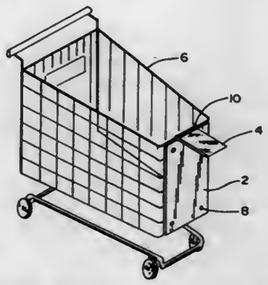
SHOPPING CART SIGN FOR DISPLAY OF ADVERTISING AND PRODUCT INDEX

Roy A. Myers, 666 Rancho Vista Rd., Vista, Calif. 92083

Filed Feb. 14, 1994, Ser. No. 195,283

Int. Cl.[6] G09F *3/00*

U.S. Cl. 40—308 **3 Claims**



1. A shopping cart advertising and indexing display device adapted for attachment to wheeled shopping carts having baskets; said baskets having a front and a rear wall; said device comprising: an inner and an outer advertising plate, said plates having top and

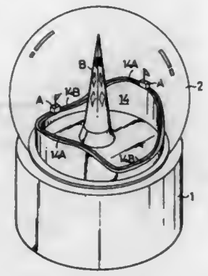
bottom edges, said advertising plates of size about that of said front wall of said shopping cart, said advertising plates having advertising indicia, said advertising plates bolted to one another, a hinge means in connection with said top edge of at least one of said advertising places, a third plate having a top and bottom edge and a front surface and having indexing information on said front surface, said third plate in connection with said hinge means so that said third plate may pivot in relation to said advertising plates; said third plate having an abutment portion on said front surface and near said bottom edge of said third plates, said abutment portion placed so that said abutment portion may abut said outer plate and support said third plate in a position perpendicular to said outer plate.

5,548,912

WATER FILLED CRYSTAL BALL STRUCTURE WITH DRIVEN STEEL BALLS

Jian Ho Liu, No. 3, Alley 202, Kao Fen Road, Hsin-Chu City, Taiwan

Filed Apr. 29, 1994, Ser. No. 235,540
Int. Cl.[6] G09F *19/00*
U.S. Cl. 40—430 **25 Claims**



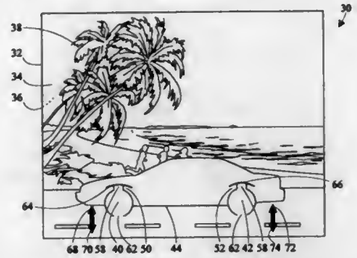
1. A decorative structure comprising:
a fixed housing;
a base mounted in said housing;
a central spindle;
a fixed structure attached to one of said spindle and said base;
the other of said spindle and said base being rotatable;
said fixed structure comprising
an undulate member having an upper periphery with at least one high portion and at least one low portion with respect to said base,
a tubular track having a top portion and an inner diameter and mounted on said periphery such that said track has at least one high portion and at least one low portion, said track low portion having a bottom portion,
a plurality of movable objects filling said tubular track, at least one of said movable objects having a protruded extension bar attached thereto and extending upwardly,
a top slot in the top portion of said tubular track through which said extension bar extends, and
a bottom slot through the bottom portion of the low portion of said tubular track, said bottom slot having a width such that there is access to said movable objects; and
drive means for moving said movable objects in said tubular track, said drive means including a rotatable plate unit comprised of a plate having a top and a flexible body mounted on the top of said plate, said flexible body being in contact with said movable objects as a result of said bottom slot.

5,548,913

APPARATUS AND METHOD FOR DISPLAYING A REPRESENTATION OF A WHEELED VEHICLE IN VARIOUS POSES WITH RESPECT TO A PICTORIAL SCENE

Steven J. Randolph, 21115 Devonshire St., #138, Chatsworth, Calif. 91311, and Curtis D. Randolph, 44142 Begonia St., Lancaster, Calif. 93535

Filed Dec. 19, 1994, Ser. No. 359,203
Int. Cl.[6] G09F *11/00*
U.S. Cl. 40—491 **10 Claims**



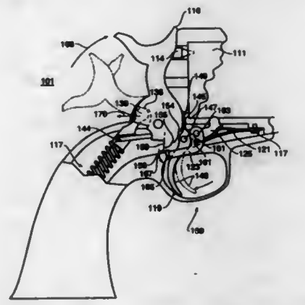
10. A method for displaying a representation of a wheeled vehicle in various poses with respect to a pictorial scene, comprising:
providing an apparatus having a background element having a pictorial scene, an outline of a body of said vehicle having two wheel wells, and two straps integral with said background element and two T-shaped cuts in said wheel wells slidably engaging said straps; and,
independently sliding said wheel wells along said straps to thereby assume a plurality of poses with respect to said pictorial scene.

5,548,914

GUN TRIGGER MECHANISM

David B. Anderson, 40725 Brook Trailwy. Lake Riverside Estates, Aguanga, Calif. 92536

Filed Nov. 10, 1994, Ser. No. 337,991
Int. Cl.[6] F41A *19/06*
U.S. Cl. 42—66 **32 Claims**



1. A revolver gun trigger mechanism comprising
a gun frame,
a trigger mounted on the frame, the trigger being pulled to fire the gun,
a gun hammer movable between a fully-cocked position, from which the gun is intended to be fired by release of the gun hammer, and a firing position, the gun hammer being biased from the fully-cocked position toward the firing position,

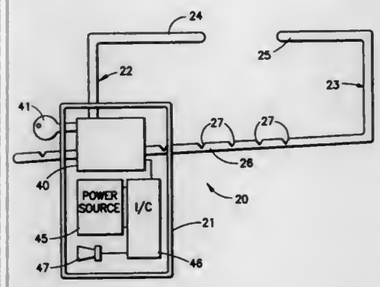
an interlock mounted on the gun frame, the interlock being movable between
a locked state in which it acts to block movement of the gun hammer toward the firing position, and
an unlocked state in which it does not act to block the movement of gun hammer toward the firing position,
wherein the interlock is biased toward its locked state and is coupled to the trigger, such that the interlock blocks the gun hammer when it is released from reaching the firing position, unless the trigger is concurrently pulled,
a means for revolving a cylinder to thereby advance a subsequent chamber, and
a cylinder latch that locks a cylinder of the gun and prevents it from rotating, at least when the gun hammer is in the fully-cocked position, the cylinder latch being pivotally mounted on the frame upon a pivot pin, and the interlock is pivotally mounted on the frame upon the same pivot pin as the cylinder latch is pivotally mounted upon.

5,548,915

UNIVERSAL FIREARM DISABLING AND ALARM SYSTEM

Michael Szarmach, 1571 Hartford Turnpike, North Haven, and Vincent Capodicci, 10 Mclean St., Stratford, both of Conn.

Filed Mar. 20, 1995, Ser. No. 406,569
Int. Cl.[6] F41A *17/02*
U.S. Cl. 42—70.11 **10 Claims**



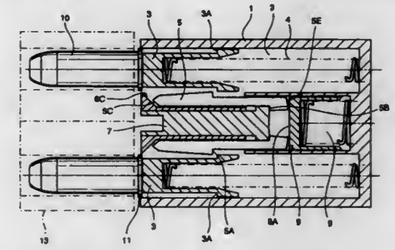
1. A universal, combined firearm disabling and alarm system constructed for being easily mounted to any firearm to prevent unauthorized use of the firearm, said system comprising
A. lock means;
B. a first arm member having
a. a proximal end fixedly mounted to the lock means,
b. a distal end positioned remotely from the lock means and incorporating a first firearm engaging protrusion positionable in any desired firearm engaging location, and
c. an intermediate portion
1. extending between the proximal end and the distal end,
2. comprising an overall length for positioning the first firearm engaging protrusion at a position remotely spaced from the lock means, and
3. extending from the lock means in a first direction;
C. a second arm member incorporating
a. an elongated portion
1. constructed for axial adjustably movable locking interengagement with the lock means for being mounted in any desired position in secure, locked, affixed interengagement with the lock means, and
2. said axial, adjustable movement being in a second direction, substantially at right angles to the first direction,
b. a second firearm engaging protrusion
1. formed at one end thereof for secure interengagement with a second desired portion of the firearm, and
2. positioned in juxtaposed, spaced, axial alignment with the first firearm engaging protrusion, cooperating with the first firearm engaging to prevent the use of the firearm and
c. an intermediate portion
1. extending between the elongated portion and the second firearm engaging protrusion, and
2. comprising a length for positioning the second firearm engaging protrusion at a position remotely spaced from the lock means and in continuous, juxtaposed, spaced, axially aligned relationship with the first firearm engaging protrusion, regardless of the axial movement of the elongated portion relative to the lock means; and
D. alarm means
a. incorporating circuitry for monitoring the movement of the firearm and producing an alarm output whenever the firearm is moved by an unauthorized individual, and
b. responsive to switch means for enabling and disabling the circuitry whenever desired by the user,
whereby a universally applicable, combined firearm disabling and alarm system is attained which is quickly and easily mounted to any desired firearm in any desired disabling engagement therewith while also providing an alarm system which, when activated, prevents the useful movement of the firearm by any unauthorized persons.

5,548,916

DEVICE FOR LOADING WEAPONS FITTED WITH A CYLINDER

Hagen Kinsel, Buchenhain 11, D-34327 Körie, Germany, and Rudolf Niemand, Buchenhain 17, D-34327 Körie, Germany

PCT No. PCT/DE93/00786, § 371 Date Mar. 22, 1995, § 102(e) Date Mar. 22, 1995, PCT Pub. No. WO94/12842, PCT Pub. Date Jun. 9, 1994
PCT Filed Aug. 28, 1993, Ser. No. 406,886
Claims priority, application Germany, Nov. 24, 1992, 42 39 445.7
Int. Cl.[6] F41A *9/85*
U.S. Cl. 42—89 **8 Claims**

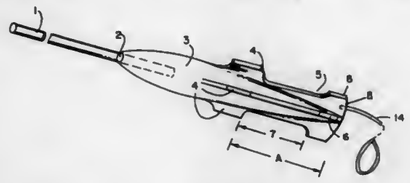


1. A device for loading a plurality of cartridges into a revolver cylinder comprising:
a housing with a central longitudinal axis and a plurality of cartridge-receiving guide bores radially distributed around said central longitudinal axis, said plurality of guide bores having a respective plurality of longitudinally-extending central axes arranged on a circular path;
a spring-loaded thrust element guidably disposed within each guide bore;
spring-loaded locking levers projecting into each guide bore and a central unlocking device for releasably securing said locking levers, each locking lever having two ends and a center zone for support;
a guiding and supporting body centrally disposed within said housing and rigidly connected thereto, said body having a central bore;
an unlocking pin disposed within said central bore and coupled to said locking levers;

a pressure sleeve supporting one end of each of said locking levers; and

catches on opposite sides of each of said locking levers, one catch of each locking lever engaging the cartridge and the other catch of each locking lever engaging the unlocking pin.

5,548,917
LOBSTER PROD WITH LEGAL SIZE GAUGE
David L. Holwadel, 2434 Taft St., Hollywood, Fla. 33020
Filed Mar. 20, 1995, Ser. No. 406,488
Int. Cl.[6] A01K *61/00;80/00*
U.S. Cl. 43—1 **16 Claims**



1. A lobster fishing and measuring device comprising:

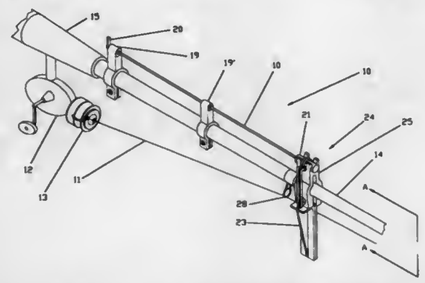
(A) an elongate, small-cross section rod member having a long axis, a proximal end and a distal end, said distal end adapted for insertion into a hole to urge a lobster therefrom, said distal end having a density greater than sea water;

(B) a handle portion attached to said proximal end, said handle portion having a density less than that of sea water;

(C) a gauge for measuring a part of said lobster's anatomy, said gauge defining an elongate recess extending along said long axis, said recess having a length corresponding to a fixed, regulation size limit of said part and

(D) said device having an overall density greater than that of sea water, wherein the device will fall to the bottom when released and will rest with the handle end upstanding for enhanced retrieval.

5,548,918
FISHING LINE SAVER
Andy Varrichione, 1215 Clearview Dr., Port Charlotte, Fla. 33953
Filed May 30, 1995, Ser. No. 453,371
Int. Cl.[6] A01K *97/00*
U.S. Cl. 43—25 **2 Claims**



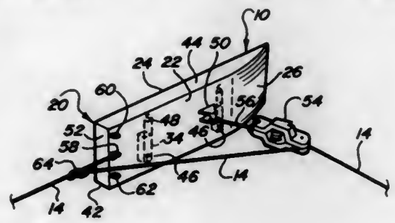
1. A line saver device for attachment to a fishing pole having eye loops deployed therealong and a spool, said device comprising:

a first and a second bracket affixed to said pole,

a restraining member affixed to said pole and positioned adjacent to and forward of a first eye loop from the spool, said restraining member consisting of a fixed member having a bracket formed to rotatably receive a cylinder therein, a pivotal member lockingly engaged with a cylinder, said cylinder rotatably mounted in said fixed member said fixed member and said pivotal member having opposed gripping faces formed thereon, and

a lever arm affixed to an actuating arm said lever arm having a protrusion extending uprightly with respect to a longitudinal axis of said fishing pole for enabling said pivotable member to be rotated alternately toward and away from said fixed member, said actuating arm rotatably supported by said first and second brackets, said actuating arm connected to said cylinder, said pivotal member adapted to create sufficient pressure when actuated by said lever arm to grip said fishing line to preclude kinks and twists in the line from passing rearward to the spool, and to release said pressure when desired, said pressure being varied constantly as desired while viewing the effect of the pressure on the line as it is being drawn between said gripping faces.

5,548,919
MINI-PLANAR TROLLING BOARD
Carl E. Hicks, 76200 True Rd., Armada, Mich. 48005
Filed Jul. 6, 1995, Ser. No. 498,754
Int. Cl.[6] A01K *91/00*
U.S. Cl. 43—43.13 **4 Claims**



1. A trolling assembly comprising:

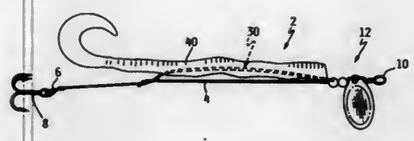
a substantially rectangular, longitudinally extending, buoyant planar board body having spaced parallel inboard and outboard longitudinally extending walls with a hollow interior portion, said body having a leading front edge tapering rearwardly from said outboard wall toward said inboard wall;

said body having first and second spaced transverse walls between said inboard and outboard walls and spaced apart and longitudinally extending cap walls which together define at opposite ends of said transverse walls a weight chamber; and

a rectangular weight in said chamber being held stationary by frictional contact with said first and second transverse walls and movable by jarring between said longitudinally extending cap walls, said weight being movable to a position adjacent one of said cap walls to define said one of said cap walls as a bottom when said body is disposed in water in a generally vertical position located on a port side of a boat, and said weight being movable to a position adjacent the other of said cap walls to define said other of said cap walls as a bottom, when said body is disposed in a generally vertical position located on the starboard side of a boat.

5,548,920
FISHING LURE
Mark J. Peddycoart, 7824 Tessman Dr. North, Brooklyn Park, Minn. 55455
Filed Apr. 26, 1995, Ser. No. 429,347
Int. Cl.[6] A01K *83/06*
U.S. Cl. 43—44.2 **16 Claims**

1. A fishing lure on which bait can be quickly and easily installed, which comprises,



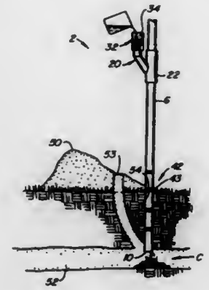
(a) a main wire shank having a hook at a first end thereof and a line attachment means at the other end thereof;

(b) at least one fish attracting element carried on the main shank adjacent the line attachment means, wherein the fish attracting element comprises a bead having an oversize bore;

(c) a bait holding wire shank having one end attached to the main shank with the bait holding shank being flexible relative to the main shank and extending away from the main shank to terminate in a free end; and

(d) a locking means on the main shank for releasably securing the free end of the bait holding shank, wherein the bait holding shank is released from the locking means to allow the bait to be threaded or slid onto the bait holding shank and thereafter can be flexed downwardly relative to the main shank to engage the free end of the bait holding shank with the locking means, wherein the locking means comprises a portion of the fish attracting element.

5,548,921
METHOD AND APPARATUS FOR GASSING GOPHERS
William Kleisath, 1730 Magnolia, Walnut Creek, Calif. 94595
Filed Mar. 31, 1995, Ser. No. 412,323
Int. Cl.[6] A01M *17/00;25/00*
U.S. Cl. 43—124 **12 Claims**



1. A method for gassing an animal within a burrow under the ground comprising the steps of:

providing a probe having a tip on a first end for poking a shallow hole in the ground;

providing a dry solid chlorine material capable of generating chlorine gas when wetted;

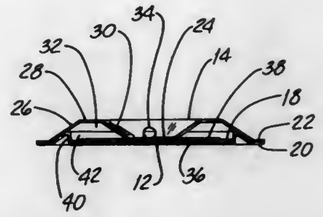
forming a hole in the ground in communication with the burrow with the tip of the probe:

introducing the dry solid chlorine material into the burrow through the formed hole;

pouring water into the formed hole onto the dry solid chlorine material to form chlorine gas; and,

closing the hole to seal the chlorine gas within the burrow, thereby allowing the chlorine gas to expand throughout the burrow and gas the animal.

5,548,922
INSECT BAIT STATION
Mark E. Wefler, Mt. Pleasant, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.
Filed Jan. 11, 1995, Ser. No. 371,239
Int. Cl.[6] A01M *1/20*
U.S. Cl. 43—131 **19 Claims**



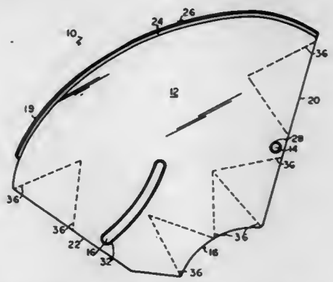
1. An insect bait station for offering a liquid insect bait to targeted insects comprising a hollow body having a base and a cover, the cover joined to the base in substantially liquid-tight relation,

a. the base having a floor and a base rim at the periphery of the floor;

b. the cover having a cover rim opposed to the base rim, a stage positioned generally parallel to and above the floor, an ascending ramp defined by inwardly inclined walls extending upwardly from the cover rim to a cover mount, and a descending ramp defined by inwardly inclined walls extending downwardly from the cover mount to the stage, interiorly facing surfaces of the floor and the cover defining a holding chamber wherein liquid insect bait may be confined; and

c. spill resistant access means for providing a targeted insect located on the stage access to liquid insect bait confined within the holding chamber, the spill resistant access means including capillary liquid transport means for transporting the liquid insect bait upwardly from the floor to a location where it is accessible to a targeted insect.

5,548,923
ADJUSTABLE POST OR BOTANICAL COLLAR APPARATUS
Randolph C. Myer, 15 Forster Rd., Manchester, Mass. 01944
Continuation-in-part of Ser. No. 276,208, Jul. 18, 1994, Pat. No. 5,430,971, which is a continuation-in-part of Ser. No. 137,664, Oct. 15, 1993, Pat. No. 5,361,536, which is a division of Ser. No. 913,464, Jul. 14, 1992, Pat. No. 5,279,069. This application Jun. 5, 1995, Ser. No. 464,409
Int. Cl.[6] A01G *17/00*
U.S. Cl. 47—25 **26 Claims**



1. An adjustable collar apparatus to encircle a post or botanical item at its base, which collar apparatus comprises:

a) a plurality of at least three separate, identical, and generally trapezoidal flat panel sheet elements;
b) each flat panel sheet element having a generally arcuate inner edge, a generally arcuate outer edge, first and second side edges, and a top and a bottom surface;
c) each flat panel sheet element characterized by:
i) a dimple means protruding from one surface and positioned toward the first edge;
ii) an arcuate elongated means positioned toward said second side edge and extending generally parallel to said inner and outer arcuate edges; and
d) the flat panel sheet elements adapted to be arranged in a side edge-overlapping relationship with said dimple means snugly engaged for slidable movement into each adjoining arcuate means and slidably movable therein to form an adjustable collar apparatus about the post of the base of a botanical item.

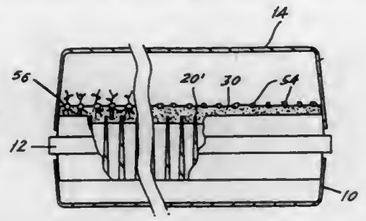
5,548,924

METHOD AND RECEPTACLES FOR GROWING PLANTS, PARTICULARLY TISSUE CULTURE PLANT PRECURSORS

Dan Mekler, Kore Hadorot 5, Jerusalem, Israel

Division of Ser. No. 97,664, Jul. 27, 1993, Pat. No. 5,425,202.
This application Jun. 2, 1995, Ser. No. 458,884
Claims priority, application Israel, Aug. 5, 1992, 102741
Int. Cl.[6] A01G *9/14*
U.S. Cl. 47—69 **3 Claims**

1. An assembly for growing plants, particularly tissue culture



callus grown on a nutrient substrate such as agar-agar, the assembly comprising:
a bottom tray,
a forming plate comprising a boneycomb-like structure defining a plurality of hollow passages surrounded by thin walls and having circumferential top and bottom frame side walls, the bottom frame wall being configured to tightly fit into the said bottom tray,
a semi-rigid slab of a nutrient substrate placed over the forming plate, and
a transparent cover tray, configured to fit over the circumferential top frame side wall of the forming plate, wherein a top portion of the forming plate is partly embedded in the said semi-rigid slab.

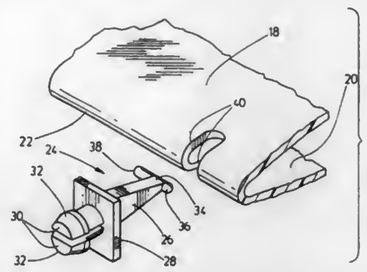
5,548,925

TOGGLE CONNECTOR FOR SHUTTER CONTROL BAR

Norbert Marocco, 46 Pennycross Ct., Woodbridge, Ontario, Canada

Filed Jun. 14, 1995, Ser. No. 490,299
Int. Cl.[6] E06B *7/086*
U.S. Cl. 49—74.1 **8 Claims**

1. A pull bar connector for a shutter bar, for use in association with a shutter having plastic blades having a hollow interior, and a hollow pull bar, for operating said blades, said connector comprising;
a body portion;



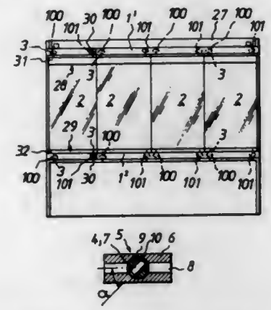
a locking portion interengagable with said pull bar, whereby to secure said body portion to said pull bar in substantially normal relation;
a free end on said body portion;
a first integral toggle portion rigidly extending on one side of said body portion, and,
a second integral toggle portion rigidly extending on a second side of said body portion aligned on a common axis with said first toggle portion, for insertion into and rotation within the hollow interior of a said blade and wherein said first toggle portion has a first predetermined length, and wherein a said second toggle has a second predetermined length, different from said first length.

5,548,926

HINGE ARRANGEMENT, AND USE THEREOF

Jarmo Sjöholm, Hovitie 20, Vantaa, Finland

PCT No. PCT/FI92/00273, § 371 Date Apr. 5, 1994, § 102(e) Date Apr. 5, 1994, PCT Pub. No. WO93/08355, PCT Pub. Date Apr. 29, 1993
PCT Filed Oct. 13, 1992, Ser. No. 211,588
Claims priority, application Finland, Oct. 14, 1991, 914848
Int. Cl.[6] E05D *15/26*
U.S. Cl. 49—127 **7 Claims**



1. A hinge arrangement for hinging a rectangular sliding element movable in guidance of, and carried by, a pair of stationary guide sections for turning about a hinge axle affixed to said sliding element, the sliding element having a first side and a second side substantially parallel to each other, and a guide wheel set is attached on each of said first side and said second side of the sliding element, each guide wheel set including a number of wheels and a wheel axle on which the wheels are rotatably carried one after another to be separately rotatable, and said wheel axle being respectively fixed at right angles to the first and the second side of the sliding element, and planes of rotation of said wheels being substantially perpendicular to a plane of said sliding element, and said stationary pair of guide sections including a first box-type guide section located on said first side of the sliding element and a second box-type guide section located on said second side of the sliding element, and the guide sections include supports arranged at an inner wall of each guide section parallel to the guide section, for guiding and carrying said guide wheel set on said first and second side, whereby opposite sides of said wheels alternatingly rest against said supports, the hinge arrangement comprising:
a first coupling member formed at an end of said wheel axle, said wheel axle being said hinge axle for the sliding element; and
a second coupling member, affixed to the guide section,
wherein the first coupling member and the second coupling member are arranged to become coupled with each other when the first coupling member is in register with the second coupling member, and thus to lock the wheel axle relative to the guide section to be substantially immovable, for the turning of said sliding element.

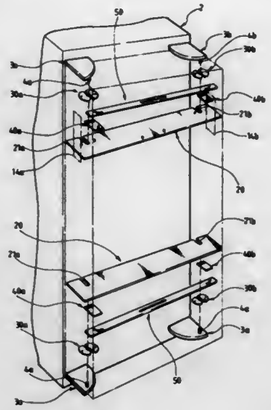
a second hinge accommodation member having a shaft receptacle for releasably retaining said hinge shaft of said second hinge member, and a shaft passage for facilitating access of said hinge shaft of said second hinge member to and from said shaft receptacle of said second hinge accommodation member, said second hinge accommodation member being pivotally supported on said second side for movement from a closed position wherein said shaft passage thereof is a first dimension and said shaft receptacle thereof securely retains said hinge shaft of said second hinge member, and an open position wherein said shaft passage thereof is of a second dimension greater than that of the first dimension said hinge shaft of said second hinge member is released from said shaft receptacle thereof; and,
facilities for interconnecting and mutually interlocking said first and second hinge accommodation members so that when said first hinge accommodation member is in said open position, said second hinge accommodation member is in said closed position, and vice versa.

5,548,927

DOOR OPENING AND CLOSING APPARATUS

Kyung-eui Song, Kyungki, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Oct. 4, 1994, Ser. No. 317,508
Claims priority, application Rep. of Korea, Apr. 29, 1994, 1994-9296
Int. Cl.[6] E05D *15/50*
U.S. Cl. 49—193 **25 Claims**



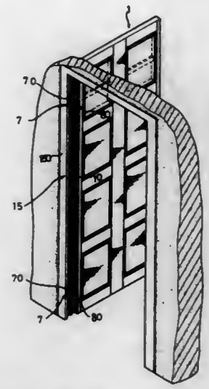
1. A door opening and closing apparatus for opening and closing a door mounted on a main body from either of opposite first and second sides thereof, said apparatus comprising:
a first hinge member having a hinge shaft, said first hinge member being securely fixed to said main body of said first side;
a second hinge member having a hinge shaft, said second hinge member being securely fixed to said main body on said second side;
a first hinge accommodation member having a shaft receptacle for releasably retaining said hinge shaft of said first hinge member, and a shaft passage for facilitating access of said hinge shaft of said first hinge member to and from said shaft receptacle of said first hinge accommodation member, said first hinge accommodation member being pivotally supported on said first side for movement from a closed position said shaft passage thereof is of a first dimension and wherein said shaft receptacle thereof securely retains said hinge shaft of said first hinge member, and an open position wherein said shaft passage thereof is of a second dimension greater than that of the first dimension said hinge shaft of said first hinge member is released from said shaft receptacle thereof;

5,548,928

DOOR STRUCTURE

Min-chi Chen, No. 143-2, Sec. 1, Tungshan Rd., Taichung, Taiwan

Filed Dec. 7, 1995, Ser. No. 568,803
Int. Cl.[6] E06B *3/34*
U.S. Cl. 49—381 **3 Claims**



1. A door structure comprising:
a substantially inverted U-shaped mounting frame (**15**) including two side plates (**150**);
at least one hinge member (**7**) including a first leaf (**70**) fixedly mounted on one of said two side plates (**150**), and a second leaf (**80**) pivotally engaged with said first leaf (**70**); and
a panel module (**1**) pivotally mounted in said mounting frame (**15**) and comprising:
at least two vertical side panels (**10**) on one of which said second leaf (**80**) is fixedly mounted;
at least two horizontal side panels (**20**) each fixedly mounted between said two vertical side panels (**10**) and each including a partition (**22**) transversely formed in an innerside thereof and defining a chamber (**23**) in two distal ends thereof;
at least two pairs of coupling members (**30**) each received in said chamber (**23**) of an associated distal end of one of said two horizontal side panels (**20**) and each fixedly engaged with an associated vertical side panel (**10**);
at least two horizontal retaining members (**40**) each including a substantially U-shaped first outer snapping portion (**408**) mounted on a corresponding one of said two horizontal side panels (**20**) and a substantially U-shaped first inner snapping portion (**402**);

at least two vertical retaining members (**41**) each including a substantially U-shaped second outer snapping portion (**418**) mounted on a corresponding one of said two vertical side panels (**10**) and a substantially U-shaped second inner snapping portion (**412**);

at least two vertical holding members (**42**) each fitted in a corresponding one of said two second inner snapping portions (**412**);

at least two central panels (**60**) each located between said two horizontal retaining members (**40**) and fitted in said two first inner snapping portions (**402**), and each located between said two vertical retaining members (**41**) and fitted in said two second inner snapping portions (**412**); and

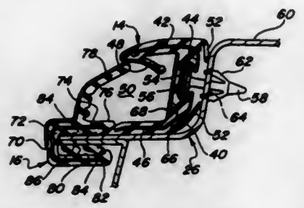
at least one horizontal reinforced beam (**50**) fixedly mounted between said two holding members (**42**) and rested between said two central panels (**60**).

5,548,929

WINDOW SEALING ASSEMBLY

Douglas C. Larsen, Highland, Mich.; Forrest K. Keller, Goldsboro, N.C., and Lawrence L. Warren, Birmingham, Mich., assignors to The Standard Products Company, Cleveland, Ohio

Filed Dec. 2, 1994, Ser. No. 349,020
Int. Cl.[6] E06B *7/16*
U.S. Cl. 49—441 **26 Claims**



1. A window sealing assembly attachable to a vehicle door including a flange portion for sealing a movable pane of window glass comprising:

an elastomeric glass run channel attachable to said vehicle door including an embedded rigid reinforcing core having an elongated slot for retaining fastening means for attaching the glass run channel to said vehicle door.

5,548,930

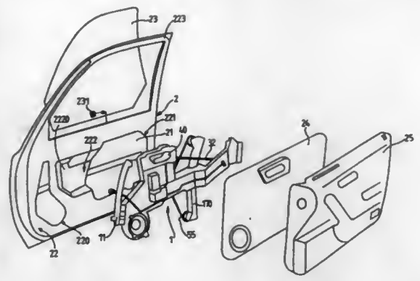
VEHICLE DOOR MOUNTING PLATE INTEGRATING SEVERAL FUNCTIONS AND ASSEMBLY METHOD

Patrick Morando, Nice, France, assignor to Mecaplast Sam, Monaco

Filed Mar. 22, 1994, Ser. No. 211,136
Int. Cl.[6] B60J *5/04*
U.S. Cl. 49—502 **12 Claims**

1. A vehicle door comprising:

a door frame having an outer panel connected to an inner panel, said inner panel having first and second openings separated longitudinally from one another by a stiffening link extending generally transversely relative to a longitudinal direction of the door, a generally longitudinally extending mounting plate formed of plastic material and having a portion carrying a window movement mechanism, said first inner panel opening enabling passage therethrough of a window pane guide element carried at one end of said mounting plate, said window movement mechanism and said second inner panel opening being sized and dimensioned relative to one another to enable said window movement mechanism to pass through said second inner panel opening of said mounting plate so that said



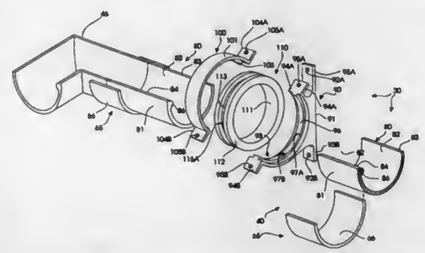
window movement mechanism and the window pane guide element are situated between said inner and outer door panels, with at least one portion of said mounting plate extending outside of said inner panel and along said stiffening link.

5,548,931

QUICK CLEANING GUTTER SYSTEM

Johnnie J. Bryant, 3606 Rocky Ln., Little Rock, Ark. 72210

Filed Jan. 3, 1995, Ser. No. 367,870
Int. Cl.[6] E04D *13/06*
U.S. Cl. 52—11 **13 Claims**



1. A quick cleaning gutter system selectively tilting to expel debris from gutters, said gutter system collecting water flowing off a building roof and channeling water to the ground, said system comprising:

at least one elongated channel having a generally semicircular cross section;

mounting means for suspending said gutter adjacent said roof, said mounting means penetrated by two spaced-apart orifices and said mounting means comprising:

collar means for securing said channel, said collar means rotatably captivated within said mounting means;

a fixture adapted to be secured to said building, said fixture comprising an integral, outwardly facing cradle and a removable bracket adapted to be coaxially coupled to said cradle about said collar means, said bracket and said cradle having mating, interior semicircular faces that form a circle when the mounting means is assembled;

tongue means protruding from said interior faces of said bracket and said cradle;

groove means circumscribing the exterior surface of said collar means;

cable means extending through said orifices and at least partially entrained about said collar means for rotating said collar means to rotate said channel;

a downspout coupled to said channel for exiting water therefrom; and,

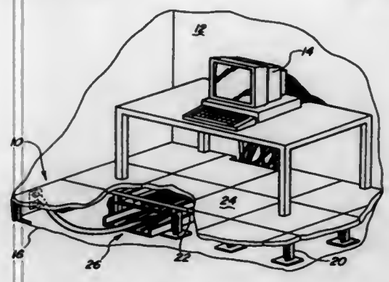
a drain beneath said downspout in fluid flow communication therewith, said drain extending downwardly.

5,548,932

ADJUSTABLE CABLE TRAY SUPPORT SYSTEM

Bruce E. Mead, Auburn Hills, Mich., assignor to Maxcess Technologies, Inc., Pontiac, Mich.

Filed Nov. 8, 1994, Ser. No. 335,637
Int. Cl.[6] E04B *2/82*
U.S. Cl. 52—126.6 **10 Claims**



1. A support system for a cable tray, said support system comprising:

a plurality of pedestals disposed between a first surface and a second surface;

at least one elongated plate associated with each of said plurality of pedestals, said elongated plate being disposed between said first and second surfaces and defining a plurality of apertures; and

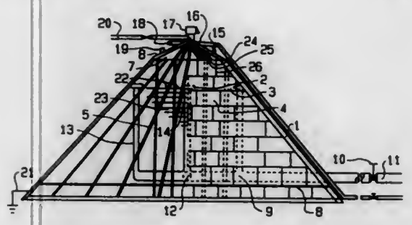
a support rod disposed between each of at least two sets of adjacent pedestals, said support rod being adapted to releasably engage any one of said plurality of apertures defined by each of said plates to provide an adjustable support for said cable tray such that said cable tray can be located at a plurality of locations between said first and second surfaces.

5,548,933

FIXED ROOF TYPE FLAMMABLE LIQUID STORAGE TANK

Tribhuvan P. Sharma, and R. S. Chimote, both of Roorkee, Ind., assignors to Council Of Scientific & Industrial Research, New Delhi, Ind.

Filed Jun. 14, 1994, Ser. No. 259,776
Int. Cl.[6] E04H *7/06*
U.S. Cl. 52—192 **5 Claims**



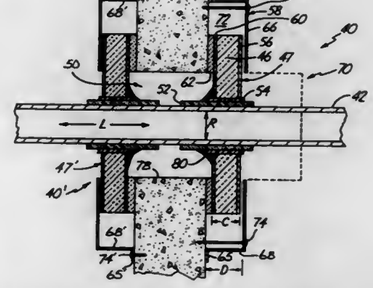
1. An improved fixed roof flammable liquid storage tank with a fire extinguishing device, which comprises a conical tank (**1**) of slope ranging from 30° to 60° to the base having a stable and hydraulically leakproof bottom, and a conical circular wall (**3**) made of plurality of metal plates (**4**) joined together in continuation and in alignment to form upwardly and inwardly tapered conical wall (**3**) of the tank (**1**) up to a beight where the top diameter reduces in the range of one-third to two-third of the base diameter of the tank to form a frustum, the joining of metal plates (**4**) being done in the manner so as to form leakproof joints (**26**) aligning toward the centre of the tank (**1**); the wall plates (**4**) are secured to a plurality of vertically spaced ring trusses (**6**), the diameter of which decreases in relation to the sloping angle as the distance from the base of the tank (**1**) increases; the conical section of the tank (**1**) is raised on a tier by tier basis up to a predetermined height by hoisting means (**5**); the top of the frustum having a pneumatically leakproof conical roof (**8**) of slope ranging from 3° to 4° to the frustum fixed to it; the fixing of the roof (**8**) being made on the frustum (**7**) supporting structure consisting of columns (**16**), girders (**24**), rafters and/or girder rings (**25**); the tank (**1**) being provided with a fire extinguishing device (**2**) consisting of one or more annular pipe ring(s) (**9**) capable of being fixed horizontally, concentrically and equidistantly from each other just above the bottom of the storage tank (**1**); the outermost annular pipe ring(s) (**9**) being connected to means (**10** and **11**) for supplying foam/dry chemical powder; the annular pipe ring(s) (**9**) having a plurality of diametrically connected cross-member pipes (**12**), the junction of the annular pipe rings (**9**) and cross-member pipes (**12**) being provided with vertical discharge pipes (**13**) of height such that the top ends of the pipes (**13**) are above the highest level (**22**) of the flammable liquid (**23**) in the storage tank (**1**); the vertical discharge pipes (**13**) having discharge nozzles (**14**) fixed to its top ends for the uniform discharge of foam/dry chemical powder onto the surface (**22**) of the flammable liquid (**23**) in the storage tank (**1**); the frustum (**7**) of the said tank (**1**) also being provided at its top with an emergency vent (**15**), a conservation vent and flame arrester (**17**), means for a water spray system (**18**), gauge hatch (**19**), and an inert gas vent (**20**); the tank (**1**) also being provided with means for earthing (**21**).

5,548,934

FIRESTOP APPARATUS FOR ALLOWING PIPE MOVEMENT

Ronald J. Israelson, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Sep. 6, 1994, Ser. No. 301,248
Int. Cl.[6] E04C *2/52*
U.S. Cl. 52—220.8 **24 Claims**



1. A penetration firestop that permits longitudinal and radial movement of a pipe through an opening in a partition where the opening has a cross-sectional area larger than a cross-sectional area of the pipe, said firestop comprising:

a) a thermal insulator adapted to generally surround the pipe and to be slidably engaged with a first side of the partition, said thermal insulator dimensioned to substantially cover the opening;

b) a first seal adapted to be interposed between said thermal insulator and the pipe, said first seal adapted to permit longitudinal movement of the pipe through said insulator;

c) a second seal adapted to be interposed between said thermal insulator and the partition, said second seal adapted to permit radial movement of the pipe and said insulator relative to the opening; and

d) securing means for allowing radial movement of said insulator relative to the opening while generally maintaining

engagement of said insulator to the first side of the partition so that the opening remains substantially covered during movement of the pipe.

5,548,935

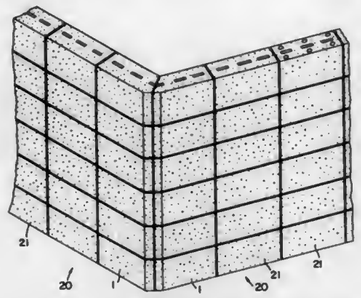
Patent Not Issued For This Number

5,548,936

COMPOSITE FOR TURNING A CORNER OR FORMING A COLUMN, MOLD AND METHOD FOR PRODUCING GLAZED UNIT FOR SUCH

John McClinton, Hanover, and Russell P. Rich, Baltimore, both of Md., assignors to The Burns & Russell Company of Baltimore City, Baltimore, Md.

Continuation of Ser. No. 971,629, Nov. 5, 1992, Pat. No. 5,410,848, which is a continuation-in-part of Ser. No. 919,988, Jul. 27, 1992, Pat. No. 5,285,611, which is a continuation-in-part of Ser. No. 795,773, Nov. 21, 1991, Pat. No. 5,212,925.
This application Feb. 27, 1995, Ser. No. 394,889
Int. Cl.[6] E04C *1/00*
U.S. Cl. 52—284 **18 Claims**



1. A wall corner composite comprising at least two glazed angled masonry building units each having an angled return portion and wherein the angled return portions face each other providing for a non-interlocking joint therebetween and wherein each glazed masonry building unit comprises a front face, a back face, a top face, a bottom face and two side faces wherein said front face is glazed with a resinous composition and is intended to be exposed and comprises a planar portion that is opposite to said back face and a second segment that intersects said planar portion to thereby form an obtuse, acute or right angle and wherein the length of said second segment is shorter than the length of said planar portion;

one of said side faces being angled and intersecting said second segment and said back face forming an obtuse angle with said back face and forming an angle with said second segment.

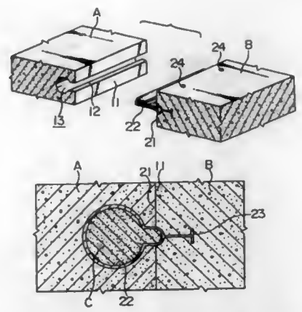
5,548,937

METHOD OF JOINTING MEMBERS AND A JOINTING STRUCTURE

Takeshige Shimonohara, 8-10, Nishikicho 5-chome, Warabi-shi, Saitama-ken 335, Japan

Filed Jul. 26, 1994, Ser. No. 280,705
Claims priority, application Japan, Aug. 5, 1993, 5-212134
Int. Cl.[6] B28B *1/00;* **E04B** *1/62*
U.S. Cl. 52—586.1 **5 Claims**

1. A method of jointing at least first and second members comprising the steps of:



forming a recessed portion in a jointing surface of said first member, said recessed portion defining an inner peripheral shape;

integrally attaching a bag body made of a flexible material to a jointing surface of said second member;

bringing said respective jointing surfaces of said first and second members into contact with each other while said bag body is inserted into said recessed portion; and

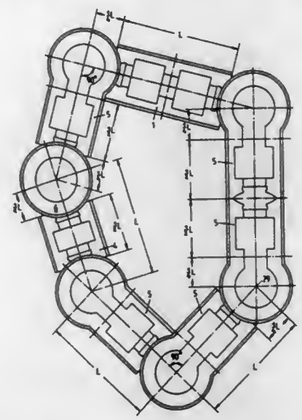
injecting a filler into said bag body so as to expand said bag body into engagement with said inner peripheral shape of said recessed portion, whereby said first and second members are jointed with each other.

5,548,938

SET OF MASONRY BLOCKS

René Scheiwiller, Postfach 266, 6052 Hergiswil, Switzerland

PCT No. PCT/EP93/01573, § 371 Date Feb. 14, 1994, § 102(e) Date Feb. 14, 1994, PCT Pub. No. WO94/00648, PCT Pub. Date Jan. 6, 1994
PCT Filed Jun. 18, 1993, Ser. No. 196,172
Claims priority, application Germany, Jun. 19, 1992, 42 20 034.2
Int. Cl.[6] E04B *5/04;* **E04C** *2/04*
U.S. Cl. 52—604 **10 Claims**



1. A set of masonry blocks, comprising:

a rectangular basic block having a basic length dimension L, a width B and a height H and including lateral end sides comprising a joining portion extending over the entire height H of the basic block, the joining portion including a recess defining a portion of a first cylinder having a first radius, the joining portion being adapted to contact adjacent masonry blocks at matching joining portions thereof;

rectangular end blocks having first and second lateral end sides, the first lateral end side comprising a joining portion having a structure identical to the joining portion of the basic block, the second lateral end side comprising a closed masonry-wall termination surface, the rectangular end blocks including:

a three quarter end block having a length equal to three quarters of the basic length dimension L; and

a one quarter end block having a length equal to one quarter of the basic length dimension L;

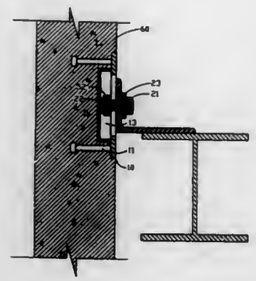
a hinge block having a length equal to the basic length dimension L plus an extension amount X, the hinge block further having a rectilinear portion and a cylindrical portion attached to the rectilinear portion, the rectilinear portion including a joining portion having a structure identical to the joining portion of the basic block, the cylindrical portion including an outer contour defining a portion of a second cylinder having a second radius R equal to the first radius and adapted to mate with a corresponding recess of an adjacent joining portion in an assembled state wherein the first and second cylinders have corresponding center points, wherein 2R=B+2X, the outer contour of the cylindrical portion thereby extending beyond the width B of each masonry block on each side thereof by an amount equal to the extension amount X.

5,548,939

ADJUSTABLE INSERT FOR USE WITH CONCRETE OR STEEL

Clifton Carmical, 3402 W. Justice, Cabot, Ark. 72023

Filed May 25, 1994, Ser. No. 248,958
Int. Cl.[6] E04B *1/41*
U.S. Cl. 52—707 **8 Claims**



1. An adjustable insert for use with concrete or steel, comprising:

(a) an elongated plate having inner and outer surfaces and having a slot of uniform width extending along a longitudinal axis of said plate, said elongated plate being further characterized by a plate length and a plate width;

(b) an elongated body having first and second closed ends, a pair of closed longitudinal sides defining a space of uniform width wider than said uniform width of said slot, and an inner side substantially perpendicular to said closed ends and to said closed longitudinal sides and substantially parallel to and spaced apart from said elongated plate, said elongated body being attached to said inner surface of said elongated plate, said elongated body further having an exterior body length shorter than said plate length and an exterior body width narrower than said plate width;

(c) said inner side of said elongated body having an opening therein wider than said uniform width of said slot;

(d) anchoring means attached directly to said elongated plate for anchoring in concrete; and

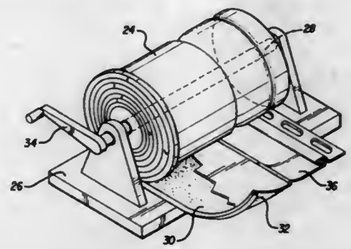
(e) structural attachment means received in said opening of said inner side of said elongated body and slidable between said longitudinal sides and between said elongated plate and said inner side of said elongated body, said structural attachment means further being sized so as to prevent passage of said structural attachment means through said slot.

5,548,940

ROLLED VINYL SIDING

Michael J. Baldock, 102 4th St., NE., East Grand Forks, Minn. 56721

Filed Nov. 22, 1994, Ser. No. 345,775
Int. Cl.[6] B65B *63/04*
U.S. Cl. 53—430 **13 Claims**



1. A method for converting semi-rigid vinyl siding sheet into a compact coil, said method comprising the steps of:

providing a vinyl siding sheet having a length, a width, a smooth side, a granular side, said vinyl sheet having a top rolled edge including a slotted flange, a bottom rolled edge, and a median bent section extending along said length;

providing support to the vinyl siding sheet during rolling by inserting a spacer sheet adjacent the siding sheet;

providing a spool having an axle diameter of at least two feet;

rolling the siding sheet lengthwise with the granular side initially in contact with the spool and having the smooth side of the siding facing outwardly during the rolling thereof;

rolling the entire length of the siding sheet and the spacer sheet onto the spool for forming a compact coil thereon; and

packaging the compact coil for easier handling and shipping.

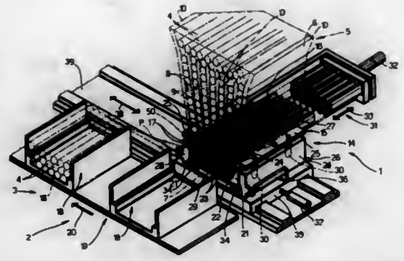
5,548,941

METHOD OF FEEDING GROUPS OF TOBACCO ITEMS, IN PARTICULAR CIGARETTES, TO A CONTINOUS PACKING MACHINE

Antonio Portaro, Milan; Antonio Gigante, Bologna; Fabio Sassi, Imola, and Bruno Belvederi, S. Martino Di Monte S. Pietro, all of, Italy, assignors to G.D Societa' Per Azioni, Bologna, Italy

Filed Jul. 13, 1994, Ser. No. 274,983
Claims priority, application Italy, Jul. 13, 1993, B093A0321; Jun. 30, 1994, B094A0303
Int. Cl.[6] B65B *19/04*
U.S. Cl. 53—444 **7 Claims**

1. A method of feeding groups (16) of elongated tobacco articles (4) from a feedbox (5) to a continuous packing machine (3); each said group (16) being defined by at least one layer (17) of articles (4); the feedbox (5) having a bottom open end (7) through which said groups may be extracted in a first direction extending transversely of the articles; and the packing machine (3) including an



input conveyor (**19**) which is a pocket conveyor having pockets (**18**) advancing, in use, in a continuous manner and with a predetermined speed in a second direction (**20**) extending transversely of the articles (**4**) and the first direction; the method comprising:

advancing the articles (**4**) in said first direction along the feedbox (**5**) and towards said open bottom end (**7**) and, for each said group (**16**), withdrawing the group (**16**) from said bottom open end (**7**) in said first direction while stopping, within the feedbox (**5**), all the remaining articles (**4**) arranged above said withdrawn group (**16**);

moving each group (**16**) when being withdrawn from said bottom open end (**7**), in said first direction to a position substantially coplanar with said pocket conveyor (**19**);

accelerating the withdrawn group in said second direction (**38** & **20**) to the advancement speed of the pocket conveyor to bring and keep said group in registry with a pocket (**18**) of said conveyor and, while in registry;

feeding the group (**16**) into the pocket (**18**) by displacing the group in a third direction (**33**) parallel to the articles.

5,548,942

METHOD AND APPARATUS FOR PACKAGING A ROLL OF MATERIAL

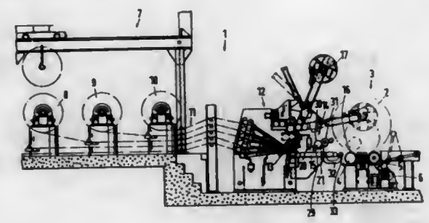
Jozef-Franc Zajec, Velden, Netherlands, assignor to Sulzer Papertec Krefeld GmbH, Krefeld, Germany

Filed Nov. 15, 1994, Ser. No. 340,120

Claims priority, application Germany, Nov. 29, 1993, 43 40 515.0

Int. Cl.[6] B65B *11/04;51/02;25/14*

U.S. Cl. 53—465 **18 Claims**



1. A method of packaging a roll of material, said roll of material having a predetermined width, said method comprising the steps of:

coating at least one side of a packaging sheet with a water soluble adhesive, said packaging sheet having a predetermined width that is matched to the width of said roll of material;

wetting at least a portion of at least one side of the packaging sheet after the coating step; and

winding the packaging sheet about the roll of material after the wetting step.

5,548,943

METHOD FOR ASSEMBLING DISPENSER WITH PLUNGING SLEEVE

Alain Behar, EU; Pierre Amiel, Neuilly sur Seine, and Jean-Louis Bougamont, EU, all of, France, assignors to SOFAB, Suresnes, France

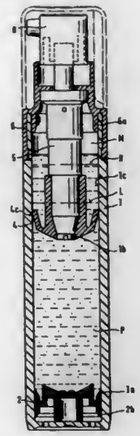
Division of Ser. No. 60,781, May 12, 1993, Pat. No. 5,449,094. This application Jan. 17, 1995, Ser. No. 373,808

Claims priority, application France, May 18, 1992, 92 05978; Jul. 24, 1992, 92 09114

Int. Cl.[6] B65B *7/28*

U.S. Cl. 53—473 **7 Claims**

1. The method for assembling a dispenser with liquid product,



said dispenser comprising a cylindrical drum and a distributor pump assembly, said drum having a wall, said wall having an upper part and an internal bearing surface, and said assembly comprising a sealing sleeve, said sealing sleeve housing a pump, said pump having a normally closed intake valve, said method comprising the steps of:

providing said upper part of said drum wall with an air escape passage (**1***c*);

filling the drum with liquid product to a predetermined level;

inserting said assembly into the drum with an outer bearing face (**4***c*) of said assembly slideably engaging said upper part and forcing a first portion of air out of said drum via said escape passage (**1***c*) during said insertion; and

moving said assembly further into the drum, with said outer bearing face (**4***c*) forming a seal with said internal bearing surface (**1***b*) of said drum wall, and until a lower face (**4***a*) of said assembly contacts a surface of said liquid product; and

forcing open said intake valve by continuing the moving of said assembly into said drum and moving said lower face (**4***c*) into said liquid product to force a second portion of air and a quantity of liquid product into said pump.

5,548,944

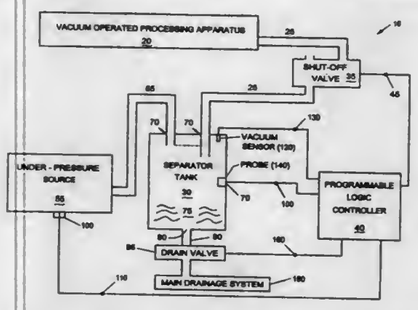
VACUUM OPERATED PROCESSING STATION HAVING A LIQUID SEPERATING SYSTEM

Richard Prochut, Bartlett; Jörgen Löfstedt, Palatine, and Christer Nilsson, all of Arlington Heights, Ill., assignors to Tetra Laval Holdings & Finance S.A., Pully, Switzerland

Filed Sep. 28, 1994, Ser. No. 315,405

Int. Cl.[6] B65D *31/02*

U.S. Cl. 53—511 **43 Claims**



13. A vacuum operated processing station in a packaging machine comprising:

an under-pressure source;

a vacuum operated processing apparatus for executing at least one of a plurality of processing steps to form and seal a container;

a separator tank having an inlet in fluid communication with the vacuum operated processing apparatus and an outlet in fluid communication with the under-pressure source;

a controller;

a level detector having an output signal indicative of the level of a fluid in the separator tank, the output signal being supplied for receipt by the controller; and

a drain valve disposed at a liquid output of the separator tank and connected for control by the controller, receipt of an active signal level from the level detector by the controller causing the controller to open the drain valve.

said channel having a first end and a second end;

said channel having a first stack holder for holding the leading tea bag displaceably positioned at said second end and a first stack pusher displaceably positioned at said first end for advancing the completed stack in an advancing direction from said first end to said second end;

a rotary device positioned at said second end of said channel, said rotary device having at least two cassettes for receiving the completed stack, wherein the completed stack received in one of said at least two cassettes is rotated with said rotary device;

a transporting device, positioned at said rotary device remote from said channel, comprised of a second stack holder and a second stack pusher for transporting the completed stack, after having been rotated with said rotary device, from said rotary device into a position above a box for packing the completed stack;

a pushing device, positioned at said rotary device remote from said channel, for pushing the completed stack into the box for packing;

a tea bag feeding device for feeding individual tea bags to said first end of said channel for forming the stack, said tea bag feeding device positioned at said first end of said channel;

two oppositely arranged retaining fingers positioned at said first end of said channel; and

a tea bag holder positioned in an initial position at the beginning of forming a new stack at said first end of said channel, said tea bag holder displaceable in the longitudinal direction of said channel toward said second end and retractable into said initial position, wherein the tea bags fed to said device by said tea bag feeding device are positioned between said retaining fingers and said tea bag holder.

5,548,945

DEVICE FOR PACKING STACKS OF FILLED TEA BAGS

Helmut Nippes, Solingen, Germany, assignor to Teepack Spezialmaschinen GmbH & Co. KG, Meerbusch, Germany

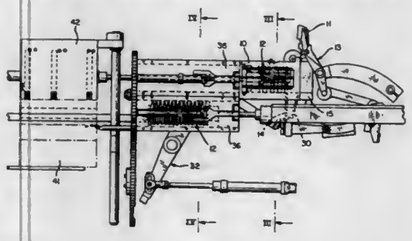
Filed Dec. 9, 1994, Ser. No. 353,113

Claims priority, application Germany, Dec. 10, 1993, 43 42 112.1

Int. Cl.[6] G65B *35/30*

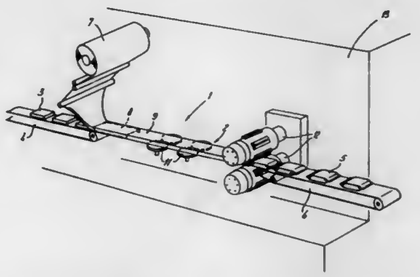
U.S. Cl. 53—540 **11 Claims**

1. A device for packing stacks of filled tea bags, said device



comprising:

a channel having a longitudinal extension for collecting filled tea bags to form a stack;



1. Packing device for packing articles supplied successively in a stream, comprising a conveyor belt for moving the articles along in a downstream direction, a supply source for supplying a web of flexible, film-type packing material to the conveyor belt, tube-forming means for forming the packing material into a tube around the conveyor belt, tube sealing elements disposed along the conveyor belt downstream of the tube-forming means, for sealing the tube of packing material in a lengthwise direction of the conveyor belt by joining together longitudinal edges of the film which have been placed against each other, and cross seal elements disposed downstream of said tube-sealing elements, for compressing the

5,548,946

FLOWPACKER AND TOOL ASSEMBLY THEREFOR

Manfred Holob, Rijnsburg, Netherlands, assignor to Klockner Hansel Tevopharm B.V., Schiedam, Netherlands

Filed Mar. 31, 1995, Ser. No. 414,295

Claims priority, application Netherlands, Apr. 7, 1994, 9400550

Int. Cl.[6] B65B *51/30;9/06;9/20;51/16*

U.S. Cl. 53—550 **12 Claims**

tube in transverse regions spaced apart, viewed in the lengthwise direction, the space between said compressed regions accommodating one or more articles from the stream, and said cross seal elements being suitable for connecting to each other walls of the tube which have been compressed against each other in said transverse regions, so as to form a transverse seam in the tube, and being suitable for separating the tube in said transverse regions, so as to obtain individual packs, filled with one or more articles from the stream, said cross seal elements including sealing members disposed opposite each other on either side of the conveyor belt, said sealing members being movable toward and away from each other, so as to allow the tube with the articles therein to pass freely between them, and to compress the tube between them in the transverse regions, at least one of the sealing members comprising a rotary element which projects at right angles to the lengthwise direction of the conveyor belt from a rotary drive unit and overlaps the conveyor belt, said rotary element being encased over at least a part of the length by a casing part, said casing part having on its radial periphery a plurality of substantially rib-shaped projections disposed at essentially equal peripheral intervals, and running essentially parallel to the lengthwise direction of the rotary element, said rib-shaped projections adapted to come into contact with the tube in the transverse regions, and said casing part being detachably fixed to said rotary element.

5,548,947

APPARATUS AND METHOD FOR PRODUCING PACKETS

Kevin R. Fincham; David R. Seaward; Graham L. Shirley, all of Coventry, and Geoffrey W. Vernon, Buckingham, all of, United Kingdom, assignors to Thomas J. Lipton Co., Englewood Cliffs, N.J.

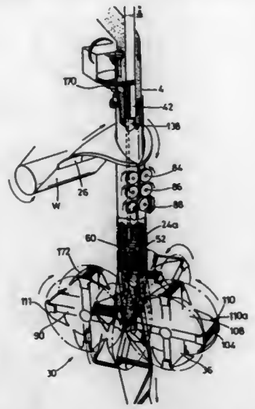
Filed Jul. 6, 1994, Ser. No. 271,296

Claims priority, application United Kingdom, Jul. 8, 1993, 9314098

Int. Cl.[6] B65B *9/12;1/06*

U.S. Cl. 53—551 **24 Claims**

1. Apparatus for dispensing doses of a flowable material into a tubular web, comprising an elongate conduit for the supply of said material, means for drawing a web of packaging material along the exterior of said conduit and past an outlet end thereof, tube-forming means adjacent the conduit for forming said web into a closed tube around the conduit, said conduit comprising a cylindrical inner peripheral wall at said outlet end, and valve means comprising a valve body at or adjacent said outlet end of the conduit means for reciprocating said valve body longitudinally of said conduit between said opposite end positions in one of which the valve body fits slidingly within said inner peripheral wall to close said outlet end for dispensing doses of said material into the tubular web by the ejection of the material by said valve body in its movement to said one end position.



5,548,948

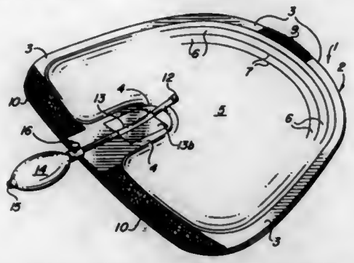
INFLATABLE SADDLE SUPPORT APPARATUS

Scott C. Smith; Julie T. Smith, and Holly A. Foster, all of Rte. 2 Box 370A, Marshall, Tex. 75670

Filed Jul. 28, 1994, Ser. No. 283,205

Int. Cl.[6] B68C *1/12*

U.S. Cl. 54—66 **15 Claims**



1. An inflatable saddle support apparatus for evenly distributing the pressure of a saddle on a horse, comprising a saddle bladder positionable between the saddle and the horse and having sealed edges, a forward portion and a rear portion; a non-inflatable bladder seal provided in said forward portion of said saddle bladder; a primary inflation chamber extending from said bladder seal and said forward portion of said saddle bladder toward said rear portion and at least one rear inflation chamber defined in said rear portion of said saddle bladder, said at least one rear inflation chamber communicating with said primary inflation chamber; and pump means communicating with said primary inflation chamber for selectively inflating and deflating said saddle bladder.

5,548,949

HAY MAKING MACHINE WITH CARRYING WHEELS

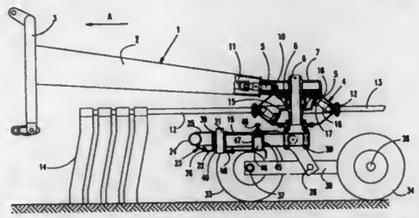
Christian Gantzer, Dannelbourg, France, assignor to Kuhn S.A., Saverne Cedex, France

Filed May 4, 1995, Ser. No. 433,969

Claims priority, application France, May 4, 1994, 94 05655

Int. Cl.[6] A01D *78/12*

U.S. Cl. 56—367 **11 Claims**



1. A hay making machine comprising:

a carrying structure which can be connected to a tractor such that the carrying structure can travel with the tractor in a direction of advance;

a substantially vertical support axle mounted to said carrying structure and supporting a rotor having hay making tools;

a girder attached to said support axle;

a support structure articulated to said girder by means of one substantially vertical pivot spindle positioned forward of said support axle relative to the normal direction of advance; and

two beams, each of said beams carrying two carrying wheels, said beams being connected to said support structure at opposite sides.

5,548,950

MOTOR FOR A SHAFTLESS SPINNING ROTOR FOR AN OPEN-END SPINNING MACHINE

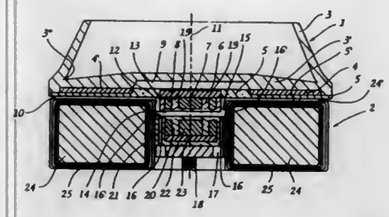
Anton Paweletz, Feilbach, Germany, assignor to SKF Textilmaschinen-Komponenten GmbH, Stuttgart, Germany

Filed Dec. 7, 1994, Ser. No. 350,673

Claims priority, application Germany, Dec. 14, 1993, 43 42 584.4

Int. Cl.[6] D01H *4/14*

U.S. Cl. 057—406 **11 Claims**



1. A shaftless rotor assembly for an open-end spinning machine comprising an axial field motor including a rotor and a stator, the rotor having a body defining a spinning chamber, an opening into the chamber and a bearing face opposite the rotor opening, and the stator having an opposed facing bearing face, means for producing a combined magnetic and gas bearing for supporting the rotor relative to the stator including means for producing a first field of magnetic flux for orienting and maintaining a rotational axis of the rotor in a stationary disposition, means for producing a second field of magnetic flux for driving rotation of the rotor about the axis, and means for conducting the magnetic flux for the guiding and driving magnetic fields, wherein the means for producing the guiding magnetic field comprises magnets concentrically arranged about the rotor axis including a first dynamically balanced magnet unit projecting from one of the two bearing faces and a second corresponding dynamically balanced magnet unit recessed in the opposed bearing face, the dynamically balanced magnet units being dimensioned to define axial and radial air gaps therebetween.

5,548,951

SYSTEM FOR CONTROLLING COMBUSDTION IN A GAS COMBUSTION-TYPE TURBINE

Stephen E. Mumford, Longwood, and Andrew J. Kosinski, Winter Springs, both of Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 161,034, Dec. 3, 1993, abandoned. This application May 9, 1995, Ser. No. 433,649

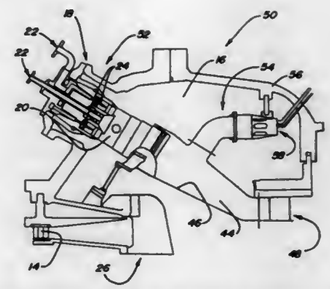
Int. Cl.[6] F02C *9/16*

U.S. Cl. 60—39.23 **11 Claims**

1. An improved combustion system that is constructed and arranged to be used with a power-generating turbine or the like, comprising:

at least one combustion chamber;

fuel supply means for supplying fuel to said at least one combustion chamber;



air supply means for supplying air from a pressurized air source to said at least one combustion chamber;

a monitor for monitoring a property of said combustion system;

a housing having an inlet port associated with said air supply means and an outlet port associated with said at least one combustion chamber for placing said air supply means in fluid communication with said at least one combustion chamber;

a fluid-actuated piston located within said housing and movable between a first position wherein said piston completely interrupts said fluid communication and a second position wherein said piston has no effect on said fluid communication; and

a controller in fluid communication with said fluid-actuated piston for controlling the position of said fluid-actuated piston within said housing in response to information received from said monitor.

5,548,952

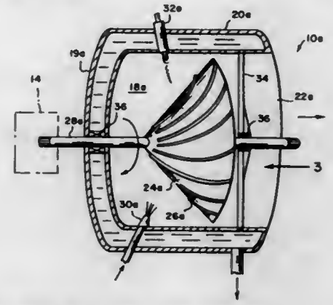
HYDROGEN JET-PHASE ENGINE

Theodore Stock, 250 Rosery Rd. NW. #264, Largo, Fla. 34640-1221, and George Spector, 233 Broadway Rm 702, New York, N.Y. 10279

Filed Aug. 22, 1994, Ser. No. 293,454

Int. Cl.[6] F02G *1/00;3/00;* **F02C** *3/22;7/00*

U.S. Cl. 60—39.465 **5 Claims**



1. A hydrogen gas jet pulse engine comprising:

a) a stationary water cooled housing with inlet and outlet having a combustion chamber within a forward end and an exhaust port within a rearward end within said housing;

b) a cone-shaped turbine wheel between said ends having a central longitudinal axis with a plurality of curved vanes radially mounted thereon within said forward end;

c) said wheel having a peripheral edge spaced from said housing, a power take off shaft affixed to said turbine wheel along said axis and rotatively mounted on said housing, including a generator connected to one end of said shaft extending from said housing;

d) a fuel nozzle extending into said housing at the combustion chamber for spraying a mixture of hydrogen gas and oxygen gas into the combustion chamber and

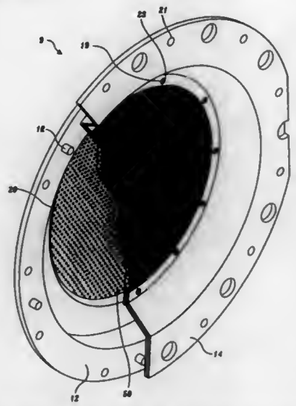
e) an igniter extending into said housing at the combustion chamber opposite from said fuel nozzle for igniting the mixture of hydrogen gas and oxygen gas in the combustion chamber, thereby producing steam to rotate said turbine wheel and said shaft to operate the generator and whereby products of combustion escape from said combustion chamber through the space about said peripheral edge to said exhaust port.

5,548,953

CARBON-CARBON GRID ELEMENTS FOR ION THRUSTER ION OPTICS

Daniel E. Hedges, Seattle; Jere S. Meserole, Jr., Issaquah, and Michael E. Rorabaugh, Seattle, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 23,285, Feb. 26, 1993. This application Sep. 8, 1994, Ser. No. 303,094
Int. Cl.[6] F03H *1/00*
U.S. Cl. 60—202 **8 Claims**



1. A grid element, for use in an ion optics set of an ion beam source, comprising:

a body of substantially uniform thickness in the range of 0.3–1.0 mm adapted for use in the ion optics set and including an array of apertures passing therethrough, said body comprising a carbon-carbon composite of carbon fibers and a carbon matrix, the areas of said body and said apertures being related by a predetermined open area fraction in the range of 0.2–0.8, the composite having a coefficient of thermal expansion essentially equal to zero.

5,548,954

TURBOJET ENGINE THRUST REVERSER WITH REAR SUPPORT STRUCTURE

Elisabeth L. F. C. de Cambray, Le Havre, and Laurent M. Vicogne, Gonfreville L'Orcher, both of, France, assignors to Societe Hispano Suiza, Cedex, France

Filed Nov. 25, 1994, Ser. No. 348,094
Claims priority, application France, Nov. 24, 1993, 9314036
Int. Cl.[6] F02K *3/02*
U.S. Cl. 60—226.2 **5 Claims**

1. A thrust reverser for a turbojet engine having a wall bounding a duct with a longitudinal axis through which gases pass in a forward thrust direction, the wall having at least one reverse thrust opening through which gases pass in a reverse thrust direction, the opening having front and rear sides, the thrust reverser comprising:

a) a thrust reverser element attached to the duct so as to be moveable between a forward thrust position wherein the thrust reverser element covers the reverse thrust opening and a reverse thrust position wherein the thrust reverser element is displaced away from the reverse thrust opening so as to deflect gases through the opening in a reverse thrust direction, wherein the thrust reverser element comprises a thrust reverser door, having front and rear edges, pivotally attached to the duct so as to pivot between open and closed positions about a pivot axis located between the front and rear edges;

b) a first support frame extending generally transverse to the longitudinal axis and located forwardly of the front side of the reverse thrust opening;

c) a second support frame extending generally transverse to the longitudinal axis and located rearwardly of the rear side of the reverse thrust opening;

d) at least one generally longitudinally extending beam connected to the first and second support frames; and,

e) actuating means connected to the thrust reverser element and to the second support frame to move the thrust reverser element between its open and closed positions.

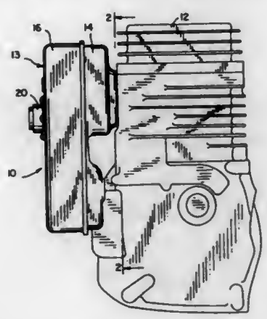
5,548,955

CATALYTIC CONVERTER HAVING A VENTURI FORMED FROM TWO STAMPED COMPONENTS

Parrish A. Sandefur, Elm Grove, and William M. Kindness, Wauwatosa, both of Wis., assignors to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed Oct. 19, 1994, Ser. No. 326,035
Int. Cl.[6] F01N *3/28*
U.S. Cl. 60—299 **16 Claims**

1. A catalytic converter for treating the exhaust gases of an internal combustion engine, comprising:



a converter housing;

means, at least partially disposed within said housing, for receiving exhaust gases from said engine;

a member, disposed within said housing, that divides said housing into at least two chambers;

a venturi device, disposed within said housing, that is formed from said housing and said dividing member;

a catalyst, disposed within said housing, through which said exhaust gases pass; and

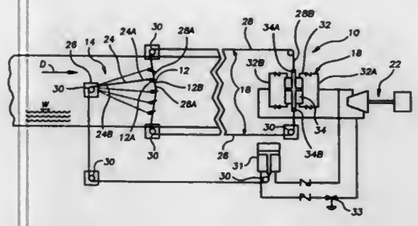
means for outputting said exhaust gases after said gases have passed through said catalyst.

5,548,956

CABLE RESTRAINED RECIPROCATING BLADE SYSTEM FOR ENERGY EXTRACTION FROM MOVING BODY OF WATER

Daniel T. Price, 60 Corona, No. 18, Denver, Colo. 80218-3877

Filed Jun. 7, 1995, Ser. No. 480,644
Int. Cl.[6] F16D *31/02*; **F03B** *13/12*
U.S. Cl. 60—369 **23 Claims**



1. A reciprocating blade system for energy extraction from a moving body of water, said system comprising:

(a) at least one blade for placement in a moving body of water flowing in a given flow direction, said blade having a hydrofoil configuration capable of being oriented at an angle of attack relative to the given flow direction to cause said blade to undergo lateral movement in response to contact with the moving body of water;

(b) control means attached to an upstream end of said blade with reference to the given flow direction for applying a condition of tension thereto;

(c) power means for transmitting conditions of tension and slack, said power means being attached to a downstream end of said blade with reference to the given flow direction and extending in generally transverse relationship to the given flow direction and in opposite directions from said blade; and

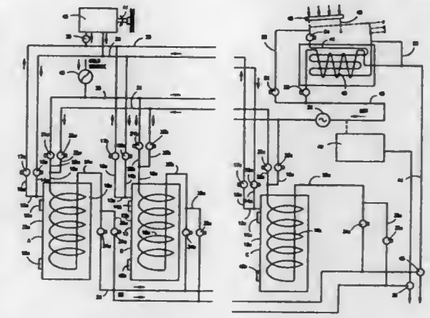
(d) load means attached to said power means and being operable for alternately applying conditions of tension and slack through said power means to said blade so as to cause said blade, depending upon the orientation of said angle of attack of said blade to the given flow direction, to respond to the moving body of water and undergo lateral movement through one at a time of a pair of opposite directions along an oscillatory path extending in generally transverse relationship to the given flow direction and thereby extract energy from the moving body of water, said load means also operable to cause said blade upon reaching respective opposite ends of the oscillatory path to reverse the orientation of the angle of attack of said blade relative to the given flow direction so that said blade will then respond to the moving body of water and initiate movement in the opposite direction along the oscillatory path.

5,548,957

RECOVERY OF POWER FROM LOW LEVEL HEAT SOURCES

Bernard Salemie, 8913 Hilton Hill Dr., Lanham, Md. 20706

Filed Apr. 10, 1995, Ser. No. 419,280
Int. Cl.[6] F03G *6/00*
U.S. Cl. 60—641.8 **16 Claims**



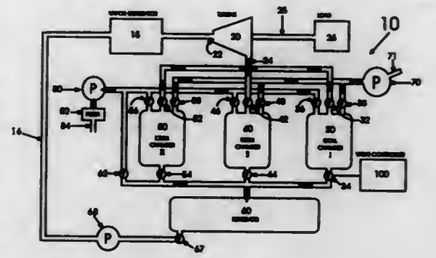
1. A method for converting low grade heat into useful work, said method comprising connecting a set of three pressure vessels to a common high pressure feed manifold and a common low pressure return manifold, connecting a fluid pressure driven motor across said manifolds, said vessels, said manifolds and said motor forming a sealed system, charging said system with a volatile refrigerant, providing fluid flow controlling valves between said pressure vessels and said manifolds, and sequentially heating and cooling selected vessels with concomitant valve operation to maintain a continuous pressure differential across said fluid pressure driven motor and further providing a high and low liquid level control for each pressure vessel and wiring said liquid level controls and said fluid control valves into a central process controller to automatically maintain said pressure differential.

5,548,958

WASTE HEAT RECOVERY SYSTEM

W. Stan Lewis, 709 Mar Vista Dr., Vista, Calif. 92083

Filed Apr. 13, 1995, Ser. No. 421,250
Int. Cl.[6] F01K *9/00*
U.S. Cl. 60—693 **17 Claims**



1. A waste heat recovery system comprising;

a vapor generating means; said vapor generating means including an evaporator in thermal communication with a heat exchanger;

a working fluid; said working fluid being vaporized to a vapor in said evaporator,

a turbine;

at least three condensation chambers,

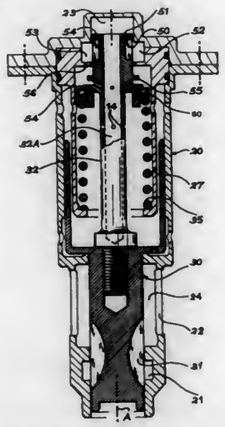
said condensation chambers having a valved inlet means and a valved outlet means;
said valved inlet means having an open and closed position;
said valved outlet means having an open and closed position;
said valved inlet means operatively connected by connection means to said turbine;
a vacuum generating means;
said condensation chambers having a first valved port means;
said first valved port means having an opened and closed position;
said first valved port means operatively connected by connection means with said vacuum generating means;
a positive air pressure generating means;
said condensation chambers having a second valved port means;
said second valved port means having an opened and closed position;
said second valved port means operatively connected by connection means to said positive air pressure generating means;
a reservoir; said reservoir operatively connected by connection means to said valved outlet means;
a valve control means for controlling said valved inlet means, said valved outlet means and said first valve port means, and said second valved port means,
whereby said heat exchanger is placed intermediate a waste heat source and said evaporator wherein said fluid is vaporized, said valve control means opens and closes said first valved port means, said second valved port means, said valved inlet means and said valved outlet means in a sequence permitting said vapor to be continuously drawn through said turbine, causing said vapor to change to a condensate, and sequentially fill each said condensation chamber and sequentially empty each condensation chamber into said reservoir.

5,548,959

ADJUSTMENT VALVE FOR INJECTING FUEL FOR A TURBOJET ENGINE

Michel M. A. A. Lechevalier, Mormant, France, assignor to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation "SNECMA" , Paris, France

Filed Mar. 29, 1995, Ser. No. 413,175
Claims priority, application France, Apr. 1, 1994, 94 03871
Int. Cl.[6] F02C *7/232*
U.S. Cl. 60—734 **5 Claims**



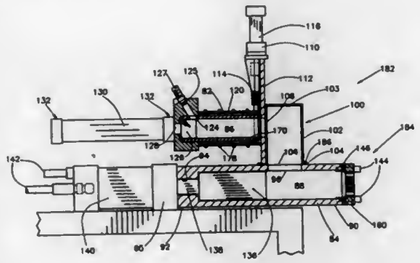
1. A control valve for controlling supply of fuel to a turbo-engine, comprising:
a hollow body having at least one fuel inlet and at least one fuel outlet;
a piston having end portions, axially slidably arranged in said hollow body, said piston having at least one cavity on a circumferential surface of said piston, said inlet and outlet being arranged in such a manner that said inlet and outlet are able to be communicated via said cavity;
a member urging said piston toward a position in which said inlet and outlet do not communicate via said cavity;
a vane wheel provided at one of said end portions of said piston;
an intake provided around and facing said vane wheel, said vane wheel being driven by a pressure flow supplied in said intake; and
positions and length along an axis of said piston of said vane wheel and said intake are determined in such a manner that area of said vane wheel receiving said pressure flow from said intake changes according to axial displacement of said piston.

5,548,960

PELLET EXTRUDING MACHINE

William E. Anderson, Rte. #2, Box 97, Jefferson, Ga. 30549; Donald M. Davis, 5046 Ponderosa Farm Rd., Gainsville, Ga. 30507, and Jon L. Curzon, 3331 Romelie Dr., Atlanta, Ga. 30340

Continuation-in-part of Ser. No. 91,143, Jul. 13, 1993, Pat. No. 5,419,138. This application Nov. 29, 1994, Ser. No. 346,491
Int. Cl.[6] F25J *1/00*
U.S. Cl. 62—605 **10 Claims**



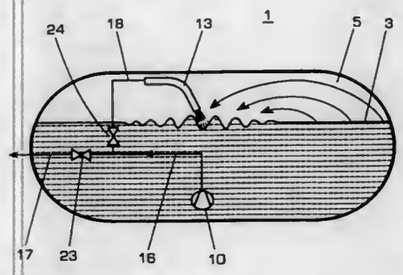
1. An apparatus for producing dry ice pellets from an injected pressurized liquid carbon dioxide (CO_2) feed, comprising:
means for transforming the liquid CO_2 feed into CO_2 snow particles and CO_2 gas, and for selectively exhausting the CO_2 gas, comprising a chamber maintained at a pressure lower than said liquid CO_2 injection pressure into which the liquid CO_2 is transformed into CO_2 snow particles and CO_2 gas, said chamber having an outlet port for removal of the CO_2 snow particles and a wall formed with a filter medium therein, the filter medium consisting of a sintered particulate plastic material comprising a blend of polymers having irregular distribution and nonuniform particle size, said sintered particulate plastic material having a plurality of tortuous and irregularly shaped air passages formed therein between the sintered particles for separating the CO_2 snow particles from the CO_2 gas to vent the CO_2 gas to the atmosphere while containing the CO_2 snow particles inside said CO_2 chamber;
means for compacting the CO_2 snow particles into a solid cartridge or an irregularly shaped solid form, having increased density; and
means for extruding the solid CO_2 snow cartridge or an irregularly shaped solid form into dry ice pellets of predetermined shape and size.

5,548,961

TEMPERATURE STRATIFICATION-FREE STORAGE OF CRYOGENIC LIQUIDS

Peter Luger, Höhenkirchen; Franz Grafwallner, Tegernsee; Helmuth Peller, Höhenkirchen; Martin Müller, Höhenkirchen-Siegertsbrunn, all of, Germany; Valentin V. Malyshev; Sergey B. Galperin, and Viacheslav P. Logvinouk, all of Moscow, Russian Federation, assignors to Deutsche Aerospace AG, Munich, Germany, and Tupolev AG, Moscow, Russian Federation

Filed Dec. 8, 1994, Ser. No. 351,835
Claims priority, application Germany, Dec. 10, 1993, 43 42 210.1
Int. Cl.[6] F17C *5/02*
U.S. Cl. 62—47.1 **20 Claims**



1. Process for the temperature stratification-free storage of a cryogenic liquid in a thermally insulated tank of a cryogenic fuel, of an aircraft, under gravitation conditions which generate a liquid volume, in a tank storage space with a clearly delimited liquid level as well as with a gas space above the liquid level, the process comprising the steps of:
pumping liquid from the area of the tank near a bottom of the tank;
feeding the pumped liquid in the form of at least one high-energy jet toward said liquid level; and
generating with said jet a locally limited, highly turbulent mixing zone in an upper area of said liquid volume, wherein during said steps of pumping and feeding said liquid is maintained within the confines of said tank.

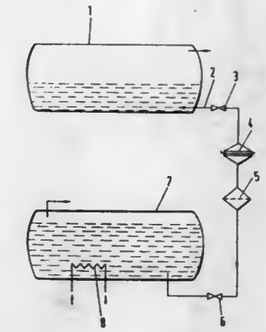
5,548,962

REFUELING PROCESS FOR CRYOGENIC LIQUIDS

Peter Luger, Höhenkirchen; Franz Grafwalliner, Tegernsee; Helmuth Peller, Höhenkirchen; Martin Müller, Höhenkirchen-Siegertsbrunn, all of, Germany; Valentin V. Malyshev, Moscow, Russian Federation; Viacheslav P. Logviniouk, Moscow, Russian Federation; Vladmimir S. Ozeretskovsky, Moscow, Russian Federation; Vladmimir S. Ozeretskovsky, Moscow, Russian Federation, and Alexander S. Shengarut, Moscow, Russian Federation, assignors to Daimler-Benz Aerospace AG, Munich, Germany, and Tupolev AG, Moskva, Russian Federation

Filed Mar. 1, 1995, Ser. No. 396,686
Int. Cl.[6] F17C *7/02*
U.S. Cl. 62—50.1 **14 Claims**

1. A refueling process for cryogenic liquids, including hydrogen or liquid natural gas, for use as fuel, including transfer of cryogenic liquid from a storage tank to a receiving tank via a least one detachable line connection, the process comprising the steps of: cooling the cryogenic liquid in the storage tank, prior to transfer of the cryogenic liquid, to a temperature that is below the lowest operating temperature intended for said receiving tank and is higher than the freezing point of said cryogenic liquid; and transferring the cryogenic liquid into the receiving tank through at least one filter, the filter being provided with a fineness of 5 to 40 μm for retaining crystals of foreign gas, and the temperature of said cryogenic liquid is increased during transfer from said storage tank to said receiving tank to substantially correspond to said intended operating temperature of said receiving tank.

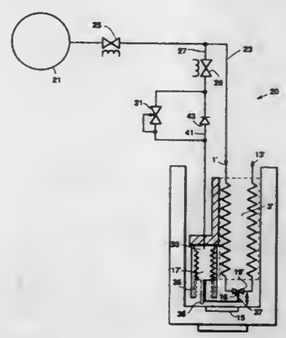


5,548,963

JOULE-THOMPSON CRYOSTAT FOR USE WITH MULTIPLE COOLANTS

Matthew M. Skertic, Chatsworth, Calif., assignor to Hughes Missile Systems Company, Los Angeles, Calif.

Filed Jun. 8, 1995, Ser. No. 486,441
Int. Cl.[6] F25B *19/02*
U.S. Cl. 62—51.2 **10 Claims**



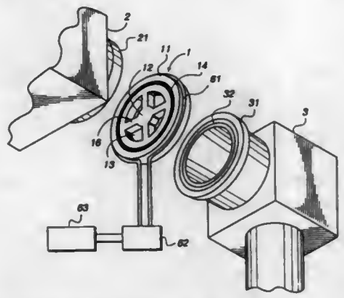
1. An apparatus for filling and bleeding a bellows in a Joule-Thomson cryostat system having a demand-flow Joule-Thomson cryostat connected to a coolant reservoir by a coolant supply line and a coupling for said coolant supply line to said reservoir including a controllable on-off device, said apparatus comprising:
means for diverting coolant from said coolant reservoir to and from said bellows and
means for controlling flow of coolant to and from said bellows.

5,548,964

METHOD AND APPARATUS FOR COOLING A VACUUM DEVICE

Takeshi Jinbo, Ichihara, and Hiroyuki Takahama, Sawara, both of, Japan, assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Jun. 27, 1994, Ser. No. 266,039
Claims priority, application Japan, Jul. 29, 1993, 5-188363
Int. Cl.[6] B01D *8/00*
U.S. Cl. 62—55.5 **13 Claims**



1. An apparatus for cooling a vacuum structure that includes a vacuum chamber and a vacuum pump, comprising:

a central cooling panel positioned between a vacuum chamber flange and a suction pump flange, said cooling panel having at least one opening formed therethrough and adapted to pass a fluid flow between said vacuum chamber and said suction pump;

at least one spoke projecting radially from said central cooling panel; and

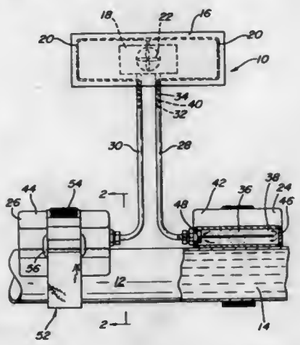
cooling means adapted to cool said cooling panel.

5,548,965

MULTI-CAVITY EVAPORATOR

Limin Chen, Dix Hills, and Arthur J. Radichio, Hempstead, both of N.Y., assignors to Spectronics Corporation, Westbury, N.Y.

Filed May 31, 1995, Ser. No. 455,235
Int. Cl.[6] F25D *3/00*
U.S. Cl. 62—66 **15 Claims**



2. An apparatus for freezing the contents of a pipe using a refrigerant, the apparatus comprising

a compressor for compressing the refrigerant from a low pressure to a high pressure;

a condenser downstream of the compressor for condensing the refrigerant from a high temperature gas to a lower temperature liquid;

an evaporator;

a first tube extending between the condenser and the evaporator for moving the refrigerant to the evaporator;

a second tube encircling the first tube for at least a portion of the tube, the second tube extending between the compressor and the evaporator for moving the refrigerant from the evaporator to compressor;

the evaporator having an outer surface and inner chamber, the outer surface having at least two pipe receiving surfaces and a pair of ends, the evaporator having a bore extending from one of the ends to the inner chamber, the second tube extending into the bore sealing the chamber, such that the refrigerant flows into the inner chamber through the first tube and out of the inner chamber through the second tube;

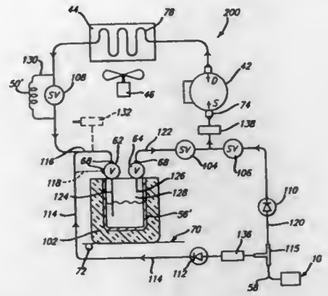
each of the pipe receiving surfaces having a distinct surface adapted for receiving different size pipes.

5,548,966

REFRIGERANT RECOVERY SYSTEM

Theodore E. Tinsler, Sidney, Ohio, assignor to Copeland Corporation, Sidney, Ohio

Division of Ser. No. 373,466, Jan. 17, 1995, which is a continuation of Ser. No. 56,717, May 3, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 478,405
Int. Cl.[6] F25B *45/00*
U.S. Cl. 62—77 **16 Claims**



1. A method of reclaiming fluid from a separate refrigeration system comprising the steps of:

providing an insulating device, a portable fluid storage tank, a compressor, and a condenser;

inserting the storage tank within the insulating device;

connecting the storage tank to the separate refrigeration system;

reducing the temperature within the storage tank; transferring both a liquid component and a gaseous component of the reclaimed fluid into the storage tank until substantially all of the liquid component has been recovered; and

switching to another mode of operation where the reclaimed fluid is primarily a gaseous component, said switching step comprising

a) routing the reclaimed fluid to the compressor for a time period to create compressed reclaimed fluid;

b) condensing the compressed reclaimed fluid to create condensed reclaimed fluid; and

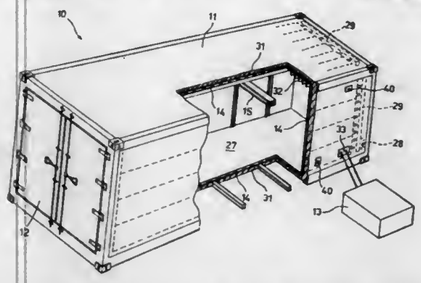
c) directing the condensed reclaimed fluid to the storage tank.

5,548,967

METHOD AND APPARATUS FOR ABSORBING HEAT AND PRESERVING FRESH PRODUCTS AT A PREDETERMINED TEMPERATURE ENSURING OPTIMAL CONDITIONS OF SAME

Alberto Ghiraldi, Reno di Leggiuno, Italy, assignor to N.R. Development Limited, Dublin 2, Ireland

Filed Jan. 24, 1995, Ser. No. 377,195
Int. Cl.[6] F25D *17/02*
U.S. Cl. 62—99 **14 Claims**



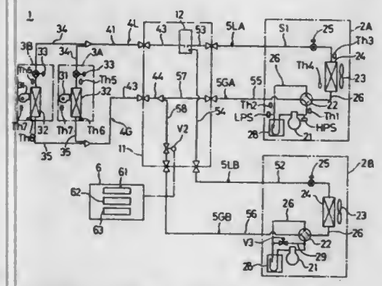
1. A method for absorbing heat and keeping perishable products under optimal preservation conditions at a predetermined temperature, including inserting the perishable products into a chamber of which at least 70% of the wall surfaces comprises hollow box-shaped panels the interspaces of which are filled with a thermal capacitance fluid having a freezing temperature in the range of between −1° C. and −4° C. compared to said predetermined temperature, and within the panel interspaces there being disposed brine fluid circuits, circulating through sad circuits in heat exchange relation with said thermal capacitance fluid a brine fluid at a temperature in the range of between −5° C. and −30° C. compared to the predetermined temperature, and maintaining the Δ, *T between the maximum and minimum temperature points of the wall surfaces under 5° C.

5,548,968

REFRIGERATON APPARATUS

Shinri Sada, Osaka, Japan, assignor to Daikin Industries, Ltd., Osaka, Japan

Division of Ser. No. 307,701, Sep. 23, 1994. This application May 24, 1995, Ser. No. 449,276
Claims priority, application Japan, Feb. 26, 1993, 5-37878; WIPO, Feb. 28, 1994, PCT/JP94/00314
Int. Cl.[6] F24F *11/00*
U.S. Cl. 62—175 **16 Claims**



8. A refrigeration apparatus, comprising:

a master thermal source unit having a compressor, a thermal-source-side heat exchanger connected at an end thereof to the discharge side and the inlet side of the compressor so as to be switchable between the two sides of the compressor and connected at the other end to a liquid line, and a thermal-source-side expansion mechanism which is disposed on the liquid line and capable of regulating an opening thereof, in which a gas line is connected to the discharge side and the inlet side of the compressor so as to be switchable between the two sides of the compressor;

a slave thermal source unit having a compressor, a thermal-source-side heat exchanger connected at an end thereof to the discharge side and the inlet side of the compressor so as to be switchable between the two sides of the compressor and connected at the other end to a liquid line, and a thermal-source-side expansion mechanism which is disposed on the liquid line and capable of regulating an opening thereof, in which a gas line is connected to the discharge side and the inlet side of the compressor so as to be switchable between the two sides of the compressor;

a connecting circuit part for connecting outer ends of the liquid lines and outer ends of the gas lines to a main liquid line and a main gas line respectively so that the thermal source units are arranged in parallel with each other;

a plurality of user units which each have a user-side heat exchanger and which are connected to the main liquid line and the main gas line so as to be arranged in parallel with one another;

a receiver which is disposed at a connecting part located between the liquid lines and the main liquid line and connects each of the liquid lines to the main liquid line;

a gas-line closing mechanism which is disposed on the gas line extending toward the slave thermal source unit and fully closed when the slave thermal source unit is deactivated during heating operation;

full-closure control means for controlling the thermal-source-side expansion mechanism of the slave thermal source unit in deactivation to be fully closed when the slave thermal source unit is deactivated during refrigerating operation;

a bypass line which bypasses the compressor of the slave thermal source unit and which is connected to the discharge and inlet sides of the compressor;

a bypass line closing mechanism disposed on the bypass line; and

refrigerant ejecting means for ejecting a liquid refrigerant remaining in the slave thermal source unit in such a manner as to open the bypass closing mechanism and the thermal-source-side expansion mechanism each included in the slave thermal source unit in deactivation, and the gas-line closing mechanism for a set time just after the slave thermal source unit is deactivated during heating operation.

5,548,969

METHOD FOR CONTROLLING ROTATION SPEED OF A COMPRESSOR FOR A REFRIGERATOR

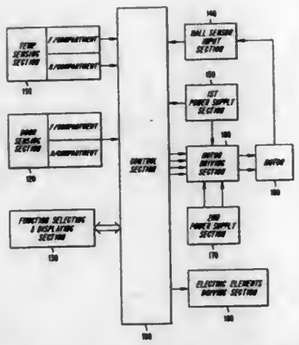
Kun B. Lee, Uijongbu, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Mar. 17, 1995, Ser. No. 405,783
Claims priority, application Rep. of Korea, Mar. 31, 1994, 94-6762
Int. Cl.[6] F25B *49/02*
U.S. Cl. 62—228.4 **4 Claims**

1. A method for controlling a compressor for a refrigerator, the compressor having a variable rotation speed, the method comprising the steps of:

comparing, during a predetermined time interval, a total number of openings of a freezing compartment door and a refrigerating compartment door and an accumulated time period of

VOI
1189
ISS
4
AG
27
1996
UMI



openings of the freezing compartment door and the refrigerating compartment door with a first and a second reference value, respectively;

maintaining the rotation speed of the compressor at a substantially constant value when both said accumulated time period of openings is not greater than said second reference value and said total number of openings is less than said first reference value; and,

increasing the rotation speed of the compressor by a predetermined value when at least one of said accumulated time period of openings is greater than said second reference value and said total number of openings is not less than said first reference value.

5,548,970

AIR HANDLING SYSTEM

Robert A. Cunningham, Jr., Argyle, and Phillip R. Rutledge, Farmers Branch, both of Tex., assignors to NRG Industries Inc., Carrollton, Tex.

Filed Mar. 24, 1995, Ser. No. 410,233
Int. Cl.[6] F25D *23/00*
U.S. Cl. 62—271 **2 Claims**

1. An air handling system comprising:

air conditioning means including compressor means, condenser means, cooling coil means and blower means for moving air through the cooling coil means and condenser means to condition air;

economizer means including a first damper means controlling recirculation and exhaust of air from the air conditioning means and a second damper means controlling admission of inlet air to the cooling coil means;

in combination with:

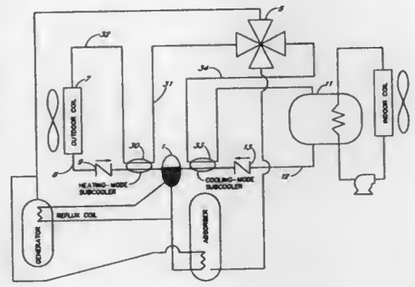
heat recovery means including inlet blower means for selectively introducing outside air to the air conditioning means, third damper means controlling flow of outside air to the air conditioning means other than through said inlet blower means, outlet blower means controlling flow of exhaust air from the air conditioning means, and desiccant wheel means which in one position rotates in the flow of outside and exhaust air and in another position is in an out-of-the-way position permitting free flow of outside and exhaust air for selectively recovering heat from the exhaust air and transferring the recovered heat to said outside air.

5,548,971

METHOD FOR USE OF LIQUID/VAPOR AMMONIA ABSORPTION SYSTEMS IN UNITARY HVAC SYSTEMS

Uwe Rockenfeller, and Lance D. Kirol, both of Boulder City, Nev., assignors to Rocky Research, Boulder City, Nev.

Filed Jun. 14, 1995, Ser. No. 490,343
Int. Cl.[6] F25B *15/00*
U.S. Cl. 62—324.2 **40 Claims**



1. A liquid vapor absorption system comprising:

one or more absorbers having a heat exchange section, one or more generators containing a refrigerant absorption fluid, and a fluid loop for directing refrigerant absorption fluid therebetween,

one or more first heat exchangers for selectively functioning as an evaporator or a condenser and one or more second heat exchangers for selectively functioning as a condenser or an evaporator and cooperating with an indoor coil for recovering thermal energy from said one or more second heat exchangers,

a reservoir for condensed refrigerant, and first conduit means for directing condensed refrigerant between said reservoir and said one or more first heat exchangers and second conduit means for directing condensed refrigerant between said reservoir and said one or more second heat exchangers,

a phase-change thermosyphon loop for directing condensed refrigerant from said reservoir to the heat exchange section of said absorber for removing heat of absorption therefrom, and

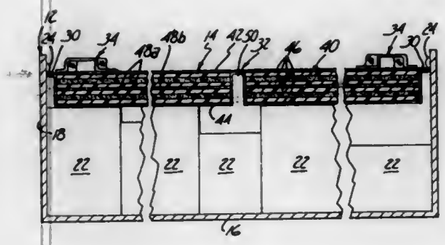
reversing valve means for selectively directing gaseous refrigerant to the said one or more first heat exchangers or said one or more second heat exchangers functioning as a condenser, and for simultaneously directing gaseous refrigerant from the said one or more first heat exchangers or said one or more second heat exchangers functioning as an evaporator to the absorber for absorption therein.

5,548,972

FLOATING INSULATOR TOP FOR PALLET SIZED CONTAINER

Mark W. Wallace, Minneapolis, Minn., assignor to Temp Top Container Systems, Inc., Minneapolis, Minn.

Continuation of Ser. No. 120,162, Sep. 10, 1993. This application Nov. 7, 1994, Ser. No. 339,088
Int. Cl.[6] F25D *3/08*
U.S. Cl. 62—371 **20 Claims**



1. An insulated container system comprising:

a container having a base and side walls which define an inner cavity; and

a cover for slidably moving within the inner cavity of the container, the cover comprising:

a lightweight foam core having a perimeter including a plurality of alternating layers of urethane foam and polyethylene for insulating the inner cavity; and

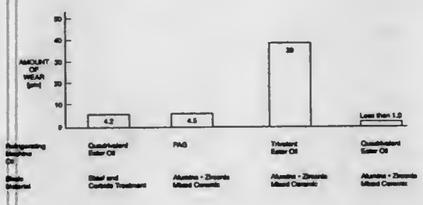
sealing means along the perimeter of the foam core for scaling between the cover and the container.

5,548,973

SEALED TYPE COMPRESSOR AND REFRIGERATING CYCLE

Kenji Komine, Shizuoka-ken, and Hiroyuki Isegawa, Shizuoko-ken, both of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 27, 1995, Ser. No. 429,878
Claims priority, application Japan, Apr. 28, 1994, 6-092415
Int. Cl.[6] F04C *29/00*; F04B *39/00*
U.S. Cl. 62—469 **48 Claims**



1. A compressor for use with an HFC refrigerant, comprising:

a sealed casing;

a motor housed within the sealed casing;

compression machinery also housed within the sealed casing, the compression machinery including first and second sliding members, the first sliding member comprising aluminum and having its surface alumite treated and the second sliding member being made of a metal material; and

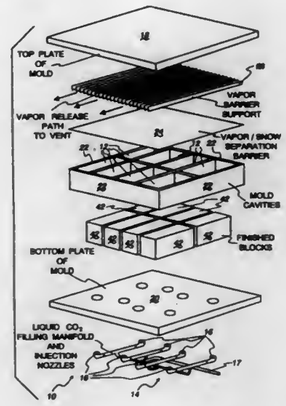
an at least quadrivalent ester oil for the refrigerating machine oil which lubricates the sliding members of the compressor.

5,548,974

METHOD AND APPARATUS FOR MAKING CO_2 SNOW BLOCKS

George D. Rhoades, LaGrange, Ill., assignor to Liquid Carbonic Corporation, Oak Brook, Ill.

Filed Jun. 7, 1995, Ser. No. 475,929
Int. Cl.[6] F25J *1/00*
U.S. Cl. 62—604 **17 Claims**



1. A method of production of blocks of CO_2 snow comprising:

providing a plurality of mold cavities having interior volumes of substantially uniform size at substantially atmospheric pressure;

commencing injection of the liquid CO_2 into said plurality of mold cavities through a plurality of orifices simultaneously while permitting said liquid CO_2 to expand into CO_2 snow in said mold cavities;

permitting CO_2 vapor to escape from said mold cavities continuously to maintain pressure in said mold cavities near atmospheric pressure;

continuing injection of said liquid CO_2 for a predetermined period of time in the absence of an override;

detecting whether one of said mold cavities has been substantially filled;

discontinuing said injection if fullness is detected before the end of said predetermined period of time, whereby blocks of CO_2 snow are produced in said mold cavities.

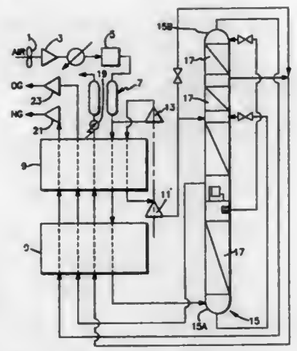
5,548,975

PROCESS AND INSTALLATION FOR THE SEPARATION OF A GASEOUS MIXTURE BY CRYOGENIC DISTILLATION

Norbert Rieth, Paris; Bernard Darredeau, Sartrouville, and Jean-Yves Lehman, Maisons-Alfort, all of, France, assignors to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation des Procedes Georges Claude, Paris Cedex, France

Filed Feb. 23, 1995, Ser. No. 393,265
Int. Cl.[6] F25J *3/02*
U.S. Cl. 62—646 **14 Claims**

1. In an installation for production of variable flow rates of at least one pure component by fractionation of a mixture in a distillation apparatus containing structured packing and dimen-



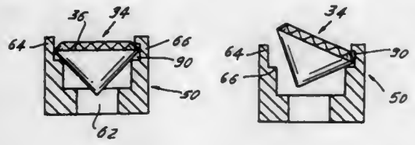
sioned to handle a nominal flow rate of said mixture at nominal pressure; the improvement which comprises, to obtain higher production than a nominal production, means operatively associated with the installation for increasing proportionately the flow rate of said mixture to be fractionated in the distillation apparatus to a ratio of said productions, and means for increasing the operating pressure of the distillation apparatus so as to increase a flooding limit of the distillation apparatus to similar proportions.

5,548,976

PRECIOUS STONE MOUNTING AND METHOD THEREFOR

Christopher Slowinski, Bellerose, N.Y., assignor to Christopher Designs, Inc., New York, N.Y.

Filed Nov. 18, 1994, Ser. No. 342,144
Int. Cl.[6] A44C *17/02*
U.S. Cl. 63—28 **15 Claims**



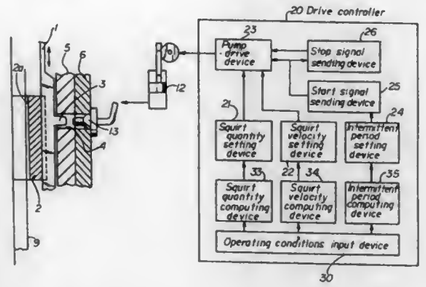
1. A jewelry piece, comprising:
a plurality of precious stones and a setting for the precious stones;
the setting including:
a body;
a linear channel in the body, flanked by a left wall and a right wall;
a first left side and upwardly oriented rim extending from the left wall and a second right side and upwardly oriented rim extending from the right wall;
a channel base, the walls extending between the channel base and the rims;
ledge means between the walls and the rims for supporting the precious stones by engaging a pavilion portion of the precious stones at the region on the pavilion that lies adjacent a girdle of the precious stones; and
the ledge means including a sharp edge made of a soft, yielding material, the sharp edge being defined by two surfaces which meet at an angle, the sharp edge being located to engage the precious stones at a region on the pavilion that lies adjacent a girdle of the precious stones and in a manner wherein insertion of the precious stones into the setting deforms the sharp edge.

5,548,977

LUBRICATING METHOD AND APPARATUS FOR A CIRCULAR KNITTING MACHINE

Kazuya Uchida, Tokyo, Japan, assignor to Lube Corporation, Tokyo, Japan

Filed Mar. 18, 1994, Ser. No. 210,556
Int. Cl.[6] D04B *35/28*
U.S. Cl. 66—8 **10 Claims**



1. A lubricating method for a circular knitting machine, said knitting machine comprising a plurality of needles arranged for revolution around a periphery or the machine, said needles having projections;
a drum-shaped cam provided around the needles, the drum-shaped cam having a cam groove which engages with the projections protruding from the needles for moving the needles back and forth when the needles revolve;
said lubricating method comprising:
providing means for periodically squirting lubricating oil into said cam groove of the cam continuously for a duration of at least revolution of said needles around the periphery of the machine; providing means for stopping and starting the lubricating oil spraying means based on the revolution position of the row of needles; and
periodically squirting lubricating oil into said cam groove of the cam continuously for a duration of at least one revolution of said needles around the periphery of the machine to thereby lubricate said projections and cam groove.

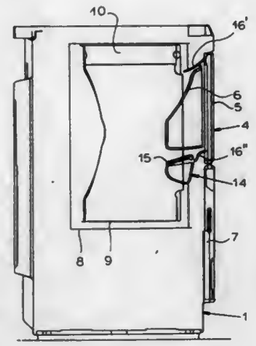
5,548,978

FRONT LOADING WASHING MACHINE

Dino Bongini, Fabriano; Sandro Duri, Fluminata, and Andrea Stopponi, Matelica, all of, Italy, assignors to Merloni Elettrodomestici S.P.A., Fabriano, Italy

Filed Nov. 29, 1994, Ser. No. 346,155
Claims priority, application Italy, Nov. 30, 1993, TO93A0909
Int. Cl.[6] D06F *39/02*
U.S. Cl. 68—17 R **17 Claims**

1. A front loading laundry machine, comprising:
a housing having a front side provided with a door opening;
a door mounted on said front side and displaceable between closed and open positions thereof, said door opening being closed by said door in the closed position thereof;
a washing chamber mounted in said housing and formed with a respective front wall, said wall having a chamber opening and being juxtaposed with said front side of the housing;
a laundry basket mounted in said chamber and rotatable about a horizontal axis and formed with a basket opening, the door, chamber and basket openings being aligned with one another; and
washing agent distribution means for delivering a detergent into said basket in said closed position of the door, said distribution means being mounted on the front wall of said chamber and extending inwardly therefrom through said basket opening into said basket.

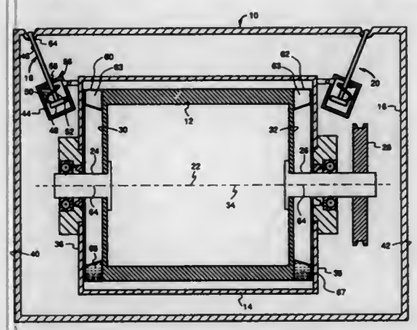


5,548,979

HORIZONTAL AXIS CLOTHES WASHING MACHINE WITH TUB SUSPENSION

Kiernan F. Ryan, Niskyuna; Rok Sribar, Clifton Park, and Sudhir D. Savkar, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 23, 1995, Ser. No. 376,572
Int. Cl.[6] D06F *37/22*
U.S. Cl. 68—23.2 **10 Claims**



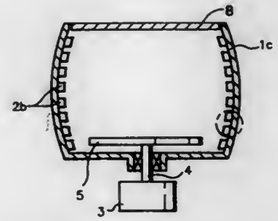
1. A clothes washing machine comprising:
a) a rotatable clothes basket having a generally longitudinally extending and generally horizontally disposed axis of rotation;
b) a first member, said first member being a tub having a generally longitudinally extending axis generally coaxially aligned with said axis of rotation, said tub generally surrounding said clothes basket and said clothes basket rotatably attached to said tub;
c) a second member, said second member being a cabinet generally surrounding said tub;
d) a plurality of spaced-apart tub suspension subassemblies each including:
(1) a cylinder attached to one of said first and second members;
(2) a rod having a first end disposed within said cylinder and having a second end attached to the other of said first and second members, wherein one of said first and second ends of said rod is disposed closer to said axis of rotation than is the other of said first and second ends of said rod, wherein said one end is disposed longitudinally outward from said tub, and wherein said other end is disposed longitudinally outward from said one end;
(3) a piston disposed within said cylinder and attached to said first end of said rod; and
(4) a spring disposed within said cylinder between said first and second ends of said rod, wherein said tub suspension subassemblies provide the only support and damping connection of said tub to said cabinet.

5,548,980

WASHING TUB FOR LOW FREQUENCY VIBRATION TYPE WASHING MACHINE

Jung C. Kim, Seoul; Dong Y. Oh; Gyu S. Choe, both of Kyungki-do; Kyung S. Hong, Inchon-Jikhalsi; Kyung H. Kim, Seoul; Joo H. Lee; Ha I. Lee, both of Kyungki-do; Kyeong B. Park, Seoul; Dong S. Gil, Seoul; Oh H. Kwon, Seoul, and Byoung H. Kwon, Busan-Jikhalsi, all of, Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 257,327, Jun. 7, 1994, abandoned.
This application Jul. 5, 1995, Ser. No. 498,795
Claims priority, application Rep. of Korea, Jun. 7, 1993, 10228/1993
Int. Cl.[6] D06F *13/00*
U.S. Cl. 68—133 **1 Claim**



1. A low frequency vibration type washing machine comprising:
a washing tub having a disc disposed therein;
means for oscillating the disc in said washing tub;
said washing tub having an outwardly bulged side wall having an inner surface, said side wall meeting with a bottom of the washing tub at an obtuse angle and cooperating with said oscillating means to smoothly guide heart type water currents flowing up and going down in said washing tub; and
a plurality of ring-shaped friction prominences disposed in parallel, vertically spaced relation to one another along substantially the entire height of the inner surface of said outwardly bulged side wall of said washing tub, said prominences exerting frictional force on clothes rubbing against said prominences while the clothes move up and down along with said water currents in the washing tub.

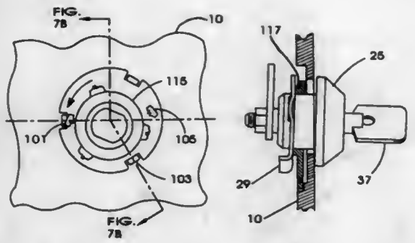
5,548,981

LOCK ASSEMBLY FOR A PERSONAL COMPUTER SYSTEM ENCLOSURE

Richard D. Kirk, Lake Worth, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1994, Ser. No. 332,024
Int. Cl.[6] E05B *69/00;15/16*
U.S. Cl. 70—58 **10 Claims**

1. A lockable computer comprising:
an opening in said computer for receiving a lock housing, said lock housing having a cylindrical opening;
a lock cylinder rotatable in said cylindrical opening of said housing, said lock cylinder having locking elements engaging said cylinder and said housing to hold said cylinder from rotation in said housing and to allow rotation in said housing only when a proper key is inserted into said cylinder;
a fracture ring having a computer engaging part and a housing engaging part to hold said housing in a substantially central position in said opening in said computer;



said fracture ring having a weakened computer engaging part which breaks when excessive torque is applied to an improper key in said cylinder allowing said housing to rotate with said cylinder to unlock said computer without said proper key, said computer engaging part having a plurality of lobes, each of said lobes extending radially from an outer perimeter of said fracture ring and each lobe having a reduced cross section designed to break when excessive torque is applied to said improper key;

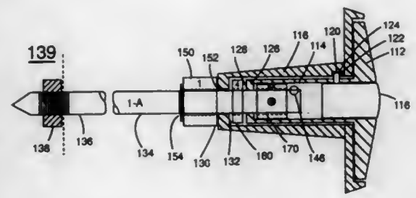
said opening in said computer having a rebated area which is concentric with said opening and allows said fracture ring and said lock to move to a position in said opening when said fracture ring has been broken so as to make it apparent to an observer that said computer engaging part has been broken.

5,548,982

SECURITY BOLT FOR T-HANDLE ASSEMBLY WITH RETROFIT CAPABILITY

James Rawling, 5187 Mount Vernon Way, Atlanta, Ga. 30338

Filed Jul. 19, 1994, Ser. No. 276,647
Int. Cl.[6] E05B *13/10;* **F16B** *41/00*
U.S. Cl. 70—208 **6 Claims**



1. A high security bolt mechanism for a T-handle assembly of the type containing a lock movable between a locked and an unlocked condition, the mechanism operable to prevent opening of an associated closure door when the lock is in the locked or unlocked condition, the mechanism comprising:

a bolt having at least one aperture and at least one recess formed therein, said bolt having a threaded end and a non-threaded end;

a security collar encircling said bolt proximate said non-threaded end and having at least one mutually opposed pair of apertures corresponding to said at least one bolt aperture, said collar apertures and said bolt aperture adapted to receive a holding pin which holds the collar stationary relative to the bolt;

said at least one recess located between said security collar and said non-threaded end of said bolt;

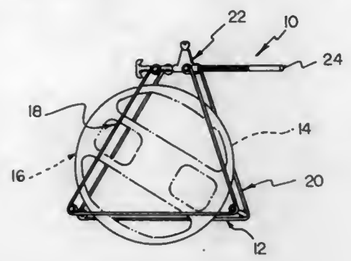
a ball bearing adapted to fit within said at least one recess, said ball bearing preventing axial movement of said security collar in the direction of said non-threaded end.

5,548,983

STEERING WHEEL LOCK

Lemuel R. Hart, 30424 Center Ave., Box 36, Keller, Va. 23401

Filed Jun. 26, 1995, Ser. No. 494,547
Int. Cl.[6] B60R *25/02*
U.S. Cl. 70—209 **6 Claims**



1. A steering wheel lock comprising:

a lower receiver adapted to receive a lower portion of a rim of a steering wheel;

a first lateral receiver pivotally mounted to a first end of the lower receiver and adapted to receive a lateral portion of the rim;

a second lateral receiver pivotally mounted to a second end of the lower receiver and adapted to receive a second lateral portion of the rim;

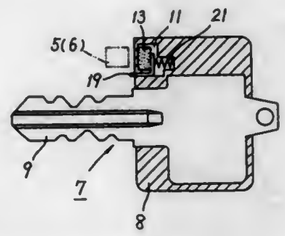
a lock means extending between free distal ends of the lateral receivers for selectively locking the free distal ends thereof together to secure the rim of the steering wheel within the receivers; said receivers, when in a locked condition on a steering wheel, including three substantially straight members on a front side and three substantially straight members on a rear side of a rim of the steering wheel, each member including an eyelet means at both of its ends for being pivoted to an adjacent element, members on the front side of the rim being substantially parallel to those on the rear side of the rim for receipt of the steering wheel rim therebetween.

5,548,984

LOCKING/UNLOCKING STATE CONFIRMING DEVICE

Takayoshi Miyatsu, 11-4 Aobadai 1-chome, Aoba-ku, Yokohama-city, Kanagawa-ken 227, Japan

Filed Aug. 8, 1994, Ser. No. 286,239
Claims priority, application Japan, Aug. 9, 1993, 5-214815; Jun. 27, 1994, 6-165788
Int. Cl.[6] E05B *41/00;47/00*
U.S. Cl. 70—276 **4 Claims**



1. A locking/unlocking state confirming device comprising:

a drive magnet formed of at least a pair of permanent magnets arranged adjacent an outer end face of an outer sleeve of a cylinder lock in symmetrical relation with respect to a key way of an inner sleeve, said pair of permanent magnets being mutually oppositely magnetized in an axial direction of said inner sleeve;

a key provided with a key bow of non-magnetic properties;

a magnet holding chamber formed in an area within said key bow that is proximate to a front end face opposite to said cylinder lock and which is generally in alignment with said drive magnet in a radial direction of said cylinder lock when said key is inserted in said key way;

an indicator magnet formed of a permanent magnet acting as a rotor magnetized in a direction at a right angle relative to a center axis thereof, said indicator magnet having first and second outer peripheral surfaces with respect to a plane including said center axis and parallel to the magnetizing direction, said first and second peripheral surfaces having respective different indicia with respect to each other, said indicator magnet being turnably received in said magnet holding chamber with said center axis of said indicator magnet extending generally perpendicular relative to a stem of said key;

a viewing window open to at least one side surface of said key bow so that the inside of said magnet holding chamber can be seen from outside; and

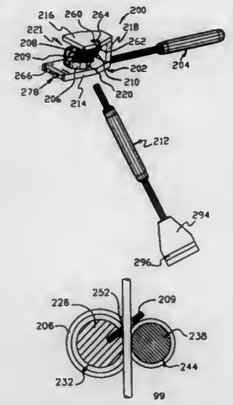
a brake member movably guided for movement forwardly and rearwardly within said key bow, said brake member being biased in a forwardly projecting direction such that when said key is withdrawn from said key way of said cylinder lock one end of said brake member projects from a front end face of said key bow, said brake member having another end resiliently pressing said indicator magnet from a rear side thereof, thereby regulating rotation of said indicator magnet about said center axis as a function of positions of said key relative to said permanent magnets.

5,548,985

ROD BENDER FOR FORMING SURGICAL IMPLANTS IN THE OPERATING ROOM

Ronald A. Yapp, 3330 E. Colter St., Phoenix, Ariz. 85018

Filed May 13, 1994, Ser. No. 242,169
Int. Cl.[6] B21D *7/04;9/05*
U.S. Cl. 72—149 **19 Claims**



1. Apparatus for bending a metal rod with a predetermined maximum hardness characteristic to form a surgical implant in a sterile operating room environment, with minimal nicking and scratching of, and minimal transfer of foreign material to, the rod, the apparatus comprising:

a mandrel housing including first and second generally parallel housing plates having proximal and distal ends, and a transversely disposed end piece removably connecting the plates:

a first lever arm extending rearwardly from the mandrel housing in a plane generally parallel to the planes of the plates;

a capstan rotatably disposed between the plates,

a second lever arm adapted to engage the capstan to facilitate rotation thereof;

the capstan comprising a cylinder of predetermined radius and height, including a plurality of radially disposed bores of a predetermined diameter, the capstan bores being adapted to receive a first end of the second lever arm and disposed in the same plane as the first lever arm, such that the first and second lever arms can be moved toward each other during the bending process without generating any spurious torques;

a primary mandrel axially aligned with the capstan and fixed thereto for rotation therewith, the primary mandrel having at least one generally cylindrical portion with a guide channel formed in the circumferential surface thereof,

a follower mandrel, having at least one generally cylindrical portion with a guide channel formed in the circumferential surface thereof, the follower mandrel being rotatably disposed in the mandrel housing and axially offset from the first mandrel by a predetermined distance generally corresponding to the diameter of the rod, with the guide channel of the follower mandrel being in planar alignment with the guide channel of the primary mandrel to form a bending channel therebetween;

a gripping member mounted for rotation with the primary mandrel, the gripping member enclosing a portion of the guide channel of the primary mandrel cylindrical portion to thereby form an enclosed passageway of predetermined configuration;

the passageway being configured such that when the primary mandrel is rotated to a predetermined starting position, the passageway is brought into general alignment with the bending channel, and the rod can be journaled through the passageway and into the bending channel;

the housing, first lever arm, second lever arm, capstan, primary mandrel, gripping member and follower mandrel each being formed of an autoclavable material with a predetermined hardness at least equal to the maximum hardness of the rod;

rotation of the primary mandrel, with a rod journaled through the gripping member passageway and bending channel, causing the gripping member passageway to engage the rod, and pull the rod through the bending channel, to bend the rod into conformance with the primary mandrel cylindrical portion.

5,548,986

METHOD AND APPARATUS FOR SIMULTANEOUSLY FORMING AT LEAST FOUR METALROUNDS

Giichi Matsuo; Akira Sakai, both of Tokyo, Japan; Jeral Rains, Seguin, and Dayton Elley, McQueeney, both of Tex., assignors to Structural Metals, Inc., Seguin, Tex., and NKK Corporation, Tokyo, Japan

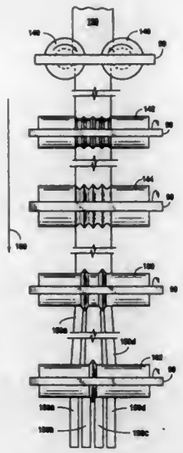
Continuation-in-part of Ser. No. 215,388, Mar. 21, 1994, abandoned, and a continuation-in-part of Ser. No. 855,010, Apr. 22, 1992, abandoned. This application Jul. 11, 1994, Ser. No. 273,597
Int. Cl.[6] B21B *1/18;27/02*
U.S. Cl. 72—204 **24 Claims**

1. Apparatus for use in simultaneously forming four metal rounds comprising:

a first pair and a second pair of forming rollers each roller having a forming surface, the first pair and second pair being connected in series to sequentially pass a bar in a first pass and a second pass through the roller forming surfaces, each pair having an adjustable separation distance with the directions of adjustment being substantially non-parallel;

grooves in the forming surface of at least one roller of each of the first pair and the second pair, dimensioned in combination to form the bar at the completion of the second pass into four connected strands of substantially equal cross sectional area; and

a pair of pre-slitter forming rollers connected downstream of the first and second roller pairs having an adjustable separation



distance, the pre-slitter rollers having forming surfaces defining two central grooves and two outside grooves, the four grooves being separated by three serial ridges with each central groove defining a central groove cross sectional area and each outside groove defining a strand cross sectional area, the central groove cross sectional area exceeding the strand cross sectional area by a free space area, the free space area being sufficient to accommodate a variance in strand cross sectional area without requiring redistribution of metal from strands within central grooves to strands within outside grooves;

the pre-slitter grooves and pre-slitter ridges dimensioned in combination with the grooves of the first and second forming roller pairs to form a bar comprised of four serial strands of substantially equal cross sectional area separated by thin connecting portions.

5,548,987

ROLL MANDREL MONITORING ARRANGEMENT IN COLD PILGER MILLS

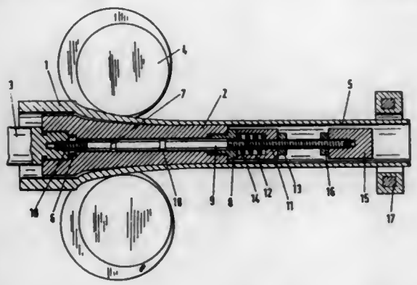
Karl H. Häusler, Korschenbroich, Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Filed Sep. 7, 1994, Ser. No. 301,692

Claims priority, application Germany, Sep. 7, 1993, 43 30 932.1

Int. Cl.[6] B21B *17/10*

U.S. Cl. 72—208 **9 Claims**



1. A device for monitoring a roll mandrel mounted at a first end to a mandrel rod in a cold pilger rolling mill, comprising:

a bar connectable to the mandrel rod so as to penetrate the mandrel concentrically, said bar being constructed as a tension bar that can be pretensioned against a second end of the mandrel;

energy accumulator means for pretensioning the bar against the mandrel;

a coil that surrounds a rolled tube concentrically at a delivery side after the rolling mill;

a coil core fastened to a portion of the bar extending from the mandrel to the coil so as to be inside the tube, said coil detecting longitudinal movement of the coil core; and

means for processing detected movement of the core to generate a signal for stopping the rolling mill.

5,548,988

MULTI-STAND ROLL TRAIN

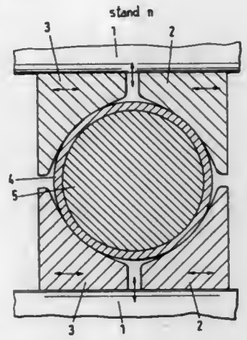
Manfred Proske, Mönchengladbach, and Gerhard Kulessa, Mülheim, both of, Germany, assignors to Mannesmann Aktiengesellschaft, Duesseldorf, Germany

Filed Nov. 15, 1994, Ser. No. 339,769

Claims priority, application Germany, Nov. 15, 1993, 43 39 228.8

Int. Cl.[6] B21B *27/02*

U.S. Cl. 72—252.5 **2 Claims**



1. A multi-stand roll train for longitudinally rolling seamless steel tubes in a continuous rolling process around an internal die, comprising a plurality of integrated two-high stands staggered by 90° with correspondingly grooved rollers adapted to be radially adjustable relative to one another, each of the rollers having an axis, at least the rollers of a final one of the roll stands in a direction of rolling being divided along a central plane which perpendicularly intersects the axes of the rollers to separate each of the rollers into two halves, the two halves being adapted to be axially adjustable relative to one another.

5,548,989

AC COIL FORMER

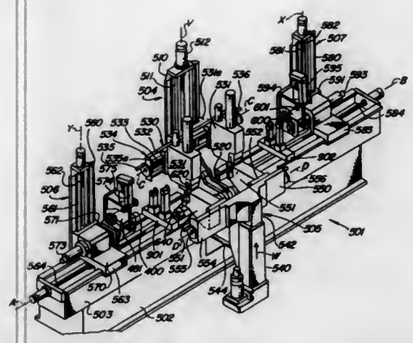
Thomas E. Howe; David M. Taccone, and Robert H. Hartmann, all of Erie, Pa., assignors to General Electric Company, Erie, Pa.

Continuation-in-part of Ser. No. 891,871, Jun. 1, 1992, abandoned. This application Jan. 18, 1994, Ser. No. 182,943

Int. Cl.[6] B21D *5/00*

U.S. Cl. 72—298 **6 Claims**

1. An apparatus for forming a form wound stator coil from a bobbin having a lower leg including a straight length arm and two outer nose end arms, and an upper leg including an upper leg straight length portion and two outer nose end arms, an outer lead end nose attached to one of the nose end arms of the upper length



portion and lower length portion, the lead end nose and attached nose end arms defining a lead end inner nose radius, an outer opposite lead end nose attached to the other of the nose end arms of the upper length portion and lower length portion, the opposite lead end nose end attached nose end arms defining an opposite lead end inner nose radius, the apparatus comprising;

a. lower leg clamping means attached to a drive frame for clamping the lower leg of the bobbin to maintain the lower leg straight length portion substantially in its original shape and for forming a radius of predetermined dimensions between the straight length portion and the lower leg nose end arms;

b. lower leg clamp positioning means operably engaged to the lower leg clamping means for initially positioning the lower leg clamping means on at least the opposite ends of the lower leg straight length portion;

c. upper leg clamping means attached to a support frame for clamping the Upper leg of the bobbin to maintain the upper leg straight length portion substantially in its original shape and for forming a radius of predetermined dimensions between the straight length portion and the upper leg nose end arms, the support frame being pivotally attached to the drive frame, said upper leg clamping means including an upper forming flange hingeably attached to the support frame, a lower forming flange fixedly attached to the support frame below the upper forming flange and a locking flange means slidably attached to the support frame for fixedly holding the upper leg of the bobbin between the locking flange and the lower forming flange, the upper forming flange having an outer forming race, the lower forming flange having an outer forming portion, the forming face of the upper flange being disposed adjacent the forming portion of the lower flange when the upper forming flange is rotated to a closed position, the forming face of the upper flange and the forming portion of the lower flange being configured to form a desired radius between the straight portion of the upper leg and one of the nose end arms when the support frame and drive frame are pivoted;

d. upper leg clamp positioning means operably attached to the upper leg clamping means for initially positioning the upper leg clamping means on at least the opposite ends of the upper leg straight length portion;

e. pivoting means for pivoting the drive frame relative to the support frame about an axis equivalent to the center axis of the stator core into which the finisbed coil will be inserted;

f. nose end clamping means for securing the nose end of the bobbin, for forming a radii, proximate to the nose end, between the nose end and the nose end arms attached to the nose end, and for rotating the nose end to a predetermined angle relative to the attached nose arms;

g. positioning means operable attached to the nose end clamping means for positioning the nose end clamping means with respect to the dimensions of the bobbin; and

h. arc forming means fixedly attached to the lower leg clamping means for engaging the nose and arms of the lower leg of the bobbin during the pivoting of the drive frame relative to the support frame, the arc forming means including an upper surface adjacent and extending outward from the lower leg clamping means.

5,548,990

METHODS AND SYSTEMS FOR CALIBRATING FLOW METERS

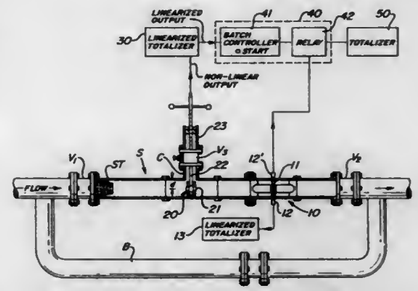
Ronald Northedge, Maison Du Sud, Val De La Mare, St. Peter, Jersey, Channel Islands

Continuation of Ser. No. 101,414, Aug. 3, 1993, abandoned. This application Apr. 19, 1995, Ser. No. 424,233

Claims priority, application United Kingdom, Jul. 15, 1993, 9314701

Int. Cl.[6] G01F *25/00*

U.S. Cl. 73—3 **2 Claims**



1. A system for in situ calibration of a flow meter under test installed in a pipe comprising:

a pre-calibrated insertion meter positioned within the bore of the pipe in series with the flow meter under test, the insertion meter having an output bearing a predetermined relationship to flow rate in the pipe;

a linearized totalizer for linearizing the output of the insertion meter;

a further totalizer for totalizing the output of the flow meter under test, and

processing means for using the output of the insertion meter to derive a calibration for the flow meter under test, said processing means comprising control means for storing a reference total output by the linearized totalizer in response to flow of a given volume of fluid along the pipe and for comparing the instantaneous total output by the linearized totalizer with the reference total, and means for inhibiting the further totalizer when the instantaneous total and the reference total are the same.

5,548,991

PERMEAMETER PROBE

Marc J. Ritson, 755 Weston Rd., Scotts Valley, Calif. 95066

Filed Mar. 9, 1995, Ser. No. 401,111

Int. Cl.[6] G01M *3/26;* **G01N** *3/00*

U.S. Cl. 73—38 **7 Claims**

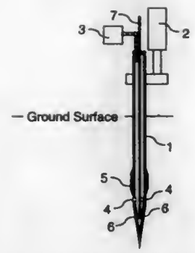
1. A permeameter probe for measuring the relative permeability of earthen material below ground, comprising:

a hollow, tubular probe shaft with a hollow drive point at a first end;

drive means, at the second end of the probe shaft, for pushing the first end of the probe shaft into the ground at a constant rate;

means for injecting a liquid under pressure down the interior of the probe shaft, out of first ports in the drive point, and into the adjacent earthen material, as the probe shaft is a pushed into the ground;

VOL 1189 ISS 4 AG 27 1996 UMI



an expanded section of the probe shaft above the drive point for preventing the injected liquid from flowing up the bore formed by the advancing probe shaft; and

means for measuring a characteristic of the liquid injected into the adjacent earthen material and determining from said measurement the relative permeability of the adjacent earthen material.

5,548,992

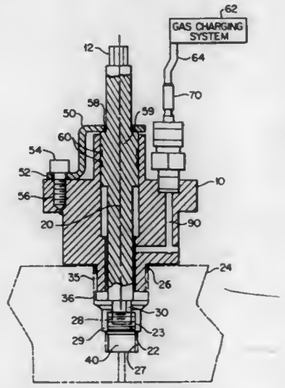
LEAK TEST ADAPTER FOR CONTAINERS

Brian H. Hallett, Elizabeth, and Michael S. Hartley, Canonsburg, both of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 6, 1995, Ser. No. 487,718

Int. Cl.[6] G01M *3/02;3/20*

U.S. Cl. 73—49.2 **19 Claims**



1. A leak test adaptor for leak testing a container having a penetration cavity, said leak test adaptor comprising:

an adapter body, said adaptor body having a bore hole disposed therethrough, said bore hole defining a vertical axis through said adaptor body;

means for securing said adapter body to said container;

means for attaching a gas supply, said means for attaching being affixed to said adaptor body;

a fluid passage disposed in said adapter body and in communication with said bore hole at a proximal end and in communication with said means for attaching a gas supply at a distal end;

an adapter stem disposed in said bore hole and capable of movement along said vertical axis;

a container penetration plug, said penetration plug for sealing said penetration cavity in said container, said penetration plug being disposed on a proximal end of said adapter stem when not in use and disposed in said penetration cavity when in use; and

preventing means for preventing said adapter stem from moving beyond a predetermined position along said vertical axis.

5,548,993

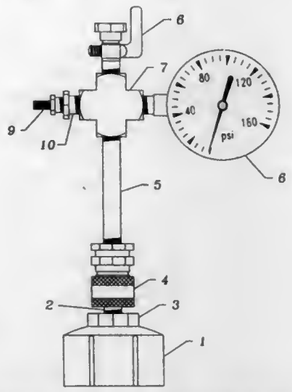
GAS SERVICE TESTING GAUGE

Brent K. Alexander, 80 Cass Ave., West Springfield, Mass. 01089-2424

Filed Apr. 21, 1995, Ser. No. 426,050

Int. Cl.[6] G01M *3/04*

U.S. Cl. 73—49.5 **1 Claim**



1. Apparatus comprising a device for testing gas service consisting of a cap having a threaded end and an open end, said threaded end engages the main gas line and said open end receives a nut, within said nut is an o-ring, within said nut and o-ring is engaged an adapter, said adapter receiving a steel nip, said steel nip receiving a cross member having a vertical bar and a horizontal bar, said vertical bar having two vertical ends, one of said vertical ends receiving said steel nip, said remaining vertical end having a release valve, said horizontal bar having two ends, one of said horizontal ends having a tank valve for receiving an air source and a bushing and said other horizontal end having a gauge.

5,548,994

STATOR CONNECTOR

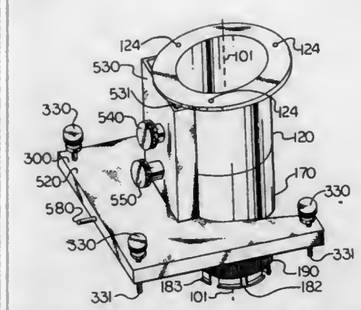
Theodore W. Selby; Kevin J. Wolfe, both of Midland, and William A. Atkins, Bay City, all of Mich., assignors to Tannas Co., Midland, Mich.

Continuation-in-part of Ser. No. 308,918, Sep. 20, 1994, Pat. No. 5,513,517. This application Jun. 7, 1995, Ser. No. 486,881

Int. Cl.[6] G01N *11/14*

U.S. Cl. 73—54.28 **16 Claims**

1. In a sensitive rotating viscometer having a module in which resides a motor for rotating a rotor attachable to a shaft of the motor, the rotor having a longitudinal axis, and being rotatable about its longitudinal axis and being generally suspended from the shaft about a lower end of the viscometer module, the module connectable to a stator which is to contain a predetermined quantity of test fluid into which the rotor is immersed so that the rotor is concurrently suspended within the stator so that, when the rotor rotates therein, drag is created on the rotating rotor related to viscosity of the test fluid, the improvement which comprises a fixable stator connected to the module of the viscometer through a stator connector, wherein the stator connector attaches to the lower end of the viscometer module and comprises an attachment member which attaches to a side of the lower end of the viscometer module and holds the stator in place, without attaching to an opposing side of the lower end of the viscometer module.



5,548,995

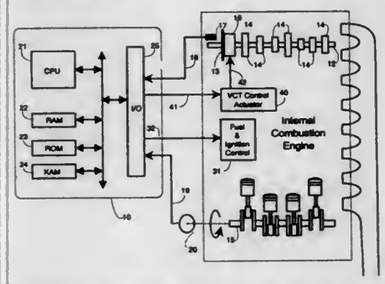
METHOD AND APPARATUS FOR DETECTING THE ANGULAR POSITION OF A VARIABLE POSITION CAMSHAFT

Eric L. Clinton, Southfield; Hsien C. Pao, Plymouth; William R. Allen, Redford, and Valerian M. Nita, Warren, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 22, 1993, Ser. No. 155,508

Int. Cl.[6] G01M *15/00*

U.S. Cl. 73—116 **19 Claims**



1. A variable cam timing system for an internal combustion engine comprising,

a variable position camshaft comprising a plurality of cams rotating in a variable angular relationship to a crankshaft,

means for altering the angular position of said camshaft in relation to said crankshaft, and

means responsive to a first signal indicative of the rotational speed of the crankshaft and to a second signal indicative of the angular position of said camshaft for determining the angular position of said camshaft in relation to said crankshaft.

5,548,996

SENSOR FOR AUTOMOBILE

Izuru Shinjo, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 29, 1994, Ser. No. 297,287

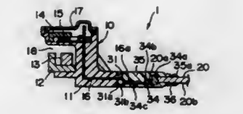
Claims priority, application Japan, Aug. 31, 1993, 5-216215

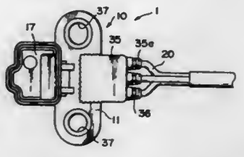
Int. Cl.[6] G01M *15/00*

U.S. Cl. 73—116 **8 Claims**

1. A sensor for an automobile engine, comprising:

a) a detection device (12–15),





b) a sensor body (10–11) accommodating the detection device,

c) a recess (30) defined in an edge of the sensor body remote from the detection device,

d) a plurality of signal wires (16) embedded in the sensor body, each having one end connected to the detection device and another, opposite end (16a) extending into the recess,

e) an equal plurality of lead wires (20) each having an end terminal (34) extending into the recess and electrically connected to an associated signal wire opposite end, and

f) an injection molded elastomer material (35) completely filling the recess and sealingly enclosing and encapsulating said opposite ends of the signal wires, said end terminals of the lead wires and said electrical connections therebetween.

5,548,997

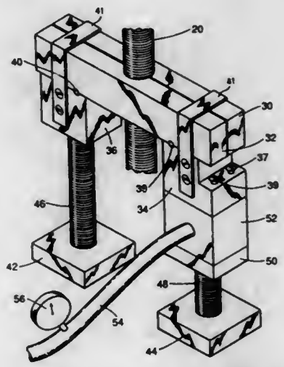
APPARATUS FOR APPLYING A KNOWN AXIAL FORCE TO A VALVE STEM

Donald L. Bauer, Atascadero, Calif., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 25,498, Mar. 3, 1993, Pat. No. 5,305,637, which is a division of Ser. No. 753,785, Sep. 3, 1991, Pat. No. 5,199,301. This application Apr. 25, 1994, Ser. No. 232,570

Int. Cl.[6] G01M *19/00*

U.S. Cl. 73—168 **8 Claims**



1. A method of testing a motor operated valve having a valve operator and a valve stem, the method comprising the steps of:

providing a means for exerting an adjustable force on an object;

positioning said adjustable force means on said valve such that said force can be exerted on said valve stem by said adjustable force means;

operating said adjustable force means to exert said force on said valve stem prior to actuating said valve operator;

without releasing said force, actuating said valve operator to cause said valve stem to move;

varying said force as said valve stem moves in accordance with a predetermined loading profile; and

monitoring the operation of said valve.

5,548,998

GAS METER HAVING SELECTIVITY CHARGEABLE COVERS

John A. Roberts, Camberley, England, assignor to Smith Meters Limited, London, England

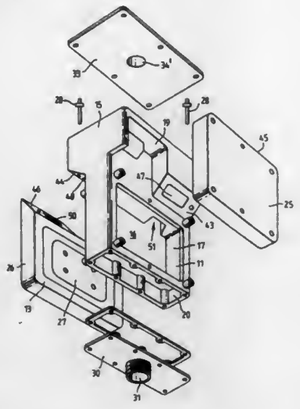
PCT No. PCT/GB93/01366, § 371 Date Feb. 17, 1995, § 102(e) Date Feb. 17, 1995, PCT Pub. No. WO94/01742, PCT Pub. Date Jan. 20, 1994

PCT Filed Jun. 30, 1993, Ser. No. 373,229

Claims priority, application United Kingdom, Jul. 14, 1992, 9214876; Mar. 18, 1993, 9305591

Int. Cl.[6] G01F *3/20*

U.S. Cl. 73—263 **5 Claims**



1. A dry gas meter having a one piece core defining at least parts of first and second chambers located on opposite sides of the meter, a third chamber located at a top of the meter and a fourth chamber located at a bottom of the meter, two flexible diaphragms located respectively in the first and second chambers and each arranged to work back and forth in its associated chamber to/from which the gas being metered is alternately admitted and exhausted, valves and valve drive gear located in the third chamber and arranged to direct gas to and from the first and second chambers, the cores additionally defining internal gasways connecting the third and fourth chambers, and first and second covers respectively closing the third and fourth chambers and each defining an inlet/outlet connection for connection respectively into a gas line, which connections extend parallel to one another.

5,548,999

MOUNTING ARRANGEMENT FOR ACCELERATION DETECTOR ELEMENT

Shinobu Kakizaki, and Kimihisa Kasajima, both of Atsugi, Japan, assignors to Atsugi Unisia Corporation, Japan

Filed Dec. 16, 1992, Ser. No. 991,434

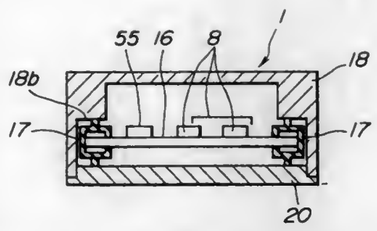
Claims priority, application Japan, Dec. 17, 1991, 3-332393

Int. Cl.[6] G01P *1/02;15/02*

U.S. Cl. 73—493 **23 Claims**

1. An acceleration sensor comprising:

an enclosed housing portion;



semiconductor type acceleration detecting means formed on a silicon substrate and mounted in said enclosed housing portion, and including, at an end portion of said acceleration detecting means, a mass displacable in at least an acceleration acting direction, said acceleration detecting means active to output an acceleration signal proportional to a degree of displacement of said mass;

signal processing means for processing said signal output from said acceleration detecting means; and

elastic support means active to elastically support at least said acceleration detecting means in said acceleration acting direction and applying a predetermined degree of damping force to a displacement of said acceleration detecting means in relation to said enclosed housing portion under a given degree of acceleration.

5,549,000

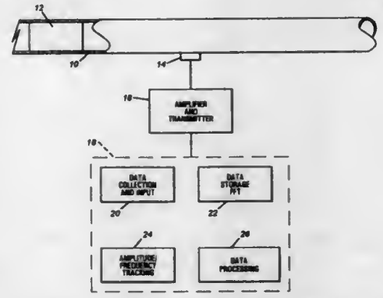
PASSIVE ACOUSTIC DETECTION OF PIPELINE PIGS

Winthrop K. Brown, Bellaire; Victor Diatschenko, Houston, and James R. Stoy, Missouri City, all of Tex., assignors to Texaco, Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 265,878, Jun. 27, 1994, abandoned. This application Jun. 9, 1995, Ser. No. 488,697

Int. Cl.[6] G01H *1/00*

U.S. Cl. 73—587 **6 Claims**



1. A non-invasive passive acoustic system for determining the condition and passage of a pig moving in a pipe comprising:

vibration sensing means in intimate physical contact with the exterior surface of a pipe, for generating electrical signals representative of radial or hoop modes vibration of said pipe;

Fast Fourier Transform means for separating said electrical signals into frequency components therefore to determine the characteristic radial or hoop mode vibrational frequency of a system of said pig and pipe with said pig moving in said pipe;

means for tracking any changes in amplitude and/or frequency of said characteristic radial or hoop mode vibrational frequency of said system; and

data processing means for determining the condition and passage of said pig from said any changes in amplitude and/or frequency of said characteristic radial or hoop mode vibrational frequency.

5,549,001

SET OF ULTRASONIC PROBEHEADS FOR MEASUREMENTS OF TIMES OF FLIGHT OF ULTRASONIC PULSES

Andrzej Brokowski, and Jacek Szelążek, both of Warsaw, Poland, assignors to Instytut Podstawowych Problemów Techniki, Warsaw, Poland

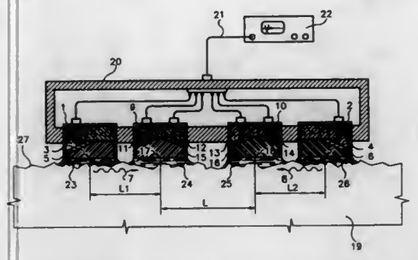
PCT No. PCT/PL92/00009, § 371 Date Mar. 28, 1994, § 102(e) Date Mar. 28, 1994, PCT Pub. No. WO93/03361, PCT Pub. Date Feb. 18, 1993

PCT Filed Jul. 22, 1992, Ser. No. 185,887

Claims priority, application Poland, Jul. 27, 1991, 290830

Int. Cl.[6] G01H *5/00*

U.S. Cl. 73—597 **3 Claims**



1. A set of ultrasonic probeheads for measurements of times of flight of surface skimming wave pulses comprising:

two transmitting ultrasonic probeheads generating ultrasonic waves where the ultrasonic waves propagate in the material being tested along one line but in opposite directions and

two identical receiving ultrasonic probeheads arranged in one line with said transmitting ultrasonic probeheads and disposed between said two transmitting ultrasonic probeheads, wherein each one of said receiving ultrasonic probeheads includes two receiving transducers and wherein each one of said receiving transducers receives ultrasonic waves from opposite directions, and wedges of the receiving ultrasonic probeheads, where distances determined by centers of said receiving transducers and point of intersection of lines normal to transducers going from said centers are equal and said points of intersection lie on bottom surfaces of the wedges, wherein said receiving transducers in each one of said receiving ultrasonic probeheads are mounted on a common wedge of said wedges.

5,549,002

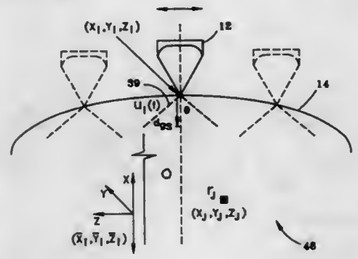
METHOD FOR DETECTING AND CHARACTERIZING FLAWS IN ENGINEERING MATERIALS

Patrick J. Howard, Cincinnati, Ohio, and Richard Y. Chiao, Clifton Park, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 1, 1994, Ser. No. 272,971

Int. Cl.[6] G01N *29/06*

U.S. Cl. 73—602 **9 Claims**



1. A method for detecting and characterizing flaws in an object having an arbitrary-shaped geometry, comprising the steps of:

scanning a surface of the object with a transducer transmitting ultrasonic sound waves through an aperture at a plurality of scanning positions along an axis normal to the object surface, the transducer having a point of focus along the object surface that transmits ultrasonic sound waves having a cone-shaped volume defined by a half-angle θ, a starting radius ρ_i located a predetermined distance below the transducer point of focus and an ending radius ρ_k having a radius larger than the starting radius ρ_i, and a vertex formed at the transducer point of focus;

detecting ultrasonic sound waves reflected from the object with the transducer at each scanning position, the detected sound waves containing signals from a volume of the object, the signals being a discrete set of points within the object representing a plurality of reconstruction points, each reconstruction point being separated from the transducer point of focus by a distance ρ_{ij} and having an angle θ_{kj} formed therebetween;

determining in accordance with ρ_{ij} and θ_{kj} whether each of the plurality of reconstruction points is within the transducer aperture for a given scanning position;

combining the signals from each of the scanning positions that are within the transducer aperture for each reconstruction point to form a reconstructed image of the arbitrary-shaped object; and

displaying the reconstructed image and detecting flaws within the arbitrary-shaped object.

5,549,003

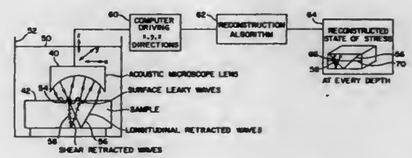
METHOD AND APPARATUS FOR VISUALIZATION OF INTERNAL STRESSES IN SOLID NON-TRANSPARENT MATERIALS BY ULTRASONIC TECHNIQUES AND ULTRASOANIC COMPUTER TOMOGRAPHY OF STRESS

Ewa Drescher-Krasicka, Gaithersburg, Md., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Continuation-in-part of Ser. No. 964,598, Oct. 21, 1992, Pat. No. 5,307,680. This application May 3, 1994, Ser. No. 237,099

Int. Cl.[6] G01N *29/04;3/08;* **G01H** *1/08*

U.S. Cl. 73—606 **21 Claims**



1. A process for visualization of internal stresses in solid materials by scanning acoustic microscopy comprising:

providing an acoustic ultrasonic means comprising an ultrasonic transmitter and an ultrasonic receiver;

supporting a sample comprising a body of solid material to be examined;

supporting said acoustic ultrasonic means in spaced relationship to said sample;

exciting said ultrasonic transmitter to produce transmitted ultrasonic waves;

directing said transmitted ultrasonic waves toward said body for producing acoustic waves reflected by said body;

scanning said sample with said acoustic ultrasonic means for receiving with said ultrasonic receiver said acoustic waves reflected from said body and produced by said transmitted ultrasonic waves; and

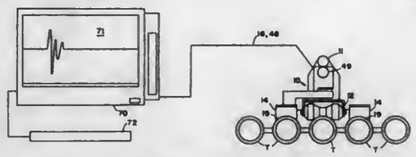
measuring the amplitude of said reflected acoustic waves received by said ultrasonic receiver to analyze distribution of internal stress in said body.

5,549,004

HAND HELD TUBE WALL THICKNESS ULTRASONIC MEASUREMENT PROBE AND SYSTEM

Michael J. Nugent, 706 Beechwood Dr., Washington Township, N.J. 07675

Filed Feb. 28, 1995, Ser. No. 396,013
Int. Cl.[6] G01N *29/06;29/10;29/26*
U.S. Cl. 73—622 **21 Claims**



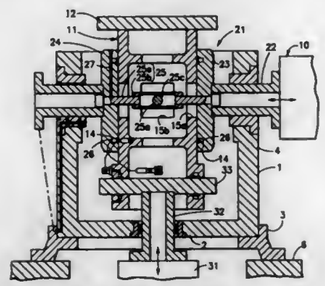
1. A portable hand-beld scanner having a plurality of transducers for converting electrical signals to ultrasonic pulses, transmitting the ultrasonic pulses, receiving return reflected ultrasonic pulses and converting the reflected pulses back into electrical signals for simultaneous examination of the thickness of walls of a plurality of adjacent parallel cylindrical tubes to locate areas of reduced tube wall thickness connected to means for measuring time intervals between transmission of the ultrasonic pulses and receipt of corresponding return ultrasonic pulses reflected off the inner wall surface of each tube wall to measure tube wall thickness as a probe moves parallel to the axes of the parallel cylindrical tubes, which comprises a movable probe body carrying said plurality of transducers each of said transducers having a concave cylindrically curved surface corresponding to and in uniformly spaced, opposed relation to an outer surface of one tube of the plurality of adjacent tubes under examination for transmitting the ultrasonic pulses through an arcuate portion of the wall of the tube to produce the return pulses by reflection off the inner wall surface, means carried by the probe body for measuring the distance the probe has moved; and means for associating corresponding time intervals and distance measurements for each tube of the plurality of tubes.

5,549,005

VIBRATION TESTING APPARATUS WITH INCREASED RIGIDITY IN STATIC PRESSURE BEARING

Hidenao Aoki, Hyogo-ken; Shigehisa Tsutsumi, Osaka; Takehiro Fukushima, and Zenji Sakai, both of Hyogo-ken, all of, Japan, assignors to IMV Corporation, Osaka, Japan

Filed Mar. 22, 1994, Ser. No. 216,046
Int. Cl.[6] G01N *29/00;* **G01M** *7/00*
U.S. Cl. 73—663 **13 Claims**



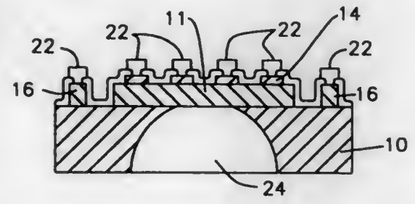
1. A vibration testing apparatus comprising:
a vibrating section having a first portion with a first surface facing in a first direction and a second portion with a second surface facing in a second direction;
said first direction being opposite to said second direction;
a first pressure plate adjacent to said first surface;
a second pressure plate adjacent to said second surface;
a connecting member connected to said first pressure plate and said second pressure plate;
a vibration generator;
means for connecting said vibration generator to said connecting member, said first pressure plate, and said second pressure plate;
said means for connecting including means for urging said first pressure plate against said first surface and for urging said second pressure plate against said second surface;
means for forcing said first and second pressure plates away from respective ones of said first and second surfaces; and
said means for forcing including means for pumping a fluid between said first pressure plate and said first surface and for pumping said fluid between said second pressure plate and said second surface.

5,549,006

TEMPERATURE COMPENSATED SILICON CARBIDE PRESSURE TRANSDUCER AND METHOD FOR MAKING THE SAME

Anthony D. Kurtz, Teaneck, N.J., assignor to Kulite Semiconductor Products, Inc., Leonia, N.J.

Filed May 24, 1994, Ser. No. 248,428
Int. Cl.[6] G01L *19/04;* **G01B** *7/16*
U.S. Cl. 73—708 **24 Claims**



11. A method for fabricating a temperature compensated silicon transducer comprising the steps of:
growing a first layer of semiconducting material having a first conductivity and a negative temperature coefficient of resistance on a first surface of a wafer of semiconducting material having a second conductivity opposite to said first conductivity;
growing a second layer of semiconducting material having said second conductivity and a positive temperature coefficient of resistance;
selectively etching said second layer to form four piezoresistive sensors therein;
selectively etching a first portion of said first layer to form temperature compensating means therein; and
selectively etching said wafer to form an aperture having an area underlying said sensors and a second portion of said first layer, said aperture allowing said second portion of said first layer to deflect.

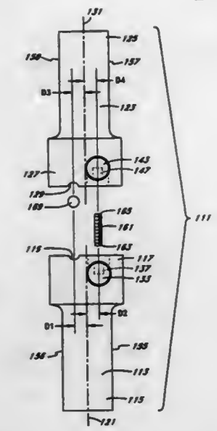
5,549,007

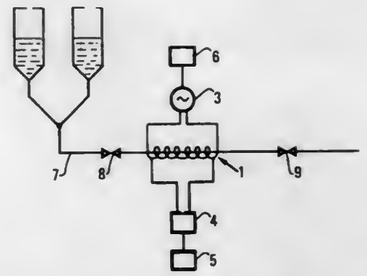
RISING STEP-LOAD TEST APPARATUS

Louis Raymond, Newport Beach, Calif., assignor to LRA Laboratories, Inc., Newport Beach, Calif.

Division of Ser. No. 321,396, Oct. 12, 1994. This application Jun. 7, 1995, Ser. No. 479,659
Int. Cl.[6] G01N *3/04*
U.S. Cl. 73—856 **12 Claims**

1. An adaptor for converting a bending load applied by a first holder having an insertable opening and a second holder having another insertable opening on said adaptor into a tensile lead on a sample having first and second ends, said adaptor comprising:
a first bending member having first and second ends, a centerline, and a first bearing surface located at the second end at a distance D_1 from the centerline, wherein said first end is shaped and sized to fit into the insertable opening of the first holder;
a first linking member, pivotally attached to the first bending member near the first bending member's second end, at a distance D_1 from the first bending member's centerline, opposite the first bearing surface, said first linking member attached to he first and of the sample;
a second bending member having first and second ends, a centerline, and a second bearing surface located at the second end at a distance D_3 from the centerline, wherein said first end is shaped and said to fit into the insertable opening of the second holder, and said second bearing surface bears against the first bearing surface;
a second linking member, pivotally attached to the second bending member near the second bending member's second end, at a distance D_4 from the second bending member's centerline, opposite the second bearing surface, said second linking member attached to the second end of the sample.





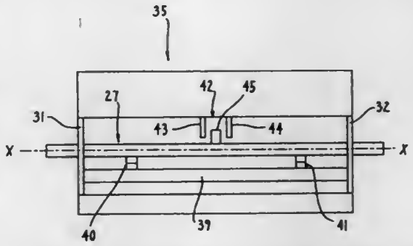
a processor coupled to the detector, for processing the detected amplitude of the envelope for determining from the measured amplitude the characteristic of the partially conductive medium.

5,549,009

APPARATUS FOR DETERMINING AND DOSING MASS FLOWS

Jörg Zaschel, Reutlingen, Germany, assignor to Joerg Zaschel, Reutlingen, Germany

Continuation of Ser. No. 144,622, Nov. 1, 1993, abandoned, which is a continuation of Ser. No. 754,896, Sep. 4, 1991, abandoned. This application Oct. 20, 1995, Ser. No. 546,154
Claims priority, application Japan, Sep. 4, 1990, 40 27 936.7
Int. Cl.[6] G01F *1/00*
U.S. Cl. 73—861.355 **6 Claims**



1. An apparatus connectable into a process pipe for determining mass flow of a fluid flowing in the process pipe using the Coriolis principle comprising:
an outer casing to be fixed in a stationary manner;
a measuring pipe mounted in said casing and interposable in the process pipe comprising an inlet section for connection to the upstream side of a break in a process pipe, an outlet section for connection to the downstream side of the break in the process pipe, and a curved central measuring section, all sections of the measuring pipe lying in a common plane with the inlet section and outlet section aligned on a common axis and each projecting freely out of the casing;
rotary joints mounted on the inlet section and outlet section of the measuring pipe for connection with the associated sides of the process pipe;
a pair of brackets, each bracket fixing one of the inlet section and outlet section to the outer casing;
a vibration decoupling system for decoupling vibrations in the process pipe from the curved central measuring section of the measuring pipe and for decoupling vibrations in the curved central measuring section from the process pipe, said system being unconnected to said outer casing and including a pair of plates, each said plate being fixed to one of the inlet section and outlet section between the bracket fixing such section to

---

5,549,008

DEVICE AND METHOD FOR CHARACTERIZING A MEDIUM COMPRISING AT LEAST A CONDUCTIVE PART

Claude Beauducel, Henouville; Didier Frot, Choisy Le Roi, and Pierre Gonzalez, Rueil Malmaison, all of, France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Filed Dec. 15, 1993, Ser. No. 167,347
Claims priority, application France, Dec. 15, 1992, 92 15112
Int. Cl.[6] G01F *1/74;* **G01N** *27/74*
U.S. Cl. 73—861.04 **25 Claims**

13. An apparatus for determining a characteristic of a partially conductive medium comprising:
a resonant circuit including a coil for producing a magnetic field for magnetic coupling to the partially conductive medium;
a signal source, coupled to the resonant circuit, for generating an excitation signal which produces an electrical current flow in the coil at a resonant frequency which produces the magnetic field varying at the resonant frequency which is magnetically coupled to the medium;
a detector for measuring an amplitude of an envelope of electrical current flow in the coil with the amplitude of the envelope being a function of a conductivity of the partially conductive medium; and

the outer casing and the connection of such section to the curved central measuring section, a pair of struts rigidly interconnecting the pair of plates to form a support frame, an anti-resonator pipe curved in accordance with the curved central measuring section being fixedly mounted at its ends in the support frame with the curved anti-resonator pipe lying parallel to and coextending with the curved central measuring section in a plane adjacent to the said common plane and having a natural resonance that substantially coincides in frequency with that of the curved central measuring section;

said support frame including said anti-resonator pipe together with said curved central measuring section constituting a matched internal vibration system;

a pair of position sensors mounted in spaced relation on said anti-resonator pipe on the side thereof adjacent the curved central section to sense the position of same; and

a vibration generator comprising an exciting element fixed to the support frame cooperating with an exciting element fixed to the curved central measuring section for causing the curved central measuring section to vibrate.

5,549,010

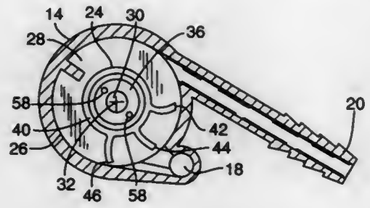
READILY SERVICEABLE ANCILLARY FLUID FILTRATION SYSTEM HAVING VISUAL FLOW RATE INDICATOR AND QUICK-RELEASE FLUID HOSE FITTING

Eric Y. Park; David Knaub; David Thorpe; Howard Barney, and Joshua Hoyt, all of Portland, Oreg., assignors to Ziba Design, Inc., Portland, Oreg.

Filed Jan. 13, 1995, Ser. No. 372,649

Int. Cl.[6] G01F *1/05*

U.S. Cl. 73—861.79 **8 Claims**



1. An economical, low friction fluid flow rate meter with a visual flow rate indicator, comprising:

a housing having an inlet port through which fluid enters at an incoming flow rate and an outlet port through which the fluid exits substantially at the incoming flow rate;

an impeller mounted inside the housing for rotation about an axis of rotation, the impeller having multiple spaced-apart vanes positioned about the axis of rotation so that fluid passing through the inlet port strikes at least one of the vanes to angularly displace the impeller;

a torsionally resistant element having a first end operatively connected to the impeller and a second end connected to the housing to resist its angular displacement at an angular position that is indicative of the incoming fluid flow rate; and

an indicator responsive to the angular displacement of the impeller to provide a visual indication of the incoming flow rate.

5,549,011

STARTER

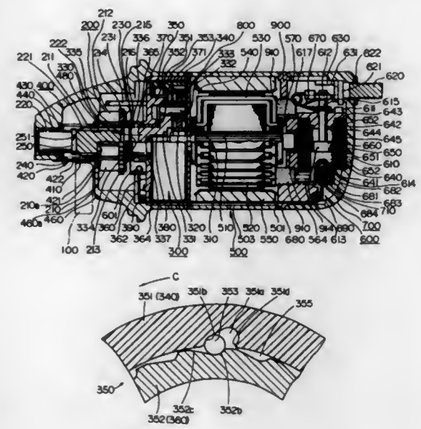
Tsutomn Shiga, Nukata-gun; Nobuyuki Hayashi, Nagoya; Masanori Ohmi, Anjo, and Yasuhiro Nagao, Okazaki, all of, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 22, 1995, Ser. No. 392,111

Claims priority, application Japan, Sep. 19, 1994, 6-222327

Int. Cl.[6] F02N *15/06;* **F16D** *41/064*

U.S. Cl. 74—7 E **13 Claims**



1. A starter comprising:

an electric motor having an armature shaft;

an output shaft engageable with an engine ring gear; and

an overrunning clutch disposed between said armature shaft and said output shaft, said clutch including a clutch inner member shaped in a cylindrical form and having first grooves on an outer circumference thereof, a clutch outer member shaped in a cylindrical form and having second grooves on an inner circumference thereof opposing said outer circumference of said clutch inner member, and rollers set between said clutch inner member and said clutch outer member,

wherein at least one of said clutch inner member and said clutch outer member is formed of a resin or nonferrous metal, and

wherein one of said first and second grooves has a radial depth that can store said rollers therein so that said rollers allow noncontact relation between said clutch outer member and said clutch inner member during overrunning of said output shaft.

5,549,012

ANGLE OSCILLATING POWER DRIVE FOR ROTATING OR SWINGING A HINGED MEMBER

John C. Read, 2627 Lone Jack Rd., Olivenhain, Calif. 92024

Filed Dec. 27, 1994, Ser. No. 363,922

Int. Cl.[6] F16H *23/00;* **E05F** *15/12*

U.S. Cl. 74—60 **12 Claims**

1. A drive for swinging a heavy member between two extreme positions, comprising:

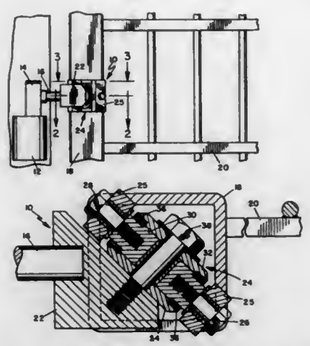
non-reversing motive means for generating a unidirectional rotary force;

reduction means connected to said motive means for reducing a speed of said rotary force;

a first shaft rotatable about a first axis of rotation, said first shaft connected to said reduction means;

an arm connected to said first shaft;

a universal joint connected to said arm, said universal joint having second, third and fourth mutually perpendicular axes



of rotation, said second axis of rotation intersecting said first axis of rotation at a predetermined angle between zero and 90 degrees; and

a second shaft connected to said heavy member and rotatable about said fourth axis of rotation and connected to said universal joint, said fourth axis of rotation perpendicular to said first axis of rotation.

5,549,013

STEPPING ACTUATOR

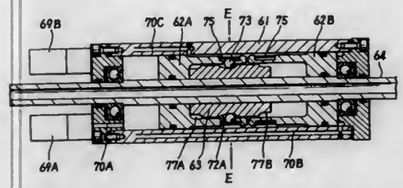
Masahiko Kimbara, Tsukuba, Japan, assignor to Three-D Composites Research Corporation, Tsukuba, Japan

Division of Ser. No. 166,886, Dec. 15, 1993, abandoned. This application Nov. 2, 1995, Ser. No. 556,832

Claims priority, application Japan, Dec. 15, 1992, 4-354183

Int. Cl.[6] F01B *3/00*

U.S. Cl. 74—129 **9 Claims**



1. A stepping actuator for producing stepwise rotations of a predetermined stepping angle through conversion of rectilinear reciprocating motions, said stepping actuator comprising:

a rectilinearly reciprocating member received in an outer frame member;

a drive means for driving said rectilinearly reciprocating member back and forth in the axial direction within the outer frame member;

a rotating member located coaxially with said rectilinearly reciprocating member within said outer frame member and having an output shaft led out axially through said outer frame member;

an endless circulative sunken track formed on and around the circumference of one of cylindrical surfaces at the interface between said rectilinearly reciprocating member and said rotating member and consisting of a series of grooves connected end to end in zigzag shape with inclinations alternately in opposite directions relative to the generator of the cylindrical surface;

tracking projections retained on the other cylindrical surface and urged into engagement with the circulative sunken track for travel therealong;

a groove selector mechanism provided at the connected ends of said grooves to let the tracking projections select a forwardly succeeding at reversing points coinciding with reversals of axial movements of said reciprocating member; and

a rotation blocking means provided at the interface between said rectilinearly reciprocating member sand said outer frame member for blocking rotational movements of said rectilinearly reciprocating member relative to the latter.

5,549,014

WORKCENTRE

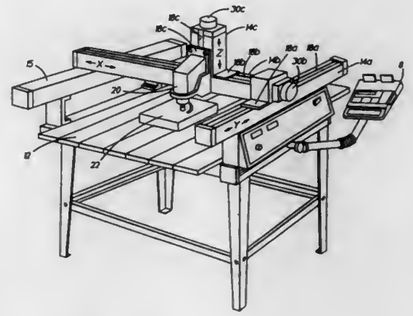
Guiseppe Cuneo, Calolzio Corte, and Sergio Bonacina, Galbiate, both of, Italy, assignors to Black & Decker Inc., Newark, Del.

Continuation of Ser. No. 59,446, May 7, 1993, abandoned, which is a continuation of Ser. No. 26,374, Mar. 4, 1993, abandoned. This application Nov. 30, 1994, Ser. No. 346,993

Claims priority, application United Kingdom, Mar. 5, 1992, 9204772

Int. Cl.[6] F16H *1/14*

U.S. Cl. 74—424.84 **6 Claims**



1. A workcenter comprising:

a track;

a carriage moveable along the track and having a through bore;

a screw disposed in the track to move the carriage and passing through said bore;

a motor to drive said screw;

at least one sleeve member surrounding said screw and fitted on said carriage;

a circumferential groove formed around said at least one sleeve member;

a spring ring disposed in each of said circumferential groove;

a plurality of segments formed along part of the length and extending to one end of said at least one sleeve member,

said segments resiliently compressible by said spring ring toward said screw; and

deformable threads formed in the internal circumference of said at least one sleeve member along part of the length said segments; when,

such that when said at least one sleeve member is threaded onto said screw said threads are deformed to account for any irregularities in said threading without losing axial tightness of the carriage with respect to said screw.

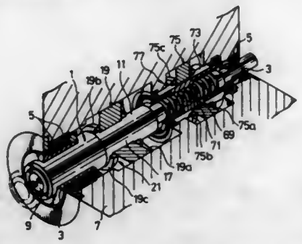
VOL 1189 ISS 4 AG 27 1996 UMI

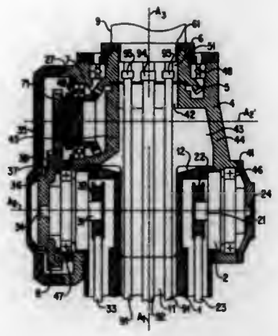
5,549,015

SHAFT ROTATION DRIVING APPARATUS FOR MACHINE TOOL

Katsuyosi Aiso; Sakasi Adati; Toshiro Igarasi; Sin Tanoue; Satosi Kumamoto, all of Shizuoka-ken, and Masonari Wakuda, Shimogawara Numazu, all of, Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 2, 1993, Ser. No. 160,729
Claims priority, application Japan, Dec. 4, 1992, 4-325211
Int. Cl.[6] F16H *1/20*
U.S. Cl. 74—424.8 B **2 Claims**





1. A shaft rotation apparatus for a machine tool having a main spindle for rotating a tool or a workpiece, comprising:
- a first rotor integral with the main spindle, said first rotor being of magnetic anisotropy;
- a first stator disposed coaxially along an outer circumference of said first rotor;
- a first field winding wound around said first stator, for magnetizing said first rotor in a predetermined direction;
- a first armature winding wound around said first stator, for providing a rotative force to said first rotor;
- a feed screw axle portion integrally formed with the main spindle;
- a second rotor having a feed nut geared with said feed screw axle portion, said second rotor being of magnetic anisotropy;
- a second stator disposed coaxially along an outer circumference of said second rotor;
- a second field winding wound around said second stator, for magnetizing said second rotor in a predetermined direction; and
- a second armature winding wound around said second stator, for providing a rotative force to said second rotor,

wherein the main spindle is movable in an axial direction relative to said first stator, and said first rotor extends over a length corresponding to a movement stroke of the main spindle.

5,549,016

WRIST MECHANISM FOR AN INDUSTRIAL ROBOT

Toru Nakako; Hideki Tanimura, and Kouji Tukuda, all of Fukuoda, Japan, assignors to Kabushiki Kaisha Yaskawa Denki, Fukuoka, Japan

Filed Dec. 14, 1994, Ser. No. 351,440
Claims priority, application Japan, Apr. 28, 1993, 5-125315
Int. Cl.[6] B25J *17/02*
U.S. Cl. 74—490.02 **10 Claims**

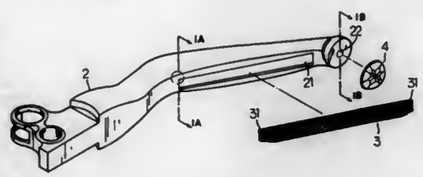
1. An industrial robot comprising an elongated arm having a hollow portion, said arm having a first axis, first and second reduction mechanism supported on opposite sides of said arm, said first and second reduction mechanisms each being rotatable about a second axis which is perpendicular to said first axis, said first reduction mechanism having a first output shaft, said second reduction mechanism having a second output shaft, a wrist frame having a hollow portion, said first and second reduction mechanisms including bearings rotatably supporting said wrist frame for rotation about said second axis, said wrist frame being connected to said first output shaft of said first reduction mechanism such that rotation of said first output shaft effects rotation of said wrist frame about said second axis, a first bevel gear rotatably mounted on said wrist frame for rotation about a third axis perpendicular to said second axis, said first bevel gear having a hollow portion, a second bevel gear rotatably mounted on said wrist frame for rotation about a fourth axis parallel to said second axis, said second bevel gear meshing with said first bevel gear, a first gear wheel fixed to said second bevel gear, a second gear wheel connected to said second output shaft of said second reduction mechanism and meshing with said first gear wheel such that rotation of said second gear wheel effects rotation of said first bevel gear, tool fixing means mounted on said first bevel gear, said tool fixing means having a hollow portion opening up to said hollow portion of said first bevel gear, said hollow portion of said first bevel gear opening up to said hollow portion of said wrist frame, said hollow portion of said wrist frame opening up to said hollow portion of said arm so as to thereby provide a passage through said tool fixing means, said first bevel gear, said wrist frame and said arm, a tool device mounted on said tool fixing means, and utility lines connected to said tool device, said utility lines passing through said passage through said hollow portion of said tool fixing means, said hollow portion of said first bevel gear, said hollow portion of said wrist frame and said hollow portion of said arm.

5,549,017

BRAKE LEVER FOR MOTORCYCLE

Frank Lin, No. 377, Sec 1, Changmei Road, Changhua, Taiwan

Filed Jun. 7, 1994, Ser. No. 254,952
Int. Cl.[6] G05G *1/04*
U.S. Cl. 74—558.5 **2 Claims**



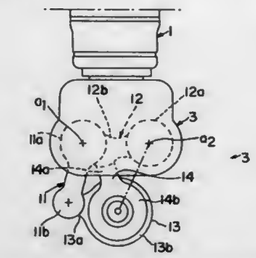
1. An improved brake lever including a lever body, a protective strip and a cap, said lever body being provided with a longitudinal slot which has a narrowed slit merged into the lever body at both ends of the longitudinal slot, said protective strip being configured in such a manner that said protective strip is received and retained with said longitudinal slot, said protective strip including at least one thinner end portion which is received and retained within at least one of said slits, an end portion of the lever body having a flat portion which is provided with a dowel hole which has a narrowed inlet, a bottom side of said cap being incorporated with a bead which is received within said dowel hole.

5,549,018

SMALL-LOCUS MACHINING APPARATUS

Ryo Nihei, Fujiyoshida; Akihiro Terada, and Yasuo Sasaki, both of Minamitsuru-gun, all of, Japan, assignors to Fanuc Ltd., Yamanashi, Japan

PCT No. PCT/JP93/00584, § 371 Date Jan. 13, 1994, § 102(e) Date Jan. 13, 1994, PCT Pub. No. WO93/24285, PCT Pub. Date Dec. 9, 1993
PCT Filed Apr. 30, 1933, Ser. No. 182,068
Claims priority, application Japan, May 22, 1992, 4-154086
Int. Cl.[6] G05G *15/00*
U.S. Cl. 74—490.03 **10 Claims**



8. A small-locus machining apparatus, comprising:
- a base;
- first and second drives fastened to said base along respective first and second axes;
- first and second rotational arms rotatable about said first and second axes, respectively, via said first and second drives, wherein the second rotational arm overlaps the first rotational arm over a portion of a full operational range of movement of said small-locus machining apparatus;
- a link structure including three intermediate joints, said structure having two coupling links intervening between said first and second rotational arms to form joints for rotatably connecting said rotational arms with said coupling links and rotatably interconnecting the coupling links; and
- a controller for controlling said first and second rotational arms to rotate to a respective predetermined amount.

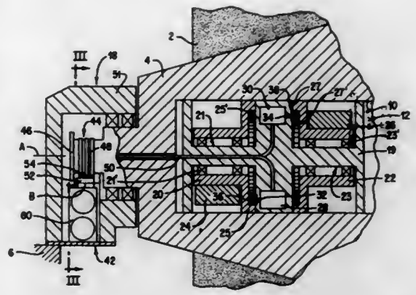
5,549,019

APPARATUS FOR THE DYNAMICAL BALANCING OF A ROTATING BODY

Carlo Cattani, Bologna, Italy, assignor to Marposs S.p.A., Bentivoglio, Italy

PCT No. PCT/EP93/01945, § 371 Date Nov. 1, 1994, § 102(e) Date Nov. 1, 1994, PCT Pub. No. WO94/03788, PCT Pub. Date Feb. 17, 1994
PCT Filed Jul. 22, 1993, Ser. No. 331,533
Claims priority, application Italy, Aug. 3, 1992, B092A0301
Int. Cl.[6] F16F *15/22*
U.S. Cl. 74—573 R **6 Claims**

1. An apparatus for dynamically balancing a rotating body (2,4) that can rotate with respect to a supporting frame (6), comprising:
- an assembly fixed to and rotating with said body (2,4), said assembly comprising:
  - masses (24,26) having a position with respect to said assembly, and
  - at least one electrical motor (28,30) connected to the masses (24,26) and adapted to adjust the position of said masses,
- a power supply and control unit (16,40) adapted to feed and control said at least one electrical motor (28,30), and spaced apart from the rotating body, and
- an electrical connection terminal (18, 42–60) between the power supply and control unit (16,40) and said at least one electrical motor (28,30), comprising:
- a housing (51) connected to the supporting frame (6), mutually slipping first contact elements (48) and second contact elements (54) that are connected to one and to the other of the rotating body (4) and the housing (51),
- a support (52), connected to one of said housing (51) and rotating assembly, and carrying said second contact elements (54),
- a retraction mechanism (58) for keeping the support (52) in a first position, in which said first (48) and second (54) contact elements are mutually spaced apart, and
- an actuator (60) for moving the support (52) from said first position to a second position, in which said first (48) and second (54) contact elements touch each other for providing electrical connection between the power supply and control unit (16, 40) and said at least one electrical motor (28,30).

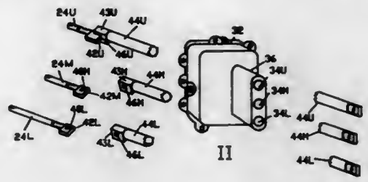


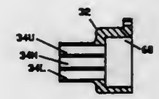
5,549,020

AUTOMOTIVE MANUAL TRANSMISSION SHIFTING MECHANISM

William W. Gudrum, 581 Moyer's Station Rd., Schuylkill Haven, Pa. 17972

Filed Sep. 19, 1994, Ser. No. 308,520
Int. Cl.[6] B60K *23/00*; F16H *57/02*
U.S. Cl. 74—606 R **12 Claims**





1. In a manually operated motor vehicle transmission including a gear casing, mainshaft and pinion shaft with associated gear sets, a gear carrier and a shift housing connected to a remotely operated gear changer, an improved shift housing and associated operating components comprising the following:
- three selector shafts each provided with a projecting U-shaped end to enable a method of operating said selector shafts;
- three connecting rods with the transmission oriented ends machined with a matching broached rectangular opening to provide a snug coupling with the U-shaped ends of the selector shafts; the forward projecting ends of the selector shafts are associated with the transmission and when connected with the broached ends of the connecting rods eliminate component bending and gear jamming associated with these transmissions;

a shift housing machined to accommodate the forwardly projecting ends of the selector shafts as they are oriented normally in gear carriers;

a set of three vertically stacked cylindrical bored and bushed passageways, each designed to slidingly support the connecting rods as part of the shift housing.

5,549,021

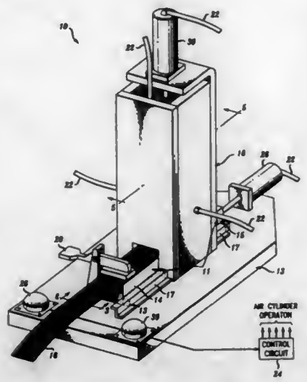
TOOL FOR STRIPPING CENTER CONDUCTORS OF SUBMINIATURE RIBBON COAXIAL CABLE

Hadley H. Bower, Jr., Oklahoma city, Okla., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 268,056, Jun. 29, 1994. This application Jul. 31, 1995, Ser. No. 509,720

Int. Cl.[6] H02G *1/12*

U.S. Cl. 81—9.51 **14 Claims**



1. A tool for stripping subminiature coaxial cable ribbon, said cable ribbon comprising a plurality of center conductors surrounded by insulation, and a plurality of outer conductors, said tool comprising:

means for cutting said center conductor insulation;

means for cutting said center conductors and said outer conductor;

means for drawing a cut portion of said center conductor insulation from said center conductors;

means for drawing a cut portion of said coaxial cable ribbon away from the rest of said coaxial cable ribbon; and

means for automatically controlling said means for cutting said conductor insulation, said means for cutting said center conductor said means drawing a cut portion of said center conductor insulation and said means for drawing said cut portion of said coaxial cable ribbon.

5,549,022

CLOSED END BOX LINE WRENCH

Bernard J. Knox, 722 Winfield Rd., Cabot, Pa. 16023

Filed Apr. 13, 1995, Ser. No. 421,218

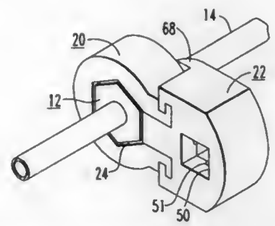
Int. Cl.[6] B25B *13/00*

U.S. Cl. 81—124.2 **20 Claims**

1. A wrench, comprising:

a wrench end having a hole extending therethrough with a multi-sided inside periphery and having an opening in communication with said hole for forming an open end of said wrench end, said open end having a first mating connection; and

a tool body having a hole therethrough and having a protuberance integrally formed with said tool body sized and adapted to fit within said opening of said wrench end for forming at least a portion of a side of said multi-sided inside periphery of said wrench end, said tool body having a second mating connection engagable with said first mating connection for securing together said wrench end and said tool body, said hole of said tool body being offset from said hole of said wrench end when said wrench end and said tool body are engaged together.



5,549,023

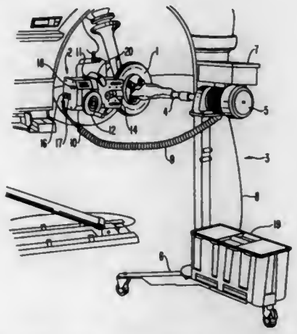
ON-CAR DISC BRAKE LATHE

D. Wayne Strout; Thomas L. Crandall, both of York, Pa.; Michael J. Slater, Mississauga, Canada, and Erik Malmmose, Odense, Denmark, assignors to RTI Technologies, Inc., York, Pa., and Canvik A/S, Vissenbjerg, Denmark

Filed Sep. 29, 1994, Ser. No. 314,773

Int. Cl.[6] B23B *5/04*

U.S. Cl. 82—112 **20 Claims**



1. A disc brake lathe for machining a brake disc of a vehicle without removing the brake disc from the vehicle but only the wheel and other parts of the brake mechanism, said lathe comprising:

a power drive unit for rotating a brake disc on a vehicle; and

a lathe head having at least one cutting tool for machining the brake disc while the brake disc on the vehicle is rotated by said power drive unit, said lathe head being adapted to be mounted on the vehicle for machining the brake disc on the vehicle and said lathe head including a reversible, low voltage DC electric motor for power feeding of said at least one cutting tool during machining in each of two opposite directions depending upon the direction of operation of said reversible motor, transmission means drivingly connecting said motor and said at least one cutting tool for power feeding said at least one cutting tool in each of said two opposite directions as a function of the direction of operation of said motor, and said lathe head further including a means for dampening transverse vibration, said means for dampening being attached to the lathe head for damping vibration transverse to said two opposite directions of power feeding of said at least one cutting tool for improving the surface finish of brake discs machined with said lathe.

5,549,024

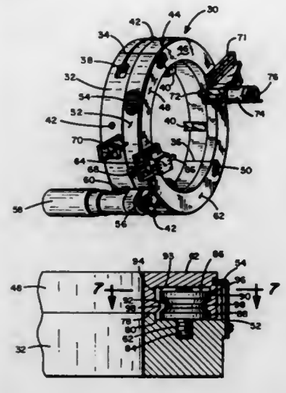
CLAMSHELL PIPE LATHE HAVING IMPROVED BEARING ARRANGEMENT

Donato L. Ricci, W8477 - 162nd Ave., Hager, Wis. 54014

Filed Jan. 30, 1995, Ser. No. 380,105

Int. Cl.[6] B23B *3/22;* **B23Q** *1/40*

U.S. Cl. 82—113 **10 Claims**



1. An improved bearing and race structure for a clamshell machining lathe used in finishing pipes comprising:

(a) a first, stationary annular member adapted to be concentrically clamped about the periphery of a cylindrical pipe segment to be finished, the first annular member having an inner arcuate face, an outer arcuate face and a planar surface extending therebetween;

(b) a plurality of roller bearings rotatably mounted on individual axles and having a predetermined outer diameter, the roller bearings being affixed to the first annular member with the axles thereof perpendicular to the planar surface of the first annular member to define a generally circular track;

(c) a second, rotatable, one-piece annular member having an inner arcuate face, an outer arcuate face and a planar surface extending therebetween, the outer arcuate face including gear teeth thereon, the planar surface of the second annular member including a circumferential groove having opposed parallel walls defining a bearing race of a depth and width to receive said plurality of roller bearings defining the generally circular track therein when the first and second annular members are juxtaposed with the planar surface of the first annular member in facing relationship to the planar surface of the second annular member, the predetermined outer diameter of the plurality of roller bearings cooperating with the opposed parallel walls defining the circumferential bearing race to rotatably support the second annular member relative to the first annular member.

5,549,025

CUTTING STRIP WITH A CUTTING EDGE MADE OF HIGHLY WEAR-RESISTANT MATERIAL

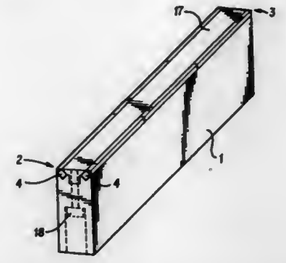
Müller Leo, Bessenbach, Germany, assignor to Rieter Automatik GmbH

Filed Aug. 9, 1994, Ser. No. 288,225

Claims priority, application Germany, Aug. 26, 1993, 43 28 778.6

Int. Cl.[6] B26D *1/09*

U.S. Cl. 83—694 **1 Claim**



1. A cutting strip with a plurality of cutting layers made of highly wear resistant material, said layers are respectively laid in solid connection on a respective base to form plurality of rail pieces, and said plurality of rail pieces are laid in series along a holder that is made of wear-resistant material and has an essentially rectangular cross-section, characterized in that the holder is provided with two adjacent edges, each with a groove protruding diagonally into the holder, each said groove having essentially parallel faces into which the rail pieces are inserted in such a way that the faces of the two grooves reach to the cutting layers of the rail pieces, the grooves are positioned in the holder such that their faces extend essentially symmetrically with respect to their respective cutting layers, and the faces situated between the two grooves are formed by a clamping piece that can be screwed onto the holder and that collectively clamps against the holder all rail pieces held in the two grooves, and the screwing of the clamping piece onto the holder takes place by a screw tightening the clamping piece against the holder which screw traverses the holder and is turned from a side of the holder opposite the clamping piece, and wherein each cutting layer forms in its cross-section a triangle whose base runs crosswise to the rail piece and whose angle opposite its base forms an essentially right angle in such a way that a cutting edge formed by it runs parallel to the rail piece and is centered such that the rail piece has a symmetrical cross section.

5,549,026

STRINGED MUSICAL INSTRUMENT

Paul M. Gay, Jr., P.O. Box 404, Cordova, Ak. 99574

Continuation-in-part of Ser. No. 187,152, Jan. 27, 1994, abandoned. This application Mar. 6, 1995, Ser. No. 399,383

Int. Cl.[6] G10D *3/00;1/08*

U.S. Cl. 84—292 **13 Claims**

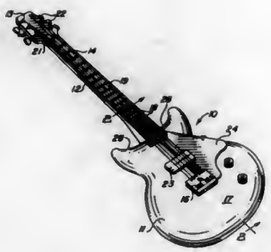
1. A stringed musical instrument comprising:

(a) a seamless metallic hollow body being substantially free of internal bracing, said body having a top face with an inner surface,

(b) a neck assembly comprising a base portion and a finger board portion having a head at its distal end,

(c) said body having an opening therein for receiving the base portion of said neck assembly, and

(d) means for securing the base portion of said neck assembly in contact with the inner surface of the top face of said body.

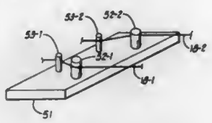


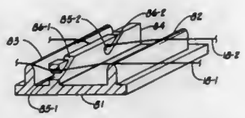
5,549,027

STRINGED ACOUSTIC MUSICAL INSTRUMENT

Richard N. Steinberger, 12 Rudy Rd., New Windsor, N.Y. 12553, and Stephen H. Grimes, 755-G Kamehameiki Rd., Kula, Hi. 96790

Filed Jan. 10, 1994, Ser. No. 179,432
Int. Cl.[6] G01D *3/00*
U.S. Cl. 84—297 R **19 Claims**





1. A bridge assembly for a stringed musical instrument, the instrument including a body, a neck extending from said body, and one or more strings, each of which extends over said body and said neck, and each of which is stretched between two anchor points, said bridge assembly being located between said anchor points, said bridge assembly comprising:

a base having a bottom surface for attachment to a surface of said instrument;

saddle means against which said one or more strings are held; and

means attached to said base for holding said strings against said saddle means by changing the direction of said strings as said strings pass said saddle, each of said strings having a first point of contact and a last point of contact with said bridge assembly, said string being the same vertical distance from said bottom surface of said base at said first point of contact and said last point of contact.

5,549,028

CHROMATIC TUNER DISPLAY PROVIDING GUITAR NOTE AND PRECISION TUNING INFORMATION

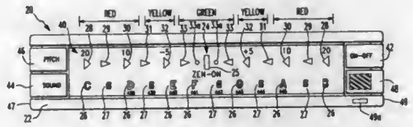
Ned Steinberger, 153B Jackson Ave., New Windsor, N.Y. 12550

Continuation-in-part of Ser. No. 966,391, Oct. 26, 1992, abandoned. This application Nov. 2, 1993, Ser. No. 144,472
Int. Cl.[6] G10G *7/02*
U.S. Cl. 84—454 **13 Claims**

1. A chromatic tuner display for comparing a pitch of a sound to notes of a musical scale, the display comprising:

a base member;

a plurality of translucent elements mounted on the base member corresponding to the notes of the musical scale;



first means for selectively illuminating the translucent elements to indicate which note of the scale is closest in pitch to the sound; and

second means for selectively illuminating the translucent elements to indicate whether the note closest in pitch to the sound is a standard guitar note or a non-standard guitar note.

11. A chromatic tuner display for indicating a relative difference between a pitch of a sound and a pitch of a desired note of a musical scale, the display comprising:

a base member;

a plurality of translucent elements mounted on the base member including a plurality of letters corresponding to notes of the musical scale, a plurality of characters corresponding to sharp and flat variations of the notes represented by the letters, a central light device corresponding to the pitch of the desired note, and a plurality of indicators, each of the indicators corresponding to a different predetermined difference in pitch between the sound and the desired note;

means for selectively illuminating the translucent elements to visually represent the pitch of the sound and the desired note, the illuminating means illuminating one of the letters or a combination of one of the letters and one of the characters to represent the desired note, the illuminating means also illuminating at least one of the indicators to indicate the relative difference in the pitch of the sound from the pitch of the desired note; and

means for indicating whether the pitch of the sound is within a first predetermined range, a second predetermined range, or in between the first and second predetermined ranges from the pitch of the desired note, the second predetermined range being about ±2 to 3.5 cents from the pitch of the desired note, and the first predetermined range being smaller than the second predetermined range, the indicating means continuously illuminating the central light device when the pitch of the sound is within the first predetermined range, the indicating means illuminating the central light device continuously and one of the indicators adjacent the central light device briefly and at intervals when the sound has a pitch in between the first and second predetermined ranges, the indicating means illuminating the indicator continuously when the sound has a pitch within the second predetermined range.

5,549,029

METHOD FOR OPERATING A MUSICAL INSTRUMENT

Jerald L. Lepinski, 25331 Ridge Way, Golden, Colo. 80401

Continuation-in-part of Ser. No. 4,834, Jan. 19, 1993, abandoned. This application Mar. 14, 1995, Ser. No. 404,053
Int. Cl.[6] G09B *15/08*
U.S. Cl. 84—483.2 **15 Claims**



1. A method for operating a musical instrument to produce sound from the musical instrument, the method comprising the steps of:

providing a musical instrument comprising a keyboard having white and black keys, said musical instrument being operative for producing sound of different pitches by depressing different of said keys;

providing a visually observable staff comprising substantially parallel lines operated in two distinct and separate groups of lines, wherein a first group consists of two lines separated by a first distance and a second group consists of three lines substantially evenly spaced at a distance substantially equal to said first distance, wherein said first group and said second group are separated by a second distance that is larger than said first distance, and wherein two of the three lines of said second group have visually distinctive, individualized appearances relative to all other of said lines of both of said first group and said second group;

wherein spaces next to said lines of said staff represent a first plurality of said pitches, which correspond to pitches produced by depressing white keys of said keyboard and said lines of said staff represent a second plurality of said pitches corresponding to black pitches produced by depressing keys of said keyboard;

providing a plurality of noteheads visually depicted in any of said spaces or on any of said lines of said staff to represent pitches of a musical composition which could be produced by depressing keys of said keyboard; and

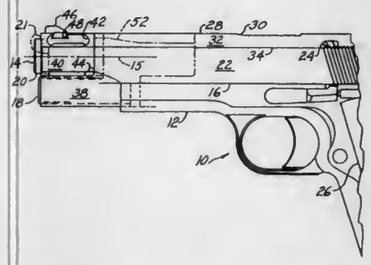
depressing, on said musical instrument, keys of said keyboard corresponding to said pitches represented by said noteheads visually depicted on said staff, with a white key being depressed when a notehead appears in one of said spaces of said staff and a black key being depressed when a notehead appears on one of said lines of said staff, whereby a sound is produced by said musical instrument.

5,549,030

AUTOMATIC PISTOL WITH INTEGRAL COMPENSATOR

Angel Lespron, Pacoima, Calif., assignor to J's Pacific Enterprise, Inc., Pomona, Calif.

Filed Mar. 10, 1995, Ser. No. 402,093
Int. Cl.[6] F41A *21/36*
U.S. Cl. 89—14.3 **20 Claims**



1. In a slide action pistol including a frame a barrel supported relative to the frame and having a bore on a barrel axis, a feed slide slidably connected with the frame for movement parallel to the barrel axis between an open position and a closed position, the barrel being substantially enclosed between the slide and the frame in the closed position thereof, a springholder portion of the slide in the closed position extending under the barrel to proximate a main front surface of the barrel for enclosing a slide spring of the pistol, the improvement comprising:

(a) a lateral enlargement integrally formed with a front extremity portion of the barrel, the slide being formed for lateral exposure of the enlargement in the closed position, the springholder portion of the slide extending under the enlargement in the closed position; and

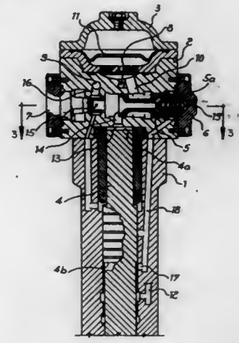
(b) at least one exhaust passage in fluid communication with the bore, and extending laterally to an external surface of the enlargement, the at least one exhaust passage being oriented for resisting recoil movement of the barrel when the pistol is fired.

5,549,031

DEVICE FOR DISTRIBUTING OIL UNDER PRESSURE AND HYDRAULIC HAMMER PROVIDED WITH SAID DEVICE

Salvatore Giordano, Bitonto, Italy, assignor to Officine Giordano S.R.L., Bitonto, Italy

Filed Jun. 2, 1995, Ser. No. 459,169
Claims priority, application Italy, Jun. 15, 1994, MI94A1248
Int. Cl.[6] F01L *25/02;* **B23B** *45/04*
U.S. Cl. 91—284 **6 Claims**



1. A device for distributing oil under pressure including a head (2) within which, inside a chamber (24), a shuttle (5) slides provided with a shank (5*a*) sealingly siiding within an end cap (6) of said head (2) and on whose head surface (19) oil at the feed pressure acts coming from a switch duct (18) formed in said cap (6), characterized in that the head (2) is provided with a feed hole (8) connected to said chamber (24) and with a drain hole (9), the head (2) being closed at the other end by a shutter (7) connected to said drain hole (9), and in that the shuttle (5) is provided with an inner cavity (26) connected to said shutter (7) and to one or more ducts (25) formed at the end where the shank (5*a*) is located, said shuttle (5) being shaped so as to have in the chamber (24) first and second opposite transverse inner surfaces (22, 23) each having an area, the second surface (23) being located at the end where the shank (5*a*) is located, with the area of the second surface (23) being greater than the area of the first surface (22), and the difference between the areas of the first and second surfaces (22, 23) being smaller than an area of the head surface (19) of the shank (5*a*).

5,549,032

LOW-POLLUTION HIGH-POWER EXTERNAL COMBUSTION ENGINE

Otto V. Long, P.O. Box 370, Beaver Creek, Oreg. 97004

Filed Apr. 25, 1995, Ser. No. 428,884
Int. Cl.[6] F01B *3/10*
U.S. Cl. 91—502 **9 Claims**

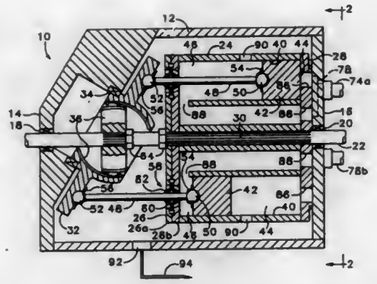
1. A reciprocating piston-type engine comprising:

(a) an engine housing;

(b) a drive shaft extending longitudinally through said housing rotatably journaled thereto;

c) a cylinder block fastened coaxially about said drive shaft within said housing so as to rotate in unison with said drive shaft, said cylinder block defining a plurality of cylinders having axes generally parallel with the axis of said drive shaft and spaced radially about said drive shaft;

d) a torque conversion plate attached to said drive shaft so as to rotate about said shaft in unison with said shaft and cylinder block, said plate being journaled to said housing so as to rotate about an axis which is tilted with respect to the axis of said drive shaft;



e) a reciprocating piston within each of said cylinders attached to said torque conversion plate at a respective location spaced radially from the axis of rotation of said plate;

(f) each of said cylinders defining a pair of chambers separated by said reciprocating piston, each of said pair of chambers having respective inlet port means for admitting pressurized gas into said pair of chambers to drive said piston bidirectionally by expansion of said gas within said pair of chambers, each of said respective inlet port means including means for admitting pressurized gas, to a respective one of said pair of chambers, separate from gas contained within the other of said pair of chambers; and

(g) an exhaust conduit interconnecting each of said pair of chambers with said inlet port means for recycling said gas from said chambers to said inlet port means.

5,549,033

HYDRAULIC GATE MOVEMENT DEVICE COMPRISING SEPARATE SUPPORT AND GATE-MOVEMENT UNITS

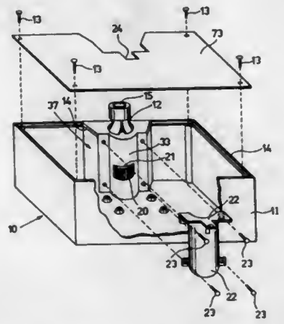
Michelangelo Manini, Bologna, Italy, assignor to FAAC S.p.A., Bologna, Italy

Filed Mar. 6, 1995, Ser. No. 399,138

Claims priority, application Italy, Mar. 22, 1994, MI940212 U

Int. Cl.[6] F01R *9/00;* **E05F** *1/00*

U.S. Cl. 92—136 **11 Claims**



1. A hydraulic operating device for effecting movement of a gate, comprising a pintle unit for the axle of a gate and comprising a box with a support body for rotatably supporting a shaft having a first gear integral therewith and protruding into the box, and the shaft extending above the box at one of its axial ends and being fixed integral with the lower end of the gate rotation axle, and the device comprising in addition a separate hydraulic operating unit comprising a drive element having a central body from which project opposed hydraulic cylinders in which run respective pistons, and between the pistons there being connected a race traversing the central body to have the teeth thereof protrude laterally therefrom, and removable connection means permitting fixing of the operating unit removably inside the box optionally to mesh the teeth of the rack with the teeth of the gear, and thus removably to couple the pintle unit to the operating unit.

5,549,034

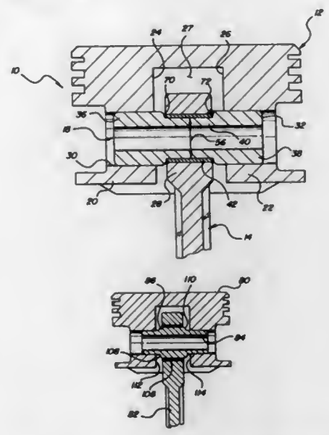
WRIST PIN FOR PISTON AND CONNECTING ROD ASSEMBLY

Neil W. Loughlin, Ortonville, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Oct. 6, 1995, Ser. No. 540,376

Int. Cl.[6] F16J *1/14*

U.S. Cl. 92—187 **8 Claims**



1. A piston, connecting rod and wrist pin assembly comprising a generally cylindrical metallic piston member, an elongated metallic connecting rod member, a unitary wrist pin of metal having axially spaced cylindrical end journals of a first outer diameter integral therewith and formed at opposite outer ends thereof and further having a cylindrical connecting rod journal of a second outer diameter formed between said end journals, said connecting journal being operatively different in outer diameter as compared to the outer diameter of said end journals, said piston member having a pair of laterally spaced pin bosses, each of said pin bosses having a circular opening of a predetermined diameter therein to provide a pair of axially spaced bearings of equal internal diameters which are axially aligned with one another, said spaced bearings of said pin bosses being sized to rotatably receive and support said cylindrical end journals of said wrist pin therein, said connecting rod member having a continuous and solid upper end with a cylindrical wrist pin bearing therethrough operatively received on said connecting rod journal so that said connecting rod member is operatively mounted on said wrist pin and between said pin bosses while said connecting rod is operatively retained on said wrist pin and in said piston member by physical interference between at least one of said journals of said wrist pin and at least one of said other members of said assembly which inhibits the removal of said pin from said pin bosses of said piston member.

5,549,035

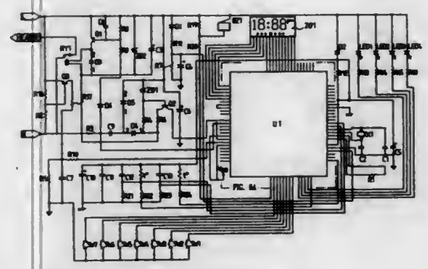
COFFEE MAKING MACHINES

Li Wing-Chung, Taikoo Shing, Hong Kong, assignor to Simatelex Manufactory Co., Ltd., Chaiwan, Hong Kong

Continuation-in-part of Ser. No. 226,805, Apr. 12, 1994, abandoned. This application Mar. 21, 1995, Ser. No. 407,564

Int. Cl.[6] A47J *31/10*

U.S. Cl. 99—281 **5 Claims**



5. A coffee making machine, comprising:

water reservoir,

a hopper for holding coffee grounds and positioned for receiving water from the reservoir,

a container mountable below the hopper for collecting coffee from the hopper, the container defining a temperature,

a water passageway through which water is conveyed from the reservoir to a location above the hopper,

a heater having a heating element for heating water in the passageway, the heater defining a temperature, the heater being operable to heat water from the reservoir at a water heating rate, the heater comprising a heat pump including a metallic body having a hollow tube connected to the passageway and an electrical heating element mounted in the metallic body adjacent the hollow tube, wherein water flows out of the heat pump at an overall flow rate,

first thermistor means for providing a first temperature signal dependent on the temperature of the heater,

second thermistor means for providing a second temperature signal dependant on the temperature of the container,

programmable microcomputer means responsive to the first and second temperature signals for controlling the coffee making machine, the microcomputer means comprising

means for switching the heater on and off at regular intervals to slow the overall flow rate,

means for turning the heater on and off intermittently at regular intervals during at least an initial period to slow the water heating rate,

means for switching the heater on at a temperature within a selected range for at least one heating period,

means for comparing the temperature of the container and a preselected temperature after the at least one heating period,

means for modifying the selected range for subsequent heating periods in response to comparing the temperature of the container and the preselected temperature,

whereby differences between the temperature of the container and the preselected temperature are reduced.

5,549,036

CAPPUCCINO MAKING APPARATUS

Richard Hourizadeh, 5354 Quakertown, Woodland Hills, Calif. 91364

Filed Aug. 24, 1995, Ser. No. 518,992

Int. Cl.[6] A47J *31/42;31/36*

U.S. Cl. 99—286 **4 Claims**

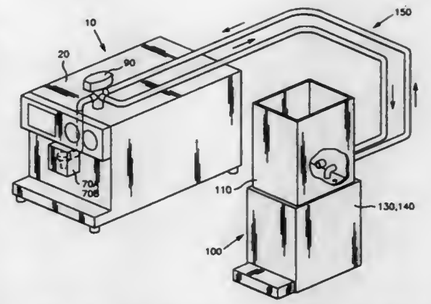
1. A cappuccino making apparatus comprising:

a coffee machine in a first enclosure and including a means for storing a supply of coffee beans, the storing means interconnected with a means for grinding a measured amount of the coffee beans, the machine further including a means for producing a supply of hot water, the hot water producing means and the grinding means both interconnected with a means for brewing coffee from the measured amount of coffee beans, and a measured amount of the supply of hot water, the brewing means further interconnected with a first dispensing valve for dispensing the brewed coffee;

the coffee machine further including a means for foaming, interconnected with the hot water means, a selection valve and the first dispensing valve;

a milk machine in a second enclosure and including a means for containing a supply of milk, a refrigeration means coupled with the milk containing means for maintaining the milk supply at a selected temperature, and a milk pumping means for continuously pumping, at least a portion of the milk supply, drawn from the milk containing means, through a milk delivery means joining the milk supply means of the milk machine with the selection valve of the coffee machine, such that with the selection valve in a first position, milk within the milk delivery means is circulated back to the milk containing means in order to maintain freshness in the milk within the milk delivery means;

the selection valve positionable into a second position wherein milk from the milk delivery means is diverted into the foaming means, is foamed therein, and is subsequently dispensed through a second dispensing valve.



5,549,037

GAS GENERATOR ATTACHMENT

William C. Stumphauzer, Elyria; Hugh F. Groth, Richfield, and John K. Duncan, Solon, all of Ohio, assignors to Effervescent Products, LLC, Lorain, Ohio

Continuation-in-part of Ser. No. 337,870, Nov. 14, 1994, Pat. No. 5,460,846, which is a continuation-in-part of Ser. No. 215,424, Mar. 21, 1994, abandoned. This application Oct. 20, 1995, Ser. No. 546,534

Int. Cl.[6] A23L *2/00;* **B01F** *3/00*

U.S. Cl. 99—323.1 **26 Claims**

1. A gas generator device for removeable attachment to a gas receiving container in communication with an inlet opening thereof, the device comprising:

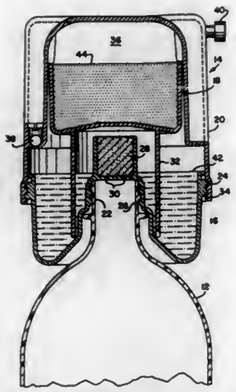
a first cup means for retaining a first mixable substance;

a second cup means for retaining a second mixable substance which is chemically reactive with the first substance when combined therewith;

means combining the first and second substances in a common enclosed mixing location to induce a chemical reaction between the substances resulting in the generation of gas;

a gas outlet in communication with the mixing location and with the inlet opening of the gas receiving container; and

means removeably attaching the gas generator device to the gas receiving container at such a location on the container that the gas outlet of the gas generator device is in communication with the inlet opening of the gas receiving container to permit



gas to flow from the gas generator device to the interior of the gas receiving container.

5,549,038

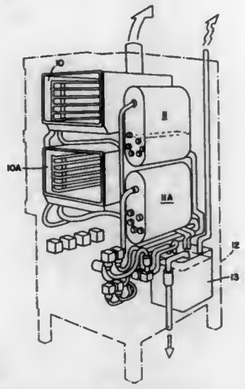
MODULATED STEAM COOKER

Albert Koivites, Mountaintop, Pa., assignor to Market Forge Industries, Everett, Mass.

Filed Nov. 16, 1995, Ser. No. 558,727

Int. Cl.[6] A23L *3/00;* **A47J** *27/04;27/16;* **F24D** *1/00*

U.S. Cl. 99—330 **14 Claims**



1. A modulated steam cooker comprising:

A. an oven chamber having an access door to receive food to be cooked, and a door switch associated with the door coupled to an electric source said switch being closed when the door is shut and open when the door is opened;

B. a steam generator provided with an electrically-actuated heater producing steam which is fed into the oven to effect cooking of the food therein, said generator being turned on by the door switch which actuates the heater only when the door is shut; and

C. a normally-closed, pressure-sensitive switch interposed between the electrically-actuated heater and the electric source to sense the pressure of steam drained from the oven, said pressure switch being opened to interrupt the operation of the generator when the sensed pressure is at a level somewhat above atmospheric whereby the flow of steam into the oven is modulated as a function of the quantity and temperature of food in the oven to effect efficient cooking thereof.

5,549,039

HEAT-INSULATING COOKING CONTAINER

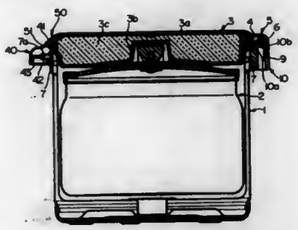
Seiichi Ito; Toru Goto, and Kazuhiro Kawamura, all of Tokyo, Japan, assignors to Nippon Sanso Corporation, Tokyo, Japan

Filed Oct. 27, 1995, Ser. No. 549,573

Claims priority, application Japan, Dec. 2, 1994, 6-299989; Dec. 2, 1994, 6-299990

Int. Cl.[6] A47J *27/00;36/00;* **A45C** *11/20;* **B65D** *81/38*

U.S. Cl. 99—340 **27 Claims**



1. A heat-insulating cooking container comprising:

an outer container possessing heat-insulating properties;

an inner container replaceably housed in said outer container;

a lid member, which can be opened and closed, possessing heat-insulating properties, the lid member provided at a peripheral mouth portion of said outer container;

a connecting member connecting said outer container and said lid member, said connecting member equipped with a hinge axis axially supporting said lid member such that said lid member can be opened and closed with respect to said outer container, and a biasing member for biasing said lid member in an opening direction; and

a stopping member for maintaining a state in which said lid member is closed.

5,549,040

FOOD MATERIAL HEATING MECHANISM

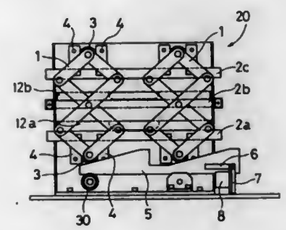
Michiyuki Naramura, Okayama-ken, Japan, assignor to Kabushiki Kaisha Kyowa Kogyoshe, Okayama-ken, Japan

Filed May 2, 1995, Ser. No. 432,833

Claims priority, application Japan, May 23, 1994, 6-108379

Int. Cl.[6] A47J *37/06*

U.S. Cl. 099—349 **13 Claims**



1. A food material heating mechanism, comprising:

an upper heating plate;

a lower heating plate facing said upper heating plate;

means for permitting placing a food material tray on said lower heating plate;

said food material tray including means for receiving a food material to be heated;

said means for receiving including a contour into which said food material is fittable;

said contour having a depth;

said depth being a predetermined amount less than a height of said food material;

means for moving at least one of said lower heating plate and said upper heating plate toward the other thereof whereby an upper surface of said food material contacts a bottom surface of said upper heating plate so that said food material is pressed and heated between said food material tray and said upper heating plate and heat from said upper heating plate directly affects an upper surface of said food material on which a crusty baked layer is desired; and

said food material tray being heat conductive, whereby heat from said lower heating plate is conducted to said food material through said food material tray such that heat transfer from said food material tray to said food material is less than heat transfer from said upper heating plate to said food material.

5,549,041

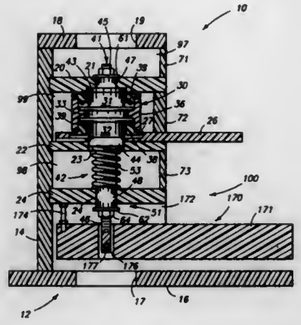
BATCH MODE FOOD TREATMENT USING PULSED ELECTRIC FIELDS

Qinghua Zhang, Columbus, Ohio; Bai-Lin Qin; Gustavo V. Barbosa-Canovas, both of Pullman, Wash.; Barry G. Swanson, and Patrick D. Pedrow, both of Moscow, Id., assignors to Washington State University Research Foundation, Pullman, Wash.

Filed Mar. 2, 1995, Ser. No. 399,360

Int. Cl.[6] A23L *3/00;3/26;3/32*

U.S. Cl. 99—451 **36 Claims**



1. A processor for treating foods with pulsed electrical fields, comprising:

a frame;

a processing vessel mounted to said frame; said processing vessel substantially enclosing a treatment chamber formed therein;

a first electrode having a first electrode face which faces the treatment chamber;

a second electrode having a second electrode face which faces the treatment chamber and is in spaced relationship to said first electrode face with portions of the treatment chamber between the first and second electrode faces;

a treatment chamber pressure relief which relieves pressure developed within the treatment chamber when pressure within the treatment chamber reaches an elevated relief pressure threshold.

5,549,042

DOMESTIC APPLIANCE OR MAKING ICE-CREAM

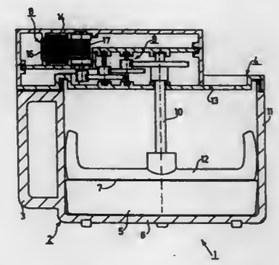
Romuald L. Bukoschek, Klagenfurt, and Reinhard Prandl, Ferlach, both of, Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 6, 1995, Ser. No. 539,947

Claims priority, application Austria, Oct. 12, 1994, 1929/94

Int. Cl.[6] A23C *3/04;* **B01F** *7/00;7/16;* **A23G** *9/00*

U.S. Cl. 99—455 **11 Claims**



1. A domestic appliance for making ice-cream, comprising a motor, a stirring tool drivable by the motor, and switching means for starting a mode of operation of the domestic appliance, in which mode of operation the stirring tool is drivable with at least one speed within one speed range, at which speed ice-cream of a comparatively dense and comparatively solid consistency is made, wherein the switching means are adapted to start a further mode of operation of the domestic appliance, in which further mode of operation the stirring tool is drivable by the motor with at least one further speed within a further speed range, the at least one further speed within the further speed range being higher than the at least one speed within the one speed range, and ice-cream of a comparatively fluffy and a comparatively soft consistency being made at the higher further speed, and wherein there has been provided a time control device which can be activated when the further mode of operation of the domestic appliance is started and by means of which the drive of the stirring tool with the at least one further speed in the further mode of operation of the domestic appliance can be limited to a given time interval.

5,549,043

NUMERICALLY CONTROLLED PRINTING MACHINE WITH RECTILINEAR PRINT LINE

Frédéric Tranin, Ozoir La Ferrier, France, assignor to Societe d'Exploitation des Machines Dubuit, Noisy le Grand, France

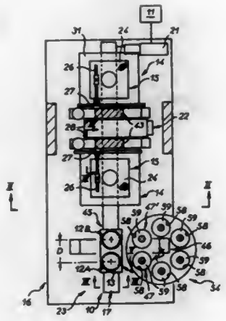
Filed Dec. 28, 1994, Ser. No. 365,223

Claims priority, application France, Jan. 14, 1994, 94 00361

Int. Cl.[6] B41F *15/04*

U.S. Cl. 101—126 **8 Claims**

1. Printing machine comprising a rectilinear print line including carriage means mounted for reciprocating movement along said print line, at least one printing station disposed along said rectilinear print line, a print head overlying said print line at the at least one printing station, two object stations adapted to be selectively loaded/unloaded with objects to be printed, said object stations being spaced a distance from each other along the rectilinear print line, and numerical control means for selectively controlling the displacement of the carriage means for a first distance for a first of said object stations and a second distance for a second one of said object stations, the second distance being equal to the first distance less the distance between the object stations along the rectilinear print line.



5,549,044

PRINTING PRESS INCLUDING A MECHANISM FOR EXCHANGING CYLINDERS

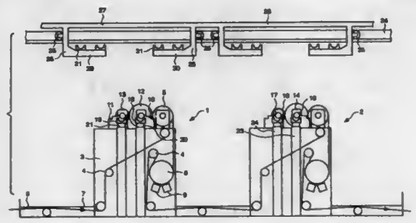
Fritz Achelpohl, Lienen, Germany, assignor to Windmöller & Hölscher, Lengerich/Westf., Germany

Filed Apr. 7, 1995, Ser. No. 419,010

Claims priority, application Germany, Apr. 20, 1994, 44 13 807.5

Int. Cl.[6] B41F 5/00

U.S. Cl. 101—216 6 Claims



1. A printing press, consisting of a row of several printing units each having one inking unit, cylinders exchangeable for diverse print runs and having their bearings arranged on a carriage displaceable in the printing press frame, and an impression cylinder mounted in the machine frame; wherein the printing press includes means for lifting out and removing the exchangeable cylinders, and conveyance means including a trolley displaceable on a rail; wherein the carriages are displaceable on at least one horizontal guide means of each printing press frame; wherein lifting jacks are assigned to the shaft journals of the exchangeable cylinders of each printing unit, which journals project outwardly beyond the bearings; wherein the trolley is displaceable on a rail approximately parallel to the carriages of all the printing units; wherein the trolley extends over the length of all the printing units and has pairs, assigned to each printing unit, of freely projecting arms that are substantially parallel to the carriage guide means, with receiving means for the shaft journals of the exchangeable cylinders; and wherein the lifting jacks can be raised above the arms.

5,549,045

METHOD AND DEVICE FOR CONVEYING FLEXIBLE PRINTING FORMS

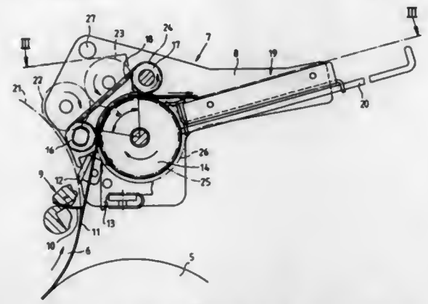
Walter D'Heureuse, Ladenburg, and Hans-Jürgen Kusch, Neckargemünd, both of, Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Continuation of Ser. No. 54,162, Apr. 26, 1993, abandoned. This application Nov. 7, 1994, Ser. No. 335,554

Claims priority, application Germany, Apr. 24, 1992, 42 13 472.2

Int. Cl.[6] B41L 47/14

U.S. Cl. 101—477 8 Claims



1. In combination with a printing press having a printing-form cylinder, a device for conveying flexible printing forms away from the printing-form cylinder of the printing press, the device comprising:

a transport roller having a peripheral surface defining a conveying plane for conveying and deflecting flexible printing forms in a conveying direction away from the printing-form cylinder, said transport roller being rotatable through a given angle for defining a deflecting region on said peripheral surface thereof;

a flat repository disposed downstream of said transport roller as seen in the conveying direction for receiving the flexible printing forms; and

a plurality of guide rollers and a conveyor belt supported on said guide rollers, said guide rollers and said conveyor belt being disposed adjacent said peripheral surface of said transport roller, a first one and a last one of said guide rollers pressing against said peripheral surface of said transport roller with a section of said conveyor belt disposed therebetween such that the printing form is received between said first one of said guide rollers and said transport roller, deflected through said deflecting region with said conveyor belt clamping the flexible printing form against said deflecting region on said peripheral surface, and the printing form is released from between said last one of said guide rollers and said transport roller for further transport to said flat repository for the printing forms.

5,549,046

PLASMA GENERATOR FOR ELECTROTHERMAL GUN CARTRIDGE

Melvin M. Widner, Rochester Hills, Mich.; Michael Raleigh, Alexandria, Va.; Yeshayahu S. A. Goldstein, Galthersburg, and Joseph R. Greig, Greenbelt, both of Md., assignors to General Dynamics Land Systems, Inc., Sterling Heights, Mich.

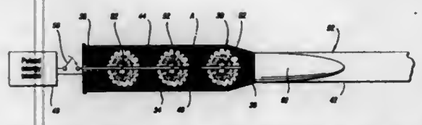
Filed May 5, 1994, Ser. No. 238,433

Int. Cl.[6] F42B 5/08

U.S. Cl. 102—202.7 11 Claims

1. A plasma generator for an electrothermal gun cartridge, comprising:

an elongated metallic rod member extending along a central axis of the plasma generator;



an elongated metallic tube member that extends around the rod member in a spaced relationship thereto and a coaxial relationship therewith, and the tube member having at least one axial gap along the length thereof; and

an elongated annular insulator of synthetic resin located between and in engagement with both elongated metallic members such that an electrical voltage applied along the tube member generates an electrical arc at the axial gap thereof to provide a plasma while the insulator and the rod member provide support for the tube member.

5,549,047

SUBMUNITION FUSE WITH A NONDELAY SELF-DESTRUCT FIRING DEVICE

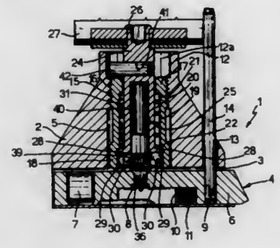
Roberto Borgni, Cornaredo, Italy, assignor to Simmel Difesa S.p.A., Castelfranco Veneto, Italy

Filed May 5, 1995, Ser. No. 435,498

Claims priority, application Italy, May 6, 1994, TO94A0366

Int. Cl.[6] F42C 15/23;15/184

U.S. Cl. 102—256 14 Claims



1. A submunition fuse for detonating a firing device after a descent from an altitude, the fuse comprising:

a) a detonating element;

b) a tubular arming body;

c) a support housed in said tubular body and slidable in said body between an armed position proximal to the detonating element and an unarmed position further from the detonating element;

d) a firing element housed in said support and slidable between a disabled position and an enabled position wherein the firing element can trigger the detonating element;

e) air brake means on said support for causing ambient atmosphere to exert a retarding force on said support during said descent, with said retarding force acting in a direction away from the detonating element, whereby the air brake means biases said support toward said unarmed position during said descent;

f) first thrust means acting on said support for generating a first thrust, in a direction toward the detonating element, of a value not exceeding said retarding force whereby to urge said support to slide in the tubular body from said unarmed position to said armed position only in an absence of the retarding force;

g) lock means for preventing the firing element from sliding from said disabled position to said enabled position if and only if said support is in said unarmed position; and

h) second thrust means for generating on said firing element a second thrust in a direction toward said detonating element to urge the firing element to slide toward said enabled position if not prevented by the lock means.

5,549,048

BIODEGRADABLE SHOT-GUN CARTRIDGE CASE

Arthur H. Godfrey-Phillips, Kent, United Kingdom, and Graham Chapman, Tonawanda, N.Y., assignors to The Kent Cartridge Manufacturing Company Limited, Tonbridge, United Kingdom

PCT No. PCT/GB92/00737, § 371 Date Oct. 18, 1993, § 102(e) Date Oct. 18, 1993, PCT Pub. No. WO92/18826, PCT Pub. Date Oct. 29, 1992

PCT Filed Apr. 22, 1992, Ser. No. 137,026

Claims priority, application United Kingdom, Apr. 22, 1991, 9108555

Int. Cl.[6] F42B 5/30;7/06

U.S. Cl. 102—466 3 Claims

1. A shot-gun cartridge case made by extrusion or equivalent pressure forming of high density polyolefin-based composition, said composition containing a biodegradable starch, a fatty acid ester to initiate peroxide attack on double bonds of the polyolefin and an anti-oxidant stabilizing compound, said composition being stable to biological and chemical degradation until the cartridge is fired, during firing said anti-oxidant stabilizing compound being partially destroyed or dispersed so that degradation of said composition takes place.

5,549,049

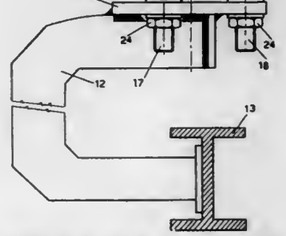
DISK-TYPE ADJUSTABLE SUPPORTING DEVICE FOR OVERHEAD RUNWAYS

Giorgio Deandrea, Turin, Italy, assignor to Fata Automation S.p.A., Turin, Italy

Filed Nov. 15, 1994, Ser. No. 340,859

Int. Cl.[6] E01B 25/24

U.S. Cl. 104—111 9 Claims



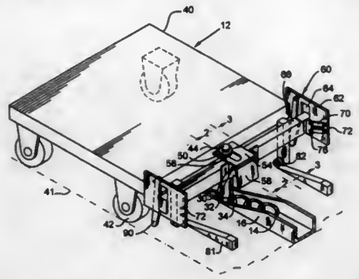
1. A coupling device for adjustably supporting a rail of an overhead runway from an upper suspension beam, said device connecting and permitting relative rotation about a substantially vertical axis of a bracket, the lower end of which is secured to the rail, with respect to the upper suspension beam and comprising a first and a second element, one of said elements being connected to the beam and the other element to the bracket with the first element having a circumferentially extending rim disposed in a plane perpendicular to said axis, two parallel plates located on either vertical side of said rim and interconnected by bolts, which bolts when tightened grip between them said circumferential rim and prevent relative rotation between the first element and the plates and when loosened permit relative rotation between the first element and the plates around said axis, and connecting means for connecting the plates to the second element so that when the plates rotate relative to the first element, the second element rotates relative to the first element.

5,549,050

LOAD CARRYING UNIT FOR A CONVEYOR SYSTEM

Arthur B. Rhodes, 3347 Campground Rd., Louisville, Ky. 40211

Filed Jun. 8, 1995, Ser. No. 488,748
Int. Cl.[6] B61B *10/04*
U.S. Cl. 104—172.3 **16 Claims**



1. A load carrying unit for selected movement along a conveying path having a first and a second elevation and defined by a conveyor chain, comprising:

a frame structure having a front end and a back end;

floor engaging wheels rotatably attached to the frame structure;

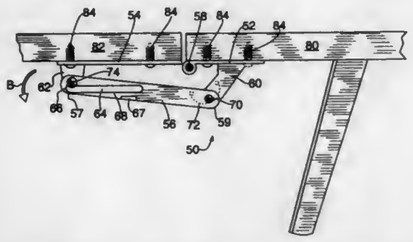
a vertically movable chain engaging pin assembly attached to said front end of said frame structure, said assembly including a chain engaging pin, a first means to move said pin between a lowered chain engaged position whereat the depending end of the pin engages the conveyor chain and a raised, chain disengaged position whereat the depending end of the pin is spaced above and out of contact with the conveyor chain, and a second means to vertically move said first means and said pin in a chain engaged position as a unit between said first elevation and said second elevation.

5,549,051

THREE PIECE HINGE TYPE DROP-LEAF SUPPORT

Harvey Zimmerman, 19 Eldorado Dr., E. Northport, N.Y. 11731

Filed Feb. 6, 1995, Ser. No. 383,794
Int. Cl.[6] A47B *1/04*
U.S. Cl. 108—81 **15 Claims**



1. A three-piece hinge type drop-leaf support consisting essentially of:

a) a table hinge plate having a first depending leg;

b) a leaf hinge plate having a second depending leg and being hingedly coupled to said table hinge plate; and

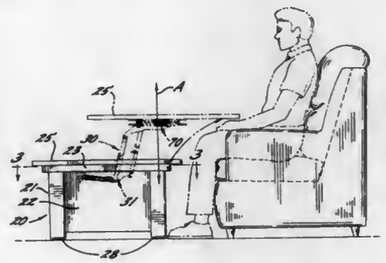
c) a strut having a first end, a second end, and a substantially L-shaped slot defined by a short portion and a long portion, said second end being directly hingedly coupled to said first depending leg, said second depending leg having slot engaging means for coupling said second depending leg to said substantially L-shaped slot, wherein when said leaf hinge plate is moved from a first position which is substantially perpendicular to said table hinge plate to a second position which is substantially coplanar with said table hinge plate, said slot engaging means moves through said long portion of said slot to said short portion of said slot, said strut pivots in a first direction relative to said first depending leg until said slot engaging means reaches said short portion of said slot whereupon said strut pivots in a second direction and said slot engaging means is captured by said short portion of said slot.

5,549,052

TABLE WITH MOVABLE TOP SURFACE

D. Stephen Hoffman, High Point, N.C., assignor to Ultra-Mek Corporation, Denton, N.C.

Continuation-in-part of Ser. No. 34,495, Mar. 19, 1993, Pat. No. 5,503,086. This application Jan. 7, 1994, Ser. No. 178,667
Int. Cl.[6] A47B *11/00*
U.S. Cl. 108—139 **35 Claims**



1. A table comprising:

a base;

a table surface; and

a mechanism for controlling the movement of said table surface relative to said base between a retracted position, in which said table surface is generally horizontally disposed above and adjacent said base, and an extended position, in which said table surface is generally horizontally disposed above said base and a major portion of said table surface resides forwardly of said base, said mechanism comprising:

(a) mounting means attached to said base;

(b) a front pivot link comprising lower, central, and upper portions, the central portion having front and rear edges, said lower portion being pivotally interconnected with said base mounting means at a first pivot;

(c) a rear pivot link comprising lower, central, and upper portions, the central portion having front and rear edges, said lower portion being pivotally interconnected with said base mounting means at a second pivot; and

(d) means for mounting said mechanism to said table surface pivotally interconnected with said front pivot link upper portion at a third pivot and with said rear pivot link upper portion at a fourth pivot;

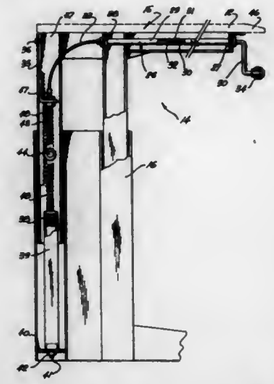
said front and rear pivot links being configured so that a first of said pivot link central portions is lateral of a second of said pivot link central portions and so that in the extended position, said rear edge of said first pivot link central portion is rearward of said rear edge of said second pivot link central portion and said front edge of said first pivot link central portion is forward of said front edge of said second pivot link central portion.

5,549,053

DESK FRAME

John E. Grout, New South Wales, Australia, assignor to Ergonomix Armdec Pty. Ltd., Padstow, Australia

Filed Jan. 3, 1995, Ser. No. 367,591
Claims priority, application Australia, Jan. 4, 1994, PM3230
Int. Cl.[6] A47B *9/00*
U.S. Cl. 108—147 **15 Claims**



1. A height adjustment mechanism for a height adjustable desk having a pair of spaced legs to support a work bench, each leg including an upper portion to be fixed to the bench, and a lower portion to engage a surface supporting the desk, said mechanism comprising:

a drive shaft having an extremity to be manipulated by a user to cause rotation of the shaft about its longitudinal axis;

means to rotatably support said shaft generally horizontally in said upper portion for rotation about its longitudinal axis;

a worm gear connected to said shaft so that said worm gear will rotate therewith about the longitudinal axis of the worm gear;

means to mount said worm gear in said upper portion so that said worm gear is generally vertically extending and is rotatable about its longitudinal axis;

a nut to be mounted on said lower portion and threadably engaged with said worm gear so that rotation of said worm gear causes movement of said nut along said worm gear so that in use said rotation causes vertical movement of said upper portion with respect to said lower portion;

a pedestal having said nut fixed to an upper end thereof, with said pedestal having a lower end to engage a respective one of the lower portions; and

a mounting bracket rotatable supporting an upper end of said worm gear, said bracket being fixed to a respective one of the upper portions.

5,549,054

SHELF EXTENDER

Kirk Lewis, Lees Summit, Mo., assignor to Fast Industries, Inc., Ft. Lauderdale, Fla.

Continuation of Ser. No. 180,302, Jan. 12, 1994, abandoned. This application Oct. 11, 1995, Ser. No. 540,824
Int. Cl.[6] A47B *5/00*
U.S. Cl. 108—152 **11 Claims**

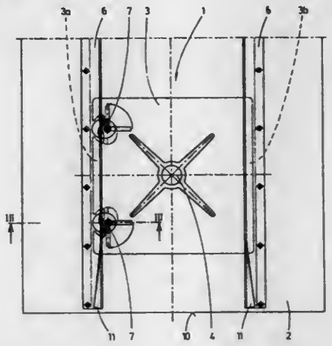
1. In combination with a product display shelf, a shelf extender comprising a die cut plastic sheet having a back edge and a front edge defining a main body panel, attachment means along a back edge portion of the sheet securing said back edge portion to a top substantially horizontal surface of the shelf with a front portion of the body panel projecting beyond a front edge surface of the shelf, said front edge surface extending downwardly from said top surface of the shelf, and tab means projecting downwardly from said front portion of the body panel to engage against the front edge surface of the shelf and provide cantilever supports for the sheet shen said front portion is under load wherein the tab means comprises fold-down tabs defined by cut-outs in the sheet, each tab being folded down about a line extending in a back to front direction of the sheet and each tab having a back edge perpendicular to said line engaging the front edge surface of the shelf.

5,549,055

UNDERFRAME FOR TABLETOPS FOR SINGLE AND MULTIPLE TABLES

Dieter Kusch, Lieserfeld 27, 59969 Hallenberg, Germany

Filed Jan. 30, 1995, Ser. No. 380,659
Claims priority, application Germany, Jan. 28, 1994, 44 02 520.3; Oct. 10, 1994, 44 36 166.1
Int. Cl.[6] A47B *3/06*
U.S. Cl. 100—153 **11 Claims**



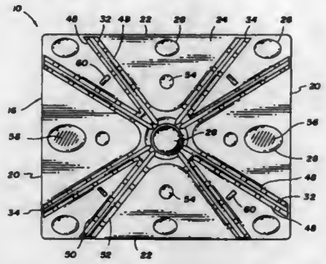
1. An underframe for tabletops for single and multiple tables, comprising at least one leg or pedestal attached to a mounting plate fastened under the tabletop; mounting rails (**6**) arranged on an underside (**5**) of a said tabletop (**2**) at a distance from and parallel to one another, the mounting rails (**6**) being adapted to be engaged with the mounting plate (**3**), and clamping devices (**7**) to clamp said mounting plate (**3**) firmly on at least one said mounting rail (**6**), said mounting rails (**6**) having a Z-profile and legs (**8**) of said mounting rails (**6**) being directed inwardly toward one another and forming gaps (**9**) with said tabletop underside (**5**) to hold two opposite edges (*3a*, *3b*) of said mounting plate (**3**).

5,549,056

LOAD DISTRIBUTOR FOR PALLETS

Richard A. Jordan, Clinton Township; James W. Jacoby, Jr., Rochester Hills, and Raymond H. Gosnell, Plymouth, all of Mich., assignors to Cadillac Products, Inc., Sterling Heights, Mich.

Filed Mar. 31, 1994, Ser. No. 220,965
Int. Cl.[6] B65D *19/00*
U.S. Cl. 108—51.1 **24 Claims**



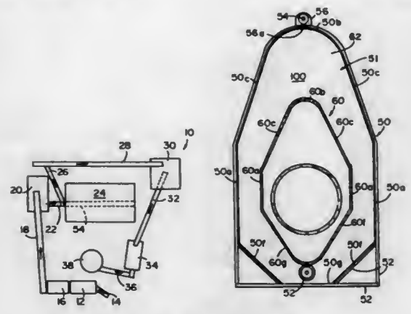
1. An apparatus for distributing a load applied thereto, the apparatus comprising:
a first sheet having a generally planar surface, a central indentation formed in the first sheet, a plurality of peripheral indentations formed in the first sheet and disposed around the central indentation, and a plurality of first ribs extending radially from the central indentation;
a second sheet joined with the first sheet and having a series of adjacent first channels extending to a first depth, each pair of adjacent first channels being separated by a raised portion including a groove and a pair of second ribs flanking the groove, the groove extending to a second depth less than the first depth;
the first channels extending out to the perimeter of the second sheet.

5,549,057

DRYER AND COMBUSTIBLE PELLET SYSTEM

David J. Favreau, Cedar Springs, Mich., assignor to Raymon J. Castine, Belmont, Mich.

Filed Oct. 11, 1994, Ser. No. 320,914
Int. Cl.[6] F23K *1/00*
U.S. Cl. 110—218 **18 Claims**



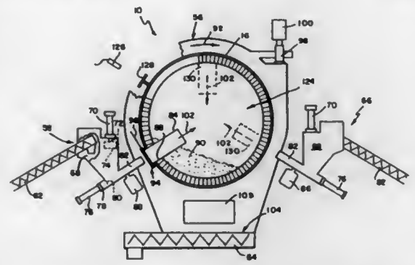
1. A dryer for particulate materials comprising:
an elongated, peripherally enclosed combustion tunnel having a combustion chamber and an exhaust outlet;
an enclosing liner spaced from and around said combustion tunnel, having heat shield slide surfaces of a metal alloy having a low coefficient of friction and high thermal conductivity;
a jacket surrounding and generally spaced from said liner having an interior heat shield and cooperative with said liner for forming a material drying chamber between said liner and said jacket such that fuel exhaust fumes do not contact the material being dried;
a material inlet conveyor in said jacket above said liner for dispensing particulate material over said liner to evaporate volatilizable substances therefrom;
a particulate material discharge conveyor beneath said liner for discharging particulate material from which volatilizable substances have been removed; and
an upper discharge passage from said drying chamber for discharge of volatilizable substances.

5,549,058

METHOD AND APPARATUS FOR CHARGING A BULK MATERIAL SUPPLEMETAL FUEL INTO A LONG CEMENT KILN

James R. Tutt, Nash, Tex., assignor to Cadence Environmental Energy, Inc., Michigan City, Ind., and Ash Grove Cement Company, Overland Park, Kans.

Filed Apr. 10, 1995, Ser. No. 418,660
Int. Cl.[6] F23D *14/00;* **F27B** *7/00*
U.S. Cl. 110—226 **35 Claims**



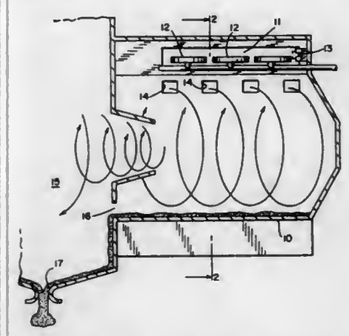
1. An apparatus for improved manufacture of cement clinker in a wet or dry process long rotary kiln for processing a mineral material therein to produce cement clinker, said kiln comprising a rotary vessel having a fired lower end and an adjacent clinkering zone, an upper kiln gas exit end and an adjacent mineral drying zone, an intermediate calcining zone along its length, and a kiln gas stream flowing from the fired lower end to the upper gas exit end, the kiln being modified to burn a bulk material supplemental fuel in a secondary burning zone of the kiln, said apparatus comprising:
a port formed in the rotary vessel upstream relative to kiln gas flow of the drying zone;
a tube extending into the rotary vessel in communication with the port to prevent an in-process mineral material in the rotary vessel from escaping through the port; and
a bulk material fuel charging apparatus including a hopper for receiving the bulk material, a barrel in communication with the hopper, a cylinder having a piston for moving a ram located within the hopper from a retracted position to an extended position to load a portion of the bulk material into the barrel and form a fuel charge, and an air cannon in air flow communication with the barrel for injecting air into the barrel to force the fuel charge out of the barrel, through the tube, and into an interior region of the rotary vessel.

5,549,059

CONVERTING PAPER MILL SLUDGE OR THE LIKE

Timothy M. Nechvatal, Brookfield, and Thomas J. Jansen, Mequon, both of Wis., assignors to Minergy Corp., Milwaukee, Wis.

Filed Aug. 26, 1994, Ser. No. 296,557
Int. Cl.[6] F23G *7/02*
U.S. Cl. 110—346 **13 Claims**



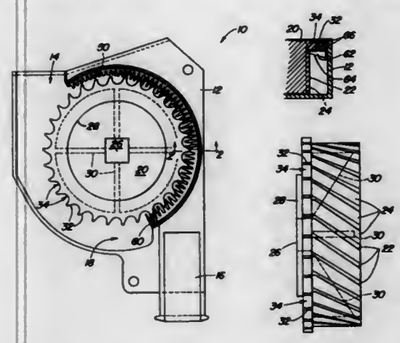
11. A method of fueling a cyclone furnace, comprising:
fueling the furnace with natural gas; and
simultaneously fueling the furnace with paper mill sludge or like organic sludge having a high ash content.

5,549,060

MECHANICAL SEED METER

Jeffrey C. Schick, Davenport, Iowa, and Donald R. Wisor, Moline, Ill., assignors to Deere & Company, Moline, Ill.

Filed Aug. 2, 1995, Ser. No. 510,447
Int. Cl.[6] A01C *7/00*
U.S. Cl. 111—178 **10 Claims**



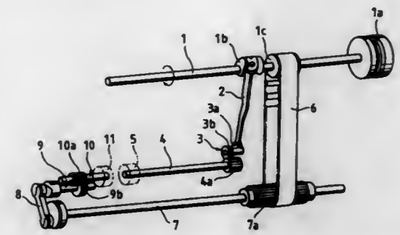
1. A seed meter for metering seeds for a piece of seeding equipment, the seed meter comprising:
a casing having an inlet for receiving seed and an outlet for dispensing seed;
a metering drum rotatively mounted in the casing, the drum is provided with a plurality of radially extending flutes which extend across the drum and between which are located a plurality of seed receiving valleys, the drum and the casing defining a space;
a dividing comb mounted to the casing and dividing the space formed between the drum and the casing into a seed dispensing space and a seed receiving space, the seed receiving space being in communication with the inlet of the casing and the seed dispensing space being in communication with the outlet of the casing, the metering drum is provided with a seed dispensing side that rotates through both the seed receiving space and the seed dispensing space, the flutes on the seed dispensing side of the metering drum being provided with outwardly extending fingers that form seed receiving pockets; and
a seed holding comb mounted to the casing for holding seed in the seed receiving pockets, whereby as the drum is rotated in the casing the seed is trapped in the seed receiving pockets and passed from the seed receiving space to the seed dispensing space where it is released by the holding comb and passes through the outlet.

5,549,061

DRIVE FORCE TRANSMISSION FOR A SHUTTLE SECTION IN A SEWING MACHINE

Yo Oda; Tadayoshi Minakawa; Shyoichi Sibuya, and Takayuki Shiina, all of Tokyo, Japan, assignors to Juki Corporation, Tokyo, Japan

Filed Mar. 28, 1995, Ser. No. 410,799
Claims priority, application Japan, Mar. 29, 1994, 6-059186
Int. Cl.[6] D05B *69/16*
U.S. Cl. 112—220 **9 Claims**



1. A drive force transmission for a shuttle section in a sewing machine in which the rotation of a spindle is transmitted and transformed into a swing motion of, an output shaft, wherein a first end portion of the output shaft is coupled with the shuttle section, the drive force transmission comprising:
power transmission means coupled with the spindle to rotate the spindle;
a drive force transmission shaft coupled with said power transmission means, said drive force transmission shaft rotating according to the rotation of the spindle through said power transmission means; and
force transforming means provided between an end of said drive force transmission shaft and a second end portion of the output shaft, for transforming the rotation from said drive force transmission shaft into the swing motion of the output shaft.

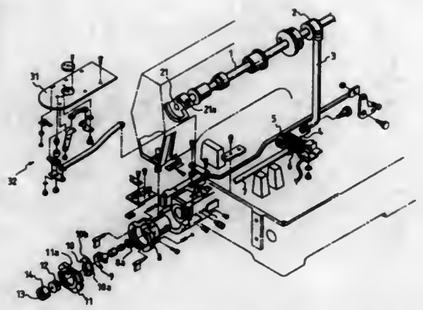
5,549,062

SHUTTLE HOOK DRIVING DEVICE FOR A SEWING MACHINE

Takashi Yamashita, and Minoru Wada, both of Tokyo, Japan, assignors to Juki Corporation, Tokyo, Japan

Filed Jun. 28, 1995, Ser. No. 496,095
Claims priority, application Japan, Jun. 29, 1994, 6-148163
Int. Cl.[6] D05B *69/16*
U.S. Cl. 112—220 **6 Claims**

1. A shuttle hook driving device for driving a shuttle hook having a beak disposed between a needle drop position and a bobbin thread lead-out point of a bobbin in a sewing machine



which includes a main shaft, a needle bar, a thread take-up lever, and a conversion mechanism for converting a rotation of the main shaft into an oscillating motion, the shuttle hook driving device comprising;

a counter balance connected to the needle bar and the thread take-up lever, the counter balance being mounted on the main shaft such that the counter balance is positioned at a predetermined angle with respect to the main shaft as compared with a standard sewing machine;

an output shaft receiving the oscillating motion from the conversion mechanism, the output shaft being connected to the conversion mechanism in a right-to-left inverted relation when the uppermost point of the needle bar is used as a reference, as compared to a standard sewing machine; and

a driver connected to the output shaft for driving the shuttle hook.

5,549,063

FRAME STRUCTURE FOR A SEWING MACHINE ARM

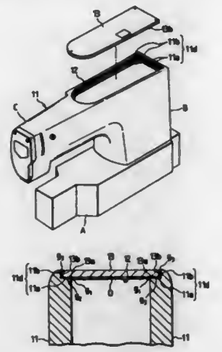
Shigemasa Kato, and Takayuki Shiina, both of Tokyo, Japan, assignors to Juki Corporation, Tokyo, Japan

Filed Jul. 5, 1995, Ser. No. 498,051

Claims priority, application Japan, Dec. 28, 1994, 6-327864

Int. Cl.[6] D05B *73/02;71/00;* **F16N** *31/00*

U.S. Cl. 112—258 **22 Claims**



1. A sewing machine having a substantially U-shaped structure comprising:

a bed section;

a barrel section connected to the bed section in a substantially perpendicular fashion;

a bracket connected to the barrel section in a substantially perpendicular fashion and extended substantially parallel to the bed section, the bracket including an arm opening at an upper surface of the bracket and an arm cover engageable with the upper surface of the bracket for closing the arm opening, the arm cover being substantially flush with the upper surface of the bracket when engaged with the upper surface, the arm opening having a periphery including a support surface for engaging the arm cover and a rising portion extending upward from the support surface; and

a predetermined gap between the rising portion of the arm opening and an outer periphery of the arm cover when the arm cover is positioned in the arm opening, the predetermined gap extending continuously along an entire length of the rising portion of the arm opening opposite the arm cover outer periphery.

5,549,064

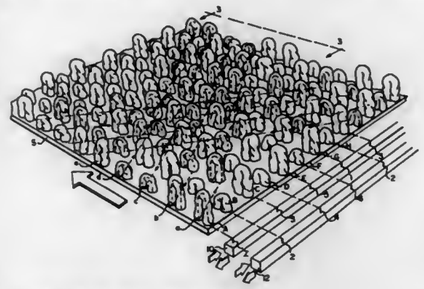
TEXTURED SURFACE EFFECT FABRIC

William P. Padgett, III, Rome, Ga., assignor to Burlington Industries, Inc., Greensboro, N.C.

Division of Ser. No. 995,297, Dec. 21, 1992, Pat. No. 5,383,415. This application Oct. 24, 1994, Ser. No. 328,164

Int. Cl.[6] D05C *17/02*

U.S. Cl. 112—410 **11 Claims**



1. A tufted pile fabric comprising:

a substrate;

a plurality of yarns stitched into said substrate in warpwise stitch rows and spaced weftwise from one another forming a tufted pile on one face of said substrate;

at least one pair of immediately-adjacent tufts having a difference in height in one stitch row greater than 3/32 inch without an intermediate tuft different in height than said pair of tufts.

5,549,065

WATER VEHICLE AND A DIRECTIONAL CONTROL DEVICE THEREFOR

Jeffrey L. Cipolla, Newport, R.I., and Ronald E. Waclawik, Fairhaven, Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 27, 1995, Ser. No. 411,237

Int. Cl.[6] F24B *19/06*

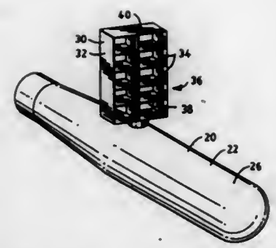
U.S. Cl. 114—23 **18 Claims**

1. In combination, a water vehicle and a directional control device therefor, said combination comprising:

a water vehicle having at least a portion thereof underwater during travel of said vehicle through water;

a directional control device comprising only one arm extendible from only one side of said portion of said vehicle, said arm including a multiplicity of fins in a compact array for contact with said water through which said vehicle portion moves in said travel and including a shroud surrounding said array of fins;

each of said fins having a neutral-lift, uncambered, shape of cross section chosen to substantially match the



hydrodynamic-streamline flow about the fin at a predetermined vehicle speed below cavitation thresbold speed; and

wherein said array of fins includes a plurality of first fins parallel to each other, and a plurality of second fins parallel to each other and normal to said first fins, said first and second fins intersecting to form a grid-like configuration, with ends of said fins fixed to an inside surface of said shroud.

5,549,066

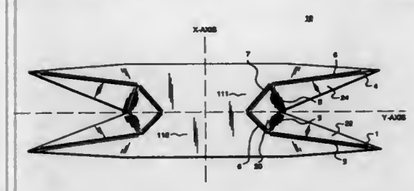
TRIANGULAR BOAT HULL APPARATUS

Robert P. Kingsbury, 377 Union Ave., Laconia, N.H. 03246

Filed Aug. 1, 1995, Ser. No. 509,814

Int. Cl.[6] B63B *1/00*

U.S. Cl. 114—56 **9 Claims**



1. A multi-hull apparatus having a direction of travel comprising;

a starboard hull section having a bow wave penetrating section, a stern wave penetrating section, a center section;

a port hull section having a bow wave penetrating section, a stern wave penetrating section, a center section, with said starboard bow wave and stern wave penetrating sections being substantially equal to one another, and with said port bow wave and stern wave penetrating sections being substantially equal to one another and substantially mirror images of said starboard bow wave and stern wave penetrating sections, and said starboard center section being joined together with said port center section to form a triangular center hull section and wherein each of said sections further comprises a plurality of intersecting flat surfaces.

5,549,067

FLOATABLE LUGGAGE CARRIER FOR PICKUP TRUCKS AND SNOWMOBILES, CONVERTIBLE INTO A CAMPER AND A TRIMARAN

Gérald Jolin, 201, rue Daudet, Chicoutimi-Nord, Qc, Canada

Filed Jul. 13, 1995, Ser. No. 501,818

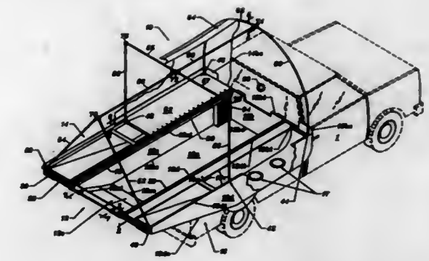
Int. Cl.[6] B63B *1/00*

U.S. Cl. 114—61 **19 Claims**

1. A floatable luggage carrier, for pickup trucks and snowmobiles, convertible into a camper and a trimaran, comprising:

a substantially rectangular floatable main vessel having:

a flat bottom being substantially horizontal,



a rear wall and opposite longitudinal side walls, upwardly extending from said bottom, and an inclined front wall extending from said bottom and away from said rear wall,

each of said longitudinal side walls, said rear wall, and said inclined front wall of said main vessel, having a top and a bottom,

said tops, from said flat bottom of said main vessel, being of a given height,

a substantially rectangular floatable wing vessel hingedly mounted along each of said longitudinal side walls, at the top, each of said wing vessels having:

a first flat shallow bottom portion being substantially horizontal, and running parallel and adjacent to said longitudinal side walls of said main vessel, and a second flat bottom portion being substantially horizontal, and having a height substantially equal to the given height of the main vessel,

a rear wall and opposite longitudinal side walls, upwardly extending from said second bottom portion, and an inclined front wall extending from said second bottom portion and away from said rear wall,

and a shallow longitudinal side upwardly extending from each of said first flat shallow bottom portions, adjacent to said longitudinal walls of said main vessel,

each of said longitudinal side walls, said rear wall, and said inclined front wall of said wing vessels, having a top and a bottom,

the dimension of each of said wing vessels, as taken from said tops of the rear wall, and the inclined front wall of said wing vessels, being in length, substantially equal to that of the main vessel,

and across, as taken from the tops of the longitudinal side walls being substantially half that of the main vessel,

said wing vessels being so hingedly mounted as to turn from a position side-by-side with the substantially rectangular floatable main vessel to an upside-down position over said main vessel:

where said wing vessels side-by-side with the main vessel define a trimaran and a camper, with a gap being defined between the shallow longitudinal side upwardly extending from each of said first flat shallow bottom portions, and said longitudinal sides of said main vessel,

and the flat bottom of said main vessel and the second flat bottom portions of said wing vessels being in a substantially same plane, but spaced by one of said first flat shallow bottom portions and said gap,

and said wing vessels in said upside-down position over said main vessel define a top for a luggage carrier, the luggage carrier being said substantially rectangular floatable main vessel, slidable into a loading platform of a pickup truck and usable with a snowmobile,

and means for releasably locking said wing vessels to said substantially rectangular floatable main vessel in said side-by-side position with the substantially rectangular floatable main vessel.

5,549,068

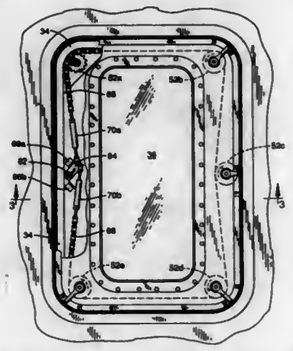
CLOSURE LATCHING MECHANISM

Arvie E. Freeman, Ophir, and Franz A. Shindler, Gold Beach, both of Oreg., assignors to Freeman Marine Equipment, Inc., Gold Beach, Oreg.

Continuation of Ser. No. 276,865, Jul. 18, 1994, Pat. No. 5,441,005, which is a continuation-in-part of Ser. No. 33,840, Mar. 19, 1993, Pat. No. 5,239,869. This application Jun. 7, 1995, Ser. No. 484,929

Int. Cl.[6] B63B *17/00*

U.S. Cl. 114—117 **13 Claims**



1. In combination, a marine closure for closing a marine hatch, window, door, or other closure opening and a wall frame for surrounding the closure and defining the closure opening, comprising:

a peripheral closure frame;

a panel covering one side of the closure frame, such that the frame and the panel define a space within the closure frame;

plural dogging shafts rotatably mounted in spaced-apart relationship within the space and adjacent an inner periphery of the closure frame, each shaft having an outer end portion terminating outwardly beyond said space;

a dogging sprocket mounted on each dogging shaft for rotation therewith;

a dogging arm mounted on the outer end portion of each dogging shaft for rotation therewith, each dogging arm having a length such that the arm can rotate with its shaft to a latching position wherein the arm extends over and beyond the closure free into a dogging relationship with a striker mounted on the wall frame adjacent the dogging arm;

a latching shaft rotatably mounted within said space and mounting a latching sprocket for rotation therewith;

an endless chain trained about said dogging sprockets and said latching sprocket such that rotation of the latching shaft rotates all of the dogging sprockets simultaneously to rotate the dogging arms into and out of their latching positions;

a latching shaft actuator accessible from outside the space for rotating the latching shaft and thereby rotating the dogging arms; and

the closure including a large window occupying a major central portion of the closure inwardly of the endless chain.

5,549,069

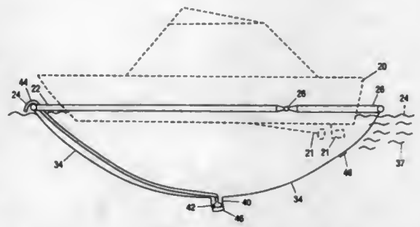
ENCLOSURE FOR SHIELDING MOORED WATER VESSEL HULL FROM DIRECT CONTACT WITH WATER

Zayd Faidi, 535 Larkspur Plaza Dr., Apt. No. 10, Larkspur, Calif. 94939

Filed Dec. 10, 1993, Ser. No. 165,811

Int. Cl.[6] B63B *59/08*

U.S. Cl. 114—222 **62 Claims**



1. A selectively submergible apparatus for enclosing and shielding the below-the-waterline portion of a moored water vessel's hull from direct contact with water, said vessel having predetermined waterline dimensions and predetermined below-the-waterline dimensions, comprising:

a frame having an inner opening greater in size than said predetermined waterline dimensions of said vessel,

a water-impervious bag having greater inner dimensions than said predetermined below-the-waterline dimensions of said vessel, said bag being at least in part secured to said frame and dangling below said waterline, said bag having a lowest area which is lower than the rest of the bag so as to provide a water collection area when said bag is being drained of water,

an attachment means attaching said frame to a solid object above said waterline, and

an evacuation means for selectively evacuating water from inside said water-impervious bag, said evacuation means comprising a hose extending from said lowest area inside said bag and then up inside said bag and to outside said bag.

5,549,070

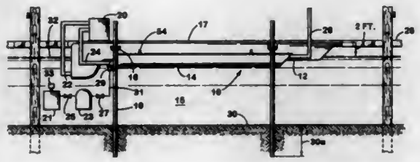
IN-WATER DRY DOCK SYSTEM

Albert Cruchelow, 23103 Bayleaf, Spring, Tex. 77373, and Rodney H. Masters, 15730 Sellers Rd., Houston, Tex. 77060

Filed Aug. 23, 1994, Ser. No. 294,253

Int. Cl.[6] B63B *35/44*

U.S. Cl. 114—263 **19 Claims**



1. A dry dock comprising:

(a) a floodable basin;

(b) a ballast tank coupled to the basin and hydraulically isolated from the basin;

(c) a water source coupled to the ballast tank to selectively admit water into the ballast tank;

(d) a vent from the ballast tank to allow water to be removed from the ballast tank;

(e) a guide means for fixing the spatial relationship between the dry dock system and a boat-slip and for guiding the dry dock system for vertical movement; and

(f) means to pump water from the basin independent of the ballast tank.

5,549,071

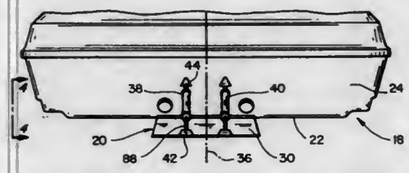
SKI TOW BOAT WITH WAKE CONTROL DEVICE AND METHOD FOR OPERATION

Charles Pigeon, Abilene, Tex., and Stephen Jones, Rancho Cordova, Calif., assignors to Tige Boats, Abilene, Tex.

Filed Jul. 3, 1995, Ser. No. 498,023

Int. Cl.[6] B63B *1/22*

U.S. Cl. 114—286 **7 Claims**



1. A wake-controllable tournament style inboard power boat for towing water skiers, the boat comprising a hull having a longitudinal axis extending between a bow and stern, the stern comprising a bottom having port and starboard sides which are joined together longitudinally and with each side extending with respect to horizontal at an angle in the range of 0° to no more than substantially 3°, said stern having a given lateral width; a wake control plate having a forward end and a trailing end, said plate having a width which is no greater than half said given lateral width of the stern; means for mounting the forward end of the plate on the stern for pivotal movement about a transverse axis with the plate being substantially centered on said longitudinal axis; and control means for pivoting the plate around the transverse axis so that the trailing end moves vertically between a raised position and a lowered position, said control means being operable to pivot the plate to selected positions between said raised and lowered positions to vary the extent to which the trailing end of the plate projects into water which moves in a stream relative to the hull as the boat moves forwardly whereby the size of the wake made in the water by the boat can be selectively controlled.

5,549,072

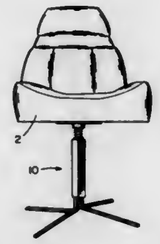
BOAT SEAT STAND

Peter E. Maloney, Louisville, Ky., assignor to Concept Outdoor Advertising, Inc., Louisville, Ky.

Filed Jan. 10, 1995, Ser. No. 370,796

Int. Cl.[6] B63B *17/00*

U.S. Cl. 114—363 **17 Claims**



1. A boat seat stand, comprising:

a. a plurality of bent leg members, each bent leg member having a vertical portion and a outward extending portion; and,

b. a vertical base member having a top and a bottom, said vertical base member having means for receiving a downwardly extending vertical member at said top, said vertical base member having means for receiving said vertical portions of said plurality of leg members to place said boat seat stand in an operable configuration for supporting a boat seat and for receiving said outward extending portions of said plurality of leg members to place said boat seat stand in a storage configuration.

5,549,073

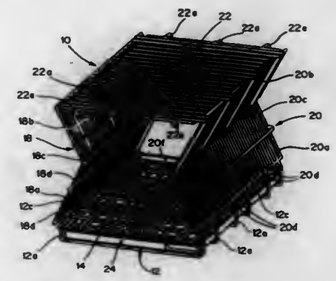
COLLAPSIBLE CAGE

William E. Askins; Michael W. Stewart, and Gary Rouiston, all of Lititz, Pa., assignors to Woodstream Corporation, Lititz, Pa.

Filed Jun. 2, 1995, Ser. No. 459,497

Int. Cl.[6] A01K *1/03;31/08*

U.S. Cl. 119—474 **21 Claims**



1. A collapsible cage structure comprising a rectangular base, a pair of side walls, a pair of end walls and a roof wherein at least the side walls, end walls and roof comprise rectangular metal grids, wherein the end walls are hinged along bottom edges thereof to respective end edges of the base for folding down onto the base and for unfolding from the base into an elevated upright position, the side walls each comprising upper and lower metal grids interconnected by a hinge joint, the lower metal grids being hinged along bottom edges thereof to respective side edges of the base, the upper metal grids being hinged along top edges thereof to respective side edges of the roof, the side walls being foldable inwardly concertina-wise about said hinge joints to collapse the side walls and roof onto the base over the end walls and being unfoldable about said hinge joints to elevate the side walls and roof prior to elevating the end walls, latching means for releasably securing the walls and roof in the elevated position means providing an animal access opening in one of the walls and stop means associated with each of said hinge joints for preventing each of the side walls from unfolding outwardly beyond a substantially planar configuration of the side wall.

5,549,074

WATER DRINKING DEVICE FOR PETS

Cheng C. Hui, P.O. Box 453, Taichung, Taiwan

Filed May 8, 1995, Ser. No. 436,095

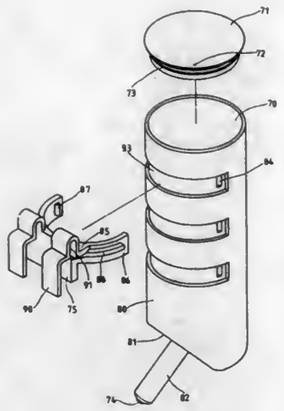
Int. Cl.[6] A01K *5/00*

U.S. Cl. 119—477 **6 Claims**

1. A water drinking device for pets comprising:

a vessel provided at a top end thereof with an opening which is provided with a cap fastened detachably thereto, said vessel having a slanted bottom with a water outlet extending downwards from an upper level thereof, said vessel further provided peripherally at different levels thereof with a plurality of locating slots which are provided respectively at both ends thereof with a locating recess; and

a vessel hanger having an arcuate retaining arm which is provided respectively at both ends thereof with a locating projection corresponding in location to and engageable with said locating recess of said locating slot of said vessel, said vessel hanger further having a hook engageable securely with a bar of a cage in which a pet is kept.

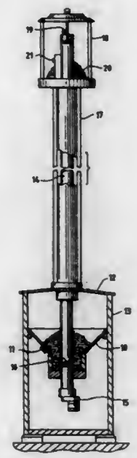


5,549,075

AUTOMATIC BIRD FEEDER

James B. Golden, 2631 N. Lehman Rd., Peoria, Ill. 61604

Filed Nov. 9, 1994, Ser. No. 336,419
Int. Cl.[6] A01K *39/012*
U.S. Cl. 119—57.92 **7 Claims**



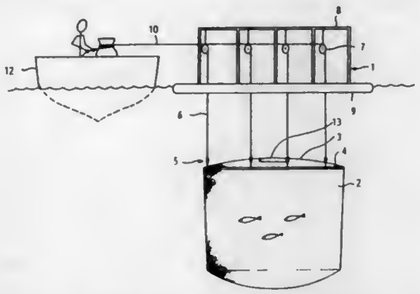
4. An automatic feeder comprising:
a storage container;
means for adding feed to the storage container;
a feeder positioned above the storage container;
an electronic sensor device in the feeder to detect the level of feed present in the feeder;
a feed tube connecting the storage container with the feeder, said feed tube having a slot therein through which feed may enter the feed tube from the storage container;
an auger conveying means located within the feed tube, wherein the angle of the auger is approximately the same as the angle of slide of the feed to be conveyed; and
a drive unit within the storage container to drive the auger conveying means, whereby the auger conveying means conveys feed from the storage container to the feeder when the drive unit is activated.

5,549,076

DEVICE FOR USE IN A REARING UNIT

Charles Kaarstad, Skolevn, 13A, N-9500, Alta, Norway

PCT No. PCT/NO92/00161, § 371 Date Oct. 31, 1994, § 102(e) Date Oct. 31, 1994, PCT Pub. No. WO93/06542, PCT Pub. Date Sep. 21, 1992
PCT Filed Aug. 28, 1992, Ser. No. 211,442
Claims priority, application Norway, Oct. 8, 1991, 913933
Int. Cl.[6] A01K *63/02* ..
U.S. Cl. 119—223 **10 Claims**



1. Rearing unit for use in a body of water, comprising:
a) a frame;
b) a net bag held by the frame;
c) a jumping fence mounted peripherally around the frame;
d) a top net attached to the jumping fence to form, with the net bag, a closed unit;
e) a floating ring supporting the closed unit, said closed unit being separable from the floating ring;
f) means for raising and lowering the closed unit with respect to the floating ring comprising a plurality of ropes fastened to the net bag, a bannister attached to the floating ring, upper blocks attached to the bannister with the ropes extending through the upper blocks, and take-up means for the ropes located externally of the closed unit and floating ring, said net bag being stretched when said closed unit is lowered.

5,549,077

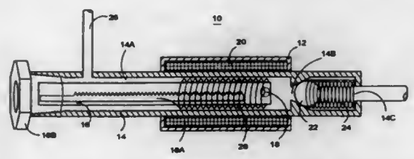
Patent Not Issued For This Number

5,549,078

DEVICE FOR SUPERHEATING STEAM

Robert L. Annecharico, and Norman Campbell, both of 25 Indian Dr., Clinton, Conn. 06413

Filed Nov. 21, 1994, Ser. No. 342,620
Int. Cl.[6] F22B *5/00*
U.S. Cl. 122—132 **10 Claims**



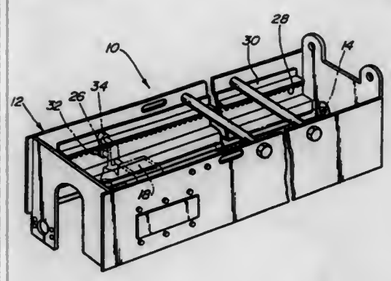
1. A heating device for submersion within a tank of water to boil the water to produce steam, and for superheating the steam, comprising:
a) an outer sleeve;
b) an inner sleeve partially disposed through the outer sleeve and having a proximal end, and a distal end in the form of an outlet port, the inner sleeve further defining a vapor chamber;
c) a heating element disposed within the vapor chamber and in electrical communication with an external electrical power supply, the heating element adapted to produce heat in response to electrical energy from the power supply;
d) a steam inlet tube extending outwardly from the inner tube and in fluid communication with the vapor chamber;
e) and a one way valve disposed within the vapor chamber adjacent the outlet port, the valve adapted to selectively gate the flow of vapor from within the vapor chamber through the outlet port; and
f) wherein the heating device is configured to heat the water within the tank to a boil to produce steam, the steam inlet tube adapted to direct the steam into the vapor chamber wherein the steam is superheated through direct contact with the heating element producing vapor, the vapor generating sufficient pressure to open the valve and exit the heating device through the outlet port.

5,549,079

OPEN BEAM SOOTBLOWER

Jesse C. Johnston, Jr., Carroll; James S. Kulig; Steven F. Lewis, both of Lancaster; Eric C. Collet, Columbus; Mark J. Sepela, Reynoldsburg, and Michael L. Meuller, Circleville, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Continuation of Ser. No. 189,301, Jan. 28, 1994, Pat. No. 5,421,076, which is a continuation-in-part of Ser. No. 34,251, Mar. 22, 1993, Pat. No. 5,299,533. This application May 12, 1995, Ser. No. 440,317
Int. Cl.[6] F22B *37/18*
U.S. Cl. 122—379 **12 Claims**



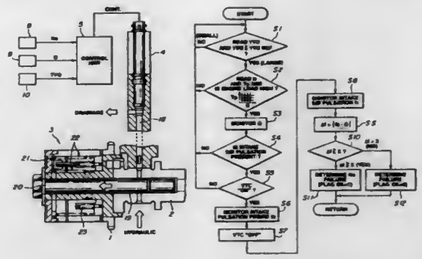
1. A retractable sootblower for cleaning interior surfaces of a boiler, said sootblower comprising a lance tube, a feed tube, supply means for providing a blowing medium through said feed tub to said lance tube, a carriage assembly including a bousing and transmission means coupled to said lance tube enclosed within said housing for advancing and retracting said lance tube into and out of the boiler, a lubrication system associated with and lubricating said transmission means, a frame supporting said carriage assembly and being located adjacent to the boiler, a lance hub supporting said lance tube and coupling said lance tube to said transmission means, said carriage assembly also including support means for rotatably supporting said lance hub and enhancing convective dissipation to ambient air of heat generated within said lance hub by the transmission of said blowing medium therethrough, said support means being independent of and isolated from said lubrication system.

5,549,080

APPARATUS AND METHOD FOR DIAGNOSING OCCURRENCE OF FAILURE IN VARIABLE VALVE TIMING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Akira Uchikawa, Atsugi, Japan, assignor to Unisia Jecs Corporation, Atsugi, Japan

Filed Apr. 28, 1995, Ser. No. 430,725
Claims priority, application Japan, Apr. 28, 1994, 6-091447
Int. Cl.[6] F01L *1/34;* **F02D** *41/22*
U.S. Cl. 123—90.16 **21 Claims**



7. A diagnosing apparatus for an internal combustion engine, comprising:
a) variable valve timing control system having a solenoid, said solenoid being excited in response to a first predetermined level signal and being deenergized in response to a second predetermined level signal;
b) an intake airflow meter arranged in an intake air system of the engine to detect an intake air quantity entering the engine and output a signal indicating the intake air quantity;
c) engine driving condition detecting means for detecting at least one engine driving condition determining parameter;
d) intake air pulsation region determining means for determining whether the engine falls in an engine driving region where intake air pulsation occurs on the basis of the engine driving condition determining parameter;
e) first intake air pulsation period measuring means for measuring at least one of a first intake air pulsation period and a frequency of the intake air pulsation when said variable valve timing control system is operated to excite the solenoid in response to the first predetermined level signal and when said intake air pulsation region determining means determines that the engine falls in the engine driving region;
f) second intake air pulsation period measuring means for measuring at least one of a second intake air pulsation period and the frequency of the intake air pulsation when said variable valve timing control system is operated to deenergize the solenoid in response to the second predetermined level signal and when said intake air pulsation region determining means determines that the engine falls in the engine driving region;
g) intake air pulsation comparing means for comparing said first and second intake air pulsation periods or frequencies measured by the first and second intake air pulsation period measuring means; and
h) determining means for determining whether a failure in said variable valve timing control system occurs according to a result of the comparison made by the intake air pulsation comparing means.

5,549,081

ARRANGEMENT FOR OPERATING VALVES OF AN INTERNAL COMBUSTION ENGINE

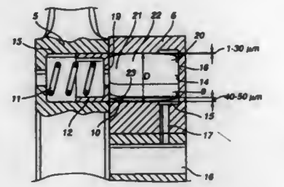
Rolf Ohlendorf, Weinstadt; Hans-Jürgen Straubel, Stuttgart; Rainer Aust, Böblingen, and Wolfgang Strobel, Remshalden, all of, Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

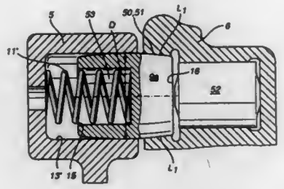
Continuation of Ser. No. 334,927, Nov. 7, 1994, abandoned. This application Nov. 20, 1995, Ser. No. 561,112

Claims priority, application Germany, Nov. 8, 1993, 43 38 050.6

Int. Cl.[6] F01L *1/18*; **F02D** *13/02*

U.S. Cl. 123—90.16 **8 Claims**





1. An arrangement for operating valves of an internal combustion engine by means of at least two operating members for opening and closing each of said valves and a camshaft with cams each having a base portion and a camming portion for operating a respective one of said operating members, said at least two operating members being disposed in side-by-side relation and having guide bores so arranged that they are aligned when said operating members are disposed on the base portions of said cams, at least one coupling pin disposed in said guide bores and having opposite end faces, said coupling pin being selectively movable between the guide bores of said adjacent operating members for coupling said adjacent operating members when being disposed in said guide bores so as to extend across said two adjacent operating members, said coupling pin being barrel-shaped providing for end sections which taper down toward said end faces and having a center section of a larger diameter which, with said guide bores, forms a cylindrical fit with a clearance of 1–60 μm, wherein one of said guide bores which receives an end of said coupling pin is convergent in an inward movement direction of said coupling pin into said one guide bore of said adjacent coupling member and said coupling pin is engaged in said one guide bore during coupling of said operating members along a circumferential line of contact.

5,549,082

AIR VENT STRUCTURE FOR PLUG CAP

Yoshinao Kobayashi, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Japan

Filed Oct. 25, 1994, Ser. No. 328,705

Claims priority, application Japan, Nov. 1, 1993, 5-063653 U

Int. Cl.[6] F02P *23/00*

U.S. Cl. 123—143 C **9 Claims**

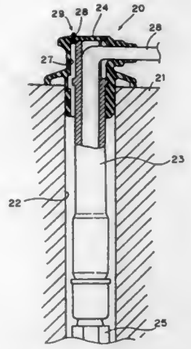
1. A plug cap device comprising:

a tubular plug cap body removably inserted in a spark plug mounting hole formed adjacent an engine;

a rain cover receiving an upper end portion of said plug cap body and closing an opening end of said spark plug mounting hole, said rain cover including an air vent aperture for communication between said spark plug mounting hole and the atmosphere; and

a sealing member including a shaft portion extending through said air vent aperture for movement with play, and outer and inner valve portions formed on projecting portions at opposite ends of said shaft portion, said outer and inner valve portions being greater in size in a diametrical direction than said air vent aperture,

said sealing member further including a closing portion for closing an outer edge of said air vent aperture by movement of said sealing member toward said spark plug mounting hole, and a communicating passage for allowing said spark plug mounting hole to communicate with the atmosphere by movement of said sealing member away from said spark plug mounting hole.



5,549,083

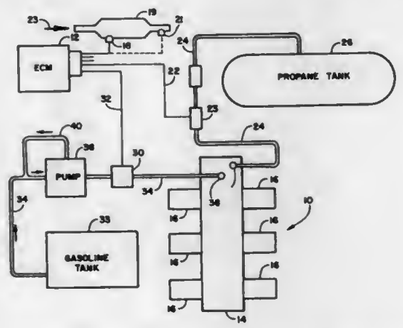
METHOD AND APPARATUS FOR CLEAN COLD STARTING OF INTERNAL COMBUSTION ENGINES

James J. Feuling, 2521 Palma, Ventura, Calif. 93003

Continuation-in-part of Ser. No. 149,523, Nov. 9, 1993, abandoned. This application Jul. 13, 1994, Ser. No. 274,342

Int. Cl.[6] F02N *17/08*

U.S. Cl. 123—179.5 **29 Claims**



1. An improved starting system for internal combustion engines which comprises:

temperature sensing means for sensing the temperature of a catalytic converter in the exhaust system of an internal combustion engine;

starting means for starting said interval combustion engine including means for igniting fuel in combustion chambers;

means for introducing a gaseous fuel into said combustion chambers when the sensed temperature is below a predetermined temperature;

means for interrupting the flow of said gaseous fuel to said combustion chambers when a temperature at or above said predetermined temperature is sensed;

means for introducing liquid fuel into the combustion chambers when a temperature at or above said predetermined temperature is sensed; and

means for preventing introduction of liquid fuel into the combustion chambers when a temperature below said predetermined temperature is sensed.

5,549,084

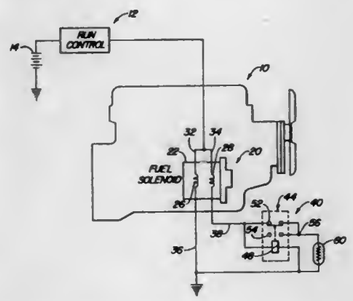
FUEL SHUT-OFF SOLENOID PULL-IN COIL CURRENT LIMITER

Rudolph A. Peterson, Jr., Beaver Dam, Wis., assignor to Deere & Company, Moline, Ill.

Filed Nov. 13, 1995, Ser. No. 557,750

Int. Cl.[6] F02N *17/00*; **F02B** *77/00*

U.S. Cl. 123—179.17 **18 Claims**



1. In an engine having a source of current, a fuel pump system including a solenoid having a pull-in coil for activating fuel flow during start up, the solenoid selectively connectable to a power source, a current limiting circuit comprising:

a thermistor connected to the pull-in coil and closing a current path from the power source through the pull-in coil to provide pull-in coil current, the thermistor heating up and thereby limiting pull-in current to a preselected period of time; and

switch structure connected to the pull-in coil and to the thermistor for opening the current path through the thermistor and permitting the thermistor to cool after the preselected period of time.

5,549,085

DEFLECTOR INSERT FOR AIR FILTERS

David A. Endrigo, 23138 Lakeshore, Paulsbo, Wash. 98370

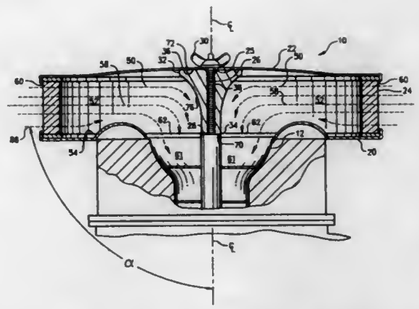
Filed Oct. 14, 1994, Ser. No. 323,369

Int. Cl.[6] B01D *47/00*

U.S. Cl. 123—184.21 **21 Claims**

1. An insert device for placement between (i) a carburator having an annular downwardly flowing mixing passageway with a longitudinal axis, and (ii) an air filter housing having a lid, said insert device adapted for turning an intake air stream from an air intake passageway, said passageway having a center with an air stream directed inwardly from a periphery towards the center, to said annular downwardly flowing mixing passageway, said insert device comprising:

(a) a first end, said first end adapted to be operably located concentrically with said annular downwardly flowing mixing passageway;



(b) a second end opposite said first end, said first and second ends having a central axis extending therebetween, said second end having a center and an upper wall extending outwardly therefrom;

(c) a peripheral wall of diminishing outside diameter beginning circumferentially at a point spaced outwardly from the center of said second end and adjacent to said upper wall, and extending smoothly to a point of minimum diameter towards the said first end;

(d) wherein said air intake passageway and said annular downwardly flowing mixing passageway are arranged so that air flows inward toward said peripheral wall of said insert device and then is turned in a smooth transition along said peripheral wall to a downward direction adjacent said first end of said insert device, and thence inward toward said annular downwardly flowing mixing passageway.

5,549,086

SLIDING CONTACT-MAKING STRUCTURES IN INTERNAL COMBUSTION ENGINE

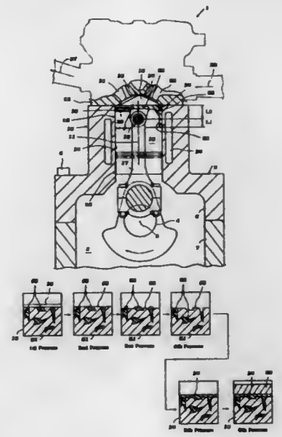
Toshikazu Ozawa; Chizuko Imai, and Hiromitsu Matsumoto, all of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed May 26, 1995, Ser. No. 451,998

Claims priority, application Japan, Jun. 30, 1994, 6-173624

Int. Cl.[6] C25D *7/04*;*5/02*

U.S. Cl. 123—193.6 **30 Claims**



1. Sliding contact-making structures in an internal combustion engine, comprising:

a cylinder unit having an inner plating coating containing a dispersoid substance; and

a piston provided with at least one piston ring, fitted into the inside of said cylinder in the axial direction so as to freely slide upon the inside surface thereof, said piston ring having a surface in sliding contact with said inside surface, said piston ring sliding surface covered with a vapor deposition layer.

5,549,087

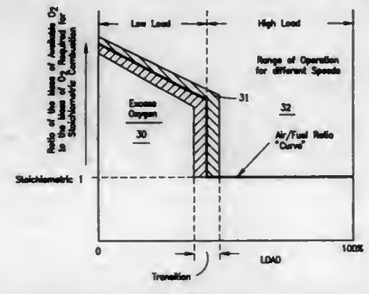
COMBINED CYCLE ENGINE

Charles L. Gray, Jr., Pinckney, and Karl H. Hellman, Ann Arbor, both of Mich., assignors to The United States of America as represented by the Administrator of the U.S. Environmental Protection Agency, Washington, D.C.

Continuation-in-part of Ser. No. 432,423, Apr. 27, 1995. This application Oct. 11, 1995, Ser. No. 540,770

Int. Cl.[6] F02F *1/00*

U.S. Cl. 123—254 **16 Claims**



1. A method of operation of an internal combustion engine, having a combustion chamber associated with each of a plurality of piston cylinders, to minimize NOx emission in exhaust gas, said method comprising:

detecting load on the vehicle engine as a low load or a high load;

responsive to detection of a low load, admitting a first quantity of air into the combustion chamber during an intake stroke and starting injection of a first quantity of fuel, during a compression stroke and adjacent top dead center, to form a first, lean combustion mixture wherein the first quantity of air is substantially in excess of stoichiometry;

igniting said lean combustion mixture;

responsive to detection of a high load, admitting a second quantity of air into the combustion chamber during an intake stroke and starting injection of a second quantity of fuel significantly earlier, relative to top dead center in the compression stroke, than start of injection of the first quantity of fuel, said second quantities of air and fuel being controlled to provide a second, substantially stoichiometric combustion mixture; and

igniting said substantially stoichiometric combustion mixture.

5,549,088

INDUCTION SYSTEM FOR ENGINE

Yoshiharu Isaka, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

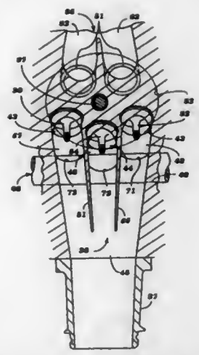
Continuation-in-part of Ser. No. 834,604, Feb. 12, 1992, Pat. No. 5,359,972. This application Jan. 14, 1994, Ser. No. 182,798

Claims priority, application Japan, Feb. 21, 1991, 3-047436; Apr. 8, 1991, 3-101789; Apr. 15, 1991, 3-111182; Jun. 28, 1991, 3-185400; Aug. 5, 1991, 3-218015; Aug. 30, 1991, 3-247018; Jan. 14, 1993, 5-005199

Int. Cl.[6] F02B *31/00*

U.S. Cl. 123—308 **7 Claims**

1. An induction system for an internal combustion engine comprising a cylinder block having a cylinder bore, a piston reciprocating in said cylinder bore, a cylinder head affixed to said cylinder block in closing said cylinder bore to define with said piston and said cylinder bore a combustion chamber, at least three intake valve seats formed in said cylinder head and forming three intake ports serving said combustion chamber, poppet valves associated with said intake valve seats and supported for reciprocation by said cylinder head for opening and closing said intake ports, induction passage means terminating at said intake ports for supplying an induction charge to said combustion chamber, said intake valve seats and said induction passage means being configured so as to direct the charge entering said combustion chamber in a generally axial direction and being substantially unrestricted, and a single control valve means supported into said cylinder head and movable in said induction passage means between a first position wherein the flow into the combustion chamber is substantially unrestricted and a second position wherein the flow into said combustion chamber is redirected to generated a tumble action within the combustion chamber.



5,549,089

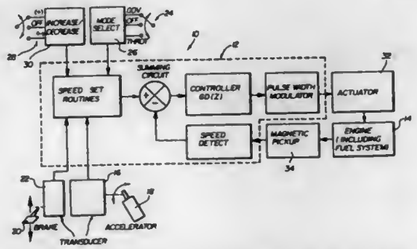
ENGINE MAXIMUM SPEED LIMITER

Wayne A. Snell, Waterford, and Alan R. Fillman, Racine, both of Wis., assignors to Textron Inc., Providence, R.I.

Filed Aug. 8, 1995, Ser. No. 512,538

Int. Cl.[6] F02D *41/02*

U.S. Cl. 123—352 **11 Claims**



1. In an engine speed control apparatus of the type having governor means responsive to predetermined control input signals for controlling engine speed; accelerator sensor means for producing an accelerator control input signal corresponding to the position of an accelerator; mode selector means for selecting one of a governor mode and a throttle mode; mode signaling means, for producing one of a governor mode control input signal and a throttle mode control input signal corresponding to the mode selected by said mode selector means; and with said governor means being responsive to said governor mode control input signal for permitting the selection of an upper limit of engine speed within a predetermined range of speeds and thereafter for controlling the engine speed to maintain said engine at said upper limit when said accelerator control input signal corresponds to a maximum position of an accelerator; and with said governor means being responsive to said throttle mode control input signal for permitting the selection of a lower limit of engine speed within a predetermined range and for thereafter controlling the engine speed to maintain said engine at said lower limit of engine speed when said accelerator control input signal corresponds to a minimum position of an accelerator, the addition comprising a switch means operatively connected with said governor means for limiting the upper limit of the governor mode control input signal when said accelerator control input signal corresponds to a previously set said engine speed upper limit.

5,549,090

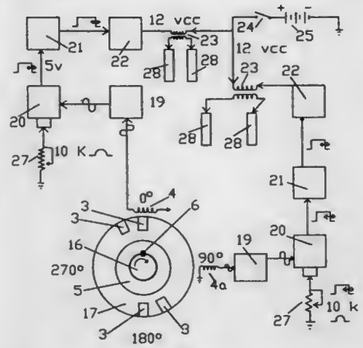
ELECTRONIC IGNITION SYSTEM FOR COMBUSTION ENGINES

David H. Blount, 6728 Del Cerro Blvd., San Diego, Calif. 92120, and James O. Blount, 5012 Lawson Ave., Gulfport, Miss. 39501

Continuation-in-part of Ser. No. 091,258, Jul. 15, 1993, Pat. No. 5,433,176, which is a division of Ser. No. 956,269, Oct. 5, 1992, Pat. No. 5,301,637, which is a division of Ser. No. 560,868, Jul. 31, 1990, Pat. No. 5,152,257. This application Dec. 2, 1994, Ser. No. 348,320

Int. Cl.[6] F22D *1/00*

U.S. Cl. 123—414 **1 Claim**



1. An electronic ignition system for combustion engines for detecting the engine's shaft angle on two and four cycle combustion engines, a detecting disk coaxially connected to an end of said engine's shaft and provided with a plurality of first permanent magnets disposed at angular intervals corresponding to each cylinder group, and second plurality of permanent magnets disposed at angular intervals on the said disk located a few degrees away from the said first permanent magnets and timed for a second firing in each cylinder group, a sensor pickup for detecting said permanent magnets and for generating first and second pulse signals for each cylinder group, and generating a timing difference for each said cylinder group and a second firing timing difference for each said cylinder group, and improvement of the system comprising:

a waveform shaping circuit responsive to said first pulse signals then responsive to second pulse signals for generating pulse signals occurring from said first and second permanent magnets;

discriminating means responsive to said first and second permanent magent's signals for determining an ignition timing for accurate control of firing cylinders.

5,549,091

4-CYCLE ENGINE AND MAGNETIC SENSOR

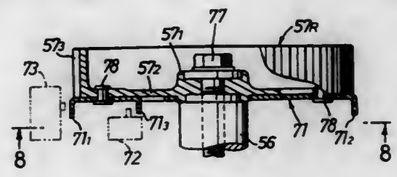
Masaki Tsunoda; Shigeaki Kuwabara, and Sadafumi Shidara, All of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 127,553, Sep. 28, 1993, Pat. No. 5,438,963. This application May 22, 1995, Ser. No. 446,519

Claims priority, application Japan, Sep. 30, 1992, 4-262583; Sep. 30, 1992, 4-262587

Int. Cl.[6] F02D *41/02*; F02P *7/067*

U.S. Cl. 123—476 **12 Claims**



1. A 4-cycle engine comprising:

a magnetic detection member mounted on a non-magnetic cam pulley which is rotated in operative association with a crank pulley, for detecting a plurality of detection portions formed on said magnetic detection member by coils mounted on a cylinder head,

wherein said magnetic detection member is integrally formed with said plurality of detection portions for different uses in such a manner that distances from the center of rotation of the cam pulley to the plurality of detection portions are different, and wherein said coils are separately mounted in correspondence to said detection portions.

5,549,092

FUEL METERING CONTROL SYSTEM IN INTERNAL COMBUSTION ENGINE

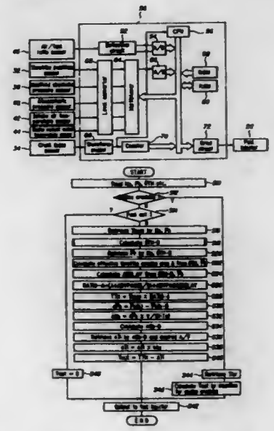
Yusuke Hasegawa; Isao Komoriya; Shusuke Akazaki; Hidetaka Maki, and Satoru Abe, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 27, 1995, Ser. No. 507,974

Claims priority, application Japan, Jul. 29, 1994, 6-197237

Int. Cl.[6] F02D *41/10;41/18*

U.S. Cl. 123—478 **14 Claims**



1. A system for controlling fuel metering in an internal combustion engine, including:

VOL 1189 ISS 4 AG 27 1996 UMI

engine operating condition detecting means for detecting parameters indicating an engine operating condition at least including an engine speed (Ne), a manifold pressure (Pb) and a throttle valve opening (θTH);

fuel injection quantity obtaining means for obtaining a quantity of fuel injection (Timap) in accordance with a predetermined characteristic at least based on the engine speed (Ne) and the manifold pressure (Pb);

first effective throttle opening area determining means for determining an effective throttle opening area (A) at least based on the throttle valve opening (θTH) and the manifold pressure (Pb);

second effective throttle opening area determining means for determining a value (ADELAY) indicative of an n-th order lag of the effective throttle opening area (A); and

fuel injection quantity determining means for determining a quantity of fuel injection (Tout) by multiplying the quantity of fuel injection (Timap) by a ratio between the effective throttle opening area (A) and the value (ADELAY) as

$$Tout = Timap \times A/ADELAY$$

wherein the improvement comprises:

said second effective throttle opening area determining means determines the value (ADELAY) using a time constant that varies with the engine speed (Ne).

5,549,093

TRACTION CONTROL FOR AUTOMOTIVE VEHICLE

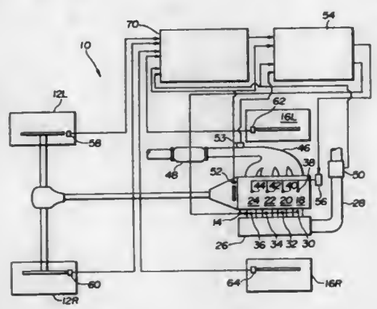
Masamichi Imamura, Atsugi City, Japan, assignor to Unisia Jecs Corporation, Atsugi City, Japan

Filed Dec. 28, 1994, Ser. No. 365,146

Claims priority, application Japan, Dec. 28, 1993, 5-070531 U

Int. Cl.[6] F02D *41/04;17/02;* **B60K** *28/16*

U.S. Cl. 123—481 **11 Claims**



1. A method of a traction control for an automotive vehicle having a multi-cylinder internal combustion engine, a pair of driving wheels driven by the engine, and a pair of non-driving wheels, wherein the engine shifts to effect a split cylinder operation in response to an occurrence of a wheel slip of the driving wheels, and wherein a first mixture on which the engine operates is subject to mixture enrichment as a second mixture, the method comprising the step of:

disabling each of the engine cylinders at intervals during the split cylinder operation wherein heat is distributed evenly over the entire engine cylinders; and

effecting the split cylinder operation on said first mixture which is free from the mixture enrichment.

5,549,094

FUEL VAPOR CONTROL FOR INTERNAL COMBUSTION ENGINE

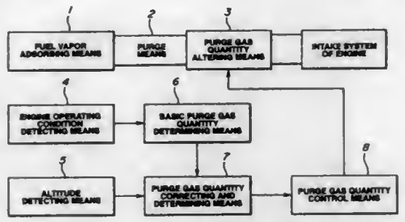
Naoki Tomisawa, Atsugi, Japan, assignor to Unisia Jecs Corporation, Atsugi, Japan

Filed Feb. 7, 1995, Ser. No. 384,831

Claims priority, application Japan, Feb. 9, 1994, 6-015392

Int. Cl.[6] F02M *25/08*

U.S. Cl. 123—520 **4 Claims**



1. A fuel vapor control system for an internal combustion engine, comprising:

fuel vapor adsorbing means for adsorbing fuel vapor produced in a fuel supply system of the engine;

purge means for purging fuel vapor from said fuel vapor adsorbing means and supplying it together with air to an intake system of the engine;

purge gas quantity altering means for altering a quantity of purge gas purged from said fuel vapor adsorbing means and supplied to the intake system of the engine by said purge means;

engine operating condition detecting means for detecting an operating condition of the engine;

basic purge gas quantity determining means for determining a basic purge gas quantity based on the engine operating condition detected by said engine operating condition detecting means;

altitude detecting means for detecting an altitude at which the engine is located and producing a signal representative thereof;

purge gas quantity correcting and determining means for correcting said basic purge gas quantity determined by said basic purge gas quantity determining means, in response to the signal from said altitude detecting means and determining a conclusive purge gas quantity; and

purge gas quantity control means for controlling said purge gas quantity altering means based on said conclusive purge gas quantity,

wherein said altitude detecting means comprises engine speed detecting means for detecting an engine speed, opening area detecting means for detecting an opening area of the intake system controlled by an intake air flow rate control means, intake air flow rate detecting means for detecting a flow rate of intake air, basic fuel supply quantity determining means for determining a determined basic fuel supply quantity depending upon detected engine speed and detected opening area, basic fuel supply quantity calculating means for calculating a calculated basic fuel supply quantity depending upon the detected engine speed and the detected flow rate of intake air, and means for estimating said altitude from a result of comparison between said determined basic fuel supply quantity and said calculated basic fuel supply quantity.

5,549,095

POWER TRAIN HAVING SUPERCHARGED ENGINE

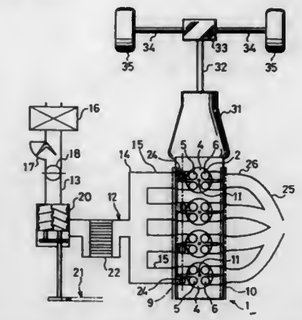
Tsuyoshi Goto, Hiroshima, and Hiroyuki Sugimoto, Hiroshima-ken, both of, Japan, assignors to Mazda Motor Corporation, Hiroshima-ken, Japan

Filed Sep. 30, 1994, Ser. No. 312,945

Claims priority, application Japan, Sep. 30, 1993, 5-245057; Jul. 30, 1994, 6-197400

Int. Cl.[6] F02B *29/08;* **F02D** *13/02;23/00*

U.S. Cl. 123—559.1 **26 Claims**



1. In a power train including an engine, which is equipped with an internal compression type of a mechanical supercharger driven by said engine and an intercooler disposed in an intake line, and a power transfer line, including a transmission operationally connected to said engine, the improvement comprising:

said engine (1) having a maximum output provided according to a maximum volume of supercharge of said mechanical supercharger, (2) including an intake valve closing at a timing retarded more than 65 degrees of a crank angle after bottom dead center on an intake stroke, (3) having a maximum speed for said maximum output of less than 6,000 rpm, and (4) having a geometric compression ratio greater than 8.5; and

said power transfer line having an overall reduction ratio between 2.1 and 2.8 for a highest gear of said transmission.

5,549,096

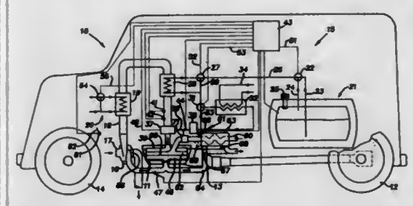
LOAD CONTROL OF A SPARE IGNITED ENGINE WITHOUT THROTTLING AND METHOD OF OPERATION

Paul F. Swenson, Shaker Heights, Ohio, and John W. Bjerklie, Upper St. Clair, Pa., assignors to Consolidated Natural Gas Service Company, Inc., Pittsburgh, Pa.

Filed Jun. 8, 1995, Ser. No. 488,740

Int. Cl.[6] F02D *23/00*

U.S. Cl. 123—564 **22 Claims**



1. A power plant for a variable load application comprising an internal combustion multi-cylinder engine, a fuel tank connected to supply fuel to the engine, first and second intake manifolds for supplying charge air to the engine, the first manifold supplying relatively high density air and the second manifold supplying relatively low density air and control means to determine which of said manifolds feeds which of said cylinders of the engine, the control means being arranged to feed a majority of cylinders exclusively from the first manifold under conditions of relatively high load and to feed a majority of the cylinders exclusively from the second manifold under relatively light loads and to feed a limited number of the cylinders exclusively from the first manifold and a limited number of the cylinders exclusively from the second manifold during moderate loads whereby the power output of the engine is regulated without substantial throttling losses at low and moderate power levels.

5,549,097

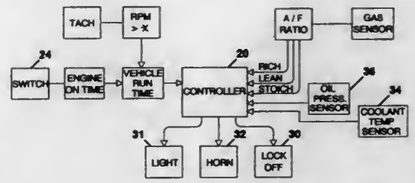
VEHICULAR FUEL CONTROL SYSTEM AND METHOD

Spencer M. Nimberger, Houston, Tex., assignor to PGI International, Ltd., Houston, Tex.

Filed May 31, 1995, Ser. No. 456,049

Int. Cl.[6] F02D *41/22*

U.S. Cl. 123—690 **35 Claims**



1. A system for controlling the operation of an engine powering a vehicle, the vehicle carrying a fuel supply to power the engine while discharging engine exhaust in an exhaust stream, the system comprising:

a gas sensor mounted on the vehicle for sensing concentration of a gas in the exhaust stream, the gas sensor providing a fuel rich signal indicative of excessive fuel operation of the engine;

a controller mounted on the vehicle for receiving signals from the gas sensor, the controller determining unacceptable engine operation as a function of the period of duration of the fuel rich signal, and for outputting a service required signal and a fuel shutoff signal in response to the unacceptable engine determination;

a warning unit for alerting a vehicle operator in response to the service required signal; and

a fuel shutoff device responsive to the fuel shutoff signal for automatically terminating the fuel supply to the engine;

the controller being mounted on the fuel shutoff device and sealingly encased to prevent tampering.

5,549,098

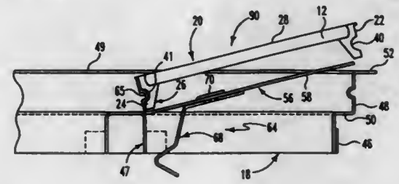
GLASS RANGE TOP-SEAL SYSTEM

Michael E. Bales, New Palestine, Ind.; Paul D. Noel, Troy, Ohio, and Steve M. Schatz, New Palestine, Ind., assignors to Maytag Corporation, Newton, Iowa

Filed Feb. 16, 1994, Ser. No. 197,233

Int. Cl.[6] F24C *15/10*

U.S. Cl. 126—211 **24 Claims**



1. Apparatus for sealing engagement of a glass range top panel with a mounting framework, comprising:

a glass range top panel,

an elastomeric band including a panel-receiving groove, coupled to the glass range top panel, and

a carrier coupled to the elastomeric band for resiliently and sealingly retaining the glass range top panel in the mounting framework.

5,549,099

INJECTION AND REGULATION DEVICE FOR ATMOSPHERIC GAS BURNERS FOR HEATING APPLIANCE, IN PARTICULAR OF THE INFRA-RED TYPE

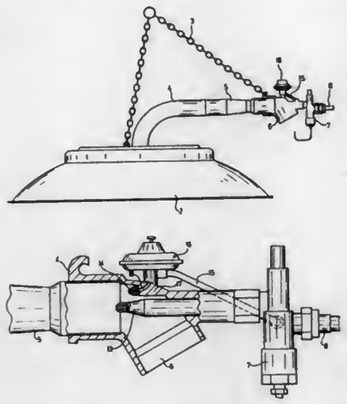
Joseph Sirand, Laplume, France, assignor to Centre D'Etude et de Realisations D'Equipment et de Materiel, France

Filed Jul. 22, 1994, Ser. No. 279,334

Claims priority, application France, Jul. 23, 1993, 93 09379

Int. Cl.[6] F24C *3/04*

U.S. Cl. 126—92 B **6 Claims**



1. A combustion gas regulator-injector device for injecting gas to and regulating the power of a gas powered infrared heating appliance between a minimum idle power level and a maximum nominal power level and including a conduit for supplying a combustion gas under variable pressure, an air intake duct including an air intake vent and a Venturi member, said device further comprising gas injection means including a first stage injector and at least one second stage injector, each of said injectors having injector nozzles and connected to said gas supply means; said first and second stage injectors being spaced along said air intake duct and oriented so that gas flow therefrom is directed at the reduced pressure area of said Venturi member, said conduit supplying a quantity of gas to said first stage injector sufficient to maintain said minimum idle power level, and supplying a quantity of gas to said second stage injector and control means for modulating the supply pressure to said second stage injector for regulating the power output of said appliance according to a desired power level.

5,549,100

PLATE OF GLASS CERAMIC AS COMPONENT OF A COOKING APPLIANCE

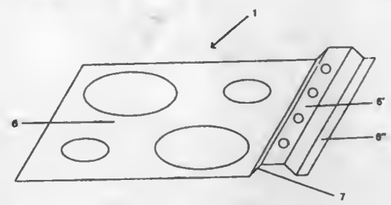
Thomas Heisner, Mainz; Jürgen Naubik, Eich, and Karl-Heinz Juras, Mainz, all of, Germany, assignors to Schott Glaswerke, Mainz, Germany

Filed Sep. 29, 1994, Ser. No. 314,743

Claims priority, application Germany, Sep. 30, 1993, 43 33 334.6

Int. Cl.[6] F24C *3/00*

U.S. Cl. 126—39J **21 Claims**



1. A one-piece glass ceramic plate suitable for use as component of a cooking appliance, said plate comprising:

a main plane and at least one region of said one-piece plate which deviates at an angle, upward or downward, from said main plate of said plate,

wherein one of said at least one regions which deviates at an angle from said main plane of said plate forms a control panel having openings for controls and displays, and

wherein at least one region of said one-piece plate deviates upward from said main plane of said plate and at least one other region of said one-piece plate deviates downward from said main plane of said plate.

5,549,101

DOSAGE INHALATOR WITH INDICATING/INTERRUPTING MEANS

Eva Ann-Christin Trofast, Lund; Kjell I. L. Wetterlin, Södra Sandby, both of, Sweden, and Risto K. V. Virtanen, Nurmijärvi, Finland, assignors to Astra Aktiebolag, Sodertalje, Sweden

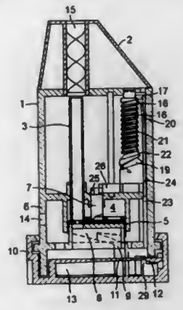
PCT No. PCT/SE93/00389, § 371 Date Nov. 14, 1994, § 102(e) Date Nov. 14, 1994, PCT Pub. No. WO93/21980, PCT Pub. Date Nov. 11, 1993

PCT Filed May 4, 1993, Ser. No. 331,589

Claims priority, application Sweden, May 5, 1992, 01411

Int. Cl.[6] A61M *15/00*

U.S. Cl. 128—203.15 **17 Claims**



1. A dosage inhalator for dispensing to a patient a pharmacologically active compound suspended in a fluid comprising:

a housing,

a nozzle extending from the housing and defining an outlet positioned for inhalation of the pharmacologically active compound by the patient and an inlet within said housing,

storage means within said housing, for storing multiple doses of said active compound to be dispensed,

a conduit in fluid communication between a conduit outlet at said inlet of said nozzle and conduit inlet at a region within said housing adjacent said storage chamber,

carrying means having portions for carrying predetermined and reproducible unit doses of said active compound from said storage means to said conduit inlet, said carrying means being mounted for intermittent movement between said conduit inlet and said storage means to deliver one of said portions to said conduit whereby said unit dose of said active compound located at said portion can be dispensed through the conduit,

maneuvering means for actuating said intermittent movement of said carrying means, said maneuvering means being positioned to be movable between first and second predetermined positions by a user of the inhalator, and

means for disrupting the movement of said maneuvering means upon exhaustion of said active compound in said storage means, said means for disrupting being operably positioned with respect to said maneuvering means,

wherein said carrying means is actuated by a ratchet mechanism including a spring-biased pawl, said maneuvering means includes a lever that is reciprocally displaceable between two distinct positions, and the movement of said ratchet mechanism is limited by said displacement of said lever.

5,549,102

NEBULIZER, ESPECIALLY FOR APPLICATION IN DEVICES FOR INHALATION THERAPY

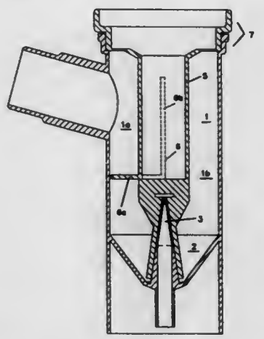
Andreas Lintl, Starnberg, and Martin Knoch, Berg, both of, Germany, assignors to Paul Ritzau Pari-Werk GmbH, Starnberg, Germany

Continuation of Ser. No. 948,485, Sep. 22, 1992, abandoned. This application Nov. 1, 1994, Ser. No. 333,612

Claims priority, application European Pat. Off., Nov. 7, 1992, 91118994

Int. Cl.[6] A61M *11/00*

U.S. Cl. 128—200.21 **12 Claims**



1. A nebulizer for use in inhalation therapy, comprising:

a substantially cylindrical nebulizing chamber for containing a liquid mist, said nebulizing chamber having a longitudinal axis and a wall;

a suction pipe for withdrawing the liquid mist from the nebulizing chamber;

a substantially cylindrical air supply chamber concentrically arranged with said nebulizing chamber to supply ambient air to said nebulizing chamber, said air supply chamber having a wall;

a nebulizing chamber divider extending outwardly from the wall of the air supply chamber substantially to the wall of the nebulizing chamber, said divider comprising a substantially planar first portion which is oriented with its major axis substantially perpendicular to the longitudinal axis of the nebulizing chamber, said first portion forming a baffle plate, an opening being defined to permit the passage of liquid mist from the nebulizing chamber past the baffle plate;

said divider dividing the nebulizing chamber into a first part in the vicinity of the suction pipe and a second part, wherein, when the liquid mist is withdrawn through the suction pipe, air flow generated in the nebulizing chamber flows from the second part into the first part and overly large liquid droplets in the mist are settled out on the baffle plate.

5,549,103

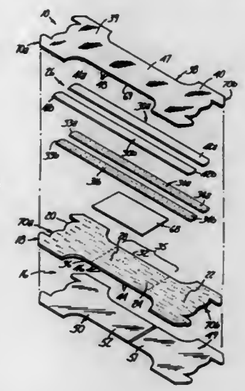
NASAL DILATOR HAVING AN ADHESIVE VOID TO ALLOW RELATIVE MOVEMENT

Bruce C. Johnson, St. Paul, Minn., assignor to Creative Integration & Design, Inc., St. Paul, Minn.

Continuation of Ser. No. 50,557, Apr. 20, 1993, abandoned, and a continuation-in-part of Ser. No. 183,916, Jan. 19, 1994, which is a continuation of Ser. No. 48,589, Apr. 16, 1993, abandoned, which is a continuation of Ser. No. 884,626, May 15, 1992, abandoned, which is a continuation of Ser. No. 712,508, Jun. 10, 1991, abandoned, said Ser. No. 50,557is a continuation-in-part of Ser. No. 48,589. This application Sep. 30, 1994, Ser. No. 316,636

Int. Cl.[6] A61F *5/08;5/56;* A61M *15/08;* A62B *7/00*

U.S. Cl. 128—200.24 **13 Claims**



1. A nasal dilator for preventing outer wall tissue of nasal passages of a nose from drawing in during breathing, comprising:

a truss member including:

a first end region, a second end region and an intermediate segment coupling the first end region to the second end region;

engagement means adhered to the first and second end regions and the intermediate segment, the engagement means securing the first end region to the outer wall tissue of a first nasal passage, the second end region to the outer wall tissue of a second nasal passage and the intermediate segment to a portion of a nose located between the first and second nasal passages;

resilient means extending along the first end region, second end region and the intermediate segment, the resilient means acting to stabilize the outer wall tissue and thereby prevent the outer wall tissue of the first and second nasal passages from drawing in during breathing; and

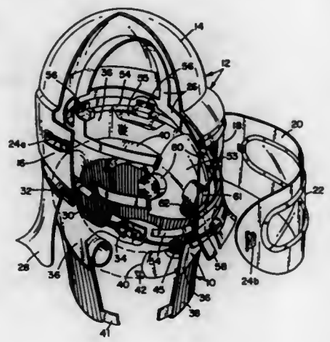
means for permitting the resilient means, at least in part, to separate from at least part of the intermediate region to redirect forces imparted to the truss member.

5,549,104

AIR DELIVERY AND EXHALATION EXHAUST SYSTEM FOR PROTECTIVE HELMETS

Kevin E. Crump, Winchester; Jimmie D. Gard, Sadieville, and Richard A. Oleson, Lexington, all of Ky., assignors to E. D. Bullard Company, Cynthiana, Ky.

Filed Sep. 16, 1994, Ser. No. 306,932
Int. Cl.[6] A62B *7/10*
U.S. Cl. 128—201.25 **37 Claims**



1. An air delivery and exhalation exhaust system for use with a protective helmet comprising

a respirator face mask having an air inlet connector and exhalation exhaust structure and being wearable by a person wearing a protective helmet,

means attachable to said protective helmet and wearable about said person's neck for providing, in cooperation with said protective helmet, a barrier to the introduction of ambient atmosphere containing particulate matter into said protective helmet, face mask and the respiratory system of said person,

means for exhausting air exhaled by said person and expelled from said face mask through said barrier providing means to ambient atmosphere, and

means located within barrier providing means for delivering breathable air to said face mask, said delivering means being accessible to a source of breathable air located external to said barrier providing means.

5,549,105

SUBASSEMBLY OF NETWORK OF GAS CONDUITS AND ANESTHETIC APPARATUS COMPRISING SUCH A SUBASSEMBLY

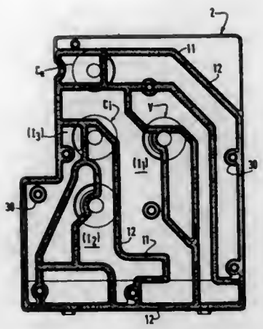
Nicolas Bloch, Paris; Yvon Guyomard, Sannois, and Michel Jounenc, Les Ulis, all of, France, assignors to L'air Liquide, Societe Anonyme Pour L'etude Et L'exploitation Des Procedes Georges Claude, Paris Cedex, France

Filed Sep. 9, 1994, Ser. No. 303,503
Claims priority, application France, Sep. 9, 1993, 93 10702
Int. Cl.[6] A61M *16/00*
U.S. Cl. 128—203.12 **9 Claims**

1. A gas circuit manifold comprising:

a body having a first face with a pattern of outwardly extending ribs delimiting at least two gas conduit portions;

a cover having a first face with a pattern of grooves mating with the pattern of ribs of the body; and



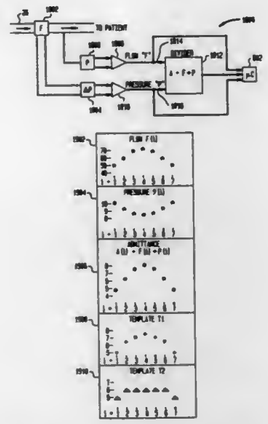
a continuous seal deposit arranged in the grooves to cooperate in sealing contact engagement with the ribs when the body and the cover are assembled together, said seal deposit comprising injection molded elastomeric sealing material.

5,549,106

INSPIRATORY AIRWAY PRESSURE SYSTEM USING CONSTANT PRESSURE AND MEASURING FLOW SIGNALS TO DETERMINE AIRWAY PATENCY

Roger A. Gruenke, and Russell L. Trimble, both of Overland Park, Kans., assignors to Puritan-Bennett Corporation, Lenexa, Kans.

Continuation of Ser. No. 846,133, Apr. 9, 1992, Pat. No. 5,259,373, which is a continuation of Ser. No. 632,327, Dec. 21, 1990, Pat. No. 5,134,995, which is a continuation-in-part of Ser. No. 518,001, May 2, 1990, abandoned, which is a continuation-in-part of Ser. No. 513,757, Apr. 24, 1990, abandoned, which is a continuation-in-part of Ser. No. 354,143, May 19, 1989, abandoned. This application Jul. 21, 1993, Ser. No. 95,652
Int. Cl.[6] A61M *16/00;* **A62B** *7/04;* **F16K** *31/02;31/26*
U.S. Cl. 128—204.23 **22 Claims**



1. An apparatus for determining the airway patency of a patient exhibiting a breath cycle having inhalation and exhalation phases, said apparatus comprising:

means for supplying a breathable gas from a source thereof under a controllable pressure to at least a portion of the patient's airway, said pressure being maintained substantially constant during the inhalation phase of a breath cycle;

means for sensing patient respiration flow and for producing flow signals representative of patient respiration flow;

signal processing means for receiving said flow signals and for determining patient airway patency values from said flow signals in view of said pressure of breathable gas delivered by said means for supplying; and

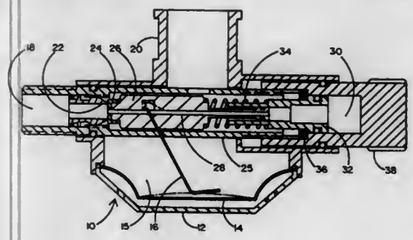
means for adjusting said pressure in accordance with said patient airway patency values.

5,549,107

SECOND STAGE SCUBA DIVING REGULATOR

Dean R. Garraffe, and Douglas J. Toth, both of Huntington Beach, Calif., assignors to Under Seas Industries, Inc., Rancho Dominiguez, Calif.

Filed Aug. 8, 1995, Ser. No. 512,448
Int. Cl.[6] A62B *7/04;* **A61M** *16/20;* **F16K** *31/00*
U.S. Cl. 128—204.26 **10 Claims**



1. A pneumatically activated second stage scuba diving regulator having a flow demand valve responsive to inhalation by a diver creating a partial vacuum within a chamber of the regulator to withdraw a balanced poppet, having a seal, from the edge of an orifice in fluid communication with a source of pressurized air to fill said regulator with the air; the regulator comprising:

an air barrel having a first end with an inlet connected to said air source and a second end with a threaded, externally adjustable knob connected thereto;

said poppet contained within said air barrel and moveable along the longitudinal axis of said air barrel to either compress said seal against said orifice edge or to withdraw said seal from said orifice edge;

a spring positioned around said poppet in coaxial engagement therewith and a slidable spring seat balance device receiving said poppet opposite said seal and positioned for forming a balance chamber within said air barrel adjacent said adjustable knob and for selectively compressing said spring in response to air pressure within said balance chamber; and

an air channel extending through said poppet and said balance device for feeding air from said inlet to said balance chamber to compress said spring facing said seal against said orifice.

5,549,108

CARDIAC MAPPING AND ABLATION SYSTEMS

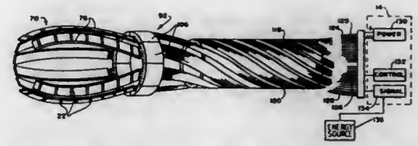
Stuart D. Edwards, Los Altos; Thomas F. Kordis, Sunnyvale, and David K. Swanson, San Jose, all of Calif., assignors to EP Technologies, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 951,729, Sep. 25, 1992, abandoned. This application Jun. 1, 1994, Ser. No. 252,060
Int. Cl.[6] A61B *5/0402;* **A61N** *1/05*
U.S. Cl. 128—642 **11 Claims**

1. A multiple electrode system for use in intraventricular cardiac diagnosis and treatment comprising

an array of support elements, each support element carrying at least two electrodes and having a proximal end,

a signal wire electrically coupled to each electrode on each support element,



an annular base member carrying the proximal ends of the support elements in a circumferentially spaced relationship about the periphery of the annular base member,

an array of switching elements circumferentially spaced about the periphery of the base member, with one switching element associated with each support element, the signal wires of each support element being electrically coupled to its associated switching element,

each switching element including an I/0 buss comprising an input power (+) contact, an input power (–) contact, an output signal contact, and a control contact,

an electrical conduit comprising a power (+) line, a power (–) line, an input control line, and a signal output line for each support element, each line having a distal end and a proximal end,

a ferrule concentrically carried within the annular base member, the ferrule including an array of electrical contacts interconnecting the distal ends of the power (+) line, the power (–) line, the input control line, and the signal output line for each support element respectively to the input power (+) contact, the input power (–) contact, the control contact, and the output signal contact of the switching element associated with that support element, and

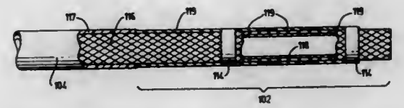
a controller adapted to be coupled to a power source, a signal generator, and a signal processor, the controller further being electrically coupled to the proximal ends of the power(+) and the power (–) lines for each support element, the proximal end of the input control line for each support element, and the proximal end of the output signal line for each support element.

5,549,109

SHEATHED MULTIPOLAR CATHETER AND MULTIPOLAR GUIDEWIRE FOR SENSING CARDIAC ELECTRICAL ACTIVITY

Gene Samson, Milpitas; Gabriel B. Vegh, Alamo; Duane Dickens, Fremont, and Herbert G. Rettke, Mountain View, all of Calif., assignors to Target Therapeutics, Inc., Fremont, Calif.

Continuation of Ser. No. 130,635, Oct. 1, 1993, abandoned. This application Dec. 8, 1994, Ser. No. 353,529
Int. Cl.[6] A61B *5/042*
U.S. Cl. 128—642 **23 Claims**



1. A multipolar sensing catheter having a distal end, a proximal end and a longitudinal axis comprising:

a tubular shaft having an outer surface and an inner lumen extending therein and formed at least in part by a plurality of filaments, at least one of which is an insulated electrical conductor, each such insulated electrical conductor extending from a distal portion of the catheter to the proximal end thereof, and a fluoropolymeric sheath comprising tetrafluoroethylene, hexafluoropropylene, and vinylidene fluoride forming at least in part the outer surface of the catheter shaft, and

at least one electrode pair situated in a distal portion of the catheter, each electrode of said at least one electrode pair being electrically connected to a separate insulated electrical conductor.

VOL 1189 ISS 4 AG 27

5,549,110

DEVICE FOR GENERATING SOUND IMPULSES FOR MEDICAL APPLICATIONS

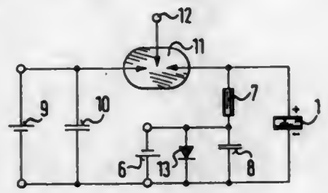
Werner Krauss, Knittlingen; Jan Zwingenberger, Mannheim, and Peter Jaggy, Ötisheim, all of, Germany, assignors to Richard Wolf GmbH, Knittlingen, Germany

Filed Mar. 4, 1994, Ser. No. 206,073

Claims priority, application Germany, Mar. 11, 1993, 43 07 669.6

Int. Cl.[6] A61B *8/00*

U.S. Cl. 128—661.01 **7 Claims**



1. A device for generating sound impulses for medical applications, comprising one or more piezo-ceramic transducer elements (1) formed as electro-acoustic transducers, a first high-voltage source (9) with high-voltage impulses (16, 22, 25) for driving the one or more transducer elements, the sound impulses being generated through directed changes in length of the one or more transducer elements dependent on a given polarization of the one or more transducer elements (1) and dependent on the polarity of the high-voltage impulses, and means for charging the one or more transducer elements (1) with a bias potential (14, 19, 21, 24) before the appearance of the high-voltage impulses (16, 22, 25), the polarity of the bias potential being opposite to the polarity of the high-voltage impulse, the charging means providing the bias potential (14, 21) as a permanent direct-current voltage, over which the high-voltage impulses (16, 22) of a greater absolute value are superimposed.

5,549,111

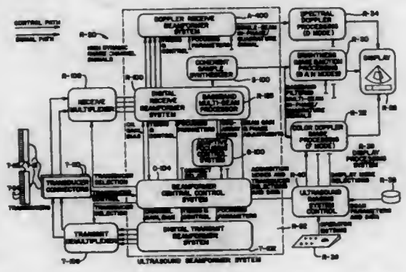
METHOD AND APPARATUS FOR ADJUSTABLE FREQUENCY SCANNING IN ULTRASOUND IMAGING

J. Nelson Wright, Menlo Park; Christopher R. Cole, Cupertino; Albert Gee, Los Altos; Hugh G. Larsen, Los Altos Hills, and Samuel H. Maslak, Woodside, all of Calif., assignors to Acuson Corporation, Mountainview, Calif.

Continuation-in-part of Ser. No. 286,524, Aug. 5, 1994. This application May 2, 1995, Ser. No. 432,868

Int. Cl.[6] A61B *8/00*

U.S. Cl. 128—742 **80 Claims**



1. A method for scanning a field of view with a plurality of ultrasonic transmit beams, at least a first and a second of which traverse different paths through said field of view, comprising the steps of:

modulating baseband waveforms for at least said first and said second of said transmit beams to ultrasonic frequencies, wherein an ultrasonic frequency to which said first transmit beam is modulated is higher than an ultrasonic frequency to which said second transmit beam is modulated; and

for at least said first and second of said transmit beams, exciting each respective transducer in an array of ultrasonic transducers with a respective excitation signal which is responsive to a respective one of said modulated baseband waveforms to produce the transmit beam.

5,549,112

MEDICAL NEEDLE FOR USE IN ULTRASOUND IMAGING AND METHOD OF ENHANCING THE VISIBILITY OF SUCH A NEEDLE TO ULTRASOUND

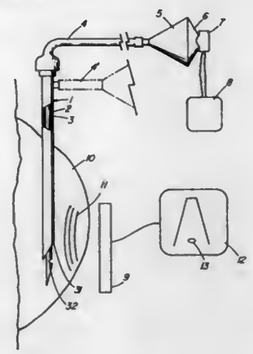
John F. Cockburn, 131 Bastings St., Northcote, Victoria 3070, Australia, and Donald Cockburn, 35 North Avenue, Mt. Merrion, Co. Dublin, Ireland

Filed Mar. 9, 1995, Ser. No. 401,625

Claims priority, application United Kingdom, Mar. 12, 1994, 9404863; Feb. 22, 1995, 9503548

Int. Cl.[6] A61B *8/12*

U.S. Cl. 128—662.05 **31 Claims**



1. A medical apparatus comprising:

a) a tubular needle for insertion into body tissue, said needle comprising a stylet and having a bore in communication with said body tissue at a tip region thereof, and

b) a sub-ultrasonic transducer for generating a longitudinal oscillation of a fluid column within said bore at a sub-ultrasonic frequency, said transducer being substantially mechanically isolated from said needle and said stylet and said oscillation enhancing the visibility of said tip region to Doppler ultrasound imaging.

5,549,113

APPARATUS AND METHOD FOR REMOTE MONITORING OF PHYSIOLOGICAL PARAMETERS

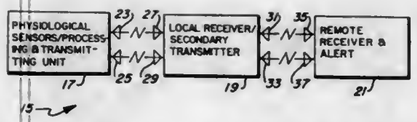
Michael D. Halleck, Northglenn; Donald N. James, Estes Park, and Michael E. Halleck, Longmont, all of Colo., assignors to I Am Fine, Inc., Bethesda, Md.

Continuation of Ser. No. 187,787, Jan. 26, 1994, abandoned, which is a continuation of Ser. No. 973,299, Nov. 9, 1992, abandoned. This application Jan. 30, 1995, Ser. No. 380,259

Int. Cl.[6] A61B *5/08;5/02*

U.S. Cl. 128—671 **31 Claims**

1. Used in association with sensing means for sensing a selected physiological parameter of a subject, an apparatus for enabling remote monitoring at a receiving unit of the selected physiological parameter comprising:



processing means for receiving information indicative of the selected physiological parameter from the sensing means and processing said information to provide output indicative of said information;

first transmitter means for receiving said output from said processing means and providing a first radio frequency transmission for receipt by the receiving unit indicative thereof; and

second transmitter means operable asynchronously and at a different frequency from said first transmitter means for receiving said output from said processing means and providing a second radio frequency transmission for receipt by the receiving unit indicative thereof.

5,549,114

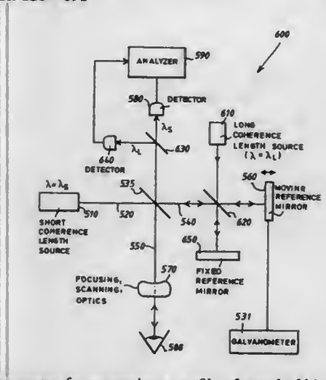
SHORT COHERENCE LENGTH, DOPPLER VELOCIMETRY SYSTEM

Christopher L. Petersen, and Thomas Hellmuth, both of Danville, Calif., assignors to Carl Zeiss, Inc., Thornwood, N.Y.

Division of Ser. No. 325,675, Oct. 19, 1994, Pat. No. 5,501,226. This application Oct. 23, 1995, Ser. No. 546,765

Int. Cl.[6] A61B *5/02*

U.S. Cl. 128—691 **13 Claims**



1. Apparatus for measuring a profile of speed of blood, wherein the speed is parallel or antiparallel to the direction of a sample beam, the profile being across a blood vessel in a biological sample, in particular, in a retinal blood vessel, which apparatus comprises:

a source of a beam of radiation having a first principal wavelength, which beam of radiation is substantially spatially coherent and has a temporal coherence length which is less than 1 picosecond;

means for splitting the beam into the sample beam and a reference beam;

means for reflecting the reference beam which comprises at least one reflective surface;

means for altering an optical path length of the reference beam from the splitting means to a detector means at an alteration velocity, wherein the means for altering comprises means for translating the at least one reflective surface;

an interferometer means which includes a long coherence length radiation source having a second principal wavelength and the at least one reflective surface, the interferometer means producing an interferometer output;

means for directing the sample beam within the biological sample to pass through the blood vessel;

wherein the detector means comprises means: (a) for detecting interferences between reflections of the sample beam from matter in the sample including matter situated across the blood vessel and reflections of the reference beam from the reflecting means; (b) for generating an interference signal; and (c) for detecting the interferometer output and for transmitting an output interferometer signal to analyzer means;

wherein the analyzer means comprises means, in response to the output interferometer signal, for determining the alteration velocity from a central frequency of a frequency spectrum of the output interferometer signal and the second principal wavelength; and

the analyzer means further comprises means for analyzing the interference signal to determine the profile of the speed of the blood from an analysis of frequency spectra of time segments of the interference signal, the alteration velocity in the time segments, and the first principal wavelength.

5,549,115

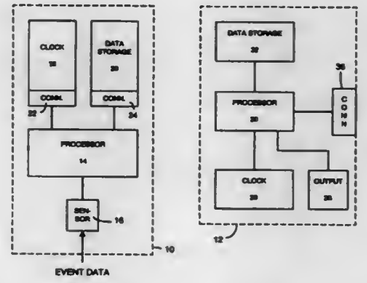
METHOD AND APPARATUS FOR GATHERING EVENT DATA USING A REMOVABLE DATA STORAGE MEDIUM AND CLOCK

Carlton B. Morgan, Bainbridge Island; Clinton Cole, Seattle, and Daniel J. Powers, Issaquah, all of Wash., assignors to Heartstream, Inc., Seattle, Wash.

Filed Sep. 28, 1994, Ser. No. 314,395

Int. Cl.[6] A61B *5/0432*

U.S. Cl. 128—696 **80 Claims**



1. A method for gathering event data using a data gathering instrument having an instrument clock and an instrument data storage medium, the method comprising the following steps:

gathering event data using the data gathering instrument;

storing the event data in the instrument data storage medium;

using the instrument clock to associate time information with the event data;

storing the time information in the instrument data storage medium;

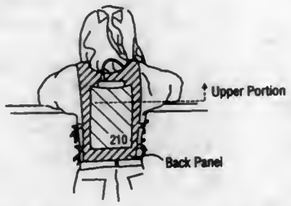
separating the instrument data storage medium from the data gathering instrument;

separating the instrument clock from the data gathering instrument; and

recovering in a main data recovery unit the event data and the time information stored in the instrument data storage medium.

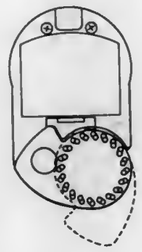
UMI

5,549,116
VEST FOR THE PHYSIOLOGICAL MONITORING OF CHILDREN
Mary Beth Mauer, Katy, Tex., assignor to Texas Children's Hospital, Houston, Tex.
Continuation of Ser. No. 218,658, Mar. 28, 1994, abandoned. This application Aug. 8, 1995, Ser. No. 512,279
Int. Cl.[6] A61B *5/402;* **A41D** *1/4*
U.S. Cl. 128—696 **2 Claims**



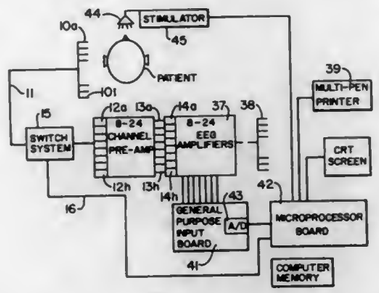
1. A child's vest for carrying a physiological monitoring device, said vest comprising:
(a) a body consisting of an essentially rectangular piece of material forming a front panel and a back panel, said back panel having an upper portion, said body further having a hole centrally located;
(b) a pouch consisting of a plurality of elastic straps for enclosing said physiological monitoring device, said pouch being centrally located in the upper portion of the back panel;
(c) means for securely enclosing said physiological monitoring device in said pouch; and
(d) means for adjustably connecting said front panel to said back panel.

5,549,117
SYSTEM FOR MONITORING AND REPORTING MEDICAL MEASUREMENTS
Christopher A. Tacklind, Palo Alto; Matthew H. Sanders, Los Altos Hills, and Geoffrey B. Waine, Atherton, all of Calif., assignors to Enact Health Management Systems, Mountain View, Calif.
Division of Ser. No. 247,727, May 23, 1994. This application Dec. 22, 1995, Ser. No. 579,062
Int. Cl.[6] A61B *5/08*
U.S. Cl. 128—716 **2 Claims**



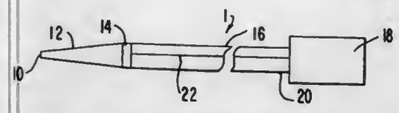
1. A respiratory function sensor comprising:
a monitor housing, having anterior and posterior ends and top and bottom plates, with the posterior end having a posterior edge divided into an arc-segment section and a mouthpiece abutting section, and the bottom plate including a support projection extending beyond said posterior edge and having an axial connecting member attached thereto;
a sensor chamber including a cylindrical chamber part having substantially circular top and bottom surfaces and interior and exterior surfaces, each having a center, and a cylindrical side surface with the side surface having a mouthpiece aperture formed therein and with the chamber having a plurality of air vents formed along a circular path on at least one of said circular surfaces to prevent a formation of back pressure, and with one of said top and bottom surfaces having an axial connector formed at the center of its exterior surface for rotatably coupling with said axial connecting member so that said sensor chamber rotates from an open position to a closed position about an axis of rotation passing through the centers of said surfaces and so that the cylindrical side surface of said sensor chamber abuts the arc-segment section of said posterior edge, and with the top and bottom surfaces having bearing receptor notches formed at the center of the interior surfaces, and with said sensor chamber further including a mouthpiece part having a distal end connected to said mouthpiece aperture and having a proximal end for accepting air flow from a patient and with the proximal end shaped to abut against the mouthpiece abutting section of said posterior edge when the chamber is rotated to the closed position to seal of said mouthpiece; and
a rotor, having a central section with an axis of rotation passing therethrough and having a plurality of rotor blades extending from the central section, with the central section having bearing parts extending therefrom and registered with the bearing receptor notches formed on the interior sides of the top and bottom surfaces of the sensor chamber so that the rotor rotates about the axis of rotation when air flows against said rotor blades.

5,549,118
SIMULTANEOUS TESTING OF TWO MOTOR CAPABILITIES OF A HUMAN SUBJECT
Erwin R. John, Mamaroneck, and Paul D. Easton, Long Island, both of N.Y., assignors to New York University, N.Y.
Filed Sep. 22, 1993, Ser. No. 125,338
Int. Cl.[6] A61B *5/0484*
U.S. Cl. 128—731 **19 Claims**



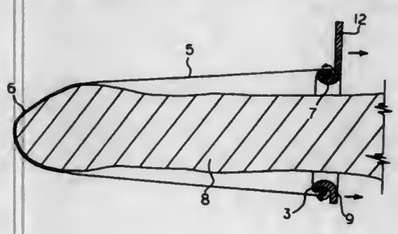
1. An apparatus for testing and analyzing the evoked brain activity and motor responses of a subject to simultaneous stimuli in two different modes, the modes being selected from visual, audio and tactile responses, the apparatus comprising:
a) a first means to present programmed stimuli in a first mode to the subject the stimuli in a first mode having been programmed in advance of the presentation thereof;
b) a second means to simultaneously present programmed stimuli in a second and different mode to the subject, the stimuli in a second mode having been programmed in advance of the presentation thereof;
c) a plurality of EEG (electroencephalograph) sensor adapted to be removably attached to the subject's head for measuring analog brain wave electrical activity;
d) amplification means for amplifying the measured analog brain wave electrical activity;
e) an A/D (analog/digital) converter means to convert the amplified brain wave electrical activity to digital data;
f) a first and a second operator control means, each being adapted to be controlled by the subject in response to the simultaneous stimuli in two modes;
g) a computer means for controlling the first means and second means for simultaneously presenting to the subject independently previously programmed controllable stimuli in two different modes, for measuring the motor response of the subject to the test stimuli, for recording the evoked brain wave digital data of the subject in response to the stimuli, for analyzing the motor responses and evoked brain wave digital data, for comparing the motor responses and evoked brain wave digital data to a data base of normal test results stored in a memory of the computer means, and for producing a visual display of the test results;
wherein the A/D means is a variable gain analog-to-digital conversion means for digitizing the amplified analog brain wave electrical activity and wherein the variable gain of the A/D converter is controlled by the computer means.

5,549,119
VIBRATING TIP CATHETER
Ronald J. Solar, San Diego, Calif., assignor to Cordis Corporation, Miami Lakes, Fla.
Filed Sep. 13, 1994, Ser. No. 305,695
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—772 **10 Claims**



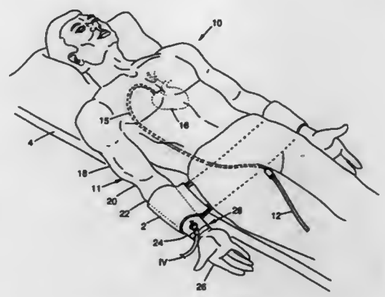
1. A catheter for use in medical applications to cross lesions or stenoses within body cavities or blood vessels wherein the catheter is provided with at least one vibration means to enhance the ability of said catheter to effectively cross the lesions or stenoses, wherein one of said vibration means is located at or near the distal end of the catheter.

5,549,120
APPARATUS FOR APPLYING AN ELASTIC PROTECTIVE SHEATH ON AN ELONGATE BODILY MEMBRANE, AND PROTECTIVE AID ARTICLE HAVING SUCH AN APPARATUS
Lars Persson, Myra 2256, Jäövs; Kjell Karlsson, Läsarvägen 13, Ljusne, and Lise-Lotte Lundgren, Mjölnäsvägen 5, Norrala, all of, Sweden
Filed Nov. 7, 1994, Ser. No. 331,486
Claims priority, application Sweden, May 7, 1992, 9201438
Int. Cl.[6] A61F *6/02;6/04*
U.S. Cl. 128—842 **7 Claims**



1. An apparatus for applying an elastic protective sheath on an elongate bodily member, said sheath having a tubular wall which is open at one end and which is closed or closable at the other end, and in an initial position the tubular wall of the sheath is rolled into an annular elastic configuration, said apparatus comprising:
a substantially annular resilient frame adapted to accommodate said bodily member,
two spaced apart peripheral beads provided on an outside surface of the frame, one of the beads being higher than the other which together define an annular groove on the outside surface of the frame providing a seating for receiving the annular rolled tubular wall portion of the sheath,
a removal means for removing the sheath from the frame once the sheath has been applied to the bodily member including a slit or opening extending from the outside surface to an inside surface separating two end portions of the frame, and enlarged flange members on either end portion of the frame formed integrally on the higher bead to serve as gripping means, each flange member, due to the inherent flexibility of the annular frame, being movable in relation to the other from a first position substantially coplanar with the annular frame to a second position spaced apart transversely of the plane of the annular frame, whereby the peripheral beads are separated, displacing the sheath from the seating.

5,549,121
SURGICAL ARM SUPPORT
Vincent A. Vinci, 20 Willard St., Lodi, N.J. 07644
Filed Jul. 25, 1995, Ser. No. 507,059
Int. Cl.[6] A61F *5/37*
U.S. Cl. 128—878 **8 Claims**



1. An arm support for use in surgical and medical procedures performed on a patient comprising an elongated rectangular strip of flexible fabric long enough to pass laterally beneath the supine body of said patient, having lateral strips of mating fastening means adjacent each end on the upper surface when said support is in use, and two sets of at least two longitudinal strips of mating fastening means positioned on either side of the upper surface of a central portion of said strip where said patient's torso is positioned, so as to mate with said lateral strips when each end of said strip is looped about the patient's arms to support them.

VOL 1189 ISS 4 AG 27 1996 UMI

5,549,122

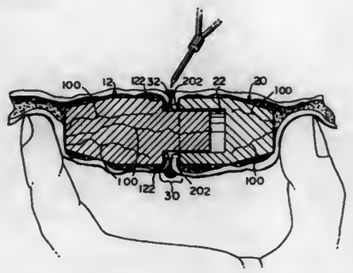
METHODS OF SURGICAL MAMMALIAN VESSEL ANASTOMOSIS

Mark B. Detweilwer, 1 S. Chester Rd., Apt. #4, Swarthmore, Pa. 19081

Division of Ser. No. 929,060, Aug. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 555,343, Jul. 19, 1990, Pat. No. 5,141,516. This application Mar. 21, 1994, Ser. No. 215,387

Int. Cl.[6] A61B *19/00;17/08*

U.S. Cl. 128—898 **14 Claims**



1. A method of surgical mammalian vessel anastomosis connecting a first vessel stump having a generally annular opening to a second vessel stump having a generally annular opening using an anastomosis apparatus comprising a stent member for receiving the first vessel stump, the stent member having a first end with a first circumference and a second end with a second circumference smaller than the first circumference, the stent member being made of a biocompatible, non-toxic material which substantially completely dissolves in mammalian bodily fluids, and a removable stent placement member for insertion through a second vessel stump, the stent placement member having an outer circumference substantially the same as the first circumference of the stent member and having a receiving portion with an inner circumference for at least partially receiving the second end of the stent member, the stent member and the receiving portion of the stent placement member being substantially axially aligned when the second end of the stent member is received by the stent placement member, the anastomosis apparatus further comprising a connecting member secured to the stent member and compression retaining means attached to the stent placement member and functionally attached to the connecting member for applying and holding a compressive force for retaining the second end of the stent member at least partially within the receiving portion of the stent placement member,

the method comprising the steps:

(a) circumferentially inserting a first purse-string suture into the first vessel stump and circumferentially inserting a second purse-string suture into the second vessel stump, the first and second purse-string sutures being positioned proximate edges of the first and second vessel stumps;

(b) placing the stent member at least partially within the receiving portion of the stent placement member;

(c) inserting the stent member and stent placement member through an opening in the second vessel stump remote from the generally annular opening of the second vessel stump until the stent member extends at least partially through the generally annular opening of the second vessel stump;

(d) inserting the first end of the stent member into the generally annular opening of the first vessel stump;

(e) tightening the purse-string sutures to annularly introflect the edges of the first and second vessel stumps onto the second end of the stent member;

(f) applying a compressive force to the stent member within the receiving portion of the stent placement member to cause the annularly introflected edge of the first vessel stump to engage the annularly introflected edge of the second vessel stump to form an engagement region between the stent member and the stent placement member with a clamping force sufficient to maintain the edges of the stumps in annular engagement;

(g) applying a biocompatible sealant capable of curing in minutes to external surfaces of the first and second vessel stumps to substantially completely cover the stumps in the annular engagement region;

(h) removing the purse-string sutures from the first and second vessel stumps; and

(i) promptly after the sealant cures, releasing the compressive force between the stent member and the stent placement member.

5,549,123

PROCESS FOR PRODUCING BIOCOMPATIBLE IMPLANT MATERIAL BY FIRING A MIXTURE OF A GRANULATED POWDER AND A COMBUSTIBLE SUBSTANCE

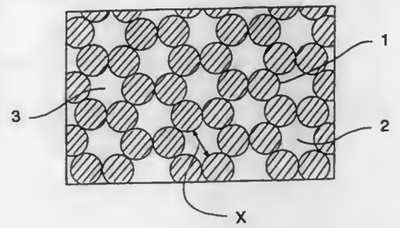
Masahiko Okuyama; Kohji Okada, and Katsuya Yamagiwa, all of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Dec. 29, 1994, Ser. No. 366,305

Claims priority, application Japan, Dec. 29, 1993, 5-353488

Int. Cl.[6] A61B *19/00*

U.S. Cl. 128—898 **10 Claims**



1. A process for producing a biocompatible implant material which comprises granulating a raw powder having an average particle size of 5 μm or smaller to give raw granules having an average particle size 10 to 800 μm, mixing said raw granules with a combustible substance having an average particle size of 2 to 1,600 μm, pressing the mixture into a shape at a pressure of 1 to 100 kg/cm^2, and then firing said shape.

5,549,124

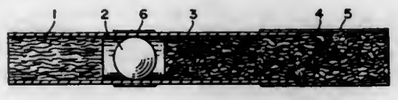
WATER FILTER FOR CIGARETTES

David A. Dorsey, 2223 Alaulau St., Pearl City, Hi. 96782

Filed Aug. 29, 1988, Ser. No. 206,888

Int. Cl.[6] A24D *3/04*

U.S. Cl. 131—337 **1 Claim**



1. A cigarette comprising a first cylindrical tube containing at one end an absorbent material in said tube adapted to serve as a mouthpiece; said tube at its other end containing a cylindrical charge of tobacco in said tube; said mouthpiece and said absorbent material being separated by a space therebetween; said space containing a liquid containing crushable capsule; said capsule being located in said tube; on the exterior of said tube and located over said capsule is positioned a band with indicia thereon indicating the location of said capsule in said tube; at the end of said tube containing said tobacco a cylinder of cigarette paper being telescopically fitted over said tobacco containing end and extending beyond said end containing said tobacco; said cylinder containing tobacco.

5,549,125

RELATING TO SMOKING ARTICLES

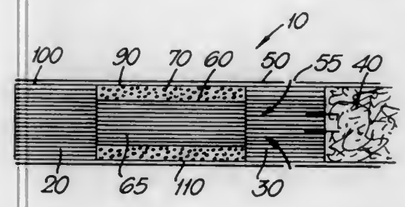
Peter R. White, Romsey, England, assignor to British-American Tobacco Company Limited, Middlesex, England

Continuation of Ser. No. 083,550, Jun. 28, 1993, abandoned. This application Dec. 12, 1994, Ser. No. 354,448

Claims priority, application United Kingdom, Jul. 4, 1992, 9214267

Int. Cl.[6] A24D *3/04*

U.S. Cl. 131—342 **13 Claims**



1. A smoking article having a rod of wrapped tobacco filler material and a tobacco smoke filter element, the filter element comprising;

(a) a first region comprising means to reduce the vapour phase constituents of tobacco smoke, said first region being an annulus of vapour phase reducing materials adhered to a wrapper and being devoid of end blocking means for blocking flow through the ends of the first region; and

(b) a separate second region extending lengthwise of the filter element and being a tobacco smoke flow path; said smoking article having ventilation means located for channelling tobacco smoke into the tobacco smoke flow path and away from the first region comprising means to reduce the vapour phase constituents of tobacco smoke, thereby negating the requirement for end-blocking means at the annulus of vapour phase reducing material, and vapour phase constituents of the smoke being able to diffuse into the first region comprising means to reduce the vapour phase constituents of tobacco smoke.

5,549,126

HAIR COLORING DEVICE

Gina Green, 2021 Castelar, Omaha, Nebr. 68108

Filed Jan. 11, 1995, Ser. No. 371,151

Int. Cl.[6] A45D *19/18*

U.S. Cl. 132—270 **10 Claims**

10. A hair coloring device comprising:

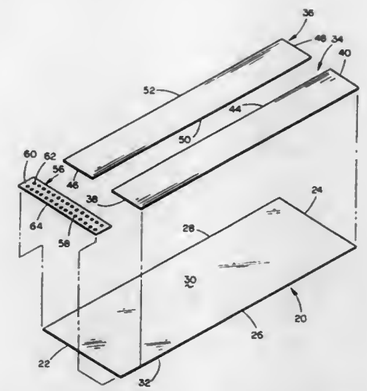
a first flat, rectangular sheet member having a top edge, a bottom edge, opposite side edges, and first and second surfaces;

said first sheet member having a transparent hair viewing window formed therein between the opposite side edges;

said first sheet member having a plurality of openings formed therein;

and a second flat, rectangular sheet member, having a top edge, a bottom edge, and opposite side edges, secured to said first surface of said first sheet member at the upper end thereof which extends between said side edges of said first sheet member;

said second sheet member being comprised of a relatively stiff material;



said second sheet member having a plurality of openings formed therein which register with said openings in said first sheet member to enable hair to be pulled therethrough;

and a relatively thin metal sheet member positioned on said first sheet member for heat retention and strengthening purposes.

5,549,127

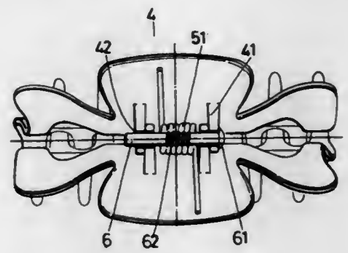
SPRING FIXING STRUCTURE FOR A HANDGRIP

Wen-Hsiung Chang, No. 32, Lane 232, Chung Shan Road, Tainan, Taiwan

Filed May 3, 1995, Ser. No. 433,044

Int. Cl.[6] A45D *8/20*

U.S. Cl. 132—277 **2 Claims**



1. A clip system comprising:

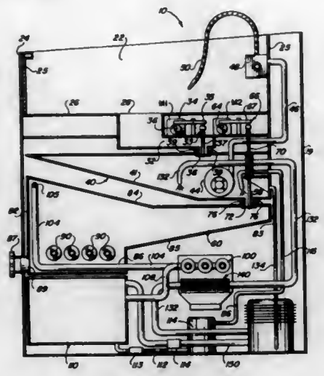
(a) a plurality of clip bodies;

(b) a coil spring member coupled to said clip bodies for biasing at least a portion of one of said clip bodies against at least a portion of another of said clip bodies, said coil spring member having a wound coil portion defining a substantially tubular center passage; and,

(c) a pin member pivotally coupling together said clip bodies and said coil spring member, said pin member having an elongate shaft portion inserted into said center passage of said coil spring member, said shaft portion having formed thereon a plurality of annular projections engaging said wound coil portion of said coil spring member, whereby said pin member is operably retained within said center passage of said coil spring member.

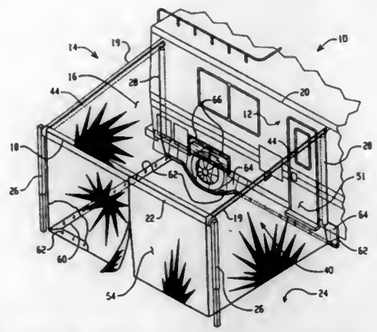
VOL 1189 ISS 4 AG 27 1996 UMI

5,549,128
GENERAL PARTS WASHER
Pierre G. Mansur, Miami, Fla., assignor to Mansur Industries Inc., Miami, Fla.
Filed Feb. 24, 1995, Ser. No. 394,290
The portion of the term of this patent subsequent to Sep. 27, 2011, has been disclaimed.
Int. Cl.[6] B08B *3/10*
U.S. Cl. 134—104.1 **12 Claims**



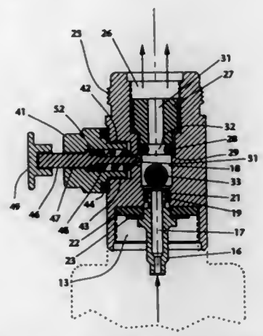
1. An apparatus for washing articles with a solution comprising:
at least one holding reservoir structured and disposed to contain a predetermined charge of the solution therein,
a wash basin including at least a partially surrounding wall structure, and a floor having a drain means therein for draining the solution from within said wash basin and into said holding reservoir,
means for discharging the solution into said wash basin,
means for recirculating the solution from said holding reservoir to said discharging means,
a distillation chamber being structured and disposed to receive said charge of solution therein,
means for releasing and directing said charge of solution from said holding reservoir into said distillation chamber, and including solution containment valve means selectively operable between an open position to release contaminated solution into said distillation chamber and a closed position to either contain the solution in the holding reservoir or to prevent vapors from escaping from said distillation chamber once the cleaning solution has been released from said holding reservoir and is contained within said distillation chamber,
heating means structured and disposed for heating the contaminated solution contained in said distillation chamber so as to produce vapors, and
a condenser in fluid communication with said distillation chamber and structured and disposed for receipt and condensing of the vapors to yield purified, condensed liquid solution and being further structured and disposed for directing the purified, condensed liquid solution into said holding reservoir.

5,549,129
RETRACTABLE ENCLOSURE FOR VEHICLE AWNING
Kent Becker, Rome City, Ind., assignor to White Consolidated Industries, Inc., Cleveland, Ohio
Filed Mar. 10, 1995, Ser. No. 401,726
Int. Cl.[6] E04H *15/06*
U.S. Cl. 135—88.15 **18 Claims**



1. A vehicle having a retractable enclosure, comprising:
a recreational vehicle, having a generally vertical side wall;
a generally horizontal awning roller extending along an upper edge of the side wall;
an awning and having a leading edge and a trailing edge connected by opposed side edges, the awning being rollable on awning roller, the trailing edge being secured near the vertical wall;
a pair of support arms for supporting a leading edge of the awning;
first and second generally vertical enclosure rollers secured at the side wall adjacent and below opposite ends of the awning roller;
first and second enclosure walls rollable on the first and second vertical rollers, respectively, said enclosure walls each having a pocket along an upper edge; and
first and second tailpieces extending through the pockets and disposed between the leading edge and the side wall, the enclosure walls being supported from the tailpieces and the leading edge and being joinable at leading edges thereof to enclose a space below the awning.

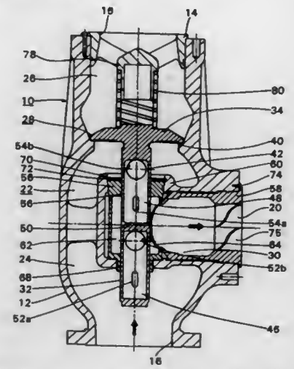
5,549,130
GAS APPLIANCE UPSET SHUTOFF VALVE
Yoel Schuster, Holon, Israel, assignor to Gas Guard West, Inc., Oakland, Calif.
Filed Feb. 27, 1995, Ser. No. 395,070
Int. Cl.[6] F16K *17/36*
U.S. Cl. 137—39 **13 Claims**



1. An upset sensing gas shutoff valve for use with a portable gas appliance, including;
a valve body having an internal bore adapted to be connected between the portable gas appliance and a pressurized gas source, said internal bore extending between an inlet port and an outlet port and defining a gas flow path therebetween;
a valve ball, and means for securing said valve ball within a portion of said bore;
an annular seal secured in said bore;

said valve ball being translatable within said bore from a first position in which said internal bore extends generally upwardly and said ball is disengaged from said annular seal to a second position in which said internal bore is tilted from said generally upwardly disposition to a generally lateral disposition and said ball is seated in said annular seal to block all gas flow through said bore; and,
said pressurized gas source comprising a compressed gas tank, and further including a valve stem extending from said inlet port to engage a standard tank output valve and transfer compressed gas into said internal bore.

5,549,131
AUTOMATIC RECIRCULATION VALVE
Horace J. Maxwell, Langhorne; Ronald J. Sirchio, Lafayette Hill, and James J. Henofer, Norristown, all of Pa., assignors to Keystone International Holdings Corp., Wilmington, Del.
Filed Jan. 23, 1995, Ser. No. 376,753
Int. Cl.[5] F16K *17/00*
U.S. Cl. 137—115.18 **6 Claims**



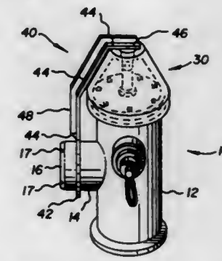
1. An automatic recirculation valve for sensing flow of fluid therethrough and providing for flow of recirculation fluid, comprising:
a valve body and an integral central hub within the valve body;
a bypass passage within said valve body through which recirculation fluid passes;
an inlet in said valve body;
a main outlet in said valve body;
a recirculation outlet in said valve body;
a main valve element responsive to flow of fluid between said inlet and said main outlet;
a bypass valve element responsive to movement of said main valve element for regulating the flow of recirculation fluid between said inlet and said recirculation outlet;
a bypass valve stem through which the recirculation fluid flows into said bypass passage, said bypass valve stem passing through said hub;
a shaft guide bushing secured within said central hub surrounding said valve stem;
a chamber within said shaft guide bushing into which recirculation fluid flows from said valve stem;
said shaft guide bushing chamber having an outlet opening;
a bellow generally cylindrical bypass adapter having first and second open end portions with fluid communication therebetween, said bypass adapter secured within said recirculation outlet and surrounds and is sealed against said guide bushing outlet, the first end portion of said adapter in fluid communication with said shaft guide bushing outlet opening and the second end portion thereof at said recirculation outlet; and
vanes provided within the second end portion of said bypass adapted to impart a swirling movement to the recirculation fluid as it leaves the recirculation outlet.

5,549,132
CONVERTIBLE FUEL DISPENSING NOZZLE
Eric J. Butterfield, Middletown, Ohio; George R. Cockram, Apex; Stewart M. Harmon, Knightdale, and Roy Talbot, Durham, all of N.C., assignors to Emco Wheaton, Inc., Wilson, N.C.
Filed Jun. 7, 1995, Ser. No. 480,763
Int. Cl.[6] B67D *5/37*
U.S. Cl. 137—270 **7 Claims**



1. A fuel dispensing nozzle which can be easily converted into a first mode adapted for use in the United States and into a second mode adapted for use in European countries, said nozzle comprising
an elongate body member having a fuel passageway extending longitudinally therethrough from a fuel inlet at one end of said body member to a fuel outlet at the other end thereof,
valve means removably mounted in said body member for movement between open and closed positions for controlling fuel flow through said fuel passageway, said valve means being reversible upon removal from said body member and reinsertable within said body member between a first attitude in which said valve means moves from the closed position to the open position in one direction and a second attitude in which said valve means moves from the closed position to the open position in the opposite direction,
a manually operable lever pivotally mounted on said body member for movement when fuel is desired to be dispensed, and
valve actuating means between said lever and said valve means for opening said valve means in one direction when said valve means is in said first attitude and for opening said valve means in the opposite direction when said valve means has been reversed and is in said second attitude.

5,549,133
SECURITY DEVICE AND SYSTEM FOR PREVENTING UNAUTHORIZED ACCESS TO AND OPERATION OF FIRE HYDRANTS
George Sigelakis, 188 Beach 123rd St., Rockaway Beach, N.Y. 11694
Filed Dec. 23, 1994, Ser. No. 363,220
Int. Cl.[6] E03B *9/06*
U.S. Cl. 137—296 **22 Claims**



10. A system for preventing unauthorized operation of a fire hydrant, said system comprising:

a bonnet having an upper portion and a lower portion, said upper portion having a generally frustoconical configuration and having an opening therein for accessing an actuating end of a valve stem of a valve control device of a fire hydrant, said lower portion having a hollow, cylindrical configuration;

a security device for controlling access to said actuating end of said valve stem of said valve control device of said fire hydrant, said security device comprising:

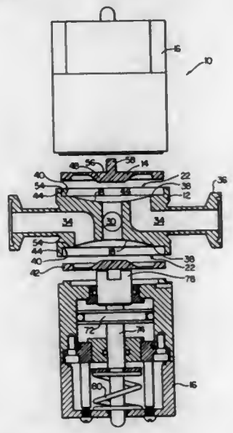
a first end portion for securing said security device to said fire hydrant, said first end portion having an opening for receiving an outlet port of said fire hydrant;

a second end portion for covering said opening in said bonnet to prevent access to said actuating end to thereby prevent operation of said valve control device; and

an intermediate portion integral with said first end portion and said second end portion, said intermediate portion extending from said first end portion to said second end portion; and

a locking cap for closing said outlet port of said fire hydrant, said locking cap securing said first end portion of said security device to said outlet port of said fire hydrant.

5,549,134
DIAPHRAGM VALVE
Ronnie A. Browne, Derry, and Marc Baril, Hollis, both of N.H., assignors to MarcValve Corporation, Tewksbury, Mass.
Continuation of Ser. No. 250,699, May 27, 1994, abandoned.
This application Nov. 2, 1995, Ser. No. 552,253
Int. Cl.[6] F16K *11/22;7/12*
U.S. Cl. 137—606 **34 Claims**



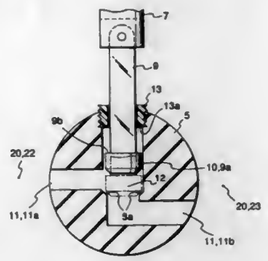
1. A fluid valve, comprising:

a valve body defining (a) a bowl-shaped cavity having a curvilinear, concave interior surface, (b) a first fluid passage through said body in communication with said cavity at a first hole in the center of said cavity, and (c) a second fluid passage through said body in communication with said cavity at a second hole in a side of said cavity;

a diaphragm attached to said valve body and spanning said cavity, said diaphragm having first and second opposite surfaces wherein said first surface is substantially planar and said second surface confronts said cavity and includes a raised edge around the circumference of said second surface, a raised boss at the center of said second surface, and a web portion between said boss and said raised edge, wherein said boss is positioned over said first hole, has a size larger than said first hole, and has sufficient thickness to close said first hole when said diaphragm is flexed toward said hole, and wherein said diaphragm includes a transition area on said second surface which gradually transitions the thickness of said diaphragm from the thickness at said boss to the thickness at said web portion; and

an actuator connected to said first surface of said diaphragm for flexing said diaphragm to open and close said first hole.

5,549,135
BALL VALVE
Hiroto Kawahara, Tokyo, Japan, assignor to Taimei Kinzoku Kogyo Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 342,912, Nov. 21, 1994, abandoned.
This application Aug. 30, 1995, Ser. No. 521,273
Int. Cl.[6] F16K *1/14;1/16;15/04*
U.S. Cl. 137—614.17 **16 Claims**



16. A ball valve comprising:

a valve casing defining a generally longitudinal fluid flow path;

valve seats disposed in the midway of said fluid flow path inside the valve casing;

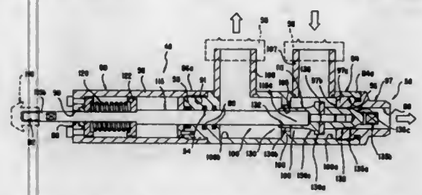
a ball shaped valve element for shutting of said fluid flow path and regulating the amount of fluid flow in said fluid flow path in cooperation with said valve seats depending on the direction of fluid flow in said fluid flow path;

operating means connected to said valve element for moving said valve element in one direction transverse to said fluid flow path and allowing displacement of said element in the direction of the flow of the fluid for engaging with said valve seats and disengaging said valve element from said valve seats when said operating means is moved in a second direction said operating means comprising a control rod to be inserted into said valve casing for transverse movement relative to said fluid flow path and a connecting rod having one end rotatably supported at the inner end of said control rod and an other end inserted within said valve element, said connecting rod being pivotable as said valve element is displaced within said fluid flow path for cooperation with said valve seats;

said valve element having a communication path communicating an upstream side of the flow path with a downstream side of the flow path, and medium size valve seats disposed in the midway of said communication path, said connecting rod acting as a medium size valve element in connection with said medium size valve seats for shutting off and regulating the flow of the fluid in said communication path; and

a medium-size communication path disposed in the medium-size valve element for communicating with said communication path open to the upstream side and communicating with the communication path open to the downstream side, a small-size valve seat disposed in the midway of the medium-size communication path, and a small-size valve element which, in cooperation with the small size valve seat, shuts off and regulates the flow of the fluid flow in the medium-size communication path, whereby pressure regulation between the upstream of the flow path and the downstream of the flow path is performed in a multi-purpose manner.

5,549,136
METERING VALVE FOR AUTOMATIC FLUID METERING DEVICES, PARTICULARLY FOR INDUSTRIAL INK AND PAINT
Luca Drocco, Alba, and Mario Drocco, Grinzane Cavour, both of, Italy, assignors to Dromont Meccanica S.r.l., Grinzane Cavour, Italy
Filed Sep. 12, 1994, Ser. No. 304,550
Claims priority, application Italy, Sep. 13, 1993, TO93A0666
Int. Cl.[6] F16K *11/04*
U.S. Cl. 137—872 **8 Claims**



1. A metering valve automatic metering of industrial fluids, comprising:

an outer casing having at least one chamber therein, said outer casing including a first fluid output port and a second fluid output port thereupon;

fluid supply means for supplying fluid to said at least one chamber;

recirculating outlet means for recirculating said fluid, with fluid to be recirculated passing through the second fluid output port in said at least one chamber;

shutter means for selectively opening and closing said first and second fluid output ports in said at least one chamber, said shutter means being axially movable along an axis of said at least one chamber between a first position wherein said shutter means seals said second fluid output port, and a second position wherein said shutter means seals said first fluid output port,

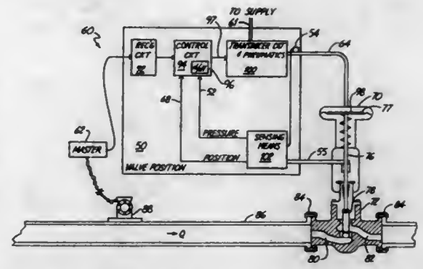
wherein said shutter means is configured such that the shutter means is movable to any intermediate position between said first and second positions, and wherein a total area of openings which are created between said shutter and said first fluid output port and said shutter and said second fluid output port is constant, and wherein an internal pressure of said metering valve remains constant, and wherein said shutter means includes a first sealing portion for sealing said second fluid output port, and a second sealing portion for sealing said first output port, wherein said first and second sealing portions are truncated cone shaped sections, having cone shaped portions thereof extend in opposite directions along an axis of said shutter means, and wherein said shutter means includes a sealing disc, said sealing disc being disposed between said first sealing portion and said second sealing portion.

5,549,137
VALVE POSITIONER WITH PRESSURE FEEDBACK, DYNAMIC CORRECTION AND DIAGNOSTICS
Gary A. Lenz, Eden Prairie; Gregory C. Brown, Minnetonka, and Jogesh Warrior, Chanhassen, all of Minn., assignors to Rosemount Inc., Eden Prairie, Minn.
Filed Aug. 25, 1993, Ser. No. 112,694
Int. Cl.[6] F16K *31/126*
U.S. Cl. 137—486 **9 Claims**

1. A valve positioner for use in a process control system for providing a control pressure to a valve actuator mechanically coupled to a valve, comprising:

receiving means coupled to a communications loop for receiving an input representative of a desired valve position;

sensing means for providing state variables representative of a process, one state variable representative of the position of the valve and the other representative of the control pressure;

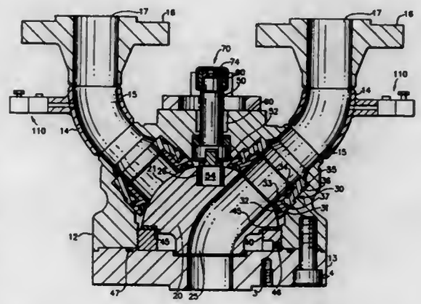


transducer means receiving a source of pressurized air and a command output, for providing the control pressure as a function of the command output;

control means coupled to the sensing means and the receiving means, for providing the command output as a function of the desired valve position, the sensed position and the time derivative of the sensed pressure; and

wherein the time derivative of sensed pressure provides reduced overshoot in the valve position.

5,549,138
CHANGEOVER VALVE SYSTEM
Harry E. Eminger, East Greenwich, R.I., assignor to Crosby Valve & Gage Company, Wrentham, Mass.
Filed Jan. 10, 1995, Ser. No. 370,797
Int. Cl.[6] F16K *11/02*
U.S. Cl. 137—876 **30 Claims**



1. A changeover valve system adapted to be secured at one end to a riser from a pressurized piping system and at its opposite end to at least two pressure relieving devices, said system including:

a body;

at least two outlets secured to said body, each of said outlets being attached to a pressure relieving device;

a partially spherical changeover member provided within said body, said changeover member having at least one inlet port adapted to communicate with said riser and two outlet ports each of which are adapted to alternately communicate with said pressure relieving devices;

means for rotating said changeover member within said body so as to cause said changeover member to move from a first position in which at least one outlet port is in communication with one of said pressure relieving devices to a second position in which said other of said outlet ports is in communication with said other pressure relieving device, wherein said means for rotating comprises a handle assembly which is connected to said changeover member by a valve stem for facilitating the rotation of said changeover member from said first position to said second position; and

a balance valve for balancing the pressure above and below the changeover member prior to operation of the changeover valve.

5,549,139

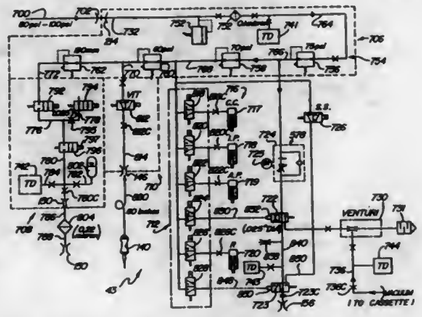
PNEUMATIC CONTROLS FOR OPHTHALMIC SURGICAL SYSTEM

James T. Perkins, St. Charles; Peter F. Appelbaum, St. Louis, and John A. Painter, St. Charles, all of Mo., assignors to Storz Instrument Company, St, Louis, Mo.

Division of Ser. No. 127,921, Sep. 27, 1993, Pat. No. 5,417,246, which is a division of Ser. No. 428,239, Oct. 30, 1989, abandoned. This application May 23, 1995, Ser. No. 449,408

Int. Cl.[6] F16K *11/10*

U.S. Cl. 137—884 **4 Claims**



1. A pneumatic control system for ophthalmic microsurgical console constructed as a module for easy placement and connection into a larger cabinet for the console, comprising: at least three air pressure regulators; at least four solenoid control valves; a plurality of air pressure sensing devices; a drawer assembly having a generally planar bottom structure, first and second side wall structures arranged parallel to one another and extending upwardly from the bottom, and a third wall structure arranged generally perpendicularly to the side walls and extending upwardly from the bottom structure, the regulators, solenoid control valves and air pressure sensing devices all being located substantially within and mounted to the drawer assembly.

5,549,140

BACK REST ARRANGEMENT FOR CONTROLLING WARP THREAD TENSION

Bo Lindblom, Almhult, Sweden, assignor to Texo AB, Almhult, Sweden

PCT No. PCT/SE93/00498, § 371 Date Dec. 5, 1994, § 102(e) Date Dec. 5, 1994, PCT Pub. No. WO93/25743, PCT Pub. Date Dec. 23, 1993

PCT Filed Jun. 4, 1993, Ser. No. 351,233

Claims priority, application Sweden, Jun. 10, 1992, 9201780

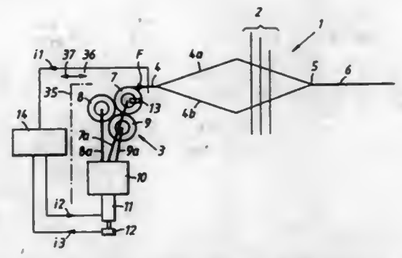
Int. Cl.[6] D03D *49/04*

U.S. Cl. 139—114 **11 Claims**

1. A device for controlling warp thread tension in a weaving machine, the warp thread tension being dependent upon rotation of a plurality of beams forming part of the weaving machine and included in a back rest system for warp threads and wherein said plurality of beams are pressed against each other and the warp threads run between said beams, said device including:

means for suspending at least one beam of said plurality of beams in a positionally mobile manner,

at least one force detection mechanism for detecting at least one force exerted on said at least one beam by the warp thread tension and for generating at least one control signal, and



an activation system for providing said thread tension control, based on said at least one control signal, by affecting the rotations of the beams in both their rotational directions thereby adjusting the feed of the warp threads continuously or by close-intervalled step-by-step changes in forward and backwards directions.

5,549,141

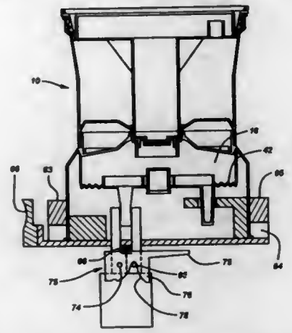
LIQUID CONTAINER SAMPLE TRANSFER METHOD AND APPARATUS

James W. Meador; Thomas L. Kraft, and Thomas G. Miller, all of Houston, Tex., assignors to KVM Technologies, Inc., Houston, Tex.

Filed Jul. 19, 1994, Ser. No. 276,892

Int. Cl.[6] B65B *1/04;3/04*

U.S. Cl. 141—1 **20 Claims**



1. A method for dispensing a sample of liquid from a sealed thermoplastic container, said container comprising a volumetrically flexible chamber bolding said liquid and a plurality of spaced axially vertical nozzles on the underside thereof having an inlet in fluid communication with said chamber, which comprises:

(a) rotating the container from a right side up position to an upside down position,

(b) manipulating said container to increase the volume of said chamber, said steps (a) and (b) being conducted in any order before step (c),

(c) creating an axial opening in one of said nozzles without decreasing the volume of the chamber,

(d) rotating said container from said upside down position to a right side up position without decreasing the volume of the chamber,

(e) manipulating said container to decrease the volume of the chamber, thereby to expel liquid from the chamber through said nozzle opening,

(f) rotating said container from said right side up position to an upside down position, and

(g) closing said opening in said nozzle.

5,549,142

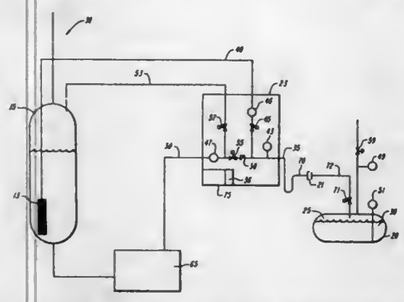
DISPENSING SYSTEM FOR REFUELING TRANSPORT CONTAINERS WITH CRYOGENIC LIQUIDS

Jeffrey P. Beale, 599 Canal St., Lawrence, Mass. 01840, assignor to Jeffrey P. Beale, Andover, Mass.

Filed May 27, 1994, Ser. No. 250,388

Int. Cl.[6] F17C *13/00*

U.S. Cl. 141—49 **4 Claims**



1. A system for automatic filling of fuel containers with cryogenic liquid comprising:

a primary storage tank and a fuel tank having a vapor phase cryogen at positive pressure,

a dispensing unit comprising:

means for determining vapor phase pressure and a liquid phase level and generating signals reflecting said vapor pressure and liquid level values,

means for transporting vapor or liquid phase cryogen comprising first vapor line, a first valve connected to said vapor line, a second liquid fuel line, a second valve connected to said fuel line, a recirculating line, a third valve connected to said recirculating line and said fuel line, and a pumping assembly,

control means for comparing said vapor phase pressure and liquid phase level signals to desired values and opening or closing said first through third valves and controlling said pump based on said comparison, and

a single phase transport line fixed to said first and second valves and removably connected to said fuel tank to extract vapor phase from said fuel tank and to carry liquid phase to said fuel tank wherein the means for determining the vapor phase pressure and generating the vapor phase pressure signal is a pressure transmitter located in said second liquid fuel line.

5,549,143

APPARATUS WITH VACUUM RECOVERY FOR ADDING FLAVOR MATERIALS TO BEVERAGES

Salvatore J. Spica, Morton, Pa.; John P. Kuhn, Wilmington, Del.; Steven R. Keller, Medford, N.J., and Joseph A. Winoker, Tampa, Fla., assignors to Campbell Soup Company, Camden, N.J.

Division of Ser. No. 705,391, May 24, 1991. This application May 22, 1995, Ser. No. 445,511

Int. Cl.[6] B65B *43/42;* **B67C** *3/00*

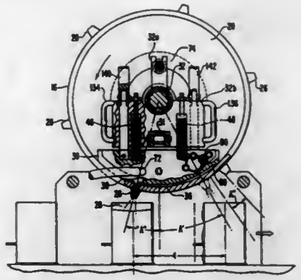
U.S. Cl. 141—144 **6 Claims**

1. Apparatus for dispensing small quantities of a fluent product into open-topped containers moving in a train along a predetermined path, said apparatus comprising:

a circular band mounted for rotation about a central axis and having a plurality of nozzle openings extending therethrough at positions circumferentially spaced-apart along said band;

a pressure shoe having a liquid-manifolding recess in a surface thereof, a periphery of said liquid-manifolding recess bearing sealingly against a surface of said band so that as said band rotates about said central axis, successive ones of said plurality of nozzle openings traverse and communicate with said recess and are supplied with fluent product from said liquid-manifolding recess during each such traversal, said pressure shoe further having an elongated vacuum recovery recess in a surface thereof, positioned adjacent and spaced from said liquid manifolding recess and longitudinally disposed along a direction of traversal by said plurality of nozzle openings, a periphery of said vacuum recess sealingly engaging said band, and

a vacuum recovery pump coupled through an inlet fitting to said elongated vacuum recovery recess to recover fluent product after said plurality of nozzles complete their respective dispensing operation.



5,549,144

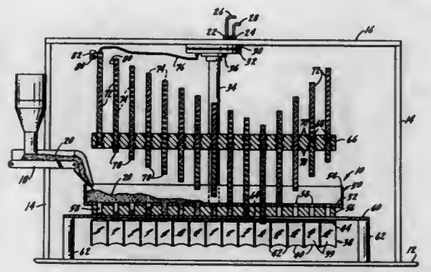
COMPRESSION FILLER FOR AERATEABLE POWDERS

Adam J. Dworak, Park Ridge, and Donn A. Hartman, Gurnee, both of Ill., assignors to Cloud Corporation, Des Plaines, Ill.

Filed Feb. 7, 1995, Ser. No. 385,048

Int. Cl.[6] B65B *1/00*

U.S. Cl. 141—146 **11 Claims**



1. A feeder for supplying a non-aerated pellet of an aerateable powder to a destination, comprising:

a powder supply;

a base member having at least one chamber formed therein, the chamber having first and second ports, the first port being in communication with the powder supply for introducing an aerateable powder into the chamber;

pellet support means associated with the chamber for alternately closing and opening said second port;

a reciprocable piston insertable into the chamber through said first port to compress the aerated powder into a non-aerated pellet while the pellet support means closes said second port and then to eject the pellet through said second port to said destination when the pellet support means opens said second port; and

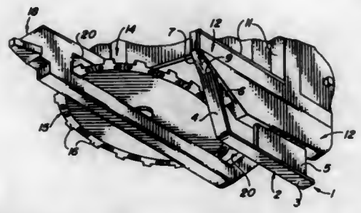
air removal means in fluid communication with the chamber during compression by the piston for removing air from the chamber as the aerated powder is compressed.

5,549,145

BALANCING SKID FOR TREE HARVESTING MACHINE

Herman G. Bearden, 3639 Highway 33, Ruston, La. 71270

Filed Jun. 16, 1995, Ser. No. 491,451
Int. Cl.[6] A01G *23/08*
U.S. Cl. 144—34.1 9 Claims



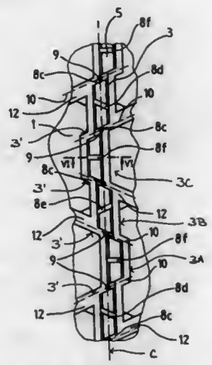
1. A balancing skid for a tree harvesting machine having a cutting wheel and cutter blades for cutting trees and a blade skid for protecting the cutting wheel and cutter blades, said balancing skid comprising a plate base, a plate skid upward-turned from said plate base, a base connector welded to said plate base and the tree harvesting machine and a skid connector welded to said plate skid and the tree harvesting machine, said base connector and said skid connector operable to fixedly connect said plate base and said plate skid to the tree harvesting machine, said plate skid and said skid connector positioned adjacent to the cutting assembly and spaced from the blade skid, for further protecting the cutting assembly and substantially horizontally balancing the cutting assembly in the tree harvesting machine.

5,549,146

VEHICLE TIRE WITH WIPER RIB MEMBER

Hagen Trabandt, Sehnde, and Uwe Ramcke, Walsrode, both of, Germany, assignors to Continental Aktiengesellschaft, Hannover, Germany

Filed Mar. 30, 1995, Ser. No. 414,016
Claims priority, application Germany, Mar. 30, 1994, 44 10 999.7
Int. Cl.[6] B60C *11/13;11/24*
U.S. Cl. 152—154.2 4 Claims



1. A pneumatic vehicle tire comprising:

a tire tread comprising circumferential grooves extending in the circumferential direction of said tire;

each one of said circumferential grooves having a groove base and groove flanks;

at least one of said circumferential grooves comprising a wiper rib member connected integrally to said groove base and extending over the entire circumferential length of said circumferential groove such that said wiper rib member is connected in the radial direction of said tire to said groove base but is separate from said groove flanks in the axial direction of said tire;

said wiper member having, when viewed radially outwardly, a lower portion and an upper portion, wherein said upper portion is divided by transverse grooves into member sections and said lower portion is continuous in said circumferential direction;

wherein said transverse grooves comprise a first and second set of grooves which are slanted at an angle of 10° to 40° relative to said axial direction with the grooves of the first set oriented opposite to the grooves of the second set;

wherein a height of said lower portion of said wiper rib member measured from said groove base radially outwardly is 5% to 20% of a maximum groove depth of said circumferential grooves; and

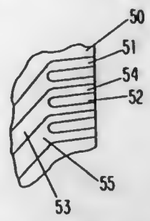
wherein said circumferential grooves extend in a zigzag pattern so as to comprise groove portions that are offset at an offset location in said axial direction relative to a circumferential center line of said circumferential grooves and comprise slanted areas extending at a slant to said circumferential center line, wherein at each one of said offset locations one of said transverse grooves is arranged such that at said offset locations said transverse grooves and said slanted areas are aligned with one another along a common line acting as a hinge axis about which a bending softness of said circumferential grooves is increased.

5,549,147

PNEUMATIC TIRE INCLUDING PROFILED ELEMENTS

Wolfgang Kuhr, and Nobert Zinnen, both of Aachen, Germany, assignors to Uniroyal Englebert Reifen GmbH, Aachen, Germany

Division of Ser. No. 669,117, Mar. 12, 1991, Pat. No. 5,234,042. This application May 14, 1993, Ser. No. 61,828
Claims priority, application Germany, Mar. 12, 1990, 9002986 U
Int. Cl.[6] B60C *115/00*
U.S. Cl. 152—209 R 10 Claims



1. In a pneumatic tire of radial construction for high-speed vehicles, with said tire having a height-to-width ratio of <0.6 and furthermore having a belt-reinforced tread portion with a tread design that is tied to the direction of rotation and comprises profiled elements that are steeply oriented in the circumferential direction at an angle to an equatorial plane of said tire and are arranged in the shape of V's, with said profiled elements extending from a central portion of said tread design into shoulder regions of said tire, with said profiled elements being angled-off at a respective bend region of said-shoulder regions in the direction of an axis of said tire, and with respective continuous inclined grooves that proceed from the vicinity of said central portion of said tread design to said shoulder regions being formed between said profiled elements, the improvement wherein:

a continuous circumferentially extending rib is disposed in said equatorial plane of said tire and is spaced from starting portions of said profiled elements, which profiled elements, in a region between said central portion of said tread design and said shoulder regions, are respectively divided into partial elements and are essentially rune-shaped, so as to form two central, circumferentially extending grooves, one on each side of said circumferential rib, between said rib and said starting portions of said profiled elements, with said inclined grooves communicating with said circumferential grooves;

in said central portion of said tread design, said profiled elements and inclined grooves extend linearly directly from said circumferential grooves at an angle of from 5° to 30° relative to said equatorial plane;

in said shoulder regions, proceeding from said bend regions, said profiled elements extend at an angle of from 65° to 85° relative to said equatorial plane; and

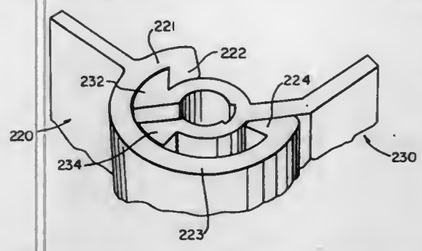
said profiled elements, in said shoulder regions, have a forked configuration, with each of said profiled elements, in said shoulder regions, having at least one blind-ended groove, wherein an additional rib is respectively disposed in said groove between adjacent forked profiled elements, said additional rib being of substantially the same length as said at least one blind-ended groove.

5,549,148

BLADE FOR ACCORDION STORM SHUTTER

Pedro Figueiredo, Sunrise; Larry Verdon, Miramar, and Norberto Valea, Miami, all of Fla., assignors to Wrono Enterprise Corp., Hallandale, Fla.

Continuation-in-part of Ser. No. 252,559, Jun. 1, 1994, Pat. No. 5,477,903. This application Aug. 5, 1994, Ser. No. 286,503
Int. Cl.[6] E05D *15/26*
U.S. Cl. 160—183 4 Claims



1. In a folding metal storm shutter blade comprising a planar metal panel having two vertical edges, and hinge coupling structures comprising a knuckle extending along one of said edges and a socket extending along the other of said vertical edges, whereby the blade can be pivotally joined to a like blade by inserting the knuckle of one into the socket of another, each said socket comprising substantially an arc of a semicircular shell having an internal first diameter, with a gap between ends of the arc, and each said knuckle being adapted to turn within the socket and having a blade arm extending therefrom through the gap, the improvement wherein

said socket has inwardly directed fingers at either end of said arc, forming ribs running lengthwise of the socket, and the knuckle has outwardly directed feet, said feet and said fingers:

(a) being positioned to engage one another and together act as a stop to prevent hyperextension or hyperflexion of the coupling structure, and

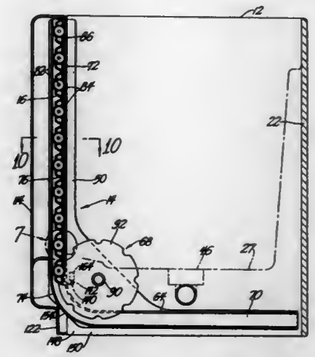
(b) having positive rake angles to prevent the feet and fingers from disengaging under heavy wind loads.

5,549,149

DOOR WITH MEMBRANE ATTACHED TO TAMBOUR SLATS GUIDED BY A TRACK

Arthur A. Sills, Traverse City; Frederick A. Kilbourn; Brian K. Nelson, both of Suttons Bay, and Donald J. Henderson, Traverse City, all of Mich., assignors to Siltech Products Incorporated, Traverse City, Mich.

Division of Ser. No. 89,890, Jul. 12, 1993, Pat. No. 5,446,929, which is a continuation-in-part of Ser. No. 910,775, Jul. 8, 1992, Pat. No. 5,351,345. This application Jun. 7, 1995, Ser. No. 474,163
Int. Cl.[6] E06B *3/38*
U.S. Cl. 160—201 7 Claims



1. A tambour door assembly comprising a plurality of tambour slats; a shaft member attached to and extending axially from a first end and a second end of each of said plurality of the tambour slats; rollers attached to said shaft members; a first track assembly which receives and guides the rollers attached to the shaft members extending from the first end of said plurality of tambour slats; a second track assembly, spaced from and parallel to the first track assembly, that receives and guides the rollers attached to the shaft members extending axially from the second end of said plurality of tambour slats; a flexible impervious membrane positioned adjacent to and substantially covering one side of said plurality of tambour slats; a plurality of clamp members clamping the flexible impervious membrane to said plurality of the tambour slats to maintain a predetermined pitch between the shaft members to hold said plurality of tambour slats parallel to each other and wherein the flexible impervious membrane transmits force between said plurality of tambour slats to move the slats along the first and second track assemblies; and a sprocket rotatably supported at each end of said plurality of tambour slats that mesh with the shaft members attached to said plurality of tambour slats as said plurality of tambour slats moves along the first and second track assemblies.

5,549,150

GLASS PORCH ENCLOSURE

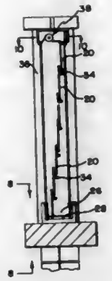
Fred G. Williams, 1695 Epping Farms La., Annapolis, Md. 21401

Filed Dec. 15, 1994, Ser. No. 356,734
Int. Cl.[6] E05D *15/16*
U.S. Cl. 160—201 15 Claims

1. An enclosure system for porches, comprising;

A frame means adapted to be fastened to a porch frame including a pair of side members having insert means with parallel slots, a bottom member having an open area, and a top member having a storage and housing area:

a plurality of glass panels each having slot engaging ends for reciprocating in said parallel slots, each of said parallel slots having seal means to seal said enclosure system against various weather conditions, said glass panels each having a



lower edge with a cylindrical barrier means extending across said lower edge stopping short of said slot engaging ends, where said cylindrical barrier means engages an adjacent glass panel having a top surface to create a weather barrier between said glass panels,

a motor mechanism and reciprocating shuttle means for raising and lowering said plurality of glass panels in said slots, said reciprocating shuttle means including an elongate bar means extending between said side members which carriers said plurality of glass panels vertically and a bracket means for connecting to said motor mechanism, said motor mechanism having means to raise and lower said reciprocating shuttle means connected to said reciprocating shuttle means, and means to remove said glass panels from said frame bottom member individually.

5,549,151

METHOD FOR MAKING GRADED COMPOSITE BODIES AND BODIES PRODUCED THEREBY

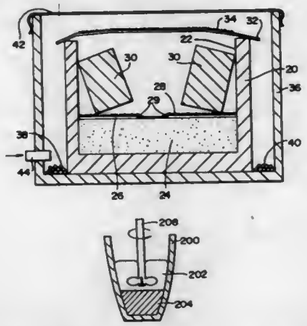
Chwen-Chih Yang, Newark, Del., assignor to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 113,932, Aug. 30, 1993, Pat. No. 5,372,777, which is a continuation of Ser. No. 692,748, Apr. 29, 1991, Pat. No. 5,240,672. This application Dec. 12, 1994, Ser. No. 353,845

The portion of the term of this patent subsequent to Aug. 30, 2013, has been disclaimed.

Int. Cl.[6] B22D *19/14*

U.S. Cl. 164—97 **20 Claims**



1. A method for making a metal matrix composite body comprising:

providing a filler consisting of substantially one particle size;

providing a matrix metal;

causing said filler and said matrix metal to form a molten suspension;

providing a mold having a shaped cavity therein;

placing said molten suspension into said shaped cavity;

maintaining said molten suspension within said mold at a sufficient temperature and for a sufficient amount of time to permit said filler in said molten suspension to at least partially settle within said mold, thus producing a filler-rich region and a metal-rich region; and

removing said metal-rich region from said filler-rich region to produce a metal matrix composite.

5,549,152

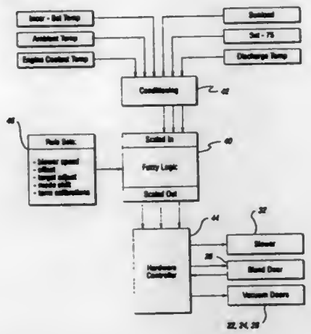
METHOD AND SYSTEM FOR MODIFYING A LINEAR CONTROL ALGORITHM WHICH CONTROLS AN AUTOMOTIVE HVAC SYSTEM

Leighton I. Davis, Jr., Ann Arbor; Thomas F. Sleja, Dearborn; Gerhard A. Dage, Franklin, and Robert W. Matteson, Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jun. 30, 1993, Ser. No. 83,589

Int. Cl.[6] F25B *29/00*

U.S. Cl. 165—201 **5 Claims**



1. A method for automatically modifying a linear contol algorithm which, in turn, controls a heating, ventilation and air conditioning (HVAC) system of a vehicle which discharges a flow of air to a passenger cabin of the vehicle, the algorithm having a target set point temperature and an offset and calibration coefficients, the system including a variable speed blower, means for varying air temperature, ducting, actuator having various control positions for contolling the direction of air flow and the ratio of fresh air to recirculating air and sensors for sensing temperature within the cabin, ambient temperature and the target set point temperature, the method comprising the steps of:

sensing the ambient temperature;

defining a first set of membership functions and fuzzy rules between the ambient temperature and target set point temperature to allow set point adjustment;

modifying the target set point temperature based on the ambient temperature and the first set of membership functions and fuzzy rules;

defining a second set of membership function and fuzzy rules between the ambient temperature and a first one of the calibration coefficients;

modifying the first one of the calibration coefficients based on the ambient temperature and the second set of membership functions and fuzzy rules to allow calibration blending;

defining a third set of membership functions and fuzzy rules between the ambient temperature and an offset;

modifying the offset based on the ambient temperature and the third set of membership functions and fuzzy rules to allow non-linear offset compensation; and

controlling the HVAC system based on the linear control algorithm having the modified target set point temperature, the modified offset and the modified first one of the calibration coefficients wherein one of the sensors sense sunload and wherein the method further comprises the steps of defining a fourth set of membership function and fuzzy rules between the sunload and the offset and modifying the offset based on the sunload and the fourth set of membership functions and fuzzy rules.

5,549,153

DEVICE FOR COOLING DRIVE COMPONENTS AND HEATING A PASSENGER COMPARTMENT OF AN ELECTRIC VEHICLE

Wilhelm Baruschke, Wangen; Karl Lochmahr, Vaihingen, and Werner Rojnica, Esslingen, all of, Germany, assignors to Behr GmbH & Co., Stuttgart, Germany

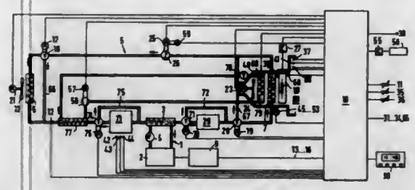
PCT No. PCT/EP93/02712, § 371 Date Apr. 14, 1995, § 102(e) Date Apr. 14, 1995, PCT Pub. No. WO94/11212, PCT Pub. Date May 26, 1994

PCT Filed Oct. 5, 1993, Ser. No. 416,706

Claims priority, application Germany, Nov. 13, 1992, 42 38 364.1

Int. Cl.[6] B60H *1/00*

U.S. Cl. 165—42 **18 Claims**



1. Device for cooling drive components and heating a passenger compartment of an electric vehicle having a battery-fed drive motor, the battery and further drive components being integrated within a first coolant circuit which is coupled by means of an intermediate heat exchanger to a second coolant circuit comprising at least one first heat exchanger, acting as a cooling element, and a second heat exchanger, acting as a heating element, and a coolant pump, and the first and second heat exchanger being assigned a respective fan, characterized in that the first and second heat exchangers (**6**, **7**) are provided in the second coolant circuit (**5**) with a respective controllable bypass (**66**, **67**), and in that an electronic control unit (**10**) containing a microprocessor is present, to which there are connected up, on the input side, a desired-value setter (**11**), an interior-temperature detector (**37**) for the heating output and a coolant-temperature detector (**12**), and to which the following signals derived from the battery control unit:

discharge clearance (**13**)

mains connection (charging mechanism) (**14**)

charge state (**15**) and

battery temperature (**16**) are fed, and the electronic control unit (**10**) is connected on the output side to adjusting and drive means (**17**, **19**, **21**, **23**, **25**) for the heat exchanger bypasses (**66**, **67**), the coolant pump (**26**), the fans (**22**).

5,549,154

METHOD FOR HEATING A ROLL AND A HEATABLE ROLL

Juhani Niskanen, Oulunsalo, and Jari Vähäpesola, Muurame, both of, Finland, assignors to Valmet Corporation, Helsinki, Finland

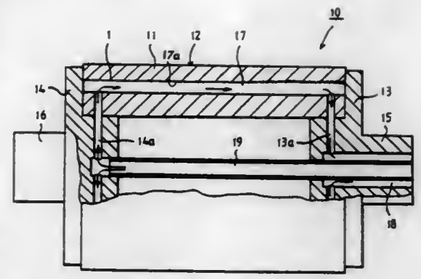
Division of Ser. No. 22,073, Feb. 24, 1993, Pat. No. 5,404,936. This application Apr. 6, 1995, Ser. No. 417,736

Claims priority, application Finland, Feb. 24, 1992, 920805

Int. Cl.[6] F28F *5/02;13/06*

U.S. Cl. 165—89 **7 Claims**

6. A method for heating a roll of a paper machine, paper finishing machine, or equivalent, comprising



introducing a heating medium into a hollow interior of a roll mantle of the roll such that the roll mantle is heated,

arranging a displacement piece in the hollow interior of the roll mantle to form an annular intermediate space between an inner face of the roll mantle and the displacement piece in which the heating medium flows, and

roughening the inner face of the roll mantle and increasing the degree of the roughening of the inner face in the flow direction of the heating medium to increase the coefficient of heat transfer from the flowing heating medium to the roll mantle in a direction of flow of the heating medium through the roll such that the temperature of the roll mantle is substantially uniform across its axial length.

5,549,155

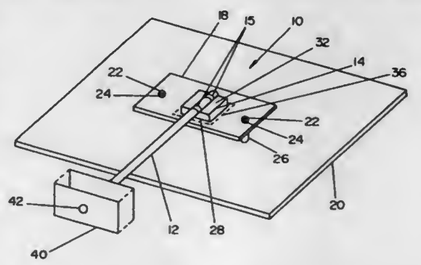
INTEGRATED CIRCUIT COOLING APPARATUS

George A. Meyer, IV, Conestoga; Jerome E. Toth, Hatboro, and Richard W. Longsderff, Lancaster, all of Pa., assignors to Thermacore, Inc., Lancaster, Pa.

Filed Apr. 18, 1995, Ser. No. 424,791

Int. Cl.[6] F28D *15/00*

U.S. Cl. 165—104.33 **10 Claims**



1. An apparatus for cooling an integrated circuit chip comprising:

an integrated circuit chip with a first surface and a second flat surface;

a mounting board to which the integrated circuit chip is attached, with the first surface of the integrated circuit chip in contact with the mounting board and the second surface of the integrated circuit chip more remote from the mounting board than the first surface of the integrated circuit chip;

a heat conductive pad including: a first surface finished to a flat condition with the first surface held in intimate contact with the second surface of the integrated circuit chip; a second surface; and third surfaces located in a plane parallel to the first surface;

a flexible holding fixture applying force against the third surfaces of the heat conductive pad so that the force is directed toward the first surface of the heat conductive pad and com-

presses the integrated circuit chip between the mounting board and the heat conductive pad;

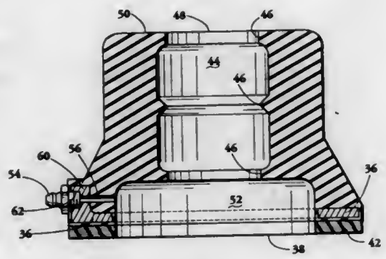
spacers separating the holding fixture from the mounting board by a distance which determines the force applied to the heat conductive pad by flexing of the holding fixture;

attachment means attached to the mounting board and holding the holding fixture against the spacers and in fixed relationship with the mounting board;

a heat pipe with one part of its casing located in contact with the heat conductive pad and a second part of its casing located in contact with a heat removal means and;

wherein the holding fixture includes a hole through which a portion of the heat conductive pad protrudes.

5,549,156
SHOCK ABSORBER & WIPER
B. Michael Borden, Sapulpa, Okla.
Filed Jun. 6, 1995, Ser. No. 465,833
Int. Cl.[6] E21B *34/02*
U.S. Cl. 166—84.2 **10 Claims**



1. A safety shock absorber and for use with a polished rod liner affixed to a polished rod by a polished rod liner head, said safety shock absorber functioning to cushion the impact of the polished rod liner head against the top of a stuffing box in the event said polished rod breaks or comes unclamped and falls, comprising:

a body having a top end and a bottom end and having an interior passage to receive said polished rod;

said body comprised of elastomeric material for protecting a stuffing box from a force typically encountered when a polished rod breaks or comes loose and the polished rod liner head drops and makes contact with said body.

5,549,157
ELECTRONIC COUNTER WITH PUMP-MOUNTED SENSOR FOR CYCLE INDICATION
Richard D. Johnson, Pinckney; Robert M. Bultman, Ann Arbor, and Kevin L. Newcomer, Monroe, all of Mich., assignors to QED Enviromental Systems, Inc., Ann Arbor, Mich.
Continuation-in-part of Ser. No. 38,835, Mar. 29, 1993, Pat. No. 5,358,037. This application Oct. 24, 1994, Ser. No. 328,231
Int. Cl.[6] E21B *43/00;* **F04B** *49/00*
U.S. Cl. 166—105 **1 Claim**

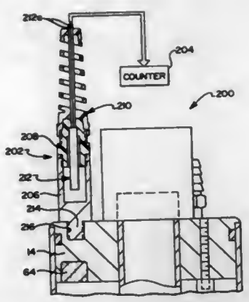
1. A counter apparatus for counting cycles of a fluid flow in a pump having a housing including an exterior surface, said apparatus comprising:

an actuating mechanism disposed in said pump, said actuating mechanism movable from a first position to a second position in response to said fluid flow;

a first attracting magnet attached to said actuating mechanism;

a magnetic sensing switch comprising a reed switch mounted on an exterior surface of said housing of said pump;

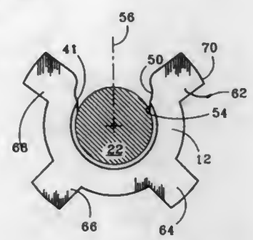
a counter coupled to said magnetic sensing switch;



said magnetic sensing switch being actuated in response to a magnetic field of said first attracting magnet when said actuating mechanism moves from said first position to said second position, said magnetic sensing switch transmitting an electrical signal to said counter in response to being actuated by said first attracting magnet, said counter counting a cycle of said fluid flow in response to said electrical signal; and

a stationary second attracting magnet disposed within said pump, said second attracting magnet positioned to be able to magnetically attach to said first magnet when said actuating mechanism moves toward said second position.

5,549,158
FIELD INSTALLED SLOTTED ROD GUIDE AND METHOD
Charles M. Hart, Stinnett, Tex., assignor to J. M. Huber Corporation, Tomball, Tex.
Filed May 9, 1995, Ser. No. 437,936
Int. Cl.[6] E21B *17/10*
U.S. Cl. 166—241.4 **20 Claims**



17. A method for securing a rod guide onto a sucker rod, the rod guide having an inner rod guide bore and a longitudinal slot for receiving the sucker rod within the rod guide bore, the method comprising the following steps:

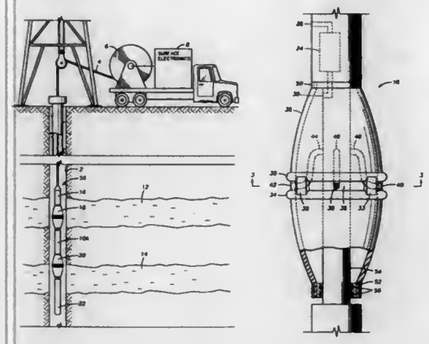
forming a preselected rod guide catch section within the slot between an entry port and an exit port of the slot, the catch section having a width continuously greater than a radially outward first throat restriction and a radially inward second throat restriction;

positioning the rod guide adjacent the sucker rod such that the longitudinal slot in the rod guide is substantially parallel to the sucker rod and the rod guide is adjacent the entry port of the slot;

applying a first force to the rod guide to move the rod guide such that the sucker rod fits within the preselected catch section within the longitudinal slot; and

applying a second force to the rod guide to move the rod guide from the preselected catch section within the longitudinal slot and through the exit port of the slot such that the rod guide fits within the inner rod guide bore.

5,549,159
FORMATION TESTING METHOD AND APPARATUS USING MULTIPLE RADIALLY-SEGMENTED FLUID PROBES
Than Shwe, and John M. Michaels, both of Houston, Tex., assignors to Western Atlas International, Inc., Houston, Tex.
Filed Jun. 22, 1995, Ser. No. 493,802
Int. Cl.[6] E21B *49/10*
U.S. Cl. 166—250.02 **20 Claims**



14. A method of determining presence of hydraulic discontinuities in an earth formation penetrated by a wellbore comprising the steps of:

positioning a formation testing tool into said wellbore adjacent to said earth formation;

hydraulically isolating a first and a second portion of said earth formation by expanding respectively a first seal and a second seal against a wall of said wellbore, said first seal and said second seal comprising radial flow isolation for hydraulically isolating radial segments of said first and said second portions;

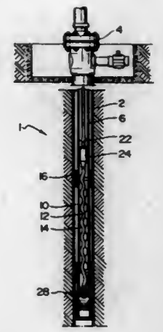
operating valves and a pump disposed in said testing tool to selectively withdraw fluid from said first portion;

measuring fluid pressure at each one of said radial segments of said second portion;

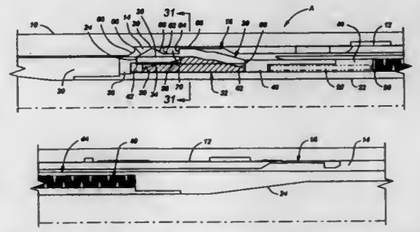
determining presence of said discontinuities from differences in pressure between said radial segments of said second portion.

5,549,160
DOWNHOLE PROGRESSING CAVITY PUMP ROTOR VALVE
Dan Bownes, Hayter, and Darren Wiltsf, Calgary, both of, Canada, assignors to National-Oilwell Canada Ltd., Canada
Filed May 27, 1994, Ser. No. 249,944
Int. Cl.[6] E21B *47/10*
U.S. Cl. 166—250.08 **14 Claims**

9. A method for plugging a tubing string of a fluid producing well below a pump of the type having a stator fixed to the inside of the tubing string wall and a rotor driven in rotary fashion within said stator by a sucker rod string, said rotor capable of being displaced axially within said stator by vertical movement of said sucker rod string, said method comprising providing a valve means inside the tubing string below said pump, said valve means being in an open position permitting fluid in the tubing string below said valve means to communicate therethrough into the tubing string above said valve means when said rotor is positioned within said stator, and actuatable to a closed position preventing said fluid communication by downward axial movement of the rotor; manipulating said sucker rod string to axially displace said rotor downward to actuate said valve means.



5,549,161
OVERPULL SHIFTING TOOL
Alfredo Gomez; William M. Richards, both of Houston, and Douglas J. Murray, Humble, all of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.
Filed Mar. 6, 1995, Ser. No. 400,334
Int. Cl.[6] E21B *34/12;34/14;23/00*
U.S. Cl. 166—255.1 **45 Claims**



35. A release mechanism for a downhole tool in a wellbore, comprising:

a body;

a gripping member on said body to engage the tool;

a release member movably mounted with respect to said body to secure said gripping member in renewable engagement with the tool until a predetermined force is applied to said body, whereupon said gripping member releases the tool and resets to allow said gripping member to get another grip.

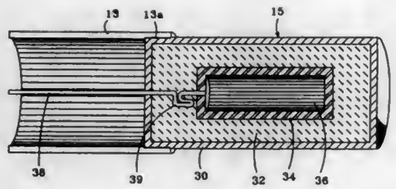
45. A method of obtaining feedback on whether a shifting tool has fully shifted a downhole tool, comprising the steps of:

applying a force to a sleeve significantly larger than the force normally required to shift the sleeve;

obtaining feedback on whether or not the sleeve has fully shifted depending on whether the shifting tool can reengage the sleeve after a release therefrom.

5,549,162
ELECTRIC WIRELINE FORMATION TESTING TOOL HAVING TEMPERATURE STABILIZED SAMPLE TANK
Michael J. Moody, Katy; Michael Yesudas, and John M. Michaels, both of Houston, all of Tex., assignors to Western Atlas International, Inc., Houston, Tex.
Filed Jul. 5, 1995, Ser. No. 498,540
Int. Cl.[6] E21B *49/10*
U.S. Cl. 166—264 **10 Claims**

7. A method of withdrawing a sample of fluid from an earth formation penetrated by a wellbore, comprising the steps of:



inserting a formation testing tool into said wellbore to a depth of interest;

extending a probe from said testing tool so as to contact said earth formation;

operating selective hydraulic valves and a fluid pump in said tool to withdraw said sample of fluid from said earth formation;

discharging said fluid sample into a sample tank attached to said tool and selectively placed in hydraulic communication with said probe, said tank including a storage cylinder adapted to hold said fluid sample and withstand high internal pressure, said tank including a fusible metal substantially surrounding said storage cylinder, said fusible metal having a melting temperature not more than a temperature of said fluid sample so that solidification of said fusible metal maintains said fluid sample substantially at said melting temperature during said solidification, said tank including an outer housing surrounding said fusible metal to contain said fusible metal when said fusible metal is in a liquid state;

retracting said probe from said earth formation; and

withdrawing said tool from said wellbore before said fusible metal has completely solidified, thereby maintaining temperature of said fluid sample substantially at said melting temperature of said fusible metal.

5,549,163

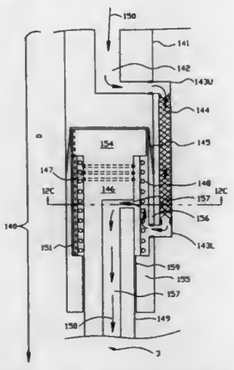
PISTON SLEEVE VALVE FOR USE WITH OILFIELD FISHING OPERATIONS

Bobby G. Sieber, Rte. 1, Arp, Tex. 75750

Continuation-in-part of Ser. No. 201,800, Feb. 25, 1994, Pat. No. 5,425,419. This application Apr. 11, 1995, Ser. No. 420,050

Int. Cl.[6] E21B *34/00*

U.S. Cl. 166—319 **18 Claims**



1. A piston sleeve valve assembly adapted for connection to a fishing tool used for retrieving downhole tools left within a wellbore, attached to a drill string capable of receiving circulating fluid flow, and for use as means to signal positive engagement of the connected fishing tool by causing an increase in the circulating fluid pressure, comprising:

a tool joint, having a top end and a bottom end, for attachment to the drill string at said top end thereof and in communication with a cross passageway within said tool joint;

a lower tubular member attached to said bottom end of said tool joint;

a piston valve having a top end and a bottom end, having a piston valve head attached to said top end of said piston valve, and wherein said piston valve has an axial central passageway in communication with said bottom end thereof and wherein said central passageway is in communication with a radial cross fluid passage located below said piston head, said bottom end thereof adapted for connection to the fishing tool;

a piston chamber formed within said lower tubular member containing said piston valve head having a top and a bottom;

conduit means between said cross passageway within said tool joint and said piston chamber;

wherein said piston valve has an open position permitting fluid flow between said tool joint and the connected fishing tool and a closed position restricting fluid flow between said tool joint and the connected fishing tool, said open position being obtained by circulation fluid pressure forcing said piston head to said top of said piston chamber and said closed position being attained by a load being applied to said piston valve whenever the connected fishing tool engages such that said piston valve moves to said closed position at said bottom of said piston chamber, said closed position causing the increase in pressure of the circulation fluid.

5,549,164

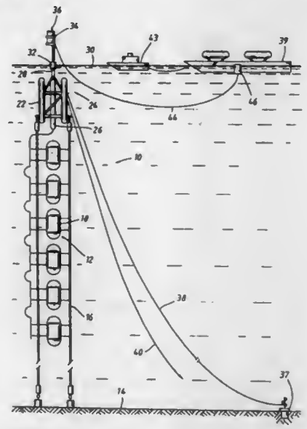
METHOD AND APPARATUS FOR PRODUCTION OF SUBSEA HYDROCARBON FORMATIONS

Joseph W. Blandford, Houston, Tex., assignor to Seahorse Equipment Corporation, Houston, Tex.

Continuation of Ser. No. 158,921, Nov. 29, 1993, Pat. No. 5,433,273, which is a continuation of Ser. No. 891,953, Jun. 1, 1992, Pat. No. 5,297,632, which is a continuation of Ser. No. 626,994, Dec. 13, 1990, Pat. No. 5,117,914. This application Apr. 28, 1995, Ser. No. 431,142

Int. Cl.[6] B63B *35/44*

U.S. Cl. 166—344 **8 Claims**



1. A method for recovering well fluids from a subsea well, which comprises:

(a) attaching means to the seabed offshore for anchoring tendons to the seabed;

(b) connecting at least three vertically oriented tendons to the anchor means;

(c) towing to a location above the vertically oriented tendons a surface buoy which has a surface-piercing central flotation column for supporting one or more decks above the water surface, and submerged flotation tanks connected to the central flotation column by braces below the water surface;

(d) ballasting the surface buoy to lower it for connection with the tendons while maintaining the upper end of the central flotation column above the water surface;

(e) securing the tendons to the surface buoy;

(f) deballasting the surface buoy to place the tendons in tension while supporting one or more decks above the water surface;

(g) establishing fluid communication between a subsea well and the surface buoy; and

(h) offloading well fluids to a cargo barge or pipeline.

5,549,165

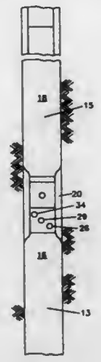
VALVE FOR INFLATABLE PACKER SYSTEM

Robert T. Brooks, Houston, Tex., assignor to Baker Hughes Incorporated, Houston, Tex.

Filed Jan. 26, 1995, Ser. No. 378,734

Int. Cl.[6] E21B *33/127*

U.S. Cl. 166—386 **21 Claims**



1. A limit valve for limiting the pressure differential between an interior of a valve collar and an exterior of the valve collar comprising:

a collar member having a valve chamber where said valve chamber has an inlet port and an outlet port;

a valve member slidably disposed in said valve chamber for moving between a first closed position where said ports are not in fluid communication, an open position where said ports are in fluid communication, and a second closed position where said ports are not in fluid communication;

a tubular valve cap member for closing said valve chamber and having a cap member bore for slidably receiving a stem element on said valve member, a tubular spacer member disposed in said valve cap member and having a spacer member bore for slidably receiving said stem element, said spacer member and said valve cap member defining a locking chamber recess in said valve cap member and defining a spring chamber which opens to said valve chamber;

a spring means in said spring chamber for resiliently engaging said valve member and for moving said valve member to a closed position;

said stem element having a reduced locking stem portion disposed in said locking chamber recess in said first closed position;

a release member slidably disposed on said locking stem portion in said first closed position and sized to be slidably received in said cap member bore, said release member being separable from said locking stem portion in the open position of the valve member;

locking segments disposed in said locking recess;

resilient means cooperating with said locking segments for engaging said locking elements with the release member in said first closed position and for engaging said locking segments with the locking stem portion in said second closed position; and

shear means interconnecting said valve member and said cap member in said first closed position for maintaining said valve closed until a differential pressure between the inlet port and the outlet port operates the shear means to move the valve member to an open position, said valve member being returnable to the second closed position by the spring means and locked in the second closed position by the locking segments when the differential pressure is sufficiently relieved relative to the forces of the spring means.

5,549,166

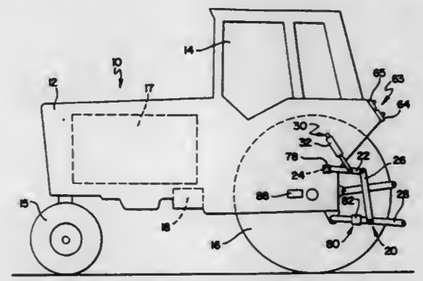
HITCH ASSEMBLY CONTROL SYSTEM

Abraham Orbach, Naperville; Dale W. Panoushek, Lemont, and William L. Schubert, Downers Grove, all of Ill., assignors to Case Corporation, Racine, Wis.

Continuation of Ser. No. 388,153, Feb. 13, 1995, Pat. No. 5,469,921, which is a continuation of Ser. No. 118,450, Sep. 8, 1993, Pat. No. 5,421,416. This application Nov. 17, 1995, Ser. No. 560,016

Int. Cl.[6] A01B *63/112*

U.S. Cl. 172—4 **20 Claims**



1. A control system for controlling elevation of a hitch assembly supported on a vehicle and adapted to be coupled to an implement, the hitch assembly including an actuator for moving the hitch assembly through a range of positions in response to control signals, the control system comprising:

a first sensor supported by the vehicle configured to detect a parameter indicative of ground speed of the vehicle;

a remote control switch external from an operator station, the remote control switch being operable by an operator to command movement of the hitch assembly; and

a control circuit coupled to the sensor and to the remote control switch, the control circuit being configured to permit movement of the hitch assembly by actuation of the remote control switch when the sensor indicates a vehicle speed below a threshold speed and to prevent movement of the hitch assembly in response to actuation of the remote control switch when the sensor indicates a vehicle speed above the threshold speed.

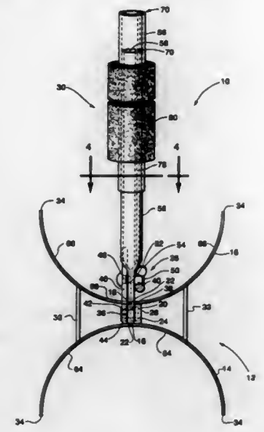
VOL 1189 ISS 4 AUG 27 1996 UMI

5,549,167

HILL MAKER HOE

Kevin M. Keperling, Sr., 133 Woodthrush Dr., York, Pa. 17403, and Michael T. Moore, 24 Scotland Rd., Quarryville, both of Pa. 17566

Filed Dec. 11, 1995, Ser. No. 570,484
Int. Cl.[6] A01B *1/00*
U.S. Cl. 172—381 9 Claims



1. A hill maker hoe comprising a set of equally dimensioned semicircular portions forming rearwardly opposing concavo-convex blades such that concave sides of said blades face away from each other, an interposed tubular member connectably joining said set of blades with the semicircular portions facing in opposing direction and connected in osculating conjunction at the respective radial apices thereof, and an extensibly adjustable handle means pivotally connected to said set of blades by a handle angle adjustment means.

5,549,168

PILE DRIVING APPARATUS

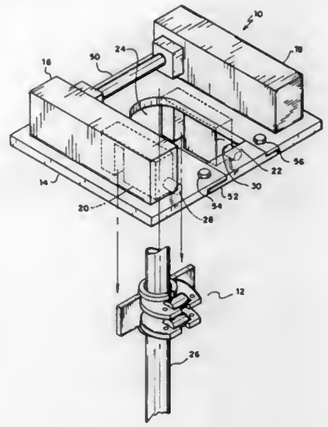
Richard A. Sadler, Jacksonville, Fla., and Johannes H. Paffhausen, Fernthal, Germany, assignors to MGF Maschinen- und Geraete-Fabrik GmbH, Fernthal, Germany

Filed Feb. 6, 1995, Ser. No. 383,822
Int. Cl.[6] E02D *7/18*
U.S. Cl. 173—49 12 Claims

1. A pile driving apparatus comprising:

a vibratory hammer assembly including, a support plate having a center, a top, a bottom, and a slot for allowing said support plate to fit around a pile, at least one vibratory hammer unit fixed to the top of said support plate, at least one clamp fixed to the bottom of said support plate; and

a pile clamp having a flange, said flange being engageable by said at least one clamp, whereby said vibratory hammer assembly can be secured to the pile when said at least one clamp is engaged to said flange and when said pile clamp is secured to the pile.

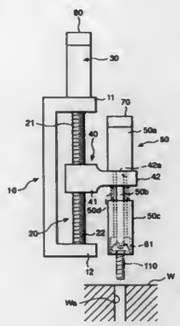


5,549,169

SCREW TIGHTENING APPARATUS

Masafumi Matsumura, Kariya, and Junichiro Kanamori, Nishin, both of, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation-in-part of Ser. No. 181,079, Jan. 13, 1994, Pat. No. 5,469,924. This application Nov. 29, 1994, Ser. No. 348,999
Claims priority, application Japan, Jan. 13, 1993, 5-4037; Jan. 13, 1993, 5-4051; Jan. 13, 1994, 6-001837
Int. Cl.[6] B23Q *5/00*; E21C *5/00*
U.S. Cl. 173—176 14 Claims



1. A screw tightening apparatus including an electric screwdriver having a bit shaft adapted to carry a male screw to be threaded into a mounting hole of a workpiece and a drive mechanism adapted to move said screwdriver toward and away from said workpiece and to apply a thrust force to said bit shaft of said screwdriver, said screw tightening apparatus also including an electric control system that comprises:

first control means for controlling operation of said screwdriver and said drive mechanism in such a manner that said bit shaft is driven at a first speed and applied with a first thrust force at an initial stage of joining said screw and said workpiece, said initial stage lasting until said male screw is brought into engagement with said mounting hole;

second control means for controlling operation of said screwdriver and said drive mechanism in such a manner that said bit shaft is driven at a second speed higher than said first speed, and has applied thereto a second thrust force which is equal to or larger than said first thrust force during an interim stage where said male screw is threaded into said mounting hole; and

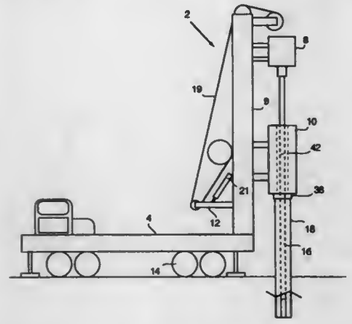
third control means for controlling operation of said screwdriver, and said drive mechanism in such a manner that said bit shaft is driven at a third speed less than said first speed and has applied thereto a third thrust force, larger than said first thrust force during a final stage during which said male screw is tightened and seated on said workpiece.

5,549,170

SONIC DRILLING METHOD AND APPARATUS

Jeffrey Barrow, 649 College St., Woodland, Calif. 95695

Filed Apr. 27, 1995, Ser. No. 429,818
Int. Cl.[6] E21B *7/20;7/24*
U.S. Cl. 175—55 37 Claims



11. A method of removing material from a subsurface, comprising the steps of:

providing a drill string and a sonic head, the drill string being coupled to the sonic head and having a hollow interior at a downhole end, the sonic head being configured to induce vibrations in the drill string for drilling through a subsurface;

driving a casing into the subsurface, the casing having an interior;

activating the sonic head so that the vibrations are induced in the drill string;

advancing the drill string into the subsurface so that material enters the hollow interior during the activating step;

pulling the drill string out of the subsurface;

the casing driving step and sonic drill string advancing step being carried out simultaneously for a period of time.

5,549,171

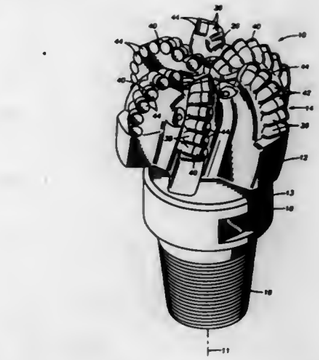
DRILL BIT WITH PERFORMANCE-IMPROVING CUTTING STRUCTURE

Graham Mensa-Wilmot, Houston, and Carl W. Keith, Spring, both of Tex., assignors to Smith International, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 288,489, Aug. 10, 1994. This application Sep. 22, 1994, Ser. No. 310,862
Int. Cl.[6] E21B *10/46*
U.S. Cl. 175—431 43 Claims

1. A cutting structure of a drill bit for cutting kerfs in formation material when the bit is rotated about its axis, said cutting structure comprising:

a set of spaced cutter elements mounted on the bit at substantially the same radial position relative to the bit axis such that each of said cutter elements in said set cuts in substantially the same kerf as the other cutter elements in said set when the bit is rotated about its axis; and



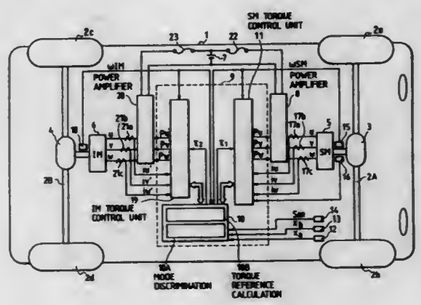
wherein at least one of said cutter elements in said set is mounted with a backrake angle that differs from the backrake angle of other elements in said set.

5,549,172

ELECTRIC VEHICLE DRIVE SYSTEM AND DRIVE METHOD

Nobuyoshi Mutoh, Katsuta; Ryoso Masaki; Taizou Miyazaki, both of Hitachi; Fumio Tajima, Ibaraki, and Tsutomu Ohmae, Hitachi, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 28, 1994, Ser. No. 234,424
Claims priority, application Japan, Apr. 28, 1993, 5-102154
Int. Cl.[6] B60K *1/02*
U.S. Cl. 180—65.1 24 Claims



10. In an electric vehicle wherein DC power of the vehicle-mounted battery is amplified and is supplied to at least two motors, and the wheels are driven by the torque of said at least two motors to drive the vehicle,

an electric vehicle drive system wherein said at least two motors comprise at least two different types of motors having different operation/torque characteristics, and the system is provided with the control means to adjust the share of the vehicle driving force to be generated by each of said motors in conformity to the running state of said vehicle,

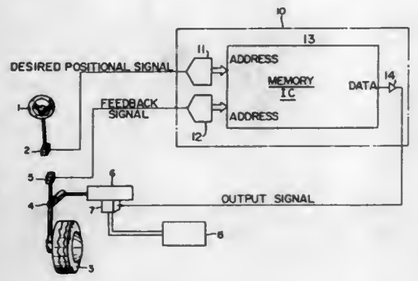
wherein front and rear wheels constitute the drive source of said vehicle, and said front and rear wheels are separately driven by said different types of motors.

5,549,173

CONTROL DEVICE FOR HYDRAULIC ACTUATOR USED IN STEERING

Ryoichi Tomita, Osaka, Japan, assignor to Sumitomo Precision Products Co., Ltd., Amagasaki, Japan

Continuation of Ser. No. 134,900, Oct. 13, 1993, abandoned.
This application Feb. 14, 1995, Ser. No. 388,893
Int. Cl.[6] B62D *5/06*
U.S. Cl. 180—417 4 Claims



1. A steering control assembly for a vehicle that includes a steering wheel, a vehicle wheel which is angularly displaceable to steer the vehicle, and a hydraulic actuator connected to the vehicle wheel to angularly displace said vehicle wheel, said hydraulic actuator including a solenoid valve which is controllable by a control signal, said control assembly comprising

a control device,

a first angle sensor connected to the steering wheel for detecting an angle of rotation of said steering wheel and providing an analog desired positional signal in response to the detected angle of rotation,

means for transmitting said analog desired positional signal to said control device,

a second angle sensor connected to the vehicle wheel for detecting an actual angle of angular displacement of said vehicle wheel and providing an analog feedback signal in response to the detected actual angle of angular displacement, and

means for transmitting said analog feedback signal to said control device, wherein

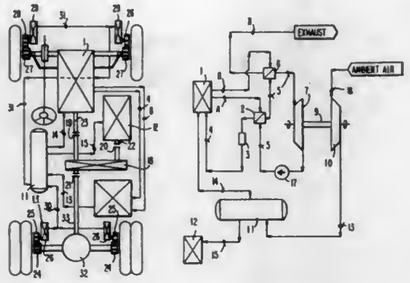
said control device consists of: first and second analog/digital converters for respectively converting said analog desired positional signal and said analog feedback signal to first and second digital signals; a memory IC which contains steering control characteristics stored at a plurality of addresses, wherein each address is defined by a pair of digital signals corresponding to a predetermined desired positional signal and a predetermined feedback signal, and when said first and second digital signals define an address stored in said memory IC said memory IC provides an output signal corresponding to steering control characteristics stored at the address to operate said solenoid valve, said memory IC being connected directly to said analog/digital converters for determining the address corresponding to said first and second digital signals; an output amplifier directly connected to data lines of the memory IC for converting said output signal into said control signal; and means for transmitting said control signal to said hydraulic actuator for control thereof.

5,549,174

RECOVERY SYSTEM FOR DISSIPATED ENERGY OF AN ENGINE MOTOR VEHICLE DURING ITS RUNNING CONDITIONS

Gianluigi Reis, Via Vettabbia, 6, 20122 Milan, Italy

Filed Sep. 23, 1994, Ser. No. 311,136
Claims priority, application Italy, Sep. 27, 1993, MI93A2054
Int. Cl.[6] B60K *6/00;13/04;* F01K *23/06*
U.S. Cl. 180—165 5 Claims



1. Recovery system for recovering dissipated energy of an engine driven motor vehicle during its running, said system consisting of:

a primary cooling circuit of an internal combustion engine consisting of a first pipe through which a primary cooling fluid flows from said internal combustion engine through a first heat exchanger and a radiator before coming back to said internal combustion engine,

a secondary cooling circuit consisting of a second pipe through which an intermediary fluid flows from said first heat exchanger through a second heat exchanger to a steam turbine which drives an air compressor before said intermediary fluid is returned back to said first heat exchanger,

a circulation pump connected to said second pipe to force said intermediary fluid through said secondary cooling circuit,

a circuit of hot exhaust gases of said internal combustion engine which flow from an exhaust of said combustion engine through said second heat exchanger, wherein said intermediary fluid having a low vaporization temperature point flows through said secondary circuit and is vaporized in said first heat exchanger by thermal exchange with said primary cooling fluid and superheated in said second heat exchanger by thermal exchange with said hot exhaust gases which are discharged from said internal combustion engine, the intermediary fluid producing mechanical work during its adiabatic expansion in said steam turbine; said recovery system further consisting of:

a compressed air circuit including said air compressor driven by said steam turbine and

a storage vessel, connected to said air compressor by a pipe, to store compressed air produced by said air compressor;

variable compression ratio air compressors, each of which replaces a braking device of said vehicle and, is powered through a plurality of gears that are connected to an axis of wheels of said vehicle to allow the braking of said vehicle;

pipes connecting to said storage vessel an output of each of said variable compression ratio air compressors;

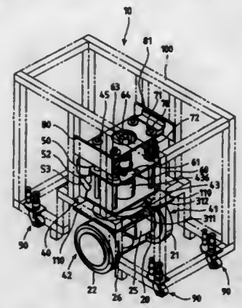
a compressed air motor powered by said compressed air stored in said storage vessel and being able to operate in place of said internal combustion engine which is installed on said engine motor vehicle.

5,549,175

CONTROL SYSTEM FOR CARRIAGE

Akito Torii, Okazaki; Naoki Matsumoto, and Shigeru Takeda, both of Aichi-ken, all of, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 23, 1995, Ser. No. 408,978
Claims priority, application Japan, Mar. 24, 1994, 6-054096
Int. Cl.[6] B62D *61/12;* B62K *13/00*
U.S. Cl. 180—209 15 Claims



1. A control system for a carriage which runs on a running surface, said control system comprising:

a frame forming an outer structure of said carriage;

a plurality of wheels mounted to said frame;

a drive source for transmitting a driving force to at least one of said wheels; and

posture control means, depending on an acceleration condition of said carriage, for raising or lowering at least one of said wheels relative to said frame so as to change a posture of said carriage, said posture control means including:

vibration-proof means mounted to said frame, and

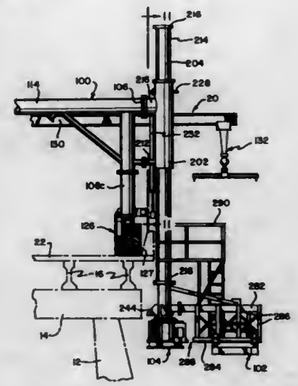
elevator means for raising or lower at least a pair of said wheels arranged at a lower center of said frame.

5,549,176

BRIDGE CONSTRUCTION MACHINERY AND METHOD FOR CONSTRUCTING BRIDGES

Claude D. Hawkins, Cantonment, Fla., assignor to Modern Bridge Forming Co., Inc., Cantonment, Fla.

Filed Sep. 9, 1994, Ser. No. 303,347
Int. Cl.[6] G04G *3/00*
U.S. Cl. 182—63 15 Claims



1. Apparatus for removing forms from a girder position, located adjacent the girders of a bridge, said bridge including longitudinally spaced apart piers having pier caps extending a finite distance transversely, said pier caps supporting spaced girders, said girders supporting a roadbed, said apparatus comprising:

a frame structure;

a support attached to said frame structure and being positioned along a side of the bridge, and including a portion which is located below said bridge;

at least two arms pivotally attached to said support, said arms being pivotal between an operative position under at least one bridge girder and a stowed position generally parallel to said at least one girder, said arms in said operative position being generally parallel to each other and spaced apart a predetermined distance, said arms in said stowed position being located away from said bridge;

a carriage having a length which is at least equal to said predetermined distance, supported by and movably positioned between said arms;

means for moving said carriage along said length of said arms under said at least one girder;

means for supporting said carriage at an accessible location out from under said bridge when said arms are in said stowed position; and

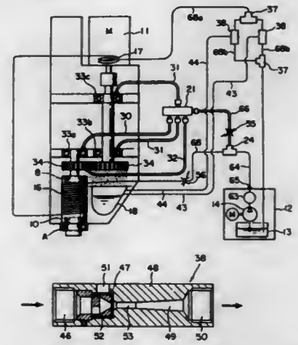
whereby forms may be removed from said girder position onto said carriage and transferred to said accessible location out from under said bridge.

5,549,177

SYSTEM FOR LUBRICATING AND COOLING MAIN SPINDLE HEAD OF MACHINE TOOL

Yutaka Hosokawa, Fuji, and Haruzi Hosoi, Nagaizumi-Cho, both of, Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Japan

Filed May 11, 1995, Ser. No. 439,378
Claims priority, application Japan, May 11, 1994, 6-097560
Int. Cl.[6] F01M *5/00*
U.S. Cl. 184—6.22 6 Claims



1. A system for lubricating and cooling a main spindle head of a machine tool, which comprises:

a storage tank for oil;

a cooling device for cooling and delivering oil stored in said storage tank;

a lubricating oil circuit and a cooling oil circuit which are constituted by bifurcating a pipe at an outlet side of said cooling device into two lines;

said lubricating oil circuit serving to feed lubricating oil to parts which require lubrication, within said main spindle head of said machine tool;

said cooling oil circuit functioning to circulate oil for cooling said main spindle of said machine tool, so that it passes through said main spindle of said machine tool and returns to said storage tank;

an oil bath for recovering said lubricating oil fed from said lubricating oil circuit; and

means for transferring said lubricating oil recovered in said oil bath to said storage tank.

5,549,178

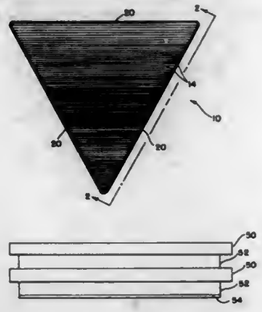
OIL ABSORBENT PAD

Gary R. Yuhas, 9325 London Rd., Orient, Ohio 43146

Filed Jul. 15, 1994, Ser. No. 275,372

Int. Cl.[6] F16N *31/02*

U.S. Cl. 184—106 **2 Claims**



1. An oil collecting mat for receiving oil drippings from a motor vehicle comprising:

a bottom member having peripheral upstanding walls;

a plurality of oil absorbent sheets being glued to said bottom member and having said peripheral upstanding walls glued to said plurality of oil absorbent sheets;

said plurality of oil absorbent sheets are sheets of corrugated cardboard where each sheet has a first flat sheet and a second flat sheet with a corrugated sheet sandwiched in between; and

wherein said plurality of absorbent sheets include alternating layers of sheets of corrugated cardboard having the cross-sections of corrugations exposed for greater absorption and layers of a foam sponge material.

5,549,179

COST EFFECTIVE CONTROL OF THE MAIN SWITCHES OF AN ELEVATOR DRIVE MOTOR

Peter L. Herkel, and Hans K. Spielbauer, both of Berlin, Germany, assignors to Otis Elevator Company, Farmington, Conn.

Filed Jan. 31, 1994, Ser. No. 189,400

Int. Cl.[6] B66B *1/06*

U.S. Cl. 187—298 **1 Claim**

1. An elevator control method, comprising the steps of:

determining a presence of a run upward or run downward command and, in the presence thereof, determining an existence of a legal combination of a plurality of signals from an inspection controller and a safety chain including at least an up run condition signal and a down run condition signal and, in the presence of the legal combination, determining that a main disconnect has not been controlled to a closed condition;

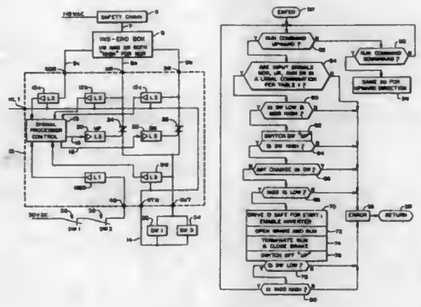
controlling the main disconnect to a closed condition;

determining that the main disconnect has been controlled to the closed condition;

providing electrical power to the disconnect and running the elevator upward or downward until a run is completed;

removing electrical power from the main disconnect and controlling the main disconnect to an open condition; and

determining that the main disconnect has been controlled to the open condition.



5,549,180

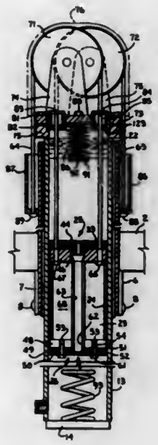
EMERGENCY ESCAPE APPARATUS

C. Calvin Hansen, Manhattan, Kans., assignor to C. Calvin Hansen Trust U/A, Manhattan, Kans.

Filed Mar. 17, 1995, Ser. No. 406,513

Int. Cl.[6] B66B *5/00*

U.S. Cl. 187—347 **23 Claims**



1. An escape apparatus comprising:

a. a vertically oriented support column at least partially filled with liquid;

b. an escape platform;

c. a sleeve for connecting said escape platform to said support column such that said escape platform is supported by and is vertically movable relative to said support column between a raised position and a lowered position;

d. a piston-counterweight positioned within and being vertically movable relative to said column, said piston-counterweight including:

i. a piston which is smaller in cross-section than the interior of said column, said piston including an aperture which extends from the top to the bottom thereof to allow the passage of said liquid therethrough; and

ii. a weight sufficient to make said piston-counterweight heavier than the combined weight of said escape platform and sleeve when said platform is empty; and

e. at least one cable connected at one end to said piston-counterweight and at an opposite end to said sleeve means.

5,549,181

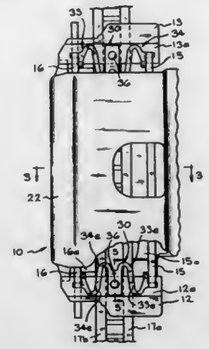
BRAKE SHOE RETRACTOR CLIP FOR DISC BRAKE ASSEMBLY

Anthony C. Evans, Northville, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Sep. 13, 1994, Ser. No. 305,236

Int. Cl.[6] F16D *55/224;65/02*

U.S. Cl. 188—72.3 **9 Claims**



1. A disc brake assembly adapted to frictionally engage a rotor connected to a vehicle wheel comprising:

an anchor plate;

a caliper carried on said anchor plate;

a pair of friction pads carried on one of said caliper and said anchor plate, said friction pads adapted to be disposed on opposite sides of the rotor;

means for selectively moving said friction pads toward one another so as to frictionally engage the rotor; and

a retraction mechanism for moving said friction pads apart from one another when said means for selectively moving is not operated so as to maintain a predetermined spaced apart relationship therebetween, said retraction mechanism including a retractor clip having a mounting portion which is fixed in position relative to said anchor plate at a location substantially outside the confines of said caliper, said retractor clip further including a pair of arms extending from said mounting portion which engage said friction pads, each of said arms of said retractor clip being elastically deformed when said friction pads are moved a predetermined distance toward one another so as to move said friction pads apart from one another when said means for selectively moving is not operated, each of said arms of said retractor clip being permanently deformed when said friction pads are moved more than said predetermined distance toward one another so as to maintain said predetermined spaced apart relationship.

5,549,182

FRICTIONAL DAMPER, IN PARTICULAR FOR SPINNER-TYPE WASHING MACHINES

Manfred Ehrnsberger, Berg; Dieter Mayer, Sulzbach-Rosenberg, and Helge Siegner, Altdorf, all of, Germany, assignors to Suspa Compart Aktiengesellschaft, Altdorf, Germany

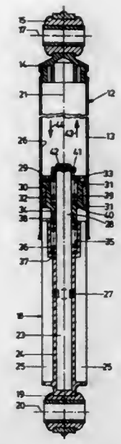
Filed Jun. 6, 1995, Ser. No. 466,432

Claims priority, application Germany, Jun. 7, 1994, 44 19 870.1

Int. Cl.[6] D06F *37/22;* **F16F** *7/08*

U.S. Cl. 188—129 **17 Claims**

1. In a spinner-type washing machine of the type including a frictional damper, the damper being joined to an element having various rotation speeds, the improvement wherein the damper comprises:



a housing (**12**) including a substantially annular cylindrical inside wall (**26**) and an axis (**21**);

a tappet (**18**; **18'**; **18"**; **18"'**; **18""**), displaceable in the housing (**12**) in the direction of the axis (**21**), having a piston-bearing section (**28**; **28'**; **28"**; **28"'**) and including stops (**41**, **37**; **41"**, **47**; **41'"**, **47"'**; **41""**, **54**) and a first end and a second end, the first end including means for guiding out of the housing (**12**) and the second end being provided with the piston-bearing section (**28**; **28'**; **28"'**; **28""**);

a unitary, non-extendable, and indivisible damping piston (**29**; **29'**; **29"**; **29"'**) disposed on the piston-bearing section (**28**; **28'**; **28"**; **28""**)

spring elements bearing against the stops (**41**, **37**; **41"**, **47**; **41'"**, **47"'**, **41""**, **54**), the spring elements including a first compression spring bearing on a first damping piston side and a second compression spring bearing on a second damping piston side;

a friction lining (**32**) disposed on the damping piston (**29**; **29'**; **29"**; **29"'**) and elastically pressed against the inside wall (**26**) of the housing (**12**), there being a stiction between the friction lining (**32**) and the inside wall (**26**) of the housing (**12**); and

fastening elements (**19**, **15**) being formed on the first end of the tappet (**18**; **18'**; **18"**; **18"'**, **18""**) and on one end of the housing (**12**), wherein the spring elements are compressively prestressed compression springs (**36**, **29**; **36"**, **39"**; **56**, **57**; **36""**, **39""**) each exerting, a biasing force on the damping piston throughout the piston stroke of the damping pistons;

the damping piston being displaceable between the spring elements over a piston stroke and including abutment faces for the spring elements to bear upon, abutment faces being unmovable in relation to the friction lining; and wherein

the spring elements (**36**, **29**; **36"**, **39"**; **56**, **57**; **36""**, **39""**) are biased such that when the first compression spring (**36**, **29** ; **36"**, **39"**, **56**, **57**; **36""**, **39""**) is completely compressed, the second compression spring (**36**, **29**; **36"**, **39"**; **56**, **57**; **36""**, **39""**) is released approximately, but not entirely.

5,549,183

MOTOR LOCKING UNIT

Harry C. Buchanan, Jr., Spring Valley, and Peter S. Zhou, Dayton, both of Ohio, assignors to ITT Automotive Electrical Systems, Inc., Auburn Hills, Mich.

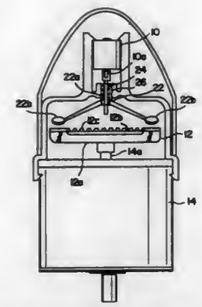
Filed May 17, 1995, Ser. No. 443,012

Int. Cl.[6] F16D *65/00*

U.S. Cl. 188—265 **13 Claims**

1. A motor locking unit comprising:

a locking motor having a shaft;



a locking disc adapted for connection to and movement with the shaft of a motor which is to be locked, said locking disc having:

(a) a hub disposed perpendicular to and centered on the axis of said shaft of said locking motor, and

(b) a plurality of alternating spaces and ridges extending radially outward of said hub of said locking disc;

a locking member having:

(a) a hub disposed perpendicular to and centered on the axis of said shaft of said locking motor,

(b) a plurality of arms extending radially outward from said hub of said locking member and toward said locking disc, and

(c) a plurality of fingers at radially outer ends of said arms engaging said locking disc in said spaces and between said ridges when said locking member is moved longitudinally of the axis of said shaft of said locking motor; and

means for coupling said shaft of said locking motor to said hub of said locking member to impart to said hub of said locking member, in response to rotary movement of said shaft of said locking motor, longitudinal movement along the axis of said shaft of said locking motor in:

(a) a first direction in response to rotary movement of said shaft of said locking motor in a first direction to move said fingers of said locking member into said spaces and between said ridges of said locking disc, and

(b) a second direction, opposite to the first direction of longitudinal movement of said hub of said locking member, in response to rotary movement of said shaft of said locking motor in a second direction, opposite to the first direction of rotary movement of said shaft of said locking motor to move said fingers of said locking member out from said spaces and between said ridges of said locking disc.

5,549,184

HYDRODYNAMIC CONVERTER WITH A BRIDGING COUPLING

Alfons Löffler, and Josef Schwarz, both of Friedrichshafen, Germany, assignors to ZF Friedrichshafen AG, Germany

PCT No. PCT/EP93/01925, § 371 Date Jan. 18, 1995, § 102(e) Date Jan. 18, 1995, PCT Pub. No. WO94/02759, PCT Pub. Date Feb. 3, 1994

PCT Filed Jul. 21, 1993, Ser. No. 374,515

Claims priority, application Germany, Jul. 24, 1992, 42 24 472.2

Int. Cl.[6] F16H *61/14*

U.S. Cl. 192—3.3 **4 Claims**

1. A hydrodynamic converter (1) including a bridging coupling (5) that is actuated by an annular piston (6) whose first active surface (9) is actuated in an opening direction by an internal pressure of said converter (1) and whose second active surface (10) is actuated in a closing direction by a closing pressure, wherein during a closing and in a closed condition of said bridging coupling (5) a precontrolled regulating valve (14) adjusts the closing pressure to a value above the internal pressure of said converter (1), wherein during an opening phase of said bridging coupling (5) said precontrolled regulating valve (14) keeps the closing pressure greater than zero and below the internal pressure of said converter (1) by a presettable value.

5,549,185

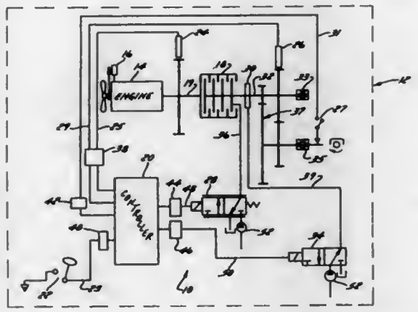
POWER TAKE OFF TORQUE LIMITING CONTROL SYSTEM

Satish L. Kale, Willowbrook, Ill., assignor to Case Corporation, Racine, Wis.

Filed Aug. 1, 1994, Ser. No. 283,960

Int. Cl.[6] F16D *67/04*

U.S. Cl. 192—12 C **31 Claims**



1. In a vehicle having a power source for producing rotational motion, a power take-off (PTO) shaft for supplying rotational motion to at least one piece of equipment other than the vehicle, and a clutch including an input shaft coupled to the power source and an output shaft coupled to the PTO shaft, wherein the clutch transmits a maximum torque between the input and output shafts in response to a maximum clutch pressure and transmits a selectable torque between the input and output shafts in response to a selected clutch engagement pressure less than the maximum clutch engagement pressure, a control system comprising:

a clutch control configured to engage and disengage the clutch in response to first and second control signals, respectively, the clutch transmitting a selectable torque between the input and output shafts dependent upon a selectable clutch engagement pressure defined by the first control signals, wherein the clutch engagement pressure is less than the maximum engagement pressure;

a first transducer disposed to generate an input signal representative of the rotational speed of the input shaft;

a second transducer disposed to generate an output signal representative of the rotational speed of the output shaft; and

a control circuit coupled to the clutch control, the first transducer and the second transducer, and being configured to;

apply said first and second control signals to the clutch control,

generate time values representative of time periods when the input signals and output signals are not representative of input and output rotational shaft speeds which are substantially equal, and

apply first control signals to the clutch control when the input and output shaft speeds are substantially equal and applying second control signals to the clutch control when the time values exceed a predetermined limit.

5,549,186

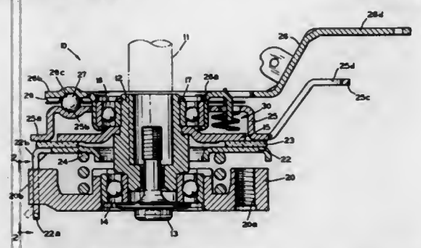
CLUTCH/BRAKE ASSEMBLY

James A. Pardee, Janesville, Wis., assignor to Dana Corporation, Toledo, Ohio

Filed Nov. 30, 1994, Ser. No. 346,622

Int. Cl.[6] F16D *67/02*

U.S. Cl. 192—18 R **15 Claims**



1. A clutch/brake assembly comprising:

an input hub adapted to be connected to a source of rotational power;

an output hub adapted to be connected to a driven device, said output hub having a boss formed thereon;

a friction plate including a finger portion having a slot formed therethrough, said boss extending through said slot such that said friction plate is connected to said output hub for rotational movement therewith and for axial movement relative thereto;

means for retaining said friction plate and said output hub together so that said friction plate anal said output hub can be removed from said clutch/brake assembly as a unit; and

means for selectively connecting said friction plate to said input hub such that said output hub is driven to rotate with said input hub.

5,549,187

FREE-WHEELING COUPLING SENSITIVE TO THE DIRECTION OF ROTATION

Hansjörg Kofler, Graz, Austria, assignor to Steyr-Daimler-Puch AG, Vienna, Austria

Filed Aug. 9, 1994, Ser. No. 288,148

Claims priority, application Germany, Aug. 16, 1993, 43 27 472.2; May 4, 1994, 44 15 774.6

Int. Cl.[6] F16D *41/10;* **B60K** *23/08*

U.S. Cl. 192—35 **7 Claims**

1. A free-wheeling coupling sensitive to the direction of rotation for a motor vehicle, comprising

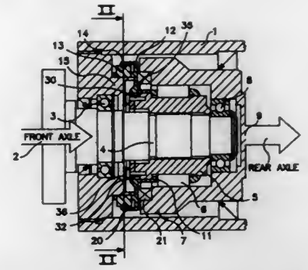
a first ring which constitutes a driving element in a towing mode for a motor vehicle,

a second ring which constitutes a driven element in said towing mode,

clamping elements which act between said first and second rings to transfer torque between said first and said second rings in both directions of torque flow,

a cage in which said clamping elements are disposed,

a first fixed friction ring,



a first friction element comprising at least one friction segment connecting said cage to said fixed friction ring, said friction segment being slaved to rotate in a circumferential direction with said cage, said friction segment being lifted away from said fixed friction ring by centrifugal force when it is caused to rotate at a rotational speed which is greater than a first-predetermined rotational speed,

at least one catch acting between said first ring and said cage, and

a spring urging said catch out of engagement with said cage.

5,549,188

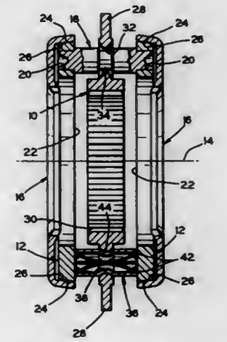
SPLIT PIN FOR TRANSMISSION SYNCHRONIZER ASSEMBLY

James A. Yarnell, Temperance, Mich., assignor to Dana Corporation, Toledo, Ohio

Filed Nov. 1, 1994, Ser. No. 333,080

Int. Cl.[6] F16D *11/00*

U.S. Cl. 192—53.332 **11 Claims**



1. A transmission synchronizer assembly comprising:

a pair of annular friction races mounted for movement co-axially with each other in a fixed, spaced apart relationship, with the spacing between the two friction races being at a fixed distance, the friction races being mounted for coaxial movement as a unit into and out of engagement with friction surfaces;

an annular shiftable clutch collar positioned between the two friction races, the clutch collar being mounted for coaxial movement with respect to the friction races to enable engagement of the clutch collar with transmission gears, the clutch collar having two or more circumferentially spaced orifices for receiving pins therethrough; and,

two or more pins mounted through the orifices to resiliently urge the clutch collar into a roughly central position with respect to the friction races, the pins being shorter than said fixed distance, and not extending into the friction races.

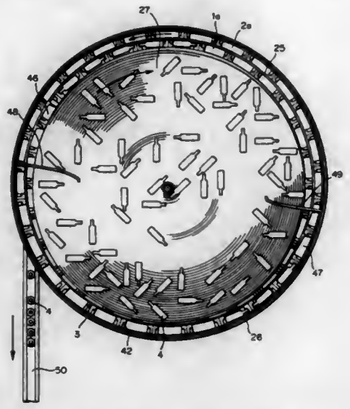
VOL 1189 ISS 4 AUG 27 1996 UMI

5,549,189

MACHINE FOR AUTOMATICALLY POSITIONING AND ALIGNING CONTAINERS

Jaime Martisala, Ronda SantaMari'' 6–8, Barbera Del Valles, Spain

Filed Jun. 15, 1994, Ser. No. 261,896
Claims priority, application Spain, Jun. 15, 1993, 9301324
Int. Cl.[6] B65G *47/24*
U.S. Cl. 198—380 **10 Claims**



1. A machine for automatically positioning and aligning containers, such as plastic bottles, comprising:

a main hopper for receiving a plurality of randomly positioned containers and having a central part;

a side wall on said main hopper;

a bottom in said main hopper having a peripheral portion spaced from said side wall to provide a space through which containers on said bottom can pass;

a container holder support means having a peripheral portion and supported below said hopper for movement of said peripheral portion thereof in a path adjacent said peripheral portion of said bottom;

means for driving said container holder support means in said path;

container holder means mounted on said container holder support means for movement therewith and having recesses therein for receiving and holding containers in a lying position from said peripheral portion of said bottom;

discharge openings in said container holder means for allowing containers to pass therethrough;

container support shelf means extending below said container holder means for supporting containers in a lying position in said recesses during movement of said container holder means;

a discharge section in said support shelf means for discontinuing support of containers at a predetermined location so that containers in said container holder means pass through said discharge openings at said discharge section;

tilting means on said container holder means engaging a part of each container for tilting each container into a predetermined position as each container passes through said discharge openings at said discharge section;

chute means mounted below and movable with said container holder means for receiving, orientating and guiding containers passing through said discharge openings into a predetermined position, moving said containers along a fixed bottom from which they are evacuated by an exit conveyor,

said container holder support means comprising at least two rows of openings surrounding said peripheral portion of said bottom; and

covering means for separating said rows of openings in several non adjacent areas, staggered along said peripheral portion of said bottom, so that at each of said areas only one portion of a predetermined length of one of said rows of openings is uncovered allowing the passage of the container therein, while the remaining annular rows of openings are covered-up, and wherein

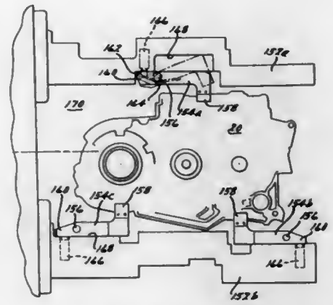
said chute means comprise a plurality of independently removable discharge chutes which converge over a single annular plane and which uprightly position and re-group, in a single row, all of said containers.

5,549,190

ADIABATIC TRANSFER DEVICE FOR AN DRY DIAMOND MILLING SYSTEM

Manuel C. Turchan, 42288 Crestview Cir., Northville, Mich. 48167

Division of Ser. No. 875,231, Apr. 28, 1992. This application May 18, 1995, Ser. No. 444,208
Int. Cl.[6] B65G *47/248*
U.S. Cl. 198—403 **6 Claims**



1. A transfer device for precision picking and placing of a workpiece, said transfer device comprising:

a pair of juxtaposed members spaced apart to form a slot therebetween for receiving said workpiece;

means attached to said pair of juxtaposed members for moving said pair of juxtaposed members between a first position and a second position;

a clamping member pivotably attached to each member of said pair of juxtaposed members, each said clamping member having a pivot end for pivotably mounting each said clamping member to its respective member of said pair of juxtaposed members and an engagement end which is pivotable into said slot for engaging said workpiece;

means engaged with each said clamping member for biasing each said clamping member into said slot;

stop means associated with each said clamping member for limiting the extent to which each said clamping member extends into said slot such that said clamping members of said pair of juxtaposed members are spaced apart a predetermined distance when said engagement end of each said clamping member is pivoted into said slot in an extended position, said predetermined distance being less than a corresponding width of said workpiece; and

means associated with said clamping members for holding each said clamping member in a retracted position, said holding means sequentially allowing a first clamping member and a second clamping member, respectively, to extend into said slot;

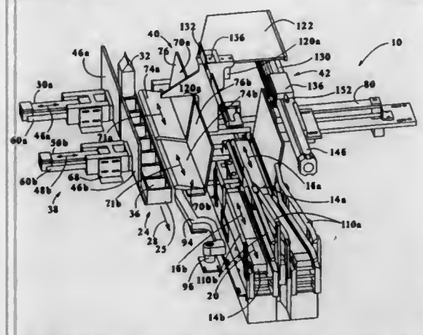
whereby upon being released by said holding means, said first clamping means moves toward said workpiece until said clamping member engages said stop means, said stop means defining a predetermined position for said first clamping member, and upon being released by said holding means, said second clamping member moves toward said workpiece until said second clamping member engages said workpiece, said second clamping member clamping said workpiece against said first clamping member so as to located said workpiece in a predetermined position for transport.

5,549,191

APPARATUS FOR TRANSFERRING CONTAINERS TO A MOVING CONVEYOR

Kosaku Itoh, Buffalo Grove; Ikuro Yokoyama, Arlington Heights; Richard Prochut, Bartlett; Jörgen Löfstedt, Palatine, and Christer Nilsson, Arlington Heights, all of Ill., assignors to Tetra Laval Holdings & Finance S.A., Pully, Switzerland

Filed Sep. 28, 1994, Ser. No. 315,409
Int. Cl.[6] B65G *47/26*
U.S. Cl. 198—432 **10 Claims**



1. An apparatus for transferring a plurality of containers carried by a support surface onto a continuously moving conveyor distally located from the support surface, comprising:

a) a puller plate adapted to support a plurality of containers along a row running parallel to the conveyor, the puller plate being movable between a first position adjacent to the support surface and a second position at which the row of cartons carried by the puller plate align with the conveyor;

b) a pusher plate movable across the support surface between a retracted position at which the containers carried by the support surface are positioned between the pusher plate and the puller plate and an extended position proximal to the puller plate first position;

c) an unloader plate movable along the puller plate when the puller plate is at its second position, the unloader plate being movable between a first position distal to the conveyor and a second position proximal to the conveyor; and

d) means for moving the pusher plate from its retracted position to its extended position to push a row of cartons onto the puller plate, moving the puller plate from its first position to its second position to align the row of cartons with the conveyor and moving the unloader plate from its first position to its second position to sequentially push the row of cartons carried by the puller plate onto the conveyor;

e) software programmable control means for coordinating movement of the means for moving, said software programmable control means including a motion cycle comprising

(i) driving the pusher plate from its retracted position to its extended position to remove the containers from the support surface onto the puller plate,

(ii) driving the puller plate from its first position to its second position as the pusher plate drives the containers from the support surface onto the puller plate, movement of the puller plate being coordinated by the software programmable control means so that the puller plate begins moving from its first position to its second position at a time prior to the time at which the pusher plate reaches its extended position,

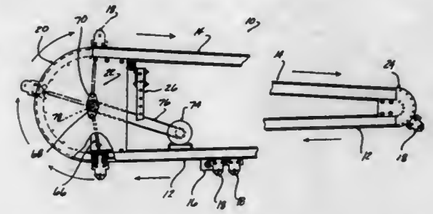
(iii) driving the unloader plate from its first position to its second position to thereby drive the containers from the puller plate onto the conveyor.

5,549,192

RETURN MECHANISM FOR GRAVITY CONVEYOR

James Zaguroli, Jr., Drayton Plains, Mich., assignor to Knight Industries, Inc., Auburn Hills, Mich.

Filed Jan. 31, 1995, Ser. No. 381,499
Int. Cl.[6] B65G *35/08*
U.S. Cl. 198—795 **5 Claims**



1. In a gravity conveyor including upper and lower inclined sections connected at one end with a first radiused track, connected at their other ends more widely spaced apart vertically with a second radiused track, larger sized than said first radiused track, and a plurality of trolleys having support rollers enabling said trolleys to roll down said upper section, around said first radiused track and down said lower section, a return mechanism for returning said trolleys from a lower end of said lower conveyor section around said second radiused rack to an upper end of said upper conveyor section, said return mechanism comprising:

a shaft mounted for rotation about the center of said second radiused track;

a drive motor rotating said shaft;

at least one rod assembly affixed to said shaft and extending radially outward to said second track;

said rod assembly including a spring-loaded plunger at the outer end adapted to be retracted against a spring force urging said plunger outwardly;

each of said trolleys including a recess in an upper portion thereof with said trolley on said lower conveyor section, said recess adapted to receive a tip of said plunger as said rod assembly rotates across a trolley disposed at said lower end of said lower conveyor section;

extension of said tip into said recess thereby establishing a driving engagement of said rod assembly with said trolley to cause said trolley to be swept around said second track by rotation of said shaft and deposit said trolley onto said upper end of said upper conveyor section.

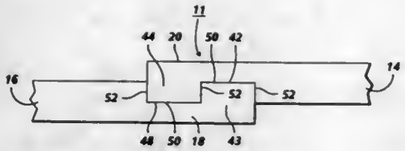
5,549,193

ENDLESS SEAMED BELT

Edward L. Schlueter, Jr.; Thomas C. Parker, both of Rochester; Robert M. Ferguson, Penfield, and Robert N. Finsterwalder, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 29, 1994, Ser. No. 297,206
Int. Cl.[6] B65G *15/30*
U.S. Cl. 198—844.2 **15 Claims**

1. An endless flexible seamed belt formed by joining two ends of a material from which the belt is fabricated, said belt having a plurality of overlapping, butting, interlocking joints to form the endless belt, each end of the overlapping butting, joints, comprising a pair of interlocking members comprising a male projection



and a female receptacle geometrically oriented so that the female receptacle on the first end receives the male projection on the second end and the male projection on the first end is received by the female receptacle on the second end to form a joint between said first and second ends, said receptacle being formed within and having a substantial depth in a portion of the belt material at the belt ends, said projection and receptacle pair being sized and shaped to form at least one pair of mutually mating elements in a combination overlapping, butting and interlocking joint to form the endless belt.

5,549,194

ACCUMULATING CONVEYOR CHAIN

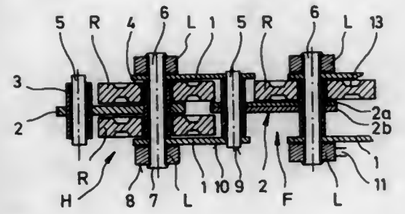
Heinrich Dag, Penzberg, Germany, assignor to Joh. Winklhofer & Sohne, Germany

Filed Dec. 15, 1994, Ser. No. 356,718

Claims priority, application Germany, Dec. 16, 1993, 9319371 U

Int. Cl.[6] B65G *39/20*

U.S. Cl. 198—845 **9 Claims**



1. An accumulating conveyor chain comprising a link chain with alternating inner and outer link plates coupled via hinge bolts which are fixed in the outer link plates and rotatably traverse sleeves fixed in the inner link plates, some of the hinge bolts extending outwardly beyond their respective sleeves and the other hinge bolts being substantially the same length as their respective sleeves, large-diameter conveyor rollers being rotatably mounted on the respective sleeves of at least some of the outwardly-extending hinge bolts at predetermined positions along the link chain and smaller rollers being rotatably mounted on at least some of the outwardly-extending hinge bolts at opposing ends of the bolts outside the outer link plates, the hinge bolts which are the same length as their sleeves being without smaller rollers and being located in sleeves without conveyor rollers.

5,549,195

MOVABLE SURFACE WITH ARTICULATED PLATES

Michel Aulagner, Saint-Ferreol-d'Auroure, and Serge Esteveny, Saint-Juste-Saint-Rambert, both of, France, assignors to Entre-Prises, Le Touvet, and Centre Stephanois de Recherches Mecaniques Hydromecaniques et Frottement, Andrezieux-Boutheon, both of, France

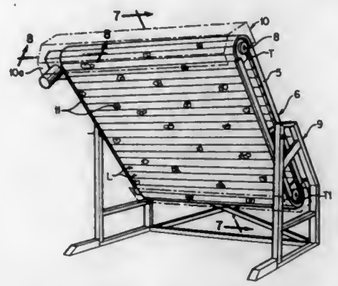
PCT No. PCT/FR93/01144, § 371 Date Jul. 27, 1994, § 102(e) Date Jul. 27, 1994, PCT Pub. No. WO94/12249, PCT Pub. Date Jun. 9, 1994

PCT Filed Nov. 22, 1993, Ser. No. 256,948

Claims priority, application France, Nov. 27, 1992, 92 14590

Int. Cl.[6] B65G *17/06*

U.S. Cl. 198—850 **10 Claims**



1. A climbing wall with a mobile surface, said wall comprising:

a framework for supporting at least an upper drive drum and a lower drive drum;

a plurality of plates that bear on the upper and lower drive drums, each plate comprising an external face, an internal face opposite the external face, a first end, a second end opposite the first end, guiding profile means located at one of the first and second ends, articulation profile means located at the other one of the first and second ends and having a cross section shape complementary to the guiding profile means, a pair of first straight edges extending perpendicularly from the external face to the guiding profile means and the articulation profile means, respectively, and a pair of second straight edges extending non-perpendicularly from the internal face to the guiding profile means and articulation profile means, respectively;

flexible coupling links for coupling the plates, the flexible links extending through a longitudinal slot in each plate, the slot being parallel to the external and internal faces; and

a free space located between the second straight edges of adjacent plates for enabling the plates to be articulated up to a stop position upon engagement of the second straight edges,

wherein the plates form at least one continuous flat face upon engagement of the first straight edges of adjacent plates.

5,549,196

CONDOM APPLICATOR AND PACKAGING

Leon B. Kassman, 245 E. 24th St., New York, N.Y. 10010

Filed Feb. 21, 1995, Ser. No. 391,440

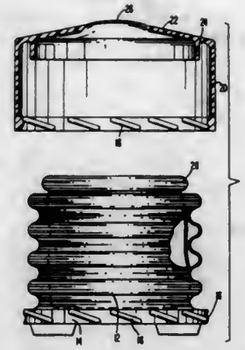
Int. Cl.[6] B65D *85/08;* **A61F** *6/04*

U.S. Cl. 206—69 **10 Claims**

1. A condom applicator and packaging, comprised by:

a tubular member formed of a resilient flexible material having a memory of its original shape, said tubular member including an axial tubular wall, an end wall providing a closure for one end of said tubular wall, and, a ring-shaped neck at an opposite end of said tubular wall of lesser diameter than said tubular wall;

a cup-shaped member having a closed end and a skirt having a free edge positioned over said tubular member;



means securing said tubular member within said cup-shaped cap member in an axially compressed condition of said tubular member;

said means being manually releasable to permit removal of said cap member from said tubular member, and, permit axial expansion of said tubular member towards its original shape under the stored inherent memory of the material comprising said tubular member.

5,549,197

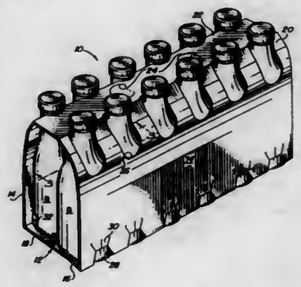
WRAP-AROUND CARRIER WITH BOTTLE NECK RETAINER TABS

Robert L. Sutherland, Kennesaw, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.

Filed Dec. 9, 1994, Ser. No. 352,461

Int. Cl.[6] B65D *5/36*

U.S. Cl. 206—158 **5 Claims**



1. A wrap-around carrier containing a plurality of necked bottles, comprising:

a pair of opposite side panels, each side panel including an upper portion and a lower primary portion, each upper side panel portion being connected by a fold line to a top panel and each primary side panel portion being connected by a fold line to a bottom panel;

each upper side panel portion forming an angle with the top panel and with an associated primary side panel portion;

the carrier including a plurality of openings through which the necks of the bottles extend, each opening extending entirely across the upper portion of each side panel, and partially into both the primary side panel portion adjacent thereto and the top panel;

each opening having opposite transverse edges in the upper side panel portions; and

an inwardly folded bottle neck retainer tab connected by a fold line to each transverse edge of the openings;

the retainer tabs of each opening contacting opposite surfaces of the bottle neck associated therewith to hold the bottle neck in place.

5,549,198

MULTIPACK FOR RECORDING MEDIA IN TAPE FORM WOUND ONTO HUBS

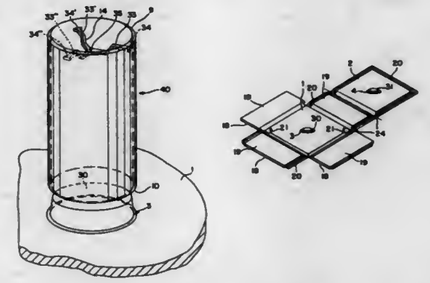
Hartmut Thiele, München; Hermann Brandstetter, Hochenkirchen-Siegertsbrunn; Jose Toral, München; Rainald Hiller, Hemsbach; Bernd Scholtysik, München; Gottfried Lutz, Seefeld, and August Liepold, München, all of, Germany, assignors to BASF Magnetics GmbH, Mannheim, Germany

Continuation-in-part of Ser. No. 119,060, Sep. 16, 1993, abandoned, and a continuation-in-part of Ser. No. 56,792, May 4, 1993, Pat. No. 5,405,101. This application Nov. 3, 1994, Ser. No. 336,231

Claims priority, application Germany, Mar. 22, 1991, 41 09 360.7; May 12, 1992, 9206339 U

Int. Cl.[6] B65D *85/67*

U.S. Cl. 206—307 **10 Claims**



1. A foldable plastic parallelepipedal packaging container for recording media in tape form which are wound up onto hubs provided with internal bores and are stacked one on top of the other, comprising a bottom part, a top part and side parts, which are joined to one another by means of molded-on film hinges, said side parts and bottom or top parts also having free edges which are not joined to one another by said hinges, the packaging container also comprising a hub support having a diameter and being formed as a hollow cylinder, within said hollow cylinder there is positioned a handling means, said diameter of the hub support being designed for matching with said internal bores of the hubs, the packaging container having annular recesses in each case in the geometrical center of the inward-facing surface of the bottom part and the top part from each of which recesses there protrudes at least one individual projection, whereby the end faces of the hub support are engageable by said projections and each of said recesses, said free edges of said side parts and bottom or top parts being provided with tongues and grooves corresponding to said tongues, such that where said free edges meet, one edge is provided with a tongue and the other with a groove, whereby when the packaging container is folded together said tongues engage said corresponding grooves, for sealing said recording media within said packaging container.

5,549,199

COMPACT DISC STORAGE CASE

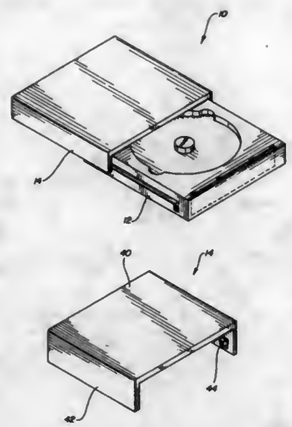
Joseph A. Lindsay, 1812 Green Acres, Metairie, La. 70003

Filed Oct. 5, 1995, Ser. No. 539,361

Int. Cl.[6] B65D *85/57*

U.S. Cl. 206—308.1 **20 Claims**

1. A compact disc storage case comprising:



a compartment section having a top surface forming a substantially cylindrical storage recess and two parallel outer sides each forming a substantially rectangular, horizontal track terminating in a vertical section oriented downwardly;

a cover section having a planar top wall and two parallel side walls extending downwardly therefrom; and

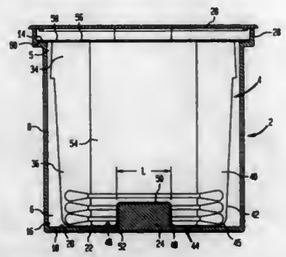
a square peg extending from each said side wall in a manner such that said square pegs are oriented along the same line and toward one another, each said peg being entrapped within one said horizontal track in a manner such that said cover section is slidable with respect to said compartment section.

5,549,200

SWAB DISPENSER

Kevin Cowan, Clinton; John Elmer, Danbury, and James Turbett, Stanford, all of Conn., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Filed Jun. 6, 1995, Ser. No. 470,514
Int. Cl.[6] B65D *85/08*
U.S. Cl. 206—362 **22 Claims**



1. A swab dispenser comprising:

an outer receptacle with an open and a closed end, comprising:

a pair of side panels parallel to one another;

a pair of front panels, the side and front panels each defined by a pair of spaced apart parallel vertical edges and spaced apart upper and lower horizontal edges orthogonal to the vertical edges, the side panels being orthogonally connected to the front panels along the respective vertical edges;

a bottom panel orthogonally connected to each of the lower horizontal edges defining the closed end of the receptacle, the bottom panel having an inner and an outer surface on opposite faces, the inner surface including a centrally positioned fin projecting vertically upwardly toward the receptacle open end, the fin having a horizontal length greater than a width thereof; and

a lid attached in a movable manner to an upper area of the receptacle having dimensions sufficient to cover the open end thereof;

a replaceable refill container insertable within the outer receptacle, the container having an open and a closed end, comprising:

a pair of side walls parallel to one another;

a pair of front walls, the side and front walls each defined by a pair of spaced apart parallel vertical edges and spaced apart upper and lower horizontal edges orthogonal to the vertical edges, the side walls being orthogonally connected to the front walls along the respective vertical edges;

a lip formed all along the upper horizontal edge defining the open end of the container; and

a bottom wall orthogonally connected to each of the lower horizontal edges defining the closed end of the container, the bottom wall having an inner and an outer surface on opposite faces, the inner surface of the container including a centrally positioned fin projecting vertically upwardly toward the container open end, and the container fin on its outer surface having an aperture therewithin for receiving the receptacle fin in a mating relationship.

14. A refill container for packaging swabs having an open and a closed end, comprising:

a pair of side walls parallel to one another;

a pair of front walls, the side and front walls each defined by a pair of spaced apart parallel vertical edges and spaced upper and lower horizontal edges orthogonal to the vertical edges, the side walls being orthogonally connected to the front walls along the respective vertical edges, and the front walls being formed with an outwardly protruding section to receive a product label therewithin;

a lip formed all along the upper horizontal edge defining the open end of the container; and

a bottom wall orthogonally connected to each of the lower horizontal edges defining the closed end of the container, the bottom wall having an inner and an outer surface on opposite faces, the inner surface of the container including a centrally positioned fin projecting vertically upwardly toward the container open end, and the container fin on its outer surface having an aperture therewithin.

22. A refill container for packaging swabs having an open and a closed end, comprising:

a pair of side walls parallel to one another;

a pair of front walls, the side and front walls each defined by a pair of spaced apart parallel vertical edges and spaced upper and lower horizontal edges orthogonal to the vertical edges, the side walls being orthogonally connected to the front walls along the respective vertical edges;

a lip formed all along the upper horizontal edge defining the open end of the container;

a bottom wall orthogonally connected to each of the lower horizontal edges defining the closed end of the container, the bottom wall having an inner and an outer surface on opposite faces, the inner surface of the container including a centrally positioned fin projecting vertically upwardly toward the container open end, and the container fin on its outer surface having an aperture therewithin; and

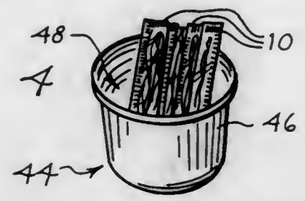
a plurality of cotton-tipped swabs stored within an interior of the container.

5,549,201

PACKAGE FOR DENTAL FLOSS

Laurence S. Braude, 797 Kimballwood La., Highland Park, Ill. 60035

Filed Jun. 7, 1995, Ser. No. 484,141
Int. Cl.[6] A61C *15/04*
U.S. Cl. 206—388 **13 Claims**



1. In combination, a plurality of packages of dental floss and a cup-shaped container holding said packages, the packages comprising:

a plurality of separate elongate enclosures having a width and a length with the length being at least nine times as great as the width and the separate enclosures each being independently movable from the other enclosures and separate from one another; and

a piece of dental floss sized for a single use, having a length of at least 3 in. and less than 36 in., individually sealed in each enclosure;

each enclosure containing only said single piece of dental floss;

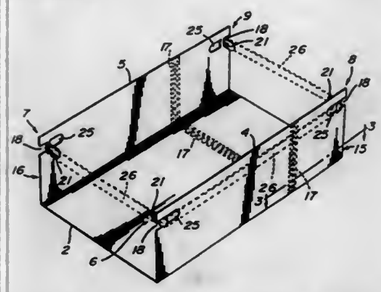
said cup-shaped container having a wall defining a dental floss package receiving space and opening through which the packages can be removed from the space, said wall having a height that is less than the length of the plastic enclosures so that the enclosures can project through the container opening as they rest in the container.

5,549,202

PACKAGING CONTAINER BLANK

Michael Whiteside, 70 Springhome Road, Barrie, Canada

PCT No. PCT/CA94/00398, § 371 Date May 1, 1995, § 102(e) Date May 1, 1995, PCT Pub. No. WO95/03223, PCT Pub. Date Feb. 2, 1995
PCT Filed Jul. 19, 1994, Ser. No. 403,847
Claims priority, application Canada, Jul. 20, 1993, 2100946
Int. Cl.[6] B65D *5/18*
U.S. Cl. 206—436 **17 Claims**



1. A blank for forming a U-shaped support envelope for a container package containing rectangular carton containers of uniform height, shape and size, said containers each having a top, a bottom and sides, said U-shaped support envelope having an uncovered top, two opposed uncovered sides, and two opposed, parallel, planar side wall members extending from a planar base, each said side wall member having a top edge,

said blank being substantially rectangular and comprising a front edge, a rear edge and two side edges,

each side edge defining with the front edge, a front corner each side edge defining with the rear edge, a rear corner

a side edge portion of said blank, adjacent each side edge, being foldable upwardly such that

said side edge portions each define a respective side wall member, said planar base is connected to each side wall member by a respective fold line, said fold lines are parallel to each other, each said side edge defines the top edge of a respective side wall member, each side wall member comprises a said front corner and a said rear corner, and each of the side wall members has a height such that the top edge thereof is flush with or extends above the tops of the adjacent containers,

characterized in that

each side edge portion is a corrugated member comprising a plurality of parallel corrugation flutes, said flutes being disposed such that when a side edge portion is folded upwardly the flutes thereof extend from a respective fold line to a respective said top edge, and

said blank includes tongue-slot combination means disposed at each said corner,

each tongue-slot combination means comprising

edge slot means for engaging a surrounding band member for holding the carton containers in the U-shaped envelope, said edge slot means thereof being disposed adjacent to a respective side edge of said blank, said edge slot means thereof having a bottom, and

cushion tongue means for projecting from said edge slot means,

each said tongue-slot combination means being disposed and configured such that

when the surrounding band member is positioned in the edge slot means thereof, and is under tension to hold the carton containers in said U-shaped envelope,

the uncovered side of an adjacent end container is flush with or extends outwardly beyond the bottom of the slot means thereof,

each said tongue-slot combination means being disposed and configured such that

when the surrounding band member is positioned in the edge slot means thereof, and is under tension to hold the carton containers in said U-shaped envelope,

the band member extends across said uncovered sides of the U-shaped envelope and over and along the side wall members thereof, and

each said tongue-slot combination means being disposed and configured such that the cushion tongue means thereof can be positioned so that

when the surrounding band member is positioned in the edge slot means thereof, and is under tension to hold the carton containers in said U-shaped envelope,

the cushion tongue means thereof is in underlying relation to said band member and engages an upper side edge portion of an uncovered side of a respective adjacent carton container.

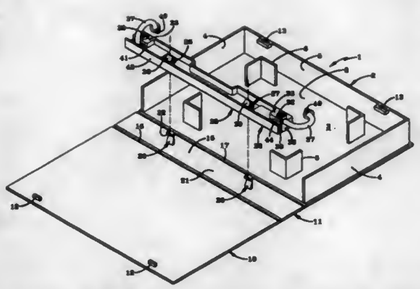
5,549,203

CONTAINER FOR VIDEO GAME AND BOOKLET

James T. Weisburn, Massillon; Christopher G. Gallagher, Akron, and Ronald K. Burdett, Strasburg, all of Ohio, assignors to Alpha Enterprises, Inc., North Canton, Ohio

Filed Jan. 4, 1995, Ser. No. 368,662
Int. Cl.[6] B65D *73/00*
U.S. Cl. 206—472 **7 Claims**

7. A container for storing an article and sheet material including:



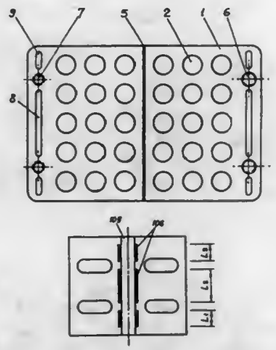
a housing having a base and a closure lid forming an interior storage compartment for removably storing an article therein;

hinge means for hingedly mounting the lid on the base for movement of said lid between open and closed positions, said hinge means including a double hinged panel assembly including an elongated panel and a pair of hinges pivotally connecting the panel to the base and lid;

bolder means located within the storage compartment when the lid is in the closed position for permanently securing sheet material within the storage compartment adjacent an article stored therein; said bolder means including an elongated holder bar and pair of spaced flexible straps mounted on the holder bar, said straps being adapted to extend through holes formed in the sheet material for permanently securing said sheet material on the container;

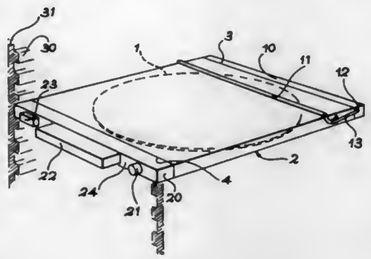
a pair of mounting posts formed on the elongated panel of the hinge assembly and a pair of apertures formed in the bolder bar for receiving the posts therein for mounting the holder bar on the elongated panel of the hinge assembly; and said mounting posts each having an undercut shoulder, a resilient tab formed on the holder bar adjacent each of the apertures; and said tabs engaging the undercut shoulders of the mounting posts to secure said posts within said apertures.

5,549,204
BLISTER PACKS
Thomas Toren, Bondi Junction, Australia, assignor to Toren Consulting Pty. Ltd., Bondi Junction, Australia
Continuation of Ser. No. 290,789, Aug. 16, 1994. This application Jan. 11, 1996, Ser. No. 585,600
Int. Cl.[6] B65D *83/04*
U.S. Cl. 206—539 **7 Claims**



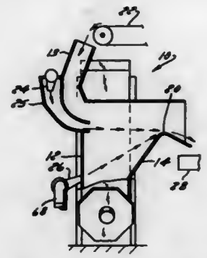
1. A blister pack for tablets or capsules, substantially impervious to humidity and oxygen, comprising a flexible plastic sheet thermoformed for defining a plurality of open faced pockets each pocket for receiving an individual tablet or capsule, and a sheet of aluminum foil heat sealed to the plastic sheet for closing the pockets, characterized in that hinge means are provided across the pack on a line about which the pack is substantially symmetrical to form first and second halves for enabling unfolding and folding of the pack for repeated opening and closing of the pack to permit removal of individual tablets or capsules in succession, wherein the hinge means comprises means for folding the first and second halves between an open configuration in which the aluminum foil is exposed such that a tablet or capsule can be removed from the pack and a closed configuration in which the area of aluminum foil of each of said halves overlies the other such that the aluminum foil is protected from accidental damage that might be caused by contact with a hard object, whereby removal of a tablet or capsule is possible only when the halves of the pack are in the open configuration, the pack having resealable fastening means for maintaining the pack in the closed configuration and for permitting the pack to be opened, the hinge means comprising a hinge groove formed by thermoforming and having one or more cuts extending parallel and directly adjacent to the groove and on either side thereof, and the hinge groove having a depth and the cuts having lengths for cooperating to enable the first and second halves to each fold through 90° relative to each other and lie flat against and in contact with each other.

5,549,205
FLAT BOX FOR CONFINING A FLAT ARTICLE UNDER A SPECIAL ATMOSPHERE
Doche Claude, Claix, France, assignor to Commissariat a l'Energie Atomique, France
Continuation of Ser. No. 131,090, Oct. 1, 1993, abandoned. This application Feb. 7, 1995, Ser. No. 385,065
Claims priority, application France, Oct. 16, 1992, 92 12423
Int. Cl.[6] B65D *81/05;81/20*
U.S. Cl. 206—710 **13 Claims**



1. A flat transfer box for the confinement of a semiconductor wafer under a special protective atmosphere as it is transferred between one wafer processing machine and another separate wafer processing machine in a clean room, said wafer transfer box comprising a thin, flat body defining an internal volume and having upper and lower walls and at least two sealed lateral faces extending along opposite edges of the body, said box further comprising, lateral means for supporting the wafer so that the wafer does not contact either said upper or lower walls, a lateral door positioned facing an opening in a third lateral face of the body, said door being arranged to be opened to permit introduction of the wafer into the box from a first wafer processing machine and removal of the wafer from the box for introduction of the wafer into a second wafer processing machine, and a gas distributing block placed in an opening of a fourth lateral face of the body opposite to the third face and adapted to be connected to a special atmosphere supply in order to distribute the special atmosphere within the body by means of the second opening and to provide flow of said special atmosphere from said third face to said fourth face and into each said wafer processing machine, said four lateral faces combining with said upper and lower walls to provide a completely sealed transfer box which protects the wafer from clean room atmosphere.

5,549,206
NONFERROUS METAL SEPARATOR
Leonard E. Siesco, Jr., Fredonia, Wis., assignor to Miller Compressing Company, Milwaukee, Wis.
Filed Nov. 30, 1994, Ser. No. 347,505
Int. Cl.[6] B03B *7/00*
U.S. Cl. 209—17 **12 Claims**



1. An apparatus for separating low specific gravity aluminum particles from high specific gravity zinc, copper and brass particles comprising:

a hopper having side walls and end walls,

a weir formed across the top of one of the walls,

a first fluid nozzle assembly mounted on the top of the wall opposite said weir for directing a high pressure fluid medium over the weir, the fluid medium having a specific gravity greater than the aluminum particles and less than zinc, copper and brass particles; and

an infeed conveyor positioned above the hopper for directing a flow of aluminum, zinc, copper and brass particles into said high pressure fluid medium, whereby the high pressure fluid medium carries the aluminum particles over the weir and the zinc, copper and brass particles pass through the high pressure fluid medium into the hopper.

5,549,207
METAL PARTICLE SWEEPER
Kathleen Busico, and Cynthia C. McCreery, both of 17366 Via Susana, San Lorenzo, Calif. 94580
Filed Jan. 30, 1995, Ser. No. 380,295
Int. Cl.[6] B07C *7/04*
U.S. Cl. 209—614 **5 Claims**



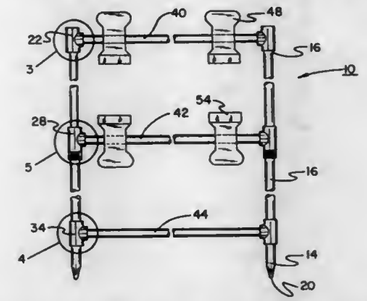
1. A metal particle sweeper for gathering and later releasing ferrous metal particles, said sweeper comprising:

a handle having an upper and lower end;

a magnet attached to said lower end of said handle; and

a sweeper cover adjacent said magnet and covering the lower and side surfaces of said magnet, said sweeper cover coupled to said handle by a lateral pivot pin between said magnet and a cover handle above said pivot pin, the metal particles to be gathered on said sweeper cover and released by pivoting said sweeper cover away from said magnet by pressing together said cover handle and said handle.

5,549,208
ADJUSTABLE TARGET HOLDER
Donald C. Yurga, RD#1 Box 40-Y, Avonmore, Pa. 15618
Filed Feb. 16, 1995, Ser. No. 390,217
Int. Cl.[6] A47F *5/00*
U.S. Cl. 211—207 **5 Claims**



1. An adjustable target holder for holding different sized targets at a variety of heights comprising, in combination:

a pair of vertical extents, each of the vertical extents having a first end, a second end, and an intermediate extent therebetween, the first end having a pointed portion being integral therewith, the second end having an upper coupling brace theresecured by adhesive, the upper coupling brace having a support portion extending inwardly therefrom, the intermediate extent having an adjustable coupling brace secured thereto by a screw extending therethrough to the intermediate extent, the adjustable coupling brace having a support portion extending inwardly therefrom, a lower coupling brace secured to the pair of vertical extents upwardly of each first end thereof by adhesive, the lower coupling brace having a support portion extending inwardly therefrom;

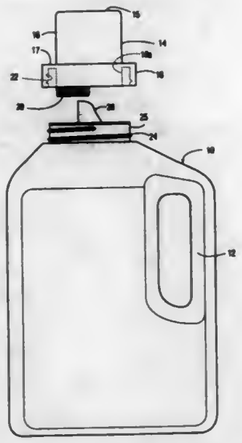
three borizontal extents, a first horizontal extent securable between the support portions of the upper coupling brace of the pair of vertical extents, a second horizontal extent securable between the support portions of the adjustable coupling brace of the pair of vertical extents, a third horizontal extent securable between the support portions of the lower coupling brace of the pair of vertical extents;

a pair of spring biased upper clips slidably secured to the first horizontal extent, the pair of spring biased upper clips having a securement portion extending downwardly therefrom, the upper clips serving to hold an upper portion of a target;

a pair of spring biased lower clips slidably secured to the second horizontal extent, the pair of spring biased lower clips having a securement portion extending upwardly therefrom, the lower clips serving to hold a lower portion of a target extending downwardly from the pair of spring biased upper clips.

5,549,209
CLOSURE BRUSH
Neal V. Weissman, New York, N.Y., and James C. McKinney, Cranbury, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.
Filed Mar. 3, 1995, Ser. No. 398,322
Int. Cl.[6] A46B *11/00;* **B65D** *23/12*
U.S. Cl. 215—228 **22 Claims**

1. A closure for a bottle comprising an upper surface, said upper surface having a periphery, a first skirt having a lower edge and depending from said periphery of said upper surface to form an



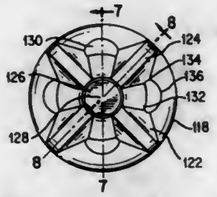
enclosed volume, attachment means to attach said closure to a bottle exit, and bristles depending from at least a portion of the lower edge of said first skirt.

5,549,210

WIDE STANCE FOOTED BOTTLE WITH RADIALLY NON-UNIFORM CIRCUMFERENCE FOOTPRINT

Jizu J. Cheng, Franklin Park, N.J., assignor to Brunswick Container Corporation, East Brunswick, N.J.

Filed Dec. 13, 1993, Ser. No. 166,340
Int. Cl.[6] B65D *1/02;23/00*
U.S. Cl. 215—375 **16 Claims**



1. A blow-molded container having a body comprising a neck, a generally cylindrical sidewall and a bottom, said sidewall defining the container diameter, said bottom comprising:

a central region, including a radius center point, said radius center point and said sidewall defining a radius;

a plurality of circumferentially spaced hollow legs having an outer side and an inner side, the outer side extending downwardly from the said sidewall and the inner side extending downwardly from said central region;

a plurality of ribs extending downwardly from said sidewall and converging in said central region, said ribs separating said legs; and

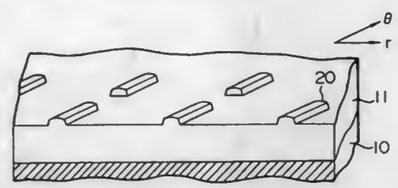
a plurality of feet positioned at the end of said legs, said feet extending below said central region, each foot positioned between two of said plurality of ribs, said feet comprising a horizontal contact surface, said contact surface being defined by an inner foot edge having a fixed radius and an outer foot edge having a variable radius, said outer foot edge including a pair of outer far corner foot edges and a far middle foot edge wherein said far middle foot edge extends radially approximately 5 to 50% further than said outer far corner foot edges.

5,549,211

METHOD OF PRODUCING MAGNETIC DISK

Takao Nakamura; Nobuya Sekiyama, both of Yokohama; Hiroshi Tani, Atsugi, and Yoshiki Kato, Tokyo, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 964,897, Oct. 22, 1992, Pat. No. 5,388,020. This application Dec. 19, 1994, Ser. No. 359,272
Claims priority, application Japan, Oct. 23, 1991, 3-275193
Int. Cl.[6] B44C *1/22*
U.S. Cl. 216—11 **6 Claims**



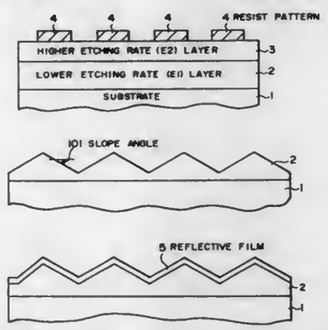
1. A method of producing a magnetic disk, comprising a surface processing step of forming fine depressions and projections in a surface of a non-magnetic substrate or a surface of at least one of a magnetic film and a protective film which are formed on said substrate, wherein said surface processing step is carried out in such a manner that when a surface shape of said substrate or a surface shape of said one film is evaluated and represented in terms of a load ratio BR5 of a three-dimensional load curve and a symmetric property Rsk of a cross-sectional shape, said load ratio of said surface shape is 0.5% to 10%, and said symmetric property Rsk of said surface shape is 0.5 to 2.0.

5,549,212

METHOD FOR FORMING ROUGH SURFACE WITH CONTROLLED CONVEX SHAPE

Hiroshi Kanoh; Shinichi Nishida, and Eishi Mizobata, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 364,454
Claims priority, application Japan, Dec. 28, 1993, 5-334163
Int. Cl.[6] B44C *1/22;* **C03C** *15/00;* **B29C** *37/00*
U.S. Cl. 216—24 **24 Claims**



1. A method for forming a rough light-reflective surface on a substrate, comprising the steps of:

forming a plurality of layers on the substrate, the layers having different etching rates for an etching condition such that the etching rates ascend from a bottom layer to a top layer of the layers;

forming a random mask pattern on the surface of the layers, the mask pattern comprising a plurality of islands each having a shape; and

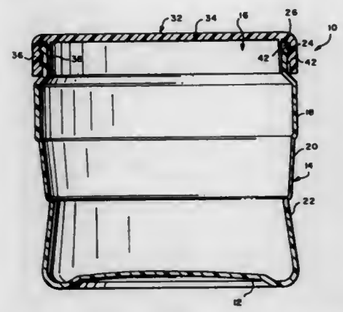
etching isotropically the surface of the layers in the etching condition until a desired convex shape free from any flat portion is formed on the surface of the layers.

5,549,213

REUSABLE RE-COLLAPSIBLE CONTAINER AND RESEALABLE CAP

Edward S. Robbins, III, 2802 E. Avalon Ave., Muscle Shoals, Ala. 35662, and Ronald Schumann, Florence, Ala., assignors to Edward S. Robbins, III, Muscle Shoals, Ala.

Continuation-in-part of Ser. No. 47,185, Apr. 16, 1993, Pat. No. 5,417,337, which is a continuation-in-part of Ser. No. 12,122, Feb. 1, 1993, abandoned, which is a continuation-in-part of Ser. No. 789,838, Nov. 12, 1991, Pat. No. 5,226,551. This application Oct. 12, 1993, Ser. No. 134,656
Int. Cl.[6] B65D *6/12*
U.S. Cl. 220—8 **9 Claims**



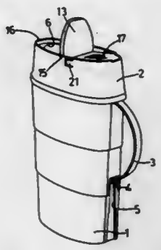
1. A container and associated cap assembly comprising a container body having a bottom peripheral wall, a relatively flexible peripheral wall and an open upper end defined by an annular rim, where the side wall is movable between axially extended and collapsed positions and, in the extended position, having lower and upper relatively thicker side wall portions and an intermediate relatively thinner side wall portion; and wherein said intermediate side wall portion is tapered downwardly radially inwardly, and said lower side wall portion is tapered downwardly radially outwardly substantially to said bottom wall, such that in said collapsed position, said lower side wall portion is partially telescoped within said upper side wall portion with said intermediate portion reverse folded therebetween, and with an uppermost edge of said lower side wall portion radially spaced away from said upper side wall portion, said rim having a substantially horizontal uppermost edge surface and a radially outwardly and downwardly extending bevelled surface extending between said upper edge and said peripheral side wall, said peripheral side wall having a first cap securing structure thereon in proximity to said rim; and a cap having a top wall, and a radially outer depending skirt, said radially outer depending skirt connected to said top wall by an internal cap surface which includes a downwardly and outwardly inclined surface portion which engages said bevelled surface such that said substantially horizontal uppermost edge surface is axially spaced from said cap top wall upon full engagement between said cap and said container body, said radially outer depending skirt having a second cap securing structure thereon for cooperative engagement with said first cap securing structure and further wherein said cap comprises a radially inner depending skirt which engages an inner surface of said open upper end of said container body laterally adjacent said first and second cap securing structures.

5,549,214

CLOSURE DEVICES

John Harris, Newport, United Kingdom, assignor to Frontier Plastics (South Wales) Limited, Gwent, United Kingdom

Filed Feb. 2, 1994, Ser. No. 190,372
Claims priority, application United Kingdom, Feb. 12, 1993, 9302790
Int. Cl.[6] B65D *43/16*
U.S. Cl. 220—339 **10 Claims**



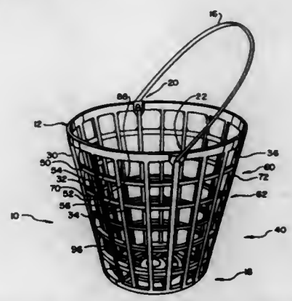
1. A container closure device comprising a lid portion having first and second ends, an opening defined in said lid portion, a flap, a flexible connection of said flap to said first end of the lid portion, said flap having a first portion towards said first end of the container and a second portion towards said second end of the container, a snap action hinge which is located on the lid portion and which has two stable conditions, said snap action hinge comprising a pivot connection to the lid portion and a flexible hinge close to said pivot across said first flap portion in a plane above the axis of said pivot, the first flap portion nearest said flexible connection forming an actuating member for the snap action hinge, and the second flap portion furthest from said flexible connection being positioned to close off said opening when the snap action hinge is in one of said two stable conditions, and being positioned fully to reveal said opening when the snap action hinge is in the other of said two stable conditions.

5,549,215

PLASTIC OPEN FRAME BASKET CONSTRUCTION AND METHOD OF MAKING THE SAME

Christopher J. Cruce, 404 Encinitas Blvd., #287, Encinitas, Calif. 92024, and Jorma P. Ripatti, 114 E. Huntington Rd., Alhambra, Calif. 91801

Filed Jan. 27, 1994, Ser. No. 188,214
Int. Cl.[6] B65D *21/04*
U.S. Cl. 220—676 **8 Claims**



1. A plastic open frame basket construction, comprising:

a generally circular base member having an outer edge portion;

a plurality of rectilinear longitudinal rib members connected integrally to said outer edge portion and extending axially

away and radially outwardly from said outer edge portion to form an open framework for defining a smoothly tapered body portion;

each of said longitudinal rib members having a pair of oppositely disposed side wall portions, wherein a plurality of pairs of facing side wall portions are defined by adjacent longitudinal rib members;

an upper rim member having a lower edge portion connected integrally to distal end portions of said longitudinal rib members to define a generally circular opening for permitting access to an interior space in said tapered body portion;

a plurality of curved cross members integrally connected between said pairs of facing side wall portions to provide lateral support to said longitudinal rib members for enhancing the structural strength of said tapered body portion;

each of said cross members having an exterior wall portion connected integrally along an exterior edge and an interior edge to a complementary interior wall portion to form a solid member for increasing the strength of said cross members, wherein said cross members are arranged in concentric circles to help define the tapered body portion;

wherein a plurality of outer corners are defined by the intersection of said exterior edges and said facing side wall portions, and a plurality of inner corners are defined by the intersection of said interior edges and said facing side wall portions; and

a plurality of raised diagonal parting lines on said side walls and extending between said outer corners and said inner corners of adjacent cross members, wherein said diagonal parting lines are arranged on each side wall portion to define a stepped configuration to facilitate molding of the construction.

5,549,216

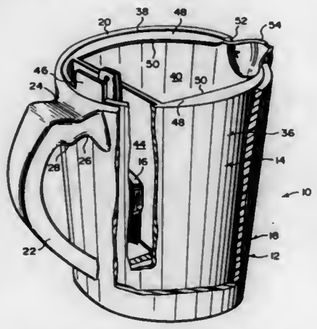
PAINT HOLDER AND DELIVERY DEVICE

Robert Scholl, 131 Momar Dr., Ramsey, N.J. 07446

Filed May 15, 1995, Ser. No. 441,343

Int. Cl.[6] B65D *1/36*

U.S. Cl. 220—695 **4 Claims**



1. A paint holder and delivery device comprising:

a) a container consisting of a tapered cylindrical housing having a wide open top end and vertically extending handle means on the outside of said housing with a recessed upper area of said handle means to enable the person to exert a downward pressure with a thumb to stabilize said container and a recessed lower area of said handle means for the forefinger followed by a lower protrusion to help stabilize said container; and

b) a disposable insert to fit within said container to facilitate the application of paint with a paint brush having a reservoir for paint and a paintbrush storage compartment to hold a paintbrush therein when not in use, said insert including a flexible pull tab extending upwardly from a top edge of said insert to enable a person to easily remove said insert from said container, said disposable insert also including a pair of flaps extending inwardly over said paint reservoir on opposite sides of said wide open top end to provide edges for removal and recapture of excess paint from the paint brush.

5,549,217

DEVICE FOR WITHDRAWING SPHERICAL PRODUCTS OF THE SAME DIMENSIONS, SUCH AS GRANULES

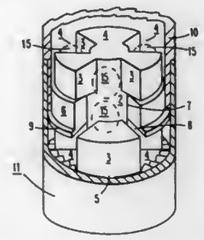
Jacques Benarrouch, Villeurbanne, France, assignor to Bolron, France

Filed Dec. 9, 1994, Ser. No. 354,860

Claims priority, application France, Dec. 14, 1993, 93 15325

Int. Cl.[6] A47F *1/04*

U.S. Cl. 221—155 **9 Claims**



1. A dispenser for dispensing granules from a container having a circular mouth, comprising:

a body comprising first and second cylindrical components, said first and second cylindrical components being identical to each other and being joined together by an axial spindle, each of said first and second cylindrical components having a plurality of circumferential notches adapted to receive granules from the container, wherein said notches of the first component are axially offset from said notches of the second component;

a cylindrical roundel including a radial slit which opens into a central axial through-passage such that said cylindrical roundel is adapted to clip onto said axial spindle, said cylindrical roundel being adapted to tightly fit into the circular mouth of the container; and

a receptacle adapted to fit onto the circular mouth of the container and comprising driving means to rotate said body.

5,549,218

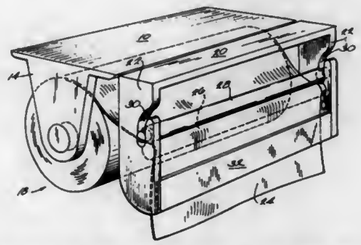
PAPER TOWEL DISPENSER

Hans P. Asmussen, 2620 S. Shore Dr., Milwaukee, Wis. 53207

Filed Feb. 28, 1995, Ser. No. 395,763

Int. Cl.[6] B65G *59/00*

U.S. Cl. 221—282 **3 Claims**



1. A device for controlling resistance to removal of paper from an associated paper towel holder, comprising,

a base including arms spaced far enough to allow free passage of paper toweling therebetween,

a guide member extending between said arms to lie in approximately the same plane as the axis of a paper roll supported by the holder and having a surface over which the paper passes,

a slot in each arm,

a roller rotatably mounted in said slots and extending between said arms, said slots serving to position the roller to freely engage a paper towel between the roller and said guide member,

and a bar extending between said arms below said guide member so paper coming from said surface of said guide member may pass behind said bar and be pulled against the bar when the paper is pulled briskly in a direction forwardly and transversely of the bar.

5,549,219

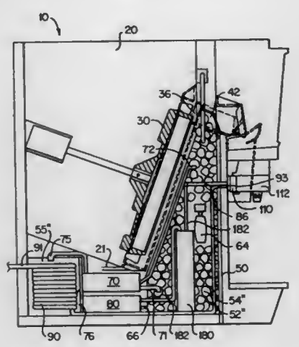
METHOD AND APPARATUS FOR COOLING AND PREPARING A BEVERAGE

William G. Lancaster, 5101 Upper River Rd., Louisville, Ky. 40222

Filed Aug. 11, 1994, Ser. No. 289,672

Int. Cl.[6] B67B *7/00*

U.S. Cl. 222—1 **90 Claims**



1. A method for preparing and dispensing a cool beverage comprising:

contacting water and a plurality of pieces of ice directly together in a heat exchanger, cooling the water and melting the ice, to produce cooled heat exchanger water in the heat exchanger from the water and ice and an outflow of the cooled heat exchanger water;

flowing beverage concentrate through a conduit in thermal contact with said plurality of pieces of ice and said cooled heat exchanger water, indirectly contacting the beverage concentrate with the ice, melting the ice and cooling the beverage concentrate, to produce an outflow of the cooled beverage concentrate;

proportioning and mixing the outflow of cooled beverage concentrate with the outflow of said cooled heat exchanger water to produce a cool, proportioned, mixed beverage;

dispensing the cool, proportioned, mixed beverage.

5,549,220

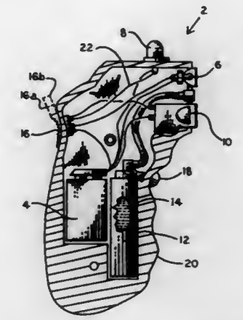
NON-LETHAL DEVICE FOR SELF-DEFENSE

Patrick J. Whalen, 2052 Cedardale Ave., Baton Rouge, La. 70808

Filed Sep. 16, 1994, Ser. No. 307,151

Int. Cl.[6] G01F *11/00*

U.S. Cl. 222—1 **1 Claim**



1. A method for deterring an assailant, the method comprising, in sequence, the steps of:

(a) as a first step, directing an intense beam of white light at the eyes of the assailant, thereby locating and illuminating the assailant, partially and temporarily blinding the assailant, and providing direction for further deterring the assailant;

(b) as a second step, if the assailant has not desisted, effecting the simultaneous emission of intermittent, high-intensity, diffuse blue light and high-intensity sound, to disconcert and disorient the assailant, and to attract attention to the situation; and

(c) as a third step, if the assailant has not desisted, discharging a spray of chemical repellent at the eyes of the assailant, using the beam of white light as a directional guide therefor, thereby completely and temporarily blinding the assailant and rendering the assailant incapable of attacking an intended victim.

5,549,221

FLEXIBLE TUBE END-LAP RETAINER

Ralph B. Conlee, 11716 N. Williamsburg Dr., Knoxville, Tenn. 37922-3318

Filed Sep. 1, 1994, Ser. No. 299,343

Int. Cl.[6] B65D *35/28*

U.S. Cl. 222—103 **8 Claims**



1. A J-shaped retainer device for use in manually dispensing material from a tubular container and for clipping a depleted portion thereof, consisting of:

a top side member, said top side member having an unconnected arced end which is bent slightly,

a bottom side member, having a sine wave configuration, said bottom side member further including a front portion, a middle portion and a rear portion, said bottom side member spaced from said top member to form an air space said bottom member defining a first arcuate surface on top of said rear portion and defining a second arcuate surface on said middle portion to retain a depleted portion of said container, said bottom side member having an unconnected end,

said top side member extending into said bottom side member connected by a circular arc portion to form a unitary formed body; and

said top side member generally parallel to and twice the size in length as said bottom side member.

5,549,222

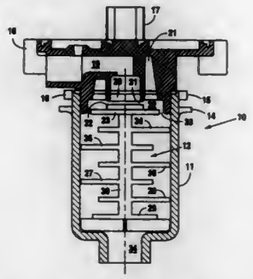
BEVERAGE DISPENSING NOZZLE

Alfred A. Schroeder, San Antonio, Tex., assignor to Lancer Corporation

Filed Jun. 9, 1994, Ser. No. 257,749

Int. Cl.[6] B67D *5/56*

U.S. Cl. 222—129.1 **4 Claims**



1. A post mix beverage dispensing nozzle, comprising:

a housing removably connectable to a dispensing valve; and

a diffuser disposed in said housing, said diffuser comprising a first plate residing directly beneath a beverage syrup outlet of said dispensing valve to force a beverage syrup delivered from the beverage syrup outlet into a thin sheet and direct the thin sheet radially outward and a second plate residing directly beneath a mixing fluid outlet of said dispensing valve that surrounds the beverage syrup outlet wherein a mixing fluid delivered from the mixing fluid outlet shears the thin sheet of beverage syrup as it spreads past said first plate and drives it against said second plate to mix the mixing fluid and beverage syrup.

5,549,223

PUMP WITH BACK SUCTION PHASE

Nobuaki Hori, Yokohama, Japan, assignor to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Aug. 3, 1994, Ser. No. 285,386

Int. Cl.[6] B67D *5/42;* **G01F** *11/04*

U.S. Cl. 222—153.13 **9 Claims**

1. A pump comprising:

a pump chamber having an upper end and a lower end;

means for altering the pressure in said pump chamber;

a first check valve having means for permitting a return flow of fluid before closing fully;

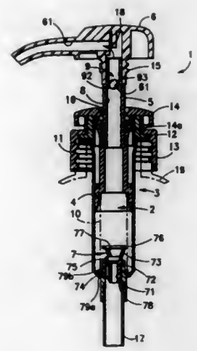
a second check valve having means for remaining closed until a specified threshold negative pressure exists in said pump chamber;

said first check valve being connected to said second check valve by said pump chamber;

said means for remaining closed of said second check valve includes a valve body, a valve seat, and a means for biasing said valve body against said valve seat:

said valve body includes a valve head, a valve stopper, means for guiding said valve body in a valve opening, and means for strengthening a seal between said valve head and said valve seat in a locked position; and

said valve head cooperates with said valve seat to regulate the flow of fluid from a main fluid container to said pump chamber.



5,549,224

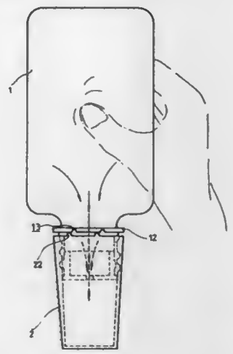
LIQUID MEDICINE CONTAINER STRUCTURE

Ko-hsiang Wu, No. 94, Lung Sho Steet 12 Lin, Lung Hsiang Li, and Wei-hsing Huang, No. 2, La. 60, Sho Fa Road, 6 Lin, Lung Hsiang Li, both of Tao Yuen Chung Cheng Li, Taiwan

Filed Mar. 22, 1995, Ser. No. 408,735

Int. Cl.[6] B67D *5/38*

U.S. Cl. 222—158 **11 Claims**



1. A liquid medicine container comprising:

a squeezable container body having a neck with an opening for the entry of a liquid medicine into an interior space of said container body;

a seal member being fit into and thus closing said opening of said container body, said seal member having a through hole formed thereon to be in fluid communication with said interior space of said container body;

a cap member having an interior space with an open end liquid-tightly releasably engageable with said neck of said container body to be in fluid communication with said interior space of said container body through said hole formed on said seal member; and

pressure balance means being provided to balance interior pressure inside said cap member when said container body is squeezed to force said liquid medicine contained therein to flow into said interior space of said cap member, said pressure balance means comprising a groove formed on said neck of said container body extending from a point located outside said cap member when said cap member is fit on said neck to a point close to said opening of said container body to allow air to flow in and out of said interior space of said cap member.

5,549,225

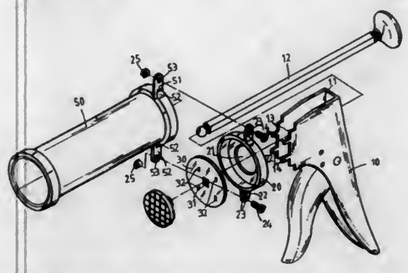
ADJUSTABLE C CLAMP

Liang-Kuen Lii, 58, Ma Yuan West St., Taichung, Taiwan

Filed Jul. 28, 1995, Ser. No. 528,463

Int. Cl.[6] B65D *35/00*

U.S. Cl. 222—192 **2 Claims**



2. An angle-adjustable C-clamp comprising:

a handle with an upper interior to receive a rod;

an upper front edge of said handle having a couple of step-shaped front edges with two positioning posts extending forward from each of said step-shaped front edge;

said positioning posts inserted in a rotary seat and a disk plate;

said rotary seat having a central opening to receive said positioning posts;

an upper and lower seat lug protruded upward and downward from said rotary seat, respectively;

said disk plate which has a central square hole and four rectangular holes corresponding to said four positioning posts disposed in said rotary seat;

a rod having a ball at a front end to be inserted in a socket of a movable jaw;

said rod passing through said central opening and said square hole;

a barrel having two barrel lugs protruded upward and downward from a rear end rim of said barrel, respectively;

each of said barrel lugs having a round hole to match a corresponding through hole on said upper and lower seat lugs to be fixed by screws and nuts; and

a recess formed between a rear end rim of said barrel and said barrel lug to receive said rotary seat.

5,549,226

DEVICE FOR OPERATING DEVICES FOR PROPELLANT CANS

Volker Kopp, CH-8133 Esslingen, Santisstrasse 29, Switzerland

Filed Apr. 22, 1994, Ser. No. 231,611

Claims priority, application Germany, Apr. 23, 1993, 43 13 319.3

Int. Cl.[6] B65D *83/30*

U.S. Cl. 222—402.13 **28 Claims**

1. A device for a region of cans held under propellant pressure where liquid to pasty substances containing solvent pass from said region, comprising:

an operating device for delivering said substances,

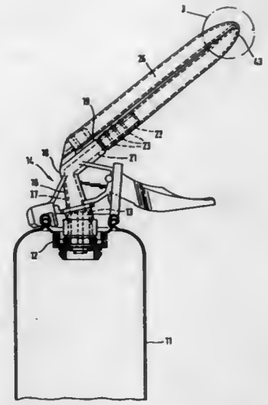
an outlet connection piece with an end region, on said operating device,

a tube made of vapor-tight material having an end region and at least one region that is resilient and flexible, which tube is mounted vapor-tight on said end region of said outlet connection piece, wherein

a) said tube can be bent back over itself into a bent back over position to form a pinch fold;

b) a holding device is connected to said outlet connection piece to hold said tube in said bent back over position, said tube being detachable by hand from said holding device;

c) said pinch fold is substantially solvent-tight and liquid-tight; and



d) said holding device comprises a stopper that can be inserted under friction into said end region of said tube.

5,549,227

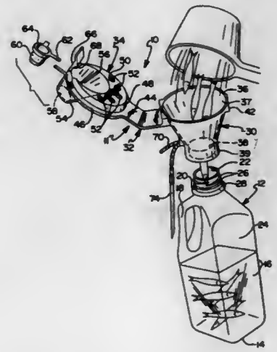
BIDIRECTIONAL DISPENSER

James Klotz, 23730 Saravilla Drive, Mt. Clemens, Mich. 48043

Continuation-in-part of Ser. No. 934,012, Aug. 21, 1992, abandoned. This application Sep. 12, 1994, Ser. No. 304,387

Int. Cl.[6] B65D *1/02;25/40;* **B65B** *39/00;* **B67C** *11/00*

U.S. Cl. 22—461 **24 Claims**

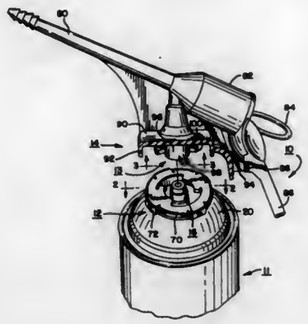


1. A bidirectional dispenser member adapted for connection to a bottle, comprising:

a funnel adapted for connection to a bottle; and

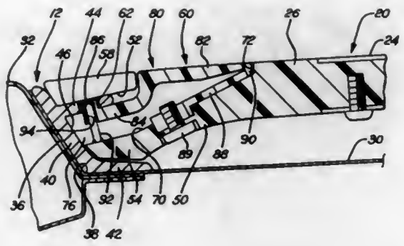
a lid connected to said funnel for opening and closing said funnel for loading and unloading objects from the bottle, said lid including an inverted funnel-shaped spout to dispense objects from the bottle one at a time when said lid is closed on said funnel.

5,549,228
ATTACHMENT SYSTEM FOR FLUENT PRODUCT DISPENSERS
Daniel P. Brown, Palos Park, Ill., assignor to Inst-Foam Products, Inc., Joliet, Ill.
Filed Aug. 11, 1995, Ser. No. 514,065
Int. Cl.[6] B65D *5/72*
U.S. Cl. 222—570 **12 Claims**



1. In combination, a valved dispensing container, an adapter ring, and a trigger-operated dispensing gun, said valved container including a valve assembly received within a mounting cup, said cup having an outer margin attached at a cup seam to a top portion of said container, a valve body and a valve stem movable within said valve body between open and closed positions, said valve stem having a product outlet passage and an upper contact surface surrounding said passage, an adapter ring made from a stiff, tough and flexible material and removably affixed to said container, said ring including generally axially extending ring locating flanges, an outer end face including circumferentially spaced apart locking ears separated by notches, and locking claws on at least two of said ring locating flanges, said claws being releasably engageable with said cup seam, with at least one of said ears including a lug stop extending axially inwardly from an end of said ear, said dispensing gun including an attachment portion with a container-engaging skirt, a valve stem capturing and operating portion and two axially spaced apart pairs of locking lugs, said valve stem operating portion including a contoured surface for fluid-tight engagement with said upper contact surface on said stem, and a center passage aligned with said valve stem product outlet passage, with said lugs in each of said lug pairs being also circumferentially spaced apart, one of said lugs having a leading edge engageable with said at least one lug stop, whereby, upon positioning said first pair of lugs beneath said ears on said locking ring and rotating said lugs to a stop-engaging position, said valve operating portion and said valve stem upper contact surface are in registry with each other and whereby further moving said gun axially and rotating said gun serves to permit engagement of said second lug pair with said ears and operates said valve by moving said stem to said open position, said lug leading edge engaging said lug stop to prevent further relative rotation of said container and to support said can and gun in a position for discharging the container contents by manipulation of said gun trigger.

5,549,229
LUGGAGE RACK
Norbert E. Grabowski, Rochester Hills, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.
Filed Feb. 6, 1995, Ser. No. 384,491
Int. Cl.[6] B60R *9/00*
U.S. Cl. 224—321 **6 Claims**

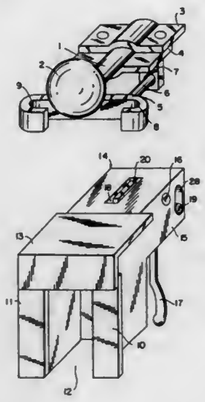


1. A luggage rack for an automotive vehicle having an exterior body surface, comprising

a pair of elongated rails adapted to be mounted on said exterior body surface in laterally spaced apart, parallel relation,
each of said rails having an elongated channel extending lengthwise thereof,
said channels opening toward one another and each channel having top and bottom flanges defining opposite sides thereof,
at least one cross member comprising an elongated cross bar extending between said rails transversely thereof and having opposite ends,
a stanchion on each end of said cross bar,
said stanchions each having a body portion and each body portion having an elongated slot extending parallel to said flanges,
said slots slidably receiving the top flanges of said respective side rails,
said body portions of said stanchions each having a lower part and said lower parts being slidably engaged in the channels of said respective side rails,
said body portions of said stanchions each having an upper part and said upper parts being disposed above and in sliding engagement with the top flange of said respective side rails, and
means for releasably locking said stanchions in adjusted position longitudinally of said rails,
said locking means comprising a line of apertures formed in each of said top flanges in spaced apart relation along the length thereof,
the body portion of each stanchion having a top wall laterally inwardly of said top part thereof and an opening in said top wall,
a recess in said body portion of each said stanchion extending from said opening laterally outwardly to a locking area beneath and in communication with said slot therein, and
an elongated lock member in the recess of the body portion of each said stanchion,
each of said lock members having an inner end portion formed with an integral release button in register with the opening in said top wall of the body portion of the associated stanchion which is substantially flush with said top wall and is uncovered and exposed so that external pressure may be applied thereagainst,
each of said lock members having a terminal outer end portion extending into said locking area,
each of said lock members having a mounting portion rigidly secured in the recess of the body portion of the associated stanchion,
each of said lock members, including said inner and outer end portions and said mounting portion thereof, being formed integrally from a single piece of material with said mounting portion connected to said inner end portion by a flexible bend line constituting a living hinge,
the second end portion of each of said lock members having a locking pin engageable in any one of the apertures in the top flange of the associated side rail,
each of said lock members being swingable about said hinge from a first position in which the locking pin thereof is extended into one of said apertures to a second position in which said locking pin is withdrawn therefrom,

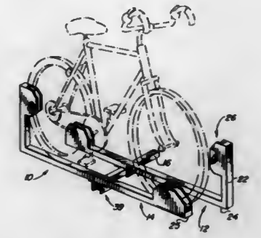
said locking members normally assuming said first position but being swingable to said second position by pressure exerted against said release button,
and spring means urging each of said lock members to said first position thereof.

5,549,230
LUGGAGE CARRIER FOR MOTORCARS
Isedore D. M. H. Palmen, Slakkehuis 1 - 6585 XA, Mook, Netherlands
Continuation of Ser. No. 84,238, Jun. 24, 1993, abandoned.
This application May 19, 1995, Ser. No. 446,017
Claims priority, application Netherlands, Dec. 27, 1990, 9002874
Int. Cl.[6] B60R *9/06*
U.S. Cl. 224—520 **5 Claims**



1. A device for mounting a luggage carrier to a towing hook fixedly attached to a motor car, said towing hook having a horizontal part terminating at a first end affixable to said motor vehicle, and a second end extending vertically from the horizontal part terminating at a ball head, said device comprising:
a clamping piece demountably mounted upon a part of the horizontal part of said towing hook which clamping piece includes;
a clamping means for attaching the clamping piece to the horizontal part of the towing hook, and,
guiding means positioned relative to the ball head, and,
a luggage carrier part which includes;
a gutter shaped indentation adapted to receive the ball head of the towing hook therein wherein the gutter shaped indentation further includes guiding means which cooperatively engage the guiding means of the clamping piece,
a handle moveable about an axis,
a moveable body having a shell shaped part adapted to contact a portion of the ball head within the gutter shaped indentation and further having an indentation adapted to contact a portion of the handle,
wherein the handle when moved about the axis is operable to retract the shell shaped part of the moveable body within the interior of the gutter shaped indentation so to remove the contact between the ball head and the shell shaped part of the moveable body and thereby permit the disengagement between the towing hook with affixed clamping means and the luggage carrier part.

5,549,231
BICYCLE CARRIER FOR MOTOR VEHICLES
James D. Fletcher, 4661 Calienta -Bodfish Rd., Calienta, Calif. 93518, and Terry L. Harris, 3200 Ferrell Ave., Lake Isabella, Calif. 93240
Filed Jan. 24, 1994, Ser. No. 184,991
Int. Cl.[6] B60R *9/10*
U.S. Cl. 224—536 **24 Claims**



1. Bicycle carrier apparatus for supporting the tires of a bicycle wheel for transportation by a motor vehicle, each of said wheels having a tire thereon, said apparatus comprising:
a longitudinal support member having means at one end adapted for attachment to a vehicle-mounted support mechanism; and
an individual bicycle carrier mounted on the support member with means for carrying a single bicycle, the carrier including:
an elongate support arm coupled to the support member adapted to support the bicycle with its tires supported by the support arm;
a first clamping device affixed to the support arm at a distal end thereof for releasably securing a first wheel of the bicycle therein; and
a vertically extending stop member mounted on the elongate support arm at the proximal end thereof and having a first end affixed to said support arm and a second end with a second clamping device affixed thereto at a position adjacent the second end and displaced from the support arm for releasably securing a second wheel of the bicycle therein;
each said clamping device having adjustable tensioning means for drawing the clamping device into frictional engagement with the tire of the bicycle wheel positioned therein;
wherein the carrier is adjustably positioned along the support member by adjustable mounting means in the form of a pair of angles welded to the underside of the support arm in positions spaced from each other by a distance slightly greater than the transverse dimension of the support member and extending below the support member, and adjustable fastening means for tightening the angles against the sides of the support member to fix the position of the bicycle carrier thereon.

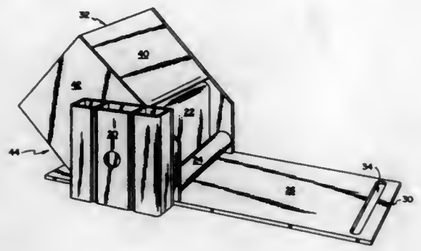
5,549,232
PAPER ROLL NOTE PAD
Richard P. Scholfield, 4608 Eastlake Cir., Sarasota, Fla. 34232
Filed Feb. 24, 1994, Ser. No. 201,460
Int. Cl.[6] B42D *19/00*; **B26F** *3/02*; **B65H** *16/02*
U.S. Cl. 225—46 **23 Claims**

1. A roll paper device comprising:
a base plate having a longitudinal axis, first and second longitudinal ends, a substantially planar mounting side for being disposed generally flush against a planar mounting surface, and a paper dispensing side;
first and second side walls projecting from said paper dispensing side of said base plate;
a front wall extending substantially between said first and second side walls;

a rear wall extending substantially between said first and second side walls and said rear wall being inclined with respect to said base plate;

said first side wall, second side wall, front wall and rear wall defining a paper roll receiving compartment; and

means defining an inclined face within said paper roll receiving compartment that extends substantially between said side walls and substantially between said front and rear walls, said inclined face defining with said front wall a paper outlet for



paper dispensed from a paper roll within said compartment, said inclined face projecting from said paper dispensing side of said base plate;

said inclined face defining with said front wall a seat for a paper roll disposed within said compartment when said base plate is disposed in a vertical plane, mounted to a vertical mounting surface, said inclined face defining with said rear wall a seat for a paper roll disposed within said compartment when said base plate is disposed in a borizontal plane, on a borizontal mounting surface, whereby paper dispensed from the paper roll is tensioned irrespective of whether the base is vertically or borizontally disposed and irrespective of the amount of paper remaining thereon.

5,549,233

COUPON INSERTER

Donald E. Clauser, Evanston, Ill., assignor to C. Joyce Witt, Barrington, Ill.

Continuation of Ser. No. 10,759, Jan. 29, 1993, abandoned. This application Dec. 23, 1994, Ser. No. 370,779

Int. Cl.[6] B65H *35/10;* **B65B** *57/04;61/12*

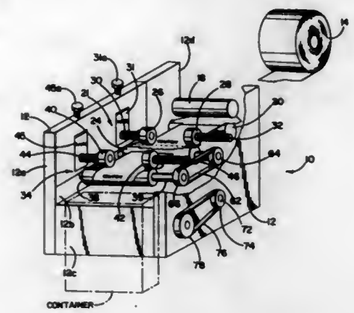
U.S. Cl. 225—100 **23 Claims**

16. Apparatus for delivering successive coupons to successive containers at a dispensing location, said coupons being provided as a continuous web of successive coupons with a forwardmost coupon having its trailing edge connected to the leading edge of the next coupon by a weakened web portion, each successive coupon being similarly connected in said web, the apparatus comprising:

feed roll means operable in a noninterrupted fashion to engage the continuous web of coupons and to pass the coupons downstream;

burst roll means located downstream from said feed roll means for engaging the forwardmost coupon;

a control circuit responsive to a plurality of timing signals supplied from an external source, each of said timing signals related to the time when the forwardmost coupon is to be positioned in one of the containers as it passes the dispensing location, said control circuit providing a plurality of sensing signals, each of said sensing signals related to the presence of a coupon at a sensing position between said feed roll means and said burst roll means, said control circuit generating a first



series of output pulses of a variable frequency in response to said timing signal and said sensing signal, and providing a plurality of second output signals in response to said timing signals; and

an actuating subassembly operable in a first mode to rotate said feed roll means and said burst roll means in response to said first series of output pulses and operable in a second mode to rotate said burst roll means at a first angular speed in response to one of said second output signals while said feed roll means is rotated at a second angular speed less than said first angular speed in response to said first series of output pulses to thereby separate the forwardmost coupon engaged in said burst roll means from the continuous web and deliver the forwardmost coupon to one of the containers as it passes the dispensing location, said actuating subassembly thereafter continuously rotating said feed roll means to move the next succeeding coupon to said sensing position in response to said first series of output pulses.

5,549,234

FASTENER SYSTEM

Woog Y. Hong, 158 Jalan Dato Sulaiman, Century Garden, Johor Bahru, Johor, West, Malaysia

Division of Ser. No. 254,700, Jnn. 6, 1994, abandoned. This application Jul. 5, 1995, Ser. No. 498,374

Int. Cl.[6] B25C *5/00;7/00*

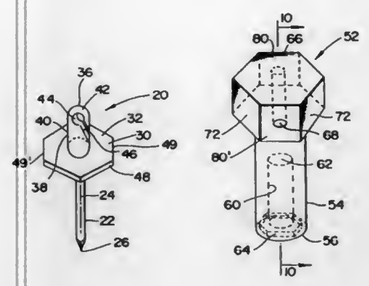
U.S. Cl. 227—119 **3 Claims**

1. A fastener system comprising:

a fastener including a shank having a longitudinal axis and defining a first pointed end and an opposed second end, a

plate connected to said second end, said plate defining first and second opposed and substantially parallel flat surfaces and a perimeter edge between said first and second surfaces, a first head connected to said plate, said head defining a first opening therethrough and an exterior surface and a slot extending from said first opening through said exterior surface, and said head defining a first predetermined overall length;

a tool for use with said fastener for attaching said fastener to a surface, said tool including a body portion defining first and second opposed ends and further defining a substantially cylindrical opening extending from said first end of said body



portion into said body portion, said cylindrical opening defining a second predetermined length greater than said first predetermined overall length, and said cylindrical opening within said body portion defining a countersunk portion at said first end of said body portion sized and configured for removably receiving said plate therein; and

wherein said shank defines an outer threaded surface, said perimeter edge is multi-sided, said countersunk portion is multi-sided, a second bead is connected to said second end of said body portion, a second opening is defined within and extends through said second head, and further including a rod sized to removably fit within and to extend beyond said second opening.

5,549,235

Patent Not Issued For This Number

5,549,236

METHOD AND APPARATUS FOR POSITIVE, TORSION-PROOF HOLDING DURING FRICTION WELDING

Rudolf Reinhardt, Esslingen, Germany, assignor to Mercedes-Benz AG, Germany

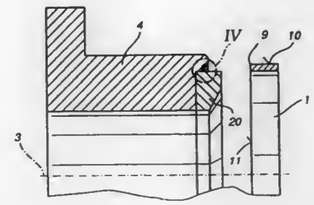
Filed Dec. 9, 1994, Ser. No. 352,567

Claims priority, application Germany, Dec. 9, 1993, 43 44 1954.2

Int. Cl.[6] B23K *20/12*

U.S. Cl. 228—114.5 **5 Claims**

1. A method for friction welding of a first part, having a functional smooth-faced outside portion to a second part, comprising the steps of holding the first and the second parts axially opposite one another in respective separate holding devices, of which at least one of the bolding device is rotatably arranged; heating the first and second parts to a pasty state by friction; retaining the first and second parts in a torsion-proof manner by embossing, in the region of a bolding face of the first part in the respective holding device, regular positive-connection faces which



match with corresponding cutter-like, positive-connection counterfaces in the holding device arranged at an acute angle (α) of less than 45° to an axial force direction, as seen in an axial section, digging into a peripheral workpiece edge of one part in a force-transmitting manner; rotating the parts relative to one another; pressing one of the parts into the other of the parts with a decreasing relative rotation and with increased axial force to effect friction welding; and thereafter stopping relative rotation of the parts, wherein the embossing is carried out one of directly before the friction welding by a separate axial pressing force which is applied separately and during the friction welding by utilizing the axial pressing force thereof.

5,549,237

APPARATUS AND METHOD FOR COLD WELDING THIN WAFERS TO HARD SUBSTRATES

Richard C. Oeftering, Elyria, and Floyd A. Smith, Cleveland, both of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 16, 1995, Ser. No. 390,460

Int. Cl.[6] B23K *20/16;20/24*

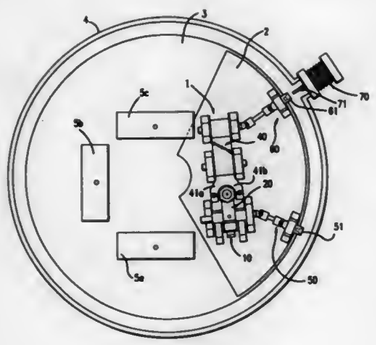
U.S. Cl. 228—116 **26 Claims**

1. An apparatus for coating and bonding a pair of parts together in a vacuum, wherein each of said pair of parts includes a bonding surface, said apparatus comprising:

a floating mount assembly for holding one of said pair of parts;

a pivoting mount assembly for bolding the other of said pair of parts, said pivoting mount assembly pivoting between a bonding position wherein said bonding surfaces are arranged to face each other and a coating position wherein said bonding surfaces are laterally spaced from each other; and

a first coating source for depositing a thin film of a metal onto said bonding surfaces, said coating source being configured to simultaneously coat each of said bonding surfaces.

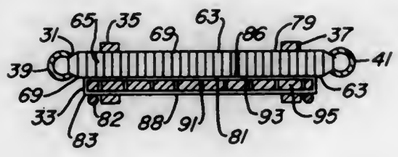


5,549,238

HEAT EXCHANGER BRAZING TRAY

Clive R. Hindle, Fort Worth, Tex., assignor to Zexel USA Corporation, Dacatur, Ill.

Continuation of Ser. No. 322,186, Oct. 12, 1994, abandoned. This application Dec. 22, 1995, Ser. No. 577,069
Int. Cl.[6] B23K *31/02;37/04*
U.S. Cl. 228—183 12 Claims



1. A method for brazing a plurality of beat exchanger components together to form a heat exchanger of a motor vehicle air conditioning system, the method comprising the steps of:

providing heat exchanger components, which include header tanks, refrigerant flow tubes and pieces of fin stock;

providing a brazing fixture having a planar surface formed from a material to which the heat exchanger components will not braze when passing through the brazing furnace;

securing the heat exchanger components to the brazing fixture, with the header tanks spaced apart and aligned parallel to one another, the refrigerant flow tubes extending between the header tanks in a spaced apart and parallel arrangement, and the pieces of fin stock extending between the header tanks and disposed between adjacent ones of the refrigerant flow tubes;

wherein the step of securing the heat exchanger components to the brazing fixture includes disposing longitudinal axes of the refrigerant flow tubes and edges of the pieces of fin stock parallel to the planar surface of the brazing fixture, with substantially a full length of the edges on one side of the pieces of fin stock extending adjacent to the planar surface;

passing the heat exchanger components and the brazing fixture through a brazing furnace to braze the heat exchanger components into a singular unit for use as a heat exchanger; and

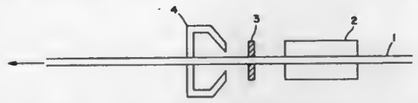
removing the heat exchanger from the brazing fixture, with the edges of the pieces of fin stock extending proximately between outermost sides of the adjacent pairs of the refrigerant flow tubes.

5,549,239

METHOD OF PROVIDING PARTICLE RETAINING METAL SURFACES AND FLUX RETAINING METAL COMPONENTS

Edward J. Morley, Kopervik, Norway, and Morten Syslak, Onsted, Mich., assignors to Norsk Hydro a.s, Oslo, Norway

PCT No. PCT/NO93/00023, § 371 Date Nov. 1, 1994, § 102(e) Date Nov. 1, 1994, PCT Pub. No. WO93/15868, PCT Pub. Date Aug. 19, 1993
PCT Filed Feb. 8, 1993, Ser. No. 284,491
Claims priority, application Norway, Feb. 12, 1992, 920546
Int. Cl.[6] B23K *1/20;103/10;31/02*
U.S. Cl. 228—207 3 Claims



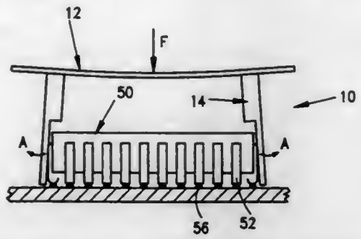
1. A method of providing a metal component having particle retaining surface, which comprises steps of providing a molten metallic coating on the component, impinging solid particles against said molten coating, and cooling the component so as to solidify the coating and thereby fix the particles firmly in the solidified coating, wherein the impinging of solid particles against the molten coating comprises fluxing of aluminum-based components by means of halogen-based flux particles.

5,549,240

SURFACE MOUNT DEVICE REMOVAL TOOL

Paul L. Urban, Cheraw, S.C., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Feb. 14, 1995, Ser. No. 388,576
Int. Cl.[6] B23K *1/018;3/02*
U.S. Cl. 228—264 21 Claims



1. A desoldering tool for desoldering and removing an electrical component having leads on at least two sides, comprising:

a flexible carrier plate;

a plurality of heatable legs attached to said flexible carrier plate, said plurality of legs configured to contact the leads on said electrical component; and

said flexible carrier plate being sufficiently flexible so that a force on the legs causes flexing of the carrier plate which allows the plurality of legs to deflect to accommodate electrical components of varying sizes.

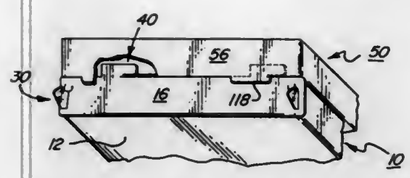
5,549,241

INTERLOCK FOR STACKABLE BOXES

John D. Correll, 8459 Holly Dr., Canton, Mich. 48187

Continuation of Ser. No. 94,526, Jul. 20, 1993. This application Jul. 11, 1994, Ser. No. 273,369
Int. Cl.[6] B65D *5/32*
U.S. Cl. 229—120.01 9 Claims

1. A pair of stackable boxes comprising,



a lower box and an upper box, each box having a bottom and a plurality of upstanding walls including first and second parallel walls,

the bottom of the upper box defining first and second slots disposed adjacent and parallel to the first and second walls, respectively,

the first and second parallel walls of the lower box having first and second upstanding hook-shaped interlock tabs, respectively,

the upper box being positioned on top of the lower box with the first and second upstanding hook-shaped interlock tabs of each of the first and second parallel walls in registry with and extending through the first and second slots, respectively,

the upper box being positioned relative to the lower box such that the hook-shaped tabs overlap the bottom of the upper box,

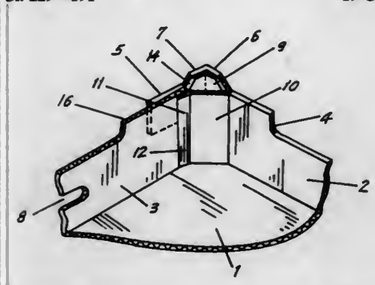
whereby the boxes are detachably interlocked and may be detached from each other by sliding the boxes relative to each other parallel to the first and second walls to a position in which the hook-shaped tabs do not overlap the bottom of the upper box.

5,549,242

STACKABLE CONTAINER WITH REINFORCED CORNERS

D. Emilio M. Gimeno, Alicante, Spain, assignor to Iberoamericana Del Embalaje S.A, Spain

Filed Mar. 7, 1994, Ser. No. 208,331
Claims priority, application Spain, Mar. 5, 1993, 9300592 U
Int. Cl.[6] B65D *5/28*
U.S. Cl. 229—191 19 Claims



1. A light-weight container formed from a single piece of foldable material, comprising:

a bottom; and

four sides, two of said sides each having an upper edge and, at opposite ends of said sides:

upward edge protrusions extending above said upper edge and forming a first part of an inner ridge; and

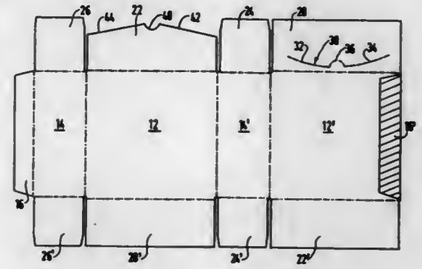
extensions, each extension being divided into three successive sectors, each extension being folded to form in a respective corner of the container a triangular reinforcement and resting prism, a first of which sectors is bent at a right angle relative to the side from which it extends to rest against an inner surface of an adjoining side of the container and having an upward edge protrusion that extends above said upper edge of said side and forms a second part of said inner ridge, a second sector being located on an angle relative to said first sector, said second sector having an upper edge substantially level with said upper edge of said side, a third sector being located against and fastened to said side from which it extends, said third sector being separated laterally from the prism formed by said extension.

5,549,243

BLANK FOR EASILY OPENED BOX AND THE BOX FORMED FROM SUCH BLANK

Regis G. Dorier, Fragnes, and Daniel Staszak, Saint-Remy, both of, France, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 1, 1995, Ser. No. 382,311
Claims priority, application France, Feb. 7, 1994, 94 01547
Int. Cl.[6] B65D *17/28*
U.S. Cl. 229—244 18 Claims



1. A blank for a cardboard box, of length L, width l and height h, having a main part, the length of which is substantially equal to 2(L+) and the width of which is equal to the height h of the box, and which is provided with folding lines so as to enable the blank to be folded to form the box, the main part being equipped, at one end which has a dimension equal to the height, with a tab (**16**) designed to be glued to another end (**16'**) of the main part so that this main part, after the gluing and folding of the blank along the folding lines disposed transversely on this main part, defines the four vertical walls of the box, two lateral walls (**14, 14'**) of length L and height h, and a front wall (**12**) and rear wall (**12'**) of length L and height h, and two series of four flaps disposed on each side of the main part to form, respectively, the bottom and top of the box, each series of flaps comprising two lateral flaps (**24, 26, 24', 26'**) with a general shape that is substantially square and an outer and inner flap (**20, 22, 20', 22'**) each having a surface covering substantially the whole of the surface of the bottom or top of the box, once the latter has been formed, characterised in that:

a) the outer top flap (**20**), joined to the top of the box, has a perforation (**30**) in three parts, two substantially symmetrical outer parts (**32, 34**) defining arcs of a circle having substantially the same centre and disposed in the vicinity of the folding line between the outer top flap and the main part, and a middle part (**36**), a convex side of which faces in an opposite direction to a convex side of the two outer parts, the distance between the points on the outer parts of the perforation and the folding line increasing progressively with the distance from the middle part along this perforation,

b) the inner top flap (**22**), joined to the top of the box, has, on its outer edge, opposite the folding line between the inner top flap and the main part, a first shape (**40**) adapted to the middle part of the perforation so as to slightly interfere with the pressing down of the part of the outer top flap defined by the middle part of the perforation during the opening of the box, and a second shape (**42, 44**) adapted to the two outer parts of the perforation so as to slightly interfere with the tearing off of the outer top flap during the opening of the box.

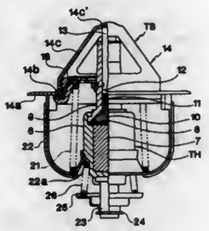
VOL 1189 ISS 4 AUG 27 1996 UMI

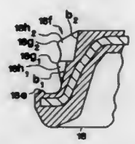
5,549,244

THERMALLY CONTROLLED VALVE FOR INTERNAL COMBUSTION ENGINES

Kazuyuki Kai; Masahisa Hamano; Hitoshi Homma; Akira Mori, and Takashi Masuko, all of Tokyo, Japan, assignors to Nippon Thermostat Co., Ltd., Tokyo, Japan

Filed Jan. 19, 1995, Ser. No. 375,109
Claims priority, application Japan, Dec. 9, 1994, 6-306403
Int. Cl.[6] F01P *7/02*
U.S. Cl. 236—34.5 **6 Claims**





1. A thermally controlled valve for regulating the flow of cooling fluid, the thermally controlled valve including a longitudinal axis and comprising:

a valve element moved by a thermo-element, movement of said thermo-element is in response to temperature changes in the cooling fluid;

a valve seat which contacts with and separates from said valve element, said valve seat includes a horizontal portion which is substantially parallel to the longitudinal axis and a vertical portion which is substantially orthogonal to the longitudinal axis;

said valve element includes a horizontal face which contacts with and separates from said horizontal portion of said valve seat and a vertical face which contacts with and separates from said vertical portion of said valve seat;

a first raised ring lip on said vertical face of said valve element, said first raised ring lip generally circumscribes said elastic valve element about the longitudinal axis; a second raised ring lip on said vertical face of said valve element, said second raised ring lip generally circumscribes said valve element about the longitudinal axis; and,

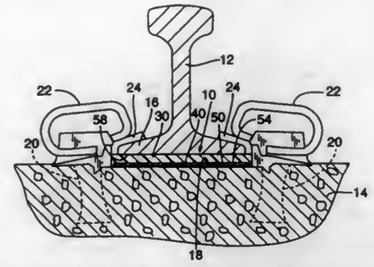
a first cooling fluid passageway provided on said first raised ring lip, said first cooling fluid passageway extends substantially parallel to the longitudinal axis a second cooling fluid passageway provided on said second raised ring lip, said second cooling fluid passageway extends substantially parallel to the longitudinal axis.

5,549,245

COMPOSITE PAD USEFUL BETWEEN RAILROAD RAIL AND RAILROAD TIE

Frederick A. Kish, Wheeling, Ill., assignor to Illinois Tool Works inc., Glenview, Ill.

Filed Nov. 2, 1994, Ser. No. 333,522
Int. Cl.[6] E01B *9/62*
U.S. Cl. 238—283 **14 Claims**



1. In a railroad track, a combination comprising a railroad rail having a lower flange, a railroad tie made from concrete, and an elastomeric pad mounted between the lower flange of the railroad rail and an upper surface of the railroad tie, the elastomeric pad having an upper surface and a lower surface, the upper surface of the elastomeric pad underlying, engaging, and being in direct contact with the lower flange of the railroad rail, and means comprising a bonding member and an adhesive layer for bonding the elastomeric pad to the railroad tie, the bonding member having an upper surface bonded to the lower surface of the elastomeric pad so as to resist relative movement between the elastomeric pad and the bonding member, the adhesive layer comprising a methyacrylate ester composition and bonding the bonding member to the upper surface of the railroad tie, at the lower surface of the bonding member, so as to resist relative movement between the bonding member and the railroad tie and so as to retard infiltration of sand, water, or debris between the bonding member and the railroad tie, the combination permitting relative movement between the lower flange of the railroad rail and the elastomeric pad.

5,549,246

EXTERNAL MIX APPLICATION SYSTEM AND NOZZLE ASSEMBLY

Timothy S. Kukesh, Indianapolis, Ind., assignor to Glas-Craft, Inc., Indianapolis, Ind.

Continuation of Ser. No. 137,491, Nov. 19, 1993, abandoned, which is a continuation-in-part of Ser. No. 968,004, Oct. 26, 1992, abandoned. This application Jan. 19, 1995, Ser. No. 375,262
Int. Cl.[6] B05B *1/28;7/08*
U.S. Cl. 239—9 **32 Claims**

1. A nozzle assembly for use in a plural component application system, comprising:

a liquid nozzle having a plurality of small, spaced liquid passageways in a two-dimensional array about the geometric center of said liquid nozzle and adapted to project a plurality of small, spaced streams of a first plural component material forward of the liquid nozzle; and

a body forming an opening in its face permitting the body to be positioned adjacent the liquid nozzle,

said body having a plurality of spray nozzles equally spaced on a first plane on opposite sides of said opening and adapted to direct a plurality of conical-shaped sprays of a second plural component and air inwardly at said plurality of small spaced streams of said first plural component material,

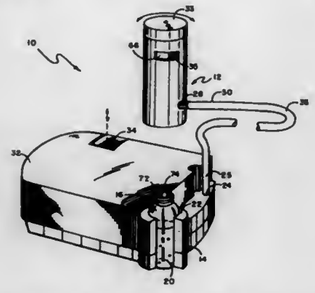
said body also having a first plurality of air passageways on a second plane between said plurality of air-second plural component spray nozzles and equally spaced on opposite sides of said opening and adapted to direct a first plurality of flows of compressed air forwardly of the body for downstream containment of the plural components.

5,549,247

SCENTED LIQUID NEBULIZER

Jon R. Rossman, Chelmsford, and Bryan Hotaling, Arlington, both of Mass., assignors to Leyden House Limited, Leyden, Mass.

Filed Dec. 27, 1994, Ser. No. 364,250
Int. Cl.[6] A61L *9/14;* **B05B** *7/24*
U.S. Cl. 239—57 **4 Claims**



1. In combination, an air nebulizer for dispersing scented mist into ambient atmosphere having on/off switch means for an "on" mode and an "off" mode; pressurized air pump means; a hose member having a first end and a second end, said first end carrying said pressurized air from said pump means, and a bottle containing scented liquid, said bottle having a top, an inner wall, an opening defined at said top of said bottle, said bottle having normal atmospheric air pressure therein, further including:

a housing having a top portion, a bottom portion, an interior portion defined within said housing having interior walls, and a central vertical axis defined therethrough, said housing having means to engage said housing bottom portion into said opening of said top of said bottle;

air entrance means on said housing to engage said second end of said hose member to said housing to direct said pressurized air into said interior portion of said housing;

a chamber housing having a top and a bottom, said chamber housing having an open chamber defined centrally therein along a central vertical axis of the housing, said open chamber having a bottom portion communicating with said air entrance means to receive said pressurized air, said chamber housing disposed in said bottom portion of said housing, said chamber housing having a chamber aperture defined at said top of said chamber housing;

a nozzle member having an upper portion having a top and a bottom portion, said nozzle member having an interior defined therein, an exterior and a vertical axis defined therethrough, said nozzle member having an upper aperture defined at said top of said upper portion in line with said vertical axis, and a lower aperture defined at said bottom portion in line with said vertical axis in communication with said nozzle member's upper aperture, said nozzle member being disposed in said chamber, said upper portion being of a size smaller than dimensions of said chamber to allow said pressurized air to pass therearound and to enter said interior portion of said housing through said chamber aperture such air movement to lower the air pressure in said open chamber above said nozzle member upper aperture compared to the air pressure in said bottle with said bottom portion of said nozzle member blocking said bottom portion of said open chamber;

a tube disposed in said lower aperture of said nozzle member extending down to said scented liquid in said bottle, said lower air pressure in said chamber above said nozzle member upper aperture, causing said scented liquid in said bottle to be forced up said tube by the normal atmospheric pressure in said bottle to pass as a mist through said nozzle member upper aperture and through said chamber aperture into said interior portion of said housing;

a mesh member disposed within said interior portion of said housing filling a substantial portion of said interior portion of said housing above said chamber aperture;

an opening defined in said top portion of said housing;

means to adjust size of said opening defined in said top portion of said housing;

a drain opening defined in said bottom portion of said bousing disposed substantially around said chamber housing;

whereby said device in its "on" mode forcing said scented liquid up through said nozzle member and out said chamber aperture as a mist into said housing and through said mesh member to be dispersed into finer particles of mist to be discharged through said adjustable opening at said top portion of said housing to add scented fine mist into said ambient atmosphere; and

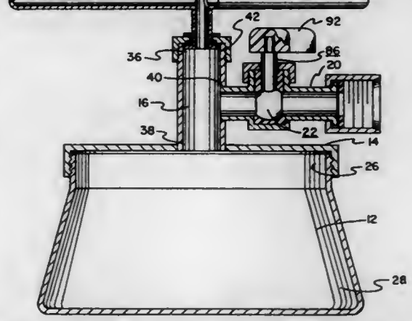
whereby said scented mist on said mesh member, when said device in its "off" mode, coalescing to form a liquid which drains through said drain opening back into said bottle for reuse.

5,549,248

COMBINATION LAWN FEEDER AND SPRINKLER DEVICE

John S. Baker, and Joyce V. Baker, both of 717 W. Warren Ave., Tampa, Fla. 33602

Filed Jan. 5, 1995, Ser. No. 369,083
Int. Cl.[6] B05B *3/06;7/28*
U.S. Cl. 239—251 **1 Claim**



1. A new and improved combination lawn feeder and sprinkler device comprising, in combination:

a fluid container formed in a cylindrical configuration with an open top, an upper extent, and a lower region serving as a base for the device, the upper extent of the container having a smaller diameter then the lower extent with a gradually increasing diameter therebetween, the upper extent including external screw threads, in an operative orientation the fluid container including water soluble fertilizer and water, the configuration of the container serving to stabilize the apparatus since the majority of the fluid weight will be concentrated in the lower region of the container;

a cover formed in a planar circular configuration with an upper surface and a lower surface, the cover including a down-

wardly extending ledge with internal screw threads, the cover being coupled to the upper extent of the container, the center point of the cover having a circular aperture extending therethrough;

an extension rod formed in a hollow cylindrical configuration with two open ends, the approximate center point of the rod having a radially positioned circular aperture, the uppermost end of the extension rod including a plurality of external screw threads, the lower extent of the extension rod being positioned in the aperture in the cover;

a propeller having a central shaft and three horizontally extending blades, the shaft being formed in a hollow cylindrical configuration with a closed upper extent and an open lower extent, a cylindrical collar with a plurality of internal screw threads, the collar being coupled to the upper extent of the extension rod, a tube formed in a hollow cylindrical configuration, the tube positioned within the extension rod and extending into the container, the upper extent of the shaft having three radially positioned apertures, the three blades being formed in a hollow cylindrical configuration with an inboard end and an outboard end, each inboard end being positioned within the apertures of the shaft, each outboard end including an aperture to permit the expulsion of fluid, the three rotating blades serving to distribute fluid uniformly over a recipient lawn;

a water control device having a hollow interior with an inboard region, an outboard region and a central region therebetween, the inboard region being positioned within the hole in the extension rod, the outboard region having a larger diameter than the inboard region and including coupling means; and

the central region being formed as an enlarged chamber and including an upper extent including a plurality of external screw threads, a valve system being positioned therein, the lower extent of the valve system being formed as a planar circular base, the lower extent including a concave depression, a bearing formed in a generally spherical configuration being positioned in the depression of the lower extent, the depression being contoured to fit the lower extent of the bearing, the bearing having a horizontally positioned radial aperture extending therethrough, the bearing permitting circular rotation upon its vertical axis to alter the flow of water therethrough, the valve system including a generally L-shaped handle with a horizontal upper portion and a vertical lower portion, the lower extent of the vertical portion being affixed to the uppermost extent of the bearing, the horizontal portion being formed in a planar circular configuration with a projection extending therefrom, the horizontal portion being releasably coupled to the vertical portion, a handle collar with coupling means being positioned around the vertical portion of the handle and coupled to the upper extent of the chamber, the handle collar permitting easy disassembly of the valve system, the valve system permitting the user to control the flow of water through the apparatus in the operative orientation.

5,549,249

FLUID SPINNER AND NOZZLE HEAD ASSEMBLY WITH CONTROLLED FLUID FLOOD PATH

Donald D. Foster, St. Charles, and Philip L. Nelson, Ellisville, both of Mo., assignors to Contico International, Inc., St. Louis, Mo.

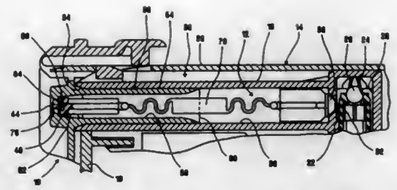
Continuation-in-part of Ser. No. 808,168, Dec. 13, 1991, Pat. No. 5,368,234. This application Apr. 20, 1994, Ser. No. 230,494

Int. Cl.[6] B05B *9/043;1/34*

U.S. Cl. 239—463 **38 Claims**

1. A trigger sprayer comprising:

a sprayer housing having a fluid channel with a cylindrical interior surface extending axially therethrough, the channel having opposite first and second ends with a fluid outlet opening at the first end and a fluid inlet opening at the second end;



a nozzle head assembled to the first end of the sprayer housing, the nozzle head having an orifice wall with a fluid discharge orifice extending axially therethrough, a cylindrical conduit projecting from the orifice wall through the fluid channel outlet opening and into the fluid channel, the conduit having a cylindrical interior surface and a cylindrical exterior surface in engagement with the interior surface of the fluid channel, and a projection projecting from the orifice wall into the conduit, the orifice extending through and being centered in the projection and the projection being centered in the conduit; and,

a fluid spinner assembly contained in the conduit, the spinner assembly having a spinner bead with axially opposite first and second end faces and an annular wall projecting an axial distance from the first end face and forming a swirl chamber at the first end face, the annular wall having an interior surface that surrounds the swirl chamber and the projection on the orifice wall, and the annular wall having a distal end surface that engages with the orifice wall around the projection where the axial distance of the annular wall's projection from the first end face spaces the orifice wall projection from the first end face of the spinner bead.

5,549,250

PROCESS AND DEVICE FOR SORTING THERMOPLASTIC MATERIALS FROM A MIXED FLOW

Urban Stricker, Am Steimel 18, D-5912, Hilchenbach, Germany

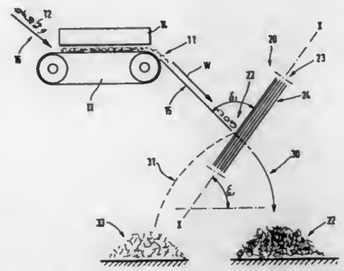
PCT No. PCT/EP93/01583, § 371 Date Jan. 20, 1995, § 102(e) Date Jan. 20, 1995, PCT Pub. No. WO94/00241, PCT Pub. Date Jan. 6, 1994

PCT Filed Jun. 22, 1993, Ser. No. 367,139

Claims priority, application Germany, Jun. 24, 1992, 42 20 666.9; Jun. 7, 1993, 43 18 839.7

Int. Cl.[6] B02C *18/06;18/18;19/00*

U.S. Cl. 241—23 **8 Claims**



1. A process for sorting a thermoplastic material from a mixed stream containing objects of said thermoplastic material which has a certain temperature at which said thermoplastic material is softened to a rubbery state, said stream containing objects of other materials which are harder than said material in said rubbery state and which, if they have softening temperatures, said softening temperature is greater than said certain temperature, said process comprising the steps of:

(a) passing said mixed stream on a transport device through a heating device and heating said mixed stream to said certain temperature and softening said objects of said thermoplastic material selectively into said rubbery state in a heated mixed stream;

(b) feeding said heated mixed stream with force into an intake zone of a grinder having relatively moving cutting members oriented and driven so that only said thermoplastic material in said rubbery state is gripped by said moving cutting members and comminuted in said grinder to feed comminuted softened material along one path while unsoftened thermoplastic materials and objects harder that the softened thermoplastic material pass uncomminuted along another path; and

(c) separately collecting comminuted softened thermoplastic material and uncomminuted material displaced along said paths.

5,549,251

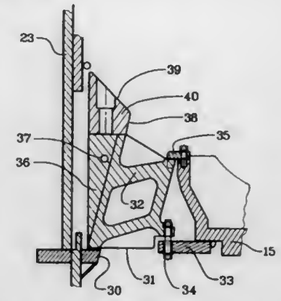
PULVERIZER THROAT ASSEMBLY

Robert S. Provost, 5630 Foxcross Pl., Stuart, Fla. 34997

Filed Jan. 27, 1995, Ser. No. 379,878

Int. Cl.[6] B02C *15/06*

U.S. Cl. 241—119 **7 Claims**



1. In a coal pulverizer having a rotatable grinding table and a pulverizer throat, an improved pulverizer throat comprising a mounting ring, a throat ring mounted thereon, and a ledge cover ring mounted on said throat ring, all of said mounting ring, throat ring and ledge cover ring being attached to and rotatable with said grinding table.

5,549,252

WATER-HAMMER ACTUATED CRUSHER

Bruno H. Walter, North Vancouver, Canada, assignor to Industrial Sound Technologies, Inc., British Columbia, Canada

Filed Jul. 18, 1994, Ser. No. 277,250

Int. Cl.[6] B02C *1/02;1/04*

U.S. Cl. 241—264 **26 Claims**

1. A crusher comprising

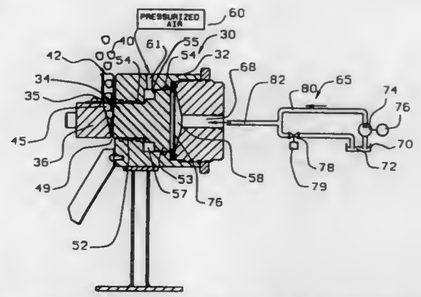
(a) a substantially rigid-walled substantially unimpeded conduit having an inlet at an upstream end thereof and an outlet at a downstream end thereof, said substantially unimpeded conduit filled with a fluid;

(b) a supply of said fluid at a first pressure connected to said inlet of said substantially unimpeded conduit;

(c) a valve in said conduit downstream from said inlet, said valve having an open position, wherein said fluid is free to flow continuously from said supply through said substantially unimpeded conduit and said valve, and a closed position, wherein said flow of said fluid through said substantially unimpeded conduit is substantially blocked by said valve;

(d) a crusher body;

(e) a fluid-filled chamber in said crusher body;



(f) means for repeatedly opening said valve, maintaining said valve open for a time sufficient for said fluid to commence flowing through said valve with a velocity, and suddenly closing said valve to generate a series of water-hammers in said substantially unimpeded conduit, each of said water hammers comprising an upstream propagating water-hammer pulse having a pressure significantly greater than said first pressure;

(g) a fluid-filled conduit for carrying said water-hammer pulses into said fluid-filled chamber, said fluid-filled conduit extending from a point said substantially unimpeded conduit upstream from said valve to said fluid-filled chamber;

(h) an anvil mounted to said crusher body; and

(i) a rigid member mounted in and having a projecting end projecting from said crusher body, said member extending between said fluid filled chamber and an impact surface on said projecting end, said member displaceable by said water-hammer pulses to transmit sudden compressive forces to a material to be crushed between said impact surface and said anvil.

5,549,253

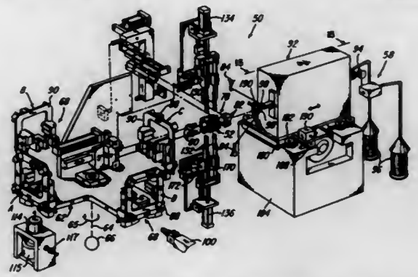
STATOR WINDING APPARATUS

John M. Beakes, Fairborn; Gary E. Clemenz, Bellbrook; Patrick A. Dolgas, Milford; Mark T. Heaton, Springfield, and Lawrence E. Newman, Tipp City, all of Ohio, assignors to Globe Products Inc., Huber Heights, Ohio

Division of Ser. No. 148,175, Nov. 5, 1993, Pat. No. 5,370,324, which is a continuation of Ser. No. 587,937, Sep. 25, 1990, abandoned. This application Dec. 5, 1994, Ser. No. 349,410

Int. Cl.[6] H02K *15/02*

U.S. Cl. 242—432.3 **21 Claims**



1. Stator winding apparatus for winding field coils onto pole pieces of a stator located at a winding station using wires supplied from sources of wire under tension, said apparatus comprising:

a turret plate mounted for rotation about a vertical axis;

at least three stator clamp mechanisms including stator clamps mounted on said turret plate at spaced locations around its periphery for clamping stators to said turret plate at said

VOI
1189
ISS
4
AG
27
19 96
UMI

spaced locations with the center axes of said stators extending horizontally and substantially perpendicularly with respect to said vertical axis and with the end faces of said stators most remote from said vertical axis held by said stator clamps in vertical orientations and spaced a fixed horizontal distance from said vertical axis;

a wire clamp assembly mounted on said turret plate adjacent each of said stator clamp assemblies having wire clamps adapted to temporarily hold coil lead wires extending from coils wound on a stator;

means for repeatedly indexing said turret plate in one direction about said vertical axis to repeatedly sequentially position each of said stators in a load/unload station wherein a newly wound stator is unclamped from said turret plate and removed from said turret plate and replaced by an unwound stator, a winding station at which coils of wire are wound on an unwound stator and coil lead wires extending from said coils are positioned in said wire clamps and severed from the wire sources, and a coil lead terminating station wherein the coil lead wires are connected to terminals mounted on the core of the newly wound stator;

a winding head assembly that winds coils of wire on the stator located at said winding station, said winding head assembly being located adjacent said winding station;

two pairs of winding forms for guiding the wires wound into coils wound on the stator at the winding station;

a pair of winding form-loading mechanisms that move said winding forms toward and away from one another at said winding station;

a pair of programmably adjustable form lock assemblies adjacent said winding station that lock said winding forms to the stator located at said winding station and, after the winding operation is completed, unlock said winding forms from the same stator while said stator is still located at said winding station; and

coil lead terminating means at said coil lead terminating station for connecting said coil lead wires to said terminals on said stator core.

5,549,254

DEVICE FOR CUTTING YARN WHEN INSERTING YARN ON A YARN-HOLDER COP IN AUTOMATED WINDING APPARATUS

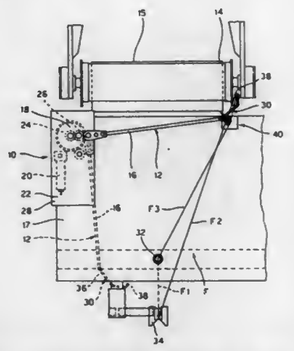
Carlo Menegatto, Monza, Italy, assignor to Menegatto S.r.l., Milano, Italy

Filed Dec. 23, 1994, Ser. No. 363,523

Claims priority, application Italy, Dec. 24, 1993, MI93A2733

Int. Cl.[6] B65H *54/71;54/00;75/28*

U.S. Cl. 242—19 **3 Claims**



1. A yarn winding apparatus comprising a frame, means for supporting a yarn-holding cop on the frame, and means supported by the frame for inserting a yarn on a yarn-holding cop on the frame, said inserting means comprising a member mounted on the frame for movement relative to the frame in a path disposed in a plane, means retaining a length of yarn extending from a yarn supply, in such a position that when said member moves toward a said cop, said member will contact said length of yarn and draw said yarn out in a loop having two branches only one of which is to be attached to a said cop, and cutting means adjacent said cop-supporting means for cutting said branch which is not to be attached to the cop, said cutting means comprising stationary and movable cutting elements that define between them a recess for receiving yarn to be cut, said recess opening in a direction parallel to said plane, resilient means acting between said elements to maintain said recess open, said movable cutting element having a portion disposed in said plane when said recess is open and being engaged by said member when said member moves toward said cop thereby to cut yarn in said branch which is not to be attached to the cop.

5,549,255

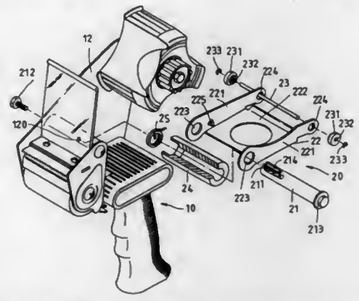
SILENCER FOR TAPE DISPENSER

Harrison Huang, No. 23, Lin T'So Rd., Shengkang, Taichung Hsien, Taiwan

Filed Apr. 10, 1995, Ser. No. 419,552

Int. Cl.[6] B32B *31/00*

U.S. Cl. 242—422.5 **5 Claims**



1. A silencer for a tape dispenser comprising:

a fixation shaft fastened horizontally at one end thereof with a base plate of a tape dispenser;

a swiveling stand fastened pivotally at a first end thereof with said fixation shaft;

a rotating shaft rotatably fastened at a second end of said swiveling stand;

a rolling cylinder fitted rotatably over said fixation shaft; and

a resilient element fastened at one end thereof with said fixation shaft and at another end thereof with said swiveling stand for providing an elastic force enabling said rotating shaft to remain at all time in contact with the surface of a tape roll mounted in said tape dispenser.

5,549,256

CONTINUOUS FEED AND DISCHARGE FLOW THROUGH CASSETTE LOADING APPARATUS

Luciano Perego, Milan, Italy, assignor to Tapematic U.S.A., Inc., Orlando, Fla.

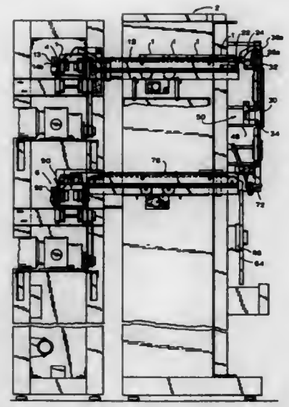
Continuation of Ser. No. 801,261, Dec. 3, 1991, abandoned, which is a division of Ser. No. 479,231, Feb. 12, 1990, Pat. No. 5,118,045, which is a continuation of Ser. No. 314,409, Feb. 22, 1989, abandoned. This application Feb. 23, 1994, Ser. No. 201,480

Claims priority, application Italy, Dec. 29, 1988, 23152A/88

Int. Cl.[6] B65H *54/22*

U.S. Cl. 242—532.1 **28 Claims**

1. A cassette loading system comprising:



a remote loading station at which empty cassettes are placed on a supply conveyor;

a cassette tape loading machine, having a main housing having an interior and an exterior, wherein said tape loading machine comprises:

first transfer means for receiving empty cassettes from said supply conveyor and transporting the empty cassettes through said interior of said maid housing of said loading machine in a first direction; and

second transfer means for transporting full cassettes through said interior of said main housing loading machine in a second direction;

a discharge conveyor capable of receiving full cassettes from said cassette tape loading machine and carrying the full cassettes to a remote location; and

a remote packing station at which loaded cassettes are removed from said discharge conveyor and packed.

5,549,257

METAL WIRE WINDING REEL

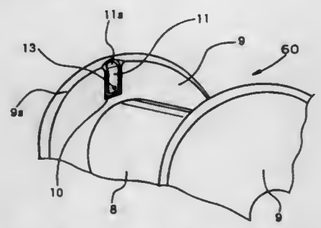
Kenji Sanda, and Hitoshi Inoue, both of Ono, Japan, assignors to Tokusen Kogyo Co., Ltd., Hyogo, Japan

Filed Nov. 3, 1994, Ser. No. 333,781

Claims priority, application Japan, Nov. 12, 1993, 5-060970 U; May 18, 1994, 6-005392 U

Int. Cl.[6] B65H *75/28*

U.S. Cl. 242—580 **7 Claims**



1. A metal wire winding reel comprising a winding drum have a flange at each end thereof, characterized in that an elastic end engaging member is formed of a one-piece member having a forward end and a base, said base is mounted entirely within at least one recess formed in the vicinity of the outer periphery of the inside surface of said flange and said forward end defining a clearance with the flange.

5,549,258

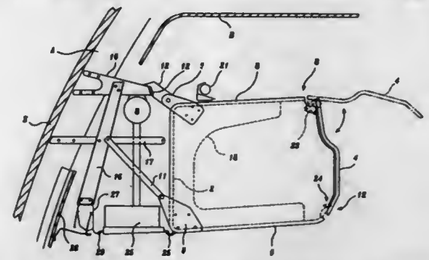
RETROFIT LUGGAGE BIN ASSEMBLY COMPATIBLE WITH EXISTING AIRCRAFT BIN SUPPORTS

Jack E. Hart, Bellevue; Ralph M. Burrows, Bellingham, and Michael E. Marquardt, Seattle, all of Wash., assignors to Heath Tecna Aerospace Company, Ardsley, N.Y.

Filed Dec. 23, 1994, Ser. No. 363,765

Int. Cl.[6] B64C *1/20*

U.S. Cl. 244—118.1 **9 Claims**



1. An aircraft overhead luggage bin retrofit assembly compatible with existing bin support structure in an aircraft cabin, said support structure including upper support brackets and lower support brackets mechanically attached to the aircraft frame and extending transversely from sides of the aircraft into the cabin, the retrofit assembly comprising:

(a) a replacement luggage bin comprising a bulkhead at each end thereof; a base, a top, and a rear side, each extending coextensively between the bulkheads to produce a containment space for receiving luggage; and a cabin-facing side opposite the rear side, said cabin-facing side equipped with a door to allow sealing of the containment space; and

(b) a mounting assembly for fixedly connecting the replacement luggage bin to the existing bin support structure, the mounting assembly comprising:

(i) an upper bin support bracket mechanically attached to an upper rear portion of the replacement bin, the upper bin support bracket extending from the rear of the bin and having an end portion, furthest from the bin, for mechanical attachment to a rail cooperating bracket mechanically attached to a rail extending along a length of the aircraft cabin, the rail supported by the existing upper support brackets of the aircraft;

(ii) a lower bin support bracket mechanically attached to the bin near a base portion of the rear of the bin, a portion of the lower bin support bracket extending rearwardly from the bin for mechanical attachment to a vertical bracket; and

(iii) a vertical bracket adapted for mechanical attachment at an upper end thereof to existing upper support brackets, and mechanical attachment of a mid portion thereof to existing lower support brackets, and mechanical attachment to the rearward extending portion of the lower bin support bracket.

5,549,259

INNOVATIVE AIRTANKERS AND INNOVATIVE METHODS FOR AERIAL FIRE FIGHTING

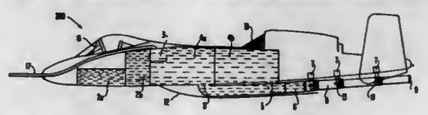
Edward C. Herlik, 9 S. Main St., Camden, Del. 19934

Filed Feb. 17, 1994, Ser. No. 197,849

Int. Cl.[6] A62C *3/02;35/58;* **B64D** *1/16*

U.S. Cl. 244—136 **9 Claims**

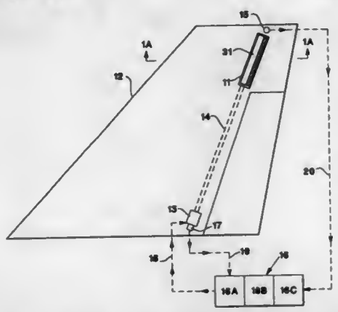
1. A turbine engine powered firefighting airtanker comprising:



a vision enhancing system;

a helmet mounted display system to display the images generated by the vision enhancing system;
an aided aiming system;
a head up display system;
a retardant discharge system having a means to accelerate liquids;
a retardant discharge control system to control the acceleration and release of said liquids;
an aerial liquid reloading system having a means for transferring liquids inflight from a transport aircraft to said airtanker; and
a low altitude ground proximity warning system having a means to warn the pilot of imminent ground impact.

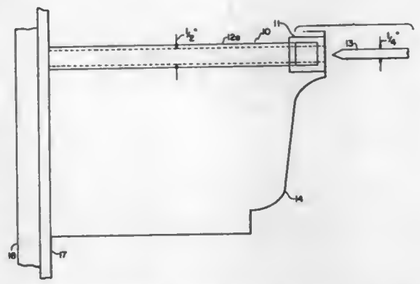
5,549,260
ACTIVE CONTROL DEVICE FOR AIRCRAFT TAIL BUFFET ALLEVIATION
Wilmer H. Reed, III, Hampton, Va., assignor to Dynamic Engineering, Inc., Newport News, Va.
Filed Jan. 27, 1995, Ser. No. 380,005
Int. Cl.[6] G05D *1/00*
U.S. Cl. 244—195 **15 Claims**



1. A device for alleviating buffet response of a tail surface in a wake of turbulent vortex flow generated upstream by leading edges of wings on a high-speed aircraft operating at a high angle of attack during flight, comprising:
a rotatable cylinder means, mounted on the tail surface, for generating aerodynamic lift forces so as to suppress the buffet response, said rotatable cylinder means having slotted means for allowing free air to flow therethrough;
wherein said rotatable cylinder means having the slotted means provides a buffet suppression force over a broad range of signal frequencies.

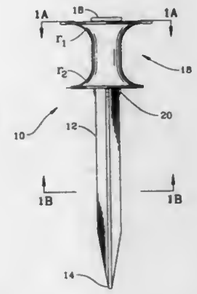
5,549,261
LADDER BRACING FOR GUTTERS
Bert A. Hardin, 7740 Glen Devon Rd., Jonesboro, Ga. 30236
Filed Nov. 2, 1994, Ser. No. 332,802
Int. Cl.[6] E04D *13/072*
U.S. Cl. 248—48.2 **9 Claims**

1. A brace for a gutter comprising:
a support having opposite sides adapted to fit within a gutter, at least two ferrules and one fastener for each ferrule, said fastener having an outer diameter; said at least two ferrules each having an inner and outer diameter wherein the inner diameter is larger than the outer diameter of said fastener;
the support containing at least two sets of holes, each said set of holes being defined in said support, one of said holes is of a first size greater than the outer diameter of the fastener and less than the outer diameter of the ferrule such that the fastener can pass therethrough, but one of said ferrules cannot and the other of said holes being of a second size greater than the outer diameters of both the fastener and the ferrule such



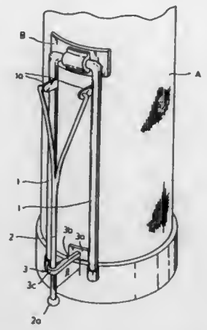
that both the fastener and the ferrule can pass through; said holes being concentric to each other and positioned on opposite sides of said support;
said ferrule being inserted into said hole of said second size and seated against a portion of said support surrounding said first hole, said fastener being inserted into the hole of said first size and passing through said support, said ferrule and said hole of second size.

5,549,262
HOSE GUIDE
Stephen P. Whitehead, Elgin, Ill., assignor to Suncast Corporation, Batavia, Ill.
Filed Jun. 6, 1995, Ser. No. 471,120
Int. Cl.[6] A47G *29/00*
U.S. Cl. 248—87 **13 Claims**

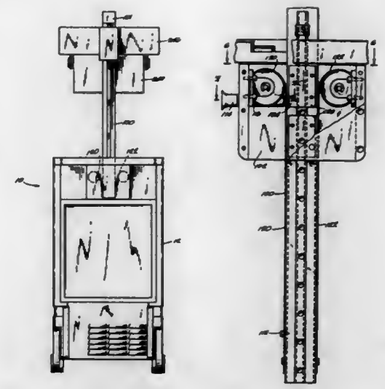


1. A water hose guide device comprising: a spike having a pointed insertion end separated from a flat distal end by a side wall surface having a length, said side wall including outwardly extending ribs with at least one locking tab integrated along the length thereof at a predefined distance from said flat distal end; a one piece roller member with an upper surface having a first diameter and a lower surface having a second diameter with a C-shaped side wall formed therebetween, said roller having a centrally disposed aperture receptive to the rotatable insertion of said spike and positionable between said locking tab and said flat distal end; wherein said insertion end of said spike is placed through said aperture of said roller positioning said roller between said locking tab and said flat distal end whereby said spike is insertable into the ground and said roller rotatable about a vertical axis formed by said spike receptive to guiding a hose along said C-shaped side wall.

5,549,263
SUPPORT STAND FOR GOLF BAG
Seop Maeng, P.O. Box 138-170, 22-102 Hangyang Apt. Songpa-dong, Songpa-gu, Seoul, Rep. of Korea
Filed Dec. 9, 1994, Ser. No. 353,068
Claims priority, application Rep. of Korea, Dec. 9, 1993, 26991
Int. Cl.[6] A63B *55/00*
U.S. Cl. 248—96 **8 Claims**



1. A support stand for a golf bag comprising a pair of legs pivotally mounted to a body of the golf bag, further comprising:
an actuating member serving to pivotally move the legs and having upper ends each pivotally mounted to an upper portion of each corresponding one of the legs and a lower end being flush with a bottom surface of the golf bag body at an upright position of the golf bag; and
a spacer bracket fixedly mounted at one end thereof to a lower portion of the golf bag and provided with means for holding the lower portion of the actuating member, the spacer bracket being adapted to space the actuating member a predetermined distance from the golf bag body and including means for adjusting the distance between the actuating member and the golf bag body.



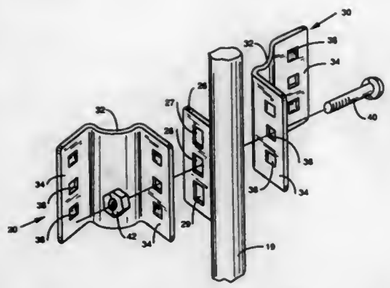
an interior guide passage in the collar including an interior end aligned with the support pole,
the support pole including a first positioning aperture aligning with the interior end of the guide passage when the support pole is in a desired raised position below the fully raised position and a second positioning aperture aligning with the interior end of the guide passage when the support pole is in a desired lowered position above the fully lowered position,
a pin carried by the guide passage, the pin including an operative end movable inside the collar within the guide passage between an extended position outside the interior end of the guide passage and a retracted position inside the guide passage,
a second spring element within the guide passage coupled to the pin to apply a normal bias to the operative end of the pin toward the extended position and into engagement with the first and second positioning apertures when the support pole moves, respectively, into the desired raised and lowered positions, the normal bias of the second spring element overcoming the normal bias of the first spring element to releasably hold the support pole in the desired raised and lowered positions, and
the pin including a handle end exposed for manipulation outside the collar to move the operative end of the pin against the normal bias of the second spring element into the retracted position out of engagement with the respective first and second positioning apertures.

5,549,264
SUPPORT POLE LIFT MECHANISM
Richard L. West, Lake Villa, Ill., assignor to Baxter International Inc., Deerfield, Ill.
Filed Jul. 1, 1994, Ser. No. 270,645
Int. Cl.[6] F16M *11/00*
U.S. Cl. 248—157 **4 Claims**

1. A support pole assembly comprising:
a base including a support collar,
a vertical support pole having an upper weight bearing end and a lower end, the support pole being carried within the collar for movement within the collar between a fully raised position in which the upper weight bearing end is located at a first position above the base and a fully lowered position in which the upper weight bearing end is located at a second position above the base closer to the base than the first position, and
a lifting mechanism for the support pole comprising
a spool mounted on the collar for rotation about an axis,
a first spring element having a first end attached to the support pole adjacent the lower end and a second end attached to the spool, the first spring element being biased into a coiled condition about the spool when the support pole is in its fully raised position, the first spring element being progressively placed in an uncoiled condition about the spool as the support pole is progressively moved toward the fully lowered position to apply a normal bias to the support pole toward the fully raised position,

5,549,265
METHOD AND APPARATUS FOR ASSEMBLING TABLE LEGS
Richard L. Minchey, Goodlettsville, and William E. Surface, Portland, both of Tenn., assignors to Sunbeam Products, Inc., Fort Lauderdale, Fla.
Filed Apr. 1, 1994, Ser. No. 222,197
Int. Cl.[6] F16M *11/16;11/18*
U.S. Cl. 248—188.2 **7 Claims**

1. A table leg assembly, comprising:
a plurality of leg members;
a tab bracket disposed on each of said leg members;
at least two ganging brackets connectable with each of said tab brackets; and
connecting means for removably connecting said at least two ganging brackets with each of said tab brackets;
wherein each of said ganging brackets comprises a central portion located between a pair of ear portions, each of said ear portions defining at least one hole and having at least one shear tab disposed thereon, each of said tab brackets defining a number of holes corresponding to the sum of the number of shear tabs and holes in one of said ear portions such that when



each of said tab brackets is disposed between a first ear of a first ganging bracket and a second ear of a second ganging bracket, a first hole of said number of holes defined by said tab bracket and said at least one hole in each of said first and second ear portions are aligned to receive said connecting means, and wherein said at least one shear tab on said first ear portion opposes said at least one shear tab on said second ear portion within a second hole of said number of holes defined by said tab bracket.

5,549,266

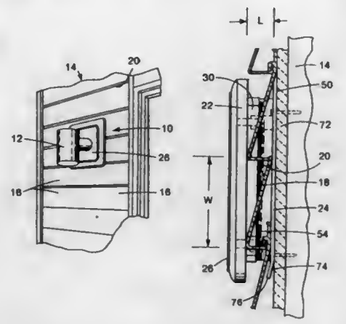
MOUNTING BRACKET WITH WATER DEFLECTOR

Alton D. Mitchell, Princeton; Keith D. Ruby; Ronald W. Miles, both of Hopkinsville, all of Ky., and Robert L. Naas, Skaneateles, N.Y., assignors to KenTech Plastics, Inc., Hopkinsville, Ky.

Filed Apr. 22, 1994, Ser. No. 231,150

Int. Cl.[6] A47B *96/00*

U.S. Cl. 248—205.1 **40 Claims**



40. In combination with a building structure, a bracket for mounting a fixture on said building structure, comprising:

a cover plate for supporting said fixture;

a back plate for attachment to said building structure; and

a strip depending from said back plate and spaced from said building structure for deflecting fluid away from said building structure,

whereby fluid is substantially prevented from being introduced within said building structure in the attachment area of said bracket.

5,549,267

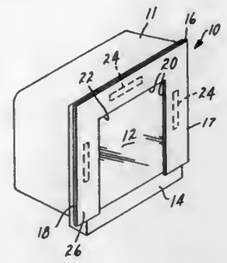
FRAME ASSEMBLY AND COMPOSITE INCLUSIVE THEREOF

June M. Armbruster, River Falls, Wis.; Willem V. Bastiaens, Medina, Minn.; Joseph P. Callahan, Jr., St. Paul, Minn.; Steve W. Moris, Woodbury, Minn., and David W. Stegink, Mendota Heights, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 10, 1994, Ser. No. 179,610

Int. Cl.[6] B41J *11/02*

U.S. Cl. 248—442.2 **23 Claims**



1. A frame assembly adapted for use on a device including a front viewed surface of a predetermined shape and a housing having a front surface at least partially around the viewed surface, said frame assembly including:

a frame having generally planar front and rear surfaces, said frame including elongate border portions having inner edge surfaces defining a first opening through the frame corresponding in shape to at least a portion of the front viewed surface of the device on which the frame is adapted to be used;

means for attaching the rear surface of the frame along the front surface of the housing on which the frame is adapted to be used with the opening in the frame aligned with the front viewed surface of the device on which the frame is adapted to be used; and

a layer of repositionable pressure sensitive adhesive adhered to said frame, said layer having an attachment surface accessible along the front surface of the frame adapted to have sheets of paper and other objects releasably adhered thereto;

said frame comprising:

a stiff outer layer providing the front surface of the frame, said outer layer having a back surface opposite said front surface and having through openings; and

a recessed layer attached along the back surface of said outer layer and extending across said openings; and

said layer of repositionable pressure-sensitive adhesive being coated over the portions of said recessed layer extending across the openings.

5,549,268

APPARATUS AND METHOD FOR HOLDING PAPER

Jeffrey J. Hopwood, 1313 Commercial, Bellingham, Wash. 98225

Filed Jan. 5, 1995, Ser. No. 368,918

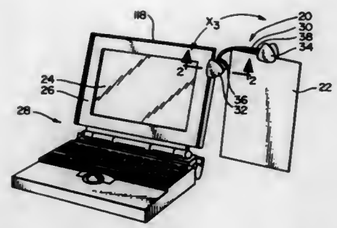
Int. Cl.[6] A47F *5/00*

U.S. Cl. 248—442.2 **2 Claims**

1. An apparatus for placing a first object in a desired orientation adjacent to a second object, comprising:

a flexible member having first and second ends and comprising first and second intertwined helical springs;

first clip means connected to the first end of the flexible member for engagin a gripping surface fixedly located adjacent to the second object in a manner that inhibits relative movement between the first end of the flexible member and the second object;



second clip means connected to the second end of the flexible member for engaging the first object in a manner that inhibits relative movement between the second end of the flexible member and the first object; wherein

the first and second intertwined helical springs engage each other such that the flexible member may be manually reconfigured to place the first object in the desired orientation.

5,549,269

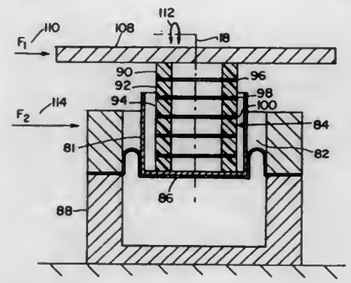
GAS SPRING ASSEMBLY

Maurice Gertel, 77 Florence St., Chestnut Hill, Mass. 02167, and Robert G. Haynes, 53 Skelton Rd., Burlington, Mass. 01803

Continuation-in-part of Ser. No. 858,569, Mar. 27, 1992, Pat. No. 5,348,266. This application Aug. 10, 1994, Ser. No. 288,291

Int. Cl.[6] F16M *13/00*

U.S. Cl. 248—562 **10 Claims**



1. A gas spring assembly for a vibration isolation system comprising:

a housing

a rolling convolution type flexible gas seal within said housing;

a piston receivable by said seal, said piston having a chamber; and

a resilient vibration damper unit residing in said chamber for reducing the horizontal stiffness of the gas spring, said resilient vibration damper unit including a plurality of elastomeric members.

5,549,270

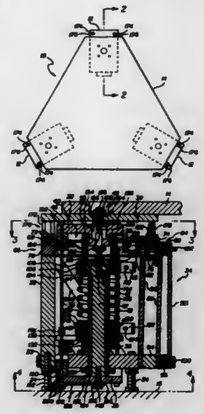
VIBRATION ISOLATION SYSTEM

David L. Platus, Los Angeles, and Patrick J. Cunningham, Fullerton, both of Calif., assignors to Minus K Technology, Inc., Inglewood, Calif.

Continuation of Ser. No. 125,496, Sep. 22, 1993, abandoned, which is a continuation of Ser. No. 987,046, Dec. 4, 1992, abandoned, which is a continuation-in-part of Ser. No. 708,995, May 31, 1991, Pat. No. 5,178,357, which is a continuation-in-part of Ser. No. 681,808, Apr. 8, 1991, abandoned, which is a continuation-in-part of Ser. No. 395,093, Aug. 16, 1989, abandoned. This application Feb. 15, 1995, Ser. No. 390,809

Int. Cl.[6] F16M *13/00*

U.S. Cl. 248—619 **26 Claims**



1. An omnidirectional vibration-isolating suspension system for supporting an object in an equilibrium position relative to a base while suppressing transmission of vibratory motion between the object and the base comprising:

at least one composite suspension apparatus connected between the object and the base, having first and second ends spaced apart to define an axial direction and comprising:

a first suspension device having first and second ends spaced apart in the axial direction, said first suspension device having force-supporting capability in the axial direction for supporting the object and relatively high axial stiffness and relatively high stiffness for relative rotations of said ends about axes transverse to the axial direction but relatively low stiffness for relative translations of said ends in directions transverse to the axial direction, wherein the first end of said first suspension device is located near the first end of said composite suspension apparatus and the second end of said first suspension device is located near the second end of said composite suspension apparatus;

a second suspension device having first and second ends spaced apart in the axial direction, said second suspension device connected axially in series with said first suspension device, wherein the first end of said second suspension device is located near the first end of said composite suspension apparatus and the second end of said second suspension device is located near the second end of said composite suspension apparatus, said second suspension device including:

spring means having first and second ends and adapted to provide positive stiffness in the axial direction and having force-supporting capability in the axial direction for supporting the object;

means for translating the second end of said spring means relative to said first end of said spring means and relative to the second end of said composite suspension apparatus;

a first spring support and means for securing said spring means near its first end to said first spring support in order to inhibit

VOL 1189 ISS 4 AG 27 1996 UMI

relative movement between said spring means and said first spring support when the second end of said spring means is translated relative to the first end of said spring means;

a second spring support and means for securing said spring means near its second end to said second spring support in order to inhibit relative movement between said spring means and said second spring support when the second end of said spring means is translated relative to the first end of said spring means;

anti-rotation means to inhibit rotation of the second end of said spring means relative to the second end of said composite suspension apparatus when the second end of said spring means is translated relative to the first end of said spring means; and

means for producing negative stiffness in the axial direction operatively connected with said first spring support wherein said spring means and said negative-stiffness-producing means combine to produce low axial stiffness of said second suspension device which is the algebraic sum of the positive and negative stiffnesses, said negative-stiffness-producing means having relatively high stiffness in response to displacements of said first spring support relative to the second end of said second suspension device in directions transverse to the axial direction and relatively high stiffness in response to rotations of said first spring support relative to the second end of said second suspension device, said negative-stiffness-producing means comprising at least two flexures oriented in a radial direction transverse to the axial direction and spaced apart in the axial direction and operatively connected to and compressively loaded in the radial direction by a pre-deformed elastic structure means comprising at least two flexures spaced apart in the radial direction;

axially-symmetric flexure means positioned between the first end of said composite suspension apparatus and the first end of said first suspension device and operatively connected axially in series with said first suspension device, said axially-symmetric flexure means having relatively high stiffness in response to translations of the first end of said composite suspension apparatus relative to the first end of said first suspension device and relatively low stiffness in response to rotations of the first end of said composite suspension apparatus relative to the first end of said first suspension device about axes transverse to the axial direction; and

a relatively stiff structural member connected axially in series between said first spring support of said second suspension device and said first suspension device near the second end of said first suspension device, said structural member providing a connection between said first and second suspension devices.

5,549,271

VIBRATION CANCELER

Arno Hamaekers, Gorxheimertal-Unterfl., Germany, assignor to Firma Carl Freudenberg, Weinheim, Germany

Filed Jun. 30, 1994, Ser. No. 268,771

Claims priority, application Germany, Aug. 26, 1993, 43 28 667.4

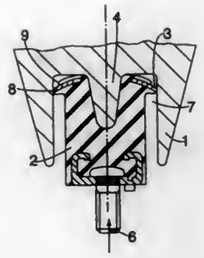
Int. Cl.[6] F16M *7/00;* **F16F** *15/00*

U.S. Cl. 248—621 **7 Claims**

1. A vibration canceler comprising:

an inertial mass comprising a recess; and

a spring element made of a flexible material, said spring element comprising a metal clamping element mounted to said spring element, said metal clamping element being frictionally fastened to a wall of said recess of said inertial mass by being pressed into said recess, thereby preventing said spring element from exiting said recess, said recess having a cross-sectional area which continuously diminishes in a press-on direction.



5,549,272

COMBINATION PRESSURE PULSATION DAMPER AND CHECK VALVE DEPRESSOR

Thomas O. Kautz, Mequon, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Aug. 11, 1994, Ser. No. 289,282

Int. Cl.[6] F16L *29/00; 55/04*

U.S. Cl. 251—118 **19 Claims**

1. An apparatus for coupling a fluid-responsive device with a valve, said valve including an actuator; said valve responding to actuation of said actuator by opening a fluid path within said valve in response to said actuator being in a first position and by closing said fluid path in response to said actuator being in a second position; the apparatus comprising:

a coupler; said coupler having a first engagement structure for fixedly engaging said fluid-responsive device at a first end, a second engagement structure for fixedly engaging said valve at a second end, and a passage between said first end and said second end;

a damper; said damper being fixedly situated substantially blocking said passage; said damper being generally capillarized to establish a network of capillary vias through said damper; and

an extension; said extension being formed integrally with said damper and being proportioned to move said actuator when said valve is fixedly engaged at said second end.

5,549,273

ELECTRICALLY OPERATED FAUCET INCLUDING SENSING MEANS

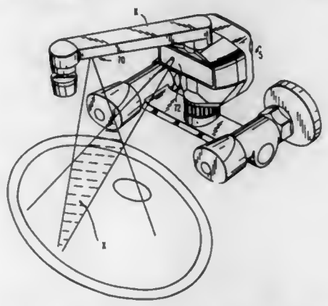
Carmel Aharon, Kibbutz Gill Yam, Israel

Filed Mar. 22, 1994, Ser. No. 215,740

Claims priority, application Israel, Mar. 22, 1993, 105,133

Int. Cl.[6] F16K *31/02*

U.S. Cl. 251—129.04 **12 Claims**



1. An electrically operated faucet of the type including:

a valve controlling a water supply;

an electrical drive for operating said valve between opened and closed positions;

a transmitter for transmitting a recognizable signal;

a receiver operative to receive said recognizable signal; and,

electronic circuit means controlled by said receiver for actuating said electrical drive to move said valve from a valve closed and valve opened position in response to a received signal;

the improvement comprising;

means limiting said recognizable signal emitted by said transmitter to a path having a determined transverse cross-sectional area;

means limiting said receiver to viewing in a path a determined cross-sectional area;

said receiver being positioned with said path of said receiver intersecting said path of said transmitter and at an angle to said path of said transmitter;

whereby, in the absence of a reflective article interposed in said path of said transmitter at a specific range of distance from said transmitter, said receiver is incapable of viewing and receiving said recognizable signal; and,

in the presence of a reflective article interposed in said path of said transmitter within said specific range of distances, said receiver can receive reflected said recognizable signals and activate said electrical drive in a direction to open said valve.

5,549,274

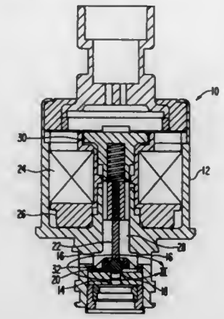
BALL GUIDE FOR AN ELECTRONICALLY ACTUATED CONTROL VALVE

David L. Buchanan, Westport, and Donald J. Benson, Columbus, both of Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Apr. 20, 1994, Ser. No. 230,250

Int. Cl.[6] F16K *31/06*

U.S. Cl. 251—129.14 **8 Claims**



1. A valve for selectively permitting a flow of fluid therethrough comprising;

a housing having an axially oriented inlet and at least one outlet;

a valve seat provided in said housing about said inlet;

a sealing means for cooperating with said valve seat for sealing fluidic communication between said axially oriented inlet and said outlet; and

a sealing means guide for guiding said sealing means between a closed position in contact with said valve seat and an open position spaced from said valve seat;

said sealing means guide comprising;

a central bore for reciprocally receiving said sealing means;

a plurality of circumferentially spaced fluid passages in fluid communication with said axially oriented inlet, said passages extending substantially parallel to said axially oriented inlet; and

fluid directing means for directing a flow of fluid passing through said axially oriented inlet away from said central bore and into said circumferentially spaced passages when said sealing means is in the open position.

3. The valve as defined in claim 1, wherein substantially no fluid passes through said central bore when said sealing means is displaced from said valve seat.

5. The valve as defined in claim 4, wherein said sealing means is a ball.

7. The valve as defined in claim 5, wherein said displacement means is an electronically controlled solenoid actuator.

5,549,275

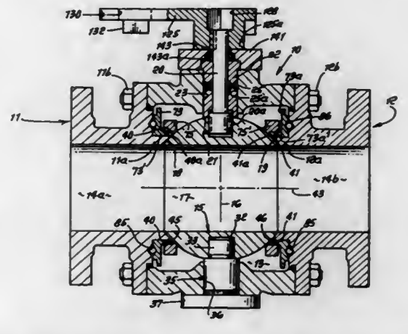
VALVE WITH ADJUSTABLY PRESSURIZED SEALING GASKETS

Granville S. Knox, 1323 Santa Margarita, Fallbrook, Calif. 92028

Filed Aug. 31, 1995, Ser. No. 522,142

Int. Cl.[6] F16K *5/20*

U.S. Cl. 251—170 **9 Claims**



1. A valve mechanism for installation in a pipe line for controlling the movement of a flowable material therein, the said mechanism comprising:

a) a central body section with end sections connected thereto and forming therewith a valve stopper chamber, said end sections each having an associated annular extension projecting into said valve stopper chamber with fluid-flow passages extending outwardly therefrom,

b) a valve stopper in said chamber having a flow passage extending therethrough and sealing surfaces bounding the flow passage,

c) means for moving said stopper to a valve open position substantially aligning the stopper flow passage with the extension flow passages, and to a valve closed position blocking said flow passages,

d) and a gasket encircling each end section extension and thrust means operable to press said gaskets against the stopper sealing surfaces when the stopper is in valve open and valve closed positions,

e) said thrust means including thrustors extending at least part way about said end sections, to be displaced for pressurizing said gaskets, and actuator means movable to displace said thrustors,

f) and wherein said actuator means includes an actuator bar extending between said thrustors to apply displacing force thereto, in response to bar displacement relative to said end sections, and an actuator member adjustably movable to displace said bar, and to hold the bar in displaced position thereby to maintain force application to said thrustors via the bar.

5,549,276

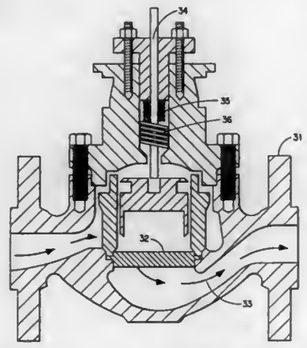
VALVE WITH PERFLOUROELASTOMER PACKING

Gary M. Pittman, Pearland, Tex.; Kenneth A. Senior, Wilmington, Del.; John N. Strunk, Houston, Tex., and Krishnan R. Thondukolam, Newark, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 905,581, Jun. 29, 1992, abandoned, and Ser. No. 904,756, Jun. 29, 1992, abandoned, which is a continuation-in-part of Ser. No. 649,541, Jan. 24, 1991, abandoned, said Ser. No. 905,581is a continuation-in-part of Ser. No. 649,543, Jan. 24, 1991, abandoned. This application Jul. 6, 1993, Ser. No. 88,015

Int. Cl.[6] F16K *41/04*

U.S. Cl. 251—214 10 Claims



1. In a valve having a body, an adjusting stem within the body and a packing around the stem, the improvement wherein the packing consists essentially of a plurality of individual rings including

(a) a male adapter,

(b) a female adapter,

(c) at least two chevron seal rings consisting essentially of perfluoroelastomer, positioned between the male adapter and the female adapter, and

(d) a chevron spacer ring positioned between each two chevron seal rings;

the male and female adapters and each spacer ring consisting essentially of a substantially non-elastomeric fluoropolymer or polyetheretherketone and each perfluoroelastomer chevron seal ring and chevron spacer ring being pointed toward the atmospheric end of the packing.

5,549,277

FLUID FLOW CONTROLLER AND METER

Jeffrey S. Franz, Chanhassen, Minn., assignor to The Futurestar Corporation, Edina, Minn.

Continuation of Ser. No. 159,038, Nov. 29, 1993, Pat. No. 5,381,826. This application Jan. 17, 1995, Ser. No. 373,650

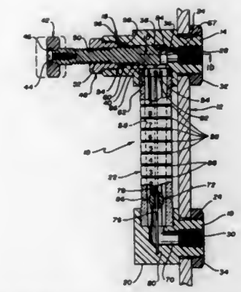
Int. Cl.[6] F16K *31/44*

U.S. Cl. 251—223 10 Claims

1. A fluid flow valve, comprising:

(a) a tube having a passage formed axially therethrough, and a slit-like orifice, having a length axially disposed, intersecting said passage along the length thereof, a portion of said passage on one side of said orifice defining a flow duct, and a portion of said passage on a second side of said orifice defining a receiving duct; and

(b) an occluding member having a generally planar forward end, substantially orthogonal to an axis of said passage, disposed in said passage for selective positioning axially therealong and retraction across said orifice in a direction away from said flow duct to regulate fluid flow through said orifice, wherein as said occluding member is retracted increased fluid flow is



permitted through said orifice as a greater proportion of said orifice is opened to said flow duct.

5,549,278

PARALLEL-SLIDE GATE VALVE

Hans-Jörg Sidler, Eschenbach, Switzerland, assignor to Sistag, Eschenbach, Switzerland

Continuation of Ser. No. 96,639, Jul. 22, 1993, abandoned. This application Dec. 9, 1994, Ser. No. 352,973

Claims priority, application Switzerland, Aug. 11, 1992, 251392

Int. Cl.[6] F16K *3/00*

U.S. Cl. 251—328 1 Claim



1. Parallel-slide gate valve for installation between end flanges of two pipelines disposed along a common axis, comprising

a slide gate moveable in a vertical plane normal to said common axis;

a two-part slide gate housing having two housing sections wherein each section is a half housing in the form of a half-shell terminating along an interfacing plane perpendicular to said vertical plane and having opposed side surfaces parallel to said vertical plane, the slide gate housing being assembled by a joining of the housing sections along said interfacing plane;

upper and lower connecting means on the side surfaces of respectively an upper one and a lower one of said half housings operative independently for securing said end flanges to said upper and said lower half housings, thereby providing that assembly and dismantling of the gate valve can be effected in the direction of movement of the slide gate;

a sealing liner disposed within the slide gate housing and having a liner stem portion and a liner flange portion configured to permit installation and removal of the sealing liner from the slide gate housing in the direction of movement of the slide gate;

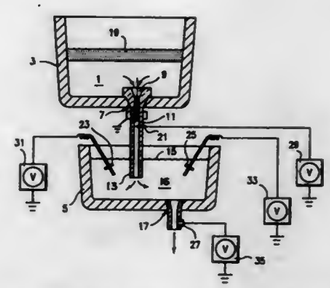
a transverse plate seal surrounding a plate of the slide gate in a region of the liner stem portion and through which the slide gate plate can slide;

wherein the transverse plate seal is installed upon the sealing liner;

the sealing liner comprises a flexurally resilient plastic, and has a supporting collar in a stem region at the transverse plate seal, thereby to permit insertion and withdrawal of the sealing liner from the slide gate housing by deformation of the liner stem portion;

the slide gate housing has a supporting wedge; and

the supporting collar is constructed compressibly and protuberantly on a sidewall of the liner stem portion, and has inwardly-directed supporting shoulders over respective narrow faces of the liner stem portion for receiving the supporting wedge.



impedance monitoring means electrically connected to said probe circuit for generating a signal indicative of the impedance of the probe circuit to determine the reliability of the probe voltage signal, including means for generating a signal indicative of an operating status of the probe circuit.

5,549,279

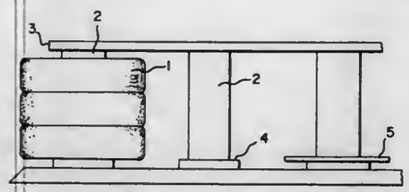
GUARD RAIL AND FENDER FORMED OF MOTOR VEHICLE TIRES

Marvin J. Aszkenas, 19195 Mystic Pointe Dr. Suite 1501, Aventura, Fla. 33180

Continuation-in-part of Ser. No. 281,478, Jul. 27, 1994, abandoned. This application Nov. 17, 1995, Ser. No. 559,131

Int. Cl.[6] E01F *13/00*

U.S. Cl. 256—13.1 5 Claims



1. A guard rail and fender device, comprising:

a frame having a base;

a plurality of substantially cylindrical spindles vertically supported on said base; and

a plurality of stacks of motor vehicle tires, each of said stacks being formed by a plurality of tires mutually coaxially disposed on a respective spindle; said tires having a given diameter and being rotatable relative to said frame; and

said spindles being mutually spaced apart by a distance substantially corresponding to said given diameter of said tires.

5,549,280

PROBE SYSTEM FOR RELIABLY MONITORING A CONDITION IN A METALLURGICAL PROCESS

Donald H. M. Kings, Bicester, England; Robin A. Sommers, Moon Township, and John D. Usher, Beaver Falls, both of Pa., assignors to Vesuvius Crucible Company, Wilmington, Del.

Filed Jun. 6, 1995, Ser. No. 467,990

Int. Cl.[6] C21D *11/00*

U.S. Cl. 266—78 22 Claims

1. A system for monitoring a condition in a metallurgical process, comprising:

a probe having a circuit for generating a voltage signal indicative of a condition in a metallurgical process, wherein the magnitude of the voltage signal varies with changes in said condition, and

---

5,549,281

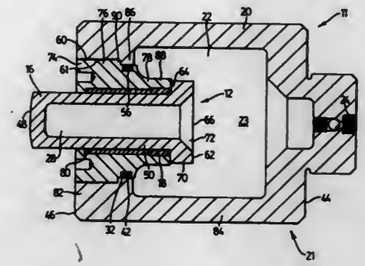
LIQUID SPRING FOR PUNCH PRESS

G. Gordon Hall, Box 156, Milligrove, Ontario, Canada

Filed Jan. 25, 1994, Ser. No. 186,286

Int. Cl.[6] F16F *5/00*

U.S. Cl. 267—119 24 Claims



1. A metal working press comprising: a die set having a metal forming die and a workpiece supporting surface;

a liquid spring for use in firmly clamping a workpiece to said supporting surface during the operation of the press, said liquid spring comprising:

a high pressure cylinder vessel having an internal chamber defined by a cylinder wall,

a first sealed end,

a second sealed end,

a central axis extending between the first sealed end and the second sealed end,

a body of a compressible liquid which is contained in the internal chamber and is pressurized prior to use of said liquid spring in said press by filling said interior chamber with said liquid at an initial pressure of at least 2,000 p.s.i., such that said liquid is under at least said initial pressure at all times during the operation of the press,

a piston comprising a piston head located within the internal chamber and having a front surface and a rear surface,

a piston rod of smaller diameter than said piston head, said rod being attached to the piston head at one end thereof, extending through an opening in said second sealed end, and having an outer end which is outside the cylinder vessel, said piston including a liquid chamber having an open end and a closed end, the open end communicating with said internal chamber at the piston head, the closed end being recessed into the piston rod,

an annular gasket mounted in said second sealed end and in slidable, sealing contact with said piston rod, said front

surface of the piston head being next to and in contact with said body of compressible liquid, and

at least one flow passageway for permitting said liquid to flow freely from a region of said internal chamber adjacent said front surface to a space adjacent said rear surface of the piston head during operation of the spring, wherein said liquid spring is mounted to hold a workpiece in a desired position during operation of said press on said workpiece.

5,549,282

VIBRATION PROOFING STRUCTURE

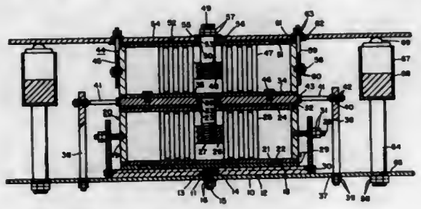
Masahiko Ikeda, A-5-101, 5-2 Kajihara, Kamakura-shi, Kanagawa-ken, Japan

Filed May 13, 1994, Ser. No. 241,900

Claims priority, application Japan, May 14, 1993, 5-147122

Int. Cl.[6] B60G *13/06*

U.S. Cl. 267—136 **18 Claims**



1. A vibration proofing structure comprising:

a first base;

a first oil damper mounted on said first base;

said first oil damper including a first tank mounted on said first base, first pistons arranged in said first tank, and a first rod having a first end and a second end, said first end of said first rod being mounted on said first pistons so as to render an axis of said first rod perpendicular to a longitudinal axis of said first pistons, said second end of said first rod outwardly extending from said first tank;

a second oil damper including a second tank, second pistons arranged in said second tank, and a second rod having a first end and a second end, said first end of said second rod being mounted on said second pistons so as to render an axis of said second rod perpendicular to a longitudinal axis of said second pistons, said second end of said second rod outwardly extending from said second tank; and

a second base on which the second end of said second rod is mounted;

said first and second oil dampers being juxtaposed to each other;

said second end of said first rod being connected to said second tank of said second oil damper, and said first rod of said first oil damper being connected to said second tank of said second oil damper so as to permit said first and second oil dampers to rotate relative to each other.

5,549,283

HYDRAULIC ANTIVIBRATION SUPPORTS

Alain Bellamy, Naveil; Denis Reh, and Pascal Petit, both of Chateaudun, all of, France, assignors to Hutchinson, Paris, France

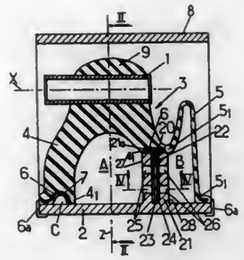
Filed Oct. 26, 1995, Ser. No. 548,857

Claims priority, application France, Oct. 27, 1994, 94 12889

Int. Cl.[6] F16F *9/00*

U.S. Cl. 267—140.12 **7 Claims**

1. A hydraulic antivibration support for interposing between two rigid elements to damp vibration between the two elements, essentially in a main vibration direction, the support comprising first and second rigid strength members suitable for securing to respective ones of the two rigid elements to be united, and an elastomer body having a thick wall interconnecting the two rigid strength members and partially defining a working chamber, said thick wall being



substantially bell-shaped, extending along the main vibration direction between a peripheral base secured to the second strength member and a crown secured to the first strength member, said elastomer base further including a freely-deformable thin wall which is integrally formed with the above-mentioned thick wall and which partially defines a compensation chamber that is in communication with the working chamber via a narrow channel, the two chambers and the narrow channel being filled with a liquid, the second strength member being a base plate which extends in a plane that is substantially perpendicular to the main vibration direction and which has a support face secured in sealed manner with the elastomer body to co-operate therewith in defining the two chambers and the narrow channel,

wherein the base of the elastomer body is integrally formed with a flexible elastomer tongue which extends from said base parallel to the main vibration direction towards the base plate, said base plate including a slot-shaped housing which receives the tongue, the housing being of a width that is slightly greater than the thickness of the tongue and including first and second inside faces disposed parallel to the tongue and facing it, the first inside face having at least one orifice which communicates with the working chamber and the second inside face including at least one orifice which communicates with the compensation chamber, and the tongue being adapted to close one or other of the orifices as a function of liquid displacements between the working chamber and the compensation chamber, the tongue and the housing thus forming a decoupling flap valve.

5,549,284

HYDRAULICALLY CONTROLLED ENGINE MOUNTING DEVICE OF AN AUTOMOTIVE VEHICLE

Hyosang Lee, Kyungsangnam-do, Rep. of Korea, assignor to Hyundai Motor Company, Seoul, Rep. of Korea

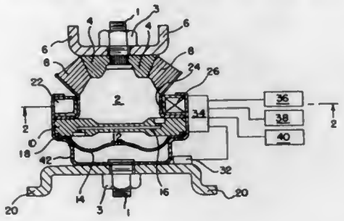
Filed Nov. 10, 1994, Ser. No. 339,212

Claims priority, application Rep. of Korea, Nov. 10, 1993, 93-23808

Int. Cl.[6] F16M *5/00;* **F16F** *15/00*

U.S. Cl. 267—140.14 **10 Claims**

1. A hydraulically controlled engine mounting device, said



device comprising:

a lower support piece adapted to be fixed to a body portion of a vehicle;

an upper support piece adapted to be fixed to an engine of the vehicle;

a first hydraulic pressure chamber positioned between said lower support piece and said upper support piece;

a second hydraulic pressure chamber positioned below said first hydraulic pressure chamber;

a first diaphragm formed in said second hydraulic pressure chamber for variably accommodating a hydraulic pressure within said second chamber;

a separating plate formed between said first and second hydraulic pressure chambers, said separating plate having a channel formed therethrough for fluidly connecting said first and second hydraulic pressure chambers;

a third hydraulic pressure chamber encircling said first hydraulic pressure chamber;

a second diaphragm formed in said third hydraulic pressure chamber for variably accommodating a hydraulic pressure within said third hydraulic pressure chamber;

means for fluidly connecting said first and third hydraulic pressure chambers;

a hydraulic pump housed within said third hydraulic pressure chamber;

a seal member mounted to said lower support piece and encapsulating said second diaphragm, said separating plate and said third hydraulic pressure chamber being arranged such that said separating plate is held between said third hydraulic pressure chamber and said first diaphragm and said first diaphragm is held between said separating plate and an inner support rim of said seal member, said seal member having an orifice formed therein on an opposing side of said first diaphragm from said separating plate;

a rubber gasket absorbing member positioned on an upper surface of said first hydraulic pressure chamber;

an intermediate supporting piece positioned between said rubber absorbing member and said upper support piece;

means for fixing said upper support piece through said intermediate supporting piece to said first hydraulic pressure chamber;

means for sensing a vibration of said lower support piece relative to the vehicle body;

a solenoid valve formed in said third hydraulic pressure chamber and having a normally opened valve for supplying hydraulic pressure from said pump to said first chamber through said means for fluidly connecting; and

means for controlling said hydraulic pump and said solenoid valve in response to at least a frequency of vibration detected by said means for sensing a vibration, whereby variations in hydraulic fluid supplied to said second and third hydraulic pressure chambers bidirectionally compensate for the supply of hydraulic fluid pressure to said first hydraulic pressure chamber such that said first hydraulic pressure chamber dampens an engine vibration from said lower support piece to said upper support piece.

5,549,285

WIRE ROPE ISOLATOR WITH CRIMP BAR AND METHOD FOR MAKING SAME

Michael J. Collins, Lockport, N.Y., assignor to Enidine, Inc., Orchard Park, N.Y.

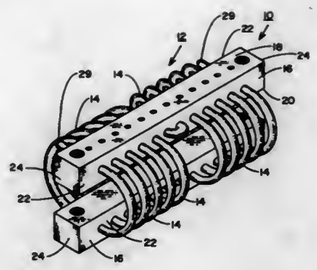
Filed Apr. 21, 1995, Ser. No. 426,059

Int. Cl.[6] F16F *1/36*

U.S. Cl. 267—148 **12 Claims**

1. A wire rope vibration isolator, comprising:

a substantially cylindrical coil of wire rope having a predetermined number of individual consecutive coils; and



crimp means for securing each of said predetermined number of individual consecutive coils in a fixed position relative to one another while allowing the coils to flex so as to absorb vibrational energy, said crimp means extending longitudinally along the length of said substantially cylindrical coil of wire rope, said crimp means including two opposed blocks of material securing said predetermined number of individual consecutive coils by deforming said blocks of material into securing contact with said coils such that said coils are secured to said blocks by forming a mechanical bond between said coils and said blocks, without the use of any additional fasteners.

5,549,286

WINDSHIELD WIPER DEVICE HAVING AN ANGLE DAMPER, IN PARTICULAR FOR A MOTOR VEHICLE

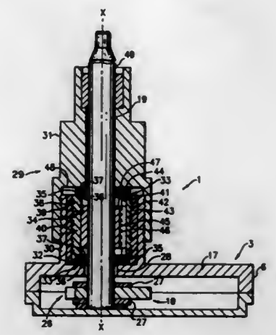
Frédéric Vacca, Behoust, France, assignor to Valeo Systemes D'Essuyage, Montigny-Le-Bretonneux, France

Filed Dec. 17, 1993, Ser. No. 173,653

Claims priority, application France, Dec. 17, 1992, 92 15245

Int. Cl.[6] F16F *1/14*

U.S. Cl. 267—154 **19 Claims**



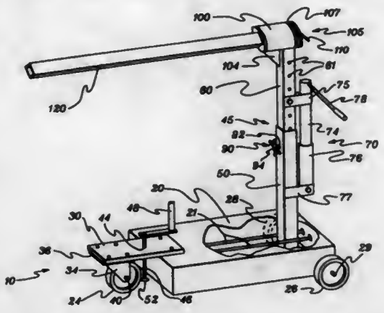
1. A windshield wiper device, in particular for a motor vehicle, comprising a shaft supported by a fixed element and being rotatable around an axis, and an angle damping device disposed between the fixed element and the shaft, wherein said damping device comprises elastic means for dampening rotation of the shaft and axial drive means for controlling the elastic means, wherein the axial drive means move axially along the shaft in response to said rotation and axially compress the elastic means at a predetermined point in the rotation of the shaft, said compression of the elastic means dampening rotation of the shaft.

5,549,287

AUTOMOBILE BODY PARTS HOLDER ASSEMBLY

Howard C. Loucks, 807 Delaware Ave., Delmar, N.Y. 12054

Filed Jun. 14, 1994, Ser. No. 259,489
Int. Cl.[6] B66F 5/04
U.S. Cl. 269—17 20 Claims



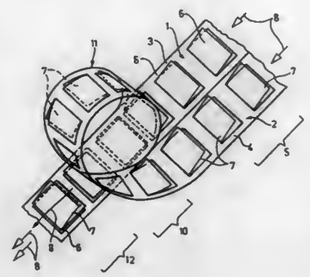
1. An adjustable, portable automobile parts holder, comprising:
a base having a front and a rear;
a vertically adjustable support leg extending upwardly from the rear of said base, said vertically adjustable support leg having a bottom and a top; and
a substantially horizontally displaced rotatable cantilevered support arm extending from the top of said vertically displaced support leg for receiving an automobile body part attachment unit; and
an automobile fender attachment unit slidably engageable to said rotatable cantilevered support arm.

5,549,288

METHODS FOR BRINGING TOGETHER FOLDED PRODUCTS

Hans J. Laubscher, Frankenthal, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Sep. 26, 1994, Ser. No. 312,321
Claims priority, application Germany, Sep. 24, 1993, 43 32 516.5
Int. Cl.[6] B65H 39/02; B41F 13/64
U.S. Cl. 270—52.14 17 Claims



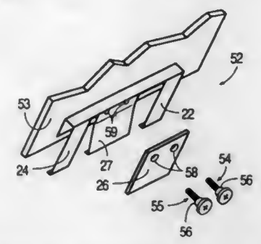
1. A method for bringing together and stacking folded products which are guided along a given path of motion, which comprises transferring two folded products at a time from a side-by-side arrangement to a stacked position, and imparting a loop-the-loop motion to the one folded product so that it comes to be stacked on the other folded product.

5,549,289

PAPER SEPARATOR SPRING ASSEMBLY FOR FACSIMILE OR COPY MACHINE

Dennis Sonnenburg, and Darren W. Wilcox, both of San Diego, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 14, 1994, Ser. No. 324,280
Int. Cl.[6] B65H 3/52
U.S. Cl. 271—121 9 Claims



1. An apparatus which separates and forwards sheets one-by-one from a stack of sheets for optical detection of matter printed on said sheets, said apparatus comprising:
a separator spring opposing a rotatable stripper roller, said separator spring having one or more holes formed therein having a first diameter;
a frame to which said separator spring is mounted, said frame having one or more holes aligned with said one or more holes in said separator spring and having a diameter less than or equal to said first diameter;
a resilient separator pad mounted on said separator spring, said separator pad having one or more holes aligned with said one or more holes formed in said separator spring, said one or more holes in said separator pad having a second diameter, said second diameter being larger than said first diameter; and
one or more shoulder screws, each of said one or more shoulder screws being inserted into one of said one or more holes in said separator pad, said separator spring, and said frame, each of said one or more screws having a head and a shoulder portion, said head having a larger diameter than said shoulder portion, said shoulder portion having a diameter less than or approximately equal to said second diameter but greater than said first diameter, each of said one or more screws additionally having a screw portion having a diameter less than or approximately equal to said first diameter,
wherein, when said one or more screws are inserted through said one of more holes formed in said separator pad, said separator spring, and said frame and then tightened, said one or more screws secure said separator pad to said separator spring by said head of each of said one or more screws securing said separator pad against said separator spring,
said one or more screws securing said separator spring to said frame by said shoulder portion of said one or more screws directly contacting said separator spring, so that additional torque on said one or more screws after said shoulder portion is firmly opposing said separator spring does not provide substantial force by said head against said resilient separator pad.

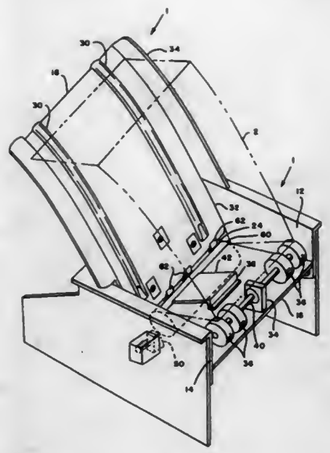
5,549,290

CURVED ENVELOPE HOPPER

Douglas G. Long, Naugatuck, and Roman Czernik, Trumbull, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Mar. 1, 1995, Ser. No. 396,983
Int. Cl.[6] B65H 1/24
U.S. Cl. 271—166 16 Claims

1. An envelope hopper for holding a stack of envelopes, comprising:



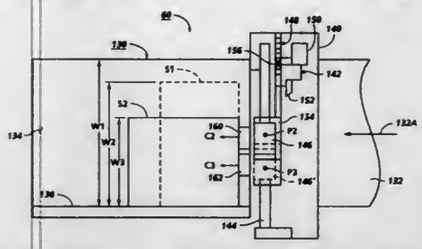
a rear panel;
a pair of side panels extending forward from the rear panel;
a convex, curved deck mounted to the rear panel, the deck extending between a rearmost section of the side panels, the deck having a convex receiving end and a straight feeding end for supporting a stack of envelopes, the deck having two sides for positioning the envelopes on the curved deck extending upwardly from the deck so that the deck will reduce the weight and compression of the stack at the feeding end of the deck by distributing the weight of the stack against the upper portion of the deck; and,
a bottom panel positioned below the feeding end of the deck and extending between the side panels thereby positioning the reduced compression stack of envelopes for passage of a bottom-most envelope from the envelope hopper.

5,549,291

PRINTER WITH MULTIPLE-SIZED SHEETS DUPLEX TRAY ASSEMBLY

Gerald M. Devito, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 1, 1994, Ser. No. 347,666
Int. Cl.[6] B65H 5/06;29/20;29/68
U.S. Cl. 271—182 13 Claims



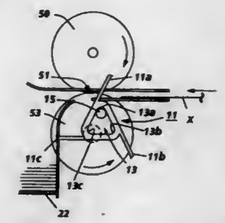
12. A sheet stacking assembly for stacking sheets without skew, the sheets being moved along a sheet path, the stacking assembly comprising:
(a) a sheet holding unit for holding different stacks of sheets, each stack having a different width located crosswise to said sheet path, and each said stack containing sheets having a common width;
(b) a cross-path movable sheet feeder unit for feeding sheets having different widths into said sheet holding unit;
(c) means for sensing a common width of sheets to be fed by said sheet feeding unit; and
(d) means responsive to said sensing means for moving said sheet feeder to a cross-path feeding position located at a point coincident with a midpoint of said sensed common width of said sheets to be fed by said sheet feeder.

5,549,292

SHEET STACKING AND REVERSING SEPARATOR

Margaret C. Plain, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 31, 1994, Ser. No. 332,289
Int. Cl.[6] B65H 39/105
U.S. Cl. 271—291 9 Claims



1. In a sheet output system with a stacking tray for a reproduction apparatus, in which sheets sequentially moving in an output path are sequentially fed out from a sheet ejection nip for stacking in said stacking tray, an improved sheet separating assistance system operatively associated with said output path comprising a sheet separator unit with a limited plural number of widely circumferentially spaced and substantially radially extending sheet separating arms, said sheet separator unit being rotatably mounted adjacent to said sheet ejection nip with at least one said separating arm automatically normally extending into said output path for engagement by a moving sheet in said output path, said sheet separator unit being partially rotated by said engagement of said moving sheet in said output path while maintaining at least one said separating arm in contact with said moving sheet as said moving sheet is fed out from said sheet ejection nip to provide sheet separating assistance; wherein said sheet separator unit is rotatably mounted adjacent to said sheet ejection nip with a mounting system providing a limited plural number of widely circumferentially spaced detent positions, in each of which detent positions at least one said separating arm is automatically normally held in said output path.

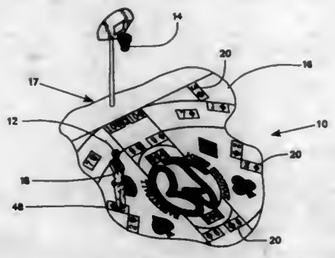
5,549,293

BASKETBALL GAME WITH PLAYING BOARD

Mark A. Seifert, 1151 Sonora Apt. 114, Glendale, Calif. 91201

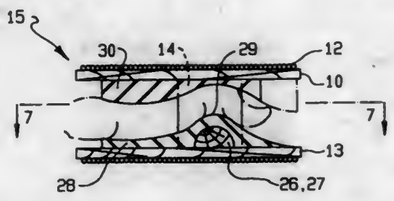
Continuation-in-part of Ser. No. 199,524, Jun. 20, 1994, abandoned. This application Apr. 6, 1995, Ser. No. 417,620
Int. Cl.[6] A63B 63/08
U.S. Cl. 273—1.5 R 7 Claims

1. A basketball game having a basketball, a basketball court, and a plurality of basketball goals, comprising:
a plurality of distinct shooting sites located on a top surface face of said basketball court, signifying different positions on said basketball court, wherein each distinct shooting site is designated to one of said plurality of basketball goals and is for shooting said basketball in the direction of said basketball goals;
a deck of cards each card being separate and distinct from one another, wherein each distinct shooting site is uniquely associated with only one of said cards; and
a plurality of point scoring boundaries located on said top surface of said basketball court, wherein each distinct shoot-



ing site is designated to one of said point scoring boundaries, and wherein each of said point scoring boundries is designated with a predetermined number of points if said basketball descends into said basketball goal when said basketball is shot from one of said distinct shooting sites.

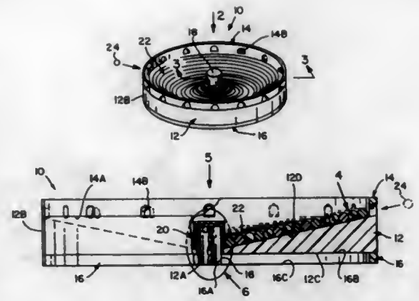
5,549,294
HAND PADDLE
Alexander B. Wellen, 901 Clinton St., Apt. 11, Philadelphia, Pa. 19107, and Allan A. Fanucci, 242 Florence Rd., Harrington Park, N.J. 07640
Continuation-in-part of Ser. No. 292,450, Aug. 18, 1994, abandoned. This application Jan. 17, 1995, Ser. No. 373,470
Int. Cl.[6] A63B *59/00*
U.S. Cl. 273—67 B **19 Claims**



11. A hand paddle comprising first and second paddle members being spaced apart to receive a user's hand therein, each having a top portion, a bottom portion, and outer and inner surfaces;
- a pair of post members for connecting the paddle members together in a manner which maintains the outer surfaces in substantially parallel alignment; and
- a raised portion positioned on the inner surface of one of the first and second paddle members between said post members, wherein the raised portion is covered by a compressible layer for grasping by the user's hand or fingers.

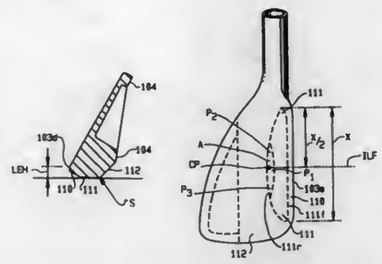
5,549,295
MULTI-LEVEL ROTATABLE CONCENTRIC RING MARBLE GAME
Michael W. Goldring, 314 Quincy St., Brooklyn, N.Y. 11216
Filed Sep. 15, 1995, Ser. No. 528,618
Int. Cl.[6] A63F *7/00*
U.S. Cl. 273—123 R **18 Claims**

1. A multi-level rotatable concentric ring marble game, comprising:
- a) a circular base containing a base central opening and having a base perimeter, a base flat bottom, and a base sloping top that slopes from said base perimeter towards said base central opening;
- b) a circular upper peripheral cylinder containing a plurality of upper peripheral cylinder openings and being disposed on said base sloping top at said base perimeter;



- c) a circular lower peripheral cylinder being disposed on said base flat bottom at said base perimeter;
- d) a cylindrical collector rotatably mounted in said base central opening; and
- e) a plurality of concentric rotatable circular rings each of which containing a plurality of ring spaces and being rotatable mounted on said base sloping top intermediate said base perimeter and said cylindrical collector so that at least one of said plurality of ring spaces contained in said each of said plurality of rotatable rings can be aligned with said at least one of said plurality of ring spaces contained in said each of said plurality of rotatable rings positioned adjacent thereto.

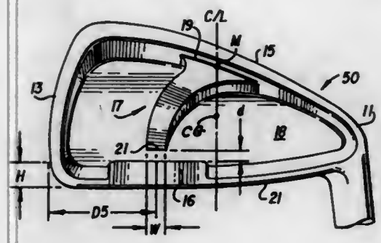
5,549,296
GOLF CLUB SOLE CONFIGURATION
Peter J. Gilbert, Vista, Calif., assignor to Acushnet Company, Fairhaven, Mass.
Filed Mar. 10, 1995, Ser. No. 402,251
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—290 **25 Claims**



1. A set of irons wherein each of the irons has a heel, a toe and a striking face having a lower edge therebetween, and in which one or more of the irons has a flange comprising three (3) surfaces:
- a) a positive bounce surface which is substantially adjacent to the lower edge of the striking face and has a first positive bounce angle;
- b) a trailing sole surface which has a negative relief angle; and
- c) a crescent shaped surface positioned between the positive bounce surface and the trailing sole surface,

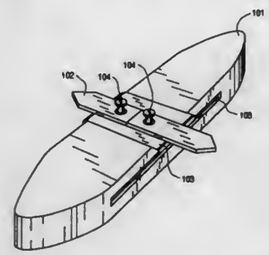
wherein the crescent shaped surface and the trailing sole surface form a curved rear border of the crescent shaped surface and the crescent shaped surface and the positive bounce surface form a substantially straight front border of the crescent shaped surface.

5,549,297
GOLF CLUB IRON WITH VIBRATION DAMPENING RAMP BAR
Steven J. Mahaffey, 357 Glendale Rd., Hampden, Mass. 01036
Filed Jul. 18, 1995, Ser. No. 503,571
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—290 **5 Claims**



1. A golf club iron comprising
- a shaft;
- a head having a sole, a toe end, and a heel end, said head being attached to one end of said shaft, said head comprising
- a substantially planar striking face and a back portion opposite said striking face;
- a cavity in said back portion of said head, said cavity extending substantially between said toe end and said heel end of said head and having upper and lower edges and a substantially planar inner surface opposite said striking face, said lower edge being adjacent said sole; and
- a single vibration dampening ramp bar having a top end and a lower end within said cavity, the top end of said ramp bar being adjacent said lower edge of said cavity, said ramp bar tapering from said top end toward said inner surface, the lower end of said bar terminating in the plane of said inner surface short of said upper edge of said cavity, the center of said ramp bar being offset from the center of gravity of said head.

5,549,298
GOLF ALIGNMENT APPARATUS
Susan J. Cullen, and Hugh L. Cullen, both of 1933 Gamel Way #2, Mountain View, Calif. 94040
Filed Apr. 7, 1995, Ser. No. 419,003
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—272 **19 Claims**



1. A golf alignment apparatus comprising:
- a first elongated member for placement in a position parallel to a target line by which a golfer is aiming, wherein the first elongated member includes visible indicia corresponding to ball placements for individual golf clubs with respect to a foot of the golfer closest to a target, and further wherein the first elongated member comprises at least one track;
- a connector slidably attached to the first elongated member to move in a direction perpendicular to the first elongated member, wherein the connector slides in said at least one track; and
- a second elongated member removably attached to the connector and maintained perpendicular to the first elongated member for providing a ball placement line based on individual golf club selection by the golfer.

5,549,299
APPARATUS FOR PLACING GOLF BALL ON TEE
Louis S. Brown, 401 Colbert Ave., Pensacola, Fla. 32507
Filed Jun. 7, 1995, Ser. No. 479,102
Int. Cl.[6] A63B *57/00*
U.S. Cl. 473—133 **19 Claims**



1. An apparatus for positioning a golf ball onto a tee, comprising:
- a source of negative pressure;
- a tee having a ball-supporting surface and a base;
- a bore extending from said ball-supporting surface through said base to place said ball-supporting surface in fluid communication with said source of negative pressure so that a golf ball seated on said ball-supporting surface is held thereto by negative pressure;

said tee having a first, substantially horizontal position and a second, substantially vertical position;

tee reciprocating means for reciprocating said tee between said substantially horizontal position and said substantially vertical position;

a tee-loading station where a golf ball is positioned onto said tee when said tee is in said substantially horizontal position;

said tee-loading station having a size sufficient to admit thereinto only one golf ball at a time;

a sloped ramp for bolding a plurality of golf balls, said sloped ramp being sloped toward said tee-loading station to deliver golf balls to said tee-loading station;

tee-loading means for driving a ball in said tee loading station into engagement with said ball-supporting surface only when said tee is in its substantially horizontal position;

control means for activating said tee-reciprocating means to move said tee from said substantially horizontal position to said substantially vertical position after said ball has been driven into engagement with said ball-supporting surface by said tee-loading means and for rotating said tee from said substantially vertical position to said substantially horizontal position when said ball is disengaged from said ball-supporting surface;

said control means activating said tee-loading means only when said tee is in its substantially horizontal position.

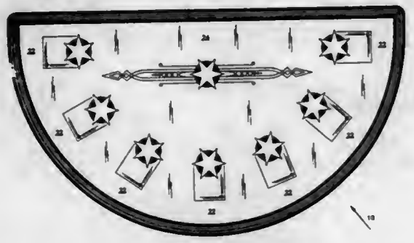
VOI
1189
ISS
4
AG
27
1996
UMI

5,549,300

METHOD OF PLAYING A BLACKJACK CARD GAME

Seroj Sardarian, 550 Oakmont Ave., #1504, Las Vegas, Nev. 89119

Filed Dec. 7, 1994, Ser. No. 350,891
Int. Cl.[6] A63F *1/00*
U.S. Cl. 273—292 **16 Claims**



6. A method of playing a card game comprising:
a) providing a deck of playing cards consisting of deuces, threes, fours, fives, sixes, sevens, eights, nines, tens and wild cards, each card having a numerical count equal to its face value and each wild card having a numerical count of either one or ten at the option of a player during the play of the game;
b) dealing two cards to the player comprising a player's hand and two cards to a dealer comprising a dealer's hand,
c) the player standing or receiving additional cards from the dealer as the player desires,
e) the dealer standing when the dealer's hand has a numerical count of seventeen or more and the dealer receiving an additional card when the dealer's hand has a numerical count of sixteen or less,
f) comparing the numerical count of the dealer's hand to the numerical count of the player's hand, and
g) determining the winning hand to be the hand with the higher numerical count.

5,549,301

CARD GAME USING CARDS HAVING PICTURES OF SCENES AND ACTIVITIES ASSOCIATED WITH DIFFERENT ROOMS IN A HOME

Barbara Gerrard, 9729 6th Ave., Inglewood, Calif. 90305

Filed Mar. 13, 1995, Ser. No. 403,053
Int. Cl.[6] A63F *1/00*
U.S. Cl. 273—305 **7 Claims**



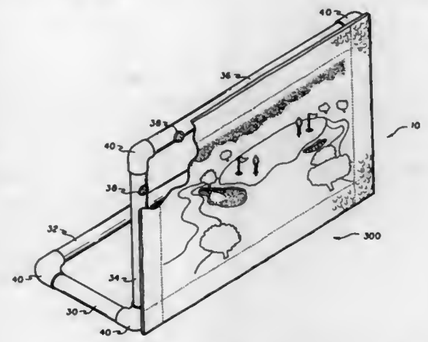
1. A card game wherein numbered cards are played in sequence to produce winning hands, and wherein each player predicts the number of winning hands by the respective player, prior to the cards being played; said card game comprising:
a multiplicity of numbered playing cards containing pictures of activities and scenes associated with different rooms in a home;
each card having the name of a particular room printed thereon, together with a number representing the value of the card; all cards having the same room printed thereon constituting one set of cards wherein there are a plurality of sets of cards;
the cards in each set being numbered consecutively from a minimum numerical value up to a maximum numerical value; each set of cards having the same number of cards and the same range of numerical values;
each set of cards comprising a first group of low numbered cards, and a second group of high numbered cards; the number of low numbered cards in each group being the same as the number of high numbered cards wherein the low numbered cards in each set are colored differently than the high numbered cards;
said card game including rules that require each player to select either the low numbered cards or the high numbered cards for use in achieving a winning hand.

5,549,302

ATHLETIC PROJECTILE AND TARGET TRAINING DEVICE

Irving Lapsker, P.O. Box 31624, Palm Beach Gardens, Fla. 33410; Jeffry G. Lapsker, 18 Honey La., and Conrad Jaroszewski, 430 Essex La., both of New Lenox, Ill. 60451

Filed Jun. 16, 1995, Ser. No. 491,065
Int. Cl.[6] A63B *63/00;67/00;* F41J *1/00*
U.S. Cl. 273—346 **16 Claims**



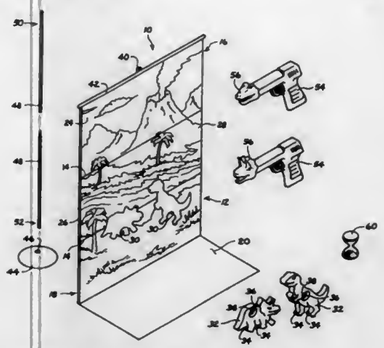
1. An athletic projectile and target training apparatus, said apparatus being in the form of a kit comprising:
a sports related projectile having a first surface, said first surface including one component of hook and loop fastening material attached thereto;
a sports related target having a second surface, said second surface being covered by a second component of said hook and loop fastening material;
a frame to support said target; and
a plurality of patches of one component of hook and loop fastening material attached to said frame to detachably support said target along edges thereof.

5,549,303

LIQUID-SHOOTING TARGET GAME

Thomas J. Kastner, 596 Brandy CP Rd., Kersey, Pa. 15846

Filed Jul. 3, 1995, Ser. No. 498,031
Int. Cl.[6] A63F *9/02;* F41J *1/00*
U.S. Cl. 273—349 **16 Claims**



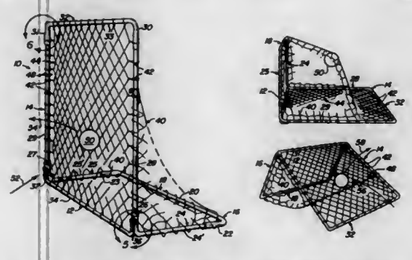
1. A liquid-shooting target game, comprising:
a flat, vertically-extending panel having a plurality of apertures formed thereon and having contours which define flora and fauna from a geologic era.
a plurality of target figurines adapted for removable insertion into the apertures for supporting by the panel, each
target figurine including a chamber for storing a liquid;
means to support the panel in a vertical disposition; and
means to fill the figurines with the liquid when the figurines are inserted into the apertures for supporting by the panel.

5,549,304

RECREATIONAL PRACTICE APPARATUS FOR SOCCER PLAYERS

Jimmy D. Davis, 401 Maxine Dr., Choctaw, Okla. 73020

Filed Aug. 1, 1995, Ser. No. 509,889
Int. Cl.[6] A63B *63/00;69/00*
U.S. Cl. 273—396 **1 Claim**



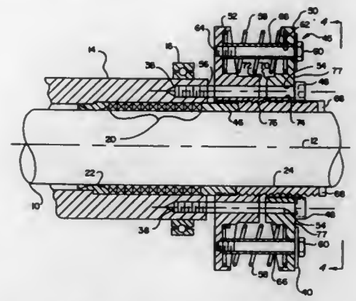
1. A soccer player ball control practice apparatus, comprising:
a pair of rectangular orthogonally joined frames; a net supported by each frame of said pair of frames for forming an upright ball rebounding surface when said pair of frames are in a first position and for forming a soccer goal when said pair of frames are in a second position,
said pair of frames form an inclined ball rebounding surface when said pair of frames are in a third position;
an end member joined at its respective end portions with one end portion of a pair of side members; and,
a third end member, common to both frames of said pair of frames, extending transversely between one said pair of side members at the juncture of the end portions of said pairs of side members opposite said one end portion.

5,549,305

SOOTBLOWER PACKING GLAND

Melvin A. Freund, 797 Linncrest Dr., Westerville, Ohio 43081

Filed Apr. 7, 1995, Ser. No. 418,793
Int. Cl.[6] F16J *15/18*
U.S. Cl. 277—106 **12 Claims**



1. A sealing and support assembly between a supply tube and a lance tube in a sootblower apparatus comprising,
a cylindrical supply tube mounted within a cylindrical lance tube,
a cylindrical stuffing box formed on the inside of said lance tube and circumscribing said supply tube,
deformable packing in said stuffing box for engaging the external surface of said supply tube and providing a fluid seal between said supply tube and said lance tube, said packing having a forward end and a trailing end,
a follower gland engaging and deforming said trailing end of said packing to deform it into sealing engagement with said supply tube and said lance tube,
an adapter mechanically secured to said lance tube for exerting force on said gland to urge said gland toward said packing,
said adapter including a pair of annularly extending flanges circumscribing said supply tube, one of said pair of flanges being fixed to one end of said lance tube and spaced therefrom, the other of said flanges being disposed for movement along said supply tube between said fixed flange and said one lance tube end,
said one flange being radially spaced from said supply tube to form an opening of a size to allow the removal of said gland without removing said adapter,
said other flange being mechanically connected to said gland,
a plurality of compression springs mounted between said flanges to bias said other flange toward said lance tube end and said gland toward said packing, said springs being at locations radially outward of said supply tube and configured in a pattern to provide a balanced force on said other flange.

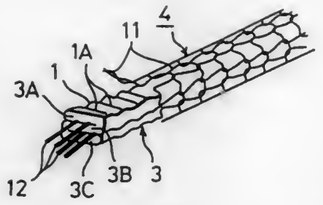
5,549,306

KNITTING YARN FOR GLAND PACKING AND GLAND PACKING MADE OF SAID KNITTING YARN

Takahisa Ueda, Sanda, Japan, assignor to Nippon Pillar Packing Co., Ltd., Japan

Continuation of Ser. No. 6,523, Jan. 21, 1993, abandoned.
This application Mar. 13, 1995, Ser. No. 402,556
Int. Cl.[6] F16J *15/22*
U.S. Cl. 277—230 **6 Claims**

1. A knitting yarn for a gland packing having a composite structure, comprising:
a string-like body formed from an expanded elongated graphite tape which contains crimpling molding in the longitudinal direction thereof and is folded in the widthwise direction thereof, thus forming folded layers which in cross section define an S-shape;



a first reinforcing member made of a knitted or braided body for covering the entire outer peripheral surface of said folded string-like body; and

a yarn-like second reinforcing member interposed between said folded layers of said string-like body which extend in the longitudinal direction thereof.

5,549,307

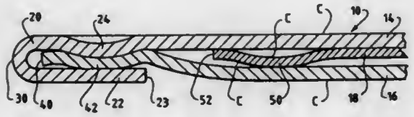
MULTI-LAYER METAL GASKET WITH DOUBLE BEADED COMBUSTION SEAL

Richard Capretta, Wadsworth; Colin Chen, Barrington; Daniel E. Czernik, Hinsdale; Robert H. Morris, Jr., Downers Grove, and Richard J. Pavel, Woodridge, all of Ill., assignors to Fel-Pro Incorporated, Skokie, Ill.

Filed Oct. 17, 1994, Ser. No. 324,348

Int. Cl.[6] F16J *15/08*

U.S. Cl. 277—235 B **4 Claims**



1. A multi-layer metal gasket for an internal combustion engine comprising

a first metal plate defining a major surface, a return defining a combustion opening, and a flange, said flange terminating in a free edge,

a second metal plate defining an annular opening adjacent said return and lying between said flange and said major surface of said first plate,

a first annular embossment in the major surface of said first metal plate and having a projection extending towards said flange and lying within the vertical projection of said flange,

a second annular embossment in said second plate, said second embossment defining a second projection and a recess, said second projection extending towards said flange, and wherein said recess nestingly receives the projection of said first embossment, the confronting surfaces of said first projection and said recess being substantially coincident throughout, said first and second embossments being entirely disposed between said return and said free edge of said flange and lying within the vertical projection of said flange, and wherein said flange is flat and without an embossment and is Spaced away from said second metal plate at locations which are radially inwardly and radially outwardly of said embossments.

5,549,308

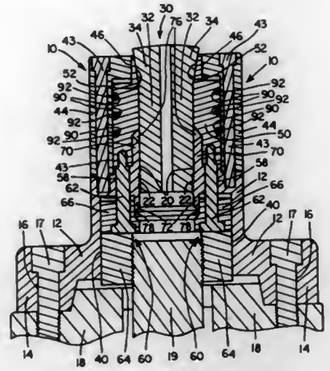
COLLET CHUCK

LaVon L. Bennett, 354 N. 424 East, Alpine, Utah 84004

Filed Jan. 17, 1995, Ser. No. 375,382

Int. Cl.[6] B23B *31/20*

U.S. Cl. 279—50 **9 Claims**



1. A collet closer nosepiece assembly for a lathe machine, wherein said lathe machine has a rotatably driven bollow spindle and a draw bar disposed within the spindle so that the draw bar is axially reciprocally movable in the spindle, said collet closer nosepiece assembly comprising

a base member having first and second ends, with the first end of said base member being adapted for attachment to the spindle of the lathe machine so that said base member can be affixed to and supported by the spindle;

a first bore extending inwardly from the second end of said base member, said first bore being coaxially aligned with the draw bar of the lathe machine when said base member is attached to the spindle of the lathe machine;

said first bore having internal threads that are capable of receiving a threaded end of a spring collet, wherein the spring collet comprises a generally cylindrical body having first and second ends, with said first end being threaded to form the threaded end of said spring collet, and with a conical nose formed at said second end of said cylindrical body, whereby when said threaded end of said spring collet is screwed into the internal threads of said first bore, the spring collet is immovably mounted to and supported by said base member with the cylindrical body and conical nose of said spring collet being substantially coaxial with said first bore;

a second bore extending inwardly from the first end of said base member to said first bore, said second bore being substantially coaxial with said first bore and said second bore having a diameter that is greater than the diameter of said first bore so that said first bore opens substantially concentrically into said second bore;

a collet housing attached to and extending from the second end of said base member, said collet housing having an opening in its distal end that is substantially coaxial with the first bore in said base member, whereby the conical nose of said spring collet extends through said opening in said collet housing when the threaded end of said spring collet is screwed into the internal threads of said first bore;

an annular collet sleeve concentrically disposed within said collet housing so that said collet sleeve encircles said collet when said collet is screwed into the internal threads of said first bore, said collet sleeve being movable axially back and forth over the surface of said collet when said collet is screwed into the internal threads of said first bore;

said collet sleeve has a flared, concentric opening in an end of said collet sleeve that faces the conical nose of said collet, so that the flared opening in the end of said collet sleeve engages the conical nose when said annular collet sleeve moves toward said conical nose;

slide means comprising a nut that is screwed on the draw bar and positioned within said second bore of said base member; and

linkage members comprising a plurality of screws that extend from said slide member through slide bores in the second end of said base member, said linkage members mechanically connecting said slide means to said collet sleeve so that the collet sleeve moves when the draw bar moves, with the collet sleeve moving with the same axial travel and in the same axial direction as the draw bar so that the movement of the draw bar controls the movement of said collet sleeve to thereby selectively open or close said collet;

whereby the axial position of the collet relative to the spindle is unaffected by the closing or opening operations of the collet.

5,549,309

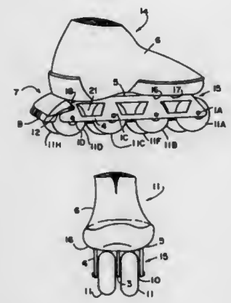
MULTI-LINE IN-LINE ROLLER SKATE, MULTI-LINE IN-LINE ROLLER SKATE FRAME

Darin L. Gleichmann, 1950 NE. 6th St., Pompano Beach, Fla. 33060

Filed Jan. 5, 1995, Ser. No. 369,006

Int. Cl.[6] A63C *1/00*

U.S. Cl. 280—7.1 **2 Claims**



1. A dual line in-line roller skate comprising:

a shoe having an outer sole surface, a toe and a heel;

a skate frame having a top member attached to said outer sole surface;

an elongate center rail rigidly attached to said top member and extending downward therefrom;

two elongate side rails rigidly attached to said top member and extending downward therefrom;

said side rails arranged one on either side of, and parallel to, said center rail, with all three of said rails having long axes in a toe to heel direction and cooperating to form elongate parallel first and second channels for supporting wheels therein;

a plurality of axles;

a plurality of wheels rotatably supported on said axles;

a plurality of apertures in all three of said rails lying transverse to said long axes, said apertures adapted to be selectively used to support said axles in said channels as desired for arranging diverse wheel configurations in which all of the wheels in said first channel lie in a common first vertical plane and all of the wheels in said second channel lie in a common second vertical plane parallel to said first vertical plane;

said axles being readily positionable in selected said apertures such that spacing apart of the wheels within one of said channels may be adjusted and the wheels in the adjacent channel may be positioned adjacent one another or non-adjacent as desired.

5,549,310

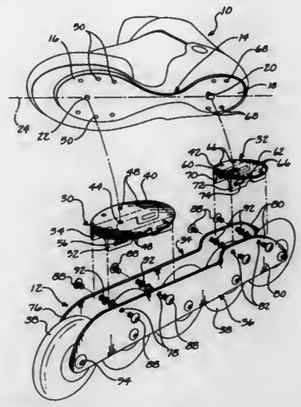
IN-LINE ROLLER SKATE WITH IMPROVED FRAME ASSEMBLY

Antonin A. Meibock, Cleveland, Ohio, and John E. Svensson, Seattle, Wash., assignors to K-2 Corporation, Vashon, Wash.

Continuation-in-part of Ser. No. 94,576, Jul. 19, 1993, Pat. No. 5,437,466, and Ser. No. 100,745, Aug. 2, 1993, abandoned, and Ser. No. 120,629, Sep. 13, 1993, Pat. No. 5,452,907. This application Jan. 10, 1994, Ser. No. 179,302

Int. Cl.[6] A63C *17/02*

U.S. Cl. 280—11.22 **7 Claims**



1. An in-line roller skate comprising:

a boot adapted to support a skater's foot, the boot including a molded base having a sole and a heel, the sole including an integrally molded downwardly protruding peg and the heel including an integrally molded downwardly protruding hook;

a sole bracket attached to the sole with a first fastener separate from the peg, said sole bracket including a close fitting peg recess for engaging the peg so that the peg aligns the sole bracket on the boot, said sole bracket being aligned and restricted from movement laterally and longitudinally with respect to said base by the engagement of said peg and said peg recess, said peg not restricting vertical movement of said base relative to said sole bracket;

a heel bracket attached to the heel with a second fastener separate from the hook, said heel bracket including a close fitting hook recess engaging the hook so that the hook aligns the heel bracket on the boot, said heel bracket being aligned and restricted from movement laterally and longitudinally with respect to said base by the engagement of said hook and said hook recess;

a frame releasably attached to the sole bracket and heel bracket; and

a plurality of in-line roller wheels rotatably mounted in the frame.

5,549,311

ARMREST AND HANDLE ASSEMBLY FOR A STROLLER

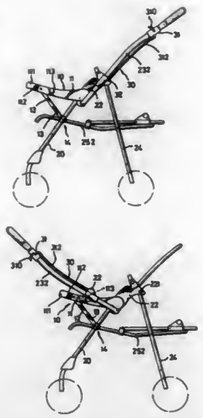
Li-chu C. Huang, No. 9, Alley 2, La. 606, Sec. 2, Po Ai Rd., Chia Yi, Taiwan

Filed Aug. 29, 1995, Ser. No. 520,835

Int. Cl.[6] B62B *9/20*

U.S. Cl. 280—47.36 **1 Claim**

1. An armrest and handle assembly for a stroller which comprises a pair of first stands each having a bore transversely defined in a mediate portion thereof, a pair of second stands each pivotally engaged with a corresponding one of said pair of first stands, a substantially U-shaped seat support member pivotally mounted between said first and second stands and including two support



braces each having a first end pivotally engaged with the mediate portion of a corresponding one of said pair of first stands and a second end pivotally engaged with a mediate portion of a corresponding one of said pair of second stands, said armrest and handle assembly comprising:

a pair of positioning bases each fixedly mounted on an upper portion of a corresponding one of said pair of first stands, two first retaining rods each formed on a corresponding one of said pair of positioning bases;

a substantially U-shaped armrest module including two armrests each having a first end portion pivotally engaged with a corresponding one of said pair of positioning bases and each having a second end portion, two second retaining rods each formed on the second end portion of a corresponding one of said two armrests;

a substantially U-shaped handle module including two handles each having a lower end pivotally engaged with a corresponding one of said pair of positioning bases;

a pair of switch devices each mounted on a corresponding one of said two handles and each including a catch member detachably engaged with a corresponding one of said two first retaining rods, each of said two catch members being slidable on an associated said handle between a first position where said catch member is stopped by an associated said first retaining rod such that each of said two handles is secured to a corresponding one of said two positioning bases, and a second position where said catch member is detached from an associated said first retaining rod such that each of said two handles is released from and pivoted relative to an associated said positioning base, each of said catch members being detachably engaged with a corresponding one of said two second retaining rods and slidable on an associated said handle between a third position where said catch member is stopped by an associated said second retaining rod such that each of said two handles is secured to a corresponding one of said two armrests, and a fourth position where said catch member is detached from an associated said second retaining rod such that each of said two handles is released from an associated said armrest and is pivoted relative to an associated said positioning base;

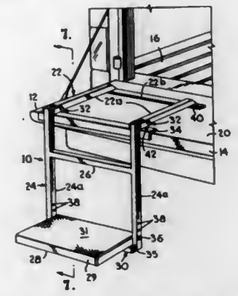
two first linking levers each having a first end pivotally engaged with an associated said armrest and a second end, two second linking levers each having a first end pivotally engaged with the second end of an associated said first linking lever and a second end having a first hole transversely defined therein;

two first ring elements each having a second hole transversely defined in a central portion thereof and each having a slot defined in a periphery thereof for receiving the second end of an associated said second linking lever therein and communicating with an associated said second hole which is in alignment with an associated said first hole;

two second ring elements each secured to an associated said first ring element to rotate therewith, and each having a third hole transversely defined in a central portion thereof and in alignment with an associated said first hole, and each having a recess laterally defined therein for receiving the first end of an associated said support brace therein: and

two pins each extending through an associated said bore, an associated said second hole, an associated said first hole, and an associated said third hole, thereby coupling the mediate portion of an associated said first stand, an associated said first ring element, the second end of an associated said second linking lever and an associated said second ring element together.

5,549,312
TRUCK TAILGATE STEP ATTACHMENT
Clarence F. Garvert, 1013 N. Second St., Garden City, Kans. 67846
Filed Jan. 23, 1995, Ser. No. 376,225
Int. Cl.[6] B60R 3/02
U.S. Cl. 280—166 **4 Claims**



1. An attachment for a truck tailgate to provide a step for entering a truck bed, the tailgate having spaced apart upper and lower edges and an interior surface, the attachment comprising:

a unitary base adapted to be secured to the interior surface of the tailgate, the base having two spaced apart elongated members extending generally perpendicular to the upper and lower edges, said elongated members rigidly secured to an elongated support that holds said elongated members in a spaced apart relationship;

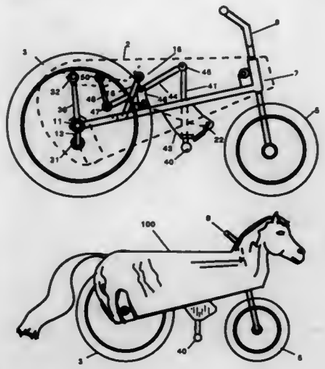
a generally planar frame having two spaced apart elongated bars, each bar lying in generally the same vertical plane as a corresponding one of said base elongated members, said frame capable of being folded into a stand-by position so that each frame bar is juxtaposed on a corresponding base member and so that said frame lies generally parallel to the interior surface of the tailgate, but does not contact the interior surface of the tailgate;

a pair of rigid elongated hinge elements, each hinge element pivotally attached on one end to a corresponding base elongated member and pivotally attached on the other end to a corresponding frame bar, said hinge elements spanning the distance between the base elongated members and the corresponding frame bars to allow the latter to clear the upper edge of the tailgate when said frame is swung to an operative position and allowing said frames to be juxtaposed on their corresponding base members when said frame is in the stand-by position;

a step member swingably carried by said frame to permit the step member to be folded into the stand-hy position lying generally parallel to the plane of said frame to minimize the space occupied by the attachment when said frame is a stand-by position;

wherein said frame is manually swingable to an operative position hanging downwardly from the tailgate toward the ground when the tailgate is in an open generally horizontal position and said step member being manually swingable to an operative position projecting outwardly from said frame in disposition to support the foot of a user to aid entry into the truck bed when said frame is hanging from the open tailgate.

5,549,313
VELOCIPEDE WITH PROTECTIVE PADDED SHELL AND SOFT REMOVABLE COVER
Jay James; Roger Zak; Michael Loeffler, and Robert Friezen, all of P.O. Box 871327, Wasilla, Ak. 99687-1327
Filed Apr. 13, 1995, Ser. No. 421,541
Int. Cl.[6] A63G 19/00
U.S. Cl. 280—221 **14 Claims**



1. A velocipede comprising:

a) a rigid frame, having a front end and a rear end;

b) a front wheel assembly, operably connected to said front end of said rigid frame;

c) a rear wheel assembly, operably connected to said rear end of said rigid frame;

d) a crank, operably associated with said rear wheel assembly such that rotation of said crank causes corresponding rotation of said rear wheel assembly;

e) a padded rigid enclosure shell, having a front portion and a rear portion, movably positioned over said rigid frame and rear wheel assembly, and forming a rigid, structural member of said velocipede;

f) a push rod, having a first end and a second end, said first end of the push rod being rotatably connected to said crank, and the second end of the push rod being pivotally connected to the padded enclosure shell;

g) a seat lifting rod, having a first end and a second end, said first end being pivotally connected to the padded enclosure shell;

h) a drive rod, having a first end and a second end and including a pivot disposed in an intermediate position, said first end of the drive being pivotally connected to said second end of said seat lifting rod, such that during operation of the velocipede, the padded, rigid enclosure shell has a vertical travel;

i) a member, fixedly attached to said rigid frame at a point intermediate of the front end-and rear end of said rigid frame, and also being pivotally connected to the pivot on said drive rod;

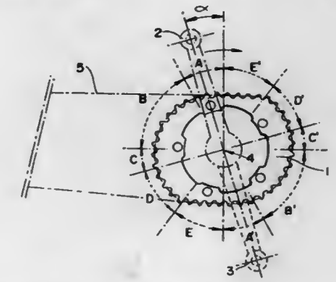
j) a second connecting rod, having a top end and a bottom end, the top end being pivotally connected to the second end of said drive rod;

k) a foot rest, fixedly connected to said bottom end of said second connecting rod;

l) a means for limiting the vertical travel of said padded, rigid enclosure shell, said means including a stop bar, having a first end and a second end, said first end being pivotally attached to said rigid frame at a point intermediate the front end and rear end of said rigid frame, such that said stop bar can be pivoted to either an engaged position, or a disengaged position, such that when said stop bar is in the engaged position, the second end of said stop bar makes contact with said padded, rigid enclosure shell during the vertical travel of said padded, rigid enclosure shell, thereby limiting the vertical travel of said padded, rigid enclosure shell and further such that when the stop bar is in the disengaged position, said second end of said stop bar makes no contact with said padded, rigid enclosure shell during said vertical travel of said padded, rigid enclosure shell; and

m) a means for positioning said stop bar into said engaged position, or disengaged position.

5,549,314
NON-CIRCULAR FRONT CHAIN WHEEL FOR CRANK GEAR
Michel Sassi, Quartier La Croix, Breil Sur Roya 06540, and Jean-Louis Talo, 34 Val du Carel, Menton 06500, both of, France
PCT No. PCT/FR92/00945, § 371 Date Apr. 11, 1994, § 102(e) Date Apr. 11, 1994, PCT Pub. No. WO93/07044, PCT Pub. Date Apr. 15, 1993
PCT Filed Oct. 7, 1994, Ser. No. 211,435
Claims priority, application France, Oct. 11, 1991, 91 12845
Int. Cl.[6] B62M 9/08
U.S. Cl. 280—259 **18 Claims**



1. Front chain wheel as a crank gear of a bicycle, comprising:

a non-circular drive chain wheel having a central axis, and comprising a single central symmetry with respect to said central axis of said non-circular drive chain wheel; and

said non-circular drive chain wheel does not possess axial symmetry with respect to said central axis;

said non-circular drive chain wheel is capable of rotating around said central axis and comprises two halves, each half of said non-circular drive chain wheel comprises five zones of varying radius angularly positioned in an opposite direction with respect to rotation of said non-circular drive chain wheel;

said non-circular drive chain wheel comprises an upper dead point, a lower dead point, a minimum primitive radius, and a maximum primitive radius; and said five zones of one of said two halves comprise:

zone A at an angle of approximately 0° to 30° comprising passage to said upper dead point comprising said minimum primitive radius and slightly increasing;

zone B at an angle of approximately 30° to 90° wherein the varying radius increases in proportion to sine of the angle;

zone C at an angle of approximately 90° to 107° wherein the varying radius increases towards a maximum;

zone D at an angle of approximately 107° to 143°;

zone E at an angle of approximately 143° to 180° wherein the varying radius again becomes equal to said minimum primitive radius; and

said five zones of one of the other of said two halves comprise:

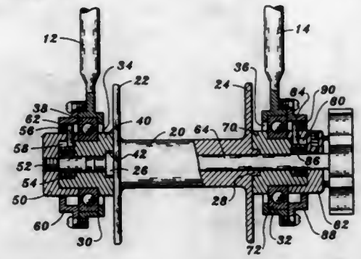
zones A', B', C', D' and E' corresponding to zones A, B, C, D and E, respectively, with zone A' following zone E.

5,549,315

APPARATUS FOR MOUNTING A CYCLE WHEEL

J. Leonard Ashman, 3962 Third Ave., Sacramento, Calif. 95817

Filed Apr. 11, 1994, Ser. No. 225,837
Int. Cl.[6] B62K *25/02*
U.S. Cl. 280—279 **8 Claims**



1. Apparatus for mounting a cycle wheel on a cycle frame, said cycle wheel including a hub having end flanges and first and second wheel supports projecting outwardly from said end flanges, said cycle frame including at least one fork having first and second cycle legs with distal ends, said cycle legs being located away from one another and defining a space therebetween for accommodating said cycle wheel, said apparatus comprising, in combination:

a first socket member located at the distal end of said first cycle leg and defining a first notch and an entry opening to said first notch for receiving and accommodating in said first notch a first wheel support of a cycle wheel;

a second socket member located at the distal end of the second cycle leg and defining a second notch and an entry opening to said second notch for receiving and accommodating in said second notch a second wheel support of a cycle wheel;

a first connector member rotatably connecting said first socket member to the distal end of said first cycle leg with the first socket member projecting into the space between and defined by the cycle legs and the first notch being located in the space between and defined by the cycle legs;

a second connector member rotatably connecting said second socket member to the distal end of said second cycle leg with the second socket member projecting into the space between and defined by the cycle legs and the second notch being located in the space between and defined by the cycle legs, said first and second socket members being in alignment;

lock means for selectively locking said socket members substantially simultaneously against rotational movement relative to their respective cycle legs, said locking means maintaining the entry openings to said first and second notches at the same predetermined orientation with respect to the cycle frame when said socket members are locked against rotational movement; and

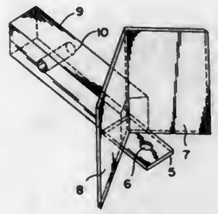
manually operable actuator means cooperable with said lock means for selectively actuating and deactuating said lock means, said manually operable actuator means at least partially comprising a support spindle for insertion into a cycle wheel hub to rotatably support a cycle wheel and movable between first and second spindle positions, said support spindle when in said first spindle position cooperable with said lock means and said socket members to allow rotational movement of said socket members, and said support spindle when in said second spindle position cooperable with said lock means and said socket members to resist rotational movement of said socket members and maintain the entry openings to said first and second notches at the same predetermined orientation with respect to said cycle frame to facilitate installation of a cycle wheel, said lock means including a first lock located at said first cycle leg and a second lock located at said second cycle leg, each of said first and second locks including a lock element movable relative to a respective socket member between a lock position wherein the lock element engages the socket member and resists rotation of the socket member and an unlock position wherein the locking element allows rotation of the socket member, said support spindle cooperable with both lock elements to move said lock elements between said lock and unlock positions.

5,549,316

TRAILER HITCH GUIDE

Robert B. Jones, 4616 109Th Pl. NE., Marysville, Wash. 98271

Filed Aug. 16, 1995, Ser. No. 515,836
Int. Cl.[6] B60D *1/36*
U.S. Cl. 280—477 **3 Claims**



1. A trailer hitch guide apparatus for use in combination with a receiving means for receiving a trailer tongue coupler,

said trailer hitch guide apparatus comprising:

a first plate having a contiguous aperture which has a diameter that is smaller than an outside diameter of a trailer hitch ball and larger than a shank on said trailer hitch ball,

said first plate having a length and a width,

a pair of plates attached to said first plate,

said pair of plates having a front and a back side,

said pair of plates being attached to each other at an angle of approximately 120°,

a tube attached to said first plate and to said back side of said pair of plates,

said tube being rectangular and having a length, width and a height,

said length of said tube being parallel to said length of said first plate,

said first plate extending from said pair of plates on said front side and said back side,

said tube extending horizontally from said back side of said pair of plates,

said tube also extending vertically along said back side of said pair of plates,

said tube having a horizontal aperture therethrough.

5,549,317

FOLDABLE HAND TRUCK APPARATUS

Gary L. Dunkle, Connersville, Ind., assignor to Harper Truck, Inc, Wichita, Kans.

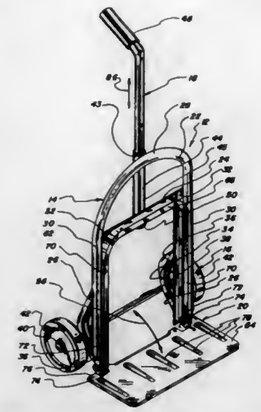
Filed Oct. 6, 1994, Ser. No. 319,161
Int. Cl.[6] B62B *1/12*
U.S. Cl. 280—652 **9 Claims**

1. A foldable hand apparatus, comprising:

a) a main support frame assembly;

b) a support wheel assembly connected to said main support frame assembly;

c) an extendable handle assembly including a handle support tube connected to said main support frame assembly and a handle member telescopingly mounted in said handle support tube;



d) said handle member movable from a first collapsed position substantially within confines of said main support frame assembly to a second usage position extending above said main support frame assembly;

e) a dual foldable load assembly pivotally connected to said main support frame assembly selectively movable from a collapsed storage position to a usage position laterally of said main support frame assembly;

f) said handle support tube includes a lower flared end section having an alignment groove;

g) said handle member includes a guide pin member extended laterally therefrom; and

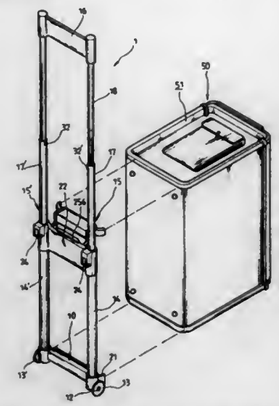
h) said guide pin member selectively positioned in said alignment groove to place said handle member in a proper usage position when in said second usage position.

5,549,318

TROLLEY WITH LUGGAGE SECURING DEVICE

Ho Ching-Feng, 2F No. 65, Yang-Ming Street, Pan Chiao City, Taipei Hsien, Taiwan

Continuation-in-part of Ser. No. 12,508, Feb. 2, 1993, abandoned. This application Oct. 15, 1993, Ser. No. 137,299
Int. Cl.[6] B62B *1/14*
U.S. Cl. 280—654 **1 Claim**



1. A luggage trolley for carrying a trunk having a predetermined height between an upper side and a lower side thereof, a lower recess and an upper recess being respectively formed on the lower and upper sides of the trunk, said luggage trolley comprising:

a lower support member;

a shaft member extending through said lower support member and having two ends thereof projecting out of said lower support member to have two wheels respectively mounted thereon to rollingly support said lower support member;

a pair of elongated side members respectively attached to and extending from said lower support member with a handle bar mounted between upper ends thereof, at least one said side member having an aperture;

an upper support member extending between said pari of side members and releasably secured thereto at a predetermined position which is substantially distant from said lower support member along the length of said side members;

an anchoring device for releasably securing said upper support member to at least one of said side members, comprising:

a boss member for entering said aperture of said side member when said upper support member is moved to said predetermined position; and

a pivotable lever member attached to said upper support member and said boss member and having biasing means disposed between said lever member and said upper support member for providing a biasing force to said lever member;

a lower holding member in the form of an elongated plate attached to said lower support member in such a way as to be receivable within the lower recess formed on the lower side of the trunk; and

an upper holding member in the form of an elongated plate attached to said upper support member in such a way as to be receivable within the upper recess formed on the upper side of the trunk;

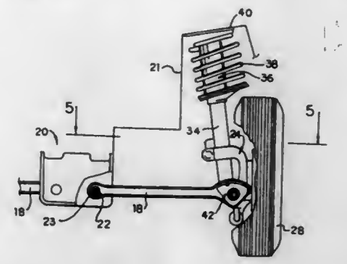
whereby the distance between the predetermined position where said upper support member is releasably secured and said lower support member being substantially equal to the height of the trunk so that when the truck is placed on said luggage trolley and said upper support member is releasably secured at said predetermined position along said side members, the upper and lower holding members are respectively in engagement with the upper and lower sides of the trunk so as to secure the trunk on said luggage trolley.

5,549,319

TOE-IN ANGLE ADJUSTMENT FOR VEHICLE WHEELS

James T. Kring, Belleville, Mich., assignor to L & W Engineering Company, Belleville, Mich.

Filed Aug. 24, 1994, Ser. No. 295,943
Int. Cl.[6] B62D *17/00*
U.S. Cl. 280—661 **13 Claims**



1. A suspension system and toe-in angle adjustment mechanism for a rear wheel on a vehicle comprising:

a. a wheel support connected to a vehicle body along a vertical axis for rotatably supporting a wheel about a horizontal axis;

b. first and second spaced parallel suspension arms having opposed ends, each of said arms being pivotally connected at

one end to a central portion of the vehicle body, extending laterally thereof and connected at the opposite end to said wheel support; and

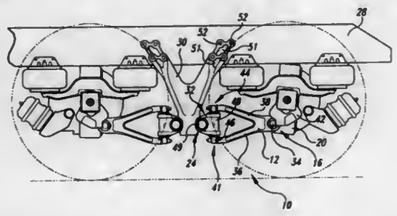
c. a toe-in angle adjustment mechanism connected to said wheel support and pivotally mounted on the opposite end of one of said first and second suspension arms about an axis extending perpendicular to the rotational axis of the wheel; said toe-in angle adjustment mechanism comprising a pivot plate member connected to said wheel support through a bushing member extending through said pivot plate member, wherein said pivot plate member is generally triangular having an apex at one end and a curved outer edge opposite the apex, said pivot plate member being pivotally mounted on said wheel support at said apex and having a plurality of teeth on the curved outer edge engageable with an adjustment tool for changing the toe-in angle of the wheel, so that, as said adjustment mechanism is pivoted about said adjustment axis, said wheel support and thus the wheel are pivoted about the vertical axis along which the wheel support is connected to said vehicle body to change the toe-in angle of the wheel.

5,549,320

COMBINED VEHICLE SUSPENSION TORQUE ROD AND SWAY BAR

Svein Ellingsen, Bothell, Wash., assignor to PACCAR Inc., Bellevue, Wash.

Filed Apr. 26, 1995, Ser. No. 427,791
Int. Cl.[6] B60G *9/02;11/27;21/055*
U.S. Cl. 280—689 **6 Claims**



1. A suspension assembly for a vehicle comprising:

a first arm and a second arm, the first and second arms being laterally spaced and substantially parallel, a first end of each arm being coupled to an axle;

a crossmember having a first end and a second end, the crossmember being substantially parallel to the axle, the first and second ends of the crossmember being pivotally coupled respectively to a second end of each of the first and second arms via vertically oriented pins such that vertical forces are translated from the arms to the crossmember, the crossmember and arms thereby functioning as a sway bar; and

a first bracket coupled to the first end of the crossmember and to a frame of the vehicle, and a second bracket coupled to the second end of the crossmember and to the frame, such that the crossmember is substantially fixed in a lateral direction.

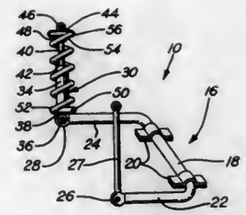
5,549,321

TILT CONTROL APPARATUS FOR AN AUTOMOTIVE SUSPENSION

Stanley J. Novak, Dearborn, and Kenneth J. Boyd, Taylor, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jun. 9, 1995, Ser. No. 488,701
Int. Cl.[6] B60G *21/055;21/073*
U.S. Cl. 280—689 **16 Claims**

1. A tilt control apparatus for use in a motor vehicle having a chassis and a suspension system, said tilt control apparatus comprising:



a torque transfer member transversely oriented relative to a longitudinal axis of the motor vehicle having first and second ends;

a first crank arm rigidly connected to said first end of said torque transfer member;

a second crank arm rigidly connected to said second end of said torque transfer member;

a link member having a lower link end being pivotally connected to said first crank arm opposite said torque member and an upper link end interconnecting the torque transfer member between the chassis and the suspension system;

a tilt damper having a lower damper end being pivotally connected to said second crank arm opposite said torque member and an upper damper end interconnecting the torque transfer member between the chassis and the suspension system; and

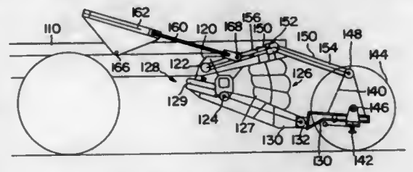
a tilt spring interconnecting the torque transfer member between the chassis and the suspension system such that said torque transfer member transfers a torsional reaction proportionate to a chassis tilt angle and rate, said tilt spring having an effective stiffness substantially less than that of the torque transfer member.

5,549,322

VEHICLE LIFT AXLE

Edward D. Hauri, Springville, N.Y., assignor to Ashford Concrete, Inc., Springville, N.Y.

Filed Dec. 29, 1994, Ser. No. 365,925
Int. Cl.[6] B60G *11/26*
U.S. Cl. 280—704 **6 Claims**



1. A lift axle for a vehicle comprising:

A. a suspension lower link element having one end thereof mounted to the frame of said vehicle by a first pivotal joint, an axle assembly, adapted to rotably mount a wheel and tire thereon, distal to said first pivotal joint, and a second pivotal joint medially located on said suspension lower element;

B. a retractable suspension assembly mounted between said frame and said suspension link element intermediate to said first pivotable joint and said second pivotal joint;

C. an upper link means to limit and articulation of said suspension link element at said medial second pivotal joint when said suspension assembly is deployed, said upper link means having a variable effective length when said suspension lower link element is lifted away from ground contact;

D. a lift means to lift said suspension lower link element and said axle assembly away from ground contact by pivoting said suspension lower link element relative to said frame about said first pivotal joint and to retract said retractable suspension assembly; and

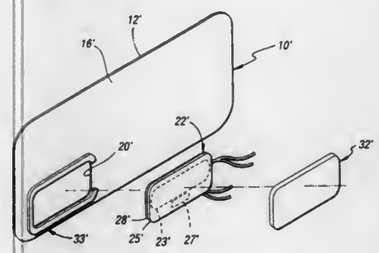
E. a retraction means to articulate said suspension link element at said medial second pivotal joint when said link element is lifted, reducing the variable effective length of said upper link to move said axle assembly farther from ground contact than provided by said lift means.

5,549,323

PLASTIC AIR BAG COVER HAVING AN INTEGRATED OCCUPANT-SENSING SENSOR MODULE

David J. Davis, Troy, Mich., assignor to Larry J. Winget, Leonard, Mich.

Filed Jun. 7, 1995, Ser. No. 477,872
Int. Cl.[6] B60R *21/20;21/32*
U.S. Cl. 280—728.3 **9 Claims**



1. A plastic air bag door having an integrated sensor module adapted for use in a vehicle occupant-sensing system, the door comprising:

a front panel adapted to overlie an undeployed air bag disposed in a passenger side of the vehicle, the front panel having a front outer surface and a rear inner surface, the front panel having a window associated therewith capable of transmitting a first signal therethrough;

an occupant-sensing sensor module including a base plate and sensor means mounted on the base plate; and

a back plate secured to the rear inner surface of the front panel in containing relationship to the sensor module and forming a hollow compartment for the sensor module wherein the first signal is transmitted through the window and received by the sensor means, the sensor means generating a second signal for use by the occupant-sensing system to prevent the air bag from being deployed.

5,549,324

CONSTRUCTION AND METHOD OF FORMING A DOOR ASSEMBLY FOR AN AIR SYSTEM

Craig B. Labrie; David R. McCooey, both of Dover, N.H., and Claude E. Bemis, York, Mass., assignors to Davidson Textron Inc., Dover, N.H.

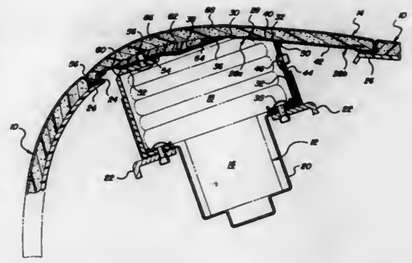
Filed Jul. 11, 1995, Ser. No. 500,596
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—728.3 **11 Claims**

1. A method of making a door assembly for covering an air bag deployment opening provided in an interior trim panel of an automotive vehicle, said method comprising the steps of:

forming a substrate with at least one hinged door section formed with a pour hole opening;

forming at least one reinforcement rib in the door section producing a resultant depressed region of predetermined size and shape extending inwardly of the door section from an exterior side surface thereof;

filling the depressed region with secondary filler material to the level and general profile of the surrounding exterior side surface;



positioning an outer skin of flexible material within a mold cavity;

inserting the door section of the substrate into the mold cavity in spaced relation to the outer skin to provide a space therebetween; and

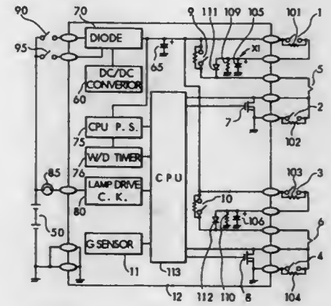
injecting primary foam plastic into the space through the pour hole opening and allowing the primary foam to cure producing a resultant primary foam layer between the door section and outer skin layer.

5,549,325

ACTIVATING DEVICE IN A PASSENGER PROTECTION APPARATUS

Shinichi Kiribayashi, Anjou, and Toshikazu Ina, Nagoya, both of, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 20, 1995, Ser. No. 425,462
Claims priority, application Japan, Apr. 21, 1994, 6-083042
Int. Cl.[6] B60R *21/32*
U.S. Cl. 280—735 **21 Claims**



1. An activating device to activate a passenger protection apparatus installed in a vehicle to protect a passenger during vehicle collision, said device comprising:

at least one power source mounted on said vehicle;

an activating element to activate said passenger protection apparatus in a case whereby an activating current is supplied from said power source;

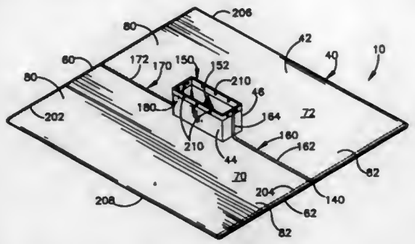
first switching means connected in series to said activating element between said activating element and said power source to be closed upon collision of said vehicle and supply said activating current to said activating element; and

a capacitor connected between said first switching means and said power source to be charged momentarily in a case of closure of said first switching means;

wherein said activating current is conducted from said capacitor to said activating element even after opening of said first switching means.

VOL 1189 ISS 4 AG 27 1996 UMI

5,549,326
AIR BAG
Jose L. Rodriguez Ramos, Madero, Mexico, assignor to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio
Filed Jun. 1, 1995, Ser. No. 457,857
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—743.1 **14 Claims**



1. An inflatable restraint for use with a source of inflation fluid and for, when, inflated, restraining a passenger of a vehicle, said inflatable restraint comprising:

a single panel of fabric material having a main body portion and first and second retainer portions, said panel having a longitudinal axis extending through said main body portion and between said first and second retainer portions;

said main body portion of said panel having a generally rectangular configuration and including first and second opposite side edges which extend generally parallel to each other and to said longitudinal axis, said main body portion of said panel including first and second opposite end portions having respective first and second opposite end edges which extend generally parallel to each other and between said side edges;

said first retainer portion of said panel projecting from said first end portion of said panel in a direction away from said main body portion of said panel, said first retainer portion having first and second side edges which extend generally parallel to said longitudinal axis;

said second retainer portion of said panel projecting from said second end portion of said panel in a direction away from said main body portion of said panel, said second retainer portion having first and second side edges which extend generally parallel to said longitudinal axis;

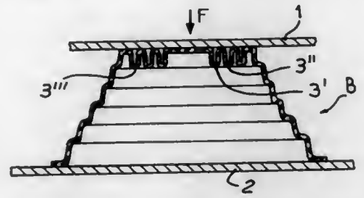
said panel being folded along a first fold line extending transverse to said longitudinal axis so that said first end portion of said panel overlies said second end portion to form a body portion of said inflatable restraint defining an inflation fluid volume, said first retainer portion of said panel overlying said second retainer portion to form a mouth portion of said inflatable restraint defining an inflation fluid opening through which inflation fluid is directed into said inflation fluid volume to inflate said body portion of said inflatable restraint, said first side edge of said first retainer portion overlying said first side edge of said second retainer portion, said second side edge of said first retainer portion overlying said second side edge of said second retainer portion;

first and second stitching lines joining said overlying first and second end portions and said overlying first and second retainer portions of said panel, said second stitching line being disposed on a side of said longitudinal axis opposite from said first stitching line, each one of said first and second stitching lines having a first leg which extends generally transverse to said longitudinal axis of said panel and a second leg which extends generally parallel to said longitudinal axis of said panel along respective overlying side edges of said retainer portions; and

a retainer for attaching said mouth portion of said inflatable restraint adjacent to the inflation fluid source, said mouth portion being folded back over said retainer and encircling said retainer, said retainer having a ring-shaped configuration defining a central opening in said retainer, said mouth portion of said inflatable restraint extending through said central opening of said retainer, said retainer encircling said mouth portion of said inflatable restraint;

said overlying first side edges of said first and second retainer portions and said first stitching line being folded back over said retainer and encircling said retainer, said overlying second side edges of said first and second retainer portions and said second stitching line being folded back over said retainer and encircling said retainer.

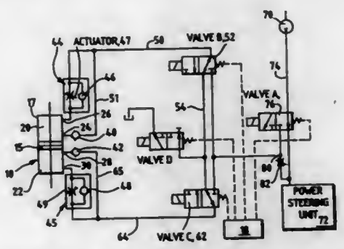
5,549,327
SHOCK ABSORBER FOR IMPROVING SAFETY IN PASSENGER COMPARTMENTS IN MOTOR VEHICLES
Heinz-Josef Rüsche, Drolshagen-Bleche, and Norbert Bonhoff, Borken, both of, Germany, assignors to Lignotock GmbH, Germany
Filed May 16, 1995, Ser. No. 442,308
Claims priority, application Germany, May 20, 1994, 44 17 835.2
Int. Cl.[6] B60R *21/02;21/00;* **B60J** *5/00;* **B62D** *25/02*
U.S. Cl. 280—751 **13 Claims**



1. A shock absorber for improving safety in passenger compartments of motor vehicles during impact accidents, preferably for impact reduction between an outer skin of bodywork parts and an associated inner lining in the passenger compartment, the shock absorber comprising:

an impact pot wherein energy absorption is partially effected by a plurality of shearing procedures of an absorbing material, said plurality of shearing procedures occur in chronological sequence upon impact, and wherein the impact pot is subdivided into shearing zones for the sequence of shearing procedures, said zones defined by longitudinally enclosed curves.

5,549,328
ROLL CONTROL SYSTEM
Joseph Cubalchini, St. Charles, Ill., assignor to Gabriel Ride Control Products, Inc., Pulaski, Tenn.
Filed Jan. 17, 1995, Ser. No. 373,016
Int. Cl.[6] B62D *9/02*
U.S. Cl. 280—772 **2 Claims**



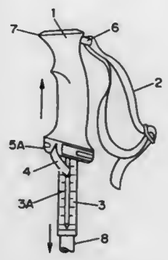
1. An improved roll control system for countering the roll forces generated by a vehicle that is capable of being driven at variable speeds and turned while being driven and that includes an anti-roll bar and an axle, the improved system comprising:

(a) a hydraulic actuator comprising a double acting piston disposed within a working cylinder and dividing the cylinder into first and second fluid chambers, with the actuator acting between the anti-roll bar and the vehicle axle;

(b) means for generating an electronic signal indicative of vehicle speed and vehicle turn direction; and

(c) a hydraulic circuit supplying fluid to the hydraulic actuator, the hydraulic circuit including a first directional control valve responsive to the electronic signal generated, the first directional control valve regulating fluid flow to the first fluid chamber, a second directional control valve responsive to the electronic signal generated, the second directional control valve regulating fluid flow to the second fluid chamber, a third directional control valve that includes a fluid flow restrictor and that is disposed between the first end of the working cylinder and a fluid reservoir, and a fourth directional control valve that includes a fluid flow restrictor and that is disposed between the second end of the working cylinder and the fluid reservoir whereby the third and fourth directional control valves provide a hydraulic cushion between the piston and the first and second ends, respectively, of the working cylinder.

5,549,329
SKI POLE AND REMOVABLE HAND GRIP
Peter C. Wuerslin, Jackson; Frederick E. Liu, Wilson, both of Wyo., and Andrew D. Maslow, New York, N.Y., assignors to Life-Link International, Inc., Jackson, Wyo.
Filed Jan. 18, 1995, Ser. No. 375,391
Int. Cl.[6] A63C *11/22*
U.S. Cl. 280—821 **3 Claims**



1. An improved ski pole comprising:

a shaft having an upper and lower portion;

a collet surrounding part of the upper portion of the shaft and having an inner surface which maintains contact with the shaft;

a permanent ridge or groove on said upper portion of the shaft;

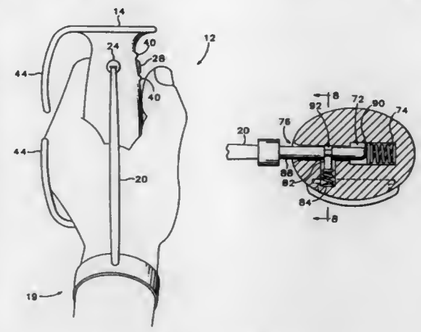
said collet comprising one or more grooves or ridges on the inner surface of the collet, which grooves or ridges are adapted to accept the permanent ridge or groove on the shaft; expansion means on the collet to allow the collet to be opened and closed relative to the shaft;

an inner sleeve surrounding the collet;

an outer cover secured to said inner sleeve;

a hand only operational pressure means having at least two positions, one for tightening and one for loosening said inner sleeve relative to the collet and the shaft of a ski pole so that when the collet is closed on said shaft with the ridge or grove on said upper portion of the shaft being accepted in the corresponding grove of said collet and the hand only operational pressure means is in a tightened position, movement of the shaft relative to the combination of the collet, inner sleeve and outer cover is inhibited.

5,549,330
QUICK RELEASE SKI POLE AND STRAP SYSTEM
Galen Wells, 9116 NE. 96th St., Vancouver, Wash. 98662
Division of Ser. No. 154,865, Nov. 18, 1993, Pat. No. 5,443,287. This application Mar. 29, 1995, Ser. No. 413,919
Int. Cl.[6] A63C *11/22*
U.S. Cl. 280—822 **7 Claims**



7. An attachment system for securing a hand of a skier to a ski pole, comprising:

a ski pole grip having a front and back and sides contoured for gripping with the hand of the skier;

a strap having a first and second end, the first end attached to the skier;

an elongated tubular strap pin attached to the second end of the strap;

an attachment mechanism disposed within the ski pole grip for receiving and locking the strap pin to the ski pole grip;

an ejection mechanism disposed inside the ski pole grip;

an elongated circular channel extending horizontally into the ski pole grip, the strap pin inserting horizontally into the channel and engaging with the attachment mechanism while moving the ejection mechanism into a compressed cocked position; and

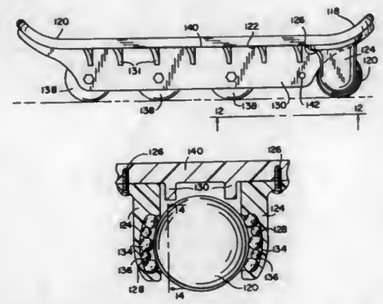
a button coupled to the attachment mechanism and depressible with the hand of the skier, the button in the depressed condition disengaging the strap pin from the attachment assembly allowing the ejection mechanism to uncock thereby ejecting the strap pin completely out of the channel while the same hand of the skier remains wrapped around the ski pole grip.

5,549,331
INLINE SKATEBOARD
Young W. Yun, 11400 W. Arrowhead Dr., Hales Corners, Wis. 53130; Lawrence B. Martel, 1212 S. 64 St., West Allis, Wis. 53214; Keith Janick, 716 N. Barstow, Waukesha, Wis. 53186, and Ralph J. Bruno, 2405 W. Bolivar, Milwaukee, Wis. 53221
Continuation-in-part of Ser. No. 253,680, Jun. 3, 1994, abandoned. This application Jul. 10, 1995, Ser. No. 499,999
Int. Cl.[6] A63C *17/24;17/06*
U.S. Cl. 280—843 **3 Claims**

1. An inline skateboard comprising:

a board body having a front edge, a rear edge, a continuous, contoured top surface adapted to support a rider's feet at any position thereon, a continuous, contoured bottom surface adapted to face a ground terrain, a length and a width;

a pair of parallel mounting rails depending downwardly from said bottom surface along a medial portion thereof to form a U-shaped channel, each of said mounting rails being spaced equidistantly from the longitudinal center line, lying coextensive with the length of said board body and tapering upwardly at said front edge and said rear edge;



each of said mounting rails having an inboard side and an outboard side;

a plurality of parallel mounting shafts extending across said U-shaped channel, said mounting shafts having a length substantially shorter than the width of said board body;

interchangeable transit means mounted in tandem on said mounting shafts for engagement with said ground terrain; and

axleless spherical means positioned on said bottom surface for 360° omni-directional rotation at one of the front edge and rear edge, said spherical means being solely supported between a pair of fixed races, each of said races located on said outboard-side of said mounting rails and having a plurality of ball bearings alternating in size between a first ball bearing having a first predetermined diameter and a second ball bearing having a second predetermined diameter smaller than said first ball bearing, said spherical means being rotatably engageable with only said first ball bearings;

said spherical means defining a pivot point on said board body about which the rider attains improved stability, balance and turnability.

5,549,332

TRAVEL PLANNER

Nancy L. Judson, 152 E. 94 St., New York, N.Y. 10128

Continuation-in-part of Ser. No. 959,159, Oct. 9, 1992, abandoned. This application Jan. 8, 1993, Ser. No. 1,792

The portion of the term of this patent subsequent to Mar. 12, 2008, has been disclaimed.

Int. Cl.[6] G09B *29/00*

U.S. Cl. 283—34 **15 Claims**



1. A compact, modular, and portable travel planner system which comprises: at least two flexible transparencies, each of which comprises a Combined Region/Topical Map including both regional information and particular topical point of interest information, the outlines of the regions of the two Combined Maps register with each other when said two Combined Maps are overlaid, and said transparencies being overlaid to provide a new map; and literature to which said transparencies are separably bound containing descriptive information relating to and corresponding with each particular point of interest on each of said transparencies, said at least two transparencies separably bound to a single piece of literature or said at least two transparencies separably bound to at least two different pieces of literature.

5,549,333

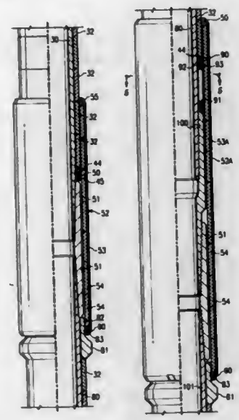
BLAST JOINT

Robert J. Uherek, Sr., 2804 SE. Dune Dr., Unit 1309, Stuart, Fla. 34996; Paul J. Uherek, 6782 Salem Rd., Plymouth, Mich. 48170, and Brain Uherek, 2804 SE. Dune Dr., Unit 1309, Stuart, Fla. 34996

Filed Sep. 8, 1994, Ser. No. 303,937

Int. Cl.[6] F16L *55/00;* **E21B** *17/10*

U.S. Cl. 285—45 **14 Claims**



1. A blast joint for protecting a production tubing through a producing zone comprising:

(a) a tubing joint connectible at an upper end into the production robing;

(b) an upper ring retainer along an upper end portion of the robing joint;

(c) a lower ring retainer along the tubing joint spaced below the upper ring retainer;

(d) a plurality of erosion resistant rings around the tubing joint in non-compressive end-to-end contact between the upper and lower ring retainers; and

(e) an compressible and extrudible elastomer spacer ring on the tubing joint between the ring retainers engaged only in a non-overlapping relationship with the lower end of the lowest of the erosion resistant rings to permit proper torque on the lower ring retainer to maintain the rings in non-compressive end-to-end contact while allowing the rings to move along the tubing joint responsive to bending and impact forces on the blast joint and to permit the necessary spacing out along the blast joint of its components to attain proper assembly to minimize damage to the erosion resistant rings during assembly, installation, and operation of the blast joint.

5,549,334

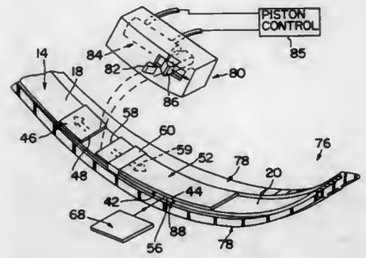
RETAINING BAND ASSEMBLY FOR INTERNAL PIPE SEALS

Kurt E. Zeisler, Rockbridge, Ohio, and Ralph E. Miller, Coatsville, Ind., assignors to Miller Pipeline Corporation, Indianapolis, Ind.

Filed Oct. 20, 1994, Ser. No. 326,487

Int. Cl.[6] F16L *21/00*

U.S. Cl. 285—189 **29 Claims**



1. A retaining band assembly for use in retaining a seal inside a pipe, the retaining band assembly comprising

a retaining band having a first end portion and a second end portion, the first end portion having a flat surface and a first edge and the second end portion having a second edge,

an expansion block mounted on the flat surface in spaced-apart relation from the first edge to define a receiving surface on the flat surface, the expansion block including an upright face extending in a direction generally normal to the flat surface, the second end portion being arranged to engage the receiving surface so that the upright face of the expansion block is positioned to lie in spaced-apart confronting relation to the second edge of the second end portion, and

a clip engaging the second end portion and the first end portion adjacent the receiving surface, the second edge being disposed between the expansion block and the clip.

5,549,335

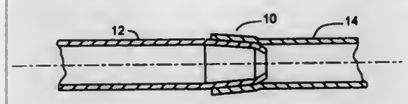
SOLDERLESS METALLURGICAL JOINT

Franz X. Wohrstein, Park Ridge, Ill., assignor to Peerless of America, Incorporated, Chicago, Ill.

Filed Apr. 6, 1994, Ser. No. 223,981

Int. Cl.[6] F16L *13/02*

U.S. Cl. 285—286 **17 Claims**



1. A method of providing a metallurgical joint between first and second tubular members comprising the steps of:

mounting the first and second tubular members having open ends thereof, in axial aligned position with respect to one another;

positioning the ends of the first and second tubular members in abutting relationship;

heating the end of at least one of said first and second tubular members to at least the eutectic temperature of the materials comprising the metallurgical joint;

telescoping movement of one of either of said first and second tubular members with respect to the other member to provide a forced fit between the outside surface of one of said members and the inside surface of the other of said members to provide a linearly extending joint between the tubular members, said forced fit serving to expand the outermost tube; and

cooling the ends of the joined tubular members to provide the linear metallurgical joint between the tubular members with the interior of said joined tubular members being free of debris from the formed joint.

5,549,336

HIGH TORQUE TOOL JOINT

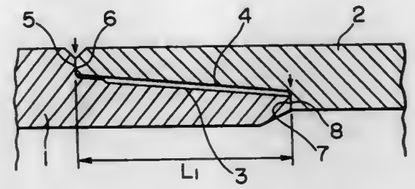
Mitsuaki Hori; Yukihiko Ebihara, and Katsumi Wadano, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan

Continuation of Ser. No. 84,244, Jun. 30, 1993, abandoned. This application Jan. 5, 1995, Ser. No. 369,866

Claims priority, application Japan, Nov. 8, 1991, 3-319607

Int. Cl.[6] F16L *25/00*

U.S. Cl. 285—333 **3 Claims**



1. A high torque tool joint for drill pipes, comprising:

a female threaded pipe member having female threads along at least a portion thereof; and

a male threaded pipe member having male threads along at least a portion thereof, said male and female pipe members being connectable continuously along respective threaded portions thereof to form a threaded joint;

a first flat shoulder provided on an external side of said male threaded pipe member, said first flat shoulder not having a relief recess;

a second flat shoulder provided on an internal side of said female threaded pipe member, said second flat shoulder not having a relief recess;

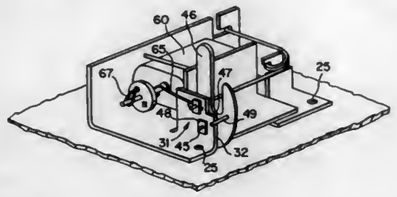
said male and female pipe members having respective flat tip ends, said female threads of said female threaded pipe member extending at least from said second flat shoulder to a point proximate the female pipe member flat tip end, said male threads of said male threaded pipe member extending at least from said male pipe member flat tip end to a point proximate said first flat shoulder;

at least said first flat shoulder being in substantial flat surface contact with the flat tip end of said female threaded pipe member when said male and female pipe members are connected together;

wherein a length from said first and second flat shoulders to the respective tip ends of the male and female pipe members is shorter than a corresponding connection length on a female thread side of a conventional tool joint and is longer than a given corresponding connection length on the male thread side; and

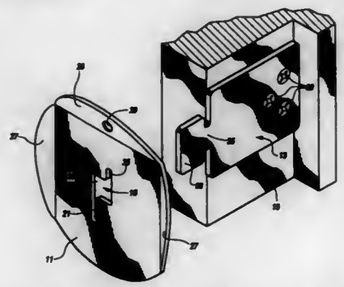
wherein a clearance is provided at said second flat internal shoulder and said male threaded pipe member flat tip end which ranges from 0.1 to 0.5 mm when the threaded joint is tightened by hand to cause the flat external shoulder of said male threaded pipe member to substantially contact said flat tip end of said female threaded pipe member.

5,549,337
MOTOR ACTUATED LATCH MECHANISM
William C. McCulloch, Albuquerque, N.M., assignor to Thomas Loeff, Scottsdale, Ariz.
Filed Oct. 7, 1994, Ser. No. 319,656
Int. Cl.[6] E05C *3/16*
U.S. Cl. 292—225 **10 Claims**



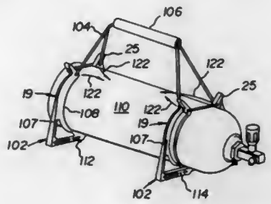
1. A latch mechanism, comprising:
a) a frame;
b) a pivotable latch bolt mounted on said frame and pivotable between first and second positions, said pivotable latch bolt having a recess adapted to retain a closure bar therein in a first position of said pivotable latch bolt and said recess being adapted to release a closure bar therefrom in a second position of said pivotable latch bolt, said pivotable latch bolt (1) being biased toward said second position, (2) having a shoulder and (3) lying in a plane;
c) a biased catch on said frame and having an end engageable with said shoulder in a first position thereof to lock said pivotable latch bolt in the first position thereof, said catch being biased toward said first position thereof and being movable to a second position thereof, against bias, to release said catch from said shoulder thereby permitting said pivotable latch bolt to move to the second position thereof, said catch comprising a thin, elougated, lightweight rod elongated in a direction non-parallel with respect to said plane; and
d) actuator means for actuating said catch to move said catch from said first position thereof to said second position thereof.

5,549,338
KEYLESS LOCK
Andy Q. Wingfield, and James L. Thomas, both of Irving, Tex., assignors to Access Protection Manufacturing, LLC, Plaistow, N.H.
Continuation of Ser. No. 191,880, Feb. 4, 1994, abandoned. This application Nov. 30, 1995, Ser. No. 565,418
Int. Cl.[6] E05C *19/18*
U.S. Cl. 292—292 **14 Claims**



1. A keyless lock for use on a door with a frame, the door having a vertical edge mounted on the frame with hinges and a latching edge movable between an open position and a closed position, the latching edge and the frame being separated by a gap when the door is in the closed position, said keyless lock comprising:
a base plate to be secured to the frame in the gap between the frame and the latching edge of the door and transverse to the face plane of the door when in the closed position, said base plate having an integral extension that extends to a distal end beyond the door frame into a space to be secured and defining a notched seat thereby; and
a planar stop plate adapted to confront the door when in the closed position, said stop plate forming an aperture configured in the form of a substantially rectangular gap defining horizontal and vertical sides and having two substantially parallel slots, one extending downwardly from a lower corner of the gap and one extending upwardly from a diagonally opposite corner of the gap enabling the stop plate to be received over the base plate extension and to rest in the notched seat and interlock transversely to the base plate to prevent opening the door beyond the notched seat.

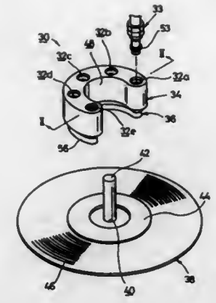
5,549,339
LIFTING DEVICE FOR CYLINDRICAL OBJECTS
Robert G. Frean, 108 Kalamunda Rd., Gooseberry Hill 6076, Australia
PCT No. PCT/AU92/00278, § 371 Date Jun. 23, 1994, § 102(e) Date Jun. 23, 1994, PCT Pub. No. WO92/22492, PCT Pub. Date Dec. 23, 1992
PCT Filed Jun. 12, 1992, Ser. No. 193,186
Claims priority, application Australia, Jun. 12, 1992, PK6624
Int. Cl.[6] B65D *63/18*; B65G *7/12*
U.S. Cl. 294—31.2 **17 Claims**



1. A lifting device for carrying a cylindrical object, the lifting device comprising:
two restraining devices located about the object and spaced apart along the length of the object, the restraining devices each having a base for inhibiting rolling of the object and the bases each having a locking means for locking the restraining devices together in face to face arrangement;
a handle disposed between the restraining devices; and,
an elongate connecting means coupling the handle to the restraining devices;
whereby, in use, a person can carry the object by using the handle, and the restraining devices inhibit rolling of the object when laid on its side.

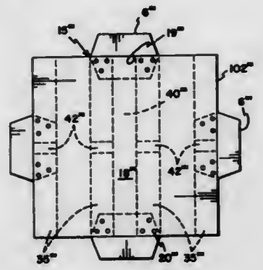
5,549,340
SUCTION PAD
Shigekazu Nagai; Shuuzou Sakurai, and Ryuichi Masui, all of Ibaraki-ken, Japan, assignors to SMC Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 30, 1994, Ser. No. 317,650
Claims priority, application Japan, Oct. 14, 1993, 5-256804; Nov. 30, 1993, 5-300181
Int. Cl.[6] B25J *15/06*
U.S. Cl. 294—64.1 **12 Claims**

1. A suction pad for attracting a workpiece having a data containing region and an interior hole defined substantially centrally therein radially inside of said data containing region, comprising:



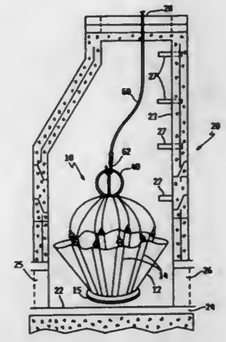
an attractor of a flexible material for abutment against the workpiece along a peripheral region of said interior hole, wherein said attractor abuts against said workpiece adjacent said interior hole at a position radially inside from said data containing region of said workpiece; and
a main body joined to said attractor and having a communication passage defined therein, for supplying suction forces from a source of vacuum through said communication passage to said attractor;
said main body having a through opening for alignment with said interior hole of the workpiece when the attractor is held in abutment against the workpiece along said peripheral region.

5,549,341
APPARATUS FOR SECURING CONTAINED MATERIAL
Williams L. Chase, Des Moines, and David W. Perkins, Hiawatha, both of Iowa, assignors to Paper Systems, Inc., Des Moines, Iowa
Continuation of Ser. No. 39,942, Mar. 29, 1993, abandoned, which is a division of Ser. No. 739,497, Aug. 1, 1991, Pat. No. 5,340,180. This application Jan. 6, 1995, Ser. No. 369,873
Int. Cl.[6] B68D *19/22*
U.S. Cl. 294—68.1 **1 Claim**



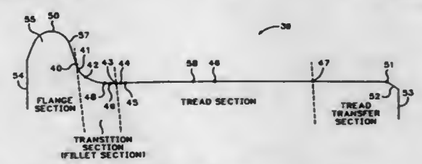
1. Apparatus for maintaining contained material secure when engaged by means for moving said apparatus, said moving means having a chisel element for inserting under said apparatus, said apparatus comprising:
a container with a bottom, sidewalls, and a cover;
means for buffering said container from said chisel element;
a plurality of cleats for holding said buffering means securely in place when said apparatus is subjected to vibration during transport, each of said cleats having a first portion extending under the bottom of said container and a second portion extending along a sidewall of said container;
means for fastening said cleats to said buffering means; and
means for banding said buffering means to said container so that said buffering means and said cover form opposite ends of said apparatus and are held securely in place when said apparatus is engaged by said moving means, said banding means extending under said buffering means, around said cleats, and over said cover.

5,549,342
MANHOLE DEBRIS CATCHER
Jeffrey E. Donaldson, and Andrew J. Sullivan, both of Eden Prairie, Minn., assignors to Virtual Industries, Inc., Eden Prairie, Minn.
Filed Feb. 2, 1995, Ser. No. 382,965
Int. Cl.[6] B66C *1/12*; *1/16*
U.S. Cl. 294—77 **16 Claims**



1. A debris retrieval apparatus, comprising:
(a) a mat having peripheral edges and a center point, said mat further comprising a plurality of elongated pockets formed at substantially equal angles radially from said center point, each of said pockets extending from proximate a peripheral edge toward said center point, and each of said pockets being open at its end points;
(b) a plurality of straps threaded through said pockets, each strap having an end proximate a pocket opening at a first peripheral edge and having an end proximate a pocket opening at a second peripheral edge, said strap being aligned along a straight line passing through said center point; and
(c) a lifting ring assembly connected to said strap ends by a plurality of lines, said lifting ring assembly having at least two substantially orthogonal loops for providing a three-dimensional form.

5,549,343
TRAIN TIRE PROFILE
Dorman S. Blazer, 7700 SE. Mitchell St., Portland, Oreg. 97206-4248
Filed Aug. 10, 1994, Ser. No. 288,942
Int. Cl.[6] B60B *19/02*
U.S. Cl. 295—34 **19 Claims**



1. A profile for a train wheel, comprising:
a flange section having a protuberance for extending over an edge of a rail;

a fillet section extending from field side surface of the flange; and

a tread section extending from the fillet section toward a field side of the train wheel, the tread section including a lift point adjacent to the fillet section, a taping line and a wear point and having a continuous asymptotic profile between the lift (design) point and the taping line including an asymptotically increasing radius that increases continuously from the lift point toward the taping line thereby causing the train wheel to respond asymptotically to changes in direction.

5,549,344

STRUCTURE OF INSTRUMENT PANEL PORTION FOR USE IN VEHICLES

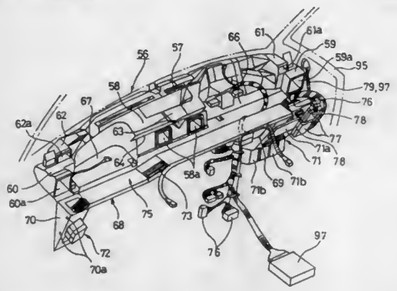
Takayuki Nishijima; Kanehiro Kawamachi; Takao Muto; Mitsuo Yamazaki, and Toshiyuki Arima, all of Omiya, Japan, assignors to Kansei Corporation, Saitama-ken, Japan

Division of Ser. No. 242,815, May 16, 1994. This application May 10, 1995, Ser. No. 438,667

Claims priority, application Japan, Apr. 14, 1993, 6-75926; May 14, 1993, 5-113201

Int. Cl.[6] B62D *25/14*

U.S. Cl. 296—70 **7 Claims**



1. A structure for use in vehicles comprising:

a base member laid in a space, defined between an instrument panel and a vehicle body panel, in a vehicle width direction over a substantially entire width of a vehicle,

a plurality of ducts integrally formed with said base member,

an electric equipment placing portion on which electric equipments are mounted integrally formed with said base member,

a substantially horizontally extending, shelf-shaped harness placing portion, on which a harness, defined by a plurality of wires, is placed, formed in the vehicle width direction over said substantially entire width of said vehicle and integrally formed with the base member on a vehicle rear side edge portion thereof, and

a harness protector, defining a rectangular cross-section with said harness received therein, detachably attached to said harness placing portion formed on said base member.

5,549,345

DASHBOARD VENT COVER

Albert V. Cawthon, and Rudolph J. Baur, both of c/o PHC Industries, Inc., Camden, N.J. 08103

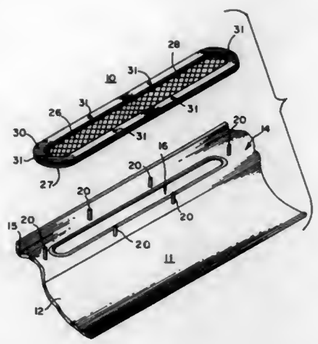
Filed Jun. 14, 1995, Ser. No. 490,419

Int. Cl.[6] A60K *37/04*

U.S. Cl. 296—70 **3 Claims**

1. In combination with a dashboard panel for use in an automotive vehicle which dashboard panel has a top and an underside with at least one vent opening extending therethrough to supply heated or cooled air to the interior of the vehicle, the improvement which comprises:

a vent cover which includes a length of plastic mesh;



said cover having a strip around the perimeter of the mesh;

a plurality of spaced rivets on the underside of said panel and extending from said panel around the perimeter of said opening;

said rivets being capable of deformation by heat and pressure; and

a plurality of spaced openings in said strip which are engaged by said rivets to retain said cover to said panel.

5,549,346

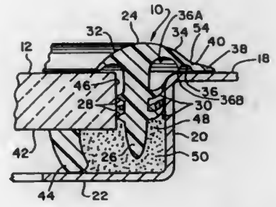
AUTO WINDSHIELD MOLDING WITH IMPROVED CROWN

Peter Gold, 389 Peninsula Blvd., Hempstead, N.Y. 11550

Filed Nov. 24, 1993, Ser. No. 156,687

Int. Cl.[6] B60J *10/02*

U.S. Cl. 296—93 **2 Claims**



1. Improvements in an automobile windshield molding for insertion between adjacent positioned edges of a windshield and a vertical wall having a lateral extension bounding an opening for receiving in projected relation therein said windshield, and of a type having a depending leg and a crown connected in perpendicular relation at an upper end of said depending leg such that said crown serves as a closure in spanning relation across a gap between an edge of said windshield and said vertical wall with said crown in contact with said adjacent positioned edges, the improvements to said molding comprising a semi-circular notch in an undersurface of said crown extending in overlying relation to said wall lateral extension when said molding is installed as said closure, and a crown portion having a peripheral edge outwardly of said semi-circular notch for flexing through an operative movement subtending an acute angle of rotation in relation to said semi-circular notch to present said peripheral edge in facing relation to said wall lateral extension upon installation, whereby a descending movement of said molding during placement of said molding in said gap establishes a weather-sealing contact between said crown portion peripheral edge and said wall lateral extension.

5,549,347

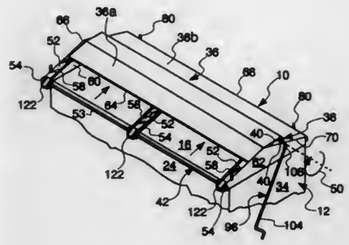
ALL WEATHER MECHANICALLY RECIPROCATABLE ROLL TOP COVER APPARATUS

Delsmore L. Anderson, Kandiyohi, Minn., assignor to Willknight, Inc., Wayzata, Minn.

Continuation of Ser. No. 92,490, Jul. 16, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 467,916

Int. Cl.[6] B60P *7/04*

U.S. Cl. 296—98 **5 Claims**



1. A cover apparatus for covering and uncovering a receptacle having a first wall and a second wall and an opening at the top, the open top defining a first end at an upper part of the first wall and an opposite second end at an upper part of the second wall, the cover apparatus comprising:

a flexible material having a fixed edge portion attached adjacent the first end of the receptacle and a non-fixed edge portion which moves to selected positions located between the first end and the second end to provide a closed position when the non-fixed portion is at the second end and an open position when the non-fixed portion is at the first end;

a first rotatable drive including a first rotatable cylindrical shaft and a first manually operable drive connected to the first rotatable shaft to rotate the first rotatable shaft to the open position, the first rotatable shaft having a longitudinal horizontal axis, the first rotatable shaft mounted to the flexible material and parallel to the first and second end and at a location intermediate to the first and second end, the first rotatable cylindrical shaft upon rotation and movement of the longitudinal axis between the first and second end simultaneously receives portions of the flexible material around the first cylindrical shaft to move the non-fixed edge portion from the second end toward the first end and the open position;

at least one strap attached to the flexible material adjacent the non-fixed edge portion;

a second rotatable drive attached to the strap, the second rotatable drive including a second rotatable cylindrical shaft and a second manually operable drive connected to the second rotatable shaft to rotate the second rotatable shaft to position the non-fixed edge portion to the closed position, the second rotatable shaft having a second horizontal axis, the second cylindrical shaft mounted at the upper part of the second wall and parallel to the first cylindrical shaft for winding or unwinding the strap around the second shaft to move the non-fixed edge portion from either the open or closed position to the other of the open or closed position, respectively, as the first rotatable shaft rotates and the horizontal axis of the first rotatable shaft moves between the first end and its location intermediate to the first and second end.

5,549,348

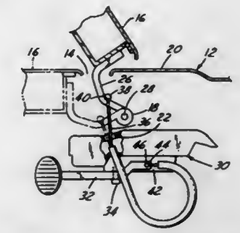
DOOR CLOSER MECHANISM FOR A VEHICLE

Andrew W. Posa, Grosse Ile, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 3, 1995, Ser. No. 538,657

Int. Cl.[6] B60J *5/04*

U.S. Cl. 296—146.4 **10 Claims**



1. A door closer mechanism for a vehicle having a body defining a passenger compartment, the body including inner and outer panels bounding the passenger compartment and having a door aperture formed therethrough closable by a door, the mechanism comprising:

a hinge assembly carried between said inner and outer panels pivotally supporting said door for swingable movement between an open position and a closed position; and

closer means fixedly carried on said inner panel and operative to permit free movement of said door from said closed position to said open position and to drivingly engage said hinge assembly to effect movement of said door from said open position to said closed position.

5,549,349

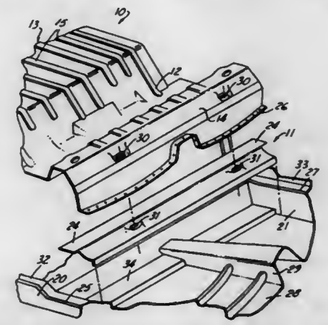
SIDE IMPACT PROTECTION SYSTEM

Max A. Corporon, Bloomfield Hills; Tim J. Wehner, Auburn Hills, and Ashutosh Gunderia, Sterling Heights, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed May 1, 1995, Ser. No. 432,480

Int. Cl.[6] B62D *25/20*

U.S. Cl. 276—188 **6 Claims**



1. In a side impact protection system for a vehicle, the vehicle comprising a side impact zone, laterally spaced apart sills extending longitudinally in the vehicle, each laterally spaced apart sill having a corresponding sill sealing flange projecting vertically therefrom, a floor pan, a seat riser, and a seat riser reinforcement disposed between the laterally spaced apart sills, the side impact protection system comprising:

a continuous, linearly extending cross member disposed laterally in the vehicle for transferring load and redistributing energy away from an impact side of the vehicle, the cross member

extending between, and is in abutment at each end with one of the laterally spaced apart sills and the corresponding sill sealing flange thereby allowing the cross member to transfer load and redistribute energy immediately after the load and the energy is imparted to a sill and corresponding sill sealing flange on the impact side of the vehicle, the cross member being in abutment with the floor pan and the seat riser reinforcement in between each end so that upon side impact of the vehicle energy is redistributed to both the floor pan and the seat riser.

5,549,350

REAR UNDERBODY STRUCTURE

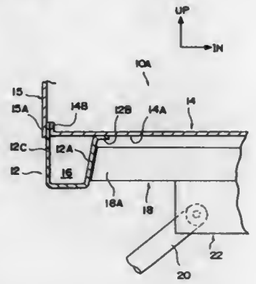
Akira Akiyama, Nagoya; Michio Arakawa, Toyota; Hisashi Ogawa, Aichi-ken, and Hartmut M. Kiessig, Shizuoka-ken, all of, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Division of Ser. No. 138,020, Oct. 19, 1993, Pat. No. 5,472,259. This application Apr. 3, 1995, Ser. No. 415,504

Claims priority, application Japan, Oct. 20, 1992, 4-281835; Nov. 19, 1992, 4-310486

Int. Cl.[6] B62D *25/20*

U.S. Cl. 296—204 **2 Claims**



1. A rear underbody structure comprising:

a pair of rear floor side members disposed along a longitudinal direction of a vehicle body in respective vicinities of both end portions, in a transverse direction of the vehicle body, of a rear-under section of the vehicle body;

a cross member being respectively connected to opposing side surfaces of said pair of rear floor side members at respective end portions of said cross member in the transverse direction of the vehicle body, said cross member extending straight in the transverse direction of the vehicle body and spaced apart from a rear floor pan connected to an upper end of said rear floor side member, and said cross member having an enclosed rectangular cross-sectional configuration when seen from the transverse direction of the vehicle body, and being rectangularly formed with an aspect ratio such that a dimension of said cross member in a longitudinal direction of the vehicle body is greater than a dimension of said cross member in a vertical direction of the vehicle body; and

a lower-arm bracket which is connected to a lower portion of said cross member and supports a rear lower arm.

5,549,351

GUIDE BUMPER DEVICE OF AUTOMOBILE TAILGATE

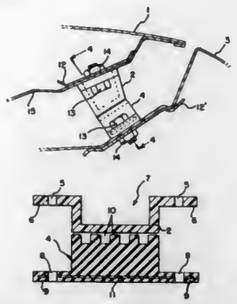
Young-Hwan Park, Kyungsangnam-do, Rep. of Korea, assignor to Hyundai Motor Company, Ltd., Seoul, Rep. of Korea

Filed Apr. 17, 1995, Ser. No. 422,953

Claims priority, application Rep. of Korea, Apr. 21, 1994, 94-8386

Int. Cl.[6] B60J *5/00*

U.S. Cl. 296—207 **5 Claims**



1. A guide bumper device of an automobile tailgate of a vehicle, said guide bumper device comprising:

a first guide bumper including a hollow space with an upward opening, and a pair of first flanges each with a first aperture, respectively, for attaching said first guide bumper to an inner panel of the tailgate of the vehicle; and

a second guide bumper including an alternatingly convex and concave surface formed on a top portion thereof, a plate inserted into a lower portion thereof, and a pair of second flanges each with a second aperture, respectively, for attaching said second guide bumper to a side panel of the vehicle, whereby when the automobile tailgate closes and said first guide bumper collides with said second guide bumper, the guide bumper device eliminates noise, prevents paint peeling from the side panel, and increases buffer action.

5,549,352

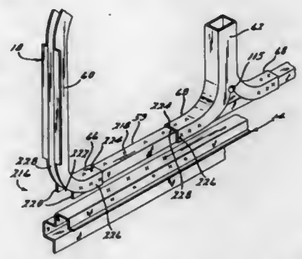
SPLIT JOINT CONSTRUCTION FOR A SPACE FRAME

Adam M. Janotik, Grosse Ile, and Lawrence P. Kazyak, Novi, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 207,983, Mar. 8, 1994, abandoned, which is a continuation of Ser. No. 876,156, Apr. 30, 1992, Pat. No. 5,332,281. This application Mar. 23, 1995, Ser. No. 409,619

Int. Cl.[6] B62D *25/20*

U.S. Cl. 296—209 **6 Claims**



1. A split joint construction for a space frame on an automotive vehicle comprising:

at least one rocker member extending longitudinally and including means forming an open portion comprising first flanges each extending outwardly on at least two side edges of said at least one rocker member;

at least one structural member having extensions extending longitudinally in a first direction and in a second direction opposite to said first direction, each of said extensions having a base wall and a pair of side walls spaced and parallel to each other and extending perpendicularly from said base wall to form a C-shaped cross section and at least one channel to receive said at least one rocker member;

said at least one rocker member having at least a pair of projections each having a channel located on adjacent sides of said rocker member, said at least a pair of projections each having a base wall and a pair of side walls spaced and parallel to each other and extending perpendicularly from said base wall to form a C-shaped cross section, one of said at least a pair of projections being disposed within said at least one channel such that said base wall of the one of said at least a pair of projections abuts said base wall of each of said extensions;

a cover member extending longitudinally and having an arcuate base wall with second flanges extending outwardly on at least two edges of said cover member to close said open portion of said at least one rocker member; and

means for securing said at least one structural member and rocker member together and said cover member and said at least one rocker member together.

5,549,353

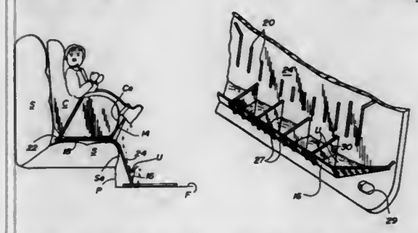
CAR SEAT MAT

Pierre Gaudet, and Nathalie Léveillé, both of Crabtree, Canada, assignors to 3156729 Canada Inc., Ste-Anne des lacs, Canada

Filed Aug. 28, 1995, Ser. No. 520,173

Int. Cl.[6] B60N *2/28*

U.S. Cl. 297—182 **10 Claims**



1. A car seat mat for use with a removable child's restraint seat over an integral fixed seat of an automobile, said car seat mat consisting of a flexible waterproof sheet member, said sheet member having a main portion and a lip portion coextensive with said main portion; said sheet lip portion sized for conforming to a seat portion of the child's restraint seat, and said sheet main portion sized for overlapping a vertical car body panel straddling the front end of the fixed seat and the automobile flooring; a first, transverse, substantially rigid flange depending from a first face of said car seat mat and located at the junction of said sheet main portion and said sheet lip portion; and a second, transverse, substantially rigid flange extending outwardly from said first face of the car seat mat and extending at an end edge section of said sheet main portion opposite said first flange; said first flange sized for flat abutment against a front end portion of the child's restraint seat, and said second flange adapted to form a water collecting pocket in spaced overlying fashion relative to the car flooring, for when the child's restraint seat is mounted over the car fixed seat;

wherein said sheet member is for shielding said car fixed seat and said car body vertical panel from accidental dirt spills generated by the stained boots of an infant sitting in the child's restraint seat.

5,549,354

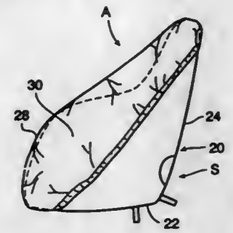
REFLECTIVE SEAT SHIELD FOR USE WITH INFANT RETAINING DEVICES

Steven B. Rosen, 28747 Mauch St., Santa Clarita, Calif. 91350

Filed Mar. 7, 1995, Ser. No. 399,823

Int. Cl.[6] A47C *7/62*

U.S. Cl. 297—184.13 **18 Claims**



1. A heat reflective cover for use with an unoccupied infant retaining device having an upwardly opening infant receiving seat section, said heat reflective cover comprising:

a) a soft and pliable sheet material having a first fabric layer for disposition against the infant receiving seat section of the infant retaining device, said sheet material having a second layer incidental to the first layer and having a highly reflective solar energy reflecting surface to reflect a substantial amount of a heat generating wavelength range contained in solar radiation, said sheet material having a size and shape to fit completely over and effectively form fit to the infant receiving seat section and being soft and pliable so as to extend around a portion of an exterior wall of the infant retaining device, and which cover thereby repels a substantial amount of the solar radiation incident on the seat cover to keep the seat section and the covered portion of the exterior wall of the retaining device relatively cool in hot weather conditions and which is easily positioned on and readily removable from the infant retaining device when an infant is later placed in the infant receiving seat section of the retaining device.

5,549,355

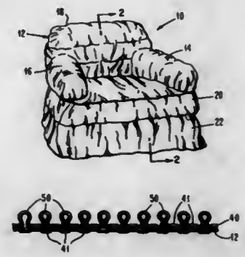
FITTED FURNITURE COVER

Khosro Illulian, 315 N. Maple Dr., Beverly Hills, Calif. 90210

Continuation of Ser. No. 181,819, Jan. 18, 1994, abandoned. This application Jun. 1, 1995, Ser. No. 457,828

Int. Cl.[6] A47C *27/00*

U.S. Cl. 297—224 **3 Claims**

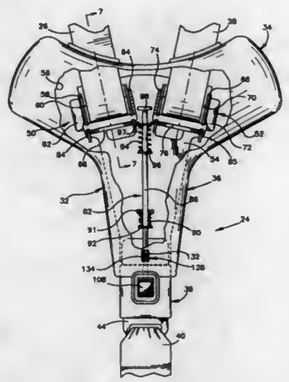


1. A one piece ready-made furniture slip cover (**12**) for covering substantially all of a piece of furniture (**10**), the piece of furniture having a back (**18**), at least one arm rest (**16**), a seat (**20**) and a body, the slip cover comprising:

a back portion (**23**, **24**) for covering the furniture back, the back portion having an inner surface for facing the furniture back, and an outer surface for facing away from the furniture back;

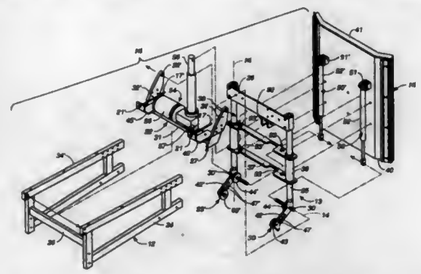
a seat portion (**26**) connected to the back portion, for covering the furniture seat;
an arm rest portion connected to the back and seat portions, for covering the arm rest;
a body portion (**28**) connected to the back, seat and arm rest portions, for covering the furniture body, the body portion having an inner surface for facing the furniture body, and an outer surface for facing away from the furniture body;
at least one first elastic band (**34**) sewn onto and across the inner surface of the back portion for elastically fitting the back portion of the slipcover to the furniture back; and
a second elastic band (**40**) sewn onto and around the inner surface of the body portion by a plurality of spaced apart stitches (**41**), portions of the second elastic band between adjacent stitches being relaxed after having been stretched while the spaced stitches were made so that the slipcover includes a plurality of folds (**50**) in the body portion of the slipcover, which form a ruffle in the body portion, each fold being between a pair of adjacent stitches.

5,549,356
CHILD RESTRAINT SYSTEM
Mark F. Gray, Attica, Mich., assignor to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio
Filed Oct. 21, 1994, Ser. No. 327,022
Int. Cl.[6] B60N *2/28*
U.S. Cl. 297—256.15 **14 Claims**



12. An apparatus for restraining a child seated in a vehicle, said apparatus comprising:
first and second shoulder belts for engaging the shoulders of the child seated in the vehicle;
shield means for engaging the abdomen of the child seated in the vehicle; and
shoulder belt retractor means mounted on said shield means and including a spool connected with said shoulder belts and being rotatable in a withdrawal direction for enabling the shoulder belts to be extended upon movement of said shield means away from the abdomen of the child seated in the vehicle and said spool biased to rotate in a retraction direction for retracting the shoulder belts upon movement of said shield means toward the abdomen of the child seated in the vehicle;
said retractor means including a first retractor assembly mounted in a first portion of said shield means, said first shoulder belt being retractable into and extendable from said first retractor assembly, and a second retractor assembly mounted in a second portion of said shield means and spaced from said first retractor assembly, said second shoulder belt being retractable into and extendable from said second retractor assembly.

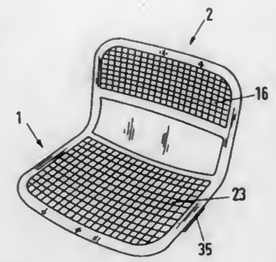
5,549,357
ADJUSTABLE BACKREST APPARATUS FOR WHEELCHAIRS
David M. Counts, Fresno, and Rex W. Stevens, Clovis, both of Calif., assignors to Quickie Designs Inc., Fresno, Calif.
Filed Dec. 12, 1994, Ser. No. 353,803
Int. Cl.[6] B60N *2/02*
U.S. Cl. 297—354.13 **24 Claims**



20. A reclining backrest apparatus for use with a chair having a main frame comprising:
a backrest frame having a longitudinal axis thereof and adapted to be mounted to the chair main frame for pivoting about a generally horizontal axis between a normal position and a reclined position;
a backrest support assembly slidably mounted to said backrest frame for movement between an extended position and a retracted position;
a biasing device coupled to said backrest support assembly for biasing thereof toward said extended position;
a motor mechanism operably mounted between said backrest frame and the main frame for power assisted reciprocating movement of said backrest frame between said normal position and said reclined position
an elongated, flexible, substantially non-resilient tendon having one end mounted to said backrest support assembly, and an opposite end adapted to be mounted to the main frame; and
a pulley assembly having a displacement member spaced-apart from said horizontal axis, and coupled to said backrest frame for pivotal movement about said horizontal axis during pivotal movement of said backrest frame between said normal position and said reclined position, said displacement member engaging said tendon to urge said support assembly slidably along the longitudinal axis of said backrest frame between said extended position and said retracted position during movement of said backrest frame between said normal position and said reclined position.

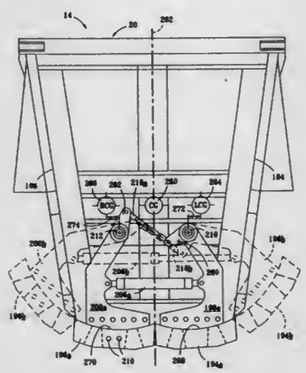
5,549,358
SEAT
Anton Müller, Aalen, Germany, assignor to Eisen- und Drahtwerk Erlau Aktiengesellschaft, Aalen, Germany
Filed Oct. 26, 1994, Ser. No. 330,076
Claims priority, application Germany, Oct. 26, 1993, 9316299 U
Int. Cl.[6] A47C *7/02*
U.S. Cl. 297—452.64 **20 Claims**

1. A seat comprising:
a seat portion having a seat frame and a seat surface comprised of a first wire mesh;
a seat back having a back frame and a back support surface comprised of a second wire mesh;
wherein said first wire mesh is comprised of first wires with distal ends;
wherein said seat frame has inner sides facing one another;
wherein said distal ends of said first wires are directly connected to said inner sides of said seat frame;



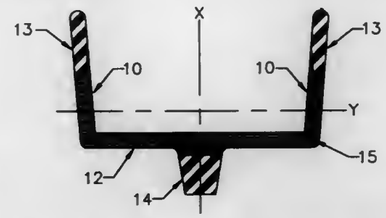
wherein said second wire mesh is comprised of second wires with distal ends;
wherein said back frame has inner sides facing one another;
wherein said distal ends of said second wires are directly connected to said inner sides of said back frame;
wherein said seat frame comprises a forward frame portion and lateral frame portions, connected to said forward frame portion, and a transverse stay connected between said lateral frame portions, said transverse stay delimiting said seat surface relative to said seat back;
wherein said first wires are comprised of a first set and a second set, wherein said distal ends of said first set, that extend away from said forward frame portion, are directly connected to said transverse stay; and
wherein said transverse stay, on a side thereof facing away from said seat surface, has a depression into which depression said distal ends of said first set extend.

5,549,359
DUAL USE MATERIALS TRANSPORT VEHICLE WITH END-DUMPING AND IMPROVED BELLY-DUMPING CAPABILITIES AND METHOD OF CONSTRUCTION
Gregg M. Hoss, Bedford; James E. Thompson, Ft. Worth; Thomas F. Johnson, Uyalde; Martin Kirbie, Grand Prairie, and Andrew J. Speer, III, Arlington, all of Tex., assignors to JBC Ventures, L.P., Irving, Tex.
Continuation-in-part of Ser. No. 392,630, Feb. 22, 1995. This application Apr. 27, 1995, Ser. No. 430,788
Int. Cl.[6] B60P *1/16*
U.S. Cl. 298—35 M **4 Claims**



3. A hopper for holding granular material for transport in and for dumping from a dual use, belly-dumping and end-dumping vehicle, said bopper comprising:
(a) angled side walls and end walls defining a top opening and a bottom opening;
(b) a first pair of spaced apart pivot points attached to at least one of said end walls, each pivot point spaced apart in opposite directions from a center line of said hopper a predetermined distance which is less than one-half of the distance between the center line and each respective side wall;
(c) a pair of actuator arms pivotably connected to said pair of pivot points;
(d) a pair of hopper bay doors, connected to said pair of actuator arms and having an inwardly pivoted closed position at which said hopper bay doors cover said bottom opening and an outwardly pivoted open position at which said hopper doors pivot in opposite directions from each other to uncover at least part of said bottom opening and each bay door having a curved interior surface with a radius of curvature approximately equal to the distance from the bottom opening to said pivot points, so that an imaginary vertical line from said pivot points to said hopper doors intersects the interior door surface at a point which is closer to the center line than to the side walls at the bottom hopper opening, thereby causing a greater proportion of the granular material in said hopper to act by the force of gravity to pivot each door inwardly to a closed position;
(e) a hydraulic actuating cylinder, attached between said actuator arms, and operatively connected to a controllable hydraulic pressure supply to selectably move said hopper bay doors between said inward closed position and said outward open position, wherein said controllable hydraulic pressure supply comprises an electrically driven hydraulic pump.

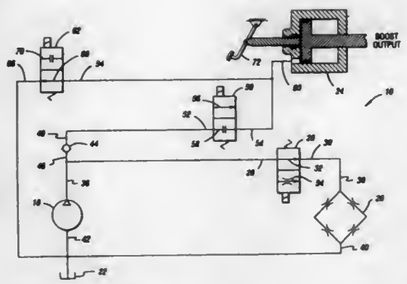
5,549,360
MINIMUM WEIGHT WHEEL RIM
Jay L. Lipeles, 316 Spring Run Cir., Longwood, Fla. 32779
Filed Aug. 15, 1994, Ser. No. 291,519
Int. Cl.[6] B60B *5/02*
U.S. Cl. 301—64.7 **7 Claims**



1. A composite wheel rim for a wheel comprising a web portion and a pair of rim flanges extending from the web portion to peripheral extremities;
the composite rim comprising at least two different types of reinforcing fibers to strengthen the rim;
said reinforcing fibers comprising fibers of higher density disposed at the extremities of the rim flanges, the remainder of the rim comprising fibers of lower density.

5,549,361
ELECTRONIC-HYDRAULIC BRAKE BOOST USING A POWER STEERING SUPPLY
Ronald L. Sorensen, Erie, Mich., assignor to Kelsey-Hayes Corporation, Livonia, Mich.
Filed Jun. 2, 1995, Ser. No. 460,247
Int. Cl.[6] F16D *31/02*
U.S. Cl. 303—3 **20 Claims**

1. An electronically controlled vehicular hydraulic brake boost system sharing a hydraulic pump with the power steering system of the vehicle to provide fluid under pressure to a brake power booster, the hydraulic brake boost system comprising:



a brake power booster;

a boost developing valve having a normally open path and a flow restrictor path, the boost developing valve having an input connected to an output of the hydraulic pump and an output connected to said brake power booster; and

valve means for closing said open path upon initiating brake actuation and thereby forcing fluid through said flow restriction path to significantly boost fluid pressure from the pump output to a level useful in the brake boost system.

5,549,362

BRAKING SYSTEMS

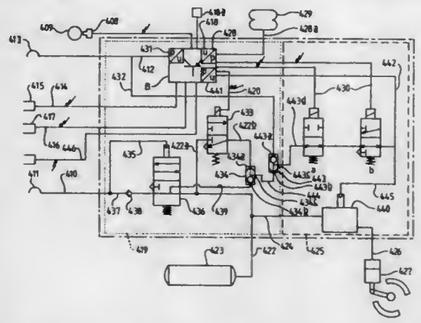
William S. Broome, Inkberrow, United Kingdom, assignor to Grau Limited, England

Continuation of Ser. No. 113,213, Aug. 27, 1993, abandoned. This application Aug. 9, 1995, Ser. No. 513,308

Claims priority, application United Kingdom, Sep. 3, 1992, 9218604; Jan. 16, 1993, 9300807; Jan. 22, 1993, 9301196

Int. Cl.[6] B60T *13/74*

U.S. Cl. 303—3 **26 Claims**



1. A braking system for a trailer vehicle comprising a trailer fluid pressure supply system comprising a source of fluid pressure and a coupling connectable to a fluid pressure outlet of a tractor vehicle transducer means capable of responding to a fluid pressure brake demand signal, delivered to the transducer means from a coupling connectable to a fluid pressure brake demand signal outlet of the tractor vehicle, to provide an electrical brake demand signal; electronic control means responsive to the electrical brake demand signal to provide an electrical brake operating signal; electrically operable valve means having an inlet and an outlet, means to connect said electrically operable valve inlet to said source and means to connect said electrically operable valve outlet to a supply valve means; said electrically operable valve means being responsive to said electrical brake operating signal to provide, at said electrically operable valve outlet, a fluid pressure brake operating signal for said supply valve means; said supply valve means being responsive to a fluid pressure brake operating signal received by said supply valve means to supply fluid from said source to at least one actuator for brake application under a brake pressure determined in accordance with said received fluid pressure brake operating signal and an electrically operable demand signal control valve operable to control delivery of said fluid pressure brake demand signal to the supply valve means to provide an alternative brake operating signal for the supply valve means wherein the electrically operable valve means which is responsive to the electrical brake operating signal comprises a first and a second solenoid valve, the first solenoid valve is operable between a first condition in which it provides for supply of fluid to the second solenoid valve, and a second condition in which it prevents supply of fluid to the second solenoid valve whilst the second solenoid valve is operable between a first condition in which it provides for passage of fluid from the first solenoid valve to provide the fluid pressure brake operating signal to the supply valve means and a second condition in which it provides for exhaust of fluid and reduction of the fluid pressure brake operating signal.

5,549,363

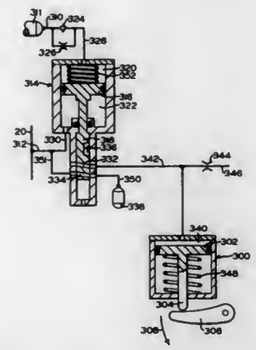
RAILWAY BRAKING APPARATUS

Wajih Kanjo, Lockport, Ill.; Eric Smith, Burlington, Canada; Thomas J. Demoise, Export, Pa.; Michael Girotti, Thorold; Thomas McCabe, Dorval, both of, Canada; Charles B. Fessler, Lancaster, Pa., and Scott Natschke, Kankakee, Ill., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Division of Ser. No. 278,937, Jul. 22, 1994. This application Jun. 7, 1995, Ser. No. 473,657

Int. Cl.[6] B60T *15/16*

U.S. Cl. 303—7 **11 Claims**



1. A railway parking brake release system for a railway train having at least one car equipped with fluid pressure operated service brakes and an auxiliary parking brake apparatus and having a first mechanism for actuating such auxiliary parking brake apparatus to a braking condition and a second mechanism for releasing such auxiliary parking brake apparatus, said release system comprising:

(a) an inlet connectable to a source of fluid pressure for such service brakes;

(b) a fluid pressure responsive valve means in communication with said inlet and responsive to predetermined levels of fluid pressure therein to be conditioned to one of an operative condition and an inoperative condition;

(c) a fluid pressure operated cylinder having a reciprocally operated piston controlled by said valve means and operable from a first position when said valve means is in an inoperable condition, in which such auxiliary parking brake apparatus may be actuated to a braking position, to a second position when said valve means is in an operative condition in which said auxiliary parking brake apparatus will be released upon operation of said cylinder; and

(d) a pressure bulb connected to said fluid pressure operated valve when said piston is in said second position.

5,549,364

METHOD AND DEVICE FOR ADJUSTING THE BRAKE FORCE DISTRIBUTION BETWEEN A TOWING VEHICLE AND A TRAILER

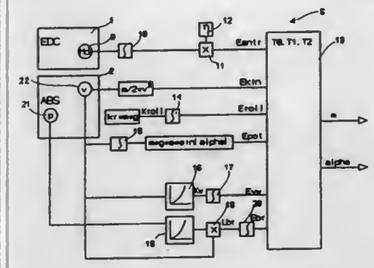
Mathias Mayr-Fröhlich, München, and Alfred Utzt, Fürstenfeldbruck, both of, Germany, assignors to Knorr-Bremse Systeme fur Nutzfahrzeuge GmbH, Germany

Filed Apr. 10, 1995, Ser. No. 419,195

Claims priority, application Germany, Apr. 11, 1994, 44 12 430.9

Int. Cl.[6] B60T *8/00;8/18;8/32*

U.S. Cl. 303—9.69 **9 Claims**



1. A device for adjusting the brake force distribution between a towing vehicle and a trailer of an interconnected motor vehicle as a function of the interconnected motor vehicle's mass, the device comprising:

a first sensor for measuring a variable selected from a wheel's rotational speed and motor vehicle speed, a second sensor for measuring a variable that is based on the driving energy of the driving motor of the towing vehicle, a third sensor for measuring a variable that is based on the brake energy, and a computer that is connected with the sensors as well as with additional memories, the computer generating from said variables and values stored in said memories a signal that corresponds to the mass of the interconnected motor vehicle, with said signal being fed to a regulator that adjusts a brake parameter of the interconnected motor vehicle's brake valve.

5,549,365

CONTROL DEVICE AND METHOD FOR TRACTION OR BRAKING

Jean-Pierre Vernier, Tarbes; Marc Perret, Combs la Ville; Didier Garret, Chevremont, and Philippe Chappet, Cravanche, all of, France, assignors to GEC Alsthon Transport SA, Paris, France

Filed Jun. 7, 1995, Ser. No. 479,771

Claims priority, application France, Jnn. 14, 1994, 94 07233

Int. Cl.[6] B60T *13/68*

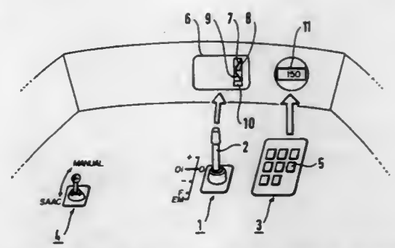
U.S. Cl. 303—20 **11 Claims**

1. A control device for controlling a traction function or a braking function of a vehicle, said control device including a moving control lever, comprising:

apparatus which enables said moving control lever to set in a first position **0** in which neither the traction function nor the braking function are activated;

apparatus which enables said moving control lever to set in an unstable position **0**i in which the vehicle coasts by reducing electrical traction force and electrical braking force to zero;

apparatus which enables said moving control lever to travel from said first position **0** over a first zone **0**+ in which the electrical traction function is activated, either by increasing the electrical traction force or by decreasing the electrical braking force;



apparatus which enables said moving control lever to travel from said first position **0** over a second zone **0**− in which the electrical braking function is activated, either by decreasing the electrical traction force or by increasing the electrical braking force;

apparatus which enables said moving control lever to travel from a—end of the second zone **0**− over a third zone −F in which a pneumatic braking function of said vehicle is activated; and

apparatus which enables said moving control lever to set in a second position EM, following said third zone −F, in which both the electrical braking function and the pneumatic braking function are activated simultaneously.

5,549,366

HYDRAULIC BRAKE SYSTEM FOR VEHICLE

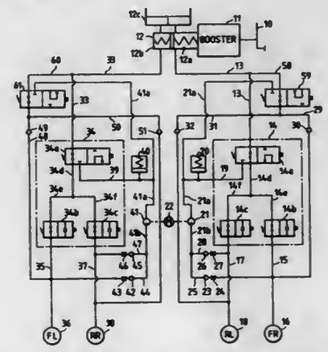
Hiroshi Toda; Michiharu Nishii; Akihito Kusano; Yoshiki Noda; Hiromu Kuromitsu; Tadashi Terazawa, and Seiichi Kojima, all of Aichi, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed May 25, 1995, Ser. No. 450,637

Claims priority, application Japan, May 26, 1994, 6-113121; Sep. 22, 1994, 6-228385; Sep. 22, 1994, 6-228386; Nov. 30, 1994, 6-297461; Mar. 17, 1995, 7-58816

Int. Cl.[6] B60T *8/32*

U.S. Cl. 303—113.2 **7 Claims**



1. A hydraulic brake system for a vehicle provided with a brake pedal, comprising:

a wheel brake for applying a braking force to a driving wheel of said vehicle;

a master cylinder having a pressure generating chamber therein;

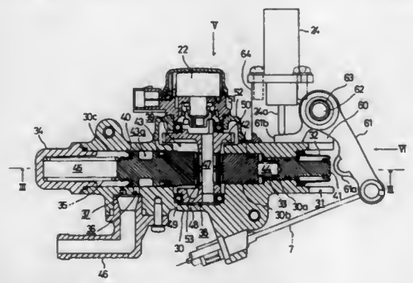
a master cylinder reservoir provided for said master cylinder;

a passage through which said wheel brake is hydraulically connected to said pressure generating chamber;

a low back pressure reservoir;

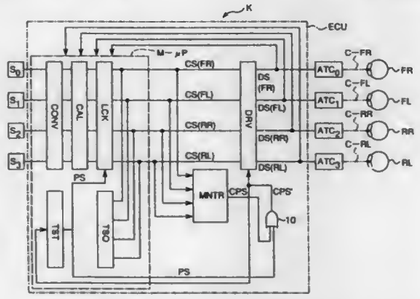
a pump;
an electric motor for driving said pump;
a control valve provided in said passage, in which when said control valve allows said wheel brake to be hydraulically isolated from said pressure generating chamber and hydraulically connected to a low back pressure reservoir, the brake fluid in said wheel brake is caused to flow into said low back pressure reservoir to decrease the hydraulic pressure in said wheel brake, and when said control valve allows said wheel brake to be hydraulically isolated from said pressure generating chamber and said low back pressure reservoir and said electric motor drives said pump so that the brake fluid in said low back pressure reservoir flows into said wheel brake, the hydraulic pressure in said wheel brake is reincreased;
said passage including a master-cylinder-side passage through which said pressure generating chamber is hydraulically connected to said control valve, and a wheel-brake-side passage through which said control valve is hydraulically connected to said wheel brake;
a bypass passage having a check valve which is adapted to hydraulically connect said wheel-brake-side passage to said master-cylinder-side passage and permits only the flow of brake fluid from said wheel brake to said pressure generating chamber;
first valve means provided in said bypass passage for preventing communication between said wheel-brake-side passage and said master-cylinder-side passage by way of said bypass passage during non-actuation of the brake pedal; and
second valve means disposed between said pump and said master cylinder reservoir at a position other than in said master-cylinder-side passage for permitting said pump to draw brake fluid from said master cylinder reservoir when said pump is driven by said electric motor during non-actuation of the brake pedal.

5,549,367
LIQUID PRESSURE CONTROLLER
Takushi Matsuto, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed May 31, 1995, Ser. No. 455,705
Claims priority, application Japan, Sep. 30, 1994, 6-259578
Int. Cl.[6] B60T *8/44;8/60;* **B60K** *41/00*
U.S. Cl. 303—114.1 **9 Claims**



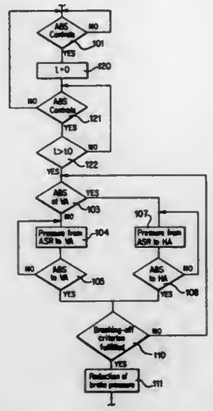
1. A liquid pressure controller comprising:
a master cylinder including a first diameter portion, a second diameter portion and a third diameter portion;
a first piston operatively mounted for reciprocation with said first diameter portion of said master cylinder;
a second piston operatively mounted for reciprocation with said second diameter portion of said master cylinder;
a third piston operatively mounted for reciprocation with said third diameter portion of said master cylinder;
a motor operatively connected to said second and third pistons for imparting motion to said second and third pistons to selectively move in at least one of a first predetermined direction and second predetermined direction;
an operating member operatively connected to said first piston for selectively imparting motion thereto and generating a first signal;
a controller for receiving said first signal and supplying a control signal to said motor for driving said second and third pistons in said first predetermined direction for supplying a predetermined liquid pressure corresponding to the motion imparted by said operating member; and
a rotation stopper engaged by a cam connected to said motor when said motor rotates to a predetermined extent for locking said second and third pistons in a predetermined position.

5,549,368
ABS MAIN MICROPROCESSOR MALFUNCTION DETERMINATON BASED ON PRESSURE REDUCTION OR HOLDING PERIODS
Kazumi Yasuzumi, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Apr. 28, 1995, Ser. No. 431,286
Claims priority, application Japan, Jul. 21, 1994, 6-169316
Int. Cl.[6] B60T *8/88*
U.S. Cl. 303—122.08 **22 Claims**



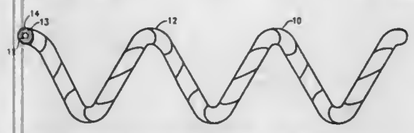
1. An antilock brake control device comprising:
a main microprocessor which forms a judgment on antilock control on the basis of wheel speed signals inputted from wheel speed sensors so as to output control signals to an actuator of a brake fluid pressure circuits in accordance with the judgment;
a drive circuit for outputting drive signals to the actuator in response to the control signals; and
a monitor for monitoring the control signals of the main microprocessor;
wherein when a state in which the main microprocessor outputs to the actuator at least once during a first predetermined period the control signals for commanding pressure reduction or pressure holding has lasted continuously for not less than a second predetermined period, the monitor outputs, by judging that the main microprocessor does not function properly, a control prohibition signal for prohibiting operation of the drive circuit.

5,549,369
METHOD FOR AUTOMATIC BRAKING OF MOTOR VEHICLES WITH AN ANTI-LOCK BRAKE SYSTEM
Siegfried Rump, Weinstadt; Manfred Steiner; Franz Brugger, both of Winnenden; Martin Klarer, Kernen; Bernd Knoff, Esslingen, and Albrecht Eckl, Stuttgart, all of, Germany, assignors to Mercedes-Benz AG, Germany
Filed Nov. 8, 1994, Ser. No. 337,427
Claims priority, application Germany, Nov. 8, 1993, 43 38 065.4
Int. Cl.[6] B60T *8/58*
U.S. Cl. 303—125 **11 Claims**



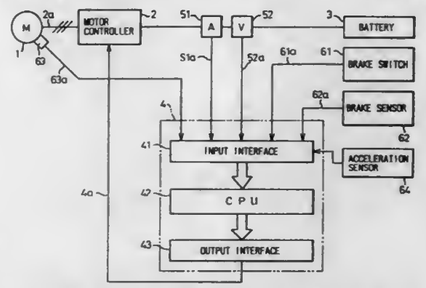
1. A method-for automatic braking of a motor vehicle having an anti-lock brake system which controls brake pressure for wheels of said vehicle which have reached a locking limit, said method comprising the steps of:
detecting when at least one wheel of the vehicle has reached said locking limit as a triggering criterion, and commencing brake pressure control for said at least one wheel by the anti-lock brake system in response thereto;
determining a brake pressure corresponding to the position of a brake pedal of said vehicle;
after detection of the occurrence of the triggering criterion, commencing performance of automatic braking, wherein brake pressure greater than that corresponding to the position of the brake pedal is generated; and
detecting occurrence of a termination criterion;
terminating automatic braking upon detection of said termination criterion.

5,549,370
FIBER-REINFORCED PLASTIC SPRINGS WITH HELICAL FIBER WIND
Mark F. Folsom, 25747 Carmel Knolls Dr., Carmel, Calif. 93923
Filed Nov. 7, 1994, Ser. No. 335,060
Int. Cl.[6] F16F *1/06;1/02*
U.S. Cl. 267—149 **15 Claims**



1. A fiber-reinforced composite spring comprising:
a core having moderate working shear strain and stiff elastic response to bulk compression;
a fiber-reinforced composite cladding formed of reinforcing fibers, said fibers being substantially wound in one direction only helically and concentrically about said core at a prescribed winding angle, said cladding compressing said core when the spring is subjected to one of any and all of compression, tension or torsion; and
a resin matrix for intimately bonding said fibers of said cladding together and to said core.

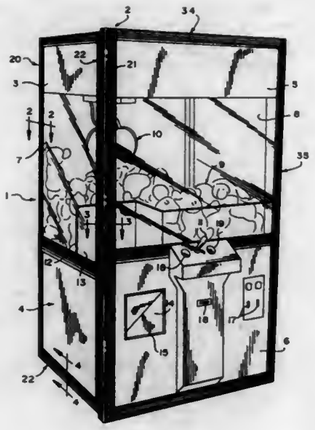
5,549,371
BRAKING FORCE CONTROLLER AND CONTROL METHOD FOR ELECTRIC CAR
Naoji Konaga, Nishio; Mitsuo Inagaki, Okazaki; Hironori Asa, Okazaki, and Toshitaka Tanahashi, Okazaki, all of, Japan, assignors to Nippondenso Co., Ltd., Kariya, and Nippon Soken, Inc., Aichi, both of, Japan
Filed Feb. 3, 1995, Ser. No. 383,768
Claims priority, application Japan, Feb. 9, 1994, 6-036488
Int. Cl.[6] B60T *13/74;* **B60L** *7/10*
U.S. Cl. 303—152 **7 Claims**



1. A braking force controller for an electric car having a motor connected to driving wheels, which generates a braking force in accordance with a braking torque command value, comprising:
regenerative energy detection means for detecting regenerative energy produced by the motor;
calculation means for calculating a braking torque calculation value from at least the regenerative energy so detected;
operation detection means for detecting an operation of a brake;
measurement means for measuring a brake operation quantity;
setting means for setting the braking torque command value in accordance with the brake operation quantity; and
braking torque command value changing means for determining when the detected regenerative energy reaches a maximum value, storing the braking torque calculation value associated with the maximum value of the detected regenerative energy as a maximum braking torque value, increasing or decreasing the braking torque command value so as to reduce a difference between the maximum braking torque value and the braking torque calculation value when the braking torque command value is within a predetermined range of the braking torque calculation value, and decreasing the braking torque command value when the braking torque command value exceeds the predetermined range of the braking torque calculation value.

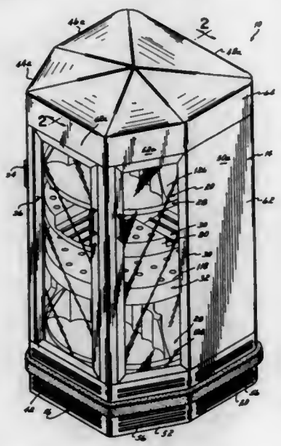
5,549,372
SKILL CRANE CABINET
Michael W. Lewis, 28132 Via Rueda, San Juan Capistrano, Calif. 92675
Filed Mar. 10, 1995, Ser. No. 402,012
Int. Cl.[6] A47F *3/026*
U.S. Cl. 312—114 **13 Claims**

1. A cabinet comprising, a rectangular extruded aluminum frame assembly having top, bottom, and side corners, and top, side and



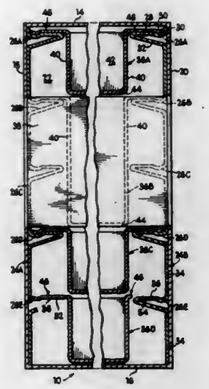
bottom edges, side, front, back, top and bottom walls secured to said frame assembly, said top wall being secured to at least two of the extruded aluminum frame assembly top corners and at least two of the extruded aluminum top edges, the bottom wall being secured to at least two of the extruded aluminum bottom edges, and channels integral with the corners, top, side and bottom edges of the extruded aluminum frame assembly, whereby panels of various decorative appearances may be removably inserted into said channels in keeping with a decor of a room in which the cabinet is placed.

5,549,373
MERCHANDISING DISPLAY WITH MODULAR SHELVES
Rafael T. Bustos, Alpharetta, Ga., assignor to L & P Property Management Company, Chicago, Ill.
Filed Jun. 30, 1994, Ser. No. 268,456
Int. Cl.[6] A47F *3/10*
U.S. Cl. 312—135 **27 Claims**



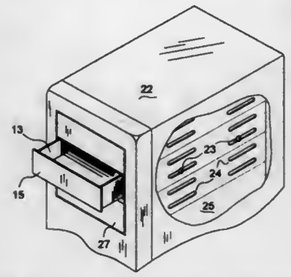
1. A merchandising display comprising:
a housing having an enclosed display compartment;
a door mounted to said housing through which access may be gained to said compartment;
a plurality of vertically spaced generally circular modular shelf assemblies supported at peripheral underside portions thereof by said housing and contained within said compartment, said shelf assemblies each including a shelf support and a product shelf, said product shelf resting on said shelf support in a removable manner to allow different product shelves to be selectively attached to said shelf support; and,
wherein at least two product shelves each include product receiving portions having differently configured product compartments for holding different types of products.

5,549,374
MODULAR CABINET AND DRAWER ASSEMBLY
Bert Krivec, Waukesha, Wis., assignor to Snap-on Technologies, Inc., Crystal Lake, Ill.
Filed Jun. 5, 1995, Ser. No. 461,062
Int. Cl.[6] A47B *43/00*
U.S. Cl. 312—257.1 **18 Claims**



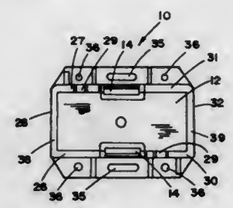
1. A cabinet assembly comprising:
first and second walls each having a length and height;
first and second one-piece support members each having a length and a height and integral with the first and second walls, respectively, each of the support members including a plurality of ledges spaced along the beight of the support member and extending lengthwise thereof, each ledge having a support portion substantially perpendicular to an associated one of the walls, the walls being disposed so that each ledge on the first support member cooperates with a corresponding ledge on the second support member to form a pair of opposed ledges, each of said ledges including a guide channel formed in said support portion and extending lengthwise of the ledge; and
a drawer having a depth and a pair of support flanges lying substantially in a common plane, each flange of the drawer including a guide portion mateable with the guide channel of its associated ledge, wherein the support portions of the pair of support ledges are adapted to respectively slidably support the flanges of the drawer to both support the drawer between the walls and allow the drawer to slide along at least a portion of the ledges.

5,549,375
COMPUTER STORAGE DRAWER SYSTEM
Joseph A. Pagliaccio, 11 2nd Ave., Bayville, N.Y. 11709
Filed Nov. 14, 1994, Ser. No. 337,889
Int. Cl.[6] A47B *88/16*
U.S. Cl. 312—319.1 **1 Claim**



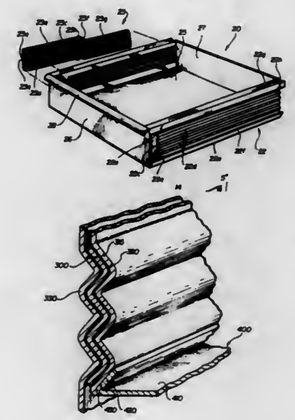
1. An apparatus for storing items within a cabinet of a computer comprising:
a housing having a top wall, a bottom wall, two opposing side walls and a rear wall thereby leaving a front opening; and
a drawer including a front panel, a rear wall, two opposing side walls and a bottom wall, the drawer able to be fitted within the housing and slideably positionable between an open and a closed position, wherein the front panel includes a means for sealing the housing opening to prevent contaminants from entering the drawer when the drawer is in the closed position, the apparatus further including a latching means for releasably maintaining the drawer in a closed position, the latching means comprising a first latch portion positioned on an outside surface of the rear wall of the drawer and a mating second latch portion correspondingly positioned on an inside surface of the rear wall of the housing, and wherein the housing further includes a lip extending downwardly from a top wall of the housing to prevent the drawer from being accidentally pulled out of the housing.

5,549,376
SNAP-IN BRACKET FOR MOUNTING A DRAWER GUIDE IN A DESK OR CABINET
Georg Domenig, Kernersville, N.C., assignor to Grass America, Inc., Kernersville, N.C.
Filed Aug. 9, 1994, Ser. No. 287,764
Int. Cl.[6] A47B *88/00*
U.S. Cl. 312—334.5 **6 Claims**



1. A snap-in mounting bracket for use in a furniture article and with a drawer guide having a flange and a tongue portion, the bracket comprising: a base; opposing retaining flanges carried by the base, each of the retaining flanges being resiliently connected to the base and each having a projection, the projections being normally spaced from one another by a distance for retaining said drawer guide tongue portion and being deflectable away from one another to define a gap between the projections for cooperatively receiving the drawer guide tongue portion through the gap between the projections and for snap-in engagement of the drawer guide tongue portion between the retaining flanges; means for supporting said base on the furniture article; and means carried by said base for supporting said engaged drawer guide tongue portion, said base having a front and a rear, and said drawer guide tongue support means comprising at least one support wall rigidly connected to said base and disposed between one of said retaining flanges and the rear of said base for supporting said engaged drawer guide tongue portion, and said support wall having portions defining a notch for receiving and engaging the flange of said drawer guide preventing lateral movement of the drawer guide.

5,549,377
CORRUGATED THREE-PIECE DRAWER SLIDE ASSEMBLY
Bert Krivec, Waukesha, Wis., assignor to Snap-on Technologies, Inc., Crystal Lake, Ill.
Filed Jun. 8, 1995, Ser. No. 488,763
Int. Cl.[6] A47B *88/00*
U.S. Cl. 312—334.8 **20 Claims**



1. A slide assembly for supporting a drawer in a cabinet comprising:
a corrugated drawer-side member including a first corrugated surface having first elongated corrugations having a longitudinal axis parallel to the direction of drawer travel;
a cabinet-side member including a second corrugated surface having second corrugations extending parallel to said longitudinal axis; and
a corrugated intermediate member sized and shaped for sliding movement between said drawer-side and said cabinet-side members, said intermediate member having a drawer-facing surface including third corrugations and a cabinet-wall-facing surface including fourth corrugations, said third and fourth corrugations being respectively mateably engageable with said first and second corrugations, wherein said third corrugations extend substantially equidistantly from opposite sides of a first medial plane and said fourth corrugations extend substantially equidistantly from opposite sides of a second medial plane, said first and second medial planes being inclined with respect to each other.

5,549,378

PANEL ADJUSTMENT COMPONENT FOR ADJUSTING THE INCLINE OF DRAWERS PULL-OUTS, OR OTHER SIMILAR ITEMS

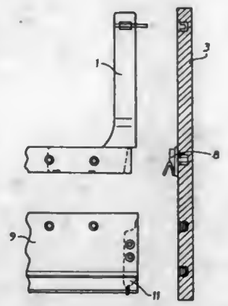
Guenter Grabher, Fussach, Austria, assignor to Grass AG, Hochst/Vlbg., Austria

Filed Oct. 14, 1994, Ser. No. 324,110

Claims priority, application Germany, Oct. 16, 1993, 43 35 393.2

Int. Cl.[6] A47B *88/00*

U.S. Cl. 312—348.4 11 Claims



1. A panel adjustment component for adjusting the incline of a front panel of a drawer of a type having a slide rail and a hollow railing, the panel adjustment component comprising:

a front panel fastenable to said slide rail of said drawer by a panel fastener, the front panel also having an inset component slideably receivable in said hollow railing of said drawer;

an angle member made of a metal material and having a horizontal leg and a vertical leg, the horizontal leg being fastenable in said hollow railing of said drawer and the vertical leg having an upper area with an opening formed in the upper area of the vertical leg;

a threaded bolt connecting the front panel to the vertical leg with the front panel disposed proximate the upper area of the vertical leg; and

a knurled nut disposed rotatable in said opening of the vertical leg and engaging said threaded bolt for adjusting the position of the front panel relative to the upper area of the vertical leg by rotating said knurled nut on said threaded bolt.

5,549,379

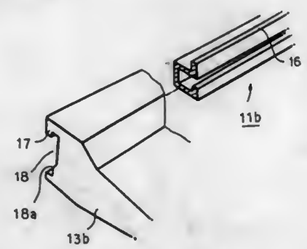
SHELF DEVICE FOR A REFRIGERATOR

Gun S. Jun, and Sang Y. Lee, both of Changwon-si, Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Aug. 2, 1993, Ser. No. 100,215

Int. Cl.[6] A47B *96/06*

U.S. Cl. 312—408 3 Claims



1. A shelf device for a refrigerator comprising;

an elongated bracket having a projecting piece protruding upwardly from its upper surface over a substantial portion of its length and horizontally mounted on a back wall of a refrigerating chamber; and

a shelf assembly provided with an elongated engaging piece extending along a majority of the length of said shelf assembly and hooked on said bracket projecting piece, said shelf assembly having a guide groove, said guide groove including a horizontal portion extending from said engaging piece, a vertical portion extending downwardly from said horizontal portion, and a projecting surface which extends at an angle from said vertical portion, said projecting surface providing contact along at least one line with said bracket over a major portion of the length of the shelf assembly and with no other contact between said shelf assembly and said bracket and no contact between said shelf assembly and said refrigeration wall, said shelf assembly being smoothly slidable horizontally along said bracket.

5,549,380

MIXING DEVICE FOR MANUFACTURING BONE CEMENT

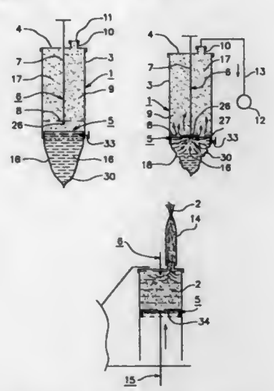
Lars ÅA. Lidgren, Lund, Sweden, and Hans J. Bauer, Flomborn, Germany, assignors to MIT AB, Sjobo, Sweden

Filed Mar. 3, 1995, Ser. No. 397,987

Claims priority, application Germany, Mar. 21, 1994, 44 09 610.0

Int. Cl.[6] B01F *13/06*

U.S. Cl. 366—139 9 Claims



1. A mixing device for mixing a first substance and a second substance for manufacturing bone cement comprising: a mixing container defining a mixing space, said first substance being contained in said mixing space, said mixing container comprising a piston movable in said mixing space to displace substance from said mixing space;

means for creating a vacuum in said mixing space;

a second container, said second substance being contained in said second container, said piston being a wall of said second container, said piston separating said second substance in said second container from said first substance in said mixing space;

a movable mixing means in said mixing space comprising an opener thereon;

means for moving said mixing means to (i) provide an opening in said piston, said opening allowing the vacuum in said mixing space to suck said second substance into said mixing space, and (ii) mix said first and second substances in said mixing space; and

means for moving said piston to displace said mixed first and second substance from said mixing space.

5,549,381

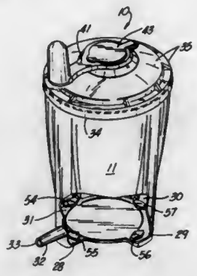
METHOD AND APPARATUS FOR MIXING POLYMERIC BONE CEMENT COMPONENTS

Greta J. Hays, 202 Delta Dr., Marion, Ark. 72364; Michael W. Kleeman, 27 Elm St., Maynard, Mass. 01754, and Ronald J. Vish, 77 Bartlet St., Summerville, Mass. 02145

Filed May 19, 1995, Ser. No. 445,302

Int. Cl.[6] B01F *13/06;7/16*

U.S. Cl. 366—139 35 Claims



1. A bone cement mixing apparatus for mixing separate components of viscous polymers as they react, comprising:

a) a receptacle base having an interior space surrounded by a continuous side wall;

b) an access opening for accessing the interior;

c) a lid for closing the access opening, said lid having opening therethrough;

d) a variety of modular inserts that can be selectively placed within the interior of the receptacle base, said inserts comprising containers for mixing and/or dispensing said polymers;

e) mixing impeller means having one or more impeller blades that fit the container for mixing bone cement contained within the container; and

f) vacuum port means for attaching a suction to the receptacle base.

5,549,382

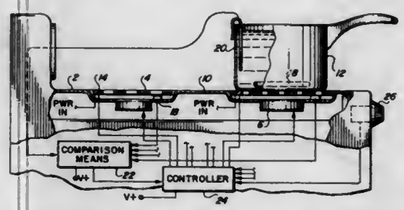
STIRRER FOR FOOD PREPARATION

Bernard A. Correia, II, P.O. Box 42242, Houston, Tex. 77242, and Philip B. Kirk, II, 327 Coronation, Houston, Tex. 77034

Filed Apr. 27, 1995, Ser. No. 429,623

Int. Cl.[6] B01F *13/08;15/06*

U.S. Cl. 366—144 20 Claims



1. An apparatus for stirring foodstuffs in a kitchen environment comprising:

a kitchen stove top having a at least one cooking location, said kitchen stove top having a top surface to support at least one kitchen cooking vessel;

a kitchen cooking vessel;

a means for heating foodstuffs in operable association with each said at least one cooking location;

an agitator device disposed in said kitchen cooking vessel, wherein the agitator device is positioned at a bottom surface of said kitchen cooking vessel;

a driver means for driving said agitator device wherein said driver means is magnetically coupled to said agitator device;

a means for actuating the driver means to induce said agitator device to stir the foodstuffs contained within said kitchen cooking vessel;

wherein the driver means is positioned in axial alignment with at least one of said at least one cooking location, said driver means further positioned beneath the top surface of said kitchen stove top;

a means for temperature control comprising:

means for sensing temperature for one of said foodstuffs or said kitchen cooking vessel to obtain a measured temperature signal;

means for setting at least one predetermined temperature signal;

means for sending said measured temperature signal from the means for sensing temperature to a means for comparing said signal of said sensed temperature to said at least one predetermined temperature signal;

means for comparing the measured temperature signal to said at least one predetermined temperature signal to determine an instructional signal;

means for transmitting said instructional signal to a means for controlling the agitator device;

means for controlling the agitator device;

means for transmitting said instructional signal to a means for controlling said means for heating foodstuffs; and

means for controlling the agitator device relative to the compared signal.

5,549,383

SCREW-TYPE EXTRUSION MACHINE WITH HEATING ELEMENTS

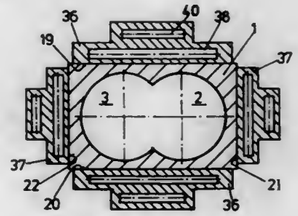
Arno Knoll, Stuttgart; Gerhard Welhrich, Illingen, and Hans Wobbe, Malmsheim, all of, Germany, assignors to Werner & Pfleiderer, GmbH, Germany

Filed Oct. 25, 1991, Ser. No. 782,577

Claims priority, application Germany, Nov. 3, 1990, 40 34 989.6

Int. Cl.[6] B01F *15/06;7/08*

U.S. Cl. 366—149 10 Claims



1. A screw-type extrusion machine comprising a housing (1,1') two housing bores (2,3), which intersect each other forming saddles (6,7) and in each of which a shaft (8) is arranged which is provided with screw elements (10,15) at least along a part of its length and which have walls (23,24),

four outer surfaces (19 or 22) of the housing (1,1') arranged in rectangular cross-section and having a non-constant distance to the walls (23,24) of the bores (2,3),

heating plates containing electrical resistance heating elements (33, 38, 40, 50) and arranged on said outer surfaces (19 to 22),

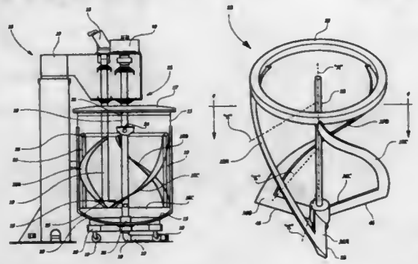
wherein said heating plates are sectionally arranged on said outer surfaces (19 to 22) of the housing (1, 1') and are formed to heat said outer surfaces such that the heating temperature at the walls (23, 24) of the bores (2, 3) is approximately constant along their circumference.

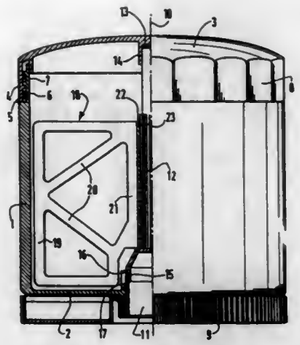
5,549,384

MIXER WITH HELICALLY EXTENDING BLADES

Augustus T. Reynolds, 3300 Woodwardia Dr., Charlotte, N.C. 28210

Filed May 15, 1995, Ser. No. 441,119
Int. Cl.[6] B01F *7/24*
U.S. Cl. 366—299 **12 Claims**





1. A mixer, comprising:
(a) a vessel for receiving materials to be mixed, and having cylindrical inner walls;
(b) a beater assembly rotatably mounted and centrally disposed within said vessel, and comprising:
i. an elongate drive shaft including a plurality of radially-extending support arms connected to a base end thereof;
ii. and a plurality of helically extending mixer blades connected at respective bottom ends thereof to the support arms of said drive shah for rotational movement about an axis defined by the drive shaft, the mixer blades cooperating upon a single rotation of said beater assembly to move materials residing immediately adjacent to the inner walls of the vessel inwardly towards the axis of rotation, and to simultaneously move materials residing near the axis of rotation outwardly towards the inner walls of the vessel, whereby the materials in the vessel are continually transferred during mixing between a center portion of the vessel and an outer portion of the vessel for uniform mixing and cooling of the materials;
iii. an annular support hoop attached to respective top ends of the mixer blades for controlling the inward and outward deflection of the mixer blades during mixing, and cooperating with said support arms to define an unobstructed area extending radially outwardly from the drive shaft to a circular path defined by said mixer blades during mixing, and axially along the length of said drive shaft between top and bottom ends of said blades;
iv. said mixer blades being supported entirely by said hoop and said arms;
(c) a disperser blade rotatably mounted on a second drive shaft received within said hoop, and extending downwardly into the unobstructed area of the beater assembly shearing and mixing relatively fine materials contained in said vessel;
(d) first and second motor means for rotating the respective first and second drive shafts.

5,549,385

DEVICE FOR AIR-SHELTERED PREPARATION OF A PASTE FOR COSMETIC USE

Antonin Goncalves, Montmorency, France, assignor to L'Oreal, Paris, France

Filed Dec. 12, 1994, Ser. No. 354,780
Claims priority, application France, Dec. 10, 1993, 93 14863
Int. Cl.[6] B01F *7/18*
U.S. Cl. 366—314 **15 Claims**

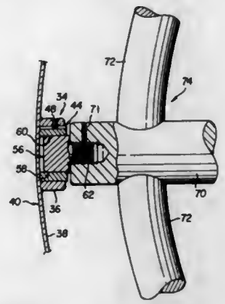
1. Device for preparing a paste for cosmetic use in a manner sheltered from the air by mixing at least two components of which at least one is in the form of cream, said device comprising a closed receptacle provided with a removable closing means, into which the components are successively introduced in a metered manner, wherein the receptacle is in the form of a cylindrical pot closed at an upper part by said removable closing means, and having at a base a bearing forming means, said device further comprising a rotatable operating element, and a shaft with a hub disposed along an axis of the cylindrical pot, said operating element being outside said cylindrical pot and integral with said hub of said shaft, said shaft having at least one radial blade at a periphery of said shaft, wherein said bearing forming means rotationally receives said hub, and whereby activation of the operating element causes said shaft and said radial blade or blades to be driven rotationally.

5,549,386

IDLER BEARING MOUNT

Warren A. Pardo, Bel Air, and Valentino Gabriele, Baltimore, both of Md., assignors to J.C. Pardo & Sons, Baltimore, Md.

Filed Dec. 4, 1995, Ser. No. 567,994
Int. Cl.[6] B01F *7/04*
U.S. Cl. 366—331 **18 Claims**



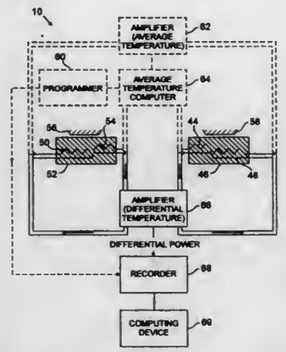
1. In combination, a kettle having inner walls and an agitator having a rotary shaft, the rotary shaft having a distal end mounted within the kettle and having a free end mounted to a drive system for rotation of the shaft to mix materials being processed within the kettle, the combination further comprising:
a replaceable idler bushing having a body portion with a channel formed therein;
mounting means affixed to the inner wall of the kettle for mounting the idler bushing; and,
a replaceable idler pin having a bearing element formed on one end thereof for receipt into the channel formed in the idler bushing and attachment means formed on the other end thereof for attaching the idler pin to the distal end of the rotary shaft, surfaces of the bearing element bearing against surfaces of the channel formed in the body portion of the idler bushing to accommodate rotational movement therebetween, excessive wear and/or damage to the idler bushing and/or idler pin being accommodated without diminishment of utility of the combination by replacement of either or both of the idler bushing and idler pin.

5,549,387

APPARATUS AND METHOD FOR DIFFERENTIAL ANALYSIS USING REAL AND IMAGINARY SIGNAL COMPONENTS

Jurgen Schawe, Blaustein, Germany, and Marcel Margulies, Scarsdale, N.Y., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jun. 1, 1994, Ser. No. 252,597
Int. Cl.[6] G01N *25/00;* **G01K** *17/00*
U.S. Cl. 374—10 **18 Claims**



1. A differential analysis apparatus comprising:
means for holding a sample and means for holding a reference;
means for subjecting the sample in the sample means and a reference in the reference means to an externally applied disturbance in acccord with a prescribed function comprising the sum of a linearly changing part and a periodically changing part;
means for receiving data representative of differential signals resulting from the sample and the reference being subjected to the externally applied disturbance in accord with the prescribed function; and
means for processing the data to provide at least one characteristic parameter of the sample and to separate the at least one parameter directly into components relating to an energy storage portion and an energy loss portion of the at least one parameter.

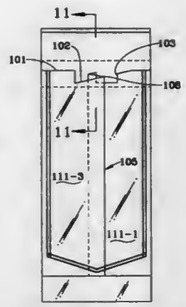
5,549,388

PLEATED STERILIZATION POUCH

Kenneth R. Wilkes, 55 Brookwood Rd., Asheville, N.C. 28804

Filed May 22, 1995, Ser. No. 445,518
Int. Cl.[6] B65D *30/20*
U.S. Cl. 383—84 **19 Claims**

1. A sealable pouch which comprises:
a base sheet having a pouch area and a flap area;
a face sheet in face to face contact with said base sheet, and covering said pouch area of said base sheet, said face sheet being sealed around its periphery to said base sheet to form a pouch, but leaving one edge adjacent said flap area of said base sheet unsealed as an access opening;
one or more pleats in said face sheet intersecting said unsealed edge of said face sheet, said pleats comprising at least an inner ply, a middle ply, and an outer ply, the intersection of said pleats with said unsealed edge being such that an exposed sealing area on the face of each of said plies exists adjacent said unsealed edge; and
a coating of self-adhesive on said base sheet covering at least a portion of said flap area of said base sheet, and extending into said pouch area whereby said self-adhesive covers a portion of said base sheet between said face sheet and said base sheet adjacent said access opening.

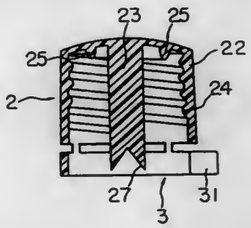


5,549,389

OUTLET STOPPER FOR POUCH-TYPE FLUID CONTAINERS

Tadao Takagaki, Tokyo, and Kisaku Chigusa, Osaka, both of, Japan, assignors to Sumitomo Bakelite Company, Limited, Tokyo, Japan

Filed Mar. 2, 1994, Ser. No. 205,608
Claims priority, application Japan, Mar. 4, 1993, 5-069365
Int. Cl.[6] B65D *65/26*
U.S. Cl. 383—202 **8 Claims**



1. An outlet stopper for providing an outlet opening at any position on a soft-sided pouch-type container, comprising:
a cap part made of a resin and having a cap part cylinder which is closed with a roof fixed to the cap part cylinder at a top portion of the cap part cylinder, the cap part cylinder having a cap part screw thread on an inner side face thereof;
an outlet part made of a resin and having a disk flange which is coated with an adhesive on a bottom face thereof, said disk flange having a hole at a center portion thereof, said outlet part having an outlet part cylinder on top of said disk flange, said outlet part cylinder having on an outer side face thereof an outlet part screw thread, the cap part screw thread on the inner side face of the cap part cylinder being screwable onto the outlet part screw thread;
opening blade means made of a resin and which is fixed to the roof of the cap part so as to project in a downward direction at a center portion of an inner face of the roof of the cap part, said opening blade means having blade tips that are projected below a bottom face of the disk flange when the cap part is in a fully screwed-in position on the outlet part, said opening blade means being rotatable with the cap part when the cap

part is screwed onto the outlet part, for opening a pouch-like container when the adhesive on the disk flange is adhered to the pouch-like container and when said cap part is rotated to the fully screwed-in position on said outlet part; and

a stopping ring which is wound around an outer face of the outlet part cylinder of the outlet part, said stopping ring being positioned between a lower end of the cap part and a top face of the disk flange, said stopping ring spacing the blade tips apart from the bottom face of the disk flange by stopping an insertion of the cap part onto the outlet part before the cap part reaches the fully screwed-in position, and wherein:

the stopping ring comprises a protrusion that is projected in an outward direction from the stopping ring, the stopping ring further having a gap therein for enabling removing of the stopping ring from the outlet part cylinder to permit the cap part to reach the fully screwed-in position on the outlet part to thereby open the pouch-like container; and

the stopping ring and the cap part cylinder are integrally molded so as to form a one piece molded resin structure, and the stopping ring and a lower end portion of the cap part cylinder are connected to each other by at least one connecting point which is breakable for removal of the stopping ring.

5,549,390

GUIDE RAIL

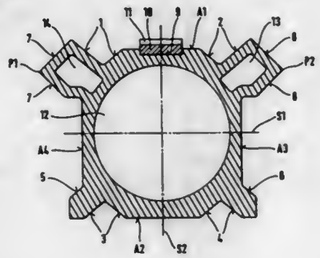
Rudolf Reitberger, Munich, Germany, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Nov. 21, 1994, Ser. No. 342,539

Claims priority, application Japan, Nov. 19, 1993, 43 39 541.4

Int. Cl.[6] F16C *29/04;29/02*

U.S. Cl. 384—44 **7 Claims**



1. Guide rail for use with drilling, cutting and grinding tools, said guide rail having a central axis and a plurality of outwardly facing sides extending in the direction of and spaced outwardly from the central axis, two first pairs of laterally spaced guide surfaces (1, 2) arranged in a first one (A1) of said outwardly facing sides and extending in the direction of the central axis, each said first pair of guide surfaces (1, 2) arranged to form an outwardly facing V-shaped recess with the recess having a width increasing outwardly, wherein the improvement comprises two second pairs of laterally spaced guide surfaces (3, 4) arranged in an outwardly directed second one (A2) of said outwardly facing side and extending in the direction of the central axis, each said second pairs of guide surfaces (3, 4) are located symmetrically opposite said two first pairs of guide surfaces (1, 2) and said second pairs of guide surfaces are V-shaped, a first axis of symmetry (S1) forms an axis of symmetry for said first and second pairs of guide surfaces (1, 2, 3, 4), a second axis of symmetry (S2) extends perpendicularly to said first axis of symmetry (S1), and additional pair of guide surfaces (18) are disposed on opposite sides of and symmetrical with respect to said second axis of symmetry (S2), and additional pairs of guide surfaces (7, 8) are inclined at an angle to one another and extend in the direction of the central axis of said guide rail.

5,549,391

LINEAR ANTIFRICTION BEARING AND CAGE THEREFOR

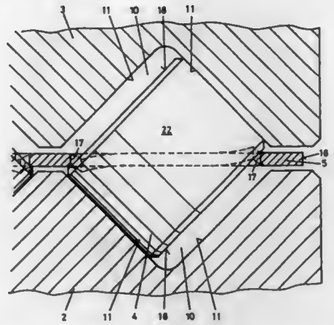
Gerhard Engbersen, Romanshorn, Switzerland; Heinz Greiner, Ebersbach, Germany, and Peter Schorscher, Salmsach, Switzerland, assignors to Hydrel AG, Romanshorn, Switzerland

Continuation of Ser. No. 119,164, Jun. 28, 1994, abandoned. This application Nov. 6, 1995, Ser. No. 554,397

Claims priority, application Germany, Jan. 21, 1992, 42 01 453.0

Int. Cl.[6] F16C *29/04*

U.S. Cl. 384—51 **10 Claims**



1. A cage for a linear antifriction bearing including a plurality of rollers, each having opposing frontal surfaces and a cylindrical outer surface, the diameter of each said roller being larger than the axial length of each said roller, the cage comprising a flat, plane ribbon which has a row of openings at regular intervals, in each of which one of said rollers is held form lockingly in all directions, the axis of the rollers being inclined to the plane of the cage by about 45°, each opening having at least two contact shoulders running essentially parallel to the longitudinal extension of the cage, the contact shoulders of each opening contacting the two frontal surfaces of said respective roller at diametrically opposed spaces, two arc shaped edges joining the contact shoulders and having at least two contact points contacting the cylindrical outer surface of said rollers.

5,549,392

RESILIENT MOUNT PAD JOURNAL BEARING

William J. Anderson, North Olmsted, Ohio, assignor to Nastec, Inc., Cleveland, Ohio

Filed May 2, 1995, Ser. No. 433,534

Int. Cl.[6] F16C *17/03*

U.S. Cl. 384—117 **8 Claims**

1. A resilient mount pad type journal bearing for supporting a rotating journal, said bearing comprising:

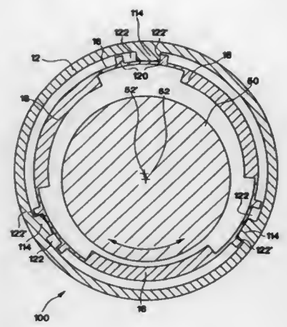
a bearing shell circumscribing the journal;

a plurality of projections fixed with respect to said bearing shell and extending from said bearing shell radially inward toward the journal, said projections are equally spaced circumferentially around said bearing shell;

a resilient mounting circumscribing the journal and radially interposed between the journal and said bearing shell;

a plurality of bearing pads fixed with respect to said resilient mounting and extending from said resilient mounting radially inward toward the journal, said bearing pads are equally spaced circumferentially around said resilient mounting; and,

support means for relating said plurality of projections to said resilient mounting, said support means are circumferentially located between circumferentially consecutive ones of said plurality of bearing pads.



5,549,393

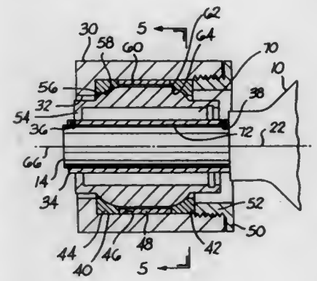
SELF-ALIGNING BEARING FOR HIGH TEMPERATURE APPLICATIONS

Jorge A. Morando, Grosse Ile, Mich., assignor to Alphatech, Inc., Trenton, Mich.

Filed Jan. 9, 1995, Ser. No. 370,311

Int. Cl.[6] F16C *23/04*

U.S. Cl. 384—203 **7 Claims**



1. A combination roll and bearing assembly useful for transferring a heated steel strip from a first position toward a second position, comprising:

a roll having a length suited for supporting a steel strip as the roll is being rotated about a first axis of rotation, the roll having a first end and a second end;

a first shaft means having a bearing supported end extending axially from the first end of the roll and attached thereto, and a second shaft means having a bearing supported end extending axially from second end of the roll and attached thereto, both of the shaft means having an axis of rotation;

a self-aligning bearing means supporting each of the shaft means, each bearing means including:

a housing;

first annular bearing structure movably mounted in the housing and having a cylindrical inner surface of a low friction material slidably mounted on the shaft means, and an outer surface having an annular partially spherical bearing surface disposed around the bearing-supported end of the associated shaft means; and

second annular bearing structure fixedly mounted in the housing and having a fixed bearing axis, and slidably engaging the annular partially spherical surface of the first bearing structure to permit the shaft means to rotate in the second bearing structure as the shaft swings within an acute angle with respect to the fixed axis of the second bearing structure.

5,549,394

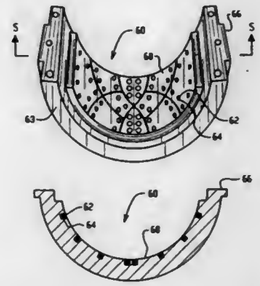
BEARING ARRANGEMENT HAVING A POLYIMIDE GRAPHITE-FIBER REINFORCED COMPOSITE EMBEDDED THEREIN

Bernard E. Nowak, Westlake, and Joseph P. Reardon, Fairview Park, both of Ohio, assignors to Hycomp, Inc., Cleveland, Ohio

Filed Nov. 10, 1994, Ser. No. 336,986

Int. Cl.[6] F16C *33/22*

U.S. Cl. 384—282 **17 Claims**



1. A bearing arrangement having at least one bearing surface, said bearing arrangement comprising:

a substrate comprising a component capable of carrying the load of the bearing arrangement and having at least one support surface,

members comprising a self-lubricating, polyimide graphite-fiber reinforced composite material, attached to said support surface to provide a load bearing structural component of the bearing arrangement and a lubricating low friction film for the substrate, and

connection means for connecting said members to said substrate.

5,549,395

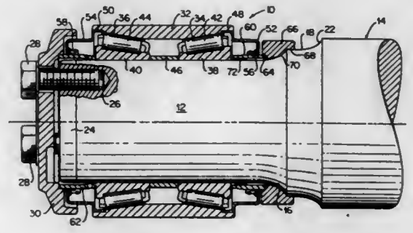
SHAFT JOURNAL BEARING HAVING IMPROVED SEAL WEAR RING

Danny R. Sink, Chester, Va., assignor to Brenco, Incorporated, Petersburg, Va.

Filed Jun. 6, 1995, Ser. No. 471,501

Int. Cl.[6] F16C *33/78*

U.S. Cl. 384—477 **12 Claims**



1. For use in combination with a shaft having a shoulder spaced from a free end, a journal of smaller diameter than the shaft between the shoulder and free end, and a contoured fillet leading from the journal to the shoulder, an improved bearing assembly adapted to be fitted onto the journal and into another structure to permit relative rotation between the shaft and the other structure, the bearing assembly comprising,

a roller bearing including an inner race fitted around the journal and having an outwardly directed raceway thereon, an outer

race having an inwardly directed raceway thereon, and roller elements located between and contacting the inner and outer raceways,

a backing ring having a contoured surface complementary to and engaging said contoured surface of said fillet, said contoured surfaces cooperating to fix said backing ring against radial and axial movement on the shaft when the bearing is installed thereon,

a counterbore formed in said backing ring,

an elongated annular seal wear ring interposed between and engaging said inner race and said backing ring, said seal wear ring having a first end bearing against said inner race and a second end received in interference relation within said counterbore to radially and axially fix said second end on the journal, said seal wear ring having an inner surface radially spaced along its full length from the surface of said shaft journal, and

an annular spacer ring of dimensionally stable, synthetic resin material interposed between said inner surface of said seal wear ring and said journal surface at a location spaced from said first end of said metal sleeve, whereby said seal wear ring is accurately centered with respect to the axis of rotation, said annular spacer ring being dimensioned to provide an interference fit both with said shaft journal.

5,549,396

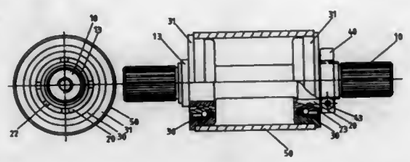
BICYCLE CRANK AXLE

Douglas Chiang, 487, Ko-Chung Rd., Ta-Li City, Taichung Hsien, Taiwan

Filed May 16, 1995, Ser. No. 441,875

Int. Cl.[6] F16C *9/02;* **B62K** *19/34*

U.S. Cl. 384—545 **1 Claim**



1. A bicycle crank axle comprising an axle having two fitting portions, with one of said two fitting portions being provided with a stopping block, and with another one of said two fitting portions being provided with a threaded portion engageable with a fastening means having peripherally a cut and a threaded hole engageable with a fixation rod, said two fitting portions fitted respectively into a tapered sleeve which is provided at one end thereof with an indentation and is further provided peripherally with a conical recess, said tapered sleeve being engageable with a tapered bearing which is in turn engageable with a tapered fixation seat.

5,549,397

ADAPTER SLEEVE AND AN ADJUSTABLE SPACER WITH RADIAL EXTENSION USEABLE THEREON

John E. Rode, Fonda, N.Y., assignor to Temper Corporation, Fonda, N.Y.

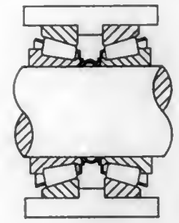
Filed Feb. 3, 1994, Ser. No. 191,551

Int. Cl.[6] F16C *19/22*

U.S. Cl. 384—551 **13 Claims**

1. An adjustable spacer of the type shaped as a ring for mounting between a pair of tapered bearings mounted on an axle or spindle to allow a load to be axially placed on said bearings, said spacer comprising:

a compressible portion comprising a curved section, said compressible portion terminating at a first end in a contact means, said contact means having an inner edge located at a first radial distance from an imaginary axis of said spacer;



said compressible portion further terminating at a second end in an extension, said extension extending radially inward from said compressible portion and terminating at a second radial distance from said imaginary axis;

said second radial distance of said extension being less than said first radial distance of said inner edge of said contact means.

5,549,398

BEARING ARRANGEMENT, ROLLER BEARINGS FOR USE THEREIN, AND A METHOD FORTHE MANUFACTURE OF A PART OF THE BEARING ARRANGEMENT

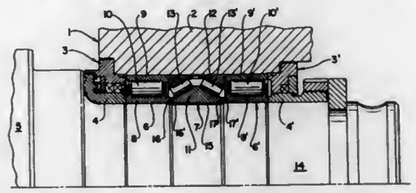
Ronaldus J. Van Brakel, Driebergen; Frank P. Wardle, Bodegraven, and Martin Verburgh, BA Amersfoort, all of, Netherlands, assignors to SKF Industrial Trading & Development Company B.V., Netherlands

Filed Aug. 3, 1994, Ser. No. 285,382

Claims priority, application Netherlands, Aug. 6, 1993, 9301366

Int. Cl.[6] F16C *33/58*

U.S. Cl. 384—571 **8 Claims**



1. A bearing arrangement which is suitable for the absorption of shock loads and is provided with parts rotating concentrically relative to each other, which parts as a group comprise a roller bearing and further at least a second adjacent roller bearing and/or a housing part, whereby the parts can come into contact with each other at adjacent, facing contact surfaces, characterized in that of at least two adjacent contact surfaces facing each other one contact surface is coated with a friction-reducing layer.

5,549,399

TAPE PRINTING METHOD AND APPARATUS HAVING HORIZONTAL AND ROTATED PRINTING MODES

Shoji Sakuragi; Sachiyo Nakahigashi; Sachie Kanda, and Akihiro Sawada, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Sep. 21, 1995, Ser. No. 531,973

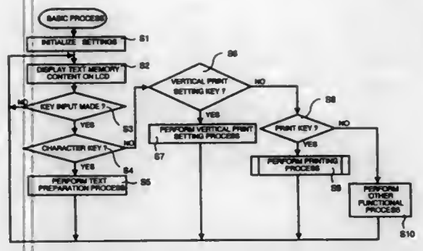
Claims priority, application Japan, Sep. 29, 1994, 6-261038

Int. Cl.[6] B41J *5/30*

U.S. Cl. 400—63 **25 Claims**

1. A method of printing characters on an elongated recording medium, comprising the steps of:

inputting at least one character or symbol for printing;



setting at least one of horizontal and rotated printing modes;

reading horizontally oriented dot pattern data corresponding to the at least one character or symbol from a memory;

rotating the dot pattern data corresponding to the at least one character or symbol a predetermined amount when the rotated printing mode is set;

shifting the position of the rotated dot pattern data to position the rotated dot pattern data for the at least one character or symbol in the center of a character pitch corresponding to the at least one character or symbol when the rotated printing mode is set; and

printing the dot pattern data corresponding to the at least one character or symbol on an elongated recording medium.

5,549,400

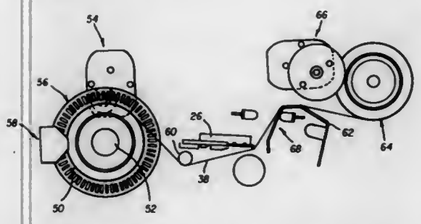
HIGH PRECISION DYE DONOR WEB POSITIONING IN A THERMAL COLOR PRINTER

Manh Tang, Penfield; Vlade J. Kordovich, and Daniel C. Maslanka, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 18, 1994, Ser. No. 245,990

Int. Cl.[6] B41J *33/16*

U.S. Cl. 400—236 **1 Claim**



1. A thermal printer having a print head defining a print line, and a web supply adapted to receive a dye donor web roll having a plurality of dye frames in a repeating series of different colors; said printer comprising:

a web take-up drive adapted to move a dye donor web along a path past the print line in a forward direction away from the web supply;

sensor means, along the donor web path and spaced from the print line, for detecting the arrival of a leading edge of a driven dye frame at the sensor means;

a web supply drive adapted to rotate a received roll through a predetermined angle in a direction to move the dye donor web along the path past the print line in a reverse direction toward the web supply to reposition the dye donor web along the path upon said sensor means detecting the arrival of the said leading edge at the sensor means, and before printing with the give dye frame, so that the leading edge of the given dye frame is in substantial alignment with the print line before printing the given dye frame begins;

a control means for adjusting the predetermined angle in accordance with the instantaneous diameter of the received roll such that the amount of dye donor web moved past the print line in the reverse direction is substantially constant; and

means for supplying slack in the dye donor web between the web take-up drive and the print head by using the web take-up drive to move the dye donor web in the reverse direction before the web supply drive rotates the received roll to move the dye donor web in the reverse direction.

5,549,401

CONTINUOUS FORM PRINTER

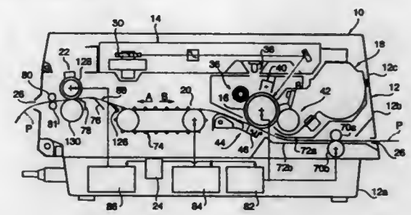
Yutaka Ishikawa; Takeru Ito, and Tsutomu Sato, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 14, 1994, Ser. No. 339,891

Claims priority, application Japan, Nov. 13, 1993, 5-307249

Int. Cl.[6] B41J *15/16*

U.S. Cl. 400—618 **15 Claims**



1. An electrophotographic printer using continuous form paper, comprising:

transfer means for transferring a toner image to said paper;

tractor means for feeding said paper along a paper path of said printer;

fixing means for fixing said toner image on the paper, said fixing means provided along said paper path downstream of said tractor means, said paper path between said tractor means and said fixing means being substantially straight, said fixing means comprising a heat roller and a pressure roller, said heat roller able to feed the paper along said paper path,

driving means for driving the tractor means and rotating said heat roller of said fixing means;

a detector for detecting tension of the paper between said heat roller and said tractor means, by detecting a deviation of the paper from said substantially straight paper path to determine a relative tension in the paper; and

a controller, responsive to said detector, for controlling said driving means to maintain said tension at a predetermined level.

5,549,402

PRINTING APPARATUS

Naoto Yamaguchi, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Feb. 24, 1994, Ser. No. 201,865

Claims priority, application Japan, Mar. 1, 1993, 5-040056; Dec. 28, 1993, 5-350662

Int. Cl.[6] B41J *13/02*

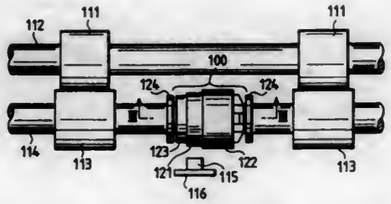
U.S. Cl. 400—708 **9 Claims**

1. A printing apparatus comprising:

a driving roller for conveying a printing medium;

a driving roller shaft for drivably supporting said driving roller;

a follower roller rotatably supported on said driving roller shaft, said follower roller being followably rotated by said printing medium when it comes in contact with said printing medium;



said follower roller including a sleeve rotatably fitted onto said driving roller shaft and including flange portions at the opposite ends thereof, a ring-shaped magnet disposed between said flange portions of said sleeve and including a plurality of magnet segments alternately magnetized such that adjacent magnet segments exhibit different magnetic poles with a radially extending boundary line as a boundary therebetween and a detecting roller made of a rubber and adapted to come in contact with said printing medium, that said sleeve is press-fitted through said ring-shaped magnet and said detecting roller between said flange portions thereof, and that said sleeve, said ring-shaped magnet and said detecting roller are integrated with each other to build an integral structure by the pressure induced by the elasticity of said detecting roller molded of a rubber so as to allow an assembly of said sleeve, said ring-shaped magnet and said detecting roller to be rotated; and

a rotation detector for detecting the rotation of said follower roller.

5,549,403

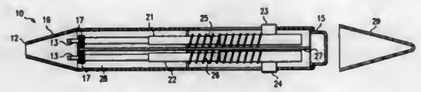
MULTI-ELEMENT WRITING INSTRUMENT

Michael V. O'Shell, 2311 Mechanic, No. 201, Galveston, Tex. 77550

Continuation of Ser. No. 977,543, Nov. 17, 1992, abandoned. This application Nov. 15, 1993, Ser. No. 152,968

Int. Cl.[6] B43K *27/00;27/08*

U.S. Cl. 401—31 **36 Claims**



1. A multi-element writing instrument, comprising:

an elongated body, said body terminating with a single opening and containing first and second separate lengthwise chambers therein;

first and second writing wicks located within said first and second chambers, respectively, said wicks alternatively selectably extendable through said single opening, said wicks each forming a portion of a felt-tip writing element; and

means for preventing fluids within said first and second wicks from commingling, said means for preventing including a protrusion about each of said wicks, said protrusion having a diameter sufficient to prevent said wicks from contacting an inner surface of said elongated body proximate said single opening.

5,549,404

STICK-SHAPED MATERIAL DRIVE CONTAINER AND SUPPLY CASSETTE

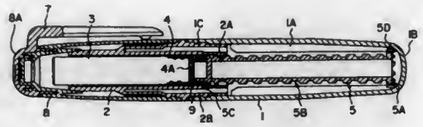
Shuhei Kageyama; Shoji Anzai, and Yoshihide Mitsuya, all of Kawagoe, Japan, assignors to Kotobuki & Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 115,186, Aug. 31, 1993, abandoned. This application Nov. 23, 1994, Ser. No. 344,094

Claims priority, application Japan, Mar. 29, 1993, 5-014839

Int. Cl.[6] A45D *40/06;40/16*

U.S. Cl. 401—75 **15 Claims**



1. A stick-shaped piece drive container comprising;

an outer cylinder;

a screw shaft having a belical groove provided on a circumference thereof and a connecting portion provided on a front end thereof, said screw shaft being unrotatably inserted in said outer cylinder but movably in an axial direction thereof;

an inner cylinder having a projection provided on a rear inside thereof engaging said helical groove, said inner cylinder being immovably mounted in said outer cylinder but rotatably in an axial direction thereof and extending forwardly out of said outer cylinder;

a cylindrical elastomer resin stick-shaped piece holder for a stick-shaped piece slidably disposed in said inner cylinder, having a partition plate dividing the inside of said stick-shaped piece holder into a cylindrical connecting portion and a cylindrical holding portion; said screw shaft being detachably coupled to said cylindrical connecting portion;

said cylindrical connecting portion of said stick-shaped piece holder having an inlet that is smaller in diameter then said screw shaft and having an elasticity so that said screw shaft expands said cylindrical connecting portion when it is connected to securely hold said screw shaft and prevent accidental detachment;

a cap detachably fitting around said inner cylinder;

annular projecting sealing means integrally formed on an outside circumference of said stick-shaped piece holder for sealing between the circumference of said stick-shaped piece holder and the inside of said inner cylinder;

said annular projecting sealing means slidably engaging the interior of said inner cylinder;

whereby a stick-shaped piece of material in said stick-shaped piece holder is prevented from drying out.

5,549,405

HEEL-SHAPED ERGONOMIC WRITING INSTRUMENT

Gilbert H. Krahn, 10100 - 38th St., Kenosha, Wis. 53144

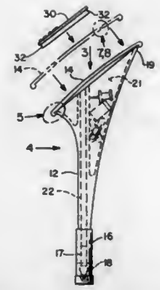
Filed Mar. 17, 1995, Ser. No. 405,820

Int. Cl.[6] B43K *29/00;31/00*

U.S. Cl. 401—195 **8 Claims**

1. An ergonomic writing instrument, comprising:

a) a hollow substantially elongated body having a longitudinal axis, an open substantially D-shaped bottom, an interior surface with an intermediate point, an open substantially D-shaped top having a perimeter and being disposed above, and larger than, said open substantially D-shaped bottom of said hollow substantially elongated body, said hollow substantially elongated body flaring smoothly upwardly and outwardly from said open substantially D-shaped bottom of said hollow substantially elongated body to said open substantially D-shaped top of said hollow substantially elongated body so as to form a substantially straight side and a substantially curved side therebetween, so that said substantially curved side of said hollow substantially elongated body can be comfortably cradled in a natural arch between a thumb and an index finger of a user in a relaxed position and said hollow substantially elongated body will not roll off of a writing surface and will not be obscured on a cluttered work surface;



b) a hollow cylindrically-shaped elongated tube disposed within said hollow substantially elongated body and extending along said longitudinal axis of said hollow substantially elongated body from said open substantially D-shaped bottom of said hollow substantially elongated body to said open substantially D-shaped top of said hollow substantially elongated body, said hollow cylindrically-shaped elongated tube contacting said interior surface of said hollow substantially elongated body from said intermediate point of said interior surface of said hollow substantially elongated body to said open substantially D-shaped bottom of said hollow substantially elongated body so as to form a conveniently accessible storage space between said intermediate point of said interior surface of said hollow substantially elongated body and said open substantially D-shaped top of said hollow substantially elongated body that is accessible from said open substantially D-shaped top of said hollow substantially elongated body, so that small common office items can be stored in said conveniently accessible storage space;

c) a substantially D-shaped cover having a perimeter and being movably mounted to, and closing, said open substantially D-shaped top of said hollow substantially elongated body, so that the small common office items stored in said conveniently accessible storage space are maintained therein, said substantially D-shaped cover having a substantially centrally-disposed removable portion with a lower surface perimeter, said lower surface perimeter of said substantially centrally-disposed removable portion of said substantially D-shaped cover being a V-shaped groove, so that said substantially centrally-disposed removable portion of said substantially D-shaped cover can be readily removed from said substantially D-shaped cover and when said substantially centrally-disposed removable portion of said substantially D-shaped cover is removed from said substantially D-shaped cover an opening with a chamfered perimeter is formed in said substantially D-shaped cover; and

d) a solid state panel having a perimeter with outwardly extending protrusions cooperating with said chamfered perimeter of said opening of said substantially D-shaped cover when said substantially centrally-disposed removable portion of said substantially D-shaped cover is removed from said substantially D-shaped cover, so that said solid state panel can be conveniently installed in said substantially D-shaped cover.

5,549,406

NO-BIND PAGE LIFTER CLIP

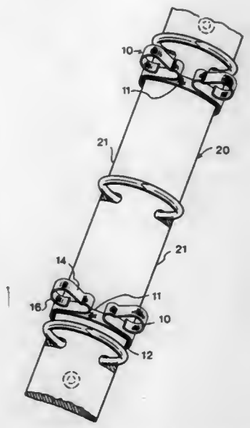
Abner B. Cohen, 1136 Loxford Ter., Silver Spring, Md. 20901

Filed Nov. 21, 1994, Ser. No. 345,417

Int. Cl.[6] B42F *13/00*

U.S. Cl. 402—80 L **17 Claims**

1. A page lifter clip to be attached to a back member of a loose-leaf ring binder comprising:



a clamping arch terminating in two inwardly curved clamping jaws:

a pair of proximal arms, each connected to said clamping jaws and extending above the arch and towards the center of the arch, said arms terminating with two spaced, opposed, outwardly curved sections; and

a pair of distal arms connected to said curved sections of the proximal arms, projecting outwardly away from the center of the clamping arch and terminating with two ends.

5,549,407

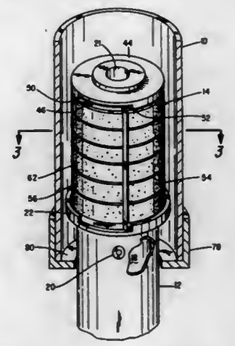
LOCKING MECHANISM FOR TELESCOPING TUBULAR POLES

Avraham Y. Levi, St. Paul, and Craig D. Quarberg, Big Lake, both of Minn., assignors to Structron Corporation, San Marcos, Calif.

Filed Apr. 10, 1995, Ser. No. 419,262

Int. Cl.[6] F16B *7/14*

U.S. Cl. 403—109 **11 Claims**



1. Apparatus for releasably locking inner and outer telescoping tube segments against longitudinal movement relative to one another, comprising:

(a) an elongated, rigid tubular cam having a pair of diametrically opposed cam surfaces of continuously varying radii extending over a predetermined arc between a pair of radially spaced longitudinal stop members and having opposed ends with a radially extending circular flange at each of the opposed ends,

the circular flanges including diametrically opposed arcuate grooves formed in a surface thereof defining first and second abutments; and

(b) first and second cam followers disposed in surrounding relation to said tubular cam, each cam follower comprising a generally cylindrical segment having an outer surface of a first predetermined radius generally equal to a radius of the circular flanges on said cam and a concentric cylindrical inner surface of a second radius less than said first predetermined radius, each segment being substantially semicircular in cross section, the cylindrical inner surface of each segment including an outwardly projecting longitudinal rib for engagement with a respective one of the pair of cam surfaces and the pair of radially spaced longitudinal stop members, said first and second cam followers further including longitudinally projecting tabs for residing in the arcuate grooves of the circular flanges of the cam between the first and second abutments.

5,549,408

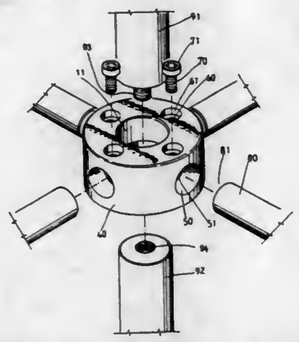
CONNECTOR FOR BUILT-UP TOY FURNITURE

Wei W. Lo, No. 14, Lane 177, Guang-Fu Rd., Taipei, Taiwan

Filed Feb. 17, 1995, Ser. No. 390,177

Int. Cl.[6] F16B *7/18*

U.S. Cl. 403—218 **3 Claims**



1. A connecting mechanism comprising:

generally cylindrical one-piece connector with a flat top side and a flat bottom side, said top side including a first circular recess and said bottom side including a second circular recess,

said connector further including a central through hole connecting said first recess and said second recess,

said connector further including a plurality of radial holes around a periphery of said connector and a plurality of axial holes in said top side of said connector, said axial holes being in communication with said respective radial holes; and

at least one horizontal frame rod being inserted into one of said radial holes and being secured within said one of said radial holes by a securing means disposed within one of said axial holes in communication with said one of said radial holes, and

a first vertical frame rod including an elongated main body and a male threaded screw rod section, wherein said main body of said first vertical frame rod being substantially longer than said screw rod section, and second vertical frame rod including an elongated main body with a female threaded screw bole provided at one end of the main body, wherein said first and second vertical frame rods being inserted into said first and second recesses, respectively, said screw rod section of said first vertical frame rod being threaded into said screw bole of said second vertical frame rod to secure said vertical frame rods in position in said respective first and second recesses of said connector.

5,549,409

RECEIVING MEMBER FOR A PLEDGE LOCK OF A SHOPPING TROLLEY

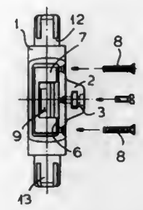
Horst Merchel, Bietigheim-Bissingen, Germany, assignor to Vendoret Holding S.A., Luxembourg-Herperange, Luxembourg

Filed Jun. 10, 1994, Ser. No. 258,977

Claims priority, application Germany, Jun. 11, 1993, 9308648 U

Int. Cl.[6] F16B *2/04*

U.S. Cl. 403—306 **5 Claims**



1. In combination, a pledge-lock assembly mounted on a handle of a cart, said handle having two hollow inner ends coaxial with and spaced from one another, each of said inner ends being formed with a respective inner surface, said pledge-lock assembly comprising:

a body recessed between said inner ends and having opposite sides, each side facing the respective inner end of said handle;

means forming a cavity on said body;

a pledge lock means for locking said cart to another cart, said pledge lock means mounted in said cavity; and

a pair of pins each mounted on the respective side of said body and extending laterally outwardly in opposite directions into the respective inner ends of the handle, each of said pins being formed with a respective outer pin head extending along a respective pin axis, so that said pin heads are coaxial, each of said pin heads having a respective outer surface complementary to the respective inner surface of the inner end of the handle.

5,549,410

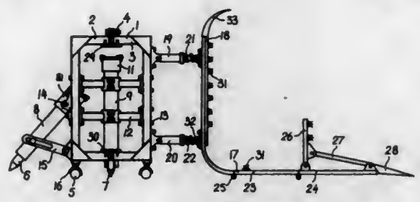
PORTABLE VEHICLE BARRIER

Vladmir Beryozkin, 3 Stephen Ct., New City, N.Y. 10956, and Alexander Rudshteyn, 2060 Ocean Ave., Brooklyn, N.Y. 11235

Filed Sep. 29, 1994, Ser. No. 314,783

Int. Cl.[6] E01F *13/00*

U.S. Cl. 404—6 **9 Claims**



1. A vehicle barrier for preventing unauthorized entry of a vehicle to a designated area, comprising a frame; penetrating means mounted on said frame and engageable into a ground so as to prevent movement of the barrier upon impact by an unauthorized vehicle; means for puncturing tires of an unauthorized vehicle provided on said frame; means arresting the unauthorized vehicle on the frame when the vehicle enters the barrier; and means for allowing said frame to move on a road surface so that the barrier can be installed at the desired location.

5,549,411

MANHOLE COVER FRAME SPACING ARRANGEMENT

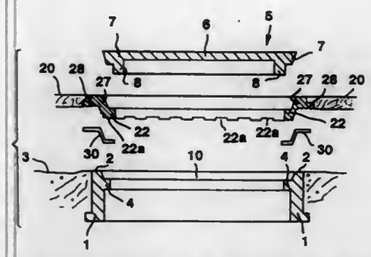
David J. D. Hawkins, Claremont, South Africa, assignor to CSR Limited, South Wales, Australia

Filed Sep. 16, 1994, Ser. No. 307,310

Claims priority, application South Africa, Sep. 24, 1993, 93/7067; Australia, Aug. 23, 1994, PM7622

Int. Cl.[6] E02D *29/14*

U.S. Cl. 404—25 **7 Claims**



1. A spacer arrangement for use in raising the height of a manhole cover frame, including at least one base spacer element and at least one upper side extension element, said at least one base spacer element being adapted to be located within said manhole frame with said at least one extension element extending upwardly relative thereto, said arrangement being adapted so as to receive a manhole cover; an underside surface of said at least one base spacer element including a plurality of downwardly directed projections and an outer side surface of said at least one base spacer element between said underside surface and a topside surface of said at least one base spacer element including a plurality of outwardly directed projections, said downwardly directed projections and said outwardly directed projections being adapted for stabilizing at least said at least one base spacer element.

5,549,412

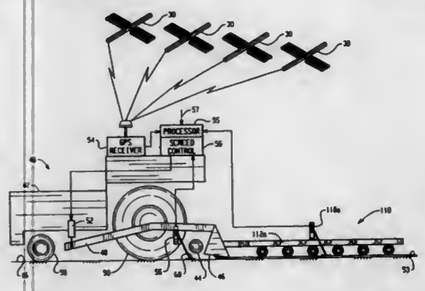
POSITION REFERENCING, MEASURING AND PAVING METHOD AND APPARATUS FOR A PROFILER AND PAVER

Kerry Malone, Charleston, Ill., assignor to Blaw-Knox Construction Equipment Corporation, Matton, Ill.

Filed May 24, 1995, Ser. No. 449,075

Int. Cl.[6] E01C *19/22*

U.S. Cl. 404—84.1 **33 Claims**



1. A road working apparatus for use with a transmitter fixed relative to the surface of the earth, said road working apparatus comprising:

a movable vehicle;

a leveller disposed on the vehicle, said leveller forming a mat of material on a base surface and said mat of material having an upper surface;

a first receiver on said vehicle receiving a positioning signal from said transmitter and generating position information expressing the position of the leveller with respect to the earth;

a leveller controller for controlling the leveller; and

means for providing base surface profile information to said leveller controller, wherein said leveller controller controls said leveller based upon said base profile information and said position information.

5,549,413

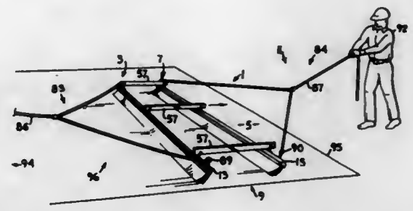
MULTI-USE CONCRETE FINISHING APPARATUS

Gary A. Bolden, 4530 Coventry La. NE., Cedar Rapids, Iowa 52402

Filed Jan. 3, 1995, Ser. No. 368,042

Int. Cl.[6] E01C *19/43*

U.S. Cl. 404—93 **15 Claims**



2. An apparatus for finishing fleshly poured concrete flatwork, comprising:

(a) texturing means for texturing the surface of the flatwork; said texturing means including a pair of brush assemblies spaced parallel to each other such that said brush assemblies are displaced in tandem relative to the flatwork;

(b) mounting means for mounting said texturing means; said mounting means including a plurality of pairs of first brackets attached to a first one of said pair of brush assemblies, a plurality of pairs of second brackets attached to the other one of said pair of brush assemblies; and a plurality of spacers spaced parallel to each other, each of said plurality of spacers having a first end connected to a respective pair of said plurality of pairs of first brackets and the other end connected to a respective pair of said plurality of pairs of second brackets;

(c) control means for automatically controlling an angular orientation of said texturing means relative to the surface of the flatwork; and

(d) displacing means for displacing said texturing means relative to the flatwork.

5,549,414

ROAD-SURFACING VEHICLE

Godfrey J. Boxall, Wilton, and David N. Kilner, Shipley, both of, United Kingdom, assignors to Shell Oil Company, Houston, Tex.

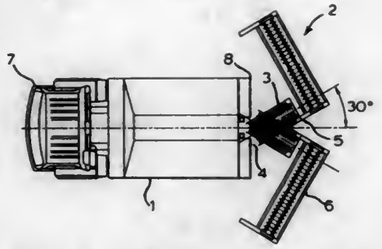
Filed Feb. 27, 1995, Ser. No. 360,808

Claims priority, application European Pat. Off., Jun. 30, 1992, 92306028

Int. Cl.[6] E01C *19/46*

U.S. Cl. 404—101 **4 Claims**

1. A road-surfacing vehicle having an articulated distribution head (2) which comprises material transfer means (3) having first and second ends (4, 5), and a laying box (6), wherein the first end (4) of the material transfer means (3) is pivotally mounted on the vehicle and the second end (5) is connected to the laying box (6) such that the laying box (6) is displaced laterally relative to the



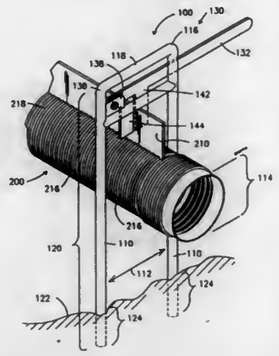
material transfer means (3); and means (11, 16) for controlling the degree of articulation of the material transfer means (3) relative to the vehicle.

5,549,415

SEPTIC TANK DRAINFIELD INSTALLATION DEVICE AND METHOD

Kelvin T. Evans, Orange City, Fla., assignor to Dixie Septic Tank, Inc., Orange City, Fla.

Filed Jun. 5, 1995, Ser. No. 464,971
Int. Cl.[6] E02B *11/00*
U.S. Cl. 405—43 **20 Claims**



1. A method for installing an on-site sewage treatment drainfield comprising the steps of:

positioning a first set of pipe supporting devices, each device having means for removably clamping to a pipe upper portion for bolding the pipe in suspended relation above an absorption area grade surface, the absorption area to be filled with an aggregate, each device further having anchoring means for anchoring the devices to the grade surface in a desired alignment for positioning pipe generally horizontally across the absorption area;

providing a first pipe section, each pipe section having perforations spaced longitudinally along the pipe section, the perforations spaced along a periphery of the pipe section, the pipe section further having a radially extending member extending from an upper portion therefrom, the upper portion opposing the effluent holding portion, the member dimensioned to be received by the clamping means;

clamping each device to the pipe member for supporting the first pipe section by the pipe supporting devices, the devices positioned in spaced relation to each other, the pipe section held at upper pipe portions displaced along the pipe section, the upper portion within an upper semicircular pipe portion in cross-section;

adjusting the supporting device for positioning the first pipe at a desired height above the grade surface;

positioning a second set of pipe supporting devices adjacent the first pipe, the second device set positioning substantially the same as the first device set positioning;

interconnecting first and second pipe sections;

clamping the second pipe member for supporting the second pipe section by the second set of pipe supporting devices in substantially the same manner as supporting the first pipe section;

positioning additional pipe sections for interconnecting with adjacent pipe for forming a drainfield system having pipe sections in fluid communication with each other;

pouring aggregate to a desired level for providing an absorption bed in fluid communication with the drain field pipe sections, the devices maintaining the pipe sections at a desired horizontal and vertical position within the absorption area;

releasing the pipe members from the clamping means thereby placing each pipe section out of communication with the devices; and

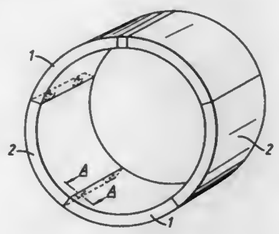
removing the devices from their position by pulling each device generally upward out of anchoring engagement with the grade surface for providing a drainfield in fluid communication with an absorption bed of aggregate surrounding the pipe system of the drainfield.

5,549,416

DEVICE FOR JOINING TWO MEMBERS TOGETHER

Norman S. Thomas, Northwich, and Christopher R. Smith, Tamworth, both of, England, assignors to C.V. Buchan Limited, Cheshire, England

Filed Nov. 2, 1994, Ser. No. 333,327
Claims priority, application United Kingdom, Nov. 2, 1993, 9322603
Int. Cl.[6] E21D *11/00;* **F16B** *19/00;21/00*
U.S. Cl. 405—153 **10 Claims**



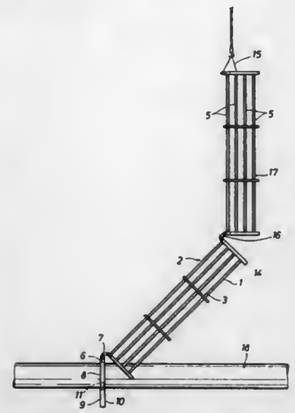
1. A device for joining two members together at facing surfaces, the device comprising a first sleeve for fitting in one of said members to open at its facing surface, a second sleeve for fitting in the other of said members to open at its facing surface, and a connecting pin having a longitudinal axis arranged to fit in both sleeves, said sleeves each having a bore with internal ribbing and said connecting pin having external ribbing, the ribbing of said connecting pin and/or the ribbing of the bore of at least one of said sleeves being of resilient material and extending in a substantially parallel direction at an inclined angle to said longitudinal axis of said connecting pin when the pin is, in use, inserted in the bores, and the bore of said at least one sleeve being of greater cross-sectional area in one dimension than the other bore, in which other bore said connecting pin can engage as a tight fit, whilst being able to engage in said bore of said at least one sleeve and traverse it in said one dimension.

5,549,417

SUBSEA PIPELINE SHROUD

Gwo-Tarng Ju; Eric S. Goudy, and Ray R. Ayers, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 19, 1993, Ser. No. 155,394
Int. Cl.[6] E02D *5/60;31/00*
U.S. Cl. 405—211 **6 Claims**



1. A shroud for installation on a subsea pipeline, the shroud comprising:

a) at least two parallel and essentially vertical sides the at least two essentially vertical sides capable of creating disturbances in a fluid flowing normal to the axis of the parallel sides;

b) a connecting member between the essentially vertical sides, attached to the essentially vertical sides, capable of supporting the shroud on the subsea pipeline, and the essentially vertical sides effective to reduce the amplitude of vortex induced vibrations of the pipeline created by horizonal water currents perpendicular to the axis of the pipeline, when the shroud is supported on the subsea pipelines;

c) a clamp hingably connected to an end of the shroud wherein the clamp is capable of latching onto the pipeline when the shroud is suspended vertically over the pipeline; and

d) a hinged connection to a second shroud at a second end of the shroud.

5,549,418

EXPANDED POLYSTYRENE LIGHTWEIGHT FILL

John P. Devine, and John H. Holmquest, both of Watertown, S. Dak., assignors to Benchmark Foam, Inc., Watertown, S. Dak.

Filed May 9, 1994, Ser. No. 240,117
Int. Cl.[6] E02D *17/18*
U.S. Cl. 405—258 **19 Claims**

1. A structure formed on a sloping earthen surface, the structure comprising:

an abutment constructed on the earthen surface, the abutment and the earthen surface defining a cavity;

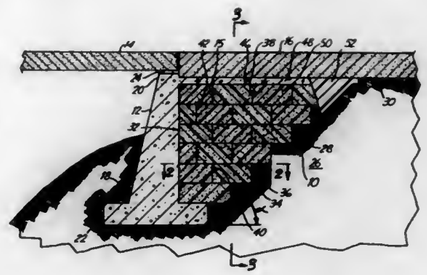
a bridge placed on the abutment so that an end of the bridge rests on the abutment, the bridge having a top surface over which vehicles are driven;

a plurality of foam blocks stacked and connected together in the cavity to a desired height;

a moisture barrier layer placed over the stack of foam blocks;

a subbase layer placed over the moisture barrier layer; and

a pavement structure formed on the subbase layer, the foam blocks support the pavement structure and retain a top surface of the pavement structure substantially coplanar with the top surface of the bridge.



5,549,419

GROUTING LIQUID FOR INJECTION INTO A GROUND

Kenji Kayahara, Yokohama, Japan, assignor to Kyokado Engineering Co., Ltd., Tokyo, Japan

Filed Oct. 20, 1994, Ser. No. 326,500
Claims priority, application Japan, Oct. 20, 1993, 5-284180
Int. Cl.[6] E02D *3/12*
U.S. Cl. 405—263 **4 Claims**

1. A suspension-type grouting liquid for injection into a ground, comprising:

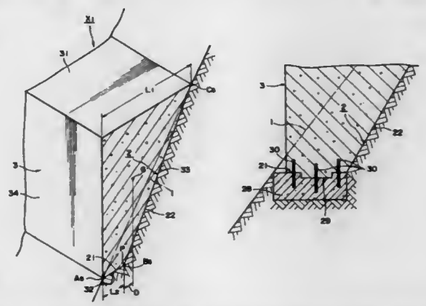
sodium aluminate having a mol ratio of 10 or more; and slag, wherein the mol ratio of sodium aluminate is defined as molar concentration of Na_2O/molar concentration of Al_2O_3.

5,549,420

RETAINING WALL STRUCTURE AND METHOD OF CONSTRUCTING SAME

Norio Nakayama, 5024, Nishiueta-cho, Takamatsu-shi, Kagawa-ken, Japan

Filed Apr. 14, 1995, Ser. No. 421,785
Claims priority, application Japan, Apr. 22, 1994, 6-084747
Int. Cl.[6] E02D *29/02;* **E02B** *3/06*
U.S. Cl. 405—286 **10 Claims**



1. A retaining wall structure constructed on a cut earth surface having a longitudinally extending horizontal portion and a sloped portion extending obliquely upward from one side of said horizontal portion,

said structure comprising a bottom surface received on said horizontal portion and having a transverse length of L_2, a top surface opposite said bottom surface and having a transverse length of L_1 which is greater than L_2, an outside surface extending a vertical distance H between said top and bottom surfaces, and an inclined surface opposite said outside surface and received on said sloped portion, wherein L_1, L_2 and H have the following relationship:

$L_1 \geqq 3L_2$ and

$H \geqq 5L_2$

said structure having sufficient weight to serve as a gravity retaining wall, and

said structure having a center of gravity at a position so that part of the weight of said structure is imposed upon said sloped portion.

10. A method of constructing a retaining wall on sloped land, comprising cutting said sloped land to form a cut surface having a longitudinally extending horizontal portion and a sloped portion extending obliquely upward from one side of said horizontal portion, and forming a retaining wall on said cut surface so that said wall includes a bottom surface received on said horizontal portion and having a transverse length of L_2, a top surface opposite said bottom surface and having a transverse length of L_1 which is greater than L_2, an outside surface extending a vertical height H between said top and bottom surfaces, and an inclined surface opposite said outside surface and received on said sloped portion, wherein L_1, L_2 and H have the following relationship:

$L_1 \geqq 3L_2$ and

$H \geqq 5L_2$

and said wall having a center of gravity at a position so that part of the weight of said wall is imposed upon said sloped portion.

5,549,421

METHOD AND APPARATUS FOR CONVEYING ICE LUMPS

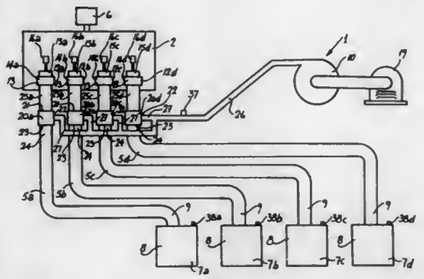
Robert C. Reinhardt, Shannon, and Richard M. Humphreys, Mount Merrion, both of, Ireland, assignors to EOLAS-The Irish Science & Technology Agency, Dublin, Ireland

Division of Ser. No. 726,679, Jul. 8, 1991, Pat. No. 5,354,152. This application Jul. 12, 1994, Ser. No. 274,017

Claims priority, application Ireland, Jul. 6, 1990, 2451/90; Jul. 6, 1990, 2454/90; Mar. 4, 1991, 704/91; Apr. 24, 1991, 1362/91

Int. Cl.[6] B65G *53/06*

U.S. Cl. 406—3 **15 Claims**



1. Conveying apparatus for conveying ice lumps from an ice lump source to a remote location, the conveying apparatus comprising:

a conveying conduit for conveying the ice lumps from the ice lump source to the remote location, the conveying conduit having an upstream end and a downstream end,

a connecting means for connecting the upstream end of the conveying conduit to the ice lump source,

a communicating means for communicating the conveying conduit with a conveying medium source for conveying the ice lumps through the conveying conduit,

a means for alternately supplying a batch of ice lumps and conveying medium to the conveying conduit so that on the batch of ice lumps being delivered into the conveying conduit, the conveying medium is then supplied to the conveying conduit for conveying the batch of ice lumps to the remote location, and

a means for determining when a batch of ice lumps has been conveyed to the remote location, the means for alternately supplying a batch of ice lumps and conveying medium being responsive to the means for determining when a batch of ice lumps has been conveyed to the remote location, for supplying the next batch of ice lumps to the conveying conduit on it being determined that a batch of ice lumps has been delivered to the remote location.

5,549,422

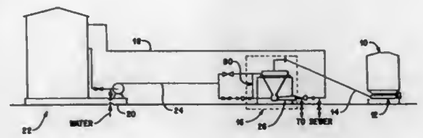
AUTOMATIC WATER FLUSHING METHOD FOR A HYDRATOR

James M. Shepard, Hockessin, Del., assignor to General Chemical Corporation, Parsippany, N.J.

Division of Ser. No. 94,259, Jul. 19, 1993, Pat. No. 5,447,394. This application Apr. 7, 1995, Ser. No. 418,813

Int. Cl.[6] B65G *53/00*

U.S. Cl. 406—48 **6 Claims**



1. A method for transferring a dry particulate chemical from a source, introducing said dry chemical into a liquid carrier medium, and forming a slurry solution, comprising the steps of:

(a) connecting to said source an apparatus comprising:

a solvation hopper formed from a wall member, said wall member defining a hopper chamber;

a hopper inlet;

a hopper outlet opposite to said hopper inlet;

a plurality of spray nozzles disposed in said hopper inlet of said solvation hopper;

means for supplying solvation liquid to said spray nozzles;

a chemical inlet pipe passing through said hopper inlet to connect said hopper chamber to said source; and

a liquid driven eductor having a liquid inlet pipe, a liquid outlet pipe, and a suction opening, said suction opening being sealingly connected to said hopper outlet,

wherein when liquid flows through said liquid driven eductor a suction is created within said chemical inlet pipe, and wherein said spray nozzles are oriented such that said solvation liquid flowing through the spray nozzles flushes said hopper chamber;

(b) supplying a flow of said solvation liquid to said liquid driven eductor to draw the dry chemical from said source into said solvation hopper;

(c) supplying a flow of liquid as said solvation liquid to the spray nozzles such that the dry chemical in the hopper is mixed with the said solvation liquid to form the slurry solution which is removed from said solvation hopper through said suction opening of said liquid driven eductor;

(d) recovering said chemical from said eductor outlet pipe in said solvation liquid, wherein said liquid comprises a combination of the solvation liquid introduced through said spray nozzles and the solvation liquid supplied to said eductor; and

(e) flushing said hopper chamber automatically and periodically with water to remove accumulations of said chemical while reducing flow of the dry particulate chemical into said solvation hopper from said source.

5,549,423

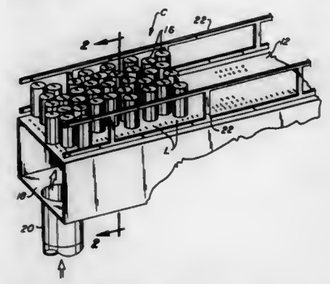
DAMPERLESS CONTROLLED SPEED AIR CONVEYOR

Ronald A. Lenhart, Lakewood, Colo., assignor to Simplimatic Engineering Company, Lynchburg, Va.

Continuation-in-part of Ser. No. 80,508, Jun. 24, 1993, Pat. No. 5,478,173. This application Jun. 6, 1995, Ser. No. 465,839

Int. Cl.[6] B65G *51/03*

U.S. Cl. 406—86 **18 Claims**



13. An air conveying apparatus comprising:

a coverless conveyor surface having a center, first and second opposite side edges, and an underside;

a plurality of upright lightweight containers, each having a cylindrical side wall extending from a bottom surface thereof, said bottom surfaces being positioned above said conveyor surface; and

means for creating downstream and upstream force vectors of air above said conveyor surface which support said plurality of upright lightweight containers above said conveyor surface, the upstream and downstream force vectors of air producing a first low pressure area under each of said plurality of upright lightweight containers to maintain them in an upright position for movement at a controlled speed from an upstream location to a downstream location without tipping.

5,549,424

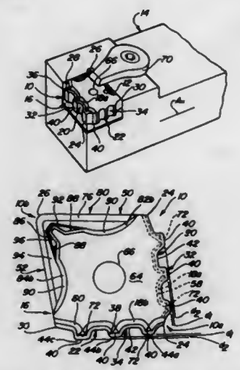
INDEXABLE THREADING AND TURNING INSERT WITH PRESSED-IN CHIP BREAKERS

Thomas Bernadic, Madison Heights, and Steven F. Wayne, Rochester Hills, both of Mich., assignors to Valenite Inc., Madison Heights, Mich.

Filed Nov. 25, 1994, Ser. No. 344,914

Int. Cl.[6] B23B *27/06*

U.S. Cl. 407—100 **22 Claims**



1. An indexable threading and turning insert for selectively providing threading and turning of a workpiece, comprising:

an insert body having a first side and an opposite second side, said insert body having a first corner and an opposite second corner, said insert body having a first insert face and a second insert face mutually adjoining said first corner, and a third insert face and a fourth insert face mutually adjoining said second corner;

a first cutting edge formed at an intersection of said first insert face and said first insert side;

a second cutting edge formed at an intersection of said second insert face and said second insert side;

a third cutting edge formed at an intersection of said third insert face and said first side;

a fourth cutting edge formed at an intersection of said fourth insert face and said second side; and

wherein said first cutting edge and said first insert face provide a contour for providing a first thread form on a workpiece, said second cutting edge and said second insert face provide a contour for providing a second thread form on a workpiece, and said third cutting edge and said fourth cutting edge provide a turning edge for material removal on a workpiece.

5,549,425

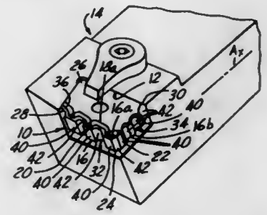
INDEXABLE THREADING INSERT WITH PRESSED-IN CHIP BREAKER

Thomas Bernadic, Madison Hts., and Tony Lowe, Royal Oak, both of Mich., assignors to Valenite Inc., Madison Hts., Mich.

Filed Jun. 29, 1994, Ser. No. 268,899

Int. Cl.[6] B23B *27/16*

U.S. Cl. 407—114 **11 Claims**



1. An indexable threading insert with pressed-in chip breaker for providing a thread form on a workpiece, comprising:

an insert body having a first side and an opposite second side, said insert body further having a first corner, a second corner opposite said first corner, a third corner and a fourth corner opposite said third corner, said insert body having a pair of insert sidewalls which mutually adjoin said second corner, said insert body having a first insert face and a second insert face which mutually adjoin said first corner, a first cutting edge being formed at an intersection of said first insert face and said first side, a second cutting edge being formed at an intersection of said second insert face and said second side, said first cutting edge and said first face being provided with a predetermined contour for providing a predetermined thread form on a workpiece, said second cutting edge and said second insert face having said predetermined contour;

a first land inward of said first cutting edge and sloping at a predetermined rake angle toward said second side from said first edge, a second land inward of said second cutting edge and sloping at the predetermined rake angle toward said first side from said second edge, said predetermined rake angle being equal and opposite to an angle of inclination at which the insert is intended to be mounted for use, whereby when so mounted, portions of the land surface are at neutral rake when engaging the workpiece;

a first chip breaker integrally connected with said first side of said insert body, said first chip breaker comprising a first raised island comprising:

a first incident face having said predetermined contour, said first incident face being recessed a predetermined distance from said first cutting edge, thereby defining a constant land width; and

a first planar face contiguously adjoining said first incident face, said first incident face being oriented at a predetermined incident angle with respect to said first planar face; and

a second chip breaker integrally connected with said second side of said insert body, said second chip breaker comprising:

a second raised island comprising a second incident face having said predetermined contour, said second incident face being recessed said predetermined distance from said second cutting edge, thereby defining a constant land width; and

a second planar face continuously adjoining said second incident face, said second incident face being oriented with respect to said second planar face at said predetermined incident angle, said first planar face being parallel with respect to said second planar face;

wherein said insert body, said first chip breaker and said second chip breaker are collectively inversely symmetrical with respect to a diagonal between said first and second corners.

5,549,426

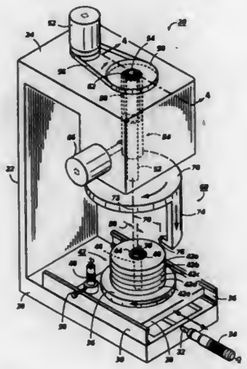
APPARATUS FOR FORMING SEVERAL POLYGONS TOGETHER

James M. Wilson, Glendora, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 9, 1994, Ser. No. 303,810

Int. Cl.[6] B23B *5/00*

U.S. Cl. 409—138 **1 Claim**



1. An apparatus for machining curved facets comprising:

a fixture;

a cutter rotatably mounted on said fixture for rotating about a first given axis;

means for rotating and gradually moving said cutter in a direction generally parallel to the first given axis during a cutting operation;

a first plate;

means for movably mounting said first plate onto said fixture for a movement in a direction generally perpendicular to the first given axis into and out of a cut operating position;

means for fixing said first plate in a cut operating position;

a second plate;

means for rotatably mounting said second plate onto said first plate for rotating about a second given axis;

said second given axis being generally parallel to the first given axis;

said second plate having a means for holding blank members on said second plate in such a manner that the center of the blank members coincide with the second given axis;

means for fixing said second plate in a cut operating position; and

said first plate and second plate are being so constructed and arranged that when in their respective cut operating position, a peripheral portion of the blank member being held by said second plate will be cut by said cutter during its cutting operation.

5,549,427

DEVICE FOR TRANSFERRING A PRESSURE MEDIUM

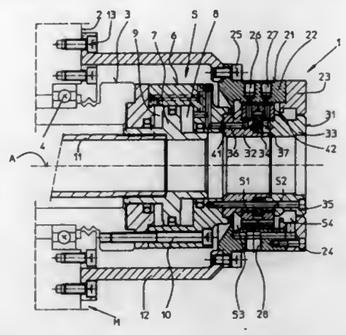
Karl Hiestand, Mühlweg 2, D-88618 Pfullendorf, Germany

Filed Dec. 2, 1994, Ser. No. 349,504

Claims priority, application Germany, Dec. 2, 1993, 43 41 167.3

Int. Cl.[6] B23C *5/26;* **B23B** *31/30;* **F01B** *31/10*

U.S. Cl. 409—233 **18 Claims**



1. A device for transferring a pressure medium, said device comprising:

a stationary outer component with first pressure medium channels;

an inner, rotatably driveable component located inside said stationary outer component and being radially spaced at a distance from said stationary outer component so that a space is defined between said inner component and said stationary outer component;

said inner component having second pressure medium channels;

said stationary outer component connected to a housing of a machine tool;

said inner component connected to a machine spindle of the machine tool rotatably supported within the housing;

a first intermediate member in the form of an annulus and a second intermediate member in the form of an annulus;

said first and second intermediate members positioned fixedly in said space between said inner component and said stationary outer component for bridging said distance between said inner component and said stationary outer component;

said first intermediate member having at least one first connecting channel and said second intermediate member having at least one second connecting channel, wherein said at least one first connecting channel connects one of said first pressure medium channels to one of said second pressure medium channels and wherein said at least one second connecting channel connects one of said first pressure medium channels to one of said second pressure medium channels;

said first intermediate member being laterally supported at one of said inner component and said stationary outer component so as to define two radially extending sealing gaps and being displaceable relative to the other of said inner component and said stationary outer component;

said second intermediate member being laterally supported at one of said inner component and said stationary outer component so as to define two radially extending sealing gaps; and

said second intermediate member displaceable relative to the other of said inner component and said stationary outer component.

5,549,428

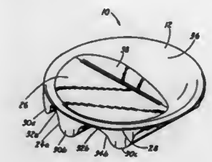
TRUCK BED LINER ANTI-SKID DEVICE

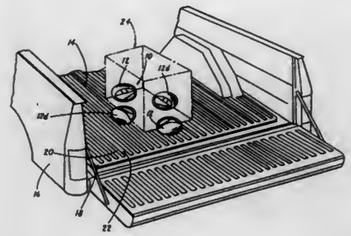
Ben R. Yeatts, Rt. 2, Box 15-S.V., Paradise, Tex. 76073

Continuation of Ser. No. 796,092, Nov. 20, 1991, abandoned, which is a continuation-in-part of Ser. No. 740,976, Aug. 6, 1991, abandoned. This application Jun. 15, 1994, Ser. No. 259,844

Int. Cl.[6] B60P *7/08;7/135*

U.S. Cl. 410—94 **2 Claims**





1. A method for storing cargo in a bed of a truck when a bed liner is disposed in the bed of the truck with the bed liner having an upper surface with a plurality of liner ribs, each liner rib extending a distance upwardly from the upper surface of the bed liner, the liner ribs being spaced a distance apart forming a liner recess between each adjacent pair of liner ribs, the method comprising the steps of:

providing an anti-skid device constructed of an anti-skid material and having an upper surface, a lower surface, and at least two device recesses formed in the lower surface of the anti-skid device, each device recess being sized to accommodate a portion of one of the liner ribs of the bed liner and the upper surface of the anti-skid device being adapted to accommodate a portion of the cargo to be stored in the bed of the truck;

positioning the anti-skid device on the bed liner with a portion of one of the liner ribs being disposed in each of the device recesses; and

positioning the cargo in the bed of the truck with a portion of the cargo being disposed on the upper surface of the anti-skid device, the anti-skid device frictionally engaging a portion of the bed liner and frictionally engaging a portion of the cargo for substantially preventing movement of the cargo during transportation.

5,549,429

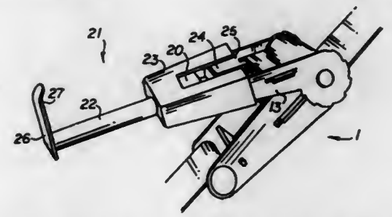
RATCHET-OPERATING TOOL FOR STRAP-TIGHTENING MECHANISM

Delores A. Sergent, 11114 Oak Creek Dr., Lakeside, Calif. 92040

Continuation of Ser. No. 226,774, Apr. 12, 1994, abandoned. This application May 4, 1995, Ser. No. 434,675

Int. Cl.[6] G05G *1/00;* **B25F** *1/00*

U.S. Cl. 410—96 **5 Claims**



1. The combination of a ratcheted strap-tightening mechanism having a hand-operable cranking lever and a resiliently biased ratchet-locking member, and

a manipulating tool, said tool comprising:

a rod;

a socket having a proximal end attached at a first end of said rod and a distal end opposite said proximal end, said socket comprising four flat joined sides defining a channel shaped and dimensioned to axially engage over said lever; and

a tongue projecting from a second end of said rod opposite said first end, said tongue being shaped and dimensioned to leveredly bear against said resiliently biased member and pry it away from a locking position to release said mechanism;

wherein at least two opposite ones of said sizes taper inwardly down axially from an opening at said distal end toward said first end of the rod, whereby said socket can be securely engaged over a plurality of levers of different sizes.

5,549,430

SELF-ATTACHING FASTENER AND INSTALLATION DIE

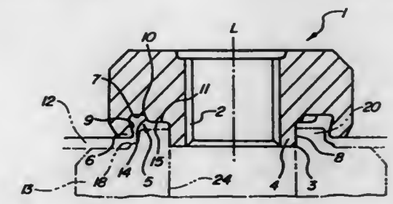
Takao Takahashi, Machida, and Niroshi Takehara, Hachioji, both of, Japan, assignors to Multifastener Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 011,439, Jan. 29, 1993, Pat. No. 5,340,251. This application Aug. 3, 1994, Ser. No. 285,201

Claims priority, application Japan, Jan. 31, 1992, 4-45997; Jan. 31, 1992, 4-45998; Feb. 25, 1994, 6-051022

Int. Cl.[6] F16B *37/04;* **B23P** *11/00*

U.S. Cl. 411—179 **20 Claims**



1. A self-attaching nut fastener for attachment to a plastically deformable metal panel, said fastener having a central pilot portion, a flange portion generally surrounding said pilot portion having a generally flat annular panel-supporting end face, and an annular groove defined in said flange end face surrounding said pilot, said groove having opposed inner and outer side walls and a bottom wall, said outer groove side wall generally inclined towards

said pilot to define a restricted opening to said groove bottom wall, said groove bottom wall including a plurality of spaced protuberances, said protuberances extending circumferentially around said pilot and radially outwardly from adjacent said pilot to a midportion of said groove bottom wall, spaced from said groove outer wall, to direct panel metal radially outwardly beneath said inclined groove outer wall as said panel is deformed in said groove against said bottom wall as said nut fastener is attached to said panel.

5,549,431

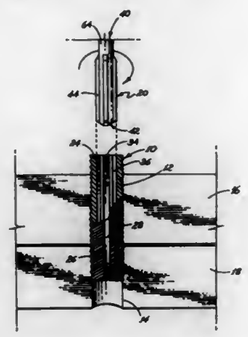
TUBE SCREW FASTENER

Ian A. Royle, USA Technology 2000, 12503 Exchange Dr., Suite 536, Stafford, Tex. 77477

Filed Jan. 3, 1995, Ser. No. 367,738

Int. Cl.[6] F16B *23/00;35/00*

U.S. Cl. 411—389 **10 Claims**



1. A threaded tubular fastener in combination with a rotary driver device configured to impart torque to said fastener comprising:

a) a tubular fastener comprising;

i) a generally cylindrical body having an external surface with a main external thread formed thereon with a plurality of external axial flutes:

ii) an elongated central through-bore; an

iii) engaging means for engaging said rotary driver positioned in said through-bore comprising a plurality of internal axial slots;

b) rotary driver means for threading said tubular fastener into apertures of a first work piece and second work piece-bore comprising:

i) a torque applying means at one end; and

ii) an interengaging means at an other end comprising a plurality of axial ribs for engagement with said internal axial slots, wherein the said threaded tubular fastener is employed to fasten the first work piece to the second work piece.

5,549,432

COMPOSITE COUPLING NUT AND METHOD OF MAKING SAME

Phillip G. Reneau, Hamilton, Ind., assignor to Winzeler Stamping Company, Montpelier, Ohio

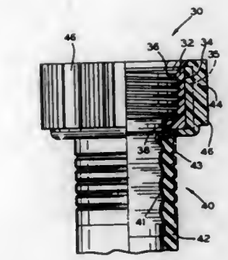
Filed Feb. 7, 1995, Ser. No. 385,054

Int. Cl.[6] F16B *37/08;* **F16L** *35/00*

U.S. Cl. 411—432 **7 Claims**

1. A composite coupling nut comprising:

an annular body portion formed of a substantially rigid material having an outer peripheral surface provided with a series of spaced apart parallel grooves formed therein and an inner



surface having threads formed therein, said grooves having an annular cross-section and an opening wherein the opening is smaller than a diameter of the cross-section; and

an outer annular layer of an elastomeric material formed in intimate juxtaposed relation on the outer peripheral surface of said body portion and adapted to be disposed within the grooved formed in the outer peripheral surface of said body portion to increase the grasping coefficient.

5,549,433

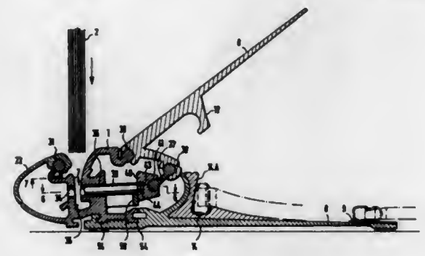
BINDING EQUIPMENT

Rodger J. Byrne, Niederdonkerstrasse 103, 40667 Meerbusch, Germany

Filed Sep. 15, 1994, Ser. No. 306,740

Int. Cl.[6] B42B *5/10*

U.S. Cl. 412—39 **24 Claims**



1. Apparatus for binding a plurality of sheets having aligned holes with a binding wire means comprising two bending elements which are pivotally connected to one another, one of said bending elements having a recess means for partially accommodating the binding wire means, the other of said bending elements having a projection such that upon placing the binding wire means in said recess means with the binding wire means passing through said holes in said sheets and effecting pivotal movement between said two bending elements, said projection engages and bends said binding wire means to thereby effect binding of said plurality of sheets by said binding wire means, said one binding element being designated a base plate means and said other binding element being designated a pressure lever plate, said pressure lever plate being pivotally mounted on said base plate means by pivot means, said pressure lever plate being pivotable between an unactuated position in which said projection on said pressure lever plate is spaced from said binding wire means as said binding wire means is disposed in said recess means and an actuated position in which said projection on said pressure lever plate engages said binding wire means as said binding wire means is disposed in said recess means to effect binding of said sheets by said binding wire means, a housing means joined to said base plate means, and punch means on said housing means operable to punch holes in said plurality of sheets, said pressure lever plate upon being pivoted from said

unactuated position to said actuated position being operable to actuate said punch means to effect punching of said holes in said sheets.

5,549,434

CASSETTE FEED SYSTEM AND METHOD

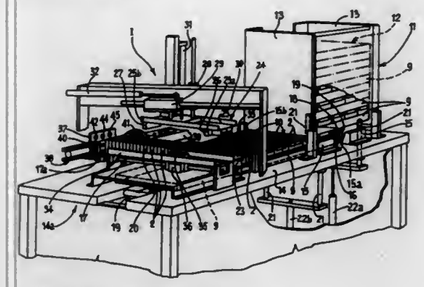
Luciano Perego, Milan, Italy, assignor to Tapematic, U.S.A., Inc., Orlando, Fla.

Continuation of Ser. No. 58,486, May 6, 1993, Pat. No. 5,393,181. This application Feb. 28, 1995, Ser. No. 395,671

Claims priority, application Italy, May 8, 1992, MI92A1098

Int. Cl.[6] B65G *59/06;65/38*

U.S. Cl. 414—416 **6 Claims**



1. A tape cassette feed unit comprising:

a feeder guiding a row of cassettes;

advance means associated with said feeder for moving the cassette row towards an output end of said feeder;

transfer means for picking up one of the cassettes from said row and putting it onto an output conveyor;

a storage station engaging a plurality of trays, each said tray carrying a plurality of cassette rows;

a track extending from said storage station towards said feeder;

pusher means for moving the individual trays along said track, from said storage station to said linear feeder;

stop means for stopping the progress of the individual trays on the track when one of said cassette rows reaches a predetermined pick-up position; and

at least one transport arm moving between a grasp position in which it picks up a cassette row arranged in a pick-up position, to a deposit position in which the cassette row is deposited onto said feeder.

5,549,435

CHAMBER AND A CHAMBER COMBINATION FOR A VACUUM FACILITY AND A METHOD FOR TRANSPORTING THROUGH AT LEAST ONE WORKPIECE

Roman Schertler, Wolfurt, Austria, assignor to Balzers Aktiengesellschaft, Liechtenstein

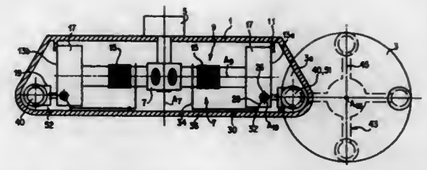
Filed Oct. 5, 1993, Ser. No. 131,539

Claims priority, application Switzerland, Oct. 6, 1992, 3120/92

Int. Cl.[6] B65G *49/07*

U.S. Cl. 414—217 **30 Claims**

1. A vacuum chamber arrangement with a transport chamber for transporting at least one workpiece under vacuum condition, said transport chamber comprising a transport device; at least one workpiece holder; at least two openings in a wall of said chamber for handling a workpiece therethrough, wherein said transport device is movable in said chamber along a first plane and is driven by a transport drive, and said at least one workpiece holder is swivellably mounted on said transport device and swivellable along a second plane which intersects said first plane and driven by



a swivel drive; and said transport device and said holder are operatively arranged so that said holder is movable by said transport device adjacent to at least one of said openings and is swivellable through said at least one opening.

5,549,436

TRACTOR FOR TOWING AIRCRAFT THROUGH ITS CENTRAL FRONT STEERING WHEELS, WHICH MAY BE LIFTED OR NOT

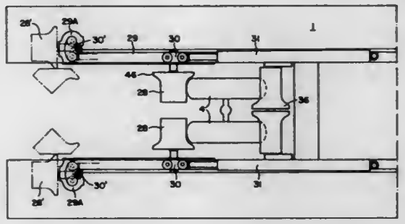
Mauro Fresia, Millesimo, Italy, assignor to Fresia S.p.A., Italy

Filed Sep. 19, 1994, Ser. No. 308,737

Claims priority, application Italy, Sep. 20, 1993, GE93A0082

Int. Cl.[6] B60P *3/11*

U.S. Cl. 414—426 **15 Claims**



1. A tractor for towing an aircraft by means of two front steering wheels of the aircraft, said tractor (1) comprising a driver's cab (2); a framework comprising a recess (3) in which to lodge the front steering wheels (4) of the aircraft (5), said framework including an entrance for the front steering wheels to enter said recess; four wheels (6) having tires thereon, said wheels being mounted in front and rear pairs on two independent axles transverse to the tractor (1), with one pair comprising steering wheels for the tractor and the other pair comprising driving wheels for the tractor; and rollers (28, 36), for gripping the wheels (4) of the aircraft, lodged in the recess, characterized in that:

the driver's cab is located in a rear section and the recess (3) in a front section of the tractor (1),

two lateral idle front rollers (28) are connected to respective shafts on the tractor framework and extend inwardly, relative to the framework,

two slider members (30) are connected to the shafts of the idle front rollers (28),

the framework further comprises two lateral guides (29) in which the slider members (30) and shafts are movable, wherein the front end of each of said guides has a cam shaped deflection (29A) bent outwardly, relative to the framework, such that the front rollers (28) are inwardly directed when the sliders are running in a straight longitudinal section of the guides (29) and whereby the front rollers are outwardly moved in a 90° turn at the entrance to said recess (3), when the shafts enter the cam section (29A) of the guide, said tractor further comprising:

two first lateral, hydraulic fluid powered cylinders (31) for actuating movement of the slider members (30),

an idle rear roller (36) having its axis transverse to the tractor (1) and connected to the tractor framework by a first knuckle arm, said idle rear roller serving as a support for the aircraft wheels (4) and for removal of the aircraft wheels from the tractor,

two lateral levers (35), one end of which is connected to the knuckle arm of the idle rear roller (36) and the other end is connected by means of an articulated joint to the tractor framework (1),

two second hydraulic fluid powered cylinders (34) acting on the levers (35) as knock off pistons to push the idle rear roller (36) back and forth,

a first microswitch (37) triggered by the levers of the rear roller for blocking the wheels 4 of the aircraft against the rear roller (36),

control means (39 thru 45) on the tractor to enable positioning of the aircraft wheels (4) inside the recess of the tractor (1), such that they are blocked therein by the front (28) and rear idle rollers (36).

5,549,437

FORK LIFT TRUCK LOADING MECHANISM

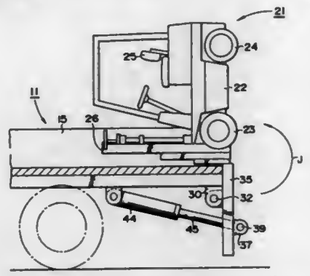
Mitsuhiro Kishi, Ashikaga, Japan, assignor to Nikken Corporation, Tokyo, Japan

Filed Dec. 9, 1994, Ser. No. 353,434

Claims priority, application Japan, Dec. 20, 1993, 5-344955; Jul. 18, 1994, 6-187814

Int. Cl.[6] B60P *1/16;3/06*

U.S. Cl. 414—462 **20 Claims**



1. A fork lift truck loading mechanism mounted on a movable truck for removably loading a fork lift truck onto the movable truck which said fork lift truck includes a pair of forwardly extending cantilevered forks, the loading mechanism comprising:

holding means which is supported by a chassis of the movable truck and reversibly turnable about a horizontal axis from a substantially horizontal position to a substantially upright position for removably receiving the forks of the fork lift truck and for holding the forks as said holding means is turned between said horizontal position and said upright position; and

rotary means interposed between said truck and said holding means for turning said holding means between said horizontal position and said upright position whereby the fork lift truck is removably loaded onto said movable truck by said turning of the holding means such that the fork lift truck overlies a truck storage area of the movable truck.

5,549,438

UNIVERSAL COVERED TRAILER

Benjamin T. Dwyer; Karen K. Dwyer, and Aaron P. Dwyer, all of P.O. Box 105, R.R. 1, Alexander, N. Dak. 58831

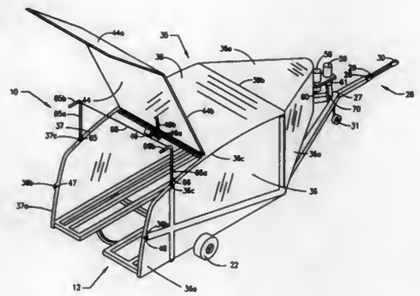
Filed Feb. 27, 1995, Ser. No. 394,736

Int. Cl.[6] B60P *3/10*

U.S. Cl. 414—559 **4 Claims**

1. A universal covered trailer comprising:

a frame having a plurality of longitudinal members and a plurality of cross members fixedly interconnecting said longitudinal members, for supporting a boat or other movable objects;



at least one wheeled axle;

a tongue means having a plurality of tubular sections, at least one of which is conventionally extendable and retractable within at least one other of said tubular sections for connecting to a prime mover, said tongue means fixedly attached to and extending forward of said frame;

a housing member having a top wall, two side walls and a bottom, each of said side walls having a forward portion which is tapered inwardly and attached forwardly to said other side wall, said housing member further having a door adapted to close over a back of said housing member, said housing member also having a pair of wall stabilizing members extendably disposed in slots in said side walls to substantially prevent said side walls from wobbling during the loading and unloading of the boat, said wall stabilizing members being extendable from and retractable in said slots in top edges of said side walls near a rear of said housing, each of said wall stabilizing members having a rod member and a cross piece fixedly attached to a top end of said rod member, said rod members being extendable from said slots with a flexible line being tightly drawn to and between said rod members to stabilize said side walls;

a means to load said boat into said trailer, and

a means to retract said extendable tubular sections of said tongue means.

5,549,439

COLLISION-FREE CONTROL SYSTEM FOR A MULTI-AXIALLY CONTROLLABLE MANIPULATOR

Ploem Sven, Kouwenberg 54, Cuijk, Netherlands

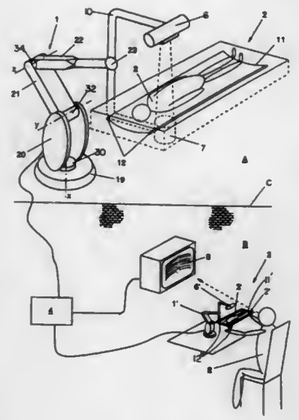
Filed Oct. 17, 1994, Ser. No. 290,791

Claims priority, application Netherlands, Feb. 17, 1992, 9200286

Int. Cl.[6] H05G *01/00*

U.S. Cl. 414—680 **15 Claims**

1. A collision-free control system comprising a multi-axially controllable manipulator having interconnected supporting arms which are movable by means of controllable actuators in such a way that a free end of the manipulator can be positioned spatially and moved into various positions, and control means for commanding the actuators, said control means comprising a miniature model made substantially to scale of the manipulator, said miniature model being operated manually and being equipped with a series of position transducers which are capable of delivering control signals for commanding the actuators in such a way that the manipulator and the miniature model thereof always assume identical positions, said control means (4, 5) also comprising a miniature model (3') of an object (3) to be treated with the manipulator (1), wherein the scale ratio of the miniature model (3') of the object (3) to be treated is greater than the scale ratio of the miniature model (1') of the manipulator (1) in order to form a collision-free safety zone in the immediate surroundings of the object (3) to be treated.



5,549,440

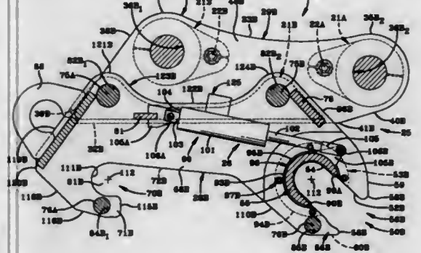
FAST-MAKE COUPLER FOR ATTACHING A WORK IMPLEMENT TO A PRIME MOVER

Rifka Cholakon, Stow; Tracy C. Errera, Mogadore, and Joseph R. Zeno, Cuyahoga Falls, all of Ohio, assignors to ACS Industries, Inc., Kent, Ohio

Filed Dec. 28, 1994, Ser. No. 365,536

Int. Cl.[6] E02F *3/32*

U.S. Cl. 414—723 **17 Claims**



1. An improved coupler assembly for connecting a work implement which has laterally oriented, longitudinally spaced, first and second mounting pins to a prime mover, wherein the prime mover presents an articulating boom having a proximal and a distal arm and at least one articulating arm, the outer end portion of the distal arm and the articulating arm are adapted to be pivotally connected to the coupler assembly, the improved coupler assembly comprising:

a body portion having laterally spaced side plate means;

means to secure said body portion to both the distal arm and the articulating arm of the articulating boom presented from the prime mover;

first and second mounting-pin receiving slots in each said side plate means;

each of said mounting-pin receiving slots having an open mouth portion at one end thereof and an apex portion at the other end thereof;

said first and second mounting-pin receiving slots oriented sequentially to receive the respective first and second mounting pins in said mouth portions;

the dimension from said mouth to said apices of said first mounting-pin receiving slots being greater than the corresponding dimension of said second mounting-pin receiving slots;

locating means in said mouth portions of said first mounting-pin receiving slots such that the first mounting pin may be retained within said mouth portion of said first mounting-pin receiving slots before the second mounting pin is received within said mouth portions of said second mounting-pin receiving slots;

rotator means extending laterally between said apex portions of said first mounting-pin receiving slots in said laterally spaced, side plate means;

said rotator means mounted for rotational movement between at least a first and a second position;

said rotator means being oriented to engage the first mounting pin when said rotator means is in said first position, lockingly to retain the first mounting pin within said apices of said first mounting-pin receiving slots;

said rotator means also being oriented, when in said second position, selectively to permit the first mounting pin to slide along said first mounting-pin receiving slots after the second mounting pin is in substantial alignment above said second mounting-pin receiving slots; and,

means selectively to move said rotator means between said first and second positions.

5,549,441

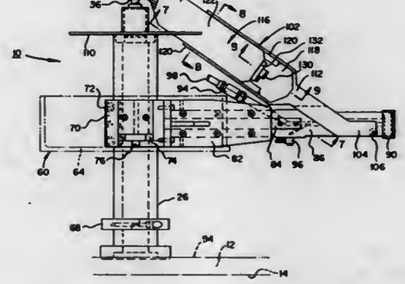
APPARATUS FOR MOVING OBJECTS FROM LOCATION AND PLACING THEM IN ANOTHER

Stephen M. Reinke, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 16, 1995, Ser. No. 405,315

Int. Cl.[6] B25J *18/04*

U.S. Cl. 414—744.6 **7 Claims**



1. Apparatus for moving objects from one location to another, comprising:

a frame;

a hollow shaft rotatably supported by the frame;

an object transfer assembly supported on the hollow shaft for movement between a first position for access to one location and a second position for access to another location;

a first actuator for rotating the hollow shaft between the first and second positions;

an extendible transfer arm included in the transfer assembly;

a pickup head, supported by the extendible transfer arm, for grasping an object or releasing an object; and

a second actuator for moving the pickup head back and forth with the extendible transfer arm at each of the first and second positions, the second actuator comprising an actuator rod extended through the hollow shaft, the actuator rod having a driven end and an output end; a cam supported by the frame and operatively connected for synchronous rotation by the first actuator, the cam being engaged with the driven end of the actuator rod; a connector arm pivotably connected at one end to the output end of the actuator rod and pivotably connected at another end to the transfer arm, whereby rotation

VOL 1189 ISS 4 AG 27 1996 UMI

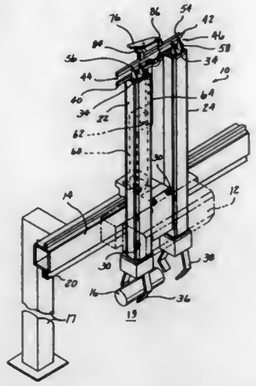
of the cam causes translational movement of the actuator rod which causes the connector arm to move the transfer arm radially relative to the hollow shaft.

5,549,442

ARTICLE TRANSFER APPARATUS

David J. Crorey, Utica, Mich., assignor to Leland D. Blatt, Grosse Pointe Farms, Mich.

Filed Sep. 27, 1994, Ser. No. 313,711
Int. Cl.[6] B65G *25/00*
U.S. Cl. 414—751 **12 Claims**



1. An article transfer apparatus for moving at least one article from a first position to a second position comprising:

first and second means for engaging said article wherein said first and second engaging means are reciprocally moveable between said first position and said second position independent of one another; and

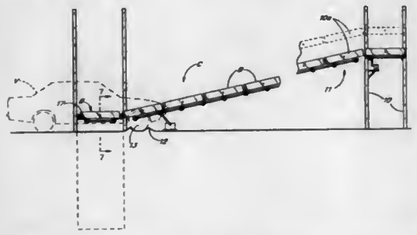
single means for independently and selectively driving each of said first and second article engaging means between said first position and said second position.

5,549,443

BATTERY CHARGING AND TRANSFER SYSTEM

Julius G. Hammerslag, 27011 Calle Esperanza, San Juan Capistrano, Calif. 92675

Filed Jan. 6, 1994, Ser. No. 178,101
Int. Cl.[6] B65G *67/02*
U.S. Cl. 414—786 **16 Claims**



1. A method of replacing an electric battery in an electrically powered passenger vehicle, comprising the steps of:

providing a battery transfer station having at least one drive-through bay for receiving an electric passenger vehicle therein, said transfer station having a battery conveyor loop which extends from a first side of the vehicle to a second side of the vehicle when the vehicle is positioned within the bay, a portion of the conveyor loop being elevated or lowered relative to a vehicle level to allow passenger vehicles to pass below or above the conveyor loop, said conveyor loop including an exchange station for conveying a discharged battery out of the vehicle and for conveying a charged battery into the vehicle, said conveyor loop having at least one charging station;

positioning the electric passenger vehicle within the bay, the vehicle having a discharged battery therein, said step of positioning comprising driving the vehicle into an entrance end of the bay;

conveying the discharged battery from a compartment of the vehicle along the conveyor loop to the charging station, the compartment extending through the vehicle from said first side to said second side such that the compartment and said conveyor loop form a closed-loop transfer path when the vehicle is positioned within the bay;

conveying a charged battery along the conveyor loop into the compartment; and

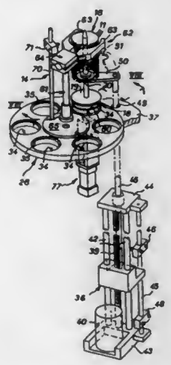
removing the vehicle from the bay in the transfer station, said step of removing comprising driving the vehicle from an exit end of the bay.

5,549,444

LOADER FOR MACHINE FOR PRINTING OBJECTS FROM A STACK

Jean-Louis Dubuit, Paris, France, assignor to Societe D'Exploitation Des Machines Dubuit, Noisy Le Grand, France

Filed Oct. 7, 1994, Ser. No. 319,844
Claims priority, application France, Oct. 13, 1993, 93 12171
Int. Cl.[6] B65G *59/04*
U.S. Cl. 414—796.7 **17 Claims**



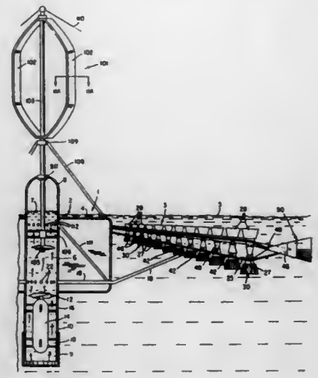
1. Loader for a machine for printing objects in a stack including a presentation device adapted to convey to a loading station at least one stack support for carrying a stack of objects to be printed, a lifting device operative at said loading station for engaging a stack of objects from below and for raising the stack of objects stepwise as objects are removed therefrom, a transfer device operative between said loading station and said printing machine for removing an object from the stack located at said loading station and then conveying the object to said printing machine, said transfer device being equipped with at least one take-up unit and being arranged for vertical reciprocating movement during a take-up cycle, a retaining clamp at said loading station having two branches mobile relative to each other, both of the branches being mobile transversely to a path of movement defined by said lifting device between a remote position in which displacement of said stack of objects carried by the lifting device is unimpeded and an operative position in which the branches are adapted to retain from below a selected number of objects in reserve for feeding to the printing machine while the stack support is being changed, the reserve of objects defining a take-up height, and level compensating means being operatively disposed between said retaining clamp and said take-up unit to compensate for variations in the take-up height as the reserve of objects retained by said retaining clamp diminishes.

5,549,445

MACRO-ENGINEERING PROCESS AND SYSTEM FOR ALL-WEATHER AT-SEA WIND-ENERGY EXTRACTION

Edward J. Schremp, 226 S. Fairfax St., Alexandria, Va. 22314

Continuation-in-part of Ser. No. 445,591, Dec. 12, 1989, abandoned, which is a continuation of Ser. No. 66,436, Jun. 26, 1987, abandoned. This application Nov. 1, 1991, Ser. No. 786,676
Int. Cl.[6] F03B *13/12*
U.S. Cl. 415—2.1 **18 Claims**



1. A method of extracting wind energy throughout a specified layer of the atmosphere overlying and in contact with a large body of water, comprising the steps of:

providing a plurality of independent seagoing wind-waveconverters, each of said wind-waveconverters comprising a wind energy removing means and a wave energy removing means, and each of said wind energy removing means being positioned above, and responsive to wind action, at a different location within said area of the large body of water,

positioning each said wave energy removing means generally below the surface of the water so as to provide a stabilized supporting platform for said wind energy removing means, the stabilization of said supporting platform being achieved by:

causing each said wave energy removing means to have a predetermined frequency selective responsiveness to wave induced subsurface water movement, the selective responsiveness of said wave energy removing means being such that, in the presence of practically any prevailing deep water sea state, the combined wave energy extracting operations of all of said wave energy removing means contribute to the overall effect of reducing the ratio of sea height to swell height within said area of the large body of water to a substantially small fraction of the ratio of sea height to swell height simultaneously prevailing in the open-sea approaches to said area of the large body of water,

exposing said plurality of independent seagoing wind-waveconverters to combined wind and wave action in said area,

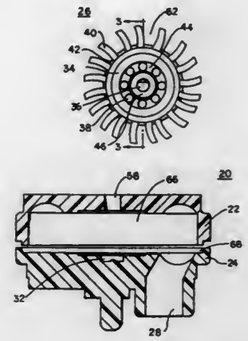
converting to a usable form energy extracted in said area of the large body of water.

5,549,446

IN-TANK FUEL PUMP FOR HIGHLY VISCOUS FUELS

Robert D. Gaston, Dearborn Heights, and DeQuan Yu, Ann Arbor, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 30, 1995, Ser. No. 521,488
Int. Cl.[6] F04D *5/00*
U.S. Cl. 415—55.1 **19 Claims**



1. A fuel pump for supplying diesel fuel to an engine, comprising:

a pump housing;

a motor mounted within said housing;

a shaft extending from said motor;

an impeller slidably attached to said shaft and having a prime number of vanes spaced unevenly about a circumference thereof;

a chamber body mounted within an end of said housing, said chamber body having a bore, a chamber body pump channel, and a chamber outlet, wherein said shaft extends through the bore and said impeller rotates within the chamber body pump channel; and

a chamber cover engaging said chamber body and being held by said housing, said chamber cover having an interlocking lip and a key notch for engaging said chamber body, a bleed orifice, a chamber cover pump channel and a shaft stop, said impeller being rotatable within the chamber cover pump channel, and an end of said shaft being rotatable against the shaft stop.

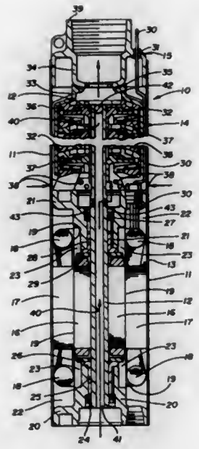
5,549,447

SYSTEM FOR COOLING A CENTRIFUGAL PUMP

Jack T. Bevington, Ashland, Ohio, assignor to McNeil (Ohio) Corporation, St. Paul, Minn.

Filed Aug. 21, 1995, Ser. No. 517,341
Int. Cl.[6] F04D *13/08;29/58*
U.S. Cl. 415—115 **15 Claims**

1. Apparatus adapted to be submersed in a fluid and to pump the fluid to a remote location comprising a casing, a motor within said casing, a pump assembly within said casing, a shaft driven by said motor and carrying a portion of said pump assembly, and an inlet to permit some fluid to enter the casing to be thereafter transferred from a pump inlet area by said pump assembly to the remote location, said shaft having an axial bore therein adapted, at one end thereof, to receive some fluid therein, that fluid moving in said axial bore to cool the inside of said casing, said shaft also having radial bores communicating with said axial bore and being positioned generally adjacent to said pump inlet area so that the fluid moving in said axial bore may pass through said radial bores and join with the fluid entering the casing.

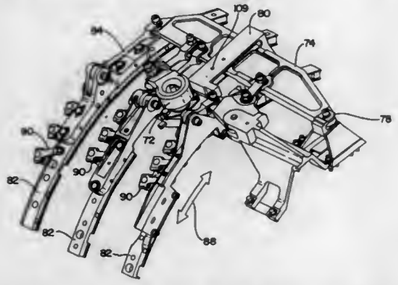


5,549,448

VARIABLE STATOR VANE LINKAGE SYSTEM AND METHOD

Todd A. Langston, Chandler, Ariz., assignor to United Technologies Corporation, Hartford, Conn.

Filed Feb. 8, 1995, Ser. No. 385,414
Int. Cl.[6] F01D 17/16
U.S. Cl. 415—149.4 10 Claims



1. The method of assembling a rigless variable vane system to a compressor section encased in a gas turbine engine which is independent of a linear actuator and external connections of the system and adjusting the system so that vanes in the compressor section are always in a given position for all positions of the linear actuator including the steps of:

providing a case for the gas turbine engine, the vanes of the compressor section comprising variable area vanes movable to a full opened position in said case;

providing the linear actuator with an adjustable stop to limit the travel thereof;

providing a pumphandle and pumphandle slider bracket and attaching the pumphandle slider bracket to the case;

providing a bellcrank and connecting the pumphandle to the variable area vanes;

providing a stop having a contact surface on the pumphandle slider bracket that engages the pumphandle;

adjusting the pumphandle relative to the stop provided in the next above step so that the variable area vanes are in the full opened position when the pumphandle is in contact with the stop;

connecting the linear actuator to the bellcrank when the variable vanes are in the full opened position;

adjusting the adjustable stop of the linear actuator so that the stop on the linear actuator and the stop on the slider bracket are in synchronous relationship relative to each other; and

machining the stop directly on the pumphandle slider bracket to assure that the stop on the linear actuator and the stop on the slider bracket are in synchronous relationship relative to each other.

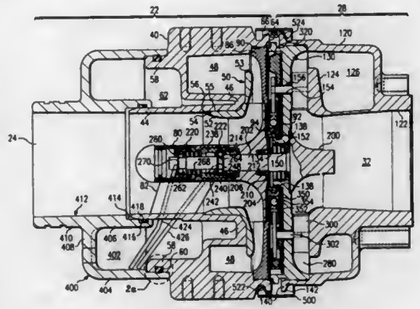
6. Apparatus for a rigless variable vane system for an axial flow gas turbine engine having a compression section including variable vanes movable to a full opened position mounted in a compressor case of the compression section including a pumphandle and a pumphandle slider bracket attached to said compressor case and an actuator having actuator stop means for positioning said variable vanes by positioning said pumphandle as limited by said actuator stop means, the improvement comprising stop means integrally formed on said pumphandle slider bracket for engaging said pumphandle when said variable vanes are in the full opened position and when said actuator stop means limits the travel of said actuator.

5,549,449

TURBOMACHINERY INCORPORATING HEAT TRANSFER REDUCTION FEATURES

William L. McInerney, Dallas; Norbert L. Osborn, and Gerhard M. Schruf, both of Irving, Tex., assignors to WRR Industries, Inc., Dallas, Tex.

Filed Jul. 2, 1993, Ser. No. 86,924
Int. Cl.[6] F04D 29/58
U.S. Cl. 415—177 6 Claims



1. Turbomachinery comprising:

a turbine and compressor rotor mounted on a shaft,

a turbine housing for housing the turbine rotor and having a backwall positioned between the turbine rotor and the compressor rotor, said backwall being formed from a first metal,

a compressor housing for housing the compressor rotor and having a backwall between the turbine rotor and compressor rotor, said compressor backwall being formed from a second metal different from the first metal, and

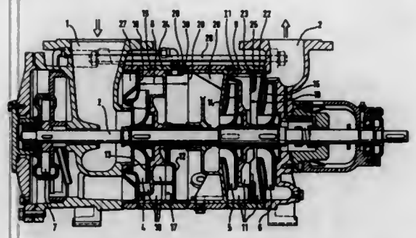
a metal insert made from a metal having like thermal properties with those of the first metal, said insert integral with the compressor backwall and being positioned for engagement with the turbine backwall for aligning the turbine housing relative to the compressor housing, said insert having a coefficient of thermal expansion equal to or greater than the average of the coefficients of thermal expansion of the compressor and turbine backwalls.

5,549,450

CENTRIFUGAL PUMP OF THE SECTIONAL-CASING DESIGN

Ralf Mann, Huje; Wilfried Lehmann, Heiligenstedten, and Hermann Müller, Oldendorf, all of, Germany, assignors to Sihi GmbH & Co KG, Itzehoe, Germany

PCT No. PCT/EP93/02570, § 371 Date Mar. 16, 1995, § 102(e) Date Mar. 16, 1995, PCT Pub. No. WO94/07031, PCT Pub. Date Mar. 31, 1994
PCT Filed Sep. 22, 1993, Ser. No. 403,710
Claims priority, application Germany, Sep. 24, 1992, 42 32 020.8
Int. Cl.[6] F04D 29/44
U.S. Cl. 415—214.1 7 Claims



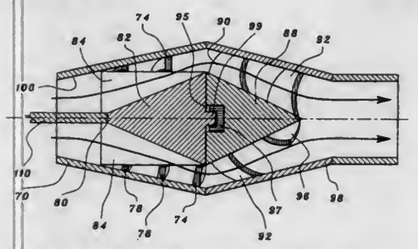
1. In a centrifugal pump having a plurality of casing sections (8, 9, 27, 28) with confronting end faces on adjacent casing sections, said confronting end faces, being clamped together by means of a tension device (29) extending over them, at least one casing section (8, 9) having a plurality of axially successive inner walls (12, 13, and 14, 15) surrounded by a cylindrical casing shell, the improvement wherein the casing shell of said at least one casing section (8 and 9) is composed of a plurality of inner shell parts integral with said inner walls and an outer shell part (24 and 25) extending over the axial length of said plurality of inner shell parts, said outer shell part being securely connected to the underlying inner shell parts in its casing section.

5,549,451

IMPELLING APPARATUS

Eldon L. Lyda, Jr., 201 Flat Creek Rd. Apt. No. 4, Athens, Tex. 75751

Continuation-in-part of Ser. No. 986,453, Dec. 7, 1992, Pat. No. 5,332,355. This application Jul. 22, 1994, Ser. No. 278,932
Int. Cl.[6] F04D 3/00
U.S. Cl. 415—218.1 15 Claims



1. An impelling device for moving fluid, comprising:

an impeller housing having a hollow interior with an inlet opening and an outlet opening, said impeller housing dimensioned such that the flow channel cross-sectional surface area at said inlet opening is less than the flow channel cross-sectional surface area of said outlet opening;

a discharge housing having a hollow interior with an inlet opening and an outlet opening, said discharge housing dimensioned such that the flow channel cross-sectional surface area at said inlet opening is greater than the flow channel cross-sectional surface area at said outlet opening, said inlet opening of said discharge housing connected to the outlet opening of said impeller housing; and

an impeller disposed within said impeller housing, said impeller having:

a rotatable impeller mass symmetrical and rotatable about a rotational axis and dimensioned to reduce the volume between said rotatable impeller mass and the interior surface of said impeller housing as fluid flows from the inlet opening to the outlet opening of said impeller housing, and

a plurality of impeller vanes disposed substantially parallel to said rotational axis on the exterior of said rotatable impeller mass and extending therefrom toward the interior walls of said impeller housing and operable to force fluid outward when said rotatable impeller mass rotates;

a plurality of helical stator vanes disposed on the interior walls of said impeller housing extending from the inlet opening thereof to the outlet opening thereof and in the direction of the rotational direction of said rotatable impeller mass and extending inward toward said impeller vanes; and

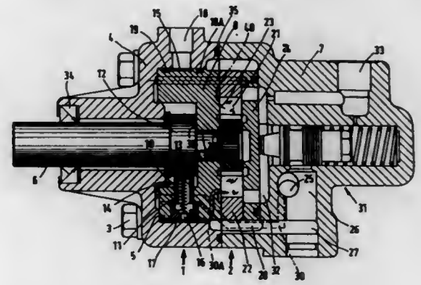
a discharge device disposed in said discharge housing and having a conical discharge mass associated therewith and fixed relative thereto, said conical discharge mass proportioned to increase the volume between the inlet opening and the outlet opening of said discharge housing as the fluid flows therethrough.

5,549,452

DOUBLE PUMP

Richard Vogt, Schwäbisch Gmünd, Germany, assignor to ZF Friedrichshafen AG, Friedrichshafen, Germany

PCT No. PCT/EP93/01224, § 371 Date Nov. 1, 1994, § 102(e) Date Nov. 1, 1994, PCT Pub. No. WO93/24753, PCT Pub. Date Dec. 9, 1993
PCT Filed May 17, 1993, Ser. No. 331,492
Claims priority, application Germany, May 25, 1992, 42 17 259.4
Int. Cl.[6] F04B 23/08
U.S. Cl. 417—199.1 6 Claims



1. A double pump having the following features:

a radial piston pump (1) and a vane-cell pump (2) being combined to form a pump unit;

a common shaft (6) driving both said pumps;

a casing (4) of said radial piston pump (1) enclosing a ring insert (5) containing delivery pistons (11) of said piston pump;

said vane-cell pump (2) comprising a pump set including a rotor (20), a plurality of vanes (21) and a cam ring (22) sealed against a pair of face plates (24) abutting on both sides of said pump set,

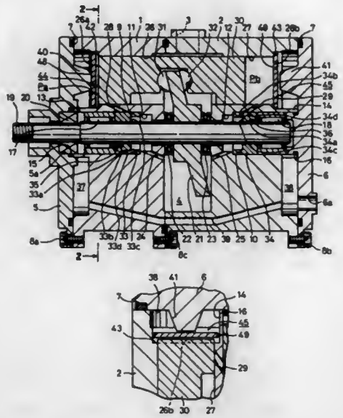
wherein said ring insert (5) and said face plate (frontal surface 23) of said pump set facing said radial piston pump (1) form a common part.

5,549,453

RECIPROCATING PISTON-TYPE COMPRESSOR HAVING PISTON ENTERING DISCHARGE CHAMBER

Kazuo Murakami; Toshiro Fujii, and Yuichi Kato, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed May 31, 1995, Ser. No. 455,191
Claims priority, application Japan, Jun. 2, 1994, 6-120965
Int. Cl.[6] F04B 39/10
U.S. Cl. 417—269 7 Claims



1. A reciprocating piston compressor for compressing refrigerant gas including:

a cylinder block with a plurality of parallel cylinder bores arranged around the longitudinal axis of the cylinder block, the cylinder bores having bore ends comprising discharge ports of the same diameter as that of the cylinder bores;

a plurality of pistons slidably provided within the cylinder bores for reciprocation between top and bottom dead centers, the inner surface of the cylinder bores and the end faces of the pistons defining compression chambers, refrigerant gas being introduced into the compression chambers while the pistons move toward the bottom dead center, the refrigerant gas in the compression chambers within which the pistons move toward the top dead center being discharged therefrom after compression;

housing means sealingly mounted to the ends of the cylinder block, the housing means including at least a discharge chamber into which the compressed refrigerant gas is discharged from the compression chambers through the bore ends;

a drive shaft for driving the compressing motion of the reciprocating pistons within the cylinder bores, the drive shaft extending along the longitudinal axis of the compressor; and

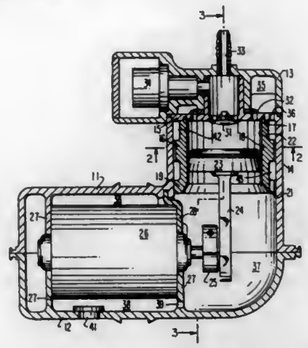
valve members for closing the bore ends of the cylinder bores, the valve members being movable in the axial direction between a closed position where the valve members close the bore ends, and an open position where the valve members are away from the bore ends wherein the top dead center of the pistons is in a plane perpendicular to the longitudinal axis, said plane being located between the ends of the cylinder bores and inner faces of the valve members in the open position.

5,549,454

HIGH SPEED VACUUM PUMP WITH REDUCED EXHAUST NOISE

Stephen R. Earle, Pudsev, United Kingdom, assignor to WABCO Automotive U.K. Limited, Leeds, United Kingdom

Filed Mar. 4, 1994, Ser. No. 206,786
Claims priority, application United Kingdom, Mar. 4, 1993, 9304445
Int. Cl.[6] F04B 53/16
U.S. Cl. 417—312 11 Claims



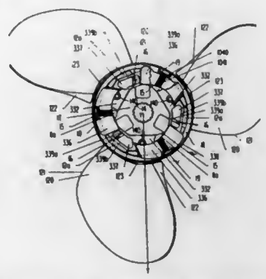
1. A vacuum pump having a casing, an insertable cylinder liner, having a one end and an other end inserted in said casing and defining a pumping bore within the cylinder liner, a piston reciprocal in the pumping bore, an inlet valve to admit fluid into the pumping bore and an outlet valve to exhaust fluid from the pumping bore wherein an annular chamber is formed between said cylinder liner and said casing and a crankcase is provided in the casing, said annular chamber defining a primary exhaust passage extending from said one end of the liner to said other end and having at one end a port in fluid communication with said outlet valve and at the other end an aperture in fluid communication with said crankcase.

5,549,455

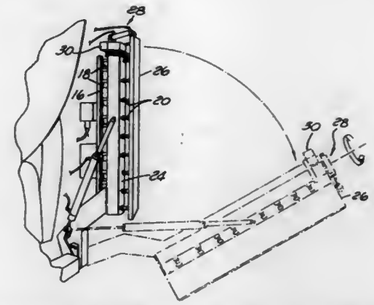
THROUGH THE HUB EXHAUST FLOW IMPROVEMENTS FOR MARINE VARIABLE PITCH PROPELLER

Stephen R. Speer, Spokane, Wash., assignor to Aerostar Marine Corporation, Spokane, Wash.

Continuation of Ser. No. 150,271, Nov. 9, 1993, which is a continuation of Ser. No. 913,835, Jul. 15, 1992. This application Jan. 18, 1995, Ser. No. 375,001
Int. Cl.[6] B63H 1/28
U.S. Cl. 416—93 A 7 Claims



1. In a variable pitch marine propeller comprising a hub case, connection means internally structurally connected to the hub case, to secure the hub case to a rotating drive shaft such that the propeller rotates with the drive shaft; a plurality of blades extending radially outward from the hub case, each blade having a shank extending into the hub case and being mounted to the hub case to allow pivotal movement about the blade axis; an arm attached to each shank, and located internally within the hub case; fluid flow connection means designed to connect the hub case to the exhaust system of a marine engine to cause exhaust gases to flow through the hub case; a counterweight mass, attached to the arm and offset from the shank pivot axis, such that inertial forces arising from propeller rotation acting on the center-of-gravity of the counterweight mass produce a torque about the blade shank axis; the improvement comprising means secured to the counterweight mass and so placed thereon to press against the hub case as a stop means, to limit the blade maximum pitch angle position.

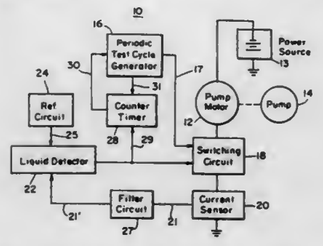


5,549,456

AUTOMATIC PUMP CONTROL SYSTEM WITH VARIABLE TEST CYCLE INITIATION FREQUENCY

James T. Burrill, Peabody, and William Anastos, Belmont, both of Mass., assignors to Rule Industries, Inc., Gloucester, Mass.

Filed Jul. 27, 1994, Ser. No. 281,231
Int. Cl.[6] F04B 49/00
U.S. Cl. 417—12 14 Claims



1. A pump control system for adjusting the frequency of operation of a pump motor in accordance with the demand on the pump, said pump control system comprising:

means for periodically actuating the pump motor to initiate operation of the pump at periodic intervals;

sensor means for sensing the condition of the operating pump motor; and

means, responsive to said sensor means, for adjusting said periodic interval to conform the operation of the pump motor to the demand on the pump, said means for adjusting including means for counting the number of times that liquid is present and the number of times liquid absent.

5,549,457

PAVEMENT SPRAYER HAVING MOVABLE SPRAY GUARD

Abel G. Flores, Monterey Park; Gerald R. Marriott, Glendora, and Jose J. Castillo, Commerce, all of Calif., assignors to Manhole Adjucting Contractors Inc., Monterey Park, Calif.

Filed Mar. 27, 1995, Ser. No. 410,926
Int. Cl.[6] E01C 19/17
U.S. Cl. 404—84.05 22 Claims

1. A pavement sprayer having a movable spray guard comprising:

a sprayer mechanism capable of applying liquid to a pavement surface as a spray, said sprayer mechanism having at least one portion movable between an operative position for spraying the pavement surface and a retracted, inoperative position;

at least one blocking member mounted to the sprayer mechanism for movement between a blocking position, in which any spray emanating from the movable portion is at least partially blocked, and a non-blocking position, in which the spray emanating from the movable portion is not blocked; and

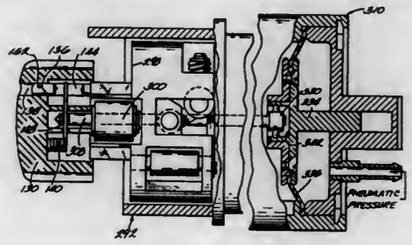
at least one blocking control for actuating the blocking member between said blocking and non-blocking positions in response to movement of the movable portion of the sprayer mechanism between said operative and retracted positions.

5,549,458

PERISTALTIC PUMP WITH QUICK RELEASE ROTOR HEAD ASSEMBLY

Arthur S. Chapman, Solvang, Calif., and Richard L. Afflerbaugh, Libertyville, Ill., assignors to Baxter International Inc., Deerfield, Ill.

Filed Jul. 1, 1994, Ser. No. 269,934
Int. Cl.[6] F04B 43/08
U.S. Cl. 417—360 4 Claims



1. A peristaltic pumping apparatus comprising

a peristaltic pumping element including a pump rotor carrying a roller, a drive mechanism for rotating the rotor and including a carrier for holding the pump rotor, and a handle on the pump rotor,

first linkage coupling the pump roller and the handle to move the pump roller between a retracted position free of contact with pump tubing and an extended position making operative contact with pump tubing in response to displacement of the handle by manual force applied by a user,

a mechanical actuator within the carrier adapted to be coupled to the handle to mechanically displace the handle, and thereby move the pump roller between the retracted position and the extended position, in response to a command signal, and

a release pin mechanism carried on the pump rotor and exposed to access by the user, the release pin mechanism being movable by the user between a connect position that concurrently connects the pump rotor to the carrier and the handle to the mechanical actuator, a first release position that concurrently connects the pump rotor to the carrier while disconnecting the handle from the mechanical actuator, and a second release position that concurrently disconnects the pump rotor from the carrier and disconnects the handle from the mechanical

actuator to allow separation of the pump rotor, the first linkage, and the handle from the drive mechanism and the mechanical actuator.

5,549,459

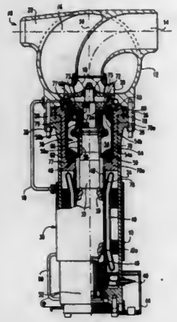
RADIAL BEARING ASSEMBLY FOR A HIGH INTERTIA FLYWHEEL OF A CANNED MOTOR PUMP

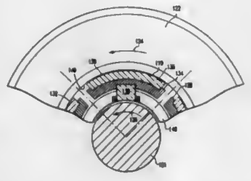
Donald R. Nixon, Murrsyville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 175,866, Dec. 30, 1993, Pat. No. 5,356,273. This application Oct. 12, 1994, Ser. No. 322,085

Int. Cl.[6] F04B *35/04*

U.S. Cl. 417—423.12 **17 Claims**





1. A canned motor pump having an impeller, said motor pump comprising:
a rotatable shaft assembly,
drive means in engagement with said shaft assembly for turning said impeller,
a flywheel assembly mounted on said shaft assembly with an annular recess between one end of said flywheel assembly and said shaft assembly forming an inner circumferential running surface means,
radial bearing means located in said annular recess and having outer circumferential running surface means for engagement with said inner circumferential running surface means of said flywheel assembly, and
bearing housing means for carrying said radial bearing means and for locating said radial bearing means in said annular recess,
said radial bearing means having convex pad means for said engagement of said radial bearing means with said inner circumferential running surface means of said flywheel assembly.

5,549,460

IV FLUID DELIVERY SYSTEM

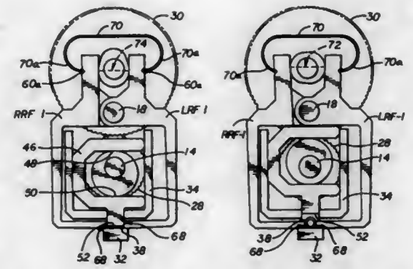
Stepben H. O'Leary, Encinitas, Calif., assignor to IVAC Corporation, San Diego, Calif.

Filed Aug. 8, 1994, Ser. No. 287,625

Int. Cl.[6] F04B *43/12*

U.S. Cl. 417—474 **18 Claims**

1. A pump for delivery of fluid through a resilient, deformable tube, comprising:
a pressure pad;
a plurality of cams associated with a first camshaft;
a plurality of pinchers that are actively driven by the cams of said first camshaft to apply force to deform said tube against said pressure pad and are actively retracted away from said tube by the cams of said first camshaft;
a plurality of cams associated with a second cam shaft;



a plurality of restoring fingers that are actively driven by the cams of said second camshaft to apply force on said tube after deformation of said tube by said pinchers to urge said tube to restore said tube's cross-sectional area; and
a motor operatively engaged with said camshafts.

5,549,461

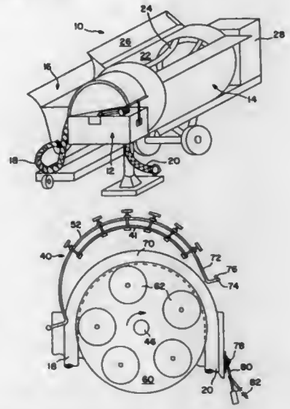
PERISTALTIC PUMP ATTACHMENT FOR SLURRY MIXERS

George Newland, 77 Cloverleaf Cir., Brentwood, Calif. 94513

Filed Jul. 21, 1995, Ser. No. 505,462

Int. Cl.[6] F04B *43/12*

U.S. Cl. 417—477.11 **9 Claims**



1. A peristaltic pump comprising:
a) an occluder ring support having side walls and a partial cylindrical surface occluder ring joined to said side walls,
b) a pump rotor and an axis for rotatably supporting said rotor,
c) a plurality of compression wheels rotatably supported on support axes parallel to and radially spaced from said axis of said rotor,
d) said occluder ring support being supported at one end of said partial cylindrical surface on a hinge radially spaced from said axis of said pump rotor, said partial cylindrical surface occluder ring having a radius of formation larger than the radius of said pump rotor,
e) said hinged support of said occluder ring support with respect to said axis of said pump rotor providing an open space between said partial cylindrical surface of said occluder ring and said pump rotor when said occluder ring support is hinged away from said axis of said pump rotor,
f) means for adjusting the position of said partial cylindrical surface occluder ring with respect to said pump rotor to vary said open space between said cylindrical surface of said occluder ring and said compression wheels,

g) a flexible hose within said occluder ring support adjacent to said partial cylindrical surface and in said open space when said occluder ring support is hinged away from said axis of said pump rotor,
h) means for connecting said axis of said pump rotor to means for producing rotary motion,
i) and means for clamping said occluder ring support in position to align said axis of said partial cylindrical surface occluder ring concentric with said axis of said pump rotor and to position said compression wheels in contact with said flexible hose in said open space as said pump rotor is rotated, said means for clamping including means for varying the position of said partial cylindrical surface occluder ring with respect to said compression wheels dependent upon pressure within said flexible hose,
j) whereby rotary motion of said pump rotor with respect to said occluder ring support causes said compression wheels to compress said flexible hose in a rolling engagement along said partial cylindrical surface of said occluder ring and to pump slurry materials through said peristaltic pump, and whereby said pumping by said peristaltic pump is controlled by the position of said occluder ring partial cylindrical surface, with respect to said axis of said pump rotor.

5,549,462

GEAR PUMP AND ITS USES

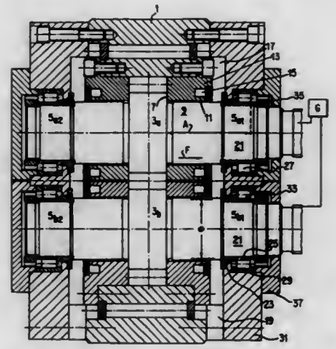
Eduard Mischler, Regensdorf, and Roger Stehr, Bülach, both of, Switzerland, assignors to Maag Pump Systems AG, Zurich, Switzerland

Filed Oct. 25, 1993, Ser. No. 140,397

Claims priority, application Switzerland, Oct. 23, 1992, 03 304/92

Int. Cl.[6] F01C *19/00*

U.S. Cl. 418—1 **33 Claims**



1. A gear pump comprising a gear pump rotor including a gear pump gear-wheel fixed to a rotor shaft,
a roller bearing assembly rotatably supporting the rotor shaft at a position spaced from an end-face of the gear wheel, said roller bearing assembly including roller elements having bearing surfaces, an inner race with inner race surfaces engaging the roller element bearing surfaces, and an outer race with outer race surfaces engaging the roller element bearing surfaces, wherein the end-face of the gear wheel is spaced from an axially outermost bearing area of engagement of the race surfaces with the roller elements by a distance which is smaller than twice the median diameter of a section of the shaft intermediate the gear wheel and end-face and the roller bearing assembly,
a sealing device sealingly engaging the shaft between said gear wheel end-face and said roller bearing assembly, wherein an annular gap is provided around the shaft at a location between the sealing device and the roller bearing assembly, and
a pipe system for a heat-transport medium adjacent said sealing device and between said annular gap and said gear wheel end face.

5,549,463

COMPOSITE DRY VACUUM PUMP HAVING ROOTS AND SCREW ROTORS

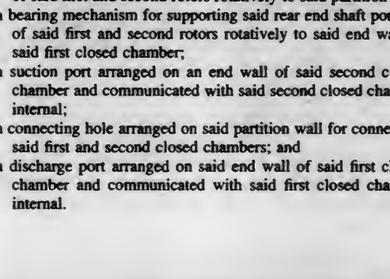
Osamu Ozawa, Nagano-pref, Japan, assignor to Kashiyama Industry Co., Ltd., Tokyo, Japan

Filed Mar. 3, 1995, Ser. No. 398,441

Claims priority, application Japan, Nov. 24, 1994, 6-289822

Int. Cl.[6] F04C *23/00;25/02*

U.S. Cl. 418—3 **1 Claim**



1. A composite dry vacuum pump comprising:
a first closed chamber defining a screw pump and a second closed chamber defining a roots pump;
a partition wall separating the first closed chamber and the second closed chamber;
a first screw rotor accommodated in said first closed chamber and formed on its circumferential surface with rectangular-shaped screws at equal leads;
a second screw rotor accommodated in said first closed chamber and formed on its circumferential surface with rectangular-shaped screws at equal leads so as to mesh with said rectangular-shaped screws of said first screw rotor;
front end shaft portions of said first and second screw rotors respectively extended coaxially from front ends of said first and second rotors into said second closed chamber through said partition wall;
first and second roots rotors respectively fixedly mounted on said front end shaft portions of said first and second rotors;
rear end shaft portions of said first and second screw rotors respectively extended coaxially from rear ends of said first and second rotors through a end wall of said first closed chamber;
a drive motor for rotating said first and second screw rotors;
a power transmission mechanism for transmitting rotation force of said drive motor to said screw rotors respectively so that said first and second screw rotors rotate at a same speed in opposite directions;
a bearing mechanism for supporting said front end shaft portions of said first and second rotors rotatively to said partition wall;
a bearing mechanism for supporting said rear end shaft portions of said first and second rotors rotatively to said end wall of said first closed chamber;
a suction port arranged on an end wall of said second closed chamber and communicated with said second closed chamber internal;
a connecting hole arranged on said partition wall for connecting said first and second closed chambers; and
a discharge port arranged on said end wall of said first closed chamber and communicated with said first closed chamber internal.

VOL 1189 ISS 4 AG 27 1996 UMI

5,549,464

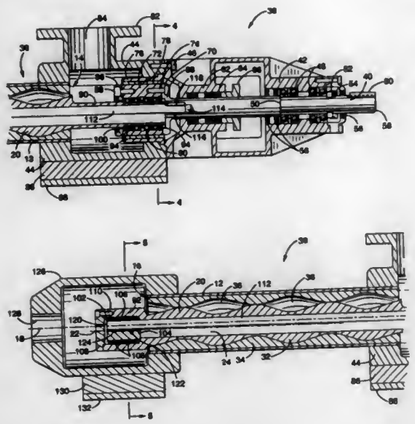
DRIVE ARRANGEMENT FOR PROGRESSING CAVITY PUMP

Rajan Varadan, 6406 Wigwam Dr., Orangevale, Calif. 95662

Division of Ser. No. 367,783, Oct. 29, 1994, abandoned. This application Aug. 31, 1995, Ser. No. 521,784

Int. Cl.[6] F04C *2/107*

U.S. Cl. 418—48 **10 Claims**



1. A progressing cavity pump, comprising:

(a) a stator, said stator having a first end and a second end, said stator including at least two helices;

(b) a rotor, said rotor mounted within said stator, said rotor including a hub positioned adjacent to said first end of said stator, said rotor including a head, said head positioned adjacent to said second end of said stator, said rotor having a longitudinal bore, said rotor including at least one helix;

(c) a drive shaft, said drive shaft concentric relative to said stator, said drive shaft eccentric relative to said rotor;

(d) a hub drive block, said hub drive block fixedly coupled to said drive shaft, said hub drive block including a bore, said bore eccentric relative to said drive shaft and said hub drive block, said bore concentric with said rotor, said rotor hub rotatably mounted within said bore in said hub drive block;

(e) fluid inlet means for allowing fluid into said stator, said fluid inlet means positioned adjacent to said first end of said stator; and

(f) fluid outlet means for allowing fluid to exit said stator, said fluid outlet means positioned adjacent to said second end of said stator;

(g) an auxiliary drive shaft, said auxiliary drive shaft rotatably mounted in said longitudinal bore in said rotor, said auxiliary drive shaft including a first end and a second end, said auxiliary shaft concentric with said drive shaft and said stator, said auxiliary drive shaft eccentric relative to said rotor, said first end of said auxiliary shaft fixedly coupled to said drive shaft;

(h) a bead drive block, said head drive block fixedly coupled to said second end of said auxiliary shaft, said head drive block rotatably associated with said rotor head;

(i) said fluid outlet means including a discharge housing, said discharge housing positioned adjacent to said second end of said stator;

(j) said head drive block rotatably mounted within a drive block housing, said drive block housing fixedly coupled to said discharge housing, said drive block housing concentric with said stator.

5,549,465

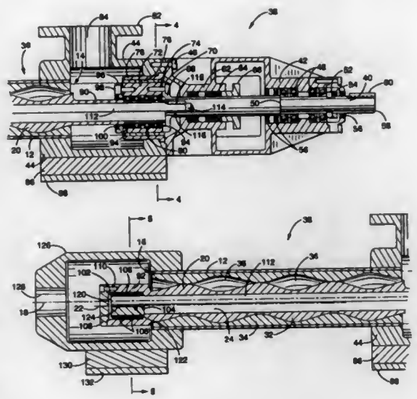
DRIVE ARRANGEMENT FOR PROGRESSING CAVITY PUMP

Rajan Varadan, 6406 Wigwam Dr., Orangevale, Calif. 95662

Division of Ser. No. 367,783, Oct. 29, 1994, abandoned. This application Aug. 31, 1995, Ser. No. 522,461

Int. Cl.[6] F04C *2/107*

U.S. Cl. 418—48 **13 Claims**



1. A progressing cavity pump, comprising:

(a) a stator, said stator having a first end and a second end, said stator including at least two helices;

(b) a rotor, said rotor mounted within said stator, said rotor including a hub positioned adjacent to said first end of said stator, said rotor including a head, said head positioned adjacent to said second end of said stator, said rotor having a longitudinal bore, said rotor including at least one helix;

(c) driving means for driving said rotor associated with said longitudinal bore in said rotor, said driving means positioned adjacent said rotor hub, said driving means positioned adjacent to said rotor head;

(d) said driving means comprising a drive shaft, said drive shaft concentric relative to said stator, said drive shaft eccentric relative to said rotor;

(e) said driving means further comprising a hub drive block, said hub drive block fixedly coupled to said drive shaft, said hub drive block including a bore, said bore eccentric relative to said drive shaft and said hub drive block, said bore concentric with said rotor, said rotor hub rotatably mounted within said bore in said hub drive block;

(f) fluid inlet means for allowing fluid into said stator, said fluid inlet means positioned adjacent to said first end of said stator; and

(g) fluid outlet means for allowing fluid to exit said stator, said fluid outlet means positioned adjacent to said second end of said stator.

5,549,466

SCROLL COMPRESSOR HAVING A CENTERING RECESS FOR ASSEMBLY

Tatsuya Hori, Fujisawa; Hiroyuki Fukuhara, Ōtsu; Shigeru Muramatsu, Kusatsu, and Sadayuki Yamada, Ōtsu, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd, Osaka-fu, and Matsushita Seiko Co., Ltd., Osaka, both of, Japan

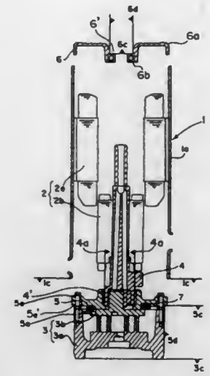
Filed Nov. 2, 1994, Ser. No. 333,341

Claims priority, application Japan, Nov. 4, 1993, 5-275252

Int. Cl.[6] F04C *18/4*

U.S. Cl. 418—55.1 **4 Claims**

1. A scroll compressor structure adapted to be assembled using a



jig having a cylindrical compression section carrier with a fixed base end and a free end, said scroll compressor structure comprising:

a cylindrical container section having a first end and a second end;

an electric motor accommodated in said cylindrical container section;

a scroll assembly drivably coupled to said electric motor and comprising a stationary scroll and an orbiting scroll, said stationary and orbiting scrolls having respective wrap elements in engagement with each other;

a crankshaft having first and second opposite ends and coupling said orbiting scroll to said electric motor;

a first bearing secured to said cylindrical container section adjacent said first end thereof and supporting said first end of said crankshaft;

a second bearing secured to said cylindrical container section adjacent said second end thereof and supporting said second end of said crankshaft;

wherein said first bearing and said scroll assembly together constitute a compression section having a first end and a second end, said first end of said compression section being the one of said first and second ends of said compression section that is closest to said first end of said cylindrical container section;

wherein said compression section includes a radially outwardly projecting portion which has an outer diameter greater than an outer diameter of a remainder of said compression section, and said radially outwardly projecting portion abuts an inner cylindrical surface of said cylindrical container section so as to locate said compression section concentrically with said cylindrical container section and so as to form a recess about said remainder of said compression section between said outer surface of said compression section and said inner cylindrical surface of said cylindrical container section;

wherein said recess has an open first end at said first end of said compression section, and a closed second end, such that said recess opens axially in a direction toward said first end of said cylindrical container section;

wherein said first end of said cylindrical container section is an open end, and said recess constitutes a means for receiving the cylindrical compression section carrier of the jig projected into said cylindrical container section through said open first end thereof;

wherein said radially outwardly projecting portion of said compression section has an annular surface facing in an axial direction toward said first end of said cylindrical container section and which lies fully in a single plane which is perpendicular to the axial direction;

wherein said annular surface constitutes a means for abutting the free end of the cylindrical compression section carrier of the jig so as to support said compression section in a desired position during assembly and prevent axial sliding movement of said compression section within said cylindrical container section up until such time as said compression section is otherwise fixedly secured in said desired position within said cylindrical container section and the cylindrical compression section carrier is withdrawn from said recess;

wherein said closed second end of said recess is delimited by said annular surface of said radially outwardly projecting portion; and

wherein said inner cylindrical surface of said cylindrical container section is equal in diameter at locations on axially opposing sides of said single plane, such that, during assembly, said radially outwardly projecting portion of said compression section is freely slidable in an axial direction along said inner cylindrical surface of said cylindrical container section.

5,549,467

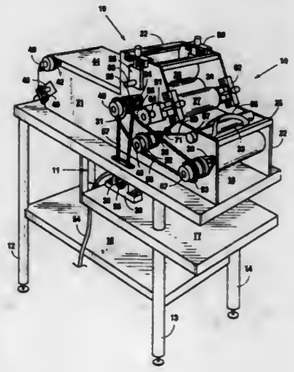
APPARATUS FOR CUTTING ELLIPSES FROM DOUGH

George A. Schultz, 176 Ohio St., New Braunfels, Tex. 78130

Filed Oct. 24, 1994, Ser. No. 327,862

Int. Cl.[6] A21C *11/00;* **B26F** *1/00*

U.S. Cl. 425—298 **9 Claims**



1. An apparatus for processing a batch of dough, comprising:

a housing;

a press mounted within said housing for pressing the batch of dough into a flat thin sheet;

a cutter mounted within said housing for cutting ellipses of dough from the flat thin sheet of dough wherein said ellipses of dough shrink into circular disks along the axis of pressing of the flat thin sheet;

a conveyor mounted within said housing for conveying the batch of dough to said press and then the flat thin sheet of dough to said cutter; and

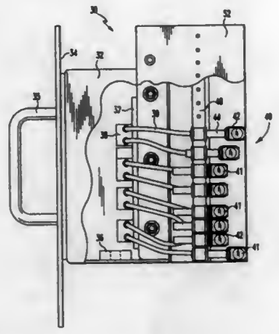
means for driving said conveyor and said press.

5,549,468

HEATING LAMP ASSEMBLY

Monroe S. Mitchell, Dunwoody, and Vinson A. Loos, Woodstock, both of Ga., assignors to Constar Plastics Inc., Atlanta, Ga.

Filed Oct. 19, 1994, Ser. No. 325,881
Int. Cl.[6] B29C 49/64
U.S. Cl. 425—526 8 Claims



1. A heating lamp assembly for use in an oven of a blow molding machine for heating plastic preforms prior to blow molding, the blow molding machine including means for advancing a stream of preforms along a defined path through the oven, the oven including a base situated at a fixed position with respect to the defined path and an enclosure fixed to the base enclosing a segment of the path to control the environment in the vicinity of the path segment, the heating lamp assembly comprising:

a chassis removably positioned at a preselected location relative to the base, a pair of brackets fixed to the chassis, each bracket including a way vertically arranged relative to the path, a plurality of couplings coupled in the ways, each coupling being adjustably positionable vertically relative to the bracket to which it is coupled, a like plurality of arms, each arm being coupled to one of the couplings and horizontally adjustably positionable, and a lamp holder carried by each arm for holding a lamp adjacent to the path.

5,549,469

MULTIPLE BURNER CONTROL SYSTEM

Gary G. Wild, Rockford, Ill., and John D. Eley, Beloit, Wis., assignors to Eclipse Combustion, Inc., Rockford, Ill.

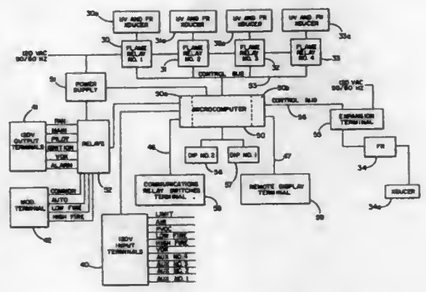
Continuation-in-part of Ser. No. 203,170, Feb. 28, 1994. This application Jan. 17, 1995, Ser. No. 374,164
Int. Cl.[6] F23M 9/00
U.S. Cl. 431—75 17 Claims

1. A control system for a plurality of burners in a multiple burner industrial furnace having a plurality of burners with associated fuel supplies distributed in said industrial furnace, the control system comprising, in combination:

a plurality of electronic flame sensors, each having an input for connection to a flame sensing transducer exposed to a flame to be sensed, each having an output for producing an electronic level signal indicative of the sensed flame, and each having a test input for polling by an electronic processor;

an electronic programmable processor having a set of program modules which include:

a polling module operative on the flame sensor test inputs for detecting the presence of a flame sensor for each burner and checking initialization conditions for each burner before startup;



a startup module for initiating burner firing, the startup module including purge and ignite sequences;

a run module including means for polling the flame sensors to monitor the flames sensed by the associated transducers; and

an alarm module for orderly shutting down of the system upon detection of a lost flame from an extinguished burner and recording the identity of the extinguished burner and the time at which the burner extinguished;

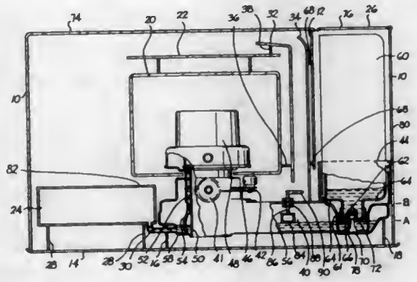
memory means associated with the processor for recording status information at the time of occurrence of an alarm condition, the status information including the identity of any extinguished burner and the time at which said extinguished burner extinguished.

5,549,470

ANTI-FLAREUP DEVICE FOR LIQUID FUEL BURNERS

Richard W. Henderson, P.O. Box 12681, Florence, S.C. 29504

Filed Dec. 29, 1994, Ser. No. 365,804
Int. Cl.[6] F24C 15/20
U.S. Cl. 431—302 20 Claims



1. An apparatus for preventing flareup in a liquid fuel burner of the type comprising:

(a) a removable liquid fuel tank,

(b) a fuel chamber,

(c) an automatic wick extinguishing unit,

(d) a combustion chamber having a wick,

(e) a reflector adjacent said combustion chamber,

(f) a cabinet having a lid over said removable tank, and

(g) a tank guide which holds said tank in a vertical position in said cabinet,

said fuel chamber being arranged to carry liquid fuel from said removable tank to said wick of said combustion chamber,

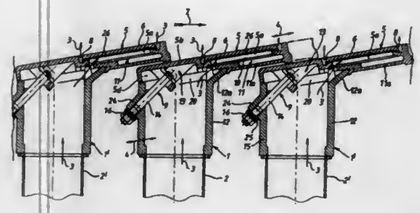
said apparatus comprising a thermal barrier for isolating said removable tank from the heat of said reflector and said combustion chamber.

5,549,471

COOLER GRATE FOR A RECIPROCATING GRATE COOLER

Gert Tegtmeier, Oelde, Germany, and Manfred Strohbusch, Ennigerloh, Germany, assignors to Krupp Polysius AG, Beckum, Germany

Filed Mar. 20, 1995, Ser. No. 406,577
Claims priority, application Germany, Apr. 14, 1994, 44 12 885.1
Int. Cl.[6] F27D 15/02
U.S. Cl. 432—77 8 Claims



1. Cooler grate for a reciprocating grate cooler which serves for cooling hot material to be cooled, comprising

a) a plurality of grate plate supports (**1**, **1'**) which extend transversely with respect to the cooler grate as well as parallel to and spaced from one another, are constructed as hollow bodies and are connected to cooling gas supply ducts (**2**, **2'**),

b) a plurality of grate plates (**5**) which are co-ordinated in transverse rows and are provided with cooling gas openings (**8**) in the upper support surfaces (**6**) for the material to be cooled, at least in the front plate portions (**5***a*) pointing in the direction of conveying the material to be cooled,

c) wherein the grate plates (**5**) of each transverse row are fixed on a grate plate support (**1**, **1'**) by means of screw connections (**9**) so as to be sealed in such a way that transverse rows of grate plates which are adjacent to one another in the longitudinal direction of the cooler grate overlap one another,

d) and wherein in the region between the at least partially open upper face (**1***a*) of the grate plate supports (**1**, **1'**) and the cooling gas openings (**8**) of the appertaining grate plates (**5**) connecting channels (**10**) are constructed for forced supply of cooling gas (**3**) from the interior of the grate plate supports to the cooling gas openings,

characterised by the following features:

e) each grate plate (**5**) is provided on its front plate portion (**5***a*), so as to form the appertaining cooling gas connecting channel (**10**, with a lower part (**11**) which is in the shape of a box, the base wall (**11***a*) of which—when viewed in the direction of conveying the material for cooling—is in gas-tight form-locking engagement by way of its rear edge region (**11***a'*) with an upper edge (**12***a*) of the front long wall (**12**) of the grate plate support facing it;

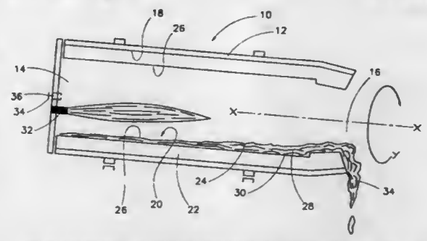
f) on the underside of a rear plate portion (**5***b*) of each grate plate (**5**) at least one receiving part (**13**) for the head portion (**14***a*) of a tightening bolt (**14**) is firmly attached, this bolt passing through the rear long wall (**15**) of the grate plate support towards the exterior and being clamped there by a bolt nut (**16**).

5,549,472

CONTROL OF PROTECTIVE LAYER THICKNESS IN KILNS BY UTILIZING TWO LASER BEAMS

Vassiliou Eustathios, Newark, Del.; Walter R. Schaefer, Cherry Hill, and Joseph F. Guinto, Pitman, both of N.J., assignors to Rollins Environmental Services, Inc., Wilmington, Del.

Filed Jun. 2, 1995, Ser. No. 458,131
Int. Cl.[6] F23G 5/00
U.S. Cl. 432—103 24 Claims



1. In an elongate kiln having a front end, a back end, an axis, an inside surface, and a protective layer on the inside surface, the protective layer having a thickness and a top surface,

a method for controlling the thickness of the protective layer at a point of the top surface of said protective layer, comprising the steps of:

(a) directing a first laser beam in a manner to form a first spot on said point of the top surface;

(b) directing a second laser beam in a manner to form a second spot on said point of the top surface and on said first spot;

(c) computing the thickness of the protective layer by using at least partially mathematic relations; and

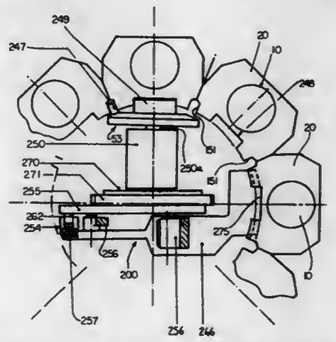
(d) increasing the thickness of the protective coating, if said thickness falls under a predetermined value.

5,549,473

LOADER DEVICE FOR AN AUTOMATIC SPACE FURNACE

Dominique Valentian, Rosny, France, assignor to Societe Europeenne de Propulsion, Suresmes, France

Filed May 10, 1995, Ser. No. 437,976
Claims priority, application France, May 13, 1994, 94 05892
Int. Cl.[6] B27D 3/00
U.S. Cl. 432—239 17 Claims



1. A loader device for an automatic space furnace for processing purposes, the furnace having a longitudinal axis and means for driving the furnace in translation in guided manner along said longitudinal axis, the loader device being disposed in the vicinity of the furnace and comprising a cartridge-carrier carousel provided

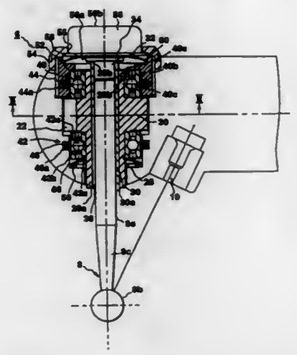
with a set of cartridge-holders in which sealed, closed cartridges are removably mounted, each cartridge being designed to contain a sample for processing in said space furnace, all of the cartridges being disposed in the carousel parallel to its axis of rotation, the loader device further comprising a control mechanism for imparting indexed rotary drive to the cartridge-holders, wherein the carousel is mounted to one side of the furnace in such a manner that its axis of rotation is parallel to the longitudinal axis of the furnace, wherein each cartridge-holder of the carousel cooperates with a transfer mechanism including a translation arm extending perpendicularly to the axis of rotation of the carousel to enable each cartridge to be brought successively into a working position in which the axis of the cartridge is in alignment with the longitudinal axis of the furnace, and wherein the control mechanism for imparting rotary drive to the cartridge-holders and to the transfer mechanism are activated alternately by a single electric motor.

5,549,474

CLAMPING DEVICE PARTICULARLY USEFUL FOR DENTAL HANDPIECES

Yechiel Cohen, 4 Rotem St., Carmiel 20100, Israel

Filed Sep. 30, 1994, Ser. No. 315,859
Claims priority, application Israel, Oct. 6, 1993, 107202
Int. Cl.[6] A61C *1/14*
U.S. Cl. 433—129 **20 Claims**



1. A clamping device for clamping a rodlike member to a housing, comprising:

a tapered sleeve carried by said housing and having an inner diameter which decreases from an open end thereof to its opposite end;

a tapered collet received within said open end of the tapered sleeve; said tapered collet having an open end for receiving the rodlike member, and an outer diameter which decreases from its open end to its opposite end; said tapered collet being formed with an axial slit starting from its open end and extending along at least a part of its length, permitting said part to contract in diameter in order to firmly clamp the rodlike member when received in the tapered collet and the tapered collet is received within the tapered sleeve;

a depressable button carried by said housing and having an inner surface engageable with said opposite end of the tapered collet, and an outer surface engageable by a user to depress the button;

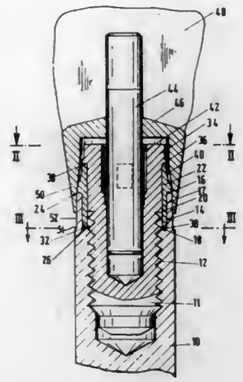
and a spring normally urging said button outwardly of the housing but being depressable to move the tapered collet outwardly of the tapered sleeve, thereby to expand said part of the tapered collet to permit removal of the rodlike member from the tapered collet, or insertion of the rodlike member into the tapered collet and firm clamping of the rodlike member in the tapered collet by manually pressing the rodlike member and tapered collet into the tapered sleeve.

5,549,475

ENOSSAL SINGLE-TOOTH IMPLANT

Walter Duerr, Remchingen, and Axel Kirsch, Stuttgart, both of, Germany, assignors to Eberle medizintechnische Elements GmbH, Wurmberg, and IMZ Fertigungs-und Vertriebsgesellschaft fuer dentale Technologie mbH, Filderstadt, both of, Germany

Filed Dec. 9, 1994, Ser. No. 352,507
Claims priority, application Germany, Dec. 9, 1993, 43 42 058.3
Int. Cl.[6] A61C *8/00*
U.S. Cl. 433—173 **14 Claims**



1. In a single-tooth implant for a tightly-fitting denture, said implant having a cylindrical basic body insertable in a bore made in a jawbone, said body having a blind bore open to an open end to form a coronal front edge, a spacing sleeve engageable on the coronal front edge, an implant post inserted in the blind bore of the basic body and connectible in a rotation-preventing manner to the basic body, a joining device for fixing the spacing sleeve on the basic body and a fixing head for the denture joined to the implant post, the improvements comprising the fixing head and the joining device being constructed as a one-piece member having a bell-shaped ring hood with a tapering skirt concentrically surrounding the implant post, said tapering skirt extending over the joint area between the outer circumference of the basic body and the spacing sleeve, said tapering skirt extending over a cylindrical circumferential wall of the basic body.

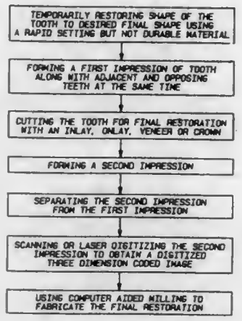
5,549,476

METHOD FOR MAKING DENTAL RESTORATIONS AND THE DENTAL RESTORATION MADE THEREBY

Sylvan S. Stern, 14720 Loretta Pl., Oak Park, Mich. 48237

Filed Mar. 27, 1995, Ser. No. 411,104
Int. Cl.[6] A61C *5/10;11/00*
U.S. Cl. 433—223 **12 Claims**

1. A method of making dental restorations comprising the steps of temporarily repairing a tooth area to be restored to a desired shape of a final restoration, taking a first impression of the tooth area to be restored, preparing the tooth area to be restored for restoration, forming a second impression within the first impression with material that is non-adherent to the first impression, separating the first impression from the second impression and scanning the second impression to obtain an image of the final restoration.

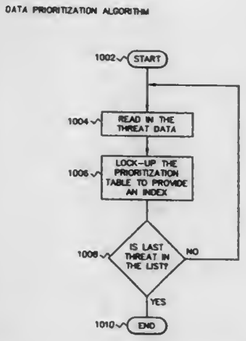


5,549,477

INTEGRATED AIRCRAFT SURVIVABILITY EQUIPMENT IN-FLIGHT SIMULATION

My Tran, and John E. Rasinski, both of Albuquerque, N.M., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 977,471, Nov. 17, 1992, abandoned. This application Jun. 23, 1995, Ser. No. 494,311
Int. Cl.[6] G09B *9/40*; G01S *7/36;7/38*
U.S. Cl. 434—5 **22 Claims**



1. Survivability equipment for an aircraft which includes:

an aircraft survivability equipment simulator apparatus embedded in the survivability equipment for providing in flight simulation of threats, said simulator apparatus comprising:

a threat database which includes a plurality of different threats as well as associated parameters for each of the threats;

a threat proximity module which receives position and flight plan information as well as the associated parameters from the threat database in order to perform a plurality of threat proximity calculations and generate a threat proximity signal;

a threat modeling module which includes threat models for a plurality of aircraft sensors, the threat modeling module receives the threat proximity signal and generates threat models for any combination of the aircraft sensors selected as a function of the associated parameters, and for each of the threat models generated, a track file is created;

an IASE simulation module which receives the track files from the threat modeling module and simulates the IASE; and

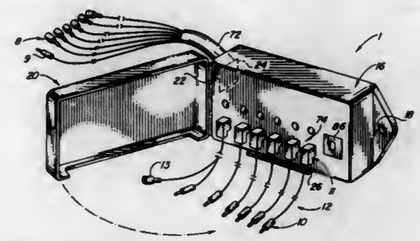
means to provide simulation information to a pilot of the aircraft.

5,549,478

UNIVERSAL TRAILER LIGHT LOCATOR

David McGuire, P.O. Box 129, Apache Junction, Ariz. 85217

Filed Jan. 20, 1995, Ser. No. 376,030
Int. Cl.[6] B60L *1/00*
U.S. Cl. 439—35 **23 Claims**



1. A universal electrical and mechanical trailer interface comprising:

(a) a printed circuit board;

(b) a casing having a top cover, a plurality of sides and at least one hinge, said casing enclosing said circuit board;

(c) a plurality of resistors and connector tabs incorporated onto said circuit board;

(d) a plurality of indicating means for verifying a proper connection, said indicating means incorporated onto said circuit board;

(e) a plurality of angled female connectors reciprocally received onto said connector tabs;

(f) a plurality of input wires in communication with said circuit board;

(g) a plurality of output wires having distal ends, said output wires in communication with said angled female connectors;

(h) a plurality of versatile female connectors having open flared ends, a central recessed portion and a center;

(i) at least one versatile male connector having open flared ends, a central recessed portion and a center, said versatile male connector reciprocally receiving said input wires; and

(j) a plurality of said versatile male connectors having open flared ends, a central recessed portion and a center, said versatile male connectors reciprocally receiving said output wires.

5,549,479

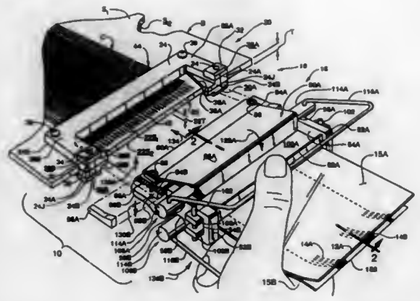
ZERO INSERTION FORCE CONNECTOR SYSTEM FOR A FLEXIBLE CIRCUIT

Richard A. Elco, Mechanicsburg, Pa., and Curt A. Williams, Raleigh, N.C., assignors to Berg Technology, Inc., Reno, Nev.

PCT No. PCT/US92/09987, § 371 Date Apr. 30, 1993, § 102(e) Date Apr. 30, 1993, PCT Pub. No. WO93/10577, PCT Pub. Date May 27, 1993
Continuation-in-part of Ser. No. 946,003, Sep. 15, 1992, abandoned, which is a continuation of Ser. No. 793,513, Nov. 18, 1991, abandoned. This PCT application Nov. 18, 1992, Ser. No. 39,378
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—67 **28 Claims**

1. A zero insertion force connector for interconnecting conductive tracings on at least a first flexible circuit to corresponding electrical conductive paths on a surface of a substrate, the substrate having a predetermined thickness dimension, the connector comprising:

a first and a second spring clamp jaw, each spring clamp jaw having a forward end and a rearward end thereon, the flexible circuit being attached to one of the clamp jaws adjacent to the forward end thereof, the clamp jaws being confrontationally arranged so that a portion of each clamp jaw adjacent to the rearward end thereof cooperate to define a channel through which the flexible circuit passes; and



actuating means for opening the spring clamp jaws to space apart the forward ends thereof,

wherein the flexible circuit has an end thereon and wherein the conductive tracings on the flexible circuit terminate a predetermined distance from the end of the flexible circuit thereby to define on the flexible circuit a region that is free of conductive tracings, the flexible circuit being attached to the forward end of the one spring clamp jaw within the region on the flexible circuit that is free of conductive tracings.

5,549,480

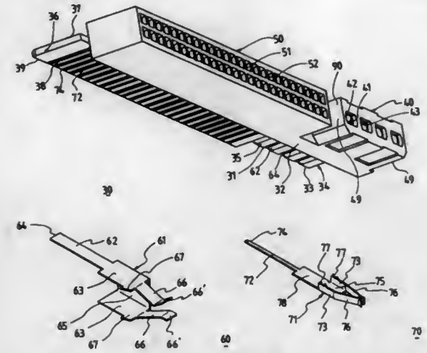
UNITARY CONNECTOR ALLOWING LATERALLY VARIANT POSITIONS OF MATING CONTACTS OF COMPLEMENTARY CONNECTOR

Lee Ming Cheng, Cupertino, Calif., assignor to Tongrand Limited, Hong Kong, Hong Kong

Filed May 17, 1994, Ser. No. 243,146

Int. Cl.[6] H01R *23/70*

U.S. Cl. 439—79 **1 Claim**



1. A unitary female connector comprising a first power region and a second signal region which are juxtaposed lengthwise along a housing of said connector for respectively mating with a power section and a signal section of a complementary male connector;

said first power region having a plurality of first large passageways extending therethrough in a front-to-back direction for receiving a corresponding number of first large power contacts therein to mate with large power pins of the power section of the complementary male connector, respectively;

said second signal region having a plurality of second small passageways extending therethrough in the front-to-back direction for receiving a corresponding number of second small signal contacts therein to mate with small signal pins of the signal section of the complementary male connector, respectively;

said first large power contact including thereof a pair of first arms positioned at a front end and arranged to oppositely face each other in a vertical direction to form a lateral through-opening in a lengthwise direction along said housing;

said second small signal contact including thereof a pair of second arms positioned at a front end and arranged to oppositely face each other in a horizontal direction; wherein

a lengthwise dimension of said power region of said female connector is substantially smaller than that of an inner space of said power section of said male connector for allowing lengthwise mating deviation between said male and female connectors; and wherein

said first large power contact includes a large U-shaped body having a large base and two large retention walls respectively extending from two sides of said large base and perpendicular to said large base, said pair of first arms extending forwardly from said two large retention walls, respectively, and a large tail directly integrally extending rearward from one of said large retention walls; said second small signal contact includes a small U-shaped body having a small base and two small retention walls respectively extending vertically from two sides of said small base, said pair of second arms extending forwardly from said two small retention walls, respectively, a plate extending rearward from said small base and a small tail integrally extending rearward from said plate.

5,549,481

CONNECTOR ASSEMBLY FOR PRINTED CIRCUIT BOARDS

Danny Morlion, St. Amandsberg, and Luc Jonckheere, Dilbeek, both of, Belgium, assignors to Framatome Connectors International, Paris, France

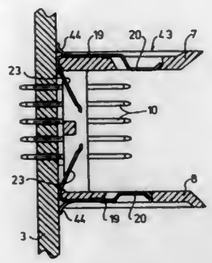
Division of Ser. No. 252,255, Jun. 1, 1994, Pat. No. 5,433,617.

This application Feb. 3, 1995, Ser. No. 382,878

Claims priority, application Netherlands, Jun. 4, 1993, 9300971

Int. Cl.[6] H01R *13/648*

U.S. Cl. 439—108 **4 Claims**



1. A connector assembly comprising:

a first connector with a first housing of insulating material having a bottom and two opposite side walls, and male contact elements mounted in the bottom of the first housing and arranged in rows and columns, the male contact elements having first portions projecting from the bottom of the first housing, which first projecting portions are adapted to be inserted into holes of a first printed circuit board, and

a second connector with a second housing of insulating material adapted to be inserted into the first housing with an insertion side, and female contact elements mounted in the second housing and arranged in rows and columns, the female contact elements having second portions projecting from a lower side of the second housing, which second projecting portions are adapted to be inserted into holes of a second printed circuit board,

wherein the second connector comprises at least one ground contact plate projecting out of said second housing at the insertion side along a distance substantially corresponding with a thickness of the bottom of the first housing,

wherein at least one slot is provided in the bottom of the first housing for receiving the at least one ground contact plate, and

wherein said first housing comprises first shielding plates provided on the side walls and having first contact means for connection with a corresponding conductor of the first printed circuit board and wherein the first connector has at least one ground contact means that each project in a slot in the bottom of the first housing for contacting the at least one ground contact plate of the second housing, the first housing comprises a ground contact unit including the at least one ground contact means which has, for each slot, at least one ground contact received in a recess adjacent to the slot and provided with a third contact means comprising a contact spring, projecting into the slot for contacting a corresponding one of the ground contact plates of the second housing, the ground contact unit comprising, for each slot, two ground contact plates, each ground contact plate of the first connector comprising a substantially H-shaped main part, legs of the H-shape each being aligned with one of the rows of the male contact elements.

5,549,482

APPARATUS FOR SECURING TOGETHER AN ATTACHMENT PLUG WITH AN ELECTRIC RECEPTACLE

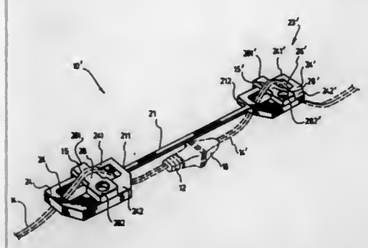
Daniel Langlais, 431 Principale, St-Prime, Québec, Canada, and Gervais Archambault, 35 Avenue de la Fabrique, Ste-Hedwidge, Québec, Canada

Filed Dec. 22, 1994, Ser. No. 361,972

Claims priority, application United Kingdom, Apr. 26, 1994, 9408243

Int. Cl.[6] H01R *13/62*

U.S. Cl. 439—369 **14 Claims**



13. An apparatus for securing together an attachment plug mounted at one end of a first electric flexible cord, with an electric receptacle defining a cord connector mounted at one end of another electric flexible cord, wherein said apparatus comprises in combination:

a member having opposite ends;

two buckles, each buckle comprising a frame having opposite sides and a tongue having two extremities, one of said extremity being pivotally connected to one of said opposite sides;

the frame being provided with an opening for receiving an arcuated portion of the corresponding electric flexible cord such that said arcuated portion of the corresponding electric cord is extendable over the frame; and

the tongue being removably positionable above the opening to be engaged by the arcuated portion of the corresponding electric flexible cord, and being pressed against the frame when the arcuated portion of said cord is moved backwardly across the opening to thus prevent said cord to be removed from said opening; and

one of said buckle being fastenable to one of said ends of the member and the other buckle being fastenable to the other end of the member.

5,549,483

ELECTRICAL TERMINAL WITH LEAD STRAIN RELIEF MEANS

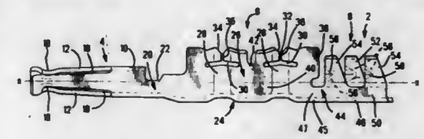
Gheorghe Hotea, Griesheim, Germany, assignor to The Whitaker Corporation, Wilmington, Del.

Filed Jun. 13, 1994, Ser. No. 258,646

Claims priority, application United Kingdom, Jul. 2, 1993, 9313652

Int. Cl.[6] H01R *4/24*

U.S. Cl. 439—399 **14 Claims**



1. An electrical terminal having a longitudinal axis and comprising a mating portion, a wire connecting portion connected at one end to the mating portion and a lead strain relief portion connected to the opposite end of the wire connecting portion, and being adapted to make electrical connection to the metal core of an insulated electrical lead, and the lead strain relief portion comprising a base and upstanding ears projecting away from the base and adapted to be crimped about the insulation of the lead to restrain axial movement of the lead away from the wire connection portion; characterized in that each ear is formed with a barb projecting inwardly of the strain relief portion and being adapted to bite into the insulation of the lead when the ears have been crimped thereabout each barb having a sharp edge directed inwardly of the strain relief portion and an end edge extending from the sharp edge and facing the wire connecting portion; whereby the sharp edge bites into the insulation of the insulated electrical lead while maintaining an approximately linear wire path.

5,549,484

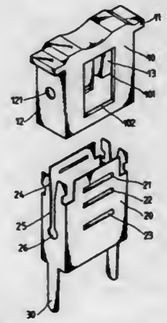
ELECTRIC TERMINAL DEVICE

Chih-Chinh Chen, Chung Ho, Taiwan, assignor to Eric-Cambridge Co., Ltd., Taipei Hsien, Taiwan

Filed Jan. 4, 1995, Ser. No. 368,338

Int. Cl.[6] H01R *4/24*

U.S. Cl. 439—417 **1 Claim**



1. An electric terminal device comprising:

a cap having a rectangular top wall having two long sides and two short sides, two large side walls and two small side walls

respectively perpendicularly extended from the four sides of said rectangular top wall in the same direction defining with said top wall a downward open chamber, two outward flanges horizontally extended from the two short sides of said rectangular top wall in reversed directions for gripping by a user, two symmetrical retaining openings respectively made through the two opposite large side walls of said cap, and two wire holes respectively made through the two opposite small side walls of said cap, and two separate downward inside flanges suspended in said downward open chamber;

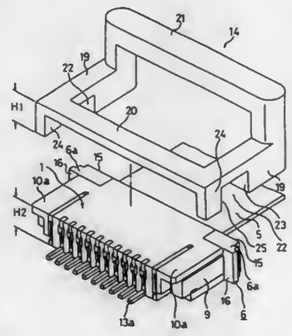
a connecting terminal made from a rectangular open frame formed of two opposite small side walls and two opposite large side walls, said connecting terminal having two connecting legs down wards extended from the two opposite small side walls of said connecting terminal for welding to a circuit board, two sets of horizontal ribs of equal length respectively raised from the two opposite large side walls of said connecting terminal at different elevations and engaged into the openings on the two opposite large side walls of said cap, two elongated cutting slots made through the two opposite small side walls of said connecting terminal and longitudinally respectively aligned with said connecting legs, each cutting slot having a top end terminating in a broad top opening and a bottom end terminating in a round hole of diameter longer than the width of said elongated cutting slots, and wherein when an electric wire is inserted through said wire holes on the cap, said connecting terminal is fitted into the downward open chamber of said cap to force said horizontal ribs into engagement with the openings on the two opposite large side walls of said cap, causing said electric wire to be forced by said downward flanges of said cap into said elongated cutting slots through the broad top openings of said elongated cutting slots to make an electric contact with said connecting terminal.

5,549,485

FITTING JIG FOR A FLAT CABLE CONNECTOR

Masamitsu Chishima, and Yutaka Noro, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Mar. 1, 1995, Ser. No. 396,717
Claims priority, application Japan, Mar. 4, 1994, 6-060310
Int. Cl.[6] H01R *9/07*; **B23P** *19/00*
U.S. Cl. 439—495 **20 Claims**



1. A fitting jig, for a flat cable connector in which a connector housing has a cable inserting chamber in a rear portion into which a flat cable is inserted, and terminal receiving holes in a front portion which communicate with the cable inserting chamber and receive terminals and a slide member which is pushed into and pulled out of said connector housing, the slide member including a push-in piece which, when pushed into the connector housing, presses the flat cable against the terminals in such a manner that the flat cable is prevented from coming off the connector housing, comprising:

a jig body including an operating section; and

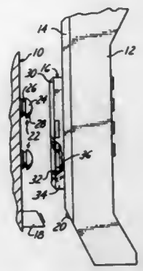
pushing surfaces through which the slide member is pushed, said jig body externally engaging the connector housing while being positioned.

5,549,486

BATTERY DOCK FOR PORTABLE COMMUNICATION DEVICES

Eric S. Cavallaro, Indianapolis; Jay J. Adams, Noblesville; Stanton E. Troy, Kokomo, and James R. Daugherty, Russiaville, all of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Jul. 3, 1995, Ser. No. 497,971
Int. Cl.[6] H01R *3/00*
U.S. Cl. 439—500 **10 Claims**



1. A mounting system for a portable communication device for detachably securing the device to a support comprising:

a battery secured externally to the device; snap-on fastener means solely on the battery;

mating means on the support for coupling to the fastener means to secure the battery to the support; and

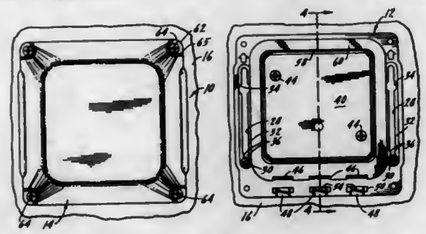
one of the fastener means and the mating means including a release means for separating the fastener means and the mating means.

5,549,487

SPLASHPROOF ENCLOSURE FOR ELECTRONIC FAUCET

Richard A. Nortier, Westchester, Ill., assignor to Sloan Valve Company, Franklin Park, Ill.

Filed Dec. 27, 1994, Ser. No. 364,559
Int. Cl.[6] H01R *13/52*; **H05K** *5/00*
U.S. Cl. 439—521 **20 Claims**



1. A splashproof enclosure for use in mounting electrical control circuits for connecting electric power to sensor operated electric actuators for toilet room plumbing devices, said enclosure including a base and a cover mounted thereto;

said base being formed and adapted to mount on a toilet room wall and having a power cord opening therein whereby a power cord may enter said enclosure through the base thereof, spacing means on the rear of said base facing the toilet room wall to space the base from the toilet room wall to allow fluid to flow behind the enclosure, a dam positioned on the upper side of said power cord opening and extending from said base rear toward the toilet room wall to divert fluid around said power cord opening;

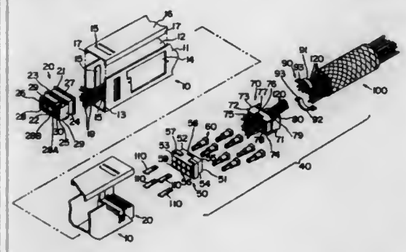
means for attaching said cover to said base, seal means between said cover and base preventing the entry of fluid into the interior of said enclosure, and cooperating means on said cover and said base providing a plurality of cable entrance openings, said cooperating means including means for securing cables to said enclosure.

5,549,488

ELECTRICAL ASSEMBLY WITH MULTIPLE ARRANGEMENT

Curtis G. Berndt, Fremont, Ind.; Daniel R. Van Dyk, Belding, Mich.; David A. Van Dyk, Grand Rapids, Mich.; Steven C. Deer, Kentwood, Mich., and Royal A. Kent, Grand Rapids, Mich., assignors to Pent Products, Inc., Kendallville, Ind.

Filed Aug. 3, 1994, Ser. No. 285,184
Int. Cl.[6] H01R *13/64*
U.S. Cl. 439—680 **34 Claims**



1. An electrical arrangement for modular wall panels, comprising;

a first plug receptacle disposed in a raceway in a base of a first panel and a second plug receptacle disposed in a raceway in a base of a second panel;

at least one electrical contact disposed in each of said first and second plug receptacles, said contacts being disposed in a predetermined, fixed orientation;

first and second plugs, each of said plugs including at least one electrical terminal;

an insulating sleeve surrounding each of said terminals, said sleeves being separate from said first and second plugs, disposed inside of said first and second plugs, and selectively positionable in an orientation which allows said terminals to mate with said contacts; and

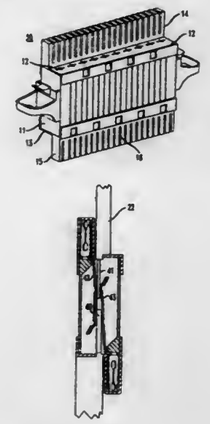
electrically conducting cables connecting said terminals in said first plug to said terminals in said second plug.

5,549,489

CONNECTOR MODULE WITH TEST AND JUMPER ACCESS

William C. Baggett, Duluth, Ga.; Elliot A. Baines, Jr., Morris; Wayne S. Filus, Lebanon, both of N.J.; Dianne W. Gilland, Lawrenceville, Ga.; Theodore E. Kluska, Glen Rock, N.J.; Wayne D. Larsen, Indianapolis, Ind.; Mark G. Spaulding, Florham Park, and Jeremia P. Starace, Nutley, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed May 17, 1995, Ser. No. 442,863
Int. Cl.[6] H01R *9/22*
U.S. Cl. 439—709 **6 Claims**



1. A connector module comprising:

an insulating housing having a top and bottom surface;

first and second rows of contacts mounted within the housing, each contact including an end portion which is capable of providing electrical connection to a corresponding wire and a stem portion, the contacts being mounted so that the end portions of the first row extend through the top surface and the end portions of the second row extend through the bottom surface, the end portions of the first and second rows being laterally displaced, and the top and bottom surfaces including slots adjacent to the corresponding rows for receiving therein leads which make electrical contact with corresponding contacts, the stem portions of corresponding contacts of the first and second rows making electrical contact on at least two contact points, one contact point being aligned with a slot in the top surface and the other contact point being aligned with a slot in the bottom surface.

5,549,490

MODULAR CONNECTOR SYSTEM

Eduardo R. Buetas, Passeig De l'Estacio 14, Tarragona, Spain

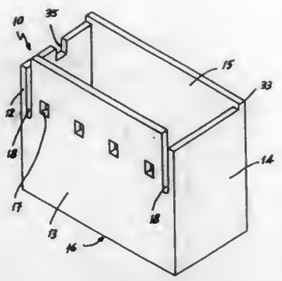
Filed Oct. 4, 1994, Ser. No. 322,305
Claims priority, application Spain, Nov. 26, 1993, 9303140
Int. Cl.[6] H01R *11/09*
U.S. Cl. 439—724 **6 Claims**

1. modular electrical connector comprising:

a box having a base with opposing side and end walls extending generally perpendicularly from said base, said opposing side and end walls having upper portions defining an open top,

a male electrical terminal mounted within said box and having a plurality of spaced pairs of contact arms extending toward said open top from said base;

a pair of spaced slots in one of said side walls extending from said upper portion towards said base so that said one of said side walls is resiliently yieldable between said slots,



a plurality of spaced openings through said one of said side walls and between said slots,

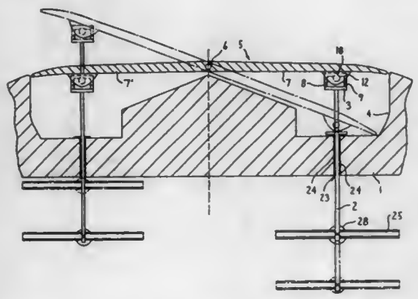
a plurality of female connectors each having a pair of generally parallel channels therein in which female electrical contacts may be mounted, each female connector having opposing and spaced side and end walls and being of a configuration to be receivable within said box so that a pair of spaced arms of said male electrical connectors are received within said pair of channels, respectively, said opposing and spaced side and end walls of said female connectors having upper and lower portions, each of said female connectors having a first locking protection extending from one of said side walls of said female connector, of a size to be engaged within one of said spaced openings in said one of said side walls of said box to thereby retain said female connectors within said box.

5,549,491

FIN DRIVE FOR A WATERCRAFT

Tomislav Domancic, pok. Mihe, 58450 Hvar - Majerovica, Croatia

Filed Mar. 29, 1995, Ser. No. 422,201
Int. Cl.[6] B63H *1/36*
U.S. Cl. 440—15 **9 Claims**



1. A fin drive for driving a watercraft in a travelling direction comprising:

a lever arm operable with a driving force and having connection means adapted to be connected to a watercraft;

a pivot joint disposed on said lever arm;

a moveable carrier connected to said pivot joint so as to be moveable along a path extending toward and away from said lever arm in response to a movement of said lever arm;

at least first and second rods provided respectively on a front side and a rear side of said moveable carrier and connected to said pivot joint so as to be moveable in conjunction with said moveable carrier, said first and second rods being moveable relative to said moveable carrier each through an adjustable stroke;

biasing means operatively engaged with said first and second rods for providing a biasing force which resists movement of said first and second rods relative to said moveable carrier through said stroke;

a fin having first swivel axis means for pivotally fastening said fin to said moveable carrier, said first swivel axis means defining a first swivel axis oriented transverse to said travelling direction, said fin including second swivel axis means for pivotally fastening said fin to said first and second rods said second swivel axis means defining a rod axis for each of said first and second rods oriented parallel with respect to said first swivel axis; and

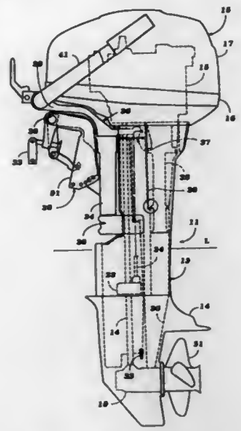
adjustment means for varying said stroke of each said first and second rods relative to said moveable carrier whereby pivoting of said fin about said first swivel axis is adjusted.

5,549,492

OUTBOARD MOTOR

Manabu Yamamoto; Takio Ogasawara, and Toshihiro Nozue, all of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Shizuoka-ken, Japan

Filed Mar. 6, 1995, Ser. No. 399,127
Claims priority, application Japan, Mar. 7, 1994, 6-059831
Int. Cl.[6] B03H *5/12*
U.S. Cl. 440—53 **18 Claims**



1. A mounting arrangement for an outboard motor comprised of an outer casing, said mounting arrangement comprising a unitary assembly comprised of a base plate portion affixed rigidly and directly to said outer casing by at least a first threaded fastener and an elastic element bonded to said base plate and defining an opening adapted to receive a fastener, a steering bracket affixed to a steering shaft, and a second threaded fastener affixed to said steering bracket and passing through said opening for resiliently connecting said steering shaft and said outer casing.

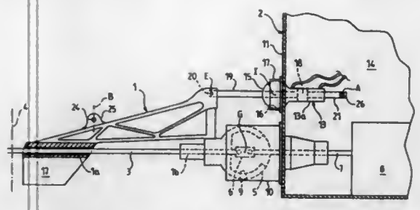
5,549,493

BOAT PROPULSION AND RUDDER DEVICE OF THE TYPE HAVING A SURFACE PROPELLER

Paul G. Bezzi, 77 Chemin de l'Avarie, 06810 Auribeau Sur Siagne, France

Filed Dec. 7, 1994, Ser. No. 351,593
Int. Cl.[6] B63H *21/26*
U.S. Cl. 440—61 **14 Claims**

1. A boat propulsion and rudder device of the type having a surface propeller, comprising:



a motor situated inside a boat and including an output shaft;

a propeller;

a propeller shaft carrying said propeller at one end and being connected by its other end to said output shaft of the motor;

a propeller shaft support projecting outward at the stern of the boat and rotationally supporting said propeller shaft;

a mounting means, for mounting said shaft support on the boat so that said shaft support can move horizontally and vertically;

an operating means for controlling movements of said propeller shaft support, said operating means including a vertical operation driving member and a transverse operation driving member for effecting movement of said propeller shaft support respectively vertically and horizontally, wherein said driving members are placed inside of the boat; and

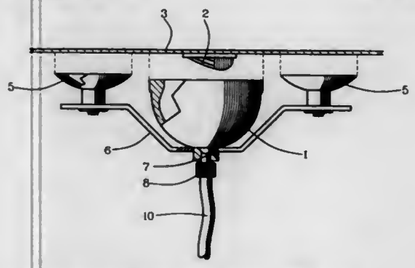
a common transmission means for commonly linking said propeller shaft support to both said driving members of said operating means, said transmission means including a first end located outside of the boat connected to said propeller support and a second end responsive to said operating means inside of the boat.

5,549,494

INBOARD MOTORBOAT ENGINE FLUSHER

William F. Fosmer, 1649 Mason Ave., Daytona Beach, Fla. 32117

Filed Jun. 16, 1995, Ser. No. 491,384
Int. Cl.[6] B08B *9/00*
U.S. Cl. 440—88 **9 Claims**



1. An inboard-motorboat-engine flusher comprising:

a cooling-water-inlet enclosure that is designedly water-tight and sized and shaped to fit over a cooling-water inlet on a bottom of an inboard-engine motorboat;

an enclosure holder for holding the cooling-water-inlet enclosure in designedly water-tight contact with the bottom of the inboard-engine motorboat about the cooling-water inlet wherein the enclosure holder is a plurality of resilient suction cups attached to a bracket on the cooling-water-inlet enclosure, said suction cups being positioned for suction attachment to the bottom of the inboard-engine motorboat;

a conduit in fluid communication between an outside periphery of the cooling-water-inlet enclosure and an inside periphery of the cooling-water-inlet enclosure;

a hose connector having a hose-connection means on an outside periphery of the cooling-water-inlet enclosure; and

the hose connector being in fluid communication with the conduit.

5,549,495

SIDE ENTRY LIFE VEST

Scott Burnworth, El Cajon, and Phillip L. Johnson, Carlsbad, both of Calif., assignors to Extreme Sports, Inc., Carlsbad, Calif.

Filed Feb. 3, 1995, Ser. No. 383,592
Int. Cl.[6] B63C *9/115*
U.S. Cl. 441—108 **12 Claims**

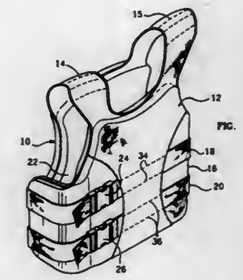


FIG.

1. A life vest, comprising:

a body portion having a ventral panel, a dorsal panel, and a top panel, said ventral and dorsal panels each having an upper edge, a lower edge and two side edges, one side edge of said ventral panel adjoining one side edge of said dorsal panel, the other side edges of said ventral and dorsal panels defining an opening therebetween for receiving a wearer's torso, said top panel having a ventral edge, a dorsal edge and an opening for receiving a wearer's head, said ventral edge of said top panel adjoining said upper edge of said ventral panel, said dorsal edge of said top panel adjoining said upper edge of said dorsal panel, said dorsal panel having a first integrally formed elongated tube extending across said dorsal panel;

a first belt having two first belt ends, said first belt adjustably extending through said first elongated tube, a portion of said first belt extending across said ventral panel and fixedly attached to said ventral panel along an elongated attachment area; and

a first buckle having two interengageable first buckle halves, each attached to one of said first belt ends.

5,549,496

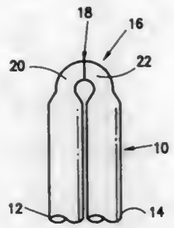
METHOD OF PRODUCING A LOW-PRESSURE MERCURY VAPOR DISCHARGE LAMP

Onn F. Foo, Hong Kong, Hong Kong, assignor to Mass Technology (H.K.) Ltd., Kowloon, Hong Kong

Filed Sep. 23, 1994, Ser. No. 311,108
Claims priority, application United Kingdom, Feb. 24, 1994, 9403558
Int. Cl.[6] H01J *9/26;9/24*
U.S. Cl. 445—26 **21 Claims**

1. A method of producing a joint between two glass discharge tubes of a low-pressure mercury vapour discharge lamp having two or more glass discharge tubes disposed in a side-by-side relationship, wherein discharge spaces of the discharge tubes are interconnected by an inter-connecting joint extending transversely to lengthwise axes of the tubes, and wherein during operation of the lamp, the discharge passes through a major part of the discharge tubes, the method comprising the steps of:

heating an open end of each of the tubes to soften the glass in a region to be joined together to form the joint;



forming a butt joint between the heated ends to join the tubes together;

stretching the region of the joined tubes in order to reduce a cross-sectional dimension of the region; and

thereafter bending the tubes into the side-by-side relationship, wherein said tubes are generally linear in form and are disposed generally in-line prior to said step of forming said butt-joint.

5,549,497

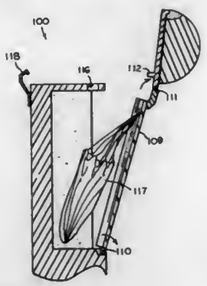
TOY ROCKET WITH VELOCITY DEPENDENT CHUTE RELEASE

Lonnie G. Johnson, Smyrna, and John Applewhite, Atlanta, both of Ga., assignors to Johnson Research Development Company, Inc., Smyrna, Ga.

Continuation-in-part of Ser. No. 165,647, Dec. 8, 1993, Pat. No. 5,407,375. This application Mar. 30, 1995, Ser. No. 413,840

Int. Cl.[6] A63H *33/20*

U.S. Cl. 446—52 **35 Claims**



1. A rocket comprising:

a body having a forward end relative to the direction of initial rocket propulsion and a bay;

a hatch movably mounted to said body for movement between a bay closed and opened positions;

a parachute stowed within said bay;

a first catch mounted adjacent a forward end of said body, and

a nose cone coupled to said hatch in latched engagement with said first catch in a static, prelaunched condition and in unlatched disengagement with said first catch in an inertially launched condition during initial rocket propulsion,

whereby with the initial forward movement or the rocket the inertia of the nose cone causes it to move to its unlatched condition and whereby the velocity of the rocket creates an airstream against the nose cone which maintains the hatch in a closed position by generating an air resistance force on the nose cone that is greater than the biasing force of the biasing means, and whereby the velocity of the rocket below a level sufficient for the wind resistance force to overcome the biasing force of the biasing means causes the hatch to move from its bay closed position to its bay opened position to release the parachute.

5,549,498

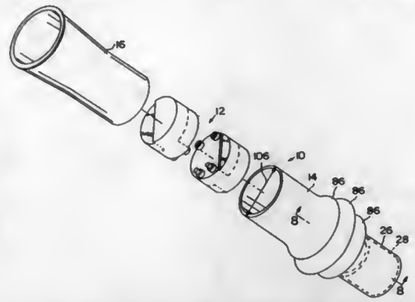
HIGH SOUND QUALITY GAME CALL

Richard C. Kirby, 6426 W. Quaker Rd., Orchard Park, N.Y. 14127

Filed Sep. 16, 1994, Ser. No. 308,093

Int. Cl.[6] A63H *3/31*

U.S. Cl. 446—193 **20 Claims**



1. A game call comprising sound chamber means, horn means in communication with said sound chamber means, and means comprising a bellows in communication with said sound chamber means for forcing air through said sound chamber means, said sound chamber means comprising at least two sounding units each of which has at least one pitch generating means and at least one of which has at least two pitch generating means for generating at least three different sound pitches respectively for thereby generating a sound simulating a sound of a wild game.

5,549,499

ADJUSTABLE DOLL STAND

Jere N. Foskey, and Jean C. Foskey, both of 440 Bucklen St., Swainsboro, Ga. 30401

Continuation-in-part of Ser. No. 95,509, Jul. 23, 1993, abandoned. This application May 8, 1995, Ser. No. 436,887

Int. Cl.[6] A63H *3/50*

U.S. Cl. 446—268 **5 Claims**



1. A doll stand comprising a base element, a hollow tube upstanding therefrom, said hollow tube having an outer diameter, a threaded rod telescopically disposed in said hollow tube, doll clamping means secured to said rod, a ring coaxially disposed with respect to said hollow tube and threadedly interconnected with said rod, said ring having the same outer diameter as said hollow tube, the bottom surface of said ring being disposed in flat face contacting relation with the upper surface of said hollow tube, said ring being seated flush with said hollow tube, a detent integrally formed on the inner surface of said hollow tube, a flat surface disposed on a portion of the periphery of said rod, said flat surface being coincidental with an imaginary plane extending between two points spaced horizontally on the circumference of said rod, and said detent being slidably engageable with said flat surface to prevent rotation of said doll clamping means.

5,549,500

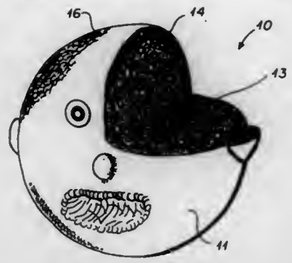
ANIMALIAN FIGURINE

Ron Manoah, Dunwoody, Ga., assignor to Bob Kennedy, Atlanta, Ga.

Filed Feb. 24, 1994, Ser. No. 201,360

Int. Cl.[6] A63H *3/36;3/02;* **A01C** *1/04*

U.S. Cl. 446—385 **24 Claims**



1. An animalian figurine comprising a body of granular plant life nutrient material, plant seeds in contact with said granular nutrient material, and a cover about said granular nutrient material and said plant seeds that includes a mesh portion having interstices of a size substantially permeable to water and plant stalks that may sprout from said plant seeds and substantially impermeable to said granular nutrient material and said plant seeds, whereby with the addition of water the granular nutrient material is maintained substantially intact by the cover and the plant seeds may sprout stalks which grow through the mesh portion of the cover to resemble hair.

5,549,501

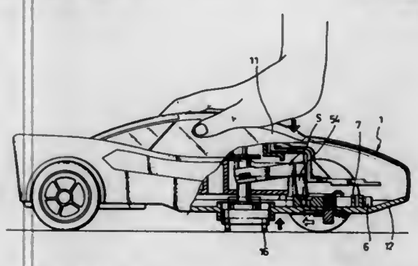
TOY CAR WITH A LIFTABLE STEERING WHEEL ASSEMBLY

Jin-Long Jow, Taipei, Taiwan, assignor to Chain Fong Toys Co., Ltd., Taipei, Taiwan

Filed Jun. 7, 1995, Ser. No. 478,791

Int. Cl.[6] A63H *17/36*

U.S. Cl. 446—460 **4 Claims**



1. A toy car of the type comprising a car body having a chassis, a casing mounted on said chassis, a driving mechanism mounted inside said casing, a transmission mechanism mounted inside said casing and driven by said driving mechanism and having a driven gear for power output, a steering wheel assembly mounted in a circular opening on said chassis and having an upright shaft at a top side coupled to said driven gear of transmission mechanism and two steering wheels at a bottom side for the steering control, a battery power supply mounted on said chassis, and a switch mounted on said chassis and connected between said battery power supply and said driving mechanism, the improvement comprising:

a link mounted on said casing and coupled to a sleeve surrounding said upright shaft between said steering wheel assembly and said transmission mechanism, said link comprising two pin holes bilaterally disposed at one end thereof and coupled to respective pins on the sleeve, two opposite pivot pins bilaterally disposed at an opposite end thereof and fastened to respective mounting grooves on said casing, and a downward rod extended from said opposite end; a slide with a locating hole which receives said rod

said slide coupled to said link and movable to switch said switch, said locating hole receiving the downward rod of said link when said steering wheel assembly is forced to move said upright shaft upward so as to lift said link, said slide having two parallel retainer arms at an end opposite the locating hole fastened to a stop member and a slide opening at one side, which receives said switch; and

said stop member being mounted on said chassis and receiving the retainer arms of said slide, said stop member having a smaller front end facing said slide, a bigger rear end, two curved side walls extended outwardly backwards from said smaller front end toward said bigger rear end.

5,549,502

POLISHING APPARATUS

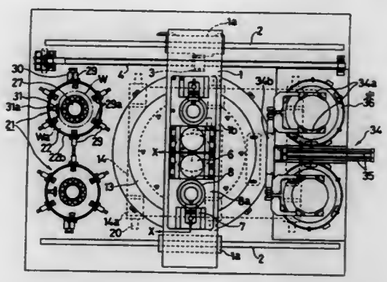
Kohichi Tanaka; Hiromasa Hashimoto, both of Fukushima-ken; Yasuo Inada, and Makoto Nakajima, both of Nagano, all of, Japan, assignors to Fujikoshi Machinery Corp., and Shin-Etsu Handotai Co., Ltd., both of, Japan

Filed Dec. 6, 1993, Ser. No. 162,679

Claims priority, application Japan, Dec. 4, 1992, 4-350115; Dec. 4, 1992, 4-350116

Int. Cl.[6] B24B *1/00*

U.S. Cl. 451—8 **19 Claims**



1. An apparatus for polishing works, each of said works having an orientation flat part, the apparatus comprising:

a work table;

a top ring for holding said work against said work table;

a position aligning mechanism for centering said work on said work table;

an orientation flat part positioning mechanism for positioning said orientation flat part of said work at a predetermined position on said work table; and

a displacing mechanism for reciprocally slidably displacing at least one of said top ring and said work table to align the center of said work with the center of said top ring, and subsequently, for aligning the center of said top ring with the gravitational center of said work.

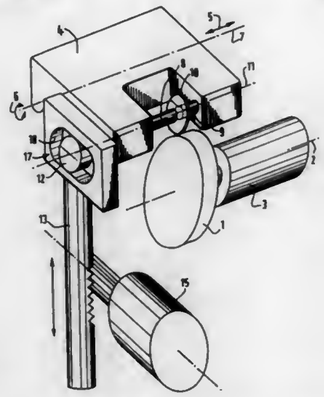
VOL 1189 ISS 4 AG 27 1996 UMI

5,549,503

OPHTHALMIC LENS GRINDING MACHINE

Michel Nauche, Soisy S/Montmorency, and Laurent Guillermin, Paris, both of, France, assignors to Essilor International, France

Filed Jan. 7, 1994, Ser. No. 179,487
Claims priority, application France, Jan. 8, 1993, 93 00130
Int. Cl.[6] B24B *17/00*
U.S. Cl. 451—11 **18 Claims**



1. A machine for grinding ophthalmic lenses comprising:

at least one grinding wheel rotatably mounted on a grinding wheel axis and drivable by a motor,

a swinging head frame pivotally mounted on a head frame axis parallel to said grinding wheel axis, said swinging head frame comprising means for gripping and retaining an ophthalmic lens and causing said lens to rotate about a lens axis, said head frame axis being located with respect to said grinding wheel axis so that said swinging bead frame is able to bring said ophthalmic lens in contact with said at least one grinding wheel,

a vernier for controlling the angular position of said swinging head frame with respect to said head frame axis, said vernier being connected to said swinging head frame by means of a positive linkage, said vernier controlling the angular position of said swinging head frame through said positive linkage by undergoing movements substantially along a longitudinal axis of said vernier, as a function of the angular position of said gripping means with respect to said lens axis.

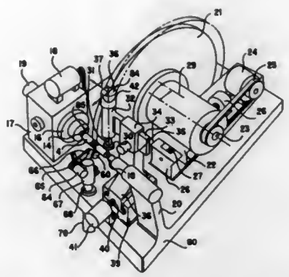
5,549,504

MANUFACTURE OF ROTARY VALVES

Arthur E. Bishop, Greenwich, Australia, assignor to A. E. Bishop & Associates Pty Limited, North Ryde, Australia

PCT No. PCT/AU93/00504, § 371 Date Apr. 20, 1995, § 102(e) Date Apr. 20, 1995, PCT Pub. No. WO94/09943, PCT Pub. Date May 11, 1994
PCT Filed Sep. 30, 1993, Ser. No. 325,175
Claims priority, application Australia, Oct. 23, 1992, PL5468
Int. Cl.[6] B24B *1/00*
U.S. Cl. 451—28 **12 Claims**

1. A machine for grinding longitudinal troughs in the edges of grooves of a power steering valve input-shaft including means to support the input-shaft for rotation about its axis, a grinding spindle having an axis substantially at right angles to the input-shaft axis and laterally displaced therefrom, a grinding wheel mounted on the grinding spindle having a contoured periphery corresponding in cross-section to the cross-section of the trough, means to rotate the spindle, first means to move the grinding wheel relatively towards the input-shaft to some predetermined depth of



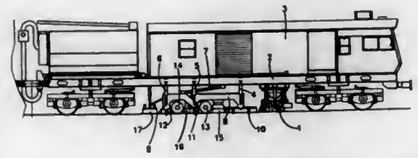
engagement therewith and to retract the grinding wheel on completion of grinding and a second means to move the grinding wheel axially relative to the input-shaft to form a longitudinal trough therein and means to rotate the input-shaft upon the retraction of the grinding wheel, the grinding wheel being of such a diameter as to produce oblique terminations of the trough.

5,549,505

INSTALLATION FOR THE REPROFILING OF TRACKS CARRIED OUT ON A RAILWAY LINE

Jean-Pierre Jaeggi, Geneva, Switzerland, assignor to Speno International SA, Geneva, Switzerland

Filed Dec. 1, 1994, Ser. No. 352,156
Claims priority, application Switzerland, Feb. 18, 1994, 497/94
Int. Cl.[6] E01B *31/17*; B23D *1/20*
U.S. Cl. 451—69 **15 Claims**



1. An installation for reprofiling at least one track of a railway line, comprising at least two milling units mounted under a railway carriage and movable relative thereto, means for lifting and applying the milling units against a track, each milling unit including at least one milling cutter driven in rotation by a motor; each milling unit being carried by a support movable vertically with respect to a frame guided along the rail; the two frames being of different lengths and being linked together along an axis perpendicular to a longitudinal axis of the rail; and said frames being connected to the underframe of the carriage by the means for lifting and for applying against the track.

5,549,506

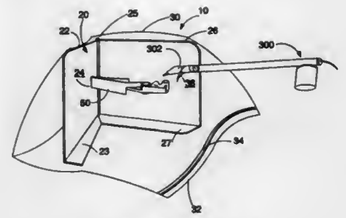
APPARATUS FOR SUPPORTING AND CONTAINING A DENTAL PROSTHESIS DURING THE MICRO-ETCHING THEREOF

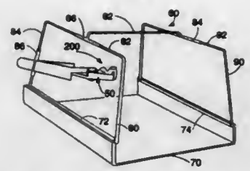
Jack Higa, 974 Esquimalt Avenue, West Vancouver, British Columbia, Canada, and Lawrence R. Higa, 2932 Fulton St., San Francisco, Calif. 94188

Filed Jan. 6, 1995, Ser. No. 369,469
Int. Cl.[6] B24C *9/00*; B24B *41/06*
U.S. Cl. 451—89 **14 Claims**

1. Apparatus for supporting and containing a dental prosthesis during the micro-etching thereof, said apparatus comprising:

(a) a framework;





(b) holding means carried by said framework for holding said prosthesis in a position permitting the micro-etching of said prosthesis;

(c) a flexible enclosing hood having an open end for slidably receiving said framework into said hood while holding said prosthesis in said micro-etching position, said framework being configured to hold said hood away from contact with said prosthesis while said framework is so received, said hood being transparent to permit viewing of said prosthesis within said hood; and,

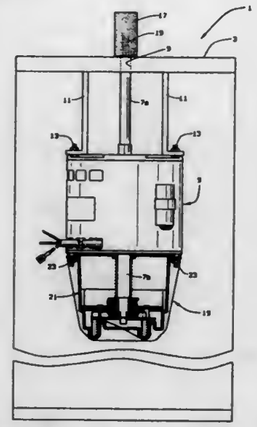
(d) means for sealing said open end while said framework is so received, said hood being sliceable with a knife edge to provide a small slit for permitting the tip of a micro-etching tool to extend into said hood for the micro-etching of said prosthesis while said framework is so received.

5,549,507

COMBINED MOTOR AND MECHANICAL DRIVE FOR USE IN OSCILLATING SPINDLE SANDER

James D. Schroeder, St. Peters, and George E. Hendrix, Florissant, both of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 26, 1994, Ser. No. 233,278
Int. Cl.[6] B24B *7/00*
U.S. Cl. 451—121 **18 Claims**



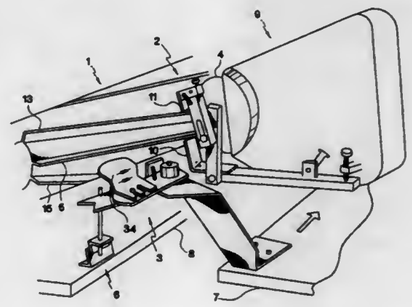
1. A combined motor and mechanical drive that imparts both axial and rotational motion to a motor shaft including an output motor shaft end and an input motor shaft end, said mechanical drive being supported by the motor as well as being connected to the motor shaft through the input motor shaft end for imparting axial motion to the output motor shaft end during rotation of said motor shaft by said motor, said mechanical drive being contained within a housing that is supported by the motor, and said mechanical drive including means for imparting axial motion to the output motor shaft end at a rate substantially less than the rotational speed of the output motor shaft end.

5,549,508

SHARPENING LAWN MOWER BLADES

Leanne Searle, Campsea Ashe; Richard Astbury, and Philip Eaves, both of Suffolk, all of, Great Britain, assignors to Supreme Mpwing Limited, South Yorkshire, United Kingdom

Filed Mar. 24, 1995, Ser. No. 409,302
Claims priority, application United Kingdom, Mar. 25, 1994, 9405926
Int. Cl.[6] B24B *3/00*
U.S. Cl. 451—141 **5 Claims**



1. Apparatus for sharpening a blade of a lawn mower cutting cylinder, comprising:

a sliding bed movable in a first direction;

a grinding wheel mounted on said sliding bed;

means for rotatably mounting a lawn mover cutting cylinder adjacent said sliding bed with its longitudinal axis substantially parallel to the said first direction;

at least one support member for maintaining a grinding portion of a blade of the cutting cylinder, which is in longitudinal register with said grinding wheel, in angular register therewith, so that said grinding wheel contacts said grinding portion for sharpening same upon rotation of said grinding wheel, said at least one support member comprising a support finger disposed to contact the blade being acted upon by the grinding wheel;

displacement means for moving said sliding bed in said first direction, whereby said grinding wheel sharpens the blade along its length at a said grinding portion thereof which travels along it during said sliding movement in the first direction; and

urging means for resiliently urging the cutting cylinder to rotate such as to urge said blade against said at least one support member, said urging means comprising a resilient finger disposed to act on a blade of the cutting cylinder;

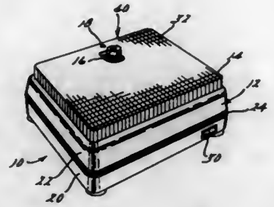
wherein the support finger and the resilient finger act on adjacent blades of the cutting cylinder.

5,549,509

GRINDING APPARATUS WITH TOUCH-TOP WORK SURFACE

Donald L. Hirst, Royal Oak, and Richard K. Wiand, Orchard Lake, both of Mich., assignors to Inland Craft Products Co., Madison Heights, Mich.

Filed Jul. 6, 1994, Ser. No. 271,135
Int. Cl.[6] B24B *9/10;7/08*
U.S. Cl. 451—178 **9 Claims**



1. A grinding apparatus including a cylindrical grinding wheel mounted on a vertical drive shaft driven by an electric motor, said grinding apparatus comprising:
a housing, said housing including a top wall, said motor being rigidly secured with the housing and said drive shaft extending through the top wall;
a work table being supported on the top wall, said work table including a base, a work table top and a side wall defining a reservoir therebetween for holding a liquid; and
means for activating the motor in response to downward force applied to the work table top, said means for activating including a pressure switch mounted in the top wall of the housing within the reservoir, said pressure switch including a spring-biased rod extending upwardly therefrom towards the work table top, said work table further including a cylindrical wall as part of an enclosure surrounding and enclosing the pressure switch within the reservoir, said cylindrical wall and enclosure defining a dry chamber within the reservoir that prevents liquid within the reservoir from contacting the pressure switch, wherein the means for activating further includes an adjustment screw threadably engaged through a cup member and contacting the spring-biased rod, said cup member being part of the enclosure, said adjustment screw being threadably engaged within the cup member so as to alter the position of the work table top relative to the top wall.

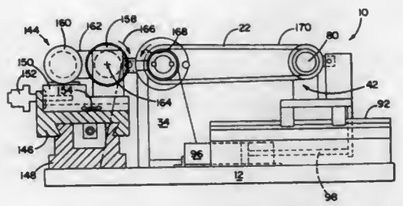
5,549,510

ENDLESS POWER TRANSMISSION BELT PROCESSING APPARATUS, A GRINDING WHEEL THEREFOR, AND A METHOD OF USING THE ENDLESS POWER TRANSMISSION BELT PROCESSING APPARATUS

Misao Fukuda, Miki; Yoshihiro Hayami, Amagasaki; Toshihiro Ueda, Iwakura, and Shoichi Iwaki, Kobe, all of, Japan, assignors to Mitsuboshi Belting Ltd., Kobe, Japan

Continuation-in-part of Ser. No. 798,636, Nov. 26, 1991, Pat. No. 5,234,382. This application Mar. 12, 1993, Ser. No. 985,622
Claims priority, application Japan, Mar. 11, 1992, 4-088010; Jul. 31, 1992, 4-225037
Int. Cl.[6] B24B *3/00*
U.S. Cl. 451—246 **16 Claims**

1. In combination:
a) a power transmission belt/belt sleeve having an exposed annular surface with a central axis;
b) means for mounting the belt/belt sleeve for continuous movement around the central axis; and
c) a grinding wheel for treating the exposed annular surface of the power transmission belt/belt sleeve, said grinding wheel comprising:



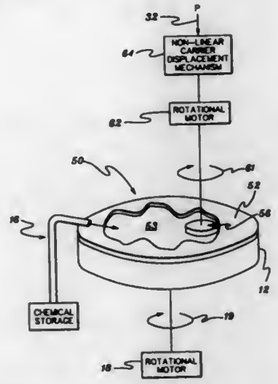
a cylindrical body defining a rotational axis and having a circumferential outer surface with an axial extent; and
a plurality of abrading elements arranged in circumferentially-spaced relationship on the outer surface of the cylindrical body and extending in substantially straight lines that are non-parallel to the axis of the grinding wheel body,
there being reliefs between adjacent abrading elements to allow momentary release of pressure on the power transmission belt/belt sleeve surface being treated by the grinding wheel.

5,549,511

VARIABLE TRAVEL CARRIER DEVICE AND METHOD FOR PLANARIZING SEMICONDUCTOR WAFERS

John E. Cronin, and Matthew J. Rutten, both of Milton, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 6, 1994, Ser. No. 349,848
Int. Cl.[6] B24B *7/00;17/00*
U.S. Cl. 451—281 **5 Claims**



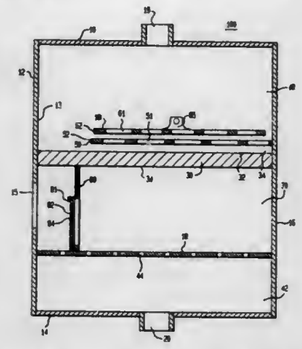
1. A polishing device for polishing a surface of a semiconductor wafer, said polishing device comprising:
a polishing pad;
a carrier assembly for holding the semiconductor wafer with the surface thereof to be polished in juxtaposition relative to the polishing pad;
means for non-rotationally moving either the carrier assembly or the polishing pad such that the semiconductor wafer proceeds in a non-linear polishing path over the polishing pad, wherein said means for non-rotationally moving includes a template having an inner opening, said template being associated with said polishing pad such that said semiconductor wafer resides within the inner opening of the template when the semiconductor wafer is in juxtaposition relative to the polishing pad; and
further comprising means for rotating the polishing pad, and wherein said template is spaced from said polishing pad so as to remain fixed notwithstanding rotation of the polishing pad.

5,549,512

MINIENVIRONMENT FOR HAZARDOUS PROCESS TOOLS

James D. Sinclair, Summit, and Constance A. Jankoski, Branchburg, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 30, 1994, Ser. No. 346,806
Int. Cl.[6] B08B *15/02*
U.S. Cl. 454—58 **36 Claims**



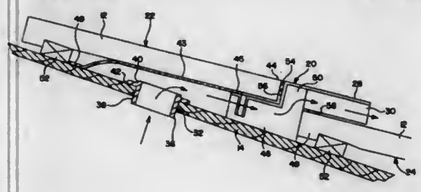
1. A method of preventing contaminants from escaping to a worker environment from an enclosure having two extremities, wherein one extremity includes an intake and the other extremity includes an exhaust, and an aperture therebetween, comprising the steps of:
supplying an uncontaminated gas to the enclosure at a supply pressure in a supply region at one extremity of the enclosure;
maintaining an isolation pressure within the enclosure in a region nearest the aperture and between the extremities for creating an isolation region adjacent an environment outside said enclosure;
maintaining a working pressure within the enclosure in a region defined by the two extremities and the isolation region, for creating a working region within which contaminants are generated;
maintaining an exhaust pressure in an exhaust region at the other end of the enclosure proximate said other extremity;
maintaining these pressure in the following descending order—supply pressure, isolation pressure, working pressure, and exhaust pressure for creating a pressure gradient and flow throughout the enclosure, said supply pressure being greater than said exhaust pressure, and said isolation pressure being at a pressure greater than outside said enclosure; and removing gas and contaminants at the other extremity.

5,549,513

ROOF VENTILATION DEVICE

John F. Thomas, Villa Park, and Anthony F. Gillett, Orange, both of Calif., assignors to Monier Roof Tile Inc., Irvine, Calif.

Filed Oct. 13, 1993, Ser. No. 136,313
Int. Cl.[6] F24F *7/02*
U.S. Cl. 454—365 **19 Claims**



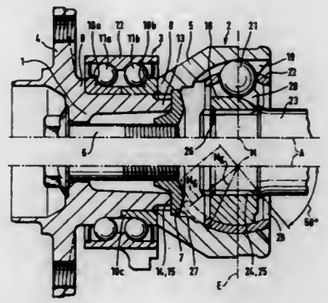
1. A roof structure comprising the combination of:
a roof support structure;
a plurality of rows of tiles mounted on the support structure, with each of the rows being mounted above an adjacent lower row so that adjacent rows are spaced apart by a generally like distance; and
at least one roof ventilation device disposed between at least one tile in a first row of the plurality of rows and at least one tile in a second row of the plurality of rows which is adjacent and immediately below the first row, the at least one tile in the first row having an upper surface and the roof ventilation device having a portion thereof extending from and having an upper surface generally continuous with the upper surface of the at least one tile in the first row and forming an extension of the at least one tile in the first row, the roof ventilation device forming a ventilation path between the at least one tile in the first row and the at least one tile in the second row, which path extends to the roof support structure.

5,549,514

CONSTANT VELOCITY UNIVERSAL BALL JOINT

Hans-Heinrich Welschof, Rodenbach, Germany, assignor to Lohr & Bromkamp GmbH, Offenbach am Main, Germany

Filed Sep. 7, 1993, Ser. No. 117,423
Claims priority, application Germany, Sep. 12, 1992, 42 30 639.6
Int. Cl.[6] F16D *3/22;* **B60K** *17/22;* **B60B** *27/00*
U.S. Cl. 464—145 **17 Claims**



1. A constant velocity universal ball joint for a wheel hub/universal joint unit comprising:
a wheel hub, a universal ball joint with an inner and outer joint part, a bearing assembly arranged on the wheel hub and tensioned relative thereto by the outer joint part of the universal joint;
an unfastenable or disconnectable connection between the wheel hub and universal joint including a bolt/nut assembly comprising at least two parts;
said outer joint part and the inner joint part having longitudinally extending ball tracks which are arranged radially opposite one another and torque-transmitting balls which are held in said radially opposite one another ball tracks and are held in one plane in individual windows of a ball cage positioned between the outer joint part and the inner joint part and which, upon articulation of the joint, are moved on to the angle-bisecting plane, with the outer joint part, at a wheel hub-turned end, being closed by a base part and the inner joint part being connected to a shaft, said base part being insertable from the wheel hub-turned end into an aperture at the wheel hub-turned end and forming one of the parts of the bolt/nut assembly for holding the wheel hub, the bearing assembly and the outer joint part relative to one another, said base part being unfastenable from an abutment means on said outer joint part for said base part in the axial direction and said outer joint part on the one hand, and one of said base part and said wheel hub, on

VOL 1189 ISS 4 AG 27 1996 UMI

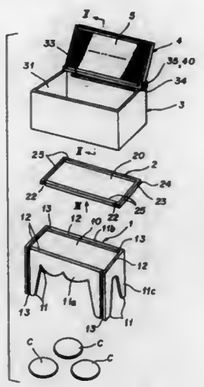
the other hand, each of the base part, wheel hub and outer joint part having form locking means mutually engaging one another in a rotational direction and that the base part connected to the outer joint part permanently extends into a space inside the outer joint part occupied temporary by the ball cage or the inner joint part during assembling of the joint.

5,549,515

COIN-MAGIC DEVICE

Hiroshi Kondo, Tokyo, Japan, assignor to Tenyo Co., Ltd, Tokyo, Japan

Filed Jun. 28, 1995, Ser. No. 496,089
Claims priority, application Japan, Jul. 22, 1994, 6-171192
Int. Cl.[6] A63J *5/02*
U.S. Cl. 472—71 **4 Claims**



1. A coin-magic device, comprising:

a stand having a first rectangular surface on which a coin is to be received generally in the center thereof;

a tray made of an opaque material, same in shape as the first coin receiving surface of said stand, having a second surface on which two coins are to be received as spaced from each other, and which is removably mounted on said stand to hide said one coin on the first coin receiving surface;

a hollow rectangular casing made of an opaque material, having openings at both top and bottom thereof, said openings being generally identical in shape to the second coin receiving surface, and which is to be fitted onto said stand and tray;

a frame having an opening generally identical in shape to the top opening of said casing and which is mounted to said casing openably and closably with respect to the top of said casing;

a prism fixed to said frame to cover the opening in said frame and having such an optical property that when the coin on said first coin receiving surface is near said prism, it will appear as it is through said prism and that as the coin is farther from said prism, the coin will look as if it were double to two pieces; and

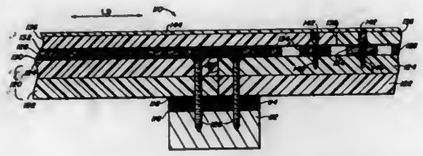
a means provided between said tray and casing to turn the second coin receiving surface of said tray through an angle of substantially 90 degrees toward the inner wall of said casing and a means of retaining said tray thus turned on the inner wall of said casing.

5,549,516

BOWLING LANE CONSTRUCTIONS AND METHODS EMPLOYING COMPRESSIBLE FOAM

Will Heddon, 1025 N. Alternate 27, P.O. Box 340, Lake Hamilton, Fla. 33851

Continuation-in-part of Ser. No. 100,029, Jul. 29, 1993, abandoned. This application Aug. 16, 1994, Ser. No. 291,432
Int. Cl.[6] A63D *1/04*
U.S. Cl. 473—115 **11 Claims**



1. A construction for a bowling lane having an approach area at one end of the lane and a pit area at another end, the construction comprising:

a layer of plural lane support panels extending along the bowling lane between the approach area and the pit area;

plural strips of compressible foam overlying an upper surface of the layer of lane support panels and extending in a longitudinal direction between the approach area and the pit area; and

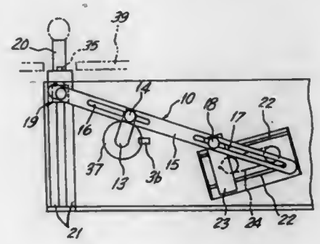
a layer of plural lane panels overlying the longitudinal foam strips, each lane panel having opposing ends with each end fitted in an end-to-end joint with an adjacent lane panel.

5,549,517

GOLF BALL SETTING APPARATUS

Yasuyuki Ikemoto, Uji, Japan, assignor to Ikemoto Shatai Kogyo Co., Ltd., Uji, Japan

Filed Apr. 28, 1995, Ser. No. 432,052
Claims priority, application Japan, Jun. 10, 1994, 6-152691
Int. Cl.[6] A63B *57/00*
U.S. Cl. 473—134 **2 Claims**



1. A golf ball setting apparatus comprising a cylindrical tee adapted to be driven by an electric motor through a tee elevating crank mechanism for vertical movement between a ball hitting position in an upper limit zone and a ball receiving position in a lower limit zone, a ball feeder disk having a feed pawl disposed sidewise of a path for vertical movement of the tee which is to be driven by the motor in conjunction with the crank mechanism for rotation in a direction oriented toward the vertical movement path of the tee, a ball supply chute facing toward the disk so as to permit a golf ball on the forward end of the chute to be fed for engagement with the pawl at the side thereof opposite to the vertical movement path of the tee, a photoelectric ball sensor for sensing the presence or absence of a golf ball on the tee which is disposed so as to face toward a hollow portion of the tee, a tee ascent sensor disposed adjacent the crank mechanism for sensing the ascent of the tee to the upper limit zone, a ball stopper vertically movably disposed above the chute, the ball stopper having a front end vertically movable between a ball restraining

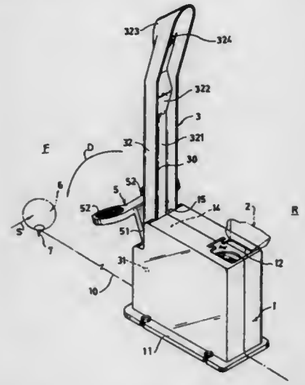
position at which the front end lockingly engages a golf ball at a position adjacent to the forward end of the chute and a ball releasing position at which the front end does not engage the golf ball, the ball stopper being held in engagement with a spring urging the front end to move downwardly so as to constantly assume the ball restraining position, and with a ball release solenoid for moving the front end upwardly against the force of the spring so as to allow the front end to assume the ball releasing position, a ball release timer which regulates time for excitation of the ball releasing solenoid, and control means which excites the solenoid for a time period set by the timer in response to a no-ball signal from the ball sensor so that the golf ball at a restraining position adjacent to the forward end of the chute is advanced by gravity to the forward end of the chute and then a golf ball advanced anew to the position adjacent to the forward end is restrained thereat, and which then actuates the motor to move the tee downward and upward via the crank mechnism and, simultaneously thereupon, delivers a golf ball advanced to the forward end of the chute onto the tee as the tee passes through the lower limit zone, the control means being then operative to stop the operation of the motor in response to the disappearance of the no-ball signal from the ball sensor due to ball reception by the tee and to a signal from the tee ascent sensor indicating the ascent of the tee to the upper limit zone, thereby causing the tee, with a golf ball placed thereon, to rest at a ball hitting position in the upper limit zone, the timer being then reset.

5,549,518

GOLF BALL DISPENSING DEVICE WITH LIGHTLY-ACTUATED PIVOTAL TRACK

Austin Wang, c/o Hung Hsing Patent Service Center P.O. Box 55-1670, Taipei, Taiwan

Filed Apr. 24, 1995, Ser. No. 426,881
Int. Cl.[6] A63B *57/00*
U.S. Cl. 473—137 **5 Claims**



1. A golf ball dispensing device comprising: a housing having a feeding channel formed therein and having a hopper mounted on said housing for feeding a plurality of golf balls into said feeding channel in said housing, and having a longitudinal axis longitudinally defined at a central portion of said housing;

a pivotal track pivotally mounted in said housing and normally vertically erected on said housing for receiving a golf ball from the plurality of golf balls fed into said housing;

a counterweight mounted on a rear end portion of said pivotal track;

a tee positioned in front of said housing receiving the golf ball discharged from said pivotal track; and

a trigger means pivotally mounted on said housing for biasing said pivotal track downwardly for rolling said golf ball down to said tee, whereby upon a manual actuation of said trigger means to rotatively bias the pivot track to gravitationally tilt the track to a downward inclined position for rolling said golf ball down to be discharged from a front end of said track to the tee; and upon discharge of the ball from said track, the counterweight will automatically restore the track vertically;

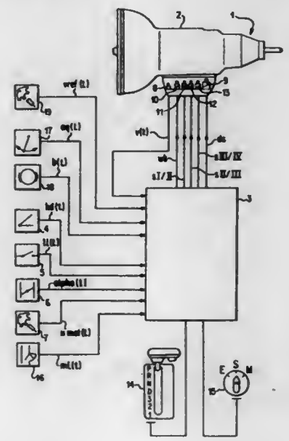
said pivotal track including: a pivot secured in a cavity recessed in the housing, an unloading lever formed on a first side portion of the pivot of the track and defining a track axis at a longitudinal center of the unloading lever with the track axis generally aligned with said longitudinal axis in the housing, a balancing lever formed on a second side portion of the pivot for securing the counterweight on a free end portion of the balancing lever opposite to the unloading lever, a concave portion formed on a rear and bottom end portion of the unloading lever for receiving one said golf ball from an take-up opening formed at the end of the feeding channel in the housing and having a depth of the concave portion equal to a diameter of the golf ball for receiving one said golf ball in said concave portion for precluding an entrance of a standby golf ball into said concave portion, with said standby golf ball neighboring the golf ball already received in the concave portion, and an arcuate portion formed on the balancing lever between an outer edge portion of the concave portion and the counterweight and said arcuate portion having a curvature arcuately convexly protruding towards the outer edge portion of the concave portion to be tangential to the standby golf ball neighboring the golf ball already received into the concave portion, whereby upon a biasing of the unloading lever downwardly to raise the arcuate portion, the arcuate portion will tangentially thrust the standby golf ball to retract the standby golf ball without entering the concave portion to allow an unique golf ball to roll at each time into the unloading lever to be placed on the tee when actuating said trigger means for downwardly inclinedly biasing the unloading lever towards said tee.

5,549,519

METHOD FOR CONTROL OF AN AUTOMATIC TRANSMISSION OF A MOTOR VEHICLE

Willi Seidel, Eberdingen-Hochdorf, and Joseph Petersmann, Wimsheim, both of, Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Germany

Filed Dec. 21, 1993, Ser. No. 170,183
Claims priority, application Germany, Jun. 21, 1991, 41 20 566.9
Int. Cl.[6] F16H *61/16*
U.S. Cl. 477—125 **18 Claims**



1. Method of controlling an automatic transmission of a vehicle with an internal combustion engine having a throttle valve, shifting of gear levels (g) of said automatic transmission being based on shifting characteristics, responsive to at least a position of said throttle valve (alpha(t)), a driving speed of said vehicle (v(t)) and engine speed (nmot(t)) of said internal combustion engine, said method comprising the steps of:

detecting a first entry of said vehicle into a coasting mode wherein a rate of change of position of said throttle valve falls below a negative limit;

activating an upshift prevention state of said automatic transmission in response to said first entry of said vehicle into said coasting mode;

continuing activation of said upshift prevention state until a first time period has elapsed following said first entry of said vehicle into said coasting mode;

detecting a second entry of said vehicle into said coasting mode prior to expiration of said first time period;

in response to said second detected entry of said vehicle into said coasting mode, continuing activation of said upshift prevention state until a second time period has elapsed following said second entry of said vehicle into said coasting mode; and

preventing upshifting of said automatic transmission so long as said upshift prevention state is activated.

5,549,520

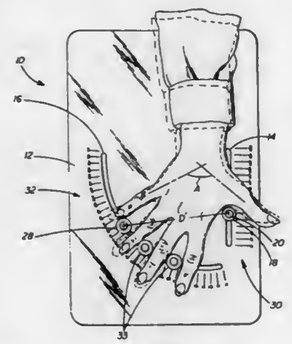
METHOD FOR INCREASING THE STRENGTH, FLEXIBILITY AND SPAN OF A HAND

Norman B. Grahm, P.O. Box 23801, Lexington, Ky. 40523-3801

Division of Ser. No. 869,327, Apr. 15, 1992, Pat. No. 5,374,226. This application Dec. 19, 1994, Ser. No. 358,658

Int. Cl.[6] A63B *23/16*

U.S. Cl. 432—47 **18 Claims**



1. A method for stretching the span of a hand of a patient as defined by the spread angle between said first and fifth digits utilizing an apparatus including a pair of spaced pegs, comprising the steps of:

engaging the first digit with a fixed first peg;

engaging the fifth digit at a spaced stretching distance from said first peg with a fixed second peg;

repeatedly pressing the hand against the pegs to stretch the spread of the hand; and

gradually increasing the spaced stretching distance between the pegs over time.

5,549,521

METHOD AND DEVICE FOR PROCESSING A CLUSTER OF ORGANS FROM A SLAUGHTERED ANIMAL

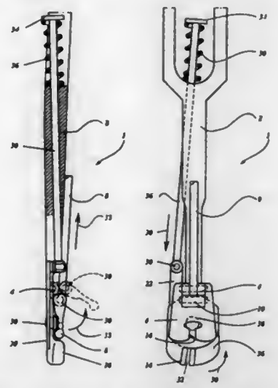
A. J. van den Nieuwelaar, Genert; Petrus C. M. Janssen, Wilbertoord; Engelbert J. J. Teurlinx, Stevensbeek; Cornelius D. van Harskamp, Boxmeer, and Bastiaan W. J. E. J. Drabbels, Vierlingsbeek, all of, Netherlands, assignors to Stork PMT B.V., Boxmeer, Netherlands

Filed Sep. 9, 1993, Ser. No. 118,979

Claims priority, application Netherlands, Sep. 10, 1992, 9201574; May 12, 1993, 9300815

Int. Cl.[6] A22C *21/06*

U.S. Cl. 452—118 **38 Claims**



1. A method for separating one or more organs or a part thereof from a cluster of interconnected internal organs of a slaughtered animal; in particular a slaughtered bird, comprising the following steps:

fixing of at least one of the organs, a part thereof or a connection between the organs when the cluster is at least partly in the body of the slaughtered animal;

taking the cluster out of the body, while maintaining the condition of fixing; and

breaking one or more tissue connections in the cluster, while maintaining the condition of fixing, on the basis of a spatial orientation of the cluster determined by the still maintained condition of fixing thereof.

5,549,522

GOLF PRACTICING DEVICE

Po-neng Chang, No. 38, 36th Rd., Industrial Dist., Taichung, Taiwan

Filed Jan. 3, 1996, Ser. No. 582,520

Int. Cl.[6] A63B *69/36*

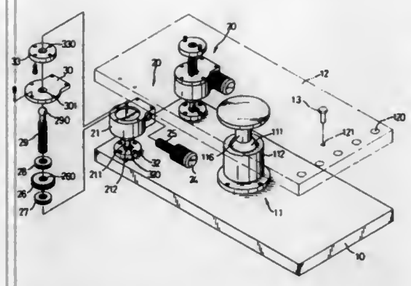
U.S. Cl. 473—279 **2 Claims**

1. A golf practicing device comprising:

a lower plate, an upper plate and at least one adjusting means disposed between said lower plate and said upper plate;

said adjusting means disposed on said lower plate, said adjusting means comprising a cup having an open top and a bottom, a stand extending from said bottom and having a first ball formed to a distal end thereof, a first base fixedly engaged to said lower plate and having a first hole for receiving said first ball therein, a worm gear being rotatably received in said cup and having a threaded hole defined centrally therein, a cap engaged to close said open top of said cup and having a central hole defined therein, a threaded rod having a first end threadedly engaged through said worm gear and a second end extending through said cap via said central hole, said threaded rod having a second ball formed to said second end thereof, a second base fixedly engaged to an underside of said upper plate and said second ball of said threaded rod being received in a second hole defined in said second base, a worm extending laterally through said cup so as to engage with said worm gear and said worm being driven by a motor, and

a support extending from said lower plate and having a receiving portion defined therein, a supporting rod extending from said underside of said upper plate and having a third ball formed to a distal end thereof so as to be received in said receiving portion.



5,549,523

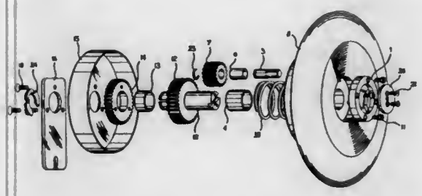
GEAR REDUCER

Pierre Doucet, Grande-Ile, Canada, assignor to Equipement Precibec Inc., St. Laurent, Canada

Filed Apr. 25, 1994, Ser. No. 231,803

Int. Cl.[6] F16H *3/44;* **B41F** *13/24*

U.S. Cl. 475—298 **25 Claims**



1. Gear reducer adapted to provide fine mechanical adjustment or speed reducing in a gearbox comprising in combination:

a hand wheel means adapted to provide rough and fine adjustment modes, said hand wheel means being mounted on a sleeve adapted to be engaged with a drive shaft of said gearbox,

a drive gear mounted on said sleeve and adapted to turn with said sleeve;

a planet wheel gear mounted on a pin shaft extending parallel to said sleeve, said hand wheel means and said planet wheel gear are adapted to move axially;

a fixed gear mounted co-axially with said drive gear, said fixed gear being non-rotatably secured in its position to be fixed relative to said drive shaft, wherein the number of teeth of said fixed gear differs from the number of teeth of said drive gear;

wherein in said rough adjustment mode said drive shaft is activated by means of said hand wheel being fixedly retained in said sleeve, and

wherein in said free adjustment mode said drive shaft being activated by means of said planet wheel gear intermeshing simultaneously with said drive gear and said fixed gear.

5,549,524

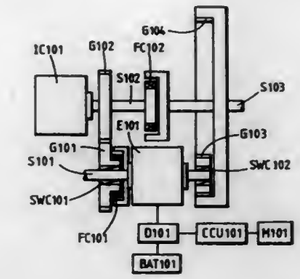
MULTIPLE FUNCTIONED COMBINED POWER SYSTEM

Tai-Her Yang, No. 32 Lane 29, Taipin St., Si-Hu Town, Dzan-Hwa, Taiwan

Filed Oct. 3, 1994, Ser. No. 317,587

Int. Cl.[6] B60K *41/06*

U.S. Cl. 477—3 **12 Claims**



1. A multiple function combined power system, comprising:

an internal combustion engine;

an electrical machine arranged to be operated through a manual control interface as a motor and generator;

first and second one way transmission devices coupled with the electrical machine;

at least one of first and second speed responsive clutches connected to transmit power from ends of rotating shafts and arranged to engage and perform transmission above rated speed while releasing and cutting off the transmission below the rated speed;

a manual control interface arranged to allow manual input of relevant carrier operating commands;

a central controller arranged to perform digital priority calculations on signals from the manual control interface signals or on feedback signals, generate control commands;

a drive controller arranged to receive the control commands from the central controller to operate the electrical machine as a generator and control its power generation rate, and to operate the electrical machine as a motor and control its rotation direction and speed,

wherein the manual control interface, central control unit, and drive controller include means for carrying out the following functions:

(1) the electrical machine is operated by the drive controller to function as a motor rotating in either positive or reverse directions, or to function as a generator for charging the battery or supplying power to other loads;

(2) the electrical machine is rotated in positive and reverse directions to provide the following system operations: the motor is rotated in the positive direction to start the engine, and the engine is used to drive loads after it is started while the electrical machine is maintained in a waiting state;

(3) while the loads are driven by the engine, if the electrical machine is operated as a generator through the manual control interface, the central controller, and the drive controller, then the engine drives the loads and the generator simultaneously to charge the battery or supply power to the other loads;

(4) while the loads are driven by the engine, if the electrical machine is operated as a motor, then the motor is powered by the battery and drives the loads together with the engine;

(5) if the electrical machine is operated as a motor and is rotated in the reverse direction, the transmission structure causes the rotation direction of the loads to be the same as if driven by the engine, and the loads are simply driven by the electrical machine operating as a motor while the engine is standing still;

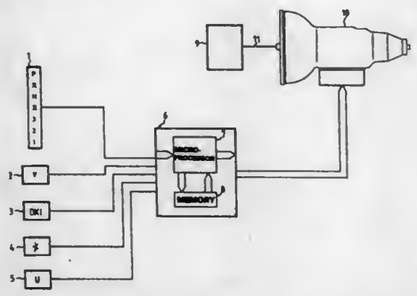
(6) while the loads are driven by the engine, energy is recovered by operating the electrical machine as a generator to charge the battery or supply power to other loads, or by using the friction damping of the engine itself for a braking function;

(7) while the electrical machine is operated as a motor to drive the loads, energy recovery is achieved by using the electrical machine as a generator to charge the battery or supply power to other loads;
(8) the electrical machine is driven by the engine as an AC generator to charge the battery or supply power to other loads.

5,549,525
ELECTRONIC CONTROL PROCESS FOR AN AUTOMATIC TRANSMISSION

Peter Wendel, Kressbronn, Germany, assignor to ZF Friedrichshafen, Germany

PCT No. PCT/EP93/01815, § 371 Date Dec. 14, 1994, § 102(e) Date Dec. 14, 1994, PCT Pub. No. WO94/01701, PCT Pub. Date Jan. 20, 1994
PCT Filed Jul. 10, 1993, Ser. No. 351,442
Claims priority, application Germany, Jul. 14, 1992, 42 23 084.5
Int. Cl.[6] B60K *41/20*
U.S. Cl. 477—93 **4 Claims**



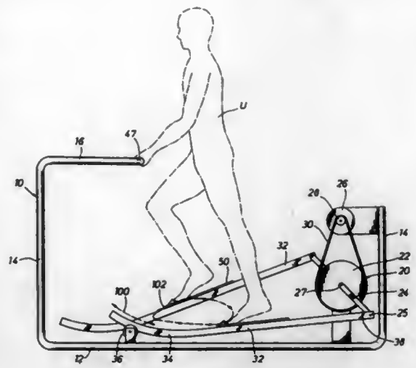
1. An electronic control process for a vehicle with an automatic transmission (**10**) having a clutch, lying in the power path, controlled by a microprocessor (**7**), a gear selector (**1**), a sensor (**2**) which detects a velocity of the vehicle, a sensor (**3**) which detects an engine throttle valve setting, and a sensor (**4**) which detects an inclination of the vehicle, and said microprocessor (**7**), with a vehicle velocity of zero or near zero and an engine throttle setting of zero or near zero, regulating the clutch lying in the power path such that the transmitted torque compensates for influences resulting from the vehicle inclination, with a weight of the vehicle and a load being taken into account for the control of the clutch, said process comprising the steps of:
determining the inclination of the vehicle with respect to the road; and
using the inclination of the vehicle with respect to the road to regulate the clutch lying in the power path.

5,549,526
STATIONARY EXERCISE APPARATUS

Robert E. Rodgers, Jr., Houston, Tex., assignor to CCS, LLC, Denver, Colo.

Continuation-in-part of Ser. No. 377,846, Jan. 25, 1995. This application Apr. 19, 1995, Ser. No. 426,467
Int. Cl.[6] A63B *69/16;22/04*
U.S. Cl. 482—57 **7 Claims**

1. An apparatus for exercising comprising:
a frame having a base portion adapted to be supported by a floor;
first and second reciprocating members, each reciprocating member having a first end and a second end, said first ends of said first and second reciprocating members having a camming portion including a curved profile portion and adapted to engage said base portion at said curved profile portion;

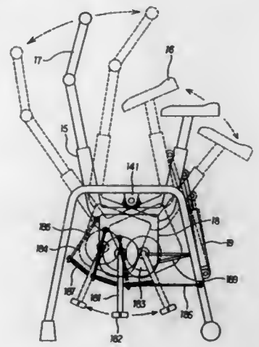


a coupling member having (i) a pulley supported by said frame defining a pivot axis, and (ii) means for attaching said second ends of said first and second reciprocating members to said pulley so that rotation of said pulley results in the rotation of said second ends of said first and second reciprocating members in a substantially circular path about said pivot axis; and
means for supporting the bottom of the foot of the user of the apparatus so that during operation of the apparatus each foot of the user follows a predetermined closed path having a preferred anatomical pattern.

5,549,527
STATIONARY BIKE

Hui-Nan Yu, No. 91-6, Ming Tsu Rd., Tao Yuan City, Taiwan

Filed Nov. 8, 1995, Ser. No. 555,514
Int. Cl.[6] A63B *69/16*
U.S. Cl. 482—57 **3 Claims**

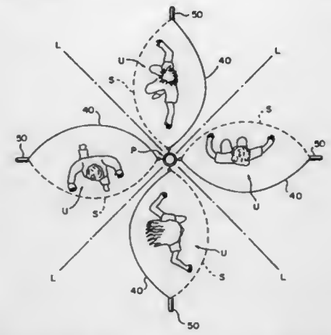


1. A stationary bike comprising a stand, a pivot means mounted on said stand a seat and handlebar mounting frame pivotally mounted on said pivot means to hold a saddle and a handlebar at two opposite ends, a transmission gear box pivotally mounted to said pivot means, a rotary crank and pedal assembly for driving said transmission gear box, and a damping resistance producing means for acting with said transmission gear box to produce a damping resistance upon pedaling of said crank and pedal assembly, wherein said seat and handlebar mounting frame is turned about said pivot means on said stand supported on a link means such that said seat and handle bar mounting frame is alternatively oscillated up and down when said crank and pedal assembly is pedaled to drive said transmission gear box.

5,549,528
OCTOPUS SKIPPING ROPE DEVICE

Philip Bryant, Orange Beach, Ala., assignor to Select Service & Supply Co., Inc., Atlanta, Ga.

Filed May 3, 1995, Ser. No. 434,202
Int. Cl.[6] A63B *5/22*
U.S. Cl. 482—81 **15 Claims**

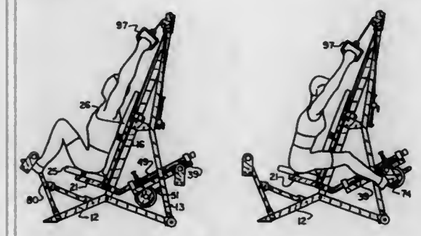


1. An apparatus for users to perform rope skipping exercises adjacent a generally vertical pole, the apparatus comprising:
a collar having a through-opening adapted to slidably accept a pole therethrough;
clamping means for adjustably fixing said collar at a selected one of various height positions and at a fixed angular orientation along the pole; and
a plurality of rope attachment means radially disposed about an exterior of said collar; and
a plurality of skipping ropes attached at respective ones of said rope attachment means;
whereby the users may skip with the ropes.

5,549,529
TRACTION SLED EXERCISE MACHINE

Aaron P. Rasmussen, 1776 Essex St., El Cajon, Calif. 92020

Filed Sep. 25, 1995, Ser. No. 533,340
Int. Cl.[6] A63B *21/068*
U.S. Cl. 482—96 **12 Claims**

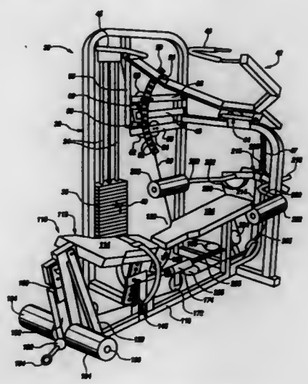


1. A traction sled exercise machine comprising:
a fixed frame assembly with component members to include: a base with a front end and a rear end; a standard with a top end and a bottom end; and an inclined rail with a top end and a bottom end;
a body support sled including a frame with a top end and a bottom end; means for tracking said frame in reciprocating motion on said inclined rail; said body sled also having a seat configured to carry a front facing or a rear facing exercise client;
a force beam assembly having a frame with a front end and a rear end; said beam frame provided with a centrally located fulcrum to permit partial rotation of said beam frame relative said fixed frame assembly; each side of said beam frame carrying a foot stirrup between said fulcrum and the rear end of said beam frame;
a force bar with a front end and a rear end; said bar engaged in a sliding fit on said beam frame; said force bar carrying a weighted hanger with means for adjusting the position of said hanger in a continuum of locations to the front or to the back of said fulcrum; the front end of said force bar also having a pivotal coupling with said sled frame, wherein lineal sled movement oscillates the force bar and imparts reciprocal motion to the force bar and weighted hanger;
a leg lever assembly to include a leg lever with a top end supporting two laterally spaced foot stirrups and a bottom end that is supported at the front end of said frame base;
lifting means coupled to both the fixed frame assembly and the body sled for engagement by an exercise client whereby the exercise client may sit in a front facing position to exert a force on said lifting means and on said leg lever stirrups, or to sit in the alternative rear facing position to exert a force on said lifting means and on said force beam foot stirrups as a means to elevate said body sled on said inclined rail.

5,549,530
COMPACT WEIGHT LIFTING MACHINE

Kent Fulks, 9710 Amberly Dr., Dallas, Tex. 75243, assignor to Kent Fulks, Dallas, Tex.

Continuation-in-part of Ser. No. 34,734, Mar. 19, 1993, Pat. No. 5,447,480. This application Apr. 26, 1995, Ser. No. 429,315
Int. Cl.[6] A63B *21/06*
U.S. Cl. 482—100 **4 Claims**



1. A compact weight lifting machine comprising:
a lift bar having at least one handle;
means for supporting the lift bar for movement in first and second opposite directions;
a pivot arm;
means connecting the pivot arm to the lift bar for movement therewith;
means for selectively varying the positioning of at least the handle of the lift bar relative to the pivot arm;
first and second pulleys mounted on opposite sides of the pivot arm, respectively;
means for moving the first pulley in the first direction with the pivot arm when the lift bar is moved in the first direction;
means for limiting movement of the second pulley in the first direction when the first pulley is moved in the first direction;
means for moving the second pulley in the second direction when the lift bar is moved in the second direction;

means for limiting movement of the first pulley in the second direction when the second pulley is moved in the second direction;

a continuous cable trained around the first and second pulleys;

means for securing one end of the cable against movement; and

resistance means connected to the other end of the cable for resisting movement of the lift bar.

5,549,531

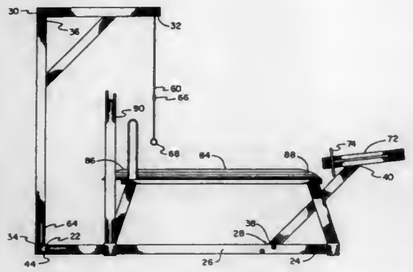
WEIGHTLIFTING MACHINE WITH SAFETY DEVICE

Matthew W. Campbell, R.R. 4 Box 148, Portland, Ind. 47371

Filed Feb. 28, 1995, Ser. No. 395,796

Int. Cl.[6] A63B *13/00*

U.S. Cl. 482—106 **5 Claims**



1. A weightlifting machine with safety device for protecting a user from injury when not being able to lift a weightbar comprising, in combination:

a hollow frame portion comprising a first horizontal portion, a second horizontal portion, a vertical portion, and a diagonal portion, the first horizontal portion having an upwardly open first end, a second end, and an intermediate extent therebetween, the intermediate extent having an opening formed in a top surface thereof inwardly of the second end thereof, the second horizontal portion having a downwardly open first end and an open second end, the vertical portion having an open first end and an open second end, the diagonal portion having an open first end and an open second end, the open first end of the vertical portion secured to the upwardly open first end of the first horizontal portion, the open second end of the vertical portion secured to the downwardly open first end of the second horizontal portion, the open first end of the diagonal portion secured to the opening in the intermediate extent of the first horizontal portion;

a pulley system comprising of a plurality of pulley cages, the plurality of pulley cages securable within the hollow frame portion, the pulley system having a cable, the cable having a first end, a second end, and an intermediate extent therebetween, the first end extending outwardly of the downwardly open second end of the second horizontal portion, the first end having a securement means adapted to be secured to a weight bar, the second end of the cable extending outwardly of the open second end of the diagonal portion, the intermediate extent extending through the plurality of pulley cages within the hollow frame portion;

a safety mechanism secured to the open second end of the diagonal portion, the safety mechanism having a foot pedal secured on opposing sides thereof, the foot pedals pivotally secured to a securement bar extending within the safety mechanism and slidably coupled therein, the securement bar secured to the second end of the cable of the pulley system, the safety mechanism having a plurality of locking notches therein to engage the securement bar;

a weightlifting bench having forward and rearward ends for supporting a weightlifter thereon in a generally supine position along its longitudinal length and having upright weight supports for supporting weights placed thereon located adjacent to the forward ends, the rearward end being adjacent to the foot pedals of the safety mechanism for engagement thereof by the weightlifter.

5,549,532

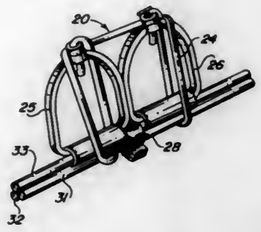
PORTABLE ELASTIC RESISTANCE EXERCISE DEVICE

Daniel P. Kropp, 6823 E. Paradise Dr., Scottsdale, Ariz. 85254

Filed Feb. 14, 1995, Ser. No. 389,131

Int. Cl.[6] A63B *21/04*

U.S. Cl. 482—126 **19 Claims**



1. A portable exercise device comprising an elongated elastic member; first and second handle means operatively attached to said elastic member at each end thereof; a first hollow cylinder attached to said first handle means; a second hollow cylinder attached to said second handle means; and bar means insertable through said first and second hollow cylinders for pulling said first and second handle means in unison while stretching said elastic member.

5,549,533

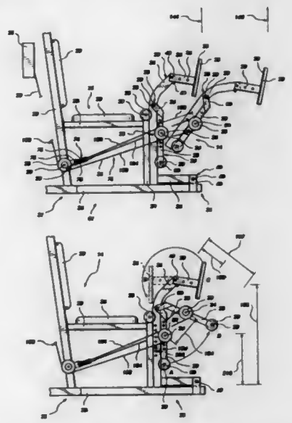
COMBINED LEG PRESS/LEG EXTENSION MACHINE

Michael L. Olson, and William T. Dalebout, both of Logan, Utah, assignors to Icon Health & Fitness, Inc., Logan, Utah

Filed Oct. 21, 1993, Ser. No. 140,584

Int. Cl.[6] A63B *23/04*

U.S. Cl. 482—137 **19 Claims**



1. An exercise machine comprising:

a frame for positioning on a support surface;

bench means associated with said frame for supporting a user thereon;

a first support member pivotally attached to said frame and extending upwardly therefrom, said first support member having a first end and being moveable between a first press position wherein the first end of said first support member is proximate said bench means and a second press position wherein the first end of said first support member is displaced away from said first press position and said bench means;

a foot member connected to said first support member and positioned for contact by the feet of the user positioned on said bench means;

an extension member rotatably supported at its first end by said first support member, said extension member having a second end extending downwardly from said first end, said extension member being moveable between a first extension position proximate said first support member and a second extension position wherein the first end of said extension member is spaced from said first extension position;

a cross member attached to said extension member for contact by a user to move said extension member in the performance of exercises; and

resistance means operationally engaging said frame and said extension member for resisting movement of said first support member and said extension member.

5,549,534

SPINE REHABILITATION APPARATUS

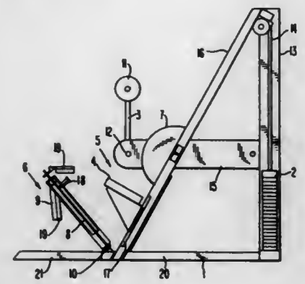
Arno Parviainen, Karitie 9, SF-01530 Vantaa, Finland

Continuation-in-part of Ser. No. 53,530, Apr. 27, 1993, abandoned, which is a continuation of Ser. No. 792,021, Nov. 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 476,160, Feb. 7, 1990, abandoned. This application Dec. 22, 1993, Ser. No. 172,567

Claims priority, application Finland, Feb. 7, 1989, 890581

Int. Cl.[6] A63B *23/02*

U.S. Cl. 482—137 **11 Claims**



1. Spine rehabilitation apparatus comprising:

a frame, said frame having a vertical part and an inclined part;

a counterforce device on said vertical part of said frame, said counterforce device being provided with an operating linkage having a pivot axle, said operating linkage having a support adapted to rest against the upper body region of the user of said rehabilitation apparatus, said operating linkage being rotatable about said pivot axle;

a seat part on said inclined part of said frame, said seat part being below said pivot axle and said support;

a convex member having a substantially cylindrical surface, said convex member being affixed to said inclined part of said frame above said seat part forming with said seat part a wedge mechanism;

a lever-lock mechanism, said lever-lock mechanism being attached to and extending from said frame beneath said seat part, said lever-lock mechanism including a foot rest and a supporting structure, said support structure extending upward from said frame to a position in front of said seat part, and said convex member curving in its height direction and providing a substantially cylindrical surface on said inclined part of said frame.

5,549,535

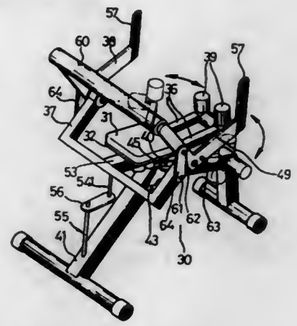
BODY BUILDING STATION

Leao Wang, and Peter Wu, both of Taichung Hsien, Taiwan, assignors to Greenmaster Industrial Corp., Taichung, Taiwan

Filed Feb. 27, 1995, Ser. No. 394,948

Int. Cl.[6] A63B *21/04*

U.S. Cl. 482—138 **8 Claims**



1. A body building station, comprising:

a frame including a first support bar having a first support bar post extending therefrom;

a securing seat mounted to the frame;

a first post, a second post and a third post, wherein each of these posts extends from a first face of the securing seat, wherein the first post is arranged toward a first side of the securing seat, the second post is arranged toward a second side of the securing seat, and the third post is arranged at a central area of the first face of the securing seat;

a first rocker arm pivotally connected to the first post;

a second rocker arm pivotally connected to the second post;

a rotary frame pivotally connected to the third post to form a twisting mechanism, and wherein the rotary frame is pivotally connected to a press bar to form an abdominal exercising mechanism, the rotary frame having a positioning bar extending from a middle section thereof, the positioning bar having a hole defined therethrough for pivotal connection with the third post of the securing seat, the positioning bar being provided with a first rod extending therefrom, and wherein a first resistance element connects the first rod of the positioning bar and the first support bar post.

5,549,536

ROTATING PLATFORM APPARATUS

Dexter M. Clark, 2188 SE. Spruce St., Hillsboro, Oreg. 97123

Filed Aug. 4, 1995, Ser. No. 511,191

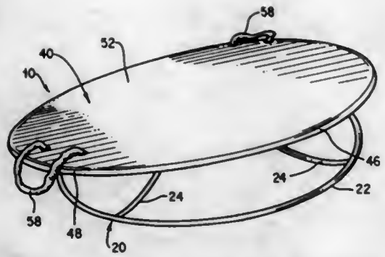
Int. Cl.[6] A63B *23/00*

U.S. Cl. 482—146 **20 Claims**

1. A rotating platform apparatus, comprising:

a) a base formed of an annular ring supporting at least three legs, which are secured at one end to the annular ring, and at the other end to an inclined collet having an inclined collet aperture therethrough, the inclined collet further having an upper end and a lower end, a tapered bearing race is disposed upon the upper end of the inclined collet in concentric alignment with the inclined collet aperture; and

b) an inclined platform having a top side and an under side with a circumferential edge located between the top side and the



underside, forming a substantially circular configuration of a size suitable to support a user thereon, the under side of the inclined platform having a shaft secured about an axis of rotation, perpendicular to the underside of the inclined platform, the shaft sized to be rotatably received within a tapered bearing upon the upper end of the inclined collet, and extending within the inclined collet aperture to rotatably engage a lower bushing located at the lower end of the inclined collet.

5,549,537

APPARATUS FOR THE SHAPING TREATMENT OF BLANKS, ESPECIALLY FOR HINGE-LID PACKS

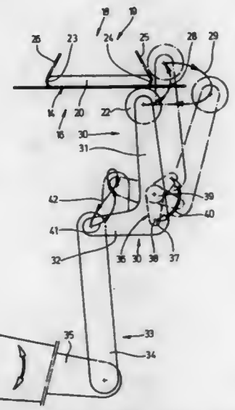
Heinz Focke, and Helmut Granz, both of Verden, Germany, assignors to Focke & Co. (GmbH & Co.), Verden, Germany

Filed Feb. 10, 1995, Ser. No. 386,627

Claims priority, application Germany, Feb. 11, 1994, 44 04 289.2

Int. Cl.[6] B31B *3/28*

U.S. Cl. 493—162 **3 Claims**



1. An apparatus for shaping or pre-shaping blanks (**14**) for enclosed boxes with rounded or polygonal longitudinal edges (**11, 12**), said apparatus comprising:

a) a shaping station having at least one shaping device (**19**); and

b) means for feeding the blanks (**14**) along a track (**16**) in a conveying direction into said shaping station (**18**) so that the longitudinal edges (**11, 12**) of the blank extend in the conveying direction of the blank (**14**) and are shaped by said shaping device (**19**);

c) wherein said shaping device (**19**) comprises: a stationary shaping plate (**20**) and two movable longitudinally extending shaping rollers (**21, 22**), the shaping plate (**20**) having shaping longitudinal margins (**23, 24**) with a contour corresponding to the shape of the longitudinal edges (**11, 12**) of each blank, the shaping rollers being parallel to the longitudinal margins (**23, 24**); and means for moving the shaping rollers from one position, which is beneath the blank (**14**) and in which the shaping rollers are pressed against the blank along the longitudinal margins (**23, 24**), to an upper side of the shaping plate (**20**) and then back to a starting position; and

d) means for moving the shaping rollers (**21, 22**), after a shaping cycle has been carried out, from an end position above the shaping plate (**20**) along an arcuate path of motion (**29**), then laterally, and then for returning the shaping rollers (**21, 22**) to the starting position located beneath the shaping plate (**20**), so that the path of motion (**29**) along which the shaping rollers (**21, 22**) are returned runs outside of an area of the unshaped, flat blank (**14**).

5,549,538

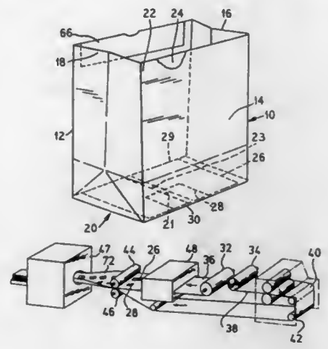
PROCESS FOR MANUFACTURING FLAP-STYLE SQUARE-BOTTOM BAGS

Ronald Marsik, Willow Springs, Ill., assignor to Bagcraft Corporation of America, Chicago, Ill.

Filed Dec. 28, 1993, Ser. No. 174,410

Int. Cl.[6] B31B *31/86;35/26;39/60*

U.S. Cl. 493—218 **9 Claims**



1. A process for manufacturing a multi-ply square bottom bag having a from wall, a back wall, a pair of gusseted side walls, each of which join to said front and back walls and a gusseted square bottom panel having spaced but substantially parallel gusset edges, said bottom joined to the front, back and side walls, said bag produced by providing a web of inner ply material and a web of outer ply material, adhesively joining said webs into a composite web having a longitudinal axis and forming said bag from said composite web and wherein the improvement comprises:

forming a first flap in said inner web by cutting said web so as to form a plurality of free edges and forming a hinge line for said flap, which line is connected to the free edges so that said free edges and hinge line define the flap;

thereafter joining the inner and outer webs;

wherein the hinge line is generally transverse to the longitudinal axis of the composite web; and

wherein the flap is formed in the inner web so as to be positioned adjacent the front wall and the bottom wall with the hinge line at a junction thereof when said bag is formed and said flap arranged to overlie the gusset edges in the bottom panel.

5,549,539

DEVICE FOR GROOVING CONTINUOUSLY-FED FLAT WORKPLACE

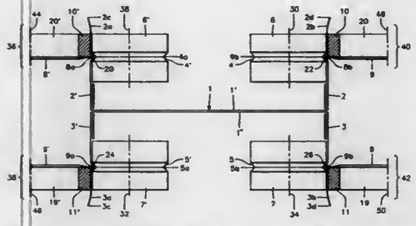
Horst Rautenberg, Lienen, Germany, assignor to Windmoeller & Hoelscher, Lengerich/Westf., Germany

Continuation of Ser. No. 220,000, Mar. 30, 1994, abandoned. This application Dec. 15, 1995, Ser. No. 573,587

Claims priority, application Germany, Mar. 30, 1993, 43 10 289.1

Int. Cl.[6] B31B *1/36*

U.S. Cl. 493—402 **1 Claim**



1. A device for grooving continuously-fed flat workpieces to form fold lines in bottom side panels, said device comprising:

two slotted discs having a common central axis, each slotted disc having a circumferential groove,

two grooving discs, each grooving disc having a circular edge penetrating into a respective one of said circumferential grooves, and

two clamp rollers, each clamp roller including a cylindrical disc having a radially outermost elastic material casing, an outer diameter of said elastic material casing in a non-compressed condition being equal to a diameter of said grooving disc, said elastic material casing compressively contacting a cylindrical section of a respective one of said slotted discs for preventing a free outer area of the workpiece from being pulled into said circumferential groove of said slotted disc while said circular edge of said grooving disc extends only partially into said circumferential groove,

each said clamp roller including said cylindrical disc attached to said grooving disc with said cylindrical disc and said grooving disc rotating at a same rate of revolution,

said two slotted discs being separated from each other along said central axis, a respective one of said two clamp rollers being located adjacent to each of said two slotted discs with said cylindrical disc of each clamp roller being located on only a laterally outward side of a respective one of said grooving discs for retaining an inner material piece of a flat workpiece between said grooving discs so as to form fold lines adjacent to outer edges of the flat workpiece while maintaining a position of side panels of said flat workpiece and preventing movement of said side panels into said circumferential grooves.

5,549,540

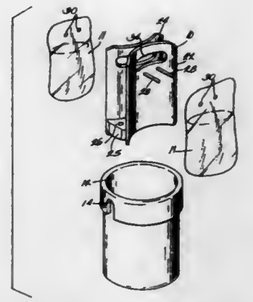
CENTRIFUGE INSERT FOR SUPPORT OF FLUID CONTAINING BAGS

Glenn R. Moore, Nivelles, Belgium, and Caryl M. Ellis, Norfolk, England, assignors to Baxter International Inc., Deerfield, Ill.

Filed Oct. 13, 1994, Ser. No. 322,212

Int. Cl.[6] B04B *5/02;15/00*

U.S. Cl. 494—20 **5 Claims**



1. An insert nestingly receivable within a centrifuge cup to support a pair of fluid containing bags therein comprising:

a pair of concave shapes, each having a front surface and a back surface, each of said shapes having an upper end and a lower end and a pair of opposed lateral edges connecting said upper and lower ends, said pair of shapes being centrally attached together in back-to-back relationship, said shapes together with an interior surface of said centrifuge cup together adapted to form a pair of elliptically shaped chambers for supporting said pair of bags within said cup,

at least one pin extending through said concave shapes and extending outwardly therefrom, said at least one pin being adapted to support one of said baas within each of said elliptically shaped chambers.

5,549,541

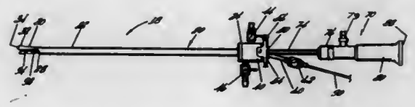
CONTINUOUS FLOW CYSTOSCOPE

Richard P. Muller, Bronx, N.Y., assignor to Circon Corporation, Santa Barbara, Calif.

Continuation of Ser. No. 17,475, Feb. 11, 1993, Pat. No. 5,392,765. This application Nov. 23, 1994, Ser. No. 344,559

Int. Cl.[6] A61M *3/00*

U.S. Cl. 600—105 **12 Claims**



1. An instrument comprising

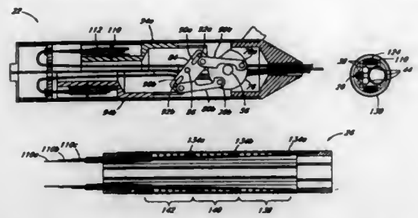
means defining an outer sheath having a distal section wherein said distal section includes means for defining an opening and means defining an elongated fenestra having an under surface which extends along a predetermined path relative to said distal section; and

means defining an inner member positioned within said means defining said outer sheath for forming a fluid passageway therebetween, said inner member defining means including a distal tip having an irrigation inlet and wherein said distal tip and irrigation inlet are positioned within said opening, said inner member defining means further including means defining at said distal tip an elongated lip having a length which is less than that of the fenestra, enabling the under surface of the fenestra to extend beyond the elongated lip, said elongated lip having a protrusion section which is substantially triangular in shape;

said fenestra defined by said means defining said outer sheath cooperating with said elongated lip and said protrusion section defined by said means defining said inner member for forming a fenestra channel having an irrigation outlet defined by said protrusion section spaced remotely from said irrigation inlet wherein the under surface of the elongated fenestra extends beyond the irrigation outlet to capture and direct the fluid to the irrigation inlet enabling said fenestra channel to pass fluid emanating from the irrigation inlet over a flow path minimizing fluid turbulence at the irrigation inlet to the under surface of the fenestra, to the irrigation outlet through the fenestra channel and to the fluid passageway.

VOL 1189 ISS 4 AG 27

5,549,542
DEFLECTABLE ENDOSCOPE
Steven W. Kovalcheck, San Diego, Calif., assignor to Life Medical Technologies, Inc., Salt Lake City, Utah
Filed Nov. 17, 1992, Ser. No. 977,875
Int. Cl.[6] A61B *1/008*
U.S. Cl. 600—146 36 Claims



35. A remotely deflectable non-rigid tubular endoscope, having a flexible steering section at a distal end along a longitudinal axis, the endoscope comprising:

a hollow flexible tubular member in said steering section;

a plurality of axially aligned actuating wires contained within said tubular endoscope and attached along a first longitudinal side of said tubular member at axially spaced locations, said locations being radially spaced from the longitudinal axis of said tubular member and substantially in a single plane intersecting said axis so as to divide said steering section into a plurality of deflectable segments, wherein a cross-section of each of said actuating wires has a first area moment of inertia for bending about a first axis perpendicular to said longitudinal axis which is substantially less than a second area moment of inertia of said cross-section about a second axis perpendicular to both said first axis and said longitudinal axis;

a coherent fiber optic image bundle, an illumination fiber and a working channel tubing extending through the tubular device and steering section; and

a control member attached to a proximal end of said endoscope containing a control mechanism capable of sequentially pulling said actuation wires to cause said deflectable segments of said steering section to deflect at different times, wherein said control mechanism comprises:

a plurality of stacked plates having different sized aligned slots; and

an actuation pin extending through said slots, wherein each of said plurality of actuation wires is attached to one plate and wherein translation of said pin causes sequential translation of said plates due to said different sized slots.

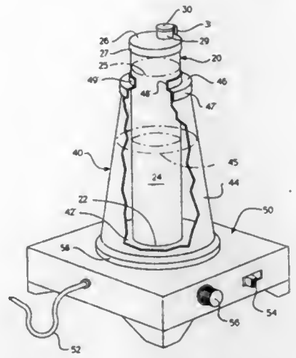
5,549,543
LAPAROSCOPIC DEFOGGING APPARATUS
Il G. Kim, Box 15A, R.R. #1, Hughesville, Pa. 17737
Filed Jun. 1, 1995, Ser. No. 457,012
Int. Cl.[6] A61B *1/06*
U.S. Cl. 600—169 16 Claims

1. A laparoscopic defogging apparatus for regulating and maintaining the temperature of a lens and end portion of a laparoscope comprising:

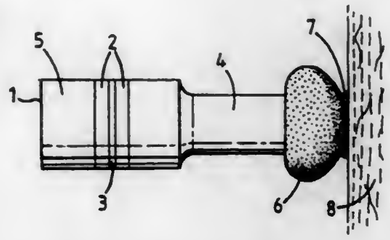
(a) a receptacle having a receptacle base, a receptacle side wall portion and a receptacle cover, said receptacle cover having an opening therein sized to receive the lens and end portion of a laparoscope, said receptacle adapted to receive and contain a first sterile fluid at a sufficient depth to allow the lens and end portion of a laparoscope to be placed into thermal contact with said first sterile fluid;

(b) a container having a container base, a container side wall portion and a container cover, said container cover having an opening therein sized to receive said receptacle, said container adapted to receive and contain a second sterile fluid at a sufficient depth to provide thermal contact with at least a part of said receptacle side wall portion; and

(c) a heating means connected to an energy source and in thermal contact with said container whereby said heating means provides sufficient heat to maintain said first sterile fluid at a desired temperature.



5,549,544
APPARATUS FOR ULTRASONIC THERAPEUTIC TREATMENT
Michael J. R. Young, South Devon, and Brian R. D. P. Bradnock, Herts, both of, United Kingdom, assignors to Orthosonics Ltd., Ashburton, South Devon, United Kingdom
Filed Dec. 10, 1993, Ser. No. 165,312
Claims priority, application United Kingdom, Feb. 25, 1992, 9204021
Int. Cl.[6] A61B *17/22*
U.S. Cl. 601—2 23 Claims

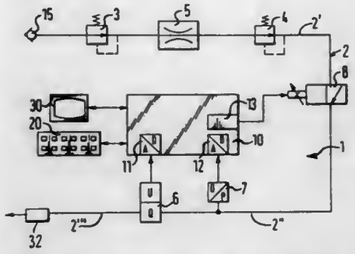


1. An apparatus to treat muscular injuries below a body surface, comprising piezoelectric transducer means including an elongate output member for distally supplying ultrasonic energy in the range of 20 to 120 kHz and on a longitudinal axis via said output member, a head means connected to and carried distally by said output member and having a smoothly continuous convex body-treatment surface that is axially spaced distally beyond the location of connection to said output member, said body-treatment surface having a predetermined effective treatment area, said head means having a wave impedance in the range of 1 to 1.2 times the wave impedance of soft human tissue, and the body-treatment surface of said head means being adapted to be applied directly to and to be manipulated continuously over a body area to be treated wherein the body area to be treated is greater than the effective treatment area of said head means.

5,549,545

Patent Not Issued For This Number

5,549,546
INSUFFLATION DEVICE
Herbert Schneider, Mühlacker, and Gunter Rentschler, Kraichtal–Münzesheim, both of, Germany, assignors to Richard Wolf GmbH, Knittlingen, Germany
Filed Jan. 24, 1995, Ser. No. 377,439
Claims priority, application Germany, Jan. 28, 1994, 44 02 467.3
Int. Cl.[6] A61M *37/00*
U.S. Cl. 604—26 12 Claims



1. An apparatus for automatically insufflating a gas into a body cavity, comprising:

a conduit having an upstream first end for connection to a gas supply and a downstream second end for connection to an insufflation instrument and configured so that gas is fed from the gas supply, through said conduit and the insufflation instrument, and into the body cavity;

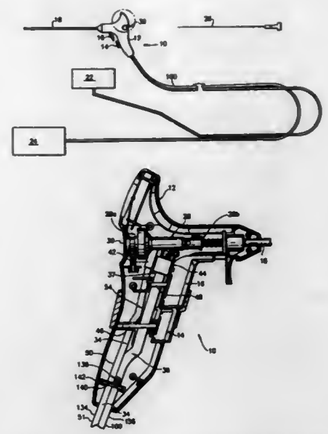
a selectively adjustable actuator located in and between said first and second ends of said conduit; and

control means operable for automatically controlling a flow and pressure of the gas within said conduit by operatively adjusting said actuator, said control means including sensor means downstream of said actuator for detecting the gas flow and gas pressure in said conduit at a location upstream of the insufflation instrument and for outputting sensory signals related to the detected gas pressure and gas flow, and automatic processing means responsive to said sensory signals for operatively adjusting said actuator to reduce the pressure in the conduit until the detected flow of gas in said conduit downstream of the actuator approaches zero when the detected pressure drops or the detected pressure ceases to continue to increase.

5,549,547
FLEXIBLE TUBE HAVING A TAPERED DIAMETER PORTION FOR USE WITH ENDOSCOPIC IRRIGATION INSTRUMENTS
Herbert Cohen, Fort Lauderdale; Matthew S. Solar, Cooper City, and Charles R. Slater, Fort Lauderdale, all of Fla., assignors to Symbiosis Corporation, Miami, Fla.
Continuation-in-part of Ser. No. 959,280, Oct. 9, 1992, Pat. No. 5,314,406. This application May 24, 1994, Ser. No. 248,523
Int. Cl.[6] A61M *1/00*
U.S. Cl. 604—30 12 Claims

1. An endoscopic irrigation instrument for use with a pressurized source of irrigation fluid, comprising:

a) a flexible irrigation tube having a proximal end having a first inner diameter, a distal portion having a second inner diameter smaller than said first inner diameter, and a portion of tapered inner diameter which tapers from said first inner diameter to said second inner diameter, with said proximal end being coupled to the irrigation source;

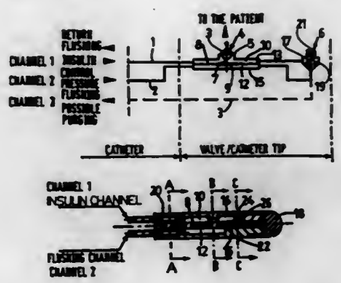


b) a pinch valve means located adjacent said distal portion of said flexible irrigation tube, said pinch valve means for pinching said flexible irrigation tube and controlling flow of the irrigation fluid through said irrigation tube at a location of said flexible irrigation tube other than where said flexible irrigation tube has said first inner diameter;

c) a fluid chamber which receives said distal portion of said flexible irrigation tube; and

d) a cannula having a proximal end coupled to said fluid chamber.

5,549,548
PROCEDURE AND DEVICE FOR FLUSHING A CATHETER
Rolf Larsson, Varby, Sweden, assignor to Siemens Elema AB, Solna, Sweden
Filed Jun. 8, 1994, Ser. No. 255,992
Claims priority, application Sweden, Jun. 22, 1993, 9302157
Int. Cl.[6] A61M *1/00*
U.S. Cl. 604—35 22 Claims



1. A procedure for in vivo flushing of an infusion channel in a catheter connected to an implanted medication infusion apparatus, said infusion channel normally being in fluid communication with a patient in whom said catheter is implanted, said procedure comprising the steps of:

completely isolating said infusion channel in vivo from fluid communication from said patient in whom said catheter is implanted;

UMI

connecting said infusion channel, while isolated, to a fluid circuit separated from said patient; and
flushing said fluid circuit with cleaning fluid.

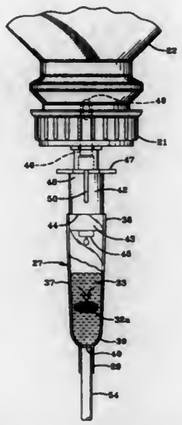
5,549,549

Patent Not Issued For This Number

5,549,550
METHOD OF ADDING MARKER DYE TO NUTRITIONAL PRODUCT DURING ENTERAL TUBE FEEDING

Terrence B. Mazer, Reynoldsburg; Joseph E. Walton, Westerville; Ronita K. Geckle, Columbus; Carl J. Piontek, Powell, all of Ohio; Susan B. Duel, Laurinburg, N.C.; Andre Daab-Krzykowski; Robert L. Joseph, both of Columbus, Ohio; William G. Pierson, Canal Winchester, Ohio; Thomas D. Loughrin, Columbus, Ohio, and Thomas W. Osip, Dublin, Ohio, assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Jan. 13, 1995, Ser. No. 372,613
Int. Cl.[6] A61M *37/00*
U.S. Cl. 604—83 **12 Claims**

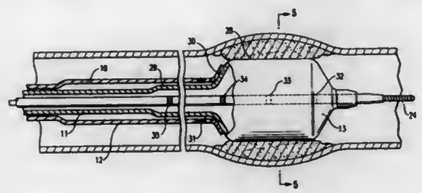


1. A method of dye marking a liquid enteral nutritional product during the flow thereof from a supply container containing such composition to a feeding tube leading into the gastrointestinal tract of a patient, comprising the steps of:
(a) providing apparatus comprising:
a formulation chamber having an inlet and an outlet and being connectable to a supply container of a liquid enteral nutritional product so as to receive said product therefrom;
the formulation chamber further comprising at least one physiologically acceptable marker dye, the at least one marker dye being contained within at least one sustained release reservoir positioned within the formulation chamber so as to be in physical contact with said liquid enteral nutritional product in said formulation chamber, the at least one marker dye being soluble in said liquid enteral nutritional product, said at least one sustained release reservoir containing marker dye being a means for providing and dispensing marker dye into said liquid enteral nutritional product having a viscosity in the range of about 5 to about 300 centipoises when the sustained release reservoir is physically contacted thereby during the feeding thereof to a patient over a time period of about 2 to about 30 hours; and
fluid communication means capable of operatively connecting the outlet of the formulation chamber to a device which feeds said liquid enteral nutritional product which is dye-mark into the gastrointestinal tract of a patient;
(b) providing said supply container containing said liquid enteral nutritional product;
(c) placing the apparatus in communicative series in the fluid flow between the supply container and said device which liquid enteral nutritional product which is dye-mark, while said device which feeds said liquid enteral nutritional product which is dye-marked for feeding is in communication with the gastrointestinal tract of a patient; and
(d) flowing the liquid enteral nutritional product through the apparatus and into the device for feeding over a time period of at least about 2 hours up to about 30 hours.

5,549,551
ADJUSTABLE LENGTH BALLOON CATHETER

James C. Peacock, III, Saratoga; Gregory M. Hyde, Sunnyvale; Wilfred J. Samson, Saratoga, all of Calif., and Michael Clayman, Carmel, Ind., assignors to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Filed Dec. 22, 1994, Ser. No. 361,825
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—96 **12 Claims**

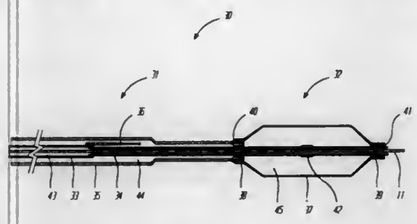


1. A balloon dilatation catheter assembly comprising:
a) a balloon dilatation catheter having
an elongated catheter shaft which has proximal and distal ends and an inner inflation lumen extending therein to a location spaced proximally from the distal end of the catheter shaft;
an inflatable balloon which has proximal and distal ends, a length and a desired inflated diameter, which is disposed on a distal portion of the elongated catheter shaft about the location spaced proximally from the distal end of the catheter shaft and which has an interior in fluid communication with the inner inflation lumen; and
b) a longitudinally moveable sheath, which has an inner lumen with smaller transverse dimensions than a desired inflated diameter of the inflatable balloon, which has a relatively inexpandable distal extremity disposed about at least a portion of the inflatable balloon spaced proximally of the distal end of the inflatable balloon so that upon the introduction of inflation fluid within the interior of the inflatable balloon only a portion of the inflatable balloon not covered by the inexpandable distal extremity of the sheath expands to a desired inflated diameter, and which has an expandable distal tip distal to the inexpandable distal extremity and much shorter than the length of the balloon which expands upon the inflation of the balloon to shape a portion of the balloon distally adjacent to the expandable distal tip.

5,549,552
BALLOON DILATION CATHETER WITH IMPROVED PUSHABILITY, TRACKABILITY AND CROSSABILITY

Jeffrey J. Peters, Golden Valley; Brooke Q. Ren, Brooklyn Park, and Christopher R. Larson, St. Paul, all of Minn., assignors to SCIMED Life Systems, Inc., Maple Grove, Minn.

Filed Mar. 2, 1995, Ser. No. 398,186
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—96 **15 Claims**

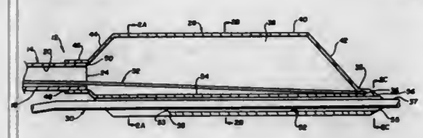


1. A medical system, comprising:
a. an over-the-wire type balloon catheter, the catheter comprising:
i. a polymer outer tube having a proximal end and a distal end;
ii. an elongate inner tube having a metallic proximal portion, a polymer distal portion and a guide wire lumen extending therethrough, the guide wire lumen having a minimum inside diameter, the inner tube being coaxially disposed within the outer tube to define an annular inflation lumen therebetween, wherein the distal portion of the metallic inner tube and the proximal portion of the polymer inner tube are connected at a junction;
iii. a flexible transition member traversing the junction, the flexible transition member having a proximal end and a distal end, wherein one end is free and the other end is fixed; and
iv. an inflatable balloon having a proximal end, a distal end and an interior, the proximal end of the balloon connected to a distal end of the distal portion of the inner tube, the proximal end of the balloon connected to the distal end of the outer tube, the interior of the balloon being in fluid communication with the inflation lumen; and
b. a guide wire removably disposed in the guide wire lumen, the guide wire having a maximum outside diameter which is less than the minimum inside diameter of the guide wire lumen.

5,549,553
DILATION BALLON FOR A SINGLE OPERATOR EXCHANGE INTRAVASCULAR CATHETER OR SIMILAR DEVICE

Thomas V. Ressemann, St. Cloud; Timothy Stivland, Plymouth, and David Blaeser, Champlin, all of Minn., assignors to SciMed Life Systems, Inc., Maple Grove, Minn.

Continuation of Ser. No. 55,009, Apr. 29, 1993, abandoned. This application Dec. 6, 1995, Ser. No. 567,810
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—96 **17 Claims**

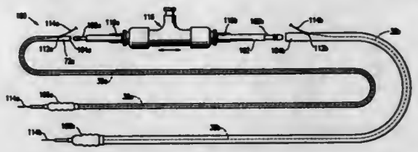


1. An assembly for an intravascular catheter, said assembly comprising:
an elongated shaft with a proximal portion, a distal portion, and an inflation lumen extending therethrough; and
a balloon member having a chamber therein in fluid communication with the inflation lumen; and
a guide wire lumen coextending with a portion of said balloon member for receiving a guide wire, said balloon member defining a portion of the guide wire lumen, wherein the side wall of the balloon member has a longitudinal rib protruding outwardly therefrom which defines at least a portion of the guide wire lumen therein.

5,549,554
CATHETERS HAVING SEPARABLE REUSABLE COMPONENTS

Manouchehr Miraki, Aliso Viejo, Calif., assignor to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 222,145, Apr. 1, 1994, and Ser. No. 265,602, Jun. 24, 1994. This application Feb. 2, 1995, Ser. No. 382,768
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—101 **32 Claims**



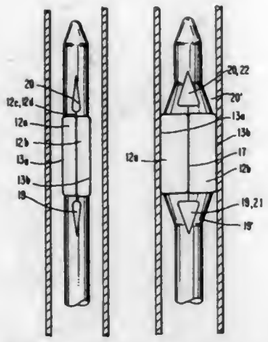
1. A dual headed catheter assembly comprising:
a generally tubular elongate central body having generally opposed first and second ends and at least one lumen extending therethrough;
a first elongate tubular distal body having proximal and distal ends, an inflatable member with an inner chamber near the distal end a first longitudinally extending bore in communication with said lumen in said central body and the interior of the inflatable member and being releasable and sealingly connected at its proximal end to said first end of said central body portion;
a second elongate tubular distal body having proximal and distal end and being sealingly connected at its proximal end to said second end of said central body and provided with a second longitudinally extending bore in communication with said lumen in said central body; and
means associated with the central body to selectively engage in fluid communication either the first or second longitudinally extending bore with a source of fluid.

5,549,555
BALLOON CATHETER

Ze'ev Sohn, Modiin, Israel, assignor to Influence, Inc., Orangeburg, N.Y.

Filed Feb. 22, 1995, Ser. No. 392,137
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—101 **22 Claims**

1. A balloon catheter, comprising:
a flexible tubular body having a distensible portion, said distensible portion being a section of said balloon catheter comprising an inflatable balloon;
said tubular body being formed with a longitudinally-extending split at said distensible portion, said longitudinally-extending split having two longitudinally-extending edges, said longitudinally-extending edges being a first edge and a second edge;
said balloon being attached to said distensible portion of said tubular body with a first portion of said balloon secured to said first edge and a second portion of said balloon secured to



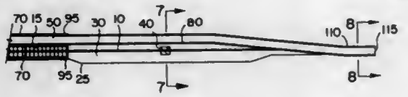
said second edge, such that inflation of said balloon applies a tension force to said first and second edges of said tubular body, pulling said first edge and said second edge apart and opening said distensible portion at said longitudinally-extending split to produce a flowpath of larger cross-sectional area within said distensible portion for the passage of fluid through said distensible portion of said tubular body.

5,549,556

RAPID EXCHANGE CATHETER WITH EXTERNAL WIRE LUMEN

Robert Ndondo-Lay, and Garry E. Rupp, both of San Diego, Calif., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Nov. 19, 1992, Ser. No. 979,094
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—102 **5 Claims**



1. A catheter comprising:
an elongated shaft having a proximal and a distal end the shaft is comprised of a hypotube at its proximal end and a spring coil at its distal end, the shaft defining a lumen;
a balloon having a distal and proximal end, the balloon disposed at the distal end of the shaft and sealed thereto so that the balloon is in fluid communication with the lumen;
a sleeve defining a second lumen, the sleeve extending proximally from the distal end of the catheter exterior to the balloon, for slidingly receiving a guidewire; and
a core wire extending through the interior of the balloon from the distal end of the balloon to a point proximal to the balloon to provide added support to the catheter and to the balloon.

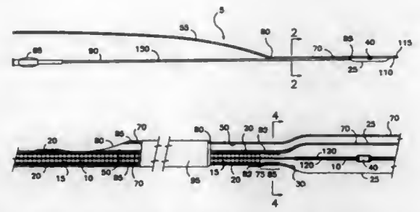
5,549,557

CATHETER BALLOON PROXIMAL HEAT BOND ON EXTENDED SHAFT

Thomas A. Steinke; Joseph Gulachenski, and R. Thomas Curtis, III, all of San Diego, Calif., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Aug. 5, 1994, Ser. No. 286,841
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—103 **8 Claims**

1. A catheter comprising:
a jacket having an outer surface, a proximal end and a distal end, an inner diameter and an outer diameter, the jacket defining an inflation lumen, the distal end of the jacket being necked down;



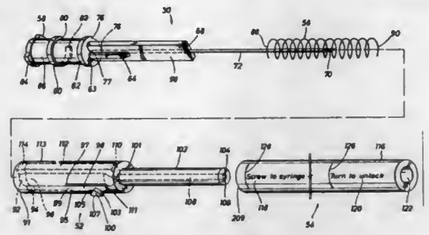
a balloon having an outer diameter, a distal end and a proximal end, the proximal end of the balloon being bonded to the distal end of the jacket where the jacket necks down to an area of reduced outer diameter, and the balloon being sealed thereto so that the balloon is in fluid communication with the inflation lumen;
an elongated spring coil having a proximal end and a distal end extending longitudinally within the jacket, the jacket sealingly surrounding the spring coil and the jacket extending distal to the distal end of the spring coil, the balloon is bonded to the jacket distal to the distal end of the spring coil;
a sleeve which defines a guidewire lumen, the sleeve extending longitudinally and exterior to the jacket and balloon, the sleeve extending to the distal end of the balloon and terminating in a proximal port substantially distal of the proximal end of the jacket, but proximal of the balloon, the sleeve being affixed adjacent to the jacket and balloon; and
a shrinkage gap between the distal end of the spring coil and the proximal end of the balloon, the shrinkage gap having a proximal end and a distal end, wherein an adhesive is placed on the outer surface of the jacket where the jacket necks down to an area of reduced outer diameter, the adhesive being placed between the proximal and distal ends of the shrinkage gap such that a continuous uniform outer diameter is maintained for the jacket and balloon between the distal end of the spring coil and the proximal end of the balloon.

5,549,558

SELF SHEATHING SAFETY NEEDLE

Robin P. Martin, 810 S. Texas Blvd., Weslaco, Tex. 78596-7054

Filed Jun. 9, 1995, Ser. No. 488,516
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—110 **20 Claims**



1. A self sheathing needle device comprising:
a needle assembly including a base on one end thereof and a hollow needle extending from said base for the injection or aspiration of a fluid;
an elongate hollow needle guard member movable relative to said needle assembly between an extended locked position, an extended unlocked position, and a plurality of retracted unlocked positions;
an elongate outer casing member surrounding and receiving said needle guard member in a telescoping relation and rotatably connected at one end to said base, said needle guard member extending outwardly from an opposed end of said casing member;

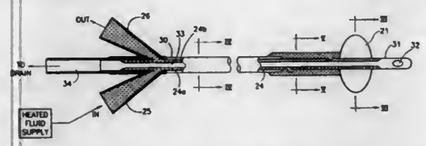
means within said elongate outer casing member to bias said needle guard member continuously toward one of said extended positions;
means mounting said outer casing member and said needle guard member for relative rotation and for relative longitudinal movement; and
coacting guide means on said outer casing member and said needle guard member to control relative movement between said casing member and said needle guard member for guiding said needle guard member between said locked and unlocked positions, said coacting guide means including a resilient locking element on one member movable resiliently in a generally radial direction relative to the other member for locking said needle guard member in said extended locked position.

5,549,559

THERMAL TREATMENT APPARATUS

Uzi Eshel, Herzlia Pituach, Israel, assignor to Argomed Ltd., Herelia, Israel

Continuation-in-part of Ser. No. 669,366, Mar. 14, 1991, Pat. No. 5,257,977. This application Mar. 11, 1994, Ser. No. 212,197
Claims priority, application Israel, Mar. 22, 1990, 93842
Int. Cl.[6] A61F *7/12*
U.S. Cl. 604—113 **14 Claims**



1. Thermal treatment apparatus for thermally treating selected tissues of a subject located in or near a body cavity, comprising a catheter insertable into the subject's body cavity and including a proximal end to be inserted into the body cavity, a distal end to be located externally of the body cavity, and an inflatable heating section on said proximal end to be located near the tissue to be heated; said catheter being formed with first and second passageways extending from said distal end to said inflatable heating section and in fluid communication with each other for circulating heated fluid through said inflatable heating section and thermal insulation surrounding said first and second passageways from close to said distal end to close to said inflatable heating section, said thermal insulation including a plurality of separate compartments containing a non-heated fluid, said components extending axially along the catheter, whereby the inflatable heating section and the tissue in its proximity may be heated to a desired high temperature without correspondingly heating non-selected tissues.

5,549,560

APPARATUS AND METHOD FOR INJECTING A PHARMACEUTICAL PREPARATION IN SOLID FORM

Gijsbertus Van de Wijdeven, Grotestraat 53, NL-5256 PA, Heesbeen, Netherlands

Filed Jan. 9, 1995, Ser. No. 335,725
Claims priority, application Netherlands, May 13, 1992, 92.00844
Int. Cl.[6] A61M *5/20*
U.S. Cl. 604—130 **16 Claims**

1. Method for injecting humans and animals with a pharmaceutical preparation, wherein the preparation is held in a rigid carrier and wherein the carrier is carried through the skin into the body by means of gas pressure, characterized in that during carrying of the rigid carrier into the body by means of gas pressure the device with which the carrier is carried into the body is held against the body.

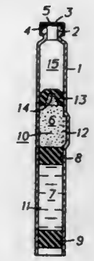


5,549,561

INJECTION CARTRIDGE ARRANGEMENT

Birger Hjertman, Vällingby, Sweden, assignor to Pharmacia AB, Sweden

PCT No. PCT/SE93/00335, § 371 Date Nov. 25, 1994, § 102(e) Date Nov. 25, 1994, PCT Pub. No. WO93/20867, PCT Pub. Date Oct. 28, 1993
PCT Filed Apr. 16, 1993, Ser. No. 325,208
Claims priority, application Sweden, Apr. 21, 1992, 9201246
Int. Cl.[6] A61M *5/145;5/19*
U.S. Cl. 604—131 **20 Claims**



1. An injection cartridge of the dual-chamber type, comprising a front chamber which contains a solid product, and a rear chamber which contains a liquid product, said front and rear chambers being separated by a fluid-sealing movable wall, and a bypass channel for conducting the liquid product from said rear chamber into said front chamber to be mixed with the solid product to form a preparation to be injected, characterized in that the solid product in the front chamber is surrounded by a medium which is soluble in the liquid product.

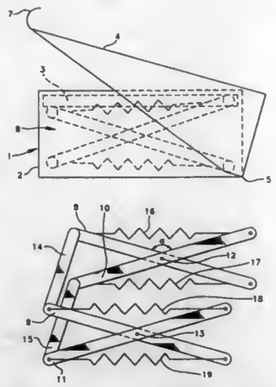
5,549,562

SELF-CONTAINED DRIP APPARATUS

Jean-Jacques Piclin, Viterne; Gilbert Thibaut, Nancy, and Michel Boisson, Saint-Andre, all of, France, assignors to A.D.E.C.E.F., Viterne, France

PCT No. PCT/FR92/00960, § 371 Date Sep. 29, 1994, § 102(e) Date Sep. 29, 1994, PCT Pub. No. WO94/08645, PCT Pub. Date Apr. 28, 1994
PCT Filed Oct. 13, 1992, Ser. No. 190,019
Int. Cl.[6] A61M *5/142*
U.S. Cl. 604—134 **1 Claim**

1. An apparatus for infusing a patient with a liquid contained in an infusion bag, comprising:
means for expelling the liquid from the bag, for injection into the patient, including a plate for receiving the infusion bag and a box fitted with a lid, wherein the plate is arranged in the box so that the lid is foldable over the infusion bag and the plate; and
elastic means for pressing on the plate responsive to closure of the lid so that pressure between the plate and the lid expels liquid from the infusion bag, wherein the elastic means includes;
first and second cross members, each cross member including a first arm and a second arm, and each arm having a first



end, a second end, and a middle portion, wherein the first arm and the second arm are connected at their middle portions;

first and second spring members, wherein the first spring member is connected between the first end of the first arm and the second end of the second arm, and the second spring member is connected between the first end of the second arm and the second end of the first arm; and

first and second rotatable rollers, wherein the first rotatable roller is connected between the first end of the first arm of the first cross member and the first end of the first arm of the second cross member, and the second rotatable roller is connected between the first end of the second arm of the first cross member and the first end of the second arm of the second cross member;

wherein the second ends of the first arms of the first and second cross members are attached to inside portions of the box, and the second ends of the second arms of the first and second cross members are attached to the plate, wherein the elastic means and the plate cooperate to define a resilient platform such that closure of the lid causes contact between the lid and the infusion bag received on the plate, and wherein the plate is pushed toward the lid by the elastic means, for expelling the liquid from the infusion bag.

5,549,563

REINFORCING INSERT FOR UTERINE MANIPULATOR

Richard F. Kronner, 1443 Upper Cleveland Rapids Rd., Roseburg, Oreg. 97470

Filed Oct. 11, 1994, Ser. No. 321,090

Int. Cl.[6] A61M *5/178*

U.S. Cl. 604—164 **1 Claim**

1. A uterine manipulator device comprising:

a manually flexible arc-shaped tube having a wall enclosing a tube passage, said tube having an insertable end, with an outlet port, adapted to be inserted through the cervical canal into the uterine cavity and an opposite end having an inlet port which locates outside the external opening of the vagina with said manipulator device in place, said tube passage serving to channel fluid introduced through said inlet port along the tube and out said outlet port;

a correspondingly arc-shaped plastic sheath having an internal sheath passage extending therealong, said tube being lodged within said sheath passage;

a rigid rod member having an arc shape the same as the arc-shape of the tube and an insertion end adapted to be freely inserted through said inlet port into said tube passage and a manipulation end opposite from said insertion end, said manipulation end extending externally from said tube inlet port when said insertion end is positioned in said insertable end of said tube; and

handle means attached fixedly to said manipulation end for facilitating manual manipulation of said rod member.

5,549,564

SAFETY PENETRATING INSTRUMENT

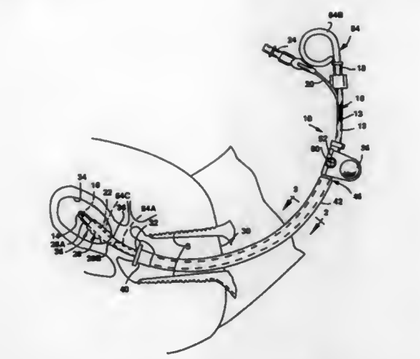
InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

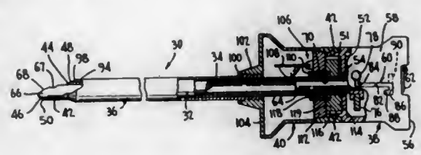
Continuation of Ser. No. 628,899, Dec. 18, 1990, Pat. No. 5,226,426. This application Jun. 7, 1993, Ser. No. 71,888

The portion of the term of this patent subsequent to Jul. 13, 2010, has been disclaimed.

Int. Cl.[6] A61B *10/00*

U.S. Cl. 604—165 **11 Claims**





6. A safety penetrating instrument comprising

an elongate penetrating member having a distal end defining a sharp tip for penetrating tissue;

a safety member disposed at least partially within said penetrating member and movably disposed relative to said penetrating member, said safety member having a distal end and being movable between an extended position with said safety member distal end protruding distally from said penetrating member sharp tip and a retracted position with said safety member distal end disposed proximally of said penetrating member sharp tip to expose said penetrating member sharp tip;

an elongate, tubular portal sleeve receiving said penetrating member and having a distal end disposed adjacent said penetrating member distal end;

bias means for biasing said safety member toward said extended position and for permitting said safety member to move to said retracted position and returning said safety member to said extended position; and

releasable locking means for selectively locking said safety member in said retracted position.

5,549,565

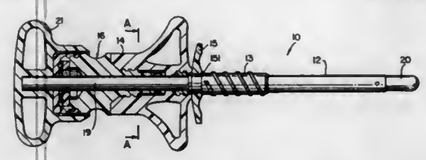
REUSABLE SURGICAL TROCAR WITH DISPOSABLE VALVE ASSEMBLY

Dana W. Ryan, Davie; Joel F. Giurtino, and Thomas O. Bales, both of Miami, all of Fla., assignors to Symblosis Corporation, Miami, Fla.

Filed Jul. 13, 1993, Ser. No. 91,237

Int. Cl.[6] A61M *5/178*

U.S. Cl. 604—167 **55 Claims**



1. A trocar assembly, comprising:

a) a reusable cannula assembly including a cannula base having a first coupling means, and a hollow cannula extending from said cannula base, said cannula base defining a first fluid passage in fluid communication with said hollow cannula;

b) a disposable valve assembly having a valve body defining a second fluid passage, said valve body including a fluid valve means in fluid communication with said second fluid passage, and a second coupling means for removably coupling said disposable valve assembly with said first coupling means of said reusable cannula assembly to effect a fluid coupling of said first and second fluid passages; and

c) a trocar insertable through said cannula, said trocar having a proximal handle, wherein,

said first and second fluid passages and said cannula are dimensioned to permit said trocar to be inserted therethrough,

said fluid valve means for permitting said trocar to be inserted through said valve means, for forming a seal between said trocar and said second fluid passage when said trocar is inserted through said valve means, and for automatically sealing said second fluid passage when said trocar is removed from said valve means, and

one of said cannula assembly and said disposable valve assembly includes a fluid sealing means for sealing said first and second fluid passages together.

5,549,566

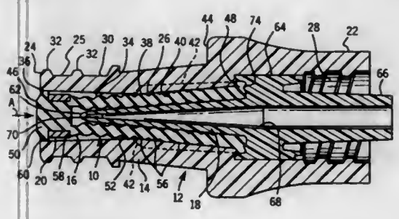
VALVED INTRAVENOUS FLUID LINE INFUSION DEVICE

Allen M. Elias, Mundelein; Warren P. Frederick, Wonder Lake, and David E. Kramer, Northbrook, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Oct. 27, 1994, Ser. No. 330,284

Int. Cl.[6] A61M *39/26*

U.S. Cl. 604—167 **19 Claims**



1. A valve, comprising:

a substantially rigid cannula;

a generally cylindrical valve member connected for operable communication with said cannula, said valve member being formed from a substantially resilient material and having a solid head portion with an outer periphery and a hollow body portion extending axially from said head portion, said head portion being movable with respect to said cannula between a first closed position and a second open position, said cannula cooperating to extend through said head portion of said valve member during movement from said first closed position to said second open position to establish a fluid flow path through said cannula and said valve member; and

sealing means independent from a flow of fluid within said fluid flow path and independent from any component utilized with said valve and circumferentially engaging said outer periphery of the head portion for automatically providing positive sealing of an opening through said head portion of said valve member when said head portion of said valve member is positioned in said first closed position, said cannula extending through said opening during said movement of said valve member, wherein said sealing means moves with said head portion.

5,549,567

INFUSION ADMINSTERING CATHETER HOLDER

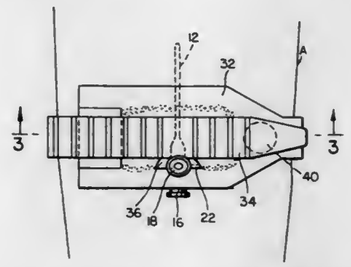
Michael Wolman, 5, Haim VeElisha Street, Tel-Aviv, Israel

Filed Oct. 19, 1994, Ser. No. 325,779

Claims priority, application Israel, Oct. 27, 1993, 107411

Int. Cl.[6] A61M *25/02*

U.S. Cl. 604—179 **16 Claims**



1. A holder for an infusion administering catheter device including a head portion and a catheter portion, said holder being formed as a deformable band, said holder comprising:

a first portion configured to overlie the device in its administered position onto a patient's arm without obstructing access to its functional parts;

a second portion formed as a band longer and narrower than said first portion, said second portion adapted to surround the arm of the patient to form a loop; and

releasable attaching means for permitting said second portion to be tightened over said first portion at any desired position over the length of said second portion, whereby to form a loop of the desired circumference over the patient's arm.

5,549,568

ELASTOMERIC NEEDLE SHIELD AND HUB-CAP

Jack W. Shields, 1950 Las Tunas Rd., Santa Barbara, Calif. 93103

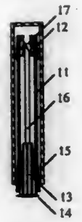
Filed Aug. 22, 1994, Ser. No. 293,798

Int. Cl.[6] A61M *5/32*

U.S. Cl. 604—192 **2 Claims**

1. An elastomeric needle shield for enhancing safe transfer of sterile fluids and preventing hazardous injuries from an enclosed hollow needle with a beveled tip, a shank, and a conical hub affixable to a syringe, said elastomeric needle shield comprising an elastomeric tube having:

VOL 1189 ISS 4 AG 27 1996 UMI



(a) an axial length approximately equal to the combined axial length of the beveled tip, shank and conical hub of the hollow needle,

(b) a leading end enclosing a tubular shield with:

i. a rigid, needle puncture-resistant consistency;

ii. a leading end nearly flush with said leading end of said elastomeric tube;

iii. an internal diameter greater than the external diameter of the shank of the hollow needle, a leading external diameter equal to or greater than the internal diameter of said elastomeric tube, and a trailing external diameter substantially greater than the internal diameter of said elastomeric tube, such that upon axial compression of said leading end of said elastomeric tube against a penetrable surface, the hollow needle slides through to extend beyond the confines of said tubular shield held by means of elastic recoil inside said leading end of said elastomeric tube; and

iv. an axial length at least 1.5 times longer than said internal diameter of said elastomeric tube and substantially shorter than the axial length of the shank of the hollow needle, and wherein the beveled tip of the hollow needle is recessed in said leading end of said tubular shield by a distance at least equal to the length of the beveled tip of the hollow needle when said elastomeric tube recoils automatically to assume its original shape on cessation of axial compression against a surface penetrable by the beveled tip and shank of the hollow needle;

(c) a body portion enclosing the shank of the hollow needle in a space with an axial length approximately equal to the axial length of the shank and an internal diameter substantially greater than the external diameter of the shank; and

(d) a trailing end wherein said internal diameter of said elastomeric tube is less than the external diameter of the mid-portion of the conical hub of the hollow needle, such that said trailing end of said elastomeric tube affixes securely over the conical hub by means of elastic recoil.

5,549,569

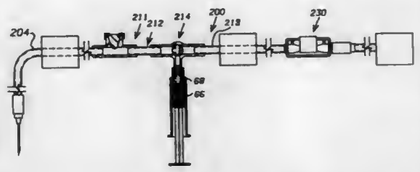
EX VIVO BLOOD ISOLATION SYSTEM

Lawrence A. Lynn, and Mark E. Larkin, both of Columbus, Ohio, assignors to Lawrence A. Lynn, D.O., Columbus, Ohio

Division of Ser. No. 196,455, Feb. 15, 1994, abandoned. This application Mar. 30, 1995, Ser. No. 413,966

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—191 **18 Claims**



1. A system for the sequential and repetitive aspiration and injection of a first liquid and blood, the system comprising:

a. a syringe having a variable volume chamber having a distal end and an opening in said end, and further having an internal displacement volume and piston to vary said internal displacement volume;

b. a chamber divider for separating said internal volume into at least first proximal and second distal variable volume reservoirs, said chamber divider being moveable along said chamber, said chamber divider being positioned adjacent said end prior to withdrawal of said first liquid into said syringe, said first proximal reservoir having a maximum displacement volume for receiving said first liquid;

c. a flow channel along said syringe, said flow channel being capable of providing flow connection between the proximal reservoir and the distal reservoir;

d. a valve capable of at least one disabling and enabling flow between said proximal reservoir and said distal reservoir through said flow channel;

e. a tensile element for linking said piston and said chamber divider so that when said piston is moved away from said chamber divider, and said proximal reservoir is at least partially filled with said first liquid, said chamber divider is urged by said tensile element away from said distal end of said chamber to enlarge said distal reservoir and to withdraw said blood into said distal reservoir;

f. a conduit having a distal terminal, said conduit being in fluid connection with said chamber and in communication with the blood vessel of a patient and containing said first liquid intermediate said chamber and said distal terminal;

g. said flow channel and said conduit being sized and configured such that after said maximum volume of first liquid has been withdrawn into said proximal reservoir and said blood has been withdrawn into said distal reservoir, said maximum volume of first liquid is substantially free from blood, and subsequent displacement of said maximum volume of first liquid back through said valve is sufficient to displace all said blood from the syringe when said piston is advanced along said chamber so that upon repetitive withdrawal and advancement of said piston, blood is not retained within said syringe.

5,549,570

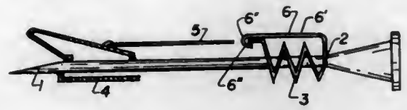
MEDICAL NEEDLE UNIT

Alena Rogalsky, 186 Pinehurst Ave., New York, N.Y. 10036

Continuation-in-part of Ser. No. 9,983, Jan. 27, 1993, Pat. No. 5,425,720. This application Apr. 29, 1994, Ser. No. 235,642

Int. Cl.[6] A61M *5/32*

U.S. Cl. 604—198 **16 Claims**



1. A medical needle unit, comprising a needle having a tip insertable in as well as withdrawable from the body of a patient and a protective element for preventing accidental puncture by said tip of said needle after the withdrawal of said tip of said needle from the body, said protective element including a hood moveable between an exposing position in which said tip of said needle is exposed and an enclosing position in which said tip of said needle is enclosed, a spring member connecting said hood with said needle so that when the spring member is compressed said hood is in said exposed position, and when said spring is relaxed said hood is in said enclosing position, a connecting element which connects said hood with said spring member, and a pivotable retaining element which in one position extends substantially parallel to said needle and retains said spring in said compressed position and therefore said hood in said exposed position before an injection by said needle and after the injection is pivotable to another position which is not parallel to said needle so as to release said spring so that said spring relaxes and moves said hood to said enclosing position, said hood, said spring member, said connecting element, and said retaining element of said protective element being formed so that during injection said hood is displaced toward a needle end to expose said tip of said needle and automatically without being actuated by a user, and after withdrawal of said needle from a patient said hood moves toward said tip also automatically without being actuated by a user.

5,549,571

BUTTERFLY ASSEMBLY WITH RETRACTABLE NEEDLE CANNULA

Robert F. Sak, 9674 Colorado Ct., Boca Raton, Fla. 33434

Filed Apr. 18, 1995, Ser. No. 424,942

Int. Cl.[6] A61M *5/32*

U.S. Cl. 604—198 **13 Claims**



1. A retractable butterfly needle system comprising:

a housing including a hollow central hub and a winged extension projecting from each side of said hub, said central hub having front and rear ends and a clip opening through an outer peripheral surface thereof;

a needle cannula having a sharpened first end and extending axially through said hollow central hub;

a retaining clip disposed on said peripheral surface of said central hub and extending at least partially through said clip opening;

wherein when said needle cannula is positioned in a normal extended position with said sharpened first end extending through said forward end of said hub, a lower terminal end of said retaining clip is biased against said needle cannula; and

wherein when said needle cannula is positioned in a retracted position with said sharpened first end housed within said central hub, said lower terminal end of said retaining clip is disposed in an active position adjacent an inner wall surface of said hub generally opposite to said clip opening.

5,549,572

SAFETY DEVICE FOR HYPODERMIC NEEDLE OR THE LIKE

Phillip O. Byrne; Penelope R. Sisson, and Harry R. Ingham, all of Newcastle upon Tyne, United Kingdom, assignors to British Technology Group, Ltd., London, United Kingdom

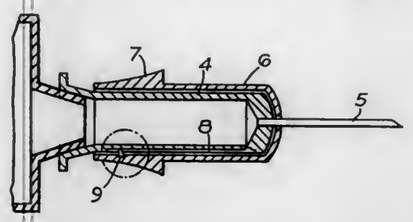
Continuation of Ser. No. 160,859, Dec. 3, 1993, which is a continuation of Ser. No. 709,999, Jun. 4, 1991, which is a continuation of Ser. No. 595,664, Oct. 11, 1990, Pat. No. 5,084,030, which is a continuation of Ser. No. 241,256, Sep. 7, 1988, abandoned, which is a continuation of Ser. No. 888,376, Jul. 23, 1986, Pat. No. 4,826,490. This application May 5, 1995, Ser. No. 435,396

Claims priority, application United Kingdom, Jul. 29, 1985, 8519049

Int. Cl.[6] A61M *5/32*

U.S. Cl. 604—198 **4 Claims**

1. For use with clinical apparatus operably applicable to a



patient by way of a deliberate skin puncture, a needle assembly operable to effect said skin puncture and comprising:

a support structure;

a needle fixedly mounted in said structure to form therewith a sub-assembly, with one end portion of said needle projecting from said structure, and said one end portion terminating in a skin-puncturing tip;

a guard mounted around part of said sub-assembly for movement relative thereto in the longitudinal direction of said needle from a first position in which said tip is exposed to effect said deliberate puncture, to a second position in which said tip is embraced by said guard to prevent unintended skin puncture;

a locking mechanism including first and second elements, said first element being a projection from one of said sub-assembly and guard, said second element being a stop surface defining a space bordering the other of said sub-assembly and guard, said elements each extending transversely of said needle longitudinal direction, said elements being spaced apart in said longitudinal direction when said guard is in said first position, said projection being subject to a bias force acting between said sub-assembly and guard during said relative movement, and said projection being automatically irreversibly moved into said space alongside said stop surface in response to said bias force when said guard is in said second position to inhibit a returning relative movement thereof towards said first position; and

a stop mechanism effective to constrain said guard from movement towards and around said apparatus.

5,549,573

SYRINGE

Wilhelm Waskönig, Calle Sacramento, 15, 04720 Aguadulce, Spain

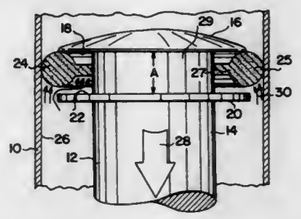
PCT No. PCT/EP93/01237, § 371 Date Feb. 15, 1995, § 102(e) Date Feb. 15, 1995, PCT Pub. No. WO93/23097, PCT Pub. Date Nov. 25, 1993

PCT Filed May 18, 1993, Ser. No. 338,450

Claims priority, application Germany, May 21, 1992, 9206878 U; Jun. 13, 1992, 42 19 502.0

Int. Cl.[6] A16M *5/00*

U.S. Cl. 604—218 **7 Claims**



1. A syringe suitable for both injection and aspiration, comprising:

a) a barrel having a predetermined inner diameter;

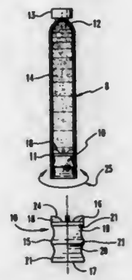
b) a plunger movable within the barrel and having a proximal end and a distal end, said plunger comprising at the distal end, a portion of narrowed diameter disposed between two portions of greater diameter, said two portions of greater diameter being separated by a distance A; and

c) a gasket disposed between said plunger and said barrel and between said two portions of greater diameter, said gasket having a diameter which is at least equal to said inner diameter and a longitudinal thickness less than or equal to said distance A, said gasket comprising an outer bead-like section contacting said barrel and said portions of said plunger, a bead-like inner portion sealing said narrowed portion of said plunger, and a central membrane-like portion connecting the outer and the inner portions, said outer and inner portions each forming a semicylindrical section and merging into each other via said central portion,

VOL 1189 ISS 4 AG 27 19 96 UMI

said gasket being freely movable with play between said portions of said plunger when the plunger is at rest and forming a transverse seal across the inner diameter of the barrel when the plunger is in motion.

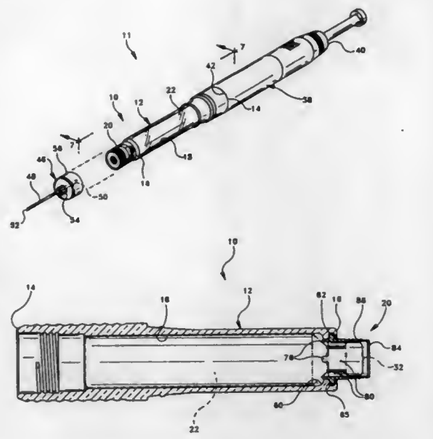
5,549,574
CARTRIDGE ASSEMBLY FOR USE IN A PEN-TYPE MEDICAMENT INJECTOR
Michael W. Townsend, Amesbury, Mass., assignor to Eli Lilly and Company, Indianapolis, Ind.
Filed Aug. 30, 1994, Ser. No. 298,117
Int. Cl.[6] A61M 5/00
U.S. Cl. 604—232 **20 Claims**



1. A cartridge assembly for use in a pen-type medicament injector, comprising:
- a cartridge for holding liquid medicament and having an open end and having an opposite capped end, the opposite capped end comprising a pierceable material operable to seal shut the capped end and to receive a needle therethrough to permit the exit of the liquid medicament; and
- a plunger sized to be received and to seal the open end and to be telescopically movable within the cartridge, said plunger defining a top surface and including at least one monolithic mixing vane formed therefrom and extending from said surface and inwardly of said cartridge when said plunger is sealingly engaged within the open end.

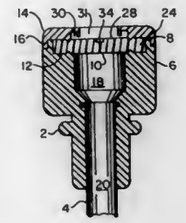
5,549,575
CARTRIDGE RETAINER ASSEMBLY FOR MEDICATION DELIVERY PEN
Lucio Giambattista, East Hanover, and Theodore Siuta, Brant Beach, both of N.J., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.
Filed Sep. 13, 1994, Ser. No. 304,953
Int. Cl.[6] A61M 5/00
U.S. Cl. 604—232 **9 Claims**

1. A cartridge retainer assembly for retaining a medication cartridge having a barrel and a neck, said cartridge retainer assembly comprising:
- a generally tubular body having opposed proximal and distal ends and being dimensioned for securely receiving a barrel of a cartridge therein;
- a generally tubular needle mounting collar having opposed proximal and distal ends and being dimensioned for receiving a neck of the cartridge therein; and
- cooperating engagiment means on said needle mounting collar and said tubular body for preventing distal and proximal movement of said needle mounting collar with respect to said body and for providing transversely floatable engagement between said needle mounting collar and said body, whereby said engagement means enables said cartridge retainer assembly to accommodate dimensional variations and eccentricities



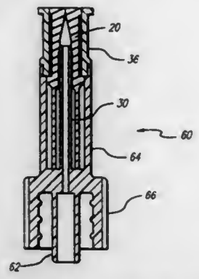
of the cartridge when the neck of the cartridge is being inserted through said body and into said needle mounting collar.

5,549,576
VASCULAR INTRODUCER VALVE WITH PROXIMAL SELF-LUBRICATION
Frank Patterson, Exeter, N.H.; John Zhang, Burlington, and George Purtell, Westford, both of Mass., assignors to C. R. Bard, Inc., Murray Hill, N.J.
Filed May 7, 1993, Ser. No. 58,594
Int. Cl.[6] A61M 5/00
U.S. Cl. 604—247 **7 Claims**



1. An introducer adapted to be inserted into a patient's blood vessel comprising:
- a housing having a proximal end and a distal end and an introducer sheath extending distally from the distal end of the housing, the sheath being adapted to be inserted into a patient's blood vessel, the housing having an opening at the proximal end thereof;
- a gasket mounted in the proximal end of the housing and adapted to enable passage of a medical instrument therethrough, the gasket having a proximal surface;
- an end cap mounted to the housing proximally of the gasket to retain the gasket within the housing;
- the end cap having a central opening to expose the proximal surface of the gasket at the opening; and,
- an annular lip extending between the end cap and the proximal surface of the gasket and defining, in cooperation with the end cap and the gasket, an annular space about the central opening to form a reservoir for retaining lubricating fluid to lubricate medical instruments inserted through the gasket.

5,549,577
NEEDLELESS CONNECTOR
Geoffrey S. Siegel, and Karl R. Leinsing, both of Raleigh, N.C., assignors to Ivac Corporation, San Diego, Calif.
Filed Dec. 29, 1993, Ser. No. 174,843
Int. Cl.[6] A61M 5/00;25/00; F16K 51/00
U.S. Cl. 604—256 **24 Claims**



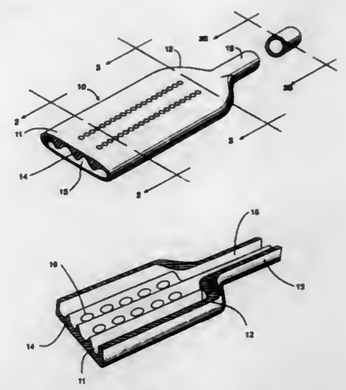
1. A needleless connector for medical use, adapted to facilitate infusion and withdrawal of fluid therethrough, comprising:
- a housing having a first end and a second end and a chamber therebetween, said first end defining a connection port;
- a blunt cannula carded by the housing within the chamber, said blunt cannula having a proximal end and a distal end and a fluid passage therethrough in fluid communication with the second end of said housing;
- an elastomeric pre-slit plunger slidably received within said housing and about said blunt cannula within the chamber, said plunger being configured so as to be oversized relative said housing and therefore under radial compression by said housing, and wherein said plunger slidable between a first position and a second position therein, which in the first position sealingly occludes the passage through the cannula at the proximal end thereof, and in a second position within said chamber is disposed distally over said blunt cannula so that the proximal end is not occluded and the first and second ends of said housing are in fluid communication by means of the passage through said cannula; and
- biasing means for biasing said elastomeric plunger to said first position, whereby insertion of a connector in said connection port moves said elastomeric plunger from said first position to said second position, and removal of said connector causes the elastomeric plunger to return to said first position.

5,549,578

Patent Not Issued For This Number

5,549,579
UNITARY DRAIN AND METHOD FOR MAKING
David B. Batdorf, Paso Robles, and Charles A. Schryver, Atascadero, both of Calif., assignors to Specialty Silicone Fabricators, Paso Robles, Calif.
Continuation of Ser. No. 219,410, Mar. 29, 1994, abandoned, which is a continuation of Ser. No. 979,808, Nov. 20, 1992, abandoned. This application Jul. 25, 1995, Ser. No. 506,607
Int. Cl.[6] A61M 27/00
U.S. Cl. 604—264 **1 Claim**

1. In a drainage tube having a proximal end and a distal end including an implantable portion adapted for implantation beneath the skin of a patient, said implantable portion having a length and comprising, in combination:
- (a) a hollow tubular collecting portion having a first length, a first outer surface and a first inner surface having struts



projecting inward therefrom coextensive with said first length, said first outer surface presenting a uniform first cross-sectional profile along said first length and wherein said first cross-sectional profile has a greatest dimension; and
- (b) a hollow tubular extension portion having a second length and a second outer surface having a substantially uniform second cross-sectional profile coextensive with said second length, said second cross-sectional profile having a greatest dimension which is less than said greatest dimension of said first cross-sectional profile; and
- (c) a hollow transition portion therebetween, said transition portion providing an integral connection between the proximal end of said collecting portion and the distal end of said extension portion, said transition portion providing a gradual transition between said first cross-sectional profile and said second cross-sectional profile;

the improvement wherein the greatest dimension of said first cross-sectional profile and the greatest dimension of said second cross-sectional profile of said implantable portion of said drainage tube progressively decreases along said length of said implantable portion in the direction of said proximal end of said drain, and wherein said implantable portion is of unitary construction.

5,549,580
CATHETER HAVING A FLEXIBLE DISTAL TIP AND METHOD OF MANUFACTURING
Juan C. Diaz, Miami, Fla., assignor to Cordis Corporation, Miami Lakes, Fla.
Filed Jan. 23, 1995, Ser. No. 376,842
Int. Cl.[6] A61M 25/00
U.S. Cl. 604—280 **25 Claims**

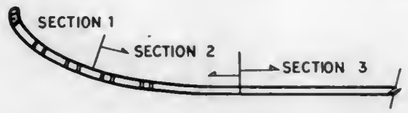


1. A catheter comprising:
- an elongate body defining a core wire;
- a projection extending generally radially outwardly from said core wire adjacent a distal end thereof;
- a coil spring covering the distal end of said core wire, said coil spring having a proximal end engaging said projection to secure the coil spring to said core wire; and
- a tube having a lumen and a distal end surrounding the proximal end of said coil spring, the distal end of said tube comprising heat fusible material being fusibly sealed to the proximal end

VOL 1189 ISS 4 AG 27 1996 UMI

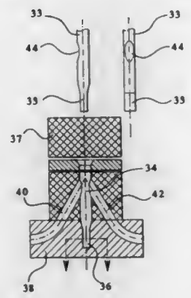
of said coil spring and adjacent portions of the core wire to form a fluid seal for said lumen.

5,549,581
CORONARY SINUS CATHETER
Keith G. Lurie, Minneapolis; David G. Benditt, Edina; Jeffrey J. Shultz, Robbinsdale; John D. Ockuly, and John J. Fleischhacker, both of Minnetonka, all of Minn., assignors to Daig Corporation, Minnetonka, Minn.
Continuation of Ser. No. 106,383, Aug. 13, 1993, Pat. No. 5,423,772. This application Jan. 12, 1995, Ser. No. 371,849
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—282 2 Claims



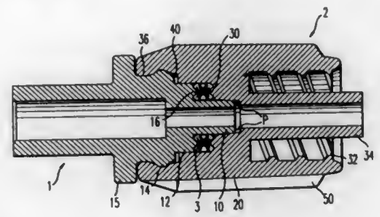
1. A catheter for use in a coronary sinus comprising an elongated member containing a generally straight proximal section and a curved distal section, wherein the distal section continues in a first and second curve, wherein the first curve is a first longitudinal curve with a radius extending through an arc of about 30 to about 50 degrees, wherein the second curve is a second longitudinal curve extending through an arc with a radius of about 50 to about 70 degrees, wherein the second longitudinal curve is curved in substantially the same direction as the first longitudinal curve, and wherein the first and second longitudinal curves are substantially coplanar.

5,549,582
RESTRICTION DEVICE AND COUPLING FOR SELECTIVELY CONNECTING MULTIPLE CONDUITS MEETING AT A COMMON CONNECTION LOCATION
Rolf Larsson, Varby, and Ulf Fahlstroem, Stockholm, both of, Sweden, assignors to Siemans Elema AB, Solna, Sweden
Filed Jun. 30, 1994, Ser. No. 269,073
Claims priority, application Sweden, Jul. 7, 1993, 9302356
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—283 23 Claims



1. A coupling comprising:
a plurality of conduits disposed in a connection piece to meet at a common interior connection point, said connection piece having an opening therein extending from an exterior of said connection piece into communication with said connection point; and
a coupling element formed by a cannula having a longitudinal axis, said cannula being insertable into said opening and maneuverable in said connection piece by at least one of displacement along and rotation around said longitudinal axis to selectively define a flow path to at least one of said conduits while simultaneously blocking a flow path to at least one other of said conduits.

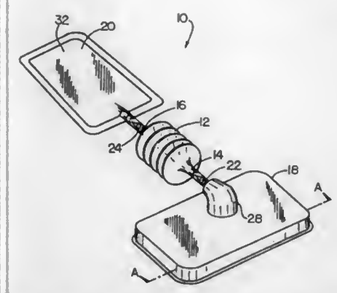
5,549,583
SURGICAL CONNECTOR
Adam Sanford, Colts Neck; John Cheer, Manasquan, and James Wood, Oakhurst, all of N.J., assignors to Adam Spence Corporation, Wall, N.J.
Filed Aug. 4, 1995, Ser. No. 511,471
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—283 19 Claims



1. A connector comprising:
(a) a female part having:
(i) a barrel-shaped body including a first end and a second end;
(ii) a socket extending into the barrel-shaped body from said first end, said socket including a first stepped portion having a first diameter, a second stepped portion having a second diameter, and a third stepped portion having a third diameter, said first stepped portion being disposed closer to said first end than said second stepped portion, said second stepped portion being disposed closer to said first end than said third stepped portion, the diameter of said first stepped portion being larger than the diameter of said second stepped portion, and the diameter of said second stepped portion being larger than the diameter of said third stepped portion; and
(iii) a lip extending radially inwardly from said barrel-shaped body of said female part at said first end and
(b) a male part having:
(i) a stem having an outer diameter and
(ii) a flange having an outer diameter larger than the outer diameter of said stem,
whereby:
(c) in an assembled state, said stem is at least partially disposed in said third stepped portion and said flange is at least partially disposed in said first stepped portion.

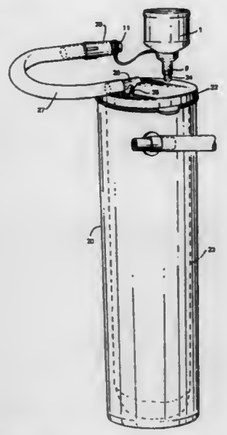
5,549,584
APPARATUS FOR REMOVING FLUID FROM A WOUND
James R. Gross, Wareham, Mass., assignor to The Kendall Company, Mansfield, Mass.
Filed Feb. 14, 1994, Ser. No. 194,976
Int. Cl.[6] A61M *1/00*
U.S. Cl. 604—313 4 Claims

1. An apparatus for evacuation of exudate from wounds, comprising
a suctioning means having an inlet port and an outlet port;
a wound cover in fluid communication with said suctioning means via said inlet port, said wound cover being adapted to fit in fluid communication with a wound dressing for application to a wound site; and



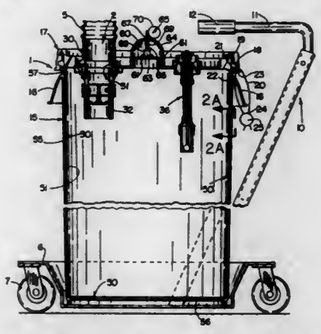
a vented wound dressing comprising a thin conformable sheet material at least a portion of the surface area of which is intended for placement as a dressing over a wound, which portion carries a pressure-sensitive adhesive coating on one surface thereof for adhering the dressing to skin, the coating being applied to provide repeating areas of the sheet material containing no adhesive, at least a portion of the repeating areas of no adhesive having slits extending through the thickness thereof to permit transfer of wound fluids through the sheet material unimpeded by presence of adhesive material which can clog the slits and thereby inhibit fluid transfer therethrough.

5,549,585
GELLING TREATMENT FOR SUCTION DRAINAGE SYSTEM
Pascal J. Maher, Donegal; Finbarr J. Filan, Sligo, and Christian Shaw, Kilkenny, all of, Ireland, assignors to Abbott Laboratories, Abbott Park, Ill.
Filed Jul. 1, 1994, Ser. No. 269,496
Claims priority, application Ireland, Jul. 1, 1993, 930,493
Int. Cl.[6] A61M *1/00;37/00;* B27C *3/16*
U.S. Cl. 604—317 1 Claim



1. A method of treating waste collected in a suction system comprising the steps of: providing a sealed receptacle, including a lid and a chamber within the receptacle for receiving the waste;
providing a waste inlet port in the lid connected to the interior of the chamber;
providing an outlet port in the lid for connection to a suction source;
providing a reservoir comprising a container (1);
disposing waste-treating material in the container;
providing an elongate dispensing nozzle (8) on the container providing a removable cap (11) on the container which in one position fits over the nozzle of the container to form a fluid-tight seal on the nozzle, and which, in a second position, when removed from the nozzle, is adapted to seal the outlet port;
providing that the reservoir is unattached to the receptacle when the suction system is in use;
attaching the reservoir to the receptacle when it is desired to treat waste within the chamber (23) by removing the removable cap and inserting the dispensing nozzle into the waste inlet port (24) of the receptacle; and
dispensing the waste-treating material in the container of the reservoir through the nozzle into the chamber to treat the waste collected therein.

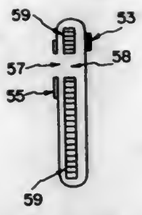
5,549,586
CONTAINMENT VESSELS FOR HANDLING AND DISPOSING OF LIQUID WASTE
Robert E. Gunya, Clarion, Pa., and Otto V. Jackson, Orlando, Fla., assignors to Milieu Systems Corp., Cleveland, Ohio
Division of Ser. No. 906,206, Jun. 25, 1992, Pat. No. 5,401,261. This application Nov. 7, 1994, Ser. No. 335,474
Int. Cl.[6] A61M *1/00*
U.S. Cl. 604—319 10 Claims



1. A vessel for liquid waste comprising a container having a top and bottom and a side wall extending between said top and bottom, a cover over said top, an inlet for introducing liquid waste into said container, gelling material within said container for transforming the liquid waste into a non-pourable gel, a tip indicator for indicating if said container has been tipped after the vessel has been put into service, said tip indicator comprising a ball which is supported in an upwardly facing socket in said cover when said vessel is setting upright, said ball being free to roll out of said socket whenever said vessel is tipped as an indication that said vessel has been tipped after said vessel has been put into service, and in-service indicator means which when actuated indicates that said vessel has been put into service and releases said ball so that said ball is free to roll out of said socket whenever said vessel is tipped.

5,549,587
OSTOMY BAG
Walter L. Norton, 208 State St., Newburgh, Ind. 47630
Filed Jun. 7, 1995, Ser. No. 483,412
Int. Cl.[6] A61F *5/44*
U.S. Cl. 604—333 20 Claims

1. An ostomy bag comprising:
a) a flexible film pouch forming a lumen therein, said flexible film pouch including a stomal opening through one wall thereof and a filter for venting gases entering said flexible film pouch through said stomal opening, said filter arranged in a



first plane and having an absorbent pad covering an external venting surface of said filter; and

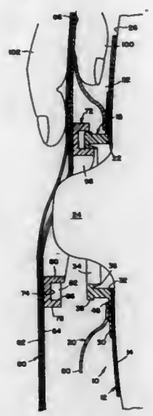
b) a liquid-gas separator arranged within said lumen in a second plane generally parallel to said first plane, at least a portion thereof laterally positioned between said filter and said stomal opening, said filter being spaced laterally from said liquid-gas separator in a direction parallel to said first plane so that said filter and said liquid-gas separator lack coincidence in a direction generally perpendicular to said first plane, said liquid-gas separator made of an absorbent material for absorbing liquids entering said lumen through said stomal opening and separating said liquids from said gas wherein said lack of coincidence facilitates simultaneous venting of gases and storage of high volumes of liquids and said portion defeats capillary action of fluid toward said filter.

5,549,588

COUPLING DEVICE FOR OSTOMY POUCH

Kenneth A. Johnsen, Piscataway, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Aug. 12, 1994, Ser. No. 289,821
Int. Cl.[6] A61F *5/44*
U.S. Cl. 604—339 **5 Claims**



1. A coupling device comprising,

a) a flexible mounting plate having an opening for a stoma,

b) a coupling member having an annular base flange, said base flange including an annular rim projecting therefrom, said base flange having a lower surface and upper surface, said entire lower surface being joined to said mounting plate,

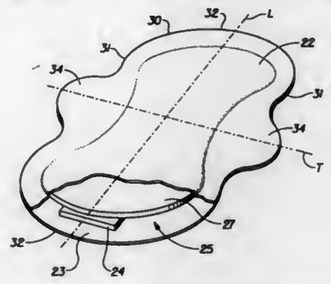
c) a flexible annular force transmitter member having an inside diameter portion and an outside diameter portion, said inside diameter portion being joined to said upper surface of said base flange around said annular rim, said outside diameter portion being freely deflectable toward and away from said mounting plate and being sized to permit annular gripping to transmit force through said force transmitter member to said annular rim.

5,549,589

FLUID DISTRIBUTION MEMBER FOR ABSORBENT ARTICLES EXHIBITING HIGH SUCTION AND HIGH CAPACITY

James C. Horney, and John R. Noel, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 3, 1995, Ser. No. 382,817
Int. Cl.[6] A61F *13/15;* **B27J** *5/00*
U.S. Cl. 604—366 **20 Claims**



16. An absorbent article capable of acquiring, distributing, and storing bodily fluids, said absorbent article comprising:

(a) a topsheet;

(b) a backsheet; and

(c) an absorbent structure located between said topsheet and said backsheet, said absorbent structure including a fluid distribution member, said fluid distribution member comprising;

(i) between about 20% and about 80% chemically stiffened, twisted, and curled bulking fibers;

(ii) between about 10% and about 80% eucalyptus high surface area fibers; and

(iii) between about 0% and about 50% thermoplastic binding fibers.

5,549,590

HIGH PERFORMANCE ABSORBENT PARTICLES AND METHODS OF PREPARATION

Stuart Suskind, Wayne, Pa., and Leonard Pearlstein, 1441 Waverly Ave., Gladwyne, Pa. 19035, assignors to Leonard Pearlstein, Gladwyne, Pa.

Filed Aug. 1, 1994, Ser. No. 283,559
Int. Cl.[6] A61F *13/15;* **B32B** *27/02*
U.S. Cl. 604—368 **26 Claims**



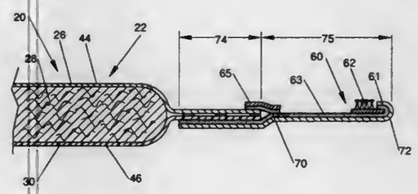
1. A plurality of individual and discrete absorbent particles wherein each particle comprises one water resistant solid core particle with a size of from about 10 microns to about 1500 microns substantially encapsulated by a composition consisting essentially of a hydrogel forming polymer wherein the plurality of individual and discrete absorbent particles are in the substantial absence of absorbent particles containing none or more than one solid core particle.

5,549,591

ADHESIVE/MECHANICAL FASTENER SYSTEMS FOR DISPOSABLE ARTICLES

Brigitte Landvogt, Euskirchen-Kirchbelm, Germany, assignor to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US93/02531, § 371 Date Dec. 15, 1994, § 102(e) Date Dec. 15, 1994, PCT Pub. No. WO93/19713, PCT Pub. Date Oct. 14, 1993
PCT Filed Mar. 19, 1993, Ser. No. 313,138
Claims priority, application European Pat. Off., Apr. 2, 1992, 92200943.6
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—389 **15 Claims**



1. A disposable absorbent article having a transport configuration when packaged and during transport, said absorbent article comprising:

a body portion having an inside surface and an outside surface, side edges extending in a longitudinal direction, a first end region and a second end region;

an adhesive-mechanical fastening tape tab positioned in said first end region of said body portion and comprising a manufacturer's region and a user's region; said manufacturer's region being joined to said absorbent article and said user's region extending beyond said longitudinal side edge of said absorbent article; said user's region having a proximal region to said longitudinal side edge and a distal region to said longitudinal side edge; said proximal region comprising an adhesive fastening member and said distal region comprising a mechanical fastening member; said adhesive fastening member and said mechanical fastening member having their respective fastening surfaces oriented in the direction of said inside surface of said body portion; said user's region being folded onto said inside surface of said body portion in said transport configuration;

a mechanical fastening landing member for cooperation with said mechanical fastening member of said adhesive-mechanical fastening tape tab, said landing member being disposed in said second end region and joined to said outside surface of said absorbent article;

a release tape being disposed on said inside surface for cooperation with said adhesive fastening member of said user's region in said transport configuration;

said release tape having a laterally innermost edge disposed laterally outwardly of said fastening surface of said mechanical fastening member in said transport configuration; and

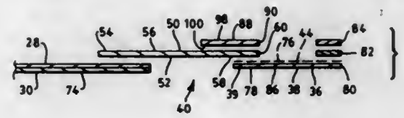
a delamination introducing area adapted to provide a non-adhesive surface, said delamination introducing area being disposed between the fastening surfaces of said adhesive fastening member and said mechanical fastening member in said users region whereby, in said transport configuration, said delamination introducing area is positioned so as to overlie the laterally innermost edge of said release tape.

5,549,592

ABSORBENT ARTICLE WITH A LAMINATED TAPE

Donald M. Fries, Combined Locks; Andrew E. Huntoon, and Andrew M. Long, both of Appleton, all of Wis., assignors to Kimberly-Clark Corporation, Neenan, Wis.

Filed Apr. 3, 1995, Ser. No. 415,382
Int. Cl.[6] A61F *13/15;13/20*
U.S. Cl. 604—389 **16 Claims**



1. An article having a front waistband portion, a rear waistband portion and an intermediate portion which interconnects said front and rear waistband portions, said article comprising:

a backsheet layer;

a topsheet layer connected in facing relation to said backsheet layer:

an absorbent body sandwiched between said backsheet and topsheet layers; and

a fastening system affixed to at least one of said waistband portions of said article for holding said article on a wearer, said fastening system including

a panel member which includes a panel material, said panel member having first and second, opposed major facing surfaces, an appointed inboard region, and an appointed outboard region having a terminal outboard edge thereof, said inboard region of said panel member affixed to said at least one waistband portion of said article;

a reinforcement strip which includes a reinforcement material and has an attachment surface affixed and laminated to said first surface of said panel member at said outboard region of said panel member, said reinforcement strip having a terminal outboard edge thereof which is coterminous with said outboard edge of said panel member; and

a fastener tab laminated to said second surface of said panel member and having a user-bond region thereof which extends from said panel member, said fastener tab including first and second, opposed major surfaces, and including a securing means located on at least one of said major surfaces of said fastener tab.

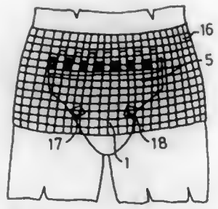
5,549,593

DEVICE FOR THE SUPPORT OF AN ABSORBENT ARTICLE

Birgitta Ygge, Gothenburg, and Terje Vigmo, Mölnlycke, both of, Sweden, assignors to Molnlycke AB, Gothenburg, Sweden

Continuation-in-part of Ser. No. 653,521, Jan. 30, 1991, abandoned, which is a continuation of Ser. No. 399,495, Sep. 6, 1989, abandoned. This application Sep. 2, 1992, Ser. No. 942,116
Claims priority, application Sweden, Mar. 24, 1987, 8701208
Int. Cl.[6] A01F *13/15*
U.S. Cl. 604—391 **8 Claims**

1. In combination, an absorbent article having a forward end and a rear end, and a waist belt for supporting said absorbent article, said waist belt and said absorbent article having coacting hook and loop fabric tape elements thereon by which said absorbent article and said waist belt are releasably secured to each other, said hook fabric tape elements being provided on one of said waist belt and said absorbent article, and said loop fabric tape elements being provided on the other of said waist belt and said absorbent article, wherein said belt comprises a continuous piece of elastic material completely open at top and bottom and having substantially equal width along its entire length, a plurality of said tape elements being arranged in a row spaced from each other along said waist belt and



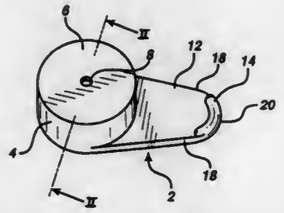
extending over substantially the whole width of said belt, said tape elements on said absorbent article extending over the whole width of said forward and rear ends thereof.

5,549,594

SEALING CAP FOR GUIDE TUBES OR REDUCING SLEEVES FOR THE INTRODUCTION OF SURGICAL INSTRUMENTS

Dieter Brunken, Hüttblek, Germany, assignor to Ethicon, Inc., Somerville, N.J.

Filed Jul. 1, 1992, Ser. No. 907,002
Claims priority, application Germany, Jul. 3, 1991, 41 21 829.9
Int. Cl.[6] A61B *19/00*
U.S. Cl. 606—1 **8 Claims**



5. Sealing cap for surgical guide tubes or reducing sleeves for inserting surgical instruments comprising: an end wall having an underside; an all-around circumferential skirt extending from said end wall; a circular groove contained within said skirt circumference and shaped so that it is capable of receiving a flange contained on a guide tube or reducing sleeve, said groove separated from said underside of said end wall by a space therebetween, said space defined by said underside of said end wall and said groove; and an insert opening contained in said end wall, said insert opening capable of receiving therethrough, a shaft of a surgical instrument.

5,549,595

GEAR ACTIVATED TROCAR ASSEMBLY

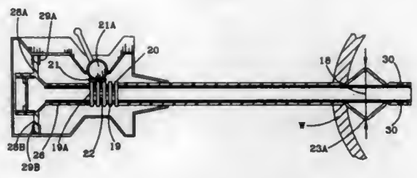
Michael W. Freitas, Irving, Tex., assignor to Dexide, Inc., Fort Worth, Tex.

Continuation of Ser. No. 29,372, Mar. 8, 1993, abandoned, which is a continuation of Ser. No. 705,110, May 24, 1991, Pat. No. 5,217,451. This application Apr. 6, 1994, Ser. No. 223,840
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—1 **7 Claims**

1. A sleeve for insertion of a surgical instrument into a bodily cavity through an incision in a body, the sleeve comprising:

a housing;

an outer cylindrical member coupled to the housing and including a radially expandable member thereon for selective expansion to resist removal of the sleeve from the bodily cavity;



an inner cylindrical member concentrically disposed within the outer cylindrical member and secured thereto, the inner cylindrical member being secured to and stationary relative to the housing and having a passage extending therethrough for passage of the surgical instrument;

a lever carried by the housing and coupled to the outer cylindrical member by gear teeth on the outer cylindrical member and inter-engaging gear teeth on the lever, wherein manipulation of the lever causes the outer sleeve to move relative to the housing and inner sleeve and the selective expansion of the radially expandable member; and

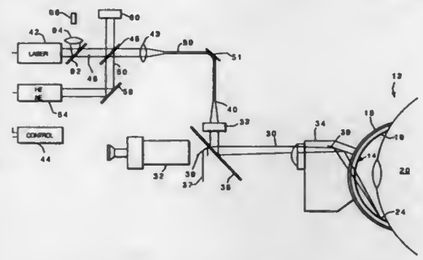
a seal means carried in the passage to prevent escape of fluids from the bodily cavity.

5,549,596

SELECTIVE LASER TARGETING OF PIGMENTED OCULAR CELLS

Mark A. Latina, North Andover, Mass., assignor to The General Hospital Corporation, Boston, Mass.

Continuation of Ser. No. 88,855, Jul. 7, 1993, abandoned. This application Oct. 20, 1995, Ser. No. 545,887
Int. Cl.[6] A61B *17/36*
U.S. Cl. 606—4 **29 Claims**



1. A method of selectively damaging pigmented intraocular cells in a patient with a disease, comprising:

selecting an intraocular area containing a pigmented cell and a nonpigmented cell, wherein the pigment is either endogenously synthesized or exogenous pigment synthesized by another intraocular cell,

irradiating the area with laser radiation having a wavelength which is absorbed more in the pigmented cell than in the nonpigmented cell, wherein said radiation has a radiant exposure of between about 0.01 and about 5 Joules/cm^2, and

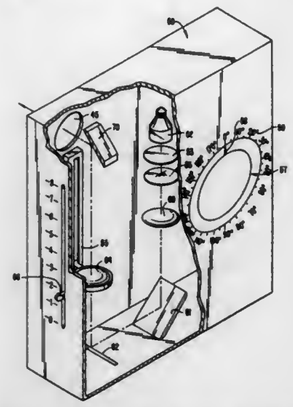
damaging said pigmented cell without killing said nonpigmented cell.

5,549,597

IN SITU ASTIGMATISM AXIS ALIGNMENT

John K. Shimmick, Belmont, and Charles R. Munnerlyn, Sunnyvale, both of Calif., assignors to Visx Incorporated, Santa Clara, Calif.

Continuation of Ser. No. 58,733, May 7, 1993, abandoned. This application Sep. 19, 1994, Ser. No. 308,480
Int. Cl.[6] A61B *17/36*
U.S. Cl. 606—5 **22 Claims**



1. A laser surgery system having a laser beam generating means laser beam delivery optical elements for directing a laser beam along a beam path to a plane of ablation substantially normal to said beam path, and an alignment system for enabling in situ determination of an astigmatic axis of an eye of a patient when in an operative position at said plane of ablation, said alignment system including:

means for providing a target image viewable by the eye of a patient when in said operative position at said plane of ablation of said laser surgery system, said target image providing means including a target having an image pattern and a light collimating lens positioned downstream of said target;

first means for enabling said image to be translated along an image path to a position corresponding to a desired sphere correction value, said first means including a moveable imaging lens positioned downstream of said collimating lens; and

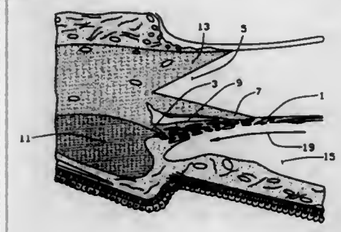
second means for enabling said image to be rotated about an axis to a position corresponding to the astigmatic axis of the eye.

5,549,598

GLAUCOMA LASER TRABECULODISSECTION

Francis E. O'Donnell, Jr., 709 The Hamptons La., Town & Country, Mo. 63017

Filed May 22, 1995, Ser. No. 445,898
Int. Cl.[6] A61B *17/36*
U.S. Cl. 606—6 **7 Claims**



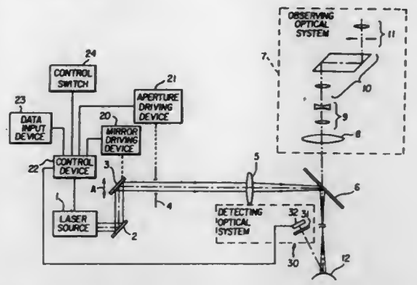
1. A method of performing trabeculodissection comprising performing a laser ablation in discrete treatment areas along a defined treatment arc of the trabecular meshwork to obtain equal residual depth along the treatment arc despite the fact that the trabecular meshwork varies in thickness along the length of the treatment arc.

5,549,599

APPARATUS FOR LASER SURGERY ON A CORNEA

Toshifumi Sumiya, Nukata-gun, Japan, assignor to Nidek Co., Ltd., Aichi, Japan

Filed Apr. 3, 1995, Ser. No. 415,213
Claims priority, application Japan, Apr. 28, 1994, 6-114442
Int. Cl.[6] H61N *5/06*
U.S. Cl. 606—10 **11 Claims**



1. An apparatus for laser surgery on a cornea for correcting the refractive error of a patient's eye by removing a part of the cornea by a laser beam, the apparatus comprising:

a first set means for setting a stroma removing area of the cornea;

a second set means for determining an amount of removal in said removing area of the cornea by determining a corneal shape after surgery based on the removing area and the amount of a refracting correction;

restricting means for restricting laser irradiation to a desired removing area of the cornea;

detecting means for detecting a change of fluorescent light generated from irradiated cornea tissue;

control means for controlling said restricting means in first and second modes, the first mode irradiating a laser beam to an epithelium of the cornea to be removed based on the removing area set by said first set means, and the second mode irradiating the laser beam to the stroma according to said second set means; and

mode changing means in communication with said control means for changing the first mode to the second mode based on the change of fluorescent light detected by said detecting means.

5,549,600

SURGICAL LASER PROBE WITH THERMAL CUTTING

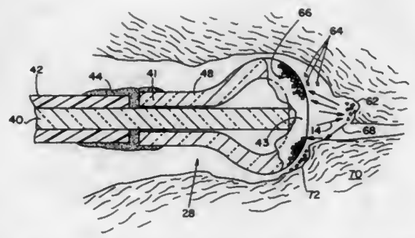
George Cho, Hopkinton, Mass., assignor to Cynosure, Inc., Bedford, Mass.

Filed Jul. 1, 1994, Ser. No. 270,032
Int. Cl.[6] A61B *17/36*
U.S. Cl. 606—95 **20 Claims**

1. A surgical laser probe comprising:

fiber optics having an input end and an output end for conveying light;

a laser light source optically coupled to the input end of the fiber optics for providing a laser beam conveyed by the fiber optics of sufficient intensity to vaporize and cause charring of tissue in the laser beam path; and



a bulbous, hollow tip member of refractory material, transparent to light at the laser source wavelength, coupled to the output end of the fiber optics, the laser beam being directed toward tissue for vaporizing the tissue with light energy, causing charring of the tissue, the tip member providing a surface surrounding the output end of the fiber optics whereon the vaporized charred tissue collects, the charred tissue absorbing light energy reflected from the tissue causing heating on the tip member for vaporizing the tissue proximate to the tip member with thermal energy, the laser beam being of sufficient intensity to maintain continued vaporization of tissue with light energy as charred tissue collects on the surface of the tip member.

5,549,601

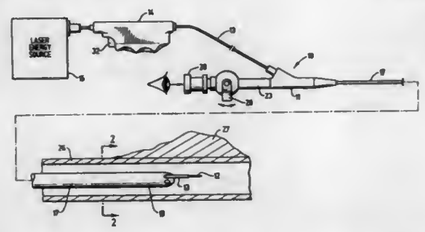
DELIVERY OF INTRACORPOREAL PROBES

John McIntyre, San Carlos; Peter S. Brown, Mountain View, and Stephen A. Morse, Palo Alto, all of Calif., assignors to Devices for Vascular Intervention, Inc., Redwood City, Calif.

Filed Oct. 11, 1994, Ser. No. 321,398

Int. Cl.[6] A61B *17/36*

U.S. Cl. 606—15 **15 Claims**



7. A system for debulking a patient's prostate gland, comprising:

a) a protective sheath having an inner lumen extending therein which is configured to be slidably disposed within a working lumen of a cystoscope;

b) an elongated optical fiber having a proximal end and a distal end and being slidably disposed within the inner lumen of the protective sheath;

c) a laser energy source in light transmitting relationship with the proximal end of the optical fiber to deliver laser energy thereto; and

d) rotary drive means to rotate the optical fiber at a rate greater than about 50 revolutions per minute while an axial force is applied to the optical fiber to facilitate penetration by the distal end of the optical fiber through the prostatic urethra into the prostate gland.

5,549,602

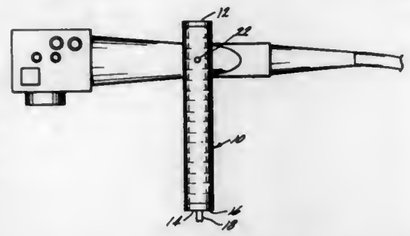
ENDOSCOPIC LASER THERAPY PLUME AND EFFLUENT COLLECTION DEVICE

Paul S. Farkas, 21 Erskine Dr., Longmeadow, Mass. 01106

Continuation-in-part of Ser. No. 273,393, Jul. 11, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 467,225

Int. Cl.[6] A61M *1/00;31/00*

U.S. Cl. 606—15 **17 Claims**



1. An aspiration device in combination with an endoscopic laser device comprising a hollow structure, sealed at one end and adapted to be engaged with a suction apparatus at the other end, said structure including and defining at least two apertures, said apertures being a biopsy port opening in communicative engagement with a biopsy port on the endoscopic laser device and a forceps opening located on the hollow structure from about 170° to about 190° circumferentially from said biopsy port such that a forceps is easily insertable through said forceps opening and into said biopsy port, whereby said aspiration device entraps and said suction apparatus is capable of disposing of effluent materials emanating from the biopsy port.

5,549,603

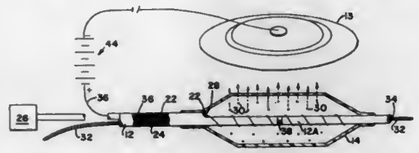
METHOD AND APPARATUS FOR INDUCING THE PERMEATION OF MEDICATION INTO INTERNAL TISSUE

Andrew J. Feiring, 4454 N. Murray Ave., Milwaukee, Wis. 53211

Continuation of Ser. No. 183,130, Jan. 14, 1994, Pat. No. 8,425,703, which is a continuation of Ser. No. 33,648, Mar. 17, 1993, abandoned, which is a continuation of Ser. No. 520,033, May 7, 1990, Pat. No. 5,236,413. This application Nov. 28, 1994, Ser. No. 345,984

Int. Cl.[6] A61B *17/36*

U.S. Cl. 604—21 **10 Claims**



1. An apparatus for selectively inducing the permeation of liquid to a targeted portion of internal tissue in the body of a patient comprising:

at least one external electrode positioned outside of the patient's body, said external electrode means adapted to extend circumferentially about a portion of the patient's body;

a catheter having an elongate shaft, the catheter having proximal and distal ends;

means extending along the shaft for delivering said liquid from the proximal end to the distal region of the catheter;

means for emitting said liquid from the catheter;

an internal electrode carried by the catheter at the distal end of the catheter;

conductor means extending through the catheter shaft and being electrically connected to the internal electrode, the proximal end of the conductor being connectible to a source of electrical energy; and

means for inducing an electric field between said internal electrode and said at least one external electrode so that fluid emitted from the distal end of the catheter will flow in a direction extending from the internally placed electrode outwardly toward the external electrode.

5,549,604

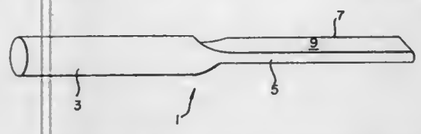
NON-STICK ELECTROCONDUCTIVE AMORPHOUS SILICA COATING

Maz Sutcu, New Hartford; John S. Gentelia, Madison, both of N.Y., and Eray Aydil, Goleta, Calif., assignors to Conmed Corporation, Utica, N.Y.

Filed Dec. 6, 1994, Ser. No. 254,072

Int. Cl.[6] A61B *17/36*

U.S. Cl. 606—45 **16 Claims**



1. An electrosurgical cutting instrument comprising a stainless steel body having a cutting edge, said stainless steel body having a non-stick, electroconductive coating of substantially pure amorphous silica deposited on at least the cutting edge by plasma enhanced chemical vapor, said coating being of a thickness that provides electroconductivity when subjected to electrical source generated hemostatic and cauterizing currents during surgery.

5,549,605

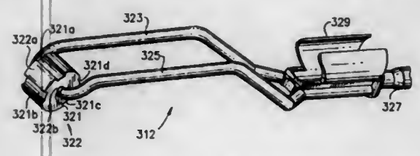
ROLLER ELECTRODES FOR ELECTROCAUTERY PROBES FOR USE WITH A RESECTOSCOPE

Kevin F. Hahnen, Cooper City, Fla., assignor to Symbiosis Corporation, Miami, Fla.

Filed Apr. 20, 1995, Ser. No. 425,367

Int. Cl.[6] A61B *17/32;* **A46B** *17/39*

U.S. Cl. 606—46 **21 Claims**



1. A roller electrode for use in an electrocautery probe having two arms between which said electrode is mounted for rotation, said electrode comprising:

a conductive member having an inner axial bore defining an axis of rotation and an outer surface, said outer surface having at least one radial groove which is substantially perpendicular to said axis of rotation.

5,549,606

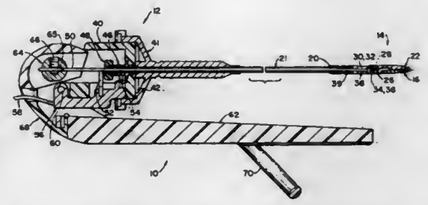
ENDOSCOPIC BIPOLAR ELECTROCAUTERY INSTRUMENTS

Michael S. McBrayer, Miami; Jurgen A. Kortenbach, Miami Springs, and Charles R. Slater, Fort Lauderdale; all of Fla., assignors to Symbiosis Corporation, Miami, Fla.

Continuation of Ser. No. 91,177, Jul. 13, 1993, Pat. No. 5,395,369, which is a continuation-in-part of Ser. No. 94,790, Jun. 10, 1993, Pat. No. 5,395,364. This application Aug. 30, 1994, Ser. No. 298,061

Int. Cl.[6] A61B *17/39*

U.S. Cl. 606—51 **3 Claims**



1. A bipolar endoscopic surgical instrument comprising:

a) a hollow electrically conductive tube having a proximal end and a distal end, said tube being covered with an outer first electrically insulating wrap except for an electrical contact receiving non-insulated outer proximal portion of said tube;

b) an electrically conductive rod having a proximal end and a distal end, said rod being covered with a second electrically insulating wrap except for an electrical contact receiving non-insulated outer proximal portion of said rod and an outer distal portion of said rod, said rod extending through said tube;

c) an electrically non-conductive handle coupled to said proximal end of said tube;

d) a first electrically conductive end effector mechanically and electrically coupled to said tube;

e) a second electrically conductive end effector electrically and mechanically coupled to said distal end of said rod and pivoting relative to said tube;

f) first insulating means for electrically insulating said second electrically conductive end effector from said first electrically conductive end effector;

g) actuating means mechanically coupled to said handle means and said proximal end of said rod for imparting reciprocal motion to said rod relative to said tube which is translated to pivoting motion of said second end effector; and

h) second annular insulating means for electrically insulating said electrical contact receiving non-insulated outer proximal portion of said rod from said tube during said reciprocal motion, said second annular insulating means being non-gaseous, said second annular insulating means remaining substantially stationary relative to said hollow electrically conductive tube during said reciprocal motion, and said second annular insulating means extending into an annular space between said rod and said tube.

5,549,607

APPARATUS FOR SPINAL FIXATION SYSTEM

Carlton D. Olson, Los Angeles, and Mark G. Urbanski, Indian Wells, both of Calif., assignors to Alphatec Manufacturing, Inc., Palm Desert, Calif.

Continuation of Ser. No. 20,288, Feb. 19, 1993, abandoned. This application Mar. 2, 1995, Ser. No. 397,717

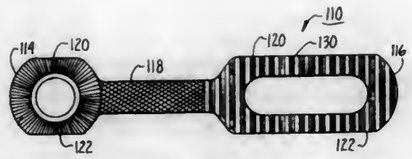
Int. Cl.[6] A61B *17/70*

U.S. Cl. 606—61 **6 Claims**

1. A spinal fixation apparatus, comprising:

a plurality of eye bolt assemblies, each comprising an eye bolt having an eye adapted to receive a rod;

VOL 1189 ISS 4 AG 27 1996 UMI



at least two generally parallel rods, each extending through the eye of an eyebolt a spinal attachment member connected to each rod;

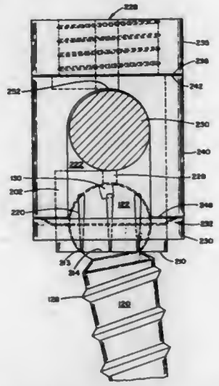
a bridge having a first end and a second end spanning said rods, wherein said first end and said second end have a first hole and a second hole therethrough, respectively, wherein a surface of said bridge proximate said first hole defines a plurality of serrations extending radially about said hole, and wherein a surface of said bridge proximate said second hole defines a plurality of parallel serrations; and first and second adapters, said first adapter engaging one of said eyebolts and said first end of said bridge and said second adapter engaging another of said eyebolts and said second end of said bridge.

5,549,608

ADVANCED POLYAXIAL LOCKING SCREW AND COUPLING ELEMENT DEVICE FOR USE WITH ROD FIXATION APPARATUS

Joseph P. Errico, Hempstead, N.Y.; Thomas J. Errico, Summit, and James D. Ralph, Oakland, both of N.J., assignors to Fastenetix, L.L.C., Summit, N.J.

Filed Jul. 13, 1995, Ser. No. 502,285
Int. Cl.[6] A61B *17/70*
U.S. Cl. 606—61 **18 Claims**



1. A polyaxial screw and coupling element assembly for use with orthopedic rod implantation apparatus, comprising:

a screw having a curvate head;

a coupling element including

an expandable and contractable interior chamber for receiving therein said curvate head, said interior chamber further having an expandable and contractable opening for receiving therethrough said currate head,

a rod receiving locus for receiving therein a rod of said orthopedic rod implantation apparatus into the side thereof, and

a surface threading disposed on an upper exterior portion thereof;

a locking ring mounted around said coupling element, the downward translation of said ring providing a force which causes said interior chamber and said opening thereof to contract, therein locking the screw to the coupling element;

a rod securing sleeve, positionable around, and in rod securing relationship with, said rod receiving locus for securing said rod therein;

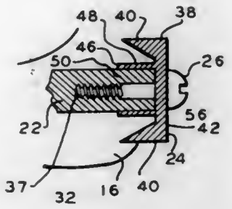
a top locking nut, mateable with said surface threading.

5,549,609

BONE FIXATION FOR FRACTURES OF THE UPPER ULNA

Victor H. Frankel, and Frederick J. Kummer, both of, New York, N.Y., assignors to Hospital for Joint Diseases, New York, N.Y.

Continuation of Ser. No. 116,700, Sep. 7, 1993, abandoned. This application Oct. 3, 1994, Ser. No. 317,287
Int. Cl.[6] A61B *17/72*
U.S. Cl. 606—64 **6 Claims**



1. A bone fixation assembly for at least one fracture of an upper ulna, said ulna having an olecranon and a proximate end, comprising:

an elongated medullary pin having a longitudinal axis and distal and proximal ends and having at least one aperature disposed only at its distal end; and

a head means disposed at the proximal end of said pin for transmitting force to the olecranon along the longitudinal axis of said pin as said head means is tightened, comprising,

a U-shaped member, for holding the proximate end of said pin in place at the proximate end of said ulna, the U-shaped member comprising,

two inwardly extending, projecting, pointed portions,

a sleeve portion disposed around the proximal end of the pin, and

an aperture having a longitudinal axis which coincides with the longitudinal axis of said pin and

a screw disposed within said aperture of said U-shaped member for compressing said at least one fracture, and

said sleeve member and said proximate end of said pin are adapted to prevent rotation of said head means within said upper ulna.

5,549,610

FEMORAL INTRAMEDULLARY NAIL

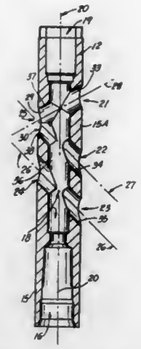
Thomas A. Russell, Memphis, and John R. Pepper, Germantown, both of Tenn., assignors to Smith & Nephew Richards Inc., Memphis, Tenn.

Filed Oct. 31, 1994, Ser. No. 332,343
Int. Cl.[6] A61B *17/72*
U.S. Cl. 606—64 **8 Claims**

8. An intramedullary nail implant for use in repair of a patient's femur, comprising:

a) an elongated nail body having an upper end portion, a lower end portion and a central longitudinal bore;

b) an enlarged head at the upper end portion, the head having a hollow bore that communicates with the central longitudinal bore and with an axis that is coincident with a central longitudinal axis of the nail body, the head having a cylindrically shaped wall surrounding the hollow bore;



c) the wall carrying first and second pluralities of openings therethrough that are positioned about one hundred eighty degrees apart from each other;

d) the first plurality of openings including first and second generally parallel, lower openings and a third upper opening with generally parallel axes having a central axis that forms an angle with the axis of each of the two lower openings; and

e) the second plurality of openings including fourth and fifth openings, the fourth opening having an axis aligned generally with the axis of the first parallel openings and the fifth opening having first and second intersecting cylindrical bores;

f) the first bore having an axis generally aligned with the axis of the second opening, and the second bore having an axis generally aligned with the axis of the third opening.

5,549,611

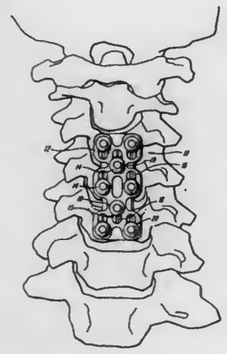
Patent Not Issued For This Number

5,549,612

OSTEOSYNTHESIS PLATE SYSTEM

Ronald A. Yapp, Marshfield, and Charles B. Worrick, Hanson, both of Mass., assignors to Codman & Shurtleff, Inc., Randolph, Mass.

Continuation of Ser. No. 981,281, Nov. 25, 1992, abandoned. This application Jun. 22, 1994, Ser. No. 263,942
Int. Cl.[6] A61B *17/58*
U.S. Cl. 606—69 **11 Claims**



1. An osteosynthesis plate system, comprising:

a rigid, elongate plate member adapted to bridge and immobilize adjacent bones or bone segments by anchoring the plate to the bones using one or more bone screws, the member having a first, bone contacting surface and a second, non-bone contacting surface;

a plurality of substantially circular screw holes extending through the member, each having substantially spherical seats and being adapted to seat bone screws;

a plurality of bone-penetrating projections disposed on the first surface of the member;

a plurality of bone screws, each having a threaded end opposite a substantially spherical head, each bone screw adapted to fit within a screw hole to anchor the member to bone; and

locking means adjacent one or more screw holes for securing the bone screw to the member to inhibit axial and rotational movement of bone screws seated within the screw holes and engaging bone, the locking means being rotatably actuable, coplanar with and permanently disposed in the second, non-bone contacting surface of the plate member and being integral with the plate member to lock the bone screws.

5,549,613

MODULAR SURGICAL DRILL

E. Marlowe Goble; David P. Luman, both of Logan, Utah, and Harold M. Martins, Newton, Mass., assignors to Mitek Surgical Products, Inc., Westwood, Mass.

Filed Sep. 15, 1993, Ser. No. 122,202
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—80 **13 Claims**



11. A modular drill which is employed with a surgical drill tool for forming boles in bone, said modular drill comprising:

a drill bit having at least one cutting edge on one end thereof, and having a longitudinally extending bore passing through said drill bit;

a rigid drill shaft having mounting means at one end thereof for mounting said drill shaft on the surgical drill tool, and having a longitudinally extending bore passing through said drill shaft; and

releasable interconnecting means formed on other ends of said drill shaft and said drill bit permitting assembly and disassembly of said drill bit to and from said drill shaft, said releasable interconnecting means being formed such that said bore passing through said drill bit is aligned with said bore passing through said drill shaft when said drill bit is assembled to said drill shaft, said releasable interconnecting means comprising a tongue-and-groove interconnection; said drill shaft comprising a central body portion, and a tongue portion formed at said other end of said drill shaft and spaced slightly forward of said central body portion, wherein a pair of locking slots are formed in the space between said tongue portion and said central body portion of said drill shaft.

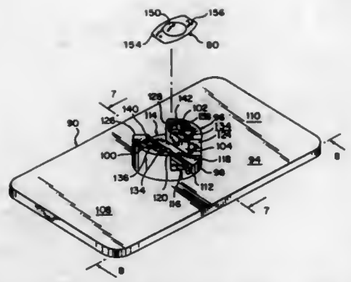
5,549,614

APPARATUS FOR FOLDING FLEXIBLE INTRAOCULAR LENSES

Scott W. Tunis, 2000 NE 49th St., Ft. Lauderdale, Fla. 3308

Continuation of Ser. No. 48,328, Mar. 18, 1993, abandoned. This application Dec. 27, 1994, Ser. No. 364,013
Int. Cl.[6] A61F *9/00*
U.S. Cl. 606—107 **6 Claims**

1. An apparatus specifically configured and dimensioned for folding a specific flexible intraocular lens of preselected dimensions having first and second faces, an optical portion of a selected



diameter for alignment with the pupil of an eye, and a pair of opposed plate haptics for attachment to the iris of the eye, the apparatus comprising:

a substantially rigid anvil having an axis of orientation;

a slot through the anvil, the slot extending in the direction of the axis of orientation and having a width at least as wide as the diameter of a lens to be folded;

a stationary platform defined by an indentation in the anvil, the stationary platform being bisected by the slot to form stationary platform halves laterally displaced from one another for supporting the lens to be folded by engaging the plate haptics thereof, each platform half having a shape for corresponding to the shape of one of the pair of opposed plate haptics of the lens being folded;

a stationary land disposed in the slot of the anvil at a location below the stationary platform, the stationary land having a diameter at a location substantially aligned with the slot for engaging substantially only the optical portion of the lens being folded; and

a groove in the stationary land aligned with the axis of the slot, whereby the lens being folded in folded twice with first and second forceps having forks by (1) initially mounting the lens on the stationary platform with the plate haptics resting on the stationary platform halves, (2) bending the plate haptics to extend transverse with respect to the optical portion of the lens by displacing the lens to rest on the stationary land, (3) folding the plate haptics to overly the first face of the lens with the forks of the first forceps, (4) gripping the lens by engaging the first and second faces of the lens with the forks of second forceps while holding the plate haptics folded over the first face of the lens with the forks of the first forceps, and (5) folding the lens into a W-shape by lifting the lens from the stationary land with the second forceps to pass between the forks of the first forceps.

5,549,615

METHOD AND APPARATUS FOR EXTRACTING PACEMAKER ELECTRODES EMBEDDED IN THE HEART

Manfred Hocherl, Efringen-Kirchen, and Jorg Reinhardt, Grenzach-Wyhlen, both of, Germany, assignors to VascoMed Institut fur Kathetertechnologie GmbH, Weil am Rhein, Germany

Continuation of Ser. No. 612,617, Nov. 13, 1990, abandoned, and Ser. No. 952,498, Dec. 4, 1992, abandoned. This application Aug. 25, 1994, Ser. No. 296,366

Claims priority, application Germany, Nov. 11, 1989, 39 37 594.3; Jun. 11, 1990, 40 18 681.4

Int. Cl.[6] A61B *17/50*

U.S. Cl. 606—108 **10 Claims**

1. In combination a pacemaker helical lead with an associated electrode and a means for extracting said lead and electrode from a heart by exerting traction on the lead, said lead comprising a lumen, said lumen defining a wall, said means for extracting comprising an extractor shell, a wire disposed in said extractor shell, and an extractor head connected to said wire, said wire



longitudinally moveable relative to said extractor shell, said extractor head comprising an umbrella head having a plurality of barbs, each said barbs having a free end and an end which is secured to said umbrella head, the free ends of said barbs adapted to be spread outwardly by interaction between said extractor shell and said free ends upon longitudinal movement in a first direction of said wire relative to said extractor shell whereby said free ends can engage with and hook into said lumen wall upon reversal of said longitudinal movement of said wire relative to said extractor shell.

5,549,616

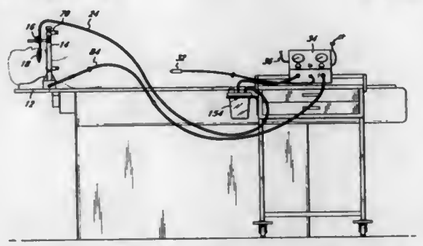
VACUUM-ASSISTED STEREOTACTIC FIXATION SYSTEM WITH PATIENT-ACTIVATED SWITCH

Reinhard W. Schulte, Grand Terrace; David A. Lesyna, Redlands; William J. Wicks, Redondo Beach, and Helmut J. Meinass, Grand Terrace, all of Calif., assignors to Loma Linda University Medical Center, Loma Linda, Calif.

Continuation-in-part of Ser. No. 148,213, Nov. 2, 1993, Pat. No. 5,464,411. This application Nov. 22, 1994, Ser. No. 344,291

Int. Cl.[6] A61B *19/00*

U.S. Cl. 606—130 **6 Claims**



1. A stereotactic fixation system for immobilizing a patient's skull during a medical procedure involving a medical device, said system comprising:

a platform for supporting a portion of a patient;

a stereotactic fixation apparatus contacting said platform at least at one interface region;

a port adapted for connection to a source of vacuum, said port being in fluidic communication with said interface region, whereby the vacuum holds said stereotactic fixation apparatus against said platform when vacuum pressure is applied to said interface region through said port;

a first sensor positioned proximate to said interface region, said sensor generating a first input signal indicating the application or absence of a vacuum at said interface region;

a patient-activated switch having at least first and second operational states, said switch generating a second input signal when the switch is in one of said states; and

a controller which receives said first and second input signals from said first sensor and said patient-activated switch, respectively, said controller generating an output signal when said vacuum pressure is applied at said interface region and said patient-activated switch is in said first state, said output signal enabling the operation of the medical device.

5,549,617

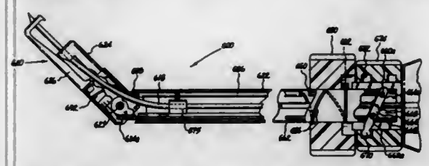
APPARATUS AND METHOD FOR APPLYING AND ADJUSTING AN ANCHORING DEVICE

David T. Green, Westport; Henry R. Sienkiewicz, Stamford; Keith Ratcliff, Sandy Hook; Salvatore Castro, Seymour, and Scott E. Manzo, Shelton, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 134,138, Oct. 8, 1993, abandoned, which is a continuation-in-part of Ser. No. 109,779, Aug. 20, 1993, Pat. No. 5,507,754. This application Feb. 21, 1995, Ser. No. 392,295

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—144 **27 Claims**



1. An apparatus for applying a surgical anchoring device to body tissue comprising:

a) a handle assembly, including a housing defining an internal actuation chamber and, defining a longitudinal axis;

b) an elongated frame extending distally from said handle assembly and including a body portion and a distal end portion configured for articulated movement, said distal end portion having a tissue receiving port defined therein;

c) a needle body extending from said handle assembly through said body portion, to said tissue receiving port, said needle body having an axial bore extending therethrough for retaining the surgical anchoring device;

d) single actuation means operatively associated with said handle assembly for initially and reciprocally moving said needle body relative to said frame to communicate with said tissue receiving port and for subsequently advancing the surgical anchoring device from a distal end of said needle body, said actuation means including a carrier assembly configured for reciprocating movement within said actuation chamber of said housing and a plunger mechanism configured for reciprocating movement relative to said carrier assembly; and

e) control means operatively associated with said frame for effectuating articulated movement of said distal end portion of said frame relative to said body portion of said frame.

5,549,618

KNOT TYING METHOD AND APPARATUS

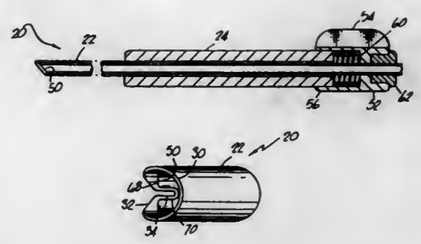
RIchard P. Fleenor, Englewood, and Daniel P. Bryce, Westminster, both of Colo., assignors to Coral Medical, Englewood, Colo.

Continuation-in-part of Ser. No. 182,609, Feb. 18, 1994. This application Feb. 21, 1995, Ser. No. 391,913

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—148 **3 Claims**

1. An assembly for use in surgery, comprising a suture knot pusher tube having a distal end slot; and an inner concentric tube positioned within the pusher tube having a distal end slot, the pusher tube and inner concentric tube being moveable with respect to one another to align or unalign said slots, whereby a suture can be cut by placing it into the aligned slots and then misaligning the



slots by moving the pusher tube and inner concentric tube with respect to one another, and wherein the pusher tube and inner concentric tube are biased with respect to one another to align said slots.

5,549,619

MEDICAL/SURGICAL DEVICES

Joseph L. Peters, Ware, and James W. Kerr, Gravesend, both of, England, assignors to Clinical Product Development Limited, Kent, England

PCT No. PCT/GB92/01005, § 371 Date Dec. 14, 1993, § 102(e) Date Dec. 14, 1993, PCT Pub. No. WO92/22041, PCT Pub. Date Dec. 10, 1992

PCT Filed Jun. 4, 1992, Ser. No. 157,135

Claims priority, application United Kingdom, Jun. 4, 1991, 9111972

Int. Cl.[6] A61B *17/00*

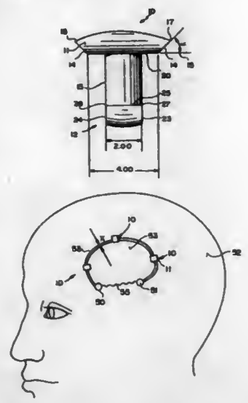
U.S. Cl. 606—151 **6 Claims**

1. A surgical suture device comprising an elongate flexible strip having ratchet means provided therealong, a complete annular eye integral with one end of the strip, a needle fastened to the other end of the strip, the needle being insertable through the eye to form the strip into a loop and the eye having latching means arranged to permit forward movement of the strip through the eye to reduce the size of the loop but to restrain the strip securely against reverse movement through the eye, wherein:

the eye defines a lengthwise extension of the strip whereby a strip portion extending through the eye is substantially perpendicular to the strip end portion attached to the eye; and

the eye has integral, one piece flattened holding means projecting therefrom in a direction away from the strip for engagement by a gripping tool; and the needle has a tubular trailing end in which is fixed a tongue integral with said other end of the strip.

5,549,620
BRAIN SURGERY WITH CRANIOTOMY PIN
Paul Bremer, 4550-1 Saint Augustine Rd., Jacksonville, Fla. 32207
Filed Dec. 6, 1994, Ser. No. 354,724
Int. Cl.[6] A61B *17/04*
U.S. Cl. 606—151 **20 Claims**

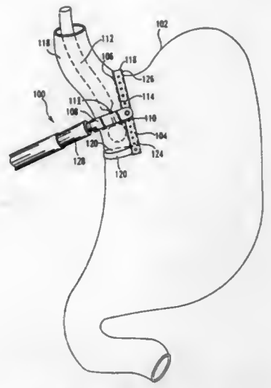


1. A method of holding a flap of skull in place after brain surgery, the flap of skull being separated from the surrounding skull by an elongated opening having first and second side edges spaced apart a distance X, using at least one craniotomy pin having a head with dimensions larger than X, and a locking portion having at least two cutting edges spaced a width greater than X and having a minor part with a dimension less than X, the cutting edges being spaced from the head a distance less than the thickness of the skull; said method comprising: the steps of:

(a) inserting the minor part of the pin into the opening, until the head substantially abuts the skull; and

(b) twisting the head of the pin so as to cause the cutting edges to cut into the skull, one cutting edge cutting into the flap of skull and another cutting edge cutting into the surrounding skull, so as to lock the locking portion in place in the skull with the head engaging the top of the skull.

5,549,621
APPARATUS AND METHOD FOR PERFORMING VERTICAL BANDED GASTROPLASTY
Marc Bessler, Teaneck, N.J.; Max R. Mintz, Houston, Tex., and Byron C. Sutherland, 2458 Country Club Dr., Pearland, Tex. 77581, assignors to Byron C. Sutherland; Hava Mattea Mintz, and Conley, Rose & Tayon, P.C., all of Houston, Tex.
Continuation of Ser. No. 62,205, May 14, 1993, abandoned.
This application Mar. 6, 1995, Ser. No. 399,958
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—151 **18 Claims**



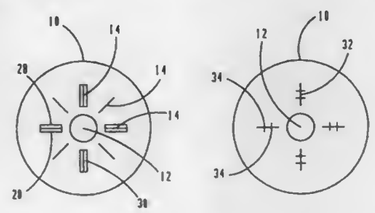
7. An apparatus for use in vertical banded gastroplasty comprising:

a clamping structure comprising first and second relatively pivotable clamping bars connected to a handle, said clamping bars being pivotable about a pivot axis and being engagable in combination with stomach walls and externally of said walls to form an upper gastric pouch, said clamping bars engaging upon the application of force to said handle;

said first clamping bar comprising piercing pins capable of engaging pin-receiving openings in a second clamping bar; and

a band connecting said clamping bars at one end, said band being sized and connected to said clamping bars such that it provides a circumferential restraint for the gastric pouch when said clamping bars are engaged, said circumferential restraint defining a plane that is parallel to said pivot axis.

5,549,622
METHOD FOR ALTERING THE CURVATURE OF THE CORNEA
Ronald W. Ingram, 3101 Stanolind Ave., Midland, Tex. 79705
Filed Mar. 10, 1995, Ser. No. 402,105
Int. Cl.[6] A61F *9/00*
U.S. Cl. 606—166 **17 Claims**



1. A method for altering the curvature of the cornea of an eye, comprising the steps of:

(a) making two parallel, closely-spaced incisions in the surface of the cornea at a first site;

(b) removing the corneal tissue disposed between the two parallel incisions at the first site;

(c) repeating the above-identified steps at at least a second site on the surface of the cornea; and

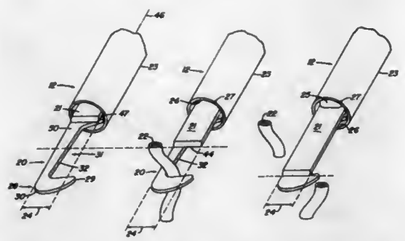
(d) closing the incision at each site.

5,549,623
ENDODISSECTOR SURGICAL INSTRUMENT
Leslie A. Sharpe, Edina, Minn., and Francis C. Peterson, Prescott, Wis., assignors to Dexide, Inc., Fort Worth, Tex.
Continuation of Ser. No. 793,841, Nov. 18, 1991, abandoned.
This application Jul. 19, 1993, Ser. No. 93,985
The portion of the term of this patent subsequent to Jun. 19, 2012, has been disclaimed.
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—171 **8 Claims**

1. A surgical cutting tool for dissecting tissues comprising:

an anterior section having an operating portion;

a posterior section having a control handle;



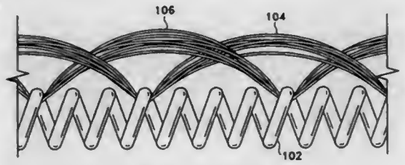
a cylindrical sheath extending between said anterior section and said posterior section, connecting said control handle to said operating portion, said sheath having a lumen, said lumen having a central axis;

a connector rod positioned within said lumen for transferring motion from said control handle to said operating portion;

a blade located in said lumen connected to said connector rod whereby manipulation of said control handle moves said blade within said lumen, along the axial length of said lumen, from a first position wherein said blade lies on the base (**47**) of a fenestrated hook member (**20**) disabling said blade from cutting, to a second position wherein said blade lies on the surface of said fenestrated hook member, disabling said blade from cutting, said blade having a width less than or equal to the widths of said base and said surface of said fenestrated hook member;

said fenestrated hook member connected to said sheath and extending from said sheath, said hook member for contacting and supporting said blade along a line of contact during blade motion, said hook member adapted to be deflected by said blade, during blade motion, whereby said hook member and said blade form a tissue cutting means for dissecting the tissue.

5,549,624
FIBERED VASOOCLUSIVE COILS
Gregory E. Mirigian, Hayward, and Nga T. Van, Santa Clara, both of Calif., assignors to Target Therapeutics, Inc., Fremont, Calif.
Filed Jun. 24, 1994, Ser. No. 265,188
Int. Cl.[6] A61B *19/00*
U.S. Cl. 606—191 **6 Claims**



1. A vasoocclusive device comprising:

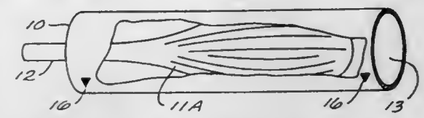
(a) a helical coil having an axis extending from a first end of the coil to a second end of the coil and having helical windings extending between that first end and second end and wherein the coil has a first generally linear form when confined in a tubular member and a relaxed secondary form when not confined,

(b) a first fibrous element having a first end and a second end, with the portion of the first fibrous element between these ends extending axially along the coil and having discrete sections defined by threading said first fibrous element about a winding at intervals along said helical coil, and

(c) at least one supplemental fibrous element having a first end and a second end, with the portion of the supplemental fibrous element between those ends extending axially along the coil and having discrete sections defined by threading said supplemental fibrous element about a coil winding at intervals along said helical coil different than said first fibrous element; and

wherein the first fibrous element and the at least one supplemental fibrous element are threaded through the helical coil in a radial quadrant measured perpendicular to the coil axis and wherein more than about 65% of the first fibrous element and the at least one supplemental fibrous element reside within the relaxed secondary form.

5,549,625
BALLOON DISSECTOR
Mel Bircoll, Beverly Hills, Calif., assignor to Very Inventive Physicians, Inc., Tucson, Ariz.
Continuation of Ser. No. 233,236, Jun. 26, 1994, Pat. No. 5,452,732. This application May 24, 1994, Ser. No. 248,353
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—192 **31 Claims**



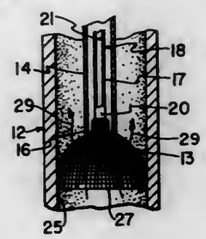
1. A balloon dissector assembly comprising:

a) a sheath having enclosed therein an expandable envelope having a predefined shape and volume, said envelope constructed of non-elastic radiopaque polyester film material and being removable from said sheath, said envelope further including an edge portion adapted to cut flesh contacted thereby;

b) a fill tube baving a first end and a second end, said first end communicating with said expandable envelope; and,

c) means for supplying a medium to said expandable envelope after said expandable envelope has been removed from said sheath, said means for supplying attached to the second end of said fill tube, said medium being communicated via said fill tube.

5,549,626
VENA CAVAL FILTER
Theodore T. Miller, Larchmont, and Bernard Ghelman, Cliffside Park, both of N.Y., assignors to New York Society For The Ruptured And Crippled Maintaining The Hospital For Special Surgery, New York, N.Y.
Filed Dec. 23, 1994, Ser. No. 362,835
Int. Cl.[6] A61M *29/00*
U.S. Cl. 606—200 **3 Claims**



1. A filtering device for removing particles from a blood vessel, comprising:

an outer catheter having distal and proximal ends;

an inner catheter for insertion through said outer catheter, said inner catheter having distal and proximal ends and a through lumen, and being movable relative to said outer catheter;

a mesh-like collapsible basket attached to said distal end of said inner catheter, said basket being made of a radially expandable material which can be compressed by said outer catheter, whereby said basket will expand into contact with the blood vessel when said basket extends from said distal end of said outer catheter.

3. A method for filtering particles from blood in a blood vessel of a patient comprising the steps of:

introducing an outer catheter into the blood vessel;

advancing said outer catheter to a desired location within the blood vessel;

guiding an inner catheter having a contracted mesh-like collapsible basket distally attached to said inner catheter to said desired location within said outer catheter, said inner catheter having a suction means proximally attached;

positioning said basket at a desired location beyond said distal end of said outer catheter whereby said basket expands radially within the blood vessel;

aspirating the particles from within said basket by applying suction to said inner catheter; and

withdrawing the basket from the blood vessel by pulling it through said outer catheter.

5,549,627

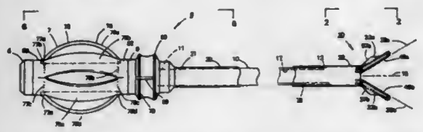
SURGICAL INSTRUMENTS AND METHOD FOR APPLYING PROGRESSIVE INTRACORPOREAL TRACTION

Maciej J. Kieturakis, 372 Beverly Dr., San Carlos, Calif. 94070

Filed Oct. 21, 1994, Ser. No. 327,154

Int. Cl.[6] A61B *17/28*

U.S. Cl. 606—206 **31 Claims**



1. A surgical instrument for applying traction on tissue, comprising:

an elongate introducer member;

at least one rolling track for engaging tissue incorporated into a distal end of said introducer member; and

a track drive mechanism operatively connected to said rolling track.

5,549,628

SOFT TISSUE STAPLING BUTTRESS

Joel Cooper, St. Louis, Mo.; Sally L. Winegar-Hentges, New Brighton, Minn.; Robert P. Nelson, Orono, Minn.; Kemal Schankereli, Stillwater, Minn., and Kristine M. Teich, Eden Prairie, Minn., assignors to Bio-Vascular, Inc., St. Paul, Minn.

Division of Ser. No. 194,382, Feb. 10, 1994, Pat. No. 5,503,638. This application May 1, 1995, Ser. No. 431,966

Int. Cl.[6] A61B *17/00*

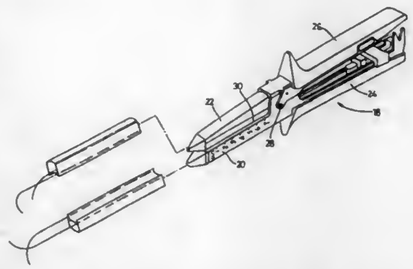
U.S. Cl. 606—220 **11 Claims**

1. A method for performing a surgical procedure to remove diseased tissue, comprising the steps of:

(a) creating an opening in the patient to expose the diseased tissue to be excised;

(b) providing a surgical staple gun having a pair of apposed jaws, one holding a cartridge of staples and the other being an anvil member against which the staples are to be fired;

(c) covering at least a portion of said pair of apposed jaws with a host-tissue-compatible animal tissue strip wherein said animal tissue strip is capable or adhering to said staples to form a substantially fluid impervious seal therebetween;



(d) positioning the surgical staple gun such that the patient's tissue to be severed is disposed between said pair of jaws;

(e) firing the staple gun to simultaneously eject at least two rows of closely spaced staples from said cartridge, through said animal tissue strips and said patient's tissue against said anvil member;

(f) severing said animal tissue strips and said patient's tissue along a line between said rows of staples; and

(g) closing said opening in the patient.

5,549,629

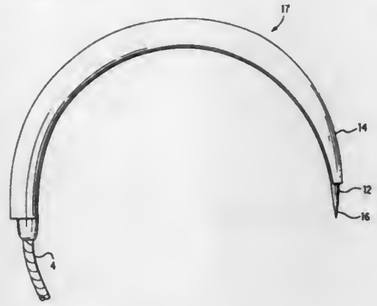
APPARATUS FOR COVERING A SURGICAL NEEDLE TO PROTECT THE USER

Stacy I. Thomas, and Rose Akerman, both of 417 N. Walnut St., Milford, Del. 19963

Filed Mar. 10, 1994, Ser. No. 208,479

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—223 **1 Claim**



1. A surgical needle, comprising:

a needle having a suture attacbed to one end and a sharp tip formed at an opposite end;

a hollow tubular needle cover extending the length of said needle and partially covering the outer surfaces of said needle having an opening at one end through which said sharp tip extends and a longitudinal slit formed therein in which said needle is slidably disposed, such that a portion of said needle is exposed along its length through said longitudinal slit for gripping by a needle holder, whereby when said needle and said cover are gripped by the needle holder, said sharp tip is exposed and when only said hollow needle cover is gripped by the needle holder and said sharp tip is struck on a hard surface, said needle cover slides forward to cover said sharp tip of said needle.

5,549,630

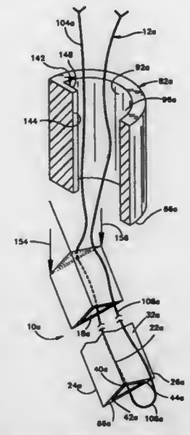
METHOD AND APPARATUS FOR ANCHORING A SUTURE

Peter M. Bonutti, 1303 W. Evergreen Plz., Effingham, Ill. 62401

Continuation-in-part of Ser. No. 62,295, May 14, 1993, Pat. No. 5,403,348, and a continuation-in-part of Ser. No. 207,297, Mar. 7, 1994, Pat. No. 5,464,426. This application Aug. 17, 1994, Ser. No. 291,970

Int. Cl.[6] A61B *17/04*

U.S. Cl. 606—232 **17 Claims**



1. An apparatus which is adapted to be at least partially received in body tissue, said apparatus comprising an anchor having a longitudinal central axis, said anchor including a tubular wall which has a polygonal cross sectional configuration and which extends along the longitudinal central axis of said anchor, said tubular wall having a plurality of flat outer side surface areas which are interconnected by a plurality of longitudinally extending outer corner portions, said longitudinally extending outer corner portions and said flat outer side surface areas being engageable with body tissue to retain said anchor in the body tissue, said outer side surface areas and said outer corner portions having longitudinal central axes which are parallel to the longitudinal central axis of said anchor, said tubular wall having a plurality of flat inner side surface areas which are interconnected by a plurality of longitudinally extending inner corner portions, said longitudinally extending inner corner portions and said flat inner side surface areas having longitudinal central axes which are parallel to the longitudinal central axis of said anchor, said longitudinally extending inner corner portions and said flat inner side surfaces cooperating to at least partially define a passage which extends longitudinally through said anchor, said tubular wall having a first end surface which is disposed at a first longitudinal end of said anchor, said tubular wall having a second end surface which is disposed at a second longitudinal end of said anchor, and a suture adapted to extend into the body tissue, through said anchor and back out of the body tissue, said suture having a first portion disposed in said passage in said tubular wall, said suture having a second portion which extends along said first end surface of said tubular wall at the first longitudinal end of said anchor and which extends out of the body tissue, said suture having a third portion which extends along said second end surface of said tubular wall at the second longitudinal end of said anchor and which extends out of the body tissue, said tubular wall extending around said first portion of said suture, said first portion of said suture being engageable with one of said inner corner portions of said tubular wall to urge at least one of said outer corner portions of said anchor into engagement with body tissue.

5,549,631

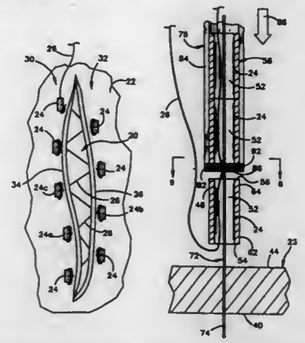
METHOD OF CLOSING DISCONTINUITY IN TISSUE

Peter M. Bonutti, 1303 W. Evergreen Plz., Effingham, Ill. 62401

Division of Ser. No. 207,297, Mar. 7, 1994, Pat. No. 5,464,426, which is a continuation-in-part of Ser. No. 62,295, May 14, 1993, Pat. No. 5,403,348. This application May 22, 1995, Ser. No. 446,333

Int. Cl.[6] A61B *17/04*

U.S. Cl. 606—232 **9 Claims**



1. An apparatus comprising a magazine which holds an array of anchors, said magazine having a pusher section with an outer side surface which is engagable with a trailing end of an anchor disposed outside of said magazine to apply force against the trailing end of the anchor disposed outside of the magazine, a thin elongated member extending through each of the anchors in the array of anchors in said magazine and through the anchor disposed outside of said magazine, and a suture extending through each of the anchors in the array of anchors in said magazine and through the anchor outside of said magazine.

5,549,632

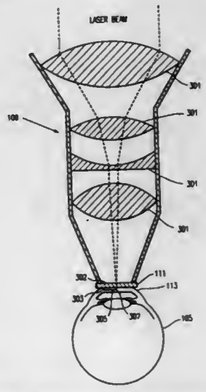
METHOD AND APPARATUS FOR OPHTHALMIC SURGERY

Shui T. Lai, Encinitas, Calif., assignor to Novatec Laser Systems, Inc., Carlsbad, Calif.

Filed Oct. 26, 1992, Ser. No. 967,253

Int. Cl.[6] A61B *17/36*

U.S. Cl. 606—5 **61 Claims**



1. An ophthalmic surgical system for performing surgery upon an eye having an outer surface, the ophthalmic surgical system including:

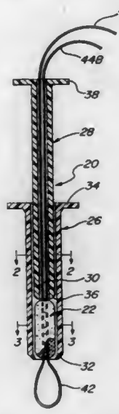
a. a laser source for generating a laser beam suitable for ophthalmic surgery;
b. a controller, optically coupled to the laser beam, for controlling positioning of the laser beam;
c. a delivery system having a proximal end and a movable distal end, the proximal end being coupled to the laser source for guiding the laser beam to the distal end of the delivery system;
d. a surgical tip at the distal end of the delivery system for directing the laser beam into an interaction point or tan area having a location, the location of the interaction point being determined by the controller; and
e. an applanator plate adapted to be rigidly attached to the eye and to the surgical tip, the applanator plate providing a fixed positional reference in three-dimensional space with respect to the laser beam interaction point in the eye to allow three-dimensional control of the interaction point in the eye by the laser source and controller.

5,549,633

APPARATUS AND METHODS OF USE FOR PREVENTING BLOOD SEEPAGE AT A PERCUTANEOUS PUNCTURE SITE

Douglas Evans, Devon, and John E. Nash, Downington, both of Pa., assignors to Kensey Nash Corporation, Exton, Pa.

Filed Aug. 24, 1994, Ser. No. 296,070
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—139 **46 Claims**



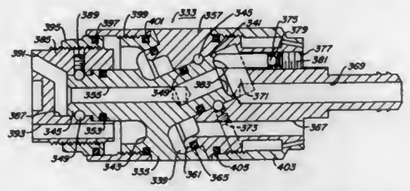
1. A system for use with a vascular puncture closure in a percutaneous puncture in a blood vessel of a living being, the puncture having an opening in the wall of the blood vessel and a tract contiguous with the opening and extending to the surface of the skin of the being, the vascular puncture closure having a first portion adapted to seal the opening in the blood vessel and at least one a filament portion extending from the first portion of the closure into the puncture tract, said system being arranged to reduce bleeding from the puncture tract and comprising:
(a) a mass of absorbable material which inhibits the flow of blood therethrough;
(b) positioning means adapted for holding said mass of material and for disposing said mass of material at the puncture tract;
(c) carrier means adapted for carrying a first portion of the filament portion in the proximal direction to couple it to at least a portion of said mass of material while said positioning means holds said mass of material; and
(d) means for holding said mass of material with respect to the first portion of said filament portion so that said mass of material closely engages tissue contiguous with the puncture tract to reduce the seepage of blood out of the puncture tract.

5,549,634

SURGICAL INSTRUMENT WITH SWIVEL MEMBER

Tony D. Scott, Weatherford; Ray Umber, Arlington, and William J. Vaughn, Fort Worth, all of Tex., assignors to Midas Rex Pneumatic Tools, Inc., Fort Worth, Tex.

Continuation-in-part of Ser. No. 958,229, Oct. 8, 1992, Pat. No. 5,352,234. This application Oct. 3, 1994, Ser. No. 316,925
Int. Cl.[6] A61B *17/32;17/00*
U.S. Cl. 606—170 **29 Claims**



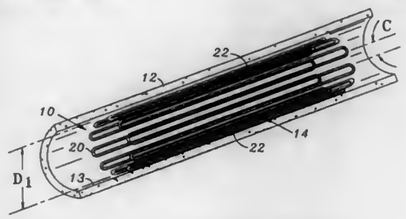
1. In a surgical instrument for dissecting tissue, the surgical instrument including a conduit having a conduit axis defined through a terminal end thereof, and a fluid powered motor for rotating a dissecting tool, the motor having a longitudinal motor axis, the improvement comprising:
connection means for rotatably connecting the motor to the conduit and including swivel means for swiveling the motor relative to the conduit from an aligned position, in which the motor axis is aligned with the conduit axis, to an angularly displaced position, in which the motor axis intersects the conduit axis at a selected included angle, the swivel means including:
a motor portion in fluid communication with the motor;
a conduit portion in fluid communication with the conduit;
a connection shaft extending from one of the portions;
a connection receptacle formed in the other of the portions, the connection receptacle formed to receive the connection shaft in rotatable engagement; and
fastener means for securing the connection shaft in rotatable engagement with the receptacle cavity; and
detent means for releasably securing the motor in each of the aligned and angularly displaced positions.

5,549,635

NON-DEFORMABLE SELF-EXPANDING PARALLEL FLOW ENDOVASCULAR STENT AND DEPLOYMENT APPARATUS THEREFORE

Ronald J. Solar, San Diego, Calif., assignor to Solar, Rita & Gaterud, Ltd., San Diego, Calif.

Continuation-in-part of Ser. No. 185,549, Jan. 24, 1994, Pat. No. 5,403,341. This application Apr. 3, 1995, Ser. No. 415,846
Int. Cl.[6] A61M *29/00*
U.S. Cl. 606—198 **30 Claims**



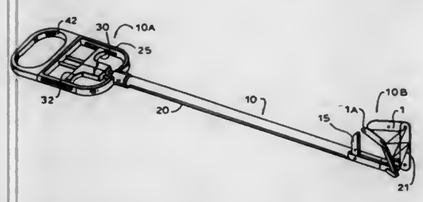
1. A stent delivery system, said system comprising:
a self expanding stent device comprising:
i) an elongate wire member having first and second ends, a multiplicity of back and forth bends being formed in said wire member at spaced-apart locations, so as to form said wire member into a series of side-by-side straight segments, the first and second ends of said wire member being coupled to one another such that said straight segments are disposed in a cylindrical array around a longitudinal axis;
ii) said stent device being alternately configureable in an operative configuration wherein said straight segments are substantially parallel to one another and disposed in said cylindrical array about said longitudinal axis so as to define a central passageway extending longitudinally therethrough and having a first diameter; and,
iii) a compact configuration wherein said straight segments are compacted such that said stent has an outer cross sectional dimension which is smaller than said first diameter;
iv) said wire member being formed on resilient material and biased to said operative configuration such that, when unrestrained, said stent device will automatically expand from its said compact configuration to its said operative configuration;
a deployment catheter for delivering said stent device into an anatomical passageway, said deployment catheter comprising: and,
i) an elongate catheter body;
ii) an inflatable balloon positioned on said catheter body;
iii) an inflation lumen extending through said catheter body for passing inflation fluid into and out of said balloon; and,
said stent device being positioned on said elongate catheter body with said inflatable balloon in its deflated state, such that said inflatable balloon in disposed within said stent device; and,
a pair of retaining sheaths being formed about the opposite ends of the stent device and adjacent portions of the balloon, said retaining sheaths being tearable in response to the exertion of outward radial pressure by inflation of said balloon such that, when said balloon is inflated, said retaining sheaths will be torn and said stent device will be thereby released from engagement to said deployment catheter such that said stent may further self expand to its operative configuration without concurrent inflation of said balloon beyond that which is required to cause said balloon to exert outward pressure to tear said retaining sheaths.

5,549,636

SURGICAL GRASPER WITH ARTICULATED FINGERS

Lehmann K. Li, Milford, Conn., assignor to Li Medical Technologies Inc., Shelton, Conn.

Filed Oct. 5, 1994, Ser. No. 318,468
Int. Cl.[6] A61B *17/28*
U.S. Cl. 606—206 **73 Claims**



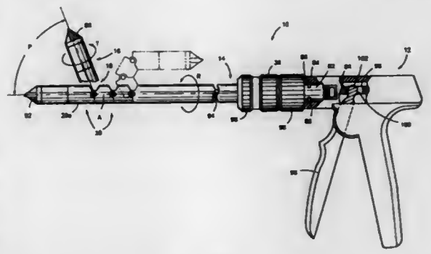
1. Surgical apparatus comprising:
a support rod having proximal and distal ends;
a plurality of articulated fingers at the distal end of the support rod;
a handle at the proximal end of the support rod, the handle having a finger grip adapted to be actuated by the hand of a user;
a connecting member connecting the finger grip and the articulated fingers;
a thumb being disposed at the distal end opposite the fingers;
a spring biasing the fingers toward a retracted position;
a spring element disposed between adjacent fingers for biasing said fingers away from each other; and
the fingers being responsive to a tension in the connecting member exerted by movement of the finger grip whereby the fingers move in a defined manner toward the thumb for grasping an object.

5,549,637

ARTICULATED MEDICAL INSTRUMENT

Lawrence Crainich, P.O. Box. 996 Ceda Rd., Charlestown, N.H. 03603

Filed Nov. 10, 1994, Ser. No. 337,563
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—207 **39 Claims**



1. A medical instrument, comprising:
a handle;
an elongate body member having a first end and a second end and at least one joint disposed therebetween dividing the body member into a plurality of segments including a first segment and a second segment, the first segment being connected to the handle and the second segment terminating in a tool head receiving means; and
means for pivoting the second segment relative to the first segment at the at least one joint, wherein the means for pivoting comprises two elongate members fixed relative to the second segment of the body member, one positioned pivotally inside of the at least one joint and one positioned pivotally outside of the at least one joint, whereby tensioning the pivotally inside elongate member pivots the second segment toward a pivoted position, and whereby tensioning the pivotally outside elongate member pivots the second segment toward a straight position.

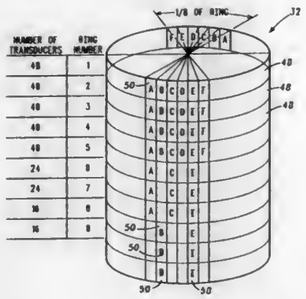
5,549,638

ULTRASOUND DEVICE FOR USE IN A THERMOTHERAPY APPARATUS

Everette C. Burdette, 2115 Seaton Ct., Champaign, Ill. 61821

Filed May 17, 1994, Ser. No. 245,301
Int. Cl.[6] A61N *1/00*
U.S. Cl. 607—97 **14 Claims**

1. A thermotherapy treatment apparatus having ultrasound transducers for applying ultrasound energy to a patient treatment site, comprising:
means for providing radio frequency power to said ultrasound transducers;
means for measuring temperature of the patient treatment site; and
means for controlling radio frequency power being provided to said ultrasound transducers responsive to temperatures being measured by said means for measuring temperature, said ultrasound transducers arranged in a cylinder forming a treatment cavity for encompassing the patient treatment site.

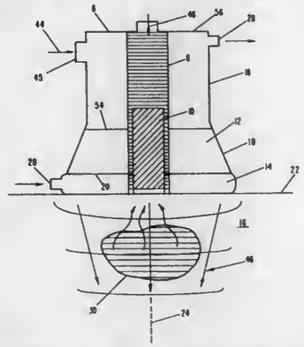


5,549,639

NON-INVASIVE HYPERTHERMIA APPARATUS INCLUDING COAXIAL APPLICATOR HAVING A NON-INVASIVE RADIOMETRIC RECEIVING ANTENNA INCORPORATED THEREIN AND METHOD OF USE THEREOF

Michael P. Ross, Albquuerque, N.M., assignor to Sandia Corporation, Albuquerque, N.M.

Filed Sep. 16, 1994, Ser. No. 307,957
Int. Cl.[6] A61N *5/02*
U.S. Cl. 607—101 **15 Claims**



1. A hyperthermia apparatus including a coaxial applicator for applying non-invasively inputted electromagnetic energy to a body surface against which the apparatus is placed, comprising:

said coaxial applicator having a central axis of symmetry that is adapted to be placed substantially perpendicular to the body surface including:

an inner conductor in the shape of a first surface of revolution about the axis of symmetry in the form of a first cylinder, the inner conductor forming an inner cavity interior thereto;

an outer conductor in the shape of a second surface of revolution about the axis of symmetry in the form of a modified cylinder, the outer conductor being coaxial outside the inner conductor;

a shorting-end conductor, the shorting-end conductor connecting a first end of the inner conductor to a first end of the outer conductor with the shorting end conductor disposed perpendicular to the axis of symmetry;

a diameter of the first end of the outer conductor being less than or equal to a diameter of a second end thereof opposite the first end such that the modified cylinder flares outwardly at the second end;

a bolus interface adapted to be disposed approximately parallel between the second end of the outer conductor and the body surface and connected to the second end of the outer conductor, the inner, outer and shorting-end conductors and the bolus interface forming an outer cavity, the outer cavity being filled with an applicator dielectric;

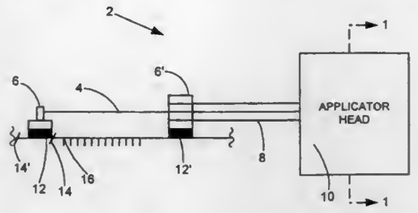
the coaxial applicator radiating inputted electromagnetic energy in a transverse electromagnetic (TEM) mode of propagation from the second end, a radiation pattern for the applicator being a bell-shaped curve symmetric about the axis of symmetry.

5,549,640

DEVICE AND METHOD FOR ENHANCEMENT OF WOUND HEALING

Mark G. Fontenot, 229 Marilyn Dr., Lafayette, La. 70503-3968

Filed Jun. 8, 1995, Ser. No. 488,723
Int. Cl.[6] A61N *1/00*
U.S. Cl. 607—149 **8 Claims**



1. An electromechanical device for enhancing wound healing, comprising:

a. an applicator head adapted for mounting adjacent to a site of a wound;

b. a cable coupled to the applicator head, the cable having two opposing ends and being configured to facilitate attachment of each end to skin surface surrounding opposite ends of the wound such that the cable is placed across a longitudinal axis of the wound;

c. a motor means for driving the cable in linear oscillations through alternating half cycles of a predetermined length so as to stretch and relax soft tissue surrounding the wound site; and

d. means for regulating the predetermined linear displacement of the cable over each half cycle.

5,549,641

ATRIAL FIBRILLATION TYPE SELECTIVE CARDIOVERTOR AND METHOD

Gregory M. Ayers, Duvall, and Clifton A. Alferness, Redmond, both of Wash., assignors to InControl, Inc., Redmond, Wash.

Filed Oct. 31, 1994, Ser. No. 331,898
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—4 **56 Claims**

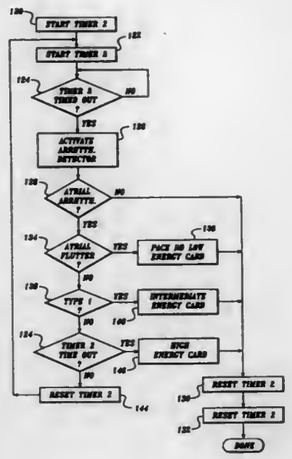
15. An atrial defibrillator comprising:

criteria establishing means for providing a respective different criteria for each of different types of atrial fibrillation;

a sensor for sensing activity of at least one of the atria of a heart to provide an electrogram signal;

therapy means for providing a corresponding therapy to the heart for each of said different types of atrial fibrillation; and

classifying means responsive to said electrogram signal and said criteria establishing means for identifying one of said types of atrial fibrillation and causing said therapy means to provide the therapy to the heart corresponding to said identified one of said types of atrial fibrillation.

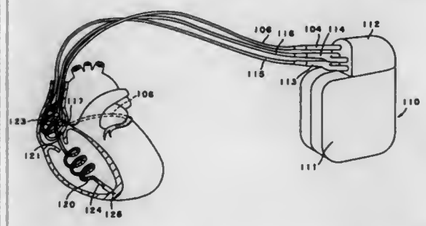


5,549,642

ATRIAL DEFIBRILLATOR AND METHOD OF USE

Xiaoyi Min, Roseville; Luc R. Mongeon, Minneapolis; Rahul Mehra, Stillwater; Kenneth M. Anderson, Bloomington; Paul J. DeGroot, and Michael R. S. Hill, Minneapolis, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Aug. 19, 1994, Ser. No. 293,769
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—5 **21 Claims**



1. An apparatus for delivering cardioversion pulses to the atrium of a patient's heart, comprising:

means for sensing atrial tachyarrhythmia;

a first electrode means for location in the coronary sinus of said patient's heart;

a second electrode means for location in the right ventricle of said patient's heart;

a third electrode means for location in the right atrium/superior vena cava portion of said patient's heart;

means for coupling said first electrode means to said second electrode means;

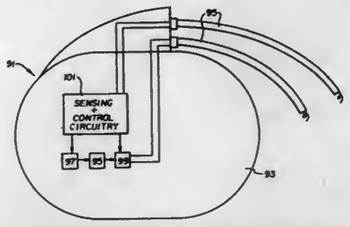
an implantable high voltage pulse generator having a housing and coupled to said first, second and third electrode means and including means for delivering a cardioversion pulse between said first and second electrode means while coupled to one another and said third electrode means, in response to a sensed occurrence of atrial tachyarrhythmia.

5,549,643

OPTIMAL PULSE DEFIBRILLATOR

Mark W. Kroll, and Charles U. Smith, both of Minnetonka, Minn., assignors to Angeion Corporation, Plymouth, Minn.

Continuation of Ser. No. 835,836, Feb. 18, 1992. This application Oct. 12, 1994, Ser. No. 322,189
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—7 **23 Claims**



1. An improved implantable defibrillator apparatus for producing a capacitive-discharge defibrillation waveform to be delivered through at least two electrodes adapted for implantation in a human patient, the implantable defibrillator apparatus including a self-contained human implantable housing having electrical connections to at least two electrodes adapted for implantation in the human patient, the implantable housing containing a waveform-generating capacitor means for storing an electrical charge, means for charging the waveform-generating capacitor means, and means for selectively discharging the electrical charge in the capacitor means through the at least two electrodes in response to a control signal from a means for sensing of a cardiac dysrhythmia in the human patient, the improvement comprising:

the means for selectively discharging including means for controlling the discharge of the capacitor means through the at least two electrodes to produce a defibrillation waveform comprising at least one electrical pulse having a predetermined optimum pulse duration based on an optimization of an effective current of the defibrillation waveform for a preselected amount of electrical energy stored in the capacitor means.

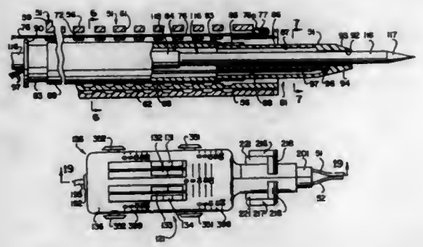
5,549,644

TRANSURETHRAL NEEDLE ABLATION DEVICE WITH CYSTOSCOPE AND METHOD FOR TREATMENT OF THE PROSTATE

Ingemar H. Lundquist, Pebble Beach; Stuart D. Edwards, Los Altos; Hugh R. Sharkey, Redwood City; Ronald G. Lax; James A. Baker, Jr., both of Grass Valley, and Phillip R. Sommer, Newark, all of Calif., assignors to Vidamed, Inc., Menlo Park, Calif.

Continuation-in-part of Ser. No. 109,190, Aug. 19, 1993, Pat. No. 5,409,453, which is a continuation-in-part of Ser. No. 61,647, May 13, 1993, Pat. No. 5,421,819, and a continuation-in-part of Ser. No. 62,364, May 13, 1993, Pat. No. 5,435,805, which is a continuation-in-part of Ser. No. 12,370, Feb. 2, 1993, Pat. No. 5,370,675, which is a continuation-in-part of Ser. No. 929,638, Aug. 12, 1992, abandoned. This application Feb. 2, 1994, Ser. No. 191,258
Int. Cl.[6] A61B *17/39*
U.S. Cl. 604—22 **37 Claims**

1. A transurethral needle ablation device for the treatment of the prostate of a human male using radio frequency energy from a radio frequency power source, the human male having a bladder with a base, a prostate and a penis with a urethra therein formed by a urethral wall extending from the base of the bladder through the prostate and the penis along a longitudinal axis with the prostate having prostatic tissue surrounding the urethral wall near the base of the bladder comprising a sheath having proximal and distal extremities and having a lumen extending from the proximal extremity to the distal extremity, a guide tube assembly slidably



mounted in the lumen in the sheath and having proximal and distal extremities and having a lumen extending from the proximal to the distal extremity and having a longitudinal axis, a needle electrode slidably mounted in the lumen in the guide tube assembly and having proximal and distal extremities, an insulation sleeve disposed about the needle electrode and having a distal extremity with the distal extremity of the insulation sleeve being positioned so that the distal extremity of the needle electrode is exposed, a handle adapted to be gripped by the human hand, means for mounting the proximal extremity of the sheath on the handle, means carried by the handle and coupled to the guide tube assembly for moving the distal extremity of the guide tube assembly from a retracted position with the distal extremity of the guide tube assembly within the distal extremity of the sheath and an extended position with the distal extremity of the guide tube assembly disposed distally of the sheath, means carried by the handle and coupled to the guide tube assembly for causing bending of the distal extremity of the guide tube assembly at an angle with respect to the longitudinal axis whereby the lumen in the guide tube assembly can be directed so that it faces the urethral wall, means connected to the needle electrode adapted to be coupled to the radio frequency power supply for supplying radio frequency energy to the needle electrode, means carried by the handle and coupled to the needle electrode and the insulating sleeve for advancing and retracting the needle electrode with respect to the guide tube whereby when the sheath is positioned in the urethra with its distal extremity in the vicinity of the prostate, the needle electrode can be advanced through the urethral wall and into the tissue of the prostate to permit the application of radio frequency energy to the tissue of the prostate surrounding the needle electrode to form a lesion in the prostate, said means carried by the handle and coupled to the needle electrode and the insulating sleeve including means for causing relative slidable movement between the insulating sleeve and the needle electrode.

5,549,645
PERITONEAL DIALYSIS CATHETER CLIP AND METHOD
James R. Frey, 1490 So. Clinton St., Defiance, Ohio 43512
Filed Jan. 19, 1995, Ser. No. 375,475
Int. Cl.[6] A61M *1/00*

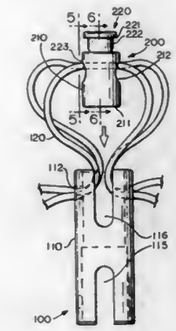
U.S. Cl. 604—29 **17 Claims**

1. A device for securing the terminal end of a catheter extension used in peritoneal dialysis treatment, said device comprising,

a generally hollow body, said body having a proximal end and a distal end, each of said proximal end and said distal end being open, said generally hollow body having a first set of holes, said first set of holes being located near said proximal end of said generally hollow body, said first set of holes being spaced evenly apart, and said generally hollow body also having a second set of holes, said second set of holes being located near said distal end of said generally hollow body, said second set of holes being spaced evenly apart;

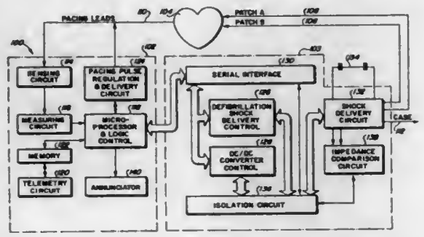
a neck cord, said neck cord being threaded through one of said first set and said second set of holes; and,

means for adjusting the vertical position of said device with respect to the body of the wearer, said adjusting means clamping onto said neck cord.



5,549,646
PERIODIC ELECTRICAL LEAD INTERGRITY TESTING SYSTEM AND METHOD FOR IMPLANTABLE CARDIAC STIMULATING DEVICES
Samuel M. Katz, and Harold C. Schloss, both of Los Angeles, Calif., assignors to Pacesetter, Inc., Sylmar, Calif.
Filed Dec. 6, 1994, Ser. No. 349,862
Int. Cl.[6] A61N *1/39*

U.S. Cl. 607—8 **79 Claims**



1. An implantable cardiac stimulating device for administering electrical stimulation to cardiac tissue, said cardiac tissue having periods of refractoriness through at least one electrical lead to interrupt cardiac arrhythmias, the implantable cardiac stimulating device comprising:

high voltage shock delivery circuitry, electrically connected to said at least one electrical lead, for generating a high energy shock and for delivering said shock to cardiac tissue through said at least one electrical lead in response to a shock delivery control signal;

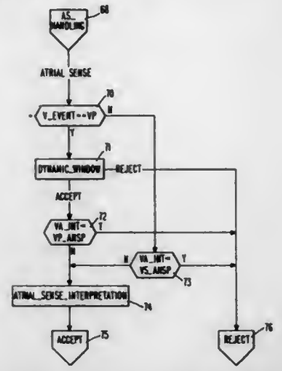
low voltage control circuitry for detecting the onset of a cardiac arrhythmia, for generating said shock delivery control signal to cause said high voltage shock delivery circuitry to generate and deliver said high energy shock, and for generating a lead integrity test control signal to initiate a lead integrity test on said at least one lead, said low voltage control circuitry comprising means for delivering said shock delivery control signal to said high voltage shock delivery control circuitry and further comprising means for detecting refractory periods of said cardiac tissue, wherein said low voltage control circuitry initiates lead integrity tests only during said refractory periods; and

a lead integrity testing circuit, coupled to said at least one electrical lead via said high voltage shock delivery circuitry and to said low voltage control circuitry, for performing said lead integrity test by evaluating the impedance of said at least one electrical lead in response to said lead integrity test control signal and for providing results of said lead integrity test to said low voltage control circuitry.

VOL 1189 ISS 4 AUG 27 1996 UMI

5,549,647
PACEMAKER WITH IMPROVED FAR FIELD R WAVE SENSING AND SUPPRESSION
Gustaaf A. P. Stoop, Dieren; Marijn van Gemert, Nijmegen, and Paul V. van Zanten, Arnhem, all of, Netherlands, assignors to Vitatron Medical, B.V., Dieren, Netherlands
Filed Oct. 4, 1994, Ser. No. 318,050
Int. Cl.[6] A61N *1/362*

U.S. Cl. 607—9 **21 Claims**



1. A dual chamber pacemaker comprising atrial sense means for sensing atrial signals (AS), ventricular pace means for generating ventricular pace pulses (VP) for delivery to a patient's ventricle, and PVARP means for establishing a post-ventricular atrial refractory period (PVARP) which occurs after a delivered VP, wherein said PVARP means comprises:

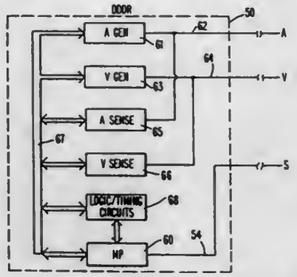
range means for defining a range of time within said PVARP,

dynamic window means for dynamically timing a blanking window within said range, said dynamic window means having dynamic adjust means for adjusting the timing of said blanking window to track AS events, and

reject means for rejecting an AS signal which occurs within said blanking window but not an AS signal which occurs outside of said blanking window and within said range.

5,549,648
PACEMAKER SYSTEM AND METHOD WITH IMPROVED DETECTION OF END OF RETROGRADE CONDUCTION
Gustaaf A. P. Stoop, Dieren, Netherlands, assignor to Vitatron Medical, B.V., Dieren, Netherlands
Filed Mar. 29, 1995, Ser. No. 412,963
Int. Cl.[6] A61N *1/362*

U.S. Cl. 607—9 **15 Claims**



1. A dual chamber pacemaker having atrial sense means for sensing signals in the atrium, ventricular pace means for generating ventricular pace pulses for delivery to a patient's ventricle, sync means for controlling said ventricular pace means to deliver said pace pulses in synchronized relation to sensed atrial signals, and RC means for determining the occurrence of retrograde conduction and for placing said pacemaker in an RC mode when retrograde conduction is determined, and RC end means operative each pacemaker cycle while in said RC mode for determining when retrograde conduction is stopped and for taking said pacemaker out of said RC mode, said RC end means comprising:

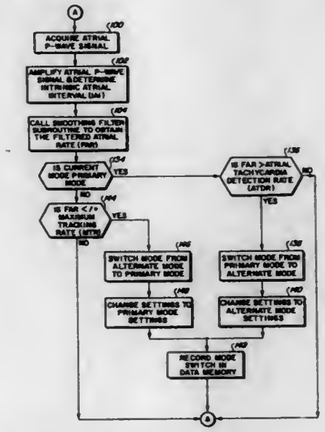
VA timing means for determining the VA interval between a ventricular pace pulse and a sensed atrial signal,

compare means for comparing said VA interval against predetermined RC timing criteria and for determining end of RC as a predetermined function of said comparison,

ventricular detect means for detecting when at least one predetermined event occurs during a cycle and for determining when a pattern of such predetermined events has been found, and mode switch means for taking said pacemaker out of said RC mode immediately when either end of RC is determined by said RC end means or said pattern of events has been found.

5,549,649
PROGRAMMABLE PACEMAKER INCLUDING AN ATRIAL RATE FILTER FOR DERIVING A FILTERED ATRIAL RATE USED FOR SWITCHING PACING MODES
Joseph J. Florio, Sunland; Gene A. Bornzin, Camarillo; Paul A. Levine, and J. Jeffrey Barlow, both of Newhall, all of Calif., assignors to Pacesetter, Inc., Sylmar, Calif.
Filed Jun. 10, 1994, Ser. No. 258,014
Int. Cl.[6] A61N *1/36*

U.S. Cl. 607—15 **35 Claims**



1. An implantable pacemaker comprising:

first and second leads adapted to couple the pacemaker to, respectively, an atrial chamber and a ventricular chamber of a heart;

atrial sense circuitry for sensing an intrinsic atrial rate through the first lead;

pulse generating circuitry for generating pacing pulses for delivery to the atrial and ventricular chambers through, respectively, the first and second leads; and

a control system, coupled to the atrial sense circuitry and the pulse generating circuitry, for deriving during each cardiac cycle, from the intrinsic atrial rate, a filtered atrial rate that exhibits less variation between successive cardiac cycles than the intrinsic atrial rate, for causing the pulse generating circuitry to generate pacing pulses in accordance with a primary mode of operation when the filtered atrial rate is less than a

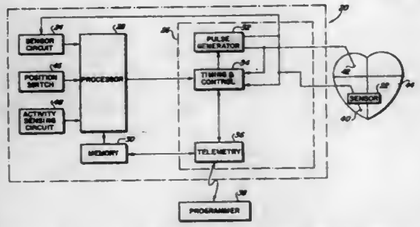
first threshold rate, for causing the pulse generating circuitry to generate pacing pulses in accordance with an alternate mode of operation when the filtered atrial rate exceeds the first threshold rate, the control system in the alternate mode of operation, causing the pulse generating circuitry to again generate pacing pulses in accordance with the primary mode when the filtered atrial rate falls below a second threshold rate.

5,549,650

SYSTEM AND METHOD FOR PROVIDING HEMODYNAMICALLY OPTIMAL PACING THERAPY

Gene A. Bornzin, Camarillo; Kelly H. McClure, Simi Valley; Gabriel Mouchawar, Newhall, and Sheldon B. Moberg, Kagel Canyon, all of Calif., assignors to Pacesetter, Inc., Sylmar, Calif.

Filed Jun. 13, 1994, Ser. No. 259,084
Int. Cl.[6] A61N *1/365*
U.S. Cl. 607—24 **26 Claims**



1. A rate-responsive pacemaker for providing pacing pulses to a patient's heart in accordance with metabolic need, the pacemaker comprising:

a cardiac wall motion sensor for providing signals representative of ventricular or cardiac wall motion;

a pulse generator for generating pacing pulses at a selectable rate;

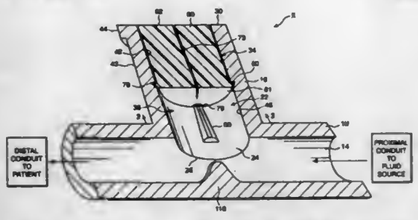
a processor, coupled to the cardiac wall motion sensor and the pulse generator, for processing the cardiac wall motion sensor signals to derive physiologic parameters indicative of the patient's level of metabolic need and for selecting the rate at which the pulse generator generates pacing pulses in accordance with the derived physiologic parameters.

5,549,651

LUER-RECEIVING MEDICAL VALVE AND FLUID TRANSFER METHOD

Lawrence A. Lynn, 862 Curleys Ct., Worthington, Ohio 43235

Filed May 25, 1994, Ser. No. 248,646
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—283 **23 Claims**



1. A medical valve for selectively providing fluid communication between a primary fluid system and a secondary fluid system, the valve being selectively activated by a male luer having a distal end and an opening therethrough, the valve comprising:

a. a tubular housing defining a longitudinal axis and having a proximal end and a distal end and a bore extending from said proximal end to said distal end, the bore defining a longitudinal axis and having a proximal portion defined by cylindrical walls for receiving a male luer and a distal portion, the distal portion including at least one region having a narrower transverse width than said proximal portion,

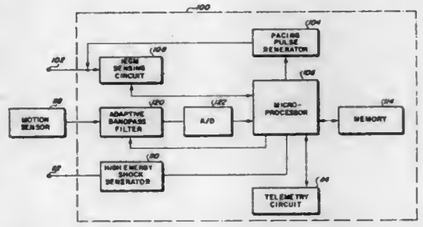
b. an elastomeric septum piston defining a longitudinal axis and disposed within said bore, said septum piston having a perforation extending along the longitudinal axis of said septum piston, said perforation being closed when said septum piston is free from external compressive force, at least a portion of said septum piston being displaceable along the longitudinal axis of said bore from a first proximal position wherein said perforation is closed to a second distal position wherein said perforation is open, said septum piston being displaced by a distal end of a male luer when a male luer is inserted into said proximal portion, said septum piston in said second distal position being compressed by said region to open said perforation through said septum piston, and thereby to provide fluid communication from said opening, through said septum piston and into a primary fluid system.

5,549,652

CARDIAC WALL MOTION-BASED AUTOMATIC CAPTURE VERIFICATION SYSTEM AND METHOD

Kelly H. McClure, Simi Valley, and Sheldon B. Moberg, Kagel Canyon, both of Calif., assignors to Pacesetter, Inc., Sylmar, Calif.

Filed Nov. 15, 1993, Ser. No. 152,659
Int. Cl.[6] A61N *1/37*
U.S. Cl. 607—28 **48 Claims**



1. An implantable cardiac stimulating device for administering pacing pulses to cardiac tissue through an implantable stimulation lead, the device comprising:

a pacing pulse generator for generating the pacing pulses;

input circuitry for receiving a signal representative of cardiac wall motion; and

control circuitry, coupled to the pacing pulse generator and the input circuitry, for regulating the pacing pulse generator and for evaluating the signal representative of cardiac wall motion to determine when the pacing pulses evoke cardiac contractions.

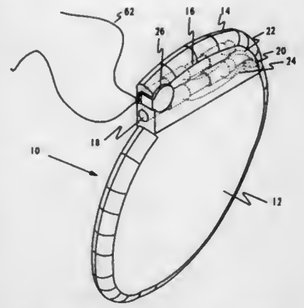
5,549,653

MUSCLE STIMULATION ELECTRODE FOR IMPLANTABLE CARDIAL STIMULATION DEVICE WITH WARNING SYSTEM

Lawrence J. Stotts; Patrick J. Paul, and David Prutchi, all of Lake Jackson, Tex., assignors to Intermedics, Inc., Angleton, Tex.

Filed Sep. 22, 1995, Ser. No. 532,961
Int. Cl.[6] A61N *1/38;1/04*
U.S. Cl. 607—4 **24 Claims**

1. An implantable cardiac therapy system comprising means for producing a cardiac therapy,



at least one electrode adapted to be implanted adjacent a patient's heart for delivering said stimulation therapy to the heart,

a cardiac stimulation lead electrically connecting said therapy producing means to said electrode,

at least one socket on said therapy producing means, said socket having electrical connections therein electrically connected to said therapy producing means,

means for detecting a predetermined condition,

means for producing a physiologic stimulation to warn said patient of said detected condition, and

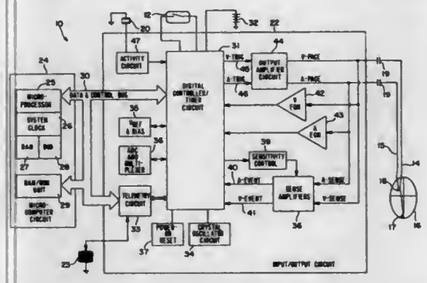
a pin electrode, said pin electrode having a shaft configured to be inserted into said socket and to make electrical contact with the electrical connections therein and having electrode means substantially immediately adjacent said socket when said shaft is inserted in said socket.

5,549,654

INTERACTIVE INTERPRETATION OF EVENT MARKERS IN BODY-IMPLANTABLE MEDICAL DEVICE

Richard M. Powell, Bloomington, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 15, 1994, Ser. No. 228,237
Int. Cl.[6] A61N *1/37*
U.S. Cl. 607—32 **10 Claims**



1. A medical device system, comprising:

an implantable device including a pulse generator having means for generating stimulating pulses and sensor circuitry means for detecting physiological events;

implantable device control circuitry coupled to said pulse generator and to said sensing circuitry, said control circuitry operative to trigger said pulse generator to deliver said stimulating pulses in response to physiological events;

a transmitter circuit coupled to said implantable device control circuitry further comprising telemetry circuitry responsive to delivery of said stimulating pulses and detection of said physiological events by said sensor circuitry means for transmitting event marker signals;

an external unit having a graphics display screen, said external unit further comprising:

a receiver circuit means for receiving said event marker signals and means for displaying sequences of said event marker signals on said graphics display screen;

means for storing a knowledge base comprising information concerning operational characteristics of said implantable device;

a user input device having means for enabling a user to select a point within a displayed sequence of said event marker signals on said graphics display screen;

means responsive to selection of a point within a displayed sequence of event marker signals for applying the information in said knowledge base to the sequence of event marker Signals to generate an explanatory message explaining operation of said implantable device at said selected point; and

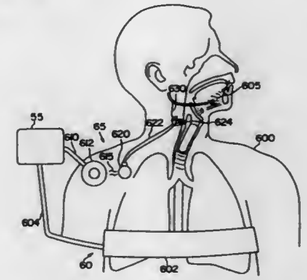
means for displaying said explanatory message on said graphics display screen.

5,549,655

METHOD AND APPARATUS FOR SYNCHRONIZED TREATMENT OF OBSTRUCTIVE SLEEP APNEA

Donald J. Erickson, Plymouth, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Sep. 21, 1994, Ser. No. 309,821
Int. Cl.[6] A61N *1/36*
U.S. Cl. 607—42 **96 Claims**



1. A method for providing stimulation of an upper airway muscle of a patient to relieve an airway obstruction, said patient having a respiratory cycle with an inspiratory phase, said stimulation synchronized with the inspiratory phase of the patient's respiratory cycle, the method comprising the steps of:

(a) providing a respiratory effort waveform of the patient;

(b) monitoring the respiratory effort waveform of the patient for a change in slope of the respiratory effort waveform characteristic of an inspiratory turn point and for a predetermined amplitude characteristic of an inspiratory turn point;

(c) detecting an inspiratory turn point according to the monitored first change in slope or amplitude in step (b); and

(d) commencing stimulation in response to the detected inspiratory turn point.

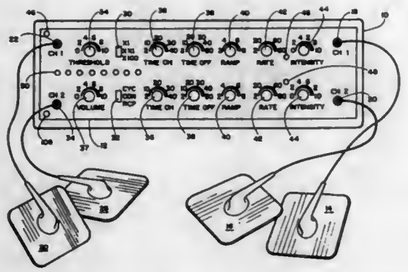
5,549,656

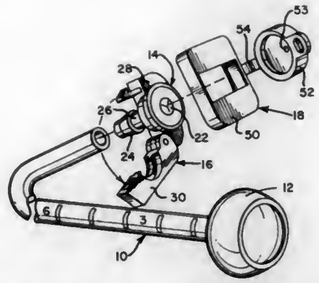
COMBINATION NEUROMUSCULAR STIMULATOR AND ELECTROMYOGRAPH SYSTEM

Hans W. Reiss, Encinitas, Calif., assignor to Med Serve Group, Inc., Encinitas, Calif.

Continuation of Ser. No. 106,718, Aug. 16, 1993, abandoned. This application May 15, 1995, Ser. No. 441,063
Int. Cl.[6] A61N *1/32; A61B 5/0488*
U.S. Cl. 607—48 **14 Claims**

1. An electrotherapy system including a two-channel electromuscular stimulator and two-channel electromyograph system for





simultaneously applying two stimulation signals to a skin area and for measuring stimulation effects in the same skin areas without interference which comprises:

a first electromuscular stimulator channel, comprising:

means for applying at a predetermined skin location a first varying electromuscular stimulator electrical signal having a variable output pulse rate, a variable on and off pulse rate and a frequency limited to below about 80 Hz;

a second electromuscular stimulator channel, comprising:

means for applying at said predetermined skin location a second varying electromuscular stimulator electrical signal having a variable output pulse rate, a variable on and off pulse rate and a frequency limited to below about 80 Hz;

means for controlling said output pulse rate of said first and second electrical signals;

means for controlling output pulse intensity of said first and second electrical signals;

means for controlling the on and off pulse rate of said output pulses;

a first electromyograph section comprising means for receiving, from a location at generally the same skin area as the area to which said first and second electromuscular signals were imposed, first and second electromyograph input signals corresponding to differences in electrical potential of muscles through the skin of a subject simultaneously with the application of said first and second electromuscular stimulator electrical signals, said electromyograph input signals resulting from said first and second electromuscular stimulator electrical signals;

electrical filter means for eliminating unwanted signals and noise from said input signals below about 100 Hz;

means for amplifying said input signals and controlling the amplification range of said input signals;

means for displaying the intensity of said input signals.

5,549,657

LOW PROFILE ADAPTOR FOR GASTROSTOMY FEEDING TUBE

David R. Stern, Grayson, Ga.; Michael Ganderer, Shaker Heights, Ohio, and Albert N. Solbjor, Waltham, Mass., assignors to C.R. Bard, Inc., Billerica, Mass.

Filed May 12, 1994, Ser. No. 241,846

Int. Cl.[6] A61M *31/00*

U.S. Cl. 604—283 **13 Claims**

1. An adaptor combination for use with a gastrostomy feeding tube having a retention member at its distal end and an open proximal end, comprising:

an anti-reflux valve with an inlet and an outlet, said valve having a stem at its outlet constructed to be received into the feeding tube proximal end, said stem being tapered and including a waist portion, and a seal contained therein to event prevent reflux adapted to receive therethrough a supply tube to supply a feeding solution through said valve to the gastrostomy feeding tube;

a clamp constructed to clamp the gastrostomy feeding tube to said stem when said stem is received therein, said clamp being positioned over said waist portion when said stem is received in said gastrostomy feeding tube, to engage the gastrostomy feed tube against said stem waist portion; and

a cover constructed to fit over and substantially cover said clamp.

5,549,658

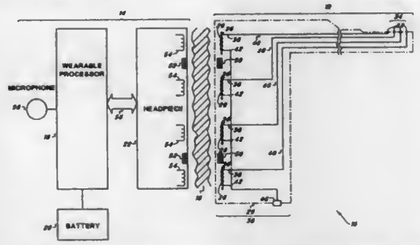
FOUR-CHANNEL COCHLEAR SYSTEM WITH A PASSIVE, NON-HERMETICALLY SEALED IMPLANT

Robert V. Shannon, La Canada; Gerald E. Loeb, Northridge, and Fan-Gang Zeng, Montrose, all of Calif., assignors to Advanced Bionics Corporation, Sylmar, and House Ear Institute, Los Angeles, both of Calif.

Filed Oct. 24, 1994, Ser. No. 328,260

Int. Cl.[6] H04R *25/00;* **A61N** *1/32*

U.S. Cl. 607—57 **30 Claims**



1. A low-cost, multichannel cochlear stimulation system comprising:

a passive, non-hermetically sealed, implantable receiver/electrode array comprising:

a carrier in which is embedded a plurality of coil assemblies at a proximal end of the carrier and a plurality of electrodes at a distal end of the carrier, the distal and proximal ends of the carrier being integrally connected together, the distal end of the carrier being adapted for insertion into a human cochlea, whereby the plurality of electrodes may be placed within the cochlea,

the proximal end of the carrier holding the plurality of coil assemblies in a predetermined pattern,

the plurality of coil assemblies and electrodes comprising the only electrical components within the carrier,

the coil assemblies each comprising a sufficient number of turns of a first wire wound to form a coil, one end of the first wire of each coil being electrically connected directly to at least one of the electrodes at the distal end of the carrier and an other end of the first wire of each coil being connected directly to a second electrode, and

implantable alignment means for aligning the plurality of coil assemblies with corresponding external coils; and

an external wearable processor comprising:

microphone means for generating an electrical signal representative of sensed audible sounds,

filter means for dividing the electrical signal into a plurality of frequency bands, thereby creating a corresponding plurality of frequency band signals, the number of frequency bands being the same as the number of implanted coil assemblies, whereby there is an implanted coil assembly for each frequency band,

signal processing means for processing each of the plurality of frequency band signals in accordance with a prescribed speech processing strategy to produce a biphasic stimulation signal for each frequency band, the biphasic stimulation signal comprising a series of narrow biphasic stimulation pulses of varying amplitude having a width of less than 250 μsec and a repetition rate of at least 250 Hz,

an external headpiece having a plurality of external coils, each connected to receive the biphasic stimulation signal of one of the plurality of frequency bands, and

external alignment means for aligning each of the external coils of the external headpiece with respective ones of the plurality of coil assemblies of the implantable receiver/electrode array;

whereby the narrow biphasic stimulation pulses received by each of the plurality of external coils are inductively coupled to respective ones of the plurality of implantable coil assemblies, thereby causing an induced biphasic stimulation current to appear at respective ones of the implantable electrodes as a function of sensed audible sounds.

5,549,659

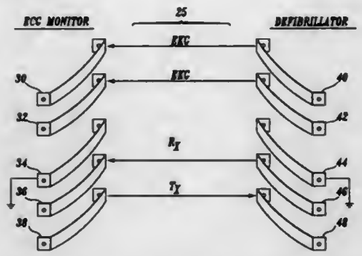
COMMUNICATION INTERFACE FOR TRANSMITTING AND RECEIVING SERIAL DATA BETWEEN MEDICAL INSTRUMENTS

Curt C. Johansen, Everett; Mark P. Moore, Kent, and Edward H. Hann, Woodinville, all of Wash., assignors to Physio-Control Corporation, Redmond, Wash.

Filed Nov. 4, 1994, Ser. No. 334,623

Int. Cl.[6] A61N *1/08*

U.S. Cl. 607—60 **6 Claims**



1. A communication interface for transmitting data between a first and a second interconnectable medical instrument, comprising: p1 a first set of horizontally extending leaf spring contacts for mounting on the first medical instrument;

a second set of horizontally extending leaf spring contacts for mounting on the second medical instrument, and positioned to engage the contacts of the first set when the first and second medical instruments are interconnected;

a first serial communication circuit to be placed within the first medical instrument that transmits and receives serial data, the communication circuit having a transmit output coupled to a first leaf spring contact of said first set of leaf spring contacts and a receive input coupled to a second leaf spring contact of said first set of leaf spring contacts; and

a second serial communication circuit to be placed within the second medical instrument that transmits and receives serial data, the second serial communication circuit having a transmit output coupled to a first leaf spring contact of said second set of leaf spring contacts and a receive input coupled to a second leaf spring contact of said second set of leaf spring contacts, wherein the transmit output of the first serial communication circuit is coupled to the receive input of the second serial communication circuit and the transmit output of the second serial communication circuit is coupled to the receive input of the first serial communication circuit when the first and second medical instruments are interconnected.

5,549,660

METHOD OF TREATING ACNE

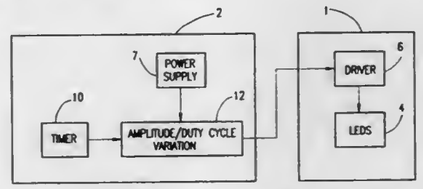
Emanuel Mendes, Petach Tikva; Gideon Iron, and Avikam Harel, both of Tel Aviv, Israel, assignors to Amron, Ltd., Tel Aviv, Israel

Continuation-in-part of Ser. No. 615,050, Nov. 15, 1990, Pat. No. 5,259,380. This application Nov. 12, 1992, Ser. No. 973,374

Claims priority, application Israel, Jun. 5, 1992, 102125

Int. Cl.[6] A61N *5/00*

U.S. Cl. 607—088 **10 Claims**



1. A method of treating acne with red light radiation, the method comprising the steps of:

(a) providing a plurality of light emitting diodes which generate non-coherent radiation in a narrow bandwidth centered at a wavelength of approximately 660 nm,

(b) driving the diodes exclusively in a continuous wave mode to generate the non-coherent radiation,

(c) concentrating and projecting the non-coherent radiation on a dermal area afflicted with acne without simultaneously illuminating the area with non-coherent light emitting diode radiation centered about a different wavelength and

(d) maintaining the concentrating and projecting step (c) for a prescribed treatment duration.

5,549,661

SYSTEMS AND METHODS FOR CREATING COMPLEX LESION PATTERNS IN BODY TISSUE

Thomas F. Kordis, Sunnyvale; David K. Swanson, Mountain View; Jerome Jackson, Sunnyvale, and Terry E. Spraker, Portolla, all of Calif., assignors to EP Technologies, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 137,580, Oct. 15, 1993, abandoned. This application Dec. 1, 1995, Ser. No. 566,291

Int. Cl.[6] A61N *1/06*

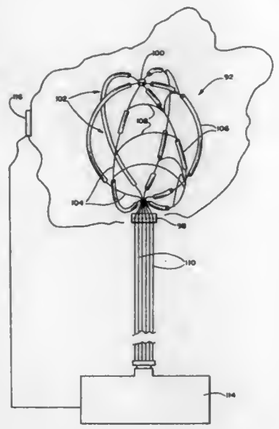
U.S. Cl. 607—99 **40 Claims**

1. A device for forming curvilinear lesions in tissue within the body comprising

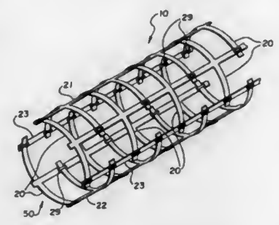
a source for generating ablating energy,

a first energy emitting electrode connected to the source, and

a second energy emitting electrode connected to the source, the second energy emitting electrode intersecting the first energy emitting electrode to form an angled junction between them creating, when ablating energy is emitted by the electrodes, an intersecting, curvilinear lesion pattern in the body tissue.

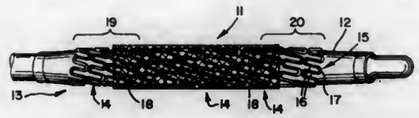


5,549,662
EXPANDABLE STENT USING SLIDING MEMBERS
Paul J. Fordenbacher, Minneapolis, Minn., assignor to SciMed Life Systems, Inc., Maple Grove, Minn.
Filed Nov. 7, 1994, Ser. No. 335,316
Int. Cl.[6] A61F 2/06; A61M 29/00
U.S. Cl. 623—1 **25 Claims**



1. A radially expandable stent for implantation within a body lumen comprising:
a plurality of elongated stent components, wherein the stent components are arranged longitudinally and substantially parallel to each other;
a plurality of circumferential members substantially perpendicularly affixed to the stent components; and
a plurality of paired slots positioned along the stent components, the paired slots being parallel relative to the elongated stent components, and wherein the circumferential members of one component are slidably received into the paired slots of an adjacent component forming a weave-like interlocking configuration, and wherein the radially expandable stent has a generally cylindrical body with open proximal and distal ends; the stent being radially expandable to engage the lumen walls by sliding the circumferential members through the paired slots to separate the components from each other diametrically.

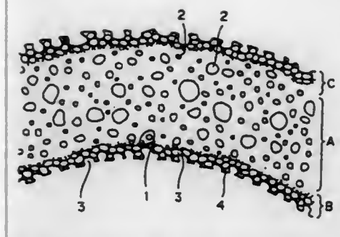
5,549,663
ENDOPROSTHESIS HAVING GRAFT MEMBER AND EXPOSED WELDED END JUNCTIONS, METHOD AND PROCEDURE
Robert J. Cottone, Jr., Ft. Lauderdale, Fla., assignor to Cordis Corporation, Miami Lakes, Fla.
Filed Mar. 9, 1994, Ser. No. 208,612
Int. Cl.[6] A61F 2/06
U.S. Cl. 623—1 **13 Claims**



1. An implantable transluminal endoprosthesis, comprising:
a malleable strand having a generally helical configuration to form a stent component having a plurality of full circle windings along a generally helically axis, the stent component having an interior surface and an exterior surface, the stent component extending the length of the endoprosthesis;
said malleable strand including a repeating pattern of undulations that follow said generally helical axis, said pattern of undulations having a plurality of substantially equally sized and shaped bendable segments having legs alternating with bendable connecting portions to impart radial expandability to the endoprosthesis; said endoprosthesis having an unexpanded transluminal insertion circumference and an expanded deployed circumference which is greater than said unexpanded circumference;
said plurality of full circle windings being generally adjacent to each other, and said bendable segments being positioned in a generally closed orientation with respect to each other at said unexpanded circumference and in a generally opened orientation with respect to each other and with respect to said bendable connecting portions at said expanded circumference;
said stent component having end lengths, each said end length having a plurality of welds joining the end windings to their respective adjacent winding in order to define welded end lengths of the stent component;
a graft component having an inner member and an outer member closely overlying said interior surface and exterior surface respectively of said stent component such that a portion of each of said welded end lengths is covered by said graft component inner and outer members and such that a substantial axially extending portion of each of said welded end lengths protrudes longitudinally beyond said graft component and said graft member covers at least the central portion of the stent component, said central portion being between said welded end lengths of the stent component; and
said graft component exhibits compliance adequate to radially expand with the stent member and a low recoil percentage once thus expanded.

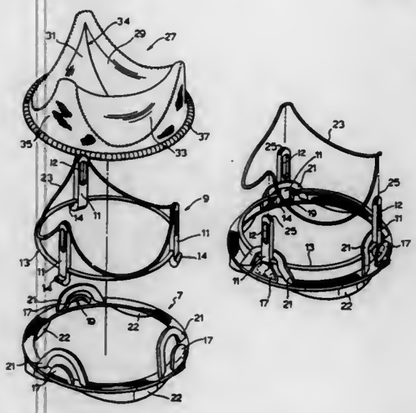
5,549,664
ARTIFICIAL BLOOD VESSEL
Yoshimi Hirata; Noriaki Kaneko; Masahiro Moriwaki, and Kanetake Oura, all of Ichihara, Japan, assignors to UBE Industries, Ltd., Ube, Japan
Continuation of Ser. No. 856,150, Mar. 25, 1992, abandoned. This application May 2, 1994, Ser. No. 236,694
Claims priority, application Japan, Jul. 31, 1990, 2-201147; Feb. 8, 1991, 3-037810
Int. Cl.[6] A61F 2/06
U.S. Cl. 623—1 **29 Claims**

1. An artificial blood vessel having a structure made of an elastomer containing a multiplicity of cells throughout the structure and comprising:
a first layer containing closed cells having no communicability therebetween, said first layer having an inner surface and an outer surface; and



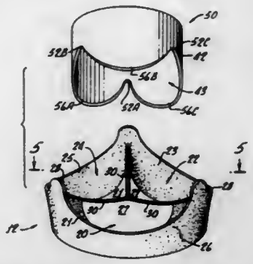
a second layer containing open cells having mutual communicability therebetween, said open cells of said second layer having wall surfaces;
said second layer having a first surface and a second surface, said first surface being contiguous to the inner surface of said first layer, the second surface of said second layer and said wall surfaces of said open cells of said second layer are coated with a thin film of a crosslinked protein of biological origin, without clogging said open cells; said crosslinked protein allowing intimal tissue to deeply intrude into said open cell structure of said blood vessel.

5,549,665
BIOPROSTETHIC VALVE
Ivan Vesely; Slawomir Krucinski; Gordon Campbell; Derek Boughner, and Mohan Dokainish, all of London, Canada, assignors to London Health Association, London, Canada
Filed Jun. 17, 1994, Ser. No. 261,983
Claims priority, application United Kingdom, Jun. 18, 1993, 9312666
Int. Cl.[6] A61F 2/24
U.S. Cl. 623—2 **21 Claims**



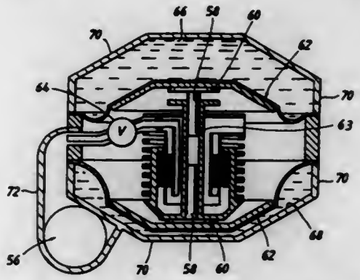
1. A bioprosthetic heart valve comprising:
a) a support ring having three spaced apart end stops projecting upwardly therefrom;
b) three spaced apart stent posts adapted to pivot outwardly relative to said support ring and to engage respective ones of said end stops for preventing inward pivoting thereof;
c) leaflet valve means formed from an aortic root and having three generally triangular leaflets defining respective cusps which are adapted to open and close during heart systole and diastole, respectively, said leaflets being joined at respective commissures adjacent said aortic root; and
d) means for attaching said leaflet valve means to said stent posts and said support ring.

5,549,666
NATURAL TISSUE VALVE PROSTHESES HAVING VARIABLY COMPLAINT LEAFLETS
Cary Hata, Alhambra; Roger Tu, Tustin, both of Calif.; Hsing-Wen Sung, Taipei, Taiwan, and Shih-Hwa Shen, Irvine, Calif., assignors to Baxter International Inc., Deerfield, Ill.
Filed Sep. 2, 1994, Ser. No. 300,025
Int. Cl.[6] A61F 2/24
U.S. Cl. 623—2 **6 Claims**



1. A natural tissue valve prosthesis having improved hemodynamic characteristics and resistance to calcification comprising:
a fixed natural tissue valve assembly having a circumferential annular margin and one or more valve leaflets pivotally attached thereto, each of said one or more valve leaflets having a pressure fixed leaflet base section adjacent to said circumferential annular margin and a lower pressure fixed leaflet tip section radially disposed therefrom, said leaflet tip section being more compliant than said leaflet base section, and wherein said leaflet tip section is less fixed than said leaflet base section.

5,549,667
MECHANICAL HEART WITH WEAR RESISTANT COATINGS OF REDUCED THROMBOGENICITY
James A. Davidson, Germantown, Tenn., assignor to Smith & Nephew Richards, Inc., Memphis, Tenn.
Continuation-in-part of Ser. No. 112,587, Aug. 26, 1993, Pat. No. 5,496,359, which is a continuation-in-part of Ser. No. 919,932, Jul. 27, 1992, Pat. No. 5,282,850, which is a continuation-in-part of Ser. No. 830,720, Feb. 4, 1992, Pat. No. 5,258,022, which is a continuation-in-part of Ser. No. 557,173, Jul. 23, 1990, Pat. No. 5,152,794, which is a continuation-in-part of Ser. No. 385,285, Jul. 25, 1989, Pat. No. 5,073,438. This application Oct. 11, 1994, Ser. No. 320,456
Int. Cl.[6] A61M 1/10
U.S. Cl. 623—3 **9 Claims**



1. In an external mechanical heart of the type having a pump for receiving blood from a patient's heart and returning the blood to a patient's aorta, an input valve and an output valve, said pump and valves adapted and connected to remove blood from the heart and

pump blood to the aorta, at least a portion of the external mechanical heart having surfaces that are subject to blood contact when in use, the improvement comprising:

at least a portion of the external mechanical heart being fabricated of a substrate metal selected from the group consisting of zirconium and alloys of zirconium, said substrate metal coated with a blood compatible coating formed by an in situ process, the coating being selected from the group consisting of blue-black zirconium oxide, black zirconium oxide and zirconium nitride, and the coating being tightly adherent to the substrate metal and covering the surfaces of the substrate metal that are subject to blood contact when the external mechanical heart is in use to reduce blood clot formation risk.

5,549,668

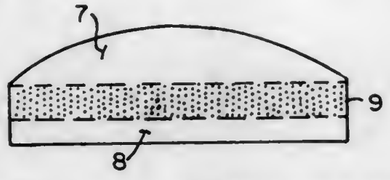
IN VIVO MODIFICATION OF REFRACTIVE POWER OF AN INTRAOCULAR LENS IMPLANT

Francis E. O'Donnell, Jr., 709 The Hamptons La., Town & Country, Mo. 63017

Continuation of Ser. No. 950,224, Sep. 24, 1992, Pat. No. 5,288,293. This application Aug. 2, 1993, Ser. No. 100,138

Int. Cl.[6] A61F *2/16*

U.S. Cl. 623—6 **1 Claim**



1. An intraocular lens implant capable of having its refractive power changed, even after the lens has been formed, including said lens comprising three laminates, said laminates formed as a front, a back, and an intermediate laminate for the lens, the front laminate being coated onto the front surface of the intermediate laminate and constructed of material shaped to provide a frontal curvature and to furnish an index of refraction for the formed lens, the intermediate laminate formed to provide for a change in the refractive power of the front laminate by being hydrated and dehydrated when exposed to laser energy, the back laminate being coated onto the back surface of the intermediate laminate, the front and back laminates formed of one of a silicone, collagen, polyacrylamide, and soft PMMA, with the intermediate laminate formed of one of a hydrogel and collagen, whereby upon initially subjecting the intermediate lamiate to laser energy causing the hydration of said intermediate layer and increasing the curvature of the front laminate and enhancing the refractive index of the lens, and upon further exposure of the intermediate laminate to laser energy causing an evaporation of some moisture in said intermediate laminate and a consequent collapse of said front laminate and a reduction in its curvature resulting in a lessening of the refractive index of the formed lens.

5,549,669

INTRAOCULAR LENS HAVING HAPTICS WITH NON-SYMMETRICAL CROSS-SECTION

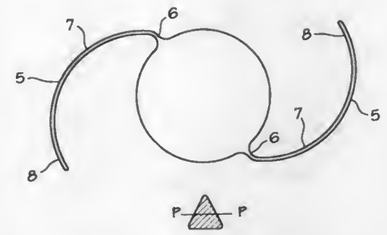
Peter Jansen, Ulthuizen, Netherlands, assignor to Pharmacia AB, Stockholm, Sweden

Continuation-in-part of Ser. No. 99,333, Aug. 2, 1993, Pat. No. 5,376,115. This application Sep. 20, 1994, Ser. No. 309,988

Int. Cl.[6] A61F *2/16*

U.S. Cl. 623—6 **5 Claims**

1. An intraocular lens including an optical lens body and haptics extending outwardly from the optical lens body, each haptic being defined by a plane, the improvement comprising each haptic having a cross-section along its entire length which is non-symmetrical with respect to the plane of said haptic.



5,549,670

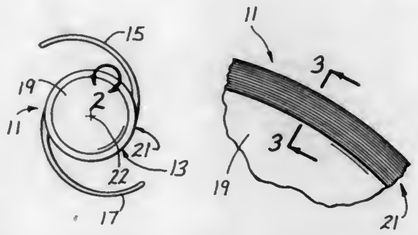
IOL FOR REDUCING SECONDARY OPACIFICATION

Craig Young, Presque Isle, Me.; Glenn R. Sussman, Lake Forest, and Crystal M. Cunahan, Mission Viejo, both of Calif., assignors to Allergan, Inc., Irvine, Calif.

Filed May 9, 1995, Ser. No. 437,656

Int. Cl.[6] A61F *2/16*

U.S. Cl. 623—6 **20 Claims**



12. An intraocular lens implantable in an eye comprising:

an optic, adapted for placement in the capsular bag of the eye, having an optical portion for directing light toward the retina of the eye and a cell barrier portion for inhibiting cell growth from the eye in front of or in back of the optical portion;

said cell barrier portion circumscribing the optical portion, including an irregularly configured structure and being incapable of focusing light on the retina; and

a member other than the cell barrier portion for fixing the optic in the eye.

5,549,671

ADJUNCTIVE FILLER MATERIAL FOR FLUID-FILLED PROSTHESIS

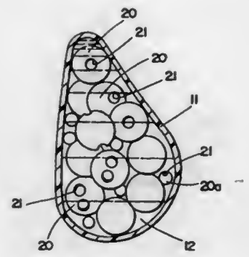
Richard S. Waybright, Lompoc, and Daniel A. Carlisle, Santa Barbara, both of Calif., assignors to McGhan Medical Corporation, Santa Barbara, Calif.

Filed Dec. 28, 1994, Ser. No. 365,202

Int. Cl.[6] A61F *2/12;2/52;2/02*

U.S. Cl. 623—8 **10 Claims**

1. A fluid-filled prosthesis comprising in combination, a) a shell comprising a flexible elastomer container having a first volume; (b) a fluid substantially filling said first volume; and (c) an adjunctive filler comprising at least one hollow bead, said bead having a substantially spherical elastomeric wall, an exterior surface and a spherical interior volume defining a cavity, said cavity being filled solely with said fluid and a plurality of holes penetrating said wall operable for providing fluid communication between said interior volume and said exterior surface of said bead.



5,549,672

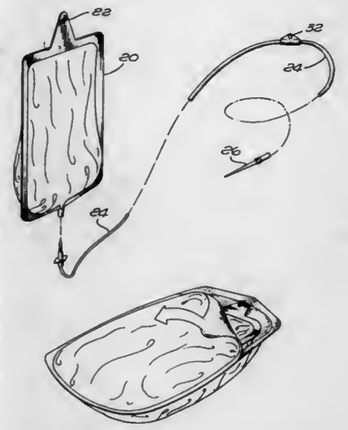
METHOD AND APPARATUS FOR FILLING MAMMARY PROSTHESES AND TISSUE EXPANDERS

Julie Maddock, Santa Barbara; Robert Bley, Goleta, and Patricia Altavilla, Santa Barbara, all of Calif., assignors to Mentor Corporation, Santa Barbara, Calif.

Continuation of Ser. No. 814,376, Dec. 26, 1991. This application May 6, 1994, Ser. No. 238,981

Int. Cl.[6] A61F *2/12*

U.S. Cl. 623—8 **15 Claims**



1. A method of inflating an inflatable implantable prosthesis that has a fill port, comprising the steps of:

(a) providing a flexible container that contains a volume of an inflation fluid, and is connected to an injection tube;

(b) inserting said injection tube into the fill port of the inflatable implantable prosthesis;

(c) pressurizing said inflation fluid to induce a continuous flow of said inflation fluid through said injection tube and into the inflatable prosthesis to entirely fill the inflatable prosthesis with a volume of inflation fluid provided entirely by the continuous flow of inflation fluid within said inflatable container without refilling said inflatable container;

(d) closing the flexible tube in a non-destructive manner to terminate the flow of the inflation fluid; and,

(e) pulling the injection tube out of the fill port such that the flexible container can be used to fill another implantable prosthesis.

5,549,673

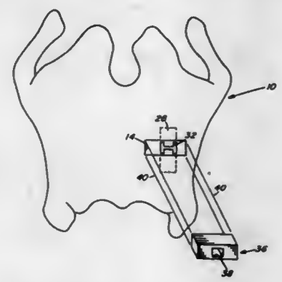
PHONOSURGERY IMPLANT INSTRUMENTS AND A SYSTEM AND METHOD OF IMPLANTATION

Bradford W. Beale, Memphis, Tenn., assignor to Smith & Nephew Richards Inc., Memphis, Tenn.

Continuation of Ser. No. 511,454, Apr. 20, 1990, abandoned. This application Sep. 8, 1993, Ser. No. 118,097

Int. Cl.[6] A61F *2/20;2/02;2/00;* **A61B** *19/00*

U.S. Cl. 623—9 **3 Claims**



1. A system of phonosurgery implantation for insertion by a surgeon through an opening formed in a patient's thyroid cartilage to stabilize a vocal cord therein, the system comprising:

(a) a series of implant bodies of different sizes, the implant bodies each having a holding portion and a series of engaging means for holding the implant bodies relative to the vocal cord by engaging the holding portion of the bodies in different positions in the opening formed in the thyroid cartilage;

(b) a series of sizing instruments, each having a sizing portion corresponding respectively in size and shape to one of the implant bodies for enabling a surgeon to determine the implant body to use;

(c) inserter instrument means for engaging the selected implant body so that the surgeon can insert and move the selected implant body in the opening in the thyroid cartilage;

(d) wherein the holding portions on the implant bodies are H-shaped in cross section and substantially the same size and shape.

5,549,674

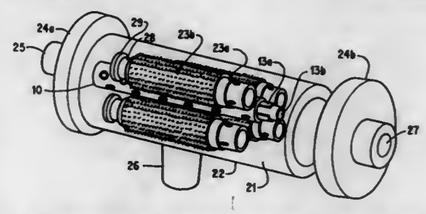
METHODS AND COMPOSITIONS OF A BIOARTIFICIAL KIDNEY SUITABLE FOR USE IN VIVO OR EX VIVO

H. David Humes, and Deborah A. Cieslinski, both of Ann Arbor, Mich., assignors to The Regents of The University of Michigan, Ann Arbor, Mich.

Continuation-in-part of Ser. No. 844,758, Mar. 2, 1992, Pat. No. 5,429,938. This application Oct. 8, 1993, Ser. No. 133,436

Int. Cl.[6] A61F *2/00;* **C12N** *5/00;* **A61K** *38/00;* **A61M** *1/00*

U.S. Cl. 623—11 **59 Claims**



1. A bioartificial filtration device suitable for filtering blood, comprising at least one semipermeable hollow fiber in a chamber defined by a housing, wherein said one surface of said fiber is coated with a layer of endothelial cells, epithelial cells, or a combination thereof, wherein said cells are non-immortalized cells,

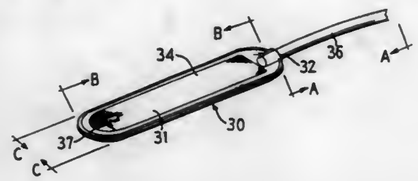
and wherein said hollow fiber is in fluid communication with blood inlet and outlet, and wherein said housing is elaborated with a blood filtrate outlet.

5,549,675

METHOD FOR IMPLANTING TISSUE IN A HOST

Steven Neuenfeldt, Vernon Hills; James Brauker, Lake Villa; Robert Clarke, Libertyville, and Victoria Carr-Brendel, Woodstock, all of Ill., assignors to Baxter International, Inc., Deerfield, Ill.

Filed Jan. 11, 1994, Ser. No. 180,018
Int. Cl.[6] A61F 2/02
U.S. Cl. 623—11 **2 Claims**



1. A method for implanting cells into a host tissue comprising the steps of:
implanting an implant assembly for holding cells including wall means for forming a porous boundary between the host tissue and the implanted cells in the device, the pore size of the boundary being sufficient to isolate the implanted cells from the immune response, the assembly being implanted without the cells into a host tissue;
allowing the assembly to be prevascularized; and
adding to an interior of the assembly the cells by use of a cannula, by inserting the cannula from a first end of the chamber to a position near a second end of the chamber and adding cells to the chamber as the cannula is removed therefrom.

5,549,676

BIOLOGICAL REPLACEMENT LIGAMENT

Lanny L. Johnson, 4528 S. Hagadorn Rd., E. Lansing, Mich. 48823

Continuation of Ser. No. 120,415, Sep. 14, 1993, abandoned. This application Sep. 16, 1994, Ser. No. 307,106
Int. Cl.[6] A61F 2/68
U.S. Cl. 623—13 **14 Claims**



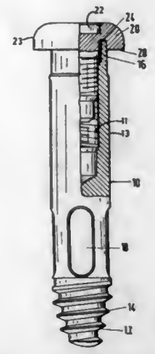
1. A biological replacement ligament sized and shaped to simulate a natural ligament, comprising:
a compressible core of resilient material formed as a unitary mass; and
a separate, flexible outer sheath having a first end, a second end, and a generally tubular intermediate portion, the intermediate portion surrounding the compressible core with the first and second ends extending beyond respective opposite ends of the compressible core, the outer sheath being constructed and arranged with respect to the compressible core such that the application of tension to the first and second ends causes the intermediate portion to constrict upon the compressible core thereby allowing elongation of the ligament and modulation of the tension on the first and second ends.

5,549,677

IMPLANT WITH PRESSING SURFACE

Walter Dürr, Panoramastrasse 5, D7537 Remchingen, and Axel Kirsch, Talstrasse 23, D7024 Filderstradt, both of, Germany, assignors to Walter Durr, Remchingen, and Axel Kirsch, Filderstradt, both of, Germany

Continuation of Ser. No. 969,857, Jan. 12, 1993, abandoned. This application Sep. 2, 1994, Ser. No. 299,639
Claims priority, application Germany, May 13, 1991, 41 15 959.4
Int. Cl.[6] A61F 2/28; A61B 17/86
U.S. Cl. 623—16 **13 Claims**



1. An implant member, which is implantable in a bone material, in combination with a removable screw, said implant member being of a biocompatible material having an outer surface and an internal threaded bore extending from one end of the implant member along an axis of the implant member toward another end of the member for receiving an outwardly threaded element including an implant post, an implant extension, or a post for attachment by means of a screw connection, said implant member having an external thread at the other end, said external thread having at least one pie-shaped notch which extends over at least a part of the length of the external thread and has a domed edge and a straight edge extending substantially in the axial direction, said removable screw having outer threads for provisional introduction into the internally threaded bore instead of the outwardly threaded element, said screw having a head with a diameter greater than the largest outer diameter of the implant member adjacent said one end, said head having means for fixing transplant bone material including a pressing surface extending substantially at a right angle to the axis of the implant member and beyond the largest outer diameter of said implant member, said head having a circular recess between the pressing surface and the outer thread of said screw for receiving an edge of the one end of the implant member when the screw is received in the threaded bore, whereby during the introduction of the screw, the internally threaded bore of the implant member is effectively sealed against the surrounding area and after removal of the screw, the edge of the one end is freely exposed.

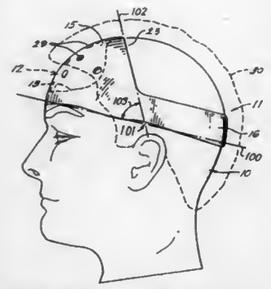
5,549,678

CRANIAL PROSTHESIS

Melvin E. Prostkoff, 9 Garrison La., Madbury, N.H. 03820

Continuation of Ser. No. 44,980, Apr. 8, 1993, abandoned, which is a continuation of Ser. No. 782,599, Oct. 25, 1991, Pat. No. 5,218,975. This application Feb. 23, 1995, Ser. No. 393,212
Int. Cl.[6] A61F 2/28;5/00;13/00
U.S. Cl. 623—16 **7 Claims**

1. A skull shaped prosthetic device for protecting a brain within a skin covered skull bone of an individual, said individual having a jaw, the skull having a normal original shape and contour, the skull having a section of bone absent from the skull bone above a



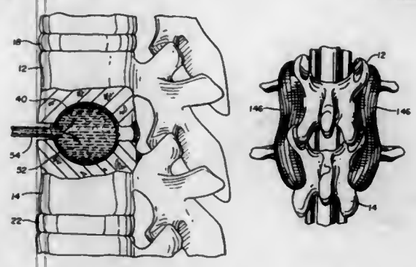
portion of said brain resulting in forming a depression in an area of said skin overlying said brain portion and covering the skull, and defining a peripheral edge, while providing an aesthetically pleasing prosthetic for the individual,
said prosthetic device comprising a curved base thermoplastic sheet formed to said contour of the skull substantially in said original shape of the skull before absence of said bone and covering and overlapping said depression and covering less than one-half of the skull the curved base defining a sector of less than 90° said base defining a sheet peripheral edge and an attachment means extending from the sheet peripheral edge to encircle the opposite side of the skull above the ear,
said sheet having a substantial width and being dimensioned to protect substantially only said area covering said portion of said brain and having said sheet peripheral edge extending over said underlying peripheral edge of said depression in the skull by at least one-eighth inch and supported by the skull to provide shock resistance,
said attachment means supported by said skull and having a width substantially less than the width of said sheet material for holding said thermoplastic sheet on the skull of the user,
said attachment means for holding said thermoplastic sheet on the skull of a user being on said skull and not extending below the jaw of the individual.

5,549,679

EXPANDABLE FABRIC IMPLANT FOR STABILIZING THE SPINAL MOTION SEGMENT

Stephen D. Kuslich, 2400 Keller Pkwy., Maplewood, Minn. 55109

Division of Ser. No. 246,959, May 20, 1994. This application Mar. 1, 1995, Ser. No. 396,625
Int. Cl.[6] A61F 2/44;5/04
U.S. Cl. 623—17 **4 Claims**



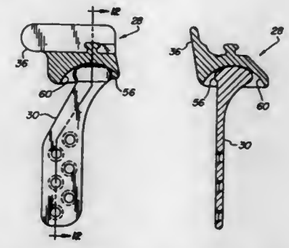
1. A method for stabilizing a spinal motion segment comprising the steps of:
(a) boring an opening into an annulus of a disc, said disc including a nucleus and end plates, each end plate being adjacent a vertebra, excising out at least a portion of the nucleus and a portion of the end plates of said disc and bone of adjacent vertebrae to said disc to expose healthy bone;
(b) inserting an expandable, empty fabric bag into said disc through said bored opening, said bag being formed of a fabric wall that includes a plurality of openings between about 0.25 to about 5.0 mm in diameter, said bag further including a mouth through which said bag may be filled;
(c) packing said bag through said mouth with material that will promote a bony or fibrous union between the vertebrae through said fabric wall, said packing causing said bag to inflate until it contacts said end plates forming a self-retaining rigid shape; and
(d) closing said bag mouth to prevent loss of said material.

5,549,680

APPARATUS FOR TOTAL TEMPOROMANDIBULAR JOINT REPLACEMENT

Jeffrey D. Gordon, Claypool, Ind., assignor to Biomet, Inc., Warsaw, Ind.

Filed Feb. 10, 1994, Ser. No. 194,543
Int. Cl.[6] A61F 2/30
U.S. Cl. 623—18 **18 Claims**



1. A biocompatible prosthetic device for the replacement of a temporomandibular joint having a mandible and a temporal bone, said biocompatible prosthetic device comprising:
an artificial condyle component for fastening to the mandible, said artificial condyle component including a condylar head having an articular surface, said articular surface including a substantially spherical articular surface of a first spherical radius forming a substantial portion of the articular surface; and
an artificial mandibular fossa component for fastening to the temporal bone, said artificial mandibular fossa component having an spherical articular surface of a second spherical radius greater than said first spherical radius, said artificial mandibular fossa component being operable to engage said condylar head in an articulating manner.

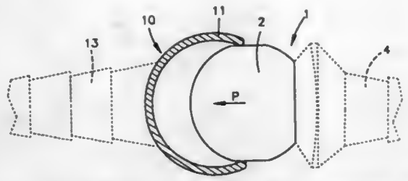
5,549,681

ARTICULATED PROSTHESIS

Gottfried Segmüller; Gontran Sennwald, both of St. Gallen, Switzerland; Zsuzsa Cserhati, Freyastrasse 21, CH-8004, Zürich, Switzerland, and Gerard R. Schaap, Hilversum, Netherlands, assignors to Zsuzsa Cserhati, Zurich, Switzerland

Filed Apr. 24, 1995, Ser. No. 427,410
Claims priority, application Germany, Apr. 26, 1994, 44 14 426.1
Int. Cl.[6] A61F 2/30
U.S. Cl. 623—18 **18 Claims**

1. An articulated prosthesis comprising:
a first prosthesis portion provided with a first stem member having a central longitudinal axis and adapted to be anchored in a first bone portion;
a second prosthesis portion provided with a second stem member having a central longitudinal axis and adapted to be anchored in a second bone portion;



said first prosthesis portion comprising an essentially ball-shaped head member which is provided with two diametrically opposite flattened portions;

said second prosthesis portion comprising a shell member having essentially the shape of a spherical sector and being made of one piece, said shell member being adapted to cooperate with said head member;

said shell member having a height which is greater than the radius of said head member, the spherical sector shaped configuration of the shell member being maintained also in that beight regioa which extends beyond the radius of said head member;

said shell member being provided with at least one window allowing the assembling of said first and second prosthesis portions to an articulated prosthesis when said first and second prosthesis portions are in an assembling position;

the width of said at least one window, measured in the region of the front edge of said shell member, being smaller than the diameter of said head member, measured remote from said two flattened portions, and the width of said at least one window, measured in the region of the front edge of said shell member, being greater than the distance between said two flattened portions of said head member;

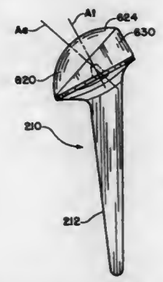
said two portions of said articulated prosthesis, being in its assembled condition, being rotatable against each other from said assembling position to an operating position in which said articulated prosthesis may be subjected to pull strain.

5,549,682

SHOULDER JOINT PROSTHESIS WITH ANGULAR ADJUSTMENT

Stephen C. Roy, 1425 E. Newport Center Dr., Deerfield Beach, Fla. 33442

Filed Jun. 16, 1994, Ser. No. 261,335
Int. Cl.[6] A61F *2/40;2/30*
U.S. Cl. 623—19 **4 Claims**



1. In a modular shoulder joint prosthesis that comprises a stem and a head for being mounted on the stem, the prosthesis comprising:

(a) a stem configured and constructed to define a generally planar head receiving surface; and

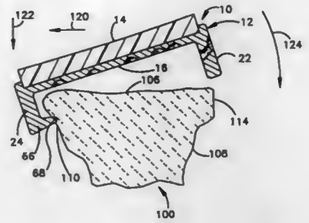
(b) a head consisting of a single unitary discoid body having first and second sides, a generally spherical segment shaped articulation surface for being received in and articulating in a socket in a patient's shoulder, said segment defining said first side surface of said discoid body, a generally planar stem engaging surface constructed and configured to lie adjacent the head receiving surface on the stem, the stem engaging surface and the head receiving surface lying generally in the same plane and being rotatable relative to each other, said stem engaging surface defining the second side of said discoid body, said first and second sides of the discoid body being spaced from each other by a central portion that defines a discoid circumference having a diameter, the central portion being generally wedge shaped for disposing the articulation surface at an angle of from about five degrees or greater and less than about thirty degrees from the plane in which the head receiving surface of the stem lies when the head is positioned thereon.

5,549,683

ANTHROPLASTY COMPONENT

Peter M. Bonutti, 1303 W. Evergreen Plaza, Effingham, Ill. 62401

Division of Ser. No. 926,481, Aug. 6, 1992, Pat. No. 5,344,458. This application Apr. 28, 1994, Ser. No. 234,974
Int. Cl.[6] A61F *2/38;2/30*
U.S. Cl. 623—20 **37 Claims**



1. A method of positioning an arthroplasty component relative to a bone, said method comprising the steps of providing an arthroplasty component having a tray portion with a first tab extending from one side of the tray portion and a second tab extending from another side of the tray portion, engaging a first side of the bone with the first tab on the arthroplasty component, thereafter, pivoting the arthroplasty component about a location where the first tab engages the first side of the bone, moving the second tab on the arthroplasty component along a second side of the bone while performing said step of pivoting the arthroplasty component about the location where the first tab engages the first side of the bone, and positioning the tray portion of the arthroplasty component over a portion of the bone disposed between the first and second sides of the bone while performing said step of pivoting the arthroplasty component about the location where the first tab engages the first side of the bone.

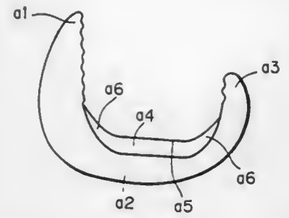
5,549,684

ARTIFICIAL KNEE JOINT

Hirokazu Amino, Kyoto, Japan, and Ian C. Clarke, Santa Monica, Calif., assignors to Kyocera Corporation, Kyoto, Japan

Continuation of Ser. No. 50,758, Apr. 20, 1993, abandoned, which is a continuation of Ser. No. 939,835, Sep. 2, 1992, abandoned, which is a continuation of Ser. No. 632,321, Dec. 21, 1990, abandoned. This application Nov. 5, 1993, Ser. No. 147,412
Claims priority, application Japan, Dec. 26, 1989, 1-337829; Dec. 26, 1989, 1-337830
Int. Cl.[6] A61F *2/38*
U.S. Cl. 623—20 **4 Claims**

1. An artificial knee joint for a femur having a distal portion and a tibia having a proximal portion, comprising a femur member to be secured to the distal portion of the femur and a tibia member to



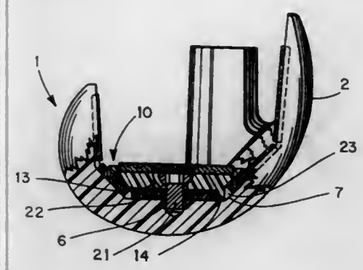
be secured to the proximal portion of the tibia, wherein said femur member includes an upright joint front wall having an inner surface, a couple of joint condyles gradually extending backward in a generally arced shape and each having a condyle inner surface, a pair of upright joint rear walls each having an inner surface, said rear walls being in an acute generally arced shape behind said joint condyles and a pair of reinforcing ribs each extending from the inner surface of said front wall to the inner surfaces of said rear walls and having an upper edge which substantially follows the contour of an inner circumferential shape defined by the front inner surfaces of said joint front wall, the condyle inner surface of each of said joint condyles and the rear inner surface of each of said joint rear walls, and said femur member is made of one of alumina ceramics and zirconia ceramics, and said tibia member includes a sliding section made of high-density polyethylene and a seat section made of a material selected from a group consisting of titanium, titanium alloy, cobalt-chromium alloy and stainless steel.

5,549,685

AUGMENTATION FOR AN ORTHOPAEDIC IMPLANT

Kevin B. Hayes, Milford, Ind., assignor to Zimmer, Inc., Warsawm, Ind.

Filed Feb. 23, 1994, Ser. No. 200,269
Int. Cl.[6] A61F *2/38*
U.S. Cl. 623—20 **9 Claims**



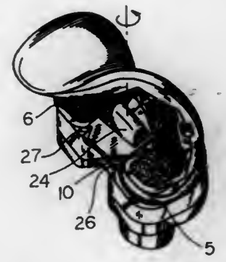
1. An augment for attachment with a screw to an orthopaedic implant having a threaded hole, the augment comprising a body with a first surface and a second surface, the body having a through hole extending through the body from the first surface to the second surface and a countersink formed in the first surface communicating with the through hole, the through hole and countersink being shaped to allow the screw to pass through the through hole and thread into the threaded hole when the center of the countersink and the center of the threaded hole are not in alignment, the countersink having a spherical surface so that as the screw is tightened against the countersink surface a lateral force results tending to move the countersink into alignment with the threaded hole.

5,549,686

KNEE PROSTHESIS HAVING A TAPERED CAM

Todd S. Johnson, Fort Wayne, and Kevin M. Greig, Leesburg, both of Ind., assignors to Zimmer, Inc., Warsaw, Ind.

Filed Jun. 6, 1994, Ser. No. 254,210
Int. Cl.[6] A61F *2/64*
U.S. Cl. 623—20 **1 Claim**



1. In combination:

a femoral component of a knee joint prosthesis comprising a pair of members joined anteriorly to form a patellar flange, the members being spaced distally to form a pair of distal condyles, and the members being spaced posteriorly to form a pair of posterior condyles, the posterior condyles reaching a height A above a datum W, the datum W corresponding to a plane tangent to the distal most portion of the distal condyles and being horizontal when the femoral is in zero degrees of physiological flexion, a cam extending between and attaching to the posterior condyles, the cam having a spine engaging surface along its lower extremity, the cam being located such that the spine engaging surface is located a height B above the datum W, the height B being from 66% to 69% of the height of A, the cam tapering from an intermediate portion to each of the posterior condyles to form femoral cam chamfers such that the intermediate portion has an intermediate cross sectional area at a point between the posterior condyles that is greater than a cross sectional area of the cam adjacent one of the posterior condyles, the cam being located between the condyles so that it is contained between the anterior most and posterior most aspects of the posterior condyles such that the cam does not project anteriorly beyond the anterior most aspect of the posterior condyles and the cam does not project posteriorly beyond the posterior most aspect of the posterior condyles; and

a tibial component of a knee joint prosthesis comprising a plate like body having anterior, posterior, medial and lateral sides, the body having a pair of concave articular regions formed in the medial and lateral sides, the body having a posterior notch extending through the posterior side, the body having a tibial relief groove extending partially through the posterior side and extending between the concave articular regions, a spine projecting from the body between the articular regions,

the tibial relief groove being adapted to receive the cam when the knee is in flexion and the relief groove and femoral cam chamfers cooperating to allow a minimum of twelve degrees of rotation, both clockwise and counterclockwise, of the femoral component with respect to the tibial component around the axis of the spine when the cam is received in the relief groove.

VOL 1189 ISS 4 AG 27 1996

5,549,687

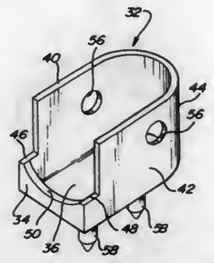
RETROFIT POSTERIOR STABILIZING HOUSING IMPLANT FOR REPLACEMENT KNEE PROSTHESIS

Bradley J. Coates, and Dominic R. Fosco, both of Cordova, Tenn., assignors to Wright Medical Technology, Inc., Arlington, Tenn.

Continuation of Ser. No. 988,611, Dec. 10, 1992, abandoned. This application Aug. 3, 1994, Ser. No. 285,499

Int. Cl.[6] A61F *2/38*

U.S. Cl. 623—20 **1 Claim**



1. A retrofit posterior stabilizing housing for securing to the distal portion of a surgically prepared femur of a knee joint having a previously implanted femoral component and an implanted complementary tibial component during revision surgery and for articulating with the implanted complementary tibial component; the previously implanted femoral component including a medial condyle and a lateral condyle spaced from the medial condyle with a posteriorly extending trochlear notch disposed between the medial and lateral condyles; the distal portion of the femur having a recess surgically formed therein through the posteriorly extending trochlear notch; the implanted complementary tibial component having a stabilizing post extending through the posterior extending trochlear notch and into the recess in the distal portion of the femur; the recess in the distal portion of the femur having an opened posterior end and an anterior end; the retrofit posterior stabilizing housing comprising:

(a) a body including:

i. an anterior end wall means for covering at least a portion of the anterior end of the recess in the distal portion of the femur and for engaging the stabilizing post of the implanted complementary tibial component when the retrofit posterior stabilizing housing is secured to the distal portion of the surgically prepared femur and the knee joint is extended to stabilize the knee joint;

ii. a posterior end wall means for extending across and blocking at least a portion of the opened posterior end of the recess in the distal portion of the femur, and for engaging the stabilizing post of the implanted complementary tibial component when the retrofit posterior stabilizing housing is secured to the distal portion of the surgically prepared femur and the knee joint is flexed to stabilize the knee joint;

iii. a first side wall means for covering a portion of the recess in the distal portion of the femur;

iv. a second side wall means for covering a portion of the recess in the distal portion of the femur;

v. the posterior end wall means, the anterior end wall means, the first side wall means, and the second side wall means are joined to one another with the posterior and anterior end wall means and the first and second side wall means spaced apart from one another to form a receptacle therebetween for receiving the stabilizing post of the implanted complementary tibial component; and

(b) means for fixing the body to the distal portion of the femur without requiring removal of the previously implanted femoral component; the means for fixing the body to the distal portion of the femur including bone cement for fixing the body to the distal portion of the femur without requiring removal of the previously implanted femoral component.

5,549,688

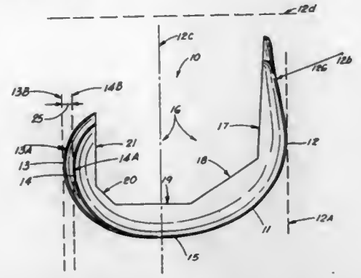
ASYMMETRIC FEMORAL PROSTHESIS

Michael Ries, Cooperstown, N.Y., and Brian Schumacher, Cordova, Tenn., assignors to Smith & Nephew Richards Inc., Memphis, Tenn.

Filed Aug. 4, 1994, Ser. No. 285,917

Int. Cl.[6] A61F *2/38*

U.S. Cl. 623—20 **18 Claims**



1. A knee prosthesis for replacing a patient's knee having a mechanical axis defined by a line drawn between the femoral head and the central region of the femoral knee end of the patient, comprising:

a) a femoral prosthesis having internal anterior, posterior and distal non-articulating surface portions;

b) said femoral prosthesis having distal and posterior articulating surface portions, the posterior articulating surface portions comprising lateral and medial condylar surface portions that are positioned at differing distances from said anterior non-articulating surface portion wherein the lateral condylar surface portion is spaced farther from said anterior non-articulating surface portion than the medial condylar surface portion;

c) a tibial component having concave articulating surfaces that receive the femoral prosthesis articulating surface portions during use;

d) the femoral articulating surface portions and the tibial articulating surfaces being shaped to define an angle of femoral rotation about the mechanical axis of the patient's leg; and

e) wherein said angle of femoral rotation about the mechanical axis gradually changes when going through a normal range of motion of the patient's knee.

5,549,689

PROSTHETIC KNEE

Norman Epstein, Rte. No. 301, Carmel, N.Y. 10512, and Steven B. Zelicof, 12 Seneca Rd., Scarsdale, N.Y. 10583

Filed Nov. 28, 1994, Ser. No. 345,472

Int. Cl.[6] A61F *2/38*

U.S. Cl. 623—20 **6 Claims**

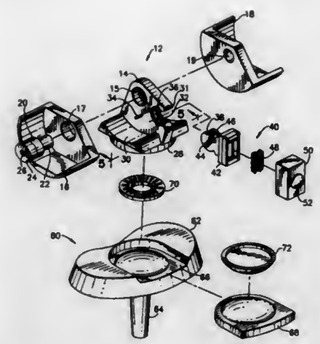
1. In a prosthetic knee joint for providing movement between at least two bones comprising:

a femoral support having laterally disposed femoral condyle carriers mounted in said femoral support for movement therein adapted to receive and hold resected femoral condyles of a user,

roller bearing means carrying a pin mounted in said femoral support for rotational movement therein, to provide low friction articulation of the prosthetic knee joint, said pin extending through said roller bearing means and femoral support, the distal ends of said pin having said condyle carriers mounted thereon for rotational movement therewith,

said femoral support having a femoral base thereon which supports the full load on the femur,

condyle carriers being spaced from said femoral base to prevent contact therebetween,



a patella support, patella support mounting means in said femoral support having roller bearings positioned therein for mounting said patella support in said femoral support and providing a limited up and down rotation of said patella on said roller bearings in said femoral support to limit wear between the patella and femoral supports.

5,549,690

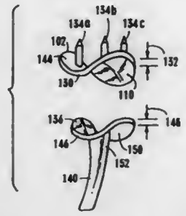
PROSTHETIC THUMB JOINT AND METHOD OF MANUFACTURE

Anne Hollister, Downey, Calif.; Mari S. Truman, Warsaw, Ind.; Leonard Bodell, Paradise Valley, Ariz., and Louise Focht, San Diego, Calif., assignors to Avanta Orthopaedics, San Diego, Calif.

Continuation-in-part of Ser. No. 169,297, Dec. 17, 1993. This application Feb. 28, 1994, Ser. No. 202,910

Int. Cl.[6] A61F *2/42*

U.S. Cl. 623—21 **13 Claims**



1. A prosthesis for a carpometacarpal joint of a thumb which comprises:

a trapezial member having a first surface and a second surface, said first surface being a surface of revolution relative to both a first axis and a second axis, said first and second axes being anatomical axes defining the pivoting of a first metacarpal bone of said thumb relative to a trapezium bone of said thumb;

a plurality of pegs mounted on said second surface of said trapezial member for engagement with said trapezium bone, to anchor said trapezial member thereon;

a metacarpal member for abutment with said trapezial member, said metacarpal member having a first surface cooperating with said first surface of said trapezial member;

a stem attached to said metacarpal member, said stem being dimensioned for insertion into a proximal metacarpal canal of said first metacarpal bone of said thumb to anchor said metacarpal member thereon;

wherein said first surface of said trapezial member and said first surface of said metacarpal member match a selected portion of a surface of a reference toroid, said reference toroid being mathematically generated by rotating said second axis about said first axis, while rotating a reference point about said second axis, the orbital radius of said reference point being determined by measuring the location, relative to said first and second axes, of anatomical abutment surfaces between said trapezium bone and said first metacarpal bone, and wherein said first axis passes through said trapezium, a naturally occurring location of sad first axis being determined with an axis finder, and said second axis passes through said first metacarpal bone, a naturally occurring location of said second axis being determined with an axis finder, said second axis being in a fixed relationship with said first axis, and further wherein said first axis and said second axis are non-parallel, non-perpendicular and non-intersecting, and the relationship between said first axis and said second axis is characterized by:

(a) a compound angle between said axes, measured at a reference plane perpendicular to said first axis, said compound angle consisting of a first angle (∝) between the projection of said second axis in said reference plane and a line tangent to the reference plane orbit of said second axis about said first axis, and a second angle (β) between said second axis and said reference plane; and

(b) an orbital distance between said two axes in said reference plane.

5,549,691

ACETABULAR CUP

Steven F. Harwin, 1050 Park Ave., New York, N.Y. 10028

Filed Feb. 3, 1994, Ser. No. 191,332

Int. Cl.[6] A61F *2/32*

U.S. Cl. 623—22 **15 Claims**



1. An acetabular prosthesis, comprising an acetabular cup in the form of a hollow dome having a hemispherical top, a bottom, a convex outer surface, a concave inner surface, a circular rim at the bottom of the dome and at least two blind sockets on said outer surface circumferentially spaced apart relative to said rim, each blind socket having an entrance facing away from said rim and in a direction parallel to the direction the entrance of each of the other sockets is facing for receiving a barb and means for fixedly securing a barb to said socket.

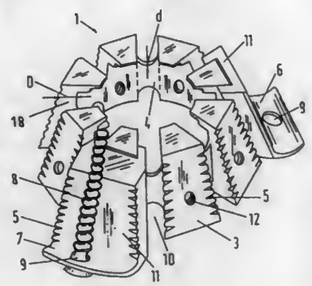
VOL 1189 ISS 4 AG 27 1996 UMI

5,549,692

TWO-PART HIPJOINT SOCKET FOR ANCHORING IN THE PELVIC BONE

René Hauser, Zollikon, and Yvan Sandoz, Winterthur, both of, Switzerland, assignors to Sulzer Medizinaltechnik AG, Winterthur, and Allo Pro AG, Baar, both of, Switzerland

Continuation of Ser. No. 986,162, Dec. 3, 1992, abandoned.
This application Jun. 8, 1994, Ser. No. 257,214
Claims priority, application Switzerland, Jan. 16, 1992, 00112/92
Int. Cl.[6] A61F 2/34
U.S. Cl. 623—22 14 Claims



1. A hipjoint socket for anchoring in the pelvic bone, comprising:

at least one supporting body;

a frustoconical shell made of metal and having a hollow inside, the shell also having regions of greater wall thickness alternating in a circumferential direction with regions of lesser wall thickness, the regions of lesser wall thickness having a cross-section in the form of sectors of a circular ring, the regions of greater wall thickness having a cross-section which is essentially trapezoidal and tapers conically towards a pole, the regions of greater wall thickness having guideshoes extending along the outer surface, the regions of greater wall thickness having means for fixing the supporting body to the shell;

an insert having a cup of the socket, the insert being sized for a snug fit in the hollow inside; and

the supporting body being adapted to engage at least one of said guideshoes, wherein the supporting body has a recess having a dovetail shape which engages the trapezoidal cross-section of the regions of greater wall thickness and may be slipped onto the guideshoes from the pole.

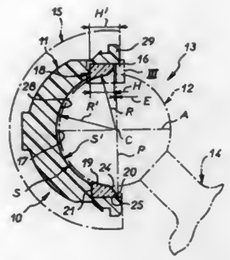
5,549,693

COTYLOIDAL PROSTHESES

Christiane Roux, 3 Chemin du Petit Mont Solu Noisy sur Ecole, 77123 Le Vaudoue, France, and Michel Pequignot, 16 Villa DésiréFilleaud, 92140 Clamart, France

Filed Jun. 13, 1994, Ser. No. 258,827
Claims priority, application France, Jun. 17, 1993, 93 07295
Int. Cl.[6] A61F 2/32
U.S. Cl. 623—22 13 Claims

1. Cotyloidal prosthesis, in particular for coxofemoral joints, comprising cup means having a contact surface for ball-and-socket contact with a ceramic spherical head, said cup means including a ceramic socket ring having a part-spherical inside surface defining said contact surface of said cup means, said cup means further comprising a plastic material cup member having an opening for introducing the part-spherical head, said cup member carrying said ceramic socket ring near the opening of the cup member, further comprising a metal liner lining said plastic material cup member, said metal lining not defining any part of said contact surface of said cup means.

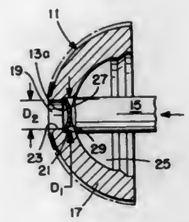


5,549,694

ACETABULAR PROSTHESIS WITH APERTURES SEALED WITH DEFORMABLE DISCS AND METHOD

Douglas G. Noiles, New Canaan, and Alfred F. DeCarlo, Jr., Stamford, both of Conn., assignors to Joint Medical Products Corporation, Stamford, Conn.

Filed Jul. 25, 1994, Ser. No. 280,592
Int. Cl.[6] A61F 2/34
U.S. Cl. 623—22 8 Claims



1. An acetabular cup for receiving a bearing, said cup comprising:

a body having an interior surface for receiving the bearing, an exterior surface for engaging bone, and a circular aperture which passes through the body from the interior surface to the exterior surface, said aperture having:

(a) a first portion, which is accessible from the interior of the body and has a cross-section having a diameter D_1, and

(b) a second portion, which is contiguous with the first portion, is located radially outward from the first portion, and has a diameter D_2 that is smaller than D_1; and

a deformable disc compressively locked within said aperture so as to seal the aperture, said disc;

(i) prior to insertion in said aperture, having a concave side, a convex side, and a diameter which is smaller than D_1 and larger than D_2,

(ii) being inserted into the aperture from the interior of the body with its convex side oriented toward the interior of the body, and

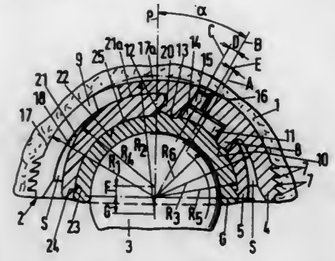
(iii) being buckled as a result of having been deformed so as to have a convex portion oriented toward the exterior of the body.

5,549,695

COMPOSITE ARTIFICIAL SOCKET AND HIP JOINT PROSTHESIS

Lorenzo Spotorno, Finale Ligure, Italy, and Roland Willi, Neftenbach, Switzerland, assignors to Sulzer Medizinaltechnic AG, Winterthur, Switzerland

Filed Aug. 16, 1994, Ser. No. 291,384
Claims priority, application European Pat. Off., Aug. 30, 1993, 93810618
Int. Cl.[6] A61F 2/34;2/30
U.S. Cl. 623—22 10 Claims



1. A composite artificial socket comprising:

an outer shell having a substantially hemispherical inner surface with a main axis extending in a substantially radial direction, the outer shell being adapted for insertion into an implantation zone, the outer shell having recesses extending along meridians in the outer shell, the recesses defining movable segments adapted for attachment to osseous tissue within the implantation zone;

an intermediate shell having substantially hemispherical inner and outer surfaces;

an inner shell adapted for insertion into the intermediate shell, the inner shell having a substantially hemispherical outer surface cooperating with the inner surface of the intermediate shell, the inner shell having at least one attachment element rigidly and non-rotatably coupled to the outer shell with respect to the main axis;

a joint head positioned within the inner shell; and

wherein the outer surface of the intermediate shell comprises a supporting portion for bearing against the recessed portion of the inner surface of the outer shell and a non-supporting portion spaced from the inner surface of the outer shell by a predetermined distance to allow movement of the intermediate shell, the inner shell and at least one of the movable segments of the outer shell, transversely to the main axis of the outer shell.

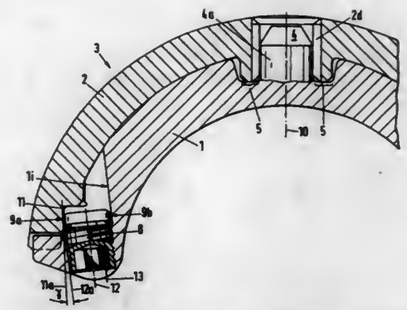
5,549,696

INNER SHELL FOR A HIP JOINT SOCKET

Roland Willi, Neftenbach, Switzerland, assignor to Sulzer Medizinaltechnik AG, Winterthur, Switzerland

Filed Sep. 14, 1994, Ser. No. 306,053
Claims priority, application European Pat. Off., Nov. 22, 1993, 93810806
Int. Cl.[6] A61F 2/34
U.S. Cl. 623—22 14 Claims

1. An inner shell for an acetabular socket implant including a metal outer shell adapted to be affixed to a bone having a concave inner surface terminating at a large opening of the outer shell and a groove defined by the inner surface, the inner shell comprising: a generally hemispherical metal shell having an open base, a pole opposite the base, and an axial direction from the base to the pole, first and second, spaced-apart support regions projecting radially past an outer surface of the inner shell so that upon placement of the inner shell in the outer shell the support regions engage the groove in the outer shell, the inner shell further including an aperture proximate the base having an axis and an internal thread; and a fastening element for placement in the aperture having an external thread cooperating with the internal thread of the aperture so that the fastening element is movable relative to the aperture so that, upon placement of the inner shell in the outer shell, the fastening element can be moved relative to the aperture into engagement with the inner surface of the outer shell in a manner generating a force acting transversely to the axial direction and biasing the support regions against a surface of the groove in the outer shell to thereby secure the inner shell to the outer shell.

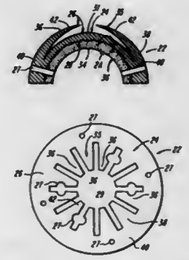


5,549,697

HIP JOINT PROSTHESES AND METHODS FOR MANUFACTURING THE SAME

Salvatore Caldarise, Hanson, Mass., assignor to Johnson & Johnson Professional, Inc., Raynham, Mass.

Filed Sep. 22, 1994, Ser. No. 310,727
Int. Cl.[6] A61F 2/34
U.S. Cl. 623—22 13 Claims

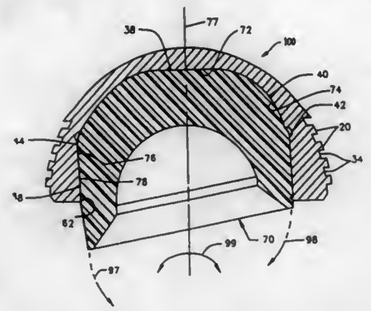


1. An implantable bone prosthesis in the form of a substantially hemispherical cup for attachment within the acetabulum cavity of the pelvis, the prosthesis comprising:

an external portion for mounting within the acetabulum cavity including a metallic dome-like structure having a textured, irregular bone-contacting surface, the bone-contacting surface further including a discontinuous portion forming a substantially hemispherical dampening structure for absorbing loading forces communicated to the acetabular cavity and a mounting surface having a substantially cup-like shape; and

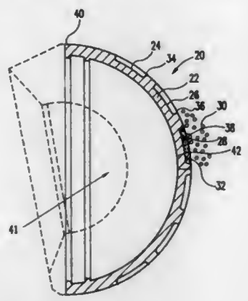
an internal portion for receiving a femoral had of a femur having a substantially cup-like shape and being formed of a biologically compatible ceramic or metallic material, the internal portion having a first surface that is permanently affixed to the mounting surface of the external portion and a second, substantially smooth articulation surface for seating the femoral head.

5,549,698
PROSTHETIC ACETABULAR CUP AND METHOD OF IMPLANT
Robert G. Averill, Ringwood, and Robert C. Cohen, Rockaway Township, both of N.J., assignors to Implex Corp., Allendale, N.Y.
Continuation of Ser. No. 52,248, Apr. 22, 1993, Pat. No. 5,443,519. This application Oct. 4, 1994, Ser. No. 317,887
Int. Cl.[6] A61F 2/34
U.S. Cl. 623—22 10 Claims



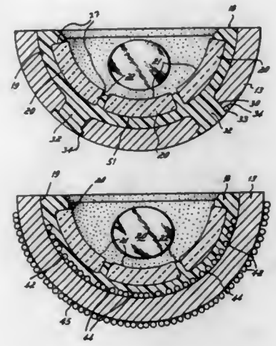
1. An acetabular cup prosthesis for implantation into an acetabulum of a patient, comprising:
a shell component having an outer surface for engaging said acetabulum and an inner cavity, wherein said inner cavity includes an annular wall sloped at an acute angle and said outer surface includes at least one ellipsoidally shaped region that defines an elliptical plane section having a major axis and a minor axis, said major axis being lodger than said minor axis, and
a bearing insert within said inner cavity, said bearing insert including an exterior surface sloped at an angle supplementary to said acute angle, whereby a wedged condition occurs between said exterior surface of said bearing insert and said annular wall of said shell component operating to seat said bearing insert within said inner cavity and prevent the removal of said bearing insert from said inner cavity.

5,549,699
BONY FIXATION AND SUPPORT OF A PROSTHESIS
Edward B. MacMahon, Middleburg, Va., and Mark Forte, Pine Brook, N.J., assignors to Osteotech of Virginia, Middleburg, Va.
Filed Oct. 21, 1994, Ser. No. 327,661
Int. Cl.[6] A61F 2/34
U.S. Cl. 623—22 8 Claims



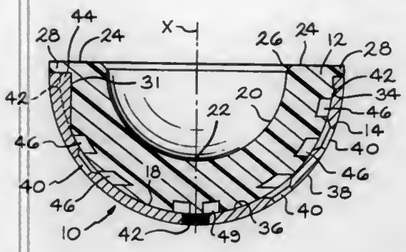
1. An acetabular cup, comprising:
a shell having a concave inner surface and a convex exterior surface; and
a plurality of bone receiving regions positioned on said convex exterior surface of said shell, each of said bone receiving regions having a base and side walls, and said side walls of bone receiving regions positioned relatively closer to a base of said shell are relatively deeper than sidewalls of bone receiving regions positioned relatively closer to a rim of said shell, wherein said plurality of bone receiving regions retentively contain compacted bone chips, and wherein said plurality of bone receiving regions cover a majority of said convex exterior surface of said shell.

5,549,700
SEGMENTED PROSTHETIC ARTICULATION
John W. Graham, Cincinnati; Timothy McTighe, Chagrin Falls, and Paul Mraz, University Heights, all of Ohio, assignors to Ortho Development Corporation, Draper, Utah
Continuation-in-part of Ser. No. 117,388, Sep. 7, 1993, abandoned. This application Dec. 21, 1994, Ser. No. 362,804
Int. Cl.[6] A61F 2/34;2/36
U.S. Cl. 623—22 17 Claims



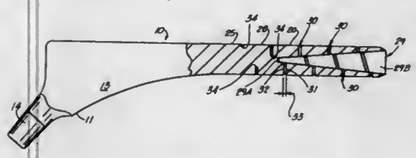
1. A prosthetic socket member for use in combination with a spherical joint motion surface to form a prosthetic joint device, said prosthetic socket member comprising:
a rigid base support structure configured for implanting within a body joint and including a rigid outer surface configured for receiving a bonding agent thereon for securing the base support structure within the joint, said base support structure further comprising an interior surface defining a generally hemispherical concave receiving cavity;
intermediate cushioning means comprising a matrix bonded to the interior surface of the base support structure;
a plurality of curved, rigid and hard segments each having a concave bearing surface and an opposing convex surface, said segments being partially embedded within the matrix so as to project outwardly therefrom such that the concave bearing surfaces are exposed within the concave receiving cavity and form a discontinuous hemispherical surface for slidable engagement with the spherical joint motion surface, and such that an underlying thickness of the matrix resides sandwiched between the convex surfaces of the segments and the interior surface of the base support structure;
wherein the concave bearing surface and the opposing convex surface of each segment are substantially parallel to each other and to the interior hemispherical surface of the base support structure and wherein the convex surface resides in substantially continuous contact with the intermediate cushioning means to thereby produce a more uniform transfer of mechanical stress from the segments through the matrix so as to reduce wearing of said matrix.

5,549,701
ACETABULAR CUP
W. E. Michael Mikhail, 4203 Shamley Green, Toledo, Ohio 43623
Continuation of Ser. No. 129,956, Sep. 30, 1993, abandoned. This application Mar. 29, 1995, Ser. No. 412,615
Int. Cl.[6] A61F 2/34;2/30
U.S. Cl. 623—22 13 Claims



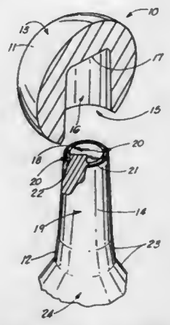
1. An acetabular cup member suitable for use in direct implantation with bone cement and as an insert for a metal shell component of an acetabular cup assembly, said cup member having a central axis an inner face with a generally dome-shaped configuration extending from an apex lying on said axis at least a major portion of said inner face, including the portion adjacent said apex having a spherical configuration, and an outer portion opposite said inner face, said outer portion having formed therein a combination of (i) retention means engageable with engagement means on a metal shell component of a type adapted for implantation without bone cement and (ii) surface irregularities configured for retentive engagement with bone cement, said retention means comprising an outwardly extending bead and a plurality of dovetail slots in said outer portion, each of said slots having a wall parallel to said axis.

5,549,702
FLEXIBLE ORTHOPAEDIC STEM APPARATUS
Michael D. Ries, Cooperstown, N.Y.; Leonard J. Tokish, Jr., Cordova, Tenn., and Thomas W. Fallin, Champaign, Ill., assignors to Smith & Nephew Richards Inc., Memphis, Tenn.
Filed Oct. 25, 1994, Ser. No. 328,363
Int. Cl.[6] A61F 2/34;2/30
U.S. Cl. 623—23 12 Claims



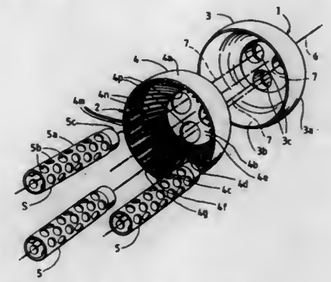
1. An orthopaedic prosthesis for implantation in a patient's intramedullary canal comprising
a) a prosthesis body that includes a generally rigid proximal portion sized and shaped to fit the intramedullary canal of a patient's bone;
b) prosthesis stem and mid portions on the prosthesis body, the stem portion including a lower elongated stem member with a an outer surface and distal end;
c) the lower stem member providing a helical groove and a cooperating hollowed tapered core portion that enable the distal end to flex; and
d) said helical groove extending between the outer surface of the stem and the hollowed core along a majority of the length of the hollowed core.

5,549,703
ORTHOPEDIC PROSTHESIS APPARATUS WITH IMPROVED TAPER LOCKING CONNECTION
Kenneth P. Daigle, Olive Branch, Miss., and Mark E. Harbaugh, Memphis, Tenn., assignors to Smith & Nephew Richards Inc., Memphis, Tenn.
Filed Feb. 16, 1995, Ser. No. 389,914
Int. Cl.[6] A61F 2/36
U.S. Cl. 623—23 8 Claims



1. An orthopedic joint prosthesis comprising:
a) a prosthesis body that includes a pair of connectable components, each having a connecting portion with a generally frustroconically shaped connecting surface, a first of the components having a projecting connecting portion, and a second of the components having a socket connecting portion;
b) the projecting connecting portion having a central longitudinal axis, a distal end portion and a proximal end, the proximal end having a generally circular end face;
c) a groove communicating with the proximal circular face;
d) wherein the groove is radially spaced from and circumferentially extending about the projecting portion axis, said groove enabling a distribution of stress between said proximal and distal end portions;
e) wherein the groove extends from the circular end face a partial distance between the proximal and distal ends; and
f) the projecting connecting portion frustroconically-shaped connecting surface extending farther from the end face than the groove.

5,549,704
UNIVERSSAL JOINT PROSTHESIS
Franz Sutter, Bennwilerstrasse 42, 4435 Niederdorf, Switzerland
Filed Mar. 30, 1995, Ser. No. 413,180
Claims priority, application Switzerland, Sep. 8, 1994, 2745/94
Int. Cl.[6] A61F 2/32
U.S. Cl. 623—23 19 Claims



1. A universal joint prosthesis comprising:

a hollow cup shaped cap, said cap having an outer surface and an inner surface, said inner surface being configured for attachment to a bone, said cap having a cap axis;

a plurality of projections positioned along a circumference of said inner surface, each of said projections being inclined away from a radial direction of said inner surface and towards said inner surface over substantially an entire length of each of said projections, each of said projections defining an undercut between each of said projections and said inner surface, each of said projections having substantially flat first and second surfaces positioned on substantially opposite sides of a cross section of each of said projections, said cross section being perpendicular to said cap axis, said first surface being connected to said inner surface by a continuously curved base transition surface, said first and second surfaces of each of said projections being connected to each other at a free end of each of said projections by a continuously curved free end transition surface.

5,549,705

PROSTHESIS WITH INTEGRAL PROXIMAL SPACER

Michael Michielli, Hoboken; Glen Kashuba, River Edge; J. Mel Goldenberg, Upper Saddle River, and Jon I. Klippel, Basking Ridge, all of N.J., assignors to Howmedica, Inc., Rutherford, N.J.

Division of Ser. No. 234,485, Apr. 28, 1994, Pat. No. 5,507,832. This application Mar. 13, 1995, Ser. No. 402,443

Int. Cl.[6] A61F *2/32;2/30*

U.S. Cl. 623—23 **5 Claims**



1. A prosthesis with an integral proximal spacer, comprising:

an elongated base element configured and dimensioned for insertion into the femoral bone canal with a proximal end and a distal end and having medial, lateral, anterior, and posterior surfaces, wherein said base element defines a plurality of depressions therein adjacent the proximal end on any of said surfaces; and

a polymeric spacer member secured to said base element with a circumferential portion surrounding the proximal end of said base element, said spacer member further having a medial leg and at least one lateral leg, each leg extending distally along the base element and having protrusions extending into said depressions, said legs tapering to a reduced thickness and width in the distal direction.

5,549,706

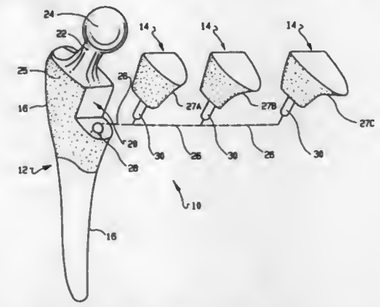
MODULAR HIP PROSTHESIS

Thomas F. McCarthy, Neshanic Station, N.J., assignor to Howmedica Inc., New York, N.Y.

Continuation of Ser. No. 15,119, Feb. 9, 1993, abandoned. This application Apr. 10, 1995, Ser. No. 420,394

Int. Cl.[6] A61F *2/36*

U.S. Cl. 623—23 **20 Claims**



1. A femoral hip prothesis comprising:

a first member having,

a stem portion adapted for insertion into the intramedullary canal, and

a body portion proximal to the stem portion and adapted for insertion into the intramedullary canal, the body portion forming lateral, posterior and anterior outer side surfaces of the prothesis and configured and dimensioned for an accurate fit in the intramedullary canal, said body portion further having a medial side;

a second member forming anterior, posterior and medial outer side surfaces of the prothesis and configured and dimensioned for an accurate fit in the intramedullary canal, said second member further having a lateral side; and

means for connecting the lateral side of the second member with the medial side of the body portion of the first member such that the combination of the body portion of the first member with the second member forms the anterior and posterior outer side surfaces of the body of the prothesis, the combination configured and dimensioned to accurately fit the intramedullary canal.

5,549,707

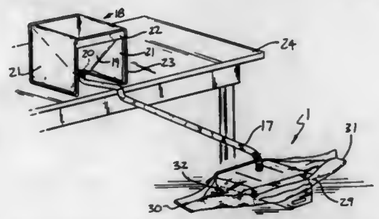
FLUID COLLECTION APPARATUS

Richard A. Weaver, Linden, Mich., assignor to Contour Fabricators, Inc., Grand Blanc, Mich.

Filed Jan. 18, 1994, Ser. No. 183,184

Int. Cl.[6] A61M *1/00*

U.S. Cl. 604—317 **22 Claims**



1. Fluid collection apparatus comprising a body having top, bottom, side, and end walls forming a chamber; partition means within said chamber sealed to said top, bottom, and side walls and forming in said chamber a plurality of compartments; and inlet means in communication with one of said compartments from outside said chamber for admitting a fluid to said one of said compartments, said walls and said partition means being formed of material sufficiently flexible to enable said body to erect from a collapsed condition in response to the flow of fluid into said one of said compartments via said inlet means, the partition means between said one of said compartments and each adjacent compartment having an opening therein at a level above that of said bottom wall for enabling fluid to flow from one of said compartments into each adjacent compartment only in response to the level of fluid in said one of said compartments rising above said bottom wall to the level of said opening, said side and end walls having extensions which provide a pouch above the level of said top wall.

5,549,708

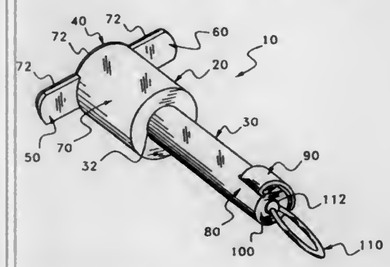
SELF RETRACTING MEDICAL NEEDLE APPARATUS AND METHODS

Gale H. Thorne, Bountiful; David L. Thorne, Kaysville, and Sandra A. Thorne, West Jordan, all of Utah, assignors to Specialized Health Products, Inc., Bountiful, Utah

Continuation of Ser. No. 370,728, Jan. 10, 1995, Pat. No. 5,480,385. This application May 31, 1995, Ser. No. 455,514

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—110 **21 Claims**



1. Apparatus for transporting and using and then safely withdrawing a medical needle directly from a patient into a container after use, said apparatus comprising:

the container comprising a catch for a medical needle latch, an exit and reentry end for access to the medical needle, an opposite end juxtaposed the exit and reentry end and a means for releasing the latch from the catch;

a needle cover frangibly affixed to said container at the exit and reentry end before use, the needle cover in combination with the container forming a protective barrier for contents of the cover and container;

a medical needle assembly disposed within said cover and container, the assembly comprising:

a medical needle comprising a sharpened point for percutaneous entry into a patient and a pathway for flow of medical fluids;

connector hub means comprising:

means for releasibly affixing the medical needle assembly to the cover such that when the cover is pulled from the container the medical needle is extended outwardly from the container for use;

at least one hub which is securely affixed to the medical needle; and

at least one latch which is securely but releasibly affixed by the catch to a predetermined position within the container when the medical needle is extended for use;

an elastic tube which is securely affixed on a first end to the connector hub means to provide a continuation of said pathway through the elastic tube and which is securely affixed on a second end to a part on the opposite end of the container wherethrough the pathway is continued for connection to a medical fluid containment vessel, the elastic tube being elongated to store energy for needle retraction when the connector hub means and opposite end are moved apart thereby providing a retracting force which acts to return the needle to the container when the latch is released.

5,549,709

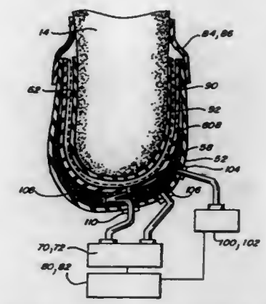
HYPOBARICALLY-CONTROLLED ARTIFICIAL LIMB FOR AMPUTEES

Carl A. Caspers, 510-8 25th Ave. North, St. Cloud, Minn. 56301

Filed Jul. 26, 1995, Ser. No. 506,911

Int. Cl.[6] A61F *2/70;2/74;2/80*

U.S. Cl. 623—24 **38 Claims**



1. A hypobarically-controlled artificial limb for amputees who have a residual limb, the artificial limb comprising:

(a) an outer socket with a volume and shape to receive a substantial portion of the residual limb with a space therebetween;

(b) a flexible inner socket with a cavity with a volume and shape for receiving a substantial portion of the residual limb and fitting in said space between said outer socket and the residual limb, said inner socket having an inner surface and an outer surface, said inner surface adapted to oppose the residual limb, said outer surface opposing said outer socket;

(c) a vacuum source;

(d) a vacuum valve connected to said vacuum source and a vacuum tube connecting said vacuum valve to said cavity, thereby drawing the residual limb into firm contact with said inner surface of said inner socket;

(e) a regulator means for controlling said vacuum source;

(f) a power source connected to said regulator means and said vacuum source; and

(g) a seal means for making an airtight seal between the residual limb and said outer socket.

5,549,710

SYSTEM FOR ASSEMBLING TWO COMPONENTS OF A PROSTHESIS IN A PLURALITY OF ADJUSTABLE POSITIONS

Bernard Vera, Seurre, France, and Olivier Pierron, Luxembourg, Luxembourg, assignors to Etablissements Proteor, Dijon, France

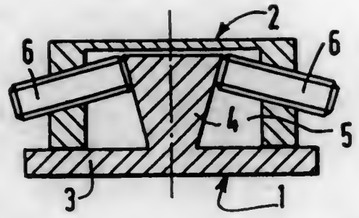
Filed Jan. 28, 1994, Ser. No. 188,457

Claims priority, application France, Feb. 3, 1993, 93 01166; Jul. 28, 1993, 93 09297

Int. Cl.[6] A61F *2/62*

U.S. Cl. 623—38 **3 Claims**

1. A system for assembling two components of a prosthesis in a plurality of adjustable positions, said system comprising a projecting part (4) integral with a first one (1) of said components engaged in a rectangular recess forming a hollow part (5) of a second of said components of the prosthesis, said rectangular recess being defined by orthogonal edges, the hollow part (5) having a flat surface extending about the recess and bearing against a flat surface (3) on said first one of said components, said flat surfaces being slidable relative to each other, screws (6) engaged in



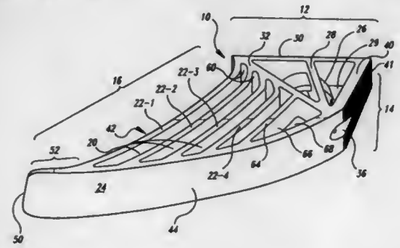
threaded orthogonally transverse recesses of the hollow part, said screws coming into abutment against orthogonally lateral flanks of the projecting part (4) for locking the projecting part in position relative to the hollow part, each of said flanks having a surface defining a length, the orthogonal edges of the recess forming the hollow part forming a bearing structure, said screws facilitating sliding movement in a rectilinear orientation in at least one direction along substantially the entire length of said lateral flanks, while said projecting part is spaced in any position thereof from a base surface of the recess forming the hollow part.

5,549,711

PROSTHETIC FOOT AND KEEL THEREFOR HAVING PROGRESSIVE STIFFENING UNDER INCREASING LOAD

William E. Bryant, Everett, Wash., assignor to M+IND (Model + Instrument Development), Seattle, Wash.

Filed Sep. 30, 1993, Ser. No. 129,844
Int. Cl.[6] A61F *2/66*
U.S. Cl. 623—53 **23 Claims**



1. A keel for a prosthetic foot, comprising:

a unitary structure formed from a material having elastic properties and having ankle, heel and forefoot portions;

said ankle portion adapted to receive an attachment means for joining the keel to a user's leg or leg prosthesis;

said forefoot portion having curved instep and bottom surfaces that commence at respective upper and lower extents of said ankle portion and curve forwardly about centers of revolution located generally above said forefoot portion and that converge toward and terminate at a tip of the keel, said forefoot portion having side walls that extend between said instep and bottom surfaces;

a curved sole plate defining said curved bottom surface of said forefoot portion;

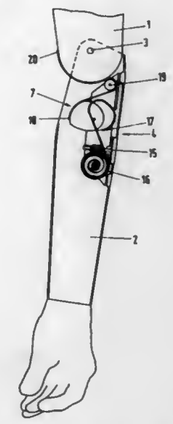
a plurality of arcuate slots formed in said forefoot portion and extending widthwise and opening at said side walls, said slots curving generally about said centers of revolution and lying at different depths beneath said instep surface to define a plurality of normally spaced apart thin wall precurved bending members having rearward and forward extents that are connected to and constrained at said rearward extents by said ankle portion and at said forward extents by said sole plate, said bending members being configured so that with increasing body load on and deflection of the keel said bending members react to bending and axial compression loads by successively stacking up against an adjacent bending member thereby progressively increasing the stiffness of the keel.

5,549,712

FOREARM LIFTER

Peter Gammer; Heinz Broeckl, and Hans Dietl, all of Wien, Austria, assignors to Otto Bock Orthopaedische Industrie Besitz- und Verwaltungs-Kommanditgesellschaft, Duderstadt, Germany

Filed Jul. 8, 1994, Ser. No. 272,036
Claims priority, application Germany, Jul. 21, 1993, 43 24 399.1
Int. Cl.[6] A61F *2/58*
U.S. Cl. 623—60 **20 Claims**



1. A forearm lifter adapted for assisting in the articulation of a mating forearm part of an arm prosthesis with respect to a mating upper arm part about at least one elbow axis, said forearm lifter comprising:

a spring element;

a mechanism having an input and an output, with said spring element directly or indirectly applying a tensile force to the input of said mechanism;

a tension element having one end acted upon by said output of said mechanism, and having another end adapted for fastening at a fixed point on said mating upper arm part; and

wherein said fixed point and said elbow axis define a torque lever, such that the force that is transmitted through said mechanism from said spring element is adapted to apply torque to said mating upper arm part in such a manner that the function of the torque acting at the fixed point, plotted against the angle of articulation of said mating forearm part, is approximately parabolic, and said torque having its minimum values in the mating forearm part extended position and at maximum mating forearm part bending, and said torque having its maximum value when said mating upper arm part and said mating forearm part are at approximately 90°.

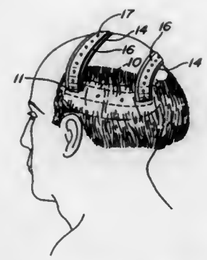
5,549,713

METHOD FOR SKIN TISSUE EXPANSION

Paul S. Kim, 760 Drovers La., Chester Springs, Pa. 19425

Division of Ser. No. 123,649, Sep. 20, 1993, Pat. No. 5,441,540. This application Apr. 6, 1995, Ser. No. 418,072
Int. Cl.[6] A61F *2/02;2/54;* **A61B** *17/50;17/08*
U.S. Cl. 623—66 **9 Claims**

1. A method of tissue expansion useful in treatment of baldness in a non-hair bearing region of scalp tissue of a patient comprising:



implanting first and second anchor plates under the scalp tissue at oppositely disposed first and second side edges of the non-hair bearing region, said anchor plates being malleable to conform to a contour of the skull and having spaced projections;

suturing the anchor plates to the hair bearing region to maintain the anchor plates in substantially parallel, fixed positions relative to the scalp tissue;

making spaced scalp incisions in the scalp at locations of the projections on said implanted anchor plates and passing the projections outwardly from a surface of the scalp through the incisions;

interconnecting the projections on the first anchor plate with the projections on the second anchor plate with an adjustable tensioning means disposed exteriorly of the scalp;

maintaining a predetermined tension on the anchor plates by adjustment of said adjustable tensioning means until the scalp tissue in the hair-bearing region is expanded a predetermined amount; and

removing a corresponding amount of tissue from the non-hair bearing region between the first and second anchor plates.

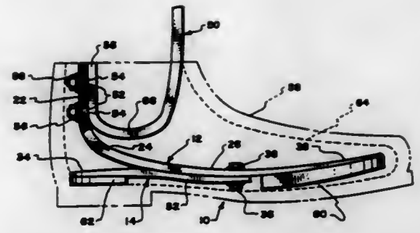
5,549,714

SYMES FOOT PROSTHESIS

Van L. Phillips, P.O. Box 1873, Rancho Santa Fe, Calif. 92067

Continuation of Ser. No. 103,732, Aug. 6, 1993, abandoned, which is a continuation of Ser. No. 844,898, Mar. 2, 1992, abandoned, which is a continuation of Ser. No. 585,920, Sep. 21, 1990, abandoned. This application Jan. 12, 1995, Ser. No. 371,595
Int. Cl.[6] A61F *2/66;2/80*
U.S. Cl. 623—33 **1 Claim**

1. A Symes foot prosthesis for an amputee who has undergone a Symes amputation in which the amputee's foot is severed from the amputee's leg near the amputee's ankle region, said prosthesis comprising:



a socket member sized and shaped to receive the stump of said amputee, said socket member having a substantially vertically oriented attachment surface formed along the back side of the lower portion thereof;

a flexible foot member secured to said socket member, said foot member being fabricated of superimposed laminates maintained in operative relationship by an encapsulating polymer such that said foot member is adapted to store and release energy during normal walking and running activities, said foot member comprising:

a substantially vertically oriented attachment section for detachably securing said foot member to said socket member, said attachment section having a substantially vertically oriented attachment surface adapted to mate with said attachment surface of said socket member such that said foot member may be secured to said socket member;

a curvilinear ankle section formed continuously with and extending downward and forward from said attachment section, said ankle section being adapted to store and release energy and having a substantially smooth radius of curvature ranging between ¾ inches and 1-¾ inches;

a toe section formed integrally with and extending relatively forward from said ankle section, said toe section being adapted to store and release energy and to provide substantially the sole means of support for all vertical, transverse and torsional forces transmitted to said foot member during toe-off; and

a heel section extending rearwardly from said ankle section, said heel section being adapted to store and release energy and to provide substantially the sole means of support for all vertical, transverse and torsional forces transmitted to said foot member during heel strike;

said socket member being attached to said attachment section of said foot member such that the lower extremity of said socket member is positioned just below the location of the residual Symes ankle joint.

VOL
1189
ISS
4
AG
27
1996
UMI

5,549,715

METHOD FOR BLEACHING TEXTILE MATERIAL

Vinzenz Olip, Villach, Austria, assignor to Degussa Austria GmbH, Vienna, Austria

Filed Nov. 22, 1994, Ser. No. 347,146
Claims priority, application Austria, Nov. 23, 1993, 2378/93
Int. Cl.[6] D06L *3/10*
U.S. Cl. 8—110 14 Claims

1. A method for bleaching textile material comprised at least in part of cellulose, comprising:

preparing a liquor comprising an aqueous alkaline solution of a bleaching agent comprised of formamidine sulfinic acid and at least one carbohydrate selected from the group consisting of monosaccharides, disaccharides, and oligosaccharides, the formamidine sulfinic acid and the at least one carbohydrate having a weight ratio of the formamidine sulfinic acid to the at least one carbohydrate which ranges from 80:20 to 99:1; and

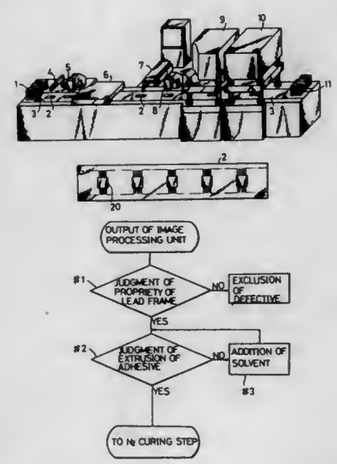
bleaching the textile material comprised at least in part of cellulose by contacting the textile material with the liquor at a temperature above 50° C.

5,549,716

PROCESS FOR MANUFACTURING INTEGRATED CIRCUITS USING AN AUTOMATED MULTI-STATION APPARATUS INCLUDING AN ADHESIVE DISPENSER AND APPARATUS THEREFOR

Tetsuo Takahashi; Eisaku Miyauchi; Kunio Mogi, All of Akita-Ken, and Shinichi Araya, Honjou, all of, Japan, assignors to TDK Corporation, Japan

Filed Apr. 13, 1993, Ser. No. 46,151
Int. Cl.[6] H01L *21/58;21/60;21/71*
U.S. Cl. 29—25.01 7 Claims



1. A process for manufacturing electronic components comprising the steps of:

die-bonding IC chips having bonding pads on a lead frame with a die-bonder by adhesively mounting said IC chips on said lead frame;

wire-bonding said bonding pads of said IC chips to said lead frame with a wire-bonder by connecting lead wires from said bonding pads to said lead frame;

molding a resin material into an outer package with a resin molding machine for covering a periphery of each of said IC chips;

transferring said lead frame during the manufacturing process by a single, continuous conveyor belt extending continuously from said die-bonder to said wire-bonder to said resin molding machine for continuously conveying said lead frame in order through said die-bonding step, said wire-bonding step and said molding step;

observing said electronic components at at least one position on said conveyor belt with automated inspection means for inspecting and forming images of said electronic components after completion of at least one of said die-bonding, wire-bonding and molding steps, said images being fed back to image processing means for verification of at least one of said die-bonding step, wire-bonding step, and molding step; and

observing the degree of runout extrusion of the adhesive used for adhesively mounting said IC chips in said die-bonding step and adding a solvent to said adhesive to adjust the flowability of said adhesive.

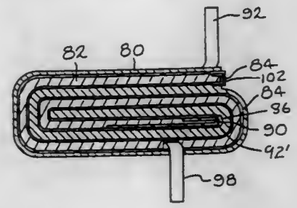
5,549,717

METHOD OF MAKING PRISMATIC CELL

Esther S. Takeuchi, Williamsville, and Ralph T. Mead, Kenmore, all of N.Y., assignors to Wilson Greatbatch Ltd., Clarence, N.Y.

Filed Mar. 3, 1994, Ser. No. 205,874
Int. Cl.[6] H01M *6/00*
U.S. Cl. 29—623.2 13 Claims

1. A method of making a solid cathode liquid organic electrolyte



alkali metal high rate cell comprising the steps of:

a) providing a combination of an elongated alkali metal, anode, elongated solid cathode and separator therebetween in a face-to-face relationship;

b) winding the combination to form an anode-cathode subassembly having a jellyroll type configuration;

c) shaping the combination so that the resulting sub-assembly has a substantially rectangular cross-section;

d) placing the anode-cathode sub-assembly in a conductive cell casing of prismatic shape having opposed flat faces;

e) attaching a lead of one of the anode or cathode to the cell casing and connecting a lead of the other of the anode or cathode to an electrical connector means extending through the casing in an insulated manner;

f) introducing liquid electrolyte to said anode-cathode sub-assembly in said casing; and

g) sealing said casing.

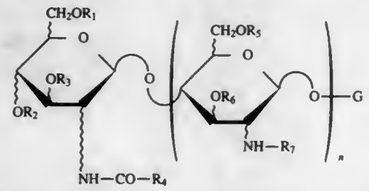
5,549,718

SUBSTANCE WITH LIPO-OLIGOSACCHARIDE STRUCTURE CAPABLE OF ACTING AS PLANT-SPECIFIC SYMBIOTIC SIGNALS, PROCESSING FOR PRODUCING THEM AND THEIR APPLICATIONS

Patrice Lerouge; Philippe Roche, Both of Toulouse; Catherine Fancher; Fabienne Maillet, both of Ramonville Saint Agne; Jean Denarie, Castanet-Tolosan; Jean-Claude Promé, Pech-busque, and Georges Truchet, Castanet-Tolosan, all of, France, assignors to Centre National de la Recherche Scientifique (C.N.R.S.), Paris, and Institut National de la Recherche Agronomique (I.N.R.A.), Paris Cedex, both of, France

Continuation of Ser. No. 214,676, Mar. 21, 1994, abandoned, which is a continuation of Ser. No. 930,662, Dec. 1, 1992, abandoned. This application Sep. 30, 1994, Ser. No. 315,491
Claims priority, application France, Apr. 6, 1990, 90 04764
Int. Cl.[6] A01C *1/06*; A01H *3/04*; C12P *19/04*; C12R *1/41*
U.S. Cl. 47—57.6 **11 Claims**

1. A purified lipo-oligosaccharide having formula I below:



wherein G is selected from the group consisting of hexosamine, acetyl-substituted hexosamine, sulphated-substituted hexosamine, and ether-substituted hexosamine,

R_1, R_2, R_3, R_5, R_6 and R_7, which are identical or different, are selected from the group consisting of H, C_xH_yCO—, and carbamyl, wherein x is an integer between 0 and 17, and y is an integer between 1 and 35,

R_4 is selected from the group consisting of a mono-, di-, or tri-unsaturated aliphatic chain containing at least 12 carbon atoms, and

n is an integer between 1 and 4.

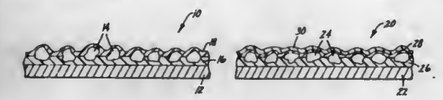
10. A method of inducing the transcription of the symbiotic genes of Leguminoseae comprising administration to a Leguminoseae of an amount effective to act as plant-specific symbiotic signal, of a lipo-oligosaccharide of claim **1**.

5,549,719

COATED ABRASIVE HAVING AN OVERCOATING OF AN EPOXY RESIN COATABLE FROM WATER

Chong S. Lee, Woodbury, and Scott J. Buchanan, Minneapolis, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 804,968, Dec. 11, 1991, abandoned, which is a continuation-in-part of Ser. No. 610,701, Nov. 14, 1990, abandoned. This application Aug. 16, 1995, Ser. No. 515,866
Int. Cl.[6] B24D *3/34*
U.S. Cl. 51—298 **25 Claims**



1. A coated abrasive article comprising:

a. a backing;

b. a make coat overlying said backing;

c. a plurality of abrasive grains supported on and adherently bonded to said backing by means of said make coat; and

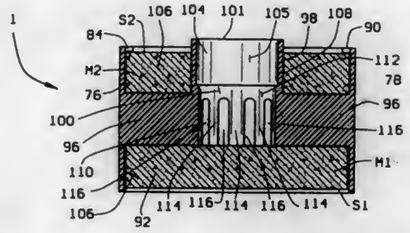
d. a size coat overlying said abrasive grains and said make coat, wherein said make coat is formed from a composition comprising an epoxy resin coatable from water, an emulsifier for said epoxy resin, a curing agent, and water, said epoxy resin having an epoxy equivalent weight of less than about 500.

5,549,720

FILTER

Gregory R. Miller, Chesterfield; Kyle Adriance; and Stanley Philipak, both of St. Charles; all of Mo., assignors to Nellcor Puritan Bennett Incorporated, St. Charles, Mo.

Filed Dec. 19, 1994, Ser. No. 359,024
Int. Cl.[6] B01D *46/00*
U.S. Cl. 55—324 **8 Claims**



1. A pre-filter assembly for filtering air entering the compressor of an oxygen concentrator, comprising:

a housing;

a first filter pledget of porous filter material within said housing, said first filter pledget having a first exposed filtering surface and a first material thickness of porous filter material adjacent said surface;

a second filter pledget of porous filter material within said housing, said second filter pledget having a second exposed filtering surface and a second material thickness of porous filter material adjacent said surface;

a framework between said first and second filter pledgets, said framework defining a plurality of air spaces, and said framework formed integrally of said housing;

an air tube positioned centrally in said framework and extending from a first open end to a second open end, said first open end positioned approximately at the midpoint between said material thicknesses and said second open end being in fluid communication with the air compressor of the oxygen concentrator, said first open end formed having a plurality of integral fingers formed thereon, said fingers defining a plurality of open spaces between said fingers, one each of said plurality of open spaces being in fluid communication with one each of said plurality of air spaces, a plurality of integral radial struts extending from select of said fingers to the housing, and arranged between said first and second filter pledgets to form said plurality of air spaces in fluid communication with said open spaces between the said fingers, and said plurality of open spaces between the fingers being aligned with the length of the said air tube and remaining free of contact with the first and second filter pledgets;

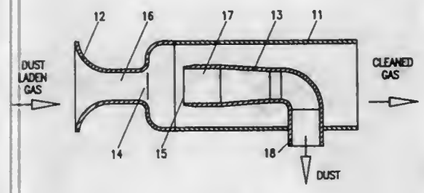
said air tube disposed within said filter so that air passing through either said first filtering surface and said first material thickness or the second filtering surface and said second material thickness enters said air tube for transfer to the oxygen concentrator air compressor.

5,549,721

CELL FOR GAS CLEANING

Viktor Shchipachev, 24 High St. #122, Springfield, Mass. 01105

Filed Dec. 2, 1994, Ser. No. 348,481
Int. Cl.[6] B01D *45/04*
U.S. Cl. 55—393 **24 Claims**



1. A cell for cleaning particulates from a gas flow, comprising:

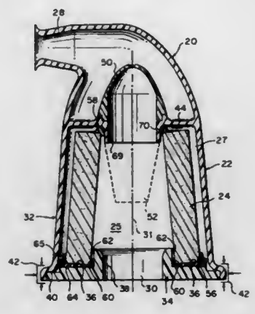
an inlet pipe connected gas-tightly to a casing, the casing forming a passageway, a first free area of an outlet of said inlet pipe being smaller than a second free area of the passageway, and an entrapment pipe mounted with said casing and downstream of said inlet pipe, said entrapment pipe having an opening facing said outlet, a third free area of said opening being larger than said first free area, and being smaller than said second free area of said passageway, said entrapment pipe having a discharge end and being secured rigidly to said casing; said inlet pipe, said casing, and said opening being coaxially aligned and constructed and arranged such that said gas flow expands within said second passageway and such that substantially unexpanded particulates are substantially captured within said second opening and removed from said gas flow.

5,549,722

AIR FILTER ASSEMBLIES AND A FRUSTOCONICAL AIR FILTER ELEMENT FOR USE WITH THE ASSEMBLIES

Walter A. Zemaitis; Edward A. Covington, both of Gastonia; Roland V. Lanier, Jr., Belmont, and Gary U. Hovis, Dallas, all of N.C., assignors to Dana Corporation, Toledo, Ohio

Filed Dec. 30, 1994, Ser. No. 366,318
Int. Cl.[6] B01D *45/08*
U.S. Cl. 55—463 **11 Claims**



3. A filter assembly comprising a housing having a housing base portion with a radially extending platform and a removable portion for mounting on the radially extending platform, wherein the base portion has an axially opening air outlet and the removable portion has an air inlet wherein a frustoconical filter element having first and second ends and a hollow core is retained within the removable portion of the housing while urged against the radially extending platform, the improvement comprising:

a wall within the removable housing, the wall including a diffusion cone extending away from the frustoconical filter element and at least an extension of the diffusion cone extending toward and within the hollow core of the frustoconical filter element;

an annular shoulder on the housing base portion projecting toward the removable portion of the housing to provide a radial sealing surface;

a first sealing member on the first end of the frustoconical filter element, the first sealing member having an axially facing, radially extending surface and a radially facing, axially extending surface; and

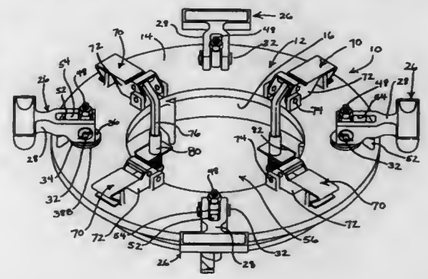
an annular seal at the second end of the frustoconical filter element, the annular seal having a radially facing surface for engagement with the extension of the diffusion cone upon assembling the removable portion of the housing to the housing base portion, whereby the filter element is retained within the removable portion of the housing with the first sealing member and annular seal sealing off the hollow core of the filter element from the air inlet of the housing whereby air entering the housing flows through the filter element into the hollow core and out of the outlet of the housing.

5,549,723

FILTER CAP

Daniel J. Terry, 133 164th St. SE., Mill Creek, Wash. 98012

Filed Aug. 31, 1994, Ser. No. 299,824
Int. Cl.[6] B01D *46/00*
U.S. Cl. 55—493 **11 Claims**



1. A device for releasably mounting a filter across an opening through a barrier wall, comprising:

a filter cap that is releasably mountable by hand to the barrier wall, the filter cap having a peripheral edge portion that is shaped to overlap the perimeter of the opening on an upper side of the barrier wall, and a body portion that projects downwardly through the opening, and a centrally-arranged air passageway through the body portion for communicating an airflow between a region above the barrier wall and another region below the barrier wall, and wherein, in use, the filter is positioned substantially in the region below the barrier wall, and including a plurality of hand-operated inboard locking devices mounted to the filter cap, each inboard locking device having a member that extends through the centrally-arranged air passageway and is adapted to releasably mount the filter directly to the body portion.

5,549,724

FILTER ELEMENT OF AIR CLEANER UNIT

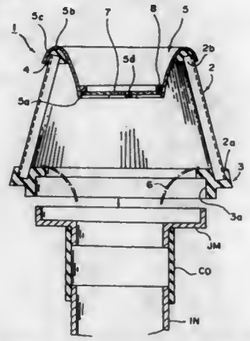
Kazuomi Mochida, Tokyo, Japan, assignor to Going Tokyo Co., Ltd., Tokyo, Japan

Filed Nov. 30, 1994, Ser. No. 351,160

Claims priority, application Japan, Oct. 24, 1994, 6-014171 U; Oct. 24, 1994, 6-282429

Int. Cl.[6] B01D *39/08*

U.S. Cl. 55—521 13 Claims



1. A filter element of an air cleaner unit comprising:

a tapered cylinder of a pleated filter material and whose larger diameter side opening is connected to an engine intake duct;

a cone member provided vertically within a smaller diameter side opening of said cylinder, with a base section of said cone member covering said smaller diameter side opening of said cylinder, and wherein a head portion of said cone member has an opening which is covered with filter material, with an inner peripheral wall of said cone member forming a funnel facilitate air flow into said opening covered with said filter material.

5,549,725

CORDIERITE CERAMIC FILTER

Yoshiyuki Kasai; Kazuhiko Kumazawa, both of Nagoya, and Wataru Kotani, Kasugai, all of, Japan, assignors to NGK Insulators, Ltd., Japan

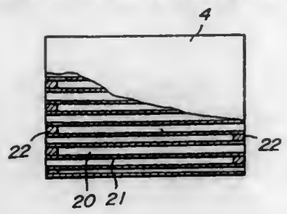
Filed Dec. 12, 1994, Ser. No. 354,490

Claims priority, application Japan, Dec. 14, 1993, 5-313031

Int. Cl.[6] B01D *39/20*; C04B *35/64*

U.S. Cl. 55—523 4 Claims

1. A ceramic honeycomb filter for separating a solid phase from



a fluid, comprising:

cordierire aggregates bonded to one another in the form of a honeycomb structure having an inlet side, an outlet side, and a plurality of longitudinal, intersecting partition walls extending from said inlet side to said outlet side and defining a plurality of flow passages; and

sealing means for closing alternate ends of said flow passages, such that flow passages open on said inlet side are closed on said outlet side and flow passages open on said outlet side are closed on said inlet side;

wherein said filter has (i) a mean pore size ranging from {0.15 (mean aggregate size)–5 μm} to {0.15 (mean aggregate size)+ 5 μm}, (ii) a porosity of at least 30%, and (iii) a compressive strength of at least 100 kgf/cm^2 in a direction parallel to said flow passages.

5,549,726

PROCESS FOR BENDING GLASS SHEETS USING FLUID BARRIER

Jean-Marc Petitcollin, Thourotte; Jean-Luc Lesage, and Arnaud Borderiou, both of Compiegne, all of, France, assignors to Saint-Gobain Vitrage International, Courbevoie, France

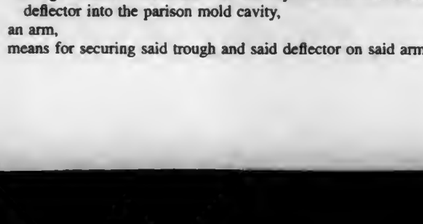
Continuation of Ser. No. 846,886, Mar. 6, 1992, Pat. No. 5,366,529, which is a continuation of Ser. No. 709,207, Jun. 3, 1991, Pat. No. 5,135,558. This application Jun. 23, 1994, Ser. No. 264,472

Claims priority, application France, Jun. 1, 1990, 9006842

Int. Cl.[6] C03B *23/035*

U.S. Cl. 65—106 8 Claims

1. Process for bending a glass sheet comprising the steps of:



heating the glass sheet in a horizontal position to a bending temperature thereof;

bending the glass sheet by bringing the heated glass sheet into contact with an upper bending form in an air atmosphere by use of a pneumatic force;

centering the glass sheet beneath the upper bending form prior to said bending step, including a step of creating a partial vacuum between the bending form and the glass sheet by generating high pressure gas jets which produce a venturi effect adjacent a periphery of the glass sheet; and

continuing to generate the high pressure gas jets so as to generate a fluid barrier adjacent the periphery of the glass sheet during said bending step, said fluid barrier comprising the high pressure gas jets which limit the entry of air from an exterior of the fluid barrier at the immediate vicinity of the upper bending form.

5,549,727

TROUGH ASSEMBLY

Willi Meyer, Effretikon, Switzerland, assignor to Emhart Glass Machinery Investments Inc., Wilmington, Del.

Filed Dec. 12, 1994, Ser. No. 353,849

Claims priority, application United Kingdom, Dec. 16, 1993, 9325781

Int. Cl.[6] C03B *7/16*

U.S. Cl. 65—225 2 Claims

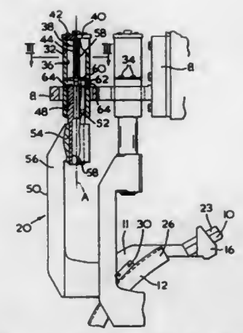
1. A trough assembly for a glassware forming machine for receiving a gob of molten glass from a gob distributor and delivering the gob to a parison mold cavity of the machine, said trough assembly comprising

a trough for receiving a gob from the gob distributor,

a deflector for receiving the gob from said trough and deflecting the gob into a vertical axis for delivery from the end of said deflector into the parison mold cavity,

an arm,

means for securing said trough and said deflector on said arm,



means for supporting said arm so that the end of said deflector can be relocated anywhere within a selectively sized circle about said vertical axis, said means including a hanger member assembly having

a support having a vertical bore,

a hanger member having

a top portion secured to said support over said vertical bore,

an elongated flexible portion extending downwardly from said top portion,

a spherical portion at the bottom of said elongated flexible portion, and

a rigid bottom portion extending downwardly from said spherical portion to a location outside of said vertical bore, and

means for securing said arm to said bottom portion,

said spherical portion located within said vertical bore and being selectively sized to fill said vertical bore so that relocation of said deflector from said vertical axis will pivot said spherical portion about its center and bow said elongated flexible portion.

5,549,728

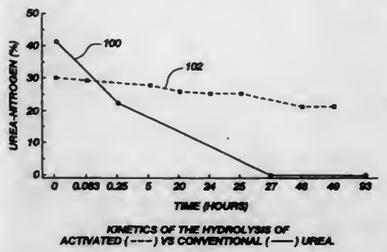
UREA-CONTAINING FERTILIZER WITH REDUCED RATE OF AMMONIA RELEASE

Elizabeth M. Wozniak, Sandy, and Stephen G. Baughman, Salt Lake City, both of Utah, assignors to Cytozyme Laboratories, Inc., Salt Lake City, Utah

Filed May 4, 1994, Ser. No. 238,217

Int. Cl.[6] C05F *11/08*; C05C *9/00*

U.S. Cl. 71—6 8 Claims



KINETICS OF THE HYDROLYSIS OF ACTIVATED (---) VS CONVENTIONAL (——) UREA.

1. A plant growth-enhancing composition comprising a combination of a fertilizer containing urea and a microbial lysate prepared by fermentation of a culture of a bacterium selected from the group consisting of *Lactobacillus acidophilus* and *Lactobacillus bulgaricus* to produce a plateau phase culture in which the increase in cell number per unit time has changed from a first exponential function to a substantially slower growth rate and has a pH of less than about 4, wherein said combination is characterized by a reduced rate of release of ammonium from the urea.

5,549,729

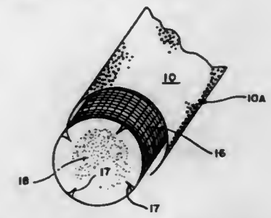
METHOD AND COMPOSITION FOR PROMOTING AND CONTROLLING GROWTH OF PLANTS

Thomas T. Yamashita, 1094 Clover La., Hanford, Calif. 93230

Continuation-in-part of Ser. No. 242,951, Sep. 9, 1988, abandoned, and a continuation-in-part of Ser. No. 354,155, May 19, 1989, abandoned. This application Mar. 8, 1990, Ser. No. 490,351

Int. Cl.[6] C05F *5/00*

U.S. Cl. 71—26 16 Claims



1. A composition of matter useful, when in diluted form suitable for foliar sprays to stimulate growth of plants, such composition being an aqueous solution and comprising the following components dissolved in an aqueous medium:

(a) a carbon skeleton/energy component

(b) a macronutrient component and

(c) a vitamin/cofactor component

the carbon skeleton/energy component (a) being present in the amount of about 25 to about 70% by weight based on the weight of the composition and being one or more organic compounds which are water soluble and which are assimilable by plants to provide energy required by metabolism of the plant and to provide carbon skeleton precursors for synthesis of proteins and other plant components, such component selected from the group consisting of mannose, lactose, dextrose, arythrose, fructose, fucose, galactose, glucose, gulose, maltose, polysaccharides, raffinose, ribose, ribulose, rutinose, saccharose, stachyose, trehalose, xylose, xylulose, adenose, amylose, arabinose, fructose phosphate, fucose-p, galactose-p, glucose-p, lactose-p, maltose-p, mannose-p, ribose-p, ribulose-p, xylose-p, xylulose-p, deoxyribose, adonitol, galactitol, glucitol, maltitol, mannitol, mannitol-p, ribitol, sorbitol, sorbitol-p, sylitol and mixtures thereof,

the macronutrient component (b) having at least one water soluble nitrogen source assimilable by plants and at least one water soluble phosphorus source assimilable by plants, the nitrogen source being present in an amount to provide about 0.3 to about 5% by weight based on the weight of the composition of nitrogen and the phosphorus source being present in an amount to provide about 0.2 to about 5% based on the weight of phosphorus,

the nitrogen source selected from the group consisting of ammonia, urea, ammonium salts, nitrates, amino acids, proteins, nucleic acids, and mixtures thereof,

the phosphorus source being one or more substances selected from the group consisting of phosphoric acid, single, double and triple super phosphates, salts of phosphoric acid, nitric phosphates, pyrophosphates, nucleic acid phosphates, and mixtures thereof,

said vitamin/cofactor component being present in a quantity of about 0.01 to about 1% by weight based on the weight of the composition to stimulate energy production and biosynthesis by the plant such that the burden of energy production and carbon skeleton production by component (a) is shared by photosynthesis and other biosynthetic paths of the plants, the amount of the vitamin/cofactor component being consistent with metabolism and biosynthesis of the plant, and the vitamin-cofactor component being one or more substances selected from the group consisting of thiamine, riboflavin, nicotinic acid, pyridoxine, folic acid, biotin, pantothenic acid, cyanocobalamin, phosphatidylcholine, inositol, para-aminobenzoic acid, and mixtures thereof,

said component (a) being present in substantially greater amount than either component (b) or (c).

5,549,730

COMPRESSION MOLDED TABLET FERTILIZER AND METHOD THE PRODUCTION THEREOF

Hiroshi Aoki, Kitakyushu, and Michihiro Inokuchi, Nakama, both of, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Jul. 5, 1994, Ser. No. 270,664
Claims priority, application Japan, Jul. 6, 1993, 5-166951
Int. Cl.[6] C05G *5/00*
U.S. Cl. 71—64.03 **4 Claims**

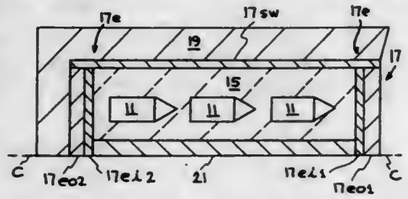
1. A compression molded tablet fertilizer consisting essentially of particulate fertilizer ingredients, and mixed therein 0.01 to 8% by weight of inorganic salt of lignin sulfonic acid, and 0.01 to 0.8% by weight of inorganic salt of stearic acid both based on the amount of said particulate fertilizer ingredients.

5,549,731

PREPARATION OF SOLID AGGREGATES OF HIGH DENSITY BORON NITRIDE CRYSTALS

Carl F. Cline, 728 Liquidamber Dr., Danville, Calif. 94506; Mark W. Wilkins, 6 Greens La., Pleasanton, Calif. 94566, and Alan W. Hare, 2136 E. Lindberg Rd., Port Angeles, Wash. 98362

Filed Dec. 21, 1994, Ser. No. 334,762
Int. Cl.[6] C22C *29/14;* **C06B** *21/00;* **B29C** *43/00*
U.S. Cl. 75—244 **22 Claims**



1. A method for compaction of powder of high density boron nitride, having an initial particle diameter of at least two microns, into a high density crystal aggregate of between 1 mm up to about 1 cm in diameter, the method comprising the steps of:

providing boron nitride high density powder, with a bulk density of at least 40 percent of the theoretical maximum density, inside a substantially cylindrical first container;

surrounding the first container on all sides with a hollow, substantially cylindrical second container that has a rigid side wall and two rigid end walls;

surrounding the first container on all sides within the second container with a selected fluid-like material, having a characteristic shock wave velocity V, that extends between the first container and the second container, where the second container is purged of substantially all gases and is sealed;

placing a selected amount of a selected high explosive material at one end wall and along at least a portion of the side wall of the second container to form a connected mass of high explosive material, where the high explosive has a detonation velocity D that is much greater than V;

detonating the high explosive at the end wall of the second container; and

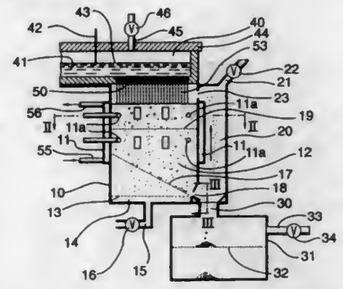
allowing a shock wave generated by the detonation wave of the high explosive to move approximately radially inward through the fluid-like material and the boron nitride powder and then approximately radially outward through the boron nitride powder and the fluid-like material so that the boron nitride powder forms crystal aggregates, with a portion of these aggregates having at least one of a zincblende form and a wurtzite form, and these aggregates having a Knoop hardness parameter of at least 4300 Kgm/mm^2 for point loads up to 1000 gm.

5,549,732

PRODUCTION OF GRANULES OF REACTIVE METALS, FOR EXAMPLE MAGNESIUM AND MAGNESIUM ALLOY

Ghyslain Dubé, Chicoutimi; Claude Dupuis, Jonquiere; Joseph Langlais, Chicoutimi; Serge Lavole, Jonquiere; Stephane Rompre, St.-Foy; Sylvain Trottier, Jonquiere, and Gilles Turcotte, Kingston, all of, Canada, assignors to Alcan International Limited, Montreal, Canada

Filed Nov. 29, 1994, Ser. No. 346,488
Int. Cl.[6] B22F *1/02;9/08*
U.S. Cl. 75—331 **32 Claims**



1. A process of producing granules of a metal, comprising:

providing a source of molten metal having a solidus temperature;

forming discrete droplets of said molten metal from said source;

fluidizing a bed of particles and maintaining said bed at a temperature substantially below the solidus temperature of the metal;

immersing said droplets while still substantially molten in said fluidized bed of particles to freeze said droplets as discrete granules of metal in said bed; and

removing said granules from said fluidized bed.

5,549,733

PROCESS FOR THE PRODUCTION OF A GAS BY ADSORPTION

Christine Marot, Versailles; Pierre Petit, Chatenay Malabry, and Xavier Vigor, Viroflay, all of, France, assignors to L'air Liquide, Societe Anonyme Pour L'etude et L'exploitation des Procedes Georges Claude, Paris Cedex, France

Filed Mar. 24, 1995, Ser. No. 410,310
Claims priority, application France, Mar. 30, 1994, 94.03782
Int. Cl.[6] B01D *53/047*
U.S. Cl. 95—100 **6 Claims**

1. A process for the production of a less-adsorbable gas from a gaseous mixture containing said less-adsorbable gas in an adsorption system comprising three adsorbers, each adsorber subject to a pressure swing adsorption cycle comprising the following successive steps:

a) a production step substantially at a high pressure of the cycle with co-current admission of the gaseous mixture and production of the less adsorbable gas as a product gas;

b) a first depressurization co-current towards another adsorber in its step e);

c) a second depressurization counter-current and simultaneously co-current towards another adsorber in its step f);

d) a third depressurization counter-current, down to a low pressure of the cycle;

e) an elution counter-current with gas from another adsorber in its step b);

f) a first recompression counter-current with gas from another adsorber in its step c); and

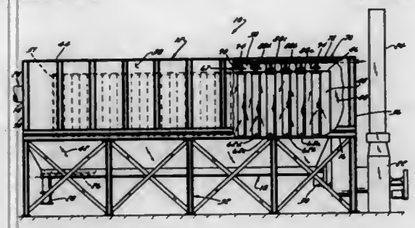
g) a second recompression counter-current with product gas up to substantially the high pressure of the cycle.

5,549,734

BAGHOUSE CLEANING METHOD

Thomas A. Standard, Chattanooga, Tenn., assignor to Astec Industries, Inc., Chattanooga, Tenn.

Filed Mar. 8, 1995, Ser. No. 400,751
Int. Cl.[6] B01D *46/00*
U.S. Cl. 95—279 **20 Claims**



13. A method comprising:

(A) conveying contaminated gases into a baghouse in which are located a plurality of rows of bags each formed from a gas-permeable material;

(B) conveying said gases into selected ones of said bags from exteriors thereof and out of upper outlets thereof, thereby clarifying said gases;

(C) inhibiting gas flow through i) a bag that is to be subject to cleaning and ii) all adjacent bags; then

(D) removing dust caked onto the exterior of said bag that is to be subject to cleaning only; and then

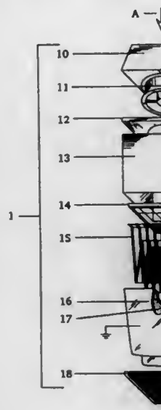
(E) permitting gas to flow through at least one of said adjacent bags.

5,549,735

ELECTROSTATIC FIBROUS FILTER

Rex R. Coppom, 939 Buffalo Ct., Longmont, Colo. 80501

Filed Jun. 9, 1994, Ser. No. 257,729
Int. Cl.[6] B03C *3/155*
U.S. Cl. 96—63 **10 Claims**



1. An electrostatic air filter for use in removing particles from air, comprising:

a filter medium having an upstream side and a downstream side;

means for flowing air through said filter medium in a downstream direction;

an electrode pair including an insulated electrode and a noninsulated electrode positioned adjacent said filter medium on respective upstream and downstream sides of said filter medium,

said insulated electrode being covered with insulation to prevent establishment of a conductive path between said insulated electrode and said noninsulated electrode through said filter medium;

means for establishing a potential difference between said insulated electrode and said noninsulated electrode to polarize said filter medium and increase the efficiency of said filter medium in removing particles from said air passing through said filter medium,

said establishing means providing said insulated electrode with an insulated electrode polarity selected from an insulated electrode polarity group consisting of a positive polarity and a negative polarity; and

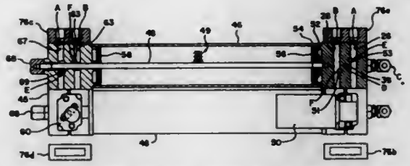
means for charging particles in said air upstream of said electrode pair with a charge having the same polarity as said insulated electrode when said insulated electrode polarity is selected from said insulated electrode polarity group consisting of said positive polarity and said negative polarity.

5,549,736

MODULAR, STACKABLE PRESSURE SWING ABSORPTION CONCENTRATOR

Kelly M. Coffield, Davenport; Dean A. Cantrill, Bettendorf; Kevin G. McCulloh, Davenport, and Sammy K. Mickelson, Bettendorf, all of Iowa, assignors to Litton Systems, Inc., Woodland Hills, Calif.

Continuation of Ser. No. 183,622, Jan. 19, 1994, abandoned.
This application Jun. 30, 1995, Ser. No. 497,452
Int. Cl.[6] B01D *53/047*
U.S. Cl. 96—133 **1 Claim**



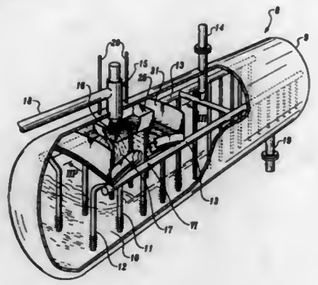
1. A modular, stackable gas concentrator operating according to the pressure swing adsorption (PSA) process, comprising:

a plurality of adsorber columns, each said adsorber column having inlet gas and product gas ends,

a plurality of manifold heads of like construction, each said manifold head having channels and ports formed therein and means for carrying pneumatic components said channels, ports and means for carrying being adapted to be arranged to perform either one of inlet gas end or product gas end pneumatic circuit functions in the PSA process, those of said manifold heads arranged as inlet manifolds being fastened and pneumatically coupled to said inlet gas ends of said adsorber columns and those of said manifold heads being arranged as product gas manifolds being fastened and pneumatically coupled to said product gas ends of said adsorber columns and

means for fastening said inlet manifolds and said product manifolds, respectively, so that ports therethrough form at least continuous pneumatic connections to a source of inlet gas and a receptacle for product gas, said adsorber columns forming a pneumatically parallel arrangement, whereby the gas concentrator may be changed in capacity by selectively adding or removing one or more adsorber columns and related manifold heads.

5,549,737
SPRAY DEGRASSER
Willem Wiemer, Delden, Netherlands, assignor to Stork ketels B.V., Hengelo, Netherlands
Filed May 17, 1993, Ser. No. 50,424
Claims priority, application Netherlands, Nov. 19, 1990, 90.02521; WIPO, Oct. 23, 1992, PCT/NL91/00227
Int. Cl.[6] B01D *19/00*
U.S. Cl. 96—204 4 Claims



1. A radial spray degasser for removing noncondensable gas from a liquid to be degassed, the degasser comprising:
(a) a boiler having a boiler structure;
(b) an inner spray compartment, the spray compartment located in an upper portion of the boiler, the spray compartment comprising:
(i) a surrounding wall defining the inner sprayer compartment, the wall extending downward from the structure of the boiler so that lower edges of the wall are in contact with an upper portion of a spray screen of liquid being degassed when the degasser is in use;
(ii) a radial sprayer located within the inner spray compartment at a distance from and surrounded by the surrounding walls, the sprayer having a first end and a second end, the first end connected to an inlet conduit for supplying liquid to be degassed to the radial sprayer, the second end extending into the inner spray compartment with liquid outlets, for spraying of liquid to be degassed radially outward in a spray screen, located above the lower edges of the surrounding wall; and
(iii) an outlet extending from an upper portion of the inner spray compartment for venting noncondensable gasses that accumulate in said compartment;
(c) an outer compartment defined by walls spaced from and surrounding the inner compartment, the walls of the outer compartment extending downward from the boiler structure, said walls of sufficient length to intercept an outer circumferential edge of the spray screen of the radial sprayer, said walls of the outer compartment extending further downward into the boiler than the surrounding walls of the inner sprayer compartment;
(d) steam pipes having perforated lower extremities extending into the boiler such that the perforated extremities are submerged in liquid and steam exiting from the pipes is able to bubble through the liquid and travel upward to the spray screen to degas liquid of said spray screen when the boiler is in use; and
(e) an outlet of the boiler for removing degassed liquid from the boiler;
whereby, when the degasser is in use, steam containing noncondensable gasses stripped from the liquid accumulates in a space between the walls of the inner spray compartment, and the distance between the radial sprayer and the surrounding walls of the inner spray compartment is such that steam and gasses crossflow from the outer compartment through the spray screen of liquid into the inner spray compartment, the liquid thereby undergoing further degassing, before the gasses vent from the degasser.

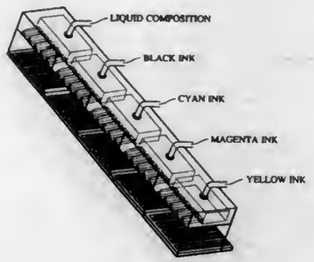
5,549,738
PLATINUM ELECTROFORMING BATH
Katsutsugu Kitada, and Soumei Yarita, both of Kanagawa-ken, Japan, assignors to Electroplating Engineers of Japan, Limited, Japan
Continuation of Ser. No. 718,767, Jun. 21, 1991, Pat. No. 5,310,475. This application May 4, 1994, Ser. No. 237,693
Claims priority, application Japan, Jun. 29, 1990, 2-170064; Jul. 16, 1990, 2-185241; Apr. 30, 1991, 3-124577; Apr. 30, 1991, 3-124578; Apr. 30, 1991, 3-124579
Int. Cl.[6] C25D *3/52*
U.S. Cl. 106—1.21 2 Claims

1. A platinum electroforming bath consisting of a hexahydroxyplatinate of hydrogen or an alkali metal, present in an amount of 2–100 g/l; an alkali metal hydroxide, present in an amount of 20–100 g/l; and an alkali metal carboxylate, present, in an amount of 20–100 g/l.

5,549,739
WOOD MODIFIER COMPOSITION
Tadashi Inoue, 13-4-102, Hiyoshidai 2-chome, Hiroshima, Japan, and Tetsuzo Tsujimura, Shibayama-machi, Japan, assignors to Nippon Suisan Kaisha, Ltd., Tokyo, Japan; Kyowa Tecnos Co., Ltd., Chiba, Japan, and Tadashi Inoue, Hiroshima, Japan
Continuation-in-part of Ser. No. 347,130, Nov. 23, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 486,583
Claims priority, application Japan, Nov. 26, 1993, 5-340318
Int. Cl.[6] A01N *33/00*
U.S. Cl. 106—15.05 20 Claims

1. A wood modifier composition comprising a mixture of a water-soluble chitosan having a molecular weight ranging from 320 to 48,000, and colloidal silica wherein said colloidal silica is present in the composition in an amount of from 15 to 300 parts by weight per part by weight of said chitosan.

5,549,740
LIQUID COMPOSITION, INK SET AND IMAGE FORMING METHOD AND APPARATUS USING THE COMPOSITION AND INK SET
Katsuhiko Takahashi, Yokohama, and Yutaka Kurabayashi, Tokorozawa, both of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 21, 1995, Ser. No. 493,303
Claims priority, application Japan, Jul. 11, 1994, 6-180474
Int. Cl.[6] C09D *11/02*
U.S. Cl. 106—20 R 26 Claims

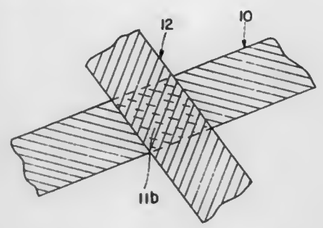


1. A liquid composition comprising a cationic substance and bishydroxyethylsulfone.

5,549,741
INK VARNISH COMPOSITION
Thomas J. Pennaz, Brooklyn Park, and John H. Burban, Lauderdale, both of Minn., assignors to Deluxe Corporation, Shoreview, Minn.
Continuation-in-part of Ser. No. 373,749, Jan. 17, 1995, abandoned, which is a continuation-in-part of Ser. No. 210,049, Mar. 17, 1994, Pat. No. 5,431,721, which is a continuation-in-part of Ser. No. 120,175, Sep. 13, 1993, Pat. No. 5,382,282, which is a continuation-in-part of Ser. No. 92,392, Jul. 14, 1993, Pat. No. 5,338,351, which is a continuation-in-part of Ser. No. 946,762, Sep. 17, 1992, abandoned. This application May 4, 1995, Ser. No. 434,886
Int. Cl.[6] C09D *11/08;11/10*
U.S. Cl. 106—20 R 11 Claims

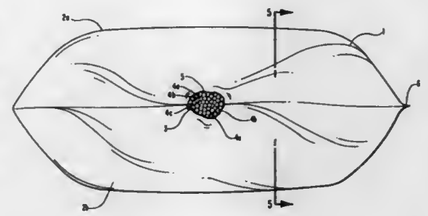
1. A substantially water insoluble low VOC lithographic ink varnish comprising a resin component, an oil component and a nonvolatile solvent component wherein said resin component includes a hard resin having an acid number greater than 40 and comprising at least 5% by weight of the varnish.

5,549,742
ASSEMBLY OR SET OF DIFFERENT COLOR INKS AND AN ASSEMBLY OF WRITING INSTRUMENTS
Jorge Cancellieri, Provincia de Buenos Aires, Argentina, assignor to Gillette Company, Boston, Mass.
PCT No. PCT/US93/08755, § 371 Date Apr. 27, 1995, § 102(e) Date Apr. 27, 1995, PCT Pub. No. WO94/06872, PCT Pub. Date Mar. 31, 1994
PCT Filed Sep. 16, 1993, Ser. No. 397,235
Claims priority, application Argentina, Sep. 18, 1992, 323209
Int. Cl.[6] C09D *11/02*
U.S. Cl. 106—22 B 14 Claims



1. A set of inks for forming polychromatic markings, comprising:
a first reservoir,
a first ink, disposed in said first reservoir, comprising a reducible colorant provided in oxidized form, in which form said colorant produces a marking of a first color when applied to white paper, said reducible colorant producing, when applied to white paper and reduced, a visible marking having a second color different from said first color,
a second reservoir, and
a second ink, disposed in said second reservoir, comprising a reducing agent selected to reduce said reducible colorant, and a second, non-reducible colorant that, when applied to white paper, produces a marking having a third color that is different from said first and second colors.

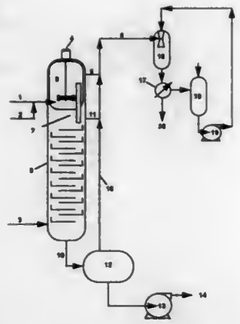
5,549,743
COMPOSITE MICROSPHERE AND LUBRICANT MIXTURE
Tony M. Pearce, Alpine, Utah, assignor to Gengsis Composites, L.C., Sandy, Utah
Continuation-in-part of Ser. No. 81,467, Jun. 22, 1993, Pat. No. 5,421,874. This application Jun. 5, 1995, Ser. No. 472,011
Int. Cl.[6] C09D *5/00;5/34*
U.S. Cl. 106—122 13 Claims



1. A composite mixture comprising:
a) a plurality of spherical objects and
b) a quantity of lubricant on the exterior surface of substantially all of said spherical objects, said lubricant being present in a quantity less than would cause dispersion of said spherical objects in said lubricant sufficient such that said spherical objects would be significantly separated from each other by said lubricant, said lubricant being selected from the group consisting of visco-elastic fluid and coco diethanolomide;
wherein said spherical objects and said lubricant are mixed together to form the composite mixture;
wherein said lubricant is lubricous, serves to reduce the coefficient of friction between contacting spherical objects, and does not prevent sliding and rolling of said spherical objects with respect to each other;
wherein said spherical objects within said mixture are movable in low-friction sliding and rolling contact with each other in all three dimensions;
wherein the composite mixture flows and shears in response to a deforming pressure exerted on it, said flow and shear being accomplished by said spherical objects moving in rolling and sliding contact with each other; and
wherein the composite mixture ceases to flow and shear when the deforming pressure is terminated.

5,549,744
PAVEMENT BINDER
Olga Puzic; Larry J. Evers; Kenneth E. Williamson, all of Sarnia, Canada; Martin L. Gorbaty, Westfield, and Nicholas C. Nahas, Chatham, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.
Filed Sep. 8, 1995, Ser. No. 525,898
Int. Cl.[6] C09D *195/00;* C08L *95/00*
U.S. Cl. 106—274 20 Claims

1. A method of making a road paving binder composition, which comprises:
a. blending a minor amount of a polymer having at least one diene monomer with a major amount of asphalt containing at least 0.3% by weight of total nitrogen at an elevated temperature sufficient to permit blending;
b. treating the asphalt-polymer blend with not more than 250 meq of a sulfonating agent per 100 g of asphalt-polymer blend to introduce the corresponding acid functionality into the blend;



c. maintaining the sulfonated asphalt-polymer blend at a sufficiently elevated temperature and stripping the sulfonated blend with sufficient chemically unreactive gas, to remove a major fraction of the acid functionality introduced by sulfonation.

5,549,745

NON-SLUMPING, PUMPABLE CASTABLE AND METHOD OF APPLYING THE SAME

Mark C. Langenohl, Pittsburgh, and Gustav G. Hughes, Wilkensburg, both of Pa., assignors to Indresco Inc., Dallas, Tex.

Continuation of Ser. No. 330,759, Oct. 28, 1994, abandoned. This application Oct. 27, 1995, Ser. No. 549,018

Int. Cl.[6] C04B *7/32*

U.S. Cl. 106—692 **7 Claims**

1. An essentially non-slumping, high density, low moisture and low cement sprayable refractory castable composition which can be applied without forms with a density of at least 120 pcf, consisting of a tempered, pumpable first component consisting essentially of a refractory aggregate, a calcium-aluminate cement, a solid flow aid, a deflocculating agent, and water, the water being present in the lowest amount sufficient to achieve a pumpable consistency of the tempered first component, and a flocculating agent as a second component to be added to said first component at time of installation in an amount sufficient to prevent slumping when applied without forms and maintain the castable dried bulk density of at least about 120 pcf.

5,549,746

SOLID STATE THERMAL CONVERSION OF POLYCRYSTALLINE ALUMINA TO SAPPHIRE USING A SEED CRYSTAL

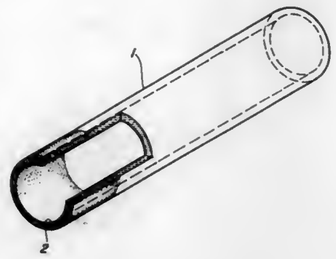
Curtis E. Scott, Mentor; Jack M. Strok, Garrettsville, both of Ohio, and Lionel M. Levinson, Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 24, 1993, Ser. No. 126,628

Int. Cl.[6] C03B *33/02*

U.S. Cl. 117—4 **12 Claims**

1. A solid state process for bulk conversion of a solid PCA body, having a density of at least 3.9 g/cc, to sapphire which comprises monolithically joining said solid PCA body to a solid sapphire seed crystal and heating said PCA body and said seed crystal at a temperature above the minimum temperature for alumina crystal grain boundary mobility, but without melting said PCA body, for a time sufficient to convert said PCA body to a sapphire body.



5,549,747

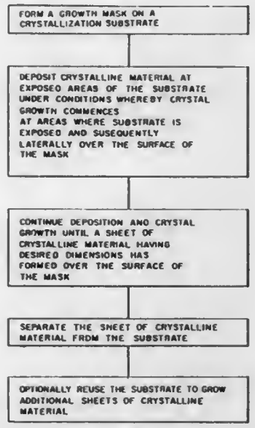
METHOD OF PRODUCING SHEETS OF CRYSTALLINE MATERIAL AND DEVICES MADE THEREFROM

Carl O. Bozler, Sudbury; John C. C. Fan, Chestnut Hill, and Robert W. McClelland, Weymouth, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 758,328, Aug. 28, 1991, abandoned, which is a continuation of Ser. No. 421,320, Oct. 12, 1989, abandoned, which is a continuation of Ser. No. 130,092, Dec. 4, 1987, abandoned, which is a continuation of Ser. No. 251,214, Apr. 6, 1981, Pat. No. 4,727,047, which is a continuation-in-part of Ser. No. 138,891, Apr. 10, 1980, abandoned. This application Apr. 14, 1994, Ser. No. 227,486

Int. Cl.[6] C30B *13/18*

U.S. Cl. 117—43 **11 Claims**



1. A process for forming an essentially single crystal region of a semiconductor material comprising:

forming a non-single crystal region on a composite structure having an insulating mask formed over a substrate, the mask having an upper surface defining a plane above the substrate and having an opening to expose a surface portion of a single crystal material positioned below the plane of the insulating mask upper surface such that said non-single crystal region contacts the single crystal material surface portion below the plane of the mask upper surface;

heating the non-single crystal region with a first heater positioned below the substrate and second heater positioned above the non-single crystal region to initiate growth of the essentially single crystal region at the exposed surface portion of the single crystal material; and

propagating the growth of the essentially single crystal region such that the single crystal region overlies at least a portion of the insulating mask.

5,549,748

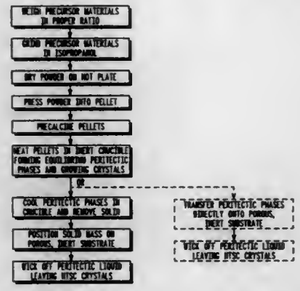
METHOD FOR HARVESTING SINGLE CRYSTALS FROM A PERITECTIC MELT

Volker R. Todt, Lemont, Ill.; Suvankar Sengupta, Columbus, and Donglu Shi, Cincinnati, both of Ohio, assignors to University of Chicago, Chicago, Ill.

Filed Jan. 12, 1995, Ser. No. 372,042

Int. Cl.[6] C30B *19/04*

U.S. Cl. 117—53 **18 Claims**



1. A method of preparing single crystals, comprising the steps of:

preparing a precursor material having a selected composition;

heating said precursor material and achieving a peritectic mixture of phases including a peritectic liquid and crystals;

positioning near said peritectic mixture a substrate having a porosity and being inert to said peritectic mixture;

quenching said peritectic mixture on said substrate;

desorbing said peritectic liquid using said substrate, leaving said single crystals behind on said substrate; and

removing said single crystals from said substrate.

5,549,749

SUBSTRATE WITH A COMPOUND SEMICONDUCTOR SURFACE LAYER AND METHOD FOR PREPARING THE SAME

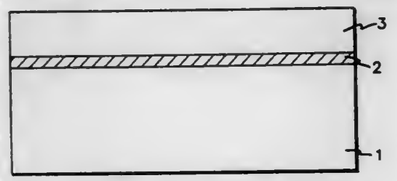
Shuji Asai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Division of Ser. No. 272,041, Jul. 8, 1994. This application Apr. 24, 1995, Ser. No. 426,951

Claims priority, application Japan, Jul. 8, 1993, 5-193070

Int. Cl.[6] C30B *25/18*

U.S. Cl. 117—90 **12 Claims**



1. A method of forming a semiconductor substrate formed thereon with a compound semiconductor layer comprising the steps of:

subjecting a surface of a substrate made of a first material to an ion implantation of one or more elements constituting a compound semiconductor different from said first material at a high impurity concentration of about 10^{20} to 10^{21} atoms/cm^3, thereby to form a diffusion region in said surface of said substrate, in which said one or more elements soak out from a surface of said diffusion region to form crystal grains of said one or more elements uniformly and finely dispersed over said surface of said diffusion region;

subjecting said substrate to a heat treatment at a higher temperature than a growth temperature of said compound semiconductor;

subjecting said substrate to a cooling down to said growth temperature of said compound semiconductor; and

forming a crystal growth layer of said compound semiconductor on said diffusion region, said crystal growth layer having a mirror face.

5,549,750

DISPOSABLE SLIDE HOLDER

Thomas F. Kelley, Canton, Mass., assignor to Norfolk Scientific, Inc., d/b/a Statspin Technologies, Norwood, Mass.

Continuation-in-part of Ser. No. 918,491, Jul. 22, 1992, Pat. No. 5,326,398. This application Jul. 1, 1994, Ser. No. 270,041

Int. Cl.[6] B05C *13/02*

U.S. Cl. 118—55 **13 Claims**



1. An enclosure for use in preparing a thin film of a fluid specimen on a microscope slide, comprising:

a top;

a bottom;

a plurality of sides joining said top to said bottom in a fixed relationship, one of said sides including an opening through which at least a portion of said microscope slide is insertable into said enclosure, said top covering said fluid specimen on said microscope slide; and

absorbent material disposed within said enclosure.

5,549,751

ADHESIVE APPLICATOR

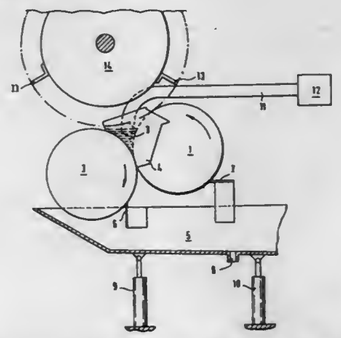
Friedhelm Brinkmeier, and Richard Feldkämper, both of Lengerich, Germany, assignors to Windmoeller & Hoelscher, Lengerich/Westf., Germany

Continuation of Ser. No. 987,836, Dec. 9, 1992, abandoned. This application Apr. 14, 1994, Ser. No. 227,708

Claims priority, application Germany, Dec. 11, 1991, 41 40 835.7

Int. Cl.[6] B05C *1/00*

U.S. Cl. 118—216 **5 Claims**



1. An adhesive applicator comprising a transfer roller (1) for providing with a uniform layer of glue and setting against a format roller (14) such that application members on said format roller (14)

distributed over a periphery thereof pick up glue applied in a certain format and transfer the glue to work pieces to be coated with glue,

wherein, in the direction of rotation of the format roller (14) before said transfer roller (1) a collection roller (2) is mounted, which together with said transfer roller (1) forms an open nip, said open nip serving as a trough for holding the glue, said transfer roller (1) and said collection roller (2) being arranged below a shaft of said format roller (14),

wherein said format roller (14) with said application members disposed thereon is arranged relative to said collection roller (2) such that said application members are adjacent to but spaced from said collection roller (2), and

wherein excess glue picked up by said application members is thrown off again immediately after the excess glue has been picked up, the glue thrown off being collected by said collection roller (2) and returned for reuse to the open nip formed between said collection roller (2) and said transfer roller (1).

5,549,752

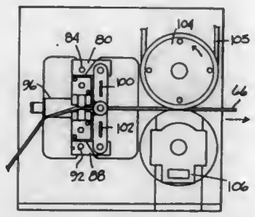
APPARATUS FOR COATING STRIP MATERIAL

Roger Hahn; Ray Bowles, and Wendel Phelps, all of Golden, Colo., assignors to Coors Brewing Company, Golden, Colo.

Continuation-in-part of Ser. No. 298,211, Aug. 29, 1994, abandoned. This application Apr. 25, 1995, Ser. No. 428,878

Int. Cl.[6] B05C *1/00*

U.S. Cl. 118—234 **15 Claims**



1. Apparatus for applying a coating material on both sides of a continuous strip of material comprising:

a coating station;

drive means for pulling a continuous strip of material through said coating station;

a stationary frame;

said continuous strip of material having an upper surface and a lower surface;

said coating station having an upper coating applicator and a lower coating applicator;

each of said upper and lower coating applicators comprising a housing having a recess formed therein so that said recesses are in a facing relationship;

mounting means for mounting each of said housings on said stationary frame;

a wick located in each of said recesses;

each of said housings having a plurality of spaced apart bores formed therein and each bore being in fluid communication with a portion of said wick;

supply means for supplying a coating material to said plurality of bores for passage therethrough to be absorbed by said wick;

said upper wick being located to contact said upper surface of said continuous strip of material and to apply said coating material thereto as said continuous strip of material passes between said wicks;

said lower wick being located to contact said lower surface of said continuous strip of material and to apply said coating material thereto as said continuous strip of material passes between said wicks;

each of said housings having a longitudinally extending bore formed therein;

a hollow piston mounted for reciprocating movement in each of said longitudinally extending bores;

reciprocating means for reciprocating said piston;

connecting means for connecting said hollow piston to said supply means so that said hollow piston may be filled with said coating material; and

said hollow piston having a plurality of spaced apart passageways formed therein so that said coating material moves through said spaced apart passageways and into said plurality of spaced apart bores.

5,549,753

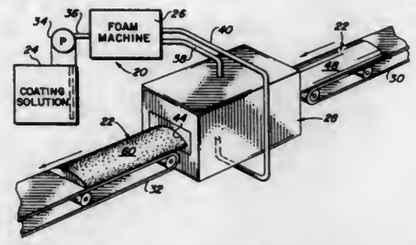
APPARATUS FOR COATING A MOLDED FIBROUS WORKPIECE

Kent R. Matthews, Littleton; Eric G. Schakel, Sedalia, both of Colo.; Lowell K. Morton, and James F. Young, both of Greenville, S.C., assignors to Schuller International, Inc., Denver, Colo.

Division of Ser. No. 286,027, Aug. 4, 1994. This application Apr. 12, 1995, Ser. No. 420,527

Int. Cl.[6] B05B *7/06*

U.S. Cl. 118—316 **7 Claims**



1. An apparatus for coating molded fibrous workpieces with a foam coating material comprising:

a coating chamber for coating molded fibrous workpieces of a selected transverse cross sectional shape and selected transverse dimensions; said coating chamber having a workpiece inlet opening for introducing molded fibrous workpieces into said coating chamber; said coating chamber having a workpiece outlet opening for discharging said molded fibrous workpieces from said coating chamber; said workpiece inlet opening and said workpiece outlet opening each having a shape, substantially the same as the transverse cross sectional shape of said molded fibrous workpieces and each having dimensions substantially the same as the transverse dimensions of said molded fibrous workpieces, for guiding said molded fibrous workpieces through said coating chamber and to permit passage of said molded fibrous workpieces through said workpiece inlet opening and said workpiece outlet opening while minimizing leakage of a polymeric foam coating material from said coating chamber through said workpiece inlet opening and said workpiece outlet opening whereby the polymeric foam coating material can be maintained in said coating chamber at a level above said workpiece inlet opening and said workpiece outlet opening to totally immerse said molded fibrous workpieces within said polymeric foam coating material and form a coating of said polymeric foam coating material on permeable exterior surfaces of said molded fibrous workpieces as said molded fibrous workpieces pass through said coating chamber;

means for introducing said polymeric foam coating material into said coating chamber at locations above and below a path of said molded fibrous workpieces through said coating chamber to assure that said molded fibrous workpieces are totally immersed within said polymeric foam coating material;

a first wiping means having a shape substantially the same as the transverse cross sectional shape of said molded fibrous workpieces and dimensions substantially the same as the transverse dimensions of said molded fibrous workpieces for spreading said polymeric foam coating material over said permeable exterior surfaces of said molded fibrous workpieces to wet out said permeable exterior surfaces of said molded fibrous workpieces with said polymeric foam coating material, to remove trapped air from said permeable exterior surfaces of said molded fibrous workpieces which can cause blisters to form in said polymeric foam coating material, and to encapsulate fibers and dust within said permeable exterior surfaces of said molded fibrous workpieces; and

means for passing said molded fibrous workpieces through said coating chamber.

5,549,754

LEAD FRAME HOLDER

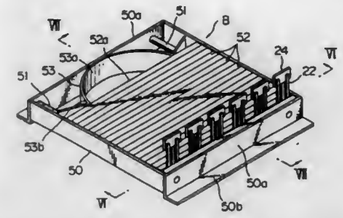
Hitoshi Taga, and Shizuo Okuhara, both of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Division of Ser. No. 154,754, Nov. 17, 1993, abandoned, which is a continuation-in-part of Ser. No. 875,377, Apr. 29, 1992, abandoned. This application Jun. 24, 1994, Ser. No. 265,688

Claims priority, application Japan, Apr. 30, 1991, 3-126597

Int. Cl.[6] B05C *13/02*

U.S. Cl. 118—500 **6 Claims**



1. A lead frame holder for holding a plurality of elongated lead frames, said lead frames being for holding electronic component elements mounted thereon, said lead frames being held in parallel with each other, said holder comprising:

a holder body having at least two opposite side walls;

a plurality of guide shafts which are fixed between said two side walls of said holder body in parallel with each other for supporting a lowermost edge of a strip portion of each of said lead frames;

a plurality of holding plates which are arranged in said holder body in parallel with each other and which are passed through by said guide shafts for guiding said holding plates in a slidable manner; and

a spring member which has a pressing position and a releasing position and which presses said holding plates in a direction along said guide shafts in said pressing position, wherein

said spring member can exert enough pressure in said pressing position against said holding plates to stably hold said strip portion of each of said lead frames which is inserted between said holding plates.

5,549,755

APPARATUS FOR SUPPLYING CONDUCTIVE COATING MATERIALS INCLUDING TRANSFER UNITS HAVING A COMBINED SHUTTLE AND PUMPING DEVICE

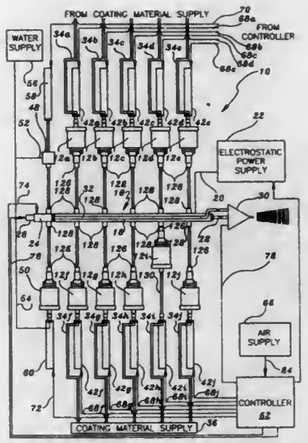
Robert Milovich, Lorain; Ronald R. Schroeder, Amherst; William F. Parmentar, Vermilion; Julius J. Molnar, Amherst, and Jack Penick, Westlake, all of Ohio, assignors to Nordson Corporation, Westlake, Ohio

Filed Dec. 8, 1994, Ser. No. 351,818

Int. Cl.[6] B05B *5/00*

U.S. Cl. 118—629 **39 Claims**

1. Apparatus for supplying electrically conductive coating material, comprising:



a manifold connectable to at least one coating dispenser, said manifold including a number of discharge stations;

a number of filling stations each connected to a different source of coating material, said filling stations being electrically isolated from said discharge stations;

a number of coating transfer units each including a combined shuttle and pumping device, each of said combined shuttle and pumping devices being movable to one of said filling stations to receive a quantity of coating material from a different source of coating material and then selectively movable to one of said discharge stations to transfer the coating material into said manifold.

5,549,756

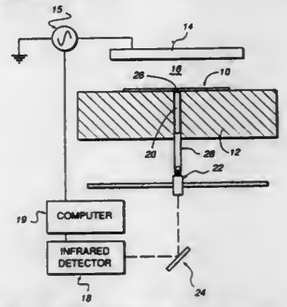
OPTICAL PYROMETER FOR A THIN FILM DEPOSITION SYSTEM

Cari A. Sorensen, Morgan Hill, and Wendell T. Blonigan, Fremont, both of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Feb. 2, 1994, Ser. No. 190,421

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—715 **32 Claims**



1. A thin film deposition system comprising:

a susceptor for supporting a deposition substrate during a deposition process;

a channel formed in said susceptor, said channel having an opening on an upper surface of said susceptor;

an infrared detector disposed to receive an optical signal that passes through said channel along an optical path from said opening to said infrared detector, wherein said infrared detector is disposed so as to image portion of a deposition substrate

VOL 1189 ISS 4 AG 27 1996 UMI

disposed on said susceptor so that said infrared detector can receive infrared radiation emitted by a deposition substrate during a deposition process; and

a hollow lightguide disposed within said channel and extending from said susceptor, wherein said lightguide further defines said optical path from said opening to said infrared detector.

5,549,757

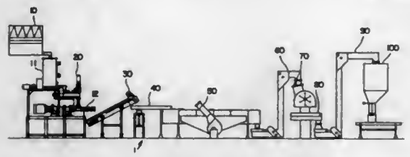
PROCESS FOR RECRYSTALLIZING SUGAR AND PRODUCT THEREOF

James R. Morano, Somerset, N.J., assignor to Ingredient Technology Corporation, Mahwah, and Innovative Sweeteners Incorporated, Somerset, bothr of N.J.

Filed Jun. 10, 1994, Ser. No. 258,110

Int. Cl.[6] B01J *3/00;* **C08B** *30/00;* **C13F** *1/04;* **C13D** *1/12*

U.S. Cl. 127—42 **26 Claims**



1. A process for recrystallizing sugar comprising:

blending a powdered sugar with up to about 15 percent of an adjuvant to provide a sugar blend, said sugar blend has up to about 3 percent moisture;

feeding said sugar blend under a positive pressure to an extruding means; and

mixing With a high shear extruding means said sugar blend at a temperature between about 220° F. and about 300° F. with a residence time in said extruding means of between about 0.5 and about 12 seconds and with a discharge pressure between 20 and 1,200 psi.

5,549,758

CLEANING METHODS AND COMPOSITIONS FOR PRODUCE

Bruce P. Murch, Cincinnati; Brian J. Roselle, Fairfield, and Kyle D. Jones, West Chester, all of Ohio, assignors to The Proctor & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 146,663, Nov. 1, 1993, abandoned, and Ser. No. 224,937, Apr. 8, 1994, abandoned. This application Jul. 5, 1994, Ser. No. 270,708

Int. Cl.[6] B08B *9/20*

U.S. Cl. 134—6 **8 Claims**

1. A method for cleaning surfaces of fruits and vegetables to remove soils and other unwanted residues clinging thereto, at a basic pH comprising (1) contacting the surfaces of said fruits and vegetables, by direct application, with an aqueous cleaning solution comprising:

(a) from about 0.01% to about 15% of C_8–C_{18} fatty acid;

(b) optionally, from about 0.1% to about 4% by weight of nonionic surfactant,

(c) optionally, from about 0.1% to about 1.5% by weight of organic polycarboxylic acid;

(d) optionally, up to about 0.2% by weight of an acid-stable anionic surfactant;

(e) optionally, a toxicologically-acceptable basic buffer;

(f) optionally, a toxicologically-acceptable preservative; and

(g) the balance comprising an aqueous carrier selected from water and mixtures of water and low molecular weight, toxicologically-acceptable organic solvent;

wherein said aqueous solution has a pH from 9.5 to about 12.5, and (2) rinsing, wiping off, or rinsing and wiping off said solution to remove said soils and said unwanted residues from the surfaces of said fruits and vegetables.

5,549,759

METHOD AND APPARATUS FOR CLEANING CYLINDRICAL COMPONENTS WHICH ARE TRANSVERSELY ROTATED IN A DRUM DURING LIQUID TREATMENT

Erik J. Lithander, Goteborg, Sweden, assignor to Niagara Tube Washing Systems AB, Kristinehamn, Sweden

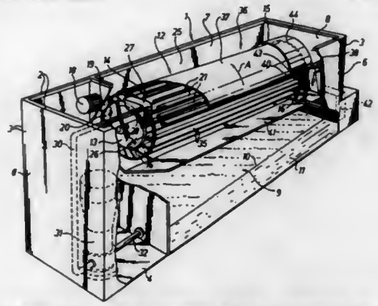
PCT No. PCT/SE93/00213, § 371 Date Nov. 21, 1994, § 102(e) Date Nov. 21, 1994, PCT Pub. No. WO93/17804, PCT Pub. Date Sep. 16, 1993

PCT Filed Mar. 9, 1993, Ser. No. 295,869

Claims priority, application Sweden, Mar. 9, 1992, 9200708

Int. Cl.[6] B08B *9/02*

U.S. Cl. 134—22.11 **9 Claims**



1. A method for cleaning elongate objects, comprising the steps of:

providing an elongate apparatus for cleaning said elongate objects, said apparatus comprised of an elongate container having an open interior, said interior receiving a rotatably driven cylindrical conveyor drum covered with elongated pockets for receiving said elongate objects, said drum including follower means for delimiting said pockets and a hemispherical cover about an upper half of said drum,

said apparatus including a means for conveying a high pressure cleaning solution through and around said elongate objects and a collector plate for receiving said solution after said solution is conveyed;

providing a plurality of elongate objects to be cleaned by introducing said objects into an inlet opening of said apparatus, said inlet opening in communication with said drum such that one object is placed within each of said elongated pockets;

rotating said drum;

spraying said objects in said elongated pockets with said high pressure cleansing solution so as to simultaneously clean an interior and an exterior of said elongate objects and;

removing said elongate objects from said drum through an elongate exit opening of said apparatus.

5,549,760

MOUNTING DEVICE FOR DISHWASHER INSULATION

Craig H. Becker, Kinston, N.C., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Dec. 1, 1994, Ser. No. 348,371

Int. Cl.[6] B08B *13/00*

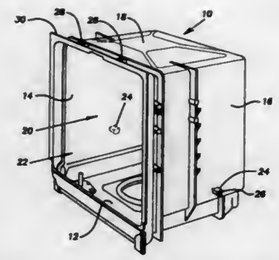
U.S. Cl. 134—25.2 **14 Claims**

14. A method of installing insulation on a washer tub having side walls and a top wall defining an external surface and an internal volume for washing objects, comprising the steps of:

locating the insulation on the external surface of the tub;

inserting a retainer clip through the insulation into an aperture on the external surface of the tub, said retainer clip enraging in the aperture to retain the insulation on the external surface;

inserting a second retainer clip through the insulation into a second aperture on a side of the external surface of the tub opposite the first aperture to retain the insulation on the external surface; and



hooking a perforation in the sheet over a tab disposed on the top wall.

5,549,761

A METHOD FOR REMOVING ROSIN SOLDERING FLUX FROM A PRINTED WIRING BOARD

Anthony E. Winston, East Brunswick; Steven E. Dunn, Hillsborough; Francis R. Cala, Highland Park; Alfredo Vinci, Dayton; M. Stephen Lajoie, Basking Ridge, and Robert C. Jorgensen, Cherry Hill, all of N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Division of Ser. No. 75,231, Jun. 10, 1993, Pat. No. 5,433,885, which is a continuation-in-part of Ser. No. 896,381, Jun. 10, 1992, Pat. No. 5,234,505, which is a continuation-in-part of Ser. No. 731,512, Jul. 17, 1991, abandoned. This application Apr. 6, 1995, Ser. No. 417,881

Int. Cl.[6] B08B *3/04;* **C23G** *5/06*

U.S. Cl. 134—40 **20 Claims**

1. A method for removing rosin soldering flux from a printed wiring board, comprising contacting the board with an aqueous rosin flux removing solution comprising from about 0.1 to 15 percent by weight of a rosin flux removing composition comprising alkaline salts, an alkali metal silicate and an anionic polymer comprising polyacrylic acid having a molecular weight of between about 100,000 to 4,000,000 and present in effective amounts to maintain said silicate solution, said solution having a pH of from about 10 to 13; allowing contact between the rosin flux removing solution and the board to continue for sufficient time to emulsify and remove the rosin soldering flux; and removing the rosin flux removing composition and the rosin soldering flux from the board.

5,549,762

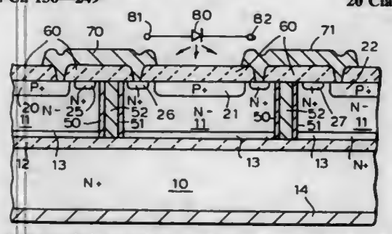
PHOTOVOLTAIC GENERATOR WITH DIELECTRIC ISOLATION AND BONDED, INSULATED WAFER LAYERS

William F. Cantarini, Redondo Beach, Calif., assignor to International Rectifier Corporation, El Segundo, Calif.

Filed Jan. 13, 1995, Ser. No. 372,600

Int. Cl.[6] H01L *31/05*

U.S. Cl. 136—249 **20 Claims**



1. A photovoltaic generator comprising, in combination, a wafer consisting of a bonded assembly having a flat relatively thick handle wafer and a flat relatively thin junction receiving layer; said handle wafer and said junction receiving layer being joined together by a thin dielectric bonding layer; said junction receiving layer being lightly doped of one conductivity type; a mesh-shaped thin trench which extends from the outer surface of said junction receiving layer to said thin dielectric bonding layer thereby dividing said junction receiving layer into a plurality of electrically insulated tubs, said trench being formed by processing said bonded assembly, the walls of said trench being lined with a thin dielectric layer and further containing a polysilicon filler; the flat outer surface of each of said tubs having a relatively shallow diffusion of the opposite conductivity type therein, whereby radiation which reaches the junction between said shallow diffusion and the body of said lightly doped material of said tub will generate an output photovoltaic voltage; and connector means for connecting said shallow diffusion of at least two of said tubs to the lightly doped material of adjacent tubs.

5,549,763

PHOTOVOLTAIC DEVICE

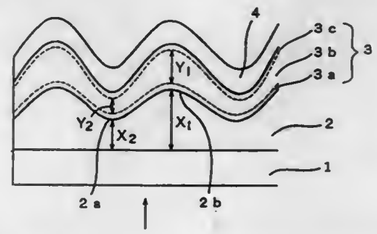
Keiichi Sano, Moriguchi; Yoichiro Aya; Norihiro Terada, Ikoma, and Yasuki Harata, Hirakata, all of, Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Jul. 26, 1994, Ser. No. 280,453

Claims priority, application Japan, Jul. 26, 1993, 5-183802; May 19, 1994, 6-129800

Int. Cl.[6] H01L *31/075*

U.S. Cl. 136—255 **19 Claims**



1. A photovoltaic device having a photoelectric conversion layer which is constituted by a semiconductor film having a semiconductor layer for absorbing light to generate charge carriers therein provided in its inner portion, wherein

the thickness of this semiconductor layer for absorbing light to generate charge carriers in portions of the photoelectric conversion layer where an internal electric field intensity is the photoelectric conversion layer is weak is smaller than that in the other portion of the photoelectric conversion layer to compensate for variations in the distribution of the internal electric field intensity in the photoelectric conversion layer.

5,549,764

WEAR RESISTANT COATED STEEL ARTICLE

Gary L. Biltgen; Kenneth W. Burris, Both of Peoria; Timothy M. Nenne, Wenona; Phil J. Shankwitz, and John B. Walenta, both of Peoria, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Apr. 21, 1995, Ser. No. 426,518

Int. Cl.[6] C23C *8/22*

U.S. Cl. 148—222 **14 Claims**

1. A coated wear resistant steel article, comprising:

a basic article being of carburized steel, said article having a carburized surface, and having carbides on said carburized surface with said carbides comprising at least 20% of the area of said carburized surface, said carbides being isotropically exposed and having an elevation greater than material adjacent said carbides of said carburized surface; and



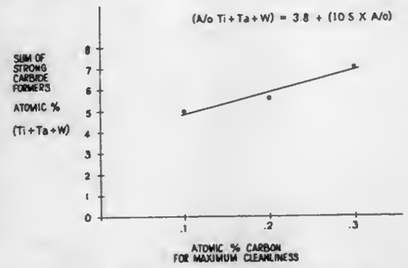
a coating material having a hardness greater than about 1200 Kg/mm covering said carburized surface with a conformal layer not greater than 3 microns in thickness, said coating material being one of boron carbide, chromium nitride, titanium carbide, titanium aluminum nitride, and titanium boride.

5,549,765

CLEAN SINGLE CRYSTAL NICKEL BASE SUPERALLOY

John R. Mihalisin, North Caldwell, N.J.; John Corrigan; Robert J. Baker, both of Yorktown, Va.; Eric L. Leonard, Rutherford, N.J., and Jay L. Vandersluis, Grand Haven, Mich., assignors to Howmet Corporation, Greenwich, Conn.

Continuation of Ser. No. 33,383, Mar. 18, 1993, abandoned.
This application Feb. 16, 1995, Ser. No. 390,437
Int. Cl.[6] C22C *19/05*
U.S. Cl. 148—428 **6 Claims**



1. A nickel base superalloy single crystal casting having a composition consisting essentially of, in weight %, 9.3–10.0% Co, 6.4–6.8% Cr, 0.5–0.7% Mo, 6.2–6.6% W, 6.3–6.7% Ta, 5.45–5.75% Al, 0.8–1.2% Ti, 0.07–0.12% Hf, 2.8–3.2% Re, and balance essentially Ni and carbon wherein a carbon concentration of about 0.04 to about 0.06 weight % is provided for reducing non-metallic inclusion levels in said casting.

5,549,766

MAGNETIC MATERIAL

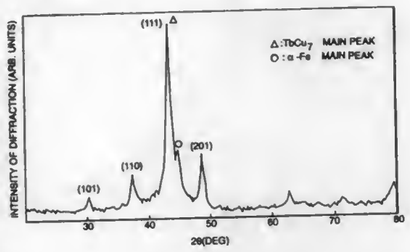
Akihiko Tsutai; Takahiro Hirai, and Shinya Sakurada, all of Kanagawa-ken, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Aug. 12, 1994, Ser. No. 288,808
Claims priority, application Japan, Aug. 31, 1993, 5-216281
Int. Cl.[6] H01F *1/055*
U.S. Cl. 148—301 **12 Claims**

1. A magnetic material which is represented by a formula:

$$R1_xR2_yA_zCo_uFe_{100-x-y-z-u}$$

where R1 is at least one element selected from rare earth elements, R2 is at least one element selected from the group consisting of Sc, Zr and Hf, A is at least one element selected from the group of C, N and P, x,y,z and u are atomic percent defined as $2 \leqq x$, $4 \leqq x+y \leqq 20$, $0.01 \leqq z \leqq 20$, $0 \leqq u \leqq 70$, wherein the crystal structure of a principal phase is $TbCu_7$ structure, and a peak width at half height of the main peak of X-ray diffraction of the principal phase using Cu-Kα X-rays with a resolution of 0.02° or less is about 0.8° or less.



5,549,767

HEAT TREATMENT AND REPAIR OF COBALT BASE SUPERALLOY ARTICLES

Norman Pietruska, Durham, and S. Michael Kurpaska, Manchester, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 879,022, May 6, 1992, abandoned.
This application Jul. 26, 1994, Ser. No. 279,989
Int. Cl.[6] B23K *31/00*
U.S. Cl. 148—512 **14 Claims**



1. A method of repairing defects in a cobalt-base superalloy gas turbine engine component, said cobalt-base superalloy containing carbides and having a carbide solvus temperature, the method consisting essentially of:

a. providing a powder mixture consisting of a first powder having a composition which is substantially the composition of the component, and a second powder whose composition is substantially the composition of the component and contains a substantial amount of a melting point depressant, said first powder having a melting point and said second powder having a melting point, wherein said melting point of the first powder exceeds said melting point of the second powder;

b. applying the powder mixture to the component in a vicinity of the defects; and

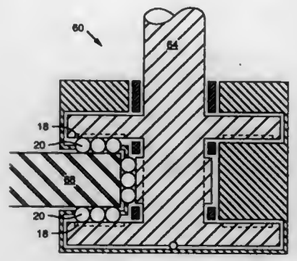
c. heating the component in vacuum or inert atmosphere at a temperature greater than the carbide solvus temperature and which is also greater than the melting point of the second powder, but less than the melting point of the first powder, to a temperature within the range of 2250° F.–2300° F., for one to twelve hours, whereby creep properties of the component are improved.

5,549,768

PROCESS FOR IMPARTING A LOCALIZED FINE GRAIN MICROSTRUCTURE IN EDGE SURFACES OF ALUMINUM ALLOY SHEETS

Murray W. Mahoney, Camarillo, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Continuation of Ser. No. 300,816, Sep. 2, 1994, abandoned.
This application Sep. 19, 1995, Ser. No. 530,541
Int. Cl.[6] C22F *1/04*
U.S. Cl. 148—695 **17 Claims**



1. A process of forming a corrosion resistant fine grain micro structure localized in a transverse edge surface of an aluminum alloy sheet having a large grain microstructure with long grain boundaries lying generally parallel to a longitudinal plane of said sheet, said edge surface transverse to said longitudinal plane and said long grain boundaries, comprising the steps of:

cold working said transverse edge surface without preparatory heat treatment by ball peening substantially normal to said transverse edge surface with sufficient force to cause localized break up of said large grain microstructure; and

rapidly recrystallizing said cold worked transverse edge surface by localized heat treatment to attain said corrosion resistant fine grain microstructure localized in said cold worked transverse edge surface.

5,549,769

HIGH TEMPERATURE STABLE, LOW IMPUT ENERGY PRIMER/DETONATOR

Coodly P. Ramaswamy, Christiana, Pa., assignor to Breed Automotive Technology, Inc., Lakeland, Fla.

Continuation of Ser. No. 651,021, Feb. 4, 1991, abandoned, which is a continuation of Ser. No. 326,021, Mar. 20, 1989, abandoned. This application May 12, 1993, Ser. No. 61,633
Int. Cl.[6] C06B *41/08*
U.S. Cl. 149—26 **1 Claim**

1. A method of forming an explosive primer capable of withstanding aging within the temperature ranging from –40° C. to 200° C. and providing sensitivity of 0.80 inch-oz at 99.99% reliability and 95% confidence level, which comprises; forming a mixture consisting of

(a) 40 to 42 percent by weight of basic lead styphnate;

(b) 20 to 22 percent by weight of lead azide;

(c) 15 to 20 percent by weight of antimony sulfide;

(d) 15 to 25 percent by weight of an oxidizer selected from the group consisting of potassium chlorate and barium nitrate; and

(e) 1 to 3 percent by weight of a mechanical sensitizer selected from the group consisting of glass powder, and sand;

taking from 15 to 25 mg of the mixture formed; and

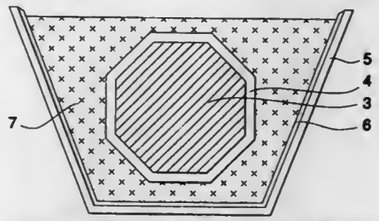
consolidating the taken mixture under a pressure of from 70 to 100 kpsi.

5,549,770

METHOD FOR MANUFACTURING COMPOSITES

Hans Darker, Robertsfors; Robert Lundberg, Trollhattan; Bertil Mattsson; Jan Nilsson, Both of Robertsfors, and Lars Pejryd, Trollhattan, all of, Sweden, assignors to Volvo Aero Corporation, Trollhattan, Sweden

PCT No. PCT/SE93/00266, § 371 Date Nov. 30, 1994, § 102(e) Date Nov. 30, 1994, PCT Pub. No. WO93/20024, PCT Pub. Date Oct. 14, 1993
PCT Filed Mar. 30, 1993, Ser. No. 313,225
Claims priority, application Sweden, Apr. 3, 1992, 9201080
Int. Cl.[6] C04B *37/00;* **B29C** *43/00*
U.S. Cl. 156—89 **16 Claims**



1. A method of manufacturing fiber-reinforced composites from a fibrous material, said method comprising the steps of:

infiltrating said fibrous material with material from which a matrix is built up;

preforming said infiltrated fibrous material into a green body against a shape-imparting body;

encapsulating said preformed green body and said shape-imparting body with an encapsulation material;

consolidating and sintering said encapsulated green body by means of isostatic pressure sintering into an essentially dense composite body while preventing deformation of the green body with said shape-imparting body; and

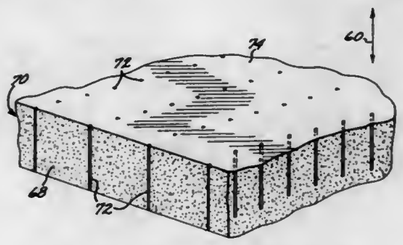
removing said encapsulation material and shape-imparting body from said green body after said isostatic pressure sintering.

5,549,771

FABRICATION OF BODY CONTAINING LENGTHS OF FIBER EMBEDDED THEREIN

David A. Brooker, 1007 Howard Ave. #49, Escondido, Calif. 92029

Filed Dec. 23, 1994, Ser. No. 372,381
Int. Cl.[6] B29C *44/12;70/86*
U.S. Cl. 156—153 **19 Claims**



1. A method for fabricating a sheet containing lengths of fiber embedded therein, comprising the steps of:

providing a length of a fiber,

providing a winding fixture including a plurality of supports, at least some of the supports being spaced apart in a Z-direction;

winding the length of fiber over the supports to form a three-dimensional skeletal structure comprising at least two parallel two-dimensional layers, each layer having a first portion of

the length of the fiber lying parallel to the Z-direction and a second portion of the length of the fiber lying perpendicular to the Z-direction;

filling the space within the skeletal structure with a matrix material; and

processing the skeletal structure filled with the matrix material to remove the supports, remove the second portion of the length of the fiber, and produce a composite sheet having a face lying perpendicular to the Z-direction with lengths of the fiber extending in the thickness direction of the composite sheet and lying parallel to the Z-direction.

5,549,772

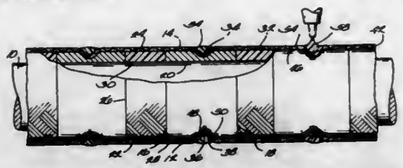
MANUFACTURING PROCESS FOR FILAMENT WOUND THRUST BEARING

Bernard Harris, Northbrook, and Dennis E. Bozych, Downers Grove, both of Ill., assignors to Rexnord Corporation, Milwaukee, Wis.

Division of Ser. No. 990,420, Dec. 15, 1992, Pat. No. 5,360,275. This application Sep. 12, 1994, Ser. No. 304,356

Int. Cl.[6] B65H *81/00*

U.S. Cl. 156—154 **20 Claims**



1. A method for making a thrust bearing assembly, said method comprising the steps of:

providing an inner race including an outer surface having an annular recess; and

forming an outer race around the inner race by applying a layer of self-lubricating material over the outer surface of the inner race to form a low friction liner such that the low friction liner conforms to the outer surface of the inner race and thereby includes a recess, extruding a flowable resin into the recess in the low friction liner, and applying an overlayment of filaments over the low friction liner and over the resin in the recess of the low friction liner.

5,549,773

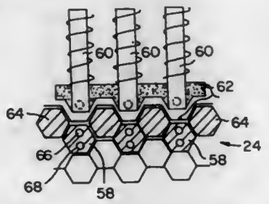
WOVEN PREFORM/MAGNETIC PRESS PROCESS FOR THEREMOPLASTIC HONEYCOMB CORES

John E. Henderson, Ogden, Utah, and John K. Narasaki, Camarillo, Calif., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Continuation of Ser. No. 978,102, Nov. 18, 1992, abandoned, which is a continuation of Ser. No. 475,062, Feb. 5, 1990, abandoned. This application Jan. 23, 1995, Ser. No. 376,266

Int. Cl.[6] B32B *3/12;31/20*

U.S. Cl. 156—173 **7 Claims**



2. The method of forming a honeycomb structure from stacked fiber reinforced thermoplastic strips bonded together by thermoplastic fusion, said structure characterized by a plurality of stacked layers of hexagonal honeycomb cells each layer being offset from the adjacent layer, comprising

providing a plurality of thermoplastic strips,

providing a plurality of ferromagnetic mandrels of hexagonal shape in cross section, each mandrel including means for heating the same to a temperature above the fusion temperature of said thermoplastic strips and further including means for cooling the mandrel to below the fusion temperature,

preforming each of said strips into a repeating hexagonal pattern defining a row of half hexagonal cells in which each hexagonal cell is separated by a facet of a hexagonal cell,

placing a first preformed strip to form a first layer in said structure with one of said mandrels in each of said cells below said first strip, said mandrels being in contact with and supporting the top facet of each said cell,

placing the next preformed strip on the first strip so that the lower facets of said next strip are juxtaposed to and overlie the top, mandrel supported facets of the first strip,

providing and supporting at least one electromagnet into contact with at least one of that row of facets of said next strip immediately adjacent at least one mandrel so that the adjacent facets of said strip are interposed between the mandrel and the electromagnet,

heating at least said one mandrel to above the fusion temperature of said interposed thermoplastic strips, said facets being heated by conduction therefrom,

energizing said electromagnet to strongly attract said mandrel and to mechanically compress the interposed facets of the first and next strips together while heated to thereby fusion bond them together,

cooling said one mandrel through said cooling means,

repeating the above steps for each of the juxtaposed facets of said row to form a new row of open hexagonal cells,

removing the mandrels and inserting them into the new row of open cells just formed,

repeating the foregoing steps with further thermoplastic strips to build a bonded honeycomb structure one layer at a time until finished.

5,549,774

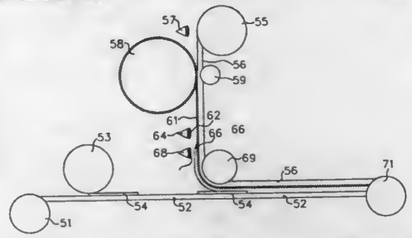
METHOD OF ENHANCING THE VISIBILITY OF DIFFRACTION PATTERN SURFACE EMBOSSMENT

Richard G. Miekka, Sudbury; Richard A. Fotland, Holliston; Frederick N. Miekka, Billerica; John J. Fitch, Natick, all of Mass., and Karl Josephy, Los Angeles, Calif., assignors to Avery Dennison Corporation, Pasadena, Calif.

Filed May 11, 1992, Ser. No. 882,187

Int. Cl.[6] B32B *1/00*

U.S. Cl. 156—209 **33 Claims**



1. A method of forming a security product, comprising the steps of:

(a) forming a sheet of base material, said sheet having a first surface and a second surface, wherein the first surface is embossed with an optical diffraction grating pattern or a holographic image pattern, and wherein the sheet is light transmitting;

(b) preparing a metallic effect ink adapted to bond to the first surface of the sheet and to form, with the first surface, an interface which approximates the light reflective properties of an interface formed by vacuum metallization, in which the metallic effect ink is selected from the group consisting of (1) a binder containing metallic flakes, (2) a dye selected from the group consisting of crystal violet, rhodamine B, fuchsine, methyl violet, safranine, fluorescein, rhodamine, and mauveine, (3) an ink containing graphite as its pigment, and (4) an ink containing a metallic sulfur compound as its pigment;

(c) applying the metallic effect ink to the embossed first surface of the sheet by conventional printing equipment; and

(d) bonding a backing sheet to the metallic effect ink-printed, embossed sheet, and further providing visual information between the backing sheet and the metallic effect ink-printed and embossed sheet, the visual information being obscured by or visible through the metallic effect ink when viewing the article through the embossed sheet.

5,549,775

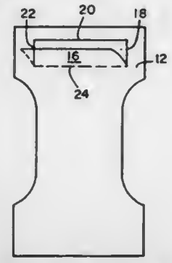
METHOD OF FORMING AN ABSORBENT ARTICLE

Thomas W. Odorzynski, Green Bay, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Nov. 23, 1994, Ser. No. 344,422

Int. Cl.[6] B32B *31/00;* **A61F** *13/15*

U.S. Cl. 156—227 **12 Claims**



1. A method for making an absorbent article which generally delimits a front waistband section, a rear waistband section, and an intermediate section which interconnects said front and rear waistband sections, which absorbent article includes a vapor-permeable panel, the steps of the method comprising:

providing a backsheet layer having a length;

forming a hinged cutout section in said backsheet layer, said hinged cutout section defining a hinge line;

folding said hinged cutout section along said hinge line to form a folded, hinged cutout section and to define a vapor-permeable panel;

positioning an absorbent body on said backsheet layer, said absorbent body having a length which is less than the length of said backsheet layer, said folded, hinged cutout section being located between said absorbent body and said backsheet layer;

positioning a liquid-permeable topsheet layer in facing relation with said backsheet layer, said absorbent body being located between said topsheet layer and said backsheet layer.

5,549,776

SELF-SUPPORTING IMPACT RESISTANT LAMINATE

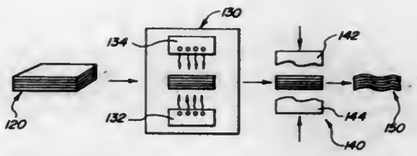
Duane M. Juriga, Davidson, N.C., assignor to Indian Head Industries, Charlotte, N.C.

Continuation-in-part of Ser. No. 86,157, Jul. 2, 1993, which is a division of Ser. No. 658,336, Feb. 20, 1991, Pat. No. 5,258,585. This application Nov. 1, 1994, Ser. No. 332,871

Int. Cl.[6] B29C *51/02;51/14;* **B32B** *31/20*

U.S. Cl. 156—228 **7 Claims**

1. A method of forming a lightweight, contoured, structurally stable, self-supporting laminate, said method comprising:



(a) laying down, in succession, a finish lamina, a first heat activated adhesive, a first thermoformable scrim lamina, a second heat activated adhesive, a high-density at least partially closed cell polymeric foam lamina, a third heat activated adhesive, and a second thermoformable scrim lamina thereby forming an unbonded laminate;

(b) uniformly heating said unbonded laminate in an oven to a temperature sufficient to make said adhesives bondable thereby forming a heated, substantially unbonded laminate; and

(c) quickly transferring said laminate to a contoured die press and permanently bonding and forming, under pressure, said laminate in said contoured die press and applying pressure to outside surfaces of said laminate to permanently bond said laminate utilizing the residual heat in said laminate to form a contoured, structurally stable, self-supporting, impact resistant laminate.

5,549,777

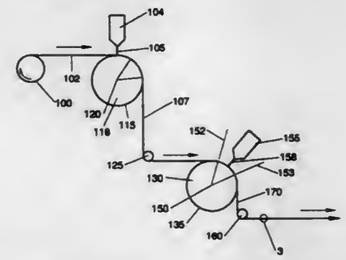
THREE-DIMENSIONAL, MACROSCOPICALLY EXPANDED, APERTURED LAMINATE WEBS AND METHOD FOR MAKING

Fred M. Langdon, and G. Chris Dobrin, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 205,968, Mar. 3, 1994. This application Jun. 5, 1995, Ser. No. 463,589

Int. Cl.[6] B29C *47/00;* **B32B** *31/00*

U.S. Cl. 156—244.18 **3 Claims**



1. A process for forming a three-dimensional, macroscopically expanded web having a first surface and a second surface, said web being comprised of a first layer of polymeric material and a second layer of nonwoven material secured to and underlying said first layer of polymeric material, said process comprising the steps of:

(a) feeding a nonwoven web onto a forming structure having opposed surfaces, said forming structure exhibiting a multiplicity of apertures which place the opposed surfaces of said forming structure in fluid communication with one another;

(b) extruding a molten resin onto said nonwoven web; and

(c) applying a vacuum across the thickness of said nonwoven web and said extruded resin, the suction provided by said vacuum being sufficiently great to cause said nonwoven web and said resin to be secured together and to cause said nonwoven web and said resin to rupture in those areas coinciding with said apertures in said forming structure and to conform with said forming structure.

5,549,778

MANUFACTURING METHOD FOR MULTILAYER CERAMIC SUBSTRATE

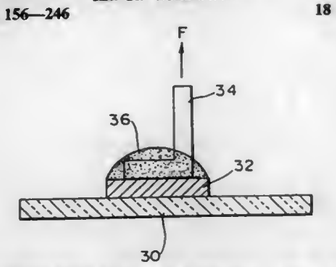
Hiromitsu Yokoyama; Katsuto Takeuchi; Koji Soekawa; Kenichiro Abe; Syouichi Hattori; Hitoshi Suzuki, and Nobuhide Okada, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 291,709, Aug. 16, 1994, abandoned. This application Aug. 25, 1995, Ser. No. 519,178

Claims priority, application Japan, Dec. 21, 1993, 5-321760

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—246 **18 Claims**



1. A manufacturing method for a multilayer ceramic substrate, comprising the steps of:

(a) forming a plurality of first holes through a first green sheet comprising glass and ceramics;

(b) filling said first holes with a first conductor to form a plurality of first vias in said first green sheet;

(c) printing a first conductor paste on said first green sheet to form a plurality of first thick pads connected to said first vias and a plurality of thick film patterns connected to said first thick pads;

(d) repeating said steps (a) to (c) to prepare a plurality of said first green sheets each formed with said first vias, said first thick film pads, and said thick film patterns;

(e) forming a plurality of second holes through a second green sheet comprising glass and ceramics;

(f) filling said second holes with a second conductor paste to form a plurality of second vias in said second green sheet;

(g) printing a second conductor paste on said second green sheet to form a plurality of second thick film pads connected to said second vias;

(h) partially covering each of said second thick film pads with a dielectric material;

(i) laminating said first green sheets prepared in step (d) and said second green sheet prepared in step (h) so that said second green sheet forms an uppermost layer;

(j) applying heat and pressure to said first and second green sheets laminated together to bond said first and second green sheets integrally with each other; and

(k) firing said first and second green sheets bonded together.

5,549,779

PROCESS FOR THE PRODUCTION OF A PENCIL

Thomas Stoecklein, Nuremberg, Germany, assignor to Schwan-Stabilo Schwanhaeusser GmbH & Co., Nuremberg, Germany

PCT No. PCT/EP92/01621, § 371 Date Apr. 7, 1994, § 102(e) Date Apr. 7, 1994, PCT Pub. No. WO93/01944, PCT Pub. Date Feb. 4, 1993

PCT Filed Jul. 16, 1992, Ser. No. 182,138

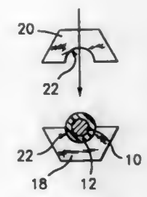
Claims priority, application Germany, Jul. 20, 1991, 41 24 210.6

Int. Cl.[6] B43K *19/02*

U.S. Cl. 156—293 **6 Claims**

1. A process for the production of a pencil, comprising the steps of:

introducing one of a lead and core stick into a groove in a first housing portion;



applying a second housing porting having a groove to the first housing portion wherein the groove of the second housing portion is fitted with one of said lead and said core stick; and

gluing one of said lead and said core stick to said first and second housing portions; and

gluing said first and second housing portions together;

wherein said step of gluing one of said lead and said core stick is achieved through using an adhesive comprising one of a flexible fusion adhesive and a melt adhesive, the adhesive having outside dimensions lying within close dimensional tolerances with respect to the dimensions of said grooves of said first and second housing such that one of said lead and said core stick is closely fixed between said first and second housing portions.

5,549,780

METHOD FOR PLASMA PROCESSING AND APPARATUS FOR PLASMA PROCESSING

Hideomi Koinuma, Tokyo; Tadashi Shiraishi, Kanagawa; Tohru Inoue, Niigaka; Kiyoto Inomata, Kanagawa; Shigenori Hayashi, Kanagawa; Akiharu Miyanaga, Kanagawa, and Shunpei Yamazaki, Tokyo, all of, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Japan

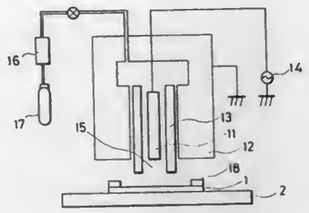
Continuation-in-part of Ser. No. 777,708, Oct. 21, 1991, Pat. No. 5,198,724, and Ser. No. 813,758, Dec. 30, 1991, Pat. No. 5,221,427. This application Mar. 22, 1993, Ser. No. 35,921

Claims priority, application Japan, Mar. 24, 1992, 4-097269; Mar. 24, 1992, 4-097270; Mar. 24, 1992, 4-097271

The portion of the term of this patent subsequent to Mar. 30, 2010, has been disclaimed.

Int. Cl.[6] C23F *1/02;* **C23C** *16/00*

U.S. Cl. 156—345 **15 Claims**



1. A method for plasma processing comprising the step of:

generating a plasma in an apparatus comprising a pair of electrodes, an insulator provided between said pair of electrodes and in contact with one of said electrodes by applying an alternating electric field between said pair of electrodes with a gas comprising a rare gas flowing between said insulator and the other one of said electrodes,

wherein said insulator has a ratio (thickness thereof in unit of millimeter)/(relative dielectric constant thereof) of 1 or less.

5,549,781

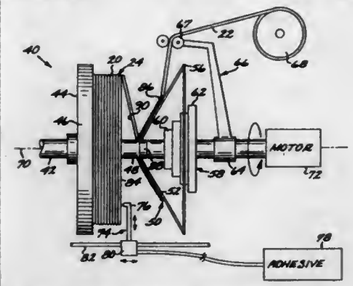
COIL WINDING APPARATUS INCORPORATING A FLEXIBLE WINDING FLANGE

Daniel K. Schotter, Tucson, Ariz., assignor to Hughes Missile Systems Company, Los Angeles, Calif.

Filed Jun. 7, 1995, Ser. No. 488,005

Int. Cl.[6] B65H *54/00;* **F42B** *15/04*

U.S. Cl. 156—443 **19 Claims**



1. Coil pack winding apparatus, comprising:

a central shaft having a first location and an oppositely disposed second location;

a first flange overlying the central shaft at a location adjacent to the first location of the central shaft;

a coil support base, comprising

a flexible flange having an inner edge adjacent to the central shaft and an outer edge remote from the central shaft, the flexible flange having a shape that is variable between a first position wherein a first-position distance of the inner edge of the flexible flange from the first flange is less than a first-position distance of the outer edge of the flexible flange from the first flange, and a second position wherein a second-position distance of the inner edge of the flexible flange from the first flange is substantially the same as a second-position distance of the outer edge of the flexible flange from the first flange, and

means for flexing the flexible flange between the first position and the second position;

a fiber winding head including a fiber guide; and

means for moving the fiber winding head circumferentially relative to the central shaft.

5,549,782

LAMINATING APPARATUS

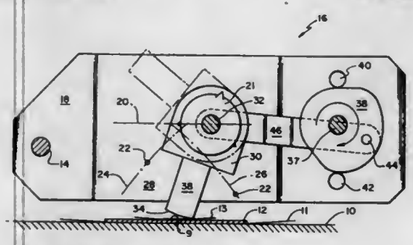
Bernhard Baist, Wuppertal, Germany, assignor to MELZER Maschinenbau GmbH, Germany

Continuation of Ser. No. 7,654, Jan. 22, 1993, abandoned. This application Jun. 17, 1994, Ser. No. 261,888

Claims priority, application Germany, Jan. 23, 1992, 42 01 752.1

Int. Cl.[6] B44C *1/16*

U.S. Cl. 156—540 **10 Claims**



1. A laminating apparatus comprising:

a planar support,

means for feeding work pieces to be laminated along said planar support towards a laminating position,

a stamp having a working surface, said working surface having a shape of a sector of a circular cylinder wall,

means for linearly guiding said stamp parallel to and across said support in a direction orthogonal to a cylinder axis of said cylinder wall,

means for pivotably guiding said stamp so as to cause said stamp to rotate about said cylinder axis when said stamp is displaced along said linearly guiding means thereby causing said working surface to roll along said work pieces, said pivotal guiding means comprising a first cam follower set and a second cam follower set and allocated first and second cam track sets provided on said linear guiding means, said cam followers being held in engagement with said cam track sets by said linear guiding means.

5,549,783

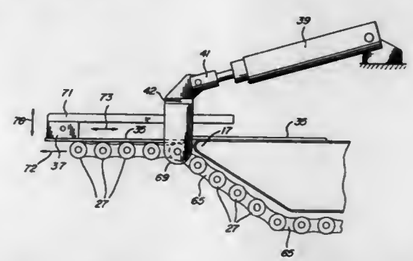
APPARATUS AND METHOD FOR AUTOMATICALLY APPLYING ADHESIVE-BACKED LABELS TO MOVING ARTICLES

Hubert J. Schroeder, Fullerton, and Jovan Zivkovic, Costa Mesa, both of Calif., assignors to Apax Corporation, Cerritos, Calif.

Continuation of Ser. No. 306,712, Sep. 15, 1994, abandoned, which is a continuation of Ser. No. 117,878, Sep. 7, 1993, Pat. No. 5,399,228, which is a continuation of Ser. No. 839,616, Feb. 21, 1992, abandoned. This application Nov. 8, 1995, Ser. No. 555,305

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—542 **11 Claims**



1. An apparatus for applying pressure-sensitive adhesive labels carried at a first predetermined rate to an article moving at a second predetermined rate, said apparatus comprising:

a label dispensing mechanism:

a label receiving means including a plurality of rollers contained in a frame which is mounted for movement with respect to said label dispensing mechanism, each roller having a non-stick surface, located adjacent said label dispensing mechanism, for receiving a label by its adhesive back side, and for moving the label by its adhesive back side along said roller surface to a waiting position: and

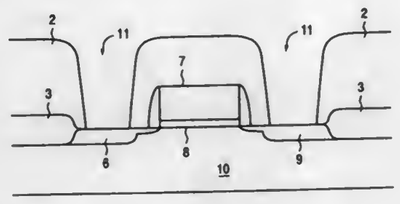
means for increasing or decreasing the length from the distal end of the roller frame to the label dispensing mechanism whereby the label is applied to the moving article by moving a portion of said adhesive back side of said label into contact with said moving article while another portion of said adhesive back side remains in contact with said roller surface.

5,549,784

METHOD FOR ETCHING SILICON OXIDE FILMS IN A REACTIVE ION ETCH SYSTEM TO PREVENT GATE OXIDE DAMAGE

Kevin F. Carmody, Hillsboro; Peter K. Charvat, Portland, and Gilroy J. Vandentop, Aloha, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 940,680, Sep. 4, 1992, abandoned. This application Sep. 14, 1994, Ser. No. 306,251
Int. Cl.[6] H01L 21/00
U.S. Cl. 156—643.1 13 Claims



1. A method for etching an insulating film in the fabrication of an integrated circuit, said etching performed in a dry etch system using a plasma formed from a gas mixture, said method comprising:

forming said insulating film over a semiconductor device, wherein said semiconductor device comprises a source region, a drain region, and a gate region;

forming said gas mixture from a first flow of a helium gas in combination with a second flow of a fluorine gas and a third flow of an oxygen gas, with said second flow comprising at least 30% of a sum of said first and said third flows, and with said first flow comprising at least 20% of a sum of said first, said second, and said third flows;

applying power to said gas mixture in said system to form said plasma, wherein said step of applying power to said gas mixture to form said plasma is performed with a wattage of approximately 2000 watts while said gas mixture is under a pressure of approximately 50 milliTorr; and

exposing said insulating film to said plasma in a hexode reactor to remove selected regions of said insulating film.

5,549,785

METHOD OF PRODUCING A SEMICONDUCTOR DYNAMIC SENSOR

Minekasu Sakai, Nukata-gun; Tsuyosho Fukada, Aichi-gun; Masakazu Terada, Kariya; Shinsuke Watanabe, Nukata-gun, and Minoru Nishida, Okazaki, all of, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

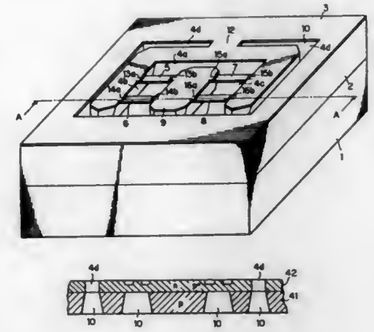
Filed Sep. 14, 1993, Ser. No. 120,380
Claims priority, application Japan, Sep. 14, 1992, 4-244448; Sep. 21, 1992, 4-251677
Int. Cl.[6] B23P 15/00
U.S. Cl. 156—644.1 14 Claims

1. A method of producing a semiconductor dynamic sensor comprising steps of:

coating a front main surface of a semiconductor substrate with a first resist film;

patterning said first resist film to expose a first region of said front main surface where upper isolation grooves are formed;

forming a lower isolation groove under said first region of said front main surface of said semiconductor substrate and under a second region of said semiconductor substrate where thin distortion-producing portions are formed, after said first resist film is patterned, by firstly etching a region of a back main surface of said semiconductor substrate; and



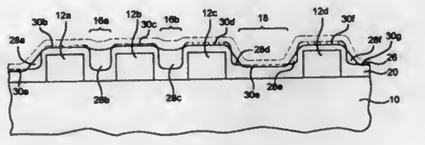
forming said upper isolation grooves to connect to said lower isolation groove by secondly etching said exposed first region of said front main surface of said semiconductor substrate utilizing said patterned first resist film, in order to sectionalize said thin distortion-producing portions in said second region of said semiconductor substrate where said thin distortion-producing portions are formed, said thin distortion-producing portions being formed by utilizing said lower isolation groove.

5,549,786

HIGHLY SELECTIVE, HIGHLY UNIFORM PLASMA ETCH PROCESS FOR SPIN-ON GLASS

Stephen A. Jones; Shyam G. Garg; James F. Buller, and Miguel Santana, Jr., all of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Aug. 29, 1995, Ser. No. 520,758
Int. Cl.[6] H01L 21/00
U.S. Cl. 156—662.1 16 Claims



1. A method for removing a portion of a spin-on glass (SOG) layer formed over a layer of PECVD silicon nitride on a frontside surface of an upper topography of a silicon wafer, comprising the steps of:

placing the silicon wafer in a gap between a pair of electrodes arranged within a reaction chamber;

establishing a flow of He, CHF_3, and N_2 gases through said reaction chamber;

adjusting the pressure within said reaction chamber;

applying RF power between the pair of electrodes for selectively etching said SOG layer to said silicon nitride layer on said silicon wafer;

ceasing the flow of He, CHF_3, and N_2 gases through said reaction chamber; and

establishing a flow of argon (Ar) gas through said reaction chamber in order to expel etch by-products from the reaction chamber.

5,549,787

TREATMENT OF WASTE PRINTED PAPERS WITH SURFACE ACTIVE POLYMERIC COMPOSITIONS TO PRODUCE BRIGHTER PULP

Mohini M. Sain, 4259 Savard #2, Trois-Rivières, Canada, and Claude Daneault, 3805 Blvd St-Jean, Trois-Rivières-Quest, Canada

Filed Feb. 3, 1995, Ser. No. 383,446
Int. Cl.[6] D21C 5/02
U.S. Cl. 162—5 6 Claims

1. A wastepaper treatment process for producing brighter pulp from an aqueous repulped wastepaper slurry containing offset, photocopy, laser and inkier printed papers contaminated with water-based flexographic ink printed furnish, which process comprises;

(i) mixing said aqueous repulped printed paper slurry containing released small ink particles and dirts with a surface active polymer solution wherein the polymer is adsorbable to small ink particles and dirt, and the surface active polymer in said repulped slurry is between 0.i to 3% by weight of dry waste paper; wherein the surface active polymer solution is art aqueous alkaline solution or a nonaqueous oily phase of a styrene-acid anhydride copolymer or a terpolymer, wherein the terpolymer contain about 60–80 mole percent of styrone, 10–40 mole percent of 2,5 furandione and 1–20 mole percent of a third monomer chosen from the group consisting of 2-dodecenyl succinic anhydride, succinic anhydride, citraconic anhydride and 2-methylene succinic anhydride, wherein the copolymer and terpolymer have a glass transition temperature in the range 105° to 170° C.;

(ii) agglomerating the free small ink particles and dirts from said repulped slurry by agitating at a consistency range between 0.2 to 1.5% and at a temperature between 25° to 75° C. for a time between 1 to 10 minutes to produce agglomerated inks and dirts, said aqueous repulped paper slurry having a pH range between about 7 to 12 and subsequently;

(iii) separating said agglomerated inks and dirts from the resulting aqueous repulped paper slurry by flotation to produce a pulp with high brightness.

5,549,788

MINIMAL EFFLUENTS DISCHARGE PULP MILL WITH CHEMICAL RECOVERY

Tuomo S. Nykanen; Brian F. Greenwood, both of Glens Falls, N.Y.; Johan Gullichsen, Helsinki, Finland; Erkki Kiiskila, Karhula, Finland; Esko Mattelmaki, Varkaus, Finland; Joseph R. Phillips; Jan T. Richardsen, both of Glens Falls, N.Y.; Rolf Ryham, Roswell, Ga.; Jarmo Soderman, Helsinki, Finland, and Karl G. Wiklund, Bonassund, Sweden, assignors to A. Ahlstrom Corporation, Noormarkku, Finland

Continuation-in-part of Ser. No. 25,386, Mar. 2, 1993, Pat. No. 5,302,246, which is a continuation-in-part of Ser. No. 922,334, Jul. 30, 1992, Pat. No. 5,374,333. This application Aug. 31, 1993, Ser. No. 113,642
Int. Cl.[6] D21C 11/00
U.S. Cl. 162—29 2 Claims

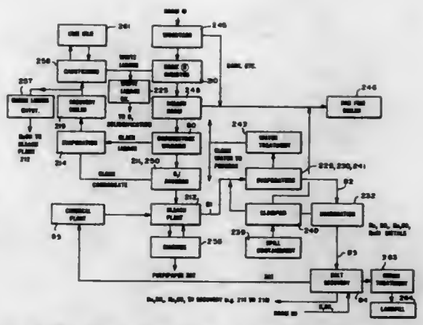
1. A method of minimizing effluents from a cellulose pulp mill having process liquid streams, and including a digester, a bleach plant, and a sulfur-containing chemical recovery loop including a recovery boiler producing flue gases having particles, comprising the steps of:

(a) collecting liquid spills from the mill process liquid streams;

(b) concentrating liquid effluents from the mill, including directly concentrating at least the collected spills from step (a) to a concentration level high enough for incineration;

(c) in an incinerator distinct from the recovery boiler incinerating the concentrated liquid effluents from step (b) to produce a residue containing at least some sulfur and containing sulfate, sodium chloride, and carbonate;

(d) returning at least that portion of the residue containing at least some sulfur to the chemical recovery loop, for the production of cooking liquor for use with the digester;



(e) distilling the residue from step (c) with sulfuric acid to produce gaseous hydrogen chloride, and remaining residue; and

(f) using the gaseous hydrogen chloride from step (e) in a chemical plant for producing chlorine dioxide used in the bleach plant; and

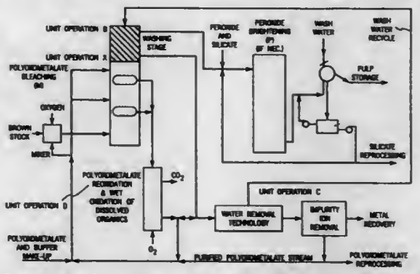
wherein step (d) is practiced at least in part by passing the remaining residue from step (e) to the recovery loop.

5,549,789

OXIDATION OF LIGNIN AND POLYSACCHARIDES MEDIATED BY POLYOXOMETALATE TREATMENT OF WOOD PULP

Rajai H. Atalla, Verona; Ira A. Weinstock, Madison, both of Wis.; Craig L. Hill, Atlanta, Ga., and Richard S. Reiner, Madison, Wis., assignors to The United States of America as represented by the Secretary of the Agriculture, Washington, D.C., and Emory University, Atlanta, Ga.

Continuation-in-part of Ser. No. 219,041, Mar. 28, 1994, which is a continuation-in-part of Ser. No. 937,634, Aug. 28, 1992, Pat. No. 5,302,248. This application Apr. 7, 1994, Ser. No. 224,449
Int. Cl.[6] D21C 9/147;3/04
U.S. Cl. 162—65 20 Claims



1. A method for oxidative degradation of lignin and polysaccharide fragments dissolved during polyoxometalate treatment of wood pulp, comprising the steps of:

obtaining a wood pulp;

mixing the wood pulp with a solution of a polyoxometalate of the formula $[V_lMo_mW_nNb_oTa_p(TM)_qX_rO_s]^{z-}$ where l is 0–18, m is 0–40, n is 0–40, o is 0–10, p is 0–10, q is 0–9, r is 0–6, TM is a d-electron-containing transition metal ion, and X is a heteroatom, which is a p or d block element, where l+ m+ n+ o+p≧4, l+ m+ q>0 and s is sufficiently large that x>0, wherein the pulp is of a consistency of 1–20%, wherein the pulp is delignified, the polyoxometalate is reduced, and the lignin and polysaccharide fragments within the pulp are dissolved, and wherein a liquor is obtained that contains the polyoxometalate and dissolved lignin and polysaccharide fragments, and

heating the liquor in the presence of a gaseous oxidant, wherein oxidation takes place, under conditions wherein the polyoxometalate is oxidized and the dissolved lignin and polysaccharide fragments are catalytically and oxidatively degraded by the oxidant and the polyoxometalate to volatile organic compounds and water,

wherein the pressure of the oxidant in the heating step is 15 to 1000 psia,

wherein the temperature of the heating step is between 100° C. and 400° C.,

wherein the heating step is performed at final pH of between 1.0 And 10.0,

wherein the time of oxidation is between 0.5 hr and 10.0 hrs, and

wherein the heating step takes place in a vessel capable of withstanding said pressure.

5,549,790

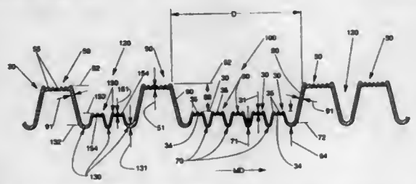
MULTI-REGION PAPER STRUCTURES HAVING A TRANSITION REGION INTERCONNECTING RELATIVELY THINNER REGIONS DISPOSED AT DIFFERENT ELEVATIONS, AND APPARATUS AND PROCESS FOR MAKING THE SAME

Dean Van Phan, West Chester, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 29, 1994, Ser. No. 268,133

Int. Cl.[6] D21H *27/40*

U.S. Cl. 162—109 **19 Claims**



1. A paper structure comprising:

a first region disposed at a first elevation and having a first thickness;

a second region disposed at a second elevation different from the first elevation, the second region having a second thickness;

a third region interconnected with the first region, the third region having a third thickness; and the third region having a third elevation; and

a fourth transition region having a fourth thickness, the transition region interconnecting the second region with at least one of the first and third regions;

wherein the fourth thickness is greater than the first thickness, the fourth thickness is greater than the second thickness, and wherein the third thickness is greater than the first thickness.

5,549,791

INDIVIDUALIZED CELLULOSIC FIBERS CROSSLINKED WITH POLYACRYLIC ACID

Carlisle M. Herron, Cincinnati, Ohio, and Walter L. Dean, Memphis, Tenn., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 15, 1994, Ser. No. 259,842

Int. Cl.[6] D21H *13/04*

U.S. Cl. 162—157.6 **2 Claims**

1. Individualized, crosslinked cellulosic fibers, said fibers having between about 1.0 weight % and about 10.0 weight % of a polymeric polyacrylic acid crosslinking agent, calculated on a dry fiber weight basis, reacted with said fibers in an ester intrafiber crosslink bond form, wherein said polymeric polyacrylic acid crosslinking agent is a copolymer of acrylic acid and maleic acid, said copolymer having a molecular weight from about 500 to about 40,000, wherein said crosslinking agent is sufficiently reacted with said fibers in intrafiber bond form to cause said fibers to have a water retention value of from about 25 to about 60, and wherein the weight ratio of acrylic acid to maleic acid is from about 5:1 to 1.5:1.

5,549,792

HEADBOX FOR A PAPER MACHINE

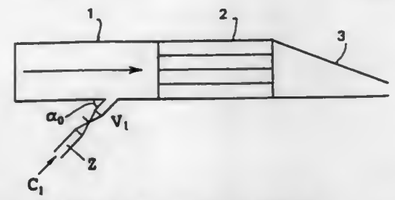
Ulrich Begemann, Leonberg; Helmut Heinzmann, Röhmenkirch; Wolfgang Ruf, Heidenheim; Dieter Egelhof, Heidenheim, and Gernot Kinzler, Heidenheim, all of, Germany, assignors to J. M. Voith GmbH, Germany

Filed Jul. 12, 1994, Ser. No. 273,903

Claims priority, application Germany, Jul. 12, 1993, 43 23 263.9

Int. Cl.[6] D21F *1/06*

U.S. Cl. 162—216 **24 Claims**



1. A headbox for a paper machine, comprising:

at least one channel region defining a main direction of flow for a fiber suspension and extending over the width of the paper machine;

a region in which turbulence is produced in the suspension;

a region comprising an outlet nozzle region for the headbox;

a plurality of feed lines for introducing an auxiliary fluid flow into the headbox distributed over the width of the machine, and discharging into the outlet nozzle region; and

an adjusting device for controlling the quantity of said auxiliary flow in each said feed line;

each feed line defining an angle α between the main direction of flow and the feed line; and

the angle α being selected so that, regardless of the amount of auxiliary flow fed through the feed line, total volumetric flow in the headbox immediately downstream of the feed line remains constant.

5,549,793

CONTROL OF DILUTION LINES IN A DILUTION HEADBOX OF A PAPER MAKING MACHINE

Ake A. Hellstrom, and Alexsey Goldshdeyn, both of Columbus, Ohio, assignors to ABB Industrial Systems, Inc., Columbus, Ohio

Filed Aug. 2, 1994, Ser. No. 284,939

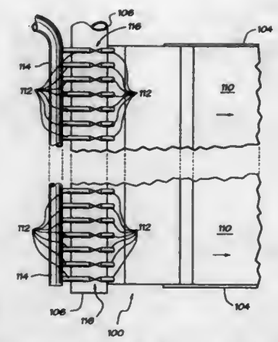
Int. Cl.[6] D21F *1/08;* **F16K** *7/04*

U.S. Cl. 162—258 **10 Claims**

1. In a paper making machine, control apparatus for controlling at least one characteristic of a web of paper produced by said paper making machine, said paper making machine having a headbox for receiving and feeding a pulp slurry onto a wire for formation of a paper web, said headbox of said paper making machine including a plurality of dilution lines inserted therein, said control apparatus comprising:

a plurality of pinch valves corresponding in number and connected individually to said plurality of dilution lines for controlling a flow of dilution water through said plurality of dilution lines; and

a control system coupled to said plurality of pinch valves for controlling said plurality of pinch valves to regulate the flow of pulp slurry from said paper making machine, said control system comprising a plurality of pinch valve controllers connected to said plurality of pinch valves with each of said plurality of pinch valve controllers comprising a differential pressure transducer for measuring a pressure differential from an inlet side of each of said plurality of pinch valves to an outlet side of each of said plurality of pinch valves and for generating a differential pressure signal representative of the measured pressure differential, said control system being responsive to differential pressure signals from said differential pressure transducers of said plurality of pinch valve controllers for controlling said plurality of pinch valves.



5,549,794

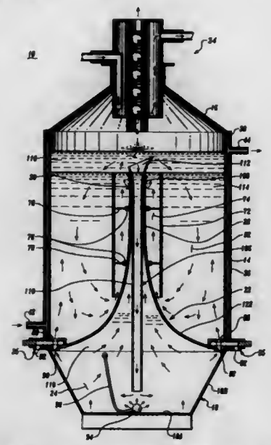
CONTINUOUS LINEAR-TORROIDAL EXTRACTION-DISTILLATION APPARATUS

Michael W. Mar, Seattle, Wash., assignor to H-O-H Research Inc., Seattle, Wash.

Filed May 24, 1994, Ser. No. 248,364

Int. Cl.[6] B01D *3/00;11/00*

U.S. Cl. 202—169 **12 Claims**



1. An apparatus for continuously extracting a solute from a carrier medium using a volatile solvent, comprising:

a vessel having an interior defining a lower end and an upper end;

a convergent baffle disposed across the interior of the vessel between the lower end and the upper end of the vessel, thereby bifurcating the vessel into a distillation chamber below the baffle for containing a volatile solvent and an extraction chamber above the baffle for containing the carrier medium, wherein the baffle is contoured to define a convergent conduit riser projecting upwardly from the distillation chamber into the extraction chamber and terminating in a vaporized solvent port placing the distillation chamber in fluid flow communication with the extraction chamber, and wherein the baffle has a flared lower skirt portion sealed about its edges to the interior of the vessel;

a vapor condenser mounted on the upper end of the vessel and in fluid flow communication with the extraction chamber; and

means for returning condensed solvent from the condenser to the distillation chamber.

5,549,795

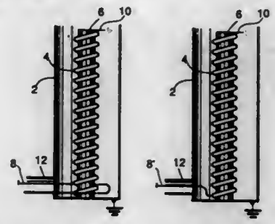
CORONA SOURCE FOR PRODUCING CORONA DISCHARGE AND FLUID WASTE TREATMENT WITH CORONA DISCHARGE

Daniel J. Gregoire; Robin J. Harvey, both of Thousand Oaks; Franklin A. Dolezal, Reseda, and Weldon S. Williamson, Malibu, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 25, 1994, Ser. No. 295,959

Int. Cl.[6] H05F *3/00*

U.S. Cl. 204—164 **16 Claims**



1. A method of producing a corona discharge, comprising:

conducting a radio frequency (RF) signal along a helical path that is self-resonant at the RF signal frequency,

fixing said RF signal at a substantially constant reference voltage level at a first location in said path,

providing a corona discharge site for said RF signal at a second location in said path that is spaced from said first location and at which the difference between the value of said RF signal and said reference voltage level is substantially maximum relative to said difference at all other locations in said path, and

inducing a corona discharge from said discharge site by applying said RF signal to said first path location.

5,549,796

ELECTROPHORESIS USING CONTOUR-CLAMPED ELECTRIC FIELDS

Gilbert Chu, Palo Alto; Douglas Vollrath, Mountain View, and Ron Davis, Palo Alto, all of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

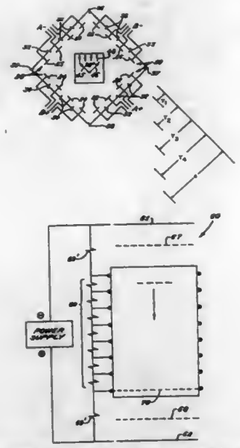
Continuation of Ser. No. 949,762, Sep. 23, 1992, abandoned, which is a continuation of Ser. No. 691,637, Apr. 25, 1991, abandoned, which is a continuation of Ser. No. 235,296, Aug. 23, 1988, Pat. No. 5,165,898, which is a continuation-in-part of Ser. No. 896,526, Aug. 14, 1986, abandoned. This application May 11, 1994, Ser. No. 241,063

Int. Cl.[6] G01N *27/26;27/447*

U.S. Cl. 204—457 **28 Claims**

18. A method for electrophoretic separation and detection of particles of a sample using an electric field, said method comprising:

providing a support for a gel medium in which one or more particles of a sample can be placed;



providing a plurality of electrodes arranged in a closed contour around said gel medium; and

simultaneously clamping in a clamping step all of the electrodes arranged in the closed contour at predetermined electrical potentials, for establishing an electric field in the gel medium of desired magnitudes and orientations for performing the electrophoretic particle separation and detection.

5,549,797

HIGHLY CORROSION-RESISTANT AMORPHOUS ALLOYS

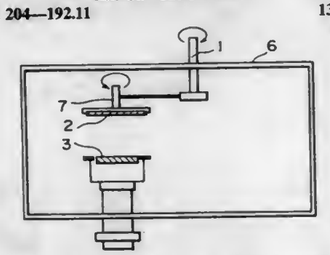
Koji Hashimoto, Sendai; Hideaki Yoshioka, Kurobe, and Asahi Kawashima, Sendai, all of, Japan, assignors to Koji Hashimoto, Sendai, Japan, and YKK Corporation, Tokyo, Japan

Division of Ser. No. 73,623, Jun. 7, 1993, abandoned, which is a continuation of Ser. No. 878,567, May 5, 1992, abandoned. This application Mar. 7, 1994, Ser. No. 207,891

Claims priority, application Japan, May 15, 1991, 3-138575

Int. Cl.[6] C23C *14/34*

U.S. Cl. 204—192.11 **13 Claims**



1. A method for producing a highly corrosion resistant single-phase amorphous alloy containing Cr and Ti comprising the steps of conducting sputtering while rotating one or more substrates about a central shaft and independently rotating the one or more substrates about their own axis to effect uniform sputtering deposition and utilizing a sputtering target having a composition represented by the following formula:

$$X_aCr_bM_c$$

wherein X is Ti; M is at least one element selected from the group consisting of Mg, Al, Co, Ni, Cu, Mo and W; and a, b and c are atomic percentages satisfying the following relationships:

$a>20$,

$20\leq b\leq 75$,

$0\leq c\leq 20$, and

$a+b+c=100$,

to produce a chemically uniform single-phase amorphous alloy having a high corrosion resistance.

5,549,798

WET PROCESSING APPARATUS HAVING INDIVIDUAL REACTIVATING FEEDBACK PATHS FOR ANODE AND CATHODE WATER

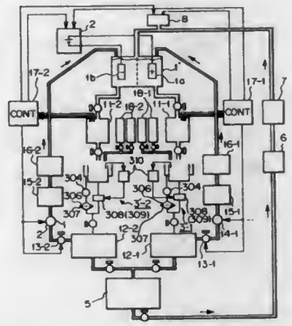
Hiroshi Kitajima; Hidemitsu Aoki; Haruto Hamano; Makoto Morita; Yoshimi Shiramizu; Masaharu Nakamori; Kaori Watanabe; Hirofumi Seo; Yuji Shimizu; Makoto Iuchi; Yasushi Sasaki, and Nahomi Ohta, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Mar. 24, 1995, Ser. No. 409,306

Claims priority, application Japan, Mar. 25, 1994, 6-056108; Mar. 25, 1994, 6-056110

Int. Cl.[6] C25F *7/02*; **C25B** *15/02*;*15/08*

U.S. Cl. 204—222 **78 Claims**



26. A wet processing apparatus comprising:

an electrolytic cell having an anode electrode and a cathode electrode for performing electrolysis upon one of pure water and electrolyte to generate anode active water in the vicinity of said anode electrode and cathode active water in the vicinity of said cathode electrode;

a storing cell for storing said anode active water;

a processing cell for receiving said anode active water from said storing cell to process a target with said anode active water to exhaust water therefrom; and

a reactivating feedback means for reactivating said water and feeding reactivated water back to the vicinity of said anode electrode of said electrolytic cell.

29. The apparatus as set forth in claim 26, further comprising ultrasonic vibration applying means for applying vibration to said processing cell.

5,549,799

HOIST APPARATUS FOR POSITIONING ANODE IN SMELTING FURNACE

Roger D. Luebke, Hartford, and Randy H. Khoury, Muskego, both of Wis., assignors to Harnischfeger Corporation, Brookfield, Wis.

Filed Dec. 31, 1992, Ser. No. 999,608

Int. Cl.[6] C25C *3/08*;*3/12*;*3/14*

U.S. Cl. 204—222 **5 Claims**

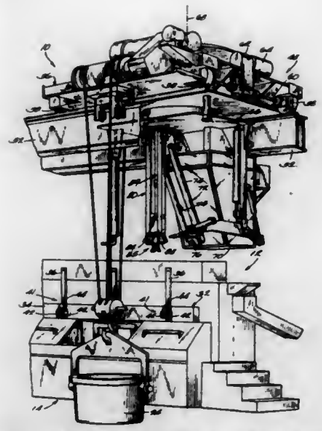
1. A hoist apparatus for positioning an anode relative to a cathode of a smelting furnace, the cathode having an upwardly facing surface, and the anode having a downwardly facing surface, said apparatus comprising

first means for moving the anode downwardly until the downwardly facing surface of the anode engages the upwardly facing surface of the cathode, and

second means for thereafter automatically moving the anode upwardly a set distance to provide a gap between the anode and the cathode,

wherein said first and second means include a cylinder/piston assembly including a vertically extending cylinder and a piston rod extending downwardly from said cylinder, and third means for releasably securing the anode to said piston rod, wherein said third means includes a carrier fixed to said piston rod for movement therewith, and means for releasably securing the anode to said carrier such that the anode moves vertically with said carrier, and

wherein said first and second means also include a pair of channel members which define opposed, generally vertical channels, and wherein said carrier has thereon rollers guided in said vertical channels.



5,549,800

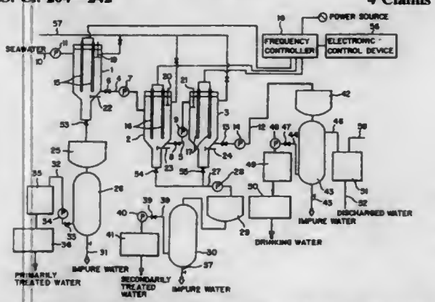
SYSTEM FOR OBTAINING FRESH WATER FROM SEAWATER

Yoshiro Iwata, 809-2, Higashirusbuzei-cho, Sagaru Nijyo Senbondori, Kamigyo-ku, Kyoto, 602, Japan

Division of Ser. No. 219,112, Mar. 29, 1994, Pat. No. 5,454,916. This application May 17, 1995, Ser. No. 443,078

Int. Cl.[6] C02F *1/463*

U.S. Cl. 204—242 **4 Claims**



1. A system for obtaining fresh water from seawater comprising:

a plurality of precipitation tanks arranged in series through which said seawater is passed to be desalinated;

a pair of electrode plates provided in each said precipitation tank;

means for applying an electrical signal of a select frequency, select voltage and select current across said pair of electrode plates;

valves provided between said precipitation tanks;

a centrifugal separator connected to a bottom portion of each said precipitation tank;

a filter connected to an outlet of each said centrifugal separator;

an upper limit water level sensor provided in each said precipitation tank;

an upper limit precipitation level sensor provided in each said precipitation tank;

a sterilization chamber connected to an outlet of each said filter;

an electronic control device for controlling the system;

a frequency controller for the signals applied to said electrode plates;

storage tanks for storing therein treated water; and

pumps provided in some of pipes which connect components to one another for flowing water therethrough.

5,549,801

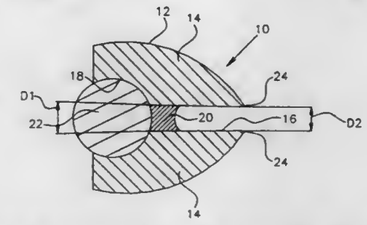
EDGE STRIP FOR ELECTROLYTIC-CELL ELECTRODE

Frank J. Perlich, Tucson, Ariz.; Ron Tix, Hastings, Minn., and Graeme Alexander, Tucson, Ariz., assignors to Quadna, Inc., Tucson, Ariz.

Filed Sep. 25, 1995, Ser. No. 533,464

Int. Cl.[6] C25D *17/00*

U.S. Cl. 204—279 **20 Claims**



1. An edge protector assembly for an electrode having a double-sided edge, comprising the following elements:

an edge strip consisting of an elongate structure having a uniform cross-section comprising two lever-arm portions of a first plastic material interconnected by a hinge member of a second plastic material, said cross-section defining an edge slot and an expansion slot on opposite sides thereof; and

an elongate expansion member adapted for engagement in said expansion slot;

wherein said lever-arm portions consist of separate structures held together by said hinge member; and

wherein said edge slot is adapted for close-fitting engagement of said double-sided edge of an electrode, and said first plastic material is rigid and said second plastic material is resilient.

5,549,802

CLEANING OF A PVD CHAMBER CONTAINING A COLLIMATOR

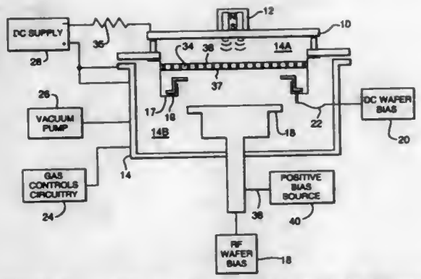
Xin S. Guo, Mountain View, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.

Division of Ser. No. 63,478, May 17, 1993, Pat. No. 5,403,459. This application Oct. 24, 1994, Ser. No. 328,189

Int. Cl.[6] C23C *14/34*

U.S. Cl. 204—298.11 **2 Claims**

1. In a physical vapor deposition chamber comprising a cover plate, a substrate support, a source of gas to said chamber, a vacuum source for said chamber and a collimator mounted



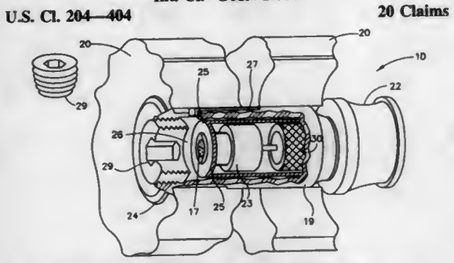
between the cover plate and the substrate support, the improvement which comprises a source of positive bias connected to the substrate support.

5,549,803

SMART FASTENER

Jeffrey N. Schoess, Buffalo, and Gary D. Havey, Maple Grove, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 14, 1994, Ser. No. 182,903
Int. Cl.[6] G01N *27/26*
U.S. Cl. 204—404 **20 Claims**



1. A smart corrosion sensing fastener comprising:
a fastening means for attaching one item to another item, each item being of a structure;
corrosion sensing means, situated in said fastening means, for simultaneously sensing in-situ a plurality of corrosive effects of ambient environment upon at least one item of structure external of said fastening means, and outputting signals indicative of the corrosive effects; and
electronics means, situated in said fastening means and connected to said corrosion sensing means, for processing the signals from said corrosion sensing means, storing the signals for retrieval, and monitoring the signals.

5,549,804

ARRANGEMENT FOR DETECTING THE OXYGEN CONTENT IN THE EXHAUST GAS OF AN INTERNAL COMBUSTION ENGINE

Gerhard Hötzel, Stuttgart; Harald Neumann, Vaihingen; Walter Strassner, Schorndorf, and Johann Riegel, Bietigheim-Bissingen, all of, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Sep. 30, 1994, Ser. No. 315,970
Claims priority, application Germany, Sep. 30, 1993, 43 33 229.3
Int. Cl.[6] G01N *27/26*
U.S. Cl. 204—425 **2 Claims**

1. An arrangement for detecting the oxygen content in the exhaust gas of an internal combustion engine for driving a motor vehicle, the exhaust gas containing gas particles, the arrangement comprising:
a concentration measuring cell operating pursuant to the Nernst principle and including:
a solid electrolyte;
a measuring electrode arranged on said electrolyte and exposed to said exhaust gas;
a reference electrode arranged on said electrolyte and being connected to said measuring electrode through said electrolyte;
an enclosed space on the side of the reference electrode opposite the side of the solid electrolyte to define a reference gas volume in contact with said reference electrode, said reference gas volume containing gas particles;
means for separating said reference gas volume from said exhaust gas and from ambient air containing gas particles so that an exchange of gas particles between said reference gas volume and said exhaust gas and between said reference gas volume and said ambient air is impeded;
said concentration measuring cell having an output voltage defining a measure for the difference of the oxygen concentration in said exhaust gas and said reference gas volume;
a series circuit connected across said measuring and reference electrodes and including a direct-current voltage source (Uv) and a resistor (Rv) connected in series with said direct-current voltage source (Uv);
said direct-current voltage source (Uv) having a source output voltage and said resistor (Rv) having a resistance value;
said direct-current voltage source (Uv), said resistor (Rv) and said concentration measuring cell conjointly defining a current loop through which a current (Ip) flows having a value dependent upon said oxygen content of said exhaust gas; and,
said source output voltage and/or said resistance value being so predetermined that said current (Ip) flows through said current loop to always be so directed that oxygen is transported from said exhaust gas to said reference gas volume independently of said output voltage of said concentration measuring cell.

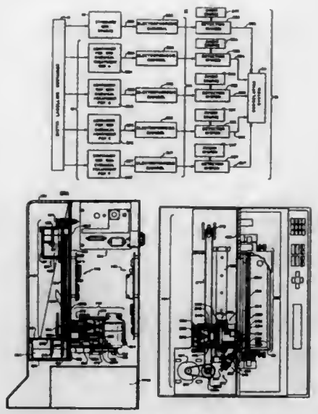
5,549,805

DIGITAL DNA TYPING

Lyle R. Middendorf; John A. Brumbaugh, and Gl Y. Jang, all of Lincoln, Nebr., assignors to The Board of Regents of the University of Nebraska, Lincoln, Nebr.

Continuation of Ser. No. 959,262, Oct. 9, 1992, abandoned, which is a continuation-in-part of Ser. No. 570,503, Aug. 21, 1990, Pat. No. 5,207,880, which is a continuation-in-part of Ser. No. 78,279, Jul. 27, 1987, abandoned, which is a division of Ser. No. 594,676, Oct. 10, 1990, Pat. No. 5,030,345. This application Aug. 11, 1994, Ser. No. 288,989
Int. Cl.[6] G01N *27/26;27/447*
U.S. Cl. 204—461 **11 Claims**

1. A method of typing DNA, comprising:
amplifying at least certain bases on a selected locus of the DNA, wherein the selected locus has variability in its sequence using PCR;
flourescently marking the at least some of the amplified bases;
applying DNA fragments at least at one of a plurality of locations for electrophoresing in at least one of a plurality of channels through a gel electrophoresis slab;



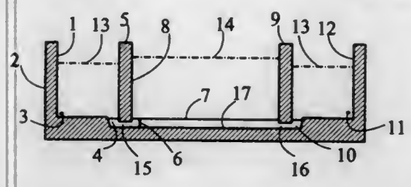
establishing electrical potential across said gel electrophoresis slab wherein the DNA fragments are resolved in accordance with the size of DNA fragments in said gel electrophoresis slab into fluorescently marked DNA bands;
scanning the separated fragments photoelectrically with a laser and a sensor wherein the laser scans with scanning light at a scanning light frequency within the absorbance spectrum of said fluorescently marked DNA fragments;
sensing light at the emission frequency of the marked DNA fragments; and
comparing the sensed labels from the patterns, wherein individuals are identified.

5,549,806

DEVICE AND METHOD OF DIRECT WATER COOLING FOR HORIZONTAL SUBMARINE GEL ELECTROPHORESIS

Stephen L. Chen, 13800 SW. 185th Ave., Aloha, Oreg. 97006

Filed Feb. 21, 1996, Ser. No. 603,625
Int. Cl.[6] G01N *27/26;27/447*
U.S. Cl. 204—621 **6 Claims**



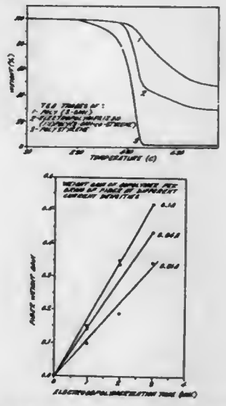
1. A device for direct water cooling for horizontal submarine gel electrophoresis, comprising:
a first slot being constructed between a first buffer chamber and a cooling water chamber, being constructed adjacent to a first end of a gel bed, and being constructed at a level lower than a level of a top surface of a gel matrix,
a second slot being constructed between a second buffer chamber and said cooling water chamber, being constructed adjacent to a second end of said gel bed, and being constructed at a level lower than said level of said top surface of said gel matrix,
a main body of said gel matrix located in said cooling water chamber,
a first end of said gel matrix exposed to said first buffer chamber via said first slot,
a second end of said gel matrix exposed to said second buffer chamber via said second slot, and
cooling water having direct contact with said main body of said gel matrix in said cooling water chamber.

5,549,807

THERMOPLASTIC COMPOSITES FORMED BY ELECTROPOLYMERIZATION OF N-SUBSTITUTED METHACRYLAMIDE MONOMERS

James P. Bell, Storrs, Conn.; Jude O. Iroh, Cincinnati, Ohio; Daniel A. Scola, Glastonbury, Conn., and Jengli Liang, Auburn, Ala., assignors to The University of Connecticut, Storrs, Conn.

Division of Ser. No. 80,674, Jun. 22, 1993, Pat. No. 5,466,357, which is a division of Ser. No. 898,911, Jun. 12, 1992, Pat. No. 5,232,560, which is a continuation of Ser. No. 366,933, Jun. 16, 1989, abandoned, and Ser. No. 947,367, Sep. 18, 1992, Pat. No. 5,238,542, which is a continuation of Ser. No. 665,943, Mar. 5, 1991, abandoned. This application Mar. 1, 1995, Ser. No. 396,671
Int. Cl.[6] C25B *3/00*
U.S. Cl. 205—50 **18 Claims**



1. A product made from the process of forming a polymeric matrix prepreg composite consisting essentially of the steps of:
electropolymerizing at least one cyclic N-substituted methacrylamide derivative monomer only an electrically conductive filler material in a substantially aqueous solution having a monomer concentration and over a time period effective to form a coating of the polymeric matrix composite prepreg on said filler material, said aqueous solution including at least one organic solvent to define an organic containing aqueous solution, said at least one cyclic N-substituted methacrylamide derivative monomer being moderately soluble in said organic containing aqueous solution and said at least one monomer being permeable to ions difusing as a result of said electropolymerization step.

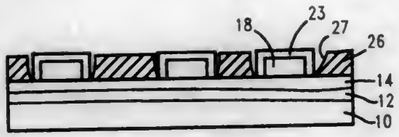
5,549,808

METHOD FOR FORMING CAPPED COPPER ELECTRICAL INTERCONNECTS

Mukta S. Farooq; Suryanarayana Kaja, both of Hopewell Junction; Eric D. Perfecto, Poughkeepsie, all of N.Y., and George E. White, Hoffman Estates, Ill., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 12, 1995, Ser. No. 440,413
Int. Cl.[6] C25D *5/02;* H01L *21/288*
U.S. Cl. 205—123 **30 Claims**

1. A method of making capped electrical interconnect comprising the steps of:



(a) depositing at least one seed layer on a substrate,
(b) depositing at least one resist layer over said at least one seed layer,
(c) exposing and developing said at least one resist layer so as to define at least one opening in said at least one resist layer such that a portion of said at least one seed layer is exposed,
(d) depositing copper in said at least one opening to define electrical interconnects,
(e) thermally treating said substrate through at least one thermal cycle so that said resist separates from said deposited copper, and the side walls of said deposited copper are exposed,
(f) capping said deposited copper electrical interconnect and the side walls thereof with at least one metallic capping material,
(g) removing said at least one resist layer such that at least a portion of said at least one seed layer underneath said at least one resist layer is exposed, and
(h) removing said exposed portion of said at least one seed layer, and thereby forming said capped electrical interconnect.

5,549,809

METHOD FOR HARDENING METALLIC ELEMENTS

Eric L. P. Barreau, Louviers; Yves C. L. A. Honnorat, Gometz la Ville; Robert L. Martinou, Bry Sur Marne, and Catherine M. H. Richin, Roinville sous Dourdan, all of, France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "Snecma", Paris, France

Filed Aug. 11, 1994, Ser. No. 289,253
Claims priority, application France, Aug. 12, 1993, 93 09894
Int. Cl.[6] C22F *1/10*; C25D *5/48*
U.S. Cl. 205—222 **5 Claims**



1200

1. A method for hardening a metallic part, comprising the steps of:
electrolytically depositing a metallic protection film on said metallic part; followed by
shot-blasting said metallic part, thereby hardening said metallic part,
wherein said metallic protection film is thick enough to adhere to said metallic part throughout said shot-blasting, and said metallic protection film is thin enough to allow said shot blasting to work harden said metallic part and to impart a residual compressive stress thereto, and
removing said metallic protection film after completion of said shot-blasting.

5,549,810

BATH FOR THE ELECTRODEPOSITION OF PALLADIUM-SILVER ALLOYS

Günter Herklotz, Bruchköbel; Thomas Frey, Hanau, and Otto Camus, Erlensee, all of, Germany, assignors to W.C. Heraeus GmbH, Hanau, Germany

Filed Jul. 18, 1995, Ser. No. 503,589
Claims priority, application Germany, Jul. 21, 1994, 44 25 813.5; Dec. 13, 1994, 44 44 232.7
Int. Cl.[6] C25D *3/56*
U.S. Cl. 205—259 **20 Claims**

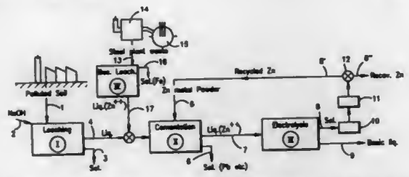
1. An aqueous ammoniacal bath for the electrodeposition of palladium-silver alloys, which comprises:
5–50 g/l of palladium ions in the form of a palladium-ammine complex,
2–40 g/l of silver ions in the form of a silver compound selected from the group consisting of silver chloride, silver nitrate, silver sulfate and a silver-diammine complex,
30–150 g/l of a conductive agent,
5–100 g/l of an amine component comprising at least one aliphatic polyamine with 2 to 10 amine groups in the molecule and being selected from the group consisting of alkylene diamine with 2 to 6 C atoms in the alkylene group and polyethylene amine of the formula $NH_2(CH_2CH_2NH)_nH$ with n=2 to 5, and
2–50 g/l of at least one water-soluble mercaptoalkane compound selected from the group consisting of mercaptoalkane carboxylic acid, mercaptoalkane sulfonic acid and a salt of said mercapto acids,
and has a pH value of 7.0 to 10.0, set by means of ammonium hydroxide.

5,549,811

PROCESS FOR DECONTAMINATION SOILS POLLUTED WITH METALS

Laurent Rizet, Viuz en Sallaz, and Pierre E. Charpentier, Ville La Grand, both of, France, assignors to Unimetal Societe Francaise des Aciers Longs, Rombas, France

PCT No. PCT/FR93/00461, § 371 Date Feb. 10, 1995, § 102(e) Date Feb. 10, 1995, PCT Pub. No. WO93/24249, PCT Pub. Date Dec. 9, 1993
PCT Filed May 13, 1993, Ser. No. 325,341
Claims priority, application France, May 29, 1992, 92 06635
Int. Cl.[6] C22B *19/24*
U.S. Cl. 205—602 **12 Claims**



1. A process for decontaminating soils polluted with metallic elements, comprising the steps of:
the polluted soils in a basic medium to bring about a selective dissolution of metallic elements to be removed,
cementing the leachate originating from the leaching step to bring about the deposition of said elements in metal form, performed by exchange with metallic zinc,
electrolyzing the solution originating from the cementation step to produce metallic zinc in powder form, and recycling said powdered metallic zinc in its entirety or partially into the leachate during the cementation step to satisfy the requirements for metallic zinc in said cementation step, and
adjusting the concentration of zinc in the solution originating from the cementation step to a value of 8 g/l to satisfy the conditions required to obtain a stable deposition of zinc powder on a cathode in the electrolysis step by introducing elemental zinc in a soluble or dissolved form at any step of

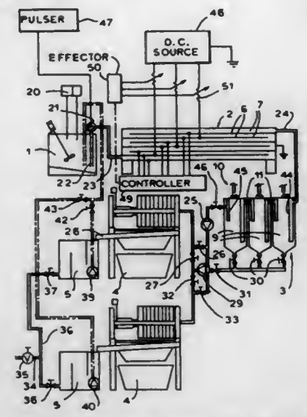
the treatment, complementing the addition of metallic zinc performed in the cementation step originating from the electrolysis step.

5,549,812

PROCESS AND APPARATUS FOR PROCESSING INDUSTRIAL WASTE WATER BY ELECTROLYSIS

Willi Witt a.k.a. Witte, Gevelsberg, Germany, assignor to WT Wassertechnologie GmbH, Wuppertal, Germany

Filed Mar. 20, 1995, Ser. No. 407,323
Claims priority, application Germany, Mar. 26, 1994, 44 10 658.0
Int. Cl.[6] C02F *1/463;1/461*
U.S. Cl. 205—744 **10 Claims**



1. A process for processing an industrial waste water by electrolysis, according to which the waste water is conducted past DC-activated electrodes in an electrolysis reactor, said process comprising the steps of:
(a) passing an industrial waste water containing contaminants susceptible to flocculation and precipitation upon electrolysis of the waste water between electrodes having parallel plate surfaces defining constricted flow-passages between them;
(b) subjecting waste water between said electrodes to electrolysis by energizing said electrodes with direct-current pulses, thereby breaking down and chemically altering contaminants in the electrolyzed water to form a sedimentatable flocculate therein;
(c) pulsingly accelerating and decelerating flow of said waste water between Said parallel plate surfaces to periodically forcibly increase flow velocity of the waste Water between said surfaces during the electrolysis; and
(d) separating said flocculate from a cleaned water.

5,549,813

FCC PROCESS EMPLOYING LOW UNIT CELL SIZE Y-ZEOLITES

Pei-Shing E. Dai, P.O. Box 1608, Port Arthur, Tex. 77641; Chih-Hao Tsang, P.O. Box 1608, Port Arthur, Tex. 77641; Laurence D. Neff, P.O. Box 1608, Port Arthur, Tex. 77641, and Randall H. Petty, P.O. Box 1608, Port Arthur, Tex. 77641

Filed Mar. 7, 1994, Ser. No. 206,801
Int. Cl.[6] C01G *45/12*
U.S. Cl. 208—120 **3 Claims**

1. A fluid catalytic cracking process for cracking hydrocarbon feedstock to selectively produce C_3–C_5 olefins comprising the steps of:
a) introducing the hydrocarbon feedstock into the reactor;
b) delivering simultaneously hot catalyst solids comprising a dealuminated Y-zeolite having a decreased unit cell size of less than about 24.19Å to the cracking reactor,
c) cracking catalytically and thermally the hydrocarbon feedstock with heat supplied by the hot catalyst solids to form a cracked product,
d) separating the cracked product from the hot catalyst solids, and
e) quenching the separated cracked product from the hot catalyst solids,
wherein the total kinetic residence time of the hydrocarbon feedstock from step (a) to step (c) is from 0.1 to 15 sec., the temperature of the cracking reaction is from 840° F. to 1200° F., the pressure of the cracking reactor is from 0 to 150 psig, and the weight ratio of the catalyst solids to hydrocarbon feedstock is 1:10 to 10.1 and, wherein the dealuminated Y-zeolite is further characterized by (i) a Secondary Pore Size of 100Å–600Å, (ii) an increased Secondary Pore Volume of 0.11–0.14 cc/g. and (iii) a Secondary Pore Mode of 105Å–190Å.

5,549,814

FCC STRIPPER WITH SPOKE ARRANGEMENT FOR BI-DIRECTIONAL CATALYST STRIPPING

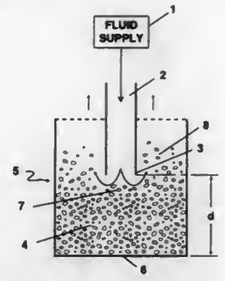
Randy J. Zinke, Carol Stream, Ill., assignor to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 984,643, Dec. 2, 1992, abandoned. This application Dec. 8, 1994, Ser. No. 351,989
Int. Cl.[6] C10G *35/00*
U.S. Cl. 208—150 **7 Claims**

1. A process for stripping hydrocarbons from a particulate catalyst, said process comprising:
a) contacting a particulate catalyst with hydrocarbons;
b) disengaging hydrocarbon vapors from said catalyst particles to yield catalyst particles having adsorbed hydrocarbons thereon;
c) passing said catalyst particles having adsorbed hydrocarbons downwardly through an elongate stripping zone past at least two levels of radially extending stripping grids while countercurrently contacting said catalyst with an upwardly flowing stripping fluid in said stripping zone wherein said grids are offset relative to grids at other levels to obstruct the downward flow of catalyst particles by cascading the catalyst circumferentially;
d) radially redirecting catalyst between grid levels by contact with a circumferentially extended baffle:
e) withdrawing stripped catalyst particles from the bottom of said stripping zone;
f) collecting stripping fluid under said radially extending stripping grids and circumferentially redirecting stripping fluid at each grid level; and

g) withdrawing stripping fluid from the top of said stripping zone.

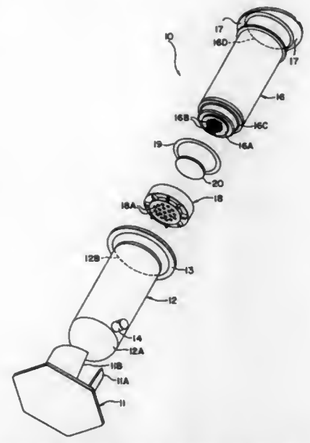
5,549,815
METHOD FOR FLUIDIZING A DENSE PHASE BED OF SOLIDS
William A. Wachter, Baton Rouge, La., assignor to Exxon Research and Engineering Company, Florham Park, N.J.
Filed May 20, 1994, Ser. No. 246,543
Int. Cl.[6] C10G *35/14*
U.S. Cl. 208—164 **4 Claims**



1. A method for fluidizing a dense phase bed of cracking catalyst particles comprising:
providing a dense bed of cracking catalyst particles within an enclosed volume, said enclosed volume comprising a housing containing a dense bed of cracking catalyst particles;
providing a means for injecting fluids into the housing, wherein said injection means contains an inlet and outlet, and the outlet of said injection means is above and downwardly directed towards the upper surface of the dense bed of cracking catalyst particles;
continuously supplying a flowing fluid stream through said injection means under conditions sufficient to expand the dense bed of cracking catalyst particles at its upper surface into a fluidized bed of cracking catalyst particles without fluidizing the underlying dense bed of cracking catalyst particles whereby the flowing fluid stream is caused to flow in an opposite direction upon contacting the upper surface of the bed of cracking catalyst particles by the solids housing enclosing said particles;
continually maintaining the distance between the outlet of the injection means and the upper surface of the bed of cracking catalyst particles such that said upper surface is continually in a fluidized state;
directing the oppositely flowing stream containing fluidized cracking catalyst particles and fluid medium in said opposite direction until it exits the solids housing; and
collecting the fluidized cracking catalyst particles in the flowing fluid stream.

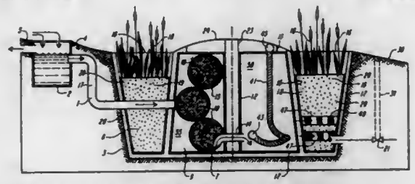
5,549,816
RE-USABLE PISTON FILTER SYSTEM
Daniel L. Harp, Berthoud; Gary Johnson, and Joe Myers, Both of Loveland, all of Colo., assignors to Hach Company, Loveland, Colo.
Filed Oct. 31, 1995, Ser. No. 551,177
Int. Cl.[6] B01D *33/01*
U.S. Cl. 210—120 **4 Claims**

1. A re-usable piston filter system comprising:
(a) an elongated tubular barrel member having a closed lower end and an open upper end; wherein said barrel member further includes an air valve which is movable between open and closed positions;



(b) an elongated tubular piston member having an open upper end and fluid permeable lower end;
(c) filter means detachably secured to said lower end of said piston member;
wherein said piston member is sized to be received in said barrel member; wherein downward movement of said piston member in said barrel forces liquid in said barrel member through said filter means into said tubular piston member.

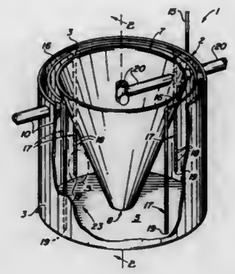
5,549,817
STORMWATER TREATMENT SYSTEM/APPARATUS
Scott W. Horsley, Boston, and Winfried Platz, Barnstable, both of Mass., assignors to Stormtreat Systems, Inc., Hyannis, Mass.
Continuation-in-part of Ser. No. 195,447, Feb. 14, 1994, Pat. No. 5,437,786. This application Feb. 13, 1995, Ser. No. 387,476
Int. Cl.[6] C02F *3/22*
U.S. Cl. 210—122 **11 Claims**



1. A stormwater treatment apparatus comprising,
a lightweight watertight integrated sedimentation tank module, said sedimentation tank module having a central sedimentation tank with an open top within it, formed integrally with an annular perimeter basin, also within said sedimentation tank module,
said central sedimentation tank having a removable watertight cover at said open top,
said annular perimeter basin having an open top and a wetland formed of sand and gravel deposited within it, said open top including wetland plants, having roots extending downwardly into said sand and gravel, said central sedimentation tank including an inlet port from outside said basin for carrying stormwater into said covered central sedimentation tank and having an infiltration section in the wall between it and the annular perimeter basin, said infiltration section being transmissive of water, but generally not transmissive of particulate materials, and located to pass water into said perimeter basin in the subsurface area of said wetland plants roots,

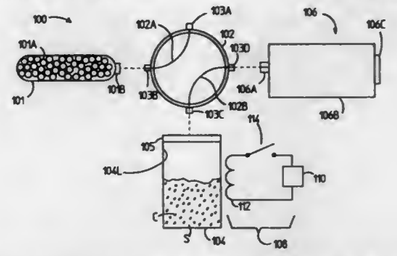
said central sedimentation tank being formed with a plurality of bulkheads each extending radially from the center of said central sedimentation tank to the perimeter thereof, said bulkheads dividing said central sedimentation tank into a series of adjacent chambers, a first one of said bulkheads adjacent to said infiltration section being formed to be water impermeable, a second one of said bulkheads adjacent to said inlet port being water impermeable except for an oil and grease trap which passes water into the next chambers while blocking oil and grease from passing, said first and second ones of said bulkheads forming a first chamber coupled to said inlet port, at least one additional water impermeable bulkhead forming at least one additional chamber,
a flexible tube positioned in at least one of said additional chambers, said flexible tube having a float attached to one end for floating on the surface of any water within said chamber with an inlet opening provided in said flexible tube adjacent to said float, below said water surface, the other end of said flexible tube penetrating an adjacent wall common to said chambers and the next adjacent chambers near the bottom of said sedimentation tank, said flexible tube other end having an outlet, whereby water from the surface of water where said float is located passes to the next compartment near the bottom thereof,
an outlet port located near the bottom of said annular perimeter basin, said outlet port including valve means which can be preset to control the throughput of water entering said sedimentation tank and exiting said annular perimeter basin at said outlet port.

5,549,818
SEWAGE TREATMENT SYSTEM
Henry E. McGrew, Jr., 9591 Wallace Lake Rd., Shreveport, La. 71101
Filed Apr. 17, 1995, Ser. No. 423,531
Int. Cl.[6] C02F *3/20*
U.S. Cl. 210—195.4 **18 Claims**



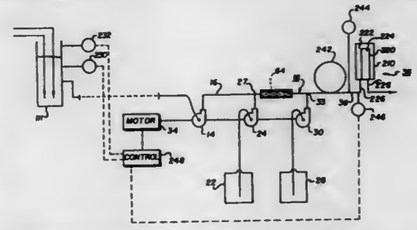
1. A sewage treatment system for processing sewage, comprising a cylindrical treatment tank having a bottom, for containing sewage; an inverted funnel-shaped clarifier provided in said treatment tank and an opening provided in said clarifier, said opening facing said bottom of said treatment tank; at least one sewage inlet line provided in said treatment tank for introducing sewage into said treatment tank; at least one effluent discharge line provided in said treatment tank and terminating in said clarifier for withdrawing effluent from said clarifier; a blower for supplying air to said treatment tank; at least two substantially vertical air drop lines connected in air-distributing relationship to said blower; a plug provided in each of the air drop lines; and a plurality of drop line openings provided in linearly spaced relationship with respect to each other in each of said air drop lines, said drop line openings facing said clarifier, whereby air from said blower is emitted from said drop line openings in the form of discreet bubbles which rise through the sewage in said treatment tank.

5,549,819
PORTABLE EXTRACTION INSTRUMENT
Mark A. Nickerson, Landenberg, Pa., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Jan. 17, 1995, Ser. No. 373,730
Int. Cl.[6] B01D *15/08*
U.S. Cl. 210—198.2 **11 Claims**



1. Portable extraction apparatus for the extraction of an analyte from a sample comprising:
a sample container for retaining the sample;
an extraction fluid source for providing pressurized extraction fluid;
an analyte trap subassembly including a collection trap vessel, and
a valve element having ports thereon for respective attachment of the sample container, extraction fluid source, and analyte trap subassembly, said valve element being operable in a first position for containing the flow of pressurized extraction fluid from the extraction fluid source, a second position for providing a flow of pressurized extraction fluid from the extraction fluid source to the sample container for mixture therein with the sample so as to provide a sample/fluid mixture, a third position for arresting the flow of pressurized extraction fluid and for effecting a fluid/constituent mixture, and a fourth position for providing a flow of the fluid/constituent mixture to the analyte trap subassembly for collection of the analyte of interest that is present in the fluid/constituent mixture.

5,549,820
APPARATUS FOR REMOVING A COMPONENT FROM SOLUTION
Thomas W. Bober, Rochester; Terry W. Pearl, Waterloo; Dominick Vacco, Rochester, and David C. Yeaw, Brockport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 4, 1994, Ser. No. 206,355
Int. Cl.[6] C02E *1/54*
U.S. Cl. 210—199 **14 Claims**



5. Apparatus for removing a component from solution, comprising:
means for providing a solution containing a component to be removed;
conduit means, defining a mixing path and having an inlet end and an outlet end, for receiving and passing the solution;
first means for delivering the solution into the inlet end;

second means, for delivering into the conduit means a precipitating agent for the component;

third means, located downstream of the second means for delivering by a first distance for providing a first residence time sufficient for mixing of the solution and the precipitating agent and for forming a precipitate for flocculation, for delivering into the conduit means a flocculating agent for the precipitate;

the outlet end of the conduit means being located downstream of the third means for delivering by a second distance for providing a second residence time sufficient for forming clumps of flocculated particles of the precipitate;

a collecting and shipping vessel for receiving the flocculated solids and any remaining liquid and for permitting the flocculated solids to settle to a bottom of the vessel and the remaining liquid to move toward a first outlet of the vessel, the collecting and shipping vessel being configured such that settled solids gradually will agglomerate and compact to fill substantially the vessel while at least a substantial part of the remaining liquid will rise to an increasingly higher level and eventually pass through the first outlet;

a closure for the collecting and shipping vessel, the closure having an inlet conduit extended into the vessel and a filter support disk extended radially from the inlet conduit beneath the closure;

a porous bag filter suspended from the support disk within the collecting vessel, the flocculated solids being captured within the bag;

means for manually, releasably connecting the conduit means to the collecting and shipping vessel with the outlet end of the conduit means extended near the bottom of the vessel to avoid undue breaking up of the clumps entering or already resting in the vessel and to avoid excessive stirring up of fines in the vessel, the means for connecting being configured such that a filled collecting and shipping vessel can be manually released and disconnected from the apparatus and replaced with an empty collecting and shipping vessel; and

the collecting and shipping vessel being closed, other than at the conduit means and the first outlet, to prevent removal of settled flocculated solids from locations within the vessel below the level of the liquid, the collecting and shipping vessel being configured such that progressive compaction of the settled flocculated solids occurs within the vessel.

5,549,821

FLUID FILTER ASSEMBLY FOR VEHICLES

Alan S. Bounnakhom; Claude Berman, and Donald W. Beach, all of Cookeville, Tenn., assignors to Fleetguard, Inc., Nashville, Tenn.

Continuation-in-part of Ser. No. 128,991, Sep. 29, 1993, abandoned, which is a continuation of Ser. No. 442,642, Apr. 17, 1995. This application May 27, 1994, Ser. No. 250,593

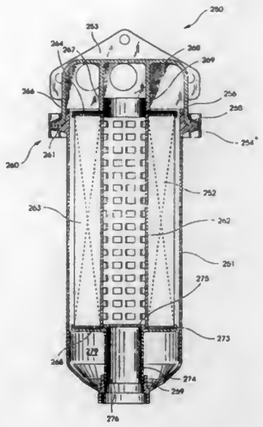
Int. Cl.[6] B01D *27/00;35/30*

U.S. Cl. 210—232 **8 Claims**

3. A filter assembly for filtering fluids comprising:

an injection molded, unitary plastic outer shell having an outwardly radiating flange, an open end and means defining a hollow interior and including a base end opposite to said open end, an internally threaded, inner annular stem integral with said base end and extending part way towards said open end;

a modular filter cartridge disposed in the hollow interior of said outer shell and including a generally cylindrical filter element having first and second opposite ends, a first endplate located adjacent said open end of said shell and bonded to the first end of the filter element and a second endplate located adjacent said base end of said shell and bonded to the opposite second end of the filter element, said second endplate including an externally threaded extension, wherein said second endplate and said externally threaded extension are a single unitary structure, said threaded extension extending from said second end plate toward said base end and being threadedly received by said inner annular stem;



a filter head having means defining a flow inlet and a flow outlet and being disposed over and around said open end, said filter head including an outwardly radiating flange; and

a clamp securely clamping together the radiating flange of said outer shell and the radiating flange of said filter head so as to create a fluid tight enclosure.

5,549,822

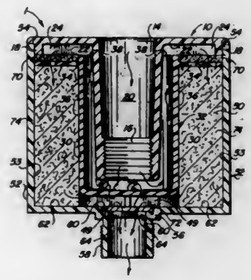
SHOWER FILTER APPARATUS

George E. Ferguson, 303-327 Maitland St., Victoria, B. C., Canada

Filed Jan. 13, 1995, Ser. No. 372,189

Int. Cl.[6] B01D *27/08;24/12;35/02*

U.S. Cl. 210—238 **15 Claims**



13. A filtration device, comprising:

(a) an external housing defining an interior chamber having an open first end, a closed second end, an outlet port on said second end, an inside surface and a diameter, said outlet port of said chamber reciprocally receiving a shower head;

(b) a baffle member having a first end, a closed second end, an outside surface, and a generally tubular projection depending centrally from the first end of the baffle member and defining the closed second end of said baffle member;

(c) at least one filration medium disposed within a space defined between said first end of said baffle member, said annular, generally tubular projection of said baffle member and said inside surface of said housing;

(d) at least one annular filter member positioned adjacent the first end of the baffle member;

(e) a cover member having a top which covers said first end of the external housing, a bottom and a recessed inlet adapted to receive a shower stem therein, said reccesed inlet being co-axially positioned within said generally tubular projection of said baffle member, whereby water passing through the recessed inlet impinges upon the closed end of the generally tubular projection of the baffle member is directed towards the open end of the generally tubular projection of the baffle member and communicated onto the at least one annular filter member, said cover member further includes a plurality of support extending from the bottom of said cover member and spaced radially inward without contacting said recessed inlet, said support defining fluid flow channels in flow communication with said at least one filter member;

whereby a shower head coupled to the outlet port of the chamber remains in substantially the same position relative to the shower stem as before the fixation of the filtration device to the shower stem.

5,549,823

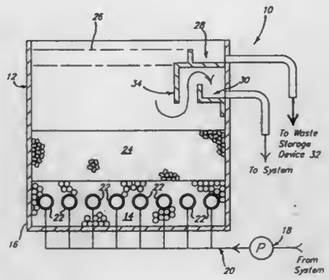
SYSTEM FOR PURIFYING A SOLUBLE OIL EMULSION

Gene Hirs, 3822 W. 13 Mile Rd.#A4, Royal Oak, Mich. 48073

Continuation-in-part of Ser. No. 267,872, Jun. 28, 1994, abandoned. This application Feb. 10, 1995, Ser. No. 386,687

Int. Cl.[6] B01D *17/04*

U.S. Cl. 210—265 **1 Claim**



1. A system for coalescing and removing reverse phase water-in-oil droplets and insoluble soaps from an oil-in-water oil emulsion comprising:

a tank for receiving the oil-in-water emulsion;

a gravel bed disposed in a lower portion of said tank, each particle of gravel having at least one dimension greater than a predetermined minimum;

a conduit extending into the gravel bed of said tank for introducing the oil-in-water emulsion thereinto, said conduit having a plurality of apertures with a maximum dimension less than the minimum dimension of the gravel particles in said bed;

a bed of media particles of 8 to 12 mesh in size disposed above said gravel bed, said media particles exhibiting both hydrophilic and oleophobic characteristics and forming a plurality of flow path interstices which effect mechanical coalescence of the water-in-oil droplets and insoluble soap into coalesced nonhomogeneous waste of sufficient buoyancy to float to the surface of the liquid in said tank through said interstices; a subsurface effluent discharge weir for removing liquid from said tank, wherein said weir includes a barrier to prevent said waste from entering said weir; and

means for skimming and removing the coalesced nonhomogeneous waste from the surface of the liquid in said tank.

5,549,824

FILTER APPARATUS INCLUDING STACKED INTAKE AND DISCHARGE PLATES

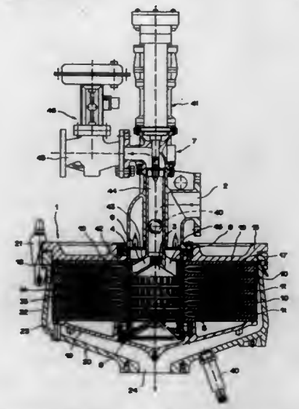
Rudolf Trumpf, Berne, and Hans Jost, Wichtrach, both of, Switzerland, assignors to Ing. A. Maurer SA, Berne, Switzerland

Filed Mar. 2, 1995, Ser. No. 397,753

Claims priority, application Switzerland, Mar. 7, 1994, 94810142.3

Int. Cl.[6] B01D *29/54*

U.S. Cl. 210—323.1 **10 Claims**



1. In an apparatus for filtering a fluid medium comprising a first chamber provided with an inlet, a second chamber provided with an outlet, a plurality of ports disposed between said first and second chambers, and at least one filter fabric, wherein the improvement comprises:

at least one intake space means having an intake end and a discharge end and gradually decreasing in cross-section toward said discharge end, said ports opening out into said at least one intake space means at said intake end,

at least one discharge space means running substantially parallel to said at least one intake space means and having an intake portion and a discharge portion, said at least one discharge space means being open toward said second chamber at said discharge portion and gradually increasing in cross-section toward said discharge portion,

said at least one filter fabric being respectively fixed between and separating said at least one intake space means and said at least one discharge space means in a longitudinal plane, and

at least one pair of adjacent plates respectively bounding said at least one intake space means and said at least one discharge space means, said at least one filter fabric being respectively clamped and held between each of said at least one pair of adjacent plates, whereby at least one filtering plane is formed in the longitudinal plane.

5,549,825

LIQUID FILTER STRUCTURE

Ytzhak Barzuza, la Frankfurter Street, Petach Tikvah, Israel, assignor to Filtration Ltd., Herzla, and Ytzhak Barzuza, Petach Tikvah, both of, Israel

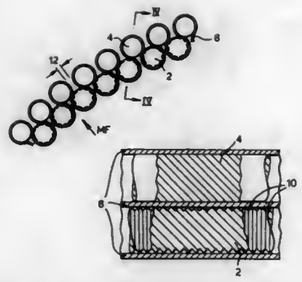
Filed Oct. 31, 1994, Ser. No. 331,797

Claims priority, application Israel, Nov. 1, 1993, 107457

Int. Cl.[6] B01D *39/10*

U.S. Cl. 210—411 **12 Claims**

1. A filter screen structure for a backflushed liquid filter having a screen separating a raw-liquid side of said filter from a clean-liquid side of said filter, comprising at least one row of substantially parallel rods extending along said screen, wherein said screen is threaded between said rods, partially enveloping said rods alternat-



ingly from said raw-liquid side of said filter and from said clean-liquid side of said filter, at least some of said rods being provided with substantially circumferential grooves, facilitating the passage of the liquid from said raw-liquid side via said screen to said clean-liquid side.

5,549,826

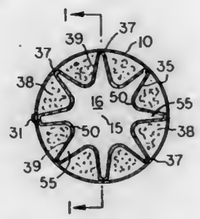
FILTRATION BAG

John H. Lapoint, Jr., 13 Hemlock La., Falmouth, Me. 04105

Filed Jun. 10, 1994, Ser. No. 260,207

Int. Cl.[6] B01D *29/27*

U.S. Cl. 210—489 **1 Claim**



1. A filtration bag for a flowing fluid, comprising:

an outer fabric sleeve (**29**) having a first end edge, and a second undulating end edge (**41**);

said undulating edge having areas thereof pressed together and secured by stitches, to close the fabric sleeve at said second end edge;

a wire annulus (**23**) located at said first end edge of the fabric sleeve;

said fabric sleeve being looped around said wire annulus at said first end edge to form a reinforced mounting ring structure for the bag;

said ring structure being adapted for positionment in a rigid flow duct so that fluid flowing through the duct is subjected to a filtration action by the bag;

said outer fabric sleeve having a circular cross-section concentric around a central fluid flow axis (**15**);

an inner fabric liner (**35**) located within said sleeve;

separate stitch means (**47**) extending through said fabric liner and said sleeve to directly connect the liner to the sleeve at circumferentially spaced points around the sleeve;

each said stitch means extending parallel to said central axis;

sections of said liner between said separate stitch means being looped away from the fabric sleeve toward the sleeve central axis to form plural hollow pockets (**39**);

the walls of each pocket being convergent in a direction going toward the central axis, to form apex areas (**50**) spaced from the fabric sleeve;

said pockets being circumferentially spaced to form crevices (**55**) between the pockets; and

a filler material (**38, 57**) filling each pocket so that the pockets are prevented from collapsing due to fluid flow forces.

5,549,827

PROCESS FOR TREATING A SUSPENSION OF SOLID PARTICLES IN A CARRIER LIQUID

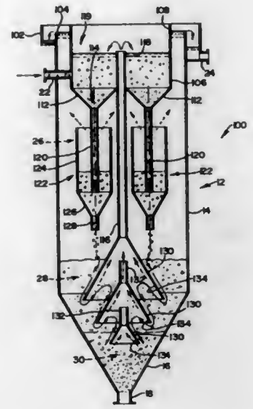
Richard G. Batson, Benoni, South Africa, assignor to Technology Finance Corporation (Proprietary) Limited, Transvaal Province, South Africa

Division of Ser. No. 110,436, Aug. 23, 1993. This application Mar. 17, 1995, Ser. No. 406,511

Claims priority, application South Africa, Aug. 24, 1992, 92/6368; Mar. 12, 1993, 93/1794

Int. Cl.[6] B01D *21/08*

U.S. Cl. 210—519 **6 Claims**



1. Settling apparatus, which comprises

a vessel providing a liquid treatment zone having at least an upper free settling region in which free settling of solid particles in suspension in a liquid introduced into the liquid treatment zone, through the liquid, can take place, a hindered settling region below the free settling region and in which hindered settling of particles can take place, and a compaction region below the hindered settling region in which solid particles will be in contact with one another so that a slurry is formed in this region;

a plurality of static inclined surfaces, staggered vertically and/or horizontally, in at least the compaction region of the vessel so that liquid can pass upwardly along upwardly inclined pathways provided by the undersides of the surfaces, with the surfaces being inclined at an acute angle of between 30° and 75° to the horizontal, and with at least one of the surfaces extending into the hindered settling region;

a feed well located in the free settling region, with the lower end of the feed well being closed off;

a suspension feed conduit leading into the feed well;

at least one suspension discharge outlet in the bottom of the feed well;

a flocculating device connected to the feed well suspension discharge outlet, and located above the compaction region, the flocculating device adapted to discharge clarified water upwardly and flocculated solids downwardly towards the compaction region;

a conduit leading upwardly from an upper edge of at least the uppermost static inclined surface, into the feed well so that, in use, clarified water passes from the underside of the surface over its upper edge, along the conduit, and into the feed well;

clarified liquid withdrawal means for withdrawing clarified liquid from the free settling region of the vessel;

slurry withdrawal means for withdrawing slurry from the compaction region of the vessel.

5,549,828

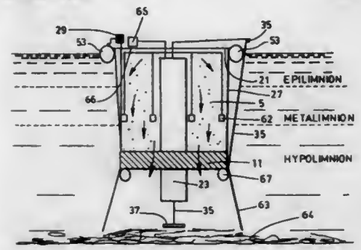
METHOD AND APPARATUS FOR IN SITU WATER PURIFICATION INCLUDING SLUDGE REDUCTION WITHIN WATER BODIES BY BIOFILTRATION AND FOR HYPOLIMNETIC AERATION OF LAKES

Karl F. Ehrlich, P.O. Box 208, North Hatley, Québec, Canada

Filed Mar. 23, 1994, Ser. No. 216,273

Int. Cl.[6] C02F *3/06;1/74*

U.S. Cl. 210—602 **25 Claims**



1. A method for the in situ purification by aeration and biofiltration of water from a water body, said method comprising the steps of:

drawing polluted, nutrient rich or oxygen deficient water from the water body into an upper portion of a submerged chamber held adjacent to the surface of said water body, said submerged chamber having a top surface open to the ambient air to cause said polluted or nutrient rich water to absorb oxygen from contact with the surface, said chamber also having a bottom surface and closed sidewalls;

letting said oxygenated water flow down and pass from said submerged chamber through a self-cleaning biofilter extending over at least one part of the bottom surface of said chamber, said biofilter comprising a filter bed made of filtering media, said filter bed being located within said body of water and having previously been inoculated with water purifying bacteria; and

subjecting the water to a supplemental aeration within the submerged chamber by injecting air into a lower portion of said chamber in such a manner that rising air bubbles move against the water flowing down, thereby creating a counter-current for efficient gas exchange.

5,549,829

MEMBRANE FILTRATION SYSTEM

Minh Son Le, Cheshire, United Kingdom, assignor to Northwest Water Group PLC, United Kingdom

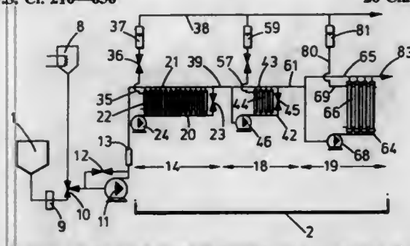
PCT No. PCT/GB93/01379, § 371 Date May 22, 1995, § 102(e) Date May 22, 1995, PCT Pub. No. WO94/01207, PCT Pub. Date Jan. 20, 1994

PCT Filed Jun. 30, 1993, Ser. No. 367,176

Claims priority, application United Kingdom, Jul. 1, 1992, 9214037

Int. Cl.[6] B01D *61/58*

U.S. Cl. 210—636 **26 Claims**



1. A process for producing a high solids content aqueous dispersion from a low solids content aqueous dispersion having a solids content of up to 5%, wherein the low solids content aqueous dispersion is passed across a face of a hollow fibre membrane of bore diameter greater than 1 mm at a cross flow velocity in the range of 0.5 to 5.0 m/s, and a pressure differential is applied across the hollow fibre membrane so as to force liquid from the low solids content dispersion through the membrane and to form as a retentate an aqueous dispersion of intermediate solids content, and wherein the intermediate solids content dispersion is passed across a face of a tubular membrane of bore diameter greater than that of the hollow fibre membrane but less than 50 mm at a cross flow velocity in the range of 0.5 to 5.0 m/s and a pressure differential is applied across the tubular membrane so as to force liquid from the intermediate solids content dispersion through the tubular membrane and to form as a retentate the aqueous solution of high solids content having a solids content of at least 20%, the hollow fibre membrane and tubular membrane having pore sizes of less than 3,000 Kilodaltons molecular weight cut off.

5,549,830

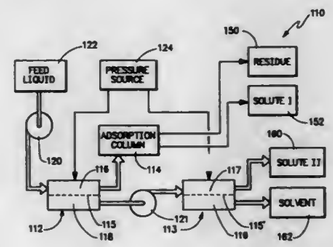
REVERSE OSMOSIS AND ULTRAFILTRATION METHODS FOR SOLUTIONS TO ISOLATE DESIRED SOLUTES INCLUDING TAXANE

David R. Carver; Timothy R. Prout; Christopher T. Workman, and Charles L. Hughes, all of Boulder, Colo., assignors to NaPro BioTherapeutics, Inc., Bolder, Colo.

Continuation of Ser. No. 982,482, Nov. 27, 1992, abandoned. This application Feb. 28, 1994, Ser. No. 203,653

Int. Cl.[6] B01D *61/14*

U.S. Cl. 210—641 **24 Claims**



24. A method of processing a feed liquid that contains desired taxane solutes, undesired solutes that have molecular sizes larger and smaller than the desired taxane solutes and a solvent as constituents of said feed liquid in order to concentrate the desired taxane solutes, comprising the steps of:

(a) separating a first region from a second region by a first semipermeable membrane of a first pore size and composition which transports a majority of the desired taxane solutes therethrough yet retains at least some of said undesired solutes;

(b) placing the feed liquid in the first region;

(c) providing pressure sufficient to transport some of the feed liquid from said first region across said first semipermeable membrane to said second region as a first permeate containing a majority of desired taxanes and thereby form a first retentate in said first region;

(d) separating a third region from a fourth region by a second semipermeable membrane of a second pore size and composition different from said first semipermeable membrane

which second pore size and composition retains a majority of the desired taxane solutes present in said first permeate yet transports at least some of said undesired solutes therethrough;

(e) placing the first permeate in the third region;

(f) providing pressure sufficient to transport at least some of the first permeate from said third region across said second semipermeable membrane to said fourth region as a second permeate thereby to form a second retentate in said third region; and

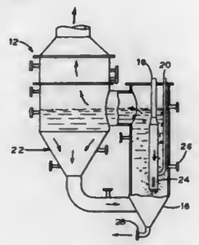
(g) recovering the desired taxane solutes from said second retentate.

5,549,831

METHOD FOR PROCESSING CHEMICAL CLEANING SOLVENT WASTE

Cary R. Bowles, Lynchburg; Sidney D. Jones, Forest, and Gary A. Peters, Forest, all of Va., assignors to B&W Nuclear Technologies, Inc., Lynchburg, Va.

Filed Aug. 8, 1995, Ser. No. 512,619
Int. Cl.[6] B01D *61/00*
U.S. Cl. 210—650 **5 Claims**



1. A method for processing chemical cleaning solvent waste which contains metals and metal oxides and organics, comprising:

a. separating by evaporating the solvent waste stream into gaseous products and a lower volume concentrated liquid and collecting said gaseous products and said concentrated liquid for further treatment;

b. vaporizing said concentrated liquid to separate the metals and metal oxides from the organics contained therein to produce separate products of a dry flaky particle residue and an organic gaseous product and collecting the residue for storage and the gaseous product for further treatment;

c. treating said organic gaseous product produced in step b. above at high temperature to convert it to non-toxic synthetic vent gas;

d. scrubbing said gaseous products produced in step a. above to remove particulates contained therein;

e. cooling the scrubbed gaseous products to remove excess moisture and collecting the excess moisture for further treatment;

f. reheating the cooled gaseous products to remove any residual moisture and collecting the residual moisture with the excess moisture collected in step e.;

g. directing the reheated gaseous products through HEPA filters for discharge to the surrounding environment; and

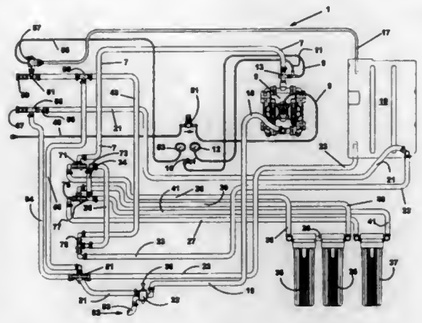
h. treating the moisture collected in steps e. and f. by filtration and reverse osmosis whereby the treated liquid may be released to the surrounding environment.

5,549,832

VEHICLE COOLANT RECYCLING

Kenneth W. Ische, Egan; Michael W. Johnson, St. Paul; William S. Dea, Bloomington, and Thomas D. Chandler, Coon Rapids, all of Minn., assignors to Century Manufacturing Company, Minneapolis, Minn.

Filed Dec. 22, 1994, Ser. No. 362,326
Int. Cl.[6] C02F *1/56*
U.S. Cl. 210—694 **15 Claims**



1. A process for the treatment and recovery of spent alkaline coolant from an internal combustion engine comprising the following steps:

a) feeding sodium dialkyldithiocarbamate into spent alkaline coolant removed from the engine to cause dissolved metals therein to form insoluble particles;

b) treating the spent coolant of step a) with a basic coagulating agent comprising a quaternary ammonium polymer containing hydroxide ions that at least partially replace acid ions in said polymer;

c) filtering the spent coolant through two or more filtration steps and

d) passing the spent coolant through a bed of carbon particles, to provide a cleaner liquid; and

e) adding to the cleaner liquid a combination of corrosion inhibitors, buffering agents and alkali, whereby the treated coolant has a pH between about 8 and about 11, and can be recycled to the engine for effective coolant performance therein.

5,549,833

METHOD OF DECOMPOSING HYDROGEN PEROXIDE

Kenji Hagimori, Kawaguchi; Yuzuru Abe, Hanyu, and Tetsuo Kanke, Misato, all of, Japan, assignors to Toshin Chemical Industry Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 64,962, May 18, 1993, Pat. No. 5,348,724. This application Jul. 18, 1994, Ser. No. 276,266
Claims priority, application Japan, Jun. 11, 1992, 4-177347
Int. Cl.[6] C01B *17/90;* **C02F** *1/68*
U.S. Cl. 210—757 **15 Claims**

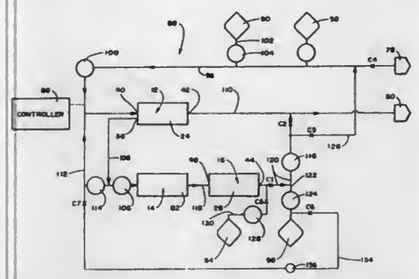
8. A method of decomposing hydrogen peroxide contained in a waste water, which comprises adjusting the acidity of said waste water which contains hydrogen peroxide to the pH range of 2.6 or below and then contacting said wastewater with carbonaceous material at an elevated temperature, thereby reductively and catalytically decomposing the hydrogen peroxide in said waste water.

5,549,834

SYSTEMS AND METHODS FOR REDUCING THE NUMBER OF LEUKOCYTES IN CELLULAR PRODUCTS LIKE PLATELETS HARVESTED FOR THERAPEUTIC PURPOSES

Richard L. Brown, Northbrook, Ill., assignor to Baxter International Inc., Deerfield, Ill.

Continuation of Ser. No. 97,454, Jul. 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 965,088, Oct. 22, 1992, Pat. No. 5,370,802, which is a continuation-in-part of Ser. No. 814,403, Dec. 23, 1991, abandoned. This application May 30, 1995, Ser. No. 454,010
Int. Cl.[6] B01D *21/26;36/00;37/00*
U.S. Cl. 210—806 **9 Claims**



5. A method for obtaining a platelet-rich concentrate having a reduced number of leukocytes comprising

introducing whole blood from a source at a selected first pumping rate into a first separation chamber, the whole blood having a surface hematocrit when introduced into the first separation chamber,

separating the whole blood in the first separation chamber into a suspension of platelets,

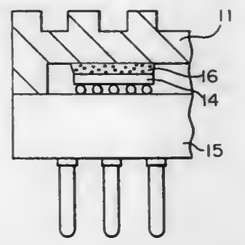
conveying the suspension of platelets through a filter at a selected second pumping rate less than the first pumping rate from the first separation chamber into a second separation chamber to reduce the number of leukocytes,

separating the filtered suspension of platelets in the second separation chamber into a platelet-rich concentrate and platelet-poor component,

diverting a portion of the suspension of platelets from the first separation chamber at a third selected pumping rate prior to filtration,

mixing the diverted portion with whole blood introduced into the first separation chamber, and

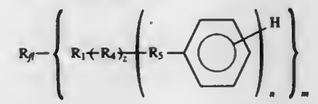
controlling the third selected pumping rate to maintain the surface hematocrit of whole blood introduced into the first separation chamber within a predetermined desired range.



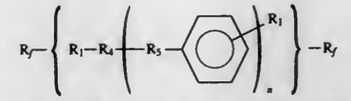
1. An apparatus comprising sliding parts and a heat conducting composition positioned between sliding parts, said composition containing a non-fluorine based base oil and a fluorine based organic compound slightly soluble in the base oil which prevents separation of the base oil from the composition; said fluorine based organic compound being contained in the composition in an amount of 0.05–14% by weight based on the total amount of the composition, and having one or more of perfluoropolyoxyalkyl groups or perfluoropolyoxyalkylene groups in the terminal of the molecule, and being at least one of the compounds represented by the following general formulae:

$$R_f-R_1-R_2-Si(OR_3)_3 \quad \text{(i)}$$

(ii)



(iii)



wherein R_f is perfluoropolyoxyalkyl group or perfluoropolyoxyalkylene group; R_1 is ester bond, amide bond or methyl ether bond; R_2 is C_2–C_5 alkylene group or amino-substituted alkylene group; R_3 is alkyl group having 1–3 carbon atoms; R_4 is an oxyalkylene group having 2 or 3 carbon atoms, phenyl group or alkylene group having 1 or 2 carbon atoms; R_5 is single bond, ether bond, alkyl group, amide bond or $—C(CH_3)_2—$ group, and are the same or different per repeating unit; Z is 0 or a positive integer; n is 0 or a positive integer when R_4 is oxyalkylene group, or an integer of 1–5 when R_4 is not oxyalkylene group: R_f is perfluoropolyoxyalkyl group when l is 1 or 2 and m is 1, or perfluoropolyoxyalkylene group when l is 1 and m is 2; and l and m cannot be 2 at the same time.

5,549,835

APPARATUS EQUIPPED WITH A COOLING BLOCK UNIT HAVING SLIDING PARTS AND A COMPOUND USED TO THE SAME

Takao Uematsu, Hitachi; Mitsuyoshi Shoji, Ibaraki-ken; Takayuki Nakakawaji, Hitachi; Shigeki Komatsuzaki, Mito; Yutaka Ito, Takahagi; Atsushi Morihara, Katsuta; Koji Sato, Hitachi; Shizuo Zushi, Hadano, and Hiroshi Go, Zama, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 131,966, Oct. 8, 1993, abandoned, which is a continuation of Ser. No. 799,115, Nov. 27, 1991, abandoned. This application Oct. 19, 1995, Ser. No. 545,908
Claims priority, application Japan, Nov. 28, 1990, 2-323157
Int. Cl.[6] C10M *141/12;157/10*
U.S. Cl. 508—204 **12 Claims**

5,549,836

VERSATILE MINERAL OIL-FREE AQUEOUS LUBRICANT COMPOSITIONS

David L. Moses, P.O. Box 955, Mercer Island, Wash. 98040

Filed Jun. 27, 1995, Ser. No. 495,189
Int. Cl.[6] C10M *173/00*
U.S. Cl. 508—183 **12 Claims**

1. A substantially mineral oil-free aqueous dispersion useful to produce a dry lubricant film comprising:

(a) about 20° to about 95% by weight of an aqueous phase;

(b) about 0.2% to about 6% by weight of an anionic surfactant, nonionic surfactant or mixture thereof; and

(c) the balance a mixture of (i) a silicone oil, vegetable oil or

combination thereof and a waxy film-forming material from at least two of the three groups saturated C_{10}–C_{24} aliphatic monohydric alcohols, saturated C_{10}–C_{24} aliphatic monocarboxylic acids and saturated or monounsaturated C_{10}–C_{24} aliphatic primary amides;

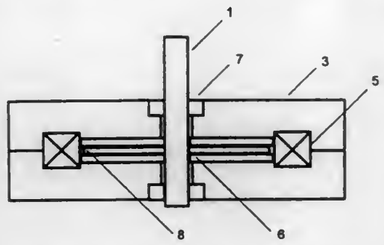
the surfactant stably dispersing the mixture in the aqueous phase.

5,549,837

MAGNETIC FLUID-BASED MAGNETORHEOLOGICAL FLUIDS

John M. Ginder, Plymouth; Larry D. Elie, Ypsilanti, and Lloyd C. Davis, Plymouth, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 31, 1994, Ser. No. 298,714
Int. Cl.[6] C09K *3/00*
U.S. Cl. 252—62.52 **20 Claims**



1. A magnetorheological fluid composition, comprising:

a magnetizable carrier fluid; and

a multiplicity of magnetizable particles, each having substantially spheroidal shape, said magnetizable particles being suspended within said magnetizable carrier fluid to provide a fluid which exhibits magnetorheological properties.

5,549,838

HYDRAULIC WORKING OIL COMPOSITION FOR BUFFERS

Toru Miyagawa; Mitsuo Okada, and Tomomasa Osumi, all of Yokohama, Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

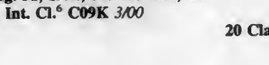
Filed Mar. 20, 1995, Ser. No. 407,284
Claims priority, application Japan, Mar. 25, 1994, 6-077840
Int. Cl.[6] C09K *5/00*
U.S. Cl. 252—75 **19 Claims**

1. A hydraulic working oil composition for buffers which comprises:

a lubricating oil as a base oil,

[I] at least one phosphorus-containing compound which is a member selected from the group consisting of the components (A) and (B):

(A) a phosphoric acid ester of formula (1)



(1)

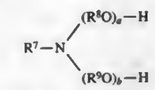
(B) a phosphorous acid ester of formula (2)

(2)

wherein R^1 and R^2 are each a straight-chain or branched-chain alkyl or alkenyl group having 8–18 carbon atoms, and R^3 is hydrogen, and R^4 and R^5 are each a straight-chain or branched-chain alkyl or alkenyl group having 8 to 18 carbon atoms, and R^6 is hydrogen,

[II]at least one nitrogen-containing compound which is a member selected from the group consisting of the following components (C), (D) and (E):

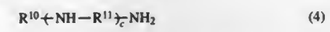
(C) an alkyleneoxide adduct of an aliphatic monoamine of formula (3)



(3)

wherein R^7 is a straight-chain alkyl or alkenyl group having 8–18 carbon atoms, R^8 and R^9 are an ethylene or propylene group and a+b=1 to 5,

(D) an aliphatic polyamine of formula (4)

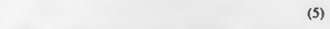


(4)

wherein R^{10} is a straight-chain alkyl or alkenyl group having 8–18 carbon atoms, R^{11} is an ethylene or propylene group, and c is 1, and

(E) a salt of said aliphatic polyamine (D) with an aliphatic acid having 8–18 carbon atoms, and

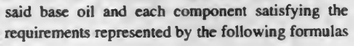
[III] (F) an aliphatic monoamine compound of formula (5)



(5)

wherein R^{12} is a straight-chain alkyl or alkenyl group having 8–18 carbon atoms,

said compounds [I], [II] and [III] being essential components added to said base oil and each component satisfying the following requirements represented by the following formulas (6) to (8):



(6)

(7)



(8)

wherein W_I, W_{II} and W_{III} represent the contents of components [I], [II] and [III] in the hydraulic working oil composition, respectively, and the contents being each expressed in % by weight based on the total weight of the composition.

5,549,839

INDUSTRIAL SOLVENT BASED ON A PROCESSED CITRUS OIL FOR CLEANING UP PETROLEUM WASTE PRODUCTS

William C. Chandler, 949 SW. 131st Ave., Davie, Fla. 33325

Filed Apr. 21, 1995, Ser. No. 426,087
Int. Cl.[6] C09K *3/32;* **C11D** *3/44;3/60;7/50*
U.S. Cl. 510—365 **4 Claims**

1. An industrial solvent that is non-toxic to human beings and animals and environmentally safe for cleaning up petroleum waste such as grease, oil, and tar, consisting essentially of:

d-limonene between 73 and 74 percent by volume; ethoxylated nonyl phenol surfactant 16 to 17 percent by volume; and

tall oil fatty acid 9 to 10 percent by volume, all of which is combined together in a liquid form, forming the industrial solvent that is at full strength ready to use.

5,549,840

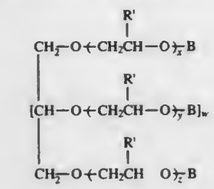
CLEANING COMPOSITION IN MICROEMULSION, LIQUID CRYSTAL OR AQUEOUS SOLUTION FORM COMPRISING MIXTURE OF PARTIALLY ESTERIFIED, FULL ESTERIFIED AND NON-ESTERIFIED ETHOXYLATED POLYHYDRIC ALCOHOLS

Myriam Mondin, Seraing; Myriam Loth, Saint-Nicolas; Guy Broze, Grace-Hollogne, all of, Belgium; Ammanuel Mehreteab, Piscataway, N.J.; Barbara Thomas, Princeton, N.J.; Steven Adamy, Hamilton, N.J., and Frank Bala, Jr., Middlesex, N.J., assignors to Colgate-Palmolive Co., Piscataway, N.J.

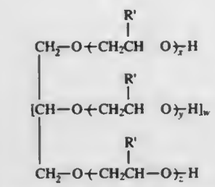
Continuation-in-part of Ser. No. 192,118, Feb. 3, 1994, abandoned, which is a continuation-in-part of Ser. No. 155,317, Nov. 22, 1993, abandoned, which is a continuation-in-part of Ser. No. 102,314, Aug. 4, 1993, abandoned. This application Nov. 15, 1994, Ser. No. 336,936
Int. Cl.[6] C11D *17/00;1/74;1/83*
U.S. Cl. 510—365 **15 Claims**

1. A microemulsion composition comprising:

(a) 0.1 wt. % to 20 wt. % of a mixture of



and



(II)

wherein w equals one to four, B is selected from the group consisting of hydrogen and a group represented by:



wherein R is selected from the group consisting of alkyl group having 6 to 22 carbon atoms, and alkenyl groups having 6 to 22 carbon atoms, wherein at least one of the B groups is represented by said



R' is selected from the group consisting of hydrogen and methyl groups; x, y and z have a value between 0 and 60, provided that (x+y+z) equals 2 to 100, wherein in Formula (I) the weight ratio of monoester / diester / triester is 40 to 90 / 5 to 35 / 1 to 20, wherein the weight ratio of Formula (I) to Formula (II) is a value between 3 and 0.02;

(b) 0.1 wt. % to 20 wt. % of an anionic surfactant wherein said anionic surfactant is selected front the group consisting of sulfonated anionic surfactants and anionic sulfate surfactants;

(c) 0.1 wt. % to 50 wt. % of a cosurfactant wherein said cosurfactant is selected from the group consisting of polypropylene glycols of the formula $HO(CH_2CHCH_3O)_nH$ wherein n is 2 to 18, aliphatic mono- and di-carboxylic acid containing 2 to 10 carbon atoms and a water soluble glycol ether and mixtures thereof;

(d) 0.1 wt. % to 10 wt. % of a water insoluble hydrocarbon or a perfume; and

(e) the balance being water.

5,549,841

PROCESS FOR MANUFACTURING FOAM WITH IMPROVED WET SET PROPERTIES

Mark R. Kinkelaar, Cross Lanes; Keith D. Cavender; James L. Lambach, both of Charleston, all of W. Va.; Robert D. Brasington, Senlis, France, and Frank E. Critchfield, South Charleston, W. Va., assignors to Arco Chemical Technology, L.P., Greenville, Del.

Filed Mar. 24, 1995, Ser. No. 410,439
Int. Cl.[6] C09K *3/00;* **C09G** *18/32*
U.S. Cl. 252—182.27 **10 Claims**

1. A polyol composition suitable for the preparation of amine catalyzed, high resilience polyurethane foam exhibiting improved wet set values, comprising:

(I) a)i) a polyoxyalkylene polyether polyol comprising minimally 70 mol percent of a polyoxyalkylene polyol component containing in major part C_{3-4} oxyalkylene moieties, having from 12% to about 30% by weight oxyethylene moieties as a cap, and having a nominal functionality of 6 or greater; and

a)ii) a polymer polyol containing a vinyl polymer dispersion in a base polyoxyalkylene polyol component comprising minimally 70 mol percent of a polyoxyalkylene polyol containing in major part C_{3-4} oxyalkylene moieties, having from 12% to about 30% by weight oxyethylene moieties as a cap, and a nominal functionality of 6 or greater,

wherein said percents oxyethylene moieties are percents by weight based on the total respective polyoxyalkylene polyol component weight, and wherein the average nominal functionality of a)i and a)ii in combination is about 5.5 or greater, and wherein said polyoxyalkylene polyols have hydroxyl numbers of 50 or less.

5,549,842

THICKENED ALKALI METAL HYPOCHLORITE COMPOSITION

David L. Chang, Norwalk, Conn., assignor to Reckitt & Colman Inc., Montvale, N.J.

Continuation of Ser. No. 174,905, Dec. 29, 1993, abandoned. This application May 26, 1995, Ser. No. 451,477
Int. Cl.[6] C01B *11/04;11/06;* **C11D** *3/395*
U.S. Cl. 510—191 **18 Claims**

1. An aqueous hypochlorite composition comprising:

(a) from about 0.5 weight % to about 10 weight % of an alkali metal hypochlorite;

(b) from about 0.5 weight % to about 2.5 weight % of a tertiary amine oxide of the formula:



where R^1 is an alkyl group containing from about 10 to about 16 carbon atoms and R^2 is a lower alkyl group containing from 1 to 3 carbon atoms;

(c) an alkali metal salt;

(d) a pH stabilizer;

(e) from 0.15 weight % to about 0.75 weight % of an alkali metal sarcosinate as represented by the formula

$$RCON(CH_3)CH_2COOM$$

where R is a straight or branched chain C_{10}–C_{16} alkyl group and M is an alkali metal cation; and

(f) from about 0.1 weight % to about 0.8 weight % of an alkali metal C_{10} to C_{14} straight chain alkyl benzene sulfonate;

wherein the molar ratio of (b):(f) ranges from about 5:1 to about 11:1 and is adjusted so that the viscosity of said composition is between about 231 and 402 cps.

5,549,843

ANNEALED ALKALINE EARTH METAL FLUOROHALIDE STORAGE PHOSPHOR, PREPARATION METHOD, AND RADIATION IMAGE STORAGE PANEL

Kyle E. Smith, Victor; Joseph F. Bringley, Rochester; Patrick M. Lambert, Rochester; David P. Trauernicht, Rochester; Philip S. Bryan, Webster; Paul M. Hoderlein, Rochester, and Andrea M. Hyde, Hamlin, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 21, 1991, Ser. No. 342,975

Int. Cl.[6] C09K *11/61*

U.S. Cl. 252—301.4 H **22 Claims**

1. A method for preparing a storage phosphor comprising the steps of:

firing, at a temperature greater than 700° C., a combination of species including species characterized by the relationship:

$$MFX_{1-z}J_z{:}uM^aX^a{:}yA{:}eQ$$

wherein

M is selected from Mg, Ca, Sr and Ba, and combinations thereof;

X is selected from Cl and Br, and combinations thereof;

M^a is selected from Na, K, Rb and Cs, and combinations thereof;

X^a is selected from F, Cl, Br and I, and combinations thereof;

A is selected from Eu, Ce, Sin, and Tb, and combinations thereof;

Q is selected from the group consisting of BeO, MgO, CaO, SrO, BaO, ZnO, Al_2O_3, La_2O_3, In_2O_3, SiO_2, TiO_2, ZrO_2, GeO_2, SnO_2, Nb_2O_5, Ta_2O_5, and ThO_2, and combinations thereof; and

$0<z<1$;

$0<u<1$;

$0<y<0.1$; and

$0<e<0.1$

to produce an intermediate product; and

annealing said intermediate product in a slightly oxidizing atmosphere and at a temperature lower than said temperature of said firing and between about 400° C. and about 800° C., for a time sufficient to reduce the erase fraction (EF) relative to the same phosphor produced without said annealing.

5,549,844

RADIOGRAPHIC PHOSPHOR PANEL, PHOSPHOR AND PHOSPHOR MODIFICATION METHOD

Joseph F. Bringley, Rochester; Kyle E. Smith, Victor, and Patrick M. Lambert, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 24, 1995, Ser. No. 410,471

Int. Cl.[6] C09K *11/61*

U.S. Cl. 252—301.4 H **28 Claims**

1. A radiographic phosphor panel comprising a luminescent layer including a mass of phosphor particles, said phosphor particles each having a primary portion and a secondary portion, said secondary portion being exterior to and continuous with said primary portion,

said primary portion comprising a primary phosphor including a combination of species characterized by the relationship:

$$MFX_{1-z}J_z{:}uM^aX^a{:}yA{:}eJ{:}tD{:}dS$$

said secondary portion comprising a secondary phosphor including a combination of species characterized by the relationship:

$$M'FX'_{1-z+q}J_{z-q}{:}u'M^{a\prime}X^{a\prime}{:}yA'{:}e'J'{:}t'D'{:}d'S$$

wherein for said relationships

M and M' are the same or different and are each selected from the group consisting of Mg, Ca, Sr, and Ba and combinations thereof;

X and X' are the same or different and are each selected from the group consisting of Cl and Br and combinations thereof;

M^a and $M^{a\prime}$ are the same or different and are each selected from the group consisting of Na, K, Rb, and Cs and combinations thereof;

X^a and $X^{a\prime}$ are the same or different and are each selected from the group consisting of F, Cl, and Br and combinations thereof;

A and A' are the same or different and are each selected from the group consisting of Eu, Ce, Sm, and Tb and combinations thereof;

J and J' are the same or different and are each selected from the group consisting of BeO, MgO, CaO, SrO, BaO, ZnO, Al_2O_3, La_2O_3, In_2O_3, SiO_2, TiO_2, ZrO_2, GeO_2, SnO_2, $Nb_{2/}O_5$, Ta_2O_5, and ThO_2, and combinations thereof;

D and D' are the same or different and are each selected from the group consisting of V, Cr, Mn, Fe, Co, and Ni and combinations thereof;

z is greater than 1×10^{-2} and less than 1;

q is from 1×10^{-2} to 1 and less than or equal to z;

u and u' are the same or different and are from 0 to 1;

y and y' are the same or different and are from 1×10^{-4} to 0.1;

e and e' are the same or different and are from 0 to 1;

t and t' are the same or different and are from 0 to 1×10^{-2}; and

d and d' are the same or different and are from 0 to 0.020.

5,549,845

DISPERSIONS AND EMULSIONS COMPRISING A FATTY ACID ESTER TO REDUCE VISCOSITY

David Young, Chorleywood, United Kingdom, assignor to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/EP91/01378, § 371 Date Jan. 21, 1993, § 102(e) Date Jan. 21, 1993, PCT Pub. No. WO92/01971, PCT Pub. Date Feb. 6, 1992

PCT Filed Jul. 24, 1991, Ser. No. 975,588

Claims priority, application United Kingdom, Jul. 26, 1990, 9016473

Int. Cl.[6] B01J *13/00*; G03C *1/76*

U.S. Cl. 252—312 **2 Claims**

1. An emulsion or dispersion comprising a continuous phase comprising an aqueous solution of gelatin and a discontinuous phase comprising a water-immiscible solid or liquid, wherein the viscosity of said emulsion or dispersion has been reduced by addition thereto of a surfactant which is a fatty acid ester of a polyethoxylate at a concentration of from 1 to 2%.

5,549,846

METHOD FOR THE CONTINUOUS PREPARATION OF VANADIUM PENTOXIDE GELS AND APPARATUS FOR IMPLEMENTING THE METHOD

Jean P. Tixier, Chalon-sur-Saone, and Annie F. Legrand, Dracy-le-Fort, both of, France, assignors to Eastman Kodak Company, Rochester, N.Y.

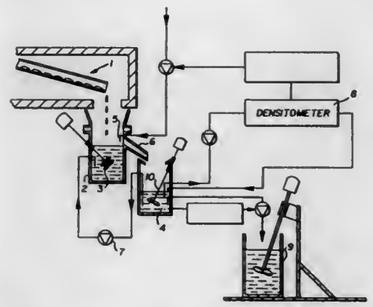
PCT No. PCT/EP92/02159, § 371 Date Dec. 3, 1993, § 102(e) Date Dec. 3, 1993, PCT Pub. No. WO93/06043, PCT Pub. Date Apr. 1, 1993

PCT Filed Sep. 18, 1992, Ser. No. 162,039

Claims priority, application France, Sep. 27, 1991, 91 12155

Int. Cl.[6] B01J *13/00*; C01G *31/02*; C09K *3/16*

U.S. Cl. 252—315.01 **18 Claims**



1. A method of preparing a vanadium pentoxide gel comprising the following steps:

a) the vanadium pentoxide is melted at a temperature which is at least 100° C. higher than its melting point;

b) the vanadium pentoxide is poured continuously into a quenching reactor containing distilled water so as to produce a gel, the vanadium pentoxide being poured under conditions such that the molten mass enters the distilled water at a temperature at least 50° C. higher than the melting point of vanadium pentoxide, distilled water being added to the said quenching reactor according to the desired concentration of vanadium pentoxide;

c) the gel obtained in the said quenching reactor runs off through overflowing into an ageing reactor, the contents of which are continuously recirculated in the quenching reactor, a continuous measurement of the concentration of the gel contained in the ageing reactor being carried out so as to adjust continuously the quantity of distilled water to be added to the quenching reactor, the contents of the two reactors being agitated continuously; and

d) continuously discharging the contents of the ageing reactor.

5,549,847

FLOWABLE AQUEOUS DISPERSIONS OF POLYCARBOXYLIC ACID CORROSION INHIBITORS

Martine Goliro, St-Louise-La Chaussée, France; Martin Holer, Magden, and Sandor Gati, Allschwil, both of, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Continuation of Ser. No. 870,651, Apr. 20, 1992, abandoned. This application Nov. 23, 1994, Ser. No. 345,013

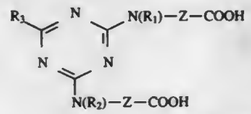
Claims priority, application Switzerland, Apr. 24, 1991, 1228/91

Int. Cl.[6] C23F *11/14*

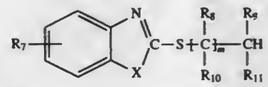
U.S. Cl. 252—394 **13 Claims**

1. A storage-stable, flowable aqueous dispersion of a solid polycarboxylic acid corrosion inhibitor comprising

25–57% by weight of a solid polycarboxylic acid corrosion inhibitor of formula I or II



I



II

wherein

Z is C_1–C_{11}alkylene, cyclohexylene or phenylene,

R_1 and R_2 are each independently of the other H, C_1–C_4alkyl or a group —Z—COOH,

R_3 is C_1–C_{12}alkyl, phenyl or a group —N(R_4)(R_5), —OR_6 or —SR_6,

R_4 and R_5 are each independently of the other H, C_1–C_{12}alkyl, C_2–C_4 hydroxyalkyl, cyclohexyl, phenyl or a group —Z—COOH, or R_4 and R_5, when taken together, are C_4–C_6alkylene or 3-oxapentylene,

R_6 is hydrogen, C_1–C_{12}alkyl or phenyl,

m is 0 or 1, X is sulfur, oxygen or NH,

R_7 is hydrogen, C_1–C_4alkyl, halogen, C_1–C_4alkoxy, carboxy, amino or nitro,

R_8, R_9, R_{10} and R_{11} are each independently of one another hydrogen, C_1–C_{12}alkyl, C_1–C_4hydroxyalkyl, C_2–C_6carboxyalkyl, C_2–C_{10}alkoxyalkyl, carboxyl, phenyl or benzyl, or R_8 and R_9, when taken together, are a direct bond, with the proviso that at least two of the groups R_8, R_9, R_{10} and R_{11} are a carboxyl or carboxylalkyl group,

or an alkali metal salt, ammonium salt or amine salt, of such solid polycarboxylic acid corrosion inhibitor of formula I or II,

40–72% by weight of water, 0.1–2% by weight of a dispersant and 0.01 to 0.5% by weight of a thickener.

12. A process for the preparation of a flowable aqueous dispersion of a polycarboxylic acid corrosion inhibitor of the formula I or II according to claim 1, comprising 25–57% of the corrosion inhibitor, 40–72% of water, 0.1–2% of a dispersant and 0.01 to 0.5% of a thickener, which process comprises mixing a moist corrosion inhibitor, obtained by filtration, with the dispersant and the thickener and stirring the mixture until it is flowable.

5,549,848

HIGH TEMPERATURE EVAPORATION INHIBITOR LIQUID

Ron Zeheb, and Paula M. Rodgers, both of Tucson, Ariz., assignors to Ventana Medical Systems, Inc., Tucson, Ariz.

Division of Ser. No. 155,935, Nov. 15, 1993. This application Jun. 1, 1995, Ser. No. 456,602

Int. Cl.[6] C09K *3/00*

U.S. Cl. 252—408.1 **21 Claims**

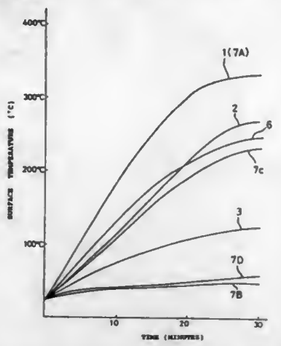
1. A method for inhibiting evaporation of an aqueous medium comprising covering the aqueous medium with an evaporation inhibitor liquid comprising a mixture of an alkane having at least six carbons and a non-volatile oil, said alkane being present in said mixture in an amount sufficient to provide a density which facilitates floating the mixture on the surface of an aqueous medium, said non-volatile oil being present in said mixture in an amount sufficient to inhibit evaporation of said mixture at elevated temperatures.

5,549,849

CONDUCTIVE AND EXOTHERMIC FLUID MATERIAL

Genji Namura, Moriyama, and Masao Takasawa, Tochigi, both of, Japan, assignors to Carrozzeria Japan Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 30,490, Apr. 2, 1993, abandoned. This application Mar. 20, 1995, Ser. No. 406,650
Claims priority, application Japan, Aug. 2, 1991, 3-216299
Int. Cl.[6] H01B *1/00;1/22;1/24*
U.S. Cl. 252—503 **13 Claims**



1. An electrically conductive and exothermic fluid material comprising a powdery material, said powdery material comprising:

first graphite particles having a long diameter of 5 to 300 microns and a shorter diameter of 3 to 200 microns;

at least one metal component selected from a spherical metal particle having a particle size less than or equal to 300 μm, a metal oxide having a particle size less than or equal to 300 μm, a metal salt, and mixtures thereof, wherein the ratio of said first carbon particles to said metal component ranges from 20:80 to 80:20; and

electrically conductive carbon black particles which are admixed in an amount of 2% to 12% by weight relative to the total weight of said powdery material;

wherein said powdery material is dispersed in a binder selected from synthetic resin varnish, an inorganic material, and mixtures thereof, said inorganic material being cement, gypsum or silica, and wherein the ratio of said powdery material to said binder ranges from 93:7 to 55:45, and said graphite particles being admixed in an amount of 30% to 85% by weight relative to the total weight of said binder.

5,549,850

LAMNO3 - COATED CERAMICS

Darryl F. Garrigus, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 381,498, Jul. 18, 1989, and Ser. No. 325,269, Mar. 17, 1989, which is a continuation-in-part of Ser. No. 155,358, Feb. 12, 1988, abandoned, Ser. No. 12,585, Jan. 19, 1987, Ser. No. 106,746, Oct. 8, 1987, Pat. No. 5,198,282, and Ser. No. 527,600, May 23, 1990, abandoned, said Ser. No. 381,498is a continuation-in-part of Ser. No. 698,496, Feb. 5, 1985, Pat. No. 5,041,321, which is a continuation-in-part of Ser. No. 667,568, Nov. 12, 1984, abandoned. This application Sep. 15, 1992, Ser. No. 945,191
Int. Cl.[6] H01B *1/00;1/08;* **C04B** *35/624;35/63*
U.S. Cl. 252—518 **20 Claims**

1. A process for forming a fiberform or microform composite wherein ceramic particles selected from the group consisting of ceramic fibers about 1/16-4 inches long or ceramic microparticles about 20–150 micrometers in diameter or both are bound together and at least partially coated with a perovskite ceramic from the $LaMnO_3$-family; comprising the steps of:

(a) forming a slurry comprising the ceramic particles in a liquid;

(b) dispersing the slurry over a form-defining surfaces and separating a substantial amount of liquid from the slurry to form a porous mat of the particles upon the form-defining surface;

(c) contacting the ceramic particles with perovskite sol, the sol being a precursor of $LaMnO_3$-family perovskite ceramic;

(d) drying and curing the sol and mat at a sufficient temperature and for a period of time sufficient to convert the sol to a perovskite ceramic from the $LaMnO_3$-family, wherein the perovskite ceramic at least partially coats the particles and binds the particles into a rigid mat.

5,549,851

CONDUCTIVE POLYMER COMPOSITION

Motoo Fukushima; Mikio Aramata, and Shigeru Mori, all of Kawasaki, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jan. 24, 1995, Ser. No. 377,342
Claims priority, application Japan, Jan. 25, 1994, 6-023135
Int. Cl.[6] H01B *1/20;1/12;1/04;1/24*
U.S. Cl. 252—519 **11 Claims**

1. A conductive polymer composition comprising a silicon containing polymer in admixture with an amine compound, the silicon containing polymer being doped with an oxidizing dopant, wherein the oxidizing dopant is iodine or ferric chloride.

5,549,852

POLYMER COMPOSITION AS DETERGENT BUILDER

John M. Bell, Canton, Ga., assignor to Rhone-Poulenc Inc., Monmouth Junction, N.J.

Filed Feb. 3, 1995, Ser. No. 382,819
Int. Cl.[6] C11D *3/37;1/12*
U.S. Cl. 510—299 **13 Claims**

1. A detergent composition or dispersant composition including a novel polymer composition wherein said polymer comprises the reaction product of:

(a) between about 75 and about 99.9 weight percent of a monocarboxylic acid or salt monomer;

(b) between about 0 and about 25 weight percent of a dicarboxylic acid, anhydride or salt monomer; and

(c) between about 0.1 and about 5.0 weight percent of an acrylic monomer which contains one or more sulfoalkyl groups, where alkyl represents an alkyl moiety containing between 1 and 6 carbon atoms or salt thereof;

the sum of the weight percents of (a), (b) and (c) being 100 percent.

5,549,853

LINKED AZO DYES

Stefan Beckmann, Mannheim; Karl-Heinz Etzbach; Karl Siemensmeyer, both of Frankenthal, and Ruediger Sens, Mannheim, all of, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Jun. 6, 1994, Ser. No. 254,789
Claims priority, application Germany, Jun. 25, 1993, 43 21 166.6
Int. Cl.[6] F21V *9/00;* **G02F** *1/00*
U.S. Cl. 252—582 **3 Claims**

1. A process for nonlinearly varying optical radiation which comprises the step of interacting the optical radiation with an azo dye of the Formula I and recovering the nonlinearly varied optical radiation:

$$W(—X—Y—Chr)_n \qquad (I),$$

where

n is 2 to 6,

Y is C_1–C_6-alkylene,

Chr is a radical which is derived from a mono- or poly-azo dye and which is bonded to the radical Y via a chemical bond, CO—O, oxygen, sulfur, imino or C_1–C_4-alkylimino,

X is a radical of the formula CO—O or O—CO and

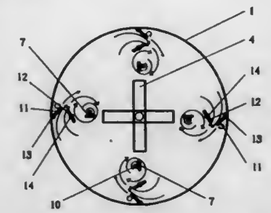
W is an n-valent radical which is derived from an unsubstituted or substituted C_2–C_{20}-alkane, an unsubstituted or substituted C_4–C_7-cycloalkane, an unsubstituted or substituted benzene or an unsubstituted or substituted naphthalene, or, if n is 4, is also silicon.

5,549,854

METHOD AND APPARATUS FOR FORMING CONTROLLED VORTEXES AND FOR RECIRCULATING GAS

Stig-Erik Hulthom; Launo L. Lilja; Valto J. Mäkitalo, all of Pori, and Bror G. Nyman, Ulvila, all of, Finland, assignors to Outokumpu Engineering Contractors Oy, Espoo, Finland

Filed May 16, 1995, Ser. No. 442,009
Claims priority, application Finland, May 20, 1994, 942340
Int. Cl.[6] B01F *3/04*
U.S. Cl. 261—87 **12 Claims**



1. A method for forming controlled vortexes and for recirculating gas thereby in a reactor containing liquid or a suspension of liquid and solids, into which reactor there also is fed gas, so that the liquid is set into a turbulent motion by means of a mixer member and flow baffles, characterized in that in the reactor there are formed, by means of the flow baffle members, at least two vortexes external to the shaft of the mixer member, the suction force of the said vortexes being adjustable, so that gas is sucked from the suspension surface into the liquid phase by means of the said vortexes.

5,549,855

OPTICAL ELEMENT MOLDING METHOD

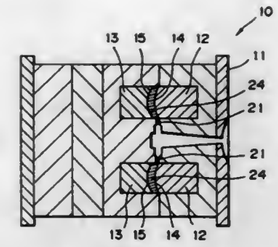
Hiroshi Nakanishi; Norihisa Saito; Toshinori Ando, all of Tokyo, and Hisakazu Morinaga, Yamato, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 15, 1994, Ser. No. 260,969
Claims priority, application Japan, Jun. 18, 1993, 5-147721; May 10, 1994, 6-096386
Int. Cl.[6] B29D *11/00*
U.S. Cl. 264—2.5 **3 Claims**

1. An optical element molding method of molding a material of an optical element by using an optical insert member, thereby transferring a shape of a surface, as an optical function surface, of a cavity surface of the optical insert member onto a surface of the material of the optical element, comprising:

the first step of setting molding conditions before molding of the optical element, such that a constant shape error is stably formed on a surface, as a transferred optical function surface, of the optical element;

the second step of molding a sample optical element under the molding conditions determined at said first step to form the transferred optical function surface on the sample optical element;



the third step of dividing the transferred optical function surface of the sample optical element into a plurality of regions, and approximating shape errors of the regions by using functions so that the functions are continuous in boundaries between the regions;

the fourth step of processing the shape of the cavity surface of the optical insert member into a shape by which the constant shape error is cancelled, on the basis of the functions used in said third step; and

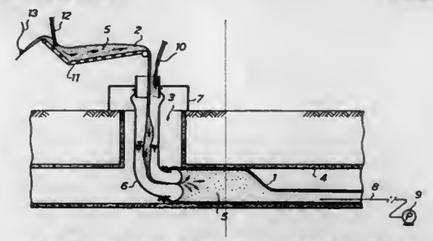
the fifth step of molding the optical element by using the optical insert member processed in said fourth step, wherein said third step further comprises the error measurement step of measuring the shape error of the sample optical element, and, in said error measurement step, in order to correct a setting error of the sample optical element, the sample optical element is rotated a very small amount about an optical axis and displaced a very small amount io a predetermined direction, thereby adjusting a position of the sample optical element.

5,549,856

METHOD OF REPAIRING A PIPELINE WITH AN INJECTED RESIN

Yasuhiro Yokoshima, Ibaraki-ken, Japan, assignor to Shonan Gosei - Jushi Seisakusho K.K., Kanagawa-ken, Japan, and Yokoshima & Company, Ibaraki-ken, Japan

Filed Apr. 1, 1994, Ser. No. 221,005
Int. Cl.[6] B29C *63/36*
U.S. Cl. 264—36 **5 Claims**



1. A method of repairing a pipeline, comprising the steps of:

(a) introducing a pipe liner bag into a pipeline to be repaired;

(b) everting an end portion of an open liner such that the end portion is fixed to one end of the pipe liner bag;

(c) injecting a predetermined amount of resin into the open liner from the other end thereof while evacuating the pipe liner bag, said evacuation being continued until no resin is left in the open liner;

(d) everting the open liner by applying fluid pressure so that the open liner is inserted into the pipe liner bag and to thereby impregnate the resin into the pipe liner bag;

(e) pressing the pipe liner bag against the inner wall of the pipeline; and

(f) curing the resin impregnated in the pipe liner bag, with the pipe liner bag continuously pressed against the inner wall of the pipeline.

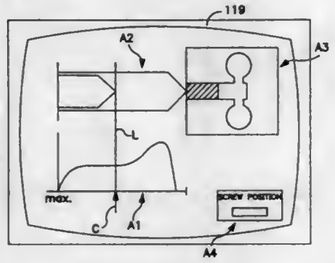
VOL 1189 ISS 4 AG 27 1996 UMI

5,549,857

INJECTION PRESSURE MONITORING METHOD

Masao Kamiguchi, and Noriaki Neko, both of Oshino-mura, Japan, assignors to Fanuc Ltd., Japan

Continuation of Ser. No. 940,882, Oct. 26, 1992, abandoned. This application Jun. 6, 1994, Ser. No. 254,439
Claims priority, application Japan, Feb. 26, 1991, 3-53766
Int. Cl.[6] B29C *45/76*
U.S. Cl. 264—40.1 21 Claims



1. An injection pressure monitoring method wherein a cylinder contains a resin and a screw which moves to inject said resin into a mold cavity, and the method uses a screw position detecting means for detecting a screw position in said cylinder, an injection pressure sensor means for detecting a pressure acting on said resin being injected into said mold cavity, and a display device, said method comprising the steps of:

storing data relating to said mold cavity;

executing at least one cycle of injection of said resin into said mold cavity;

displaying a configuration of said mold cavity based on said data, and a pressure waveform detected during said injection by said injection pressure sensor means and said screw position detecting means, said pressure waveform being a graph of said detected pressure versus said detected screw position, on said display device;

inputting a screw position;

displaying said input screw position on said display device;

obtaining a resin injection quantity based on said input screw position;

determining a position of a leading end of said resin being injected into said mold cavity based on said obtained resin injection quantity; and

displaying a filling resin state of said resin into said displayed mold cavity based on said determined position of the leading end of said resin.

5,549,858

A SILICONE FOAM SYMMETRICAL INVERSION MOLDING PROCESS

Kathryn G. Krotseng, Richmond, Va., assignor to Manni-Kit, Inc., Richmond, Va.

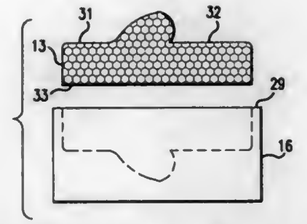
Filed Feb. 8, 1995, Ser. No. 386,108
Int. Cl.[6] B29C *67/20*
U.S. Cl. 264—46.4 19 Claims

1. A method for manufacture of an article of molded silicone foam having the features of a designated object, said method comprising the steps of:

(a) introducing a silicone foam mixture into a first mold having a first cavity, said silicone foam mixture forming a first molded object having a top surface and a first bottom surface that form a shape that is representative of said first cavity;

(b) removing said first molded object from said first mold;

(c) pressing said first molded object into a second mold having a top edge and a second cavity, said second cavity adjacent to said top edge and having a profile that is representative of said article, said first bottom surface of said first molded object



being pressed against said second cavity, said top surface of said first molded object forming a layer of foam on said top edge;

(d) cutting said layer to form an opened celled surface on said top surface of said first molded object; and

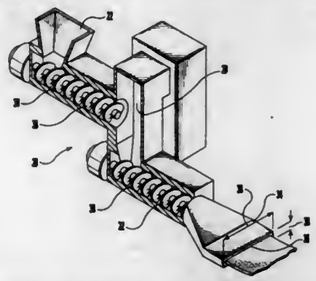
(e) releasing and removing said first molded object from said second cavity, said opened celled surface having a configuration that is representative of said second cavity, said first bottom surface returning to said shape of said first cavity.

5,549,859

METHODS FOR THE EXTRUSION OF NOVEL, HIGHLY PLASTIC AND MOLDABLE HYDRAULICALLY SETTABLE COMPOSITIONS

Per J. Andersen, and Simon K. Hodson, both of Santa Barbara, Calif., assignors to E. Khashoggi Industries, Santa Barbara, Calif.

Continuation-in-part of Ser. No. 19,151, Feb. 17, 1993, Pat. No. 5,453,310, Ser. No. 95,662, Jul. 20, 1993, Pat. No. 5,385,764, Ser. No. 101,500, Aug. 3, 1993, and Ser. No. 109,100, Aug. 18, 1993, abandoned, each which is a continuation-in-part of Ser. No. 929,898, Aug. 11, 1992, abandoned. This application Jun. 7, 1994, Ser. No. 255,344
Int. Cl.[6] B28B *1/00;21/52;* B29C *47/00;65/00*
U.S. Cl. 264—102 104 Claims



1. A method for extruding a hydraulically settable mixture to form an article of manufacture having a hydraulically settable matrix, the method comprising the steps of:

combining a hydraulically settable binder, at least one aggregate material, a rheology-modifying agent and water to form a hydraulically settable mixture, the hydraulically settable binder and at least one aggregate material each comprising a plurality of particles which form a combination of particles that are in an initial state of natural packing density, the hydraulically settable mixture having an initial net deficiency of water such that the mixture is initially granular and substantially noncohesive;

extruding the hydraulically settable mixture under an extrusion pressure sufficient to increase the initial packing density of the combination of the hydraulically settable binder particles and aggregate material particles, thereby reducing the initial net deficiency of water, causing the hydraulically settable mixture to become cohesive, and causing the mixture to flow through a die to form an extruded article of manufacture of a desired shape and having a hydraulically settable matrix, the hydraulically settable matrix of the extruded article of manufacture being form-stable immediately after being extruded through the die; and

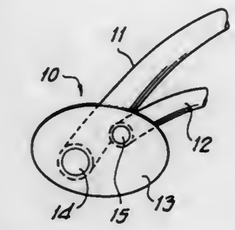
allowing the hydraulically settable matrix of the extruded article of manufacture to cure.

5,549,860

METHOD OF FORMING A VASCULAR PROSTHESIS

David Charlesworth, Knutsford; Christopher J. Underwood, Denton, both of, Great Britain, and Kerm S. Chian, Singapore, Singapore, assignors to PolyMedica Industries, Inc., United Kingdom

Continuation-in-part of Ser. No. 856,223, May 13, 1992, abandoned. This application Jan. 31, 1995, Ser. No. 381,297
Claims priority, application United Kingdom, Oct. 18, 1989, 8923516
Int. Cl.[6] B29C *41/02*
U.S. Cl. 264—139 36 Claims



1. A method for forming a polymeric vascular prosthesis from a polymeric vessel having a lumen open at one end, the steps comprising

precipitating from a solution onto said one end of said vessel a sheet of polymer extending radially and integrally therefrom; and

forming an aperture in said sheet at the position of said lumen so as to allow fluid communication with the lumen at said one end of the vessel.

5,549,861

PROCESS FOR THE PRODUCTION OF SHAPED STRUCTURES OF CELLULOSE

Bernd Huber, and Richard Kinscher, both of Kelheim, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Feb. 13, 1995, Ser. No. 387,332
Claims priority, application Germany, Feb. 15, 1994, 44 04 714.2
Int. Cl.[6] B29C *47/00;* D01F *2/24;2/28;2/30*
U.S. Cl. 264—187 13 Claims

1. A process for the production of a shaped structure of cellulose from a shaping solution comprising the steps of:

providing a shaping solution comprising a solvent, which is water-soluble alcohol, water-soluble ketone, water, or mixtures thereof, and a water-soluble cellulose derivative;

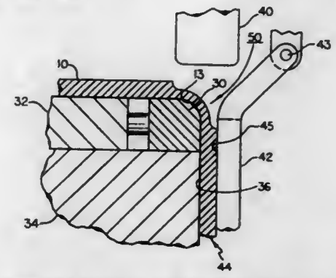
shaping said shaping solution into a shaped structure by a drying shaping process and regenerating the shaped structure to give cellulose.

5,549,862

METHOD FOR FABRICATING A ONE PIECE COVED BACKSPLASH

Donald R. Vail, 8585 Ocean View Rd., Ventura, Calif. 93001

Filed Jul. 31, 1995, Ser. No. 509,244
Int. Cl.[6] B29C *53/00*
U.S. Cl. 264—238 8 Claims



1. A method for forming a coved backsplash from an elongated member having first and second surfaces comprising the steps of:

forming a groove in the first surface of said member, first and second portions of said member on the opposite sides of said groove being substantially coplanar;

positioning a heating device having a convex surface in contact with the second surface of said member opposite said groove and heating the elongated member to a thermoforming temperature;

positioning a heating member in said groove and heating the groove to a thermoforming temperature so that the heated elongated member can be bent;

bending said member against the convex surface of the heating device such that said first portion of said member is at an angle to said second portion of said member forming a coved section; and

retracting said heating device from said second surface of said member and said heating member from said groove.

5,549,863

COMPOSITE BOARD

Michael W. Symons, Pretoria, South Africa, assignor to Plascon Technologies (Proprietary) Limited, Bedfordview, South Africa

Filed Aug. 12, 1994, Ser. No. 289,373
Claims priority, application South Africa, Aug. 13, 1993, 93/5928
Int. Cl.[6] B27N *3/10;* B32B *31/00;9/04*
U.S. Cl. 264—257 15 Claims

1. A method of making a composite board having a front and a back in a mould includes the steps of:

(a) applying a layer of a first composition comprising a thermosetting resin and a catalyst for the thermosetting resin, to the surface of the mould;

(b) allowing the thermosetting resin to polymerize to form the front of the composite board;

(c) applying a layer of a connecting composition comprising an adhesive or a second composition comprising a thermosetting resin and a catalyst for the thermosetting resin, to the inner surface of the front of the composite board in the mould;

and either

(d) placing on the layer of step (c) a structure comprising one or more laminae, each lamina comprising first and second sheets of a natural fibre material and a corrugated sheet or a cellular core of a natural fibre material sandwiched between the first and second sheets, the lamina having been impregnated with a third composition comprising a thermosetting resin, an extending liquid for the thermosetting resin and a catalyst for the thermosetting resin, the thermosetting resin having been polymerized; and

(e) allowing the connecting composition to set to join the structure to the front of the composite board to form the composite board, and removing the composite board from the mould;

or

(f) applying to the layer of step (c) a layer of a fibrous reinforcing material wetted with a fourth composition comprising a thermosetting resin and a catalyst for the thermosetting resin, and allowing the thermosetting resin to polymerise and allowing the connecting composition to set to join the layer of the fibrous reinforcing material to the front of the composite board to form an intermediate composite, and removing the intermediate composite from the mould;

(g) connecting to the side of the intermediate composite not connected to the front of the composite boards, using a layer of the connecting composition of step (c), a structure of step (d); and

(h) allowing the connecting composition to set to join the structure to the free side of the intermediate composition to form the composite board.

5,549,864

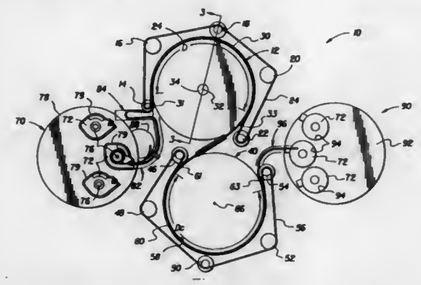
PROCESS FOR DECURLING A STRIP OF PHOTOSENSITIVE MATERIAL

William J. Greene, Webster; Robert J. Matoushek, Rochester; Harry A. Gorman, Rochester, and John G. Weigand, Churchville, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 228,065, Apr. 14, 1994. This application Apr. 28, 1995, Ser. No. 430,640

Int. Cl.[6] B29C *53/18*

U.S. Cl. 264—280.000 **3 Claims**



1. A method for decurling a strip of photosensitive material comprising the steps of:

providing a heating drum of a predetermined temperature;

placing a strip of photosensitive material against the surface of the drum such that the curl in the photosensitive material is placed against the drum in the opposite direction from the curvature of the drum and in such a manner that substantially no sliding occurs between the strip of photosensitive material and said drum; and

providing pressure against at least a portion of the photosensitive material on the side of said photosensitive material opposite said drum such that the photosensitive material is in contact with the drum, said pressure being provided by a belt, said belt forming a receiving pocket for holding and retaining said drum such that when said belt is moved, said drum is rotated about its axis of rotation and the photosensitive material will be moved along the film path.

5,549,865

METHOD FOR MANUFACTURE OF AN ELASTOMERIC TUBE COUPLING BODY

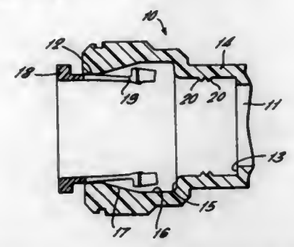
John D. Guests, Cannon Hill Way, Berks, United Kingdom

Continuation of Ser. No. 227,562, Apr. 14, 1994, abandoned, which is a continuation of Ser. No. 897,658, Jun. 12, 1992, abandoned. This application Nov. 7, 1994, Ser. No. 335,478

Claims priority, application United Kingdom, Jun. 12, 1991, 9112617

Int. Cl.[6] B29C *45/44;57/06*

U.S. Cl. 264—318 **1 Claim**



1. A method of making a tube coupling body having a throughway open at one end of the body to receive a tube, the throughway having a first cylindrical portion of equivalent internal diameter to the external diameter of the tube to be received with a close fit, a second cylindrical portion connected to said first cylindrical portion and of larger internal diameter than said open end and having a cavity to receive a device for locking in said coupling body the tube to be received, and a third, tapered portion between said second portion and said open end, said coupling body increasing in thickness from said second portion to said open end, in which a tube locking means is received to lock a tube in the throughway, the method comprising:

injection molding the coupling body using tooling which forms said throughway having an enlarged diameter portion which tapers to a narrowed diameter portion and a cylindrical outer surface, molding the coupling body in one piece of an elastomeric material;

releasing the coupling body from the tooling which forms the internal part of the coupling body by drawing the tooling through the tapered portion of the throughway out of said open end of the coupling body by stretching the wall of the coupling body as the tooling is withdrawn;

and then allowing the coupling body to return to its molded shape after extraction of the tooling through only the elasticity of the material from which the coupling body is formed and to cool the coupling body to the normal operating temperature of the coupling body.

5,549,866

PROCESS OF MAKING A FLOW REGULATION DEVICE

Victor Grifols Lucas, Poligono Levante-Can Guasch, s/n, 08150 Parets Del Valles, Barcelona, Spain

Continuation-in-part of Ser. No. 844,843, Mar. 2, 1992, abandoned. This application Jun. 22, 1994, Ser. No. 263,755

Claims priority, application Spain, Mar. 18, 1991, 9100691

Int. Cl.[6] B29C *67/00*

U.S. Cl. 264—451 **5 Claims**

1. A method of manufacturing a flow regulation device, comprising the steps of:

providing a guide member within an open end of a tube;

inserting a rod through said guide member and into said tube whereby said guide member maintains said rod coaxial with the axis of said tube, said rod having a smaller external diameter than an internal diameter of said tube;

molding a portion of the tube around the rod by keeping a cross-section of internal regions of the portion of the tube circular through an entire duration of the step of molding and preventing an outside surface of the tube from becoming semi-molten throughout the entire duration of the step of molding, pressing the portion of the tube on the rod and high frequency heating the portion of the tube; and

extracting the rod and guide member, whereby the molded portion of the tube that remains constitutes the flow regulation device.

5,549,867

DISTRIBUTION ENHANCED POLYOLEFIN MELTSPINNING PROCESS AND PRODUCT

Scott L. Gessner, Encinitas, Calif., and William Fowells, Washougal, Wash., assignors to Fiberweb North America, Inc., Simpsonville, S.C.

Filed Nov. 3, 1994, Ser. No. 333,651

Int. Cl.[6] D01D *5/088;* **D01F** *6/04*

U.S. Cl. 264—555 **35 Claims**

1. An enhanced productivity meltspinning process for meltspinning polyolefin filaments comprising:

extruding molten polyolefin through a plurality of filament forming orifices to form a plurality of filaments, quenching said filaments and subjecting said quenched filaments to an attenuation force, wherein the polyolefin resin supplied to the filament forming orifices is an enhanced molecular weight distribution polyolefin resin having property parameters comprising;

(i) a molecular weight distribution breadth, M_z/M_n, of between 7.2 and 10, a flow rate ratio of less than 15.5, and a power law index at 20 sec^{-1} of between 0.70 and 0.78; and

(ii) either a z-average molecular weight, M_z, of between 400,000 and 580,000, or a second order constant, b_2, determined from the regression analysis viscosity equation, of between –0.029 and –0.047, or both; and

(iii) unless both of the M_z and b_2 parameters is within said ranges of between 400,000 and 580,000, and between –0.029 and –0.047, respectively, a die swell, B^2, of between 1.6 and 2.0, and a spinnability factor $\ln(B^2)/MFR$ of between about 0.08 and about 0.026.

5,549,868

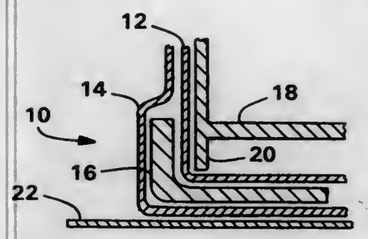
METHOD OF STERILIZING AN ARTICLE

Gerald I. Carlson, II, Marietta, Ga., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Apr. 21, 1995, Ser. No. 426,338

Int. Cl.[6] B01J *19/00;* **A61L** *2/08*

U.S. Cl. 422—1.000 **21 Claims**



1. A process for sterilizing an instrument tray comprising the steps of:

securing a sterilization reactive material to a sheet of sterilization wrap;

wrapping the instrument tray with the sheet of sterilization wrap such that the sterilization reactive material is positioned between a weight bearing surface of the instrument tray and an instrument tray receiving surface; and

exposing the product of the preceding step to sterilization conditions.

5,549,869

METHOD OF CREATING A BARRIER TO WOOD MATERIALS AND WOODEN STRUCTURES FROM ATTACK BY HUMIDITY, FUNGI AND INSECTS

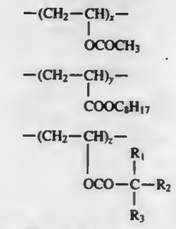
Toru Iwakawa, Tokyo, Japan, assignor to Nippon Eisei Center Co., Ltd., Tokyo, Japan

Filed Apr. 12, 1995, Ser. No. 420,824

Int. Cl.[6] B01J *19/00*

U.S. Cl. 422—40.000 **11 Claims**

1. A method for creating a barrier to protect wood from moisture and/or biological attacks which comprises contacting the wood, or the ground surface thereunder, with a liquid containing a combination of a urethane based resin and a synthetic resin emulsion and an anti-fungal and wood-preservative agent and/or a pesticide to give a dried film, said synthetic resin emulsion being a copolymer of:



vinyl acetate (X)

2-ethylhexyl acylate (Y)

vinylester of versatic acid (Z)

wherein $R_1 + R_2 + R_3 = C_8$ and X:Y:Z=6:2:2.

5,549,870

SELF-SUPPORTING THIN-FILM FILAMENT DETECTOR, PROCESS FOR ITS MANUFACTURE AND ITS APPLICATION TO GAS DETECTION AND GAS CHROMATOGRAPHY

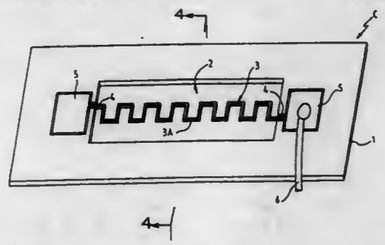
Antoinette Accorsi, Pont Sainte Maxence, and Daniel Chariot, Saint Ismier, both of, France, assignors to Commissariat a l'Energie Atomique, and Institut National de l'Environnement Industriel et des Risques, both of, France

Continuation of Ser. No. 829,074, Feb. 6, 1992, abandoned. This application Nov. 28, 1994, Ser. No. 345,548

Claims priority, application France, Aug. 11, 1989, 89 10837

Int. Cl.[6] G01N *27/12*

U.S. Cl. 422—90 **14 Claims**



1. A sensor for determining a static or dynamic characteristic of a surrounding environment, comprising:

a supporting substrate through which there is formed at least one aperture and having at least two conductive lands at a side area of said at least one aperture;

at least one elongated filament comprising at least one elongated thin film of an electrically conductive element, said at least one elongated filament having a central portion and at least

two end portions, said central portion being only attached to said at least two conductive lands of said supporting substrate by said at least two end portions, said central portion between said at least two end portions independently spanning said at least one aperture, said central portion further being connected through said at least two end portions and said at least two conductive lands to said supporting substrate; and

an interface region integral with said at least one elongated filament, said interface region being adapted to react with the environment so as to modify a predetermined electrical characteristic of said interface region, whereby static or dynamic characteristics of a surrounding environment may be measured.

5,549,871

SENSOR FOR COMBUSTIBLE GASES

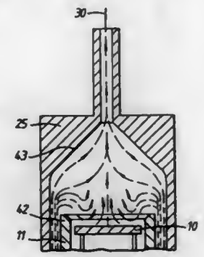
Riad M. A. Kocache; Dany F. Holman, both of Crowborough, and James Swan, Eastbourne, all of, United Kingdom, assignors to Servomex PLC, East Sussex, England

Continuation of Ser. No. 416,449, Apr. 3, 1995, abandoned, which is a continuation of Ser. No. 185,741, Jan. 21, 1994, abandoned. This application Oct. 13, 1995, Ser. No. 542,713

Claims priority, application United Kingdom, Jan. 21, 1993, 9301104

Int. Cl.[6] G01N *27/16*

U.S. Cl. 422—95 **35 Claims**



1. A sensor for a combustible gas comprising:

a temperature sensitive element having a catalyst associated therewith to facilitate combustion of the combustible gas;

a shroud surrounding the temperature sensitive element and extending above a top surface of the temperature sensitive element;

a reaction vessel surrounding the shroud and forming a passageway there between for creating a flow of gas separated from the temperature sensitive element by the shroud and having a shaped downstream end for directing the flow inwardly starting at a point above the temperature sensitive element so that the flow of gas does not directly contact the temperature sensitive element, but reaches the temperature sensitive element substantially solely by diffusion; and

a heater coupled to the reaction vessel.

5,549,872

APPARATUS FOR PURIFYING ENGINE EXHAUST GAS

Yasuhiko Hosoya, and Toshiki Kuroda, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

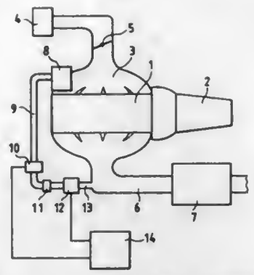
Continuation of Ser. No. 096,980, Jul. 27, 1993, abandoned. This application Feb. 21, 1995, Ser. No. 391,094

Claims priority, application Japan, Aug. 5, 1992, 4-208897

Int. Cl.[6] F01N *7/14;3/20;3/34*

U.S. Cl. 422—173 **4 Claims**

1. An apparatus for purifying an exhaust gas of an internal combustion engine mounted in a vehicle, said apparatus comprising:



an exhaust pipe communicated with an internal combustion engine,

a catalyst disposed in said exhaust pipe,

a heater for heating air which is introduced into said exhaust pipe,

an air introducing pipe disposed between an air intake pipe of the internal combustion engine and said exhaust pipe for introducing said heated air at a point upstream of said catalyst in said exhaust pipe, said air introducing pipe having one end communicated to the air intake pipe and an other end communicated to said exhaust pipe of the internal combustion engine at a location upstream of said catalyst, said heater being installed in said air introducing pipe, and

a windbreak cover provided on a periphery of both said heater and said air introducing pipe, through which said heated air is permitted to flow, in such a way that said windbreak cover surrounds both said heater and said air introducing pipe.

5,549,873

EXHAUST GAS CONVERTER ARRANGEMENT

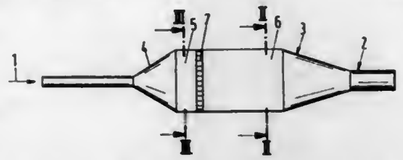
Ekkehard Pott, Gifhorn, Germany, assignor to Volkswagen AG, Wolfsburg, Germany

Filed Feb. 10, 1995, Ser. No. 387,027

Claims priority, application Germany, Feb. 18, 1994, 44 05 158.1

Int. Cl.[6] B01D *53/34;* **F01N** *3/28*

U.S. Cl. 422—180 **5 Claims**



1. An exhaust gas converter arrangement comprising a catalyst support having a precatalyst region and a main catalyst region which are spaced in the direction of exhaust gas flow through the converter, the precatalyst region being in the upstream direction and the main catalyst region being in the downstream direction and the main catalyst region being of larger size and larger mass than the precatalyst region, the catalyst support comprising corrugated and uncorrugated sheet metal members disposed in alternating sequence defining exhaust passages, each sheet metal member extending into both the precatalyst region and the main catalyst region and including an intermediate region between the precatalyst region and the main catalyst region, the sheet metal members being provided with apertures in the intermediate region which are sufficient to diminish the conduction of heat between the precatalyst region and the main catalyst region so that the precatalyst region will be heated to a start-up temperature before the main catalyst region reaches a start-up temperature wherein the exhaust passages are of generally square or triangular cross-section in the main catalyst region as a result of a corresponding shaping of the corrugations in the corrugated sheet metal member and wherein at

least one of the sheet metal members has further apertures in the precatalyst region which, together with the shape of the corrugations in the corrugated sheet metal member, produce exhaust passages in the precatalyst region which have a larger cross-sectional area than the exhaust passages in the main catalyst region.

5,549,874

DISCHARGE REACTOR

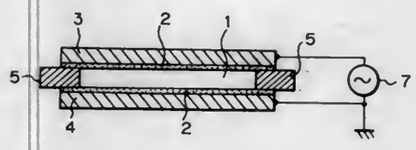
Ichiro Kamiya, Tokyo; Ryoichi Shinjo, Kanagawa-ken; Takeshi Murakami, Kanagawa-ken; Yukiko Nishioka, Kanagawa-ken, and Minoru Harada, Kanagawa-ken, all of, Japan, assignors to EBARA Corporation, Tokyo, Japan

Filed Apr. 20, 1993, Ser. No. 49,866

Claims priority, application Japan, Apr. 23, 1992, 4-130168; Apr. 23, 1992, 4-130171

Int. Cl.[6] B01J *19/08*

U.S. Cl. 422—186.04 **5 Claims**



1. A discharge reactor that generates silent discharge and/or creeping discharge between a dielectric and a high voltage electrode and/or a grounded electrode, said dielectric being located between said high voltage electrode and said grounded electrode, and which causes a substance to undergo reaction in the discharge space as it passes through said discharge space or as it is held within said discharge space, said dielectric being formed of crystal sapphire which is highly purified crystallized aluminum oxide, said high voltage electrode and/or grounded electrode in the area of the discharge space which is to be exposed to discharge being composed of a high-purity aluminum material purified to 99.5% by weight or more and at least the area of said electrode(s) which is to be exposed to discharge is further coated with an anodic oxidation film, said anodic oxidation film having a thickness of 15 μm or more and a surface hardness (Hv) of 300 or more on the microvickers scale.

5,549,875

DETERGENT DISPENSER FOR USE WITH SOLID CAST DETERGENT

Timothy E. Laughlin, Edina, and Robert C. Grant, Eden Prairie, both of Minn., assignors to Sunburst Chemicals, Inc., Bloomington, Minn.

Division of Ser. No. 263,796, Jun. 22, 1994, Pat. No. 5,428,537, which is a continuation-in-part of Ser. No. 950,932, Sep. 24, 1992, Pat. No. 5,342,587. This application Jun. 6, 1995, Ser. No. 466,396

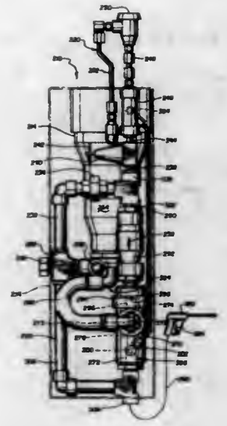
Int. Cl.[6] B01D *11/02*

U.S. Cl. 422—266 **5 Claims**

1. An improved detergent dispenser coupled to an external source of fluid flow under pressure and having a chemical source being in solid cast form, a spray generator designed to generate a fluid spray being fluidly coupled to the fluid source and the fluid spray generated by the spray generator bearing on the chemical source and generating a solution of the chemical, means to selectively discharge the solution of the chemical through a discharge conduit, wherein the improvement comprises:

a fluid inlet conduit fluidly coupling the source of fluid to the spray generator having pressure reduction means disposed in said fluid inlet conduit for reducing the pressure of the flow of fluid in said fluid inlet conduit; and

a pressure feedback means for disabling a flow of fluid from the source of fluid to the spray generator responsive to selective discontinuation of the discharge flow of the solution of the chemical through the discharge conduit, the pressure feedback means including back pressure actuated valve means disposed in said fluid inlet conduit downstream of said pressure reduction means, the back pressure actuated valve means being fluidly coupled to the discharge conduit for discontinuing the fluid flow to the spray generator responsive to reception of a fluid feedback pressure from the discharge conduit, the fluid feedback pressure being greater than the reduced flow pressure produced in said fluid inlet conduit by the pressure reduction means.



5,549,876

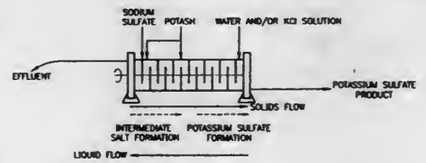
PRODUCTION OF POTASSIUM SULFATE USING DIFFERENTIAL CONTACTING

Tuvia Zisner, Raanana; Curt Holdengraber, Qiryat Tivon, and Shalom Lampert, Maalot, all of, Israel, assignors to Dead Sea Works, Beer Sheva, Israel

Filed Nov. 28, 1994, Ser. No. 348,114

Int. Cl.[6] C01D *5/00*

U.S. Cl. 423—199 **11 Claims**



1. Process for the manufacture of potassium sulfate from a solid sodium sulfate source, potash and water, comprising

introducing the solid sodium sulfate source, water and potash into a single vessel differential countercurrent contactor; and

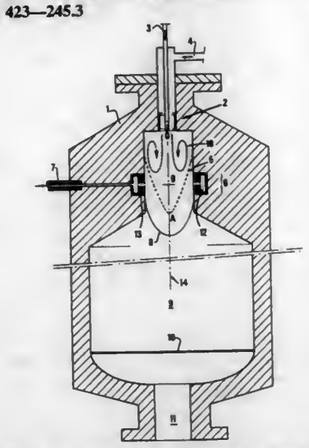
causing said sodium sulfate source, potash and water to contact countercurrently and differentially so as to establish countercurrent flow between the solid and liquid phases to produce potassium sulfate.

5,549,877

DEVICE AND PROCESS FOR MANUFACTURING SYNTHESIS GASES THROUGH COMBUSTION AND ITS APPLICATION

Paul Gateau, Saint Nom La Breteche; Michel Maute, Les Clayes Sous Bois, and Alain Feugier, Orgeval, all of, France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Filed Jun. 27, 1990, Ser. No. 544,371
Claims priority, application France, Jun. 27, 1989, 89 08667
Int. Cl.[6] B01J *7/00;12/00*
U.S. Cl. 423—245.3 **21 Claims**



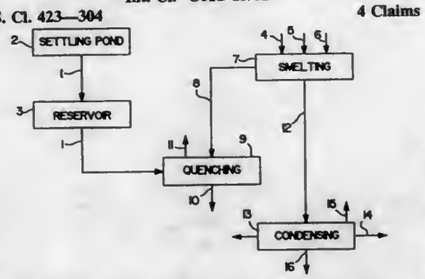
1. A device for manufacturing synthesis gas through the combustion, under a lack of oxygen, of a hydrocarbon fuel with a gaseous oxidizer, said device comprising a reactor having a combustion chamber and a primary injection means for producing a jet of the fuel and a portion of the oxidizer in the combustion chamber of the reactor, said jet having an elongated axis and forming a main flame substantially originating at an outlet level of the primary injection means and extending from the primary injection means along said axis and secondary injection means for injecting a complementary portion of the oxidizer into said combustion chamber, said secondary injection means being arranged to inject the complementary portion of oxidizer into said jet at a distance spaced from the outlet level of said primary injection means.

5,549,878

PROCESSES FOR THE DISPOSAL AND RECOVERY OF PHOSSY WATER

James C. Barber, 1725 Ingleside Ave., Florence, Ala. 35630

Filed May 24, 1995, Ser. No. 448,999
Int. Cl.[6] C01B *25/12*
U.S. Cl. 423—304 **4 Claims**



1. A process for the disposal of water containing elemental phosphorus, said process comprised of the following steps:

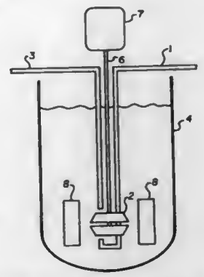
(a) smelting phosphorus-containing solid in a submerged-arc electric furnace to form molten slag;
(b) removing said molten slag from electric furnace in step (a) by tapping;
(c) granulating the molten slag from step (b) by quenching said slag with water containing elemental phosphorus;
(d) evaporating said quenching water from step (c) to form steam;
(e) volatilizing the elemental phosphorus in step (c) to form phosphorus vapor;
(f) oxidizing the elemental phosphorus vapor in step (e) by contacting said vapor with ambient air to form phosphorus pentoxide;
(g) dispersing steam formed in step (d) and phosphorus pentoxide formed in step (f) into ambient air; and
(h) separating the granulated slag formed in step (c).

5,549,879

PROCESS FOR PULSE FLOW DOUBLE-JET PRECIPITATION

Lu Chow, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 23, 1994, Ser. No. 311,093
Int. Cl.[6] C01G *5/02;* **G03C** *1/005*
U.S. Cl. 423—491 **4 Claims**



1. A method of manufacturing silver halide grains comprising:
a) providing an aqueous solution containing silver halide particles having a first grain size;
b) continuously mixing the aqueous solution containing silver halide particles;
c) simultaneously introducing a soluble silver salt solution and a soluble halide salt solution into a reaction zone of high velocity turbulent flow confined within the aqueous solution for a time t, wherein high velocity being at least 1000 rpm;
d) simultaneously halting the introduction of the soluble silver salt solution and the soluble halide salt solution into the reaction for a time T wherein T>t, thereby allowing the silver halide particles to grow; and
e) repeating steps (c) and (d) until the silver halide particles attain a second grain size greater than the first grain size.

5,549,880

METHOD OF MAKING LITHIUM-VANADIUM-OXIDE ACTIVE MATERIAL

Rene Koksbang, 4231 Norwalk Dr., San Jose, Calif. 95129

Filed Mar. 31, 1994, Ser. No. 221,301
Int. Cl.[6] C01G *31/00;* **H01M** *4/58;* **C01D** *15/02*
U.S. Cl. 423—593 **16 Claims**

1. A method of making an electrode active material of the nominal general formula LiV_yO_z where y is greater than 0 but less than or equal to 3, and z is greater than 0 but less than or equal to 8, comprising:
a. forming a mixture of lithium hydroxide dispersed in a alcohol of the general formula $C_nH_{2n+1}OH$, each of said lithium hydroxide and said alcohol being provided in an amount sufficient to provide a lithium alkoxide of the general formula $LiOC_nH_{2n+1}$;
b. adding to the mixture of step (a) progressive amounts of an oxide of vanadium having the general formula V_2O_5 (vanadium pentoxide) while stirring the mixture;
c. reacting the vanadium oxide with the alkoxide in the mixture of step (b) for a time sufficient to provide a solid precipitate of the general formula LiV_yO_z; and
d. separating and drying the solid precipitate of step (c) to obtain a powder of an oxide of vanadium having the nominal general formula LiV_yO_z, where $0<y\leq 3$ and $0<y\leq 8$.

5,549,881

PROCESS FOR PREPARING A SEEDED HIGH-SILICA ZEOLITE HAVING THE FAUJASITE TOPOLOGY

David E. Vaughan, Flemington, and Karl G. Strohmaier, Port Murray, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation of Ser. No. 200,987, Feb. 24, 1994, abandoned. This application Nov. 29, 1994, Ser. No. 347,004
Int. Cl.[6] C01B *39/20*
U.S. Cl. 423—703 **5 Claims**

1. A process for preparing the aluminosilicates, ECR-4 or ECR-32, having a faujasite structure and a composition, in terms of mole ratios of oxides, in the range:

$$0.2 \text{ to } 0.80\ T_2O{:}0.20 \text{ to } 0.8\ Na_2O{:}Al_2O_3{:}6 \text{ to } 15\ SiO_2{:}xH_2O$$

wherein T represents an organic ammonium template trapped in supercages of said zeolite and x represents 0 or an integer from 1 to 20, wherein said process comprises:
(a) preparing a reaction mixture comprising an oxide of sodium, a bis-(2-hydroxyethyl) dimethyl or tetrapropyl or tetra hydroxypropyl or tetrabutyl or tetra hydroxy-butyl organic ammonium salt, or combinations thereof, water, a source of silica, a source of alumina, and sodium aluminosilicate nucleating seeds, said reaction mixture having a composition, in terms of mole ratios of oxides, within the following ranges:

$(Na, T)_2O:Al_2O_3$	3 to 15
$SiO_2:Al_2O_3$	9 to 36
$H_2O:Al_2O_3$	120 to 500

where T represents the cation of the organic ammonium template, and said seeds being aged between 6 and 16 days and present in an amount to yield 0.1 to 10 mole percent of the total final alumina content in said aluminosilicate;
(b) blending the reaction mixture sufficiently to substantially form a mixture;
(c) maintaining the reaction mixture at between about 80° C. and 160° C. under autogenous pressure for a sufficient period of time to form crystals of said aluminosilicate; and
(d) recovering said aluminosilicate crystals.

5,549,882

IMAGING INFECTIOUS FOCI WITH HUMAN IGM 16.88

Ramaswamy Subramanian, Frederick, Md., assignor to Akzo Nobel N.V., Arnhem, Netherlands

Continuation of Ser. No. 899,661, Jun. 9, 1992, abandoned. This application Nov. 30, 1994, Ser. No. 346,988
Int. Cl.[6] A61K *49/00;51/00;* **G01N** *33/569;* **C07K** *16/00*
U.S. Cl. 424—1.11 **4 Claims**

1. A method for locating bacterial infectious loci in an animal comprising the administration of radiolabelled human IgM monoclonal antibody 16.88, having ATCC accession number 8495. to the animal in an amount effective for detection and identification of said infectious foci and detecting the radiolabelled antibody thereby locating said infectious foci.



5,549,883

CHEMICALLY DEFINED POLYMERIC CARRIERS FOR RELEASE OF COVALENTY LINKED AGENTS

Ananthachari Srinivasan, St. Charles, Mo.; Vivekananda M. Vrudhula, Edmonds, and Diana L. Brixner, Lynnwood, both of Wash., assignors to NeoRx Corporation, Seattle, Wash.

Continuation of Ser. No. 765,126, Sep. 25, 1991, abandoned, which is a continuation-in-part of Ser. No. 590,086, Sep. 28, 1990, abandoned. This application Jun. 3, 1993, Ser. No. 71,357
Int. Cl.[6] A61K *51/08;49/00;* **C07K** *1/00;2/00*
U.S. Cl. 424—1.45 **10 Claims**

1. A polymeric carrier comprising a series of α-amino acids which are the same or different and which contain side chains to which agents covalently join through cleavable linkers after chemical modification of the side chains represented by the formula:

$$(PG)_r\text{—}(AA)_n\text{—}SG\text{—}CG)_s$$
$$\qquad\qquad\qquad\qquad\qquad\qquad\quad |$$
$$\qquad\qquad\qquad\qquad\qquad\qquad\quad (AGENT)_m$$

wherein
PG is a N-terminal protecting group;
AA is an α-amino acid selected from the group consisting of lysine, arginine, histidine, cysteine, tyrosine, tyrosine-O—SO_3—, serine and threonine, aspartic acid, glutamic acid, asparagine and glutamine, wherein $(AA)_n$ does not comprise (1) any two adjacent amino acids which are the same, (2) any two adjacent amino acids selected from the group consisting of aspartic acid, glutamic acid, asparagine and glutamine;
SG is a spacer group which prevents stearic hindrance by agents attached to the polymeric carrier and which promotes attachment of the polymeric carrier to a targeting molecule;
CG is a conjugation group which provides for the attachment of the polymeric carrier to a targeting molecule;
AGENT is a diagnostic or therapeutic agent, or a chelating agent which binds a diagnostic or therapeutic metal radionuclide;
n is from 2 to 18;
m is from 2 to 18;
r is 0 or 1; and
s is 0 or 1.

5,549,884

RAT OR MOUSE EXHIBITING BEHAVIORS ASSOCIATED WITH HUMAN SCHIZOPHRENIA

Daniel R. Weinberger, Washington, D.C.; Barbara K. Lipska, Annandale, Va., and George E. Jaskiw, Lyndhurst, Ohio, assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Filed Oct. 28, 1992, Ser. No. 967,367
Int. Cl.[6] A61K *49/00;* **C12N** *15/00;* **G01N** *37/00*
U.S. Cl. 424—9.2 **11 Claims**

1. A rat or mouse artificially brain damaged through a process which introduces a lesion in the ventral hippocampus of the rat or mouse when that rat or mouse is prepubescent, wherein:

(a) said process comprises injecting a neurotoxin directly into the ventral hippocampus of the prepubescent rat or mouse;
(b) the neurotoxin causes a lesion by killing the neurons in the ventral hippocampus of said prepubescent rat or mouse; and
(c) said process results in an artificially brain damaged rat or mouse which, when allowed to reach postpuberty, exhibits abnormal behavior as objectively measured in a standard behavioral test, wherein said abnormal behavior is a behavior which is associated with schizophrenia in humans, and statistically differs from the corresponding behavior of sham lesioned rats or mice.

5,549,885

CHLORHEXIDINE AND GLUTARALDEHYDE MOUTHWASH

Alick Torchinsky, 1035 Champagnac, C.P. 821, St. Adele, Quebec, Canada

Filed Feb. 3, 1995, Ser. No. 383,013

Claims priority, application United Kingdom, Feb. 15, 1994, 9402877

Int. Cl.[6] A61K *7/16;7/22*

U.S. Cl. 424—54 **16 Claims**

1. A pharmaceutical liquid mouthwash composition comprising, as active pharmacological agents, a pharmacologically effective, pharmacologically acceptable amount of chlorhexidine and a pharmacologically effective, pharmacologically acceptable amount of glutaraldehyde, in association with a pharmaceutically acceptable carrier.

5,549,886

PHOTOSTABLE FILTERING COSMETIC COMPOSITION

Jean F. Grollier, Paris, France, assignor to L'Oreal, Paris, France

Division of Ser. No. 854,883, Mar. 20, 1992, Pat. No. 5,393,515, which is a continuation of Ser. No. 399,836, Aug. 24, 1989, abandoned. This application Nov. 1, 1994, Ser. No. 332,065

Claims priority, application France, Aug. 24, 1988, 88 11178

Int. Cl.[6] A61K *7/42*

U.S. Cl. 424—59 **3 Claims**

1. A photostable filtering cosmetic concentrate composition for protecting the skin from UV radiation of wavelengths between 280 and 380 nm, consisting essentially of, in a base comprising a soap and water, an effective amount ranging from 10 to 17 weight percent of, as a wide absorption band photostable filter, benzene-1,4-[di(3-methylidene-10-camphosulphonic)] acid and an effective amount ranging from 15 to 33 weight percent of a photostable UV-A filtering system consisting essentially of an effective amount of at least one of
(i) N-(2-ethylhexyl)-3-[(3'-methoxy-4'-n-butoxy)benzylidene]-10-camphosulphonamide,
(ii) 4-(1,1-dimethylethyl)-4'-methoxydibenzoylmethane and
(iii) 4-isopropyldibenzoylmethane, said (ii) and (iii) compounds being photochemically stabilized by at least one fat-soluble filter of λ_{max} less than 330 nm selected from the group consisting of
(iv) benzylidene camphor,
(v) p-methylbenzylidene camphor,
(vi) N-(2-ethylhexyl)-4-(3'-methylidene camphor) benzene sulphonamide and
(vii) 3-methoxy-4-n-butoxybenzylidene camphor,
the weight ratio of the at least one of said compound (iv), (v), (vi) and (vii) to said compound (ii) or compound (iii) being at least 1.

5,549,887

ANTIPERSPIRANT DEODORANT COMPOSITIONS

Ramiro Galleguillos, Glendale Heights; Maximo M. Panitch, Skokie, and Anjana K. Jadav, Chicago, all of Ill., assignors to Helene Curtis, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 199,763, Feb. 22, 1994. This application Dec. 14, 1994, Ser. No. 355,636

Int. Cl.[6] A61K *7/34;7/38*

U.S. Cl. 424—66 **29 Claims**

1. A gelled or solid antiperspirant composition comprising:
(a) about 1% to about 40% by weight of an antiperspirant compound;
(b) about 0.5% to about 10% by weight of a borate crosslinker;
(c) about 0.005% to about 10% by weight of a hydrophilic polymeric binder selected from the group consisting of a polyethylene glycol having a weight average molecular weight of at least about 5,000; and
(d) a carrier comprising water, a water-soluble solvent and mixtures thereof;
wherein the antiperspirant composition has a pH of about 2 to about 6.

5,549,888

AQUEOUS TOPICAL ANTI-ACNE COMPOSITIONS OF LOW PH

Ananthanarayan Venkateswaran, Kobe, Japan, assignor to Procter & Gamble, Cincinnati, Ohio

Filed Jan. 31, 1994, Ser. No. 189,364

Int. Cl.[6] A61K *31/74;31/60*

U.S. Cl. 424—78.02 **1 Claim**

1. An aqueous topical composition comprising by weight:
(a) 0.1–2% of an acidic anti-acne agent selected from the group consisting of salicylic acid, retinoic acid, azelaic acid, lactic acid, glycolic acid, pyruvic acid, flavonoids and its derivatives, and mixtures thereof;
(b) 5–20% of a water soluble glycol ether selected from the group consisting of the general formula: $R^1—O—[(CH_2)_mO]_nH$; wherein R^1 is an alkyl of 1 to 6 carbon atoms, m is from about 2 to about 3, and n is from about 1 to about 2; and mixtures thereof;
(c) 1–5% of a nonionic surfactant having an HLB from about 10 to 18;
(d) 1–5% of a water soluble dialkylpolysiloxane-polyoxyalkylene copolymer; and
(e) 5–15% of a lower alcohol selected from the group consisting of monoalcohols having 1 to 3 carbons and mixtures thereof;
wherein said composition has a pH of about 2.5–4.

5,549,889

NEMATOCIDAL AND FUNGICIDAL +I STREPTOMYCES DICKLOWII BIOPESTICIDE

Bert M. Zuckerman, Amherst; M. B. Dicklow, South Deerfield, both of Mass., and Nahum Marban-Mendoza, Turrialba, Costa Rica, assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

PCT No. PCT/US93/02065, § 371 Date Jun. 11, 1993, § 102(e) Date Jun. 11, 1993, PCT Pub. No. WO93/18135, PCT Pub. Date Sep. 16, 1993

Continuation-in-part of Ser. No. 850,627, Mar. 13, 1992, abandoned. This PCT application Mar. 5, 1993, Ser. No. 74,877

Int. Cl.[6] C12N *1/20;* **A01N** *63/00*

U.S. Cl. 424—93.43 **36 Claims**

1. A biologically pure *Streptomyces dicklowii* strain (ATCC 55274) wherein said *S. dicklowii* is active against nematodes and fungi.

5,549,890

ANIMAL FEED CONTAINING +I BACILLUS SUBTILUS FERM BP-3418 THAT DECOMPOSES AFLATOXIN

Kazuhiro Kubo, Maebashi, Japan, assignor to AHC, Inc., Maebashi, Japan

Division of Ser. No. 906,460, Jun. 30, 1992, Pat. No. 5,364,788. This application Sep. 2, 1994, Ser. No. 299,649

Claims priority, application Japan, Jul. 1, 1991, 3-185880; Jan. 8, 1992, 4-018434

Int. Cl.[6] A01N *63/00;* **C12N** *1/00;1/20*

U.S. Cl. 424—93.462 **3 Claims**

1. A livestock fattening feed, comprising an effective amount of a biologically pure culture of *Bacillus subtilis* FERM BP-3418 having aflatoxin decomposing ability.

5,549,891

METHOD FOR DISINFECTING CONTACT LENS WITH CATALASE COMPOSITIONS

Jiri S. Sulc, Newport Beach, and Zuzana Krcova, La Jolla, both of Calif., assignors to Allergan, Irvine, Calif.

Filed Apr. 5, 1994, Ser. No. 223,340

Int. Cl.[6] A61K *38/44*

U.S. Cl. 424—94.4 **18 Claims**

1. A method of disinfecting a lens comprising the steps of:
(1) contacting a lens with a hydrogen peroxide-containing liquid aqueous medium at effective lens disinfecting conditions, thereby disinfecting said lens; and
(2) contacting said hydrogen peroxide-containing liquid aqueous medium with a composition comprising at least one item containing a hydrophilic polyurethane which is cross-linked and catalase covalently bonded to said hydrophilic polyurethane and being effective to cause the destruction of hydrogen peroxide present in a liquid aqueous medium to which said catalase is exposed, said step (2) being effective to cause the destruction of all of the hydrogen peroxide present in said hydrogen peroxide-containing liquid aqueous medium, said hydrophilic polyurethane being insoluble in said hydrogen peroxide-containing liquid aqueous medium, said composition being effective to substantially prevent said catalase from being exposed to said hydrogen peroxide-containing liquid aqueous medium for a controlled period of time after said composition is initially contacted with said hydrogen peroxide-containing liquid aqueous medium, provided that the resistance to diffusion within said hydrophilic polyurethane is controlled to control the length of said controlled period of time.

5,549,892

ENHANCED IN VIVO UPTAKE OF GLUCOCEREBROSIDASE

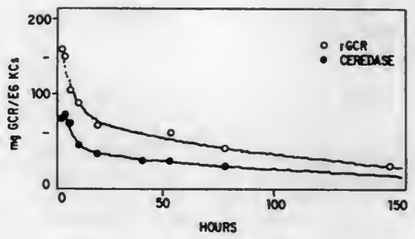
BethAnn Friedman, Arlington, and Michael Hayes, Acton, both of Mass., assignors to Genzyme Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 748,283, Aug. 21, 1991, Pat. No. 5,236,832, which is a division of Ser. No. 455,507, Dec. 22, 1989, abandoned, which is a continuation-in-part of Ser. No. 289,589, Dec. 23, 1988, abandoned. This application Jun. 21, 1993, Ser. No. 80,855

Int. Cl.[6] A61K *38/47;* **C12N** *9/42;15/56*

U.S. Cl. 424—94.61 **10 Claims**

1. A pharmaceutical composition, comprising:
remodeled recombinant GCR, obtained from CHO cells, wherein the remodeled recombinant GCR has exposed mannose terminal residues on appended oligosaccharides, in an effective dosage suitable for significantly alleviating clinical symptoms of Gaucher's disease, such that the dose is substantially less than the effective dose using remodeled naturally occurring GCR.



5,549,893

USE OF PROTEIN C IN THE TREATMENT OF PURPURA FULMINANS

Johann Eibl; Ludwig Pichler, and Hans P. Schwarz, all of Vienna, Austria, assignors to Immuno Aktiengesellschaft, Vienna, Austria

Continuation of Ser. No. 882,058, May 12, 1992, abandoned. This application Apr. 27, 1995, Ser. No. 429,462

Claims priority, application Austria, May 14, 1991, A991/91

Int. Cl.[6] A61K *38/48*

U.S. Cl. 424—94.64 **4 Claims**

1. A method for the prophylaxis of purpura fulminans in a patient exposed to endotoxin, comprising the step of administering to said patient an effective amount of a concentrate of non-activated protein C.

5,549,894

DISINFECTON FORMULATIONS AND METHODS USING D-ENANTIOMERIC ANTI-MICROBIAL PEPTIDES

Terrence J. Hunt, Moreno Valley, Calif., assignor to Allergan, Inc., Irvine, Calif.

Filed Jan. 18, 1994, Ser. No. 182,993

Int. Cl.[6] A61K *38/48;37/00*

U.S. Cl. 424—94.64 **17 Claims**

1. A method for cleaning and disinfecting a contact lens comprising the step of contacting said lens with a solution comprising
(a) an effective amount of at least one pharmaceutically acceptable D-enantiomer of a peptide having antimicrobial activity which is selected from the group consisting of D-enantiomers of cecropins, magainins, defensins, tachyplesins, polyphemusins, anti-microbially effective hybrids thereof and anti-microbially effective derivatives thereof,
(b) an effective amount of a proteolytic enzyme, and
(c) a pharmaceutically acceptable carrier for a period of time sufficient to clean and disinfect said lens.

5,549,895

METHOD AND COLICIN COMPOSITION FOR INHIBITING ESCHERICHIA COLI 0157:H7 IN FOOD PRODUCTS

Wanda J. Lyon, Des Moines; Dennis G. Olson, and Elsa A. Murano, both of Ames, all of Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed May 17, 1993, Ser. No. 62,773

Int. Cl.[6] A61K *35/00;* **A21D** *4/00;* **A23L** *3/34*

U.S. Cl. 424—115 **11 Claims**

1. A method of inhibiting the growth of *Escherichia coli* strain O157:H17, or a variant thereof which retains all of the identifying pathogenic characteristics of strain O157:H7, in an edible non-liquid food substance, comprising:
a) applying a composition consisting essentially of a colicin obtained from a strain of *Escherichia coli* in combination with a carrier to the food substance, in an amount effective to

inhibit the growth of said strain O157:H7 or variant thereof, wherein said colicin composition is applied at a substantially neutral to basic pH.

5,549,896

HEPATITIS A VIRUS STRAIN, METHOD FOR THE ISOLATION OF NEW HEPATITIS A VIRUS STRAINS AND HEPATITIS A VACCINES

Reinhard Glück, Spiegel/Bern, and Stefan Brantschen, Bern, both of, Switzerland, assignors to Schweiz. Serum- & Impfinstitut Bern, Bern, Switzerland

Continuation of Ser. No. 960,410, Mar. 3, 1993, abandoned. This application Feb. 9, 1995, Ser. No. 386,207

Claims priority, application European Pat. Off., May 8, 1991, 91107526

Int. Cl.[6] A61K *39/29;39/125;* **C12N** *7/00;* **C12Q** *1/70*

U.S. Cl. 424—226.1 **6 Claims**

1. A biologically pure hepatitis A virus (HAV) culture RG-SB XA112 (CNCM #I-1080).

5,549,897

HIGH MOLECULAR WEIGHT SURFACE PROTEINS OF NON-TYPEABLE HAEMOPHILUS

Stephen J. Barenkamp, Webster Grove, and Joseph W. St. Geme, III, St. Louis, both of Mo., assignors to St. Louis University, and Washington University, both of St. Louis, Mo.

Filed Mar. 16, 1993, Ser. No. 38,682

Claims priority, application United Kingdom, Mar. 16, 1992, 9205704

Int. Cl.[6] A61K *39/102;38/16*

U.S. Cl. 424—256 N **3 Claims**

1. A vaccine against disease caused by non-typeable *Haemophilus influenzae*, including otitis media, sinusitis and bronchitis, comprising an effective amount of a high molecular weight protein of non-typeable *Haemophilus influenzae* which is protein HMW1 and/or HMW2 and a physiological carrier therefor.

5,549,898

IMMUNOGENIC ANAPLASMA MARGINALE SURFACE ANTIGENS, COMPOSITIONS, AND METHODS OF USE

Travis C. McGuire, SW. 920 Crestview; Guy H. Palmer, NW. 335 Dillon, both of Pullman, Wash. 99163; Anthony F. Barbet, 31 SW. 21st Rd., Archer, Fla. 32618, and William C. Davis, NW. 300 Yates, Pullman, Wash. 99163

Continuation of Ser. No. 79,971, Jun. 18, 1993, abandoned, which is a continuation of Ser. No. 875,554, Apr. 27, 1992, abandoned, which is a continuation of Ser. No. 335,178, Apr. 6, 1989, abandoned, which is a continuation-in-part of Ser. No. 253,143, Oct. 4, 1988, abandoned, Ser. No. 245,855, Sep. 16, 1988, abandoned, and Ser. No. 141,505, Jan. 7, 1988, abandoned, which is a continuation of Ser. No. 761,178, Jul. 3, 1985, abandoned, which is a continuation-in-part of Ser. No. 715,528, Mar. 25, 1985, abandoned. This application Apr. 15, 1994, Ser. No. 228,180

Int. Cl.[6] A61K *39/00;39/002;39/005;39/018*

U.S. Cl. 424—269.1 **2 Claims**

1. A vaccine composition for inducing an immune response in a ruminant, said vaccine composition comprising a purified surface protein antigen of *Anaplasma marginale*, wherein said antigen has a molecular weight of approximately 105 kilodaltons, said vaccine composition further comprising a pharmaceutically acceptable carrier or diluent.

5,549,899

GIARDIA VACCINE

Merle E. Olson; Howard Ceri, both of Calgary, and Douglas W. Morck, Airdrie, all of, Canada, assignors to University Technologies International, Inc., Calgary, Canada

Continuation of Ser. No. 985,489, Dec. 4, 1992, abandoned. This application Aug. 24, 1994, Ser. No. 294,047

Int. Cl.[6] A61K *39/002;* **C12N** *1/10;1/06*

U.S. Cl. 424—269.1 **4 Claims**

1. A vaccine composition comprising a protectively immunogenic amount of a giardia strain and an adjuvant, wherein said giardia strain is cultured in media containing bile so as to make it protectively immunogenic and said giardia strain is disrupted and/or inactivated before use in said composition.

5,549,900

Patent Not Issued For This Number

5,549,901

ANTIMICROBIAL OIL-IN-WATER EMULSIONS

D. Craig Wright, Gaithersburg, Md., assignor to Novavax, Inc., Rockville, Md.

Continuation-in-part of Ser. No. 246,868, May 20, 1994. This application Oct. 13, 1994, Ser. No. 322,827

Int. Cl.[6] A61K *7/40*

U.S. Cl. 424—401 **11 Claims**

1. A method of inhibiting the growth of an infectious pathogen comprising the step of topical application of an antimicrobial oil-in-water emulsion, said antimicrobial emulsion being in the form of positively charged droplets of a lipid-containing oily discontinuous phase dispersed in a continuous aqueous phase, the oily discontinuous phase consisting essentially of:

a. an oil;

b. glycerol monooleate as the primary lipid; and

c. a cationic halogen-containing compound having a C_{12}–C_{16} chain selected from the group consisting of cetylpyridinium chloride, cetylpyridinium bromide, cetyltrimethylammonium bromide, cetyltrimethylammonium chloride, cetyldimethylethylammonium bromide, cetylbenzyldimethylammonium chloride, cetyltributylphosphonium bromide, dodecyltrimethylammonium bromide, and tetradecyltrimethylammonium bromide.

5,549,902

BIRD AVERSION COMPOUNDS

Marvin F. Preiser, Middletown, N.Y., and Peter F. Vogt, Loveland, Ohio, assignors to PMC Specialties Group, Inc., Rockey River, Ohio

Division of Ser. No. 277,256, Jul. 20, 1994, which is a continuation of Ser. No. 8,675, Jan. 25, 1993, abandoned. This application Dec. 19, 1994, Ser. No. 358,462

Int. Cl.[6] A01N *25/02*

U.S. Cl. 424—405 **14 Claims**

1. A method of repelling birds from a source, comprising the step of applying to said source an aversely effective amount of a liquid bird aversion solution comprising:

a bird aversion agent in an amount of from 5 to 50% by weight of a total weight of the solution;

a terpene selected from the group consisting of terpene hydrocarbons, oxygenated terpenes and a mixture of terpene hydrocarbons and oxygenated terpenes in an amount of from 10 to 50% by weight of a total weight of the solution; and

alkylesters selected from the group consisting of saturated fatty acids having from 4–20 carbon atoms and unsaturated fatty acids having from 10–18 carbon atoms esterified with an alcohol having 1–8 carbon atoms in an amount of from 10 to 50% by weight of a total weight of the solution.

5,549,903

MICROENCAPSULATED COMPOSITION CONTAINING CHLORPYRIFOS OR ENDOSULFSAN

Arie Marcus, Beer Sheva, Israel, assignor to Ben Gurion University of Negev, Beer Sheva, Israel

Filed Jul. 28, 1994, Ser. No. 281,677

Int. Cl.[6] A01N *25/28*

U.S. Cl. 424—408 **20 Claims**

1. A microencapsulated composition comprising particles having a shell consisting essentially of a polyurea and a pesticide encapsulated within said shell, said pesticide being selected from the group consisting of chlorpyrifos and endosulfan, and wherein said particles also comprise one or more photostable ultraviolet and visible light absorbent compounds having a log molar extinction coefficient of from about 2 to 5 with respect to radiation having wave lengths in the range of about 300 to 500 nanometers, said photostable ultraviolet and visible light absorbent compounds being selected from those which do not react with the monomer used in building the polyurea shell.

5,549,904

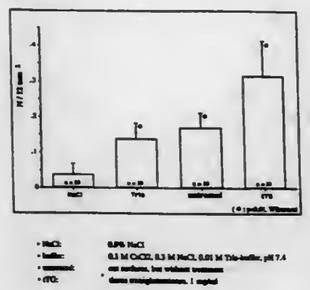
BIOLOGICAL ADHESIVE COMPOSITION AND METHOD OF PROMOTING ADHESION BETWEEN TISSUE SURFACES

Kay Juergensen, Murten; Daniel Aeschlimann, Basel, and Ernst B. Hunziker, Riedholz, all of, Switzerland, assignors to Orthogene, Inc., San Francisco, Calif.

Filed Jun. 3, 1993, Ser. No. 71,528

Int. Cl.[6] A61F *2/02;* **A61K** *38/43;38/50*

U.S. Cl. 424—423 **36 Claims**



1. A formulated biological adhesive composition comprising tissue transglutaminase and a pharmaceutically acceptable carrier, said tissue transglutaminase in an effective amount to promote adhesion upon treatment of tissue in the presence of a divalent metal ion.

5,549,905

ENTERNAL COMPOSITION FOR PEDIATRIC PATIENTS

David A. Mark, Oak Park; Diana Twyman, Chicago, and Donna Buckley, Barrington, all of Ill., assignors to Clintec Nutrition Co., Deerfield, Ill.

Filed Oct. 18, 1994, Ser. No. 324,727

Int. Cl.[6] A61K *47/00*

U.S. Cl. 424—439 **20 Claims**

1. An enteral composition designed for pediatric patients comprising:

a hydrolyzed protein source comprising approximately 12% of the total calories;

a carbohydrate source; and

a lipid source comprising a mixture of medium and long chain triglycerides, wherein at least 55% of the lipid source are medium chain triglycerides.

5,549,906

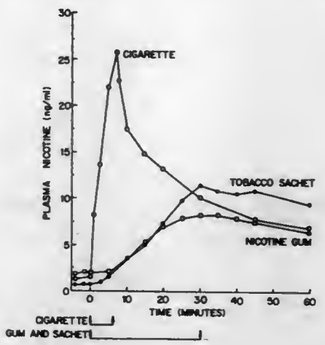
NICOTINE LOZENGE AND THERAPEUTIC METHOD FOR SMOKING CESSATION

Gian C. Santus, Milan, Italy, assignor to Pharmacia AB, Sweden

Filed Jul. 26, 1993, Ser. No. 97,962

Int. Cl.[6] A61K *9/68*

U.S. Cl. 424—440 **10 Claims**



1. A method of reducing nicotine craving comprising administering buccally to a patient a nicotine lozenge, said lozenge comprising nicotine, an absorbent excipient, and a nonnutritive sweetener, wherein said buccal administration of said nicotine lozenge results in a decrease in the patient's craving for nicotine as measured by a nicotine craving scale, further comprising the steps of:

i) immediately prior to the buccal administration of the nicotine lozenge, evaluating the patient's initial craving for nicotine using a nicotine craving scale, wherein said nicotine craving scale is selected from the group consisting of a scale set forth in DSM-III-R, and a Craving Questionnaire; and

ii) subsequent to the buccal administration of the nicotine lozenge, evaluating the patient's subsequent craving for nicotine using said nicotine craving scale;

wherein said buccal administration of said nicotine lozenge results in maximal decrease in the patient's craving for nicotine as measured by said nicotine craving scale from 2 to 30 minutes after the buccal administration of the nicotine lozenge.

5,549,907

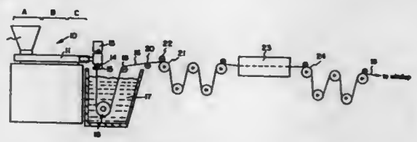
IONOMERIC SUTURE AND ITS METHOD OF MANUFACTURE

Cheng-Kung Liu, Norwalk, and John C. Brewer, Bristol, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 944,595, Sep. 14, 1992, abandoned. This application Jan. 19, 1994, Ser. No. 184,362

Int. Cl.[6] A61F *13/00;* **A61K** *9/70*

U.S. Cl. 424—443 **8 Claims**



1. A size 3/0 monofilament suture comprising a filament spun from a composition containing at least about 30 mole percent an ionomeric copolymer of at least one alpha olefin and at least one

member selected from the group of ethylenically unsaturated carboxylic acid and ethylenically unsaturated carboxylic acid anhydride, the suture exhibiting a maximum 0–5% strain energy of about 2 kg-mm.

5,549,908

HYDROLYTICALLY LABILE MICROSPHERES OF POLYSACCHARIDE CROSSLINKED WITH CYANOGEN HALIDE AND THEIR APPLICATION IN WOUND DRESSINGS

Daniel J. Smith, Stow, and Debashish Chakravarthy, Kent, both of Ohio, assignors to The University of Akron, Akron, Ohio

Filed May 20, 1993, Ser. No. 65,742
Int. Cl.[6] A61L *15/16*
U.S. Cl. 424—444 **26 Claims**

1. A water swellable and hydrolytically labile crosslinked polymer composition in the form of microspheres, said polymer composition comprising polysaccharide chains and crosslinking groups selected from the group consisting of linear imidocarbonate groups, linear carbonate groups and mixtures thereof, said polysaccharide chains being derived from a water soluble polysaccharide, said polymer composition being essentially free of crosslinking groups other than said imidocarbonate and said carbonate, said polymer composition being water swellable and water insoluble at 25° C. and degradable to a water soluble non-crosslinked polysaccharide in an essentially neutral aqueous medium at a temperature of at least 37° C.

5,549,909

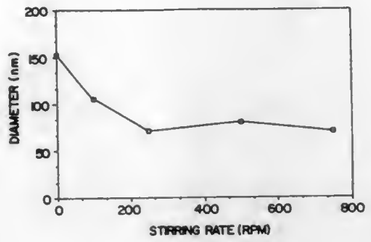
Patent Not Issued For This Number

5,549,910

PREPARATION OF LIPOSOME AND LIPID COMPLEX COMPOSITIONS

Francis C. Szoka, Jr., San Francisco, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 741,937, Aug. 8, 1991, Pat. No. 5,277,914, which is a continuation-in-part of Ser. No. 605,155, Oct. 29, 1990, Pat. No. 5,077,057, which is a continuation of Ser. No. 334,055, Apr. 5, 1989, abandoned, which is a continuation-in-part of Ser. No. 332,609, Mar. 31, 1989, abandoned. This application Jan. 10, 1994, Ser. No. 179,291
The portion of the term of this patent subsequent to Dec. 31, 2008, has been disclaimed.
Int. Cl.[6] A61K *9/127;51/02;* **B01J** *13/02;13/20*
U.S. Cl. 424—450 **7 Claims**



1. A process for preparing a lipid suspension of particle size less than about 10,000 nm in diameter encapsulating a therapeutically, pharmaceutically or diagnostically useful aqueous-soluble compound, which process comprises:

dissolving an encapsulating amount of a suitable lipid in a sufficient amount of a solvent mixture comprising a non-halogenated hydrocarbon aprotic solvent to provide a lipid solution; and

extruding an aqueous solution of said useful aqueous-soluble compound through a suitably-sized aperture into said lipid solution to form a lipid-compound suspension of particle size less than about 10,000 nm in diameter.

5,549,911

GALENIC FORM OF 5-NITROMIDAZOLE DERIVATIVES WHICH IS EFFECTIVE FOR THE TREATMENT OF PARASITOSES AND INFECTIONS OF THE ENTIRE GASTROINTESTINAL TRACT

Gérard Leduc, Malesherbes, and Patrice Debregeas, Paris, both of, France, assignors to Laboratoires Des Produits Ethiques Ethypharm, Houdan, France

Filed Jan. 11, 1995, Ser. No. 371,520
Int. Cl.[6] A61K *9/22;9/26;9/52;9/54*
U.S. Cl. 424—458 **22 Claims**

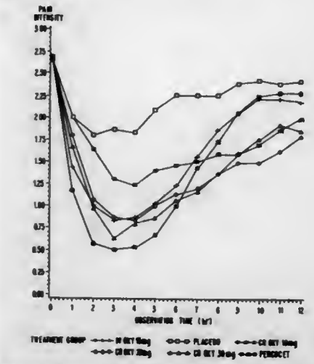
1. Galenic form of 5-nitroimidazole derivatives characterized in that it comprises a combination of microgranules of 5-nitroimidazole derivatives consisting of gastroresistant microgranules and prolonged-release microgranules.

5,549,912

CONTROLLED RELEASE OXYCODONE COMPOSITIONS

Benjamin Oshlack, New York, N.Y.; Mark Chasin, Manalpan, N.J.; John J. Minogue, Mount Vernon, N.Y., and Robert F. Kaiko, Weston, Conn., assignors to Euro-Celtique, S.A., Luxembourg, Luxembourg

PCT No. PCT/US92/10146, § 371 Date Jun. 18, 1993, § 102(e) Date Jun. 18, 1993, PCT Pub. No. WO93/10765, PCT Pub. Date Jun. 10, 1993
Continuation-in-part of Ser. No. 800,549, Nov. 27, 1991, Pat. No. 5,266,331. This PCT application Nov. 25, 1992, Ser. No. 81,302
Int. Cl.[6] A61K *9/22;9/26*
U.S. Cl. 424—468 **9 Claims**



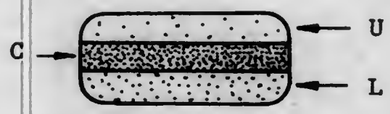
1. A controlled release oxycodone formulation for oral administration to human patients, comprising from about 10 to about 40 mg oxycodone or a salt thereof, said formulation providing a mean maximum plasma concentration of oxycodone from about 6 to about 60 ng/ml from a mean of about 2 to about 4.5 hours after administration, and a mean minimum plasma concentration from about 3 to about 30 ng/ml from a mean of about 10 to about 14 hours after repeated administration every 12 hours through steady-state conditions.

5,549,913

MULTILAYER MATRIX SYSTEMS FOR THE CONTROLLED RELEASE OF ACTIVE PRINCIPLES

Paolo Colombo; Antonio C. Cardona, and Giorgio Pifferi, all of Milan, Italy, assignors to Inverni Della Beffa S.p.A., Milan, Italy

Filed Nov. 16, 1993, Ser. No. 153,437
Claims priority, application Italy, Nov. 17, 1992, MI92A2617
Int. Cl.[6] A61K *9/24*
U.S. Cl. 424—472 **15 Claims**



1. A tablet for controlled release of a drug to be administered orally and for release of said drug at a constant rate with zero order kinetic, said tablet comprising two external layers containing 5–70% by weight of the total weight of said tablet of hydrophilic swelling polymers separated by an interposed layer containing a water soluble polymer in the amount of up to 20% by weight of the total weight of said tablet, said drug being mixed with at least one of said external layers containing said hydrophilic swelling polymers, said interposed layer controlling the release of said drug.

5,549,914

HEAT STABLE WOUND CARE GEL

Elliott Farber, North Mankato, Minn., assignor to Sween Corporation, Mankato, Minn.

Continuation-in-part of Ser. No. 145,039, Oct. 29, 1993, abandoned, which is a continuation of Ser. No. 992,264, Dec. 14, 1992, abandoned. This application Sep. 30, 1994, Ser. No. 316,401
Int. Cl.[6] A61K *9/10;47/32;47/42;47/36*
U.S. Cl. 424—487 **10 Claims**

1. A hydrocolloid wound care gel made from substances comprising:

slightly cross-linked polyacrylic acid gel in a concentration of about 0.3 to 0.7% by weight;

a neutralizing substance for neutralizing the slightly cross-linked polyacrylic acid gel in a concentration of about 0.3 to 0.7% by weight selected from the group consisting of triethanolamine and 2-aminomethylpropanol;

collagen in a concentration of about 0.05 to 4% by weight or gelatin in a concentration of about 0.1 to 0.5% by weight; and

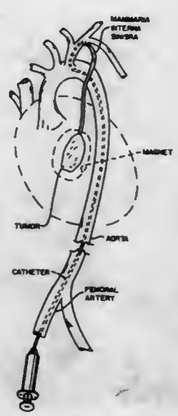
water in a concentration range of about 94 to 96% by weight, and has a minimum viscosity of about 150,000 cp when the gel is heated to 50 degrees C. and held at 50 degrees C. for two weeks and then cooled to room temperature.

5,549,915

MAGNETICALLY RESPONSIVE COMPOSITION FOR CARRYING BIOLOGICALLY ACTIVE SUBSTANCES AND METHODS OF PRODUCTION

Viktor A. Volkonsky; Sergei D. Dvukhsherstnov, and Sergei V. Chernyakov, all of Moscow, Russian Federation, assignors to Magnetic Delivered Therapeutics, Inc., Boulder, Colo.

Continuation of Ser. No. 11,363, Jan. 29, 1993, abandoned. This application Jan. 26, 1994, Ser. No. 188,062
Int. Cl.[6] A61K *9/16*
U.S. Cl. 424—490 **20 Claims**



1. A method for producing a magnetically responsive composition for carrying a biologically active substance comprising mixing iron and carbon powders and milling the mixed powders for a time sufficient to bind said powders into particles having a diameter of from 0.2 to 5.0 μm and containing 1.0 to 95.0% by volume of the carbon, each particle including carbon and iron with said carbon distributed throughout the volume of each said particle and at both particle surface and particle interior.

5,549,916

PROCESS FOR PREPARING LOW FAT CHEESE PRODUCTS

Aly Gamay, Franklin, Wis., assignor to Alpine Lace Brands, Inc., Maplewood, N.J.

Continuation of Ser. No. 378,515, Jan. 26, 1995, which is a continuation of Ser. No. 250,336, May 27, 1994, Pat. No. 5,395,630, which is a continuation of Ser. No. 67,455, May 25, 1993, abandoned, which is a continuation of Ser. No. 877,953, Apr. 30, 1992, Pat. No. 5,225,220, which is a continuation of Ser. No. 522,203, May 11, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 475,143

Int. Cl.[6] A23C *19/32;19/6;19/9;19/14*

U.S. Cl. 426—39 **27 Claims**

1. A method for the manufacture of a low fat cheese starting material suitable for manufacturing process cheese, comprising:

preparing a starting liquid milk having a fat content of about 0–0.3%;

mixing a lactic acid producing culture with said starting liquid milk thereby forming a starting cheese formulation solution;

processing said cheese formulation solution by reacting clotting enzyme means with said cheese formulation solution;

coagulating said solution thereby forming a curd in a whey solution;

cutting said curd thereby increasing surface area of said curd in said whey solution;

achieving a pH of between 4.7–5.5 for said curd in said whey solution;

dissolving calcium into said whey solution by a step consisting essentially of maintaining the pH of said curd between 4.7–5.5;

separating said whey solution from said curd, said whey solution including dissolved calcium from maintaining the pH of said curd between 4.7–5.5; and

then ripening said curd to form said cheese starting material having a fat content arising from the fat content of said starting liquid milk.

5,549,917

FLASH FLOW FORMED SOLLOID DELIVERY SYSTEMS

Subraman R. Cherukuri, Towaco, N.J.; Gerald E. Battist, Reston, and James H. Perkins, Boyce, both of Va., assignors to Fuisz Technologies Ltd., Chantilly, Va.

Division of Ser. No. 269,679, Jul. 1, 1994. This application Jun. 7, 1995, Ser. No. 487,794

Int. Cl.[6] A23L *1/05;1/221;* **A23P** *1/04*

U.S. Cl. 426—96 **40 Claims**



1. A method of forming a solloid for delivering actives comprising:

a) feeding to an extruder a composition comprising a non-fat solid substrate having an active associated therewith and a solid fat which is solidifiable at room temperature and having an intraparticle flow point lower than the melting point of said non-fat solid substrate;

b) subjecting said compositions in said extruder to conditions of temperature and force sufficient to cause intraparticle flow of the fat; and

c) expelling said composition in a flowable state while applying a disruptive force to said composition to form discrete solids.

5,549,918

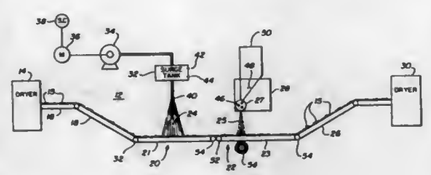
MONOLAYER CURL-SALTING PROCESS AND APPARATUS

Brian W. Hartman, Carrollton; Lillian R. Juranovic, Irving; Stephen C. Scannell, Dallas, and Rogers B. Williams, Carrollton, all of Tex., assignors to Recot, Inc., Pleasanton, Calif.

Filed Apr. 11, 1995, Ser. No. 420,258

Int. Cl.[6] A23L *1/217*

U.S. Cl. 426—291 **11 Claims**



1. A process for curling chip food product comprising the steps of:

moving a conveyor containing a monolayer of chips under a moisture-applying device, the chips having an exposed top surface and a nonexposed bottom surface;

spraying a continuous curtain of moisture on only the exposed top surface of the chips as the conveyor belt moves the chips under the moisture-applying device; and

drying the chips, the moisture differential between the top and bottom surfaces of said chips being such that the tops of the chips dry at a different rate than the bottom of the chips, thereby causing the chips to curl as they dry.

5,549,919

PRESERVATION OF FOODS BY THE COMBINED ACTION OF A NATURAL ANTIMOCROBIAL AGENT AND SEPERATELY PACKAGED DEOXIDIZING AGENT

Ryuzo Ueno; Yatsuka Fujita, both of Nishinomiya; Yoshiaki Nagamura, Ushiku; Yuji Kamino, Tsukuba, and Akihiko Tabata, Ushiku, all of, Japan, assignors to Kabushiki Kaisha Ueno Seiyaku Oyo Kenkyujo, Osaka, Japan

Continuation of Ser. No. 91,478, Jul. 15, 1993, abandoned, which is a continuation of Ser. No. 854,763, Mar. 20, 1992, abandoned, which is a continuation of Ser. No. 460,106, Feb. 9, 1990, abandoned. This application Oct. 17, 1994, Ser. No. 324,375

Claims priority, application Japan, Jun. 9, 1988, 63-144122

Int. Cl.[6] A23B *4/00*

U.S. Cl. 426—335 **8 Claims**

1. A method of preserving food which comprises adding to food at least one kind of natural antimicrobial agent selected from the group consisting of protamine in an amount of from 250–2,000 ppm, chitosan in an amount of from 15.6–1,000 ppm and lysozyme in an amount of from 40–500 ppm, and storing the food in the presence of a deoxidizing agent consisting essentially of iron powders, said deoxidizing agent is packed separately from the food, wherein the food and deoxidizing agent are contained in a sealed package to maintain an oxygen concentration in the sealed package of not more than 0.05%, and the food is preserver from deterioration caused by Lactobacillns, Leuconostoc, Streptococcus, Saccharomyces, Candida, Cryptococcus, Rhodotorula, Shizosaccharomyces, Torulopsis and Trichosporon.

5,549,920

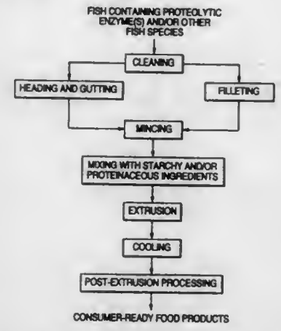
EXTRUSION INACTIVATION OF PROTEASE ENZYME IN FISH AND FISH FOOD PRODUCTS

Gour S. Choudhury, Kokiak, Ak., assignor to University of Alaska, Fairbanks, Ak.

Filed Dec. 22, 1994, Ser. No. 361,824

Int. Cl.[6] A23L *3/317;1/325;* **A23P** *1/12*

U.S. Cl. 426—516 **30 Claims**



1. A method of inactivate protease enzyme in fish muscle having said enzyme in a portion thereof comprising:

mixing said fish muscle with a starchy and/or proteinaceous material to form a mixture; and

passing said mixture through a screw extruder having at least two barrel sections wherein in a first barrel section the temperature of said mixture is maintained below the activation temperature of said enzyme, and downstream of said first barrel section a barrel section having a reaction zone and in which is maintained a temperature sufficient to cause complete inactivation of the protease enzyme in said mixture.

5,549,921

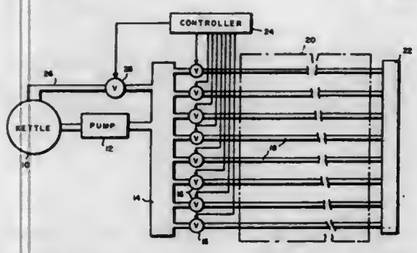
METHOD FOR FORMING SMALL DIAMETER ROPES OF GELLED AQUEOUS PRODUCT

Frederick L. Robinson, Thomaston; Ernest J. Hedberg, Deblois; Michael A. Kuhni, Milbridge, and Everett L. Ramsdell, Harrington, all of Me., assignors to Jasper, Wyman & Sons, Milbridge, Me.

Filed Apr. 18, 1995, Ser. No. 423,815

Int. Cl.[6] A23L *1/05*

U.S. Cl. 426—573 **10 Claims**



1. A method of making a gelled aqueous formed product comprising the steps of

mixing together at least one thermal-gelling gum and an aqueous product base at a temperature below the solubilization temperature of the gum to disperse the at least one gum in the base;

heating the mixture to a temperature above the solubilization temperature of the gum;

cooling the mixture to a temperature just above the gelation temperature of the mixture;

pumping the mixture through at least one confining conduit maintained at a temperature below the gelation temperature of the mixture, and

controlling the pumping so that the mixture has a static residence time in said at least one conduit sufficient to produce substantially uniform cross-sectional gelation of the mixture within said at least one conduit to produce said gelled aqueous formed product and pumping said gelled product from said at least one conduit.

5,549,922

METHOD OF MAKING FLOUR-CONTAINING EDIBLE SEMIFINISHED PRODUCTS

Franz-Josef Juchem, Eppelborn, Germany, assignor to Juchem GMBH, Eppelborn, Germany

Continuation-in-part of Ser. No. 773,778, Oct. 10, 1991, which is a continuation of Ser. No. 510,095, Apr. 17, 1990, abandoned. This application Nov. 19, 1991, Ser. No. 794,583

Claims priority, application Germany, Apr. 24, 1989, 39 13 420; Nov. 26, 1990, 40 37 499

Int. Cl.[6] A23L *3/00*

U.S. Cl. 426—618 **18 Claims**

1. A method of reducing the microorganism population of flour-containing semifinished products, comprising the steps of:

forming a suspension of flour and a liquid;

subjecting the suspension to the action of an inert gas for an interval of between 5 and 240 minutes, including maintaining the gas at a pressure of between approximately 2 and 100 bars to produce a substantially sterilized semifinished product that is capable of being stored in a refrigerator until being used for further processing; and

abruptly reducing the pressure of gas after elapse of said interval.

5,549,923

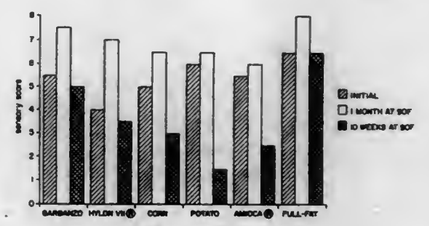
STARCH CONTAINING REDUCED FAT PEANUT BUTTER AND METHOD OF MANUFACTURE

Eugene T. Finnochiaro, Milton, Mass., assignor to Opta Food Ingredients, Inc., Bedford, Mass.

Filed Mar. 30, 1994, Ser. No. 219,983

Int. Cl.[6] A23L *1/38;1/0522*

U.S. Cl. 426—633 **8 Claims**



1. A reduced fat peanut butter product comprising ground peanuts in a continuous oil phase and from about 5 to about 50 percent by weight native starch.

5,549,924

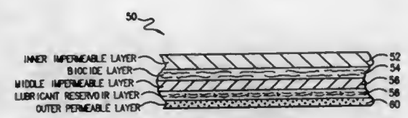
METHOD OF FORMING A MEMBRANE, ESPECIALLY A LATEX OR POLYMER MEMBRANE, INCLUDING A DEACTIVATING BARRIER AND INDICATING LAYER

Robin Renee Thill Shlenker, 100 S. Ash, Denver, Colo. 80222, assignor to Robin Renee Thill Shlenker, Malibu, Calif.

Continuation-in-part of Ser. No. 976,881, Nov. 16, 1992, Pat. No. 5,338,565, which is a continuation of Ser. No. 825,546, Jan. 24, 1992, Pat. No. 5,165,953, which is a continuation-in-part of Ser. No. 536,772, Jun. 12, 1990, Pat. No. 5,130,159, and a continuation-in-part of Ser. No. 536,773, Jun. 12, 1990, Pat. No. 5,128,168, said Ser. No. 536,772and Ser. No. 536,773, , each is a continuation-in-part of Ser. No. 482,978, Feb. 22, 1990, Pat. No. 5,045,341, which is a continuation-in-part of Ser. No. 246,337, Sep. 19, 1988, Pat. No. 4,935,260, which is a continuation-in-part of Ser. No. 143,184, Jan. 13, 1988, Pat. No. 4,919,966, which is a continuation-in-part of Ser. No. 074,629, Jul. 17, 1987, Pat. No. 4,771,482. This application Aug. 15, 1994, Ser. No. 291,002

Int. Cl.[6] A01N *1/02;* **A41D** *19/00;* **A61F** *6/04*

U.S. Cl. 427—2.3 **37 Claims**



1. A method of making a multi-layer membrane including at least two discrete separated layers, comprising the steps of:
(a) depositing onto a former a first latex layer;
(b) treating said first layer with a material effective as a coagulant for latex;
(c) depositing over said first layer on said former a second latex layer, said coagulant effective to substantially prevent fusing of said first and second layers; and
(d) setting or curing said first and second layers.

5,549,925

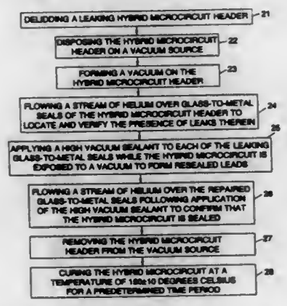
HYBRID MICROCIRCUIT GLASS-TO-METAL SEAL REPAIR PROCESS

Michael T. Madjerec, Tucson, Ariz., assignor to Hughes Missile Systems Company, Los Angeles, Calif.

Filed Jun. 7, 1995, Ser. No. 487,736

Int. Cl.[6] B05D *3/02;* **B32B** *35/00*

U.S. Cl. 427—8 **7 Claims**



1. A process for repairing leaking glass-to-metal seals of a hybrid microcircuit header comprising the steps of:
delidding a leaking hybrid microcircuit header;
disposing the hybrid microcircuit header on a vacuum source;
forming a vacuum on the hybrid microcircuit header;
flowing a stream of helium over the seals to verify the presence and location of leaks in the seals of the hybrid microcircuit header;
applying a high vacuum sealant formed of a silicone resin having a low vapor pressure to each of the leaking glass-to-metal seals while the hybrid microcircuit header is exposed to a vacuum to form resealed leads;
flowing a stream of helium over the resealed leads following application of the high vacuum sealant to confirm that the hybrid microcircuit header is sealed;
removing the hybrid microcircuit header from the vacuum source; and
curing the hybrid microcircuit header at a temperature of 150± degrees Celsius to create a permanent seal.

5,549,926

MANUFACTURING METHOD OF ELECTRONIC PART

Makoto Miyamoto, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Continuation of Ser. No. 248,861, May 24, 1994, abandoned. This application Oct. 30, 1995, Ser. No. 550,221

Claims priority, application Japan, May 31, 1993, 5-154134

Int. Cl.[6] B05D *5/12*

U.S. Cl. 427—100 **12 Claims**



1. A method of manufacturing an electronic part having an electronic part body, the method comprising the steps of:
(a) preparing a molten resin bathtub including a layer of resin;
(b) forming a layer of a surface active agent on a surface of the layer of resin in the molten resin bathtub such that the layer of the surface active agent remains substantially on top of the layer of resin and is not diluted in the layer of resin in the molten resin bathtub;
(c) dipping the electronic part body into the resin layer in the molten resin bathtub via the layer of surface active agent; and
(d) removing the electronic part body from the resin layer in the molten resin bathtub after coating the electronic body with the molten resin.

5,549,927

MODIFIED SUBSTRATE SURFACE AND METHOD

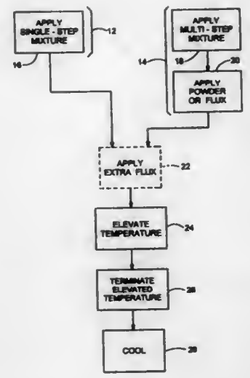
Andrew J. Cottone, Racine, Wis.; Zalman P. Saperstein, Lake Bluff, Ill.; Ronald D. Tait, Franksville, Wis.; Richard G. Parkhill, and Jeffrey A. Bahr, both of Racine, Wis., assignors to Modine Manufacturing Company, Racine, Wis.

Filed Mar. 1, 1994, Ser. No. 203,787

Int. Cl.[6] B05D *3/02;1/34*

U.S. Cl. 427—191 **39 Claims**

1. A method of modifying the surface of a substrate, the method comprising the steps of:



applying to a substrate surface to be modified a mixture comprising a ceramic powder, a brazing material and a flux;
heating the applied mixture to an elevated temperature effective to activate the flux and at least partially melt the brazing material.

5,549,928

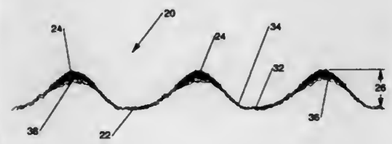
PROCESS OF MAKING ABSORBENT STRUCTURES AND ABSORBENT STRUCTURES PRODUCED THEREBY

Paul D. Trokhan, Hamilton, and Dean V. Phan, West Chester, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 154,667, Nov. 17, 1993, abandoned. This application May 15, 1995, Ser. No. 441,363

Int. Cl.[6] B05D *1/28*

U.S. Cl. 427—265 **13 Claims**



1. A process for producing an absorbent structure having both osmotic and capillary absorbing capabilities, said process comprising the steps of:
providing a transfer roll and an anvil roll, said rolls being disposed in axially parallel relationship to form a gap therebetween;
providing a liquid precursor on the periphery of said transfer roll;
providing a capillary absorbent substrate, said capillary substrate having topographically elevated regions and being oriented so that said topographically elevated regions are oriented towards said transfer roll while said capillary substrate is in said gap, said capillary substrate resting against said anvil roll while in said gap;
passing said capillary substrate through said gap;
applying said liquid precursor from the periphery of said transfer roll to said topographically elevated regions of said substrate; and
polymerizing said liquid precursor in situ to form an immobilized osmotic absorbent on said substrate.

5,549,929

SCREEN PRINTABLE DECORATIVE COATING COMPOSITION

Anthony S. Scheibelhoffer, Norton; Michael J. Berlin, University Heights; Atam P. Sahni, Solon; Dianna B. Dusek, Oakwood Village, all of Ohio, and Donald P. Hart, Pittsburgh, Pa., assignors to Ferro Corporation, Cleveland, Ohio

Filed Feb. 17, 1995, Ser. No. 390,884

Int. Cl.[6] B05D *1/32;* **C08L** *67/00*

U.S. Cl. 427—282 **6 Claims**

1. A method of decorating a substrate comprising the steps of:
A. Providing a coating composition comprising:
I. a polymeric binder comprising a hydroxy functional material (I) and a crosslinker (II), said polymeric binder comprising from about 20% to about 80% by weight said hydroxy functional material;
II. at least one crystalline reactive diluent (III), said crystalline reactive diluent comprising a crystalline material capable of forming a chemically covalent link with at least one of said hydroxy functional material (I) or said crosslinker (II);
B. Heating said coating composition to a temperature of from about 70° C. to about 160° C.;
C. Screen printing said coating composition upon a substrate so as to coat at least a portion of said substrate;
D. Cooling said applied coating composition so as to solidify the coating composition; and
E. Heating said coating composition to a temperature of from about 150° C. to about 250° C. so as to cure said coating composition.

5,549,930

DRYER AND TOP COAT FOR NAIL POLISH

Moisei Reysis, 37140 Independence Ct., Solon, Ohio 44139

Filed May 25, 1995, Ser. No. 450,527

Int. Cl.[6] B05D *3/02;3/04;3/10*

U.S. Cl. 427—337 **10 Claims**

1. A method for drying nail polish, comprising the steps of:
applying at least one layer of nail polish to a nail;
providing a solvent free silicon based drying accelerator;
applying drops of the drying accelerator to wet nail polish using a dropper;
extracting solvents from the wet nail polish via the drying accelerator;
drying the wet nail polish in ambient conditions; and
leaving a top coat over the nail polish.

5,549,931

PROCESS FOR THE PREPARATION OF UNIFORM ULTRA THIN FILMS OF METAL OXIDE, METAL CHALCO-GENIDES AND METAL HALIDES

Sathaye S. Dattatraya; Patil K. Raghu, and Paranjape D. Vinayak, all of Pune, Ind., assignors to Council of Scientific & Industrial Research, New Delhi, Ind.

Filed Feb. 27, 1995, Ser. No. 394,595

Int. Cl.[6] B05D *3/02*

U.S. Cl. 427—376.2 **8 Claims**

1. A process of preparing films of metal oxides, metal chalcogenides, or metal halides, comprising;
(a) preparing an aqueous solution comprising cations, anions, or species capable of forming a metal oxide, metal chalcogenide, or metal halide, wherein the pH of said aqueous solution is in the range of 3 to 12,
(b) preparing an organic solution comprising cations, anions, or species capable of combining in solution with said cations, anions, or species capable of forming a metal oxide, metal chalcogenide, or metal halide in step (a), wherein said organic solution comprises a volatile organic solvent, and is immiscible with said aqueous solution,

(c) spreading said organic solution onto said aqueous solution so as to form a system having a film at the interface between said aqueous solution and said organic solution,
(d) evaporating the volatile organic solvent,
(e) applying a constant pressure to compress said system,
(f) dipping a substrate into said system and withdrawing said substrate at a uniform rate to form a film on said substrate,
(f) heating said substrate to crystallize said film formed on said substrate,
wherein steps (a)–(e) are performed at a temperature in the range of 10° to 50° C.

5,549,932
THERMOSETTING COMPOSITIONS, METHODS OF COATING AND COATED ARTICLES
Masahiro Ishidoya, Kamakura; Kishio Shibato, Tokyo; Keiji Komoto, Yokohama; Kenji Shibamoto, Yokohama; Mitsuyuki Mashita, Yokohama, and Osamu Ohe, Yokohama, all of, Japan, assignors to Nippon Oil and Fats Company, Limited, Tokyo, Japan
Division of Ser. No. 948,017, Sep. 21, 1992, Pat. No. 5,419,929, which is a continuation-in-part of Ser. No. 680,356, Apr. 4, 1991, Pat. No. 5,352,740. This application Mar. 9, 1995, Ser. No. 401,198

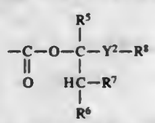
Claims priority, application Japan, Apr. 10, 1990, 2-94267; Sep. 28, 1990, 2-259695; Oct. 26, 1990, 2-288776; Mar. 28, 1991, 3-089510; Oct. 3, 1991, 3-283514; Oct. 3, 1991, 3-283515; Oct. 7, 1991, 3-287129; Oct. 7, 1991, 3-287130; Mar. 18, 1992, 4-91985; Mar. 18, 1992, 4-92240; Mar. 24, 1992, 4-97055; Mar. 24, 1992, 4-97057; Mar. 24, 1992, 4-97058; Aug. 31, 1992, 4-255847

The portion of the term of this patent subsequent to Jun. 15, 2014, has been disclaimed.

Int. Cl.[6] C08L *29/00;33/00;37/00;67/02*

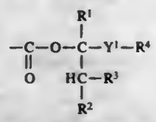
U.S. Cl. 427—385.5 **28 Claims**

1. A thermosetting composition which comprises: (D) a self-crosslinking compound having in the molecule (a) one or more functional groups of the formula (2):



(2)

wherein R^5, R^6 and R^7 are respectively selected from the group consisting of a hydrogen atom and an organic group of 1 to 18 carbon atoms, R^8 is an organic group of 1 to 18 carbon atoms; Y^2 is selected from the group consisting of an oxygen atom and a sulfur atom and R^7 and R^8 may be bonded with each other to form a heterocyclic structure which comprises Y^2 as the hereto atom component: and (b) one or more reactive functional groups which can form a chemical bond with the functional groups (a) by heating; (C) optionally, a thermal latent acid catalyst which is activated during curing of the composition by heating; (A) optionally, a compound having in the molecule two or more functional groups of the formula (1):



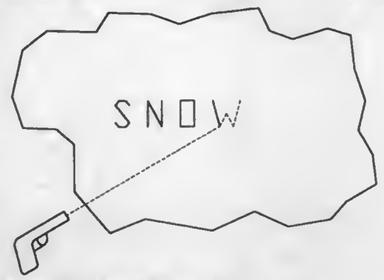
(1)

wherein R^1, R^2 and R^3 are respectively selected from the group consisting of a hydrogen atom and an organic group of 1 to 18 carbon atoms, R^4 is an organic group of 1 to 18 carbon atoms, Y^1 is selected from the group consisting of an oxygen atom and a sulfur atom and R^3 and R^4 may be bonded with each other to form a heterocyclic structure which comprises Y^1 as the heteroatom component; and/or, (B) optionally, a compound having in the molecule two or more reactive functional groups which can form a chemical bond by heating with either one or both of the functional group of the formula (1) and the functional group of the formula (2).

5,549,933
PROCESS FOR PAINTING SNOW
Theodore P. Adams, Edina; Mark W. Kroll, Minnetonka, and Karl Kroll, Maple Grove, all of Minn., assignors to Creative Toy Corporation, Minneapolis, Minn.
Continuation of Ser. No. 979,252, Nov. 20, 1992, abandoned, which is a continuation-in-part of Ser. No. 669,896, Mar. 15, 1991, Pat. No. 5,165,966. This application Feb. 28, 1995, Ser. No. 395,892

Int. Cl.[6] B05D *1/02;5/00;7/00*

U.S. Cl. 427—421 **6 Claims**

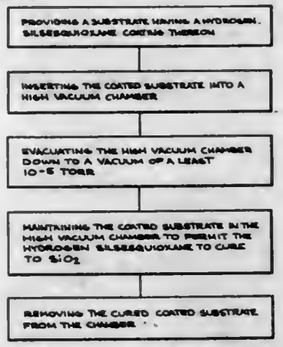


1. A process comprising the steps of:
a. mixing a nontoxic substrate, coloring agent and water in an aqueous solution for painting or coloring snow or ice;
b. filling a sprayer apparatus with said solution; and
c. spraying said solution on snow or ice to form a coating, whereby said solution gels upon contact with said snow or ice.

5,549,934
PROCESS OF CURING HYDROGEN SILSESQUIOXANE COATING TO FORM SILICON OXIDE LAYER
Mario Garza, Sunnyvale, and Keith Chao, San Jose, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.
Division of Ser. No. 245,191, May 17, 1994, Pat. No. 5,456,952. This application Jun. 5, 1995, Ser. No. 462,651

Int. Cl.[6] C08J *7/18*

U.S. Cl. 427—489 **15 Claims**



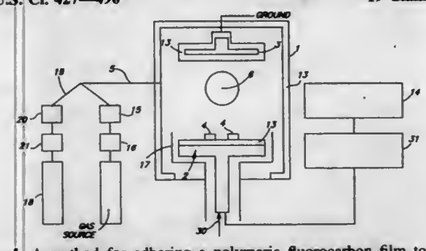
1. A process for converting substantially all of a hydrogen silsesquioxane coating material on a substrate to SiO_2 which comprises:
a) placing said substrate coated with said hydrogen silsesquioxane coating material in a vacuum chamber; and

b) maintaining said vacuum chamber at a vacuum of at least 10^{-5} Torr, until substantially all of said hydrogen silsesquioxane coating material has been converted to SiO_2.

5,549,935
ADHESION PROMOTION OF FLUOROCARBON FILMS
Thao N. Nguyen, Katonah; Gottlieb S. Oehrlein, Yorktown Heights, and Zeev A. Weinberg, White Plains, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 693,735, Apr. 30, 1991, abandoned. This application Jan. 4, 1995, Ser. No. 368,764

Int. Cl.[6] C08J *7/18;* **C23C** *14/14;* **H05H** *1/00*

U.S. Cl. 427—490 **19 Claims**



1. A method for adhering a polymeric fluorocarbon film to a substrate which comprises providing a thin layer of silicon or a silicide having a thickness of up to about 50 nanometers on said substrate; placing said substrate and a working electrode in a chamber having walls, wherein said chamber can be evacuated and wherein the walls of said chamber and the electrode are coated with a polymeric fluorocarbon coating and wherein the electrode is capacitively coupled;
introducing in said chamber a gaseous polymerizable fluorocarbon; applying radio-frequency at a power level of about 100 watts to about 1000 watts to said electrode; to thereby deposit a polymeric fluorocarbon film on said layer of silicon or silicide while maintaining pressure in said chamber of about 10 to about 180 mTorr and a self-bias voltage on said electrode of about −50 to about −700 volts, and whereby said thin layer is intermediate said substrate and said polymeric fluorocarbon film and silicon-carbon bonds are formed between said thin layer and said fluorocarbon film for promoting the adhesion between said fluorocarbon film and said substrate.

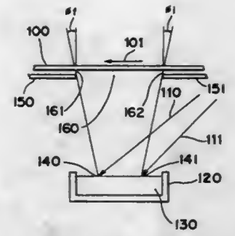
5,549,936
MANUFACTURING METHOD OF MAGNETIC RECORDING MEDIUM
Kiyhokazu Tohma, Hirakata; Kazunari Yoshimoto, Neyagawa; Ryuji Sugita, Hirakata, and Tatsuaki Ishida, Sakai, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan
Filed Oct. 18, 1994, Ser. No. 325,125

Claims priority, application Japan, Oct. 20, 1993, 5-262176; Nov. 17, 1993, 5-287946; Jul. 8, 1994, 6-156908

Int. Cl.[6] B05D *3/06*

U.S. Cl. 427—566 **21 Claims**

1. A method of manufacturing a magnetic recording medium by vacuum deposition, comprising:
moving a substrate in a vacuum;
providing two shielding members for defining an aperture;
providing an evaporation source having an evaporation material therein to be used for a magnetic layer, the evaporation source being located at a position such that evaporated atoms from the evaporation material pass through the aperture to adhere to the moving substrate; and
irradiating the evaporation material at two evaporation locations on the evaporation source with electron beams;



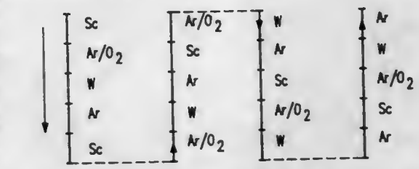
wherein the evaporation locations are provided along a moving direction of the substrate, with respect to each other, on forming a deposition layer on the moving substrate; and
wherein evaporated atoms from the two evaporation portions deposit onto the substrate to form a magnetic layer.

5,549,937
METHOD OF PLASMA-ACTIVATED REACTIVE DEPOSITION OF ELECTRICALLY CONDUCTING MULTICOMPONENT MATERIAL FROM A GAS PHASE
Georg Gartner, Aachen, Germany, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 133,544, Oct. 7, 1993, abandoned, which is a continuation-in-part of Ser. No. 879,058, Apr. 30, 1992, abandoned, which is a continuation of Ser. No. 595,118, Oct. 9, 1990, abandoned. This application Feb. 15, 1995, Ser. No. 389,446

Claims priority, application Germany, Oct. 11, 1989, 39 33 900.9

Int. Cl.[6] H05H *1/24;1/30;* **C23C** *14/02*

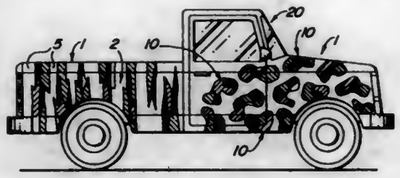
U.S. Cl. 427—576 **6 Claims**



1. A method of manufacturing a structure comprising a substrate carrying a multicomponent material layer, said layer comprising a series of parallel sub-layers one sub-layer deposited on top of each other sub-layer, where each of said sub-layers comprises a plurality of adjacent regions arranged along a deposition path where each of said regions comprises a single component material of the multicomponent material, a distribution of said single component materials in said sub-layers being such that in a cross-section normal to said substrate and parallel to said deposition path said adjacent regions of each two of said sub-layers that are adjacent comprise different single component materials, said method comprising generating a plasma in a reaction space, adding precursors of single component materials for each of the regions of one of said sub-layers to flowing gas phases of said plasma in such a way that each of said flowing gas phases, in an alternating way, comprises only said precursors for said single component material for a single one of said regions, moving said plasma along said deposition path which is a path extending along said substrate between points of reversal while reciprocating said flowing gas phases between said points of reversal during sub-intervals of said plasma movement to thereby deposit said single component materials between said points of reversal to thereby form all said regions of said one of said sub-layers, on said substrate and then depositing at least one additional sub-layer of said sub-layers upon said one of said sub-layers so as to produce said cross-section normal to said substrate.

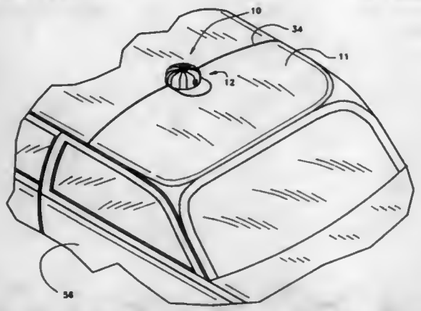
VOL 1189 ISS 4 AUG 27 1996 UMI

5,549,938
REMOVABLE CAMOUFLAGE
Gregg G. Nesbitt, 3081 Dartmoor Ct., Shreveport, La. 71115
Filed Oct. 13, 1994, Ser. No. 335,061
Int. Cl.[6] F41H *3/00*
U.S. Cl. 428—17 **8 Claims**



1. A removable camouflage panel for magnetic attachment to steel body panels of a vehicle, comprising sheets of flexible, elastomeric magnetic material shaped to substantially fit the body panels of the vehicle and a selected camouflage pattern provided on said sheets of flexible, elastomeric magnetic material for camouflaging the vehicle.

5,549,939
ORNAMENTAL DEVICE FOR METAL STRUCTURE
Freddie W. Ray, 2034 Daisy Meadow La., North Las Vegas, Nev. 89030
Filed Feb. 25, 1994, Ser. No. 201,978
Int. Cl.[6] B60R *13/00*
U.S. Cl. 428—31 **16 Claims**



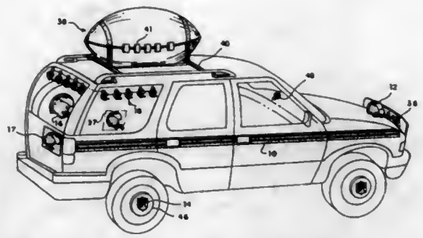
1. In combination, a vehicle having a generally flat, horizontal exterior surface, and an ornamental device mounted on said surface comprising a molded cap, of a size to be worn on a human head, having a hollow crown and a visor extending therefrom, said cap having a logo thereon, and;

attaching means connected to said cap for removably mounting said cap to said surface.

5,549,940
STOCK MOTOR VEHICLE OUTFITTED WITH A SPORTS THEME KIT
Robert P. Noone, 275 Christopher Dr., Scranton, Pa. 18504
Filed Mar. 6, 1995, Ser. No. 398,880
Int. Cl.[6] B60R *13/04*
U.S. Cl. 428—31 **13 Claims**

1. An after-market customizing coordinated kit for outfitting a motor vehicle with a sports theme, comprising:

a tape printed with indicia representing a sports team, including a predetermined plurality of stripes in the colors identifying the sports team, said tape for decorating a motor vehicle by adhering to exterior body parts thereof;



a plurality of opaque sheet materials printed with a plurality of indicia selected from the group consisting of a sports team, a sports figure, and a sport's teams governing body,

a plurality of transparent sheet materials printed with a plurality of indicia selected from the group consisting of a sports team and a sports figure;

wherein said opaque and transparent sheet materials further comprises sheets of predetermined size to enable convenient consumer packaging, said sheet materials further including scored lines circumscribing areas of said printed indicia to enable removal of said areas from said sheet materials for application to predetermined parts of the motor vehicle;

a gear shift lever knob shaped to resemble an implement used in playing a sport;

a clock shaped to resemble an implement used in playing a sport;

a sports medallion for attachment to the interior of the motor vehicle; and

a hood ornament shaped to resemble an implement used in playing a sport.

5,549,941
CRAZE RESISTANT TRANSPARENT SHEET
Harold R. Banyay; Michael S. Cholod, both of Bensalem, Pa.; Laurence M. Kolanko, Mt. Holly, and Bonnie V. Smith, Magnolia, both of N.J., assignors to Atohass Bolding C.V., Haarlem, Netherlands
Continuation-in-part of Ser. No. 145,266, Oct. 29, 1993, abandoned. This application Aug. 1, 1994, Ser. No. 283,888
Int. Cl.[6] B29C *39/14*
U.S. Cl. 428—34.1 **6 Claims**

1. A melt calendered sheet having excellent transparency and solvent craze resistance comprising an acrylic copolymer derived from monomer units comprising:

a) from about 94.0 to about 99.9 weight percent methyl methacrylate; and

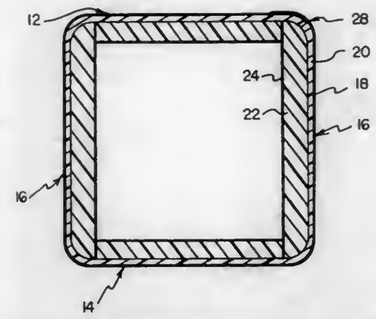
b) from about 0.1 to about 6.0 weight percent of a monomer selected from an alkyl acrylic ester having from 1 to 12 carbon atoms in the alkyl group;

wherein the acrylic copolymer has a melt flow rate of from about 0.3 to about 1.3 grams/10 minutes, a molecular weight distribution of from 1.7 to about 1.8, a heat distortion temperature greater than about 85° C., a haze value less than 2.0%, a flexural modulus greater than about 3,275 megapascals, and a critical stress rating greater than 12,000 kilopascals.

5,549,942
SEALED DUCTBOARD
Anthony Watts, P.O. Box 411, Fort Ashby, W. Va. 26719
Filed Jun. 8, 1995, Ser. No. 488,964
Int. Cl.[6] F16L *59/02*
U.S. Cl. 428—34.5 **1 Claim**

1. A sealed ductboard comprising:

a generally rectangular top panel having an outer foil web with an outer fiberglass web coupled thereto;



a generally rectangular bottom panel having the outer foil web with the outer fiberglass web coupled thereto;

a pair of spaced and panels lateral panels extending substantially or orthogonally between the top and bottom panels, each of the lateral panel having the outer for web with the outer fiber glass web coupled thereto;

the outer fiberglass web being substantially rigid, the inner fiberglass web being less rigid than the outer fiber glass web and more insulative than the outer fiber glass web, the inner fiber glass web of the top panel, bottom panel and lateral panels being coupled to the outer fiber glass of each panel, and forming an inner surface of each panel, the inner fiber glass web of each panel being sealed by the inner foil webs;

a blank being formed by a single coextensive outer foil web of the top panel, the bottom panel and the pair of lateral panels, the panels being separated and defined by relief cuts directed across the blank and oriented in a substantially spaced and parallel orientation relative to one another, the blank capable of being folded into an operative orientation about the relief cuts, the blank having a seam formed between a pair of adjacent panels, the seam being defined by a portion of the outer foil web of one of the panels extending beyond the outer fiberglass web so as to define a securing flap, the securing flap capable of being secured to the outer foil web of another of the panels; and

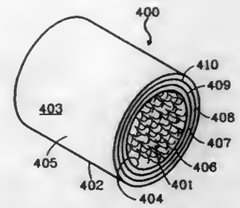
each of the relief cuts having a first relief groove and a second relief groove, the first relief groove being directed through the inner foil web, the inner fiber glass web and into the outer fiber glass web, the second relief groove being directed through both the inner foil web and the inner fiberglass web, the second relief groove being positioned adjacent to and in contiguous communication with the first relief groove, the first relief groove being of a first traverse width which substantially equal to a thickness of the outer fiberglass web, with the second relief groove being of a second transverse width equal to a combined thickness of the other fiberglass web, the inner fiberglass web, and the inner foil web.

5,549,943
HEAT SHRINKABLE NYLON FOOD CASING WITH A POLYOLEFIN CORE LAYER
Stephen J. Vicik, Darien, Ill., assignor to Viskase Corporation, Chicago, Ill.
Filed Sep. 23, 1992, Ser. No. 948,552
Int. Cl.[6] F16L *11/00;* **B65D** *81/34*
U.S. Cl. 428—34.8 **36 Claims**

1. A tubular, biaxially stretched, heat shrinkable, multilayer film, food casing consisting essentially of three polymeric layers:

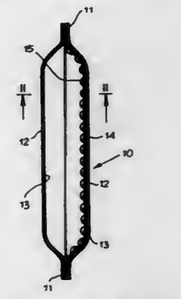
(a) an inner layer comprising a polyamide;

(b) a core layer comprising at least 60% by weight of at least one polyolefin selected from the group of copolymers of ethylene with at least one C_3–C_{10} α -olefin, VLDPE, LLDPE, copolymers of ethylene with an alkyl acrylate, LDPE, HDPE, and blends thereof; and



(c) an outer layer comprising a polyamide; wherein said core layer (b) is disposed between and directly adhered to said inner layer (a) and said outer layer (c), and said multilayer film has a shrinkage value of at least 20% in at least one direction at 90° C.

5,549,944
TUBULAR ELEMENT FOR THE FORMATION OF BAGS FOR THE VACUUM-PACKING OF PRODUCTS
Luigi F. Abate, Via Colli Storici 67, S.Martino d/Battaglia (Brescia), Italy
Continuation of Ser. No. 198,499, Feb. 18, 1994, abandoned. This application Jul. 10, 1995, Ser. No. 500,812
Claims priority, application Italy, Oct. 13, 1993, BS930074 U
Int. Cl.[6] B65D *33/02;81/20*
U.S. Cl. 428—35.2 **10 Claims**



1. A tubular element for forming bags used for the vacuum-packing of products, comprising: a first sheet formed of an outer layer of film made of a plastic material that is impermeable to gas and formed of an inner layer of film made of a thermoplastic, heat-sealable material; a second sheet formed of an outer layer of film made of a plastic material which is impermeable to gas and an inner layer of film made of a thermoplastic, heat-sealable material, said inner layer of said first sheet being bonded to said inner layer of said second sheet along an upper edge of said first sheet and said second sheet and along a lower edge of said first sheet and said second sheet, said edges extending in a length direction and said first sheet and said second sheet and said bonded edges cooperating to define a robe with an interior region for receiving the product to be vacuum packaged; a plurality of bubble structures formed on one of an inner surface of said inner layer of said first sheet, and an inner surface of said inner layer of said second sheet and an additional layer, said additional layer being formed of the same material as said inner layer of said first sheet and said inner layer of said second sheet, said additional layer being disposed on one of said inner layer of said first sheet and said inner layer of said second sheet, said bubble structures delimiting a network of surface channels covering at least half of an inner surface of the tubular element and defining passages between adjacent bubble structures when said first sheet is pressed against said second sheet for the discharge of air and for the formation of a vacuum in a formed bag, said bubble structures containing a nontoxic, inert gas which is provided in said passages after being progressively dif-

fused from said bubble structures into the network of surface channels of the bag for the preservation of the packed product.

5,549,945

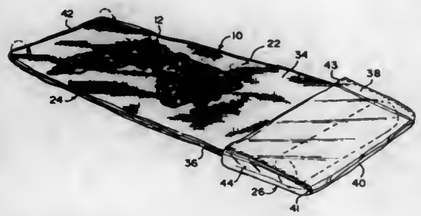
ABSORBENT MAT

Bruce B. Lind, Rte. 1 Box 302-D, Hull, Ga. 30646

Filed Jul. 3, 1995, Ser. No. 497,976

Int. Cl.[6] B32B *1/06;33/00;* **B65D** *65/38;81/00;85/00*

U.S. Cl. 428—35.5 **5 Claims**



1. An improved absorbent mat for absorbing oil and other liquid drippings beneath a motor vehicle comprising:

a) a first bottom impervious flexible layer to be placed upon a support surface beneath the motor vehicle;

b) a second intermediate absorbent flexible layer disposed upon said first bottom impervious layer;

c) a third top permeable flexible layer disposed upon said second intermediate absorbent layer;

d) a retaining means, said retaining means being a disposal bag affixed at its bottom end to a first side of said mat, so when said mat is rolled up from a second side, said disposal bag can be turned inside out to receive said rolled up mat for proper removal thereof.

5,549,946

VARNISH-COATED HEAT-RESISTANT ROLL FOR COPYING MACHINE, AND METHOD OF PRODUCING THE SAME

Kazuo Iura; Yasuhiko Onishi, and Takashi Itoh, all of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Mie, Japan

Continuation of Ser. No. 45,798, Apr. 15, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 465,907

Claims priority, application Japan, Apr. 16, 1992, 4-124341

Int. Cl.[6] B32B *1/00;* **B05D** *3/00*

U.S. Cl. 428—35.8 **18 Claims**

1. A heat-resistant roll for copying machine use which comprises a metallic roll having a surface coating comprising polybenzimidazole, wherein said surface coating is provided by coating said metallic roll with a varnish containing at least 5% by weight of polybenzimidazole as a resin component based on total weight of resin component in the varnish, followed by curing said surface coating by baking at a temperature between about 450° C. and 1000° C., wherein said coating is conducted by means of rotational coating with application of pressure and wherein said polybenzimidazole in the cured surface coating is cross-linked.

5,549,947

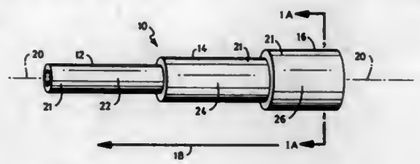
COMPOSITE SHAFT STRUCTURE AND MANUFACTURE

Peter A. Quigley, Pocasset; Steven C. Nolet, Leominster, both of Mass., and James L. Gallagher, Tiverton, R.I., assignors to Composite Development Corporation, West Wareham, Mass.

Continuation-in-part of Ser. No. 178,664, Jan. 7, 1994. This application Feb. 3, 1994, Ser. No. 191,856

Int. Cl.[6] B65H *81/00;* **B29D** *22/00;* **B32B** *1/08;5/12*

U.S. Cl. 428—36.2 **25 Claims**



1. In an axially extending composite member having a plurality of plies and having primary bending stiffness along a longitudinal axis, the improvement comprising

at least one interior ply having a first fiber component with a matrix material, said interior ply providing a first fraction of the bending stiffness of said composite member and being structured to provide impact resistance,

at least one intermediate ply having a second fiber component disposed with said matrix material, said intermediate ply being exterior to said interior ply and being structured to provide primary load-carrying strength and providing a second fraction of the bending stiffness such that said second fraction is greater than said first fraction, and

at least one exterior ply having a third fiber component disposed with said matrix material, said exterior ply being exterior to said intermediate ply and being structured to provide abrasion resistance and providing a third fraction of the bending stiffness such that said second fraction is greater than said third fraction, and

wherein said intermediate ply comprises at least one sub-ply having at least one circumferentially-wound fiber component oriented relative to said axis at a selected angle variable along the length of said member, said angle being greater at at least one end of said member for providing selective structural reinforcement at said end.

5,549,948

MELT-PROCESSABLE FLUOROPLASTIC

Thomas J. Blong, Woodbury, Minn., and Claude Lavallée, London, Canada, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 2, 1994, Ser. No. 300,640

Int. Cl.[6] C08L *27/16;27/18;27/20;23/02*

U.S. Cl. 428—36.9 **20 Claims**

1. A melt-processable fluoroplastic composition consisting essentially of a blend of:

(a) a major amount of a melt-processable, thermoplastic fluoropolymer component having at least 5 wt % of its interpolymerized units derived from vinylidene fluoride and more than 25 wt % of its interpolymerized units derived from a combination of tetrafluoroethylene and hexafluoropropylene; and

(b) from 0.01 to 20 wt %, to reduce melt defecting of the composition, of a polymer component comprising a polymer of ethylene or propylene.

5,549,949

FUME DUCT CIRCUMFERENTIAL JOINT SEALANT

Douglas Williams, 28 Waterside Clr., San Rafael, Calif. 94903; Jeff Shea, 708 Vermont St., San Francisco, Calif. 94107, and Michael S. Cork, 2552 Honeysuckle, Richardson, Tex. 75082

Filed Mar. 31, 1995, Ser. No. 415,045

Int. Cl.[6] B32B *1/08;* **F16L** *9/127*

U.S. Cl. 428—36.9 **14 Claims**

1. A circumferential joint bond for sealingly circumscribing a fume-traversable construction joint connecting opposed ends of fume-duct, polymeric fiberglass sections, the joint including unsanded, polymeric fiberglass mating surfaces, the joint bond containing:

a resin component comprising an admixture of epoxy resin and glycidyloxy silane; and

a hardener component comprising an admixture of amine hardener and amino silane, the hardener component effecting cure of the resin component at ambient temperature.

5,549,950

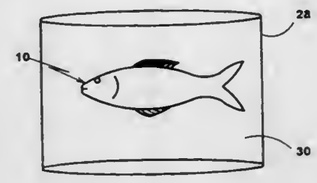
FLEXIBLE WATERPROOF APPLIQUE FOR ACCURATE MOUNTING DIRECTLY TO SWIMMING POOLS AND THE LIKE

David Murolo, 2 Evergreen Dr., Manorville, N.Y. 11949

Continuation-in-part of Ser. No. 249,714, May 26, 1994, abandoned. This application Mar. 20, 1995, Ser. No. 406,630

Int. Cl.[6] G09F *1/10*

U.S. Cl. 428—41.7 **4 Claims**



1. A flexible waterproof applique accurately mountable directly to a swimming pool, comprising:

a) a flexible waterproof sheet having a flexible waterproof sheet front surface and a flexible waterproof sheet rear surface, the flexible sheet further comprising printed matter disposed on the flexible waterproof sheet front surface;

b) a waterproof adhesive layer entirely covering the flexible waterproof sheet rear surface so that water in the swimming pool is prevented from coming between the flexible waterproof sheet and the swimming pool, preventing lifting of the flexible waterproof sheet away from the swimming pool, the waterproof adhesive layer further comprising an adhesive that is activated in the presence of water;

c) a waterproof release sheet containing at least two slits disposed therethrough, said slits defining at least one release sheet intermediate portion and at least two release sheet outer portions, each of the release sheet outer portions being larger than each of the release sheet intermediate portions so that by removing one of the release sheet intermediate portions, a portion of the adhesive layer becomes exposed allowing the flexible waterproof sheet to be properly positioned on the swimming pool interior surface, and by progressively removing each remaining release sheet intermediate portion and each of the release sheet outer portions, the properly positioned flexible sheet is progressively adhered to the swimming pool free of wrinkles and bubbles; and

d) flexible waterproof said applique contained within an air tight pouch containing an inert gas functioning to prevent the waterproof adhesive layer activating until water is present.

5,549,951

COMPOSITE ULTRAFINE PARTICLES OF NITRIDES, METHOD FOR PRODUCTION AND SINTERED ARTICLE THEREOF

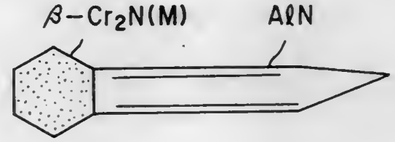
Tadashi Yamaguchi, Sendai; Katsutoshi Nosaki, Wako; Inoue Akihisa, Sendai, and Tsuyoshi Masumoto, Sendai, all of, Japan, assignors to YKK Corporation, Tokyo; Tsuyoshi Masumoto; Akihisa Inoue, both of Miyagi-ken, and Honda Giken Kogyo Kabushiki Kaisha, Tokyo, all of, Japan

Filed Sep. 7, 1994, Ser. No. 301,879

Claims priority, application Japan, Sep. 8, 1993, 5-246064; Sep. 29, 1993, 5-264104; Mar. 28, 1994, 6-079282

Int. Cl.[6] B22F *7/00*

U.S. Cl. 428—565 **18 Claims**



1. An composite nitride particle of Al—M^1—N system, wherein M^1 stands for at least one metallic element selected from the group consisting of Cr, Co, and Fe, which particle having a whiskery or columnar structure formed of a composite phase of aluminum nitride and a substance selected from the group consisting of said metal, an intermetallic compound of said metal with aluminum, and a nitride ceramic of said metal.

5,549,952

OPTICAL INFORMATION MEDIUM AND METHOD FOR PRINTING ON THE SURFACE OF THE MEDIUM

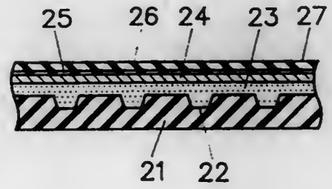
Yuji Arai; Takashi Ishiguro, and Toshio Watanabe, all of Tokyo, Japan, assignors to Sony Corporation, and Taiyo Yuden Co., Ltd., both of Tokyo, Japan

Filed Jun. 11, 1993, Ser. No. 76,339

Claims priority, application Japan, Jun. 13, 1992, 4-178967

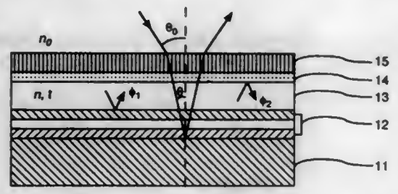
Int. Cl.[6] B32B *3/02*

U.S. Cl. 428—64.4 **7 Claims**



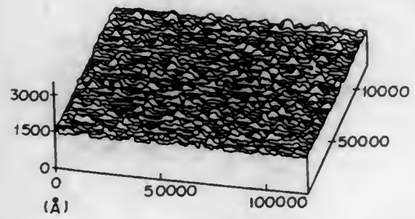
1. An optical information medium which optically readable information can be reproduced and/or recorded by a laser beam, said optical information medium comprisiog a plate-shaped, optically transparent substrate having a recording layer, a reflective layer, a proctective layer made of UV-curable resin and a hydrophilic resin film having a printing ink-fixable, hydrophilic surface provided at a side which is opposite to a side of said optically transparent substrate through which reproduction light is incident.

5,549,953
OPTICAL RECORDING MEDIA HAVING OPTICALLY-VARIABLE SECURITY PROPERTIES
Li Li, Gloucester, Canada, assignor to National Research Council of Canada, Ottawa, Canada
Filed Apr. 29, 1993, Ser. No. 53,678
Int. Cl.[6] B32B 3/00
U.S. Cl. 428—64.1 15 Claims



1. A thin film structure for storing data and having optically-variable properties for the prevention of counterfeiting and forgery, comprising:
a substrate having data encoded therein;
a thin film multilayer interference coating defining a Fabry Perot structure carried by the substrate, the interference coating being of a thickness suitable for providing thin film interference effects such that colours seen vary with a change in viewing angle, said thin film multilayer interference coating including at least one semi-transparent layer, at least a non-absorbing spacer including one or more dielectric layers, and a reflecting layer, the at least one spacer being disposed between the at least one semi-transparent layer and the reflecting layer.

5,549,954
MAGNETIC DISC
Haruhiko Otsuka; Yuzo Murayama; Akihiko Tashiro; Kyoko Hyomi, and Naohiko Ishimaru, all of Yokohama, Japan, assignors to AG Technolgy Co., Ltd., Yokohama, Japan
Filed Aug. 31, 1994, Ser. No. 296,910
Claims priority, application Japan, Sep. 20, 1993, 5-233248
Int. Cl.[6] B32B 3/02; G11B 5/66;5/70
U.S. Cl. 428—65.3 9 Claims

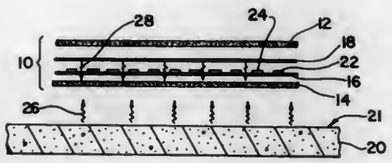


1. A magnetic disc having one or multiple undercoat layers, a continuous thin film magnetic layer or continuous thin film multiple magnetic layers, a protective layer and a lubricant layer sequentially laminated on a non-magnetic disc substrate, the surface roughness on the outermost surface of the lubricant layer being such that when the surface roughness is measured by an atomic force microscope or a scanning tunnel microscope, the maximum peak height is from 150 Å to 800 Å, with the maximum peak height measured from the height giving the highest frequency in the height distribution of the surface roughness, and the depth ($D_{0.5}$) at a bearing ratio of 0.5% from the highest point is from 80 Å to 450 Å.

5,549,955
MAGNETIC RECORDING DISK
Toshio Kawamata; Satoru Hayakawa, and Yasushi Endo, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Continuation of Ser. No. 44,384, Apr. 2, 1993, abandoned.
This application Apr. 10, 1995, Ser. No. 419,757
Claims priority, application Japan, Apr. 2, 1992, 4-108478
Int. Cl.[6] G11B 5/66
U.S. Cl. 428—65.3 6 Claims

1. A magnetic recording disk comprising a non-magnetic support having coated thereon, in the following order, a non-magnetic layer comprising mainly a non-magnetic powder and a binder resin and a magnetic layer comprising mainly a ferromagnetic powder and a binder resin, wherein the non-magnetic layer is formed by applying a non-magnetic coating solution containing a first solvent onto the non-magnetic support, the magnetic layer is formed by applying a magnetic layer coating solution containing a second solvent onto the coated non-magnetic layer while the non-magnetic layer remains in a wet condition, the first solvent for the non-magnetic coating solution has a boiling point higher than that of the second solvent for the magnetic layer is 0.01 to 0.5 μm, and the maximum thickness and the minimum thickness of the magnetic layer fall within the range of ±15% of the average thickness of the magnetic layer.

5,549,956
HEAT REFLECTIVE BLANKET
Gary Handwerker, 2311 Burr Oak Rd., Northfield, Ill. 60093
Filed Apr. 6, 1995, Ser. No. 417,792
Int. Cl.[6] B32B 3/12;7/00;1/00
U.S. Cl. 428—73 18 Claims



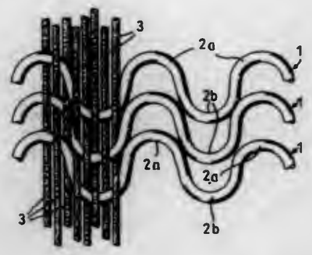
1. A heat reflective blanket comprising:
a first moisture-impervious outer layer;
a second moisture-impervious outer layer;
at least one insulative layer disposed between said first and second outer layers;
said insulative layer including a plurality of insulative elements disposed in spaced relation to each other on a surface of said insulative layer, with open spaces defined in said surface between said insulative elements; and
at least one heat reflective layer disposed between said first and second outer layers, reflecting heat through the at least one insulative layer.

5,549,957
BULKED CONTINUOUS FILAMENT CARPET YARN
Edward J. Negola, 1007 Riverbend Dr., Atlanta, Ga. 30339, and James R. Kennedy, 4531 King Springs Rd., Smyrna, Ga. 30082
Continuation-in-part of Ser. No. 910,426, Jul. 8, 1992, abandoned. This application Jun. 24, 1993, Ser. No. 82,222
Int. Cl.[6] B32B 3/02; D02G 3/00
U.S. Cl. 428—92 4 Claims

1. A carpet tufted with a bulked continuous filament carpet face yarn, wherein said yarn comprises:
a) a bundle of drawn and crimped bi-component filaments;

b) each filament consisting essentially of an outer sheath of nylon surrounding a core consisting of fiber forming polymeric material;
c) said nylon sheath constituting from twenty to fifty percent of the total weight of each filament wherein said polymeric core constitutes the remainder of the total weight of each filament;
d) said nylon sheath being dyed under standard atmospheric pressure using nylon dye techniques and said polymeric core material being undyeable under standard atmospheric pressure using said nylon dye techniques;
e) wherein the percentages of nylon and polymeric material in combination impart the properties of recovery from crushing or compression; the ability
to be tufted at high speeds; the ability to apply desired color on conventional dyeing equipment at atmospheric pressure; strength to resist heavy foot traffic; and good bulking properties equivalent to those of a bulked continuous filament carpet face yarn consisting of 100% nylon.

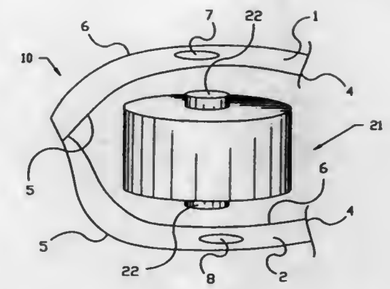
5,549,958
COMPOSITE MATERIAL FOR THE MANUFACTURE OF SEATS, SEAT BACKS AND LIKE OBJECTS COMPRISING A DIFFERENTIALLY WOVEN FABRIC OF WARP THREADS AND WEFT WIRES
Didier Royaerts, F 09600, Regat, France, assignor to Didier Royaerts, Regat, and Societe Duret, Brionne, both of, France
Filed Jan. 18, 1995, Ser. No. 374,098
Claims priority, application France, Jan. 28, 1994, 94 00976
Int. Cl.[6] B32B 3/02;5/02;7/00
U.S. Cl. 428—95 12 Claims



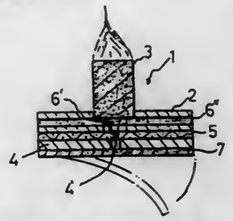
1. Composite material for the manufacture of seats, seat backs and like objects adapted to receive a decorative fabric on one side, the other side cooperating with the frame or stuffing of said seat, said composite material being woven and including a metal armature with warp threads and weft wires, wherein said weft wires are steel rods bent to a shape having regular undulations, said rods are disposed so that said undulations are parallel and coplanar, said warp threads are interwoven with said rods, and at least part of said armature is embedded in an elastomer.

5,549,959
PERFORATED FILM WITH PREPUNCHED TUBE HOLES
Stephen F. Compton, Spartanburg, S.C., assignor to W. R. Grace & Co.-Conn., Duncan, S.C.
Division of Ser. No. 26,898, Mar. 5, 1993, Pat. No. 5,358,771.
This application Jun. 20, 1994, Ser. No. 262,195
Int. Cl.[6] B32B 9/00
U.S. Cl. 428—131 3 Claims

1. A package comprising:
a) a product wrapped around a tube, and
b) a polymeric thermoplastic film wrapped around the product, the film characterized by having perforations therein and further having holes to accept the ends of the tube.



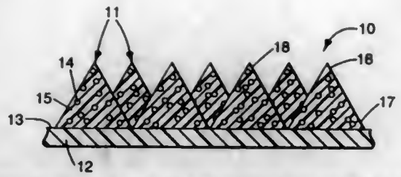
5,549,960
MOXIBUSTING IMPLEMENT
Tae W. Yoo, Apt. 32-5, Banpo-dong, Seocho-ku, Seoul, Rep. of Korea
Filed Apr. 1, 1994, Ser. No. 222,466
Claims priority, application Rep. of Korea, Nov. 9, 1993, 93-23351
Int. Cl.[6] B32B 3/24; A61F 7/00
U.S. Cl. 428—139 11 Claims



1. A moxibusting implement comprising:
an upper paper-board having a receiving hole with a predetermined outer shape and dimension, and a lower surface,
a moxa having a lower end with said predetermined outer shape and dimension, and closely fit within said receiving hole, said lower end having a lower surface,
an adhesion sheet having an upper adhesion layer adhered to said lower surface of said upper paper-board and to said lower surface of said moxa, said adhesion sheet having a hole therein,
a filter paper secured to a lower surface of said adhesion sheet,
a lower paper-board secured to a lower surface of said filter paper and having a hole therein, and
an exfoliation paper secured to a lower surface of said lower paper-board.

5,549,961
ABRASIVE ARTICLE, A PROCESS FOR ITS MANUFACTURE, AND A METHOD OF USING IT TO REDUCE A WORKPIECE SURFACE
John D. Haas, Woodbury; Todd J. Christianson, Oakdale, and Wesley J. Bruxvoort, Woodbury, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Division of Ser. No. 145,412, Oct. 29, 1993, Pat. No. 5,453,312.
This application May 15, 1995, Ser. No. 441,075
Int. Cl.[6] B32B 5/16; B24B 1/00
U.S. Cl. 428—143 11 Claims

1. An abrasive article comprising a sheet structure having at least one major surface having deployed thereon a plurality of individual abrasive composites, each composite comprising a plurality of abrasive particles dispersed in a plasticized crosslinked binder, and said binder having been formed by crosslinking of



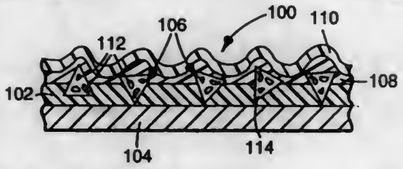
binder precursor via an addition crosslinking mechanism wherein said binder precursor is combined with plasticizer prior to said crosslinking in an amount of 30 to 70 parts plasticizer per 100 parts by weight of said combined binder precursor and plasticizer, wherein said plasticizer comprises an organosilicone oil, and wherein said composites each have a precise shape defined by a distinct and discernible boundary and each composite further comprises a distal end that is spaced from said major surface and unconnected to any other composite.

5,549,962

PRECISELY SHAPED PARTICLES AND METHOD OF MAKING THE SAME

Gary L. Holmes, Vadnais Heights; Scott R. Culler, Burnsville, both of Minn.; David H. Hardy, New Richmond, Wis.; Kimberly K. Harmon; Robert V. Heiti, both of Hudson, Wis.; William A. Hendrickson, St. Joseph, Wis.; Thomas P. Klun, Lakeland, Minn.; Kathryn M. Spargeon, River Falls, Wis., and Charles J. Studiner, III, Oakdale, Mich., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 30, 1993, Ser. No. 85,638
Int. Cl.[6] D06N *7/04*
U.S. Cl. 428—144 **22 Claims**



1. A coated abrasive article comprising:
(a) a backing;
(b) at least one layer comprising a plurality of precisely shaped abrasive composites that comprise abrasive grits and a binder formed from a free radically polymerizable binder precursor, wherein said precisely shaped composites have vertexes, and wherein the precisely shaped composites are randomly disposed on the backing such that at least a portion of said particles are oriented with said vertexes point toward said backing;
(c) a bonding medium which serves to adhere said precisely shaped particles to said backing.

5,549,963

POLYAMIDE MATERIALS WITH DURABLE STAIN RESISTANCE

Yassin M. Elgarhy, St. Eustache, and Barry R. Knowlton, Concord, both of, Canada, assignors to Trichromatic Carpet Inc., Quebec, Canada

Continuation-in-part of Ser. No. 190,636, Feb. 2, 1994, Pat. No. 5,457,259. This application Nov. 9, 1994, Ser. No. 336,767
Int. Cl.[6] C08L *61/14;61/06*
U.S. Cl. 428—224 **17 Claims**

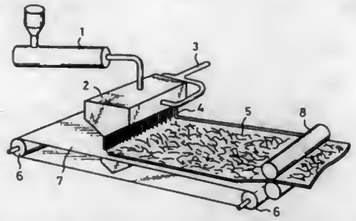
1. The method of making a modified resol resin comprising reacting a member of the group: phenol, and phenol in admixture with a sulfonated naphthalene in the presence of an aldehyde, in an alkline medium, to form an aldehyde condensate, adjusting the pH to below 7 and further sulfonating the condensate with a sulfonating agent such as sodium metabisulfite, cooling the reaction mixture to 50° C., adding phosphoric acid, raising the temperature to about 100° C. and continuing the reaction for 1 to 2 hours in order to accomplisb the desired degree of phosphation.

5,549,964

STRETCHABLE NONWOVEN FABRIC AND METHOD OF MANUFACTURING THE SAME

Kohichi Shohji; Masataka Ikeda, both of Nobeoka, and Yasushi Kishimoto, Kawasaki, all of, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 27,606, Mar. 5, 1993, abandoned, which is a continuation of Ser. No. 691,056, Jun. 27, 1991, abandoned. This application Jan. 11, 1995, Ser. No. 371,490
Claims priority, application Japan, Dec. 27, 1988, 63-327935
Int. Cl.[6] D02G *3/00;* **D04N** *1/04;* **C08K** *3/00*
U.S. Cl. 428—224 **6 Claims**



1. A stretchable meltblown nonwoven fabric having a weight per unit area of 5 to 500 g/m^2, a mean diameter of fibers of 0.5 to 30 μm, and a strength per weight per unit area of 2.4 g/cm/g/m^2 or more, composed of a thermoplastic fiber comprising a hydrogenated block copolymer C obtained by hydrogenating a block copolymer including two to about four polymer blocks A composed mainly of a vinyl aromatic compound and two to about four polymer blocks B constituted mainly of a conjugated diene compound, at least one polymer block B being arranged on an end of a polymer chain thereof, the number-average molecular weight of said block copolymer being between 30,000 and 65,000 and the content S of the vinyl aromatic compound in the block copolymer being between 15 wt % and 40 wt % and the remaining content being the conjugated diene compound, the content V of a 1,2-vinyl structure of the conjugated diene compound being between 20 wt % and 50 wt % and the remaining content of the conjugated diene compound being structures other than the 1,2-vinyl structure, and a polyolefin D, wherein a blending ratio (C/D) of the hydrogenated block copolymer and the polyolefin D is between 40/60 and 99/1.

5,549,965

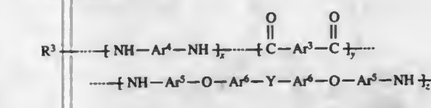
TEXTILE SHEET-LIKE STRUCTURE COMPRISING REINFORCING FIBERS AND THERMOPLASTIC ARAMID MATRIX FIBERS AND COMPOSITE MATERIAL MADE THEREFROM

Kari Heinrich, Grossaitingen; Hans-Joachim Brüning, Augsburg, and Elke Gebauer, Bobingen, all of, Germany, assignors to Hoechst Aktiengesellschaft, Germany

Continuation of Ser. No. 823,375, Jan. 21, 1992, abandoned. This application May 2, 1994, Ser. No. 236,671
Claims priority, application Germany, Jan. 22, 1991, 41 01 675.0
Int. Cl.[6] D03D *3/00*
U.S. Cl. 428—229 **21 Claims**

1. A semi-finished product for the production of composite materials comprising reinforcing fibers and matrix fibers, said reinforcing fibers comprising at least one of inorganic material and organic polymers, wherein the semi-finished product is in the form

of a textile sheet-like structure, wherein the reinforcing fibers employed have high tenacity and a high modulus of elasticity, and wherein said matrix fibers comprise aromatic polyether-amides of the formula II



(II)

in which Ar^3 is a divalent, substituted or unsubstituted aromatic radical whose free valences are in the para- or meta-position or in a comparable parallel or angled position to one another, Ar^4 has one of the meanings indicated for Ar^3 or is an —Ar^7—Z—Ar^7— group where Z is a —C(CH$_3$)$_2$— or —O—Ar^7—O— bridge and Ar^7 is a divalent aromatic radical, Ar^5 and Ar^6 are identical or different and are substituted or unsubstituted para- or meta-arylene radicals, Y is a —C(CH$_3$)$_2$—, —S— or —C(CF$_3$)$_2$— bridge, where

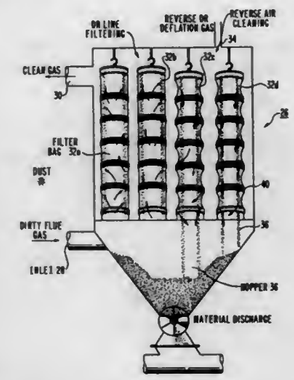
a) the polyether-amide has a mean molecular weight (number average) in the range from 5000 to 50,000,
b) the molecular weight is controlled specifically by non-stoichiometric addition of the monomer units, where the total of the mole fractions x, y and z is one, the total of x and z is not equal to y, and x can adopt the value zero, and
c) the ends of the polymer chain are blocked substantially completely by monofunctional radicals R^3 which do not react further in the polymer and, independently of one another, are identical or different.

5,549,966

FABRIC OF COMMINGLED FIBERGLASS AND POLYTETRAFLUOROETHYLENE

Robert L. Sassa, Newark, Del., assignor to W. L. Gore & Associates, Inc., Newark, Del.

Division of Ser. No. 33,678, Mar. 16, 1993, abandoned. This application Sep. 16, 1994, Ser. No. 307,539
Int. Cl.[6] D03D *3/00*
U.S. Cl. 428—229 **5 Claims**



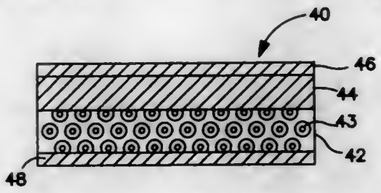
1. A fabric which comprises
multiple filaments of expanded polytetrafluoroethylene (PTFE);
multiple filaments of fiberglass, some of the fiberglass comprising fiberglass fragments;
wherein the filaments of expanded PTFE and fiberglass form a single strand fiber of commingled filaments having the filaments of fiberglass textured within the expanded PTFE filaments; and
wherein the fabric is formed by the combination of multiple strands of the fibers.

5,549,967

PAPERMAKERS' PRESS FABRIC WITH INCREASED CONTACT AREA

Hippolit Gstrein, Gloggnitz, Austria, assignor to Huyck Licensco, Inc., Wilmington, Del.

Filed May 4, 1995, Ser. No. 433,676
Int. Cl.[6] D03D *15/00;* **B32B** *5/26;31/00*
U.S. Cl. 428—229 **17 Claims**



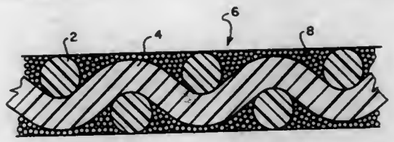
1. A press fabric for a papermaking machine comprising:
a base fabric of interwoven machine direction yarns and cross machine direction yarns, 10–100% of said machine direction yarns and cross machine direction yarns being monofilaments of bicomponent material, having a sheath/core configuration said base fabric being heat set to produce a matrix within the base fabric.

5,549,968

COMPRESSIBLE FABRIC SUBSTRATE

Joseph L. Byers, Inman; W. Toriran Flint, Spartanburg, both of S.C., and Richard C. Kerr, Rutherfordton, N.C., assignors to Reeves Brothers, Inc., Spartanburg, S.C.

Division of Ser. No. 116,819, Sep. 3, 1993, Pat. No. 5,334,418, which is a continuation-in-part of Ser. No. 794,261, Nov. 15, 1991, abandoned. This application Mar. 8, 1994, Ser. No. 208,163
Int. Cl.[6] B32B *5/24;5/28;33/00;* **B41N** *10/04*
U.S. Cl. 428—241 **22 Claims**



1. A compressible fabric comprising a plurality of warp and fill fibers or yarns forming a fabric substrate and a matrix material on at least one side of the fabric substrate in an amount sufficient to at least partially impregnate substantially all of the fibers, yarns, and interstices of the fabric substrate, the matrix material containing a plurality of cells therein in an amount sufficient to impart increased compressibility properties to the fabric, wherein the thickness of the partially impregnated fabric substrate is substantially the same as the unimpregnated fabric substrate.

5,549,969

ENHANCED SURFACE FOR GLASS FIBER REINFORCED PLASTICS

David M. Parish, Loveland, Ohio, assignor to Fibre Glass-Evercoat Company, Inc., Cincinnati, Ohio

Filed May 12, 1995, Ser. No. 440,069
Int. Cl.[6] B32B *5/16;7/00*
U.S. Cl. 428—241 **18 Claims**

1. A laminate comprising:
a fiber-reinforced thermoset substrate comprising a cured polyester resin or vinyl ester resin, or combinations thereof and from 5 to 85 percent by weight fibers, based on the weight of the substrate; and

a coating applied thereto, which coating as applied comprises:

a) a filler/glazing component comprising a mixture of from about 20% to about 50% by weight of a resin selected from the group consisting of vinyl ester resins and vinyl ester resins in combination with polyester resins, from about 5% to about 35% by weight of a sprayable filler selected from the group consisting of calcium carbonate, talc, and combinations thereof,

from about 1% to about 15% by weight of a mixture of thixotropic clays,

from about 0% to about 2% by weight activated fumed silica,

from about 1–10% by weight of a phosphosilicate,

from about 0–2% by weight of an accelerator, and from about 0% to about 20% by weight of an organic solvent, and

b) a catalyst component, wherein said coating has a thickness of up to 9 mils without sagging, running or cracking.

5,549,970

Patent Not Issued For This Number

5,549,971

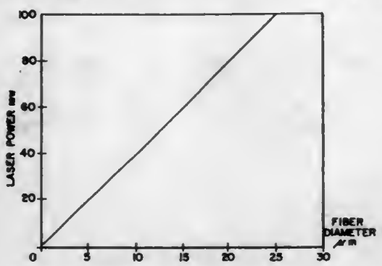
LASER ASSISTED FIBER GROWTH

Paul C. Nordine, Kansas City, Mo., assignor to Clemson University, Clemson, S.C.

Continuation of Ser. No. 835,292, Feb. 13, 1992, Pat. No. 5,336,360, which is a division of Ser. No. 515,665, Apr. 25, 1990, Pat. No. 5,126,200, which is a continuation of Ser. No. 78,316, Jul. 30, 1987, abandoned, which is a continuation-in-part of Ser. No. 897,710, Aug. 18, 1986, abandoned. This application Aug. 9, 1994, Ser. No. 287,947

Int. Cl.[6] D02G *3/00*

U.S. Cl. 428—364 **9 Claims**



1. A substrate free fiber consisting essentially of zinc selenide, said fiber having a diameter of about 10 micrometers to about 170 micrometers.

5,549,972

SILVER-PLATED FIBERS OF POLY(P-PHENYLENE TEREPHTHALAMIDE) AND A PROCESS FOR MAKING THEM

Che-Hsiung Hsu, and Wilfred Sweeny, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Division of Ser. No. 194,594, Feb. 10, 1994, abandoned. This application May 8, 1995, Ser. No. 436,849

Int. Cl.[6] D06M *101/36*

U.S. Cl. 428—398 **2 Claims**

1. Fibers having a core of PPD-T with a sulfur content of greater than 0.5 weight percent based on the total weight of the PPD-T, an outer layer of a continuous coating of silver, and a zone of impregnation between the core and the outer layer, 0.01 to 3 micrometers thick.



5,549,973

METAL, ALLOY, OR METAL CARBIDE NANOPARTICLES AND A PROCESS FOR FORMING SAME

Sara Majetich; Michael McHenry; John H. Scott; Elaine Brunsman, and Scott Kirkpatrick, all of Pittsburgh, Pa., assignors to Carnegie Mellon University, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 85,298, Jun. 30, 1993, Pat. No. 5,456,986. This application Jun. 24, 1994, Ser. No. 265,008

Int. Cl.[6] B32B *5/16;15/02*

U.S. Cl. 428—403 **10 Claims**

1. A metal alloy nanoparticle having a diameter less than 50 nm and having a coating consisting essentially of elemental carbon formed by preparing a graphite rod, said graphite rod being packed with said metal alloy, or an oxide of said metal alloy, subjecting said packed graphite rod to a carbon arc discharge to produce soot containing metal alloy or metal-alloy carbide nanoparticles having said coating and non-magnetic species, and applying a magnetic field gradient to said soot to separate said metal alloy or metal alloy carbide nanoparticles from said non-magnetic species.

5,549,974

METHODS FOR THE SOLID PHASE SYNTHESIS OF THIAZOLIDINONES, METATHIAZANONES, AND DERIVATIVES THEREOF

Christopher P. Holmes, Sunnyvale, Calif., assignor to AFFYMAX Technologies NV, Curacao, Netherlands Antilles

Filed Jun. 23, 1994, Ser. No. 265,090

Int. Cl.[6] C07D *279/06;277/10;* B32B *15/04;17/06*

U.S. Cl. 428—403 **11 Claims**

1. A library of 4-thiazolidinones, metathiazinones, or derivatives thereof comprising a plurality of different compounds, each compound covalently linked to a solid support, wherein each of said compounds comprises at least one 4-thiazolidinone group, metathiazinone group, or a group derived from a 4-thiazolidinone group or metathiazinone group which group is prepared by the method which comprises:

(a) on a surface of a solid support, providing an amine component having the formula:

$$R—NH_2,$$

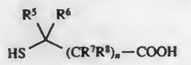
wherein R is selected from the group consisting of alkyl, alkoxy, amino, aryl, aryloxy, heteroaryl, and arylalkyl or salts thereof;

(b) treating the amine component with a carbonyl component having a formula:



wherein R^3 is hydrogen and R^4 is selected from the groups consisting of consisting of alkyl, aryl, heteroaryl, and arylalkyl;

and a thiol component having a formula:



wherein R^5, R^6, R^7, and R^8 are independently selected from the groups consisting of hydrogen, alkyl, alkoxy, aryl, aryloxy, heteroaryl, carboxyl, carboxyalkyl, carboxyaryl, and arylalkyl and n is either 0 or 1 wherein n being 0 represents a valence bond;

under conditions effective to cyclize the components and form a solid support-bound 4-thiazolidinone, metathiazinone, or a derivative thereof and

provided that at least one of the following conditions is satisfied:

i) at least two different amine components are used

ii) at least two different carbonyl components are used;

iii) at least two different thiol components are used; or

iv) at least two different sets of conditions effective to cyclize the components are used.

5,549,975

COATED TOOL AND CUTTING PROCESS

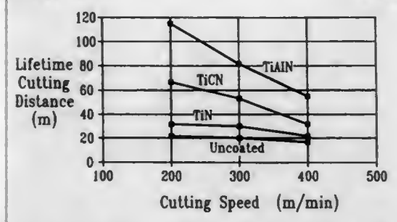
Hans Schulz, Balzers, Liechtenstein, and Josef Maushart, Solothurn, Switzerland, assignors to Balzers Aktiengesellschaft, Balzers, Liechtenstein

Filed Jul. 20, 1994, Ser. No. 278,011

Claims priority, application Switzerland, Jul. 29, 1993, 02 290/93

Int. Cl.[6] B22F *7/04*

U.S. Cl. 428—553 **4 Claims**



1. A coated tool consisting of a cermet body and a refining layer thereon, whereby the refining layer is a wear resistant layer of (Ti,Me)N, wherein Me is at least one metal which forms a stable oxide at a temperature above 700° C.

5,549,976

REINFORCED COMPOSITE MATERIAL INCLUDING A MAGNESIUM ALLOY MATRIX AND GRAHITE OR CARBON FIBERS

Henri Abiven, Oinville/Montcient; Lionel Picquet, Albert; Gilles Claveyrolas, Puteaux; Jean-Claude Viala, Villeurbanne, and Jean Bouix, Lyons, all of, France, assignors to Aerospatiale Societe Nationale Industrielle, France

Continuation of Ser. No. 120,249, Sep. 10, 1993, abandoned. This application Apr. 5, 1995, Ser. No. 417,444

Claims priority, application France, Sep. 10, 1992, 92 10797

Int. Cl.[6] C22C *1/09*

U.S. Cl. 428—608 **8 Claims**

1. A composite comprising a magnesium alloy matrix including zirconium, the magnesium alloy matrix of the prepared composite comprising 0.3 to 1% by weight zirconium, and a reinforcement including graphite or carbon fibers having a diameter d dispersed in said matrix, said fibers being coated with a continuous zirconium carbide layer including magnesium in solid solution, said zirconium carbide layer having an average thickness of at least 0.004 d, further characterized in that the volume fraction of the fibers is 45 to 55 percent of the composite material.

5,549,977

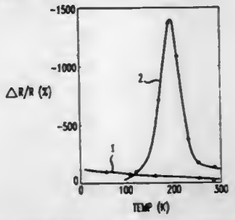
ARTICLE COMPRISING MAGNETORESISTIVE MATERIAL

Sungho Jin, Millington; Mark T. McCormack, Summit, and Ramamoorthy Ramesh, Tinton Falls, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 154,766, Nov. 18, 1993, abandoned. This application Apr. 15, 1994, Ser. No. 228,168

Int. Cl.[6] G11B *5/66;* B05D *5/12;* C23C *14/00*

U.S. Cl. 428—692 **18 Claims**



1. An article comprising a layer of a material that exhibits magnetoresistance at 25° C. and has nominal composition $XMnO_y$, where X is La and at least one member of the group consisting of Ca, Sr and Ba;

CHARACTERIZED IN THAT

the layer of material has a magnetoresistance ratio having an absolute value of at least 200% at 25° C., the magnetoresistance ratio being defined as $(R(H)—R_o)/R(H)$, where R(H) is the resistance of the layer in an applied magnetic field H of magnitude 6 Tesla, and R_o is the resistance of the layer in the absence of an applied magnetic field; wherein y is selected to provide the layer with said magnetoresistance ratio.

5,549,978

MAGNETORESISTANCE EFFECT ELEMENT

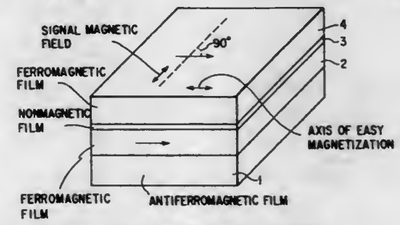
Hitoshi Iwasaki; Yuichi Ohsawa; Reiko Kondoh, all of Yokohama; Susumu Hashimoto, Ebina; Atsuhito Sawabe, Yokosuka; Yuzo Kamiguchi, and Masashi Sahashi, both of Yokohama, all of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 1, 1993, Ser. No. 144,258

Claims priority, application Japan, Oct. 30, 1992, 4-315648; Mar. 12, 1993, 5-078919; Mar. 15, 1993, 5-053605; Mar. 15, 1993, 5-053612

Int. Cl.[6] G11B *5/66;* B32B *9/00*

U.S. Cl. 428—692 **17 Claims**



1. A magnetoresistance effect element comprising:

a substrate;

a stacked film formed on said substrate, and

a pair of leads to supply current to said stacked film,

said stacked film being comprised of a first ferromagnetic film, a second ferromagnetic film and a nonmagnetic film disposed between said first and second ferromagnetic films wherein said first and second ferromagnetic films are not substantially coupled with each other, a direction of magnetization of said first ferromagnetic film is pinned, said second ferromagnetic film is a field-detecting film, the magnetization of said first ferromagnetic film does not substantially rotate with lower signal magnetic fields than the magnetization of said second ferromagnetic film does, said second ferromagnetic film comprises a Co alloy having a fcc crystal structure, and a (111) plane of said stacked film is oriented in a direction perpendicular to a surface of said stacked film,

wherein said nonmagnetic film comprises Cu, Al, Pd, Pt, Rh, Ru, Ir, Au, Ag, a CuPd alloy, a CuPt alloy, a CuAu alloy or a CuNi alloy, wherein said first ferromagnetic film comprises Co, a CoFe-alloy, a CoNi alloy, a NiFe alloy, a NiFeCo alloy or Fe_8N, and wherein said second ferromagnetic film comprises a CoFe alloy, a CoNi alloy or a NiFeCo alloy.

5,549,979

MAGNETIC RECORDING MEDIUM

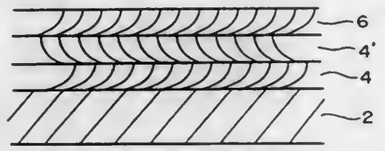
Shinji Miyazaki; Mitsuru Takai, and Koji Kobayashi, all of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Nov. 29, 1993, Ser. No. 159,422

Claims priority, application Japan, Mar. 12, 1992, 4-350045; Nov. 9, 1993, 5-302215

Int. Cl.[6] G11B *5/66*

U.S. Cl. 428—694 T **2 Claims**



1. A magnetic recording medium comprising a nonmagnetic base, an SiO_x (x=1.2–1.85) undercoat, an under-layer ferromagnetic metal film consisting of a Co-Ni alloy, an SiO_x (x=1.2–1.8) intermediate layer, an upper-layer ferromagnetic metal film consisting of a Co-Ni alloy, a diamond-like carbon protective film having a carbon content of 60–70 at %, and a lubricant layer, formed in the order of mention, the angles of vapor deposition as measured from lines normal to surfaces of the upper- and under-layer ferromagnetic metal films being all decreasing toward the upper surfaces within the range from 40 to 80 degrees and the upper-layer ferromagnetic metal film consisting of 85 to 95 percent by weight of Co and the balance Ni and the under-layer ferromagnetic metal consists of 70 to 85 percent by weight of Co and the balance Ni.

5,549,980

CEMENTED CARBIDE WITH BINDER PHASE ENRICHED SURFACE ZONE

Ake Ostlund, Taby; Ulf Oscarsson, Tumba; Per Gustafson, Huddinge, and Leif Akesson, Alvsjo, all of, Sweden, assignors to Sandvik AB, Sandviken, Sweden

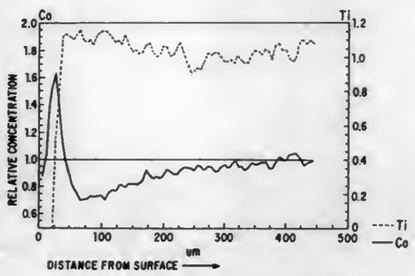
Continuation of Ser. No. 19,701, Feb. 19, 1993, abandoned. This application Jun. 10, 1994, Ser. No. 258,598

Claims priority, application Sweden, Feb. 21, 1992, 9200530

Int. Cl.[6] B32B *15/04*

U.S. Cl. 428—698 **6 Claims**

1. A cemented carbide insert with improved toughness and resistance against plastic deformation containing WC and cubic phases of carbide and/or carbonitride in a binder phase based on Co and/or Ni with a binder phase enriched surface zone wherein



the total amount of cubic phase expressed as the content of metallic elements that forms cubic carbides is between 6 and 15 weight-%, the content of cubic phases in the binder phase enriched zone, other than the surface, is essentially zero and in a zone <300 μm thick below the binder phase enriched surface zone, the binder phase content is 0.85–1 times the binder phase content in the inner portion of the insert with the content of cubic phases essentially constant and equal to the content of cubic phases in the inner portion of the insert.

5,549,981

ELECTROCHEMICAL STORAGE DEVICE

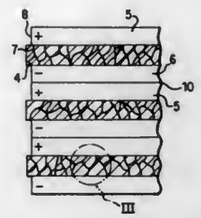
Martha Maly-Schreiber, and Robert A. Huggins, both of Ulm, Germany, assignors to Daimler-Benz AG, Germany

Filed Mar. 20, 1995, Ser. No. 406,477

Claims priority, application Germany, Mar. 18, 1994, 44 09 268.7

Int. Cl.[6] H01M *14/00*

U.S. Cl. 429—7 **14 Claims**



1. Electrochemical storage device having a plurality of individual cells connected in series, each of the individual cells having spatially separated positive and negative electrodes, with at least an electrolyte and an intermediate part ensuring the spacing of the electrodes arranged therebetween, wherein:

each cell has a protective element, which is formed from a solid material which makes electrical contact with the positive and negative electrodes within the individual cell, providing a nonlinear voltage-dependent electrical connection between said electrodes;

said solid material comprises a varistor material which has a nonlinear current voltage characteristic wherein, when a voltage applied to said cell is greater than a critical voltage for the cell, electrical resistance of the protective element is smaller than a resistance between the electrodes without the protective element, and when a voltage applied to said cell is smaller than said critical voltage, the electrical resistance of the protective element is greater than the resistance between the electrodes without the protective element;

the critical voltage is smaller than a decomposition voltage of the associated individual cell; and

the protective element is integrated into said intermediate part ensuring the spacing of the electrodes.

5,549,982

FUEL CELL

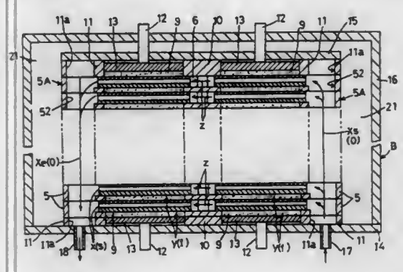
Kosuke Akagi, Ikoma, Japan, assignor to Osaka Gas Co., Ltd., Japan

Filed Sep. 29, 1995, Ser. No. 537,136

Claims priority, application Japan, Oct. 3, 1994, 6-238968; Jun. 1, 1995, 7-134898

Int. Cl.[6] H01M *8/04*

U.S. Cl. 429—30 **18 Claims**



1. A fuel cell comprising:

a rectangular plate-like cell including a solid electrolyte layer having an oxygen electrode on one side thereof and a fuel electrode on the other side thereof, and a flow-passage forming member affixed to one of said sides of the electrolyte layer;

a cell layer including a plurality of said cells juxtaposed to each other in the direction of plane of the cell, with opened sides of adjacent cells, to which inner cell flow passages are opened, being aligned in opposition to each other;

a cell assembly including a plurality of said cell layers stacked one above another with a set distance therebetween;

said inner cell flow passages being formed by said flow-passage forming member, and being opened on one pair of opposed opened sides of the cell and closed on the other pair of oppposed closed sides of the cell;

an inter-cell flow passaage formed between the cells adjacent each other in the stacking direction of the cell layer, said inter-cell flow passage being closed on said opposed opened sides of the cell and opened on said opposed closed sides of the cell;

a cell connector member for supporting the adjacent cells of each cell layer and supporting also adjacents cells in the stacking direction of the cell layers with a set distance therebetween, said cell connector member interconnecting said inner cell flow passages of the adjacent cells of each cell layer and forming a connecting flow passage partitioned from said inter-cell flow passage;

said cell connector member comprising a cell connecting plate member including a cutout portion extending from one side edge to the opposite side edge thereof, and a pair of partition wall portions provided on opposed sides of the cutout portion and extending along the entire length of the cutout portion;

said cutout portion allowing, at each of opposed ends thereof, introduction of said opened side of the cell, said cutout portion having a cutting depth about the same as the thickness of the cell; and

an abutment face defined in each end face of the partition wall portions disposed on the opposed sides of the cutout portion, said abutment face coming into sealed abutment against said closed side of the cell adjacent the opened side thereof when the closed side is fitted into an end of the cutout portion.

5,549,983

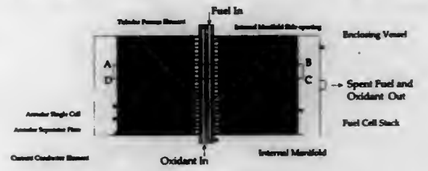
COFLOW PLANAR FUEL CELL STACK CONSTRUCTION FOR SOLID ELECTROLYTES

Jean Yamanis, Morristown, N.J., assignor to AlliedSignal Inc., Morris Township, N.J.

Filed Jan. 22, 1996, Ser. No. 589,226

Int. Cl.[6] H01M *8/10*

U.S. Cl. 429—32 **33 Claims**



1. A fuel cell stack, comprising:

a. an internal, longitudinal manifold, said manifold having at least two separate, longitudinal, interior cavities, and a corresponding number of sets of side openings, each of said sets communicating with a single one of said interior cavities;

b. a plurality of single cells, each of said cells comprising an annular solid electrolyte plate sandwiched between an annular solid anode plate and an annular solid cathode plate, wherein the inner cylindrical surface of each of said cells is bonded to the exterior surface of said manifold;

c. a plurality of annular separator plates, wherein the inner cylindrical surface of each of said plates is bonded to the exterior surface of said manifold at a distance of at least 0.1 mm away from said single cells;

d. a plurality of tubular porous elements, wherein each of said elements is bonded to one flat surface of one of said single cells and the proximate flat surface of the next of said single cells-in-the-sequence separator plate, thereby creating an annular void space between said porous element and said manifold wherein each said annular void space communicates with one of the interior cavities of said mainifold through a side opening of said manifold; and

e. a plurality of current conductor elements, said elements having a skeletal structure and being distributed in the space defined by each single cell and the adjacent separator plate, said space being exterior to said tubular porous elements.

5,549,984

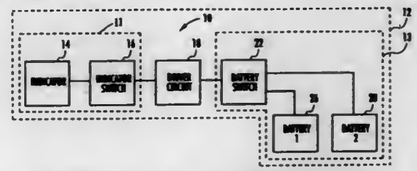
CONTROL AND INDICATOR CIRCUIT FOR A DUAL BATTERY SYSTEM

Thomas J. Dougherty, Waukesha, Wis., assignor to Globe-Union Inc., Milwaukee, Wis.

Filed Jul. 25, 1994, Ser. No. 280,053

Int. Cl.[6] H01M *2/00*

U.S. Cl. 429—61 **6 Claims**



1. A dual battery system for an automobile, comprising:

a first battery having a first positive terminal and a second negative terminal;

a second battery having a second positive terminal and a second negative terminal, the second negative terminal electrically communicating with the first negative terminal;

a transistor having a gate, a drain coupled to the first positive terminal, and a source coupled to the second positive terminal;

an indicator; and a driver circuit responsive to a first state of the indicator for providing a first control signal to the gate and to a second state of the indicator for providing a second control signal to the gate.

5,549,985

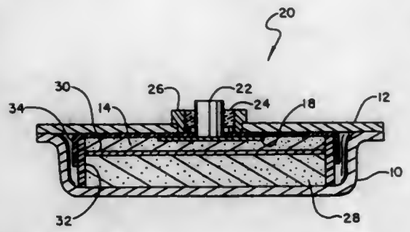
METHOD OF ASSEMBLING ELECTROCHEMICAL CELLS OF NOVEL CONSTRUCTION

Bernard F. Heller, Fridley; Craig L. Schmidt, Eagan; Thomas M. Nutzman, Andover, and Joseph F. Lessar, Coon Rapids, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Division of Ser. No. 54,778, Apr. 27, 1993. This application Jun. 2, 1995, Ser. No. 459,571

Int. Cl.[6] H01M *2/20*

U.S. Cl. 429—157 **6 Claims**



1. A button cell comprised of preassembled active components within a retaining ring, the cell comprising;

top and bottom metal enclosure portions, the top portion including a sealed pin feedthrough structure extending through the top portion to an interior surface thereof, an inverted plastic insulator cup positioned against the interior surface thereof with the pin extending therethrough, and a collector disk attached to an interior end of the pin, the disk being positioned against a bottom of the inverted insulator cup;

a retaining ring subassembly including a flange on one edge, enclosing the ring, lithium anode layer positioned on the flanged edge, a P2VP film against an interior surface of the anode layer within the ring and a solidified layer of cathode I_2/P2VP against the film, the ring subassembly being positioned with the anode surface and ring flange against the bottom of the insulator cup whereby the anode contacts the collector and the flange on the ring positions the subassembly in the insulator cup, and

the bottom enclosure portion is positioned against the cathode surface and secured to the top portion to form a sealed enclosure.

5,549,986

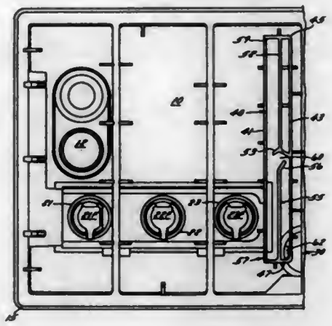
BATTERY COVER AND MANIFOLD SYSTEM PROVIDING SPEW RESISTANCE AND EXPLOSION ATTENUATION CAPABILITIES

Jerome R. Heiman, Campbellsport, and Gerald D. Slayton, South Milwaukee, both of Wis., assignors to Globe-Union, Inc., Milwaukee, Wis.

Filed Jun. 15, 1994, Ser. No. 260,063

Int. Cl.[6] H01M *2/08*

U.S. Cl. 429—175 **28 Claims**



1. A battery cover for a battery casing having a plurality of electrolyte containing cells, the cover having a longitudinal axis and a plurality of spaced apart fill holes for the cells arranged in a line parallel to the longitudinal axis, the cover having an upper surface and a lower surface and an explosion attenuation device mounted therein, an exhaust passageway extending from the attenuation device, the cover further comprising at least one elongate passageway located on the lower surface and having a pair of spaced apart inlet openings and an outlet opening in gaseous communication with the attenuation device, the elongate passageway being arranged perpendicularly to the longitudinal axis.

5,549,987

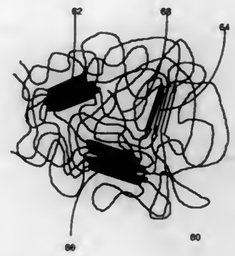
POLYURETHANE BASED ELECTROLYTES FOR ELECTROCHEMICAL CELLS AND ELECTROCHEMICAL CELLS USING SAME

Ganesh Venugopal, Plantation; Veronica R. Reichert, Sunrise, and Jinshan Zhang, Coral Springs, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 22, 1994, Ser. No. 279,131

Int. Cl.[6] H01M *10/40*

U.S. Cl. 429—188 **14 Claims.**



1. An electrolyte system for use in an electrochemical cell having positive and negative electrodes, said electrolyte system comprising:

a polymeric support structure fabricated of a segmented block copolymer comprising a first block consisting of hydroxyl terminated polyesters and polyethers selected from the group consisting of polybutylene adipate, polyethylene adipate, polycaprolactone, and combinations thereof, a second block consisting of diisocyanates resulting from the condensation products of diphenyl urethane, diisocyanate and a chain extender selected from the group consisting of butane diol, ethylene glycol, and 4–4' methylene bis(2-chloroaniline), said first and second blocks being joined by a urethane linkage interposed therebetween; and

an electrochemically active electrolyte species dispersed in said polymeric support structure.

5,549,988

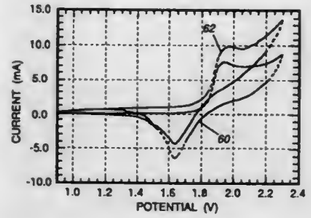
POLYMER ELECTROLYTES AND ELECTROCHEMICAL CELLS USING SAME

Veronica R. Reichert, Sunrise; Ganesh Venugopal, Plantation, and Florence O. Eschbach, Sunrise, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 10, 1995, Ser. No. 402,426

Int. Cl.[6] H01M *6/18;6/22*

U.S. Cl. 429—192 **9 Claims**



1. An aqueous electrolyte system for an electrochemical cell, comprising a poly(2-hydroxyethylmethacrylate) film matrix having a KOH electrolyte incorporated thereinto.

5,549,989

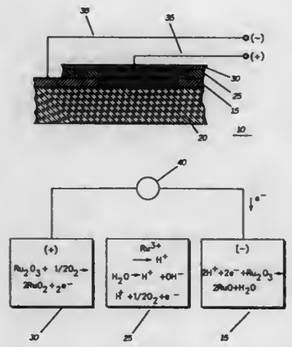
ELECTROCHEMICAL CAPACITOR HAVING A PROTON CONDUCTING SOLID ELECTROLYTE

Anaba A. Anani, Lauderhill, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 20, 1993, Ser. No. 169,231

Int. Cl.[6] H01M *6/18*

U.S. Cl. 429—193 **13 Claims**



1. An electrochemical capacitor for storing an electrical charge from an external source, comprising:

a positive electrode and a negative electrode, each comprising a metal oxide;

a solid, protonically-conducting electrolyte disposed between the positive and negative electrodes and in contact with each electrode, said solid protonically-conducting electrolyte selected from the group consisting of pseudoboehmite, tetramethyl ammonium pentahydrate, Li_5AlO_4, and combinations thereof; and

the electrochemical capacitor capable of storing the electrical charge by changing the oxidation state of the metal oxide.

5,549,990

BATTERY ELEMENT CONTAINING POROUS PARTICLES

Thomas J. Clough, Grover Beach; Victor L. Grosvenor, Topanga, and Naum Pinsky, Thousand Oaks, all of Calif., assignors to Ensci Inc, Pismo Beach, Calif.

Division of Ser. No. 874,178, Apr. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 770,557, Oct. 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 621,660, Dec. 3, 1990, Pat. No. 5,204,140, which is a continuation-in-part of Ser. No. 348,789, May 8, 1989, Pat. No. 5,167,820, Ser. No. 348,788, May 8, 1989, Pat. No. 5,039,845, Ser. No. 348,787, May 8, 1989, abandoned, and Ser. No. 348,786, May 8, 1989, Pat. No. 5,182,165, each which is a continuation-in-part of Ser. No. 272,517, Nov. 17, 1988, abandoned, and Ser. No. 272,539, Nov. 17, 1988, abandoned, each which is a continuation-in-part of Ser. No. 82,277, Aug. 6, 1987, Pat. No. 4,787,125, which is a division of Ser. No. 843,047, Mar. 24, 1986, Pat. No. 4,713,306. This application Aug. 19, 1994, Ser. No. 293,699

Int. Cl.[6] H01M *4/14;10/08*

U.S. Cl. 429—204 **19 Claims**

1. A battery element useful as at least a portion of the positive plate in a lead acid battery, comprising a plurality of acid resistant three-dimensional porous particles having sulfuric acid electrolyte contained in the pores of said porous particles and a positive active material, provided that at least a portion of said porous particles are incorporated into said material and said porosity allows for participation of the sulfuric acid electrolyte contained in the pores of said particles during discharge of the positive active material.

5,549,991

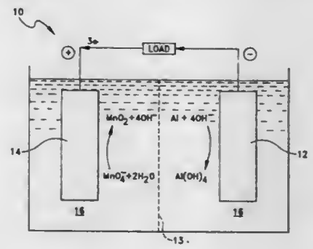
ALUMINUM PERMANGANATE BATTERY

Stuart L. Licht, Charlton City, Mass., and Catherine L. Marsh, Exeter, R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 30, 1993, Ser. No. 168,788

Int. Cl.[6] H01M *4/58*

U.S. Cl. 429—218 **28 Claims**



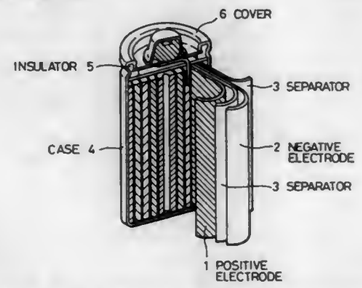
1. An electrical storage cell comprising two electrochemical half cells positioned in electrochemical contact with one another, at least one of said two half cells comprising:
an aqueous salt solution comprising permanganate anions;
a current transferring electrocatalytic electrode positioned in electron-transferring contact with said aqueous solution; and
the remaining half cell of said half two cells comprising a pure aluminum or aluminum alloy anode material which is in direct contact with said aqueous solution of permanganate anions.

5,549,992

PREPARING METHOD FOR A NICKEL HYDROXIDE FOR A NICKEL ELECTRODE, A MANUFACTURING METHOD FOR THE NICKEL ELECTRODE, AND AN ALKALINE SECONDARY BATTERY INCORPORATING THE NICKEL ELECTRODE THEREIN

Noriyasu Iwane, Tokyo, and Haruo Sawa, Yokohama, both of, Japan, assignors to Furukawa Denchi Kabushiki Kaisha, Kanagawa, Japan

Filed Oct. 11, 1994, Ser. No. 320,863
Claims priority, application Japan, Oct. 25, 1993, 5-266544
Int. Cl.[6] H01M *4/02*
U.S. Cl. 429—223 **13 Claims**



5. A method for manufacturing a nickel electrode, comprising:
preparing nickel hydroxide containing metal ions, other than nickel, solidly dissolved therein and then
eluting a partial amount of the metal ions from the nickel hydroxide, thereby preparing a nickel hydroxide to be filled into a current collector;
mixing said nickel hydroxide to be filled into a current collector, a conductive material, a binder, and a thickener, to prepare an active material paste; and
filling the porous current collector with the active material paste, and molding the nickel electrode by heating and pressurization.

5,549,993

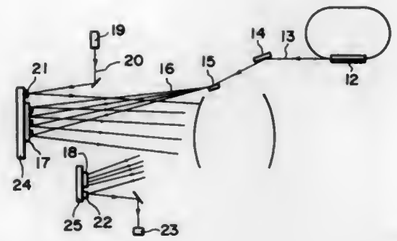
Patent Not Issued For This Number

5,549,994

EXPOSURE APPARATUS AND REFLECTION TYPE MASK TO BE USED IN THE SAME

Yutaka Watanabe, Isehara, and Masami Hayashida, Yokohama, both of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 24, 1995, Ser. No. 393,676
Claims priority, application Japan, Mar. 2, 1994, 6-031712
Int. Cl.[6] G03F *9/00*
U.S. Cl. 430—5 **10 Claims**



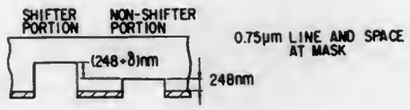
1. A reflection mask, comprising:
a reflective portion having a multilayered film;
a non-reflective portion having an absorbing material and being formed on the multilayer film; and
a non-reflective portion being defined by destroying the regularity of the periodic structure of the multilayered film.

5,549,995

PHOTOMASK AND METHOD OF MANUFACTURING THE SAME

Satoshi Tanaka, Kawasaki; Soichi Inoue, and Hiroko Nakamura, both of Yokohama, all of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 13, 1995, Ser. No. 402,656
Claims priority, application Japan, Mar. 15, 1994, 6-043618; Sep. 16, 1994, 6-222190
Int. Cl.[6] G03F *9/00*
U.S. Cl. 430—5 **8 Claims**



1. A transmitting photomask comprising:
an optically transparent substrate having a major surface, on which a plurality of recesses are selectively formed, and transmitting exposure light;
a plurality of opaque materials formed on portions of the major surface of said transparent substrate, other than said plurality of recesses, and preventing the exposure light from passing therethrough; and
a plurality of transmitting portions constituted of said plurality of recesses,
said plurality of recesses each having side walls formed perpendicular to the major surface of said transparent substrate so as to substantially coincide with a corresponding end face of each of said plurality of opaque materials, and adjacent transmitting portions having different depths,
wherein, when a depth of a recess of one of said adjacent transmitting portions is D_1, a depth of a recess of the other of said adjacent transmitting portions is D_2, a refractive index of said transmitting substrate is n, a wavelength of said exposure light is X, and m is a positive integer, the depths D_1 and D_2 are set so as to substantially satisfy following equations:

$D_1=(2m-1)\lambda/\{2(n+1)\{$

$D_2=m\lambda/(n-1).$

5,549,996

METHOD FOR PROVIDING HARD COPIES OF RADIOLOGICAL IMAGES

Romain Bollen, Sint-Truiden, Belgium, assignor to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Mar. 14, 1995, Ser. No. 404,085
Claims priority, application Belgium, Apr. 22, 1994, 94201111
Int. Cl.[6] G03C *11/00;* **G06F** *15/00;* **G06K** *9/62*
U.S. Cl. 430—21 **15 Claims**

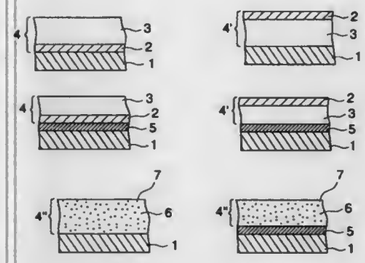
1. A method for representing X-ray images on a recording medium comprising an image recording layer and an opaque reflecting support characterized by the steps of:
(i) recording said image directly in an digital form or recording said image as an analog image and transforming said analog image into a digital image,
(ii) determining a raw image histogram of said digital image
(iii) determining from said histogram the width of a diagnostically useful window
(iv) dividing said useful window into several smaller windows, the width of said smaller windows being adapted to the dynamic range of said recording medium
(v) feeding digital image data of each of said smaller windows to an imager
(vi) printing the information content of each of said smaller windows onto said image recording medium.

5,549,997

ELECTROPHOTOGRAPHIC PHOTORECEPTOR

Asao Matsushima; Takeo Ooshiba; Yoshihiko Etoh, all of Hachioji; Akira Kinoshita, Hino; Tomoko Suzuki, Hino, and Tomoo Sakimura, Hino, all of, Japan, assignors to Konica Corporation, Tokyo, Japan

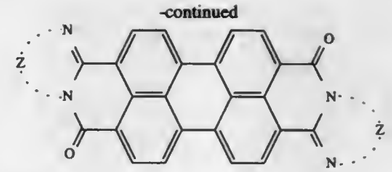
Filed Feb. 23, 1995, Ser. No. 393,352
Claims priority, application Japan, Feb. 28, 1994, 6-030140; Mar. 17, 1994, 6-047239; May 12, 1994, 6-098850
Int. Cl.[6] G03G *5/047;5/09*
U.S. Cl. 430—59 **20 Claims**



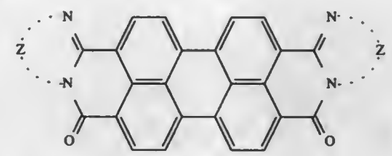
1. An electrophotographic photoreceptor comprising a carrier generation material selected from the group consisting of the following Formulas 1 and 2 having peaks at 2θ=6.3°, 12.4°, 25.3° and 27.1° in the Bragg angle (2θ±0.2°) as measured by X-ray diffraction under radiation of Cu-kα rays; said peak of 12.4° has a maximum intensity and has a half width of 0.65° or more; no peak being present at 11.5°; and
a carrier transportation material selected from the group consisting of the following Formulas 3, 4, 5 and 6;

Formula 1:

-continued

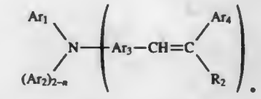


Formula 2:



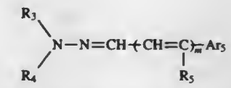
wherein Z represents an atomic group necessary to form a substituted or unsubstituted heterocyclic ring;

Formula 3:



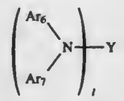
wherein Ar_1, Ar_2, Ar_3, and Ar_4 each represent a substituted or unsubstituted aromatic hydrocarbon group or heterocyclic group; R_2 is a hydrogen atom or a substituted or unsubstituted aromatic hydrocarbon group or heterocyclic group; n is 1 or 2; and Ar_4 and R_2 may combine with each other;

Formula 4:



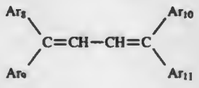
wherein R_3 and R_4 each represent a substituted or unsubstituted aromatic hydrocarbon group, heterocyclic group or alkyl group, which may combine with one another; R_5 is a substituted or unsubstituted aromatic hydrocarbon group, heterocyclic group or alkyl group, Ar_5 is a substituted or unsubstituted aromatic hydrocarbon group or heterocyclic group; and m is 0 or 1;

Formula 5:



wherein Y is a substituted or unsubstituted benzene, naphthalene, pyrene, fluorene, carbazole or 4,4' -alkylidene diphenyl group; Ar_6 and Ar_7 each represent a substituted or unsubstituted aromatic hydrocarbon group or heterocyclic group, and l is 1 to 3;

Formula 6:



wherein Ar_8, Ar_9, Ar_{10} and Ar_{11} each represent a substituted or unsubstituted aromatic hydrocarbon group or heterocyclic group.

2. The electrophotographic photoreceptor of claim 1 comprising a conductive support and provided thereon an intermediate layer, a carrier generation layer, and a carrier transport layer, wherein the carrier generation layer contains said carrier generation material comprising a perylene pigment selected from the group consisting of Formulas 1 and 2, and the carrier transportation layer contains said carrier transportation material selected from the group consisting of Formulas 3, 4, 5 and 6.

5,549,998

POLYMERIZATION PROCESS AND TONER COMPOSITIONS THEREFROM

Michael K. Georges, Guelph; Richard P. N. Veregin, Mississauga; Peter M. Kazmaier, Mississauga, and Gordon K. Hamer, Mississauga, all of, Canada, assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 181,134, Jan. 13, 1994, Pat. No. 5,401,804, which is a division of Ser. No. 976,604, Nov. 16, 1992, Pat. No. 5,322,912. This application Dec. 23, 1994, Ser. No. 363,083

Int. Cl.[6] G03G *9/08*

U.S. Cl. 430—109 **16 Claims**

1. A toner composition comprised of pigment particles, and resin comprised of at least one polymer or copolymer obtained by a free radical polymerization process comprising:

heating a mixture of a free radical initiator, a stable free radical agent, and at least one polymerizable monomer compound to form said polymer or copolymer with a high monomer to polymer conversion;

cooling said mixture;

optionally isolating said polymer or copolymer; and

optionally washing and drying said polymer or copolymer.

5,549,999

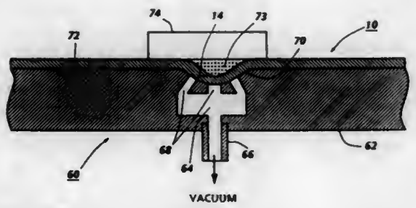
PROCESS FOR COATING BELT SEAMS

Eugene A. Swain, and John J. Darcy, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 27, 1990, Ser. No. 634,365

Int. Cl.[6] G03G *5/00;* **B05D** *1/36;* **B65H** *69/02;* **B32B** *31/20*

U.S. Cl. 430—127 **4 Claims**



1. A process for coating flexible belt welded lap joint seams comprising providing a rectangular flexible web comprising a thermoplastic substrate and at least one imaging layer having an outer imaging surface, overlapping opposite ends of said web to form an overlapped seam, ultrasonically welding the overlapping ends together to form a flexible belt having an outwardly facing imaging surface and a welded lap joint seam, bending said belt in the shape of a trough with said welded lap joint seam at the bottom of said trough, filing said trough with a liquid coating to cover said welded lap joint, to form a coating strip having feathered edges and a thickness between about 5 micrometers and about 200 micrometers above the average surface of said welded lap joint seam at the centerline of said welded lap joint seam, said liquid coating comprising a hardenable film forming polymer substantially free of fugitive solvent, the outer surface of said imaging layer having a surface energy exceeding the surface energy of said hardenable film forming polymer by at least about 30 percent based on the surface energy of said hardenable film forming polymer, and hardening said hardenable film forming polymer to form a smooth solid coating strip on said welded lap joint seam.

5,550,000

PROCESS FOR PRODUCING ELECTROPHOTOGRAPHIC PHOTORECEPTOR

Ichiro Takegawa; Shigeto Hashiba; Hiroshi Miyamoto, and Nobuyuki Ichizawa, all of Minami Ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Apr. 6, 1995, Ser. No. 417,886

Claims priority, application Japan, Jun. 30, 1994, 6-170364

Int. Cl.[6] G03G *5/06;5/14;5/047*

U.S. Cl. 430—131 **7 Claims**

1. A process for producing an electrophotographic photoreceptor which, comprises coating on a substrate a functional layer-forming coating solution containing a compound which undergoes polycondensation upon hydrolysis, adjusting a temperature of said substrate having the coated layer such that relationship (1) is satisfied, and then moistening said coated layer at a temperature of 30° C. to 180° C. in an atmosphere of a dew point of 25° C. to 80° C.:

$$DP \leqq ST \leqq DP+40° \text{ C.} \quad (1)$$

wherein DP represents the dew point upon said moistening and ST represents the temperature of the substrate just before said moistening.

5,550,001

LITHOGRAPHIC PRINTING PLATES CONTAINING FUNCTIONAL GROUPS CAPABLE OF REACTING WITH A SILANE COMPOUND

John R. Wade; Michael J. Pratt, both of West Yorkshire; Robert A. W. Johnstone, Bebington, and David I. Smith, Garforth, all of, United Kingdom, assignors to DuPont (U.K.) Limited, Stevenage, United Kingdom

Continuation of Ser. No. 953,762, Sep. 29, 1992, abandoned, which is a continuation of Ser. No. 580,813, Sep. 11, 1990, abandoned. This application May 5, 1994, Ser. No. 238,581

Claims priority, application United Kingdom, Sep. 12, 1989, 89/20622

Int. Cl.[6] G03F *7/016;7/022*

U.S. Cl. 430—157 **8 Claims**

1. An unexposed lithographic printing plate comprising a substrate coated with a radiation-sensitive composition including a component having functional groups capable of reacting with a silane compound and a component having groups imparting solubility in aqueous solutions, wherein the surface of the composition has been modified by reaction of said functional groups with a silane compound before exposure of the plate to a source of radiation, said silane compound having the general formula

$$R_n—Si—X_{4-n}$$

wherein R is H or an alkyl, alkenyl, aryl, or aralkyl radical; X is halogen, hydroxy or an alkoxy or aryloxy radical; and n=1 to 3 provided that the silane compound includes at least one group R which is an alkyl, alkenyl, aryl or aralkyl radical.

5,550,002

METHOD OF PRODUCING A PRINTING PLATE

Yasuo Kojima; Nobumasa Sasa, and Takeo Akiyama, all of Hino, Japan, assignors to Konica Corporation, Japan

Filed Apr. 3, 1995, Ser. No. 415,326

Claims priority, application Japan, Apr. 7, 1994, 6-069722

Int. Cl.[6] G03F *7/34*

U.S. Cl. 430—258 **4 Claims**

1. A method of producing a printing plate, the method comprising the steps of:

(a) providing a light-sensitive material on an aluminum support, the light-sensitive material comprising a photo-hardenable light-sensitive layer on a 50 μm or less thick film so that the support faces the light-sensitive layer, the surface on the light-sensitive layer side of the support is electrolytically etched in a nitric acid solution to have an average surface roughness R_a of 0.1 to 0.6 μm, whereby a light-sensitive plate is obtained;

(b) imagewise exposing to light the photo-hardenable photosensitive layer of the light-sensitive plate;

(c) applying heat or pressure to the entire exposed light-sensitive plate;

(d) removing the exposed light-sensitive layer from the light-sensitive plate to leave an unexposed light-sensitive layer on the aluminum support; and

(e) overall exposing to light the unexposed light-sensitive layer to harden the same.

5,550,003

SILVER HALIDE PHOTOGRAPHIC PHOTOSENSITIVE MATERIALS AND A METHOD OF IMAGE FORMATION IN WHICH THEY ARE USED

Nobuaki Inoue, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 170,800, Dec. 21, 1993, abandoned. This application Sep. 7, 1994, Ser. No. 301,633

Claims priority, application Japan, Dec. 24, 1992, 4-357381; Feb. 4, 1993, 5-017431

Int. Cl.[6] G03C *5/315*

U.S. Cl. 430—264 **18 Claims**

1. A method for forming an image comprising, the step of processing a photographic photosensitive material with a developer having a pH of 9.6 to 11.0,

wherein the photographic photosensitive material comprises a support, having thereon at least one silver halide emulsion layer and at least one protective layer over said emulsion layer, wherein said silver halide emulsion layer is comprised of silver halide grains having a silver chloride content of at least 50 mol % which contain from 1×10^{-8} to 5×10^{-6} mol of a rhodium compound per mol of silver, at least one hydrazine derivative selected from among those of general formula (1) or (2) indicated below is included in at least one of said emulsion layer or another hydrophilic colloid layer, at least one compound selected from among colloidal silica and polyacrylamide derivatives is included in at least one of said silver halide layer and another hydrophilic colloid layer, and the dynamic friction coefficient of the outermost layer of said protective layer is not more than 0.35:



General Formula (1)

wherein R_1 represents an aliphatic group or an aromatic group which includes either a partial structure of $—O—(CH_2CH_2O)_n—$, $—O—(CH_2CH(CH_3)O)_n—$ or $—O—(CH_2CH(OH)CH_2O)_n—$ (where n is an integer of 3 or more), or which contains a quaternary ammonium cation; G_1 represents —CO—, —COCO—, —CS—, $—C(=NG_2R_2)—$, —SO—, $—SO_2—$ or $—P(O)(G_2R_2)—$; G_2 represents a single bond, —O—, —S— or $—N(R_2)—$, R_2 represents an aliphatic group, an aromatic group or a hydrogen atom, and in those cases where a plurality of R_2 groups is present within the hydrazine derivative of formula (1), these groups may be the same or different;

one of A_1 and A_2 is a hydrogen atom, and the other represents a hydrogen atom or an acyl group, or an alkyl or aryl sulfonyl group;

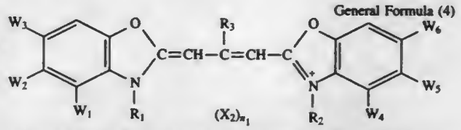
General Formula (2)

$$R_1—NHNH—G—R_2$$

wherein R_1 represents an aliphatic group, an aromatic group or a heterocyclic group; G represents —CO—, $—SO_2—$, —SO—, —COCO—, a thiocarbonyl group, an iminomethylene group or $—P(O)(R_3)—$, and R_2 represents an alkyl group in which the carbon atom of the alkyl group bonded to G is also bonded to at least one electron attractive group; R_3 represents a hydrogen atom, an aliphatic group, an aromatic group, an alkoxy group, an aryloxy group or an amino group; R_1 and R_2 of formula (2) do not contain a silver halide adsorptive group;

wherein said silver halide emulsion has been spectrally sensitized by means of at least one dye selected from among those of general formula (4), (5) or (6):

General Formula (4)

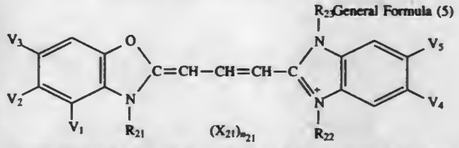


wherein W_1 and W_4 represent hydrogen atoms; W_3 and W_6 represent hydrogen atoms, methyl groups or methoxy groups; W_2 is an alkyl group which may be branched of a total carbon number not more than 6, an alkoxy group which has a total carbon number of not more than 5, a bromine atom, an iodine atom, an aryl group of a total carbon number not more than 9 or a chlorine atom when W_3 represents a methyl group or a methoxy group, or it may be joined with W_1 or W_3 to form a benzene ring; W_5 represents an alkyl group which may be branched of a total carbon number not more than 6, an alkoxy group of a total carbon number not more than 5, a halogen atom, a hydroxy group, an aryl group of a total carbon number not more than 9, an aryloxy group of a total carbon number not more than 9, an arylthio group of a total carbon number not more than 8, an alkylthio group of a total carbon number not more than 4 or an acylamino group of a total carbon number not more than 4, or W_5 may be joined with W_4 or W_6 to form a benzene ring;

R_1 and R_2 may be the same or different, representing alkenyl groups or alkyl groups having a total carbon number not more than 10, and at least one of R_1 and R_2 is a group which contains a sulfo group or a carboxyl group;

R_3 represents a lower alkyl group; X_1 represents a counter ion which is required to neutralize the charge; n_1 represents 0 or 1, and is 0 when an intramolecular salt is formed;

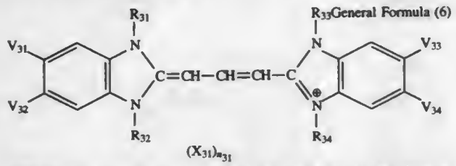
General Formula (5)



wherein V_1 represents a hydrogen atom; V_2 represents a hydrogen atom, a halogen atom, a hydroxy group, a lower alkyl group which may be branched, a lower alkoxy group, an aryl group of a total carbon number not more than 9, an aryloxy group of a total carbon number not more than 9, an arylthio group of a total carbon number not more than 8, a lower alkylthio group or an acylamino group of total carbon number not more than 4, or it may be joined with V_1 or V_3 to form a benzene ring; V_3 represents a hydrogen atom, a methyl group or a methoxy group; V_4 represents an electron attractive group; V_5 represents a hydrogen atom, a fluorine atom, a chlorine atom or a bromine atom; R_{21}, R_{22} and R_{23} may be the same or different, representing alkenyl groups or alkyl groups having a total carbon number not more than 10, and at least one of

R_{21}, R_{22} and R_{23} is a group which has a sulfo group or a carboxyl group; X_{21} represents a counter ion which is required to neutralize the charge; and n_{21} represents 0 or 1, and n_{21} is 0 when an intramolecular salt is formed;

General Formula (6)



wherein V_{31} and V_{33} represent a hydrogen atom or an electron attractive group and V_{32} and V_{34} represent an electron attractive group; R_{31}, R_{32}, R_{33} and R_{34} may be the same or different, represent an alkyl group having a total carbon number of 10 or less or an alkenyl group having a total carbon number of 10 or less, and at least one of R_{31}, R_{32}, R_{33} and R_{34} have a sulfo group or carboxyl group; X_{31} represents a counter ion which is required to neutralize the charge; n_{31} represents 0 or 1, and it is 0 when an intramolecular salt is formed.

5,550,004

CHEMICALLY AMPLIFIED RADIATION-SENSITIVE COMPOSITION

Kenji Honda, Barrington, R.I., assignor to OCG Microelectronic Materials, Inc., Norwalk, Conn.

Continuation-in-part of Ser. No. 879,021, May 6, 1992, Pat. No. 5,340,687. This application Aug. 19, 1994, Ser. No. 292,899

The portion of the term of this patent subsequent to Aug. 23, 2011, has been disclaimed.

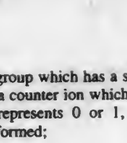
Int. Cl.[6] G03F *7/039*

U.S. Cl. 430—270.1 **8 Claims**

1. A chemically amplified radiation-sensitive composition comprising no admixture:

(a) an alkali-soluble binder resin made by a condensation reaction of:

(i) hydroxystyrene moiety having formulae [1] or [2]:

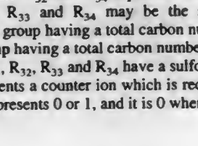


[1]

[2]

wherein x is an integer from 2 to 300; with

(ii) a monomethylolated phenolic compound having a formula [3]:



[3]

wherein R_1 and R_2 are individually selected from the group consisting of lower alkyl group having 1–4 carbon atoms, lower alkoxy group having 1–4 carbon atoms, amino group, and carboxylic acid group; wherein R_3 and R_4 are individually selected from the group consisting of hydrogen, lower alkyl group having 1–4 carbon atoms, lower alkoxy groups having 1–4 carbon atoms, an amino group, and a carboxylic group; and wherein the mole ratio of the hydroxystyrene moiety to the monomethylolated phenolic compound is from about 1:10 to about 10:1;

(b) at least one alkaline dissolution inhibitor containing acid-cleavable groups; and

(c) at least one compound that results in generation of an acidic moiety under irradiation.

5,550,005

PHOTOSENSITIVE ELASTOMER POLYMER COMPOSITIONS FOR FLEXOGRAPHIC PRINTING PLATES

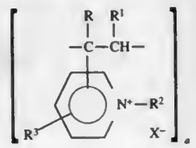
Arthur L. Berrier, and Rustom S. Kanga, both of Ellicott City, Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

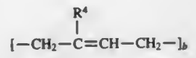
Continuation-in-part of Ser. No. 868,062, Apr. 13, 1992, Pat. No. 5,290,662, which is a continuation-in-part of Ser. No. 729,976, Jul. 15, 1991, Pat. No. 5,223,375. This application Sep. 8, 1992, Ser. No. 941,508

Int. Cl.[6] G03F *7/38;* **G03C** *1/73*

U.S. Cl. 430—286.1 **3 Claims**

1. A photosensitive article comprising a backing and a layer of a photosensitive composition on the backing comprising a quaternized multiblock copolymer of the structure A'CBCA' where





X is a leaving group;

R, R^1, R^2, and R^4 are independently H or 1–8 carbon alkyl;

R^2 is H, 1–8 carbon alkyl, or aralkyl;

C is a segment of a polymerized monomer having about 25–500 monomer units, said monomer being a substituted or unsubstituted styrene, a substituted or unsubstituted acrylate or a substituted or unsubstituted methacrylate;

a has a value in the range of about 50–1,000; and b has a value in the range of about 500–10,000; a photosensitive unsaturated compound; and a photoinitiator.

5,550,006

PHOSPHATING COMPOSITIONS AND PROCESSES, PARTICULARLY FOR USE IN FABRICATION OF PRINTED CIRCUITS UTILIZING ORGANIC RESISTS

Gary B. Larson, Cheshire; Brian Jobson, Wolcott; James A. Johnson, Litchfield, all of Conn., and Lance C. Sturni, Allison Park, all of Pa., assignors to MacDermid, Incorporated, Waterbury, Conn., and PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 2,922, Jan. 11, 1993. This application May 13, 1994, Ser. No. 243,189

Int. Cl.[6] G03F *7/00*

U.S. Cl. 430—311 **7 Claims**

1. A method for producing a phosphate conversion coating on the surface of metal, said process comprising contacting said surface with an aqueous phosphating composition which comprises phosphoric acid and at least one composition-soluble compound containing an element selected from the group consisting of vanadium, niobium, tungsten and tantalum for a time effective to produce a phosphate conversion coating on said metal surface.

5,550,007

SURFACE-IMAGING TECHNIQUE FOR LITHOGRAPHIC PROCESSES FOR DEVICE FABRICATION

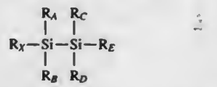
Gary N. Taylor, Bridgewater, N.J., and David R. Wheeler, Albuquerque, N.M., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed May 28, 1993, Ser. No. 68,485

Int. Cl.[6] G03F *7/26*

U.S. Cl. 430—314 **17 Claims**

1. A process for manufacturing a device comprising: depositing an imaging layer comprising a polymeric resist material on a substrate; exposing a portion of the imaging layer to radiation, thereby forming an exposed region and an unexposed region that together define an image of a pattern in the imaging layer; introducing into the imaging layer a refractory material comprising an organodisilane that is selectively permeable into one of either the exposed region or the unexposed region of the imaging layer, the refractory material characterized by the formula:



wherein R_X is a reactive group that reacts with a functional group pendant to the polymeric resist material, the reaction producing a reactive site on the polymeric resist material with which the remaining portion of the refractory material, $—SiR_AR_BSiR_CR_DR_E$, reacts and groups $R_{(A-E)}$ are all selected from the group consisting of H and alkyl wherein $R_{(A-E)}$ are the same or different and wherein at least two of $R_{(A-E)}$ are alkyl; and developing the pattern in the imaging layer.

5,550,008

METHOD FOR MAKING A DRY ETCHING RESISTANT POSITIVE AND NEGATIVE PHOTORESIST

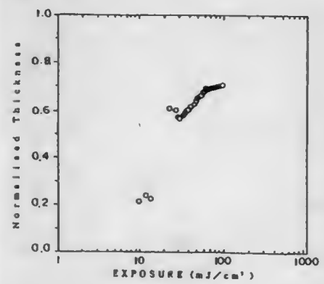
Yoichi Tomo, and Masao Saito, both of Kanagawa, Japan, assignors to Sony Corporation, Japan

Division of Ser. No. 250,530, May 31, 1994, Pat. No. 5,474,872. This application May 11, 1995, Ser. No. 438,832

Claims priority, application Japan, May 31, 1993, 5-13044; Jan. 10, 1994, 6-000971

Int. Cl.[6] G03C *5/00*

U.S. Cl. 430—325 **5 Claims**

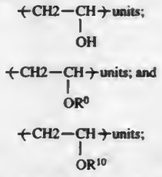


1. A method of forming a pattern on an exposure material comprising the steps of:

providing a silicon wafer substrate;

providing a photoresist composition comprising:

(a) a copolymer derived from:

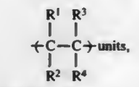


(i)

(ii)

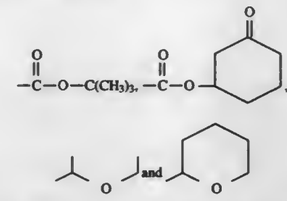
(iii)

alone or in combination with at least one comonomer selected from:

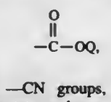


(iv)

wherein R^0 is selected from



groups R^{10} is selected from adamantyl, norbonyl, cyclohexyl, cyclopentyl and t-butyl groups; R^1, R^2, R^3 and R^4 are selected from hydrogen, halogen, alkyl, chloromethyl, allyl,



—COQ, —OAc and —CN groups, wherein Q is alkyl or cycloalkyl, and Ac is acetate; and

(b) a photoacid generator, said composition being developable in a polar solution and exhibiting good dry etching resistance;

spin coating a surface of the wafer with said photoresist composition to provide a coated substrate;

exposing the coated substrate through a mask with a KrF or ArF excimer laser radiation to provide an exposed substrate;

baking the exposed substrate; and

developing the baked and exposed substrate with a developing solution to provide a pattern on the substrate.

5,550,009

STABILIZED PEROXIDE BLEACHING SOLUTIONS AND THEIR USE FOR PROCESSING OF PHOTOGRAPHIC ELEMENTS

Shirleyanne E. Haye, Rochester, N.Y., and Mayra B. Reyes, Parkville, Puerto Rico, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 17, 1995, Ser. No. 422,468

Int. Cl.[6] G03C *7/00;5/44;5/18;5/26*

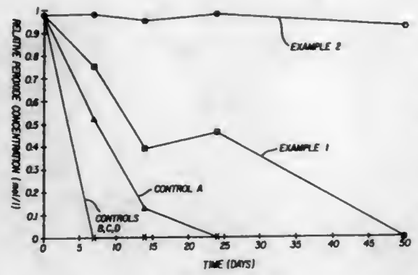
U.S. Cl. 430—393 **18 Claims**

1. A method for processing a color silver halide photographic element comprising:

bleaching an imagewise exposed and developed color silver halide photographic element with a bleaching solution comprising:

a peroxide bleaching agent,

chloride ions present in an amount of at least 0.35 mol/l,



a first acid that is an organic phosphonic acid or a salt of said first acid, and

a second acid that is a 2-pyridinecarboxylic acid or 2,6-pyridinedicarboxylic acid, or alkali metal or ammonium salts of said second acid.

5,550,010

METHOD FOR PROCESSING PHOTOGRAPHIC PRODUCTS COMPRISING A FINE-GRAIN TOP LAYER

François J. Bredoux, Saint Martin en Bresse; Yannick Begel, Chalon-Sur-Saone, and Henri Freisz, Les Lilas, all of, France, assignors to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/EP93/00535, § 371 Date Aug. 31, 1994, § 102(e) Date Aug. 31, 1994, PCT Pub. No. WO93/19397, PCT Pub. Date Sep. 30, 1993

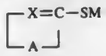
PCT Filed Mar. 9, 1993, Ser. No. 295,848

Claims priority, application France, Mar. 16, 1992, 92 03330

Int. Cl.[6] G03C *7/42*

U.S. Cl. 430—393 **14 Claims**

1. A method for controlling the sensitivity of a color photographic product during photographic processing, said color photographic product comprising a base, at least one light-sensitive silver halide emulsion layer and a top layer of non light-sensitive silver halide emulsion, wherein the exposed product is processed in a bleaching or in a bleach-fixing bath, characterised in that (A) the top layer of the photographic product consists of an emulsion comprising silver chlorobromide grains having a size of less than 0.5 μm and a bromide content of between 45 and 55% molar, and (B) said bleaching or bleach-fixing bath initially comprising a bleaching accelerator compound (1) defined by the formula:



in which X represents a nitrogen, A represents the complementary atoms required to form an unsaturated ring which may contain one or more heteroatoms and M represents a hydrogen atom, an alkali metal or an ammonium group, provided that said unsaturated ring is an azole, diazole, triazole or tetrazole ring.

5,550,011

PHOTOGRAPHIC ELEMENTS CONTAINING MATTE PARTICLES OF BIMODAL SIZE DISTRIBUTION

Alfred B. Fant, Rochester; Yongcai Wang, Penfield; Dennis E. Smith, Rochester; Melvin M. Kestner, Hilton, and Gary W. Visconte, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 1, 1995, Ser. No. 381,803

Int. Cl.[6] G03C *1/00;3/00;1/76*

U.S. Cl. 430—496 **14 Claims**

1. An imaging element comprising a support, at least one hydrophilic light-sensitive layer and at least one protective overcoat layer containing a binder and permanent matte particles, the permanent matte particles having a size distribution of a first mode and a second mode, the first mode being organic polymer particles having a mean size of from 0.2 to 1.2 micrometers in a coating weight of from 10 to 200 mg/m^2, the said second mode being particles having a mean particle size of from 1.5 to 10 micrometers in a coating weight of from 25 to 150 mg/m^2, the coating weight of particles of the first and second modes in total being greater than 100 mg/m^2.

5,550,012

SILVER HALIDE EMULSION AND SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL USING THE SAME

Yoichi Suga, Minami-Ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

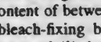
Continuation of Ser. No. 989,936, Dec. 10, 1992, abandoned, which is a continuation of Ser. No. 619,462, Nov. 29, 1990, abandoned. This application Aug. 22, 1994, Ser. No. 293,606

Claims priority, application Japan, Dec. 1, 1989, 1-310716

Int. Cl.[6] G03C *1/035*

U.S. Cl. 430—567 **19 Claims**

1. A negative silver halide emulsion comprising silver halide grains in a dispersion medium, wherein said silver halide grains are tabular silver halide grains having a thickness of less than 0.5 μm, a diameter of not less than 0.3 μm, an aspect ratio of not less than 2, and not less than 10 dislocations per grain account for not less than 50% of a projected area of all the silver halide grains; wherein said tabular silver halide grains comprise a substrate region having an AgI content of 0 to 12 mole %, an outer region having an AgI content of 0 to 12 mole %, and an internal high AgI region located between the substrate region and the outer region, obtained by growing AgI, or AgBrI having an AgI content of 10 to 40 mole %, wherein the AgI content of said internal high AgI region is higher than the AgI content of said substrate region and said outer region; and wherein said grains are formed in the presence of a compound represented by formula (I) which is added during grain formation and before completion of addition of a total amount of solution of water-soluble silver salt necessary to complete silver halide grain formation:



(I)

wherein R represents an unsubstituted or substituted aliphatic group, an unsubstituted or substituted aromatic group, or an unsubstituted or substituted heterocyclic group, and M represents a cation, wherein said compound represented by formula (I) may be a polymer containing divalent groups derived from structures represented by formula (I) as repeating units.

5,550,013

HIGH CHLORIDE EMULSIONS HAVING HIGH SENSITIVITY AND LOW FOG AND IMPROVED PHOTOGRAPHIC RESPONSES OF HIRF, HIGHER GAMMA, AND SHOULDER DENSITY

Benjamin T. K. Chen, Penfield, and Roger Lok, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 22, 1994, Ser. No. 362,110

Int. Cl.[6] G03C *1/043;1/035*

U.S. Cl. 430—567 **22 Claims**

1. A radiation sensitive emulsion comprised of a dispersing medium and silver iodochloride grains

WHEREIN the silver iodochloride grains

are cubical and

contain from 0.05 to 1 mole percent iodide, based on total silver, with maximum iodide concentrations located nearer the surface of the grains than their center, said iodide forming the grains is confined to exterior portions of the grains accounting for up to 15 percent of total silver in said grains,

and wherein said emulsion further comprises a polyethylene oxide represented by Formula 1



(I)

wherein

R is H, alkyl or substituted alkyl with the number of carbon atoms ranging from 1 to 25, and n may vary from 1 to 40.

5,550,014

SILVER HALIDE PHOTOGRAPHIC EMULSION, METHOD OF MANUFACTURING THE SAME, AND PHOTOGRAPHIC LIGHT SENSITIVE MATERIAL

Yoichi Maruyama, and Mikio Ihama, both of Minami-Ashigara, Japan, assignors to Fujl Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 200,298, Feb. 23, 1994, abandoned, which is a continuation of Ser. No. 621,871, Dec. 4, 1990, abandoned. This application Mar. 17, 1995, Ser. No. 407,056

Claims priority, application Japan, Dec. 5, 1989, 1-314201

Int. Cl.[6] G03C *1/005*

U.S. Cl. 430—567 **25 Claims**

1. A silver halide photographic emulsion containing tabular silver halide grains having an aspect ratio of 2 or more and having dislocations concentrated about at least one corner of the grain wherein the tabular silver halide grains are formed by a method comprising: a step of junctioning a guest silver halide grain to at least one corner of a host tabular silver halide grain to form a junctioned silver halide grain, wherein the guest silver halide grain is silver iodide grain or silver halide grain having silver iodide content higher than that of the host tabular grain, and the host silver halide tabular grain is silver iodobromide or silver chloroiodobromide containing 30 mole % or less of silver iodide; and a step of adding simultaneously to the solution containing said junctioned silver halide grain after formation of said junctioned silver halide grain, a silver nitrate solution and potassium bromide solution, or a silver nitrate solution and a solution mixture of potassium bromide and potassium iodide to form said dislocations.

5,550,015

PRODUCTION OF SILVER HALIDE EMULSIONS COMPRISING TABULAR GRAINS

Silvia Karthäuser, Köln, Germany, assignor to Agfa-Gevaert AG, D-51368 Leverkusen, Germany

Continuation of Ser. No. 178,511, Jan. 7, 1994, abandoned, which is a continuation-in-part of Ser. No. 028,221, Mar. 9, 1993, abandoned. This application Dec. 29, 1994, Ser. No. 366,404

Claims priority, application Germany, Mar. 20, 1992, 42 09 023.7; Jul. 21, 1992, 42 24 027.1

Int. Cl.[6] G03C *1/015*

U.S. Cl. 430—569 **9 Claims**

1. A process for the production of a silver halide emulsion containing platelike silver halide grains in at least 80% of the total projected area, said platelike silver halide grains having an AgBrI core of which the silver iodide content is at least 2.5 mol %, a first shell of AgBrI surrounding the core, of which the silver iodide content is 40±4 mol %, and at least one other shell, of which the silver iodide content is below 20 mol %, said process comprising (a) precipitating a core containing 2 to 20 mol % of AgI by the double jet method at 30° to 50° C. and pBr 1.2 to 2.3, (b) subjecting the core to physical ripening at 60° to 80° C. and pBr 1.2 to 2.8, (c) growing the first shell by adding silver ions, bromide ions, and iodide ions to the ripened core-grains, other silver halide layer having a silver iodide content below 20 mol %, wherein the amount of iodide ions added during step (c) is more than 40±4 mol % and less than 90 mol % of the total amount of halide ions added during step (c), the amount of iodide ions added during step (c) is continuously reduced until the lower limit of the miscibility gap of AgBrI is reached at 40±4 mol % silver iodide, and the silver ions, bromide ions, and iodide ions added during step (c) are provided by at least two micrate emulsions of which one is an AgI emulsion and at least one is an AgBr emulsion or an AgBrI emulsion of which the silver iodide content is less than or equal to the lower limit of the miscibility gap.

4. A process for the production of a silver halide emulsion containing platelike silver halide grains in at least 80% of the total projected area, said platelike silver halide grains having an AgBrI core of which the silver iodide content is at least 2.5 mol %, a first shell of AgBrI surrounding the core, of which the silver iodide content is 40±4 mol %, and at least one other shell, of which the silver iodide content is below 20 mol %, said process comprising (a) precipitating a core containing 2 to 20 mol % of AgI by the double jet method at 30° to 50° C. and pBr 1.2 to 2.3, (b) subjecting the core to physical ripening at 60° to 80° C. and pBr 1.2 to 2.8, (c) growing the first shell by adding silver ions, bromide ions, and iodide ions to the ripened core grains, and (d) precipitating said at least one other silver halide layer having a silver iodide content below 20 mol %, wherein the amount of iodide ions added during step (c) is more than 40±4 mol % and less than 90 mol % of the total amount of halide ions added during step (c) is continuously reduced until the lower limit of the miscibility gap of AgBrI is reached at 40±4 mol % silver iodide, and the silver ions, bromide ions, and iodide ions added during step (c) are provided by at least two solutions of which one contains silver ions and the other(s) bromide and iodide ions.

5. A process for the production of a silver halide emulsion containing platelike silver halide grains in at least 80% of the total projected area, said platelike silver halide grains having an AgBrI core of which the silver iodide content is at least 2.5 mol %, a first shell of AgBrI surrounding the core, of which the silver iodide content is 40±4 mol %, and at least one other shell, of which the silver iodide content is below 20 mol %, said process comprising

(a) precipitating a core containing 2 to 20 mol % of AgI by the double jet method at 30° to 50° C. and pBr 1.2 to 2.3,

(b) subjecting the core to physical ripening at 60° to 80° C. and pBr 1.2 to 2.8,

(c) growing the first shell by adding silver ions, bromide ions, and iodide ions to the ripened core grains, and

(d) precipitating said at least one other silver halide layer having a silver iodide content below 20 mol %, wherein the amount of iodide ions added during step (c) is more than 40±4 mol % and and less than 90 mol % of the total amount of halide ions added during step (c), the amount of iodide ions added during step (c) is continuously reduced until the lower limit of the miscibility gap of AgBrI is reached at 40±4 mol % silver iodide, and during step (c) the pBr value is reduced and the bromide-to iodide ratio constant is kept constant.

5,550,016

OLIGONUCLEOTIDES OF HCV, PRIMERS AND PROBES THEREFROM, METHOD OF DETERMINING HCV GENOTYPES AND METHOD OF DETECTING HCV IN SAMPLES

Hiroaki Okamoto, Tochigi, Japan, assignor to Immuno Japan Inc., Tokyo, Japan

Filed Nov. 24, 1993, Ser. No. 157,235

Claims priority, application Japan, Nov. 27, 1992, 4-354370

Int. Cl.[6] C12Q *1/70;1/68;* **C07H** *21/04;* **C12N** *15/00*

U.S. Cl. 435—5 **19 Claims**

1. A recombinant oligonucleotide selected from the group consisting of:

(a) Mit/92 having the nucleotide sequence of SEQ ID NO. 1;

(b) Hir/92 having the nucleotide sequence of SEQ ID NO. 2;

(c) Th-85 having the nucleotide sequence of SEQ ID NO. 3;

(d) NZL-1 having the nucleotide sequence of SEQ ID NO. 4;

(e) US-114 having the nucleotide sequence of SEQ ID NO. 5;

(f) Th-103 having the nucleotide sequence of SEQ ID NO. 6; and

(g) #299 having the nucleotide sequence of SEQ ID NO. 7.

VOL 1189 ISS 4 AG 27 1996 UMI

5,550,017

ANTI-PARAMYXOVIRUS SCREENING METHOD AND VACCINE

Richard W. Compans, Atlanta, Ga., assignor to Emory University, Atlanta, Ga.

Filed Oct. 12, 1993, Ser. No. 135,285
Int. Cl.[6] C12Q *1/70*
U.S. Cl. 435—5 **4 Claims**

1. A method for measuring the amount of an HN:F complex having a first component which may be HN or F and a second component which is F if the first component is HN, or HN if the first component is F, formed in the membrane of a transfected host cell expressing type-homologous paramyxovirus HN and F proteins, comprising the steps of:

a) separating from membrane-associated proteins of the cell a specific fraction consisting essentially of an HN:F complex and a first component of the HN:F complex; and

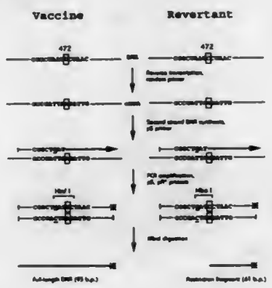
b) measuring independently the amount of the second component of the HN:F complex in the specific fraction, whereby the amount of an HN:F complex formed in membranes of transformed host cells is measured.

5,550,018

TEST FOR VIRULENT GENOMIC NUCLEOTIDE 472 REVERTANTS IN ATTENUATED LIVE POLIOVIRUS TYPE 3 VACCINES

Inessa Levenbook; Konstantin Chumakov, both of Bethesda; Laurie Powers, Silver Spring, all of Md., and Igor Roninson, Chicago, Ill., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 607,742, Nov. 6, 1990, abandoned. This application May 18, 1994, Ser. No. 246,373
Int. Cl.[6] C12Q *1/70;1/68*
U.S. Cl. 435—5 **5 Claims**



1. A method for classifying an unclassified live poliovirus type 3 vaccine, which is attenuated by a C to U substitution at nucleotide position 472, as having an acceptable or unacceptable level of neurovirulence in comprising the steps of:

quantifying revertant viruses contained in the vaccine prior to administration by testing for the presence of a U to C substitution at position 472 of the poliovirus type 3 genome; and

comparing the percentage of revertant viruses in the unclassified vaccine to the percentage of revertant viruses in an accepted reference vaccine, which is attenuated by a C to U substitution at nucleotide position 472, a vaccine having a higher percentage of U to C substitution than in the reference vaccine being classified as unacceptable and a vaccine with an equal or lower percentage of U to C substitution than in the reference vaccine being classified as acceptable.

5,550,019

METHODS OF IDENTIFYING COMPOUNDS WHICH ALTER APOPTOSIS

John C. Reed, Carlsbad, Calif., assignor to La Jolla Cancer Research Foundation, La Jolla, Calif.

Filed May 26, 1993, Ser. No. 66,556
Int. Cl.[6] C12Q *1/68*
U.S. Cl. 435—6 **3 Claims**

1. A method to identify compounds that alter the apoptotic process, comprising the steps of:

a. preparing an apoptotic cell extract comprising a cytosolic cell extract and either nuclei or chromation;

b. treating said apoptotic cell extract with one or more compounds; and

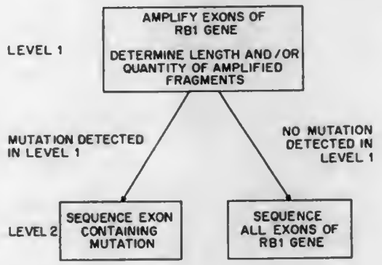
c. selecting the one or more compounds that alter the apoptotic process in said apoptotic cell extract.

5,550,020

METHOD, REAGENTS AND KIT FOR DIAGNOSIS AND TARGETED SCREENING FOR RETINOBLASTOMA

Brenda L. Gallie, Toronto; James M. Dunn, Scarborough, and John K. Stevens, Mississauga, all of, Canada, assignors to Visible Genetics Inc., and HSC Research & Development, both of Toronto, Canada

Filed Jul. 8, 1994, Ser. No. 271,942
Int. Cl.[6] C12Q *1/68;* C12P *19/34;* C07H *21/04;21/02*
U.S. Cl. 435—6 **137 Claims**



1. A method for identifying mutations in a sample retinoblastoma gene comprising the steps of:

(a) quantitatively amplifying one or more exons of the sample retinoblastoma gene using primers complementary to intron regions immediately flanking each amplified exon;

(b) determining the lengths of the amplification products for each amplified sample exon and comparing that length to the length of amplification products obtained when a wild-type retinoblastoma gene is amplified using the same primers, whereby differences in length between an amplified sample exon and the corresponding amplified wild-type exon reflect the occurrence on an insertion or deletion mutation in the sample retinoblastoma gene; and

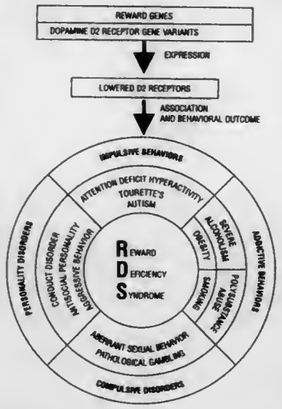
(c) determining the nucleic acid sequence of each exon identified in step (b) to contain an insertion or deletion mutation, or in the event no insertion or deletion mutations are identified, the nucleic acid sequence of at least one exon of the retinoblastoma gene until all exons have been sequenced or until a mutation has been detected.

5,550,021

ALLELIC DIAGNOSIS OF SUSCEPTIBILITY TO COMPULSIVE DISORDER

Kenneth Blum, San Antonio, Tex.; Ernest P. Noble, Los Angeles, Calif., and Peter J. Sheridan, San Antonio, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex., and Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 909,383, Jun. 24, 1992, which is a continuation-in-part of Ser. No. 826,222, Jan. 23, 1992, Pat. No. 5,210,016, which is a continuation of Ser. No. 477,057, Feb. 7, 1990, abandoned. This application Sep. 1, 1994, Ser. No. 299,934
Int. Cl.[6] C12Q *1/68;* C12P *19/34;* C07H *21/04;* C12N *15/00*
U.S. Cl. 435—6 **34 Claims**



1. A method for determining a type of compulsive disorder in an individual comprising:

identifying an individual having at least one compulsive disorder;

obtaining DNA from said individual;

analyzing said DNA for the presence of a human dopamine D_2 receptor gene A1, B1 or $DRD2^{In6\text{-}Ex7}$ haplotype I allele;

wherein the presence of said human dopamine D_2 receptor gene A1, B1 or $DRD2^{In6\text{-}Ex7}$ haplotype I allele indicates a compulsive disorder resulting from Reward Deficiency Syndrome or impulsive-addictive-compulsive disorder and the lack of a human dopamine D_2 receptor gene A1, B1 or $DRD2^{In6\text{-}Ex7}$ haplotype I allele indicates a compulsive disorder having other causes.

5,550,022

METHOD FOR THE DETERMINATION OF PATHOGENIC LISTERIA BACTERIA

Trinad Chakraborty, Würzburg; Werner Goebel, Veitshöchheim, both of, Germany, and Servatius H. W. Notermans, Bilthoven, Netherlands, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Continuation of Ser. No. 10,512, Jan. 28, 1993, abandoned, which is a continuation of Ser. No. 573,214, Oct. 15, 1990, abandoned. This application Sep. 8, 1994, Ser. No. 303,577
Claims priority, application Germany, Jan. 19, 1989, 39 01 397.9; Mar. 3, 1989, 39 06 832.3
Int. Cl.[6] C12Q *1/68;* C07H *21/04*
U.S. Cl. 435—6 **10 Claims**

1. An isolated nucleic acid molecule, which is at least 27 nucleotides in length, is a nucleotide sequence specific for pathogenic strains of Listeria bacteria and which hybridizes to the nucleotide sequence of FIG. 1 or to the complementary nucleotide sequence of that shown in FIG. 1 at 5–6× SSC and 42°–60° C. and washing for at least 30 minutes at from 0.1–0.5× SSC and at a temperature of from 65° C.–70° C.

5,550,023

AMPLIFICATION OF HUMAN MDM2 GENE IN HUMAN TUMORS

Kenneth W. Kinzler, and Bert VogelStein, both of Baltimore, Md., assignors to The Johns Hopkins University, Baltimore, Md.

Division of Ser. No. 44,619, Apr. 7, 1993, Pat. No. 5,420,263, which is a continuation-in-part of Ser. No. 903,103, Jun. 23, 1992, Pat. No. 5,411,860, which is a continuation-in-part of Ser. No. 867,840, Apr. 7, 1992, abandoned. This application May 18, 1994, Ser. No. 245,500
Int. Cl.[6] G01N *33/53;33/566*
U.S. Cl. 435—7.1 **27 Claims**

1. A method for identifying compounds which interfere with the binding of MDM2 to p53, said compounds being candidate therapeutic agents, said method comprising the steps of:

contacting: a first protein; a second protein; and a compound to be tested for its capacity to interfere with binding of said first and second proteins to each other; wherein the first protein comprises MDM2 and the second protein comprises p53 or the first protein comprises p53 and the second protein comprises MDM2; and

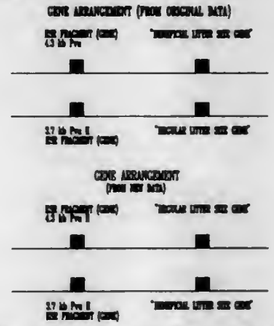
determining the quantity of the first protein which is bound to, is displaced from, or is prevented from binding to, the second protein, wherein a compound which diminishes the quantity of the first protein bound to the second protein, or which displaces first protein bound to the second protein, or which prevents first protein from binding to the second protein, is identified as a candidate therapeutic agent.

5,550,024

GENETIC MARKERS FOR PIG LITTER SIZE

Max F. Rothschild; Christopher K. Tuggle; Carol D. Jacobson, all of Ames, Iowa; David A. Vaske, Marshfield, Wis.; Alan J. Mileham, Huntingdon, and Graham S. Plastow, Soham, both of, United Kingdom, assignors to Biotechnology Research & Development Corporation, Peoria, Ill., and Iowa State University Research Foundation, Inc., Ames, Iowa

Continuation-in-part of Ser. No. 961,819, Oct. 19, 1992, Pat. No. 5,374,526, which is a continuation-in-part of Ser. No. 687,708, Apr. 19, 1991, abandoned. This application Sep. 26, 1994, Ser. No. 312,312
Int. Cl.[6] C12Q *1/68;* C12P *19/34;* C07H *21/04*
U.S. Cl. 435—6 **29 Claims**



1. A method of screening pigs to identify those which have a genetic predisposition to produce larger or smaller litters comprising:

obtaining a sample of genomic DNA from a pig; and assaying for the presence of a polymorphism in the pig

estrogen receptor gens in said sample, said polymorphism being one which is associated with litter size.

5,550,025

DETECTION OF HYDROPHOBIC AMPLIFICATION PRODUCTS BY EXTRACTION INTO AN ORGANIC PHASE

G. Terrance Walker, Chapel Hill, N.C., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Jul. 19, 1995, Ser. No. 503,964
Int. Cl.[6] C12Q *1/68;* C12P *19/34;* C07H *21/04*
U.S. Cl. 435—6 **20 Claims**

1. A method for detecting amplification of a target sequence comprising:

a) hybridizing to the target sequence, in an aqueous solution,
(i) a hydrophilic signal primer comprising nucleotides linked to a lipophilic label, and
(ii) an amplification primer;
b) extending the hybridized amplification primer on the target sequence with a polymerase, whereby extension of the amplification primer displaces the signal primer, or a portion thereof, from the target sequence;
c) cleaving or nicking the displaced signal primer, or the displaced portion thereof, thereby generating a hydrophobic secondary amplification product having fewer nucleotides linked to the lipophilic label than the hydrophilic signal primer;
d) contacting the aqueous solution with an organic phase whereby the hydrophobic secondary amplification product is extracted into the organic phase;
e) separating the organic phase from the aqueous solution, and;
f) detecting the label of the extracted hydrophobic secondary amplification product as an indicator of amplification of the target sequence.

5,550,026

ANTIBODIES TO HUMAN GASTRIN-RELEASING PEPTIDE PRECURSOR AND USE THEREOF

Ken Yamaguchi, c/o National Cancer Center Research Institute 1-1, Tsukiji 5-chome, Chuo-Ku, Tokyo, and Yoshio Miyake, Tokyo, both of, Japan, assignors to Tonen Corporation; Terumo Corporation, and Ken Yamguchi, all of Tokyo, Japan

Filed Feb. 11, 1993, Ser. No. 15,180
Claims priority, application Japan, Jun. 12, 1992, 4-153643
Int. Cl.[6] G01N *33/53;* C12N *5/12;* C07K *16/26*
U.S. Cl. 435—7.1 **3 Claims**

1. A monoclonal antibody having an association constant K_a of 3×10^9–2×10^{10}/M obtained from a hybridoma cell line selected from the group consisting of proGRP-2B10 (FERM BP-4110), proGRP-3G2 (FERM BP-4109), and proGRP-2OD2 (FERM BP-4184).

3. A diagnostic agent for lung cancer comprising a monoclonal antibody according to claim 1 and a carrier.

5,550,027

ASSAY FOR TRYPANSOMA CRUZI ANTIBODIES WHICH SPECIFICALLY BIND THREE DIFFERENT ANTIGENS

Martin A. Winkler, Lindenhurst, and Alfred A. Pan, Grayslake, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 911,590, Jul. 10, 1992, abandoned. This application Jul. 13, 1994, Ser. No. 275,086
Int. Cl.[6] G01N *33/53;33/537;33/543*
U.S. Cl. 435—7.22 **3 Claims**

1. A confirmatory assay for the presence of *Trypanosoma cruzi* (*T. cruzi*) antibody in a test sample, comprising:

a. determining the presence of a first *T. cruzi* antibody in a test sample, comprising:
i. contacting a first aliquot of a test sample with *T. cruzi* Gp90 antigen attached to a solid support to form a mixture and incubating same to form Gp90 antigen/antibody complexes;
ii. contacting said Gp90 antigen/antibody complexes with an indicator reagent for a time and under conditions sufficient to form Gp90 antigen/antibody/indicator reagent complexes;
iii. detecting the presence of the *T. cruzi* Gp90 antibody by measuring the signal generated;
b. determining the presence of a second *T. cruzi* antibody in a test sample, comprising:
i. contacting a second aliquot of a test sample with *T. cruzi* Gp60/50 antigen attached to a solid support to form a mixture and incubating same to form Gp60/50 antigen/antibody complexes;
ii. contacting said Gp60/50 antigen/antibody complexes with an indicator reagent for a time and under conditions sufficient to form Gp60/50 antigen/antibody/indicator reagent complexes;
iii. detecting the presence of the *T. cruzi* Gp60/50 antibody by measuring the signal generated;
c. determining the presence of a third *T. cruzi* antibody in a test sample, comprising:
i. contacting a third aliquot of a test sample with *T. cruzi* LPPG antigen attached to a solid support to form a mixture and incubating same to form LPPG antigen/antibody complexes;
ii. contacting said LPPG antigen/antibody complexes with an indicator reagent for a time and under conditions sufficient to form LPPG antigen/antibody/indicator reagent complexes;
iii. detecting the presence of the *T. cruzi* LPPG antibody by measuring the signal generated;

wherein the presence of at least two *T. cruzi* antibodies confirms the presence of *T. cruzi* antibody in the test sample.

5,550,028

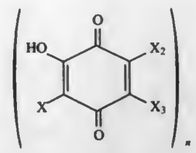
TETRAHYDROXYQUINONE AS AN ACTIVATOR COMPONENT FOR ACTIVATED PARTIAL THROMBOPLASTIN TIME TEST OF BLOOD COAGULATION

Ted C. K. Lee, Plantation; Franz H. Pelzer, Miami, and Leslie A. Motley, Miami, all of Fla., assignors to Dade International Inc., Deerfield, Ill.

Continuation of Ser. No. 148,139, Nov. 4, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 484,373
Int. Cl.[6] C12Q *1/56;1/00;* G01N *33/86;* A01N *55/02*
U.S. Cl. 435—13 **15 Claims**

1. A method for activation of the intrinsic coagulation pathway comprising the steps of:

a) Preparing an aqueous solution of a compound with the structure;



wherein X is selected from the group consisting of H, OH, and OR, wherein R is an alkyl group,
wherein X_2 is selected from the group consisting of H, OH, and OR, wherein R is an alkyl group, and
wherein X_3 is selected from the group consisting of H, OH, and OR, wherein R is an alkyl group and where n=at least 1;

b) Buffering the aqueous solution of step a) so that the aqueous solution has a pH greater than 7.0;

c) Adding an aqueous solution including metal ions selected from the group consisting of cupric, cobalt, ferric, and manganese to the aqueous solution resulting from step b);
d) Adding a phospholipid to the solution resulting from step c);
e) Adding plasma to the solution formed as a result of step d);
f) Incubating the mixture resulting from step e); and
g) Adding an aqueous solution of calcium chloride to the incubated mixture resulting from step f) resulting in the formation of clot in approximately 30 to 50 seconds.

5,550,029

METHOD FOR DIAGNOSING ESTROGEN RESPONSIVENESS

James W. Simpkins, Gainesville, and Jean Bishop, Jacksonville, both of Fla., assignors to University of Florida, Gainesville, Fla.

Filed Sep. 8, 1994, Ser. No. 303,056
Int. Cl.[6] C12Q *1/54*
U.S. Cl. 435—14 **12 Claims**

1. A method for diagnosing responsiveness of a living human subject to an estrogen compound, comprising:

(i) obtaining an ex vivo cell sample from the subject;
(ii) exposing a first aliquot of the sample to the estrogen compound and glucose;
(iii) exposing a comparable second aliquot of the sample to glucose only;
(iv) measuring the amount of the glucose utilized by the first and second aliquots of steps (ii) and (iii) to obtain first and second measurements, respectively; and
(v) correlating the first and second measurements obtained in step (iv), whereas when the first measurement is a greater value than the second measurement, the subject is responsive to the estrogen compound.

5,550,030

REAGENT FOR ENDOTOXIN–SPECIFIC ASSAY

Shigenori Tanaka; Hiroshi Tamura, and Makoto Ohki, all of Tokyo, Japan, assignors to Seikagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 14, 1993, Ser. No. 120,469
Claims priority, application Japan, Sep. 14, 1992, 4-269189
Int. Cl.[6] C12Q *1/37;1/34;* C12N *11/08;11/12*
U.S. Cl. 435—23 **7 Claims**

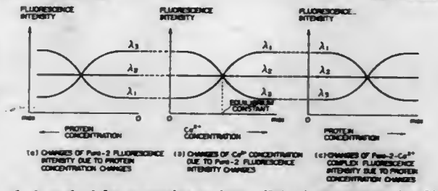
1. A method for conducting an endotoxin-specific assay comprising applying a sample solution to a reagent for endotoxin-specific assay which comprises an insoluble carrier selected from the group consisting of polyamide and cellulose which has immobilized thereon one or more moieties, wherein at least one of said immobilized moieties is an endotoxin-sensitive factor that can be activated by endotoxin and that is derived from a limulus amebocyte lysate and wherein none of said immobilized moieties shows reactivity with a (1→3)-β-β-glucan, allowing endotoxin in the sample to react with at least the endotoxin-sensitive factor on said reagent, allowing said reagent to react with either a substrate that reacts with the immobilized endotoxin-sensitive factor after the immobilized endotoxin-sensitive factor has been activated by endotoxin or a substrate for limulus amebocyte lysate clotting enzyme, and determining a change of either of said substrate.

5,550,031

METHOD OF OPTIMIZING EQUILIBRIUM CONSTANTS AND FLUORESCENCE COEFFICIENTS FOR MEASURING INTRACELLULAR ION CONCENTRATION USING FLUORESCENCE PROBE DYES WITH TRIPLE WAVE LENGTH PHOTOMETRY

Atsuo Miyakawa, Sejyuruguranpieru 102, 2-13-1, Shijimizuka, Hamamatsu, Shizuoka-ken; Masahiko Hirano, and Kiyoshi Kamiya, both of Hamamatsu, all of, Japan, assignors to Hamamatsu Photonics K.K., and Atsuo Miyakawa, both of Hamamatsu, Japan

Continuation-in-part of Ser. No. 110,173, Aug. 23, 1993, abandoned. This application Sep. 20, 1994, Ser. No. 309,317
Int. Cl.[6] C12Q *1/02;* G01N *33/53*
U.S. Cl. 435—29 **24 Claims**



1. A method for measuring an intracellular ion concentration X_i, where the ion is selected from the group consisting of Ca^{+2}, Mg^{+2}, $H^+$and $Na^+$with a fluorescent probe dye, in which the fluorescent probe dye is introduced into a cell, and a concentration of the ion to be measured in the cell is measured, based on intensities of fluorescence generated by irradiating the cell with excitation beams, the method comprising:

A) irradiating a first series of probe-ion solutions containing:
(1) the fluorescent probe dye and
(2) the intracellular ion to be measured in different relative concentrations of said probe and said ions with excitation beams at three different wavelengths, and measuring fluorescence intensities generated by the excitation beams, which correspond to the respective three different wavelengths and the first series of the probe-ion solutions;
B) irradiating a second series of probe-interfering biosubstance solutions containing:
(1) an interfering biosubstance which interacts with the fluorescent probe dye and either a) changes a property of the fluorescent probe dye selected from the group consisting of fluorescence intensity, and fluorescence spectrum or b) affects an equilibrium constant K_{Fi} between the fluorescent probe dye, the intracellular ion and their complex, and
(2) the fluorescent probe dye, in different relative concentrations of said interfering biosubstance and said probe, with excitation beams at three different wavelengths, and measuring fluorescence intensities generated by the excitation beams, which correspond to the respective three different wavelengths and the second series of solutions;
C) irradiating a third series of probe-biosubstance-ion solutions containing:
(1) the interfering biosubstance,
(2) the fluorescent probe dye, and
(3) the intracellular ions, in different relative concentrations of the interfering biosubstance, the fluorescent probe dye, and the intracellular ions with excitation beams at three different wavelengths, and measuring fluorescence intensities generated by the excitation beams, corresponding to the respective three different wavelengths and the third series of solutions;
D) approximating equilibrium constants and fluorescence coefficients in a successive manner by
(1) setting initial values for each of three kinds of equilibrium constants: K_{Fi}, K_{PF} and K_{PFi} in the following three kinds of independent equilibrium constant equations of the fluorescent probe dye, the intracellular ion to be measured, the interfering biosubstance and their complexes in the cell, and initial values of 12 kinds of fluorescence coefficients: $I_{\lambda1,F}$, $I_{\lambda2,F}$, $I_{\lambda3,F}$, $I_{\lambda1,PF}$, $I_{\lambda2,PF}$, $I_{\lambda3,PF}$, $I_{\lambda1,Fi}$, $I_{\lambda2,Fi}$, $I_{\lambda3,Fi}$, $I_{\lambda1,PFi}$, $I_{\lambda2,PFi}$, and $I_{\lambda3,PFi}$, in the following equations

between the intensities of the fluorescence measured, and concentrations of fluorescent probe dye, the intracellular ion to be measured, interfering biosubstance, and their complexes,

(2) calculating and comparing errors between fluorescence intensities calculated based on the initial values, and fluorescence intensities measured in the first three steps,

(3) if the error is within a preselected allowable range, optimizing the three kinds of equilibrium constants and the 12 kinds of fluorescence coefficients, if the error exceeds the allowable range, setting new values for the three kinds of equilibrium constants and the 12 kinds of fluorescence coefficients,

(4) calculating errors between calculated fluorescence intensities, and fluorescence intensities measured in the first three steps,

(5) comparing the error based on the newly set values with the previous error, and

(6) if the error this time is larger or equal to the previous error, or zero, the three kinds of equilibrium constants and the 12 kinds of fluorescence coefficients are deemed optimized, or if the error this time is less than the previous error but not zero, the steps are successively repeated and new values of the three kinds of equilibrium constants and the 12 kinds of fluorescence coefficients are reset until the error is larger or equal to the previous error, or zero;

E) introducing the fluorescent probe dye into the cell, irradiating the cell with excitation beams at three different wavelengths, and measuring intensities of the fluorescence generated by the excitation beams, which correspond to the respective three different wavelengths; and

F) determining the intracellular ion concentration X_I by solving simultaneous equations of (1) equilibrium constant equations of the fluorescent probe dye, interfering biosubstance, the ions to be measured and their complexes in the cell, and (2) equations between the intensities of the fluorescence measured and the concentrations of fluorescent probe dye, interfering biosubstance, the ions to be measured and their complexes, wherein the equations are:

$$K_{FI}=X_F \bullet X_I / X_{FI}$$

$$K_{PF}=X_P \bullet X_P / X_{PF}$$

$$K_{PFI}=X_P \bullet X_{PF} / X_{PFI} \text{ (or, } K_{PFI}=X_{PF} \bullet X_I / X_{PFI}$$

$$I_{\lambda 1}=I_{\lambda 1,F} \bullet X_F + I_{\lambda 1,PF} \bullet X_{PF} + I_{\lambda 1,FI} \bullet X_{FI} + I_{\lambda 1,PFI} \bullet X_{PFI}$$

$$I_{\lambda 2}=I_{\lambda 2,F} \bullet X_F + I_{\lambda 2,PF} \bullet X_{PF} + I_{\lambda 2,FI} \bullet X_{FI} + I_{\lambda 2,PFI} \bullet X_{PFI}$$

$$I_{\lambda 3}=I_{\lambda 3,F} \bullet X_F + I_{\lambda 3,PF} \bullet X_{PF} + I_{\lambda 3,FI} \bullet X_{FI} + I_{\lambda 3,PFI} \bullet X_{PFI}$$

wherein

X_F: a concentration of a fluorescent probe dye (F),

X_I: a concentration of intracellular ions to be measured (I)

X_P: a concentration of interfering biosubstance (P)

X_{FI}: a concentration of fluorescent probe dye-intracellular ions to be measured complex (FI)

X_{PF}: a concentration of interfering biosubstance-fluorescent probe dye complex (PF)

X_{PFI}: a concentration of interfering biosubstance-fluorescent probe dye-intracellular ions to be measured complex (PFI)

K_{FI}: an equilibrium constant between fluorescent probe dye, intracellular ions to be measured and the FI complex

K_{PF}: an equilibrium constant between interfering biosubstance, fluorescent probe dye and the PF complex

K_{PFI}: an equilibrium constant among interfering biosubstance, fluorescent probe dye, intracellular ions to be measured and the PFI complex

$I_{\lambda i}$: a measured fluorescence intensity for an excitation beam of wavelength λ_i

$I_{\lambda i,F}$: a fluorescence intensity coefficient of a fluorescence probe dye for an excitation beam of wavelength λ_iI

$I_{\lambda PF}$: a fluorescence intensity coefficient of interfering biosubstance-fluorescent probe dye complex (PF) for an excitation beam of wavelengthλi

$\lambda_{I,PI}$: a fluorescence intensity coefficient of fluorescent probe intracellular dye-ions to be measured complex (FI) for an excitation beam at wavelengthλi

$I_{\lambda I,PFI}$: a fluorescence intensity coefficient of interfering biosubstance-fluorescent probe dye-ions to be measured complex (PFI) for excitation beam of a wavelength λi

i: 1, 2, 3.

5,550,032

BIOLOGICAL ASSAY FOR MICROBIAL CONTAMINATION

Jenefir D. Isbister, Potomac, Md., assignor to George Mason University, Fairfax, Va.

Filed May 27, 1994, Ser. No. 250,383
Int. Cl.[6] C12Q *1/06*
U.S. Cl. 435—39 **13 Claims**

1. A method for determining the concentration of viable microorganisms in a liquid, comprising the steps of:

selecting a sample of said liquid from a source where contamination is suspected;

mixing said liquid with an indicator compound in a container, said indicator compound including a triphenyltetrazolium indicator which undergoes a visible color change upon reduction as a result of contact with a viable microorganism;

visually detecting a predetermined visible color change in said liquid sample due to said viable microorganisms being in contact with said indicator compound;

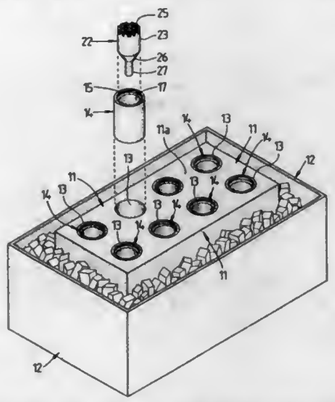
measuring an elapsed time for said predetermined visible color change to occur in said liquid sample, said elapsed time indicating the concentration of viable microorganisms in said liquid at the time of selection of said sample.

5,550,033

MOLD PLUNGER AND METHOD FOR EMBEDDING TISSUE SAMPLES

Carlos Krumdieck, 3408 Wellford Cir., Birmingham, Ala. 35216

Filed Sep. 26, 1994, Ser. No. 312,034
Int. Cl.[6] C12Q *1/08*
U.S. Cl. 435—40.52 **15 Claims**



14. A method for encasing a tissue sample within a hardening medium for obtaining improved sample slices comprising:

(a) sizing a tissue sample to fit within a slicing well of a microtome;

(b) orienting said tissue sample on an upper surface of a mold plunger resting within a mold cavity such that major vessels lie parallel to a center vertical line of said plunger;

(c) covering said tissue sample with a gel forming medium and allowing said medium to harden; and

(d) removing said mold plunger and said tissue sample encased within said gel as one unit and inverting said mold plunger into a tissue well of a tissue slicing machine, for iterative slicing thereof.

5,550,034

APOLIPOPROTEIN B MRNA EDITING PROTEIN COMPOSITIONS AND METHODS

BaBie Teng, Gaithersburg, Md.; Nicholas O. Davidson, Olympia Fields, and Charles F. Burant, Chicago Heights, both of Ill., assignors to Arch Development Corp., Chicago, Ill., and Northwestern University, Evanston, Ill.

Continuation-in-part of Ser. No. 984,926, Dec. 4, 1992, abandoned. This application Feb. 9, 1993, Ser. No. 15,203
Int. Cl.[6] C12P *21/06*; C12N *9/22;5/00*; C07H *19/00*
U.S. Cl. 435—69.1 **16 Claims**

1. An isolated polynucleotide that encodes an apo B RNA editing protein that comprises the amino acid residue sequence of SEQ ID NO:2.

5,550,035

PROKARYOTIC EXPRESSION IN EUKARYOTIC CELLS

Bernard Moss, Bethesda, Md.; F. William Studier, Stony Brook, N.Y.; Thomas R. Fuerst, Gaithersburg, Md., and Edward G. Niles, Amherst, N.Y., assignors to The Research Foundation of State University of New York, Buffalo, N.Y.

Continuation of Ser. No. 648,971, Jan. 31, 1991, abandoned, which is a continuation-in-part of Ser. No. 582,489, Sep. 14, 1990, abandoned, which is a continuation-in-part of Ser. No. 905,253, Sep. 8, 1986, abandoned. This application Jan. 26, 1994, Ser. No. 187,119
Int. Cl.[6] C12N *5/10;15/09;7/01*
U.S. Cl. 435—69.1 **43 Claims**

1. A method of expressing a gene in a eukaryotic cell comprising incorporating into said cell:

a DNA-based cytoplasmic virus;

a first carrier including a first gene encoding a bacteriophage RNA polymerase selected from the group consisting of T7, SP6, GH1 and T3 RNA polymerase, said first gene being foreign to the carrier and to the cell, and a first promoter sequence which initiates expression of said first gene; and

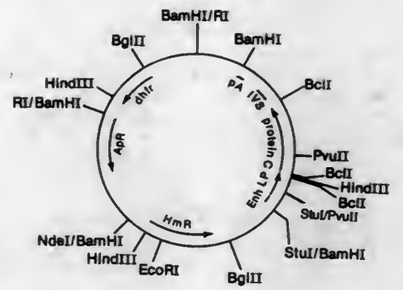
a second carrier comprising a functional cistron comprising a second foreign gene including a second promoter sequence responsive to said bacteriophage RNA polymerase, such that upon recognition of said RNA polymerase, said second promoter initiates expression of the second foreign gene in the eukaryotic cell.

5,550,036

METHOD FOR CO-AMPLIFICATION OF HUMAN PROTEIN C GENES IN HUMAN CELLS

Brian W. Grinnell, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 368,700, Jun. 20, 1989, abandoned, which is a continuation-in-part of Ser. No. 250,001, Sep. 27, 1988, abandoned, which is a continuation-in-part of Ser. No. 129,028, Dec. 4, 1987, abandoned, which is a continuation-in-part of Ser. No. 849,999, Apr. 9, 1986, abandoned. This application Mar. 9, 1994, Ser. No. 208,930
Int. Cl.[6] C12N *15/63;* C12P *21/00*
U.S. Cl. 435—69.1 **12 Claims**



1. A method of amplifying the nascent human protein C gene in human kidney 293 cells, said method comprising:

a) introducing into said human kidney 293 cells,

1) a first DNA encoding a directly selectable marker functional in eukaryotic cells, and

2) a second DNA encoding the murine dihydrofolatereductase gene, the nascent human protein C gene, the SV40 early promoter, the BK enhancer and the adenovirus 2 late promoter, wherein said SV40 early promoter and said adenovirus 2 late promoter are used in tandem,

b) isolating the cells containing the directly selectable marker,

c) amplifying the levels of the DNA encoding nascent human protein C by culturing said selected cells in media containing progressively increasing amounts of methotrexate.

5,550,037

MAMMALIAN AUGMENTER OF LIVER REGENERATION (ALR): HUMAN AND RAT

Antonio T. Francavilla, Pittsburgh, Pa.; Michio Hagiya, Shiga, Japan, and Thomas E. Starzl, Pittsburgh, Pa., assignors to University of Pittsburgh, Pittsburgh, Pa., and Toyobo Co. Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 197,496, Feb. 16, 1994, Pat. No. 5,480,797. This application Jul. 15, 1994, Ser. No. 275,370
Int. Cl.[6] C12N *1/21;5/10;15/12;15/63*
U.S. Cl. 435—69.1 **9 Claims**

```
        10         20         30         40
CCGTGCCGGG CCTGCGTCGA CTTCAAGACG TGGATGCGGA
        50         60         70         80
CGCAGCAGAA GCGGGACACC AAGTTTACGG AGGACTGCCC
        90        100        110        120
GCCGGATCGC GAGGAACTGG GCCGCCACAG CTGGGCTGTC
       130        140        150        160
CTCCACACCC TGGCCGCCTA CTACCCCGAC CTGCCCACCC
       170        180        190        200
CAGAACAGCA GCAAGACATG GCCCAGTTCA TACATTTATT
       210        220        230        240
TTCTAAGTTT TACCCCTWTG ACGAGTGTGC TGAAGACCTA
       250        260        270        280
AGAAAAAGGT TGTGCAGGAA CCACCCAGAC ACCCGCACCC
       290        300        310        320
GGGCATGCTT CACACAGTGG CTGTGCCACC TGCACAATGA
       330        340        350        360
AGTGAACCGC AAGCTGGGCA AGCCTGACTT CGACTGCTCA
       370        380        390        400
AAAGTGGATG ACGCGTGGCG CGACGGCTGC AAGGATGGCT
       410        420        430        440
CCTGTGACTA GAGGGTGGTC AGCCAGAGCT CATGGGACAG
       450        460        470        480
CTAGCCAGGC ATGGTTGGAT AGGGGCAGGG CACTCATTAA
       490        500        510        520
AGTGCATCAC AGCCAGAAAA AAAAAAAAAA AAAAA.....
```

1. An isolated DNA comprising a nucleotide sequence encoding mammalian augmenter of liver regeneration, which is characterized by having the nucleotide sequence of SEQ ID NO:21.

5,550,038

MOLECULAR FARMING

Robert M. Goodman; Vic C. Knauf, both of Davis; Catherine M. Houck, Vacaville, and Luca Comai, Davis, all of Calif., assignors to Calgene, Inc., Davis, Calif.

Continuation of Ser. No. 507,380, Apr. 9, 1990, abandoned, which is a continuation of Ser. No. 760,236, Jul. 29, 1985, Pat. No. 4,956,282. This application Dec. 8, 1993, Ser. No. 164,346

The portion of the term of this patent subsequent to Sep. 11, 2007, has been disclaimed.

Int. Cl.[6] C12N *15/12;15/20;15/82;15/84*

U.S. Cl. 435—70.1 **5 Claims**

1. A method for producing a mammalian peptide which comprises:

growing dicotyledonous plant cells containing an integrated sequence comprising,

an expression cassette having in the direction of transcription (1) a transcriptional and translational initiation region functional in said plant cells, (2) a structural gene coding for said mammalian peptide and (3) a termination region,

whereby said structural gene is expressed to produce said mammalian peptide.

5,550,039

OLIGONUCLEOTIDE PRIMERS FOR HLA CLASS I B LOCUS DNA TYPING

Elizabeth A. Trachtenberg, Berkeley, Calif., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Mar. 7, 1995, Ser. No. 399,675

Int. Cl.[6] C12P *19/34;* **C07H** *21/04*

U.S. Cl. 435—91.2 **21 Claims**

1. A primer for the polymerase chain reaction amplification of HLA-B locus nucleic acid, wherein said primer consists of a subsequence of SEQ ID NO:2 comprising bases 5–21 of SEQ ID NO:2.

5,550,040

METHOD, REAGENTS AND KITS FOR THE DETECTION OF NEISSERIA GONORRHOEAE

Ashok P. Purohit, Sommerville, and Sheryl B. Silver, Paramus, both of N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 82,851, Jun. 23, 1993, abandoned. This application Mar. 17, 1994, Ser. No. 214,861

Int. Cl.[6] C12P *19/34;* **C07H** *21/02;21/04;* **C12N** *15/00*

U.S. Cl. 435—91.2 **8 Claims**

1. A method for determining the presence or absence of *N. gonorrhoeae* and/or *C. trachomatis* in a fluid sample suspected of containing either or both *N. gonorrhoeae* and *C. trachomatis* comprising:

(a) treating said sample with an aqueous solution containing at least four oligonucleotide primers, two of said primers being capable of hybridizing selectively with the two complementary strands of *N. gonorrhoeae* DNA which contain the target sequence, said primers having SEQ ID NO: 1 and SEQ ID NO:2, respectively, and the other two primers being capable of hybridizing selectively with the two complementary strands of *C. trachomatis* DNA which contain the target sequence, said primers having SEQ ID NO:4 and SEQ ID NO:5, respectively, said aqueous solution also containing an inert organic polar solvent as a cosolvent;

(b) synthesizing an extension product of each of said primers, which extension product(s) containing the target DNA sequence(s), and amplifying said target sequences(s) if present;

(c) treating said sample, after the intended amplification(s), with two oligonucleotide probes: one probe having sequence SEQ ID NO:3 which is uniquely complementary to a sequence in the amplified region of *N. gonorrhoeae*, and a second probe having sequence SEQ ID NO:6 which is uniquely complementary to a sequence in the amplified region of *C. trachomatis;*

(d) incubating the amplified target region(s), if any, with each of the oligonucleotide probes, under stringent conditions, and allowing for hybridization between each of said probes and the target region for said probe; and

(e) detecting hybrids formed between the amplified target regions(s), if any, and the oligonucleotide probe(s).

5,550,041

CAFFEINE DEMETHYLATE GENE-CONTAINING DNA FRAGMENT AND MICROBIAL PROCESS FOR PRODUCING 3-METHYL-7-ALKYLXANTHINE

Yoshinao Koide; Seiji Nakane, and Yutaka Imai, all of Aichi, Japan, assignors to Amano Pharmaceutical Co., Ltd., Nagoya, Japan

Continuation of Ser. No. 63,553, May 18, 1993, abandoned. This application Oct. 18, 1994, Ser. No. 324,483

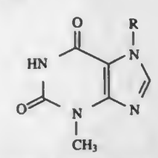
Claims priority, application Japan, May 20, 1992, 4-154380; Oct. 27, 1992, 4-312954

The portion of the term of this patent subsequent to Apr. 14, 2012, has been disclaimed.

Int. Cl.[6] C12P *17/18;* **C12N** *9/14;9/78;1/21*

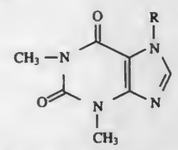
U.S. Cl. 435—119 **10 Claims**

1. A process for producing a 3-methyl-7-alkylxanthine represented by formula (II):



(II)

wherein R represents a straight-chain or branched alkyl group, comprising cultivating a transformant in a nutrient culture medium containing a 1,3-dimethyl-7-alkylxanthine represented by formula (I):



(I)

wherein R is as defined above, to produce 3-methyl-7-alkylxanthine in the resulting culture and

recovering the produced 3-methyl-7-alkylxanthine from the culture,

wherein said transformant comprises an organism of the genus Pseudomonas which has the ability to constitutively convert caffeine into theobromine, but lacks the ability to demethylate theobromine into 7-methylxanthine, that has been transformed with a recombinant DNA vector comprising a DNA molecule encoding a caffeine demethylase gene of a microorganism belonging to the genus Pseudomonas, which has the ability to assimilate caffeine, and wherein said transformant produces caffeine demethylase during said cultivating.

5,550,042

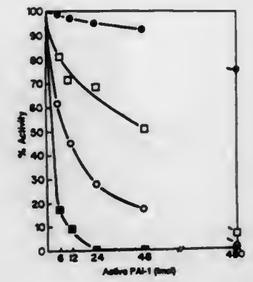
SERINE PROTEASE MUTANTS OF THE CHYMOTRYPSIN SUPERFAMILY RESISTANT TO INHIBITION BY THEIR COGNATE INHIBITORS AND GENES ENCODING THE SAME AND SERINE PROTEASE INHIBITOR MUTANTS AND GENES ENCODING THE SAME

Joseph F. Sambrook; Edwin L. Madison; Elizabeth J. Goldsmith; Maryjane H. Gething, and Robert D. Gerard, all of Dallas, Tex., assignors to The Board of Regents of The University of Texas System, Austin, Tex.

Continuation-in-part of Ser. No. 319,212, Mar. 6, 1989, abandoned. This application Nov. 13, 1989, Ser. No. 434,748

Int. Cl.[6] C12N *15/01;15/63;9/50;* **C07H** *21/04*

U.S. Cl. 435—172.1 **48 Claims**



1. A t-PA mutant which is resistant to inhibition by its cognate inhibitor, wherein said t-PA mutant has an acidic or neutral amino acid substitution at the basic amino acid corresponding to position 304 of human t-PA.

5,550,043

EXPRESSION OF HETEROLOGOUS PROTEINS IN DROSOPHILA CELLS

Hanne R. Johansen, Hojbjerg, Denmark; Ariane A. Van Der Straten-Ponthoz, Chicago, Ill., and Martin Rosenberg, Royersford, Pa., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

Division of Ser. No. 98,016, Jul. 27, 1993, which is a continuation-in-part of Ser. No. 278,386, Dec. 1, 1988, abandoned, and Ser. No. 574,563, Aug. 27, 1990, abandoned, which is a continuation of Ser. No. 428,454, Oct. 30, 1989, which is a continuation of Ser. No. 47,736, May 8, 1987. This application May 3, 1995, Ser. No. 433,178

Int. Cl.[6] C12M *15/09*

U.S. Cl. 435—172.3 **7 Claims**

1. A method for altering the copy number of a heterologous gene integrated into a Drosophila cells genome which comprises: selecting cultured Drosophila cells as a host for transfection; cotransfecting said host cell with (i) a first vector comprising a gene expression unit having a promoter of Drosophila origin and a DNA sequence encoding a heterologous gene product and; (ii) a second vector comprising a promoter of Drosophila origin and a DNA sequence encoding a selection marker, wherein the ratio of said cotransfected vectors is altered such that the first vector is present in the ratio of from about 1 to 100 times that of the second vector; and culturing the transfected Drosophila cells.

5,550,044

PREPARATION OF WAX BEADS CONTAINING A REAGENT USING LIQUID NITROGEN FOR COOLING AND SOLIDIFYING

Kenneth M. Kosak, and Matthew K. Kosak, both of 3194 S. 4400 West, West Valley City, Utah 84120

Continuation-in-part of Ser. No. 936,357, Aug. 27, 1992, Pat. No. 5,413,924, which is a continuation-in-part of Ser. No. 835,758, Feb. 13, 1992, abandoned. This application Jun. 10, 1994, Ser. No. 257,567

Int. Cl.[6] C12N *11/02;11/08;* **G01N** *33/544;* **C07K** *17/00*

U.S. Cl. 435—177 **15 Claims**

1. A method for producing a wax bead that contains a reagent and is greater than one millimeter in diameter, comprising the steps of:

a. forming a droplet of molten wax containing said reagent,

b. cooling said droplet to solidify the molten wax by dropping said droplet onto the surface of liquid nitrogen such that said droplet remains on the surface of the liquid nitrogen until solidified; and

c. removing the solidified droplet from the surface of the liquid nitrogen before said droplet sinks into the liquid nitrogen.

5,550,045

CLONING AND EXPRESSION OF DNA ENCODING A RIPENING FORM OF A POLYPEPTIDE HAVING RHAMNOGALCTURONASE ACTIVITY

Wouter Musters, Maassluis; Hein Stam, Diemen; Maria E. Suykerbuyk, Utrecht; Jacob Visser, Wageningen, and Johannes M. Verbakel, Maasland, all of, Netherlands, assignors to Unilever Patent Holdings, B.V., Vlaardingen, Netherlands

Filed May 14, 1993, Ser. No. 61,062

Claims priority, application European Pat. Off., May 15, 1992, 92201403

Int. Cl.[6] C12P *21/06;* **C12N** *1/14;9/26;* **C07H** *19/00*

U.S. Cl. 435—201 **23 Claims**

1. An isolated and purified DNA comprising a DNA sequence encoding a polypeptide having rhamnogalacturonase activity said polypeptide consisting of the amino acid sequence of SEQ ID NO:6.

5,550,046

DNA ENCODING ALPHA-GLUCOSIDASE AND METHOD OF PRODUCING SAME BY GENETIC ENGINEERING

Yuzuru Suzuki, Shiga-gun; Yukio Takii, Kyoto; Kazumi Yamamoto, Tsuruga; Yoshiaki Nishiya, Tsuruga; Atsushi Sogabe, Tsuruga; Yukihiro Sogabe, Tsuruga, and Shigenori Emi, Tsuruga, all of, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Mar. 22, 1993, Ser. No. 39,777

Claims priority, application Japan, Mar. 27, 1992, 4-101658; May 11, 1992, 4-117538

Int. Cl.[6] C12N *9/28;9/26;15/56;15/63*

U.S. Cl. 435—202 **4 Claims**

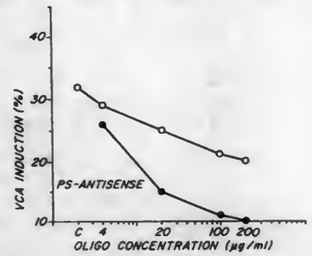
1. An isolated and purified DNA comprising a nucleotide sequence encoding α-glucosidase, wherein said DNA has the nucleotide sequence of SEQ ID NO:2.

5,550,047

OLIGONUCLEOTIDES WITH ANTI-EPSTEIN-BARR VIRUS ACTIVITY

Carel Mulder, Worcester, Mass., assignor to University of Massachusetts, Worcester, Mass.

Filed Feb. 18, 1994, Ser. No. 199,510
Int. Cl.[6] C12N *5/00;7/06;* A61K *48/00;* C07H *21/04*
U.S. Cl. 435—238 7 Claims



1. A synthetic oligonucleotide complementary to and hybridizable with a portion of the BZLF1 RNA of Epstein-Barr virus, the oligonucleotide having the nucleotide sequence set forth as SEQ ID NO:1 or SEQ ID NO:3.

5,550,048

Patent Not Issued For This Number

5,550,049

PROCESS FOR IDENTIFYING PARA CATION CHANNEL MODULATORS

Leonardus H. T. Van Der Ploeg, and Jeffrey W. Warmke, both of Scotch Plains, N.J., assignors to Merck & Co., Inc, Rahway, N.J.

Filed Nov. 10, 1994, Ser. No. 338,702
Int. Cl.[6] C12N *1/21;1/15;5/10;15/12;15/63*
U.S. Cl. 435—240.1 3 Claims

1. A DNA molecule characterized by the nucleotide sequence as set forth in SEQ ID NO:7.

5,550,050

METHOD FOR IMPLANTING ENCAPSULATED CELLS IN A HOST

Laura M. Holland, Providence; Joseph P. Hammang; Seth A. Rudnick, both of Barrington; Michael J. Lysaght, E. Greenwich, all of R.I., and Keith E. Dionne, Reboboth, Mass., assignors to CytoTherapeutics, Inc., Providence, R.I.

Filed Apr. 15, 1994, Ser. No. 228,403
Int. Cl.[6] C12N *5/00;1/38;1/36*
U.S. Cl. 435—240.2 13 Claims

1. A method for preparing encapsulated cells for implanting at an implantation site in a human comprising the steps of:

(a) encapsulating the cells in a biocompatible capsule, and

(b) exposing the cells to at least one restrictive condition that closely matches a condition at the implantation site and which establishes a measurable change in at least one cell property in response to the restrictive condition.

5,550,051

AVIAN EMBRYO CELL AGGREGATE BIOMASS FOR PRODUCING VIRUS/VIRUS ANTIGEN AND METHOD FOR PRODUCING VIRUS/VIRUS ANTIGEN

Wolfgang Mundt, Vienna; Wilfried Woehrer, Bad Voeslau; Friedrich Dorner, and Johann Eibl, both of Vienna, all of, Australia, assignors to Immuno Aktiengeselischaft, Vienna, Australia

Continuation of Ser. No. 854,630, Jul. 6, 1992, Pat. No. 5,391,491. This application Dec. 1, 1994, Ser. No. 352,077
Claims priority, application Australia, Jan. 4, 1990, 18/90
Int. Cl.[6] C12N *5/00;5/02;7/00;* C12P *21/04;* A01N *1/02;* A61K *39/12;39/145;39/245*
U.S. Cl. 435—240.2 19 Claims

1. A biomass for producing virus/virus antigen, comprising cell aggregates of avian embryo cells, wherein said cell aggregates have diameters of between 100 μm and 1,000 μm and have been infected with a virus.

5,550,052

HYBRID CELL LINE FORMED BETWEEN T4 LYMPHOCYTES AND TUMORAL LYMPHOID TYPE CELLS

Luc Montagnier, Le Plessins Robinson; Françoise Rey, Paris; Bernard Krust, Paris, and François Clavel, Paris, all of, France, assignors to Institut Pasteur and Centre National de la Recherche Scientifique, France

Continuation of Ser. No. 632,405, Dec. 20, 1990, which is a continuation of Ser. No. 221,303, Jul. 19, 1988, which is a continuation of Ser. No. 852,438, Apr. 15, 1986, abandoned, which is a continuation-in-part of Ser. No. 771,247, Aug. 31, 1985. This application Sep. 11, 1992, Ser. No. 944,015
Claims priority, application France, Apr. 15, 1985, 85.05676
Int. Cl.[6] C12N *5/22*
U.S. Cl. 435—240.26 5 Claims

1. A hybrid cell line, wherein the hybrid cells are formed between human T4 lymphocytes and a MOLT-4 cell, wherein

said hybrid cells express T4 molecule at their surface; and

said hybrid cells are infected by a human immunodeficiency virus type 1 (HIV-1).

5,550,053

METHOD OF CALIBRATING AN AUTOMATIC CHEMICAL ANALYZER

Jerome Salpeter, Yorktown, N.Y., assignor to SI Industrial Instruments, Inc., Hawthorne, N.Y.

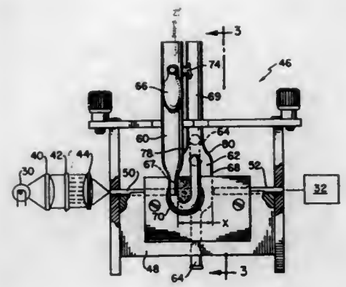
Filed Jan. 5, 1995, Ser. No. 368,853
Int. Cl.[6] G01N *31/00*
U.S. Cl. 436—8 15 Claims

1. A method for calibrating an automatic chemical analyzer comprising the steps of:

a.) adding at least a color reagent that reacts with an analyte to form a color complex, and an inhibiting reagent to inhibit any further formation of color complex after a specified time has elapsed, to a chemical module; then

b.) adding a baseline solution of known analyte concentration to the chemical module to form a baseline mixture that maintains the ratio of the reagents constant;

c.) passing the baseline mixture through a flow cell;



d.) passing light at a specified frequency through the flow cell so that the concentration of analyte in the baseline mixture may be determined; and

e.) calculating a baseline value corresponding to the quantity of the analyte detected in the baseline mixture which also corresponds to the amount of analyte contamination contained within the color reagent and the inhibiting reagent.

5,550,054

HEMATOPOIETIC RESTRICTED TYROSINE KINASE (BPK)

Owen Whitte, Sherman Oaks; Satoshi Tsukada; Douglas Saffran, both of Los Angeles, and David Rawlings, Santa Monica, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Continuation of Ser. No. 6,449, Jan. 21, 1993, abandoned, which is a continuation-in-part of Ser. No. 985,998, Dec. 4, 1992, abandoned. This application Feb. 21, 1995, Ser. No. 391,615
Int. Cl.[6] C12N *1/21;5/10;15/54;9/12*
U.S. Cl. 435—240.2 6 Claims

1. A purified cDNA which encodes a polypeptide selected from the group consisting of SEQ ID NO:2 and SEQ ID NO:6.

5,550,055

RECOMBINANT DNA-PRODUCED T11 AND FRAGMENTS THEREOF

Ellis Reinherz, Lincoln; Peter Sayre; Hsiu-Ching Chang, both of Cambridge, and Neil Richardson, Needham Heights, all of Mass., assignors to Dana-Farber Cancer Institute, Boston, Mass.

Continuation of Ser. No. 361,014, Dec. 21, 1994, which is a continuation of Ser. No. 902,436, Jun. 18, 1992, abandoned, which is a continuation of Ser. No. 714,323, Jun. 11, 1991, abandoned, which is a continuation of Ser. No. 932,871, Nov. 18, 1986, abandoned, which is a continuation-in-part of Ser. No. 913,988, Oct. 1, 1986, abandoned, which is a continuation-in-part of Ser. No. 906,413, Sep. 11, 1986, abandoned. This application May 24, 1995, Ser. No. 449,199
Int. Cl.[6] C12N *15/00;* C12P *21/06;* C07K *14/00;* C07H *21/04*
U.S. Cl. 435—240.2 10 Claims

4. A cell transformed with a vector comprising the DNA sequence set forth in FIG. 2 encoding the human T11 protein, wherein said cell is capable of expressing said human T11 protein.

5,550,056

Patent Not Issued For This Number

5,550,057

Patent Not Issued For This Number

5,550,058

SYSTEM FOR FLEXIBLY SORTING PARTICLES

Mark A. Corio, and James F. Leary, both of Rochester, N.Y., assignors to University of Rochester, Rochester, N.Y.

Division of Ser. No. 681,559, Apr. 15, 1991, Pat. No. 5,199,576. This application Dec. 15, 1992, Ser. No. 990,718
Int. Cl.[6] B07C *5/04;5/342;* G01N *15/00*
U.S. Cl. 436—63 11 Claims

1. A control system for sorting particles comprising:

a sensor for generating input signals for said particles;

timing circuitry receiving said input signals generated by said sensor and generating a trigger signal after a predetermined time interval for each of the input signals generated by said sensor;

inter-event counting circuitry for receiving the trigger signals generated by said timing circuitry and incrementing an inter-event counter in response to said input signals generated by said sensor received within said predetermined time interval;

inter-event storage circuitry for storing values of said inter-event counter;

sort decision storage circuitry for storing sort decision values for respective characteristics of said particles;

sort decision control circuitry receiving the trigger signal generated by said timing circuitry and thereby updating an avail

ability level variable in response to the trigger signal generated by said timing circuitry;

said sort decision control circuitry generating a read storage signal for respectively reading sort decision values from said sort decision storage circuitry and values of said inter-event counter from said inter-event storage circuitry in response to the trigger signal generated by said timing circuitry;

comparing circuitry, coupled to said inter-event storage circuitry, for comparing said respective values of said inter-event counter with a predetermined value to thereby generate compared values when said respective values of said inter-event counter are less than said predetermined value; and

logic decision circuitry receiving said respective sort decision values from said sort decision circuitry, said availability level variable updated by said sort decision control circuitry, and said compared values generated by said comparing circuitry, and generating a sort pulse signal for said particles in response to the trigger signal generated by said timing circuitry whenever a selected yield/purity ratio which includes intermediate values between maximum yield and maximum purity occurs.

5,550,059

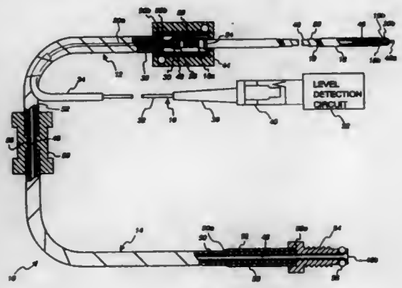
FLUID SENSING PIPETTE

David L. Boger, Mishawaka; Doraiswami Jaichandra, Granger; Donald L. Jaworski, Mishawaka, and Joseph E. Perry, Osceola, all of Ind., assignors to Bayer Corporation, Elkhart, Ind.

Continuation-in-part of Ser. No. 200,675, Feb. 23, 1994, abandoned. This application Dec. 16, 1994, Ser. No. 358,111

Int. Cl.[6] B01L *3/02*

U.S. Cl. 436—54 **10 Claims**



1. A fluid sensing pipette, comprising:

an outer conductive tube forming a first electrode;

an inner conductive tube forming a second electrode, said inner conductive tube disposed concentrically within said outer conductive tube, an outer surface of said inner conductive tube coated with a thin, uniform, and consistent polymer coating to insulate said inner conductive tube from said outer conductive tube;

a hydrophobic polymeric tube disposed concentrically within said inner conductive tube; and

a level detection circuit, coupled to said inner and outer conductive tubes, for determining an impedance between said first and second electrodes and for generating a control signal in response to the impedance falling below a predetermined threshold wherein said polymer coating is selected from the group consisting of poly (para-xylylene), poly (2-chloro-para-xylylene), and poly (2,5-dichloro-para-xylylnene.

5,550,060

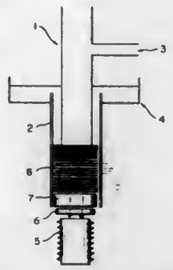
METHOD AND PROCEDURE FOR PREPARING RED BLOOD FRACTIONS

Alexander Saunders, San Carlos; Frank W. Summerfield, Redwood City, and Michael A. Zarowitz, San Carlos, all of Calif., assignors to Chronomed, Inc., San Carlos, Calif.

Continuation-in-part of Ser. No. 970,840, Nov. 3, 1992, abandoned. This application May 3, 1994, Ser. No. 237,095

Int. Cl.[6] B01D *21/26*

U.S. Cl. 436—63 **24 Claims**



1. A method of sorting red blood cells substantially according to their densities into at least three separate fractions, which comprises

(a) placing red blood cells of different densities into a centrifuge tube means,

(b) centrifuging said cells until they are sorted substantially according to their density, and

(c) recovering at least three separate fractions, each fraction having a different average density, from said sorted cells,

where the centrifuge tube means comprises a tube which is capable of withstanding forces applied during centrifugation, said tube being formed of a material which is not a plastic, said tube having an inner surface coating of a water-insoluble plastic, such that the degree of density sorting is greater than that which would have been achieved under the same conditions in the absence of said inner surface coating.

5,550,061

TEST SWAB AND METHOD OF USING SAME

Marcia J. Stone, Wellsley, Mass., assignor to HybriVet Systems, Inc., Natick, Mass.

Continuation-in-part of Ser. No. 156,623, Nov. 24, 1993, Pat. No. 5,364,792, which is a continuation-in-part of Ser. No. 750,312, Aug. 27, 1991, Pat. No. 5,330,917, which is a continuation-in-part of Ser. No. 709,981, Jun. 4, 1991, abandoned, which is a continuation of Ser. No. 499,488, May 7, 1990, Pat. No. 5,039,618, which is a continuation-in-part of Ser. No. 305,221, Feb. 2, 1989, abandoned. This application Oct. 20, 1994, Ser. No. 325,149

The portion of the term of this patent subsequent to Nov. 11, 2094, has been disclaimed.

Int. Cl.[6] G01N *33/20*

U.S. Cl. 436—73 **7 Claims**

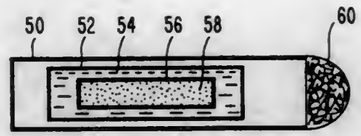
1. A swab device for testing for a metal on a surface, comprising:

a hollow stem;

an absorbent ball of material mounted at one end of the stem;

a passageway interconnecting an interior of said hollow stem with said absorbent ball of material;

a first crushable cartridge within said stem interior;



a second crushable cartridge within said first crushable cartridge;

a reagent that reacts with the metal in such a manner so as to give a visual indication of the reaction, said reagent being located within one of the first and second crushable cartridges; and

an activator solution for activating the metal, said activator solution being located in the other of said first and second crushable cartridges,

wherein said metal is selected from the group consisting of chromium, nickel, manganese, zinc, barium, strontium, silver and vanadium.

5,550,062

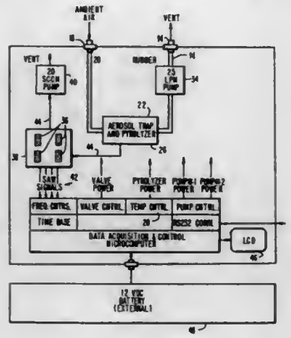
METHOD AND APPARATUS FOR CHEMICAL DETECTION BY PYROLYSIS

Henry Wohltjen, Bowling Green, Ky., and Edward J. Poziomek, Las Vegas, Nev., assignors to Microsensor Systems, Inc., Bowling Green, Ky.

Filed Oct. 27, 1993, Ser. No. 144,876

Int. Cl.[6] G01N *21/72*

U.S. Cl. 436—155 **15 Claims**



1. A method for determining the amount of a non-volatile chemical substance of interest present in a sample, which comprises the steps of:

(a) introducing said sample into a pyrolysis zone;

(b) subjecting said sample to an elevated temperature no more than 300° C. such that any sample is pyrolyzed to yield a pyrolysis product;

(c) extracting an amount of atmospheric gaseous material from said pyrolysis zone, and introducing said amount of gaseous material into a detection zone, where said amount is contacted with a sensing apparatus which selectively senses the presence of a product of the pyrolysis of said chemical substance and produces a sensor pattern signal representative of the results of such sensing; and

(d) analyzing the signal produced due to sensing of said atmospheric gaseous materials to indicate the presence and amount of said chemical substance of interest in the sample.

5,550,063

METHODS FOR PRODUCTION OF AN OPTICAL ASSAY DEVICE

Gregory R. Bogart, Berthoud, Colo., assignor to Biostar, Inc., Boulder, Colo.

Continuation-in-part of Ser. No. 923,270, Jul. 31, 1992, abandoned, and a continuation-in-part of Ser. No. 653,064, Feb. 11, 1991, abandoned. This application Jun. 10, 1993, Ser. No. 76,347

Int. Cl.[6] G01N *33/543*

U.S. Cl. 436—518 **14 Claims**

1. A method for producing an optical assay device which produces a detectable signal caused by light interference effects of said device comprising a substrate and one or more optical layers, an attachment layer and a receptive layer, comprising the steps of:

providing a substrate,

spin coating an anti-reflective layer onto said substrate,

providing an attachment layer, formed from one or more members selected from the group consisting of non-linear branched polymeric siloxanes, film forming latexes, and dendrimers, on said anti-reflective layer, and

providing a receptive layer on said attachment layer.

5,550,064

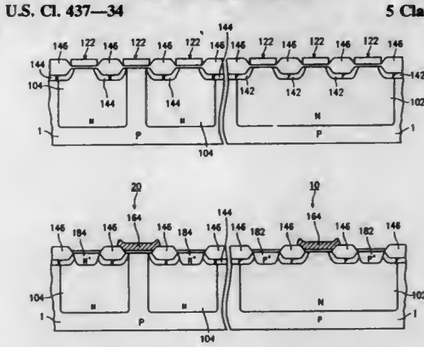
METHOD FOR FABRICATING HIGH-VOLTAGE COMPLEMENTARY METAL-OXIDE-SEMICONDUCTOR TRANSISTORS

Sheng-Hsing Yang, Hsinchu, Taiwan, assignor to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Sep. 29, 1995, Ser. No. 537,074

Int. Cl.[6] H01L *21/8238*

U.S. Cl. 437—34 **5 Claims**



1. A method for fabricating a CMOS transistor on a silicon substrate of a first conductivity type, comprising the steps of:

forming a well of a second opposite conductivity type and two lightly-doped diffusion regions of the second conductivity type in said silicon substrate;

forming a plurality of shielding blocks over said silicon substrate to define source/drain and gate regions;

implanting impurities of the first conductivity type in said well of the second conductivity type by using the shielding blocks as marks to form drift regions of the first conductivity type therein;

implanting impurities of the second conductivity type in said diffusion regions of the second conductivity type by using the shielding blocks as marks to form drift regions of the second conductivity type therein;

forming field oxide layers between said shielding blocks over said silicon substrate;

removing said shielding blocks to expose surfaces of said silicon substrate between the two diffusion regions and said well;

forming gate oxide layers on the exposed surfaces of said silicon substrate and said well respectively;

forming gate electrodes on said gate oxide layers;

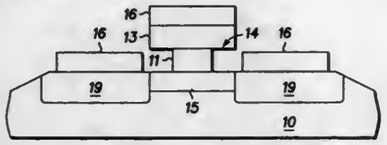
implanting impurities into said well to form source and drain regions of the first conductivity type; and
implanting impurities into said diffusion regions and to form a drain region in the other one of the two diffusion regions.

5,550,065

METHOD OF FABRICATING SELF-ALIGNED FET STRUCTURE HAVING A HIGH TEMPERATURE STABLE T-SHAPED SCHOTTKY GATE CONTACT

Majid M. Hashemi, Tempe; Saied N. Tehrani, Scottsdale, and Patricia A. Norton, Mesa, all of Ariz., assignors to Motorola, Schaumburg, Ill.

Filed Nov. 25, 1994, Ser. No. 344,911
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—39 **1 Claim**



1. A method of fabricating a self-aligned FET comprising the steps of:
providing a substrate having a surface:
forming a conductive channel in the substrate adjacent the surface;
depositing a layer of TiWN refractory gate metal on the surface of the substrate to form a Schottky gate contact on the substrate;
selectively depositing a layer of LaB_6 on the layer of TiWN by electron beam deposition and photolithography;
selectively dry etching the layer of TiWN, using the layer of LaB_6 as a mask, to form a high temperature stable "T-shaped" Schottky gate contact on the surface of the substrate in overlying relationship to the conductive channel;
implanting a dopant into the substrate to form source and drain regions in overlying relationship to the conductive channel adjacent to the surface in spaced relationship to the "T-shaped" gate and in spaced apart relationship using the "T-shaped" Schottky gate contact as a mask;
annealing the implanted source and drain regions; and
selectively depositing metal to form source and drain ohmic contacts on the surface of the substrate in overlying relationship to the source and drain ohmic regions using the "T-shaped" Schottky gate contact as a mask.

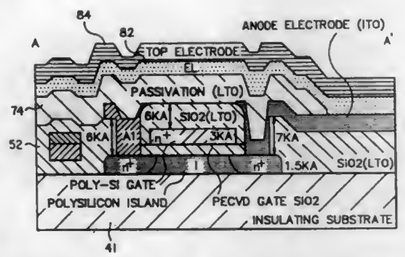
5,550,066

METHOD OF FABRICATING A TFT-EL PIXEL

Ching W. Tang, Rochester, and Biay C. Hseih, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 14, 1994, Ser. No. 355,940
Int. Cl.[6] H01L *21/86*
U.S. Cl. 437—40 **10 Claims**

1. A method of fabricating a TFT-EL pixel comprising the steps of:
a) providing an insulating substrate having top and bottom surfaces, depositing a layer of silicon on the top surface of said substrate and patterning said layer to form a first and a second polycrystalline silicon island;
b) depositing a first dielectric layer over the top surface of said substrate and over said first and second polycrystalline islands to form a gate dielectric layer;
c) depositing a first strip of material over said first polycrystalline silicon island, and depositing a second strip of material over said second polycrystalline silicon island;



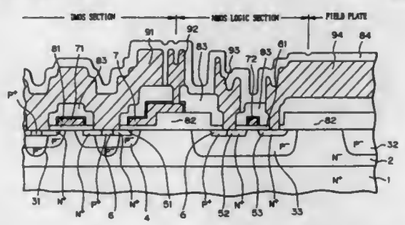
d) depositing a layer for the bottom electrode of a capacitor;
e) ion-implanting into said polycrystalline silicon islands and said strips of material to form source and drain regions and a doped gate electrode; thus forming first and second thin-film-transistors;
f) depositing a second dielectric layer covering said first dielectric layer, said strips of material, and said bottom layer of a capacitor;
g) etching through said first and second dielectric layers to form source and drain contact holes and depositing conducting material into said source and drain contact holes;
h) depositing a conductive layer that forms the top electrode of said capacitor;
i) depositing a display anode layer electrically connected to said drain of said second thin-film-transistor; said anode layer disposed on said second dielectric layer;
j) depositing a third dielectric layer over the surface of the article resulting from step i;
k) etching a hole through said third dielectric layer to expose said display anode layer;
l) depositing an organic electroluminescent layer over said display anode layer; and depositing a cathode layer over said organic layer.

5,550,067

METHOD FOR PRODUCING SEMICONDUCTOR DEVICE HAVING DMOS AND NMOS ELEMENTS FORMED IN THE SAME SUBSTRATE

Akira Kuroyanagi; Yutaka Tomatsu, both of Okazaki, and Yasuaki Tsuzuki, Anjo, all of, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 29, 1993, Ser. No. 38,953
Claims priority, application Japan, Mar. 30, 1992, 4-074554
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—41 **21 Claims**



2. A method of forming a semiconductor device, comprising the steps of:
preparing a semiconductor substrate of a first conductivity type, forming a layer of said first conductivity type over said semiconductor substrate, said semiconductor substrate having a higher concentration than said layer, and implanting ions to form a main well in a vertical semiconductor device forming area on which a first control element having a first allowable current is formed, as well as a subwell in a semiconductor island forming area on which a second control element is

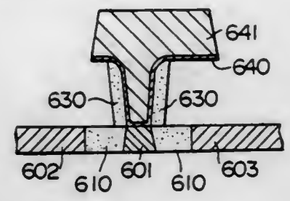
formed, said second control element having MOS construction, a second allowable current which is smaller than said first allowable current and a withstand voltage between a source and drain thereof which is higher than a withstand voltage of said first control element;
forming a gate electrode on a gate insulation film formed on said layer, in the vertical semiconductor device forming area except over said main well;
forming a channel well of a second conductivity type such that an edge of said channel well extends under said gate electrode and such that said channel well overlaps said main well and is shallower than said main well;
forming an internal well of said second conductivity type in a center portion of said channel well, said internal well having a higher concentration than said main well and being formed after said main well and said subwell are formed; and
forming another source of said first conductivity type in said channel well such that an edge of said another source extends under said gate electrode and such that said another source is shallower and narrower than said channel well, wherein the concentration of said another source is higher than that of said layer over said semiconductor substrate.

5,550,068

PROCESS OF FABRICATING A CIRCUIT ELEMENT FOR TRANSMITTING MICROWAVE SIGNALS

Makoto Hirano, Tokyo; Kazuyoshi Asai, Atsugi; Yuhki Imai, Sagamihara; Masami Tokumitsu, Isehara; Tsuneo Tokumitsu, Yokosuka, and Ichihiko Toyoda, Yokosuka, all of, Japan, assignors to Nippon Telegraph And Telephone Corporation, Tokyo, Japan

Division of Ser. No. 133,211, Oct. 7, 1993, which is a division of Ser. No. 787,136, Nov. 4, 1991, Pat. No. 5,281,769. This application May 24, 1995, Ser. No. 449,277
Claims priority, application Japan, Nov. 5, 1990, 2-299500; Feb. 15, 1991, 3-042954; Feb. 15, 1991, 3-042955; Feb. 25, 1991, 3-053355; Mar. 4, 1991, 3-062725; Mar. 4, 1991, 3-062726; Jul. 10, 1991, 3-195001
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—41 **4 Claims**



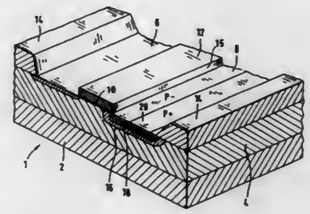
1. A process of fabricating a circuit element on a semiconducting substrate material, said circuit element adapted for use as an active component for transmitting and modifying microwave signals in an integrated circuit of a three dimensional architecture, said process comprising the steps of:
(a) forming a gate masking pattern to define a gate electrode, a source electrode and a drain electrode on said substrate material;
(b) depositing a conductive layer on said gate masking pattern to form the gate electrode;
(c) forming a first insulation layer on said gate, source and drain electrodes and the substrate material;
(d) forming a planarization masking layer on said first insulation layer;
(e) removing the planarization masking layer and the first insulation layer to obtain a planar surface of said gate, source and drain electrodes;
(f) forming a second insulation layer on the planar surface;
(g) forming a window masking layer on said second insulation layer to define a window region;
(h) removing the window masking layer and regions of the second insulation layer so as to define a window cavity and to expose an input gate surface of said gate electrode and a gate region;
(i) forming a third insulation layer on said window cavity so as to cover the input gate surface, gate region and a surface of said cavity completely;
(j) removing said third insulation layer directly above the input gate surface so as to expose the input gate surface of the gate electrode;
(k) forming a first conductive layer on said third insulation layer and the input gate surface;
(l) depositing a second conductive layer so as to form a metal deposit in the window cavity;
(m) forming a gate masking layer on the second conductive layer to define a gate terminal; and
(n) removing the metal deposit, first conductive layer, second insulation layer and the second conductive layer outside said window cavity from the gate terminal; thereby forming the circuit element adapted for use as said active component.

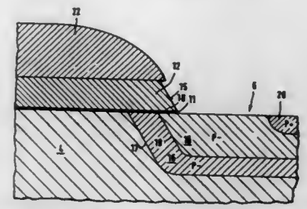
5,550,069

METHOD FOR PRODUCING A PMOS TRANSISTOR

Walter Roth, Dortmund, Germany, assignor to El Mos Electronik In Mos Technologie GmbH, Dortmund, Germany

Continuation of Ser. No. 971,913, Dec. 21, 1992, abandoned. This application May 2, 1995, Ser. No. 432,759
Claims priority, application Germany, Jun. 23, 1990, 40 20 076.0
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—41 **19 Claims**





1. A method for producing a PMOS transistor, comprising:
providing a p doped substrate,
providing an n doped trough on at least a portion of the p doped substrate,
providing a source and a drain extending in the n doped trough,
providing an insulation layer comprising field oxide on at least a portion of the n doped trough,
providing a gate oxide layer extending between the source and the drain,
forming a gate on the gate oxide layer, the gate defining a gate edge,
providing a photolithographic pattern on the gate including a photoresist layer as a mask for ion implantation,
shaping the photoresist layer so that the thickness of the photoresist layer near the gate edge diminishes towards the drain,

forming at least one weakly doped implantation region in overlapping relationship with the gate using the shaped photoresist layer as a mask,

the trough and the at least one weakly doped implantation region defining at least one flank having a doping concentration, the diminishing thickness of the photoresist layer causing the at least one flank having a doping concentration to define a border that is inclined toward the gate.

5,550,070

METHOD FOR PRODUCING CRYSTALLINE SEMICONDUCTOR FILM HAVING REDUCED CONCENTRATION OF CATALYST ELEMENTS FOR CRYSTALLIZATION AND SEMICONDUCTOR DEVICE HAVING THE SAME

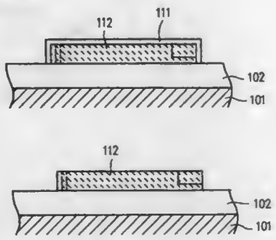
Takashi Funai, Tenri; Naoki Makita, Nara; Yoshitaka Yamamoto, Yamatokoriyama, and Tatsuo Morita, Soraku-gun, all of, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 16, 1994, Ser. No. 357,653

Claims priority, application Japan, Dec. 27, 1993, 5-331626; Jun. 27, 1994, 6-144967

Int. Cl.[6] H01L *21/336;21/20;21/265*

U.S. Cl. 437—41 **27 Claims**



1. A method for producing a semiconductor film, comprising the steps of:

(a) forming an amorphous semiconductor film on a substrate having a surface with an insulating property;

(b) introducing a material for accelerating crystallization of the amorphous semiconductor film into at least a part of the amorphous semiconductor film;

(c) crystallizing the amorphous semiconductor film by heating to obtain a crystalline semiconductor film from the amorphous semiconductor film;

(d) oxidizing a surface of the crystalline semiconductor film to form a semiconductor oxide film containing a part of the material for accelerating the crystallization on the surface of the crystalline semiconductor film; and

(e) removing the semiconductor oxide film.

5,550,071

METHOD FOR FORMING MICRO CONTACTS OF SEMICONDUCTOR DEVICE

Eui K. Ryou, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyoungki-do, Rep. of Korea

Filed Oct. 23, 1995, Ser. No. 546,736

Claims priority, application Rep. of Korea, Oct. 28, 1994, 94-27927

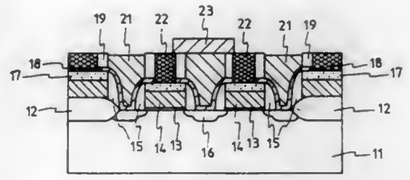
Int. Cl.[6] H01L *21/283;21/336*

U.S. Cl. 437—41 **5 Claims**

1. A method for forming micro contacts of a semiconductor device, comprising the steps of:

forming a gate oxide film on a semiconductor substrate;

forming a polysilicon film for a gate electrode over the gate oxide film;



forming a first insulating film over the resulting structure obtained after the formation of the polysilicon film;

sequentially etching the first insulating film, the polysilicon film and the gate oxide film using a gate electrode mask, thereby forming a gate electrode and a pattern of the gate oxide film while partially exposing the semiconductor substrate;

implanting low concentration impurity ions in the exposed portion of the semiconductor substrate under a condition that the first insulating film is used as a mask;

forming insulating film spacers on side walls of the first insulating film and gate electrode;

implanting high concentration impurity ions in the exposed portion of the semiconductor substrate under a condition that the upper structure disposed on the semiconductor substrate is used as a mask, thereby forming a source/drain region;

forming a pad conductive layer to a desired thickness over the resulting structure obtained after the formation of the source/drain region;

forming a second insulating film over the pad conductive layer, thereby planarizing the structure;

forming a photoresist film pattern on the second insulating film using a contact mask;

etching the second insulating film using the photoresist film pattern as a mask such that the pad conductive layer is partially exposed;

removing the photoresist film pattern;

selectively growing the exposed portion of the pad conductive layer, thereby forming a second conductive layer;

etching the second insulating film using the second conductive layer as a mask, thereby forming a pattern of the second insulating film;

etching both the pad conductive layer and the second conductive layer;

forming a third insulating film over the resulting structure obtained after the etching of the second conductive layer, thereby planarizing the structure;

fully etching the structure planarized by the third insulating film until the second insulating film pattern is exposed, and then planarizing the resulting structure;

forming a third conductive layer for a bit line to a desired thickness over the planarized structure; and

etching the third conductive layer using a bit line mask, thereby forming a bit line which is in contact with the semiconductor substrate.

5,550,072

METHOD OF FABRICATION OF INTEGRATED CIRCUIT CHIP CONTAINING EEPROM AND CAPACITOR

Philip J. Cacharelis, Menlo Park; Jeffrey R. Perry, Sunnyvale, and Narasimha Narahari, San Jose, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

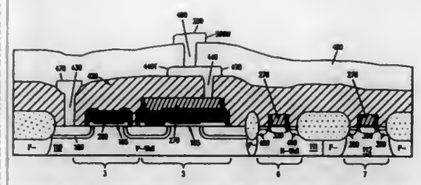
Division of Ser. No. 298,239, Aug. 30, 1994, abandoned. This application Oct. 19, 1994, Ser. No. 325,855

Int. Cl.[6] H01L *21/8247;21/82*

U.S. Cl. 437—43 **16 Claims**

1. A method of fabricating an IC device including an EEPROM cell, said method comprising performing the following steps in the order indicated:

providing a semiconductor member having a flat surface;



forming a first mask layer over said semiconductor member to define source/drain regions of a select transistor and a memory transistor within said EEPROM cell;

implanting dopant into said semiconductor member using said first mask layer to form said source/drain regions;

removing said first mask layer;

growing a thick oxide on said surface of said semiconductor member;

forming a second mask layer over said thick oxide layer to define a tunnel region of said memory transistor;

etching said thick oxide layer using said second mask layer;

removing said second mask layer;

depositing a first conductive layer and depositing a dielectric layer over said first conductive layer;

forming a third mask layer over said first conductive layer and said dielectric layer to define a floating gate of said memory transistor and a gate of said select transistor;

etching said first conductive layer and said dielectric layer using said third mask layer to form the floating gate of said memory transistor and the gate of said select transistor;

removing said third mask layer;

growing a thin oxide layer on said surface of said semiconductor member in a region where a first low-voltage MOSFET is to be formed;

depositing a second conductive layer over said dielectric layer and said thin oxide layer;

forming a fourth mask layer to define a control gate of said memory transistor and a gate of said first low-voltage MOSFET; and

etching said second conductive layer through said fourth mask layer to form the control gate of said memory transistor and the gate of said first low-voltage MOSFET.

5,550,073

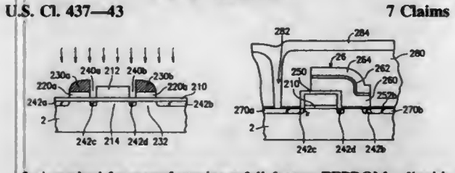
METHOD FOR MANUFACTURING AN EEPROM CELL

Cary Hong, Hsinchu, Taiwan, assignor to United Microelectronics Corporation, Taiwan

Filed Jul. 7, 1995, Ser. No. 499,533

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—43 **7 Claims**



1. A method for manufacturing a full-feature EEPROM cell with a selective-gate transistor and a stacked-gate transistor formed on a first conductivity type of a substrate, said method comprising the steps of:

forming a gate isolating layer and a first conductive layer on a region of the substrate to be a selective gate of the selective-gate transistor, and thereby defining a channel region of the selective-gate transistor;

forming a masking layer on the selective gate and the substrate;

forming an oxide layer over the masking layer and then etching back the oxide layer to form sidewall spacers beside the selective gate and on the masking layer, and defining a channel region of the stacked-gate transistor underlying one of the sidewall spacers;

removing the masking layer between the selective gate and the sidewall spacers;

doping a second conductivity type of dopant into the first conductivity type of substrate to form lightly doped regions beside the channel regions of the selective-gate transistor and the stacked-gate transistor by using the selective gate and the sidewall spacers as masks;

removing the sidewall spacers and the masking layer;

forming an insulating layer covering the selective gate and forming a tunnel dielectric layer on the substrate;

forming a second conductive layer, a dielectric layer and a third conductive layer on the selective gate and the channel region of the stacked-gate transistor to serve as a stacked gate of the stacked-gate transistor; and

implanting a second conductivity type of dopant into the substrate to form heavily doped regions by using the selective gate which is covered with said insulating layer and the stacked gate as masks, so that each of the lightly doped regions, which combine with one of the heavily doped regions to form a LDD structure, respectively forms sources and drains of the selective-gate transistor and the stacked-gate transistor.

5,550,074

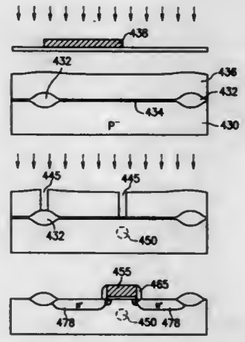
PROCESS FOR FABRICATING MOS TRANSISTORS HAVING ANTI-PUNCHTHROUGH IMPLANT REGIONS FORMED BY THE USE OF A PHASE-SHIFT MASK

Jengping Lin, Taoyuan Hsien, Taiwan, assignor to United Microelectronics Corp., Taiwan

Filed Jan. 19, 1996, Ser. No. 591,236

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—44 **6 Claims**



1. A process for fabricating a MOS transistor having a channel, comprising the following steps of:

(1) preparing a silicon substrate on which a field oxide region is formed to define an active region;

(2) using a phase-shift mask to define a substantially rectangular removal portion on a photoresist layer, one side of the rectangular removal portion being aligned with the channel of the MOS transistor to be fabricated and the other three sides being placed within the field oxide region;

(3) performing an anti-punchthrough implantation process in which ions are implanted through the removal portion of the photoresist layer to form an anti-punchthrough implant region beneath the channel of the MOS transistor; and

(4) forming gate region and source/drain regions for the MOS transistor.

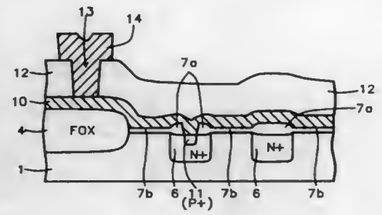
VOL 1189 ISS 4 AUG 27 1996 UMI

5,550,075

ION IMPLANTED PROGRAMMABLE CELL FOR READ ONLY MEMORY APPLICATIONS

Chen-Chung Hsu, Taichung, and Gary Hong, Hsinchu, both of, Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Jan. 19, 1995, Ser. No. 374,967
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—48 **18 Claims**



1. A method of fabricating a read only memory, (ROM), cell on a semiconductor substrate, having a first conductivity, comprising the steps of:

forming a field oxide pattern on regions of said substrate, while leaving silicon unoxidized on remaining regions of said substrate;

photolithography to expose portions of said unoxidized silicon;

ion implanting second conductivity imparting dopants into said exposed portions of said unoxidized silicon;

growing a first oxide layer on said exposed portions of said ion implanted silicon;

growing a second oxide layer ou non-implanted silicon;

growing a second oxide layer on non-implanted silicon, said first oxide layer having a thickness greater than a thickness of said second oxide layer;

photolithography to expose a specific area of said first oxide layer grown on said ion implanted silicon to program said ROM cell;

removal of said first oxide layer, from said specific area of said ion implanted silicon;

depositing a polysilicon layer on said field oxide, on said second oxide layer grown on said non-ion implanted silicon, on said first oxide layer grown on said ion implanted silicou, and on said ion implanted silicon in said specific area where said first oxide layer has been removed;

ion implanting a first conductivity imparting dopant into said polysilicon layer;

annealing to drive said first conductivity imparting dopant, into said specific area of said ion implanted silicon, where said first oxide layer has been removed; and

patterning to form polysilicon gate structure on said field oxide, on said second oxide layer grown on said non-ion implanted silicon, on said first oxide layer grown on said ion implanted silicon, and on said specific area of said ion implanted silicon, where said first oxide layer has been removed.

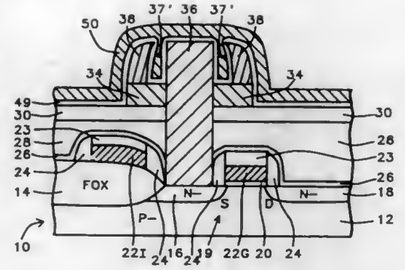
5,550,076

METHOD OF MANUFACTURE OF COAXIAL CAPACITOR FOR DRAM MEMORY CELL AND CELL MANUFACTURED THEREBY

Chung-Zen Chen, Hsinchu, Taiwan, assignor to Vanguard International Semiconductor Corp., Hsinchu, Taiwan

Filed Sep. 11, 1995, Ser. No. 526,363
Int. Cl.[6] H01L *21/70;27/00*
U.S. Cl. 437—52 **23 Claims**

1. A method of fabricating a dynamic random access memory having a capacitor comprising:



selectively forming field oxide areas on a surface of a semiconductor substrate while leaving device areas for fabrication of field effect devices having gate electrode structures and source/drain structures;

forming a gate dielectric layer on said substrate in said device areas;

depositing a first layer of polysilicon on said field oxide areas and said device areas;

removing portions of said first polysilicon layer while leaving portions thereof for said gate electrode structures in said device areas, and portions over said field oxide areas;

forming said source/drain structures within said device areas of said semiconductor substrate associated with said gate electrode structures;

forming a planarization silicon oxide layer over sad device areas and said field oxide areas,

forming an etch stop layer over said planarization layer,

forming a first portion of a lower capacitor plate doped polysilicon layer over said planarization layer,

forming a glass layer on said first portion,

forming a contact opening to said source/drain structures by etching through said glass layer, said first portion and etch stop and planarization layers therebelow down to one of said source/drain structures,

forming a second portion of said lower capacitor plate comprising a polysilicon plug completely within said glass layer by etching a doped polysilicon layer formed over said substrate and through said contact opening into electrical and mechanical contact with one of said source/drain structures, said second portion having exposed sidewalls and a top surface extending above surface of said first portion of said lower capacitor plate after removing said glass layer,

forming sacrificial spacer structures adjacent to said exposed sidewalls of said second portion of said lower capacitor plate,

depositing a third portion of said lower capacitor plate polysilicon layer over said substrate including said sacrificial spacer structures and said first portion and said second portion into electrical and mechanical contact therewith, and providing doping thereof,

etching back said third portion of said lower capacitor plate down to said etch stop layer and exposing said sacrificial spacer structures leaving upright elements from said third portion adjacent to said sacrificial spacer structures,

then etching away said sacrificial spacer structures,

forming a blanket interconductor dielectric layer over said substrate after etching away said sacrificial spacer structures providing an exposed surface of said interconductor dielectric layer,

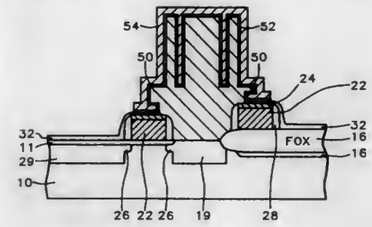
depositing an upper capacitor plate over said exposed interconductor dielectric layer, said upper capacitor plate extending between said second and third portions.

5,550,077

DRAM CELL WITH A COMB-TYPE CAPACITOR

Horng-Huei Tseng, and Chih-Yuan Lu, both of Hsin Chu, Taiwan, assignors to Vanguard International Semiconductor Corporation, Hsinchu, Taiwan

Filed May 5, 1995, Ser. No. 435,203
Int. Cl.[6] H01L *21/70;27/00*
U.S. Cl. 437—52 **16 Claims**



1. A method of manufacturing a comb-shape capacitor as part of a Dynamic Random Access Memory cell, comprising:

(a) providing a partially completed silicon integrated circuit structure comprising a plurality of Field Effect Transistors, each transistor having source, drain, and gate regions, said gate region having a first gate electrode formed on a gate oxide and a second gate electrode formed on a field oxide, said first and second gate electrodes are separated by said source region;

(b) then coating the structure with a first layer of silicon oxide, then with a layer of silicon nitride and then with a second layer of silicon oxide having an opening exposing said source region;

(c) then coating the structure with a first layer of polycrystalline silicon;

(d) then coating the structure with a layer of photoresist, patterned to protect only a part of said first layer of polycrystalline silicon that overlies said gate region and then etching said first layer of polycrystalline silicon down to an upper surface of said second layer of silicon oxide;

(e) then isotropically etching said patterned layer of photoresist, thereby symmetrically reducing its width and exposing portions of said first layer of polycrystalline silicon on either side of said photoresist pattern;

(f) then etching said first layer of polycrystalline silicon until a thickness of a portion of said first polycrystalline silicon layer not protected by photoresist has been reduced by a factor of about 2 to form vertical sidewalls and then stripping said layer of photoresist;

(g) then isotropically coating the structure with a third layer of silicon oxide;

(h) then anisotropically etching all exposed horizontal surfaces of third and second silicon oxide layers, thereby creating spacers on the vertical sidewalls of said first layer of polycrystalline silicon, and exposing said layer of silicon nitride;

(i) then coating the structure with a conformal second layer of polycrystalline silicon;

(j) then anisotropically etching said second layer of polycrystalline silicon so as to remove all horizontal surfaces down to upper surfaces of said spacers and said silicon nitride layer leaving portions of said second layer of polycrystalline silicon on sidewalls of said spacers, thereby creating a bottom capacitor electrode from said first and second polycrystalline silicon layers;

(k) then, removing said spacers, said layer of silicon nitride, said first layer of silicon oxide and said layer of silicon nitride that underlie said first layer of polycrystalline silicon, thereby forming a rim of polycrystalline silicon projecting outwardly from a vertical wall of said first layer of polycrystalline silicon and overhanging said gate region;

(l) then coating said bottom capacitor electrode with a layer of a capacitor dielectric; and

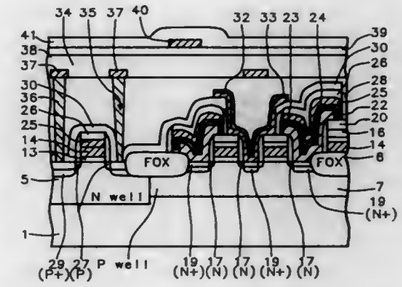
(m) then coating said capacitor dielectric layer with a third layer of polycrystalline silicon, thereby forming a top capacitor electrode.

5,550,078

REDUCED MASK DRAM PROCESS

Janmye Sung, Tauyuan, Taiwan, assignor to Vanguard International Semiconductor Corp., Hsinchu, Taiwan

Filed Jun. 28, 1995, Ser. No. 496,015
Int. Cl.[6] H01L *21/70;27/00*
U.S. Cl. 437—52 **24 Claims**



1. A method of fabricating stacked capacitor, dynamic random access memory, (DRAM), devices, on a semiconductor substrate, comprising the steps of:

ion implanting first conductivity imparting dopants into portions of said semicondductor substrate, to form N well region;

ion imnplanting second conductivity imparting dopants into other portions of said semiconductor substrate, to form P well region;

forming a field oxide region in said semiconductor substrate, between said N well region, and said P well region;

ion implanting a third conductivity imparting dopant into said P well region, and said N well region;

ion implanting a fourth cooductivity imparting dopant into said P well region;

growing a gate oxide on said P well region, and said N well region;

depositing a first polysilicon layer on said gate oxide, and on said field oxide region;

growing a first oxide layer on said first polysilicon layer;

depositing a phosphosilicate doped oxide layer on said first oxide layer;

patterning of said phosphosilicate doped oxide layer, said first oxide layer, and said first polysilicon layer, to form N channel polysilicon gate structures, in said P well region, while leaving said phosphosilicate doped oxide layer, said first oxide layer, and said first polysilicon layer, undisturbed in said N well region;

ion implanting a fifth conductivity imparting dopant into areas of said P well region, not covered by said N channel polysilicon gate structures;

depositing a first insulator layer;

anisotropic etching of said first insulator layer to produce insulator spaces on said sidewalls of said N channel polysilicon gate structures;

ion implanting a sixth conductivity imparting dopant into areas of said P well region, not covered by said N channel polysilicon gate structures;
depositing a second insulator layer;
opening holes in said second insulator layer to areas in said P well region, between said field oxide region, and said N channel polysilicon gate structures;
depositing a second polysilicon layer;
patterning of said second polysilicon layer to form structure that completely covers area in said P well region, between said field oxide region and said N channel polysilicon gate structures;
depositing a composite dielectric layer;
depositing an amorphous silicon layer on said composite dielectric layer;
patterning to remove said amorphous silicon layer, and said composite dielectric layer, formed over said phosphosilicate doped oxide layer in said N well region;
removal of said phosphosilicate doped oxide layer formed over said first polysilicon layer, in said N well region;
depositing a third polysilicon layer;
depositing a third insulator layer on said third polysilicon layer;
patterning of said third insulator layer, of said third polysilicon layer, and of said first polysilicon layer, to form P channel polysilicon gate structures in said N well region, while removing said third insulator layer, and said third polysilicon layer from all regions in said P well region, except from a structure, of said amorphous silicon layer, said composite dielectric insulator, and said second polysilicon layer;
ion implanting a seventh conductivity imparting dopant into areas of said N well region, not covered by said P channel polysilicon gate structures;
depositing a fourth insulator layer;
anisotropic etching of said fourth insulator layer, to produce insulator spacers on sidewalls of said P channel polysilicon gate structures;
ion implanting an eight conductivity imparting dopant into areas of said N well region, not covered by said P channel polysilicon gate structures;
depositing a fifth insulator layer;
opening holes in said fifth insulator layer to areas of said P well region, between said N channel polysilicon gate structures;
depositing a fourth polysilicon layer;
depositing a metal silicide on said fourth polysilicon layer;
patterning to remove said metal silicide layer, and said fourth polysilicon layer from all areas except from said holes in said fifth insulator layer;
depositing a first interlevel dielectric layer;
planarizing said first interlevel dielectric layer;
opening holes in said first interlevel dielectric layer, to areas of said N well region, not covered by said P channel polysilicon gate structures;
depositing a stud metal layer;
removal of said stud metal layer from all areas except from said holes, in said first interlevel dielectric layer;
depositing a first metal layer;
patterning of said first metal layer to form first metal structure;
depositing a second interlevel dielectric layer;
planarizing said second interlevel dielectric layer;
depositing a second silicon nitride layer, on said second intrelevel dielectric layer;
opening holes in said silicon nitride layer, and in said second interlevel dielectric layer, to regions of said first metal structure;
depositing a second metal layer; and
patterning of said second metal layer to form second metal structure.

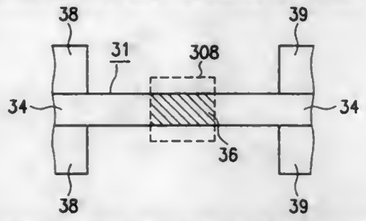
5,550,079

METHOD FOR FABRICATING SILICIDE SHUNT OF DUAL-GATE CMOS DEVICE

Jengping Lin, Taoyuan Hsien, Taiwan, assignor to Top Team/ Microelectronics Corp., Taipei, Taiwan

Filed Jun. 15, 1995, Ser. No. 490,832
Int. Cl.[6] H01L *21/265;21/283*
U.S. Cl. 437—56 **25 Claims**

1. A method for fabricating a silicide shunt for dual-gate CMOS



devices in a semiconducting substrate having a dielectric layer to isolate a first well region and a second well region therebetween, comprising:
(a) forming a first conducting layer covering said first well region and a second conducting layer covering said second well region, a junction formed between the first and second conducting layers and above said dielectric layer;
(b) forming a silicide layer overlying said first conducting layer and said second conducting layer; and
(c) forming a nitrogen-containing silicide layer on said junction through an ion implantation procedure.

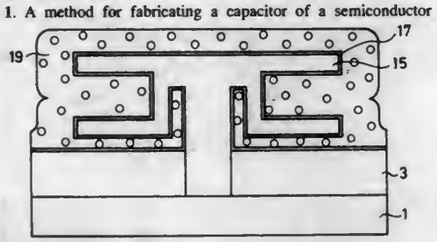
5,550,080

METHOD FOR FABRICATING CAPACITORS OF SEMICONDUCTOR DEVICE

Suk S. Kim, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyoungki-do, Rep. of Korea

Filed Aug. 2, 1995, Ser. No. 510,174
Claims priority, application Rep. of Korea, Aug. 3, 1994, 94-19192
Int. Cl.[6] H01L *21/70*
U.S. Cl. 437—60 **5 Claims**

1. A method for fabricating a capacitor of a semiconductor



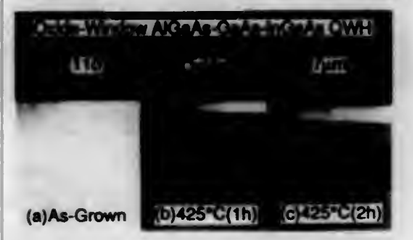
device comprising the steps of:
forming a lower insulating layer on a semiconductor substrate, depositing a first insulating film on the lower insulating layer, and then forming a first storage electrode contact mask on the first insulating film;
selectively growing the first insulating film, thereby forming a selectively-grown oxide film, and then removing the first contact mask;
forming a first conduction layer on the resulting structure obtained after the removal of the first contact mask, coating a second insulating film on the first conduction layer, planarizing the second insulating film using a full etch process, and then forming a second storage electrode contact mask on the second insulating film;
sequentially etching the first conduction layer, the selectively-grown oxide film, the first insulating film and the lower insulating layer using the second contact mask, thereby forming a contact hole for exposing a portion of the semiconductor substrate;
depositing a second conduction layer on the resulting structure obtained after the formation of the contact hole such that the second conduction layer is in contact with the semiconductor substrate through the contact hole, and then forming a storage electrode mask on the second conduction layer;
sequentially etching the second conduction layer, the second insulating film and the first conduction layer using the storage electrode mask, thereby forming a second-conduction layer pattern and a first-conduction layer pattern, and then removing the storage electrode mask; and
removing the second insulating film, the first insulating film and the selectively-grown oxide film using a wet etch process, whereby a storage electrode with an increased surface area is formed.

5,550,081

METHOD OF FABRICATING A SEMICONDUCTOR DEVICE BY OXIDIZING ALUMINUM-BEARING 1H-V SEMICONDUCTOR IN WATER VAPOR ENVIRONMENT

Nick Holonyak, Jr., Urbana; Steven A. Maranowski, Champaign, both of Ill., and Fred A. Kish, San Jose, Calif., assignors to Board of Trustees Of The University Of Illinois, Ill.

Continuation of Ser. No. 224,838, Apr. 8, 1994. This application Mar. 31, 1995, Ser. No. 414,432
Int. Cl.[6] H01L *21/20*
U.S. Cl. 437—129 **24 Claims**



1. A method of making a semiconductor device, comprising the steps of:
forming a structure comprising layers of III-V semiconductor material, at least one of said layers being an aluminum-bearing III-V semiconductor material;
applying metal electrodes to said structure to form a metallized semiconductor structure; and
heating said metallized structure in a water-containing environment to convert a portion of the aluminum-bearing III-V semiconductor material to a native oxide of aluminum.

5,550,082

METHOD AND APPARATUS FOR DOPING SILICON WAFERS USING A SOLID DOPANT SOURCE AND RAPID THERMAL PROCESSING

John C. Wolfe, and Wanda Zagozdzon-Wosik, both of Houston, Tex., assignors to The University of Houston System, Houston, Tex.

Continuation of Ser. No. 157,337, Nov. 18, 1993, abandoned. This application Mar. 30, 1995, Ser. No. 414,031
Int. Cl.[6] H01L *21/223*
U.S. Cl. 437—168 **14 Claims**

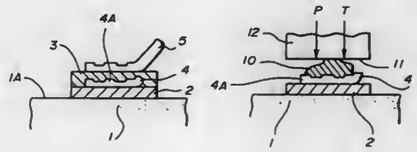
1. A method of directly doping a silicon wafer comprising the steps of:
producing a planar dopant source comprising a dopant source deposited on a thermochemically stable holding disk;
etching a layer of dopant depleted material from said planar dopant source to expose a dopant rich layer;
disposing the resulting planar dopant source proximate to said silicon wafer; and
then thermally processing for a time period less than about 300 seconds said planar dopant source and said silicon wafer so that the dopant diffuses onto said silicon wafer producing a sheet resistance of about three ohms/sq,
said holding disc remains substantially planar during said step of thermally processing, and wherein said dopant source comprises a spin-on dopant.

5,550,083

PROCESS OF WIREBOND PAD REPAIR AND REUSE

Masateru Koide, and Yasuo Kawamura, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 255,730, Jun. 7, 1994, Pat. No. 5,455,461, which is a continuation of Ser. No. 947,482, Sep. 21, 1992, abandoned. This application Mar. 16, 1995, Ser. No. 405,015
Int. Cl.[6] H01L *21/283;21/603*
U.S. Cl. 437—183 **10 Claims**



1. A wire bonding method comprising the steps of:
(a) disconnecting a first wire which is bonded on a first pad which is provided on a substrate;
(b) forming a second pad on the first pad; and
(c) bonding a second wire on the second pad, so that the second wire is electrically connected to the first pad;
wherein said step (a) completely removes the first wire from the first pad, and said step (b) forms the second pad at least on a top surface of the first pad including a part which is damaged by the removal of the first wire.
6. A wire bonding method comprising the steps of:
(a) disconnecting a first wire which is bonded on a first pad which is provided on a substrate;
(b) forming a second pad on the first pad; and
(c) bonding a second wire on the second pad, so that the second wire is electrically connected to the first pad;
wherein said step (a) cuts the first wire so that a tip end of the first wire remains bonded on the first pad, and said step (b) forms the second pad at least on a top surface of the first pad so as to completely cover the remaining tip end of the first wire.

5,550,084

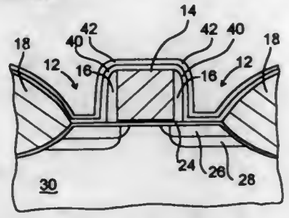
INTEGRATED CIRCUIT FABRICATION USING A METAL SILICIDE HAVING A SPUTTERDEPOSITED METAL NITRIDE LAYER

Mohammed Anjum; Ibrahim K. Burki, both of Austin, and Craig W. Christian, Buda, all of Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 183,485, Jan. 19, 1994. This application Jan. 17, 1995, Ser. No. 375,126

Int. Cl.[6] H01L *21/44;21/48*

U.S. Cl. 437—200 **18 Claims**



1. A method for fabricating a metal silicide upon a semiconductor substrate, comprising the steps of:
providing a semiconductor substrate comprising an impurity region and a polysilicon region configured across a portion of said substrate;
forming within a sputter chamber a metal layer across said semiconductor substrate;
without removing said semiconductor substrate from said sputter chamber, forming in the presence of a nitrogen and argon ambient a metal nitride layer upon said metal layer;
heating said semiconductor substrate in the absence of a nitrogen ambient to a temperature approximately between 800° C. to 1000° C. to react said metal layer with said impurity region and said polysilicon region in order to form a metal silicide; and
removing said metal nitride layer and unreacted said metal layer from said semiconductor substrate.

5,550,085

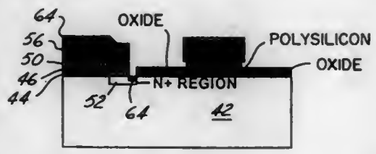
METHOD FOR MAKING A BURIED CONTACT

Min-Sea Liu, Chung-Li, Taiwan, assignor to Winbond Electronics Corp., Hsinchu, Taiwan

Filed Sep. 7, 1995, Ser. No. 525,917

Int. Cl.[6] H01L *21/44*

U.S. Cl. 437—203 **21 Claims**



1. A method of forming a buried contact in a semiconductor silicon substrate of a first conductivity type having a top surface comprising the steps of:
forming a silicon oxide layer on said top surface of the substrate,
forming a first polysilicon layer over said silicon oxide layer,
etching said first polysilicon layer by using a first mask and a first etching gas having etching selectivity between polysilicon and silicon oxide such that a first portion of said polysilicon layer is left on the top surface of said substrate except the area defining said buried contact,
forming in said substrate a zone of a second conductivity type at the area defining the buried contact by implanting impurity ions,
removing the silicon oxide layer over said area defining said buried contact and removing the first mask over said first portion of said polysilicon layer,
blanket depositing sequentially a conducting layer and a second polysilicon layer,
etching said second polysilicon layer over an area defining a transistor gate electrode and interconnect by using a second mask and a second etching gas having high etching selectivity between polysilicon and the conducting layer, using the conducting layer as an etch stop, and
etching said conducting layer over said area defining said transistor gate electrode and interconnect by a third etching gas having etching selectivity between 1) the conducting layer, and 2) polysilicon and silicon.

5,550,086

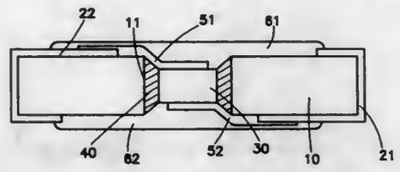
CERAMIC CHIP FORM SEMICONDUCTOR DIODE FABRICATION METHOD

George Tai, 2F, NO. 8, Alley 14, Lane 121, Ching-Hua St., Taipei, Taiwan

Filed Dec. 27, 1995, Ser. No. 578,194

Int. Cl.[6] H01L *21/60*

U.S. Cl. 437—209 **6 Claims**



1. A ceramic chip form semiconductor diode fabrication method including the steps of:
i) making a plate-like ceramic body element having a diode die mounting site, then covering a conductive layer on said body element to form conductor elements permitting said conductor elements to be respectively extended to two opposite ends of said body element to form a respective terminal for external connection;
ii) attaching a diode die to said diode die mounting site, then applying a glass powder paste in the gap between said diode die mounting site and said diode die, and then heat processing said glass powder paste into a glass joint;
iii) covering conductive layer to connect conductor element(s) and electrode surface(s) of said diode die; and
iv) covering an over glaze over said diode die and said conductor elements to finish the package.

5,550,087

PROCESS FOR BONDING A SEMICONDUCTOR DIE TO A VARIABLE DIE SIZE INNER LEAD LAYOUT

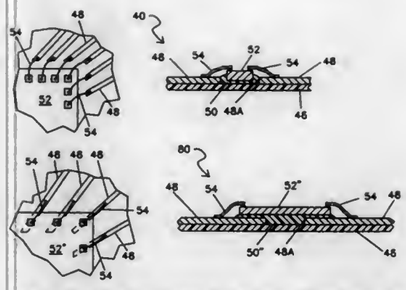
Richard Brossart, San Jose, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Continuation of Ser. No. 979,299, Nov. 20, 1992, abandoned, which is a division of Ser. No. 568,265, Aug. 15, 1990, Pat. No. 5,168,345. This application Jan. 3, 1994, Ser. No. 176,700

Int. Cl.[6] H01L *21/58;21/60*

U.S. Cl. 437—217 **5 Claims**

1. A method of forming a semiconductor device assembly, comprising the steps of:
forming a substrate by forming a single non-conductive support layer having a front face and a back face, and a conductive layer comprised of a plurality of "n" conductive leads having inward and outward lead ends,
the conductive layer disposed on the front face of the support layer,
the conductive layer having a front face and a back face,



the back face of the conductive layer proximate to the front face of the support layer,
the conductive leads arranged in a generally radial pattern about a central point on the support layer with the inward ends closest to the central point,
each of the conductive leads having a width "w" and spaced a distance "d" from one another at their inward ends,
the conductive lead inward ends forming a generally square opening having a side dimension "s" and an area "s^2";
attaching a semiconductor die to the front face of the non-conductive support layer with an electrically non-conductive adhesive,
the die having a front circuit-containing face and a back face,
the back face of the die being attached to the front face of the non-conductive support layer through the generally square opening formed by the inward ends of the conductive leads,
the die having an area larger than the area "s^2" of the generally square opening,
the die being disposed atop and over the generally square opening and the inward ends and part of the conductive leads,
wherein the die may be of different areas without having to change the area "s^2" of the generally square opening; and
connecting the front circuit containing face of the die to the conductive leads with bond wires.

5,550,088

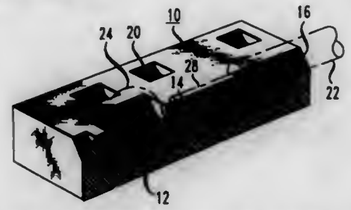
FABRICATION PROCESS FOR A SELF-ALIGNED OPTICAL SUBASSEMBLY

Mindaugas F. Dautartas, Alburtis, Pa., and Yiu-Huen Wong, Summit, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jun. 2, 1993, Ser. No. 71,427

Int. Cl.[6] H01L *21/302*

U.S. Cl. 437—225 **7 Claims**



1. A method of forming a fiber-supporting substrate to provide for passive optical alignment between an optical fiber and at least one associated optical component(s), the method comprising the steps of:
a) providing a silicon substrate including a top major surface;
b) forming a masking layer on said silicon substrate top major surface;
c) patterning said masking layer such that different areas of said masking layer comprise different thicknesses, said areas associated with the location of said optical fiber and said associated optical component(s), wherein the patterning is performed to provide passive optical alignment between said optical fiber and said associated optical components(s);
d) etching said masking layer until an underlying surface of said silicon substrate is first exposed;
e) etching said exposed silicon substrate to a predetermined depth; and
f) repeating steps d) and e) until all openings required to support said optical fiber and said aligned associated optical component(s) have been formed.

5,550,089

GALLIUM OXIDE COATINGS FOR OPTOELECTRONIC DEVICES USING ELECTRON BEAM EVAPORATION OF A HIGH PURITY SINGLE CRYSTAL $GD_3GA_5O_{12}$ SOURCE.

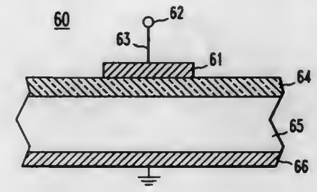
Niloy K. Dutta, Colonia; Russell J. Fischer, Berkeley Heights; Neil E. J. Hunt, Scotch Plains; Matthias Passlack; Erdmann F. Schubert, both of New Providence, and George J. Zydzik, Columbia, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Mar. 23, 1994, Ser. No. 217,332

The portion of the term of this patent subsequent to Mar. 23, 2014, has been disclaimed.

Int. Cl.[6] H01L *21/00;21/02;21/302;21/463*

U.S. Cl. 437—225 **16 Claims**



1. A process of fabricating an optoelectronic device comprising a semiconductor surface selected from the groove consisting of III-V and II-VI compound semiconductors and a coating of gallium oxide on at least a region of said surface, in which said gallium oxide is a thin film of stoichiometric Ga_2O_3 having low midgap interface state density, said Ga_2O_3 coating is deposited on said semiconductor surface by electron-beam evaporation using a high purity single crystal $Gd_3Ga_5O_{12}$ source, said semiconductor surface being kept at temperatures ranging from 40° to 370° C. and at background pressures at or above 1×10^{-10} Torr.

5,550,090

METHOD FOR FABRICATING A MONOLITHIC SEMICONDUCTOR DEVICE WITH INTEGRATED SURFACE MICROMACHINED STRUCTURES

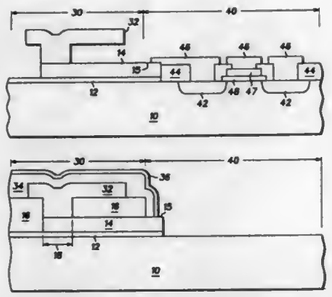
Ljubisa Ristic, Paradise Valley, and Frank A. Shemansky, Jr., Phoenix, both of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Sep. 5, 1995, Ser. No. 523,581

Int. Cl.[6] H01L *21/461;21/4757*

U.S. Cl. 437—228 **21 Claims**

1. A method of manufacturing a monolithic semiconductor device with an integrated surface micromachined structure comprising the steps of:
providing a semiconductor substrate;
forming at least one conductive microstructure, wherein the at least one conductive microstructure overlies said semiconductor substrate within a sensor area, wherein said at least one conductive microstructure is sealed;
forming at least one semiconductor device subsequent to the step of forming said at least one conductive microstructure,



wherein said at least one semiconductor device, including conductively doped regions, is formed within an integrated circuit area;

performing a thermal anneal subsequent to the forming of said at least one semiconductor device;

unsealing said at least one conductive microstructure, wherein said at least one conductive microstructure is suspended; and

electrically coupling said at least one conductive microstructure to said at least one semiconductor device.

5,550,091

METHOD OF SPUTTERING A SILICON NITRIDE FILM

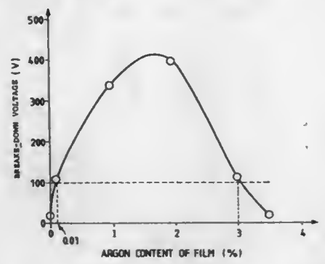
Koichi Fukuda; Tomofumi Oba; Masanori Miyazaki, all of Sendai; Hirofumi Fukui, Daiwa-machi; Chisato Iwasaki, Sendai; Yasuhiko Kasama, Sendai; Tadahiro Ohmi, 2-1-17-301 Komegafukuro, Aoba-ku, Sandai-shi, Miyagi-ken; Masaru Kubota, Miyagi-ken; Hitoshi Kitagawa, Sendai; Akira Nakano, Furukawa, and Osamu Yoshida, Sendai, all of, Japan, assignors to Frontec Incorporated, and Tadahiro Ohmi, both of Sendai, Japan

Division of Ser. No. 274,946, Jul. 14, 1994. This application May 9, 1995, Ser. No. 437,606

Claims priority, application Japan, Jul. 14, 1993, 5-196866; Dec. 21, 1993, 5-346625; Mar. 7, 1994, 6-35767

Int. Cl.[6] H01L *21/318; C23C 14/06*

U.S. Cl. 437—241 **2 Claims**



1. An electronic device producing method for forming an electronic device provided with a conductive wiring pattern formed on a surface of a substrate, at least said surface being electrically insulated, and an insulating film mainly composed of silicon and nitrogen and deposited to cover said substrate and said wiring pattern partly or wholly,

wherein a target for depositing said insulating film in sputtering includes at least silicon, an atmospheric gas for the sputtering is a mixture of at least a rare element gas, a hydrogen gas, and a nitrogen gas or an ammonia gas, the partial pressures of said rare gas element gas and said hydrogen gas are respectively 0.20 Pa to 0.40 Pa and 0.02 Pa to 0.15 Pa.

5,550,092

CERAMIC DIELECTRICS COMPOSITIONS

Mike S.-H. Chu, Lewiston, N.Y.; John Bultitude, Banbury, and Christopher Hood, Reading, both of, United Kingdom, assignors to Tam Ceramics Inc., Niagara Falls, N.Y.

Filed Feb. 10, 1995, Ser. No. 386,935

Int. Cl.[6] C04B *35/46*

U.S. Cl. 501—137 **8 Claims**

1. A sinterable ceramic composition which comprises a barium titanate based dielectric precursor powder which has a temperature coefficient of capacitance, TC, of ±15% over the temperature range − 55° to 125° C., in admixture with from 0.25 to 2.0% by weight of an additive which is selected from the group consisting of $ZrSiO_4$, Al_2O_3, SiO_2, precursors therefor and mixtures thereof, the composition having an average particle size in a range of from 0.6 to less than 0.8 micrometers and, when fired, having a dielectric constant of above 2400, a TC of ±15% over a temperature range of −55° to +125° C. and a porosity of less than 0.7% with no pores greater than 3.5 micrometers average diameter.

5,550,093

PREPARATION OF SUPPORTED GOLD CATALYSTS FOR CARBON MONOXIDE OXIDATION

Ben-Zu Wan, Taipei, and Yih-Ming Kang, Taipei Hsien, both of, Taiwan, assignors to National Science Council, Taiwan

Filed Jun. 14, 1995, Ser. No. 490,530

Int. Cl.[6] B01J *23/02*

U.S. Cl. 502—74 **11 Claims**

1. A method of preparing a supported gold catalyst for carbon monoxide oxidation, comprising the steps of:

a) adding an ion-exchangeable support into a solution of chloroauric acid to carry out a cation exchange procedure;

b) performing a filtration of said solution to obtain a exchanged gold catalyst and leave the remaining part of said solution as a filtrate;

(c) washing and drying said exchanged gold catalyst; and

(d) heating said supported gold catalyst in a stream of humidified inert gas at a temperature between 200° C. to 800° C.

5,550,094

BINARY COCATALYST COMPOSITIONS FOR ACTIVATING HETEROGENEOUS POLYMERIZATION CATALYSTS

Ahmed H. Ali, Beaumont, Tex.; Vaseem Firdaus, Somerset, N.J.; Tomas A. Geoghegan, Bedminster, N.J.; Yury V. Kissin, East Brunswick, N.J., and Robert I. Mink, Warren, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Division of Ser. No. 171,055, Dec. 21, 1993. This application Jun. 1, 1995, Ser. No. 456,977

Int. Cl.[6] C08F *4/64*

U.S. Cl. 502—115 **18 Claims**

1. A fluid bed gas phase olefin polymerization catalyst composition, comprising a catalyst precursor and a binary cocatalyst mixture, for copolymerizing ethylene with alpha-olefins to form broad molecular weight distribution products characterized by MFR values (I_{21}/I_2) of 35 to 60 and free of alpha-olefin oligomers, comprising

activating, in a fluid bed gas phase reactor, a solid catalyst precursor with an activating amount of a cocatalyst mixture which comprises dimethylaluminum chloride and a trialkylaluminum compound in a molar ratio of dimethylaluminum chloride:trialkylaluminum ranging from 30:1 to 300:1;

wherein the presence of trialkylaluminum eliminates the formation of alpha olefin oligomers;

wherein the catalyst precursor comprises a support,

which is silica, and magnesium and titanium components, wherein the catalyst precursor comprises an amount of titanium which ranges from 0.5 to 5 weight % of the catalyst precursor, wherein the catalyst precursor comprises a molar titanium to magnesium ratio which ranges from 0.2 to 1.0.

5,550,095

PROCESS FOR PRODUCING CATALYST USED FOR SYNTHESIS OF METHACRYLIC ACID

Hiroyuki Naito; Masato Otani, both of Hiroshima; Motomu Oh-Kita, Tokyo, and Toru Kuroda, Hiroshima, all of, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

PCT No. PCT/JP93/00597, § 371 Date Nov. 4, 1994, § 102(e) Date Nov. 4, 1994, PCT Pub. No. WO93/23161, PCT Pub. Date Nov. 25, 1993

PCT Filed May 7, 1993, Ser. No. 331,484

Claims priority, application Japan, May 8, 1993, 4-115917

Int. Cl.[6] B01J *27/19;* **C07C** *51/16*

U.S. Cl. 502—211 **5 Claims**

1. A process for producing a catalyst for synthesis of methacrylic acid by gas phase catalytic oxidation of methacrolein with molecular oxygen which comprises drying a mixed solution or aqueous slurry of catalytically active material comprising at least molybdenum, phosphorous and vanadium, mixing the resulting dried product with at least one organic compound selected from the group consisting of methyl alcohol, ethyl alcohol, propyl alcohol, butyl alcohol and acetone and molding the mixture by extrusion.

5,550,096

CATALYST FOR PURIFYING NITROGEN OXIDES FROM EXHAUST AND WASTE GASES

Akira Inoue, Hirakata; Motonobu Kobayashi, Takarazuka, and Tetsuji Ono, Amagasaki, all of, Japan, assignors to Nippon Shokubai Koguko Kogyo Co., Ltd., Osaka, Japan

Continuation of Ser. No. 243,959, May 17, 1994, abandoned, which is a continuation of Ser. No. 132,839, Oct. 7, 1993, abandoned, which is a continuation of Ser. No. 22,328, Feb. 25, 1993, abandoned, which is a continuation of Ser. No. 877,151, May 1, 1992, abandoned, which is a continuation of Ser. No. 767,991, Sep. 30, 1991, abandoned, which is a continuation of Ser. No. 519,098, May 3, 1990, abandoned, which is a continuation of Ser. No. 418,645, Oct. 10, 1989, abandoned, which is a continuation of Ser. No. 319,918, Mar. 6, 1989, abandoned, which is a continuation of Ser. No. 208,651, Jun. 20, 1988, abandoned, which is a continuation of Ser. No. 114,554, Oct. 29, 1987, abandoned, which is a continuation of Ser. No. 15,501, Feb. 6, 1987, abandoned, which is a continuation of Ser. No. 858,071, Apr. 22, 1986, abandoned, which is a continuation of Ser. No. 660,850, Oct. 15, 1984, abandoned. This application Feb. 9, 1995, Ser. No. 385,896

Claims priority, application Japan, Oct. 21, 1983, 58-196023

Int. Cl.[6] B01J *27/053*

U.S. Cl. 502—217 **12 Claims**

1. A catalyst for the purification of an exhaust gas by the removal, through selective reduction, of nitrogen oxides present in the exhaust gas, said catalyst consisting essentially of

(A) 80 to 95% by weight of an oxidized sulfur containing catalytic oxide obtained by

thermally treating at 450° C. to 700° C. a compound selected from the group consisting of a binary hydrous oxide of titanium and silicon in the presence of at least one sulfur compound selected from the group consisting of sulfuric acid and ammonium sulfate,

(B) 0 to 5% by weight of vanadium oxide, and

(C) 1 to 15% by weight of a catalytic oxide selected from the group consisting of an oxide of at least one metal selected from the group

consisting of tungsten, molybdenum, tin, and cerium, wherein said catalytic oxide (A) containing an oxidized sulfur consists essentially of (a) 40 to 95 parts of titanium, (b) 60 to 5 parts of silicon and zirconium and (c) 1.2 to 7 parts of sulfur, by atomic ratio.

5,550,097

COLOR RECORDING METHOD AND DEVICE

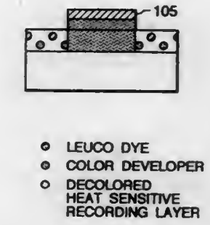
Souhei Shibasaki; Yukio Sawano, and Hiroto Nagashima, all of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 30, 1995, Ser. No. 452,716

Claims priority, application Japan, May 31, 1994, 6-119106

Int. Cl.[6] B41M *5/128*

U.S. Cl. 503—201 **7 Claims**



1. A color recording method for providing multiple colors on a direct heat sensitive paper comprises:

(a) providing a direct heat sensitive paper comprising a base coated with at least one leuco dye and at least one color developer;

(b) developing a first color on a predetermined first portion of the heat sensitive paper through a color developing reaction between the leuco dye and the color developer;

(c) developing a second color on a predetermined second portion of the heat sensitive pater by transferring an ink and a desensitizing material onto the second predetermined portion of the direct heat sensitive layer, said desensitizing material being present in an amount effective to prevent any substantial color developing reaction at said second portion of said heat sensitive paper.

5,550,098

THERMAL TRANSFER SHEET

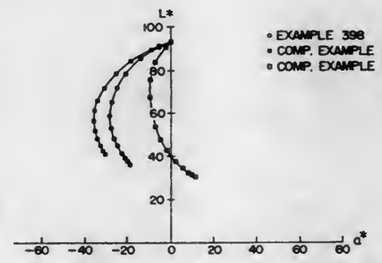
Kenichi Aso; Hideaki Sato; Hiroshi Eguchi; Komei Kafuku, and Ryohei Takiguchi, all of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Japan

Continuation-in-part of Ser. No. 974,723, Nov. 13, 1992, Pat. No. 5,369,078. This application Mar. 30, 1994, Ser. No. 220,105

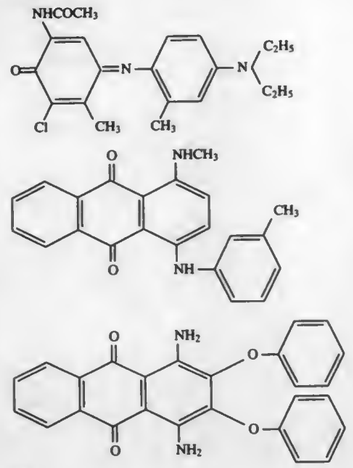
Claims priority, application Japan, Nov. 14, 1991, 3-325058; Nov. 14, 1991, 3-325060; Jan. 21, 1992, 4-029043; Jnn. 25, 1992, 4-190257; Sep. 22, 1992, 4-276811; Nov. 21, 1992, 4-029042; Mar. 31, 1993, 5-095052

Int. Cl.[6] B41M *5/035;5/38*

U.S. Cl. 503—227 **2 Claims**



1. A thermal transfer sheet comprising a base sheet and a dye-containing layer formed on one surface of said base sheet wherein a dye contained in said layer is a mixture of a dye represented by the following formula (29) with a dye represented by the following formula (30) and/or a dye represented by the following formula (31):



za

5,550,099

IMAGE FORMING METHOD, IMAGE FORMING APPARATUS AND IMAGE FORMING MEMBER

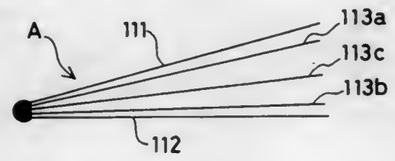
Katsuyuki Ohshima; Takeshi Ueno; Mineo Yamauchi, and Tatsuya Kita, all of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

Division of Ser. No. 809,501, Jan. 6, 1992, Pat. No. 5,318,941. This application Mar. 16, 1994, Ser. No. 213,558

Claims priority, application Japan, May 7, 1990, 2-117209; Aug. 4, 1990, 2-207037; Feb. 19, 1991, 3-045382

Int. Cl.[6] B41M *5/035;5/38*

U.S. Cl. 503—227 **7 Claims**



1. An image forming booklet comprising a front cover, a back cover and one or more paper mounts fastened as separate sheets therebetween, characterized in that a dye receiving layer to accommodate a sublimation dye is provided at least on a part of the front cover, the back cover or the paper mounts,

wherein said dye receiving layer is formed on the paper mount, and said booklet further comprises a laminate sheet for providing image protection or a protective layer transfer sheet, wherein said laminate sheet or said protective layer transfer sheet is fastened in said booklet as a separate sheet adjacent the dye receiving layer side of said paper mount.

5,550,100

METHODS OF USING MANGANESE CHLORIDE FOR IMPROVING THE WETTING OF PARTICULATES

Yili Guo, Maple Glen, Pa., assignor to Rohm and Hass Company, Philadelphia, Pa.

Division of Ser. No. 420,393, Apr. 12, 1995, Pat. No. 5,516,748, which is a continuation of Ser. No. 033,997, Mar. 19, 1993, abandoned, which is a continuation-in-part of Ser. No. 877,332, May 1, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 467,379

Int. Cl.[6] A01N *25/14*

U.S. Cl. 504—116 **3 Claims**

1. A method for wetting particulates comprising: admixing a particulate material, wherein the particulate material is an agricultural chemical, with an effective amount of manganese chloride such that the particulate material is wetted, dissolved or dispersed in less than 50% of the time needed to wet, dissolve or disperse the particulate material in the absence of manganese chloride.

5,550,101

SUPERCONDUCTING MAGNETORESISTIVE ELEMENT HAVING A PLURALITY OF WEAK-COUPLING PORTIONS AND A METHOD OF FABRICATING THE SAME

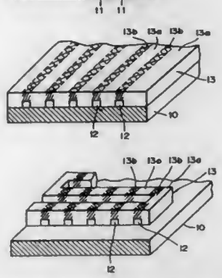
Masaya Nagata, Souraku-gun; Hideo Nojima, and Masayoshi Koba, both of Nara, all of, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 968,681, Oct. 30, 1992, abandoned. This application Sep. 8, 1994, Ser. No. 302,390

Claims priority, application Japan, Oct. 31, 1991, 3-286178

Int. Cl.[6] H01L *39/22*

U.S. Cl. 505—162 **7 Claims**



1. A method of fabricating a superconducting magnetoresistive apparatus which comprises a plurality of superconducting portions having such a high critical current density that the superconducting portions bold a zero resistance to any magnetic fields within a measuring range, said superconducting portions being spaced from each other, and a plurality of weak-coupling portions having a lower critical current density, each of which is positioned between the neighboring superconducting portions so that the superconducting portions and the weak-coupling portions are alternately arranged and connected in series, comprising the steps of:

forming either semiconductor films or metal films at a plurality of sites on a substrate in a manner that the semiconductor or metal films are spaced from each other;

forming a superconducting thin film all over said substrate and processing the superconducting thin film into a line pattern which passes over the plurality of semiconductor or metal films; and

heat-treating the substrate to diffuse a constituent element of the semiconductor films or metal films in the superconducting thin film so that portions of the superconducting thin film overlying the semiconductor or metal films become the weak-coupling portions and that the rest portions of the superconducting thin film become the superconducting portions.

5,550,102

SUPERCONDUCTOR AND METHOD OF MANUFACTURING THE SAME

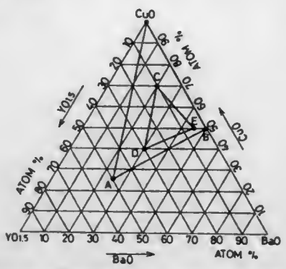
Yoshihiro Nakai; Kazuo Sawada; Kazuhiko Hayashi, and Masanobu Nishio, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Continuation of Ser. No. 800,876, Nov. 27, 1991, abandoned, which is a continuation of Ser. No. 175,437, Mar. 30, 1988, abandoned. This application Sep. 9, 1992, Ser. No. 942,481

Claims priority, application Japan, Apr. 2, 1987, 62-81819; Apr. 10, 1987, 62-89633; Apr. 11, 1987, 62-89234; Sep. 18, 1987, 62-235874

Int. Cl.[6] H01B *12/00;* **H01L** *39/24;* **B29C** *47/00;47/88*

U.S. Cl. 505—420 **12 Claims**



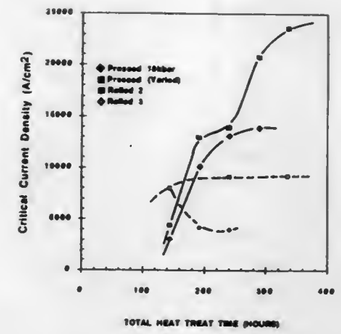
1. A method of manufacturing a superconductor formed by a base material coated with a ceramic superconductor material of a composition AaBbCucOd, wherein A is at least one of Y, La, and Bi; B is at least one of Ca, Sr and Ba; and a,b, c, and d represent the relative molar ratios of A, B, Cu and O, said method comprising:

a step of preparing an elongated base material;

a step of preparing a raw material of said composition expressed in said general formula AaBbCc;

a step of passing said base material through a melt of said raw material to apply said melt to said base material; and

a step of solidifying said melt on said base material by drawing said base material having said melt applied thereto out through a die portion having internal dimensions which define the external dimensions of a solidified body, said die portion being provided in an opening in a vessel.



treatment of the coil at temperatures above 800° C. thereby creating and aligning non-random pinning centers in the superconductor coil.

5,550,104

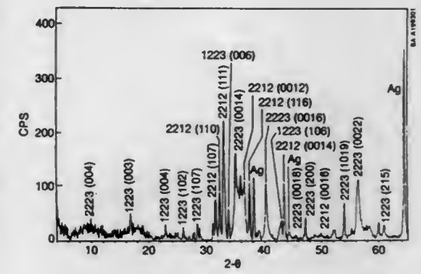
ELECTRODEPOSITION PROCESS FOR FORMING SUPERCONDUCTING CERAMICS

Raghu N. Bhattacharya, Littleton, Colo., assignor to Davis, Joseph & Negley, Golden, Colo.

Filed Sep. 9, 1994, Ser. No. 303,437

Int. Cl.[6] C25D *5/18;* **H01L** *39/24*

U.S. Cl. 505—472 **18 Claims**



5,550,103

SUPERCONDUCTOR TAPES AND COILS AND METHOD OF MANUFACTURE

Leszek Motowidlo, Bristol, Conn., and Pradeep Haldar, Guilderland, N.Y., assignors to IGC/Advanced Superconductors, Inc., Waterbury, Conn.

Continuation-in-part of Ser. No. 755,038, Sep. 4, 1991, abandoned. This application Aug. 18, 1993, Ser. No. 108,929

Int. Cl.[6] H01B *12/04;13/00*

U.S. Cl. 505—430 **22 Claims**

1. An improved method of producing coils of high temperature superconductor wire and tape by passing the superconductor through a series of operations involving at least one of a rolling operation and a pressing operation to generate a final thickness of the wire and tape, coiling the wire or tape and annealing, and thereafter reducing microcracks formed during production of the wire or tape, said method comprising uncoiling the wire or tape and in-line pressing the superconductor wire or tape in sections at a pressure less than that applied to the wire or tape in the series of operations, recoiling the wire or tape, and providing final heat

1. A method for making a superconducting ceramic precursor film, said method comprising the steps of:

a) providing a working electrode which comprises a surface;

b) providing at least one counter electrode which comprises a surface;

c) immersing said working electrode and counter electrode in a solution which comprises a mixture of superconducting precursor metal ions;

d) electrodepositing said superconducting precursor metal ions onto the surface of said working electrode to form a film thereon comprising a mixture of superconducting precursor metals in proportions sufficient to be oxidized into a superconducting ceramic, wherein said electrodepositing consists of the step of:

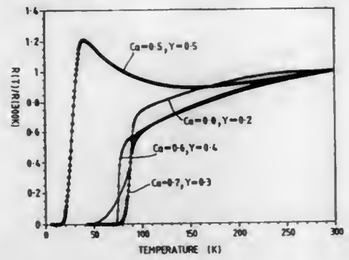
simultaneously applying a direct current voltage of between 2 to 10 volts between said working electrode and said counter electrode and a square wave alternating current signal between said working electrode and said counter electrode wherein the frequency of said alternating current signal is between about 5 KHz to 100 KHz wherein said direct

current voltage and said alternating current signal are applied together at a combined voltage of up to 20 volts for a sufficient time to form said film of superconducting precursor metals.

5,550,105
SUPERCONDUCTING COMPOSITIONS

Peter P. Edwards, Solihull, Great Britain; Shu-Fen Hu; Ru-Shi Liu, both of Chutung, Taiwan, and David A. Jefferson, Newmarket, Great Britain, assignors to BICC Public Limited Comapany, London, England

PCT No. PCT/GB93/01529, § 371 Date Jan. 31, 1995, § 102(e) Date Jan. 31, 1995, PCT Pub. No. WO94/02947, PCT Pub. Date Feb. 3, 1994
PCT Filed Jul. 21, 1993, Ser. No. 373,223
Claims priority, application United Kingdom, Jul. 23, 1992, 9215667
Int. Cl.[6] H01B *12/00;* H01L *39/12*
U.S. Cl. 505—120 **13 Claims**



1. Superconducting ceramic compositions characterized by alternate layers approximating perovskite structure and rocksalt structure and having nominal compositions represented by the abbreviated formula 1-2-1-2 and characterized by the formula

$(Pb_aA_{1-a})(Sr_bBa_{1-b})_2(Ca_cB_{1-c})Cu_2O_{7\ nominal}$

in which at least half the A atoms are Hg and the remainder, if any, are selected from one or more of Cd, Tl and Cu; B is selected from Y and the rare earth elements; a is from 0.3 to 0.7; b is from 0 to 1; and c is from 0.2 to 0.5 (all limits inclusive).

5,550,106
LOW BUFFER NUTRITIONAL COMPOSITION

Bryon W. Petschow, and Yung-Hsiung Lee, both of Evansville, Ind., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Filed Mar. 4, 1994, Ser. No. 206,555
Int. Cl.[6] A61K *38/01*
U.S. Cl. 514—2 **20 Claims**

16. A method for treating a subject in need of control of orally ingested pathogenic microorganisms comprising administering to said subject an effective amount of a liquid, nutritionally complete infant formula or adult enteral composition having a buffer strength of 18 or lower.

5,550,107
COMBINATION THERAPY FOR THE TREATMENT OF ESTROGEN-SENSITIVE DISEASE

Fernand Labrie, Quebec, Canada, assignor to Endorecherche Inc., Quebec, Canada

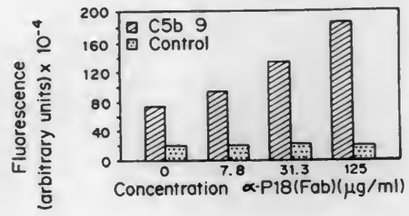
Continuation of Ser. No. 321,926, Mar. 10, 1989, abandoned. This application Nov. 4, 1991, Ser. No. 785,890
Int. Cl.[6] A61K *38/00;31/56;31/495;31/50;31/445;31/165;31/135*
U.S. Cl. 514—11 **46 Claims**

1. A method of treating breast or endometrial cancer comprising the steps of inhibiting the ovarian hormonal secretions of a warm blooded patient in need of such treatment and administering to said patient therapeutically effective amounts of an antiestrogen and at least one compound selected from the group consisting of an androgenic compound and, an inhibitor of an enzyme that catalyzes a step in the synthesis of sex steroids from sex steroid precursors in peripheral tissues, said inhibitor achieving that result by a non-adrenal mechanism.

5,550,108
INHIBITION OF COMPLEMENT MEDIATED INFLAMMATORY RESPONSE

Peter J. Sims, and Therese Wiedmer, both of Oklahoma City, Okla., assignors to Oklahoma Medical Research Foundation, Oklahoma City, Okla.

Continuation of Ser. No. 813,432, Dec. 24, 1991, abandoned, which is a division of Ser. No. 365,199, Jun. 12, 1989, Pat. No. 5,135,916. This application May 16, 1994, Ser. No. 243,540
Int. Cl.[6] C07K *15/00;* A61K *37/02;37/64*
U.S. Cl. 514—21 **5 Claims**



1. A method for the prevention of platelet and endothelial cell activation or cytolysis comprising:

adding an effective amount to inhibit platelet or endothelial cell activation or cytolysis by C5b-9 of an 18 kDa C5b-9 inhibitory protein that is expressed on erythrocyte membranes, wherein the molecular weight of the inhibitory protein is determined by SDS-PAGE under non-reducing conditions, and the inhibitory protein is of the same species of origin as the complement proteins to be inhibited to platelets or endothelial cells.

5,550,109
INDUCIBLE DEFENSIN PEPTIDE FROM MAMMALIAN EPITHELIA

Barry S. Schonwetter, Philadelphia, and Michael A. Zasloff, Merion Station, both of Pa., assignors to Magainin Pharmaceuticals Inc., Plymouth Meeting, Pa.

Filed May 24, 1994, Ser. No. 248,016
Int. Cl.[6] C07K *14/47;* A61K *38/17*
U.S. Cl. 514—12 **7 Claims**



1. A purified mammalian epithelial lingual antimicrobial peptide (LAP) having an ion mass of about 4627.5 daltons having the amino acid sequence QGVRNSQSCRRNKGICVPIRCPGSMR-QIGTCLGAQVKCCRRK (SEQ ID NO: 1), and having antimicrobial and antifungal activity.

5,550,110
ENDOTHELIN ANTAGONISTS II

Wayne L. Cody, Saline; Annette M. Doherty, and John G. Topliss, both of Ann Arbor, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 33,515, Mar. 31, 1993, abandoned, which is a continuation-in-part of Ser. No. 872,225, Apr. 22, 1992, abandoned. This application Jun. 30, 1994, Ser. No. 269,257
Int. Cl.[6] A61K *38/04;38/08;* C07K *5/04;7/06*
U.S. Cl. 514—17 **27 Claims**

1. A compound of Formula I

AA^1-AA^2-AA^3-AA^4-AA^5-AA^6 Seq ID No: 1

wherein AA^1 is



wherein R is hydrogen,
alkyl,
alkenyl,
alkynyl,
cycloalkyl,
cycloalkylalkyl,
aryl,
heteroaryl,
fluorenylmethyl,

wherein R^2 and R^3 are each the same or different and each is
hydrogen,
alkyl,
alkenyl,
alkynyl,
cycloalkyl,
cycloalkylalkyl,
aryl,
arylalkyl,
heteroaryl, or
fluorenylmethyl,

wherein R^2 is as defined above,
$—OR^2$, wherein R^2 is as defined above,

wherein R^2 and R^3 are as defined above,

wherein R^9 is F, Cl, Br, or I,
$—CH_2—OR^2$, wherein R^2 is as defined above,

wherein R^{2a} is hydrogen or alkyl and R^3 is as defined above,

wherein R^{2a} and R^3 are as defined above excluding R^3 is hydrogen, or

wherein R^2 is as defined above,
R^1 is hydrogen or alkyl,
Z is
—O—,
$—S(O)_m—$, wherein m is zero or an integer of 1 or2,

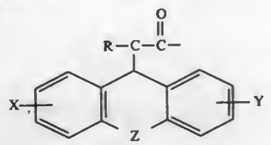
wherein R^2 is as defined above,
$—(CH_2)_n—$, wherein n is zero or an integer of 1, 2, 3, or 4,
$—(CH_2)_n—CH═CH—(CH_2)_{n'}—$, wherein n and n' are each independently the same or different and each is as defined above for n,

wherein R^1 and R^2 are as defined above, or

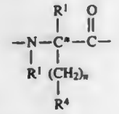
wherein R^2 and R^3 are each the same or different and each is as defined above,
X and Y are the same and substituted at the same position on the aromatic ring and each may be 1, 2, 3, or 4 substituents selected from the group consisting of
hydrogen,
halogen,
alkyl,
$—CO_2R^2$, wherein R^2 is as defined above

wherein R^2 and R^3 are as defined above,

wherein R^2 and R^3 are as defined above, and nitro or



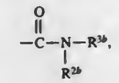
wherein R, Z, X, and Y are as defined above;
AA^2 is



wherein R^4 is
hydrogen,
alkyl,
alkenyl,
alkynyl,
cycloalkyl,
aryl,
heteroaryl,



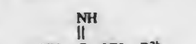
wherein R^{2b} and R^{3b} are each the same or different and each is
hydrogen,
alkyl,
cycloalkyl,
aryl, or
heteroaryl,
$—OR^{2b}$, wherein R^{2b} is as defined above,



wherein R^{2b} and R^{3b} are each the same or different and each is as defined above for R^{2b} and R^{3b},



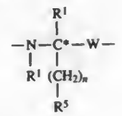
wherein R^{2b} is as defined above,



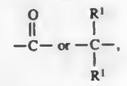
wherein R^{2b} is as defined above, or



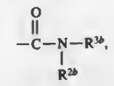
wherein R^{2b} is as defined above, and
R^1 and n are as defined above, or AA^2 is absent;
AA^3 is



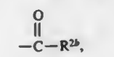
wherein W is



R^5 is
hydrogen,
alkyl,
aryl,
heteroaryl,

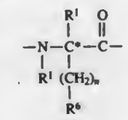


wherein R^{2b} and R^{3b} are each the same or different and each is as defined above,

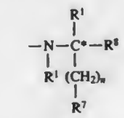


wherein R^{2b} is as defined above, or

wherein R^{2b} is as defined above, and
R^1 and n are as defined above, or AA^3 is absent;
AA^4 and AA^5 are each independently absent or each is independently



wherein R^6 is hydrogen,
alkyl,
alkenyl,
alkynyl,
cycloalkyl,
aryl, or
heteroaryl, and
R^1 and n are as defined above;
AA^6 is

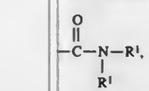


wherein R^7 is
aryl or
heteroaryl,

R^8 is



wherein R^1 is as defined above,
$—OR^1$, wherein R^1 is as defined above,



wherein R^1 is as defined above, or
$—CH_2—OR^1$, wherein R^1 is as defined above, and
R^1 and n are as defined above;
stereochemistry at C* in AA^1, AA^2, AA^3, AA^4, or AA^5 is D, L, or DL and stereochemistry at C* in AA^6 is L;
or a pharmaceutically acceptable salt thereof.

5,550,111

DUAL ACTION 2',5'-OLIGOADENYLATE ANTIVIRAL DERIVATIVES AND USES THEREOF

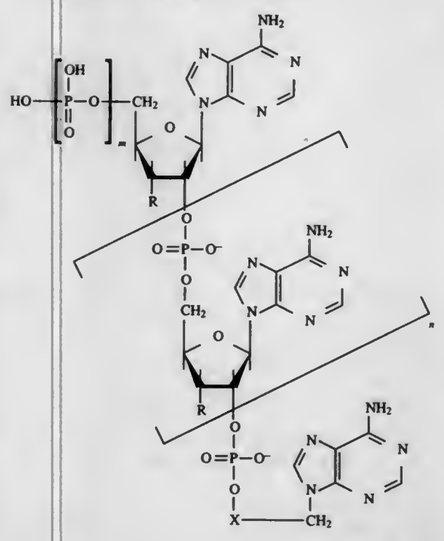
Robert J. Suhadolnik, Roslyn, Pa., and Wolfgang Pfleiderer, Konstanz, Germany, assignors to Temple University Of The Commonwealth System Of Higher Education, Philadelphia, Pa.

Continuation of Ser. No. 849,865, Mar. 12, 1992, abandoned, which is a continuation-in-part of Ser. No. 613,848, Dec. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 204,649, Jun. 9, 1988, abandoned, which is a continuation-in-part of Ser. No. 144,602, Jan. 11, 1988, Pat. No. 4,859,768, which is a continuation of Ser. No. 629,660, Jul. 11, 1984, abandoned. This application Nov. 3, 1994, Ser. No. 333,930

Int. Cl.[6] A61K *31/70;* **C07H** *21/00*

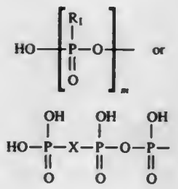
U.S. Cl. 514—44 **31 Claims**

1. A compound according to the formula



I

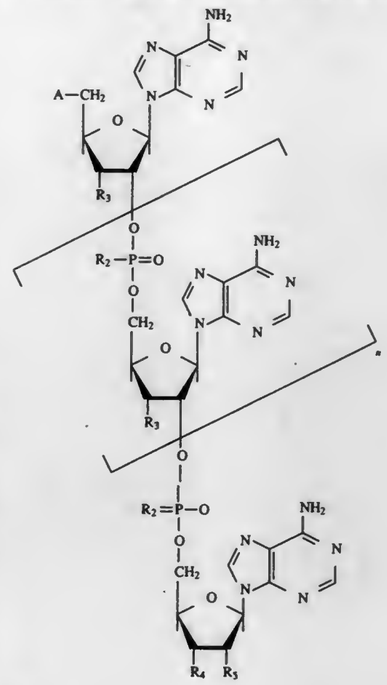
wherein
A is



X is NH_2 or CH_2;
m is zero, 1 2 or 3;
n is an integer from 1 to 8;
each R_1 is independently selected from the group consisting of O, S, sulfate, Se, C_1 to C_8 alkyl and C_1 to C_8 alkoxy;
each R_2 is independently selected from the group consisting of O, S-, sulfate, Se, C_1 to C_8 alkyl and C1 to C_8 alkoxy;
each R_3 is independently selected from hydrogen, hydroxyl, amino and $—OSi(CH_3)_2C(CH_3)_3$;
R_4 and R_5 are independently selected from the group consisting of hydrogen; hydroxyl; amino; C_1 to C_8 alkyl; C_1 to C_8

wherein
n is a whole positive integer from 1 to 8,
m is 0, 1, 2 or 3,
R is hydrogen,
X is selected from the group consisting of C1 to C6 alkyl and C1 to C6 alkoxy, or
a pharmaceutically acceptable salt thereof.

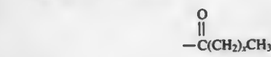
8. A conjugate comprising a compound according to the formula



alkoxy; C_1 to C_8 alkylamino, alkylcarbonyl, alkylcarboxyl and alkylhalide; and C_1 to C_8 alkoxyamino, alkoxycarbonyl, alkoxycarboxyl and alkoxyhalide; or pharmaceutically acceptable salts thereof,

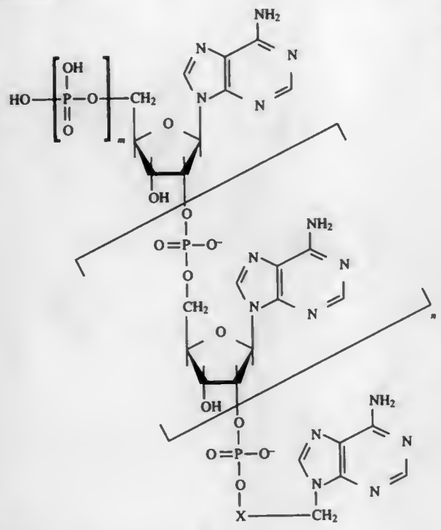
provided the compound is not authentic 2', 5'-oligoadenylate or a salt thereof,

said compound being covalently linked through an optional linker to an adduct through a hydroxyl oxygen at the 2'- or 3'-position of the 2'-terminal nucleotide of said compound, which adduct is selected from the group consisting of vitamin B_{12}, biotin, folic acid, riboflavin, cholesterol and an acyl group of the formula



wherein x is an integer from 1 to 20.

22. A method of antiviral treatment comprising administering to a mammal an effective amount of a compound according to the formula



wherein

n is a whole positive integer from 1 to 8,

m is 0, 1, 2 or 3,

X is selected from the group consisting of C1 to C6 alkyl and C1 to C6 alkoxy, or

a pharmaceutically acceptable salt thereof.

5,550,112

HYALURONIC ACID-UREA PHARMACEUTICAL COMPOSITIONS AND USES

Damian J. Gallina, Erie, Pa., assignor to Patent Biopharmaceutics, Inc., Erie, Pa.

Continuation-in-part of Ser. No. 966,938, Dec. 30, 1992, abandoned. This application Aug. 4, 1993, Ser. No. 101,826

Int. Cl.[6] C07H *5/04;* **A61K** *31/70*

U.S. Cl. 514—54 **7 Claims**

1. A method of treating skin ulcers which comprises applying to cutis tissues in need of such treatment a therapeutically effective amount of a composition comprising a pharmaceutically acceptable carrier, and as active pharmaceutical agents, urea in an amount of 0.1–40% by weight, and hyaluronic acid or a pharmaceutically acceptable salt thereof in an amount of 0.05–25% by weight.

5,550,113

BLOOD SUGAR REGULATING COMPOSITION AND METHODS RELATING THERETO

Morris A. Mann, 21663 W. 57th Ave., Glendale, Ariz. 85308

Filed Jul. 20, 1994, Ser. No. 277,875

Int. Cl.[6] A61K *31/715;* **C08B** *37/18*

U.S. Cl. 514—54 **21 Claims**

10. A method for regulating blood sugar level in a warm-blooded animal in need thereof, comprising administering to animal an effective amount of a composition comprising inulin, a metal complex, and a pharmaceutically acceptable carrier therefor wherein the metal of the metal complex is selected from vanadium, chromium and manganese.

5,550,114

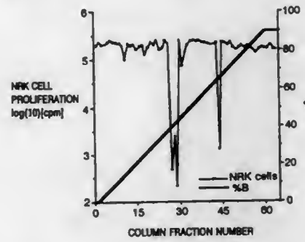
EPIDERMAL GROWTH FACTOR INHIBITOR

David S. Strayer, Newton Square, Pa., assignor to Thomas Jefferson University, Philadelphia, Pa.

Filed Apr. 2, 1993, Ser. No. 41,774

Int. Cl.[6] A61K *38/16;* **C07K** *14/47;1/20;1/30*

U.S. Cl. 514—21 **8 Claims**



1. A method of producing an epidermal growth factor inhibitor which inhibits Epidermal Growth Factor-induced cellular proliferation which comprises the steps of:

infecting host kidney cells with a fibroma virus to produce infected cells;

disrupting the infected cells to form a mixture;

filtering the mixture to remove cellular debris;

adding an equal amount of 100% methanol to the mixture such that the final concentration of methanol is 50% of the mixture so as to form a precipitate;

removing the precipitate from the mixture by centrifugation; and

collecting the mixture containing said epidermal growth factor inhibitor.

5,550,115

BIOLOGICALLY ACTIVE COMPOSITION

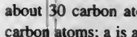
Roger H. Garst, Cincinati; Jane C. Mneninghoff, West Chester, and Matthew C. Schwan, Cincinnati, all of Ohio, assignors to Henkel Corporation, Plymouth Meeting, Pa.

Continuation of Ser. No. 227,934, Apr. 15, 1994, abandoned. This application May 26, 1995, Ser. No. 452,059

Int. Cl.[6] C07G *3/00;* **C07H** *15/04;* **A01N** *43/04;* **A61K** *31/70*

U.S. Cl. 514—25 **22 Claims**

12. A process for treating an agricultural substrate which comprises applying to said substrate an effective amount of a composition comprised of: (1) a biologically active ingredient selected from the group consisting of a fungicide; a bactericide; a bacteriostat; an insecticide; an insect repellent; an herbicide; a plant growth regulator and mixtures thereof and, (2) a solid surfactant comprised of (i) an alkyl polyglycoside of the formula I



I

wherein R_1 is a monovalent organic radical having from about 6 to about 30 carbon atoms; Z is a saccharide residue having 5 or 6 carbon atoms; a is a number having a value from 1 to about 6, and (ii) an inert solid carrier selected from the group consisting of silica, talc, a zeolite, magnesium aluminum silicate, calcium sulfate, magnesium carbonate, magnesium oxide, aluminum oxide.

5,550,116

N,O-SULPHATED HEPAROSANS AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Jean Claude Lormeau, Kremlin Bicetre; Bruno Chevallier, Paris; Marc L. V. Salomé, Castanet-Tolosan, and Guy E. M. Tenaille d'Estais, Toulouse, all of, France, assignors to Sanofi, Paris, France

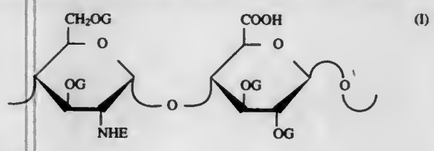
Continuation of Ser. No. 266,302, Jun. 27, 1994, abandoned, which is a continuation of Ser. No. 801,923, Dec. 3, 1991, abandoned. This application Feb. 15, 1995, Ser. No. 389,618

Claims priority, application France, Dec. 3, 1990, 90 15114

Int. Cl.[6] A61K *31/725*

U.S. Cl. 514—56 **18 Claims**

1. N,O-sulphated heparosans consisting of chains or of a mixture of chains of molecular mass between 1,500 and 15,000 Da, which consist essentially of repeated disaccharide units of formula I:



(I)

in which:

E represents a group selected from an acetyl group in 0 to 80% of the disaccharide units of the N,O-sulphated heparosans, and a group selected from a sulphate group and a hydrogen atom in the remaining disaccharide units, and

G represents a group selected from a hydrogen atom and a sulphate group;

said N,O-sulphated heparosans having a degree of sulphation, expressed as the sulphate/carboxyl ratio, between 1.5 and 3.0; and the pharmaceutically acceptable salts of said N,O-sulphated heparosans.

5,550,117

DIPYRIDO[3,2-B:2',3'-E][1,4]DIAQZEPINES AND THEIR USE IN THE TREATMENT OF HIV INFECTION

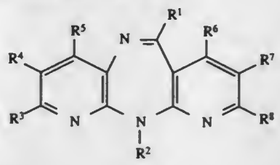
Karl D. Hargrave, Brookfield; Ernest Cullen; John R. Proudfoot, both of Newtown; Karl G. Grozinger, Ridgefield; Kollol Pal, New Milford, and Julian Adams, Ridgefield, all of Conn., assignors to Boehringer Ingelheim Pharmaceuticals, Inc., Ridgefield, Conn.

Continuation of Ser. No. 239,628, May 9, 1994, abandoned, which is a continuation of Ser. No. 95,780, Jul. 21, 1993, abandoned, which is a continuation of Ser. No. 964,241, Oct. 21, 1992, abandoned, which is a continuation of Ser. No. 837,715, Feb. 19, 1992, abandoned, which is a continuation of Ser. No. 652,147, Feb. 7, 1991, abandoned. This application Dec. 29, 1994, Ser. No. 366,130

Int. Cl.[6] A61K *31/55;* **C07D** *487/14*

U.S. Cl. 514—81 **6 Claims**

1. A compound of the formula I



(I)

wherein,

R^1 is cyano, chloro, bromo, imidazolyl, phosphetanyl, phospholanyl, or phosphorinanyl, or a group of the formula $—OR^9$, $—SR^9$, $—SOR^9$, $—SO_2R^9$, $—NH_2$, $—NHR^9$, $—NR^9R^{10}$, $—PR^9R^{10}$, $—P(OR^9)(OR^{10})$, $—P(O)(OR^9)(OR^{10})$, $—PO_3H_2$, $—P(NR^9R^{10})(NR^9R^{10})$, or $—P(O)(NR^9R^{10})(NR^9R^{10})$, wherein R^9 and R^{10} are each independently alkyl of 1 to 4 carbon atoms, which may optionally be substituted by a cyano or alkoxycarbonyl group of 2 to 4 carbon atoms, cyclopropyl or cyclobutyl, or the group $—NR^9R^{10}$ may be pyrrolidine, piperidine, or morpholine;

R^2 is hydrogen, alkyl of 1 to 6 carbon atoms, fluoroalkyl of 1 to 6 carbon atoms and 1 to 3 fluorine atoms, cycloalkyl of 3 to 6 carbon atoms, oxetanyl, thietanyl, tetrahydrofuranyl or tetrahydrothienyl, alkenyl or alkynyl of 2 to 6 carbon atoms, alkyloxyalkyl or alkylthioalkyl of 2 to 5 carbon atoms, alkanoyl of 2 to 5 carbon atoms, cyano, hydroxyalkyl of 2 to 6 carbon atoms, aryl or arylmethyl (wherein the aryl moiety is thiazolyl, oxazolyl, or isoxazolyl, which is unsubstituted, or is pbenyl, thienyl or furanyl, which is either unsubstituted or substituted by alkyl or alkyloxy of 1 to 3 carbon atoms, hydroxyl or halogen), or alkyloxycarbonylmethyl wherein the alkyl moiety contains 1 to 5 carbon atoms;

one of R^3, R^4 and R^5 is alkyl of 1 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, alkenyl or alkynyl of 2 to 6 carbon atoms, trihalomethyl, hydroxyalkyl of 1 to 6 carbon atoms, alkyloxy-alkyl or alkylthioalkyl of 2 to 5 carbon atoms, alkyloxycarbonylalkyl wherein the alkyl moieties each contain 1 to 2 carbon atoms, hydroxyl, alkyloxy or alkylthio of 1 to 5 carbon atoms, hydroxyalkyloxy of 2 to 4 carbon atoms, alkanoyloxy of 2 to 4 carbon atoms, alkylsulfinyl or alkylsulfonyl of 1 to 4 carbon atoms, alkanoyl of 2 to 6 carbon atoms, alkyloxycarbonyl wherein the alkyl moiety contains 1 to 3 carbon atoms, mono- or di-alkylaminocarbonyl wherein each alkyl moiety contains 1 to 3 carbon atoms, aminoalkyl of 1 to 4 carbon atoms, mono- or di-alkylaminoalkyl wherein each alkyl moiety contains 1 to 3 carbon atoms, aryl or arylmethyl (wherein the aryl moiety is phenyl, thienyl or furanyl, which is either unsubstituted or substituted by alkyl or alkyloxy of 1 to 3 carbon atoms, hydroxyl or halogen), a group of the formula $—NR^{11}R^{12}$, halogen, cyano, nitro, azido or carboxyl, with the other two substituents being hydrogen, methyl or chloro; or,

two of R^3, R^4 and R^5 are independently alkyl or hydroxyalkyl of 1 to 2 carbon atoms, trihalomethyl, alkyloxy or alkylthio of 1

to 2 carbon atoms, halogen or a group of the formula —$NR^{11}R^{12}$, with the remaining substituent being hydrogen or methyl; or,

R^3, R^4 and R^5 are each hydrogen;

one of R^6, R^7 and R^8 is alkyl of 1 to 4 carbon atoms, alkenyl or alkynyl of 2 to 4 carbon atoms, trihalomethyl, hydroxyalkyl of 1 to 4 carbon atoms, alkyloxyalkyl or alkylthioalkyl of 2 to 4 carbon atoms, alkyloxycarbonylalkyl wherein the alkyl moieties each contain 1 to 2 carbon atoms, hydroxyl, alkyloxy or alkylthio of 1 to 4 carbon atoms, hydroxyalkyloxy of 2 to 4 carbon atoms, alkanoyloxy of 2 to 4 carbon atoms, alkylsulfinyl or alkylsulfonyl of 1 to 4 carbon atoms, alkanoyl of 2 to 6 carbon atoms, alkoxycarbonyl wherein the alkyl moiety contains 1 to 3 carbon atoms, aminoalkyl of 1 to 4 carbon atoms, mono- or di-alkylamino-alkyl wherein each alkyl moiety contains 1 to 2 carbon atoms, a group of the formula —$NR^{13}R^{14}$, halogen, cyano, nitro, azido or carboxyl, with the other two substituents being hydrogen; or,

two of R^6, R^7 and R^8 are independently alkyl of 1 to 2 carbon atoms, trihalomethyl, alkyloxy or alkylthio of 1 to 2 carbon atoms, halogen or a group of the formula —$NR^{11}R^{14}$, with the remaining substituent being hydrogen; or,

R^6, R^7 and R^8 are each hydrogen; and,

R^{11}, R^{12}, R^{13} and R^{14} are each independently hydrogen, alkyl of 1 to 4 carbon atoms, alkenylmethyl or alkynylmethyl of 2 to 4 carbon atoms, aryl or arylmethyl (wherein the aryl moiety is phenyl, thienyl or furanyl, which is either unsubstituted or substituted by methyl, methoxy or halogen), mono- or dihydroxyalkylmethyl of 2 to 4 carbon atoms, alkyloxy of 1 to 3 carbon atoms, hydroxy, alkyloxyethyl or alkylthioethyl of 3 to 4 carbon atoms, aminoalkyl-methyl of 1 to 4 carbon atoms, mono- or dialkylaminoalkylmethyl wherein each alkyl moiety contains 1 or 2 carbon atoms, or alkanoyl of 1 to 4 carbon atoms; or,

R^{11} and R^{12}, and R^{13} and R^{14}, together with the nitrogen atoms between them, respectively and independently form azetidin-1-yl or a 5, 6 or 7-membered ring which is either saturated or unsaturated, which optionally contains up to one additional heteroatom which may be selected from O, S or N, or which optionally contains in place of a carbon atom a group of the formula =NR^{15} wherein R^{15} is hydrogen or alkyl or 1 to 2 carbon atoms, and which ring is optionally and independently substituted with hydroxymethyl, aminomethyl, 1 to 4 methyl groups and 1 to 2 hydroxy groups;

or a pharmaceutically acceptable acid addition salt thereof.

5. A method for treating HIV-1 infection which comprises administering, to a human being exposed to or infected by HIV-1, a therapeutically effective amount of a compound of formula I, as set forth in claims **1**, **2**, **3**, or **4**, or a pharmaceutically acceptable acid addition salt thereof.

5,550,118

POLYHYDRONORHARMAN SYNTHASE INHIBITORS

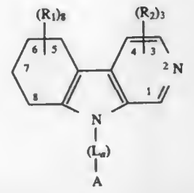
Joseph A. Jakubowski, Indianapolis; Alan D. Palkowitz, Carmel, and Sandra K. Sigmund, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jan. 31, 1994, Ser. No. 189,213

Int. Cl.[6] **A61K** *31/44;31/675;* **C07F** *9/58;* **C07D** *471/04*

U.S. Cl. 514—89 **7 Claims**

4. A polyhydronorharman compound, or a pharmacologically acceptable salt, solvate, or aliphatic ester prodrug thereof, which compound inactivates TXA_2 synthase in mammalian human blood platelets and other cells, and said compound is represented by the formula (II):



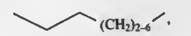
(II)

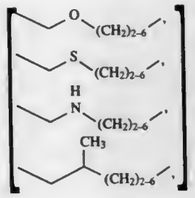
wherein;

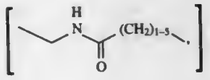
R_1 is a radical at position 5, 6, 7, and 8 where each R_1 is independently selected from hydrogen, hydroxy, halogen, C_1–C_{12} alkyl, C_1–C_{12} alkoxy, and C_4–C_8 cycloalkyl,

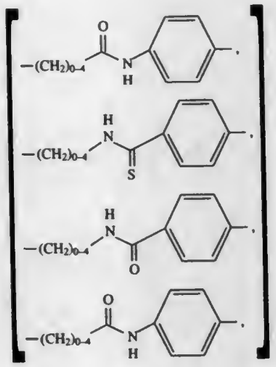
R_2 is hydrogen;

(L_a) is a divalent linking group selected from the following formulae:

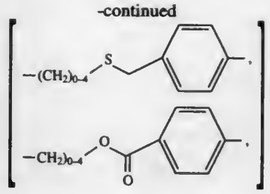


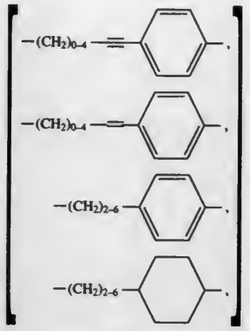


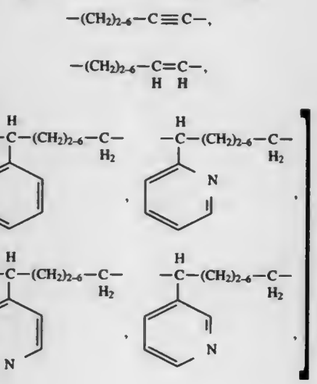


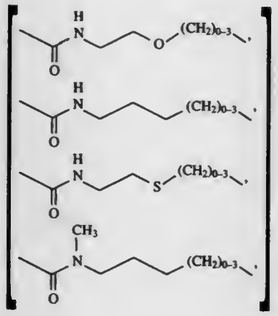


-continued

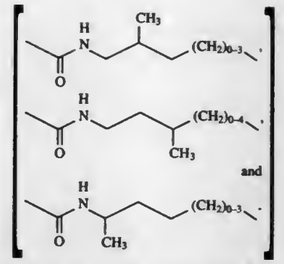




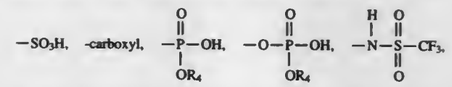




-continued



and A is an acidic group selected from the following:



and where R_4 is selected from hydrogen, C_1–C_{12} alkyl, phenyl or substituted phenyl.

5,550,119

PHOSPHONO SUBSTITUTED TETRAZOLE DERIVATIVES AS ECE INHIBITORS

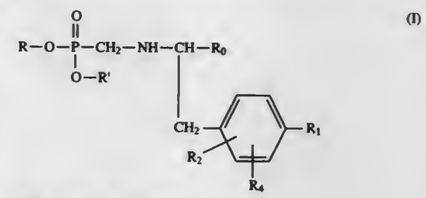
Stéphane De Lombaert, Bernardsville; Arco Y. Jeng, Piscataway, and Gary M. Ksander, Milford, all of N.J., assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed Mar. 2, 1995, Ser. No. 403,353

Int. Cl.[6] **C07F** *9/280*

U.S. Cl. 514—92 **20 Claims**

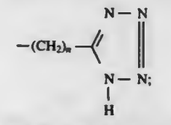
1. A method of inhibiting the endogenous formation and of decreasing the level of endothelin in mammals which comprises administering to a mammal in need thereof an effective endothelin converting enzyme inhibiting amount of a compound of the formula (I)



(I)

or a tautomer thereof, wherein

R_0 represents a group of formula



(Ia)

R and R' represent independently hydrogen, carbocyclic aryl, 6-tetrahydronaphthyl, 5-indanyl, α-(trichloromethyl, car

boxyl, esterified carboxyl or amidated carboxyl) substituted-(lower alkyl or aryl-lower alkyl), acyloxymethyl optionally monosubstituted on methyl carbon by lower alkyl, by C_5–C_7-cycloalkyl, by aryl or by aryl-lower alkyl; R_1 represents phenyl, or phenyl substituted by lower alkyl, lower alkoxy, halogen or trifluoromethyl; or R_1 represents thienyl or furanyl optionally substituted by lower alkyl; or R_1 represents hydrogen if R_0 represents a group of formula Ia; R_2 and R_4 represent hydrogen, lower alkyl, hydroxy, lower alkoxy, halogen or trifluoromethyl; n is 0, 1 or 2; or a pharmaceutically acceptable salt thereof.

5,550,120

REGULATING NEUROPEPTIDE HORMONE SECRETION

Meyer B. Jackson, 3568 Tallyho La., Madison, Wis. 53705

Continuation of Ser. No. 109,683, Aug. 20, 1993, abandoned. This application Apr. 3, 1995, Ser. No. 415,741

Int. Cl.[6] A01N *45/00*; A61K *31/56*

U.S. Cl. 514—169 **10 Claims**

1. A method for increasing the release of neuropeptide hormones from the neurosecretory nerve terminals of the posterior pituitary of a patient, said method comprising the step of administering to said patient an effective amount of 17 beta-estradiol, dehydroepiandrosterone or its sulfated derivatives.

5,550,121

AMINOALKYLPYRROLIDINYLTHIOCARBAPENEM DERIVATIVES

Susumu Nakagawa; Shinji Kato; Satoshi Murase; Osamu Okamoto; Ryuji Mitomo; Katsumi Yamamoto; Koji Yamada, and Hiroshi Fukatsu, all of Tsukuba, Japan, assignors to Banyu Pharmaceutical Co., Ltd., Tokyo, Japan

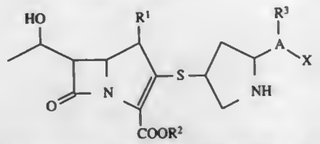
Continuation of Ser. No. 982,585, Nov. 27, 1992, abandoned. This application Sep. 27, 1994, Ser. No. 312,619

Claims priority, application Japan, Nov. 27, 1991, 3-335888; Jul. 21, 1992, 4-215613

Int. Cl.[6] C07D *487/04*; A61K *31/40*

U.S. Cl. 514—210 **21 Claims**

1. A compound of the formula:



(I)

wherein R^1 is a hydrogen atom or a methyl group, R^2 is a hydrogen atom or a negative charge, R^3 is a halogen atom, a hydroxyl group, a lower alkoxy group, a lower alkanoyloxy group, an amino group, an N-lower alkylamino group, an N,N-di-lower alkylamino group, a lower alkanoylamino group, an aroylamino group, a (lower alkylsulfonyl)amino group, a sulfamoylamino group, a cyano group, a nitro group, a group of —$COOR^4$ (wherein R^4 is a hydrogen atom or a lower alkyl group) or a group of —$CON(R^5)R^6$ (wherein each of R^5 and R^6 which may be the same or different, is a hydrogen atom or a lower alkyl group, or R^5 and R^6 form together with the adjacent nitrogen atom a heterocyclic group selected from the group consisting of an aziridinyl group, an azetidinyl group, a pyrrolidinyl group, a piperidyl group, a piperazinyl group, a 4-lower alkyl piperazinyl group and a morpholino group), A is a linear or branched lower alkylene group, X is a group of —$N(R^7)R^8$ (wherein each of R^7 and R^8 which may be the same or different, is a hydrogen atom or a lower alkyl group) or a group of —$N^+(R^9)(R^{10})R^{11}$ (wherein each of R^9, R^{10} and R^{11} which may be the same or different, is a lower alkyl group); or a pharmaceutically acceptable salt or ester thereof.

5,550,122

PYRIDO[2,3-B][1,5]BENZOXAZEPIN (AND THIAZEPIN)-5(6H)-ONES AND THIONES AND THEIR USE IN THE TREATMENT OF HIV INFECTION

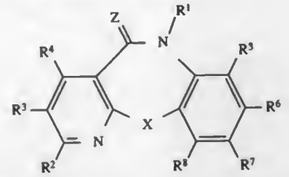
Karl D. Hargrave, Brookfield, Conn., and Gunther Schmidt, deceased, late of Munich, Germany, assignors to Boehringer Ingelheim Pharmaceuticals, Inc., Ridgefield, Conn.

Continuation of Ser. No. 131,263, Oct. 1, 1993, abandoned, which is a continuation of Ser. No. 955,543, Oct. 1, 1992, abandoned, which is a continuation of Ser. No. 562,767, Aug. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 539,294, Jun. 15, 1990, abandoned, which is a continuation of Ser. No. 400,253, Aug. 29, 1989, abandoned. This application Aug. 17, 1994, Ser. No. 292,123

Int. Cl.[6] A61K *31/55*; C07D *513/04*;*498/04*

U.S. Cl. 514—211 **7 Claims**

1. A compound of the formula I



I

wherein,

X is oxygen or sulfur;

Z is oxygen or sulfur;

R^1 is alkyl of 1 to 5 carbon atoms, fluoroalkyl of 1 to 3 fluorine atoms and 1 to 5 carbon atoms, cycloalkyl of 3 to 5 carbon atoms, mono- or dihalovinyl, 2-halo-2-propen-1-yl, alkenylmethyl or alkynylmethyl of 3 to 5 carbon atoms, alkyloxyalkyl or alkylthioalkyl of 2 to 4 carbon atoms, arylmethyl (wherein the aryl moiety is phenyl, thienyl or furanyl optionally substituted with methyl, methoxy or halogen), alkoxycarbonylalkyl of 3 to 4 carbon atoms, alkenyloxy- or alkynyloxycarbonyl wherein each alkenyl or alkynyl moiety contains 2 to 4 carbon atoms, hydroxy, alkoxy of 1 to 4 carbon atoms, amino, mono- or di-alkylamino wherein each alkyl moiety contains 1 to 3 carbon atoms, aminocarbonylmethyl, alkanoylaminoalkyl wherein the alkanoyl moiety contains 2 to 3 carbon atoms and the alkyl moiety contains 1 to 2 carbon atoms, hydroxyalkylmethyl of 2 to 5 carbon atoms, alkanoyl of 2 to 3 carbon atoms, or cyanoalkyl wherein the alkyl moiety contains 1 to 4 carbon atoms;

one of R^2, R^3 and R^4 is alkyl of 1 to 4 carbon atoms, alkenyl or alkynyl of 2 to 4 carbon atoms, halogen, hydroxyl, alkoxy or alkylthio of 1 to 3 carbon atoms, alkanoyloxy of 2 to 3 carbon atoms, amino, mono- or di-alkylamino wherein each alkyl

moiety contains 1 to 2 carbon atoms, aminoalkyl of 1 to 2 carbon atoms, mono- or dimethylaminomethyl, hydroxyalkyl of 1 to 4 carbon atoms, alkoxyalkyl or alkylthioalkyl wherein each alkyl moiety contains 1 to 2 carbon atoms, alkoxycarbonyl of 2 to 3 carbon atoms, trihalomethyl, alkanoyl of 2 to 3 carbon atoms, alkanoylamino of 1 to 3 carbon atoms, cyano, azido, alkoxycarbonylmethyl of 3 to 4 carbon atoms or methoxycarbonylmethoxy, with one of the two remaining groups being hydrogen or methyl and the last remaining group being hydrogen; or,

two of R^2, R^3 and R^4 are methyl, ethyl or chloro, with the remaining group being hydrogen; or,

R^2, R^3 and R^4 are each hydrogen; and,

one of R^5, R^6, R^7 and R^8 is alkyl of 1 to 4 carbon atoms, alkenyl or alkynyl of 2 to 4 carbon atoms, halogen, hydroxyl, alkoxy or alkylthio of 1 to 3 carbon atoms, alkanoyloxy of 2 to 3 carbon atoms, amino, mono- or di-alkylamino wherein each alkyl moiety contains 1 to 2 carbon atoms, aminoalkyl of 1 to 2 carbon atoms, mono- or dimethylaminomethyl, hydroxyalkyl of 1 to 4 carbon atoms, alkoxyalkyl or alkylthioalkyl wherein each alkyl moiety contains 1 to 2 carbon atoms, alkoxycarbonyl of 2 to 3 carbon atoms, trihalomethyl, alkanoyl of 2 to 3 carbon atoms, alkanoylamino of 1 to 3 carbon atoms, cyano, azido, alkoxycarbonylmethyl of 3 to 4 carbon atoms or methoxycarbonylmethoxy, with one of the three remaining groups being hydrogen, methyl, ethyl or chloro and the other two remaining groups being hydrogen; or,

R^5, R^6, R^7 and R^8 are each hydrogen;

or a pharmaceutically acceptable salt thereof.

5,550,123

METHODS FOR INHIBITING BONE PROSTHESIS DEGENERATION

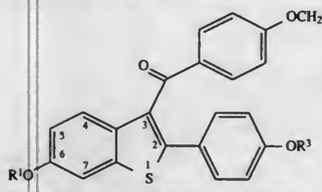
George J. Cullinan, Trafalgar, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 22, 1994, Ser. No. 294,170

Int. Cl.[6] A61K *31/55*;*31/445*;*31/40*

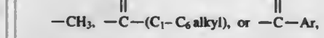
U.S. Cl. 514—214 **4 Claims**

1. A method of inhibiting bone prosthesis degeneration comprising administering to a human in need thereof an effective amount of a compound having the formula



(I)

wherein R^1 and R^3 are independently hydrogen,



wherein Ar is optionally substituted phenyl;

R^2 is selected from the group consisting of pyrrolidine, hexamethylenemino, and piperidino; or a pharmaceutically acceptable salt of solvate thereof.

5,550,124

USE OF PERIPHERAL-TYPE BENZODIAZPINE SITES FOR TREATMENT OF CNS TRAUMA OR DISEASE

Kelvin W. Gee, Hacienda Heights, Calif., assignor to University of Southern California, Los Angeles, Calif.

Filed Dec. 10, 1991, Ser. No. 805,458

Int. Cl.[6] A61K *31/55*

U.S. Cl. 514—221 **15 Claims**

1. A method for treatment of central nervous system damage in a mammal which damage is associated with inflammation comprising:

administering, to a mammal suffering from central nervous system damage associated with inflammation, an amount of a peripheral-type BZ receptor inhibitory agonist effective to minimize or prevent further central nervous system damage;

wherein said inhibitory agonist binds to peripheral-type BZ receptors in a competitive assay with labeled Ro5-4864 with an IC_{50} of at most 200 nM, with the proviso that said agonist is not diazepam.

5,550,125

3-(2-AMINOMETHYL)-4-[3-TRIFLUOROMETHYL)BENZOYL]-3-4 DIHYDRO-2H-1,4-BENZOXAZINE DERIVATIVES AND THEIR THERAPEUTIC APPLICATION

Pascal George, St Arnoult en Yvelines; Jonathan Frost, Wissous; Patrick Pasau, Bagneux; Corinne Rousselle; Régine Bartsch, both of Fontenay aux Roses; Paul Howard Williams, Paris, and Jean Claude Muller, Morsang sur Orge, all of, France, assignors to Synthelabo, Le Plessis Robinson, France

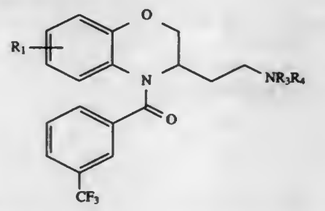
Filed Feb. 2, 1995, Ser. No. 382,589

Claims priority, application France, Feb. 3, 1994, 94 01196; Feb. 3, 1994, 94 01197

Int. Cl.[6] A61K *31/535*; C07D *413/06*;*471/04*;*495/04*

U.S. Cl. 514—230.5 **3 Claims**

1. Compound of the formula



(I)

wherein

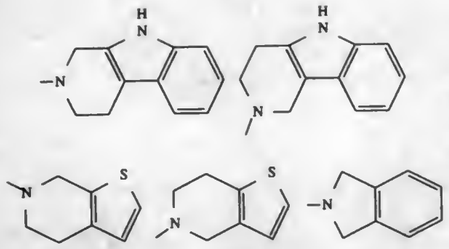
R_1 represents a hydrogen, fluorine or chlorine atom or a methyl, C_1–C_3 alkoxy or nitro group;

R_3 represents a hydrogen atom or a C_1–C_3 alkyl group;

R_4 represents a 2,3-dihydro-1H-inden-2-yl group, a 2,3-dihydro-1H-inden-1-yl group or a 1,2,3,4-tetrahydronaphthalen-1-yl group;

or alternatively

R_3 and R_4 together complete, with the nitrogen atom to which they are attached, a 1,2,3,4-tetrahydro-9H-pyrido[3,4-b]indol-2-yl group, a 1,2,3,4-tetrahydro-9H-pyrido[4,3-b]indol-3-yl group, a 4,5,6,7-tetrahydrothieno[2,3-c]pyrid-6-yl group, a 4,5,6,7-tetrahydrothieno[3,2-c]pyrid-6-yl group or a 2,3 -dihydro-1H-isoindol-2-yl group, the respective formulae of which are as follows:



in the form of a base or of an addition salt with an acid; and either in the form of a pure optical isomer or a mixture of optical isomers.

5,550,126

CENTRAL CHOLECYSTOKININ ANTAGONISTS HAVING PHARMACEUTICAL ACTIVITY

David C. Horwell, Foxton; John Hughes, Swaffman Prior, and Geoff N. Woodruff, Dassels, all of, England, assignors to Merck Sharp and Dohme Limited, Hoddesdon, England

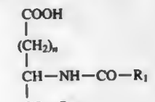
Continuation of Ser. No. 286,715, Aug. 5, 1994, abandoned, which is a continuation of Ser. No. 210,251, Mar. 18, 1994, abandoned, which is a continuation of Ser. No. 96,749, Jul. 23, 1993, abandoned, which is a continuation of Ser. No. 800,861, Oct. 24, 1991, abandoned, which is a continuation of Ser. No. 421,896, Oct. 16, 1989, abandoned, which is a continuation-in-part of Ser. No. 389,665, Aug. 4, 1989, abandoned. This application Jan. 30, 1995, Ser. No. 380,467

Int. Cl.[6] A61K *31/195;31/445;31/535*

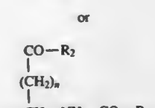
U.S. Cl. 514—237.5 **4 Claims**

1. A method for treating or preventing the withdrawal response produced by withdrawal of chronic treatment with diazepam in a mammal in need of such treatment which comprises administering a pharmaceutical composition in unit dosage form of at least one of the following CCK-ligands:

pharmaceutically active derivatives of D,L-glutamic acid and D,L-aspartic acid of formula:



I



IA

wherein n is 1 or 2;

R_1 is a phenyl group mono-, di, or tri-substituted with linear or branched C_1-C_4 alkyl groups, which may be the same or different, or with halogens, with a cyano group or with a trifluoromethyl group; and

R_2 is selected from the group consisting of morpholino, piperidino and amino which amino can have one or two linear, branched or cyclic alkyl group substituents which substituents contain from 1 to 8 carbon atoms and which substituents may be the same or different.

2. A method for treating or preventing the withdrawal response produced by withdrawal of chronic use of cocaine in a mammal in need of such treatment which comprises administering a pharmaceutical composition in unit dosage form of at least one of the following CCK-ligands:

pharmaceutically active derivatives of D,L-glutamic acid and D,L-aspartic acid of formula:

I

IA

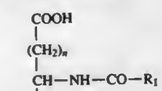
wherein n is 1 or 2;

R_1 is a phenyl group mono-, di, or tri-substituted with linear or branched C_1-C_4 alkyl groups, which may be the same or different, or with halogens, with a cyano group or with a trifluoromethyl group; and

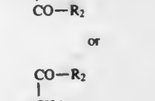
R_2 is selected from the group consisting of morpholino, piperidino and amino which amino can have one or two linear, branched or cyclic alkyl group substituents which substituents contain from 1 to 8 carbon atoms and which substituents may be the same or different.

3. A method for treating or preventing the withdrawal response produced by withdrawal of chronic use of alcohol in a mammal in need of such treatment which comprises administering a pharmaceutical composition in unit dosage form of at least one of the following CCK-ligands:

pharmaceutically active derivatives of D,L-glutamic acid and D,L-aspartic acid of formula:



I



IA

wherein n is 1 or 2;

R_1 is a phenyl group mono-, di-, or tri-substituted with linear or branched C_1-C_4 alkyl groups, which may be the same or different, or with halogens, with a cyano group or with a trifluoromethyl group; and

R_2 is selected from the group consisting of morpholino, piperidino and amino which amino can have one or two linear, branched or cyclic alkyl group substituents which substituents contain from 1 to 8 carbon atoms and which substituents may be the same or different.

4. A method for treating or preventing the withdrawal response produced by withdrawal of chronic use of nicotine in a mammal in need of such treatment which comprises administering a pharmaceutical composition in unit dosage form of at least one of the following CCK-ligands:

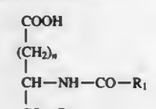
pharmaceutically active derivatives of D,L-glutamic acid and D,L-aspartic acid of formula:

I

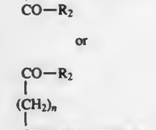
IA

need of such treatment which comprises administering a pharmaceutical composition in unit dosage form of at least one of the following CCK-ligands:

pharmaceutically active derivatives of D,L-glutamic acid and D,L-aspartic acid of formula:



I



IA

wherein n is 1 or 2;

R_1 is a phenyl group mono-, di, or tri-substituted with linear or branched C_1-C_4 alkyl groups, which may be the same or different, or with halogens, with a cyano group or with a trifluoromethyl group; and

R_2 is selected from the group consisting of morpholino, piperidino and amino which amino can have one or two linear, branched or cyclic alkyl group substituents which substituents contain from 1 to 8 carbon atoms and which substituents may be the same or different.

5,550,127

METHOD OF TREATMENT FOR EIPH IN RACING STOCK

James A. Patano, 2459 Riverbend Rd., Allentown, Pa. 18103

Filed Sep. 7, 1995, Ser. No. 524,834

Int. Cl.[6] A61K *31/495;31/30*

U.S. Cl. 514—248 **9 Claims**

1. A method for the treatment or prevention of exercise-induced pulmonary hemorrhage in a non-human mammal comprising:

administering to said non-human mammal an effective amount of at least one angiotensin converting enzyme inhibitor.

5,550,128

ENANTIOMERS OF GAMMA METHYLENE 10-DEAZA AMINOPTERIN AND PROCESS FOR PREPARING THE SAME

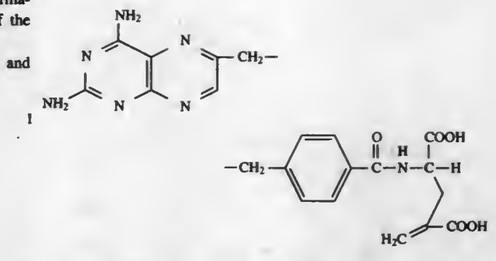
Madhavan G. Nair; Indira G. Nair, both of 7005 Charleston Oaks Dr. N., and Ratna Pati, 2101 Woodford Ct., all of Mobile, Ala. 36695

Filed Sep. 9, 1994, Ser. No. 303,403

Int. Cl.[6] C07D *475/08*

U.S. Cl. 514—249 **7 Claims**

1. 4-Amino-4-deoxy-10-deazapteroyl-γ-methylene-L-glutamic acid (L-MDAM) having the following chemical structure, wherein the γ-methyleneglutamate moiety has the "L" configuration.



5,550,129

BENZOPYRANONES, PROCESSES FOR THEIR PREPARATION AND THEIR USE

Michael Nöldner, Eggenstein; Shyam S. Chatterjee, and Hermann Hauer, both of Karlsruhe, all of, Germany, assignors to Willmar Schwabe GmbH & Co., Karlsruhe, Germany

PCT No. PCT/EP93/02742, § 371 Date Apr. 5, 1995, § 102(e) Date Apr. 5, 1995, PCT Pub. No. WO94/08985, PCT Pub. Date Apr. 28, 1994

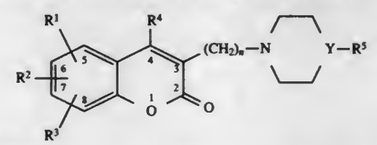
PCT Filed Oct. 6, 1993, Ser. No. 411,621

Claims priority, application Germany, Oct. 8, 1992, 42 33 963.4

Int. Cl.[6] A61K *31/495;31/445;* **C07D** *409/00;211/68*

U.S. Cl. 514—253 **3 Claims**

1. A 2H-1-benzopyran-2-one having of the formula I,



(I)

wherein:

R^1 is a hydroxy radical, an alkoxy radical with 1 to 5 C atoms, a cycloalkoxy radical with 4 to 6 C atoms, or an alkyl-or arylsulphonyloxy radical R^6—SO_2O—,

R^2 and R^3 are, independently of one another, a hydrogen atom, hydroxy radical, alkoxy radical with 1 to 4 C atoms, or a cycloalkoxy radical with 4 to 6 C atoms,

R^4 is a hydrogen atom, an alkyl group with 1 to 4 C atoms, or a phenyl radical,

Y is a nitrogen atom, a CH group or a COH group,

R^5 is a phenyl, naphthyl, pyridinyl or pyrimidinyl radical, which is optionally substituted with in each case one or two C_1–C_5 alkyl groups, with in each case one or two halogen atoms, with halogen and simultaneously C_1–C_5 alkyl, with perfluoroalkyl with 1 to 3 C atoms, C_1–C_5 alkoxy, hydroxy, methylenedioxy or nitro,

R^6 is an alkyl radical with 1 to 5 C atoms, a cycloalkyl radical with 4 to 6 C atoms or a phenyl radical, which is optionally substituted with in each case one or two C_1–C_5 alkyl groups, with in each case one or two halogen atoms or with perfluoroalkyl with 1 to 3 C atoms, and

n is an integer from 1 to 4;

or pharmaceutically compatible acid addition salts thereof, with the

exception however of 7,8-dimethoxy-4-methyl-3-[(4-phenyl-1-piperazinyl)methyl]-2H- 1-benzopyran-2-one.

5,550,130

1-[(1,4-BENZODIOXANYL)ALKYL]-4-(HETEROARYL)PIPERIDINES AND RELATED COMPOUNDS AND THEIR THERAPEUTIC UTILITY

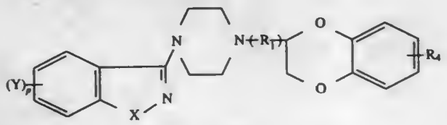
Edward J. Glamkowski, Warren, and Yulin Chiang, Covent Station, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

Division of Ser. No. 329,000, Oct. 25, 1994, which is a continuation-in-part of Ser. No. 144,265, Oct. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 969,383, Oct. 30, 1992, Pat. No. 5,364,866, which is a continuation-in-part of Ser. No. 788,269, Nov. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 944,705, Sep. 5, 1991, abandoned, which is a continuation of Ser. No. 619,825, Nov. 29, 1990, abandoned, which is a continuation of Ser. No. 456,790, Dec. 29, 1989, abandoned, which is a continuation-in-part of Ser. No. 354,411, May 19, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 465,697

Int. Cl.[6] A61K *31/495;31/55;* **C07D** *403/00;417/00;419/00;221/04;275/04*

U.S. Cl. 514—254 **16 Claims**

1. A compound of the formula:



wherein,

X is —O—, —S—, —NH—, or —$N(R_2)$;

R_2 is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, (C_3–C_{10}) cycloalkyl, aroyl, (C_2–C_{18}) alkanoyl, (C_1–C_{18}) alkoxycarbonyl and phenylsulfonyl groups;

aryl is as defined hereinafter;

p is 1 or2;

Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower alkoxy, trifluoromethyl, nitro, or amino;

R_1 is —$CR_{24}R_{27}$—$(CR_{23}R_{27})_n$—, where n is 0,1,2 or 4; or

—$CHR_{24}CH$═CH—CHR_{24}—,

—CHR_{24}—C═C═CHR_{24}—,

—CHR_{24}—CH═CH—$CR_{23}R_{24}$—CHR_{24}—,

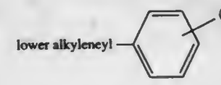
—CHR_{24}—$CR_{23}R_{24}$—CH═CH—CHR_{24}—,

—CHR_{24}—C═C— $CR_{23}R_{24}$—CHR_{24}—, or

—CHR_{24}—$CR_{23}R_{24}$—C═C—CHR_{24},

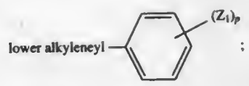
the —CH═CH— bond being cis or trans;

R_{23} is hydrogen, (C_1—C_{18}) linear alkyl, phenyl, hydroxy, (C_1–C_{18}) alkoxy, aryloxy, aryl (C_1–C_{18}) alkyloxy, (C_1–C_{18}) alkanoyloxy, hydroxy (C_1–C_6) alkyl, (C_1–C_{18}) alkoxy (C_1–C_6) alkyl, phenyl (C_1–C_6) alkyloxy, aryl (C_1–C_{18}) alkyloxy (C_1–C_6)alkyl, (C_1–C_{18}) alkanoyloxy(C_1–C_6) alkyl or



where Z_1 is lower alkyl, —OH, lower alkoxy, —CF_3, —NO_2, —NH_2 or halogen, and p is as previously defined;

R_{24} is hydrogen, (C_1–C_{18}) linear alkyl, phenyl, hydroxy(C_1–C_6)alkyl, (C_1–C_{18})alkoxy(C_1–C_6)alkyl, phenyl (C_1–C_6) alkyloxy, aryl (C_1–C_{18})alkyoxy (C_1–C_6) alkyl, (C_1–C_{18}) alkanoyloxy (C_1–C_6) alkyl or

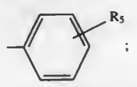


where Z_1 and p are as previously defined;

R_{27} is hydrogen or R_{24} and R_{27} taken together with the carbon to which they are attached form C═O or C═S;

R_4 is hydrogen, lower alkyl, lower alkoxy, hydroxy, tri(C_1–C_6)alkylsilyloxy, hydroxy lower alkyl, alkanoyloxy lower alkyl, amino, mono- or dialkylamino, (C_1–C_{18})acyl amino, (C_1–C_{18}) alkanoyl, trifluoromethyl, chlorine, fluorine, bromine, —O—C (═O)—(C_1–C_{18}straight or branched chain-)alkyl or —C(═O)-aryl;

aryl is phenyl or



where R_5 is hydrogen, lower alkyl, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine, lower monoalkylamino, lower dialkylamino, nitro, cyano, trifluoromethyl, or trifluoromethoxy; and, any hydroxyl group attached to an aliphatic or aromatic carbon atom or any primary or secondary nitrogen atom may be acylated with a (C_4–C_{18})carboxylic group, in addition, any nitrogen atom may alternatively be acylated with a (C_4–C_{18}) alkoxycarbonyl group;

all geometric, optical, and stereoisomers thereof, or a pharmaceutically acceptable acid addition salt thereof.

5,550,131

2-PIPERAZINONE COMPOUNDS AND THEIR USE

Hirosada Sugihara, Tsukuba; Zenichi Terashita, Suita, and Hideto Fukushi, Higashiosaka, all of, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

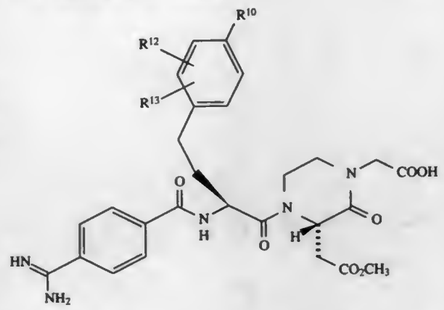
Filed Jun. 17, 1994, Ser. No. 262,315

Claims priority, application Japan, Jun. 17, 1993, 5-146136; Oct. 12, 1993, 5-254142

Int. Cl.[6] A61K *31/495;* **C07D** *241/04*

U.S. Cl. 514—255 **7 Claims**

1. A compound of the formula



wherein R^{10} is OH, OCH_3, $O(CH_2)_2$ CH_3, OCH_2O (CH_2) OCH_3, OCH_2CH═CH_2, OCH_2 C═CH, or F,

R^{12} is H, F or OH, and

R^{13} is H or F; or a pharmaceutically salt thereof.

5,550,132

HYDROXYALKYLAMMONIUM-PYRIMIDINES OR PURINES AND NUCLEOSIDE DERIVATIVES, USEFUL AS INHIBITORS OF INFLAMMATORY CYTOKINES

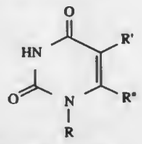
Bradley J. Benson, Chapel Hill, N.C.; Xiannong Chen, Athens, Ga.; George J. Cianciolo, Chapel Hill, N.C.; Jose-Luis Diaz, Durham, N.C.; Khalid S. Ishaq, Chapel Hill, N.C.; Susan L. Morris-Natschke, Apex, N.C.; Ronald J. Uhing, Durham, N.C., and Henry Wong, Morrisville, N.C., assignors to University of North Carolina, Chapel Hill, and Macronex, Inc., Morrisville, both of N.C.

Filed Jun. 22, 1994, Ser. No. 264,026

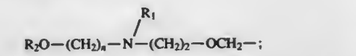
Int. Cl.[6] A61K *31/505;* **C07D** *239/54*

U.S. Cl. 514—269 **32 Claims**

1. A compound of the formula 1

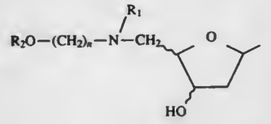


wherein R is a group of the formula



wherein R_1 is one or two lower alkyl groups with the proviso that when R_1 is two lower alkyl groups, then the nitrogen atom is quaternized; R_2 is hydrogen or an alkanoyl group of 2–20 carbon atoms; n is 2–6; or

R is a substituted furanyl group of the formula



wherein n, R_1 and R_2 are as hereinbefore defined; and the wavy lines indicate either stereochemical configuration; R' and R" are independently hydrogen, halogen or a lower alkyl, lower alkenyl, lower alkynyl, or aralkyl group; and the pharmaceutically acceptable salts thereof.

5,550,133

CARBAMATES OF RAPAMYCIN

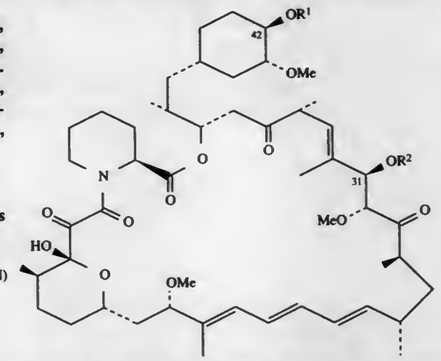
Amedeo A. Failli, Princeton Junction, N.J.; Oleg I. Bleyman, Holland, Pa.; Wenling Kao, Paoli, Pa., and Magid A. Abou-Gharbia, Glenn Mills, Pa., assignors to American Home Products Corporation, Madison, N.J.

Division of Ser. No. 284,764, Aug. 2, 1994, Pat. No. 5,480,988, which is a continuation-in-part of Ser. No. 160,984, Dec. 1, 1993, abandoned, which is a division of Ser. No. 054,655, Apr. 23, 1993, Pat. No. 5,302,584, which is a continuation-in-part of Ser. No. 960,597, Oct. 13, 1992, abandoned. This application May 24, 1995, Ser. No. 448,869

Int. Cl.[6] A61K *31/44*

U.S. Cl. 514—291 **1 Claim**

1. A method of treating rheumatoid arthritis in a mammal in need thereof, which comprises administering to said mammal an antiarthritis effective amount of a compound of the structure



(I)

wherein R^1 and R^2 are each, independently, hydrogen, —$CONR^3(CR^4R^5)_m(CR^6R^7)_n(CR^8R^9)_pNR^{10}R^{11}$,

R^3 is hydrogen, alkyl of 1–6 carbon atoms, or arylalkyl of 4–10 carbon atoms;

R^4, R^5, R^8, and R^9 are each, independently, hydrogen, alkyl of 1–6 carbon atoms, —OH, —CF_3, or —F;

R^6 is hydrogen or —OR^{14};

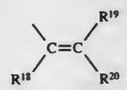
R^7 is hydrogen or alkyl of 1–6 carbon atoms;

R^{10} is hydrogen, alkyl of 1–6 carbon atoms, or arylalkyl of 4–10 carbon atoms;

R^{11} is —$(CR^{15}R^{16})_rR^{17}$;

R^{14} is hydrogen, alkyl of 1–6 carbon atoms, tri-(alkyl of 1–6 carbon atoms)silyl, tri-(alkyl of 1–6 carbon atoms)silylethyl, triphenylmethyl, benzyl, alkoxymethyl of 2–7 carbon atoms, tri-(alkyl of 1–6 carbon atoms)silylethoxymethyl, or tetrahydropyranyl;

R^{15} and R^{16} are each, independently, hydrogen or alkyl of 1–6 carbon atoms;



R^{18}, R^{19}, R^{20}, and R^{21} are each, independently, hydrogen, alkyl of 1–6 carbon atoms, halogen, or phenyl, wherein the phenyl group may be optionally mono-, di-, or tri-substituted with a group selected from alkyl of 1–6 carbon atoms, arylalkyl of 7–10 carbon atoms, alkoxy of 1–6 carbon atoms, trifluoroalkoxy of 1–6 carbon atoms, cyano, halo, hydroxy, nitro, carbalkoxy of 2–7 carbon atoms, trifluoromethyl, amino, dialkylamino of 1–6 carbon atoms per alkyl group, dialkylaminoalkyl of 3–12 carbon atoms, hydroxyalkyl of 1–6 carbon atoms, alkoxyalkyl of 2–12 carbon atoms, alkylthio of 1–6 carbon atoms, —SO_3H, —PO_3H, and —CO_2H;

R^{22} is hydrogen, alkyl of 1–6 carbon atoms, or arylalkyl of 4–10 carbon atoms;

m=0–6;

n=1–6;

p=0–6; and

r=1–6

with the proviso that R^1 and R^2 are both not hydrogen, or a pharmaceutically acceptable salt thereof.

5,550,134

METHODS FOR INHIBITING BONE LOSS

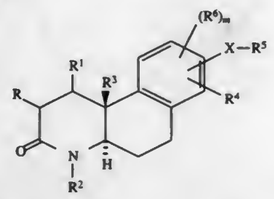
James E. Audia, and Blake L. Neubaner, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed May 10, 1995, Ser. No. 438,420

Int. Cl.[6] A61K *31/44;31/50;31/40;31/405*

U.S. Cl. 514—284 **24 Claims**

1. A method of inhibiting bone loss comprising administering to a mammal in need of treatment an effective amount of a compound of formula I



I

wherein

R and R^1 both represent hydrogen or combine to form a bond;

R^2 represents hydrogen or C_1–C_3 alkyl;

R^3 represents hydrogen, methyl or ethyl; either R^4 and X—R^5 have the following definitions, $(R^6)_m$ is absent, and R^3 does not represent hydrogen; or $(R^6)_m$ has the following definition, R^4 and X—R^5 are absent, and R^3 does not represent ethyl;

R^4 and —X—R^5 each occupies one of the 7-, 8- and 9-positions;

R^4 represents hydrogen, halo, methyl or ethyl;

x represents C_1–C_4 alkyl, C_2–C_4 alkenyl, C_2–C_4 alkynyl, a bond, —SO—, —SO_2—, —CO—Y—$(CH_2)_n$—, —Y—CO—$(CH_2)_n$, —CO—, —Z—$(CH_2)_n$—, or —SO_3—; wherein X groups which are not symmetrical may be in either orientation;

Y represents —S—, —O—; or —NH—;

Z represents —O— or —S—;

n represents 0–3;

R^5 represents phenyl, naphthalenyl, pyridinyl, pyrazinyl, pyridazinyl, pyrimidinyl, anthracenyl, acenaphthalenyl, thiazolyl, benzimidazolyl, indazolyl, thiophenyl, phenanthrenyl, quinolinyl, fluorenyl, isoquinolinyl, indanyl, benzopyranyl, indolyl, benzisoquinolinyl, benzindolyl, benzothiazolyl, benzothiophenyl, quinoxalinyl, benzoxazolyl, metrazolyl, naphthothiazolyl, quinazolinyl, thiazolopyridinyl, pyridazinoquinazolinyl, benzisothiazolyl, benzodioxolyl, benzodioxinyl, diphenylmethyl or triphenylmethyl;

the above R^5 groups are unsubstituted or substituted with 1–3 groups chosen from the group consisting of halo, trifluoromethyl, trifluoroethoxy, C_1–C_4 alkyl, trifluoromethoxy, hydroxy, C_1–C_3 alkoxy, nitro, C_1–C_3 alkylthio, C_1–C_6 alkanoyl, phenyl, oxo, phenoxy, phenylthio, C_1–C_3 alkylsulfinyl, C_1–C_3 alkylsulfonyl, cyano, amino, C_1–C_3 alkylamino, diphenylmethylamino, triphenylmethylamino, benzyloxy, benzylthio, (mono-halo, nitro or CF_3)benzyl(oxy or thio), di(C_1–C_3 alkyl, C_3–C_6 cycloalkyl, or C_4–C_8 cycloalkylalkyl)amino, (mono-C_1–C_3 alkyl, C_1–C_3 alkoxy or halo)-(phenyl, phenoxy, phenylthio, phenylsulfonyl or phenoxysulfonyl), C_2–C_6 alkanoylamino, benzoylamino, diphenylmethylamino (C_1–C_3 alkyl), aminocarbonyl, C_1–C_3 alkylaminocarbonyl, di(C_1–C_3 alkyl) aminocarbonyl, halo-C_1–C_6 alkanoyl, aminosulfonyl, C_1–C_3 alkylaminosulfonyl, di(C_1–C_3 alkyl) aminosulfonyl, phenyl(oxy or thio) (C_1–C_3 alkyl), (halo, C_1–C_3 alkyl or C_1–C_3 alkoxy)phenyl(oxy or thio) (C_1–C_3 alkyl), benzoyl, or (amino, C_1–C_3 alkylamino or di(C_1–C_3 alkyl)amino) (C_1–C_3 alkyl);

or an above R^5 group is substituted with a morpholino(C_1–C_3 alkyl) group, a phenyl(C_1–C_3 alkyl)piperidinyl group, a phenyl(C_1–C_3 alkyl)-piperidinylaminocarbonyl group, a C_2–C_6 alkanoyl-aminothiophenyl group, or a (amino, C_1–C_3 alkylamino or di(C_1–C_3 alkyl)amino)naphthalenylsulfonylamino group;

or R^5 is a perhalophenyl group;

m represents 1–2;

R^6 represents hydrogen, halogen, NO_2, cyano, CF_3, C_1–C_6 alkyl, C_1–C_6 alkoxy, carboxy, C_1–C_6 alkoxycarbonyl, amino, C_1–C_4 alkylamino, C_1–C_4 dialkylamino, amido, C_1–C_4 alkylamido, C_1–C_4 dialkylamido, mercapto, C_1–C_6 alkylthio, C_1–C_6 alkylsulfinyl, C_1–C_6 alkylsulfonyl, or a group —A—R^7 where A is C_1–C_6 alkylene C_2–C_6 alkenylene or C_2–C_6 alkynylene; and R^7 represents halogen, hydroxy, CF_3, C_1–C_6 alkoxy, carboxy, C_1–C_6 alkoxycarbonyl, amino, C_1–C_4 alkylamino, C_1–C_4 dialkylamino, amido, C_1–C_4 alkylamido, C_1–C_4 dialkylamido, C_1–C_4 alkylsulfonylamino, aminosulfonyl or C_1–C_4 alkylaminosulfonyl;

or a pharmaceutically acceptable salt thereof.

5,550,135

HETEROCYCLE-SUBSTITUTED BENZENEMETHANAMINE DERIVATIVES

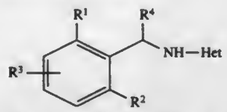
Marcel A. C. Janssen, Vosselaar; Georges H. P. Van Daele, Turnhout; Jean-Paul R. M. A. Bosmans, Edegem; Marc G. C. Verdonck, Gierle, and Paul A. J. Janssen, Vosselaar, all of, Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Division of Ser. No. 240,737, May 12, 1994, Pat. No. 5,480,997. This application May 2, 1995, Ser. No. 433,910

Int. Cl.[6] C07D *215/18;215/38;215/42;* **A61K** *31/47*

U.S. Cl. 514—313 **10 Claims**

1. A compound of the formula:



(I)

a pharmaceutically acceptable acid addition salt form or a stereochemically isomeric form thereof, wherein:

R^1 and R^2 each independently are halo or methyl;

R^3 is hydrogen, halo, nitro or trifluoromethyl;

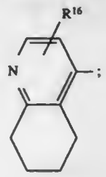
R^4 is

trifluoromethyl or methyl carbonyl; or

a radical —C(=X)—NR^5R^6 wherein X is O or S, and R^5 and R^6 each independently are hydrogen or C_{1-4}alkyl; or

a radical -Alk-R^7, wherein Alk is C_{1-4}alkanediyl; and R^7 is hydrogen or hydroxy; and

Het is a heterocyclic radical of the formula:



(e)

wherein:

R^{16} is hydrogen, C_{1-4}alkylcarbonyl, nitro or halo,

wherein in the heterocyclic radical (e), a nitrogen atom can optionally be oxidized.

5,550,136

METHANOANTHRANCENYL PIPERIDYL ANTIPSYCHOTICS

Robert T. Jacobs; Cyrus J. Ohnmacht, and Diane A. Trainor, all of Wilmington, Del., assignors to Zeneca Limited, London, England

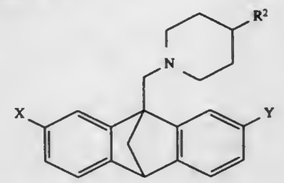
Division of Ser. No. 927,685, Aug. 6, 1992, Pat. No. 5,399,568. This application Jan. 19, 1995, Ser. No. 374,053

Claims priority, application United Kingdom, Aug. 15, 1991, 9117644; Apr. 7, 1992, 9207539

Int. Cl.[6] C07D *401/06;* **A61K** *34/445*

U.S. Cl. 514—322 **6 Claims**

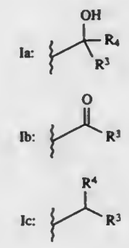
1. A compound of formula I



or a pharmaceutically acceptable salt thereof, wherein

X and Y are independently selected from hydrogen and halo; and

R^2 is selected from the structures shown as formulae Ia, Ib, and Ic,



wherein:

R^3 is selected from

(3–6C)cycloalkyl;

phenyl and naphthyl each of which may bear 0–3 substituents independently selected from the group consisting of (1–6C)alkyl, (1–6C)alkoxy, hydroxy, halo, cyano, nitro, benzoyl, di(1–6C)alkylamino(1–6C)alkyl, aminosulfonyl having the formula $SO_2NR^aR^b$ and aminocarbonyl having the formula $CONR^cR^d$ wherein R^a, R^b, R^c and R^d are independently selected from hydrogen and (1–6C)alkyl, or wherein R^a and R^b, and R^c and R^d, together with the nitrogen atom to which each is attached, form a 5-membered or 6-membered heterocyclic ring in which the said nitrogen is the only heteroatom; or

a isothiazolyl, oxazolyl, thiazolyl, oxadiazolyl, furyl, imidazolyl, thienyl or benzimidazolyl ring, which may bear 0–2 substituents selected from hydroxy, (1–6C)alkyl, (1–6C)alkoxy, (1–6C)hydroxyalkyl, phenyl, chloro, and fluoro; and

R^4 is selected from hydrogen and (1–6C)alkyl.

5,550,137

PHENYLAMINOCARBONYL DERIVATIVES

Nigel R. A. Beeley, Thames, and Thomas A. Millican, Maidenhead, both of, United Kingdom, assignors to Celltech Therapeutics Limited, Berkshire, United Kingdom

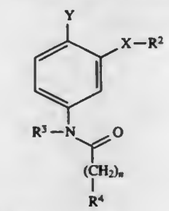
Filed Jun. 14, 1993, Ser. No. 77,284

Claims priority, application United Kingdom, Jun. 15, 1992, 9212673

Int. Cl.[6] A61K *31/44;* **C07D** *213/30*

U.S. Cl. 514—354 **16 Claims**

1. A compound of formula (1)



(1)

wherein:

Y is a halogen atom or a group —OR^1, where R^1 is an optionally substituted C_{1-6}alkyl group, said R^1 substituent being halogen;

R^2 is a C_{3-8}cycloalkyl, C_{3-8}-cycloalkenyl or C_{7-10}polycycloalkyl group which is optionally substituted with one to three substituents, said R^2 substituents being halogen, C_{1-6}alkyl, hydroxyl or C_{6-12}alkoxy;

R^3 is a hydrogen atom or a C_{1-6}alkyl, C_{6-12}aryl or C_{6-12}arylC_{1-6} group;

R^4 is a pyridinyl group which is optionally substituted with one to four substituents, said R^4 substituents being halogen, C_{1-6}alkyl, C_{1-6}alkoxy, C_{2-6}alkylenedioxy, C_{5-7}cycloalkoxy, haloC_{1-6}alkyl, C_{1-6}alkylamino, C_{1-6}dialkylamino, amino, nitro, cyano, hydroxyl, carboxyl (—CO_2H), —CO_2R^7, C_{1-6}alkanoyl, sulphonyl (—SO_3H), C_{1-6}alkylsulphonyl, aminosulphonyl (—SO_2NH_2), C_{1-6}alkylaminosulphonyl, C_{1-6}dialkylaminosulphonyl, carboxamido (—$CONH_2$), C_{1-6}alkylaminocarbonyl, C_{1-6}dialkylaminocarbonyl, sulphonylamino (—$NHSO_2H$), C_{1-6}alkylsulphonylamino, C_{1-6}dialkylsulphonylamino, —$NHCOR^8$, —$NHCSR^8$, —$NHCONH_2$, —$NHCONHR^7$, —$NHCON(R^7)_2$ or C_{1-6}alkanoylaminoC_{1-6}alkyl;

each of R^7 and R^8 is independently C_{1-6}alkyl, C_{6-12}aryl or C_{6-12}arylC_{1-3}alkyl;

X is —O—, —S—, —CH_2— or —$N(R^5)$—, where R^5 is a hydrogen atom or a C_{1-6}alkyl group;

n is zero or an integer of value 1, 2 or 3;

or a salt, solvate or hydrate thereof.

5,550,138

CONDENSED THIADIAZOLE DERIVATIVE, METHOD OF ITS PRODUCTION, AND USE THEREOF

Takashi Sohda; Zen-ichi Terashita, both of Osaka; Yu Momose; Yukio Fujisawa, both of Hyogo, and Junji Mizoguchi, Osaka, all of, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

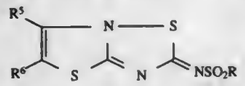
Filed Mar. 23, 1993, Ser. No. 39,579

Claims priority, application Japan, Mar. 25, 1992, 4-067615; Feb. 19, 1993, 5-030872

Int. Cl.[6] C07D *513/04;* A61K *31/435*

U.S. Cl. 514—361 **16 Claims**

1. A compound represented by the following formula (I'):



wherein R represents a hydrocarbon group or heterocyclic group which may be substituted; R^5 and R^6 independently represent hydrogen, halogen, a carboxyl group which may be esterified, or a hydrocarbon group which may be substituted; or a pharmaceutically acceptable salt thereof.

5,550,139

SERINE PROTEASE INHIBITORS

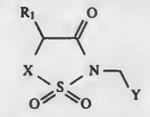
William C. Groutas, Wichita, Kans., assignor to The Wichita State University, Wichita, Kans.

Filed Jan. 3, 1994, Ser. No. 177,352

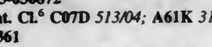
Int. Cl.[6] C07D *285/10;275/03;* A61K *31/41*

U.S. Cl. 514—362 **19 Claims**

1. A compound represented by the following formula:



a) X is CH2 or NR2 where R2 is any one of H, alkyl, halogen substituted alkyl, alkenyl, halogen substituted alkenyl, alkynyl, halogen substituted alkynyl, halogen substituted alkanoate, alkoxy, Ph-alkyl-, Ph-alkenyl-, Ph-alkynyl-, Ph—S-alkynyl-, —Ph—S-alkyl-, Ph—S-alkenyl-, Ph—S-alkynyl-, Ph—SO—, Ph—SO_2—, Ph—SO_2-alkyl-, Ph—SO_2-alkenyl-, Ph—SO_2-alkynyl-, benzyl, alkyl substituted benzyl, alkenyl substituted benzyl, alkynyl substituted benzyl, hydroxy substituted benzyl, alkoxy substituted benzyl, halogen substituted benzyl, aryl, —$(CH_2)_a$COOR5 where n is 1 to 5 inclusive and R5 is any one of H, alkyl, alkenyl, alkynyl, halogen substituted alkanoate, N-tert-butoxy carbonyl (t-BOC), benzyl, alkyl substituted benzyl, alkenyl substituted benzyl, alkynyl substituted benzyl, hydroxy substituted benzyl, halogen substituted benzyl, —SO_2Ph, —SO_2-alkane, —SO_2-alkene, —SO_2-alkyne, —S—Ph, Ph—S-alkyl-, Ph—S-alkenyl-, Ph—S-alkynyl-,



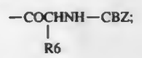
where R6 is any one of alkyl, benzyl, hydroxy substituted benzyl, indolyl-alkyl-, sulfhydryl-alkyl-, CH_3—S-alkyl-,



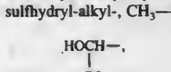
where R8 is H or methyl, imidazolyl-alkyl-, amide-alkyl- -amine-alkyl- or

and R7 is H or alkyl,

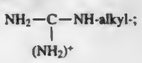
where n is 1 to 50 inclusive, or



b) R1 is any one of H, alkyl, benzyl, hydroxy substituted benzyl, indolyl-alkyl-, sulfhydryl-alkyl-, CH_3—S-alkyl-,



imidazolyl-alkyl-, amide-alkyl-, amine-alkyl- or



and

c) Y is

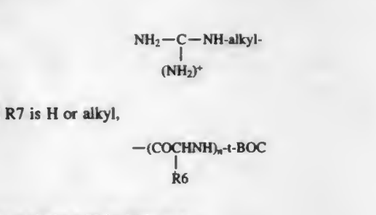
1) CBZ-$(AA)_n$ where b is 1 to 5 inclusive, and (AA) is selected from the group consisting of L-Phenylalanine, D-Phenylalanine, L-proline, D-proline, L-alanine, D-alanine, and glycine, N-t-BOC $(AA)_n$ where n is 1 to 5 inclusive, and (AA) is selected from the group consisting of L-phenylalanine, D-Phenylalanine, L-proline, D-proline, L-alanine, D-alanine, and glycine, Cl, F, Br, I, —SPh, Ph—SO—, —COO-alkane, —COO-alkene, —COO-alkyne, —$PO(OCH_3)_2$, —SO_2—Ph, —SO_2-alkane, —SO_2-alkene, —SO_2-alkyne, —S-alkane, —S-alkene, or —S-alkyne;

or

2) —O—CO—R3 where R3 is any one of H, alkyl, halogen substituted alkyl, alkenyl, halogen substituted alkenyl, alkynyl, halogen substituted alkynyl, Ph—S-alkyl-, Ph—S-alkenyl-, Ph—S-alkynyl-, Ph—SO_2-alkyl-, Ph—SO_2-alkenyl-, or Ph—SO_2-alkynyl-;

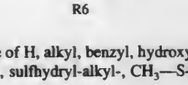
or

3) represented by the following formula:



or

4)



where R4 is alkyl, halogen substituted alkyl, alkenyl, halogen substituted alkenyl, alkynyl, or halogen substituted alkynyl;

c) when R1 is benzyl and R2 is H, then Y cannot be F;

or a pharmaceutically acceptable salt thereof.

5,550,140

OXA(THIA)DIAZOL- AND TRIAZOL-ONES(THIONES) HAVING A MITICIDE AND INSECTICIDE ACTIVITY

Franco Bettarini; Luigi Capuzzi; Piero La Porta, all of Novara; Sergio Massimini, Milan, and Vincenzo Caprioli, San Martino Siccomario, all of, Italy, assignors to Minister Dell 'Universita' e Della Ricerca Scientifica e techologica, Rome, Italy

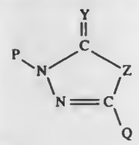
Division of Ser. No. 945,135, Sep. 15, 1992, Pat. No. 5,418,246. This application Feb. 21, 1995, Ser. No. 391,240

Claims priority, application Italy, Sep. 17, 1991, MI91A2456

Int. Cl.[6] C07D *285/13;* A61K *31/41*

U.S. Cl. 514—363 **12 Claims**

1. A compound having the general formula:



(I)

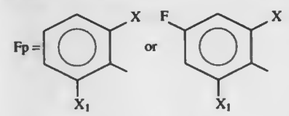
wherein:

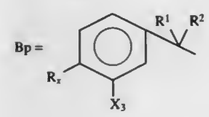
Y represents O, S

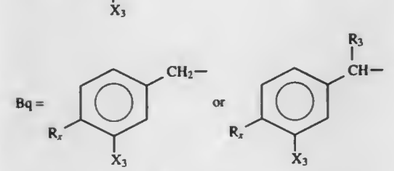
Z represents O, S or a NMe group; Me=methyl;

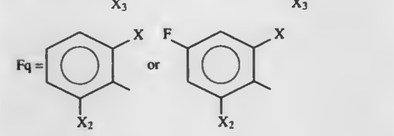
P represents an Fp group or a Bp group;

Q represents a Bq group when P=Fp, or an Fq group when P=Bp and Z=O or S;









in said F_p, F_q, B_p and B_q groups:

X represents Cl, F, Br, Me, CF_3, MeO;

X_1 represents H or F;

X_2 represents H, F or Cl;

X_3 represents H, F, Cl or a C_1-C_4 alkoxy;

R_1 and R_2 independently represent H or a C_1-C_3 alkyl;

R_x represents a C_3-C_{10} alkoxy, a C_3-C_8 alkenyloxy, a C_3-C_8 alkinyloxy, a C_3-C_8 cycloalkoxy, a C_4-C_8 cycloalkylalkoxy, a C_3-C_{10} alkoxyalkoxy all optionally halogenated, or a phenoxy or a phenylalkoxy optionally substituted by halogen atoms, alkyl groups, haloalkyl groups, alkoxy groups, haloalkoxy groups,

R_3 represents a C_1-C_3 alkyl.

5,550,141

METHOD FOR INHIBITING THE FORMATION OF ACID MINE DRAINAGE

W. Douglas Gould, Ottawa; Lyne Lortie, and Geneviève Béchard, both of Hull, all of, Canada, assignors to Natural Resources - Canada, Ottawa, Canada

Filed Aug. 31, 1995, Ser. No. 522,450

Int. Cl.[6] A01N *43/82;43/50;* C02F *3/00*

U.S. Cl. 514—363 **5 Claims**

1. A method for inhibiting the production of acid mine drainage from the disposal of sulphide tailings and waste rock depósition during mining and milling of sulphide containing ores, which comprises adding to said sulphide tailings or waste rock deposition an effective amount of (i) 2-mercapto-1-methyl imidazole or (ii) a 1,3,4-thiadiazole selected from the group consisting of 2,5-dimercapto-1,3,4-thiadiazole and 5-amino-2-thiol-1,3,4-thiadiazole to inhibit oxidation of sulphides and thereby prevent the formation of acid mine drainage.

5,550,142

PHENYL HETEROCYCLES AS COX-2 INHIBITORS

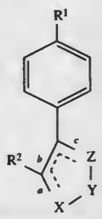
Yves Ducharme, Montreal; Jacques Y. Gauthier, Laval; Petpiboon Prasit; Yves Leblanc, both of Kirkland; Zhaoyin Wang, Pierrefond; Serge Leger, Dollard Des Ormeaux, and Michel Therien, Laval, all of, Canada, assignors to Merck Frosst Canada Inc., Kirkland, Canada

Division of Ser. No. 179,467, Jan. 10, 1994, Pat. No. 5,474,995, which is a continuation-in-part of Ser. No. 82,196, Jun. 24, 1993, abandoned. This application May 8, 1995, Ser. No. 438,130

Int. Cl.[6] A61K *31/425*

U.S. Cl. 514—365 **18 Claims**

1. A compound of formula I



I

or a pharmaceutically acceptable salt thereof wherein:

X-Y-Z-is selected from the group consisting of:

(a) —S—N=CH—,

(b) —CH=N—S—,

(c) —N=CR^4—S—, and

(d) —S—CR^4=N—,

when side b is a double bond, and sides a an c are single bonds; and

X-Y-Z-is selected from the group consisting of:

(a) =N—S—CH=,

(b) =CH—S—N=, and

(c) =N—S—N=,

when sides a and c are double bonds and side b is a single bond;

R^1 is selected from the group consisting of

(a) $S(O)_2CH_3$,

(b) $S(O)_2NH_2$,

(c) $S(O)_2NHC(O)CF_3$,

(d) $S(O)(NH)CH_3$,

(e) $S(O)(NH)NH_2$,

(f) S(O)(NH)NHC(O)CF_3,

(g) P(O)(CH$_3$)OH, and
(h) P(O)(CH$_3$)NH$_2$,

R^2 is selected from the group consisting of
(a) C$_{1-6}$ alkyl,
(b) C$_3$, C$_4$, C$_5$, C$_6$, and C$_7$, cycloalkyl,
(c) mono-, di- or tri-substituted phenyl wherein the substituent is selected from the group consisting of
(1) hydrogen,
(2) halo,
(3) C$_{1-6}$alkoxy,
(4) C$_{1-6}$alkylthio,
(5) CN,
(6) CF$_3$,
(7) C$_{1-6}$ alkyl,
(8) N$_3$,
(9) —CO$_2$H,
(10) —CO$_2$— C$_{1-4}$ alkyl,
(11) —C(R^5)(R^6)—OH,
(12) —C(R^5)(R^6)—O— C$_{1-4}$ alkyl, and
(13) —C$_{1-6}$ alkyl-CO$_2$—R^5;
(d) mono-, di- or tri-substituted heteroaryl wherein the heteroaryl is a monocyclic aromatic ring of 5 atoms, said ring having one hetero atom which is S, O, or N, and optionally 1, 2, or 3 additional N atoms; or
the heteroaryl is a monocyclic ring of 6 atoms, said ring having one hetero atom which is N, and optionally 1, 2 or 3 additional N atoms; said substituents are selected from the group consisting of
(1) hydrogen,
(2) halo, including fluoro, chloro, bromo and iodo,
(3) C$_{1-6}$ alkyl,
(4) C$_{1-6}$ alkoxy,
(5) C$_{1-6}$ alkylthio,
(6) CN,
(7) CF$_3$,
(8) N$_3$,
(9) —C(R^5)(R^6)—OH, and
(10) —C(R^5)(R^6)—O— C$_{1-4}$ alkyl;

R^4 is selected from the group consisting of
(a) hydrogen,
(b) CF$_3$,
(c) CN,
(d) C$_{1-6}$ alkyl,
(e) —Q,
(f) —O—Q;
(g) —S—Q, and
(h) optionally substituted
(1) —C$_{1-5}$ alkyl-Q,
(2) —O—C$_{1-5}$ alkyl-Q,
(3) —S—C$_{1-5}$ alkyl-Q,
(4) —C$_{1-3}$ alkyl—O—C$_{1-3}$ alkyl-Q,
(5) —C$_{1-3}$ alkyl—S—C$_{1-3}$ alkyl-Q,
(6) —C$_{1-5}$ alkyl—O—Q, and
(7) —C$_{1-5}$ alkyl—S—Q,
wherein the substituent resides on the alkyl and the substituent is C$_{1-3}$ alkyl, and

R^5 and R^6, R^7 and R^8 are each independently selected from the group consisting of
(a) hydrogen, and
(b) C$_{1-6}$ alkyl,
or R^5 and R^6 or R^7 and R^8 together with the carbon to which they are attached form a monocyclic saturated carbon ring of 3, 4, 5, 6 or 7 atoms; and

Q is CO$_2$H, CO$_2$—C$_{1-4}$alkyl, tetrazolyl-5-yl, C(R^7)(R^8)(OH), or C(R^7)(R^8)(O—C$_{1-4}$alkyl).

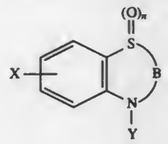
5,550,143

HETEROCYCLIC COMPOUNDS

Jean-Daniel Brion, St-Leu-La-Foret; Anne-Marie Chollet, Viroflay; Luc Demuynck, Orleans; Lucy De Montarby, Courbevoie; Yves Rolland, Vanves; Jacqueline Bonnet, Paris, all of, France; Pietro Ghezzi, Milan, Italy, and Armel Fradin, Neuilly-Sur-Seine, France, assignors to Adir et Compagnie, Courbevoie, France

Division of Ser. No. 66,524, May 24, 1993, abandoned. This application Apr. 12, 1994, Ser. No. 226,633
Claims priority, application France, May 25, 1992, 92 06353
Int. Cl.^{6} A61K *31/425;* **C07D** *277/68*
U.S. Cl. 514—367 **5 Claims**

1. A compound selected from those of formula (I):



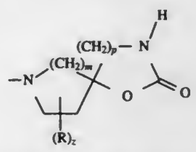
(I)

in which:
X represents halogen,
n represents 0, 1, or 2,
B represents groups

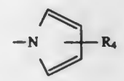


in which:
A represents either:
* the radical

in which x represents 0 or 1, Alk represents a saturated bivalent hydrocarbon radical having from 3 to 6 carbon atoms inclusive in a straight or branched chain, and Z represents a radical selected from the group consisting of:
a) nitrile, carboxy or alkoxycarbonyl,
b) the radical

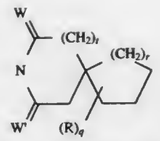


in which each of m and p, independently of the other, represents 1 or 2, z represents 0 to (m+2) inclusive and R represents alkyl having 1 to 5 carbon atoms inclusive in a straight or branched chain, aryl, or arylalkyl, each of which is optionally substituted,
c) the radical

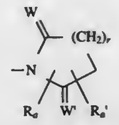


in which R$_4$ represents hydrogen, carboxy, alkoxycarbonyl, or optionally substituted aminocarbonyl,

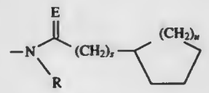
d) the radical



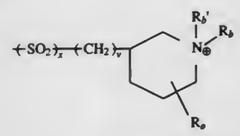
in which each of W and W', independently of the other, represents H$_2$, O or S, t represents 0 or 1, r represents 1 to 2, q represents 0 to (r+2) inclusive and R is as defined above,
e) the radical



in which W, W' and r are as defined above and each of R$_a$ and R'$_a$, independently of the other, represents hydrogen, alkyl having 1 to 5 carbon atoms inclusive in a straight or branched chain, optionally substituted aryl, or optionally substituted arylalkyl,
f) the radical



in which E represents O, S or the group N-H, each of s and u, independently of the other, represents 1 or 2 and R is as defined above,
* or the radical



in which v represents 1 to 4 inclusive, R$_a$ and x are as defined above and each of R$_b$ and R'$_b$, independently of the other, represents alkyl having 1 to 5 carbon atoms inclusive in a straight or branched chain, optionally substituted aryl, or optionally substituted arylalkyl,
* or the radical

in which x is as defined above and R$_5$ represents a hydrocarbon radical having 5 to 20 carbon atoms inclusive in a straight or branched chain and including at least one unsaturation in the form of a double bond,
and Y, represents the group A as defined above,
with the following restrictions:
when A represents the radical -(SO$_2$)$_x$Alk-Z and when x simultaneously is different from 0, Z must represent other than nitrile or carboxy or alkoxycarbonyl,
it being understood that, unless otherwise specified, "aryl radical" represents a radical chosen from phenyl and naphtyl, "arylalkyl radical" represents a radical chosen from phenyl and naphthyl bound to an alkyl radical containing 1 to 4 carbon atoms inclusive and "heteroaryl radical" represents a radical chosen from pyridyl, pyrrolyl, pyrazinyl, pyridazinyl, pyrimidazinyl, quinolyl and indolyl,
it being also understood that, unless otherwise specified, the expression "optionally substituted" means that the alkyl, aryl, arylalkyl or heteroaryl group may be substituted by one or more substituents chosen from halogen, hydroxy, nitro, cyano, alkyl, alkoxy, acyl, haloalkyl, amino, alkylamino and dialkylamino.
and their possible stereoisomers, epimers, N-oxides and addition salts with a pharmaceutically acceptable acid or base.

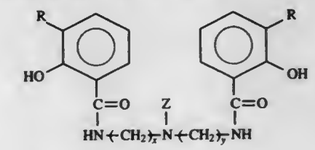
5,550,144

ANTI-NEOPLASTIC, ANTI-VIRAL AND RIBONUCLEOTIDE REDUCTASE ACTIVITY AFFECTING PHARMACEUTICAL COMPOSITIONS AND METHODS OF TREATMENT

Raymond J. Bergeron, Gainesville, Fla., assignor to University of Florida Research Foundation, Inc., Gainesville, Fla.

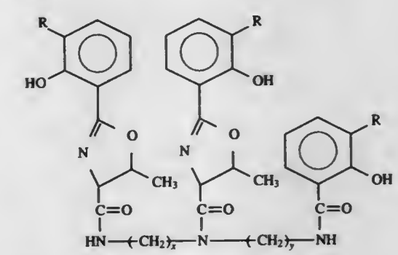
Division of Ser. No. 376,889, Jan. 20, 1995, which is a division of Ser. No. 299,126, Sep. 2, 1994, Pat. No. 5,466,702, which is a division of Ser. No. 124,557, Sep. 22, 1993, Pat. No. 5,391,563, which is a division of Ser. No. 993,620, Dec. 21, 1992, Pat. No. 5,292,775, which is a division of Ser. No. 645,644, Jan. 25, 1991, Pat. No. 5,173,505, which is a division of Ser. No. 313,734, Feb. 22, 1989, Pat. No. 5,128,353, which is a continuation-in-part of Ser. No. 746,672, Jun. 20, 1985, abandoned. This application Jun. 7, 1995, Ser. No. 477,550
Int. Cl.^{6} A01N *43/36;43/38;43/76;* **A61K** *31/40*
U.S. Cl. 514—374 **1 Claim**

1. A method for treating a human or non-human animal afflicted with psoriasis comprising administering thereto an effective anti-psoriasis amount of a compound of the formula:

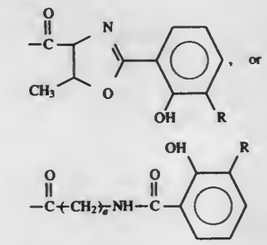


(I)

or,



Wherein: Z— is



R is H or OH,
x is 3 or 4,

y is 3 or 4, and
a is 1, 2 or 3, or
a pharmaceutically acceptable salt or complex thereof.

5,550,145

POTENTIATION OF ANTIMICROBIAL EFFECTS

Karin Ölund, Kollegievägen; Lena-Karin Lütz, Ronnebygatan; Rickard Bryland, Rönneholmsvägen, and Ake Lindahl, Ringduvevägen, all of, Sweden, assignors to Biogian AB, Malmo, Sweden

PCT No. PCT/SE93/00275, § 371 Date Sep. 27, 1994, § 102(e) Date Sep. 27, 1994, PCT Pub. No. WO93/20812, PCT Pub. Date Oct. 28, 1993

PCT Filed Mar. 31, 1993, Ser. No. 307,763

Claims priority, application Sweden, Apr. 14, 1992, 9201187

Int. Cl.[6] A61K *47/00;31/23*

U.S. Cl. 514—396 **28 Claims**

1. An antimicrobial composition, which comprises an antimicrobially effective amount of a combination of:

A) a monoglyceride selected from the group consisting of a monoglyceride of lauric acid, a monoglyceride of myristic acid and a mixture of these monoglycerides, and

B) at least one chemical substance selected from the group consisting of urea, fusidic acid, econazole nitrate, (1 -(2,4-dichloro-beta-(p-chlorobenzyloxy)-phenethyl)imidazol nitrate), mikonazole nitrate (1((2(2,4-di-chlorophenyl)-2((2,4-dichlorophenyl)methoxy)-ethyl)-1H-imidazol nitrate), tinidazole (1-(2-(ethylsulphonyl)ethyl)-2-methyl-5-nitroimidazole), metronidazole (1-(2-hydroxyethyl)- 2-methyl-5-nitroimidazole and pentanediol, and

c) optionally, a conventional physiologically acceptable carrier and/or physiologically acceptable additives, the concentration of A) being from 0.2 ppm to 30% and of B) being from 1 ppm to 20%, in both cases calculated as weight of the total weight of the composition.

5,550,146

MEDICAL FOODS FOR THE NUTRITIONAL SUPPORT OF INFANT/TODDLER METABOLIC DISEASES

Phyllis J. B. Acosta, Westerville; Richard A. Grondalski, Columbus; Jeffrey W. Liebrecht, and Patricia A. Reynolds, both of Columbus, all of Ohio, assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 230,452, Apr. 20, 1994, which is a continuation of Ser. No. 997,278, Dec. 23, 1992, abandoned. This application Apr. 18, 1995, Ser. No. 423,177

Int. Cl.[6] A61K *31/415;31/40;31/205;31/195*

U.S. Cl. 514—400 **2 Claims**

1. A method of providing enteral nutritional support for an infant/toddler having an inherited metabolic disease selected from the group consisting of tyrosinemia, alcaptonurta, isovaleric acidemia, homocystinuria, urea cycle disorders, or an organic acid metabolic disorder comprising enterally feeding the infant/toddler in need of such nutritional support an effective amount of a composition having utility for the nutritional support of infants and toddlers having inherited diseases of metabolism, the composition comprising a physical admixture of:

(a) a premix base which is a composition of matter that is essentially free of protein and amino acids and consists essentially of fats comprising 30 to 40% by dry weight of the premix base, carbohydrates comprising 60 to 70% by dry weight of the premix base, minerals comprising 0.1 to 8% by dry weight of the premix base, vitamins comprising 0.1 to 1.0% of the premix base, trace elements, carnitine, routine and antioxidants; and

(b) a blend of synthetic α-amino acids that comprises up to 18 different synthetic α-amino acids selected from the group consisting of L-alanine, L-arginine, L-aspartic acid, L-cystine, L-glutamic acid, L-glutamine, glycine, L-histidine, L-isoleucine, L-leucine, L-lysine, L-methionine, L-proline, L-phenylalanine, L-serine, L-threonine, L-tryptophan, L-tyrosine and L-valine, the composition being in powdered form with the premix base comprising about 75 to 90% by dry weight of the composition and the blend of synthetic α-amino acids comprising about 9 to 25% by dry weight of the composition, and the composition being free of intact protein.

5,550,147

PYRAZOLE DERIVATIVES, PROCESSES FOR PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITION COMPRISING THE SAME

Masaaki Matsuo, Toyonaka; Kiyoshi Tsuji, Kishiwada; Takashi Ogino, Yamatokooriyama, and Nobukiyo Konishi, Nagaokakyo, all of, Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

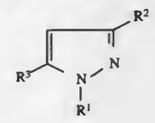
Continuation of Ser. No. 297, Jan. 4, 1993, abandoned. This application Mar. 30, 1995, Ser. No. 413,939

Claims priority, application United Kingdom, Feb. 5, 1992, 9202442; Sep. 28, 1992, 9220427

Int. Cl.[6] A61K *31/495;* **C07D** *231/10*

U.S. Cl. 514—406 **4 Claims**

1. A compound of the formula



wherein
R^1 is aryl substituted with cyano or lower alkanoyl;
R^2 is halogen, halo(lower) alkyl, cyano or acyl; and
R^3 is aryl substituted with lower alkylthio, lower alkylsulfinyl or lower alkylsulfonyl.

5,550,148

PAF SYNTHESIS MODULATORS

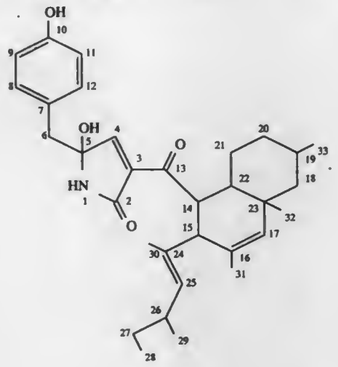
Robert R. West, Seattle; Jeffrey Van Ness, Botheil, both of Wash., and Annemarie R. Varming, Charlottenlund, Denmark, assignors to ZymoGenetics, Inc., Seattle, Wash., and Novo Nordisk A/S, Bagsvaerd, Denmark

Filed Jun. 7, 1995, Ser. No. 482,248

Int. Cl.[6] A61K *31/40;* **C07D** *207/22*

U.S. Cl. 514—408 **8 Claims**

1. A compound having the structure:



5,550,149

MDR REVERSAL AGENTS

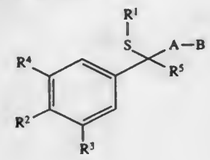
Dennis Powell, Peekskill, N.Y.; Rolf Paul, River Vale, N.J.; William A. Hallett, New City, N.Y.; Dan M. Berger, Orangeburg, N.Y., and Minn D. Dutia, West Nyack, N.Y., assignors to American Cyanamid Company, Madison, N.J.

Division of Ser. No. 92,653, Jul. 16, 1993, Pat. No. 5,387,685. This application Oct. 25, 1994, Ser. No. 328,643

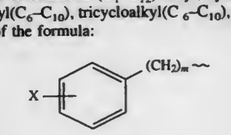
Int. Cl.[6] C07D *209/44;* **A61K** *31/40*

U.S. Cl. 514—416 **13 Claims**

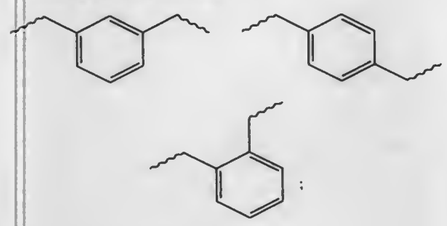
1. A compound of the formula:



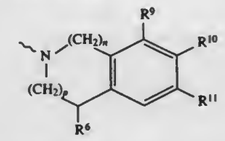
wherein
R^2 is H, OH, O-alkyl(C_1–C_4), F, Br, Cl, I, NO_2, OCF_3, alkyl(C_1–C_6), or $N(R^{12})_2$;
R^3 is H, OH, O-alkyl(C_1–C_3), straight or branched OSi—(C_1–C_4)alkyl, F, Br, Cl, I, NO_2, alkyl(C_1–C_6), OCH_2CH_2Cl, O-alkyl(C_2–C_5)-heterocycle, O-alkyl(C_2–C_5)$N(R^{12})_2$, OSO_2CF_3, OCF_3, or $N(R^{12})_2$;
or R^2 and R^3 taken together are methylenedioxy or ethylenedioxy;
R^4 is H, OH, O-alkyl(C_1–C_4), F, Br, Cl, I, or alkyl(C_1–C_3);
R^5 is H, CN, CH_2OH, CO_2(C_1–C_3)alkyl, CH_2NH_2, $CH_2N(R^{12})_2$ or alkyl(C_1–C_3);
R^1 is straight or branched (C_1–C_{12}) alkyl, cycloalkyl (C_3–C_7), bicycloalkyl(C_6–C_{10}), tricycloalkyl(C_6–C_{10}), a heterocycle or a moiety of the formula:



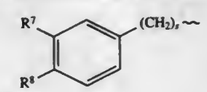
wherein
m is an integer 0–3,
X is H, straight or branched (C_1–C_4)alkyl, I, Cl, Br, F, NO_2, or $N(R^{12})_2$;
A is straight or branched (C_2–C_{12})alkyl, or a moiety selected from these of the formulae:



B is a moiety of the formula:



n and p are integers with n=1 and p=0;
R^6 is H, alkyl(C_1–C_4), or a moiety of the formula:



s is an integer with s=1–3,
R^7 and R^8 are independently H, alkyl(C_1–C_4), or O-alkyl(C_1–C_4);
R^9 is H, O-alkyl(C_1–C_4), F, Br, Cl, I, or alkyl(C_1–C_3);
R^{10} is H, O-alkyl(C_1–C_3), OH, F, Br, Cl, I, alkyl(C_1–C_3), OCH_2CH_2Cl, O-alkyl(C_2–C_5)-heterocycle, S-alkyl(C_1–C_4), OSO_2CF_3, OCF_3, OCH_2-phenyl, NO_2 or $N(R^{12})_2$;
R^{11} is H, O-alkyl(C_1–C_4), S-alkyl(C_1–C_4), OH, F, Br, Cl, I, OCF_3, OCH_2phenyl, alkyl(C_1–C_3) or O-aklyl (C_2–C_5)-heterocycle;
R^{12} is alkyl(C_1–C_4);
heterocycle is imidazole, pyrrole, 1,2,4-triazole, oxazole, isoxazole, furan, thiophene, pyridine, pyrimidine, or thiazole;
or a pharmaceutically acceptable salt thereof.

5,550,150

METHODS OF INHIBITING THE SYMPTOMS OF PREMENSTRUAL SYNDROME/LATE LUTEAL PHASE DYSPHORIC DISORDER

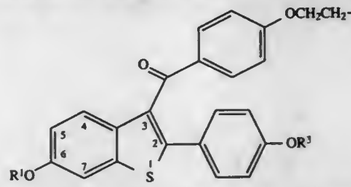
Steven A. Fontana, Martinsville, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 171,148, Dec. 21, 1993, Pat. No. 5,389,670. This application Aug. 29, 1994, Ser. No. 297,350

Int. Cl.[6] A61K *31/38*

U.S. Cl. 514—443 **1 Claim**

1. A method of inhibiting one or more symptoms of premenstrual syndrome/late luteal phase dysphoric disorder comprising prophylactically administering to a female human in need of treatment an effective amount of a compound having the formula



(I)

wherein R^1 and R^3 are independently hydrogen, —CH_3, —CO—(C_1-C_6 alkyl), or —CO—Ar, in which Ar is optionally substituted phenyl;
R^2 is selected from the group consisting of pyrrolidine, hexamethyleneimino, and piperidino; or a pharmaceutically acceptable salt or solvate thereof.

5,550,151

METHODS OF REDUCING SCARRING IN WOUND HEALING

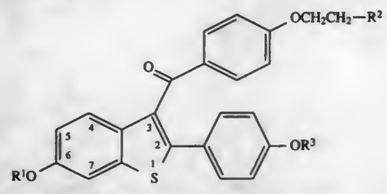
George J. Cullinan, Trafalgar, Ind., assignor to Eli Lilly Company, Indianapolis, Ind.

Filed Aug. 22, 1994, Ser. No. 293,851

Int. Cl.[6] A61K *31/38*

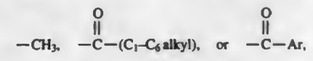
U.S. Cl. 514—445 **3 Claims**

1. A method of inhibiting scarring comprising administering to a human in need thereof an effective amount of a compound having the formula



(I)

wherein R^1 and R^3 are independently hydrogen,



wherein Ar is optionally substituted phenyl;

R^2 is selected from the group consisting of pyrrolidine, hexamethylenemino, and piperidino; or a pharmaceutically acceptable salt of solvate thereof.

5,550,152

BENZOPYRAN AND RELATED LTB$_4$ ANTAGONISTS

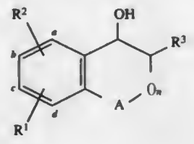
Kevin Koch, Mystic; Lawrence S. Melvin, Jr., Ledyard; Lawrence A. Reiter, Mystic, and Sally G. Ruggeri, Madison, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 890,055, May 28, 1992, abandoned, which is a continuation of Ser. No. 824,678, Jan. 23, 1992, abandoned. This application Sep. 30, 1994, Ser. No. 256,809

Int. Cl.^{6} A61K *31/35;* **C07D** *311/22*

U.S. Cl. 514—458 **10 Claims**

1. A compound of the formula

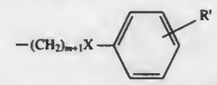


wherein

A is O;

n is 1;

R^1 is a substituent at position b or c as follows: carboxy, cis or trans $—(CH_2)_m—CR^4=CR^5—CO_2H$,



wherein m is 0, 1 or 2, R' is carboxy, or CH_2OH, and X is O, CH_2, S, NH or $N(C_1\text{-}C_6)$ alkyl; $—(CH_2)_mCR^4R^5R^6$ wherein m is as defined above, R^4 and R^5 are hydrogen or each independently are $C_1\text{-}C_6$ alkyl, or are taken together with the carbons to which they are attached to form $C_3\text{-}C_7$ cycloalkyl; and R^6 is hydroxyl, carboxy, or $—CONR^7R^8$ wherein R^7 and R^8 are hydrogen or each independently are $C_1\text{-}C_6$ alkyl, hydroxy substituted $C_1\text{-}C_6$ alkyl, $C_1\text{-}C_4$ perfluoroalkyl, $C_1\text{-}C_6$ alkylsulfinyl, phenylsulfinyl, $C_1\text{-}C_6$ alkylsulfonyl, phenylsulfonyl, R^9-substituted phenyl, or hydroxy, except that R^7 and R^8 cannot be both hydroxy;

R^2 is hydrogen or is one or any two of the following: fluoro, chloro, $C_1\text{-}C_6$ alkyl, $C_1\text{-}C_6$ alkoxy, $C_1\text{-}C_4$ perfluoroalkyl, $C_1\text{-}C_4$ perfluoroalkoxy, $C_1\text{-}C_6$ alkylthio, $C_1\text{-}C_6$ alkylsulfinyl or $C_1\text{-}C_6$ alkylsulfonyl;

R^3 is $—(CH_2)_qCHR^{11}R^{12}$, $—(CH_2)_qR^{12}$, $—O(CH_2)_qCHR^{11}R^{12}$, or $—O(CH_2)_qR^{12}$, wherein p is 0, 1 or 2 and q is 0, 1, 2, or 3;

R^{11} is hydrogen, $C_1\text{-}C_6$ alkyl or R^{16}-substituted phenyl;

R^{12} is $C_1\text{-}C_6$ alkyl or $C_3\text{-}C_8$ cycloalkyl; or phenyl, furyl, or naphthyl, each of which is optionally substituted by phenyl, R^{15} or R^{15}-substituted phenyl wherein R^{15} is as defined above; R^9, R^{15}, and R^{16} are hydrogen or each independently is one or any two of the following: fluoro, chloro, $C_1\text{-}C_6$ alkyl, $C_1\text{-}C_6$ alkoxy, $C_1\text{-}C_4$ perfluoroalkyl, $C_1\text{-}C_4$ perfluoroalkoxy, $C_1\text{-}C_6$ alkylthio, $C_1\text{-}C_6$ alkylsulfinyl or $C_1\text{-}C_6$ alkylsulfonyl;

and the salts and esters of those compounds of formula I containing a carboxy group, wherein the esters contain ester groups selected from the group consisting of $C_1\text{-}C_6$ alkyl, phenyl($C_1\text{-}C_6$)alkyl, $C_3\text{-}C_7$ cycloalkyl, and phenyl and benzyl substituted by fluoro, chloro, $C_1\text{-}C_6$ alkyl or $C_1\text{-}C_6$ alkoxy.

5,550,153

METHOD FOR TREATING HEARTWORM-INFECTED CANINES

Phillip D. Kerz, Rte. 4, Box 12, Charleston, Ill. 61920

Filed Nov. 14, 1994, Ser. No. 338,687

Int. Cl.^{6} A01N *43/16*

U.S. Cl. 514—460 **17 Claims**

1. A method for killing adult heartworms in a canine comprising administering to the canine a series of effective doses of an avermectin composition.

5,550,154

METHOD FOR TREATING WRINKLES USING GLUCURONIC ACID OR GLUCURONOLACTONE

Ruey J. Yu, Ambler, and Eugene J. Van Scott, Abington, both of Pa., assignors to Tristrata, Inc., Princeton, N.J.

Continuation of Ser. No. 179,190, Jan. 10, 1994, Pat. No. 5,470,880, which is a continuation of Ser. No. 89,101, Jul. 12, 1993, Pat. No. 5,389,677, which is a division of Ser. No. 8,223, Jan. 22, 1993, abandoned, which is a continuation of Ser. No. 812,858, Dec. 23, 1991, abandoned, which is a continuation of Ser. No. 469,738, Jan. 19, 1990, abandoned, which is a continuation of Ser. No. 945,680, Dec. 23, 1986, abandoned. This application Jun. 5, 1995, Ser. No. 463,235

Int. Cl.^{6} A61K *7/48;31/19;31/365*

U.S. Cl. 514—473 **10 Claims**

1. Method of visibly reducing a human skin wrinkle comprising topically applying to said wrinkle a composition comprising glucuronic acid or a topically effective salt thereof, or glucuronolactone in an amount and for a period of time sufficient to visibly reduce said wrinkle, wherein said wrinkle is a facial wrinkle.

5,550,155

METHODS FOR THE SYNTHESIS OF MONOFUCOSYLATED OLIGOSACCHARIDES TERMINATING IN DI-N-ACETYLLACTOSAMINYL STRUCTURES

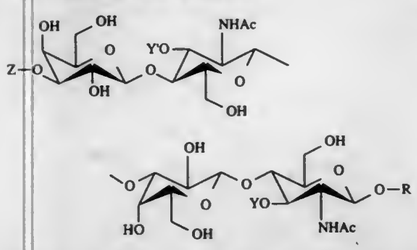
Mohammed A. Kashem; Andre P. Venot, and Richard Smith, all of Edmonton, Canada, assignors to Alberta Research Council, Alberta, Canada

Continuation of Ser. No. 914,172, Jul. 14, 1992, Pat. No. 5,374,655, which is a continuation-in-part of Ser. No. 889,017, May 26, 1992, abandoned, which is a continuation-in-part of Ser. No. 771,259, Oct. 2, 1991, abandoned, which is a continuation-in-part of Ser. No. 714,161, Jun. 10, 1991. This application Oct. 14, 1994, Ser. No. 323,100

Int. Cl.^{6} A01N *47/40;* **C08B** *37/00;* **C07K** *1/00;* **C12N** *7/06*

U.S. Cl. 514—540 **7 Claims**

1. A compound of the formula VII:



VII

wherein R is hydrogen, a saccharide, an oligosaccharide or an aglycon having from 1 to 10 carbon atoms or having the formula —(A)—Z' wherein A represents a covalent bond, an alkylene group of from 2 to 10 carbon atoms, or a moiety having the formula $—(CH_2—CR_2G)_n—$ wherein n is an integer equal to 1 to 5; R_2 is selected from the group consisting of hydrogen, methyl, and ethyl; and G is selected from the group consisting of hydrogen, oxygen, sulphur, nitrogen, phenyl and phenyl substituted with 1 to 3 substituents selected from the group consisting of amine, hydroxyl, halo, alkyl of from 1 to 4 carbon atoms and alkoxy of from 1 to 4 carbon atoms; and Z' is selected from the group consisting of hydrogen, methyl and, when G is not oxygen, sulphur or nitrogen and A is not a covalent bond, then Z' is also selected from the group consisting of —OH, —SH, $—NH_2$, $—NHR_3$, $—N(R_3)_2$, —C(O)OH, $—C(O)OR_3$, $—C(O)NH—NH_2$, $—C(O)NH_2$, $—C(O)NHR_3$, $—C(O)N(R_3)_2$, and $—OR_4$ wherein each R_3 is independently alkyl of from 1 to 4 carbon atoms and R_4 is an alkenyl group of from 3 to 10 carbon atoms, Y and Y' are selected from the group consisting of hydrogen, L-fucose, and a compatible analogue of L-fucose with the proviso that one of Y and Y', but not both, is hydrogen, and Z' is sialic acid or a compatible analogue of sialic acid and pharmaceutically acceptable salts thereof.

5,550,156

MICROBIAL OIL MIXTURES AND USES THEREOF

David J. Kyle, Catonsville, Md., assignor to Martek Corporation, Columbia, Md.

Division of Ser. No. 944,739, Sep. 14, 1993, Pat. No. 5,374,657, which is a continuation of Ser. No. 645,457, Jan. 24, 1991, abandoned. This application Dec. 19, 1994, Ser. No. 358,474

Int. Cl.^{6} A61K *31/225;31/20*

U.S. Cl. 514—547 **31 Claims**

1. A process for making a supplement for infant formula consisting essentially of blending a docosahexaenoic acid (DHA)-containing microbial oil and a gamma linolenic acid (GLA)-containing oil, and adding an amount of the blended oils to infant formula, such that the amount of DHA provided by the blend is sufficient to provide an amount of DHA comparable to the amount in human breast milk and the amount of GLA provided by the blend is sufficient to provide GLA in an amount that, upon administration of the formula to an infant, can be converted in the infant's body to an amount of arachidonic acid (ARA) comparable to the amount of ARA obtainable from human breast milk.

5,550,157

METHOD FOR CONTROLLING DREISSENIDAE MUSSELS

Alexander M. Vegega, Trenton, N.J., and Claudio E. Manissero, Malden, N.C., assignors to FMC Corporation, Philadelphia, Pa., and The Research Foundation of the State University of N.Y., Buffalo, N.Y.

Continuation-in-part of Ser. No. 88,935, Jul. 8, 1993, Pat. No. 5,393,781. This application Jun. 15, 1994, Ser. No. 260,048

Int. Cl.^{6} A01N *37/02*

U.S. Cl. 514—557 **11 Claims**

1. A method for controlling fresh water mussels of the Dreissenidae family, which comprises contacting the mussels, or an environment where control is desired, with a biocidally effective amount of peracetic acid.

5,550,158

METHOD OF TREATING WRINKLES USING GLUCOHEPTONIC ACID

Ruey J. Yu, Ambler, and Eugene J. Van Scott, Abington, both of Pa., assignors to Tristrata, Inc., Princeton, N.J.

Continuation of Ser. No. 179,190, Jan. 10, 1994, Pat. No. 5,470,880, which is a continuation of Ser. No. 89,101, Jul. 12, 1993, Pat. No. 5,389,677, which is a division of Ser. No. 8,223, Jan. 22, 1993, abandoned, which is a continuation of Ser. No. 812,858, Dec. 23, 1991, abandoned, which is a continuation of Ser. No. 469,738, Jan. 19, 1990, abandoned, which is a continuation of Ser. No. 945,680, Dec. 23, 1986, abandoned. This application Jun. 6, 1995, Ser. No. 471,530

Int. Cl.^{6} A61K *7/48;31/19*

U.S. Cl. 514—557 **10 Claims**

1. Method of visibly reducing a human skin wrinkle comprising topically applying to said wrinkle a composition comprising glucoheptonic acid or a topically effective salt thereof in an amount and for a period of time sufficient to visibly reduce said wrinkle, wherein said wrinkle is a facial wrinkle.

5,550,159

PEPTIDE MIMICS USEFUL AS PLATELET AGGREGATION INHIBITORS

Philippe R. Bovy, St. Louis, Mo.; Robert B. Garland; Masateru Miyano, both of Northbrook, Ill.; Joseph G. Rico, Manchester, Mo.; Thomas E. Rogers, Ballwin, Mo., and Jeffery A. Zablocki, Skokie, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Division of Ser. No. 138,559, Oct. 15, 1993, Pat. No. 5,453,440, which is a continuation of Ser. No. 847,260, Mar. 6, 1992, abandoned. This application May 18, 1995, Ser. No. 444,337

Int. Cl.^{6} A61K *31/195*

U.S. Cl. 514—563 **2 Claims**

1. N-[N-[4-[[4-(aminoiminomethyl)phenyl](phenylmethyl)amino]-1,4-dioxobutyl]-L-alpha-aspartyl-L-phenylalanine or pharmaceutically acceptable salt thereof.

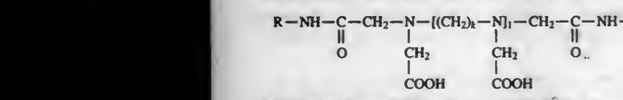
5,550,160

METAL COMPLEXES OF HYDROXYARL CONTAINING AMINOCARBOXYLIC ACID CHELATING AGENTS

Suzanne V. Smith; Richard M. Lambrecht; Peter F. Schmidt, and Fook-Thean Lee, all of New South Wales, Australia, assignors to Australian Nuclear Science & Technology Organization, Australia

Filed Jul. 29, 1993, Ser. No. 99,179
Claims priority, application Australia, Jul. 31, 1992, PL3883
Int. Cl.[6] A61K *31/215*
U.S. Cl. 514—563 **6 Claims**

1. A compound consisting of a compound of the formula



(II)

and the pharmaceutically acceptable salts thereof
where
k is an integer from 2 to 5
l is an integer from 1 to 5
R is independently selected from



wherein Ar is an aryl or heteroaryl group;
R^1 is $—NR^2R^3$ where R^2 and R^3 are independently selected from hydrogen, $—(CH_2)_p—NH_2$; $—(CH_2)_p—Ar—(CH_2)_m—NH_2$; $—(CH_2)_p—CO_2H$; $—(CH_2)_p—Ar—CO_2H$; $—(CH_2CH_2O)_n—CH_2CH_2NH_2$; $—(CH_2)_p—NCS$, $—(CH_2)_p—Ar—NCS$; or $—(CH_2)_pNHCOR''$, $—COR''$; or
R^2 and R^3 together with the nitrogen atom to which they are attached form an optionally substituted saturated or partially unsaturated ring optionally containing one or more heteratoms O, S or N; or
R^1 is —NCS, —N=N or —C(=NH)—OCH_3;
n and m are independently an integer from 0 to 4
p is an integer from 1 to 4;
R" is alkyl-L where L is halogen; 2,5-diketo-pyrrolinyl, —Het—$CH=CH_2$ wherein Het is an optionally substituted 5 or 6 membered heterocyclic ring containing one or more heteroatoms O, N or S.

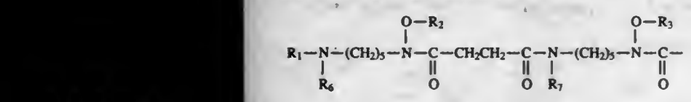
5,550,161

SUBSTITUTED ORALLY EFFECTIVE ION CHELATORS RELATED TO DEFEROXAMINE

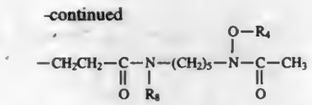
Donald E. Green, Sunnyvale, Calif., assignor to Oral-D, Boston, Mass.

Continuation of Ser. No. 699,610, May 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 41,679, Apr. 21, 1987, Pat. No. 5,015,664, which is a continuation of Ser. No. 694,259, Jan. 26, 1985, Pat. No. 4,671,901, which is a continuation-in-part of Ser. No. 574,482, Jan. 26, 1984, Pat. No. 4,684,482. This application Oct. 28, 1993, Ser. No. 144,664
The portion of the term of this patent subsequent to Jun. 9, 2004, has been disclaimed.
Int. Cl.[6] A61K *31/16*
U.S. Cl. 514—616 **15 Claims**

1. A pharmaceutical composition for oral administration to a mammal to treat and reduce a metal ion overload condition, by administering a compound of the structure:



-continued



wherein R_6, R_7 and R_8 are each —H, and
R_1 is selected from —(C=O)-R_5 wherein R_5 is selected from alkyl groups having from 2 to 13 carbon atoms,
R_2, R_3 and R_4 are each independently selected from acyl group —(C=O)-R_{5a} where R_{5a} is selected from alkyl groups having from 2 to 4 carbon atoms,
or the pharmaceutically acceptable non-toxic salt or ester thereof, optimally, in a pharmaceutically acceptable excipient.

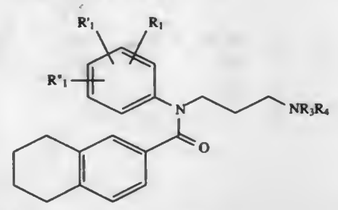
5,550,162

N-(-3-AMINOPROPYL)-N-PHENYL-5,6,7,8-TETRAHYDRO-NAPHTHALENE-2-CARBOXAMIDE DERIVATIVES, THEIR PREPARATION AND THEIR THERAPEUTIC USE

Jonathan Frost, Wissous; Pascal George, St Arnoult en Yvelines; Patrick Pasau, Bagneux; Régine Bartsch; Corinne Rousselle, both of Fontenay aux Roses; Paul H. Williams, Paris, and Jean C. Muller, Morsang sur Orge, all of, France, assignors to SYNTHELABO, Le Plessis Robinson, France

Filed Feb. 20, 1995, Ser. No. 382,578
Claims priority, application France, Feb. 3, 1994, 94 01198; Feb. 3, 1994, 94 01199; Feb. 3, 1994, 94 01200
Int. Cl.[6] A61K *31/165;* **C07C** *233/65*
U.S. Cl. 514—617 **6 Claims**

1. A compound, of the formula:



(I)

in which
R_1 represents a hydrogen, halogen, methyl, or a C_1–C_4 alkoxy,
R'_1 represents hydrogen or halogen;
R''_1 represents hydrogen or methoxy;
R_3, taken alone, represents C_1–C_3 alkyl,
R_4, taken alone, represents 2,3-dihydro-1H-inden-2-yl, a 2,3-dihydro-1H-inden-1-yl, or 1,2,3,4-tetrahydronaphthalen-1-yl, in the form of a pure optical isomer or a mixture thereof, or in the form of a base or an acid addition salt.

5,550,163

METHOD FOR REDUCING FILTRATE WASTE IN A MANUFACTURING PROCESS OF A PHARMACEUTICAL PRODUCT CONTAINING BENZALKONIUM CHLORIDE

Shulin Ding, Irvine; Robert J. Pallo, Laguna Niguel; Walter L. Tien, Irvine, and Orest Olejnik, Trabuco Canyon, all of Calif., assignors to Allergan, Inc., Irvine, Calif.

Filed Aug. 3, 1994, Ser. No. 285,079
Int. Cl.[6] A61K *31/14*
U.S. Cl. 514—643 **13 Claims**

1. A method for reducing filtrate waste in a manufacturing process of a pharmaceutical product containing benzalkonium chloride as a preservative, said manufacturing process including the steps of storing product components, mixing the product components and dispensing product to containers, said method comprising the steps of:
mixing the non-benzalkonium chloride components with benzalkonium chloride to formulate the product;
sterilizing the product by passing same through a microfiltration membrane, said product having a time dependent benzalkonium chloride content, the time dependence being dependent on benzalkonium chloride adsorption equilibration in the microfiltration membrane; and
reducing a benzalkonium chloride equilibration time in the microfiltration membrane by maintaining a selected temperature of the microfiltration membrane and the product therein.

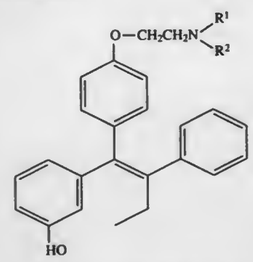
5,550,164

METHOD FOR INHIBITING UTERINE FIBROID DISEASE WITH 1,1,2-TRIPHENYLBUT-1-ENE DERIVATIVES

Steven A. Fontana, Martinsville, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 241,258, May 11, 1994, Pat. No. 5,455,275. This application Apr. 4, 1995, Ser. No. 416,260
Int. Cl.[6] A61K *31/135*
U.S. Cl. 514—648 **3 Claims**

1. A method for inhibiting uterine fibroid disease comprising administering to a woman in need thereof an effective amount of a compound of formula I



(I)

wherein
R^1 and R^2 may be the same or different provided that, when R^1 and R^2 are the same, each is a methyl or ethyl group, and, when R^1 and R^2 are different, one of them is a methyl or ethyl group and the other is a benzyl group; or a pharmaceutically acceptable salt thereof.

5,550,165

PHARMACEUTICAL COMPOSITIONS FOR THE TREATMENT OF HEREDITARY TYOSINAEMIA TYPE I

Martin K. Ellis, Macclesfield, England; Sven T. Lindstedt, Lund, Sweden; Edward A. Lock, Wilmslow, England; Maj E. H. Markstedt, Bilidal, Sweden; Linda C. Mutter, Bloomfield, and Michael P. Prisbylla, Richmond, both of Calif., assignors to Zeneca Limited, London, England

Continuation of Ser. No. 903,691, Jun. 24, 1992, abandoned. This application Dec. 19, 1994, Ser. No. 359,361
Claims priority, application United Kingdom, Jun. 24, 1991, 9113622; Mar. 24, 1992, 9206412
Int. Cl.[6] A61K *31/12*
U.S. Cl. 514—676 **10 Claims**

1. A pharmaceutical composition comprising as an active ingredient an effective 4-hydroxyphenypyruvate dioxygenase inhibiting amount of the compound 2-(2-nitro-4 -trifluoromethylbenzoyl)-1,3-cyclohexanedione, or a pharmaceutically acceptable salt thereof, together with a pharmaceutically acceptable diluent or carrier.

5,550,166

PINITOL AND DERIVATIVES THEREOF FOR THE TREATMENT OF METABOLIC DISORDERS

Richard E. Ostlund, 39 Fair Oaks, Ladue, Mo. 63124, and William R. Sherman, 8126 Teasdale Ave., University City, Mo. 63130

Filed Mar. 17, 1995, Ser. No. 407,430
Int. Cl.[6] A61K *31/075*
U.S. Cl. 514—715 **23 Claims**

1. A composition useful in treating conditions of insulin resistance, hyperlipidemia or dyslipidemia in a mammal comprising an effective amount of pinitol or a derivative or metabolite thereof.

5,550,167

ABSORBENT FOAMS MADE FROM HIGH INTERNAL PHASE EMULSIONS USEFUL FOR ACQUIRING AQUEOUS FLUIDS

Thomas A. DesMarais, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 30, 1995, Ser. No. 520,793
Int. Cl.[6] C08J *9/28*
U.S. Cl. 521—50 **16 Claims**

1. A polymeric foam material which is capable of acquiring and distributing fluids, said polymeric foam material comprising a hydrophilic, flexible, nonionic polymeric foam structure of interconnected open cells, which foam structure has:
A) a capacity after desorption at 30 cm of less than about 10% of the foam's free absorbent capacity;
B) a capillary absorption pressure of from about 3 to about 20 cm;
C) a capillary desorption pressure of from about 8 to about 25 cm;
D) a resistance to compression deflection of from about 5 to about 85% when measured under a confining pressure of 0.74 psi; and
E) a free absorbent capacity of from about 12 to about 125 g/g.

5,550,168

PROCESS FOR PRODUCING MODIFIED POLYISOCYANURATE FOAMS

Satoshi Nakamura, and Hirokatsu Shirahata, both of Tokyo, Japan, assignors to Nisshinbo Industries, Inc., Tokyo, Japan

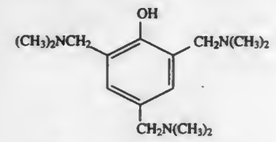
Filed Jun. 20, 1994, Ser. No. 262,531
Claims priority, application Japan, Dec. 3, 1993, 5-33951
Int. Cl.[6] C08G *18/00;* **B01J** *31/00*
U.S. Cl. 521—108 **21 Claims**

1. A process for producing a modified polyisocyanurate foam, which process comprises reacting an organic polyisocyanate, a polyol and water in the presence of:
(a) a trimerization catalyst which is an alkali metal salt of a C_{1-8} aliphatic monocarboxylic acid represented by formula (II)

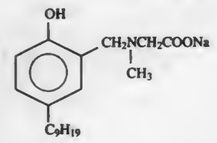
$R_6—COOM$ (II)

wherein R_6 is a hydrogen atom or a substituted or unsubstituted C_{1-7} aliphatic hydrocarbon group, and M is an alkali metal,

(b) a trimerization catalyst selected from compounds of formulas (IV), (V) or (VI)

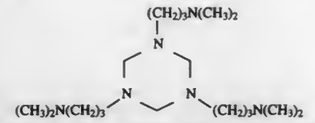


(IV)



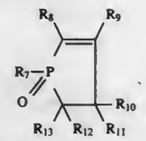
(V)

or



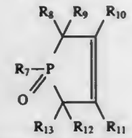
(VI)

and (c) a carbodiimidation catalyst selected from the group of compounds consisting of phosphorene oxides represented by formulas (VII) and (VIII)



(VII)

and



(VIII)

wherein R_7 is a substituted or unsubstituted alkyl, phenyl, naphthyl or benzyl group, and R_8, R_9, R_{10}, R_{11}, R_{12} and R_{13} are each a hydrogen atom, a chlorine atom or a C_{1-4} alkyl group.

5,550,169

PREPARATION OF WATER-IMPERMEABLE POLYURETHANE FOAM

Tatsuo Yata, and Hideya Kinoshita, both of Yokohama, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Aug. 19, 1994, Ser. No. 293,220

Claims priority, application Japan, Aug. 20, 1993, 5-226696

Int. Cl.[6] C08G *18/32*

U.S. Cl. 521—112 **2 Claims**

1. A method for preparing a flexible or semi-hard polyurethane foam from a blend containing a polyhydroxyl compound, an isocyanate, a blowing agent, a catalyst, and a foam stabilizer, characterized in that

a polyolefin polyol is used as the polyhydroxyl compound, and at least one member selected from the group consisting of a carboxy-modified organosilicone, an epoxy-modified organosilicone, and a methacryl-modified organosilicone is used as the foam stabilizer,

whereby a water-impermeable polyurethane foam is obtained.

5,550,170

PROCESS FOR THE PRODUCTION OF FOAM BEADS

Michael Träger, Haltern; Reinhard Wirobski, Marl, and Thomas Leven, Lüdenscheid, all of, Germany, assignors to Huels Aktiengesellschaft, Marl, Germany

Filed Sep. 20, 1994, Ser. No. 309,438

Claims priority, application Germany, Sep. 25, 1993, 43 32 724.9

Int. Cl.[6] C08J *9/16*

U.S. Cl. 521—143 **24 Claims**

1. A process for the production of expanded polyolefin foam particles, comprising

(a) heating a liquid dispersion of polyolefin particles to a first temperature which is above the crystallite melting point T_m of the polyolefin, and applying increased pressure to the liquid dispersion optionally in the presence of a volatile blowing agent, to obtain a heated dispersion (a);

(b) passing the heated dispersion (a) prior to decompression for foaming the polyolefin particles through a cooling device having a short residence time and terminated by one or more expansion nozzles, such that the temperature (second temperature) of the dispersion upon exiting said cooling device is lower than said first temperature but is above the softening point of the polyolefin,

c) allowing the dispersion to discharge through the expansion nozzles; and

d) collecting from said nozzle(s) an expanded polyolefin product.

5,550,171

POLYMERIC SULFONIUM SALT PHOTOINITIATORS

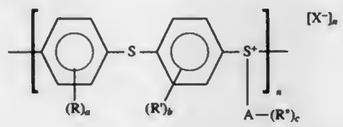
Joseph P. Kuczynski, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 31, 1995, Ser. No. 455,218

Int. Cl.[6] C08F *2/46*

U.S. Cl. 522—31 **12 Claims**

1. A polymeric photoinitiator, said polymeric photoinitiator having the formula:



wherein n=10 to 150; each of a and b are 0–4 and c is 0–5; A is an aryl group; X is SbF_6^-, PF_6^-, or BF_4^-; and each of R, R', and R" is independently H or one or more groups substituted onto the respective phenyl, said substituted group selected from the group consisting of a halogen atom, a nitro group, an alkoxy group, a branched or unbranched C_1–C_{18} aliphatic group, a cyclic hydrocarbon group, an aryl or alkyl group containing one or more heteroatoms; a thiophenoxy group; a C_{1-18} aliphatic group, a cyclic hydrocarbon group, an aryl or alkyl group containing ooe or more heteroatoms; a thiophenoxy group; a C_{1-18} aliphatic group having at least one hydroxyl group; and a C^{3-19} group having a group of $—OCH_2CH_2O—$.

5,550,172

UTILIZATION OF BIOCOMPATIBLE ADHESIVE/SEALANT MATERIALS FOR SECURING SURGICAL DEVICES

Donald W. Regula, Belle Mead; Kevin Cooper, Warren; Michael F. Bregen, Milford; Shawn T. Huxel, Lakehurst, all of N.J., and Daniel C. Rosenman, San Mateo, Calif., assignors to Ethicon, Inc., Somerville, N.J.

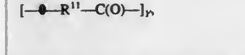
Filed Feb. 7, 1995, Ser. No. 385,015

Int. Cl.[6] C08K *5/10;* **A61B** *17/56;17/58;* **C01B** *15/16*

U.S. Cl. 523—118 **12 Claims**

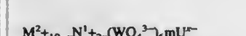
1. A process for enhancing the security of implantable surgical devices secured to bone tissue consisting essentially of securing a surgical device with a biocompatible adhesive and/or sealant selected from the group consisting of:

(a) a bioabsorbable semi-crystalline aliphatic poly(ester) of the formula:



wherein R^{11} is selected from the group consisting of $—CR^{12}H—$, $—(CH_2)_3—O—$, $—CH_2—CH_2—O—CH_2—$, $CR^{12}H—CH^2$, $—(CH_2)_4—$, $—(CH_2)_z—O—C(O)—$ and $—(CH_2)_z—C(O)—CH_2—$; R^{12} is hydrogen or methyl; z is an integer in the range of from 1 to 7 and y is an integer in the range of from about 10 to about 20,000; and

(b) a slurry of water and a calcium containing compound with the general formula:



where n is an integer form 1 to 10, and m is 2 when x is 1, or m is 1 when x is 2, M and N are alkali or alkaline earth metals; WO_4 is an acid radical and W is phosphorus, vanadium, sulfur, silicon, or is substituted in whole or part with carbonate ($CO_3^{2—}$); and U is a halide hydroxide, or carbonate; provided in an amount effective to increase the amount of force necessary to remove the implanted surgical device.

5,550,173

POLYESTER COMPOSITION

Timothy Hammond, Stockton on Tees, and Jasbinder S. Bal, Grindon, both of, United Kingdom, assignors to Zeneca Limited, London, England

PCT No. PCT/GB93/02279, § 371 Date May 5, 1995, § 102(e) Date May 5, 1995, PCT Pub. No. WO94/11445, PCT Pub. Date May 26, 1994

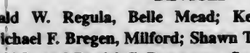
PCT Filed Nov. 4, 1993, Ser. No. 432,116

Claims priority, application United Kingdom, Nov. 6, 1992, 9223350

Int. Cl.[6] C08L *67/00;* **C08G** *63/91*

U.S. Cl. 523—122 **11 Claims**

1. A polymer composition comprising at least one biodegradable microbiologically produced polyhydroxyalkanoate (PHA) having a of molecular weight Mw of at least 50000, having repeating units of formula I:



I

where m is 3 in all said units or m is 3 in some of said units and m is 4 in the remainder of said units; and

n is 2m

and at least one oligomer selected from the group consisting of hydroxyalkanoate, lactide, caprolactone and co-oligomers thereof.

5,550,174

Patent Not Issued For This Number

5,550,175

SOLVENTLESS COMPOUNDING AND COATING OF NON-THERMOPLASTIC HYDROCARBON ELASTOMERS

Timothy D. Bredahl, Cottage Grove; Harold Leverty, Stillwater; Robert L. Smith, New Brighton, all of Minn.; Richard E. Bennett, Hudson, Wis.; David J. Yarusso, Shoreview; Daniel C. Munson, St. Paul, both of Minn., and Anthony R. Piepys, Austin, Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 215,212, Mar. 21, 1994, which is a continuation-in-part of Ser. No. 972,620, Nov. 6, 1992, abandoned. This application May 5, 1995, Ser. No. 435,980

Int. Cl.[6] C08K *3/00;* **C08L** *23/00;* **B32B** *7/12;3/26*

U.S. Cl. 523—348 **28 Claims**

1. A solventless hot melt process for preparing a foamed, non-thermosettable pressure sensitive adhesive from a non-thermoplastic hydrocarbon elastomer comprising the steps of

(a) feeding said non-thermoplastic hydrocarbon elastomer to a continuous compounding device which has a sequence of alternating conveying and processing zones, said processing zones being capable of masticating and mixing;

(b) feeding a chemical blowing agent to said continuous compounding device and mixing said blowing agent into said non-thermoplastic elastomer;

(c) maintaining said non-thermoplastic elastomer and said blowing agent at a temperature below the decomposition temperature of said blowing agent;

(d) discharging the mixture of said non-thermoplastic elastomer and said blowing agent from said continuous compounding device; and

(e) heating the discharged mixture to a temperature above the decomposition temperature of said blowing agent and liberating gas therefrom to create a cell structure within the non-thermoplastic elastomer and create said foamed pressure-sensitive adhesive.

VOL 1189 ISS 4 AG 27 1996 UMI

5,550,176

ROOM TEMPERATURE SETTING CARBONACEOUS CEMENT WITH INCREASED ELECTRICAL CONDUCTIVITY AND FLEXURAL STRENGTH

Irwin C. Lewis, Strongsville; Terrence A. Pirro, Cleveland; Ronald A. Greinke, Medina; Richard I. Bretz, and Dennis J. Kampe, both of Parma, all of Ohio, assignors to UCAR Carbon Technology Corporation, Danbury, Conn.

Continuation of Ser. No. 135,154, Oct. 12, 1993, abandoned, which is a continuation-in-part of Ser. No. 870,314, Apr. 17, 1992, Pat. No. 5,280,063. This application Mar. 23, 1995, Ser. No. 409,896

Claims priority, application Germany, Apr. 17, 1993, 43 12 571.9; Japan, Apr. 17, 1993, 5-087247

Int. Cl.[6] C08K *3/00*

U.S. Cl. 524—6 **10 Claims**

1. A three component carbonaceous cement which will set at room temperature and is capable of being applied to a carbon surface within two hours of mixing of the three components without undergoing a significant viscosity increase and sets to a solid shape within 24 hours said cement consisting of a first solid component, a second liquid component and a third component containing an acid polymerization catalyst in an amount sufficient to effect setting of the cement at room temperature, said first solid component comprising an admixture of carbonaceous particles, copper particles, and a solid phenolic resin, said second liquid component comprising an amine-free and basic catalyst-free solution of a liquid resol phenolic dissolved in an acid polymerizable furfuraldehyde solvent and wherein said polymerization catalyst in said third component consists of a strong acid selected from the group consisting of p-toluene sulfonic acid, benzene sulfonic acid, trichloroacetic acid, naphthalene disulfonic acid, benzene disulfonic acid, trifluoroacetic acid, sulfuric acid and methanesulfonic acid dissolved in water or alcohol and wherein the concentration of the copper is from 25% to 300% by weight of the first solid component not including copper.

5,550,177

STARCH AND POLY (ETHLENE-CO-ACRYLIC ACID) PASTES AND GELS, AND METHOD FOR THEIR MAKING

George F. Fanta, and Donald D. Christianson, both of Peoria, Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Feb. 28, 1992, Ser. No. 843,333

Int. Cl.[6] C08L *3/00;89/00*

U.S. Cl. 524—47 **8 Claims**

1. A method for making an aqueous ambient temperature starch and poly(ethylene-co-acrylic acid) paste or gel, comprising:

heating a mixture of starch and poly(ethylene-co-acrylic acid) in an aqueous medium to obtain a cooked aqueous solution/dispersion of the starch and the poly(ethylene-co-acrylic acid); and,

cooling the aqueous solution/dispersion to ambient temperature with water retained in the solution/dispersion thereby to form an aqueous ambient temperature starch and poly(ethylene-co-acrylic acid) paste or gel, the starch being from about 2.5% to about 10%, by weight, of the paste or gel, and the poly(ethylene-co-acrylic acid) being from about 0.5% to about 20%, by weight, of the starch, the poly(ethylene-co-acrylic acid) content being sufficient to provide an aqueous ambient temperature paste having a higher viscosity than the same ambient temperature paste without poly(ethylene-co-acrylic acid) or an aqueous ambient temperature gel having a different gel strength from the same ambient temperature gel without poly(ethylene-co-acrylic acid).

5,550,178

PROCESS FOR ENCAPSULATING BIOLOGICS USING CROSSLINABLE BIOCOMPATIBLE ENCAPSULATION SYSTEM

Neil P. Desai; Patrick Soon-Shiong; Paul A. Sandford, and Roswitha E. Heintz, all of Los Angeles, Calif., assignors to VivoRx, Inc., Santa Monica, Calif.

Division of Ser. No. 866,038, Apr. 8, 1992, Pat. No. 5,344,640. This application Jun. 13, 1994, Ser. No. 258,769

Int. Cl.[6] C08K *5/15;* **C08L** *5/00;* **A61K** *9/14;* **C12N** *11/02*

U.S. Cl. 524—56 **40 Claims**

1. A process for encapsulating a biologic in a crosslinked biocompatible material, said process comprising:

coating the biologic with a crosslinked biocompatible material having at least one ionically crosslinked component, and at least one covalently crosslinked component;

wherein the ionically crosslinked component is selected from a polysaccharide, a polyanion, or a polycation.

5,550,179

WATER BASED LACQUER COMPOSITIONS AND METHOD OF MAKING AND USING SAME

Nichan Srourian, 3009 Dona Emila Dr., Studio City, Calif. 91604

Continuation of Ser. No. 659,731, Feb. 25, 1991, abandoned. This application Apr. 19, 1993, Ser. No. 49,008

Int. Cl.[6] C08K *5/20;5/10;5/07*

U.S. Cl. 524—210 **24 Claims**

1. A water-based transparent or translucent, relatively permanent film-forming lacquer composition for application to unfinished plastic items with good adhesion, and which is environmentally safe and presents little or no health risks, and which items have been formed in plastic forming operations and which have not had any surface treatment finish thereon, said lacquer composition comprising:

a) a fully reacted aqueous film-forming polymer dispersion in which the polymer of the dispersion dries on the plastic item by evaporation of a carrier as opposed to polymerization,

b) a water-miscible solvent selected from the class consisting of amides and ketones and pyrrolidones in an amount sufficient to dissolve a surface portion of the plastic item without creating any chemical reaction with the plastic item and thereby cause a physical bonding of the polymer dispersion and the plastic item to thereby enable good adhesion of the polymer dispersion to the plastic item, said solvent being present in an amount no greater than 30% by weight based on the total weight of the lacquer composition,

c) water present in an amount of at least 30% based on the total weight of the composition, and

d) pigment or dye incorporated in said lacquer composition which provides a permanent color to the composition but where the composition can remain transparent or translucent,

and which lacquer compensation provides good adherence to a plastic item with good scratch and abrasive adherence and provides an aesthetic quality to the plastic item, and where the composition, when hardened forms a film on the plastic item with adhesion substantially as good as the adhesion obtained with a lacquer composition having substantially an organic solvent as the solvent for the dispersion and pigment or dye, so that the color imparted to the plastic item is permanent.

5,550,180

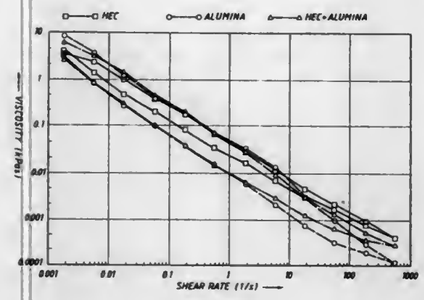
"ALUMINA THICKENED LATEX FORMULATIONS"

Cutis M. Elsik, Austin, and Ronald L. Beggs, Leander, both of Tex., assignors to Condea Vista Company, Houston, Tex.

Continuation of Ser. No. 140,267, Oct. 21, 1993, abandoned. This application Dec. 2, 1994, Ser. No. 348,757

Int. Cl.[6] C08J *5/10;* **C08K** *3/18;3/22;* **C08L** *33/10*

U.S. Cl. 524—430 **9 Claims**



1. A latex composition comprising, as a rheology modifier, a boehmite alumina having a crystallite size (020 plane) of less than about 60 Angstroms and a surface area, when calcined to gamma phase, of greater than about 250 m^2/g, said boehmite alumina being present in an amount of from about 0.1 to about 5% by weight of said latex composition and being of a type that does not require acid for dispersibility.

5,550,181

REPULPABLE SPLICING TAPE

William F. Scholz, Altadena, Calif., assignor to Avery Dennison Corporation, Pasadena, Calif.

Filed Mar. 7, 1994, Ser. No. 207,356

Int. Cl.[6] C09J *7/02*

U.S. Cl. 524—460 **10 Claims**

1. A water-dispersible, inherently tacky pressure-sensitive adhesive composition for use in splicing tape constructions which comprises from about 97% to about 65% by weight of a tacky emulsion polymer formed from about 55% to 90% by weight of a first monomer which is at least one alkyl acrylate containing from 4 to about 8 carbon atoms in the alkyl group, from about 10% to about 20% by weight of at least one unsaturated carboxylic acid, from 0% to about 15% by weight of at least one vinyl ester, and from 0% to about 15% by weight methyl acrylate, said emulsion polymer being formed in the presence of anionic and nonionic surfactants, said polymer having a glass transition temperature of about −15° to about −50° C., and formed in the presence of a sufficient amount of chain transfer agent to provide an emulsion polymer which, when coated onto a repulpable paper substrate, is water-dispersible and passes Tappi Useful Method 204; from 0 to about 35% by weight of an acrylic polymer having a glass transition temperature of less than −50° C. and from about 3% to about 20% by weight of a plasticizer which is compatible with the emulsion and acrylic polymers, said pressure-sensitive adhesive composition having, at a coat weight of 50 to 60 grams per square meter, an adhesion sufficient to pass a flying splice test.

5,550,182

MASKING COMPOSITION FOR PROTECTING VEHICLE SURFACE FROM OVERSPRAY

Richard W. Ely, New London; James P. Gilson, Green Bay, and Cathy Pawelski, New London, all of Wis., assignors to Aqua tec Coatings Corporation, Appleton, Wis.

Filed Dec. 22, 1994, Ser. No. 361,968

Int. Cl.[6] C08K *5/053*

U.S. Cl. 524—557 **33 Claims**

1. A masking composition for protecting a surface from paint overspray, said masking composition consisting of:

polyvinyl alcohol, said polyvinyl alcohol being at least 98.0% hydrolyzed and having a viscosity less than about 7 centipoise in 4% aqueous solution at 68° F.;

a surfactant including sodium dioctyl sulfoccinate and alcohol alkoxylates; and

water.

5,550,183

METAL-PEPTIDE COMPOSITIONS AND METHODS FOR STIMULATING HAIR GROWTH

Loren R. Pickart, Bellevue, Wash., assignor to ProCyte Corporation, Kirkland, Wash.

Continuation of Ser. No. 101,957, Aug. 4, 1993, abandoned, which is a continuation of Ser. No. 988,352, Dec. 9, 1992, abandoned, which is a continuation of Ser. No. 855,227, Mar. 20, 1992, abandoned, which is a division of Ser. No. 436,382, Nov. 13, 1989, Pat. No. 5,120,000, which is a continuation-in-part of Ser. No. 442,440, Sep. 22, 1989, Pat. No. 5,177,000, which is a continuation of Ser. No. 48,444, May 11, 1987, abandoned, which is a continuation-in-part of Ser. No. 699,824, Feb. 8, 1985, Pat. No. 4,665,054. This application Mar. 7, 1995, Ser. No. 401,648

Int. Cl.[6] A61K *38/16;38/00;* **C07K** *5/00*

U.S. Cl. 514—6 **16 Claims**

1. A method for stimulating the growth of hair on a warm-blooded animal, comprising administering topically or by injection to the animal a stimulatory effective amount of glycyl-L-histidyl-L-lysine:copper(II).

5,550,184

HYDROLYZED SILANE EMULSIONS AND THEIR USE AS SURFACE COATINGS

Robert A. Halling, Wilmington, Del., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Filed Mar. 4, 1994, Ser. No. 206,779

Int. Cl.[6] C08J *3/03;3/07;* **C09D** *183/06*

U.S. Cl. 524—837 **10 Claims**

1. A reactive aqueous emulsion comprising: (a) an alkoxysilane compound emulsified in water; wherein said alkoxysilane compound is a fluorocarbon silane represented by the formula:

$$R_f(CH_2)_pSi(O-CH_2CH_2)_nOR')_3$$

wherein R_f is a perfluoroalkyl radical of 3 to 18 carbon atoms; R's are the same or different alkyl radicals of 1 to 3 carbon atoms; p=2 to 4; and n=2 to 10 and (b) an effective amount of an emulsifier of sufficiently high HLB value to simultaneously retain said alkoxysilane compound in a hydrolyzed state and inhibit the resulting hydrolyzed alkoxysilane compound from self-condensation.

5,550,185

SILICONE RUBBER COMPOSITION

Yoshio Inoue; Masaharu Takahashi; Susumu Sekiguchi, and Minoru Igarashi, all of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed May 10, 1994, Ser. No. 240,530

Claims priority, application Japan, May 11, 1993, 5-132814

Int. Cl.[6] C08L *83/04;* C08G *77/06*

U.S. Cl. 524—847 **9 Claims**

1. A silicone rubber composition, comprising

(A) a chain-extended organopolysiloxane containing low molecular weight cyclic siloxane having a degree of polymerization of 3 to 25 in an amount of 5,000. ppm or less, obtained by condensation polymerization by mixing and heating an organopolysiloxane having a silanol group at both ends of the molecular chain represented by formula (1):

$$HO(SiO)_nH \quad (1)$$

wherein R^1 and R^2, which are the same or different, each represent an unsubstituted monovalent hydrocarbon group or monovalent hydrocarbon group substituted with halogen or cyano and n is an integer of 2 to 3,000, with at least one member selected from the group consisting of a silane and a siloxane each having a total of two hydrolyzable groups in the molecule,

(B) a finely divided silica, and

(C) a curing agent.

5,550,186

PARTICLE SIZING

James E. Cantrill, Acton, and Thomas R. Doyle, Leominster; both of Mass., assignors to Novacor Chemicals (International) S.A., Fribourg, Switzerland

Continuation of Ser. No. 94,381, Jul. 19, 1993, abandoned. This application Apr. 17, 1995, Ser. No. 424,597

The portion of the term of this patent subsequent to Apr. 17, 2015, has been disclaimed.

Int. Cl.[6] C08F *279/02;287/00*

U.S. Cl. 525—52 **41 Claims**

1. A process to decrease the volume average diameter of the particle distribution of a dispersed rubber-like composite phase in a particulated syrup consisting essentially of a discontinuous rubber-like composite phase and a continuous resin phase consisting essentially of:

(i) from 99 to 80 weight % of a resin phase selected from the group consisting of:

(a) homopolymers of C_{8-12} vinyl aromatic monomers which are unsubstituted or substituted by a C_{1-4} alkyl radical;

(b) copolymers consisting essentially of:

(1) from 50 to 90 weight % of one or more C_{8-12} vinyl aromatic monomers which are unsubstituted by a C_{1-4} alkyl radical; and

(2) from 10 to 50 weight % of one or more monomers selected from the group consisting of C_{1-8} alkyl esters of acrylic or methacrylic acid, acrylonitrile, methacrylonitrile, and maleic anhydride; and

(ii) from 1 to 20 weight % of rubber selected from the group consisting of:

(a) co- or homopolymers of C_{4-6} conjugated diolefins;

(b) random, block, and tapered copolymers comprising from 10 to 80 weight % of one or more C_{8-12} vinyl aromatic monomers which are unsubstituted or substituted by a C_{1-4} alkyl radical; and from 20 to 90 weight % of one or more C_{6-8} conjugated diolefins; and

(c) copolymers comprising from 5 to 50 weight % of acrylonitrile or methacrylonitrile and from 50 to 95 weight % of one or more C_{4-6} conjugated diolefins,

which has been polymerized to a conversion from 5 to 75% conversion comprising subjecting at least a portion of said syrup to a relatively uniform controlled shear field from 2 to 2,000 sec^{-1} by flowing said portion of said syrup through a device comprising:

(i) a chamber having a circular cross section perpendicular to its longitudinal axis, at least one input port and at least one output port and a ratio of length to diameter from 0.5:1 to 3:1;

(ii) a cylinder within and occupying substantially the volume of said chamber said cylinder having a circular cross section perpendicular to its longitudinal axis, a surface closely conforming to the internal surface of the chamber except for a closely controlled clearance between the internal surface of the chamber and the external surface of the cylinder defined by the ratio of the radius of the chamber to the radius of the cylinder being from 0.993 to 0.875; and

(iii) means for rotating at least one of said cylinder and said chamber relative to each other,

for a time to cause less than 2% conversion of said syrup and reduce the volume average diameter of the dispersed rubber-like composite by 20% to a final volume average diameter from 0.01 to 15 microns.

5,550,187

METHOD OF PREPARING CROSSLINKED BIOMATERIAL COMPOSITIONS FOR USE IN TISSUE AUGMENTATION

Woonza M. Rhee, Palo Alto; Richard A. Berg, Los Altos; Joel S. Rosenbaltt, Palo Alto; Jacqueline A. Tefft, Redwood City, and Larry J. Braga, Fremont, all of Calif., assignors to Collagen Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 236,769, May 2, 1994, which is a continuation-in-part of Ser. No. 198,128, Feb. 17, 1994, Pat. No. 5,413,791, which is a division of Ser. No. 922,541, Jul. 12, 1994, Pat. No. 5,328,955, which is a continuation-in-part of Ser. No. 433,441, Nov. 10, 1992, Pat. No. 5,162,430, which is a continuation-in-part of Ser. No. 274,071, Nov. 21, 1988, abandoned. This application Aug. 8, 1994, Ser. No. 287,549

Int. Cl.[6] C08G *63/49;63/91*

U.S. Cl. 525—54.1 **14 Claims**

1. A method of preparing a formed implant comprising a crosslinked biomaterial composition comprising the steps of:

providing a device for extruding a biocompatible polymer and a device for extruding a sterile, dry crosslinking agent;

mixing the biocompatible polymer and the crosslinking agent to initiate crosslinking between the biocompatible polymer and the crosslinking agent;

extruding the biocompatible polymer and the crosslinking agent into a mold having a desired size and shape; and

allowing the biocompatible polymer and the crosslinking agent to crosslink within the mold to produce a formed implant having a desired size and shape.

5,550,188

POLYMER CONJUGATES OPHTHALMIC DEVICES COMPRISING COLLAGEN-POLYMER CONJUGATES

Woonza Rhee, Palo Alto; Donald G. Wallace, Menlo Park, both of Calif.; Alan S. Michaels, Boston, Mass.; Ramon A. Burns, Jr., Fremont, Calif.; Louis Fries, Los Altos, Calif.; Frank DeLustro, Belmont, Calif., and Hanne Bentz, Newark, Calif., assignors to Collagen Corporation, Palo Alto, Calif.

Division of Ser. No. 368,874, Jan. 5, 1995, Pat. No. 5,446,051, which is a division of Ser. No. 198,128, Feb. 17, 1994, Pat. No. 5,413,791, which is a division of Ser. No. 922,541, Jul. 30, 1992, Pat. No. 5,328,955, which is a continuation-in-part of Ser. No. 433,441, Nov. 14, 1989, Pat. No. 5,162,430, which is a continuation-in-part of Ser. No. 274,071, Nov. 21, 1988, abandoned. This application Jun. 7, 1995, Ser. No. 478,510

Int. Cl.[6] G02C *7/04;* A61F *2/00*

U.S. Cl. 525—54.1 **10 Claims**

1. An ophthalmic device comprising a conjugate comprising nonfibrillar collagen chemically conjugated by an ether linkage to a synthetic hydrophilic polymer.

5,550,189

MODIFIED POLYSACCHARIDES HAVING IMPROVED ABSORBENT PROPERTIES AND PROCESS FOR THE PREPARATION THEREOF

Jian Qin; James R. Gross, both of Appleton; William J. Mui, Neenah; Xin Ning, Appleton; Wen Z. Schroeder, Appleton, and Tong Sun, Neenah, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 870,529, Apr. 17, 1992, abandoned. This application Oct. 29, 1993, Ser. No. 145,453

Int. Cl.[6] C08F *8/00*

U.S. Cl. 525—54.3 **68 Claims**

1. A method for producing a water-swellable, water-insoluble carboxyalkyl polysaccharide, the method comprising the following steps:

forming a homogeneous mixture comprising a water-soluble carboxyalkyl polysaccharide, water, and a crosslinking agent, wherein the water-soluble carboxyalkyl polysaccharide dissolves into the water;

recovering said carboxyalkyl polysaccharide and said crosslinking agent from said mixture; and

heat-treating said recovered carboxyalkyl polysaccharide and said crosslinking agent at a temperature above about 50° C. for a time effective to crosslink said carboxyalkyl polysaccharide to render said carboxyalkyl polysaccharide water swellable and water insoluble, wherein the water-swellable, water-insoluble carboxyalkyl polysaccharide exhibits an initial Absorbency Under Load value of at least 17 and retains at least about 50 percent of the initial Absorbency Under Load value after aging for about 60 days at about 24° C. and at least about 30 percent relative humidity.

5,550,190

THERMOPLASTIC ELASTOMER COMPOSITION

Ko Hasegawa; Toshio Teramoto, both of Yokkaichi; Tatsuo Nakajima, Iwata, and Takeyoshi Konomoto, Kakegawa, all of, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, and NTN Corporation, Osaka, both of, Japan

Filed Mar. 27, 1992, Ser. No. 858,656

Claims priority, application Japan, Mar. 27, 1991, 03-087928

Int. Cl.[6] C08L *67/02*

U.S. Cl. 525—92 A **19 Claims**

1. A thermoplastic elastomer composition obtained by dynamically crosslinking (A) 55–85% by weight of a thermoplastic polyester elastomer and (B) 45–15% by weight of at least one rubber during kneading, wherein said at least one rubber is selected from the group consising of halogen-free diene rubbers and hydrogenation products thereof, epichlorohydrin rubbers, silicone rubbers, and olefin rubbers selected from ethylene-propylene copolymer rubber and ethylene-propylene-diene terpolymer rubber, and wherein said thermoplastic elastomer composition has a melt flow rate of 10–100 g/10 minutes as measured at 230° C. under a load of 10 kg.

5,550,191

CATALYST FOR REACTIVE HOT MELT ADHESIVES

Ju M. Hung, Yardley, Pa., and Malcolm Graham, Bushey, United Kingdom, assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Continuation of Ser. No. 200,131, Feb. 22, 1994, abandoned. This application Apr. 25, 1995, Ser. No. 428,594

Int. Cl.[6] C09J *175/04;175/14*

U.S. Cl. 525—92 C **12 Claims**

1. A catalyzed polyurethane reactive hot melt adhesive comprising:

a) a reactive polyurethane adhesive and

b) 0.05 to 0.15% by weight of 2,2'dimorpholinoethyl ether or di(2,6-dimethylmorpholinoethyl)ether catalyst.

5,550,192

DYEABLE POLYOLEFIN COMPOSITIONS AND DYEING POLYOLEFIN COMPOSITIONS

Paresh J. Sheth, Sugarland; Venkatramana Chandrashekar, League City, and Roger R. Kolm, The Woodlands, all of Tex., assignors to Lyondell Petrochemical Company, Houston, Tex.

Continuation-in-part of Ser. No. 254,974, Jun. 7, 1994, abandoned, which is a continuation-in-part of Ser. No. 154,682, Nov. 18, 1993, Pat. No. 5,468,259, which is a continuation-in-part of Ser. No. 987,010, Dec. 7, 1992, abandoned. This application Feb. 3, 1995, Ser. No. 384,716

Int. Cl.[6] D06P *3/79;* D01F *6/46;6/52;* C08L *23/12*

U.S. Cl. 525—194 **45 Claims**

1. A process for dyeing fibers based on a polypropylene, comprising:

(a) forming into a fiber a composition of about 98 to 70% by weight of a polypropylene and an ethylene copolymer comprising about 70 to 82% by weight ethylene and about 30 to 18% by weight of an alkyl acrylate wherein the alkyl has one to four carbon atoms; said alkyl acrylate present in the composition in an amount between 0.2 to 3.0% by weight of the sum of the polypropylene and ethylene copolymer; and the ethylene from said ethylene copolymer present in the composition in an amount less than about 10% by weight of the sum of the polypropylene and ethylene copolymer;

(b) exposing the fiber to a disperse dye.

5,550,193

MELT FRACTURE ELIMINATION IN FILM PRODUCTION

Ramen Chiu, Marysville, Mich.; Joseph W. Taylor, Halton Hills, Canada; David L. Cooke, Calgary, Canada; Shivendra K. Goyal, Calgary, Canada, and Robert E. Oswin, Calgary, Canada, assignors to Novacor Chemicals Ltd., Calgary, Canada

Filed Dec. 7, 1994, Ser. No. 350,630

Int. Cl.[6] C08L *27/12;71/02;23/04;23/10*

U.S. Cl. 525—199 **16 Claims**

1. An extrudable composition consisting essentially of:

(i) a predominant amount of an olefin polymer comprising at least 85 weight % of one or more C_{2-3} alpha olefins and up to 15 weight % of one or more C_{4-8} olefins;

(ii) from 0.01 to 1 weight % of a fluoropolymer having an atomic ratio of fluorine to carbon of at least 1:2;

(iii) from 0.01 to 1 weight % of a blend of dimethyl succinate and 4-hydroxy -2,2,6,6-tetramethyl-1-piperidine ethanol in a

weight ratio from 0.1 to 1 to 1 to 0.1 to provide a weight ratio of component (iii) to component (ii) from 3:1 to 7:1;

(iv) from 0.01 to 1 weight % of a C_{2-6} alkylene glycol or a C_{1-4} alkyl ether thereof, having a weight average molecular weight of less than 20,000 or mixtures thereof;

(v) from 25 to 500 ppm based upon the total composition of a metal oxide selected from the group consisting of ZnO and hydrotalcite; and

(vi) from 0.01 to 2 weight % of a hindered phenol antioxidant.

5,550,194

PROCESS FOR MAKING GRAFT BOOK COPOLYMERS BY GRAFTING ANIONIC POLYMER CHAINS ONTO FUNCTIONALIZED POLYOLEFINS

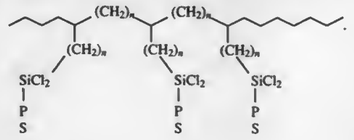
Ronald J. Hoxmeier; Robert C. Job, and Bridget A. Spence, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 31, 1995, Ser. No. 381,453
Int. Cl.[6] C08F *287/00*
U.S. Cl. 525—250 **2 Claims**

2. A saturated graft block copolymer having a polymer backbone comprised of a copolymer of an α-olefin and a 1-alkenyl halosilane monomer of the formula

$$CH_2{=}CH{-}(CH_2)_n{-}SiX_3$$

where n≧0, X is halogen, R, or H, or combinations thereof, and R is alkyl or aryl, and at least one X must be halogen, which has been reacted with anionically polymerized living polymer chains such that at least one living polymer chain replaces at least one X group in the halosilane to form a saturated graft block copolymer with the following formula where PS represents polystyrene blocks.



5,550,195

GRAFT COPOLYMERS HAVING ANHYDRIDE FUNCTIONALITY

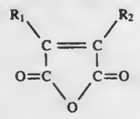
Rodney M. Harris, Chicago; Mohamad D. Shalati, Homewood, and Joyce A. Bibeau, Richton Park, all of Ill., assignors to The Sherwin-Williams Company, Cleveland, Ohio

Continuation of Ser. No. 176,629, Jan. 3, 1994, Pat. No. 5,492,976. This application Jan. 5, 1996, Ser. No. 583,580
Int. Cl.[6] C08F *267/04;* **B32B** *27/00*
U.S. Cl. 525—285 **10 Claims**

1. An anhydride-functional polymer obtained by reacting under graft copolymerization reaction conditions,

(A) an unsaturated polymer which was obtained by reacting under ene reaction conditions a mixture of reactants comprising:

(i) 20 to 70 percent by weight of an unsaturated anhydride having the structure:



wherein R_1 and R_2 are each independently hydrogen, alkyl of 1 to about 6 carbons, or alkoxy of 1 to about 6 carbons, or a halogen; and

(ii) 30 to 80 percent by weight of at least one polyolefin having at least two carbon-carbon double bonds in the polyolefin backbone and having an average of at least three carbon atoms in the polyolefin backbone between the carbon-carbon double bonds; and

(B) at least one ethylenically unsaturated monomer which is copolymerizable with the unsaturated polymer.

5,550,196

LOW VISCOSITY ADHESIVE COMPOSITIONS CONTAINING ASYMMETRIC RADIAL POLYMERS

Bridget A. Spence; Jeffrey G. Southwick; Steven S. Chin, and Ronald J. Hoxmeier, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 9, 1994, Ser. No. 336,458
Int. Cl.[6] C08F *297/04;* **C08G** *81/02*
U.S. Cl. 525—314 **4 Claims**

1. A low viscosity adhesive composition which comprises:

(a) an asymmetric radial block copolymer of a vinyl aromatic hydrocarbon and at least one conjugated diene having from 3 to 6 polymer arms, which:

(i) contains from 40 to 80% by weight of polyvinyl aromatic hydrocarbon block/polydiene block copolymer arms and the balance polydiene homopolymer arms,

(ii) has vinyl aromatic hydrocarbon blocks with block molecular weights of from 8000 to 30,000,

(iii) has conjugated diene blocks in the copolymer arms with a molecular weight of at least 6000, and

(iv) has a polyvinyl aromatic hydrocarbon content of from 10 to 40% by weight; and

(b) from 20 to 400 parts per hundred parts of polymer of a tackifying resin.

5,550,197

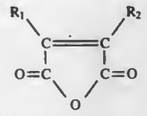
HYDROGENATED POLYMERS HAVING ANHYDRIDE FUNCTIONALITY

Richard S. Valpey, III, Matteson; Mohamad D. Shalati, Homewood; Rodney M. Harris, and Thomas W. Yokoyama, both of Chicago, all of Ill., assignors to The Sherwin-Williams Company, Cleveland, Ohio

Continuation of Ser. No. 176,633, Jan. 3, 1994, Pat. No. 5,492,976. This application Oct. 20, 1995, Ser. No. 546,290
Int. Cl.[6] C08F *20/08;* **B32B** *27/00*
U.S. Cl. 525—327.4 **11 Claims**

1. An anhydride-functional polymer obtained by hydrogenating at least 1% of the carbon-carbon double bonds of an unsaturated polymer which was obtained by reacting under ene reaction conditions a mixture of reactants comprising:

(i) 20 to 70 percent by weight of an unsaturated anhydride having the structure:



wherein R_1 and R_2 are each independently hydrogen, alkyl of 1 to about 6 carbons, or alkoxy of 1 to about 6 carbons, or a halogen; and

(ii) 30 to 80 percent by weight of at least one polyolefin having at least two carbon-carbon double bonds in the polyolefin backbone and having an average of at least three carbon atoms in the polyolefin backbone between the carbon-carbon double bonds.

5,550,198

POLYURETHANE RESIN COMPOSITION

Toshiyuki Oshima, Ibaraki; Hideo Ishibashi, Neyagawa; Hiromasa Minamino, Yao; Satoshi Yamamoto, Hirakata; Takaharu Izumo, Shimamotocho, and Mitsuharu Kaneko, Hiroshima, all of, Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Division of Ser. No. 190,505, Feb. 2, 1994, abandoned. This application Dec. 15, 1994, Ser. No. 356,540
Claims priority, application Japan, Feb. 2, 1993, 5-37519; Sep. 22, 1993, 5-259365
Int. Cl.[6] C08L *75/02;* **C08G** *18/50*
U.S. Cl. 525—404 **13 Claims**

1. In a moldable polyurea resin composition comprising:

(a) a polyoxyalkylene polyamine;

(b) an aromatic polyamine and/or xylylenediamine;

at least one of said polyoxyalkylene polyamine (a) and said aromatic polyamine and/or xylylenediamine (b) having been modified either wholly or partly to have a plurality of secondary amino groups by a Michael reaction of the primary amino group thereof with an unsaturated compound of the formula $CH_2{=}C(R){-}Y$, wherein R is a hydrogen atom or a methyl group and Y is an electron attracting group; and

(c) a polyisocyanate compound; the improvement wherein the polyurea resin composition further contains at least 0.5% but less than 5.0% by weight of a polyoxyalkylene mono-C_4–C_{18} alkyl ether having a weigh average molecular weight from 800 to 10,000 to enhance the initial strength and mold release characteristic of articles molded therefrom,

and wherein the polyoxyalkylene chain of the polyoxyalkylene mono-C_4–C_{18} alkyl ether contains from 30 to 80 mole % of ethylene oxide units and the balance propylene oxide units in a random or block copolymer form.

5,550,199

DIEPOXIDE CROSSLINKED/ESTERIFIED POLYIMIDE-ALIPHATIC POLYESTER COPOLYMERS

Win-Sow W. Ho; Guido Sartori, both of Annandale; Warren A. Thaler, Flemington, and David C. Dalrymple, Bloomsbury, all of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation of Ser. No. 348,426, Dec. 2, 1994, abandoned. This application Nov. 21, 1995, Ser. No. 560,243
Int. Cl.[6] C08G *59/22;73/10*
U.S. Cl. 525—423 **9 Claims**

1. A copolymer composition of matter comprising diepoxide crosslinked/esterified polyimide-aliphatic polyester copolymers comprising hard polyimide segments having a glass-transition temperature (Tg) higher than 130° C. and soft polyester segments having a Tg lower than that of the hard segments, wherein said copolymer is cross-linked through the carboxylic acid group adjacent to the ester.

5,550,200

METHOD OF PRODUCING CONJUGATED DIENE-AROMATIC VINYL HYDROCARBON COPOLYMERS

Tadashi Shibata, and Ryota Fujio, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Continuation of Ser. No. 172,826, Dec. 27, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 478,526
Claims priority, application Japan, Dec. 24, 1992, 4-344660; Nov. 29, 1993, 5-297874
Int. Cl.[6] C08F *4/46;4/48;4/56*
U.S. Cl. 526—174 **15 Claims**

1. A process for preparing a copolymer of a conjugated diene monomer and an aromatic vinyl hydrocarbon monomer, comprising the step of copolymerizing the conjugated diene monomer and aromatic vinyl hydrocarbon monomer in a hydrocarbon solvent using an organolithium initiator compound, the copolymerization being conducted in the presence of: (a) an organopotassium compound having a formula selected from the group consisting of R^1K, R^2OK, R^3COOK and R^4R^5NK, wherein R^1, R^2, R^3, R^4 and R^5 each represents an alkyl group having 1 to 20 carbon atoms, a cycloalkyl group having 3 to 20 carbon atoms, an alkenyl group having 2 to 20 carbon atoms, an aryl group having 5 to 20 carbon atoms, a phenyl group or partially substituted derivatives thereof; and (b) an oxolanyl alkane.

5,550,201

AIR ACTIVATABLE POLYMERIZABLE COMPOSITIONS CONTAINING TETRAZOLES

Brendan J. Kneafsey, Co. Dublin, and John Guthrie, Co. Kildare, both of, Ireland, assignors to Loctite (Ireland) Limited, Ireland

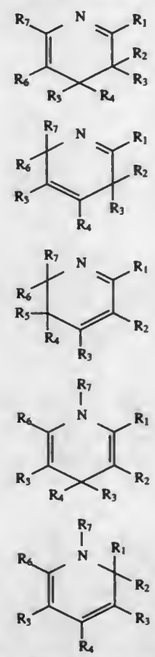
Filed Dec. 19, 1995, Ser. No. 574,524
Claims priority, application Ireland, Dec. 22, 1994, 941002
Int. Cl.[6] C08F *4/00*
U.S. Cl. 526—204 **9 Claims**

1. A one-component air-activatable polymerisable composition comprising:

(a) a free-radically polymerisable monomer, and

an activator system for effective polymerisation of the free-radically polymerisable monomer, said activator system comprising:

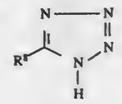
(b) an autoxidisable compound which is a dihydropyridine having a general formula selected from II:



where R_1 to R_7, which may be the same or different, are independently selected from hydrogen, hydrocarbyl and heterohydrocarbyl groups, silyl groups, and substituted derivatives of any of the foregoing, and any two of the groups R_1 to R_7 may together form a mono- or polycyclic ring structure, which may optionally be a fused ring structure, and which in turn may be substituted, provided that none of the groups R_1 to R_7 is a group which is known to interfere with polymeri-

sation, and that in the case of 1,4-dihydropyridines of formula II (iv) the groups R_2 and R_5 at the 3- and 5-positions are not both electron-withdrawing groups,

(c) a tetrazole having the formula III



wherein R^8 is selected from hydrogen and hydrocarbyl groups, and

(d) a soluble ionic salt,

provided that the composition does not contain a peroxide, or a peroxide precursor which produces peroxide in the absence of air or any ingredient which is a significant source of radicals in the absence of air, the composition having been prepared under anaerobic conditions and stored under anaerobic conditions.

5,550,202

COATING RESIN AND ANTIFOULING COATING COMPOSITION

Seiji Tai, Hitachi; Hisanori Takusari, Nakamachi; Hiroyuki Tanaka, Hitachi; Isamu Moribe, Tokushima-ken, and Chie Ohdoi, Kanazawa, all of, Japan, assignors to Hitachi Chemical Co., Ltd., Tokyo, Japan

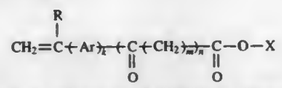
Continuation of Ser. No. 996,134, Dec. 23, 1992. This application Apr. 11, 1994, Ser. No. 225,620

Claims priority, application Japan, Dec. 25, 1991, 3-343331; Feb. 26, 1992, 4-039355; Feb. 28, 1992, 4-043085; Mar. 3, 1992, 4-045009; Mar. 3, 1992, 4-045010; Mar. 3, 1992, 4-045011; May 11, 1992, 4-117362; Jun. 25, 1992, 4-167456; Jul. 2, 1992, 4-175253; Nov. 2, 1992, 4-294293

Int. Cl.[6] C08F *12/30;28/06*

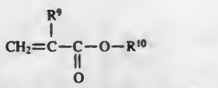
U.S. Cl. 526—286 **2 Claims**

1. A coating resin comprising a polymer obtained by polymerizing an unsaturated monomer of the following formula (I) alone or together with one or more other unsaturated monomers copolymerizable therewith:



(I)

wherein R is a hydrogen atom or a straight or branched alkyl group having 1–4 carbon atoms; Ar is a benzene ring or a naphthalene ring, k, m and n represent independently a number of 0 or 1; and X is $—R^2—(—SO_2\ R^3)_a$ wherein R^2 is a C_{1-6} straight, branched or cyclic hydrocarbon group connecting O and SO_2R^3; a is an integer of 1 to 3 indicating the number of SO_2R^3 groups bonded to R^2; R^3 represents, independently, a straight, branched or cyclic alkyl group, having 1–22 carbon atoms, an aryl group having 6–10 carbon atoms, which may have a substituent selected from the group consisting of methoxy, cyano, nitro, sulfonyl and acyl, or an aralkyl group having 7–18 carbon atoms, which may have a substituent selected from the group consisting of methoxy, cyano, nitro, sulfonyl and acyl, when a is 2 or 3, R^3's may be the hydrocarbon groups forming a cyclic structure with each other; said other unsaturated monomer copolymerizable with the unsaturated monomer of the formula (I) being a monomer represented by the formula:



(II)

wherein R^9 is a hydrogen atom or CH_3, and R^{10} is a branched or alicyclic alkyl, aryl or aralkyl group having 3 or more carbon atoms; an unsaturated monomer having a hydrophilic group selected from the group consisting of a monomer having the formula:

(III)

wherein R^{11} is a hydrogen atom or CH_3 group; x is an integer of 1 to 6; y is an integer of 1 to 10, and R^{12} is a hydrogen atom or a straight, branched or cyclic alkyl, aryl or aralkyl group and an unsaturated acid anhydride selected from the group consisting of maleic anhydride, methylmaleic anhydride, dimethylmaleic anhydride, ethylmaleic anhydride, phenylmaleic anhydride, chloromaleic anhydride, itaconic anhydride, 1-methylitaconic anhydride, 1,2-dimethylitaconic anhydride, 1-phenylitaconic anhydride, 1-chloroitaconic anhydride, endomethylenetetrahydrophthalic anhydride, chlorendic anhydride and tetrahydrophthalic anhydride; or another monomer selected from the group consisting of acrylic methyl ester, acrylic ethyl ester, acrylic n-propyl ester, acrylic n-butyl ester, methacrylic methyl ester, methacrylic ethyl ester, methacrylic n-propyl ester, methacrylic n-butyl ester, styrene, β-methylstyrene, p-butylstyrene, butadiene, isopropene, chloroprene, vinyl chloride, vinyl acetate, acrylonitrile, methacrylonitrile, acrylic acid, methacrylic acid, glycidyl acrylate, glycidyl methacrylate and N-vinyl pyrrolidone.

5,550,203

FUNCTIONALIZED AMINE INITIATORS FOR ANIONIC POLYMERIZATION

John F. Engel, Belmont; Conrad W. Kamienski, Gastonia; James A. Schwindeman, Lincolnton; Randy W. Hall, Kings Mountain; Robert C. Morrison, Gastonia, and B. Troy Dover, Kings Mountain, all of N.C., assignors to FMC Corporation, Philadelphia, Pa.

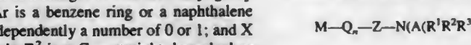
Division of Ser. No. 354,998, Dec. 13, 1994. This application Jun. 2, 1995, Ser. No. 460,305

Int. Cl.[6] C08F *36/04;36/06;36/08;12/02*

U.S. Cl. 526—336 **4 Claims**

1. A functionalized polymer produced by a process comprising the steps of:

a) initiating polymerization of a conjugated polyene hydrocarbon having 4 to 30 carbon atoms or a vinyl-substituted aromatic hydrocarbon at a temperature of 10° C. to 70° C. with initiators having the formulas:



or



wherein M is an alkali metal selected from the group consisting of lithium, sodium and potassium, Q is a saturated or unsaturated hydrocarbyl group selected from the group consisting of C_4 to C_{10} alkene hydrocarbons and C_8 to C_{19} alkanyl substituted aromatic hydrocarbons; Z is a hydrocarbon group which contains 3–25 carbon atoms; A is an element selected from the group consisting of carbon and silicon and R^1, R^2, and R^3 are independently selected from hydrogen, alkyl, substituted alkyl, cycloalkyl, aryl or substituted aryl groups, m is an integer from 1 to 7, and n is an integer from 1 to 5; and

b) recovering a linear or branched polymer having one or more terminal functional groups.

5,550,204

ETHER AND ESTER OLIGOMERS WITH MULTIDIMENSIONAL MORPHOLOGY

Hyman R. Lubowitz, Rolling Hills Estates, Calif., and Clyde H. Sheppard, Bellevue, Wash., assignors to The Boeing Company, Seattle, Wash.

Division of Ser. No. 167,656, Mar. 4, 1988, which is a continuation-in-part of Ser. No. 810,817, Dec. 17, 1985, abandoned, which is a continuation-in-part of Ser. No. 726,258, Apr. 23, 1985, abandoned, which is a continuation-in-part of Ser. No. 519,394, Aug. 1, 1983, abandoned, Ser. No. 673,229, Nov. 20, 1984, Pat. No. 4,584,364, Ser. No. 536,350, Sep. 27, 1983, abandoned, Ser. No. 505,348, Jun. 17, 1983, Pat. No. 4,536,559, and Ser. No. 651,826, Sep. 18, 1984, abandoned, which is a continuation-in-part of Ser. No. 519,394, Ser. No. 536,350, and Ser. No. 505,348, said Ser. No. 673,229is a continuation of Ser. No. 576,795, Feb. 6, 1984, abandoned, which is a continuation-in-part of Ser. No. 321,119, Nov. 13, 1981, abandoned, said Ser. No. 536,350is a continuation-in-part of Ser. No. 519,394. This application Jun. 30, 1994, Ser. No. 269,297

Int. Cl.[6] C08G *8/02;63/02;63/42;* **C08L** *67/00*

U.S. Cl. 528—125 **14 Claims**

1. An oligomer useful in forming advanced composites, comprising:

a cyclic central hub having at least three substantially identical radiating chains linked about the hub, each chain including at least one image selected from the group consisting of —O—, —CO—, —S—, $—SO_2—$, $—(CH_3)_2C—$, and $—(CF_3)_2C—$, each chain including a terminal, unsaturated hydrocarbon, crosslinking unit that can be chemically or thermally activated in the oligomer to form a crosslinked composite.

5,550,205

COPOLYCARBONATES AND MANUFACTURING METHOD FOR THEM

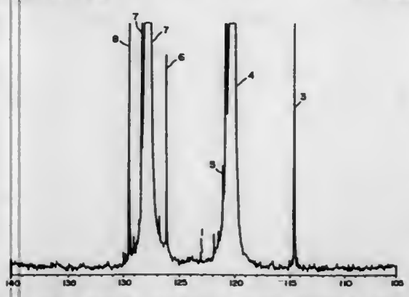
Takeshi Sakashita, Moka; Tomoaki Shimoda, Iwakuni, and Takashi Nagai, Moka, all of, Japan, assignors to General Electric Company, Pittsfield, Mass.

Filed Nov. 21, 1994, Ser. No. 342,987

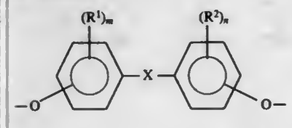
Claims priority, application Japan, Nov. 26, 1993, 5-319281

Int. Cl.[6] C08G *63/00*

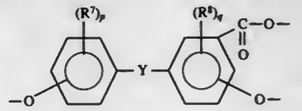
U.S. Cl. 528—176 **11 Claims**



1. A copolycarbonate obtained by copolymerizing at least two aromatic dihydroxy compounds and a compound capable of introducing carbonate links wherein a component derived from one of the aromatic dihydroxy compounds is a constituent unit of the following formula [I]:



in this formula, X is $—(R^3—)C(—R^4)—$, $—C(=R^5)—$, —O—, —S—, —SO—, or $—SO_2—$ where R^3 and R^4 are monovalent hydrocarbon groups which may be substituted with hydrogen atoms or halogens, and R^5 is a bivalent hydrocarbon group which may be substituted with halogen; R^1 and R^2, which may be identical or different, are each a hydrocarbon group with from 1 to 10 carbon atoms which may be substituted with halogen or are a halogen atom; and m and n are independently integers ranging from 0 to 4 and representing the number of substituents and another component derived from one of the aromatic dihydroxy compounds is a constituent unit of the following formula [II]:



in this formula, Y is $—(R^{3'}—)C(—R^{4'})—$, $—C(=R^{5'})—$, —O—, —S—, —SO—, or $—SO_2—$ where $R^{3'}$ and $R^{4'}$ are monovalent hydrocarbon groups which may be substituted with hydrogen atoms or halogen, and $R^{5'}$ is a bivalent hydrocarbon group which may be substituted with halogen; R^7 and R^8, which may be identical or different, are each a hydrocarbon group with 1 to 10 carbon atoms which may be substituted with halogen or are a halogen atom; and p and q represent the number of substituents, with p being an integer ranging from 0 to 4 and q being an integer ranging from 0 to 3.

5,550,206

POLYAMINES CONTAINING UREA GROUPS

Rainer Gras, Bochum, and Elmar Wolf, Recklinghausen, both of, Germany, assignors to Hneis Aktiengesellschaft, Marl, Germany

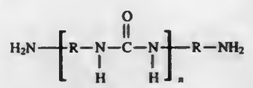
Filed Jun. 7, 1995, Ser. No. 487,532

Claims priority, application Germany, Sep. 14, 1994, 44 32 637.8

Int. Cl.[6] C08G *12/06;14/08*

U.S. Cl. 528—229 **3 Claims**

1. A polyamine containing urea groups represented by the formula:



wherein n is: $2 \leq n \geq 1$; and R is a C_{2-14} alkylene radical or a substituted C_{2-14} alkylene radical with 1–3 CH_3 or C_2H_5 groups, or a C_{2-14} alkylene radical where 1–3 $—CH_2—$ groups are substituted by —NH— or $—NCH_3—$ groups.

5,550,207

LINEAR COPOLYESTER CONTAINING PHOSPHOROUS, PROCEDURE FOR ITS PREPARATION AND ITS USE AS A FLAME-RESISTANT ADDITIVE

Carlo Neri, San Donato Milanese, and Gianluigi Landoni, Milan, both of, Italy, assignors to Enichem Synthesis S.p.A., Palermo, Italy

Continuation of Ser. No. 992,591, Dec. 18, 1992, abandoned. This application May 23, 1994, Ser. No. 247,525

Claims priority, application Italy, Dec. 18, 1991, MI91A3399

Int. Cl.[6] C08G *79/02*

U.S. Cl. 528—287 **9 Claims**

1. A linear copolyester, which is useful as a flame retardant additive for organic polymers, is composed of a polycondensation product of a dicarboxylic aromatic acid with a C_2–C_6 alkylene glycol and with a monomer which, in the chain of the copolyester,

produces units having the formula:



where R_1 is a C_1–C_6 linear, branched or cyclic alkylene group and R_2 is a C_1–C_6 alkyl group or a phenyl group, wherein the copolyester has a phosphorous content of 4.03 to 6% by weight.

5,550,208

POLYCONDENSATION PROCESS

Joel A. Richardson, Naperville; Wassily Poppe, Lombard; Benjamin A. Bolton, and Edward E. Paschke, both of Wheaton, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Division of Ser. No. 280,702, Jul. 26, 1994, Pat. No. 5,480,616, which is a continuation of Ser. No. 970,577, Nov. 3, 1992, abandoned, which is a continuation of Ser. No. 651,475, Feb. 6, 1991, abandoned, which is a continuation of Ser. No. 350,147, May 10, 1989, abandoned, which is a division of Ser. No. 47,905, May 7, 1987, Pat. No. 4,831,108, which is a continuation of Ser. No. 715,609, Mar. 25, 1985, abandoned, which is a continuation-in-part of Ser. No. 640,672, Aug. 13, 1984, abandoned, which is a continuation of Ser. No. 466,904, Feb. 16, 1983, abandoned. This application Feb. 10, 1995, Ser. No. 386,429

Int. Cl.[6] C08G *69/28*

U.S. Cl. 528—335 **9 Claims**

1. A polyamide comprising at least one dicarboxylic acid and at least one diamine, said polyamide prepared by passing a pressurized, essentially liquid phase salt mixture containing said diamine and said dicarboxylic acid at a temperature no greater than the lesser of the decomposition temperature of the mixture or the decomposition temperature of said polyamide through an orifice into a zone of about 0–400 psig pressure to form a dispersion and heating said dispersion to a mean temperature in the range of about 350° F. to about 750° F.

5,550,209

MONODISPERSED POLYMER OR COPOLYMER AND A PREPARATION PROCESS THEREOF

Shohei Inoue, Tokyo-to; Takuzo Aida, and Masaki Akatsuka, both of Kashiwa, all of, Japan, assignors to Daicel Chemical Industries, Ltd., Osaka-fu, Japan

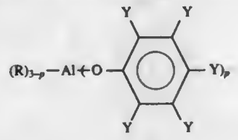
Filed Feb. 28, 1995, Ser. No. 395,889

Claims priority, application Japan, Mar. 4, 1994, 6-060368; Jan. 31, 1995, 7-034424

Int. Cl.[6] C08G *63/84;63/91;64/00*

U.S. Cl. 528—361 **10 Claims**

1. A process for the preparation of any one of a monodispersed lactone polymer, a monodispersed carbonate polymer, and a monodispersed lactone-carbonate copolymer which comprises: adding a ring-opening initiator to a lactone monomer, a cyclic carbonate monomer, or a lacteone monomer and a cyclic carbonate monomer in a ring-opening addition reaction in the presence of an organic aluminum-based Lewis acid represented by general formula (I),



(I)

wherein R is an alkyl group having a carbon number ranging from 1 to 4, Y is independently selected from a hydrogen, an alkyl group, an aryl group, a halogen, a trimethylsilyl group and a trimethylgelmil group, and p is any one of 1, 2, and 3.

5,550,210

Patent Not Issued For This Number

5,550,211

METHOD FOR REMOVING RESIDUAL ADDITIVES FROM ELASTOMERIC ARTICLES

Michelle A. DeCrosta, Bethlehem, Pa., and Indradat Jagnandan, West Orange, N.J., assignors to Schering Corporation, Kenilworth, N.J.

PCT No. PCT/US92/10742, § 371 Date Jun. 15, 1994, § 102(e) Date Jun. 15, 1994

Continuation-in-part of Ser. No. 810,754, Dec. 18, 1991, abandoned. This PCT application Dec. 17, 1992, Ser. No. 244,849

Int. Cl.[6] C08F *6/28*

U.S. Cl. 528—480 **8 Claims**

1. A cleaned vulcanized elastomeric article made of nitrile rubber wherein prior to cleaning the vulcanized elastomeric article contained phthalate and/or PAH impurities integrated throughout its matrix, wherein the the cleaned vulcanized elastomeric article has a lower phthalate and/or PAH impurity content than a comparable vulcanized elastomeric article cleaned conventionally by refluxing in Freon P11 for 72 hours, wherein the cleaned vulcanized elastomeric article is prepared by contacting the vulcanized elastomer with at least one supercritical fluid until the content of phthalate and/or polynuclear aromatic hydrocarbon (PAH) impurities contained therein is lower than that of a comparable article cleaned conventionally.

5,550,212

ANALOGUES OF HGH-RH(1-29)NH_2 HAVING ANTAGONISTIC ACTIVITY

Marta Zarandi, and Andrew V. Schally, both of Metairie, La., assignors to The Administrators of the Tulane Educational Fund, New Orleans, La.

Filed Dec. 17, 1993, Ser. No. 168,810

Int. Cl.[6] A61K *38/00;* **C07K** *7/10;7/00*

U.S. Cl. 530—324 **17 Claims**

1. A peptide having the formula:

X—R^1—R^2—R^3—R^4—R^5—R^6—Thr—R^8—Ser—Tyr—R^{11}—

R^{12}—Val—Leu—R^{15}—Gln—Leu—Ser—R^{19}—R^{20}—R^{21}—

Leu—Leu—Gln—Asp—Ile—R^{27}—R^{28}—R^{29}

5,550,213

INHIBITORS OF UROKINASE PLASMINOGEN ACTIVATOR

Stephen Anderson, Princeton, and Raymond Ryan, Trenton, both of N.J., assignors to Rutgers, The State University of New Jersey, Piscataway, N.J.

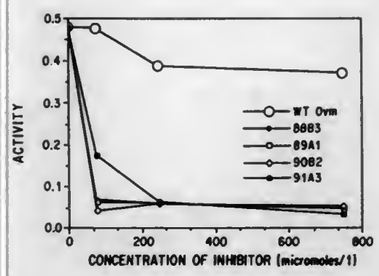
Filed Dec. 27, 1993, Ser. No. 173,102

Int. Cl.[6] C07K *14/00;14/465;* **A61K** *38/00;38/57*

U.S. Cl. 530—324 **16 Claims**

1. A low molecular weight proteinaceous inhibitor of urokinase, wherein said inhibitor is selected from the group consisting of:

(A) an inhibitor comprising an amino acid sequence of: Val-Asp-Cys-Ser-Glu-Tyr-Pro-Lys-Pro-Ala-Cys-Gly-Arg-Thr-Gly-His-



Pro-Leu-Cys-Gly-Ser-Asp-Asn-Lys-Thr-Tyr-Gly-Asn-Lys-Cys-Asn-Phe-Cys-Asn-Ala-Val -Val-Flu-Ser-Asn-Gly-Thr-Leu-Thr-Leu-Ser-His-Phe-Gly-Lys-Cys (SEQ ID NO:7);

(B) an inhibitor comprising an amino acid sequence of: Val-Asp-Cys-Ser-Glu-Tyr-Pro-Lys-Pro-Ala-Cys-Ala-Arg-Met-Ala -Ala-Pro-Leu-Cys-Gly-Ser-Asp-Asn-Lys-Thr-Tyr-Gly-Asn-Lys-Cys -Asn-Phe-Cys-Asn-Ala-Val-Val-Glu-Ser-Asn-Gly-Thr-Leu-Thr-Leu -Ser-His-Phe-Gly-Lys-Cys (SEQ ID NO:8);

(C) an inhibitor comprising an amino acid sequence of: Val-Asp-Cys-Ser-Glu-Tyr-Pro-Lys-Pro-Ala-Cys-Gly-Arg-Val-Val -Gly-Pro-Leu-Cys-Gly-Ser-Asp-Asn-Lys-Thr-Tyr-Gly-Asn-Lys-Cys -Asn-Phe-Cys-Asn-Ala-Val-Val-Glu-Ser-Asn-Gly-Thr-Leu-Thr-Leu -Ser-His-Phe-Gly-Lys-Cys (SEQ ID NO:9); and

(D) an inhibitor comprising an amino acid sequence of: Val-Asp-Cys-Ser-Glu-Tyr-Pro-Lys-Pro-Ala-Cys-Ala-Arg-Ser-Ser -Ala-Pro-Leu-Cys-Gly-Ser-Asp-Asn-Lys-Thr-Tyr-Gly-Asn-Lys-Cys -Asn-Phe-Cys-Asn-Ala-Val-Val-Glu-Ser-Asn-Gly-Thr-Leu-Thr-Leu -Ser-His-Phe-Gly-Lys-Cys (SEQ ID NO:10).

5,550,214

ISOLATED ANTIGENIC ONCOGENE PEPTIDE FRAGMENTS AND USES

Timothy J. Eberlein, Dover; George E. Peoples, Newtonville; Ichiro Yoshino, Brookline, and Peter Goedegebuure, Brighton, all of Mass., assignors to Brigham and Women's Hospital, Boston, Mass.

Filed Feb. 10, 1994, Ser. No. 195,075

Int. Cl.[6] A61K *38/08;* **C07K** *4/12*

U.S. Cl. 530—328 **2 Claims**

1. An isolated peptide consisting of 10 amino acid residues, said isolated peptide having an amine acid sequence consisting of IISAVVGILN, where N is an amine acid selected from the group consisting of L, V, and I.

5,550,215

POLYMER REVERSAL ON SOLID SURFACES

Christopher P. Holmes, 521 Pine Ave., Sunnyvale, Calif. 94086

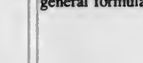
Continuation of Ser. No. 978,940, Nov. 19, 1992, abandoned, which is a continuation-in-part of Ser. No. 796,727, Nov. 22, 1991, Pat. No. 5,242,974. This application Nov. 28, 1994, Ser. No. 351,058

Int. Cl.[6] C07H *1/00;* **C07K** *1/04;* **C08B** *37/00;* **C08F** *283/00*

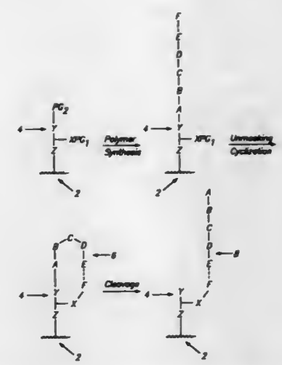
U.S. Cl. 530—334 **16 Claims**

1. A method of synthesizing a polymer on a substrate comprising:

a) on a surface of said substrate attaching a molecule having the general formula



where:



X is a first tether reactive site selected from the group consisting of O, NH, S, CO_2, S—$(CH_2)_n$O and NHCO$(CH_2)_nCO_2$, where n is one to ten,

Y is a second tether reactive site selected from the group consisting of:

1) O, NH, S, CO_2, S—$(CH_2)_n$O, and NHCO$(CH_2)_nCO_2$ functionality which functionality is blocked with a second protective group; and

2) OH, NH_2, SH, CO_2H, S—$(CH_2)_n$OH and NHCO$(CH_2)_nCO_2H$ functionality, where n is one to ten,

T is a tether molecule, and

PG is a first protective group;

wherein the molecule is attached to the surface via a covalent bond between T and the surface;

b) removing any such second protective group employed on the second tether site Y while retaining the first protective group;

(c) coupling a polymer, said polymer having a first polymer reactive site and a second polymer reactive site, to said tether reactive site Y, wherein a bond is formed between said second polymer reactive site and said tether reactive site Y;

(d) removing said first protective group PG;

(e) coupling said first polymer reactive site to said tether at said first tether reactive site X; and

(f) cleaving said bond between Y and the polymer whereby the polarity of the said polymer is reversed

wherein said polymer is a linear, cyclic or branched chain polymer selected from the group consisting of peptides, nucleic acids and polysaccharides.

5,550,216

GELATINASE A INHIBITOR, AND ANALYTICAL REAGENT THEREOF FOR THE DETERMINATION OF GELATINASE A

Kaoru Miyazaki, Kanagawa-ken, Japan, assignor to Oriental Yeast Co., Ltd., Tokyo, Japan

Filed Apr. 25, 1994, Ser. No. 231,940

Claims priority, application Japan, Apr. 26, 1993, 5-120457; Mar. 8, 1994, 6-062129

Int. Cl.[6] C07K *17/00;* **A61K** *38/00;* **G01N** *33/00*

U.S. Cl. 530—395 **7 Claims**

1. A peptide glycosylated peptide having gelatinase A inhibitor activity obtainable from amyloid protein precursor and consisting of amino acid residues 439V through 687K of SEQ ID NO:1.

5,550,217
AZO DYES

Martin Trottmann, Therwil, Switzerland, assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

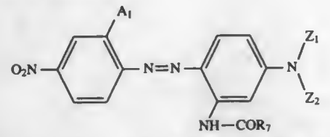
Continuation of Ser. No. 203,857, Feb. 28, 1994, abandoned, which is a continuation of Ser. No. 011,932, Feb. 1, 1993, abandoned. This application Oct. 25, 1994, Ser. No. 328,943

Claims priority, application Switzerland, Feb. 3, 1992, 300/92

Int. Cl.[6] C09B *29/00*

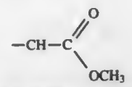
U.S. Cl. 534—732 **5 Claims**

1. A dye of the formula



(1a)

wherein A_1 is chloro or cyano, R_7 is C_1–C_6alkyl, Z_1 is a radical of formula



(4)

and Z_2 is hydrogen or a radical of formula (4).

5,550,218
AZO COMPOUNDS HAVING UNSUBSTITUTED OR SUBSTITUTED 2-PHENOXYCARBONYLETHYL GROUPS

Ruedi Altermatt, Buckten, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

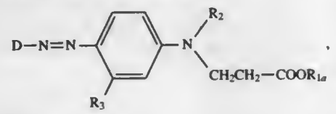
Continuation of Ser. No. 6,018, Jan. 15, 1993, abandoned, which is a continuation-in-part of Ser. No. 728,431, Jul. 11, 1991, abandoned. This application Oct. 6, 1994, Ser. No. 319,834

Claims priority, application Germany, Jul. 11, 1990, 40 22 092.3; Mar. 13, 1991, 41 08 087.4

Int. Cl.[6] C09B *29/085;29/36;31/043;29/46;67/22;* **D06P** *1/18*

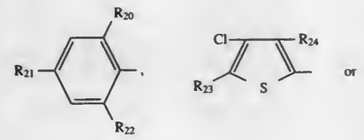
U.S. Cl. 534—852 **22 Claims**

1. A compound of the formula



wherein

D is



wherein

R_{20} is hydrogen, C_{1-4}alkyl, halo, (C_{1-4}alkoxy)carbonyl, cyano or nitro,

R_{21} is halo, C_{1-4}alkyl, nitro, phenylazo or phenylazo the phenyl group of which is substituted by 1 to 4 substituents each of which is independently C_{1-4}alkyl, nitro, halo or C_{1-4}alkoxy,

R_{22} is hydrogen, halo, cyano or (C_{1-4}alkoxy)carbonyl,

R_{23} is formyl, cyano, —CH=N—O—C_{1-4}alkyl or —CH=C(CN)R_{25a}, wherein R_{25a} is cyano or (C_{1-4}alkoxy)carbonyl, and R_{24} is (C_{1-4}alkoxy)carbonyl, nitro or cyano,

R_{1a} is phenyl or phenyl substituted by 1 to 4 substituents each of which is independently halo, C_{1-4}alkyl, C_{1-4}alkoxy, trifluoromethyl, hydroxy, nitro, formyl, cyano, —SCN, (C_{1-4}alkyl)carbonyl, (C_{1-4}alkyl)carbonylamino, (C_{1-4}alkoxy)carbonyl, (C_{1-4}alkyl)carbonyloxy, carbamoyl, (C_{1-2}alkoxy)(C_{2-3}alkoxy)carbonyl or phenyl,

R_2 is hydrogen, C_{1-6}alkyl, C_{2-6}alkenyl, halo(C_{2-6}alkenyl), C_{3-8}alkynyl, benzyl, phenylethyl, phenylpropyl, hydroxy(C_{1-6}alkyl), (C_{1-4}alkoxy)C_{1-4}alkyl, (C_{1-4}alkoxy)carbonyl(C_{1-4}alkyl), (C_{1-4}alkyl)carbonyloxy(C_{1-4}alkyl) or (C_{1-4}alkoxy)carbonyloxy(C_{1-4}alkyl), with the proviso that R_2 may be hydrogen only when D is a heterocyclic group, 2,4-dinitrophenyl or 2,4-dinitrophenyl having a substituent in the 6-position, and

R_3 is hydrogen or C_{1-4}alkyl,

wherein each halo is independently fluoro, chloro, bromo or iodo.

5,550,219
SILICONE POLYMERS

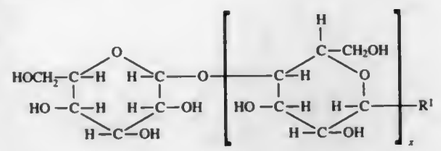
Anthony J. O'Lenick, Jr., Lilburn, Ga., assignor to Siltech Inc., Norcross, Ga.

Continuation-in-part of Ser. No. 138,189, Oct. 20, 1993, Pat. No. 5,428,142. This application Feb. 10, 1995, Ser. No. 386,442

Int. Cl.[6] C07G *3/00;* **C07H** *15/04;23/00*

U.S. Cl. 536—1.110 **9 Claims**

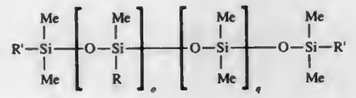
1. A silicone glycoside which conforms to the following structure:



wherein

x ranges from 0 to 1;

R^1 is



wherein;

Me is methyl;

R is —$(CH_2)_3$—O—$(EO)_a$—$(PO)_b$—$(EO)_c$—

R' is selected from the group consisting of CH_3 and —$(CH_2)_3$—O—$(EO)_a$—$(PO)_b$—$(EO)_c$—H, with the proviso that R' cannot be CH_3 when o is zero;

EO is —$(CH_2CH_2$—O)—;

PO is a —$(CH_2CH(CH_3)$—O)— a, b and c are independently integers ranging from 0 to 20;

o is an integer ranging from 0 to 200;

q is an integers ranging from 0 to 1,100.

5,550,220
ALKYL GLYCOSIDE FATTY ACID POLYESTER FAT SUBSTITUTE FOOD COMPOSITIONS AND PROCESS TO PRODUCE THE SAME

Richard S. Meyer, Federal Way; Michael L. Campbell, Kent, both of Wash.; Daryl B. Winter, San Bruno, Calif., and Jeffrey M. Root, Tacoma, Wash., assignors to Curtice-Burns, Inc., Rochester, N.Y.

Continuation of Ser. No. 869,288, Apr. 15, 1992, abandoned, which is a continuation-in-part of Ser. No. 770,771, Oct. 4, 1991, abandoned, which is a continuation of Ser. No. 368,675, Jun. 19, 1989, abandoned, which is a continuation-in-part of Ser. No. 347,264, May 3, 1989, Pat. No. 4,942,054, which is a continuation-in-part of Ser. No. 122,188, Nov. 18, 1987, Pat. No. 4,840,815, which is a continuation-in-part of Ser. No. 49,625, May 13, 1987, abandoned, said Ser. No. 869,288is a continuation of Ser. No. 347,264. This application Dec. 20, 1994, Ser. No. 359,942

Int. Cl.[6] C07G *3/00;* **C07H** *1/00;13/06;15/04*

U.S. Cl. 536—18.5 **29 Claims**

1. A process for producing an alkyl glycoside fatty acid polyester comprising the steps of:

reacting a lower acylated reducing saccharide halogenated at the anomeric carbon with a monohydric, dihydric, trihydric or tetrahydric alcohol having at least one free hydroxyl group, the remaining hydroxyl groups being protected wkh hydroxyl protecting groups, thereby forming a lower acyl ester alkyl glycoside;

removing any protecting groups on the alkyl moiety of the lower acyl ester alkyl glycoside;

admixing the lower acyl ester alkyl glycoside, a fatty acid lower alkyl ester, and an alkali metal catalyst to form a reaction mixture;

heating said reaction mixture to a reaction temperature in the range of from 100° to 125° C. and maintaining the reaction temperature for a period of from one to three hours;

while maintaining the reaction temperature, drawing a vacuum of from about 0 to 10 torr over the reaction mixture to obtain a yield of at least 95% of an alkyl glycoside fatty acid polyester in the reaction mixture; and

recovering an alkyl glycoside fatty acid polyester from the reaction mixture.

5,550,221
NUCLEIC ACID MOLECULE ENCODING THE AMPHOTROPIC VIRUS RECEPTOR

Stephen V. Johann, Pearl River; Marja van Zeijl, Cornwall, and Bryan M. O'Hara, Pearl River, all of N.Y., assignors to American Cyanamid Company, Wayne, N.J.

Filed Apr. 16, 1993, Ser. No. 50,684

Int. Cl.[6] C12N *15/09;* **C07H** *21/00;* **C07K** *14/705*

U.S. Cl. 536—23.5 **8 Claims**

1. A purified, isolated nucleic acid molecule encoding the amino acid sequence set forth in SEQ ID NO: 2.

5,550,222
PROCESS FOR PRODUCING GAMMA-CYCLODEXTRIN

Wen Shieh, Crown Point, Ind., assignor to American Maize-Products Company, Hammond, Ind.

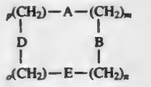
Filed Dec. 14, 1994, Ser. No. 355,850

Int. Cl.[6] C08B *37/16*

U.S. Cl. 536—103 **17 Claims**

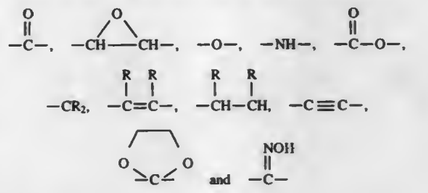
1. A process for preparing cyclooctaamylose comprising the steps of:

a) treating an aqueous slurry of starch substrate with a cyclodextrin glycosyltransferase in the presence of two or more complexing agents, a first complexing agent being an aliphatic ketone or an aliphatic alcohol; and a second complexing agent having twelve atoms in the ring and having a formula



wherein,

A, B, D and E represent a substituent, independently selected from one another, selected from the group consisting of



wherein

R is a substituent selected from the group consisting of a hydrogen atom, an alkyl radical, an hydroxyl radical, an alkoxy radical and a carboxyl radical,

m, n, o, p are integers each being within the range of 0 to 8, with the proviso that the number of atoms forming the ring is 12; and

b) recovering cyclooctaamylose.

5,550,223
LIPOPROTEIN I (OMPI) OF PSEUDOMONAS AERUGINOSA

Michael Duchene, München; Ulrich von Specht, Ambach, and Horst Domdey, Neuried, all of, Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Germany

Continuation of Ser. No. 12,797, Feb. 2, 1993, abandoned, which is a continuation of Ser. No. 400,810, Aug. 30, 1989, abandoned. This application May 13, 1994, Ser. No. 242,059

Claims priority, application Germany, Sep. 1, 1988, 38 29 616.0

Int. Cl.[6] C07H *21/04*

U.S. Cl. 536—23.7 **1 Claim**

1. An isolated DNA coding for the outer membrane protein lipoprotein I (OMPI) of *Pseudomonas aeruginosa*, having the nucleotide sequence:

```
1                                   20
ATG AAC AAC GTT CTG AAA TTC TCT GCT CTG
Met Asn Asn Val Leu Lys Phe Ser Ala Leu

                    40                                  60
GCT CTG GCT GCT GTT CTG GCC ACC GGT TGC
Ala Leu Ala Ala Val Leu Ala Thr Gly Cys

                    80
AGC AGC CAC TCC AAA GAA ACC GAA GCT CGT
Ser Ser His Ser Lys Glu Thr Glu Ala Arg

                   100                                 120
CTG ACC GCT ACC GAA GAC GCA GCT GCT CGT
Leu Thr Ala Thr Glu Asp Ala Ala Ala Arg
```

-continued

```
                                                140
GCT CAG GCT CGC GCT GAC GAA GCC TAT CGC
Ala Gln Ala Arg Ala Asp Glu Ala Tyr Arg

                160                                     180
AAG GCT GAC GAA GCT CTG GGC GCT GCT CAG
Lys Ala Asp Glu Ala Leu Gly Ala Ala Gln

                                        200
AAA GCT CAG CAG ACC GCT GAC GAG GCT AAC
Lys Ala Gln Gln Thr Ala Asp Glu Ala Asn

                220                                     240
GAG CGT GCC CTG CGC ATG CTG GAA AAA GCC
Glu Arg Ala Leu Arg Met Leu Glu Lys Ala

AGC CGC AAG TAA TAG.
Ser Arg Lys  *   *
```

5,550,224

GUAR AS A DRIFT CONTROL AGENT

James L. Hazen, One Red Oak Dr., Plainsboro, N.J. 08536

Filed Jan. 3, 1994, Ser. No. 177,051

Int. Cl.[6] C08B *37/00;* **C07H** *1/00;* **A61K** *31/715;* **A01N** *43/04*

U.S. Cl. 536—114 **18 Claims**

1. A method for reducing the drift during aerial spraying or discharge of an aqueous composition containing a major amount of water and essentially no drift control agents comprising the steps of:

admixing with said composition prior to said spraying or discharge from 0.075 to less than 0.20% weight per unit volume at final dilution of a sole drift control agent consisting essentially of non-derivatized guar; and aerial spraying or discharging the admixture.

5,550,225

PROCESS FOR PREPARING MONOESTERS PREDOMINANTLY IN THE 6'POSITION OF D-MALTOSE, THEIR USE IN COSMETICS, BUCCAL-DENTAL, PHARMACEUTICAL AND FOOD COMPOSITIONS

Michel Philippe, Antony, France, assignor to L'Oreal, Paris, France

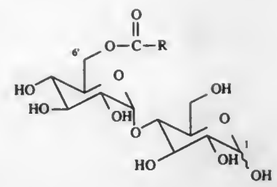
Filed Mar. 26, 1993, Ser. No. 37,172

Claims priority, application France, Mar. 30, 1992, 92 03812

Int. Cl.[6] C07H *1/00;13/04;* **A61K** *31/715;* **C13K** *7/00*

U.S. Cl. 536—115 **14 Claims**

14. A pharmaceutical composition comprising in a pharmaceutically acceptable vehicle at least one mono C_7–C_{21} alkyl or alkenyl ester predominantly in the 6' position of D-maltose, said monoester having the formula



(II)

wherein

R represents linear or branched alkyl or alkenyl having 7–21 carbon atoms or R represents a defined mixture of said alkyl or alkenyl radicals, said monoester in position 6' representing about at least 70 percent by weight, the remainder being essentially a monoester in position 1.

5,550,226

SACCHARIDE IN THE FORM OF POWDER, AND ITS PREPARATION AND USE

Masaru Yoneyama; Takashi Shibuya, and Toshio Miyake, all of Okayama, Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Continuation of Ser. No. 894,482, Jun. 5, 1992, abandoned. This application Oct. 3, 1994, Ser. No. 316,372

Claims priority, application Japan, Jun. 6, 1991, 3-233646

Int. Cl.[6] C13K *13/00;1/08;* **C07H** *3/06*

U.S. Cl. 536—123.13 **4 Claims**

1. A powdery saccharide composition comprising 48–93 w/w % panose and at least 7% oligosaccharide, on a dry solid basis, said oligosaccharide selected from the group consisting of maltose, isomaltose, maltotriose, isomaltotriose, isomaltosyl maltose, tetraoligosaccharide, higher oligosaccharides, and mixtures thereof, said saccharide composition exhibiting a crystallinity of 19% or higher and predominant diffraction angles (2Θ) of 16.4°, 18.2°, 18.5° and 20.8° on X-ray powder diffraction analysis.

5,550,227

METHOD FOR THE PREPARATION OF RHAMNOSE MONOHYDRATE FROM RHAMNOLIPIDS

Johann Mixich, Kelkheim; Knut M. Rapp, Offstein, and Manfred Vogel, Neuleiningen, all of, Germany, assignors to Südzucker AG Mannheim/Ochsenfurt, Mannheim, Germany

Continuation of Ser. No. 977,401, Mar. 2, 1993, abandoned. This application May 26, 1994, Ser. No. 250,104

Claims priority, application Germany, Sep. 25, 1990, 40 30 262.8

Int. Cl.[6] C07H *1/00;1/06;1/08;* **C13K** *13/00*

U.S. Cl. 536—124 **26 Claims**

1. A method for preparing rhamnose from rhamnolipids comprising the steps of:

a) hydrolyzing an aqueous acidic rhamnolipid emulsion having a pH value of 0 to 3.0 at a temperature of 110° to 200° C. for a period of 5 to 300 minutes to obtain a hydrolysate comprising a lipid phase and an aqueous phase,

b) cooling said hydrolysate to a temperature below 100° C. and separating said lipid phase from said aqueous phase,

c) adding a basic compound to said aqueous phase to raise the pH to a value of 2.0 to 8.0, thereby precipitating the acidic ions as salts of low solubility,

d) separating said precipitate from said aqueous phase, and

e) concentrating the resulting rhamnose containing solution.

5,550,228

HYPER-SENSITIVITY RELATED GENE

Laurence Godiard, Köln, Germany; Yves Marco, Castanet-Tolosan, France; Dominique Pontier, and Dominique Roby, both of Toulouse, France, assignors to Sandoz Ltd., Basel, Switzerland

Filed Feb. 23, 1994, Ser. No. 202,054

Claims priority, application European Pat. Off., Feb. 24, 1993, 93102887

Int. Cl.[6] C07H *21/04;* **C12N** *5/10;15/29;15/82*

U.S. Cl. 536—24.1 **19 Claims**

1. Recombinant DNA including a region comprising a nucleotide sequence selected from the group consisting of

a) nucleotides 1 to 1341 of the sequence depicted in SEQ ID No.1;

b) nucleotides 1 to 651 of the sequence depicted in SEQ ID No.1;

c) nucleotides 652 to 1341 of the sequence depicted in SEQ ID No.1;

d) nucleotides 1195 to 1268 of the sequence depicted in SEQ ID No.1; and

e) nucleotides 1195 to 1341 of the sequence depicted in SEQ ID No.1.

5,550,229

ALKYLATION PROCESS FOR PREPARING AZETIDINONE COMPOUND AN STARTING COMPOUND THEREFOR

Tameo Iwasaki, Nishinomiya; Kazuhiko Kondo, Osaka, and Hiroshi Ohmizu, Kyoto, all of, Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

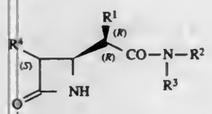
Filed Jun. 21, 1994, Ser. No. 262,892

Claims priority, application Japan, Jun. 23, 1993, 5-151899

Int. Cl.[6] C07D *205/08;413/06;403/06;417/06*

U.S. Cl. 540—200 **20 Claims**

1. A process for preparing an azetidinone compound of the formula (III):



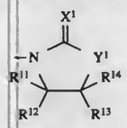
(III)

wherein

R^1 is a lower alkyl group,

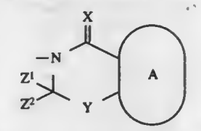
R^2 and R^3 combine together with the adjacent nitrogen atom to form a heterocyclic group which is a member selected from the group consisting of

a group of the formula:



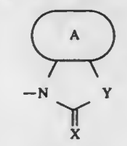
wherein X^1 is an oxygen atom or a sulfur atom, Y^1 is an oxygen atom, a sulfur atom, a methylene group or an imino group substituted by an alkyl group or an aryl group, and R^{11}, R^{12}, R^{13} and R^{14} are the same or different and each a hydrogen atom, a C_1–C_5 alkyl group, a cyano group, an alkoxycarbonyl group, an aralkyl group, or an aryl group, or R^{11} and R^{12} combine together to form a C_2–C_6 alkylene chain, and, simultaneously or independently, R^{13} and R^{14} combine together to form a C_2–C_6 alkylene chain, or R^{11}, R^{12}, R^{13} and R^{14} combine together with the adjacent two carbon atoms to form a substituted or unsubstituted aromatic cyclic group,

a group of the formula:



wherein X is an oxygen atom or a sulfur atom, Y is an oxygen atom, a sulfur atom, a protected or unprotected imino group or a methylene group, Z^1 and Z^2 are the same or different and each a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted cycloalkyl group, an aryl group or an aralkyl group, or both combine at the end thereof to form a substituted or unsubstituted alkylene group having 4 to 7 carbon atoms, and Ring A is a substituted or unsubstituted benzene ring or a substituted or unsubstituted heterocyclic ring having 1 to 4 hetero atoms selected from an oxygen atom, a sulfur atom and a nitrogen atom, and

a group of the formula:

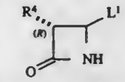


wherein X, Y and Ring A are the same as defined above, and R^4 is a protected or unprotected hydroxy-substituted lower alkyl group, which comprises reacting an alkanamide compound of the formula (I):



(I)

wherein R^1, R^2 and R^3 are the same as defined above, with a compound of the formula (II):



(II)

wherein L^1 is a leaving group and R^4 is the same as defined above, in the presence of a base without using a Lewis acid.

5,550,230

7-SUBSTITUTED-2-OXA-7-AZABICYCLO [3.2.0.]HEPTAN-6-ONE COMPOUND AND METHOD FOR THE PREPAREOF THEREOF

Yoichi Taguchi; Akihiro Oishi; Isao Shibuya, and Tohru Tsuchiya, All of Tsukuba, Japan, assignors to Japan as represented by Director General of Agency of Industrial Science and Technology, Japan

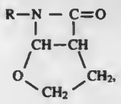
Filed Mar. 1, 1995, Ser. No. 396,778

Claims priority, application Japan, Mar. 8, 1994, 6-65500

Int. Cl.[6] C07D *491/048;* **A61K** *31/395*

U.S. Cl. 540—203 **2 Claims**

1. A β-lactam compound which is a 7-substituted-2-oxa-7-azabicyclo[3.2.0]heptan-6-one represented by the formula



in which R is a monovalent member selected from the group consisting of alkyl, cycloalkyl, aryl, halogen-substituted aryl and alkaryl.

5,550,231

LORACARBEF HYDROCHLORIDE C1-C3 ALCOHOL SOLVATES AND USES THEREOF

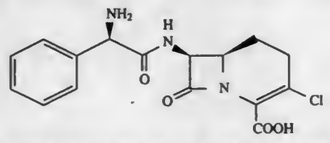
Jane G. Amos, Mooresville; Perry C. Heath, Indianapolis; Douglas E. Prather, Brownsburg, and John E. Toth, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 15, 1993, Ser. No. 77,305

Int. Cl.[6] C07D *463/00*

U.S. Cl. 540—205 **5 Claims**

1. A process for the isolation of a compound of formula I:



(I)

which comprises the step of adding a sufficient amount of base to a hydrochloride C_1–C_3 alcohol solvate form of compound of formula (I) suspended in a suitable solvent and/or water to precipitate the compound of formula (I).

5,550,232

DIASTEREOMERS OF 1-(ISOPROPOXYCARBONYLOXY) ETHYL 3-CEPHEM 4-CARBOXYLATE

Gerd Fischer, Limburg; Elisabeth Defossa, Idstein; Uwe Gerlach, Frankfurt; Rolf Hörlein, Frankfurt am Main; Norbert Krass, Frankfurt am Main; Rudolf Lattrell, Königstein/Taunus; Ulrich Stache; Theodor Wollmann, both of Hofheim, and Dieter Isert, Eschborn, all of, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

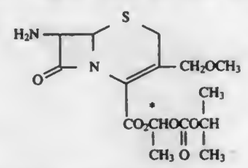
Division of Ser. No. 940,367, Sep. 3, 1992, Pat. No. 5,461,043. This application May 22, 1995, Ser. No. 447,229

Claims priority, application Germany, Sep. 7, 1991, 41 29 771.7

Int. Cl.[6] C07D *501/14*

U.S. Cl. 540—230 **6 Claims**

1. A diastereomerically pure compound of 1-(isopropoxycarbonyloxy)ethyl (6R,7R)-7 -amino-3-methoxymethyl-3-cephem-4-carboxylate of the formula III



or a physiologically acceptable salt thereof.

5,550,233

ARYL, ALKYL, ALKENYL AND ALKYNYLMACROLIDES HAVING IMMUNOSUPPRESSIVE ACTIVITY

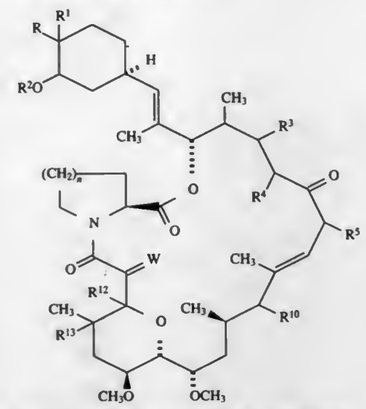
Kathleen M. Rupprecht; Robert K. Baker, both of Cranford; Hyun O. Ok, and William H. Parsons, both of Edison, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 21, 1994, Ser. No. 263,298

Int. Cl.[6] C07D *498/16*

U.S. Cl. 540—456 **13 Claims**

1. A compound of the formula I:



I

or a pharmaceutically acceptable salt thereof, wherein:

R is selected from:

(1) C_{1-10}alkyl

(2) substituted C_{1-10}alkyl wherein the alkyl is substituted with one or more of the substituent(s) selected from:

(a) aryl,

(b) substituted aryl in which the substituents are X, Y and Z,

(c) heteroaryl,

(d) substituted heteroaryl in which the substituents are X, Y and Z,

(e) C_{1-6}alkoxy,

(f) aryloxy,

(g) substituted aryloxy in which the substituents are X, Y and Z,

(h) heteroaryloxy,

(i) substituted heteroaryloxy in which the substituents are X, Y and Z,

(j) aryl-C_{1-3}alkoxy,

(k) substituted aryl-C_{1-3}alkoxy, in which the substituents on aryl are X, Y and Z,

(l) hydroxy,

(m) oxo,

(n) —OCO—C_{1-6}alkyl

(o) —NR^6R^7, wherein R^6 and R^7 are independently selected from:

(i) hydrogen,

(ii) C_{1-10}alkyl unsubstituted or substituted with one or more of the substituent(s) selected from:

(a') aryl, which is unsubstituted or substituted with X, Y and Z,

(b') heteroaryl, which is unsubstituted or substituted with X, Y and Z,

(c') —OH,

(d') C_{1-6}alkoxy,

(e') —CO_2H,

(f') —CO_2—C_{1-6}alkyl,

(g') —C_{3-7}cycloalkyl, and

(h') —OR^{11},

(iii) C_{3-10}alkenyl unsubstituted or substituted with one or more of the substituent(s) selected from:

(a') aryl, which is unsubstituted or substituted with X, Y and Z,

(b') heteroaryl, which is unsubstituted or substituted with X, Y and Z,

(c') —OH,

(d') C_{1-6}alkoxy,

(e') —CO_2H,

(f') —CO_2—C_{1-6}alkyl,

(g') —C_{3-7}cycloalkyl, and

(h') —OR^{11},

(iv) or where R^6 and R^7 and the N to which they are attached may form an unsubstituted or substituted 3–7-membered heterocyclic ring which may include one or two additional heteroatoms independently selected from the group consisting of O, $S(O)_p$, NR^{14}, wherein R^{14} is hydrogen or C_{1-6} alkyl unsubstituted or substituted by phenyl, and p is 0, 1 or 2, such as morpholine, thiomorpholine, piperidine, or piperizine,

(p) —NR^6CO—C_{1-6}alkyl-R^7,

(q) —NR^6CO_2—C_{1-6}alkyl-R^7,

(r) —$NR^6CONR^6R^7$,

(s) —$OCONR^6R^7$,

(t) —$COOR^6$,

(u) —CHO,

(v) —OR^{11}, and

(w) —$S(O)_p$—C_{1-6}alkyl;

(3) substituted or unsubstituted C_{1-10}alkyl wherein one or more of the alkyl carbons is replaced by a group selected from: —NR^6—, —O—, —$S(O)_p$—, —CO_2—, —O_2C—, —$CONR^6$—, —NR^6CO—, and —NR^6CONR^7—, and the alkyl may be substituted with one or more of the substituent(s) selected from:

(a) aryl,

(b) substituted aryl in which the substituents are X, Y and Z,

(c) heteroaryl,

(d) substituted heteroaryl in which the substituents are X, Y and Z,

(e) C_{1-6}alkoxy,

(f) aryloxy,

(g) substituted aryloxy in which the substituents are X, Y and Z,

(h) heteroaryloxy,

(i) substituted heteroaryloxy in which the substituents are X, Y and Z,

(j) aryl-C_{1-3}alkoxy,

(k) substituted aryl-C_{1-3}alkoxy, in which the substituents on aryl are X, Y and Z,

(l) hydroxy,

(m) oxo,

(n) —OCO—C_{1-6}alkyl,

(o) —NR^6R^7, wherein R^6 and R^7 are defined above,

(p) —NR^6CO—C_{1-6}alkyl-R^7,

(q) —NR^6CO_2—C_{1-6}alkyl-R^7,

(r) —$NR^6CONR^6R^7$,

(s) —$OCONR^6R^7$,

(t) —$COOR^6$,

(u) —CHO,

(v) —OR^{11}, and

(w) —$S(O)_p$—C_{1-6}alkyl;

(4) C_{1-10}alkenyl wherein alkenyl contains one to four double bonds;

(5) substiuted C_{1-10}alkenyl wherein the alkenyl contains one to four double bonds and the alkyl or alkenyl may be substituted with one or more of the substituent(s) selected from:

(a) aryl,

(b) substituted aryl in which the substituents are X, Y and Z,

(c) heteroaryl,

(d) substituted heteroaryl in which the substituents are X, Y and Z,

(e) C_{1-6}alkoxy,

(f) aryloxy,

(g) substituted aryloxy in which the substituents are X, Y and Z,

(h) heteroaryloxy,

(i) substituted heteroaryloxy in which the substituents are X, Y and Z,

(j) aryl-C_{1-3}alkoxy,

(k) substituted aryl-C_{1-3}alkoxy, in which the substituents on aryl are X, Y and Z,

(l) hydroxy,

(m) oxo,

(n) —OCO—C_{1-6}alkyl

(o) —NR^6R^7, wherein R^6 and R^7 are as defined above,

(p) —NR^6CO—C_{1-6}alkyl-R^7,

(q) —NR^6CO_2—C_{1-6}alkyl-R^7,

(r) —$NR^6CONR^6R^7$,

(s) —$OCONR^6R^7$,

(t) —$COOR^6$,

(u) —CHO,

(v) —OR^{11}, and

(w) —$S(O)_p$—C_{1-6}alkyl;

(6) C_{2-10}alkenyl wherein alkenyl contains one to four double bonds and wherein one or more of the alkyl carbons is replaced by a group selected from: —NR^6—, —O—, —$S(O)_p$—, —CO_2—, —O_2C—, —$CONR^6$—, —NR^6CO—, and —NR^6CONR^7—;

(7) substituted C_{2-10}alkenyl wherein alkenyl contains one to four double bonds and wherein one or more of the alkyl carbons may be replaced by a group selected from: —NR^6—, —O—, —$S(O)_p$—, —CO_2—, —O_2C—, —$CONR^6$—, —NR^6CO—, and —NR^6CONR^7, and the alkyl or alkenyl may be substituted with one or more of the substituent(s) selected from:

(a) aryl,

(b) substituted aryl in which the substituents are X, Y and Z,

(c) heteroaryl,

(d) substituted heteroaryl in which the substituents are X, Y and Z,

(e) C_{1-6}alkoxy,

(f) aryloxy,

(g) substituted aryloxy in which the substituents are X, Y and Z,

(h) heteroaryloxy,

(i) substituted heteroaryloxy in which the substituents are X, Y and Z,

(j) aryl-C_{1-3}alkoxy,

(k) substituted aryl-C_{1-3}alkoxy, in which the substituents on aryl are X, Y and Z,

(l) hydroxy,

(m) oxo,

(n) —OCO—C_{1-6}alkyl,

(o) —NR^6R^7, wherein R^6 and R^7 are as defined above,

(p) —NR^6CO—C_{1-6}alkyl-R^7,

(q) —NR^6CO_2—C_{1-6}alkyl-R^7,

(r) —$NR^6CONR^6R^7$,

(s) —$OCONR^6R^7$,

(t) —$COOR^6$,

(u) —CHO,
(v) —OR^{11}, and
(w) —$S(O)_p$—C_{1-6}alkyl;
(8) C_{2-10}alkynyl wherein the alkynyl contains one to four double bonds;
(9) subsituted C_{2-10}alkynyl wherein the alkynyl contains one to four double bonds and the alkyl or alkynyl may be substituted with one or more of the substituent(s) selected from:
(a) aryl,
(b) substituted aryl in which the substituents are X, Y and Z,
(c) heteroaryl,
(d) substituted heteroaryl in which the substituents are X, Y and Z,
(e) C_{1-6}alkoxy,
(f) aryloxy,
(g) substituted aryloxy in which the substituents are X, Y and Z,
(h) heteroaryloxy,
(i) substituted heteroaryloxy in which the substituents are X, Y and Z,
(j) aryl-C_{1-3}alkoxy,
(k) substituted aryl-C_{1-3}alkoxy, in which the substituents on aryl are X, Y and Z,
(l) hydroxy,
(m) oxo,
(n) —OCO—C_{1-6}alkyl,
(o) —NR^6R^7, wherein R^6 and R^7 are as defined above,
(p) —NR^6CO—C_{1-6}alkyl-R^7,
(q) —NR^6CO_2—C_{1-4}alkyl-R^7,
(r) —$NR^6CONR^6R^7$,
(s) —$OCONR^6R^7$,
(t) —$COOR^6$,
(u) —CHO,
(v) —OR^{11}, and
(w) —$S(O)_p$—C_{1-6}alkyl;
(10) C_{2-10}alkynyl wherein alkynyl contains one to four double bonds and wherein one or more of the alkyl carbons is replaced by a group selected from: —NR^6—, —O—, —$S(O)_p$—, —CO_2—, —O_2C—, —$CONR^6$—, —NR^6CO—, and —NR^6CONR^7—;
(11) substituted C_{2-10}alkynyl wherein alkynyl contains one to four double bonds and wherein one or more of the alkyl carbons may be replaced by a group selected from: —NR^6—, —O—, —$S(O)_p$—, —CO_2—, —O_2C—, —$CONR^6$—, —NR^6CO—, and —NR^6CONR^7, and the alkyl may be substituted with one or more of the substituent(s) selected from:
(a) aryl,
(b) substituted aryl in which the substituents are X, Y and Z,
(c) heteroaryl,
(d) substituted heteroaryl in which the substituents are X, Y and Z,
(e) C_{1-6}alkoxy,
(f) aryloxy,
(g) substituted aryloxy in which the substituents are X, Y and Z,
(h) heteroaryloxy,
(i) substituted heteroaryloxy in which the substituents are X, Y and Z,
(j) aryl-C_{1-3}alkoxy,
(k) substituted aryl-C_{1-3}alkoxy, in which the substituents on aryl are X, Y and Z,
(l) hydroxy,
(m) oxo,
(n) —OCO—C_{1-6}alkyl
(o) —NR^6R^7, wherein R^6 and R^7 are as defined above,
(p) —NR^6CO—C_{1-6}alkyl-R^7,
(q) —NR^6CO_2—C_{1-6}alkyl-R^7,
(r) —$NR^6CONR^6R^7$,
(s) —$OCONR^6R^7$,
(t) —$COOR^6$,
(u) —CHO,
(v) —OR^{11}, and
(w) —$S(O)_p$—C_{1-6}alkyl;
(12) aryl
(13) heteroaryl;
(14) substituted aryl in which the substituents are X, Y and Z;
(15) substituted heteroaryl in which the substituents are X, Y and Z;
R^1 is selected from:
(1) hydrogen,
(2) hydroxy,
(3) C_{1-6}alkoxy,
(4) aryl-C_{1-3}alkoxy,
(5) substituted aryl-C_{1-3}alkoxy, in which the substituents on aryl are X, Y and Z,
(6) unsubstituted or substituted aryloxy, in which the substituents on aryl are X, Y and Z,
(7) heteroaryl-C_{1-3}alkoxy,
(8) substituted heteroaryl-C_{1-3}alkoxy, in which the substituents on heteroaryl are X, Y and Z,
(9) unsubstituted or substituted heteroaryloxy, in which the substituents on aryl are X, Y and Z,
(10) —OCO—C_{1-6}alkyl,
(11) —$OCONR^6R^7$, and
(12) —OR^{11}, and
R^2 is selected from:
(1) hydrogen;
(2) C_{1-10}alkyl;
(3) substituted-C_{1-10}alkyl in which one or more substituent(s) is (are) selected from:
(a) hydroxy,
(b) oxo,
(c) C_{1-6}alkoxy,
(d) aryl-C_{1-3}alkoxy,
(e) substituted aryl-C_{1-3}alkoxy, in which the substituents on aryl are X, Y and Z,
(f) unsubstituted or substituted aryloxy, in which the substituents on aryl are X, Y and Z,
(g) —OCO—C_{1-6}alkyl,
(h) —NR^6R^7, wherein R^6 and R^7 are as defined above
(i) —NR^6CO—C_{1-6}alkyl-R^7, wherein R^6 and R^7 are as defined above,
(j) —$COOR^6$, wherein R^6 is as defined above,
(k) —CHO,
(l) —OR^{11},
(m) —$S(O)_p$—C_{1-6}alkyl;
(4) C_{3-10}alkenyl;
(5) substituted C_{3-10}alkenyl in which one or more substituent(s) is(are) selected from:
(a) hydroxy,
(b) oxo,
(c) C_{1-6}alkoxy,
(d) aryl-C_{1-3}alkoxy,
(e) substituted aryl-C_{1-3}alkoxy, in which the substituents on aryl are X, Y and Z,
(f) unsubstituted or substituted aryloxy, in which the substituents on aryl are X, Y and Z,
(g) —OCO—C_{1-6}alkyl,
(h) —NR^6R^7, wherein R^6 and R^7 are as defined above
(i) —NR^6CO—C_{1-6}alkyl-R^7, wherein R^6 and R^7 are as defined above,
(j) —$COOR^6$, wherein R^6 is as defined above,

(k) —CHO,
(l) —OR^{11},
(m) —$S(O)_p$—C_{1-6}alkyl;
(6) C_{3-10}alkynyl;
(7) substituted C_{3-10}alkynyl in which one or more substituent(s) is(are) selected from:
(a) hydroxy,
(b) oxo,
(c) C_{1-6}alkoxy,
(d) aryl-C_{1-3}alkoxy,
(e) substituted aryl-C_{1-3}alkoxy, in which the substituents on aryl are X, Y and Z,
(f) unsubstituted or substituted aryloxy, in which the substituents on aryl are X, Y and Z,
(g) —OCO—C_{1-6}alkyl,
(h) —NR^6R^7, wherein R^6 and R^7 are as defined above
(i) —NR^6CO—C_{1-6}alkyl-R^7, wherein R^6 and R^7 are as defined above,
(j) —$COOR^6$, wherein R^6 is as defined above,
(k) —CHO,
(l) —OR^{11},
(m) —$S(O)_p$—C_{1-6}alkyl;
R^3 is hydrogen, hydroxy, —OR^{11}, or C_{1-6}alkoxy;
R^4 is hydrogen, or R^3 and R^4 taken together form a double bond;
R^5 is methyl, ethyl, propyl or allyl;
R^{10} is hydrogen, hydroxy, —OR^{11} or fluoro;
R^{11} is selected from:
(a) —PO(OH)O—M^+, wherein M^+ is a positively charged inorganic or organic counterion,
(b) —SO_3—M^+,
(c) —$CO(CH_2)_qCO_2$—M^+, wherein q is 1–3, and
(d) —CO—C_{1-6}alkyl-NR^6R^7, wherein R^6 and R^7 are as defined above and the alkyl is unsubstituted or substituted with one or more substituents selected from:
(i) hydroxy,
(ii) C_{1-6}alkoxy,
(iii) —$NR^{16}R^{17}$, wherein R^{16} and R^{17} are independently selected from:
(a') hydrogen, and
(b') C_{1-6}alkyl,
(iv) —$COOR^6$, wherein R^6 is as defined above,
(v) phenyl,
(iv) substituted phenyl in which the substituents are X, Y and Z,
(vii) heteroaryl,
(viii) —SH, and
(ix) —S—C_{1-6}alkyl;
R^{12} is OH, H, or R^{12} and R^{13} taken together form a double bond;
W is O, (H, OH) or (H, H);
X, Y and Z independently are selected from:
(a) hydrogen,
(b) C_{1-10}alkyl, unsubstituted or substituted with one or more substituents selected from:
(i) aryl,
(ii) substituted aryl in which the substituents are X', Y' and Z',
(iii) heteroaryl,
(iv) substituted heteroaryl in which the substituents are X', Y', and Z',
(v) unsubstituted or substituted aryloxy, in which the substituents on aryl are X', Y' and Z',
(vi) —OR^6,
(vii) —OR^{11},
(viii) —$OCOR^6$,
(ix) —OCO_2R^6,
(x) —NR^6R^7,
(xi) —CHO,
(xii) —NR^6COC_{1-6}alkyl-R^7,
(xiii) —$NR^6CO_2C_{1-6}$alkyl-R^7,
(xiv) —$NR^6CONR^6R^7$,
(xv) —$OCONR^6R^7$,
(xvi) —$CONR^6R^7$,
(c) C_{1-10}alkyl wherein one or more of the alkyl carbons is replaced by a group selected from —NR^6— —O—, —$S(O)_p$—, —CO_2—, —O_2C—, —$CONR^6$—, —NR^6CO—, —NR^6CONR^7—, —CO—, —CH(OH)—, alkenyl or alkynyl and the alkyl may be unsubstituted or substituted with one or more substituents selected from:
(i) aryl,
(ii) substituted aryl in which the substituents are X', Y' and Z',
(iii) heteroaryl,
(iv) substituted heteroaryl in which the substituents are X', Y', and Z',
(v) unsubstituted or substituted aryloxy, in which the substituents on aryl are X', Y', and Z',
(vi) —OR^6,
(vii) —OR^{11},
(viii) —$OCOR^6$,
(ix) —OCO_2R^6,
(x) —NR^6R^7,
(xi) —CHO
(xii) —NR^6COC_{1-6}alkyl-R^7,
(xiii) —$NR^6CO_2C_{1-6}$alkyl-R^7,
(xiv) —$NR^6CONR^6R^7$,
(xv) —$OCONR^6R^7$,
(xvi) —$CONR^6R^7$,
(d) aryl,
(e) substituted aryl wherein the substituents are X', Y' or Z',
(f) heteroaryl,
(g) substituted heteroaryl wherein the substituents are X', Y' or Z',
(h) substituted and unsubstituted aryloxy wherein the substitutents are X', Y', or Z',
(i) substituted and unsubstituted heteroaryloxy wherein the substitutents are X', Y', or Z',
(j) —NO_2,
(k) halogen,
(l) —NR^6R^7,
(m) —CN,
(n) —CHO,
(o) —CF_3,
(p) —SR^8, wherein R^8 is hydrogen, C_{1-6}alkyl, trifluoromethyl, or phenyl,
(q) —SOR^8,
(r) —SO_2R^8,
(s) —$CONR^6R^7$,
(t) $R^9O(CH_2)_m$— wherein R^9 is hydrogen, C_{1-6}alkyl, hydroxy-C_{2-3}alkyl, —CF_3, phenyl, R^{11} or naphthyl and m is 0, 1, 2, or 3,
(u) —$CH(OR^{12})(OR^{13})$, wherein R^{12} and R^{13} are C_{1-3} alkyl or taken together form an ethyl or propyl bridge,
(v) $R^9CO(CH_2)_m$— wherein R^9 and m are as defined above,
(w) $R^9O_2C(CH_2)_m$— wherein R^9 and m are as defined above, and
(x) —R^{11}; or any two of X, Y and Z may be joined to form a saturated ring having 5, 6 or 7 ring atoms, said ring atoms comprising 1 or 2 oxygen atoms, the remaining ring atoms being carbon, such as dioxolanyl or dioxanyl;
X', Y' and Z' independently are selected from:
(a) hydrogen,
(b) C_{1-7}alkyl,
(c) C_{2-6}alkenyl,
(d) halogen,
(e) —NO_2,
(f) —NR^6R^7, wherein R^6, and R^7 are as defined above,
(g) —CN,
(h) —CHO,
(i) —CF_3,
(j) —SR^8, wherein R^8 is hydrogen, C_{1-6}alkyl, trifluoromethyl, or phenyl,
(k) —SOR^8, wherein R^8 is as defined above,

(l) $—SO_2R^8$, wherein R^8 is as defined above,
(m) $—CONR^6R^7$, wherein R^6 and R^7 are as defined above,
(n) $R^9O(CH_2)_m—$ wherein R^9 and m are as defined above,
(o) $—CH(OR^{12})(OR^{13})$, wherein R^{12} and R^{13} are as defined above,
(p) $R^9CO(CH_2)_m—$ wherein R^9 and m are as defined above,
(q) $R^9O_2C(CH_2)_m—$ wherein R^9 and m are as defined above, and
(r) $—R^{11}$;

n is 1 or 2; heteroaryl, as used herein in the claim is: acridine, carbazole, cinnoline, dibenzofuran, dibenzothiophene, quinoxaline, pyrrazole, benzoxazole, indole, imidazole, thiazole, benzothiazole, benzotriazole, furan, benzofuran, benzimidazole, quinoline, isoquinoline, oxazole, pyrazine, pyridazine, pyridine, pyrimidine and pyrrole.

5,550,234

POLYALKYLPIPERIDINE COMPOUNDS

Karl Gaa, Burtenbach, and Matthias Zäh,, Gersthofen, both of, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

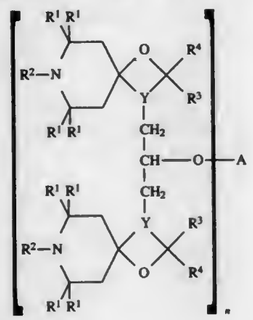
Filed Jun. 29, 1995, Ser. No. 496,496

Claims priority, application Germany, Jul. 10, 1994, 44 23 054.0

Int. Cl.[6] C07D *401/14;401/06*

U.S. Cl. 540—466 **3 Claims**

1. A polyalkylpiperidine compound of the formula I

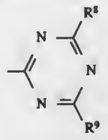


(I)

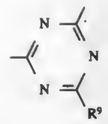
in which Y is a group



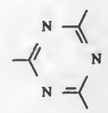
R^1 is a hydrogen atom or a C_{1-20} alkyl group,
R^2 is a hydrogen atom or a C_{1-20} alkyl group,
R^3 and R^4 are identical or different and are a hydrogen atom or a C_{1-20} alkyl group, or R^3 and R^4, together with the carbon atom connecting them, form a ring having 5 to 12 ring members,
n is 1, 2 or 3, and
A, in the case n=1, is $—COOR^5$, $—P(OR^6)(OR^7)$, $—Si(OR^5)(OR^5)$, $—SiR^5R^5R^5$ or the



group,
A, in the case where n=2, is —CO—, $=POR^5$, $=Si(OR^5)(OR^5)$, $=SiR^5R^5$ or the

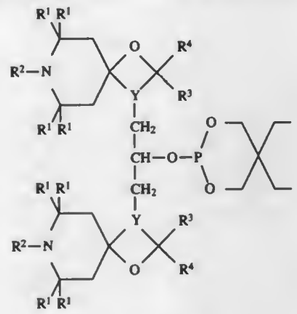


group,
A, in the case where n=3, is $≡Si(OR^5)$, $≡SiR^5$ or the

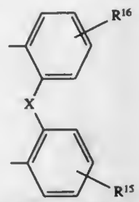


group,
R^5 is a C_1–C_{18}-alkyl group, a C_2–C_{18}-alkenyl group, a C_2–C_{18}alkynyl group, a C_5–C_{12}cycloalkyl group, a C_6–C_{10}-bicycloalkyl group, a C_5–C_8-cycloalkenyl group, a C_6–C_{10}-aryl group, a C_7–C_9aralkyl group, a C_7–C_9-alkaryl group, unsubstituted or substituted by C_1–C_4-alkyl or phenyl, where a plurality of radicals R^5 may be identical or different,
R^6 and R^7 are identical or different and are a C_1–C_{18}-alkyl group, a C_2–C_{18} alkenyl group, a C_2–C_{18}-alkynyl group, a C_5–C_{12} cycloalkyl group, a C_6–C_{10}-bicycloalkyl group, a C_5–C_8-cycloalkenyl group, a C_6–C_{10}-aryl group, a C_7–C_9-aralkyl group or a C_7–C_9-aralkyl group, substituted by C_1–C_4-alkyl or phenyl, or
R^6 and R^7 together are a radical of the formula II or III

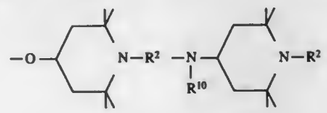
(II)



(III)



in which R^1, R^2, R^3, R^4 and R^5 are as defined above, and X is a direct bond or methylene group or a 1,1-alkylidene group having 2 to 5 carbon atoms, R^8 and R^9 are identical or different and are $—OR^5$, $—NHR^5$, $—NR^{11}R^{12}$ or one of the two groups of the formula



5,550,235

Patent Not Issued For This Number

5,550,236

PROCESS FOR CROSS-COUPLING AROMATIC BORONIC ACIDS WITH AROMATIC HALOGEN COMPOUNDS OR PERFLUOROALKYLSULFONATES

Hubert Schlosser, Glashütten/Taunus; Rainer Wingen, Hattersheim/Main, and Javier Manero, Frankfurt am Main, all of, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

PCT No. PCT/EP93/02733, § 371 Date Apr. 24, 1995, § 102(e) Date Apr. 24, 1995, PCT Pub. No. WO94/10105, PCT Pub. Date May 11, 1994

PCT Filed Oct. 6, 1993, Ser. No. 424,254

Claims priority, application Germany, Oct. 26, 1992, 42 36 103.6

Int. Cl.[6] C07D *213/26;239/30;401/04;403/04*

U.S. Cl. 544—238 **8 Claims**

1. A process for preparing polycyclic aromatic compounds by cross-coupling aromatic boronic acids with aromatic halogen compounds or perfluoroalkylsulfonates in the presence of metallic palladium, if desired applied to a support material, as catalyst, wherein the coupling is carried out in the presence of a ligand selected from the group consisting of phosphines, diketones and tertiary amines and a base.

5,550,237

PROCESS FOR THE PREPARATION OF CARBOXYARENESULFONIC ACIDS AND THEIR CARBOXYLIC ACID DERIVATIVES

Jan Vermehren, Frankfut am Main, Germany, assignor to Hoechst Schering AgrEvo GmbH, Berlin, Germany

Filed Apr. 3, 1995, Ser. No. 415,696

Claims priority, application Germany, Apr. 5, 1994, 44 11 682.9

Int. Cl.[6] C07C *309/58;* **C07D** *295/192*

U.S. Cl. 544—159 **10 Claims**

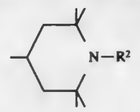
1. A process for the preparation of compounds of the formula (I) or salts thereof

$$HO_3S—Ar—CO—Nuc \quad (I)$$

in which
Ar is an unsubstituted or substituted arylene radical, and
Nuc is the radical of a nucleophile Nuc-H,
which comprises reacting an internal diazonium salt of the formula (II)

$$^-O_3S—Ar—N_2^+ \quad (II)$$

which R^{10} is a hydrogen atom, a C_1–C_{12}-alkyl group, a C_5–C_7-cycloalkyl group, a C_7–C_9-aralkyl group, a C_8–C_{18}-alkanoyl group, a C_3–C_5-alkenoyl group or a benzoyl group, or in which R^{10} is



R^{11} and R^{12} are identical or different and are a C_1–C_{10}-alkyi group, a C_5–C_7-cycloalkyl group or a C_6–C_{10}-aryl group, or R^{11} and R^{12}, together with the nitrogen, form a 5- to 12-membered ring, which may also contain oxygen.

5,550,235

Patent Not Issued For This Number

5,550,236

PROCESS FOR CROSS-COUPLING AROMATIC BORONIC ACIDS WITH AROMATIC HALOGEN COMPOUNDS OR PERFLUOROALKYLSULFONATES

Hubert Schlosser, Glashütten/Taunus; Rainer Wingen, Hattersheim/Main, and Javier Manero, Frankfurt am Main, all of, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

PCT No. PCT/EP93/02733, § 371 Date Apr. 24, 1995, § 102(e) Date Apr. 24, 1995, PCT Pub. No. WO94/10105, PCT Pub. Date May 11, 1994

PCT Filed Oct. 6, 1993, Ser. No. 424,254

Claims priority, application Germany, Oct. 26, 1992, 42 36 103.6

Int. Cl.[6] C07D *213/26;239/30;401/04;403/04*

U.S. Cl. 544—238 **8 Claims**

1. A process for preparing polycyclic aromatic compounds by cross-coupling aromatic boronic acids with aromatic halogen compounds or perfluoroalkylsulfonates in the presence of metallic palladium, if desired applied to a support material, as catalyst, wherein the coupling is carried out in the presence of a ligand selected from the group consisting of phosphines, diketones and tertiary amines and a base.

5,550,237

PROCESS FOR THE PREPARATION OF CARBOXYARENESULFONIC ACIDS AND THEIR CARBOXYLIC ACID DERIVATIVES

Jan Vermehren, Frankfut am Main, Germany, assignor to Hoechst Schering AgrEvo GmbH, Berlin, Germany

Filed Apr. 3, 1995, Ser. No. 415,696

Claims priority, application Germany, Apr. 5, 1994, 44 11 682.9

Int. Cl.[6] C07C *309/58;* **C07D** *295/192*

U.S. Cl. 544—159 **10 Claims**

1. A process for the preparation of compounds of the formula (I) or salts thereof

$$HO_3S—Ar—CO—Nuc \quad (I)$$

in which
Ar is an unsubstituted or substituted arylene radical, and
Nuc is the radical of a nucleophile Nuc-H,
which comprises reacting an internal diazonium salt of the formula (II)

$$^-O_3S—Ar—N_2^+ \quad (II)$$

with carbon monoxide in the presence of a metal catalyst from the group composed of catalysts of metals of group VIII of the Periodic System and of copper, and with the nucleophile of the formula Nuc-H or a salt thereof.

5,550,238

PROCESS FOR PREPARING SULFONYLUREAS

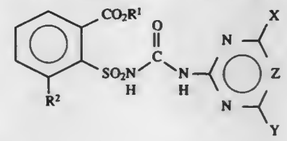
George C. Chiang, Wilmington; Richard F. Davis, Newark, and Kwaku O. Temeng, Wilmington, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 23, 1995, Ser. No. 518,435

Int. Cl.[6] C07D *251/42;251/48;239/42;239/48*

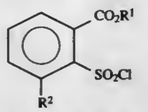
U.S. Cl. 544—211 **10 Claims**

1. A process for the preparation of a sulfonylurea of the formula:



I

wherein:
R^1 is C_1-C_4 alkyl;
R^2 is C_1-C_2 alkyl or C_1-C_2 haloalkyl;
X CH_3 or $N(CH_3)_2$;
Y is CH_3, OCH_3 or OCH_2CF_3;
Z is CH or N;
comprising reacting the sulfonyl chloride of Formula II



II

wherein R^1 and R^2 are as defined above with a cyanate salt of the Formula III

MOCN

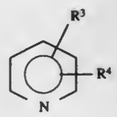
III

wherein M is Na or K
in the presence of an inert aprotic solvent and a heterocyclic amine base of the Formula IV

Q

IV

wherein Q is Q_1 or Q_2
Q_1 i

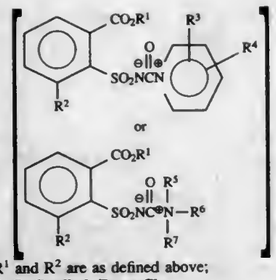


Q_2 i

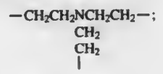


at a temperature of 0° to 60° C. and a pressure of 1 to 5 atmospheres for a time sufficient to give an isocyanate complex of the

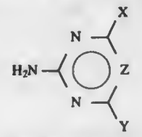
Formula V



wherein R^1 and R^2 are as defined above;
R^3 is H, C_1-C_2 alkyl, Br, or Cl;
R^4 is H, C_1-C_2 alkyl, Br, or Cl;
R^3 and R^4 can also be taken together to form an aromatic ring where the structure becomes quinoline or isoquinoline;
R^5, R^6, and R^7 are each independently C_1-C_3 alkenyl, phenyl or benzyl;
R^5 and R^6 can be taken together as $—CH_2CH_2$ A $CH_2CH_2—$ or $—CH_2CH_2CH_2CH_2—$;
or R^5, R^6, R^7 can be taken together as



A is 0, NR^8; and
R^8 is C_1-C_3 alkyl
which is then reacted with an aminobeterocycle of Formula VI



wherein X, Y and Z are as defined above.
in the presence of an inert aprotic solvent at a temperature of 0° to 50° C. and a pressure of 1 to 5 atmospheres for a time sufficient to yield the sulfonylurea of Formula I.

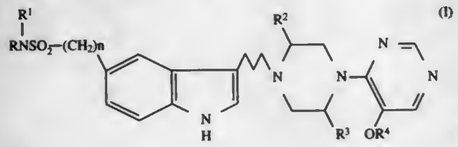
5,550,239

PROCESS FOR LARGE-SCALE PRODUCTION OF INDOLYL ALKYL PYRIMIDINYL PIPERAZINE COMPOUNDS

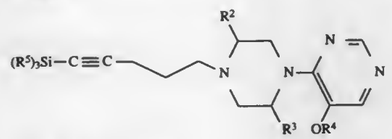
Michael J. Humora, Cranbury; Sandeep P. Modi, Monmouth Junction; Sushi K. Srivastava, Dayton, all of N.J., and Andrew D. Williams, Middletown, Conn., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Filed Nov. 8, 1994, Ser. No. 336,022
Int. Cl.[6] C07D *403/14*
U.S. Cl. 544—295 **13 Claims**

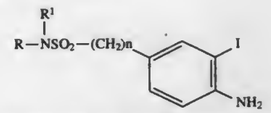
1. An improved process for preparing certain useful antimigraine agents of Formula (I)



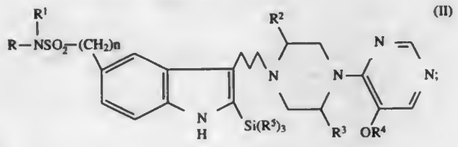
wherein
R is hydrogen, lower alkyl and trifluoromethyl;
R^1 is hydrogen, lower alkyl and lower alkyl-phenyl;
R^2 and R^3 are independently selected from hydrogen and methyl;
R^4 is lower alkyl; and
n is zero or the integers 1 and 2;
which comprises
a) the reaction of compound (III), wherein R^5 is methyl, ethyl or propyl



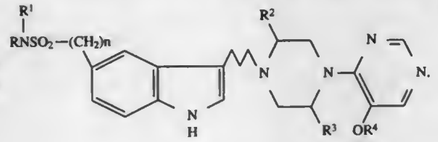
with compound (IV) in



a palladium-catalyzed heteroannulation step to give the 2-$(R^5)_3$Si-indole compound (II)



and
b) removal of the trialkylsilyl group of (II) with a mineral acid followed by basification to provide the synthetic product (I)



5,550,240

PIPERAZINYL-BIS(ALKYLAMINO)PYRIMIDINE DERIVATIVES AND PROCESS FOR PREPARING SAME

Sándor Mahó; Zoltán Tuba; Csaba Sánta; Gábor Balogh; Éva Czajlikné Csizér; Mária Lovasné Marsai, and György Gálik, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

PCT No. PCT/HU93/00034, § 371 Date Dec. 8, 1994, § 102(e) Date Dec. 8, 1994, PCT Pub. No. WO93/25539, PCT Pub. Date Dec. 23, 1993
PCT Filed Jun. 8, 1993, Ser. No. 351,449
Claims priority, application Hungary, Jun. 9, 1992, 1907/92
Int. Cl.[6] C07D *403/04;* **A61K** *31/505*
U.S. Cl. 544—295 **2 Claims**

1. A compound selected from the group consisting of: 2,4-bis[1-adamantylamino]-6-(1-piperazinyl)pyrimidine; and 4,6-bis(1-adamantylamino)-2 -(1-piperazinyl)pyrimidine;
or a pharmaceutically acceptable acid addition salt thereof.

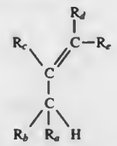
5,550,241

ADDUCTS OF CYCLIC CARBONYL MONOMERS AND SUBSTITUTED ALKENS

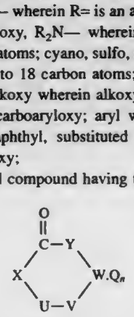
Stanley J. Brois, Westfield, N.J., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 746,541, Jan. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 556,243, Jul. 23, 1990, Pat. No. 5,057,564. This application Mar. 18, 1993, Ser. No. 32,903
Int. Cl.[6] C07C *49/497;* **C07D** *239/60*
U.S. Cl. 544—302 **5 Claims**

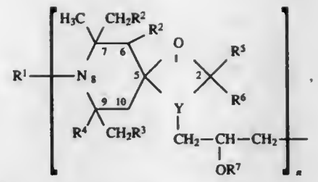
1. An adduct of:
an olefin having the formula:



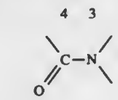
wherein Ra, Rb, Re, Rd, and Re are independently selected from the group consisting of H, alkyl and substituted groups having from 1 to 15 carbon atoms, provided that at least one of Ra, Rb, Re, Rd and Re is a substituted alkyl group containing one or more of substituents selected from the group consisting of halo, hydroxy, (Oalkylene)$_x$OH wherein alkylene is ethylene, propylene or butylene, and x=1–30; RO— wherein R= is an alkyl group of from 1 to 18 carbon atoms; aryloxy, R_2N— wherein R=is an alkyl group having 1 to 18 carbon atoms; cyano, sulfo, sulfono, RS— where R is an alkyl group of 1 to 18 carbon atoms; arylthio, formyl; acyl, aroyl, carboxy, carboalkoxy wherein alkoxy contains 1–18 carbon atoms; carboxamido; carboaryloxy; aryl wherein aryl is phenyl, substituted phenyl, naphthyl, substituted naphthyl; heterocyclic radicals; silyl, and siloxy;
(b) a cyclic carbonyl compound having the formula:

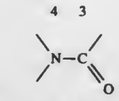


wherein Q=water or an alcohol; n=0, 1, >1; and X and Y are C=O; U, V, and W are independently selected from the group consisting of methylene, C=O, C=NH, C=NR, O, NH, NR, S, C=S, CMe_2, CHPh, CH—CHOH—CH_2OH wherein R=an alkyl group of 1–18 carbons; or U and V taken together are selected from 1,2 phenylene, 1, 8-naphthalene-diyl; and 1,2 dihydroxyethyelen-1,2-diyl.

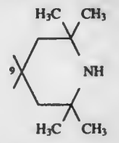


in which
n is an integer from 1 to 50 and
Y is a group of the formula II or III

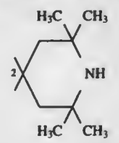




in which the indices 3 and 4 indicate the ring positions in the diazaspirodecane system and one bond of the nitrogen is linked to a CH_2 group of the propylene-2-oxy group,
R^1 is a hydrogen atom, an oxygen atom, an NO group, a C_1–C_{12}-alkyl group, an allyl group, a C_1–C_{22}-acyl group, a benzyl group, a C_1–C_{12}-alkyloxy group or a C_3–C_{12}-cycloalkoxy group,
R^2 and R^3 are either identical or different and are a hydrogen atom or
a C_1–C_5-alkyl group, in which case R^4 is a methyl group, or
R^2 is a hydrogen atom or a C_1–C_5-alkyl group and R^3 and R^4, together with the carbon atoms joining them, form a C_5 - or C_6-cycloalkyl group or a group of the formula



R^5 and R^6 are identical or different and represent a hydrogen atom, a C_1–C_{30}-alkyl group or a C_7–C_{12}-phenylalkyl group which is unsubstituted or substituted by chlorine or C_1–C_4-alkyl, or
R^5 and R^6, together with the carbon atom joining them, form a C_5–C_{18}-cycloalkyl group which is unsubstituted or substituted by up to four C_1–C_4-alkyl groups, or a group of the formula



R^7, if n=1, has no meaning, so that the oxygen atom of the group pendent from the Y group is bonded to the terminal CH_2 group, and forms an oxirane ring, in which case the compound of formula I is an epoxy compound, or
R^7, if n>1, is a hydrogen atom or a C_1–C_{22}-acyl group, or has no meaning in the terminal monomer unit, so that the oxygen atom of the group pendent from the Y group is bonded to the terminal CH_2 group and forms an oxirane ring in the terminal monomer unit,
which comprises:

5,550,242

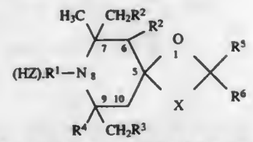
PROCESS FOR THE PREPARATION OF POLYALKYL-1-OXA-DIAZASPIRODECANE COMPOUNDS

Karl Gaa, Burtenbach, and Matthias Zäh, Gersthofen, both of, Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Feb. 16, 1995, Ser. No. 390,404
Claims priority, application Germany, Feb. 19, 1994, 44 05 388.6
Int. Cl.[6] C07D *498/10*
U.S. Cl. 548—19 **11 Claims**

1. A process for the preparation of a polyalkyl-1 -oxa-diazaspirodecane compound of the formula I

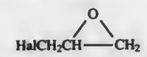
reacting a compound of the formula IV



(IV)

in which R^1, R^2, R^3, R^4, R^5 and R^6 have the abovementioned meaning, and X is a group of the formula II or formula III in which the indices 3 and 4 indicate the ring positions in the diazaspirodecane system and one bond of the nitrogen is linked to a hydrogen atom and HZ is an acid radical, or a salt thereof with a proton acid,

with an epihalohydrin of the formula V



(V)

in which Hal is a chlorine, bromine or iodine atom, in a molar ratio of 1:1 to 1:10 in the presence of an inert organic solvent and in the presence of the equimolar to twenty times the molar amount of solid alkali metal hydroxide or of the corresponding amount of a mixture comprised of solid alkali metal hydroxide and water in a weight ratio of 1:0 to 9:1 as catalyst and essentially in the absence of a phase transfer catalyst;

recovering from the resulting reaction mixture the resulting epoxy compound of formula I in which n=1 and R^7 has no meaning, so that said oxygen atom of the group pendent from the group pendent from the Y group is bonded to the the terminal CH_2 group and forms an oxirane ring;

then, optionally, heating said resulting epoxy compound of formula I to a temperature of 100° to 240° C. to obtain a compound of formula I in which n is >1.

5,550,243

B PREPARATION OF 2- AND 3- AZIDO DERIVATES OF 1, 5-IMINOSUGARS

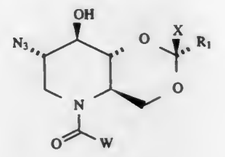
Ish K. Khanna, Vernon Hills; Richard A. Mueller, Glencoe, and Richard M. Weier, Lake Bluff, all of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Division of Ser. No. 323,706, Oct. 17, 1994, Pat. No. 5,436,341, which is a division of Ser. No. 169,233, Dec. 20, 1993, Pat. No. 5,391,746, which is a division of Ser. No. 2,380, Jan. 8, 1993, Pat. No. 5,334,717, which is a division of Ser. No. 861,696, Apr. 1, 1992, Pat. No. 5,206,251. This application Mar. 6, 1995, Ser. No. 398,827

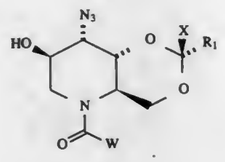
Int. Cl.[6] C07D *491/056*

U.S. Cl. 546—116 **1 Claim**

1. A method for the chemical synthesis of a compound having the formula



or



wherein R_1=H, C_1–C_4 alkyl or phenyl,

W=benzyloxy, and

X=H comprising the steps of:

(a) N-acylating deoxynojirimycin with an acylating agent to form a carbamate derivative thereof,

(b) selectively protecting the hydroxyls at C-4 and C-6 with a hydroxyl protecting agent by acetalization or ketalization to form an acetal or ketal derivative of the product of step (a),

(c) protecting the hydroxyl at C-2 by regioselective sulfonylation with a sulfonylating agent at C-2 to give a sulfonylated intermediate derivative of step (b),

(d) forming a 2,3-anhydro intermediate by epoxidation at C-2 and C-3 to give an epoxide intermediate derivative of the product of step (c), and

(e) opening up the epoxide in the product of step (d) by nucleophilic attack at C-2 and C-3 with an azide-containing compound to give a mixture of diasteromeric azido derivatives of the above formulas.

5,550,244

PROCESS FOR PREPARING SULPHONYLAMINOCARBONYLTRIAZOLINONES

Joachim Kluth, Langenfeld, and Klaus-Helmut Müller, Düsseldorf, all of, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

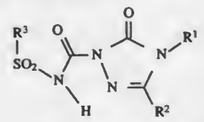
Filed Dec. 14, 1994, Ser. No. 355,724

Claims priority, application Germany, Dec. 21, 1993, 43 43 595.5

Int. Cl.[6] C07D *409/12;403/12;401/12;249/12*

U.S. Cl. 546—153 **7 Claims**

1. A process for the preparing a sulphonylaminocarbonyltriazolinone of the formula



(I)

in which

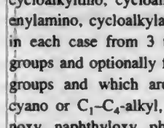
R^1 represents hydrogen, hydroxyl or amino, represents alkyl which has from 1 to 6 carbon atoms and which is optionally substituted by halogen, cyano, C_1–C_4-alkoxy, C_1–C_4-alkylcarbonyl or C_1–C_4-alkoxycarbonyl, represents alkenyl or alkinyl which have in each case from 2 to 6 carbon atoms and which are in each case optionally substituted by halogen, represents alkoxy, alkenyloxy, alkylamino or dialkylamino which have in each case up to 5 carbon atoms in the alkyl or alkenyl groups and which are in each case optionally substituted by halogen, represents cycloalkyl, cycloalkyloxy, cycloalkylamino or cycloalkylalkyl which have in each case from 3 to 6 carbon atoms in the cycloalkyl groups and optionally 1 to 4 carbon atoms in the alkyl moiety and which are in each case optionally substituted by halogen, cyano or C_1–C_4-alkyl, or represents phenyl, naphthyl, phenylalkyl or naphthylalkyl which have from 1 to 4 carbon atoms in the alkyl moieties and which are in each case optionally substituted by halogen, cyano, nitro, C_1–C_4-alkyl, C_1–C_4-halogenoalkyl, C_1–C_4-alkoxy and C_1–C_4-halogenoalkoxy,

R^2 represents hydrogen, hydroxyl, mercapto, amino or halogen, represents alkyl which have from 1 to 6 carbon atoms and which is optionally substituted by halogen, cyano, C_1–C_4-alkoxy, C_1–C_4-alkylcarbonyl or C_1–C_4-alkoxycarbonyl, represents alkenyl or alkinyl which have in each case from 2 to 6 carbon atoms and which are in each case optionally substi

tuted by halogen, represents alkoxy, alkenyloxy, alkinyloxy, alkylthio, alkenylthio, alkinylthio, alkylsulphinyl, alkylsulphonyl, alkylamino or dialkylamino which have in each case up to 5 carbon atoms and which are in each case optionally substituted by halogen, cyano or C_1–C_4-alkyl, represents cycloalkyl, cycloalkenyl, cycloalkyloxy, cycloalkenyloxy, cycloalkylthio, cycloalkenylthio, cycloalkylamino, cycloalkenylamino, cycloalkylalkyl or cycloalkenylalkyl which have in each case from 3 to 6 carbon atoms in the cycloalkyl groups and optionally from 1 to 4 carbon atoms in the alkyl groups and which are optionally substituted by halogen, cyano or C_1–C_4-alkyl, or represents phenyl, naphthyl, phenoxy, naphthyloxy, phenylthio, naphthylthio, phenylamino, naphthylamino, phenylmethyl, phenylethyl, phenylmethoxy, naphthylmethoxy, phenylethoxy, naphthylethoxy, phenylmethylthio, naphthylmethylthio, phenylethylthio, naphthylethylthio, phenylmethylamino, naphthylmethylamino, phenylethylamino or naphthylethylamino which are in each case optionally substituted by halogen, cyano, nitro, C_1–C_4-alkyl, C_1–C_4-halogenoalkyl, C_1–C_4-alkoxy and C_1–C_4-halogenoalkoxy, and

R^3 represents alkyl which has from 1 to 6 carbon atoms and which is optionally substituted by halogen, cyano, C_1–C_4-alkoxy, C_1–C_4-alkylcarbonyl or C_1–C_4-alkoxycarbonyl, represents cycloalkyl or cycloalkylalkyl which have from 3 to 6 carbon atoms in the cycloalkyl groups and optionally from 1 to 4 carbon atoms in the alkyl moiety and which are in each case optionally substituted by halogen, cyano, carboxyl, C_1–C_4-alkyl and C_1–C_4-alkoxycarbonyl, or represents phenyl, naphthyl, benzyl, phenylethyl, pyridyl, phenylmethyl, pyridylethyl, quinolyl, quinolylmethyl, thienyl, thienylmethyl, pyrazolyl or pyrazolylmethyl which are in each case optionally substituted by halogen, cyano, carboxyl, nitro, amino, carbamoyl, C_1–C_4-alkyl, C_1–C_4-halogenoalkyl, C_1–C_4-alkoxy-C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-halogenoalkoxy, C_1–C_4-alkoxy-C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-halogenoalkylthio, C_1–C_4-alkylsulphinyl, C_1–C_4-halogenoalkylsulphinyl, C_1–C_4-alkylsulphonyl, C_1–C_4-halogenoalkylsulphonyl, di-(C_1–C_3-alkyl)-aminosulphonyl, N-(C_1–C_3-alkoxy)-N-(C_1–C_3-alkyl)-aminosulphonyl, C_1–C_4-alkylcarbonyl, C_1–C_4-alkoxycarbonyl, C_1–C_4-halogenoalkoxycarbonyl, di-(C_1–C_3-alkyl)-aminocarbonyl, C_1–C_2-alkoxy-C_1–C_2-alkoxycarbonyl, C_3–C_6-cycloalkyl, C_3–C_6-cycloalkyl-methyl, C_3–C_6-cycloalkylcarbonyl, phenyl or phenoxy,

which comprises reacting a triazolinone of the formula



(II)

in which

R^1 and R^2 have the above-mentioned meaning, with a sulphonyl halide of the formula

$$R^3—SO_2—X \quad \text{(III)}$$

in which

R^3 has the above mentioned meaning, and

X represents halogen,

and a metal cyanate of the formula

$$MOCN \quad \text{(IV)}$$

in which

M represents an alkali metal or one alkaline earth metal equivalent,

together optionally in the presence of a reaction auxiliary and optionally in the presence of a diluent at a temperature between 20° C. and 150° C. and wherein the reaction auxiliary is an organic nitrogen base.

5,550,245

3-QUINOLYL-SUBSTITUTED DIHYDROPYRIDINES, PROCESSES FOR THEIR PREPARATION AND THEIR USE IN MEDICAMENTS

Jürgen Stoltefuss, Haan; Siegfried Goldmann, Wuppertal; Alexander Straub, Wuppertal; Martin Bechem, Wuppertal; Rainer Gross, Wuppertal; Siegbert Hebisch, Bottrop; Joachim Hütter, and Howard-Paul Rounding, both of Wuppertal, all of, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

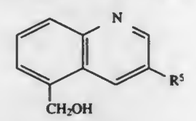
Division of Ser. No. 230,286, Apr. 20, 1994, Pat. No. 5,504,210. This application May 25, 1995, Ser. No. 450,461

Claims priority, application Germany, Apr. 27, 1993, 43 13 692.3

Int. Cl.[6] C07D *403/92;215/36*

U.S. Cl. 546—167 **4 Claims**

1. A quinoline of the formula



in which

R^5 represents a cyclic, straight-chain or branched, saturated or unsaturated hydrocarbon radical having up to 10 carbon atoms, which is optionally interrupted by oxygen or sulphur, and which is optionally substituted up to twice in an identical or different manner by cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, fluorine, chlorine, bromine, acyloxy having up to 2 carbon atoms, cyano or hydroxyl or by phenyl, phenyloxy or phenylthio wherein the phenyl moiety is optionally substituted up to twice in an identical or different manner by fluorine, chlorine, bromine, hydroxyl, methyl, ethyl, methoxy, ethoxy, trifluoromethyl, trifluoromethoxy or trifluoromethylthio or by a group of the formula —$NR^{11}R^{12}$,

wherein

R^{11} and R^{12} are identical or different and denote hydrogen or a straight-chain, branched or cyclic, saturated or unsaturated hydrocarbon radical having up to 6 carbon atoms, which is optionally substituted by fluorine, chlorine, hydroxyl or phenyl, wherein the cyclic radicals are optionally substituted by fluorine or chlorine or by alkyl, alkoxy, alkylthio or alkoxycarbonyl having in each case up to 2 carbon atoms, trifluoromethyl or trifluoromethoxy, or denote phenyl which is optionally substituted by fluorine or chlorine or by alkyl, alkoxy, alkylthio or alkoxycarbonyl having in each case up to 2 carbon atoms, trifluoromethyl or trifluoromethoxy,

or

the hydrocarbon radical is optionally substituted by a group of the formula —CO_2—R^{15}, —$CONR^{27}R^{28}$, —$NR^{29}R^{30}$, —NR^{31}—CO_2R^{32} or —NR^{33}—SO_2 R^{34}

wherein R^{27}, R^{28}, R^{29}, R^{30}, R^{31}, R^{32}, R^{33} and R^{34} have the abovementioned meaning of R^{11} and R^{12} and are identical to or different from these,

or

R^5 represents a group of the formula D-R^{35},
wherein
D denotes the CO or —S(O)$_h$ group or an oxygen atom,
wherein
h denotes the number 0, 1 or 2,
and
R^{35} denotes phenyl which is optionally substituted up to twice in an identical or different manner by fluorine, chlorine, bromine, cyano or nitro or by straight-chain or branched alkyl, alkoxy, alkylthio, alkoxycarbonyl, halogenoalkyl, halogenoalkoxy or halogenoalkylthio having in each case up to 4 carbon atoms or amino or by C_1–C_4-mono- or -dialkylamino,
or
R^{35} denotes hydrogen or a cyclic, straight chain or branched, saturated or unsaturated hydrocarbon radical having up to 8 carbon atoms, which is optionally interrupted by oxygen or sulphur, and which can optionally be substituted by fluorine, chlorine, phenyl, phenoxy or phenylthio, or is substituted by a group of the formula —$NR^{36}R^{37}$,
wherein
R^{36} and R^{37} have the abovementioned meaning of R^{11} and R^{12} and are identical to or different from these,
or a pharmaceutically acceptable salt thereof.

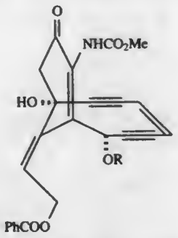
5,550,246

CALICHEAMICIN MIMICS

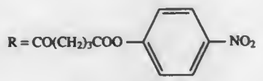
K. C. Nicolaou, La Jolla, Calif., and Emmanuel N. Pitsinos, Halandri, Greece, assignors to The Scripps Research Institute, La Jolla, Calif.

Filed Sep. 7, 1994, Ser. No. 301,968
Int. Cl.[6] C07D *213/04*
U.S. Cl. 546—300 **3 Claims**

1. A calicheamicin mimic represented by the following structure:

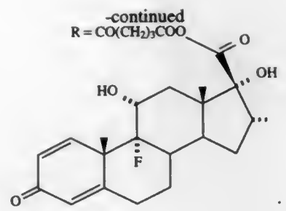


wherein R is selected from the group consisting of:



R = $CO(CH_2)_3CO_2H$

and



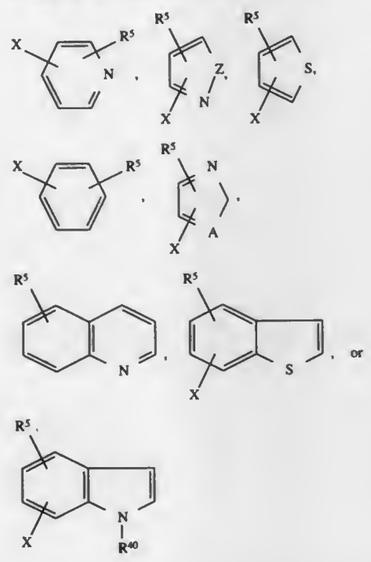
5,550,247

1-ALKYL-, 1-ALKENYL-, AND 1-ALKYNLARYL-2-AMINO-1, 3-PROPANEDIOLS AND RELATED COMPOUNDS

John J. Tegeler, Bridgewater; Barbara S. Rauckman, Flemington; Russell R. L. Harner, Lebanon; Brian S. Freed, Phillipsburg, all of N.J., and Gregory H. Merriman, Fairfield, Ohio, assignors to Hoechst Roussel Pharmaceuticals Inc., Somerville, N.J.

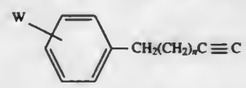
Division of Ser. No. 942,908, Sep. 10, 1992, Pat. No. 5,360,811, which is a continuation-in-part of Ser. No. 840,236, Feb. 24, 1992, abandoned, which is a continuation of Ser. No. 632,910, Dec. 24, 1990, abandoned, which is a continuation-in-part of Ser. No. 596,448, Oct. 12, 1990, abandoned, which is a continuation-in-part of Ser. No. 492,200, Mar. 13, 1990, abandoned. This application Apr. 20, 1995, Ser. No. 425,544
Int. Cl.[6] C07D *213/46;333/56;333/22;209/32*
U.S. Cl. 546—314 **17 Claims**

1. A compound of the formula RCHO wherein R is



---

wherein R^5 is $CH_3(CH_2)_mC{\equiv}C$, $CH_3(CH_2)_mCH{=}CH$, or



wherein m is 3 to 15, n is 0 to 12, W and X are independently hydrogen, loweralkyl, loweralkoxy, halogen, or trifluoromethyl; A is O or S; and Z is O.

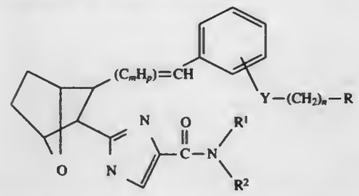
5,550,248

SUBSTITUTED STRYL HETEROCYCLIC AMIDO PROSTAGLANDIN ANALOGS

Raj N. Misra, Hopewell, N.J., assignor to E.R. Squibb & Sons, Inc., Princeton, N.J.

Filed Nov. 29, 1990, Ser. No. 619,569
Int. Cl.[6] C07D *493/08*
U.S. Cl. 548—236 **10 Claims**

1. A compound having the formula



including all stereoisomers and pharmaceutically acceptable salts thereof, wherein:
C_mH_p is an alkylene chain wherein m is 0, 1, 2, or 3 and p=(2×m)−1, except that when m is 0, p is also 0;
n is 0, 1, 2 or 3;
R is CO_2R', CH_2OH, $CONHSO_2R^3$, $CONHR^4$, or —CH_2-5-tetrazolyl;
R' is hydrogen, alkyl, or alkali metal;
X is O or NH;
Y is —O—, a single bond or vinylene, except that Y cannot be —O— when n is 0;
R^1 is hydrogen, alkyl, alkenyl, alkynyl, aralkyl, aryl, cycloalkyl, cycloalkylalkyl, cycloheteroalkyl, cycloheteroalkylalkyl, heteroaryl, heteroarylalkyl, —CH_2)$_t$—C(O)—N(H)—R_a or —$(CH_2)_t$—N(H)—C(O)—R_a wherein t is 1 to 12 and R_a is alkyl, aryl, cycloalkyl, or cycloalkylalkyl), each of R^1 being unsubstituted or optionally substituted with alkyl, aryl, cycloalkyl, or cycloalkylalkyl;
R^2 is hydrogen, alkyl, aryl, or aralkyl; or
R^1 and R^2, together with the nitrogen atom to which they are linked, form a 5- to 8-membered ring;
R^3 is alkyl, aryl or aralkyl;
R^4 is hydrogen, alkyl, aryl or aralkyl;
"alkyl" refers to groups of up to 12 carbon atoms;
"cycloalkyl" refers to cyclic groups of 3 to 12 carbon atoms;
"aryl" refers to monocyclic or bicyclic aromatic groups containing from 6 to 10 carbon atoms in the ring portion;
"cycloheteroalkyl" refers to 5-, 6- or 7-membered saturated rings that include one or two heteroatoms selected from nitrogen, oxygen and sulfur, which are linked through a carbon atom either beta or gamma to a heteroatom;
"heteroaryl" refers to 5-, or 6-membered aromatic rings that include one or two heteroatoms selected from nitrogen, oxygen, and sulfur, which are not attached directly by a heteroatom to the "N" of the —NR^1R^2 group;
"cycloheteroalkylakyl" refers to 5-, 6- or 7-membered saturated rings that include one or two heteroatoms selected from nitrogen, oxygen, and sulfur, and are linked to the "N" of the —NR^1R^2 group through a $(CH_2)_x$ chain wherein x is 1 to 12;
"heteroaryalkyl" refers to 5-, 6- or 7-membered aromatic rings that include one to four nitrogen and/or one or two oxygen or sulfur atoms and is linked to the "N" of the —NR^1R^2 group through a $(CH_2)_x$ chain wherein x is one to 12; and
"5- to 8-membered ring" refers to a cycloheteroalkyl or heteroaryl group wherein the "N" of the —NR^1R^2 group is the only heteroatom.

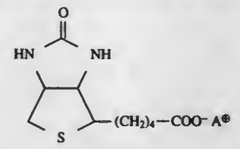
5,550,249

WATER SOLUBLE DERIVATIVES OF BIOTIN AND RELATED THERAPEUTICAL COMPOSITIONS

Francesco Della Valle; Silvana Lorenzi, both of Padova, and Gabriella Calderini, Carrara San Giorgio, all of, Italy, assignors to Lifegroup, S.p.A., Rome, Italy

Continuation of Ser. No. 986,390, Dec. 7, 1992, abandoned. This application Feb. 22, 1994, Ser. No. 200,545
Claims priority, application Italy, Dec. 31, 1991, MI91A3507
Int. Cl.[6] C07D *495/04;* A61K *31/38*
U.S. Cl. 548—303.7 **8 Claims**

1. A biotinate of an alkanolammonium of the formula:



wherein $A^{\oplus}$ is selected from the group consisting of: $H_3N^{\oplus}CH_2CH_2OH$, $H_2N^{\oplus}(CH_2CH_2OH)_2$ and $HN^{\oplus}(CH_2CH_2OH)_3$.

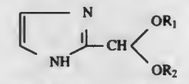
5,550,250

PREPARATION PROCESS FOR 2 FORMYL IMIDAZOLE ACETALS

Alain Schouteeten, Ezanville, and Yani Christidis, Paris, both of, France, assignors to Societe Francaise Hoechst, Puteaux, France

Filed Aug. 4, 1995, Ser. No. 511,251
Int. Cl.[6] C07D *405/04;233/64*
U.S. Cl. 548—311.1 **4 Claims**

1. A process for preparing a product of formula (I):



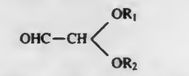
(I)

in which R_1 and R_2, either are identical and represent a C_1– C_4 alkyl radical, or together form a group of formula (II):



(II)

in which R_3, R_4, R_5 and R_6, identical or different, represent a hydrogen atom or a C_1–C_4 alkyl radical, and n represents 0 or 1, comprising reacting an aqueous mixture of glyoxal and an ethanal of formula (III):



(III)

in which R_1 and R_2 have the meaning given above, is reacted with ammonia.

5,550,251
ALICYCLIC PEPTIDOMIMETICS

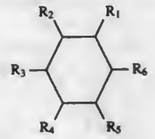
Ralph Hirschmann, Blue Bell, and Ellen Leahy, Philadelphia, both of Pa., assignors to The Trustees of the University of Pennsylvania, Philadelphia, Pa.

Continuation-in-part of Ser. No. 4,644, Jan. 12, 1993, abandoned, which is a continuation of Ser. No. 805,895, Dec. 12, 1991, abandoned. This application Feb. 23, 1994, Ser. No. 200,320

Int. Cl.[6] C07D *403/12;* **A61K** *31/41*

U.S. Cl. 548—312.1 **10 Claims**

1. A compound having the structure:



wherein:

(a) R_1 is $—O(CH_2)_2$ (3- indolyl), R_2 is —O— CH_2(4-imidazolyl), R_3 and R_4 are -O-benzyl, R_5 is $—O(CH_2)_pNH_2$, p is 5–7, and R_6 is OH; or

(b) R_1 is $—O(CH_2)_2$ (3- indolyl), R_2 is —O—CH_2(4-imidazolyl), R_3 and R_4 are -O-benzyl, R_5 is $—O(CH_2)_pNHC(O)CH_3$, p is 5–7, and R_6 is OH; or

(c) R_1 is $—O(CH_2)_2$(3-indolyl), R_2 is —O—CH_2(4-imidazolyl), R_3 and R_4 are-O-benzyl, R_5 is $—O(CH_2)_pOH$, p is 5–7, and R_6 is OH; or

(d) R_1 is $—O(CH_2)_2$ (3-indolyl), R_2 is —O—CH_2 (4-imidazolyl), R_3 and R_4 are-O-benzyl, R_5 is $—O(CH_2)_pH$, p is 5–7, and R_6 is OH; or

(e) R_1 is $—O(CH_2)_2$ (3-indolyl), R_2 is —O—CH_2 (4-imidazolyl), R_3 and R_4 are —OH, R_5 is $—O(CH_2)_pNH_2$, p is 5–7, and R_6 is OH; or

(f) R_1 is $—O(CH_2)_2$ (3-indolyl), R_2 is —O—CH_2 (4-imidazolyl), R_3 and R_4 are —OH, R_5 is $—O(CH_2)_pNHC(O)CH_3$, p is 5–7, and R_6 is OH; or

(g) R_1 is $—O(CH_2)_2$ (3-indolyl), R_2 is —O—CH_2 (4-imidazolyl), R_3 and R_4 are —OH, R_5 is $—O(CH_2)_pOH$, p is 5– 7, and R_6 is OH; or

(h) R_1 is $—O(CH_2)_2$ (3-indolyl), R_2 is —O—CH_2 (4-imidazolyl), R_3 and R_4 are —OH, R_5 is $—O(CH_2)_pH$, p is 5– 7, and R_6 is OH;

or a pharmaceutically acceptable salt thereof.

5,550,252
2-AMINO-IMIDAZOLE DERIVATIVES

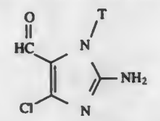
Luc Vanmaele, Lochristi, Belgium, assignor to Agfa-Gevaert, N. V., Mortsel, Belgium

Division of Ser. No. 449,668, May 24, 1995, Pat. No. 5,489,568, which is a division of Ser. No. 294,358, Aug. 23, 1994, Pat. No. 5,438,122, which is a division of Ser. No. 61,568, May 17, 1993, Pat. No. 5,356,857. This application Sep. 14, 1995, Ser. No. 528,336

Int. Cl.[6] C07D *233/88*

U.S. Cl. 548—332.1 **2 Claims**

1. A compound according to the following formula:



wherein T represents an alkyl group or aryl group.

5,550,253
MEMORY ENHANCING AND ANALGESTIC 1,2,3,3A,8,8A-HEXAHYDRO-3A,8(AND 1,3A,8)-DI (AND TRI)METHYLPYRROLO[2,3-B]-INDOLES

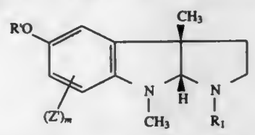
R. Richard L. Hamer, Far Hills; Grover C. Helsley, Pluckemin; Edward J. Glamkowski, Warren, and Yulin Chiang, Convent Station, all of N.J., assignors to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

Division of Ser. No. 967,534, Oct. 28, 1992, which is a continuation of Ser. No. 828,751, Jan. 31, 1992, abandoned, which is a continuation of Ser. No. 252,309, Oct. 3, 1988, abandoned, which is a division of Ser. No. 49,894, May 15, 1987, Pat. No. 4,791,107, which is a continuation-in-part of Ser. No. 885,991, Jul. 16, 1986, abandoned. This application Jun. 7, 1995, Ser. No. 483,696

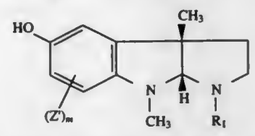
Int. Cl.[6] C07D *487/04*

U.S. Cl. 548—429 **1 Claim**

1. A method of preparing a compound of the formula



where m is 1 or 2; Z' is hydrogen, loweralkyl, halogen or nitro; R_1 is loweralkyl, aryloweralkyl, heteroaryloweralkyl, cycloalkylmethyl or loweralkylmethyl; and R' is loweralkyl; which comprises reacting a phenol compound of the formula



with loweralkyl p-toluenesulfonate to obtain said compound.

5,550,254
MEMORY ENHANCING AND ANALGESIC 1,2,3,3A,8,8A-HEXAHYDRO-3A,8 (AND 1,3A,8)-DI (AND TRI) METHYLPYRROLO[2,3-B] INDOLES

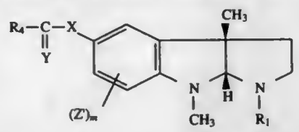
R. Richard L. Hamer, Far Hills; Grover C. Helsley, Pluckemin; Edward J. Glamkowski, Warren, and Yulin Chiang, Convent Station, all of N.J., assignors to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

Division of Ser. No. 967,534, Oct. 28, 1992, which is a continuation of Ser. No. 828,751, Jan. 31, 1992, abandoned, which is a continuation of Ser. No. 252,309, Oct. 3, 1988, abandoned, which is a division of Ser. No. 49,894, May 15, 1987, Pat. No. 4,791,107, which is a continuation-in-part of Ser. No. 885,991, Jul. 16, 1986, abandoned. This application Jun. 7, 1995, Ser. No. 483,700

Int. Cl.[6] C07D *487/04*

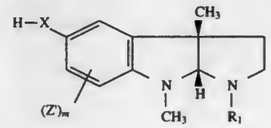
U.S. Cl. 548—429 **1 Claim**

1. A method of preparing a compound of the formula



where m is 1 or 2; X is O or S; Y is O or S; Z' is hydrogen, loweralkyl, halogen or nitro; R_1 is loweralkyl, aryllowerlkyl, beteroaryllowerlkyl, cycloalkylmethyl or loweralkylmethyl; and R_4 is hydrogen, loweralkyl, aryllowerlkyl, diaryllowerlkyl, aryl

or heteroaryl; which comprises reacting a carboxylic acid of the formula R_4COOH with 1,1'-carbonyldiimidazole or 1,1'-thiocarbonyldiimidazole and thereafter adding to the reaction mixture a phenol or thiophenol compound of the formula



to obtain said compound.

5,550,255
CIS, ENDO-2-AZABICYCLOALKANE-3-CARBOXYLIC ACID DERIVATIVES

Hansjörg Urbach, Kronberg/Taunus; Rainer Henning, Hattersheim am Main, and Winfried Hertzsch, Kelkheim, all of, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

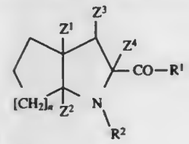
Division of Ser. No. 882,376, May 6, 1992, abandoned, which is a continuation of Ser. No. 407,452, Sep. 14, 1989, abandoned, which is a division of Ser. No. 205,001, Jun. 2, 1988, Pat. No. 4,886,827, which is a continuation of Ser. No. 769,356, Aug. 26, 1985, abandoned. This application Feb. 28, 1994, Ser. No. 202,478

Claims priority, application Germany, Aug. 28, 1984, 34 31 541.1

Int. Cl.[6] C07D *209/52;* **A61K** *31/405*

U.S. Cl. 548—452 **14 Claims**

1. A compound of the formula I



(I)

in which

n is 1, 2 or 3 and

a) Z^1 and Z^2, and Z^3 and Z^4, in each case together represent a chemical bond,

R^1 denotes hydroxyl, $(C_1–C_6)$-alkoxy, $(C_6–C_{12})$-aryl-$(C_1–C_4)$-alkoxy, amino, $(C_1–C_6)$-alkylamino or di-$(C_1–C_6)$-alkylamino and

R^2 denotes $(C_6–C_{12})$-aryl, $(C_6–C_{12})$-aryl-$(C_1–C_6)$-alkyl, $(C_3–C_8)$-cycloalkyl or $(C_7–C_{12})$-alkylcycloalkyl, or

b) Z^1, Z^2, Z^3 and Z^4 in each case represent hydrogen, Z^1 and Z^2 being in the cis configuration relative to one another and the COR^1 group on C atom 3 being in the endo configuration relative to the bicyclic ring system,

R^1 denotes hydroxyl, $(C_1–C_6)$-alkoxy, $(C_6–C_{12})$-aryl-$(C_1–C_4)$-alkoxy, amino, $(C_1–C_6)$-alkylamino or di-$(C_1–C_6)$-alkylamino and

R^2 denotes $(C_6–C_{12})$-aryl, $(C_6–C_{12})$-aryl-$(C_1–C_6$)-alkyl, $(C_3–C_8)$-cycloalkyl or $(C_7–C_{12})$-alkylcycloalkyl, with the exception of the compounds of the formula I in which Z^1–Z^4 are defined as under a), n=1, 2 or 3, R^1 denotes ethyl and R^2 denotes methyl.

5,550,256
IMINE QUATERNARY SALTS AS BLEACH CATALYSTS

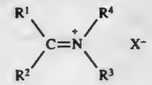
Stephen A. Madison, New City, N.Y., and Janet L. Coope, Cliffside Park, N.J., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Division of Ser. No. 278,664, Jul. 21, 1994, Pat. No. 5,482,515, which is a division of Ser. No. 151,717, Nov. 12, 1993, Pat. No. 5,360,568. This application Apr. 5, 1995, Ser. No. 417,414

Int. Cl.[6] C11D *3/28;3/395;* **D06L** *1/12;3/02*

U.S. Cl. 548—473 **1 Claim**

1. An oxygen transfer agent whose structure is:



(I)

wherein:

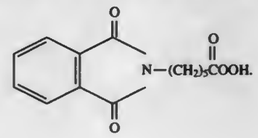
R^1 and R^4 may be a substituted or unsubstituted radical selected from the group consisting of hydrogen, phenyl, aryl, alkyl and cycloalkyl radicals:

R^2 may be a substituted or unsubstituted radical selected from the group consisting of hydrogen, phenyl, aryl, alkyl, cycloalkyl, nitro, halo, cyano, alkoxy, keto, carboxylic and carboalkoxy radicals;

R^3 may be a substituted or unsubstituted radical selected from the group consisting of phenyl, aryl, alkyl, cycloalkyl, nitro, halo, and cyano radicals;

R^1 with R^2 and R^2 with R^3 may respectively together form a radical selected from the group consisting of cycloalkyl, polycyclo and aromatic ring systems;

X' is a counterion stable in the presence of oxidizing agents; and with the proviso that the oxygen transfer agent is not a N-methyl-3,4-dihydroisoquinolinium salt and that the oxygen transfer agent at a level of 6×10^{-5}M in the presence of PAP at a level of 7.5 ppm active oxygen at pH 9.5 bleaches tea stains to achieve a ΔR of at least 6.9, wherein PAP has the structure:



5,550,257
SUBSTITUTED OXOTREMORINE DERIVATIVES

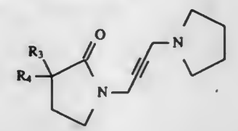
Eugene J. Trybulski, Park Ridge, N.J.; Richard H. Kramss, Madison, Conn., and Herbert J. Brabander, Nanuet, N.Y., assignors to American Cyanamid Company, Madison, N.J.

Continuation-in-part of Ser. No. 274,604, Jul. 13, 1994, which is a division of Ser. No. 690,749, Apr. 24, 1991, Pat. No. 5,356,885. This application Feb. 22, 1995, Ser. No. 392,436

Int. Cl.[6] C07D *403/12;* **A61K** *31/40*

U.S. Cl. 548—550 **20 Claims**

I. A compound of Formula I



I

wherein

R_3 is $(C_2$-$C_{10})$alkanoyloxy, $(C_3$-$C_7)$cycloalkylcarbonyloxy, $(C_3$-$C_7)$cycloalkyl carbonyloxy, aroyloxy, aryl$(C_1$-$C_4)$alkylcarbonyloxy, $(C_1$-$C_{10})$alkoxycarbonyloxy, $(C_3$-$C_7)$cycloalkoxycarbonyloxy, $(C_3$-$C_7)$cycloalkyl carbonyloxy, aryloxycarbonyloxy, aryl$(C_1$-$C_4)$alkyloxycarbonyloxy, $(C_1$-$C_{10})$alkylaminocarbonyloxy, $(C_3$-$C_7)$cycloalkylaminocarbonyloxy, $(C_3$-$C_7)$cycloalkylaminocarbonyloxy, arylaminocarbonyloxy, aryl$(C_1$-$C_4)$alkylaminocarbonyloxy, $(C_1$-$C_{10})$dialkylaminocarbonyloxy, arylaminocarbonyloxy, $(C_3$-$C_7)$cycloalkyl$(C_1$-$C_4)$alkylaminocarbonyloxy, diarylaminocarbonyloxy, and bis aminocarbonyloxy, in which any aryl group is phenyl, 2-naphthyl or 4-biphenyl, and

R4 is hydrogen or $(C_1$-$C_6)$alkyl,

or a pharmaceutically acceptable salt thereof.

5,550,258

ESTER COMPOUND, ACTIVE AGENT FOR CONTROLLING NOXIOUS INSECT PESTS CONTAINING THE SAME AS ACTIVE INGREDIENT, INTERMEDIATE FOR PRODUCTION OF THE ESTER COMPOUND, AND PROCESS FOR PRODUCING THE INTERMEDIATE

Tomonori Iwasaki; Masaya Suzuki; Takashi Furukawa, all of Takarazuka; Kazunori Tsushima, Sanda; Takao Ishiwatari, Minoo, and Toru Tsuchiya, Takarazuka, all of, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

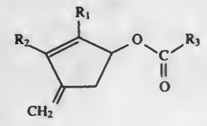
Filed Aug. 23, 1994, Ser. No. 294,934

Claims priority, application Japan, Aug. 24, 1993, 5-209742; Jun. 22, 1994, 6-140004

Int. Cl.[6] C07D *209/82*

U.S. Cl. 549—78 **15 Claims**

1. An ester compound represented by a formula I:



wherein R_1 represents a hydrogen atom or a methyl group; R_2 represents a 3,3-dihalogeno-1-methyl-2-propenyl group or a C_1–C_6 alkyl group which may be substituted with at least one halogen atom; and R_3 represents an acid residue of pyrethroids.

5,550,259

CLINICAL MARKER AND THERAPEUTIC AGENT IN KIDNEY STONE DISEASE AND METHODS OF USE

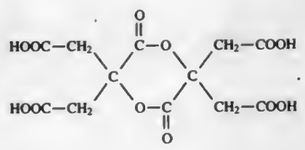
William C. Thomas, Jr.; Christopher D. Batich, and Daniel L. Purich, All of Gainesville, Fla., assignors to The University of Florida, Gainesville, Fla.

Division of Ser. No. 261,581, Jun. 17, 1994, which is a continuation-in-part of Ser. No. 80,017, Jun. 18, 1993, Pat. No. 5,376,553. This application Jun. 2, 1995, Ser. No. 460,585

Int. Cl.[6] C07D *319/12*

U.S. Cl. 549—274 **5 Claims**

1. A compound for inhibiting a calcification process, wherein said compound is dicitrate cyclic diester which has the structure



5,550,260

PROCESS FOR THE PRODUCTION OF A CYCLOPENTENOL DERIVATIVE

Kazunori Tsushima, Sanda; Tomonori Iwasaki; Masaya Suzuki, both of Takarazuka, and Noritada Matsuo, Itami, all of, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jun. 2, 1994, Ser. No. 253,065

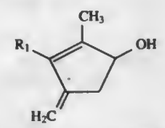
Claims priority, application Japan, Jun. 3, 1993, 5-133296

Int. Cl.[6] C07C *35/06;* **C07D** *307/02;* **C07F** *7/08*

U.S. Cl. 549—421 **10 Claims**

1. A process for the production of a cyclopentenol compound represented by the formula I:

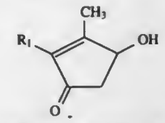
I



wherein R_1 represents a 2-propenyl group or a 2-propynyl group, which comprises the steps of;

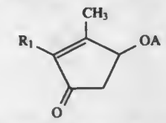
(i) protecting the hydroxyl group of the cyclopentenolone compound II:

II



wherein R_1 is the same as defined above to give a cyclopentenolone derivative represented by the formula III:

III

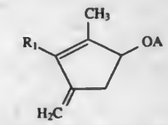


wherein R_1 is the same as defined above and A is a protecting group for the hydroxyl group;

(ii) reacting a mixture of zinc and dibromomethane or diiodomethane in an inert organic solvent with titanium tetrachloride;

(iii) reacting the resulting reaction mixture with a cyclopentenolone derivative III to give a cyclopentenol derivative IV:

IV



wherein R_1 and A are the same as defined above; and

(iv) removing the protecting group A from the cyclopentenol derivative represented by the formula IV to give the cyclopentenol compound I.

5,550,261

TAXOIDS, THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Hervé Bouchard, Ivry Sur Seine; Jean-Dominique Bourzat, Vincennes, and Alain Commercon, Vitry-Sur-Seine, all of, France, assignors to Rhone-Poulenc Rorer S.A., Antony, France

Division of Ser. No. 162,984, Dec. 8, 1993. This application Jun. 7, 1995, Ser. No. 483,693

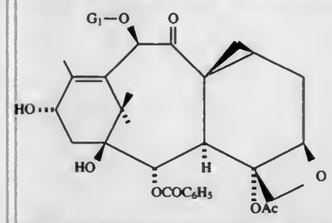
Claims priority, application France, Dec. 9, 1993, 92 14813

Int. Cl.[6] C07D *305/14*

U.S. Cl. 549—510 **10 Claims**

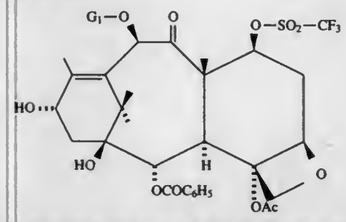
1. A method of preparing a compound of the formula (VI):

(VI)



in which G_1 is a hydrogen atom or an acetyl, alkoxy-acetyl or alkyl radical or a hydroxy-protecting group, comprising reacting a compound of the formula (XXII)

(XXII)



with an alkali metal halide or an alkali metal azide or a quaternary ammonium salt or an alkali metal phosphate in an organic solvent and isolating the compound of formula (VI).

5,550,262

MULTICATALYTIC PROTEASE INHIBITORS

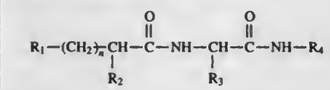
Mohamed Iqbal, Malvern; James L. Diebold, Norristown, all of Pa.; Robert Siman, Wilmington, Del.; Sankar Chatterjee, Wynnewood, and James C. Kauer, Kennett Square, both of Pa., assignors to Cephalon, inc., West Chester, Pa.

Filed Nov. 14, 1994, Ser. No. 337,795

Int. Cl.[6] C07C *231/00;255/00*

U.S. Cl. 554—57 **10 Claims**

1. A compound represented by the formula:



wherein:

R_1 is selected from the group consisting of —C≡N, —C(O)OR_9, phthalimido, —NH—SO_2R_9, and —NH—J;

R_2 is selected from the group consisting of H, hydroxyl, alkyl having from one to ten carbons, and cycloalkyl having from five to seven carbons;

R_3 is selected from the group consisting of —$(CH_2)_m$—NH—C(=N—R_5)—NH_2, —R_6—NO_2, —R_6—J and —R_6—CN;

R_4 is —CH (CH_2—R_7)—CH—R_8;

R_5 is selected from the group consisting of —NO_2, —CN, —J; and

R_6 is —$(CH_2)_n$—NH—C (=NH) —NH—;

R_7 is alkyl having from one to eight carbons, said alkyl group being optionally substituted with one or more phenyl groups, or C_6H_5; and

R_8 is selected from the group consisting of =O =N—NHC(O)—NH_2, =N—OH, =N—OCH_3, =N—O—CH_2—C_6H_5, =NNHC— C(S)—NH_2 and =N—NH—J;

R_9 is alkyl having from one to six carbons, said alkyl group being optionally substitued with one or more halogen atoms, aryl, or heteroaryl groups;

J is a protecting group;

n is an integer from 5 to 10; and

m is an integer from 2 to 5.

5,550,263

X-RAY CONTRAST AGENT

Bengt Herslöf, Stockholm; Kåre Larsson, Bjärred, and Stig Bengmark, Lund, all of, Sweden, assignors to Karlshamns LipidTeknik AB, Stockholm, Sweden

PCT No. PCT/SE92/00374, § 371 Date Dec. 30, 1993, § 102(e) Date Dec. 30, 1993, PCT Pub. No. WO92/21384, PCT Pub. Date Dec. 10, 1992

PCT Filed Jun. 3, 1992, Ser. No. 157,048

Claims priority, application Sweden, Jun. 3, 1991, 9101709

Int. Cl.[6] A61K *49/04;* **C07F** *9/10*

U.S. Cl. 554—78 **31 Claims**

1. A phospholipid-based compound which comprises a phospholipid to which an x-ray contrast-giving moiety has been covalently linked by means of an ester or an amide bond.

5,550,264

PROCESS FOR THE REMOVAL OF DISSOLVED METALLIC CATALYST FROM ESTER PRODUCTS

A. Fred Elsasser, Cincinatti, Ohio, assignor to Henkel Corporation, Plymouth Meeting, Pa.

Filed Jul. 13, 1994, Ser. No. 274,593

Int. Cl.[6] C11B *3/10*

U.S. Cl. 554—176 **22 Claims**

1. A process for purifying crude ester containing dissolved residual metallic catalyst comprising the steps of

(a) adding to said crude ester an adsorbent effective amount of an amorphous silicon dioxide adsorbent which is capable of adsorbing metallic catalyst;

(b) heating the combination resulting from (a) at a temperature of between about 80° C. and about 130° C.; and

(c) separating the ester from the adsorbent by filtration wherein said metallic catalyst is retained on the adsorbent.

5,550,265

ONIUM BORATES/BORATES OF ORGANOMETALLIC COMPLEXES AND CATIONIC INITIATION OF POLYMERIZATION THEREWITH

Frederic Castellanos, Mulhouse; Jacques Cavezzan, Villeurbanne; Jean-Pierre Fouassier, Morschwiller-le-bas, and Christian Priou, Villeurbanne, all of, France, assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France

Division of Ser. No. 35,838, Mar. 23, 1993, Pat. No. 5,468,902. This application Mar. 8, 1995, Ser. No. 400,970

Claims priority, application France, Mar. 23, 1992, 92 03440

Int. Cl.[6] C07F *5/02;9/00;13/00*

U.S. Cl. 556—7 **3 Claims**

1. An onium borate, the cationic moiety of which having the formula (II):

$(L^1L^2L^3M)^{q+}$ (II)

in which M is a metal of Groups 4 to 10 of the Periodic Table; L^1 is a ligand associated with the metal M via η electrons and is an η^3-alkyl, η^5-cyclopentadienyl or η^7-cycloheptatrienyl ligand or an η^6-aromatic compound selected from among the optionally substituted η^6-benzene ligands and compounds having from 2 to 4 condensed ring members, each ring member contributing to the valence shell of the metal M via 3 to 8 ρ electrons; L^2 is a ligand associated with the metal M via ρ electrons and is an η^7-cycloheptatrienyl ligand or an η^6-aromatic compound selected from among the optionally substituted η^6-benzene ligands and compounds having from 2 to 4 condensed ring members, each ring member contributing to the valence shell of the metal M via 6 or 7 π electrons; and L^3 represents from 0 to 3 identical or different ligands associated with the metal M via σ electrons and is CO or NO_2^+ ligands, the total electron charge q of the complex to which L^1, L^2 and L^3 contribute and the ionic charge of the metal M being positive and equal to 1 or 2; and the anionic borate moiety of which having the formula:

$$[BX_aR_b]^-$$

in which a and b are integers ranging from 0 to 4 and a+b=4; the symbols X are each a halogen atom when a ranges up to 3 and an OH functional group when a ranges up to 2; and the symbols R, which may be identical or different, are each a phenyl radical substituted by at least one element or electron-withdrawing substituent.

5,550,266

METHOD FOR THE PREPARATION OF PURE CARBOXYETHYL GERMANIUM SESQUIOXIDE

Michael J. Arnold, 4521 Campus Dr., Suite 225, Irvine, Calif. 92715

Continuation-in-part of Ser. No. 204,548, Mar. 2, 1994, Pat. No. 5,386,046. This application Jan. 31, 1995, Ser. No. 381,343
Int. Cl.[6] C07F *7/30*
U.S. Cl. 556—89 **14 Claims**

1. A method of preparing organic germanium in the absence of any toxic level of germanium dioxide or metallic germanium comprising;

preparing trichlorogermane propionic acid as a crude reaction product from germanium tetrachloride;

forming a germanium acrylate moiety as a reaction product from hydrolysis of the reaction product;

forming carboxyethyl germanium sesquioxide as a reaction product from acidification of the germanium acrylate moiety.

5,550,267

PROCESS FOR THE SYNTHESIS OF HALOALKYLFERROCENES

Hervé Graindorge, Vert le Petit; Jean-Claude Mondet, Vert le Grand, and Charles-Henry Vincent, Precy sur Oise, all of, France, assignors to Societe Nationale Des Poudres Et Explosifs, Paris, France

Filed Jun. 6, 1995, Ser. No. 470,966
Claims priority, application France, Jun. 14, 1994, 94 07223
Int. Cl.[6] C07F *15/02;17/02*
U.S. Cl. 556—144 **10 Claims**

1. In a process for the synthesis of haloalkylferrocenes, comprising a first stage of reaction, in the presence of aluminum chloride as catalyst and in organic solvent medium, of a haloalkyl carboxylic acid halide or haloalkyl carboxylic acid anhydride with a ferrocene derivative chosen from the group consisting of ferrocene and alkylferrocenes to produce an intermediate compound which is thereafter reduced to provide the haloalkylferrocene, the improvement wherein, after this first reaction stage, without first isolating the intermediate compound, a metal hydride is added to the reaction mixture to reduce said intermediate compound.

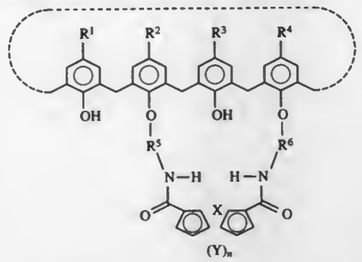
5,550,268

ION-SENSITIVE COMPOUNDS

Christopher P. Moore, Harrow; Trevor J. Wear, South Harrow; Paul D. Beer, North Oxford, and Alistair J. Goulden, Bartlemas Close, all of, England, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 21, 1995, Ser. No. 517,052
Claims priority, application England, Sep. 7, 1994, 9418019
Int. Cl.[6] C07F *17/02*
U.S. Cl. 556—145 **6 Claims**

1. An ion-sensitive compound having the formula



wherein

R^1, R^2, R^3 and R^4 are each independently hydrogen, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group wherein substituents are selected from alkyloxy, aryloxy, alkylamido, arylamido, alkylsulfonamido, aklyloxycarbonyl, aryloxycarbonyl and nitro; an alkylamido group, an arylamido group, an alkylsulfonamido group, an arylsulfonamido group or a nitro group;

R^5 and R^6 are each independently an alkylene group;

X is Fe or Co^+;

Y is a counter anion; and,

n is 0 or 1.

5,550,269

METHOD FOR REDISTRIBUTION OF TRICHLOROSILANE

Philip Boudjouk, Fargo, N. Dak., and Steven D. Kloos, Chanhassen, Minn., assignors to North Dakota State University Research Foundation, Fargo, N. Dak.

Filed Nov. 17, 1995, Ser. No. 560,456
Int. Cl.[6] C07F *7/10;7/08*
U.S. Cl. 512—415 **18 Claims**

1. A method for redistribution of trichlorosilane, the method comprising:

(A) contacting trichlorosilane with N,N,N'N'-tetraethylethylenediamine forming a complex comprising dichlorosilane and N,N,N',N'-tetraethylethylenediamine and

(B) recovering the complex comprising dichlorosilane and N,N,N',N'-tetraethylethylenediamine.

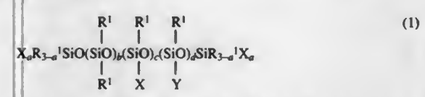
5,550,270

ORGANOPOLYSILOXANES AND PROCESS OF MAKING

Mitsuhiro Takarada, and Yoshinori Shimazaki, both of Usuigun, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jun. 5, 1995, Ser. No. 461,742
Claims priority, application Japan, Sep. 6, 1994, 6-151448
Int. Cl.[6] C07F *7/08*
U.S. Cl. 556—440 **3 Claims**

1. An organopolysiloxane of the following average compositional formula (1):



(1)

wherein X is $—C_3H_6O(CH_2CH_2O)_nR^2$ wherein R^2 is a hydrogen atom or an alkyl group having 1 to 6 carbon atoms and letter n is a positive number of 5 to 30,

Y is a 3-acryloxypropyl or 3-methacryloxypropyl group,

R^1 is an alkyl group having 1 to 6 carbon atoms or phenyl group, letters a, b, c, and d are positive numbers in the range: a=1,1≦b≦20, 0≦c≦10, 1≦d≦10, and 1≦a+c≦10.

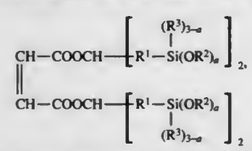
5,550,271

BIS(BIS-SILYLALKYL) DICARBOXYLATES AS ADHESION PROMOTERS AND COMPOSITIONS CONTAINING THEM

Judith Stein, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 378,692, Jan. 26, 1995, Pat. No. 5,487,948.
This application Jun. 6, 1995, Ser. No. 486,149
Int. Cl.[6] C08F *7/04*
U.S. Cl. 556—440 **8 Claims**

1. A bis(bis-silylalkyl) dicarboxylate ester having the formula



(I)

wherein R^1 is C_{2-6} alkylene, each of R^2 and R^3 is independently C_{1-8} alkyl and a is from 1 to 3, said esters being the cis- or trans-isomers or mixtures thereof.

5,550,272

METHOD FOR HYDROSILATING UNSATURATED MONOMERS

Larry N. Lewis, Scotia, and Terrell W. Carothers, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 2, 1995, Ser. No. 538,149
Int. Cl.[6] C07F *7/08;7/10*
U.S. Cl. 556—479 **15 Claims**

1. A process for hydrosilating unsaturated monomers under non-free radical conditions comprising the step of contacting:

(a) a system comprising at least one SiH group,

(b) an unsaturated monomer,

(c) a transition metal catalyst; and

(d) a free radical polymerization inhibitor.

5,550,273

PROCESS FOR PREPARING FLUOROCARBON FLUOROALKANESULFONATES

Patricia M. Savu, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 129,259, Sep. 30, 1993, abandoned. This application Nov. 16, 1994, Ser. No. 341,448
Int. Cl.[6] C07C *309/65;309/71;309/68;309/69*
U.S. Cl. 558—54 **17 Claims**

1. A process for preparing fluorocarbon fluoroalkanesulfonates or fluorocarbon fluorocycloalkanesulfonates comprising (a) forming a mixture comprising at least one compound selected from the group consisting of fluoroalkanesulfonyl halides and fluorocycloalkanesulfonyl halides, up to an essentially stoichiometric amount of at least one fluorocarbon-monosubstituted carbinol, and at least one base; and (b) allowing said mixture to react in the absence of solvent at a temperature below about +15° C.

5,550,274

IN-SITU PHOSPHATION REAGENT PROCESS

Robert L. Reierson, 1 Ruthies Run, Cranbury, N.J. 08512

Continuation-in-part of Ser. No. 220,339, Mar. 30, 1994, abandoned. This application Mar. 7, 1995, Ser. No. 400,077
Int. Cl.[6] C07F *9/09*
U.S. Cl. 558—110 **9 Claims**

1. A process for the production of monoalkyl phosphoric acid ester compositions wherein the monoalkyl to dialkyl phosphate weight ratio is greater than 80:20 and the weight percent of the residual alcohol and phosphoric acid are individually each less than 6% comprising the steps of:

A) preparing a phosphoric acid-alcohol reactant solution by

i) dissolving

a) from about 75 weight % to about 117 weight % phosphoric acid in

b) at least one alcohol medium of the formula $RO\{C_nH_{2n}O\}_xH$, wherein R is selected from the group consisting of a saturated or unsaturated aliphatic C_1–C_{30} straight or branched carbon chain, a phenyl, a mono-,di- or tri-substituted phenyl, a phenyl C_1–C_6 alkyl and a mono-,di-,or tri-substituted phenyl C_1–C_6 alkyl, wherein the phenyl substituent group(s) each have a total of 1 to 30 carbon atoms, and wherein each substitution may be a saturated or unsaturated straight or branched carbon chain, a phenyl, an alkyl phenyl, a phenyl alkyl, or an alkyl phenyl alkyl group; wherein n is from 2 to 4 and may be the same or different for each alkylene oxide unit; and wherein x is from 0 to 100, under essentially non-reactive temperature conditions;

B)

i) intimately blending into said reactant solution and

ii) reacting exclusively the phosphoric acid in said reactant solution with a stoichiometrically effective amount of phosphoric anhydride to produce in-situ a phosphation reagent having an effective equivalent polyphosphoric acid weight percent of from about 118 to 125; and

C) reacting the phosphation reagent so produced with the alcohol medium at from about 75° C. to about 100° C. for a reaction time of from about 4 to about 12 hours.

VOL 1189 SS 4 AG 27 1996 UMI

5,550,275
METHOD OF PREPARING DIARYLCHLOROPHOSPHATE

Mutsuno Kato; Yoshifusa Hara, and Masao Takada, all of Tokyo, Japan, assignors to Nippon Chemical Industrial Co., Ltd., Tokyo, Japan

Filed Nov. 3, 1994, Ser. No. 335,345

Claims priority, application Japan, Nov. 8, 1993, 5-278367

Int. Cl.[6] C07F 9/14

U.S. Cl. 558—140 **10 Claims**

1. A method of preparing diarylchlorophosphate, which comprises:

a) reacting an alkyl diarylphosphate having the formula (I):

$$R^1O—P(O)(OAr)_2 \quad (I)$$

wherein R^1 is an alkyl group having 1 to 4 carbon atoms, and Ar represents aryl or substituted aryl; with thionyl chloride in the presence of a catalyst at a temperature from about 100° C. to 120° C.

5,550,276
PHOSPHONIC ACID DERIVATIVES AND THIONOPHOSPHONIC ACID DERIVATIVES

Hermann O. Wirth, Bensheim; Hans-Helmut Friedrich, Lautertal, and Kay S. Gröninger, Darmstadt, all of, Germany, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

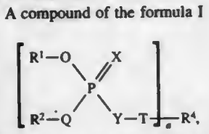
Continuation of Ser. No. 90,980, Jul. 12, 1993, abandoned, which is a continuation of Ser. No. 954,943, Sep. 30, 1992, abandoned, which is a continuation of Ser. No. 793,495, Nov. 14, 1991, abandoned, which is a continuation of Ser. No. 641,197, Jan. 15, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 483,624

Claims priority, application Switzerland, Jan. 18, 1990, 162/90

Int. Cl.[6] C07F 9/141;9/201

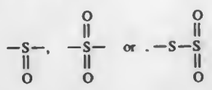
U.S. Cl. 558—177 **10 Claims**

1. A compound of the formula I



(I)

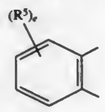
in which n is 1, 2 or 3 and in which X is oxygen or sulfur, T has the meaning of —S—, —S—S—, —S—S—S—, —S— S—S—S—, —S—S—S—S—S—,



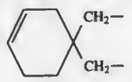
and Y has the meaning of



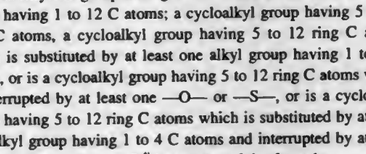
in which Z has the meaning of —H, —COR^{13}, —$COOR^{13}$ or —$CONHR^{43}$, and Q has the meaning of oxygen or —NR^0, and R^1, R^2, R^0 and R^{13} are identical or different and are an alkyl group having 1 to 18 C atoms, an alkenyl group having 2 to 18 C atoms, a phenyl or naphthyl group, a phenyl or naphthyl group each of which is substituted by at least one C_1–C_4alkyl group, or are a phenylalkyl group having 7 to 9 C atoms, a cycloalkyl group having 5 to 12 ring C atoms or a cycloalkyl group having 5 to 12 ring C atoms which is substituted by at least one alkyl group having 1 to 4 C atoms, or R^0 is —H, or R^1 and R^2 together are a straight-chain alkylene group having 2 to 5 C atoms, a straight-chain alkylene group having 2 to 5 C atoms which is substituted by at least one alkyl group having 1 to 8 C atoms or by at least one group —CH_2—O—C_1–C_{12}alkyl or —CH_2—S—C_1–C_{12}alkyl, or R^1 and R^2 together are a group of the formula



in which R^5 is an alkyl group having 1 to 4 C atoms and e is a number 0, 1 or 2, or R^1 and R^2 together are a group of the formula



R^3 has the meaning of —H, alkyl having 1 to 4 C atoms, phenyl, —CH_2—S—$R^{4'}$, in which $R^{4'}$ is as defined below, or is phenyl or phenyl substituted by at least one alkyl group having 1 to 4 C atoms, and, if n is 1, R^4 has the meaning of $R^{4'}$ in which $R^{4'}$ is —H, an alkyl group having 12 to 18 C atoms, an alkenyl group having 2 to 18 C atoms pinan-10-yl, an alkyl group having 1 to 18 C atoms which is substituted by at least one OH group, an alkyl group having 2 to 18 C atoms which is interrupted by at least one —S— or —O—, an alkyl group having 3 to 18 C atoms which is substituted by at least one OH group and interrupted by at least one —S— or —O—, a group of the formula —R^6—$COOR^7$ in which R^6 is an alkylene group having 1 to 6 C atoms and R^7 is an alkyl group having 1 to 12 C atoms; a cycloalkyl group having 5 to 12 ring C atoms, a cycloalkyl group having 5 to 12 ring C atoms which is substituted by at least one alkyl group having 1 to 4 C atoms, or is a cycloalkyl group having 5 to 12 ring C atoms which is interrupted by at least one —O— or —S—, or is a cycloalkyl group having 5 to 12 ring C atoms which is substituted by at least one alkyl group having 1 to 4 C atoms and interrupted by at least one —O— or —S—, or $R^{4'}$ is a group of the formula



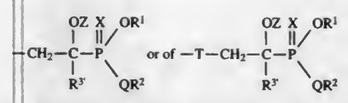
in which X is oxygen or sulfur and Q, R^4 and R^2 are as defined above, or R^4 is a heterocycle having 5 to 6 ring members with 1 to 4 members selected from the group consisting of —NH—, —N=,



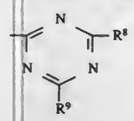
and —N(C_1–C_4alkyl)—, or a heterocycle having 5 to 6 ring members with one or two members from the group consisting of —NH—, —N=,



or —N(C_1–C_4alkyl)— and one further hetero atom selected from the group consisting of O and S, or the abovementioned heterocycles which are fused to a benzene radical, or the abovementioned heterocycles which are substituted on one or two of the C atoms by =S and/or C_1–C_4alkyl, or $R^{4'}$ has the meaning of



in which T and Z are as defined above, X is oxygen or sulfur, $R^{3'}$ is —H, alkyl having 1 to 4 C atoms, phenyl or phenyl which is substituted by at least one alkyl group having 1 to 4 C atoms, and Q, R^1 and R^2 are as defined above, or R^4 has the meaning of



in which R^8 and R^9, independently of one another, are C_1–C_{18}alkyl, phenyl, phenyl which is mono-, di- or tri-C_1–C_4alkyl-substituted, or are a group —OR^{10}, —SR^{10} or

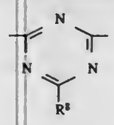


in which R^{10} is C_1–C_{18}alkyl, C_5–C_{12}cycloalkyl, C_5–C_{12}cycloalkyl which is mono-, di- or tri-C_1–C_4alkyl-substituted, or is C_3–C_6alkenyl, phenyl, phenyl which is mono-, di- or tri-C_1–C_9alkyl-substituted, or is C_7–C_9phenylalkyl or C_7–C_9phenylalkyl which is mono-, di- or tri-C_1–C_4alkyl-substituted on the phenyl, and R^{11} and R^{12} which are identical or different are —H, C_1–C_{18}alkyl, C_5–C_{12}cycloalkyl, C_5–C_{12}cycloalkyl which is mono-, di- or tri-C_1–C_4alkyl-substituted, or are C_3–C_6alkenyl, C_7–C_9phenylalkyl, C_7–C_9phenylalkyl which is mono-, di- or tri-C_1–C_4alkyl-substituted on the phenyl, or are C_2–C_4alkyl which is substituted by —OH, by C_1–C_8alkoxy or by di(C_1–C_4alkyl)amino, or R^{11} and R^{12} together with the nitrogen atom linking them are a 5- to 7-membered heterocycle, or,

if n is 2,

R^4 is straight-chain alkylene having 1 to 12 C atoms or alkenylene having 2 to 10 C atoms or straight-chain alkylene having 1 to 10 C atoms which is substituted by at least one alkyl group having 1 to 4 C atoms, or straight-chain alkylene having 2 to 10 C atoms which is interrupted by at least one —S— or —O— , or straight-chain alkylene having 2 to 10 C atoms which is substituted by at least one alkyl group having 1 to 4 C atoms and interrupted by at least one —S— or —O—, or R^4 has the meaning of a bivalent heterocycle having 5 to 6 ring members with 1 to 4 nitrogen atoms, or of a bivalent heterocycle having 5 to 6 ring members with one or two nitrogen atoms and one further hetero atom selected from the group consisting of O or S, or of the abovementioned bivalent heterocycles which are substituted by =S and/or C_1–C_4alkyl on one or two of the C atoms, or,

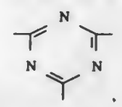
R^4 has the meaning of



in which R^8 is as defined above, or,

if n is 3,

R^4 is a group of the formula



with the proviso that the compound of the formulae C_2H_5—S—$CH_2CH(OH)$—PO(—OC_2H_5)$_2$, Ph—$C(CH_2SCH_3)(OH)$—PO(—OC_2H_5)$_2$ and C_2H_5—S—$CH_2CH(OC(O)CH_3)$—PO(—OC_2H_5)$_2$ are excepted.

5,550,277
PERFLUOROALKYL AND PERFLUOROALKYLETHER SUBSTITUTED AROMATIC PHOSPHATES, PHOSPHONATES AND RELATED COMPOSITIONS

Kazimiera J. L. Paciorek, 1425 Seacrest Dr., Corona Del Mar; Wen-Huey Lin, 24362 Hilton Way, both of Laguna Niguel, Calif. 92656; Steven R. Masuda, 29322 Crown Ridge, Laguna Niguel, Calif. 92656, and James H. Nakahara, 10 Wickland, Irvine, Calif. 92720

Filed Jan. 19, 1995, Ser. No. 375,954

Int. Cl.[6] C07F 9/09;9/32;9/40

U.S. Cl. 558—194 **11 Claims**

1. Phosphates of the general formula $(R_fC_6H_4O)_xP(O)(OR)_{3-x}$; wherein:

x is an integer 1, 2, or 3; and

R_f is selected from the group consisting of:

(a) substituents having a general formula (C_nF_{2n+1}), wherein n is an integer from 2 to 10 inclusive;

(b) $C_3F_7(OCF(CF_3)CF_2)_m$,

(c) $CF_3(OCF_2CF_2)_m$,

(d) $C_2F_5(OCF_2CF_2)_m$,

(e) $C_3F_7(OCF_2CF_2CF_2)_m$, and

(f) $C_4F_9(OCF_2CF_2CF_2CF_2)_m$,

wherein m is an integer from 1 to 20 inclusive, and R is C_6H_5 or R'C_6H_4, wherein R' is phenyl, alkyl, SC_6H_5 or OC_6H_5.

5,550,278
PROCESS FOR WORKING UP THE LIQUID REACTION PRODUCTS FROM THE CU-CATALYSED PREPARATION OF DIMETHYL CARBONATE

Johann Rechner, Krefeld; Paul Wagner, Düsseldorf; Hans-Josef Buysch, Krefeld, and Alexander Klausner, Köln, all of, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 17, 1994, Ser. No. 340,775

Claims priority, application Germany, Nov. 24, 1993, 43 39 977.0

Int. Cl.[6] C07C 69/96

U.S. Cl. 558—277 **16 Claims**

1. A process for the preparation of dimethyl carbonate by reaction of methanol with oxygen and carbon monoxide in the presence of a copper-containing catalyst suspended or dissolved in the reaction medium under increased pressure at elevated temperature, removal of the catalyst and working-up of the reaction solution, wherein the catalyst-free reaction solution is initially freed from the water of reaction as the bottom product in a first distillation column and the top product, comprising dimethyl carbonate and methanol, is separated in a subsequent pressure distillation at elevated temperature under increased pressure into a bottom product of pure dimethyl carbonate and a dimethyl carbonate-depleted, methanolic top product, and the top product is recycled to the reaction medium and not to the distillation column.

5,550,279

METHOD OF CONTROLLING REACTIONS

Takashi Yano, and Hiroyuki Miura, both of Himeji, Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 108,421, Aug. 19, 1993, abandoned. This application May 1, 1995, Ser. No. 431,461
Claims priority, application Japan, Aug. 20, 1992, 4-245750
Int. Cl.[6] C07C *68/00*
U.S. Cl. 558—277 **14 Claims**

1. A method of producing a carbonic ester by allowing methanol to react with carbon monoxide and oxygen in a liquid phase to provide the corresponding dimethyl carbonate which comprises

supplying continuously the reactants and a catalyst to a reactor wherein a reactor liquid phase and a reactor vapor phase are obtained,

subjecting at least a portion of said reactor vapor phase gas to gas-liquid separation to obtain a condensable gas fraction and a non-condensable gas fraction,

controlling the temperature of the reaction within the range of about 100° C. to about 150° C. by recycling at least a portion of said non-condensable gas fraction to said reactor liquid phase and sparging said reactor liquid phase with said portion of recycled non-condensable gas fraction, wherein the flow rate of the recycled gas is regulated within the range of 0.5 to 5 Nm^3/H per liter of the reaction mixture, and

withdrawing continuously an amount of the reactor liquid phase to adjust the liquid level in the reactor.

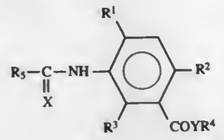
5,550,280

HINDERED AROMATIC ESTER COMPOUNDS USEFUL AS ANTI-VIRAL AGENTS

Dong Dao-Cong, and William A. Harrison, both of Guelph, Canada, assignors to Uniroyal Chemical Ltd., and Uniroyal Chemical Ltee, both of Elmira, Canada

Filed Nov. 30, 1994, Ser. No. 346,811
Int. Cl.[6] C07C *255/49;* **C07D** *291/04;327/06*
U.S. Cl. 558—415 **3 Claims**

1. A compound of the formula



wherein

X is O or S;

Y is O or S;

R^1 is hydrogen, halogen, C_1–C_4 alkyl or C_1–C_4 alkoxy;

R^2 is hydrogen, halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_2–C_4 alkenyl, C_2–C_4 alkenyloxy, C_2–C_4 alkynyl, C_2–C_4 alkynyloxy, mono-, di- or tri-halomethyl, trifluoromethoxy, C_1–C_4 alkylthio, C_3–C_4 branched alkylthio, nitro, or cyano;

R^3 is hydrogen, halogen, methyl, mono-, di- or tri-halomethyl;

R^4 is

a) C_3–C_8 cycloalkyl substituted by one or more C_1–C_4 alkyl; or

b)



wherein

R^6 and R^7 are independently, hydrogen or linear or branched, C_1–C_4 alkyl, C_2–C_4 alkenyl, or C_2–C_4 alkynyl, and R^8 is C_3–C_8 cycloalkyl substituted by one or more C_1–C_4 alkyl; and

R^5 is

a) fully unsaturated, partially or fully reduced or substituted oxathiinyl, furanyl, dithiinyl, dioxinyl, thienyl, thiazolyl, oxazolyl, isoxazolyl, isothiazolyl, thiadiazolyl, pyrazolyl, pyrrolyl, imidazolyl, pyranyl, oxathiazinyl, oxadiazolyl, dihydrofuranyl, dihydro-2-dioxinyl or indolyl; or

b) G—O—

wherein

G is a furanylalkyl, tetrahydrofuranylalkyl, oxetanylalkyl or oxiranylalkyl.

5,550,281

FLUID BED PROCESS FOR THE ACETOXYLATION OF ETHYLENE IN THE PRODUCTION OF VINYL ACETATE

Larry M. Cirjak, 14007 Stanley Dr., Burton, Ohio 44021; Michael F. Lemanski, 306 Tamerlaine Rd., Houston, Tex. 77024; David R. Wagner, 8429 Hallet St., Lenexa, Kans. 66215; Nancy C. Benkalowycz, 24771 Wildwood Dr., Westlake, Ohio 44145; Patricia R. Blum, 970 Brookpoint Dr., Macedonia, Ohio 44056; Marc A. Pepera, 7304 Honeydale Dr., Northfield, Ohio 44067, and Christos Paparizos, 283 E. 284th St., Willowick, Ohio 44095

Filed Jun. 2, 1994, Ser. No. 252,874
Int. Cl.[6] C07C *67/05*
U.S. Cl. 560—245 **12 Claims**

1. The process for manufacturing vinyl acetate comprising co-joining oxygen-containing gas, ethylene and acetic acid in a fluid bed reactor in the presence of a fluid bed catalyst material to react to produce vinyl acetate and recovering the vinyl acetate from the fluid bed reactor, wherein the improvement comprises feeding a gaseous mixture comprising ethylene and acetic acid into said fluid bed reactor through a first inlet, feeding an oxygen-containing gas into said fluid bed reactor through a second inlet wherein the ratio of the sum of the ethylene, acetic acid and oxygen-containing gas entering the reactor from the first and second inlet is within the flammability limits of a mixture of the gases.

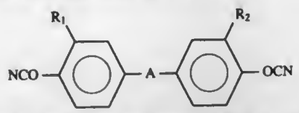
5,550,282

BIFUNCTIONAL AROMATIC CYANATES, PREPOLYMERS AND ELECTRICAL LAMINATES MADE THEREFROM

Hidenari Tsunemi, Adogawacho, and Toshinobu Nakata, Otsu, both of, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 228,170, Apr. 15, 1994, Pat. No. 5,488,144, which is a division of Ser. No. 996,754, Dec. 24, 1992, abandoned. This application Jul. 13, 1994, Ser. No. 274,520
Claims priority, application Japan, Dec. 27, 1991, 3-359938; Feb. 26, 1992, 4-75148
Int. Cl.[6] C07C *71/00*
U.S. Cl. 560—301 **12 Claims**

1. A curable composition comprising a partially trimerized prepolymer of a dicyanate ester of the formula:



wherein R_1, and R_2 are the same or different and each is alkyl, perfluoroalkyl, aryl or halogen; and

A is a bridge selected from the group consisting of a direct bond, methylene optionally mono- or disubstituted by alkyl, perfluoroalkyl and/or aryl, a five or six membered cycloalkylene, sulfonyl, thio, oxy, carbonyl, phenylene, and xylylene optionally substituted by alkyl at one or both methylene carbon atoms.

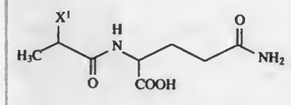
5,550,283

PROCESS FOR PRODUCING ALANYLGLUTAMINE

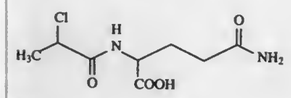
Kunimi Inoue; Yoshiyuki Yamada; Kazumi Amatsu, all of Sakai; Yukiteru Mimura, Shizuoka-ken; Yasunori Nakaguchi; Hiroyuki Shinmura, both of Sakai; Yasuyuki Ono, Isehara; Yutaka Osawa, Ichikawa; Shoichi Mizutaki, Kawachinagano; Masaji Kasai, Fujisawa, and Shinji Tomioka, Hashimoto, all of, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Division of Ser. No. 141,622, Oct. 27, 1993, Pat. No. 5,380,934. This application Sep. 19, 1994, Ser. No. 307,417
Claims priority, application Japan, Oct. 29, 1992, 4-291139
Int. Cl.[6] C07C *229/00*
U.S. Cl. 562—561 **2 Claims**

1. N-(2-substituted)propionylglutamine compound represented by the formula



(I')



(I')

or a salt thereof.

5,550,284

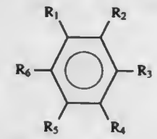
PRODUCTION METHOD FOR ALKOXYNAPHTHALENECARBOXYLIC ACID

Toshio Soto; Ikuo Ito; Kazuhiko Maeda; Keiichi Yokota; Takeshi Namekata, all of Ibaraki Prefecturee, and Akihiko Nemoto, Okegawa, all of, Japan, assignors to Sumikin Chemical Co., Ltd., Japan

Filed Aug. 16, 1994, Ser. No. 292,052
Claims priority, application Japan, Aug. 18, 1993, 5-226453
Int. Cl.[6] C07C *63/34*
U.S. Cl. 562—467 **15 Claims**

1. A method for producing alkoxyalkyltetralin comprising the steps of;

in a presence of an alkali metal catalyst adding 1,3-butadiene to an alkoxyalkylbenzene having the formula



wherein

R_1 is alkyl group having a benzylic hydrogen;

R_2 through R_6 are H, alkyl, phenyl, alkoxy, or phenoxy, and either of R_2 and R_6 is H, and at least one of R_2 through R_6 is alkoxy or phenoxy, to yield an adduct; and

subjecting said adduct to cyclization in a presence of an acid catalyst to yield alkoxyalkyltetralin.

5,550,285

METHOD FOR PRODUCING CALCIUM SALTS OF [S,S]-ETHYLENEDIAMINE-N,N'-DISUCCINIC ACID

William J. Layman, Jr., 15732 Woodmoss Dr.; Kannappan Chockalingam, 11888 Longridge Ave., both of Baton Rouge, La. 70816, and Jean-Pierre Lecouvé, 12, Avenue Roger Salengro, 68100 Mulhouse, France

Filed Jul. 11, 1994, Ser. No. 272,455
Int. Cl.[6] C07C *229/00*
U.S. Cl. 562—565 **14 Claims**

1. A process for producing solid calcium [S,S]-ethylenediamine-N,N'-disuccinate, which process comprises: providing a solution which includes calcium L-aspartate, 1,2-dihaloethane and an aqueous solvent and which has a pH within the range of from about 9 to about 14; forming calcium [S,S]-ethylenediamine-N,N'-disuccinate by the reaction of calcium L-aspartate and 1,2-dihaloethane in the solution; and precipitating the formed calcium [S,S]-ethylenediamine-N,N'-disuccinate from the solution at a solution pH which is within the range of from about 9.0 and to about 11.

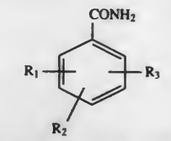
5,550,286

PROCESS FOR THE PREPARATION OF AROMATIC CARBOXAMIDES FROM AROMATIC CARBOXYLIC ACIDS AND UREA

Yani Christidis, Paris, France, and Michael Meier, Frankfurt, Germany, assignors to Hoechst AG., Germany

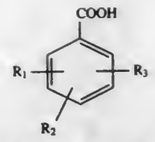
Filed Dec. 12, 1994, Ser. No. 354,206
Claims priority, application Germany, Dec. 14, 1993, 43 42 571.2
Int. Cl.[6] C07C *231/00*
U.S. Cl. 564—139 **14 Claims**

1. A process for the preparation of an aromatic carboxamide of the formula (I)



(I)

in which R_1, R_2, and R_3 are identical or different and are hydrogen, fluorine, chlorine or bromine atoms, or are alkyl (C_1–C_4), hydroxyl or nitro groups, or R_1 and R_2 form an aromatic ring of 5 or 6 ring members, which ring may be substituted by fluorine, chlorine or bromine atoms or by alkyl (C_1–C_4), hydroxyl or nitro groups, which comprises reacting an aromatic carboxylic acid of the formula (II)



(II)

in which R_1, R_2 and R_3 are as defined above with urea in an inert organic solvent with the addition of a catalytic amount of phosphorous acid.

5,550,287

PROCESS FOR THE PREPARATION AND PURIFICATION OF IODINATED CONTRAST AGENTS

Vincenzo Cannata, Sasso Marconi; Valeriano Merli, Occhiobello, and Claudio Dal Santo, Monticello Di Fara, all of, Italy, assignors to Zambon Group S.p.A., Vicenza, Italy

Filed Mar. 3, 1995, Ser. No. 397,955

Claims priority, application Italy, Mar. 3, 1994, MI94A0378

Int. Cl.[6] C07C *233/05;231/22*

U.S. Cl. 564—153 **8 Claims**

1. A process for the preparation and purification of L-5-(2-hydroxypropionylamino)- 2,4,6-triiodoisophthalic acid bis-(1,3-dihydroxypropylamide) comprising the loading of a solution of crude L-5-(2-acetoxypropionylamino)- 2,4,6-triiodoisophthalic acid bis-(1,3-dihydroxypropylamide) on a column containing a strong anionic resin, the elution with water, the elution with a diluted aqueous solution of a weak acid so that crude L-5-(2-hydroxypropionylamino)-2,4,6-triiodoisophthalic acid bis-(1,3-dihydroxypropylamide) is released out of the column and the final purification of the resultant crude by chromatography on a weak anionic resin.

5,550,288

PROCESS FOR THE PREPARATION OF α-AMINOACYLANILIDES

James W. McManus, Leesburg, Ga., assignor to Merck & Co., Inc., Rahway, N.J.

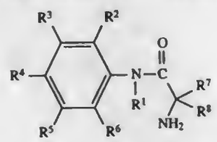
PCT No. PCT/US93/05613, § 371 Date Nov. 14, 1994, § 102(e) Date Nov. 14, 1994, PCT Pub. No. WO93/25518, PCT Pub. Date Dec. 23, 1993

PCT Filed Jun. 11, 1993, Ser. No. 335,806

Int. Cl.[6] C07C *235/68;237/06*

U.S. Cl. 564—194 **4 Claims**

1. A process for the preparation of a compound of the Formula I:



I

wherein:

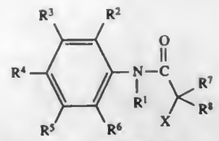
R^1 is H, lower alkyl or aryl;

wherein aryl is phenyl or substituted phenyl with one or two substituents selected from the group consisting of Cl, Br, I, F, NH_2, —NH—(lower alkyl), —N(lower alkyl)$_2$, CO_2H, —CO_2—(lower alkyl), lower alkoxy, NO_2, CF_3, lower alkylthio or OH;

R^2, R^3, R^4, R^5 and R^6 are each independently selected from the group consisting of H, lower alkyl, lower alkoxy, Cl, Br, I and F; and

R^7 and R^8 are independently selected from the group consisting of H and lower alkyl;

WHICH COMPRISES treating the acylanilide of the Formula III



III

wherein R^1, R^2, R^3, R^4, R^5, R^6, R^7 and R^8 are as defined hereinabove; and

X is Cl, Br, I, p-toluenesulfonyloxy, trifluoromethyl sulfonyloxy or methylsulfonyloxy;

WITH A MIXTURE OF ammonium carbamate and aqueous ammonia solution, at a temperature from 40° to 80° C.

5,550,289

N-(1,(1-1)-DIALKYLOXY)-AND N-(1,(1-1)-DIALKENYLOXY ALK-1-YL-N-N,N-TETRASUBSTITUTED AMMONIUM LIPIDS AND USES THEREFOR

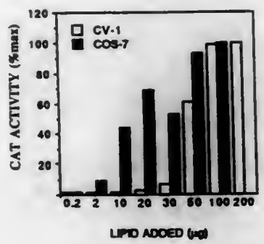
Deborah A. Eppstein, Menlo Park; Philip L. Felgner, Los Altos; Thomas R. Gadek, Oakland; Gordon H. Jones, Cupertino, all of Calif., and Richard B. Roman, Fairhope, Ala., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

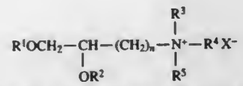
Division of Ser. No. 237,807, May 4, 1994, which is a division of Ser. No. 15,738, Feb. 10, 1993, Pat. No. 5,366,737, which is a division of Ser. No. 614,412, Nov. 16, 1990, Pat. No. 5,208,036, which is a division of Ser. No. 524,257, May 15, 1990, Pat. No. 5,049,386, which is a division of Ser. No. 428,815, Oct. 27, 1989, Pat. No. 4,946,787, which is a division of Ser. No. 114,809, Oct. 29, 1987, Pat. No. 4,897,355, which is a continuation-in-part of Ser. No. 877,916, Jun. 24, 1986, abandoned, which is a continuation-in-part of Ser. No. 689,407, Jan. 7, 1985, abandoned. This application Apr. 3, 1995, Ser. No. 415,963

Int. Cl.[6] C07C *213/06;* **A61F** *2/02;* **A61K** *9/127;9/70*

U.S. Cl. 564—293 **13 Claims**

1. A compound of the formula





I

in its R, S, and racemic forms wherein R^1 and R^2 are the same or different and are an alkyl or alkenyl group of 6 to 24 carbon atoms; R^3, R^4 and R^5 are the same or different and are alkyl of 1 to 8 carbon atoms, aryl, aralkyl of 7 to 11 carbon atoms, or when two or three of R^3, R^4, and R^5 are taken together form quinuclindino, pyrrolidino, piperidino, or morpholino; n is 1 to 8; and X is a pharmaceutically acceptable anion.

5,550,290

BENZIDINE DERIVATIVE AND ELECTROPHOTOSENSITIVE MATERIAL USING THE SAME

Yasufumi Mizuta; Masashi Tanaka; Nariaki Muto; Toshiyuki Fukami; Hideo Nakamori; Mikio Kakui; Sakae Saito; Hiroshi Shiomi; Keisuke Sumida, and Maki Uchida, all of Osaka, Japan, assignors to Mita Industrial Co. Ltd., Osaka, Japan

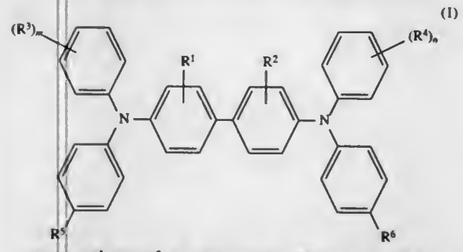
Filed Sep. 28, 1994, Ser. No. 314,375

Claims priority, application Japan, Oct. 13, 1993, 5-256089; Oct. 13, 1993, 5-256090; Oct. 14, 1993, 5-257207; Oct. 14, 1993, 5-257209; Dec. 3, 1993, 5-304437; Dec. 3, 1993, 5-304438; Apr. 8, 1994, 6-070422; Apr. 8, 1994, 6-070423; Apr. 8, 1994, 6-070424; Apr. 8, 1994, 6-070425; Apr. 8, 1994, 6-070426; Apr. 8, 1994, 6-070427

Int. Cl.[6] C07C *211/54;217/92*

U.S. Cl. 564—309 **9 Claims**

1. A benzidine derivative represented by the general formula (1):



(I)

wherein R^1 and R^2 are the same or different and indicate a hydrogen atom or an alkyl group; R^3 and R^4 are the same or different and indicate an alkyl group, an alkoxy group or a halogen atom; R^5 and R^6 are the same or different and indicate an alkyl group having 3 to 5 carbon atoms or an aryl group which may contain a substituent; and m and n are the same or different and indicate an integer of 2 or 3.

5,550,291

PROCESS FOR KEY INTERMEDIATES FOR HIV PROTEASE INHIBITORS

Pierre L. Beaulieu, Rosemère; Yvan Guindon, Montréal, and Dominik M. Wernic, Laval, all of, Canada, assignors to Bio-Mega/Boehringer Ingelheim Research, Inc., Laval, Canada

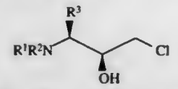
Filed May 4, 1995, Ser. No. 434,691

Claims priority, application Canada, Dec. 6, 1994, 2137406

Int. Cl.[6] C07C *209/26;209/54;209/68;209/82*

U.S. Cl. 564—357 **10 Claims**

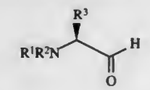
1. A process for preparing a hydrochloric acid addition salt of an isomerically pure chlorohydrin of formula 1



(1)

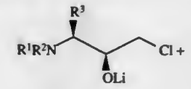
wherein R^1 and R^2 each independently is an N-benzyl protective group selected from benzyl or benzyl monosubstituted or disubstituted with (1–4C) alkyl, (1–4C)alkoxy or halo, and R^3 is an amino acid side chain or a protected amino acid side chain, which comprises the following steps:

(a) reacting an aldehyde of formula 2

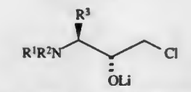


(2)

wherein R^1, R^2 and R^3 are as defined in this claim with (chloromethyl)lithium in an inert solvent at −76° C. to −20° C. to obtain a diastereoisomeric mixture of lithium alcoholates of formula 3 and formula 4



(3)

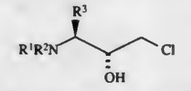


(4)

wherein R^1, R^2 and R^3 are as defined in this claim, the (chloromethyl)lithium being generated in situ in the reaction mixture by a metered series of tandem additions thereto of portions of bromochloromethane and of lithium metal so that the temperature of the reaction mixture is maintained at −20° C. or below;

(b) while maintaining the temperature of the aforementioned reaction mixture at −20° C. or below, separating unreacted lithium metal from the reaction mixture to obtain a chilled solution of the mixture of the lithium alcoholates in the inert solvent;

(c) transforming the mixture of the lithium alcoholates into a corresponding mixture of hydrochloric acid addition salts by immediately contacting the aforementioned chilled solution of the mixture of the lithium alcoholates with aqueous hydrochloric acid to obtain an inert solvent/aqueous hydrochloric acid solution of the hydrochloric acid addition salt of the chlorohydrin of formula 1 in admixture with a hydrochloric acid addition salt of a chlorohydrin of formula 5



(5)

wherein R^1, R^2 and R^3 are as defined in this claim;

(d) removing the inert solvent from the inert solvent/aqueous hydrochloric acid solution to obtain an aqueous phase and a water-insoluble phase, the latter phase comprising the mixture of the hydrochloric acid additions salts of the chlorohydrins;

(e) separating the water-insoluble phase from the aqueous phase;

(f) preparing a concentrated solution of the water-insoluble phase in a lower alkanol; and

(g) selectively crystallizing the desired hydrochloric acid addition salt of the isomerically pure chlorohydrin of formula 1 from the lower alkanol solution.

5,550,292

BENZYLAMINE DERIVATIVES

Yohji Sakurai; Nobuyuki Kurahashi, both of Tokushima; Tsuyoshi Hirose, Kagawa; Takashi Miwa, Tokushima; Atsushi Mori, Tokushima, and Takao Nishi, Tokushima, all of, Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

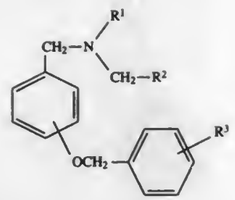
Filed Apr. 29, 1995, Ser. No. 428,114

Claims priority, application Japan, Aug. 30, 1993, 5-214147; Mar. 15, 1994, 6-044003

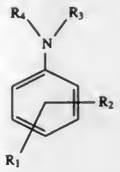
Int. Cl.[6] C07C *217/58*

U.S. Cl. 564—399 **13 Claims**

1. A benzylamine derivative represented by the general formula (1):



(I)



wherein

R^1 is a lower alkyl group;

R^2 is a cycloalkyl group; and

R^3 is a halogen atom;

or a salt thereof.

5,550,293

ELECTROPHOTOGRAPHIC PHOTOCONDUCTORS AND TERTIARY AMINE COMPOUNDS HAVING CONDENSED POLYCYCLIC GROUP FOR USE IN THE SAME

Tomoyuki Shimada, Numazu; Masaomi Sasaki, Susono, and Tamotsu Aruga, Mishima, all of, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

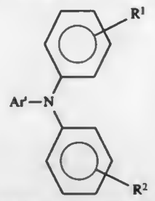
Division of Ser. No. 290,094, Aug. 15, 1994, Pat. No. 5,488,164, which is a division of Ser. No. 15,339, Feb. 9, 1993, Pat. No. 5,382,692, which is a division of Ser. No. 490,468, Mar. 8, 1990, Pat. No. 5,219,692. This application Apr. 10, 1995, Ser. No. 419,235

Claims priority, application Japan, Mar. 29, 1989, 1-077839; Jun. 14, 1989, 1-151605; Jul. 25, 1989, 1-191640

Int. Cl.[6] C07C *211/57;211/60;* **G03G** *15/02*

U.S. Cl. 564—426 **6 Claims**

1. A tertiary amine compound having formula



(II)

wherein Ar' represents a condensed polycyclic hydrocarbon group having 18 or fewer carbon atoms, R^1 and R^2 each independently represent a substituted alkyl group, a substituted alkoxyl group, or a phenyl group which may have a substituent.

5,550,294

METHOD OF INCREASING HYDROGENATION RATE OF AROMATIC AMINES

Peter J. Whitman, Hamden, Conn., assignor to Olin Corporation, Cheshire, Conn.

Continuation-in-part of Ser. No. 831,712, Feb. 5, 1992, abandoned. This application Sep. 16, 1994, Ser. No. 307,215

Int. Cl.[6] C07C *209/72*

U.S. Cl. 564—451 **12 Claims**

1. A process for the catalytic hydrogenation of an aromatic amine represented by the formula:

(II)

in which:

R_1 is selected from the group consisting of H, an alkyl or cycloakyl group having 1–6 carbon atoms, and NH_2;

R_2 is P-aminobenzyl and

R_3 and R_4 are selected from the group consisting of H, and an alkyl or cycloalkyl group having 1–6 carbon atoms;

which process comprises reacting a reaction mixture comprising said aromatic amine and hydrogen at a pressure of between about 500 and about 4000 psig, and a reaction temperature of below 130° C., in the presence of a ruthenium noble metal catalyst, a lithium hydroxide catalyst promoter, and an aqueous water miscible organic solvent being isopropyl alcohol, said reaction mixture containing water in an amount of between 7% and 12% by weight, based upon the weight of the reaction mixture, to produce a bis(4-aminocyclohexyl)methane product having a trans, trans isomer content of between 16% and 24%.

5,550,295

PREPARATION OF ARYLALKYL PHOSPHINES, PHOSPHINE OXIDES OR PHOSPHINE SULFIDES

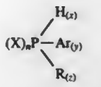
John H. Hillhouse, Niagara Falls, Canada, assignor to Cytec Technology Corp., Wilmington, Del.

Filed May 3, 1995, Ser. No. 433,612

Int. Cl.[6] C07F *9/02*

U.S. Cl. 568—14 **11 Claims**

1. A process for the preparation of a compound having the formula



wherein X is O or S, n is 0 or 1; Ar is a substituted or unsubstituted aryl radical, R is a substituted or unsubstituted alkyl radical, x is 0 or 1 and y and z are 1 or 2, with the proviso that when x is 0, only one of y and z is 2 and when x is 1, both of y and z are 1, which comprises reacting a compound having the formula:



wherein X, n, R and z are as defined above, with an arylhalide in the presence of a zero valence palladium catalyst.

5,550,296

METHOD OF PRODUCING KETONES

Weston W. Haskell, Fulshear, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 2, 1994, Ser. No. 348,642

Int. Cl.[6] C07C *45/45*

U.S. Cl. 568—314 **14 Claims**

1. A method of producing ketones from crude oil containing naphthenic acids thereby reducing waste disposal of naphthenic acids comprising:

(a) admixing a liquid ammonia stream comprising water and liquid ammonia with a crude oil stream comprising hydrocarbons and naphthenic acids to obtain a mixture comprising liquid ammonia, ammonium naphthenates, water, and oil;

(b) separating the mixture into a liquid ammonia phase comprising liquid ammonia, water and substantially all the naphthenates and an oil phase;

(c) feeding said liquid ammonia phase to a first separation vessel;

(d) separating at least a portion of said liquid ammonia as gaseous ammonia from said liquid ammonia phase to obtain a first mixture comprising naphthenates and water;

(e) acidifying said first mixture with acetic acid to convert said naphthenates to naphthenic acids and to obtain a second mixture comprising naphthenic acids and water;

(f) recovering excess acetic acid;

(g) admixing calcium hydroxide with said second mixture to produce calcium salts of naphthenic acids; and

(h) pyrolysizing said calcium salts to produce naphthenic ketones.

5,550,297

PROCESS FOR THE PREPARATION OF ALCOHOLS OR AMINES

Gerhardt Horn, Oberhausen, and Carl D. Frohning, Wesel,both of, Germany, assignors to Hoechst Aktiengesellschaft, Germany

Continuation of Ser. No. 22,685, Mar. 1, 1993, abandoned. This application Feb. 16, 1995, Ser. No. 390,375

Claims priority, application Germany, Mar. 4, 1992, 42 06 750.2

Int. Cl.[6] C07C *209/14*

U.S. Cl. 564—493 **16 Claims**

1. A process for the hydrogenation of a compound selected from the class consisting of esters, fatty acids, and nitriles to form corresponding alcohols or amines, said process comprising a reaction of said compound with hydrogen at elevated pressure and elevated temperature in the presence of a catalyst which contains CuO,

said catalyst, in its unreduced state, comprising, per 100 parts of said CuO, 40 to 130 parts by weight of ZnO, 2 to 50 parts by weight of Al_2O_3, said catalyst having a BET total area of 80 to 175 m^2/g, 75% to 95% of said total area constituting pores having radii $r_p \leq 15$ nm.

5,550,298

DEVICE FOR CARRYING OUT CATALYZED REACTIONS

Ronald Shelden, Winterthur, and Jean-Paul Stringaro, Bulach, both of, Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Division of Ser. No. 92,504, Jul. 15, 1993, Pat. No. 5,473,082, which is a division of Ser. No. 499,367, May 31, 1990, Pat. No. 5,417,938. This application Mar. 29, 1995, Ser. No. 412,898

Claims priority, application Switzerland, Sep. 2, 1988, 93295/88; Feb. 17, 1989, 0057/89

Int. Cl.[6] C07C *41/06*

U.S. Cl. 568—494 **3 Claims**

1. A process for obtaining methyl tertiary butyl ether comprising the steps of

feeding methanol over a solid catalyst section in a rectifying column having a plurality of vertically extending parallel layers defining flow channels therebetween, each layer having a pair of walls defining at least one interspace for a catalyst material, at least one of said walls being impermeable to the catalyst material and permeable to the methanol;

feeding a reactant comprising a mixture of saturated and unsaturated 4 carbon-chain hydrocarbons into the solid catalyst section for catalytic reaction with said methanol to produce methyl tertiary butyl ether; and

removing the methyl tertiary butyl ether from the rectifying column.

5,550,299

METHOD OF PREPARING 1.1-DIALKOXYCYCLOALKANES

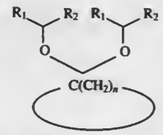
Chitoor S. Subramaniam, Kendall Park, N.J.; Thomas V. John, Yardley, Pa.; David Colvin, North Mobile, and George W. Bitler, Mobile, both of Ala., assignors to Huls America Inc., Somerset, N.J.

Division of Ser. No. 70,563, Jun. 1, 1993, Pat. No. 5,401,885. This application Oct. 24, 1994, Ser. No. 327,626

Int. Cl.[6] C07C *43/32*

U.S. Cl. 568—591 **8 Claims**

1. A method of preparing a dialkoxycycloalkane of the structure (II)



(II)

wherein R_1 and R_2 are different or the same alkyl moiety, said alkyl moiety having from 1 to 3 carbon atoms and n is an integer of from 4 to 9, the method comprising making an imino ether hydrochloride in an organic solvent by anhydrously reacting in the solvent hydrogen cyanide or hydrogen cyanide derivative, hydrogen chloride and a secondary alkanol of the structure (IV)



wherein R_1 and R_2 correspond to R_1 and R_2 of structure (II), and anhydrously reacting with the imino ether hydrochloride additional secondary alkanol of the structure (IV) and a cycloalkanone having from 5 to 10 carbon atoms in the ring structure of the cycloalkanone, by adding the additional secondary alkanol in a molar amount equal to at least twice the molar amount of hydrogen cyanide or hydrogen cyanide derivative used to make the imino ether hydrochloride, and adding the cycloalkanone in a molar amount equal to at least the molar amount of hydrogen cyanide or hydrogen cyanide derivative used to make the imino ether hydrochloride.

5,550,300

GRADIENT CATALYST SYSTEM FOR THE INTEGRATED PRODUCTION OF ISOPROPYL ALCOHOL AND DIISOPROPYL ETHERS

Robert J. Taylor, Jr.; Pei-Shing E. Dai, both of Port Arthur, and John F. Knifton, Austin, all of Tex., assignors to Texaco Chemical Inc., White Plains, N.Y.

Filed Dec. 30, 1994, Ser. No. 338,725

Int. Cl.[6] C07C *41/09;43/06*

U.S. Cl. 568—698 **21 Claims**

1. An integrated process for the generation of DIPE from a crude byproduct acetone stream by reacting the crude acetone with hydrogen over a catalyst system consisting of a series of catalyst zones in a reactor characterized by a hydrogenation activity gradient along the reactor in one direction and an etherification activity gradient in the opposite direction, wherein the catalysts in these zones display hydrogenation activity resulting from the presence of one or more metals from Group IB and Group VIII and etherification activity resulting from a support containing a strong acid zeolite from the group consisting of Beta zeolite, dealuminated Y

zeolite, medium -pore and large-pore silicoaluminophosphates, optionally, mixed with a binder selected from Groups III and IV of the Periodic Table, wherein the concentration of metals and zeolite are varied in the catalysts along the length of the catalyst bed resulting in an activity gradient for hydrogenation which decreases along the bed and an activity gradient for etherification which increases along the length of the bed.

5,550,301

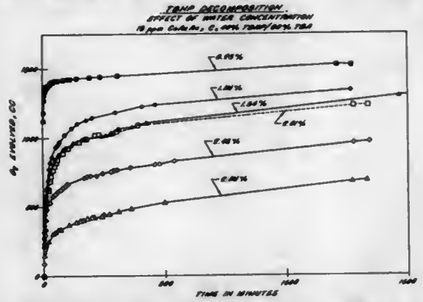
DRIED CATALYTIC SYSTEMS FOR DECOMPOSITION OF ORGANIC HYDROPEROXIDES

Manoj V. Bhinde, Boothwyn; James E. Lyons, Wallingford, and Paul E. Ellis, Jr., Downingtown, all of Pa., assignors to Sun Company, Inc. (R&M), Philadelphia, Pa.

Continuation-in-part of Ser. No. 223,090, Apr. 4, 1994, Pat. No. 5,395,988. This application Mar. 3, 1995, Ser. No. 398,024

Int. Cl.[6] C07C *29/00;31/12;33/22;35/14*

U.S. Cl. 568—835 **37 Claims**



1. Method for decomposing organic hydroperoxides which comprises drying a reaction mixture comprising an organic hydroperoxide, an organic solvent for said hydroperoxide, and water, thereby to obtain a dried reaction mixture and contacting said dried reaction mixture with a metal organic ligand catalyst for said decomposing, the improvement which comprises drying said reaction mixture such that said water comprises approximately 1 weight percent or less of said dried reaction mixture.

5,550,302

METHOD FOR PRODUCING AN ALCOHOL AND CATALYST PRECURSOR USEFUL FOR THE METHOD

Tomoyuki Mori; Kouichi Fujita, and Hiroki Hinoishi, all of Okayama, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Mar. 16, 1995, Ser. No. 405,010

Claims priority, application Japan, Mar. 24, 1994, 6-053532; Apr. 20, 1994, 6-081748

Int. Cl.[6] C07C *29/141;31/125*

U.S. Cl. 568—881 **10 Claims**

1. A method for producing an alcohol, which comprises reacting an aldehyde with hydrogen in a gas phase in the presence of a hydrogenation catalyst to form a corresponding saturated alcohol, wherein a reduced product of a catalyst precursor composition comprising components represented by the following formula (I):

$$Cu(a)—Cr(b)—Zn(c)—Mn(d)—Ba(e)—X(f) \quad (I)$$

wherein X is a transition metal of Group 8 or 4A of the Periodic Table, and a to f represent the contents of the respective components as converted to their oxides and have the following values:

a: 20 to 50 wt %
b: 0 to 50 wt %
c: 0 to 50 wt %
d: 0.1 to 5.0 wt %
e: 0.1 to 5.0 wt %
f: 0.01 to 3.0 wt %

is used as the hydrogenation catalyst.

5,550,303

HIGH EFFICIENCY OLEFIN DISPLACEMENT PROCESS

Ronny W. Lin; Robert H. Allen, and Andrew D. Overstreet, all of Baton Rouge, La., assignors to Amoco Corporation, Chicago, Ill.

Filed Jun. 2, 1995, Ser. No. 459,080

Int. Cl.[6] C07F *5/06*

U.S. Cl. 585—328 **10 Claims**

1. A process for displacing olefin having 3 to 40 carbon atoms per molecule from an aluminum trialkyl having 3 to 40 carbon atoms per alkyl group which comprises contacting ethylene with said aluminum trialkyl in an ethylene:aluminum trialkyl mol ratio in the range of 2–8:1 at a temperature in the range of about 1 to about 70° C., a pressure in the range of from about atmospheric pressure up to about 1000 psia, and for a reaction time in the range of about 0.5 to about 60 minutes in the presence of a displacement enhancing amount of a nickel- or cobalt-containing displacement catalyst.

5,550,304

NICKEL-CONTAINING COMPOSITION FOR CATALYSIS AND OLEFIN DIMERISATION AND OLIGOMERISATION PROCESS

Yves Chauvin, Rueil Malmaison, France; Sandra Einloft, Rio Grande Do Sul, Brazil, and Helene Olivier, Rueil Malmaison, France, assignors to Institut Francais Du Petrole, Rueil Malmaison, France

Division of Ser. No. 309,703, Sep. 21, 1994, Pat. No. 5,502,018. This application May 26, 1995, Ser. No. 451,159

Claims priority, application France, Sep. 22, 1993, 93/11382

Int. Cl.[6] C07C *2/02;2/24*

U.S. Cl. 585—512 **19 Claims**

1. A process for the dimerization, codimerization or oligomerization of olefins, comprising contacting under effective conditions at least one olefin with a catalytic composition comprising a mixture of at least one alkylaluminum halide, at least one bivalent nickel complex which contains two molecules of tertiary phosphine and at least one bivalent nickel compound or complex compound containing neither water nor phosphine.

5,550,305

ETHYLENE TRIMERIZATION

Feng-Jung Wu, Baton Rouge, La., assignor to Amoco Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 25,524, Mar. 3, 1993, abandoned, which is a continuation-in-part of Ser. No. 914,489, Jul. 14, 1992, which is a continuation of Ser. No. 777,137, Oct. 16, 1991, abandoned. This application Apr. 14, 1994, Ser. No. 227,433

Int. Cl.[6] C07C *2/36*

U.S. Cl. 585—513 **9 Claims**

1. A process for the trimerization of ethylene, said process comprising reacting ethylene, at a temperature of from about 35° to 200° C. and an ethylene pressure of from about atmospheric to 3000 psig, using a catalyst comprising an aluminoxane and at least about 0.001 mmole of a polydentate phosphine, arsine and/or stibine coordination complex of a chromium salt, wherein:

a) the mole ratio of aluminum to chromium in the catalyst is from about 1:1 to about 10,000:1;

b) said complex has the formula $LCrX_n$, wherein X represents anions which can be the same or different, n is an integer of 2 to 4 and L is a coordinating polydentate phosphine, arsine and/or stibine ligand selected from the group consisting of:

1) ligands of the formula:

$$RY(R'ZR''R''')_2$$

wherein R, R" and R'" are hydrogen or C_1 to about C_{20} hydrocarbyl and where R" and R'" can join to form a five membered ring which includes Z; R' is C_1 to about C_{10} hydrocarbyl; and Y and Z are individually phosphorus, arsenic or antimony;

2) ligands of the formula:

$$CH_3E(R'ZR''_2)_3$$

wherein E is C, Si, Ge or Sn; R^1 is C_1 to about C_{20} hydrocarbyl; each R' is individually hydrogen or C_1 to about C_{10} to hydrocarbyl and each Z is individually phosphorus, arsenic or antimony;

3) ligands of the formula:

$$E'(R'ZR''_2)_3$$

wherein E' is nitrogen, phosphorus, arsenic or antimony; R' is C_1 to about C_{20} hydrocarbyl; each R" is individually hydrogen or C_1 to about C_{10} hydrocarbyl and each Z is individually phosphorus, arsenic or antimony; and

4) ligands of the formula:

$$A—ZR—B$$

wherein A represents the number of atoms in the ring and is an integer of 9 to 18, B represents the number of Z atoms in the ring and is an integer of 3 to 6, R is a C_1 to C_{10} alkyl or a C_6 to C_{20} aryl group and Z is phosphorus, arsenic or antimony; so as to form 1-hexene.

5,550,306

CATALYTIC PROCESS FOR THE DIMERIZATION OF OLEFINS

Yves Chauvin, Rueil Malmaison, France; Sandra Einloft, Rio Grande Do Sul, Brazil, and Helene Olivier, Rueil Malmaison, France, assignors to Institut Francais Du Petrole, Rueil Malmaison, France

Division of Ser. No. 309,702, Sep. 21, 1994. This application Jun. 1, 1995, Ser. No. 456,820

Claims priority, application France, Sep. 22, 1993, 93 11381

Int. Cl.[6] C07C *2/24*

U.S. Cl. 585—514 **22 Claims**

1. A process for the dimerization, codimerization or oligomerization of at least one olefin, comprising contacting the olefin with at least one nickel compound mixed or complexed with at least one tertiary phosphine, said compound being dissolved at least partly in a non-aqueous ionic medium, said medium resulting from contacting: (C) at least one aromatic hydrocarbon with (B) at least one aluminum halide and with (A) at least one quaternary ammonium halide and/or at least one quaternary phosphonium halide,

said aromatic hydrocarbon being selected from the group consisting of unsubstituted benzene, substituted benzene of the formula $C_6H_xR_{6-x}$ wherein x is equal to 1 to 5 inclusive; unsubstituted naphthalene, substituted naphthalene of the formula $C_{10}H_xR_{8-x}$ and x is equal to 0 to 7 inclusive, unsubstituted anthracene, and substituted anthracene of the formula $C_{14}H_xR_{10-x}$ and x is equal to 0 to 9 inclusive, wherein R is an alkyl, cycloalkyl, aryl, alkaryl radical,

the A:B molar ratio being between 1:0.5 and 1:3, and the B:C molar ratio being between 1:1 and 1:100.

5,550,307

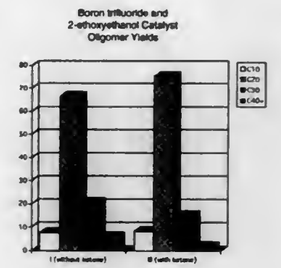
INCREASED DIMER YIELD OF OLEFIN OLIGOMERS THROUGH CATALYST MODIFICATIONS

Kenneth D. Hope; Ting C. Ho, and Barrett L. Cupples, all of Kingwood, Tex., assignors to Chevron Chemical Company, San Ramon, Calif.

Continuation-in-part of Ser. No. 217,265, Mar. 24, 1994, Pat. No. 5,420,373. This application Aug. 31, 1994, Ser. No. 298,635

Int. Cl.[6] C07C *2/14*

U.S. Cl. 585—525 **9 Claims**



1. A process for making an oligomer comprising contacting an olefinic monomer with a catalyst comprising boron trifluoride, an alcohol alkoxylate, and a ketone.

5,550,308

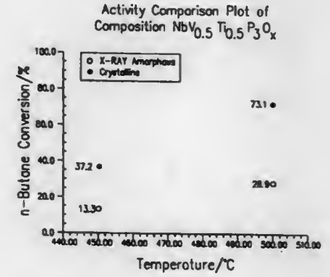
VANADIUM (IV)-CONTAINING NASICON MATERIALS

Pradyot A. Agaskar, 55 Cliveden Ct., Lawrenceville, N.J. 08648, and Robert K. Grasselli, 12 Black Rock Rd., Chadds Ford, Pa. 19317

Division of Ser. No. 50,794, Apr. 22, 1993, Pat. No. 5,354,722. This application Sep. 27, 1994, Ser. No. 312,580

Int. Cl.[6] C07C *5/09;* **C07D** *307/34*

U.S. Cl. 585—623 **14 Claims**



1. A method for upgrading a hydrocarbon feedstock comprising partially oxidizing said hydrocarbon feedstock in the presence of a composition of matter having the formula

$$A_xB_{1-x}V_yC_{1-y}P_3O_{10-15}$$

wherein A is Nb or Ta, B is Sb or As, C is Ti, Zr, Sn or Ge, and $0 \leqq x \leqq 1$, $0 < y \leqq 1$.

VOL 1189 ISS 4 AUG 27 1996 UMI

5,550,309

PROCESS FOR DEHYDROGENATION OF HYDROCARBON FEEDS

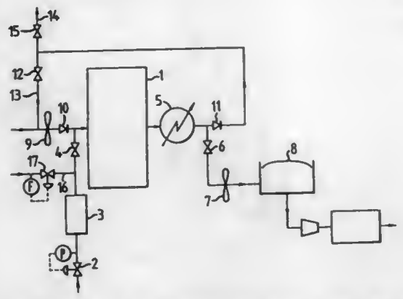
Harry M. Maunders, and Stephen R. Partington, both of Surrey, United Kingdom, assignors to BP Chemicals Limited, London, United Kingdom

Continuation of Ser. No. 113,097, Aug. 30, 1993, abandoned. This application Oct. 31, 1994, Ser. No. 331,815

Claims priority, application United Kingdom, Sep. 4, 1992, 9218823

Int. Cl.[6] C07C *5/32;1/20;45/29*

U.S. Cl. 585—654 **22 Claims**



1. A process for the dehydrogenation of a hydrocarbon or oxygenated hydrocarbon feed, said process comprising the steps of:

(a) contacting the feed with a catalyst bed in a reaction chamber at elevated temperature, said catalyst bed comprising a dehydrogenation catalyst and a hydrogen retention agent, said hydrogen retention agent being in particulate form and having a porous coating, said dehydrogenation catalyst producing a product stream comprising a dehydrogenated product and hydrogen, said porous coated hydrogen retention agent being capable of selectively removing and adsorbing hydrogen from said product stream;

(b) removing from the reaction chamber the dehydrogenated product and any hydrogen which has not been adsorbed by said porous coated hydrogen retention agent;

(c) removing at least some of the adsorbed hydrogen from said porous coated hydrogen retention agent, thereby regenerating said porous coated hydrogen retention agent; and

(d) using the regenerated porous coated hydrogen retention agent, in step (a).

5,550,310

METHOD FOR WASTE FOR VITRIFICATION

Ray S. Richards, Sylvania, Ohio, assignor to Stir-Melter, Inc., Perrysburg, Ohio

Continuation of Ser. No. 510,556, Apr. 18, 1990. This application Jun. 7, 1995, Ser. No. 472,387

Int. Cl.[6] G21F *9/00*

U.S. Cl. 588—11 **19 Claims**

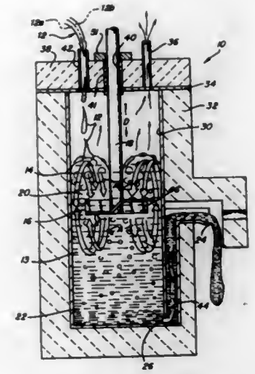
1. A waste vitrification method comprising:

introducing a non-aqueous feed stream comprising waste material into a vessel having a wall and a rotatable impeller;

mixing the feed stream into a glass melt formed in the vessel with the impeller to disperse said feed stream in the melt to form a foamy mass, said foamy mass comprising gaseous material released by the waste material into the glass melt;

completing an electrical circuit between the wall of the vessel and the impeller and including said foamy mass to form a molten output;

densifying the foamy mass by passing said foamy mass into a quiescent zone where a portion of the gaseous material in said foamy mass separates from said foamy mass to form the molten output;



maintaining an opening in the vessel above the melting temperature of the molten output; and

recovering the molten output through the opening.

5,550,311

METHOD AND APPARATUS FOR THERMAL DECOMPOSITION AND SEPARATION OF COMPONENTS WITHIN AN AQUEOUS STREAM

Robert Young, Snohomish, Wash., assignor to HPR Corporation, Snohomish, Wash.

Filed Feb. 10, 1995, Ser. No. 388,067

Int. Cl.[6] G21F *9/00;* **F23G** *5/04*

U.S. Cl. 588—19 **53 Claims**

1. A method for treating a material that contains at least one disposal problem component, comprising:

directing an aqueous stream comprising the material into an oxygen-deficient closed system, wherein water is present in the aqueous stream in an amount ranging from 75% to 99% by weight of the aqueous stream;

subjecting the aqueous stream to a vaporization temperature within the oxygen-deficient closed system, wherein the vaporization temperature ranges from 90° C. to 150° C. and is sufficient to vaporize most of the water within the aqueous stream; and

subsequently subjecting the aqueous stream to a refractory temperature within the oxygen-deficient closed system, wherein the refractory temperature ranges from 150° C. to 700° C. and is sufficient to thermally decompose or separate the disposal problem component such that the material is rendered more suitable for disposal.

5,550,312

METHOD OF THERMAL UTILIZATION OF WASTE MATERIALS

Manfred Schingnitz; Peter Göhler, both of Freiberg, and Heinz Martin, Rostock, all of, Germany, assignors to Noell-DBI Energie-Und Entsorgungstechnik GmbH, Freiberg, Germany

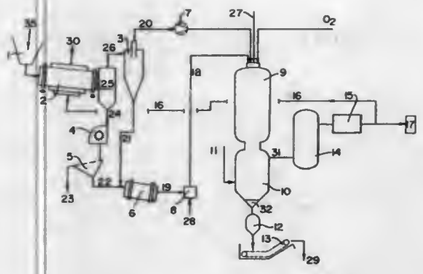
Continuation of Ser. No. 983,980, Nov. 30, 1992, abandoned. This application Feb. 6, 1995, Ser. No. 384,696

Claims priority, application Germany, Nov. 29, 1991, 41 39 512.3; Jun. 19, 1992, 42 20 055.5

Int. Cl.[6] B09B *3/00;* **A62D** *3/00;* **C22B** *7/00;* **C02F** *1/00*

U.S. Cl. 588—205 **17 Claims**

1. A method of thermal utilization of waste materials of any consistency containing combustible or organic components, the method comprising the steps of:



(a) feeding the waste materials containing at least a portion of a coarse, noncomminutable material into an externally heated cylindrical rotary pyrolysis furnace;

(b) subjecting the waste materials to a carbonization process in the cylindrical rotary pyrolysis furnace with the exclusion of air at temperatures of up to approximately 800° C. for producing a solid pyrolysis residue and a pyrolysis gas containing vaporized hydrocarbons;

separating the pyrolysis gas from the solid pyrolysis residue at temperatures above the condensation temperature of the vaporized hydrocarbons;

(d) subjecting the solid pyrolysis residue to a separation process including comminuting and classifying states, wherein a fine material is obtained which is enriched with coke-like compounds and a coarse material is obtained which is free of organic impurities and is composed essentially of metal components;

(e) feeding the pyrolysis gas and the fine material to an entrained flow gasification reactor;

(f) converting the pyrolysis gas and the fine material in the gasification reactor with a gasification agent containing free oxygen autothermally in a flame reaction at a temperature of 1400° C. and above the melting temperature of the mineral residues into gas containing CO and H_2 and free of hydrocarbons and a mineral residue in the form of a molten slag; and

(g) using a portion of the gas generated in the gasification reactor for externally heating the cylindrical rotary pyrolysis furnace, wherein the temperatures occurring in the gasification reactor are regulated by varying the quantity of free oxygen to the quantity of carbon in the pyrolysis gas and in the fine material.

5,550,313

TREATMENT OF NORM-CONTAINING MATERIALS FOR MINIMIZATION AND DISPOSAL

Christopher G. Hayden, Friendswood, Tex., assignor to Institute of Gas Technology, Des Plaines, Ill.

Filed Oct. 20, 1994, Ser. No. 326,507

Int. Cl.[6] A62D *3/00;* **G21F** *9/34*

U.S. Cl. 588—256 **14 Claims**

1. A process for extraction of radium from naturally occurring radioactive material (NORM)-containing materials comprising the steps of:

treating said NORM-containing materials with a first acid, forming a spent acid solution comprising at least: one of dissolved carbonates, salts, iron, and sulfates and a NORM-containing solid material;

separating said NORM-containing solid material from said spent acid solution and treating said NORM-containing solid material with a second acid selected from the group consisting of concentrated sulfuric acid, fuming sulfuric acid and mixtures thereof, dissolving NORM in said NORM-containing solid material and forming a NORM-containing acid;

removing any remaining solids from said NORM-containing acid and saturating said NORM-containing acid with barite;

adding water to said barite-saturated NORM-containing acid, precipitating at least a portion of said NORM in said NORM-containing acid; and removing said NORM from said NORM-containing acid.

5,550,314

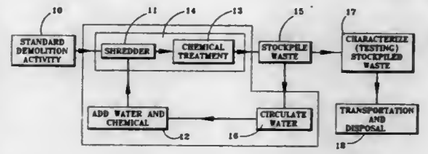
METHOD OF ENVIRONMENTALLY STABILIZING LEAD PAINT CONTAMINATED DEBRIS

Joe A. Laughlin, 8 Shadow La., Houston, Tex. 77080, and Larry C. Thyssen, 1042 Orchard Hill, Houston, Tex. 77077

Filed Feb. 27, 1995, Ser. No. 395,614

Int. Cl.[6] A62D *3/00;* **B09B** *3/00*

U.S. Cl. 588—256 **10 Claims**



1. A method of environmentally stabilizing lead paint contaminated construction or demolition debris comprising the steps of:

shredding said lead paint contaminated debris;

mixing said shredded debris with water and at least one chemical selected from the group consisting of fly ash, lime, Portland cement and kiln dust;

collecting said chemically treated debris and allowing it to stand for a period of time sufficient to convert said lead paint from an unstable soluble form to a stabilized insoluble form;

draining and collecting excess water from said standing chemically treated debris; and

disposing of said treated and lead paint stabilized debris.

5,550,315

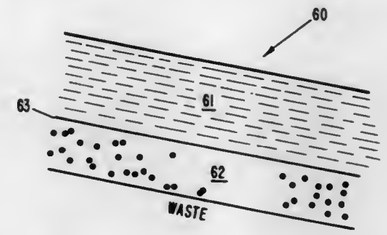
ANISOTROPIC CAPILLARY BARRIER FOR WASTE SITE SURFACE COVERS

John C. Stormont, Sandia Park, N.M., assignor to Sandia Corporation, Albuquerque, N.M.

Filed Mar. 23, 1995, Ser. No. 409,376

Int. Cl.[6] B04B *1/00*

U.S. Cl. 588—259 **30 Claims**



1. A barrier layer for a waste site cover, comprising:

a sublayer having an unsaturated hydraulic conductivity and a top surface and a bottom surface, wherein the bottom surface is in close proximity to said waste site;

a top layer in contact with said top surface of said sublayer wherein said top layer and said sublayer form a top layer-sublayer interface; and said top layer has an effective anisotropic unsaturated hydraulic conductivity.

5,550,316

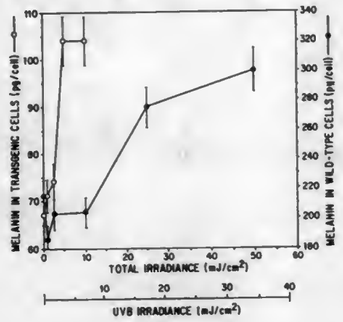
TRANSGENIC ANIMAL MODEL SYSTEM FOR HUMAN CUTANEOUS MELANOMA

Beatrice Mintz, Elkins Park, Pa., assignor to Fox Chase Cancer Center, Philadelphia, Pa.

Continuation-in-part of Ser. No. 636,798, Jan. 2, 1991, abandoned. This application Jan. 29, 1993, Ser. No. 11,060

Int. Cl.[6] C12N *15/00*; A01K *67/00*

U.S. Cl. 800—2 **2 Claims**



1. A method for producing a transgenic mouse that develops cutaneous melanoma, comprising grafting a portion of skin from a first donor transgenic mouse onto a second histocompatible recipient transgenic mouse, in which:

(a) both the donor and recipient transgenic mice are more susceptible than wild-type mice to developing cutaneous melanoma, and

(b) the donor mouse is from a line characterized by early development of ocular melanoma and aggressive ocular tumor growth, and

(c) the phenotype of each transgenic mouse is conferred by an SV40E oncogene, the expression of which is controlled by a pigment cell-specific tyrosinase gene promoter,

so that nevi and cutaneous melanomas develop within the graft.

5,550,317

Patent Not Issued For This Number

5,550,318

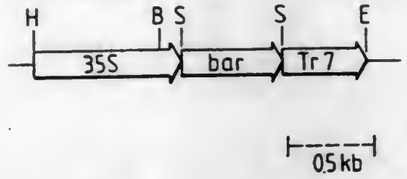
METHODS AND COMPOSITIONS FOR THE PRODUCTION OF STABLY TRANSFORMED, FERTILE MONOCOT PLANTS AND CELLS THEREOF

Thomas R. Adams, No. Stonington; Whitney R. Adams, Jr.; Sheryl A. Chambers, both of Groton; Richard J. Daines, Ledyard; William J. Gordon-Kamm; Albert P. Kausch, both of Stonington; Roger W. Krueger, Salem; Peggy G. Lemaux, Mystic; Catherine J. Mackey, Old Lyme, all of Conn.; Mary L. Mangano, Westerly, R.I.; James V. O'Brien, Mystic, Conn.; Thomas B. Rice, Waterford, Conn.; T. Michael Spencer, Mystic, Conn.; William G. Start, North Stonington, Conn., and Nancy G. Willetts, Niantic, Conn., assignors to Dekalb Genetics Corporation, Dekalb, Ill.

Continuation of Ser. No. 513,298, Apr. 17, 1990, abandoned. This application Aug. 9, 1990, Ser. No. 565,844

Int. Cl.[6] C12N *15/00;15/82*; A01H *1/06;4/00*

U.S. Cl. 800—205 **16 Claims**



1. A fertile cultivated, transgenic maize plant, the genome of which has been augmented through the genomic introduction of a preselected genetic component, said component comprising an exogenous gene positioned under the control of one or more preselected genetic control elements, the plant prepared by a process comprising:

(a) preparing a DNA composition in vitro, which composition includes the genetic component one desires to introduce into the genome of a maize plant, wherein the genetic component includes a selectable or screenable marker gene that comprises a bar gene or a β-lactamase gene;

(b) contacting recipient maize cells with said DNA composition using microprojectile bombardment;

(c) regenerating maize plants from recipient cells which have received the genetic component; and

(d) identifying a fertile, transgenic maize plant whose genome has been augmented relative to that of the corresponding nontransgenic recipient cells through the stable introduction of said genetic component.

5,550,319

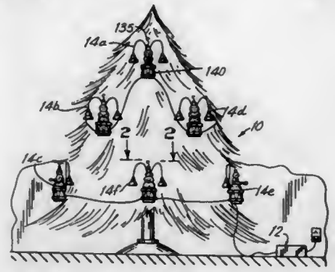
DECORATIVE DISPLAY AND ORNAMENT THEREFOR

Michael Newsome, Jersey City, N.J., and Marc H. Segan, 20 E. 9th St., New York, N.Y. 10003, assignors to M. H. Segan, Great Barrington, Mass.

Filed Oct. 4, 1991, Ser. No. 771,346

Int. Cl.[6] G10F *1/08*

U.S. Cl. 84—103 **17 Claims**



1. An ornament for inclusion in a display comprising:

a striker movable in first and second directions, first and second tone generating means for generating corresponding first and second tones when struck, said first tone being different from said second tone, said striker being disposed between said first and second tone generating means, and moving means responsive to an electrical signal for moving said striker from a rest position to strike either of said first and second tone generating means, said striker striking said first tone generating means when moved in said first direction and said striker striking said second tone generating means when moved in said second direction, and said striker coming to rest in said rest position after striking one of said first and second tone generating means.

5,550,320

ELECTRONIC SOUND GENERATING DEVICE FOR GENERATING MUSICAL SOUND BY ADDING VOLUME FLUCTUATION TO PREDETERMINED HARMONICS

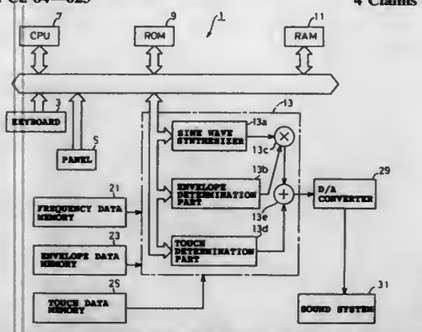
Sayoko Hirano, Hamamatsu, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamamatsu, Japan

Filed May 26, 1994, Ser. No. 250,032

Claims priority, application Japan, May 27, 1993, 5-126110

Int. Cl.[6] G10H *1/02;7/00*

U.S. Cl. 84—623 **4 Claims**



1. An electronic sound generating device for generating musical sound by synthesizing a plurality of harmonics, said electronic sound generating device comprising:

storage means for storing frequencies and levels of said plurality of harmonics included in a musical sound, and storing frequencies and levels of first and second signals which have a predetermined frequency difference to generate said predetermined harmonics having a volume fluctuation, said volume fluctuation being a cyclical change of sound level;

a keyboard for designating a tone to be generated;

waveform forming means for forming a synthesized waveform responsive to an operation on said keyboard, by retrieving data from said storage means for generating sound corresponding to an operated key, forming sine waves for each harmonic according to frequencies and levels of harmonics included in said retrieved data, and by synthesizing said sine waves, said synthesized waveform including waveform of harmonic having desired volume fluctuation;

sound signal generating means for generating a sound signal by multiplying said synthesized waveform by an envelope curve specific to a timbre of sound generated by a specific musical instrument; and

outputting means for outputting sound according to said sound signal generated by said sound signal generating means.

5,550,321

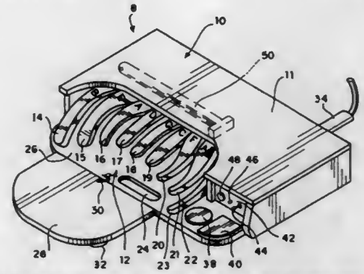
FOOT OPERATED ELECTRONIC MUSICAL APPARATUS

William A. Brann, P.O. Box 1025, Montross, Va. 22520

Filed Dec. 9, 1994, Ser. No. 355,250

Int. Cl.[6] G10H *1/32*

U.S. Cl. 84—721 **11 Claims**



1. A foot operated musical apparatus for producing tones comprising:

a housing including a plurality of foot operated primary actuators extended from and supported by said housing, and a tone generating switch for each actuator, each actuator and switch combination representing a natural note of the chromatic scale;

a foot operated flat switch adjacent said primary actuators,

an electronic tone generator; and

circuitry means joining said switches to said tone generator; whereby

sharps and flats between the natural notes are played by operating said flat switch, thus obviating any need for actuators representing sharps and flats to be disposed intermediate adjacent ones of the primary actuators.

5,550,322

ELECTRICAL OUTLET BOX

Joseph Tynan, 7 Brennan's Terrace, Strand Road, Bray, County Wicklow, Ireland

PCT No. PCT/IE92/00017, § 371 Date Aug. 5, 1994, § 102(e) Date Aug. 5, 1994, PCT Pub. No. WO93/08627, PCT Pub. Date Apr. 29, 1993

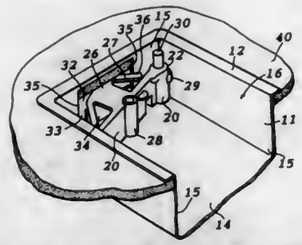
PCT Filed Oct. 16, 1992, Ser. No. 211,756

Claims priority, application Ireland, Oct. 16, 1991, 3632/91

Int. Cl.[6] H02G *3/08*

U.S. Cl. 174—48 **8 Claims**

1. An electrical outlet box for mounting in an opening of a panel,



including a housing having a base and sidewall(s) defining an open front to the housing with means at said open front for bearing against the surface of the panel surrounding the opening, the electrical outlet box further including at least two holding members in the housing each comprising a body portion rotatably mounted upon a respective cylindrical pin fixed to the base of the housing and extending towards the open front thereof and a retaining flange extending sideways from the body substantially parallel to the open front of the housing, each member being rotatable about the axis of the respective pin from an inoperative position wherein the respective retaining flange is substantially inside the housing to an operative position wherein the retaining flange projects through a respective aperture in the housing sidewall, each holding member being slidable forwardly on its respective pin towards the open front of the housing when in the operative position.

5,550,323

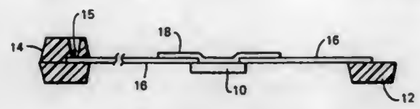
MOUNTING OF ELECTRONIC DEVICES

Trevor C. Gainey, Kent, England, assignor to LSI Logic Corporation, Milpitas, Calif.

Continuation of Ser. No. 856,904, Aug. 28, 1991, abandoned. This application Oct. 26, 1993, Ser. No. 142,820

Int. Cl.[6] H02G *3/08*

U.S. Cl. 174—52.1 **18 Claims**



1. An electronic device assembly comprising:

at least one electronic device,

a single electrically insulating support structure, in the form of a ring, disposed circumferentially around the at least one electronic device, and

a plurality of individual, discrete lengths of electrically conductive material extending between the at least one electronic device and the support structure, wherein the individual, discrete lengths of electrically conductive material are in the form of tapes or ribbons,

the at least one electronic device is disposed in a central area defined within the ring of the support structure,

each individual, discrete length of electrically conductive material having a one end and an other end, the one end of each length of electrically conductive material directly bonded to the at least one electronic device and the other end of each length of electrically conductive material bonded to the support structure.

5,550,324

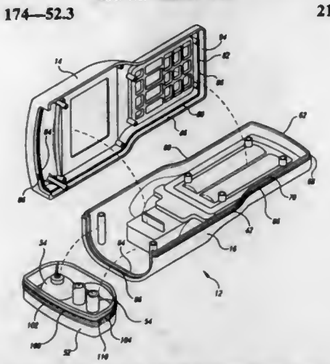
ENVIRONMENTAL SEALING SYSTEM FOR ELECTRONIC INSTRUMENTS

Michael J. Black; Keith S. Willows, both of Seattle; William P. Stiles, Bothell, and Patrick M. Gallagher, Seattle, all of Wash., assignors to Fluke Corporation, Everett, Wash.

Filed Feb. 23, 1995, Ser. No. 393,550

Int. Cl.[6] H05K *5/06*

U.S. Cl. 174—52.3 **21 Claims**



1. A system for sealing an electronic instrument case from the external environment, said case having a first part having marginal edges at each side and a substantially open end, a second part having marginal edges at each side and a substantially open end, the second case part being shaped and dimensioned so that the side marginal edges of said second case may be positioned opposite the corresponding side marginal edges of said first case part, said electronic instrument case further including an end plate covering the open ends of said first and second case parts, said sealing system comprising:

a first gasket positioned between the opposed side marginal edges of said first and second case parts; and

a second gasket positioned between and contacting said end plate and said first and second case parts, said second gasket further contacting said first gasket at each side of the first and second case parts so that said first gasket seals a junction between said first and second case parts, said second gasket seals a junction between said end plate and said first and second case parts, and the combination of said first and second gaskets seal a junction between said end plate, said first case part, and said second case part at each side of said case.

5,550,325

PRINTED-CIRCUIT BOARD INCLUDING CIRCUIT PATTERN HAVING LOCATION TO BE CUT IF NECESSARY

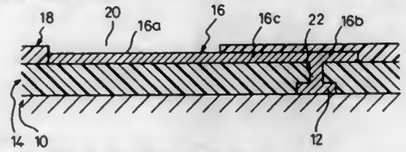
Shinji Matsuda, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 6, 1994, Ser. No. 300,861

Claims priority, application Japan, Sep. 27, 1993, 5-239873

Int. Cl.[6] H05K *001/00*

U.S. Cl. 174—250 **9 Claims**



1. A printed-circuit board, comprising:

a substrate member made of a suitable insulating material;

at least one insulating layer formed on said substrate member;

a circuit pattern formed on said insulating layer, said circuit pattern having a location capable of being cut; and

a protective coating layer formed on said insulating layer having said circuit pattern formed thereon,

wherein said protective coating layer has a portion with a first thickness, and wherein said protective coating further has at least two zones different from said portion with said first thickness, said two zones having second thicknesses which are substantially thinner than said first thickness and being disposed at sides of the location to be cut.

5,550,326

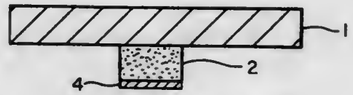
HEAT DISSIPATOR FOR ELECTRONIC COMPONENTS

Bradley K. Kesel, Newton, Mass., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Jul. 13, 1994, Ser. No. 274,599

Int. Cl.[6] H05K *7/20*

U.S. Cl. 174—16.3 **19 Claims**



1. A heat dissipator for a heat-generating electronic component comprising:

a thermal dissipation layer formed of a thermally conductive metal sheet which is from about 1 mil to 30 mils in thickness and which has a first surface and a second surface opposing the first surface; and

an adhesive pad having an inner surface mounted to the first surface of the metal sheet and an outer surface bonded to a heat-generating electronic component. –

15. A method of dissipating heat from a heat-generating electrical component comprising the steps of:

a) providing a heat dissipator comprising a lamination of a thermal dissipation layer formed of a thermally conductive metal sheet which is from about 1 mil to 30 mils in thickness and which has a first surface and a second surface opposing the first surface, and an adhesive pad having an inner surface mounted to the first surface of the metal sheet and an outer surface; and

b) bonding a heat-generating electrical component to the outer surface of the adhesive pad of said lamination.

5,550,327

COREWEIGHING SYSTEM FOR CLOSED-LOOP STOCK GAUGING CONTROL

Thomas R. Neuenschwander, Fort Wayne, Ind., assignor to L.H. Carbide Corporation, Fort Wayne, Ind.

Division of Ser. No. 72,504, Jun. 4, 1993, Pat. No. 5,365,021, which is a division of Ser. No. 835,214, Feb. 13, 1992, Pat. No. 5,241,138. This application Nov. 9, 1994, Ser. No. 336,848

Int. Cl.[6] G01G *19/40;19/52;* **B23P** *19/00*

U.S. Cl. 177—25.14 **13 Claims**

8. A core conveyor system for use with an apparatus for manufacturing electric motor laminate stacks having a plurality of individual laminas, each of said laminas having weight and thickness parameters, said conveyor system comprising:

a conveyor means for moving said stacks;

a motor drivingly connected to said conveyor means for operating said conveyor means;

weighing means operatively associated with said conveyor means for measuring a stack weight and transmitting said measured weight to said apparatus; and

means for adjusting a numerical value representing one of said parameters associated with an individual lamina utilizing said measured weight.

5,550,328

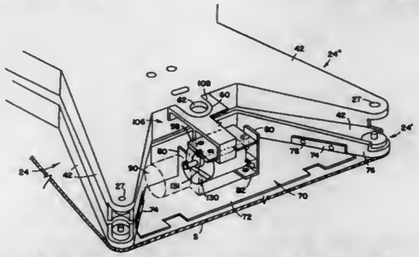
ELECTRONIC SCALE RECALIBRATING DEVICE CONSISTING OF A MOVEABLE CALIBRATION WEIGHT

Gerald C. Freeman, Norwalk, and Paul C. Talmadge, Ansonia, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 10, 1993, Ser. No. 165,151

Int. Cl.[6] G01C *17/38;* **G01G** *19/52;9/00*

U.S. Cl. 177—50 **11 Claims**



1. In an electronic scale having a platform on which an article to be weighed is placed, a load cell responsive to movement of the platform for generating a signal indicative of the weight of the article, a digital readout for indicating the weight of the article and a microprocessor for converting the signal from the load cell into digital information recognizable by the readout, a device for recalibrating the scale to compensate for the effects on the accuracy of the scale of variations in physical or environmental conditions under which the scale is operating, said device comprising:

A. an object having a predetermined fixed weight disposed in the scale;

B. means mounting said object for movement between an inoperative position in which said object is ineffective and an operative position in which said object is effectively applied to the load cell of the scale; said means mounting said object including:

1. first support means fixedly mounted on the scale for normally suspending said object in said inoperative position, said first support means includes

a pair of upstanding members spaced apart a distance sufficient for said object to fit between said upstanding members,

a shaft rotatably supported by said upstanding members for supporting said object in said inoperative position, and

first abutment means on said object for supporting said object on said shaft, and

2. second support means effectively connected to the load cell of the scale for supporting said object in said operative position to cause the weight of said object to be effectively applied to the load cell,

C. means for moving said object between said operative and inoperative positions; and

D. a microprocessor having:

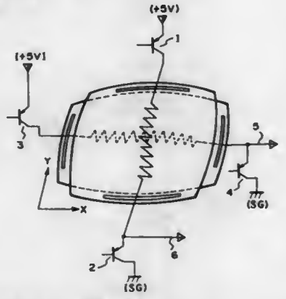
1. memory means for storing an electronic count indicative of the actual weight of said object,
2. means for recording an electronic count of the weight of said predetermined weight wben said object is moved to said active position,
3. comparator means for comparing said stored electronic count with said recorded electronic count, and
4. means for automatically adjusting the weight displayed on the digital readout of an object placed on the scale platform by the ratio of said stored electronic count to said recorded electronic count,

whereby the scale is recalibrated to provide an accurate readout of the weight of an article on the scale platform regardless of variations in physical or environmental conditions in which the scale is operating which affect the accuracy of the scale.

5,550,329
APPARATUS FOR DRIVING A RESISTANCE FILM TYPE INPUT DEVICE

Katsuyoshi Matsubayashi, Yamanashi, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 14, 1994, Ser. No. 339,727
Claims priority, application Japan, Nov. 12, 1993, 5-282874
Int. Cl.[6] G08C *21/00*
U.S. Cl. 178—18 **6 Claims**



1. An input device comprising:

a Y-axis resistance film having a first Y-axis electrode formed on one side thereof and a second Y-axis electrode on the opposite side thereof;

an X-axis resistance film having a first X-axis electrode formed on one side thereof and a second X-axis electrode on the opposite side thereof, wherein said resistance films are in a superposed relation so that said resistance films are in contact with each other when pressure is applied to any point on one of said resistance films;

a first transistor connecting a first voltage source to said first Y-axis electrode, said first transistor being intermittently turned ON to apply a voltage from said first voltage source to said first Y-axis electrode;

a second transistor connecting a first signal ground to said second Y-axis electrode;

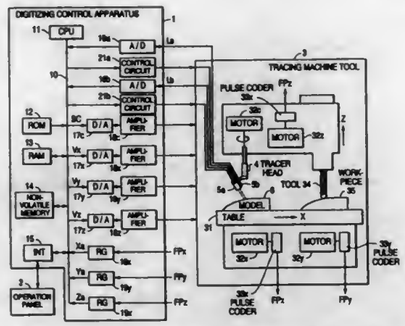
a third transistor connecting a second voltage source to said first X-axis electrode, said third transistor being intermittently turned ON to apply said second voltage to said first X-axis electrode;

a fourth transistor connecting a second signal ground to said second X-axis electrode, wherein said second transistor is turned ON by a pulse-shaped voltage to discharge residual electric charges accumulated on said first and second Y-axis electrodes when said third transistor is OFF, and wherein said fourth transistor is turned ON to discharge residual electric charges accumulated on said first and second X-axis electrodes when said first transistor is OFF.

5,550,330
DIGITIZING CONTROL APPARATUS

Hitoshi Matsuura, Hachioji, and Osamu Tsukamoto, Minamitsuru-gun, both of, Japan, assignors to Fanuc Limited, Yamanashi, Japan

Continuation of Ser. No. 64,161, May 24, 1993, abandoned.
This application Mar. 10, 1995, Ser. No. 401,643
Claims priority, application Japan, Oct. 16, 1991, 3-267681
Int. Cl.[6] G08C *21/00*
U.S. Cl. 178—18 **1 Claim**



1. A digitizing control apparatus for outputting digitized data of a model configuration from measuring displacements of a sensor tracing a three-dimensional model surface, comprising:

calculation means for calculating coordinate data of a digitized model surface by adding coordinate data commanding a tracing path on said three-dimensional model surface to the measuring displacements at trace measuring points of said sensor; and

correction means for correcting the coordinate data of said trace measuring points to digitize data approximated with a new coordinate point on a tracing plane containing said tracing path by using a trace measuring point where a vector connecting the center of gravity of said trace measuring point and the measuring points located in front of and behind said trace measuring point to said trace measuring point intersects a tracing plane containing said tracing path as a new coordinate point.

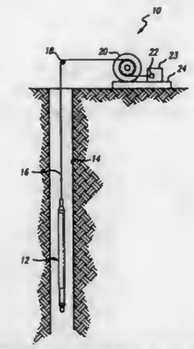
5,550,331
SYSTEM AND METHOD OF PROTECTING INSTRUMENTS FROM DOWN-HOLE FLUIDS

Jack T. Thompson, Port Hueneme, Calif., assignor to Westech Geophysical, Inc., Ventura, Calif.

Continuation of Ser. No. 343,205, Nov. 22, 1994, Pat. No. 5,440,081, which is a continuation of Ser. No. 263,482, Jun. 21, 1994, abandoned, which is a continuation of Ser. No. 62,691, May 21, 1993, abandoned. This application Jun. 1, 1995, Ser. No. 456,751
Int. Cl.[6] G01V *1/40*
U.S. Cl. 181—102 **18 Claims**

1. A method of preventing down-hole well fluids from adhering to a down-hole instrument exposed to such down-hole well fluid, comprising the step of:

applying a down-hole well fluid repelling surfactant to an exterior surface of the instrument, said surfactant containing tricresyl phosphate as an active ingredient to prevent said down-hole well fluid from adhering to the surface of said instrument.

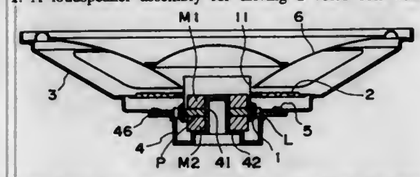


5,550,332
LOUDSPEAKER ASSEMBLY

Yoshio Sakamoto, Hachioji, Japan, assignor to Kabushiki Kaisha Kenwood, Japan

Continuation of Ser. No. 370,464, Jan. 9, 1995, abandoned, which is a continuation of Ser. No. 135,973, Oct. 14, 1993, abandoned. This application Dec. 11, 1995, Ser. No. 570,379
Claims priority, application Japan, Oct. 20, 1992, 4-281321
Int. Cl.[6] H05K *5/00;* **H04R** *25/00*
U.S. Cl. 181—148 **2 Claims**

1. A loudspeaker assembly for driving a voice coil with a winding width extending in a direction of voice coil movement, comprising:



a magnetic circuit for generating a magnetic field having a magnetic flux distribution with two transition points from positive to negative field flux values, said transition points separated by a distance in a direction along the winding width, said circuit having two magnets which are magnetized in a direction of thickness thereof and arranged with said thicknesses in the direction of the winding width with magnetic poles of a same polarity facing each other; and

a center plate made of magnetic material and having a thickness, said center plate arranged with said thickness between said two magnets,

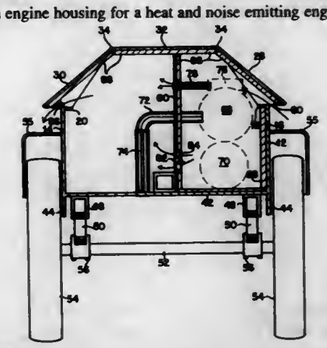
wherein said center plate has a diameter larger than diameters of the two magnets so as to project diametrically beyond the two magnets, and the winding width of said voice coil is greater than the thickness of the center plate, but smaller than said distance between said two positive-to-negative transition points of the magnetic flux distribution of said magnetic circuit.

5,550,333
REDUCED NOISE TRAILERABLE ENGINE

Marvin E. Whiteman, Jr., Boise, Id., assignor to Whiteman Industries, Inc., Boise, Id.

Filed Jan. 10, 1995, Ser. No. 370,727
Int. Cl.[6] F01N *1/10*
U.S. Cl. 181—204 **12 Claims**

1. An engine housing for a heat and noise emitting engine which comprises:



a pair of top panels, each configured in size and shape to, in combination and in reciprocally angled relationship, span and cover an open topped container of predetermined length and width and to extend, in overhanging relationship a portion of each top panel over a side wall;

an open topped container, of predetermined length, width and volume, for receiving a heat and noise emitting engine, formed of a first pair of generally opposing end walls, defining a container length and a container centerline between them, a pair of generally opposing side walls defining a container width and a transverse axis between them, and a bottom plate, all interconnected to form said open topped container, said pair of generally opposing end walls each having a similar and pyramidally shaped upper portion for supporting the pair of said top panels spanning and covering the length of the enclosure in reciprocally angled orientations from a higher centerline peak to a lower point wherein a portion of each of said top panels overhangs one of the pair of opposing side walls,

said pair of generally opposing side walls each having a vent hole located therein and configured in size and shape to provide that any line drawn parallel to the transverse axis and passing through a vent hole will intersect with the portion of a top panel which overhangs the side wall in which said hole is formed;

an enclosure baffle for, in combination with at least a portion of a side wall, dividing the container volume into two separate enclosures, with each having, as a part of its enclosure structure a portion of a side wall having a vent hole, said enclosure baffle having a baffle vent hole formed therethrough for the passage of air from one enclosure to the other within the container; and

means for mounting a heat and noise emitting engine mounted within one of the enclosures.

VOL 1189 ISS 4 AUG 27 1996

5,550,334

ACTIVELY SOUND REDUCED MUFFLER HAVING A VENTURI EFFECT CONFIGURATION

Andrew J. Langley, Welwyn, Great Britain, assignor to Noise Cancellation Technologies, Inc., Linthicum, Md.

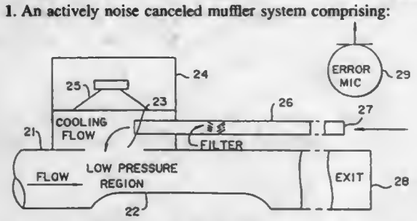
PCT No. PCT/US91/07831, § 371 Date May 24, 1994, § 102(e) Date May 24, 1994, PCT Pub. No. WO93/09334, PCT Pub. Date May 13, 1993

PCT Filed Oct. 30, 1991, Ser. No. 211,838

Int. Cl.[6] F01N *1/06*

U.S. Cl. 181—206 **4 Claims**

1. An actively noise canceled muffler system comprising:



an exhaust pipe having a front end and a rear end, for exhausting exhaust gases;

an aperture in the exhaust pipe disposed between said front end and said rear end of said exhaust pipe;

an enclosure mounted adjacent said exhaust pipe and over said aperture containing at least one loudspeaker means adapted to produce opposite sound from that emanating from said exhaust pipe through said aperture;

a venturi effect means in said exhaust pipe adjacent said aperture for generating a low pressure region in said exhaust pipe, said low pressure region being below atmospheric pressure;

a conduit means having a first end and a second end, said first end being disposed in said enclosure adjacent said low pressure region and said second end being spaced from said rear end of said exhaust pipe, for allowing ambient air to flow to said low pressure region to thereby prevent or inhibit any exhaust gases from coming into contact with said loudspeaker means.

5,550,335

RESONANCE ABSORBER

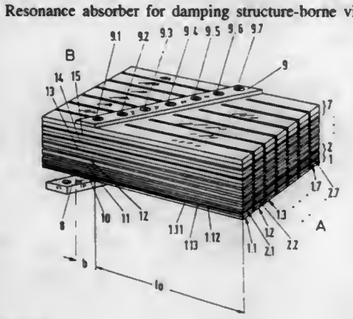
Klaus Ermert, Grasbrunn; Arno Röder, and Klaus Zimmermann, both of München, all of, Germany, assignors to Deutsche Aerospace AG, Germany

Filed Dec. 1, 1994, Ser. No. 352,138

Int. Cl.[6] F16F *15/00*

U.S. Cl. 181—207 **22 Claims**

1. Resonance absorber for damping structure-borne vibrations,



comprising:

a common base member for connecting said resonance absorber with a body to be damped; and

a plurality of free-swinging vibration absorbing elements mounted on said common base member wherein;

each of said vibration absorbing elements comprises a double slat structure having at least two slats, with a damping coating sandwiched between said two slats; and

each of said vibration absorbing elements has a resonance frequency which differs from resonance frequencies of other vibration absorbing elements.

5,550,336

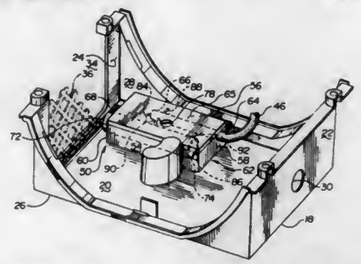
TURBINE SOUND REDUCER

Joseph W. Kieffer, Rogers, Minn., assignor to Wagner Spray Tech Corporation, Minneapolis, Minn.

Filed Nov. 9, 1994, Ser. No. 335,003

Int. Cl.[6] F01N *3/02*

U.S. Cl. 181—230 **26 Claims**



1. A sound reducer enclosure for silencing turbine bleed air venting from a paint sprayer turbine of the type for use with a non-bleeder spray gun, the sound reducer enclosure comprising:

a. a generally rectangular base having:

i. a bottom wall, first and second spaced apart side walls, and first and second spaced apart end walls forming a housing,

ii. an inlet aperture in the first end wall for receiving an inlet tube member having an outlet end and carrying air venting from the turbine,

iii. an outlet aperture in the second end wall,

iv. an outlet tube member received in the housing and passing through the outlet aperture, wherein the outlet tube member includes an inlet end and an outlet end, and wherein the outlet end of the outlet tube member is located exterior of the housing generally adjacent the outlet aperture,

v. spacer means located within the base for positioning the inlet tube member and outlet tube member in a spaced, parallel relationship such that the outlet end of the inlet tube member is offset from the inlet end of the outlet tube member causing air exiting the outlet end of the inlet tube member to reverse direction and traverse a circuitous path within the housing before entering the inlet end of the outlet tube member; and

b. a generally planar cover forming a top wall for the housing to seal the enclosure and require that turbine bleed air is exhausted only via the outlet tube member

such that high frequency noise present in the turbine bleed air exiting the outlet end of the inlet tube member is substantially abated as the turbine bleed air exhausts from the outlet tube member.

5,550,337

EXHAUST SYSTEM FOR A SMALL PLANING CRAFT

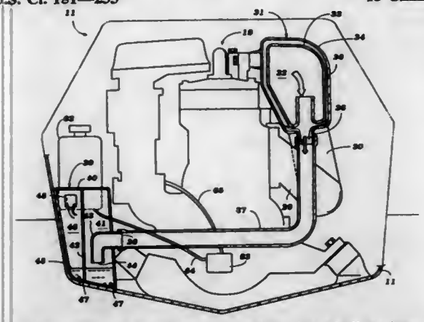
Hiroshi Tazaki; Kazumasa Ito, and Atsushi Sugawara, all of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Shizuoka-ken, Japan

Continuation of Ser. No. 593,779, Oct. 5, 1990, abandoned. This application Jul. 22, 1992, Ser. No. 918,940

Claims priority, application Japan, Oct. 6, 1989, 1-261701

Int. Cl.[6] F01N *7/12*

U.S. Cl. 181—235 **15 Claims**



1. An exhaust silencer for a watercraft having a hull, an internal combustion engine positioned within said hull substantially along a longitudinal center plane thereof, said internal combustion engine having at least one exhaust port for discharge of exhaust gases from said engine, said silencer comprising a first expansion chamber housing on one side of said hull, said first expansion chamber housing defining at least one internal expansion volume, an inlet for receiving exhaust gases and delivering exhaust gases to said first expansion chamber expansion volume, and an outlet for discharge of exhaust gases from said first expansion chamber housing expansion volume, conduit means for delivering exhaust gases from said engine exhaust port to said first expansion chamber housing inlet, a discharge conduit having a first end connected to said outlet of said first expansion chamber housing and a second end, a second expansion chamber housing positioned on the other side of said hull from said one side, said second expansion chamber housing defining at least one internal expansion volume, an input connected to said second end of said discharge conduit for delivering exhaust gases from said discharge conduit to said expansion volume of said second expansion chamber housing, and an output for discharging exhaust gases from said second expansion chamber housing expansion volume to the atmosphere, at least one of said expansion chamber housings being supported within said hull independently of said engine.

5,550,338

DISPOSABLE THERMAL SHIELD

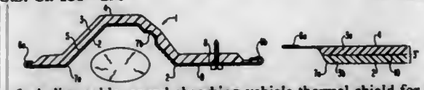
Peter Hielscher, Röthis, Austria, assignor to Matec Holding AG, Kusnacht, Switzerland

Continuation of Ser. No. 789,017, Nov. 6, 1991, abandoned. This application May 30, 1995, Ser. No. 453,106

Claims priority, application Switzerland, Nov. 12, 1990, 03583/90

Int. Cl.[6] E04B *1/82*

U.S. Cl. 181—290 **15 Claims**



1. A disposable, sound-absorbing vehicle thermal shield for the acoustic and thermal insulating of vehicle parts, said shield consisting essentially of a relatively thick, partially perforated, dimensionally stable substrate in the form of a sheet of metal, a multi-ply, sound-absorbing thermal insulating layer built up of several plies of a light metal material having an open pored structure with a porous metal foil being provided between plies thereof as an interlayer of said insulating layer, said thermal insulating layer being carried by said substrate, a protective cover in the form of a relatively thin layer of a light metal provided at least on a side of said thermal insulating layer facing away from the substrate, and means for holding together said dimensionally stable substrate, said sound-absorbing thermal insulating layer and said protective cover, and wherein said dimensionally stable substrate, said multi-ply, sound-absorbing thermal insulating layer, and said protective cover layer are each manufactured from the same material, namely a readily disposable light metal having a melting point above 600° C. whereby the thermal shield is readily disposable for recycling the material thereof without separation from one another and sorting of said dimensionally stable substrate, said multi-ply, sound-absorbing thermal insulating layer and said protective cover layer.

5,550,339

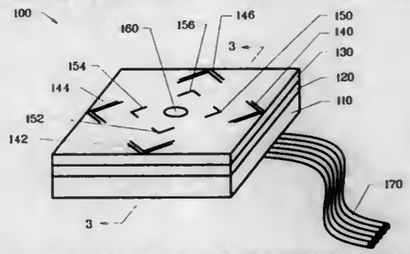
VARIABLE SPEED TACTILE SWITCH

James E. Hangh, Granger, Ind., assignor to CTS Corporation, Elkhart, Ind.

Filed Oct. 31, 1994, Ser. No. 331,422

Int. Cl.[6] H01H *13/70;* **H01C** *10/10*

U.S. Cl. 200—5 A **11 Claims**



1. A sensor for sensing intent, direction and magnitude comprising:

first and second contact members extending in planes parallel to but spaced from each other, said first contact member being flexible and resilient so as to deform upon the application of a force normal to said first contact member;

first and second means for conducting electricity, said first conducting means deforming with said first contact member upon said application of said normal force, said first conducting means and said first contact member further being sufficiently flexible as to permit said first conducting means to make electrical contact with said second conducting means when said normal force reaches a sufficient magnitude, said first conducting means and said first contact member further being sufficiently resilient as to substantially return to an initial shape prior to an application of said normal force of said sufficient magnitude;

a first electrically insulating means for spacing said first and second contact members a predetermined distance apart, said first electrically insulating means positioned apart from an active area formed by areas of possible contact between said first and second conducting means;

a second electrically insulating means for spacing said first and second contact members a predetermined distance apart, said second electrically insulating means positioned within an active area formed by areas of possible contact between said first and second conducting means to thereby define a region of non-contact within said active area;

an electrical circuit formed by said first conducting means and said second conducting means and further including a first termination and a second termination, said electrical circuit having a nearly infinite resistance between said first and said second termination indicative of an open circuit when no normal force is applied to said first contact member, said nearly infinite resistance to thereby signal a lack of intent,

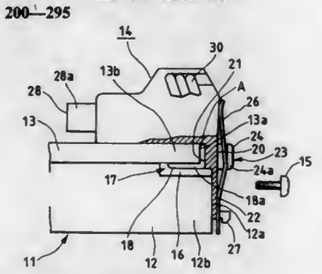
said electrical circuit having a finite and determinable resistance during said application of said normal force at a first location within said active area and outside of said region of non-contact within said active area, said finite and determinable resistance varying as a function of a distance between said region of non-contact and said first location, wherein said finite and determinable resistance thereby signals an intent and a magnitude and direction of said intent.

5,550,340

SWITCH DEVICE

Tomoharu Ogawa, Aichi, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Dec. 12, 1994, Ser. No. 370,721
Claims priority, application Japan, Dec. 13, 1993, 5-66267 U
Int. Cl.[6] H01H *1/64*
U.S. Cl. 200—295 **1 Claim**



1. A switch device comprising:

a deformable mounting piece extended from a switch body, said mounting piece being abutted against a mounting surface of a switch mounting unit, and secured to said mounting surface with a screw;

a positioning portion integral with said switch body, said positioning portion being abutted against a positioning surface of said switch mounting unit, said positioning surface being set back from said mounting surface, thus forming a step; and

a leaf spring formed separately from said switch mounting unit and arranged in such a manner as to spread over an outer surface of said deformable mounting piece and an outer surface of said switch body and further arranged such that it does not contact said switch mounting unit, said leaf spring together with said mounting piece being tightened by the screw to urge said switch body so that said positioning portion of said switch body is abutted against said positioning surface.

5,550,341

SWITCH MOUNTABLE TO A PANEL WITHOUT ADDITIONAL FASTENERS

Larry J. Bohnert, Monroe, Wis.; Richard R. Ellis, and Michael G. Marchini, both of Freeport, Ill., assignors to Honeywell Inc., Minneapolis, Mich.

Filed Jun. 9, 1995, Ser. No. 489,192
Int. Cl.[6] H01H *9/02*
U.S. Cl. 200—296 **8 Claims**

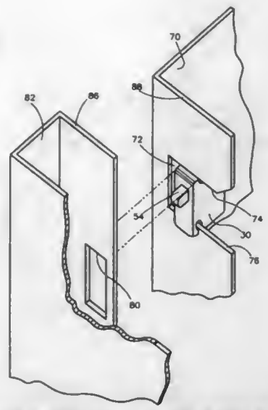
1. An apparatus, comprising:

a switch having a housing structure, said housing structure having a top major surface, a bottom major surface, a first edge surface and a second edge surface;

a first slot formed in said housing structure, said first slot extending through said top major surface, said bottom major surface and said first edge surface;

a second slot formed in said housing structure, said second slot extending through said top major surface, said bottom major surface and said second edge surface;

a first panel of said apparatus having a first opening, said first opening being a slot bordered on three sides by said first panel



and having a fourth side extending through an edge of said first panel, said first opening being shaped to permit said switch to be slideably inserted into said fourth side of said first opening between two opposite ones of said three sides, said first panel being made of a sheet material having a first thickness, said first and second slots of said housing structure being sized to receive said first thickness of said sheet material at said two opposite ones of said three sides of said opening of said first panel, respectively;

means for maintaining said switch within said first opening of said first panel, said maintaining means comprising a second panel of said apparatus, said second panel having a second opening formed therethrough, said second opening being shaped to receive said housing structure therein and to prevent said housing structure from moving out of said first opening by surrounding said housing structure of said switch with said second opening; and

means movable relative to said first and second openings for actuating said switch.

5,550,342

METHOD AND APPARATUS FOR AN ELECTRICAL SWITCH ASSEMBLY

Daniel J. Danek, Berwyn; Harry N. Etters, Jr., Downers Grove; Earl J. Genz, Des Plaines; Brigg A. Johnston, Oak Park; Iran R. Littman, Wheaton; John N. Long, Morton Grove; Anthony W. Meadors, Elmhurst; Nicholas J. Mercadante, Lisle; Mario M. Orrico, Chicago; Stephan H. Schramme, Schaumburg, and Charles J. Shedore, Elmhurst, all of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Filed Jul. 13, 1994, Ser. No. 274,479
Int. Cl.[6] H01H *5/06*
U.S. Cl. 200—448 **14 Claims**

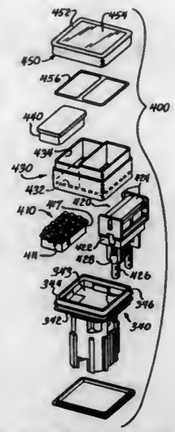
1. An electrical switch assembly for alternate on and off switch operation, the electrical switch assembly comprising:

an electrical switch having a pair of normally open electrical contacts and a pair of normally closed electrical contacts, wherein the electrical switch may be actuated to close the normally open electrical contacts and open the normally closed electrical contacts, the electrical contacts of the switch connected to electrical contact pins matable with a contact pin connector;

a module frame assembly having a channel with a latch spring hook, a cavity for receiving the electrical switch, and a ribbed collar pivotally connected thereto;

a switch actuator assembly disposed on a shaft for engaging and actuating the electrical switch upon depressing the shaft;

a cap base assembly is releasably connected to the shaft of the switch actuator assembly and disposable in the ribbed collar for depressing the shaft to actuate the electrical switch, the



cap base assembly including a cap module having an LED illuminatable display for indicating switch status, wherein the cap base assembly further comprises a metal cap base platform having an edge, the LED illuminatable display having an LED disposed on a metal base having an outer edge that is mountable on the edge of the cap base platform, the cap module being formed of a metal and having an inner edge for engaging the outer edge of the LED metal base when the metal cap module is disposed on the cap base platform, wherein the metal base transfers heat from the LED to the metal cap module and the metal cap base platform which act as a heat sink for the LED;

an electrical circuit interconnectable to the LED illuminatable display and electrical contacts for providing electrical power to the LED illuminatable display;

a latch spring guide disposed on the shaft and reciprocatingly receivable in the channel of the module frame assembly, the latch spring guide having a hook channel for receiving and guiding the latch spring hook when the shaft and the latch spring guide are moved into and out of the channel of the module frame assembly, the latch spring guide having a first and a second edge disposed in the hook channel thereof for engaging the latch spring hook in order to retain the latch spring guide in the channel and maintain the switch actuator assembly in engagement with the actuated electrical switch so as to latch the actuated electrical switch, the latch spring guide having a ramp disposed in the channel of the latch spring guide and extending away from the first edge for guiding and disengaging the latch spring hook from the first edge to permit the shaft and the latch spring guide to move out of the channel of the module frame assembly and disengage the switch actuator assembly from the electrical switch to unlatch and de-actuate the electrical switch,

wherein the electrical switch is comprised of a plurality of snap-action electrical switches interconnected by a flexible circuit board, the snap-action electrical switches disposable in cavities of the module frame assembly, the switch actuator assembly actuating the snap-action electrical switches upon depressing the cap module of the cap base assembly,

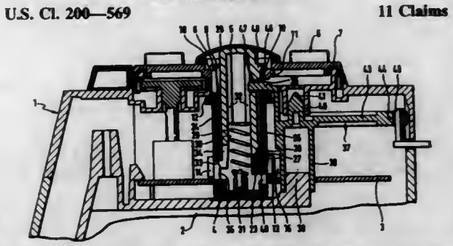
the electrical switch assembly emitting audible and tactile indicators perceptible to an operator of the switch when the latch spring hook engages the first edge to indicate that the electrical switch has been actuated and latched, and when the latch spring hook moves over the second edge to indicate that the electrical switch has been unlatched and de-actuated.

5,550,343

SWITCH FOR ELECTRICALLY POWERED APPARATUS

Georg Börger, Steinbach, and Karl-Heinz Kamprath, Wiesbaden, both of, Germany, assignors to Braun Aktiengesellschaft, Frankfurt, Germany

PCT No. PCT/EP93/01843, § 371 Date Jan. 19, 1995, § 102(e) Date Jan. 19, 1995, PCT Pub. No. WO94/03912, PCT Pub. Date Feb. 17, 1994
PCT Filed Jul. 14, 1993, Ser. No. 374,539
Claims priority, application Germany, Jul. 30, 1992, 42 25 153.2
Int. Cl.[6] H01H *19/20*
U.S. Cl. 200—569 **11 Claims**



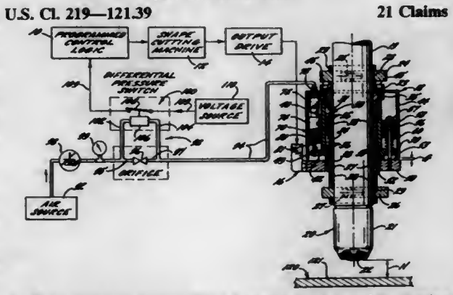
1. A switch for an electrically powered apparatus comprising a rotary handle structure, switch contact structure, a rotary actuating shaft structure connected to said rotary handle structure for transmitting a switching operation from said rotary handle structure to said switch contact structure to thereby actuate said contact structure upon rotation of said rotary handle structure, said actuating shaft structure including a longitudinal bore, an actuating rod axially movably disposed in said longitudinal bore, an end of said rod being adapted to be urged into the actuating shaft structure for a depth of some length in opposition to a restoring force structure, cutout structure in a wall of said actuating shaft structure surrounding said longitudinal bore and a transmission element extending through said cutout structure, said transmissioa element converting an axial motion of said actuating rod into a switching operation which actuates the same switch contact structure which can be actuated by said rotary actuating shaft structure.

5,550,344

MOUNTING APPARATUS FOR A CUTTING TORCH HAVING SOFT TOUCH HEIGHT CONTROL

Duane N. Winterfeldt, Clio, S.C., assignor to The ESAB Group, Inc., Florence, S.C.

Filed Oct. 14, 1994, Ser. No. 323,256
Int. Cl.[6] B23K *10/00*
U.S. Cl. 219—121.39 **21 Claims**



15. An apparatus for mounting a cutting torch to a shape cutting machine, said apparatus adapted to detect contact with an obstruction during movement of the torch in the vertical or a lateral direction, movement of the torch accomplished by an output drive controlled by the shape cutting machine, said apparatus comprising

a cylindrical sleeve secured to the torch by an upper clamp and a lower clamp, said sleeve defining a longitudinal axis of the

torch in the vertical direction, said sleeve comprising an inner race portion at a medial location along the outer surface of said sleeve;

an annular base ring fixed to the output drive of said shape cutting machine so that the output drive may move the torch vertically or laterally along a predetermined path;

a bearing assembly comprising an outer race, three circumferentially-spaced series of cylindrical bearing pins cooperating with the inner race portion of said sleeve, and three circumferentially-spaced bearing plates cooperating with the three series of bearing pins, said bearing assembly connected to said base ring for permitting displacement of said sleeve relative to the outer race when the torch contacts an obstruction in the vertical or a lateral direction; and

control means responsive to the displacement of said sleeve relative to the outer race of said bearing assembly caused by the torch contacting an obstruction in the vertical or a lateral direction, and for generating an electrical signal adapted to be sent to the shape cutting machine so that the machine may take corrective action, said control means comprising

a pressurized gas source;

a gas line connected to said pressurized gas source;

valve means operatively connected to said gas line for at least partially opening said gas line and permitting pressurized gas from said pressurized gas source to escape to atmosphere when said sleeve is displaced relative to the outer race of said bearing assembly; and

switch means responsive to said valve means for generating a signal to control the output drive of the shape cutting machine.

5,550,345

PROCESS AND DEVICE FOR WELDING SHEETS BY LASER TO FORM COMPOUND SHEETS

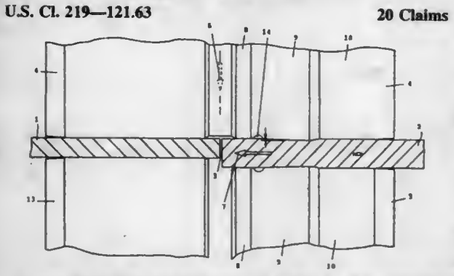
Markus Meier, Gächlinge; Werner Urech, Kaiserstuhl, and Karl Wueger, Uster, all of, Switzerland, assignors to Elpatronic AG, Zug, Switzerland

Filed Mar. 18, 1993, Ser. No. 33,050

Claims priority, application Switzerland, Apr. 12, 1992, 01173/92; Apr. 13, 1992, 01211/92; Feb. 25, 1993, 00573/93

Int. Cl.[6] B23K *26/00*

U.S. Cl. 219—121.63 **20 Claims**



1. Process for butt welding sheets by a laser to form compound sheets, each sheet having a thickness and defining a gap having a width when edges of the sheets are positioned in an abutting relationship, comprising the step of:

plastically deforming at least one of the sheets prior to the sheets being welded and ahead of a welding zone in order to reduce the width of the gap between the sheets, the deformation being controlled as a function of the width of the gap ahead of a deformation zone caused by the deformation.

5,550,346

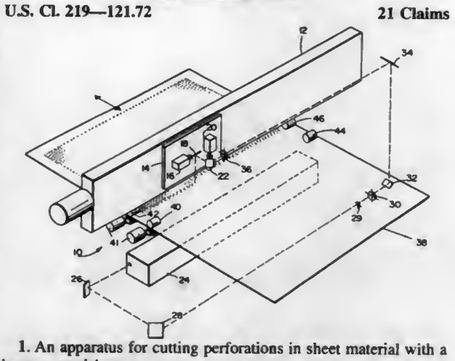
LASER SHEET PERFORATOR

Myke D. Andriash, 88 Rockland Road, Campbell River, Canada

Filed Jun. 21, 1994, Ser. No. 262,976

Int. Cl.[6] B23K *26/08*

U.S. Cl. 219—121.72 **21 Claims**



1. An apparatus for cutting perforations in sheet material with a laser, comprising:

(a) a bed for supporting the sheet material;

(b) a laser operative to provide a laser beam of sufficient intensity to cut through the sheet material supported by said bed;

(c) an arm movable across said bed;

(d) means for moving said arm at a selected speed;

(e) means for reflecting and collimating said beam so that said beam is incident on said sheet;

(f) means for moving said sheet over said bed transverse to the direction of movement of said arm;

(g) said reflecting and collimating means including first and second mirrors rotatable about orthogonal axes mounted on said arm;

(h) means for rotating said first and second mirrors so that said beam traverses a closed path over said sheet to define each perforation, at each of a plurality of spaced apart locations along said sheet so as to produce an array of perforations in said sheet; and

(i) means for shutting off said laser between perforations.

5,550,347

METHOD OF REDUCING WELDING DISTORTION IN ONE SIDE WELDING FOR JOINING PLATES

Tadashi Kasuya; Koichi Shinada; Yukihiko Horii, all of Futtsu, and Tateo Miyazaki, Osaka, all of, Japan, assignors to Nippon Steel Corporation, Tokyo, and Hitachi Zosen Corporation, Osaka, both of, Japan

PCT No. PCT/JP94/00162, § 371 Date Oct. 28, 1994, § 102(e) Date Oct. 28, 1994, PCT Pub. No. WO94/17951, PCT Pub. Date Aug. 18, 1994

PCT Filed Feb. 3, 1994, Ser. No. 313,271

Claims priority, application Japan, Feb. 4, 1993, 5-017724

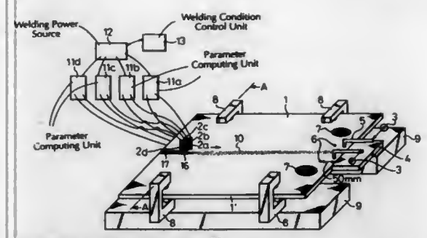
Int. Cl.[6] B23K *9/00*

U.S. Cl. 219—137 R **10 Claims**

1. A method of optimizing a welding condition for reducing welding distortion to a minimum by reducing a heavy burden imposed on preparation work for welding and a welding apparatus, in one side welding for joining plates in which steel plates to be welded are butted against each other, a tack-welded bead is formed and fixed in a groove, and not less than three electrodes are applied, said method comprising the steps of:

1) selecting maximum height H(mm) of the tack-welded bead in the butted groove to be not more than half of the wall thickness of said steel plate to be welded;

2) selecting distance Li(mm) from the first electrode to the i-th electrode;



3) setting a positive constant K;

4) establishing a parameter P defined by the following expression (2) in an allowable range;

5) computing an amount of inputted heat Qi(kJ/mm) by the following expression (2); and

6) selecting suitable combinations of current Ii(A) and voltage Ei(V) and welding speed Vi(cm/min) of said i-th electrode by the following expression (1),

$$Qi=Ii\times Ei\times 6+Vi \qquad \text{Expression (1)}$$

$$P=\frac{1}{H}\sum_{i=1}^{n}\frac{Qi}{Li+k} \qquad \text{Expression (2)}$$

where L_1 is O. and n is the number of the electrodes.

5,550,348

FLUX-CORED WIRE AND SOLID WIRE FOR ARC WELDING

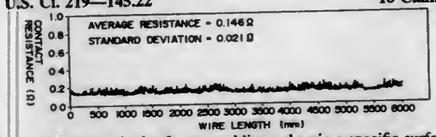
Norio Masaie; Tomoyuki Tachibana; Hiroyuki Shimizu; Kazuhiko Ito; Akira Matsuguchi, all of Fujisawa; Yoshikazu Sasa, Osaka, and Atsushi Furuya, Kobe, all of, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Apr. 13, 1995, Ser. No. 421,252

Claims priority, application Japan, May 6, 1994, 6-094505; Jan. 5, 1995, 7-000401

Int. Cl.[6] B23K *35/02*

U.S. Cl. 219—145.22 **18 Claims**



1. A flux-cored wire for arc welding, wherein a specific surface area defined by the following equation is in the range of from 0.005 to 0.035,

specific surface area=(Sa/Sm)−1

where Sm is an apparent surface area and Sa is a real surface area in a region to be measured on a surface of said wire; and

wherein molybdenum disulfide is stuck on said surface of said wire in an amount of from 0.004 to 0.24 g/m^2, and no plating is applied on said surface of said wire.

5,550,349

SNOW PROTECTION AND REMOVAL SYSTEM

Fidelis Bomba, 585 Morris Ave., Orange, N.J. 07050

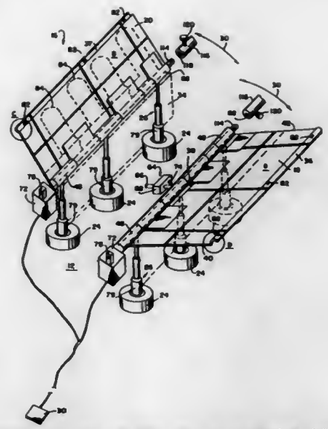
Filed Jun. 8, 1994, Ser. No. 257,002

Int. Cl.[6] H05B *3/28;* **E04B** *7/16*

U.S. Cl. 219—213 **18 Claims**

1. A passageway coverage assembly system for preventing and eliminating the accumulation of fallen snow on ingress and egress passageway at ground level to buildings so as to permit vehicle and pedestrian traffic therealong, said assembly comprising:

a. a plurality of paired array of panels of selected lengths and widths disposed in a cooperative spaced relationship to cover passageways for catching and accumulating fallen snow thereon and the periodic removal of accumulating fallen snow;



b. plurality of drive shaft support assemblies of selected lengths including a drive shaft having a first and second end, a shaft bearing member and a plurality of snap-in panel holders connected to said drive shafts at spaced apart distances along said support assembly adapted to receive and support said panels in substantially fixed spaced relationship along their respective lengths;

c. a plurality of weighted support members disposed at ground level below each of said panels and drive shaft support assemblies fixedly connected to a corresponding plurality of vertically extendable support legs of selected lengths fixedly connected to each of said drive shafts bearing support assemblies at spaced apart positions along the lengths thereof to support said panels and drive shaft support assemblies above and along ingress and egress passageways;

d. an electrical drive device connected to said first end of each of said drive shafts to provide rotational motion of said panels through an arc of a circle, where said drive shafts act as the axis of rotational motion for said panels to thereby effect the periodic removal of caught snow that accumulates on said panels along their respective widths and lengths;

e. an electrical circuit with power input which actuate and control rotational motion and operation of said electrical drive device, drive shaft and panels responsive to selected period signal inputs; and

f. a snow-drift shield having a length corresponding to a length of each drive shaft support assembly and a height corresponding to the extendable lengths of a plurality of vertically extendable support legs, said shield being adjustable to a height corresponding to selected lengths of said support legs, said shield being appropriately affixed to said drive shaft bearing support assembly and disposed vertically to prevent both falling snow and accumulated snow removed from said panels to drift onto covered passageways.

5,550,350

HEATED ICE-MELTING BLOCKS FOR STEPS

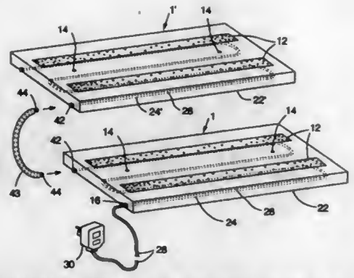
Donald W. Barnes, P.O. Box 211313, Anchorage, Ak. 99504, assignor to Donald W. Barnes, and Dennis N. Dunham, both of Anchorage, Ak.

Filed Nov. 17, 1994, Ser. No. 341,362

Int. Cl.[6] H05B *3/10*

U.S. Cl. 219—213 **16 Claims**

1. A device for melting ice having capability for mounting over steps, comprising:



a) a rigid block of heat-conducting plastic having a top surface and a bottom surface, said bottom surface having a channel embedded therein;
b) a heating element mounted within said channel, said heating element having a first end;
c) electrical coupling means for coupling said heating element to a source of power at said first end of said heating element within said channel; and
d) a heat conducting strip covering said channel and in thermal conducting contact with said heating element so that the heat is distributed to said rigid block of heat-conducting plastic.

5,550,351

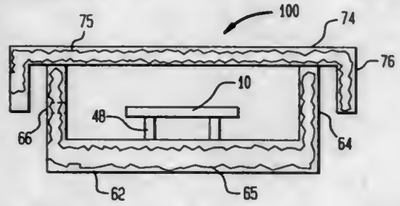
PROCESS AND APPARATUS FOR CONTAMINATION-FREE PROCESSING OF SEMICONDUCTOR PARTS

Nunzio DiPaolo, Poughkeepsie, and Daniel J. Ferguson, Marlboro, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 227,937, Apr. 15, 1994, Pat. No. 5,471,033. This application Jun. 7, 1995, Ser. No. 476,470

Int. Cl.[6] F27B *5/04*

U.S. Cl. 219—390 **10 Claims**



1. An apparatus for treating at least one part comprising a boat, said boat has a base and a cover and forms a covered boat, said covered boat envelopes said part and forms a first environment while said apparatus has a second environment, and wherein said apparatus further comprises at least one means for treating said part, and wherein said second environment envelopes said covered boat and has more contamination than said first environment.

5,550,352

METHOD AND DEVICE FOR THE THERMAL CLEANING OF OBJECTS

André Geeroms, Erpe-mere, Belgium, assignor to Dinamec, Naamloze Vennootschap, Belgium

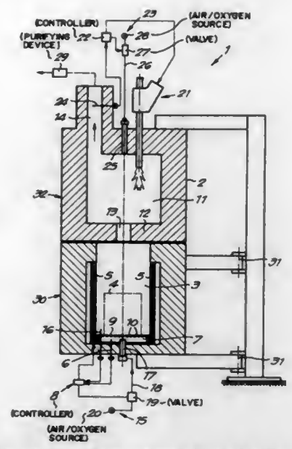
Filed Jun. 16, 1994, Ser. No. 260,787

Claims priority, application Belgium, Jun. 16, 1993, 09300611

Int. Cl.[6] H05B *1/02*

U.S. Cl. 219—497 **17 Claims**

1. A method of thermally cleaning objects comprising:
placing an object to be cleaned upon a receiver defining a measuring space below the object within a room of a furnace;



heating the object to a temperature which causes materials to be cleaned from the object to disintegrate by means of pyrolysis;
providing a first temperature sensor within the measuring space of said room;
sensing the temperature associated with said object from said measuring space by means of said first temperature sensor;
controlling the temperature to which the object is heated based on the temperature sensed by said first temperature sensor;
sensing the temperature in said room by means of a second temperature sensor; and
causing a controlled combustion in said room by supplying an adjustable flow of air/oxygen therein in dependence upon the sensed temperature in the room.

5,550,353

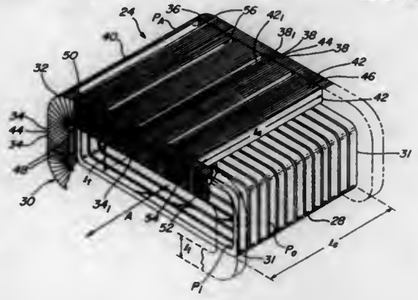
INDUCTION HEATING COIL ASSEMBLY FOR PREVENT OF CIRCULATING CURRENT IN INDUCTION HEATING LINES FOR CONTINUOUS-CAST PRODUCTS

Vitaly Peysakhovich, Moorestown, N.J.; Nicolas P. Cignetti, North Canton, Ohio; Hans G. Heine, Red Bank, and John H. Mortimer, Mt. Laurel, both of N.J., assignors to Inductotherm Corp., Rancocas, N.J.

Continuation-in-part of Ser. No. 107,427, Aug. 16, 1993, Pat. No. 5,416,794, which is a continuation-in-part of Ser. No. 19,921, Feb. 19, 1993, Pat. No. 5,425,048, which is a continuation-in-part of Ser. No. 532,010, Jun. 1, 1990, Pat. No. 5,272,720, which is a continuation-in-part of Ser. No. 473,000, Jan. 31, 1990, Pat. No. 5,257,281. This application Feb. 6, 1995, Ser. No. 384,080

Int. Cl.[6] H05B *6/36*

U.S. Cl. 219—672 **12 Claims**



1. A roller induction heating line, comprising conveyor rolls for conveying a workpiece to be inductively heated along a linear path and an induction heating coil assembly surrounding the path, the induction heating coil assembly having a central axis substantially collinear with said path and a preselected axial length and comprising an induction coil having a plurality of turns and being shaped to define a preselected perimeter for permitting the workpiece to be received within the perimeter and conveyed therethrough along said path, first and second pluralities of transverse yokes at opposite ends of the coil, and a plurality of intermediate yokes spaced apart from each other, and disposed between said first and second pluralities of transverse yokes and extending parallel to the central axis of the coil assembly, said first and second pluralities of transverse yokes and said plurality of intermediate yokes surrounding the coil, said intermediate yokes extending around a major portion of the perimeter defined by said induction coil, said first and second yokes being axially separated from each other and electromagnetically coupled together by said plurality of intermediate yokes.

5,550,354

HIGH-FREQUENCY INDUCTION HEATING COIL

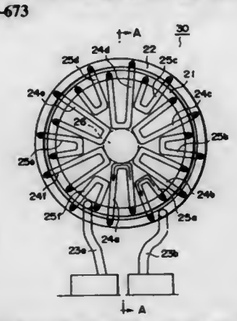
Masanori Kimura, and Hirotoshi Yamagishi, both of Gunma-ken, Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed May 30, 1995, Ser. No. 456,102

Claims priority, application Japan, May 31, 1994, 6-141265

Int. Cl.[6] H05B *6/40;* **C30B** *13/20*

U.S. Cl. 219—673 **7 Claims**



1. A high-frequency induction heating coil comprising;
a pair of annular conductors;
a pair of power source terminals for feeding a high-frequency electric current to said pair of annular conductors;
a plurality of small coils each having one end electrically connected to one of said pair of annular conductors and another end connected to another of said pair of annular conductors and projecting toward an axis of the pair of annular conductors; and
wherein one power source terminal is connected to only one annular conductor, and another power source terminal is connected to only another annular conductor.

5,550,355

MICROWAVE OVEN DRIVING CONTROL METHOD AND APPARATUS THEREOF

Kyung-Han Jung, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

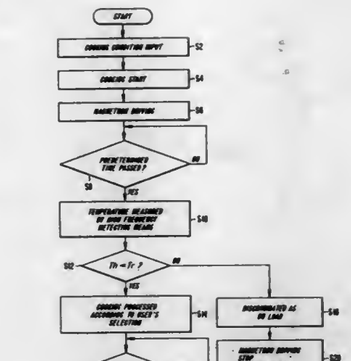
Filed Jun. 29, 1994, Ser. No. 267,399

Claims priority, application Rep. of Korea, Jun. 29, 1993, 93 11952

Int. Cl.[6] H05B *6/68*

U.S. Cl. 219—709 **19 Claims**

1. A high frequency detecting apparatus comprising:



a high frequency absorbent body formed of compressed high molecular powder for absorbing high frequency from a high frequency generator and generating heat in proportion to the absorbed high frequency;
a temperature detector disposed inside a portion of said body for detecting a temperature of the heat generated by said body; and
a thermal insulation material encompassing said portion of said body in which said detector is disposed, with another portion of said body disposed outside said thermal insulation material.

5,550,356

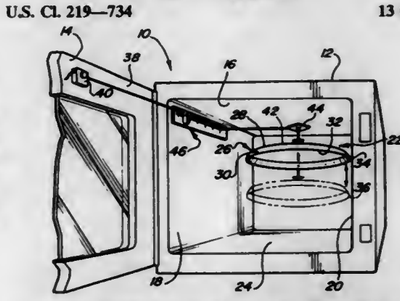
FOOD COVERING DEVICE FOR USE WITH A MICROWAVE OVEN

Gregory A. Tripp, 10626 Hand Hwy., Onsted, Mich. 49265, and Mitchell W. Michaluk, III, 17501 Mulvaney, Manchester, Mich. 48158

Filed Jun. 20, 1994, Ser. No. 262,922

Int. Cl.[6] H05B *6/80*

U.S. Cl. 219—734 **13 Claims**



1. A food covering device for use with a microwave oven, the microwave oven having a door hingedly attached thereto revealing an interior of the oven, the interior being defined by a top, sides and a bottom, said device comprising:
a cover having a top and at least one side wall extending from said top to define an enclosure;
means for actuating said cover from a first elevated position above the bottom of the oven interior to a second lowered position adjacent to and overlaying the bottom of the oven interior, said enclosure of said cover overlying an item placed within the interior of the microwave oven, when said cover is in said second position;

said actuating means including a length of cord, a first end of said cord adapted to be attached to the door of the microwave oven and a second end of said cord being attached to said top of said cover;

a suspending member adapted to be secured to and extending from the top of the oven interior, said cord being engaged by said suspending member to suspend said cover between said first position and said second position; and

an adjustment guide adapted to be mounted to the oven and receiving a portion of said length of cord, said adjustment guide being operable to adjust the position of said cover relative to the oven bottom between said first position and said second position.

5,550,357

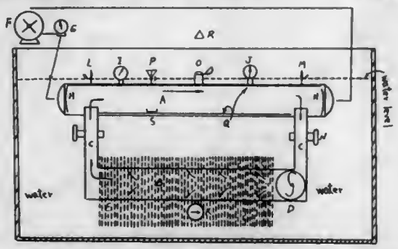
APPARATUS FOR PRODUCING HEAT ENERGY WITHOUT COMBUSTION USING NON-FUEL FLUID MATTER

James P. S. Huang, No. 22-4, Lane 64, Sec. 11, Chung Shen Road, Chung Ho City, Taipei, Taiwan

Division of Ser. No. 237,281, May 3, 1994. This application May 25, 1995, Ser. No. 450,552

Int. Cl.[6] H05B *6/62*

U.S. Cl. 219—772 **4 Claims**



1. Apparatus for producing heat energy without combustion comprising a cylindrical shape reactor (A) containing non-fuel fluid matter in a tank within which liquid is stored for converting a selected matter into energy conveyer, an electrostatic wave generator having a plurality of electrodes (H), an electrostatic wave regulator located outside of the tank, being wired to the reactor, a heat releasing reactor (B) composed of a predetermined alloy connected to both ends of the cylindrical shape reactor through connecting tubes (C), said electrodes (H) being located inside of the cylindrical shape reactor with said liquid stored in said tank being in proximity to said heat releasing reactor (B), and a gas circulating machine (D) on one end of the heat releasing reactor (B) for recycling the gaseous matter in the cylindrical shaped reactor (A) and heat releasing reactor (B).

5,550,358

NON-CONTACTING TRANSACTION SYSTEM

Robert A. R. Tait, and Elizabeth M. Tait, both of 5 Bridgecastle Gardens, Westfield, Bathgate, West Lothian, EH48 8DU, United Kingdom

Continuation of Ser. No. 94,182, Aug. 2, 1993, abandoned. This application Feb. 21, 1995, Ser. No. 392,023

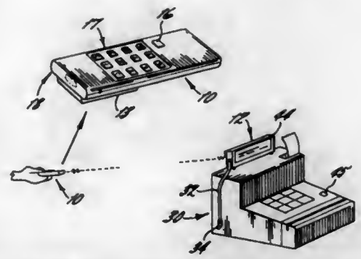
Claims priority, application United Kingdom, Jan. 31, 1991, 9102104

Int. Cl.[6] G06K *5/00*

U.S. Cl. 235—380 **19 Claims**

1. A non-contacting transaction system comprising,

transmitter means having a memory for storage of data identifying the user therein, and a wireless transmitter for transmitting the stored data to a remote location upon actuation of the transmitter means by the user, and



receiver means for receiving the transmitted data and also having indicator means for indicating that the data transmitted is received and that the transaction can proceed,

said transmitter means having no receiver to receive data from a remote location wbereby said transmitter means only transmits data to said receiver means and said receiver means having no transmitter means for transmitting data to said transmitter means.

5,550,359

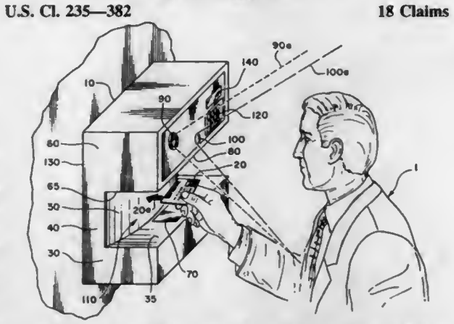
TIME AND ATTENDANCE SYSTEM AND METHOD THEREFOR

Michael J. Bennett, Las Vegas, Nev., assignor to Mikohn Gaming Corporation, Las Vegas, Nev.

Filed Sep. 14, 1994, Ser. No. 306,302

Int. Cl.[6] G06K *5/00*

U.S. Cl. 235—382 **18 Claims**



1. A time and attendance system for the high-speed recording of time information for a plurality of users, said time and attendance system comprising:

a plurality of user identification documents, one for each user of a plurality of users, each said user identification document having a bar code containing information uniquely identifying said user;

a base;

an upper container oriented above said base;

a support connecting said upper container to said base;

at least one user input means fixedly mounted in said upper container for reading said bar code to obtain said identification information on each said user identification document when each said user identification document is passed through a predetermined three-dimensional scanning region, said three-dimensional scanning region providing a guide for said plurality of user identification documents, said three-dimensional scanning region comprising:

said base, said base having an upper surface:

a column extending vertically from said base, said column having a vertically inclined arcuate surface;

said upper container connected atop said column and having a lower surface facing said upper surface of said base;

a reading means contained in said upper container;

a card fixedly attached to said upper surface of said base; and

an aperture in said lower surface of said upper container of said user input means through which said reading means projects a beam of laser light;

said three-dimensional scanning region being a region formed by the projection of said laser beam, the base of said region bounded inferiorly by said upper surface of said base and the apex of said region formed by said aperture; and

a host computing means connected to said at least one user input means for processing said user identification information, said host computing means comprising

(a) display means for displaying information corresponding to said user identification information;

(b) storing means for storing said user identification information;

(c) a database contained in said storing means for retaining a record of each time and date of each said user attendance as said user passes said corresponding user identification document through said predetermined three-dimensional scanning region; and

(d) means connected to said at least one user input means for transferring said user identification information from said at least one user input means to said host computing means;

said host computing means coupled to said transfer means and said storing means for processing said user identification information received from said at least one user input means through said transfer means, storing said user identification information in said database contained in said storing means, and transferring said identification information to said display means.

5,550,360

AUTOMATIC ADDFARE MACHINE

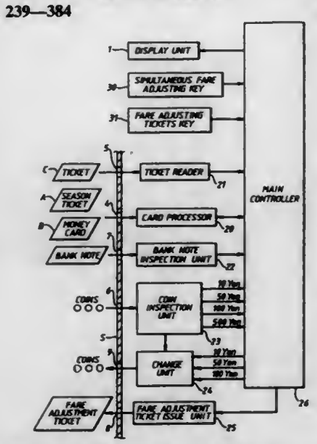
Yoshinori Muraoka, Saitama-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 27, 1994, Ser. No. 364,045

Claims priority, application Japan, Dec. 27, 1993, 5-348866

Int. Cl.[6] G06K *5/00*

U.S. Cl. 239—384 **19 Claims**



1. An automatic addfare machine comprising:

first receiving means for receiving in order first and second passenger tickets being respectively recorded sectional information representing a prescribed section between a station and the other station on a route:

means for reading respective sectional information recorded on the first and second passenger tickets received by the first receiving means:

means for comparing the sectional information of the first and second passenger tickets read by the reading means and outputting a comparison result:

means for calculating a total addfare amount of the first and second passenger tickets based on the sectional information as far as a destination station at which the addfare machine is installed when the comparison result indicates that the sectional information of the second passenger ticket coincides with the sectional information of the first passenger ticket;

second receiving means for receiving currency; and

means for issuing fare adjustment tickets in the number of sheets equivalent to the passenger tickets received by the first receiving means when an amount of the currency received by the second receiving means is much more than the total addfare amount.

5,550,361

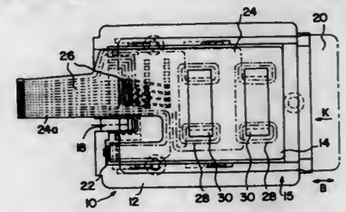
CARD READER CONTACTS AND NON-CONTACT COILS ON A PRINTED CIRCUIT BOARD

Heinrich Huis, Obereisesheim, and Bernd Schuder, Schwaigern, both of, Germany, assignors to Amphenol-Tuchel Electronics GmbH, Heinbronn, Germany

Filed Aug. 2, 1994, Ser. No. 284,120

Int. Cl.[6] G06K *7/00*

U.S. Cl. 235—440 **8 Claims**



1. A reader for a contactless data card, comprising:

a printed circuit including at least one drive coil;

at least one corresponding magnetic yoke, wherein the at least one drive coil forms a means for establishing a contactless connection for transmitting energy and data between the printed circuit and a data medium on the data card, and wherein the magnetic yoke is positioned to establish a magnetic return for the at least one drive coil;

a carriage arranged to descend toward a data card being inserted into the reader, and

a printed circuit board which carries said printed circuit and which is affixed to the carriage, said circuit board including a flexible connection zone extending out of the reader,

wherein the printed circuit board comprises contact strips electrically connected to corresponding contacts which project toward the card in an inserted position of the card, and wherein an electrical connection for both the at least one drive coil and the contact strips to an electrical connector is established by means of the flexible connection zone.

5,550,362

METHOD AND APPARATUS FOR CALIBRATING A BAR CODE SCANNER

David M. Sherman, Everett, Wash., assignor to Intermec Corporation, Everett, Wash.

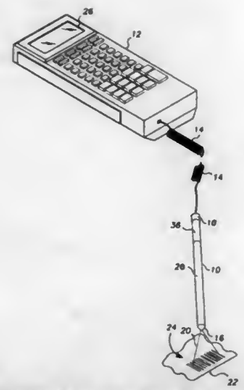
Continuation of Ser. No. 984,168, Nov. 20, 1992, abandoned. This application Jan. 3, 1995, Ser. No. 367,749

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—455 **19 Claims**

1. Apparatus for producing a calibrated light beam, comprising:

a programmable memory for storing a digital representation of a predetermined signal;



a processing circuit for receiving the representation of the predetermined signal from the programmable memory, and reproducing the predetermined signal therefrom;

a light source for producing a light beam in response to the reproduced predetermined signal, the light beam having a carrier frequency light source being coupled to receive the reproduced predetermined signal;

means for transmitting the light beam toward a symbol;

means for receiving a portion of the light beam reflected by the symbol;

a receiver for processing the portion of the light beam reflected by the symbol and producing a signal representative of the symbol; and

a processor connected to receive the signal from the receiver, the processor transmitting programming signals to the programmable memory in response to the signal from the receiver to adjust the stored representation of the predetermined signal.

5,550,363

OPTICAL INFORMATION READING APPARATUS

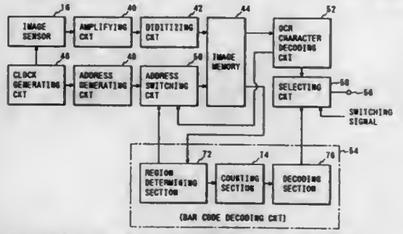
Kenzo Obata, Okazaki, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 24, 1994, Ser. No. 202,183

Claims priority, application Japan, Feb. 25, 1993, 5-036864; Dec. 8, 1993, 5-308186

Int. Cl.[6] G06F *17/10*

U.S. Cl. 235—462 **27 Claims**



1. An optical information reading apparatus comprising:

a light source for emitting light onto an object bearing optical information;

an optical system for collecting said light reflected by said object so as to form an information image indicative of said optical information at a predetermined reading position;

two-dimensional image pickup means having a plurality of photoelectric conversion elements arranged in a plane, said two-dimensional image pickup means being provided at said predetermined reading position for capturing said information image;

storing means for storing said information image captured by said two-dimensional image pickup means;

two-dimensional information decoding means for recognizing two-dimensional information in said information image stored by said storing means;

region detecting means for detecting a region of each bar and a region of each space of a bar code in said information image stored by said storing means, said bars and said spaces being alternately arranged to form said bar code; and

bar code decoding means for decoding said bar code based on a relationship between areas of said regions of said bars and areas of said regions of said spaces detected by said region detecting means.

5,550,364

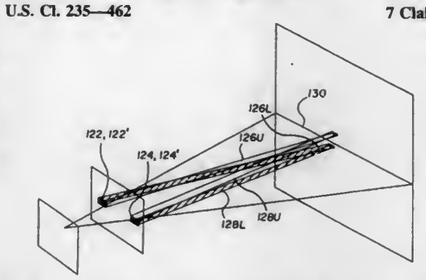
METHOD AND APPARATUS FOR SPOTTER BEAM FORMATION USING A PARTITIONED OPTICAL ELEMENT

Robert W. Rudeen, Eugene, Oreg., assignor to Intermec Corporation, Everett, Wash.

Filed Mar. 21, 1994, Ser. No. 215,852

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—462 **7 Claims**



1. An apparatus for forming a visible scanning beam and cursor beam for use in a scanning reader, comprising:

a source for producing a beam of light, said beam being visible light;

a scanning element receiving said beam of light and causing said beam of light to scan over a predetermined angular range in a scan plane to form a visible scanning beam from said beam of light; and

an optical element for receiving said scanning beam from said scanning element, said optical element being operative to transmit said scanning beam substantially unaffected when said scanning beam is in a first portion of said optical element and operative to redirect said scanning beam when said scanning beam is in a second portion of said optical element to form a first cursor beam, the second portion of said optical element being positioned to receive said scanning beam from said scanning element when scanning over a portion of said angular range adjacent to the angular extreme of the angular range, said optical element further being operative to redirect said scanning beam when said scanning beam is in a third portion of said optical element to form a second cursor beam spaced apart from said first cursor beam, wherein said optical element is operative to redirect said first and second cursor beams such that said first cursor beam is directed above the scanning beam transmitted by the first portion and said second cursor beam is directed below the scanning beam transmitted by the first portion.

5,550,365

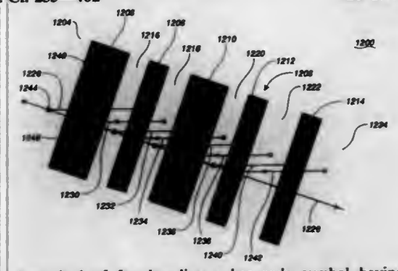
METHOD AND APPARATUS FOR DECODING BAR CODE SYMBOLS USING SUBPIXEL INTERPOLATION

Mihael Klancnik, Brookfield, and Luis Figarella, Waterbury, both of Conn., assignors to United Parcel Service of America, Inc., Atlanta, Ga.

Division of Ser. No. 927,905, Aug. 10, 1992, Pat. No. 5,329,105. This application Mar. 22, 1994, Ser. No. 215,900

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—462 **10 Claims**



1. A method of for decoding a bar code symbol having a plurality of characters, wherein one character of said plurality of characters is a checksum character, comprising the steps of:

(a) receiving a signal representative of said symbol;

(b) using subpixel interpolation to determine a first choice for each character of said plurality of characters from said signal;

(c) using subpixel interpolation to determine a second choice for at least one character of said plurality of characters from said signal;

(d) performing checksum analysis in accordance with said first choice for each character of said plurality of characters; and

(e) if said checksum analysis of step (d) is not satisfied, then performing checksum analysis in accordance with said second choice.

5,550,366

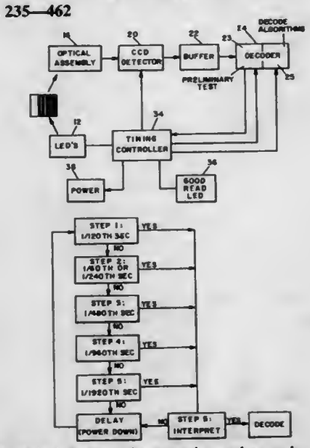
OPTICAL SCANNER WITH AUTOMATIC ACTIVATION

Alexander Roustaei, 2454 Rue Denise, La Jolla, Calif. 92037

Filed Jun. 20, 1994, Ser. No. 262,785

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—462 **11 Claims**



1. An optical scanner for scanning a bar code, the scanner comprising:

an optical scanning head having an LED light source, an optical assembly, and a detector, said detector generating a signal representative of modulated light reflected from a surface within a field of view of the scanner;

a power supply;

a decoder having a preliminary testing portion and a decoding algorithm portion for receiving and processing said signal;

a timing controller for controlling application of power from said power supply to said optical scanning head and said decoder, said timing controller providing a scan command during an inactive mode of the scanner so that power is periodically provided to said optical scanning head to scan said surface within the field of view and to said preliminary testing portion of said decoder to conduct comparisons of said signal to a threshold, the threshold being a minimum number of transitions indicative of said bar code, so that when said minimum number of transitions is found, said scanner enters an active mode for processing said signal within said decoding algorithm portion of said decoder to generate a decoded output, and so that when said minimum number of transitions is not found, said scanner remains in said active mode;

wherein said scan command comprises a test sequence of distinct scan periods, each scan period having a different scan duration from other scan periods of said test sequence, said test sequence terminating when a good exposure is achieved.

5,550,367

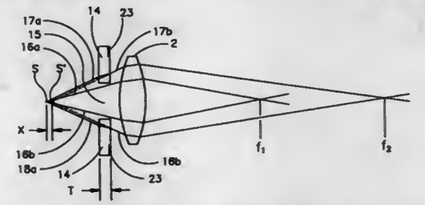
SYSTEM FOR EXTENDING THE OPERATING RANGE OF A BEAM SCANNER

George A. Plesko, Media, Pa., assignor to GAP Technologies, Inc., Media, Pa.

Continuation-in-part of Ser. No. 776,663, Oct. 15, 1991, Pat. No. 5,371,347. This application Apr. 19, 1994, Ser. No. 229,728

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—472 **50 Claims**



1. An optical system for distinguishing features of a target in a working distance range comprising:

a light producing means for generating a first group of light rays and a second group of light rays from a light source position;

a focus means for converging said first group of light rays and said second group of light rays in said working distance range;

an optic means disposed between said source and said focus means, said optic means having a thickness that is less fit an a length between first and second ends of said working distance range;

said optic means having at least first and second optical path regions for simultaneously receiving said first group of light rays and said second group of light rays, respectively, from said source position and for refractively forming, with said focus means, a third group of light rays and a fourth group of light rays, respectively; and

wherein said third group of light rays converge in said first end of said working distance range and said fourth group of light rays converge in said second end of said working distance range, said second end of said working distance range being downrange from said first end of said working distance range, and wherein said first optical path region is formed of an opening in said optic means.

5,550,368

METHOD OF DETECTING FOCUSING ERROR IN AN OPTICAL PICKUP SYSTEM EMPLOYING A REFLECTIVE KNIFE EDGE TO SEPARATE THE OPTICAL SIGNAL FOR COMPARISON

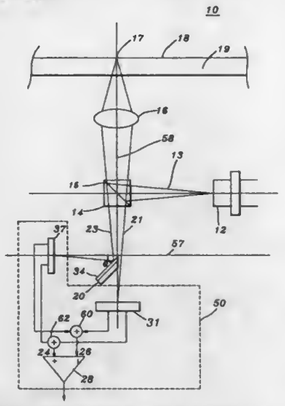
Chan-Kyu Park, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 16, 1994, Ser. No. 340,675

Claims priority, application Rep. of Korea, Nov. 16, 1993, 1993-24390

Int. Cl.[6] G11B *7/00*; G01J *1/20*

U.S. Cl. 250—201.5 **3 Claims**



1. An optical pickup system for determining a focusing error, comprising:

a light source for generating a light beam;

an optical detection unit having a first detector and a second detector, each of the detectors being capable of generating an output indicative of a light beam intensity measurement, the first and second detectors being perpendicular to each other, each of the first and the second detectors being equally divided to provide a pair of first and second photoelectric cells, wherein the first detector and a convergence point located on an optical disk form an optical axis;

a beam splatter provided with a reflection surface for reflecting the light beam from the light source to a recording surface of the optical disk and for transmitting the light beam reflected from the recording surface of the optical disk to the optical detection unit, wherein the reflection surface is positioned in such a way that it is inclined with respect to the optical axis of the light beam reflected from the recording surface;

an objective lens, disposed between the beam splitter and the optical disk, for focusing the light beam reflected by the beam splitter on the recording surface and for converging the light beam reflected from the recording surface into the reflection surface of the beam splitter;

a knife edge, provided with a back side surface and disposed between the beam splitter and the first detector, for reflecting a portion of the light beam transmitted through the reflection surface of the beam splitter to the second detector using the back side surface of the knife edge, the remaining portion of the light beam transmitted through the beam splitter passing by the knife edge to the first detector, wherein the back side surface of the knife edge is arranged in such a way that it is inclined at a predetermined angle with respect to a first optical axis perpendicular no the second detector;

a first adder, the first adder being connected to the first photoelectric cell of the first detector and the first photoelectric cell of the second detector;

a second adder, the second adder being connected to the second photoelectric cell of the first detector and the second photoelectric cell of the second detector; and

a differential amplifier for generating a focusing error signal by comparing the first and second adder outputs.

5,550,369

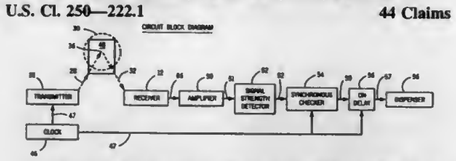
TRIANGULATION POSITION DETECTION METHOD AND APPARATUS

Daniel G. Skell, and Eric D. Skell, both of Cedarburg, Wis., assignors to Electro-Pro, Inc., Cedarburg, Wis.

Filed Feb. 28, 1994, Ser. No. 202,792

Int. Cl.[6] G01V *8/20*; G01S *7/481*;*17/02*; B67D *3/00*

U.S. Cl. 250—222.1 **44 Claims**



1. An automatic dispenser control which detects when a container is in a desired position and activates a dispenser comprising:

a clock producing constant periodic clock pulses;

a transmitter having an input and an output, said input receiving the periodic clock pulses and the output emitting pulses of light responsive thereto along an axis of projection;

a receiver having a light sensing input receiving the light pulses along an axis of reflection, said receiver having an output providing a light indicative signal;

the transmitter and receiver being orientated in a common plane and having said axes of projection and reflection extending out of said common plane and converging to a target intercept point associated with the desired position;

a synchronous checker producing a signal only when a light indicative signal resulting from a given emitted light pulse occurs substantially synchronously with the periodic clock pulse causing the given emitted light pulse from the transmitter; and

wherein the production of the signal indicates the container is in position and activates the dispenser, and the absence of the signal indicates the container is no longer in position and deactivates the dispenser.

5,550,370

POTENTIAL SENSOR EMPLOYING ELECTROOPTIC CRYSTAL AND POTENTIAL MEASURING METHOD

Atsushi Takano; Minoru Utsumi, and Hiroyuki Obata, all of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

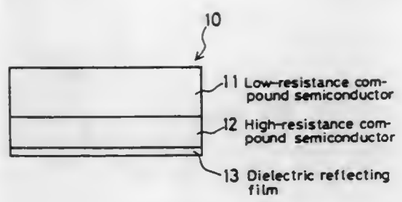
Division of Ser. No. 94,907, Jul. 20, 1993, Pat. No. 5,434,698, which is a continuation of Ser. No. 721,517, Jul. 12, 1991, abandoned. This application Mar. 15, 1995, Ser. No. 404,345

Claims priority, application Japan, Nov. 13, 1989, 1-294367

Int. Cl.[6] G02F *1/015*; G01R *31/00*

U.S. Cl. 250—225 **3 Claims**

1. A potential sensor employing an electrooptic crystal comprising a large bandgap compound semiconductor of high resistance of at least $10^5\Omega$cm which is formed by epitaxial growth on a large bandgap compound semiconductor substrate of low resistance of up to $10^1\Omega$cm, and wherein the substrate is connected to a ground reference potential.



5,550,371

Patent Not Issued For This Number

5,550,372

APPARATUS AND METHOD FOR ANALYZING FOREIGN MATTER ON SEMICONDUCTOR WAFERS AND FOR CONTROLLING THE MANUFACTURING PROCESS OF SEMICONDUCTOR DEVICES

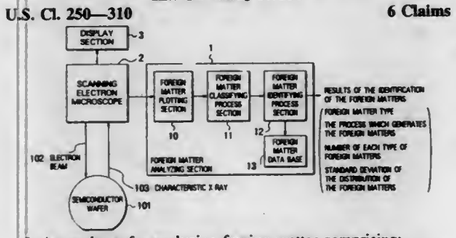
Takao Yasue, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 16, 1995, Ser. No. 543,826

Claims priority, application Japan, Oct. 24, 1994, 6-258399

Int. Cl.[6] H01J *37/256*

U.S. Cl. 250—310 **6 Claims**



1. An analyzer for analyzing foreign matter comprising:

an analyzing section for obtaining composition ratios for each element of a plurality of foreign matter adhered to a semiconductor wafer;

a foreign matter distribution generation section for obtaining a distribution of each of the composition ratios of the plurality of foreign matter on the basis of a result obtained by said analyzing section;

a foreign matter classifying section for classflying the plurality of foreign matter on the basis of the distribution obtained by said foreign matter distribution generation section; and

a foreign matter identifying section for comparing a result obtained by said foreign matter classflying section with predetermined foreign matter data, thereby identifying the foreign matter type.

5,550,373

FABRY-PEROT MICRO FILTER-DETECTOR

Barrett E. Cole, Bloomington; Bernard S. Fritz, Eagan, and Robert D. Horning, Burnsville, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 30, 1994, Ser. No. 367,491

Int. Cl.[6] G01B *9/02*; G01J *3/45*

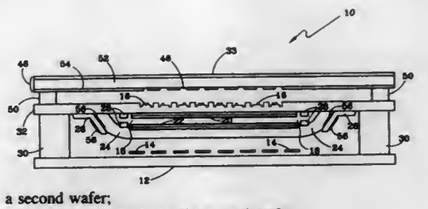
U.S. Cl. 250—338.1 **12 Claims**

1. A monolithic micro tunable Fabry-Perot filter-detector comprising:

a first wafer;

an array of detectors formed on said first wafer;

a ring formed on said first wafer, said ring encircling said array of detectors;



a second wafer;

a first mirror formed on said second wafer;

a bridge structure;

a second mirror formed on said bridge structure;

a Fabry-Perot cavity formed by attaching said bridge structure to said second wafer such that said first and second mirrors face each other; and

an actuator formed on said bridge proximate to said second wafer, wherein said actuator can cause said first and second mirrors to vary in distance from each other so as to tune said Fabry-Perot cavity; and

wherein said second wafer is situated on said ring resulting in a hermetically sealed confinement containing said Fabry-Perot cavity and said array of detectors.

5,550,374

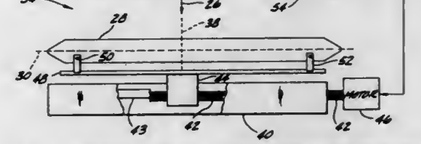
METHODS AND APPARATUS FOR DETERMINING INTERSTITIAL OXYGEN CONTENT OF RELATIVELY LARGE DIAMETER SILICON CRYSTALS BY INFRARED SPECTROSCOPY

Joseph C. Holzer, Manchester; Harold W. Korb, Ballwin, both of Mo., and Klaus Drescher, Bochum, Germany, assignors to MEMC Electronic Materials, Inc., St. Peters, Mo.

Filed May 12, 1994, Ser. No. 241,972

Int. Cl.[6] G01N *21/35*

U.S. Cl. 250—339.07 **12 Claims**



1. A nondestructive method for determining a concentration of interstitial oxygen in an ingot of crystalline silicon, said ingot being generally cylindrical and having a longitudinal axis along which the ingot was grown, said method comprising the steps of:

transmitting an infrared (IR) beam through the ingot in a direction generally transverse to the longitudinal axis of the ingot;

measuring the absorption coefficient of the transmitted IR beam with respect to an interstitial oxygen absorption band; and

determining the concentration of interstitial oxygen in the ingot as a function of the measured absorption coefficient.

5,550,375

INFRARED-SPECTROMETRIC SENSOR FOR GASES

Ralf-Peter Peters, Bergisch-Gladbach; Arnd Rogner, Sprockhövel; Nezih Ünal, Dortmund; Lothar Heinrich, Münster; Dierk Landwehr, Dülmen, and Wolfgang A. D. Heyde, Haltern, all of, Germany, assignors to microParts, Dortmund, Germany

Filed Jan. 4, 1995, Ser. No. 368,634

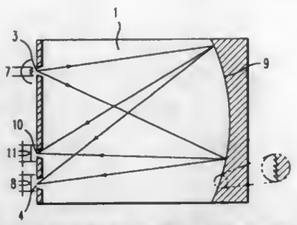
Claims priority, application Germany, Sep. 29, 1994, 44 34 814.2

Int. Cl.[6] G01N *21/61*

U.S. Cl. 250—343 **17 Claims**

1. An infrared sensor for gases, the sensor comprising:

VOL 1189 ISS 4 AG 27 1996 UMI



a single-piece shaped part having a micropattern body, the shaped part comprising a base plate, a mirror grating, a connection for injecting multi-frequency IR radiation, and at least one connection for extracting single-frequency IR radiation;

a free space which contains a gas to be tested, the free space being disposed between the mirror grating and the respective connections for injecting multi-frequency IR radiation and extracting single frequency IR radiation;

a cover plate above the free space, said cover plate being joined to the shaped part in a sealing manner so as to cover the free space; and

orifices for introducing the gas to be tested into the free space and discharging the gas therefrom.

5,550,376

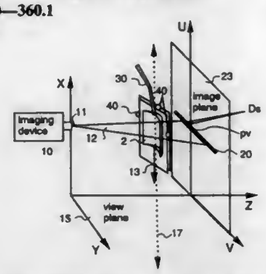
METHOD OF CALIBRATION OF IMAGING DEVICES

Rajiv Gupta, Schenectady, N.Y.; Julia A. Noble, Oxford, United Kingdom; Richard I. Hartley, and Andrea M. Schmitz, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 22, 1995, Ser. No. 447,020

Int. Cl.[6] G01N *23/00*

U.S. Cl. 250—360.1 **2 Claims**



1. A method of comparing points on a CAD model of a part and markers located at known CAD coordinates, to points on a physical part having several high-accuracy surface points, created from the CAD model comprising the steps of:

a) fixing the physical part to a fixture having a set of physical markers with locations relative to each other being the same as the relative locations CAD markers;

b) adjusting the location of the physical part such that the relation between the high accuracy surface points and the physical markers is the same as the corresponding location of the high accuracy points of the CAD part to the CAD markers;

c) acquiring linear pushbroom (LPB) projection images of said physical part with an imaging device at several preselected angles about an axis of rotation passing through the center of the physical part;

d) selecting a projection image;

e) identifying 2D screen coordinates (u_{ij},v_{ij}) for the centers of each physical marker i for the jth projection image and the corresponding 3D known CAD coordinate, (x_i,y_i,z_i);

f) iteratively determining a global rotation calibration matrix G which defines a solid body rotation from a CAD coordinate system fixed with respect to the CAD model, to a coordinate system fixed with respect to the imaging device, and a projection matrix M_j for mapping 3D coordinates fixed with respect to the imager coordinate system to 2D screen coordinates of the projection image according to:

$$(u_{ij},v_{ij})=M_j \cdot G \cdot (x_i,y_i,z_i);$$

g) repeating steps "d"–"f" for a plurality of other projection images, starting with a previous value of G to determine other projection matrices M_j and to refine the value of G; and

h) employing the equation of step "f" with the matrices M_j, G, to map between CAD model coordinates and screen locations of the projection images.

5,550,377

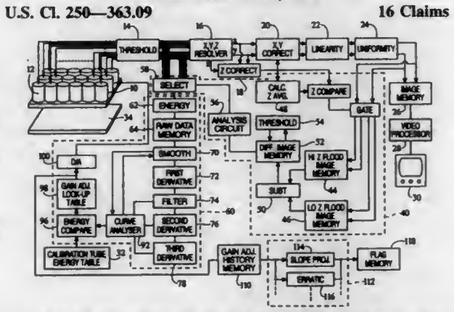
TECHNIQUE FOR BALANCING ANGER CAMERAS USING AN EXTERNALLY IRRADIATED CRYSTAL AND SINGLE TUBE DATA

Michael J. Petrillo, Twinsburg; Steven E. Cooke, Brecksville, and Frank C. Valentino, Solon, all of Ohio, assignors to Picker International, Inc., Highland Heights, Ohio

Filed Sep. 20, 1994, Ser. No. 309,082

Int. Cl.[6] G01T *1/161;1/208*

U.S. Cl. 250—363.09 **16 Claims**



1. In a nuclear camera including a scintillation crystal, a plurality of photomultiplier tubes with adjustable gain, a resolver for resolving coordinate position and energy of each scintillation event on the scintillation crystal, and an image memory, the improvement comprising:

a circuit which concurrently monitors an output signal of each of a plurality of selected photomultiplier tubes individually when the scintillation crystal is exposed to a uniform flood source;

a circuit for identifying each selected photomultiplier tube individually whose gain is out of adjustment; and

an automatic photomultiplier tube gain adjustment circuit which individually adjusts each selected photomultiplier tube gain individually in accordance with the monitored output signals.

5,550,378

X-RAY DETECTOR

Brian Skillicorn, Saratoga, and Giovanni Pastrone, Los Gatos, both of Calif., assignors to Cardiac Mariners, Incorporated, Los Gatos, Calif.

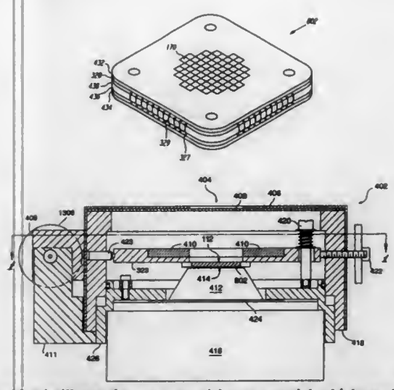
Continuation-in-part of Ser. No. 375,501, Jan. 17, 1995, abandoned, which is a continuation of Ser. No. 42,742, Apr. 5, 1993, abandoned. This application Feb. 10, 1995, Ser. No. 387,292

Int. Cl.[6] G01T *1/20*

U.S. Cl. 250—367 **4 Claims**

1. An x-ray detector comprising a plurality of detector elements, said detector elements arranged in an array, said array comprising a plurality of rows and columns;

each of said detector elements comprising a scintillator element, an optical coupling element, and a photodetector element;



said scintillator element comprising a material which produces light photons when excited by x-ray photons;

said optical coupling element comprising an input face and an output face, said input face substantially adjacent said scintillator element, said output face substantially adjacent said photodetector element;

said photodetector element comprising a light photon detector and an electrical signal generator, said electrical signal generator outputs electrical signals in proportion to said light photons detected by said light detector;

a scintillator array assembly in which said scintillator elements are disposed, said scintillator array assembly comprising a top frame, a bottom frame, a top endplate, a bottom endplate, wires and a spacer;

said spacer comprising a plate with a central opening, said top frame and said bottom frame comprising a plurality of notches formed around the periphery of said frames and having a central opening corresponding to the array configuration;

said spacer disposed between said top frame and said bottom frame, said wires extending across said frames from corresponding notches on each edge of said top frame and said bottom frame forming an array of scintillator spaces, each of said scintillator elements disposed in said scintillator spaces, a septa material disposed between said scintillator elements, said top endplate disposed over said top frame, said bottom endplate disposed over said bottom frame.

5,550,379

ZERO GAIN SETTING FOR DISCRETE EVENT PROCESSING

Zoltan Schreck, Ville de Léry, and Benoit Venne, Montreal, both of, Canada, assignors to Park Medical Systems Inc., Lachine, Canada

Filed Dec. 13, 1994, Ser. No. 354,546

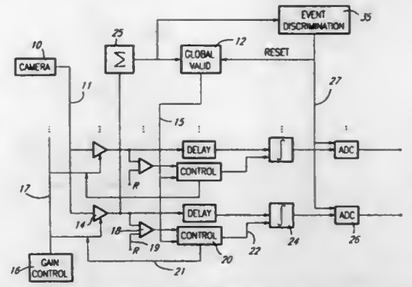
Int. Cl.[6] G01T *1/208;1/161*

U.S. Cl. 250—369 **3 Claims**

1. A control circuit for a scintillation camera comprising a planar array of photodetectors generating light intensity signals on photodetector outputs in response to scintillation light produced in a scintillator optically coupled to the photodetectors, and a plurality of integrators each receiving one of said intensity signals, the control circuit comprising:

a threshold comparator connected to each of said photodetector outputs and producing a comparison output when said intensity signals are above a predetermined threshold;

a global signal detection means for producing a valid signal indicating their a scintillation event is in process in said scintillator;



a valid event determination circuit including a summing circuit connected to said photodetector outputs, said valid event determination circuit producing an event output trigger signal;

a summing circuit control means connected to said photodetector outputs for preventing said summing circuit from summing for a remainder of said event certain ones of said intensity signals for which said comparison output is absent at a beginning of said valid signal, whereby valid event determination is based on the sum of only those intensity signals above the predetermined threshold at the beginning of said scintillation event.

5,550,380

RADIATION IMAGE DETECTING APPARATUS INCLUDING BUNDLED OPTICAL FIBERS

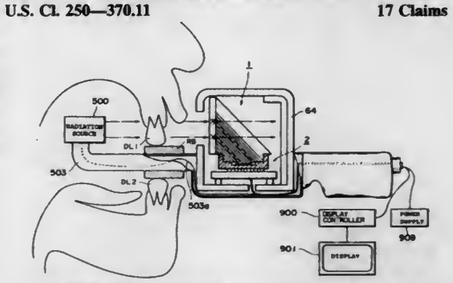
Takeo Sugawara; Toshihiko Hino, and Makoto Suzuki, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Hamamatsu, Japan

Filed Jan. 20, 1995, Ser. No. 376,280

Claims priority, application Japan, Jan. 21, 1994, 6-005438

Int. Cl.[6] A61B *6/14;* **G01T** *1/20*

U.S. Cl. 250—370.11 **17 Claims**



1. An apparatus for detecting a ray, comprising a first module: wherein said first module comprises:

a first fiber optic device having a plurality of cores buried in a cladding, each of said plurality of cores having a first end face and a second end face, said first fiber optic device comprising an input face which includes said first end faces and to which a ray is incident and an output face which includes said second end faces and from which a ray is outgoing;

a first luminescent screen fixed to said input face; and

a first CCD image sensor fixed to said output face, said CCD image sensor comprising a package, a CCD chip fixed in said package, lead pins penetrating said package, and bonding wires connecting said lead pins to said CCD chip,

wherein said CCD chip comprises an image pickup region for converting a ray incident thereto into an electric signal, and bonding pads in contact with said bonding wires and wherein said output face is in contact with said image pickup region and said output face is not in contact with said bonding pads, and

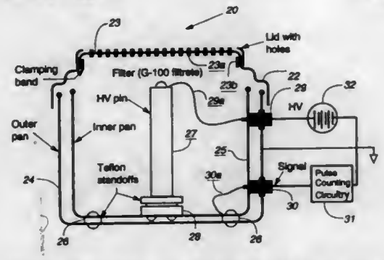
wherein said package has a recessed portion, said fiber optic device has a projected portion, and said projected portion of said fiber optic device fits in with the recessed portion of said package.

5,550,381

EVENT COUNTING ALPHA DETECTOR

Richard D. Bolton, and Duncan W. MacArthur, both of Los Alamos, N.M., assignors to The Regents of the University California, Oakland, Calif.

Filed Nov. 1, 1994, Ser. No. 333,020
Int. Cl.[6] G01T *1/18;1/185*
U.S. Cl. 250—380 **2 Claims**



1. An electrostatic single-event counting alpha detector comprising:

decay cavity means for allowing radon atoms or other alpha radiation emitters to decay, having an inlet for admitting air and said radon atoms or other alpha radiation emitters, said decay cavity means comprising two nesting, inner and outer enclosures insulated from each other; and

high voltage electrode means located inside said decay cavity means for collecting air ions created by collisions with alpha particles emitted from said decaying radon atoms or other alpha radiation, said high voltage electrode means comprising an electrically conductive pin insulatively mounted to said inner enclosure; and

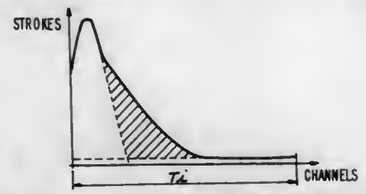
signal retrieval means connected to said high voltage electrode means for sensing individual alpha decays as electrical pulses for counting.

5,550,382

PROCESS AND APPARATUS FOR COMPACTING INFORMATIONS TO BE STORED AND PROCESSING SAID COMPACTED INFORMATIONS

Joël Loridon; Jean-Luc Ma, both of Manosque; Alain Marini, Vinon/Verdon, and Michel Latu, Montbonnot, all of, France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed Apr. 21, 1995, Ser. No. 426,157
Claims priority, application France, Apr. 22, 1994, 94 04871
Int. Cl.[6] G01N *23/222;* **H03M** *7/48*
U.S. Cl. 250—390.04 **16 Claims**



1. Process for compacting binary informations resulting from the recording of signals from a neutron detector and having to be stored and for the reconstruction of the thus compacted useful informations in order to process them, characterized in that it consists of:

a) performing the recording of the detected signals for a total acquisition time corresponding to a number (K) of measuring cycles, each cycle consisting of a number (N) of channels having a regulatable acquisition time,

b) for each cycle, accumulating the detected signals for a sampling time corresponding to the acquisition time of a channel, each of these signals representing an individual information,

c) for the acquisition time of one channel, forming a binary sum of these individual informations, the thus summated informations constituting a global data item,

d) allocating to each global data item the number of the corresponding channel (Ni),

e) storing each channel number, as well as the global data item associated therewith, when said global data item is not zero for forming a compacted data item,

f) reinitializing each of the data items for performing the recording of the following cycle,

g) for performing information processing operations, reconstructing (stage 0) the useful informations contained in the corresponding compacted data items,

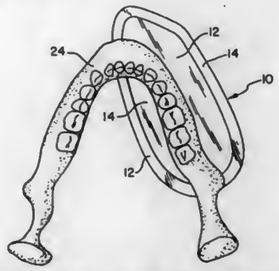
h) processing said useful informations (stages 1 to 10).

5,550,383

REMOLDABLE THERMOPLASTIC RADIATION SHIELD FOR USE DURING RADIATION THERAPY

Douglas A. Haskell, 449 Amhurst Rd., Valparaiso, Ind. 46383

Filed Apr. 17, 1995, Ser. No. 423,231
Int. Cl.[6] G21F *3/02*
U.S. Cl. 250—519.1 **20 Claims**



1. A radiation shielding compound comprising metal particles uniformly dispersed in a thermoplastic matrix, the metal particles being formed from a nontoxic, nonradioactive and radioresistant metal or metal alloy, the thermoplastic matrix being a thermoplastic material characterized as a solid at temperatures of up to about 35° C. and being plastically formable at temperatures of about 45° C. and higher.

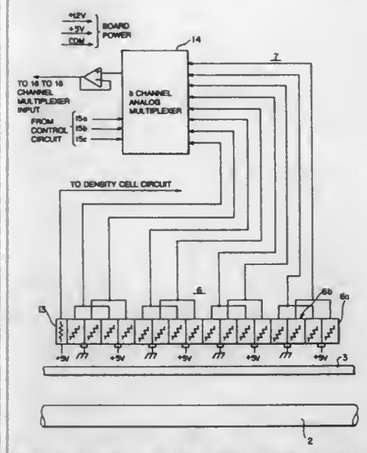
5,550,384

METHOD AND APPARATUS OF AUTOMATICALLY SCANNING FOR DENSITY DEFECTS IN CARPETS

Larry C. Nickell, Lewisburg, W. Va., assignor to Appalachian Electronic Instruments, Inc., Ronceverte, W. Va.

Filed Apr. 11, 1995, Ser. No. 420,378
Int. Cl.[6] G01N *21/86*
U.S. Cl. 250—559.45 **22 Claims**

1. A system for scanning a carpet for tuft defects, said system comprising:



a light source for providing light along a width of said carpet;

a scanning array for detecting light from said light source passing through said carpet, said scanning array having at least one pair of first and second sensor cells, and being positioned opposite said light source with said carpet passing transversely therebetween, wherein

each of said first and second sensor cells includes first and second sets of sensor elements, each of said first and second sensor cells having an output node between said first and second sets of sensor elements, said output node outputting a signal detecting tuft defects in said carpet based on an amount of light passing through said carpet,

said first set of sensor elements of said second sensor cell being positioned adjacent said first set of said first sensor cell, said second set of said first sensor cell being positioned adjacent said first set of said second sensor cell, and said second set of said second sensor cell being positioned adjacent said second set of said first sensor cell, and

said first and second sensor cells are positioned longitudinally in said sensor array; and

control circuit means for controlling said sensor array to scan said carpet and for receiving said output signals from said first and second sensor cells detecting tuft defects in said carpet based on said light passing through said carpet.

5,550,385

METHOD AND APPARATUS FOR DETECTING ABNORMAL IMAGE PATTERNS

Shoji Nanami, and Hiroaki Yasuda, both of Kanagawa-ken, Japan, assignors to Fuji Photo Film Co., Ltd, Kanagawa, Japan

Filed Jul. 27, 1995, Ser. No. 508,187
Claims priority, application Japan, Oct. 14, 1994, 6-249612
Int. Cl.[6] G01N *23/04*
U.S. Cl. 250—584 **8 Claims**

1. A method for detecting an abnormal image pattern in a radiation image read-out operation, wherein a stimulable phosphor sheet, on which a radiation image has been stored, is exposed to stimulating rays, which cause the stimulable phosphor sheet to emit light in proportion to the amount of energy stored thereon during its exposure to radiation, the light, which is emitted by one of the two surfaces of the stimulable phosphor sheet during the scanning of the stimulable phosphor sheet with the stimulating rays, and the light, which is emitted by the other surface of the stimulable phosphor sheet during the scanning of the stimulable phosphor sheet with the stimulating rays, are respectively detected photoelectrically, two image signals are thereby obtained, each of the two image signals being made up of a series of image signal components representing picture elements, and the two image signals are then added to each other, an addition image signal, which represents the radiation image, being thereby obtained, the method comprising the steps of:

i) subtracting the image signal components of the two image signals from each other, which image signal components represent corresponding picture elements on one of the two surfaces of the stimulable phosphor sheet and the other surface of the stimulable phosphor sheet, difference values being thereby obtained,

ii) making a judgment as to whether each of the difference values falls or does not fall within a predetermined range, and

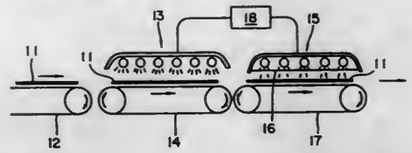
iii) in cases where a difference value is judged as being outside the predetermined range, determining that an abnormal signal component is contained in at least either one of the two image signals.

5,550,386

METHOD FOR ERASING REMAINING RADIATION IMAGE AND DEVICE

Yasushi Kojima, and Hiroshi Matsumoto, Both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kangawa, Japan

Division of Ser. No. 171,770, Dec. 22, 1993, Pat. No. 5,422,208, which is a continuation of Ser. No. 964,605, Oct. 23, 1992, abandoned. This application Mar. 23, 1995, Ser. No. 409,680
Claims priority, application Japan, Oct. 25, 1991, 3-306872; Sep. 30, 1992, 4-283604
Int. Cl.[6] G01N *23/04*
U.S. Cl. 250—588 **7 Claims**



1. A device for erasing a radiation image remaining in a stimulable phosphor sheet which has stored a radiation image and has been irradiated with stimulating rays to read the radiation image, comprising:

a first erasing light source emitting a light containing a light portion of wavelength in ultraviolet region;

a second erasing light source emitting a light containing a light portion of wavelength longer than ultraviolet and containing no light portion of wavelength in ultraviolet region, which is arranged adjacent to the first erasing light source; and

a control means which controls at least one erasing light source such that an amount of light emitted by the second erasing light source relative to an amount of light emitted by the first erasing light source is the range of 20/80 to 45/55.

5,550,387

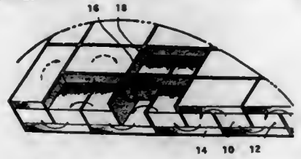
SUPERLATTICE QUANTUM WELL MATERIAL

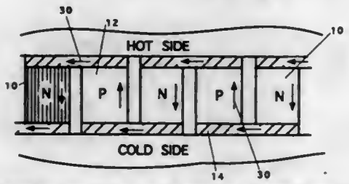
Norbert B. Elsner, and Saied Ghamaty, Both of La Jolla, Calif., assignors to H.Z Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 185,562, Jan. 24, 1994, Pat. No. 5,436,467. This application Aug. 29, 1994, Ser. No. 297,601

Int. Cl.[6] H01L *29/06;29/12;23/38;* **F25B** *21/02*

U.S. Cl. 257—15 **13 Claims**





1. A thermoelectric element for use in a thermoelectric device comprised of:

a plurality of alternating layers of at least two different semiconducting materials, the first of said two materials, defining a barrier material and the second of said two materials defining a conducting material, said alternating materials defining band gaps,

said barrier material and said conducting material being strained having the same crystalline structure,

said barrier material having a band gap higher than the band gap of said conducting material,

said conducting material being doped to create conducting properties,

said layer arrangement of said at least two different materials creating a superlattice and quantum wells within said layers of said conducting material.

5,550,388

HETEROJUNCTION FET HAVING BARRIER LAYER CONSISTING OF TWO LAYERS BETWEEN CHANNEL AND BUFFER LAYERS

Junzi Haruyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 20, 1994, Ser. No. 359,905

Claims priority, application Japan, Dec. 22, 1993, 5-324967

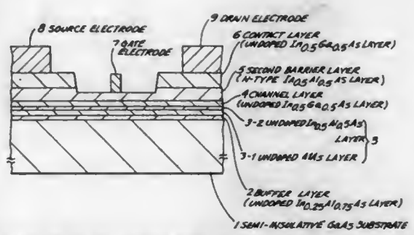
Int. Cl.[6] H01L *29/06*

U.S. Cl. 257—24 **3 Claims**

1. A beterojunction field-effect transistor comprising:

a semi-insulating GaAs substrate;

a buffer layer including an undoped $In_{y2}Al_{1-y2}As$ layer ($0<y<1$) being disposed on said semi-insulating GaAs substrate and having a film thickness less than or equal to a corresponding critical film thickness;



a first barrier layer including an undoped AlAs layer disposed on said buffer layer and an undoped $In_yAl_{1-y}As$ layer disposed on said undoped AlAs layer;

a channel layer including an undoped $In_yGa_{1-y}As$ layer disposed on said first barrier layer;

a second barrier layer including an N-type $In_yAl_{1-y}As$ layer disposed on said channel layer;

a gate electrode selectively disposed on said second barrier layer to form a Schottky junction; and

electrodes for a drain and a source, each of said electrodes being disposed on said barrier layer via a contact layer,

wherein y stands for an atomic ratio.

5,550,389

SUPERCONDUCTING DEVICE

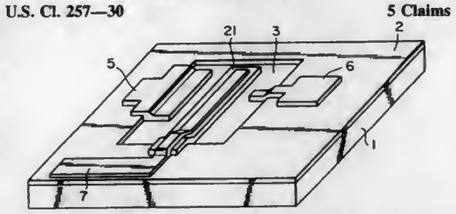
Toshikazu Nishino, Kawasaki; Mutsuko Hatano, Kodaira; Haruhiro Hasegawa, Kokubunji; Hideaki Nakane, Hachioji; Ushio Kawabe, Tokyo, and Kazuo Saitoh, Hachioji, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 744,823, Aug. 12, 1991, abandoned, which is a continuation of Ser. No. 441,951, Nov. 27, 1989, abandoned. This application Dec. 22, 1993, Ser. No. 171,869

Claims priority, application Japan, Nov. 28, 1988, 63-298095; Mar. 3, 1989, 1-49830; Jul. 26, 1989, 1-191444; Dec. 22, 1992, 4-342353

Int. Cl.[6] H01L *29/06*

U.S. Cl. 257—30 **5 Claims**



1. A superconducting switching device with a three terminal structure, comprising:

(a) a first solid member containing therein carriers following Fermi statistics;

(b) a second solid member, disposed in contact with the first solid member, containing therein carriers following Bose statistics;

(c) means for injecting carriers according to Fermi statistics into the first solid member;

(d) means for detecting carriers reflected adjacent to an interface between the first and second solid members by Andreev reflection and propagating through the first solid member; and

(e) means for controlling at least a selected one of phase and amplitude of wave-functions of the Andreev reflected carriers propagated through said first solid member to control current which flows between said first solid member and said means for injecting carriers;

wherein a distance between the second solid member and the means for injecting carriers is equal to or smaller than ten times a mean free path of carriers in the first solid member; and

wherein a potential difference V between the first solid member and the means for injecting carriers is $0<V<2\Delta g$, wherein Δg is a value of the gap energy at an operating temperature of the superconducting device.

5,550,390

SEMICONDUCTOR DEVICE AND MANUFACTURING METHOD THEREOF

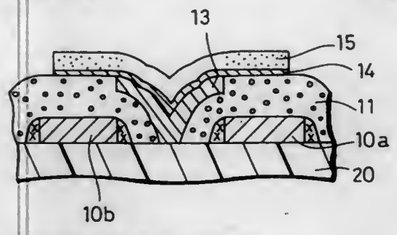
Teruhiko Okada; Hirotada Kuriyama, and Yoshio Kohno, all of Hyogo-ken, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 952,784, Nov. 16, 1993, abandoned, which is a continuation of Ser. No. 925,157, Aug. 6, 1992, abandoned. This application May 30, 1995, Ser. No. 453,726

Claims priority, application Japan, Aug. 8, 1991, 3-199434

Int. Cl.[6] H01L *29/76;31/036;31/112;27/01*

U.S. Cl. 257—66 **7 Claims**



1. A semiconductor device, comprising:

a semiconductor substrate;

a first gate electrode of a bulk transistor and a second gate electrode of a bulk transistor horizontally spaced apart from each other on a surface of said semiconductor substrate with a gate insulating film between said first and second gate electrodes and said semiconductor substrate;

a third gate electrode of a thin film transistor having a central portion between said first and second gate electrodes and connected to a portion of said semiconductor substrate between said first and second gate electrodes;

a first insulating layer separating said third gate electrode from said first and second gate electrodes;

a second insulating layer formed on the surfaces of said first gate electrode and said first insulating layer; and

a semiconductor layer of a first conductivity type formed on the surface of the second insulating layer,

said semiconductor layer of the first conductivity type having a channel region of the first conductivity type at a position vertically aligned and above said central portion of said third gate electrode and source/drain regions of a second conductivity type having the channel region therebetween.

5,550,391

LIGHT-EMITTING DIODE AND LIGHT-EMITTING DIODE ARRAY

Kiyoshi Yamaguchi, Sendai, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

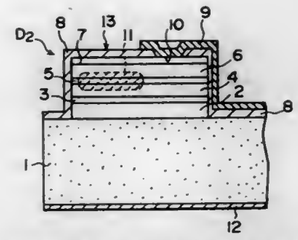
Filed Jun. 14, 1994, Ser. No. 259,547

Claims priority, application Japan, Jun. 18, 1993, 5-148106; Sep. 7, 1993, 5-222544; May 27, 1994, 6-114828

Int. Cl.[6] H01L *33/00;29/861*

U.S. Cl. 257—96 **12 Claims**

1. A light-emitting diode of a surface-emitting type, which comprises:



a layered structure on a semiconductor substrate, said layered structure and said semiconductor substrate having first and second side walls, and said layered structure includes a light-emitting portion extending from said first side wall to said second side wall, and a current blocking portion adjacent said light-emitting portion and extending from said first side wall to said second side wall, wherein said light-emitting portion is configured to permit current to flow through said portion of said layered structure to generate light, and wherein said current blocking portion is configured to block the flow of current through said portion of said layered structure;

a first electrode positioned on a portion of said layered structure and extending from said first side wall to said second side wall, such that said first electrode is aligned with said current blocking portion;

a second electrode positioned on at least a portion of said semiconductor substrate; and

a light-transmissive window positioned on a portion of said layered structure and extending from said first side wall to said second side wall, said light-transmissive window being laterally spaced from said first electrode and substantially aligned with said light-emitting portion, such that when a voltage is applied between said first and second electrodes, a current flows through said light-emitting portion to generate light therefrom so as to emit said generated light from said light-transmissive window.

5,550,392

SEMICONDUCTOR SWITCHING DEVICES

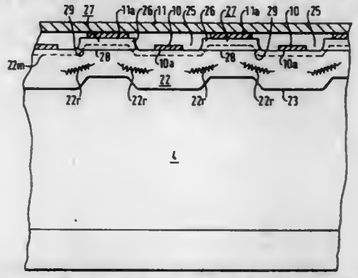
Michael Evans, Chippenham, England, assignor to Westinghouse Brake and Signal Holdings Limited, United Kingdom

Filed Oct. 11, 1994, Ser. No. 321,147

Claims priority, application United Kingdom, Jan. 14, 1994, 9400678

Int. Cl.[6] H01L *29/744*

U.S. Cl. 257—170 **9 Claims**



1. A semiconductor switching device containing dopants of first and second conductivity types comprising:

a semiconductor body of said second conductivity type having a face etched to provide islands and channels defining a mesa-contoured surface;

dopant of said first conductivity type in said body forming a first p-n junction at a pre-selected depth below the mesa-contoured surface, said dopant having surfaces of equal concentration in

said body following substantially the mesa-contoured surface; and dopant of said second conductivity type in said islands to form second p-n junctions with said

dopant of said first conductivity type;

wherein said dopant of said first conductivity type has a surface of maximum concentration in said body following substantially the mesa-contoured surface, said surface of maximum concentration being closer to the mesa-contoured surface than to the first p-n junction.

5,550,393

SEMICONDUCTOR LAYER STRUCTURE HAVING DISTRIBUTED STRAIN AND OPTICAL SEMICONDUCTOR DEVICE INCLUDING SUCH STRAINED LAYER

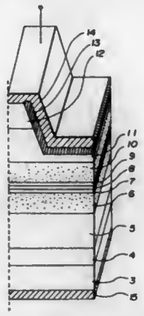
Michiyo Nishimura, Sagamihara, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 3, 1994, Ser. No. 316,451

Claims priority, application Japan, Oct. 4, 1993, 5-271329

Int. Cl.[6] H01L *31/0328;31/0336;31/072;31/109*

U.S. Cl. 257—192 **17 Claims**



1. A semiconductor optical device comprising:

a first semiconductor layer, said first semiconductor layer having a uniform lattice constant in its layering direction; and

a second semiconductor layer, said second semiconductor layer having a distributed lattice constant varying in its layering direction, said second semiconductor layer being strained due to a difference in the lattice constants between said said second semiconductor layer and said first semiconductor layer, a strain in said second semiconductor layer being controlled so that no crystal defects occur in said second semiconductor layer, a positional relation of energy levels of heavy holes and light holes in said second semiconductor layer being controlled so that said second semiconductor layer acts as a graded index-separate confinement heterostructure for confining TE light and TM light in respective desired energy levels.

5,550,394

SEMICONDUCTOR MEMORY DEVICE AND DEFECTIVE MEMORY CELL CORRECTION CIRCUIT

Shunichi Sukegawa, Oume; Takumi Nasu, Tsuchiura, and Hidetoshi Iwai, Oume, all of, Japan, assignors to Texas Instruments Incorporated, Dallas, Tex., and Hitachi, Ltd., Japan

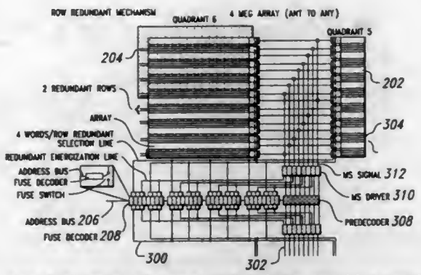
Filed Jun. 18, 1993, Ser. No. 80,159

Int. Cl.[6] H01L *31/0328;31/0336;31/072;31/109*

U.S. Cl. 257—209 **6 Claims**

1. A semiconductor memory device comprising:

a plurality of arrays of memory cells;



each of said arrays of memory cells being arranged in a matrix of rows and columns of individual memory cells;

multiple redundant memory cells for replacement of defective memory cells included in said matrix of rows and columns of individual memory cells for each array of memory cells, said multiple redundant memory cells being arranged in respective groups of one of redundant rows and columns with each said one of redundant-rows and columns included in a group having a plurality of redundant memory cells;

address generating means for providing a memory address signal to selectively drive one of the row and column of memory cells included in an array of memory cells;

multiple programmable fuses having respective input means, each of the input means of said programmable fuses being connected to said address generating means for receiving the memory address signal;

an electrical connection node common to each of said fuses;

each of said fuses having an output connected to said common node;

address coincidence signal generating means connected to said common node and generating an address coincidence signal in response to outputs received and indicative of a specific defective memory cell, said address coincidence signal generating means including,

transistor means having a first output and a second output complementary to the first output, said first and second outputs of said transistor means being coupled to a single transistor output node, said transistor means being programmable to activate the use of redundant memory cells,

a plurality of logic gates each including a programmable fuse disposed at the output thereof,

each of said logic gates having first and second inputs, the first input of each of said logic gates being connected to said output node of said transistor means,

the second input of each of said logic gates receiving a different one of a plurality of memory address bits for identifying the address of a memory cell,

said electrical connection node being common to each of said logic gates included in said plurality of logic gates, and

the output including the programmable fuse of each of said logic gates being connected to said common node to provide a composite output as an address coincidence signal indicative of a specific defective memory cell for replacement by a redundant memory cell; and

means connected to said address coincidence signal generating means for accessing said multiple redundant memory cells and replacing said specific defective memory cell of a memory cell array with a redundant memory cell from said multiple redundant memory cells in response to receiving the address coincidence signal from said address coincidence signal generating means;

the replacement of a specific defective memory cell of a memory cell array with a redundant memory cell being accomplished by said means connected to said address coincidence signal generating means accessing one of the said one of redundant rows and columns from any of said groups and replacing a corresponding one of rows and columns of memory cells in which said specific defective memory cell occurs with the accessed said one of redundant rows and columns of redundant memory cells.

5,550,395

SEMICONDUCTOR DEVICE AND PROCESS OF PRODUCING SAME

Taiji Ema, and Toshimi Ikeda, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

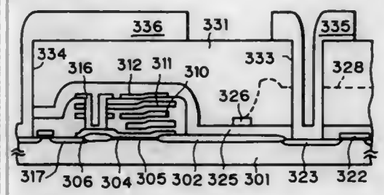
Continuation of Ser. No. 46,149, Apr. 15, 1993, abandoned.

This application Jan. 20, 1995, Ser. No. 376,082

Claims priority, application Japan, Apr. 16, 1992, 4-096726; Oct. 9, 1992, 4-271622

Int. Cl.[6] H01L *27/108;29/76;29/94;31/119*

U.S. Cl. 257—306 **11 Claims**



1. A semiconductor device comprising:

a semiconductor substrate having a memory cell area containing a plurality of memory cells and a circuit area surrounding the memory cell area with a boundary area interposed therebetween;

a first conductive layer covering the memory cell area and having an extended portion extending onto the boundary area;

a first insulating layer covering the circuit area surrounding the memory cell area and covering part of the extended portion of the first conductive layer, the first insulating layer having a pattern edge on the first conductive layer and having an etching rate different than an etching rate of said first conductive layer;

a second insulating layer covering the first insulating layer and the first conductive layer;

a throughhole formed through the first and second insulating layers; and

a second conductive layer electrically connected with another conductive layer via the throughhole and extending from the memory cell area to the circuit area surrounding the memory cell area.

5,550,396

VERTICAL FIELD EFFECT TRANSISTOR WITH A TRENCH STRUCTURE

Kazuhito Tsutsumi, Hyogo-ken, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 171,258, Dec. 21, 1993, abandoned, which is a continuation of Ser. No. 980,878, Nov. 24, 1992, abandoned. This application May 24, 1995, Ser. No. 449,611

Claims priority, application Japan, Jan. 24, 1992, 4-011412

Int. Cl.[6] H01L *29/76;29/94;31/062*

U.S. Cl. 257—330 **21 Claims**

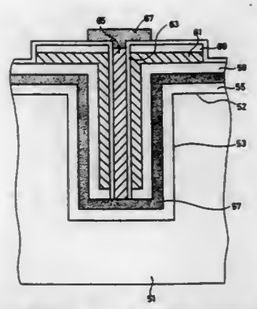
1. A field effect transistor formed in a hole portion provided in a main surface of a semiconductor substrate, comprising:

a first polycrystalline silicon film, which is to be a channel, located in said hole portion, extending along the depth direction in said hole portion, and including a first end portion on the side of said main surface and a second end portion on the side of a bottom of said hole portion;

a gate electrode located in said hole portion,

extending along the depth direction of said hole portion and facing said first polycrystalline silicon film with a gate insulating film interposed therebetween;

a first source/drain film located on the periphery of said first polycrystalline silicon film and said gate electrode in said hole portion, extending along the depth direction of said hole portion, and electrically connected to said second end portion;



a first insulating film located in said hole portion and electrically insulating said first source/drain film from said gate electrode;

a second insulating film located in said hole portion and electrically insulating said first source/drain film from said semiconductor substrate;

a second source/drain film located above said main surface and electrically connected to said first end portion wherein said first source/drain film and said gate electrode extend above said main surface; and

said first source/drain film is electrically connected to a source/drain region of another field effect transistor formed in said main surface, and

said gate electrode is electrically connected to a gate electrode of said another field effect transistor,

wherein the electrode of said another field effect transistor further comprises a portion of the gate electrode of said field effect transistor extending above said main surface.

5,550,397

METAL OXIDE SEMICONDUCTOR TRANSISTORS HAVING A POLYSILICON GATE ELECTRODE WITH NONUNIFORM DOPING IN SOURCE-DRAIN DIRECTION

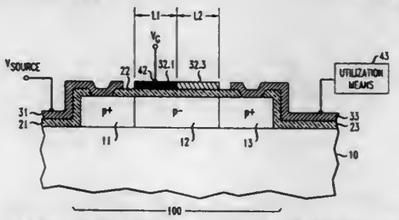
Nadia Lifshitz, and Serge Luryi, Both of Bridgewater, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 18,484, Feb. 16, 1993, abandoned.

This application Sep. 1, 1994, Ser. No. 299,855

Int. Cl.[6] H01L *29/76;29/04;31/36;27/01*

U.S. Cl. 257—412 **14 Claims**



1. A metal insulator thin-film-polysilicon semiconductor transistor structure comprising:

(a) source and drain regions located in the thin-film-polysilicon semiconductor and spaced apart by an intermediate region, located in the thin-film-polysilicon semiconductor, of length L, the intermediate region and the source and drain regions forming a thin-film polysilicon structure,

(b) the insulator located on the intermediate region,

(c) a polycrystalline semiconductor gate electrode layer located on the insulator and consisting essentially of first and second contiguous gate electrode regions,

(d) an insulating substrate having a top major surface contiguous with a bottom major surface of the intermediate region and with the source and drain regions,

the first gate electrode region, having a first average impurity doping concentration, extending from a first location overlying an edge of the source region to an edge of the second gate electrode region,

the second gate electrode region, having a second average impurity doping concentration, extending from the edge of the second gate electrode region to a second location overlying an edge of the drain region,

the ratio of the first to the second average impurity doping concentration being equal to at least 10, and the first gate electrode region having a conductivity type opposite to that of the source drain.

5,550,398

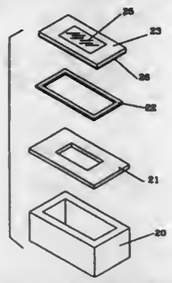
HERMETIC PACKAGING WITH OPTICAL

Thomas A. Kocian, and Doug Darrow, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 332,229, Oct. 31, 1994. This applicatioo Jun. 12, 1995, Ser. No. 489,244

Int. Cl.[6] H01L *31/0203*

U.S. Cl. 257—434 **10 Claims**



1. A semiconductor device package having an optical quality window, comprising:

a housing having a cavity and a rim surrounding said cavity;

a semiconductor device mounted in said cavity;

an optical quality glass plate having a polished bottom surface;

a metal layer deposited onto said polished glass surface; said metal layer having a CTE that matches the CTE of said glass plate and being deposited from a vapor phase onto said surface using an Enhanced Ion-Plating process; and said metal layer further being patterned in an annular pattern, with a central aperture free of metallization defining an optical window;

a metal frame, having a CTE that matches the CTE of said glass plate, sealed to said housing rim; and

a reflowed solder preform sealing said metal layer to the metal frame.

5,550,399

INTEGRATED CIRCUIT WITH WINDOWED FUSE ELEMENT AND CONTACT PAD

Motoya Okazaki, Fishkill, N.Y., assignor to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Nov. 3, 1994, Ser. No. 355,387

Int. Cl.[6] H01L *29/00*

U.S. Cl. 257—529 **19 Claims**

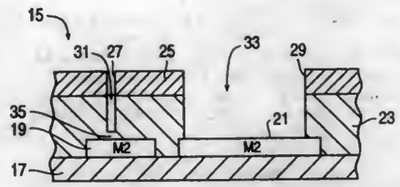
1. An intermediate product used in the production of an integrated circuit including a fuse element and a contact pad, said product comprising:

a substrate;

a circuit path formed on said substrate, said circuit path including a fuse element and a contact pad;

an insulative layer covering at least part of said circuit path;

a patterned resist layer on said insulative layer, said resist layer providing a first aperture above said fuse element and a second aperture above said contact pad, said first aperture having a width dimension which is sufficiently small to decrease an etch rate of the insulative layer at said first aperture relative to the second aperture.



5,550,400

SEMICONDUCTOR DEVICE EQUIPPED WITH ANTIFUSE ELEMENTS AND A METHOD FOR MANUFACTURING AN FPGA

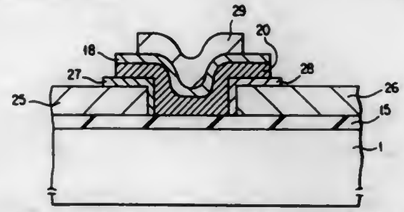
Mariko Takagi; Ichiro Yoshii, both of Kawasaki; Kaoru Hama; Naoki Ikeda, both of Yokohama, and Hiroaki Yasuda, Zushi, all of, Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Jul. 5, 1994, Ser. No. 270,458

Claims priority, application Japan, Jul. 5, 1993, 5-190949

Int. Cl.[6] H01L *29/00*

U.S. Cl. 257—530 **2 Claims**



1. A semiconductor device including an electrically programmable antifuse, the semiconductor device comprising:

a semiconductor substrate;

a first and second electrodes formed, on a same plane, over the semiconductor substrate with an insulating film interposed therebetween such that these electrodes are arranged at a predetermined interval;

an antifuse film formed on the first and second electrodes and on the insulating film and formed of a silicon nitride whose nitrogen/silicon atomic composition (N/Si) ration ranges from 0.6 to 1.2; and

a floating gate formed on the antifuse film,

wherein the first and second electrodes are capacitively coupled through the floating gate in such a manner that a program voltage applied between the first and second electrodes causes the antifuse to blow.

5,550,401

LEAD ON CHIP SEMICONDUCTOR DEVICE HAVING BUS BARS AND CROSSING LEADS

Takayuki Maeda, Ibaraki-ken, Japan, assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 14,281, Feb. 5, 1993, abandoned. This application Oct. 17, 1994, Ser. No. 324,330

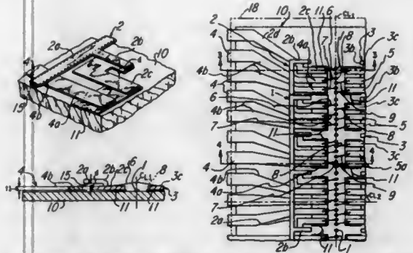
Claims priority, application Japan, Feb. 7, 1992, 4-057066

Int. Cl.[6] H01L *23/48*

U.S. Cl. 257—666 **4 Claims**

1. A semiconductor device comprising:

a semiconductor substrate having a surface on which an electronic circuit is provided;



a plurality of bonding pads disposed on the surface of said semiconductor substrate at a substantially central location thereon and arranged in a straight line column;

first and second bus bars on the surface of said semiconductor substrate and respectively arranged on opposite sides of said column of bonding pads;

first and second pluralities of elongated leads on the surface of said semiconductor substrate and respectively disposed on opposite sides of said column of bonding pads;

each of said bus bars including:

a base wiring portion extending in a straight line in spaced parallel relation to said column of bonding pads,

a plurality of branch portions integral with and extending inwardly from said base wiring portion toward said column of bonding pads, said plurality of branch portions being in substantially perpendicular relation to said base wiring portion, and

a plurality of bonding terminal portions integral with and corresponding to said plurality of branch portions, each of said bonding terminal portions having a wire bonding terminal extending inwardly from said base wiring portion toward said column of bonding pads and in offset relation to the branch portion corresponding thereto;

the leads of each of said first and second pluralities of elongated leads extending across the base wiring portion of the bus bar corresponding thereto and including inner lead portions arranged in spaced coextensive relation to said wire bonding terminals of the bonding terminal portions of said first and second bus bars, said inner lead portions of said first and second pluralities of elongated leads being respectively provided with grooves;

the plurality of branch portions of said first and second bus bars being respectively received in a groove of a corresponding lead portion;

insulating means interposed between said branch portions of said first and second bus bars and the bottoms of the respective grooves in said inner lead portions in which said branch portions of said first and second bus bars are received;

said wire bonding terminals of the bonding terminal portions of said first and second bus bars and said inner lead portions of said first and second pluralities of elongated leads being arranged along said column of bonding pads on opposite sides thereof;

a first group of individual connector wires connected to respective ones of said bonding pads at one end and to respective wire bonding terminals of the bonding terminal portions of said first and second bus bars at the other end thereof; and

a second group of individual connector wires connected to respective others of said bonding pads at one end and to respective inner lead portions of said first and second pluralities of elongated leads at the other end thereof.

5,550,402

ELECTRONIC MODULE OF EXTRA-THIN CONSTRUCTION

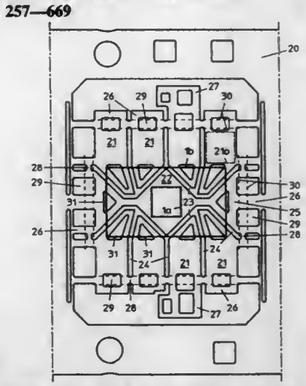
Karl Nicklaus, Cham, Switzerland, assignor to Esec Sempac S.A., Cham, Switzerland

Filed Nov. 23, 1993, Ser. No. 156,295

Claims priority, application Switzerland, Nov. 27, 1992, 03633/92

Int. Cl.[6] H01L *23/495*

U.S. Cl. 257—669 **20 Claims**



1. Electronic module of thin construction, having external contacts which lie in a plane on a flat side of a plastic casing and which are made out of a system support having rectangular edges formed of a thin, flat metal-strip structure, and having a rectangular semiconductor chip mounted on one side of the system support on a chip pad thereof, said chip being moulded within plastic material of the casing and connected to the external contacts, characterized in that a plurality of slits in the system support form the boundaries of said chip pad and separate the chip pad from said external contacts; and the slits are situated at an angle, of about 45°, relative to the edges of the chip and relative to said system support rectangular edges, said slit plurality further dividing said chip pad into a central pad region flanked by at least one opposed outer pad region, with said central pad region having a boundary substantially orthogonal to an adjacent outer pad region boundary.

5,550,403

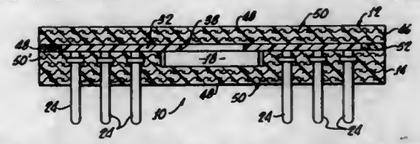
IMPROVED LAMINATE PACKAGE FOR AN INTEGRATED CIRCUIT AND INTEGRATED CIRCUIT HAVING SUCH A PACKAGE

Karla Carichner, Pleasanton, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Jun. 2, 1994, Ser. No. 252,692

Int. Cl.[6] D01L *23/48*

U.S. Cl. 257—702 **13 Claims**



1. An integrated circuit assembly having an integrated circuit die, and a package enclosing said die and providing for electrical interconnection of said die to external electrical circuitry, said package comprising:

a first package portion providing a recess into which said integrated circuit die is received;

a second package portion sealingly cooperating with said first package portion to enclose said integrated circuit die within said recess;

means for effecting corresponding individual electrical interconnection between plural electrical contact pads of said integrated circuit die and plural electrical connection features defined on said package for connection with said external electrical circuitry;

wherein:

said package portions are materially uniform and matched in thermal coefficient of expansion to one another;

said package portions are each formed of the same composite material including a matrix of a fibrous material in a resinous material;

said fibrous material includes glass fibers;

said resinous material includes an epoxy resin; and

said package portions are sealingly secured together by a scrim formed of said epoxy resin carried in a fibrous material.

5,550,404

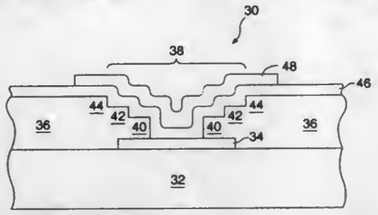
ELECTRICALLY PROGRAMMABLE ANTIFUSE HAVING STAIR APERTURE

Yeouchung Yen, San Jose; Shih-Oh Chen, Fremont, and Hung-Kwei Hu, Saratoga, all of Calif., assignors to Actel Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 65,530, May 20, 1993, abandoned. This application Aug. 10, 1994, Ser. No. 292,801

Int. Cl.[6] H01L *29/04;27/10;29/00*

U.S. Cl. 257—530 **5 Claims**



1. An antifuse including:

a lower electrode;

an interlayer dielectric layer disposed over said lower electrode, said interlayer dielectric layer including an antifuse cell opening formed therein, said antifuse cell opening having a first area in a lower portion of said interlayer dielectric layer, and a second area larger than said first area, said second area defined by a first step in an upper portion of said interlayer dielectric layer, said first area exposing a portion of said lower electrode;

a layer of antifuse material disposed in said antifuse cell opening and in contact with said lower electrode and said interlayer dielectric layer; and

an upper electrode in contact with an entire upper surface of said layer of antifuse material.

5,550,405

PROCESSING TECHNIQUES FOR ACHIEVING PRODUCTION-WORTHY, LOW DIELECTRIC, LOW INTERCONNECT RESISTANCE AND HIGH PERFORMANCE ICS

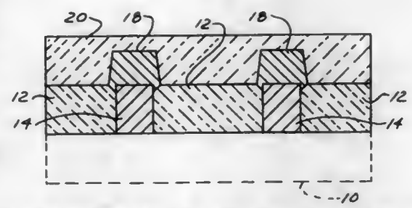
Robin W. Cheung, Cupertino, and Mark S. Chang, Los Altos, both of Calif., assignors to Advanced Micro Devices, Incorporated, Sunnyvale, Calif.

Filed Dec. 21, 1994, Ser. No. 360,856

Int. Cl.[6] H01L *23/48;23/52;29/40*

U.S. Cl. 257—642 **10 Claims**

1. A semiconductor device formed on a wafer comprising source and drain regions contacted by source and drain contacts, respectively, and each source and drain region separated by a gate region contacted by a gate electrode, with a first level patterned interconnect contacting said source and drain contacts and said gate electrode in a desired pattern and with a second level patterned interconnect contacting said first level patterned interconnect by a plurality of metal fines, said metal lines separated by a first dielectric material, said second level patterned interconnect comprising a low resistance metal and separated by a planarized dielectric material inert to diffusion of said low resistance metal.



5,550,406

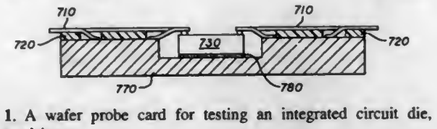
MULTI-LAYER TAB TAPE HAVING DISTINCT SIGNAL, POWER AND GROUND PLANES AND WAFER PROBE CARD WITH MULTI-LAYER SUBSTRATE

John McCormick, Redwood City, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Continuation-in-part of Ser. No. 894,031, Jun. 4, 1992, abandoned. This application Dec. 20, 1993, Ser. No. 170,136

Int. Cl.[6] H01L *23/02;23/48;23/52*

U.S. Cl. 257—666 **14 Claims**



1. A wafer probe card for testing an integrated circuit die, comprising:

a first conductive layer patterned to have a plurality of probe leads, said probe leads having an inner end and an outer end;

an insulating layer, having an inner peripheral edge defining a central opening in which said integrated circuit die is disposed during testing, supporting said probe leads with the inner ends of said probe leads extended in a direction toward said central opening;

an inner peripheral opening in said insulating layer near said inner peripheral edge and having an inner and an outer edge;

a second conductive layer provided on a side of said insulating layer opposite said probe leads and having an inner edge portion exposed within said inner peripheral opening in said insulating layer with the first conductive layer, insulating layer and second conductive layer forming a substrate; and

selected probe leads cut closely adjacent to said outer edge of said inner peripheral opening in said insulating layer, bent past said insulating layer, and bonded to said exposed inner edge portion of said second conductive layer.

5,550,407

SEMICONDUCTOR DEVICE HAVING AN ALUMINUM ALLOY WIRING LINE

Toshinori Ogashiwa, Tokyo, Japan, assignor to Tanaka Denshi Kogyo Kabushiki Kaisha, Tokyo, Japan

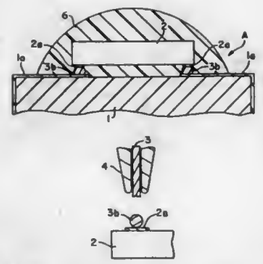
Division of Ser. No. 618,900, Nov. 28, 1990, Pat. No. 5,366,692. This application Jul. 29, 1994, Ser. No. 282,020

Claims priority, application Japan, Dec. 27, 1989, 1-340132; Jun. 29, 1990, 2-171991; Aug. 24, 1990, 2-222729

Int. Cl.[6] H01L *23/488;* **C22C** *13/00*

U.S. Cl. 257—737 **17 Claims**

2. A semiconductor device having an aluminum alloy wiring line, comprising:



a substrate; and

a semiconductor package electrically connected to the substrate through bump contacts formed by metallurgically attaching balls, having a Brinell hardness which is greater than H_B6, to the aluminum alloy wiring line by mutual diffusion between a surface of the aluminum alloy wiring line and a surface of the balls, each of said balls having been formed by heating the tip of a fine alloy wire formed of an alloy material produced by drawing a rapidly-quenched alloy, said alloy comprising:

Pb as a principal element;

1–10 Wt % Sb; and

0.05–3 wt % Zn;

wherein the fine alloy wire from which said balls are formed is passed through a capillary tube employed in a wire bonder, and the balls are joined to the aluminum alloy wiring lines by a wire bonding method.

5,550,408

SEMICONDUCTOR DEVICE

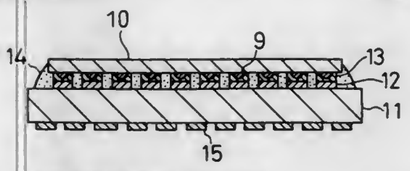
Yoshinobu Kunitomo; Makoto Nozu, both of Kyoto; Yasuyuki Sakashita, Shiga; Masahide Tsukamoto, Nara; Seichi Nakatani, Osaka; Keiji Saeki, Hyogo, and Yoshifumi Kitayama, Osaka, all of, Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Continuation-in-part of Ser. No. 153,108, Nov. 17, 1993, Pat. No. 5,436,503. This application Mar. 23, 1995, Ser. No. 408,965

Claims priority, application Japan, Nov. 18, 1992, 4-308589

Int. Cl.[6] H01L *23/28*

U.S. Cl. 257—737 **5 Claims**



1. A semiconductor device comprising:

an insulating substrate having a plurality of electrodes on its top surface and a plurality of external electrodes arranged in a matrix on its undersurface;

a semiconductor chip provided above said insulating substrate with a distance between said insulating substrate and said semiconductor chip and having a plurality of bump electrodes formed on its undersurface so as to correspond to said electrodes;

a conductive adhesive, provided only around each of said bump electrodes, for electrically connecting said bump electrodes and said respectively corresponding electrodes of said insulating substrate; and

an insulating resin which is filled between said insulating substrate and said semiconductor chip and covers a circumferential part of said semiconductor chip.

5,550,409

SEMICONDUCTOR DEVICE HAVING INTERNAL WIRE AND METHOD OF FABRICATING THE SAME

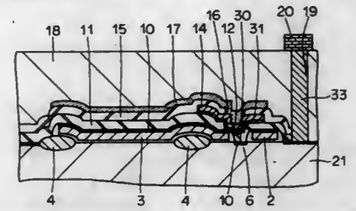
Takehisa Yamaguchi, and Hidekazu Oda, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 14, 1994, Ser. No. 339,662

Claims priority, application Japan, Jun. 29, 1994, 6-148240

Int. Cl.[6] H01L *23/48;23/52;29/40*

U.S. Cl. 257—757 **10 Claims**



1. A semiconductor device having an internal wire, comprising:

a semiconductor substrate;

a conductive layer being provided in a surface of said semiconductor substrate, and having a first silicide layer provided on the surface of the conductive layer;

a conductor being provided on said semiconductor substrate in proximity to said conductive layer, and having a second silicide layer provided on the surface of the conductor;

an interlayer insulating film being provided on said semiconductor substrate to cover said conductor;

a contact hole being provided in said interlayer insulating film for exposing both of a surface of said first silicide layer and a surface of an end of said second silicide layer; and

an internal wiring layer being provided in said contact hole, and contacting both the first silicide layer and said end of said second silicide layer, thereby electrically connecting said conductive layer and said conductor with each other,

said internal wiring layer including a titanium metal film being directly in contact with said said first silicide layer and said end of said second silicide layer, and a third silicide layer, the third silicide layer being provided on said titanium metal film.

5,550,410

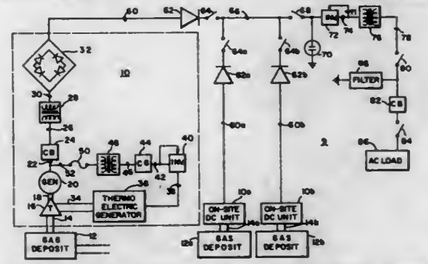
GAS TURBINE ELECTRICAL POWER GENERATION SCHEME UTILIZING REMOTELY LOCATED FUEL SITES

Charles H. Titus, 323 Echo Valley La., Newton Square, Pa. 19073

Filed Aug. 2, 1994, Ser. No. 284,148

Int. Cl.[6] H02K *7/18;* **F01D** *15/10;* **F02C** *6/00;* **F02D** *29/06*

U.S. Cl. 290—52 **47 Claims**



12. A system for transporting energy from a remotely located site having a deposit of fossil fuel to an energy utilization center, said system comprising:

energy conversion means located on the site of said fossil fuel deposit and operatively connected to receive the fossil fuel therefrom for converting the fossil fuel to DC electrical energy; and

local high-voltage transmission means for carrying the DC electrical energy from the site of said fossil fuel deposit;

main high-voltage transmission means for transmitting the DC electrical energy toward the energy utilization center; and

coupling means for coupling the local transmission means in parallel with the main transmission means, said coupling means comprising a cooling system energized by a relatively low voltage difference between the local transmission means and the main transmission means.

5,550,411

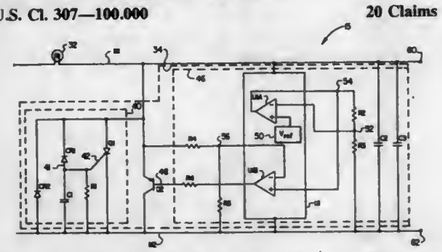
DOWNHOLE INSTRUMENT POWER SUPPLY SYSTEM USING SHUNT VOLTAGE REGULATION

Donald L. Baker, Ventura, Calif., assignor to Westech Geophysical, Inc., Ventura, Calif.

Continuation of Ser. No. 976,313, Nov. 12, 1992, abandoned. This application Jun. 20, 1995, Ser. No. 492,918

Int. Cl.[6] G05F *1/613*

U.S. Cl. 307—100.000 **20 Claims**



1. A power supply system for providing variable voltage power to a first device and for regulating the power provided to a selected voltage and providing the regulated voltage power to a second device, the system comprising:

a variable voltage power source having a power line and a power return line, the voltage of the power source being controllable;

a shunt voltage regulator connected to the power line and the power return line and comprising:

a shunt line connected across the power line and the power return line of the power source;

a current control device disposed in the shunt line for controlling the amount of current flowing on the shunt line;

a voltage sensor for sensing the voltage across the power line and the power return line at the location of the voltage regulator and for providing a voltage error signal to the current control device in the event that the sensed voltage differs from the selected voltage;

wherein the current control device is responsive to the voltage error signal to control the amount of current flowing on the shunt line in accordance therewith to maintain the selected voltage across the power and power return lines;

wherein the first device is disposed in series between the controllable voltage power source and the shunt line of the voltage regulator thereby receiving an increased voltage across it in response to an increase in the power source voltage; and

wherein the second device is connected to the voltage regulator to receive the regulated voltage power.

5,550,412

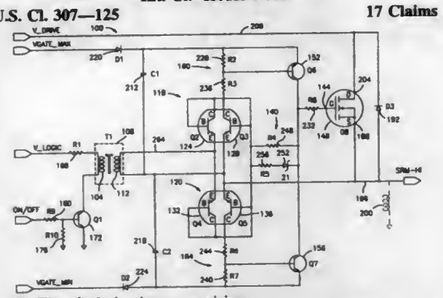
ISOLATED MOSFET GATE DRIVE

Douglas L. Anneser, Hollis, N.H., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sep. 12, 1994, Ser. No. 304,537

Int. Cl.[6] H01H *47/00*

U.S. Cl. 307—125 **17 Claims**



10. Electrical circuitry, comprising:

a. a transformer having primary and secondary windings, a control signal having bistable states indicated by a pair of discrete voltage values being applied to the primary winding;

b. a power transistor having a pair of output terminals and an input control terminal, the power transistor being operable to be switched between two discrete output states depending on either one of two discrete logic levels of a gate signal applied to the input control terminal;

c. first switch means for providing a first supply voltage as the gate signal as a first one of the two gate signal logic levels;

d. second switch means for providing a second supply voltage as the gate signal as a second one of the two gate signal logic levels;

e. means, being responsive to any voltage change on the secondary winding of the transformer that corresponds to a simultaneous voltage change on the first winding of the transformer, for triggering the first switch means to provide the first supply voltage upon a voltage change on the primary winding of the transformer from a first voltage value to a second voltage value, and for triggering the second switch means to provide the second supply voltage upon a voltage change on the primary winding of the transformer from the second voltage value back to the first voltage value; and

f. feedback means, connected to an output of both the first switch means and the second switch means, for sustaining the means for triggering the first switch means to provide the first supply voltage during an entire time that the control signal is at a first one of the discrete voltage values, and for sustaining the means for triggering the second switch means to provide the second supply voltage during an entire time that the control signal is at the second discrete voltage value.

5,550,413

ELONGATE TORQUE MOTOR AND ANGULAR DISPLACEMENT CONTROL DEVICE INCORPORATING IT

Christophe Bernus, Paris; Patrice Jamain, Maule, and Jean-Pierre Roland, Vienne en Arthie, all of, France, assignors to Aerospatiale Societe Nationale Industrielle, France

PCT No. PCT/FR93/00922, § 371 Date May 19, 1994, § 102(e) Date May 19, 1994, PCT Pub. No. WO94/07299, PCT Pub. Date Mar. 31, 1994

PCT Filed Sep. 22, 1993, Ser. No. 244,233

Claims priority, application France, Sep. 22, 1992, 92 11262

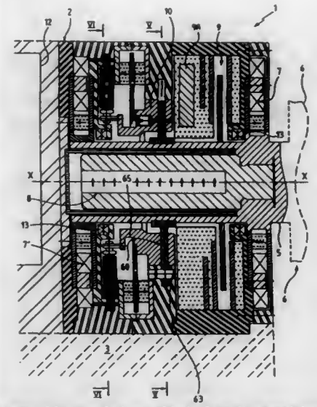
Int. Cl.[6] H02K *26/00;7/09*

U.S. Cl. 310—36 **29 Claims**

1. A torque motor comprising:

a stator member;

a shaft rotatable about an axis and having a limited angular displacement relative to said stator member;



a field assembly coupled to said shaft and comprising:

an elongate central bar disposed along said axis, said elongate central bar including two diametrically opposed portions of a cylinder coaxial with said axis, each of said two diametrically opposed portions subtending substantially equal angles of less than about 180 degrees, said elongate central bar further including two parallel longitudinal flats separating said two diametrically opposed portions;

a ferromagnetic tubular portion circumscribing said elongate central bar at a radial distance therefrom; and

a permanently magnetized central bar disposed along said axis interposed said two diametrically opposed portions of said cylinder coaxial with said axis; said permanently magnetized central bar having a magnetization substantially parallel to said two parallel longitudinal flats; and

an armature associated with said stator member, said armature comprising a tubular member disposed radially between said elongate central bar and said ferromagnetic tubular portion, said armature including at least one coil having an input and an output, said at least one coil having separate parallel longitudinal strands connected by transverse strands disposed transversely to said axis, said longitudinal strands being divided into two diametrically opposed groups, each strand of one of said diametrically opposed groups carrying current in a same direction when current is applied between said input and said output of said at least one coil, each of said diametrically opposed groups facing a respective one of said two diametrically opposed portions of a cylinder, said limited angular displacement of said shaft being less than a difference between a first angle subtended by one of said two diametrically opposed portions and a second angle subtended by one of said diametrically opposed groups.

5,550,414

MOTOR

Hiroshi Sakashita, and Masayuki Katagiri, both of Nagano, Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan

Filed Dec. 9, 1993, Ser. No. 163,699

Claims priority, application Japan, Dec. 10, 1992, 4-090583 U; Dec. 10, 1992, 4-090584 U

Int. Cl.[6] H02K *7/14;7/10*

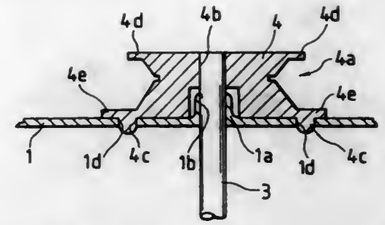
U.S. Cl. 310—67 R **17 Claims**

1. A motor comprising:

a rotor case having a rotor magnet confronted to a stator core:

a rotating shaft extending through a hole formed in the center of the rotor case, said shaft being fixed to said hole;

a pulley having a center hole fixedly secured directly to a distal end portion of the rotating shaft projecting beyond the hole in the rotor case, the pulley being fixed to the rotor case; and



holding means for holding the pulley on the rotor case, the holding means being provided by the rotor case and the pulley.

5,550,415

VEHICULAR ALTERNATING CURRENT GENERATOR

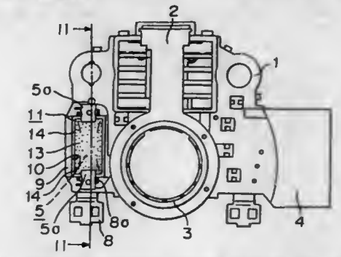
Katsumi Adachi, and Kyoko Kurusu, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 10, 1994, Ser. No. 240,461

Claims priority, application Japan, Jan. 17, 1994, 6-003034

Int. Cl.[6] H02K *11/00;13/06;13/00*

U.S. Cl. 310—68 R **5 Claims**



1. A vehicular alternating current generator having a base attached to at least one of a brush holder and a voltage regulator, and a condenser attached to a holding portion formed in the base for suppressing electric noise, wherein a main body of the condenser is encapsulated by a resin and accommodated in a condenser accommodating body, and connecting leads of the condenser protrude from an exposed surface of the condenser accommodating body when the condenser accommodating body is inserted in the holding portion formed in the base.

5,550,416

CONTROL MECHANISM OF REVOLVING SPEED OF AN ELECTRIC TOOL

We C. Fanchang, and Hsueh W. Hsueh, both of P.O. Box 1750, Taichung, Taiwan

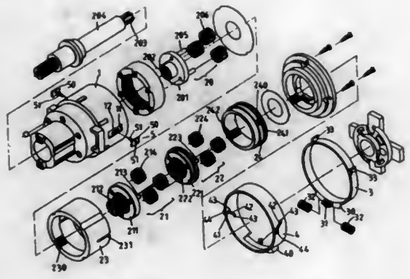
Filed Feb. 9, 1995, Ser. No. 386,164

Int. Cl.[6] H02K *7/14;7/06;7/10;* **E21B** *3/00*

U.S. Cl. 310—83 **4 Claims**

1. A control mechanism of revolving speed of an electric tool comprising a speed changing mechanism, a speed selecting device, a gear set seat, a first gear set, a second gear set engaged with said first gear set and, a third gear set engaged with said second gear set, a fixing toothed sleeve including a first inner ring teeth, and a sliding toothed ring including an outer ring teeth for engaging with the first inner ring teeth of said fixing toothed sleeve and including a second inner ring teeth for engaging with said second gear set;

wherein said speed changing mechanism is composed of an action ring, a locating ring, and two slides, said action ring being capable of actuating said locating ring to rotate, said



locating ring provided correspondingly with two slots provided rearwardly with slanted slots, each of said slanted slots provided respectively at both ends thereof with a curved locating slot, said two slide rods provided respectively with a sliding piece and a sliding bar, said sliding bars each including a first end passing through said gear set seat and said fixing toothed sleeve to push said sliding toothed ring to move back and forth so as to engage and to disengage said outer ring teeth of said sliding toothed ring from the first inner ring teeth of said fixing toothed sleeve, said sliding bars each including a second end slidably engaged in said slanted slot so as to enable said sliding bar to move back and forth and to be located in said locating slot.

5,550,418

ALTERNATOR FOR USE IN AN AUTOMOBILE

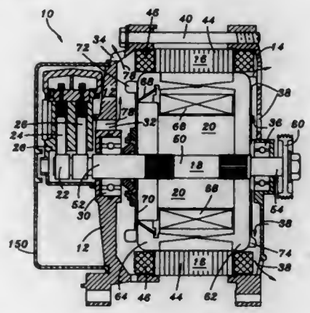
Jong-Won Chung, Kyungsangbuk-Do, Rep. of Korea, assignor to Mando Machinery Corp. Ltd., Kyunpo, Rep. of Korea

Filed Dec. 28, 1994, Ser. No. 365,724

Claims priority, application Rep. of Korea, Dec. 29, 1993, 93-30511

Int. Cl.[6] H02K *13/00*

U.S. Cl. 310—239 **4 Claims**



1. An alternator for use in an automobile, which comprises:

a first frame having apertures;

a second frame engaged to the first frame;

a stator positioned between the first and the second frames;

a shaft coupled to the first and the second frames, the shaft including a first portion positioned between the first and the second frames and a second portion extending outwardly from the first portion and beyond the first frame, the shaft being rotatable with respect to the first and the second frames about an axis thereof;

a rotor mounted on the shaft, the rotor including a rotor core and a rotor coil for establishing an electromagnetic cooperation with the stator;

a pair of slip rings fixed to the second portion of the shaft, each of the slip rings being electrically connected to the rotor coil;

a pair of brushes, each of the brushes being urged against and in slidable contact with each of the slip rings;

a brush holder mounted to first frame for retaining the brushes, the brush holder including a slip ring shield portion, the slip ring shield portion having a first opening distant to the first frame and a second opening adapted to serve as a passage for the slip rings and the shaft, the second opening being in communication with one of the apertures of the first frame; and

means for circulating air through the first and the second openings of the brush holder;

wherein each of the brushes includes a brush lead attached thereto, and the brush holder further includes a pair of radial apertures, a pair of terminals, each of the terminals being connected to each of the brush leads, a plug covering a top portion of each of the radial apertures and having a pair of bores for the brush holder and a partition so as to isolate one of the terminals from the other, and a cap mounted to a top portion of the brush holder.

5,550,419

Patent Not Issued For This Number

5,550,420

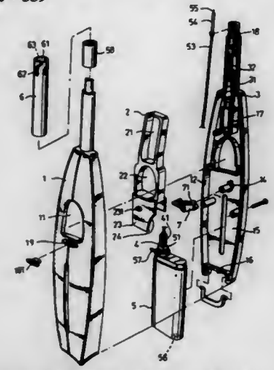
ELECTRONIC IGNITION APPARATUS

Kun-Chung Hsu, Shin Chuang, Taiwan, assignor to Chien Sheng Machine Industrial Co., Ltd., Shin Chuang, Taiwan

Filed Jun. 5, 1995, Ser. No. 461,853

Int. Cl.[6] H01L *41/08*

U.S. Cl. 310—339 **11 Claims**



1. An electronic ignition apparatus comprising:

a housing, said housing comprising an opening, an upright support on the inside adjacent to said opening, a link pivoted to said upright support, a gas well chamber for holding a gas well, a trough adjacent to said opening opposite to said upright post for holding a piezoelectric igniter, a projecting front chamber, a push bar, a metal nozzle tube mounted in said projecting front chamber, a metal cap mounted on said projecting front chamber, a connecting tube having one end connected to said metal nozzle tube through a flexible gas tube and an opposite end for coupling to a gas well, said link having one end connected to said connecting tube and a second end terminating in a projecting rod for coupling to said push bar;

a piezoelectric igniter mounted in said trough and having two opposite terminals respectively connected to said metal cap and said metal nozzle tube by a respective conductor, said piezoelectric igniter being triggered when said push bar is depressed, causing sparks produced between said metal cap and said metal nozzle tube for burning fuel gas being ejected out of said metal nozzle tube; and

a gas well mounted in said gas well chamber, said gas well having a gas outlet valve connected to said metal nozzle tube by said connecting tube and said flexible gas tube, said gas outlet valve being opened to release fuel gas into said connecting tube and said flexible gas tube and said metal nozzle tube for burning when said push bar is depressed to move said link.

5,550,421

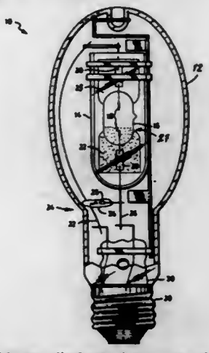
DISCHARGE LAMP WITH ENHANCED PERFORMANCE AND IMPROVED CONTAINMENT

John A. Scholz, Georgetown, Mass., and Sandra M. Morin, Manchester, N.H., assignors to Osram Sylvania Inc., Danvers, Mass.

Filed Dec. 6, 1994, Ser. No. 349,852

Int. Cl.[6] H01J *61/34;61/18*

U.S. Cl. 313—25 **4 Claims**



1. A metal halide arc discharge lamp comprising: an arc tube containing an arc generating and sustaining medium and having first and second electrodes sealed at opposite ends thereof; an outer envelope surrounding said arc tube and having first and second terminals for electrical connection thereto; an electrical connector coupling said first electrode to said first terminal; an electrical connector coupling said second electrode to said second terminal; a heat reflecting coating on at least one end of said arc tube; a starting aid operatively associated with said arc tube; and a light transmissive shroud positioned about said arc tube on at least two sides thereof; said arc tube having a wall thickness of about 0.5 mm and said shroud having a thickness of about 1 mm, whereby the ratio of said shroud wall thickness to said arc tube wall thickness is about 2.

5,550,422

HIGH INTENSITY ARC DISCHARGE LAMP HAVING CLIP MEMBER TO SECURE BASE TO OUTER LAMP ENVELOPE

Juris Sulcs, Chagrin Falls, and Raymond J. Noe, Highland Heights, both of Ohio, assignors to Venture Lighting International, Inc., Solon, Ohio

Filed Dec. 21, 1994, Ser. No. 360,577

Int. Cl.[6] H01J *5/48;1/88;* **H01K** *1/46*

U.S. Cl. 313—25 **17 Claims**

1. Anchoring means to secure a screw type conductive member having an inner hollow opening when physically joined to mating threads provided in an outer vitreous envelope of a high intensity arc discharge lamp which further employs an arc tube physically suspended within said outer vitreous envelope by means of a conductive metal mount frame, said anchoring means comprising a

---

5,550,417

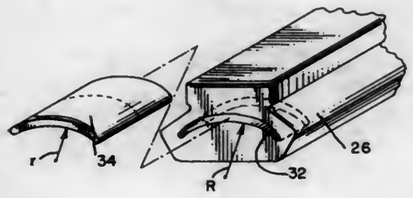
AMORTISSEUR WINDING ARRANGEMENT, IN A ROTOR FOR ELECTRICAL, ROTATING EQUIPMENT

Darrell R. Morrison, Blaine; James L. Nessa, St. Paul, and James J. McClurg, Vadnais Heights, all of Minn., assignors to Dresser-Rand Company, Corning, N.Y.

Filed Jul. 3, 1995, Ser. No. 497,972

Int. Cl.[6] H02K *3/16;3/487*

U.S. Cl. 310—183 **7 Claims**



1. In a rotor for electrical, rotating equipment, an amortisseur winding arrangement, comprising:

a rotor having (a) a rotary axis, and (b) axial slots, formed in an outer periphery of said rotor;

a plurality of electrically-conductive wedges, serially set in each of said slots, for restraining rotor-carried coils against centrifugal-force-induced movement thereof; and including

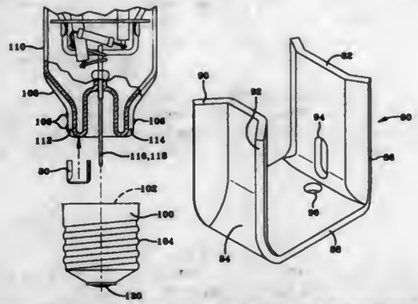
means engaged with said wedges of said plurality thereof for physically and electro-conductively interconnecting each one of said wedges with at least another of said wedges; wherein

each of said wedges has grooves formed in opposite, axial ends thereof;

said interconnecting means comprises inserts set in said grooves;

transversely thereof, each groove describes an arc having a given radius; and

transversely thereof, each insert describes an arc having a radius differing from said given radius.



single conductive clip member physically separate and distinct from said conductive metal frame while physically engaging the mating threads of said outer vitreous envelope, said single conductive clip member having at least one outwardly projecting tang element for further frictional engagement with the inner hollow opening in the conductive base member.

5,550,423

OPTICAL COATING AND LAMP EMPLOYING SAME

Andre R. Oughton, Boxford, Mass., assignor to Osram Sylvania Inc., Danvers, Mass.

Continuation of Ser. No. 164,065, Dec. 8, 1993, abandoned. This application Oct. 20, 1995, Ser. No. 546,520

Int. Cl.[6] H01K *1/32;* **G02B** *5/28*

U.S. Cl. 313—112 **10 Claims**



1. An optical interference coating for reflecting infrared radiation and transmitting visible radiation comprising:

three spectrally adjacent multiperiod stacks each having a respective stack wavelength, two of said stacks being shortwave pass stacks, said shortwave pass stacks having very low reflectance at wavelengths less than said respective stack wavelength and then a region of substantial reflectance at wavelengths greater than said respective stack wavelength, each of said shortwave pass stacks being a quarterwave stack containing periods of the form, the third stack containing seven alternating layers of high and low refractive index materials and having a period of the form

wherein a, b, c and d are predetermined values, and wherein L and H are a low and a high index of refraction material, respectively, L and H each being defined as having an optical thickness of a multiple of a quarterwave of the third stack wavelength.

5,550,424

SPARK PLUG FOR INTERNAL COMBUSTION ENGINES

Irene Jennrich, Winnenden; Lothar Weber, Stuttgart, and Andreas Niegel, Kornwestheim, all of, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE93/01133, § 371 Date Jun. 5, 1995, § 102(e) Date Jun. 5, 1995, PCT Pub. No. WO94/13046, PCT Pub. Date Jun. 9, 1994

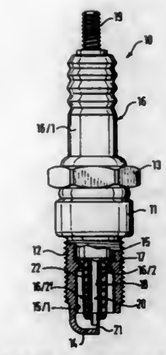
PCT Filed Nov. 27, 1993, Ser. No. 448,424

Claims priority, application Germany, Dec. 3, 1992, 42 40 646

Int. Cl.[6] H01J *13/38*

U.S. Cl. 313—130 **7 Claims**

1. A spark plug for an internal combustion engine, comprising:



a tubular metal housing having an axial bore disposed therethrough and a counterelectrode formed at one end of the housing, the housing having an outer surface adapted for removably mounting the housing in the internal combustion engine;

a ceramic insulating body having a longitudinal opening disposed therethrough, at least one longitudinal portion of the ceramic insulating body being sealably disposed within the axial bore of the tubular metal housing;

a connecting element mounted in a first portion of the longitudinal opening;

a central electrode sealably mounted in a second portion of the longitudinal opening, the central electrode being electrically connected to the connecting element, an end region of the central electrode being opposed to an end region of the counterelectrode, a spark gap being formed between the central electrode and the counterelectrode; and

wherein a lower portion of the ceramic insulating body is exposed to a combustion chamber of the internal combustion engine, at least one surface of the lower portion having a silicone coating to protect against contamination, the coating being composed of one of a solvent-free silicone rubber and a solvent-free silicone resin.

5,550,425

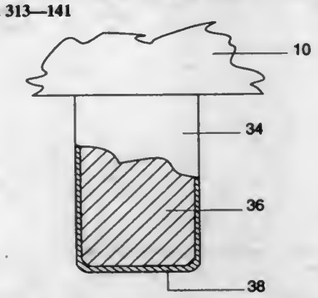
NEGATIVE ELECTRON AFFINITY SPARK PLUG

Max N. Yoder, Falls Church, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 27, 1995, Ser. No. 379,815

Int. Cl.[6] H01T *13/22*

U.S. Cl. 313—141 **12 Claims**



1. A spark plug having a negative electrode and a positive electrode, the two electrodes having respective, spaced apart, spark end portions which define a spark path therebetween, the spark end portion of the negative electrode comprising an n-type impurity-doped semiconductor material exhibiting negative electron affinity (NEA).

5,550,426

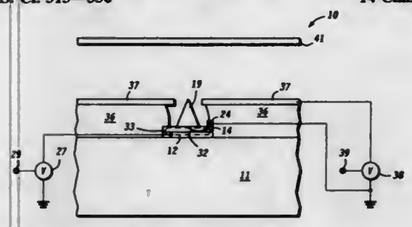
FIELD EMISSION DEVICE

Robert T. Smith, Mesa, and Scott K. Ageno, Phoenix, both of Ariz., assignors to Motorola, Schaumburg, Ill.

Filed Jun. 30, 1994, Ser. No. 268,748

Int. Cl.[6] H01J *1/30*

U.S. Cl. 313—336 **14 Claims**



1. A field emission device comprising:

a substrate;

a conductive layer on the substrate;

a doped semiconductor layer on the conductive layer wherein a semiconductor junction is formed between the conductive layer and the doped semiconductor layer; and

an emission tip on the doped semiconductor layer, the emission tip overlying the semiconductor junction wherein current flowing through the emission tip flows through the doped semiconductor layer but not through the semiconductor junction.

5,550,427

SUBSTRATE CONTACT ELECTRODE HAVING REFRACTORY METAL BUMP STRUCTURE WITH REINFORCEMENT SIDEWALL FILM

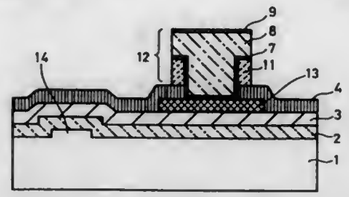
Yoshihiro Hayashi, Tokyo, Japan, assignor to NEC Corporation, Minato-ku, Japan

Continuation of Ser. No. 270,219, Jul. 1, 1994, abandoned, which is a continuation of Ser. No. 978,740, Nov. 19, 1992, abandoned. This application Mar. 15, 1995, Ser. No. 404,839

Claims priority, application Japan, Nov. 19, 1991, 3-302955

Int. Cl.[6] H01L *29/00*

U.S. Cl. 313—355 **4 Claims**



1. A substrate contact electrode formed on a wiring layer which is formed on a passivation oxide film on a semiconductor substrate, said semiconductor substrate having a convex portion on a part of a surface thereof and said wiring layer being covered by a polyimide resin layer, said substrate contact electrode comprising:

a metal pedestal formed within said polyimide resin layer, said metal pedestal having an overall height greater than an overall height of said convex portion of said semiconductor substrate and an under surface of said metal pedestal being in contact with an upper surface of said wiring layer;

a contact hole which is formed within said polyimide resin layer and which reaches an upper surface of said metal pedestal;

a bump which is composed of a barrier metal film and a refractory metal film and which is partly formed within said contact hole and which is partly protruding from an upper surface of said polyimide resin layer;

an oxidation-resistant metal film which covers a top surface of said bump; and

a reinforcement film of insulating material which partially covers a side portion of said bump.

5,550,428

FRAME STRUCTURE OF APERTURE GRILLE WITH HIGHER LONG-SIDE FRAMES

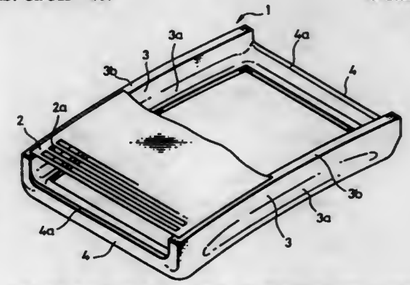
Hisao Kume, Kanagawa, and Yoshiro Horiuchi, Tokyo, both of, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 16, 1993, Ser. No. 167,013

Claims priority, application Japan, Dec. 16, 1992, 4-336173

Int. Cl.[6] H01J *29/06;29/07*

U.S. Cl. 313—407 **6 Claims**



1. A color selecting mechanism for a cathode ray tube, comprising:

a rectangular frame constituted by a pair of opposite long-side frames and a pair of opposite short-side frames; and

a color selecting electrode having longitudinal stripe aperture portions and stretched over said pair of opposite long-side frames facing the fluorescent screen of a panel on upper surface sides thereof,

wherein end portions on the upper surface side of each of said long-side frames are formed into a straight line spaced above said short-side frames, the lower surfaces of said long-side frames and the lower surfaces of said short-side frames defining a lower surface which is substantially evenly spaced from a surface defined by the upper surfaces of said long-side frames, and the height of each of said long-side frames from said lower surface is made to be higher than that of each of said short-side frames.

5,550,429

DISPLAY DEVICE

Hidekazu Hayama, Moriguchi; Yasunori Miura, Takatsuki; Atsushi Suzuki, Nagaokakyo, and Keizou Ishiai, Takatsuki, all of, Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed Dec. 27, 1994, Ser. No. 364,107

Claims priority, application Japan, Dec. 27, 1993, 5-332597

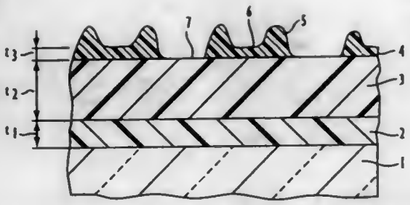
Int. Cl.[6] H01J *29/86;29/89*

U.S. Cl. 313—479 **5 Claims**

1. A display device comprising:

a glass face panel;

a first layer, which is an electrically-conductive thin film having a first refractive index, which is deposited on an outer surface of said glass face panel;



a second layer, which is a thin film having a second refractive index lower than said first refractive index, and which is deposited on an outer surface of said first layer; and

a third layer, which is deposited on said second layer, and which has an exposed surface having a large number of concave regions and convex regions;

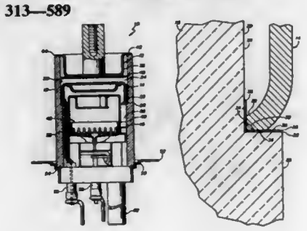
wherein said first layer, said second layer and said third layer form an anti-reflection film which has a composite luminous reflectance of 1.5% or less, and a reflectance of 3% or less at a wavelength of 436 nm.

5,550,430

GAS DISCHARGE CLOSING SWITCH WITH UNITARY CERAMIC HOUSING

Henry D. Navaroli, and Eugene E. Lednum, both of Williamsport, Pa., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed May 16, 1994, Ser. No. 237,607
Int. Cl.[6] H01J *17/48*
U.S. Cl. 313—589 **15 Claims**



1. A gas discharge closing switch comprising:

a unitary ceramic housing for maintaining a gaseous discharge, the unitary ceramic housing having upper and lower ends;

an anode structure forming a fluid-tight seal with the upper end of the unitary ceramic housing;

a cathode structure forming a fluid-tight seal with the lower end of the unitary ceramic housing;

a control electrode structure disposed within the unitary ceramic housing, the control electrode structure being interposed between the anode structure and the cathode structure; and

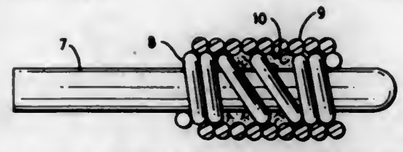
an electrically conductive path extending from the control electrode structure to said lower end for application of control signals to said control electrode structure.

5,550,431

HIGH PRESSURE ARC DISCHARGE LAMP HAVING BARIUM HAFNATE IMPREGNATED ELECTRODES

George L. Duggan, Manchester, N.H., and David A. Goodman, Amesbury, Mass., assignors to OSRAM Sylvania Inc., Danvers, Mass.

Filed May 5, 1995, Ser. No. 435,261
Int. Cl.[6] H01J *17/04;61/073*
U.S. Cl. 313—630 **5 Claims**



1. A method of making an electron emitting, barium hafnate material for arc discharge lamp electrodes comprising the steps of: forming a mixture of barium carbonate and hafnium oxide in a 48 to 52 mole ratio; adding said mixture to a suitable carrier to form a slurry; ball milling said slurry for about 2 hours to form a powder mix; drying said powder mix; firing said dried powder mix in air at about 1500° C. for about 22 hours to produce a product; and vibration milling said product in methanol with zirconia media to produce said barium hafnate.

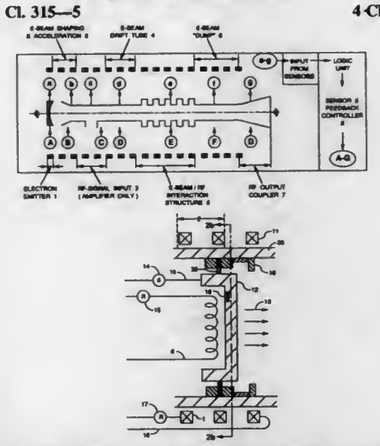
4. In a high pressure arc discharge tube having a main electrode at each end thereof and containing a fill of an arc generating and sustaining medium, the improvement comprising an electron emitting material on said electrodes comprising barium oxide and hafnium oxide and wherein said oxides were deposited as barium hafnate.

5,550,432

SMART ADAPTIVE VACUUM ELECTRONICS

Robert J. Barker, Fairfax, Va., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 1, 1994, Ser. No. 333,151
Int. Cl.[6] H01J *23/04;23/087*
U.S. Cl. 315—5 **4 Claims**



1. A controlled vacuum electronic device which modulates an externally applied electron beam with an externally applied rf carrier signal and comprising:

a means for modulating that uses said rf carrier signal to modulate said electron beam to produce thereby an rf output signal;

a waveguide housing which receives and conducts said electron beam and said rf output signal from said modulating means;

a means for injecting said electron beam into said waveguide housing with a predetermined beam energy so that said beam energy adjustably amplifies said rf carrier signal;

a means for detecting the rf output signal in the waveguide housing to produce thereby output signals indicating amplitude, phase and frequency of actual characteristics of the rf output signal;

a microprocessor which has an internal memory and which receives and compares the output signals of said detecting means with a corresponding set of desired amplitude, phase and frequency characteristics to produce thereby a set of control signals;

a set of servomechanisms which receive said set of control signals from said microprocessor and which adjust said injecting means in response to said set of control signals;

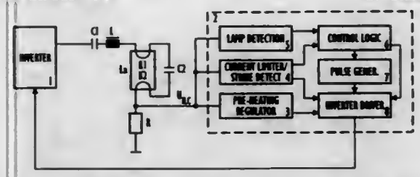
wherein said injecting means has a cathode which is powered by an electrical input signal with adjustable amplitude, phase and frequency, and which emits said electron beam with adjustable power levels, frequency and phase that varies with the cathode electrical input signal and wherein said servomechanisms includes a means for adjusting the temperature of said cathode which is attached to said cathode to adjust thereby said power levels of said electron beam by thermally affecting impedance to said electrical input signal of said cathode.

5,550,433

DRIVER CIRCUIT FOR DISCHARGE LAMPS

Felix Tobler, Schanis, Switzerland, assignor to Knobel AG Lichttechnische Komponenten, Ennenda, Switzerland

Filed Apr. 14, 1995, Ser. No. 421,922
Claims priority, application European Pat. Off., Apr. 15, 1994, 94105853
Int. Cl.[6] H05B *39/00*
U.S. Cl. 315—94 **17 Claims**



1. A method for operating a driver circuit for discharge lamps, said driver circuit comprising an inverter driving a lamp circuit, wherein at least one discharge lamp is arranged in said lamp circuit, said method comprising the steps of:

attempting to cause said at least one lamp to strike during a start-up phase, and if said start-up phase fails and said lamp does not strike, performing the following steps:

performing repeated measurements during a monitoring phase, wherein, during each of said measurements, operating said inverter for a predetermined time interval;

measuring at least one voltage generated by said inverter in said lamp circuit during each of said measurements for detecting a removal or an insertion of said at least one lamp; and

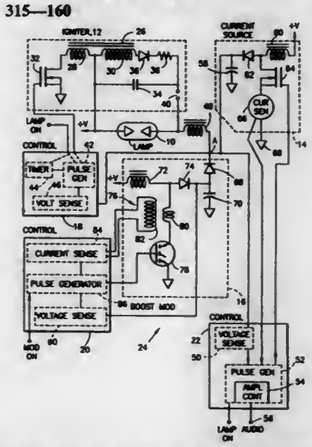
operating said inverter, during each measurement, to generate four pulses at a frequency of 50 kHz.

5,550,434

BOOST-MODE ENERGIZATION AND MODULTION CIRCUIT FOR AN ARC LAMP

Kenneth J. King; Robert M. Zawislak, and Richard C. Vokoun, all of Palatine, Ill., assignors to Northrop Corporation, Los Angeles, Calif.

Filed May 23, 1994, Ser. No. 247,832
Int. Cl.[6] H05B *37/02*
U.S. Cl. 315—160 **5 Claims**



1. A system for energizing an arc lamp to emit radiation, comprising:

an igniter circuit having a first terminal and a second terminal, the first terminal and the second terminal of the igniter circuit to be connected to a first terminal and a second terminal, respectively, of the arc lamp, the igniter circuit having a boost topology, said first terminal of said igniter circuit serving as an output terminal of said igniter circuit;

a current supply circuit having an output terminal connected to the first terminal of said igniter circuit, the current supply circuit having a boost topology;

a boost modulator circuit having an output terminal connected via a junction to said output terminal of said current supply circuit, said boost modulator circuit having a boost topology, there being a coupling diode for connecting said output terminal of said boost modulator circuit to said junction;

a saturable-reactor inductor connected between said junction of said output terminals of said current supply and said boost modulator circuits and said first terminal of said igniter circuit; and

wherein each of said boost topologies of said igniter and said current supply and said boost modulator circuits includes a capacitor and means for charging the capacitor by a series of current pulses;

in each of said boost topologies, said charging means includes an inductor, pulsing means for generating a series of current pulses within said inductor, and means for switching the current pulses within said inductor to said capacitor;

said switching means comprises a diode connecting a first terminal of said inductor to said capacitor, and a transistor for switchably directing a current through said inductor to ground;

said system further comprises means for sensing a voltage outputted by said boost modulator circuit to said junction, said voltage sensing means being operatively coupled to said pulsing means of said boost modulator circuit for control of the voltage outputted by said boost modulator circuit; and

means for sensing a current outputted by said current supply circuit to said junction, said current sensing means being operatively coupled to said pulsing means of said current supply circuit for control of the current outputted by said current supply circuit.

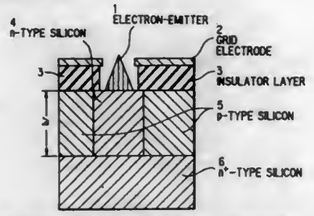
VOI 1189 ISS 4 AG 27 1996 UMI

5,550,435

FIELD EMISSION CATHODE APPARATUS

Toshihide Koriyama, and Hideo Makishima, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Oct. 28, 1994, Ser. No. 330,582
Claims priority, application Japan, Oct. 28, 1993, 5-270632
Int. Cl.[6] G09G 3/10
U.S. Cl. 315—169.1 16 Claims



1. A field emission cathode apparatus, comprising:

an electron-emitter having a micropoint at a tip portion thereof;

an active device connected in series to said electron-emitter; and

means for applying a predetermined voltage across said electron-emitter and said active device to emit electrons from said micropoint of said electron-emitter;

wherein a current flowing through said electron-emitter is modulated by said active device; and

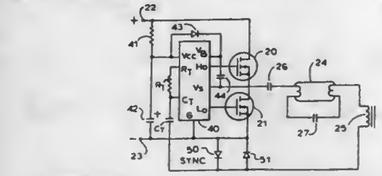
said active device has a breakdown voltage that is greater than said predetermined voltage.

5,550,436

MOS GATE DRIVER INTEGRATED CIRCUIT FOR BALLAST CIRCUITS

Talbott M. Houk, Culver City, Calif., assignor to International Rectifier Corporation, El Segundo, Calif.

Filed Sep. 1, 1994, Ser. No. 299,561
Int. Cl.[6] H05B 41/00
U.S. Cl. 315—209 R 20 Claims



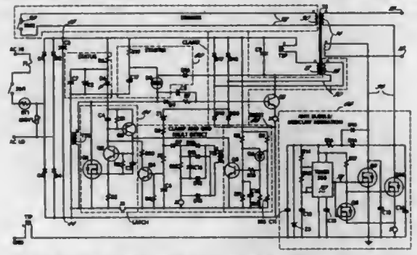
1. A monolithic integrated circuit formed in a silicon substrate for driving first and second MOS gated power devices which are connected in a half bridge circuit which has first and second d-c terminals and a common terminal at the node between said first and second MOS gated power devices; said monolithic integrated circuit including timer circuit means having an input control terminal C_T which is connectable to a low logic level signal referenced to the potential of said substrate; latch circuit means coupled to said timer circuit means for controlling the frequency at which said first and second MOS gated power devices are switched on and off and having an output which is switched in response to a predetermined signal applied to said input control terminal; a high side dead time delay circuit and a low side dead time delay circuit each coupled to said latch circuit means for delaying the transmission of a latch output signal for a predetermined time delay following the switching of the output of said latch circuit means; a high side level shifting means and a high side driver circuit means and a low side driver circuit means; said high side driver circuit means and said low side driver circuit means coupled to said high side dead time circuit and said low side dead time circuit, respectively, and having high side and low side output pins, respectively, which produce outputs for turning on and off said first and second MOS gated power devices in response to control signals at said input control terminal C_T; said high side and low side dead time delay circuits preventing the simultaneous conduction of said first and second MOS gated power devices; and an undervoltage circuit monitor means coupled to said high side driver circuit means and low side driver circuit means to disable said high side and low side driver circuit means as a function of an operating voltage V_{cc} and a control voltage, said undervoltage circuit monitor means disabling said high side and said low side driver circuit means when said operating voltage is less than a first predetermined value during an initial startup of said half bridge circuit, said undervoltage circuit monitor means enabling said low side driver circuit means and supplying said control voltage to said input control terminal C_T when said operating voltage is greater than said first predetermined value and less than a second predetermined value, and said undervoltage circuit monitor means disabling said low side driver circuit means and enabling said high side driver circuit means when said control voltage is greater than a third predetermined value, thereby protecting said first and second MOS gated power devices.

5,550,437

ELECTRONIC DIMMABLE GAS TUBE POWER SUPPLY WITH OVERVOLTAGE PROTECTION

William T. Hopkins, and Alan M. Smith, both of Dickson, Tenn., assignors to France/Scott Fetzer Company, West Fairview, Tenn.

Filed Apr. 6, 1995, Ser. No. 417,955
Int. Cl.[6] H05B 37/00
U.S. Cl. 315—209 R 17 Claims



1. A ballast for supplying power to a light, comprising

a core of magnetically permeable material defining a window therethrough for providing a closed path for magnetic field flux around said window,

a primary winding comprising a primary conductor extending between two primary terminals and wound onto said core through said window such that magnetic field flux produced by current in said primary conductor is channeled into said closed path;

an oscillator coupled between said primary terminals and bi-directionally electrically stimulating said primary winding via said primary terminals to produce bi-directional magnetic flux in said core;

a secondary winding comprising a secondary conductor extending between two secondary terminals and wound onto said core through said window such that magnetic field flux travelling along said closed path couples to said secondary winding and electrically stimulates said light coupled between said secondary terminals;

a clamp winding comprising a conductor extending between two clamp terminals and wound onto said core through said window such that magnetic field flux travelling along said closed path couples to said clamp winding and produces a voltage between said clamp terminals, said clamp winding being wound onto said core directly adjacent to said secondary winding to produce a low leakage flux coupling between said secondary winding and said clamp winding; and

a clamping circuit having two clamping terminals, said clamping circuit absorbing energy through said clamping terminals whenever a voltage in excess of a given clamp voltage is applied between said clamping terminals;

said clamp terminals of said clamp winding being connected to said clamping terminals of said clamping circuit;

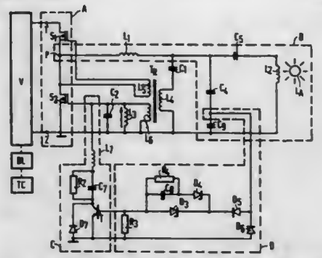
whereby said clamping circuit absorbs energy from said clamp winding by permitting a current to be induced in said clamp winding whenever a voltage in excess of said clamp voltage is produced between said clamp terminals, such that said clamp winding produces magnetic flux in said closed path tending to oppose magnetic flux produced by said primary winding and thereby limits voltage produced between said secondary terminals.

5,550,438

CIRCUIT ARRANGEMENT

Jozef H. Reijnaerts, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 79,299, Jun. 17, 1993, Pat. No. 5,414,327.
This application Feb. 3, 1995, Ser. No. 383,391
Claims priority, application European Pat. Off., Jun. 17, 1993, 92202205
Int. Cl.[6] H05B 37/02
U.S. Cl. 315—219 20 Claims



1. A DC-AC converter circuit for a discharge lamp, comprising:

at least one input terminal for connection to a source of DC supply voltage for the DC-AC converter circuit,

at least one controlled switching transistor coupled to said at least one input terminal,

a load circuit coupled to said at least one controlled switching transistor and comprising at least one capacitor and one inductor, and means for coupling a discharge lamp to the load circuit so as to apply a voltage to the discharge lamp, and

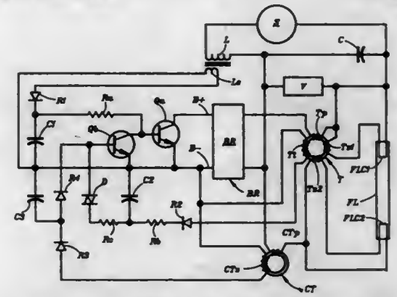
a control circuit including a resonant circuit which controls a frequency f of an AC current generated and which comprises at least one further capacitor and one further inductor, said control circuit being coupled to a control electrode of the at least one controlled switching transistor so as to drive the transistor into conduction and non-conduction at the frequency f whereby the AC current is supplied to the load circuit, and means for limiting the amplitude of an ignition voltage developed in the load circuit for ignition of a discharge lamp, said limiting means comprising a frequency-dependent impedance means coupled to said resonant circuit and a second controlled transistor coupled to the frequency-dependent impedance means, and means coupled to said load circuit and to a control electrode of the second controlled transistor for controlling the impedance of the second controlled transistor as a function of the voltage applied to the discharge lamp via the load circuit whereby, during an ignition phase of the discharge lamp, an electrical characteristic of said frequency-dependent impedance means changes to a degree, dependent on the impedance of the second controlled transistor so as to alter the resonant frequency of the resonant circuit in a manner so as to limit the amplitude of said ignition voltage.

5,550,439

ELECTRONIC BALLAST HAVING PULSATING OUTPUT VOLTAGE

Ole K. Nilssen, 602 Caeser Dr., Barrington, Ill. 60010

Continuation of Ser. No. 346,321, May 1, 1989, abandoned, which is a continuation of Ser. No. 686,275, Dec. 26, 1984, abandoned, which is a continuation-in-part of Ser. No. 677,562, Dec. 3, 1984, Pat. No. 4,698,553, and a continuation-in-part of Ser. No. 456,276, Feb. 22, 1983, Pat. No. 4,503,363.
This application Oct. 4, 1991, Ser. No. 772,547
Int. Cl.[6] H05B 37/00
U.S. Cl. 315—244 27 Claims



1. A ballast for a gas discharge lamp; the ballast being adapted to operate from a source of high-frequency AC voltage; the high-frequency AC voltage being provided by a frequency converter powered by the power line voltage provided by an ordinary electric utility power line; the ballast comprising:

an L-C circuit series-connected across the source; the L-C circuit being series-resonant at or near the frequency of the high-frequency AC voltage and having at least one inductive and one capacitive reactance means;

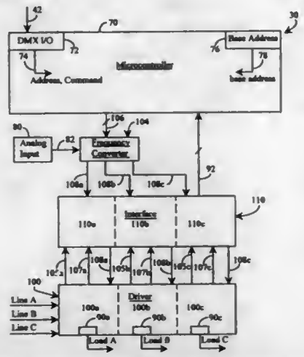
connect means operable to connect the lamp in parallel-circuit with one of said reactance means, thereby to provide for proper lamp starting and operating voltage; and

control means connected in circuit with the reactance means and operative, but only when there is no current flowing through the lamp, to cause a repetitive alternation between two states: (i) a first state characterized by the provision of an effective short circuit across one of said reactance means, and (ii) a second state characterized by not providing such a short circuit; the repetitive alternation occurring at a repetition frequency substantially lower than the fundamental frequency of the high-frequency AC voltage; the magnitude of any voltage present across one of said reactance means being substantially negligible throughout the duration of the first state.

5,550,440
SINUSOIDAL INDUCTORLESS DIMMER APPLYING VARIABLE FREQUENCY POWER SIGNAL IN RESPONSE TO USER COMMAND

Greg R. Allison, North Stonington, Conn.; James D. Christensen, Portland, and Thomas L. Folsom, Hillsboro, both of Oreg., assignors to Electronics Diversified, Inc., Hillsboro, Oreg.

Filed Nov. 16, 1994, Ser. No. 340,756
Int. Cl.[6] G05F *1/00*
U.S. Cl. 315—294 **10 Claims**



1. A control device responsive to a user command and applying a selected magnitude energy to a load, the control device comprising:

a control receiving said user command as a command value;

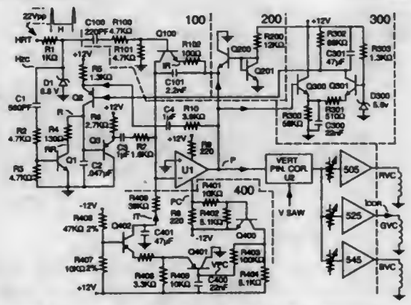
a gate signal generator receiving said command value and producing a gate signal maintained given at a frequency corresponding to said command value; and

a gating device receiving said gate signal and a sinusoidal power source whereby said gating device applies said selected magnitude energy to said load at said frequency, said frequency being at least greater than twice the frequency of said sinusoidal power source.

5,550,441
PARABOLIC CORRECTION SIGNAL AMPLITUDE CONTROL LOOP

John B. George, Carmel, Ind., assignor to Thomson Consumer Electronics Inc., Indianapolis, Ind.

Filed Dec. 8, 1994, Ser. No. 351,922
Claims priority, application United Kingdom, Mar. 24, 1994, 9405799
Int. Cl.[6] H01J *29/56*
U.S. Cl. 315—371 **13 Claims**



1. A deflection correction waveform generator comprising:

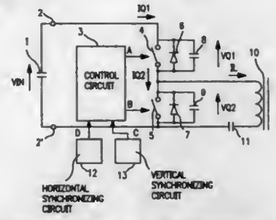
a horizontal frequency ramp signal generator coupled to an integrator for generating a parabolic shaped horizontal rate signal for correcting pincushion distortion; and,

an amplitude measuring means coupled to said parabolic shaped signal and generating a control signal output, said control signal being coupled to said ramp signal generator to control said parabolic shaped signal in amplitude to maintain a predetermined peak value.

5,550,442
HORIZONTAL DEFLECTION CIRCUIT

Toshinari Ueyama, and Nobuyoshi Nagagata, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 15, 1994, Ser. No. 356,889
Claims priority, application Japan, Dec. 16, 1993, 5-316352; Aug. 9, 1994, 6-187473
Int. Cl.[6] G09G *1/04;* H01J *29/70*
U.S. Cl. 315—371 **23 Claims**



1. A horizontal deflection circuit comprising:

a first series circuit of first and second switch means, the first series circuit connected to positive and negative terminals of a DC power source;

a second series circuit of a horizontal deflection coil and a first capacitor, the second series circuit connected across said first switch means;

control means for controlling closing and opening operations of said first and second switch means so that said first switch means and said second switch means each have an open time period and a closed time period, the control means further for varying (1) a ratio of the closed time period to the open time period, of the second switch means and (2) a ratio of the closed time period to the open time period, of the first switch means; to correct vertical line distortion; and

first and second diodes respectively connected across said first and second switch means;

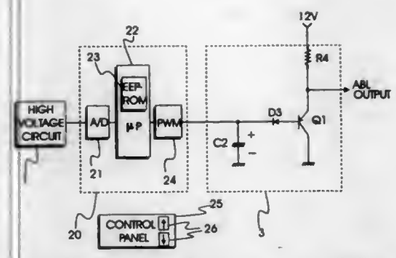
wherein said control means further controls said first and second switch means so that said first and second switch means are alternately closed and opened in synchronism with a horizontal synchronizing signal, and said control means further controls said first and second switch means so that the closed and open time periods of said first and second switch means are changed in synchronism with a vertical synchronizing signal and in response to a correction signal.

5,550,443
AUTOMATIC BEAM CURRENT CONTROL CIRCUIT FOR MULTIMODE MONITOR AND METHOD THEREOF

Ji-Young Lee, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Aug. 25, 1995, Ser. No. 519,280
Claims priority, application Rep. of Korea, Aug. 25, 1994, 21008/1994
Int. Cl.[6] H01J *29/52*
U.S. Cl. 315—383 **4 Claims**

1. A circuit for automatically controlling a beam current in a multimode monitor, said circuit comprising:



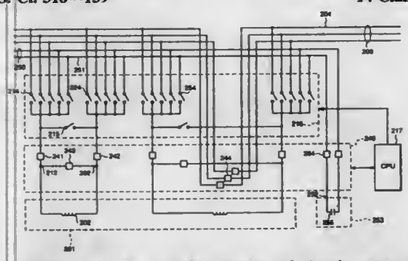
a high voltage circuit for providing an output voltage having a magnitude representative of a degree of luminance in a video signal applied to a cathode ray tube of said multimode monitor; and

a luminance data compensator for receiving said output voltage from said high voltage circuit, determining a mode of operation currently being employed by said multimode monitor, reading preset luminance data from a memory means, comparing said preset luminance data with present luminance data represented by said output voltage, generating compensated luminance data by adjusting said present luminance data to equal said preset luminance data, and outputting said compensated luminance data to control said beam current.

5,550,444
DEVICE AND PROCESS FOR THE REVERSIBLE STORAGE OF ELECTRIC ENERGY BY ITS REVERSIBLE CONVERSION TO KINETIC ENERGY

Mathias Zeller, Lengnau, Switzerland, assignor to Twix Equipment AG, Zurich, Switzerland

PCT No. PCT/CH93/00274, § 371 Date Aug. 23, 1994, § 102(e) Date Aug. 23, 1994, PCT Pub. No. WO94/14219, PCT Pub. Date Jun. 23, 1994
PCT Filed Dec. 7, 1993, Ser. No. 256,673
Claims priority, application Switzerland, Dec. 10, 1992, 03784/92
Int. Cl.[6] H02J *3/30;* H02P *6/00*
U.S. Cl. 318—139 **14 Claims**



1. A device for the reversible storage of electric energy by reversible conversion of the electric energy into kinetic energy in an electric motor, the electric energy being drawn from an a.c. power supply of predetermined frequency and fed back into the a.c. power supply, comprising:

a brushless, electronically commutated pancake electric motor with permanent magnets arranged on a rotor thereof and coreless windings arranged on a stator thereof,

each of said windings being provided with a pair of terminals, which are respectively connectable, each via a respective controllable switch, to at least one phase conductor of the a.c. power supply,

devices for repeated sampling of an instantaneous voltage at one phase conductor each with respect to a neutral conductor or another phase conductor of the a.c. power supply,

devices for repeated sampling of an instantaneous voltage between the terminals of at least one said pair of terminals,

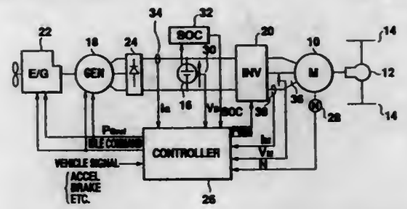
devices for repeated sampling of an instantaneous current in each winding, and

a device for comparing the sampled instantaneous voltages or currents with one another and with corresponding thresbold values and for controlling said switches in dependence on the instantaneous result of the comparisons.

5,550,445
GENERATOR CONTROLLER AND CONTROLLING METHOD FOR HYBRID VEHICLE

Yoshihide Nii, Fuji, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Sep. 8, 1994, Ser. No. 302,412
Claims priority, application Japan, Sep. 24, 1993, 5-237547
Int. Cl.[6] H02D *5/20;* B60K *1/00*
U.S. Cl. 318—153 **16 Claims**



1. A generator controller for controlling an operation of a generator mounted on a hybrid vehicle, said hybrid vehicle including a battery for supplying electric power to a motor, the generator for supplying electric power to the motor and the battery, and an engine for driving the generator, comprising:

means for detecting a heavy load state in which a battery charge state is reduced to less than a predetermined value;

means for carrying out an increase control of an output of the generator and for limiting an output of the motor so that, when the heavy load state is detected, the generator output is used, for a certain period, to charge the battery, and

means for either stopping or avoiding the increase control of the generator output and the output limitation of the motor when at least heavy load state is not detected.

5,550,446
DUAL SLEW RATE CIRCUIT FOR DRIVER TRANSISTORS IN DISK DRIVES

Karl M. Schlager, Campbell, and Li-Hsin D. Lu, San Jose, both of Calif., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

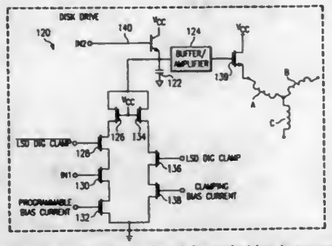
Filed Sep. 30, 1994, Ser. No. 316,891
Int. Cl.[6] H02P *7/00*
U.S. Cl. 318—439 **10 Claims**

1. A circuit for driving a winding of a direct current motor comprising:

a transistor having a current path connected between a drive voltage and said winding, for selectively conducting current through the winding, and having a control terminal;

a buffer amplifier having an input for receiving a commutation signal and having an output connected to the control terminal of said transistor; and

a dual slew rate control circuit having an output connected to the input of said buffer amplifier for controlling the slew rate of said transistor, wherein said dual rate control circuit has a first slew rate and a second slew rate, and has an input for



receiving a digital clamp signal for switching between the first and the second slew rates responsive to the digital clamp signal.

5,550,447

PULSE GENERATING SYSTEM RESPONDING TO INSTRUCTION PULSES FOR GENERATING DRIVING PULSES FOR DIVING MOTOR

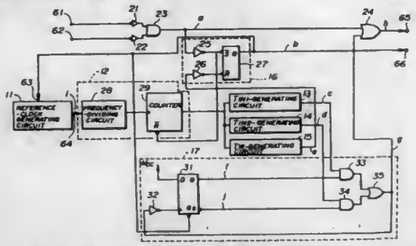
Naoki Sugeta, and Hiroshi Tsuyuguchi, both of Musashino, Japan, assignors to TEAC Corporation, Japan

Filed Dec. 2, 1994, Ser. No. 349,500

Claims priority, application Japan, Dec. 7, 1993, 5-065267 U

Int. Cl.[6] H02P *7/00*

U.S. Cl. 318—439 **5 Claims**



1. A pulse generating system comprising:

reference-clock generating means responding to a series of instruction pulses being received from outside and thus generating a series of reference clock pulses;

said reference-clock generating means has a starting delay time since said reference-clock pulse generating means has received a first pulse of said series of instruction pulses, which time is required for said reference clock generating means to enter a state in which said reference-clock generating means generates an effective one of said series of reference clock pulses;

pulse generating means responding to said series of instruction pulses being received and thus generating a series of driving pulses, said series of driving pulses being used to drive a motor which is operated in response to said series of driving pulses being provided;

said series of driving pulses comprising alternately occurring first driving pulses and second driving pulses;

said pulse generating means generating said first driving pulses directly in response to said series of instruction pulses;

said pulse generating means measuring a predetermined delay time using said series of reference clock pulses after said starting delay time has elapsed since said pulse generating means received said first pulse of said series of instruction pulses, and said pulse generating means generating said second driving pulses after the thus measured predetermined delay time has elapsed;

and wherein:

said motor requires, when the rotation of said motor is started, an initial exciting period between a first one of said first driving pulses and a first one of said second driving pulses of said series of driving pulses;

said motor requires, after said first one of said first driving pulses and said first one of said second driving pulses have driven said motor, a steady-state exciting period between each two adjacent pulses of said series of driving pulses;

said predetermined delay time is longer than said initial exciting period;

a time span between each two adjacent pulses of said series of instruction pulses is longer than a predetermined minimum instruction pulse period;

said starting delay time is shorter than a time period obtained as a result of subtracting said steady-state exiting period and said predetermined delay time from said predetermined minimum instruction pulse period.

5,550,448

METHOD AND APPARATUS FOR CONTROLLING THE MOVEMENT OF A TOOL

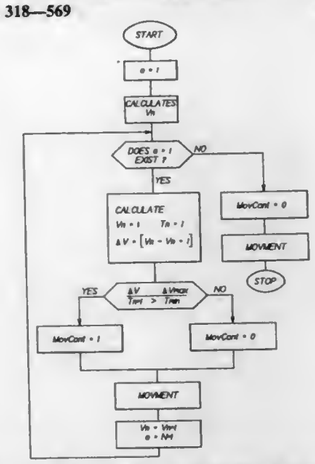
Rosario Ferragina, Lipomo, Italy, assignor to Black & Decker Inc., Newark, Del.

Filed Jul. 20, 1994, Ser. No. 277,462

Claims priority, application Italy, Jul. 20, 1993, M193A1597

Int. Cl.[6] G05B *19/416*

U.S. Cl. 318—569 **20 Claims**



1. A method of controlling stepper motors for moving a tool along a pre-established plurality of sequential path segments, comprising the steps of:

calculating first parameters representing the period of the pulse to be imparted to the stepper motors to travel at a pre-established nominal speed along a first segment of a sequential pair of path segments;

calculating second parameters representing the period of the pulse to be imparted to the stepper motors to travel at a pre-established nominal speed along a second segment of the sequential path segments;

calculating an absolute value of the difference between said first and second parameters;

comparing said absolute value of the difference with a pre-established maximum value;

wherein said pre-established maximum value represents the maximum permissible change of speed in the stepper motors;

such that, if said absolute value of the difference is less than said pre-established maximum value, commanding the stepper motors to travel along said first segment at the nominal speed

pre-established for said first segment and then, from the point of transition between said two segments, commanding the stepper motors to travel along the second segment at the nominal speed pre-established for said second segment; and

such that, if said absolute value of the difference is greater than said pre-established maximum value, commanding the stepper motors to travel along said first segment at said nominal speed pre-established for said first segment, slowing down the speed of the stepper motors close to the end of said first segment to a pre-established minimum speed, reaching the point of transition between said first and second segments at said minimum speed and then accelerating the stepper motors to travel along said second segment at said nominal speed preestablished for said second segment.

11. An apparatus for controlling stepper motors for moving a tool along a pre-established plurality of sequential path segments, comprising:

calculating means for calculating first parameters representing the period of the pulse to be imparted to the stepper motors to travel at a pre-established nominal speed along a first segment of a sequential pair of path segments;

calculating means for calculating second parameters representing the period of the pulse to be imparted to the stepper motors to travel at a pre-established nominal speed along a second segment of the sequential path segments;

calculating means for calculating an absolute value of the difference between said first and second parameters;

comparing means for comparing said absolute value of the difference with a pre-established maximum value;

wherein said pre-established maximum value represents the maximum permissible change of speed in the stepper motors;

such that, if said absolute value of the difference is less than said pre-established maximum value, said comparing means commanding the stepper motors to travel along said first segment at the nominal speed pre-established for said first segment and then, from the point of transition between said two segments, commanding the stepper motors to travel along the second segment at the nominal speed pre-established for said second segment; and

such that, if said absolute value of the difference is greater than said pre-established maximum value, said comparing means commanding the stepper motors to travel along said first segment at said nominal speed pre-established for said first segment, slowing down the speed of the stepper motors close to the end of said first segment to a pre-established minimum speed, reaching the point of transition between said first and second segments at said minimum speed and then accelerating the stepper motors to travel along said second segment at said nominal speed pre-established for said second segment.

5,550,449

PROCESS FOR DRIVING ELECTRIC, CURRENT-CONTROLLED ACTUATORS

Hans-Jürgen Ege, Ravensburg; Günther Horsak, Friedrichshafen, and Peter Wiggermann, Langenargen, all of, Germany, assignors to ZF Friedrichshafen AG, Friedrichshafen, Germany

Filed Feb. 17, 1995, Ser. No. 341,601

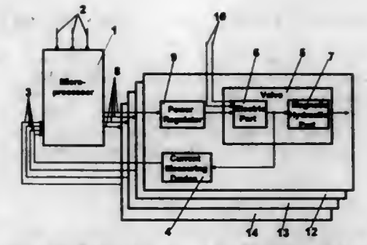
Claims priority, application Germany, Jun. 6, 1992, 42 18 782.6

Int. Cl.[6] G05D *23/275*

U.S. Cl. 318—632 **2 Claims**

1. A process for driving electric current-controlled actuators (5) using a microprocessor (1) having at least one memory for storing data, performance characteristics and flow programs relevant to said process; said process comprising the steps of:

inputting at least one of an adjusting signal (2) and a current signal (3) to said microprocessor (1) to be processed according to logical rules;



issuing modulated set values for said actuators, during intermediate time periods between sequential inputs of said adjusting signals to said microprocessor (1) in accordance with a modulation program, said modulated set values being below a response level for said actuators;

measuring current intensities of said actuators (5), from said current signal input to said microprocessor, to determine interference levels;

determining, using said modulation program, compensation values due to current changes caused by said interference levels;

storing said compensation values temporarily in said at least one memory; and

issuing set values for said actuators upon inputting a further said adjusting signal to said microprocessor, said set values being adjusted by a last of said stored compensation values.

5,550,450

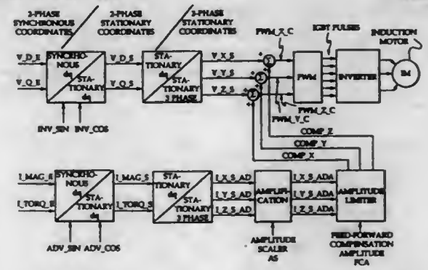
DEAD-TIME EFFECT COMPENSATION FOR PULSE-WIDTH MODULATED INVERTERS AND CONVERTERS

Joseph Palko, Southington, and Robert R. Zeranski, Meriden, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Apr. 28, 1993, Ser. No. 53,773

Int. Cl.[6] H02P *5/40*

U.S. Cl. 318—800 **17 Claims**



1. A method for compensating for a dead-time voltage disturbance, comprising:

providing a pulse width modulation (PWM) reference;

providing a feed-forward compensation signal wherein a polarity change of said feed-forward compensation signal is synchronized with a polarity change of an advanced load current reference which is advanced in time with respect to a load current reference;

adding said feed-forward compensation signal to said PWM reference.

5,550,451
MICROCOMPUTER WITH BUILT-IN MOTOR CONTROL CIRCUIT

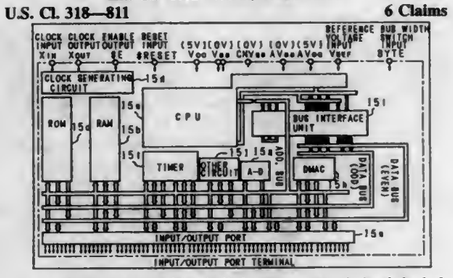
Mitsuhiro Itoh, and Hideo Matsui, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 337,417, Nov. 8, 1994, abandoned, which is a continuation of Ser. No. 58,062, May 10, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 475,478

Claims priority, application Japan, May 18, 1992, 4-124567

Int. Cl.[6] H02P *7/628;* **G06F** *15/78*

U.S. Cl. 318—811 **6 Claims**



1. A microcomputer with a built-in motor control circuit including, a central processing unit and clock generating means for generating a clock signal, and converting a pulse width modulation output generated responsive to one of (i) an analog signal given from the outside, (ii) a digital signal given from the outside, and (iii) processing of a stored program, into an inverter output waveform to generate a three-phase signal for controlling a three-phase inverter motor, comprising:

a pulse width modulation output generating circuit having three three-phase inverter waveform generating timers which generate output pulses on the bases of a rising edge pulse which is in synchronism with the clock signal, and a start level setting circuit which automatically inverts start levels of said three-phase inverter waveform generating timers at elapse of each period, or sets them according to a preset pattern; and

a timer data setting circuit having two registers for setting time count values of said three-phase inverter waveform generating timers, and setting set values of the registers alternately in said three-phase inverter waveform generating timers.

5,550,452
INDUCTION CHARGING APPARATUS

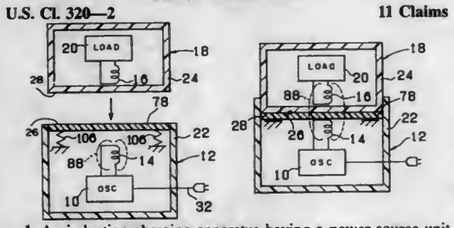
Ichiro Shirai; Hitoshi Yamagami, both of Kyoto; Eiichi Hiroshige, and Koichi Kubo, both of Fukuoka-ken, all of, Japan, assignors to Nintendo Co., Ltd., Kyoto, and Kyushu Hitachi Maxell, Ltd., Fukuoka-ken, both of, Japan

Filed Jul. 22, 1994, Ser. No. 279,004

Claims priority, application Japan, Jul. 26, 1993, 5-204581

Int. Cl.[6] H01M *10/46*

U.S. Cl. 320—2 **11 Claims**



1. An induction charging apparatus having a power source unit and a device unit detachable from said power source unit, said induction charging apparatus comprising:

said power source unit comprising:

a first casing having one end opened;

a primary coil provided in said first casing;

oscillator means provided in said first casing for supplying an alternating current powered by a commercial alternating current power source to said primary coil to generate magnetic fluxes; and

a depressible member movably provided and closing said open end of said first casing, said depressible member movable between a lift position at which said magnetic fluxes are substantially located under said depressible member and inside said first casing, and a depressed position at which portions of said magnetic fluxes are substantially located over said depressible member and outside said first casing;

said device unit comprising:

a second casing having one end detachable to said open end of said first casing;

a secondary coil provided in said second casing and adjacent to said one end; and

load means provided in said second casing for receiving power from said secondary coil, whereby when said second casing is attached to said first casing with said depressible member being moved to said depressed position, said primary and secondary coils are coupled to link said magnetic fluxes from said primary coil to said secondary coil, and when said second casing is detached, said depressible member is moved to said lift position to prevent the leakage of said magnetic fluxes.

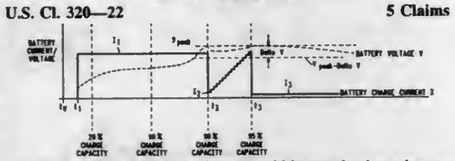
5,550,453
BATTERY CHARGING METHOD AND APPARATUS

William C. Bohne, Elgin, and Eric A. Bergquist, Hinsdale, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 24, 1994, Ser. No. 185,344

Int. Cl.[6] H01M *10/44*

U.S. Cl. 320—22 **5 Claims**



1. A method of charging a battery, said battery having a battery voltage, said method comprising the steps of:

providing an initial battery charge current to said battery;

measuring a rate of temperature rise of said battery;

measuring said battery voltage when said rate of temperature rise reaches a predetermined level to obtain a V_{peak} level;

after measuring said battery voltage, reducing said battery charge current substantially below that of said step of providing; and

increasing said battery charge current after said step of reducing according to a predetermined staircase waveform until said battery voltage reaches said V_{peak} level.

5,550,454
CHARGING REGIME FOR SECONDARY LITHIUM BATTERIES

James P. Buckley, 21063 Red Fir Ct., Cupertino, Calif. 95014

Filed Feb. 2, 1994, Ser. No. 190,762

Int. Cl.[6] H01M *10/44*

U.S. Cl. 320—22 **24 Claims**

12. A method for extending the cycle life of a rapidly charged solid lithium secondary electrochemical cell or battery to its initial charge capacity over many cycles wherein said electrochemical cell comprises;

a lithium anode;

a compatible cathode; and

a solid polymeric electrolyte interposed between said anode and said cathode, said electrolyte comprising an inorganic ion salt, a compatible electrolyte solvent and a solid polymeric matrix wherein the method comprises the steps of:

applying an initial current to the cell or battery; and

increasing the current that is applied, wherein the so charged cell or battery has a life cycle that is substantially equal to η_0 wherein said electrochemical cell or battery has an active surface area S and had an initial charge capacity Q_0 that was established by charging said electrochemical cell or battery at a constant current I_0 over a time T_0, and had a cycle life of η_0; such that $Q0=SI_0T_0$; and wherein the method further comprises rapidly charging said secondary cell or battery to achieve a cycle life of about η_0, by the use of several charging currents I_k, each applied for a time period $T_k<T_0$, such that

$$Q_0 = S \sum_{k=1}^{m} I_k T_k$$

where k is an integer from 1 to m representing the time serial order of charging steps in a charging half cycle and m is an integer greater than one representing the total number of charging steps in one charging half cycle.

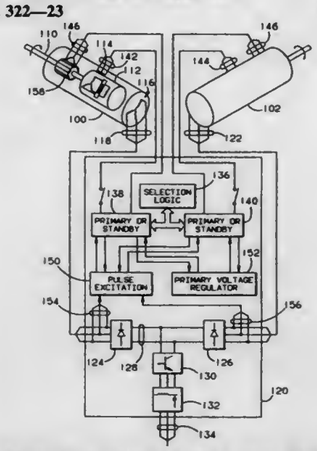
5,550,455
STANDBY GENERATOR PULSE EXCITATION SYSTEM AND ELECTRIC POWER GENERATING SYSTEM FOR USE THEREIN

Roy S. Baker, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Oct. 26, 1994, Ser. No. 329,745

Int. Cl.[6] H02P *9/00*

U.S. Cl. 322—23 **13 Claims**



1. A back-up electric power generating system, comprising:

a first variable speed synchronous generator drivably coupled to a first prime mover, said first generator having an exciter field, a rotor, and a poly-phase wound stator forming a first output, said first generator producing a voltage signal on said first output in response to a current signal applied to said exciter field;

a second variable speed synchronous generator drivably coupled to a second prime mover, said second generator having an exciter field, a rotor, and a poly-phase wound stator forming a second output, said second generator producing a voltage signal on said second output in response to a current signal applied to said exciter field;

a converter having a first and a second input coupled to said first and said second generators respectively, and an output;

logic means in controlling communication with said converter for designating one of said first or said second generators as a primary power source and one of said first or said second generators as a standby power source, exclusively;

means selectably coupled to said exciter field of said primary power source and in controlled communication with said logic means for regulating output voltage of said primary power source, said regulating means generating a controlled current signal to maintain said output voltage at a given level thereby;

means selectably coupled to said exciter field of said standby power source and in controlled communication with said logic means for verifying the operational readiness of said standby power source, said verifying means generating a current pulse signal to said exciter field of said standby power source and monitoring said output voltage generated thereby; and wherein

said converter produces a constant frequency voltage on said converter output in response to a voltage signal from said primary power source.

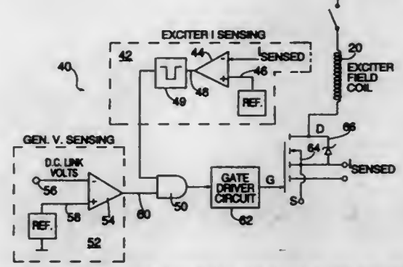
5,550,456
VOLTAGE/CURRENT CONTROLLED VOLTAGE REGULATOR TO ELMININATE EXCITER FIELD SATURATION

Sampat Shekhawat, Tinton Falls; Eli Liebermann, Ocean; William M. Scherzinger; Gayton L. Silvestro, both of Brick; Nick Suttora, Fairview, all of N.J., and David Hodge, Reading, England, assignors to AlliedSignal Inc., Morris Township, N.J.

Filed Jul. 27, 1994, Ser. No. 281,387

Int. Cl.[6] H02P *9/00*

U.S. Cl. 322—25 **8 Claims**



1. An aircraft electrical generating system producing an output potential comprising:

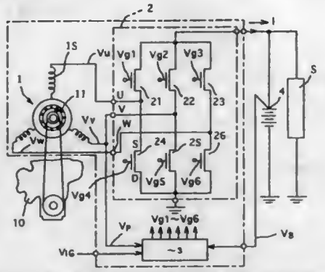
(a) an excitation generator which is rotatably driven having a rotor from which a variable current is output;

(b) a wound rotor synchronous generator which is rotatably driven having a rotor that accepts said variable current output and a stator from which current at the output potential is generated in response to said current output; and

(c) a voltage regulator for controlling said current output comprising an excitation generator field current regulating circuit comprising an output potential sensing circuit in logic cooperation with a field current sensing circuit wherein said output potential sensing circuit regulates said output current at aircraft steady state engine speeds and said field current sensing circuit regulates said output current at low aircraft engine speeds.

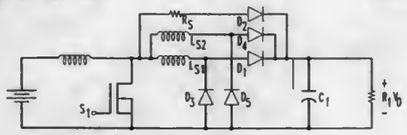
VOL 1189 ISS 4 AG 27 1996 UMI

5,550,457
ELECTRIC POWER GENERATING DEVICE FOR VEHICLES
Shin Kusase; Kenzo Mitani, both of Obu; Atsushi Umeda, Anjo, and Hirohide Sato, Toyokawa, all of, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Jan. 30, 1995, Ser. No. 380,821
Claims priority, application Japan, Jan. 31, 1994, 6-009699; Aug. 9, 1994, 6-187307; Aug. 9, 1994, 6-187321
Int. Cl.[6] H02P *9/46*
U.S. Cl. 322—29 **18 Claims**



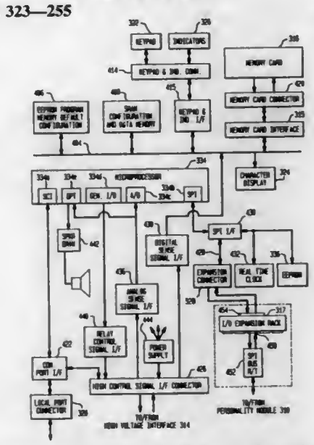
1. An electric power generating device for vehicles comprising:
an induction type electric rotating machine including an armature wound with an armature winding and a rotor working with an engine;
an electric power storing device charged by the electric power generating output from said armature winding;
an inverter connected at the alternating current side to an end of said armature windiog and at the direct current side to said electric power storing device for exciting said armature winding by the output of said electric power storing device and supplying said electric power storing device with the electric power generating output of said armature winding;
a detecting means for detecting the quantity of state related to the electric power generating voltage of said induction type electric rotating machine excluding the actually measured revolution number of said induction type electric rotating machine but including the electric power storing voltage of said electric power storing device; and
an electric power generation controlling device for maintaining said electric power storing voltage within the preset range by controlling the frequency of the controlling voltage of said inverter based on the quantity of state related to said electric power generating voltage.

5,550,458
LOW-LOSS SNUBBER FOR A POWER FACTOR CORRECTED BOOST CONVERTER
Richard W. Farrington, Mesquite, and William P. Gardiner, Dallas, both of Tex., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed May 31, 1994, Ser. No. 251,163
Int. Cl.[6] G05F *1/56*
U.S. Cl. 323—222 **9 Claims**



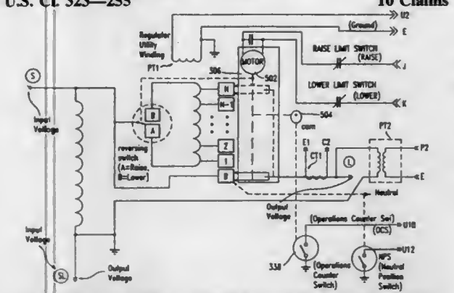
1. A boost converter, comprising:
an input and output;
a boost inductor connected to the input for storing energy;
an active power switch connected to draw current from the boost inductor when conducting;
a boost diode connected for conducting energy from the boost inductor to the output during non-conduction of the active power switch;
a second inductor connected to the boost diode to minimize its turn off losses;
a series connection of a finite resistor and a second diode connected in shunt with the second inductor/boost diode connection; and
a third diode connected to a junction of the second inductor and the boost diode for limiting ringing across the boost diode during conduction of the active power switch.

5,550,459
TAP POSITION DETERNINATION BASED ON REGULAR IMPEDANCE CHARACTERISTICS
Carl J. Laplace, Raleigh, N.C., assignor to Siemens Energy & Automation, Inc., Alpharetta, Ga.
Filed Aug. 8, 1994, Ser. No. 287,438
Int. Cl.[6] G06F *15/56*
U.S. Cl. 323—255 **20 Claims**



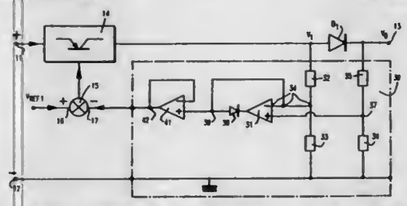
1. A voltage regulator controller for use with a multi-tap voltage regulator transformer capable of producing an output voltage from an input voltage and having a plurality of tap positions for adjusting the output voltage in discrete tap position steps, comprising:
at least one sensor for generating a first scaled signal indicative of the load current of the multi-tap transformer;
a plurality of scaling transformers for generating a second scaled signal indicative of the input voltage and a third scaled signal indicative of the output voltage of the multi-tap transformer;
a random access memory having a look-up table formed thereon, the look up table including a cross reference between first data indicative of regular type and second data indicative of inherent electrical parameters of the multi-tap transformer and having program code for determining a position of the tap from the load current, the input voltage, the output voltage and the electrical parameters provided by the look up table; and,
a microprocessor coupled to the random access memory, the at least one sensor and the plurality of scaling transformers for determining the tap position responsive to execution of the program code.

5,550,460
VOLTAGE REGULATOR CONTROL SYSTEM WITH MULTIPLE CONTROL PROGRAMS
Michael Bellin, Brandon, Mich.; Carl J. Laplace, Raleigh, and Jack Trainor, Wake Forest, both of N.C., assignors to Siemens Energy & Automation, Inc., Alpharetta, Ga.
Filed Sep. 29, 1994, Ser. No. 314,984
Int. Cl.[6] G05F *1/14*
U.S. Cl. 323—255 **10 Claims**



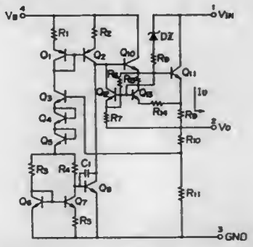
1. A voltage regulator controller for use with a multi-tap voltage regulator transformer having a plurality of tap positions for adjusting an output voltage in discrete tap position steps, comprising:
a memory having a tap movement control code stored therein for controlling the tap positions in accordance with a plurality of tap position control algorithms which control the positioning of the tap;
an operator interface for receiving configuration parameters from an operator; and,
selection controls, connected to receive the configuration parameters and connected to monitor operating conditions of the voltage regulator, for selecting one of the tap position control algorithms as being active as a function of the configuration parameters and the operating conditions.

5,550,461
SYSTEM FOR OPERATING A PLURALITY OF POWER SUPPLY MODULES IN PARALLEL
Gérard Pouzoullic, Gif Sur Yvette, France, assignor to Lucent Technologies Inc., Murray Hill, N.J.
Filed Nov. 23, 1993, Ser. No. 156,490
Claims priority, application France, Nov. 25, 1992, 9214189
Int. Cl.[6] G06F *1/614*
U.S. Cl. 323—269 **12 Claims**



1. A system, comprising at least two power supply modules which together feed a load with a DC supply voltage V_o, are connected in a redundant configuration, and are each coupled to the load via a respective blocking diode whose cathode carries the voltage V_o, each module comprising a feedback loop for its output voltage, which loop includes a voltage controller and a comparator whose positive input receives a respective reference voltage, each module also comprising, in order to realise said feedback, two output voltage terminals, one of which is provided on the anode and the other on the cathode of its respective blocking diode, which system is characterized in that the two output voltage terminals of each power supply module are connected to inputs of an output voltage selection means suitable to supply a predetermined fraction (k) of the cathode voltage of its respective blocking diode when its respective blocking diode is in the conductive state, and the predetermined fraction (k) of the anode voltage of its respective blocking diode when its respective blocking diode is blocked.

5,550,462
REGULATED POWER SUPPLY CIRCUIT AND AN EMITTER FOLLOWER OUTPUT CURRENT LIMITING CIRCUIT
Akio Nakajima, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jun. 27, 1994, Ser. No. 266,182
Claims priority, application Japan, Jun. 29, 1993, 5-186674; Aug. 3, 1993, 5-192182; Oct. 25, 1993, 5-266521
Int. Cl.[6] G05F *1/573*
U.S. Cl. 323—277 **5 Claims**

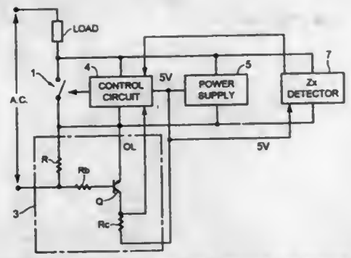


1. A regulated power supply circuit comprising:
a series regulating transistor disposed between input and output terminals with the collector and emitter connected to the input and output terminals, respectively;
a reference voltage generating circuit for generating a reference voltage based on a bias voltage that is separately input;
an output voltage detecting circuit for detecting an output-proportional voltage that is proportional to an output terminal voltage;
an error amplifying circuit for controlling the base current of said series regulating transistor on the basis of the detected output-proportional voltage and the reference voltage;
a drop voltage detecting circuit for detecting a voltage between the input and output terminal; and
a current limiting circuit for detecting the emitter current of the series regulating transistor and for limiting the base current of the series regulating transistor in response to the resultant detection of the emitter current and the resultant detection of the drop voltage,
said current limiting circuit comprising a pair of transistors which are connected at their bases with one another and each of emitter of said pair transistor being connected to the output terminal through a respective resistor.

5,550,463
POWER SUPPLY CONNECTED IN PARALLEL WITH SOLID SWITCH FOR PHASE CONTROL OF AVERAGE POWER TO A LOAD
Michael Coveley, Suite 101, #16 Passy Crescent, York University, North York Ontario, Canada
Continuation-in-part of Ser. No. 267,220, Jul. 1, 1994, abandoned, which is a continuation of Ser. No. 063,658, May 20, 1993, abandoned. This application Dec. 15, 1994, Ser. No. 356,501
Int. Cl.[6] G05F *5/02*
U.S. Cl. 323—300 **18 Claims**

1. A circuit for controlling average power applied to a load from a source of alternating supply voltage, comprising:

VOL 1189 ISS 4 AG 27 1996 UMI



(a) a solid state switch connected in series with said load across said source of alternating supply voltage;

(b) a zero crossing detector connected in parallel with said solid state switch for receiving said alternating supply voltage and in response generating an output signal indicative of each zero crossing of said alternating supply voltage, said zero crossing detector including a positive feedback loop to maintain generally the magnitude of said output signal for its duration;

(c) a control circuit connected in parallel with said solid state switch for receiving said output signal from said zero crossing detector and in response generating and applying a gating signal to said solid state switch whereby said solid state switch is caused to conduct current after a predetermined delay time following each said zero crossing of said alternating supply voltage; and

(d) a power supply connected in parallel with said solid state switch for receiving charging current from said source of alternating supply voltage when said solid state switch is not conducting current, and in response generating a regulated DC output voltage for application to said control circuit and said zero crossing detector.

5,550,464

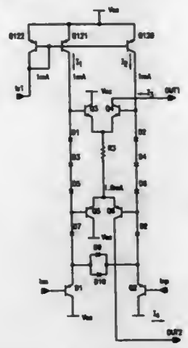
CURRENT SWITCH WITH BUILT-IN CURRENT SOURCE

Perry S. Lorenz, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Del.

Filed Mar. 15, 1994, Ser. No. 213,911

Int. Cl.[6] G05F *3/26*

U.S. Cl. 323—315 **6 Claims**



1. A current switch that receives a differential voltage, the differential voltage having one of first and second polarities, and provides an output current at a first output if the differential voltage has the first polarity and provides the output current at a second output if the differential voltage has the second polarity, comprising:

an input stage that receives the differential voltage;

a first switch coupled to the input stage;

a second switch coupled to the input stage;

a resistor coupled between said first and second switches; and

means for maintaining a voltage differential across the resistor, the voltage differential inducing a current in the resistor

wherein the first switch provides the induced current, as the output current, to the first output responsive to the differential voltage having the first polarity and the second switch provides the current to the second output, as the output current, responsive to the differential voltage having the second polarity.

5,550,465

DRIVING APPARATUS FOR CROSS-COIL TYPE ANALOG INDICATING INSTRUMENT

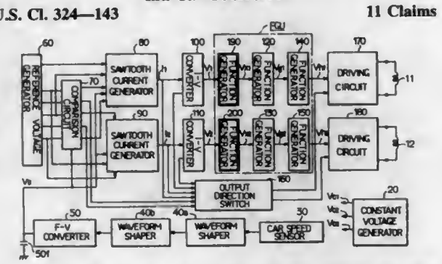
Tomohisa Yamamoto, Hoi-gun; Junji Hayakawa, Okazaki, and Hiroyuki Ban, Hazu-gun, all of, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 16, 1995, Ser. No. 442,340

Claims priority, application Japan, May 23, 1994, 6-108187

Int. Cl.[6] G01R *5/16*

U.S. Cl. 324—143 **11 Claims**



1. A driving apparatus for a cross-coil type analog indicating instrument including a pair of coils arranged in quadrature for generating magnetic fields in response to inflow currents thereto, a magnet and a pointer rotating in response to a composite magnetic force of said coils, said indicating instrument comprising:

a sensor for generating an electric signal representing a physical quantity to be indicated;

signal converting means for converting said electric signal into first and second triangular voltage wave signals;

current supplying means connected to said signal converting means for generating an approximated sine wave current and an approximated cosine wave current based on said first and second triangular wave voltage signals to supply said pair of coils; and

zero-cross-point compensating means connected to said signal converting means for adjusting deflecting points of said triangular wave voltage signals to zero volts.

5,550,466

HINGED CONDUIT FOR ROUTING CABLES IN AN ELECTRONIC CIRCUIT TESTER

Julius K. Botka, Santa Rosa, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 30, 1994, Ser. No. 315,641

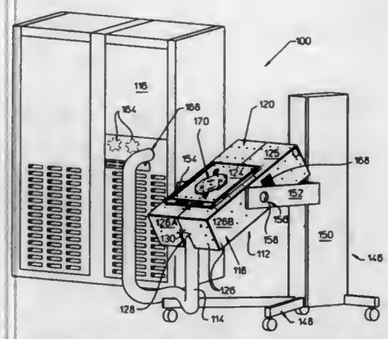
Int. Cl.[6] G01R *31/00*

U.S. Cl. 324—158.1 **23 Claims**

1. A test head for an electronic circuit tester, comprising:

a housing, the housing comprising a chassis for mounting circuitry for connection to an external load board, the chassis including a first portion and a sidewall portion integral with the first portion and depending away from the first portion, the sidewall portion comprising a relieved region;

a bracket selectively mounted in the relieved region of the sidewall portion of the chassis, the bracket comprising first and second legs disposed at a distance from one another, the first and second legs each being provided with a hole to provide a bearing surface for pivotable movement;



a fitting comprising first and second arms extending outwardly from an integral transversely depending conduit portion, each of the first and second arms being captured in the respective holes of the first and second legs of the bracket when the bracket is mounted to the chassis; and

a conduit selectively connected to the conduit portion of the fitting for routing cables connected to the circuitry connected to the load board to an external location.

5,550,467

SENSOR INCLUDING A FOLLOWER FOR ENGAGING THE ROTATING PORTION OF A BEARING AND HAVING A SLIDING LAYER APPLIED TO THE HOUSING AND ENCODER RING

Andre F. L. Goossens, Rumst, Belgium, assignor to ITT Automotive Europe GmbH, Germany

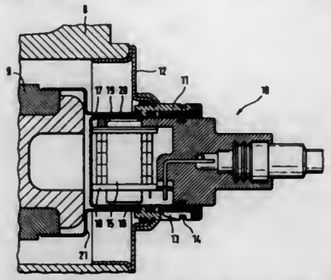
PCT No. PCT/EP93/00846, § 371 Date Oct. 28, 1994, § 102(e) Date Oct. 28, 1994, PCT Pub. No. WO93/22687, PCT Pub. Date Nov. 1, 1993

PCT Filed Apr. 6, 1993, Ser. No. 325,465

Claims priority, application Germany, Apr. 29, 1992, 42 13 979.1

Int. Cl.[6] G01P *3/48;* **G01B** *7/14;* **F16C** *41/04*

U.S. Cl. 324—173 **2 Claims**



1. A device for the measurement of rotation and for generation of an electric alternating signal representative of the rotation, comprising:

a part performing the rotation about a first axis;

a stationary transducer accommodated in a housing and arranged around said first axis, said housing having a peripheral surface; and

a signal generator ring rotating jointly with said part and including a portion with an inner surface, said portion being rotatably supported around said housing of said transducer and coupled to said part performing the rotation by means of at least one of a follower and a snug fit;

said housing of said transducer at least in part being of cylindrical design, said housing peripheral surface and said signal generator ring portion inner surface abutting thereon being coated with a sliding layer.

5,550,468

METHOD AND APPARATUS FOR ADJUSTING THE OPERATING DIAMETER OF A PROBE IN A ROTATING TESTING HEAD

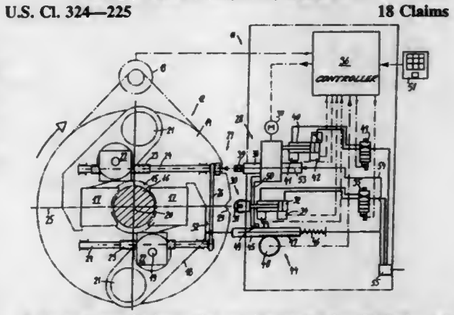
Peter Häberlein, and Hans Link, both of Reutlingen, Germany, assignors to Institut Dr. Friedrich Forster Prufgerateban GmbH & Co. KG, Reutlingen, Germany

Filed Mar. 23, 1994, Ser. No. 216,681

Claims priority, application Germany, Apr. 30, 1993, 43 14 274.5

Int. Cl.[6] G01N *37/00;27/72;* **G01R** *33/12*

U.S. Cl. 324—225 **18 Claims**



1. An apparatus for inspecting an elongate product for faults and defects, and comprising

a testing head which is mounted for rotation about a predetermined axis,

drive means for rotating the testing head about said predetermined axis,

at least one testing probe,

means mounting said one testing probe to said testing head so as to permit adjustment of the operating diameter of said one testing probe, said mounting means including first coupling means,

an external adjustment drive positioned adjacent the testing head, the external adjustment drive having second coupling means,

indexing means for stopping and holding the testing head in a predetermined circumferential position, in which the first and second coupling means are juxtaposed to each other,

coupling drive means for operationally coupling said first and second coupling means when said testing head is in said predetermined circumferential position,

whereby said external adjustment drive is operationally connected to said diameter adjustment means for adjusting the operating diameter of said at least one probe.

5,550,469

HALL-EFFECT DEVICE DRIVER WITH TEMPERATURE-DEPENDENT SENSITIVITY COMPENSATION

Toru Tanabe; Kazuhide Seki, Both of Yokohama, and Masaaki Hatsumi, Sagamihara, all of, Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Mar. 11, 1994, Ser. No. 208,859

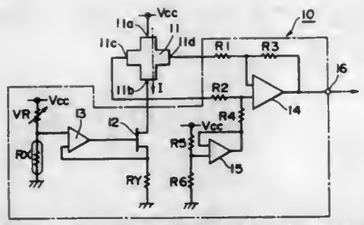
Claims priority, application Japan, Apr. 2, 1993, 5-077153

Int. Cl.[6] G01R *33/06;* **G01U** *3/18;* **H01L** *43/06*

U.S. Cl. 324—251 **12 Claims**

1. A Hall-effect device driver comprising:

a semiconductor having an internal resistance connected in series to one of a pair of voltage-applying terminals of a Hall-effect device which has a positive or negative tempera-



ture characteristic of sensitivity, said internal resistance being variable depending on an input voltage applied thereto;

a temperature-dependent variable resistor having a temperature characteristic of resistance which is opposite to said positive or negative temperature characteristic of sensitivity of said Hall-effect device;

voltage converting means for converting a change in the resistance of said temperature-dependent variable resistor into a voltage change and applying said voltage change as the input voltage to said semiconductor device for correcting said positive or negative temperature characteristic of sensitivity of said Hall-effect device, said voltage converting means comprising an operational amplifier;

a resistor connected to limit a drive current flowing through the Hall-effect device; and

a variable resistor connected to said temperature-dependent variable resistor to divide a voltage and apply the divided voltage to an input terminal of said operational amplifier;

wherein said semiconductor device being connected to said operational amplifier such that a voltage drop developed across said resistor is applied to another input terminal of said operational amplifier, whereby the drive current flowing through said Hall-effect device is controlled.

5,550,470

Patent Not Issued For This Number

5,550,471

ANTENNA CABLE FOR A DIAGNOSTIC MAGNETIC RESONANCE APPARATUS

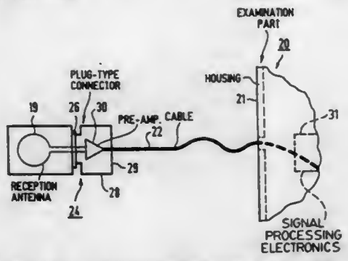
Peter Feld, Nuremberg, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Nov. 2, 1994, Ser. No. 332,787

Claims priority, application Germany, Nov. 8, 1993, 43 37 908.7

Int. Cl.[6] G01R *33/20*

U.S. Cl. 324—318 **1 Claim**



1. A diagnostic magnetic resonance apparatus comprising:

examination means for conducting a nuclear magnetic resonance examination of a subject, said examination means including a housing containing signal processing circuitry;

a freely movable reception antenna for receiving high-frequency magnetic resonance signals for said subject generated by the operation of said examination means; and

a flexible cable connecting said reception antenna to said signal processing circuitry, said flexible cable having one end extending into said housing and connected to said signal processing circuitry and an opposite end connected to said reception antenna, and having a plug-type connector at said opposite end making said connection between said flexible cable and said reception antenna, said plug-type connector having a plug part attached to said cable and a plug part attached to said antenna and containing at least one preamplifier in said plug part attached to said cable for amplifying the received magnetic resonance signals.

5,550,472

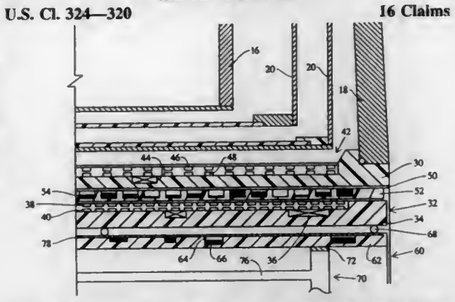
COMBINED RADIO FREQUENCY COIL WITH INTEGRAL MAGNETIC FIELD SHIM SET

Mark A. Richard, Cleveland Hts.; Michael A. Morich, Mentor, and Labros S. Petropoulos, Solon, all of Ohio, assignors to Picker International, Inc., Highland Heights, Ohio

Filed Apr. 13, 1995, Ser. No. 421,837

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—320 **16 Claims**



1. In a magnetic resonance imaging apparatus that includes magnets disposed in a toroidal housing for defining a temporally constant magnetic field through a central bore of the toroidal housing, a radio frequency coil disposed in the bore, a radio frequency shield disposed around the radio frequency coil, and a gradient magnetic field coil assembly including a primary magnetic field gradient coil and a shield gradient magnetic field coil, the gradient magnetic field coil assembly being disposed radially outward from and around the radio frequency shield, the improvement comprising:

segmented ferrous material disposed in annular rings around the bore, the segmented ferrous material rings being disposed between the radio frequency coil and the radio frequency shield; and

shim trays being disposed between the primary and secondary gradient magnetic field coils, the shim trays carrying selectively adjustable numbers of ferrous shims.

5,550,473

METHOD FOR LOCATING THIN BED HYDROCARBON RESERVES UTILIZING ELECTRICAL ANISOTROPY

James D. Klein, Lucas, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

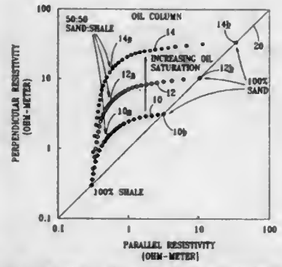
Filed Mar. 29, 1995, Ser. No. 412,683

Int. Cl.[6] G01V *3/30*

U.S. Cl. 324—338 **13 Claims**

1. A method of locating thin bed hydrocarbon reserves in laminated subterranean formations comprising thin beds, the method comprising:

drilling a well penetrating said subterranean formations;



measuring the parallel and perpendicular resistivity across multiple thin beds; and

locating regions of said thin beds where said perpendicular resistivity is substantially greater than said parallel resistivity.

5,550,474

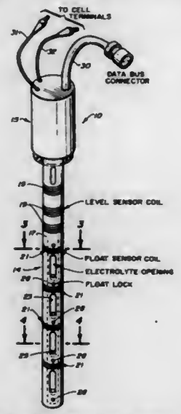
BATTERY ELECTROLYTE-LEVEL AND ELECTROLYTE-STRATIFICATION SENSING SYSTEM

Ernest A. Dahl, 3247 Breaker, Ventura, Calif. 93003

Filed May 3, 1985, Ser. No. 730,122

Int. Cl.[6] G01N *27/416;* **H02J** *7/04;* **H01M** *10/48*

U.S. Cl. 324—432 **18 Claims**



1. In a battery wet cell monitoring system, an electrolyte level sensing device, comprising:

a. a probe housing of electrically insulating and electrolyte nonreactive material; said probe housing being of suitable size and shape for extending into the electrolyte of a wet cell battery;

b. a plurality of electrical coils embedded within said probe housing at various predetermined levels and insulated from coming into contact with the battery cell electrolyte; each of said plurality of electrical coils comprising three adjacent commonly-wound coils of a balanced transformer;

c. a pulse generator means connected to apply a signal to the center coil of each of said plurality of three commonly-wound transformer coils; each of said plurality of three commonly-wound transformer coils being series connected such that the sum voltage is zero in air;

d. the output of each said balanced transformer being connected to a comparator and detector circuit, wherein, as said transformer coils are sequentially surrounded by electrolyte the change in the Q of the coils results in an increase in transformer voltage output, which output, when it exceeds a predetermined amount, causes said comparator and detection circuit to produce an output that indicates the presence of a predetermined amount of electrolyte;

e. read-out means connected to said detection circuit wherein indicator signals from said detection circuit are used to indicate the electrolyte level within the battery cell.

5,550,475

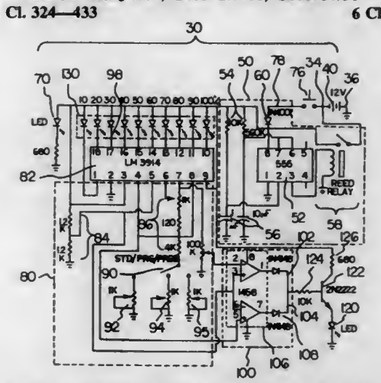
PROGRAMMABLE BATTERY CHARGE INDICATOR

Timothy M. Shafer, R.R. #2 Box 78, Yankton, S. Dak. 57078

Filed Apr. 11, 1995, Ser. No. 420,145

Int. Cl.[6] H02J *7/04;* **G01N** *27/416;* **G01R** *31/36*

U.S. Cl. 324—433 **6 Claims**



1. A programmable battery charge indicator for allowing a user to monitor the condition and charge of a regular and deep cycle 12 volt lead-acid battery comprising, in combination:

a hollow rigid box-shaped housing having a bottom wall, a top wall, a pair of opposed side walls, a back wall, and a front panel with a peripheral border therearound;

a charge indicator circuit disposed within the housing and further comprising:

a pair of electrically-conductive sheathed terminal wires with one wire designated as a negative terminal wire and the other wire designated as a positive terminal wire, each terminal wire having a base end and a tip end with each tip end extended through the housing and terminated with a spring-loaded battery clip or permanently attached battery terminal connector, each battery clip coupleable to a separate pole of a test battery;

timer-controlled power delivery circuitry coupled to the base ends of the terminal wires and having an activated mode for allowing transmission of electrical power from a test battery for a period of between about 10 to 15 seconds and further having a de-activated mode for preventing such transmission;

a first light-emitting diode coupled to the timer-controlled power delivery circuitry for receiving electrical power from a test battery for operation and extended through the front panel of the housing, the first light-emitting diode illuminated when the timer-controlled power delivery circuitry is placed in the activated mode;

a normally open single pole single throw push button switch coupled between the base end of the negative terminal wire and the timer-controlled power delivery circuitry, the push button switch having a momentarily closed orientation for generating a timer activation signal for placing the timer-controlled power delivery circuitry in an activated mode and further having an open orientation for preventing such generation;

reference voltage generating circuitry coupled to the timer-controlled power delivery circuitry for receiving electrical power from a test battery for operation and having a standard mode for generating a standard battery reference voltage for comparison with a voltage supplied from a test battery and further having a programmable mode for generating a user-selected battery reference voltage initially set based upon a voltage supplied from a user's fully-charged test battery act-

ing as a calibration source, the reference voltage generating circuity including display driver circuitry for generating a sequence of bar graph driver signals that are activated in sequence as a function of a voltage on a test battery;

comparator circuitry coupled to the reference voltage generating circuitry for receiving a reference voltage therefrom and further coupled to the timer-controlled power delivery circuitry for receiving electrical power from a test battery for operation and a voltage from a test battery for testing, the comparator circuitry generating an overcharged designator signal representing an overcharged battery condition when a voltage on a test battery is greater than the reference voltage, the comparator circuitry generating an undercharged designator signal representing an undercharged battery condition when a voltage on a test battery is less than about 10% of the reference voltage;

a second light-emitting diode operatively coupled to the comparator circuitry and timer-controlled power delivery circuitry and extended through the front panel of the housing, the second light-emitting diode illuminated for indicating an overcharged battery condition based on the receipt of an overcharged designator signal and further illuminated for indicating an undercharged battery condition based on the receipt of an undercharged designator signal; and

a set of ten light-emitting diodes coupled to the timer-controlled power delivery circuitry and display driver circuitry and further extended through the front panel of the housing in a linear bar graph-type configuration, a number of diodes from the set selectively illuminated in sequence based upon receipt of the bar graph driver signals and with the number of diodes illuminated indicating a percentage of charge on a test battery ranging from about 10% up to 100%.

5,550,476

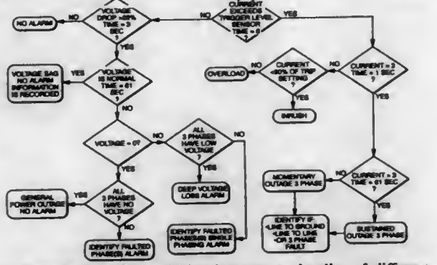
FAULT SENSOR DEVICE WITH RADIO TRANSCEIVER

Ken Lau, San Francisco; Jimmie Yee; Rodger Mayeda, both of Danville; Julian Riccomini, Pleasanton, and Mary Ilyin, Walnut Creek, all of Calif., assignors to Pacific Gas and Electric Company, San Francisco, Calif.

Filed Sep. 29, 1994, Ser. No. 314,958

Int. Cl.[6] G01R *31/08*

U.S. Cl. 324—522 **7 Claims**



1. A method of distinguishing between a plurality of different types of faults using a fault sensor that monitors current of an AC power transmission or distribution line, comprising the steps of:

a) detecting when the current exceeds a first predetermined threshold level;

b) at a first predetermined time after the current has been detected as exceeding the predetermined threshold level, checking to see if said current is zero;

c) if the current at said first predetermined time is not zero, checking to see if the current is less than a second predetermined threshold level; and

d) if the current at said first predetermined time is zero, at a second predetermined time after the current has been detected as exceeding the predetermined threshold level, checking to see if the current is zero.

5,550,477

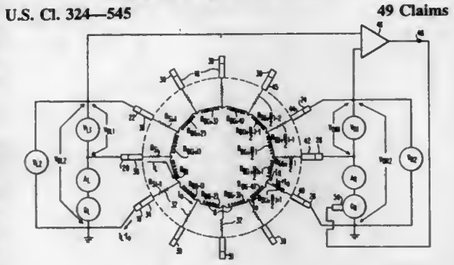
METHODS AND APPARATUS FOR TESTING ARMATURE COILS AND COIL LEAD CONNECTIONS USING RESISTANCE MEASUREMENTS

Cario Domenichini, Siena, and Mauro Tarchi, Florence, both of, Italy, assignors to Axis USA, Inc., Tampa, Fla.

Filed Aug. 1, 1994, Ser. No. 285,057

Int. Cl.[6] G01R *27/14;27/02*

U.S. Cl. 324—545 **49 Claims**



1. Apparatus for testing armatures on which a plurality of serially connected wire coils are wound to form a continuous wire loop, each coil having a pair of endpoints and being electrically connected to two adjoining coils and two coil lead connections at said endpoints, the armature having a first coil connected between first and second coil lead connections, a second coil connected between third and fourth coil lead connections, third and fourth coils connected respectively to said first and second coils, and a group of one or more coils connected between said third and fourth coils, the apparatus comprising:

fixed current inducing circuitry for inducing a first current in said first coil lead connection and in said first coil;

variable current inducing circuitry for inducing a second current in said third coil lead connection and in said second coil;

a control circuit having first and second input terminals connected respectively to fifth and sixth coil lead connections connected to the coils in said group of one or more coils connected between said third and fourth coils, said control circuit measuring a first voltage at said fifth coil lead connection and a second voltage at said sixth coil lead connection, said control circuit directing the variable current inducing circuitry to adjust the second current so that said second voltage is substantially equal to said first voltage, thereby preventing the flow of current in said third and fourth coils and in each of the coil lead connections connected to the coils in said group of coils connected between said third and fourth coils;

first voltage measuring circuitry connected across at least said first coil lead connection and said third coil for measuring a first coil lead connection voltage, a first coil lead connection resistance being determined based on said first coil lead connection voltage and said first current; and

second voltage measuring circuitry connected across at least said third coil lead connection and said fourth coil for measuring a third coil lead connection voltage, a third coil lead connection resistance being determined based on said third coil lead connection voltage and said second current;

third voltage measuring circuitry connected across at least said first coil for measuring a first coil voltage, a first coil resistance being determined based on said first coil voltage and said first current; and

fourth voltage measuring circuitry connected across at least said second coil for measuring a second coil voltage, a second coil resistance being determined based on said second coil voltage and said second current, wherein said first coil lead connection resistance, said third coil lead connection resistance, said first coil resistance, and said second coil resistance are measured within a single measurement step.

5,550,478

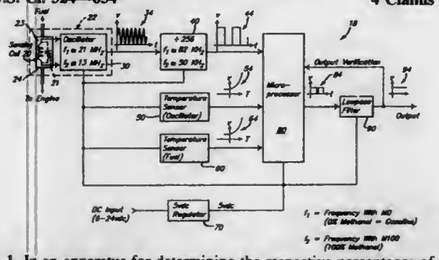
HOUSING FOR FLEXIBLE FUEL SENSOR

John J. C. Kopera, Rochester Hills, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.

Continuation of Ser. No. 667,840, Mar. 12, 1991, abandoned. This application Jun. 2, 1992, Ser. No. 896,507

Int. Cl.[6] G01N *27/74;* **G01R** *27/28*

U.S. Cl. 324—654 **4 Claims**



1. In an apparatus for determining the respective percentages of first and second liquids in a mixture, the apparatus including an inductive coil for immersion in said fluid mixture such that the mixture at least partially determines the value of distributed capacitance exhibited by said coil winding, and including a circuit board carrying associated circuitry utilizing said distributed capacitance; a housing for encasing the inductive coil and the circuit board with its associated circuitry comprising:

a chamber for an inductive coil winding confined within said chamber with fluid inlet/outlets to provide for the interaction with the fluid mixture and the inductive coil;

a cavity to encase the circuit board and its associated circuitry and;

the housing including connector means for removably connecting the circuit board and its associated circuitry to other electrical circuitry located exteriorly to the housing.

5,550,479

SIGNAL MEASURING APPARATUS AND SIGNAL MEASURING METHOD

Shinichi Wakana; Kazuyuki Ozaki; Yoshiro Goto, all of Kawasaki, and Yasutoshi Umehara, Tokyo, all of, Japan, assignors to Fujitsu Limited, Kanagawa, and Advantest Corporation, Tokyo, both of, Japan

Filed Jul. 6, 1995, Ser. No. 498,911

Claims priority, application Japan, Jul. 8, 1994, 6-157285

Int. Cl.[6] G01R *31/302*

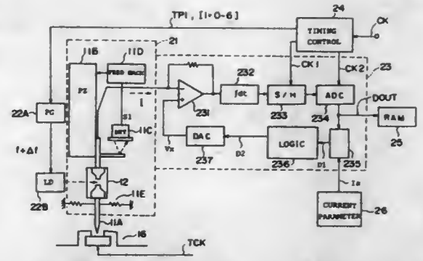
U.S. Cl. 324—750 **15 Claims**

1. A signal measuring apparatus for adjusting a distance between a sample and a probe and measuring a signal using a tunnel current or an ohmic current flowing through the sample and the probe when a voltage is applied therebetween, comprising:

means for sampling a current flowing through the sample and the probe according to a reference voltage to obtain a sample value;

means for comparing the sample value obtained in the sampling means and a current setting value arbitrarily set; and

control means for receiving an output signal of the comparing means, generating the reference voltage according to the output signal, feeding back the reference voltage to the sampling means and controlling the current flowing through the sample and the probe using the reference voltage to converge the current at the current setting value, thereby measuring the signal of the sample according to the reference voltage on condition that the current is converged at the current setting value.



5,550,480

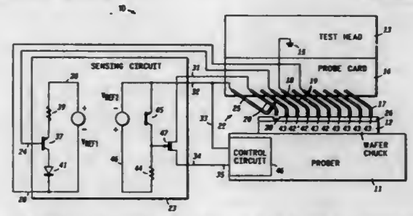
METHOD AND MEANS FOR CONTROLLING MOVEMENT OF A CHUCK IN A TEST APPARATUS

Randall D. Nelson, Sun Lakes, and Gregory L. Westbrook, Chandler, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 5, 1994, Ser. No. 270,290

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—754 **6 Claims**



1. A method for controlling movement of a chuck, comprising the steps of:

providing a test apparatus comprising a test head, a probe card, the chuck, and a prober, wherein the probe card includes at least one probe-card probe and is mounted to the test head, and the chuck is mounted to the prober;

providing a sensing circuit having a first input terminal, a second input terminal, a first output terminal, and a second output terminal, the first and second input terminals coupled to the at least one probe-card probe and the first and second output terminals coupled to the prober;

mounting a substrate to the chuck, the substrate having first and second contact pads;

temporarily coupling the first and second input terminals of the sensing circuit to the first and second contact pads of the substrate via the at least one probe-card probe;

generating a current;

transmitting a portion of the current through the first input terminal, the at least one probe-card probe, the first contact pad, the second contact pad, and the second input terminal; and

generating an electrical signal for controlling the movement of the chuck, wherein the electrical signal is coupled to the prober via at least the first output terminal of the sensing circuit.

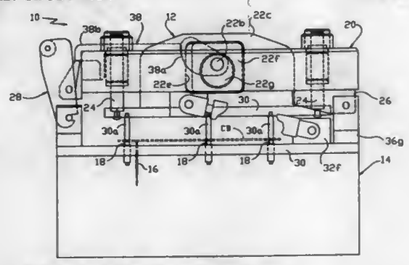
VOL 1189 ISS 4 AG 27 1996 UMI

5,550,481

CIRCUIT BOARD TEST FIXTURE APPARATUS WITH CAM ROTABLY MOUNTED IN SLIDABLE CAM BLOCK AND METHOD FOR MAKING.

Frederick J. Holmes, Bellingham, and Frederick F. Holmes, Jr., Franklin, both of Mass., assignors to Semco Machine Corporation, Wrentham, Mass.

Filed Feb. 8, 1995, Ser. No. 385,639
Int. Cl.[6] G01R *15/12;31/02;* **H01R** *13/629*
U.S. Cl. 324—754 **17 Claims**



1. A circuit board test fixture comprising

a base,

a frame having first and second opposed end portions and first and second opposed side portions, the second end portion pivotably mounted on the base so that the frame can pivot toward the base to a closed position and away from the base to an open position, means to latch the first end portion of the frame to the base in the closed position,

a pusher plate having a face surface lying in a plane, the pusher plate being movably mounted relative to the frame, a cam mechanism comprising a cam slide plate fixedly attached to the pusher plate, the cam slide plate having an opening therethrough forming a rectilinear track, a cam block slidably mounted in the opening and adapted to slide with rectilinear motion generally parallel with the face surface of the pusher plate, the cam block having a circular opening therethrough, and a circular cam member fixedly mounted eccentrically on a cam shaft rotatably mounted on the frame, the diameter of the cam selected to rotatably fit within the circular opening, the cam member being disposed within the circular opening,

means to maintain a selected angular orientation of the pusher plate relative to the frame, and

means to turn the cam shaft whereby rotation of the cam member will cause the cam block to slide in the rectilinear track and force the cam slide plate and the pusher plate to move relative to the frame in a direction generally perpendicular to the face surface to an actuated position.

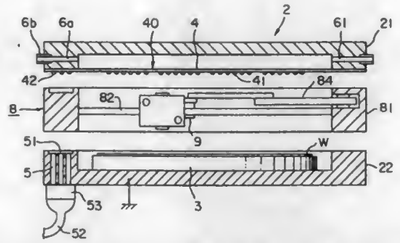
5,550,482

PROBE DEVICE

Kunio Sano, Nakakoma-gun, Japan, assignor to Tokyo Electron Kabushiki Kaisha, and Tokyo Electron Yamanashi Kabushiki Kaisha, both of, Japan

Filed Jul. 14, 1994, Ser. No. 274,862.
Claims priority, application Japan, Jul. 20, 1993, 5-201096; Aug. 18, 1993, 5-225210
Int. Cl.[6] G01R *1/073;31/02*
U.S. Cl. 324—758 **6 Claims**

1. A probe device, comprising:



a mounting stand for holding thereon an object to be tested, the object having electrode pads such that, when the object to be tested is held on said mounting stand, the electrode pads of the object to be tested face away from said mounting stand;

a probe card provided facing said mounting stand and therefore the electrode pads of an object to be tested held on said mounting stand, the probe card having contactors for contacting the electrode pads of an object to be tested held on said mounting stand;

a test head for performing electrical measurements of an object to be tested held on said mounting stand;

connection means for electrically connecting said contactors of said probe card to said test head;

moving means for moving said probe card relative to said mounting stand such that, when an object to be tested is held on said mounting stand, said contactors are brought into contact with the electrode pads of the object to be tested, thereby causing the electrode pads to be electrically connected to said test head through the contactors and said connection means;

a vessel having an interior accommodating said mounting stand and said probe card in a sealed state, said vessel including

a first portion supporting said mounting stand; and

a second portion supporting said probe card, the second portion being relatively movable to and away from said first portion to hermetically close said vessel and to open the vessel so as to allow an object to be tested to be conveyed onto and away from said mounting stand;

a positioning unit for advancing into and out of a space between said mounting stand and said probe card when said first portion and said second portion are separated to open said vessel; and

an optical system provided on said positioning unit for transmitting an image of at least one electrode pad of an object to be tested held on said mounting stand, and for transmitting an image of at least one of said contactors of said probe card.

5,550,483

HIGH SPEED TEST PROBE POSITIONING SYSTEM

James E. Boyette, Jr., Delray Beach; James M. Hammond; Jiann-Chang Lo, both of Boca Raton; James C. Mahlbacher, Lake Worth; Michael Servedio, and Ali R. Taheri, both of Boca Raton, all of Fla., assignors to International Business Machines, Armonk, N.Y.

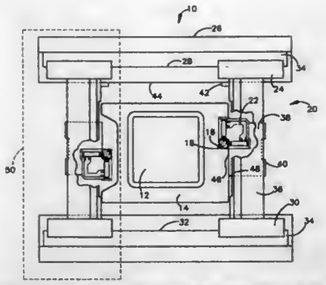
Filed Nov. 18, 1994, Ser. No. 342,433
Int. Cl.[6] G01R *31/02*
U.S. Cl. 324—758 **32 Claims**

7. A probing system for testing a series of test sites of a device under test, comprising:

(a) a support member, said support member being configured to hold the device under test;

(b) a gantry, said gantry being configured for movement along x and y axes of the device under test;

(c) a test probe, said test probe being mounted to said gantry for coordinated movement with said gantry along x and y axes relative to the series of test sites;



(d) a primary positioner, said primary positioner being operatively coupled to said gantry, and being configured to move said gantry along the x-axis to within a predetermined x-axis distance of a test site selected from the series of test sites and along the y-axis to within a predetermined y-axis distance of said test site, including:

(1) a primary x-axis positioning device, said primary x-axis positioning device being operatively coupled to said gantry, and being configured to position said gantry along the x-axis to within said predetermined x-axis distance of said test site responsive to (i) an x-axis target signal corresponding to the x-axis position of said test site and (ii) an x-axis error signal corresponding to the position of said gantry along the x-axis relative to said test site; and

(2) a primary y-axis positioning device, said primary y-axis positioning device being operatively coupled to said gantry, and being configured to position said gantry along the y-axis to within said predetermined y-axis distance of said test site responsive to (i) a y-axis target signal corresponding to the y-axis position of said test site and (ii) a y-axis error signal corresponding to the position of said gantry along the y-axis relative to said test site; and

(e) a secondary positioner, said secondary positioner being operatively coupled to said test probe, and being configured to move said test probe along the x-axis to position said test probe to the x-axis position of said test site and to move said test probe along the y-axis to position said test probe to the y-axis position of said test site, including:

(1) a secondary x-axis positioning device, said secondary x-axis positioning device being operatively coupled to said test probe, and being configured to compensate for displacement of said test probe from said test site along the x-axis when said gantry is within said predetermined x-axis distance of said test site by positioning said test probe to the x-axis position of said test site responsive to (i) said x-axis target signal and (ii) said x-axis error signal; and

(2) a secondary y-axis positioning device, said secondary y-axis positioning device being operatively coupled to said test probe, and being configured to compensate for displacement of said test probe from said test site along the y-axis when said gantry is within said predetermined y-axis distance of said test site by positioning said test probe to the y-axis position of said test site responsive to (i) said y-axis target signal and (ii) said y-axis error signal.

5,550,484

APPARATUS AND METHOD FOR INSPECTING THIN FILM TRANSISTOR

Kenichi Mitsumori, and Koji Kikuchi, both of Miyagi-ken, Japan, assignors to Frontec Incorporated, Sendai, Japan

Filed Sep. 25, 1995, Ser. No. 533,427
Claims priority, application Japan, Oct. 12, 1994, 6-246616
Int. Cl.[6] G01R *1/04*
U.S. Cl. 324—769 **8 Claims**

1. An apparatus for inspecting a thin film transistor having a drain electrode connected to a drive electrode, a source electrode separated from said drain electrode and a gate electrode located between said source electrode and said drain electrode and insulated from said source electrode and said drain electrode by an insulating film in which a current flowing between said source electrode and said drain electrode is controlled by a voltage applied to said gate electrode, said apparatus comprising:

an inspection signal generation means for inputting drive pulse signals and test pulse signals, respectively to said gate electrode;

a test voltage generation means for inputting a test voltage to said source electrode in synchronism with said drive pulse signals;

an external electrode arranged to be opposed to said drive electrode and forming therebetween a capacitance for storing test charges; and

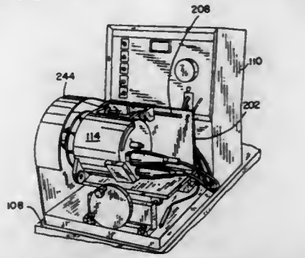
an electric signal detection means for detecting electric signals output from said capacitance formed between said drive electrode and said external electrode to said source electrode in synchronism with test pulse signals to be input to said gate electrode.

5,550,485

MULTIFUNCTION ALTERNATOR TESTING DEVICE

Dean A. Falk, 1122 Buena Vista Ave., Waukesha, Wis. 53188

Continuation of Ser. No. 71,841, Jun. 4, 1993, abandoned. This application Jan. 26, 1995, Ser. No. 378,910
Int. Cl.[6] G01R *31/00*
U.S. Cl. 324—772 **17 Claims**



1. A device capable of testing a variety of motor vehicle alternators for testing a single alternator under conditions identical to conditions encountered in a motor vehicle when the alternator is in use in the motor vehicle, said device comprising:

(a) a frame;

(b) an alternator mounting bracket attached to said frame; and

(c) an operator-controlled circuit proximate said alternator mounting bracket for selective alternator testing, said testing circuit comprising:

(1) a power supply;

(2) a motor;

(3) a first subcircuit for directly measuring and displaying any alternator reverse current leakage;

(4) a second subcircuit for measuring and displaying alternator charging voltage output;

(5) a third subcircuit for measuring and displaying maximum alternator current output;

(6) a fourth subcircuit for detecting and indicating alternator diode and stator imbalance; and

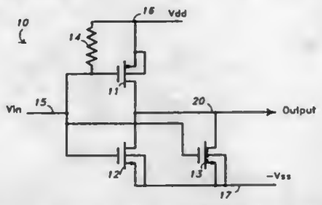
(7) an operator-controlled switch array for selecting which of said subcircuits is in use.

5,550,486

CIRCUIT AND METHOD FOR PROVIDING A KNOWN LOGIC STATE AT INSUFFICIENT SUPPLY VOLTAGE

Frank J. Sweeney, Rowlett, and Apparajan Ganesan, Manchacha, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 1, 1995, Ser. No. 396,849
Int. Cl.[6] H03K *19/007;17/16*
U.S. Cl. 326—14 **20 Claims**



3. A circuit to force a logic circuit to a known state when a supply voltage rises above a predetermined level, said logic circuit including a pair of MOS logic transistors of opposite conductivity type connected in series between a supply voltage source and a reference potential source, one of said MOS logic transistors is connected between the supply voltage source and an output line, comprising:

at least one MOS state controlling transistor having a threshold voltage less than a threshold voltage of one of said MOS logic transistors, said at least one MOS state controlling transistor and said one of said MOS logic transistors being of the same conductivity type;

said MOS state controlling transistor being connected in parallel with said one of said MOS logic transistors, and having a control element connected to an input voltage source to which a control element of said one of said MOS logic transistors is connected;

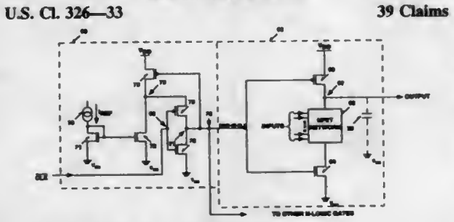
whereby if said supply voltage rises above the threshold of said MOS state controlling transistor, said MOS state controlling transistor conducts to produce said known logic state at the output line.

5,550,487

APPARATUS AND METHOD FOR ALLOWING A SYNAMIC LOGIC GATE TO OPERATE STATICALLY

Richard F. Lyon, Los Altos, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 295,157, Aug. 24, 1994, Pat. No. 5,440,243, which is a continuation of Ser. No. 124,820, Sep. 21, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 482,671
Int. Cl.[6] H03K *19/003*
U.S. Cl. 326—33 **39 Claims**



1. A dynamic logic circuit, comprising:

(A) a logic network circuit having a first end coupled to an output node and a second end, wherein the logic network circuit is coupled to receive at least one logic input for performing a predefined logic function with respect to the logic input;

(B) a precharging transistor having a subthreshold conduction region for precharging the output node to a first voltage state, wherein the precharging transistor includes a first terminal coupled to a first supply voltage, a second main terminal coupled to the output node, and a control terminal;

(C) an evaluation transistor for allowing the logic network circuit to selectively charge the output node to a second voltage state in accordance with the predefined logic function with respect to the logic input, wherein the evaluation transistor includes a first terminal coupled to the second end of the logic network circuit, a second terminal coupled to a second supply voltage, and a control terminal; and

(D) circuitry coupled to the control terminal of the precharging transistor and the evaluation transistor, wherein the circuitry includes

(i) a current source for providing a reference current;

(ii) a first transistor for generating a bias voltage, wherein the bias voltage has a voltage level that is less than one threshold voltage different from the first voltage state and causes the precharging transistor to operate in the subthreshold conduction region;

(iii) current control means coupled to the current source and the first transistor for causing a constant current relative to the reference current to flow through the first transistor such that the first transistor generates the bias voltage;

(iv) switching means coupled to the first transistor and being responsive to a control signal for selectively coupling the control terminal of the precharging transistor and evaluation transistor to one of (1) the control signal and (2) the bias voltage, wherein when the switching means couples the control terminal of the precharging transistor and the evaluation transistor to the control signal under the control of the control signal, the precharging transistor is turned on and the evaluation transistor is turned off such that the output node is charged to the first voltage state, wherein when the switching causes the control terminal of the precharging transistor and evaluation transistor to receive the bias voltage under the control of the control signal, (1) the evaluation transistor is turned on to allow the logic network circuit to selectively charge the output node to the second voltage state according to the predefined logic function of the logic input and (2) the precharging transistor is turned to operate in a subthreshold conduction region so as to allow a substantially reduced current to flow through to maintain the output node at the first voltage state when the logic network circuit does not charge the output node to the second voltage state such that the dynamic logic gate circuit can operate statically: and

(v) delay means coupled to a control terminal of the first transistor for causing the first transistor to delay generating the bias voltage for a predetermined time interval after the precharging transistor is completely turned off by the control signal.

5,550,488

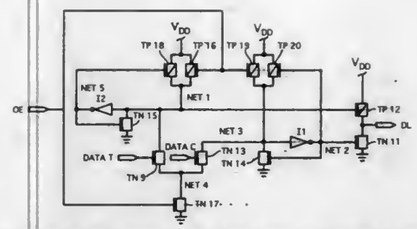
SELF TIMED DRIVER

John A. Fifield, Underhill, and Lawrence G. Heller, S. Burlington, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 6, 1995, Ser. No. 466,904
Int. Cl.[6] H03K *19/00;19/02*
U.S. Cl. 326—58 **12 Claims**

1. A tri-state driver circuit comprising:

a) first means for generating a tri-state mode from said tri-state driver circuit in response to said tri-state driver circuit receiving a first control signal;



b) ready means, coupled to said first means, for creating a ready state in said tri-state driver circuit after said tri-state driver circuit receives a second control signal, said ready state preparing the tri-state driver circuit to output a one or zero signal, independent of a clock signal, in response to receiving a true or complement data signal, respectively, the tri-state mode being maintained during said ready state until said true or complement data signal is inputted into said circuit; and

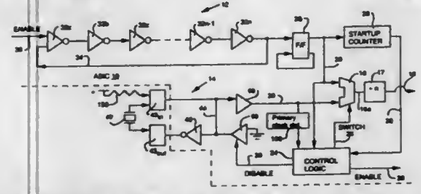
c) output means, coupled to said ready means, for outputting said one or zero signal from the tri-state driver circuit upon receiving said true or complement data signal, respectively, after the tri-state driver circuit is in said ready state.

5,550,489

SECONDARY CLOCK SOURCE FOR LOW POWER, FAST RESPONSE CLOCKING

Michael L. Raab, Fremont, Calif., assignor to Quantum Corporation, Milpitas, Calif.

Filed Sep. 29, 1995, Ser. No. 536,314
Int. Cl.[6] H03K *19/096*
U.S. Cl. 326—93 **22 Claims**



1. A method for rapidly generating clocking signals with clocking circuitry of a digital logic circuit during a clock recovery interval and thereafter, comprising the steps of:

applying a clock enable signal to the clocking circuitry,

generating and putting out secondary clocking pulses from a free-running secondary clock oscillator within the clocking circuitry during the clock recovery interval,

generating primary clocking pulses from a frequency-stabilized master oscillator within the clocking circuitry during the recovery interval and thereafter,

timing duration of the recovery interval by reference to the secondary clock pulses,

selecting and putting out the primary clock pulses following the recovery interval.

5,550,490

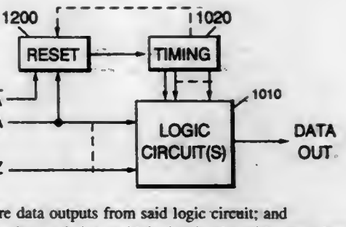
SINGLE-RAIL SELF-RESETTING LOGIC CIRCUITRY

Christopher M. Durham; Visweswara R. Kodali, and Salim A. Shah, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 25, 1995, Ser. No. 450,056
Int. Cl.[6] H03K *19/096;19/00*
U.S. Cl. 326—98 **19 Claims**

1. A logic circuit, comprising:

one or more data inputs to said logic circuit;



one or more data outputs from said logic circuit; and

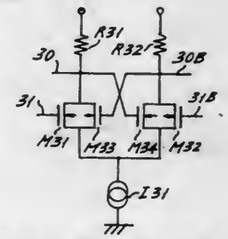
a reset circuit coupled to said logic circuit, said reset circuit coupled to said one or more data inputs, said reset circuit coupled to a complement of said one or more data inputs.

5,550,491

CURRENT-MODE LOGIC CIRCUIT

Koichiro Furuta, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Sep. 21, 1995, Ser. No. 531,931
Claims priority, application Japan, Sep. 28, 1994, 6-233491
Int. Cl.[6] H03K *19/20*
U.S. Cl. 326—115 **4 Claims**



1. A current-mode logic circuit comprising:

a differential logic pair that is composed of a first logic means for controlling conductive or nonconductive states between a first output line and a constant-current source by means of an input signal or its reverse signal and a second logic means for controlling the conductive or nonconductive states between a second output line and said constant-current source by means of said input signal or its reverse signal; equivalent condoctance of said first and second logic means being equal and, in response to said input signal or its reverse signal, conductive or nonconductive states of said first and second logic means acting with complementary logic; and

comprising a holding transistor pair that is composed of a first MOS transistor having its gate electrode connected to said second output line, its drain electrode connected to said first output line, and its source electrode connected to said constant-current source, and a second MOS transistor having its gate electrode connected to said first output line, its drain electrode connected to said second output line, and its source electrode connected to said constant-current source; said first and second MOS transistors having equal conductance.

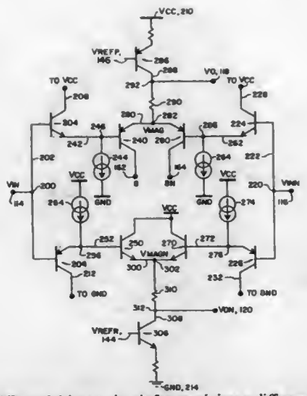
5,550,492

ANALOG TO DIGITAL CONVERTER USING COMPLEMENTARY DIFFERENTIAL EMITTER PAIRS

Frank Murden, Greensboro, N.C., assignor to Analog Devices, Inc., Norwood, Mass.

Filed Dec. 1, 1994, Ser. No. 347,910
Int. Cl.[6] H03K *5/24;* **H03M** *1/72*
U.S. Cl. 327—65 **24 Claims**

1. A differential amplifier comprising:



a first differential input circuit for receiving a differential analog input, the first differential input circuit having a first branch and a second branch;

a second differential input circuit for receiving the differential analog input, the second differential input circuit having a third branch and a fourth branch, with an input to the first branch coupled to an input to the third branch, and an input to the second branch coupled to an input to the fourth branch;

a first differential pair of first and second transistors, each of the first and second transistors having a control lead coupled to the respective first branch and second branch to receive a signal therefrom, the first differential pair for folding the differential analog input and providing a first folded signal; and

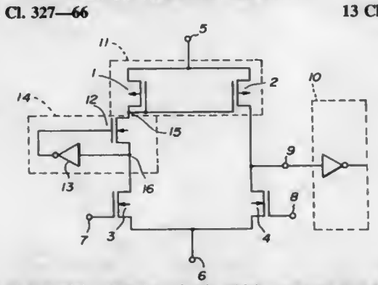
a second differential pair of third and fourth transistors, each of the third and fourth transistors having a control lead coupled to the respective third branch and fourth branch to receive a signal therefrom, the second differential pair for folding the differential analog input and providing a second folded signal, with the second folded signal being a mirror image of the first folded signal.

5,550,493

POTENTIAL COMPARING CIRCUIT HAVING AN OFFSET CORRECTING CIRCUIT

Hidejl Miyanishi, Toyonaka, Japan, assignor to Ricoh Company Ltd., Tokyo, Japan

Filed Sep. 16, 1994, Ser. No. 307,891
Claims priority, application Japan, Sep. 21, 1993, 5-234417
Int. Cl.[6] H03K *5/22;* **H03L** *5/00*
U.S. Cl. 327—66 **13 Claims**



1. A potential comparing circuit which compares a potential level of a first input signal with a potential level of a second input signal so as to output an output signal having a potential level to be supplied to a next-stage logic circuit which uses predetermined determination potential levels corresponding to "1" and "0", the potential comparing circuit comprising:

a current-mirror circuit, connected to a first power source, and having an input point and an output point;

a first transistor having a gate to which said first input signal is supplied;

a second transistor having a gate to which said second input signal is supplied, a channel type of said second transistor being the same as a channel type of said first transistor, a source of said second transistor being connected to a source of said first transistor, a drain of said second transistor being connected to said output point of said current-mirror circuit, a second power source being connected to a connection point between the source of said first transistor and the source of said second transistor; and

an offset correcting circuit provided between a drain of said first transistor and said input point of said current-mirror, said offset correcting circuit having operating characteristics that are substantially the same as the next-stage logic circuit so as to substantially equalize a potential level obtained at a drain of said first transistor with specific potential levels related to said specific determination potential levels of the next-stage logic circuit,

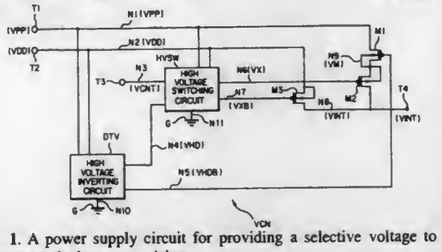
said output signal being output from a point between the drain of said second transistor and said output point of said current-mirror circuit.

5,550,494

VOLTAGE SELECTING DEVICE FOR RECEIVING A PLURALITY OF INPUTS AND SELECTIVELY OUTPUTTING ONE THEREOF

Kikuzo Sawada, Tokyo, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Filed Jan. 23, 1995, Ser. No. 377,052
Claims priority, application Japan, Jan. 25, 1994, 6-023106
Int. Cl.[6] H03K *5/24;17/62*
U.S. Cl. 327—69 **3 Claims**



1. A power supply circuit for providing a selective voltage to memory devices, comprising:

a first input terminal for receiving a first voltage signal ranging from zero to a first value;

a second input terminal for receiving a second voltage signal which has three ranges, wherein a first range is from zero to said first value, a second range is from said first value to a second value, and a third range is from said second value to a third value;

a control signal input terminal for receiving a control signal;

an output terminal for selectively providing either said first or second voltage signal;

a first switching circuit which includes a first MOS transistor connected between said first input terminal and said output terminal;

a second switching circuit which includes a second and a third MOS transistor having a common substrate and being connected in series, said second MOS transistor having a source connected to said second input terminal, said third MOS transistor having a source connected to said output terminal, said second and third MOS transistors having drains connected to each other and held at a potential of said common substrate; and

control means for controlling said first and second switching circuits, wherein said first MOS transistor is nonconductive

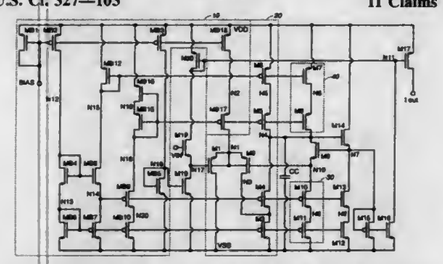
and said second and third MOS transistors are conductive if said control signal is substantially the same as said first voltage signal and said second voltage signal is in said third range thereby providing said second voltage signal from said output terminal, and said first MOS transistor is conductive and at least one of said second and third MOS transistors is nonconductive if said control signal is other than said first voltage signal thereby providing said first voltage signal from said output terminal.

5,550,495

ALL MOS VOLTAGE TO CURRENT CONVERTER

Bahram Fotouhi, Cupertino, Calif., assignor to Sierra Semiconductor Corporation, San Jose, Calif.

Filed May 12, 1994, Ser. No. 241,720
Int. Cl.[6] H02M *11/00*
U.S. Cl. 327—103 **11 Claims**



1. A method of producing an output current as a linear function of an input voltage using first and second MOSFETs, comprising the steps of:

a) impressing a first voltage related to the input voltage across the first MOSFET transistor;

b) operating the first MOSFET in its linear region, producing a first current through the first MOSFET having a magnitude related to the first voltage;

c) level shifting the first voltage by a predetermined voltage to produce a level-shifted voltage;

d) applying the level-shifted voltage to the second MOSFET;

e) operating the second MOSFET in its saturated region, producing a second current through the second MOSFET having a magnitude related to the level-shifted voltage; and

f) adding together currents substantially equal to the first and second currents to produce the output current.

5,550,496

HIGH SPEED I/O CIRCUIT HAVING A SMALL VOLTAGE SWING AND LOW POWER DISSIPATION FOR HIGH I/O COUNT APPLICATIONS

Alan R. Desroches, San Jose, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

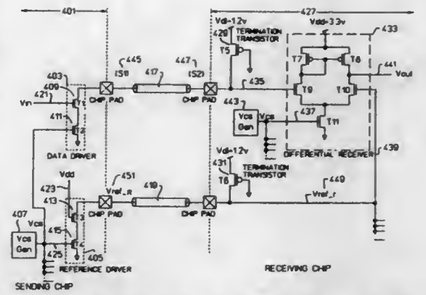
Filed Jul. 31, 1995, Ser. No. 509,066
Int. Cl.[6] H03F *3/45*
U.S. Cl. 327—108 **11 Claims**

1. An interchip high speed communications apparatus comprising:

a first integrated circuit having a controlled current data driver having an output and the first integrated circuit also having a reference driver having an output;

a second integrated circuit having a differential receiver with a data input, a reference input and the differential receiver also having an output;

a data transmission line electrically connecting the output of the data driver to the data input of the differential receiver;



a reference transmission line electrically connecting the output of the reference driver to the reference input of the differential receiver; and

the differential receiver comprising a comparator for comparing said data input voltage with said reference input voltage and operative to output a first voltage level in response to a voltage on the data input being higher than a voltage on the reference input and the differential receiver being operative to output a second voltage level in response to a voltage on the data input being lower than a voltage on the reference input; and

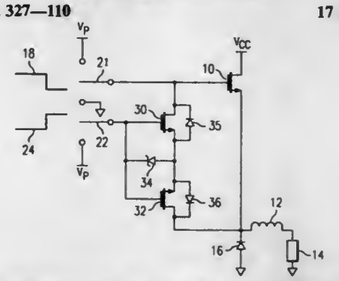
a termination device fabricated as part of said second integrated circuit, wherein the power dissipation on said communications apparatus is minimized.

5,550,497

POWER DRIVER CIRCUIT WITH REDUCED TURNOFF TIME

Francesco Carobolante, Portola Valley, Calif., assignor to SGS-Thomson Microelectronics, Inc., Carollton, Tex.

Filed May 26, 1994, Ser. No. 249,851
Int. Cl.[6] H03K *17/04;17/296*
U.S. Cl. 327—110 **17 Claims**



16. A method for reducing a turn-off time of a power transistor comprising the step of:

clamping a gate to a source of said power transistor by using a first n-channel MOSFET transistor connected in series with a second n-channel MOSFET transistor as a current path for said clamping wherein each of the two transistors have a parasitic source to drain diode and wherein the first and second transistors are configured drain to drain so that the parasitic diode of the first transistor blocks the current through the parasitic diode of the second transistor.

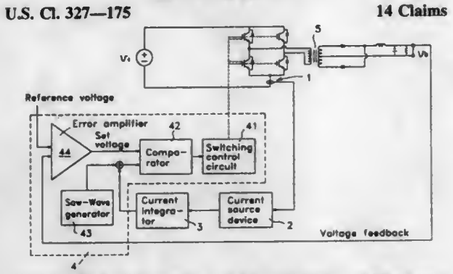
VOL 1189 ISS 4 AUG 27 1996 UMI

5,550,498

METHOD AND APPARATUS FOR CHARGE PULSE-WIDTH MODULATION CONTROL

Khang-Shen Kwan; Chean-Lung Tsay, and Li-Ming Wu, all of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Chutung Hsinchu, Taiwan

Filed Aug. 30, 1995, Ser. No. 521,218
Int. Cl.[6] H03K *3/017*
U.S. Cl. 327—175 **14 Claims**



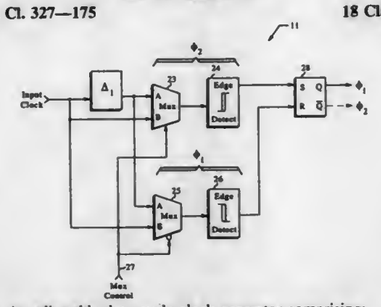
1. A method of controlling a charge mode pulse-width modulation circuit having a transformer, comprising:
detecting a first current at a primary side of the transformer;
producing a second current in response to the first current;
integrating the second current to produce an integrator output voltage;
comparing the integrator output voltage with a set voltage; and
employing the result of the comparison to control a switching operation of the charge mode pulse-width modulation circuit.

5,550,499

SINGLE DELAY LINE ADJUSTABLE DUTY CYCLE CLOCK GENERATOR

John K. Eitrheim, Plano, Tex., assignor to Cyrix Corporation, Richardson, Tex.

Filed Apr. 18, 1995, Ser. No. 423,199
Int. Cl.[6] H03K *5/04*
U.S. Cl. 327—175 **18 Claims**



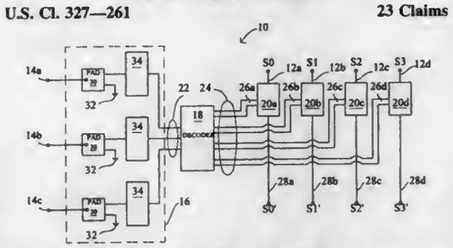
1. An adjustable duty cycle clock generator comprising:
(a) a delay line having an input coupled to receive an input clock and an output;
(b) a first multiplexer having a first input coupled to receive the input clock, a second input coupled to receive the output from the delay line, a third input coupled to receive a control signal, and an output;
(c) a second multiplexer having a first input coupled to receive the input clock, a second input coupled to receive the output from the delay line, a third input coupled to receive an inversion of the control signal, and an output;
(d) a latch having a set input, a reset input, and an output;
(e) a first edge detector coupled between the output of the first multiplexer and the set input on the latch, for detecting edges of a first polarity; and,
(f) a second edge detector coupled between the output of the second multiplexer and the reset input on the latch, for detecting edges of a second polarity opposite that of the first polarity.

5,550,500

TIMING DELAY MODULATION SCHEME FOR INTEGRATED CIRCUITS

Michael C. Stephens, Jr., and Ajit K. Medhekar, both of San Jose, Calif., assignors to Alliance Semiconductor Corporation, San Jose, Calif.

Filed Jun. 23, 1995, Ser. No. 493,901
Int. Cl.[6] H03K *5/13;5/153*
U.S. Cl. 327—261 **23 Claims**



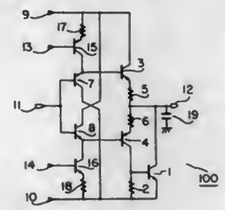
1. In an integrated circuit having a plurality of timing pulse signals, a pulse width modulation circuit, comprising:
logic means for receiving a plurality of external signals and generating a plurality of control signal combinations therefrom;
a plurality of pulse width adjusting circuits, each said pulse width adjusting circuit receiving at least one timing pulse signal internal to the integrated circuit and at least one of said plurality of control signal combinations, and adjusting a width of the at least one timing pulse in response to its respective control signal; and
a super voltage detect circuit, including a plurality of super voltage inputs and detect outputs, said super voltage detect circuit providing a particular combination of said plurality of external signals at the detect outputs in response to each combination of super voltages applied to its super voltage inputs, the detect outputs being coupled to said logic means.

5,550,501

CURRENT BUFFER CIRCUIT WITH ENHANCED RESPONSE SPEED TO INPUT SIGNAL

Masahiro Ito, and Yoji Hirano, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Feb. 22, 1995, Ser. No. 392,257
Claims priority, application Japan, Feb. 23, 1994, 6-024590
Int. Cl.[6] H03K *17/04*
U.S. Cl. 327—374 **8 Claims**



1. A current buffer circuit comprising:
an input terminal;
an output terminal;

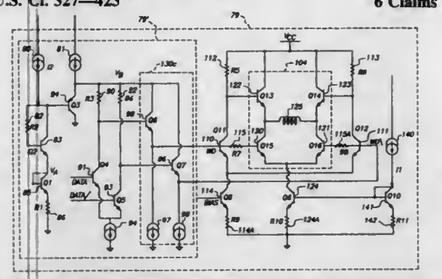
a first transistor of a first conductivity type having a base coupled to said input terminal, a collector coupled to a first power supply terminal, and an emitter;
a second transistor of a second conductivity, type having a base coupled to said input terminal a collector coupled to a second power supply terminal, and an emitter;
a third transistor of said second conductivity type having a base coupled to the emitter of said first transistor, an emitter coupled to said output terminal, and a collector coupled to said second power supply terminal;
a fourth transistor of said first conductivity type having a base coupled to the emitter of said second transistor, a collector coupled to said first power supply terminal, and an emitter coupled to said output terminal;
a fifth transistor of said second conductivity type having a base coupled to the collector of said fourth transistor, a collector coupled to said output terminal, and an emitter coupled to said first power supply terminal; and
a resistor connected between said first power supply terminal and a node of the collector of said fourth transistor and the base of said fifth transistor, a resistance value of said resistor being set such that said fifth transistor is rendered conductive only during a transition period of a change in an input signal at said input terminal from a high level to a low level.

5,550,502

CONTROL CIRCUIT AND METHOD FOR THIN FILM HEAD WRITED RIVER

Anatoly Aranovsky, Los Gatos, Calif., assignor to GEC Plessey Semiconductors, Inc., Scotts Valley, Calif.

Filed May 23, 1995, Ser. No. 447,978
Int. Cl.[6] H03K *17/56;3/00*
U.S. Cl. 327—423 **6 Claims**



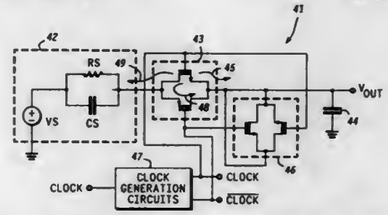
1. A control circuit for a write drive current switch having first, second, third and fourth transistors (Q13, Q15, Q14, Q16); an inductive write head having first and second sides; and a write current source transistor having a base node, an emitter node, and a collector node, said write current source transistor being connected at its collector node to second and fourth transistors of a write drive current switch; said first, second, third, and fourth transistors being connected to said inductive write head; said first and second transistors being connected to each other at said first side of said write head, and said third and fourth transistors being connected to each other at said second side of said write head, said first and third transistors being connected between said inductive write head and VCC, said control circuit comprising:
fifth, sixth, and seventh transistors (Q3, Q2, Q1) each having a base, a collector, and an emitter, the base of said fifth transistor being connected to the collector of said sixth transistor, and the emitter of said sixth transistor being connected to the collector of said seventh transistor, wherein the emitter of said seventh transistor (Q1) is structured to have an emitter area 1/k times emitter area of the write current source transistor (Q9), and wherein the base-to-emitter voltage drop across said sixth transistor (Q2) is substantially equal to the base-to-emitter voltage drop across said second transistor (Q15);
a first current source (I2) connected to the collector of said sixth transistor (Q2) wherein the current of said first current source equals 1/k times the current through the write current source transistor (Q9), where k is a selected scale factor; and
a circuit connected between the emitter of said fifth transistor (Q3) and the write drive current switch, said circuitry including first (Q6) and second Q7) switching transistors, wherein the base to emitter voltages of said fifth transistor (Q3) and said first and second switching transistors are substantially equalized.

5,550,503

CIRCUITS AND METHOD FOR REDUCING VOLTAGE ERROR WHEN CHARGING AND DISCHARGING A CAPACITOR THROUGH A TRANSMISSION GATE

Doug Garrity, Gilbert; David Anderson, Scottsdale; Howard Anderson, Tempe; Brad Gunter, Phoenix, and Danny Bersch, Gilbert, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 28, 1995, Ser. No. 430,999
Int. Cl.[6] H03K *17/687*
U.S. Cl. 327—437 **16 Claims**



4. A circuit for reducing voltage error when charging and discharging a storage capacitor through a first transmission gate, the circuit comprising:
a clock generation circuit providing complementary control signals for enabling and disabling the first transmission gate, said complementary control signals transition simultaneously having no delay therebetween;
the first transmission gate comprising:
a first transistor of a first conductivity type having a first electrode coupled for receiving a voltage, a control electrode coupled for receiving a non-inverting control signal, and a second electrode coupled to the storage capacitor; and
a second transistor of a second conductivity having a first electrode coupled for receiving said voltage, a control electrode coupled for receiving an inverting control signal, and a second electrode coupled to the storage capacitor; and
a second transmission gate coupled to the storage capacitor for canceling voltage error, said second transmission gate being respectively enabled and disabled by the complementary control signals as the first transmission gate is disabled and enabled, the second transmission gate comprising:
a first transistor of said first conductivity type having a first and a second electrode coupled to the storage capacitor, and a control electrode coupled for receiving said inverting control signal; and

a second transistor of said second conductivity type having a first and a second electrode coupled to the storage capacitor, and a control electrode coupled for receiving said non-inverting control signal wherein said first and second transistors of the second transmission gate are respectively one half a size of said first and second transistors of the first transmission gate.

5,550,504

DRAM USING WORD LINE POTENTIAL CONTROL CIRCUIT

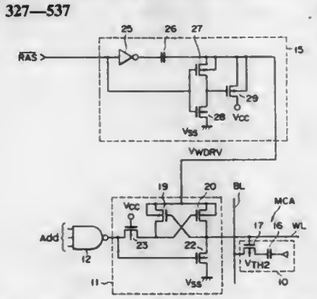
Masaki Ogihara, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 757,632, Sep. 11, 1991, Pat. No. 5,335,205. This application May 10, 1994, Ser. No. 240,368

Claims priority, application Japan, Sep. 12, 1990, 2-239893

Int. Cl.[6] G05F *3/16*; G11C *7/00*

U.S. Cl. 327—537 **4 Claims**



1. A signal control circuit for generating an output potential comprising:

inverting means for receiving a control signal of a logic level and inverting the control signal to a voltage signal of a first potential or a second potential in accordance with the logic level of the control signal;

capacitive voltage-boosting means for boosting the inverted voltage signal to a boosted voltage signal;

a signal line for receiving the boosted voltage signal boosted by said capacitive voltage-boosting means;

a first MOS transistor of a first conductivity type having a first current terminal and a back gate connected to said signal line and a control gate for receiving the control signal;

a second MOS transistor of a second conductivity type having a first current terminal electrically connected to a second current terminal of said first MOS transistor, a second current terminal connected to a first potential-supplying source for supplying a third potential, and a control gate for receiving the control signal; and

a third MOS transistor of the first conductivity type having a first current terminal and a back gate connected to said signal line, a second current terminal electrically connected to a second potential-supplying source for supplying a fourth potential, and a control gate connected to a connection point between said first current terminal of said second MOS transistor and said second current terminal of said first MOS transistor.

5,550,505

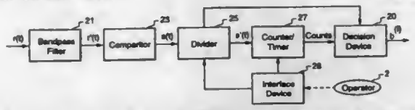
FREQUENCY SHIFT KEYING (FSK) DEMODULATOR FOR USE IN LOW SIGNAL-TO-NOISE RATIO ENVIRONMENTS

Richard C. Gaus, Jr., Burnt Hills, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 30, 1994, Ser. No. 366,932

Int. Cl.[6] H03D *3/04*

U.S. Cl. 329—300 **7 Claims**



1. A frequency shift keying (FSK) demodulator for decoding a binary signal encoded in a received signal comprising:

a) a comparator which processes said received signal into a square wave output signal by comparing the received signal to a high and a low threshold and transitioning an output signal to a 'high' voltage when an amplitude of the received signal is above the high threshold, and a 'low' voltage when the amplitude of the received signal is below the low threshold;

b) a counter/timer for determining a measured count of transitions between high and low voltages of the square wave output signal of the comparator over a predetermined time period;

c) a decision device for selecting a frequency, from a predetermined set of frequencies, which most closely corresponds to the measured count, and for providing at least one bit value corresponding to the selected frequency.

5,550,506

DQPSK DEMODULATOR CAPABLE OF IMPROVING A SYMBOL ERROR RATE WITHOUT DECREASING A TRANSMISSION RATE

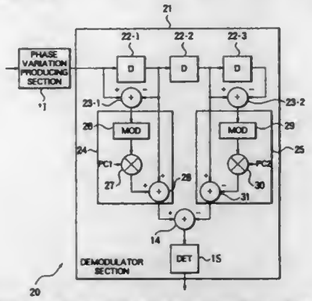
Soichi Tsumura, Minato-ku, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jul. 12, 1995, Ser. No. 501,478

Claims priority, application Japan, Jul. 13, 1994, 6-161572

Int. Cl.[6] H03D *3/00*; H04L *27/22*

U.S. Cl. 329—304 **16 Claims**



1. A demodulator supplied with a modulated signal having phase information as a received signal for demodulating said received signal into a demodulated signal by differential detection, comprising:

delay means supplied with an input signal based on said received signal for delaying said input signal to produce first through N-th delayed signals which have first through N-th delayed times different from one another, where N represents an odd number which is not less than three;

first producing means for carrying out said differential detection in accordance with said input signal and said first through said N-th delayed signals to produce first through K-th output signals, where K represents a positive integer equal to (N+1)/2, said first producing means recursively repeating said differential detection until said positive integer K is equal to two and producing first and second output result signals; and

second producing means for producing said demodulated signal in accordance with said first and said second output result signals.

5,550,507

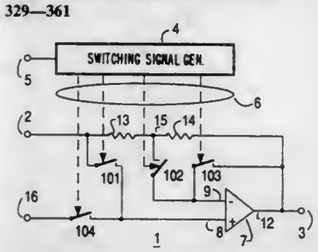
DEMODULATOR EMPLOYING CYCLIC SWITCHING OF THE GAIN FACTOR OF AN OPERATIONAL AMPLIFIER BETWEEN DIFFERENT PREDETERMINED VALUES

Manfred Horl, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 317,158, Oct. 3, 1995, abandoned. This application Oct. 24, 1995, Ser. No. 547,391

Int. Cl.[6] H03D *1/00;1/04;1/18*

U.S. Cl. 329—361 **7 Claims**



1. A circuit arrangement for demodulating an input signal in the form of a carrier wave which is amplitude modulated by an information signal, the demodulation recovering said information signal; said circuit arrangement comprising:

an operational amplifier having at least two alternate input networks which can be selectively activated, at least two alternate feedback networks which can be selectively activated, and an output terminal; the input signal being supplied in common to each of the input networks; said amplifier having a gain factor the value of which at any time is determined by which combination of said input networks and feedback networks are then activated; and

switching means coupled to each of said input networks and to each of said feedback networks for periodically selectively activating different combinations of said input networks and feedback networks, thereby periodically varying the gain factor of said amplifier between different predetermined values; said periodic variation being at a frequency which is an integral multiple of the frequency of said carrier;

whereby the variation of the gain factor of said amplifier, as applied to said input signal, results in demodulation of said input signal and recovery of said information signal at the output of said amplifier.

5,550,508

PHASE INVERTER SELECTION APPARATUS FOR TONE ALTERATION IN A TUBE-TYPE AUDIO AMPLIFIER

Salvatore J. Trentino, 800 Sir Francis Drake Blvd., Suite A, San Anselmo, Calif. 94960

Filed Jan. 9, 1995, Ser. No. 371,023

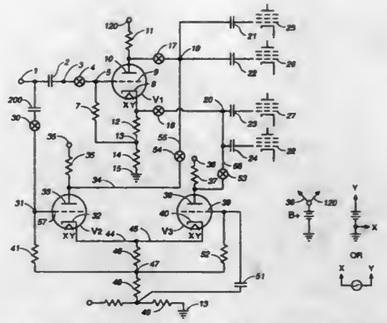
Int. Cl.[6] H03F *17/00*

U.S. Cl. 330—59 **11 Claims**

1. A phase inverter selection apparatus for tone alteration in a tube-type audio amplifier, said selection apparatus comprising:

an audio amplifier including a first type phase inverter and a second type phase inverter, each connected to associated output tubes;

a first opto-isolator array electrically connected to said first type phase inverter, said first opto-isolator array normally in a high resistance state;



a second opto-isolator array electrically connected to said second type phase inverter, said second opto-isolator array normally in a high resistance state;

power supply means selectively connected to one of said first opto-isolator array or said second opto-isolator array, wherein when said power supply means is connected to said first opto-isolator array, said first opto-isolator array is driven to a low resistance state to enable said first type phase inverter to connect to its associated output tubes, and said second opto-isolator array remains in a high resistance state effectively preventing said second type phase inverter from connecting to its associated output tubes, and when said power supply means is connected to said second opto-isolator array, said second opto-isolator array is driven to a low resistance state to enable said second type phase inverter to connect to its associated output tubes, and said first opto-isolator array remains in a high resistance state effectively preventing said first type phase inverter from connecting to its associated output tubes.

5,550,509

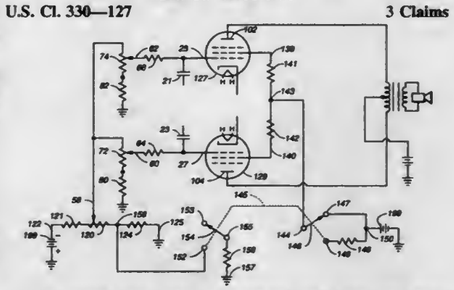
OUTPUT POWER SELECTION APPARATUS FOR A TUBE-TYPE AUDIO AMPLIFIER

Salvatore J. Trentino, 800 Sir Francis Drake Blvd., Suite A, San Anselmo, Calif. 94960

Filed Jan. 9, 1995, Ser. No. 371,021

Int. Cl.[6] H03F *3/28*

U.S. Cl. 330—127 **3 Claims**



1. An output power selection apparatus for a tube-type audio amplifier, said apparatus comprising:

an output tube having a screen grid and a control grid;

a screen grid voltage supply;

a control grid bias supply; and

a power reduction switch selectively connecting said output tube screen grid directly to the screen grid voltage supply through a current limiting resistor, and connecting said output tube control grid to the control grid bias supply whose potential voltage is at the more negative of two selectable voltage level values for high power operation, and connecting said output tube screen grid to the screen grid power supply through a

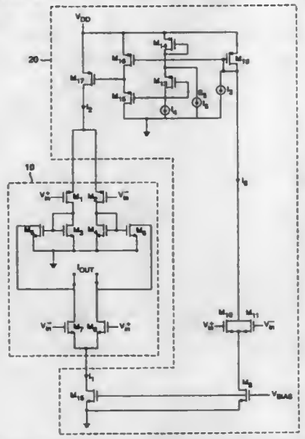
power limiting resistor connected to said current limiting resistor, and the output tube control grid to the less negative of two selectable voltage levels for low power operation.

5,550,510

CONSTANT TRANSCONDUCTANCE CMOS AMPLIFIER INPUT STAGE WITH RAIL-TO-RAIL INPUT COMMON MODE VOLTAGE RANGE

Krishnaswamy Nagaraj, Hillsborough Township, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 27, 1994, Ser. No. 364,369
Int. Cl.[6] H03F *3/45*
U.S. Cl. 330—253 **7 Claims**



1. A CMOS differential amplifier having reduced feedback and a substantially constant net transconductance over a large common mode input voltage ranges of operation comprising:

a first differential transistor pair connected at a first tail for receiving a first tail current for biasing and having an input for receiving a differential signal;

a second differential transistor pair connected at a second tail for receiving a second tail current for biasing and having inputs for receiving said differential signal, said second pair being complementary to said first pair;

an output circuit having an input connected to said first pair and to said second pair;

a first current source connected to said first tail for supplying said first tail current;

a reference voltage source connected to said first current source for setting said first tail current to a nominal value;

a first current mirror connected to said first current source and biased to carry a current proportional to that from said first current source, said first current mirror also connected to a dummy differential pair, said dummy differential pair having an input connected to receive said differential signal and an output connected to a first current-to-voltage converter;

said first current mirror providing a representative current indicative of the magnitude of said first tail current;

the first current-to-voltage converter having an input connected to receive said representative current and an output for supplying a first voltage proportional to the square root of the magnitude of said representative current;

a reference current source having an output for supplying a reference current;

a second current-to-voltage converter having a terminal connected to said reference current and supplying a second voltage proportional to the square root of the magnitude of said representative current; and

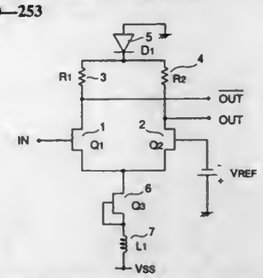
a second current source having an input connected to directly receive a difference voltage representative of the difference between said second voltage and said first voltage and an output connected to said second tail for supplying said second tail current proportional to the square of said difference voltage, thereby manipulating said second tail current in response to variations in said first tail current to maintain a substantially constant net transconductance in said amplifier.

5,550,511

DIFFERENTIAL AMPLIFIER HAVING SINGLE PHASE INPUT AND TWO OUTPUT PHASES

Miyo Miyashita, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 26, 1995, Ser. No. 451,493
Claims priority, application Japan, Jun. 2, 1994, 6-121197
Int. Cl.[6] H03F *3/45*
U.S. Cl. 330—253 **8 Claims**



1. A differential amplifier having a single phase input and two phase output comprising:

switching field effect transistors provided at an input side and at a reference side, respectively, forming a differential pair;

a field effect transistor serving as a constant current source for providing a current flow equal to a sum of currents flowing through said switching field effect transistors; and

an inductor connected in series with said field effect transistor serving as a constant current source between a connection node of respective source electrodes of said switching field effect transistors and a power supply for said amplifier.

5,550,512

METHOD FOR OFFSET VOLTAGE TRIM FOR AUTOMATIC GAIN CONTROLS

Kiyoshi Fukahori, Tokyo, Japan, assignor to Silicon Systems, Inc., Tustin, Calif.

Continuation of Ser. No. 260,065, Jun. 15, 1994, Pat. No. 5,432,475. This application Jun. 6, 1995, Ser. No. 470,087
Int. Cl.[6] H03F *3/45;* **H03G** *3/30*
U.S. Cl. 330—254 **19 Claims**

9. A method of offset trim comprising the steps of:

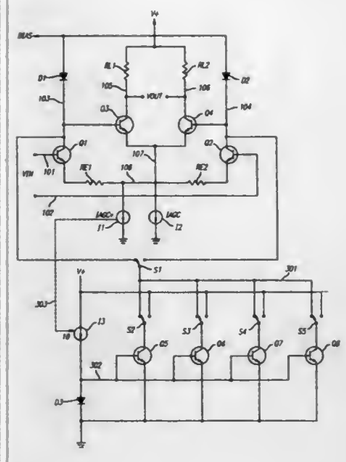
providing a first current source for controlling a current supplied to a first differential pair;

providing a second current source for controlling a current supplied to a second differential pair, said second differential pair coupled to output terminals to produce an output signal;

providing a third current source switchably coupled to said first differential pair for providing a trim current to one of said first differential pair of transistors;

adjusting said trim current such that DC offset of said output signal is substantially eliminated;

adjusting said third current source in response to said first current source.

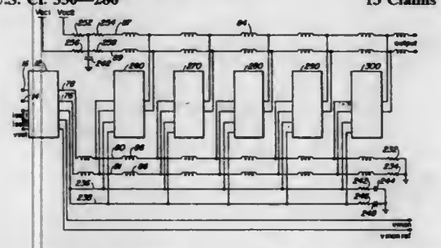


5,550,513

HIGH FREQUENCY, DIFFERENTIAL LIMITING DISTRIBUTED AMPLIFIER

Thomas Y. Wong, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jun. 22, 1995, Ser. No. 493,600
Int. Cl.[6] H03F *3/60*
U.S. Cl. 330—286 **13 Claims**



1. A limiting, distributed amplifier circuit for supplying a high frequency differential output, said circuit comprising:

a limiting output amplifier having a plurality of interconnected distributed amplifier stages, each of said amplifier stages having input means to receive a high frequency differential input and output means to provide an amplified limiting differential output;

a pair of input transmission lines for delivering said high frequency differential input to each of said distributed amplifier stages;

a pair of output transmission lines for receiving said amplified limiting differential output from each of said distributed amplifier stages and combining said outputs to provide said high frequency differential output; and

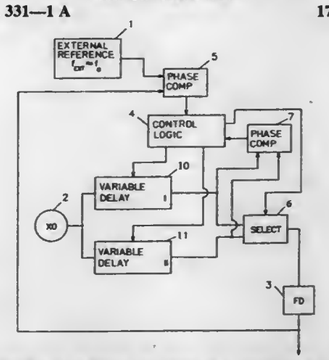
bias means to provide a d.c. bias current to each of said distributed amplifier stages to control the amplitude of said high frequency differential output.

5,550,514

DIGITAL CONTROLLED XTAL OSC

Nils P. ÅLiedberg, Stockholm, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Apr. 28, 1994, Ser. No. 234,109
Claims priority, application Sweden, Apr. 28, 1993, 9301435
Int. Cl.[6] H03L *7/06*
U.S. Cl. 331—1 A **17 Claims**



1. A method of aligning the phase of a stable local frequency oscillator, whose phase and frequency differ from and is not based on a phase and frequency of a reference signal, utilizing a phase comparator and digitally incrementally variable delay lines so as to align a phase of the signal from the local frequency stable oscillator with the phase of said reference signal to also compensate buffering delays, said method comprising the steps of:

momentarily switching between an active delay line and an inactive delay line in series with a signal from said stable local frequency oscillator when said active delay line approaches its phase adjustment limit, there being in absolute phase a difference of one clock period between said active and said inactive delay line, whereby when switching between said lines there is achieved an exchange of function such that an earlier active delay line will then constitute the inactive delay line and an earlier inactive delay line will constitute the active delay line up to a time at which a further switch is made, so as to obtain delay-wise unlimited continuous incremental phase alignment of the signal from said stable local frequency oscillator with said phase of said reference signal; and

adjusting said inactive delay line with at least plus or minus one clock period of the signal from said stable local frequency oscillator when said inactive delay line approaches a limit of its phase regulating ability, such that relative phase from said inactive delay line will continue to coincide with an output phase from said active delay line, to obtain a correct clock phase with any output of said stable local frequency oscillator.

5,550,515

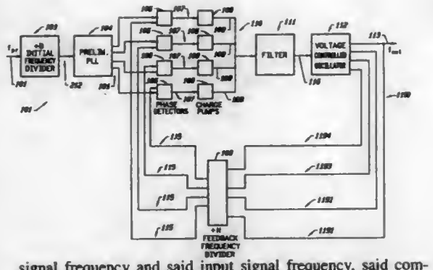
MULTIPHASE CLOCK SYNTHESIZER HAVING A PLURALITY OF PHASE SHIFTED INPUTS TO A PLURALITY OF PHASE COMPARATORS IN A PHASE LOCKED LOOP

Jui Liang, Laguna Niguel; Ramon Co, Trabuco Canyon, and Ann Gui, Sunnyvale, all of Calif., assignors to Opti, Inc., Milpitas, Calif.

Filed Jan. 27, 1995, Ser. No. 378,798
Int. Cl.[6] H03L *7/07;7/087;7/18*
U.S. Cl. 331—11 **26 Claims**

1. Phase-locked loop apparatus for producing an output signal having an output signal frequency, in response to an input signal oscillating at an input signal frequency, each cycle of said input signal being divided into a plurality of phase intervals, comprising:

error means for producing an output frequency control signal in response to a number of comparisons between a feedback



signal frequency and said input signal frequency, said comparisons occurring with respect to each of said plurality of phase intervals within each cycle of said input signal;

output means for producing said output signal in response to said output frequency control signal; and

feedback means for producing a feedback signal in response to said output frequency control signal, said feedback signal having said feedback signal frequency, each cycle of said feedback signal being divided into a plurality of phase intervals and said feedback signal frequency being a non-integer multiple of the number of said comparisons.

5,550,516

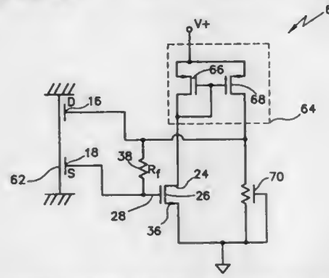
INTEGRATED RESONANT MICROBEAM SENSOR AND TRANSISTOR OSCILLATOR

David W. Burns, and J. David Zook, both of Minneapolis, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 16, 1994, Ser. No. 357,943

Int. Cl.[6] G01L *1/10*; H03B *5/30*

U.S. Cl. 331—65 **14 Claims**



1. A transistor resonant integrated microbeam structure comprising:

a beam situated in a substrate and connected to a reference terminal, said beam having a first end and a second end fastened to the substrate, said beam having a tension or compression between the first and second ends and caused by bending of the substrate due to a magnitude of a physical parameter being measured, and said beam having a resonant frequency affected according to an amount of tension or compression of said beam, the resonant frequency indicating the magnitude of the physical parameter;

a first electrode situated on a first side of said beam, such that when said beam vibrates, a distance between said beam and said first electrode varies in synchronism with the resonant frequency, resulting in a first capacitance between said first electrode and said beam that varies inversely with the distance between said first electrode and said beam;

a second electrode situated on the first side of said beam, a distance between said beam and said second electrode varies proportionally to the distance between said beam and said first electrode, and a second capacitance between said second electrode and said beam varies in phase with the first capacitance; and

a non-inverter having an input connected to said first electrode and an output connected to said second electrode; and

wherein said non-inverter comprises:

a first transistor having a first terminal connected to said first electrode, a second terminal connected to the reference terminal, and a third terminal; and

an inverter having an input terminal connected to the third terminal of said transistor and having an output terminal connected to said second electrode.

5,550,517

OSCILLATION CIRCUIT HAVING HYSTERESIS INVERTER COUPLED TO A DELAY CIRCUIT

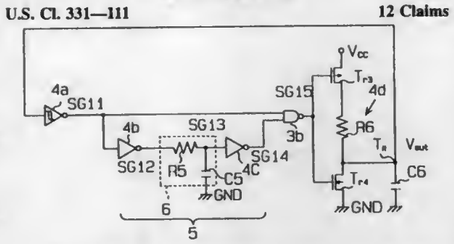
Teruhiko Saito, Kasugai, Japan, assignor to Fujitsu Limited, Kawasaki, and Fujitsu VLSI Limited, Kasugai, both of, Japan

Filed Dec. 19, 1994, Ser. No. 358,470

Claims priority, application Japan, Dec. 20, 1993, 5-320300

Int. Cl.[6] H03K *3/03*

U.S. Cl. 331—111 **12 Claims**



1. An oscillation circuit, supplied with power from a first power supply and a second power supply, comprising:

an input stage circuit composed of a hysteresis inverter having a first threshold value and a second threshold value set between said first threshold value and the potential of said first power supply;

an intermediate stage circuit coupled to said input stage circuit and including an inversion circuit and a delay circuit, said delay circuit being provided between said hysteresis inverter and said inversion circuit; and

an output stage circuit coupled to said input stage circuit and said intermediate stage circuit, said output stage circuit including an output terminal connected to said hysteresis inverter, a capacitor provided between said output terminal and said first power supply, and an inverter circuit, connected to said inversion circuit, for controlling the charging and discharging of said capacitor to generate an oscillation output signal at said output terminal,

wherein when the potential of said oscillation output signal shifts from said first threshold value to the potential of said first power supply, said delay circuit causes said hysteresis inverter to output a signal to said inversion circuit of said intermediate stage circuit following a time delay after said oscillation output signal reaches said second threshold value, thereby setting the voltage swing of said oscillation output signal to the potential difference between said first threshold value and the potential of said first power supply, and wherein said first power supply is a low-potential power supply, said second power supply is a high-potential power supply, said first threshold value is a high threshold value for said hysteresis inverter, and said second threshold value is a low threshold value for said hysteresis inverter.

5,550,518

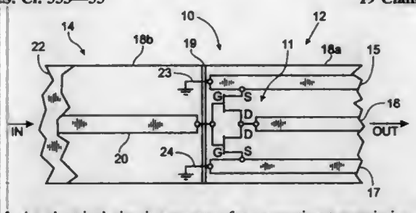
MINIATURE ACTIVE CONVERSION BETWEEN MICROSTRIP AND COPLANAR WAVE GUIDE

Clifford A. Mohwinkel, San Jose, Calif., assignor to Endgate Corporation, Sunnyvale, Calif.

Filed Jun. 12, 1995, Ser. No. 490,019

Int. Cl.[6] H01P *5/08*

U.S. Cl. 333—33 **19 Claims**



1. An electrical circuit apparatus for converting transmission of signals between a microstrip transmission line and a coplanar wave guide transmission line comprising:

substrate means having opposite faces;

a microstrip transmission line having a signal conductor mounted on one face of the substrate and a ground plane mounted to the other face of the substrate;

a coplanar wave guide having a center conductor and two coplanar ground strips mounted on the one face of the substrate means;

means coupling the ground plane to the two ground strips; and

an active device having a control terminal, an output terminal, and a common terminal, the active device being mounted adjacent to the substrate with the control terminal and the output terminal each coupled to a different respective one of the signal conductor and the center conductor, and with the at least one common terminal coupled to one of the ground strips, so that the active device couples a signal between the signal conductor and the center conductor.

5,550,519

DIELECTRIC RESONATOR HAVING A FREQUENCY TUNING ELEMENT EXTENDING INTO THE RESONATOR HOLE

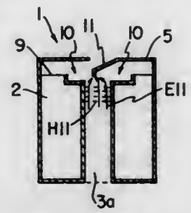
Juha Korpela, Kempele, Finland, assignor to LK-Products OY, Kempele, Finland

Filed Jan. 18, 1995, Ser. No. 373,859

Claims priority, application Finland, Jan. 18, 1994, 940246

Int. Cl.[6] H01P *1/202;7/04*

U.S. Cl. 333—207 **9 Claims**



1. A dielectric resonator comprising:

a dielectric block having opposed surfaces and a hole extending between the opposed surfaces, one of which surfaces is coated with an electrically conductive material and the other of which is uncoated, the hole having an electrically coated bore forming a transmission line resonator capable of generating an electric field therein, the bore having a wider section adjacent the uncoated surface than adjacent the coated surface, and an electrically conductive frequency tuning element grounded at one end and having a structure such that an opposing end is bent into the wider section in the bore of the transmission line resonator so as to frequency tune the dielectric resonator by affecting the field present in the wider section and providing a capacitance between the transmission line resonator and ground.

5,550,520

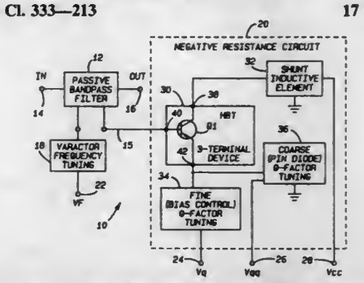
MONOLITHIC HBT ACTIVE TUNEABLE BAND-PASS FILTER

Kevin W. Kobayashi, Torrance, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Apr. 11, 1995, Ser. No. 420,262

Int. Cl.[6] H03H *11/04;11/52*

U.S. Cl. 333—213 **17 Claims**



1. An active band-pass filter with tuneable negative resistance, said filter comprising:

a passive filter circuit having an input and an output; and

a negative resistance circuit coupled to the band-pass filter for generating a negative resistance so as to compensate for undesired resistive losses exhibited by the passive filter circuit, said negative resistance circuit including;

a transistor having a base, a collector and an emitter, said base being connected to the passive filter circuit for applying the negative resistance to the passive filter circuit;

an inductive shunt coupled to the collector of the transistor; and

tuning means coupled to the emitter of the transistor for adjusting the amount of negative resistance generated at the base of the transistor.

5,550,521

ELECTRICAL GROUND CONNECTION BETWEEN A COAXIAL CONNECTOR AND A MICROWAVE CIRCUIT BOTTOM PLATE

Maurice Bernaud, Asnieres, and Freddy Maquet, Neuilly Sur Seine, both of, France, assignors to Alcatel Telspace, Nanterre Cedex, France

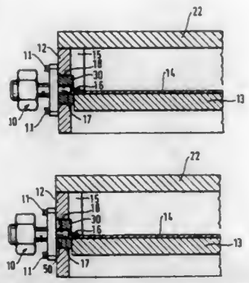
Filed Jan. 25, 1994, Ser. No. 186,442

Claims priority, application France, Feb. 16, 1993, 93 01709

Int. Cl.[6] H01P *1/04*

U.S. Cl. 333—260 **8 Claims**

1. A system for making an electrical connection between an electronic circuit implemented on a substrate on an electrically conductive bottom plate fixed into an electromagnetic shield box and a coaxial connector fixed to an outside wall of said shield box, the center conductor of said coaxial connector being inserted in a hole in said wall in order to be connected to said electronic circuit, said coaxial connector having a grounding surface facing said wall and an electrically conductive ring coaxial with said center conductor,



the grounding contact between said coaxial connector and said bottom plate is made axially of said electrically conductive ring, said electrically conductive ring being insulated from said center conductor and simultaneously in electrical contact axially with said grounding surface of said coaxial connector and said bottom plate with said coaxial connector being fixed to said wall of said box.

5,550,522

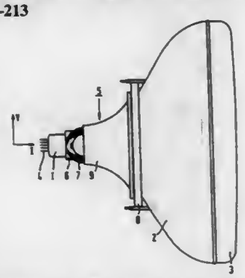
DEFLECTION UNIT HAVING A RING WITH FIELD CORRECTION ELEMENTS, AND CATHODE-RAY TUBE PROVIDED WITH SAID UNIT

Bernadus H. J. Dekkers; Ronald J. J. DeMan; Antonius J. J. Bolder, and Albertus A. S. Sluyterman, all of Eindhoven, Netherlands, assignors to U.S. Phillips Corporation, New York, N.Y.

Continuation of Ser. No. 149,492, Nov. 9, 1993, abandoned. This application Mar. 29, 1995, Ser. No. 414,173

Int. Cl.[6] H01H *1/00;* **H01F** *7/00;* **H01J** *29/70;29/74*

U.S. Cl. 335—213 **33 Claims**



1. An electromagnetic deflection unit for a predetermined type of cathode ray tube, said deflection unit comprising a hollow coil holder substantially surrounding a longitudinal axis and having an inner surface at which is supported an arrangement of coils for producing an electron beam deflection field within said tube, characterized in that said deflection unit includes field correction means for correcting deflection errors of said electron beam, said field correction means comprising:

a. an annular support disposed around the longitudinal axis and within the arrangement of coils, said annular support having a multiplicity of predetermined correction-element-supporting locations;

b. a plurality of magnetized field correction elements, for producing respective magnetic fields, secured at only selected ones of said predetermined locations, said selected locations and said respective magnetic fields being determined for the deflection unit on the basis of at least one measured operating characteristic of said deflection unit.

5,550,523

INDUCTOR

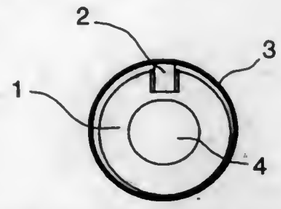
Pascal Rouet, Gouy, and Bernard Delvart, Heudreville Sur Eure, both of, France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 24, 1994, Ser. No. 295,444

Claims priority, application France, Sep. 1, 1993, 9310428

Int. Cl.[6] H01F *27/24*

U.S. Cl. 336—221 **23 Claims**



1. An inductor comprising a winding of electrical wire wound on a straight magnetic core, characterised in that it comprises a bar made of an electrically resistive material, which bar is interposed between the winding and the core, the winding is formed by non-contiguous turns of a bare wire, and the wire is in contact with the bar.

5,550,524

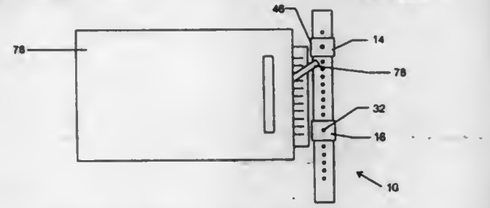
THERMOSTAT RANGE LIMIT DEVICE

Ralph W. Zimmerman, 2807 Rabbit Hill, Tallahassee, Fla. 32312

Filed May 31, 1994, Ser. No. 251,401

Int. Cl.[6] H01H *37/00;* **G05D** *23/00;* **G09F** *9/00;* **G05G** *1/04*

U.S. Cl. 337—1 **16 Claims**



1. A thermostat range limiting device for limiting the travel of a temperature lever on a thermostat mounted on a wall comprising in combination:

a base having a first end, a second end, a front side, a back side, and a middle portion located between said first end and said second end;

a first receiving means extends from said first end to said second end and extends through said base;

a first attachment means is located on said back side at said first end, and a second attachment means is located on said back side at said second end for securing said base to the wall;

a first temperature limit means and a second temperature limit means are in slidable communication with said base for limiting high and low temperature settings, respectively of the temperature lever on said thermostat, said first temperature limit means and said second temperature limit means are adapted to limit travel of said temperature lever on said thermostat;

a second receiving means extends centrally through said first temperature limit means and is adapted to be aligned with said first receiving means;

a third receiving means extends centrally through said second temperature limit means and is adapted to be aligned with said first receiving means;

a first securement means extends through said second receiving means and said first receiving means for providing said first temperature limit means to be in a locked and secured position on said base and a second securement means extends through said third receiving means and said first receiving means for providing said second temperature limit means to be in a locked and secured position on said base; and

said first securement means and said second securement means provides for said first temperature limit means and said second temperature limit means to be maintained in a fixed position on said base when said base is vertically displace and when said base is horizontally displaced.

5,550,525

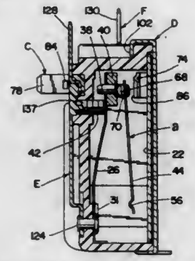
SWITCH WITH BIMETALLIC ELEMENT

Donald E. Place, Mansfield, Ohio, assignor to Therm-O-Disc, Incorporated, Mansfield, Ohio

Filed Jul. 19, 1994, Ser. No. 276,998

Int. Cl.[6] H01H *37/52;37/54;37/04;37/66*

U.S. Cl. 337—363 **3 Claims**



1. A thermostatic switch including a substantially U-shaped bimetal blade having a pair of spaced-apart legs with connected end portions and outer end portions,

a switchcase having one of said outer end portions on one of said legs attached thereto,

a movable electrical contact on the other of said outer end portions on the other of said legs,

a pair of fixed electrical contacts on opposite sides of said movable electrical contact,

said movable electrical contact being in engagement with one of said fixed electrical contacts under ambient temperature conditions,

said bimetal blade being movable responsive to an elevated temperature condition for moving said movable electrical contact out of engagement with said one fixed electrical contact and into engagement with the other of said fixed electrical contacts,

said switchcase having opposite endwalls, opposite sidewalls and a front wall,

a plurality of terminal members attached to said switchcase,

first and second ones of said terminal members being connected respectively with said one outer end portion of said one leg and with said one fixed electrical contact,

a third of said terminal members being connected with said other fixed electrical contact,

said first and second terminal members extending along said front wall in spaced-apart parallel relationship and projecting outwardly beyond one of said endwalls,

and said third terminal member extending through said front wall between said first and second terminal members in a direction substantially perpendicular to said first and second terminal members.

5,550,526

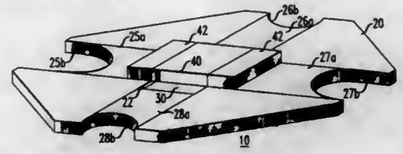
THERMAL DETECTION ELEMENTS WITH HEATER

Behzad D. Mottahed, Upper Montclair, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 27, 1994, Ser. No. 364,626

Int. Cl.[6] H01C *7/10*

U.S. Cl. 338—22 R **10 Claims**



1. A thermal detection element comprising:

an insulating substrate including an aperture formed therein;

a plurality of conductive interconnection elements formed on the substrate, the conductive interconnection elements configured for electrical connection of the thermal detection element with other electrical components;

a resistor positioned within the substrate aperture such that its upper surface is substantially flush with the

upper surface of the substrate, the resistor electrically communicating with at least one of the conductive interconnection elements; and

a resistor mounted adjacent the thermal radiating element such that a substantial portion of the thermal energy radiated by the resistor is channeled to the thermal sensing element, the thermal sensing element electrically communicating with at least one of the conductive interconnection elements.

5,550,527

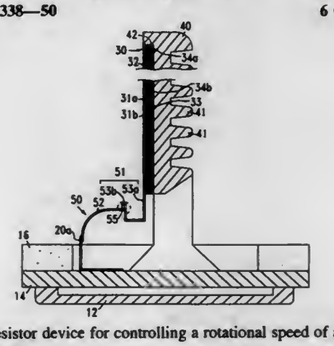
RESISTOR DEVICE FOR CONTROLLING A ROTATIONAL SPEED OF A MOTOR

Woo Y. Lee, Seoul, Rep. of Korea, assignor to Dong A Electric Parts Co., Ltd., Kuri-si, Rep. of Korea

Filed Jul. 1, 1994, Ser. No. 270,129

Int. Cl.[6] H01C *13/00*

U.S. Cl. 338—50 **6 Claims**



1. A resistor device for controlling a rotational speed of a motor comprising:

(a) a housing;

(b) a fixed plate attached to said housing;

(c) connecting terminals extending upwardly from said fixed plate;

(d) a heat sink attached to said fixed plate for radiating heat produced by said resistor device, said heat sink having a receiving recessed portion on a side surface thereof;

(e) a resistance unit comprising a metal band-shaped member closely contacted between a first film and a second film in a foil shape, said resistance unit received within said receiving recessed portion of said heat sink and connected to said connecting terminals to form a resistance circuit; and

VOL 1189 ISS 4 AG 27 1996 UMI

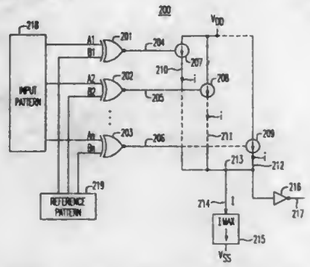
(f) an open-circuit means having a soldered portion characterized by fusing at a predetermined temperature, said open-circuit means positioned a predetermined distance from said resistance unit and connected to said resistance unit and a connecting terminal.

5,550,528

MATCHING OF DIGITAL PATTERNS USING ANALOG LOGIC

Glen E. Offord, Macungie, and Jeffrey L. Sonntag, Rockland Township, Berks County both of Pa., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Mar. 1, 1995, Ser. No. 397,700
Int. Cl.[6] G05B *1/00*
U.S. Cl. 340—146.2 **10 Claims**



1. An integrated circuit comprising circuitry for indicating whether a first set of digital values at least partially matches a second set of digital values to within a desired degree, said circuitry comprising:

set of digital comparators each having a first input for connection to a source of said first set of digital values and a second input for connection to a source of said second set of digital values, and an output;

and further comprising current sources each connected to an output of a digital comparator for providing a first value of current when a pair of digital values from said first and second sets are equal, and for providing a second value of current when the pair of digital values from said first and second sets are not equal, and a current summer for summing the currents from said current sources to produce a total current;

and still further comprises a current comparator that provides a first output signal when said total current exceeds a given value, and provides a second output signal when said total current is less than a given value, wherein said current comparator comprises a current sink that sinks a value of current up to a maximum value, beyond which the voltage across said current sink rises.

5,550,529

ACCESS CONTROL SYSTEM

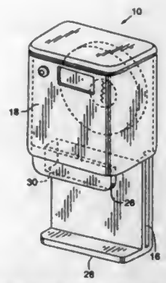
Gregory L. Burge, Salem, Oreg., assignor to Supra Products, Inc., Salem, Oreg.

Filed Jun. 26, 1995, Ser. No. 494,881
Int. Cl.[6] G08B *13/00*
U.S. Cl. 340—296 **14 Claims**

1. A security enclosure adapted to restrict access to a device positioned on a surface, said device being in the group consisting of locks, switches, valves, and outlets, the enclosure comprising:

a first member for mounting to the surface while allowing access to the device positioned thereon;

a cover member coupled to the first member and having first and second positions, in the first position said cover member serving to prevent access to the device, in the second position said cover member allowing access to the device;



the enclosure further including a lock responsive to a key, the lock serving to latch the cover member in the first position until unlocked by the key;

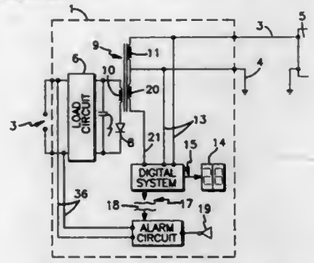
said cover member serving to prevent removal of the key when the cover member is in its second position, wherein a user must return the cover member to its first position in order to retrieve the user's key.

5,550,530

DEVICE FOR SUPPLYING POWER TO AND MONITORING AN ELECTRIC FENCE

Valery Hamm, Les Pelouses, Route du Lude, La Fleche, France

Filed Oct. 27, 1994, Ser. No. 329,993
Claims priority, application France, Oct. 27, 1993, 93 12800
Int. Cl.[6] G08B *13/26*
U.S. Cl. 340—564 **8 Claims**



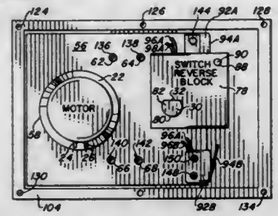
1. A device as for supplying power to and monitoring an electric fence line intended to pen in livestock or to prevent intrusion into an enclosure, comprising a high-voltage pulse generating means connected to a source of energy, said high-voltage pulse generating means generating high-voltage pulses, a system for digitizing an electric quantity, said digitizing system being connected to and drawing electric energy for operating from said energy source, a display device connected to said digitizing system, said display drawing electrical energy for operating from said energy source via said digitizing system, wherein said digitizing system comprises a microprogrammed electronic integrated digital circuit which, by means of software, analyzes at least one of a status of the fence line and a degree of insulation of said fence line on the basis of data pertaining to at least one of pulses transmitted along the fence line and data relating to return pulses sent by a transponder, said digital circuit comprising means for sending results of these analyses to said display device, said digital circuit also comprising means for transmitting data to an alarm circuit connected to said digital circuit via a data transmission channel comprising electrical insulation.

5,550,531

MOTORIZED BOAT-MOUNTED SIGNALING DEVICE FOR WATER SKIERS

Cheryl G. Little-Lowry, 70 Hawaii Dr., Aliso Viejo, Calif. 92656

Filed Feb. 1, 1994, Ser. No. 189,870
Int. Cl.[6] G08B *23/00*
U.S. Cl. 340—573 **14 Claims**



1. A warning device for use on a ski boat to indicate the presence of a downed water skier in the water, said ski boat containing an electrical power source, said warning device comprising:

electrically powered drive means for rotating an output shaft in a first direction when electrical power of a first polarity is supplied to said electrically powered drive means, and in a second direction when electrical power of a second polarity is supplied to said electrically powered drive means;

a first limit switch, said first limit switch being normally closed and opening only when actuated;

a second limit switch, said second limit switch being normally closed and opening only when actuated;

first switch means for location in the ski boat, said first switch means for alternately, selectively: a. supplying power from the ski boat's electrical power source through said first limit switch to said electrically powered drive means in said first polarity; or b. supplying power from said ski boat's electrical power source through said second limit switch to said electrically powered drive means in said second polarity; or c. not supplying power from said ski boat's electrical power source to said electrically powered drive means;

second switch means for location remote from the ski boat, said second switch means for alternately, selectively: a. supplying power from the ski boat's electrical power source through said first limit switch to said electrically powered drive means in said first polarity; or b. not supplying power from said ski boat's electrical power source to said electrically powered drive means;

an eccentric element fixedly mounted on said output shaft to rotate with said output shaft, said eccentric element having an actuating element extending therefrom, said actuating element functioning to alternately actuate said first limit switch and said second limit switch, said actuating element actuating said first limit switch when said output shaft reaches a first angular position, and said actuating element actuating said second limit switch when said output shaft reaches a second angular position; and

flag means for providing a warning when raised, said flag means being mounted on said output shaft, said flag means being deployed when output shaft reaches said first angular position, and said flag means being undeployed when said output shaft reaches said second angular position.

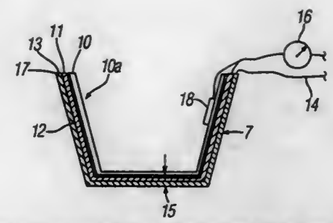
5,550,532

METHOD AND DEVICE FOR CONTAINING FUEL SPILLS AND LEAKS

Glen R. Marshall, Kingwood, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Mar. 3, 1994, Ser. No. 206,292
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—604 **5 Claims**

1. A device for containing and responding to spillage and leaks associated with fuel handling equipment comprising:



a spillage containment vessel placed beneath the fuel handling equipment, said vessel having a substantially open top portion, said containment vessel further having an interior surface and an exterior surface, said interior surface being substantially sealed;

differential sensing means within said vessel comprising hydrocarbon and fluid sensing elements which separately sense hydrocarbon and nonhydrocarbon, at least the hydrocarbon sensing element of said differential sensing means intrinsically incorporated in the construction of said interior surface of said containment vessel such that it comprises the entirety of the interior surface of said vessel;

a signalling means, signalling means being in nonmechanical communication with at least said hydrocarbon sensing element of said differential sensing means and being in further communication with said nonhydrocarbon sensing element of said sensing means such that the differential sensing of hydrocarbons and nonhydrocarbon is communicated by said signalling means; and

a disabling means, said disabling means being in nonmechanical communication with said signalling means;

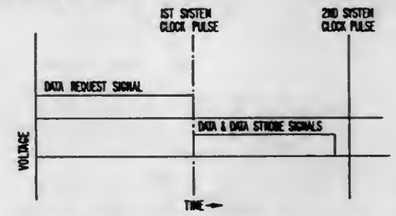
wherein said differential sensing means generates a nonmechanical communication in response to the detection of hydrocarbons, a different communication in response to the detection of the nonhydrocarbon within said vessel, said disabling means disables said fuel handling equipment in response to the detection of hydrocarbon and the detection of hydrocarbon and nonhydrocarbon are separably perceptible by an attendant of said equipment.

5,550,533

HIGH BANDWIDTH SELF-TIMED DATA CLOCKING SCHEME FOR MEMORY BUS IMPLEMENTATION

Stephen S. Pawlowski, Beaverton, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 999,283, Dec. 30, 1992, abandoned.
This application Nov. 14, 1994, Ser. No. 339,635
Int. Cl.[6] H04L *1/16*; H04Q *1/30*; G06F *1/12*
U.S. Cl. 340—825.2 **4 Claims**



1. A method for transmitting data from a first device to a second device, comprising the steps of:

a) sending a data request from the first device to the second device;

b) sending a system clock signal from a system clock to said second device to latch said data request signal into said second device, said system clock having a first clock period;

c) sending data from the second device to the first device

VOL 1189 ISS 4 AG 27 1996 UMI

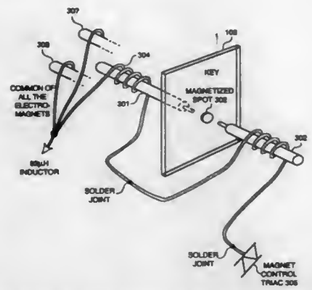
d) sending a data validation signal from said second device to said first device to latch said data into said first device, said data validation signal lagging said data and having a second clock period that is less than first clock period, said data validation signal being unique to said data sent by the second device.

5,550,534

COMPUTERIZED MAGNETIC KEY PROGRAMMER

Thomas R. Myers, 300 Miramonte, Palo Alto, Calif. 94306-1032

Filed Oct. 5, 1994, Ser. No. 319,458
Int. Cl.[6] H04Q *1/00*
U.S. Cl. 340—825.34 **9 Claims**



1. An apparatus for programming a magnetic card key associated with a magnetic locking device, said apparatus comprising:

a computer having an input device for inputting a plurality of codes and a memory for storing said plurality of codes;

an encoder having a slot for accepting said magnetic card key, wherein when said magnetic card key is inserted in said slot, said encoder encodes said magnetic card key with a particular code corresponding to said magnetic locking device as supplied by said computer, said encoder comprising a plurality of electromagnets having a sufficiently narrow thickness to enable the plurality of electromagnets to be concurrently placed in close proximity to the inserted magnetic card key, said electromagnets being programmed by said computer to encode said magnetic card key with south and north polarities according to said particular code corresponding to said magnetic locking device, wherein each of said electromagnets is constructed in a complete magnetic loop, in which a pathway from a first end of the electromagnet to a second end of the electromagnet is constructed of materials that pass magnetic fields with little or no reluctance, wherein the electromagnet operates in a highly efficient manner; and

an interface coupling said computer and said encoder.

5,550,535

BANK BALANCE NOTIFICATION BY WRISTWATCH PAGER

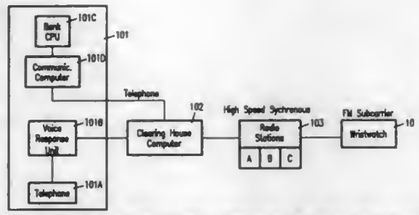
Mike C. Park, Portland, Oreg., assignor to Seiko Communications Holding N.V., Netherlands Antilles

Filed Aug. 14, 1992, Ser. No. 930,953
Int. Cl.[6] H04Q *7/14*
U.S. Cl. 340—825.440 **10 Claims**

1. A system including,

a plurality of personal message reception devices, each of which has a unique identification number and receives messages,

means for sending messages to said personal reception devices, each message being one of a plurality of message types, at least one of said message types being a security code message



containing a security code datum and at least one of said message types being a bank balance messages being directed to a personal reception device which has a particular unique identification number whereby a selected security code datum is directed to and stored within a selected message reception device and a selected bank balance datum is directed to and stored within said selected message reception device and said selected message reception device displays a received and stored bank balance datum only upon a user entry matching a received and stored security code datum,

a bank computer which has stored therein system users' current bank balance data and which regularly selects for sending bank balance data, and

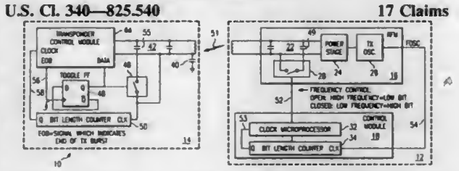
means coupling said bank computer to said sending means to deliver said selected bank balance datum via a selected bank balance message to said selected message reception device.

5,550,536

CIRCUIT FREQUENCY FOLLOWING TECHNIQUE TRANSPONDER RESONANT

Thomas J. Flaxl, Train, Germany, assignor to Texas Instruments Deutschland GmbH, Germany

Filed Aug. 17, 1994, Ser. No. 291,964
Int. Cl.[6] H04Q *9/12*
U.S. Cl. 340—825.540 **17 Claims**



8. A transponder unit operable to receive information, comprising:

a transponder resonant circuit operable to receive a transmit frequency signal, said transponder resonant circuit being tuned to a first frequency and a second frequency, said transmit frequency signal being one of said first and second frequencies, said first and second frequencies representing information in binary zero and binary one level states respectively, said transmit frequency signal further operable to supply power to the transponder unit; and

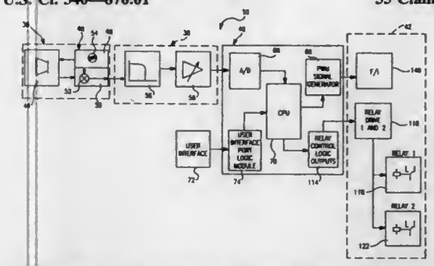
a transponder control module coupled to said transponder resonant circuit and operable to detect a change in a frequency of said transmit frequency signal between said first and second frequencies, and to tune said transponder resonant circuit to approximately said first frequency when the frequency of said transmit frequency signal is said first frequency, and to tune said transponder resonant circuit to approximately said second frequency when the frequency of said transmit frequency signal is said second frequency.

5,550,537

APPARATUS AND METHOD FOR MEASURING MASS FLOW RATE OF A MOVING MEDIUM

Kenneth L. Perdue, Greenwood, Ind., assignor to Endress + Hauser, Inc., Greenwood, Ind.

Filed May 6, 1994, Ser. No. 239,330
Int. Cl.[6] G08C *19/16*
U.S. Cl. 340—870.01 **35 Claims**



32. A method of measuring the mass flow rate of a material moving along a flow path at an assumed velocity, comprising the steps of:

transmitting a field of electromagnetic energy of known magnitude and frequency across the flow path;

detecting the magnitude of electromagnetic energy reflected from material moving across the field which is proportional to the concentration of material moving along the flow path; and

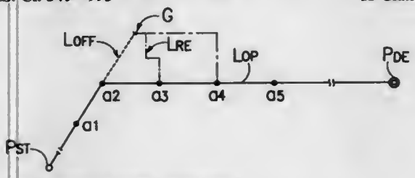
converting the magnitude of reflected energy and the assumed velocity to a response related to the mass flow rate of the material.

5,550,538

NAVIGATION SYSTEM

Takao Fujii, Cupertino, Calif., and Tatsuhiko Abe, Saitama, Japan, assignors to Zexel Corporation, Tokyo, Japan

Continuation of Ser. No. 91,761, Jul. 14, 1993, abandoned. This application Oct. 31, 1994, Ser. No. 331,677
Int. Cl.[6] G08G *1/123*
U.S. Cl. 340—995 **11 Claims**



1. A navigation system comprising:

means for detecting a present position of a vehicle;

first computing means for computing an optimal route for said vehicle from a starting point to a destination;

first means for selecting a first plurality of marked points on said optimal route;

said first plurality of marked points being used for determining a restoration point between said destination and a deviation point;

off-route detection means for detecting a deviation of said vehicle from said optimal route;

said deviation occurring at said deviation point;

second means for selecting one of said first plurality of marked points disposed between a point at which said deviation occurs and said destination, as a restoration point when said off-route detection means detects said deviation;

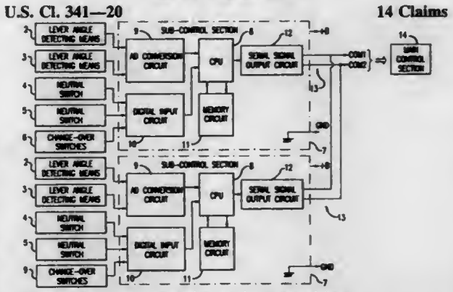
said second means for selecting including second computing means for computing an optimal restoration route from a plurality of restoration routes each extending from said present position to one of said first plurality of marked points disposed between a deviation point and said destination; and said optimal restoration route extending from said present position to said restoration point on said optimal route.

5,550,539

JOY STICK TYPE OPERATING LEVER DEVICE

Masatoshi Miki; Toshio Kuwabara, and Manabu Tamura, all of Tokyo, Japan, assignors to Shin Caterpillar Mitsubishi Ltd., Tokyo, Japan

Filed Dec. 6, 1994, Ser. No. 354,082
Claims priority, application Japan, Dec. 9, 1993, 5-340752
Int. Cl.[6] H03M *11/00*
U.S. Cl. 341—20 **14 Claims**



1. A joy stick type operating device, comprising:

lever operation angle detecting means for detecting an operation angle in the X or Y direction of a joy stick type operation lever of at least two joy stick type operating levers and outputting signal data for the operation angle of each joy stick type operating lever;

a sub-control section for accepting the signal data, which have been output from the detecting means, and for arranging the signal data into serial data, which is output to a main control section; and

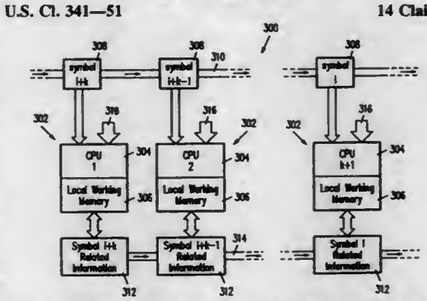
a serial signal output line linking the sub-control section and the main control section for passing the serial data.

5,550,540

DISTRIBUTED CODING AND PREDICTION BY USE OF CONTEXTS

Gilbert Furlan, Roquebrune-Cap-Martin, France; Jorma J. Rissanen, Los Gatos, Calif., and Dafna Sheinvald, Nofit, Israel, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 12, 1992, Ser. No. 975,300
Int. Cl.[6] H03M *7/30*
U.S. Cl. 341—51 **14 Claims**



1. A distributed data processing system for processing a data string comprised of a plurality of symbols, comprising:

a plurality of data processing elements (DPEs), each said DPE including a data storage means for storing a plurality of data and a data processing means for processing said data in said storage means;

each said DPE adaptively generating a set of context-relevant data and utilizing, individually or in conjunction with other said DPEs; at least one of said sets of context-relevant data to generate model information corresponding to said symbol;

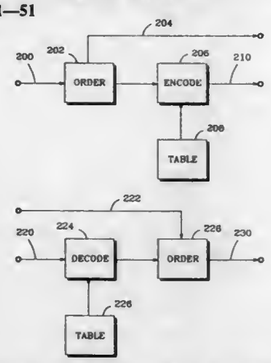
wherein said data processing elements are successively employed as determined by said sets of context-relevant data.

5,550,541

COMPACT SOURCE CODING TABLES FOR ENCODER/DECODER SYSTEM

Craig C. Todd, Mill Valley, Calif., assignor to Dolby Laboratories Licensing Corporation, San Francisco, Calif.

Filed Apr. 1, 1994, Ser. No. 234,871
Int. Cl.[6] H03M *7/40*
U.S. Cl. 341—51 **22 Claims**



1. An encoding method for encoding a plurality of symbols representing a signal intended for human perception, said method comprising

generating order information representing the order of symbols within said plurality of symbols with respect to a specific order,

generating a code word in response to said plurality of symbols such that said symbols, ordered according to said specific order, can be recovered from said code word, and

assembling said code word and said order information into a form suitable for processing, transmission or storage.

5,550,542

VARIABLE LENGTH CODE LOOK-UP TABLE HAVING SEPARATE CODE LENGTH DETERMINATION

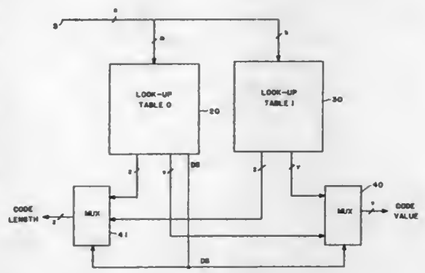
Shuji Inoue, Mount Holly, N.J., assignor to Matsushita Electric Corporation of America, Secaucus, N.J.

Filed May 4, 1994, Ser. No. 238,362
Int. Cl.[6] H03M *7/40*
U.S. Cl. 341—67 **12 Claims**

1. A variable length decoder for decoding a variable length code value, the decoder comprising:

code length look-up table means for receiving n–j bits of an n-bit fixed-length word, a segment of the variable length code value being held in the n–j bits, n and j being integers and j less than or equal to n, and the code length look-up table means for producing a decoded code length value; and

code value look-up table means for receiving the n-bit fixed-length word holding the variable length code and for producing a decoded code value of the variable length code.

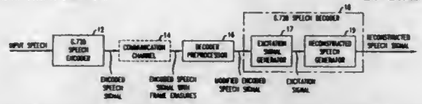


5,550,543

FRAME ERASURE OR PACKET LOSS COMPENSATION METHOD

Juin-Hwey Chen, Neshanic Station, N.J., and Craig R. Watkins, Hamilton, Australia, assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Oct. 14, 1994, Ser. No. 324,283
Int. Cl.[6] H03M *13/00*
U.S. Cl. 341—94 **26 Claims**



1. A method of enhancing the performance of a coding system, the coding system including a decoder which performs a decoding process in response to an encoded signal, the encoded signal comprising a plurality of frames, at least one of the frames of the encoded signal having experienced frame erasure, the method comprising the steps of:

recognizing that a given one of the frames of the encoded signal has experienced frame erasure; and

modifying the encoded signal for the given frame, based on the decoding process and on a predetermined signal, to enable the decoder to generate a signal which approximates the predetermined signal in response to the modified encoded signal,

wherein the given frame comprises an encoded gain signal representing a gain factor, and wherein the step of modifying the encoded signal comprises replacing the encoded gain signal with a different encoded gain signal, the different encoded gain signal representing it gain factor having a smaller absolute value than the gain factor represented by the replaced encoded gain signal.

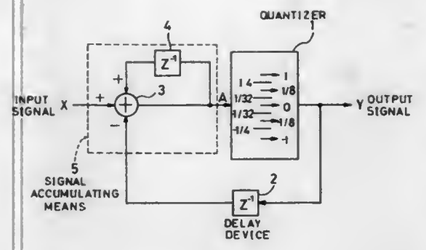
5,550,544

SIGNAL CONVERTER, NOISE SHAPER, AD CONVERTER AND DA CONVERTER

Shiro Sakiyama; Shiro Dosho; Masakatsu Maruyama; Hiroyuki Nakahira, all of Osaka; Toshiyuki Shono, and Akira Matsuzawa, both of Kyoto, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 23, 1994, Ser. No. 200,493
Int. Cl.[6] H03M *1/00*
U.S. Cl. 341—155 **13 Claims**

1. A signal converter comprising a quantizer in which an input signal is compared with each of preset (n–1) reference levels and quantized into one of n-digital output signals, said (n–1) reference levels in said quantizer being set such that there are present, according to the amplitude of said input signal, a plurality of average amplitudes for a difference signal representing a difference between said input signal and an output signal of said quantizer.

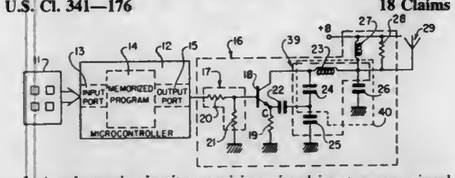


5,550,545

ELECTRONIC CIRCUIT HAVING A LINEARISED AND SYMMETRIZED RESPONSE, AN OSCILLATOR HAVING SUCH A CIRCUIT, AND A TELECONTROL TRANSMITTER HAVING SUCH AN OSCILLATOR

Charles Rydel, Paris, France, assignor to Valeo Electronique, Creteil Cedex, France

Filed Apr. 4, 1994, Ser. No. 222,708
Claims priority, application France, Apr. 5, 1993, 93 03990
Int. Cl.[6] G08C *19/12*
U.S. Cl. 341—176 **18 Claims**



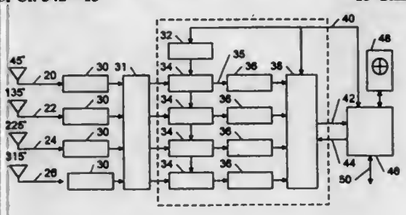
1. An electronic circuit comprising: signal input means; signal output means; and a linearising and symmetrizing device connected between the input and output means, the linearising and symmetrizing device comprising a first component having a first transfer function characteristic, a second component having a second transfer function characteristic that is different from said first transfer function characteristic, and means for connecting said first and second components characteristics between the signal input means and output means in a substantially inverse relation with respect to each other, and whereby to define a resultant transfer function in the form of a characteristic curve defining an operating point for the circuit and such that it has a point of inflexion in the vicinity of said operating point and a substantially linear section of the curve on either side of said point of inflexion.

5,550,546

ADVANCED PARAMETER ENCODER WITH DUAL INTEGRATED PULSE PRESENT DETECTION AND CHANNEL/SECTOR ARBITRATION

Mark E. Noneman, Ramona, and Donald A. Porter, San Diego, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 154,906, Nov. 19, 1993, abandoned.
This application May 3, 1995, Ser. No. 433,174
Int. Cl.[6] G01S *7/292*
U.S. Cl. 342—13 **15 Claims**



1. A pulse present detection system comprising:

receiver means for receiving an RF signal and amplifier means for amplifying said RF signal;

converter means connected to said amplifier means for converting said received RF signal to digital words representing the instantaneous amplitude over selected periodic time increments of said RF signal,

detector means having multiple threshold levels in which the digital value of said sampled RF signal is compared to the threshold values,

each threshold value having a separate and programmable number of amplitude samples that must occur above said threshold before a pulse presence is declared,

each threshold level having a separate reporting means for reporting a separate pulse presence signal, and

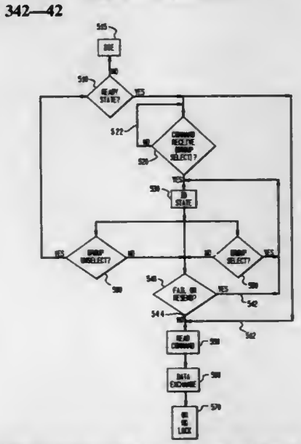
resolution means for selecting between pulse present signals reported by said threshold levels wherein the first threshold level to report a pulse present is selected.

5,550,547

MULTIPLE ITEM RADIO FREQUENCY TAG IDENTIFICATION PROTOCOL

Shun S. Chan, Flushing; Harley K. Heinrich, Brewster; Dilip D. Kandlur, and Arvind Krishna, both of Briarcliff Manor, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 12, 1994, Ser. No. 304,340
Int. Cl.[6] G01S *13/79*
U.S. Cl. 342—42 **15 Claims**



1. a radio frequency tag for communicating with a base station, comprising:

a. an antenna and tag radio frequency circuit for sending and receiving radio frequency signals to and from the base station;

b. a tag memory for storing tag data;

c. a tag logic circuit connected to the tag radio frequency circuit and the tag memory, the tag logic circuit having a tag state register that indicates the tag is in a state that is one of the states including an ID and Data Exchange, the tag logic further having a state counter and a random number generator; and

d. a tag state selector run by the tag logic placing the tag in the ID state by setting the state register to ID when the base station sends the tag an identification command and the tag state selector upon receiving a Fail command from the base station causing a state counter value to increase in the state counter if:

a. the state counter has a value not equal to a predetermined value, or

b. the state counter has a value equal to the predetermined value and the random number generator has a given value,

the tag not transmitting the tag identification information while the state counter value is not equal to the predetermined value and the tag state selector further causing the random number generator to generate a new random value.

5,550,548

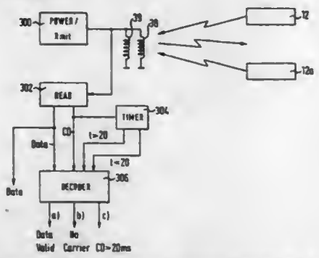
INTERROGATOR FOR DETECTING ADJACENT TRANSPONDERS

Josef H. Schuermann, Oberhummel, Germany, assignor to Texas Instruments Deutschland GmbH, Germany

Continuation-in-part of Ser. No. 105,538, Aug. 11, 1993, Pat. No. 5,457,461, and Ser. No. 263,904, Jun. 22, 1994, Pat. No. 5,451,959, which is a continuation of Ser. No. 964,574, Oct. 21, 1992, abandoned, which is a continuation of Ser. No. 742,134, Aug. 8, 1991, abandoned, which is a division of Ser. No. 655,182, Feb. 13, 1991, Pat. No. 5,053,774, which is a continuation of Ser. No. 216,756, Jul. 8, 1988, abandoned. This application Jun. 7, 1995, Ser. No. 483,485

Int. Cl.[6] G01S *13/75*

U.S. Cl. 342—42 **9 Claims**



1. An interrogator for wireless communication with at least two transponders, said interrogator comprising:

a. an RF oscillator;

b. a transmitter that receives the output of said RF oscillator and initiates an RF interrogation signal for interrogating said at least two transponders;

c. an antenna operable to receive the output of said transmitter and transmits said RF interrogation signal to said at least two transponders, thereby causing each of said transponders to transmit RF responses, and operable to receive said RF responses;

d. a receiver for receiving said RF responses via said antenna upon termination of said RF interrogation pulse; and

e. a control circuit, said control circuit operable to initiate said RF interrogation signal in said transmitter, to disable the output of said transmitter and thereby enable reception of at least one of said RF responses upon termination of said RF interrogation signal, to receive at least one of said RF responses from said receiver, and to measure the duration of said at least one RF response thereby determining whether multiple transponders exist adjacent to each other.

5,550,549

TRANSPONDER SYSTEM AND METHOD

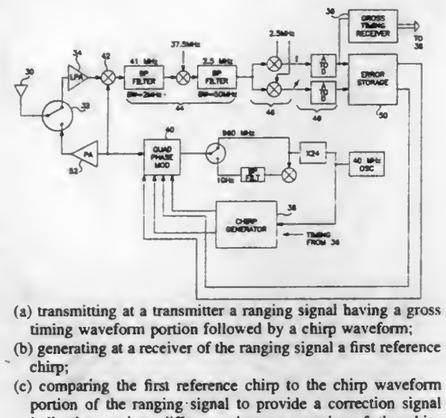
James A. Procter, Jr., Indialantic, and James C. Ott0, Indian Harbour Beach, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Feb. 28, 1995, Ser. No. 395,815

Int. Cl.[6] G01S *13/84*

U.S. Cl. 342—47 **22 Claims**

1. A method of determining range between a receiver of a radio frequency signal and a transmitter of the signal, the method comprising the steps of:



(a) transmitting at a transmitter a ranging signal having a gross timing waveform portion followed by a chirp waveform;

(b) generating at a receiver of the ranging signal a first reference chirp;

(c) comparing the first reference chirp to the chirp waveform portion of the ranging signal to provide a correction signal indicating a time difference between receipt of the chirp waveform and generation of the first reference chirp;

(d) transmitting from the receiver a corrected chirp that incorporates the correction signal; and

(e) comparing the corrected chirp received at the transmitter to a second reference chirp generated at the transmitter to determine a range between the transmitter and the receiver.

5,550,550

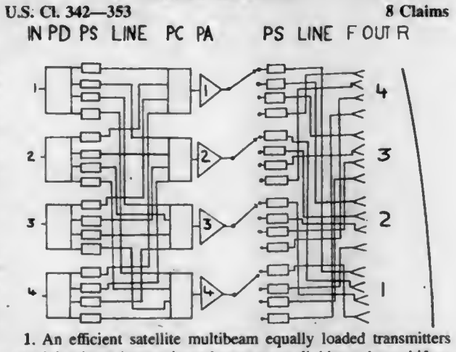
HIGH EFFICIENCY SATELLITE MULTIBEAM EQUALLY LOADED TRANSMITTERS

Satyendranath Das, P.O. Box 574, Mt. View, Calif. 94042-0574

Filed Aug. 4, 1995, Ser. No. 511,532

Int. Cl.[6] H04B *7/185*

U.S. Cl. 342—353 **8 Claims**



1. An efficient satellite multibeam equally loaded transmitters containing input beams, input beam power dividers, phase shifters connected to input power dividers, power combiners connected to each power amplifier input, lines connecting input power divider of each input to the power combiner connecting each amplifier, power amplifiers, switches, phase shifters connected to each switch connected to each power amplifier, feed elements, lines connecting switches at the output of each power amplifer to each feed element, reflector antenna, output beams and comprised of;

an input beam;

an input power divider, the number of outputs being equal to the number of amplifiers, being connected to said input beam;

a part of a first set of phase shifters each being connected to each line of said input power divider;

a power amplifier **1**;

a power combiner being connected to said power amplifier **1** and its one line being connected to the top of the first set of phase shifters through a connecting line;

an output switch, having a number of outputs equal to the number of output beams, being connected to said power amplifier **1**;

a part of a second set of phase shifters each being connected to each line of said switch;

a reflector antenna;

an output beam **1**;

a number of feed elements, being equal to the number of amplifiers, for said beam **1**, located at or near the focal plane of said reflector antenna, forming one shaped beam;

one of a second set of lines connecting to the top of the 2nd set of phase shifters to one said feed element of said output beam **1**;

input beams **2** through n;

input power dividers **2** throuh n, each 1 to n way zero phase shift, each connected to each said input beam;

a first set of input phase shifters, **1** through n×n, each being connected sequentially, one after another, to each line of said input power dividers;

a first set of connecting lines 2×2 through n×n;

power amplifiers **2** through n;

power combiners, **2** through n, each being connected to the input of each said power amplifier at one end and the other end being connected to each said input phase shifter, through a first set of connecting lines;

output switches, **2** through n, each being connected, at one end, to each said power amplifiers;

a second set output phase shifters, **1** through n×n, each being connected to each line of said each switch;

feed elements, 2×2 through n×n, each being located at or near a focal plane of said reflector antenna;

each output beam containing **2** through n element;

a second set of lines connecting each of said second set of phase shifters to each feed element;

one line of each output switch being connected to one feed element of one beam through one of a said second set of phase shifters;

output beams **2** through n corresponding to its input beam only;

said feed elements, **2** through n located at or near a focal plane of said reflector antenna, form one shaped beam; and

said input beams, said input power dividers, said first set of phase shifters, said first set of input connecting lines, said power combiners, said power amplifiers, said output switches, said second set of phase shifters, said output connecting lines, and said feed elements are connected together to produce each single output beam corresponding to each one input beam.

5,550,551

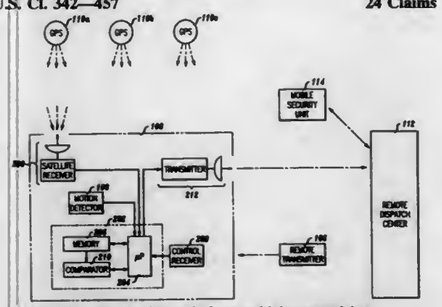
POSITION MONITORING SYSTEM AND METHOD

Thomas Alesio, Malibu, Calif., assignor to AT&T Corp., Murray Hill, N.J.

Filed Jul. 25, 1994, Ser. No. 279,962

Int. Cl.[6] G01S *3/02*

U.S. Cl. 342—457 **24 Claims**



1. A vehicle monitoring unit for a vehicle comprising:

a position detector for detecting a current position of the vehicle;

a controller circuit connected to said position detector for determining a range of movement of the vehicle based on said current position of the vehicle and for generating position signals indicative of the position of the vehicle if said range of movement is not within a range limit; and

a transmitter connected to said controller circuit for transmitting said position signals.

5,550,552

RADIATION SHIELD

L. Thomas Oxley, 2525 Hoffman La., Riverwoods, Ill. 60015, assignor to L. Thomas Oxley, Riverwoods, Ill.

Continuation-in-part of Ser. No. 19,132, Feb. 18, 1993, abandoned. This application Oct. 4, 1993, Ser. No. 131,152

Int. Cl.[6] H01Q *1/24*

U.S. Cl. 343—702 **10 Claims**



1. A radiation shielding apparatus in combination with a cellular telephone radio transmitting device having a radiation emanating external antenna for transmission of electromagnetic radiation, said radiation shielding apparatus comprising a disc which shields the user from radiation emanating from the antenna toward the user and means for maintaining the disc at an operable position between the antenna and the user of the cellular telephone device so that at the operable position the disc is effective to prevent exposure of the user to the radiation during all transmission of electromagnetic radiation from the radiation emanating antenna.

5,550,553

DIELECTRIC ROD ANTENNA

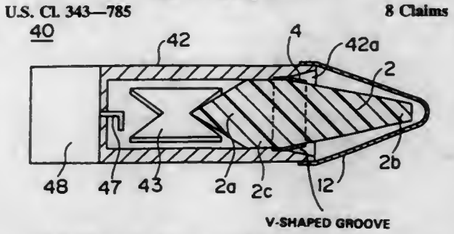
Kazuhisa Yamaki, and Kazunari Kawabata, both of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Feb. 17, 1994, Ser. No. 198,152

Claims priority, application Japan, Feb. 18, 1993, 5-028754

Int. Cl.[6] H01Q *13/00*

U.S. Cl. 343—785 **8 Claims**



1. A dielectric rod antenna comprising:

a dielectric rod having a forward end portion and a base end portion being opposed to said forward end portion;

a conductor being provided on an outer peripheral surface of said dielectric rod substantially in the form of a ring; and

a conductor housing being so provided as to support said dielectric rod;

wherein said conductor is arranged to intersect said conductor housing to define therebetween a substantially V-shaped cross-sectional area.

5,550,554

ANTENNA APPARATUS

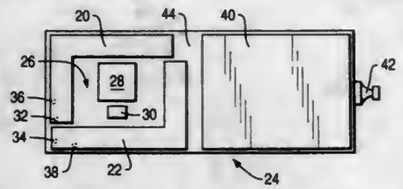
Nedim Erkocevic, Nieuwegein, Netherlands, assignor to AT&T Global Information Solutions Company, Dayton, Ohio

Continuation of Ser. No. 219,578, Mar. 28, 1994, Pat. No. 5,420,599. This application Mar. 23, 1995, Ser. No. 409,556

Claims priority, application United Kingdom, May 6, 1993, 9309368

Int. Cl.[6] H01Q *1/24*

U.S. Cl. 343—828 **12 Claims**



1. An antenna apparatus for use with a ground plane and an antenna circuit including receiver circuitry, comprising:

a first antenna member;

a grounding connector for connecting said first antenna member to the ground plane;

a feed connector for connecting said first antenna member to the antenna circuit;

a second antenna member;

a second grounding connector for connecting said second antenna member to the ground plane;

a second feed connector for connecting said second antenna member to the antenna circuit; and

a switch electrically interposed between said first antenna member and said second antenna member, said switch for electrically connecting said first antenna member to the receiver circuitry when said first antenna member is selected to receive, for electrically connecting said second antenna member to the receiver circuitry when said second antenna member is selected to receive, and for electrically isolating the receiver circuitry from said first and second antenna members when said first antenna member is selected to transmit.

5,550,555

STRUCTURES SUBJECT TO LOADING

Peter R. Cottrell, Cumbria, United Kingdom, assignor to Vickers Shipbuilding & Engineering Limited, Cumbria, United Kingdom

Filed Jan. 17, 1989, Ser. No. 303,685

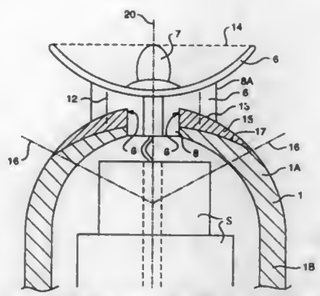
Claims priority, application United Kingdom, Feb. 3, 1988, 8802318

Int. Cl.[6] H01Q *1/12;1/34;1/50;* **B25G** *3/00*

U.S. Cl. 343—878 **12 Claims**

1. A structure comprising a first component subject to loading and connected to a flexible second component having relatively low resistance to tensile and shearing loads, via a load transmitting member so that the loading exerted by the first component is imposed on the second component, the first component having a surface secured to a complementary first surface of said load transmitting member,

the second component includes a surface bonded to a complementary second surface of said load transmitting member,



said load transmitting member and the second component being formed of materials having relatively superior and inferior bending stiffness and tensile strength respectively, and

the area of said surface of the second component being greater than the area of said surface of the first component.

5,550,556

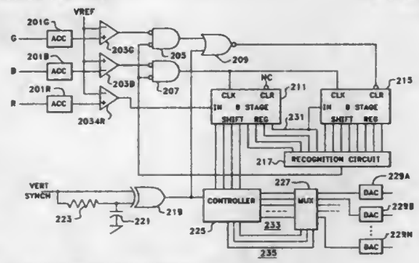
TRANSMITTING DATA AND COMMANDS TO DISPLAY MONITORS

Chin T. Wu, Brunswick, and James V. Samuels, Monmouth Junction, both of N.J., assignors to MultiVideo Labs, Inc., Princeton, N.J.

Filed Nov. 1, 1993, Ser. No. 145,864

Int. Cl.[6] H04N *5/04;7/08*

U.S. Cl. 345—14 **8 Claims**



1. A combination comprising:

processor means for executing sequences of preprogrammed operations;

input means coupled to the processor means for supplying coded input signals to the processor means;

monitor means for displaying, in color, information from the processor means, the monitor means including control means responsive to information embedded in color signals coupled to the monitor for regulating attributes of the display;

monitor driving means for coupling signals from the processor means to the monitor means and including means for adding adjustment information signals to the color signals coupled to the monitor;

separator means in the monitor means for receiving color signals from the monitor driving means, the separator means including

means for extracting the adjustment information signals,

decoding means responsive to the extracting means for coupling adjustment signals to the monitor control means; and

means in said monitor means for detecting a signature code sequence validating the adjustment information signals.

5,550,557

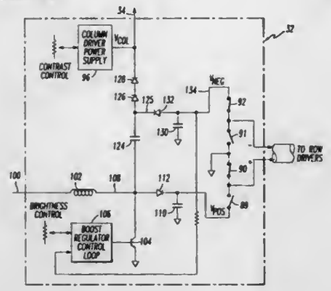
SYMMETRIC DRIVE FOR AN ELECTROLUMINSCENT DISPLAY PANEL

Mohan L. Kapoor, Orange, and Thomas J. Rebeschi, North Haven, both of Conn., assignors to Northrop Grumman, Los Angeles, Calif.

Continuation of Ser. No. 241,950, May 12, 1994, abandoned, which is a continuation of Ser. No. 133,811, Oct. 3, 1993, abandoned, which is a continuation of Ser. No. 906,605, Jun. 30, 1992, abandoned. This application Dec. 15, 1994, Ser. No. 358,044

Int. Cl.[6] G09G *3/30*

U.S. Cl. 345—76 **1 Claim**



1. An electroluminescent display panel power supply which generates two voltage values of opposite polarity V_{pos},V_{neg} by using a single switching regulator, for an electroluminescent display panel, said power supply comprising:

a first node;

a second node;

third node;

a fourth node;

means for providing a regulated maximum column driver voltage signal value V_{col};

an inductor having a first terminal which receives a DC voltage signal value, and a second terminal connected to said first node;

a first diode having an anode connected to said first node and a cathode connected to said second node;

a first capacitor having a first terminal connected to said second node and a second terminal connected to a fixed voltage signal value;

a second capacitor having a first terminal connected to said first node and a second terminal connected to said third node;

a second diode having an anode connected to said third node;

a third diode having a cathode connected to said third node and an anode connected to said fourth node;

a third capacitor having a first terminal connected to said fourth node and a second terminal connected to said fixed voltage signal value;

a single switching regulator which receives a feedback signal from said fourth node and provides a voltage control signal on a control line;

a transistor having a collector terminal connected to said first node, a base terminal connected to said control line and an emitter connected to a fixed voltage signal value; and

a fourth diode having an anode connected to said cathode of said second diode, and a cathode connected to said column driver voltage signal value V_{col},

wherein said V_{pos} is provided on said second node and said V_{neg} is provided on said fourth node.

5,550,558

DISPLAY MATRIX

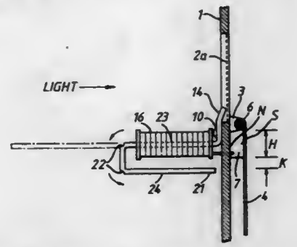
Hassan Paddy A. Salam, London, England, assignor to Unisplay S.A., Geneva, Switzerland

Filed Sep. 10, 1993, Ser. No. 118,828

Claims priority, application United Kingdom, Sep. 11, 1992, 9219315; Dec. 23, 1992, 9226760

Int. Cl.[6] G09G *3/34;* **G09F** *9/00*

U.S. Cl. 345—111 **4 Claims**



2. A matrix display element comprising:

an opaque member having first and second sides and defining an aperture therein;

a translucent diffuser mounted close to said aperture having front and back faces;

means on said first side of said opaque member for providing light impinging on the back face of said diffuser;

an opaque vane having first and second faces of differing color arranged to rotate about a hinge axis close to an edge of the vane between a first position in which said vane covers said aperture and exposes to a viewer on the second side of the opaque member its first face and a second position in which said vane uncovers said aperture and exposes to the viewer its second face;

a permanent magnet mounted on said vane, the magnetic axis of said permanent magnet being transverse to the plane of the vane and the center of which is spaced away from said hinge axis;

further comprising an electromagnet on said first side of said opaque member comprising an actuating coil and a U-shaped body of magnetizable material of low magnetic remanence having first and second limbs, said first limb being coaxial with said coil and connected to a magnetic member extending transverse to the longitudinal axis of said first limb positioned next to said permanent magnet for magnetically interacting therewith, said second limb terminating in a tip portion spaced away from said magnet for each of said positions by a magnetic air gap, excitation of said coil inducing in said magnet by interaction between said magnetic member and said magnet a first torque and by interaction between said tip portion and said magnet a second torque, said second torque being less than and opposite to said first torque.

5,550,559

METHOD AND APPARATUS FOR LOCATING A POINT IN A LIST

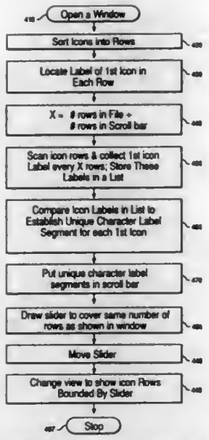
Scott H. Isensee, Georgetown, and Ricky L. Poston, Austin, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 23, 1994, Ser. No. 247,838

Int. Cl.[6] G09G *5/34*

U.S. Cl. 345—124 **11 Claims**

1. A method implemented by a computer system, having at least a display device, memory, and user controls, for scrolling a list of rows, having information therein, to a desired location, wherein at least a first portion of the list is displayed on the display device, comprising the steps of:



indexing said information in said list of rows to generate a unique label segment for each of a number of said rows, each of said unique label segments corresponding to one of said rows;

displaying said unique label segments in a viewer displayed on said display device; and

in response to a selection of at least one of said unique label segments in said viewer using said user controls, wherein said corresponding row of said selected unique label segment is not displayed on said display device, scrolling said list to said corresponding row of said selected unique label segment.

5,550,560

IMAGE DISPLAYING APPARATUS

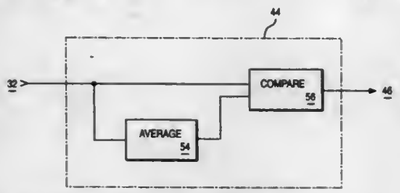
Yoshihisa Kanada, Tokyo; Kiyokuni Kawachiya, Kawasaki, and Ichiro Shiio, Yokohama, all of, Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 195,002, Feb. 14, 1994, abandoned. This application Sep. 29, 1995, Ser. No. 537,071

Claims priority, application Japan, Feb. 12, 1993, 5-023963

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—156 **10 Claims**



1. An image display apparatus, comprising:

means for generating a video image with multiple regions;

means for varying the intensity of a selected region of the video image, created by the means for generating, about an intensity level for the selected region;

means for detecting by optical sensor the intensity of the selected region of the video image;

means for comparing the detected intensity of the selected region with an average of the detected intensity, the average corresponding to the level for the selected region, to derive variations in the intensity created by the means for varying;

means for identifying the selected region using the derived variations; and

means for changing the generated video image responsive to the identification of the selected region.

5,550,561

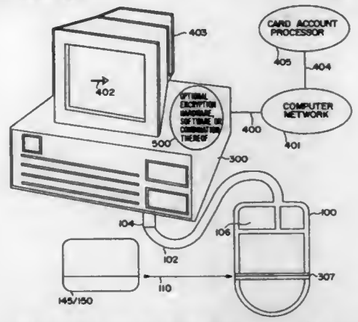
DISPLAY CURSOR CONTROLLING DEVICE FOR READING CARD INFORMATION FROM AN INFORMATION BEARING CREDIT OR DEBIT CARD

Witold A. Ziarno, 4519 S. St. Louis Ave., Chicago, Ill. 60632

Filed Jan. 11, 1995, Ser. No. 371,109

Int. Cl.[6] S09G *3/02*

U.S. Cl. 345—163 **23 Claims**



1. A cursor control unit as an input unit, device for a personal, computer or workstation for simplifying and streamlining the entry of monetary transaction information, comprising, in combination:

a magnetic stripe or smart card reader for reading credit or debit card information from an information bearing credit or debit card, said credit or debit card selected from the group consisting essentially of a smart card and a conventional magnetically striped card; a communication link for communicating said credit or debit card information to said personal computer or work station; and, means for controlling the movement of the cursor on a display,

whereby the capture of monetary transaction information for on-line shopping is facilitated and the monetary transaction is safeguarded by capture of said information on a transaction by transaction basis.

5,550,562

DATA PROCESSING DEVICE THAT ENABLES MOUSE-OPERATED APPLICATION PROGRAMS TO BE OPERATED FROM AN OPERATION PAD, AND AN OPERATION PAD FOR USE WITH THE SAME

Yoichi Aoki; Yasuo Sato; Chiaki Ito; Hitoshi Nishiuchi; Makoto Nakamoto; Syoji Yamaguchi; Haruhiko Mio; Kazuhiro Koyata, all of Kawasaki, and Yoshinori Miyazawa, Inagi, all of, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation-in-part of Ser. No. 113,809, Aug. 31, 1993, abandoned. This application Apr. 11, 1995, Ser. No. 420,707

Claims priority, application Japan, Jan. 12, 1993, 5-003494; Jan. 12, 1993, 5-003495

Int. Cl.[6] G09G *3/02*

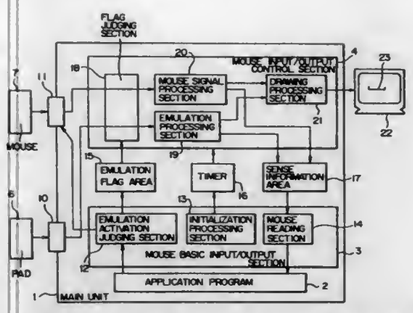
U.S. Cl. 345—163 **5 Claims**

1. A data processing device in a casing, for receiving an operation pad and running an application program designed for operation by operating data corresponding to mouse signals output from a mouse, said data processing device comprising:

a memory for storing the application program;

a pad connector, attached to the casing for receiving the operation pad and data signals output by the operation pad;

an emulation processing section for processing the pad signals output from the operation pad connected to the pad connector



and converting the data signals to the operating data to run the application program designed for operation by the operating data;

a mouse connector, attached to the casing, for receiving the mouse;

a mouse signal processing section for processing the mouse signals output from the mouse connected to the mouse connector and, in response, generating the operating data for use by the application program;

a selecting section for selecting the operating data for use by the application program from the mouse signal processing section or the emulation processing section;

an emulation activation judging section for determining connection states of the mouse and the operation pad when called by the application program and, in response, determining whether to activate or not activate the emulation processing section; and

an emulation flag area in which a flag is set or cleared according to the determination of the emulation activation judging section, wherein the selecting section tests the flag in the emulation flag area and generates the operating data for use by the application program from the mouse signal processing section or the emulation processing section.

5,550,563

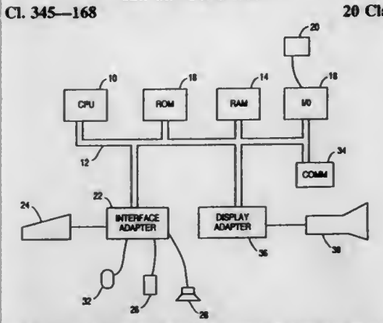
INTERACTION FRAMEWORK SYSTEM

John R. Matheny, and Christopher White, both of Mountain View, Calif., assignors to Taligent, Inc., Cupertino, Calif.

Filed Dec. 23, 1992, Ser. No. 996,073

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—168 **20 Claims**



1. In a computer system with a processor, a memory, an object-oriented operating system stored in the memory and a display, an apparatus for providing an object oriented application interface between a pointing device having a pointer graphic and a user-operable button, a keyboard having an option key and an object-oriented application program, the apparatus comprising:

(a) interactable class information stored in the memory as part of the object-oriented operating system, the interactable class information including graphic data representing a display icon and a plurality of methods for drawing and manipulating the display icon on the display;

(b) an interactable object instantiated from the interactable class information and incorporated into the application program, the object having a display icon visible on the display, and a plurality of methods for manipulating the display icon on the display;

(c) means responsive to a depression of the user-operable button for generating a device event signal;

(d) means responsive to a physical position of the pointer graphic on the display device for generating device position signals;

(e) means responsive to a depression of the option key for generating an option key signal; and

(f) an interactor object responsive to the device event signal, to the device position signals and to the option key signal for calling a first predetermined one of the manipulating methods to move the display icon when the option key is depressed and the user-operable button is depressed.

5,550,564

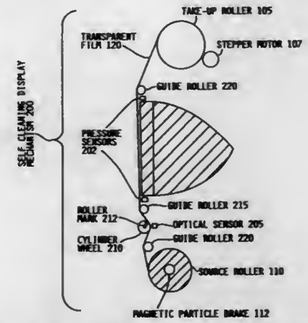
SELF CLEANING TOUCH SCREEN DISPLAY MECHANISM

Brian J. Cragun, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 165,239, Dec. 10, 1993, abandoned. This application Jan. 3, 1995, Ser. No. 368,247

Int. Cl.[6] G09G *3/02*

U.S. Cl. 345—173 **15 Claims**



1. A self cleaning display mechanism, said self cleaning display mechanism comprising:

a display, said display having a front side and a front surface;

source means, said source means containing a supply of transparent film;

take-up means, said transparent film being stretched from said source means to said take-up means such that said transparent film contacts said front surface;

advancing means for advancing said transparent film from said source means to said take-up means and across said front surface, wherein said advancing means comprise a stepper motor and wherein said stepper motor is controlled by a computer;

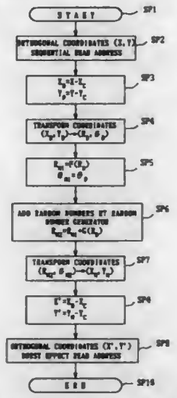
detecting means for detecting when said supply of transparent film contained on said source means has been exhausted; and

message sending means for sending an external message that indicates that a new supply of said transparent film is needed by said self cleaning display mechanism, said external message being electronically dispatched to an external device which is responsible for receiving said external message.

5,550,565
IMAGE TRANSFORMATION APPARATUS

Toshihiro Shiraishi, and Katsuakira Moriwake, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 13, 1994, Ser. No. 226,845
Claims priority, application Japan, Apr. 17, 1993, 5-113778
Int. Cl.[6] G09G *5/36*
U.S. Cl. 345—190 **8 Claims**



1. Apparatus for transforming input video data representing an input video image, comprising:

storage means for storing said input video data;

means for supplying a rectangular coordinate address representing a location in a transformed image;

means for transforming said rectangular coordinate address to a polar coordinate address having a radius coordinate and an angular coordinate;

means for extending said radius coordinate of said polar coordinate address in accordance with a burst function to produce an extended radius coordinate;

means for generating a random number within a range of values whose range is a function of the value of the radius coordinate of said polar coordinate address;

means for adding said random number to said extended radius coordinate to produce a modified radius coordinate;

means for converting said modified radius coordinate and said angular coordinate to a transformed rectangular coordinate address; and

means for retrieving from said storage means said input video data corresponding to said transformed rectangular coordinate address of said input video image and providing said retrieved input video data as data at said rectangular coordinate address of said transformed image.

5,550,566
VIDEO CAPTURE EXPANSION CARD

David O. Hodgson, San Mateo, and Daniel B. Gochnauer, Saratoga, both of Calif., assignors to Media Vision, Inc., Fremont, Calif.

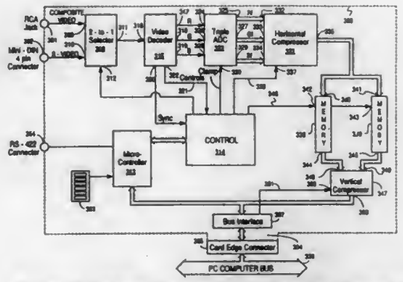
Filed Jul. 15, 1993, Ser. No. 92,152
Int. Cl.[6] G09G *5/00*
U.S. Cl. 345—202 **13 Claims**

1. An expansion card for a personal computer, said personal computer having a bus and a bus connector, comprising:

a printed circuit board having connecting means which is detachably engagable with said bus connector, said board having disposed thereon

a video connector for accepting a video signal;

a video decoder communicatively coupled to said video connector for decoding said video signal;



an analog-to-digital converter having an analog input, for accepting said decoded video signal, and a digital output, said analog input being coupled to said video decoder, said analog-to-digital converter outputting a plurality of digitized signal lines forming a frame of a video signal, each of said digitized signal lines having a first plurality of digital samples;

a first data compressor for compressing a second plurality of said digital samples received from said analog-to-digital converter into a first plurality of digital values, said second plurality of digital samples being a portion of said first plurality of digital samples;

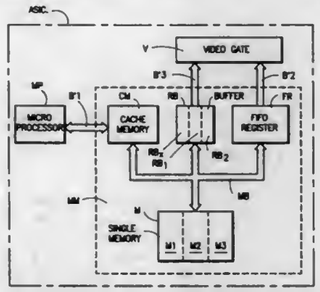
a memory coupled to said first data compressor for storing the digital values from said first data compressor, said memory having a maximum storage capacity of less than that required to store an amount of data corresponding to digitized signal lines forming a frame of a video signal; and

a second data compressor for compressing the digital values stored in said memory and for coupling said memory to said bus of said personal computer via said connecting means.

5,550,567
DATA INPUT/OUTPUT DEVICE FOR DISPLAYING INFORMATION, AND METHOD FOR EMPLOYING SUCH A DEVICE

Christian Baillif, Bourg La Reine, France, assignor to Bull S.A., Paris, France

Continuation of Ser. No. 053,311, Apr. 28, 1993, abandoned, which is a continuation of Ser. No. 731,699, Jul. 18, 1991, abandoned. This application Aug. 17, 1994, Ser. No. 291,832
Claims priority, application France, Jul. 23, 1990, 90.09363
Int. Cl.[6] G09G *3/00*
U.S. Cl. 345—203 **16 Claims**



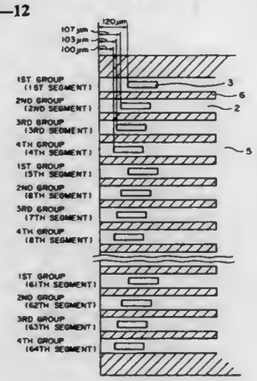
1. A data input/output device for the display of video information, comprising a microprocessor, memorizing means, and a video

portion monolithically integrated in an application specific integrated circuit and operatively connected via bus lines, said microprocessor including programs therein, said memorizing means including a single memory having three specific zones for storing data relating respectively to said programs of said microprocessor, to the video information to be displayed, and to information for character generation, wherein a single memory bus is connected with said single memory and provides access authorization to said three specific zones, said access authorization being administered by a sequencing method employed by microprogrammed sequencing means for the distribution of memory cycles and regulation of the flow of data within said memorizing means, said memorizing means including intermediate memory means for use by said microprogrammed sequencing means in regulating said flow of data within said memorizing means.

5,550,568
INK JET RECORDING WITH TIME-DIVISION DRIVING

Yoshinori Misumi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 970,641, Nov. 2, 1992, abandoned, which is a continuation of Ser. No. 715,468, Jun. 14, 1991, abandoned. This application Apr. 25, 1994, Ser. No. 232,395
Claims priority, application Japan, Jun. 15, 1990, 2-157003
Int. Cl.[6] B41J *2/05*
U.S. Cl. 347—12 **28 Claims**



1. An ink jet recording apparatus comprising:

a plurality of ink discharge portions, each having predetermined shape and including a plurality of discharge ports corresponding thereto for discharging an ink, a plurality of ink channels communicating with said discharge ports and containing the ink therein, and a plurality of ink discharge elements corresponding thereto for discharging the ink contained within said ink channels onto a recording medium, said ink which has been discharged from each discharge port forming a droplet which strikes the recording medium at an impact position;

driving means for driving said ink discharge elements with a drive timing;

means for dividing said ink discharge elements and corresponding said discharge ports into a plurality of groups for separate driving, such that each of the groups is driven by a drive signal with a different drive timing therebetween for driving the ink discharge elements in that said group; and

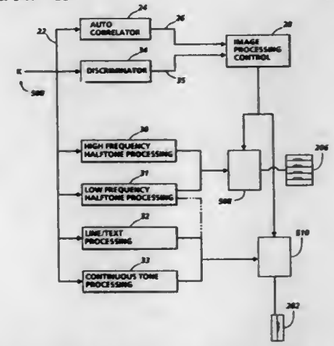
conveying means for conveying a recording medium to be recorded with the ink discharged from said discharge ports,

wherein the shapes of at least some of said ink discharge portions are different from one another so as to reduce a deviation between the impact positions of the ink droplets in accordance with the different drive timing between said groups.

5,550,569
IMAGE PROCESSING FOR INK-JET PRINTING WITH FAST-AND SLOW-DRYING INKS

Joseph D. Wright, Burlington, Canada, assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 12, 1994, Ser. No. 226,582
Int. Cl.[6] B41J *2/205;2/21*
U.S. Cl. 347—15 **11 Claims**



1. A method of printing an image based on digital data on a substrate, comprising the steps of:

identifying from the digital data a subset of the digital data relating to a portion of the image wherein pixels associated with the digital data are of a predetermined spatial relationship with pixels intended to be of a different color as the pixels associated with the digital data, wherein the identifying step includes the steps of

forming a first data stream comprising image data for pixels intended to be printed in a first preselected color, and a second data stream comprising image data for pixels intended to be printed in a second preselected color different from the first preselected color;

polling data corresponding to proximal locations in the image based on the digital data in the first data stream and the second data stream; and

identifying data in the first data stream as the subset of digital data when image data for pixels intended to be printed in the first preselected color on the first data stream are present with image data for pixels intended to be printed in the second preselected color on the second data stream;

causing the subset of digital data to activate a printhead adapted to emit ink of a first type; and

causing digital data not in the subset to activate a printhead adapted to emit ink of a second type, the ink of the first type being adapted to dry at a faster rate than the ink of the second type.

VOL 1189 ISS 4 AG 27 1996 UMI

5,550,570
INK JET CARTRIDGE MOUNTING DEVICE AND METHOD

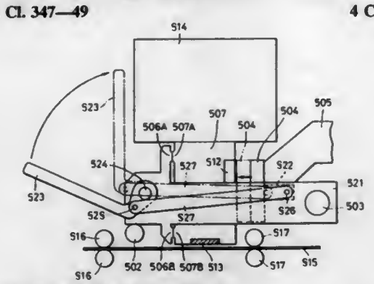
Mitsuru Kurata, Kawasaki; Shinji Kanemitsu; Akihiro Nomura, both of Yokohama; Tokihide Ebata; Akio Takeda, both of Kawasaki; Yasuo Miyauchi, Yokohama; Haruo Uchida, Yokohama, and Shigeyoshi Onoda, Yokohama, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 888,534, May 26, 1992, abandoned, which is a division of Ser. No. 466,470, Jan. 16, 1990, Pat. No. 5,138,342. This application Aug. 25, 1994, Ser. No. 295,486

Claims priority, application Japan, Jan. 17, 1989, 1-008072; Jan. 18, 1989, 1-009183; Jan. 27, 1989, 1-018006; Apr. 25, 1989, 1-105487; Dec. 20, 1989, 1-330034

Int. Cl.[6] B41J *2/175*

U.S. Cl. 347—49 **4 Claims**



1. An ink jet apparatus comprising:

a head mounting portion for mounting an ink jet head thereon, said ink jet head having an electrically connecting portion;

an electrical connector disposed on a body side which is provided on a part of said head mounting portion, said electrical connector being dimensioned and disposed so as to allow electrical connection with said electrically connecting portion of said ink jet head; and

an operation member for affixing said ink jet head to said head mounting portion and effecting the electrical connection;

characterized in that said electrical connector on the body side is supported by a supporting member; and,

said electrical connector on the body side being released from said supporting member while the electrical connection between said electrical connector on the body side and said electrically connecting portion on the ink jet head is maintained through the affixation of said ink jet head to said head mounting portion, and the electrical connection between said electrically connecting portion on the ink jet head and said electrical connector on the body side is effected by operation of said operation member.

5,550,571
METHOD OF AND APPARATUS FOR THERMALLY RECORDING IMAGES

Takashi Shoji, Kanagawa-ken, Japan, assignor to Fuji Photo Film Co., Ltd, Kanagawa, Japan

Filed Aug. 10, 1994, Ser. No. 288,614

Claims priority, application Japan, Aug. 20, 1993, 5-206210

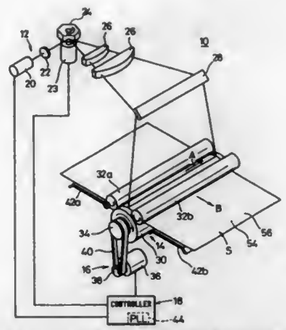
Int. Cl.[6] B41J *2/415*

U.S. Cl. 347—133 **3 Claims**

1. A method of thermally recording an image on a thermosensitive recording medium, comprising the steps of:

applying thermal energy to a thermal recording medium to cause the thermosensitive recording medium to be colored for recording an image thereon;

heating the thermosensitive recording medium to a temperature lower than a coloring temperature thereof before or after the image is recorded thereon;



detecting an amount of thermal deformation by which the thermosensitive recording medium is deformed when heated to the temperature lower than the coloring temperature; and

establishing a scanning interval employed when the image is to be recorded on the thermosensitive recording medium, depending on the detected amount of thermal deformation.

5,550,572
COLOR VIDEO PRINTER FOR DOUBLE SIDE PRINTING

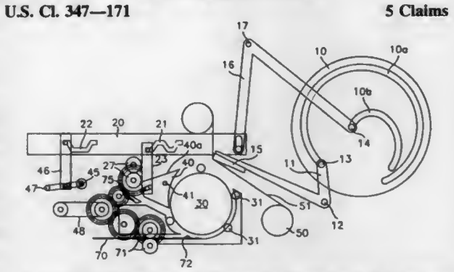
Ki-Son Chang; Moon-Bae Park, and Dong-Hwan Kang, all of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Jul. 20, 1993, Ser. No. 93,713

Claims priority, application Rep. of Korea, Jul. 20, 1992, 12897/1992

Int. Cl.[6] B41J *2/325;11/00*

U.S. Cl. 347—171 **5 Claims**



1. A color video printer for printing onto both sides of a printing paper, comprising:

a platen roller;

a feed paper unit for feeding a printing paper to said platen roller for printing on one side of the printing paper;

a cam having a first cam groove and a second cam groove and being rotatably mounted;

a thermal recording bead for selectively contacting said platen roller;

a first lever coupled to said thermal recording head and to said first cam groove of said cam;

a re-feed paper roller for re-feeding the printing paper toward said platen roller after the one side of the printing paper has been printed;

a guide for guiding the re-fed printing paper so said printing paper moves to said platen roller for printing on another side of the printing paper;

a second lever coupled to said second cam groove of said cam; and

a slider coupled to said re-feed paper roller and to said second lever,

wherein said thermal recording head and said slider are positioned by said cam throuqh said first lever and said second lever, respectively.

5,550,573
IMAGE FORMING APPARATUS USING A PHOTOSENSITIVE DRUM AND HAVING LIGHT QUANTITY ADJUSTMENT

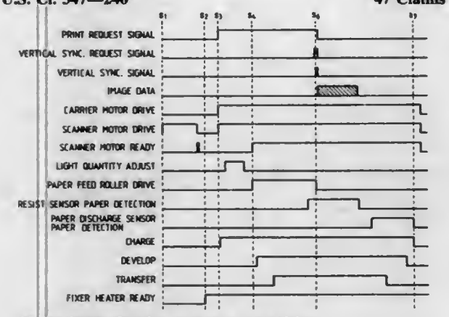
Yoji Serizawa, Yokohama, and Yukihide Ushio, Tokyo, both of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 782,384, Oct. 24, 1991, abandoned. This application Nov. 30, 1994, Ser. No. 351,107

Claims priority, application Japan, Oct. 26, 1990, 2-289339; Feb. 20, 1991, 3-045606; Feb. 20, 1991, 3-045608; Mar. 20, 1991, 3-080476

Int. Cl.[6] G01D *9/42*

U.S. Cl. 347—246 **47 Claims**



10. An image forming apparatus comprising:

light beam generating means for generating a light beam;

a rotational polygon mirror for scanning the light beam generated by said light beam generating means across a member to be illuminated;

rotation detecting means for detecting whether or not a rotation number of said rotational polygon mirror reaches a predetermined rotation number for image formation within a predetermined time after start of driving said rotational polygonal mirror; and

memory means for storing a detected result by said rotation detecting means.

5,550,574
METHOD AND APPARATUS FOR EXPOSING LIGHT SENSITIVE MATERIAL BY MEANS OF A COPYING MACHINE HAVING A VERTICALLY MOVABLE LASER UNIT

Brian Dillow, Hägersten, Sweden, assignor to Misomex Aktiebolag, Hagerstein, Sweden

PCT No. PCT/SE92/00356, § 371 Date Oct. 26, 1993, § 102(e) Date Oct. 26, 1993, PCT Pub. No. WO92/21518, PCT Pub. Date Dec. 10, 1992

PCT Filed May 26, 1992, Ser. No. 137,194

Claims priority, application Sweden, May 28, 1991, 9101619

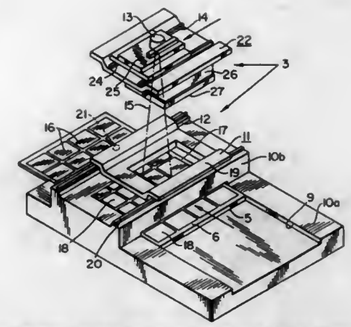
Int. Cl.[6] B41J *2/435*

U.S. Cl. 347—262 **5 Claims**

1. A method of exposing rows of images onto a light sensitive plate using laser light comprising the steps of:

placing a light sensitive plate onto an exposure table which is movable stepwise in a first direction;

stepwise positioning the exposure table at a predetermined position close to a laser unit which includes a base and a laser carriage stepwise movably mounted to the base whereby a first row of the plate is beneath the base and a first portion of the first row is beneath the laser carriage;



lowering and locking the laser carriage on which a laser gun is movably mounted into engagement with the first portion of the first row of the plate;

moving the laser gun relative to the laser carriage to sweep a laser light emitted from the laser gun onto the first portion of the plate and hence to expose at least one image on the first portion;

raising the laser carriage from the plate;

moving the laser carriage relative to the base stepwise in a second direction perpendicular to the first direction whereby a second portion of the first row of the plate is beneath the laser carriage;

repeating the lowering and locking step, the moving the laser gun step, and the raising step to expose at least one image on the second portion;

repeating the stepwise positioning step, the lowering and locking step, the moving the laser gun step, the raising step, the moving the laser carriage step, and the first-mentioned repeating step whereby a second row is positioned beneath the base and first and second portions of the second row have images exposed thereon; and discharging the plate from the exposure table.

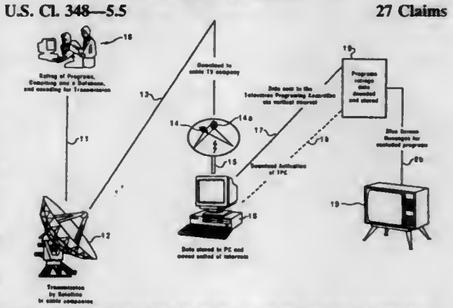
5,550,575
VIEWER DISCRETION TELEVISION PROGRAM CONTROL SYSTEM

Brett West, Two Lookout Point Rd., Ridgefield, Conn. 06877, and John P. Gardner, 1214 Wood La., Arlington, Tex. 76017

Filed May 4, 1994, Ser. No. 237,658

Int. Cl.[6] H04N *7/167*

U.S. Cl. 348—5.5 **27 Claims**



1. A viewer discretion program censoring system comprising:

(a) a visual display;

(b) a source of programs for viewing by a viewer on said visual display;

(c) viewer control means conditionable by a first viewing authority for:

(1) identifying content of said selectable programs,

(2) allocating permissible viewing times for a viewer; and

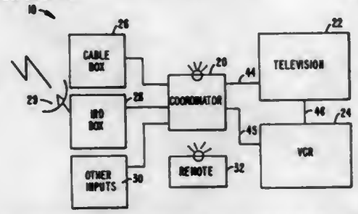
(d) display control means interconnected with said visual display and responsive to said viewer control means for enabling and disabling said visual display according to content selected by said authority.

5,550,576

METHOD AND APPARATUS FOR MERGING TELEVISION PROGRAM SCHEDULE INFORMATION RECEIVED FROM MULTIPLE TELEVISION SCHEDULE INFORMATION SOURCES

Brian L. Klosterman, San Ramon, Calif., assignor to StarSight Telecast Incorporated, Fremont, Calif.

Filed Apr. 17, 1995, Ser. No. 424,861
Int. Cl.[6] H04N *7/10*
U.S. Cl. 348—6 **19 Claims**



1. A method of merging channel guide information in a television system, comprising the steps of:

receiving said channel guide information from multiple television signal sources, said channel guide information differing between said multiple television signal sources;

storing said channel guide information in said television system;

mixing and sorting said channel guide information received from said multiple television signal sources in a desired order;

generating a display with said channel guide information presented in said desired order; and

displaying said display with said channel guide information on a television.

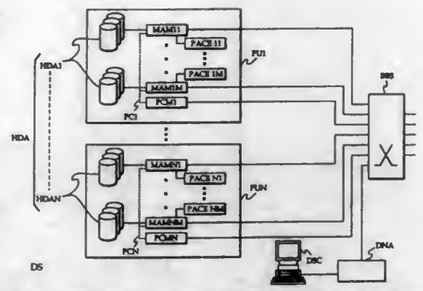
5,550,577

VIDEO ON DEMAND NETWORK, INCLUDING A CENTRAL VIDEO SERVER AND DISTRIBUTED VIDEO SERVERS WITH RANDOM ACCESS READ/WRITE MEMORIES

Willem J. A. Verbiest, Sint Gillis Waas; Bart F. Voeten, Beerse; Christophe D. G. Vermeulen, Ramegnies-Chin; Frank O. Van der Putten, Lede, and Frank C. M. Defoort, Aartselaar, all of, Belgium, assignors to Alcatel N.V., Rijswijk, Netherlands

Filed May 19, 1994, Ser. No. 246,180
Claims priority, application European Pat. Off., May 19, 1993, 93870084
Int. Cl.[6] H04N *7/10;7/14;7/173*
U.S. Cl. 348—7 **13 Claims**

1. Video on demand network for transmitting video signals to user stations and including at least one central video server for storing a first plurality of video signals, and a plurality of distributed video servers each for storing a second plurality of video signals and for transmitting video signals of said second plurality to said user stations in response to control signals provided by said user stations, said central server for transmitting video signals of said first plurality to said distributed video servers in order to adapt said second pluralities based on said control signals, wherein said distributed video servers include random access read/write memories for storing said second pluralities as pluralities of data packets, wherein predetermined ones of said data packets include timing information relating to required packet transmission rates of video signals of which they form a part, wherein said data packets are retrieved from said random access memories independent from



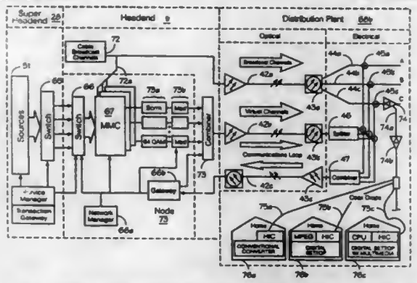
said required transmission rates, and wherein said distributed servers also include pace control means for queuing said data packets under control of said timing information in order to transmit said video signals at said required packet transmission rates.

5,550,578

INTERACTIVE AND CONVENTIONAL TELEVISION INFORMATION SYSTEM

W. Leo Hoarty, Santa Clara; Joshua W. Soske, Sunnyvale, both of Calif.; Gary M. Lauder, New York, N.Y.; Stephen C. Sneli, Aptos, Calif.; Delmer D. Fisher, Milpitas, Calif., and John North, Mountain View, Calif., assignors to ICTV, Inc., Los Gatos, Calif.

Division of Ser. No. 56,958, May 3, 1993, which is a continuation-in-part of Ser. No. 877,325, May 1, 1992, Pat. No. 5,412,720, which is a continuation-in-part of Ser. No. 754,932, Sep. 10, 1991, Pat. No. 5,220,420, which is a continuation-in-part of Ser. No. 589,205, Sep. 28, 1990, Pat. No. 5,093,718. This application Oct. 6, 1994, Ser. No. 318,982
Int. Cl.[6] H04N *7/173*
U.S. Cl. 348—7 **10 Claims**



1. An interactive television information system coupled to a cable television system having (i) an information source means available at a headend for supplying a plurality of information services and (ii) an information service distribution network, for delivering the information services to subscriber televisions, the interactive television system comprising:

a plurality of home interface controllers, one such home interface controller associated with each subscriber television, for providing an output in communication with the subscriber television and having (i) a signal input for television information signals and input selection means for selecting a given one of the television information signals at the signal input, (ii) channel selection means for permitting a user to select an apparent channel from any of a first group of apparent channels and a second group of apparent channels, each apparent channel in the second group of apparent channels corresponding to a different television information signal available at the signal input, and (iii) a data transceiver operative over a data communications link;

node means, in television communication with the information source means over a first path of the network and with a group of the home interface controllers over a second path of the network, and in data communications with the home interface controller means over the data communications link, for selecting and providing information services obtained from the information source means to any home interface controller in the group based on data obtained over the data communications link that indicates a selection of an apparent channel from the first group of apparent channels by such home interface controller;

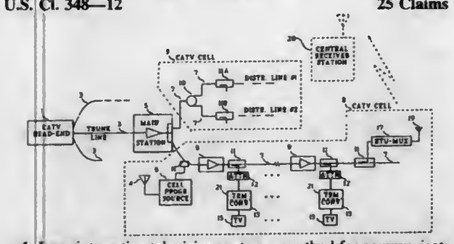
wherein the node means and the home interface controllers are so arranged that the node means provides different information services on different apparent channels from the first group of apparent channels all via the same television information signal selected by the input selection means of a given one of the home interface controllers as the channel selection means of such given home interface controller changes its selection from one of the apparent channels in the first group of apparent channels to another apparent channel in the first group of apparent channels and so that when any of the second group of apparent channels is selected on a given one of the home interface controllers, the input selection means of such given home interface controller selects the television information signal at the signal input corresponding to the selected channel.

5,550,579

TWO-WAY CABLE TV CONVERSION SYSTEM

Louis Martinez, Perris, Calif., assignor to Radio Telecom & Technology, Inc., Riverside, Calif.

Continuation-in-part of Ser. No. 941,187, Sep. 4, 1992, Pat. No. 5,321,514, which is a division of Ser. No. 202,206, Jun. 3, 1988, Pat. No. 5,177,604, which is a division of Ser. No. 863,101. May 14, 1986, Pat. No. 4,750,036. This application Mar. 7, 1994, Ser. No. 207,386
Int. Cl.[6] H04N *7/14*
U.S. Cl. 348—12 **25 Claims**



1. In an interactive television system, a method for communicating information to at least one central receiver from at least one remote receiver location, each remote receiver location connected to a cable television system, the cable television system for transmitting at least one video signal in a downlink direction over at least one cable, the at least one cable having at least one amplifier along the at least one cable, each amplifier serving at least one remote location, the method comprising the steps of:

(i) at at least one remote location:

(a) modulating the information to be communicated from the at least one remote location onto a first carrier;

(b) transmitting the modulated first carrier of step (i)(a) onto the at least one cable only during at least some of the blanking intervals of a first cable channel;

(ii) after at least one cable amplifier in the downlink direction from the at least one remote location:

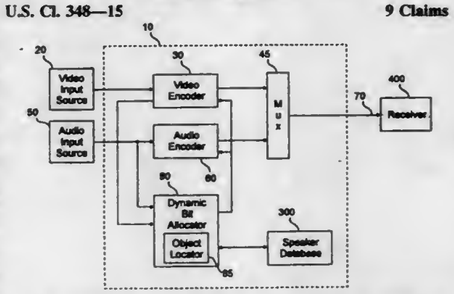
(a) detecting the modulated information received on the at least one cable and retransmitting the modulated information over the air on a second carrier during at least some of the blanking intervals of a first broadcast channel.

5,550,580

LOW BIT RATE AUDIO-VISUAL COMMUNICATION SYSTEM HAVING INTEGRATED PERCEPTUAL SPEECH AND VIDEO CODING

Yong Zhou, Washington Township, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Division of Ser. No. 223,903, Apr. 6, 1994. This application May 31, 1995, Ser. No. 455,378
Int. Cl.[6] H04N *7/14*
U.S. Cl. 348—15 **9 Claims**



1. A method of selecting an audio encoding technique for encoding an audio signal by an audio-visual communication system that contains audio and video information, said video information including a view of a facial region of at least one person, said facial region including lips, said method comprising the steps of:

analyzing said audio signal to determine if there is audio activity;

analyzing said video signal to determine if said lips of said person in said view are moving; and

encoding said audio signal with a speech specific audio encoding technique if said analyzing steps determine that said lips are moving while there is audio activity and encoding said audio signal with a non-speech specific audio encoding technique if said analyzing steps determine that said lips are not moving while there is audio activity.

5,550,581

LOW BIT RATE AUDIO-VISUAL COMMUNICATION SYSTEM HAVING INTEGRATED PERCEPTUAL SPEECH AND VIDEO CODING

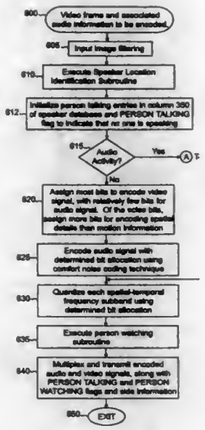
Yong Zhou, Washington Township, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Division of Ser. No. 223,903, Apr. 6, 1994. This application May 31, 1995, Ser. No. 455,449
Int. Cl.[6] H04N *7/14*
U.S. Cl. 348—17 **11 Claims**

1. A method of encoding a first audio and a first video signal in a transmitter of an audio-visual communication system associated with a first party for transmission, utilizing a predetermined number of available bits, to a receiver associated with a second party, said receiver decoding said first audio and video signals for presentation to said second party, said encoding method comprising the steps of:

detecting whether said second party is talking; and

allocating a minimal number of said predetermined number of available bits for encoding said first audio signal if said detecting step determines that said second party is talking.



5,550,582

ENDOSCOPE-IMAGE PROCESSING APPARATUS FOR PERFORMING IMAGE PROCESSING OF EMPHASIS IN ENDOSCOPE IMAGE BY PIGMENT CONCENTRATION DISTRIBUTION

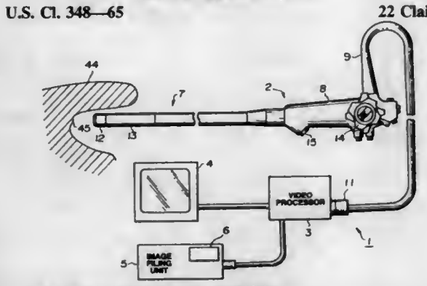
Kei Takasugi, and Kazunari Nakamura, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 29, 1993, Ser. No. 175,242

Claims priority, application Japan, Mar. 19, 1993, 5-060631; Mar. 30, 1993, 5-072471

Int. Cl.[6] H04N *9/64;7/18*

U.S. Cl. 348—65 22 Claims



1. An endoscope apparatus comprising:

an endoscope provided with an inserting section insertable into an organism, illuminating-light outputting means for outputting illuminating light to a part to be inspected within said organism, from a side of a forward end of said inserting section, and an image pickup device for photoelectrically converting an optical image in response to an objective optical system which is provided on the side of the forward end of said inserting section;

signal processing means for performing signal processing for displaying an image of said part to be inspected, from an output signal output from said image pickup device;

pigment-amount calculating means for calculating an amount of pigment with respect to said part to be inspected, from said output signal from said image pickup device, wherein said pigment-amount calculating means includes concentration distribution calculating means for calculating amounts of pigments of respective parts of said endoscope image from said image signal, to calculate a pigment concentration distribution with respect to said endoscope image;

emphasis means for performing emphasis processing on said image in response to the amount of pigment which is calculated by said pigment-amount calculating means, wherein said emphasis means has concentration distribution enlarging means for enlarging an amount of shift from a reference value of the concentration distribution of said amount of pigment which is calculated by said concentration distribution calculating means, and wherein said emphasis means generates said emphasis processing image which has the concentration distribution of the amount of pigment which is enlarged by said concentration distribution enlarging means; and

display means for displaying an emphasis processed image which is processed in emphasis by said emphasis means, wherein said emphasis processed image contains said pigment concentration distribution which is emphasized by the amount of shift from said reference value calculated with respect to an original picture image contained in said output signal, and

wherein said reference value is one of an average of said amounts of pigment and the amount of pigment which is distributed with a greatest frequency.

5,550,583

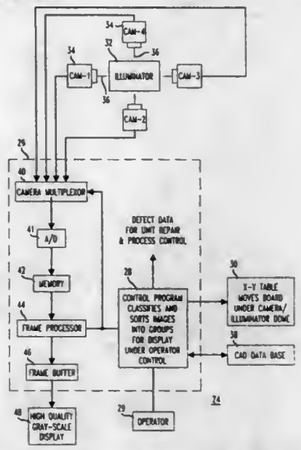
INSPECTION APPARATUS AND METHOD

Israel Amir, Princeton, and Frank P. Higgins, Ewing, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Oct. 3, 1994, Ser. No. 316,745

Int. Cl.[6] H04N *7/18;17/00*

U.S. Cl. 348—126 13 Claims



1. A method of facilitating inspection of an object having a generally planar surface containing a plurality of light-reflective area arranged in individual arrays, comprising the steps of:

(a) capturing an image of each of a plurality selected portions of each array of light-reflective areas;

(b) arranging the images of like portions of like arrays in a single frame such that the light-reflective areas in the frame are oriented and arranged separately in a two-dimensional array having large scale regularity to de-randomize and de-locate the arrays of light-reflective areas so that the light-reflective areas lie in at least one row and generally exhibit the same orientation from row-to-row; and

(c) displaying the frame on a display device for observation and inspection by a human operator to detect which if any light-reflective areas are defective, missing or misaligned.

5,550,584

BUS-LINE NETWORK COMMUNICATION SYSTEM

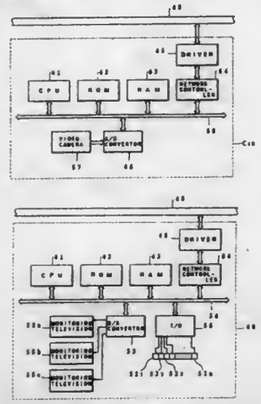
Hiroshi Yamada, Kobe, Japan, assignor to Canopus Co., Ltd., Hyogo, Japan

Continuation-in-part of Ser. No. 8,771, Jan. 25, 1993. This application Feb. 8, 1995, Ser. No. 385,463

Claims priority, application Japan, Feb. 19, 1992, 4-32263

Int. Cl.[6] H04N *7/18*

U.S. Cl. 348—153 8 Claims



1. An image obtaining terminal for connection to a network bus-line, comprising:

video convening means for converting an image into a video signal;

analog to digital convening means for converting the video signal into digital image data;

memory means for storing the digital image data;

judging means for determining whether or not a request command on the network bus-line is addressed to a particular image obtaining terminal; and

communication control means for transmitting the digital image data stored in the memory means over the network bus-line when the judging means determines that the request command is addressed to the particular image obtaining terminal, said communication control means including means for adding an identifier to said digital image data before said digital image data is transmitted, indicating that said digital image data is being transmitted from the particular image obtaining terminal.

5,550,585

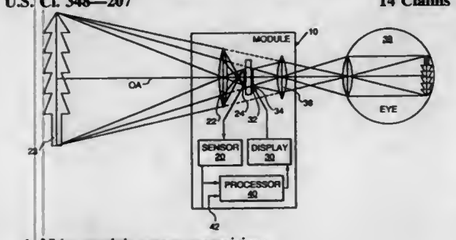
VIDEO INTER-VIEW SYSTEM

Allan Cherri, No. 305, 3630 Andrews Dr., Pleasanton, Calif. 94588, assignor to Allan Cherri, Pleasanton, Calif.

Filed Mar. 26, 1993, Ser. No. 38,618

Int. Cl.[6] H04N *5/225;* G06F *15/20*

U.S. Cl. 348—207 14 Claims



1. Video module means comprising:

video sensor means having an image field of pixel elements responsive to incident light to generate sensor video signals, a sensor video signal output terminal, and a timing signal terminal;

processor means having a sensor video signal input terminal coupled to said output terminal, a host signal input terminal for accepting a host signal, a timing signal terminal, video pixel signal combining means responsive to said sensor video signal and said host signals simultaneously to develop display video signals where each of said pixel elements is individually manipulated and controlled, and a display video signal output terminal for outputting said display video signals;

video display means having thin screen means disposed substantially on an axis in the center of and perpendicular to said image field and facing oppositely from said image field, a display video signal input terminal, and a timing signal terminal, wherein said video display means receives display video signals for said screen means to display video images; and

timer means having a timing signal terminal for providing timing signals.

5,550,586

VIDEO CAMERA AND IMAGE INPUT DEVICE CONNECTED THROUGH SIGNAL LINE FOR TRANSFERRING MULTIPLEX DATA, AND IMAGE INPUT SYSTEM USING THEM

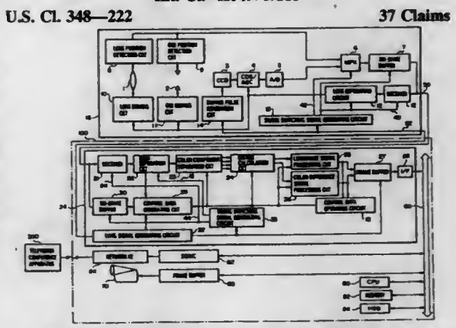
Yoshimichi Kudo, Fujisawa; Toshiro Kinugasa, Hiratsuka, and Takuya Imaide, Fujisawa, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 24, 1995, Ser. No. 409,690

Claims priority, application Japan, Mar. 28, 1994, 6-056946

Int. Cl.[6] H04N *5/225*

U.S. Cl. 348—222 37 Claims



1. An image input system comprising a video camera, first and second signal lines, and an image input device connected to said video camera by said first and second signal lines, said video camera including an imager and an analog-to-digital (A/D) convertor for converting video signals read out from said imager to digital image data, for outputting the digital image data to said first signal line, said image input device converting the digital image data from said first signal line to a data format used inside an external information processing unit, wherein said video camera further comprises:

detecting circuits for detecting a plurality of operation states of said video camera, and for outputting operation state data representing a plurality of the operation states;

a multiplexer for multiplexing the operation state data from said detecting circuits and the digital image data from said A/D convertor, and for outputting multiplexed data;

a first output portion for outputting the multiplexed data from said multiplexer to said first signal line;

a first input portion for inputting a plurality of kinds of control data inputted thereto from said image input device through said first signal line, and for producing an output;

a first data separating circuit for separating and outputting a plurality of kinds of the control data from said first input portion;

control circuits for controlling a plurality of kinds of the operation states of said video camera in accordance with a plurality of kinds of separated control data from said first data separating circuit, respectively; and

a first mode switching signal generating circuit for generating a first mode switching signal in synchronism with a sync signal inputted from said image input device through said second signal line, applying the first mode switching signal to said first output portion, said first input portion and said control data separating circuit, generating a second mode switching signal in synchronism with the sync signal, and applying the second mode switching signal to said multiplexer;

wherein:

said first output portion is switched between a first mode in which said first output portion can output the multiplexed data and a second mode in which said first output portion cannot output the multiplexed data, in response to the first mode switching signal;

said first input portion is switched between a third mode in which said first input portion can input a plurality of kinds of the control data and a fourth mode in which said first input portion cannot input she control data, in response to the first mode switching signal;

said first data separating circuit is switched between a fifth mode in which said first data separating circuit can separate a plurality of kinds of she control data and a sixth mode in which said first data separating circuit cannot separate the control data, in response to the first mode switching signal;

said multiplexer is switched between a seventh mode in which said multiplexer selects and outputs the operation data from said detecting circuits and an eighth mode in which said multiplexer selects and outputs the digital image data from said A/D convertor, in response to the second mode switching signal;

said first input portion is in the fourth mode when said first output portion and said first data separating circuit are in the first and fifth modes, respectively; and

said first input portion is in the third mode when said first output portion and said first data separating circuit are in the second and sixth modes, respectively; and

wherein said image input device includes:

a second input portion for inputting the multiplexed data inputted thereto through said first signal line, and for producing an output;

a second data separating circuit for separating the multiplexed data from said second input portion into the digital image data and the operation data, and for outputting the separated data;

signal processing circuits for processing the digital image data from said second data separating circuit and converting the digital image data into a data format used in the external information processing unit;

a control data generating circuit for generating and outputting a plurality of kinds of the control data on the basis of the operation data from said data separating circuit;

a second output portion for inputting a plurality of kinds of the control data from said control data generating circuit and producing an output to said first signal line;

a sync signal generating circuit for generating the sync signal; and

a second mode switching signal generating circuit for generating a third mode switching signal, synchronized with the first mode switching signal, in synchronism with the sync signal, applying the third mode switching signal to said second output portion and said second input portion, generating a fourth mode switching signal, synchronized with the second mode switching signal, in synchronism with the sync signal and applying the fourth mode switching signal to said second data separating circuit;

wherein:

said second input portion is switched between a ninth mode in which said second input portion can input the multiplexed data and a tenth mode in which said second input portion cannot input the multiplexed data, in response to the third mode switching signal;

said second output portion is switched between an eleventh mode in which said second output portion can output a plurality of kinds of the control data and a twelfth mode in which said second output portion cannot output the control data, in response to the third mode switching signal;

said second data separating circuit is switched between a thirteenth mode in which said second data separating circuit can separate the operation data from the multiplexed data and a fourteenth mode in which said second data separating circuit can separate the digital image data, in response to the fourth mode switching signal;

said second input portion is in the tenth and ninth modes when the second output portion is in the eleventh and twelfth modes, respectively; and

said second input portion is in the ninth and tenth modes when said first output portion is in the first and second modes, respectively.

5,550,587

WHITE BALANCE ADJUSTMENT DEVICE FOR A STILL-VIDEO CAMERA HAVING AN ELECTRONIC FLASH

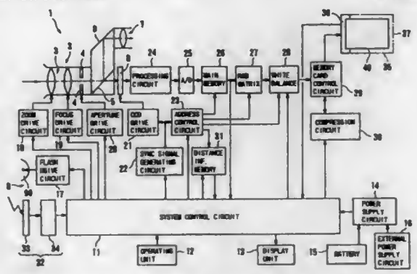
Shunichi Miyadera, Itabashi-ku, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 28, 1995, Ser. No. 430,854

Claims priority, application Japan, May 2, 1994, 6-115961

Int. Cl.[6] H04N *9/73;5/225*

U.S. Cl. 348—223 **9 Claims**



1. A white balance adjusting device provided in a still-video camera, said white balance adjusting device having an imaging device outputting an image signal corresponding to an object to be photographed, and an electronic flash radiating a flash of light to said object, said white balance adjusting device comprising:

color temperature sensing means for sensing a first color temperature corresponding to said flash of light radiated by said electronic flash and a second color temperature corresponding to light reflected from said object prior to said object being radiated by said electronic flash;

image-object distance sensing means for sensing an image-object distance from said object to an image formed by a photographing optical system of said still-video camera, said image-object distance sensing means sensing said image-object distance for each sector which is formed by subdividing a frame photographed by said still-video camera; and

a white balance adjusting circuit for performing a white balance adjustment of said image signal outputted from said imaging device based on said first color temperature and said second color temperature, said white balance adjusting circuit performing said white balance adjustment for each sector in accordance with said image-object distance for each sector when said electronic flash is used.

5,550,588

DATA INPUT DEVICE AND DATA INPUT METHOD FOR INPUTTING IMAGE DATA FROM CAMERA TO MEMORY

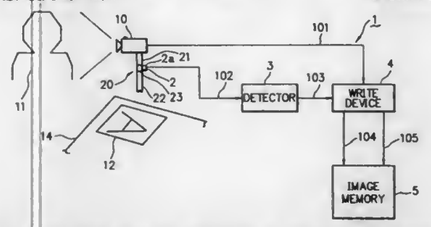
Hisao Hayashi, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed May 31, 1995, Ser. No. 456,227

Claims priority, application Japan, Jun. 2, 1994, 6-120982

Int. Cl.[6] H04N *5/76*

U.S. Cl. 348—231 **8 Claims**



1. A data input device for inputting to an image memory a set of image data of an object picked up by and received from a camera installed on a camera mount, said camera having a shooting angle thereof variable in accordance with an operational state of said camera mount, said device comprising:

a sensor means for sensing the operational state of said camera mount to detect thereby the shooting angle of said camera; and

a write means for writing to store the set of image data in said image memory, in accordance with a selected order from among a plurality of defined orders of a write access to said image memory, depending on an output of said sensor means, so that an inverted image of said object when picked up by said camera is inverted when the set of image data is stored in said image memory.

5,550,589

METHOD OF ADAPTIVELY MULTIPLEXING A PLURALITY OF VIDEO CHANNEL DATA USING CHANNEL DATA ASSIGNMENT INFORMATION OBTAINED FROM A LOOK-UP TABLE

Hirohisa Shiojiri, and Toshio Koga, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

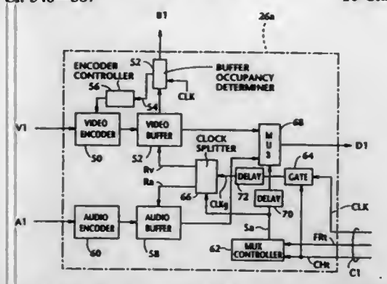
Continuation of Ser. No. 940,406, Sep. 3, 1992, abandoned.

This application Nov. 4, 1994, Ser. No. 334,441

Claims priority, application Japan, Sep. 3, 1991, 3-221934

Int. Cl.[6] H04N *7/08*

U.S. Cl. 348—387 **10 Claims**



1. An apparatus for transmitting and receiving multiplexed video signals including audio information, comprising a transmission section and a receiving section interconnected with each other via a transmission path,

the transmission section comprising a transmitter, a plurality of encoders, an adaptive bit sharing multiplexer, and a sub-frame assignment controller including a look-up table,

the receiver section comprising a receiver, an adaptive bit sharing demultiplexer, and a plurality of decoders,

the sub-frame assignment controller being responsive to a plurality of control signals to derive a sub-frame allocation datum from the look-up table;

wherein each of said encoders is supplied with a video signal and an audio signal, and each said encoder comprises:

a video encoder for receiving the video signal, subjecting the video signal to inter-frame encoding, and producing encoded video data thereby;

a video buffer for receiving and storing the encoded video data;

a buffer occupancy determiner for determining how much video data is stored in the video buffer, and for producing a buffer occupancy value signal;

an encoder controller that is responsive to the buffer occupancy value signal to control an encoding parameter such that average video data encoded is confined within a predetermined range;

an encoder multiplexer;

an audio encoder for receiving said audio signal and producing encoded audio information;

an audio buffer for receiving and storing the encoded audio information at a fixed rate, and for supplying the encoded audio information to the encoder multiplexer in synchronism with an audio timing signal; and

a clock splitter for supplying the audio timing signal to the audio buffer, and for supplying a video timing signal to said video buffer;

and wherein said video buffer supplies said encoded video data to the encoder multiplexer in synchronism with the video timing signal.

5,550,590

BIT RATE CONTROLLER FOR MULTIPLEXER OF ENCODED VIDEO

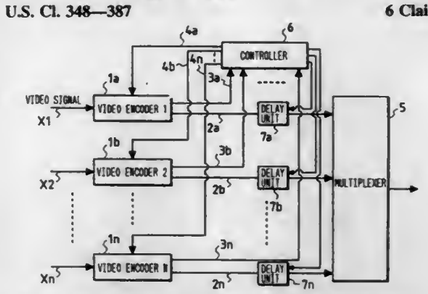
Shigeyuki Sakazawa, and Masahiro Wada, both of Tokyo, Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Japan

Filed Feb. 28, 1995, Ser. No. 395,709

Claims priority, application Japan, Mar. 4, 1994, 6-059921; Jul. 8, 1994, 6-179795

Int. Cl.[6] H04N *7/12;7/58*

U.S. Cl. 348—387 **6 Claims**



1. A bit rate controller for a multiplexer of an encoded video for multiplexing the encoded outputs of a plurality of video encoders, said bit rate controller comprising:

a plurality of video encoders for performing an encoding for each of a plurality of frames wherein intra-frame codings and inter-frame codings regularly alternately appear; and

a controller for controlling the operation timing of said plurality of video encoders so that said intra-frame codings are not performed at the same time, wherein

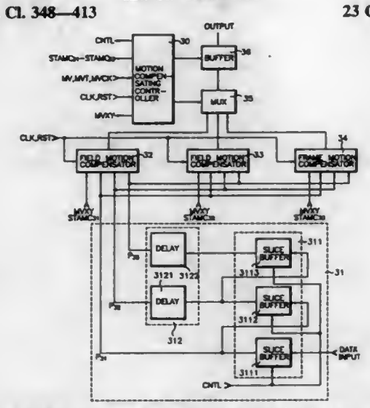
the amounts of encoded output information of said plurality of video encoders do not become maximum at the same time.

VOL 1189 ISS 4 AUG 27 1996

5,550,591
MOTION COMPENSATOR FOR DIGITAL IMAGE RESTORATION

Chai Y. Rim, and Seong W. Hong, both of Seoul, Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Oct. 28, 1994, Ser. No. 330,522
Claims priority, application Rep. of Korea, Oct. 28, 1993, 22575/1993
Int. Cl.[6] H04N *7/32*
U.S. Cl. 348—413 **23 Claims**



1. A motion compensator for restoring a digital image comprising:

a motion compensating controller for receiving a motion vector and a motion vector-type signal for indicating a vector type of field or frame, in synchronization with a clock and generating a motion displacement signal of the motion vector, start signals and a control signal, for controlling the entire operation of said motion compensator;

a data interface for sequentially shifting input data according to said control signal output from said motion compensating controller;

first and second field motion compensators for receiving said shifted data, output from said data interface, according to said motion displacement signal and said start signals output from said motion compensating controller, for performing vertical and horizontal interpolation on the received shifted input data, and for performing motion compensation in units of one half of one pixel with respect to a field motion vector;

a frame motion compensator for receiving said shifted input data, output from said data interface, according to said motion displacement signal and said start signals output from said motion compensating controller, for performing vertical and horizontal interpolation on the received shifted input data and for performing motion compensation in units of one-half of one pixel with respect to a frame motion vector; and

a first multiplexer for selecting and outputting a compensated signal from one of said first and second field motion compensators and said frame motion compensator according to the control of said motion compensating controller.

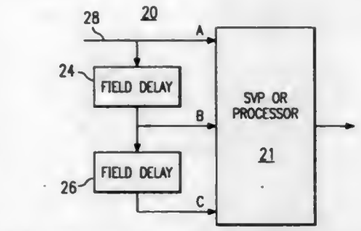
5,550,592
FILM MODE PROGRESSIVE SCAN CONVERSION

Vishal Markandey, Dallas, and Gregory J. Hewlett, Garland, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 25, 1995, Ser. No. 429,254
Int. Cl.[6] H04N *7/01;11/20*
U.S. Cl. 348—448 **4 Claims**

1. A television system with progressively scanned display, including:

an input line for transmitting a current video field of data originally produced on film;



a first memory for storing data for a most recent previous video field;

a second memory for storing data for a second most previous video field;

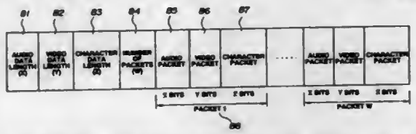
a processor for comparing said most recent previous field with said current field and said second most previous field such that a motion signal is selected by comparing motion signals between said current field and said most recent previous field, and between said most recent previous field and said second most previous field, wherein said minimum motion signal is used to generate progressive frames of said data originally produced on film; and

a spatial light modulator for displaying said progressive frames of video data as an image.

5,550,593
MULTIPLEX COMMUNICATION SYSTEM USING SEPARATED AND MULTIPLEXED DATA

Jiro Nakabayashi, Urawa, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 143,150, Oct. 29, 1993, abandoned.
This application Mar. 8, 1995, Ser. No. 400,486
Claims priority, application Japan, Nov. 30, 1992, 4-345392
Int. Cl.[6] H04N *7/00*
U.S. Cl. 348—465 **14 Claims**



1. A multiplex communication system using separated and multiplexed data for compressing information of a dynamic image, multiplexing and storing the compressed information together with audio data and character data, and reproducing and decoding the stored information, the multiplex communication system comprising:

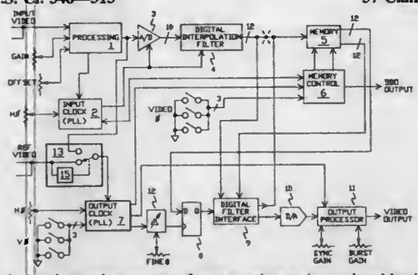
storage means for assembling video, audio and character data of the multiplexed information into packets of length which depends upon a bit rate of the multiplexed information, appending condition information to the packets indicative of multiplexing conditions of the packets, and storing the appended packets therein; and

judging means for identifying packet structure in accordance with the condition information during reproduction of the packets stored in said storage means and disassembling the packets into separate data based on the identified packet structure to decode the video, audio and character data.

5,550,594
APPARATUS AND METHOD FOR SYNCHRONIZING ASYNCHRONOUS SIGNALS

Carl Cooper, Monte Sereno; David Wallen, San Francisco; Mirko Vojnovic, Santa Clara, and Howard Loveless, Ben Lomond, all of Calif., assignors to Pixel Instruments Corp., Los Gatos, Calif.

Filed Jul. 26, 1993, Ser. No. 96,240
Int. Cl.[6] H04N *9/475*
U.S. Cl. 348—513 **37 Claims**



1. An electronic apparatus for processing an input signal having synchronizing components including in combination:

a) an input processing section responsive to said input signal to separate said synchronizing components therefrom and to provide a processed signal;

b) a clock section for generating a sampling clock;

c) a sampling section operative to sample said processed signal and provide samples thereof in response to said clock section;

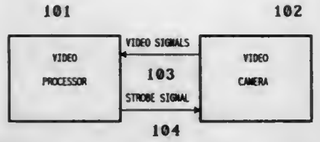
d) an interpolation section responsive to groups of said samples to perform interpolation thereof to provide filtered samples having improved resolution;

e) a memory section responsive to a reference signal and said filtered samples to provide a stored signal synchronized in response to said reference signal which reference signal may be a phase shifted version of said input signal.

5,550,595
APPARATUS AND METHOD FOR MOTION ESTIMATION WITH ENHANCED CAMERA INTERFACE

Eric C. Hannah, Pebble Beach, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 16, 1994, Ser. No. 357,389
Int. Cl.[6] H04N *7/24;7/32;5/765*
U.S. Cl. 348—552 **28 Claims**



1. A method for processing video signals, comprising the steps of:

(a) providing a video processor means;

(b) providing a video camera means interfaced with the video processor means and for supplying video frames to the video processor means, the video camera means comprising:

automatic exposure setting means for automatically updating at least one video exposure parameter before transmitting a next video frame to the video processor means; and

means for enabling or disabling the automatic exposure setting means in response to a strobe signal;

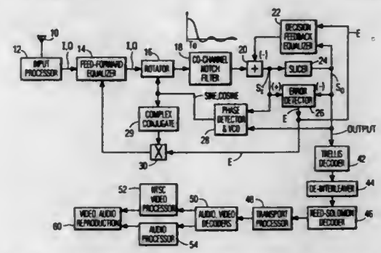
(c) determining with the video processor means whether to intra-frame encode or to difference encode the next video frame; and

(d) transmitting the strobe signal from the video processor means to the video camera means in accordance with the determining of step (c) to control the automatic exposure setting means of the video camera means.

5,550,596
DIGITAL TELEVISION SIGNAL PROCESSING SYSTEM INCLUDING A CO-CHANNEL REJECTION FILTER

Christopher H. Strolle, 275 Bickley Rd., Glenside, Pa. 19038, and Steven T. Jaffe, 90 Eaglenest Rd., Freehold, N.J. 07728

Filed Nov. 25, 1994, Ser. No. 345,031
Int. Cl.[6] H04N *5/445;5/213*
U.S. Cl. 348—607 **13 Claims**



1. In a television receiver for receiving a television signal representative of digital video information, apparatus comprising:

an input signal translation network;

a first equalizer responsive to signals from said signal translation network;

a baseband demodulator responsive to an output signal from said equalizer; and

a notch filter included in said baseband demodulator for filtering baseband and near-baseband video signals, said filter exhibiting a response including significant amplitude attenuation at a prescribed frequency for attenuating interferer signal components subject to contaminating said received signal.

5. In a system for receiving a signal representative of digital video information, apparatus comprising:

an input processor;

an input equalizer responsive to signals from said input processor;

a carrier recovery network responsive to an output signal from said equalizer for providing a demodulated baseband video signal;

an output signal processor for processing said baseband video signal; and

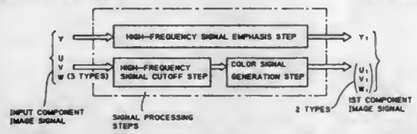
a filter included in said carrier recovery network for filtering baseband and near-baseband video signals, said filter exhibiting a response including significant amplitude attenuation at a prescribed frequency for attenuating .narrowband interferer signal components subject to contaminating said received signal.

5,550,597

SIGNAL PROCESSING METHOD AND SIGNAL PROCESSING DEVICE

Ryukichi Wada; Fumio Suzuki, and Yoshisuke Ohtsuru, all of Kyoto, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 26, 1995, Ser. No. 494,731
Claims priority, application Japan, Jul. 5, 1994, 6-153922
Int. Cl.[6] H04N *9/64*
U.S. Cl. 348—708 **10 Claims**



1. A signal processing method, for inputting an input component image signal having a luminance signal representing a luminance component and color difference signals representing a color component and generating a first component image signal to be outputted having a first luminance signal representing the luminance component and first color signals representing the color component, comprising the steps of:

emphasizing a high-frequency signal component of said luminance signal to output said first luminance signal;

cutting off a high-frequency signal component of said color difference signals to output low-frequency color difference signals; and

generating said first color signals from said low-frequency color difference signals to be outputted, wherein

said step of generating said first color signals follows said step of cutting off said high-frequency signal component, and

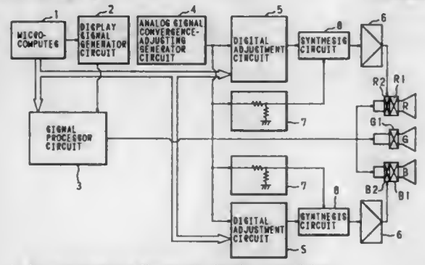
said step of emphasizing said high-frequency signal component and said step of cutting off said high-frequency signal component being performed substantially in parallel.

5,550,598

CONVERGENCE ADJUSTMENT CIRCUIT AND PROJECTION TYPE DISPLAY APPARATUS

Masateru Itoh, and Hiroshi Kawamura, both of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 18, 1994, Ser. No. 341,182
Claims priority, application Japan, Dec. 2, 1993, 5-302698
Int. Cl.[6] H04N *9/28*
U.S. Cl. 348—807 **21 Claims**



1. A convergence adjustment circuit, comprising:

an analog signal convergence adjusting generator circuit generating an analog convergence adjustment signal;

an analog fixed gain adjustment circuit roughly adjusting a waveform and level of said analog convergence adjustment signal by a fixed gain adjustment value;

a digital adjustment circuit finely adjusting the waveform and level of said analog convergence adjustment signal according to a digital control signal;

a control means for outputting said digital control signal; and

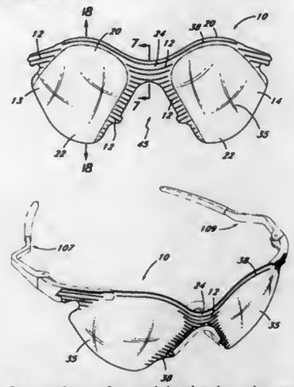
a synthesis circuit synthesizing the roughly adjusted convergence adjustment signal from said analog fixed gain adjustment circuit and the finely adjusted convergence adjustment signal from said digital adjustment circuit.

5,550,599

SURFACE MODIFIED LENS

James H. Jannard, Eastsound, Wash., assignor to Oakley, Inc., Irvine, Calif.

Filed Jan. 10, 1994, Ser. No. 179,092
Int. Cl.[6] G02C *7/02;7/16*
U.S. Cl. 351—159 **12 Claims**



1. A lens for eyeglasses for participation in active sports, such as biking, skiing and the like, said lens comprising:

a top edge and a bottom edge, the bottom edge having a nose opening therein for mounting the lens on the nose of a wearer and for defining a right and a left lens optical zones;

said lens having an arcuate horizontal cross-sectional configuration, wherein the lens curves across the face of the wearer and extends into both the wearer's left eye and right eye fields of vision;

said lens having an outer convex surface and an inner concave surface, the outer convex surface having a peripheral zone on the lens surrounding said right and left optical zones; and

a first groove in said peripheral zone surrounding said right lens optical zone and a second groove in said peripheral zone surrounding said left lens optical zone.

5,550,600

OPHTHALMIC LENS HAVING A NEGATIVE REFRACTIVE POWER

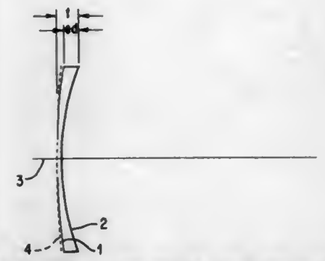
Yasunori Ueno, Kanagawa-ken, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jun. 7, 1995, Ser. No. 472,924
Claims priority, application Japan, Jun. 23, 1994, 6-164529
Int. Cl.[6] G02C *7/02*
U.S. Cl. 351—159 **6 Claims**

1. An aspherical ophthalmic lens having a negative refractive power, an axis of symmetry and a periphery, comprising:

an aspherical front refractive surface having a meridional plane and a sagittal plane that intersects said meridional plane, said sagittal plane having a sagittal plane curvature of ρ_s and said meridional plane having a meridional plane curvature of ρ_m, wherein a curvature difference Z defined as $Z=\rho_m-\rho_s$ increases over a first range, decreases over a second range and increases over a third range in a direction from said axis of symmetry toward the periphery, wherein the first range extends from said axis of symmetry to approximately 20 mm, the second range extends from approximately 20 mm to approximately 25 mm, and the third range extends from approximately 25 mm toward said periphery; and

a rear refractive surface.

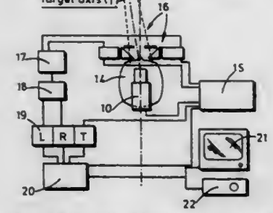


5,550,601

METHOD AND APPARATUS FOR OCULAR MOTILITY TESTING

William B. M. Donaldson, 45 Carlton Pl., Aberdeen AB2 4BR, Scotland

PCT No. PCT/GB93/00715, § 371 Date Sep. 30, 1994, § 102(e) Date Sep. 30, 1994, PCT Pub. No. WO93/19661, PCT Pub. Date Oct. 14, 1993
PCT Filed Apr. 5, 1993, Ser. No. 313,051
Claims priority, application United Kingdom, Apr. 3, 1992, 9207315
Int. Cl.[6] A61B *3/14*
U.S. Cl. 351—209 **8 Claims**



1. An apparatus for ocular motility testing comprising, head positioning means for location of the head of a patient in a predetermined position,

gaze-detecting means adapted to image both eyes simultaneously with the patient's head in a predetermined position while the patient's eye(s) follow a target on a screen, and

computing means for computing the position of visual axis of said eyes with reference to a primary position, and store means associated with a target display means and said computing means to store the positions of the target and the positions of the visual axes;

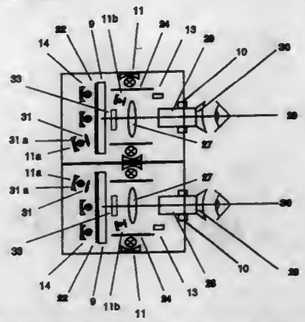
characterized in that the gaze-detecting means is disposed adjacent the eyes of the patient and comprises left and right gaze direction detecting means acting independently, the gaze-detecting means including gaze occluder means operable selectively to occlude a patient's eye relative to the target, without obstructing the gaze detecting means.

5,550,602

APPARATUS AND METHOD FOR EXAMINING VISUAL FUNCTIONS

Johannes Braeuning, Schwarzwaldstrasse 11, 73760 Ostfildern, Germany, assignor to Johannes Braeuning, Ostfildern, and Stefan Schueller, Tuebingen, both of, Germany

Filed Nov. 9, 1994, Ser. No. 338,199
Int. Cl.[6] A61B *3/02*
U.S. Cl. 351—243 **13 Claims**



1. Apparatus for examining at least one visual function in an eye of a test subject, comprising:

an optical apparatus portion which contains a relatively small-surface image-generating display screen having controllable pixels for offering optical test objects at different angles with respect to an optical axis;

a computer control for controlling the display screen;

one of a spectacle-type and helmet-type carrier which can be mounted on the test subject and houses the optical apparatus portion; and

a focussing optical imaging system contained in the carrier through which the optical test objects offered by the display screen are viewed, said optical imaging system being arranged in front of the display screen.

5,550,603

MOTION PICTURE FILM WITH DIGITAL SOUND TRACK

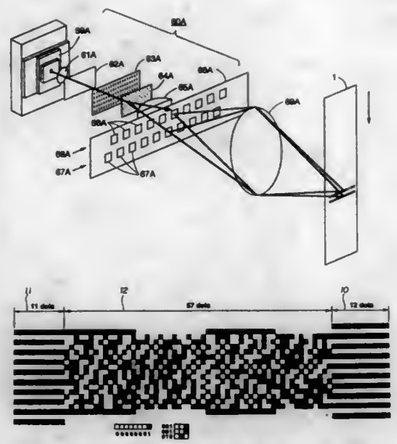
Shunji Yoshimura, Tokyo; Yoshiyuki Akiyama, Kanagawa; Kiyoshi Ohsata, Chiba; Isao Ichimura; Toshio Watanabe, both of Kanagawa, and Shinji Katsuramoto, Chiba, all of, Japan, assignors to Sony Corporation, Japan

Filed Nov. 30, 1993, Ser. No. 158,767
Claims priority, application Japan, Nov. 30, 1992, 4-320918; Dec. 22, 1992, 4-356935; Jun. 16, 1993, 5-168397
Int. Cl.[6] G03B *31/02;31/00*
U.S. Cl. 352—27 **29 Claims**

1. A motion picture film having an optically-readable digital sound track formed thereon, the motion picture film having a direction of travel, the digital sound track being adapted to be read by a line element aligned perpendicular to the direction of travel, the line element reading the sound track in response to a timing signal, the motion picture film comprising:

an elongate, flexible substrate, the substrate having opposed edges and having a line of sprocket holes formed therein adjacent each of the edges;

an elongate digital pattern recording area on the substrate in the vicinity of one of the lines of sprocket holes, the digital pattern recording area having plural dots formed therein in a rectangular array of tracks substantially perpendicular to the direction of travel of the motion picture film, and columns in the direction of travel, each of the dots being in one of a first state and a second state optically distinct from one another, the digital pattern recording area being divided along the tracks into:



a first tracking pattern area and a second tracking pattern area, the dots in each tracking pattern area being in opposite states in consecutive tracks to form a vertical synchronizing pattern adapted for generating the timing signal, and

a signal pattern area disposed between the first tracking pattern area and the second tracking pattern area, the states of the dots in the signal pattern area representing a digital sound signal of at least one channel.

5,550,604

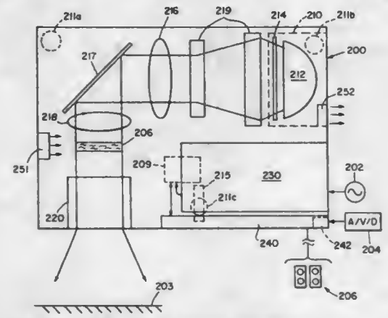
COMPACT HIGH RESOLUTION LIGHT VALVE PROJECTOR

Ronald P. Gale, Sharon; Richard McClullough, Wrenthem, and John C. C. Fan, Chestnut Hill, all of Mass., assignors to Kopin Corporation, Taunton, Mass.

Filed Jun. 3, 1994, Ser. No. 254,276

Int. Cl.[6] G03B *21/00*

U.S. Cl. 353—31 **20 Claims**



1. A light valve projection system comprising:

an arc lamp having an arc gap of less than 2 mm;

an optical coupler positioned to receive light from the arc lamp and to direct the light along an optical path;

an active matrix light valve comprising a plurality of pixel electrodes and having a pixel resolution of at least 300,000, the pixels defining an active area of the light valve through which light from the optical coupler is directed along the optical path, the active area being less than 320 mm^2;

a projection lens positioned to receive light directed through the active matrix light valve along the optical path and to project the light onto a viewing surface.

5,550,605

OPTICAL ELEMENT ROTATING DEVICE FOR LIQUID-CRYSTAL

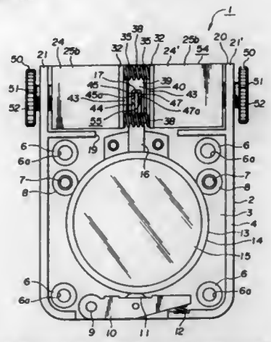
Yoshio Haraguchi, Kanagawa, and Minoru Okuda, Tokyo, both of, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 29, 1994, Ser. No. 282,789

Claims priority, application Japan, Aug. 2, 1993, 5-208147

Int. Cl.[6] G02B *26/00*

U.S. Cl. 353—81 **17 Claims**



2. An optical element rotating device comprising:

a wedge-shaped prism having a maximum thickness at one side and a minimum thickness at the other side;

an optical element chassis rotatably supporting said wedge-shaped prism so as to rotatable about an optic axis of said prism; and

a drive mechanism attached to said optical element chassis, for cyclically rotating said prism clockwise and counterclockwise between two different predetermined phase angles of said prism with respect to said optical element chassis;

wherein two stationary rollers are rotatably supported on said optical element chassis, and a pressure-contact roller is movably and rotatably mounted on said optical element chassis, wherein said wedge-shaped prism has a circular shape with respect to its optic axis, and wherein a biasing means is arranged for permanently biasing said pressure-contact roller in a direction which biases said prism into pressure contact with said stationary rollers, whereby an outer periphery of said prism is rotatably supported on said optical element chassis by said three rollers.

5,550,606

CAMERA WITH MAGNETICALLY MOVABLE LIGHT BLOCKING SHIELD

Jr. Wilbert Janson, Shortsville, and Ivsey Chernobilsky, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

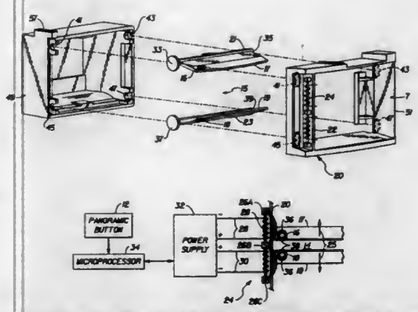
Filed Aug. 23, 1994, Ser. No. 294,691

Int. Cl.[6] G03B *37/00;17/02*

U.S. Cl. 354—94 **6 Claims**

1. A camera comprising a taking lens and at least one light blocking shield which is movable between (1) a light blocking position in which light passing through the taking lens is partially blocked from reaching an image recording surface such that a reduced size image can be recorded on the image recording surface and (2) a normal position in which light passing through said taking lens is not blocked by said light blocking shield such that a normal image can be recorded on said image recording surface, is characterized by:

means for magnetically moving said light blocking shield between said light blocking and normal positions, said magnetic moving means including a permanent magnet attached to said light blocking shield, said permanent magnet having a first magnetic field, and a selectively energizable electromagnet having a second magnetic field when energized, said first



and second magnetic fields interacting to cause said light blocking shield to be moved between said light blocking and normal positions.

5,550,607

LENS-FITTED PHOTOGRAPHIC FILM UNIT WITH ELECTRONIC FLASH EQUIPMENT

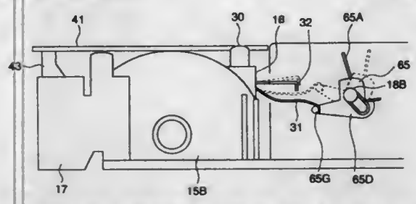
Shuri Mizoguchi, Hino, Japan, assignor to Konica Corporation, Japan

Filed Nov. 1, 1994, Ser. No. 333,147

Claims priority, application Japan, Nov. 25, 1993, 5-295561

Int. Cl.[6] G03B *15/03*

U.S. Cl. 354—149.11 **2 Claims**



1. A lens-fitted photographic film unit having an unexposed photographic film loaded therein, the film unit comprising:

(a) a main body, wherein the unexposed photographic film is loaded therein and an electronic flash unit including an electronic flash circuit is attachable on the main body;

(b) a sector provided on the main body for exposing the unexposed photographic film by opening and closing movements of the sector responsive to a release operation; and

(c) a connecting unit provided on the main body having a first and a second elastic, electrically conductive member disposed facing each other in a spaced apart relation with each other, each member including a first tip end and a second tip end opposite the first tip end,

wherein the second tip ends of the first and second conductive members acting as synchronizing contacts for flashing the electronic flash unit, each of the first tip ends being electrically in contact with the electronic flash circuit when the electronic flash unit is attached to the main body, and when the release operation of the film unit is conducted, the second tip end of the first member is forced to bend in accordance with the opening movement of the sector to come in contact with the second tip end of the second member, and the second tip end of the first member acts on the sector so that the sector returns to a closed position thereof by an elastic restoring force of the first member after the first member contacts the second member.

5,550,608

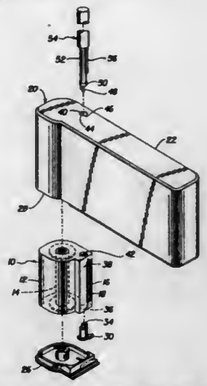
APPARATUS AND METHOD FOR CLOSING A FILM CASSETTE AND UNLOADING THE CLOSED CASSETTE FROM A CAMERA

David C. Smart, Rochester, and Thomas E. Dussinger, Henrietta, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 11, 1995, Ser. No. 371,336

Int. Cl.[6] G03B *19/10*

U.S. Cl. 354—174 **14 Claims**



1. A camera comprising a cassette-receiving chamber for holding a film cassette provided with a light lock which is pivoted closed before removing the cassette from said chamber, is characterized in that:

said camera has an ingress opening to one end of said chamber positioned to longitudinally admit a separate implement, not part of the camera, into the chamber for rotation to pivot the light lock closed and to further admit the implement into the chamber to push the cassette out of the chamber through an egress opening at an opposite end of the chamber.

5,550,609

FILM CARTRIDGE WITH FILM MOVEMENT INDICATOR, AND ASSOCIATED INDICATOR SENSING DEVICE

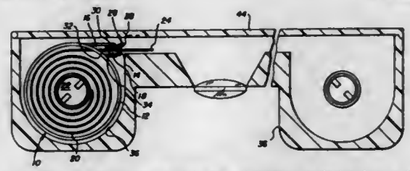
Thomas M. Stephany, Churchville, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 4, 1995, Ser. No. 368,462

The portion of the term of this patent subsequent to Dec. 19, 2014, has been disclaimed.

Int. Cl.[6] G03B *17/26;7/00*

U.S. Cl. 354—275 **5 Claims**



1. A film cartridge comprising a cartridge shell having a film egress slot, a filmstrip located inside said cartridge shell and adapted to be moved outwardly through said film egress slot, and a film movement indicator, is characterized in that:

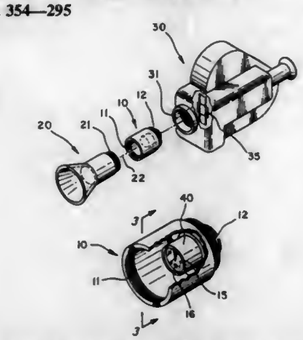
said film movement indicator includes an electrically conductive indicator patch which is separate from said filmstrip and located in said film egress slot, but is moved outwardly from the film egress slot by the filmstrip as the filmstrip is similarly moved, to provide an electrically sensible indication of film movement once outside the cartridge shell.

5,550,610

SYTEM FOR CREATING SPECIAL EFFECT IMAGES IN THE OUT-OF-FOCUS HIGHLIGHTS OF PHOTOGRAPHS

Frank G. DeMarco, 36 E. 7th St. #2W, New York, N.Y. 10003

Filed Aug. 9, 1995, Ser. No. 513,173
Int. Cl.[6] G03B *11/00*
U.S. Cl. 354—295 **20 Claims**



1. A system for creating special effect images in the out-of-focus highlights of a photographic image, said system comprising:

an objective lens;

a camera for recording a photographic image projected through said objective lens onto a predetermined focal plane, with at least a portion of said photographic image having highlights that are out of focus; and

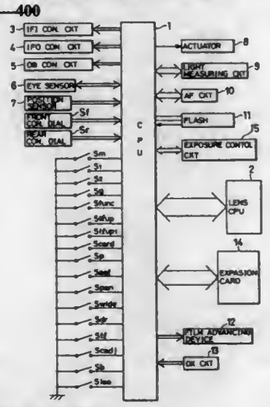
an image cell having transparent portions and opaque portions defining a predetermined special effect image, said image cell being placed between said objective lens and said focal plane to create said special effect image within said out-of-focus highlights in said photographic image.

5,550,611

CAMERA

Tokuji Ishida, Daito; Yasuo Nakanishi, Osaka; Toshihiko Ishimura, Habikino; Takehiro Katoh, Nara; Kenji Ishibashi, Sakai; Yoshihiro Hara, Kishiwada; Takashi Kondo, Neyagawa, and Hiroshi Yoshino, Osaka, all of, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 889,605, May 27, 1992, abandoned.
This application Mar. 1, 1994, Ser. No. 203,643
Claims priority, application Japan, May 28, 1991, 3-123978
Int. Cl.[6] G03B *13/36;7/08*
U.S. Cl. 354—400 **18 Claims**



14. A camera comprising:

a taking lens for photographing a subject;

auto-focussing means for automatically bringing the taking lens into a focus position, the auto-focussing means having a plurality of selectable focussing areas of the view field;

selecting means for selecting a desired focussing area from among the plurality of selectable focussing areas for a current photographic operation;

initial area setting means for selecting a desired focussing area from among the plurality of selectable focussing areas, and setting the selected focussing area as an initial focussing area; and

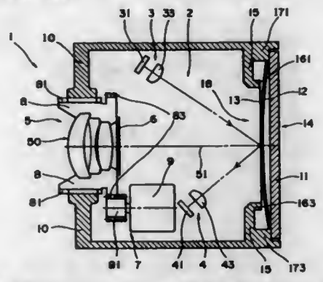
resetting means for resetting the auto-focussing means to the initial focussing area.

5,550,612

FOCAL POINT CORRECTION APPARATUS

Akihiro Arai, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 9, 1994, Ser. No. 338,124
Claims priority, application Japan, Nov. 9, 1993, 5-064735 U
Int. Cl.[6] G03B *13/36*
U.S. Cl. 354—400 **15 Claims**



1. A focal point correction apparatus for use in a camera, comprising:

an optical system having a taking lens and an axis for focusing images onto a film;

mechanism for detecting a surface displacement of the film relative to a predetermined base focal position, said predetermined base focal position being a position where light from an object to be photographed is focussed through said taking lens and where the film is normally positioned and for outputting data corresponding to the detected surface displacement; and

means for correcting a focal point of said optical system in response to said data outputted by said detecting means.

5,550,613

NEGATIVE CARRIER FOR PHOTOGRAPHIC PRINTER

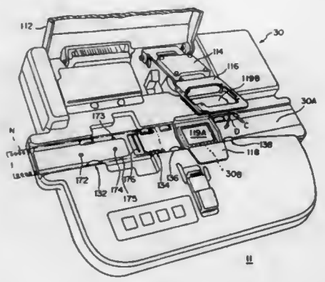
Takeshi Hasegawa, and Takashi Yamamoto, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 2, 1995, Ser. No. 458,251
Claims priority, application Japan, Sep. 8, 1994, 6-214475
Int. Cl.[6] G03B *27/52*
U.S. Cl. 355—41 **20 Claims**

1. A negative carrier for a photographic printer, which is installed on a photographic printer for print-exposing an image on a negative film onto a photosensitive material, and which effects the positioning of the negative film during print-exposure of the photosensitive material, comprising:

a sensor disposed in a transporting passage of the negative film so as to detect information concerning the negative film; and

a controlling device for determining one of the presence and absence of the negative film over said sensor on the basis of a detection signal from said sensor, and for calibrating said sensor if it is determined that the negative film is absent.

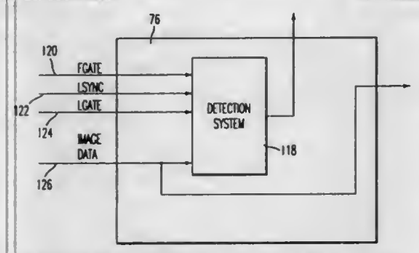


5,550,614

METHOD AND SYSTEM FOR DETECTING AND DISTINGUISHING BETWEEN BLANK PAGES WITHIN A REPRODUCTION JOB

Tetsuro Motoyama, Cupertino, Calif., assignor to Ricoh Company, Ltd., Tokyo, Japan, and Ricoh Corporation, San Jose, Calif.

Filed Jun. 5, 1995, Ser. No. 463,001
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—206 **21 Claims**



1. A method for analyzing pages, comprising the steps of:

determining a beginning of a job;

obtaining page information included in the job;

determining if a page represented by the page information is a blank page;

determining if the job is past the beginning when the page is determined not to be a blank page;

incrementing a blank page counter when the page is determined to be a blank page;

comparing the blank page counter to a blank page threshold; and

indicating an error has occurred when the comparing step determines that the blank page counter has exceeded the blank page threshold and the job is not past the beginning.

5,550,615

TONER CONCENTRATION ADJUSTMENT METHOD AND APPARATUS

Thomas F. Szlucha, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 7, 1994, Ser. No. 334,904
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—208 **25 Claims**

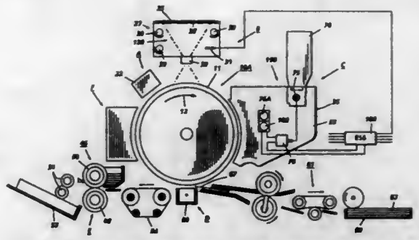
1. A method of minimizing operator adjustments for toner concentration drifts in a printing machine using multiple developer material and having a programmable controller, the method comprising the steps of:

(a) automatically and intentionally dispensing into the development housing a quantity of fresh toner that is less than a quantity of depleted toner estimated in accordance with a control algorithm stored in the controller in order to prevent errors in over feeding of toner which are more damaging and harder for an operator to control;

(b) manually adjusting a quantity of fresh toner added to the developer material in the development housing so as to maintain acceptable toner development quality;

(c) sensing and keeping count of manual adjustments to quantities of fresh toner added; and

(d) automatically adjusting the stored algorithm in the controller, when the number of manual adjustments relative to a predetermined running count of reproductions reaches a predetermined value.

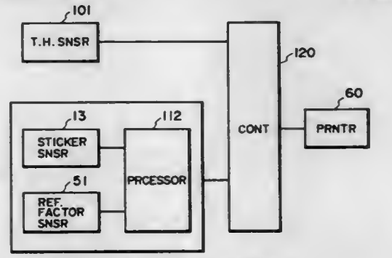


5,550,616

IMAGE FORMING APPARATUS INCLUDING MEANS FOR CONTROLLING IMAGE FORMING CONDITION ACCORDANCE WITH AMBIENT CONDITION AND PATCH DENSITY DETECTION

Hisashi Fukushima, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 8, 1994, Ser. No. 337,383
Claims priority, application Japan, Nov. 8, 1993, 5-300775
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—208 **28 Claims**



1. An image forming apparatus comprising:

toner image forming means for forming a toner image on a recording material;

fixing means for heat-fixing a toner image on a recording material;

ambient condition detecting means for detecting an ambient condition;

control means for controlling an image forming condition of said image forming means on the basis of an output of said ambient condition detecting means; and

second detecting means for detecting a parameter relating to a toner charge amount of a toner image formed on a recording material;

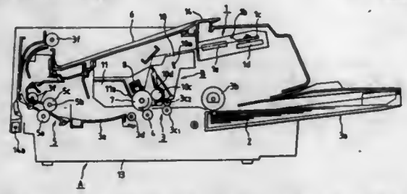
wherein said control means is operable to control an image forming condition on the basis of an output of said second detecting means after a main power source of said image forming apparatus is changed from an off-state to an on-state, and wherein a determination is made as to whether said second detecting means is operated or not, in accordance with a fixing temperature of said fixing means when the main power source is changed from the off-state to the on-state.

5,550,617

PROCESS CARTRIDGE AND IMAGE FORMING APPARATUS

Kazuyoshi Odagawa, Koshigaya, and Shinichi Sasaki, Fujisawa, both of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 31, 1995, Ser. No. 381,339
Claims priority, application Japan, Jan. 31, 1994, 6-009743
Int. Cl.[6] G03G *21/18*
U.S. Cl. 355—210 **55 Claims**



11. A process cartridge removably mountable to an image forming apparatus, said process cartridge comprising:

an electrophotographic photosensitive member including a drum base made of synthetic resin around which an electrophotographic photosensitive layer is coated and a drum bearing made of synthetic resin for rotatable supporting said electrophotographic photosensitive member and provided on one end of said drum base, wherein said drum bearing is integrally formed with a contact spring for earthing said drum base; and

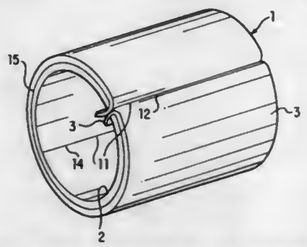
process means acting on said electrophotographic photosensitive member.

5,550,618

DRUM IMAGING STRUCTURE WITH PHOTOSENSITIVE MEMBER

William G. Herbert, Williamson; Satchidanand Mishra, Webster; Richard L. Post, Penfield; Donald C. VonHoene, Fairport; Robert C. U. Yu, Webster; Geoffrey M. T. Foley, Fairport, and William W. Limborg, Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 18, 1993, Ser. No. 63,177
Int. Cl.[6] G03G *5/00*
U.S. Cl. 355—211 **49 Claims**



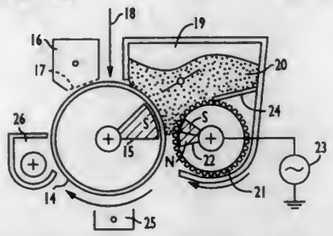
1. An electrostatographic imaging structure comprising a rotary drum having an outer peripheral surface defining a circumferential surface of said drum, a retainer and a photosensitive member in the form of a sheet wrapped completely around the circumferential surface of said drum and held down to said outer peripheral surface of said drum by mechanical capture of ends of said sheet by said retainer.

5,550,619

ELECTROPHOTOGRAPHIC APPARATUS OF IMPROVED LOW IMAGE DENSITY

Hiroshi Komakine, Hirakata; Hiroshi Terada, Ikoma; Hajime Yamamoto, Ibaraki; Kazumasa Hayashi, Osaka, and Masahiro Aizawa, Takatsuki, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jan. 10, 1994, Ser. No. 179,590
Claims priority, application Japan, Jan. 13, 1993, 5-003779; Feb. 3, 1993, 5-016110
Int. Cl.[6] G03G *13/00*
U.S. Cl. 355—246 **17 Claims**



14. An electrophotographic apparatus comprising a magnetic developer, an electrostatic latent image holding member rotating in a specified direction, a removing roller comprising a means for increasing friction force against said developer, said removing roller placed at a position with a specified distance apart from a surface of said electrostatic latent image holding member and rotating in a direction opposite to the rotation of said electrostatic latent image holding member, a developer reservoir for supplying said magnetic developer to the surface of said electrostatic latent image holding member, a means for applying an AC voltage to said removing roller to remove the developer retained on non-image areas of said electrostatic latent image holding member, and a magnetic field generating means installed inside said electrostatic latent image holding member for producing a magnetic field on the surface of said electrostatic latent image holding member in a vicinity of developing areas where said electrostatic latent image holding member comes closest to said removing roller wherein said removing roller removes said developer retained on said non-image areas of said electrostatic latent image holding member at the vicinity of developing areas where said electrostatic latent image holding member comes closest to said removing roller without slippage because of the friction force caused by said means for increasing friction force.

5,550,620

IMAGE FORMING APPARATUS WITH ATTRACTION CHARGER HAVING FIRST AND SECOND ELECTRODES

Yoichi Kimura, Kawaguchi; Isao Kumada, Yamato; Takashi Hasegawa, Ageo, and Satoshi Tamura, Yokohama, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

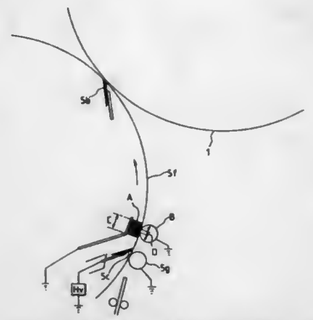
Filed Dec. 30, 1994, Ser. No. 366,500
Claims priority, application Japan, Jan. 11, 1994, 6-001315; Dec. 26, 1994, 6-322415
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—273 **33 Claims**

1. An image forming apparatus, comprising:

a recording material support member for supporting a recording material and moving therewith;

image forming means for forming an image on the recording material supported by said recording material support member; and

attraction charging means for electrostatically attracting said recording material to said recording material support member, said attraction charging means including first and second electrodes positioned across said recording material support member, a center of charging of said first electrode to said recording material support member being shifted from a center of charging of said second electrode, in the moving direction of said recording material support member.

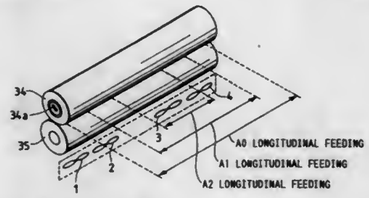


5,550,621

TONER IMAGE FUSING DEVICE WITH OPTIMIZED CONTROL OF COOLING A PRESSURE ROLLER

Norio Ogawahara, Saitama, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Feb. 18, 1994, Ser. No. 198,784
Claims priority, application Japan, Feb. 19, 1993, 5-030294
Int. Cl.[6] G03G *15/20*
U.S. Cl. 355—285 **5 Claims**



1. A fusing device comprising:

fusing means for fusing a toner image onto a transfer sheet by applying heat thereto;

cooling means having a plurality of cooling sections arranged in a direction perpendicular to a running direction of the transfer sheet, for cooling the fusing means;

temperature detecting means for detecting at least one of an ambient temperature and a temperature of a section in which transfer paper is set;

comparing means for comparing the temperature detected by the temperature detecting means with a predetermined temperature; and

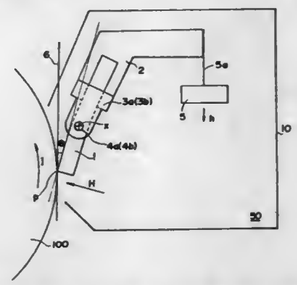
control means for controlling the cooling means so that a cooling profile of the cooling means in a width direction of the transfer sheet becomes substantially uniform if the detected temperature is equal to or higher than the predetermined temperature, and that the cooling profile is switched in accordance with a size of the transfer sheet if the detected temperature is lower than the predetermined temperature.

5,550,622

FLEXIBLE BLADE CLEANING DEVICE USED IN AN IMAGE FORMING APPARATUS

Keigo Tange, Okazaki, Japan, assignor to Minolta Co., Ltd., Osaka, Japan

Filed Nov. 29, 1994, Ser. No. 348,865
Claims priority, application Japan, Dec. 2, 1993, 5-302829
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—299 **12 Claims**



1. A cleaning device for removing residual toner from a surface of an image bearing member, said cleaning device comprising:

a flexible cleaning blade disposed along said image bearing member;

a holder connected with one end portion of said cleaning blade to contact another end portion of said cleaning blade with said surface of the image bearing member;

a casing in which said holder is provided; and

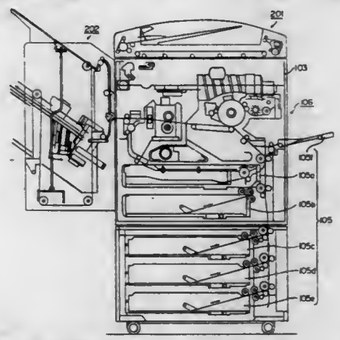
a connecting member which rotatably connects said holder with said casing about an axis positioned between said one end portion and said another end portion of the cleaning blade.

5,550,623

DIGITAL COPYING MACHINE HAVING SELECTIVE PAPER FEED BASED ON COPY PRODUCTIVITY

Kan Tomita; Toshihiko Majima, both of Tokyo; Toshiya Tagawa, and Hiroyasu Sumida, both of Ichikawa, all of, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 2, 1995, Ser. No. 460,355
Claims priority, application Japan, Jun. 15, 1994, 6-156822; Mar. 30, 1995, 7-74072
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—311 **23 Claims**



1. A digital copying machine, comprising:

a scanner for reading image information from an original image;

an image memory for storing digital image data;

an image processing section coupled to said image memory for processing said digital image data;

paper feeding means comprising plural paper trays for storing, respectively, recording paper of various sizes as well as longitudinal and lateral orientations;

an automatic paper selection means that computes a reference value on the basis at least of processing times for at least one prescribed image conversion process in addition to transport time of paper from corresponding trays of said paper feeding means, and, based on the reference number and number of copies to be repetitively made, selects a tray from among said plurality of paper trays; and

an image forming means for forming an image corresponding to said digital image data on the recording paper from the selected tray.

5,550,624

ELECTROPHOTOGRAPHIC PRINTING DEVICE FOR THE SIMULTANEOUS PRINTING OF BOTH SIDES OF A RECORDING MEDIUM

Rudolf Wachtler, Hohenpolding, Germany, assignor to Siemens Nixdorf Informationssysteme Aktiengesellschaft, Paderborn, Germany

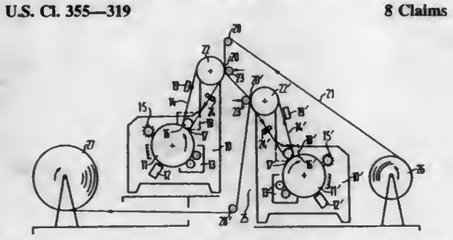
PCT No. PCT/DE93/00195, § 371 Date Oct. 11, 1994, § 102(e) Date Oct. 11, 1994, PCT Pub. No. WO93/21566, PCT Pub. Date Oct. 28, 1993

PCT Filed Mar. 4, 1993, Ser. No. 318,701

Claims priority, application Germany, Apr. 10, 1992, 42 12 144.2

Int. Cl.[6] G03G *21/00*

U.S. Cl. 355—319 **8 Claims**



1. An electrophotographic printing device for printing rear end front sides of a recording medium comprising:

a first printing module having a first electrophotographic processing means for transferring and fixing a rear side image on a rear side of the recording medium, the first electrophotographic processing means comprising a first heated photoconductor drum and a first intermediate carrier for transferring the rear side image from the first photoconductor drum onto the rear side of said recording medium;

a second printing module having a second electrophotographic processing means for transferring and fixing a front side image on a front side of the recrding medium, the second electrophotographic processing means comprising a second heated photoconductor drum and a second intermediate carrier for transferring the front side image from the second photoconductor drum onto the front side of said recording medium, the first and second printing modules being mounted opposite one another in the printing device to form a conveyor channel for the recording medium between the printing modules, wherein the recording medium is guided over guide means for bringing said front and rear sides respectively into contact with the first and second intermediate carriers of the respective printing modules without beating said recording medium.

5,550,625

COLOR IMAGE FORMING APPARATUS PROVIDING REGISTRATION CONTROL FOR INDIVIDUAL COLOR IMAGES

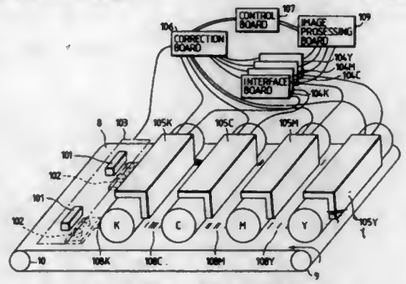
Masahiro Takamatsu, and Masao Ito, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Sep. 27, 1993, Ser. No. 126,553

Claims priority, application Japan, Sep. 28, 1992, 4-281085

Int. Cl.[6] G03G *15/01*

U.S. Cl. 355—326 R **4 Claims**



1. A color image forming apparatus comprising:

a plurality of image forming means for successively forming color images of different colors according to image information;

transfer/transport means for transporting different color images formed by said image forming means in a state that the color images a re successively transferred thereon;

detecting means for detecting patterns used for detecting an out-of-registration of the color images formed on said transfer/transport means by said image forming means; and

correcting means for correcting positions of the color images to be transferred on said transfer/transport means according to data signal output from said detecting means,

wherein said transfer/transport means includes a belt having a light transmission characteristic, said detecting means includes a light source and a photosensing element which are opposed with respect to the belt, said light source includes a light emitting diode and emits a quantity of light which is stepwise controllable, and said photosensing element detects the patterns through a lens-array imaging element.

5,550,626

IMAGE FORMING DEVICE FOR CREATING A COLOR IMAGE HAVING PIXEL ELEMENTS OF DIFFERENT THICKNESSES

Shinya Kobayashi, Mito; Toru Miyasaka, and Kunio Satoh, both of Hitachi, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 6, 1994, Ser. No. 177,991

Claims priority, application Japan, Jan. 12, 1993, 5-003103

Int. Cl.[6] G03G *15/01*

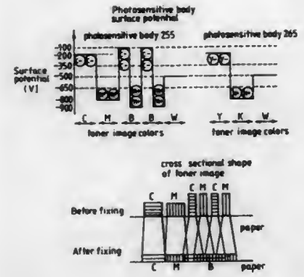
U.S. Cl. 355—326 R **29 Claims**

1. An electrophotographic color printer, comprising:

a photosensitive body;

an exposure system to expose said photosensitive body to form an exposure pattern having a plurality of pixel elements; and

a developer system to apply first toner material of a first color and second toner material of a second color to respective ones said pixel elements such that first ones of said plurality of pixel elements have a first thickness of said first toner material, second ones of said pixel elements have a second thickness of said first toner material, said third ones of said pixel elements have said first thickness of said second toner material and fourth ones of said pixel elements have said second thickness of said second toner material.



5,550,627

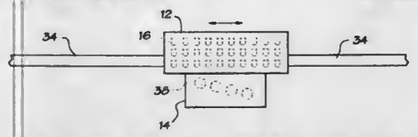
EXPOSURE AND PRESSURE APPLICATOR DEVICE FOR PRINTING AN IMAGE

James A. Dowler, Greenwood, S.C.; Tyson B. Whitaker, Beavercreek; Julius D. King, Jr., Huber Heights, both of Ohio; Fumitaka Murayama, Okaya, Japan; Satoru Takizawa, Suwa, Japan; Masaao Gomi, Suwa, Japan, and Fumiyoshi Itoh, Fujimi, Japan, assignors to Cycolor Imaging, Inc.

Filed Apr. 6, 1995, Ser. No. 418,431

Int. Cl.[6] G03G *21/00*

U.S. Cl. 355—326 M **20 Claims**



19. An exposure and pressure applicator device for use in printing an image onto an imaging media containing photosensitive microcapsules, said device comprising:

a compact scanning printer head which comprises exposure means and pressure applicator means combined therein as a single unit wherein said exposure means comprises at least one exposure producing element which image-wise exposes said imaging media to provide a latent image thereon, and said pressure applicator means comprises at least one point contact element to apply at least one point of uniform rupturing force to said exposed imaging media; and

motive means for effectuating movement of said compact scanning printer head relative to said imaging media.

5,550,628

DISTANCE MEASURING DEVICE

Takashi Kawabata, Kamakura, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 841,776, Mar. 2, 1992, abandoned, which is a continuation of Ser. No. 693,027, Apr. 30, 1991, abandoned, which is a continuation of Ser. No. 449,383, Dec. 7, 1989, abandoned, which is a continuation of Ser. No. 820,821, Jan. 21, 1986, abandoned, which is a continuation of Ser. No. 493,975, May 12, 1983, Pat. No. 4,582,424. This application May 16, 1995, Ser. No. 441,955

Claims priority, application Japan, May 20, 1982, 83971/1982

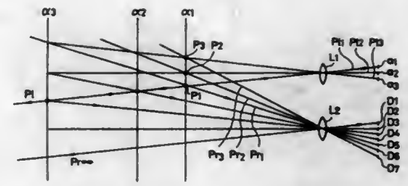
Int. Cl.[6] G01C *3/00*; G02B *7/04*; G03B *3/00*

U.S. Cl. 356—3.11 **110 Claims**

1. An apparatus for forming a signal for use with focusing, comprising:

means for projecting light with different angles toward at least two target directions, said projecting means including at least two means for generating said light;

means for receiving light with different angles from at least said two target directions, said means for receiving light outputting



a signal which varies in accordance with receiving positions of the receives light; and

means for forming said signal for use with focussing in accordance with the signal output from said receiving means.

5,550,629

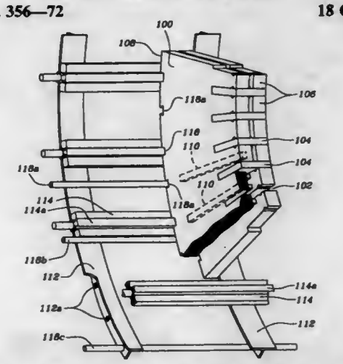
METHOD AND APPARATUS FOR OPTICALLY MONITORING AN ELECTRICAL GENERATOR

Vincent F. Shapanus, 716 Morningside Dr., Towson, Md. 21204, and Kevin J. Phipps, 1114 Halstead Rd., Baltimore, Md. 21234

Continuation-in-part of Ser. No. 210,027, Mar. 17, 1994. This application Jun. 7, 1995, Ser. No. 487,956

Int. Cl.[6] G01N *21/00*; G01J *3/00*

U.S. Cl. 356—72 **18 Claims**



1. An apparatus for monitoring the condition of an electrical generator formed of a stator core punching assembly having a plurality of winding slots for receiving a plurality of generator windings, each of said generator windings being formed from a plurality of conductor wires and having an exterior surface formed from insulation surrounding said conductor wires, said plurality of winding core slots lying along an interior cylindrical surface of said stator core punching assembly, said stator core punching assembly having an outer cylindrical surface opposite said interior cylindrical surface, said stator core punching assembly having a plurality of internal vent openings extending from said outer cylindrical surface toward said inner cylindrical surface, comprising:

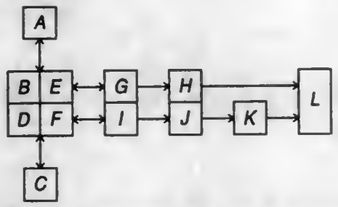
a first optical probe disposed outside of said stator core punching assembly and formed of a plurality of optical acquisition devices each of which is formed from at least one optical fiber strand, each of said optical acquisition devices being disposed to acquire light originating at said exterior surface of one of said plurality of generator windings and passing through one of said internal openings.

5,550,630

SPECTROPHOTOMETRIC METHOD FOR STRUCTURAL ANALYSIS OF ORGANIC COMPOUNDS, POLYMERS, NUCLEOTIDES AND PEPTIDES

Joseph Chrastil, Kenners, La., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Mar. 19, 1993, Ser. No. 34,919
Int. Cl.[6] G01J *3/00;3/42;3/427*
U.S. Cl. 356—300 **8 Claims**



1. A method for determining one or both of the structure or molecular weight of a chemical compound selected from the group consisting of organic compounds, polymers, polynucleotides and polypeptides, comprising:
(a) providing a sample of said chemical compound in a spectrophotometer;
(b) passing a light beam at a first wavelength λ_1 within the UV or visible spectra from said spectrophotometer through said sample;
(c) measuring the absorbance of said sample at λ_1;
(d) repeating steps (b) and (c) at a plurality of different wavelengths from λ_1 to λ_m within the UV or visible spectra and wherein m is an integer greater than one, to measure the absorbance of said sample at each said wavelength;
(e) determining the spectrosum from the absorbance measured in (c) and (d);
(f) determining one or both of the structure or molecular weight of said chemical compound from said spectrosum;
wherein said spectrosum is determined as

$$S_\Sigma = \int_{\lambda_1}^{\lambda_m} f_\lambda(\log \epsilon - q)d\lambda$$

wherein S_Σ is the spectrosum, ϵ is the extinction coefficient, and q is an arbitrary constant.

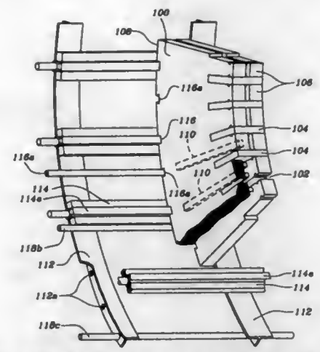
5,550,631

INSULATION DOPING SYSTEM FOR MONITORING THE CONDITION OF ELECTRICAL INSULATION

Vincent F. Shapanus, 716 Morningside Dr., Towson, Md. 21204, and Kevin J. Phipps, 1114 Halstead Rd., Baltimore, Md. 21234

Continuation-in-part of Ser. No. 210,027, Mar. 17, 1994. This application Jun. 7, 1995, Ser. No. 475,205
Int. Cl.[6] G01J *3/00;* **G01N** *21/00*
U.S. Cl. 356—300 **9 Claims**

1. An apparatus for monitoring the condition of an electrical generator having at least one conductor, comprising:
(A) an insulator surrounding said at least one conductor, said insulator having an interior surface adjacent to said at least one conductor and an exterior surface opposite said interior surface, said insulator having a depth spanning between said interior and exterior surfaces of said insulator, said insulator being formed of a plurality of overlapping layers positioned along said depth, each of said plurality of layers including an associated one of a plurality of different light producing materials, wherein each of said plurality of layers generates one of a plurality of different distinctive optical signatures upon degradation;



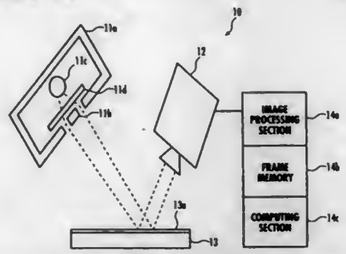
(B) an optical acquisition device positioned outside of said insulator for acquiring at least one optical signature when said insulator degrades;
(C) a light detector means, coupled to said optical acquisition device, for detecting said at least one optical signature and forming an electrical signal representative of said at least one optical signature; and
(D) a signal processor, responsive to said electrical signal, for monitoring degradation of said insulator.

5,550,632

METHOD FOR EVALUATING GLOSS AND BRIGHTNESS CHARACTER OF COATED PAINT FILM

Hiroaki Harata, No. 1-20-22, Daido, Kanazawa-ku, Yokohama City, Kanagawa Pref., Japan

Filed Jun. 13, 1991, Ser. No. 714,542
Claims priority, application Japan, Jun. 20, 1990, 2-159860
Int. Cl.[6] G01N *21/32*
U.S. Cl. 356—446 **12 Claims**



1. A method for evaluating a gloss and brightness character of a coated paint film, comprising the following steps:
projecting a brightness and darkness pattern, said pattern extending along a first direction and alternating between brightness and darkness along a second direction perpendicular to said first direction, onto a surface of the coated paint film;
converting the projected pattern into a two-dimensional brightness and darkness pattern;
separating a disturbance of the two-dimensional brightness and darkness pattern into a plurality of predetermined spatial frequency ranges of said disturbance, at least one spatial frequency of said disturbance within at least one of said ranges having a propagation axis along said first direction, each of said predetermined spatial frequency ranges being a range within which a total energy correlates to a human perception of one of a plurality of gloss and brightness characters of the coated paint film;
quantifying a total energy for a first range from among said plurality of predetermined spatial frequency ranges;

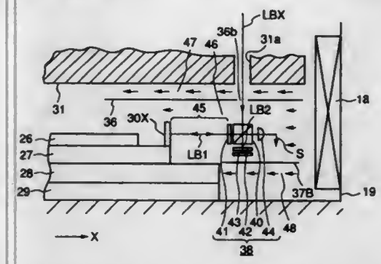
generating a first estimate, in accordance with said quantified total energy for said first range, said first estimate corresponding to a predetermined human perception associated with a value of said quantified total energy for said first range, of at least a first characteristic from among said plurality of gloss and brightness characteristics;
quantifying a total energy for a second range from among said plurality of predetermined spatial frequency ranges;
generating an estimate, in accordance with said quantified total energy for said second range, said estimate corresponding to a predetermined human perception associated with a value of said quantified total energy for said second range, of at least a second characteristic from among said plurality of gloss and brightness characteristics.

5,550,633

OPTICAL MEASURING APPARATUS HAVING A PARTITIONING WALL FOR DIVIDING GAS FLOW IN AN ENVIRONMENTAL CHAMBER

Saburo Kamiya, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Nov. 4, 1994, Ser. No. 334,059
Claims priority, application Japan, Nov. 10, 1993, 5-280788
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—358 **17 Claims**



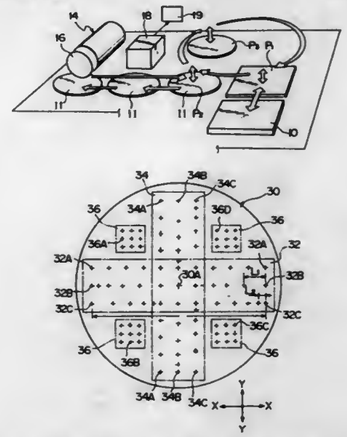
1. An optical position measuring apparatus, comprising:
an environmental chamber which has a blowing opening through which a temperature-controlled gas is supplied from an external device into said environmental chamber, and an exhaust opening for exhausting the gas outside said environmental chamber;
a light-emitting unit for irradiating a light beam onto an object to be measured arranged in said environmental chamber;
a light-receiving unit for receiving the light beam reflected by said object and outputting a signal corresponding to a position of said object;
a heat source which is arranged in said environmental chamber and forms a gas layer having a temperature higher than a temperature of gas being supplied from the blowing opening into said environmental chamber; and
a partitioning wall which is arranged between an optical path of the light beam and said heat source to divide gas supplied from said blowing opening into a first flow path containing said optical path of the light beam and a second flow path containing said heat source.

5,550,634

SEMICONDUCTOR MANUFACTURING SYSTEM WITH SELF-DIAGNOSING FUNCTION AND SELF-DIAGNOSING METHOD THEREOF

Masaharu Nakamura, Tokyo, Japan, assignor to Tokyo Seimitsu Co., Ltd.

Filed Apr. 25, 1994, Ser. No. 231,760
Claims priority, application Japan, Apr. 30, 1993, 5-104233
Int. Cl.[6] G01B *11/00*
U.S. Cl. 356—401 **21 Claims**



1. A semiconductor manufacturing system having a self-diagnosing function, the system comprising:
a reference wafer for inspecting at least positional accuracy and mechanical accuracy of the system, the reference wafer having groups of patterns each including a plurality of patterns;
a housing section for housing said reference wafer;
conveying means for conveying said reference wafer that has been removed from said housing section, to an alignment position for said reference wafer and from said alignment position to said housing section;
a moving means capable of moving said reference wafer at least in one of an X axial direction and a Y axial direction;
alignment means for coinciding an extending direction of said groups of patterns of said reference wafer that has been conveyed to said alignment position with a moving direction of said moving means, and for detecting a position of at least one of said plurality of patterns when said moving means is delivered by an interval between the at least one of said plurality of patterns; and
inspecting means for inspecting an accuracy of said moving means at least in the X axial direction and the Y axial direction based on the detected value of said pattern position detected by said alignment means and said pattern interval of said at least one of said plurality of patterns.

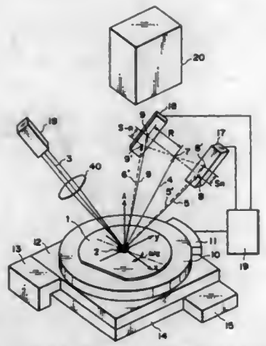
5,550,635

ROTATIONAL DEVIATION DETECTING METHOD AND SYSTEM USING A PERIODIC PATTERN

Kenji Saitoh, Atsugi; Koichi Sentoku, Kanagawa-ken, and Takahiro Matsumoto, Zama, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 28, 1994, Ser. No. 330,736
Claims priority, application Japan, Oct. 29, 1993, 5-293910; Oct. 18, 1994, 6-252172
Int. Cl.[6] G01B *11/00;9/02*
U.S. Cl. 356—401 **27 Claims**

1. A combination for detecting rotational deviation of an object, said combination comprising:



a pattern provided on the object and having a periodicity;

a laser for providing light;

an optical system for projecting the light from said laser to said pattern;

detecting means for detecting at least two diffraction lights, from said pattern, at a predetermined detection plane, wherein said optical system is disposed along a light path from said laser to said detecting means, and said optical system images a beam waist of said laser on a light path from said pattern to the predetermined detection plane; and

determining means for determining rotational deviation of the object with respect to a predetermined axis, on the basis of incidence positions of the diffraction lights upon the predetermined detection plane, as detected by said detecting means.

5,550,636

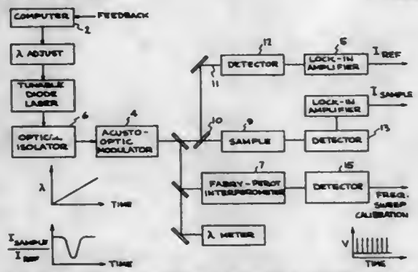
SELF-TUNING METHOD FOR MONITORING THE DENSITY OF A GAS VAPOR COMPONENT USING A TUNABLE LASER

Karla Hagans; Leon Berzins; Joseph Galkowski, all of Livermore, and Rita Seng, Tracy, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 117,404, Sep. 3, 1993. This application Apr. 18, 1995, Ser. No. 425,681

Int. Cl.[6] G01N *21/00*

U.S. Cl. 356—437 **2 Claims**



1. A method for determining the density of a component of a gas vapor using a tunable laser, said component absorbing light at an expected maximum absorptance frequency, comprising the steps of:

self-tuning the tunable laser to transmit a laser source beam at a local maximum absorptance frequency of the component by

transmitting a laser source beam through a first path of at least one predetermined paths through the gas vapor,

sweeping the frequency of the laser source beam through a frequency range including said expected maximum absorptance frequency, and during the step of sweeping the frequency of the laser source beam,

measuring the intensity of the transmitted laser source beam after having been transmitted through the first path of at least one predetermined path through the gas vapor to determine the frequency at which the gas vapor exhibits a maximum absorptance; and

locking the laser source beam frequency at the frequency at which the gas vapor exhibits a maximum absorptance frequency;

measuring the intensity of said locked-frequency laser source beam;

transmitting said locked-frequency laser source beam through a least one of said predetermined paths through the gas vapor;

measuring the intensity of the transmitted locked-frequency laser source beam after having been transmitted through said at least one of said predetermined paths through the gas vapor; and

calculating the density of the component in said at least one of said predetermined paths using Beer's law.

5,550,637

POWER-SAVING PRINTER WHICH CONTROLS FIXING DEVICE BASED ON PRINT DATA PRESENCE

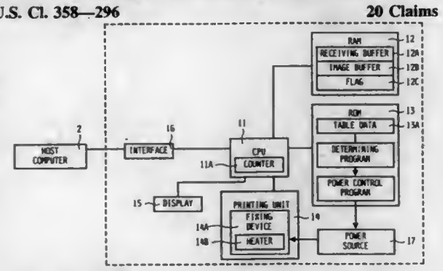
Masahiro Murakami, Hekinan, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Feb. 10, 1994, Ser. No. 194,612

Claims priority, application Japan, Mar. 26, 1993, 5-068498

Int. Cl.[6] H04N *1/23;1/29;* G03G *21/00;15/20*

U.S. Cl. 358—296 **20 Claims**



1. A printer, comprising:

data receiving means for receiving transmitted data;

a fixing device, whose temperature is varied according to the supply of power to said fixing device from a power source, for fixing an image on paper based on the transmitted data;

determining means for determining whether the transmitted data requires a print executing process;

first power controlling means for controlling the supply of the power to said fixing device in such a manner that the temperature of said fixing device is brought to a fixable predetermined temperature when it is determined by said determining means that the transmitted data requires said print executing process; and

second power controlling means for controlling the supply of the power to said fixing device in such a manner that the temperature of said fixing device is brought to a temperature lower than the fixable predetermined temperature when it is determined by said determining means that the transmitted data requires a print non-executing process.

5,550,638

FEATURE DETECTION WITH ENHANCED EDGE DISCRIMINATION

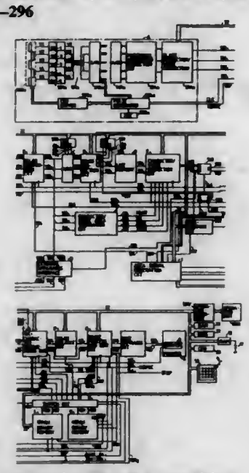
Yoshinori Ikeda, Tokyo; Hiroyuki Ichikawa, Kawasaki; Mitsuru Kurita, Tokyo; Kimiyoshi Hayashi, Soka; Toshio Honma, Kawasaki, and Yoshiko Horie, Tokyo, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 21,853, Feb. 24, 1993, abandoned, which is a division of Ser. No. 519,448, May 4, 1990, Pat. No. 5,239,383. This application Jun. 7, 1995, Ser. No. 481,825

Claims priority, application Japan, May 10, 1989, 1-117004; May 10, 1989, 1-117017; May 10, 1989, 1-117023

Int. Cl.[6] H04N *1/46;1/034;* G06K *9/46;* G03F *3/08*

U.S. Cl. 358—296 **12 Claims**



1. An image processing apparatus comprising:

a) input means for inputting a plurality of color component signals of a color system representing an image;

b) extraction means for extracting a multi-valued single color component signal from among the color component signals input by said input means;

c) emphasizing means for emphasizing a high-frequency component of the multi-valued single color component signal extracted by said extraction means by using a spatial filter; and

d) discrimination means for discriminating a feature of the image in accordance with the multi-valued single color component signal whose high-frequency component is emphasized by said emphasizing means.

5,550,639

RECORDING APPARATUS HAVING DIFFERENT MODES FOR READING AND PHOTOGRAPHING DOCUMENTS

Shigeru Sugita, Sayama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 15, 1994, Ser. No. 212,794

Claims priority, application Japan, Mar. 31, 1993, 5-098937

Int. Cl.[6] H04N *1/21*

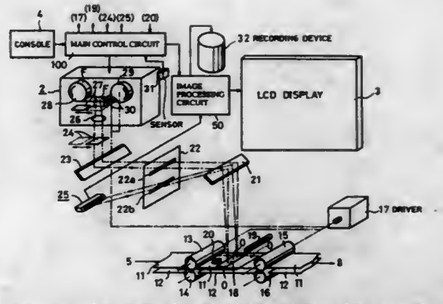
U.S. Cl. 358—302 **20 Claims**

1. A recording apparatus comprising:

document conveying means for conveying documents along a predetermined path;

photographing means for photographing images of the documents conveyed by said document conveying means on a film;

reading means for reading the images of the documents conveyed by said conveying means and for generating electric signal representing the images; and



mode selection means for selecting between a first mode for executing the photographing by said photographing means, a second mode for executing both the photographing by said photographing means and reading by said reading means, and a third mode for executing the reading by said reading means.

5,550,640

DIGITAL VIDEO SIGNAL RECORDING AND REPRODUCING APPARATUS AND METHOD FOR SETTING A NUMBER OF COMPRESSION BLOCKS ACCORDING TO DIFFERENT OPERATIONAL MODES

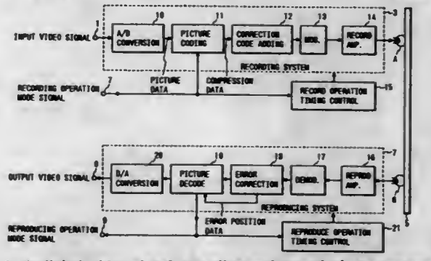
Yukitoshi Tsuboi, Yokohama; Masuo Oku, Kamakura; Masaru Takahashi, Yokohama, and Kenji Ichige, Chigasaki, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 19,850, Feb. 19, 1993, abandoned. This application Jul. 12, 1994, Ser. No. 273,626

Claims priority, application Japan, Feb. 19, 1992, 4-031757

Int. Cl.[6] H04N *5/76*

U.S. Cl. 358—335 **17 Claims**



1. A digital video signal recording and reproducing apparatus wherein a basic block is constituted by a plurality of pixels of video signals, comprising:

picture data compressing means for effecting data compression of the video signals so that a compression data quantity after data compression becomes a constant with respect to a compression block constituted by a plurality of the basic blocks;

recording means for recording the compressed data of the video signals on a data recording medium; and

compression block setting for setting a number of the basic blocks to constitute the compression block in response to different operation modes of the digital video signal recording and reproducing apparatus which are different in at least one of resolution of the video signals, recording time and data compression system, the compression block setting means controlling the picture data compressing means so that the number of the compression blocks of the video signals recorded on one track of the data recording medium after data compression by the picture data compressing means becomes M in a first operation mode and becomes N in a second operation mode, M and N being positive integers which are different from one another;

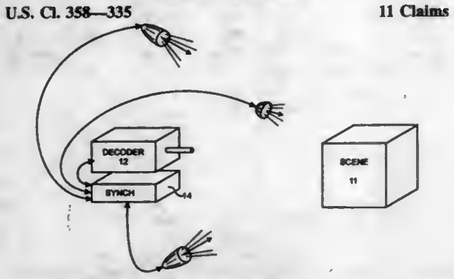
wherein the first operation mode is a long play mode and the second operation mode is a normal play mode.

5,550,641

SYSTEM AND METHOD FOR RENDERING IMAGES

Amnon Shashua, Cambridge, and Tomaso Poggio, Wellesley, both of Mass., assignors to GenTech Corporation, Tokyo, Japan

Continuation of Ser. No. 700,703, May 15, 1991, abandoned. This application Aug. 22, 1994, Ser. No. 293,742
Int. Cl.[6] H04N *5/76*
U.S. Cl. 358—335 **11 Claims**



1. An image processing system comprising:

A. an image recording system for recording images of a scene comprising:

i. a recording device for recording images of the scene on a series of frames;

ii. a plurality of individually-energizable light sources each for illuminating the scene, the light sources situated relative to the scene so as to illuminate the scene from diverse angular positions; and

iii. a synchronizer connected to the recording device and the light sources for synchronizing the energization of each said light source individually as the recording device records individual frames in the series, so that each frame contains an image of the scene as illuminated from one of said angular positions; and

B. an image rendering system for generating a rendered image which reflects a desired light source position, the image rendering system comprising:

i. a frame store for storing the image information for each of the series of frames;

ii. a rendered image store for receiving rendered image information representing a rendered image; and

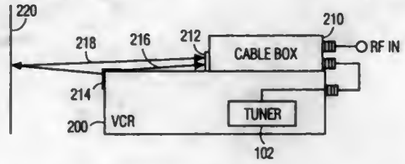
iii. a rendered image information generator for generating rendered image information representing a rendered image of the scene as illuminated from a desired light source angular position, the rendered image information generator generating said rendered image information in response to image information from the frame store related to frames of the series and a plurality of weighting values each associated with a frame, the weighting value associated with each frame being a function of the angular position of the light source relative to the scene when the frame was recorded and a desired light source angular position for the rendered image, the rendered image information generator storing the rendered image information in said rendered image store.

5,550,642

VCR CONTROL OF A CABLE CONVERTER UNIT

Sung J. Kim, Fishers, and Alfred J. Schick, Indianapolis, both of Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Continuation of Ser. No. 205,755, Mar. 4, 1994, abandoned, which is a continuation of Ser. No. 806,917, Dec. 13, 1991, abandoned. This application Nov. 21, 1994, Ser. No. 343,265
Int. Cl.[6] H04N *5/76*
U.S. Cl. 358—335 **8 Claims**



1. A videocassette recorder, comprising:

a first power supply subject to being energized and deenergized for providing operating power when energized, said videocassette recorder being in an on-state when said first power supply is energized, and said videocassette recorder being in an off-state when said first power supply is deenergized;

a second power supply for providing standby power so long as said videocassette recorder is connected to an external AC power line;

a radio frequency (RF) signal input terminal, for receiving a particular RF signal from an external source of RF signals, said external source of RF signals including a first tuner means for tuning television channels and providing a selected channel as said particular RF signal;

said videocassette further including second tuner means coupled to said RF signal input terminal for receiving said particular RF signal, said second tuner means tuning said particular RF signal in response to a control signal

control means for generating said control signal for causing said second tuner means to tune said particular RF signal;

means, coupled to said control means, for receiving remote control signals from a remote control unit;

means, coupled to said control means, for entering data in response to operation by a user; and

means coupled to said control means for transmitting remote control signals for controlling said external source of said RF signals;

said control means in response to data entered by said user or in response to said remote control signals from said remote control unit generates said remote control signals and applies said remote control signals to said remote control signal transmitting means;

said second tuner means, said control means, said transmitting means, and said means for entering data being coupled to said second power supply for receiving standby power from said second power supply;

said transmitting means transmitting said remote control signals to said external source of said RF signals when said videocassette recorder is in said on-state and when said videocassette recorder is in said off-state;

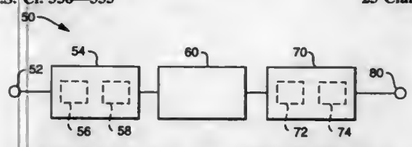
said videocassette recorder, while in said off state, receives said remote control commands for controlling said external source of video signals, and also while in said off state, passes said remote control commands to said external source of video signals.

5,550,643

TRICK-PLAY VCR FOR DIGITALLY CODED VIDEO

Faramarz Azadegan, Plainsboro, N.J., assignor to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Dec. 22, 1994, Ser. No. 362,009
Int. Cl.[6] H04N *50/76;5/78*
U.S. Cl. 358—335 **25 Claims**



1. A method of processing video signals comprising:

receiving a digital video input signal comprising a plurality of input frames, each of the input frames including intraframe data and other data in random positions;

separating the input frames into the intraframe data and the other data;

programming a tessellation of at least a portion of a video screen, the tessellation including vertical columns and horizontal rows; and

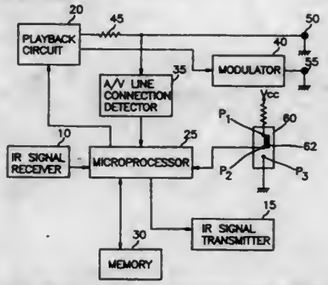
assembling a plurality of records from the intraframe data and other data with the intraframe data positioned within the records such that when a video recorder head scans the record in any one of a plurality of trick-mode trajectories, either sequential columns or sequential rows of the tessellation are updated according to the intraframe data.

5,550,644

VIDEO CASSETTE RECORDER CAPABLE OF AUTOMATICALLY SETTING A TELEVISION RECEIVER

Myung-Kook So, Incheon, Rep. of Korea, assignor to Daewood Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 22, 1994, Ser. No. 362,108
Claims priority, application Rep. of Korea, Dec. 22, 1993, 93-29137
Int. Cl.[6] H04N *5/76;5/78*
U.S. Cl. 358—335 **2 Claims**



1. A video cassette recorder for automatically setting a television receiver when the video cassette recorder is in a playback mode, wherein the video cassette recorder includes a radio frequency signal output terminal for transmitting a radio frequency signal having a channel 3 or 4 carrier frequency program and an audio/video signal output terminal for transmitting an audio/video signal; and the television receiver includes an infrared signal receiver, the television receiver being responsive to power-on, power-off, television mode, audio/video mode, channel 3 and channel 4 key codes transmitted through the infrared signal receiver thereby performing respective functions corresponding to the key codes, comprising:

first detection means for determining whether the audio/video signal output terminal is connected to the television receiver to thereby generate a first connection signal if the audio/video signal output terminal is connected to the television receiver and a second connection signal, if otherwise;

second detection means for detecting the carrier frequency of the radio frequency signal to thereby provide a first frequency detection signal if the radio frequency signal has the channel 3 carrier frequency and provide a second frequency detection signal if the radio frequency signal has the channel 4 carrier frequency;

means for storing the power-on, power-off, television mode, audio/video mode, channel 3 and channel 4 key codes; and

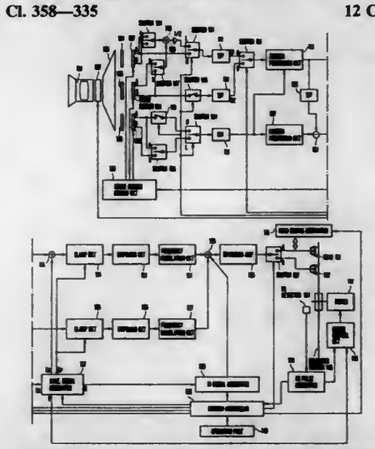
microprocessor means for providing from the storage means the power-on key code if the video cassette recorder is in the playback mode, the audio/video mode key code if the first connection signal is applied thereto, the television mode and the channel 3 key codes if the second connection signal and the first frequency detection signal are fed thereto, the television mode and the channel 4 key codes in response to the second connection signal and the second frequency signal, and the power-off key code if the video cassette recorder is not in the playback mode.

5,550,645

IMAGE SIGNAL RECORDING APPARATUS HAVING HIGH-FINENESS RECORDING MODE AND NORMAL RECORDING MODE

Ryo Fujimoto, Kanagawa-ken, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 344,305, Apr. 27, 1989, abandoned. This application Feb. 10, 1992, Ser. No. 833,642
Claims priority, application Japan, May 6, 1988, 63-111333
Int. Cl.[6] H04N *5/76;5/225*
U.S. Cl. 358—335 **12 Claims**



1. An image signal recording apparatus for recording on a recording medium an image signal obtained by sensing an object, comprising:

a) first image sensing means for sensing said object and generating a first sensed image signal corresponding to an image having a first resolution;

b) second image sensing means, having picture elements allocated for the object differently from said first image sensing means, for sensing said object and generating a second sensed image signal corresponding to the image having said first resolution and of the same kind as that of said first sensed image signal;

c) third image sensing means for sensing said object and generating a third sensed image signal corresponding to the image of different kind from said first sensed image signal and said second sensed image signal;

d) fourth sensed image signal forming means for forming a fourth sensed image signal corresponding to the image having said first resolution, by performing a computing process using

the first sensed image signal generated by said first image sensing means and the second sensed image signal generated by said second image sensing means; and

e) recording means having a first recording mode in which a first recording image signal is formed by using the first sensed image signal generated by said first image sensing means, the second sensed image signal generated by said second image sensing means and the third sensed image signal generated by said third image sensing means and said first recording image signal thus formed is recorded on the recording medium and a second recording mode in which a second recording image signal is formed by using the third sensed image signal generated by said third image sensing means and the fourth sensed image signal generated by said fourth sensed image signal forming means and said second recording signal thus formed is recorded on the recording medium, for recording the image signal corresponding to said object on the recording medium according to either one of said first recording mode or said second recording mode.

5,550,646

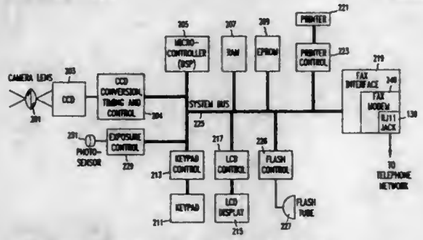
IMAGE COMMUNICATION SYSTEM AND METHOD

Ahmad M. Hassan, Madison; Russel R. Johnston, Bedminster, and John C. Krejci, Sparta, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Sep. 13, 1993, Ser. No. 120,254

Int. Cl.[6] H04N *1/32*

U.S. Cl. 358—442 **7 Claims**



1. An image communication system comprising

a portable image capture device including means arranged to generate digital representations of images;

means for processing said digital representations so that shades of gray present in said images are converted to patterns of black and white dots;

memory means for storing destination numbers of facsimile machines which are intended to receive copies of said images;

a Group III compatible fax modem; and means for supplying one of said stored destination numbers and one of said processed digital representations to said fax modem, so that said image may be transmitted to a remote Group III compatible facsimile machine.

5,550,647

IMAGE PROCESSING APPARATUS FOR CONVERTING A MULTILEVEL IMAGE SIGNAL INTO A BI-LEVEL IMAGE SIGNAL

Kazumasa Koike, Atsugi, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

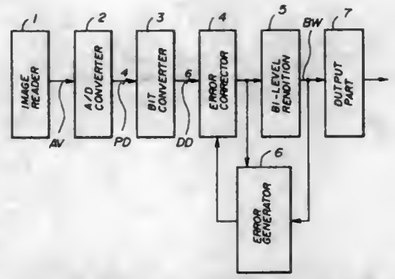
Filed Sep. 18, 1992, Ser. No. 946,889

Claims priority, application Japan, Sep. 20, 1991, 3-268619; Nov. 19, 1991, 3-329814; May 13, 1992, 4-146942

Int. Cl.[6] H04N *1/46*

U.S. Cl. 358—462 **8 Claims**

1. An image processing apparatus for generating an output bi-level image signal from a scanned input multilevel image signal through an error diffusion process, comprising:



bit conversion means for converting said scanned input multilevel image signal having an input image density value into an output multilevel image signal having an output image density value, said input image density value being represented as a first number of bits and said output image density value being represented as a second number of bits, said second number of bits including said first number of bits plus a third number of bits for converting said input image density value;

correction means for generating a corrected multilevel image signal having a corrected image density value based on said output multilevel image signal; and

bi-level rendition means for generating an output bi-level image signal having an output bi-level image density value based on said corrected multilevel image signal, and for outputting the output bi-level image signal, said output bi-level image signal being a bi-level rendition of said corrected multilevel image signal, wherein

said correction means includes means for performing error diffusion based on a difference between said corrected image density value and said bi-level image density, value for converting said output multilevel image signal into said corrected multilevel image signal.

5,550,648

SYSTEM FOR FILLING OUTLINES BY ADDITION AND SUBTRACTION ACCORDING TO START AND END POSITIONS OF THE OUTLINES

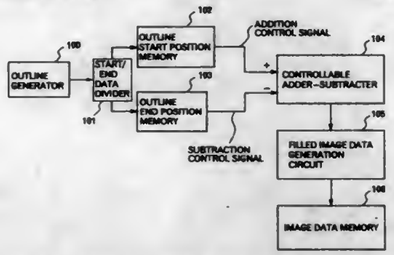
Koji Wada, and Kouichi Sato, Both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 19, 1994, Ser. No. 358,374

Claims priority, application Japan, Dec. 20, 1993, 5-318811

Int. Cl.[6] H04N *1/21*

U.S. Cl. 358—448 **11 Claims**



1. An image signal processing system for filling the insides of image outlines, comprising:

controllable arithmetic means capable of changing its output status in either of a positive direction and a negative direction, the controllable arithmetic means changing the output status in one direction when a scanning position is coincident with a start position of the image outlines and changing the output status in the opposite direction when the scanning position is coincident with an end position of the image outlines, said controllable arithmetic means having first input means for receiving start position data of said image outlines and second input means for receiving end position data of said image outlines;

an outline start position memory connected to said first input means for storing the start position data of the image outlines in scanning lines; and

an outline end position memory connected to said second input means for storing the end position data of the image outlines in scanning lines; and

filling means for filling a region of the scanning line, the region comprising positions in which the output status of the controllable arithmetic means has a value of the one direction.

5,550,649

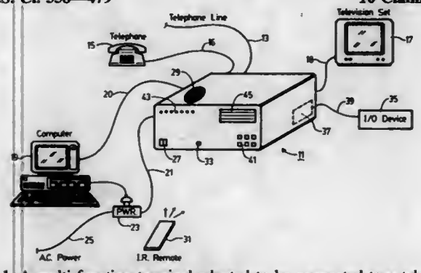
MULTI-FUNCTION TELECOMMUNICATIONS INSTRUMENT

John J. Wong, Atherton, and Paul S. Lui, Saratoga, both of Calif., assignors to Current Logic Systems, Inc., Fremont, Calif.

Filed May 14, 1992, Ser. No. 882,935

Int. Cl.[6] H04N *1/04*

U.S. Cl. 358—479 **10 Claims**



1. A multi-function terminal adapted to be connected to a telephone communications line, comprising:

a digital processor connected to a bus structure,

a first binary memory connected to said bus structure, wherein at least a portion of said first memory includes audio random access memory,

means connectable to said telephone line and said bus structure for identifying voice signals on said telephone line, digitizing such signals and storing the digitized voice signals as data in said first memory,

a second binary memory connected to said bus structure,

facsimile means connectable to said telephone line and said bus structure for identifying facsimile document data on said telephone line and storing such digitized facsimile data in said second memory,

means connected to said bus structure for reading voice and facsimile data from each of the first and second memories,

converting means responsive to said reading means for converting said data into a form adapted to be connected with a television set to display the facsimile data and reproduce the voice signals thereon;

means responsive to an incoming telephone call to the terminal being answered by a user for causing said facsimile means to operate when either a facsimile identifying tone or a predetermined touchtone code is present on the telephone communications line,

means responsive to an incoming telephone call to the terminal going unanswered for said preset number of rings for causing a message stored in said first binary memory to be sent on the telephone communications line,

means also responsive to an incoming telephone call to the terminal going unanswered for a preset number of rings for causing said facsimile means to operate when either a facsimile identifying tone or a predetermined touchtone code is present on the telephone communications line, during a time that the stored message is being sent on the telephone communications line, and

means responsive to said stored message being sent in its entirety without either a facsimile identifying tone or a predetermined touchtone code being received for causing the voice storage meads to operate, thereby to store a voice message in said first memory.

5,550,650

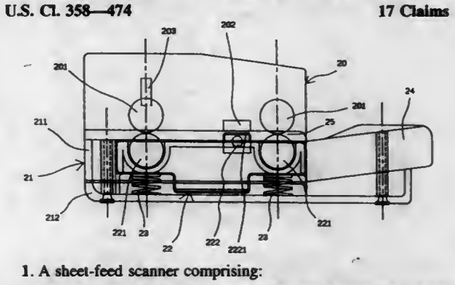
SHEET-FEED SCANNER FOR TRANSMISSIVE AND REFLECTIVE DOCUMENTS

Ampere Pan, Taipei Hsien, Taiwan, assignor to Primax Electronics Ltd., Taipei Hsien, Taiwan

Filed Nov. 1, 1994, Ser. No. 332,710

Int. Cl.[6] H04N *1/024;1/04;* G03B *27/48;* B65H *5/22*

U.S. Cl. 358—474 **17 Claims**



1. A sheet-feed scanner comprising:

a scanner body including a scanner roller and scanning a content of an article to be scanned;

a feeder including a feeder roller in contact with said scanner roller for transmitting said article through a passage between said scanner body and said feeder by a frictional force caused by the rotation of said scanner roller and said feeder roller to have said content of said article scanned, said feeder having a light source for allowing said sheet-feed scanner to perform a penetration-mode scanning, wherein said passage follows a substantially linear path to facilitate the passing of various articles, said feeder including:

a lower shell;

an upper shell having a surface mounting thereon said light source emitting a light which penetrates through said article to allow said sheet-feed scanner to perform said penetration-mode scanning;

said feeder roller partly protruding from said surface of said upper sbell;

a driving device driving said feeder roller to rotate;

a transmission device engaged between said feeder roller and said driving device for moderating a rotation torsion and a rotation speed of said feeder roller driven by said driving device;

a transmission-pressure adjusting device mounted under said feeder roller for allowing articles with different thicknesses to pass said passage; and

a power contact mounted on said upper shell for transmitting power from said scanner body to said driving device.

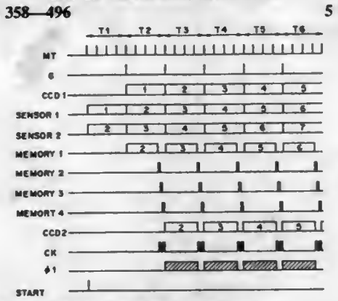
VOL 1189 ISS 4 AG 27 1996 UMI

5,550,651

IMAGE READING APPARATUS HAVING A PLURALITY OF IMAGE SENSORS FOR READING A PORTION OF AN IMAGE A PLURALITY OF TIMES

Hisao Terajima, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 40,438, Apr. 1, 1993, abandoned.
This application Mar. 13, 1995, Ser. No. 402,979
Claims priority, application Japan, Apr. 3, 1992, 4-082189
Int. Cl.[6] H04N *1/04*; H01L *27/00*
U.S. Cl. 358—496 **5 Claims**



1. An image reading apparatus comprising:
a plurality of linear image sensors for reading an original, each image sensor having a plurality of pixels and being arranged parallel to each other to read portions of the original, at least one of the portions being at a predetermined distance from other portions, each of said image sensors reading portions of the original corresponding to the plurality of pixels and outputting pixel image signals;
setting means for setting a resolution to read the original;
means for relatively moving the original and said image sensors at a speed selected according to the resolution set by said setting means;
delay means for delaying pixel image signals from a first one of said image sensors in accordance with the set resolution so as to obtain pixel image signals relating to pixel image signals corresponding to a line of the original read by a second one of said image sensors; and
adding means for adding (1) the pixel image signals obtained by said delay means and (2) the pixel image signals from the second image sensor, the added pixel image signals each relating to a same line of the original.

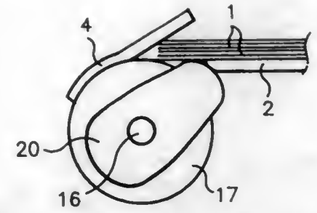
5,550,652

AUTOMATIC DOCUMENT FEEDER FOR A FACSIMILE MACHINE

Kyung S. Park, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Jun. 14, 1994, Ser. No. 260,291
Claims priority, application Rep. of Korea, Jun. 15, 1993, 93/10452
Int. Cl.[6] H04N *1/12*
U.S. Cl. 358—498 **4 Claims**

1. An automatic document feeder for a facsimile machine comprising:
a rotating shaft for transmitting drive force to feed documents;
an ADF (automatic document feeding) roller coupled to said rotating shaft to frictionally feed the documents;
cam roller means for receiving and feeding the documents, said cam roller means being directly mounted on said rotating shaft coaxially with said ADF roller;
a drive gear coupled to a drive motor generating the drive force through a power transmission shaft; and
power transmission means for selectively controlling the transmission of the drive force of said drive gear to said ADF roller and said cam roller so as to rotate these rollers, wherein said power transmission means includes a single clutch member



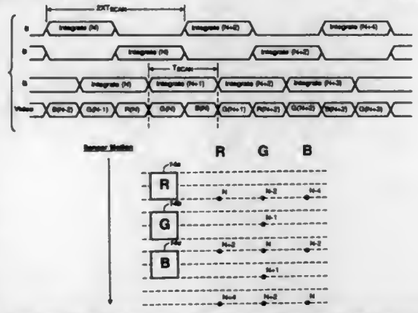
operatively connected to both said ADF roller and said cam roller for selectively controlling the transmission of the drive force.

5,550,653

COLOR SENSOR ARRAY AND SYSTEM FOR SCANNING SIMPLE COLOR DOCUMENTS

Scott L. TeWinkle, Ontario; Paul A. Hosier, Rochester, and Fred O. Hayes, Ontario, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 5, 1995, Ser. No. 462,354
Int. Cl.[6] H04N *1/46*
U.S. Cl. 358—514 **12 Claims**



1. A method of operating an input scanner having a bar including a first linear array of photosensors sensitive to a single first color and a second linear array of photosensors, parallel to the first linear array, sensitive to a single second color, comprising the steps of:
moving the bar relative to an original image being scanned in a process direction perpendicular to the linear arrays;
for each of a series of scan cycles as the sensor bar moves, causing integration of image signals from the photosensors of the first linear array; and
for a periodically-occurring subset of the series of scan cycles as the sensor bar moves, causing integration of image signals from the photosensors of the second linear array.

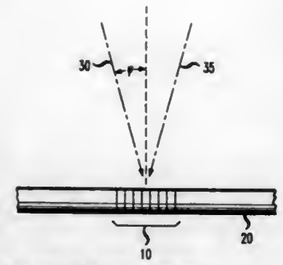
5,550,654

METHOD FOR FORMING, IN OPTICAL MEDIA, REFRACTIVE INDEX PERTURBATIONS HAVING REDUCED BIREFRINGENCE

Turan Erdogan, Berkeley Heights, and Victor Mizrahi, Bedminster, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 93,420, Jul. 19, 1993, abandoned.
This application Mar. 13, 1995, Ser. No. 402,803
Int. Cl.[6] G03H *1/02*
U.S. Cl. 359—3 **2 Claims**

1. A method for writing a Bragg grating in a portion of a silica-containing optical fiber, comprising:



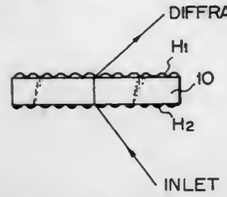
generating a beam of actinic radiation;
processing the beam to form a two-beam interference pattern having a sequence of fringes; and
exposing the fiber portion to the interference pattern such that at least some of said fringes fall on said portion and said portion is thereby impinged by impinging radiation, wherein
said impinging radiation is at least 90% polarized with a P polarization relative to the fiber portion.

5,550,655

LASER BEAM OPTICAL SCANNER

Shigeo Kayashima; Shinya Hasegawa; Satoshi Maeda, and Hirokazu Aritake, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 964,909, Oct. 22, 1992, abandoned.
This application Apr. 22, 1994, Ser. No. 232,344
Claims priority, application Japan, Oct. 25, 1991, 3-279800
Int. Cl.[6] G03H *1/22*; G02B *36/10*;*5/32*
U.S. Cl. 359—17 **3 Claims**



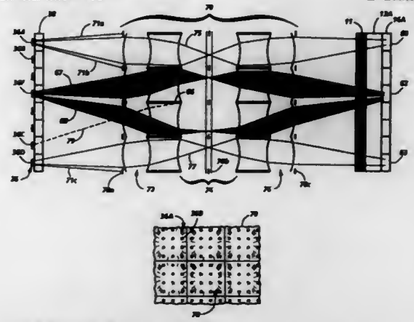
1. An optical scanner comprising:
a transparent rotary plate having first and second opposite surfaces and first and second holograms respectively formed on the first and second opposite surfaces;
a laser beam source which generates a laser beam, a transparent, fixed plate having a hologram thereon;
an image forming surface having a feed direction;
the laser beam source and the rotary and fixed plates being positioned in mutual, relative relationship such that the laser beam, as generated by the laser beam source, is projected so as to converge on the first surface of the transparent rotary plate and have a direction of polarization which is perpendicular to the grating direction of the center of scanning thereon, so as to pass through the transparent rotary plate and thereby, in succession, to pass through and be diffracted by the first and second holograms, so as to pass through the transparent fixed plate and the hologram thereon and be further diffracted thereby and so as to be incident and converge on the image forming surface and to scan same in a direction perpendicular to the feed direction;
each of the first and second holograms having a holographic diffraction grating having a grating constant, d, and where λ is the wavelength of the laser beam, the ratio λ/d is in the range of 0.4 to 1.1;
the first hologram being formed on the first surface of the transparent rotary plate by one of:
(1) a plane wave incident thereon in a direction perpendicular to the first surface and a second wave incident thereon and having an aberration of a first angle relatively to the first surface of the transparent rotary plate, or
(2) a plane wave incident thereon in a direction defined by a third angle relatively to the first surface of the transparent rotary plate and a second wave having an aberration of the first angle relatively to the first surface; and
the second hologram being formed on the second surface of the transparent rotary plate by one of:
(1) a plane wave incident thereon in a direction perpendicular to the second surface and a second wave incident thereon and having an aberration of a second angle, different from the first angle, relatively to the second surface, or
(2) a plane wave incident thereon at the third angle relatively to the second surface and a plane wave incident thereon at the second angle, different from the first angle, relatively to the second surface.

5,550,656

FULL COLOR DISPLAY WITH PLURAL TWO-DIMENSIONAL PLANAR ARRAYS OF LENSLETS

Robert A. Sprague, Saratoga; Richard H. Bruce, Los Altos, both of Calif., and Louis D. Silverstein, Scottsdale, Ariz., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 900,813, Jun. 17, 1992, abandoned. This application May 25, 1995, Ser. No. 450,964
Int. Cl.[6] G02F *1/1335*
U.S. Cl. 359—40 **2 Claims**



1. A full color display comprising:
light source means having a light emitting surface and having a plurality of individual visible light emitters for providing to the full color display visible light with wavelength emission spectra in at least three primary colors, the plurality of primary color visible light emitters being arranged spatially on the light emitting surface so that light from at least three different primary color visible light emitters forms a mixture color by additive spatial juxtaposition, primary color visible light emitted from the light emitting surface being spatially separated at the light emitting surface;
image forming means for receiving the primary color visible light from the light source means and for forming a full color image; the image forming means having a matrix of individually addressable light modulating pixels, the matrix having modulation means associated with it for modulating the amount of primary color visible light received from the light source means;
light coupling lens array means, disposed between the light emitting surface and the image forming means and not abutted against the modulation means, for optically coupling the primary color visible light from one of the plurality of primary color visible light emitters to a respective one of the light modulating pixels; each lens of the light coupling lens array means having optical properties to collect substantially all of the primary color visible light from more than one of the

plurality of primary color visible light emitters and to focus a real image thereof in the respective one of the light modulating pixels, the light coupling lens array means including a plurality of two-dimensional planar arrays of lenslets, disposed adjacent to each other, each planar array of lenslets being in substantial alignment with adjacent planar arrays of lenslets; the plurality of two-dimensional planar arrays of lenslets having optical properties to collect primary color visible light from each of the primary color visible light emitters and to focus each collection of primary color visible light as a real image into the respective pixel of the image forming means; and

image display means, disposed to receive the full color image from the image forming means, for displaying the full color image in such a manner as to be visible to a human observer.

5,550,657

LIQUID CRYSTAL DISPLAY DEVICE HAVING AN OPTIMIZED RIDGED LAYER TO IMPROVE LUMINOSITY

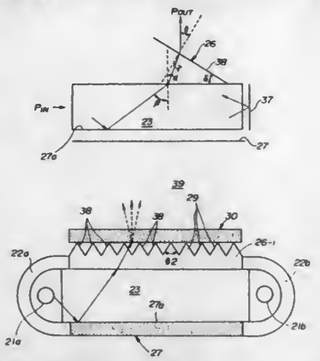
Akira Tanaka; Yoshinori Mesaki; Akio Sotokawa, all of Kawaski; Masahiro Tomatsu, and Kazumasa Kaiwa, both of Yokohama, all of, Japan, assignors to Fujitsu Limited, Japan

Filed Sep. 10, 1993, Ser. No. 118,816

Claims priority, application Japan, Sep. 14, 1992, 4-245158

Int. Cl.[6] G02F *1/1335*

U.S. Cl. 359—49 **5 Claims**



5. A liquid display panel, comprising:

a liquid crystal cell panel having first and second, mutually opposing surfaces, said liquid crystal cell panel including liquid crystal molecules therein; and

a planar illumination unit having first and second, mutually opposing principal surfaces and being disposed such that said first principal surface of said planar illumination unit faces said second principal surface of said liquid crystal cell panel, said planar illumination unit comprising:

an optical guide layer having first and second, mutually opposing principal surfaces, said optical guide layer being laterally defined by a side wall and guiding a light incident thereto at said side wall, said optical guide layer emitting said light from said first principal surface;

light source means, facing said side wall of said optical guide layer, for injecting said light into said optical guide layer through said side wall, said light source means including first reflection means for reflecting said light produced by said light source means toward said side wall of said optical guide layer;

an optical scattering layer having first and second, mutually opposing principal surfaces, said optical scattering layer being disposed such that said second principal surface of said optical scattering layer faces said first principal surface of said optical guide layer thereby for receiving said light emitted from said first principal surface of said optical guide layer, said optical scattering layer causing scattering in said light received from said optical guide layer and emitting said light from said first principal surface;

second reflection means, provided on said second principal surface of said optical guide layer, for reflecting a light incident to said second principal surface of said optical guide layer; and

directivity means having first and second opposing principal surfaces and provided on said first principal surface of said optical guide layer such that said second principal surface of said directivity means faces said first principal surface of said optical guide layer, said directivity means being disposed such that said first principal surface of said directivity means faces said second principal surface of said optical scattering means, said directivity means carrying a plurality of ridges on said first principal surface so as to extend in parallel with each other, each of said plurality of ridges having an apex angle such that said plurality of ridges transmit an optical beam incident at any arbitrary angle to said second principal surface of said directivity means.

5,550,658

REFLECTOR FOR LIQUID CRYSTAL DISPLAY HAVING A NON-PRECIOUS METAL LAYER AND A PRECIOUS METAL LAYER SUCCESSIVELY FORMED ON A PLASTIC FILM

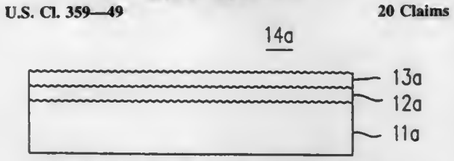
Shirai Yoshihiro, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 26, 1994, Ser. No. 296,683

Claims priority, application Japan, Aug. 27, 1993, 5-213231

Int. Cl.[6] G02F *1/1335*

U.S. Cl. 359—49 **20 Claims**



1. A reflector for a liquid crystal display comprising:

a first metal layer formed on a plastic film and containing a non-precious metal; and

a second metal layer formed on the first metal layer and containing a precious metal,

wherein the first metal layer has a thickness of approximately 400–500 Angstroms.

5,550,659

ACTIVE MATRIX LIQUID CRYSTAL DISPLAY HAVING A SPATIAL COORDINATES INPUT FUNCTION

Ichiro Fujieda, and Setsuo Kaneko, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan.

Filed Jul. 25, 1994, Ser. No. 280,332

Claims priority, application Japan, Jul. 26, 1993, 5-183774

Int. Cl.[6] G02F *1/1335*

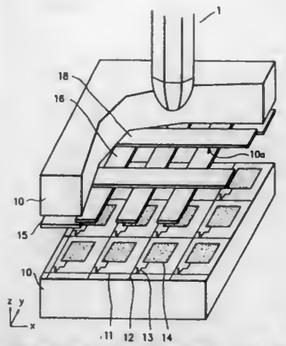
U.S. Cl. 359—54 **5 Claims**

1. An active matrix liquid crystal display, comprising:

a substrate on an active element side including a first insulating substrate, switching elements, pixel electrodes, and scan lines and data lines for writing data in the pixels, the switching elements, the pixel electrodes, and the scan and data lines being formed on the first insulating substrate;

a second insulating substrate on an opposing electrode side, said second insulating substrate including a transparent conductive layer;

a liquid crystal layer enclosed between the substrate on the active element side and the second insulating substrate on the opposing electrode side;



a plurality of first and second electrodes, said first and second electrodes being vertical to each other on the second insulating substrate on the opposing electrode side;

an insulating layer inserted between the first and second electrodes;

means for externally controlling the potential of each of the first and second electrodes in an independent manner;

means for sensing electric charge generated by the first and second electrodes; and

a transparent conductive layer formed under the first and second electrodes, wherein the first and second electrodes are formed with a conductive substance having a light interrupting characteristic; and

wherein the first and second electrodes are arranged in locations opposing areas occupied by gaps between the pixel electrodes and the switching elements on the first substrate on the active element side.

5,550,660

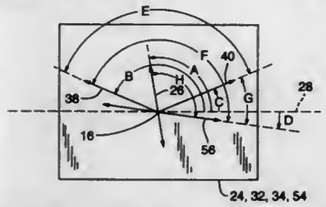
STN DISPLAYS HAVING HIGH CONTRAST, WITH PURPLE POLARIZER AND RESIDUAL BIREFRINGENCE CAUSING GREENISH-GOLD OR PURPLISH-BLUE COLORING

Kei-Wean C. Yang, Beaverton, Oreg., assignor to Tektronix, Inc., Wilsonville, Oreg.

Filed Nov. 22, 1993, Ser. No. 156,593

Int. Cl.[6] G02F *1/1335*

U.S. Cl. 359—63 **28 Claims**



1. A display device, comprising:

first and second polarizing filters having respective first and second transmission axes angularly displaced by about 110° to about 130° relative to each other, the first transmission axis transmissive of a neutral polarized color, the first polarizing filter also having another transmission axis orthogonal to the first transmission axis and transmissive of a purple polarized color; and

a supertwisted nematic (STN) liquid crystal cell positioned between the first and second polarizing filters, characterized by a layer twist angle of between about 230° and about 250°, and including two spaced-apart electrode structures confining a liquid crystal composition, each electrode structure having an inner surface with an alignment layer conditioned so that the alignment directions of surface-contacting directors of the liquid crystal composition at the inner surfaces are angularly displaced by between about 110° and about 130° relative to each other, one of the alignment directions angularly displaced by between about 35° to about 45° relative to the second transmission axis, the STN liquid crystal cell producing in combination with the first and second polarizing filters a display in which the residual birefringence causes display cells that are in the nonselected state to appear greenish-gold and display cells that are in the selected state to appear dark purplish-blue when the display system is illuminated by white light and viewed by a human eye substantially along the viewing axis.

5,550,661

OPTICAL PHASE RETARDATION FILM

Terri R. Clark, and Thomas C. Long, both of Morristown, N.J., assignors to AlliedSignal Inc., Morris Township, N.J.

Filed Nov. 15, 1993, Ser. No. 153,114

Int. Cl.[6] G02F *1/1335*

U.S. Cl. 359—073 **22 Claims**

1. An optical phase retardation film for a liquid crystal display comprising a polymer comprising at least about 40 percent by weight chlorotrifluoroethylene.

5,550,662

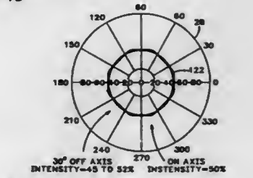
COLOR LIQUID CRYSTAL DISPLAY HAVING A WIDE VIEWING ANGLE

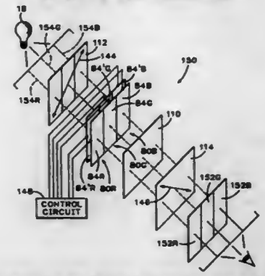
Philip J. Bos, Beaverton, Oreg., assignor to Tektronix, Inc., Wilsonville, Oreg.

Continuation of Ser. No. 25,486, Mar. 3, 1993, Pat. No. 5,410,422. This application Mar. 15, 1995, Ser. No. 404,794

Int. Cl.[6] G02F *1/1335;1/137*

U.S. Cl. 359—73 **14 Claims**





1. A color liquid crystal display apparatus having an optical axis and light transmission properties specified by a range of off-axis and azimuthal viewing angles, comprising:

a set of three liquid crystal cells each including liquid crystal material enclosed between a pair of optically transparent electrodes, the liquid crystal material of each liquid crystal cell in the set having directors arranged in a controllable, optically self-compensating symmetrical director field configuration;

a color filter placed in a light transmission path of each one of the liquid crystal cells, each color filter passing a different primary color wavelength for its associated liquid crystal cell;

a negative birefringence compensator plate optically associated with the liquid crystal cells; and

a control circuit for selectively applying field-forming potentials to the transparent electrodes of the liquid crystal cells in the set to reorient their symmetrical director field configurations and thereby control transmission of corresponding predetermined color levels of externally generated light exiting the liquid crystal display apparatus, the symmetrical director field configuration and the negative birefringence compensator plate cooperating to provide for each of the predetermined color levels perceptually generally uniform color transmission for off-axis and azimuthal viewing angles within a wide range of viewing and azimuthal angles relative to the optical axis.

5,550,663

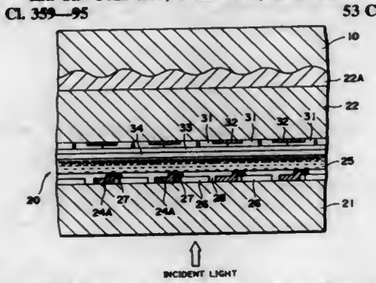
METHOD OF MANUFACTURING OPTICAL LOW-PASS FILTER

Osamu Nishizaki, Takatsuki, and Shigeru Aoyama, Kyoto, both of, Japan, assignors to Omron Corporation, Kyoto, Japan

Filed May 24, 1994, Ser. No. 248,248

Int. Cl.[6] G02F *1/13;* **G02B** *27/46;* **H04N** *9/083*

U.S. Cl. 359—95 **53 Claims**



1. A method of manufacturing an optical low-pass filter comprising the steps of:

forming a mother layer made of a thermoplastic resin on a substrate;

etching the mother layer through a mask to form a grating layer in the upper portion of the mother layer so that an offset layer remains under the grating layer;

baking to melt the grating layer and the offset layer so as to produce a phase grating, the surface of which exhibits a sinusoidal waveform; and

solidifying the phase grating on the substrate.

5,550,664

LIQUID CRYSTAL DISPLAY DEVICE

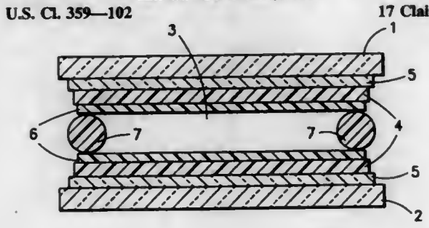
Kazuhiko Tsuda, Tenri; Tokihiko Shinomiya, Nara, and Shinji Yamagishi, Osaka, all of, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 21, 1994, Ser. No. 360,461

Claims priority, application Japan, Dec. 24, 1993, 5-328887

Int. Cl.[6] G02F *1/13;1/133*

U.S. Cl. 359—102 **17 Claims**



1. A liquid crystal display device comprising:

a pair of substrates disposed in an opposed relation each having an electrode formed in a selected pattern on the opposed surface thereof, and an orientation film formed over the entire opposed surface including the electrode;

a liquid crystal layer sandwiched between the substrates; and

a driver means for shifting longitudinal molecular axes of the liquid crystal in the liquid crystal layer;

said liquid crystal layer comprising a composition of a nematic liquid crystal having a splay elastic constant K_{11} and a twist elastic constant K_{22}, and the ratio K_{11}/K_{22} being said constants being not greater than 1; in which said nematic liquid crystal has a bistability such that the longitudinal molecular axes thereof are shifted from a first orientation state to a second orientation state within a plane generally parallel with respect to said substrates when a voltage is applied across said electrodes from said driver means, and are kept in the second orientation state when the application of the voltage is stopped.

5,550,665

Patent Not Issued For This Number

5,550,666

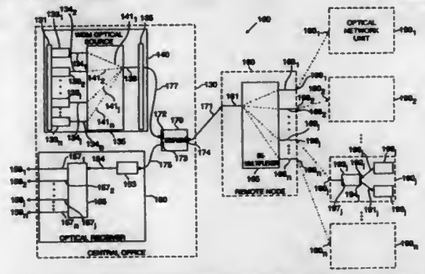
WAVELENGTH DIVISION MULTIPLEXED MULTI-FREQUENCY OPTICAL SOURCE AND BROADBAND INCOHERENT OPTICAL SOURCE

Martin Zirngibl, Middletown, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jun. 17, 1994, Ser. No. 261,584

Int. Cl.[6] H04J *14/02*

U.S. Cl. 359—125 **46 Claims**



1. A system for communicating information signals at optical wavelengths, comprising:

a common unit comprising a single wavelength division multiplexing multi-frequency optical source for providing a plurality of multiplexed discrete optical information signals, wherein said multi-frequency source simultaneously provides a plurality of discrete optical wavelength carriers upon which, respectively, a plurality of information signals is impressed to create the plurality of optical information signals,

said common unit further comprising a coupler for receiving said plurality of optical information signals from said multi-frequency optical source;

a passive optical demultiplexer for wavelength division demultiplexing the plurality of multiplexed optical information signals, wherein said plurality of multiplexed optical information signals provided from the multi-frequency source is coupled through the coupler and into a transmission optical fiber for transmission to the optical demultiplexer, and said plurality of demultiplexed optical information signals is coupled into a plurality of routing optical fibers; and,

a plurality of optical network units for receiving said plurality of demultiplexed optical information signals from said plurality of routing optical fibers, wherein said plurality of routing optical fibers routes said plurality of demultiplexed signals from the optical demultiplexer to the plurality of optical network units configured, respectively, to receive the plurality of optical information signals at a plurality of discrete optical wavelengths corresponding to the wavelengths of the plurality of optical carriers.

5,550,667

OPTICAL TRANSMITTER

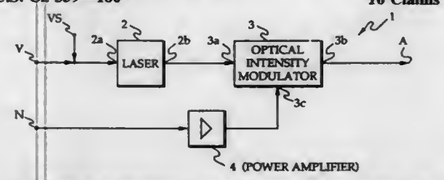
Heinz Krimmel, Stuttgart; Henning Bülow, Ludwigsburg; Rolf Heidemann, Tamm, and Jürgen Otterbach, Leonberg, all of, Germany, assignors to Alcatel N.V., Rijswijk, Netherlands

Filed Aug. 18, 1993, Ser. No. 108,325

Claims priority, application Germany, Aug. 22, 1992, 42 27 859.7; Oct. 14, 1992, 42 34 599.5

Int. Cl.[6] H04B *10/04*

U.S. Cl. 359—180 **16 Claims**



1. An optical transmitter (**1**) for a communications system comprising:

A) a laser (**2**) generating a carrier that is directly modulated by an energy dispersing signal (V) for providing a modulated carrier (*2b*, *3a*);

B) an optical intensity modulator (**3**) having a characteristic curve with a non-linearity caused primarily by second- and third-order distortions, said optical intensity modulator being operated at an inflection point of said characteristic curve to compensate for said second-order distortions, said optical intensity modulator receiving the modulated carrier (*2b*, *3a*) and an intelligence signal (N), said optical intensity modulator indirectly modulating said modulated carrier with the intelligence signal (N); and

C) means for generating the energy-dispersing signal (V) (**6**; **7**, **8**) so that the energy-dispersing signal (V) is a signal for compensating the non-linearity of at least the third-order distortions of the optical intensity modulator (**3**).

5,550,668

MULTISPOT POLYGON ROS WITH MAXIMIZED LINE SEPARATION DEPTH OF FOCUS

James J. Appel, Rochester, and Susan E. Dunn, Mobegan Lake, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 21, 1994, Ser. No. 342,974

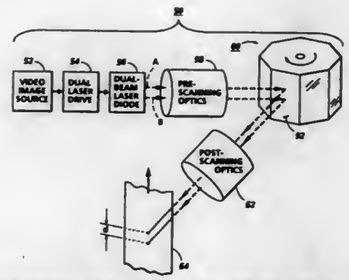
Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—204 **23 Claims**

1. A multispot optical scanning system for exposing a surface of a photoreceptor, comprising:

a source of at least two high intensity modulated light beams;

a reflective scanning member, having a light reflective surface thereon, interposed in the optical path between said source and the surface of the photoreceptor;



a pre-scanning optical system for directing the beams to the light reflecting surface of the reflective scanning member, said pre-scanning optical system including

a collimator,

an aperture, and

a cross-scan cylinder lens; and

a post-scanning optical system for placing the beams reflected from the light reflecting surface of said reflective scanning member in a path telecentric with an optical axis of the post-scanning optical system prior to striking the surface of the photoreceptor so as to maximize the system common depth of focus about a focal plane defined by the photoreceptor surface wherein the multispot optical scanning system exposes the photoreceptor surface with the at least two high intensity beams having an interlace factor greater than one, said post-scanning optical system including

an f-theta scan lens, and

a wobble correcting element.

5,550,669

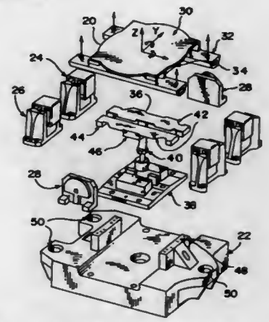
FLEXURE DESIGN FOR A FAST STEERING SCANNING MIRROR

Bhikhu Patel, Orlando, Fla., assignor to Martin Marietta Corporation, Bethesda, Md.

Filed Apr. 19, 1993, Ser. No. 47,485

Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—224 **37 Claims**



20. A support for a fast steering/scanning mirror, comprising:

a base;

at least one horizontal flexure secured to said base at two ends and also secured to the mirror between said two ends of said at least one horizontal flexure; and

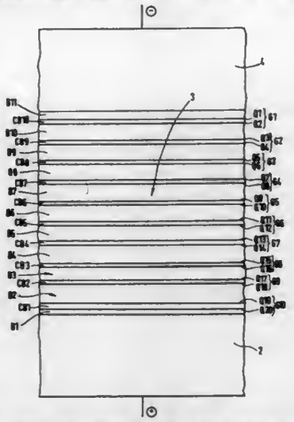
a vertical flexure secured to said base and pivotally secured to said mirror.

5,550,670
ELECTRO-OPTIC MODULATOR USING MULTIPLE QUANTUM WELL STRUCTURE HAVING STARK-EFFECT QUANTUM BARRIERS AND NON-STARK-EFFECT QUANTUM BARRIERS SANDWICHED THEREBETWEEN

Erich Zielinski, Remseck, and Gerhard Weiser, Marburg, both of, Germany, assignors to Alcatel N.V., Netherlands

Filed Apr. 22, 1994, Ser. No. 231,265
Claims priority, application Germany, Apr. 24, 1993, 43 13 488.2
Int. Cl.[6] G02F *1/015*
U.S. Cl. 359—248 **14 Claims**

1. An optoelectronic semiconductor component (1) for modulating a light beam, said optoelectronic semiconductor component having a PIN structure (2, 3, 4) whose intrinsic region (3) contains M semiconductor structures with carriers localized in at least one dimension in an active layer (Q1–Q20), where M is an integer greater than three, with every two adjacent active layers (Q1–Q20) separated by a barrier (B1–B11; CB1–CB10), and with a control voltage for generating an electric modulation field being applied across the M semiconductor structures through an n-type layer (2) and a p-type layer (4) of the PIN structure, characterized in that the M semiconductor structures with carriers localized in at least one dimension (Q1–Q20; CB1–CB10) are arranged in at least two groups (G1–G10), with the semiconductor structures of each of the groups separated by barriers (CB1–CB10) which permit essentially Stark-ladder transitions of the first order between the individual semiconductor structures (Q1–Q20; CB1–CB10) of each group (G1–G10), and that the individual groups (G1–G10) of such coupled semiconductor structures (Q1–Q20; CB1–CB10) are separated from each other by an additional barrier (B1–B11) which prevents essentially Stark-ladder transitions between the active layers (Q1–Q20) of the semiconductor structures (Q1–Q20; CB1–CB10) of one group (G1–G10) and an active layer (Q1–Q20) of another group.

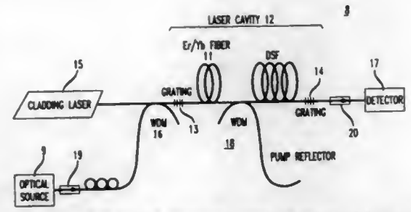


5,550,671
INTRA-CAVITY OPTICAL FOUR-WAVE MIXER AND OPTICAL COMMUNICATIONS SYSTEM USING THE SAME

Jay R. Simpson, Fanwood, N.J.; Jefferson L. Wagener, Stanford, Calif., and Kenneth L. Walker, New Providence, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Mar. 2, 1995, Ser. No. 397,516
Int. Cl.[6] H01S *3/00;* **G02F** *1/35*
U.S. Cl. 359—337 **10 Claims**

1. Article comprising four-wave mixing means comprising:

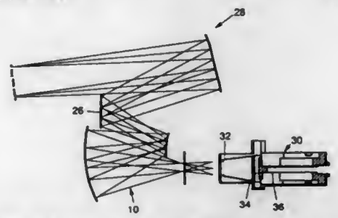


a) an input adapted for receiving signal radiation of first wavelength λ;
b) an output;
c) a first optical fiber transmission path connecting said input and said output, said first optical fiber transmission path comprising rare earth-doped optical fiber and dispersion-shifted optical fiber; and
d) a pump radiation input adapted for receiving pump radiation of a second wavelength, said second wavelength being different from λ; wherein
e) the first optical fiber transmission path further comprises wavelength-dependent reflecting means that define an optical cavity for a radiation of a third wavelength different from λ and the second wavelength, said optical cavity including at least a portion of each of said rare earth-doped optical fiber and of said dispersion-shifted optical fiber, said optical cavity being adapted for generation, by four-wave mixing, of radiation of wavelength within 10% of λ.

5,550,672
OFF-AXIS THREE-MIRROR ANASTIGNAT HAVING CORRECTOR MIRROR

Lacy G. Cook, El Segundo, Calif., assignor to Hughes Electronics, Los Angeles, Calif.

Continuation of Ser. No. 247,362, May 23, 1994, abandoned. This application Nov. 1, 1995, Ser. No. 551,361
Int. Cl.[6] G02B *5/10;17/06*
U.S. Cl. 359—365 **4 Claims**



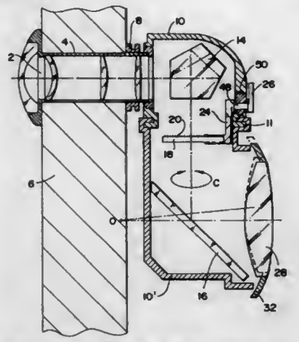
1. An all-reflective optical system for receiving and focusing optical signals comprising:
(a) a primary mirror having an optical axis and a concave reflecting surface yielding significant net positive optical power and operable to create a subsequent intermediate image;
(b) a real unobscured entrance pupil displaced from said optical axis and located prior to said primary mirror;
(c) a significant two dimensional field of view displaced from said optical axis that is substantially in focus at said intermediate image;
(d) a low power corrector mirror having a general aspheric reflecting surface and positioned between said primary mirror and said intermediate image;
(e) a secondary mirror having a convex reflecting surface yielding significant net negative optical power and positioned subsequent to said intermediate image;
(f) a tertiary mirror having a concave reflective surface yielding significant net positive optical power and positioned subsequent to said secondary mirror;

(g) a final image surface that is substantially flat and located subsequent to said tertiary mirror and is optically conjugate to said intermediate image by the operation of said secondary and tertiary mirrors; and
(h) a real unobscured exit pupil displaced from said optical axis and positioned between said tertiary mirror and said final image surface and optically conjugate to said entrance pupil by the operation of said primary, corrector, secondary, and tertiary mirrors.

5,550,673
SPYHOLE VIEWER

Pinchas Goldstein, 59 Shaulson St., Jerusalem, Israel

Continuation-in-part of Ser. No. 968,525, Oct. 29, 1992, Pat. No. 5,357,367. This application Jul. 18, 1994, Ser. No. 276,620
Claims priority, application Israel, Nov. 1, 1991, 099941; Sep. 15, 1993, 107023
Int. Cl.[6] G02B *23/02;25/04*
U.S. Cl. 359—367 **19 Claims**



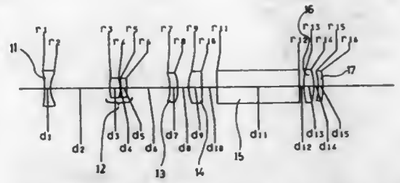
1. A spybole viewer for a door or wall, comprising:
an objective system, comprising a plurality of optical elements, for producing a real, inverted image, said objective system mounted in a tubular member fixedly installable in the door or wall;
erector means for inverting said inverted image and located behind at least one of said optical elements of said objective system;
reflector means for angularly deflecting light beams from said objective system;
a housing fixedly attachable to said tubular member and accommodating at least said erector means and said reflector means;
a viewing lens for magnifying said real image as inverted by said erector means; and
an image surface, for said real image to appear upon, said image surface located between said erector means and said reflector means and comprising a diffusing surface of a transparent planar plate.

5,550,674
REAL TIME TYPE VIEWFINDER

Tetsuya Abe, Hokkaido; Sachio Hasushita, and Takayuki Ito, both of Tokyo, all of, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 12, 1994, Ser. No. 273,873
Claims priority, application Japan, Jul. 12, 1993, 5-171608
Int. Cl.[6] G02B *23/00;25/00*
U.S. Cl. 359—422 **9 Claims**

1. A real image type viewfinder, comprising:
an objective lens group;
an eyepiece lens group;



a condenser lens group for transmitting an image of an object formed by said objective lens group towards said eyepiece lens group; and,
an image erecting optical system for erecting an inverted image;
said objective lens group, said condenser lens group, said image erecting optical system and said eyepiece lens group being located in that order from an object side of said viewfinder;
said eyepiece lens group consisting of a negative lens and a positive double-convex lens in that order from an eye side of said viewfinder, and satisfying the following three conditional formulas:

$$-0.5<f_E/f_{E1}<0 \quad (1)$$

$$-1.5<f_E/r_{E1}<1.0 \quad (2)$$

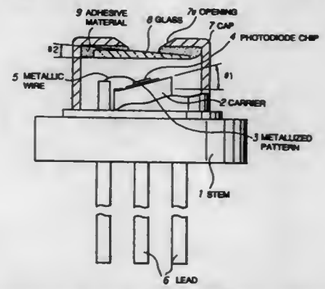
$$0.03<d_{E1-2}/f_E<0.1 \quad (3)$$

wherein f_E designates the overall focal length of said eyepiece lens group; f_{E1} designates the focal length of said negative lens of said eyepiece lens group; r_{E1} designates the radius of the eye-side surface curvature of said negative lens of said eyepiece lens group; and d_{E1-2} designates the distance between said negative lens and said positive double-convex lens of said eyepiece lens group.

5,550,675
SEMICONDUCTOR LIGHT RECEIVING APPARATUS

Nobuko Komatsu, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 22, 1994, Ser. No. 310,743
Claims priority, application Japan, Sep. 25, 1993, 5-261691
Int. Cl.[6] H01L *31/0232;33/00;* **H01S** *3/18;* **G02B** *7/00*
U.S. Cl. 359—514 **5 Claims**



1. A semiconductor light receiving apparatus, comprising:
a light receiving chip mounted on a carrier and having a light axis;
a cap for containing the chip and having an opening on the light axis;
a transparent plate for transmitting light along the light axis, the transparent plate being sealingly fixed to the cap to close the cap's opening; and
a stem for sealingly placing the cap thereon, to enclose the chip;
wherein:

a light receiving surface of the chip is inclined in a first direction to the light axis; and

an outer surface of the transparent plate is inclined in a second direction to the light axis, which second direction is opposite to the first direction.

5,550,676

SURFACE LIGHT SOURCE ELEMENT

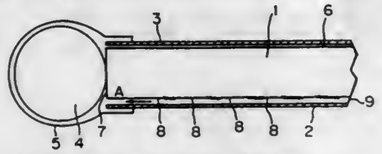
Makoto Ohe, and Issei Chiba, both of Kawasaki, Japan, assignors to Mitsubishi Rayon Co., Ltd, Tokyo, Japan

Continuation of Ser. No. 849,365, May 5, 1992, abandoned. This application Sep. 6, 1994, Ser. No. 300,518

Claims priority, application Japan, Sep. 12, 1990, 2-241538

Int. Cl.[6] G02B *5/02;* **F21V** *7/04*

U.S. Cl. 359—599 **11 Claims**



1. A surface light source element, comprising:

a cylindrical light source means for generating light;

a transparent light guide having a light incident surface facing the cylindrical light source means, a light emitting surface that is perpendicular to the light incident surface, an opposed surface opposing the light emitting surface, and a light reflecting layer facing the opposed surface;

wherein incident light that is generated by said cylindrical light source means enters said transparent light guide through said light incident surface and propagates along an incident light direction; and

a diffusing means for diffusing light exiting from the light emitting surface, said diffusing member facing the light emitting surface;

wherein at least one of the light emitting surface and the opposed surface has flat areas which are optically flat and non-flat areas which are not optically flat and have a haze value of at least thirty percent, whereby said non-flat areas radiate light from the transparent light guide in a direction that is oblique to said incident light direction;

wherein a sum of areas of said flat areas of said at least one of the light emitting surface and the opposed surface decreases with increasing distance from said light incident surface.

5,550,677

AUTOMATIC REARVIEW MIRROR SYSTEM USING A PHOTOSENSOR ARRAY

Kenneth Schofield, Holland, and Mark Larson, Grand Haven, both of Mich., assignors to Donnelly Corporation, Holland, Mich.

Filed Feb. 26, 1993, Ser. No. 23,918

Int. Cl.[6] G02B *5/08;27/00*

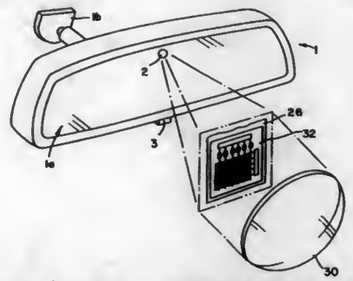
U.S. Cl. 359—604 **87 Claims**

1. An automatic rearview mirror system for an automotive vehicle comprising:

at least one variable reflectance rearview mirror;

an array of sensing elements to sense light levels in an area rearward of said at least one variable reflectance rearview mirror, each of said sensing elements adapted to sense light levels of light incident thereon and to output an electrical signal indicative of said sensed light levels;

a signal processor, connected to said array of sensing elements, receiving and using the electrical signals indicative of the sensed light levels from said sensing elements to determine a first electrical signal indicative of a background light level in the area rearward of said at least one variable reflectance



rearview mirror and to determine a second electrical signal indicative of at least one peak light level in the area rearward of said at least one variable reflectance rearview mirror,

wherein said signal processor determines at least one control signal indicative of a desired reflectance level of the at least one variable reflectance rearview mirror from the first electrical signal indicative of the background light level and the second electrical signal indicative of the at least one peak light level; and

at least one drive circuit connected to said signal processor and to said at least one variable reflectance rearview mirror for receiving said at least one control signal and generating and applying at least one drive signal to said at least one variable reflectance rearview mirror to drive said at least one variable reflectance mirror to the desired reflectance level.

5,550,678

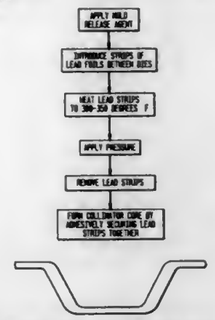
FOCUSSING COLLIMATOR OF THE PLATZ-HEINZELMANN TYPE AND METHOD OF MAKING PLATZ-HEINZELMANN TYPE COLLIMATORS

Derek J. Morby, Streamwood, Ill., assignor to Siemens Medical Systems, Inc., Iselin, N.J.

Filed Mar. 14, 1994, Ser. No. 213,296

Int. Cl.[6] G02B *27/30;* **H04N** *7/18;* **B23P** *19/04*

U.S. Cl. 359—641 **5 Claims**



1. A method of manufacturing a Platz-Heinzelmann collimator, comprising the following steps:

setting up a die press with mating die sections which are so dimensioned as to produce one or more collimator strips having appropriate dimensions for a Platz-Heinzelmann collimator;

introducing elongated strips of material between the coated die sections;

heating the elongated strips of material to a temperature which is less than the extrusion temperature of the material;

applying pressure to the elongated strips of material after they have been so heated;

removing the pressed elongated strips from between the die sections; and

forming a Platz-Heinzelmann collimator from the strips so removed.

5,550,679

PROJECTION LENS APPARATUS HAVING A PLURALITY OF LENS GROUPS TO PERFORM ZOOMING

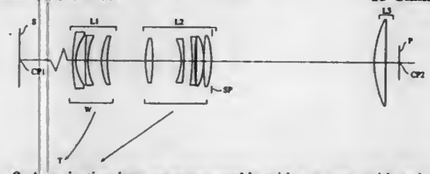
Saburo Sugawara, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 20, 1994, Ser. No. 262,664

Claims priority, application Japan, Jun. 25, 1993, 5-179928

Int. Cl.[6] G02B *15/14*

U.S. Cl. 359—689 **18 Claims**



9. A projection lens apparatus usable with a screen, said projection lens apparatus comprising, in order from a side where the screen is disposed:

a first lens group having a negative refracting power;

a second lens group having a positive refracting power; and

a third lens group having a positive refracting power,

wherein zooming is performed by changing the distances between said first lens group and said second lens group, and wherein if the distance between said second lens group and said third lens group and the focal length of the entire projection lens apparatus are DD2w and fw, respectively, when the projection lens apparatus is positioned at a short focus end configuration, then the following condition is satisfied:

$1.6<DD2w/fw<2.5$.

5,550,680

THIN FILM ACTUATED MIRROR ARRAY HAVING AN IMPROVED OPTICAL EFFICIENCY

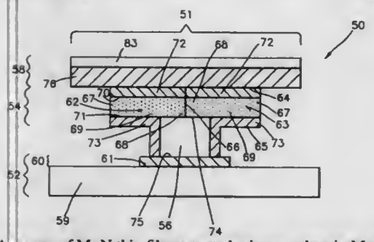
Dong-Seon Yoon, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 30, 1994, Ser. No. 346,958

Claims priority, application Rep. of Korea, Nov. 30, 1993, 93-25830

Int. Cl.[6] G02B *5/08;* **G03B** *21/28;21/14*

U.S. Cl. 359—850 **7 Claims**



1. An array of M×N thin film actuated mirrors, wherein M and N are integers, for use in an optical projection system, comprising:

a substrate;

an array of M×N thin film actuating structures, each of the actuating structures including a first and a second actuating parts, the first and second actuating parts being identically structured, each of the first and second actuating parts being provided with a top, a bottom and a side surfaces, and a proximal and a distal ends, each of the first and second actuating parts having at least a thin film layer of a motion-inducing material including a top and a bottom surfaces, each of the first and second actuating parts further being provided with a first and a second electrodes with the first electrode being placed on the top surface of the motion-inducing thin film layer, and the second electrode, on the bottom surface of the motion inducing layer, the side surface from each of the actuating parts in each of the actuating structures being in physical contact with each other, the first electrode from each of the first and second actuating parts in each of the actuating structures being common to the first and second actuating parts, thereby functioning as a common bias electrode, the second electrode from each of the first and second actuating parts in each of the actuating structures functioning as a signal electrode in the corresponding actuating part, wherein an electrical signal applied across the motion-inducing thin film layer between the first and second electrodes in each actuating part causes a deformation of the motion-inducing thin film layer, and hence said each actuating part;

an array of M×N supporting members, each of the supporting members being placed on top of the substrate wherein the proximal end of the actuating parts of each of the actuating structures is secured to the corresponding supporting member; and

an array of M×N mirror layers, each of the mirror layers including a mirror for reflecting light beams and a supporting layer, each of the mirror layers being divided into a first and a second reflectors, the first and second reflectors being symmetric to each other, each of the reflectors being provided with a first surface, a second opposing surface and a central tab portion therebetween, the first surface and central tab portion, and the second opposing surface and central tab portion being separated by a dividing slot therebetween, wherein the central tab portion of each reflector is directly attached on top of each actuating part in each of the actuating structures such that when the central tab portion in each of the reflectors deforms in response to the electrical signal, the first and second opposing surfaces in each of the reflectors tilt while remaining planar, thereby allowing all of the first and second opposing surfaces to reflect light beams, resulting in an increased optical efficiency.

5,550,681

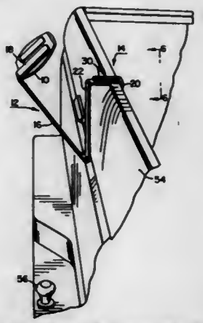
REAR-MOUNTED VEHICLE MIRROR

Kevin P. Mazarac, 220 Monarch Dr., Apartment J-24, Houma, La. 70364

Filed May 30, 1995, Ser. No. 452,960

Int. Cl.[6] G02B *7/182;* **B60R** *1/06*

U.S. Cl. 359—872 **5 Claims**



1. A mirror support structure for supporting a mirror on a rear surface of a vehicle for permitting observation of a trailer hitch element positioned at the lower rear portion of the vehicle by an observer while the observer is seated in the driver's seat of the vehicle, said mirror assembly comprising:

a. a mounting member for removable attachment to a vehicle surface at the rear of the vehicle, wherein the mounting member is a U-shaped bracket for positioning on an upper edge of a substantially vertically positioned tailgate and has a

longitudinal axis and is positioned above the trailer hitch element, and wherein the U-shaped bracket is defined by first and second L-shaped members that are joined together to form the U-shaped bracket, wherein the L-shaped members are slidably joined to permit an opening defined by the U-shaped bracket to be changed to enable the bracket to tilt about a pivot axis defined by an edge of the support arm;

b. a support arm extending angularly from the mounting member and disposed at an acute angle relative to the vehicle surface, the support arm having a longitudinal axis and an outer end spaced from the mounting member;

c. a mirror mounting surface carried by the support arm and positioned adjacent the outer end of the support arm and facing the trailer hitch element for supporting a convex mirror;

d. a convex mirror carried on the mirror mounting surface, wherein the convex mirror is disposed to face the trailer hitch element to permit an observer seated in the driver's seat of the vehicle to observe the trailer hitch element to thereby facilitate connection and disconnection of the trailer hitch element of the vehicle with a cooperating trailer hitch element carried by a towed vehicle; and

e. wherein the longitudinal axis of the support arm is inclined relative to the longitudinal axis of the mounting member when the support arm longitudinal axis is projected onto a first plane passing through the mounting member longitudinal axis, and wherein the longitudinal axis of the support arm is inclined relative to the longitudinal axis of the mounting member when the support arm longitudinal axis is projected onto a second plane passing through the mounting member longitudinal axis and extending perpendicular to the first plane.

5,550,682

MODE DISCRIMINATION CIRCUIT FOR AN IMAGE RECORDING/PLAYBACK SYSTEM UTILIZING PEAK DETECTORS

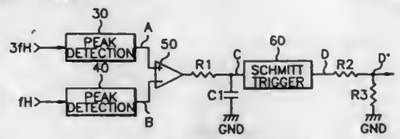
Jong-Soo Seo, Incheon, and Ki-Ho Shin, Kyungki-do, both of, Rep. of Korea, assignors to Samsung Electronics Co., Ltd, Suwon, Rep. of Korea

Filed Oct. 13, 1993, Ser. No. 134,944

Claims priority, application Rep. of Korea, Oct. 13, 1992, 1992-18834

Int. Cl.[6] G11B *5/02;15/46*

U.S. Cl. 360—27 **21 Claims**



1. A circuit for detecting the recording/playback mode of a system for recording/playing back an image signal on/from a recording medium, using first and second input signals derived from pilot signals also recorded on the recording medium, comprising:

a first peak value detector for detecting the peak value of said first input signal, and for generating a first output signal representative of the peak value of said first input signal;

a second peak value detector for detecting the peak value of said second input signal, and for generating a second output signal representative of the peak value of said second input signal;

a comparator for comparing said first output signal and said second output signal, and for generating a comparison output signal representative of the difference therebetween;

an integrator connected to said comparator, for integrating said comparison output signal, to thereby produce an integrated comparsion output signal; and,

a mode discrimination signal generating circuit responsive to said integrated comparison output signal, for generating a mode discrimination signal indicative of the recording mode that the image signal was recorded in, and the playback mode that the image signal is being played back in.

5,550,683

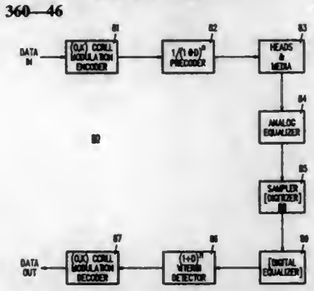
MAGNETIC RECORDING CHANNEL EMPLOYING A NON-IDEAL D.C.-FREE EQUALIZER AND A D.C.-FREE MODULATION CODE

Norman L. Koren, Encinitas, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 11, 1992, Ser. No. 989,432

Int. Cl.[6] G11B *5/09*

U.S. Cl. 360—46 **40 Claims**



1. A magnetic recording system for storing and retrieving binary data, said system comprising:

encoder means for receiving signals representing said binary data and for encoding said binary data with a d.c. free charge-controlled modulation code characterized by (d, k) run length constraints, the modulation code having an associated code rate;

equalizer means, coupled to said encoder means, having a pulse response that approximates a (1+D)^n partial response polynomial and is zero at d.c. for producing equalized pulses in response to said encoded binary data;

detector means, coupled to said equalizer means, for detecting said equalized pulses; and

decoder means, coupled to said detector means, for decoding said equalized pulses.

5,550,684

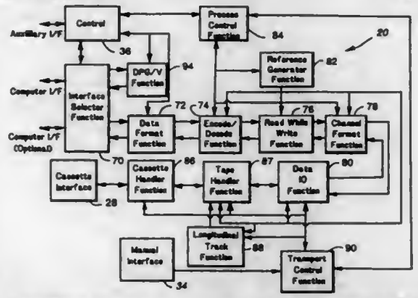
DATA RECORDING SYSTEM HAVING IMPROVED BOOKKEEPING CAPABILITY

Lionel C. Shih, 5907 Amapola Dr., San Jose, Calif. 95129, and John R. Haglund, 445 Vera Ave., Redwood City, Calif. 94061

Continuation of Ser. No. 843,461, Feb. 28, 1992, Pat. No. 5,442,493. This application Oct. 11, 1994, Ser. No. 320,535

Int. Cl.[6] G11B *5/09;15/18;15/48*

U.S. Cl. 360—48 **1 Claim**



1. A system adapted to selectively record and reproduce digital information data on a magnetic tape currently loaded on said system, said magnetic tape having a recordable volume, said volume having at least a plurality of partitions in which said information data are recorded, said system comprising:

helical means adapted to selectively record and reproduce said information data in a said partition, including user data and system format data, said information being contained in

physical blocks of predetermined size on a helical recording area of said tape, said user data being contained in data blocks of a predetermined size and being organized in files with each file having at least one file section, said helical means being adapted to record data along said tape and to record at least one physical block having system format data indicating that said physical block is at the end of a recording in said partition;

servo means for controlling the movement of said tape in first and second directions, said servo means moving said tape in said first direction during recording and reproducing, said servo means including means adapted to selectively record and reproduce servo information on a servo control track that extends in the longitudinal direction of said tape;

address means adapted to selectively record and reproduce data on at least one address track that extends in the longitudinal direction of said tape, said data recorded on said address track comprising physical address parameters relating to said tape and logical address parameters relating to the data that is recorded on said helical recording area;

processing means for generating said system format data and for providing said user data and said system format data to said helical means for recording thereby on said tape, said processing means generating a subarea table of said system format data for recording on predetermined helical tracks of said helical recording area, said system format data including data which identifies each recorded data block;

said processing means being adapted to control said helical means and said servo means to selectively record and reproduce data, and to search for and reproduce recorded information data on said helical recording area;

said processing means including means for storing bookkeeping data for a tape present in said system, said bookkeeping data indicative of recording, searching and reading activity performed by said system on said magnetic tape during a current load of said magnetic tape into said system, said bookkeeping data including data identifying the furthest location from the beginning of said partition at which any recording and reproducing of information data was performed in said partition while said tape was currently loaded in the system;

said bookkeeping data enabling said processing means to search for previously recorded information data from either the forward or reverse direction by commanding said servo means to move said tape to the location where said information data is located.

5,550,685

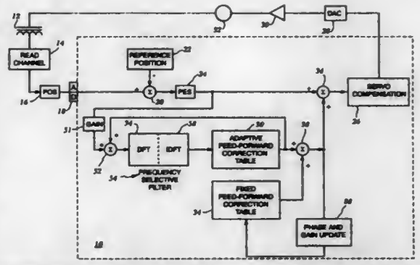
METHOD AND APPARATUS FOR APPLYING AN ADAPTIVE FEED-FORWARD ALGORITHM AS A FREQUENCY SELECTIVE FILTER IN A CLOSED LOOP DISK DRIVE SERVO SYSTEM IN ORDER TO COMPENSATE FOR PERIODIC PERTURBATIONS WHICH OTHERWISE APPEAR IN THE SERVO SYSTEM POSITION ERROR SIGNA

David M. Drouin, Fremont, Calif., assignor to Syquest Technology, Inc., Fremont, Calif.

Filed Oct. 22, 1993, Ser. No. 141,822

Int. Cl.[6] G11B *5/596*

U.S. Cl. 360—77.08 **20 Claims**



1. A method of correcting for repeatable runout in a rotating data storage apparatus, the rotating data storage apparatus including a rotating disk having at least one data track with a centerline and servo information recorded in a plurality of servo sectors along the data track, the rotating data storage apparatus also having a head structure for reading the servo information from the servo sectors as the disk rotates and a servo processing structure for generating a position error signal at each servo sector on the disk based on the servo information read by the head structure as the disk rotates, the position error signal representing misalignment between the head structure and the centerline of the data track, said method comprising:

defining a predetermined measurement cycle and a predetermined reconstruction cycle;

performing a discrete fourier transform on the position error signal at each servo sector during said predetermined measurement cycle to obtain real and imaginary terms;

accumulating said real and imaginary terms for all of the sampled servo sectors in the track during said predetermined measurement cycle;

reconstructing a fixed feed-forward correction waveform during said predetermined reconstruction cycle, using said accumulated real and imaginary terms, said fixed feed forward correction waveform corresponding to the repeatable runout occurring during said predetermined measurement cycle;

storing said fixed feed-forward correction waveform;

defining subsequent measurement cycles and subsequent reconstruction cycles;

performing a discrete fourier transform on the position error signal at each servo sector during each of said subsequent measurement cycles to obtain real and imaginary terms;

accumulating said real and imaginary terms for all of the sampled servo sectors in the track during each of said subsequent measurement cycles;

reconstructing an adaptive feed-forward correction waveform during each of said subsequent reconstruction cycles, using said real and imaginary terms accumulated during each of said subsequent measurement cycles, said adaptive feed-forward correction waveform corresponding to the changes in the runout; and

algebraically summing said adaptive feed-forward correction waveform, said fixed feed-forward correction waveform and the position error signals during each of said subsequent measurement cycles to provide a position error signal corrected for the effects of repeatable runout.

5,550,686

APPARATUS FOR TAPE LOADING DEVICE

Hidetoshi Matsuoka, Tokyo; Kouji Hashimoto, Matsudo, and Junji Kobayashi, Tokyo, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 970,843, Nov. 3, 1992, Pat. No. 5,363,257. This application Jun. 17, 1994, Ser. No. 261,940

Claims priority, application Japan, Nov. 29, 1991, 3-340004; Jun. 29, 1992, 4-194965

Int. Cl.[6] G11B *15/66*

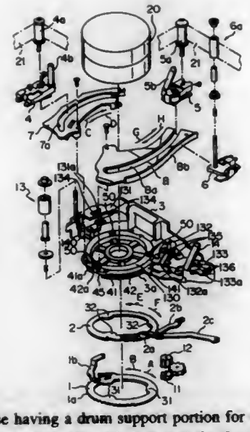
U.S. Cl. 360—85 **8 Claims**

1. A tape recorder apparatus, comprising:

a rotary drum carrying at least one magnetic head;

at least one rail member arranged in the vicinity of said rotary drum and having a first elongated slot formed therein;

at least one tape guide which is guided along said rail member;



a drum base having a drum support portion for supporting said rotary drum, and a second elongated slot formed at the outer side of said drum support portion, said second elongated slot being connected to said first elongated slot so as to form a continuous guide groove for guiding said tape guide; and

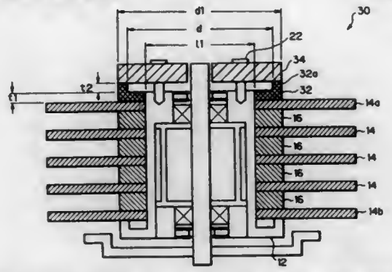
an interconnector which is provided on said drum base so as to interconnect the portions of said drum base which oppose each other across said second elongated slot in a region near an open end of the second elongated slot.

5,550,687

MAGNETIC DISK DRIVE CAPABLE OF REDUCING DISTORTIONS OF DISKS

Takahiro Suzuki, Tokyo, Japan, assignor to Nec Corporation, Tokyo, Japan

Filed Oct. 26, 1994, Ser. No. 330,080
Claims priority, application Japan, Oct. 26, 1993, 5-266818
Int. Cl.[6] G11B *17/02;23/03*
U.S. Cl. 360—98.06 **2 Claims**



1. A magnetic disk drive capable of reducing distortions of magnetic disks, comprising:

a spindle motor rotatable at high speed while supporting a stack of magnetic disks and spacer rings alternating with each other;

a ceramic top spacer mounted on top of the stack, said top spacer having an annular projection on a top surface of said top spacer, said annular projection extending away from the spindle motor and having a pressing diameter which is equal to a pressing diameter of said spindle motor; and

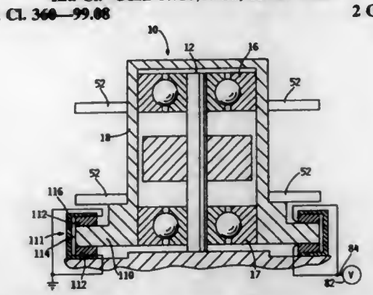
a clamp mounted over said top spacer and abuts said annular projection and said spindle motor for clamping the disks, the spacer rings and said top spacer to said spindle motor, so as to reduce radial distortion of said disks.

5,550,688

CRASH STOP SHOCK RING FOR THE PROTECTION OF DISK DRIVE MOTOR BEARINGS

Akihiko Aoyagi, Fujisawa-Ken, Japan; Zine-Eddine Boutaghou, Rochester, Minn.; Vijayeshwar D. Khanna, Ossining, N.Y.; Suresh Kumar, Peekskill, N.Y., and Muthuthamby Sri-Jayantha, Ossining, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 188,178, Jan. 28, 1994, abandoned. This application May 25, 1995, Ser. No. 450,645
Int. Cl.[6] G11B *17/28;19/20;* **H02K** *7/102*
U.S. Cl. 360—99.08 **2 Claims**



1. A magnetic disk drive for storing data comprising:

a drive motor including a shaft and a rotor rotationally mounted for movement relative to said shaft; a pair of ball bearing assemblies disposed intermediate said rotor and said shaft:

a magnetic disk disposed on said rotor for rotation with said rotor relative to said shaft;

a flange disposed on said rotor extending radially from said rotor and having a pair of planar faces;

a first ring spatially fixed with respect to said shaft and disposed juxtaposed with one of said pair of planar faces of said flange;

a second ring spatially fixed with respect to said shaft and disposed juxtaposed with the other of said pair of planar faces of said flange;

said rings having a state of contraction in a direction perpendicular to said faces when influenced by an electrical potential and a de-energized state when not influenced by said electrical potential;

a source of said electrical potential connected to said rings;

an electrical switch intermediate said source and said rings to connect and disconnect said source and said rings;

whereby said flange is disengaged by said rings when said electrical potential is applied to said rings; and said flange is engaged by said rings when said source is disconnected.

5,550,689

MAGNETIC FLUID SEAL AND GROUND PATH FOR LOW PROFILE DISK DRIVES

Zine-Eddine Boutaghou; Luke A. Cossette, and Richard W. Luoma, All of, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 179,015, Jan. 7, 1994, abandoned. This application Aug. 7, 1995, Ser. No. 512,073
Int. Cl.[6] G11B *17/028;33/14*
U.S. Cl. 360—99.08 **12 Claims**

8. A rigid disk data storage device comprising:

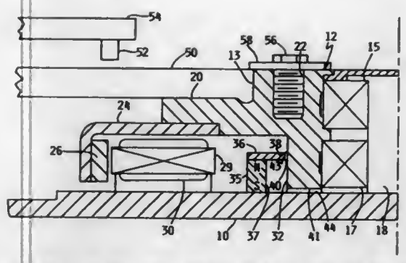
a rigid base member;

a disk carrying hub mounted on a bearing assembly for rotation about a central axis and supported on said base member;

a spindle motor to drive said hub to rotation;

a magnetic fluid seal assembly supported on said base member and presenting an annular flux gap which confronts an outer diameter surface of said hub, said gap being located radially outward from said outer diameter surface of said hub and said bearing assembly and radially inward from said spindle motor, said gap being located within the axial extent of said bearing assembly; and

magnetic fluid retained in said gap.

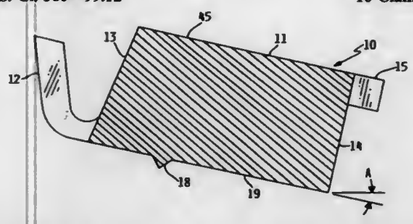


5,550,690

RESILIENT COMPLIANT CLAMP FOR DATA STORAGE DISK DRIVES

Zine-Eddine Boutaghou; Randy J. Bornhorst, and Douglas W. Johnson, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 298,490, Aug. 30, 1994, Pat. No. 5,486,961. This application May 5, 1995, Ser. No. 437,100
Int. Cl.[6] G11B *17/02*
U.S. Cl. 360—99.12 **10 Claims**



1. A clamp for mounting and securing a data storage disk on a hub comprising

an annular body formed of resilient material;

an interrupted flange extending from the outer peripheral surface of said annular body;

resilient flexure portions extending inwardly and upwardly from the inner annular surface of said annular body to fixedly secure said annular body to said hub and to maintain said annular body in a deformed state; and

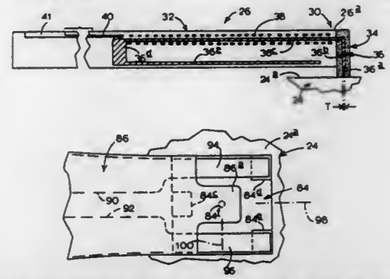
a continuous projection formed at a lower surface of said annular body and extending downward from said annular body in a direction opposite the direction of the upward extension of said resilient flexure portions whereby said projections deform against said a surface of said disk to compressively retain said disk against said hub when said annular body is maintained in said deformed state.

5,550,691

SIZE-INDEPENDENT, RIGID-DISK, MAGNETIC, DIGITAL-INFORMATION STORAGE SYSTEM WITH LOCALIZED READ/WRITE ENHANCEMENTS

Harold J. Hamilton, Santa Clara, Calif., assignor to Censtor Corp., San Jose, Calif.

Continuation-in-part of Ser. No. 783,509, Oct. 28, 1991, abandoned, Ser. No. 806,611, Dec. 12, 1991, Pat. No. 5,174,012, and Ser. No. 760,586, Sep. 16, 1991, abandoned, said Ser. No. 806,611is a continuation-in-part of Ser. No. 632,958, Dec. 21, 1990, Pat. No. 5,073,242, which is a continuation-in-part of Ser. No. 441,716, Nov. 27, 1989, Pat. No. 5,041,432. This application Oct. 22, 1992, Ser. No. 966,095
Int. Cl.[6] G11B *5/60;21/16*
U.S. Cl. 360—103 **17 Claims**



1. An electromagnetic disk drive system for storing and reproducing digital information comprising

at least one rigid disk including magnetic recording surface structure disposed on at least one side of the disk and defining, on said at least one side, plural, concentric, adjacent recording tracks,

motor means operatively connected to said at least one disk for feedback-controlled-speed, powered rotation of the disk,

electromagnetic read/write head structure, and elongate flexure structure operatively connected to said head structure, said head structure and flexure structure collectively having an effective mass of between approximately 1.5-milligrams and 24-micrograms, inclusive wherein said head structure includes a durable pad encasing a magnetic pole and contacting said recording surface structure amid data communication between said pole and surface structure, and

servo-controlled actuator means operatively connected to said flexure structure for positioning the flexure structure, and therethrough said head structure, relative to at least one of said tracks on said recording surface structure.

5,550,692

PROXIMITY RECORDING AIR BEARING SLIDER DESIGN WITH WAIST OFFSET

Peter Crane, Richfield, Minn., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

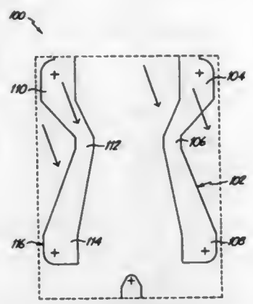
Filed Sep. 29, 1994, Ser. No. 315,282
Int. Cl.[6] G11B *5/60*
U.S. Cl. 360—103 **21 Claims**

1. An air bearing disc head slider for supporting a transducing head proximate a rotating magnetic disc, comprising:

a slider body having a surface with a leading edge, a trailing edge, first and second side edges and a longitudinal center axis;

first and second raised side rails along the first and second edges, respectively, each having a leading section, a trailing section, a waist section therebetween, an inner edge and an outer edge, wherein a ratio of a trailing section width to a waist section width is at least about 1.0; and

wherein the waist sections are offset toward the longitudinal center axis such that the waist sections have a convex shape along the inner edges.

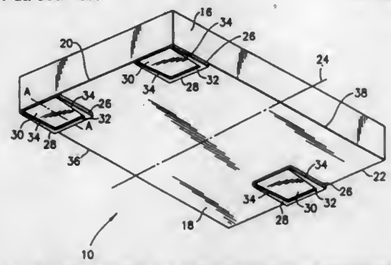


5,550,693

AIR BEARING SLIDER HAVING PROJECTIONS THAT PROVIDE MINIMAL ACTUAL CONTACT AREA

Ferdinand Hendriks, Yorktown Heights, N.Y., and Michel P. Robert, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1994, Ser. No. 333,012
Int. Cl.[6] G11B *5/60*
U.S. Cl. 360—103 **24 Claims**



1. A slider for providing an air bearing between a transducer and a moving recording surface, said slider comprising:
- a platform having a first surface with a leading edge opposite a trailing edge and a lateral axis between said leading edge and said trailing edge;
- a plurality of projections extending from said first surface, each of said projections including a second surface elevated above the first surface and a recess defined by a backwall substantially parallel to said leading edge and side shrouds, wherein said recess provides lift to said slider when said recording surface is moving;
- wherein one of said projections is disposed within a first area located only between said leading edge and said lateral axis and another of said projections is disposed within a second area located only between said trailing edge and said lateral axis, and wherein only said second surface of said projections is in apparent contact with said recording surface when said recording surface is stationary.

5,550,694

MAGNETIC MEMORY DISK STORAGE SYSTEM

Darryl L. Hyde, San Jose, Calif., assignor to Western Digital Corporation, Irvine, Calif.

Filed Jul. 12, 1993, Ser. No. 90,809
Int. Cl.[6] G11B *5/48*
U.S. Cl. 360—104 **1 Claim**

1. A magnetic memory disk storage system comprising:
- a housing;
- at least one rotatable magnetic memory storage disk mounted in the housing;



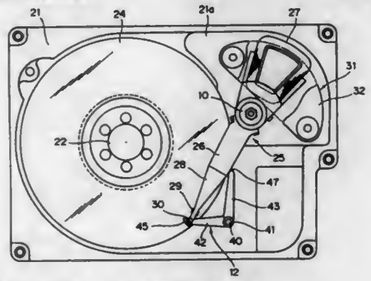
- an actuator assembly pivotably mounted adjacent to the storage disk and including at least a pair of load beam assemblies, with one load beam assembly of the pair adjacent each face of such a storage disk;
- each such load beam assembly comprising:
  - a load beam,
  - a magnetic recording slider adjacent an outboard end of the load beam adjacent a face of the disk for reading and writing data on the disk,
  - an actuator arm welded to the inboard end of the load beam and including a pivot hole, and
  - an alignment ear on the actuator arm;
- a pivot bearing assembly extending through the pivot holes of the load beam assemblies for pivotal support of the actuator assembly;
- a nut threaded on a portion of the bearing assembly for clamping the load beam assemblies together on the bearing assembly with the alignment ears on the actuator arms of all of the load beam assemblies in alignment with each other; and
- a washer between the nut and the load beam assemblies, the washer including:
  - a torque resistance member for isolating torque of the nut from the load beam assemblies, and
  - a connection arm transverse to the plane of the washer; and
- a flexible ribbon cable connected to the connection arm and including electrical conductors for making electrical contact with the slider.

5,550,695

MAGNETIC DISK APPARATUS INCLUDING MAGNETIC HEAD UNLOADING MECHANISM

Takashi Matsumoto, Kawasaki, Japan, assignor to Fujitsu Limited, Japan

Continuation of Ser. No. 60,402, May 11, 1993, abandoned.
This application Nov. 29, 1994, Ser. No. 346,583
Claims priority, application Japan, May 15, 1992, 4-123483
Int. Cl.[6] G11B *5/54*
U.S. Cl. 360—105 **11 Claims**



1. A magnetic disk apparatus comprising:
- a base;

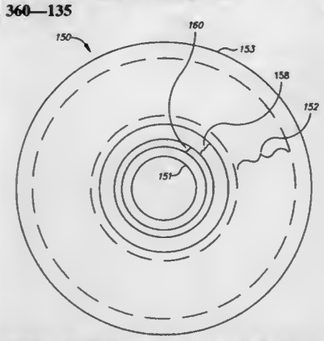
- a spindle erected for rotation on said base;
- drive means for rotating said spindle;
- a magnetic head for performing write/read of data on a magnetic disk that is rotated by said spindle;
- a head arm;
- supporting means for supporting said head arm for rotation on said base;
- a spring arm joined at its one end to one end of said bead arm, said spring arm having the other end supporting said magnetic head;
- actuator means for rotating said head arm, said actuator means being operatively coupled with the other end of said head arm;
- an unloading member set up on said base for rotation in a plane parallel to the plane of rotation of said head arm, said unloading member including a first arm with one end capable of slidably contacting said spring arm, and a second arm with one end capable of abutting on said head arm, said first and second arms being joined together at the other ends, whereby a force of said head arm on said one end of said second arm causes said one end of said first arm to rotate toward contact with said spring arm to unload said magnetic head from said magnetic disk, said first arm having the one end beveled to facilitate its slide contact with the spring arm; and
- urge means for urging said second arm of said unloading member in the direction of said head arm.

5,550,696

MAGNETIC RECORDING DISK HAVING TEXTURED TEST BAND FOR CONTROLLING TEXTURE IN THE SLIDER LANDING ZONE

Thao A. Nguyen, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 27, 1995, Ser. No. 379,410
Int. Cl.[6] G11B *5/82*
U.S. Cl. 360—135 **9 Claims**



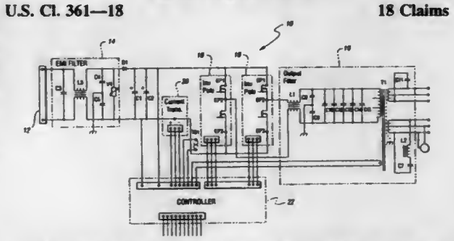
1. A magnetic recording disk for use in a disk drive of the type that positions the carrier supporting the recording head in a textured landing zone on the disk when the disk drive is not operating, the disk comprising:
- a disk substrate;
- a plurality of first generally like and symmetrically-shaped laser-induced bumps for use in forming laser-induced bumps in the landing zone, the first bumps being formed on the surface of the disk substrate in an annular test band;
- a plurality of second generally like and symmetrically-shaped laser, induced bumps for providing texturing in the landing zone, the second bumps being formed on the surface of the disk substrate in an annular textured landing zone radially spaced from the annular test band, the bumps in both the test band and the textured landing zone being formed of the same material as the disk substrate; and
- a magnetic recording layer formed over the disk substrate surface, including over the bumps in the textured landing zone, the magnetic recording layer including a portion located over an annular region of the disk substrate surface that is radially spaced from both the test band and the textured landing zone and that has no bumps formed on it, whereby said magnetic recording layer portion over said annular region forms a data region that is radially spaced from the portion of the magnetic recording layer formed over the textured landing zone.

5,550,697

SYSTEM AND METHOD FOR CONTROLLING DC TO AC VOLTAGE INVERTER

John D. Green, Granville, Ohio, and Ira J. Pitel, Morristown, N.J., assignors to Holophane Corporation, Newark, Ohio

Filed Mar. 18, 1994, Ser. No. 210,612
Int. Cl.[6] H02H *7/122*
U.S. Cl. 361—18 **18 Claims**



1. A system for controlling a DC to AC voltage inverter, the system comprising:
- means for generating one of a plurality of pulse width modulated (PWM) waveforms to convert a DC input voltage to an AC output voltage suitable for use with a non-linear load;
- means for generating an AC output voltage signal representing the AC output voltage;
- means for processing the AC output voltage signal to select one of the plurality of PWM waveforms, the means for processing including
  - means for storing the plurality of PWM waveforms and a plurality of switching patterns, each PWM waveform having one of the plurality of switching patterns associated therewith;
  - means for generating an AC output voltage error signal;
  - means for comparing the AC output voltage error signal to a reference band;
  - means for selecting from storage a first PWM waveform when the AC output voltage error signal falls within the reference band; and
  - means for selecting from storage a second PWM waveform when the AC output voltage error signal falls outside the reference band; and
- means for generating a control signal based on the PWM waveform selected operative to control the means for generating one of a plurality of PWM waveforms.

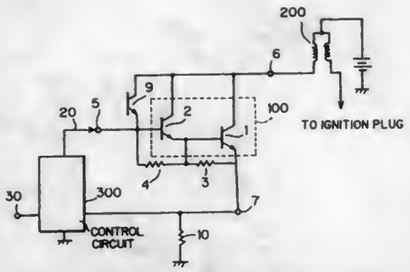
5,550,698

SEMICONDUCTOR DEVICE

Masayuki Tabuchi, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1991, Ser. No. 767,481
Claims priority, application Japan, Oct. 5, 1990, 2-105355
Int. Cl.[6] H01L *29/00*
U.S. Cl. 361—56 **4 Claims**

1. A semiconductor device connected with a high voltage generation coil, for generating high voltage at said high voltage generation coil by blocking current flowing through said high voltage generation coil, comprising:
- an input terminal;
- a first output terminal and a second output terminal;
- a Darlington transistor for controlling current flowing through said high voltage generation coil, a base of said Darlington



transistor being connected said input terminal, a collector of said Darlington transistor being connected to said first output terminal and an emitter of said Darlington transistor being connected to said second output terminal; and

a protection transistor having an emitter connected to said input terminal and a collector connected to said first output terminal,

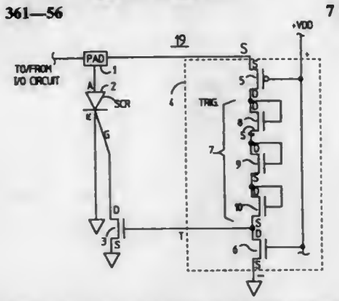
the impurity density at the base region of said protection transistor being lower than impurity density at the base regions of transistors which constitute said Darlington transistor.

5,550,699

HOT PLUG TOLERANT ESD PROTECTION FOR AN IC

Carlos H. Diaz, Palo Alto, Calif., assignor to Hewlett-Packard Co., Palo Alto, Calif.

Filed Aug. 15, 1994, Ser. No. 290,627
Int. Cl.[6] H02H *9/00*
U.S. Cl. 361—56 **7 Claims**



1. An ESD protection circuit for an integrated circuit having a plurality of electrical terminals, the ESD protection circuit comprising:

a reference that serves as a power supply return for electrical currents flowing within the integrated circuit;

a signal node susceptible to ESD via a conductive path coupling the signal node to one of the terminals in the plurality thereof;

an SCR coupled between the signal node and the reference, and also having a gate;

a trigger FET having a drain coupled to the gate of the SCR, a source coupled to the reference, and also having a gate;

a first inverter FET having a source coupled to the signal node, a drain, and also having a gate coupled to a power supply;

a second inverter FET having a source coupled to the reference, a drain, and also having gate coupled to the power supply;

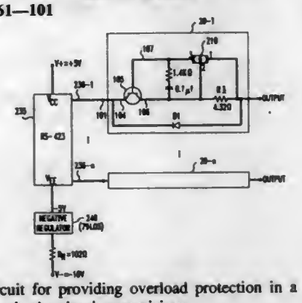
a two terminal network exhibiting a constant voltage drop and coupled between the drain of the first inverter FET and the drain of the second inverter FET; and the gate of the trigger FET being coupled to the drain of the second inverter FET.

5,550,700

INTERCHANGE CIRCUIT OVERLOAD PROTECTION USING DRIVER CURRENT LIMITING

Wayne T. Moore, Clearwater, and John Scarmalis, St. Petersburg, both of Fla., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Oct. 7, 1994, Ser. No. 320,147
Int. Cl.[6] H02H *3/18*
U.S. Cl. 361—101 **3 Claims**



1. A circuit for providing overload protection in a data interchange circuit, the circuit comprising:

a driver device for providing an output signal; and

a current limiting circuit comprising:

a transistor having a base, emitter, and collector, where the emitter receives the output signal;

a current threshold sensor coupled between the base of the transistor and a pin of the data interchange circuit; and

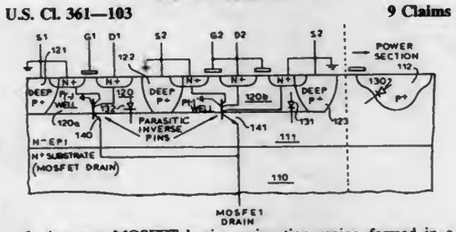
a resistor network for a) coupling the collector of the transistor to the pin of the data interchange circuit, and b) providing a threshold input signal to the current threshold sensor.

5,550,701

POWER MOSFET WITH OVERCURRENT AND OVER-TEMPERATURE PROTECTION AND CONTROL CIRCUIT DECOUPLED FROM BODY DIODE

Bruno C. Nadd, Puyvert, France, and Talbott M. Houk, Culver City, Calif., assignors to International Rectifier Corporation, El Segundo, Calif.

Filed Aug. 30, 1994, Ser. No. 298,383
Int. Cl.[6] H02H *5/04*
U.S. Cl. 361—103 **9 Claims**



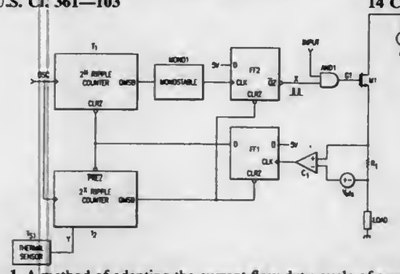
1. A power MOSFET having a junction region formed in a silicon chip and including a fault responsive signal circuit integrated into the silicon chip; said power MOSFET comprising an N-type silicon substrate containing a plurality of cells found in respective P-type bodies formed in said N-type silicon substrate; each of said cells having common source, drain and gate electrodes; a P-type well formed in said N-type silicon substrate; said fault responsive signal circuit being formed in said P-type well; said fault responsive signal circuit including a fault latch circuit means coupled to said gate electrodes for turning off said power MOSFET in response to a fault condition; said fault responsive signal circuit including a bipolar transistor integrated into said P-type well and being connected to be turned on in an inverse mode in response to the forward biasing of the body diode of said power MOSFET; said bipolar transistor shorting said N-type substrate to said P-type well when turned on, and a series connected control MOSFET transistor integrated into a second P-type well being turned off in response to turn on of said bipolar transistor, thereby preventing activation of a parasitic transistor formed of said N-type silicon substrate, said second P-type well and at least one N-type region formed in said second P-type well; said control MOSFET transistor coupled to said fault latch circuit means for said power MOSFET to disable said gates and turn off said power MOSFET when said control MOSFET transistor conducts.

5,550,702

ADAPTIVE DUTY-CYCLE LIMITING FOR OVERLOAD PROTECTION OF INTEGRATED CIRCUITS

Thomas A. Schmidt, Dallas, and Roy A. Hastings, Allen, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 21, 1994, Ser. No. 342,528
Int. Cl.[6] H02H *5/00*
U.S. Cl. 361—103 **14 Claims**



1. A method of adapting the current flow duty-cycle of an output driver to protect the output driver, comprising the steps of:

sensing an overcurrent condition in the current flow of the output driver; setting the duty-cycle of the output driver to flow the current at a given on-off duty-cycle upon sensing the overcurrent condition;

while flowing the current at the given duty-cycle, monitoring the junction temperature of the output driver; and

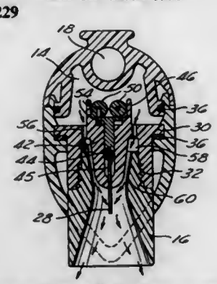
controlling the output driver to flow the current at a lower on-off duty-cycle, less than the given on-off duty-cycle, if the junction temperature rises above a thermal sense trip point during continuation of the sensed overcurrent condition.

5,550,703

PARTICLE FREE IONIZATION BAR

Douglas H. Beyer, Cathedral City; Eugene V. Williams, Desert Hot Springs, and Jose A. Alvarez, Palm Springs, all of Calif., assignors to Richmond Technology, Inc., Redlands, Calif.

Filed Jan. 31, 1995, Ser. No. 392,379
Int. Cl.[6] H05F *3/06*
U.S. Cl. 361—229 **10 Claims**



8. A method for providing a flow of ionized gas while preventing contaminant buildup on an electrode, including the steps of:

(a) providing a supply of gas to a low-pressure plenum;

(b) metering the gas through a plurality of apertures in the low-pressure plenum into a laminar flow channel towards an electrode;

(c) deforming a shroud thereby enlarging the laminar flow channel;

(d) ionizing the flow of gas that passes sufficiently near the electrode; and

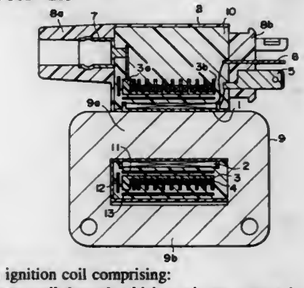
(e) directing the gas flow through the shroud and towards the work station, preventing room air from reaching the electrode during ionization.

5,550,704

IGNITION COIL INCLUDING INORGANIC INSULATOR EXHIBITING CONDUCTIVITY ALONG ITS SURFACE THAN PERPENDICULAR TO ITS SURFACE

Shingo Morita, and Yutaka Ohashi, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 18, 1994, Ser. No. 276,884
Claims priority, application Japan, Feb. 25, 1994, 6-028500
Int. Cl.[6] H01F *27/32*
U.S. Cl. 361—263 **25 Claims**



1. An ignition coil comprising:

a primary coil through which a primary current is conducted in an on/off manner according to ignition timing;

a secondary coil magnetically coupled to said primary coil via a core, for developing a high-tension voltage for ignition by switching on and off of the primary current;

a casing housing said primary and secondary coils;

an insulating resin filled in said casing; and

an inorganic insulator material exhibiting a higher conductivity in a direction along its surface than in a direction perpendicular to the surface, for providing insulation between a high-tension voltage section of said secondary coil inside said casing and conducting components which are internal and external to said casing and devices which are external to said casing.

5,550,705

ELECTRICAL TERMINAL CONNECTION EMPLOYING PLURAL MATERIALS

J. Peter Moncrieff, 408 Mason Rd., Vista, Calif. 92084

Filed May 15, 1995, Ser. No. 441,522
Int. Cl.[6] H01G *4/30;4/232*
U.S. Cl. 361—313 **20 Claims**

1. A structure comprising,

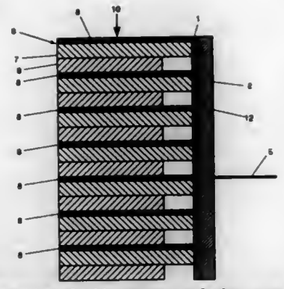
an electrical component,

and a terminal for making external electrical connections to said electrical component,

and a substructure for electrically connecting said terminal to said electrical component,

the improvement comprising the composition of said substructure,

said composition of said substructure comprising a first material adjacent to said electrical component,



said composition of said substructure further comprising a second material adjacent to said first material, said second material having a melting point higher than the melting point of said first material,

said first material being employed in a predetermined first form having a predetermined first amount of material and a predetermined first set of dimensions,

said second material being employed in a predetermined second form having a predetermined second amount of material and a predetermined second set of dimensions,

said first amount of material and said first set of dimensions being related to said second amount of material and said second set of dimensions

such that a first electrical resistance, through said second form employing said second material, for a given length in at least one first direction, is less than a second electrical resistance, through said first form employing said first material, for said given length in said first direction.

5,550,706

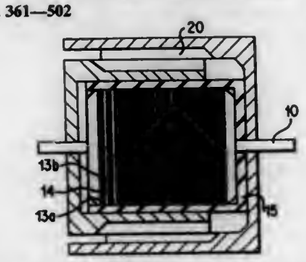
ELECTRODE WITH A LONG-TIME STABILITY AND A DOUBLE-LAYER CAPACITOR FORMED THEREOF

Peter Kurzweil; Barbara Schmid, both of Immenstaad, and Ottmar Schmid, Markdorf, all of, Germany, assignors to Dornier GmbH, Friedrichshafen, Germany

Filed Jun. 30, 1994, Ser. No. 269,117

Int. Cl.[6] H01G *9/00*; C25B *11/04*

U.S. Cl. 361—502 **14 Claims**



1. An electrode having a long-time stability, a high surface capacitance and a low resistance, for a double-layer capacitor, comprising

a chemically stable support;

an active layer of understoichiometric hydrated metal oxides;

a base layer of precious metals arranged on said support; and

an electrically conductive oxidic intermediate layer arranged between said support and said active layer.

5,550,707

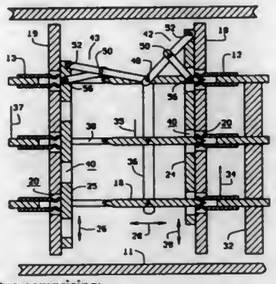
LOW COST POWER SWITCHGEAR

Arthur H. Iversen, 15315 Sobey Rd., Saratoga, Calif. 95070

Filed Feb. 13, 1995, Ser. No. 387,351

Int. Cl.[6] H02B *1/14*

U.S. Cl. 361—617 **11 Claims**



1. Apparatus comprising:

a first electrically insulating member having at least one aperture,

at least one fixed contact,

at least one movable contact movable between a closed current carrying position with said fixed contact and an open current-interrupting position, said movable contact at least partially located in said first insulating member aperture when in said closed current carrying position, and

a movable second electrically insulating member coupled to said movable contact at all times so that when the movable contact moves so does the movable second electrically insulating member and so that when current flow is interrupted by moving said movable contact to said open current-interrupting position, said movable second electrically insulating member covers said first insulating member aperture and extends beyond all edges of said first insulating member aperture, and any arc between said fixed contact and said movable contact is extinguished.

5,550,708

REMOTE ACCESS DISCONNECT AND FUSING ARRANGEMENT

Steven L. Slems, 1491 SW. 21st Ave., Ft. Lauderdale, Fla. 33314

Continuation-in-part of Ser. No. 1,502, Jan. 6, 1993, abandoned. This application Jan. 23, 1995, Ser. No. 376,807

Int. Cl.[6] H02B *1/04*

U.S. Cl. 361—642 **2 Claims**

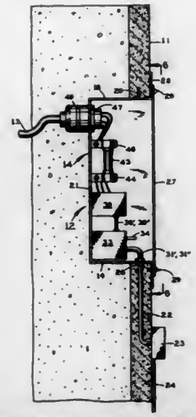
1. A remote access disconnect and fusing arrangement, the arrangement-comprising:

a mounting post extending substantially vertically from the ground for mounting said arrangement, wherein said post has a cutout for receiving said housing at a location along said post at least ten feet and at most fifty feet above the ground;

a lighhting fixture mechanically connected to said mounting post more than fifty feet above ground;

a remote fusing assembly comprising a housing recessed into said cutout and composed of a plurality of panels; ducting means for ducting ac-power means into said housing; said ac-power means including at least two non-grounded hot conductors, disconnect means in said housing connected in series with said hot conductors; a distribution terminal assembly in said housing having a plurality of terminal assembly input terminals each connected to a respective one of the hot conductors via said disconnect means, and a plurality of groups of terminal assembly output terminals, each group of terminal assembly output terminals connected in parallel to a respective one of the terminal assembly input terminals; a plurality of current limiting elements in said housing each having a current limiting element input connected to a respective one of the terminal assembly output terminals and a current limiting element output; and at least one female plug connector mounted on one of said panels, said plug connector having a plurality of female receive terminals, each female receive terminal connected to a respective current limiting element output;

and a remote extension power cable electrically connected to said lighting fixture, extending downwardly from said lighting fixture and electrically connected to said output terminals, for delivering electric power from said remote fusing assembly to said lighting fixture.



5,550,709

EXTERNAL STORAGE DEVICE

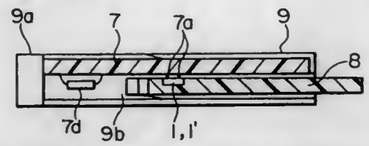
Hiroshi Iwasaki, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

Filed Mar. 4, 1994, Ser. No. 205,451

Claims priority, application Japan, Jul. 23, 1993, 5-182650

Int. Cl.[6] H05K *7/10*

U.S. Cl. 361—684 **11 Claims**



1. An external storage device characterized by comprising:

an external storage device main including,

a thin type external storage device module in which a storage medium series element containing at least one non-volatile semiconductor memory device is packaged, and which is formed into a one-sided sealed package, and

a flat type external connection terminal connected to an input/output terminal of the storage medium series element and led and exposed to a backside of the thin type external storage device module; and

an external storage device unit including,

means for engaging, insertedly and rigidly attaching and detaching the external storage device main,

a resilient contact electrically connecting to the flat type external connection terminal of the external storage device main, and

means for driving and controlling the storage medium series element.

5,550,710

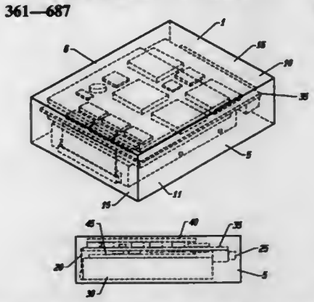
PACKAGING AND COOLING STRUCTURE FOR THE PERSONAL PROCESSOR MODULE

Uriel Rahamim, Palo Alto; Randy Minobe, San Jose; Ahmad A. Chahrour, Santa Clara, and Raanan Ben-Zur, Campbell, all of Calif., assignors to Hitachi Computer Products (America), Inc., Santa Clara, Calif.

Filed Sep. 9, 1994, Ser. No. 303,318

Int. Cl.[6] H05K *7/14*; G06F *13/00*

U.S. Cl. 361—687 **36 Claims**



1. A computer system module having high performance and transportability, known as a personal processor module (PPM), for use with any one of a plurality of external clocking stations, each said docking station providing necessary computer system components not provided by said PPM so that said PPM and said docking station when coupled together form an operational computer system, said PPM being operable solely when coupled with one of said docking stations, said necessary computer system components provided by said docking station comprising a power supply, an input device, and an output device; said docking station further comprising a docking station connector for electrically connecting said docking station to said PPM, said PPM comprising:

a case having a top and bottom wall, a pair of side walls and a front and back wall;

a docking connector which is securely attached to one of said walls of said case;

at least one printed circuit board (PCB) which fits within said case and is electrically connected to said docking connector and has components of said PPM attached to and electrically connected to said PCB, said components including a processor and related logic including a memory;

a mass storage device which fits within said case and is electrically connected to said printed circuit board and which provides data storage for said processor and related logic;

cooling means adjacent said at least one printed circuit board within said case and also adjacent to one of said walls of said case for transferring heat away from said components of said PPM to said walls of said case;

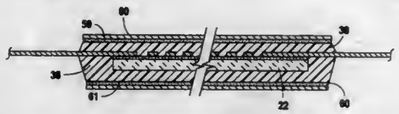
wherein said components of said PPM further comprise a bridge device for coupling a bus in said PPM in said docking station via said docking connector, said bridge device providing PPM bus to docking station bus communication and bus signal conditioning including bus signal isolation and bus signal voltage conversion when required, said bridge device being adaptable to alter said communication and said bus signal conditioning in response to modifications to said PPM components so that said PPM is easily upgradeable and retains compatibility with unmodified ones of said docking station;

said processor, said related logic, and said mass storage device being driven by said power supply of said docking station and exchanging data with said docking station only via said docking connector.

5,550,711
ULTRA HIGH DENSITY INTEGRATED CIRCUIT PACKAGES

Carmen D. Burns; Jerry Roane, and James W. Cady, all of Austin, Tex., assignors to Staktek Corporation, Austin, Tex.

Continuation of Ser. No. 186,827, Jan. 24, 1994, which is a continuation of Ser. No. 884,066, May 15, 1992, which is a continuation-in-part of Ser. No. 561,417, Aug. 1, 1990. This application May 8, 1995, Ser. No. 436,902
Int. Cl.[6] H05K *7/00*; **H01L** *23/28*
U.S. Cl. 361—728 **7 Claims**

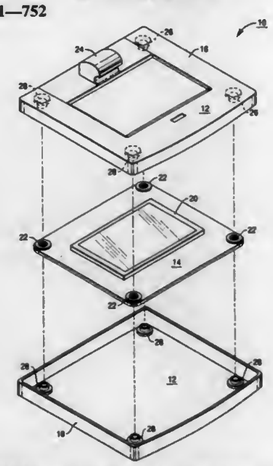


1. A thin and durable integrated circuit package comprising:
an integrated circuit element comprising an integrated circuit formed in a semiconductor substrate;
a protective casing layer surrounding said integrated circuit element, said protective casing layer having an upper surface, a lower surface and a perimeter wall; and
a moisture-barrier layer, comprising a layer of silicon nitride, applied using a low temperature plasma deposit process to either said entire upper surface or said entire lower surface of said protective casing layer.

5,550,712
APPARATUS FOR CONTAINING AND SUPPORTING ELECTRONIC COMPONENTS

Robert J. Crockett, Central, S.C., assignor to NCR Corporation, Dayton, Ohio

Continuation of Ser. No. 292,637, Aug. 18, 1994, abandoned, which is a continuation of Ser. No. 115,300, Sep. 1, 1993, Pat. No. 5,363,276. This application Jan. 19, 1995, Ser. No. 374,057
The portion of the term of this patent subsequent to Sep. 1, 2013, has been disclaimed.
Int. Cl.[6] H05K *5/00*
U.S. Cl. 361—752 **10 Claims**

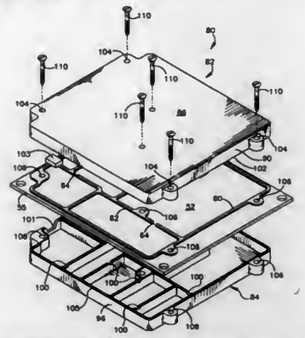


1. An apparatus for containing and supporting electronic components, comprising:
a housing;
an elastomeric grommet positioned within said housing; and
a base upon which electronic components are mounted, a portion of said base being secured to said elastomeric grommet, wherein all portions of said base are spaced apart from said housing and wherein said electronic components comprise a computer.

5,550,713
ELECTROMAGNETIC SHIELDING ASSEMBLY FOR PRINTED CIRCUIT BOARD

Stephen M. Pressler, Uniontown; James J. Friedmann, Canton, and Donald 1. Sloan, Stow, all of Ohio, assignors to Aironet Wireless Communications, Inc., Fairlawn, Ohio

Filed Sep. 6, 1995, Ser. No. 524,248
Int. Cl.[6] H05K *9/00*
U.S. Cl. 361—818 **15 Claims**



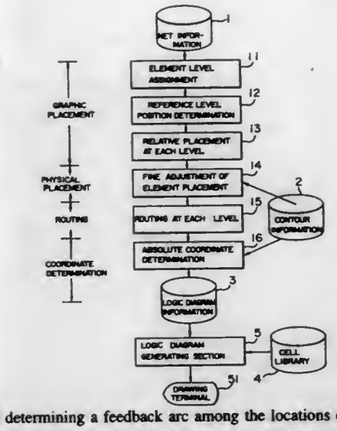
1. An electromagnetic shielding assembly for a PC board having ground trace segments disposed on a surface of the board, the shielding assembly comprising:
a) a PC board cover adapted to be secured to the board surface, the cover including an integral base portion and fencing extending outwardly from a surface of the base portion, the fencing includes:
i) an outer fencing segment having a peripheral edge configured to overlie an outermost ground trace segment on the PC board surface when the cover is secured to the board surface; and
ii) a plurality of interior fencing segments disposed within the outer fencing segment, each of the plurality of interior segments having a peripheral edge configured to overlie a different ground trace segment disposed within the outermost ground trace segment on the board surface;
b) a fastener to secure the cover to the PC board surface; and
c) a sealing gasket disposed between said ground trace segments and said cover to seal the peripheral edges of the outer and interior fencing segments to corresponding ground trace segments when the cover is secured to the PC board surface.

5,550,714
SCHEMATIC GENERATOR AND SCHEMATIC GENERATING METHOD

Tamotsu Nishiyama, Hirakata, Japan, assignor to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Sep. 6, 1989, Ser. No. 403,452
Claims priority, application Japan, Sep. 9, 1988, 63-227030
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—490 **45 Claims**

1. A method of assigning a level to a node of a net diagram, said method comprising:
(a) detecting loops formed by nodes and arcs in a net diagram;
(b) detecting locations at which a maximum overlapping of the loops detected in step (a) exists, each of said locations comprising at least one arc by which at least two nodes are serially connected to one another;

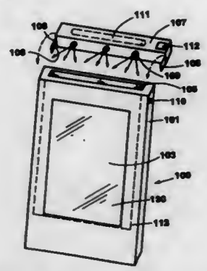


(c) determining a feedback arc among the locations detected in step (b), said feedback arc including a disconnection node constituting an end-point node of said feedback arc; and
(d) assigning a level to said disconnection node.

5,550,715
EXTERNAL LIGHT SOURCE FOR BACKLIGHTING DISPLAY

Jeffrey C. Hawkins, Redwood City, Calif., assignor to Palm Computing, Inc., Los Altos, Calif.

Filed Dec. 10, 1993, Ser. No. 165,363
Int. Cl.[6] F21V *8/00*
U.S. Cl. 362—31 **11 Claims**

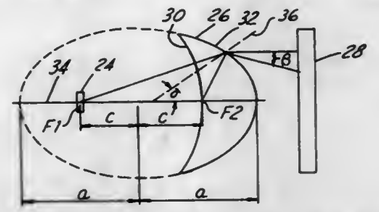


1. A display illuminating system for a computing device, comprising:
a. a case having a transflective display and a light transmitting input;
b. at least one light emitting element, positioned externally from the case and removably affixed thereto, for emitting light into the light transmitting input; and
c. a light directing element comprising a light conducting panel disposed within the case and positioned with respect to the light transmitting input and transflective display so as to receive light emitted by the light emitting element into the light transmitting input and directing such light through the transflective display, thereby illuminating the display.

5,550,716
REDUCED PACKAGE DEPTH LOW PROFILE HEADLAMP

Mahendra S. Dassanayake, Farmington Hills, and Jeffrey A. Erion, Plymouth, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 18, 1994, Ser. No. 342,065
Int. Cl.[6] F21V *8/00*; **B60Q** *1/00*
U.S. Cl. 362—32 **10 Claims**

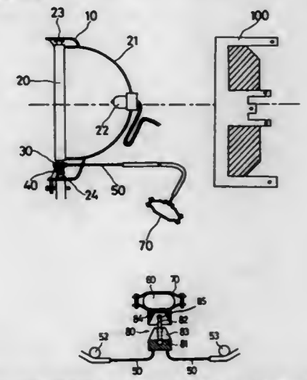


1. A forward lighting system for an automotive vehicle having a longitudinal axis parallel to a horizontal road plane, said lighting system comprising:
an elongated light source for emitting light in a direction substantially parallel to said longitudinal axis, said light source having a length longer than a width, said length forming a predetermined angle with respect to said horizontal road plane;
a converging lens having a spherical inner surface and an elliptical outer surface, said elliptical outer surface having a first and second focal point, said light source located at the first focal point, said radius of said spherical lens having a length equal to the distance between the first and second focal point, said spherical lens centered at said first focal point; and
a diffusion lens adjacent said elliptical outer surface of said converging lens.

5,550,717
DIRECTION TURNING DEVICE FOR A HEADLIGHT OF AN AUTOMOBILE

Winner Liao, No. 27, hsiang 47, san ho road, sec 1., San Chung county, Taipei hsien, Taiwan

Continuation of Ser. No. 191,819, Feb. 4, 1994, abandoned. This application Apr. 10, 1995, Ser. No. 419,955
Int. Cl.[6] B60Q *1/076*; *1/072*
U.S. Cl. 362—41 **5 Claims**



1. A direction turning system for a left and right headlight of an automobile comprising:
a left and right headlight assembly, each headlight assembly comprising:

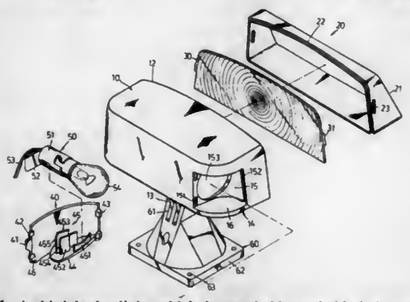
a curved cover inside a housing of said headlight;
a movable frame having an upper rotating axis and a lower rotating axis pivotally connected to said curved cover respectively,
a reflector having a light bulb in a center of the reflector and being fixed to said movable frame,
a spool perpendicularly fixed on said lower rotating axis of said movable frame;
a spring underneath said spool and surrounding said lower rotating axis, said spring having an upper end secured at said spool and a lower end secured adjacent an inside of said curved cover;
said turning system further comprising:
a pair of control cables having their first ends connected to said spools of said left and right headlight assemblies and their second ends extending outside said curved covers and around a respective turning point at a bottom of said automobile and then connected to an electromagnetic actuator, said electromagnetic actuator comprising a seat member set at a bottom end of a positioning clamp, having a fitting cavity, a rocking rod hingedly connected to said seat member in said fitting cavity, a moving member slidingly connected to said rocking rod, and a base member connected to said rocking rod and said control cables, and
an oscillating arm being held by said positioning clamp and connected to a steering system of said automobile, wherein said oscillating arm sways said movable frame of said headlights toward a direction of a turn of said automobile.

5,550,718

THIRD BRAKE LIGHT FOR AUTOMOBILES

Jack Shy, Suite 1, 11F, No. 95-8, Chang Ping Rd., Sec. 1, Taichung, Taiwan

Filed Feb. 28, 1994, Ser. No. 202,376
Int. Cl.[6] B60Q *1/26*
U.S. Cl. 362—80.1 **4 Claims**



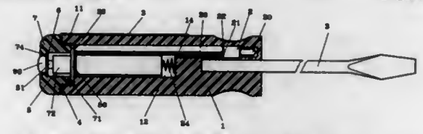
1. A third brake light which is attachable to behind the rear windshield of an automobile comprising:
a generally rectangular lamp shade, said shade comprising an upper wall and a lower wall connected by an arcuate wall therebetween to define a lamp chamber and an opening on the fore side thereof, said walls being internally laminated with reflective material, an elongate fillister formed around the interior surface of said walls adjacent the edge of said opening, another opening formed on a corner of said arcuate wall and a lug means thereof extended downward at an appropriate center of the bottom of said chamber therefrom;
a visor connected to the fore side of said shade, said visor comprising a pair of triangular lateral walls connected by a narrower upper wall and a wider lower wall to define a four sided rectangular housing having a sloped fore side, a pair of retaining slots formed on said lateral walls respectively and an elongate fillet means formed around the outer surface adjacent a rectangular rear edge thereof in registry with said fillister of said shade;
a red color reflector, said reflector comprising a flat rectangular body and a pair of snap tabs thereof formed on lateral sides respectively in registry with said retaining slots of said visor;
an interior arcuate compartment abutting said opening of said arcuate wall to define a roughly sector receiving space therebetween, said compartment comprising on first end a pair of retaining recesses, the second end a vertical slot and a circular passage formed on said compartment adjacent said recesses;
an arcuate rectangular cover for removably closing said opening of said arcuate wall, said cover comprising on first lateral side a pair of snap tabs, a pull means and a recess, the second lateral side a pair of retaining tabs and a platform on the bottom which has a attachment member thereon for the releasably disposition therein of a lamp receptacle which includes a socket with an electric bulb, a pair of lead-in wires and an inversely bent retainer means thereof;
a roughly cone shaped stand member, said stand member comprising vertical slots which is made in registry with said lug of said shade with axle recesses thereon at the top thereof for pivotal engagement with said lug therein by a threaded axle pin and a rectangular base seat having vertical screw apertures thereon for the disposition of said brake light onto an automobile by means of screws;
whereby, said removable cover facilitates a ready replacement of said electric bulb therefrom.

5,550,719

SCREW DRIVER WITH A FLASHLIGHT

Shang-Tai Kuo, No. 21 Lane 351 An Chung Road Sec 6, Tainan, Taiwan

Filed Apr. 11, 1995, Ser. No. 419,883
Int. Cl.[6] B25B *23/18*
U.S. Cl. 362—120 **1 Claim**



1. A screw driver with a flashlight comprising:
a grip having a female thread in a bottom end, a battery chamber extending inward from an inner end of said female thread for placing a battery therein, a conducting groove bored lengthwise beside the battery chamber and extending to near a front end of said grip, but not protruding out of the front end, a driver rod tube beside the conducting groove with an opening on the front end of said grip, and a book hole near a bottom end of the conducting groove;
a lamp base contained in said conducting groove of said grip, having a negative pole and a positive pole in a bottom end, said negative pole and said positive pole separated from each other, a short wire connected with the negative pole and extending rearward and having its rear end connected with a helical spring, and a conductive elongate bar connected to the positive pole and extending rearward in parallel to the short wire of the negative pole and having a hook at a rear end;
a button switch contained in a switch hole in a bottom cap, having a conducting disc at a top end thereof to contact with the rear end of the elongate bar and a positive pole of a battery;
an inner cap provided to cover a rear end of said button switch;
said bottom cap having a male-threaded inner end portion to engage said female thread of said grip, a center sloped hole provided in a rear end of the cap, said switch hole provided in the male-threaded portion, a through hole communicating with said switch hole and said sloped hole, said through hole fitting with said inner cap firmly, a hangar and a gasket provided to fit around said male-threaded portion and sandwiched between said bottom cap and said rear end of said grip after said bottom cap is combined with said grip; and

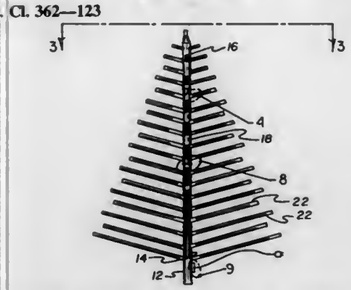
said lamp base together with said short wire, said helical spring and said elongate conducting bar being placed in said conducting groove of said grip, said belical spring being located in the top end of said battery chamber, said book of said conducting bar booking said hook hole, a lamp fixed on top of said lamp base near the front end of said grip, a battery being placed in said battery chamber with a negative bottom in contact with the top of said helical spring, said inner cap and said button switch being placed in the switch hole of said bottom cap, and said male-threaded portion being screwed tightly into the female thread of said grip.

5,550,720

ARTIFICIAL CHRISTMAS TREE WITH ELECTRIC SEPARABLE SEGMENTS

Grant A. Carroll, 801 Palo Duro St., Amarillo, Tex. 79106

Filed Jun. 26, 1995, Ser. No. 494,403
Int. Cl.[6] F21P *1/02*
U.S. Cl. 362—123 **3 Claims**



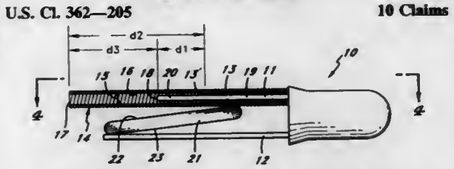
1. An artificial Christmas tree with electric separable segments, comprising, in combination:
a trunk fabricated of a plurality of separable sections including a lowermost section, an uppermost section and intermediate sections therebetween;
a plurality of branches, each with a pivot pin coupled to an adjacent portion of one of the separable sections to allow movement between a raised inoperative storage position parallel with the trunk sections and a deployed operative position wherein the branches form an acute angle of about 60 degrees with its associated trunk section, each of the branches having artificial needles extending therefrom in a generally radial direction;
a base adapted to be positioned on a recipient surface such as a floor, the base having an upper central section adapted to removably receive a lower extent of the lowermost trunk section;
electrical components in each of the trunk sections and extending outwardly into each of the branches with associated electric lights for the illumination of the branches and tree when assembled;
an electrical receptacle at an upper extent of the lowermost trunk section, at a lowermost extent of the uppermost trunk section and at an upper and lower extent of each intermediate trunk section;
a plurality of electrical connectors, each electrical connector adapted to connect an electrical receptacle of adjacent trunk sections for providing electricity throughout the entire tree; and
a transformer located in the base for converting alternate current from a source of potential from a line to the electrical components within the trunk sections and branches.

5,550,721

MOTION SENSITIVE LIGHT AND BATTERY ASSEMBLY SWITCHED ON AND OFF BY THE OSCILLATION OF A HELICAL SPRING

Thomas C. Rapisarda, Pico Rivera, Calif., assignor to Carmen & Thomas Rapisarda Enterprises, Monrovia, Calif.

Filed May 8, 1995, Ser. No. 437,617
Int. Cl.[6] F21L *11/00*
U.S. Cl. 362—205 **10 Claims**



1. A process for intermittently and briefly sustainedly energizing an electrically powered light comprising:
electrically connecting a straight, conductive lead to a first lead of the electrically powered light having first and second leads;
insulating a portion of said straight, conductive lead to provide an insulated portion and leaving at least an exposed end terminal;
supporting a flexible, belical spring over at least a portion of said insulated portion of said straight, conductive lead, said belical spring having a conductive inner surface, said flexible, belical spring having a central axis;
positioning said flexible, helical spring so that when said spring is at rest it surrounds, overhangs but does not touch said exposed end terminal, the length that said spring overhangs said conductive end terminal being a overhanging length;
abruptly moving said straight, conductive lead in a direction so that the overhanging length exhibits a wagging movement, said wagging movement being sufficient that the conductive inner surface contacts said exposed end terminal and is deflected thereby and caused to move in an opposite direction by contact with said conductive end terminal; and
contacting said spring to one lead of a source of electrical energy and contacting another lead of said source of electrical energy to said second lead of said electrically powered light whereby when said conductive inner surface of said spring contacts said exposed end terminal, a circuit is completed in an intermittent and briefly sustained manner.

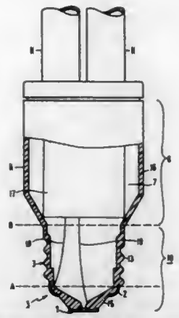
5,550,722

ELECTRIC LAMP

Lambertus J. M. Bouwman, Eindhoven; Guillaume M. P. G. Hermes, Terneuzen, and Cornellis J. Janson, Eindhoven, all of, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 10, 1993, Ser. No. 105,205
Claims priority, application European Pat. Off., Aug. 10, 1992, 92202455
Int. Cl.[6] F21V *2302*
U.S. Cl. 362—221 **9 Claims**

1. An electric lamp, comprising:
a) a light source which is energizable for emitting light;
b) a housing having a first end holding said light source and an opposing, second end;
c) a lamp cap arranged at said second end of said housing and enclosing a space with said housing, said lamp cap comprising a base portion and a shell portion, said shell portion disposed between said base portion and said housing, said base portion carrying a first electrical contact and said shell portion carrying a second electrical contact, said second electrical contact comprising a band of conducting material circumferentially extending about said shell portion, said band being located at the end of said shell portion remote from said housing and having an axial dimension substantially smaller than the axial length of said shell portion, and said base portion and said shell portion each comprising a circumferen-



tial band of insulating material at opposing axial sides of said band of conductive material which comprises said second electrical contact; and

d) a ballast for operating said light source, said ballast being disposed within the space enclosed by said housing and said lamp cap and being electrically connected to said light source and to said first and second contacts.

5,550,723

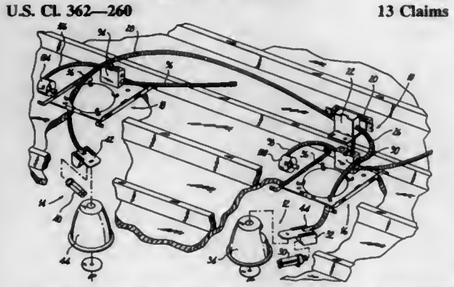
APPARATUS AND METHOD FOR RETROFITTING INCANDESCENT LIGHTING FIXTURES

Allan Ullman, Lattingtown Rd., Glen Cove, N.Y. 11542

Filed Aug. 15, 1994, Ser. No. 290,397

Int. Cl.[6] F21V *23/00*

U.S. Cl. 362—260 **13 Claims**



1. A method of retrofitting a plurality of adjacent incandescent lighting fixtures for fluorescent service, said method comprising the steps of:

a) removing an existing incandescent lighting unit from each of a plurality of adjacent lighting fixtures;

b) mounting a ballast assembly on one of said plurality of adjacent lighting fixtures; and

c) installing a fluorescent lighting unit, powered by said ballast assembly, in each of said plurality of adjacent lighting fixtures.

5,550,724

ELECTROD HOUSING AND CAP ASSEMBLY

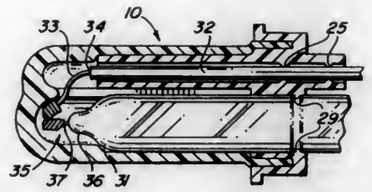
Herbert F. Moulton, 4525 W. Marlette, Glendale, Ariz. 85301

Filed Sep. 23, 1994, Ser. No. 311,203

Int. Cl.[6] F21V *31/02*

U.S. Cl. 362—267 **11 Claims**

11. A high voltage inert gas sign system comprising an inert gas tube, an inert gas tube electrode integrally formed with said inert gas tube, a power supply cable, an electrical connection operatively interposed between said electrode and said power supply cable; and a doubled back, watertight electrode housing and cap



assembly operatively disposed about said electrode, said electrical connection and a portion of said power supply cable in frictional, sealing engagement therewith.

5,550,725

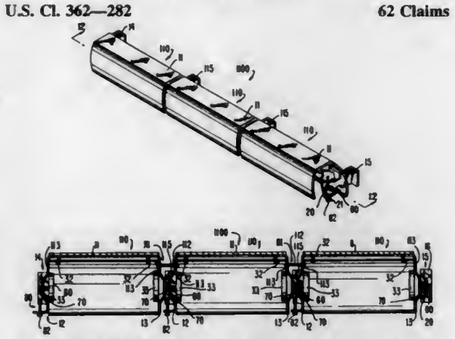
ADJUSTABLE LUMINAIRE AND MOUNTING SYSTEM THEREFOR

Sylvan R. Shemitz; David B. Miller, and Gregory L. Moler, all of Woodbridge, Conn., assignors to Sylvan R. Shemitz Designs, Inc., West Haven, Conn.

Filed Nov. 3, 1994, Ser. No. 333,856

Int. Cl.[6] F21V *21/29*

U.S. Cl. 362—282 **62 Claims**



1. An adjustable luminaire for attachment to a mounting surface, said adjustable luminaire comprising:

an elongated reflector having first and second ends, said reflector extending lengthwise in a first direction between said first and second ends;

two end brackets, each of said end brackets having:

an end bracket flange for mating with said reflector, and

an end plate substantially perpendicular to said flange; and

two mounting brackets for attaching said adjustable luminaire to said mounting surface, each of said mounting brackets having:

a mounting flange for attaching to said mounting surface, and

a mounting plate substantially perpendicular to said mounting flange for attaching to said end plate; wherein:

at each said end, one of said end plate and said mounting plate bears a mounting stud and the other of said end plate and said mounting plate has a hole therein for rotatably receiving said mounting stud, whereby said reflector is rotatably adjustable within a range of adjustment about an axis extending from said first end to said second end along said first direction;

each said mounting plate has a mounting plate edge; and

at least one of said end plates has a brake for cooperating with the mounting plate edge of a respective one of said mounting plates to lock said reflector against rotation about said axis.

5,550,726

AUTOMATIC CONTROL SYSTEM FOR LIGHTING PROJECTOR

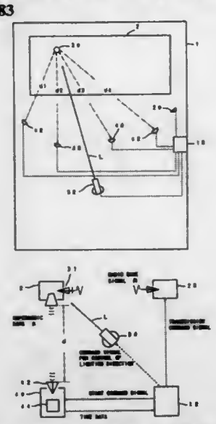
Yoshio Hiromachi, and Tsunehisa Kawahara, both of Tokyo, Japan, assignors to Ushio U-Tech Inc., Tokyo, Japan

Filed Sep. 29, 1993, Ser. No. 128,804

Claims priority, application Japan, Oct. 8, 1992, 4-293943; Oct. 8, 1992, 4-293944; Oct. 8, 1992, 4-293945

Int. Cl.[6] F21P *5/00; G01S 5/00*

U.S. Cl. 362—383 **20 Claims**



1. An automatic control system for a lighting projector, comprising:

a central control unit;

a radio wave transmitter for transmitting a radio wave signal according to a transmission command signal from the central control unit;

a supersonic wave transmitter held by a moving object and adapted to transmit a supersonic wave by detecting the radio wave signal;

a plurality of supersonic wave detecting devices each having a time counter which is initialized by a start command signal from the central control unit to start instrumentation, adapted to stop the instrumentation of the time counter by detecting the supersonic wave transmitted from the supersonic wave transmitter, and disposed in different stationary positions; and

a lighting projector provided in a stationary position and having a drive mechanism for shifting its lighting direction,

said central control unit including:

a timing-system control part, which sends out a transmission command signal to the effect that a radio wave signal is intermittently transmitted, to the radio wave transmitter, and at the same time as the sending of the transmission command signal, the start command signal to the time counters in all the supersonic wave detecting devices;

an arithmetic part for calculating a coordinate position of the object in a space coordinate system preset on the basis of time data according to the time determined by the time counters in the supersonic wave detecting devices and positional data according to coordinate positions occupied by the supersonic wave detecting devices in the space coordinate system; and

a lighting control part for sending out a command signal for control of the lighting direction of the lighting projector on the basis of a positional data according to the thus-calculated coordinate position of the object and a positional data according to a coordinate position of the lighting projector in the space coordinate system.

5,550,727

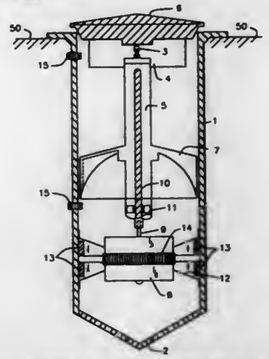
OUTDOOR ILLUMINATOR

Thomas P. Fenyvesy, 360 Monastery La., Matawan, N.J. 07747

Filed Jul. 24, 1995, Ser. No. 506,068

Int. Cl.[6] B60Q *1/06*

U.S. Cl. 362—386 **7 Claims**



1. An outdoor illuminator for the illumination of front gardens, parks, recreation areas and the like, comprising:

a lamp post;

a transparent lampshade mounted on said lamp post and having a cover plate;

a light source mounted within said lampshade;

an underground cabinet having closed walls, a bottom plate, an opening and a rim;

a guide piston within said cabinet and connected to said lamp post;

and means for moving said guide piston upwardly and downwardly;

whereby said means moves said guide piston to close said opening of said underground cabinet when moved upwardly, and whereby said means moves said guide piston to seat said cover plate on said rim of said cabinet when moved downwardly;

wherein said means includes a compression spring; and

wherein said compression spring is coupled between said bottom plate of said cabinet and said guide piston, wherein said guide piston include a pair of fixing pins, and wherein said walls of said cabinet are provided with a plurality of fixing grooves to receive said fixing pins for the raising and lowering of said transparent lampshade.

5,550,728

CHARGE PUMP CONVERTER STRUCTURE

Denis Ellis, Limerick, Ireland, assignor to Analog Devices, Inc., Norwood, Mass.

Filed Apr. 18, 1994, Ser. No. 228,722

Int. Cl.[6] H02M *3/18*

U.S. Cl. 363—60 **4 Claims**

1. An efficient charge pump inverter disposable between an electrical supply source and a load circuit, comprising:

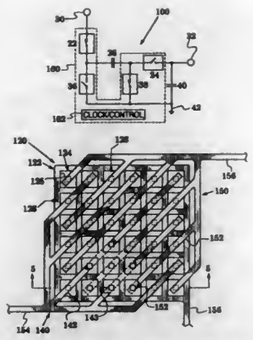
a switch network;

a reservoir capacitor embedded in said switch network and arranged therein to be available to said load circuit for supplying current thereto; and

a pump capacitor embedded in said switch network and having first and second leads;

wherein said switch network is configured to connect said first pump capacitor lead to said supply source for conduction of charge therefrom in a first switching phase and to connect said second pump capacitor lead to said reservoir capacitor for conduction of charge thereto in a second switching phase;

and said switch network is comprised of a plurality of MOS transistors wherein each of said transistors includes:



a) a planar gate configured to define a two dimensional array of spaced apertures which are orthogonally arranged in rows and columns;

b) a plurality of source regions; and

c) a plurality of drain regions with each of said source regions and said drain regions positioned within a different one of said apertures and said source regions and said drain regions arranged in an alternating relationship along said rows and said columns so that current flows in a substantially radial pattern between each of said source regions and surrounding ones of said drain regions.

5,550,729

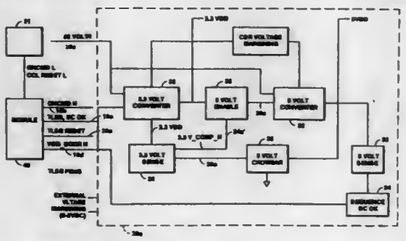
POWER SEQUENCING CONTROL

Daniel Wissell, Acton, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 9, 1994, Ser. No. 257,757

Int. Cl.[6] H02M *7/00*

U.S. Cl. 363—65 **5 Claims**



1. An apparatus comprising:

means, responsive to a control signal, for asserting a voltage supply signal;

means responsive to the output of said asserting means for sensing the level of voltage at the output of said asserting means and for providing an enable signal in response to the output of said asserting means reaching a desired value; and

means responsive to said enable signal for providing a second supply voltage at a second different voltage level.

5,550,730

POWER CONVERTING APPARATUS FOR SYSTEM INTERCONNECTION

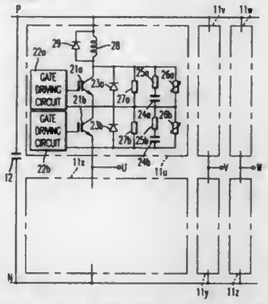
Nagataka Seki, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 10, 1995, Ser. No. 402,334

Claims priority, application Japan, Mar. 11, 1994, 6-040750

Int. Cl.[6] H02M *7/5387;3/24*

U.S. Cl. 363—132 **33 Claims**



1. A power converting apparatus for system interconnection, comprising:

self-commutated converter means including a semiconductor value and having a DC terminal for connection to a DC power supply and an AC terminal; and

said semiconductor valve comprising

switching circuit means including a nonlatch device having a driving circuit, and a unidirectional rectifying element connected in parallel to said nonlatch device,

first means connected in series with said nonlatch device, for suppressing voltage when said nonlatch device is turned on, and

second means, connected in parallel to said nonlatch device, for suppressing voltage when said nonlatch device is turned off, said second means including a clipper circuit.

5,550,731

METHOD AND APPARATUS FOR IMPLEMENTING A DATABUS VOTER TO SELECT THE COMMAND SIGNALS FROM ONE OF SEVERAL REDUNDANT ASYNCHRONOUS DIGITAL PROCESSING UNITS

Douglas O'Brien Jackson, 4460 Ferncroft Rd. Street, Mercer Island, Wash. 98040

Continuation of Ser. No. 233,142, Apr. 25, 1994. This application Aug. 17, 1995, Ser. No. 516,274

Int. Cl.[6] G06F *15/16*

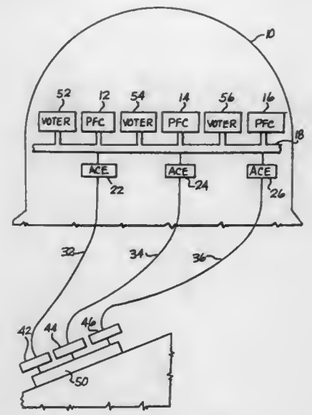
U.S. Cl. 364—133 **22 Claims**

1. A parallel digital processing system comprising:

a databus;

a plurality of asynchronous, digital processing units connected to said databus, each processing unit receiving data signals over said databus and producing output command signals, the processing units operating in parallel and redundant one to the next; and

a databus voter connected to said databus for receiving the output command signals from each of the processing units and, responsive to a predetermined voting algorithm, outputting onto said databus as the voted command signal a selected one of said received command signals.



5,550,732

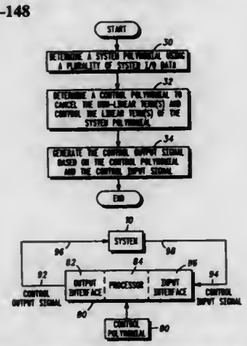
CONTROLLER FOR NONLINEAR SYSTEMS

Shay-Ping T. Wang, Long Grove; Dan Teng, Wheeling, and David A. Hayner, Arlington Heights, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 19, 1994, Ser. No. 358,291

Int. Cl.[6] G05B *13/04*

U.S. Cl. 364—148 **3 Claims**



1. A controller for controlling a system having a system input and a system output, the controller comprising:

an input interface, that receives a control input signal based on the system output;

an output interface, for generating a control output signal in response to a control output value, the control output signal coupled to the system input; and

a processor, responsive to the control input signal, for generating the control output value based on a control polynomial and the control input signal, the control polynomial having a plurality of cancellation terms and a plurality of control terms, the plurality of cancellation terms calculated to cancel a plurality of nonlinear terms of a system polynomial, and the plurality of control terms calculated to control a plurality of linear terms of the system polynomial, wherein the system polynomial expresses the system output in terms of the system input and wherein the system polynomial is determined using a plurality of system I/O data.

5,550,733

VELOCITY CONTROL METHOD FOR PREVENTING OSCILLATIONS IN CRANE

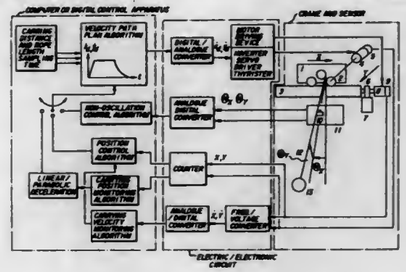
Ji-Seop Yun; Byung-Seok Park; Jae-Seol Lee, and Hyun-Su Park, all of Daejeon-Si, Rep. of Korea, assignors to Korea Atomic Energy Research Institute, Daejeon-Si, Rep. of Korea

Filed May 19, 1994, Ser. No. 246,337

Claims priority, application Rep. of Korea, Mar. 25, 1994, 94-6026

Int. Cl.[6] G05B *11/32*

U.S. Cl. 364—174 **5 Claims**



1. A velocity control method for preventing oscillations in a crane using a computer or a digital control apparatus for removing oscillation, comprising:

measuring oscillation angle, velocity, and position by means of a two-dimensional velocity and position measuring device and by means of a two-dimensional oscillation angle measuring device:

feeding the measured data to a computer and the like to drive an electric motor for a trolley in accordance with the computed velocity based on a digital non-oscillation control algorithm as follows,

$\dot{x}(n)=\dot{x}(n-1)-k[\theta(n)-\theta(n-1)]$, wherein,

$\dot{x}(n)$ is the input velocity at nth sampling time ΔT from the start of control;

$\dot{x}(n-1)$ is the velocity of the trolley at $(n-1)$th sampling time;

$\theta n)$ and $\theta(n-1)$ are actual oscillation angles at nth and $(n-1)$th sampling time respectively; and

k is a non-oscillation control gain; or

$\dot{x}(n\Delta T)-\dot{x}[(n-1)\Delta]=-k\{\theta(n\Delta T)-\theta[(n-1)\Delta T]\}$wherein,

$n\Delta T$ is a time for the nth sampling from the start of the control;

a sampling time is determined based on

$$T_s < \Delta T < \frac{T}{10-20}$$

wherein,

T_s is a stabilizing time of an electric motor which is approximately same as the time when the actual velocity of motor becomes same with the input velocity; and

T is the oscillation period of the load;

a control gain k is determined based on $k=2\times(0.5-0.7)gL-f$ wherein,

g is the gravitational acceleration;

L is a distance from a hinge point of a rope to a center of gravity of an object; and

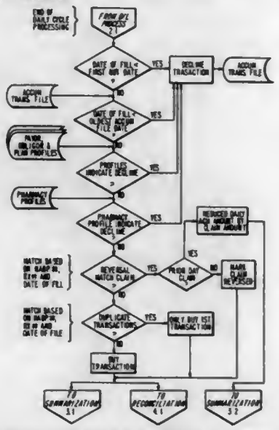
f is a damping constant due to the friction at the hinged point of rope.

5,550,734

COMPUTERIZED HEALTHCARE ACCOUNTS RECEIVABLE PURCHASING COLLECTIONS SECURITIZATION AND MANAGEMENT SYSTEM

Fred B. Tarter, Armonk; Jeffrey M. Greene; Thomas J. De Fazio, both of New York, all of N.Y.; Jan Peck, Glendale; L. Stephen Wylie, Scottsdale, both of Ariz.; Mark M. Magnotte, Woodbridge, N.J.; Del Hall, Phoenix, Ariz., and Scott A. Tarter, Armonk, N.Y., assignors to The Pharmacy Fund, Inc., New York, N.Y.

Filed Dec. 23, 1993, Ser. No. 175,338
Int. Cl.[6] G06F *17/60;* G06G *7/52*
U.S. Cl. 364—401 R 32 Claims



1. A computerized method for financing a health care service provider, comprising:

(a) receiving an electronically transmitted insurance claim from the service provider;

(b) identifying a payor and an obligor associated with the insurance claim;

(c) accessing a profile database record for the payor and obligor;

(d) retrieving a creditworthiness status of the payor and obligor from the profile database record;

(e) determining whether to purchase the insurance claim from the service provider based on the creditworthiness status; and

(f) if the determination is to purchase the insurance claim, making a payment to the service provider for purchase of the insurance claim.

5,550,735

COMPILING SYSTEM AND METHOD FOR MASS PRODUCING INDIVIDUALLY CUSTOMIZED MEDIA

Michael G. Slade, San Francisco, and Darren J. LaBatt, Walnut Creek, both of Calif., assignors to Datavision Technologies, San Francisco, Calif.

Continuation of Ser. No. 935,852, Aug. 26, 1992, abandoned.
This application Sep. 23, 1994, Ser. No. 311,198
Int. Cl.[6] G06F *17/60;* G06G *7/52;* G11B *17/22;3/64*
U.S. Cl. 364—401 R 16 Claims

9. A method of compiling customized information segment sequences from an assortment of information segments, comprising:

using M number of destination means for receiving Z number of customized information Segment sequences, wherein M and Z are at least equal to two;

using N number of resource means coupled to said destination means for storing the assortment of information segments to be transmitted to said destination means for forming said customized information segment sequences, each of said resource means stores at least one information segment which is unique to that resource means, wherein N is at least equal to one;

storing user information signals indicative of all of said customized information segment sequences to be compiled, each of said customized information segment sequences extending over an associated sequence time period and including at least one of the information segments;

allocating said resource means to said destination means on a time sharing basis according to said user information signals for enabling each of said destination means to access the information segments stored on said resource means;

generating a schedule for the compilation of each of said customized information segment sequences on one of said destination means to enable each of said destination means to receive the information segments from said resource means without interruption in a time ordered manner for compiling a group of customized information segment sequences during a compiling time period, said group of customized information segment sequences including P number of said customized information segment sequences wherein P is at least two and is less than or equal to M, and said compiling time period is substantially less than the sum of said sequence time periods for said P number of customized information segment sequences; and

supplying the information segments to said destination means according to said schedule for compiling said group of customized information segment sequences during said compiling time period.

5,550,736

FAIL-OPERATIONAL FAULT TOLERANT FLIGHT CRITICAL COMPUTER ARCHITECTURE AND MONITORING METHOD

Rick H. Hay, Cave Creek; Clarence S. Smith, Glendale; Robert D. Girts, Mesa, and Larry J. Yount, Scottsdale, all of Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 27, 1993, Ser. No. 54,777
Int. Cl.[6] G06F *11/16*
U.S. Cl. 364—424.03 15 Claims

1. A flight critical computer system for an aircraft, the aircraft having sensor means for providing sensor signals representative of characteristics concerning the aircraft, said system comprising:

a first lane having a first primary processor and a first redundant processor and for providing a first command signal, said first primary processor for providing a first output signal and said first redundant processor for generating a first redundant output signal, as a function of said sensor signals;

a second lane having a second primary processor and a second redundant processor and for providing a second command signal, said second primary processor for providing a second output signal and said second redundant processor for generating a second redundant output signal, as a function of said sensor signals;

wherein said first primary processor is dissimilar from said second primary processor and said first and second redundant processors, said second primary processor is dissimilar from said first and second redundant processors, and said redundant processors are substantially similar to each other;

first monitoring means for comparing said first output signal with said second output signal and generating first comparison signals as a function of disagreement therebetween;

second monitoring means for comparing said first output signal with said second redundant output signal and generating second comparison signals as a function of disagreement therebetween;

third monitoring means for comparing said second output signal with said first redundant output signal and generating third comparison signals as a function of disagreement therebetween; and

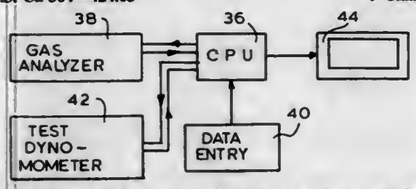
selection means for selecting, as a function of said first, second, and third comparison signals, one of said first output signal and said first redundant output signal as said first command signal and one of said second output signal and said second redundant output signal as said second command signal while allowing for at least one of said processors to fail before disabling either of said lanes and disabling both of said lanes when both of said lanes are unable to detect any processor failure.

5,550,737

METHOD FOR ANALYSIS OF VEHICLE PERFORMANCE CHARACTERISTICS

Rinaldo Tedeschi, Newington, Conn., assignor to Environmental Systems Products, Inc., East Granby, Conn.

Filed Nov. 5, 1993, Ser. No. 148,634
Int. Cl.[6] G01M *15/00*
U.S. Cl. 364—424.03 9 Claims



1. A method for the analysis of vehicle performance data for a vehicle under test, comprising the steps of:

a) measuring the concentration of a plurality of exhaust constituents over the course of a test protocol;

b) identifying a plurality of test intervals during the duration of said test protocol and determining the concentration of each of said constituents thereat;

c) creating a graph of concentration value over the course of said test protocol for each constituent;

d) creating a corresponding graph of reference concentration value over the course of said test protocol for each constituent;

e) comparing the value of each constituent graph and its corresponding reference graph value at each of said test intervals;

f) classifying the result of each comparison into one of a plurality of comparison zones;

g) creating an array of said classifying results; and

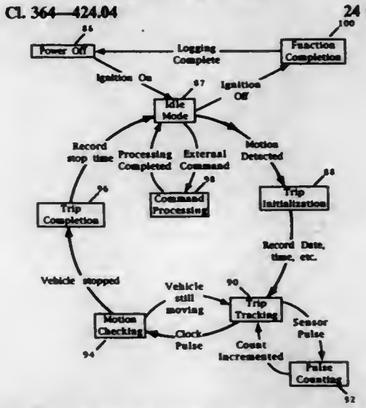
h) comparing said array to a reference to determine the vehicle performance.

5,550,738

SYSTEM FOR RECORDING AND ANALYZING VEHICLE TRIP DATA

Brian L. Bailey, and Harvey L. Clayman, both of Dayton, Ohio, assignors to TeamNet, Inc., Dayton, Ohio

Filed Aug. 19, 1994, Ser. No. 292,874
Int. Cl.[6] G06F *17/40*
U.S. Cl. 364—424.04 24 Claims



1. A vehicle monitoring system for use in a motor vehicle, the system comprising:

a plurality of sensors located on said vehicle for sensing vehicle operating parameters and generating signals in response thereto, said plurality of sensors including a vibration sensor;

means connected to said sensors for recording said sensor signals and generating trip data in response thereto, wherein said generation of trip data is initiated upon receipt of a signal of a change in state of said vibration sensor and wherein said recording means stops generating data after there has been no change in state of said vibration sensor for a predetermined amount of time;

means for processing said trip data and generating trip reports based thereon, said processing means being remote from said recording means and said vehicle; and

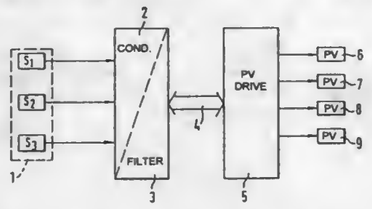
means for transferring said trip data from said recording means to said processing means.

5,550,739

SEMI-ACTIVE SUSPENSION CONTROL SYSTEM

Michael Hoffmann, Frankfurt, and Alfred Eckert, Mainz-Laubenheim, both of, Germany, assignors to Alfred Teves GmbH, Frankfurt, Germany

Continuation of Ser. No. 50,444, Jun. 30, 1993, abandoned.
This application Mar. 9, 1995, Ser. No. 401,337
Claims priority, application Germany, Oct. 26, 1990, 40 36 064.4
Int. Cl.[6] G06F *19/00*
U.S. Cl. 364—424.05 **10 Claims**



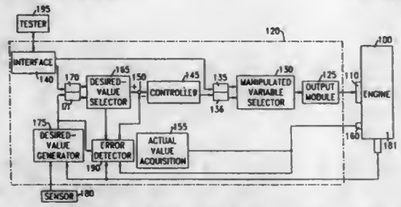
1. A semi-active suspension control system for automotive vehicles, said system comprising:
a plurality of chassis acceleration sensors for developing chassis acceleration signals representative of acceleration of an automotive vehicle chassis;
a plurality of vibration dampers for controlling vibration of said automotive vehicle chassis;
and electronic circuit means responsive only to said chassis acceleration signals for generating damper-actuating signals to actuate said vibration dampers, said electronic circuit means having:
(a) a filter which:
(i) produces output signals representative of the speed of said vibration dampers, and
(ii) has a transmission characteristic which concentrates on a discrete frequency range having a lower limit approximately 0.1-fold to 0.5-fold of the natural vehicle chassis frequency and an upper limit approximately 1.2 -fold to 2-fold of the natural vehicle wheel frequency, and
(b) circuitry for assessing said output signals of said filter to develop said damper-actuating signals.

5,550,740

PROCESS AND DEVICE FOR CONTROLLING AN INTERNAL COMBUSTION ENGINE

Dieter Hall, Vienna, Austria, and Klaus Sassen, Schwieberdingen, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Dec. 5, 1994, Ser. No. 349,224
Claims priority, application Germany, Dec. 4, 1993, 43 41 434.6
Int. Cl.[6] G01M *15/00*; F02D *41/22*
U.S. Cl. 364—431.01 **9 Claims**



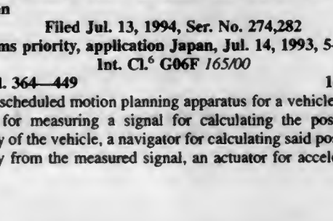
1. A method for controlling an internal combustion engine, comprising the steps of:
coupling a control unit to a tester via an interface;
storing, in a first storage element, data corresponding to control signals transmitted by the tester;
storing, in a second storage element, data from the control unit;
determining whether the data stored in the first storage element is allowable;
selecting the data stored in the first storage element if the data stored in the first storage element is allowable, otherwise selecting the data stored in the second storage element; and
controlling the engine using the selected data.

5,550,741

DOCUMENT CREATION ASSISTANCE DEVICE

Akiko Nakajima, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 10, 1994, Ser. No. 258,552
Claims priority, application Japan, Jun. 11, 1993, 5-140568
Int. Cl.[6] G06F *3/14;17/24*
U.S. Cl. 364—419.14 **10 Claims**



1. A document creation assistance device comprising:
a first language document storing means for storing a first language document written in a first language;
a second language document storing means for storing a second language document corresponding to the first language document;
an input means for inputting a selected word and a replacement word, the selected word in the first language document to be replaced with the replacement word;
a location information memory for storing a correspondence between each word in the first language document and its location, wherein the words spelled in the same way and having the same meaning are grouped into one entry to correspond to the locations of the words;
a first language replacing means for replacing a first language word at a location corresponding to the entry for the selected word in the location information memory with the replacement word, the first language word in the first language document from the first language document storing means; and
a second language replacing means for, when the first language replacing means operates the replacement, replacing a word in the second language document corresponding to the replaced word with a second language word corresponding to the replacement word.

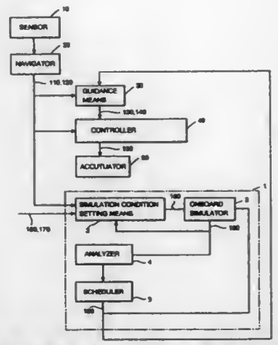
5,550,742

SCHEDULED MOTION PLANNING METHOD AND APPARATUS FOR A VEHICLE

Masatoshi Furuya; Toshiro Sasaki, and Fuminobu Komura, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 13, 1994, Ser. No. 274,282
Claims priority, application Japan, Jul. 14, 1993, 5-173975
Int. Cl.[6] G06F *165/00*
U.S. Cl. 364—449 **16 Claims**

2. A scheduled motion planning apparatus for a vehicle having a sensor for measuring a signal for calculating the position and velocity of the vehicle, a navigator for calculating said position and velocity from the measured signal, an actuator for accelerating or decelerating the vehicle, a controller for giving control command to said actuator, and guidance means for giving a necessary desired position and velocity to said controller and guidance and control of the vehicle, comprising:
(1) means for obtaining the position, velocity data, and time of the vehicle from the navigator;
(2) means for obtaining constraints and demanded specifications;
(3) an onboard simulator for simulating the motion on the basis of a dynamic model and guidance and control model:
(4) simulation condition setting means for setting an ideal position and ideal velocity curve for satisfying said constraints and demanded specifications on the basis of said constraints and demanded specifications, and for judging a plan type by comparing the ideal position and ideal velocity curve with said obtained position and velocity data or comparing the ideal position and velocity curve with the simulation result by said onboard simulator, and for setting simulation conditions;
(5) means for evaluating said simulation result by the onboard simulator on the basis of predetermined constraints and demanded specifications; and motion planning means for making a motion plan on the basis of said evaluation by the onboard simulator.



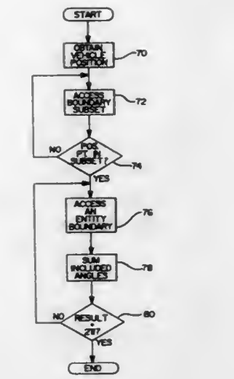
5,550,743

GEOGRAPHIC LOCATOR OF A VEHICLE USING GPS AND ANGLES BETWEEN PAIRS OF ADJACENT BOUNDARY COORDINATE POINTS

Christos T. Kyrtsos, Southfield, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Feb. 15, 1995, Ser. No. 388,772
Int. Cl.[6] G06G *7/78*; G06F *17/10*
U.S. Cl. 364—449 **15 Claims**

1. A system for determining which of a plurality of geographic entities a vehicle is in, wherein each of said entities is defined by a closed path boundary represented by a set of ordered discrete coordinate points, said system comprising:
a position determining system for generating present vehicle position information including a coordinate data point for said vehicle;
receiver means installed on said vehicle for receiving said present vehicle position information;
a memory device containing information including said ordered coordinate points for each of said plurality of entities; and
processor means for selecting a set of entities from said plurality of entities and for each entity in said set, adding the angles formed between lines extending from said vehicle position coordinate data point to each adjacent pair of discrete coordinate points representing said closed path boundary to obtain a summation and for identifying the entity for which said summation yields a non-zero result.

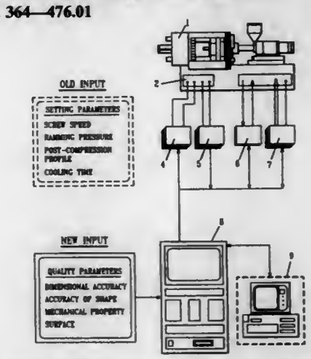


5,550,744

METHOD OF CONTROLLING A MACHINE FOR THE MANUFACTURE OF PRODUCTS, IN PARTICULAR FOR CONTROLLING AN INJECTION MOLDING MACHINE

Georg Steinbichler, Rottenmann, Austria, assignor to Engel Maschinenbau Gesselschaft mbH, Schwertberg, Austria

PCT No. PCT/AT92/00117, § 371 Date May 31, 1994, § 102(e) Date May 31, 1994, PCT Pub. No. WO93/04839, PCT Pub. Date Mar. 18, 1993
PCT Filed Sep. 9, 1992, Ser. No. 178,298
Claims priority, application Austria, Sep. 12, 1991, A1823/91
Int. Cl.[6] G06F *19/00*; B29C *45/76*
U.S. Cl. 364—476.01 **18 Claims**



1. A method for controlling an injection molding machine comprising the steps of:
preselecting a number of at least two quality parameters, which are essential for a product to be produced;
preselecting a number of setting parameters of the machine, said quality parameters of the product being dependent on said setting parameters of the machine;
determining and storing characteristic data arrays in a learning cycle, which characteristic data arrays reflect the dependencies between the quality parameters and the setting parameters;
inputting reference values or reference value ranges into a control unit for each preselected quality parameter;
ascertaining for each quality parameter by the control unit a set of all setting parameter combinations, for which the respective quality parameter corresponds to the corresponding input reference value or lies in the input reference value range; and
determining the intersection of said sets in order to obtain those combinations of setting parameters for which simultaneously

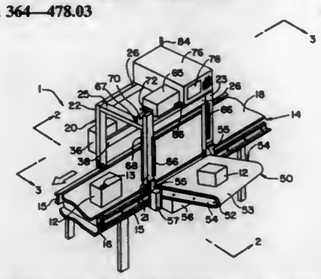
all preselected quality parameters correspond to the input reference values or lie in the input reference value range.

5,550,745

MOVEABLE LABEL PRINTER-APPLICATOR/ CONVEYOR LOADER ASSEMBLY

Albert Wurz, Doylestown, Pa., assignor to Accu-Sort Systems, Inc., Telford, Pa.

Filed Jun. 30, 1994, Ser. No. 269,209
Int. Cl.[6] G06F *17/00*
U.S. Cl. 364—478.03 **4 Claims**



1. A moveable label printer-applicator/conveyor loader comprising:
a frame mounted for movement along a path defined by a conveyor;
means for locating articles to be loaded on the conveyor as the frame is moved along said path;
labeling means, attached to the frame, for labeling a selected article; and
controller means which receives a signal that includes data comprising pick quantity and location information for a selected article, directs the frame to the article location, verifies the selected article, and directs the labeling means to print and apply a label to the article.

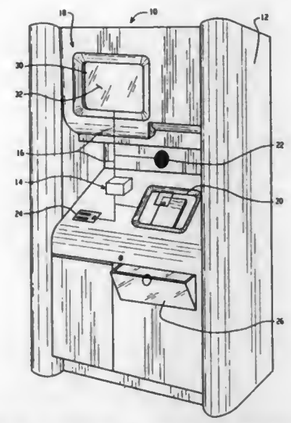
5,550,746

METHOD AND APPARATUS FOR STORING AND SELECTIVELY RETRIEVING PRODUCT DATA BY CORRELATING CUSTOMER SELECTION CRITERIA WITH OPTIMUM PRODUCT DESIGNS BASED ON EMBEDDED EXPERT JUDGMENTS

Herbert H. Jacobs, LaJolla, Calif., assignor to American Greetings Corporation, Cleveland, Ohio

Filed Dec. 5, 1994, Ser. No. 349,390
Int. Cl.[6] G06F *17/60;19/00*
U.S. Cl. 364—479.01 **72 Claims**

1. A method for storing and selectively retrieving product/seryice data, comprising the steps of:
storing in a design data file a plurality of product/service designs;
storing in a selection criteria data file a plurality of descriptors, each of said descriptors representing an application scale associated with each of said plurality of product/service designs;
storing in a design applicability data file an expert-predetermined optimum applicability value for each combination of said application scales and said product/service designs;
presenting, to a customer, selection criteria options for one or more application scales;
storing in said selection criteria data file customer preference values for one or more application scales used for describing the product/service designs, said customer preference values to be predetermined by expert judgment and assigned to application scales where such values correspond to said selection criteria options chosen by the customer;



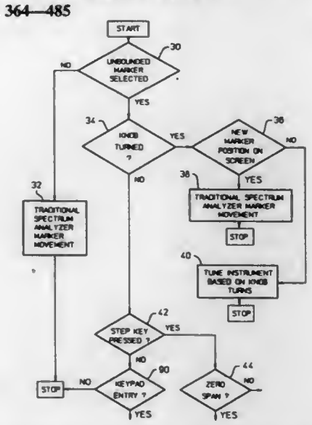
quantitatively correlating, by means of a correlation algorithm, each of said customer preference values with corresponding expert-predetermined optimum applicability values to calculate an average suitability rating for each of said product/service designs based on said customer-chosen selection criteria options; and
displaying for the customer a group of identified product/service designs based on said average suitability ratings for those identified product/service designs.

5,550,747

UNBOUNDED MARKER FOR SPECTRUM ANALYSIS

James P. Newman, Jr., Santa Rosa, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 7, 1994, Ser. No. 207,003
Int. Cl.[6] G01R *23/16*
U.S. Cl. 364—485 **22 Claims**



9. In a swept-tuned instrument having means for providing a marker to measure frequency and amplitude of trace data acquired over a predetermined frequency range and displayed on a display device, the improvement comprising:
means controlled by an operator for selecting an unbounded marker and moving the unbounded marker along the displayed trace data to measure frequency and amplitude of the trace data; and

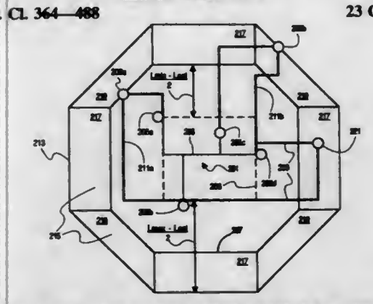
means responsive to the position of the unbounded marker for automatically re-tuning the swept-tuned instrument to adjust the predetermined frequency range when the operator causes the unbounded marker to be moved to measure trace data at a frequency beyond the predetermined frequency range, whereby the speed of measurements is increased.

5,550,748

REGION SEARCH FOR DELAY ROUTING AND SIGNAL NET MATCHING

Xiao-Ming Xiong, San Diego, Calif., assignor to Cadence Design Systems, Inc., San Jose, Calif.

Filed Mar. 22, 1994, Ser. No. 216,157
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—488 **23 Claims**



19. In a delay router for delay routing a signal net any number of pins, and having maximum and minimum delay constraints, a computer implemented method of defining a search region around the signal net for locating within the search region a free point at which to place a pseudo pin for routing between two pins of the signal net, comprising:
determining a signal net boundary surrounding all of the pins of the signal net, the signal net boundary defined by a plurality of coordinates;
determining an estimated wire length for connecting all of the pins of the signal net;
defining an outer search boundary as a function of the estimated wire length, the maximum delay constraint, and the coordinates of the signal net boundary; and,
defining an inner search boundary as a function of the estimated wire length, the minimum delay constraint, and the coordinates of the signal net boundary, wherein the search region comprises an area between the outer and inner search boundaries.

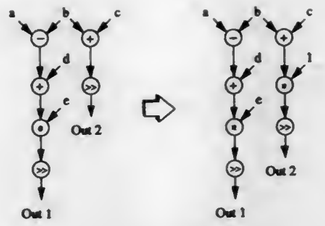
5,550,749

HIGH LEVEL CIRCUIT DESIGN SYNTHESIS USING TRANSFORMATIONS

Sujit Dey, and Miodrag Potkonjak, both of Plainsboro, N.J., assignors to NEC USA, Inc., Princeton, N.J.

Filed Jun. 3, 1994, Ser. No. 254,147
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—489 **10 Claims**

1. A method of high level circuit design synthesis using transformations by adding deflection operations for reducing the quantity of scan registers for partial scan testing of the circuit comprising the steps of:
defining the circuit functionality in terms of a control data flow diagram (CDFG);
adding deflection operations to the control data flow diagram such that there is an absence of hardware sharing bottlenecks; and
synthesizing the circuit to include said added deflection operations.

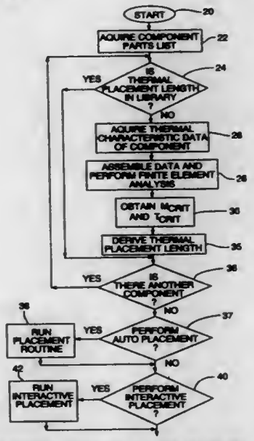


5,550,750

METHOD AND SYSTEM FOR INTEGRATING COMPONENT ANALYSIS WITH MULTIPLE COMPONENT PLACEMENT

Daniel W. Wolff, Lake Oswego, Oreg., assignor to Mentor Graphics Corporation, Wilsonville, Oreg.

Filed May 28, 1993, Ser. No. 69,148
Int. Cl.[6] G06F *17/50;* **G06G** *7/32*
U.S. Cl. 364—491 **14 Claims**



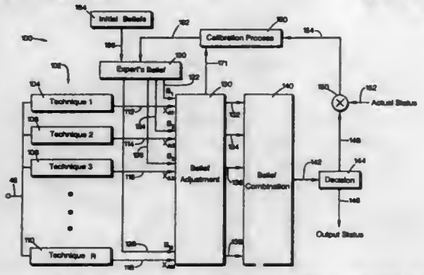
1. In a programmed computer system including a display unit and an input device, a computer assisted method for designing a layout of components comprising:
storing characteristic data for the components in memory;
reading one of the following types of characteristic data of the components from memory: electromagnetic, thermal, or thermal stress;
separately and individually performing an electromagnetic, thermal, or mechanical stress analysis on the components corresponding to the type of characteristic data read from the memory to produce separate distribution data for the components;
deriving placement lengths for the components from the distribution data;
executing a placement program to automatically place the components in alternative layouts until a final layout is generated without performing further analysis of the components, wherein executing the placement program includes automatically checking the alternative layouts generated by the placement program to determine whether the placement length of at least a first component in each of the alternative layouts is violated, wherein a placement length of the first component is violated when the distance between the first component and another one of the components is less than the placement length for the first component.

5,550,751

EXPERT SYSTEM FOR DETECTING HIGH IMPEDANCE FAULTS

B. Don Russell, College Station, Tex., assignor to The Texas A & M University System, College Station, Tex.

Filed Oct. 15, 1993, Ser. No. 138,392
Int. Cl.[6] H02J *13/00*
U.S. Cl. 364—492 **20 Claims**



2. A method of detecting high impedance faults occurring on a distribution circuit coupled to an AC power source, comprising the steps of:

analyzing a parameter of power flowing over the distribution circuit using a set of fault detection techniques each providing a number of fault indications;

weighting the number of fault indications from each fault detection technique;

combining the weighted number of fault indications from each fault detection technique to determine whether a high impedance fault has occurred;

inputting a status input of the status of the distribution circuit;

calibrating the weighting of at least one of the fault detection techniques to a performance history in response to the status input, wherein the calibrating step comprises the steps of:

comparing the weighting of at least one of the fault detection techniques with the status input according to a scoring rule;

awarding a score to at least one of the fault detection techniques in response to the comparing step; and

changing the weighting of at least one of the fault detection techniques when the score indicates suboptimal performance; and

repeating said analyzing step, said weighting step, and said combining step in response to said calibrating step.

5,550,752

METHOD AND APPARATUS FOR ESTIMATING THE RATE AT WHICH A GAS IS GENERATED WITHIN A PLURALITY OF ZONES

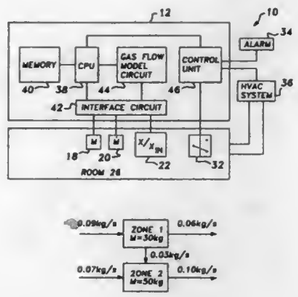
Clifford C. Federspiel, Shorewood, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Jul. 25, 1994, Ser. No. 279,910
Int. Cl.[6] F24F *11/00*
U.S. Cl. 364—505 **40 Claims**

1. An apparatus for estimating the rate at which gas is generated in a plurality of zones, comprising:

at least one sensor configured to measure values of selected environmental variables of at least two of the plurality of zones and generate signals representative of the values, the at least one sensor includes means for measuring the concentration of the gas in the incoming air of the at least two zones and the concentration of the gas in the at least two zones; and

a gas flow model circuit, operatively connected with the sensors, for receiving the signals from the sensors and generating an estimated gas generation rate value as a function of the values.

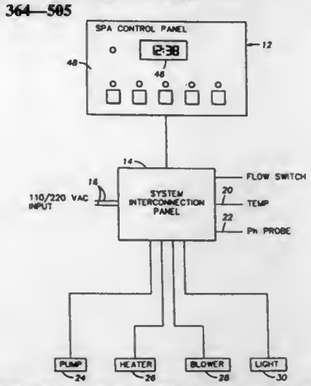


5,550,753

MICROCOMPUTER SPA CONTROL SYSTEM

Michael E. Tompkins, Missouri City, and Michael J. Green, Houston, both of Tex., assignors to Irving C. Siegel, Houston, Tex.

Continuation of Ser. No. 162,420, Dec. 3, 1993, abandoned, which is a continuation of Ser. No. 54,581, May 27, 1987, abandoned. This application Feb. 7, 1995, Ser. No. 385,062
Int. Cl.[6] G06F *17/00*
U.S. Cl. 364—505 **13 Claims**



1. A spa control system comprising a control panel, output components, and a heating element which heats the water in the spa, and further comprising:

a solid state sensor for detecting the temperature of water in the spa;

a solid state sensor for detecting the temperature of the heating element; and

a microcomputer for processing the signals from said sensors to calculate the temperature of the water and the heating element so that the heating element controls the temperature of the water within a prescribed range.

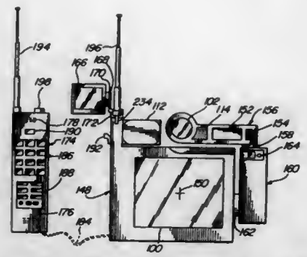
5,550,754

TELECONFERENCING CAMCORDER

Steve McNelley, Capistrano, and Eric Williams, Altadena, both of Calif., assignors to Videoptic Research, San Juan Capistrano, Calif.

Filed May 13, 1994, Ser. No. 242,131
Int. Cl.[6] H05K *11/00*
U.S. Cl. 364—514 A **65 Claims**

1. A portable powered video camera device adjustable for producing and playing back video recordings and for acting as a video telephone to permit video telephone conversations between a first



party using the device and a second party using a remotely-located communicating device, the device comprising:

video display means for providing a display used for playing back video recordings and for displaying a video signal transmitted from the remotely-located device during video telephone conversations;

video pickup means physically redirectable into a first configuration for capturing of an image of the first party facing a front surface of the video display means, and a second configuration for capturing an image of objects facing a rear surface of the video display means, the captured images for furnishing video signals to be transmitted to the second party using the remotely-located communicating device and to be stored as video recordings;

viewfinder means for aiming the video pickup means;

audio pickup means for providing an audio signal for video recordings and for providing an audio signal of the first party for transmission to the second party during video telephone conversations;

sound production means for providing an audible rendition of the audio signal during playing back video recordings and for providing an audible rendition of the audio signal transmitted from the remotely-located device during video telephone conversations;

recording means for recording and playing back video recordings;

communication means for manually establishing connection with the remotely-located device, for transmitting and receiving audio and video signals to and from the remotely-located device, and for indicating when the remotely-located device attempts to establish connection; and

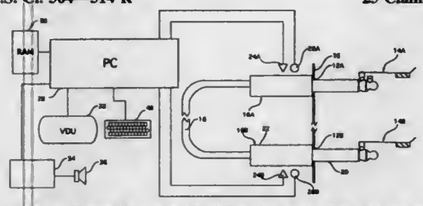
control means for controlling the communication means and the recording means.

5,550,755

APPARATUS AND METHOD FOR PATCH RECORDING AND RECALL

B. Morgan Martin, 1846 North Ave. 50, Los Angeles, Calif. 90042, and Ian Eales, 24389 Crestlawn, Woodland Hills, Calif. 91367-3911

Filed Jul. 14, 1994, Ser. No. 274,963
Int. Cl.[6] G06F *17/00*
U.S. Cl. 364—514 R **25 Claims**



1. An apparatus for patch bay interconnection data storage and recall system comprising:

a plurality of light sources located proximate and individually associated with a plurality of jacks in the patch bay;

a plurality of photodetectors individually associated with the plurality of light sources and responsive to impingement of an associated light beam due to insertion of a plug in the associated jack to produce a connection signal;

a controller having

means for receiving the connection signals during a first patch bay setup and storing consecutive connection signals in a memory;

means for retrieving the stored connection signals during a subsequent patch bay setup;

means for providing a patch signal corresponding to a retrieved connection signal; and

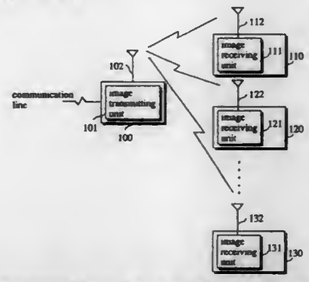
means for transmitting patch signals to prompt an operator to make a connection corresponding to the patch signal.

5,550,756

TRANSMITTING DEVICE, RECEIVING DEVICE, SYSTEM, AND METHOD FOR TRANSMITTING IMAGE AT HIGH EFFICIENCY

Shinichiro Ohmi, Osaka; Hiroyuki Imai, Takarazuka; Kazuhiro Ando, and Takayuki Suematsu, both of Osaka, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 4, 1994, Ser. No. 286,130
Claims priority, application Japan, Aug. 5, 1993, 5-194611
Int. Cl.[6] G06F *17/00*
U.S. Cl. 364—514 R **39 Claims**



1. A transmitting device for encoding to compress an animated image including a plurality of image frames by detecting a difference between one image frame to be encoded and a reference image frame, then transmitting data of the encoded image to a receiving device by a radio line at high efficiency, the transmitting device comprising:

an image storing means for storing the reference image frame which is referred to detect the difference relating to the image frame to be encoded;

an initialization means for, before a first transmission, initializing the image storing means by initial data which is identical to initial data held by the receiving device;

a difference encoding means for detecting the difference between the image frame to be encoded and the reference image frame, and encoding to compress the difference;

an encoded data storing means for storing the encoded difference data received from the difference encoding means;

a transmitting means for detecting an error detection code in the encoded difference data, and transmitting the encoded difference data together with transmission information including the error detection code to the receiving device;

a receiving means for receiving reception information from the receiving device, the reception information including information which indicates whether the receiving device finds either OK or NG as a result of error detection check which is based on the error detection code;

a reproducing means for decoding to reproduce the encoded difference data stored in the encoded data storing means, then storing it as one reference frame into the image storing means when the received reception information indicates OK; and

a controlling means for controlling the difference encoding means to encode to compress the next image frame when the received reception information indicates NG, while controlling the difference encoding means to encode to compress the next image frame only after the reproducing means stores a new reference image frame when the received reception information indicates OK.

5,550,757

METHOD FOR DETERMINATION OF THE POSITION OF AN ELONGATED PIECE

Jukka Tervahauta, Tampere, Finland, assignor to Novatron Oy, Tampere, Finland

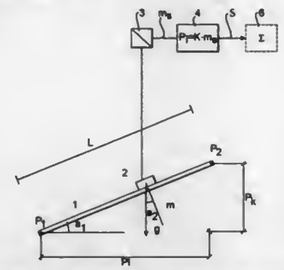
PCT No. PCT/EI93/00056, § 371 Date Aug. 22, 1994, § 102(e) Date Aug. 22, 1994, PCT Pub. No. WO93/17301, PCT Pub. Date Sep. 2, 1993

PCT Filed Feb. 18, 1993, Ser. No. 290,917

Claims priority, application Finland, Feb. 21, 1992, 920754

Int. Cl.[6] G01C *9/00*

U.S. Cl. 364—560 **9 Claims**



1. A method for determining a position of an elongated piece, wherein at least one sensor is placed in connection with the elongated piece for measuring acceleration forces in a vertical measuring plane, said at least one sensor being connected with a computing unit, wherein at least one calculation formula is used in connection with the computing unit, terms of said at least one calculation formula including information derived from a measuring signal produced by said at least one sensor to calculate the position of the elongated piece at least in relation to a horizontal level, wherein the elongated piece is a beam structure of a working machine which is arranged to be pivotable substantially in the vertical measuring plane around a point of articulation, and wherein in the beam structure two points are determined having a known distance, preferably constant, and wherein at least one of the two points is a point of articulation, said method comprising the steps of:

measuring by said at least one sensor acceleration forces active on the elongated piece; and

providing to the computing unit a calculation formula

$$(P_f = K * m_s),$$ wherein

P_f=a desired projection of the distance between the two points in the vertical measuring plane,

K=L/g, wherein

L=the distance between the two points,

g=gravitational acceleration, and

m_s=the measuring signal of said at least one sensor in a quantity suitable for the computing unit,

wherein a measuring direction of said at least one sensor is selected in at least one of the following ways: 1) substantially perpendicular to a direct line between the two points, wherein by using the measuring signal of said at least one sensor, a horizontal extension of the beam structure is provided by the calculation formula (P_f=K * m_s), and 2) substantially to merge with a longitudinal direction of the direct line between the two points, wherein by using the measuring signal of said at least one sensor, a height position of the beam structure is provided by the calculation formula (P_f=K * m_s).

5,550,758

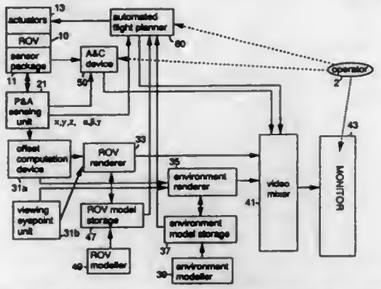
AUGMENTED REALITY MAINTENANCE SYSTEM WITH FLIGHT PLANNER

Nelson R. Corby, Jr.; Peter M. Meenan, both of Scotia, N.Y.; Claude H. Solanas, III, Morgan Hill, and David C. Vickerman, Pleasanton, both of Calif., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 29, 1994, Ser. No. 219,558

Int. Cl.[6] G06F *15/50*

U.S. Cl. 364—571.03 **5 Claims**



1. A remote maintenance system for inspection and repair of structures in an environment comprising:

a) a remotely operated vehicle (ROV) having

1. a sensor package, capable of inspecting physical characteristics of said structures in environment, and

2. actuators capable of maneuvering the ROV;

b) a position and attitude (P&A) sensing unit for providing a position and orientation of the ROV;

c) environmental model storage device capable of retaining computer graphic information regarding the environment of the ROV;

d) environment modeler for receiving parameters defining objects in an environment of the ROV and producing a computer generated model of the environment and storing the model in the environment model storage device;

e) environment renderer coupled to the environment model storage device for generating an image of the environment from the environment model as viewed from at least one viewpoint;

f) ROV renderer coupled to the P&A sensing unit adapted for generating an image of the ROV at a position and orientation corresponding to that of the ROV, generated from a prestored model of the ROV as viewed from at least one viewpoint;

g) monitor for displaying a video signal;

h) video mixer coupled to the environment renderer and the ROV renderer for displaying the images on the monitor, thereby allowing an operator to visualize the position of the ROV relative to its environment; and

i) an automated flight planner comprised of:

i. a pointing device allowing the operator to select points on a path which the operator desires the ROV to follow;

ii. a flight path storage unit capable of storing information defining a path through space; and

iii. a trajectory computer coupled to the environment model storage device, the pointing device, the flight path storage unit, functionally coupled to the ROV renderer and the actuators, for approximating a path closest to the points selected by the operator which does not cause the ROV to collide with objects in the environment, being a selected trajectory, storing this trajectory in the flight path storage unit, and causing the ROV to follow the selected trajectory.

5,550,759

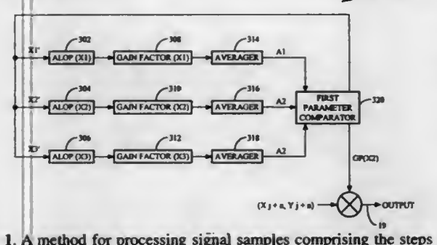
ADAPTIVE PARAMETER KERNEL PROCESSOR

James W. Bond, San Diego, Calif., assignor to The Unite States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation of Ser. No. 707,352, May 29, 1991, Pat. No. 5,517,531, Ser. No. 707,354, May 29, 1991, Pat. No. 5,499,399, Ser. No. 713,659, Jun. 11, 1991, Pat. No. 5,509,032, Ser. No. 713,660, Jun. 11, 1991, Ser. No. 766,618, Sep. 25, 1991, Pat. No. 5,495,497, and Ser. No. 766,605, Sep. 26, 1991, Pat. No. 5,495,496. This application Aug. 7, 1995, Ser. No. 511,675

Int. Cl.[6] H04B *15/00*

U.S. Cl. 364—574 **16 Claims**



1. A method for processing signal samples comprising the steps of:

generating a signal magnitude value for each of said signal samples;

concurrently executing multiple copies of a signal processing algorithm in at least one processor, said signal processing algorithm comprising the steps of:

partitioning said signal magnitude values into sets;

applying a probability density function to said signal magnitude values to generate gain factors for said sets, wherein said probability density function includes a parameter; and

averaging said gain factors to form an average gain factor associated with a value of said parameter;

finding said value of said parameter associated with a minimum of said average gain factors;

updating said values of said parameter in said multiple copies of said signal processing algorithm so that said value of said parameter associated with said minimum approaches a midpoint of said values of said parameter;

forming an output signal from an arithmetic function of said signal samples and said average gain factor associated with said midpoint value of said parameter; and

updating said values of said parameter as follows:

if said minimum is associated with a smallest of said values of said parameter, then said values are decremented; or

if said minimum is associated with a midpoint of said values of said parameter, then said values are unchanged; or

if said minimum is associated with a largest of said values of said parameter, then said values are incremented.

5,550,760

SIMULATION OF CIRCUITS

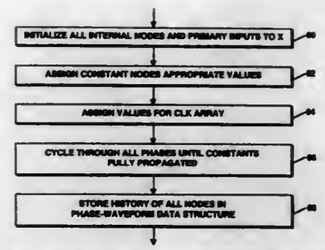
Rahul Razdan, Princeton; Gabriel Bischoff, Marlborough, and Ernst G. Ulrich, Bedford, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 19,211, Feb. 18, 1993, abandoned. This application Oct. 19, 1993, Ser. No. 139,228

Int. Cl.[6] G06F *15/60*

U.S. Cl. 364—578 **8 Claims**

1. A method of preparing for executing simulation code for a logic circuit design having at least some elements which are synchronously clocked by multiple phase clock signals, the simulation code including data structures associated with circuit modules and nodes interconnecting the circuit modules, comprising, by computer



performing a preanalysis of the simulation code and storing phase waveforms each representing values occurring at a node in successive phases,

based on the preanalysis, categorizing modules in a first category for which an event-based evaluation is to be performed in each phase of the simulation, and a second category for which no event-based evaluation need be performed in at least one but not all phases,

determining for each phase of a second category module, an appropriate response to an event occurring with respect to the module, and

providing a data structure entry for each module of the code, said data structure entry indicative of the phases in which simulation code for evaluation of the module is not executed.

5,550,761

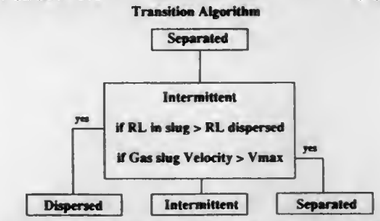
METHOD FOR MODELLING MULTIPHASE FLOWS IN PIPELINES

Christian Pauchon, St Germain-En-Laye; Gilles Ferschneider, St Symphorien D'Ozon, and Daniel Ferre, Sautron, all of, France, assignors to Institut Francais du Petrole, Rueil Malmaison, France; Total, Puteaux, France, and Elf Aquitaine, Courbevoie, France

Filed Feb. 8, 1994, Ser. No. 193,457

Int. Cl.[6] G01F *22/00*

U.S. Cl. 364—578 **8 Claims**



1. A method for modeling steady state and transient flow of multiphase fluids, such as hydrocarbon mixtures circulating in pipelines, defined by a set of variables defining fluid properties and flow patterns and dimensions or slope angles of the pipelines, by numerical resolution of a drift-flux type model, comprising:

solving a set of transport equations including mass conversion equations for each phase, a mixture momentum equation and a mixture energy equation, and flow-regime dependent closure relations suitable for dispersed flow regimes, a separated flow regime and any intermittent flow regime with formation of liquid or gas slugs;

imposing when solving the closure relations continuity constraints at boundaries between the regimes to the gas volume fractions and to slug velocities;

determining any current flow regime when solving the set of closure relations by comparing current values of a liquid fraction in slugs with respect to a liquid fraction in a dispersed region of the flow, as well as a gas slug velocity with respect to a gas slug velocity for the separated flow regime; and

characterizing flow regimes by a parameter β representing the fraction of a flow in a separated state, the parameter β continuously ranging from 0 for dispersed flow regimes to 1 for separated flow regimes.

5,550,762

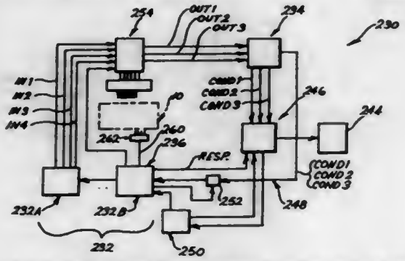
DIAGNOSTIC SYSTEM FOR ELECTRONIC AUTOMOTIVE SYSTEM

John A. Doll, 7304 Greenlawn, Louisville, Ky. 40222

Continuation of Ser. No. 169,171, Dec. 20, 1993, abandoned. This application Jul. 21, 1995, Ser. No. 505,597

Int. Cl.[6] G05B *15/00*

U.S. Cl. 364—579 **23 Claims**



1. A method for electronically diagnosing an electronic automotive system normally operatively associated with and controlling peripheral components of a motor vehicle comprising:

a. providing an electronic automotive system which is electrically disconnected from an electronic data bus and peripheral components of a motor vehicle:

b. generating simulated stimulus input signals to the electronic automotive system corresponding to actual stimulus signals normally received by the electronic automotive system from the peripheral components and causing the electronic automotive system to generate output response signals based upon the simulated stimulus input signals while said electronic automotive system is disconnected from said data bus and peripheral components;

c. conditioning the output response signals from the electronic automotive system for data processing and generating conditioned output response signals;

d. generating exemplar response data signals responsive to the simulated stimulus input signals;

e. comparing each of the conditioned output response signals to the exemplar response signals;

f. evaluating differences between the conditioned output response signals and the exemplar response signals;

g. if there is a difference between the conditioned output response signals and the exemplar response signals, then generating corresponding fault evaluation signals identifying faults in the electronic automotive system;

h. displaying the fault evaluation signal; and

i. altering the generated simulated stimulus input signals in accordance with the conditioned output response signals.

5,550,763

USING CONE SHAPED SEARCH MODELS TO LOCATE BALL BONDS ON WIRE BONDED DEVICES

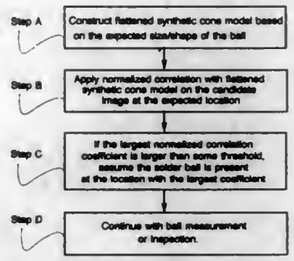
David J. Michael, 124 Cabot St., Newton, Mass. 02158; Juha Koljonen, 65 Powers St., Needham, Mass. 02192, and Arman Garakani, 12 Chauncey St. Apartment 2, Cambridge, Mass. 02138

Filed May 2, 1994, Ser. No. 236,211

Int. Cl.[6] G01B *11/24;* **G01N** *21/86*

U.S. Cl. 364—582 **8 Claims**

1. An apparatus for automatically locating the center of a ball bond formed on a bonded semiconductor pad in a digitized image of said ball bond comprising:



a. means for constructing a flattened synthetic cone shaped model having a monotonically increasing slope value for concentric circles having varying grey levels, where each circle has inner and outer radii encompassing at least one expected size variation in said ball bond;

b. means for conducting a normalized correlation search in a vision processing system using said flattened synthetic cone shaped model as a search model to generate correlation coefficient signals;

c. means for evaluating said correlation coefficient signals to generate signals indicating the presence and center of said ball bond to an inspection means so that the quality of said ball bond can be inspected.

5,550,764

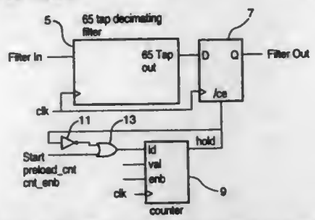
IMAGE FILTERING WITH AN EFFICIENT IMPLEMENTATION OF HIGH ORDER DECIMATION DIGITAL FILTERS

Peter Mandl, Aurora, Canada, assignor to Genesis Microchip Inc., Ontario, Canada

Continuation of Ser. No. 133,367, Oct. 8, 1993, abandoned. This application Mar. 30, 1995, Ser. No. 413,895

Int. Cl.[6] G06F *17/10*

U.S. Cl. 364—724.1 **4 Claims**



1. A decimator for effecting a X:1 decimation of a digital image signal, where X is a selectable positive integer greater than 1, comprising:

a) means for generating a clock signal;

b) a single FIR filter characterized by a fixed frequency response, and having a data input for receiving an input stream of unfiltered image data bits, a clock input for receiving said clock signal, and an output for generating an output stream of filtered output image data bits;

c) a counter having a pre-load input for receiving a selectable count value equal to X, a clock input for receiving said clock signal, and an output for generating a hold signal once every X cycles of said clock signal; and

d) a storage register having a data input connected to the output of said FIR filter, a clock input for receiving said clock signal, a control input for receiving said hold signal and an output for outputting every Xth one of said filtered output image data bits, thereby implementing said X:1 decimation of said digital image signal for said selectable positive integer X utilizing said only single FIR filter.

5,550,765

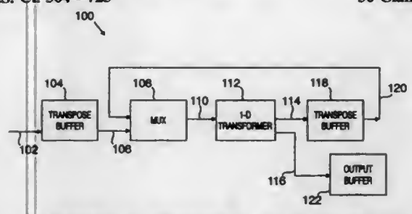
METHOD AND APPARATUS FOR TRANSFORMING A MULTI-DIMENSIONAL MATRIX OF COEFFICENTS REPRESENTATIVE OF A SIGNAL

Arup K. Bhattacharya, Franklin Park, and Syed S. Haider, Belleville, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed May 13, 1994, Ser. No. 242,755

Int. Cl.[6] G06F *7/38*

U.S. Cl. 364—725 **30 Claims**



1. An apparatus for transforming a two-dimensional block of input coefficients representative of a signal, the apparatus comprising:

a first transpose buffer having an input and first and second outputs, the input adapted to receive input coefficients representative of a signal,

a first multiplexer having first and second inputs and an output, the first input connected to the first output of the first transpose buffer;

a second multiplexer having first and second inputs and an output, the first input connected to the second output of the first transpose buffer;

a one-dimensional transformer comprising:

a first coefficients processor having an input and an output, the input connected to the output of the first multiplexer, said first coefficients processor comprising a first plurality of primary cells connected in a circular manner;

a second coefficients processor having an input and an output, the input connected to the output of the second multiplexer, said second coefficients processor comprising a second plurality of primary cells connected in a circular manner; and

a second transpose buffer having an input connected to the outputs of the first and second coefficients processors, a first output connected to the second input of the first multiplexer, and a second output connected to the second input of the second multiplexer.

5,550,766

HIGH SPEED DIGITAL POLARITY CORRELATOR

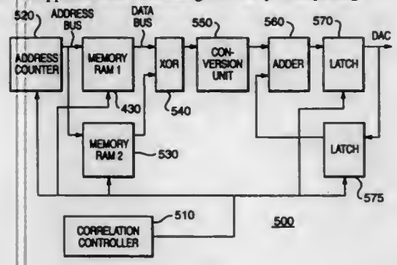
Salah A. M. Al-Zamil, King Abdulaziz City for Science and Technology, P.O. Box 6086, Riyadh 11442, Saudi Arabia

Filed Oct. 4, 1994, Ser. No. 322,302

Int. Cl.[6] G06F *17/15*

U.S. Cl. 364—728.03 **4 Claims**

1. An apparatus for correlating two arrays comprising:



a shift-one-bit circuit for receiving a first of said two arrays, for shifting said first of said two arrays, and for providing a one-bit shifted array;

a correlation circuit including

an exclusive OR circuit for receiving a data byte from a second of said two arrays and said one-bit shifted array, and for delivering an XOR output containing a number of same states equal to the number of times said two arrays are in agreement;

a conversion means for receiving said XOR output and for delivering a binary representation of said number of times said two arrays have been in agreement;

an adder for receiving said number, for adding said number to an existing sum of previous agreements between said two arrays and for delivering an updated sum; and

a latch for receiving said updated sum, for providing said updated sum as said existing sum to said adder, and for, after all data bytes in said two arrays have been examined, delivering a correlation coefficient; and

a controller for transferring operation between said shift-one-bit circuit and said correlation circuit; said controller comprising a combination of flip-flops for alternately receiving a one shot signal from said shift-one-bit circuit and a one shot signal from siad correlation circuit, for starting operation in said correlation circuit when said one shot signal is received from said shift-one-bit circuit, and for starting operation in said shift-one-bit circuit when said one shot signal is received from said correlation circuit, said combination of flip-flops comprising: a first D-type flip-flop for receiving said one shot signal from said shift-one-bit circuit; a second D-type flip-flop for receiving said one shot signal from said correlation circuit; a third D-type flip-flop for receiving an output from said second D-type flip-flop; a JK-type flip-flop for receiving outputs from said first and third D-type flip flops; a fourth D-type flip-flop for receiving an output of said JK-type flip-flop and starting operation in said correlation circuit when said one shot signal is received from said shift-one-bit circuit; and a fifth D-type flip-flop for receiving an output of said JK-type flip-flop and starting operation in said shift-one-bit circuit when said one shot signal is received from said correlation circuit.

5,550,767

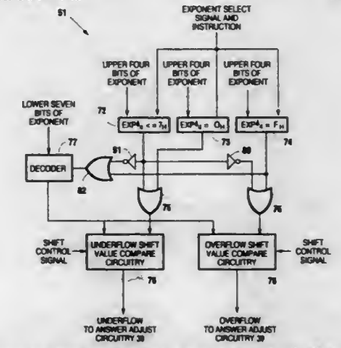
METHOD AND APPARATUS FOR DETECTING UNDERFLOW AND OVERFLOW

Michael P. Taborn, and John K. Yuan, both of Austin, Tex., assignors to IBM Corporation, Armonk, N.Y.

Filed Oct. 14, 1994, Ser. No. 323,483

Int. Cl.[6] G06F *7/00;7/38*

U.S. Cl. 364—745 **21 Claims**



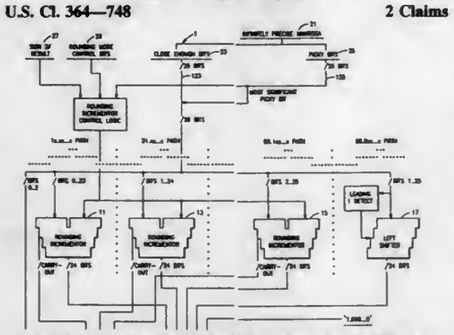
1. An apparatus for detecting whether a result of a floating point arithmetic operation underflows or overflows, comprising:

first circuitry for decoding the exponent of the result into an exponent shift value; and

second circuitry for comparing the exponent shift value with a normalize shift value required to normalize the mantissa of

the result and for outputting a signal indicating whether the result underflows or overflows.

5,550,768
ROUNDING NORMALIZER FOR FLOATING POINT ARITHMETIC OPERATIONS
Clarence R. Ogilvie, and Paul C. Stabler, both of Huntington, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 31, 1995, Ser. No. 381,783
Int. Cl.[6] G06F *5/01;7/48*
U.S. Cl. 364—748 **2 Claims**

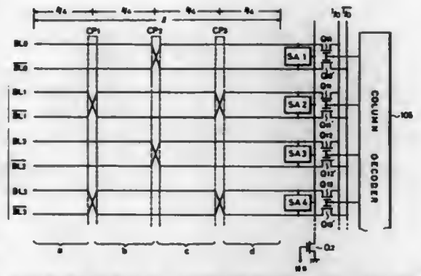


1. A parallel data path rounding normalizer for floating point arithmetic operations comprising four parallel data paths for taking a mantissa having close enough bits and picky bits and producing a correctly rounded mantissa, said data paths comprising:
   a. a 1X.XX . . . X data path for mantissas greater than or equal to 2 but less than 4, said data path having means for right shifting the close enough bits and adjusting the exponent by +1 or +2;
   b. a 01.XX . . . X data path for mantissas greater than or equal to 1 but less than 2, said data path having means for right shifting the close enough bits and adjusting the exponents by +0 or +1;
   c. a 00.1X . . . X data path for mantissas greater than or equal to ½ but less than 1, said data path having means for left shifting bits and adjusting the exponent by −1 or +0; and
   d. a 00.01X . . . X data path left shifter for mantissas less than ½, said data path having means for left shifting the bits and adjusting the exponent by the shift amount;

whereby each of said data paths produces a normalized and rounded mantissa for its subset of mantissas.

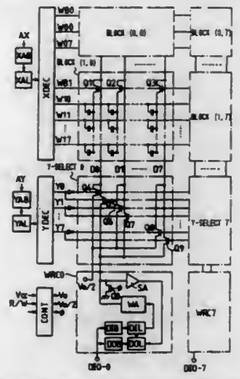
5,550,769
BIT LINE STRUCTURE FOR SEMICONDUCTOR MEMORY DEVICE
Hideto Hidaka; Kazuyasu Fujishima, and Yoshio Matsuda, all of Hyogo-ken, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 28,917, Mar. 8, 1993, Pat. No. 5,416,734, which is a division of Ser. No. 876,690, Apr. 28, 1992, Pat. No. 5,214,601, which is a continuation of Ser. No. 430,915, Oct. 31, 1989, abandoned, which is a continuation of Ser. No. 131,633, Dec. 11, 1987, abandoned. This application Nov. 4, 1994, Ser. No. 336,114
Claims priority, application Japan, Dec. 11, 1986, 61-296365; Mar. 24, 1987, 62-069828; Mar. 27, 1987, 62-075692
Int. Cl.[6] G11C *5/06;11/24*
U.S. Cl. 365—63 **9 Claims**

1. A semiconductor memory device comprising:
a plurality of memory cells arranged in a matrix of rows and columns,
a plurality of bit line pairs, each pair connected to memory cells in a corresponding column,



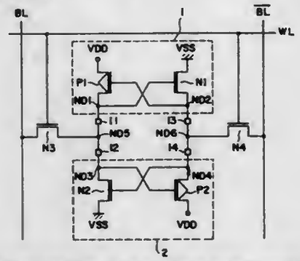
at least one bit line pair of said plurality of bit line pairs having a number of cross points which is exactly divisible by two,
first and second bit lines of said at least one bit line pair having a plurality of parallel portions interconnected at said cross points, each cross point comprising an upper interconnect segment and a lower interconnect segment, said first and second bit lines each having either an upper interconnect segment or a lower interconnect segment at said each cross point,
the first and second bit lines of said at least one bit line pair each having (1) at least one upper interconnect segment and one lower interconnect segment, and (2) the same number of upper interconnect segments as well as the same number of lower interconnect segments as the other bit line of the respective bit line pair.

5,550,770
SEMICONDUCTOR MEMORY DEVICE HAVING FERROELECTRIC CAPACITOR MEMORY CELLS WITH READING, WRITING AND FORCED REFRESHING FUNCTIONS AND A METHOD OF OPERATING THE SAME
Kenichi Kuroda, Tachikawa, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 111,507, Aug. 24, 1993, Pat. No. 5,487,829. This application Jun. 2, 1995, Ser. No. 458,159
Claims priority, application Japan, Aug. 27, 1992, 4-252326
Int. Cl.[6] G11C *11/22*
U.S. Cl. 365—145 **28 Claims**



1. A semiconductor memory device comprising:
a first word line;
a first data line;
a first memory cell comprising a first switch and a first ferroelectric capacitor, said first switch having a current path of which one end is coupled to said first data line and having a control terminal coupled to said first word line, said first ferroelectric capacitor having a first pair of electrodes, one of said first pair of electrodes being coupled to the other end of said current path of said first switch; and
a second switch having a current path of which one end is coupled to the other of said first pair of electrodes,
said first data line being set at a first voltage and the other of said first pair of electrodes receiving a second voltage in the case when the data in said first memory cell is read out,
said first data line being set at a third voltage and the other end of said current path of said second switch receiving a fourth voltage in the case when a poling is executed to said first ferroelectric capacitor,
a voltage difference between said first voltage and said second voltage being smaller than a voltage difference between said third voltage and said fourth voltage,
said first switch being conductive in the case when the data in said first memory cell is read out and in the case when a poling is executed to said first ferroelectric capacitor,
said second switch being conductive in the case when a poling is executed to said first ferroelectric capacitor, and
a polarization inversion of said first ferroelectric capacitor being made possible in the case when the data in said first memory cell is read out.

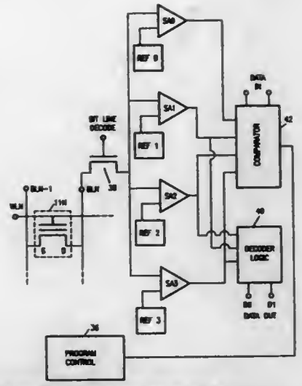
5,550,771
PROGRAMMABLE SEMICONDUCTOR INTEGRATED CIRCUIT
Fumitoshi Hatori, Tachikawa, Japan, assignor to Kabushiki Kaisha Toshiba, Tokyo, Japan
Filed Jun. 5, 1995, Ser. No. 463,379
Claims priority, application Japan, Jun. 3, 1994, 6-122722
Int. Cl.[6] G11C *11/34*
U.S. Cl. 365—174 **22 Claims**



1. A programmable semiconductor integrated circuit comprising basic cells each comprised of:
a first stable circuit having first and second nodes and operative to respectively output, in the steady state, power supply potential and ground potential from the first and second nodes;
a second stable circuit having third and fourth nodes and operative to respectively output, in the steady state, ground potential and power supply potential from the third and fourth nodes; and
a control circuit for selectively connecting any one of a node pair comprised of the first and second nodes of the first stable circuit and a node pair comprised of the third and fourth nodes of the second stable circuit, or the both node pairs to first and second bit lines.

5,550,772
MEMORY ARRAY UTILIZING MULTI-STATE MEMORY CELLS
Manzur Gill, Saratoga, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.
Filed Feb. 13, 1995, Ser. No. 387,171
Int. Cl.[6] G11C *11/34*
U.S. Cl. 365—185.03 **17 Claims**

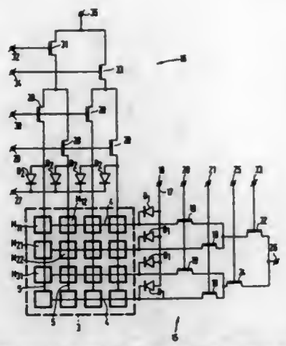
1. A non-volatile memory system comprising:
a memory cell array including



a P conductivity type semiconductor body;
a group of memory cells disposed in the semiconductor body and arranged in an array having a multiplicity of rows and columns, each of said cells including
(a) a drain region of N conductivity type;
(b) a source region of N conductivity type, spaced apart from the drain region, so as to form a channel region in the semiconductor body intermediate the source and drain regions;
(c) a floating gate disposed over the channel region and insulated from the channel region;
(d) a control gate disposed over the floating gate and insulated from the floating gate;
with the control gates of all of the cells in one of the array rows being connected to a common word line; and
control means for programming, reading and erasing the cells of the array, said control means including
program means for applying a source voltage, a drain voltage, and a control gate voltage to a selected one of the cells of the array so to program the selected cell to a multiplicity of programmed states, with a first one of said programmed states resulting in the selected cell having a positive threshold voltage, relative to the source voltage of the selected cell, and with a second one of the programmed states resulting in the selected cell having a negative threshold voltage, relative to the source voltage of the selected cell; and
read means for applying voltages to a selected cell of the array so that the programmed state of the selected cell can be determined, including the application of a positive voltage, relative to the source voltage of the selected cell, to the word line associated with the row in which the selected cell is located and for applying a negative voltage to the remaining word lines of the array.

5,550,773
SEMICONDUCTOR MEMORY HAVING THIN FILM FIELD EFFECT SELECTION TRANSISTORS
Pierre H. Woerlee, and Cornelis M. Hart, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Jan. 30, 1995, Ser. No. 380,536
Claims priority, application Belgium, Jan. 31, 1994, 9400108
Int. Cl.[6] G11C *11/34*
U.S. Cl. 365—185.23 **14 Claims**

1. A semiconductor device with a semiconductor body which is provided at a surface with a system of memory elements arranged in rows and columns and with a system of mutually adjacent, parallel selection lines which form one of row and column conductors for addressing the memory elements and which are each connected at an end to a selection transistor for forming a switchable connection between said conductor and a peripheral electronic



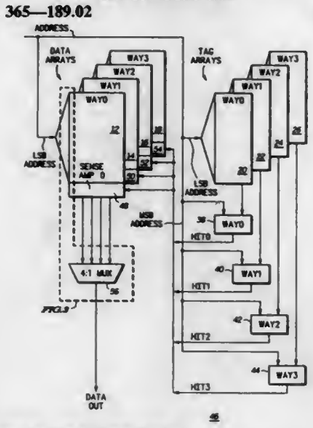
circuit, characterized in that the selection transistors are integrally formed with said conductors by thin-film field effect transistors provided in a semiconductor layer provided on an insulating layer which covers the semiconductor body.

5,550,774

MEMORY CACHE WITH LOW POWER CONSUMPTION AND METHOD OF OPERATION

Michael L. Brauer; Paul A. Reed, and John L. Duncan, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 5, 1995, Ser. No. 523,663
Int. Cl.[6] G11C *8/00*
U.S. Cl. 365—189.02 **18 Claims**



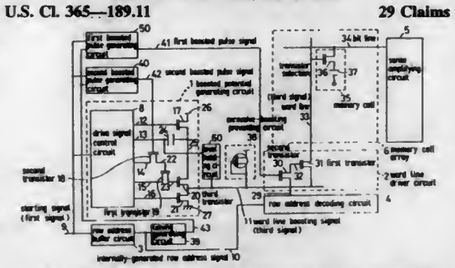
1. A memory cache comprising:
a plurality of tag arrays, each one of the plurality of tag arrays outputting a differing one of a plurality of tags responsive to an address;
a plurality of comparators receiving the address, a differing one of the plurality of comparators also receiving a differing one of the plurality of tags and generating a differing one of a plurality of hit signals;
a plurality of data arrays, each one of the plurality of data arrays outputting a differing one of a plurality of data lines responsive to the address;
a plurality of sense amplifiers, each one of the plurality of sense amplifiers receiving a differing one of the plurality of data lines and outputting a differing one of a plurality of driven data lines; and
a plurality of gates, a differing one of the plurality of gates receiving a differing one of the plurality of driven data lines and a differing one of the plurality of hit signals, each one of the plurality of gates outputting the differing one of the plurality of driven data signals responsive to a first logic state of the differing one of the plurality of hit signals and a current path between a first voltage supply and a second voltage supply of each one of the plurality of gates being in a non-conductive state responsive to a second logic state of the differing one of the plurality of hit signals.

5,550,775

SEMICONDUCTOR DEVICE FOR GENERATING HIGH VOLTAGE POTENTIALS

Wataru Abe; Akihiro Yamamoto; Takehiko Nakajima, and Makoto Kojima, Osaka, all of, Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed Dec. 22, 1994, Ser. No. 361,551
Claims priority, application Japan, Dec. 28, 1993, 5-337210
Int. Cl.[6] G11C *7/00*; H03K *4/58*
U.S. Cl. 365—189.11 **29 Claims**



1. A semiconductor device comprising a signal transmitting device in which, upon generation of a first signal, a second signal is transmitted and then supplied as a third signal,
the signal transmitting device comprising: a first transistor arranged such that, upon generation of the first signal, the second signal is transmitted and then supplied as the third signal; and a second transistor for electrically charging and discharging the gate electrode of the first transistor,
the semiconductor device having a boosted pulse generator for generating a boosted pulse which is brought to the high level not less than the power voltage at the timing at which the first signal is activated or inactivated, and which is brought to the low level before the second signal is activated,
a boosted pulse from the boosted pulse generator being entered into the gate electrode of the second transistor of the signal transmitting device.

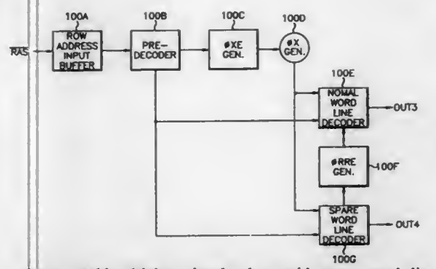
5,550,776

SEMICONDUCTOR MEMORY DEVICE CAPABLE OF DRIVING WORD LINES AT HIGH SPEED

Dong-il Seo, Suwon, and Tae-Seong Jang, Boosan, both of, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Continuation-in-part of Ser. No. 224,480, Apr. 6, 1994, abandoned. This application Jul. 26, 1994, Ser. No. 280,849
Int. Cl.[6] G11C *7/00;17/16*
U.S. Cl. 365—200 **5 Claims**

1. A semiconductor memory device comprising:
a row address input buffer which receives a row address strobe signal and generates a row address signal;
a predecoder which receives said row address signal and predecodes said row address signal to form a predecoder output signal;
a word line signal generator which receives said predecoder output signal and generates a word line signal;
a power source supply circuit which receives said word line signal and generates a source power signal therefrom;
a spare word line decoder which receives said predecoder output signal and said source power signal and generates a redundancy enable driving signal when said spare word line decoder decodes a spare word line address;
a redundancy enabling circuit which receives and amplifies said redundancy enable driving signal to generate therefrom a row redundancy signal, said row redundancy circuit using neither said source power signal, nor any signal derived from said source power signal, to generate said row redundancy signal; and
a normal word line decoder which receives said predecoder output signal, said source power signal and said row redundancy signal, said normal word line decoder being operable to select a normal word line in the absence of said row redundancy enabling signal.

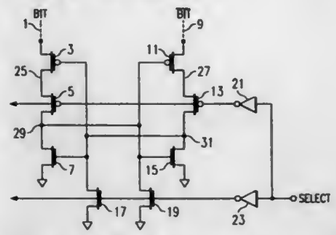


5,550,777

HIGH SPEED, LOW POWER CLOCKING SENSE AMPLIFIER

Hiep V. Tran, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 30, 1994, Ser. No. 346,725
Int. Cl.[6] G11C *7/06*
U.S. Cl. 365—205 **19 Claims**



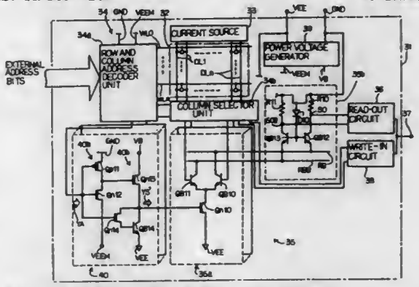
1. A memory element for a static random access memory which comprises:
(a) a bit line for providing a voltage thereon indicative of a "1" or a "0" and a $\overline{bit}$ line for providing a voltage thereon indicative of the complement of said "1" or "0" on said bit line; and
(b) a sense amplifier coupled to said bit and $\overline{bit}$ lines, said sense amplifier including:
(i) a first switch coupled to said $\overline{bit}$ line;
(ii) a second switch coupled to said $\overline{bit}$ line;
(iii) circuitry associated with said bit line and responsive to a predetermined signal to indicate the voltage level of said bit line and associated with said $\overline{bit}$ line and responsive to said predetermined signal to indicate the voltage level of said $\overline{bit}$ line;
(iv) said first and second switches responsive to said circuitry to turn off a predetermined one of said first and second switches and turn on the other of said first and second switches in response to the difference in voltage level on said bit and $\overline{bit}$ lines.

5,550,778

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE IMPLEMENTED BY BIPOLAR AND FIELD EFFECT TRANSISTORS AND HAVING STABLE SENSE AMPLIFIER

Hiroyuki Takahashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 26, 1994, Ser. No. 311,869
Claims priority, application Japan, Sep. 29, 1993, 5-268198
Int. Cl.[6] G11C *7/02*
U.S. Cl. 365—207 **6 Claims**



3. A semiconductor memory device comprising:
a) a memory cell array having a plurality of addressable memory cells for respectively storing data bits;
b) a means for producing a primary activation signal changing between a first voltage level and a second voltage level;
c) a sense amplifier unit comprising:
a first field effect transistor responsive to a secondary activation signal produced from said primary activation signal for activating said sense amplifier unit, and coupled between a common node and a source of a third voltage level,
first and second bipolar transistors coupled in parallel between read-out bus lines and said common node, and responsive to a first potential difference indicative of one of said data bits stored in said memory cell array for producing a second potential difference between said read-out bus lines, and
a cascade amplifier circuit coupled between a source of said first voltage level and said read-out bus lines, and responsive to said second potential difference for producing a third potential difference used for producing an output data signal;
d) an addressing system responsive to external address bits for supplying said first potential difference to said first and second bipolar transistors; and
e) a level shift circuit comprising:
a series combination of a second field effect transistor, an output node and a third bipolar transistor coupled between a source of said fourth voltage level and said source of said third voltage level; and
a third field effect transistor coupled between said output node and a base node of said third bipolar transistor, said second field effect transistor and said third bipolar transistor complementarily turning on and off depending upon the voltage level of said primary activation signal for producing said secondary activation signal at said output node,
wherein said first voltage level has a minimum absolute value compared with an absolute value for each of said second, third, and fourth voltage levels, and said third voltage level has a maximum absolute value compared with an absolute value for each of said first, second, and fourth voltage levels, said second voltage level having an absolute value closer to said third voltage level than said fourth voltage level.

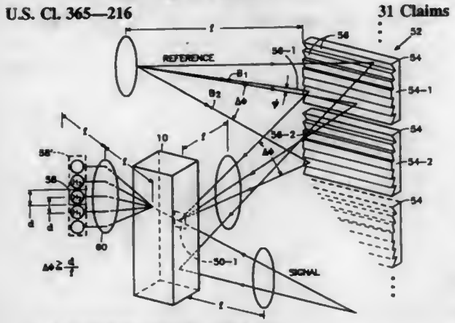
VOI 1189 ISS 4 AG 27 1996 UMI

5,550,779

HOLOGRAPHIC MEMORY WITH ANGLE, SPATIAL AND OUT-OF-PLANE MULTIPLEXING

Geofrrey W. Burr, Pasadena; Fai H. Mok, Torrance, and Demetri Psaltis, Pasadena, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Oct. 20, 1994, Ser. No. 326,783
Int. Cl.[6] G11C 7/00
U.S. Cl. 365—216 31 Claims



27. A holographic memory comprising:

a holographic recording medium having plural holograms recorded in at least a recording spot therein by reference and object beams defining a plane of interaction, each hologram in said recording spot having been recorded with said reference beam oriented at a particular scan angle measured in said interaction plane and a particular out-of-plane multiplexing angle measured in a plane orthogonal to said plane of interaction, each hologram in said spot uniquely specified by the scan angle and out-of-plane multiplexing angle at which it was recorded, successive out-of-plane multiplexing angles differing by a difference angle sufficient to spatially separate reconstructions of holograms recorded in said recording spot at the same scan angle;

a detector plane facing said holographic recording medium; and

a lens between said holographic recording medium and said detector plane, whereby to focus a reconstructed hologram previously recorded in said holographic recording medium onto said detector plane whenever said one beam is blocked; and wherein

said out-of-plane multiplexing difference angle is sufficiently great so that holograms recorded in the same recording spot with reference beams at the same scan angle are reconstructed in separate locations near said detector plane.

5,550,780

TWO CYCLE ASYNCHRONOUS FIFO QUEUE

Tam-Anh Chu, Milpitas, Calif., assignor to Cirrus Logic, Inc., Fremont, Calif.

Filed Dec. 19, 1994, Ser. No. 359,298
Int. Cl.[6] G11C 7/00
U.S. Cl. 365—221 36 Claims

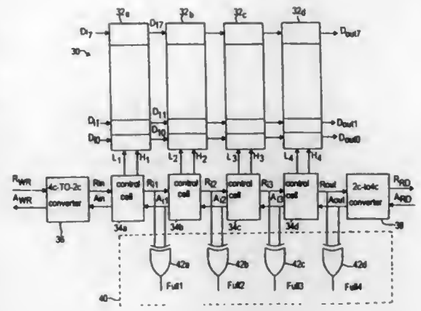
1. An asynchronous queue arrangement comprising:

a plurality of queue registers for holding data and which are coupled in series with one another;

a plurality of control cells coupled in series with one another, each control cell also coupled to a different one of said queue registers and controlling data transfer into and out of said queue register;

a four-to-two cycle converter coupled to a first one of the series of control cells; and

a two-to-four cycle converter coupled to a last one of the series of control cells.

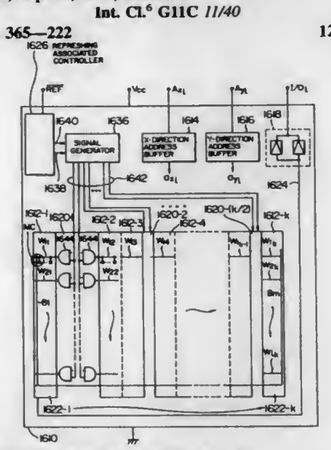


5,550,781

SEMICONDUCTOR APPARATUS WITH TWO ACTIVATING MODES OF DIFFERENT NUMBER OF SELECTED WORD LINES AT REFRESHING

Ken Sugawara, Yuki-gun; Shigeru Sakairi, Tsukuba; Mikio Matoba, Yuki-gun; Toshio Sasaki, Hachioji; Katsuhiro Shimohigashi, Musashimurayama, and Katsutaka Kimura, Akishima, all of, Japan, assignors to Hitachi Maxell, Ltd., Osaka, and Hitachi, Ltd, Tokyo, both of, Japan

Continuation of Ser. No. 266,870, Jul. 5, 1994, Pat. No. 5,430,681, which is a continuation of Ser. No. 623,662, Jan. 7, 1991, abandoned. This application Jan. 31, 1995, Ser. No. 381,648
Claims priority, application Japan, May 8, 1989, 1-113713; May 8, 1989, 1-113714; Jun. 6, 1989, 1-143779; Jul. 13, 1989, 1-180851; Sep. 22, 1989, 1-245234
Int. Cl.[6] G11C 11/40
U.S. Cl. 365—222 12 Claims



1. A semiconductor apparatus comprising:

a plurality of word lines;

a plurality of bit lines, each crossing with said plurality of word lines;

a plurality of memory cells, each provided at any crossing points of said plurality of bit lines and said plurality of word lines; and

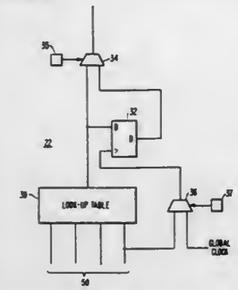
a word line activation signal generating circuit for generating a signal activating any of said plurality of word lines, said word line activation signal generating circuit having a first mode of activating at least two of said plurality of word lines substantially at the same time to refresh information of memory cells connected to said activated at least two of said plurality of word lines and a second mode of activating each of said plurality of word lines, one by one, to refresh information of memory cells connected to said activated plurality of word lines.

5,550,782

PROGRAMMABLE LOGIC ARRAY INTEGRATED CIRCUITS

Richard G. Cliff, Milpitas; L. Todd Cope, San Jose; Cameron R. McClintock, Mountain View; William Leong, San Francisco; James A. Watson, Santa Clara; Joseph Huang, San Jose, and Bahram Ahanin, Cupertino, all of Calif., assignors to Altera Corporation, San Jose, Calif.

Continuation-in-part of Ser. No. 111,693, Aug. 25, 1993, which is a continuation-in-part of Ser. No. 754,017, Sep. 3, 1991, Pat. No. 5,260,610, and a continuation-in-part of Ser. No. 880,942, May 8, 1992, Pat. No. 5,260,611. This application May 18, 1994, Ser. No. 245,509
Int. Cl.[6] G11C 13/00
U.S. Cl. 365—230.03 21 Claims



1. A programmable logic array integrated circuit organized as a two-dimensional array of cells comprising:

a first plurality of conductors, each of which extends along a first dimension of said two dimensional array;

a second plurality of conductors, each of which extends along a second dimension of said two dimensional array, said second plurality of conductors programmably coupled to said first plurality of conductors;

an array of logic array blocks devoted substantially to logic functions, said array of logic array blocks programmably coupled to at least one of said first or second plurality of conductors, each logic array block comprising an equal number of substantially identical programmable logic elements, each programmable logic element having at least one programmable logic element input and at least one programmable logic element output; and

an array of random access memory blocks devoted substantially to user memory, said array of random access memory blocks programmably coupled to at least one of said first or second plurality of conductors, each random access memory block comprising a plurality of memory columns and a control unit coupling said first plurality of conductors to said plurality of memory columns.

5,550,783

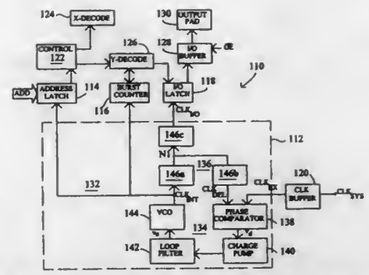
PHASE SHIFT CORRECTION CIRCUIT FOR MONOLITHIC RANDOM ACCESS MEMORY

Michael C. Stephens, Jr., and Ajit K. Medhekar, both of San Jose, Calif., assignors to Alliance Semiconductor Corporation, San Jose, Calif.

Filed Apr. 19, 1995, Ser. No. 424,820
Int. Cl.[6] G11C 8/00
U.S. Cl. 365—233 18 Claims

1. A semiconductor memory device, comprising:

at least one memory array having a plurality of memory cells;



at least one clocked circuit responsive to an internal clock signal, said clocked circuit having a clock signal input;

a clock distribution circuit having a plurality of signal paths for providing the internal clock signal to said clocked circuit; and

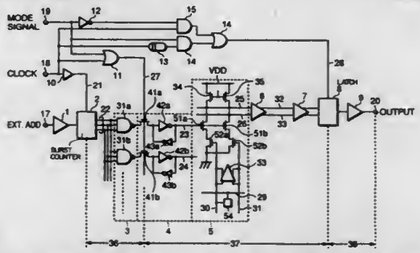
a modified phase locked loop circuit (PLL) having an output coupled to said clock distribution circuit, said modified PLL generating an internal clock signal at the output in response to an external clock signal and a delayed internal clock signal, the delayed internal clock signal being the internal clock signal coupled to said modified PLL by a delay feedback path.

5,550,784

SEMICONDUCTOR MEMORY DEVICE WITH SYNCHRONOUS DRAM WHOSE SPEED GRADE IS NOT LIMITED

Yasuhiro Takai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 26, 1995, Ser. No. 534,270
Claims priority, application Japan, Sep. 28, 1994, 6-232730
Int. Cl.[6] G11C 8/00
U.S. Cl. 365—233 3 Claims



1. A semiconductor memory device which includes a burst counter for latching an external address signal and generating an internal address signal in synchronism to a first clock signal having a predetermined cycle period; a column decoder for decoding the internal address signal; a column switch latch portion which assumes a data-through state with the supply of the first clock signal being cut-off when a mode signal internally supplied is active, and latches the output of the column decoder in synchronism to the first clock signal when the mode signal is inactive; and an output data latch circuit for reading out memory data designated by the output of the column switch latch portion under control of a read command and latching the read-out data in synchronism to the first clock signal, and in which, when the mode signal is inactive, a first operation mode is set to read out the data designated by the internal address signal in synchronism to the first clock signal that is N (N being an integer not less than 2) clock cycles after a latch timing of the burst counter, and the read-out data is outputted from the output data latch circuit, and when a second clock signal having a longer cycle period than the first clock signal is supplied in lieu of the first clock signal and also when the mode signal is inactive, a second operation mode is set to read out the data designated by the internal address signal in synchronism to the

second clock signal N-1 clock cycles after the latch timing of the burst counter, and the readout data is outputted from the output data latch circuit, said semiconductor memory device comprising:

a delay circuit for delaying said second clock signal by a predetermined period of time under said second operation mode; and

an output control means for controlling the data to be outputted from said output data latch circuit in synchronism to said second clock signal that is delayed by said delay circuit.

5,550,785

MOBILE SEISMIC SYSTEM OF GREAT LENGTH FOR WELLS

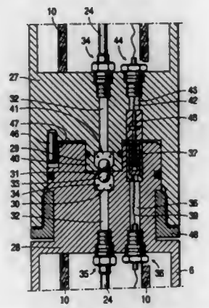
Jean Laurent, Orgeval; Patrick Meynier, Chatou; Jacques Cretin, le Chesnay, and Claude Beauducel, Henonville, all of, France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Filed Jun. 14, 1993, Ser. No. 75,805

Claims priority, application France, Jun. 12, 1992, 92 07068

Int. Cl.[6] G01V *1/40;3/26;* **E21B** *47/00*

U.S. Cl. 367—25 **2 Claims**



1. A mobile seismic system for collecting seismic waves in a well, said waves emanating from a subterranean formation, which comprises several elongate elements provided each with an end fitting and a connecting sleeve and adapted for connecting together by fitting into each other, each of the elongate elements being cross lengthwise by a plurality of electric wires, and electric connection means for connecting electrically the electrical wires of the several elongate elements to one another; each elongate element of at least part of the several elongate elements being crossed by a hydraulic line, the end fittings and sleeves of said elongate elements being provided with retractable closing means so as to communicate automatically respective hydraulic lines of adjoining elongated elements when fit into each other; at least one first elongate element provided with mobile means for anchoring the at least one first elongate element in the well and with hydraulic motor means for actuating the mobile anchoring means, at least one geophone arranged at least in the at least one first elongate element for being coupled with formations surrounding the well by action on said anchoring means; an electro-carrying cable for connecting said at least one first elongate element to a surface control and recording station; an electronic assembly for acquiring, storing and transmitting received seismic signals, for controlling said motor means and for managing communications with said surface control and recording station; said seismic system also comprising at least one second elongate element coupled with said at least one first elongate element, said at least one second elongate element comprising an elongate cavity provided with a wall made of a supple material and filled with liquid, at least one hydrophone arranged in the cavity of said at least one second elongate element; electronic acquisition means connected with said electronic assembly in said at least one first elongate element for acquiring signals sensed by said at least one hydrophone and transmitting the signals to the electronic assembly; hydraulic cable means passing along the at least one second elongate element, and at least another elongate element including at least mobile anchoring means for anchoring the another elongate element in the well and hydraulic motor means for actuating the mobile anchoring means fed with hydraulic power.

5,550,786

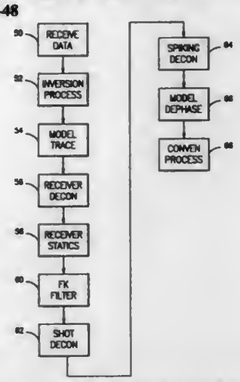
HIGH FIDELITY VIBRATORY SOURCE SEISMIC METHOD

Kenneth P. Allen, Dallas, Tex., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed May 5, 1995, Ser. No. 435,940

Int. Cl.[6] G01V *1/24;1/36*

U.S. Cl. 367—48 **12 Claims**



1. A method for recording high resolution vibratory source data comprising the steps of:

receiving electrical signals representing detected seismic information generated by a vibratory source;

receiving measured signals representing transmitted seismic waves from said vibratory source;

dividing said electrical signals with said measured signal to obtain earth reflectivity multiplied by a time derivative divided by a minimum phase transfer function to obtain a minimum phase data set;

filtering said minimum phase data set with a minimum phase band pass filter;

performing minimum phase deconvolution on said minimum phase data set to obtain data representing earth reflectivity; and

recording said data representing earth reflectivity.

5,550,787

SEISMIC ACQUISITION SYSTEM WITH DECENTRALIZED PROCESSING MEANS

Joseph Rialan, 15, rue Bigôts, 92190 Meudon, and Christian Grouffal, 14, allée Louis David, 92500 Rueil-Malmaison, both of, France

PCT No. PCT/FR93/00562, § 371 Date Feb. 8, 1994, § 102(e) Date Feb. 8, 1994, PCT Pub. No. WO93/25919, PCT Pub. Date Dec. 23, 1993

PCT Filed Jun. 11, 1993, Ser. No. 190,198

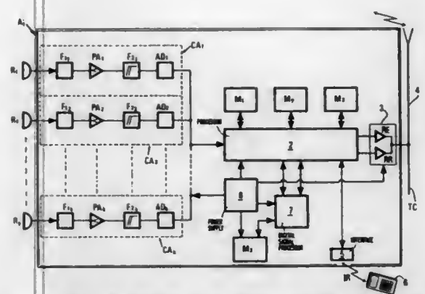
Claims priority, application France, Jun. 11, 1992, 92 07243

Int. Cl.[6] G01V *1/28;* **G08C** *17/00*

U.S. Cl. 367—77 **20 Claims**

1. A seismic acquisition system with decentralized processing capacity for reducing a volume of data to be transmitted with a communication link to at least one control unit and centralized therein comprising:

at least one acquisition device for collecting the data in response to seismic signals received by an array of seismic receivers positioned on a field and transmitted to the at least one acquisition device, the at least one acquisition device including at least one acquisition chain for digitizing signals



received by at least one of the seismic receivers and a control set for controlling acquisition and storage of signals, the control set including a processor and a digital signal processor controlled by the processor, the digital signal processor being programmed for performing processing operations on the seismic signals before transmission thereof to the control unit and for performing quality control on each seismic receiver and each acquisition chain and functioning according to two methods of operation, one method of operation being an active mode for performing the data processing operations and the quality control and the other operation being a standby mode having a lower power consumption than power consumption during the active mode.

5,550,788

METHOD AND SYSTEM OF ANALYSIS OF THE BEHAVIOR OF A DRILL STRING

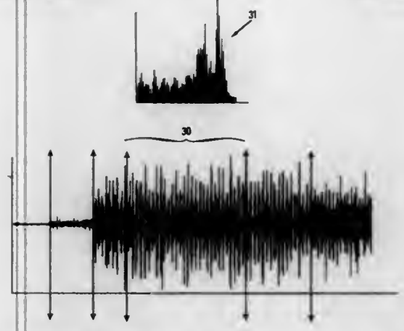
Didier Pavone, Eaubonne; Jacques Froment, Bussy Saint Georges, and Eddy Thesee, Creteil, all of, France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Filed May 24, 1995, Ser. No. 449,851

Claims priority, application France, May 24, 1994, 94 06246

Int. Cl.[6] G01V *1/40*

U.S. Cl. 367—25 **15 Claims**



1. A method of analysis of the drilling conditions and/or of the behaviour of an element of a drill string including a drill bit driven into rotation, comprising the following stages:

acquisition of a signal by at least one sensor located in said drill string,

operating calculation means which achieve: splitting of the signal into segments of a determined length of time, determination of the wavelet coefficients of said segments by applying a Time-Frequency wavelet to at least two consecutive segments, merging the segments so as to form at least one homogeneous segment by using a merging algorithm,

operating means for determining at least one magnitude associated with each homogeneous segment representative of the drilling conditions and/or of the behaviour of a drill string element.

5,550,789

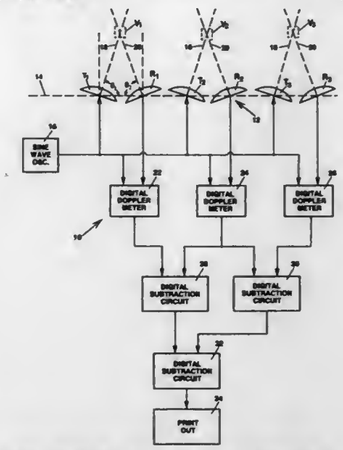
WATER TURBULENCE DETECTOR

Abraham Silverstien, Adelphi, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 17, 1971, Ser. No. 181,607

Int. Cl.[6] G01S *15/00*

U.S. Cl. 367—94 **7 Claims**



1. A water turbulence detection system comprising:

at least three means for transmitting acoustic ultrasonic energy into a water medium and for receiving reflections of said acoustic ultrasonic energy produced by said water medium;

at least three means, each associated with a different one of said transmitting and receiving means, for digitally computing the Doppler shift between said transmitted acoustic ultrasonic energy and said reflections of said acoustic ultrasonic energy; p1 at least two first subtraction means, each for digitally computing the difference between the outputs of adjacent pairs of said means for digitally computing the Doppler shift; and p1 at least one second subtraction means for computing the digital difference between the outputs of said first subtraction means to thereby indicate water turbulence.

5,550,790

ACOUSTIC TRANSDUCER FOR LEVEL MEASUREMENT IN CORROSIVE CHEMICAL ENVIRONMENTS

Sesh Velamoor, Mercer Island, and Kai P. Mesterton, Monroe, both of Wash., assignors to Kistler-Morse Corporation, Redmond, Wash.

Filed Feb. 10, 1995, Ser. No. 386,744

Int. Cl.[6] H04R *17/00*

U.S. Cl. 367—140 **11 Claims**

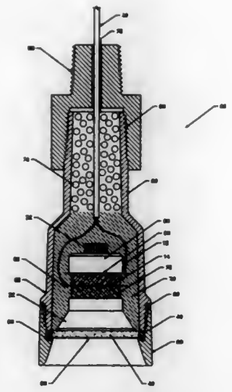
1. A chemically insensitive ultrasound transducer for measuring the level of industrial chemicals, said transducer system comprising:

a piezoelectric driving assembly having an acoustic radiating surface;

a low-loss acoustic propagation disc covering and being acoustically coupled to the radiating surface of said piezoelectric driving assembly;

an enclosure surrounding said piezoelectric driving assembly and propagation disc; and

a coating of polyparaxylylene having a thickness of between 0.0001 inch and 0.001 inch covering all externally exposed surfaces of said piezoelectric driving assembly, propagation disc, and enclosure to make said transducer system substantially impervious to said industrial chemicals.

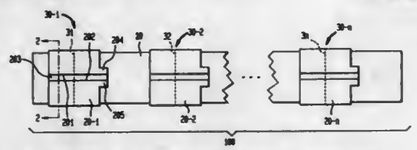


5,550,791

COMPOSITE HYDROPHONE ARRAY ASSEMBLY AND SHADING

Mark S. Peloquin, Uncasville, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 2, 1995, Ser. No. 520,971
Int. Cl.[6] H04R *17/00*
U.S. Cl. 367—153 **23 Claims**



1. A composite hydrophone array assembly, comprising:
a compliant mandrel; and
a plurality of pieces of piezoelectric film wrapped about and adhered to said compliant mandrel at a plurality of locations on said compliant mandrel for defining a corresponding plurality of composite hydrophone channels, wherein centers of adjacent ones of said plurality of composite hydrophone channels are separated along the length of said compliant mandrel.

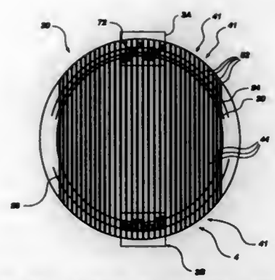
5,550,792

SLICED PHASED ARRAY DOPPLER SONAR SYSTEM

F. Anthony Crandall, Salt Lake City; Kevin V. Jorgensen, Draper; Brian L. Grose, Bountiful, and Monroe Tyler, Sandy, all of Utah, assignors to EDO Western Corp., Salt Lake City, Utah

Filed Sep. 30, 1994, Ser. No. 316,048
Int. Cl.[6] H04R *17/00*
U.S. Cl. 367—155 **9 Claims**

1. An underwater transducer, comprising:
a plurality of groups of rectangular planar staves made of a piezoelectric material, each stave having opposing faces, a long first side edge and an opposing long second side edge;
means for supplying positive and negative electrical charges to the long first and second side edges of each of the staves such that opposite polarity is developed between said edges, said supplying means including an even buss, an odd buss and a common buss, wherein each group of staves is comprised of four staves each such that:
a first stave first edge is connected to the common buss and second edge is connected to the even buss;



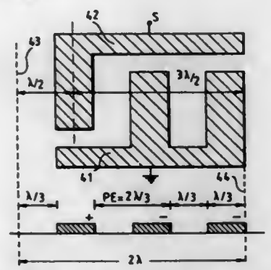
a second stave, adjacent the first stave, has a first edge connected to the common buss and second edge connected to the odd buss;
a third stave, adjacent the second stave, has a first edge connected to the even buss and second edge connected to the common buss; and
a fourth stave, adjacent the third stave, has a first edge connected to the odd buss and second edge connected to the common buss,
the staves being supplied electrical charges such that selected pairs of adjacent staves develop like charges, and are interspersed with oppositely charged pairs of adjacent staves;
support means for holding the staves by the long first side edges in an array such that the staves are spaced apart one from another so that each stave is electrically isolated from every other stave, with their opposing faces being generally parallel with one another, with exposed long second side edges defining a generally planar active sonar face, the spacing between staves being about one-half wavelength of a predetermined operating signal so that a phase center of the signal is established at approximately a midpoint between like-charged adjacent staves; and
means for affixing the staves to said support means.

5,550,793

UNIDIRECTIONAL WAVE TRANSDUCER

Pierre Dufilie, Vernon, Conn., assignor to Thomson-CSF, Paris, France

Filed Apr. 26, 1995, Ser. No. 397,053
Int. Cl.[6] H04R *17/00*
U.S. Cl. 367—164 **8 Claims**



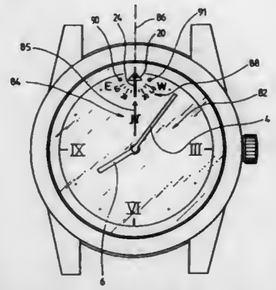
1. Unidirectional ground wave transducer of the type comprising a line of emitter cells (E) and reflector cells (R) alternating in succession and arranged in such a way that the acoustic waves emitted by the emitter cells and reflected by the reflector cells are added together constructively in a direction of propagation and destructively in the other direction of propagation, wherein the emitter cells consist of two electrodes (41, 42) existing as interdigitated combs incorporating a spacing (P_E) equal to $2\lambda/3$, λ being the operating midband wavelength of the transducer.

5,550,794

WATCH INCLUDING AN ARRANGEMENT INDICATING THE MAGNETIC NORTH

Jean-Jacques Born, Morges, and Etienne Bornand, Boudry, both of, Switzerland, assignors to Asulab S.A., Bienne, Switzerland

Filed Jul. 20, 1995, Ser. No. 504,580
Claims priority, application Switzerland, Jul. 26, 1994, 02353/94
Int. Cl.[6] G04B *47/06;* **G01C** *9/00*
U.S. Cl. 368—11 **12 Claims**



1. A watch comprising an horological movement, a case within which said horological movement is fitted, and means for indicating the terrestrial magnetic north also fitted within said case; said terrestrial north indicating means comprising a bipolar permanent magnet mounted on a shaft defining a rotation axis, and a direction indicator rigidly fixed to said permanent magnet and made of a non-magnetic material; said direction indicator having a longitudinal dimension which is perpendicular to said rotation axis and which defines the direction indicated by said direction indicator; said permanent magnet exhibiting a radial magnetization defining a magnetic axis which is substantially perpendicular to said rotation axis and which is located within a peripheral region of said case, said longitudinal dimension of said direction indicator being eccentric relative to said rotation axis, said direction indicator having a rotational movement which is limited so that a larger longitudinal part of said direction indicator measured from said rotation axis and partially defining said longitudinal dimension is located in a circular sector oriented substantially in a direction of the center of said watch relative to said rotation axis.

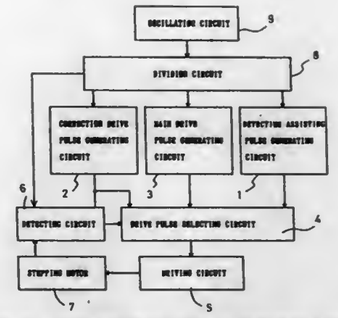
5,550,795

ELECTRONIC TIMEPIECE AND A METHOD OF DRIVING A STEPPING MOTOR OF ELECTRONIC TIMEPIECE

Akira Takakura, and Jun Hirotomi, both of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

PCT No. PCT/JP94/00030, § 371 Date Sep. 19, 1994, § 102(e) Date Sep. 19, 1994, PCT Pub. No. WO94/16365, PCT Pub. Date Jul. 21, 1994
PCT Filed Jan. 12, 1994, Ser. No. 302,923
Claims priority, application Japan, Jan. 18, 1993, 5-006163; Feb. 12, 1993, 5-024311; Mar. 4, 1993, 5-044182; Mar. 11, 1993, 5-051111; Mar. 25, 1993, 5-067127; Apr. 14, 1993, 5-087660; Oct. 4, 1993, 5248204
Int. Cl.[6] G04F *5/00;* **G04B** *19/00*
U.S. Cl. 368—157 **13 Claims**

1. An electronic timepiece comprising:
an oscillator circuit for generating a time standard signal;
a dividing circuit for dividing the time standard signal from the oscillator circuit and outputting a plurality of clock signals each having a different frequency;
a stepper motor having a rotor and a coil for driving a gear train;
a driving circuit for outputting an effective power pulse to drive the stepper motor;



a main drive pulse generating circuit for generating a main drive pulse signal to drive the stepper motor at a predetermined time interval in accordance with the plurality of clock signals from the dividing circuit;
a detecting circuit for detecting the rotational state of the rotor by comparing an induced voltage in the coil after application of the main drive pulse signal to the stepper motor with a reference voltage level, and for outputting a detection signal corresponding to a detection result;
a detection assisting pulse generating circuit for generating a detection assisting pulse signal having a smaller effective power than the main drive pulse signal in accordance with the plurality of clock signals from the dividing circuit, wherein the detection assisting pulse signal is effective to amplify the induced voltage level of the coil and is applied to the stepper motor at a time of detecting whether the rotor is being rotated by the main drive pulse signal;
a correction drive pulse generating circuit for generating a correction drive pulse signal having a larger effective power than the main drive pulse signal in accordance with the plurality of clock signals from the dividing circuit, wherein the correction drive pulse signal is applied to the stepper motor to rotate the rotor when the detection result of the detecting circuit indicates a non-rotation state of the rotor; and
a drive pulse selecting circuit for selectively outputting the main drive pulse signal to the driving circuit at a predetermined time, for selectively outputting the detection assisting pulse signal to the driving circuit at a predetermined time, and for selectively outputting the correction drive pulse signal to the driving circuit a predetermined time period after application of the main drive pulse signal in accordance with the detection signal.

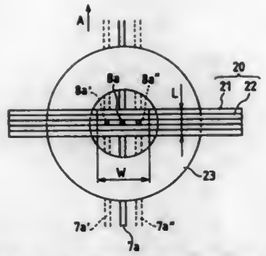
5,550,796

MAGNETIC HEAD AND MAGNETO-OPTICAL RECORDING APPARATUS

Kazuyoshi Ishii, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 11, 1995, Ser. No. 540,803
Claims priority, application Japan, Oct. 13, 1994, 6-247714
Int. Cl.[6] G11B *11/04;13/04*
U.S. Cl. 369—13 **6 Claims**

1. A magnetic head for applying a magnetic field modulated according to an information signal to a recording medium, comprising:
a core comprised of a laminate in which a plurality of magnetic layers are laminated, said core having a pole-tip face formed perpendicular to said magnetic layers, wherein said pole-tip face is arranged so as to be parallel to said recording medium and said magnetic layers are arranged so as to be perpendicular to a moving direction of relative movement between said recording medium and said magnetic head; and
a coil arranged around said core;



wherein when W is a width of said pole-tip face in a direction perpendicular to said moving direction and L is a length of said pole-tip face in a direction parallel to said moving direction, said width W and length L satisfy the following relations:

$20\ \mu m \leq L \leq 100\ \mu m$

$L+40\ \mu m \leq W$

$L \times W \leq 25000\ \mu m^2$.

5,550,797

OPTICAL REPRODUCTION SIGNAL PROCESSING CIRCUIT FOR PRODUCING AN RF SIGNAL AND A SERVO SIGNAL WITH A HIGH SIGNAL TO NOISE RATIO EVEN THOUGH THE RF SIGNAL COMPONENT PARTIALLY OVERLAP IN FREQUENCY DISTRIBUTION

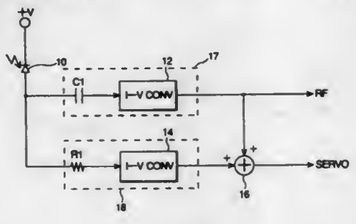
Motoi Kimura, Kanagawa; Shunji Yoshimura, Tokyo, and Kyoko Suzuki, Kanagawa, all of, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 23, 1994, Ser. No. 344,842

Claims priority, application Japan, Nov. 25, 1993, 5-295774

Int. Cl.[6] G11B *7/95*

U.S. Cl. 369—44.41 **8 Claims**



1

1. A processing circuit for an optical reproduction signal comprising:

a signal generating means for dividing an optical reproduction signal output from a photo detector, and including a plurality of signal components, into a plurality of signals having frequency regions corresponding to the respective plurality of signal components and performing current to voltage conversion on the divided optical reproduction signals, wherein the signal generating means, when dividing the optical reproduction signal in accordance with signal components partially overlapping each other in the frequency regions in which they are located, divides the optical reproduction signal into a frequency region in which one of the overlapping signal components is located and another frequency region; and

a correcting means for adding the results of the current to voltage conversion of the signal components to correct the results of the current to voltage conversion, wherein the correcting means adds the results of the current to voltage conversion corresponding to the frequency region in which one of overlapping signal components is located to the results of current to voltage conversion corresponding to the other frequency region to correct dropout of information of the results of current to voltage conversion corresponding to the other frequency region.

5,550,798

AN ENHANCED OPTICAL BEAM SPLITTER TO INCREASE THE KERR ROTATION ANGLE

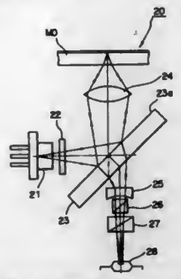
Satoshi Hineno, Kanagawa, and Nobuhiko Ando, Tokyo, both of, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 7, 1994, Ser. No. 224,344

Claims priority, application Japan, Apr. 13, 1993, 5-109883; Apr. 23, 1993, 5-120776

Int. Cl.[6] G11B *7/135*

U.S. Cl. 369—110 **14 Claims**



1. An optical head apparatus for a magneto-optical recording medium, said apparatus comprising:

a light beam source for emitting a light beam;

an objective lens which focuses the light beam emitted from said light beam source to the recording surface of a magneto-optical recording medium;

a separating optical system which separates the light beam emitted from said light beam source from a reflected light beam reflected from the recording surface of the magneto-optical recording medium via said objective lens; and

a photodetector for receiving said reflected light beam reflected from the recording surface, being separated by said separating optical system,

wherein, said separating optical system comprises an enhancement element for increasing a Kerr rotation angle of the reflected light beam.

5,550,799

DEVICE FOR AND METHOD OF CALIBRATING OPTIMUM RECORDING POWER FOR RECORDABLE OPTICAL DISC RECORDING APPARATUS

Akiyoshi Inoue; Shoji Taniguchi; Eisaku Kawano; Naoharu Yanagawa, and Hiroshi Suzuki, all of Saitama-ken, Japan, assignors to Pioneer Electronic Corporation, Tokyo-to, Japan

Filed Jan. 19, 1995, Ser. No. 374,872

Claims priority, application Japan, Jan. 26, 1994, PO6-6943

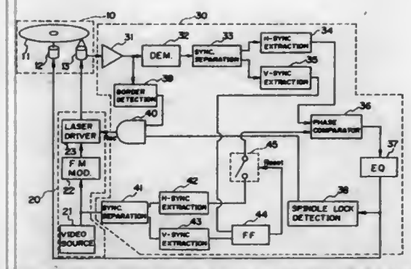
Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—116 **8 Claims**

1. A method of calibrating power of laser beam emitted from a laser unit installed in a recording device and irradiated on an optical recording medium, comprising the steps of:

performing test recording of FM video signal and EFM audio signal with varying recording power of the laser beam and duty of recording signal for driving the laser unit independently of each other;

detecting carrier level of the recorded FM video signal and error rate of recorded EFM audio signal; and



determining optimum recording power of the laser beam so that the carrier level is higher than a first predetermined value and the error rate is smaller than a second predetermined value.

5,550,800

PICK-UP WITH ADAPTATION

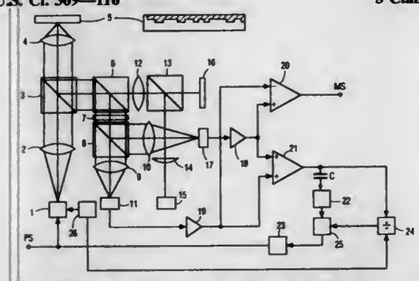
Friedhelm Zucker, Villingen-Schwenningen, Germany, assignor to Deutsche Thomson-Brandt GmbH, Villigen-Schwenningen, Germany

Filed May 1, 1995, Ser. No. 432,446

Claims priority, application Germany, May 3, 1994, 44 15 508.5

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—116 **8 Claims**



1. Apparatus for recovering information from a recording medium by directing energy to and detecting reflected energy from said recording medium, said apparatus comprising:

a controllable source for controlling energy directed to the recording medium;

detection circuitry for providing a control signal corresponding to a ratio of energy directed to and energy reflected from-said recording medium, said control signal being applied to said controllable source.

5,550,801

LINEAR ARRAYED DISC CHANGER WITH SHIFTABLE GUIDE PROJECTIONS

Kazuhisa Enomoto; Takao Yamazaki; Taiki Azuma, and Shinji Tarutani, all of Saitama, Japan, assignors to Pioneer Electronic Corporton, Tokyo, Japan

Filed Jan. 5, 1995, Ser. No. 368,913

Claims priority, application Japan, Jan. 5, 1994, 6-000125

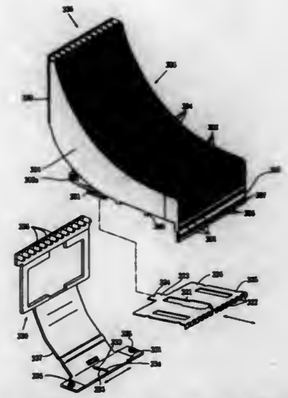
Int. Cl.[6] G11B *17/22;17/04*

U.S. Cl. 369—178 **4 Claims**

1. An automatic disc changer for a disc reproducing system, comprising:

a casing for the automatic disc changer;

a plurality of disc holders arranged in a substantially horizontal direction in the casing, each of said disc holders having a plurality of holding plates forming spaces therebetween for respectively storing a plurality of discs in vertical positions, each space defining a pitch;



a reproducing device provided in the casing to be moved along the disc holders, the reproducing device having a loading arm to be inserted into a corresponding one of the spaces for loading a selected one of the discs on the reproducing device;

a movable frame provided on each of the disc holders to be shifted by the pitch of a corresponding one of the spaces in the substantially horizontal direction of arrangement of the disc holders, the movable frame including a plurality of guide projections disposed adjacent to ends of the holding plates, the guide projections being spaced apart by a pitch which is twice as much as the pitch of each of the spaces, each of the guide projections having a triangular section defining a bottom portion which is approximately equal to the pitch of each of the spaces so as to close a corresponding one of the spaces when positioned thereover, and shifting means for shifting the movable frame and in turn the guide projections by a distance corresponding to the pitch of each of the spaces.

5,550,802

DATA COMMUNICATION NETWORK WITH MANAGEMENT PORT FOR ISOCHRONOUS SWITCH

Debra J. Worsley, Vista; Geetha N. K. Rangan, Sunnyvale; Brian C. Edem, San Jose, and Michael S. Evans, San Jose, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

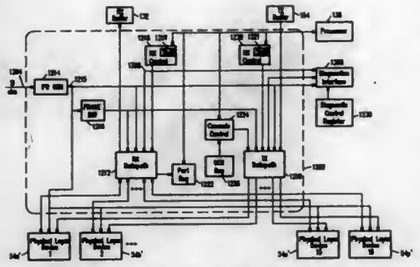
Continuation of Ser. No. 146,389, Nov. 1, 1993, abandoned, which is a continuation-in-part of Ser. No. 969,916, Nov. 2, 1992, abandoned. This application Feb. 7, 1995, Ser. No. 385,086

Int. Cl.[6] H04L *12/44;* **H04J** *3/12*

U.S. Cl. 370—13 **24 Claims**

1. In a communication apparatus for exchanging data among a plurality of devices coupled to a communication hub, wherein receive data communicated from the plurality of devices to the hub are received by the hub through a plurality of parallel connected receive communication data paths, wherein the receive data communicated to the hub from each of said plurality of devices is ordinarily stored in a buffer before being communicated from said buffer to each of said plurality of devices, and wherein transmit data communicated to the plurality of devices from the hub are communicated through a plurality of parallel connected transmit communication data paths, a communication management device comprising:

a monitoring circuit coupled to said plurality of transmit communication data paths and to said plurality of receive commu-



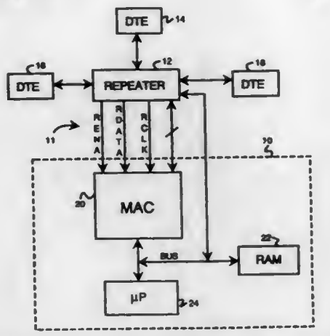
nication data paths for selectively receiving the receive data being communicated to said hub by a selected one of said devices and for selectively receiving the transmit data being communicated from said hub to a selected one of said devices without affecting communication of said transmit and receive data between said buffer and any of said plurality of transmit and receive communication data paths.

5,550,803

METHOD AND SYSTEM FOR INCREASING NETWORK INFORMATION CARRIED IN A DATA PACKET VIA PACKET TAGGING

Ian S. Crayford, San Jose, and William Lo, Santa Clara, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Mar. 17, 1995, Ser. No. 406,085
Int. Cl.[6] H04J *3/14*
U.S. Cl. 370—13 **42 Claims**



1. A method for providing statistical network information in a data packet, the method comprising the steps of:

(a) receiving a data packet on a repeater in the network, the repeater having a plurality of ports, the data packet having a data portion;

(b) transferring the data portion of the data packet to a management unit; and

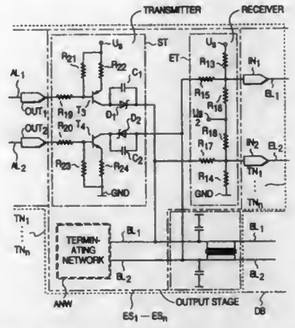
(c) appending statistical information to the data portion transferred to the management unit during an interpacket gap period.

5,550,804

DATA BUS SYSTEM

Bernd HäuBler, Ostfildern; Benno Meyer, Salem, and German Münk, Friedrichshafen, all of, Germany, assignors to Temic Telefunken Microelectronic GmbH, Heilbronn, and Mercedes Benz AG, Stuttgart, both of, Germany

Filed Dec. 7, 1994, Ser. No. 351,486
Claims priority, application Germany, Dec. 9, 1993, 43 42 036.2
Int. Cl.[6] H04J *1/16*
U.S. Cl. 370—16 **9 Claims**



1. Data bus system comprised of:

a) a serial data bus (DB) operated with complementary logic signals,

b) several system users ($TN_1 \ldots Tn_n$), communicating with each other via the bus lines (BL_1, BL_2) of the data bus (DB),

c) several output stages ($ES_1 \ldots Es_n$) each having a transmitter (ST) and a receiver (ET), with each system user ($TN_1 \ldots Tn_n$) being assigned an output stage (ES1 . . . Esn) for coupling to the data bus (DB), and

wherein,

d) the output stage ($ES_1 \ldots Es_n$) of each system user ($TN_1 \ldots Tn_n$) includes a respective terminating network ($ANW_1 \ldots ANW_2$) coupled to the bus lines (BL1, BL2),

e) the terminating network (ANW1) of at least one output stage (ES_1) is low impedance, active, and internally switchable from one impedance value present on the bus lines to another impedance value present on the bus lines,

f) the terminating network ($ANW_3 \ldots ANW_n$) of at least one more output stage (ES_2) is passive and of low impedance,

g) the terminating networks ($ANW_3 \ldots ANW_n$) of all other output stages (ES_3) . . . ES_n) are passive and of high impedance.

5,550,805

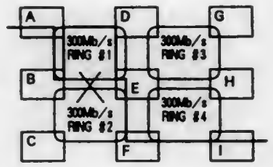
FAILURE RESTORATION METHOD IN A MESH NETWORK

Masahiro Takatori, Hachioji; Yukio Nakano, Zama, and Yoshihiro Ashi, Yokohama, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 8, 1995, Ser. No. 385,408
Claims priority, application Japan, Feb. 14, 1994, 6-017110
Int. Cl.[6] H04L *1/22*
U.S. Cl. 370—16.1 **14 Claims**

1. A method for restoring a failed mesh network in which each closed loop in the network is defined as a logical ring, each channel transmitted in multiplexed form in a transmission line is assigned to one of the logical rings, the channels belonging to the logical ring are divided into two groups, one being a working channel group and the other being a spare channel group, the method for restoring comprising the steps of:

normally transmitting a signal over working channels of a logical ring; and



when a failure occurs in a transmission line transmitting the affected traffic from one of the end nodes of the failed line to the other end node of the failed line by using the spare channel in said logical ring in which said failure occurs away from the failed line;

whereby the restoration from the failure is attained.

5,550,806

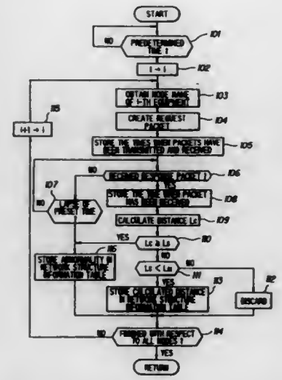
Patent Not Issued For This Number

5,550,807

METHOD OF MEASURING DISTANCE BETWEEN EQUIPMENTS ON LAN AND DISTANCE MEASURING APPARATUS

Kazumasa Kuroshita, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Sep. 27, 1994, Ser. No. 313,438
Claims priority, application Japan, Mar. 4, 1994, 6-034519
Int. Cl.[6] H04J *3/24;* **H04L** *12/46*
U.S. Cl. 370—17 **10 Claims**



1. A method of measuring the distance between the equipments on a LAN comprising the steps of:

transmitting a request packet periodically from a first equipment to each of the other equipments;.

transmitting a response packet from each equipment which has received said request packet to said first equipment;

calculating by said first equipment a distance between said first equipment and each of the other equipments on the basis of the time at which said request packet has been transmitted and the time at which said response packet has been received; and

storing the calculated distance in a memory, wherein said step of storing said calculated distance includes the steps of:

comparing said calculated distance with a distance previously stored in said memory;

updating said distance stored in said memory when said calculated distance is shorter; and

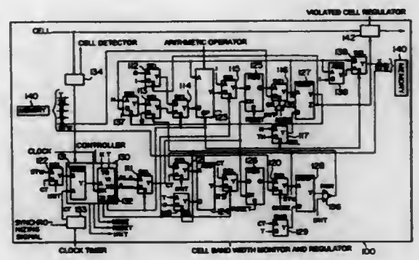
discarding said calculated distance and holding said distance stored in said memory when said calculated distance is longer.

5,550,808

WINDOW-BASED ATM CELL STREAM REGULATOR

Kiyoshi Shimokoshi, Tokyo, Japan, assignor to OKI Electric Industry Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1995, Ser. No. 413,852
Claims priority, application Japan, Apr. 1, 1994, 6-064821
Int. Cl.[6] H04J *3/22*
U.S. Cl. 370—17 **8 Claims**



1. A window-based ATM cell stream regulator comprising:

arrival time detecting means for detecting an arrival time of an arriving cell;

arriving cell detecting means for detecting to which connection, among a plurality of connections, the arriving cell belongs;

memory means for storing therein a predetermined allowable number, a predetermined upper limit number greater than the allowable number, a predetermined window section length indicating a predetermined single window length, a predetermined reset time, a counted number of arriving cells and a window start time that is an initial value and will be updated;

window detecting means for detecting to which window of a connection the arriving cell belongs based on the arrival time, the window start time and the window section length;

counting means for counting a number of cells which have arrived in each connectionu, and for counting a number of

cells, that have arrived until a number of the counted cells in a single window exceeds the allowable number and reaches the upper limit number, and then designating the counted number of cells having reached the upper limit number as an allowable number of cells;

allowable number updating means for updating the counted number stored in said memory means to the allowable number of cells, which have been counted by said counting means, as a counting number in a succeeding window on a time base;

discarding means for discarding cells which arrive after the counted number of cells reaches the upper limit number;

counted number updating means for updating the counted number if the arrival time is later than the window start time by an amount no less than the predetermined window section length, and less than the reset time;

window updating means for updating the window start time if the arrival time is later than the window start time by an amount no less than the window section length and less than the reset time;

resetting means for updating the counted number if the arrival time is later than the window start time by an amount no less than the reset time; and

reset updating means for updating the window start time if the arrival time is later than the window start time by an amount no less than the reset time.

5,550,809

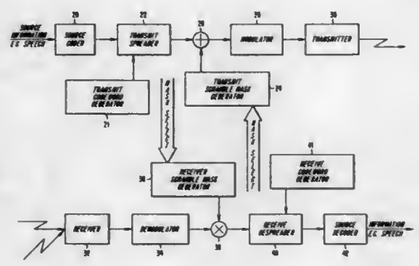
MULTIPLE ACCESS CODING USING BENT SEQUENCES FOR MOBILE RADIO COMMUNICATIONS

Gregory E. Bottomley, Cary, N.C., and Paul W. Dent, Stehag, Sweden, assignors to Ericsson GE Mobile Communications, Inc., Research Triangle Park, N.C.

Continuation-in-part of Ser. No. 866,865, Apr. 10, 1992, Pat. No. 5,353,352. This application Aug. 16, 1994, Ser. No. 291,693

Int. Cl.[6] H04J *13/00*

U.S. Cl. 370—18.000 **50 Claims**



1. In a system for communicating a sequence of information symbols, a transmitter comprising:

means for spreading each information symbol with a respective spreading sequence, thereby forming a sequence of spread symbols, wherein the spreading sequences are selected from a set of spreading sequences that are mutually orthogonal or bi-orthogonal;

means for scrambling each spread symbol with a common scramble mask, thereby producing a sequence of scrambled symbols, wherein the common scramble mask is selected from a set of scramble masks having optimal or semi-optimal correlation properties; and

means for transmitting the sequence of scrambled symbols over a communication channel.

5,550,810

DIRECT SEQUENCE CODE DIVISION MULTIPLE ACCESS (DS-CDMA) COMMUNICATION SYSTEM AND A RECEIVER FOR USE IN SUCH A SYSTEM.

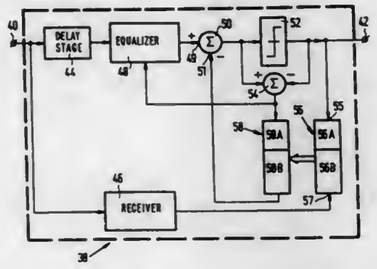
Pantelis N. Monogioudis, Athens, Greece, and John M. Edmonds, Horley, England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 24, 1994, Ser. No. 295,449

Claims priority, application United Kingdom, Aug. 24, 1993, 9317604

Int. Cl.[6] H04J *13/04*

U.S. Cl. 370—18 **22 Claims**



1. A direct sequence-code division multiple access (DS-CDMA) system, having associated therewith cross correlation values among contemporaneous users, the system comprising: a transmitter and a receiver, the transmitter having means for multiplying a modulating signal with a spreading sequence in order to form a spread spectrum signal and means for transmitting the spread spectrum signal on a CDMA channel, and the receiver comprising receiving means for receiving signals on said CDMA channel, and interference cancelling means for cancelling multiple access interference, said interference cancelling means including

an input coupled to the receiving means for receiving the received signals,

feedforward filtering means coupled to the input for processing the received signals,

quantizing means coupled to the feedforward filtering means for producing quantized decisions from information derived from the feedforward filtering means,

tentative decision means coupled to the input for making tentative decisions on the received signals,

characterizing means, coupled to the tentative decision means and the quantizing means, for characterizing the CDMA channel in dependence on the cross correlation values of all the contemporaneous users, and

adjusting means responsive to the characterizing means for adjusting tap weights of at least the feedforward filtering means so as to cancel substantially multiple access interference.

5,550,811

SYNC ACQUISTION AND TRACKING CIRCUIT FOR DS/CDMA RECEIVER

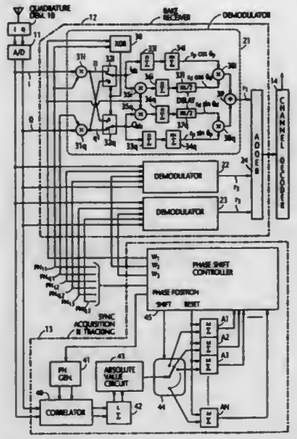
Tomoya Kaku, and Sean O'Regan, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Dec. 30, 1994, Ser. No. 367,108

Claims priority, application Japan, Dec. 30, 1993, 5-354554

Int. Cl.[6] H04B *1/707*

U.S. Cl. 370—18 **12 Claims**



1. A sync acquisition and tracking circuit for a direct sequence spread spectrum receiver which receives in-phase and quadrature data signals and in-phase and quadrature pilot signals, comprising:

register means storing a plurality of phase position signals;

first selector means cyclically selecting each one of said phase position signals in response to a shift command signal;

a pseudo-random number (PN) generator for producing orthogonal PN sequences in accordance with the selected phase position signal;

correlator means multiplying the in-phase and quadrature spread pilot signals with the orthogonal PN sequences of the PN generator at a chip rate to produce in-phase and quadrature despread pilot signals and integrating the in-phase and quadrature despread pilot signals at predetermined intervals to produce a correlation value;

a plurality of accumulator means;

second selector means cyclically selecting each one of said accumulator means in response to said shift command signal and applying the correlation value to the selected accumulator means, whereby each of said accumulator means produces a total sum of the correlation values which are produced by said correlator means while said phase position signals are being cyclically selected and applied to said PN sequence generator; and

control means connected to said accumulator means for generating said shift command signal at a rate higher than a rate at which Rayleigh fading occurs, selecting a total sum of the highest correlation value from the total sums of all of said accumulator means, selecting one of said phase position signals which corresponds to the selected total sum, and generating orthogonal despreading sequences corresponding to the selected phase position signals and applying the orthogonal despreading sequences to said direct sequence spread spectrum receiver to despread said in-phase and quadrature data symbols with said orthogonal despreading sequences.

5,550,812

SYSTEM FOR BROADCASTING AND RECEIVING DIGITAL DATA, RECEIVER AND TRANSMITTER FOR USE IN SUCH SYSTEM

Norbert J. L. Philips, Leuven, Belgium, assignor to U.S. Philips Corporation, New York, N.Y.

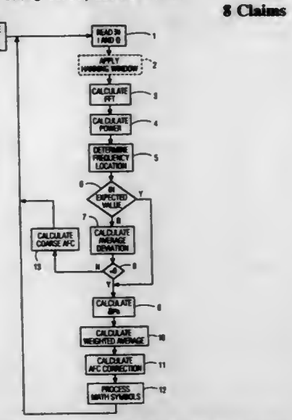
PCT No. PCT/NL92/00039, § 371 Date Aug. 23, 1993, § 102(e) Date Aug. 23, 1993, PCT Pub. No. WO92/16063, PCT Pub. Date Sep. 17, 1992

PCT Filed Feb. 27, 1992, Ser. No. 108,560

Claims priority, application United Kingdom, Feb. 28, 1991, 9104241

Int. Cl.[6] H04J *11/00;* **H04L** *27/144*

U.S. Cl. 370—19 **8 Claims**



1. System for broadcasting and receiving digital data within time divisional multiplexed channels, grouped in frames, each frame comprising multicarrier symbols, including data symbols and system symbols, each symbol comprising a set of orthogonal frequency division multiplexed carriers at carrier positions within a frequency raster with regular carrier spacing, said frames further including frequency reference symbols, each carrying information to generate a peak value at at least one reference peak position within the frequency raster, wherein the receiver comprises means for determining the ratio of leakage components occurring at both adjacent carrier positions of at least one reference peak position, and means for deriving an AFC signal from said ratio, which varies with said ratio, said AFC signal being supplied to frequency control means for reducing the difference between said ratio and unity.

5,550,813

CELLULAR BASE STATION TRANSMIT-RECEIVE SYSTEM

George P. Vella-Coleiro, Summit, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Aug. 31, 1994, Ser. No. 299,466

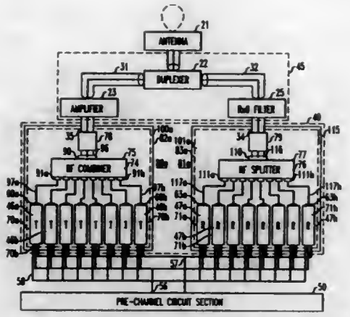
Int. Cl.[6] H04B *1/56*

U.S. Cl. 370—24 **16 Claims**

10. A base station cellular telephone transmit-receive system for use with an antenna that radiates a first wide-band microwave transmission signal and detects a second wide-band microwave reception signal, wherein said first and second signal are subdivided into a plurality of smaller frequency band channels, said system comprising:

a transmitter device receiving baseband signals and electrically connected to said antenna, said transmitter device comprising,

a plurality of transmitter channel circuits corresponding to said plurality of channels, each of said transmitter channel



circuits outputting a carrier transmitter channel signal based on said baseband signals, and

a signal combiner outputting said first signal to said antenna, said signal combiner concurrently receiving each said carrier transmitter channel signal from each of said transmitter channel circuits, said signal combiner combining said each received carrier transmitter channel signal into said first wide-band signal;

a receiver device outputting said baseband signals and electrically connected to said antenna, said receiver device comprising,

a plurality of receiver channel circuits corresponding to said plurality of channels, each of said receiver channel circuits receiving a carrier receiver channel signal based on said second signal, said each of said receiver channel circuits outputting said baseband signals, and

a signal splitter receiving said second signal from said antenna, said signal splitter deriving and distributing receiver channel signals from said second signal, said signal splitter concurrently outputting each of said receiver channel signals to a corresponding one of said receiver channel circuits;

a substrate device mounting at least said transmitter device and said receiver device;

a plurality of first multi-conductor microwave transmission lines disposed adjacent to said substrate device to connect said signal combiner to said corresponding transmitter channel circuits; and

a plurality of second multi-conductor microwave transmission lines disposed adjacent to said substrate means to connect said signal splitter to said corresponding receiver channel circuits.

5,550,814

Patent Not Issued For This Number

5,550,815

APPARATUS AND METHOD FOR REDUCING DATA LOSSES IN A GROWABLE PACKET SWITCH

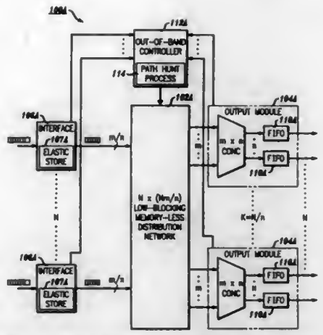
Thomas J. Cloonan, Downers Grove, and Gaylord W. Richards, Lisle, both of Ill., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 30, 1994, Ser. No. 366,705

Int. Cl.[6] H04L *12/54*

U.S. Cl. 370—54 **6 Claims**

1. A growable packet switch for switching packets of data from a plurality of input lines to a plurality of output lines, comprising:



a plurality of input interfaces, each having an input port connected to a respective input line of said plurality of input lines, and an output port;

a single stage distribution network for switching a plurality of I network input ports to a plurality of L network output ports thereof;

each of said input interfaces having a store therein for holding a packet of data until the packet of data is routed to the network;

each of said plurality of input interface output ports fanning out to a respective group of F of said I network input ports of said single stage distribution network;

said single stage distribution network having a plurality of P partitions, where P is an integer;

a plurality of output modules, said output modules together having a plurality of inputs, each of said output module inputs connected to respective network output port of said plurality of L network output ports, and together having a plurality of outputs, each of said output module outputs connected to a respective output line of said plurality of output lines;

an out-of-band controller having a plurality of busy-idle memory units equal in number to the number of partitions P, each of said busy-idle memory units controls the routing of data packets through its respective partition;

each data packet routing request that is made in an i-th time interval has a route determined in the i-th time interval, the next subsequent time interval or is dropped; and

each partition of said P partitions having at least one path that is connectable to provide a connection for a data packet from each of the plurality of input lines to a respective output line of the plurality of output lines.

5,550,816

METHOD AND APPARATUS FOR VIRTUAL SWITCHING

Ken Hardwick, Sherwood, Oreg., and Geoffrey C. Stone, Minneapolis, Minn., assignors to Storage Technology Corporation, Lousville, Colo.

Filed Dec. 29, 1994, Ser. No. 366,227

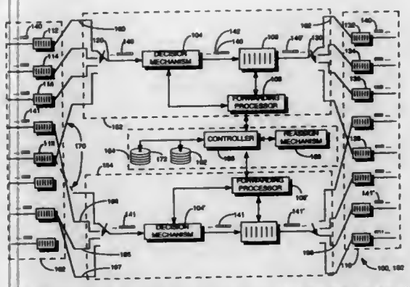
Int. Cl.[6] H04L *12/56;* **G06F** *13/00*

U.S. Cl. 370—60 **57 Claims**

1. A physical switching device for use in a communication network to switch Open Systems Interconnection (OSI) network layer protocol data units within the communication network, the physical switching device comprising:

(a) at least a first and a second virtual switch, each virtual switch comprising decision means for determining an associated directive based on a destination identifier within a particular protocol data unit received at a data port, each virtual switch further comprising processing means for inserting the particular protocol data unit into an outgoing data stream on another data port according to the associated directive to enable delivery of the protocol data unit to the destination identifier, both data ports being associated with a set of data interfaces selected from a plurality of data interfaces in a physical communication network switch, the set of data interfaces being assigned exclusively to a unique virtual switch;

(b) management means, operatively coupled to each virtual switch, for maintaining information on an association between the plurality of data interfaces and each virtual switch, the management means comprising control means dependent on the association information for limiting the processing means of each virtual switch to only inserting the particular protocol data unit into an outgoing data stream on another data port associated with the same virtual switch which received the particular protocol data unit.



5,550,817

Patent Not Issued For This Number

5,550,818

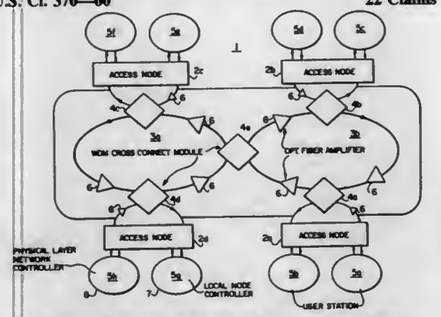
SYSTEM FOR WAVELENGTH DIVISION MULTIPLEXING/ASYNCHRONOUS TRANSFER MODE SWITCHING FOR NETWORK COMMUNICATION

Charles A. Brackett, Mendham; Gee-Kung Chang, Holmdel, and Muhammed Z. Iqbal, Tinton Falls, all of N.J., assignors to Bell Communications Research, Inc., Morristown, N.J.

Filed Sep. 19, 1994, Ser. No. 308,313

Int. Cl.[6] H04J *14/02;* **H04L** *12/433*

U.S. Cl. 370—60 **22 Claims**



1. An optical communication network system, comprising:

a plurality of optical cross-connecting switch devices each controlling a routing of optical data signals in the optical communications network system;

a plurality of fiber optic communication network rings through which data signals are transmitted and received, each of said rings being connected to at least one other ring with at least one of said plurality of optical cross-connecting switch devices such that the data signals can be transmitted and received between adjacent network rings;

a plurality of access node circuits connected to at least one of said plurality of network rings with one of said plurality of optical cross-connecting switch devices, each of said access node circuits being connected to access the data signals being transmitted and received through said network rings;

at least one user station connected to each of said plurality of access node circuits; and

at least one network controller controlling said plurality of cross-connecting switch devices and having means for configuring each of said plurality of cross-connecting switch devices to control the routing of the data signals;

wherein each of said plurality of access node circuits has a local node controller connected to said at least one network controller, whereby said at least one network controller controls configurations of said plurality of access node circuits and said plurality of cross-connecting switch devices through corresponding local node controllers.

5,550,819

METHOD OF TRANSFERRING STRUCTURED DATA OF CONSTANT BIT RATE TRAFFIC IN AN ATM NETWORK

Maurice Duault, Saint Laurent du Var, France, assignor to International Business Machines Corporation, Armonk, N.Y.

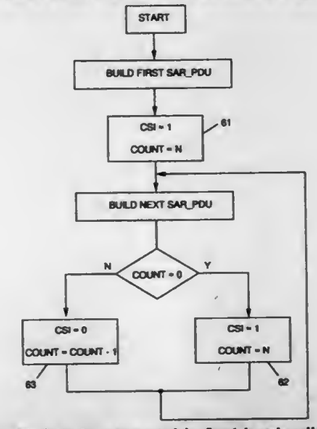
Filed Oct. 4, 1994, Ser. No. 318,012

Claims priority, application European Pat. Off., Oct. 14, 1993, 93480159

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—60.1 **2 Claims**

1. For use in a data communication network in which constant



bit rate traffic is to be transported in fixed length cells having a fixed length cell header and a fixed length cell data payload, a method of generating data cells to be transported over a given connection established between a source node and a destination node to allow said data cells to be used for transport of N-byte data structures, said method comprising the steps of:

a) setting an indicator in a cell header to a first value and a count to N, filling the cell payload portion with complete or partial data structures, forwarding the data cell for transport, resetting the header indicator to a second value and setting N equal to N–1;

b) for each subsequent data cell to be transported over the same given connection, determining whether N equals 1;

c) where N is not equal to 1, writing any bits of a data structure which was only partially loaded into the preceding cell's payload portion into leading positions of the current cell's payload portion and filling the remainder of the payload portion with complete or partial data structures, forwarding the data cell for transport and setting N equal to N−1; and

d) repeating steps b) and c) until step b) indicates that N equals 1 and then repeating steps a) through c) until the last cell to be transported over the same given connection has been forwarded.

5,550,820

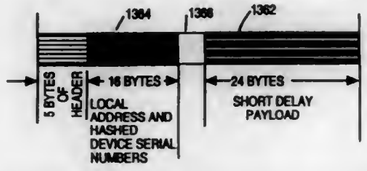
MULTIPLE PROTOCOL PERSONAL COMMUNICATIONS NETWORK SYSTEM

Paul Baran, Atherton, Calif., assignor to Com 21, Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 78,561, Jun. 16, 1993, abandoned, and a continuation-in-part of Ser. No. 953,744, Sep. 29, 1992, abandoned. This application Oct. 14, 1994, Ser. No. 323,341

Int. Cl.[6] H04J *3/26;* **H04L** *12/56*

U.S. Cl. 370—60.1 **16 Claims**



13. A bi-directional relay transmission interface unit to simultaneously provide a transmission path between a terminal unit via a first communications link and a transmission terminating unit via a second communications link, said bi-directional relay transmission interface unit comprising:

a transceiver to communicate bi-directionally and simultaneously with said terminal unit via said first communications link and to convert signals bi-directionally between the signal format of said terminal unit and a series of compliant ATM cells when said terminal unit is operating in other than a compliant ATM cell format; and

an rf modem coupled to said transceiver to communicate bi-directionally via said second communications link with said transmission terminating unit using compliant ATM cells;

wherein each compliant ATM cell is defined as a 53 byte ATM cell with each cell having a 5 byte header and a 48 byte payload, and said payload of each said compliant ATM cell contains an end-to-end routing path designation, said routing path designation uniquely defining a transmission path to be taken by a signal from said terminal unit to said transmission terminating unit and to said terminal unit from said transmission terminating unit, and wherein each cell in said series of compliant ATM cells contains identical formatted routing path information.

5,550,821

ATM REMOTE MAINTENANCE CONNECTION ESTABLISHING SYSTEM

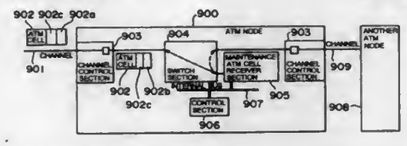
Hitomi Akiyoshi, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Oct. 25, 1994, Ser. No. 328,910

Claims priority, application Japan, Mar. 18, 1994, 6-049476

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—60.1 **16 Claims**



10. An ATM exchange comprising:

a cell switch section having a plurality of ports, for outputting an ATM cell, inputted from any one of said ports, through any one of said ports;

a plurality of channel control sections, respectively connected to channels and any of said ports, for receiving and transmitting the ATM cell;

a remote maintenance ATM cell receiver section, connected to said cell switch section, for receiving a maintenance ATM cell which commands establishment of permanent virtual connection between terminals connected to the switch section through the channel control sections and which has an identifier indicating that said ATM cell is a maintenance ATM cell, and

a control section for establishing the permanent virtual connection by controlling said channel control sections based on said maintenance ATM cell received by said remote maintenance ATM cell receiver section, wherein:

said plurality of channel control sections relay the ATM cell between said cell switch section and said channels, and writes, into said maintenance ATM cell, routing information indicating that said maintenance ATM cell is to be transmitted through said cell receiver section, when said ATM cell received from any of said channels has an identifier indicating said ATM cell is a maintenance ATM cell.

5,550,822

PRIVATE BRANCH EXCHANGE

Nobuhiro Ikeda, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 54,316, Apr. 28, 1993, abandoned. This application Dec. 14, 1994, Ser. No. 355,809

Claims priority, application Japan, Apr. 28, 1992, 4-136345

Int. Cl.[6] H04J *3/02;* **H04Q** *11/04*

U.S. Cl. 370—60.1 **19 Claims**

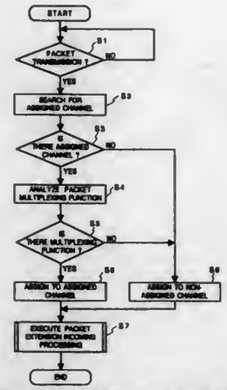
1. A private branch exchange for supporting a packet switching service, which accommodates a main wire between a network and a packet terminal, the main wire accommodating a plurality of channels, the private branch exchange comprising:

detecting means for detecting a channel of the plurality of channels designated by the network or the terminal performing packet switching for a first call, when the first call is originated from the network or the terminal;

means for searching a channel among the plurality of channels to be assigned for a packet switching for a second call;

determining means for determining whether the channel used in packet switching for first call is available for multiplexing the second call; and

negotiating means for negotiating with the network or the terminal in such a manner that in a case where the determining means determines that the channel used in packet switching for first call is available for multiplexing the second call, the second call will be assigned to the channel used in the packet switching for the first call to leave another channel unused, while in a case where the determining means determines that



the channel used in the packet switching for first call is not available for multiplexing the second call, the second call will be assigned to a channel unused.

5,550,823

METHOD AND APPARATUS FOR PERFORMING PRIORITY CONTROL FOR CELLS IN OUTPUT BUFFER TYPE ATM SWITCH

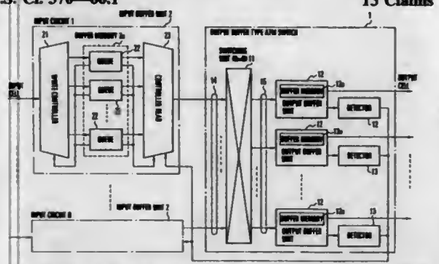
Yasuhito Irie, and Kenji Yamada, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Apr. 28, 1995, Ser. No. 430,385

Claims priority, application Japan, Apr. 28, 1994, 6-111819

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—60.1 **13 Claims**



1. A method of performing priority control for cells in an output buffer type ATM switch including a switching unit, having a plurality of input ports and a plurality of output ports, for switching/outputting the cells input from said input ports to said output ports in accordance with routing information, and a plurality of output buffer units having output buffer memories, connected to said output ports of said switching unit, for temporarily storing the cells output from said output ports to perform output control of the cells, comprising the steps of:

adding a loss quality class, a delay quality class and the routing information to each of the cells;

virtually setting a plurality of logical queues, for temporarily storing the cells, in input buffer memories in accordance with the delay quality classes and the routing information;

selectively writing the input cells in said logical queues on the basis of the loss quality classes and the routing information added to the cells;

performing a transition process for all said logical queues to change the delay quality class of each of said logical queues into one of upper and lower classes depending on a cell storage amount in said logical queue; and

upon completion of the transition process, reading the cells from said logical queue having the delay quality class which is an uppermost class.

5,550,824

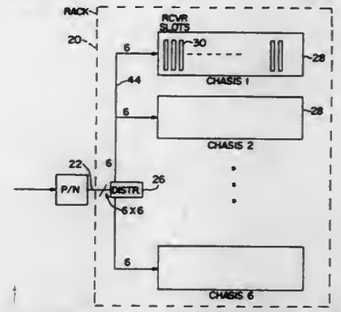
RF SIGNAL DISTRIBUTION SCHEME

Donald K. Belcher, W. Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Feb. 24, 1995, Ser. No. 393,833

Int. Cl.[6] H04J *1/00*

U.S. Cl. 370—71 **20 Claims**



17. In a system for distributing plural RF signals to a set of plural receivers connected to one of a plural number of interface boards carried by a rack, the improvement comprising the use of a separate electrical bus to carry each one of said RF signals to the set of said plural receivers so that one and only one set of RF signals is distributed to the set of plural receivers on an interface board.

5,550,825

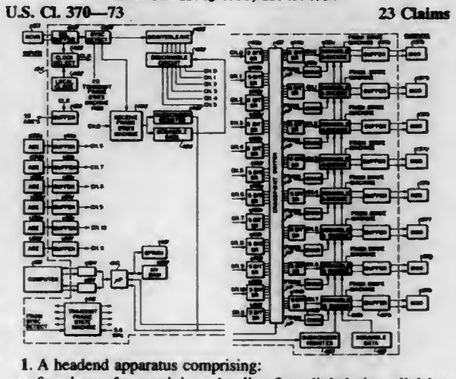
HEADEND PROCESSING FOR A DIGITAL TRANSMISSION SYSTEM

Jay C. McMullan, Jr., Doraville; David B. Burleson; Donald R. Huntley, both of Roswell, and Randolph J. Schaube, Stone Mountain, all of Ga., assignors to Scientific-Atlanta, Inc., Norcross, Ga.

Filed Nov. 19, 1991, Ser. No. 794,477

Int. Cl.[6] H04J *1/00;* **H04N** *7/14*

U.S. Cl. 370—73 **23 Claims**



1. A headend apparatus comprising:

a first input for receiving plurality first digital time division multiplexed channels of program information from a first program source;

a second input for receiving one or more second digital channels of program information from a second program source;

a demultiplexing circuit coupled to said first input for demultiplexing the first channel of digital time division multiplexed program information into a plurality of demultiplexed digital channels of program information;

a switching circuit to which the plurality of demultiplexed digital channels and the and second digital channels of programs information are applied; and

a switch control for controlling said switching circuit to output third channels of program information comprising combinations of programs information of the first and second channels for distribution to subscriber.

5,550,826

COMMUNICATION PROTOCOL FOR COMMUNICATING IMAGE DATA

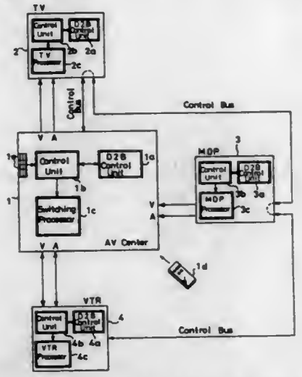
Shigeo Tanaka, Tokyo; Hiroshi Yamazaki; Yoshio Osakabe, both of Kanagawa; Noriko Kotabe, Chiba; Koji Iwamoto; Yoko Souma, both of Nara; Toshihiro Imaura, and Shigeru Maki, both of Osaka, all of, Japan, assignors to Sony Corporation, Tokyo, Japan, and Matsushita Electric Industrial Co., Limited, Osaka, Japan

Filed May 25, 1994, Ser. No. 248,673

Claims priority, application Japan, May 31, 1993, 5-153013; Sep. 3, 1993, 5-243616

Int. Cl.[6] H04J *3/24*

U.S. Cl. 370—85.8 **50 Claims**



1. A method for communicating data by one apparatus with a plurality of apparatus by a serial format comprising:

transmitting a command packet to issue an operation command;

transmitting a status request packet to inquire a status of one of the plurality of apparatus;

transmitting a datum packet to communicate pure data to one of the plurality of apparatus;

transmitting a data request packet requesting data from one of the plurality of apparatus;

receiving from one of a plurality of apparatus an answer packet responding to one of the command packet, the status request packet and the data request packet;

transmitting an automatic status sending packet to voluntarily inform a status of the one apparatus; and

transmitting a simulcast packet to broadcast simulcast datum to the plurality of apparatus.

5,550,827

CONTROL OF THE INTERCHANGE OF DATA PACKETS IN A NETWORK

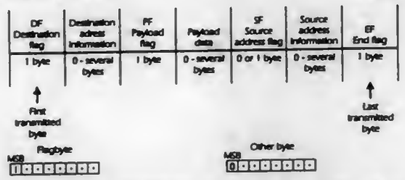
Kenneth G. Fernström, Hägersten, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Continuation of Ser. No. 59,936, May 11, 1993, abandoned. This application Apr. 27, 1995, Ser. No. 428,479

Claims priority, application Sweden, May 11, 1992, 9201495

Int. Cl.[6] H04J *3/02*

U.S. Cl. 370—94.1 **20 Claims**



1. A method of transmitting information from one station to another station comprising the step of sending data packets from the one station to the other station, each data packet comprising:

at least one information field comprising an integral number of bytes; and

at least two flags, wherein each flag indicates one of the beginning of an information field and an ending of an information field, each flag is one byte long, and each flag contains a predetermined bit of a predetermined value different from values corresponding predetermined bits of other bytes,

wherein the value of the predetermined bit in each byte directly indicates whether the corresponding byte is a flag.

5,550,828

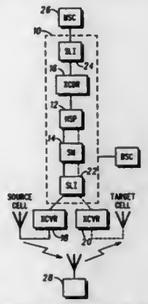
METHOD OF HANDING OFF A COMMUNICATION UNIT IN A CELLULAR COMMUNICATION SYSTEM

Patrick J. Gries, Crystal Lake, and Quoc Nguyen, Lake Zurich, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 30, 1994, Ser. No. 268,745

Int. Cl.[6] H04Q *7/36*

U.S. Cl. 370—95.1 **9 Claims**



1. A method of handing off a radio frequency communication between a source cell transceiver and a communication unit, the method comprising the steps of:

communicating initialization frame data from a target cell transceiver to a base site transcoder;

establishing a radio frequency communication between the target cell transceiver and the communication unit, a timing of the radio frequency communication established between the target cell transceiver and the communication unit being independent of a timing of the radio frequency communication between the source cell transceiver and the communication unit;

terminating communication of initialization frame data;

communicating ordinary frame data received by the target cell transceiver from the communication unit to the base site transcoder;

detecting a transition from initialization frame data to ordinary frame data at the base site transcoder; and

dropping the radio frequency communication between the source cell transceiver and the communication unit upon detecting the transition from initialization frame data to ordinary frame data at the base site transcoder.

5,550,829

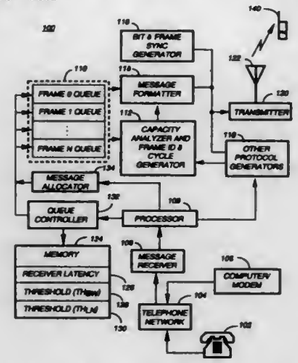
METHOD FOR REALLOCATION FRAME ASSIGNMENTS OF RECEIVES IN A COMMUNICATION SYSTEM

Zhonghe Wang, Lake Worth, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 24, 1995, Ser. No. 547,342

Int. Cl.[6] H04J *3/16*

U.S. Cl. 370—95.1 **17 Claims**



11. A selective call receiver for receiving messages in an assigned frame of a selective call signal comprising a plurality of frames wherein each frame having a frame identifier, an owner identifier, a frame lending offset and a frame borrowing offset, comprising:

a receiver for synchronizing and receiving the selective call signal;

a frame decoder for determining the assigned frame and for docoding the frame identifier and the owner identifier encoded in the assigned frame;

a frame determinator determines whether the frame is being reallocated when the frame identifier is different from a receiver identifier associated with the receiver;

a processor, coupled to the frame decoder, for calculating a first battery saving period indicated by the frame lending offset of the assigned frame in response to receiving the selective call signal having the frame identifier encoded in the frame not equal to the receiver identifier; and

a battery saver, in response to the processor, for disabling the receiver during the first battery saving period in response to the frame determinator, and for activating the receiver for receiving a next frame.

5,550,830

MULTIPLEX TRANSMISSION APPARATUS AND METHOD

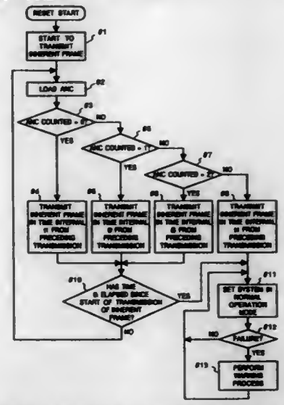
Yasuhiko Kurata, Higashihiroshima; Yuichi Akiyama, and Osamu Michihira, both of Hiroshima, all of, Japan, assignors to Naidec Corporation and Mazda Motor Corporation, Hiroshima, Japan

Continuation of Ser. No. 127,366, Sep. 28, 1993, abandoned. This application Dec. 23, 1994, Ser. No. 364,392

Claims priority, application Japan, Sep. 30, 1992, 4-262327

Int. Cl.[6] H04J *3/12*

U.S. Cl. 370—95.2 **14 Claims**



7. A multiplex transmission apparatus in which a plurality of control nodes connected to a common multiplex transmission path exchange data with each other, comprising:

counting means, located in each of said plurality of control nodes, for counting a number of control nodes which are in a state of being able to exchange data with each other; and

period control means, located in each of said plurality of control nodes, for prolonging a data transmission period of each of said control nodes which are in said state, wherein said period becomes longer as said number of control nodes increases.

5,550,831

TDMA SATELLITE COMMUNICATION SYSTEM FOR TRANSMITTING SERIAL SUBSIGNAL DATA

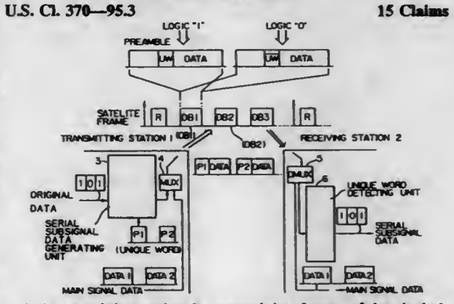
Katsuhiko Tanahashi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 835,588, Feb. 14, 1992, abandoned. This application Mar. 8, 1994, Ser. No. 207,258

Claims priority, application Japan, Feb. 15, 1991, 3-044347

Int. Cl.[6] H04J *3/12*

U.S. Cl. 370—95.3 **15 Claims**



1. A transmitting station for transmitting frames of data including main signal data, said transmitting station comprising:

serial subsignal data generating means for generating serial subsignal data by selectively inverting, for each frame, a unique word identifying when said main signal data starts in each frame of a multiframe transmission, in accordance with the value of a bit in original data synchronized with said unique word in said transmitting station; and

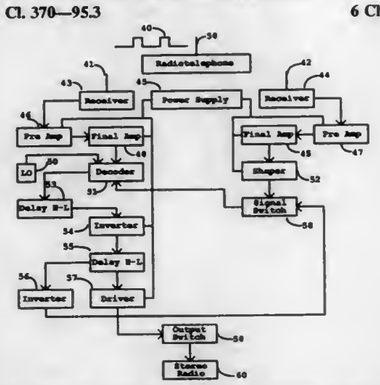
multiplexing means for multiplexing said serial subsignal data and said main signal data for transmission.

5,550,832

TIME DIVISION MULTIPLE ACCESS RADIO TRANSMISSION ACTIVATED RECEIVER SWITCH

Robert H. Randolph, Brandon, Fla., assignor to Digital Call Alert, Lakeland, Fla.

Filed Dec. 12, 1994, Ser. No. 354,430
Int. Cl.[6] H04J *3/02*; H04B *7/212*
U.S. Cl. 370—95.3 **6 Claims**



1. A system for receiving time division multiple access radiotelephone transmissions to activate a switch, comprising:

means for receiving a square root cosine pulse transmission, wherein said means for receiving a square root cosine pulse transmission activates said switch upon initial power up of the said system,

means for receiving local area TDMA radiotelephone transmission time slots using a plurality of receivers for receiving said transmitted time slots, therefore reconstituting the square root, cosine pulse shape of the said transmitted time slot, to prevent signal cancelling, fading and echo effects, and to activate a switch,

means for activating a switch when a transmitted time slot of the proper frequency is detected within a plurality of different TDMA time slot frequencies,

means for detecting a change from TDMA to analog transmission, for holding said switch in its state even when said analog transmission is detected,

means for interfacing switch control circuits to a plurality of receivers to accomplish a redundancy of operation, therefore ensuring correct operation of the switch,

means for utilizing time delay to keep the switch active if a received TDMA or analog signal is temporarily disturbed during transmission,

the switch remaining active throughout the entire period of the radiotelephone transmission, therefore deactivating said switch when said transmission is terminated, and

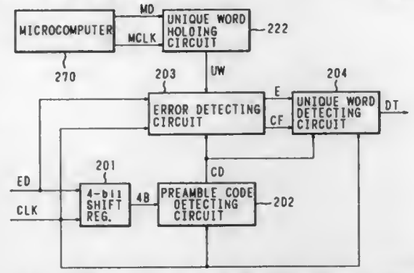
means for detecting an analog transmission in the targeted frequency range, allowing said switch to remain active if a TDMA transmission switches to analog transmission.

5,550,833

UNIQUE WORD DETECTING APPARATUS AND UNIQUE WORD DETECTING METHOD

Yukio Fujisawa, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, and Mitsubishi Electric Semiconductor Software Co., Ltd., Hyogo, both of, Japan

Filed Feb. 21, 1995, Ser. No. 391,797
Claims priority, application Japan, Mar. 1, 1994, 6-031448
Int. Cl.[6] H04J *3/06*
U.S. Cl. 370—105.4 **7 Claims**



1. A unique word detecting apparatus for detecting a unique word from an external data in which the unique word is transmitted following a preamble code, comprising:

data holding means for inputting the external data bit by bit in synchronism with the clock, and for holding data of a predetermined number of bits;

preamble code detecting means for comparing the data of said preamble code stored in advance with the data of the predetermined number of bits held by said data holding means, and for outputting a coincidence detecting signal when they coincide;

unique word holding means for holding the data of the unique word to be detected;

error detecting means for inputting said external data bit by bit in synchronism with said clock, and for, when said coincidence detecting signal is outputted from said preamble code detecting means, comparing the inputted external data with the data of the unique word held by said unique word holding means and outputting an error signal in the case where they do not coincide; and

unique word detecting means for beginning counting the number of outputs of error signal from said error detecting means when said coincidence detecting signal is outputted from said preamble code detecting means, and for outputting a detecting signal indicating that the unique word has been detected in the case where the count value is equal to or smaller than a predetermined value when the comparison of said error detecting means completes.

5,550,834

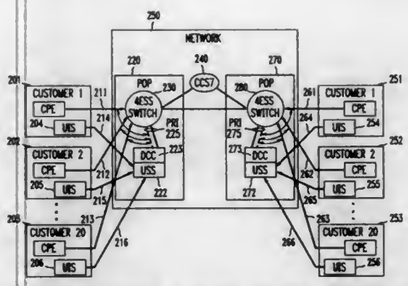
METHOD AND APPARATUS FOR PROVIDING ISDN ACCESS

William J. D'Ambrogio, Oceanport, N.J.; Karen M. McCourt, Raleigh, N.C.; Wayne D. Phillips, Randolph, N.J.; Patricia D. Saleh, Holmdel, N.J., and Barry S. Selp, New Providence, N.J., assignors to AT&T Corp., Murray Hill, N.J.

Continuation of Ser. No. 839,452, Feb. 20, 1992, Pat. No. 5,375,124. This application Jun. 17, 1994, Ser. No. 261,626
Int. Cl.[6] H04J *3/12*
U.S. Cl. 370—110.1 **5 Claims**

1. A system for providing signaling messages to an ISDN capable switch in a telecommunications network, said signaling messages containing information for routing ISDN calls connected to said switch from a plurality of customers served by said switch to desired destinations, said system comprising

a D-channel controller within said network;



means for transmitting non-facility associated signaling messages to said D-channel controller via a first set of paths, said signaling messages originating from a plurality of customer locations different from the location of said D-channel controller,

means for connecting said ISDN calls to said switch via a second set of paths different from said first set of paths, and

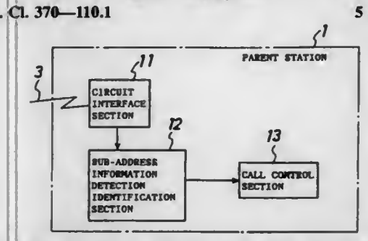
means in said D-channel controller for formulating and sending to said switch ISDN signaling messages to set up appropriate paths from said switch through said network to route said ISDN calls to said desired destinations.

5,550,835

SUPERVISORY IMAGE COMMUNICATION SYSTEM THROUGH AN INTEGRATED SERVICE DIGITAL NETWORK

Kimihiro Mano, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jul. 26, 1994, Ser. No. 280,786
Claims priority, application Japan, Jul. 27, 1993, 5-203713
Int. Cl.[6] H04Q *5/00*
U.S. Cl. 370—110.1 **5 Claims**



1. A supervisory image communication system through an integrated service digital network "ISDN", comprising:

a parent station capable of responding to an originating call from a child station;

a plurality of child stations connected to said parent station by ISDN basic interfaces and an ISDN switched network;

each of said child stations including transmitting means transmitting call originating information to originate a call to said parent station;

sub-address information generation section at each of said child stations for adding sub-address information, representative of a reason for originating a call, to call originating information;

sub-address information detection means provided in said parent station for detecting, upon receiving call originating information from any of said child stations, sub-address information added to the call originating information; and

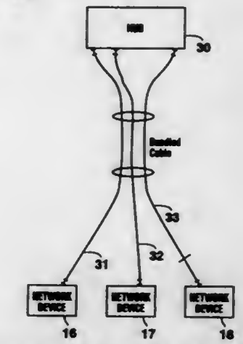
call originating reason identification means provided in said parent station identifying a call originating reason from sub-address information detected by said sub-address information detection means, thereby the call originating reason being identified by the parent station along with an originating call.

5,550,836

HIGH SPEED DATA TRANSFER OVER TWISTED PAIR CABLING

Alan Albrecht, Rocklin; Steven H. Goody, Roseville, both of Calif.; Michael P. Spratt, Henleaze, United Kingdom; Joseph A. Curcio, Jr., Folsom, and Daniel J. Dove, Applegate, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 6, 1992, Ser. No. 972,694
Int. Cl.[6] H04L *12/44*
U.S. Cl. 370—85.2 **30 Claims**



21. In a local network system in which a hub is connected to each of a plurality of network nodes, a method comprising the step of:

(a) when a first network node desires to send a data packet, performing by the first network node the following substeps

(a.1) beginning transmission of the data packet, by the first network node during an arbitration time slot, over a plurality of wire mediums between the first network node and the hub;

(a.2) concurrent with substep (a.1) transmitting by the first network node over a first set of the plurality of wire mediums a first collision signal; and,

(a.3) concurrent with substep (a.1) and (a.2) listening, by the first network node, for a second collision signal sent from the hub to the network node, the second collision signal, when sent, being sent over a second set of the plurality of wire mediums.

5,550,837

ADDAPTIVE DIFFERENTIAL PULSE CODE MODULATION SYSTEM WITH TRANSMISSION ERROR COMPENSATION

Hyokang Chang, Potomac, Md., assignor to Telogy Networks, Inc., Gaithersburg, Md.

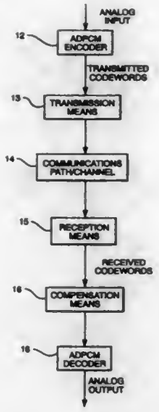
Filed May 24, 1994, Ser. No. 248,143
Int. Cl.[6] G06F *11/00*
U.S. Cl. 371—5.5 **20 Claims**

1. A communications system that compensates for transmission errors, comprising:

A) input means for accepting an analog signal;

B) encoding means, connected to the input means, for encoding the analog signal according to adaptive differential pulse code modulation techniques to generate an encoded output, the encoded output comprising at least one codeword; and

C) compensation means, connected for communication with the encoding means, for accepting the encoded output and for limiting a range of amplitudes of the encoded output to generate a compensated output based on the encoded output.



5,550,838

METHOD FOR TESTING CHARACTERISTICS OF A SEMICONDUCTOR MEMORY DEVICE IN A SERIES OF STEPS

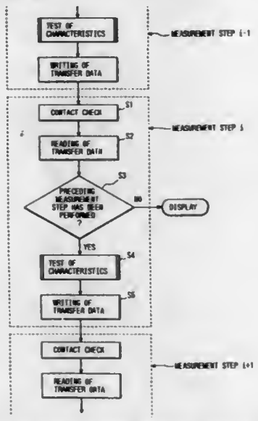
Susumu Okajima, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 889,444, May 27, 1992, abandoned. This application Nov. 22, 1993, Ser. No. 156,392

Claims priority, application Japan, Aug. 7, 1991, 3-223422

Int. Cl.[6] G01R *31/28;31/22*

U.S. Cl. 371—21.2 **3 Claims**



1. A method of testing a semiconductor memory device classifiable into one of a plurality of classifications and having an erasable memory comprising the steps of:

performing a first measurement on the semiconductor memory device, including:

conducting a first test on the semiconductor device;

recording in the erasable memory of the semiconductor device being tested transfer data relating to the result of the first test;

performing immediately after the first measurement a second measurement on the semiconductor memory device, including:

reading the transfer data recorded in the erasable memory to determine if the first measurement has been performed by determining whether the read-out transfer data is of a predetermined kind;

if the read-out transfer data is of the predetermined kind, conducting a second test on the semiconductor memory device;

classifying the semiconductor memory device into one of a plurality of classifications based on the transfer data read-out in the reading step and based on the result of the second test; and

erasing the data recorded in the erasable memory.

5,550,839

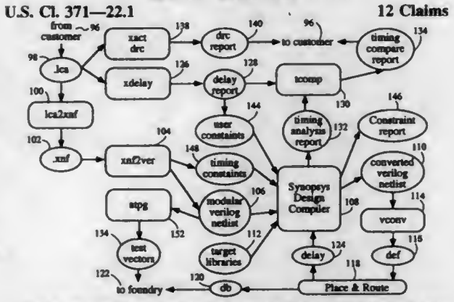
MASK-PROGRAMMED INTEGRATED CIRCUITS HAVING TIMING AND LOGIC COMPATIBILITY TO USER-CONFIGURED LOGIC ARRAYS

Kiran B. Buch, Fremont; Edwin S. Law, Saratoga, and Jakong J. Chu, Santa Clara, all of Calif., assignors to Xilinx, Inc., San Jose, Calif.

Filed Mar. 12, 1993, Ser. No. 30,981

Int. Cl.[6] G01R *31/28*

U.S. Cl. 371—22.1 **12 Claims**



1. A method of making and configuring a mask-configured logic cell array configured to emulate the logical operations of a user-configured logic cell array during normal mode operations, comprising the steps of:

providing a netlist describing the configuration of the user-configured logic cell array, the netlist including a plurality of logic blocks each including a plurality of logic gates present on the user-configured logic cell array; and

configuring the mask-configured logic cell array according to the netlist without a logic simulation to verifying functionality of the configured mask-configured logic cell array, the mask configured logic cell array including a plurality of logic gate clusters placed and routed to correspond one-to-one to used logic blocks of the user-configured logic cell array, each cluster being a plurality of logic gates having physical proximity, but not including at least some logic gate clusters corresponding to unused logic blocks on the user configured logic cell array.

5,550,840

NOISE SUPPRESSION IN LARGE THREE STATE BUSSES DURING TEST

Mark O'Brien, San Jose, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

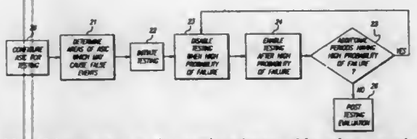
Filed Jan. 12, 1994, Ser. No. 180,730

Int. Cl.[6] H04B *15/00*

U.S. Cl. 371—22.1 **8 Claims**

1. A method for suppressing noise during testing of a semiconductor chip having a plurality of output drivers, comprising the steps of:

applying a master control signal to the semiconductor chip for controlling data output therefrom;



identifying areas on the semiconductor chip where spurious transitions could occur by measuring inductance and by measuring sensitivity to changes in the master control signal;

isolating a noisy portion of the semiconductor chip where spurious transitions between states may occur by running a test vector through the semiconductor chip and disabling portions of the test vector that could produce a failure signal in the identified areas where spurious transitions could occur;

testing the semiconductor chip;

disabling output drivers in the noisy portion of said semiconductor chip;

enabling the output drivers in the noisy portion of said semiconductor chip after portions of the test vector that could cause spurious transitions have expired; and

completing testing of the semiconductor chip by running portions of the test vector that remain after the portions of the test vector that could cause spurious transitions have expired.

5,550,841

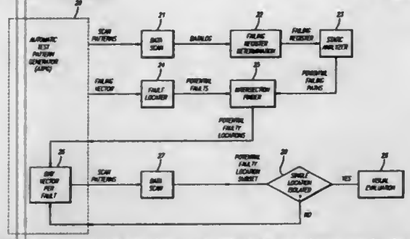
METHOD FOR FAILURE ANALYSIS OF MEGACHIPS USING SCAN TECHNIQUES

Mark O'Brien, San Jose, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Jan. 12, 1994, Ser. No. 181,520

Int. Cl.[6] G01R *31/28;* **G06F** *11/30*

U.S. Cl. 371—22.1 **19 Claims**



15. A method of testing a semiconductor integrated circuit having a plurality of macrocells comprising the steps of:

determining a set of physical paths located on the semiconductor which lead to a failing register;

exercising a primary scan pattern and observing a first set of faults on the semiconductor;

determining physical locations on the semiconductor of an intersection between the first set of faults and the set of physical paths;

iteratively determining and exercising secondary scan patterns to locate a small area containing the fault; and

visually scanning the small area containing the fault to determine cause of failure.

5,550,842

EEPROM VERIFICATION CIRCUIT WITH PMOS TRANSISTORS

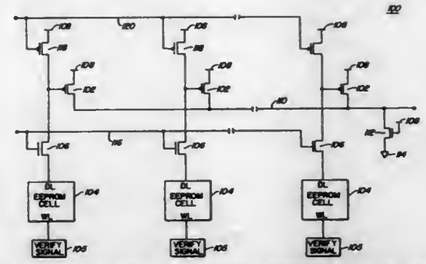
Nghia Tran, San Jose, Calif., assignor to Altera Corporation, San Jose, Calif.

Filed Oct. 28, 1994, Ser. No. 330,761

Int. Cl.[6] G11C *29/00*

U.S. Cl. 371—21.4 **9 Claims**

1. A circuit for verifying the contents of non-volatile memory cells comprising:



a plurality of Electrically Erasable Programmable Read Only Memory (EEPROM) cells, each having a word line and data line;

a plurality of PMOS verify transistors associated with said plurality of EEPROM cells, each having a source coupled to a supply potential, a drain coupled to other drains of the remaining ones of said plurality of PMOS verify transistors and a gate;

a pulldown transistor having a gate coupled to said supply potential, a source coupled to a ground potential and a drain coupled to said drains of said plurality of PMOS verify transistors;

a plurality of NMOS control transistors, each having a source coupled to said data line of one of said plurality of EEPROM cells, a drain coupled to said gate of one of said plurality of said PMOS verify transistors and a gate coupled to a first control line; and

a plurality of PMOS control transistors, each having a source coupled to said supply potential, a drain coupled to said gate of one of said plurality of said PMOS verify transistors and a gate coupled to a second control line.

5,550,843

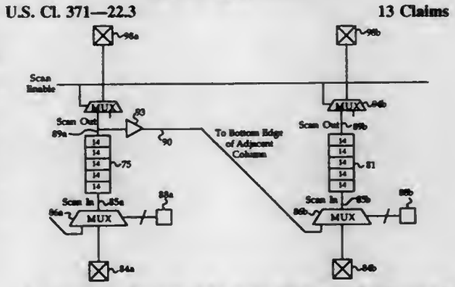
PROGRAMMABLE SCAN CHAIN TESTING STRUCTURE AND METHOD

Wilson K. Yee, Tracy, Calif., assignor to Xilinx, Inc., San Jose, Calif.

Filed Apr. 1, 1994, Ser. No. 223,083

Int. Cl.[6] G01R *31/317*

U.S. Cl. 371—22.3 **13 Claims**



1. A circuit for the scan chain testing of logic cells, the circuit comprising:

a first column of logic cells having a first column input terminal for receiving test data and a first column output terminal for outputting test data;

a second column of logic cells having a second column input terminal for receiving test data and a second column output terminal for outputting test data; and

a first multiplexer having;

a first multiplexer output terminal coupled to the second column input terminal,

a plurality of first multiplexer input terminals, one first multiplexer input terminal of which is coupled to the first column output terminal, and

a control terminal for selecting from among the first multiplexer input terminals for propagation of a selected input signal to the first multiplexer output terminal.

5,550,844

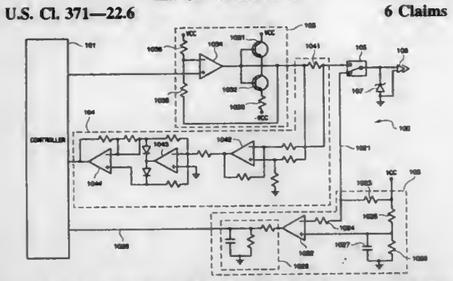
PRINTED CIRCUIT BOARD FAULT INJECTION CIRCUIT

Brian K. Lucas, Avon, England, assignor to Proteus Corporation, Littleton, Colo.

Continuation of Ser. No. 978,752, Nov. 19, 1992, abandoned. This application Jan. 25, 1994, Ser. No. 187,783

Int. Cl.[6] G01R *31/28*

U.S. Cl. 371—22.6 **6 Claims**



1. Apparatus for driving a test node on a printed circuit board under test to logic zero, wherein said printed circuit board under test operates between first and second predetermined voltages representative of logic one and logic zero states, respectively, said first predetermined voltage being greater in magnitude than said secood predetermined voltage, comprising:

means, located external to said printed circuit board under test, for generating a drive signal voltage of predetermined fixed magnitude, whose value is less than said second predetermined voltage representative of logic zero; and

means for directly applying said drive signal voltage of fixed magnitude to said test node on said printed circuit board under test via a probe lead to drive voltage at said test node to a value representative of said logic zero while said printed circuit board is powered to operate between said first and second predetermined voltages.

5,550,845

METHOD FOR DYNAMIC TESTING OF DIGITAL LOGIC CIRCUITS

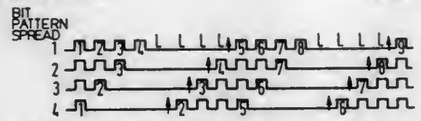
Karl Traub, Olching, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Jun. 10, 1991, Ser. No. 712,468

Claims priority, application Germany, Aug. 3, 1990, 40 24 736.8

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—27 **6 Claims**



1. A method for dynamic testing of logic circuits, comprising the steps of:

(a) applying cyclically-occurring digital signals having a predetermined chronological spacing to inputs of the logic circuit;

(b) identifying anticipated values in all cycles at outputs of the logic circuit with respect to its inputs; and

(c) after at least two test cycles, introducing dummy cycles to provide a spread of the digital signals such that modifications no longer appear at the inputs to the logical circuits during the spread.

5,550,846

CIRCUIT FOR GENERATING AN OUTPUT SEQUENCE OF VALUES

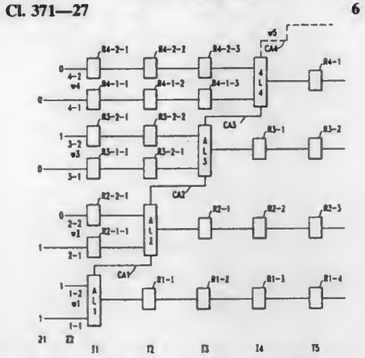
Dieter E. Staiger, Weil im Schoenbuch, Germany, assignor to International Business Machines Corp., Armonk, N.Y.

Filed Sep. 29, 1993, Ser. No. 128,951

Claims priority, application European Pat. Off., Sep. 30, 1992, 92116755

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—27 **6 Claims**



1. A method for configuring of a processor-controlled circuit for generating an factorically producible sequence of values comprising the steps of;

determining a sequence of values to be generated;

C1; C2; C3; C4; C5; C6; C7; C8; . . . CN;

determining from the sequence of values to be generated a series of sequence factors;

A1; A2; A3; A4; A5; A6; A7; A8; . . . AN.

the first factor in said series of said factors having a value which, when added to said initial value in said sequence of values, will provide an obtained result which, when added to the next factor in the sequence of factors, will result in the next value in the sequence of values so that each value in the sequence of values when added to the next factor in the series of factors results in the next value in the sequence of values;

arranging the determined sequence factors in said series in respective periods of recurring values;

each period containing the same number of values as any other period;

determining the number of the factors occurring during a period;

creating a plurality of partial sequences from the sequence of values equal in number to the number of factors occurring in a period;

each partial sequence having a partial sequence factor equal to a constant value; and

configuring a multi-processor circuit;

wherein said multi-processor comprises:

a plurality processors, each having an input and an output, corresponding in number to the number of partial sequences and each processor producing a respective partial sequence;

each respective processor receiving the initial value of each respective partial sequence and further being coupled to a program storage means containing said constant so that said constant can be added to the initial received value to form the next value in said partial sequence and can be successively added to said formed next value to form a further next value to generate each successive value of said partial sequence; and

a multiplexor circuit coupled to the output of each respective processor to combine all the partial sequences to generate the determined sequence of values.

5,550,847

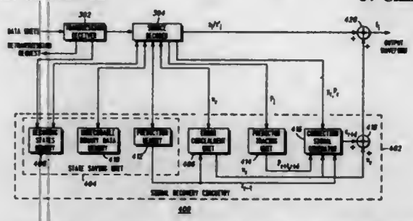
DEVICE AND METHOD OF SIGNAL LOSS RECOVERY FOR REALTIME AND/OR INTERACTIVE COMMUNICATIONS

Qin-Fan Zhu, Stoughton, Mass., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 11, 1994, Ser. No. 320,718

Int. Cl.[6] G08C *25/02*

U.S. Cl. 371—32 **37 Claims**



1. A device for signal loss recovery of a sequence of vectors generated by a predictive waveform encoder and carried over a channel by a plurality of data units for realtime and/or interactive communications, comprising:

A) a transmission receiver, operably coupled to receive the plurality of data units from the channel and to a signal recovery circuitry, for detecting whether a data unit has been damaged/lost during transmission, and for generating a retransmission request to a transmitter for retransmission of the damaged/lost data unit, for signalling signal recovery circuitry that the data unit is damaged/lost, and for generating a binary bitstream from the received data units:

B) a source decoder, operably coupled to the transmission receiver and the signal recovery circuitry, for decoding the binary bitstream to provide an output and for, where a data unit is damaged/lost, facilitating error concealment and signal loss recovery;

C) the signal recovery circuitry, operably coupled to the transmission receiver and the source decoder, for, where a data unit is damaged/lost, providing error concealment, tracing error propagation and generating a correction signal from the retransmitted data unit; and

D) a signal recovery adder, operably coupled to the source decoder and to the signal recovery circuitry, for, where the data unit has been damaged/lost, providing the sum of the output from the source decoder and the correction signal from the signal recovery circuitry to provide an output waveform for a recovered signal,

wherein the signal recovery circuitry includes:

E) a state saving unit, operably coupled to the transmission receiver and to the source decoder, for saving decoding states and information from data units upon detection of data unit damage/loss;

F) an error concealment unit, operably coupled to a prediction memory of the state saving unit, for performing error concealment for vectors damaged due to a data unit damage/loss to provide error concealment information;

G) a predictor tracing unit, operably coupled to the source decoder, for tracing prediction operations performed on sample vectors from the time of the data unit damage/loss until arrival of the retransmitted data unit to provide predictor tracing information;

H) the correction signal generator, operably coupled to the predictor tracing unit, to the error concealment unit, to the source decoder, and to the prediction memory of the state saving unit, for generating a correction signal vector from information contained in the retransmitted data unit and the state saving unit; and

I) a correction signal adder, operably coupled to the error concealment unit and the correction signal generator, for providing the sum of the outputs from the error concealment unit and the correction signal generator to the signal recovery adder.

5,550,848

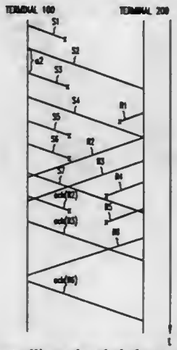
SIGNALING PROTOCOL FOR A NOISY COMMUNICATIONS CHANNEL

Bharat T. Doshi, Holmdel, N.J.; Richard P. Ejzak, Wheaton, Ill., and Sanjiv Nanda, Plainsboro, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed May 13, 1994, Ser. No. 242,500

Int. Cl.[6] H04L *1/08*

U.S. Cl. 371—33 **5 Claims**



4. A method of controlling a hand-shake procedure between first and second communications terminals comprising the steps of

at the first communications terminal, repeatedly transmitting a signaling message to the second communications terminal until a message confirming receipt of the signaling message is received from the second communications terminal, said repeated transmission of said signaling message being independent of an expiration of a timer function associated with waiting for an acknowledgment from said second communications terminal, and

responsive to receipt of each signaling message at the second communications terminal, transmitting the confirmation message.

5,550,849

METHOD AND APPARATUS FOR DETECTING SINGLE OR MULTIPLE BIT ERRORS INSTORAGE DEVICES

Gary L. Harrington, Colorado Springs, Colo., assignor to Ceram Incorporated

Filed May 20, 1993, Ser. No. 64,226

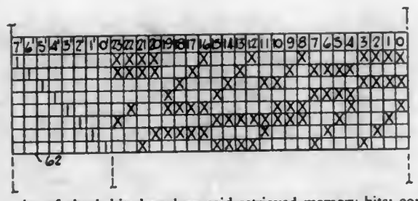
Int. Cl.[6] G06F *11/10*

U.S. Cl. 371—37.1 **14 Claims**

1. A method for detecting multiple bit errors in binary coded information, comprising the steps of:

receiving a plurality of binary coded data bits; generating a first plurality of binary coded check bits based on said received data bits, wherein each of said plurality of check bits is generated by a unique set of data bits, the data bits and check bits together being a set of memory bits; storing said memory bits; retrieving said memory bits; generating a second plural-

VOL 1189 ISS 4 AG 27 1996 UMI



ity of check bits based on said retrieved memory bits; comparing the first plurality of check bits to the second plurality of check bits to determine any differences between the first plurality of check bits and the second plurality of check bits; and using said determination of differences to establish the existence of any single bit and multiple bit errors, whether or not they are in the same byte, in the data bits, check bits and both, and to determine which of the data bits or check bits contains said error.

5,550,850

APPARATUS AND METHOD FOR PRECISELY WAVELENGTH-TUNING SINGLE LONGITUDINAL MODE TUNABLE LASER BEAMS BY UTILIZING WEDGE PRISM

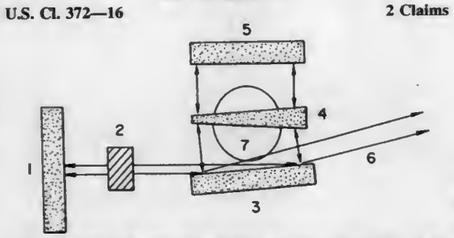
Jong-Min Lee; Byung-Heon Cha; Sung-Ho Kim, and Do-Kyeong Ko, all of Daejeon, Rep. of Korea, assignors to Korea Atomic Energy Research Institute, Daejeon, and Korea Electric Power Corporation, Seoul, both of, Rep. of Korea

Filed Feb. 8, 1995, Ser. No. 385,429

Claims priority, application Rep. of Korea, Mar. 22, 1994, 94-5726

Int. Cl.[6] H01S *3/11*

U.S. Cl. 372—16 **2 Claims**



1. A method for precisely tuning the wavelength of a single longitudinal mode turntable laser, comprising the steps of:

inserting a wedge prism on a rotating stage between a grating and a tuning mirror;

rotating the rotating stage and prism to precisely tune a desired wavelength.

5,550,851

LASER SYSTEM DECONTAMINATION METHOD AND APPARATUS

Steve Guch, Jr., Longwood, and Floyd Hovis, Apopka, both of Fla., assignors to Litton Systems, Inc., Woodland Hills, Calif.

Filed Sep. 15, 1994, Ser. No. 306,470

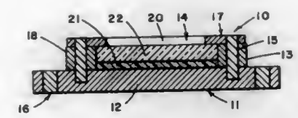
Int. Cl.[6] H01S *3/00*

U.S. Cl. 372—33 **18 Claims**

10. A decontaminate apparatus for laser systems comprising:

a laser system;

a compartment housing having a base and walls forming a cavity therein and a compartment cover having at least a portion thereof made of porous silica, porous to predetermined gases used in laser system optical compartments attached to said compartment housing and having a decontaminating material



held in said compartment housing by said compartment cover, said compartment housing being attached in said laser system in contact with a gas in said laser system, whereby selected contamination in the laser system optical cavity gas is absorbed by the selected material in said compartment.

5,550,852

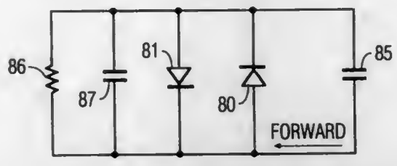
LASER PACKAGE WITH REVERSED LASER DIODE

Rushikesh M. Patel, Pomona; Henri Nahapetiance, Glendale; Rajiv Agarwal, Arcadia, all of Calif., and Rajiv Agarwal, Arcadia, all of Calif., assignors to Opto Power Corporation, Tucson, Ariz.

Filed Feb. 10, 1995, Ser. No. 386,413

Int. Cl.[6] H01S *3/00*

U.S. Cl. 372—33 **4 Claims**



1. A laser diode package including a first laser diode having an emitting surface and a power source for applying a voltage to said diode for generating light from said emitting surface, said package also including a second diode connected electrically to said power source in parallel with said first laser diode and in a direction reversed from that of said first laser diode for providing a path for currents in said reversed direction which would otherwise damage said first laser diode.

5,550,853

INTEGRAL LASER HEAD AND POWER SUPPLY

Kevin D. Ostler, West Jordan, Utah, assignor to Laser Physics, Inc., Salt Lake City, Utah

Filed Dec. 21, 1994, Ser. No. 362,249

Int. Cl.[6] H01S *3/04*

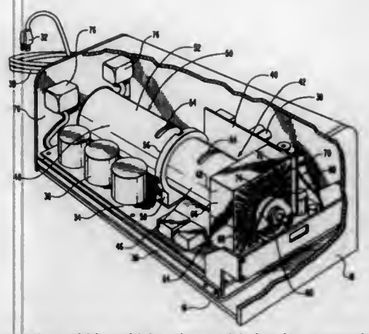
U.S. Cl. 372—34 **14 Claims**

1. An integral laser head and power supply system comprising:

a. a housing having an air port to enable air to be directed into said housing through said air port and having an exhaust air port for exhaustion of air to the environment;

b. a power supply within said housing, said power supply receiving power from a power source and including electronic components;

c. a laser head within said housing and powered by said power supply, said laser head having an anode contained within an anode end of said laser head and a cathode contained within a plasma tube extending from said laser head, said plasma tube



extending within said housing and being in communication with said exhaust air port to exhaust air from said plasma tube to the environment;

d. a laser head heat sink circumferentially disposed around said anode end of said laser head;

e. a power supply heat sink circumferentially disposed around said laser head heat sink, said power supply heat sink being in sufficiently close proximity to said electronic components of said power supply for dissipation of heat to said power supply heat sink to ensure that said electronic components remain adequately cool, and said power supply heat sink being in communication with said plasma tube;

f. a cooling conduit defined by said air port, said housing, said power supply heat sink, said plasma tube and said exhaust air port; and

g. a fan in communication with said cooling conduit to direct air flow through said cooling conduit to remove heat from said power supply and said laser head by directing air through said cooling conduit and exhausting the air to the environment.

5,550,854

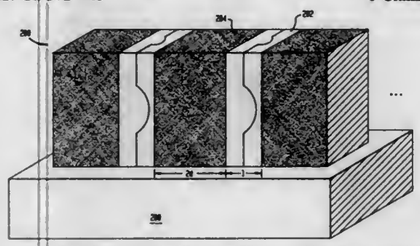
BINARY STRATIFIED STRUCTURES FOR PERIODICALLY PUMPED SEMICONDUCTOR LASERS

Howard Z. Chen, Berkeley Heights, and Alfred Y. Cho, Summit, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 29, 1994, Ser. No. 346,051

Int. Cl.[6] H01S *3/19*

U.S. Cl. 372—45 **6 Claims**



1. A graded-index, separate confinement heterostructure laser, comprising:

a substrate; and

a binary stratified structure along an axis of an optical path upon said substrate, wherein said binary stratified structure comprises an active region of the laser, and includes

at least two graded-index, separate confinement heterostructure (GRINSCH) sections upon said substrate; and

at least three filler sections upon said substrate and sandwiching said at least two GRINSCH sections in an alternating fashion.

5,550,855

OPTICAL MODULATOR

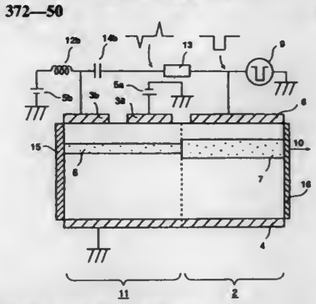
Toshitaka Aoyagi; Hitoshi Watanabe; Yasunori Miyazaki, and Kunihiko Isshiki, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 3, 1994, Ser. No. 237,308

Claims priority, application Japan, Jul. 23, 1993, 5-182414

Int. Cl.[6] H01S *3/18*

U.S. Cl. 372—50 **11 Claims**



1. An optical modulator comprising:

a modulator for modulating laser light;

a variable wavelength laser for emitting laser light of variable wavelength to be modulated by said modulator, a first reflectivity film on a rear facet of said variable wavelength laser, and a second reflectivity film having a lower reflectivity than the first reflectivity film on a front, output facet of said modulator, said modulator and said variable wavelength laser being an integrated semiconductor structure;

means for generating a modulation signal applied to said modulator;

means receiving the modulation signal for producing an electrical output signal in response to changes in the modulation signal;

means for generating a driving current applied to said laser to produce laser light;

means for synthesizing the electrical output signal and the driving current to produce a synthesized electrical output signal and for applying the synthesized electrical output to said laser, and including a differentiating circuit for differentiating the modulation signal to produce a differentiated waveform current;

a common grounding electrode on a rear surface of said integrated semiconductor structure; and

at least two spaced apart front side electrodes disposed on a front surface of said variable wavelength laser arranged in a resonator length direction including a front side electrode proximate said modulator and a front side electrode remote from said modulator, said means for generating a modulation signal being electrically connected between a modulator electrode disposed on the front surface at said modulator and said common grounding electrode, said means for generating a driving current including a front side electrode D.C. current source and a rear side electrode D.C. current source outputting respective D.C. currents to said front side electrodes proximate and remote from said modulator, respectively, and said means for synthesizing the differentiated waveform current that has passed through a D.C. blocking condenser and the driving current that has passed through an A.C. blocking coil.

VOL 1189 ISS 4 AG 27 1996 UMI

5,550,856

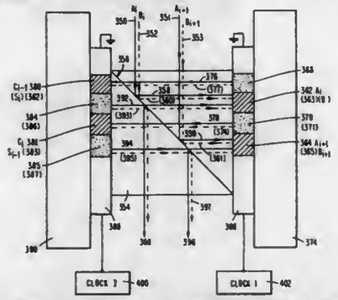
ELECTRO-OPTICAL DEVICE

Julian Cheng, Albuquerque, N.M., assignor to University of New Mexico, Albuquerque, N.M.

Division of Ser. No. 789,172, Nov. 8, 1991, Pat. No. 5,404,372. This application Apr. 4, 1995, Ser. No. 416,606

Int. Cl.[6] H01S *3/19;3/10*

U.S. Cl. 372—50 **4 Claims**



1. An electro-optical apparatus for processing plural time varying binary optical input signals and for deriving plural binary output signals representing a binary operation on the input signals comprising a plurality of first optical detectors respectively responsive to different ones of the plural optical input signals, a plurality of first optical emitters respectively responsive to the first optical detectors so that a particular optical emitter is activated to an energized condition in response to a particular first optical detector corresponding with the particular first emitter having optical energy incident thereon, a plurality of second optical detectors respectively responsive to optical energy from the first optical emitters, a plurality of second optical emitters respectively responsive to the second optical detectors so that a particular optical emitter is activated to an energized condition in response to a particular second optical detector corresponding with the particular second emitter having optical energy incident thereon, means for coupling optical energy from the second emitters to the first optical detectors, replicas of the optical energy coupled from the second emitters to the first detectors being the binary output signals, and means for electrically activating the first and second detectors and the first and second emitters so that during: a first interval the first and second detectors and first and second emitters are electrically activated, a second interval following immediately after the first interval the first detectors and first emitters are electrically activated while the second detectors and second emitters are electrically deactivated, a third interval following immediately after the second interval the first and second detectors and first and second emitters are electrically activated, and during a fourth interval following immediately after the third interval the first detectors and first emitters are electrically deactivated while the second detectors and second emitters are electrically activated; the first, second, third and fourth intervals being periodically repeated in sequence, the optical emitters being incapable of emitting optical energy while they are electrically deactivated.

5,550,857

METHOD AND APPARATUS FOR WASTE VITRIFICATION

Ray S. Richards, Sylvania, Ohio, assignor to Stir-Melter, Inc., Perrysburg, Ohio

Continuation of Ser. No. 785,776, Oct. 31, 1991, which is a division of Ser. No. 510,556, Apr. 18, 1990. This application Jun. 7, 1995, Ser. No. 485,625

Int. Cl.[6] C03B *5/02*

U.S. Cl. 373—27 **6 Claims**

1. A vitrification apparatus comprising:

a vessel having a base and at least a side wall formed of an electrically conductive material for receiving a feed stream having vitrifiable materials, for containing a glass melt, and for defining a mixing zone;

a mixing impeller at least partially formed of an electrically conductive material;

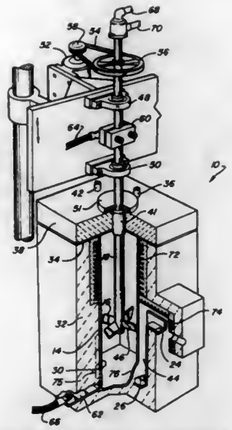
a drive shaft extending into said mixing zone of said vessel, said impeller being connected to said drive shaft;

means for rotating the drive shaft and said impeller in said mixing zone to disburse the vitrifiable materials of the feed stream into the glass melt;

means for creating current flow between the vessel side wall and said impeller sufficient to heat the feed stream until a portion of the vitrifiable materials melt to a liquid state forming a solidifiable output;

an opening in the vessel for removal of said solidifiable output; and

an auxiliary heater for maintaining the base of the vessel above the melting temperature of the solidifiable output.



5,550,858

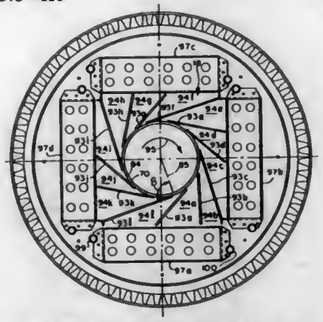
HEAT TREAT FURNACE WITH MULTI-BAR HIGH CONVECTIVE GAS QUENCH

Max Hoetzl, Toledo, and Daniel E. Goodman, Perrysburg, both of Ohio, assignors to Surface Combustion, Inc., Maumee, Ohio

Continuation of Ser. No. 123,800, Sep. 20, 1993. This application Jun. 6, 1995, Ser. No. 466,596

Int. Cl.[6] F27D *7/06*

U.S. Cl. 373—110 **4 Claims**



1. A process for heat treating metal work in a furnace having a cylindrical metal casing to which conventional fibrous furnace insulation is applied defining a heat treat chamber containing the work, a cylindrical plenum plate suspended within said chamber adjacent a rearward end of said chamber to define an exit space between an outer edge of said plenum plate and said chamber, said plenum plate having a central underpressure opening and a fan between said plenum plate and said rearward end for generating a wind mass, said furnace also having means for heating said work and means for cooling said wind mass, said process including the steps of:

a. rotating said fan while actuating said heating means to cause said wind mass to travel along a fixed path passing through said exit space, then along said furnace casing substantially intact to a forward end of said chamber and thereafter returning through said underpressure opening to said space between said plenum plate and said chamber's rearward end whereby said wind mass heats said work to temperatures of about 1200° F. by passing around and about said work when returning through said underpressure opening;

b. thereafter heating said work while under a vacuum by radiation to a higher heat treat temperature up to the range of 2000° F. to 2200° F.;

c. backfilling said heat treat chamber with an inert gas at multiple bar pressures not greater than 10 bar absolute;

d. rotating said fan while actuating said cooling means with said inert gas at said multiple bar pressures; and

e. controlling both the fan rotational speed and the pressure of said inert gas to cause said inert gas to travel in said fixed path while gas quenching said work from the temperature set in step b) to about 1200° F. at a set rate.

5,550,859

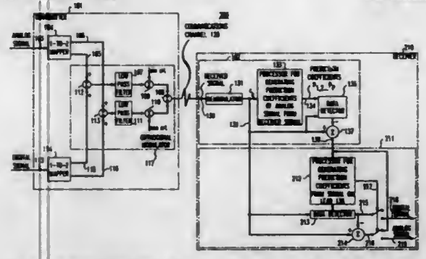
RECOVERING ANALOG AND DIGITAL SIGNALS FROM SUPERIMPOSED ANALOG AND DIGITAL SIGNALS USING LINEAR PREDICTION

Nambirajan Seshadri, Chatam, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Apr. 29, 1994, Ser. No. 236,601

Int. Cl.[6] H04L *27/00;27/06*

U.S. Cl. 375—216 **20 Claims**



1. Apparatus for use in a communication system wherein a transmitted signal includes at least one superposition of first and second signals, said apparatus comprising

means responsive to said superposition of first and second signals for generating prediction coefficients for said first signal independently of any presence of such prediction coefficients in said transmitted signal; and

means responsive to said prediction coefficients for recovering said first and second signals from said transmitted signal.

5,550,860

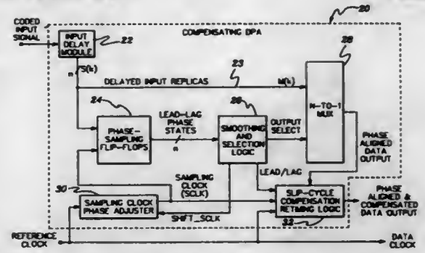
DIGITAL PHASE ALIGNMENT AND INTEGRATED MULTICHANNEL TRANSCEIVER EMPLOYING SAME

Christos J. Georgiou, White Plains; Thor A. Larsen, Hopewell Junction, and Ki W. Lee, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 152,108, Nov. 12, 1993, Pat. No. 5,533,072. This application Apr. 11, 1995, Ser. No. 420,102

Int. Cl.[6] H04L *25/34*

U.S. Cl. 375—220 **7 Claims**



1. A transceiver circuit for a subsystem of a system wherein data is transferred along multiple channels asynchronously among a plurality of subsystems, said transceiver circuit comprising:

multiple transceiver macros, each transceiver macro being coupled to a different one of the multiple channels, and comprising a receiver circuit and a transmitter circuit, each receiver circuit having a digitally implemented phase aligner for aligning an input signal with a reference clock signal for subsequent synchronous data operations within the subsystem of the plurality of subsystems; and

means, coupled to each of the multiple transceiver macros, for generating the reference clock signal from one of a plurality of reference clock signals, wherein each receiver circuit of said multiple transceiver macros may receive the reference clock signal such that at least some unique reference clock signals of different frequency are provided, wherein said digitally implemented phase aligner of each of said multiple transceiver macros comprises:

a delay circuit having an input coupled to receive the input signal, said delay circuit including a plurality of serially connected delay stages, each of said delay stages outputting a correspondingly delayed, input replica as the input signal propagates through said delay circuit;

clock adjustment means for receiving the reference clock signal and for producing therefrom a sampling clock signal having a clocking transition, said sampling clock signal having a same frequency as the reference clock signal and a phase offset from the input signal, said phase of the sampling clock signal being offset from the reference clock signal when the reference clock signal is substantially in phase with the input signal;

selection means for detecting a phase relationship between said sampling clock signal and at least some of said input replicas, and for identifying based thereon one of said input replicas as closely synchronized with said sampling clock signal, said identified one of the input replicas comprising a synchronous replica; and

output means for retiming and for outputting the synchronous replica as a data output signal closely synchronized with the reference clock signal, said output means for retiming the synchronous replica including means for compensating for said clock adjustment means' sampling clock signal phase offset relative to the reference clock signal when the reference clock signal is substantially in phase with the input signal.

5,550,861

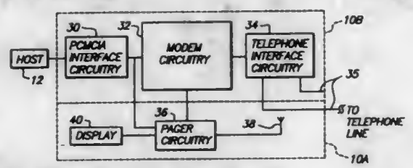
MODULAR PCMCIA MODEM AND PAGER

Demonder Chan, Palo Alto; Robert B. Fultz, Boulder Creek, and Baldev Krishan, Fremont, all of Calif., assignors to Novalink Technologies, Inc., Fremont, Calif.

Continuation-in-part of Ser. No. 313,414, Sep. 27, 1994. This application Oct. 28, 1994, Ser. No. 330,752

Int. Cl.[6] H04B *1/38;* **H04Q** *7/14*

U.S. Cl. 375—222 **27 Claims**



1. A data communication device comprising:

a modem module having modem circuitry, first interface circuitry for selectively coupling the modem circuitry to a host computer and second interface circuitry for coupling the modem circuitry to a telephone line;

a pager module having pager circuitry, the pager module removably coupled to the modem module, the pager circuitry operating in a first mode to transmit wireless messages to the host computer via the first interface circuitry, and in a second mode, when uncoupled from the modem module and removably coupled to a battery pack, to receive wireless messages; and

switching circuitry disposed in the modem module and having a first operational state wherein the modem circuitry is coupled to the first interface circuitry to enable the host computer to communicate via the telephone line and a second operational state wherein the pager circuitry is coupled to the first interface circuitry to operate in the first mode, the switching circuitry defaulting to the first operational state when the pager module is uncoupled from the modem module.

5,550,862

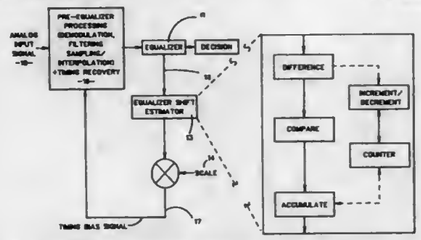
METHOD AND APPARATUS FOR CENTERING EQUALIZER TAPS

Sverrir Olafsson, Seltjarnarnes, Iceland, assignor to Rockwell International corporation, Seal Beach, Calif.

Filed Aug. 1, 1994, Ser. No. 283,345

Int. Cl.[6] H03H *7/30;* **H04B** *3/04*

U.S. Cl. 375—229 **8 Claims**



6. A circuit for stabilizing equalizer positioning by centering a plurality of tap coefficients of a plurality of equalizer taps of a first equalizing response generated by an equalizer upon receiving a signal sample with a sampling phase as equalizer input, said plurality of equalizer taps having a first tap and a last tap, comprising:

means for calculating a measure of equalizer shift by comparing energies corresponding to said plurality of equalizer taps at both said first and last taps of said first equalizing response;

means for scaling said measure by a predetermined factor to generate a timing bias signal; and

means for biasing said sampling phase of said equalizer input with the timing bias signal to cause said equalizer to shift its tap position.

5,550,863

AUDIO AND VIDEO TRANSMISSION AND RECEIVING SYSTEM

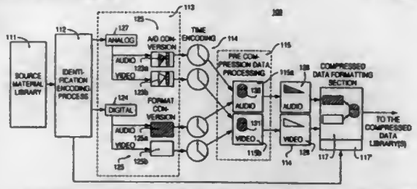
Paul Yurt, Scottsdale, Ariz., and H. Lee Browne, Two Soundview Dr., Greenwich, Conn. 06830, assignors to H. Lee Browne, Greenwich, Conn.

Continuation of Ser. No. 862,508, Apr. 2, 1992, Pat. No. 5,253,275, which is a continuation of Ser. No. 637,562, Jan. 7, 1991, Pat. No. 5,132,992. This application Oct. 8, 1993, Ser. No. 133,982

The portion of the term of this patent subsequent to Jul. 21, 2009, has been disclaimed.

Int. Cl.[6] H04B *1/66*

U.S. Cl. 375—240 **19 Claims**



1. A transmission system for providing information to be transmitted to remote locations, the transmission system comprising:

a plurality of library means for storing items containing information;

identification encoding means for retrieving the information in the items from the plurality of library means and for assigning a unique identification code to the retrieved information;

conversion means, coupled to the identification encoding means, for placing the retrieved information into a predetermined format as formatted data;

ordering means, coupled to the conversion means, for placing the formatted data into a sequence of addressable data blocks;

compression means, coupled to the ordering means, for compressing the formatted and sequenced data blocks;

compressed data storing means, coupled to the data compression means, for storing as files the compressed, sequenced data blocks received from the data compression means with the unique identification code assigned by the identification encoding means; and

transmitter means, coupled to the compressed data storing means, for sending at least a portion of one of the files to one of the remote locations.

5,550,864

BIT RATE-INSENSITIVE MECHANISM FOR TRANSMITTING INTEGRATED CLOCK AND DATA SIGNALS OVER DIGITAL COMMUNICATION LINK

James W. Toy, Melbourne, and Paul W. Casper, West Melbourne, both of Fla., assignors to Broadband Communications Products, Melbourne, Fla.

Filed Dec. 1, 1993, Ser. No. 160,054

Int. Cl.[6] H04L *25/49*

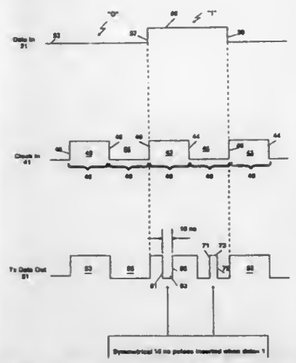
U.S. Cl. 375—293 **35 Claims**

1. A method of encoding digital data comprising the steps of:

(a) generating a clock signal having a sequence of alternating, opposite clock transitions, between each pair of successive opposite ones of which clock transitions a respective event cell is defined;

(b) for a first binary data value, providing, as an output, a pair of unmodified successive event cells of said clock signal; and

(c) for a second binary data value, generating a modified event cell having contents thereof between said opposite clock



transitions of said clock signal different from an unmodified event cell, and providing, as an output, a pair of immediately successive modified event cells of said clock signal.

5,550,865

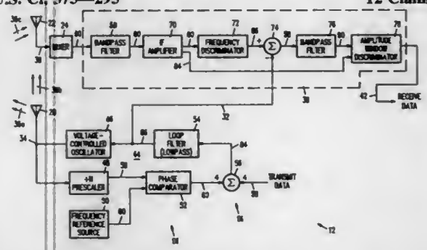
FREQUENCY MODULATOR FOR DATA TRANSCEIVER

Peter K. Cripps, Redwood City, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 057,621, May 9, 1993, abandoned. This application Aug. 8, 1994, Ser. No. 287,194

Int. Cl.[6] H04L *24/04*

U.S. Cl. 375—295 **12 Claims**



1. A frequency modulator, comprising:

phase-lock-loop means for receiving a reference ac signal, generating an output ac signal and generating a frequency control signal, wherein said reference ac signal has a reference frequency FR and phase ϕR, said output ac signal has an output frequency FS and phase ϕS and is selectively synchronized to said reference ac signal, and said output ac signal frequency FS is controlled by said frequency control signal; and

modulator means coupled to said phase-lock-loop means for receiving a binary signal and in accordance therewith modulating said frequency control signal, wherein said modulated frequency control signal modulates said output ac signal frequency FS, and wherein said binary signal includes a plurality of steady-state signal levels and said modulated output ac signal includes a single steady-state output ac signal frequency corresponding thereto, and further wherein said binary signal further includes a plurality of signal transitions and said modulated output ac signal further includes a like plurality of transient output ac signal frequency peaks corresponding thereto.

5,550,866

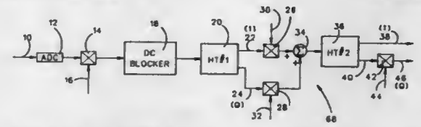
DIGITAL DEMODULATOR REFERENCE SIGNAL GENERATOR HAVING DC BLOCKER AND FIRST HILBERT TRANSFORMATION WITH QUADRATURE OUTPUT FOLLOWED BY GAIN STAGING AND COMBINATION FOR SECOND HILBERT TRANSFORMATION QUADRATURE OUTPUT

Stanley A. White, San Clemente, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Sep. 30, 1994, Ser. No. 316,143

Int. Cl.[6] H04L *27/22*

U.S. Cl. 375—316 **16 Claims**



1. Apparatus comprising:

(a) a first Hilbert transformer constructed to receive an input signal and to produce a first in-phase output and a first quadrature output;

(b) a first multiplier connected to:

(1) multiply the first in-phase output by an in-phase multiplicand which is equal to:

(A) the cosine of a desired angle, divided by

(B) a first gain factor; and

(2) thereby produce a first product;

(c) a second multiplier connected to:

(1) multiply the first quadrature output by a quadrature multiplicand which is equal to:

(A) the sine of the desired angle, divided by

(B) a second gain factor; and

(2) thereby produce a second product;

(d) a summer connected to add together the first product and the second product and to thereby produce a sum; and

(e) a second Hilbert transformer constructed to receive the sum and to produce a second in-phase output and a second quadrature output.

5,550,867

COMPLEX ANGLE CONVERTER

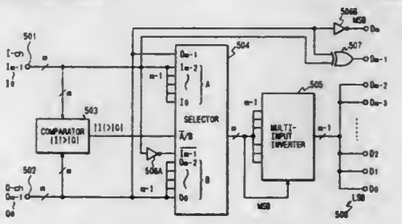
Yuuri Yamamoto, Yokohama; Kenichi Takahashi, Kawasaki; Hiroshi Ohnishi, Tokyo; Yoshinori Kunieda, Kawasaki, and Naoki Matsubara, Tokyo, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 6, 1995, Ser. No. 417,528

Claims priority, application Japan, Jun. 19, 1992, 4-160662; Jun. 26, 1992, 4-168837; Jan. 20, 1993, 5-7247; Feb. 5, 1993, 5-18378

Int. Cl.[6] H04L *27/06*

U.S. Cl. 375—324 **1 Claim**



1. A complex angle converter comprising:

comparing means for deriving first difference data representing a difference between predetermined reference data and data represented by a first baseband signal, for deriving second difference data representing a difference between the predetermined reference data and data represented by a second base-

band signal having a quadrature relation with the first baseband signal, for comparing absolute values of the first difference data and the second difference data, and for outputting a signal representative of a result of said comparing;

means for grouping an inversion of a highest bit of the first baseband signal and second highest and lower bits of the second baseband signal into a first set;

means for grouping a highest bit of the second baseband signal and second highest and lower bits of the first baseband signal into a second set;

a selector for selecting one of the first set and the second set in response to the output signal of the comparing means; and

a decoder for decoding the highest bit of the first baseband signal, the highest bit of the second baseband signal, and said selected one of the first set and the secood set into data representing a complex angle.

5,550,868

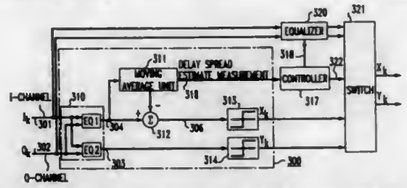
π/4-DQPSK DELAY SPREAD DETECTION AND COMPENSATION APPARATUS AND METHOD

Joseph Boccuzzi, Brooklyn, N.Y., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Mar. 3, 1994, Ser. No. 205,060

Int. Cl.[6] H03D *3/22*

U.S. Cl. 375—330 **14 Claims**



1. A digital wireless receiver arranged for decoding digital signals on a multipath delay spread digital channel, the receiver comprising:

differential detector circuit means for decoding the digital signals on the channel;

means for detecting a direct current (DC) component signal produced in the differential detector circuit means, the level of said DC component signal being proportional to the amount of multipath delay spread on the digital channel; and

compensating means for removing said DC component signal, said compensating means being responsive to the detecting means for providing compensation to the differential detector circuit means for compensating for the multipath delay spread on the channel.

5,550,869

DEMODULATOR FOR CONSUMER USES

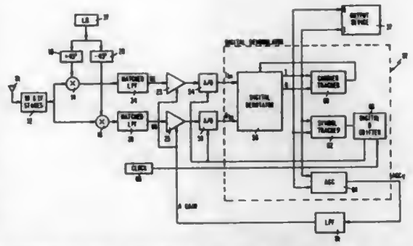
Sree A. Raghavan, San Diego, Calif.; Yoay Goldenberg, Kirat Haim, Israel, and Itzhak Gurantz, San Diego, Calif., assignors to Comstream Corporation, San Diego, Calif.

Filed Dec. 30, 1992, Ser. No. 998,300

Int. Cl.[6] H03D *1/00;* **H04L** *27/06*

U.S. Cl. 375—340 **61 Claims**

1. A demodulator responsive to symbols having a symbol rate in an analog baseband signal comprising analog-to-digital converter means responsive to the signal for sampling the signal only once per symbol to derive a digital output, and digital signal processing circuitry responsive to the digital output of the converter means, the baseband signal including residual components due to frequency and phase errors between a carrier on which the baseband signal is modulated and a local frequency source, the digital



processing circuitry responding to the converter means to derive a further signal having a value corrected for the frequency and phase error, the digital processing circuitry including a feedback loop responsive to the further signal for deriving an additional signal having a value determined by the frequency and phase error, the additional signal controlling the value of the further signal, the digital processing circuitry comparing indications of a function of the values of the digital output derived by the converter means for consecutive symbols to derive a digital signal having a value indicative of a change to be made in the relative timing of when the symbols are to be sampled by the converter means, and a digitally-controlled variable phase shifter responsive to the digital change indicating signal and clock pulses having a frequency approximately equal to an integral multiple the rate for controlling when the converter samples the symbols.

5,550,870

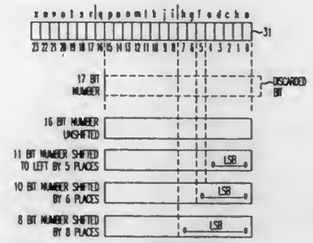
VITERBI PROCESSOR

David M. Blaker, Emmaus, Pa.; Gregory S. Ellard, Forest Park, Great Britain, and Mohammad S. Mobin, Whitehall, Pa., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Mar. 2, 1994, Ser. No. 205,961

Int. Cl.[6] H04L *27/06*

U.S. Cl. 375—341 **7 Claims**



3. A method of trellis decoding comprising:

determining two or more branch metric values associated with state transitions in a Viterbi trellis;

said branch metric values having a maximum of n bits;

forming a k bit number associated with each of said branch metric value by:

if k<n, discarding the n−k least significant bits;

if k>n, shifting each of said branch metric bits so that their most significant bits is the k th bit position and concentrating zeros in the least significant bit positions, thereby obtaining two to more modified branch metrics, each having k bits.

5,550,871

SATELLITE COMMUNICATION RECEIVING APPARATUS

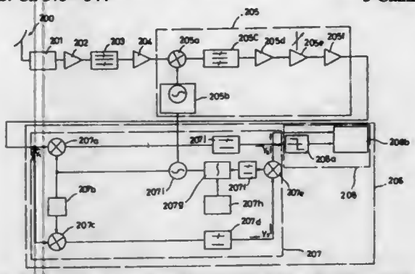
Jin-Seok Lee, Kyonggi-Do, Rep. of Korea, assignor to Hyundai Electronics Industries, Co., Ltd., Kyonggi-do, Rep. of Korea

Filed Dec. 22, 1994, Ser. No. 362,257

Claims priority, application Rep. of Korea, Dec. 29, 1993, 93-30577

Int. Cl.[6] H04L *27/06*

U.S. Cl. 375—344 **3 Claims**



1. A satellite communication receiving apparatus, comprising:

modulating means for mixing satellite broadcast receiving signals obtained through an L-band receiving antenna, a low-noise amplifying means, a first bandpass filter means and a local oscillating frequency obtained in accordance with a reference frequency signal applied thereto, and for generating an intermediate frequency signal; and

demodulating means for generating a temperature compensation voltage control oscillating signal in accordance with the intermediate frequency signal outputted from said modulating means, for inputting said temperature compensation voltage control oscillating signal to the modulating means as a reference frequency signal, and for recovering said intermediate frequency signals keyed to said satellite broadcast receiving signals.

5,550,872

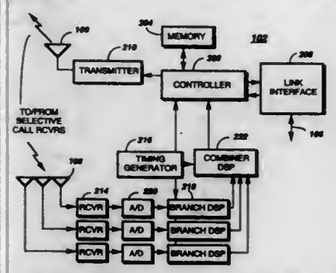
METHOD AND APPARATUS FOR FAST FOURIER TRANSFORM BASED MAXIMAL RATIO COMBINING

Joseph C. Liberti, Jr., Blacksburg, Va.; Douglas I. Averst, Delray Beach; Tony R. Branch, and Stephen R. Carsello, both of Boynton Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 24, 1994, Ser. No. 327,753

Int. Cl.[6] H04B *7/02;* **H04L** *1/02*

U.S. Cl. 375—347 **21 Claims**



8. An apparatus for diversity-combining a plurality of radio signals, each radio signal received from one of a plurality of branches fed from a corresponding plurality of antennas, and each radio signal comprising a plurality of subchannels, the apparatus comprising:

a plurality of analog-to-digital (A/D) coverters coupled to the plurality of branches for digitizing the radio signal from each branch of the plurality of branches to form a plurality of digitized samples corresponding thereto; and

a plurality of branch processors coupled to the plurality of A/D converters for converting the plurality of digitized samples into a plurality of frequency domain signals, each frequency domain signal corresponding to a subchannel of the plurality of subchannels and further corresponding to a branch of the plurality of branches, and each frequency domain signal comprising a plurality of frequency-domain samples corresponding to a plurality of frequencies within each subchannel, each branch processor comprising:

a weighting factor element for determining a weighting factor for each subchannel of the branch from which the branch processor receives the radio signal after digitization, the weighting factor being determined from instantaneous signal energy and noise power, the instantaneous signal energy and the noise power calculated from the plurality of frequency domain signals; and

a multiplier coupled to the weighting factor element for multiplying the frequency domain signal corresponding to the branch and each subchannel thereof by the weighting factor therefor to produce a plurality of weighted frequency domain signals corresponding to the branch and each subchannel,

wherein the apparatus further comprises a combiner coupled to the plurality of branch processors for combining the plurality of weighted frequency domain signals that correspond to all the branches of each subchannel to produce a diversity-combined frequency domain signal for each subchannel.

5,550,873

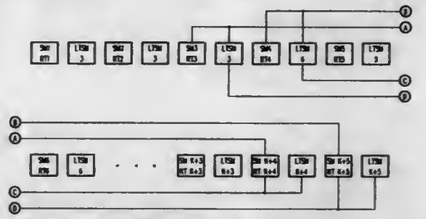
PROCESSING SYSTEM FOR USE AS A NETWORK NODE FOR PERFORMING ANONYMOUS TIME SYNCHRONIZATION IN A NETWORK

Danny Dolev, Jerusalem, Israel; Rüdiger K. Reischuk, Münster-Altheim, Germany, and Hovey R. Strong, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 970,666, Nov. 3, 1992, Pat. No. 5,428,645. This application Feb. 1, 1995, Ser. No. 382,479

Int. Cl.[6] H04L *7/00*

U.S. Cl. 375—354 **14 Claims**



1. A network node comprising:

means for maintaining an internal time scale;

means for receiving synchronization messages containing reference time stamps which denote times of respective events according to a reference time scale, the synchronization messages having been sent according to a predetermined protocol;

means for marking received synchronization messages with local time stamp marks which denote respective events of receipt of the synchronization messages according to the internal time scale, in accordance with the predetermined protocol, thereby defining temporal relationships between certain ones of the reference time stamps and certain ones of the local time stamp marks;

means for identifying a first time according to a first scale and second and third times according to a second time scale, the first time scale being one of the internal time scale and the reference time scale, the second time scale being the other of the internal time scale and the reference time scale, the first,

second, and third times being identified in accordance with the defined temporal relationships between the events denoted by the times, such that the event denoted by the first time falls between the events denoted by the second and third times;

means for determining a difference between the first time and a time related to the second and third times; and

means for updating the internal time scale to compensate for the difference between the first time and the time related to the second and third times.

5,550,874

CLOCK SYNCHRONIZING CIRCUIT OF DATA TRANSMISSION SYSTEM

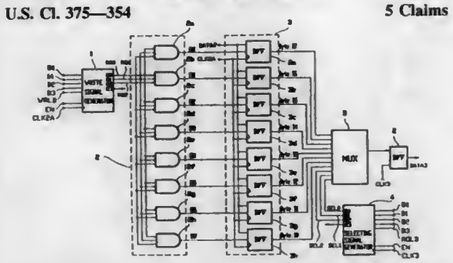
Sim-Ho Lee, Kyongki-do, Rep. of Korea, assignor to LG Information & Communications, Ltd., Rep. of Korea

Filed Aug. 25, 1995, Ser. No. 519,436

Claims priority, application Rep. of Korea, Aug. 26, 1994, 94-21190

Int. Cl.[6] H04L *7/00*

U.S. Cl. 375—354 **5 Claims**



1. A clock synchronizing circuit of a data transmission system for synchronizing a serial input data at an input clock with a new system clock at each channel of a receiving station to produce a serial output data when transmitting multi-channel data using transmitting lines different from each other in length between data transmission systems distant from each other, the combination of the circuit including:

first means for counting the input clock provided from a transmitting station to generate write signals of plural bits;

second means for performing a logical AND with the write signals of plural bits generated from said first means to produce a plurality of enable signals;

third means for converting the serial input data into parallel data in response to the plurality of enable signals of said second means and the input clock;

fourth means for counting said system clock to generate selecting signals of plural bits;

fifth means for multiplexing the parallel data provided from said third means in response to the selecting signals to produce the serial output data; and

D flip-flop for synchronizing the serial output data produced from said fifth means to said system clock to output the serial output data without glitch.

5,550,875

APPARATUS AND METHOD FOR RESIDUAL ERROR CLOCK SKEW BOUND, AND CLOCKING THEREWITH

Donald B. Bennett, Apple Valley, Minn., assignor to Unisys Corporation, Blue Bell, Pa.

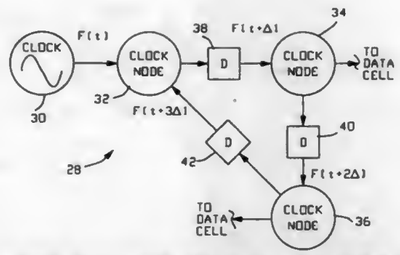
Filed Dec. 29, 1994, Ser. No. 366,201

Int. Cl.[6] H04L *7/00*

U.S. Cl. 375—356 **6 Claims**

1. Apparatus for distributed clocking, comprising:

a clock generator for generating a periodic clock edge signal of period p,



a plurality of clock nodes, each said clock node being at least connected to another of said clock nodes via a link connection or to said clock generator,

each of said clock nodes having a logic delay g±δ,

a plurality of link delays one in each said link connection between a pair of nodes, and

each of said link delays having a delay value m±" chosen such that the output of each said clock node occurs shortly after a clock edge signal p such that the loop transmission delay 2n(δ±ε) is less than or equal to p/2 where n is the number of nodes connected in a loop and δ and ϵ are small device delay tolerances and m is a delay value,

whereby said clock edges originating from said clock generator are regenerated at each output of said clock nodes in synchronism with each other.

5,550,876

MEASURING DEVICE FOR A SYNCHRONOUS TRANSMISSION SYSTEM

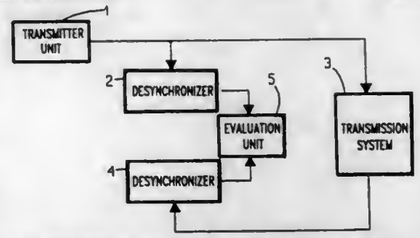
Ralph Urbansky, Schwalg bei Nürnberg, Germany, assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Aug. 25, 1994, Ser. No. 296,210

Claims priority, application Germany, Aug. 28, 1993, 43 29 041.8

Int. Cl.[6] H04L *7/00*

U.S. Cl. 375—371 **4 Claims**



1. A measuring device for measuring a phase deviation of at least one subordinate transport unit of a synchronous signal, said synchronous signal having at least one subordinate transport unit, said transport unit having at least one byte, the synchronous signal being transmitted by means of a synchronous transmission system, comprising:

a transmission unit for forming the synchronous signal to be transmitted,

a first desynchronizer for receiving a transmitted synchronous signal from the transmission unit and separating the bytes of the transmitted synchronous signal and for detecting at least one selected byte of the subordinate transport unit,

a second desynchronizer for receiving a received synchronous signal from the synchronous transmission system and separating the received synchronous signal passing through the transmission system and for detecting at least said selected byte in the received synchronous signal, and

an evaluation unit for calculating the phase deviation from the moments of detection of at least said selected byte in the transmitted and the received synchronous signal.

5,550,877

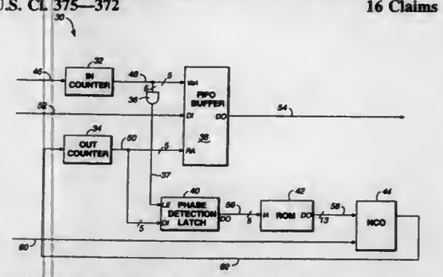
METHOD AND APPARATUS FOR ATTENUATING JITTER IN A DIGITAL TRANSMISSION LINE

Michael R. Waters, Pleasanton, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Continuation of Ser. No. 113,574, Aug. 27, 1993, Pat. No. 5,479,457. This application Jun. 7, 1995, Ser. No. 477,197

Int. Cl.[6] H04L *7/00;25/36;25/40*

U.S. Cl. 375—372 **16 Claims**



1. A circuit for attenuating jitter comprising:

a jitter sensor operative to produce a digital output signal in accordance with the amount of jitter on an input signal, said input signal being compared to a compensation clock signal derived, at least in part, from a high frequency reference clock signal;

a clock generator coupled to said jitter sensor and responsive to said digital output signal, said clock generator including:

(a) a low frequency portion including an adder operative to sum said digital output signal with a previous sum of said adder; and

(b) a high frequency portion coupled to said low frequency portion and to said high frequency reference clock signal and operative to produce said compensation clock signal of a frequency determined in part by said digital output signal and derived from said high frequency reference clock signal, said frequency of said compensation clock signal being lower than a frequency of said high frequency reference clock signal, wherein said high frequency portion includes a frequency divider coupled to said adder and to said high frequency reference clock signal, said frequency divider producing said compensation clock signal;

wherein said clock generator includes an edge detector circuit receptive to an output of said adder and to said high frequency reference clock signal, said edge detector circuit having an output coupled to an enabling input of said frequency divider such that said edge detector circuit is operative to adjust the frequency of said compensation clock signal by selectively disabling said frequency divider; and

output circuitry coupled to said compensation clock signal and said input signal and operative to produce an output signal with reduced jitter.

5,550,878

PHASE COMPARATOR

Seiichiro Shigaki; Hiroaki Shimizu, and Hiroyuki Mizomoto, all of Tokyo, Japan, assignors to NEC Corporation, Japan

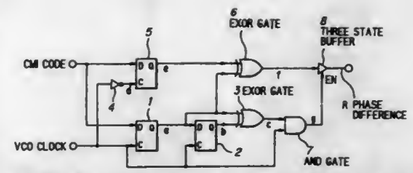
Filed Nov. 9, 1994, Ser. No. 336,846

Claims priority, application Japan, Nov. 9, 1993, 5-278778

Int. Cl.[6] H03D *3/24*

U.S. Cl. 375—373 **4 Claims**

2. A phase comparator, comprising:



a first flip flop for synchronizing a coded mark inversion (CMI) code with a voltage controlled oscillator (VCO) clock, said CMI code being defined by a CMI data and said VCO clock having a period for defining a time slot for said CMI data;

a second flip flop for delaying said CMI code supplied from said first flip flop by a predetermined time determined by said period of said VCO clock;

a first exclusive OR circuit for performing exclusive OR logic calculation between outputs of said first and second flip flops;

a third flip flop for adjusting a timing of said CMI code by a signal obtained by inverting said VCO clock;

a second exclusive OR circuit for performing exclusive OR logic calculation between outputs of said first and third flip flops, said second exclusive OR circuit providing a pulse signal representing a phase difference between said CMI code and said VCO clock;

an AND gate for performing AND logic calculation between an output of said first exclusive OR circuit and said VCO clock, said AND gate providing an enable signal having first and second logic states; and

an output circuit for outputting said pulse signal supplied from said second exclusive OR circuit by receiving said first logic state of said enable signal, said output circuit having one output line on which a three state signal of said pulse signal is provided.

5,550,879

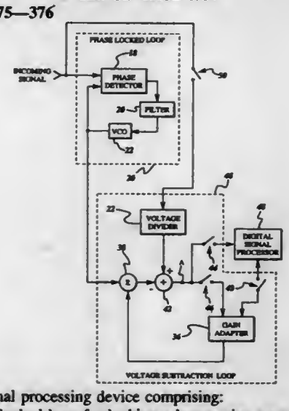
MOTOR CURRENT SIGNAL PROCESSOR INCLUDING PHASE LOCKED AND DELTA MODULATED LOOPS

John E. Hershey, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 30, 1995, Ser. No. 521,501

Int. Cl.[6] H03D *3/24*

U.S. Cl. 375—376 **7 Claims**



1. A signal processing device comprising:

a phase locked loop for locking a largest sine wave component phase and frequency element of an incoming analog signal to provide a component signal; and

a delta-adjusted subtraction loop for removing a largest sine wave component of the incoming analog signal, the delta-adjusted subtraction loop including

a gain adapter for monitoring an output signal and calculating a gain for minimizing the magnitude of the output signal,

a multiplier for multiplying the gain by the component signal to provide a multiplied signal, and

a subtractor for subtracting the multiplied signal from at least a portion of the incoming analog signal and supplying the output signal to the gain adapter.

5,550,880

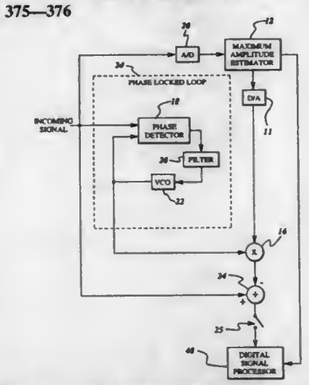
MOTOR CURRENT SIGNAL PROCESSOR USING ANALOG SUBSTRACTION OF AN ESTIMATED LARGEST SINE WAVE COMPONENT

Aiman A. Abdel-Malek, Schenectady; John E. Hershey, Ballston Lake; Gerald B. Kliman, Schenectady, and Rudolph A. A. Koegl, Niskayuna, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 30, 1995, Ser. No. 521,503

Int. Cl.[6] H03D *3/24*

U.S. Cl. 375—376 **11 Claims**



1. A signal processing system comprising:

a phase locked loop for locking a largest sine wave phase and frequency element of an incoming analog signal;

an amplitude estimator for estimating a maximum amplitude of the incoming signal;

a multiplier for multiplying the largest sine wave phase and frequency element by the estimated maximum amplitude to provide an estimated largest sine wave component; and

a subtractor for subtracting the estimated largest sine wave component from the incoming signal to provide a diagnostic signal.

5,550,881

AUTOMATIC MODULATION MODE SELECTING UNIT AND METHOD FOR MODEMS

Manickam R. Sridhar, Holliston, and Neil Sheer, Foxboro, both of Mass., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 13, 1995, Ser. No. 421,723

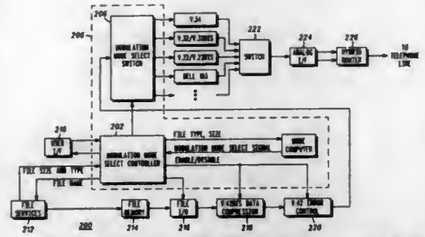
Int. Cl.[6] H04L *23/00*

U.S. Cl. 375—377 **16 Claims**

1. An automatic modulation mode selecting unit in a calling modem for automatically selecting an optimal modulation mode from a plurality of modulation modes, the automatic modulation mode selecting unit comprising:

A) a mode computer, operably coupled to a modulation mode select controller, for determining the optimal modulation mode for a data file based on file size and type, and for sending a modulation mode select signal to the modulation mode select controller indicating the optimal modulation mode; and

B) the modulation mode select controller having a control memory, coupled to receive the data file from a user, a file services unit and the mode computer, for utilizing the data file



to provide the file size and type to the mode computer, and, upon receiving the modulation mode select signal, enabling/disabling a predetermined scheme for selectable implementation of V.42/V.42bis on the data file and for sending a modem select signal indicating the optimal modulation mode,

wherein the optimal modulation mode is based on an optimized transmission time period that is determined based on a training time required for each modulation mode available, the data file size and the maximum data rate for each available modulation mode.

5,550,882

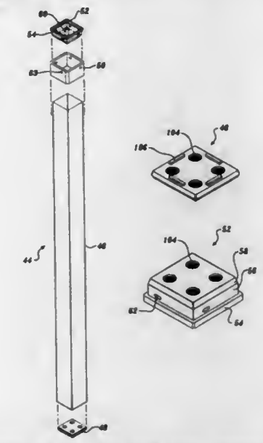
CONTAINERS FOR TRANSPORTATION AND STORAGE OF SPENT NUCLEAR FUEL

Robert A. Lehnert, Milpitas; Robert D. Quinn, Morgan Hill; Steven E. Sisley, Fremont, and Brandon D. Thomas, San Jose, all of Calif., assignors to Vectra Technologies, Inc., Federal Way, Wash.

Division of Ser. No. 131,971, Oct. 8, 1993, Pat. No. 5,438,597. This application Jun. 8, 1995, Ser. No. 488,727

Int. Cl.[6] G21F *5/008*

U.S. Cl. 376—272 **16 Claims**



6. A canister for receiving structurally damaged nuclear fuel assemblies, including fissionable material, from within a fuel pool, and for subsequent storage and transportation of the nuclear fuel assemblies, comprising:

(a) a basket assembly, including:

(i) a plurality of apertured plates; and

(ii) structural members interconnecting the apertured plates, maintaining the plates in a spaced apart relationship with the apertures in each plate axially aligned into a plurality of rows;

(b) an exterior shell, forming an enclosure open at one end, the exterior shell receiving and surrounding the basket assembly, the basket assembly being oriented within the shell, so that

the longitudinal axis of each row is substantially parallel to the longitudinal axis of the shell;

(c) a plurality of containers, each for containing a damaged nuclear fuel assembly, a single container inserted into each row of axially aligned apertures, each container including:

(i) an elongated receptacle, forming an enclosure, having an open end, the open end for receiving a structurally damaged nuclear fuel assembly;

(ii) a cover, adapted to mate with the open end of the receptacle thereby substantially closing the open end of the receptacle;

(iii) a drainage passage defined in the container, forming a path of fluid communication from the interior of the receptacle to the exterior of the receptacle, wherein the drainage passage includes a restrictor to prevent the passage of fissionable material therethrough; and

(d) a lid, adapted to mate with the open end of the shell and close the open end of the shell.

5,550,883

VESSEL OF A NUCLEAR REACTOR, INCLUDING MEANS FOR HOLDING ITS LOWER INTERNALS AND METHOD OF ADJUSTING THE HOLDING MEANS

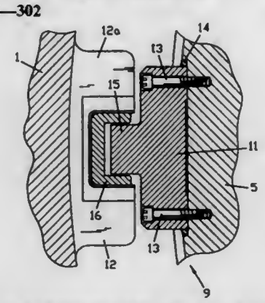
Jean-Claude Bougis, Courbevoie, France, assignor to Framatome, Courbevoie, France

Filed Mar. 15, 1995, Ser. No. 404,434

Claims priority, application France, Mar. 15, 1994, 94 03004

Int. Cl.[6] G21C *9/00*

U.S. Cl. 376—302 **10 Claims**



1. Vessel of a pressurized-water nuclear reactor, including a generally cylindrical wall which has a vertical axis in a service position of the vessel, a lower end of said vessel being closed by a domed bottom head and containing a cylindrical barrel arranged coaxially with respect to the vessel and integral with a very thick core support plate at its lower part, the barrel and the core support plate which form lower internals of the reactor vessel being held in directions perpendicular to the axis of the vessel and, in the event of rupture of the barrel, by holding means in engagement with the core support plate, wherein the holding means include at least three assemblies distributed around the periphery of the core support plate, each of said assemblies comprising:

(a) a key fixed onto the inner surface of the wall, at the level of the core support plate, and including a prismatic end part extending axially of the vessel; and

(b) a cut-out in a peripheral part of the core support plate which is open to the exterior in order to receive, with clearance, the end internal part of the key, said cut-out being delimited by an upper surface perpendicular to the axis of the vessel and machined in the core support plate for retention of the core support plate in the event of a drop of the lower internals.

5,550,884

"GOLF COUNTER" DEVICE AND WATCH COMBINED WITH SUCH A DEVICE

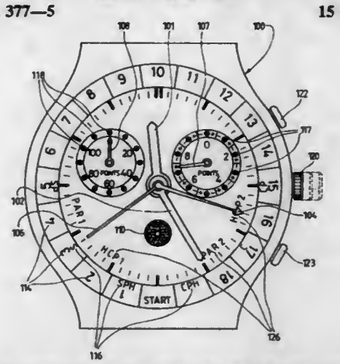
Jean-Claude Berney, Route de Mouthe, CH-1343, Les Charbonnières, Switzerland

PCT No. PCT/CH93/00072, § 371 Date Oct. 28, 1994, § 102(e) Date Oct. 28, 1994, PCT Pub. No. WO94/21338, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 16, 1993, Ser. No. 325,342

Int. Cl.[6] A63B *71/06*

U.S. Cl. 377—5 **15 Claims**



1. Golf counter device for displaying on dial data relating to game of golf on a plurality of scales, in particular a number of points when a particular hole of a golf course is played, said device comprising:

manual imputting means for introducing in particular a number of strokes, selection means and display means manually activated when said particular hole is played, said inputting, selection and display means cooperating with electronic counting, storing, processing and control means to calculate and display both the number of strokes played on the particular hole (simple total), and the total number of strokes introduced for each of the successively selected holes since the beginning of the game (cumulative total), said device being characterised in that the display means are provided with at least two hands arranged to move above a dial with their axes passing substantially through the center of said dial and being driven independently of each by stepping motors controlled by said electronic counting, storing, and processing means so as to cooperate with the plurality of scales, one of said hands displaying the cumulative total and the zero point of the other hand displaying the simple total.

5,550,885

CONTROL DEVICE FOR POWER SAVING

Keyoung T. Nam, and Hong E. Sung, both of Kyungsangbuk-Do, Rep. of Korea, assignors to LG Electronics, Inc., Rep. of Korea

Filed Nov. 29, 1995, Ser. No. 563,984

Claims priority, application Rep. of Korea, Nov. 30, 1994, P94-31938

Int. Cl.[6] H03K *21/00*

U.S. Cl. 377—27 **10 Claims**

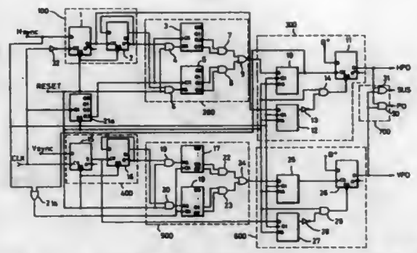
1. A control device for power saving comprising:

horizontal sync signal input means for providing a horizontal sync signal synchronized with a system clock signal;

horizontal sync signal detecting means for detecting whether or not said horizontal sync signal is inputted by counting an output of said horizontal sync signal input means;

horizontal detected signal output means for outputting a horizontal power-off signal in accordance with an output of said horizontal sync signal detecting means;

vertical sync signal input means for providing a vertical sync signal synchronized with said system clock signal;



vertical sync signal detecting means for detecting whether or not said vertical sync signal is inputted by counting an output of said vertical sync signal input means;

vertical detected signal output means for outputting a vertical power-off signal in accordance with an output of said vertical sync signal detecting means;

control signal output means for outputting a system power-off signal or a suspension signal for a suspension mode in accordance with said horizontal power-off signal from said horizontal detected signal output means and said vertical power-off signal from said vertical detected signal output means; and

clock generating means for providing said system clock signal to said horizontal sync signal detecting means and said vertical sync signal detecting means.

5,550,886

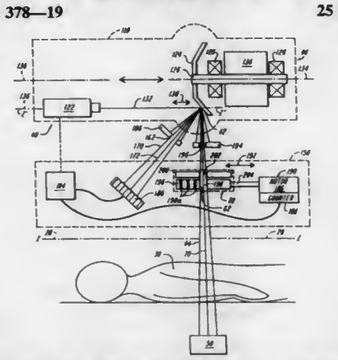
X-RAY FOCAL SPOT MOVEMENT COMPENSATION SYSTEM

John Dobbs, Hamilton, and Ruvin Deych, Brookline, both of Mass., assignors to Analogic Corporation, Peabody, Mass.

Filed Nov. 22, 1994, Ser. No. 343,240

Int. Cl.[6] G01N *23/00*

U.S. Cl. 378—19 **25 Claims**



1. A system for controlling the direction of a fan beam of X-radiation, produced at the focal spot of an X-ray source of a tomography system and directed toward a detector array of X-ray detectors of the tomography system, said system comprising:

(a) fan beam defining means including a fan beam collimator, positionable between the focal spot and at least some of the detectors of the array, for defining said fan beam; and

(b) means for defining a secondary beam of X-radiation, produced at the focal spot of the X-ray source at the same time as the fan beam, and directed transversely to the fan beam;

(c) means, responsive to said secondary beam of X-radiation, for detecting a shift of the focal spot in a direction parallel to the Z-axis of the tomography system and for generating a control signal as a function of the amount of said shift; and

(d) means, responsive to the control signal, for moving the fan beam collimator so as to maintain an alignment between said fan beam and said detectors.

5,550,887

PHASE CONTRAST X-RAY MICROSCOPE

Günter Schmal, Göttingen, and Dietbert Rudolph, Einbeck-Wenzen, both of, Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim (Brenz), Germany

Filed May 16, 1995, Ser. No. 436,284

Claims priority, application Germany, Sep. 15, 1993, 43 31 251.9

Int. Cl.[6] G21K *7/00*

U.S. Cl. 378—43 **13 Claims**



1. Phase contrast X-ray microscope comprising:

a pulsed X-ray source for generating an intense line radiation,

an annular condenser for focusing radiation from said X-ray source on an object to be investigated,

an X-ray detector

X-ray optics constructed as a micro zone plate with a rear focal plane, for imaging said object at high resolution on said X-ray detector, and

a phase ring in said rear focal plane of said micro zone plate, for applying to zero order X-ray radiation coming from said object a phase shift with respect to higher order radiation deflected by said object, which phase shift is determined by thickness and material of said phase ring.

5,550,888

METHOD OF DISPLAYING NOTABLY A DIGITAL X-RAY IMAGE AS A VISIBLE IMAGE, AND DEVICE FOR CARRYING OUT THE METHOD

Ulrich Neitzel, Hamburg; Hanss-Ingo Maack, Norderstedt, and Thomas Pralow, Buchholz, all of, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 24, 1995, Ser. No. 427,393

Claims priority, application Germany, May 6, 1994, 44 15 990.0

Int. Cl.[6] H05G *1/64*

U.S. Cl. 378—98.7 **6 Claims**

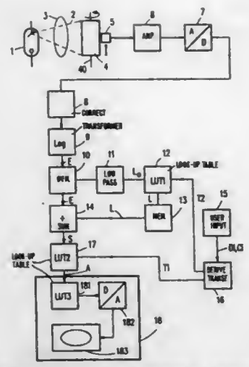
1. A method of displaying a spatial distribution of an X-ray image whose pixels are associated with digital input image values, comprising the following steps:

entering a contrast function and a density function desired for the display,

processing the input image values in first and second signal channels, summing the image values formed in the signal channels, and applying sum image values thus formed to an output unit for forming a visible image,

filtering the input image values in the first signal channel in order to generate low-pass image values or high-pass image values, and performing complementary filtering, or no filtering, in the second signal channel,

transforming the image values formed in the second signal channel, or the sum image values, by means of a first transformation function, and transforming the image values formed in the first signal channel by means of a second transformation function, the first and second transformation functions being derived from the density function and contrast function entered in such a manner that, in the image displayed detail contrast is in conformity with the contrast function and brightness, or density, of coarse image structures varies in conformity with the density function.



5,550,889

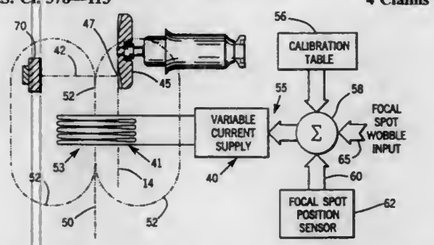
ALIGNMENT OF AN X-RAY TUBE FOCAL SPOT USING A DEFLECTION COIL

Michael F. Gard, Perry, Okla.; Stephen W. Gravelle, Mequon, Wis.; Jiang Hsieh, Waukesha, Wis.; Quan N. Lu, Milwaukee, Wis.; John W. Newman, Naperville, Ill.; Thomas L. Toth, Brookfield, Wis., and Michael A. Wu, Oro Valley, Ariz., assignors to General Electric, Waukesha, Wis.

Filed Nov. 28, 1994, Ser. No. 345,082

Int. Cl.[6] H01J *35/30*

U.S. Cl. 378—113 **4 Claims**



1. In an x-ray system having an x-ray tube that produces x-rays by generating an electron beam within an envelope at a cathode and directing the electron beam along a path which strikes the surface of an anode at a focal spot from which the x-rays emanate, the improvement comprising:

a deflection coil mounted adjacent to the electron beam for producing a magnetic field which is substantially uniform and substantially normal to the path of the electron beam when a current is applied to the deflection coil, wherein the magnetic field acts on the electron beam to change its path and thereby change the location of the focal spot on the anode;

a variable current power supply connected to the deflection coil for applying a current thereto which is controlled by an input signal;

means for applying an input signal to the variable current power supply which changes the location of the focal spot by a predetermined amount;

in which the means for applying an input signal includes calibration means for producing an input signal that aligns the focal spot at a predetermined static operating position; and

the calibration means includes a calibration table that stores calibration values that indicate the input signal to be applied to the variable current power supply at a plurality of corresponding x-ray tube operating parameters.

5,550,890

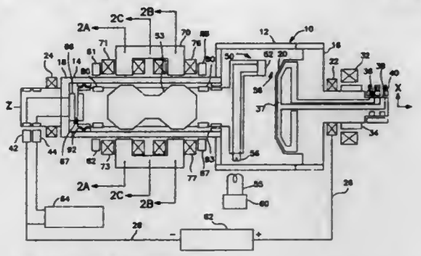
MAGNETICALLY SUPPORTED CATHODE X-RAY SOURCE

Waston A. Anderson, 763 La Para Ave., Palo Alto, Calif. 94306

Filed Jun. 6, 1995, Ser. No. 467,242

Int. Cl.[6] H01J *35/06*

U.S. Cl. 378—136 **32 Claims**



1. An X-ray source comprising:

(a) a rotating vacuum envelope, said envelope having an anode cap section;

(b) a first cylindrical wall transparent to radiation, said first wall adjacent to said anode cap section;

(c) a second cylindrical wall permeable to magnetic fields adjacent to said first wall;

(d) a cathode cap section adjacent to said second cylindrical wall opposite to said first wall;

(e) an anode disposed within said anode cap section and fixed to said vacuum envelope said anode having a peripheral track;

(f) a cathode assembly disposed within said envelope, said cathode assembly comprising:

an X-ray cathode for generating a beam of electrons to strike said peripheral track to generate X-rays, said X-rays being transmitted through said first wall;

a supplementary cathode for emitting electrons, said supplementary cathode mounted on the inside of said cathode cap section;

a supplementary anode for receiving said electrons, whereby an electric current is produced and conducted to said cathode assembly, said supplementary anode spaced apart from said supplementary cathode and mounted to said cathode assembly;

(g) a magnetic suspension system for supporting said cathode assembly, said suspension system being the only support for said cathode assembly comprising:

a magnet assembly, said magnet assembly having two rings of electromagnets disposed circumferentially of said second cylindrical wall of said vacuum envelope;

a magnetic susceptor mounted to said cathode assembly, said susceptor made of magnetically susceptive material, wherein said magnetic suspension system is preferably operated in a biased mode so that a non-zero magnetic field is maintained in gaps between said magnet assembly and said magnetic susceptor; and

(h) a plurality of proximity sensors for sensing a displacement of said cathode assembly within said vacuum envelope.

5,550,891

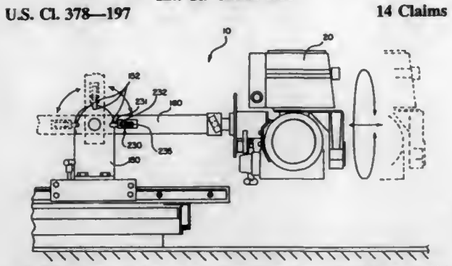
POSITIONING APPARATUS FOR X-RAY SOURCE

Robert L. Barbury, Elgin, Ill., and James W. Cutter, Hollister, Calif., assignors to Olympic Controls Corp., Elgin, Ill.

Continuation-in-part of Ser. No. 850,891, Mar. 13, 1992, Pat. No. 5,469,492. This application May 27, 1994, Ser. No. 250,560

Int. Cl.[6] H05G *1/06*

U.S. Cl. 378—197 **14 Claims**



1. An apparatus for supporting an X-ray source in a space, said space defined by a floor and at least one wall arranged substantially perpendicular to said floor, the X-ray source used for exposing patients to X-ray radiation, the apparatus comprising:

an upright support member mountable adjacent to said wall;

a slidably movable carriage supported by the support member and slidable thereto for planar movement in a vertical plane substantially parallel to said wall;

a source assembly mounted to the slidable carriage, and adapted to receive the X-ray source, the source assembly including:

a horizontally projecting base member fixedly mounted to the carriage;

a horizontally extending tubular member pivotably mounted to the base member for selective and fixedly positionable rotational motion in a horizontal plane substantially parallel to said floor;

a stem receivably journalled within the tubular member for horizontal telescoping reciprocation with respect thereto; and

a source attachment fixedly attached to the X-ray source and including a collar journalled around the stem to provide rotational movement in said vertical plane about the stem.

5,550,892

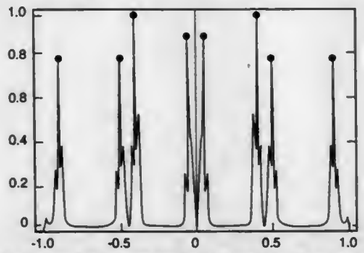
ENHANCED LOCAL TOMOGRAPHY

Alexander J. Katsevich, Los Alamos, N.M., and Alexander G. Ramm, Manhattan, Kans., assignors to The Regents of the University of California, Alameda, Calif.

Filed Mar. 24, 1995, Ser. No. 410,613

Int. Cl.[6] G06F *15/66*

U.S. Cl. 378—210 **8 Claims**



1. A method for estimating by tomography the location and value of a discontinuity between a first internal density of an object and a second density of a region within said object, comprising the steps of:

directing a beam of radiation in a predetermined pattern through said region of said object containing said discontinuity;

determining relative attenuation data of said beam within said predetermined pattern having a first data component that includes attenuation data through said region;

inputting said relative attenuation data to a local tomography function f_Λ to define said location S of said discontinuity;

determining the asymptotic behavior of f_Λ in a neighborhood of S; and

estimating said value for said discontinuity from said asymptotic behavior of f_Λ.

5,550,893

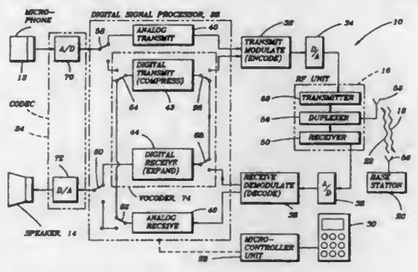
SPEECH COMPENSATION IN DUAL-MODE TELEPHONE

Alireza R. Heidari, Encinitias, Calif., assignor to Nokia Mobile Phones Limited, Salo, Finland

Filed Jan. 31, 1995, Ser. No. 381,314

Int. Cl.[6] H04Q *7/32*

U.S. Cl. 379—59 **4 Claims**



2. A radiotelephone comprising:

a radio frequency (RF) unit enabling transmission of a voice signal to a base station and reception of a voice signal from the base station;

a voice input means and a transmit channel interconnecting the voice input means to the RF unit;

a voice output means and a receive channel interconnecting the voice output means to the RF unit;

wherein a portion of the transmit channel is bifurcated into an analog protocol signal branch and a digital protocol signal branch;

a portion of said receive channel is bifurcated into an analog protocol signal branch and a digital protocol signal branch;

said radiotelephone further comprises switching means operative to direct voice signals alternately into either the analog protocol branches of said transmit and said receive channels to effect an analog mode of communication or into the digital protocol branches of said transmit and said receive channels to effect a digital mode of communication;

said digital protocol branch of said transmit channel comprises a voice signal compressor and said digital protocol branch of said receive channel comprises a voice signal expander; and

said radiotelephone further comprises means, operative during the analog communication mode, for connecting an output terminal of the compressor to an input terminal of the expander to form a speech compensator, and means for inserting said speech compensator in

said receive channel during said analog communication mode for providing a digitally processed voice quality to voice signals communicated via said telephone in both said digital and said analog modes of communication.

5,550,894

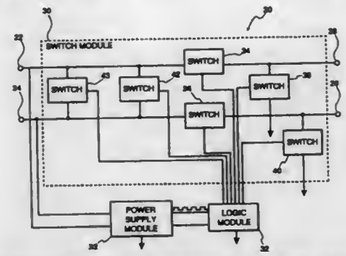
DEVICE FOR SEQUENTIALLY ALTERING A COMMUNICATION LINE FOR REMOTE DIAGNOSTIC CHECKS

Claude Chariand, Boisbriand, Canada, assignor to Atlas Telecom International Ltd., Canada

Filed Nov. 20, 1992, Ser. No. 978,970

Int. Cl.[6] H04M *1/24;3/08;3/22*

U.S. Cl. 379—2 **37 Claims**



1. A device for sequentially altering the electrical condition of a communication line to allow a diagnostic routine to be performed on the communication line at a remote location from said device, said device comprising:

a set of switches for electrical connection to conductors of the communication line for establishing a network of electrical paths capable of altering an electrical condition of the communication line, each switch of said set being capable of assuming an opened condition and a closed condition for controlling a state of conduction of a respective electrical path, in said opened condition the switch manifesting a high impedance to substantially prevent passage of electrical current, in said closed condition the switch manifesting a low impedance to allow passage of electrical current; and

a logic module capable of selectively actuating switches of said set to either one of said opened and closed conditions, said logic module being responsive to a trigger signal for initiating a predetermined sequence of switching events scheduled to occur at predetermined instants in time, at each switching event the condition of at least one said switch of said set being altered, during said predetermined sequence of switching events at least two said switches of said set assuming at a given moment different conditions from each other, where one of said at least two switches is in the opened condition while the other of said at least two switches is in the closed condition, said switching events causing a series of successive changes to the electrical condition of a communication line that occur in a predetermined order.

5,550,895

BIMODAL PORTABLE TELEPHONE

Kyle L. Burson, Somerset; Yum C. Chang, Belford; Wilson Fok, Aberdeen; Kenneth W. Leland, Toms River; Denis P. Orlando, Freehold, and Andrzej Partyka, Bedford, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

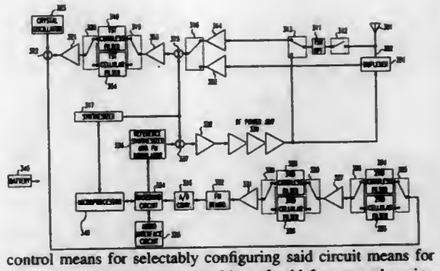
Filed Dec. 2, 1993, Ser. No. 160,135

Int. Cl.[6] H04M *11/00*

U.S. Cl. 379—59 **30 Claims**

1. A portable telephone handset comprising:

circuit means for communicating with a first base station configured for operation in a frequency hopping system and for communicating with a second base station configured for operation in a cellular radio system, said circuit means including receive signal means for receiving radio-frequency signals from said first base station while configured for operation in said frequency hopping system and from said second base station while configured for operation in said cellular radio system;



control means for selectably configuring said circuit means for operation of the handset in either of said frequency hopping system or said cellular radio system, and;

standby circuit means for configuring said handset to a standby state, while in said standby state the receive signal means also being configured by the standby circuit means for monitoring both a selected radio frequency channel in said frequency hopping system for a first time period for detecting an incoming call directed to the handset from the first base station and a selected one from a group of radio frequency channels in said cellular radio system for a second time period for detecting an incoming call directed to the handset from the second base station, while in said standby state the receive signal means cycling between said first and second time period, and wherein said second time period is greater than said first time period.

5,550,896

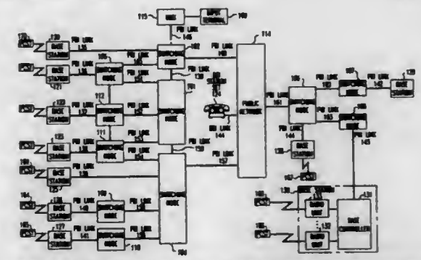
AUTHENTICATION HIERARCHICAL STRUCTURE OF SWITCHING NODES FOR STORAGE OF AUTHENTICATION INFORMATION

David L. Chavez, Jr., Thornton, Colo., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jun. 30, 1994, Ser. No. 268,902

Int. Cl.[6] 404Q *7/36*

U.S. Cl. 379—59 **12 Claims**



10. An apparatus for distributing authentication information in a mobile telecommunication system having a plurality of switching nodes, comprising:

means for arranging a set of the plurality of switching nodes into a authentication hierarchical structure with each one of the set of switching nodes having information to identify the switching nodes of the set above and below each one of the set of switching nodes in the authentication hierarchical structure;

means for storing authentication information for a mobile telephone in a first one of the switching nodes of the authentication hierarchical structure with the mobile telephone registered on the first one of the set of switching nodes;

means for accessing the authentication information from the first one of the switching nodes of the authentication hierarchical structure by second one of the switching nodes of the authentication hierarchical structure

means for receiving by the first one of the set of the switching nodes the authentication information from a resident switching node assigned to the mobile telephone;

means for communicating a copy of the authentication information from the first one of switching nodes to the second one of switching nodes upon the first one of switching nodes receiving the authentication information from the resident switching node;

means for determining by the first one of the set of switching nodes to remove the authentication information;

means for transmitting a first message to the second one of the set of switching nodes to inquire if the second one of the set of switching nodes has still retained the authentication information;

means for removing the authentication information and maintaining a pointer to second one of the set of switching nodes by the first one of the set of switching nodes indicating that the second one of the set of switching nodes has the authentication information upon the second one of the set of switching nodes responding affirmatively to the first message; and

means for removing the authentication information and transmitting a second message to the second one of the set of switching nodes to also remove a pointer in the second one of the set of switching nodes indicating that the first one of the set of switching nodes has the authentication information upon the second one of the set of switching nodes responding negatively to the first message.

5,550,897

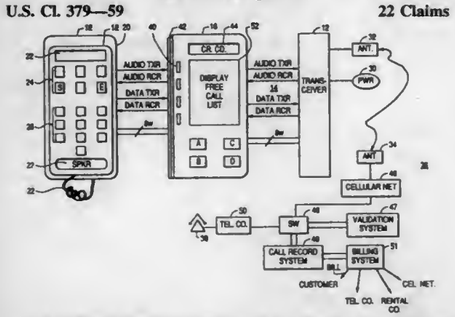
CELLULAR TELEPHONE CALLING SYSTEM USING CREDIT CARD VALIDATION

Abe Seiderman, 165 Solano Prado, Coral Gables, Fla. 33156

Continuation of Ser. No. 30,675, Mar. 11, 1993, Pat. No. 5,388,148, which is a continuation-in-part of Ser. No. 743,972, Sep. 25, 1992. This application Nov. 8, 1994, Ser. No. 336,168

Int. Cl.[6] H04Q *7/32*

U.S. Cl. 379—59 **22 Claims**



1. A cellular telephone calling system with a credit card call accounting and billing component, said cellular telephone calling system including a plurality of cellular telephones wherein users charge cellular telephone calls to credit cards, each said cellular telephone having access to a telecommunications network including a cellular telecommunications component and a credit card verification component comprising:

a cellular telephone having a handset and a transceiver unit coupled together via a communications bus, said communications bus carrying audio transmission signals, audio receive signals, data transmission signals and data receive signals between said handset and said transceiver unit, said handset adapted to accept a destination telephone number from said user as part of initiating a telephonic communications link with a telephonic device corresponding to said destination telephone number;

a credit card interface unit coupled to said communications bus, said interface unit having means for selectively monitoring, blocking, modifying and passing said audio transmission signals, audio receive signals, data transmission signals and data receive signals between said handset and said transceiver unit;

a credit card data input device coupled to said interface unit;

as part of said interface unit:

means for blocking all said audio transmission signals, audio receive signals, data transmission signals and data receive signals except emergency signals until said user inputs his or her credit card data into said card data input device;

means for inserting a predetermined call placement telephone number into at least one of said audio transmission signals and data transmission signals along with said credit card data and said destination telephone data and for sending such data and signals to said telecommunications network via said transceiver and said communications bus;

said telecommunications network having:

a network transceiver associated with said call placement telephone number, said network transceiver receiving said credit card data and said destination telephone data from said cellular telephone transceiver and having means for ascertaining the validity of said credit card data with said credit card verification component before completion of said telephonic communications link between said cellular telephone and said telephonic device corresponding to said destination telephone number.

5,550,898

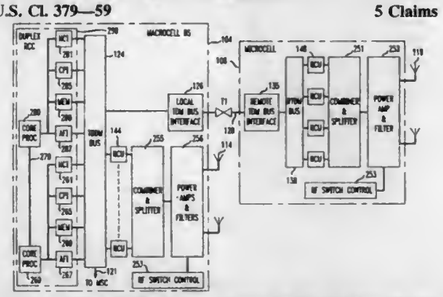
METALLIC MACROCELL/MICROCELL INTERFACE

Salman Y. Abbasi, Clifton; Irwin Gerszberg, Kendall Park; Eugene T. Kendig, Township of Brick; Jeffrey S. Martin, Dover, and Thomas M. Oplinger, Morristown, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 218,470, Mar. 28, 1994, abandoned, which is a continuation of Ser. No. 983,348, Nov. 30, 1992, abandoned. This application May 31, 1995, Ser. No. 456,012

Int. Cl.[6] H04Q *7/22*

U.S. Cl. 379—59 **5 Claims**



1. In a cellular radiotelephone system having a macrocell base station (BS) and a microcell access station responsive to the macrocell BS and providing enhanced service to a sub service area of the service area of the macrocell BS; the system comprising:

a digital time division multiplex (TDM) bus having a plurality of time slots shared by both the macrocell BS and the microcell access station in which time slots of the microcell access station are an integral pan of the TDM bus of the macrocell base station;

a metallic wire for interconnecting the macrocell BS to the microcell access station;

the macrocell BS comprising:

a plurality of BS radio channel units (RCUs);

at least a first subplurality of the plurality of time slots of the digital time division multiplex (TDM) bus included in the macrocell BS for connecting the BS RCUs to a mobile switching center (MSC);

a radio control complex (RCC) located at the BS and connected to and controlling the BS TDM bus;

a local TDM bus interface connected to a portion of the BS (TDM) bus included in the macrocell BS and connected to the metallic wire;

the microcell access station comprising:

a second subplurality of the plurality of time slots of the digital time division multiplex (TDM) bus being located at the microcell access station;

a plurality of microcell radio channel units (RCUs) connected to the time slots of the digital time division multiplex (TDM) bus located at the microcell access station;

a remote TDM bus interface connected to a portion of the TDM bus located at the microcell access system;

the local TDM bus interface and the remote TDM bus interface each including:

a link interface with a digital interface for connecting to the metallic wire;

a TDM buffer, the TDM buffer of the local TDM bus interface connected to a TDM bus slot of the BS TDM bus included in the macrocell BS and the TDM buffer of the remote TDM bus interface connected to a TDM bus slot of the TDM bus located at the microcell access station;

a TDM multi-address control logic circuit connected to the TDM buffer for providing TDM address control;

whereby the local and remote TDM bus interfaces are connected together through the metallic wire to incorporate the second plurality of time slots of the digital time division multiplex (TDM) bus as an integral portion of the TDM bus at the macrocell BS.

5,550,899

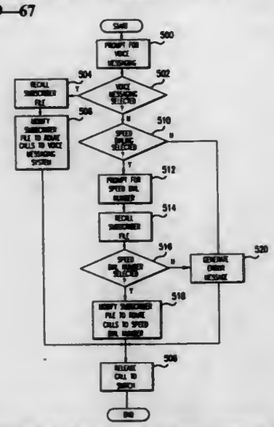
LONG DISTANCE TELEPHONE SWITCHING SYSTEM WITH ENHANCED SUBSCRIBER SERVICES

Clark E. McLeod; Steven J. Hogan, both of Cedar Rapids; Kristi T. Feltz, Iowa City; Douglas R. Murdock, Cedar Rapids, all of Iowa, and Van E. Hanson, Forest, Va., assignors to MCI Communications Corporation, Washington, D.C.

Division of Ser. No. 513,956, Apr. 23, 1990, Pat. No. 5,222,180. This application Mar. 17, 1993, Ser. No. 32,595

Int. Cl.[6] H04M *3/50;3/54*

U.S. Cl. 379—67 **8 Claims**



4. For use in conjunction with a long distance telephone network, a method for allowing a subscriber to direct rerouting of incoming calls received at a telephone switching system, comprising the steps of:

receiving and recognizing a call from said subscriber as a subscriber call on a first incoming line which is accessible by any telephone in communications with said long distance telephone network;

receiving from said any telephone a request code entered by said subscriber, said request code designating at least one routing number indicative of a telephone line accessible by said long distance telephone network to which incoming calls for said subscriber are to be rerouted;

storing said routing number in a subscriber file;

retrieving said subscriber file when an incoming call is received on a second incoming line reserved for said subscriber; and

completing the incoming call using only said one routing number contained in said subscriber file without reference to another file and without requiring further information from a calling party associated with the call.

5,550,900

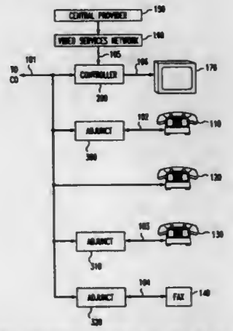
APPARATUS AND METHOD FOR ROUTING MESSAGES IN A TELEPHONE MESSAGE CENTER

Myra L. Ensor, Summit; Anthony J. Grewe, Holmdel, and Howard M. Singer, Marlboro, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 29, 1994, Ser. No. 366,948

Int. Cl.[6] H04M *11/00*

U.S. Cl. 379—67 **28 Claims**



1. A telephone message system for use at a subscriber's premises, adapted to be parallel connected onto a wire-pair that extends between said premises and a telephone line switching system, the message system comprising:

controller means connected onto said wire-pair for receiving the identity of one of a plurality of preselected calling stations over said wire-pair in a first frequency band;

mailbox means having a plurality of mailboxes for storing telephone messages, each mailbox being respectively associated with a group of preselected calling stations;

call receiving means responsive to receipt of the identity of one of said preselected calling stations for routing a call from said calling station to the respectively associated mailbox within the plurality of mailboxes; and

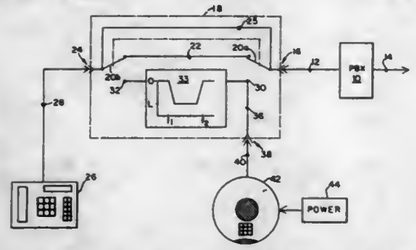
at least one adjunct unit operatively, responsive to the controller means, the adjunct unit being commonly connected onto said wire-pair and communicating with said controller means over said wire-pair in a second frequency band for interrogating at least a specific one of said plurality of mailboxes for determining when a telephone message from at least one of said preselected calling stations is stored in said specific one of said plurality of mailboxes, said second frequency band being different from said first frequency band.

5,550,901

FULL-DUPLEX ADAPTER FOR PBX TELEPHONE SYSTEM

Arthur B. Williams, Smithtown, N.Y., assignor to Coherent Communications Systems Corp., Leesburg, Va.

Filed Aug. 24, 1994, Ser. No. 295,019
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—93 **33 Claims**



1. An adapter circuit for connecting a first telephone device and a second telephone device with a telephone communication system, wherein the first telephone device is configured to produce first voice band signals and control signals compatible with the telephone communication system, and the second telephone device is configured to produce second voice band signals, the adapter circuit comprising:

a first terminal for connection with said first telephone device;

a second terminal for connection with said second telephone device;

a third terminal for connection with said communication system;

first connection means for connecting said second terminal with said third terminal, and for allowinq the second voice band signals to be conducted between the second telephone and the telephone communication system;

second connection means for connecting said first terminal with said third terminal;

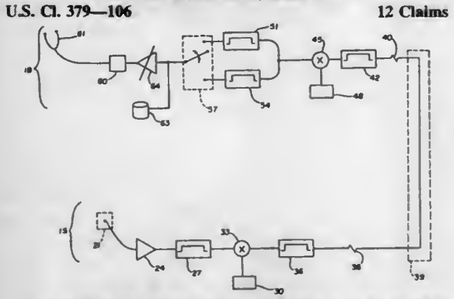
selective attenuation means, located along said second connection means, for selectively attenuating said first voice band signals according to a selected frequency characteristic, and for allowing control signals to be conducted along said second connection means between the first telephone device and the telephone communication system.

5,550,902

REMOTE STETHOSCOPE SIGNAL PROCESSING SYSTEM

C. Richard Abbruscato, Burnsville, Minn., assignor to American TeleCare, Inc., Minneapolis, Minn.

Filed Aug. 17, 1994, Ser. No. 291,950
Int. Cl.[6] H04M *11/00;* **A61B** *7/04*
U.S. Cl. 379—106 **12 Claims**



1. A system for signal recovery in which a local oscillator frequency is selected to eliminate distortion of the signal and to yield a desired frequency band from a remote stethoscope system transmitting stethoscope sounds generated at a remote location over a telephone network to a provider location for evaluation by a health care provider, said telephone network having a characteristic telephone frequency band having a high end frequency, the system comprising:

a sensor for use with a patient, wherein said sensor is capable of picking up acoustic signals over a full stethoscope frequency band and converting said acoustic signals into an original electrical signal to provide a base band signal with a range of frequencies;

a first frequency shifting means for frequency shifting of said base band signal up to a preferred telephone frequency band, said first frequency shifting means including a local oscillator for generating a local oscillator frequency which is at least twice the highest frequency of said range of frequencies of said base band, said local oscillator frequency being no higher than said telephone frequency band high end frequency;

a first filtering means for filtering said shifted base band signal to suppress portions of said shifted base band signal that are not within said preferred telephone frequency band;

means for transmitting said shifted base band signal from said remote location over said telephone network to said provider location;

means for receiving said shifted base band signal from said telephone network at said provider location;

a second frequency shifting means for frequency shifting said shifted base band signal back down so that said original electrical signal is recovered;

a selection sensing means for sensing a selection made by said health care provider of a desired frequency band, wherein said desired frequency band spans only a portion of said full stethoscope frequency band;

a second filtering means for filtering said recovered original electrical signal to suppress portions of said recovered original electrical signal that are not within said desired frequency band; and

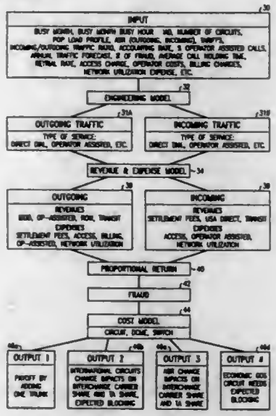
means for converting said electrical signal to an acoustic signal.

5,550,903

METHOD FOR MONITORING TELEPHONE COMPLETION DATA

Chuan-Chuen Chang, Holmdel, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 8, 1993, Ser. No. 164,077
Int. Cl.[6] H04M *15/00*
U.S. Cl. 379—115 **32 Claims**



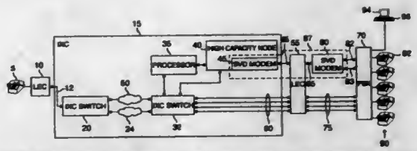
1. A method for monitoring telephone call completion data to evaluate the economic impact of (a) adding call handling capacity to an overseas telephone trunk group and/or (b) improving a foreign internal telephone network call Answer Seizure Ratio (ASR), comprising the steps of:

(a) compiling a set of input data information for telephone network call loads and expenses;

(b) evaluating the set of input data information with a telephone call retrial model to determine billable carried telephone call loads and ineffective telephone call attempts handled by said telephone network;

(c) applying a revenue and expense model to said billable carried telephone call loads and ineffective telephone call attempts to determine the revenues and expenses associated with said billable carried telephone call loads and said ineffective telephone call attempts;

(d) wherein said step of applying said revenue and expense model to said billable carried telephone call loads and said ineffective telephone call attempts includes the step of recalculating the revenues and expenses associated with said billable carried telephone call loads and said ineffective call attempts based upon an increased capacity to said overseas telephone trunk group and/or upon an improvement in the ASR of said foreign internal telephone network.



using a common voice-data communications line having a voice channel and a data channel and at least one voice communications line, said method comprising:

a) determining upon receipt of the telephone call whether a communications link is in progress between a previous caller and one of said plurality of agent terminals of said multi-line user facility over the common voice-data communications line;

b) establishing a communications link over the common voice-data communications line between the present caller and an agent terminal of the multi-line user facility if a communications link is determined not to be in progress on such line in step a);

c) routing the caller identification information of the present caller for the telephone call to the multi-line user facility over the data channel of the common voice-data communications line;

d) routing the telephone call to one of the plurality of terminals in the multi-line user facility over the voice channel of the common voice-data communications line if a communications link is determined not to be in progress on such channel in step a); and

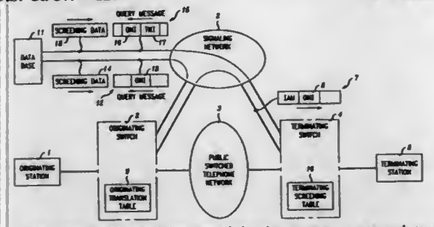
e) establishing a communications link over said voice communications line and routing the call to one of the plurality of terminals in the multi-line user facility over said voice communications line if a communications link is determined to be in progress on the common voice-data communications line in step a) while still routing the caller identification information for the telephone call to the multi-line user facility over the data channel of the common voice-data communications line.

5,550,904

METHOD FOR IDENTIFYING THE ORIGINATING NETWORK AT THE TERMINATING NETWORK FOR TRANSNETWORK CALLS

Donald L. Andruska, Glen Ellyn, and Thomas C. Ruvarac, Aurora, both of Ill., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 129,282, Sep. 30, 1993. This application Oct. 4, 1995, Ser. No. 538,872
Int. Cl.[6] H04M *15/00;15/06;3/00;3/42*
U.S. Cl. 379—127 **20 Claims**



1. A method of identifying an originating customer network to a terminating network for a call comprising the steps of:

identifying an originating customer network of a caller of said call by determining its originating network identification (ONI);

delivering said call across a network boundary as determined by said ONI not matching a network identification of said terminating network,

transmitting said ONI of said customer network to a terminating switching system in said terminating network serving said call; and

delivering said ONI to a called party.

5,550,905

METHOD AND APPARATUS FOR DELIVERING CALLS AND CALLER IDENTIFICATION INFORMATION TO MULTI-LINE USERS

David P. Silverman, Somerville, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Oct. 26, 1994, Ser. No. 329,739
Int. Cl.[6] H04M *1/56;15/06;11/00;1/00*
U.S. Cl. 379—142 **31 Claims**

1. A method of delivering a telephone call from a caller and delivering corresponding caller identification information to a multi-line user facility including a plurality of agent terminals

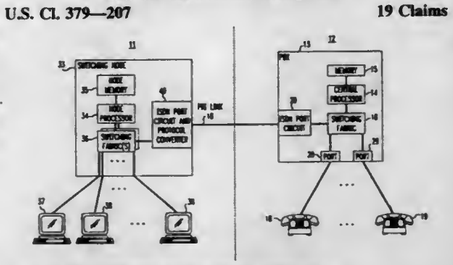
---

5,550,906

TELECOMMUNICATIONS FEATURE SERVER

Toan Chau, Broomfield, and Ronald E. Heffner, Boulder, both of Colo., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Aug. 5, 1994, Ser. No. 286,839
Int. Cl.[6] H04M *3/54;* **H04Q** *11/04*
U.S. Cl. 379—207 **19 Claims**



18. A telecommunications system comprising:

a first stored-program-controlled telephone switching system and a second stored-program-controlled telephone switching system connected to each other and each including, and operating under control of, its own stored-program controller;

the first telephone switching system providing telecommunications connections independently of the second telephone switching system between a plurality of first telephone sets that are connected to the first telephone switching system, and further providing telecommunications features to the plurality of first telephone sets;

the second telephone switching system providing telecommunications connections independently of the first telephone switching system between a plurality of second telephone sets that are connected to the second telephone switching system, and further providing telecommunications features to the plurality of second telephone sets; and

the first telephone switching system and the second telephone switching system cooperating to provide telecommunications connections between a first telephone set of the plurality of first telephone sets and a second telephone set of the plurality of second telephone sets, with the stored-program controller of one of the first telephone switching system and the second telephone switching system acting as a telecommunications feature server for the stored-program controller of the other of the first telephone switching system and the second telephone switching system to provide the telecommunications features for both the first telephone set and the second telephone set, to effect telecommunications feature transparency between the first telephone switching system and the second telephone switching system for the connection between the first telephone set and the second telephone set.

5,550,907

PERSONAL COMMUNICATION USING INTELLIGENT TERMINALS

Ralph Carlsen, Port Monmouth, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 23, 1994, Ser. No. 363,496

Int. Cl.[6] H04M *3/42;11/00;7/00*

U.S. Cl. 379—207 **25 Claims**

601 PERSONAL NUMBER	602 LOGIN CODE	603 TERMINALS TO BE POLLED	604 COMMUNICATIONS LINK USED	605 X.25 ADDRESSES
500-288-1234	#1	908-949-7503	SS7/0.931	
		908-123-4567	SS7/ADSI	
		609-787-9876	X.25	3134 1234567890
		609-234-7643	GSM/SMS	
		908-949-9876	X.25	3134 5678901234
		908-949-3214	X.25	3134 9012345678

1. A method for completing telephone calls placed to a selected one of a plurality of subscribers, each of the subscribers having a personal telephone number, said method including the steps of

storing information indicating when each of a plurality of intelligent terminals associated with a selected subscriber was last visited,

storing in a central processor, for each respective subscriber, a corresponding list of associated intelligent terminals that have been pre-designated for use by that subscriber,

responsive to a call placed to a selected subscriber by dialing said selected subscriber's unique personal number, querying specific pre-designated intelligent terminals on said selected subscriber's list to determine when said selected subscriber was last present at each terminal, said stored information being retrieved from each terminal remotely, without completing a conventional call to the terminal, and

completing the call to the particular terminal that was most recently visited by the subscriber.

5,550,908

MODEM COMMUNICATIONS INTEROPERABILITY WITH SERVICES EQUIPPED TO PROVIDE CALLING PARTY IDENTITY DELIVERY WITH CALL WAITING

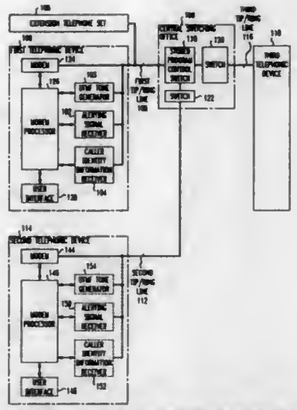
Lujing Cai, Tinton Falls, and Nuri R. Dagdeviren, Red Bank, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jun. 1, 1995, Ser. No. 457,937

Int. Cl.[6] H04M *3/42;1/56;15/06;3/00*

U.S. Cl. 379—215 **12 Claims**

1. A method of providing interoperability between a first modem and a caller identity delivery on call waiting (CIDCW) service that



operates when a communications link is established between the first modem and a remote modem, the CIDCW service, upon receiving an incoming call from a third party and directed to the first modem, sending the first modem a first alerting signal sequence including a first portion indicative of the existence of an incoming telephone call from the third party;

and, if the first modem responds to the first portion with an acknowledgment signal, the first alerting signal sequence further including a second portion specifying the identity of the third party caller;

the CIDCW service sending the first modem a second alerting signal sequence including a first portion indicative of the existence of the incoming telephone call from the third party;

and, if the first modem responds to the first portion of the second alerting signal sequence with an acknowledgment signal, the second alerting signal sequence further including a second portion specifying the identity of the third party caller;

THE METHOD CHARACTERIZED BY THE FOLLOWING STEPS:

(a) the first modem, upon receipt of the first portion of the first alerting signal sequence, not sending an acknowledgment signal to the CIDCW service; and

(b) the first modem, upon receipt of the first portion of the second alerting signal sequence, sending an acknowledgment signal to the CIDCW service.

5,550,909

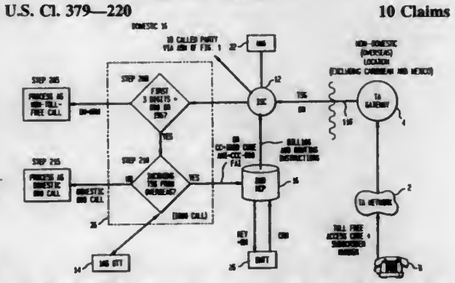
INTERNATIONAL TOLL-FREE CALLING PROCESS

Rajat Chanda, Howell; Hani M. Dib, Montville, and Steven T. Heinsius, Freehold, all of N.J., assignors to AT & T Corp., Murray Hill, N.J.

Filed Oct. 14, 1994, Ser. No. 323,303

Int. Cl.[6] H04M *3/42*

U.S. Cl. 379—220 **10 Claims**



1. A method for processing international calls comprising the steps of:

receiving a call, at a switch located in a domestic telecommunications network, made by a caller in a foreign location by directly dialing a domestic telephone number assigned to a sponsor of said domestic telephone number, said domestic telephone number including a special service code followed by 7 digits, all of said 7 digits being used to identify said sponsor as an ultimate destination for said call, said call having been carried over an international trunk sub-group along with call origination information and said domestic telephone number;

determining at said switch that said call originated from said foreign location and is an international call;

identifying from said international trunk sub-group trunk sub-group characteristics including a country identifier and originating carrier specific information for the call;

utilizing said country identifier and carrier specific information as ANI parameters; and

processing said call to said ultimate destination using all of said 7 digits of said domestic telephone number, said country identifier and said carrier specific information.

5,550,910

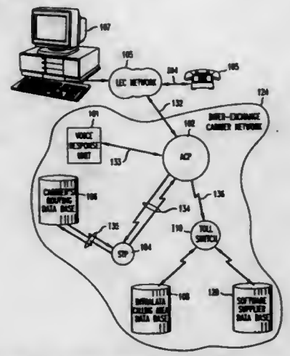
END-USER COMMUNICATIONS DEVICE WITH AUTOMATIC CARRIER SELECTION CAPABILITY FOR INTRALATA TOLL CALLS

Dale S. DeJager, Lincroft, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 18, 1994, Ser. No. 342,062

Int. Cl.[6] H04M *11/06*

U.S. Cl. 379—220 **15 Claims**



1. An end-user communicating device comprising:

a dialing apparatus for initiating a first telephone call in order to access a database in a communications carrier network;

a memory for storing data retrieved from said database, said data including a) a carrier access code that is used to establish intraLATA toll calls, and b) exchange numbers included in an intraLATA toll calling area associated with origination information obtained during said first telephone call; and

a processor for i) comparing each telephone number that is subsequently dialed via said dialing apparatus to said exchange numbers included in said intraLATA toll calling area, and ii) prepending said carrier access code to each subsequently dialed telephone number that comprises one of said exchange numbers included in said intraLATA toll calling area.

5,550,911

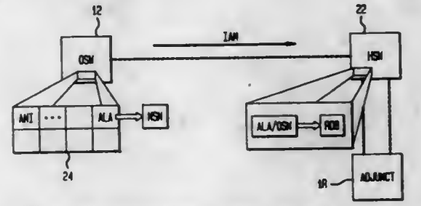
ADJUNCT CALL HANDLING FOR ACCESSING ADJUNCT-BASED CAPABILITIES PLATFORM

Promod K. Bhagat, Morganville; Warren R. Moe, Atlantic Highlands, and William T. Shampine, Freehold, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 29, 1994, Ser. No. 346,123

Int. Cl.[6] H04M *3/42;7/00*

U.S. Cl. 379—220 **28 Claims**



1. In a telecommunications system having a plurality of switches, a method of accessing an adjunct for handling adjunct-based applications remote from an originating switch when a local adjunct connected to said originating switch is unavailable, comprising the steps of:

(a) determining whether a given telephone call requires an adjunct;

(b) determining the type of adjunct that may be necessary to process the adjunct-based application for that given telephone call;

(c) identifying the logical address of a remote adjunct capable of processing said application based upon the type of adjunct required;

(d) identifying a hand-off switch having a communication path to the remote adjunct;

(e) selecting a route from said originating switch to said hand-off switch;

(f) transmitting data from said originating switch to said hand-off switch;

(g) transmitting information between said hand-off switch and the remote adjunct to process the adjunct-based application for the particular call; and

(h) determining the operating mode of the remote adjunct based upon customer-specific application data contained in the remote adjunct.

5,550,912

CONNECTIONS BETWEEN A TOLL NETWORK AND MULTIPLE LOCAL NETWORKS

Akinwale A. Akinpelu, Leonardo; Promod K. Bhagat, Howell, both of N.J., and Dana L. Garoutte, Wheaton, Ill., assignors to AT&T Corp., Murray Hill, N.J.

Continuation of Ser. No. 203,102, Feb. 28, 1994, abandoned. This application Jul. 17, 1995, Ser. No. 503,254

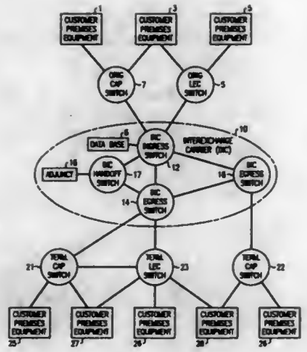
Int. Cl.[6] H04M *3/00*

U.S. Cl. 379—221 **5 Claims**

1. A method of routing a call from an interexchange carrier (IXC) to one of a plurality of terminating local exchange carriers, wherein a called party of said call is identified by a called number comprising an office code, individual telephone numbers within said office code being assigned to subscribers of different ones of said plurality of local exchange carriers, and wherein different ones of said plurality of local exchange carriers are served from different egress switches of said IXC, the method comprising the steps of:

accessing a data base by an IXC ingress switch connected to said egress switches to identify a terminating local exchange carrier, based on a telephone number within said called number's office code, to which said call is to be routed; and

routing said call to said identified terminating local exchange carrier via one of said egress switches.



5,550,913
NETWORK TERMINATING UNIT FOR CONNECTING ANALOG AND DIGITAL COMMUNICATION SYSTEMS TO A DIGITAL NETWORK

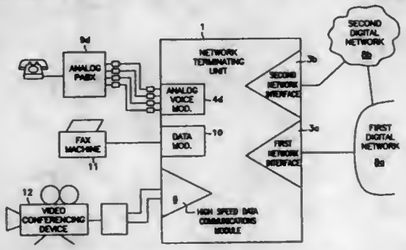
Samuel McMaster, Nottinghamshire, and Stephen Kirwan, Swindon, both of, United Kingdom, assignors to The Post Office, London, United Kingdom

Filed Dec. 9, 1994, Ser. No. 244,886

Claims priority, application European Pat. Off., Dec. 9, 1991, 91311440

Int. Cl.[6] H04M *7/00;* **H04Q** *11/04;* **H04J** *3/02*

U.S. Cl. 379—230 **14 Claims**



1. Communications terminal equipment comprising:

an analog voice module, for connection to an analog private exchange;

a high speed data communication module, for connection to high speed communications devices;

a first interface for a common channel signalling connection to a first digital network; and

a second interface for a common channel signalling connection to a second digital network.

5,550,914
COMMUNICATIONS SIGNALLING NETWORK APPARATUS

David A. Clarke, 75 Dorset Way, Yate Bristol, and Steven N. Bennett, 1 Bafford Farm, Bafford Lane, Charlton Kings, Cheltenham, both of, England

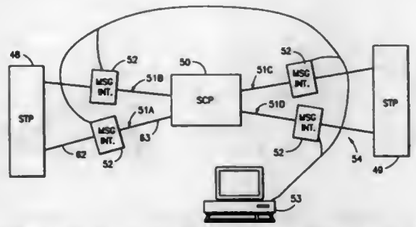
Filed Feb. 16, 1995, Ser. No. 389,925

Claims priority, application European Pat. Off., Feb. 25, 1994, 94301351

Int. Cl.[6] H04M *3/42;7/06*

U.S. Cl. 379—230 **17 Claims**

1. A message interceptor for a communications signalling network of the type comprising a plurality of signalling points interconnected by bi-directional point-to-point links over which messages are passed to transfer data between the signalling points, the passing of messages over each said link being effected in accordance with a link-level protocol; the message interceptor being intended for insertion in a link between a first and a second signalling point and comprising:



a first link interface for interfacing with a first portion of said link that connects with said first signalling point,

a first link-level protocol engine connected to said first link interface for implementing said link-level protocol in respect of messages exchanged with said first signalling point over said first link portion, said first link-level protocol engine having means for extracting data carried in messages received from said first signalling point and means for incorporating other data into messages for sending to said first signalling point,

a second link interface for interfacing with a second portion of said link that connects with said second signalling point,

a second link level protocol engine, connected to said second link interface for implementing said link-level protocol in respect of messages exchanged with said second signalling point over said second link portion, said second link-level protocol engine having means for extracting data carried in the messages received from said second signalling point and means for incorporating other data into messages for sending to said second signalling point,

first transfer means for transferring data extracted by said first link-level protocol engine to said second link-level protocol engine for incorporation into messages, and

second transfer means for transferring data extracted by said second link-level protocol engine to said first link-level protocol engine for incorporation into messages at least one of said transfer means including storage means for storing predetermined selection criteria, and selective-action means for effecting at least one of the following actions:

modification of particular data being transferred between protocol engines,

inhibiting transfer of particular data between said protocol engines, said selective-action means being responsive to the data to be transferred by transfer means to effect said action only on data meeting a corresponding selection criterium held in said storage means.

5,550,915
APPARATUS FOR USE IN COMPLETING TELEPHONE CALLS

B. W. Partridge, III, Mendham, N.J., assignor to Lucent Technologies, Inc., Murray Hill, N.J.

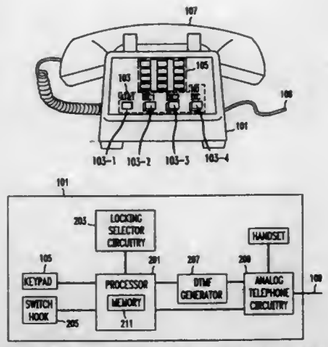
Filed Jul. 2, 1993, Ser. No. 86,963

Int. Cl.[6] H043 *1/27*

U.S. Cl. 379—355 **19 Claims**

1. A telephone station set for use in connecting a caller to the network of a local service provider, the telephone station set comprising:

multi-position selection means for registering a selection of a telecommunications carrier other than said local service provider to carry future telecommunications calls originated from said telephone station set and carried by a telecommunications carrier other than said local service provider, said selection remaining in effect, for all subsequent calls, until explicitly changed; and



means for automatically supplying from said telephone station set the telecommunication carrier code of said selected telecommunications carrier to said network of said local service provider during all calls originated after registration of said selection that are to be carried by a telecommunications system other than said local service provider.

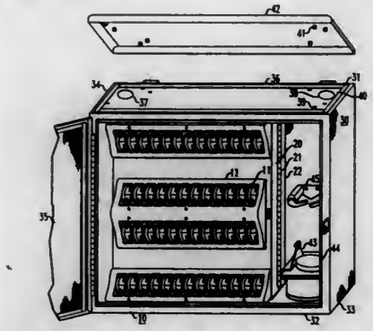
5,550,916
TELECOMMUNICAATIONS EQUIPMENT TERMINAL

Bassel H. Daoud, Township of Parsippany, Morris County, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jul. 18, 1994, Ser. No. 276,377

Int. Cl.[6] H04M *1/00*

U.S. Cl. 379—399 **10 Claims**



1. Apparatus comprising:

telecommunications equipment; and

a housing for mounting said equipment outdoors, said housing comprising a top surface with a removably mounted cover thereon, said top surface including a sealing material around a periphery thereof and at least one aperture which permits a telecommunications cable to pass therethrough, the top surface thereby providing a sealed interface with a bottom surface of another housing of a similar type when the cover is removed.

5,550,917
INTERFACE DEVICE BETWEEN A PUBLIC TELEPHONE AND AN EXTERNAL TERMINAL

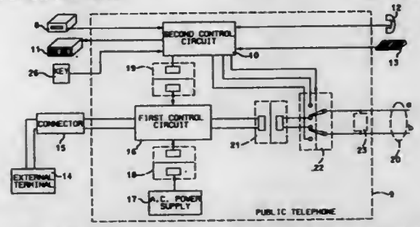
Ronan Tallec, Issy les Moulineux, France, assignor to France Telecom Etablissement Autonome De Droit Public, Paris, France

Continuation of Ser. No. 208,124, Mar. 9, 1994, abandoned. This application Oct. 23, 1995, Ser. No. 546,901

Claims priority, application France, Mar. 16, 1993, 93 03007

Int. Cl.[6] H04M *1/00*

U.S. Cl. 379—442 **12 Claims**



1. Interface device between a public telephone and an external terminal, said interface device incorporating a connector accessible to one user, a first control circuit for the connector, a second control circuit of the public telephone connected to a telephone line, a switching circuit switching the line either to the second control circuit of the public telephone, or to the first control circuit of the connector, a first electrical insulation module being positioned between the first control circuit of the connector and the switching circuit and a second electrical insulation module being placed between said first control circuit and the second control circuit, said second electrical insulation module also detecting connection of the external terminal to the connector.

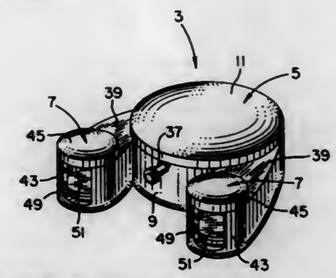
5,550,918
CARRYING CASE FOR HYGIENIC TELEPHONE SHEILDS

Olga Zdanov, 84-89 Homelawn St., Jamaica, N.Y. 11432

Filed Feb. 10, 1995, Ser. No. 386,406

Int. Cl.[6] H04M *1/00*

U.S. Cl. 379—452 **18 Claims**



1. A portable case, comprising:

first and second portable case portions connected with each other;

said first case portion having a first body part and a first lid structure defining an interior space therein, said first lid structure sealing said interior space;

a sanitary telephone covering structure in said interior space, said sanitary telephone covering structure comprising an attaching portion adapted to be applied to a handset of a telephone, and a shield portion covering said handset and permitting passage of sound therethrough;

said second case portion ahving a second body part and a second lid structure defining a second interior space therein of a size permitting receiving therein a plurality of tokens or coins

suitable for use in a public telephone, said second lid structure being securable in latching engagement with said second body part so as to secure the tokens or coins in said second interior space, and said second lid structure being releasable from said second body part and permitting exit of said coins or tokens from said second interior space when said second lid structure is unlatched.

5,550,919

METHOD AND DEVICE FOR LIMITING THE NUMBER OF AUTHENTICATION OPERATIONS OF A CHIP CARD CHIP

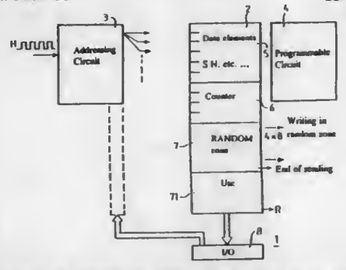
Jacek Kowalski, Trets, France, assignor to Gemplus Card International, Gemenos, France

Filed May 25, 1994, Ser. No. 248,475

Claims priority, application France, May 26, 1993, 93 06312

Int. Cl.[6] H04L 9/32

U.S. Cl. 380—23 **18 Claims**



1. A device for limiting the number of authentication operations executed by a chip card chip, the device comprising:

a first logic circuit defining

means for detecting a presentation of characteristic bits, the characteristic bits being the same for each authentication operation executed, and

means for authorizing an authentication operation based on the presentation of the characteristic bits;

means for counting the number of authentication operations executed by the chip card chip

means for comparing the number of authentication operations executed by the chip card chip with a limit;

a second logic circuit defining means for detecting a change in state of the means for counting;

means for limiting the number of authentication operations executed by the chip card chip, said means for limiting comprising a third validation circuit defining means for validating the performance of the authentication operation on a presentation of authentication bits, the validating being performed as a function of the state of the first logic circuit such that the validation is performed only if the presentation of characteristic bits has been detected and as a function of the second logic circuit such that the validation is performed only if the change in state of the means for counting has been detected; and

means for connecting the device for limiting to the chip card chip.

5,550,920

VOICE CANCELER WITH SIMULATED STEREO OUTPUT

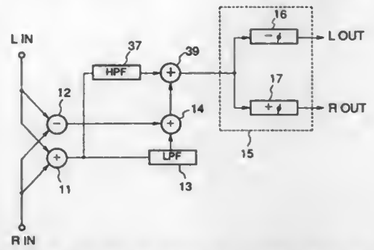
Takashi Nomura, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Kyoto, Japan

Filed Aug. 19, 1994, Ser. No. 293,462

Claims priority, application Japan, Aug. 30, 1993, 5-214125

Int. Cl.[6] H04S 5/00

U.S. Cl. 381—1 **13 Claims**



1. A vocal canceler for producing simulated stereo karaoke output from a left-channel input signal and a right-channel input signal, comprising:

a differencing circuit for taking a difference between said left-channel input signal and said right-channel input signal to produce a difference signal;

a first summing circuit for adding said left-channel input signal and said right-channel input signal to produce a sum signal;

a low-pass filter coupled to filter said sum signal to produce a low-frequency signal;

a second summing circuit for adding said difference signal and said low-frequency signal to produce a monaural karaoke signal;

a phase-shifting circuit for shifting said monaural karaoke signal by a first phase angle to produce a left-channel output signal and by a second phase angle to produce a right-channel output signal;

a stereo discriminator for determining whether said left-channel input signal and said right-channel input signal constitute a stereo signal; and

a first switch, controlled by said stereo discriminator, for selecting said monaural karaoke signal for input to said phase-shifting circuit when said left-channel input signal and said right-channel input signal constitute a stereo signal, and selecting said left-channel input signal and said right-channel input signal for input to said phase-shifting circuit, in place of said monaural karaoke signal, when said left-channel input signal and said right-channel input signal do not constitute a stereo signal.

5,550,921

STEREO SOUND SOURCE FOR PORTABLE COMPUTER

Tommyca Freadman, Goshen, N.Y., assignor to Sparkomatic, Milford, Pa.

Filed May 15, 1995, Ser. No. 441,662

Int. Cl.[6] H04R 5/00

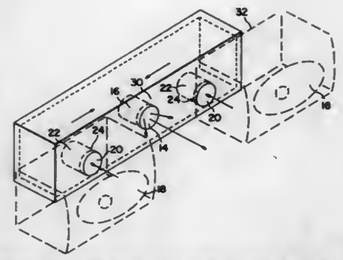
U.S. Cl. 381—24 **3 Claims**

1. A stereo sound source for a portable computer, comprising:

first and second speaker enclosures, each enclosure having a respective bass port therein;

a bass guide tube attached to the respective bass port on the outside of each enclosure;

a mixing chamber having respective guide ports through a wall of said chamber and a mixer port through a given wall of said



chamber, said bass guide tubes each being rotatably inserted through a respective guide port into said mixing chamber; and

a mixer tube attached to said mixer port on an inside surface of said given wall so as to provide an acoustic connection through said mixer tube to the outside of said mixing chamber, so that lower frequencies produced by each speaker are conducted to the mixing chamber and out through the mixer port, whereby a compact unit having improved stereo sound is provided for portable computer applications.

5,550,922

VEHICLE RADIO AUTOMATIC VOLUME ADJUSTMENT SYSTEM

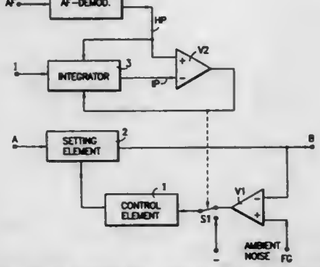
Raimund Becker, Hildesheim, Germany, assignor to Blaupunkt-Werke GmbH, Hildensheim, Germany

Filed Aug. 10, 1994, Ser. No. 288,563

Claims priority, application Germany, Aug. 27, 1993, 43 28 798.0

Int. Cl.[6] H03G 3/20

U.S. Cl. 381—57 **6 Claims**



1. A method of adjusting the volume of a mobile sound reproduction unit having first (V1) and second (V2) level comparator stages, to an ambient:driving noise level (FG),

comprising the steps of

feeding an audio signal level, sampled in a signal path (A-B) of the reproduction unit, downstream of a setting element (2), and a driving noise signal level (FG) to said first level comparator stage (V1), said first comparator, a control element (1) connected to an output of said first comparator (V1) and said setting element (2) together forming a feedback control loop (1, 2, V1) which attempts to minimize the difference between the audio signal level and the driving noise signal level;

comparing in a second level comparator stage (V2), at preset time intervals, an envelope curve level (HP) of the audio signal to a continuously increasing output signal (IP) of a resettable integrator (3);

wherein, as long as, at the moment of comparison, the envelope curve level (HP) is greater than the integrator output level (IP), the integrator output signal (IP) continues to increase and the feedback control loop is operative; and

wherein, as long as, at the moment of comparison, the envelope curve level (HP) is smaller than the integrator output level (IP), the feedback control loop (1, 2, V1) of the control circuit is inoperative and the integrator output level (IP) is set back to the present value of the audio envelope curve level (HP), from which position it increases until the next moment of comparison; and

wherein, for the duration of each period identified as an audio signal pause (T), the setting element (2) is supplied with a control signal that influences the level of the audio signal; and wherein the control loop (1, 2, V1) becomes operative again immediately after the end of an audio signal pause (T).

5,550,923

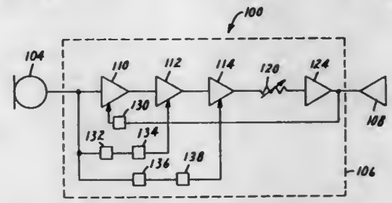
DIRECTIONAL EAR DEVICE WITH ADAPTIVE BANDWIDTH AND GAIN CONTROL

David A. Hotvet, Savage, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 2, 1994, Ser. No. 300,345

Int. Cl.[6] H03G 5/00

U.S. Cl. 381—72 **13 Claims**



1. A device for protecting a user's ears from excessive levels of sound

while permitting the user to hear desired sounds in a noisy environment, comprising:

enclosure means for at least partially isolating the user's ears from ambient sounds;

at least one directional microphone for receiving audio signals; and

an adaptive band pass filter, connected to receive the audio signals and adapted to output a processed audio signal, the adaptive band pass filter comprising:

means for sensing the noisiness of the environment and generating therefrom a corresponding control signal;

an adaptive high pass filter;

an adaptive low pass filter;

means responsive to the control signal for automatically adjusting the pass band of the adaptive high pass filter and for automatically adjusting the pass band of the adaptive low pass filter, such that the processed audio signal includes progressively narrower bands of frequencies in progressively noisier environments; and

an adaptive compression circuit, comprising:

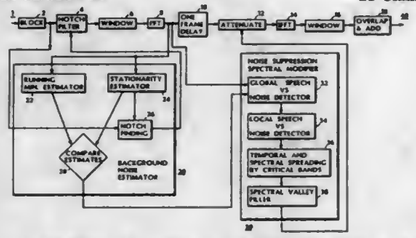
first time constant means for controlling response time of an automatic gain control circuit in response to isolated bursts of noise; and

second time constant means for controlling response time of the automatic gain control circuit in response to repetitive bursts of noise.

5,550,924
REDUCTION OF BACKGROUND NOISE FOR SPEECH ENHANCEMENT

Brant M. Helf, Melrose, Mass., and Peter L. Chu, Lexington, both of Mass., assignors to PictureTel Corporation, Danvers, Mass.

Continuation of Ser. No. 86,707, Jul. 7, 1993, abandoned. This application Mar. 13, 1995, Ser. No. 402,550
Int. Cl.[6] H04B *15/00*
U.S. Cl. 381—94 **21 Claims**



1. An apparatus for the perceived real-time suppression of background noise in an input audio signal having components of noise comprising:

a framer for dividing the input audio signal into a sequence of audio signal frames;

a windower for producing a current windowed audio signal frame, combining all of one audio signal frame with some of the audio signal frame immediately preceding in time the one audio signal frame;

a transformer for obtaining a group of frequency spectrum components from the current windowed audio signal frame;

a noise estimator using the frequency spectrum components to produce a noise estimate of an amount of noise in the frequency spectrum components;

a noise suppression spectral modifier for producing current gain multiplicative factors based on the noise estimate and the frequency spectrum components;

a delayer for delaying, by a fixed number of frames, the frequency spectrum components of said sequence of audio signal frames to produce delayed frequency spectrum components;

a controlled attenuator for attenuating the delayed frequency spectrum components of a previous frame of said sequence based on the current gain multiplicative factors produced using said current frame to produce noise-reduced frequency components; and

an inverse transformer for converting the noise-reduced frequency components to the time domain.

5,550,925
SOUND PROCESSING DEVICE

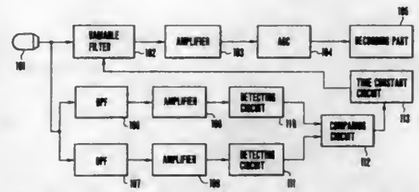
Taizou Hori, Kanagawa-ken; Hideaki Fujimoto, Chiba-ken; Hirokazu Mogi, Saitama-ken, and Yasumasa Ono, Tokyo, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 30, 1991, Ser. No. 814,562
Claims priority, application Japan, Jan. 7, 1991, 3-000219; Jan. 7, 1991, 3-000220; Jan. 7, 1991, 3-000221; Jan. 7, 1991, 3-000225; Jan. 7, 1991, 3-000226; Jan. 7, 1991, 3-000227; Jul. 8, 1991, 3-167021; Oct. 7, 1991, 3-259137; Oct. 7, 1991, 3-259138; Oct. 7, 1991, 3-259140; Oct. 7, 1991, 3-259141
Int. Cl.[6] H03G *5/00*
U.S. Cl. 381—98 **13 Claims**

1. A sound processing device for processing sound, comprising:

(A) low-frequency attenuating means for receiving an audio signal as its input, attenuating a low-frequency signal of the input audio signal and outputting a resultant audio signal; and

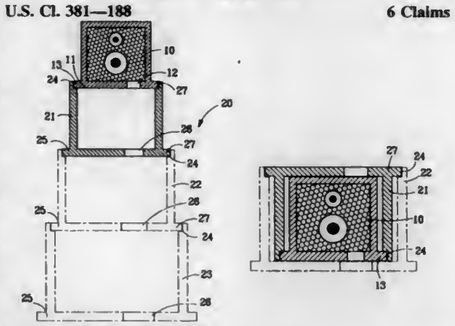
(B) control means for controlling an attenuating characteristic in said low-frequency attenuating means according to a level of a middle-frequency signal of the input audio signal having a frequency zone different from that of a level of the low-frequency signal of the input audio signal and the low-frequency signal.



5,550,926
OVERLAP SOUND CASE

Ye-Ming Tsao, 6-4 Fl., No. 188, Sec. 3, Ting-Chou Rd., Taipei, Taiwan

Filed Sep. 8, 1994, Ser. No. 302,305
Int. Cl.[6] H04R *25/00*
U.S. Cl. 381—188 **6 Claims**



1. A sound case comprising:

a main sound case generally formed as a box, said main sound case having a speaker and an electric circuit disposed therein, said main sound case further having a bottom wall with an opening therein, said bottom wall extending beyond side walls of said main sound case such that a flange is formed around a perimeter of said bottom wall, and

plurality of subordinate sound chests of differing sizes, said subordinate sound chests each having a hollow interior, an open top side, a subordinate bottom wall with an opening therein, and surrounding side walls,

said subordinate bottom walls of each subordinate sound chest extending beyond said side walls of each said subordinate sound chest such that a flange is formed around a perimeter of said subordinate bottom wall,

said side walls of each said subordinate sound chest including a recess formed on a top side thereof; such that

during operation said subordinate sound chests are stacked in order of decreasing size, each succeeding smaller subordinate sound chest being received in said recess on said top side of said side walls of a larger subordinate sound chest stacked beneath it, a smallest of said subordinate sound chests receiving said main sound case, and

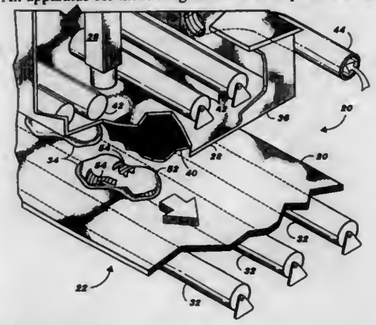
for storage, said main sound case is inverted and received top side down in the hollow interior of said smallest subordinate sound chest, said smallest subordinate sound chest thereafter being inverted and received top side down in a next larger subordinate sound chest, each succeeding subordinate sound chest being similarly stored in a next larger subordinate sound chest until all said subordinate sound chests and said main sound case are contained in a largest of said subordinate sound chests.

5,550,927
VEGETABLE PEEL FRACTION INSPECTION APPARATUS

David R. Zittel, Columbus, Wis., and Douglas P. Wornson, Northfield, Minn., assignors to Lyco Manufacturing, Inc., Columbus, Wis.

Filed Sep. 13, 1994, Ser. No. 304,873
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—110 **14 Claims**

1. An apparatus for measuring the amount of peel removal from



a potato comprising:

a) a stand through which potatoes having surfaces which have been peeled are moved;

b) a camera mounted to the stand for imaging potatoes passing through the stand, wherein the camera is directed to view the potatoes against a surrounding background, and wherein the camera forms an image corresponding to the viewed potatoes and produces an electrical signal corresponding to the image;

c) a first means for projecting light in the direction viewed by the camera;

d) a second means for projecting a second light, the second means including a translucent floor through which the second light projects, the second means positioned so the potatoes are moved between the second means and the camera;

e) an electric controller which receives the camera signal and which processes the signal to produce an image of the potato, said image highlighting the peel condition of the surface of the potato, and wherein the controller calculates the fraction of peel which remains on the peeled potato; and

f) a display for allowing an operator to view the controller processed image of the viewed potatoes and displaying information relating to the completeness of peel removal.

5,550,928
AUDIENCE MEASUREMENT SYSTEM AND METHOD

Daozheng Lu, Buffalo Grove, Ill.; Ceril T. Shagrin, Palm Harbor; William L. Thomas, Clearwater, both of Fla.; Morris Lee, Buffalo Grove, Ill.; Bruce Bernard, and Jia Zhang, both of Mundelein, Ill., assignors to A.C. Nielsen Company, Northbrook, Ill.

Filed Dec. 15, 1992, Ser. No. 992,383
Int. Cl.[6] G06K *9/62*
U.S. Cl. 382—116 **22 Claims**

1. An image recognition apparatus for passively identifying individuals in a monitored area comprising:

means for storing a first set of reference facial image signatures wherein each reference facial image signature in the first set corresponds to a predetermined one of said individuals and is formed from an initial image of a predetermined individual by a first facial recognition methodology;

means for storing a second set of reference facial image signatures wherein each reference facial image signature in the second set corresponds to a predetermined one of said individuals and is formed from an initial image of a predetermined individual by a second facial recognition methodology which is different from the first facial recognition methodology;

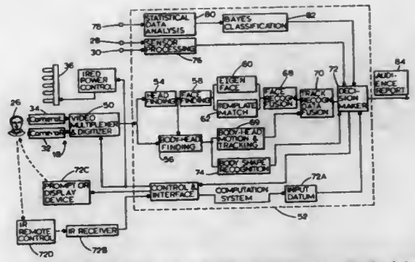


image capturing means for capturing video images of a monitored area;

means for extracting a first current facial image signature from the video image by processing the video images and by utilizing the first facial recognition methodology and for providing a first set of identity-indicating scores by comparing the first current facial image signature to each reference facial image signature of the first set of reference facial image signatures;

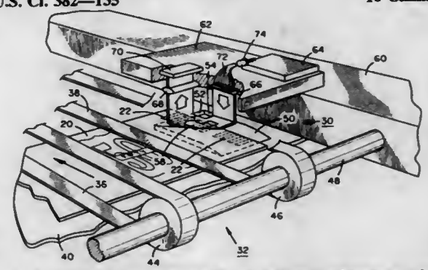
means for extracting a second current facial image signature from the video image by processing the video images and by utilizing the second facial recognition methodology and for providing a second set of identity-indicating scores by comparing the second current facial image signature to each reference facial image signature of the second set of reference facial image signatures; and,

means for fusing the first and second sets of identity-indicating scores to form a set of composite identity-indicating scores from which individuals may be identified.

5,550,929
MEANS AND METHOD FOR READING INDICIA ON A SKEWED SUBSTRATE

James S. Bianco, 217 Brainard Rd., Enfield, Conn. 06082

Filed Feb. 26, 1992, Ser. No. 842,011
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—135 **16 Claims**



1. A reader for reading indicia disposed on a substrate moving relative to said reader, said indicia being parallel to and at a known fixed distance from an edge of said substrate, said reader comprising:

(a) reading means for reading said indicia as said indicia normally move relative to said reading means along a fixed plane which passes through said reading means;

(b) optical sensing means for continuously sensing the position of said edge relative to said reading means while said indicia are being read; and

(c) adjusting means responsive to said optical sensing means for adjusting said reading means such that said reading means can read said indicia when said edge is skewed with respect to said reading means such that said indicia no longer move along said plane;

said reading means and said optical means including:

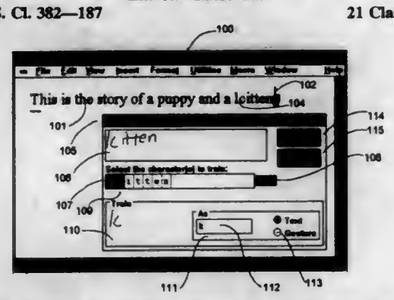
(d) a linear array of photodetector elements disposed on a line passing through plane and over said edge;
(e) said photodetector elements to detect said edge of said substrate by comparing contrast between said substrate and a background; and
(f) said reading means to use a selected one of said photodetector elements to read said indicia, said selected one of said photodetector element being said known fixed distance from a photodetector element detecting said edge of said substrate.

5,550,930

METHOD AND SYSTEM FOR TRAINING A HANDWRITING RECOGNIZER AT THE TIME OF MISRECOGNITION

Eric R. Berman, Redmond; Luis F. T. Abdala, and Marlin Eller, both of Seattle, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 716,730, Jun. 17, 1991, abandoned.
This application Apr. 5, 1993, Ser. No. 42,834
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—187 **21 Claims**



1. A method in a computer system for correcting misrecognition by a handwriting recognizer, the method comprising the computer-implemented steps of:
inputting raw handwritten data;
recognizing the raw handwritten data as a plurality of symbols;
sending the raw handwritten data and the recognized symbols to a trainer; and
under control of the trainer,
displaying the raw handwritten data and the recognized symbols;
selecting recognized symbols that are misrecognized;
re-displaying the raw handwritten data corresponding to the selected symbols;
inputting correct symbols corresponding to the re-displayed raw handwritten data; and
training the handwriting recognizer to recognize the raw handwritten data corresponding to the selected symbols as the correct symbols.

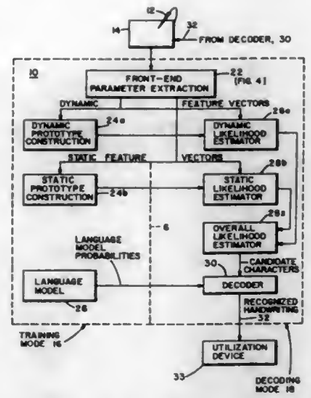
5,550,931

AUTOMATIC HANDWRITING RECOGNITION USING BOTH STATIC AND DYNAMIC PARAMETERS

Jerome R. Bellegarda, Goldens Bridge; David Nahamoo, White Plains, and Krishna S. Nathan, New York, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 9,515, Jan. 27, 1993, Pat. No. 5,491,758.
This application May 25, 1995, Ser. No. 450,557
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—187 **2 Claims**

1. Handwriting recognition apparatus, comprising:
handwriting transducer means having an output providing x-y coordinate information generated by a writer while writing characters;



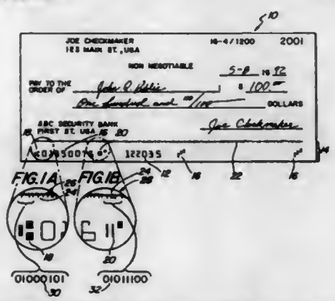
first extracting means, having an input coupled to said output of said handwriting transducer means, for extracting and outputting temporally-based feature vectors from the x-y coordinate information;
first training means, responsive to the temporally-based feature vectors, for providing and storing first corresponding character prototypes based on K-means Euclidean clustering and K-means Gaussian clustering of the temporally-based feature vectors;
second extracting means, having an input coupled to said output of said handwriting transducer means, for extracting and outputting shape-based feature vectors from the x-y coordinate information; and
second training means, responsive to the shape-based feature vectors, for providing and storing second corresponding character prototypes based on K-means Euclidean clustering and K-means Gaussian clustering of the shape-based feature vectors.

5,550,932

METHOD FOR ENCODING MICR DOCUMENTS

Thomas F. Blaylock, Irvine, and Marvin C. Schroeder, Mission Viejo, both of Calif., assignors to Pierce Companies, Inc., Santa Ana, Calif.

Filed Jun. 19, 1992, Ser. No. 901,403
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—139 **2 Claims**



1. A method for providing a printed identification of the source of a magnetic ink character recognition (MICR) printed document printed by a printer using a character-cell set, said identification being printed directly on said document comprising:
for each source of a printed document, providing a unique character-cell set having a set of character cells for printing onto a document wherein at least one of said character cells

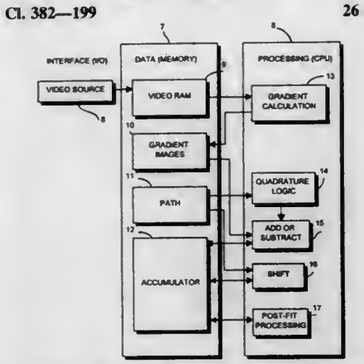
has binary code, defined by a series of long and short parallel lines arranged in a row, included therein which uniquely identifies the said character-cell set used by a MICR printer in printing the document;
downloading said character-cell set to a printer;
selecting character cells from said character-cell set for printing onto a document, said selected character cells including at least one character cell having the binary code; and
printing said selected character cells onto a document, such that the binary code is also automatically printed.

5,550,933

QUADRATURE SHAPE DETECTION USING THE FLOW INTEGRATION TRANSFORM

George D. Stetten, Chapel Hill, N.C., assignor to Duke University, Durham, N.C.

Filed May 27, 1994, Ser. No. 249,342
Int. Cl.[6] G06K *9/48*
U.S. Cl. 382—199 **26 Claims**



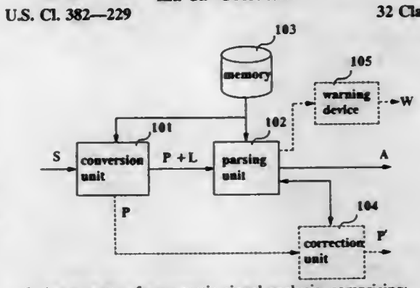
1. A computer process of detecting the presence of a contour in an image formed on an array of pixels comprising:
calculating the x and y gradients Gx and Gy at each pixel in the array,
generating a plurality of paths each corresponding in shape to the shape of said contour and fixing a single predetermined point in each path at a pixel in said array, each path being fixed at a different pixel,
for each path, proceeding from the pixel at said predetermined point on the path to the next pixel on the path,
accumulating in an accumulator the gradient at the next pixel by adding or subtracting the horizontal gradient Gx where the movement to the next pixel was up or down, respectively, or subtracting or adding the vertical gradient Gy where the movement along the path to the next pixel was to the right or left, respectively, then proceeding to the next pixel on said path in said selected direction,
accumulating in the accumulator as in said preceding step, and
continuing the procedure until said path is traced to the pixel at said predetermined point, whereat the accumulated value in the accumulator for each pixel at said predetermined point is the pixel value for a pixel in a transformed image, and the transformed image indicates the detection of the contour by exhibiting a fovea.

5,550,934

APPARATUS AND METHOD FOR SYNTACTIC SIGNAL ANALYSIS

Eduardus J. W. Van Vliembergen, Venlo; Robertus P. E. H. Heemels, Roermond; Louis M. G. Cremers; Frederik J. Hommersom, both of Venlo, and Jan Gerritsen, Nijmegen, all of, Netherlands, assignors to Oce-Nederland B.V., Netherlands

Continuation of Ser. No. 196,570, Feb. 15, 1994, abandoned.
This application Nov. 27, 1995, Ser. No. 562,787
Claims priority, application Netherlands, Feb. 19, 1993, 9300310; European Pat. Off., Mar. 29, 1993, 93200893
Int. Cl.[6] G06K *9/72*
U.S. Cl. 382—229 **32 Claims**



1. An apparatus for syntactic signal analysis, comprising:
primitive conversion means for converting an input signal to a string of primitives;
normalized primitive conversion means, responsive to the primitive conversion means, for converting the primitives to a corresponding string of normalized primitives;
wherein conversion from a primitive to a set of at least one normalized primitive results in a loss of information content;
feature extraction means, responsive to the primitive conversion means and the normalized primitive conversion means, for at least partially restoring the loss of information content, between a primitive and the corresponding set of at least one normalized primitive, by extracting features associated with a primitive;
grouping means, responsive to the feature extraction means, for grouping the features extracted from a primitive into at least one current feature group corresponding to the primitive;
assignment means, responsive to the grouping means, for assigning, relative to a particular primitive, the at least one current feature group to the normalized primitives to which the particular primitive corresponds;
a memory for storing a grammar, the grammar including:
grammar rules; and
declared feature groups;
a grammar rule establishing a relationship between a non-terminal and a replaceable set of terms, the rule permitting an occurrence of the replaceable set to be replaced by the non-terminal;
the terms in the replaceable set including at least one of a terminal, a non-terminal, and an empty-symbol, a terminal being equivalent to a normalized primitive;
a declared feature group being associated with the non-terminals and with the replaceable sets of the reduction rules;
parsing means, responsive to the normalized primitive conversion means and operatively interconnected to the memory, for shifting the stream of normalized primitives onto a stack as terms in the stack until a grammar rule is satisfied, and for applying the grammar rule to replace a replaceable set of terms on the stack with a non-terminal;
feature checking means, operatively connected to the memory, responsive to the assignment means and parsing means when the parsing means determines that a grammar rule is satisfied, for processing a current feature group, associated with a replaceable set of terms of the satisfied grammar rule, to produce a violation score if the grammar rule and the corresponding declared feature groups are not satisfied perfectly;

production of the violation score by the feature checking means enabling a sequence of normalized primitives, that would otherwise not satisfy any grammar rule not having feature groups corresponding thereto, to satisfy at least one grammar rule and the corresponding declared feature groups, albeit to a lesser degree of satisfaction than a situation where no violation score is generated.

5,550,935

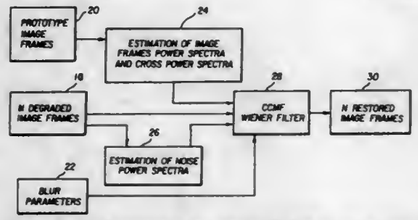
METHOD FOR MULTIFRAME WIENER RESTORATION OF NOISY AND BLURRED IMAGE SEQUENCES

Arif T. Erdem; Muhammed I. Sezan, and Mehmet K. Ozkan, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 723,873, Jul. 1, 1991, abandoned. This application Apr. 13, 1995, Ser. No. 421,138

Int. Cl.[6] G06K *9/40*

U.S. Cl. 382—260 **47 Claims**



1. A method of generating a sequence of images of a scene, in which at least one of blurring and noise, perceptible by a human observer as a result of relative motion between an image capture device and said scene, is reduced, said method comprising the steps of:

(a) generating a sequence of N image frames of said scene by performing the steps of

(a1) providing an image capture device which, when operated, generates said Sequence of N image frames of said scene in which said at least one of blurring and noise, perceptible by a human observer as a result of relative motion between said image capture device and said scene, may be present, and

(a2) operating said image capture device provided in step (a1), so as to cause said image capture device to generate said sequence of N image frames of said scene, in which said at least one of blurring and noise, perceptible by a human observer as a result of relative motion between said image capture device and said scene, may be present;

(b) processing said sequence of N image frames of said scene as generated by said image capture device as operated in step (a2) to remove said at least one of blurring and noise present in said sequence of N image frames by performing the steps of:

(b1) digitizing said sequence of N image frames of said scene as generated by said image capture device in step (a2);

(b2) dividing the digitized sequence of images into groups of N frames;

(b3) estimating power spectra and cross power spectra of the N digitized image frames;

(b4) providing as inputs to a cross-correlated multiframe Wiener filter: the estimation of the power spectra and cross power spectra of the N digitized frame, noise power spectra of the N digitized frames, and blur parameters;

(b5) performing cross-correlated multiframe Wiener filtering using said inputs to obtain N restored image frames as an output; and

(b6) repeating steps (b2)–(b5) for every other group of N frames in the digitized sequence of images to produce a restored image sequence in which said at least one of blurring and noise has been reduced;

(c) coupling the digitized restored image sequence produced in step (b6) to an image reproduction output device; and

(d) operating said image reproduction output device to which said digitized restored image sequence produced in step (b6) is coupled in step (c), and thereby causing said image reproduction output device to reproduce said restored image sequence from which said at least one of blurring and noise has been reduced, thereby increasing the amount of information that a human observer can obtain when viewing said restored image sequence of said scene, as reproduced by said image reproduction output device.

5,550,936

IMAGE PROCESSING SYSTEM

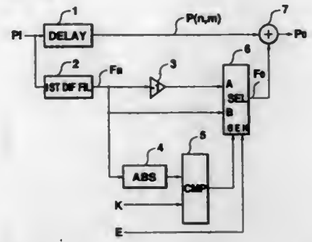
Jun Someya; Kazuhiro Chiba; Kazuyoshi Watabu; Yoshie Yamamoto; Mamoru Inamura; Takeshi Nagayama; Noriko Bamba, and Noboru Sunada, all of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 931,198, Aug. 17, 1992, abandoned. This application May 6, 1994, Ser. No. 238,946

Claims priority, application Japan, Aug. 23, 1991, 3-211802; Sep. 9, 1991, 3-228934; Sep. 13, 1991, 3-234741; Sep. 13, 1991, 3-234742; Feb. 7, 1992, 4-22694

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—263 **22 Claims**



1. An outline correction circuit for digitally correcting an outline of an image, comprising:

input means for inputting a discrimination threshold value of the outline;

differential filter means for extracting a high band signal component of a spatial frequency of the image;

comparison discrimination means for comparing an absolute value of the high band signal component with the discrimination threshold value;

high band emphasis means for adding the high band signal component to an original image signal to output an emphasized image signal;

smoothing means for subtracting the high band signal component from the original image signal to output a smoothed image signal; and

selector means for selecting the emphasized image signal when the high band signal component is greater than the discrimination threshold value and for selecting the smoothed image signal when the high band signal component is less than or equal to the discrimination threshold value;

said high band emphasis means including,

emphasis means for emphasizing the high band signal component to output an emphasis signal, and

subtraction means for subtracting the discrimination threshold value from the high band signal component to output a subtraction signal.

5,550,937

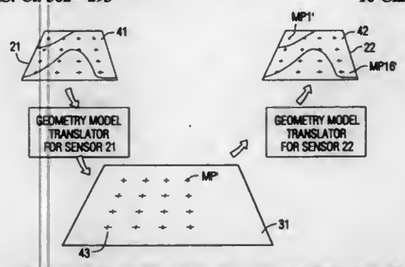
MECHANISM FOR REGISTERING DIGITAL IMAGES OBTAINED FROM MULTIPLE SENSORS HAVING DIVERSE IMAGE COLLECTION GEOMETRIES

David M. Bell, Palm Bay; Joseph K. Bryan, West Melbourne, both of Fla., and Stephen B. Black, Arlington, Va., assignors to Harris Corporation, Melbourne, Fla.

Continuation of Ser. No. 982,071, Nov. 23, 1992, abandoned. This application Sep. 12, 1994, Ser. No. 304,316

Int. Cl.[6] G06K *9/32*

U.S. Cl. 382—293 **10 Claims**



1. For use with a digital image processing system in which plural images of an object are derived by a plurality of sensors, object observation and image collection parameters of which may be different from one another, and wherein said plural images of said object obtained by said plurality of sensors are digitized to form first and second digital images, said first digital image having a first array of pixels of a prescribed spatial resolution, and said second digital image having a second array of pixels of said prescribed spatial resolution, a method of bringing said first and second digital images into effective registration with one another comprising the steps of:

(a) processing said first and second digital images to obtain plural versions of each of said first and second digital images, having successively reduced spatial resolutions from said prescribed spatial resolution to a prescribed base resolution;

(b) comparing image contents of respective first neighborhoods of pixels associated with respective points of a first array of points within a first selected resolution version of said first digital image with image contents of respective second neighborhoods of pixels associated with respective points of a second array of points within said first selected resolution version of said second digital image, so as to derive a measure of misregistration between said first and second images, the contents of each of said first and second neighborhoods of pixels being defined with respect to a reference image surface in accordance with first and second geometric models of sensors through which said first and second digital images are obtained, said measure of misregistration between said first and second digital images being derived by

(b1) comparing the extent to which a prescribed content of respective first neighborhoods of pixels associated with said first array of points within said first selected resolution version of said first digital image matches a prescribed content of respective second neighborhoods of pixels associated with said second array of points within said first selected resolution version of said second digital image, by

(b1-1) emphasizing said prescribed content of said first and second neighborhoods of pixels, and

(b1-2) comparing respective prescribed content-emphasized first neighborhoods of pixels with respective edge content-emphasized second neighborhoods of pixels, so as to derive a distribution of peaks representative of said measure of misregistration between said first and second digital images, such that said measure of misregistration between said first and second digital images is in accordance with offsets of peaks from points of said first and second arrays of points respectively,

(b3) generating respective consistent subsets of offsets of peaks, which subsets consistently point in the same direction from points of said first and second arrays of points, respectively, said peaks falling within a prescribed range of offset values,

(b4) processing said consistent subsets of offsets to derive, for each consistent subset, a measure of the accuracy to which that subset is representative of misregistration between said first and second images,

(b5) comparing respective measures of accuracy derived for respective consistent subsets, and

(b6) deriving said measure of misregistration between said first and second digital images, in accordance with said comparing step (b5) of respective measures of accuracy derived for respective consistent subsets; and

(c) modifying at least one of said first and second geometric models of the sensors, through which said first and second digital images are obtained, in accordance with the measure of misregistration derived in step (b6), so as to effectively decrease misregistration between said first and second images.

5,550,938

CORDLESS IMAGE SCANNER

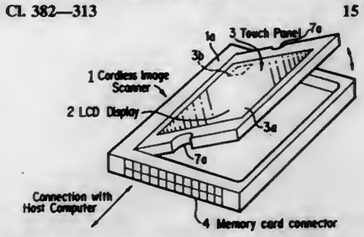
Tomohiko Hayakawa, Kyoto, and Tpsjojorp Tashima, Joyo, both of, Japan, assignors to Omron Corporation, Kyoto, Japan

Continuation-in-part of Ser. No. 803,733, Dec. 9, 1991, abandoned. This application Dec. 21, 1993, Ser. No. 170,918

Claims priority, application Japan, Apr. 17, 1989, 1-96962

Int. Cl.[6] G06K *9/22*

U.S. Cl. 382—313 **15 Claims**



1. A cordless hand-held image scanner comprising:

input means for inputting image data;

reading means for enabling said input means to input image data;

data storing means for storing image data input through said input means and reading means;

display means for displaying data input through said input means and for displaying, after the inputting and storing of said image data has been completed, image data stored in said data storing means;

processing means connected to said input means, reading means and display means for causing said display means to display input image data thereby enabling a user of said image scanner to correct movement of said scanner as said image data is input;

power supply means for supplying electrical power;

communication means for communicating the stored image data with a host computer; and

a common card-shaped housing for supporting said input means, reading means, data storing means, display means, processing means, power supply means and communication means, said housing being user graspable and having a generally planar configuration with substantially coextensive upper and lower surfaces and side edges connecting said upper and lower surfaces, the planar area of each of said upper and lower surfaces being greater than that of said side edges, the lower surface of said housing including a read out window through which image data is input to said input means, the upper surface of said housing supporting said display means, said display means being rotatably mounted to said housing and including at least one handle for raising said display means by rotation relative to said housing from a first position where said display means forms a substantially planar upper surface of said housing to a second upstanding position.

VOL 1189 ISS 4 AUG 27 1996

5,550,939

HIGH SPEED OPTICAL SWITCHING DEVICE INCLUDING A CAPACITANCE STRUCTURE

Paul M. Rodgers, Woodbridge; David G. Moodie, Ipswich, and David Wake, Levington, all of, England, assignors to British Telecommunications public limited company, London, England

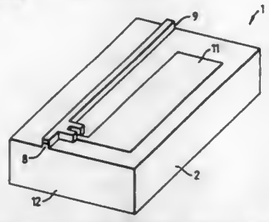
PCT No. PCT/GB93/00762, § 371 Date Oct. 7, 1994, § 102(e) Date Oct. 7, 1994, PCT Pub. No. WO93/21554, PCT Pub. Date Oct. 28, 1993

PCT Filed Apr. 13, 1993, Ser. No. 318,620

Claims priority, application United Kingdom, Apr. 13, 1992, 9208104

Int. Cl.[6] G02B 6/10

U.S. Cl. 385—8 13 Claims



1. A semiconductor optical switching device, for use in optical communications systems operating at high optical data rates, the switching device comprising:

an optical waveguide, including a p-n junction, provided on a substrate,

the optical waveguide having input and output ports for receiving an optical data signal at a first optical wavelength from a communications link and an optical control signal at a second optical wavelength,

the optical control signal operating to modify the refractive index of at least part of the waveguide at the first optical wavelength, by creating electrical carriers in the region of the p-n junction, so as to change the optical path length of the data signal in the device, there being capacitance structure which provides significant capacitance substantially in excess of 0.6 pf across the device in use.

5,550,940

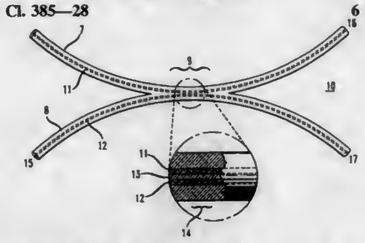
OPTICAL TAPPING FILTERS EMPLOYING LONG PERIOD GRATINGS

Ashish M. Vengsarkar, Morris County, and Kenneth L. Walker, Union County, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Feb. 24, 1995, Ser. No. 393,754

Int. Cl.[6] G02B 6/34

U.S. Cl. 385—28 6 Claims



1. An optical filtering device comprising:

a plurality of optical waveguiding cores extending side-by-side in a common cladding, and

a grating for shifting light in a guided mode in one of said cores to a non-guided mode, said grating comprising a plurality of index perturbations spaced apart by a periodic distance Λ, where 50 μm≦Λ≦1500 μm.

5,550,941

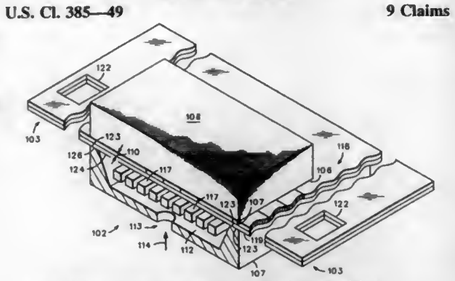
OPTOELECTRONIC INTERFACE MODULE

Michael S. Lebby, Apache Junction; Christopher K. Y. Chun, Mesa; Shun-Meen Kuo, Chandler, and Kent W. Hansen, Scottsdale, all of Ariz., assignors to Motorola, Schaumburg, Ill.

Division of Ser. No. 106,472, Aug. 13, 1993, Pat. No. 5,482,658. This application Feb. 24, 1995, Ser. No. 393,763

Int. Cl.[6] G02B 6/30

U.S. Cl. 385—49 9 Claims



1. An optoelectronic interface submodule comprising:

a molded waveguide having a core region, a cladding region, and a flexible circuit film simultaneously mated to the molded waveguide during the molding of the molded waveguide, the flexible circuit film having a plurality of electrical tracings, an optically clear area positioned over the core region, and a contact area positioned adjacent to the optically clear area that is electrically coupled to one of the plurality of electrical tracings; and

a photonic device having a working portion and a contact area mounted on the flexible circuit film, wherein the contact area of the photonic device and the contact area of the flexible circuit film are electrically and mechanically coupled and wherein the working portion of the photonic device is aligned through the optically clear area of the flexible circuit film to the core region of the molded waveguide.

5,550,942

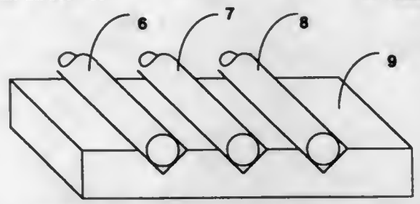
MICROMACHINED HOLES FOR OPTICAL FIBER CONNECTION

Sang K. Sheem, P.O. Box 2141, Livermore, Calif. 94551

Division of Ser. No. 276,829, Jul. 18, 1994, abandoned. This application Mar. 3, 1995, Ser. No. 397,941

Int. Cl.[6] G02B 6/00;6/36

U.S. Cl. 385—53 21 Claims



1. An optical fiber connector plug comprising an optical fiber; and a substantially planar thin slab provided with a front surface, a rear surface, and a through-hole; wherein the through-hole is registered and fabricated with the aid of the lithography so as to ensure precise location of the through-hole, and the bore size of the through-hole is slightly larger than the diameter of the optical fiber, the optical fiber is terminated on the front surface of the thin slab, and the optical fiber is oriented substantially perpendicular to the front surface of the slab.

5,550,943

UNITARY, DOUBLE-ENDED CONNECTOR FOR OPTICAL FIBRES

Håkan Elderstig, Bromma, and Christian Vieider, Sollentuna, both of, Sweden, assignors to Stiftelsen Institutet For Mikroelektronik, Kista, Sweden

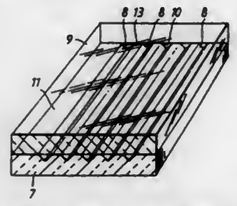
PCT No. PCT/SE93/00430, § 371 Date Nov. 21, 1994, § 102(e) Date Nov. 21, 1994, PCT Pub. No. WO93/23777, PCT Pub. Date Nov. 25, 1993

PCT Filed May 14, 1993, Ser. No. 341,596

Claims priority, application Sweden, May 19, 1992, 9201571

Int. Cl.[6] G02B 6/38

U.S. Cl. 385—71 11 Claims



1. An optical fibre-connecting device for connecting a pair of optical fibres in coaxial relationship, said device comprising: a body member having a passageway which is funnel-shaped at both ends thereof and into which passageway an optical fibre is intended to be inserted from either end thereof, so that a pair of fibres inserted at respective opposite ends of the passageway will meet one another in the passageway, the body member including a first silicon part having a flat surface in which a groove of V-shaped cross-section has been etched and wherein the body member includes a second part covering said groove so that a channel with a triangular cross section is formed, wherein during said etching the V-shaped groove has been etched to a deeper and wider section at opposite ends of the body member so as to form a funnel-shaped section at each passageway end, wherein said second part is made from transparent glass material which has a flat side lying against the grooved surface of the first part to enable visual determination of fibre position within the passageway, and wherein the grooved surface of the first part and the flat side of the second part of the body member are joined together by means of an anodic bond whereby said channel of triangular cross-section is formed, wherein a circle inscribed in said channel will have a diameter which only slightly exceeds the outer diameter of the optical fibre.

5,550,944

FIBRE OPTIC CONNECTOR

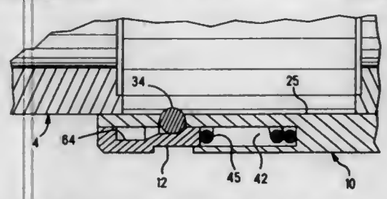
Theodorus C. M. van Woesik; Lucas G. C. Teurlings, both of Hertogenbosch, and Willem S. J. Vermeulen, Boekel, all of, Netherlands, assignors to The Whitaker Corporation, Wilmington, Del.

Filed May 1, 1995, Ser. No. 432,299

Claims priority, application United Kingdom, May 4, 1994, 9408877

Int. Cl.[6] G02B 6/38

U.S. Cl. 385—73 11 Claims



1. A fibre optic connector assembly comprising

a fibre optic connector for terminating a plastic optical cable having an end, the connector including a connector housing having a bore extending therethrough to a front face of the housing for receiving the fibre, where a transmissive end plate is positioned across the bore in proximity of the front face, the connector further including a crimp sleeve to engage the cable in a fixed manner with the end in close relation with the end plate and the housing having an engagement feature on an outer surface thereof; and

a coupling sleeve having a first end for receiving the connector where the first end includes an inner surface and an outer surface with an opening therebetween, a lock extending across the opening and a locking sleeve disposed upon the housing and operatively connected to the lock, the locking sleeve having a first position where the lock is displaceable clear of the engagement feature for insertion and removal of the connector and a second position where the lock interfered with the engagement feature to retain the connector therein.

5,550,945

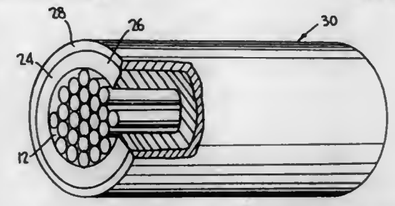
INTEGRATED IMAGE CONDUIT AND ILLUMINATION

Christopher C. Gregory, Yardley, Pa., assignor to Galileo Electro-Optics Corporation, Sturbridge, Mass.

Filed May 11, 1995, Ser. No. 439,271

Int. Cl.[6] G02B 6/06

U.S. Cl. 385—116 20 Claims



1. An integrated image conduit having end portions for transmitting and illuminating an image comprising:

a fused array of imaging fibers having end portions formed in a rod-like bundle for transmitting said image; and

an illumination conduit surrounding the fused bundle for transmitting illuminating light and being directly fused to and drawn with said fused array to form an integrated structure over a substantial portion thereof.

5,550,946

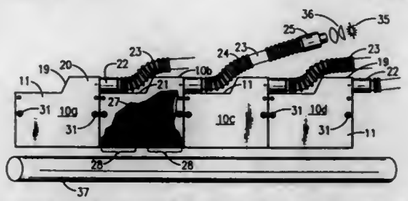
MODULAR FIBER OPTIC LIGHT LINE UNIT

Michael M. Muehlemann, Liverpool, and J. Donald Noble, La Fayette, both of N.Y., assignors to Illumination Technologies, Inc., East Syracuse, N.Y.

Filed Aug. 25, 1995, Ser. No. 519,394

Int. Cl.[6] G02B 6/06

U.S. Cl. 385—121 10 Claims



1. Modular fiber optic light line unit for producing a thin, continuous line of illumination, comprising

a housing having a distal face from which said line of illumination emanates, said distal face extending from a first end edge to a second end edge of said housing;

a fiber optic bundle formed of a plurality of optical fibers, said bundle including a proximal portion carried in a sheath, said proximal portion including means to receive light from a light

source, and a distal portion disposed within said housing, with the optical fibers in said distal portion being fanned out to terminate in a flat linear array; and

wherein said distal face of said housing includes means for holding distal termini of said optical fibers in a continuous row that extends the length of said distal face and such that ends of said row are flush with said first and second end edges, such that another similar modular fiber optic light line unit can be positioned abutting the first-mentioned module to form a single uninterrupted light line.

5,550,947

SLIDABLE OPTICAL FIBER INTERCONNECTING TRAY WITH FLEXIBLE FIBER GUIDING TUBES

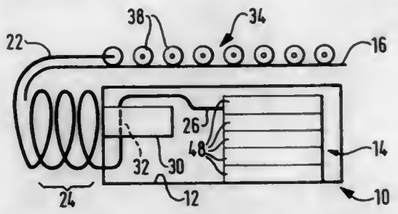
Laurence Llewellyn, Chepstow; Mark G. Graveston; Ispran S. Kandasamy, both of Newport, and Peter G. Hale, Merchant's Quay, all of, United Kingdom, assignors to Pirelli General plc, London, England

Filed Jun. 5, 1995, Ser. No. 464,296

Claims priority, application United Kingdom, Jun. 20, 1994, 9412368

Int. Cl.[6] G02B *6/36*

U.S. Cl. 385—134 **21 Claims**



21. Apparatus for use in interconnecting optical fibres, comprising a support, means for locating interconnections between the fibres on said support, support means for slidably supporting said support for sliding movement in a first direction between a retracted position and an extended position, and a plurality of flexible first tubes connectable to said support for passing optical fibres therethrough and guiding optical fibres to said support, each tube having a substantially helical configuration over at least a portion of its extent disposed in a second opposite direction with respect to said support for accommodating said sliding movement of said support, and a plurality of second tubes for passing optical fibres therethrough connected to said interconnection locating means, each said first tube being connectable to a respective second tube to form a passage for passing at least one optical fibre to said support and to said interconnection locating means.

5,550,948

METHOD OF DETERMINING CHANGES IN THE REFRACTIVE INDEX OF AN OPTICAL WAVEGUIDE

Daryl Inniss, Hillsborough; Ashish M. Vengsarkar, Chatham, and Qian Zhong, Scotch Plains, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Division of Ser. No. 198,802, Feb. 17, 1994. This application Mar. 8, 1995, Ser. No. 400,893

Int. Cl.[6] G02B *6/00*

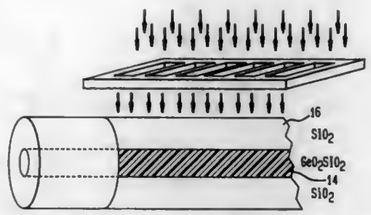
U.S. Cl. 385—147 **3 Claims**

1. A method of determining changes in refractive index of an optical waveguide comprising the steps of

writing a photo-induced device in the optical waveguide such that it has a refractive index change across the waveguide.

cleaving the waveguide to produce a cleaved endface,

etching the endface,



measuring the profile of the etched endface with a scanning probe microscope, and

determining the difference in the refractive index across the cleaved endface based on the differences in the etched rate.

5,550,949

METHOD FOR COMPRESSING VOICE DATA BY DIVIDING EXTRACTED VOICE FREQUENCY DOMAIN PARAMETERS BY WEIGHTING VALUES

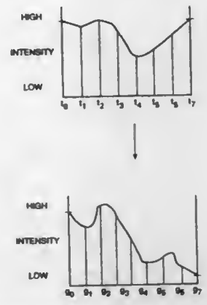
Sunao Takatori, and Makoto Yamamoto, both of Tokyo, Japan, assignors to Yozan Inc., Tokyo, and Sharp Corporation, Osaka, both of, Japan

Filed Dec. 23, 1993, Ser. No. 172,172

Claims priority, application Japan, Dec. 25, 1992, 4-359004

Int. Cl.[6] G10L *3/02;9/00*

U.S. Cl. 395—2.15 **4 Claims**



1. A voice compression method comprising steps of:

(a) inputting voice data for a predetermined time;

(b) dividing said predetermined time into a plurality of time periods;

(c) separating sets of initial frequency components from said voice data, each said set of initial frequency component corresponding to one of said plurality of time periods and having plural frequency components corresponding to respective ones of a plurality of initial frequencies;

(d) calculating sets of further frequency components, each of said sets of further frequency components corresponding to one of said plurality of frequency components and the corresponding one of said initial frequencies and including information representing a frequency transformation performed on said one of said plural of frequency components; and

(e) quantizing said voice data, said quantizing step including dividing said further frequency components by corresponding weighting values, certain ones of said weighting values that correspond to selected ones of said further frequency components at intermediate frequencies being lower than other ones of said weighting values that correspond to other ones of said further frequencies components.

5,550,950

VOICE TRANSFER SYSTEM WITH LOW-ERROR VOICE SIGNAL REGENERATION

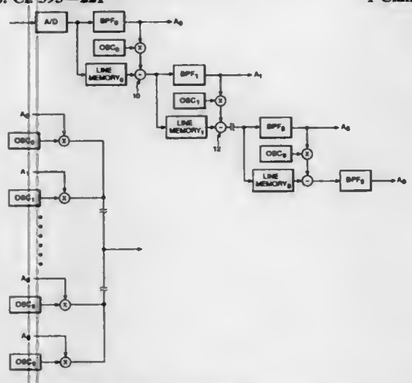
Sunao Takatori, and Makoto Yamamoto, both of Tokyo, Japan, assignors to Yozan Inc., Tokyo, and Sharp Corporation, Osaka, both of, Japan

Filed Dec. 23, 1993, Ser. No. 172,287

Claims priority, application Japan, Dec. 25, 1992, 4-359397

Int. Cl.[6] G10L *3/02;9/00*

U.S. Cl. 395—221 **1 Claim**



1. Voice transfer system comprising:

i) a voice transmitter for transmitting voice data, said voice transmitter including a plurality of frequency transformation units which process respective ones of a plurality of different frequency ranges, each of said frequency ranges corresponding to one of a plurality of frequencies stepwisely increasing from a lowest frequency to a highest frequency, said voice data being supplied to one of said frequency transformation units corresponding to said lowest frequency, and the remainder of said frequency transformation units being sequentially connected in an increasing order of said frequencies such that each of said frequency transformation units receives an output from a frequency transformation unit corresponding to a lower one of said frequencies, each of said frequency transformation units including:

a) a band pass filter which extracts a frequency component corresponding to said respective one of said frequency ranges, said band pass filter of said one of said frequency transformation units corresponding to said lowest frequency receiving said voice data as an input data, said band pass filter of the remaining frequency transformation units receiving an output from a frequency transformation unit corresponding to said lower one of said frequencies as said input data;

b) an oscillator which receives an output of said band pass filter and which executes reverse frequency transformation for said frequency component so as to generate a regenerated voice data;

c) a line memory which holds said input data received by said band pass filter and outputs said input data synchronously with the generation of said regenerated voice data; and

d) a subtractor which forms a difference signal between said input data beld by said line memory and said regenerated voice data generated by said oscillator and which provides said difference signal as an output of said frequency transformation unit; and

ii) a voice receiver which receives said frequency components extracted by each of said frequency transformation units of said voice transmitter, said voice receiver including:

a) a plurality of oscillators corresponding to said oscillator of each of said frequency transformation units, each of said plurality of oscillators receiving a corresponding one of said frequency components and executing reverse frequency transformation so as to generate a voice data component; and

b) an addition circuit which sums each of said voice data components from said plurality of oscillators.

5,550,951

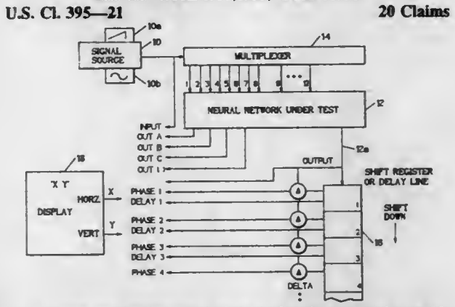
METRICS FOR SPECIFYING AND/OR TESTING NEURAL NETWORKS

Roger L. Woodall, Jewett City, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 18, 1993, Ser. No. 33,225

Int. Cl.[6] G06E *1/00;3/00;* **G06F** *15/18*

U.S. Cl. 395—21 **20 Claims**



1. A computer-implemented method of testing a neural network, comprising a set of processing nodes interconnected by a plurality of interconnecting links in a sequence of layers from an input layer to an output layer, each processing node receiving an input signal over each interconnecting link connected thereto and generating a nodal output signal in response thereto and further in response to a respective connection weight value, nodal output signals from processing nodes in the output layer comprising a neural network output, in relation to a reference represented by a reference image, the method comprising the steps of:

stimulating at least one processing node of the input layer of the neural network with an input vector comprising at least one input signal to obtain output signals from processing nodes at the output layer of the neural network;

obtaining a plurality of samples of the output signals, wherein at least one of the plurality of samples is delayed in time from another one of the samples;

generating an image from the plurality of samples; and comparing the image to the reference image to determine an operational characteristic of the neural network.

5,550,952

Patent Not Issued For This Number

5,550,953

ON-LINE METHOD AND APPARATUS FOR COORDINATED MOBILITY AND MANIPULATION OF MOBILE ROBOTS

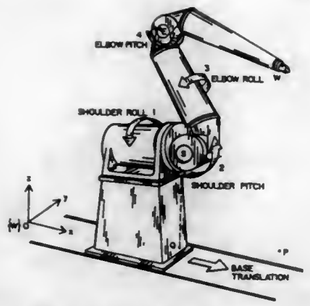
Homayoun Seraji, La Crescenta, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, Del.

Filed Apr. 20, 1994, Ser. No. 231,597

Int. Cl.[6] G05B *15/00;19/00*

U.S. Cl. 395—98 **14 Claims**

1. A method of controlling a mobile robot, the robot of the type having a mobile base having at least one degree of mobility and a



manipulatable arm having at least one degree of manipulation; the method comprising the steps of:

(a) generating a forward kinematic model that relates arm and base joint coordinates to end-effector coordinates;

(b) generating a differential kinematic model that relates end-effector velocity to arm and base joint velocities including Jacobian matrices of the arm and base, respectively;

(c) augmenting by column the arm Jacobian matrix with the base Jacobian matrix to obtain an overall end-effector Jacobian matrix where the availability of base mobility appears as extra columns in the end-effector Jacobian matrix because of effectively increasing the dimension of the joint space;

(d) augmenting by row the end-effector Jacobian matrix of step (c) with a constraint Jacobian matrix which relates to a user-defined additional task to be accomplished due to kinematic redundancy where said additional task results in extra rows in the end-effector Jacobian matrix due to an increase of the task space;

(e) selecting end-effector and constraint task weighting factors and arm and base joint velocity weighting factors;

(f) finding the optimal arm and base motions using a closed-loop damped-least-squares approach; and

(g) moving the arm and base of said robot in accordance with the optimal motions resulting from carrying out steps (a) through (f).

5,550,954

IMAGE PROCESSING LOAD BALANCING FOR A HOST PROCESSOR WITH A CONNECTED BINARY LEVEL IMAGE PRINTER

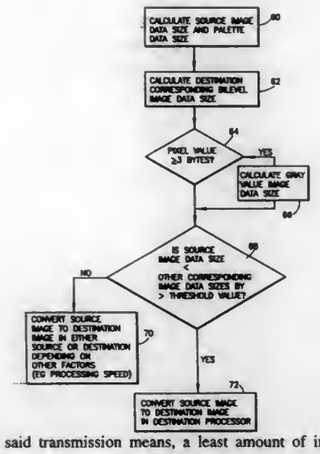
Russell Campbell; Terrence M. Shannon, and Burton H. Poppenga, all of Boise, Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 4, 1994, Ser. No. 237,793
Int. Cl.[6] G06K *15/00*
U.S. Cl. 395—106 **13 Claims**

1. Apparatus for processing and displaying binary pixel image data, comprising:

peripheral means for receiving image data and for presenting said image data as an output image comprising a matrix of bilevel pixel values in an image size of m rows by n pixels per row, said peripheral means including a processor for altering received image data into said output image; and

source processor means for storing multi-bit-per-pixel image data of image size (x rows)-(y pixels per row)-(z bits per pixel), and including image processing means and data transmission means, said data transmission means coupled to said peripheral means, said source processor means comparing an image data size of said output image and an image data size of said multi-bit-per-pixel image, and based upon a size relationship determined from said comparing, processing said multi-bit-per-pixel image data into bilevel pixel values in either said peripheral means or source processor means so as to transmit, via said transmission means, a least amount of image data between said source processor means and said peripheral means.

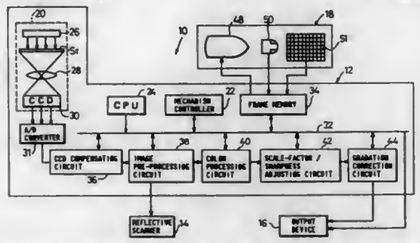


5,550,955

METHOD AND APPARATUS FOR DIGITALLY PROCESSING AN IMAGE BASED ON A RANDOM NUMBER AND A MULTIPLIER CORRESPONDING TO INPUT IMAGE DATA

Seiichiro Morikawa, Kaisei-machi, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 7, 1994, Ser. No. 123,572
Claims priority, application Japan, Feb. 8, 1993, 5-020123
Int. Cl.[6] H04N *1/387*
U.S. Cl. 395—109 **4 Claims**



1. A method of processing an image signal digitally, comprising steps of:

inputting and digitizing an image signal, representing an image, to provide first image data having a length of n bits;

reading a multiplier from a storage device in accordance with the value of said first image data, a value of said multiplier varying according to the value of the first image data;

performing arithmetic operations including a multiplication of a random number by said multiplier, said random number having a value equal to or greater than zero and less than unity;

adding the result of said arithmetic operations to said first image data; and

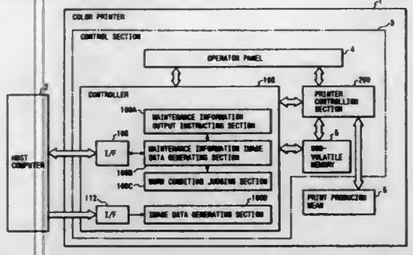
defining m bits (m<n) of the integral part of the result of said addition as second image data, representing said image, for use in a next process.

5,550,956

COLOR PRINTER

Hiroyuki Tadokoro, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 10, 1993, Ser. No. 58,133
Claims priority, application Japan, May 11, 1992, 4-117619
Int. Cl.[6] C06K *15/00*
U.S. Cl. 395—113 **20 Claims**



1. A color printer including a controller having an image data generating section for generating color image data, a print-out means for printing said image data in color, and an operator panel having an instruction function for initiating functions on said controller and print-out means, said color printer comprising:

a first memory means for storing latest history information for each of a predetermined number of expendable members of said print-out means;

a second memory means for storing an exchange time for each of said expendable members;

a worn condition judging section for judging a worn condition of each of said expendable members based on said history and exchange time information;

a maintenance information image data generating section for:

(a) sorting said expendable members into a first group of expendable members which have not reached their respective exchange times and a second group of expendable members which have reached or exceeded their respective exchange times,

(b) generating maintenance information image data for representing said groups in different colors, and

(c) generating, based on said worn condition for each of said members, degree-of-wear image data for representing a degree-of-wear for each of said members; and

a maintenance information output section for outputting said maintenance information image data and the degree-of-wear image data to said print-out means for printing said maintenance information image data in said different colors on a first recording medium, and for printing said degree-of-wear image data on a second recording medium relative to the exchange time of each member.

5,550,957

MULTIPLE VIRTUAL PRINTER NETWORK INTERFACE

Peter S. Davidson, Jr.; Francis D. Rafferty, Jr., and Gail M. Songer, all of Lexington, Ky., assignors to Lexmark International, Inc., Greenwich, Conn.

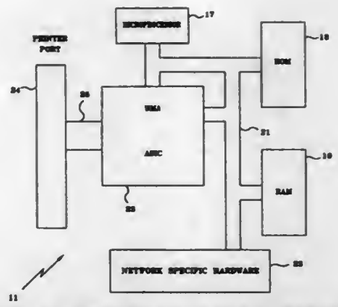
Filed Dec. 7, 1994, Ser. No. 350,860
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—114 **7 Claims**

1. An interface between a network of host computers and a printer controller for a printer comprising:

means for communicating with the printer controller to receive printer status information of different types;

means for storing a set of data for each host computer of a number of the host computers on the network, each set of data including designations corresponding to at least some of said types of printer status information to be communicated to a corresponding host computer of the number of host computers; and

means for communicating with the number of host computers to send at least some of said plurality of plurality of types of said printer status information to said number of host computers, wherein the types of said printer status information sent to a particular host computer correspond to the stored designations of types of said printer status information in the set of data stored for said particular host computer.

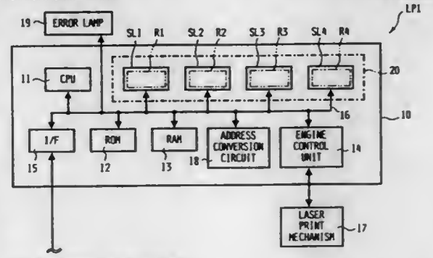


5,550,958

PRINTER WITH EXTENSION MEMORY CAPACITY THAT PROVIDES INSTRUCTIONS REGARDING MEMORY INSTALLATION

Hiroshi Hattori, Inazawa, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Dec. 16, 1993, Ser. No. 167,022
Claims priority, application Japan, Feb. 22, 1993, 5-057782
Int. Cl.[6] G06F *3/12*
U.S. Cl. 395—115 **19 Claims**



12. A printer comprising:

print means for printing characters and symbols oo a print medium;

control means for controlling said print means;

plural extension memory installing mechanisms coupled to the control means that detachably receive extension memories;

memory means for storing data including effective extension conditions when one or plural extension memories are installed in the extension memory installing mechanisms based on memory capacity of the extension memories;

identifying means for identifying the presence of an installed extension memory and memory capacity of an installed extension memory for each of the extension memory installing mechanisms;

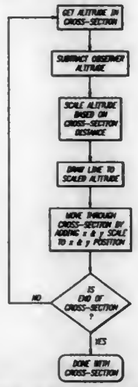
determining means for determining whether an installed extension memory matches an extension condition stored in the memory means based on the identification result of the identifying means; and

notifying means for notifying a user of an incorrect installation and thereby generating information for the user regarding proper installation based on the identification result of the identifying means and the stored extension conditions so that a user can correctly install the extension memory.

5,550,959
TECHNIQUE AND SYSTEM FOR THE REAL-TIME GENERATION OF PERSPECTIVE IMAGES

Kyle G. Freeman, Woodland Hills, Calif., assignor to Novalogic, Inc., Calabasas, Calif.

Filed May 27, 1993, Ser. No. 68,428
Int. Cl.[6] G06T *15/20*
U.S. Cl. 395—127 **9 Claims**



1. A method of realtime generation of perspective visual scenes reflective of a virtual observer's movement through a gaming area generated from a visual data base, comprising:

generating a series of overlapping perspective cross-sections perpendicular to a virtual observer's line of sight, including:

(a) determining a desired horizontal scale, vertical scale, position, heading and height of the virtual observer relative to the visual data base, a desired number of perspective cross-sections and distance of each respective perspective cross-section from the heading, position and height of the virtual observer;

(b) identifying a sampling point for the first perspective cross-section in the perspective visual scene of the gaming area;

(c) computing a two-dimensional scale vector with direction perpendicular to the observer's line of sight and with magnitude scaled according to the distance of the respective perspective cross-section from the virtual observer;

(d) for each display column to the virtual observer's left of the virtual observer's line of sight, adding the scale vector to the sampling point;

(e) obtaining elevation data at said sampling point from a visual data base;

(f) for each display column, scaling the elevation data stored at a respective point in said data base and drawing a line to the scaled elevation;

(g) repeating steps (d), (e) and (f) until all display columns to the virtual observer's left have been drawn;

(h) for each display column to the virtual observer's right of the virtual observer's line of sight, adding the negative of said scale vector to said sampling point;

(i) obtaining elevation data from the visual data base;

(j) for each display column, scaling the elevation data stored at a respective point in said data base and drawing a line to the scaled elevation;

(k) repeating steps (h), (i) and (j) until all display columns to the virtual observer's left have been drawn;

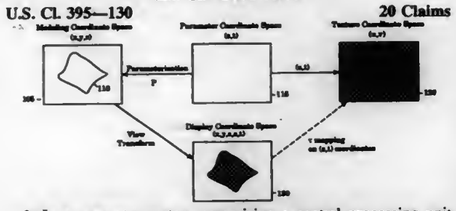
(l) repeating steps (b) through (k), inclusive until all of the overlapping series of perspective cross-sections have been generated; and

displaying the display columns of the overlapping cross-sections that are not overdrawn by the display columns of an overlapping cross-section.

5,550,960
METHOD AND APPARATUS FOR PERFORMING DYNAMIC TEXTURE MAPPING FOR COMPLEX SURFACES

Leon A. Shirman, San Jose, and Yakov Kamen, Cupertino, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Aug. 2, 1993, Ser. No. 101,471
Int. Cl.[6] G06T *15/00*
U.S. Cl. 395—130 **20 Claims**



1. In a computer system comprising a central processing unit (CPU), memory and input/output devices including a graphic display controller coupled to a graphic display device, a method for the rendering of textured objects on the graphic display device, each of said textured objects comprising an object and a texture applied to the object, said objects defined by a plurality of vertices in Modeling Coordinate (MC) space, transformed to World Coordinate (WC) space and rendered as images in Device Coordinate (DC) space, each vertex having an associated color value, said graphic display device defined according to DC space, said texture defined by a texture map in Texture Coordinate (TC) space, said texture map identifying colors of the texture, said method comprising the steps of:

constructing a Parameter Coordinate (PC) space associated with the object;

generating a τ mapping of the PC space to the TC space;

transforming the vertices of the object in MC space to the DC space;

mapping the texture map to the object in DC space using the τ mapping;

composing the color values of the object with the mapped texture values to generate textured object pixel data;

storing each pixel data in a frame buffer, each pixel data being stored at a location in the frame buffer corresponding to the location of the pixel in the DC space; and

said graphic display controller reading the pixel data stored in the frame buffer and generating control signals to actuate the pixels at the location and color indicated by the pixel data;

wherein textured objects are generated for display.

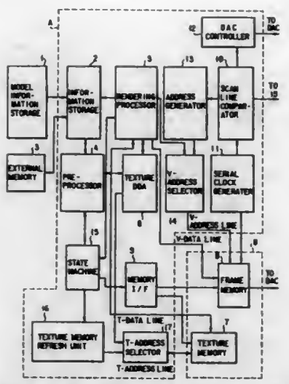
5,550,961
IMAGE PROCESSING APPARATUS AND METHOD OF CONTROLLING THE SAME

Hiroyuki Chimoto, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 25, 1994, Ser. No. 202,133
Claims priority, application Japan, Feb. 25, 1993, 5-036652
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—133 **12 Claims**

1. An image processing apparatus having means for providing model information defining an image, said model information being based on polygons having a plurality of vertices, arithmetic operation means for calculating a luminance gradient of each vertex of said polygons, means for storing an output of said arithmetic operation means, rendering means for performing texture operations on said polygons based on an output of said arithmetic operation means, and a display for displaying said image, said apparatus comprising:

a multiport DRAM defining an image memory including a first memory portion and a second memory portion to which address lines, data lines, and memory control lines are individually connected;



setting means for setting said first memory portion as a texture memory for storing texture data therein and for setting said second memory portion as a frame memory for storing an output of said rendering means as image data, if a size of said second memory portion is greater than double a size of said display, said setting means also setting said second memory portion as imaginary double buffers, an internal data structure of said texture memory being such that two-dimensional texture data is expressed as one-dimensional texture data and stored in said texture memory as said one-dimensional texture data, and wherein a size of said one-dimensional texture data is less than a maximum value of a column address of said first memory portion;

buffer switching means for switching, within a vertical flyback time period, between said imaginary double buffers set within said second memory portion such that one of said imaginary double buffers is used for reading out said image data from a serial access memory port, and a remaining other of said imaginary double buffers is used for writing image data produced from said polygons into a RAM port;

detecting means for detecting completion of reading out of said image data of every scan line of said buffer for reading out said image data;

clearing means for clearing said scan line detected by said detecting means within a horizontal flyback period by means of a flash write function of said multiport DRAM;

next-address output means for outputting an address of a next-readout scan line of said scan line cleared by said clearing means;

refreshing means for refreshing a plurality of lines in said texture memory in synchronism with said clearing process performed by said clearing means and said address output operation of said next-address output means during a single horizontal flyback period by a RAS-only-refresh function; and

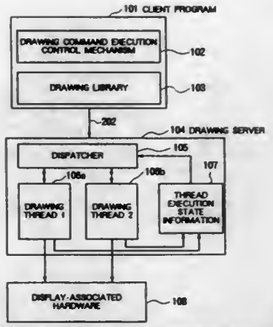
means for synchronizing operation of said arithmetic operation means and said rendering means during a drawing mode to provide pipeline processing.

5,550,962
SYSTEM FOR SELECTIVELY PERFORMING PARALLEL OR SEQUENTIAL DRAWING PROCESSING

Shouji Nakamura, Yokohama; Shinji Kimura, Sagamihara; Yumiko Sugita, Sagamihara; Reki Yamamoto, Tokyo; Eriko Koda, Kawasaki; Toshiyuki Kuwana, Hitachi, and Masato Manda, Isehara, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 10, 1995, Ser. No. 419,278
Claims priority, application Japan, Apr. 13, 1994, 6-074631
Int. Cl.[6] G06T *1/00*
U.S. Cl. 395—133 **15 Claims**

7. A drawing processing system compromising:



a client for sending a drawing command string including a plurality of drawing commands according to a predetermined protocol;

a drawing server for receiving said drawing command string and providing graphics display on a display screen of a display; and

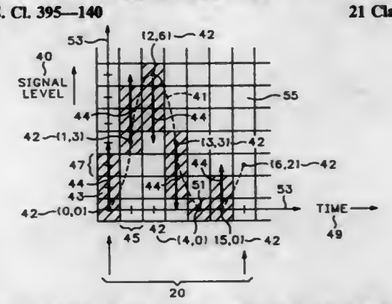
a communication path connected between said client and said drawing server,

wherein said client includes a drawing command execution control mechanism for attaching to at least one said drawing command string a pair of a parallel processing block start command indicative of start of the drawing command string parallelly executable and a parallel processing block end command indicative of end of the parallelly-executable drawing command string and for transmitting the attached command string to said drawing server, and said drawing server includes execution control determination means, when receiving said drawing command string, for processing a subsequent drawing command string on the parallel basis in response to said parallel processing block start command and for processing the subsequent drawing command string on the sequential basis in response to said parallel processing block end command.

5,550,963
GRADED DISPLAY OF DIGITALLY COMPRESSED WAVEFORMS

Roy I. Siegel, and John A. Hengeveld, both of Aloha, Oreg., assignors to TEKTRONIX, Inc., Wilsonville, Oreg.

Filed Dec. 8, 1994, Ser. No. 352,334
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—140 **21 Claims**



1. An apparatus for compressing a display of a waveform, the apparatus comprising:

a compression interval memory containing data representative of a waveform over an interval to be compressed for display;

an array of accumulating means with each accumulating means being associated with one or more pixels in a column of

pixels, the column of pixels being associated with one quantum of a display pixel map;

means for choosing pairs of points from the data in the compression interval memory; and

means for converting the chosen pair of points into a weight value and a range of pixels to be affected, the weight value being a function of a number of pixels in the range of pixels to be affected, and for causing each accumulating means associated with the range of pixels to be affected to add the weight value to a previous value in memory to produce an accumulated value, the accumulated value defining a gradable visual characteristic.

5,550,964

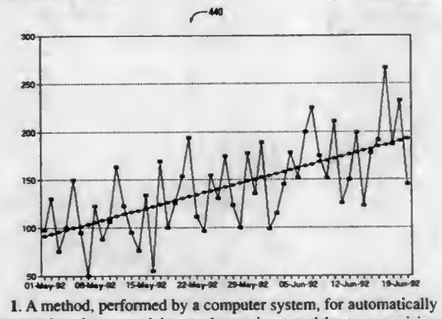
SYSTEM AND METHODS FOR INTELLIGENT ANALYTICAL GRAPHING

Paul Davoust, Mountain View, Calif., assignor to Borland International, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 993,195, Dec. 18, 1992, Pat. No. 5,375,201. This application Nov. 1, 1994, Ser. No. 333,000

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—140 **23 Claims**



1. A method, performed by a computer system, for automatically interpreting data stored in an electronic spreadsheet, comprising the steps of:

determining a set of information members to be analyzed in response to input from a user, the set of information members including at least some information members characterized by numeric values;

displaying a number of analysis types for the user;

determining a selected analysis type in response to input from the user;

subjecting the set of information members to a set of operations that effects the selected analysis type so as to generate a temporary data set that includes numeric values based on at least some of the numeric values that characterize the set of information members; and

generating a graph representing the temporary data set.

5,550,965

METHOD AND SYSTEM FOR OPERATING A DATA PROCESSOR TO INDEX PRIMARY DATA IN REAL TIME WITH ICONIC TABLE OF CONTENTS

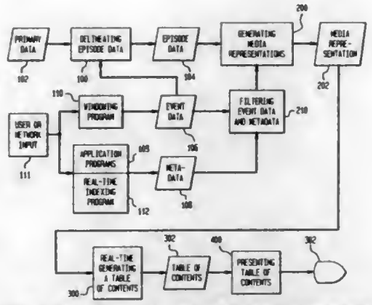
John D. Gabbe, Little Silver; Allen Ginsberg, Jackson, and Bethany S. Robinson, Colts Neck, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 27, 1993, Ser. No. 173,843

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—154 **29 Claims**

1. A method of operating a data processor to index data for at least one user comprising the computer-implemented steps of:



receiving primary data from a data source, the primary data consisting of audio-data and audiovisual-data that has been converted to a sequence of binary words;

delineating a plurality of episode data from the primary data, each one of said plurality of episode data being at least one word of said sequence of binary words, said each one of said plurality of episode data being stored in memory, wherein said delineating includes comparing and filtering audio spectral frequency components in said audio-data and audiovisual-data in the primary data;

generating a plurality of icons, to correspond with said plurality of episode data;

generating a table of contents as said primary data is being received by configuring said plurality of icons in an organized fashion;

presenting the table of contents to said at least one user on at least one display device, the table of contents permitting said at least one user to select one of said plurality of icons to replay the corresponding one of said plurality of episode data.

5,550,966

AUTOMATED PRESENTATION CAPTURE, STORAGE AND PLAYBACK SYSTEM

Samuel Drake; Allan D. Griefer, both of San Jose; John T. Powers, Jr., Morgan Hill, and John G. Thomas, Santa Cruz, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 874,441, Apr. 27, 1992, abandoned. This application Dec. 28, 1994, Ser. No. 365,339

Int. Cl.[6] G06T *13/00*

U.S. Cl. 395—154 **1 Claim**

1. An automated system for the capture, management and playback of a presentation given by a live speaker having audio and visual information components, comprising:

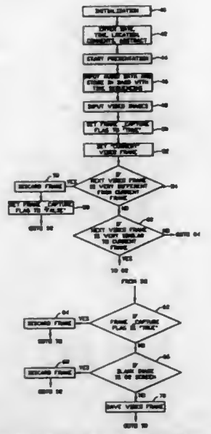
a live presentation capture system, including:

audio input means for sensing an audio portion of a live presentation and for producing audio signal information corresponding to said audio portion;

video input means for sensing a visual portion of said live presentation and for producing video signal information corresponding to said visual portion;

user input means for permitting a user to manually input presentation identification information relating to said live presentation; and

processing means connected to the audio, video and user input means for converting said audio signal information, video signal information and presentation identification information to machine-readable format in the form of, respectively, an audio data stream, a video data stream and presentation identification data, said processing means including storage means for receiving said audio signal



information and said video signal information upon conversion to machine-readable format and for assembling said audio data stream and said video data stream, respectively, by storage in a sequence of storage locations whose addresses correspond to elapsed times from a presentation start point included in said presentation identification data, said processing means further including video processing means for identifying selected portions of said video data stream to be stored in said storage means, said video data stream corresponding to a series of static video presentation images and said video processing means including means for preventing storage of said video data stream corresponding to transitions between said static video presentation images;

a presentation management system coupled to said presentation capture system, including:

a presentation database;

means for receiving said audio and video data streams and said presentation identification data;

means for combining the received audio and video data streams into a single presentation object and indexing that presentation object by said presentation identification data;

means for storing said presentation object with other presentation objects in said presentation database; and

means for retrieving said presentation object from said presentation database in response to a search request including index data contained in said presentation identification data;

a presentation playback system coupled to said presentation management system, including:

query means connected to said presentation management system for providing a search request including index data;

output interface means for displaying search results including presentation management system responses to said search request;

replay request means for selecting a presentation object from said search results;

audio output means for outputting audio information from a selected presentation object; and

video output means for outputting video information in response to said selected presentation object.

5,550,967

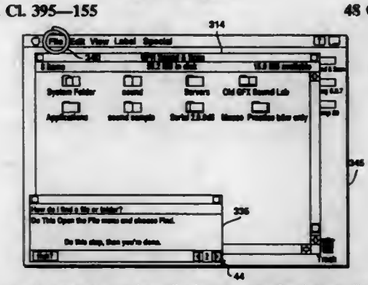
METHOD AND APPARATUS FOR GENERATING AND DISPLAYING VISUAL CUES ON A GRAPHIC USER INTERFACE

Gregory S. Brewer, Pleasanton, and Peter Commons, Mountain View, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 56,367, Apr. 30, 1995, abandoned, which is a continuation-in-part of Ser. No. 10,062, Jan. 27, 1993, Pat. No. 5,488,685. This application Sep. 18, 1995, Ser. No. 592,669

Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—155 **48 Claims**



1. In a data processing display system having a display, a method for providing visual cues to a user comprising the steps of:

(a) displaying on said display a user interface having a plurality of objects; and

(b) automatically drawing on said display a coach mark having at least one geometric shape to visually identify at least one of said objects on said user interface to said user, wherein said coach mark is formed by a plurality of pen pictures, wherein each of said plurality of pen pictures is a pixel map having at least two vertically aligned pixels and at least two horizontally aligned pixels, wherein the automatically drawing step (b) includes the steps of:

(i) drawing on said display an initial pen picture for said coach mark, and

(ii) iteratively drawing on said display additional pen pictures for said coach mark over time until said coach mark has been fully rendered on said display.

5,550,968

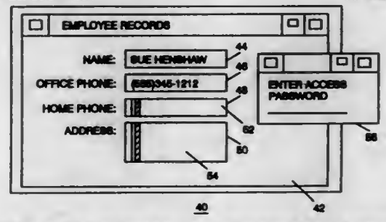
METHOD AND SYSTEM FOR PROVIDING ACCESS SECURITY TO CONTROLS IN A GRAPHICAL USER INTERFACE

Steven M. Miller, Apex, and Richard J. Redpath, Cary, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 12, 1994, Ser. No. 226,529

Int. Cl.[6] G06F *3/14*

U.S. Cl. 395—157 **33 Claims**



1. A method for limiting access to information in predetermined controls of windows in a graphical user interface, comprising the steps of:

during creation of a window having a predetermined control, sizing an opening for the predetermined control and defining an area for the predetermined control within the window;

sizing an obscuring member and defining an area for the obscuring member within the window so that the information in the predetermined control will be obscured from view when the window is displayed; and

displaying the window with the information in the predetermined control obscured from view by the obscuring member.

5,550,969

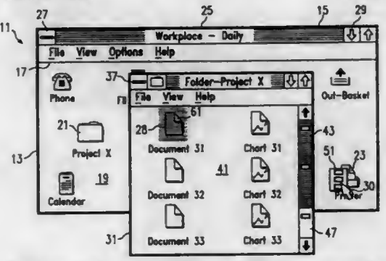
GRAPHICAL METHOD OF INDICATING THE POSITION OF AND PERFORMING AN OPERATION ON A PLURALITY OF SELECTED OBJECTS IN A COMPUTER SYSTEM

Robert J. Torres, Colleyville, and Stephen S. Fleming, Irving, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 619,628, Nov. 28, 1990, abandoned. This application Jan. 12, 1994, Ser. No. 180,514

Int. Cl.[6] G06F *3/14*

U.S. Cl. 395—159 **4 Claims**



1. A method for enhanced efficiency in the manipulation of objects within a computer system which includes a display screen for displaying a display window, user operable means for manipulating objects on said display screen, a scroll bar associated with said display window for indicating an available display area which exceeds said display window in size and a position indicator within said scroll bar for graphically indicating a relative position within said available display area of a portion of said available display area which is visible within said display window, said method comprising the computer implemented steps of:

displaying objects to be selected within said display window;

automatically placing a first marker icon in said scroll bar in response to selection of a first object within said display window;

simultaneously displaying said first marker icon and said position indicator within said scroll bar wherein a relative position of said first object within said available display area may be graphically depicted: and

performing an action on said first object in response to dragging of said marker icon to a target object.

5,550,970

METHOD AND SYSTEM FOR ALLOCATING RESOURCES

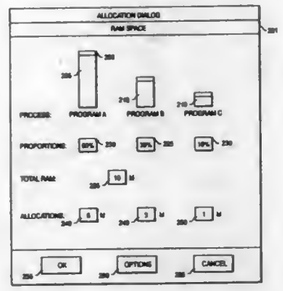
Troy L. Cline, Cedar Park; Scott H. Isensee, Georgetown, and Ricky L. Poston, Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 31, 1994, Ser. No. 298,880

Int. Cl.[6] G06F *3/14*

U.S. Cl. 395—161 **24 Claims**

1. A computer-implemented method for allocating the use of at least one resource in a computer system among a plurality of processes, comprising the steps of:



displaying on a computer display a representation of a first proportion of the resource that is allocated for use by a first process; and

in response to manipulating the representation on the computer display by user controls, dynamically changing the first proportion allocated for use by the first process according to the manipulation of the representation.

5,550,971

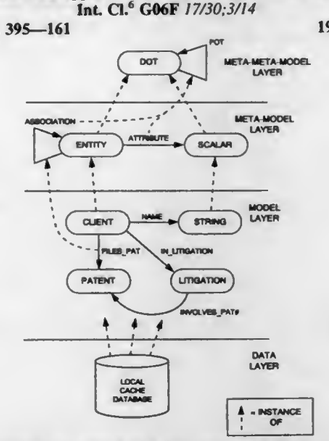
METHOD AND SYSTEM FOR GENERATING A USER INTERFACE ADAPTABLE TO VARIOUS DATABASE MANAGEMENT SYSTEMS

Hans Brunner, Denver; Timothy P. McCandless, Boulder; Randall B. Sparks, Louisville; Robert J. Cuthbertson, Boulder, and Jacques Durand, Louisville, all of Colo., assignors to U S West Technologies, Inc., Boulder, Colo.

Continuation-in-part of Ser. No. 86,330, Jun. 30, 1993, abandoned. This application Jun. 2, 1995, Ser. No. 460,193

Int. Cl.[6] G06F *17/30;3/14*

U.S. Cl. 395—161 **19 Claims**



1. A method for generating a user interface adaptable to various database management schemas each having a database containing a plurality of data items, the method comprising:

generating an intermediate data model from the database having a model and a meta-model categorizing the plurality of data items as either a data object type or a functional object type, the data object type representing a type of data contained in the database and the functional object type representing a plurality of relationships existing between instances of a plurality of the data object types, the model containing a plurality of entities and a plurality of relationships, the plurality of data items being instances of the plurality of entities and the plurality of relationships, and the meta-model containing a plurality of entity object types and a plurality of relationship object types, the plurality of entities being instances of the plurality of entity object types and the plurality of relationships being instances of the plurality of relationship object types, and the plurality of entity object types further being instances of the data object type and the plurality of relationship object types further being instances of the functional object type;

executing a plurality of internal dialogs to retrieve data representing the plurality of entity object types, the plurality of relationship object types, the plurality of entities and the plurality of relationships so as to determine the model and the meta-model of the intermediate data model;

generating the user interface independent of the database based on the data retrieved by the internal dialogs; and

displaying the user interface.

5,550,972

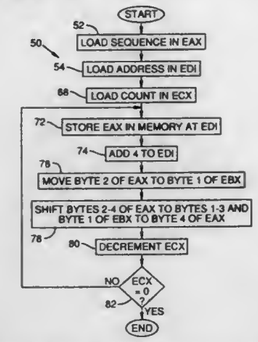
METHOD AND APPARATUS FOR EFFICIENT TRANSFER OF DATA TO MEMORY

Stuart R. Patrick, Issaquah, and Amit Chatterjee, Redmond, both of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Jun. 30, 1993, Ser. No. 86,331

Int. Cl.[6] G06F *12/02*

U.S. Cl. 395—164 **23 Claims**



11. A method of filling consecutive pixels of an image with a three byte color value, comprising:

loading a first register with a four byte sequence, the four byte sequence including the three byte color value;

repeatedly storing for a finite number of times the sequence from the first register to a string of locations in a memory where the consecutive pixels of the image are stored; and

updating the sequence in the first register between repetitions of the step of storing;

the step of updating comprising:

shifting the bytes of the sequence in the first register whereby the bytes currently in a second through fourth byte locations of the first register are shifted to a first through third byte locations, respectively, and the byte currently in the second byte location is also moved into the fourth byte location.

5,550,973

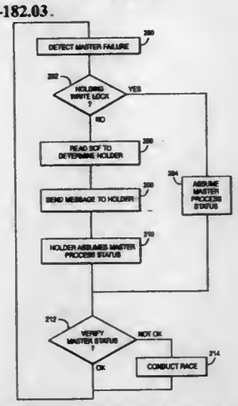
SYSTEM AND METHOD FOR FAILURE RECOVERY IN A SHARED RESOURCE SYSTEM HAVING A MOVING WRITE LOCK

Ira R. Forman, and Hari H. Madduri, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 15, 1995, Ser. No. 405,420

Int. Cl.[6] G06F *13/16*

U.S. Cl. 395—182.03 **3 Claims**



1. In a computer network that includes a plurality of processing nodes, a method for distributing control of a write lock for a shared data object from, a master processing node currently in control of the write lock, to one of the plurality of processing nodes requesting use of the write lock upon failure of the master processing node wherein the master processing node fails to transfer the write lock to the processing node requesting use of the write lock,

the method comprising the following steps in the sequence set forth:

detecting by the processing node requesting use of the write lock, when the master processing node fails to transfer the write lock to the processing node requesting use of the write lock;

determining, by the processing node requesting use of the write lock, whether the processing node requesting use of the write lock holds the write lock for the shared data object;

when the processing node requesting use of the write lock holds the write lock, requesting that the processing node requesting use of the write lock assume control over the write lock for that shared data object from the master processing node failing to transfer use of the write lock for that shared data object to establish a new master processing node for that shared data object;

when the processing node requesting use of the write lock does not hold the write lock for the shared data object, determining whether another processing node of the plurality of processing nodes holds the write lock for the shared data object;

when the another processing node holds the write lock for the shared data object, requesting that the another processing node assume control over the write lock for that shared data object from the master processing node failing to transfer use of the write lock for that shared data object to establish a new master processing node for that shared data object; and

when the another processing node fails to assume control of the write lock, executing a race among the plurality of processing nodes for control of the write lock for that shared data object from the master processing node failing to transfer use of the write lock for that shared data object to establish a new master processing node for that shared data object.

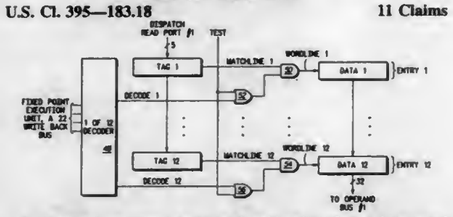
VOL 1189 ISS 4 AUG 27 1996 UMI

5,550,974

TESTABLE MEMORY ARRAY WHICH IS IMMUNE TO MULTIPLE WORDLINE ASSERTIONS DURING SCAN TESTING

Artie Pennington, Dripping Sprgs., Tex., and Makoto Ueda, Kyoto, Japan, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 15, 1994, Ser. No. 228,544
Int. Cl.[6] G01R *31/28*
U.S. Cl. 395—183.18 **11 Claims**



1. A testable memory array storing N pairs of stored tags and data fields, each one of the data fields output upon a match of an input tag and the one of the stored tags associated with the one of the data fields, the testable memory array immune to multiple wordline assertions during scan testing, the testable memory array comprising:

a decode means, where N is an integer, the decode means asserting one and only one of N control signals responsive to each one of N possible permutations of a received input signal;

N entries coupled to the decode means, each of the N entries comprising:

tag means storing a stored tag and receiving an input tag, the tag means asserting a matchline signal if the stored tag is logically equivalent to the input tag;

testing means receiving the matchline signal, a differing one of the N control signals and a test control signal, the testing means asserting a wordline signal only if the test control signal corresponds to a first logic state and the tag means asserts the matchline signal or either the test control signal corresponds to a second logic state and the decode means asserts the differing one of the N control signals; and

storage means storing a data field, the storage means outputting the data field responsive to an assertion of the wordline signal.

5,550,975

DISK ARRAY CONTROLLER

Hiroshi Ichinomiya, Kawasaki; Takao Satoh, and Akira Yamamoto, both of Sagamihara, all of, Japan, assignors to Hitachi, Ltd., and Hitachi Microcomputer System Ltd., both of Tokyo, Japan

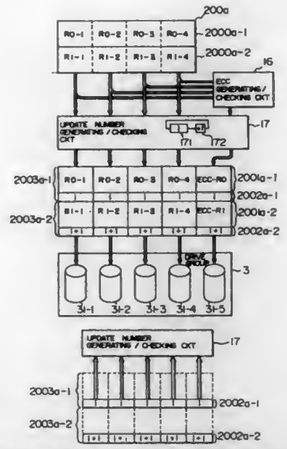
Filed Jan. 19, 1993, Ser. No. 5,994
Claims priority, application Japan, Jan. 21, 1992, 4-008211
Int. Cl.[6] G06F *11/28;11/10*
U.S. Cl. 395—185.04 **6 Claims**

1. A disk array controller in data communication with both a host computer which issues input/output requests and a plurality of disk drives operating in parallel, said disk array controller responsive to an output request from said host computer for dividing data supplied from said host computer into blocks and writing said blocks of divided data parallelly into said plurality of disk drives, and responsive to an input request from said host computer for assembling the blocks of divided data parallelly read from said plurality of disk drives into a set of data and transferring said set of data to said host computer, the disk array controller comprising:

update number generating means for generating an update number updated each time said host computer issues an output request, and adding said generated update number to each corresponding block of divided data to be written to each of said disk drives;

update number checking means connected to the plurality of disk drives for checking a consistency among the update numbers added to each corresponding block of divided data parallelly read from said plurality of disk drives; and

a processor responsive to an output request from said host computer for writing data having said update number added by said update number generating means for each block, in a corresponding one of said disk drives, and responsive to an input request from said host computer for transferring data to said host computer after being checked by said update number checking means.

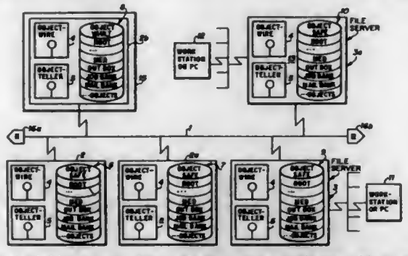


5,550,976

DECENTRALIZED DISTRIBUTED ASYNCHRONOUS OBJECT ORIENTED SYSTEM AND METHOD FOR ELECTRONIC DATA MANAGEMENT, STORAGE, AND COMMUNICATION

Kenneth R. Henderson; Robert E. Koski, and Christopher R. Barlow, all of Sarasota, Fla., assignors to Sun Hydraulics Corporation, Sarasota, Fla.

Filed Dec. 8, 1992, Ser. No. 986,727
Int. Cl.[6] G06F *13/00;13/14;17;30*
U.S. Cl. 395—200.06 **21 Claims**



1. A highly secure, virus resistant, tamper resistant, object oriented, data processing system for depositing, withdrawing and communicating electronic data between one or more individual and/or networked computers comprising in operative combination:

a) at least one computer means for processing electronic data;

b) at least one of said computer means including at least one shared electronic storage means for temporary or permanent storage of said electronic data, said temporary storage is accessible via an OLE-aware application program to deposit and withdraw temporarily stored objects, said temporarily stored objects used to communicate requests that a permanent object be stored into or retrieved from said shared electronic storage means;

c) each of said computer means including user customizable OLE-aware and OLE-accessible objectteller program means for asynchronous deposition, withdrawal and communication of said electronic data to said shared electronic storage means;

d) each of said computer means having at least one or more of said shared electronic storage means, an objectteller program means and an objectwire program means, said objectwire program means functioning to permit customizing communications functions from other individual or networked computers,

i) said computer means, electronic storage means ojectwire program means, objectteller program means and object wire program means providing an objectbank system,

ii) said network of object bank systems providing an objectbank network;

e) a customizable and modifiable electronic index data file of every object in the objectbank system permanently stored in said electronic storage means to provide a record of all objectbank system transactions to facilitate deposit, withdrawal and communication audits and to identify the address of objects to facilitate retrieval of objects from an electronic storage means;

f) said electronic data is deposited, withdrawn and communicated by at least one of the objectteller and the objectwire program means by providing a copy of said data on said system, said copy ensuring that the electronic data on said storage means is not corrupted by altered electronic data or by the introduction of a computer virus;

g) said copy of electronic data is sent to said computer means by one of said storage means in response to a request being posted by said computer means in a temporary data storage area with said temporary data storage area periodically being polled to identify the presence of said request and, if present, said request being communicated to said storage means;

h) said electronic data is identified by a time object such that each of said electronic data is unique by virtue of having a unique time stamp associated with each of said electronic data, said time stamp corresponding to the time of acceptance of said electronic, data in said storage means; and

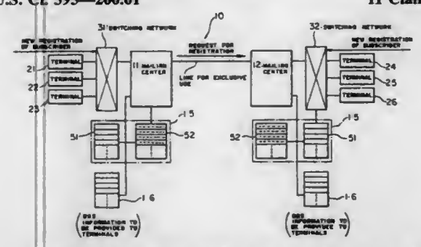
i) said time object permitting audit trails of each of said electronic data and permitting the coexistence of redundant electronic data in at least one of said storage means.

5,550,977

MULTI-MEDIA MAILING METHOD AND APPARATUS

Maki Hiraizumi, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed May 18, 1993, Ser. No. 63,928
Claims priority, application Japan, May 18, 1992, 4-124621
Int. Cl.[6] G06F *13/14;13/38*
U.S. Cl. 395—200.01 **11 Claims**



1. A multi-media mailing method for a multi-media mailing system which includes a plurality of mailing centers having same information data base, in a network, for handling and transmitting information by signals including facsimile signals, audio signals and text signals, the method comprising the steps of:

when a subscriber makes a request for processing registration of bulletin board service information at a first one of said mailing centers, processing of registration of the bulletin board service information to store said information in storage means of said first mailing center, and delivering by said first mailing center a request for processing of registration of the bulletin board service information and a request to inhibit processing of registration by any other subscriber to a second one of said mailing centers other that the first mailing center, then

processing of registration of the bulletin board service information into storage means of the second mailing center, and then, when some other registration processing has been performed before the processing of registration of the bulletin board service information, processing information to change contents of the storage means of the second mailing center in accordance with contents of storage means of a predetermined one of said mailing centers which is highest in priority order, and

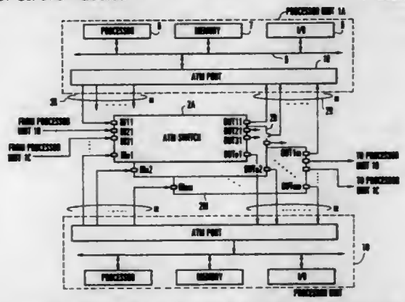
finally cancelling the inhibition of processing by any other subscriber.

5,550,978

MULTIPROCESSOR SYSTEM HAVING SWITCHES FOR ROUTING CELLS IN PARALLEL AMONG PROCESSORS BY SPLITTING DATA INTO BLOCKS HAVING NUMBERS OF CELLS EQUALS TO PROCCESSOR BUS WIDTH

Yasuhiro Takahashi, Fujisawa, and Tohru Hoshi, Yokohama, both of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 7, 1993, Ser. No. 117,325
Claims priority, application Japan, Sep. 7, 1992, 4-237975
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—200.01 **7 Claims**



1. A multiprocessor system in which a plurality of processors are connected to one another, each of said processors including an internal bus of M-bit width where M is a positive integer, said multiprocessor system comprising:

M self-routing switches, each for transferring a cell received from one of a plurality of input terminals to one of a plurality of output terminals determined by header information of said cell; and

interface means for interfacing between internal buses to which said respective processors are connected and said M self-routing switches, said interface means comprising:

first means for splitting a data stream received from one of said processors and composed of a plurality of bytes to be transmitted to another processor into a plurality of data blocks, converting each data block into M cells, each of said M cells having a header which is different depending on a destination processor and a partial data block which forms a portion of said data block, and sending said M cells in parallel to said M self-routing switches, and

second means for receiving M cells in parallel from said M self-routing switches and converting partial data blocks included in said M cells into one data block.

5,550,979

AUDIO VIDEO SYSTEM

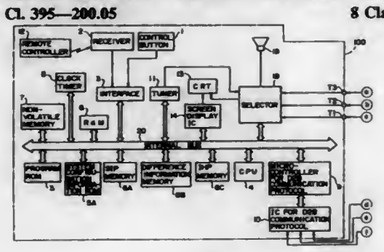
Shigeo Tanaka, Tokyo; Hiroshi Yamazaki, Kanagawa; Noriko Kotabe, Chiba; Kouichi Sugiyama, Kanagawa; Makoto Sato, Kanagawa; Akira Katsuyama, Kanagawa; Yoshio Osakabe, Kanagawa, and Yasuo Kusagaya, Tokyo, all of, Japan, assignors to Sony Corporation, Tokyo, Japan

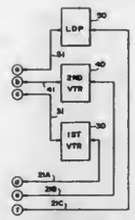
Filed Dec. 17, 1993, Ser. No. 168,374

Claims priority, application Japan, Dec. 28, 1992, 4-361412

Int. Cl.[6] G06F *13/00;* **G05B** *23/02;19/04;* **H04Q** *9/00*

U.S. Cl. 395—200.05 **8 Claims**





1. A method of avoiding a conflict of respective controllers of a plurality of apparatuses connected to a system bus line which form a system, each controller controlling interaction, including connection and communication, of the corresponding apparatus with other apparatuses in the system, comprising the steps of:

querying a user whether a target apparatus is to be set as a master apparatus of the system which monitors information of existing system configuration and controls the system configuration according to input from the user, the information of the existing system configuration, and information of predetermined available system configurations, the querying being controlled by a controller of the target apparatus, and the query being stored in a storage means of the target apparatus and being displayed by a display means of the target apparatus;

receiving an answer to the query from the user by an input means of the target apparatus;

determining whether the answer to the query is negative and if so, setting the target apparatus as a sub master apparatus in the system which monitors information of connection of other apparatuses to the sub master apparatus and controls communication between the master apparatus and the other apparatuses connected to the sub master apparatus, the determining and setting being controlled by the controller of the target apparatus; and

determining whether the answer to the query is affirmative and if so, executing a checking procedure to verify a presence of any other master apparatus by obtaining a response on the system bus line from the other master apparatus, the determining and the executing being controlled by the controller of the target apparatus.

5,550,980

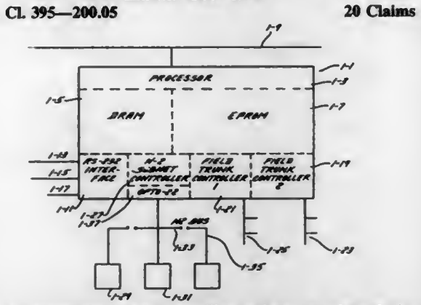
NETWORKED FACILITIES MANAGEMENT SYSTEM WITH OPTICAL COUPLING OF LOCAL NETWORK DEVICES

Gregory A. Pascucci, Waukesha; David E. Rasmussen, Wales; Gaylon M. Decious, Milwaukee; James R. Garbe, Greenfield; Susan M. Hyzer, Brown Deer; Karen L. Woest, Wauwatosa; Vairavan Vairavan, Milwaukee; David L. Koch, Fox Point; Donald A. Gottschalk, Jr., Milwaukee; Dennis E. Burkhardt, Franklin; Darrell E. Standish, New Berlin; Paul W. Madaus, Oak Creek; Dan J. Spacek, Cudahy; Clay G. Nesler, New Berlin; James K. Stark, Wauwatosa; Otto M. Mageland, Greenfield; Robert R. Singers, Brown Deer, and Michael E. Wagner, Delafield, all of Wis., assignors to Johnson Service Company, Milwaukee, Wis.

Division of Ser. No. 476,031, Jan. 30, 1990, abandoned. This application Jan. 7, 1994, Ser. No. 178,970

Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—200.05 **20 Claims**



1. A computerized node controlling at least one slave device connected to a slave device bus having a pair of signal lines, the computerized node communicating with the slave devices over the slave device bus and being optically isolated from the slave device bus, the node having a mode output for providing a mode select signal, a transmit output and a receive input, the node comprising:

a transmit optical isolator connected between the transmit output of the node and a line driver connected to the pair of signal lines;

a receive optical isolator connected between the receive input of the node and a line receiver connected to the pair of signal lines; and

a mode optical isolator having a mode input coupled to the mode output, the mode optical isolator activating at least one of the line driver or the line receiver in response to the mode select signal, the mode select signal being indicative of a transmit mode or a receive mode, the pair of signal lines receiving signals from the slave device bus in the receive mode and transmitting signals to the slave device bus in the transmit mode.

5,550,981

DYNAMIC BINDING OF NETWORK IDENTITIES TO LOCALLY-MEANINGFUL IDENTITIES IN COMPUTER NETWORKS

Eric Bauer, Freehold, and Russel W. Schaffer, Ocean Grove, both of N.J., assignors to AT&T Global Information Solutions Company, Dayton, Ohio

Filed Jun. 21, 1994, Ser. No. 263,092

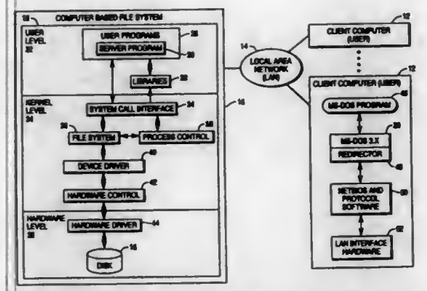
Int. Cl.[6] G06F *15/16*

U.S. Cl. 395—200.06 **30 Claims**

1. An apparatus for binding network identities to locally-meaningful identities in a network comprised of a plurality of computers, the apparatus comprising:

(a) a first computer;

(b) a second computer coupled to the first computer for performing functions requested by an operator of the first computer, the second computer comprising:



(1) means for assigning a temporary local identity to a username and domain name pair associated with the operator of the first computer;

(2) means for receiving and responding to requests from the first computer to perform functions;

(3) means for triggering an ownership fault in response to a particular request received from the assigned temporary local identity associated with the operator of the first computer; and

(4) means for assigning a permanent local identity to the network identity associated with the operator of the first computer in response to the ownership fault.

5,550,982

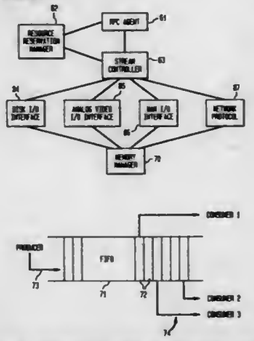
VIDEO APPLICATION SERVER

James E. Long, Palo Alto; Joseph M. Gang, Jr.; Charles J. Bedard, both of Saratoga; Randall B. Baird, and David A. Edwards, both of San Jose, all of Calif., assignors to Starlight Networks, Mountain View, Calif.

Filed Jun. 24, 1993, Ser. No. 82,227

Int. Cl.[6] G06F *13/42*

U.S. Cl. 395—200.13 **16 Claims**



1. A network for supporting both transactional data applications and full motion video applications comprising

a transmission medium for transmitting data for said transactional data applications,

at least one video server connected to said transmission medium,

a plurality of clients connected to said transmission medium for transmitting software generated commands via said transmission medium to said video server to request that a particular full motion video stream be enabled to access the transmission medium,

in response to said commands received from said clients, said video server controlling the transmission of multiple simultaneous full motion video streams of different content in said transmission medium so as to maintain the continuity of said plurality of full motion video, said full motion video streams of different content being transmittable in said transmission medium from one of said clients to said server and from said server to one of said clients, said video server including digital storage which serves as a source or destination for said video streams of different content and an interface for managing video I/O of said digital storage to maintain the continuity of said multiple simultaneous video streams of different content.

5,550,983

Patent Not Issued For This Number

5,550,984

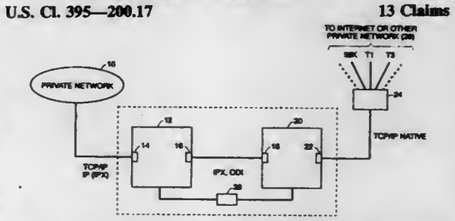
SECURITY SYSTEM FOR PREVENTING UNAUTHORIZED COMMUNICATIONS BETWEEN NETWORKS BY TRANASLATING COMMUNICATIONS RECEIVED IN IP PROTOCOL TO NON-IP PROTOCOL TO REMOVE ADDRESS AND ROUTING SERVICES INFORMATION

Edward J. Gelb, Wayne, N.J., assignor to Matsushita Electric Corporation of America, Secaucus, N.J.

Filed Dec. 7, 1994, Ser. No. 350,541

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.17 **13 Claims**



1. A security system for preventing unauthorized communications between a first network of computers interconnected for Internet Protocol (IP) communications and a second network of computers interconnected for IP communications, while permitting application level communication services between computers connected to said first and said second networks, comprising:

a first network motherboard and a second network motherboard, said first and second network motherboards each having a network interface adapter for communication with said first and said second networks of computers, and for establishing a distinct subnetwork mask, respectively;

each of said network motherboards further having a transfer adapter for communication with said transfer adapter of said other network motherboard, said transfer adapters being identical and matcbed, each of said network motherboards having network operating software to assign a source address for IP protcol communication in accordance with a susbnetwork mask established for one of said network motherboards which is different from the subnetwork mask established for the other of said network motherboards, said network operating software further including protocol conversion software to translate communications received by each said network interface adapter from said first or said second networks of computers, repectively, in IP protocol format to non-IP protocol format for transmission between the transfer adapters of said first and said second network motherboards, whereby upper level layer protocol information and originating source and destination address information are removed from said communication and routing services communications from said first and second computer networks are prevented from being passed between said network interface adapter and said transfer adapter of each said network motherboard, and thence

preventing unauthorized communications between computers connected to said first and said second computer networks; and

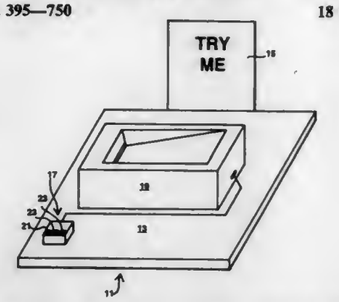
at least one of said network motherboards having application programming interface (API) shim software for providing application level communication services to the computers connected to said at least one network motherboard notwithstanding the removal of said original source and destination address information, and the preventing of said routing services communications.

5,550,985

SPECIAL PURPOSE COMPUTER FOR DEMONSTRATING PERIPHERAL DEVICES SUCH AS PRINTERS IN WHICH POWER IS WITHDRAWN FROM THE PORT CONNECTION OF THE PERIPHERAL DEVICE

Warren L. Miller, Meridian, and Harold B. Noyes, Boise, both of Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 2, 1994, Ser. No. 236,950
Int. Cl.[6] G06F *3/00;13/00*
U.S. Cl. 395—750 **18 Claims**



1. A method of operating a computer peripheral device to demonstrate the operation of the computer peripheral device comprising:

a) providing a special purpose computer;

b) connecting the special purpose computer to a connection port for the computer peripheral device, wherein the computer peripheral device has a plurality of signal lines terminating at the connection port, a plurality of said signal lines having potentials generated by the computer peripheral device which are at levels which correspond to high logic levels for communications through the connection port;

c) withdrawing power from the computer peripheral device through at least one of said plurality of signal lines while maintaining the potentials of said plurality of signal lines approximately at said high logic levels;

d) using said power from the computer peripheral device to operate the special purpose computer; and

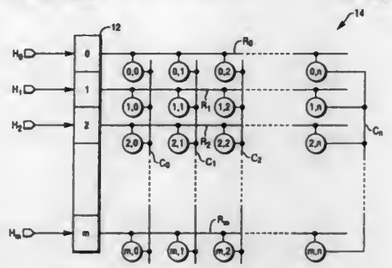
e) using the special purpose computer to operate the computer peripheral device, with said connection port providing a power supply connection to supply power from the computer peripheral device to the special purpose computer, whereby said special computer is able to operate with said connection port providing the sole continuous power supply to the special purpose computer.

5,550,986

DATA STORAGE DEVICE MATRIX ARCHITECTURE

Keith B. DuLac, Derby, Kans., assignor to AT&T Global Information Solutions Company, Dayton, Ohio; Hyundai Electronics America, Milpitas, Calif., and Symbios Logic Inc., Fort Collins, Colo.

Continuation of Ser. No. 124,653, Sep. 7, 1993, abandoned.
This application Oct. 5, 1995, Ser. No. 539,663
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—280 **15 Claims**



1. A data storage system comprising:

a plurality of nodes including a first node, a second node, and a third node;

a plurality of first busses, at least one of said first busses for conducting data from and to a corresponding host system processor; and

a plurality of second busses;

wherein each one of said plurality of nodes connects with a different pairing of one of said first busses with one of said second busses;

each one of said plurality of nodes including:

a data storage device connected to receive data from and provide data to the first and second busses associated with said one of said plurality of nodes; and

a node processor connected to said first and second busses associated with said one of said plurality of nodes for controlling the storage and retrieval of data at said data storage device and for receiving a first command from a host system relating to one of storage and retrieval of data in said data storage system and developing a second command from said first command that is different from said first command for controlling one of storage and retrieval of data at said data storage device associated with at least one other node of said plurality of nodes through communications between said node processor and said at least one other node, thereby distributing the control of the storage and retrieval of data in said data storage system from a host system to said plurality of nodes.

5,550,987

DATA TRANSFER DEVICE

Koichi Tanaka, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

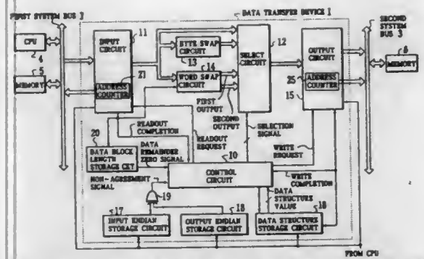
Filed Jul. 27, 1993, Ser. No. 97,219
Claims priority, application Japan, Jul. 28, 1992, 4-201392
Int. Cl.[6] G06F *13/38*
U.S. Cl. 395—286 **28 Claims**

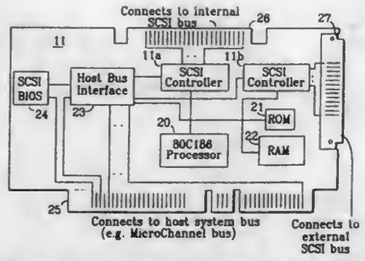
1. A data transfer device comprising:

input means for receiving a block of structured data including a plurality of data elements of different lengths from a transfer source;

conversion means for converting the structure of the received block of data elements to an endian format for a transfer destination;

output means for providing the data elements converted by said conversion means to the transfer destination;


DATA TRANSFER DEVICE 1
FIRST SYSTEM BUS 2
SECOND SYSTEM BUS 3
CPU
MEMORY
INPUT CIRCUIT
BYTE SWAP CIRCUIT
WORD SWAP CIRCUIT
SELECT CIRCUIT
OUTPUT CIRCUIT
ADDRESS COUNTER
FIRST OUTPUT
SECOND OUTPUT
SELECTION SIGNAL
WRITE REQUEST
READOUT COMPLETION
READOUT REQUEST
DATA REMAINDER ZERO SIGNAL
BUFFER COUNTER
BUFFER ADDRESS COUNTER
BUFFER ADDRESS
BUFFER ADDRESS
BUFFER ADDRESS



each other, each of said bus segments being useful for attaching to peripheral devices in varied configurations, said bus adapting system comprising:

an adapter unit for connecting said computer separately to each of said first and second bus segments, said adapter unit being useful to isolate said bus segments from the computer to differing extents, as well as from each other, so that operations of the computer relative to devices attached to any one of said first and second bus segments cannot be compromised by devices attached to the other of said first and second bus segments, said adapter unit comprising:

circuit means having physically separate first and second circuit paths linking respectively to said first and second bus segments, said circuit means being useful to conduct data signalling operations between said computer and each of said first and second bus segments, over said respective first and second circuit paths, using identical operating protocols relative to both of said first and second bus segments; each of said first and second bus segments being connectable to at least one device requiring communication with the computer; the first bus segment being physically closer to said computer than the second bus segment; the first segment having a predetermined length and connecting only to devices for transferring data at a predetermined first rate; and the second segment having a variable length and connecting only to devices for transferring data at a rate less than said first rate said circuit means being designed to transfer data relative to said first bus segment at said first rate and to transfer data relative to said second bus segment at a rate less than said first rate.

5,550,991

PERSONAL COMPUTER SYSTEM HAVING HIGH SPEED LOCAL PROCESSOR BUS AND STORAGE CONTROLLER WITH FIFO MEMORY COUPLED DIRECTLY THERETO

Don S. Keener; Gregory J. Moore, and Richard W. Voorhees, all of Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 712,233, Jun. 7, 1991. This application Mar. 28, 1995, Ser. No. 411,916

Int. Cl.[6] G06F *13/00;13/10;12/00*

U.S. Cl. 395—309 **11 Claims**

11. A personal computer system comprising:

a central processing unit for controlling the personal computer system operation and functioning inter alia as a logical processor device for signaling an occurrence of the transfer of blocks of data;

a high speed local processor data bus coupled directly to said central processing unit and having data, address and control components for exchanging signals with elements of the personal computer system;

at least one additional logical processor device coupled directly to said local processor bus said additional processor device for signalling through said local processor bus an occurrence of the transfer of blocks of data and which portion of a block of data is to be considered valid; and

a storage controller coupled directly to said local processor bus for regulating communications between said central processing unit and said additional processor device and storage memory devices, said storage controller having FIFO memory for transitory storage of blocks of data being exchanged with said local processor bus and functioning for signaling through said local processor bus to said CPU and said at least one additional logical processor (1) the availability of one of blocks of data stored in the FIFO memory for transfer and space in the FIFO memory for reception of blocks of data to be transferred and (2) to initiate a transfer of block(s) of data between said FIFO memory and said local processor bus,

said CPU and said additional logical processor being operative to signal through said local processor bus to said storage controller an occurrence of said transfer of block(s) of data between said FIFO memory and said local processor bus and which portion of a block of data is to be considered valid;

said storage controller also functions for recognizing signals transmitted by said CPU or said additional logical processor and passed through said local processor bus to said storage controller and indicative of an occurrence of the transfer of data and of which portion of a block of data is to be considered valid;

said central processing unit and said additional processor device additionally function for generating the signals, and said storage controller for recognizing said signals which distinguish among a validity of the entirety of a block of data, a first half of a block of data, and a second half of a block of data, and cooperating for exchange of blocks of data between said local processor bus and said FIFO memory when said FIFO memory has available one of data to be transferred and space for reception of data and for emptying of said FIFO memory through said local processor bus as necessary.

5,550,992

TRANSMISSION TIMING CONTROL IN A BASE STATION FOR CELLULAR TDMA MOBILE COMMUNICATION BY RECEIVING AN UP-LINK SIGNAL FOR A DIFFERENT BASE STATION

Tadao Hashimoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 7, 1993, Ser. No. 86,845

Claims priority, application Japan, Jul. 9, 1992, 4-182024

Int. Cl.[6] H04L *7/00*

U.S. Cl. 375—355 **12 Claims**

1. A synchronization system for use in a cellular digital mobile communication network comprising a plurality of radio base stations and mobile stations communicative with said radio base stations through a time division multiplex radio communication link, wherein said synchronization system comprises, in each radio base station:

receiving means for receiving an up-link radio signal directed from a mobile station to a different one of said radio base stations to detect a reception time of said up-link radio signal, said up-link radio signal comprising up-link frames, said receiving means receiving said up-link frames as received frames to produce a first reception timing signal representative of said reception time in response to a first one of said received frames and producing a second reception turning signal in response to a second one of said received frames;

adjusting means for adjusting, based on a calculated time difference between said reception time of said up-link radio signal and a transmission time of said up-link radio signal, a transmission time of a down-link radio signal comprising down-link frames, said adjusting means comprising a base station control unit for producing transmission timing pulses indicative of said transmission time, and timing adjusting means supplied with said transmission timing pulses and said first reception timing signal for calculating a time difference between said reception time and a time indicated by one of said transmission timing pulses that is produced nearest in time to said reception time, a timing controller supplied with said transmission timing pulses and said first reception timing signal to calculate said time difference, and a memory loaded with said time difference, said base station control unit being supplied with said second reception timing signal to read said time difference from said memory and to produce a timing adjust signal if said predetermined time interval is not shorter than the time difference read by said second reception timing signal, said timing controller adjusting said transmission timing pulses in response to said timing adjust signal;

said timing adjusting means adjusting said transmission timing pulses if said time difference is not shorter than a predetermined time interval upon production of said second reception timing signal; and

transmitting means for transmitting, based on said calculated time difference, said down-link radio signal.

5,550,993

DATA PROCESSOR WITH SETS OF TWO REGISTERS WHERE BOTH REGISTERS RECEIVE IDENTICAL INFORMATION AND WHEN CONTEXT CHANGES IN ONE REGISTER THE OTHER REGISTER REMAINS UNCHANGED

Peter N. Ehlig, Houston, Tex.; Frederic Boutaud, Roquefort les Pins, France, and James F. Hollander, Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

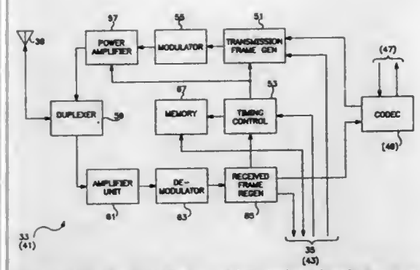
Continuation of Ser. No. 959,008, Oct. 9, 1992, Pat. No. 5,349,687, which is a division of Ser. No. 864,776, Apr. 7, 1992, Pat. No. 5,319,789, which is a division of Ser. No. 347,615, May 4, 1989, Pat. No. 5,142,677. This application Aug. 9, 1994, Ser. No. 288,368

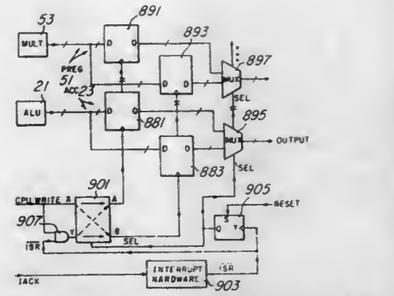
Int. Cl.[6] G06F *9/46*

U.S. Cl. 395—375 **17 Claims**

1. A data processing device comprising:

an electronic processor operable in alternative processing contexts identified by a context signal; at least one set of a first and second register connected to said electronic processor in a manner to concurrently store identical information during one of the processing contexts, and wherein said first register individually participates in and is continuously available in the next of the processing contexts when said first register is selected while said second register retains said information from said one processing context; and





a context switching circuit responsive to said context signal connected to said first and second registers to selectively control input and output operations of said registers to and from said electronic processor depending on the processing context.

5,550,994

CONDITION DECISION CIRCUIT FOR A MICROCOMPUTER

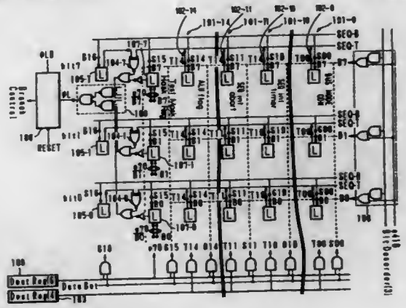
Tetsu Tashiro, and Yoshiki Cho, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 23, 1994, Ser. No. 247,836

Claims priority, application Japan, Jun. 14, 1993, 5-142028; Jan. 31, 1994, 6-009123

Int. Cl.[6] G06F *9/40*

U.S. Cl. 395—375 **5 Claims**



1. A microcomputer, comprising:

a condition decision circuit, having:

a register group including a plurality of registers, one of which is specified by execution of a conditional branch instruction, and to which a predetermined value in the code of said conditional branch instructions is set;

a comparing register which stores the operation result of the instruction execution;

compare means for comparing a value of the register specified by the conditional branch instruction in said registers group and a value of said compare register bit by bit; and

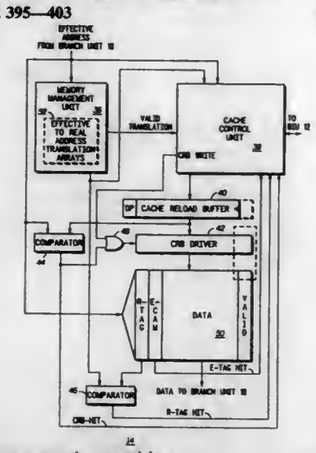
a mask register which, by masking values of only necessary bits of the register specified by the conditional branch instruction in said register group, forces a condition decision signal, representing whether or not the branch condition of the conditional branch instruction is satisfied, to a state representing that the branch condition is satisfied.

5,550,995

MEMORY CACHE WITH AUTOMATIC ALLIASED ENTRY INVALIDATION AND METHOD OF OPERATION

David D. Berrera; Bahador Rastegar, and Paul C. Rossbach, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill., and International Business Machines, Armonk, N.Y.

Filed Jan. 3, 1994, Ser. No. 176,812
Int. Cl.[6] G06F *12/12*
U.S. Cl. 395—403 **18 Claims**



1. A memory cache comprising:

a semi-associative cache array storing a plurality of sets, each one of the plurality of sets further comprising a first tag, a second tag, a data field, and a means for indicating the validity of the one of the plurality of the sets, the semi-associative cache array receiving a first subset and a second subset of an index, the first subset specifying a group of the plurality of sets, the semi-associative cache outputting the second tag and the data field of a selected one of the plurality of sets, the selected one of the plurality of sets being a member of the group, the first tag of the selected one of the plurality of sets being logically equivalent to the second subset, the data field of the selected one output on a plurality of bit lines;

a cache reload buffer receiving a data field from an external source and a third tag, the cache reload buffer storing the third tag and the data field; and

a cache reload buffer driver coupled to the cache reload buffer and to the semi-associative cache array, the cache reload buffer driver coupling the data field of the cache reload buffer to the plurality of bit lines if the third tag and a third subset of the index are logically equivalent,

wherein the cache array sets the means for indicating the validity of the selected one to an invalid state upon an equivalence of the third tag and the third subset.

5,550,996

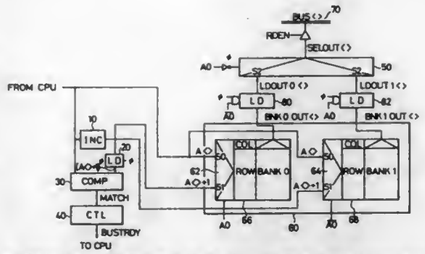
ROM BURST TRANSFER CONTINUOUS READ-OUT EXTENSION METHOD AND A MICROCOMPUTER SYSTEM WITH A BUILT-IN ROM USING THIS METHOD

Masue Shiba, Ftyu, and Shigeharu Nakata, Yokohama, both of, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Nov. 1, 1993, Ser. No. 143,779
Claims priority, application Japan, Nov. 2, 1992, 4-294154
Int. Cl.[6] G11C *8/00;* **G06F** *12/06*
U.S. Cl. 395—421.03 **4 Claims**

1. A memory device comprising:

memory means comprising a plurality of blocks for reading out data when supplied with an address; and



an adder for adding a specific address value to the address and outputting an added address to said plurality of blocks,

wherein,

each of said plurality of blocks includes selection means for selecting either the address or the added address

in response to selection data included in the address, and

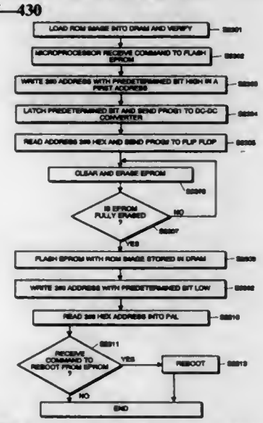
said memory device outputs data corresponding to either the address or the added address, according to the selection data included in the address.

5,550,997

IN AN INTERACTIVE NETWORK BOARD, A METHOD AND APPARATUS FOR PREVENTING INADVERTENT LOADING OF A PROGRAMMABLE READ ONLY MEMORY

Tony K. Ip, Lake Forest, and Walter D. Kuver, Laguna Hills, both of Calif., assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 18, 1992, Ser. No. 978,491
Int. Cl.[6] G06F *12/16*
U.S. Cl. 395—430 **27 Claims**



1. A method for preventing inadvertent re-programming of an EPROM, comprising the steps of:

loading a ROM firmware image into a RAM on an interactive network board;

verifying the integrity of the ROM firmware image in the RAM;

receiving a command to load the EPROM;

closing a switch in response to the command to load the EPROM so as to permit transfer of a load enable signal to a load enable input on the EPROM, the load enable signal permitting the ROM firmware image to be loaded into the EPROM;

erasing the EPROM; and

loading the ROM firmware image into the EPROM;

wherein the step of closing the switch is a two-step process which includes steps of (1) writing a predetermined bit pattern to a first address in order to generate a first signal for closing the switch, and (2) reading from a second address in order to generate a second signal for clocking the first signal to the switch so as to close the switch; and

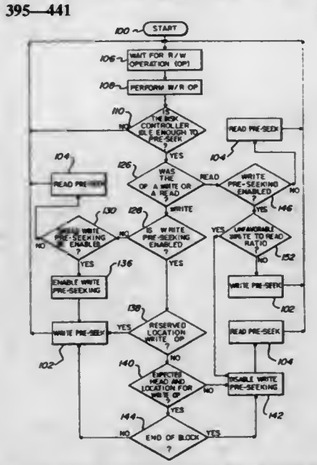
wherein, whenever the switch is open, the load enable input on the EPROM is substantially grounded.

5,550,998

PRE-SEEKING PROCESS FOR ENHANCING READING AND WRITING PERFORMANCE IN A MASS STORAGE SYSTEM HAVING MULTIPLE INDIVIDUAL DISK DRIVES

Daniel J. Willis, Arvada, and Richard C. Cleavinger, Lafayette, both of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Jun. 14, 1993, Ser. No. 76,548
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—441 **33 Claims**



23. A process for decreasing an amount of time necessary to perform sequential read and write operations in a RAID mass storage system, the RAID mass storage system including a plurality of redundancy groups, each redundancy group including a plurality of disk drives, a separate disk controller connected to each disk drive, and an array controller connected to each of the disk controllers, said process comprising:

commanding write and read operations from the array controller to each redundancy group;

distributing write operations substantially equally to all of the redundancy groups;

commanding write operations within only one redundancy group at a time to write a block of data to the disk drives of that one redundancy group;

controlling the read and write operations to and from the disk drives in each redundancy group from the connected disk controllers;

determining from at least one write operation at a disk controller a characteristic uniquely defining a predetermined write algorithm used to execute a predetermined series of write operations to write a block of data to a multiplicity of different predetermined locations on the disk drives of the one redundancy group; and thereafter in response to the determination of the write algorithm and by using the disk controllers of the one redundancy group to which the write operations are anticipated to be directed in accordance with the write algorithm:

seeking a transducer of each disk drive of the one redundancy group to a predetermined write pre-seek location at which a next write operation of the predetermined series is to be performed; and

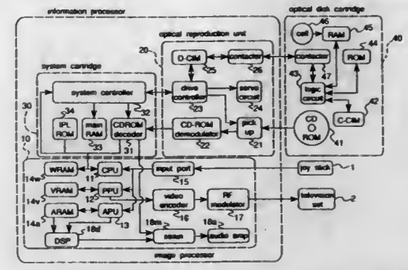
selecting the transducer of each disk drive in that one redundancy group for the next write operation of the predetermined series after performance of a previous write operation of the series and before the next write operation is commanded.

5,550,999

INFORMATION PROCESSING SYSTEM WHICH CAN CHECK SECONDARY STORAGE MEDIUM HAVING PRESCRIBED RELATION THEREWITH AND SECONDARY STORAGE DEVICE THEREFOR

Masakazu Nagano; Kunihiro Tanaka; Toshiro Hibino, and Hiroshi Sato, all of Kyoto, Japan, assignors to Nintendo Co., Ltd., Kyoto, Japan

Filed Nov. 23, 1993, Ser. No. 155,780
Claims priority, application Japan, Nov. 26, 1992, 4-341164
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—442 **15 Claims**



1. An information processing system comprising an information processor and a secondary storage device which is removably connected to the information processor, said secondary storage device comprising:

a secondary storage medium for storing a first data, processed by the information processor and including at least image data, and a second data;

a case which contains the secondary storage medium;

a non-volatile storage device for storing a third data having a predetermined relationship with the second data and storing a fourth data for identifying a location in the secondary storage medium at which the second data is stored; and

a first checking circuit for determining the existence of the predetermined relationship between the second and third data;

said information processor comprising;

a random access memory for writing and reading image data;

a central processor for performing image processing according to the image data stored in the random access memory;

write and read circuitry for reading the first data, for reading the second data stored in the secondary storage medium in accordance with the fourth data stored in the non-volatile storage device and for writing the first data and the second data to the random access memory; and

an activation circuit for enabling the central processor to perform processing according to the first data when the first checking circuit decides according to the second data stored in the random access memory and the third data stored in the non-volatile storage device that the predetermined relationship exists,

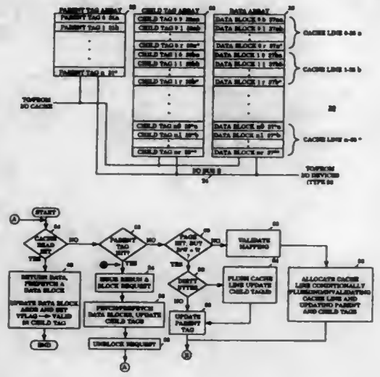
said secondary storage medium comprising an optical storage device, said secondary storage device case enclosing said secondary storage medium, and housing said non-volatile storage device and said first checking circuitry, said read circuitry comprising optical reproduction circuitry for optically reading storage data in said optical storage medium.

5,551,000

I/O CACHE WITH DUAL TAG ARRAYS

Juay K. Tan, San Jose, and Robert W. Kwong, Los Altos, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Mar. 18, 1993, Ser. No. 33,502
Int. Cl.[6] G06F *12/00;13/00*
U.S. Cl. 395—445 22 Claims



1. In a computer system comprising a memory, an input/output (I/O) bus coupled to said memory, and a plurality of I/O devices coupled to said I/O bus, a streaming cache for caching data being transferred between said memory and said I/O devices during read and write operations, said streaming cache comprising:

a) cache data array means comprising at least one cache data array having a plurality of cache lines, wherein each cache line having at least two cache line segments, for caching said data being transferred between said memory and said I/O devices during read and write operations including data prefetched from said memory in anticipation of being transferred to said I/O devices during read operations, each cache line segment including a plurality of data bytes, each of said cache lines being mapped to a memory page;

b) first cache tag array means comprising a parent cache tag array having a plurality of parent cache tag entries identifying said cache lines, one parent cache tag entry per cache line, for describing data cached in said cache lines, each of said parent cache tag entries describing common attributes of data cached in the cache line segments of the identified cache line;

c) second cache tag array means comprising at least one child cache tag array having a plurality of child cache tag entries used to identify said cache line segments, one child cache tag entry per cache line segment, for describing data cached in said cache line segments, each of said child cache tag entry describing unique attributes of data cached in its corresponding cache line segment;

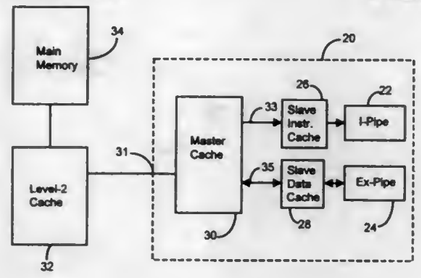
d) control means coupled to said I/O bus, said cache data array means, said first and second cache tag array means for responding to read and write operations from and to said memory by said I/O devices using said at least one cache data array, and said parent and child cache tag arrays.

5,551,001

MASTER-SLAVE CACHE SYSTEM FOR INSTRUCTION AND DATA CACHE MEMORIES

Earl T. Cohen, Fremont; Russell W. Tilleman, Palo Alto; Jay C. Pattin, Redwood City, and James S. Blomgren, San Jose, all of Calif., assignors to Exponential Technology, Inc., San Jose, Calif.

Filed Jun. 29, 1994, Ser. No. 267,658
Int. Cl.[6] G06F *12/08*
U.S. Cl. 395—449 16 Claims



1. A master-slave cache system for transferring data between a main memory and a central processing unit (CPU), the CPU having an instruction pipeline decoding instructions at a first rate, the CPU having an execution pipeline executing at a second rate, the main memory storing a plurality of operands and a plurality of instructions, the system comprising:

a master cache for storing operands and instructions, the master cache coupled to the main memory, the master cache storing a first subset of the plurality of operands and a second subset of the plurality of instructions stored in the main memory, the master cache storing a third subset of instructions and a fourth subset of operands, the third subset being a subset of the second subset, and the fourth subset being a subset of the first subset;

a slave instruction cache, coupled to the master cache and coupled to the instruction pipeline, for storing the third subset of instructions, the slave instruction cache capable of transferring instructions to the instruction pipeline at the first rate, the slave instruction cache comprising a cache that is read-only by the CPU; and

a slave data cache, coupled to the master cache and coupled to the execution pipeline, for storing the fourth subset of operands, the slave data cache capable of transferring operands to the execution pipeline at the second rate;

wherein the master cache comprises a set-associative cache, and the slave instruction cache and the slave data cache comprise direct-mapped caches;

wherein the master cache further includes means for replacing operands and instructions using a modified least-recently-used algorithm, never replacing a least-recently used operand or instruction that is present in the slave data cache or the slave instruction cache,

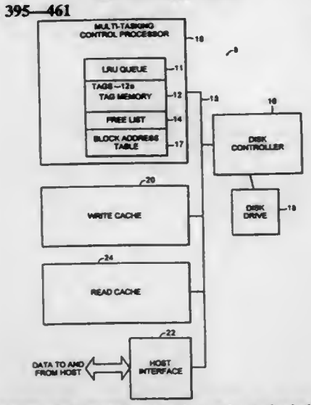
whereby the slave instruction cache matches the first rate required by the instruction pipeline, and the slave data cache matches the second rate required by the execution pipeline.

5,551,002

SYSTEM FOR CONTROLLING A WRITE CACHE AND MERGING ADJACENT DATA BLOCKS FOR WRITE OPERATIONS

Mitchell N. Rosich; Eric S. Noya, both of Groton, and Randy M. Arnott, Clinton, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jul. 1, 1993, Ser. No. 86,453
Int. Cl.[6] G06F *12/12*
U.S. Cl. 395—461 11 Claims



1. A system for managing a write cache to include in a write operation adjacent blocks in a chunk, the system including:

A. data storage device including a plurality of storage locations, each location holding a block of data;

B. a controller for managing the write cache and the data storage device, the controller including

i. an address table for storing cache addresses of blocks included in a write operation,

ii. a least recently used queue for listing block identifiers in order of use of the corresponding data blocks;

iii. a storage-location-free list for storing information relating to free cache storage locations, the controller monitoring the storage location free list and when the list reaches a free-location-low threshold, (a) determining if blocks adjacent to a least recently used block are held in the write cache, (b) including the addresses of the least recently used block and the adjacent data blocks in the address table and (c) when the adjacent blocks, that are within associated chunk boundaries and stored in the cache, have been located, performing a storage device write operation to transfer the data blocks identified in the address table to the data storage device.

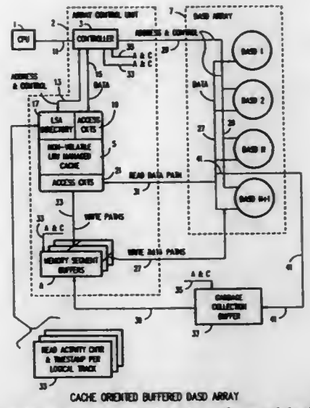
5,551,003

SYSTEM FOR MANAGING LOG STRUCTURED ARRAY (LSA) OF DASDS BY MANAGING SEGMENT SPACE AVAILABILITY AND RECLAIMING REGIONS OF SEGMENTS USING GARBAGE COLLECTION PROCEDURE

Richard L. Mattson, Pacific Grove, and Jaishankar M. Menon, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 989,245, Dec. 11, 1992, Pat. No. 5,416,915. This application Feb. 14, 1994, Ser. No. 196,047
Int. Cl.[6] G06F *13/24*
U.S. Cl. 395—463 28 Claims

1. In a system having a segment-oriented and buffered log structured array (LSA) of DASDs, directory controlled means for establishing read and write access paths to logical tracks stored in said segments on said LSA as referenced by a source of external commands, cache means coupling the source and the LSA for



CACHE ORIENTED BUFFERED DASD ARRAY

separately read or write enqueuing the referenced logical tracks and for managing segment space availability by destaging tracks to the buffer of the LSA according to a usage discipline, and means for reclaiming regions of segments of the LSA by a garbage collection procedure, said reclaimed regions being available for recording segments formed from write modified logical tracks thereon, a method comprising the steps of:

(a) accumulating neighborhoods of tracks in the buffer in a destage path from the cache means and in a garbage collection path from the LSA, and performing read-activity-based sorting of the accumulated neighborhoods of tracks into corresponding segments formed from write modified read active logical tracks, write modified read inactive logical tracks, clean read active logical tracks, and clean inactive logical tracks;

(b) writing segments from the buffer formed from write modified or clean read active tracks into an LSA DASD region of contiguous segments of read active tracks and writing segments from the buffer formed from write modified or clean read inactive tracks into an LSA DASD region of contiguous segments of read inactive tracks; and

(c) ascertaining the number of free space segments in each region and garbage collecting segments having either free space, old write age, or read inactive tracks in the regions in the LSA where the detected number is less than a first threshold, continuing the collection until the number of collected segments exceeds a second threshold, and applying the collected segments to the garbage collection path.

5,551,004

STRUCTURE WHICH RENDERS FAULTY DATA OF A CACHE MEMORY UNCACHEABLE IN ORDER THAT A PARTIALLY FUNCTIONAL CACHE MEMORY MAY BE UTILIZED

David C. McClure, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

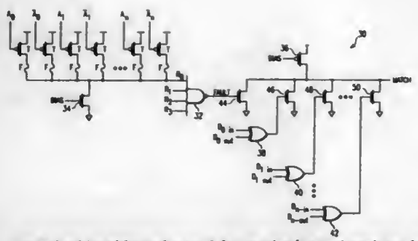
Filed May 28, 1993, Ser. No. 69,024
Int. Cl.[6] G06F *12/08*
U.S. Cl. 395—465 17 Claims

1. Circuitry for bypassing faulty data locations in cache memory, comprising:

a cache memory, having at least one faulty data location, which store a plurality of data;

a tag RAM which stores a plurality of addresses of the plurality of data stored in the cache memory; and

bypass circuitry of the tag RAM which forces the tag RAM to generate a predetermined output signal indicative of a Miss condition for a tag RAM address which corresponds to the at least one faulty data location, such that the at least one faulty data location is permanently bypassed and thus made



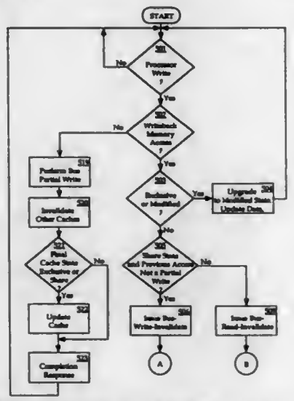
uncacheable without the need for monitoring and setting a bit whose sole function is to communicate if the at least one faulty data location is faulty, wherein the predetermined output signal is received by a microprocessor.

5,551,005

APPARATUS AND METHOD OF HANDLING RACE CONDITIONS IN MESI-BASED MULTIPROCESSOR SYSTEM WITH PRIVATE CACHES

Nitin V. Sarangdhar, Beaverton; Wen-Hann Wang, Portland, and Matthew Fisch, Beaverton, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Feb. 25, 1994, Ser. No. 201,854
Int. Cl.[6] G06F *12/08*
U.S. Cl. 395—472 **22 Claims**



6. A MESI-based multiprocessor (MP) computer system for handling race conditions comprising:

a pipelined bus;

a first processor coupled to said pipelined bus, said first processor having a first cache;

a second processor coupled to said pipelined bus, said second processor having a second cache;

a first memory controller for controlling said first cache;

a second memory controller coupled to said first memory controller via said pipelined bus, said second memory controller for controlling said second cache, said first and said second memory controllers determining an existing state of a cache line;

a first logic coupled to said first memory controller for writing to said cache line and changing said existing state of said cache line to a modified state if said existing state of said cache line is an Exclusive state;

a second logic coupled to said first memory controller for performing a Bus-Read-Invalidate operation if said existing state of said cache line is an Invalid state and allowing an invalidation request corresponding to said first processor to complete if said existing state of said cache line is a Shared state and said first processor and said second processor both initiate Bus-Write-Invalidate operations;

a third logic coupled to said first processor for setting said cache line to said Exclusive state, updating data to said cache line, and setting said cache line to said Modified state;

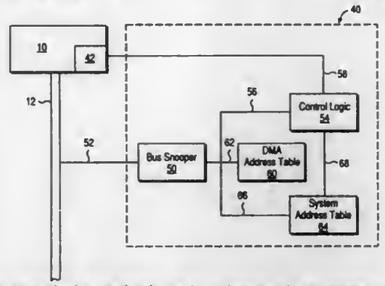
a fourth logic coupled to said second processor for receiving a second cache line, updating said second cache line, setting said second cache line to said Exclusive state, writing said data to said second cache line in said Exclusive state, and setting said second cache line to said Modified state.

5,551,006

LOW COST WRITETHROUGH CACHE COHERENCY APPARATUS AND METHOD FOR COMPUTER SYSTEMS WITHOUT A CACHE SUPPORTING BUS

Upendra M. Kulkarni, Sacramento, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Sep. 30, 1993, Ser. No. 130,025
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—473 **32 Claims**



19. A method to maintain cache coherency in a computer system, the method comprising the steps of a cache coherency module:

(a) detecting a CPU programming a DMA controller to transfer data to a main memory;

(b) detecting conclusion of the data transfer and flushing a cache coupled to the CPU in response;

(c) detecting the CPU reading a non-standard address during the time interval between steps (a) and (b) and flushing the cache in response.

5,551,007

METHOD FOR CONTROLLING MULTIPLE COMMON MEMORIES AND MULTIPLE COMMON MEMORY SYSTEM

Yoshihiro Miyazaki, Hitachi; Yoshiaki Takahashi, Mito; Manabu Araoka, Hitachi; Soichi Takaya, Hitachi, and Hiroaki Fukumaru, Hitachi, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 585,234, Sep. 20, 1990, abandoned.
This application Sep. 16, 1993, Ser. No. 121,449
Claims priority, application Japan, Sep. 20, 1989, 1-243617
Int. Cl.[6] G06F *13/40*
U.S. Cl. 395—47.5 **6 Claims**

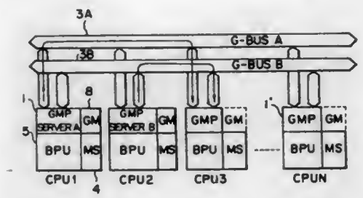
1. A multiple common memory system comprising:

a first CPU which has a first common memory to be shared with a third CPU; and

a second CPU which has a second common memory to be shared with said third CPU,

wherein said third CPU includes means for accessing either the first or second common memory,

wherein each of the first and second CPUs includes means responsive to a read request from the third CPU for sending out requested data to the third CPU, and wherein the third



CPU includes means for issuing the read request to one of the first and second CPUs to access the respective first and second common memories therein and means for receiving the requested data sent therefrom to the third CPU, and

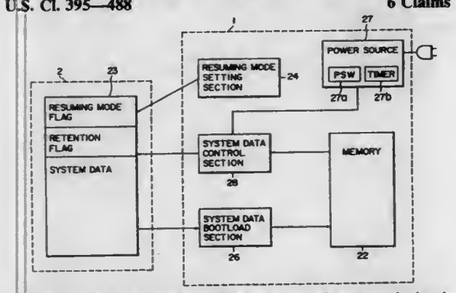
wherein the third CPU has two data paths each connected to both the first and second CPUs for selectively receiving, through either of the two data paths, data sent from the first or second common memory to the third CPU.

5,551,008

METHOD AND SYSTEM FOR RESUMING DATA PROCESSING IN COMPUTER

Toshimitsu Saito, Fuchu, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 341,926, Nov. 16, 1994, Pat. No. 5,435,005, which is a continuation of Ser. No. 974,820, Nov. 16, 1992, abandoned, which is a continuation of Ser. No. 343,356, Apr. 26, 1989, abandoned. This application Apr. 13, 1995, Ser. No. 421,238
Claims priority, application Japan, Apr. 30, 1988, 63-108464
Int. Cl.[6] G06F *1/24*
U.S. Cl. 395—488 **6 Claims**



1. A computer system to which an external storage device is connected, said computer system comprising:

a switch which instructs an ON/OFF condition of said computer system;

first holding means for holding resume flag data representing whether a resume mode is set;

storing means for storing system data of said computer system necessary for resuming data processing by said computer system into said external storage device when said switch instructs the OFF condition of said computer system and when the resume flag data represents that the resume mode is set;

second holding means for holding retention flag data representing that the system data has been stored in said external storage device;

outputting means for outputting a storage completion signal after the system data has been stored in said external storage device;

a power source supplying, in response to the instruction of the ON condition by said switch, power to said computer system in order to drive said computer system and stopping the power supply to said computer system in response to the store completion signal; and

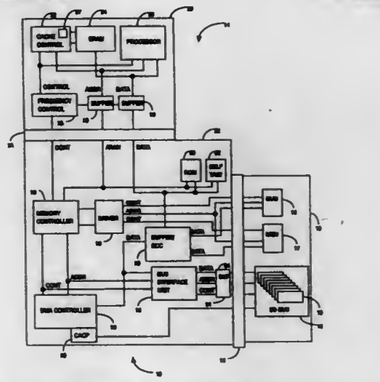
restoring means for restoring the system data stored in said external storage device into said computer system when said switch instructs the ON condition of said computer system, when the resume flag data represents that the resume mode is set and when said second holding means holds the retention flat data.

5,551,009

EXPANDABLE HIGH PERFORMANCE FIFO DESIGN WHICH INCLDES MEMORY CELLS HAVING RESPECTIVE CELL MULTIPLEXORS

Nader Amini; Bechara E. Boury; Sherwood Brannon, and Terence J. Lohman, Boca Raton, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 778,298, Oct. 15, 1991, abandoned. This application Oct. 12, 1993, Ser. No. 134,504
Int. Cl.[6] G06F *13/00;13/04*
U.S. Cl. 395—492 **15 Claims**



1. Data storage apparatus for a data handling system comprising:

storage circuitry including a plurality of cells for holding said data,

each of said plurality of cells including a cell multiplexer and cell control circuit dedicated exclusively to the respective cell for selecting data to be stored in the respective cell,

input steering circuitry common to all of said cells for receiving the data to be stored in

said apparatus and providing the data to said cell multiplexers of individual said cells, output steering circuitry for retrieving the data from some of said plurality of cells and providing said data from some of said plurality of cells to said system, and

control circuitry common to all of said cells,

said common control circuitry providing control information to said input steering circuitry, said output steering circuitry and said cell control circuits to control the routing of data received by said input steering circuitry into and out of said cells, as well as between said cells,

said control circuitry conditioning said cell control circuits of individual said cells to route data into and out of said apparatus on a first in, first out basis.

VOL 1189 ISS 4 AG 27 1996 UMI

5,551,010

ARITHMETIC OPERATION UNIT AND MEMORY ACCESSING DEVICE FOR ACCESSING PRIMARY AND SECONDARY CACHE MEMORIES INDEPENDENTLY OF A CPU

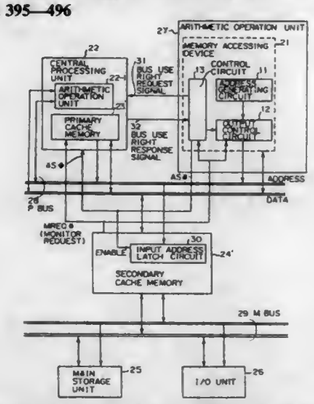
Hideyuki Iino, and Hiromasa Takahashi, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 19, 1992, Ser. No. 978,882

Claims priority, application Japan, Nov. 19, 1991, 3-303578

Int. Cl.[6] G06F *13/36;13/00;15/347;12/00*

U.S. Cl. 395—496 **9 Claims**



1. A memory accessing device coupled to a first bus which couples to a first buffer storage in a central processing unit to a second buffer storage, said memory accessing device accessing at least one of said first buffer storage and said second buffer storage independently of said central processing unit, using said first bus, said memory accessing device comprising:

address generating means for generating an address, the address being used to determine which of said first buffer storage and said second buffer storage is accessed, and

output control means having an output for outputting said address to said first bus when the memory accessing device has obtained a right to use said first bus, and for controlling the outputting of said address to said first bus such that the output to said first bus enters an idle state if said second buffer storage issues a request for access to said first buffer storage.

5,551,011

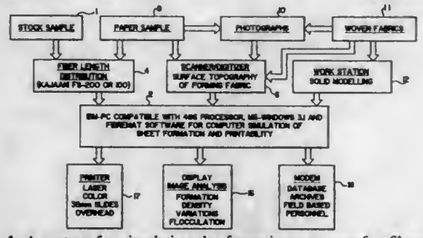
COMPUTERIZED SYSTEM FOR SIMULATING PAPER SHEET FORMATION AND THE APPEARANCE OF PRINT THEREON

Roger Danby, Arnprior, Canada, and Alain Bouchard, Raleigh, N.C., assignors to Huyck Licensco, Inc., Wilmington, Del.

Filed Jan. 27, 1994, Ser. No. 189,120

Int. Cl.[6] G06G *7/48;* **G06F** *3/00*

U.S. Cl. 395—500 **30 Claims**



1. A system for simulating the formation process of a fibrous sheet comprising:

a plurality of databases having means for storing parameters relating to sheet formation,

a configuring base having means for relating input data to said plurality of databases,

means for interactively eliciting said input data from a user,

simulating means, interacting with said configuring base, for producing at least one simulation of at least a portion of a sheet, and

means for displaying said at least one simulation.

5,551,012

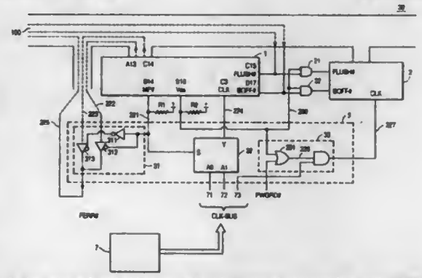
SINGLE SOCKET UPGRADEABLE COMPUTER MOTHERBOARD WITH AUTOMATIC DETECTION AND SOCKET RECONFIGURATION FOR INSERTED CPU CHIP

Te-Chin Chuang, Miao-Lee City; Yunn-Hung Liao, Taipei; Lung Wei, Taichung, and Yi-Hsien Lee, Taipei, all of, Taiwan, assignors to Acer Incorporated, Industrial Park, Taiwan

Continuation of Ser. No. 872,611, Apr. 22, 1992, abandoned, which is a continuation-in-part of Ser. No. 689,317, Apr. 22, 1991, abandoned. This application Mar. 8, 1994, Ser. No. 208,056

Int. Cl.[6] G06F *15/76*

U.S. Cl. 395—500 **28 Claims**



1. An upgradeable/downgradeable central processing unit (CPU) chip computer system for driving by more than one type of CPU chip, said computer system including a circuit board, the circuit board comprising:

a first socket, disposed on the circuit board, for receiving different types of CPU chips, wherein at least first and second of said different types of CPU chips drive a particular output signal on different first and second respective output pins, depending on the type of CPU chip;

an identifying circuit, disposed on the circuit board and coupled to said first socket, for identifying the type of CPU chip inserted in said first socket and for generating an identification signal in response to the identification;

a clock signal generator, coupled to said identifying circuit and to said first socket, responsive to said identification signal for generating clock signals compatible with the type of CPU chip in said first socket; and

an enabling circuit, disposed on the circuit board and coupled to said identifying circuit and to said first socket, responsive to said identifying signal for (a) enabling signals on said first output pin to be transmitted when a CPU chip of said first type is in said first socket and (b) enabling signals on said second output pin to be transmitted when a CPU chip of said second type is in said first socket, thereby allowing said particular output signal to be transmitted regardless of which one of said first and second types of CPU chip is in said first socket;

wherein said clock signal generator is disposed on the circuit board.

5,551,013

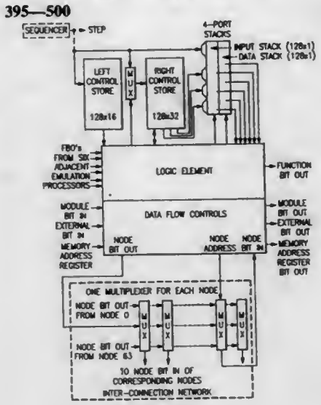
MULTIPROCESSOR FOR HARDWARE EMULATION

William F. Beausoleil, Hopewell Junction; Tak-Kwong Ng, Hyde Park, and Harold R. Palmer, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 3, 1994, Ser. No. 253,881

Int. Cl.[6] G06F *9/455*

U.S. Cl. 395—500 **7 Claims**



1. A software-driven multiprocessor emulation system, comprising

a plurality of emulation processors, each emulation processor containing an execution unit for processing multiple types of logic gate functions, each emulation processor rapidly switching from one logic gate function to a next logic gate function in a switched-emulation sequence of different gate functions, and the switched-emulation sequence of each of the plurality of processors emulating a subset of gates in a hardware arrangement in which logic gates are of any type that the emulation processors functionally represent for a sequence of clock cycles,

a plurality of multiplexors having outputs respectively connected to the emulation processors and having inputs respectively connected to each of the other emulation processors, and bus means connected to the multiplexors to enable an output from any emulation processor to be transferred to an input of any other of the emulation processors,

an embedded control store in each of the emulation processors to store software logic-representing signals for controlling operations of the emulation processor,

an embedded data store in each of the emulation processors to receive data generated by the same emulation processor under control of software signals stored in the embedded control store in the same emulation processor, and

bus controls to transmit data on the bus means from any emulation processor through a connected multiplexor under control of software signals stored in the embedded control store to control computational emulation of the hardware arrangement by operation of the plurality of emulation processors under software control.

5,551,014

METHOD AND APPARATUS FOR DESIGNING INTEGRATED CIRCUITS ACCORDING TO MASTER SLICE APPROACH

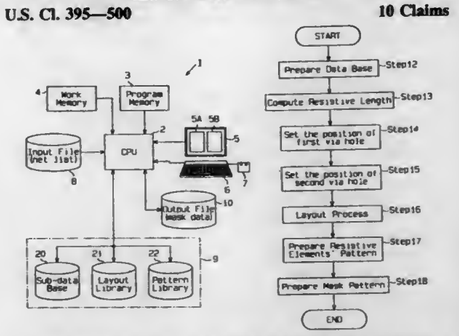
Kazuhiro Yoshida, and Noriaki Sato, both of Kasugai, Japan, assignors to Fujitsu Ltd., Kanagawa, and Fujitsu VLSI Ltd., Aichi, both of, Japan

Filed Mar. 1, 1995, Ser. No. 396,789

Claims priority, application Japan, Mar. 14, 1994, 6-042838

Int. Cl.[6] G06F *15/00;13/00*

U.S. Cl. 395—500 **10 Claims**



1. An interactive circuit designing apparatus for assisting an operator in designing a master slice type integrated circuit, said apparatus comprising:

a display device having a screen accommodating a first window for symbolically displaying circuit elements of a diagram of a circuit design, the circuit elements including a resistive element having a predetermined resistance, and a second window for displaying a bulk model of a master slice indicating circuit cells provided in the master slice, the circuit cells including a resistive cell;

an operator-manipulated input device for designating one of the circuit elements displayed in the first window and then designating one of the circuit cells displayed in the second window, associated with the designated circuit element, the designated circuit element being the resistive element and the designated circuit cell being the resistive cell;

data storage means for containing a first data base and a second data base, said first data base storing a net list descriptive of the circuit design, said second data base storing master slice data relating to a bulk structure of the master slice and cellular data relating to a plurality of types of circuit cells of the master slice; and

a processing unit, coupled to said input device, said display device and said data storage means,

wherein said processing unit:

A) processes said net list and said master slice data to cause said display device to display the diagram of the circuit design in said first window and to display the bulk mode of the master slice in said second window;

B) receives an instruction input thereto by the operator using said input device, said instruction representing the designated circuit element and the designated circuit cell associated with the designated circuit element, and prepares circuit cell data descriptive of the designated circuit by referring to said net list and the cellular data stored in the second data base, wherein the resistive element is to be formed in the designated resistive cell;

C) computes a length of the resistive element to be formed in the designated resistive cell, wherein the length computation is based on said circuit cell data and on the resistance of the resistive element;

D) prepares initial position data of a first contact hole for the designated resistive cell, based on said circuit cell data;

E) prepares initial position data of a second contact hole paired with said first contact hole, based on said computed length and on the initial position data of said first contact

hole, wherein the distance between said first and second contact holes corresponds to the computed length;

F) creates a third data base in said data storage means, and stores data concerning said designated circuit cell, the computed length and the positions of said first and second contact holes into the third data base; and

G) controls the display of said display device to display indications of the positions of the first and second contact holes, over the designated resistive cell in the bulk model of the master slice, with reference to the data stored in the third data base.

5,551,015

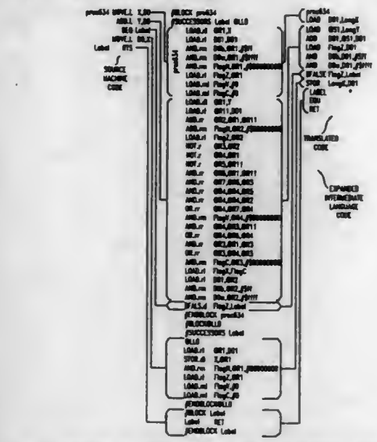
METHOD AND APPARATUS FOR DIRECT CONVERSION OF PROGRAMS IN OBJECT CODE FORM BETWEEN DIFFERENT HARDWARE ARCHITECTURE COMPUTER SYSTEMS

John C. Goettelmann, Point Pleasant, and Christopher J. Macey, Red Bank, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 133,707, Oct. 8, 1993, abandoned, which is a continuation of Ser. No. 280,774, Dec. 6, 1988, Pat. No. 5,313,614. This application Jul. 20, 1995, Ser. No. 504,797

Int. Cl.[6] G06F *17/00*

U.S. Cl. 395—500 **11 Claims**



1. A method of translating a first non-source code computer program having a predetermined functionality into a second non-source code computer program having a functionality substantially the same as the first non-source code computer program, the first non-source code computer program being executable by a source computer, but not a target computer, the second non-source code computer program being executable by the target computer without translation, simulation, or emulation during execution, comprising the steps of:

expanding each instruction in the first non-source code computer program into one or more intermediate language instructions which explicitly replicate primary and secondary effects of each instruction in the first non-source code computer program so that an intermediate language representation of the entire first non-source code computer program is created which has substantially the entire functionality of the first non-source code computer program; and

processing the intermediate language representation of the first non-source code computer program to eliminate intermediate language instructions whose elimination does not substantially affect the functionality of the intermediate language representation, the processing step comprising the steps of:

identifying one or more procedures in the intermediate language representation, at least one of the procedures comprising:

a procedure head block and one or more basic blocks, a basic block being a sequence of instructions that has exactly one instruction at which control can enter the sequence during execution and exactly one instruction at which control leaves the sequence during execution and a procedure head block being a basic block whose first instruction is either an entry point of the computer program or a target of a call, each procedure being composed of a procedure head block and all basic blocks reachable from the procedure head block through a sequence of successors from the procedure head block, the basic blocks being those which are not procedure head blocks and those to which flow of control from the procedure head block does not pass through any other intermediate procedure head block; and

performing procedure by procedure data flow analysis of the intermediate language representation in response to the identifying step to eliminate instructions whose elimination does not substantially change the functionality of the intermediate language representation.

5,551,016

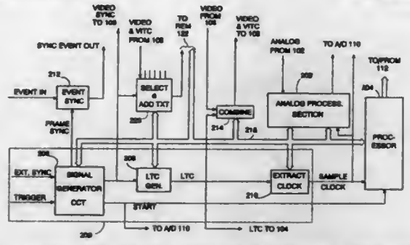
MONITORING SYSTEM AND INTERFACE APPARATUS THEREFOR

Gerald E. Loeb, Kingston; Roy A. Young, Odessa, and Kevin H. Hood, Kingston, all of, Canada, assignors to Queen's University at Kingston, Kingston, Canada

Filed Jul. 1, 1993, Ser. No. 84,928

Int. Cl.[6] G06F *3/05*

U.S. Cl. 395—550 **54 Claims**



1. A monitoring system comprising a plurality of monitoring devices for acquiring data about a subject, an analog-to-digital converter means responsive to a sampling clock signal for digitizing data acquired by the monitoring devices, and interface apparatus for receiving data from the monitoring devices and interconnecting with the analog-to-digital converter means, the interface apparatus comprising timing means including means for generating a time code signal, means for deriving the sampling clock signal from, and synchronized to, the time code signal, and means for supplying said sampling clock signal to the analog-to-digital converter means.

5,551,017

POLYCYCLIC TIMING AND APPARATUS FOR PIPELINED COMPUTER OPERATION

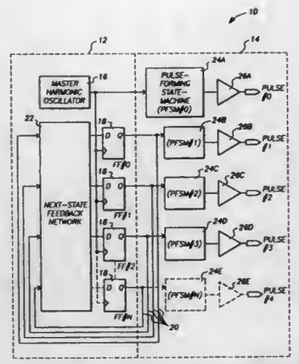
Michael A. Baxter, Sunnyvale, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 53,724, Apr. 26, 1993. This application May 19, 1995, Ser. No. 444,659

Int. Cl.[6] G06F *1/08;1/04*

U.S. Cl. 395—550 **14 Claims**

1. An apparatus for generating a plurality of clock signals synchronously originated with independent phase, said apparatus comprising:



a master state machine having a first and a second output, and including an oscillator that generates a master clock signal, said master state machine producing a first and a second synchronous control signal in response to the master clock signal, said master state machine providing the first synchronous control signal at the first output and the second synchronous control signal at the second output; and

a slave state machine having a first and a second input and a first and a second output, the slave state machine receiving the first and second synchronous control signals from the master state machine at the first and second inputs, respectively, the slave state machine producing a first asynchronous pulse stream at the first output of the slave state machine in response to the first synchronous control signal and producing a second asynchronous pulse stream at the second output of the slave state machine in response to the second synchronous control signal.

5,551,018

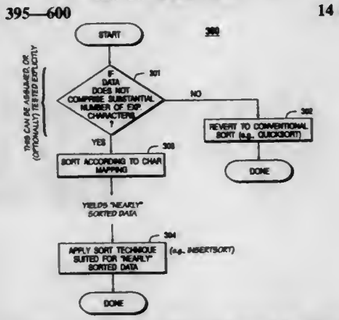
METHOD OF STORING NATIONAL LANGUAGE SUPPORT TEXT BY PRESORTING FOLLOWED BY INSERTION SORTING

Kurt Hansen, Scotts Valley, Calif., assignor to Borland International, Inc., Scotts Valley, Calif.

Filed Feb. 2, 1993, Ser. No. 12,703

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—600 **14 Claims**



1. In a computer system, an improved method for ordering into a desired sequence a set of records storing international (National Language Support) information, each said record for storing at least one alphanumeric data member, selected ones of the data members requiring expansion into multiple characters for sorting, the improvement comprising:

(a) sorting the records without regard to data members requiring expansion into multiple characters for sorting, whereby an ordered set of records is created that is substantially ordered according to the stored international information; and

(b) creating an ordered set of records by sorting said ordered set of records with insertion sort technique, with each data member requiring expansion being sorted as its multiple-character equivalent resulting in a set of records ordered according to the stored international information.

5,551,019

METHODS AND SYSTEMS FOR SORTING MULTIPLYING INDEXED DATA

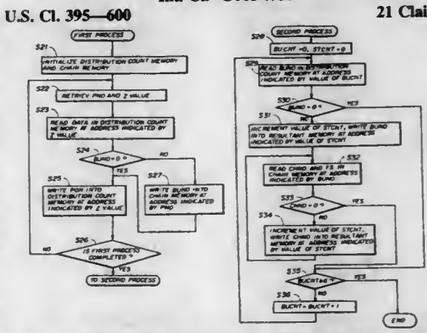
Yasuhiro Izawa, Suita; Tatsuya Fujii, Nishinomiya; Naoto Shiraishi, Toyonaka; Masanobu Fukushima, Toyonaka, and Tatsuya Nakajima, Toyonaka, all of, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 22, 1993, Ser. No. 173,499

Claims priority, application Japan, Dec. 25, 1992, 4-359476

Int. Cl.[6] G06F *7/08*

U.S. Cl. 395—600 **21 Claims**



1. A method of sorting data sets each having a pair of a unique id and a multiply occurring value, the data sets being sorted in an ascending order based upon the multiply occurring value via a first intermediate table, a second intermediate table and a result table, comprising the steps of:

a) initializing the first intermediate table, the second intermediate table and the result table with a predetermined value;

b) placing each data set at a first storage address in the first intermediate table in an ascending order based upon the multiply occurring value, said first storage location being derived from the multiply occurring value, one of the data sets stored at said first storage location defining a stored data set;

c) replacing said stored data set with another of the data sets if the multiply occurring value collides onto said first storage location, said another of the data sets defining a current data set, said stored data set being replaced defining a replaced data set;

d) placing the unique id of said replaced data set at a second storage location in the second intermediate table, said second storage location derived from the unique id of said current data set; and

e) merging the first intermediate table and the second intermediate table into the result table.

5,551,020

SYSTEM FOR THE COMPACTING AND LOGICAL LINKING OF DATA BLOCKS IN FILES TO OPTIMIZE AVAILABLE PHYSICAL STORAGE

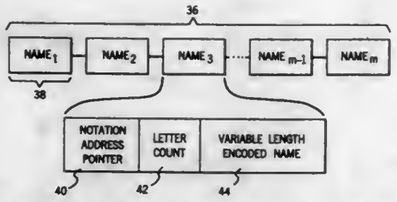
Stephen W. Flax, Wauwatosa, and Dennis E. Bahr, Middleton, both of Wis., assignors to Flextech Systems, Inc., Brookfield, Wis.

Filed Mar. 28, 1994, Ser. No. 219,027

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—600 **20 Claims**

1. A method for compressing data files for storage on a memory media comprising the steps of:



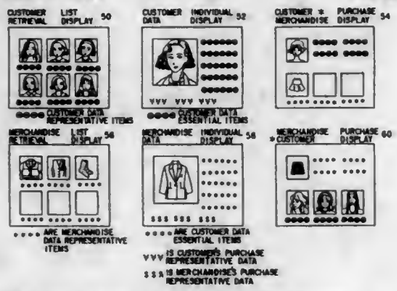
a. processing the data within each file, wherein the step of processing comprises
(1) ordering the data;
(2) encoding the data;
(3) packing the encoded data to form data strings;
b. linking the files to form an overall data structure wherein the relative relationship between files is determined;
c. partitioning the data strings within each file to form data blocks and determine the physical location of said blocks on the memory media so that the available memory of the memory media is optimized, while the relative relationship between files is maintained;
d. generating reference data within each data block to relate the physical location of said blocks on the memory media; and
e. writing the data blocks to the memory media.

5,551,021

IMAGE STORING MANAGING APPARATUS AND METHOD FOR RETREIVING AND DISPLAYING MERCHANDISE AND CUSTOMER SPECIFIC SALES INFORMATION

Hisaryuki Harada, and Toshitsugu Tomita, Tokyo, both of, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 25, 1994, Ser. No. 279,993
Claims priority, application Japan, Jul. 30, 1993, 5-189817; Feb. 15, 1994, 6-018150
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—600 **24 Claims**



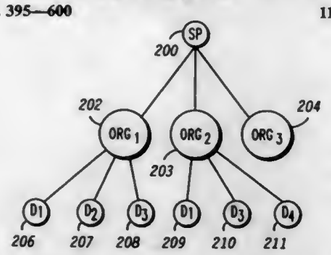
1. An image storage managing apparatus comprising:
customer data storage means for storing various types of customer information including customer image data relating to individual customers;
merchandise data storage means for storing various types of merchandise information including merchandise image data relating to individual items of merchandise;
sales data storage means for storing customer-merchandise link data for each individual customer, said customer-merchandise link data indicating individual items of merchandise purchased by said individual customer; and
customer-merchandise retrieving means for retrieving customer information relating to a specific customer and merchandise information relating to individual items of merchandise purchased by said specific customer from said customer data storage means and said merchandise data storage means, respectively, based on said customer-merchandise link data stored in said sales data storage means, and for displaying said retrieved customer information and merchandise information, including respective customer image data and merchandise image data.

5,551,022

HODAL FREE DATA STRUCTURE FOR STORING, CONSOLIDATING, AND DISPLAYING MICROBIOLOGICAL LABORATORY RESULTS

M. Hasan Tariq, and Michael R. Ostler, both of Tempe, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 980,082, Nov. 23, 1992, abandoned.
This application Jul. 11, 1994, Ser. No. 272,450
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—600 **11 Claims**



1. A method executed by a computer as part of a computer program for displaying lab data in a composite display matrix on a display monitor, said lab data including data identifying one or more specimens, one or more organisms grown from each specimen, and one or more drugs tested against the organisms for a reaction, the lab data being entered into a lab computer to form a lab report, said lab computer coupled to said computer, said lab report being received by said computer from said lab computer, said method comprising the steps of:
a) determining relationships among said lab data including determining which of the organisms are grown from which of the specimens and which of the drugs are tested against which of the organisms;
b) storing said lab data and said relationships in a nodal tree structure in said computer if said lab data is not already stored in said computer;
c) consolidating said lab data into said composite display matrix by arranging and combining said lab data based on said relationships between said lab data, said composite display matrix having a first dimension for each of said organisms grown for each of said specimens, a second dimension for each of said drugs tested against any of said organisms, and a cell at each of a number of different coordinate combinations of said first and second dimension, said cell containing drug sensitivity information indicating sensitivity of said organisms to said drugs; and
d) displaying said composite display matrix on said display monitor.

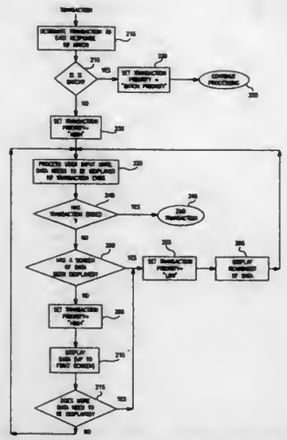
5,551,023

SYSTEM OF DATABASE CONCURRENCY CONTROL BASED ON TRANSACTION TYPES AND PRIOR ACCESS TO A DATA SET

Rafael Alonso, Plainsboro, N.J., assignor to Panasonic Technologies, Inc., Princeton, N.J.

Filed Aug. 5, 1994, Ser. No. 286,709
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—600 **10 Claims**

1. A method of concurrency control for a database management system, comprising the steps of:



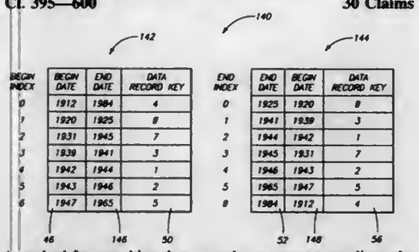
a) designating each of a plurality of transactions intended for the database management system as being one of fast-response type and batch type;
b) determining if each of said plurality of transactions that is designated fast-response type has been allowed to access a first set of data;
c) assigning a high database access priority value for each of said plurality of transactions that is designated fast-response type and has not accessed the first set of data; and
d) assigning a low database access priority value for each of said plurality of transactions that is designated fast-response type and has accessed the first set of data;
wherein each of said plurality of transactions that is assigned said high database access priority is permitted access to said database management system before each of said plurality of transactions that is assigned said low database access priority.

5,551,024

SYSTEM FOR IDENTIFYING DATA RECORDS IN A DATABASE USING A DATA STRUCTURE WITH LINKED PARAMETERS IN A SEARCH RANGE

Anthony B. Waters, Redmond, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed Oct. 13, 1994, Ser. No. 322,957
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—600 **30 Claims**



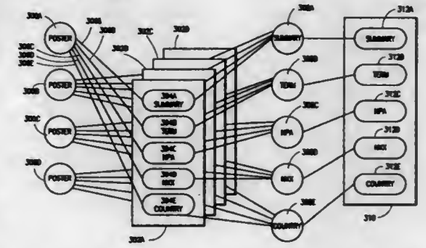
1. A method for searching data records on a storage medium, the method comprising the following steps:
providing data records on a storage medium, individual data records being characterized by associated first and second search parameters;
providing a first parameter table which lists the first search parameters of the data records in a selected order, the first parameter table containing record keys which relate the first search parameters to their associated data records;
providing a second parameter table which lists the second search parameters of the data records in a selected order, the second search parameters being associated with corresponding first search parameters, the second parameter table containing the record keys which also relate the second search parameters to their associated data records;
selecting a search range;
locating a first search parameter in the first parameter table which falls within the search range;
referencing a second search parameter that is associated with the located first search parameter to determine if the second search parameter falls within the search range; and
in the event the second search parameter falls within the search range, identifying the data record corresponding to the associated first and second search parameters using the record key.

5,551,025

RELATIONAL DATABASE SYSTEM FOR STORING DIFFERENT TYPES OF DATA

Daniel L. O'Reilly, and Matthew J. Brazier, both of Colorado Springs, Colo., assignors to MCI Communications Corporation, Washington, D.C.

Filed Nov. 30, 1994, Ser. No. 350,186
Int. Cl.[6] G06F *17/00*
U.S. Cl. 395—600 **24 Claims**



16. In a telecommunications network, a system for storing data, comprising:
means for retrieving from a traffic statistics system at least call statistics collected by said traffic statistics data system;
means for grouping said statistics data into different types of statistics data;
a first memory means having a plurality storage files;
means for routing each of said different types of statistics data to its own storage file in said first memory means to form respective sets of different types of statistics data;
means for retrieving from each of said storage files in said first memory means at predetermined periodic time periods respective stored sets of said different types of statistics data; and
a second memory means for storing each said stored set of respective types of statistics data at a predefined time period for longer term storage, said second memory means operating slower than said first memory means.

VOI 1189 155 4 AG 27 1996 UMI

5,551,026

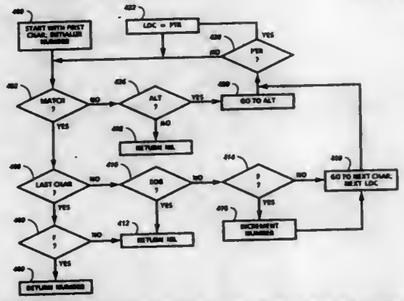
STORED MAPPING DATA WITH INFORMATION FOR SKIPPING BRANCHES WHILE KEEPING COUNT OF SUFFIX ENDINGS

Ronald M. Kaplan, Palo Alto, and Martin Kay, Menlo Park, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 776,909, Oct. 16, 1991, which is a continuation of Ser. No. 563,885, Aug. 6, 1990, abandoned, which is a continuation of Ser. No. 54,462, May 26, 1987, abandoned. This application May 30, 1995, Ser. No. 453,616

Int. Cl.[6] G06F *17/30;17/22*

U.S. Cl. 395—600 **15 Claims**



1. An article of manufacture for use in a machine that includes a processor, the article comprising:

memory for storing data, the data stored in the memory being accessible by the processor when the article is used in the machine; and

mapping data stored in the memory; the mapping data indicating a set of strings of elements; the mapping data comprising;

data units arranged in a sequence and indicating information about strings in the set such that the mapping data can be used by the processor to perform mapping between each string in the set and a respective number by keeping count of suffix endings; the data units including:

a prefix subsequence of data units that a processor can access in mapping between each string in the set that begins with a first prefix and the respective number; the set including at least two strings that begin with the first prefix;

for a first subset of the strings that begin with the first prefix, a first branch subsequence; and

for a second subset of the words that begin with the first prefix, a second branch subsequence;

the mapping data further including:

branch choosing information that the processor can use to determine whether to access the first branch subsequence or, alternatively, to skip the first branch subsequence and access the second branch subsequence; the branch choosing information being associated with the prefix subsequence so that the processor can determine from the prefix subsequence whether to access the first branch subsequence or to skip the first branch subsequence and access the second branch subsequence;

suffix ending information associated with the prefix subsequence so that the processor can keep count of suffix endings if the processor determines to skip the first branch subsequence and access the second branch subsequence; the suffix ending information indicating a number of suffix endings that are skipped if the first branch subsequence is skipped; and

location information the processor can use to obtain a location in the memory of the second branch subsequence; the location information being associated with the prefix subsequence so that the processor can use the location information to access the second branch subsequence if the processor determines to skip the first branch subsequence and access the second branch subsequence;

the suffix ending information and the location information together providing sufficient information that the processor can skip the first branch subsequence and keep a count of suffix endings that accurately reflects any suffix endings skipped.

5,551,027

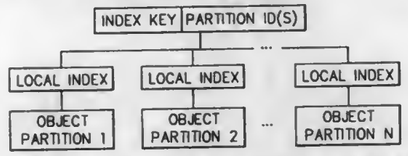
MULTI-TIERED INDEXING METHOD FOR PARTITIONED DATA

David M. Choy, Los Altos, and Chandrasekaran Mohan, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 1,491, Jan. 7, 1993, abandoned. This application Sep. 11, 1995, Ser. No. 526,723

Int. Cl.[6] G06F *9/355;12/00*

U.S. Cl. 395—600 **11 Claims**



1. A method for maintaining consistency between a second index table and a first index table in a multi-tiered index structure to handle the insertion of an index entry into a unique index, the multi-tiered index structure including a respective second index table of index key values corresponding with each respective partition of a partitioned database and a first index table containing at least one unique first index entry for each index key value in each of the respective second index tables,

i) wherein the second index table has a second index identifier and contains second index entries, each of the second index entries having an identifier which identifies an object in the respective database partition corresponding with the second index table, and having a second index key value which relates to the identified object, at least some of the index key values being distinct, and

ii) wherein the first index table has at least one first index entry for each distinct one of the second index key values in each second index table, each of the first index entries having a second index identifier which identifies a second index table, and having a first index key value which relates to one of the second index key values in the identified second index table,

the method comprising the computer-implemented steps of:

A) determining if the second index key value in the index entry to be inserted is already present in the second index table;

B) if the second index key value in the index entry to be inserted is already present in the second index table, then rejecting the insertion; and

C) if the second index key value in the index entry to be inserted is not already present in the second index table, then performing the steps of:

1) inserting the index entry into the second index table;

2) determining if the first index key value which relates to the second index key value is already present in the first index table, and

3) if the first index key value which relates to the second index key value is already present, performing the steps of:

i) deleting the inserted second index entry from the second index table; and

ii) rejecting the insertion;

4) determining if the first index key value which relates to the second index key value is present in the first index table, and,

5) if the first index key value which relates to the second index key value is not present, then inserting, into the first index table,

i) a first index entry having a first index key value relating to the second index key value· and

ii) a second index identifier identifying the second index table.

5,551,028

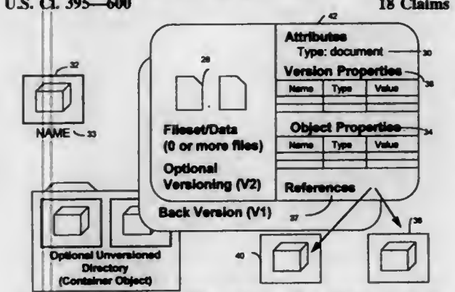
DESIGN DATA MANAGEMENT SYSTEM AND ASSOCIATED METHOD

Robert Voll, West Linn, Oreg.; Sandeep Arora, Vancouver, Wash.; William C. Berg, Beaverton, Oreg.; Brad Campbell, Hillsboro, Oreg.; Jim Clauss, Tigard, Oreg.; Richard Ellermeier, Beaverton, Oreg.; Manuel Gonzales, San Jose, Calif.; Eric Peterson, Portland, Oreg.; Niranjan Ramakrishmnan, Tigard, Oreg.; Brad Sergent, Lake Oswego, Oreg.; Sam Stevens, Portland, Oreg.; Eric Williams, Sunnyvale, Calif., and Ron Wold, Beaverton, Oreg., assignors to Mentor Graphics Corporation, Wilsonville, Oreg.

Continuation of Ser. No. 266,327, Jun. 27, 1994, abandoned, which is a continuation of Ser. No. 663,142, Feb. 28, 1991, abandoned. This application Feb. 28, 1995, Ser. No. 396,336

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—600 **18 Claims**



1. In a computer automated design system having a display, memory and multiple software tools for operating on data files representing a design, a method of managing design data for ease of manipulation by a user, the method comprising the following steps:

providing in memory a design object type that includes a fileset definition of multiple data files representing related but distinct aspects of the design object type;

creating an instance of the design object type, the data files of the instance each containing design data on a related aspect of a particular design represented by the instance;

providing on the display a symbol visible to a user which represents the instance;

associating with the design object type a software tool that is invoked upon opening of the instance; and

in response to an opening of the instance, opening all of the data files in the fileset corresponding to the instance and combining the data of the data files to provide the particular design and invoking the associated software tool for communication with the data files.

5,551,029

METHOD FOR ASSOCIATING INTEGRITY MAINTENANCE CONSTRAINTS WITH DATA OBJECT CLASSES IN AN OBJECT-ORIENTED DATABASE

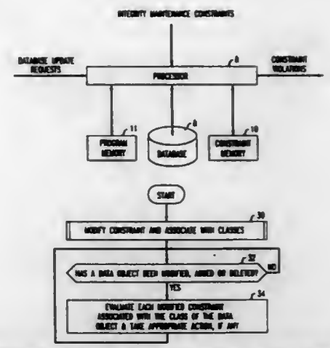
Hosagrahar V. Jagadish, Berkeley Heights, N.J., and Xiaolei Qian, Cupertino, Calif., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Aug. 18, 1993, Ser. No. 108,406

Int. Cl.[6] G06F *17/30;9/45*

U.S. Cl. 395—600 **14 Claims**

1. A computer-implemented method for associating a constraint stored in a memory with one or more data object classes in an object-oriented database, wherein the constraint reflects an initial



constraint which comprises zero or more initial quantifiers and a quantifier-free boolean expression, the method comprising the steps of

identifying one or more data object classes upon which an evaluation of the constraint depends; and

associating the constraint with the one or more identified data object classes,

wherein the identifying step comprises the steps of

(a) choosing a non-primitive reference expression in the quantifier-free boolean expression and determining a primitive reference expression at the head of the non-primitive reference expression;

(b) modifying the initial constraint to produce a modified constraint by

(i) replacing the primitive reference expression in the quantifier-free boolean expression with a first variable;

(ii) augmenting the zero or more initial quantifiers with a first universal quantifier of the first variable over all data objects in a data object class, which class comprises the data object referred to by the primitive reference expression; and

(iii) augmenting the quantifier-free boolean expression with a disjunctive condition specifying that the first variable is not equal to the primitive reference expression; and

(c) identifying the data object class comprising the data object referred to by the primitive reference expression.

5,551,030

METHOD AND APPARATUS FOR INTEGRATING APPLICATIONS IN A GRAPHICAL USER INTERFACE ENVIRONMENT WITH A RULES DATABASE

Thomas M. Linden, Los Gatos; Jon D. Reinke, San Jose, and Frank B. Schmuck, Campbell, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 987,230, Dec. 8, 1992, abandoned. This application May 2, 1995, Ser. No. 437,115

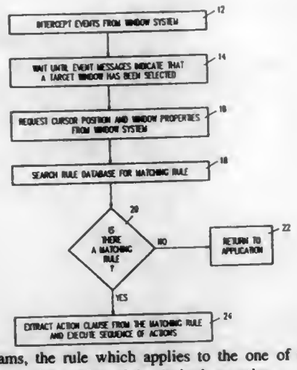
Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—600 **22 Claims**

1. A processing system comprising:

means for supporting a plurality of application programs and objects thereof, the objects having a first plurality of respective properties, the means for supporting including means for supporting the application programs according to a second plurality of respective properties thereof; and

a rule database including a plurality of rules for integrating the application programs and objects thereof, each of the rules including means for identifying the properties of one of the application programs and one of the objects thereof to which the rule applies, and means for invoking a desired operation by the one of the application programs, whose property is identified therein, on the one of the objects whose property is identified therein, the property of the one of the objects being incompatible with the property of the one of the application



programs, the rule which applies to the one of the objects facilitating invocation of the desired operation.

5,551,031

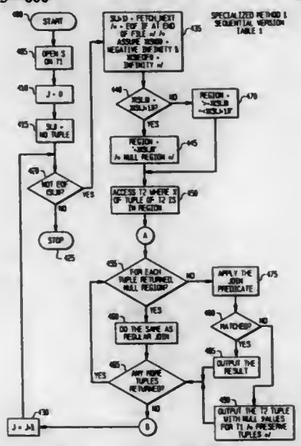
PROGRAM STORAGE DEVICE AND COMPUTER PROGRAM PRODUCT FOR OUTER JOIN OPERATIONS USING RESPONSIBILITY REGIONS ASSIGNED TO INNER TABLES IN A RELATIONAL DATABASE

Josephine Miu-Kung Cheng; Chandrasekaran Mohan, and Mir H. Pirahesh, all of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 325,942, Oct. 19, 1994, which is a continuation of Ser. No. 749,088, Aug. 23, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 487,300

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—600 **22 Claims**



1. A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform method steps for performing a right outer join with specified join predicates in a database system having an inner table and an outer table, each of which tables is composed of a plurality of tuples having multiple columns, the outer table being ordered or indexed in a sorted sequence on a selected set of columns, said method steps comprising:

determining a plurality of responsibility regions in the inner table using a selected set of columns such that every tuple in the inner table belongs to one and only one responsibility region; and

processing each responsibility region by outputting all tuples of the inner table which belong to the responsibility region, wherein if an inner tuple and an outer tuple match by satisfying all the specified join predicates, outputting the outer tuple with the inner tuple, and if the inner and outer tuples do not match, outputting null values for the outer tuple with the inner tuple.

5,551,032

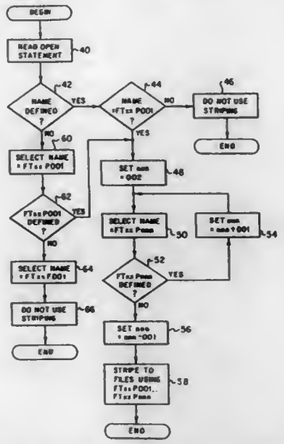
METHOD FOR FILE TRANSFER

Leonard E. Lyon, Mountain View, and Richard L. Teed, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 869,210, Apr. 13, 1992, Pat. No. 5,459,858, which is a continuation of Ser. No. 461,343, Jan. 5, 1990, abandoned. This application Jun. 30, 1995, Ser. No. 497,244

Int. Cl.[6] G06F *7/00*

U.S. Cl. 395—600 **8 Claims**



1. An article of manufacture for use in a computer system for striping file data across a plurality of attached disk storage devices, the computer system having means to write data to the disk storage devices, run time environment means, and means to cause execution of programs containing control statements that define file names in the run time environment means and containing object code including file open statements,

said article of manufacture comprising a computer-readable storage medium having a computer program code embodied in said medium for causing the computer to:

detect an execution of at least one of the file open statements in the object code;

query the run time environment means for a definition of a preselected file name, and if the preselected file name has been defined in the run time environment means, cause the computer to:

select a number (N), greater than one, of stripes if the preselected file name has been defined in the run time environment means, the number being derived from the preselected file name; and

stripe file data associated with the detected file open statement by division of the file data into N blocks, and write the N blocks to N disk storage devices in parallel.

5,551,033

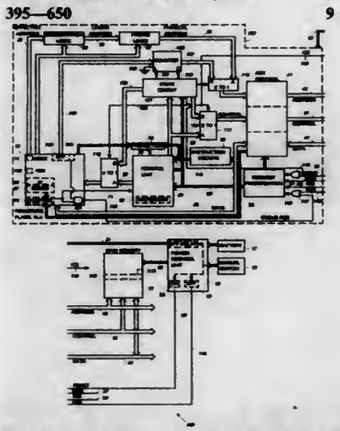
APPARATUS FOR MAINTAINING ONE INTERRUPT MASK REGISTER IN CONFORMITY WITH ANOTHER IN A MANNER INVISIBLE TO AN EXECUTING PROGRAM

Mark J. Foster, Lincoln Township; Saifuddin T. Fakhruddin, St. Joseph; James L. Walker, Benton Harbor; Matthew B. Mendelow; Jiming Sun, both of St. Joseph; Rodman S. Brahman, St. Joseph Township; Michael P. Krau, Hagar Township; Brian D. Willoughby; Michael D. Maddix, both of Lincoln Township; Steven L. Belt, Stevensville; Scott A. Hovey, St. Joseph, and Mark A. Ruthenbeck, Lincoln Township, all of Mich., assignors to Zenith Data Systems Corporation, Buffalo Grove, Ill.

Division of Ser. No. 752,342, Aug. 30, 1991, which is a continuation-in-part of Ser. No. 705,039, May 17, 1991. This application Jun. 4, 1992, Ser. No. 893,432

Int. Cl.[6] G06F *1/00;13/24*

U.S. Cl. 395—650 **9 Claims**



1. An apparatus comprising: a processor having an interrupt input, first and second mask registers controlled by said processor and each having a bit indicating whether an interrupt signal present at said interrupt input is to be enabled or disabled, first means responsive to said interrupt input and said bit in said first mask register for respectively permitting and obstructing recognition of said interrupt signal by said processor when said bit of said first mask register is respectively indicating that said interrupt signal is respectively enabled and disabled, second means responsive to said interrupt input and said bit in said second mask register for respectively permitting and obstructing recognition of said interrupt signal by a further circuit when said bit of said second mask register is respectively indicating that said interrupt signal is respectively enabled and disabled, and means responsive to loading of said first mask register by said processor for conforming said bit of said second mask register to said bit of said first mask register.

5,551,034

SYSTEM FOR SYNCHRONIZING REPLICATED TASKS

Dominique Herz, L'Hay Les Roses, France, assignor to Cegelec, Levallois-Perret, France

Filed Jan. 7, 1994, Ser. No. 178,886

Claims priority, application France, Jan. 8, 1993, 93 00147

Int. Cl.[6] G06F *9/46*

U.S. Cl. 395—650 **4 Claims**

1. A method of operating a data processing system for running two or more identical-data-receiving replicated tasks in parallel, said method comprising the steps of:

transferring messages to the replicated tasks, each message including data to be processed and a time stamp from a clock in said system;

sequencing the messages transferred to each replicated task in a chronological order so as to be processed by the replicated task in said chronological order; and

determining a stability time for each message, wherein said stability time defines the time from which the replicated task may process the message,

wherein in said sequencing step, said chronological order is based on the message time stamp plus a respective first time constant determined for each message, and in said determining step, the stability time of the message is based on the message time stamp plus a respective second time constant determined for said message.

5,551,035

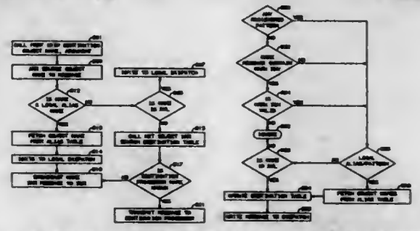
METHOD AND APPARATUS FOR INTER-OBJECT COMMUNICATION IN AN OBJECT-ORIENTED PROGRAM CONTROLLED SYSTEM

Erich C. Arnold, Glen Ellyn; Olivia M. Gagliardi, Wheaton; Wayne E. Hyatt, Glenview; Lawrence G. Mayka, Aurora, and Todd C. Morgan, Oak Park, all of Ill., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 871,607, Apr. 20, 1992, abandoned, which is a continuation-in-part of Ser. No. 374,501, Jun. 30, 1989, abandoned. This application Mar. 16, 1995, Ser. No. 405,578

Int. Cl.[6] G06F *15/16*

U.S. Cl. 395—650 **9 Claims**



1. A computer-implemented method for controlling a telecommunications system by using inter-object message communication, said telecommunication system comprising an operating system, a linker, and a plurality of object means for controlling functionality of said telecommunication system, each of said object means controlling a subset of said functionality and a subset of data, said method comprising:

generating a message in an origination object means, said origination object comprising one of said plurality of object means, said message being divided into parts comprising a symbolic name of a destination object means, said destination object means comprising one of said plurality of object means different from said origination object means, a designation of one or more predefined system operations to be performed on said message by said operating system, and an argument list;

said origination object means causing said operating system to transmit said message from said origination object to said linker, said linker having a linker table comprising a plurality of symbolic names and a corresponding plurality of address pointers for each one of said plurality of object means, said linker comparing said symbolic name in said message to said plurality of symbolic names in said linker table in order to determine one or more address pointers corresponding to said symbolic name; and

said linker object controlling said operating system to perform said designated one or more predefined system operations on said message and providing said determined one or more address pointers of a destination object means to said one or more predefined operations, whereby, said telecommunications system is responsive to said system to operations to perform its operations.

5,551,036

METHOD AND SYSTEM FOR GENERATING OPERATION SPECIFICATION OBJECT INFORMATION

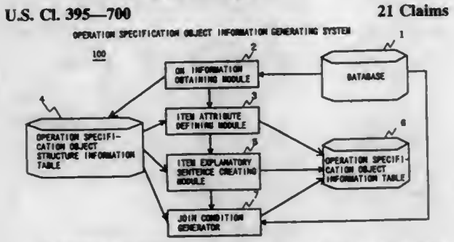
Tadahiro Kiyama, Yao; Hisao Mase, Hirakata; Hiroshi Tsuji, Itami, and Hiroshi Kinukawa, Machida, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 9, 1993, Ser. No. 104,173

Claims priority, application Japan, Aug. 21, 1992, 4-222318

Int. Cl.[6] G06F *17/20*

U.S. Cl. 395—700 **21 Claims**



1. A method for generating operation specification object information comprising information about a plurality of items in an operation specification object, in a system having a function for converting an input sentence, input by a user and which represents an operation specification which is input to said operation specification object, wherein said operation specification object has at least one table having said plurality of items, to an operation specification instruction wherein said operation specification instruction comprises a command for executing an operation in the system which may be interpreted by said operation specification object, said method comprising the steps of:

performing at least one of a plurality of defining steps, said defining steps comprising:

defining a first relationship between a word in each of said items in said operation specification object and one of a plurality of unit words;

defining a second relationship between each of said items in said operation specification object and one of a plurality of interrogative pronouns wherein said interrogative pronoun identifies the item as a search object when said operation specification object is searched; and

identifying that an item exists in both a first table and a second table and defining a third relationship comprising a join condition between said item in said first table and said item in said second table; and

generating the operation specification object information on a basis of a result from said step of performing at least one of a plurality of defining steps.

5,551,037

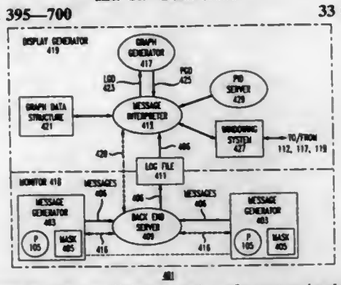
APPARATUS AND METHODS FOR VISUALIZING OPERATION OF A SYSTEM OF PROCESSES

Glenn S. Fowler, Scotch Plains, N.J.; David G. Korn, New York, N.Y.; Eleftherios Koutsofios, Chatham, and Stephen C. North, Califon, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 19, 1993, Ser. No. 154,771

Int. Cl.[6] G06F *3/153*

U.S. Cl. 395—700 **33 Claims**



1. Apparatus for visualizing operation of a system implemented by means of processes running in at least one computer system, the apparatus comprising:

monitoring means for causing at least one of the processes to send a message when the process performs an operating system call, the message indicating at least the process and the operating system call; and

means for receiving the message and responding thereto by making an alteration in a graphical display of the system which includes at least an entity representing the one process, the alteration reflecting an effect on the system of the operating system call which resulted in the message being sent.

5,551,038

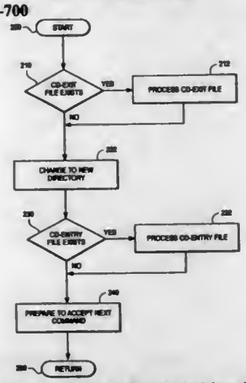
DIRECTORY BASED COMPUTER ENVIRONMENT

Andrew R. Martin, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 16, 1992, Ser. No. 914,075

Int. Cl.[6] G06F *15/20*

U.S. Cl. 395—700 **10 Claims**



9. A system having at least a display and interface adapter, the system for customizing a computer environment in response to a change directory command, comprising:

(a) a processor;

(b) means for inputting a change directory command;

(c) means for executing the change directory command;

(d) means for detecting the new directory;

(e) in response to detecting the new directory, means for controlling the processor to search for an environment file on the new directory, wherein the environment file contains operating system commands; and

(f) means for controlling the processor to execute the operating system commands to reconfigure the operating system.

5,551,039

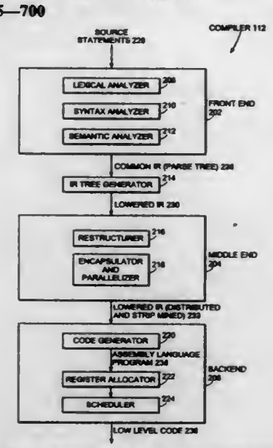
COMPILING A SOURCE CODE VECTOR INSTRUCTION BY GENERATING A SUBGRID LOOP FOR ITERATAIVELY PROCESSING ARRAY ELEMENTS BY PLURAL PROCESSING ELEMENTS

Tobias M. Weinberg, Somerville; Lisa A. Tennies, Bedford, and Alexander D. Vasilevsky, Watertown, all of Mass., assignors to Thinking Machines Corporation, Bedford, Mass.

Continuation of Ser. No. 827,945, Feb. 3, 1992, abandoned. This application Sep. 30, 1994, Ser. No. 315,662

Int. Cl.[6] G06F *9/45*

U.S. Cl. 395—700 **14 Claims**



1. A method of transforming a strip mined lowered intermediate representation ("IR") of a source program to a low level program adapted for use with a data parallel computer having multiple processing elements, each of the processing elements having multiple pipelined functional units, the lowered IR having one or more code blocks, each of the code blocks having inline elemental vector instructions which operate on arrays, wherein all arrays in a code block have an identical size and layout, said method comprising the steps of:

(1) generating assembly language code representing the elemental vector instructions such that said assembly language code comprises a plurality of low-level vector instructions, each of said low-level vector instructions when executed in a processing element of the data parallel computer enabling said processing element to execute in a pipelined functional unit a series of elemental operations each involving at least one array element stored in said processing element, said series of elemental operations each enabling performance of a function specified by said each of said low-level vector instructions, wherein execution of a predetermined number of said operations is complete prior to initiating execution of an ensuing low-level vector instruction in said processing element, said predetermined number selected so as to reduce deleterious effects of pipeline delays in said pipelined functional unit; and

(2) scheduling execution of said low-level vector instructions by the processing elements of the data parallel computer such that at least some of said low-level vector instructions are executed in parallel in the processing elements of the data parallel computer.

5,551,040

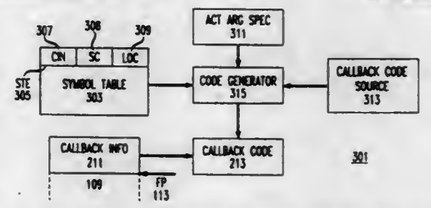
METHODS AND APPARATUS FOR SPECIFYING THE CONTEXTS OF NAMES IN CALLBACK-STYLE PROGRAMMING

Charles D. Blewett, Madison, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 71,144, Jun. 2, 1993, abandoned. This application Jan. 9, 1995, Ser. No. 369,976

Int. Cl.[6] G06F *9/45*

U.S. Cl. 395—700 **10 Claims**



1. Code generation apparatus used in a computer system to generate machine-executable instructions, the code generation apparatus including at least

a text written in a programming language, the text including a definition of a function, and

means for generating the machine-executable instructions from the text,

the code generation apparatus having the improvement comprising:

in the text,

a name which has global scope in the text and specifies a value which is separately instantiated for each execution of the function and

a use specification which specifies how the name is used in an execution of the function; and

in the means for generating the machine-executable instructions,

means responsive to the name for making a definition thereof which indicates that the name has global scope and specifies a value which is separately instantiated for each execution of the function; and

means responsive to the definition and to the use specification for generating the machine-executable instructions for the function such that when the function is executed, a separate instance of the value represented by the name is created and that instance is used in the execution as specified by the use specification.

5,551,041

WAIT FOR SERVICE REQUEST IN AN ICONIC PROGRAMMING SYSTEM

Douglas C. Beethe, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 686,861, Apr. 12, 1991, abandoned, which is a continuation-in-part of Ser. No. 63,102, May 14, 1993, Pat. No. 5,313,575, which is a continuation of Ser. No. 537,550, Jun. 13, 1990. This application Dec. 15, 1992, Ser. No. 991,485

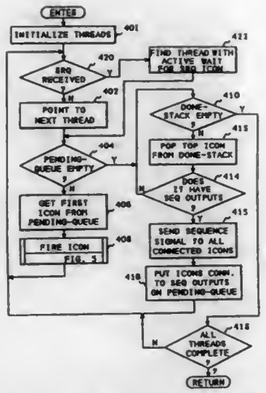
Int. Cl.[6] G06F *13/14*

U.S. Cl. 395—733 **8 Claims**

1. In an iconic programming system process executing in a computer system, said programming system process having at least one thread of connected icons, a method for processing service requests from devices connected to said computer system, said method comprising the steps of:

(a) starting processing of icons in all threads within said iconic programming system process;

(b) when a wait for service request icon is processed on a singular thread, stopping further processing on said singular thread, and setting a status of said singular thread to a status



which indicates that processing of said singular thread is stopped until a service request is received;

(c) when a service request from a device occurs, stopping processing of all threads not having said status which indicates that processing of said singular thread is stopped until a service request is received, and restarting processing of all threads having said status which indicates that processing of said singular thread is stopped until a service request is received; and

(d) after processing all threads having said status which indicates that processing of said singular thread is stopped until a service request is received, restarting processing all other threads.

5,551,042

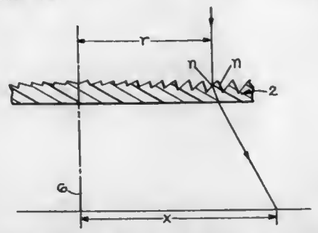
STRUCTURED FILMS AND USE THEREOF FOR DAYLIGHT ILLUMINATION

Michael C. Lea, Harlow, England, and Paul A. Jaster, Arden Hills, Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Apr. 26, 1993, Ser. No. 53,064

Int. Cl.[6] G02B *3/08*

U.S. Cl. 359—742 **13 Claims**



1. A transparent film having a structured surface forming a plurality of negative Fresnel lenses each of said lenses having a plurality of refracting facets, each facet having an associated riser wherein each riser makes an angle with said film such that each riser is parallel to the direction of travel through the film for light incident on the riser's associated facet in a direction normal to said film.

5,551,043

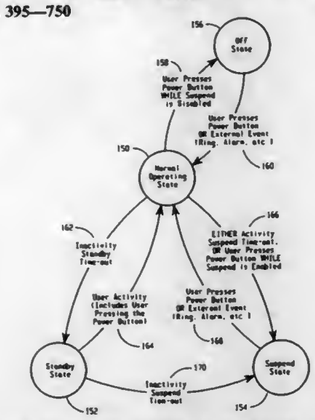
STANDBY CHECKPOINT TO PREVENT DATA LOSS

Dwayne T. Crump; Steven T. Pancoast; Paul H. Benson IV, all of Lexington, and Herbert S. Steelman, Lawrenceburg, all of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 7, 1994, Ser. No. 303,103

Int. Cl.[6] G06F *1/32*

U.S. Cl. 395—750 **21 Claims**



1. A computer system operating in any selected one of four states of power management, namely a normal operating state in which code is executed normally by said computer system, a standby state, a checkpoint state, and a suspend state, the system comprising:

(a) a CPU for executing code;

(b) a control unit electrically connected to said CPU for changing said computer system between each of said states and at least one other of said states in response to at least one of a first plurality of preselected events;

(c) a peripheral device electrically connected to said CPU and said control unit and operating in a selected one of a relatively high electrical power usage state and a relatively low electrical power usage state, said peripheral device changing between said high and low electrical power usage states in response to said control unit;

(d) a power supply electrically connected to said CPU and said control unit and said peripheral device and comprising power selection circuitry for selectively providing system power from an external source to said computer system, said power supply being operating in a selected one of a first power supply state and a second power supply state, said power supply changing between said first and second power supply states responsive to said control unit;

(e) an electromechanical non-volatile storage unit electrically connected to said CPU for receiving and storing and delivering data;

(f) volatile memory for storing volatile memory data and electrically connected to said CPU; and

(g) volatile registers for storing volatile register data and electrically connected to said CPU;

(1) wherein in said normal operating state, said power supply is in said first power supply state, said peripheral device is in said high electrical power usage state, and code is executed normally by said computer system;

(2) wherein in said standby state, said power supply is in said first power supply state, said peripheral device is in said low electrical power usage state, and code continues being executed by said computer system;

(3) wherein in said checkpoint state, said power supply is in said first power supply state, said peripheral device is in said low electrical power usage state, code continues being executed by said computer system, if power from the external source to said power supply is interrupted then

volatile register data and volatile memory data would be lost from the volatile memory and volatile registers, and volatile memory data and the volatile register data at a point in time are stored on said electromechanical non-volatile storage unit;

(4) wherein in said suspend state, said power supply is in said second power supply state and the code executing on said CPU has been reversibly interrupted such that the execution of the code on said CPU may be resumed after said power supply changes to said first power supply state.

5,551,044

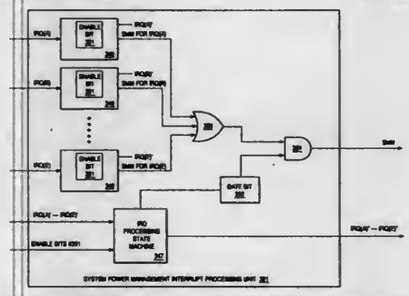
METHOD AND APPARATUS FOR INTERRUPT/SMI # ORDERING

Nilesh V. Shah, Folsom; Jeffrey L. Rabe, Rancho Cordova, and Zohar Bogin, Folsom, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 1, 1994, Ser. No. 349,065

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—750 **11 Claims**



1. A circuit for controlling interrupt request signal transmission in a computer system comprising:

an input for receiving an interrupt request signal from an external component;

first circuitry coupled to said input for generating a system management interrupt (SMI) signal in response to said interrupt request signal from said external component wherein said SMI signal causes a processor to switch to a fully operational mode;

second circuitry coupled to said input for generating an interrupt request signal to said processor in response to said interrupt request signal from said external component; and

a signal processing circuit coupled to said second circuitry for suppressing transmission of said interrupt request signal to said processor until said SMI signal is transmitted to said processor.

5,551,045

MICROPROCESSOR WITH RESET EXECUTION FROM AN ARBITRARY ADDRESS

Kohji Kawamoto; Yukihiko Shimazu, and Toshiki Fujiyama, Itami, all of, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 966,123, Oct. 22, 1992, Pat. No. 5,361,371, which is a continuation of Ser. No. 450,358, Dec. 13, 1989, abandoned. This application May 18, 1994, Ser. No. 245,985

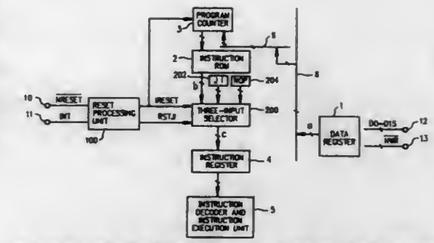
Claims priority, application Japan, Dec. 21, 1988, 63-324234

Int. Cl.[6] G06F *9/06;9/34*

U.S. Cl. 395—775 **12 Claims**

1. A microprocessor comprising:

a data register which holds an arbitrary data, said data register having a data input terminal for inputting said arbitrary data to said data register;



an instruction ROM which stores a plurality of instructions constituting a program to be executed;

a program counter, different from said instruction ROM, which, when a reset signal is given, holds a predetermined address of said instruction ROM and specifies address of instructions to be executed in said instruction ROM, said program counter capable of holding any of a plurality of addresses of said instruction ROM;

an instruction register which holds the instructions to be executed;

a means for executing an unconditional register indirect jump instruction which transfers the arbitrary data held in said data register to said program counter to set said arbitrary data as the address of the instruction to be executed next;

a control signal input terminal whereto a control signal of a first or second logical level is inputted; and

a selecting means, coupled to said control signal input terminal for receiving said control signal and selecting either of a first or a second resetting function, said first resetting function including setting said predetermined address as an instruction start address and said second resetting function including transferring said unconditional register indirect jump instruction to said means for executing, without receiving said register indirect jump instruction from said instruction ROM, and for executing said unconditional register indirect jump instruction to set the arbitrary data held in said data register as an instruction start address, said selecting being done in response to whether the level of said control signal input terminal at a point of time when said reset signal is cleared is the first logical level or the second logical level in the absence of execution of an instruction.

5,551,046

METHOD FOR NON-HIERARCHICAL LOCK MANAGEMENT IN A MULTI-SYSTEM SHARED DATA ENVIRONMENT

Chandrasekaran Mohan, San Jose, and Inderpal S. Narang, Saratoga, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 215,505, Jun. 14, 1991, abandoned. This application Jul. 7, 1994, Ser. No. 271,533

Int. Cl.[6] G06F *15/00*

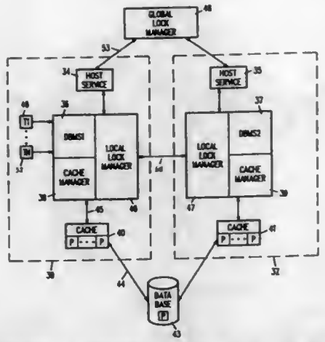
U.S. Cl. 395—800 **6 Claims**

1. A method for non-hierarchical locking of data resources in a shared data system including multiple database management systems (DBMS) connected to one or more data storage devices and to a global lock manager, the global lock manager receiving and granting requests for locks,

each DBMS including a data cache, a cache manager, and a local lock manager for receiving, processing, and granting requests for a first type of lock (L lock) that serializes transaction access to data resources and for a second type of lock (P lock) for caching of a data resource in the cache,

the method including the steps of:

providing a request from a transaction to a local lock manager of a DBMS for an L lock on a data resource, and providing a request to the local lock manager from the cache manager of the DBMS for a P lock on the data resource;



a. responsive to receipt of either the L lock or the P lock, whichever is received first, by the local lock manager, transmitting to the global lock manager a request for a third type of lock (LP lock) that indicates interest on the part of the DBMS in the data resource, wherein said third type of lock hides from the global lock manager the type of the first received lock as being an L lock or a P lock; and

b. upon receipt by the local manager of a grant of the LP lock from the global lock manager, the local lock manager granting the request for the L lock or the P lock whichever is first.

5,551,047

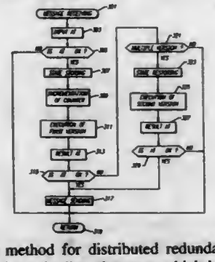
METHOD FOR DISTRIBUTED REDUNDANT EXECUTION OF PROGRAM MODULES

Kinji Mori, Tokyo; Masayuki Orimo, Kawasaki; Hirokazu Kasashima, Hitachi, all of, Japan, and K. H. Kim, Irvine, Calif., assignors to The Regents of the Univeristy of California, Oakland, Calif.

Filed Jan. 28, 1993, Ser. No. 10,649

Int. Cl.[6] G06F *15/16*

U.S. Cl. 395—800 **18 Claims**



16. A method for distributed redundant execution of program modules in a distributed system which has at least two processors connected by transmission medium and in which at least first and second different versions of a program module are stored in each of at least two processors, said method comprising the steps of:

asynchronously executing, in each of said at least two processors, any of said at least first and second different versions of a program module which is stored therein to produce result data, after receiving a message containing input data necessary for said asynchronous execution;

checking to conclusion, in each of said at least two processors which executed said one of said at least first and second different versions of the program module, acceptability of the result data produced by said asynchronously executing said one version of said program module based only upon information within each of said at least two processors;

sending, by each of at least two processors which executed one of said at least first and second different versions of the program module, to at least one destination processor an information message which contains at least:

the result data produced by said asynchronously executing said one version of said program module;

said input data utilized during said one version execution; and

information about said executed version and about identity of said sending processor through the transmission medium; and

receiving, in said at least one destination processor, said information messages and selecting one of the information messages as a new input data message based on the result data and the input data contained in said received information messages.

5,551,048

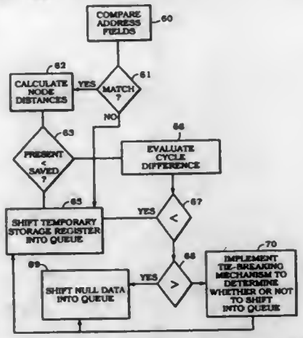
RING BASED DISTRIBUTED COMMUNICATION BUS FOR A MULTIPROCESSOR NETWORK

Simon C. Steely, Jr., Hudson, N.H., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 3, 1994, Ser. No. 253,474

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—800 **12 Claims**



1. A method for providing communication between a plurality of nodes coupled in a ring formation, said method comprising the steps of:

receiving, at an input of each node, data from one of the neighboring nodes on said ring during a predetermined time period;

depositing data at an output of each node during said predetermined time period, wherein said data deposited by each node is either said data received at said input of said node during said predetermined time period or data provided by the respective node; and

wherein said plurality nodes further comprises a plurality processors, each processor including a memory for storing a subset of shared data shared between at least two of said plurality of nodes,

wherein said method further comprises the step of maintaining data coherency between each of said memories in each of said plurality of processors and said memory node, said step of maintaining coherency further comprising the steps of:

determining, at each processor, whether data received during said time period is updated data of interest to said receiving processor by:

determining a first nodal distance between a processor that transmitted said new data and said receiving processor; and

determining a second nodal distance between said receiving processor and a node indicated in a node field associated with version data stored at said processor;

storing said received data at said receiving processor if the relationship between said first nodal distance and said second nodal distance indicate that said data is updated data of interest to said processor.

5,551,049

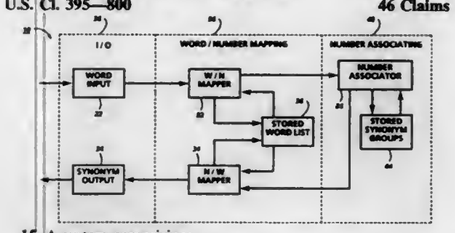
THESAURUS WITH COMPACTLY STORED WORD GROUPS

Ronald M. Kaplan, Palo Alto, and Martin Kay, Menlo Park, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 53,978, May 26, 1987, abandoned. This application Aug. 30, 1990, Ser. No. 575,032

Int. Cl.[6] G06F *9/00*

U.S. Cl. 395—800 **46 Claims**



15. A system comprising:

a data structure stored in memory;

instruction data stored in memory; and

a processor connected for accessing the data structure and the instruction data stored in memory;

the data structure comprising two or more identifiers, each identifier having a value that identifies one of a set of types, each identifier having a respective position in a sequence in the data structure, each identifier identifying a respective one of the types so that the processor can access the data structure with a candidate identifier identifying one of the set of types to compare the candidate identifier with the identifiers in the data structure; each identifier being in one of two or more groups of identifiers, each group identifying a respective group of the types; each group of identifiers including, for each type in the respective group of types, a single identifier identifying the type; the identifiers being ordered in the sequence so that the processor can determine the respective positions in the sequence of all of the identifiers of each group from the respective position in the sequence of any of the identifiers in that group that matcbes the candidate identifier;

the instruction data indicating instructions the processor can execute; the processor, in executing the instructions:

obtaining a candidate identifier identifying one of the types;

accessing the data structure to compare the candidate identifier with the identifiers in the data structure; and

determining the respective positions of the identifiers in one of the groups which includes an identifier that matches the candidate identifier, the processor determining the respective positions of the identifiers based on the respective position in the sequence of the matching identifier.

5,551,050

SYSTEM AND METHOD USING SYNCHRONIZED PROCESSORS TO PERFORM REAL TIME INTERNAL MONITORING OF A DATA PROCESSING DEVICE

Peter N. Ehlig, Houston, and Gary L. Swoboda, Sugar Land, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 928,145, Aug. 11, 1990, abandoned, which is a continuation of Ser. No. 453,450, Dec. 20, 1989, abandoned. This application Nov. 14, 1994, Ser. No. 339,424

Int. Cl.[6] G06F *11/00*

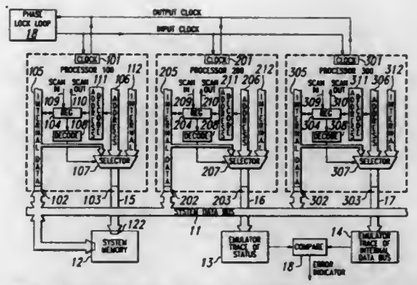
U.S. Cl. 395—800 **2 Claims**

2. A data processing system configured to operate in lock step such that one processor sends out addresses for reading data while other processors use their address outputs for transmitting internal information, comprising:

a system memory;

a system data bus connected to the system memory;

a clock synchronization circuit;



a first processor having a clock, an address output, and a data input/output, the clock connected to the clock synchronization circuit, the address output connected to the system memory; and the data input/output connected through the system data bus to the system memory;

a second processor having a clock, an address output, a data input/output, and an internal status bus, the clock connected to the clock synchronization circuit, the address output connected to a first monitor circuit, the data input/output connected through the system data bus to the system memory, and the internal status bus connected to the address output;

a third processor having a clock, an address output, a data input/output, and an internal data bus, the clock connected to the clock synchronization circuit, the address output connected to a second monitor circuit, the data input/output connected through the system data bus to the system memory, and the internal data bus connected to the address output; and

as the clock synchronization circuit synchronizes the clock of the first, the second, and third processor in phase, the processors operate in lock step whereby the first processor sends out addresses for reading data from the system memory through its address output while the second processor sends out internal status data through its address output to the first monitor circuit and the third processor sends out internal data bus data through its address output to the second monitor circuit.

5,551,051

ISOLATED MULTIPROCESSING SYSTEM HAVING TRACKING CIRCUIT FOR VERIFYNG ONLY THAT THE PROCESSOR IS EXECUTING SET OF ENTRY INSTRUCTIONS UPON INITIATION OF THE SYSTEM CONTROLLER PROGRAM

Lee Silverthorn, Paradise Valley; Curtis Cornils; Mark L. Kirchner, both of Phoenix; Susan D. Stephens, and Parker E. Crouse, both of Chandler, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 20, 1994, Ser. No. 309,379

Int. Cl.[6] G06F *15/00;12/00;13/12*

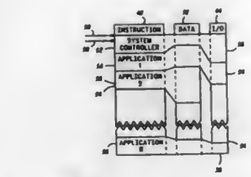
U.S. Cl. 395—800 **26 Claims**

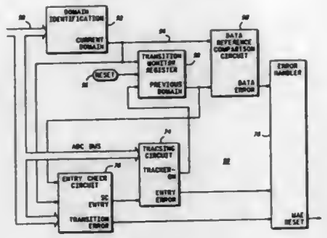
1. A computer for performing isolated multiprocessing operations, said computer comprising:

a memory allocated to a plurality of programs, each of said plurality of programs corresponding to one of a plurality of address domains within said memory, said plurality of programs including a system controller program and at least one application program;

a processor configured to access said memory at addresses specified by said processor and to execute instructions stored in said memory, said instructions including a set of entry instructions which said processor executes upon initiation of said system controller program and other instructions following said set of entry instructions; and

a tracking circuit, coupled to said processor, said tracking circuit being configured to verify only that said processor actually executes said set of entry instructions.

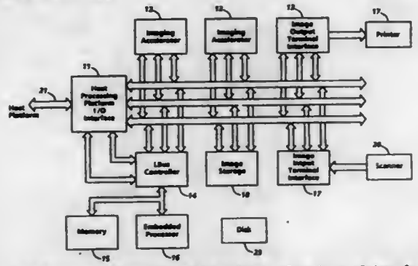




5,551,052
DATA BUS PROTOCOL FOR HIGH SPEED CHIP TO CHIP DATA TRANSFER

Eric S. Barnes, Manhattan Beach; George L. Eldridge; Uoc Nguyen, both of Long Beach; Ajit Shah, Laguna Niguel, and Ronald E. Weir, Torrance, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 100,229, Aug. 2, 1993, abandoned.
This application Feb. 14, 1995, Ser. No. 389,612
Int. Cl.[6] G06F *9/46;13/362;13/42;13/40*
U.S. Cl. 395—800 **1 Claim**



1. A process of transferring a number n of packets of data from a read chip having an address to a write chip having an address connected by a data bus having data lines, address lines and a grant line, said process being controlled by a bus controller, said read chip generating a read request signal and said write chip generating a write request signal, comprising steps of:

a. writing into a read chip said number n and a read chip address, and instructing said read chip to begin said transfer by issuing a read request signal,

b. writing into a write chip said number n and a write chip address, and instructing said write chip to begin said transfer by issuing a write request signal,

c. In response to receiving by the controller both of said read and write request signals, placing, by the controller, the read and write chip addresses on said address lines at the same time, and activating a grant signal on said grant line,

d. upon receiving the grant signal, if the read chip is addressed by the read chip address on the address lines, driving data onto the data lines of said data bus from said read chip until a packet is completely transmitted,

e. upon receiving the grant signal, if the write chip is addressed by the write chip address on the address lines, receiving data from the data lines of said data bus by said write chip until the packet is completely received,

f. both chips, after the packet transfer is complete, removing the request signal and waiting until both read and write chips are ready to perform another packet transfer,

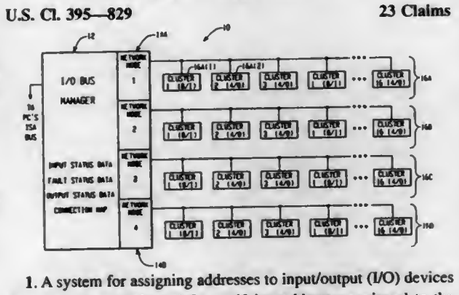
g. both read and write chips issuing request signals, and

h. repeating steps c through g until the transfer of said number n of packets is complete.

5,551,053
SYSTEM AND METHOD FOR ASSIGNING ADDRESSES TO I/O DEVICES IN A CONTROL NETWORK AND FOR VERIFYING THE ASSIGNED ADDRESS OF THE DEVICES

Gregory L. Nadolski, Brookfield, and Keith O. Satula, New Berlin, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Feb. 28, 1994, Ser. No. 202,501
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—829 **23 Claims**



1. A system for assigning addresses to input/output (I/O) devices in a control network, and for verifying addresses assigned to the I/O devices, comprising:

a logic controller providing memory into which a connectivity map may be programmed, said connectivity map defining a specific expected address for each I/O device in the network, said logic controller further providing an external controller bus and logic for downloading said connectivity map to an I/O bus manager connected to said logic controller via said external controller bus, said I/O bus manager providing a mechanism for assigning said specific addresses to said I/O devices;

at least one node processor connected to said I/O bus manager, said at least one node processor including a multiplexer for multiplexing output signals from said I/O bus manager and a demultiplexer for demultiplexing input signals from said I/O devices; and

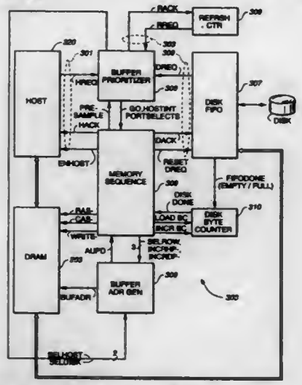
at least one I/O cluster processor connected to each of said at least one node processor, said at least one I/O cluster processor including a multiplexer for multiplexing input signals from said I/O devices and a demultiplexer for demultiplexing output signals from said at least one node processor;

said at least one I/O cluster processor including (i) a manager; (ii) a visual indicator for displaying the address device for manually requesting an address from said I/O bus assigned by said I/O bus manager; and (ii) a device for manually rejecting said address assigned to it by said I/O bus manager if said assigned address is not the expected address for said I/O cluster process defined in said connectivity map.

5,551,054
PAGE MODE BUFFER CONTROLLER FOR TRANSFERRING NB BYTE PAGES BETWEEN A HOST AND BUFFER MEMORY WITHOUT INTERRUPTION EXCEPT FOR REFRESH

John S. Packer, San Jose, Calif., assignor to Adaptec, Inc., Milpitas, Calif.

Filed Nov. 19, 1991, Ser. No. 795,161
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—843 **28 Claims**



1. In a disk drive, a structure comprising:

a buffer memory; and

an integrated circuit including:

a page mode buffer memory controller operatively coupled to a host port and to said buffer memory, said page mode buffer memory controller comprising:

a buffer prioritizer having a plurality of ports wherein said plurality of ports includes said host port for receiving a host port request signal, and in response to two or more port request signals from said plurality of ports, said buffer prioritizer selects the port select signal having a highest priority; and

a memory sequencer coupled to said buffer prioritizer wherein said memory sequencer is responsive to a predetermined signal from said buffer prioritizer;

wherein said memory sequencer transfers an Nb byte page data between said buffer memory and said host port and further wherein

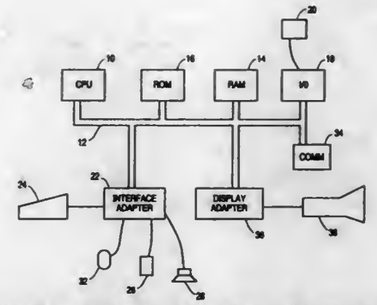
said Nb byte page size is determined by the structure of said buffer memory; and

said Nb byte page of data is transferred without interruption until one event in a set of events consisting of (i) a buffer memory refresh request signal and (ii) completion of said transfer of said Nb byte page of data occurs so as to limit overhead clock cycles associated with said data transfer thereby optimizing a host port bandwidth of said page mode buffer memory controller.

5,551,055
SYSTEM FOR PROVIDING LOCALE DEPENDENT USER INTERFACE FOR PRESENTING CONTROL GRAPHIC WHICH HAS DIFFERENT CONTENTS OR SAME CONTENTS DISPLAYED IN A PREDETERMINED ORDER

John R. Matheny; Christopher White, both of Mountain View, and Mark E. Davis, Cupertino, all of Calif., assignors to Taligent, Inc., Cupertino, Calif.

Filed Dec. 23, 1992, Ser. No. 996,781
Int. Cl.[6] G06F *3/00;3/03;3/14*
U.S. Cl. 395—882 **11 Claims**



1. A graphical user interface command system for use in a computer system having a display and a processor, the system displaying a control graphic on the display, said control graphic presenting information on the display, and executing a command in response to manipulation of the control graphic by a user, the system is configured to display said control graphic in a different particular manner according to associated locales respectively, and comprising:

a memory for storing a command data structure, a plurality of control graphics, and a plurality of locale information for each of said control graphics;

a pre-runtime mechanism operating on the processor for saving parameters in the command data structure indicative of a plurality of command executions;

tracking apparatus for modifying the command data structure as the user manipulates a displayed control graphic to select and execute one of the plurality of command executions and provide for proper control execution;

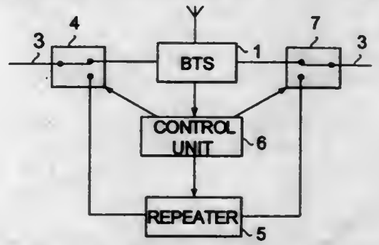
a locale selector for selecting one of said plurality of locale information; and

display control apparatus, coupled to said memory, said pre-runtime mechanism, said tracking apparatus, and said locale selector, for generating one of said control graphics in a specific manner based on said selected locale information and wherein for different locales said control graphic has different information contents or same information contents displayed in a predetermined order.

5,551,056
METHOD FOR SECURING THE OPERATION OF A TELECOMMUNICATIONS NETWORK IN A CELLULAR RADIO SYSTEM AND A BASE STATION ARRANGEMENT

Pekka Koponen, and Jukka Suonvieri, both of Oulu, Finland, assignors to Nokia Telecommunications OY, Espoo, Finland

Filed Aug. 16, 1994, Ser. No. 291,598
Claims priority, application Finland, Aug. 17, 1993, 933630
Int. Cl.[6] H04B *3/36*
U.S. Cl. 455—8 **6 Claims**



1. A base station arrangement in a cellular radio system, comprising:

a base station having a predetermined coverage area, said base station comprising first means by which the base station can establish a radio connection with active radio units currently

located within said predetermined radio coverage area, and second means for receiving signals transmitted by other base stations through a first cabled communication link, for repeating said signals and for transmitting said repeated signals further via a second cabled communication link;

a control unit monitoring operation of said base station; and

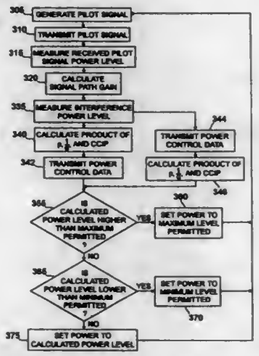
a repeater connected in parallel with said base station, said repeater being responsive to said control unit for repeating signals received from said first cabled communication link for transmitting further said repeated signals via said second cabled communication link when said control unit indicates a malfunction of said base station.

5,551,057

CELLULAR MOBILE RADIO SYSTEM POWER CONTROL

Debasis Mitra, Summit, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jun. 8, 1994, Ser. No. 255,607
Int. Cl.[6] H04Q 7/22
U.S. Cl. 455—33.1 **23 Claims**



1. In a digital mobile radio system, a method of regulating the power of signals transmitted by a transmitting unit which is communicating with a corresponding receiving station, the transmitting unit and the corresponding receiving station each having a transmitter and a receiver, said method comprising the steps of:

(a) calculating a signal path gain between the transmitting unit and the corresponding receiving station;

(b) measuring a co-channel interference power level at the corresponding receiving station;

(c) calculating the product of the reciprocal of said signal path gain, said co-channel interference power level, and a pre-fixed value which corresponds to a minimum target value of the ratio of a received carrier power and a co-channel interference power;

(d) regulating the power of signals transmitted by the transmitting unit according to the value of said product; and

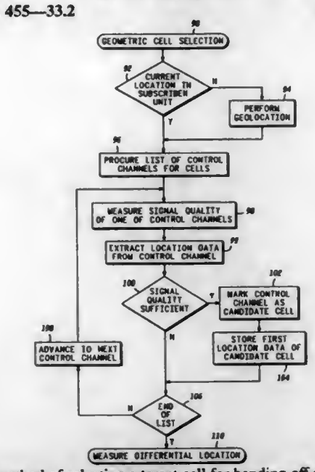
(e) repeatedly performing the steps (a), (b), (c) and (d) wherein the duration between successive performances of the step of regulating the power of signals varies.

5,551,058

METHOD AND SYSTEM FOR INTELLIGENT CELL SELECTION USING LOCATION DATA IN CELLULAR SYSTEMS

Jonathan E. Hutcheson, Tempe; Kadathur S. Natarajan, Mesa, and Raymond J. Leopold, Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 31, 1994, Ser. No. 331,463
Int. Cl.[6] H04Q 7/00
U.S. Cl. 455—33.2 **22 Claims**



1. A method of selecting a target cell for handing off a subscriber unit in a cellular communication system, said system having a plurality of transceivers projecting cells upon the earth, said method comprising the steps of:

(a) procuring a list of at least one control channel for evaluation within said subscriber unit;

(b) measuring a signal quality as received at said subscriber unit for one of said at least one control channel;

(c) extracting a location data of said at least one control channel having sufficient signal quality;

(d) retaining said location data for said at least one control channel in a group of candidate cells when said signal quality exceeds a signal quality threshold value;

(e) repeating steps (b) thru (d) for each of said at least one control channel;

(f) ordering said group Of candidate cells according to a range rate derived from said location data; and

(g) selecting said target cell from said group of candidate cells.

5,551,059

METHOD AND SYSTEM FOR INTELLIGENT CELL SELECTION USING DOPPLER DATA IN CELLULAR SYSTEMS

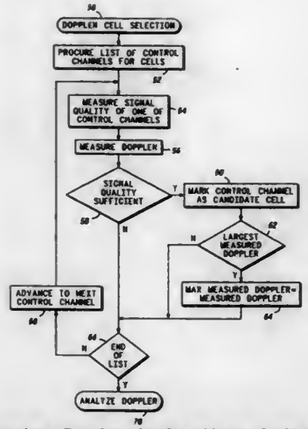
Jonathan E. Hutcheson, Tempe; Kadathur S. Natarajan, Mesa, and Raymond J. Leopold, Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 31, 1994, Ser. No. 331,461
Int. Cl.[6] H04Q 7/00
U.S. Cl. 455—33.2 **19 Claims**

1. A method of selecting a target cell for handing off a subscriber unit in a cellular communication system, said system having a plurality of transceivers projecting cells upon the earth, said method comprising the steps of:

(a) procuring a list of at least one control channel for evaluation within said subscriber unit;

(b) measuring a signal quality as received at said subscriber unit for one said at least one control channel;



(c) measuring a Doppler value for said one of said at least one control channel as received at said subscriber unit;

(d) retaining said at least one control channel in a group of candidate cells when said signal quality exceeds a signal quality threshold value;

(e) repeating steps (b) thru (d) for each of said at least one control channel; and

(f) ordering said group of candidate cells according to said Doppler value of each of said at least one control channel; and

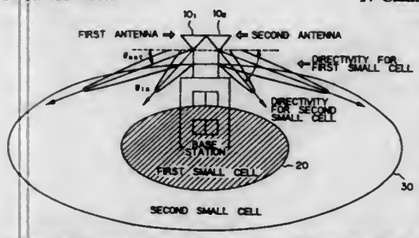
(g) selecting said target cell from said group of candidate cells as ordered by said Doppler value.

5,551,060

STRUCTURE OF CELLS WITHIN A MOBILE COMMUNICATION SYSTEM

Teruya Fujii, and Masayuki Sakamoto, both of Kanagawa, Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Aug. 28, 1992, Ser. No. 936,450
Claims priority, application Japan, Sep. 3, 1991, 3-248413
Int. Cl.[6] H04B 7/00
U.S. Cl. 455—33.4 **17 Claims**



1. A mobile communication system having a plurality of radio cells for a service area so that each radio cell is assigned a respective channel, and a same channel is used in a plurality of radio cells which are apart from each other by more than a predetermined distance, said mobile communication system comprising:

a first cell provided in one of said radio cells, said first cell accessed by a first antenna provided in a base station, said first antenna having a first vertical directivity;

a second cell provided in said one of said radio cells, said second cell is smaller than said first cell, said second cell being provided within said first cell and being concentric and overlapped by said first cell and said second cell is accessed by a second antenna which is provided in said base station, said second antenna having a second vertical directivity which is different from said first antenna, wherein a cell area, in which said same channel is used in said second cell, is smaller than a cell area that said same channel is used in said first cell, and wherein each cell having a respective channel; and

each cell including a control channel transceiver means for controlling each respective cell,

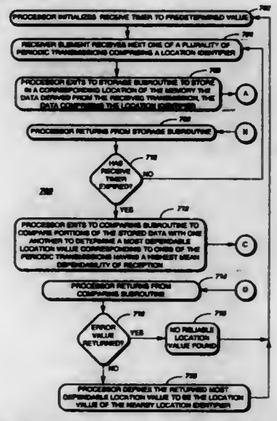
wherein communication between a mobile station and said base station being effected through a channel having a higher signal received level in one of a communication channel and a control channel.

5,551,061

APPARATUS AND METHOD IN A RADIO COMMUNICATION SYSTEM FOR DISTINGUISHING AN IDENTIFIER OF A NEARBY TRANSMITTER FROM THAT OF A MORE DISTANT TRANSMITTER

Robert J. Schwendeman, Pompano Beach, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 24, 1994, Ser. No. 201,509
Int. Cl.[6] H04Q 7/32
U.S. Cl. 455—51.1 **8 Claims**



1. A portable radio receiver for receiving information comprising location identifiers each having a location value, the location identifiers including a nearby location identifier transmitted by a nearby transmitter and distant location identifiers transmitted by more distant transmitters in a radio communication system comprising the portable radio receiver and a plurality of the transmitters, the portable radio receiver distinguishing the nearby location identifier from the distant location identifiers, wherein the location identifiers are transmitted repeatedly in periodic transmissions, the portable radio receiver comprising:

receiver means for receiving over a predetermined period a plurality of the periodic transmissions comprising the location identifiers, wherein the location identifiers are received multiple times throughout the predetermined period;

memory means coupled to the receiver means for storing the location identifiers received in the plurality of the periodic transmissions; and

processor means coupled to the memory means for comparing stored portions of the location identifiers with one another to determine the location value received with greatest dependability relative to all other location values received during the predetermined period, and wherein the processor means defines the location value received with the greatest dependability to be the location value of the nearby location identifier.

wherein the periodic transmissions from ones of the plurality of the transmitters are synchronized with the periodic transmissions from others thereof, and

wherein the periodic transmissions are frequency modulated (FM) simulcast transmissions, and

wherein the portable radio receiver has a defined capture ratio, and

wherein the receiver means comprises demodulator means for demodulating a location identifier corresponding to a strongest transmitter producing a highest signal strength at the portable radio receiver during each of the periodic transmissions, wherein the highest signal strength is greater by at least the defined capture ratio than a signal strength produced at the portable radio receiver by the plurality of the transmitters other than the strongest transmitter, and

wherein the processor means comprises:

sorter means coupled to the memory means for sorting into like-valued groups the location values that are equal to one another;

counter means coupled to the sorter means for counting the location values sorted into each of the like-valued groups to determine one of the like-valued groups having a highest count; and

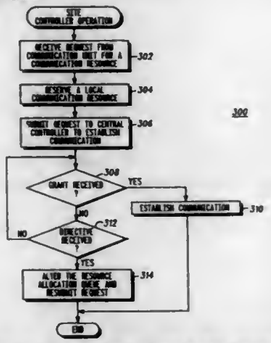
concluder means coupled to the counter means for concluding therefrom that the location value of the one of the like-valued groups having the highest count is the location value received with the greatest dependability.

5,551,062

METHOD FOR ENHANCING COMMUNICATION ACCESS IN A RADIO COMMUNICATION SYSTEM

Peter M. Drozt, 1043 Longford Rd., Bartlett, Ill. 60103, and Alexander Rozenstrauch, 1222 Lockwood Dr., Buffalo Grove, Ill. 60089

Filed Jul. 22, 1993, Ser. No. 96,146
Int. Cl.[6] H04B *7/26*
U.S. Cl. 455—54.2 **5 Claims**



1. In a multi-site communication system that includes a plurality of communication units, a central controller for coupling a plurality of communication sites, a plurality of site controllers for controlling communications through each of the plurality of communication sites, a method for resolving a deadlock condition resulting from two or more requests for a common communication resource, the method comprising the steps of:

at the central controller:

A) receiving, from a first site controller, a request for a single available communication resource to establish a first communication between a first communication unit located in a first site and a second communication unit located in a second site;

B) receiving, from a second site controller, a request for the single available communication resource to establish a second communication between a third communication unit located in the second site and a fourth communication unit located in the first site; and

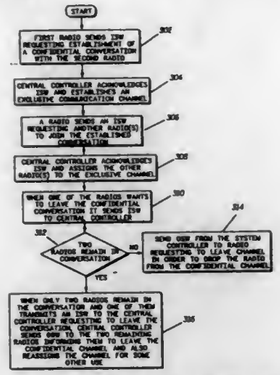
C) directing at least the first controller to submit a request for a second communication resource.

5,551,063

METHOD AND APPARATUS FOR ESTABLISHING A PRIVATE CONVERSATION FOR MORE THAN TWO MOBILE UNITS IN A TRUNKED SYSTEM

Jeffrey J. Brandon, Ft. Lauderdale, and Thomas R. Moder, Coral Springs, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 3, 1994, Ser. No. 237,573
Int. Cl.[6] H04B *7/26*
U.S. Cl. 455—54.2 **14 Claims**



1. A method for establishing a group private conversation in a trunked radio frequency system including at least first, second and third radios, a plurality of communication channels, and a system controller, the method comprising the steps of:

(a) transmitting a first message from the first radio to the system controller requesting that a confidential communication channel be established so that the first radio can communicate with the second radio;

(b) selecting one from among the plurality of communication channels as the confidential communication channel to be used to establish a communication link between the first and second radios; and

(c) transmitting a second message from either the first or second radio to the system controller requesting that the third radio join the communication link established on the confidential communication channel.

5,551,064

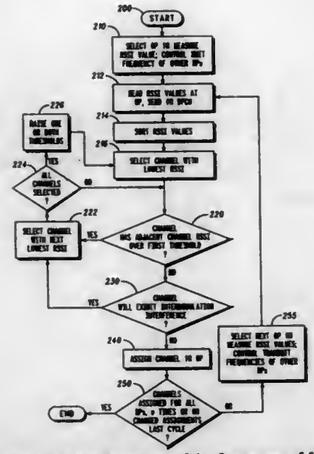
METHOD AND APPARATUS FOR COMMUNICATION UNIT FREQUENCY ASSIGNMENT

Dan W. Nobbe, Keller, and Ronald L. Royer, Grapevine, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 27, 1994, Ser. No. 281,310
Int. Cl.[6] H04B *15/00*
U.S. Cl. 455—62 **10 Claims**

5. A method of determining frequency assignment for a first of a plurality of fixed radio communication units each having a tunable transceiver and coupled to a communication controller, comprising:

(a) controlling all of the plurality of fixed radio communication units except the first fixed radio communication unit to transmit each at a predetermined frequency, and controlling the first fixed radio communication unit to measure a signal strength of a first group of frequencies including at least each predetermined frequency;



(b) determining a first frequency of the first group of frequencies having a lowest measured signal strength;

(c) determining whether two or more frequencies of the first group of frequencies, together yielding intermodulation interference at the first frequency, have a measured signal strength of at least a first predetermined threshold, and if not selecting the first frequency for use by the first fixed radio communication unit;

(d) when the determining step of step (c) has a positive determination, determining a next frequency of the first group of frequencies having a next lowest measured signal strength and repeating step (c) for the next frequency;

(e) repeating step (d) until one of the first group of frequencies is selected or a predetermined number of repetitions of step (d) is completed; and

(f) changing at least one of the first and second predetermined threshold if step (d) is repeated the predetermined number of repetitions.

5,551,065

WIRELESS SOLAR ENTERTAINMENT SYSTEM

David Honore, 26561 Sparks St., Highland, Calif. 92346

Filed Dec. 19, 1994, Ser. No. 358,296
Int. Cl.[6] H04B *7/00*
U.S. Cl. 455—66 **3 Claims**

1. A personal wireless solar entertainment system comprising:

a) an entertainment device;

b) a low range transmitter integrated into said entertainment device;

c) a personal receiver unit tuned to said transmitter; and

d) wherein said personal receiver unit comprises:

(i) an entertainment receiver device;

(ii) a receiver connected to said entertainment receiver device;

(iii) a receive antenna connected to said receiver;

(iv) a first frequency select switch connected to said receiver;

(v) a first power management unit connected to said entertainment receiver device and said receiver;

(vi) a first solar array cell connected to said first power management unit; and

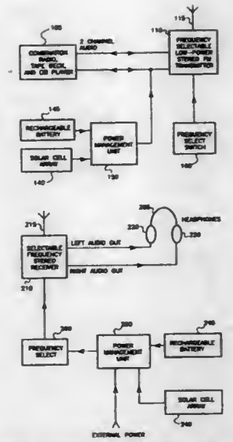
(vii) a first rechargeable battery connected to said first power management unit; and

e) wherein said low range transmitter comprises:

(i) a transmitter connected to said entertainment device;

(ii) a transmitter antenna is connected to said transmitter;

(iii) a second frequency select switch connected to said transmitter;



(iv) a second power management unit connected to said entertainment device and said transmitter;

(v) a second solar array cell connected to said second power management unit;

(vi) a second rechargeable battery connected to said second power management unit; and

f) wherein said receiver antenna is integrated into said entertainment receiver device; and

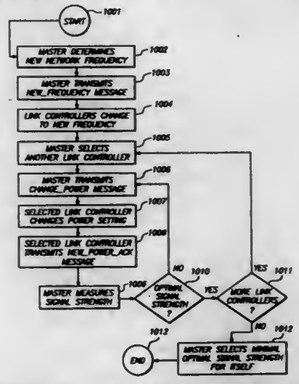
g) said transmitter antenna is integrated into a handle of said entertainment device.

5,551,066

NETWORK LINK CONTROLLER FOR DYNAMIC DESIGNATION OF MASTER NODES

Robert A. Stillman, Los Altos; James A. Way, Cupertino; Jesse F. Cable, III, San Jose; David Cooper, Saratoga, all of Calif., and James Koskinen, Seattle, Wash., assignors to Radio Local Area Networks, Inc., San Jose, Calif.

Continuation of Ser. No. 72,042, Jun. 7, 1993, abandoned.
This application Feb. 27, 1995, Ser. No. 395,206
Int. Cl.[6] H04B *7/00;* **H04J** *3/24*
U.S. Cl. 455—69 **25 Claims**



1. In a wireless computer network comprising a plurality of nodes, one of which is designated as a master node for setting a communication frequency among the plurality of nodes, a network link controller associated with each node for configuring, regulat-

ing, and controlling the associated node in the computer network, each network link controller comprising:

a radiator for transmitting and receiving modulated signals;

a radio transceiver coupled to the radiator for processing the received and transmitted modulated signals including a signal from the designated master node indicating the communication frequency;

a digital controller coupled to the radio transceiver for providing at least one control signal to adjust selected parameters of the radio transceiver responsive to commands from a control program; and

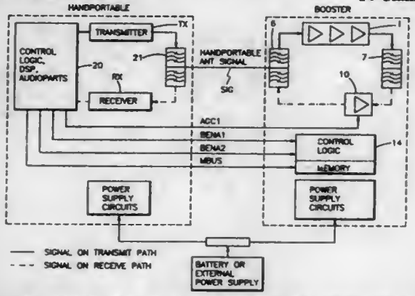
a control program included in the digital controller for monitoring network conditions, analyzing the monitored network condition for a measure of signal quality, and providing commands to the digital controller to improve the measure of signal quality, including desigating the associated node as a new master node.

5,551,067

AMPLIFIER CONTROL SYSTEM

Jaakko Hulkko; Jorma Matero, both of Oulu, and Toivo Vilmi, Haukipudas, all of, Finland, assignors to Nokia Mobile Phones Ltd., Salo, Finland

Continuation of Ser. No. 113,849, Aug. 27, 1993, abandoned.
This application Mar. 30, 1995, Ser. No. 414,041
Claims priority, application Finland, Sep. 23, 1992, 924265
Int. Cl.[6] H04B *1/40*
U.S. Cl. 455—88 **14 Claims**



7. An external radio frequency amplifier for connection to a radio telephone, said radio telephone including control signal outputs for providing a pair of opposite phase, control signals, each comprising a first portion at least a first time interval before a start of a data transmission and a second portion at an end of said data transmission, said external radio frequency amplifier comprising:

a power amplifier coupled between an antenna connection and a signal transmission input from said radio telephone;

control input means for providing said opposite phase control signals from said radio telephone; and

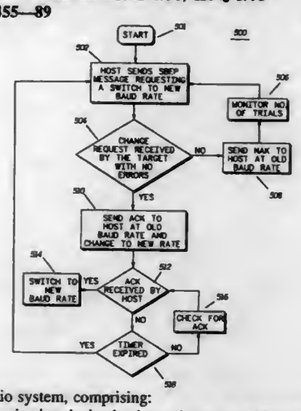
control logic means coupled between said control input means and said power amplifier and responsive to at least one of said pair of opposite phase control signals, a first portion thereof causing an increase in power of said power amplifier during said first time interval to an operating level and a second portion thereof causing a reduction of said power of said power amplifier from said operating level.

5,551,068

METHOD AND APPARATUS FOR COMMUNICATION VARIABLE LENGTH MESSAGES BETWEEN REGISTER MODELED RADIO DEVICES

Eric S. Goldsmith, Davie; Jeffrey W. Klingberg, Fort Worth; Ronald L. Bane, and Charles M. Ehmann, both of Plantation, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 889,348, May 28, 1992, abandoned.
This application May 12, 1994, Ser. No. 241,951
Int. Cl.[6] H04B *1/38*; **H04J** *3/16*
U.S. Cl. 455—89 **22 Claims**



1. A radio system, comprising:

a communication device having at least one addressable processor means;

at least one additional addressable processor means;

a communication means, comprising a serial communication link, for interconnecting the at least one and the at least one additional addressable processor means, the communication means includes a signal line and a busy line;

a first communication protocol including a plurality of information packets for passing parametric data between the at least one and the at least one additional addressable processor means, the first communication protocol further including a first information packet for changing the communication protocol and changing the baud rate to a baud rate chosen from among a plurality of baud rates; and

a second communication protocol including a second plurality of information packets for passing parametric data to or from the addressable processor means at selectable speeds, the second plurality of information packets include information on the length of a second information packet that will immediately follow the first information packet, the second communication protocol further including the second information packet which has an uninterrupted variable length;

whereby the operating state of the addressable processor means is determined or altered by, respectively, communicating parametric data between the at least one and the at least one additional addressable processor means.

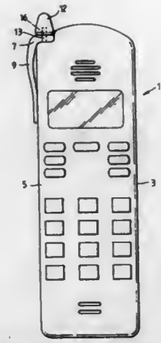
5,551,069

RADIO APPARATUS HAVING A COMBINED ANTENNA AND CLIP

Peter D. Harrison, Ascot, and Sarah Hodgkinson, Chelmsford, both of, England, assignors to Nokia Mobile Phones Ltd., Salo, Finland

Filed Aug. 2, 1993, Ser. No. 101,427
Claims priority, application United Kingdom, Aug. 5, 1992, 9216640
Int. Cl.[6] H04B *1/38*
U.S. Cl. 455—90 **8 Claims**

1. A radio apparatus comprising a housing having a first end and a second end, said housing enclosing a transceiver, and an antenna comprising a first radiating element, said first radiating element



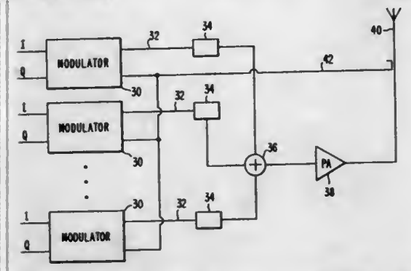
having a first end that is stationarily fixedly fastened to the housing and permanently coupled to the transceiver for transmitting and receiving radio signals without moving the first radiating element wherein a substantially stationary portion of the first radiating element overlaps a portion of the housing between said first and second ends of said housing which is deflectable in a general cantilever fashion relative to said housing and said first end of said radiating element, said portion of said first radiating element being sized, shaped and positioned relative to the housing to function as a pocket clip for removably attaching said housing to clothing of a user by capturing the clothing between said housing and said portion of said first radiating element.

5,551,070

CARTESIAN MULTICARRIER FEEDBACK

Ulf Skarby, Lidingo; Par Bergsten, Solna, and Bo Hedberg, Kista, all of, Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Jan. 28, 1993, Ser. No. 10,336
Int. Cl.[6] H04B *1/04*
U.S. Cl. 455—126 **17 Claims**



1. A system for transmitting combined, multi-carrier signals comprising:

channel modulation means for generating a modulated signal for each channel to be transmitted;

summing means for summing said modulated signals to generate a composite signal;

power amplifying means for amplifying said composite signal to generate a combined, multi-carrier signal including intermodulation products;

feedback means including a cartesian feedback loop for feeding back a portion of said combined, multi-carrier signal to said channel modulation means wherein said intermodulation products of said combined, multi-carrier signal are suppressed; and

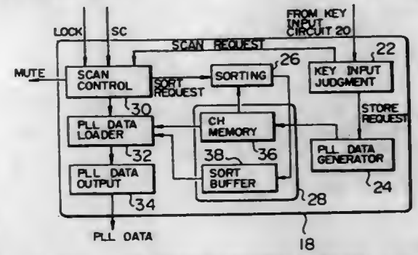
antenna means for transmitting said combined, multi-carrier signal.

5,551,071

CHANNEL SORTING SCANNING RECEIVER

Yasuyoshi Nakano, Kashiwa, Japan, and Seiji Harada, Colleyville, Tex., assignors to Uniden Corp., Ichikawa, Japan, and Uniden America Corporation, Fort Worth, Tex.

Filed Feb. 15, 1994, Ser. No. 196,427
Int. Cl.[6] H04B *1/18*
U.S. Cl. 455—161.2 **8 Claims**



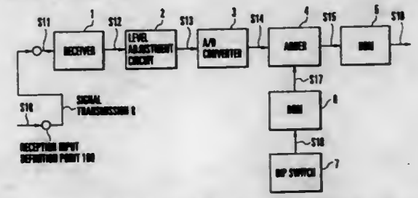
1. A scan receiving system comprising an antenna circuit, a radio-frequency reception circuit connected to said antenna circuit and for converting a received radio-frequency signal into an audio-frequency signal, an audio-frequency circuit connected to said radio-frequency reception circuit and for amplifying said audio-frequency signal supplied from said radio-frequency reception circuit, an input circuit for inputting a desired reception frequency, and a controller connected to said radio-frequency reception circuit, said audio-frequency circuit and said input circuit, said controller including a plurality of channel memories which are provided in one-to-one correspondence with a plurality of carrier frequency channels, a sort buffer connected to said controller, for storing a plurality of channel numbers that uniquely correspond to said plurality of channel memories, and wherein a plurality of desired reception frequencies inputted through said input circuit are programmed in said plurality of channel memories, said controller being operable to sort the plurality of channel numbers in said sort buffer in the order of frequency ascending in accordance with a scan instruction inputted through said input circuit to perform tuning to a reception signal in said radio-frequency reception circuit by successively using said programmed frequencies as reference values to thereby perform reception of a signal from a desired station, wherein said controller carries out the scanning operation while sorting the plurality of channel numbers in said sort buffer in the order of ascending reference oscillation frequencies.

5,551,072

RECEPTION FIELD DETECTION APPARATUS

Nozomu Watanabe, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 25, 1995, Ser. No. 378,367
Claims priority, application Japan, Jan. 28, 1994, 6-008055
Int. Cl.[6] H04B *17/00*
U.S. Cl. 455—226.2 **7 Claims**



1. A reception field detection apparatus comprising:

field intensity detecting means for generating a first digital signal representing a value corresponding to a signal intensity of a received signal;

correction value setting means for generating a second digital signal representing a correction value of the signal intensity of the received signal in accordance with setting;

adding means for adding the first digital signal from said field intensity detecting means to the second digital signal from said correction value setting means to generate a third digital signal; and

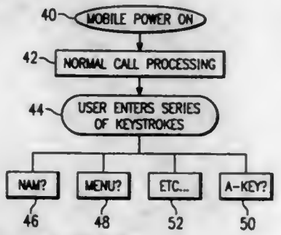
first converting means for a fourth digital signal representing a corrected reception field intensity on the basis of the third digital signal from said adding means.

5,551,073

AUTHENTICATION KEY ENTRY IN CELLULAR RADIO SYSTEM

Anthony J. Sammarco, Garner, N.C., assignor to Ericsson Inc., Research Triangle Park, N.C.

Filed Feb. 25, 1993, Ser. No. 23,345
Int. Cl.[6] H04B *1/38*
U.S. Cl. 455—89 **15 Claims**



1. A mobile station comprising:

a plurality of data entry keys;

means for operating said mobile station in a plurality of programming modes including an authentication key programming mode and a number administration module (NAM) programming mode;

means for enabling the selection of one of said programming modes through said data entry keys;

a memory containing at least one mobile identification number (MIN);

means for receiving an authentication key (A-key) entered by the user while said authentication key programming mode is selected; and

means for storing the entered A-key with said at least one MIN in said memory.

5,551,074

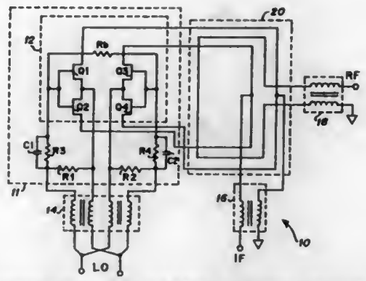
BALANCED REFLECTION TRANSFORMER

Michael W. Vice, El Granada, Calif., assignor to Watkins-Johnson Company, Palo Alto, Calif.

Continuation of Ser. No. 105,292, Aug. 10, 1993, abandoned, which is a division of Ser. No. 4,234, Jan. 14, 1993, Pat. No. 5,361,409, which is a continuation of Ser. No. 668,248, Mar. 12, 1991, abandoned. This application Jan. 19, 1995, Ser. No. 376,126
Int. Cl.[6] H04B *1/26*
U.S. Cl. 455—326 **8 Claims**

1. A reflection transformer, comprising:

a transmission line transformer having first and second ports, said first and second ports connected such that nearly complete coupling of a signal between said ports relies on substantially complete reflection of energy at a reference plane of the transformer, and a third port for connection to a phase selector switch means for inducing said substantially complete reflection of energy at said reference plane by switchably creating an impedance mismatch at a first end of a transmission line, said transmission line having a second end connected to at least one of said first and second ports



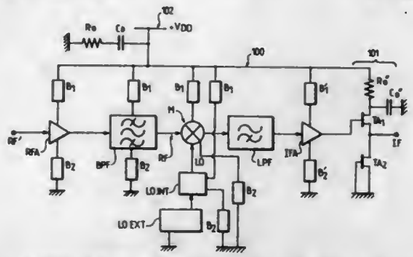
wherein said energy propagates in opposite directions over said transmission line due to said reflection at said reference plane.

5,551,075

SEMICONDUCTOR DEVICE INCLUDING A PLURALITY OF INTERCONNECTED FUNCTIONAL INTEGRATED CIRCUIT BLOCKS OPERATING AT HIGH AND ULTRAHIGH FREQUENCIES, EACH HAVING A DC DISTRIBUTION LINE

Christian Caux, La Garenne Colombes, and Patrice Gamand, Yerres, both of, France, assignors to U.S. Philips Corporation, New York, N.Y.

PCT No. PCT/NL92/00186, § 371 Date May 25, 1993, § 102(e) Date May 25, 1993, PCT Pub. No. WO93/08648, PCT Pub. Date Apr. 29, 1993
PCT Filed Oct. 19, 1992, Ser. No. 66,048
Claims priority, application France, Oct. 18, 1991, 91 12919
Int. Cl.[6] H04B *1/28*
U.S. Cl. 455—333 **25 Claims**



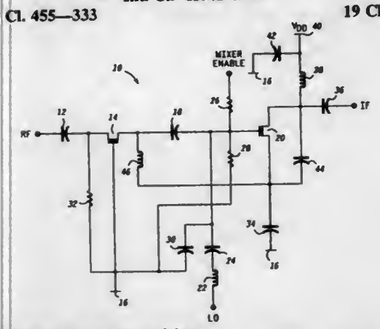
1. A semiconductor device comprising: a plurality of interconnected high frequency and ultrahigh frequency functional blocks positioned in close proximity and which together form an integrated circuit including at least an ultra high frequency amplifier block, said blocks including transistor stages operating at different frequencies, a DC voltage distribution line common to said blocks, means for biasing each block by means of a DC supply voltage of said DC voltage distribution line, said blocks also comprising power-matched circuits operating in the ultrahigh frequency range, wherein all of the high frequency and ultrahigh frequency functional blocks are integrated on one and the same substrate and, in order to provide the DC supply voltage of all functional blocks by means of said DC voltage distribution line which is common to all of the blocks, said device includes a frequency stabilization circuit for said amplifier block and another frequency stabilization circuit for the common DC voltage distribution line, and self-biasing circuits for biasing each block by means of said DC supply voltage.

5,551,076

CIRCUIT AND METHOD OF SERIES BIASING A SINGLE-ENDED MIXER

Fred H. Bonn, Chandler, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 6, 1994, Ser. No. 300,768
Int. Cl.[6] H04B *1/28*
U.S. Cl. 455—333 **19 Claims**



1. A mixer circuit, comprising:

a first transistor having a gate, a drain and a source, said source being coupled for receiving an RF signal, said gate being coupled to a first power supply conductor;

a second transistor having a gate, a drain and a source, said gate being coupled to said drain of said first transistors said gate being further coupled for receiving an LO signal, said source being coupled to said first power supply conductor, said drain providing an IF output signal; and

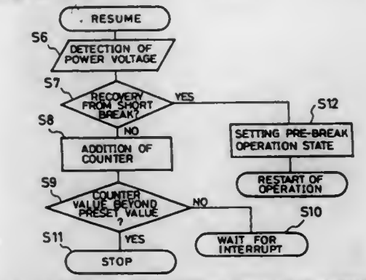
circuit means coupled between said source of said second transistor and said drain of said first transistor for providing a DC signal path between said source of said second transistor and said drain of said first transistor to allow said first and second transistors to share operating current.

5,551,077

PORTABLE TELEPHONE EQUIPMENT WITH CONDITION RESTORATION

Tateru Oda, Hyogo-ken, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 14, 1994, Ser. No. 181,110
Claims priority, application Japan, Jan. 20, 1993, 5-024777
Int. Cl.[6] H04B *1/16*
U.S. Cl. 455—343 **2 Claims**



1. A portable telephone equipment powered by a main power source and an auxiliary power source, said portable telephone equipment comprising:

a power source switching controller for detecting a power failure in said main power source and switching power supply to said auxiliary power source during the power failure;

storage means for storing information on the operation state of the equipment when a power failure in said main power source occurs;

a clock for obtaining information on the time when a power failure in said main power source occurs and for generating interrupt requests at fixed time intervals;

means for detecting restoration of said main power supply after the failure thereof;

means for storing in a counter the number of successive interrupt requests generated by said clock and for determining whether the stored number of interrupt requests is less than a preset number; and

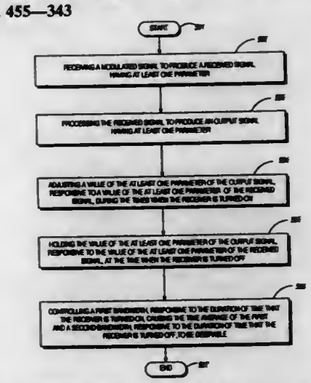
means for resuming operation of the equipment based on information stored in said storage means when said means for detecting restoration of said main power supply detects restoration of said main power supply after a failure thereof and when the number of interrupt requests stored in said counter is less than said preset number.

5,551,078

APPARATUS AND METHOD FOR MINIMIZING THE TURN ON TIME FOR A RECEIVER OPERATING IN A DISCONTINUOUS RECEIVE MODE

Lawrence E. Connell, Naperville; Kenneth A. Paiti, East Dundee; William J. Roeckner, Algonquin, and Kenneth R. Haddad, Arlington Heights, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 29, 1994, Ser. No. 282,666
Int. Cl.[6] H04B *1/16*
U.S. Cl. 455—343 **4 Claims**



1. In a communication unit including a receiver that receives a signal including at least a first word block and a second word block, wherein each word block has a predetermined time duration, wherein each word block has desirable data words repeated therein, and wherein the receiver has a discontinuous receive mode of operation wherein the receiver is selectively turned on and off, a method for minimizing a turn on time for the receiver operating in the discontinuous receive mode, the method comprising the steps of:

turning on the receiver at a predetermined time prior to the arrival of each occurrence of the desirable data word;

verifying the integrity of the desirable data word responsive to receiving a number of occurrences of the desirable data word;

turning off the receiver for any remaining occurrences of the desirable data word within the predetermined time period responsive to the step of verifying the integrity of the desirable data word;

determining a variable time period that the receiver will be turned off responsive to the number of occurrences of the desirable data word used in the step of verifying and the predetermined time period; and

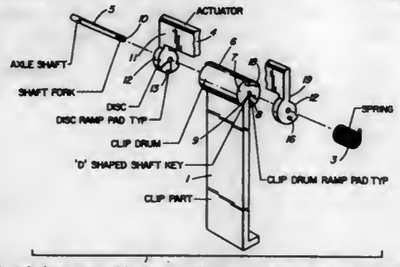
turning on the receiver at a time prior to the arrival of the second word block responsive to the variable time period.

5,551,079

RADIO PAGER HOLSTER ASSEMBLY

Gyles Panther, Stittsville; J. Peter Williams, Munster, and Donald W. F. Campbell, Nepean, all of, Canada, assignors to Silcom Research Limited, Kanata, Canada

Filed Apr. 29, 1993, Ser. No. 52,534
Claims priority, application Canada, Apr. 30, 1992, 2067624
Int. Cl.[6] H04B *1/08*
U.S. Cl. 455—347 6 Claims



1. A holster assembly for a radio pager or data receiver comprising:

(a) a holster for retaining said pager or receiver, the holster having a rear,

(b) a clip rotatably fixed to the holster,

(c) means for resiliently biasing the clip to the rear of the holster,

(d) an actuator engaging said clip whereby by manually pinching the actuator to the holster, the clip is rotated away from the holster and by releasing the actuator the clip is resiliently biased toward the rear of the holster,

(e) latching means for retaining the clip in a fixed position away from the holster upon the clip being manually pulled away from the holster,

f) the clip and the actuator each rotating on an axle retained by the holster, and

g) the clip and actuator each containing mutually interfacing faces rotating around said axle, the faces containing ramp pads which impart mutual stress parallel to the axis of the axle as the clip and actuator rotate relative to each other, said latching means comprising a stress relief means mutually engaged by said faces at a wide rotational angle of the clip relative to the actuator for retaining the clip in an open position until manually forced toward a closed position with said holster.

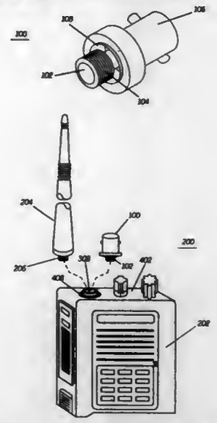
5,551,080

RADIO FREQUENCY CONNECTOR

Randall P. Chambers, Schaumburg; James J. Gfesser, Palatine; Martin E. Holmes, Hoffman Estates, all of Ill., and Kevin S. Oberman, Mt. Pleasant, Iowa, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 4, 1994, Ser. No. 206,811
Int. Cl.[6] H04B *1/08;* H01Q *1/24;* H01R *4/66*
U.S. Cl. 455—348 8 Claims

6. A communication device, comprising:



a receiver for receiving a radio frequency signal, the receiver having a signal input and a ground plane;

a non-coaxial antenna having a coupling port;

an enclosure for housing the receiver, the receiver having a first major surface;

a metallic antenna plate attached to the first major surface for providing a ground plane for the antenna in order to render the non-coaxial antenna more efficient, the metallic plate including:

a ground contact tab for coupling the metallic antenna plate to the ground plane of the receiver;

at least one circular opening having a circumference and having a plurality of raised finger tabs on the circumference; and

a coupler for coupling the coupling port of the non-coaxial antenna to the signal input of the receiver without contacting the raised finger tabs.

DESIGN PATENTS

GRANTED August 27, 1996

ERRATA

For CLASS	See PATENT NO.
D 14–167	D 373,109

1189
4
AG
27
1996
UMI

373,011

BELT

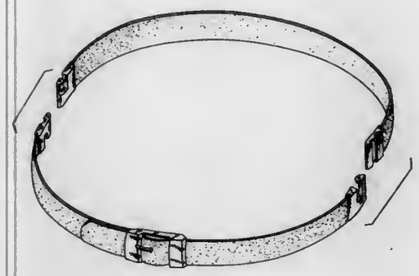
Thomas E. Rippel, Unterburger Str. 12, 90482 Nürnberg, Germany

Filed Nov. 28, 1994, Ser. No. 31,594

Claims priority, application Germany, May 27, 1994, M 94 04 226.8

Term of patent 14 years

U.S. Cl. D2—627



373,012

SHOE SOLE

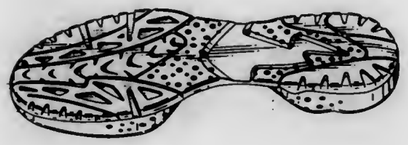
Hiroshi Nozu, Akashi; Nobutane Inoue, Kobe, and Kazumasa Yoshikawa, Osaka, all of, Japan, assignors to Asics Corporation, Japan

Filed Jun. 22, 1994, Ser. No. 24,881

Claims priority, application Japan, Dec. 28, 1993, 39908/93

Term of patent 14 years

U.S. Cl. D2—954



373,013

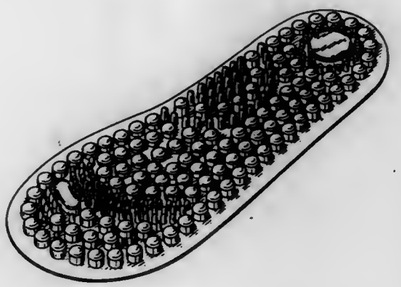
INNER SOLE

Papini Rosetta, Larciano, Italy, assignor to R&S Sales Company, Inc., New York, N.Y.

Filed Sep. 8, 1995, Ser. No. 43,635

Term of patent 14 years

U.S. Cl. D2—961



373,014

SOCK

Wei-Feng Chiang, No. 210, Sec. 3, Tai-Chung-Kang Rd., Hsi-Tun Dist., Taichung City, Taiwan

Filed Jun. 1, 1995, Ser. No. 39,639

Term of patent 14 years

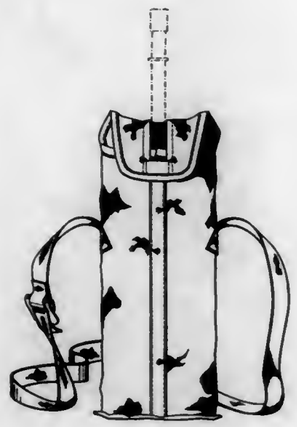
U.S. Cl. D2—980



373,015
FOLDING SWEEP SPORT FAN
Mark A. Schwartz, 15618 Grovewood, Cleveland, Ohio 44110
Filed Oct. 31, 1995, Ser. No. 45,848
Term of patent 14 years
U.S. Cl. D3—2



373,016
PORTABLE HOLDER FOR A BEVERAGE CONTAINER
Barbara M. Welsh, 205 Yale Ave., Pittsburgh, Pa. 15229
Filed Dec. 1, 1994, Ser. No. 31,633
Term of patent 14 years
U.S. Cl. D3—202



373,017
KEY FOB
Craig E. Lewis, 9 Beechgrove Gardens, Aberdeen AB2 4HG, Scotland
Filed Jul. 27, 1994, Ser. No. 26,419
Claims priority, application United Kingdom, Jan. 28, 1994, 2036673
Term of patent 14 years
U.S. Cl. D3—207



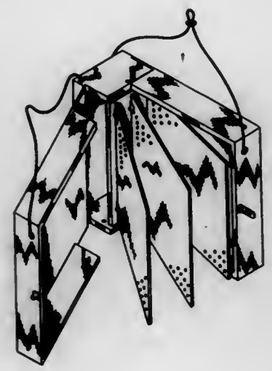
373,018
PORTABLE CELLULAR PHONE CARRIER
V. Vic Alberti, 2491 W. Shaw Ave., No. 110, Fresno, Calif. 93711
Filed Jan. 13, 1995, Ser. No. 33,470
Term of patent 14 years
U.S. Cl. D3—218



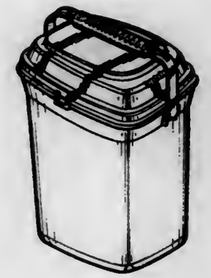
373,019
HANDBAG
Thomas C. Ford, Milan, Italy, assignor to Guccio Gucci S.p.A., Firenze, Italy
Filed Dec. 29, 1993, Ser. No. 16,923
Claims priority, application Hague Agreement, Jul. 1, 1993, DMA/002204
Term of patent 14 years
U.S. Cl. D3—243



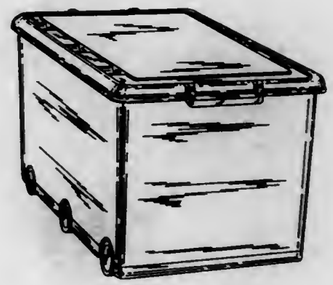
373,020
ORGANIZER FOR ASSORTED SMALL ARTICLES
Helen L. Martin, P.O. Box 17043, Salt Lake City, Utah 84117
Filed Apr. 28, 1995, Ser. No. 38,100
Term of patent 14 years
U.S. Cl. D3—273



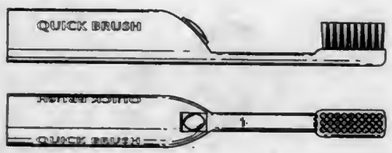
373,021
STORAGE CONTAINER
John D. Breen, Wooster, and Stephen P. Casteel, Wadsworth, both of Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Dec. 14, 1994, Ser. No. 32,180
Term of patent 14 years
U.S. Cl. D3—276



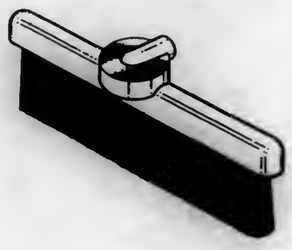
373,022
STORAGE BOX
Sami Sagol, Ramat HaSharon, Israel, assignor to Keter Plastic Ltd., Herzlia, Israel
Filed Oct. 21, 1994, Ser. No. 30,040
Claims priority, application Israel, Apr. 21, 1994, 22544
Term of patent 14 years
U.S. Cl. D3—279



373,023
TOOTHPASTE DISPENSING TOOTHBRUSH
Christopher A. Otero, and Mark E. Otero, both of 410 Atlantic SW., Albuquerque, N.M. 87102
Filed Apr. 20, 1995, Ser. No. 37,774
Term of patent 14 years
U.S. Cl. D4—108



373,024
BRUSH HEAD
Charles G. Shepherd, 1008 Westdale Rd., Oakville, Ontario, Canada
Filed Apr. 3, 1995, Ser. No. 37,019
Term of patent 14 years
U.S. Cl. D4—132



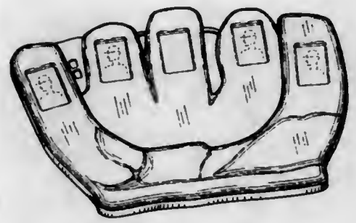
373,025
BRUSH
Frank W. Phillips, 144 Squirrels Heath Lane, Ardley Green, Hornchurch, Essex RN11 2DX, England
Filed Jul. 25, 1995, Ser. No. 41,876
Claims priority, application United Kingdom, Jan. 27, 1995, 2044888
Term of patent 14 years
U.S. Cl. D4—134



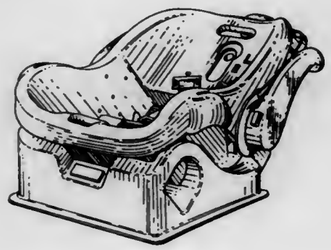
373,026
ONE SIDE OF A PAPER WIPE PRODUCT
Peter J. Delebreau, and Bradley G. Schmidt, both of Green Bay, Wis., assignors to Fort Howard Corporation, Green Bay, Wis.
Filed Dec. 15, 1994, Ser. No. 32,311
Term of patent 14 years
U.S. Cl. D5—20



373,027
BASEBALL CARD DISPLAY GLOVE
Brad S. Hulback, and Lester L. Jacobson, both of Eau Claire, Wis., assignors to Star Windo, Eau Claire, Wis.
Filed Aug. 22, 1994, Ser. No. 27,469
Term of patent 14 years
U.S. Cl. D6—303



373,028
FRAME FOR AN INFANT CAR SEAT
James M. Kain, Tipp City, Ohio, assignor to Lisco, Inc., Tampa, Fla.
Filed Sep. 29, 1993, Ser. No. 13,658
Term of patent 14 years
U.S. Cl. D6—333



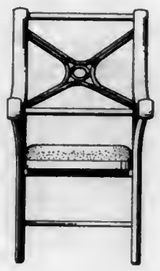
373,029
ADJUSTABLE HIGH CHAIR
John V. Mariol, Cincinnati, and Paul K. Meeker, Hiram, both of Ohio, assignors to Lisco, Inc., Tampa, Fla.
Filed Sep. 29, 1993, Ser. No. 13,659
The portion of the term of this patent subsequent to Aug. 29, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—339



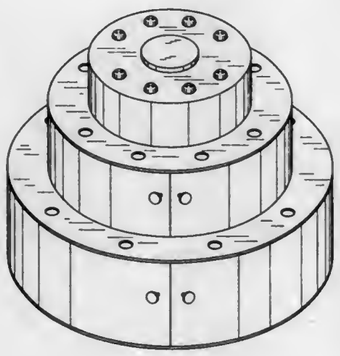
373,030
CHAIR
Chao K. Chen, 6F, No. 6, Alley 24, Lane 267, Chan-An Street, Lu-Chou, Taipei, Taiwan
Filed Oct. 1, 1993, Ser. No. 13,792
Term of patent 14 years
U.S. Cl. D6—341



373,031
ARM CHAIR
Leo Martin, Coconut Grove, Fla., assignor to Miami Metal Products, Inc., Miami, Fla.
Filed Sep. 8, 1995, Ser. No. 43,658
Term of patent 14 years
U.S. Cl. D6—380



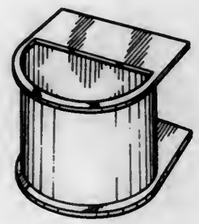
373,032
TIERED STORAGE UNIT
Judith A. Williamson-Markman, 5167 Jarom, Las Vegas, Nev. 89120
Filed Feb. 7, 1995, Ser. No. 34,522
Term of patent 14 years
U.S. Cl. D6—437



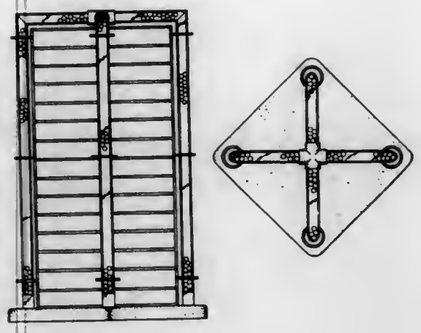
373,033
DRESSER
Paul A. Rosebrock, Morganton, N.C., assignor to Henredon Furniture Industries, Inc., Morganton, N.C.
Filed Aug. 23, 1994, Ser. No. 27,492
Term of patent 14 years
U.S. Cl. D6—445



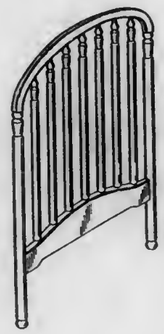
373,034
MERCHANDISE HOLDER
Neal M. Menaged, South Hampton, Pa., assignor to Lewis M. Hendler, Huntingdon Valley, Pa.
Filed Nov. 4, 1994, Ser. No. 30,692
Term of patent 14 years
U.S. Cl. D6—466



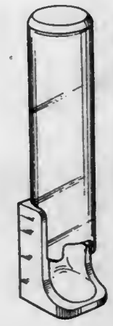
373,035
DISPLAY STAND
Diane Keller, Copiague, N.Y.; Frank Keller, Asbury; Charles Better, Port Monmouth, both of N.J., and Edwin Pettersen, Staten Island, N.Y., assignors to Kinney Shoe Corporation, New York, N.Y.
Filed Oct. 29, 1993, Ser. No. 14,716
The portion of the term of this patent subsequent to Apr. 16, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—477



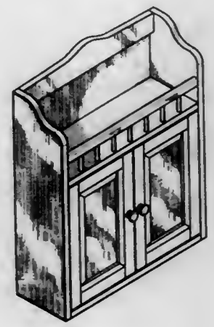
373,036
CRIB ENDBOARD
Merlin A. Brunner, Appleton, and Harvey J. Draheim, Weyauwega, both of Wis., assignors to Simmons Juvenile Products Company, Inc., New London, Wis.
Filed Apr. 6, 1995, Ser. No. 37,200
Term of patent 14 years
U.S. Cl. D6—508



373,037
CONTAINER/DISPENSER FOR MAKE-UP REMOVING PADS
Giovanni Lotti, Via Berni, 2, 46038 Mantova, Italy
Filed Sep. 7, 1995, Ser. No. 43,611
Claims priority, application WIPO, Jul. 19, 1995, DM/033580
Term of patent 14 years
U.S. Cl. D6—515



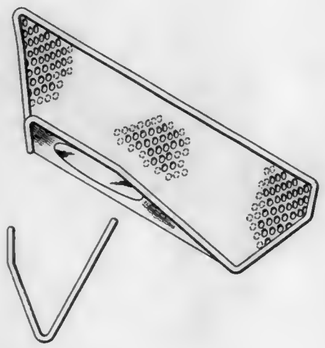
373,038
BATHROOM CABINET
Joe Chen, 30 Bedminster Rd., Randolph, N.J. 07869
Filed Oct. 20, 1995, Ser. No. 45,463
Term of patent 14 years
U.S. Cl. D6—561



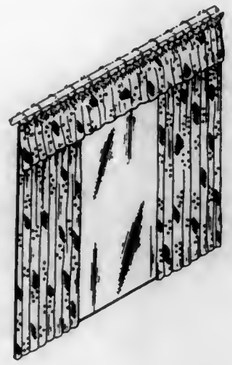
373,039
DISPLAY BASKET
Milton L. Cohen, Hewlett Bay Park, and Jeff Siegel, Great Neck, both of N.Y., assignors to Lifetime Hoan Corporation, Westbury, N.Y.
Filed Aug. 21, 1995, Ser. No. 42,934
Term of patent 14 years
U.S. Cl. D6—566



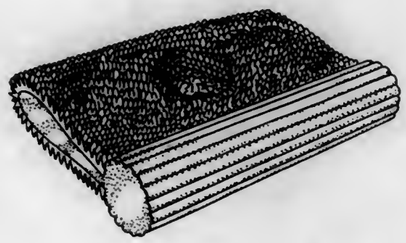
373,040
LETTER HOLDER
Craig Milroy, Palo Alto, Calif., assignor to Design Ideas, Ltd., Springfield, Ill.
Division of Ser. No. 17,183, Jan. 6, 1994, Pat. No. Des. 365,954. This application Dec. 29, 1995, Ser. No. 48,469
Term of patent 14 years
U.S. Cl. D6—566



373,041
SHOWER CURTAIN
Howard W. Michaelson, 4 Whitfield La., Tanglewood Hills, Coram, N.Y. 17727
Filed Mar. 29, 1995, Ser. No. 36,870
Term of patent 14 years
U.S. Cl. D6—575



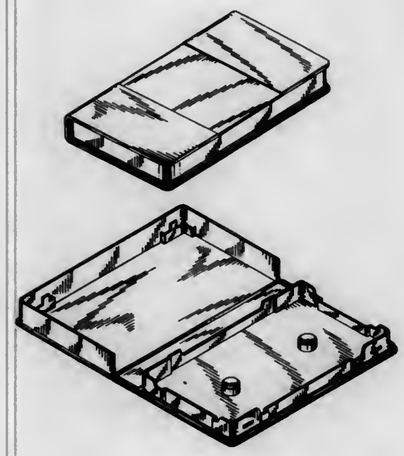
373,042
SYNTHETIC FOAM PILLOW WITH INTEGRAL NECKROLL
Vincenzo A. Bonaddio, Boothwyn, Pa., assignor to FOAMEX L.P., Linwood, Pa.
Filed Sep. 27, 1994, Ser. No. 28,993
Term of patent 14 years
U.S. Cl. D6—601



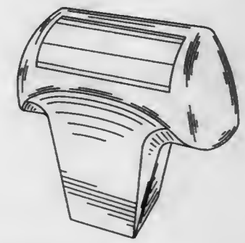
373,043
PERFORATED ROLL OF PLACEMATS
Michael S. Zumbo, and Renee H. Zumbo, both of 6416 Telegraph Ave., Oakland, Calif. 94609
Filed Sep. 6, 1994, Ser. No. 28,074
Term of patent 14 years
U.S. Cl. D6—613



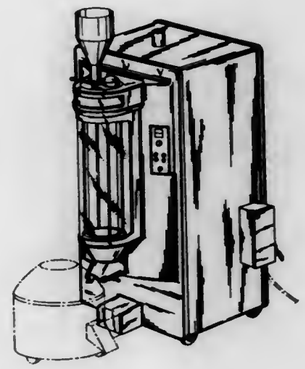
373,044
CASE FOR VIDEOCASSETTE
Ryoko Kikuchi, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jan. 10, 1994, Ser. No. 17,318
Claims priority, application Japan, Jul. 13, 1993, 5-21388
Term of patent 14 years
U.S. Cl. D6—632



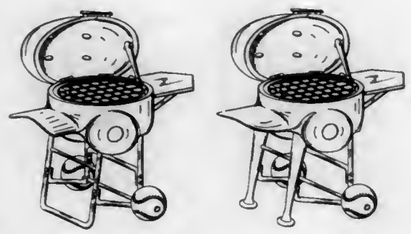
373,045
DISPENSING UNIT FOR SOFT-DRINKS
Riccardo Guadalupi, Ponteranica, Italy, assignor to VIN Service, S.r.l., Bergamo, Italy
Filed Apr. 26, 1993, Ser. No. 7,604
Claims priority, application Italy, Oct. 26, 1992, MI9200713
Term of patent 14 years
U.S. Cl. D7—300



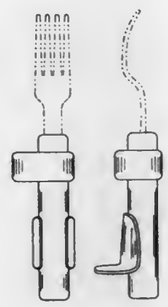
373,046
COFFEE BEAN ROASTER WITH TRANSPARENT DISPLAY COLUMN
Brian D. Newnan, 10841 Herchell Dr., San Jose, Calif. 95127
Continuation-in-part of Ser. No. 28,285, Sep. 9, 1994. This application Dec. 20, 1994, Ser. No. 32,534
Term of patent 14 years
U.S. Cl. D7—323



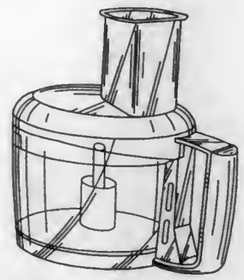
373,047
BASEBALL HELMET BARBEQUE GRILL
David N. McCrary, 2731 Scott St. N., Valdosta, Ga. 31601, and Fred L. McCrary, 606 Camelot Dr., Valdosta, Ga. 31601
Filed Mar. 14, 1994, Ser. No. 19,856
Term of patent 14 years
U.S. Cl. D7—334



373,048
ADAPTIVE FORK FOR THE PHYSICALLY IMPAIRED
Timothy G. Knoebel, 4210 Clendenning Rd., Gibsonia, Pa. 15044
Filed Aug. 3, 1995, Ser. No. 42,188
Term of patent 14 years
U.S. Cl. D7—401.2



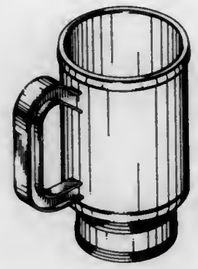
373,049
BOWL WITH COVER FOR A FOOD PROCESSOR
Claude le Rouzic, Montceau-les-mines, France, assignor to Magimix, France
Filed Mar. 31, 1994, Ser. No. 20,851
Claims priority, application France, Oct. 1, 1993, 93 5021
Term of patent 14 years
U.S. Cl. D7—413



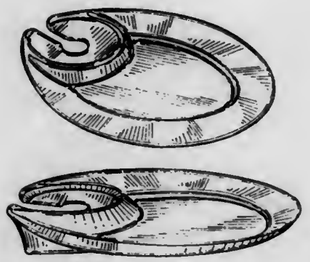
373,050
BOWL
Charles A. Brewer, Geneva; Bruce S. Cohen, Winnetka; James A. Cohen, Northbrook; Robert J. Kleckauskas, Downers Grove; Jeffrey A. Rustemeyer, Lake in the Hills, and Michael C. Thuma, DesPlaines, all of Ill., assignors to Arrow Plastic Manufacturing Co., Elk Grove, Ill.
Filed Aug. 25, 1994, Ser. No. 27,590
Term of patent 14 years
U.S. Cl. D7—505



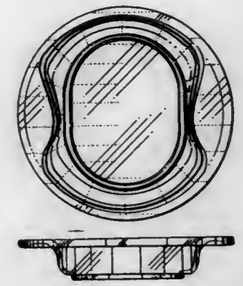
373,051
TRAVEL COFFEE MUG
Jeffrey A. Kramer, 1241 NE 83rd St., Miami, Fla. 33138, and William W. Rosenfeld, 8501 SW 30 St., Davie, Fla. 33328
Division of Ser. No. 35,023, Feb. 17, 1995. This application Oct. 23, 1995, Ser. No. 45,553
Term of patent 14 years
U.S. Cl. D7—536



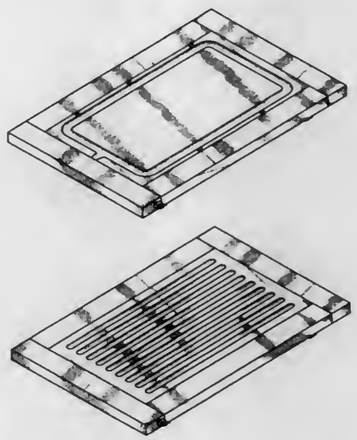
373,052
COCKTAIL DISH
Anthony P. Di Biase, 45 Ivy Pl., Wayne, N.J. 07470
Filed Aug. 24, 1995, Ser. No. 43,066
Term of patent 14 years
U.S. Cl. D7—555



373,053
DINNER PLATE
Jean P. Allegre, Saint-Etienne, France, assignor to Allegre Puericulture Hygiene S.A., France
Filed Jun. 13, 1994, Ser. No. 24,309
Claims priority, application France, Dec. 13, 1993, 93 6577
Term of patent 14 years
U.S. Cl. D7—587



373,054
COMBINED CARVYING AND BREADBOARD
Carsten Joergensen, Kriens, Switzerland, assignor to PI-Design AG, Triengen, Switzerland
Filed Apr. 25, 1994, Ser. No. 21,891
Claims priority, application Denmark, Oct. 25, 1993, 947/93
Term of patent 14 years
U.S. Cl. D7—698



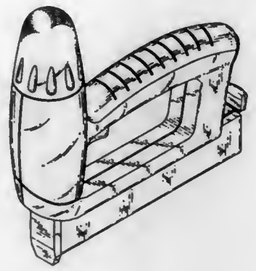
373,055
FOOD CADDY
Hernando M. Segura, La Victoria, Venezuela, assignor to Polimeros Industriales Compania Anonima Polimes C.A., Venezuela
Filed Oct. 26, 1995, Ser. No. 45,683
Term of patent 14 years
U.S. Cl. D7—709



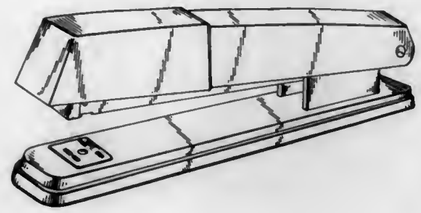
373,056
RAKE FOR GOLF COURSE SAND TRAPS
David B. Hueber, Ponte Vedra Beach, Fla., assignor to D. B. Hueber Golf Company, Ponte Vedra Beach, Fla.
Filed Jul. 17, 1995, Ser. No. 41,482
Term of patent 14 years
U.S. Cl. D8—13



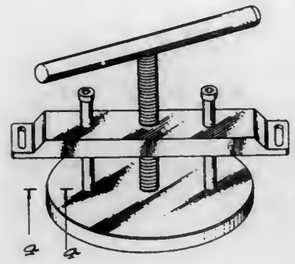
373,057
ELECTRIC STAPLER
Benjamin M. J. Chen, Taichung Hsien, Taiwan, assignor to Regitar Power Tools Co., Ltd., Taichung Hsien, Taiwan
Filed Oct. 25, 1995, Ser. No. 45,627
Term of patent 14 years
U.S. Cl. D8—49



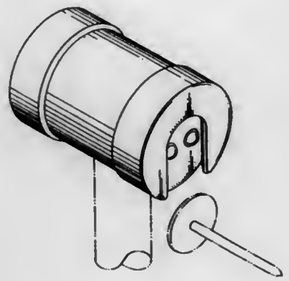
373,058
STAPLER
Walter B. Herbst, Evanston; Mikael Backstrom, Chicago, and Ralph Lazar, Skokie, all of Ill., assignors to General Binding Corporation, Northbrook, Ill.
Filed Jun. 27, 1994, Ser. No. 25,079
Term of patent 14 years
U.S. Cl. D8—50



373,059
SNAP RING INSERTION TOOL
Douglas Hodges, 44200 Kingtree Ave., Unit 7, Lancaster, Calif. 92423
Filed Oct. 4, 1994, Ser. No. 29,382
Term of patent 14 years
U.S. Cl. D8—51



373,060
HAMMERHEAD FOR INSTALLING SHEATHING PANELS
Timothy A. Wilcox, 3257 James Harbor Way, Lawrenceville, Ga. 30244
Filed Jun. 1, 1995, Ser. No. 39,641
Term of patent 14 years
U.S. Cl. D8—78



373,061
SCREWDRIVER
Richard J. Macor, Greenwich, N.J., assignor to Proprietary Technologies, Inc., Stewartsville, N.J.
Filed Jun. 5, 1995, Ser. No. 39,726
Term of patent 14 years
U.S. Cl. D8—85



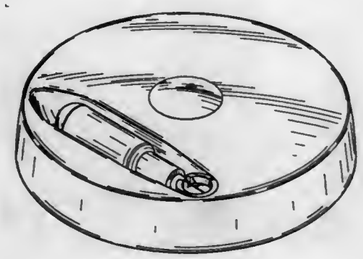
373,062
POCKET KNIFE
Alain P. Neron, Thiers, France, assignor to Wichard, Thiers, France
Filed Apr. 3, 1995, Ser. No. 37,029
Claims priority, application WIPO, Nov. 28, 1994, DM/031 394
Term of patent 14 years
U.S. Cl. D8—99



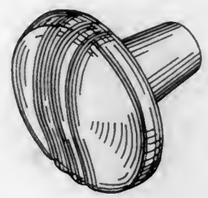
373,063
CYLINDER PORTION OF A LEVER TYPE LOCKSET
Anthony J. Carsello, Chino, Calif., assignor to Emhart Inc., Newark, Del.
Filed Aug. 3, 1994, Ser. No. 26,522
Term of patent 14 years
U.S. Cl. D8—308



373,064
HAND WHEEL WITH FOLDABLE CRANK ARM
Giorgio Decursu, and Alberto Bertani, both of Milan, Italy, assignors to Elesa S.p.A., Milan, Italy
Filed Oct. 3, 1994, Ser. No. 29,278
Claims priority, application Hague Agreement, Apr. 5, 1994, DM/029270
Term of patent 14 years
U.S. Cl. D8—308



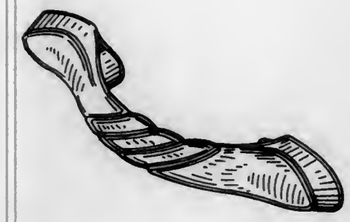
373,065
KNOB
Robert De'Armond, Celina, Ohio, assignor to Newell Operating Company, Freeport, Ill.
Filed Jul. 26, 1995, Ser. No. 41,911
Term of patent 14 years
U.S. Cl. D8—310



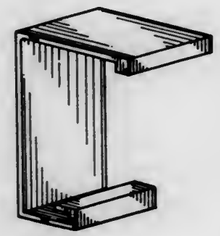
373,066
KNOB
Robert De'Armond, Celina, Ohio, assignor to Newell Operating Company, Freeport, Ill.
Filed Jul. 26, 1995, Ser. No. 41,915
Term of patent 14 years
U.S. Cl. D8—310



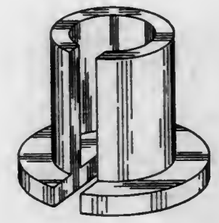
373,067
PULL
Robert De'Armond, Celina, Ohio, assignor to Newell Operating Company, Freeport, Ill.
Filed Jul. 26, 1995, Ser. No. 41,916
Term of patent 14 years
U.S. Cl. D8—317



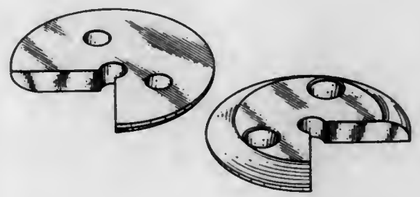
373,068
DETACHABLE ANCHOR BRACKET FOR A POOL COVER
Charles W. Airey, Alden, N.Y., assignor to Envisionairey Products, Inc., Alden, N.Y.
Continuation-in-part of Ser. No. 5,917, Mar. 12, 1993, Pat. No. 359,224. This application Feb. 27, 1995, Ser. No. 35,448
Term of patent 14 years
U.S. Cl. D8—349



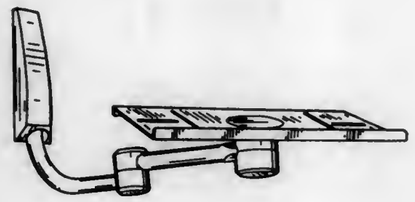
373,069
INSERT FOR MOUNTING A DECORATIVE FIGURE ONTO AN ANTENNA
John McCarthy, 16912 Westwood La. #31, Huntington Beach, Calif. 92647
Filed Dec. 19, 1994, Ser. No. 32,459
Term of patent 14 years
U.S. Cl. D8—354



373,070
ROTATABLE CONCRETE SPACER
Stewart B. Kriegstein, 2929 Sailor Ave., Ventura, Calif. 93001
Continuation-in-part of Ser. No. 342,179, Nov. 18, 1994. This application Aug. 18, 1995, Ser. No. 42,867
Term of patent 14 years
U.S. Cl. D8—354



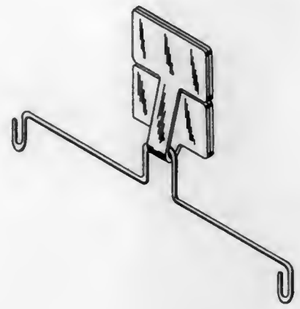
373,071
TV SUPPORT
Henricus H. Vogels, DE Eindhoven, Netherlands, assignor to Vogel's Holding B.V., Eindhoven, Netherlands
Division of Ser. No. 34,385, Feb. 3, 1995. This application Sep. 6, 1995, Ser. No. 43,536
Claims priority, application European Pat. Off., Oct. 17, 1994, DMA/002670
Term of patent 14 years
U.S. Cl. D8—363



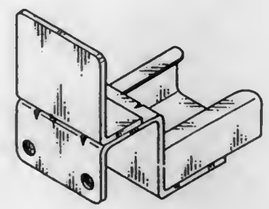
373,072
LACE HOOK
Paul M. Durante, 1145 El Abra Way, San Jose, Calif. 95125
Filed Mar. 2, 1995, Ser. No. 35,675
Term of patent 14 years
U.S. Cl. D8—367



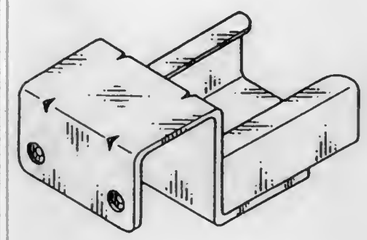
373,073
ORGANIZER HANGER
Michael S. Kellogg, Brookfield, Wis., assignor to Bajer Design & Marketing, Inc., Brookfield, Wis.
Filed Jul. 8, 1994, Ser. No. 25,711
Term of patent 14 years
U.S. Cl. D8—373



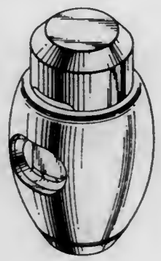
373,074
JOINT FOR A RACK FRAME
Muneharu Miyashita, Shizuoka, Japan, assignor to Yazaki Industrial Chemical Co., Ltd., Shizuoka, Japan
Filed Aug. 22, 1994, Ser. No. 27,435
Claims priority, application Japan, Jun. 30, 1994, 6-19416
Term of patent 14 years
U.S. Cl. D8—382



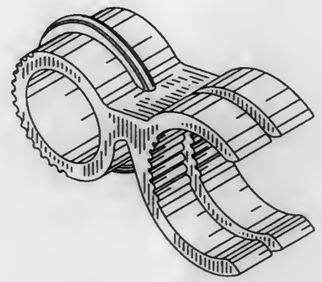
373,075
JOINT FOR A RACK FRAME
Muneharu Miyashita, Shizuoka, Japan, assignor to Yazaki Industrial Chemical Co., Ltd., Shizuoka, Japan
Filed Aug. 22, 1994, Ser. No. 27,439
Term of patent 14 years
U.S. Cl. D8—382



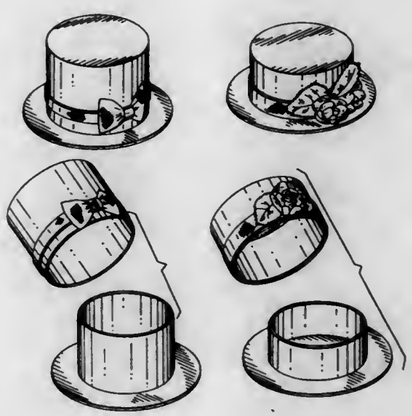
373,076
STRAP FASTENER
Yasuhiko Ikeda, Toyonaka, Japan, assignor to Nifco Inc., Yokohama, Japan
Filed Nov. 10, 1994, Ser. No. 31,185
Claims priority, application Japan, May 12, 1994, 6-13195
Term of patent 14 years
U.S. Cl. D8—383



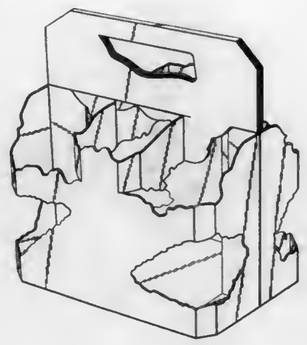
373,077
RATCHET LINK
James P. Dudley, Sacramento, and Kyle D. Fields, El Dorado Hills, both of Calif., assignors to OP-D-OP, Inc., Roseville, Calif.
Filed Aug. 24, 1994, Ser. No. 27,541
Term of patent 14 years
U.S. Cl. D8—499



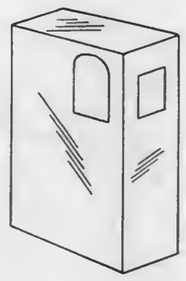
373,078
HAT GIFT BOX
Kui-Eng Cheng, 99 Glencairn Street, Toronto, Ontario, Canada
Filed Jan. 20, 1995, Ser. No. 33,822
Term of patent 14 years
U.S. Cl. D9—320



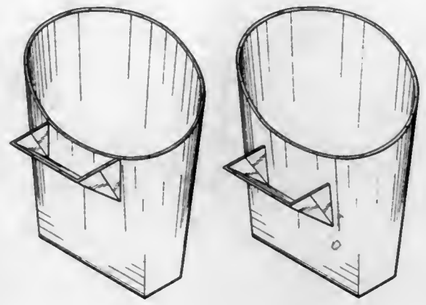
373,079
BOTTLE CARRIER
Eden Fahlen, Brooklyn, N.Y., assignor to The Coca-Cola Company, Atlanta, Ga.
Filed Sep. 14, 1995, Ser. No. 43,961
Term of patent 14 years
U.S. Cl. D9—346



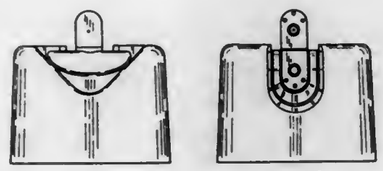
373,080
LAWN STATUARY BOX
Mario Prosperi, Lake Barrington Shores, and Dennis Prosperi, South Barrington, both of Ill., assignors to Henri Studio, Inc., Wauconda, Ill.
Filed Apr. 8, 1994, Ser. No. 21,050
Term of patent 14 years
U.S. Cl. D9—418



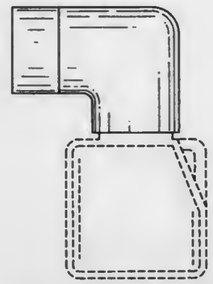
373,081
COMBINED PORTABLE FOOD AND CONDIMENT CONTAINER
Gordon B. Bridger, 3087 McFarland Rd., Lucas, Ohio 44843
Filed Nov. 16, 1994, Ser. No. 31,578
Term of patent 14 years
U.S. Cl. D9—430



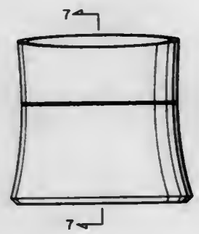
373,082
COMPOSITE OVERCAP AND DELIVERY HEAD FOR A CONTAINER
Daniel A. Ferrara, Jr., Bantam, Conn., assignor to Precision Valve Corporation, Yonkers, N.Y.
Continuation-in-part of Ser. No. 14,567, Oct. 25, 1993, abandoned. This application Apr. 14, 1994, Ser. No. 21,329
Term of patent 14 years
U.S. Cl. D9—447



373,083
COMBINED POUR SPOUT AND CAP FOR A CONTAINER
Satyendranath Das, P.O. Box 574, Mt. View, Calif. 94042-0574
Filed Oct. 17, 1994, Ser. No. 29,764
Term of patent 14 years
U.S. Cl. D9—447



373,084
COSMETIC CREAM CONTAINER
Young R. Choi, Seoul, Rep. of Korea, assignor to Pacific Corporation, Seoul, Rep. of Korea
Filed Jul. 14, 1995, Ser. No. 41,436
Term of patent 14 years
U.S. Cl. D9—504



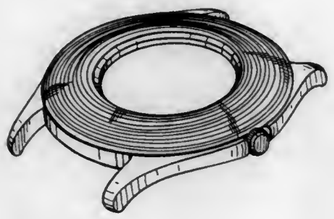
373,085
COMBINED BOTTLE AND CLOSURE
Thierry Lecoule, Paris, France, assignor to PDP Parfums de Paris S.A., Switzerland
Filed Mar. 21, 1994, Ser. No. 20,192
Claims priority, application Hague Agreement, Sep. 30, 1993, DM027498
Term of patent 14 years
U.S. Cl. D9—516



373,086
COMBINED COSMETIC BOTTLE AND CLOSURE
Eriko Hirato, Abiko, Japan, assignor to Shiseido Company, Ltd., Tokyo, Japan
Filed May 15, 1995, Ser. No. 39,402
Claims priority, application Japan, Nov. 21, 1994, 6-35112
Term of patent 14 years
U.S. Cl. D9—540



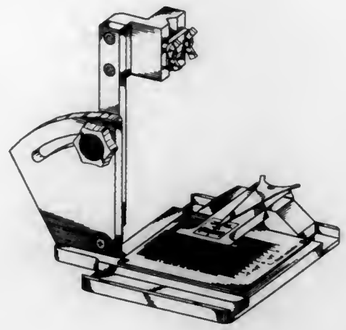
373,087
WATCH CASING WITHOUT FACE AND WATCHBAND
Jean Goulet Mauboussin, Paris, France, assignor to Mauboussin - Successeur de Noury, Paris, France
Filed Apr. 18, 1994, Ser. No. 21,468
Term of patent 14 years
U.S. Cl. D10—30



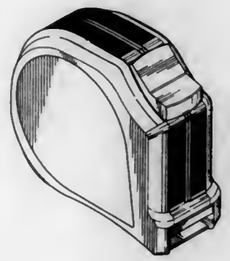
373,088
WATCH
Severin S. Wunderman, Irvine, Calif., assignor to Severin Montres AG (Severin Montres SA) Severin Montres Ltd., Lengnau, Switzerland
Filed Jun. 5, 1995, Ser. No. 39,743
Claims priority, application Hague Agreement, Dec. 6, 1994, DMA/002 719
Term of patent 14 years
U.S. Cl. D10—39



373,089
GOLF CLUB HEAD SURVEYING INSTRUMENT
Kuen-Yi Wang, No. 26, Lane 380, Chung San East Rd., Fong San, Kaohsiung Hsien, and Mondher Latiri, 7F 95-5 Shin-Gia Road, Feng-Shan, Kaohsiung, both of, Taiwan
Filed May 16, 1995, Ser. No. 38,847
Term of patent 14 years
U.S. Cl. D10—65



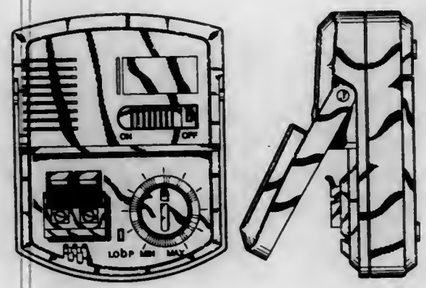
373,090
TAPE MEASURE CASE
Jeffrey E. Bennett, Newhall, Calif., assignor to Allied Wholesale, Inc., Sylmar, Calif.
Filed Aug. 1, 1995, Ser. No. 42,103
Term of patent 14 years
U.S. Cl. D10—72



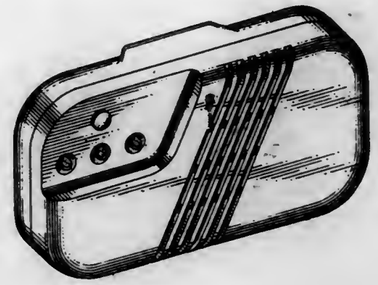
373,091
WEIGHT SCALE
Sharon M. LeBoeuf, 1633 42nd St., No. 4, Kenner, La. 70065
Filed Aug. 3, 1995, Ser. No. 42,194
Term of patent 14 years
U.S. Cl. D10—93



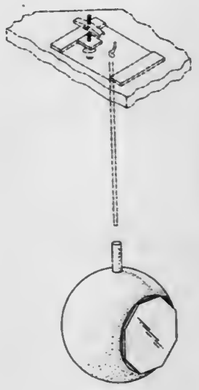
373,092
ELECTRONIC SIGNALLING TRANSMITTER FOR THE RETRIEVAL OF ANIMALS
Ping H. Heun, Kowloon, Hong Kong, assignor to GSL Rechargeable Products, Ltd., Kowloon, Hong Kong
Filed Apr. 7, 1995, Ser. No. 37,258
Term of patent 14 years
U.S. Cl. D10—104



373,093
DETECTOR HOUSING
Kenneth R. Fenne, Glen Ellyn, Ill., assignor to BRK Brands, Inc., Aurora, Ill.
Filed Jul. 20, 1995, Ser. No. 41,646
Term of patent 14 years
U.S. Cl. D10—106



373,094
VEHICLE LOCATOR
Raffi L. Marderosian, 854 Pondway Dr., Kettering, Ohio 45419
Filed May 6, 1994, Ser. No. 22,551
Term of patent 14 years
U.S. Cl. D10—109



373,095
NECKLACE
Paolo Bulgari, Rome, Italy, assignor to Bulgari S.p.A., Rome, Italy
Filed Sep. 6, 1994, Ser. No. 28,054
Claims priority, application Hague Agreement, Mar. 7, 1994, DMA/002444
Term of patent 14 years
U.S. Cl. D11—6



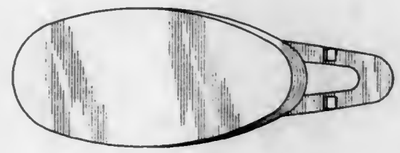
373,096
FINGER RING
Norberto Bergagnini, Garden City, N.Y., assignor to Sandberg & Sikorski Diamond Corp., New York, N.Y.
Filed Aug. 30, 1995, Ser. No. 43,263
Term of patent 14 years
U.S. Cl. D11—28



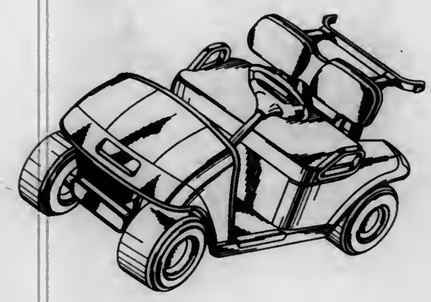
373,097
FIGURINE
Li-Mei Chiu, Nan Village, Kung Kuan Hsiang, Miaoli, Taiwan
Filed Sep. 7, 1995, Ser. No. 43,548
Term of patent 14 years
U.S. Cl. D11—160



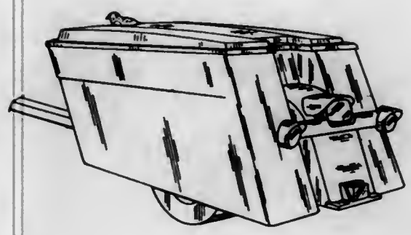
373,098
BRA CLIP
Shirley Lee, and Richard E. Lee, both of 3065 Farrell Dr., Palm Springs, Calif. 92262
Filed Feb. 9, 1994, Ser. No. 18,562
Term of patent 14 years
U.S. Cl. D11—215



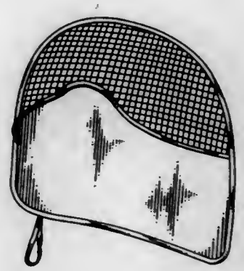
373,099
GOLF CAR
William R. Molzon, Clarkston, Mich., and James M. Criscuolo, Martinez, Ga., assignors to Textron Inc., Providence, R.I.
Continuation-in-part of Ser. No. 886,444, May 20, 1992, Pat. No. Des. 345,717, and a continuation-in-part of Ser. No. 886,445, May 20, 1992, Pat. No. Des. 345,718. This application Jan. 14, 1994, Ser. No. 17,534
The portion of the term of this patent subsequent to Apr. 5, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D12—16



373,100
MOTORCYCLE TRAILER
Randy B. Carter, 519 Claramont Dr., Concord, N.C. 28027
Filed Oct. 24, 1994, Ser. No. 30,247
Term of patent 14 years
U.S. Cl. D12—102



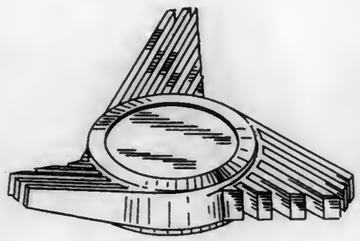
373,101
STEERING WHEEL COVER
Ezra D. Eskandry, 1925 Brickell Ave., D901, Miami, Fla. 33129
Filed Jan. 14, 1994, Ser. No. 17,466
Term of patent 14 years
U.S. Cl. D12—177



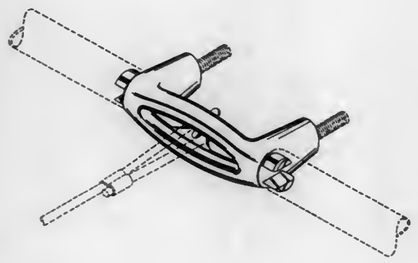
373,102
OCTAGONAL WIRE SPOKE WIRE WHEELS
James H. Choi, 2157 E. Del Amo Blvd., Rancho Dominguez, Calif. 90220
Filed Nov. 1, 1994, Ser. No. 30,529
Term of patent 14 years
U.S. Cl. D12—213



373,103
SPINNER FOR WHEELS
James K. Miansian, 218 Belmont 2, Long Beach, Calif. 90803
Filed Jun. 21, 1995, Ser. No. 40,549
Term of patent 14 years
U.S. Cl. D12—213



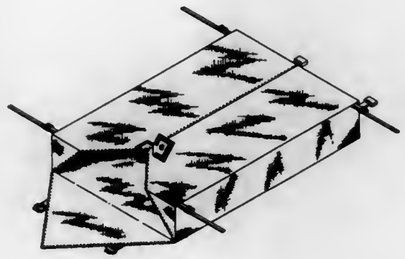
373,104
WATER SKI TOW FIXTURE FOR SECURING A WATER SKI TOW ROPE TO A BOAT
James H. Miller, Holland, and Steven R. Isenga, Zeeland, both of Mich., assignors to ITC Incorporated, Holland, Mich.
Filed Aug. 31, 1995, Ser. No. 43,476
Term of patent 14 years
U.S. Cl. D12—317



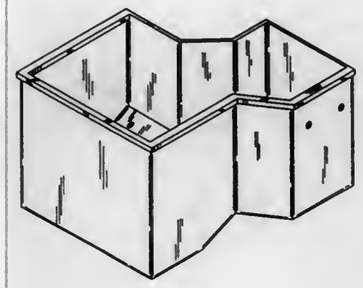
373,105
CONTAINER FOR A CARRIER ON A CAR-ROOF
Mitsuru Imotani, Yao, Japan, assignor to Imotani Industry Co., Ltd., Osaka, Japan
Filed Jun. 23, 1995, Ser. No. 40,700
Claims priority, application Japan, Jan. 19, 1995, 7-1118
Term of patent 14 years
U.S. Cl. D12—406



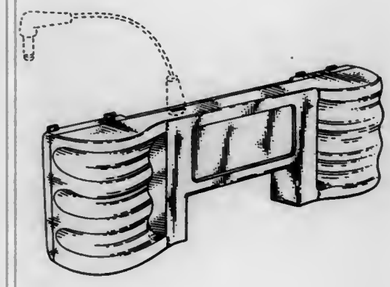
373,106
FLEXIBLE STORAGE CONTAINER FOR CARGO BED OF A PICKUP TRUCK
Randolph J. Guidi, Stockton, Calif., assignor to The Buffalo Bag LLC, Stockton, Calif.
Filed Jun. 17, 1994, Ser. No. 24,650
Term of patent 14 years
U.S. Cl. D12—423



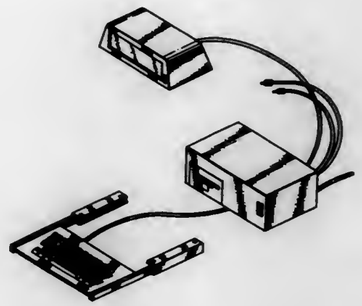
373,107
UNDERHOOD ACCESSORY CONTAINER
Edward Mooney, R.R. 2 Box 52, Greenbush, Minn. 56728
Filed Jun. 13, 1995, Ser. No. 40,219
Term of patent 14 years
U.S. Cl. D12—425



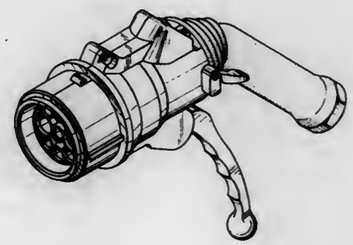
373,108
BATTERY PACK
Matchy L. C. Chung, Kowloon, Hong Kong, assignor to Atelier Sen, Inc., Los Angeles, Calif.
Filed Apr. 20, 1994, Ser. No. 21,590
Term of patent 14 years
U.S. Cl. D13—103



373,109
COMPUTERIZED MUSIC RECORDING AND PLAYBACK SYSTEM
Charles W. Brown, 20 Naomi Ct., Sumter, S.C. 29154
Filed Apr. 25, 1994, Ser. No. 21,863
Term of patent 14 years
U.S. Cl. D14—167



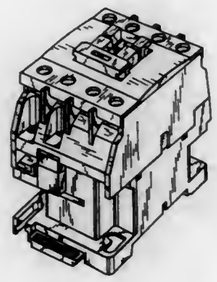
373,110
ELECTRICAL CHARGING PLUG
Yasuyoshi Fukao; Toshiyuki Sekimori; Hiromichi Kuno, all of Toyota; Nobuaki Yoshioka, Shizuoka-ken; Toshiaki Hasegawa, Shizuoka-ken, and Shigemitsu Inaba, Shizuoka-ken, all of, Japan, assignors to Yazaki Sogyo K.K., and Toyota Jidosha K.K., both of, Japan
Division of Ser. No. 20,177, Mar. 18, 1994, Pat. No. Des. 361,749. This application Jul. 18, 1995, Ser. No. 41,577
Claims priority, application Japan, Sep. 20, 1993, 5-28066
Term of patent 14 years
U.S. Cl. D13—146



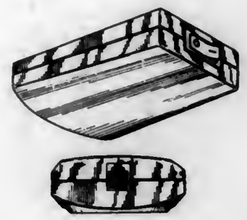
373,111
FRONT PANEL OF AN ELECTRICAL CONTACTOR
Christian Bouteiller, Rueil Malmaison, France, assignor to Telemecanique, France
Division of Ser. No. 829, Jan. 5, 1993, Pat. No. Des. 343,162, which is a continuation of Ser. No. 391,328, Aug. 9, 1989, abandoned. This application Aug. 30, 1993, Ser. No. 12,326
Claims priority, application France, Feb. 13, 1989, 891003
Term of patent 14 years
U.S. Cl. D13—159



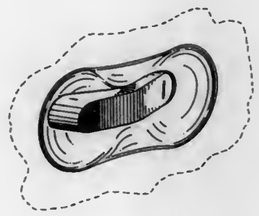
373,112
MAGNETIC CONTACTOR
Dong H. Kim, Seoul, Rep. of Korea, assignor to Goldstar Electric Machinery Co., Ltd., Seoul, Rep. of Korea
Filed Aug. 23, 1994, Ser. No. 27,522
Claims priority, application Rep. of Korea, Feb. 23, 1994, 3411/1994
Term of patent 14 years
U.S. Cl. D13—159



373,113
SWITCH
Christopher J. Stringer, San Francisco, Calif., assignor to Steelcase Inc., Grand Rapids, Mich.
Filed May 9, 1995, Ser. No. 38,595
Term of patent 14 years
U.S. Cl. D13—169



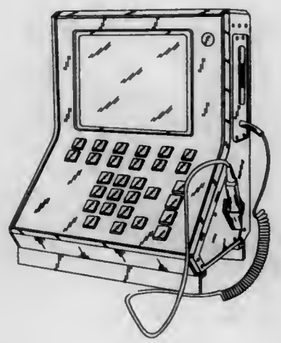
373,114
RECESSED ROCKER SWITCH
Anthony G. Laidlaw, Boise, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Jun. 6, 1995, Ser. No. 39,920
Term of patent 14 years
U.S. Cl. D13—169



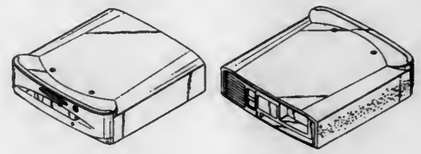
373,115
NOVELTY MAGNET
Charles Logan, 5570 S. 152nd St., Apt. 25, Tukwila, Wash. 98188
Filed May 25, 1994, Ser. No. 23,504
Term of patent 14 years
U.S. Cl. D13—183



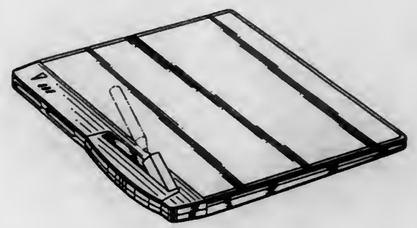
373,116
COMBINED PRODUCTION DATA ACQUISITION UNIT AND BAR CODE READER
Klaus Werse, Rottenburg, Germany, assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 8, 1994, Ser. No. 28,132
Claims priority, application Germany, Mar. 11, 1994, M 94 02 176.7
Term of patent 14 years
U.S. Cl. D14—100



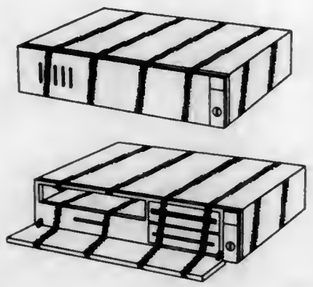
373,117
COMPUTER HOUSING
Matthew Barthelemy, Burlingame; Garry Goh, Mountain View; Daniel K. Harden, Palo Alto; Christopher Lenart, San Francisco, and Barbara Sauceda, Palo Alto, all of Calif., assignors to Acer America Corporation, San Jose, Calif.
Filed May 22, 1995, Ser. No. 38,770
Term of patent 14 years
U.S. Cl. D14—100



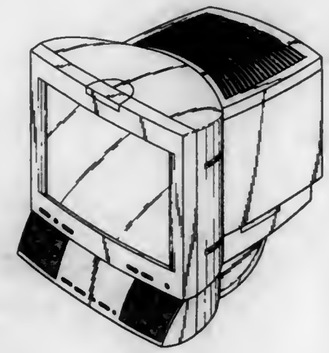
373,118
ELECTRONIC COMPUTER
Masatomo Naruki, Yokohama, Japan, assignor to Kabushiki Kaishi Toshiba/Toshiba Corporation, Kanagawa-ken, Japan
Filed Jun. 20, 1995, Ser. No. 40,510
Claims priority, application Japan, Dec. 22, 1994, 6-38902
Term of patent 14 years
U.S. Cl. D14—100



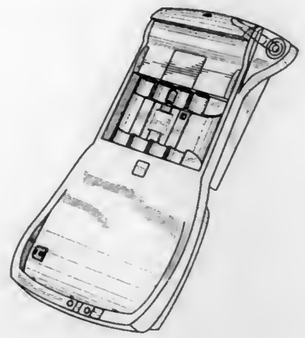
373,119
UNIT FOR EXTENDING THE FUNCTIONS OF ELECTRONIC COMPUTERS
Masaaki Iino, Yokohama, and Tooru Okuyama, Kanagawa, both of, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan
Filed Jan. 10, 1995, Ser. No. 33,337
Claims priority, application Japan, Jul. 22, 1994, 6-21802
Term of patent 14 years
U.S. Cl. D14—107



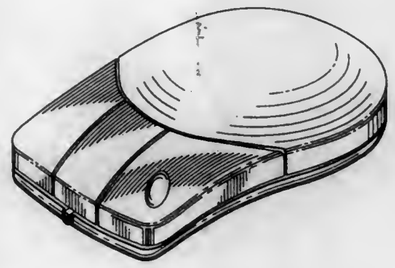
373,120
COMPUTER DISPLAY
Bartley K. André, Menlo Park, and Jonathan P. Ive, San Francisco, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.
Filed Jul. 26, 1995, Ser. No. 41,879
Term of patent 14 years
U.S. Cl. D14—113



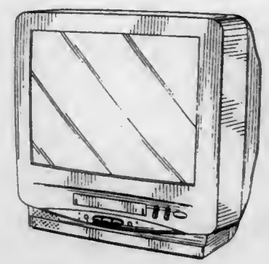
373,121
CRADLE FOR A PERSONAL DIGITAL ASSISTANT
Daniele DeIuliis, and Jonathan P. Ive, both of San Francisco, Calif., assignors to Apple Computer, Inc., Cupertino, Calif.
Filed Mar. 2, 1994, Ser. No. 19,434
Term of patent 14 years
U.S. Cl. D14—114



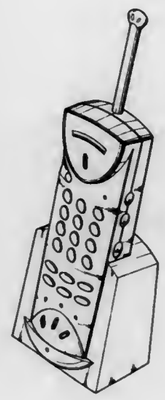
373,122
COMPUTER MOUSE
Johnson Lo, Taipei, Taiwan, assignor to Primax Electronics Ltd., Taipei, Taiwan
Filed Oct. 18, 1994, Ser. No. 29,862
The portion of the term of this patent subsequent to Aug. 20, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—114



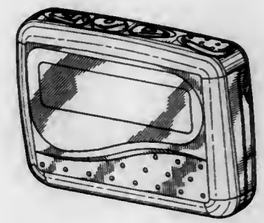
373,123
TELEVISION RECEIVER WITH VIDEO TAPE RECORDER
Koji Yukikado, and Norihiko Shimose, both of Ehime, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jun. 19, 1995, Ser. No. 40,454
Claims priority, application Japan, Dec. 21, 1994, 6-39427
Term of patent 14 years
U.S. Cl. D14—129



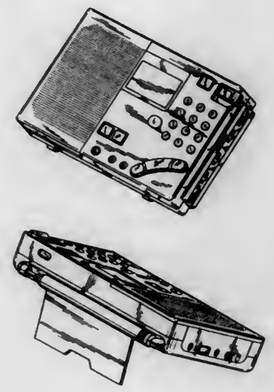
373,124
COMBINED CORDLESS HAND PHONE AND CHARGER
Yves Béhar, San Francisco, Calif., and Eok-nyun Lee, Kwangmyung-si, Rep. of Korea, assignors to Taihan Electric Wire Co., Ltd., Seoul, Rep. of Korea
Filed Sep. 26, 1995, Ser. No. 44,541
Term of patent 14 years
U.S. Cl. D14—148



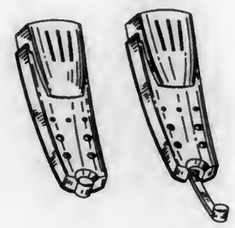
373,125
PORTABLE DATA COMMUNICATION RECEIVER
Bee L. Khoo, Johor Bahru, Malaysia, assignor to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 7, 1995, Ser. No. 43,620
Term of patent 14 years
U.S. Cl. D14—191



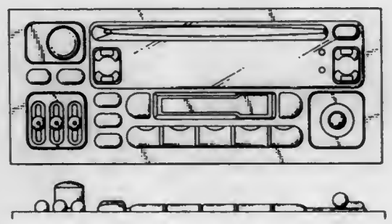
373,126
RADIO RECEIVER
Shuhei Taniguchi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Nov. 30, 1994, Ser. No. 31,906
Claims priority, application Japan, May 31, 1994, 6-15477
Term of patent 14 years
U.S. Cl. D14—198



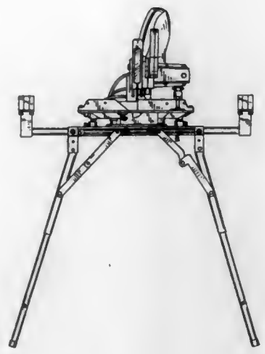
373,127
TELEPHONE HEADSET
Joost Godee, and Daniel Harden, both of Palo Alto, Calif., assignors to Proteq Technologies Pte. Ltd., Singapore, Singapore
Filed Aug. 14, 1995, Ser. No. 42,620
Term of patent 14 years
U.S. Cl. D14—248



373,128
COMBINED FRONT SURFACE AND CONTROL KNOBS FOR A RADIO
Andrew D. Magic, Clarkston; James P. Muccioli, Farmington Hills; Harlan E. Kifer, Bloomfield Hills, and Michael W. Weigat, Royal Oak, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Apr. 18, 1994, Ser. No. 21,462
Term of patent 14 years
U.S. Cl. D14—258



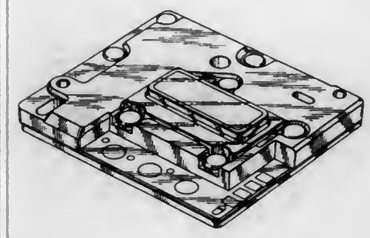
373,129
SLIDING COMPOUND MITER SAW AND STAND
Barry D. Wixey, Pittsburgh; Ronald E. Young, Cheswick, and David N. Hollinger, Glenshaw, all of Pa., assignors to Delta International Machinery Corp., Pittsburgh, Pa.
Filed Jun. 8, 1994, Ser. No. 24,110
Term of patent 14 years
U.S. Cl. D15—133



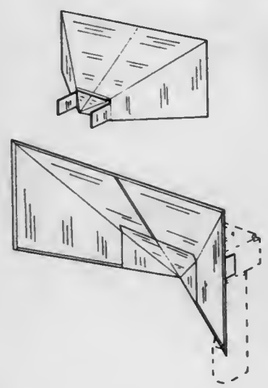
373,130
CAMERA
Byeong-Uk Jin, Kyeongsangnam-do, Rep. of Korea, assignor to Samsung Aerospace Industries, Ltd., Kyeongsangnam-do, Rep. of Korea
Filed Sep. 12, 1994, Ser. No. 28,324
Term of patent 14 years
U.S. Cl. D16—218



373,131
DATA IMPRINTING DEVICE FOR A CAMERA
Masao Akaiwa, and Shinobu Nakazawa, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan
Filed Apr. 17, 1995, Ser. No. 37,523
Claims priority, application Japan, Oct. 25, 1994, 6-32418; Oct. 25, 1994, 6-32419
The portion of the term of this patent subsequent to Apr. 23, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D16—219



373,132
DIFFUSER FOR PHOTOGRAPHIC FLASHLAMP
John W. Baillie-Hamilton, 9 St Christopher Road, Ellistown, Leicestershire, and Alastair J. Weakley, 3 South Street, Barrow on Soar, Leicestershire, LE12 8LY, both of, United Kingdom
Filed Aug. 24, 1994, Ser. No. 27,556
Term of patent 14 years
U.S. Cl. D16—237



373,133
TRIPOD FOR CAMERA
Hisaichi Usui, Tama, and Hisashi Tomioka, Asaka, both of, Japan, assignors to Hakuba Photo Industry Co., Ltd., Tokyo, Japan
Filed Oct. 19, 1994, Ser. No. 29,941
Term of patent 14 years
U.S. Cl. D16—244



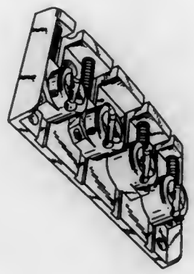
373,134
MUSICAL KEYBOARD
Randal L. Bertram, Raleigh, and John D. Swansey, Durham, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 5, 1994, Ser. No. 31,743
Term of patent 14 years
U.S. Cl. D17—1



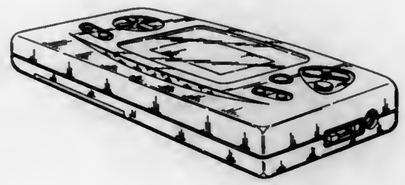
373,135
GUITAR
Domingo C. Tejera, Calle Rodriguez Moure No. 17, La Laguna, Tenerife, Spain
Filed Apr. 20, 1995, Ser. No. 37,806
Term of patent 14 years
U.S. Cl. D17—14



373,136
BRIDGE DEVICE FOR A STRINGED INSTRUMENT
Takao Goto, Gunmaken, Japan, assignor to Gotoh Gut Yugen Kaisha, Gunmaken, Japan
Filed Mar. 24, 1994, Ser. No. 20,308
Claims priority, application Japan, Oct. 6, 1993, 5-30064
Term of patent 14 years
U.S. Cl. D17—21



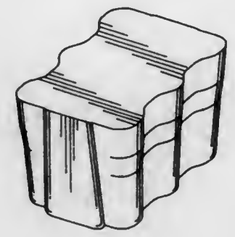
373,137
MUSIC SEQUENCER
Tsutomu Nakada, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan
Filed Aug. 9, 1994, Ser. No. 26,906
Claims priority, application Japan, Mar. 18, 1994, 6-7305
Term of patent 14 years
U.S. Cl. D17—24



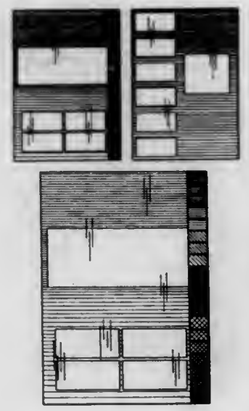
373,138
INK TANK FOR PRINTER
Hiroyuki Tokuda; Masanori Takenouchi, both of Yokohama; Yasuo Kotaki, Machida, and Yuji Hamasaki, Sagamihara, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 22, 1995, Ser. No. 35,179
Claims priority, application Japan, Aug. 23, 1994, 6-25193
Term of patent 14 years
U.S. Cl. D18—56



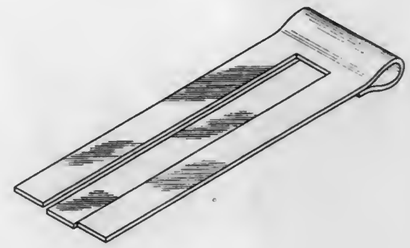
373,139
SOLID INK STICK FOR A COLOR PRINTER
Brent R. Jones, Tualatin; Clark W. Crawford, Wilsonville, and John A. Wright, Molalla, all of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.
Continuation-in-part of Ser. No. 33,830, Jan. 20, 1995. This application May 11, 1995, Ser. No. 41,774
The portion of the term of this patent subsequent to Jul. 16, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—56



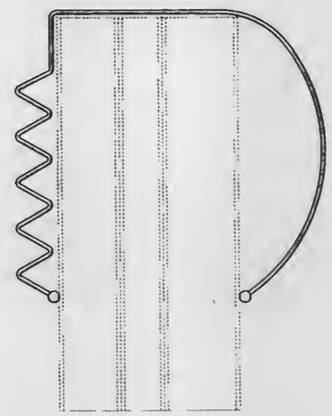
373,140
SET OF FRONT AND BACK COVER PANELS FOR A DIRECTORY
Jacquelyn A. Owens, and Robert D. Smith, both of Aurora, Colo., assignors to LOCALTouch Brand Company, Englewood, Colo.
Filed Mar. 14, 1994, Ser. No. 19,918
Term of patent 14 years
U.S. Cl. D19—26



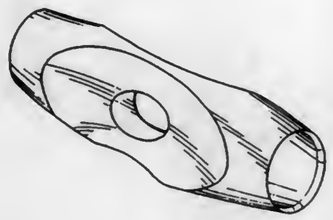
373,141
LIME GUIDE INDICATOR
Maureen V. Dolbow, 313 Peach St., Trion, Ga. 30953
Filed Apr. 3, 1995, Ser. No. 37,072
Term of patent 14 years
U.S. Cl. D19—34



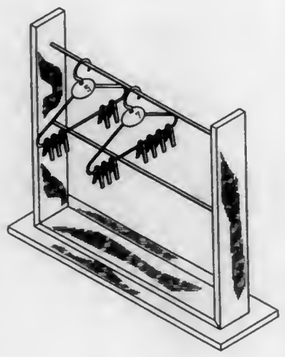
373,142
DECORATIVE BOOK HOLDER
Patricia R. Zilinsky, 6508 Barclay Ct., Downers Grove, Ill. 60516
Filed Jan. 6, 1995, Ser. No. 33,180
Term of patent 14 years
U.S. Cl. D19—34.1



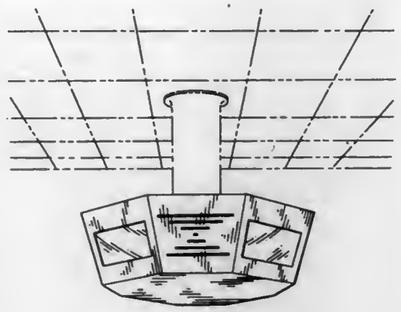
373,143
GRIP FOR A WRITING IMPLEMENT
Vivienne D. Jagger, Dalkeith, Australia, assignor to Little People Limited, Hong Kong, Hong Kong
Continuation of Ser. No. 33,804, Jan. 20, 1995, abandoned. This application Sep. 27, 1995, Ser. No. 44,592
Claims priority, application United Kingdom, Oct. 10, 1994, 2042491
Term of patent 14 years
U.S. Cl. D19—55



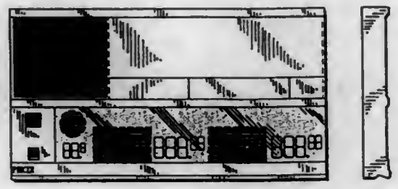
373,144
MATHEMATIC TEACHING RACK
Alice M. Hansen, 13162 Highway 8, Space 80, El Cajon, Calif. 92021
Filed Jun. 6, 1994, Ser. No. 23,997
Term of patent 14 years
U.S. Cl. D19—62



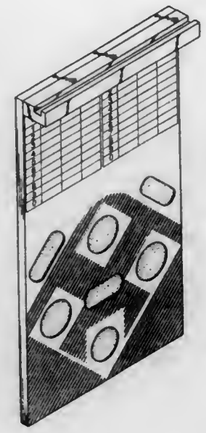
373,145
VIDEO ADVERTISING DISPLAY MODULE
James Pettus, P.O. Box 19022, Charlotte, N.C. 28219
Filed Jun. 10, 1994, Ser. No. 24,332
Term of patent 14 years
U.S. Cl. D20—19



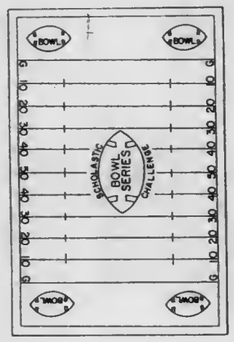
373,146
PRICE DISPLAY HOLDER FOR STORE SHELVES
Ola Ödmark, Uppsala, Sweden, assignor to Pricer Norden AB, Sweden
Division of Ser. No. 16,169, Dec. 9, 1993. This application Jan. 4, 1995, Ser. No. 33,079
Claims priority, application Sweden, Jun. 10, 1993, 93-1369; Dec. 7, 1993, 93-2736
Term of patent 14 years
U.S. Cl. D20—43



373,147
GAME TARGET
George Varga, 6839 - 90 Avenue, Edmonton, Alberta, Canada
Filed Nov. 28, 1994, Ser. No. 31,462
Claims priority, application Canada, Jun. 1, 1994, 1994-1053
Term of patent 14 years
U.S. Cl. D21—5



373,148
GAME BOARD
Christy Crow, 1617 Nanceford Rd., and John Higginbotham, 1009 Rhodes St., NW., both of Hartselle, Ala. 35640
Filed Oct. 3, 1994, Ser. No. 29,302
Term of patent 14 years
U.S. Cl. D21—29



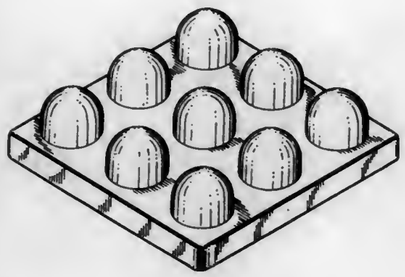
373,149
PAD CONTROLLER ATTACHMENT FOR A CD ROM VIDEO GAME PLAYER
Eikichi Kawasaki, Suita, Japan, assignor to SNK Corporation, Suita, Japan
Filed Dec. 8, 1994, Ser. No. 31,923
Claims priority, application Japan, Jul. 29, 1994, 6-23120
Term of patent 14 years
U.S. Cl. D21—48



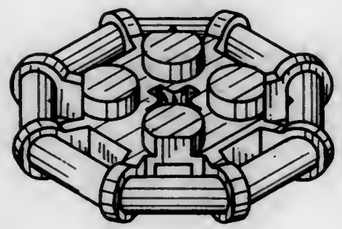
373,150
NOISEMAKER
Issac Zaksenberg, 165 E. 32nd St., New York, N.Y. 10016, assignor to Issac Zaksenberg
Continuation of Ser. No. 918,405, Jul. 22, 1992. This application Aug. 22, 1995, Ser. No. 42,965
Term of patent 14 years
U.S. Cl. D21—64



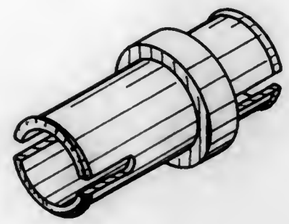
373,151
TOY BUILDING ELEMENT
Thomas Mathiesen, Ringsted, Denmark, assignor to Interlego AG, Baar, Switzerland
Filed Sep. 29, 1994, Ser. No. 29,185
The portion of the term of this patent subsequent to Oct. 24, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—108



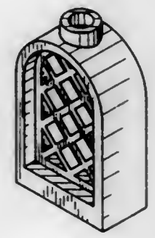
373,152
TOY BUILDING ELEMENT
Anna M. Thomasen, Århus, Denmark, assignor to INTERLEGO AG, Baar, Switzerland
Filed Sep. 14, 1995, Ser. No. 43,979
Term of patent 14 years
U.S. Cl. D21—108



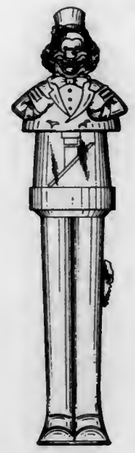
373,153
TOY BUILDING ELEMENT
Hans Madsen, Billund, Denmark, assignor to INTERLEGO AG, Baar, Switzerland
Filed Sep. 14, 1995, Ser. No. 43,986
Term of patent 14 years
U.S. Cl. D21—108



373,154
TOY BUILDING ELEMENT
Geir K. Riis, Vonge, Denmark, assignor to INTERLEGO AG, Baar, Switzerland
Filed Sep. 14, 1995, Ser. No. 43,998
Term of patent 14 years
U.S. Cl. D21—108



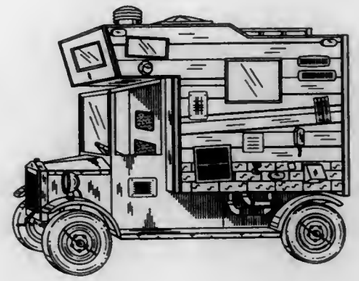
373,155
TOY FLASHLIGHT
Benjamin J. Cimock, Altamonte Springs, Fla., assignor to I & K Trading, Vienna, Va.
Filed Apr. 6, 1994, Ser. No. 20,992
Term of patent 14 years
U.S. Cl. D21—120



373,156
MODEL SAILBOAT
Bruce R. W. Kirby, Rowayton, Conn., assignor to Bruce Kirby, Inc., Rowayton, Conn.
Filed Feb. 3, 1994, Ser. No. 18,306
Term of patent 14 years
U.S. Cl. D21—130



373,157
AMUSEMENT R.V. CAMPER
Samuel L. Bowman, Rte. 1, Box 156, Sharpsville, Ind. 46068
Filed Oct. 3, 1994, Ser. No. 29,328
Term of patent 14 years
U.S. Cl. D21—140



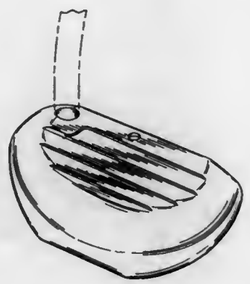
373,158
BEAR SCULPTURE
Edvenar Dixon, P.O. Box 103, Angie, La. 70426
Filed Jun. 13, 1994, Ser. No. 24,374
Term of patent 14 years
U.S. Cl. D21—159



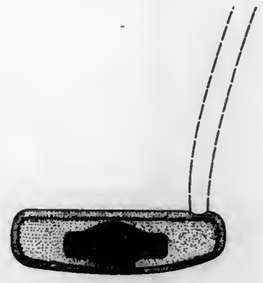
373,159
DOLL
Catherine Fleming, 1529 Coral Ridge Dr., Coral Springs, Fla. 33071
Filed Jun. 28, 1994, Ser. No. 25,231
Term of patent 14 years
U.S. Cl. D21—171



373,160
GOLF PUTTER HEAD
Bobby Grace, Madeira Beach, Fla., assignor to Bobby Grace Golf Design, Inc., St. Petersburg, Fla.
Filed May 23, 1995, Ser. No. 38,826
Term of patent 14 years
U.S. Cl. D21—217



373,161
GOLF PUTTER HEAD WITH FACE PLATE INSERT
Glenn H. Schmidt, 1409 Schoeren Rd., Malibu, Calif. 90265, and Richard C. Helmstetter, 2285 Rutherfrod Rd., Carlsbad, Calif. 92008-8815
Continuation-in-part of Ser. No. 24,688, Jun. 20, 1994, which is a continuation-in-part of Ser. No. 16,187, Dec. 9, 1993. This application Oct. 31, 1994, Ser. No. 30,464
Term of patent 14 years
U.S. Cl. D21—219



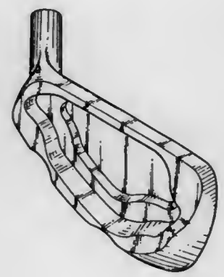
373,162
GOLF PUTTER HEAD
Dean E. Meyer, 1433 Forest Rd., LaGrange Park, Ill. 60525, and Jeffrey L. Vinyard, 273 Wildwood Rd., Elk Grove, Ill. 60007
Filed May 30, 1995, Ser. No. 39,408
Term of patent 14 years
U.S. Cl. D21—219



373,163
GOLF CLUB HEAD
Aristoteli D. Protopappas; Kees A. Schilperoort, and Donovan P. Penaluna, all of Johannesburg, South Africa, assignors to Pacific Investment Company International Limited, Isle of Man, United Kingdom
Filed Apr. 5, 1994, Ser. No. 20,929
Claims priority, application South Africa, Oct. 7, 1993, 93/0783
Term of patent 14 years
U.S. Cl. D21—220



373,164
GOLF CLUB HEAD
Ming-Ho Wang, P.O. Box 82-144, Taipei, Taiwan
Filed May 22, 1995, Ser. No. 39,308
Term of patent 14 years
U.S. Cl. D21—220



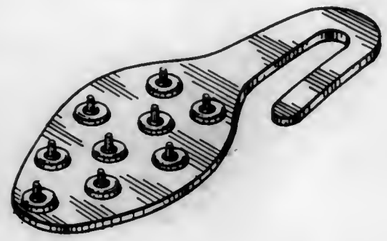
373,165
ROLLER SKATE
Peter Edauw, Camalo'di Povegliano, and Francesco Caeran, Montebelluna, both of, Italy, assignors to Nordica S.p.A., Italy, and Rollerblade, Inc., Minnetonka, Minn.
Filed Sep. 25, 1995, Ser. No. 44,459
Claims priority, application WIPO, Mar. 28, 1995, DM/032 625
Term of patent 14 years
U.S. Cl. D21—226



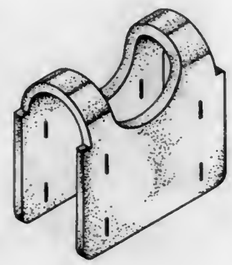
373,166
ROLLER SKATE
Peter Edauw, Camalo' Di Povegliano, and Francesco Caeran, Montebelluna, both of, Italy, assignors to Nordica S.p.A., Italy, and Rollerblade, Inc., Minnetonka, Minn.
Filed Sep. 25, 1995, Ser. No. 44,477
Claims priority, application WIPO, Mar. 28, 1995, DM/032 625
Term of patent 14 years
U.S. Cl. D21—226



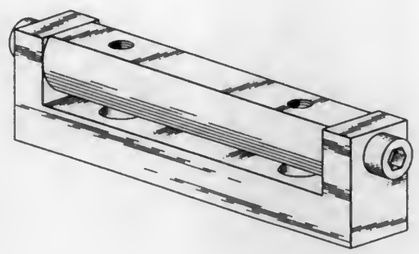
373,167
HOLDER FOR SPIKES FOR GOLF SHOES
James D. Santos, 8049 S. 118th, Seattle, Wash. 98178
Filed Nov. 17, 1994, Ser. No. 31,072
Term of patent 14 years
U.S. Cl. D21—234



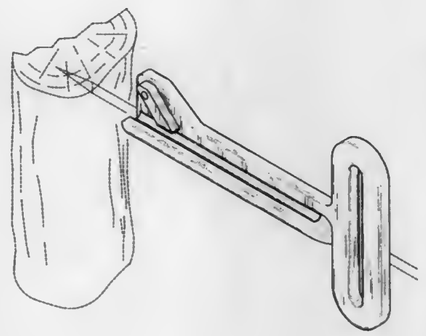
373,168
FLOATATION VEST
Michael Kahn, 949 N. Kings Rd., Apt. #309, Los Angeles, Calif. 90069
Filed May 3, 1994, Ser. No. 22,258
Term of patent 14 years
U.S. Cl. D21—238



373,169
GIMBAL ASSEMBLY FOR ARCHERY SIGHT YAW CALIBRATION
Kenneth E. Kokko, 5347 Misty Meadow Way, Elk Grove, Calif. 95758
Filed Apr. 12, 1995, Ser. No. 37,444
Term of patent 14 years
U.S. Cl. D22—107



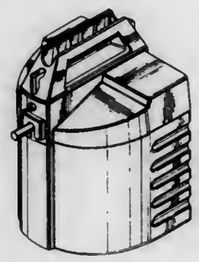
373,170
DEVICE FOR GRASPING AND PULLING ARROWS FROM TARGETS
Karl J. Kosa, 305 Meadow Ave., Charlerui, Pa. 15022
Filed Sep. 28, 1994, Ser. No. 29,049
Term of patent 14 years
U.S. Cl. D22—115



373,171
ROD ATTACHED FISH STRIKE INDICATOR
Mihai Negreanu, 1375 Everett Ct., No. 307, Lakewood, Colo. 80215
Filed Dec. 2, 1994, Ser. No. 31,659
Term of patent 14 years
U.S. Cl. D22—139



373,172
STAIN SPRAYER
Steven A. Anderson, Eden Prairie; Paul A. Pilosi, Minneapolis, and Richard C. Schoenert, Hopkins, all of Minn., assignors to Wagner Spray Tech Corporation, Minneapolis, Minn.
Filed Aug. 2, 1995, Ser. No. 41,526
Term of patent 14 years
U.S. Cl. D23—225



373,173
SPRAY VALVE
Harold J. Valley, Fountain Valley, and Robert C. Huff, Southgate, both of Calif., assignors to Modern Faucet Mfg. Co., Los Angeles, Calif.
Filed Jun. 12, 1995, Ser. No. 40,146
Term of patent 14 years
U.S. Cl. D23—226



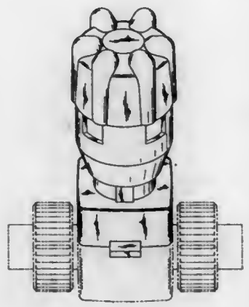
373,174
SPRAY VALVE
Harold J. Valley, Fountain Valley, and Robert C. Huff, Southgate, both of Calif., assignors to Modern Faucet Mfg. Co., Los Angeles, Calif.
Filed Jun. 12, 1995, Ser. No. 40,176
Term of patent 14 years
U.S. Cl. D23—226



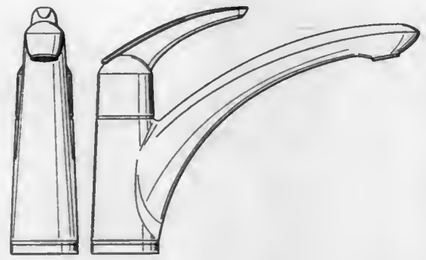
373,175
SPRAY VALVE
Harold J. Valley, Fountain Valley, and Robert C. Huff, Southgate, both of Calif., assignors to Modern Faucet Mfg. Co., Los Angeles, Calif.
Filed Jun. 12, 1995, Ser. No. 40,177
Term of patent 14 years
U.S. Cl. D23—226



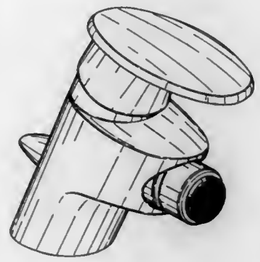
373,176
COMBINED VALVE INDICATOR AND HANDLE
Walter Booth, East Hanover, and Alan R. Levin, Somerville, both of N.J., assignors to H-Tech, Inc., Wilmington, Del.
Filed May 31, 1995, Ser. No. 39,569
Term of patent 14 years
U.S. Cl. D23—233



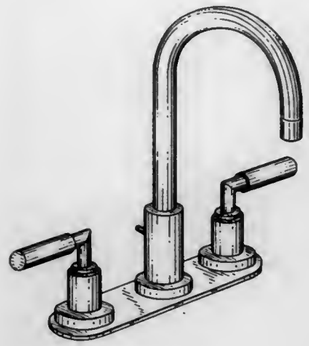
373,177
FAUCET
Franz W. Jans, Roedermark, Germany, assignor to Jado Bathroom and Hardware Manufacturing Corp., Camarillo, Calif.
Filed Jul. 20, 1995, Ser. No. 41,644
Term of patent 14 years
U.S. Cl. D23—238



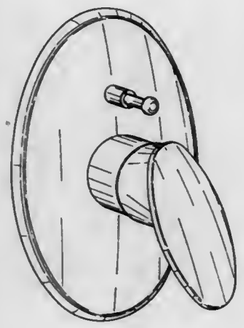
373,178
BIDET FAUCET
Adolf Gottwald, Iserlohn, Germany, assignor to Friedrich Grohe Aktiengesellschaft, Hemer, Germany
Filed Aug. 25, 1995, Ser. No. 43,372
Claims priority, application Germany, Feb. 27, 1995, M9501629.5
Term of patent 14 years
U.S. Cl. D23—238



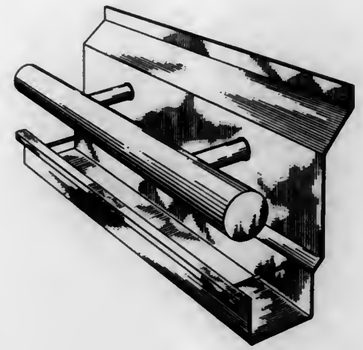
373,179
FAUCET
Dieter Sieger, Sassenberg, Germany, assignor to Aloys F. Dornbracht GmbH & Co. KG, Iserlohn, Germany
Filed Apr. 3, 1995, Ser. No. 37,100
Claims priority, application Germany, Jan. 19, 1995, M9500402.5
Term of patent 14 years
U.S. Cl. D23—241



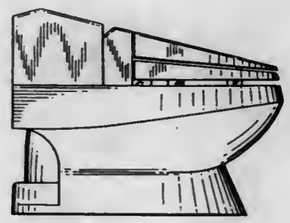
373,180
COMBINED HANDLE AND ESCUTCHEON
Adolf Gottwald, Iserlohn, Germany, assignor to Friedrich Grohe Aktiengesellschaft, Hemer, Germany
Filed Aug. 25, 1995, Ser. No. 43,364
Claims priority, application Germany, Feb. 27, 1995, M9501629.5
Term of patent 14 years
U.S. Cl. D23—254



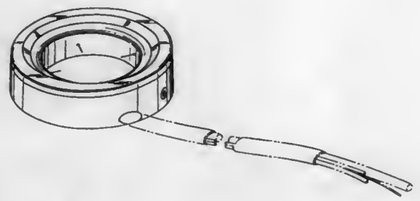
373,181
COMBINED CURB AND DRAINAGE SYSTEM
David Howard, 6 Falconwood Chase, Worsley, Manchester, England
Filed Jun. 28, 1994, Ser. No. 25,441
Term of patent 14 years
U.S. Cl. D23—261



373,182
COMBINED TOILET BASIN, TOILET SEAT AND SEAT COVER
Seijiro Kawamura, and Noriko Y. Hashida, both of Kitakyushu, Japan, assignors to Toto, Ltd., Fukuoka, Japan
Filed Jun. 27, 1994, Ser. No. 25,057
Claims priority, application Japan, Dec. 28, 1993, 5-39891; Dec. 28, 1993, 5-39893
Term of patent 14 years
U.S. Cl. D23—285



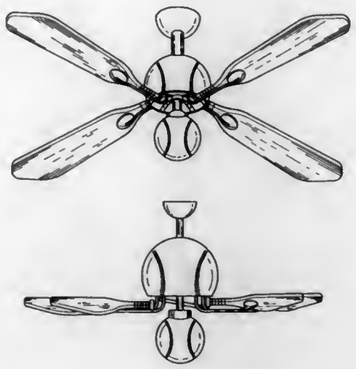
373,183
AIR IONIZING RING
Douglas H. Beyer, Cathedral City, Calif., assignor to Richmond Technology, Inc., Redlands, Calif.
Filed Dec. 8, 1994, Ser. No. 31,933
Term of patent 14 years
U.S. Cl. D23—364



373,184
VENTILATOR
Keisuke Nishizawa, Tokyo, Japan, assignor to Seiho International, Inc., San Marino, Calif.
Filed Jun. 29, 1994, Ser. No. 25,314
Claims priority, application Japan, Feb. 8, 1994, 6-002614
Term of patent 14 years
U.S. Cl. D23—370



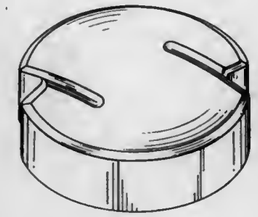
373,185
COMBINED CEILING FAN AND LIGHT
Tsung-Ming Tseng, No. 11-2, Talun Rd., Talum Tsun, Tatsun Hsiang, Changhua Hsien, Taiwan
Filed Aug. 9, 1995, Ser. No. 42,737
Term of patent 14 years
U.S. Cl. D23—377



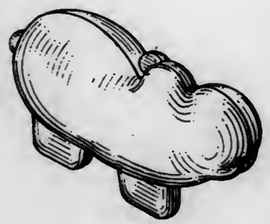
373,186
FIREPLACE GRATE
Stephen E. Bain, Hudson, Ohio, assignor to Forest Technology Corporation, Akron, Ohio
Filed Feb. 9, 1994, Ser. No. 18,576
Term of patent 14 years
U.S. Cl. D23—398



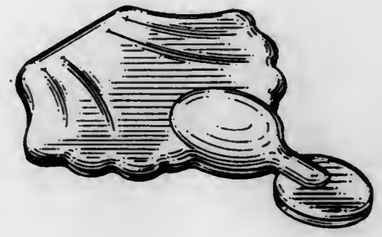
373,187
PHARMACEUTICAL TABLET
Jeffrey Dickinson, and Karrar A. Khan, both of Nottingham, United Kingdom, assignors to The Boots Company PLC, Nottingham, United Kingdom
Filed Sep. 9, 1994, Ser. No. 28,237
Claims priority, application United Kingdom, Mar. 9, 1994, 2037633; Mar. 9, 1994, 2037634; Mar. 9, 1994, 2037635; Mar. 9, 1994, 2037636
Term of patent 14 years
U.S. Cl. D24—103



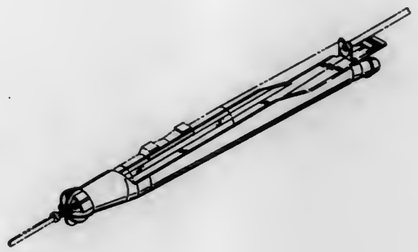
373,188
SOFTGEL CAPSULE
David G. Williams, Palm Harbor, Fla., assignor to R. P. Scherer Corporation, Troy, Mich.
Filed Jun. 27, 1995, Ser. No. 40,809
Term of patent 14 years
U.S. Cl. D24—104



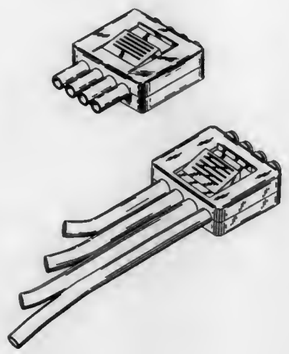
373,189
SOFTGEL CAPSULE
Gregory A. Schurig, Clearwater, and David G. Williams, Palm Harbor, both of Fla., assignors to R. P. Scherer Corporation, Troy, Mich.
Filed Aug. 31, 1995, Ser. No. 43,316
Term of patent 14 years
U.S. Cl. D24—104



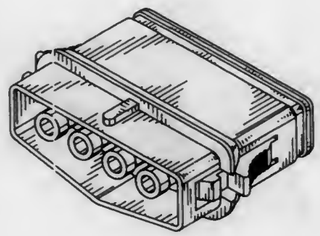
373,190
SMOKE EVACUATOR FOR AN ELECTROCAUTERY SCALPEL
Donald R. Monson, West St. Paul, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.
Filed Oct. 6, 1994, Ser. No. 29,445
Term of patent 14 years
U.S. Cl. D24—112



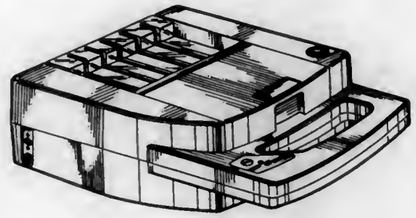
373,191
MULTI-CHANNEL CONDUIT CONNECTOR FOR TREATING DEEP VEIN THROMBOSIS
Philip P. Ribando; Kenneth M. Bolam, and Donald H. Peeler, all of Charlotte, N.C., assignors to Jobst Institute, Inc., Charlotte, N.C.
Filed Apr. 5, 1994, Ser. No. 20,893
The portion of the term of this patent subsequent to May 14, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—129



373,192
CONNECTOR FOR A DEVICE FOR APPLYING COMPRESSIVE PRESSURE TO THE LEG
David l. Murphy, N. Attleboro, and Robert C. Bouchard, Bellingham, both of Mass., assignors to The Kendall Company, Mansfield, Mass.
Filed Nov. 9, 1994, Ser. No. 32,375
Term of patent 14 years
U.S. Cl. D24—129



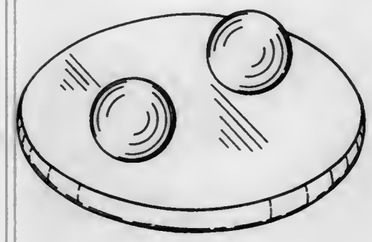
373,193
DEFIBRILLATOR
James W. Luther, Boston, Mass., assignor to Surviva Link Corporation, Minneapolis, Minn.
Filed Jun. 1, 1995, Ser. No. 39,629
Term of patent 14 years
U.S. Cl. D24—167



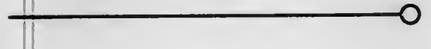
373,194
ANKLE JOINT BRACE
Joachim Grifka, Bochum, Germany, assignor to Otto Bock Orthopaedische Industrie Besitz-und Verwaltungs-Kommanditgesellschaft, Duderstadt, Germany
Filed Nov. 28, 1994, Ser. No. 31,579
Claims priority, application Germany, May 28, 1994, 94 04 236.5
Term of patent 14 years
U.S. Cl. D24—192



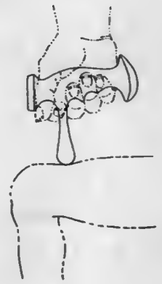
373,195
MASSAGE TOOL
Richard Hoff, 1187 Delaware St., Berkeley, Calif. 94702
Filed Oct. 4, 1995, Ser. No. 44,975
Term of patent 14 years
U.S. Cl. D24—211



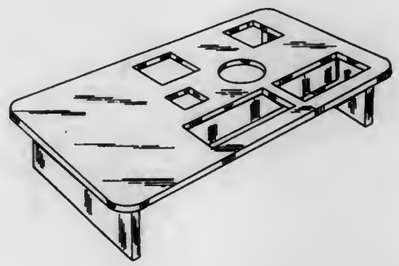
373,196
SKIN MASSAGER
Ghalen Kraige, 3300 N. Tenaya Way, #2059, Las Vegas, Nev. 89129
Filed May 31, 1994, Ser. No. 23,666
Term of patent 14 years
U.S. Cl. D24—214



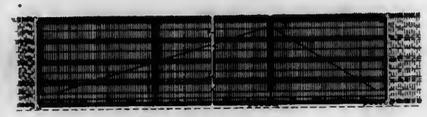
373,197
DEEP TISSUE MASSAGER
Richard Schepper, 185-01 Hillside Ave. Apt. 3B, Jamaica, N.Y. 11432
Filed Jun. 20, 1994, Ser. No. 24,704
Term of patent 14 years
U.S. Cl. D24—214



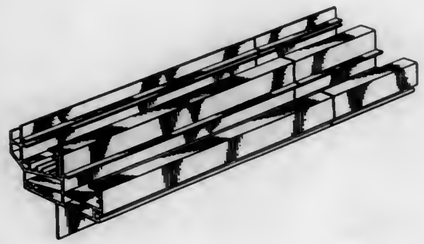
373,198
MOBILE CLEANING STATION FOR SANITIZING NEEDLES
Bryan D. Hill, 5502 Gate Post Ct., Greensboro, County of Guilford, N.C. 27455, and David H. Hwang, 324½ S. Tate St., Greensboro, County of Guilford, N.C. 27403
Filed Jul. 11, 1994, Ser. No. 25,785
Term of patent 14 years
U.S. Cl. D24—230



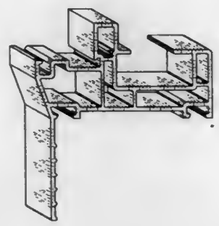
373,199
SLIDING GATE FOR A FENCE
Rafael Vanthournout, Ingelmunster, Belgium, assignor to N. V. Bekaert S.A., Zwevegem, Belgium
Filed Oct. 21, 1994, Ser. No. 30,039
Claims priority, application Belgium, May 4, 1994, 69.711-00
Term of patent 14 years
U.S. Cl. D25—50



373,200
WINDOW JAMB
Domenic Colitto, Bolton, Canada, assignor to Royal Extrusions Limited, Woodbridge, Canada
Filed May 31, 1995, Ser. No. 39,450
Term of patent 14 years
U.S. Cl. D25—124



373,201
WINDOW COMPONENT EXTRUSION
Jeffrey R. Franson, Kent, Wash., assignor to Mikron Industries, Kent, Wash.
Filed May 31, 1995, Ser. No. 39,587
The portion of the term of this patent subsequent to Apr. 30, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D25—124



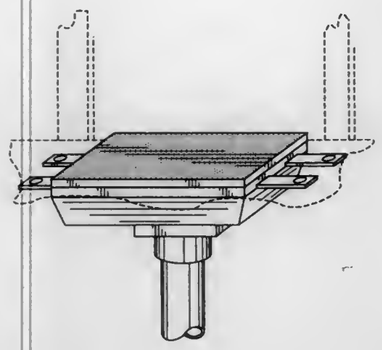
373,202
FENCE POST
Lee Hong-Jen, Taipei Hsien, Taiwan, assignor to Fu-Chi Plastics Co., Taipei Hsien, Taiwan
Filed Sep. 26, 1995, Ser. No. 44,531
Term of patent 14 years
U.S. Cl. D25—130



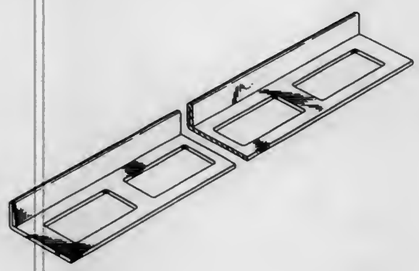
373,203
PROFILE MOLDING
Sven Kornfalt, Malmo, and Per Bengtsson, Ekeby, both of, Sweden, assignors to Perstorp Flooring AB, Trelleborg, Sweden
Filed Apr. 24, 1995, Ser. No. 37,930
Claims priority, application Sweden, Oct. 24, 1994, 942125
Term of patent 14 years
U.S. Cl. D25—136



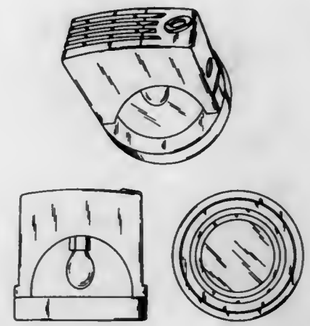
373,204
VACUUM CONNECTED FLOOR MAT
Roger Blain, 375 NE. Main St., P.O. Box 1058, E. Douglas, Mass. 01516
Filed Dec. 15, 1994, Ser. No. 32,316
Term of patent 14 years
U.S. Cl. D25—138



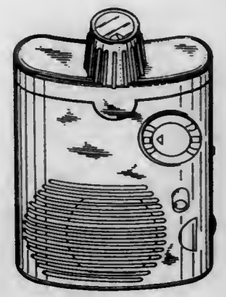
373,205
TILE EDGING STRIP
Malcolm Caley, Burton Upon Trent, England, assignor to McKechnie UK Limited, Walsall, England
Filed Dec. 21, 1994, Ser. No. 32,577
Claims priority, application United Kingdom, Jun. 30, 1994, 2040052
The portion of the term of this patent subsequent to Nov. 14, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D25—164



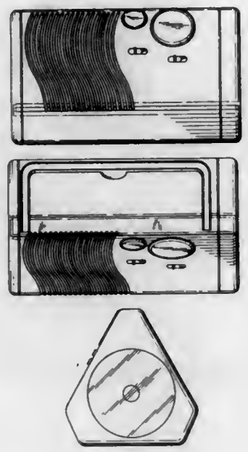
373,206
LOW-VOLTAGE TRACK LIGHTING FIXTURE
Donald Wandler, Racine, Wis.; Julito A. Bustamante, Waukegan, Ill.; Kent Solberg, and Cory Ternberg, both of Racine, Wis., assignors to Rund Lighting, Inc., Racine, Wis.
Filed Sep. 19, 1995, Ser. No. 44,142
Term of patent 14 years
U.S. Cl. D26—63



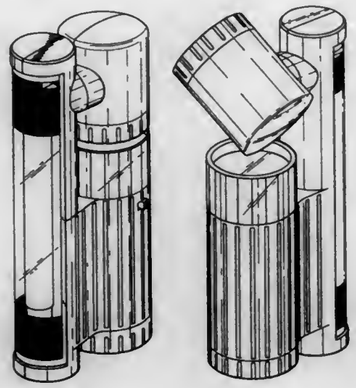
373,207
COMBINED FLASHLIGHT AND RADIO
Se Kit Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Aug. 24, 1994, Ser. No. 27,534
Claims priority, application United Kingdom, Apr. 7, 1994, 2038247
Term of patent 14 years
U.S. Cl. D26—38



373,208
RECHARGEABLE RADIO LANTERN WITH HINGED HANDLE
Se K. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Dec. 1, 1995, Ser. No. 47,349
Claims priority, application United Kingdom, Aug. 21, 1995, 2049723
Term of patent 14 years
U.S. Cl. D26—38



373,209
COMBINED FLUORESCENT LANTERN AND FLASHLIGHT
Se K. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Ltd., Kowloon, Hong Kong
Filed May 23, 1994, Ser. No. 23,285
Claims priority, application United Kingdom, Nov. 23, 1993, 2035396
Term of patent 14 years
U.S. Cl. D26—42



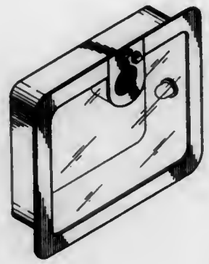
373,210
HEAD FOR A FLASHLIGHT
Paul S. Santarsiero, Avon, Conn., assignor to Black & Decker Inc., Newark, Del.
Filed Apr. 17, 1995, Ser. No. 37,613
Term of patent 14 years
U.S. Cl. D26—43



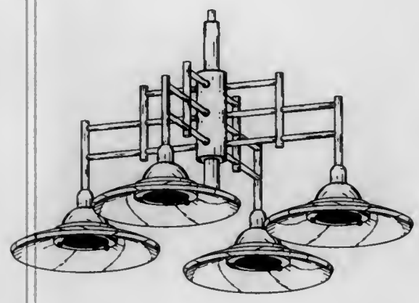
373,211
FLASHLIGHT WITH PIVOTING HEAD
Ping H. Heun, Kowloon, Hong Kong, assignor to GSL Rechargeable Products, Ltd., Kowloon, Hong Kong
Filed Apr. 11, 1995, Ser. No. 37,380
Term of patent 14 years
U.S. Cl. D26—44



373,212
EARTHQUAKE EVACUATION LIGHT
Foy Clark, 9000 Opal St., Bakersfield, Calif. 93307
Filed Aug. 31, 1994, Ser. No. 27,778
Term of patent 14 years
U.S. Cl. D26—74

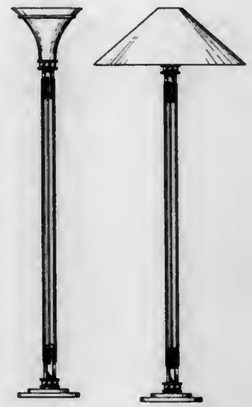


373,213
CHANDELIER
David H. Porter, Chagrin Falls, Ohio, assignor to The L. D. Kichler Co., Cleveland, Ohio
Filed Oct. 11, 1994, Ser. No. 29,564
Term of patent 14 years
U.S. Cl. D26—84



373,214
Patent Not Issued For This Number

373,215
FLOOR LAMP
Sally S. Lewis, 715 N. Canon Dr., Beverly Hills, Calif. 90210
Filed Jul. 28, 1995, Ser. No. 41,988
Term of patent 14 years
U.S. Cl. D26—110



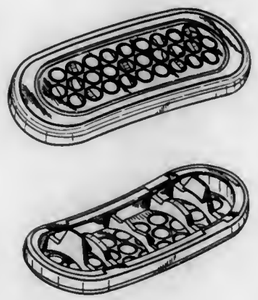
373,216
GLASS SHADE
Jyh-Horng Jen, No. 244, Dahyng Rd., 8 Lin, Yngparn Li, Jwunan Jenn, Miau-Li Hsien, Taiwan
Filed Feb. 28, 1995, Ser. No. 35,458
Term of patent 14 years
U.S. Cl. D26—133



373,217
ASHTRAY
Terry Adams, Coconut Creek; Neil J. Ambrosio, Sunrise; William E. Bratton, Boca Raton, all of Fla.; Bruce E. Hatton, San Diego; Larry L. Kinder, Sunnyvale, both of Calif., and William A. Swat, Delray Beach, Fla., assignors to Progressive Games, Inc., Fort Lauderdale, Fla.
Filed Apr. 20, 1994, Ser. No. 21,568
Term of patent 14 years
U.S. Cl. D27—102



373,218
SAFETY RAZOR CARTRIDGE
Jill M. Shurtleff, South Boston, Mass., and Graham J. Simms, Reading, United Kingdom, assignors to The Gillette Company, Boston, Mass.
Filed Apr. 14, 1994, Ser. No. 21,347
Term of patent 14 years
U.S. Cl. D28—47



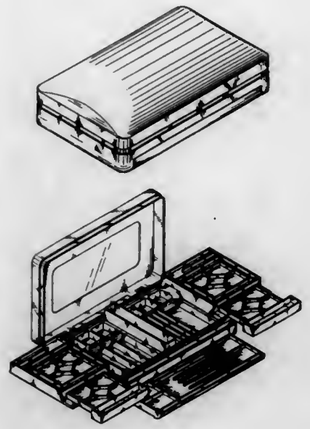
373,219
EYELINER CONTAINER
Ellen Gavin, Atlantic Highlands, N.J., assignor to Cosmair, Inc., New York, N.Y.
Filed May 16, 1995, Ser. No. 38,921
Term of patent 14 years
U.S. Cl. D28—76



373,220
COMBINATION COSMETIC CONTAINER AND APPLICATOR PACKAGE
Doug M. Lund, Bartlett; John M. B. Ford, and Tammye L. Byars, both of Cordova, all of Tenn., assignors to Maybelline Intermediate Co., Memphis, Tenn.
Filed Jun. 30, 1995, Ser. No. 40,984
Term of patent 14 years
U.S. Cl. D28—77



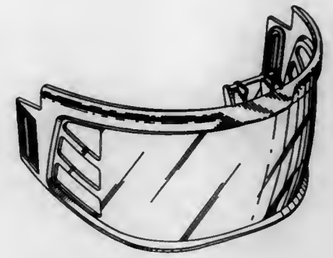
373,221
COSMETIC KIT
Chiu C. Lai, No. 21 PuTing Road, Shinchu Shiang, Taiwan
Filed May 10, 1995, Ser. No. 38,678
Term of patent 14 years
U.S. Cl. D28—83



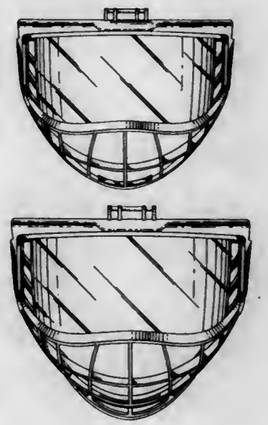
373,222
LIPSTICK CASE
Hsi C. Chen, Suite 1, 11F, 95-8 Chang Ping Road Sec. 1, Taichung, Taiwan
Filed Dec. 14, 1992, Ser. No. 3,062
Term of patent 14 years
U.S. Cl. D28—87



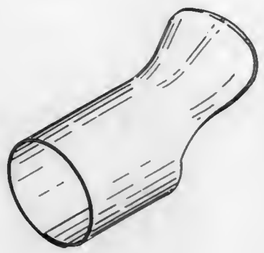
373,223
VISOR SHIELD FOR SPORTS HEADGEAR
Martin Pernicka, St-François, and Paul Isabelle, St-Augustin de Desmaures, both of, Canada, assignors to Leader Industries Inc., Boucherville, Canada
Filed Apr. 24, 1995, Ser. No. 37,890
Term of patent 14 years
U.S. Cl. D29—110



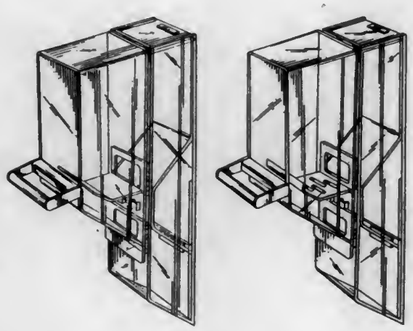
373,224
VISOR SHIELD FOR SPORTS HEADGEAR
Martin Pernicka, St-François, and Paul Isabelle, St-Augustin de Desmaures, both of, Canada, assignors to Leader Industries Inc., Boucherville, Canada
Filed Apr. 24, 1995, Ser. No. 37,893
Term of patent 14 years
U.S. Cl. D29—110



373,225
FINGER SHIELD
Claire J. Theroux, 350 Lakewood Dr., Apt. 126, Brandon, Fla. 33510, and Daniel A. Amyx, 4517 S. Hale Ave., Tampa, Fla. 33611
Filed Oct. 16, 1995, Ser. No. 45,268
Term of patent 14 years
U.S. Cl. D29—114



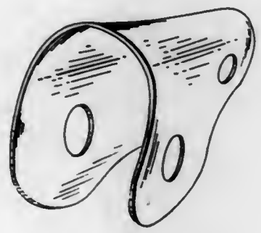
373,226
COMBINED MULTI-CHUTE BIRD FEEDER WITH RECAPTURE BIN
David S. Bloom; Michael A. Bloom; Drucella A. Bloom, and Timothy K. Bloom, all of 7203 W. Wier Ave., Phoenix, Ariz. 85043
Filed Apr. 6, 1994, Ser. No. 20,995
Term of patent 14 years
U.S. Cl. D30—124



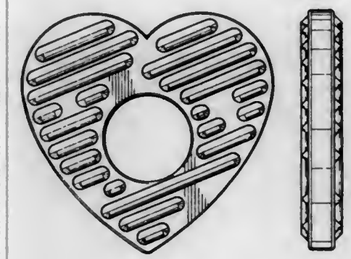
373,227
INFLATABLE GIRTH STRAP
Patrick T. Holgate, Box 1570, Nicholson, Pa. 18446
Filed May 8, 1995, Ser. No. 38,562
Term of patent 14 years
U.S. Cl. D30—134



373,228
GARMENT FOR COVERING AN ANIMAL
David W. Brown, Orton R.D. 26, Temuka, New Zealand
Filed Oct. 8, 1993, Ser. No. 14,005
Claims priority, application New Zealand, Jun. 11, 1993, 25253
Term of patent 14 years
U.S. Cl. D30—145



373,229
CHEW TOY FOR DOGS
Anthony O'Rourke, Malibu, and Charles Byrne, Mammoth Lakes, both of Calif., assignors to Booda Products, Inc., Gardena, Calif.
Filed Aug. 20, 1993, Ser. No. 12,064
Term of patent 14 years
U.S. Cl. D30—160



373,230
SUBMERSIBLE SELF-PROPELLED POOL CLEANER
Pavel Sebor, 751 Cricklewood Ter., Heathrow, Fla. 32746; Brian H. Phillipson, Longwood, Fla.; Mark J. Ciesko, Westerville, and Spencer B. Murrell, Delaware, both of Ohio, assignors to Pavel Sebor, Heathrow, Fla.
Filed Jul. 8, 1994, Ser. No. 25,688
Term of patent 14 years
U.S. Cl. D32—1



UMI
1189
SC
4
AG
27
1996

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 27th DAY OF AUGUST, 1996

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Corporation: *See*—
Nykanen, Tuomo S.; Greenwood, Brian F.; Gullichsen, Johan; Kiiskila, Erkki; Mattelmaki, Esko; Phillips, Joseph R.; Richardsen, Jan T.; Ryham, Rolf; Soderman, Jarmo; and Wiklund, Karl G., 5,549,788, Cl. 162-29.000.

A.C. Nielsen Company: *See*—
Lu, Daozheng; Shagrin, Ceril T.; Thomas, William L.; Lee, Morris; Bernard, Bruce; and Zhang, Jia, 5,550,928, Cl. 382-116.000.

A.D.E.C.E.F.: *See*—
Piclin, Jean-Jacques; Thibaut, Gilbert; and Boisson, Michel, 5,549,562, Cl. 604-134.000.

A. E. Bishop & Associates Pty Limited: *See*—
Bishop, Arthur E., 5,549,504, Cl. 451-28.000.

Abate, Luigi F. Tubular element for the formation of bags for the vacuum-packing of products. 5,549,944, Cl. 428-35.200.

ABB Industrial Systems, Inc.: *See*—
Hellstrom, Ake A.; and Goldshdeyn, Alexsey, 5,549,793, Cl. 162-258.000.

Abbasi, Salman Y.; Gerszberg, Irwin; Kendig, Eugene T.; Martin, Jeffrey S.; and Oplinger, Thomas M., to Lucent Technologies Inc. Metallic macrocell/microcell interface. 5,550,898, Cl. 379-59.000.

Abbott Laboratories: *See*—
Acosta, Phyllis J. B.; Grondalski, Richard A.; Liebrecht, Jeffrey W.; and Reynolds, Patricia A., 5,550,146, Cl. 514-400.000.
Elias, Allen M.; Frederick, Warren P.; and Kramer, David E., 5,549,566, Cl. 604-167.000.
Maher, Pascal J.; Filan, Finbarr J.; and Shaw, Christian, 5,549,585, Cl. 604-317.000.
Mazer, Terrence B.; Walton, Joseph E.; Geckle, Ronita K.; Piontek, Carl J.; Duel, Susan B.; Daab-Krzykowski, Andre; Joseph, Robert L.; Pierson, William G.; Loughrin, Thomas D.; and Osip, Thomas W., 5,549,550, Cl. 604-83.000.
Winkler, Martin A.; and Pan, Alfred A., 5,550,027, Cl. 435-7.220.

Abbruscato, C. Richard, to American TeleCare, Inc. Remote stethoscope signal processing system. 5,550,902, Cl. 379-106.000.

Abdala, Luis F. T.: *See*—
Berman, Eric R.; Abdala, Luis F. T.; and Eller, Marlin, 5,550,930, Cl. 382-187.000.

Abdel-Malek, Aiman A.; Hershey, John E.; Kliman, Gerald B.; and Koegl, Rudolph A. A., to General Electric Company. Motor current signal processor using analog substraction of an estimated largest sine wave component. 5,550,880, Cl. 375-376.000.

Abe, Kenichiro: *See*—
Yokoyama, Hiromitsu; Takeuchi, Katsuto; Soekawa, Koji; Abe, Kenichiro; Hattori, Syouichi; Suzuki, Hitoshi; and Okada, Nobuhide, 5,549,778, Cl. 156-246.000.

Abe, Satoru: *See*—
Hasegawa, Yusuke; Komoriya, Isao; Akazaki, Shusuke; Maki, Hidetaka; and Abe, Satoru, 5,549,092, Cl. 123-478.000.

Abe, Tatsuhiko: *See*—
Fujii, Takao; and Abe, Tatsuhiko, 5,550,538, Cl. 340-995.000.

Abe, Tetsuya; Hasushita, Sachio; and Ito, Takayuki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Real time type viewfinder. 5,550,674, Cl. 359-422.000.

Abe, Wataru; Yamamoto, Akihiro; Nakajima, Takehiko; and Kojima, Makoto, to Matsushita Electronics Corporation. Semiconductor device for generating high voltage potentials. 5,550,775, Cl. 365-189.110.

Abe, Yuzuru: *See*—
Hagimori, Kenji; Abe, Yuzuru; and Kanke, Tetsuo, 5,549,833, Cl. 210-757.000.

Abiven, Henri; Picquet, Lionel; Claveyrolas, Gilles; Viala, Jean-Claude; and Bouix, Jean, to Aerospatiale Societe Nationale Industrielle. Reinforced composite material including a magnesium alloy matrix and grahite or carbon fibers. 5,549,976, Cl. 428-608.000.

Abou-Gharbia, Magid A.: *See*—
Failli, Amedeo A.; Bleyman, Oleg I.; Kao, Wenling; and Abou-Gharbia, Magid A., 5,550,133, Cl. 514-291.000.

Access Protection Manufacturing, LLC: *See*—
Wingfield, Andy Q.; and Thomas, James L., 5,549,338, Cl. 292-292.000.

Accorsi, Antoinette; and Charlot, Daniel, to Commissariat a l'Energie Atomique; and Institut National de l'Environnement Industriel et des Risques. Self-supporting thin-film filament detector, process for its manufacture and its application to gas detection and gas chromatography. 5,549,870, Cl. 422-90.000.

Accu-Sort Systems, Inc.: *See*—
Wurz, Albert, 5,550,745, Cl. 364-478.030.

Acer Incorporated: *See*—
Chuang, Te-Chih; Liao, Yunn-Hung; Wei, Lung; and Lee, Yi-Hsien, 5,551,012, Cl. 395-500.000.

Achelpohl, Fritz, to Windmöller & Hölscher. Printing press including a mechanism for exchanging cylinders. 5,549,044, Cl. 101-216.000.

Acosta, Phyllis J. B.; Grondalski, Richard A.; Liebrecht, Jeffrey W.; and Reynolds, Patricia A., to Abbott Laboratories. Medical foods for the nutritional support of infant/toddler metabolic diseases. 5,550,146, Cl. 514-400.000.

ACS Industries, Inc.: *See*—
Cholakon, Rifka; Errera, Tracy C.; and Zeno, Joseph R., 5,549,440, Cl. 414-723.000.

Actel Corporation: *See*—
Yen, Yeouchung; Chen, Shih-Oh; and Hu, Hung-Kwei, 5,550,404, Cl. 257-530.000.

Acushnet Company: *See*—
Gilbert, Peter J., 5,549,296, Cl. 473-290.000.

Acuson Corporation: *See*—
Wright, J. Nelson; Cole, Christopher R.; Gee, Albert; Larsen, Hugh G.; and Maslak, Samuel H., 5,549,111, Cl. 128-742.000.

Adachi, Katsumi; and Kurusu, Kyoko, to Mitsubishi Denki Kabushiki Kaisha. Vehicular alternating current generator. 5,550,415, Cl. 310-68.00R.

Adam Spence Corporation: *See*—
Sanford, Adam; Cheer, John; and Wood, James, 5,549,583, Cl. 604-283.000.

Adams, Jay J.: *See*—
Cavallaro, Eric S.; Adams, Jay J.; Troy, Stanton E.; and Daugherty, James R., 5,549,486, Cl. 439-500.000.

Adams, Julian: *See*—
Hargrave, Karl D.; Cullen, Ernest; Proudfoot, John R.; Grozinger, Karl G.; Pal, Kollol; and Adams, Julian, 5,550,117, Cl. 514-81.000.

Adams, Theodore P.; Kroll, Mark W.; and Kroll, Karl, to Creative Toy Corporation. Process for painting snow. 5,549,933, Cl. 427-421.000.

Adams, Thomas R.; Chambers, Sheryl A.; Daines, Richard J.; Gordon-Kamm, William J.; Kausch, Albert P.; Lemaux, Peggy G.; Mackey, Catherine J.; Mangano, Mary L.; O'Brien, James V.; Rice, Thomas B.; Spencer, T. Michael; Start, William G.; and Willetts, Nancy G., to Dekalb Genetics Corporation. Methods and compositions for the production of stably transformed, fertile monocot plants and cells thereof. 5,550,318, Cl. 800-205.000.

Adamy, Steven: *See*—
Mondin, Myriam; Loth, Myriam; Broze, Guy; Mehreteab, Ammanuel; Thomas, Barbara; Adamy, Steven; and Bala, Frank, Jr., 5,549,840, Cl. 510-365.000.

Adaptec, Inc.: *See*—
Packer, John S., 5,551,054, Cl. 395-843.000.

Adati, Sakasi: *See*—
Aiso, Katsuyosi; Adati, Sakasi; Igarasi, Tosihiro; Tanoue, Sin; Kumamoto, Satosi; and Wakuda, Masanori, 5,549,015, Cl. 74-424.80B.

Adir et Compagnie: *See*—
Brion, Jean-Daniel; Chollet, Anne-Marie; Demuynck, Luc; De Montarby, Lucy; Rolland, Yves; Bonnet, Jacqueline; Ghezzi, Pietro; and Fradin, Armel, 5,550,143, Cl. 514-367.000.

Adriance, Kyle: *See*—
Miller, Gregory R.; Adriance, Kyle; and Philipak, Stanley, 5,549,720, Cl. 55-324.000.

Advanced Bionics Corporation: *See*—
Shannon, Robert V.; Loeb, Gerald E.; and Zeng, Fan-Gang, 5,549,658, Cl. 607-57.000.

Advanced Cardiovascular Systems, Inc.: *See*—
Miraki, Manouchehr, 5,549,554, Cl. 604-101.000.
Peacock, James C., III; Hyde, Gregory M.; Samson, Wilfred J.; and Clayman, Michael, 5,549,551, Cl. 604-96.000.

Advanced Micro Devices, Inc.: *See*—
Anjum, Mohammed; Burki, Ibrahim K.; and Christian, Craig W., 5,550,084, Cl. 437-200.000.
Cheung, Robin W.; and Chang, Mark S., 5,550,405, Cl. 257-642.000.
Crayford, Ian S.; and Lo, William, 5,550,803, Cl. 370-13.000.
Jones, Stephen A.; Garg, Shyam G.; Buller, James F.; and Santana, Miguel, Jr., 5,549,786, Cl. 156-662.100.

Advantest Corporation: *See*—
Wakana, Shinichi; Ozaki, Kazuyuki; Goto, Yoshiro; and Umehara, Yasutoshi, 5,550,479, Cl. 324-750.000.

Aerospatiale Societe Nationale Industrielle: *See*—
Abiven, Henri; Picquet, Lionel; Claveyrolas, Gilles; Viala, Jean-Claude; and Bouix, Jean, 5,549,976, Cl. 428-608.000.
Bernus, Christophe; Jamain, Patrice; and Roland, Jean-Pierre, 5,550,413, Cl. 310-36.000.

Aerostar Marine Corporation: *See*—
Speer, Stephen R., 5,549,455, Cl. 416-93.00A.
Aeschlimann, Daniel: *See*—
Juergensen, Kay; Aeschlimann, Daniel; and Hunziker, Ernst B., 5,549,904, Cl. 424-423.000.
Afflerbaugh, Richard L.: *See*—
Chapman, Arthur S.; and Afflerbaugh, Richard L., 5,549,458, Cl. 417-360.000.
AFFYMAX Technologies NV: *See*—
Holmes, Christopher P., 5,549,974, Cl. 428-403.000.
AG Technology Co., Ltd.: *See*—
Otsuka, Haruhiko; Murayama, Yuzo; Tashiro, Akihiko; Hyomi, Kyoko; and Ishimaru, Naohiko, 5,549,954, Cl. 428-65.300.
Agarwal, Rajiv: *See*—
Patel, Rushikesh M.; Nahapetiance, Henri; and Agarwal, Rajiv, 5,550,852, Cl. 372-33.000.
Agaskar, Pradyot A.; and Grasselli, Robert K. Vanadium (IV)-containing nasicon materials. 5,550,308, Cl. 585-623.000.
Ageno, Scott K.: *See*—
Smith, Robert T.; and Ageno, Scott K., 5,550,426, Cl. 313-336.000.
Agfa-Gevaert AG: *See*—
Karthäuser, Silvia, 5,550,015, Cl. 430-569.000.
AGFA-Gevaert, N.V.: *See*—
Bollen, Romain, 5,549,996, Cl. 430-21.000.
Vanmaele, Luc, 5,550,252, Cl. 548-332.100.
Ahanin, Bahram: *See*—
Cliff, Richard G.; Cope, L. Todd; McClintock, Cameron R.; Leong, William; Watson, James A.; Huang, Joseph; and Ahanin, Bahram, 5,550,782, Cl. 365-230.030.
Aharon, Carmel. Electrically operated faucet including sensing means. 5,549,273, Cl. 251-129.040.
AHC, Inc.: *See*—
Kubo, Kazuhiro, 5,549,890, Cl. 424-93.462.
Aida, Takuzo: *See*—
Inoue, Sbohei; Aida, Takuzo; and Akatsuka, Masaki, 5,550,209, Cl. 528-361.000.
Aironet Wireless Communications, Inc.: *See*—
Pressler, Stephen M.; Friedmann, James J.; and Sloan, Donald I., 5,550,713, Cl. 361-818.000.
Aisin Seiki Kabushiki Kaisha: *See*—
Toda, Hiroshi; Nishii, Michiharu; Kusano, Akihito; Noda, Yoshiki; Kuromitsu, Hiromu; Terazawa, Tadashi; and Kojima, Seiichi, 5,549,366, Cl. 303-113.200.
Aiso, Katsuyosi; Adati, Sakasi; Igarasi, Tosihiro; Tanoue, Sin; Kumamoto, Satosi; and Wakuda, Masanori, to Toshiba Kikai Kabushiki Kaisha. Shaft rotation driving apparatus for machine tool. 5,549,015, Cl. 74-424.80B.
Aizawa, Masahiro: *See*—
Komakine, Hiroshi; Terada, Hiroshi; Yamamoto, Hajime; Hayashi, Kazumasa; and Aizawa, Masahiro, 5,550,619, Cl. 355-246.000.
Akagi, Kosuke, to Osaka Gas Co., Ltd. Fuel cell. 5,549,982, Cl. 429-30.000.
Akatsuka, Masaki: *See*—
Inoue, Sbohei; Aida, Takuzo; and Akatsuka, Masaki, 5,550,209, Cl. 528-361.000.
Akazaki, Shusuke: *See*—
Hasegawa, Yusuke; Komoriya, Isao; Akazaki, Shusuke; Maki, Hidetaka; and Abe, Satoru, 5,549,092, Cl. 123-478.000.
Akerman, Rose: *See*—
Thomas, Stacy I.; and Akerman, Rose, 5,549,629, Cl. 606-223.000.
Akesson, Leif: *See*—
Ostlund, Ake; Oscarsson, Ulf; Gustafson, Per; and Akesson, Leif, 5,549,980, Cl. 428-698.000.
Akihisa, Inoue: *See*—
Yamaguchi, Tadashi; Nosaki, Katsutoshi; Akihisa, Inoue; and Masumoto, Tsuyoshi, 5,549,951, Cl. 428-565.000.
Akinpelu, Akinwale A.; Bhagat, Promod K.; and Garoutte, Dana L., to AT&T Corp. Connections between a toll network and multiple local networks. 5,550,912, Cl. 379-221.000.
Akiyama, Akira; Arakawa, Michio; Ogawa, Hisashi; and Kiessig, Hartmut M., to Toyota Jidosha Kabushiki Kaisha. Rear underbody structure. 5,549,350, Cl. 296-204.000.
Akiyama, Takeo: *See*—
Kojima, Yasuo; Sasa, Nobumasa; and Akiyama, Takeo, 5,550,002, Cl. 430-258.000.
Akiyama, Yoshiyuki: *See*—
Yoshimura, Sbunji; Akiyama, Yoshiyuki; Ohsata, Kiyoshi; Ichimura, Isao; Watanabe, Toshio; and Katsuramoto, Shinji, 5,550,603, Cl. 352-27.000.
Akiyama, Yuichi: *See*—
Kurata, Yasuhiko; Akiyama, Yuichi; and Michihira, Osamu, 5,550,830, Cl. 370-95.200.
Akiyoshi, Hitomi, to Fujitsu Limited. ATM remote maintenance connection establishing system. 5,550,821, Cl. 370-60.100.
Akzo Nobel N.V.: *See*—
Subramanian, Ramaswamy, 5,549,882, Cl. 424-1.110.
Alberta Research Council: *See*—
Kashem, Mohammed A.; Venot, Andre P.; and Smith, Richard, 5,550,155, Cl. 514-540.000.
Albrecht, Alan; Goody, Steven H.; Spratt, Michael P.; Curcio, Joseph A., Jr.; and Dove, Daniel J., to Hewlett-Packard Company. High speed data transfer over twisted pair cabling. 5,550,836, Cl. 370-85.200.
Alcan International Limited: *See*—
Dubé, Ghyslain; Dupuis, Claude; Langlais, Joseph; Lavoie, Serge; Rompre, Stephane; Trottier, Sylvain; and Turcotte, Gilles, 5,549,732, Cl. 75-331.000.
Alcatel N.V.: *See*—
Krimmel, Heinz; Bülow, Henning; Heidemann, Rolf; and Otterbach, Jürgen, 5,550,667, Cl. 359-180.000.
Verbiest, Willem J. A.; Voeten, Bart F.; Vermeulen, Christophe D. G.; Van der Putten, Frank O.; and Defoort, Frank C. M., 5,550,577, Cl. 348-7.000.
Zielinski, Erich; and Weiser, Gerhard, 5,550,670, Cl. 359-248.000.
Alcatel Telspace: *See*—
Bernaud, Maurice; and Maquet, Freddy, 5,550,521, Cl. 333-260.000.
Alesio, Thomas, to AT&T Corp. Position monitoring system and method. 5,550,551, Cl. 342-457.000.
Alexander, Brent K. Gas service testing gauge. 5,548,993, Cl. 73-49.500.
Alexander, Graeme: *See*—
Perlich, Frank J.; Tix, Ron; and Alexander, Graeme, 5,549,801, Cl. 204-279.000.
Alferness, Clifton A.: *See*—
Ayers, Gregory M.; and Alferness, Clifton A., 5,549,641, Cl. 607-4.000.
Alfred Teves GmbH: *See*—
Hoffmann, Michael; and Eckert, Alfred, 5,550,739, Cl. 364-424.050.
Ali, Ahmed H.; Firdaus, Vaseem; Geoghegan, Tomas A.; Kissin, Yury V.; and Mink, Robert I., to Mobil Oil Corporation. Binary cocatalyst compositions for activating heterogeneous polymerization catalysts. 5,550,094, Cl. 502-115.000.
Allen, Kenneth P., to Mobil Oil Corporation. High fidelity vibratory source seismic method. 5,550,786, Cl. 367-48.000.
Allen, Robert H.: *See*—
Lin, Ronny W.; Allen, Robert H.; and Overstreet, Andrew D., 5,550,303, Cl. 585-328.000.
Allen, William R.: *See*—
Clinton, Eric L.; Pao, Hsien C.; Allen, William R.; and Nita, Valerian M., 5,548,995, Cl. 73-116.000.
Allergan: *See*—
Sulc, Jiri S.; and Krcova, Zuzana, 5,549,891, Cl. 424-94.400.
Allergan, Inc.: *See*—
Ding, Shulin; Pallo, Robert J.; Tien, Walter L.; and Olejnik, Orest, 5,550,163, Cl. 514-643.000.
Hunt, Terrence J., 5,549,894, Cl. 424-94.640.
Young, Craig; Sussman, Glenn R.; and Cunanan, Crystal M., 5,549,670, Cl. 623-6.000.
Alliance Semiconductor Corporation: *See*—
Stephens, Michael C., Jr.; and Medhekar, Ajit K., 5,550,500, Cl. 327-261.000.
Stephens, Michael C., Jr.; and Medhekar, Ajit K., 5,550,783, Cl. 365-233.000.
AlliedSignal Inc.: *See*—
Clark, Terri R.; and Long, Thomas C., 5,550,661, Cl. 359-073.000.
Shekhawat, Sampat; Liebermann, Eli; Scherzinger, William M.; Silvestro, Gayton L.; Suttora, Nick; and Hodge, David, 5,550,456, Cl. 322-25.000.
Yamanis, Jean, 5,549,983, Cl. 429-32.000.
Allison, Greg R.; Christensen, James D.; and Folsom, Thomas L., to Electronics Diversified, Inc. Sinusoidal inductorless dimmer applying variable frequency power signal in response to user command. 5,550,440, Cl. 315-294.000.
Allo Pro AG: *See*—
Hauser, René; and Sandoz, Yvan, 5,549,692, Cl. 623-22.000.
Alonso, Rafael, to Panasonic Technologies, Inc. System of database concurrency control based on transaction types and prior access to a data set. 5,551,023, Cl. 395-600.000.
Alpha Enterprises, Inc.: *See*—
Weisburn, James T.; Gallagher, Christopher G.; and Burdett, Ronald K., 5,549,203, Cl. 206-472.000.
Alphatec Manufacturing, Inc.: *See*—
Olson, Carlton D.; and Urbanski, Mark G., 5,549,607, Cl. 606-61.000.
Alphatech, Inc.: *See*—
Morando, Jorge A., 5,549,393, Cl. 384-203.000.
Alpine Lace Brands, Inc.: *See*—
Gamay, Aly, 5,549,916, Cl. 426-39.000.
Altavilla, Patricia: *See*—
Maddock, Julie; Bley, Robert; and Altavilla, Patricia, 5,549,672, Cl. 623-8.000.
Altera Corporation: *See*—
Cliff, Richard G.; Cope, L. Todd; McClintock, Cameron R.; Leong, William; Watson, James A.; Huang, Joseph; and Ahanin, Bahram, 5,550,782, Cl. 365-230.030.
Tran, Nghia, 5,550,842, Cl. 371-21.400.
Altermatt, Ruedi, to Sandoz Ltd. Azo compounds having unsubstituted or substituted 2-phenoxycarbonylethyl groups. 5,550,218, Cl. 534-852.000.
Alvarez, Jose A.: *See*—
Beyer, Douglas H.; Williams, Eugene V.; and Alvarez, Jose A., 5,550,703, Cl. 361-229.000.
Al-Zamil, Salah A. M. High speed digital polarity correlator. 5,550,766, Cl. 364-728.030.
Amano Pharmaceutical Co., Ltd.: *See*—
Koide, Yoshinao; Nakane, Seiji; and Imai, Yutaka, 5,550,041, Cl. 435-119.000.
Amatsu, Kazumi: *See*—

Inoue, Kunimi; Yamada, Yoshiyuki; Amatsu, Kazumi; Mimura, Yukiteru; Nakaguchi, Yasunori; Shinmura, Hiroyuki; Ono, Yasuyuki; Osawa, Yutaka; Mizutaki, Shoichi; Kasai, Masaji; and Tomioka, Shinji, 5,550,283, Cl. 562-561.000.
American Cyanamid Company: *See*—
Johann, Stephen V.; van Zeijl, Marja; and O'Hara, Bryan M., 5,550,221, Cl. 536-23.500.
Powell, Dennis; Paul, Rolf; Hallett, William A.; Berger, Dan M.; and Dutia, Minu D., 5,550,149, Cl. 514-416.000.
Trybulski, Eugene J.; Kramss, Richard H.; and Brabander, Herbert J., 5,550,257, Cl. 548-550.000.
American Greetings Corporation: *See*—
Jacobs, Herbert H., 5,550,746, Cl. 364-479.010.
American Home Products Corporation: *See*—
Failli, Amedeo A.; Bleyman, Oleg I.; Kao, Wenling; and Abou-Gharbia, Magid A., 5,550,133, Cl. 514-291.000.
American Maize-Products Company: *See*—
Shieh, Wen, 5,550,222, Cl. 536-103.000.
American TeleCare, Inc.: *See*—
Abbruscato, C. Richard, 5,550,902, Cl. 379-106.000.
Amiel, Pierre: *See*—
Behar, Alain; Amiel, Pierre; and Bougamont, Jean-Louis, 5,548,943, Cl. 53-473.000.
Amini, Nader; Boury, Bechara E.; Brannon, Sherwood; and Lohman, Terence J., to International Business Machines Corporation. Expandable high performance FIFO design which includes memory cells having respective cell multiplexors. 5,551,009, Cl. 395-492.000.
Amino, Hirokazu; and Clarke, Ian C., to Kyocera Corporation. Artificial knee joint. 5,549,684, Cl. 623-20.000.
Amir, Israel; and Higgins, Frank P., to Lucent Technologies Inc. Inspection apparatus and method. 5,550,583, Cl. 348-126.000.
Amoco Corporation: *See*—
Lin, Ronny W.; Allen, Robert H.; and Overstreet, Andrew D., 5,550,303, Cl. 585-328.000.
Richardson, Joel A.; Poppe, Wassily; Bolton, Benjamin A.; and Paschke, Edward E., 5,550,208, Cl. 528-335.000.
Wu, Feng-Jung, 5,550,305, Cl. 585-513.000.
Amos, Jane G.; Heath, Perry C.; Prather, Douglas E.; and Toth, John E., to Eli Lilly and Company. Loracarbef hydrochloride C1-C3 alcohol solvates and uses thereof. 5,550,231, Cl. 540-205.000.
Amphenol-Tuchel Electronics GmbH: *See*—
Huis, Heinrich; and Schuder, Bernd, 5,550,361, Cl. 235-440.000.
Amron, Ltd.: *See*—
Mendes, Emanuel; Iron, Gideon; and Harel, Avikam, 5,549,660, Cl. 607-088.000.
Analog Devices, Inc.: *See*—
Ellis, Denis, 5,550,728, Cl. 363-60.000.
Murden, Frank, 5,550,492, Cl. 327-65.000.
Analogic Corporation: *See*—
Dobbs, John; and Deych, Ruvin, 5,550,886, Cl. 378-19.000.
Anani, Anaba A., to Motorola, Inc. Electrochemical capacitor having a proton conducting solid electrolyte. 5,549,989, Cl. 429-193.000.
Anastos, William: *See*—
Burrill, James T.; and Anastos, William, 5,549,456, Cl. 417-12.000.
Andersen, Per J.; and Hodson, Simon K., to E. Khashoggi Industries. Methods for the extrusion of novel, highly plastic and moldable hydraulically settable compositions. 5,549,859, Cl. 264-102.000.
Anderson, David: *See*—
Garrity, Doug; Anderson, David; Anderson, Howard; Gunter, Brad; and Bersch, Danny, 5,550,503, Cl. 327-437.000.
Anderson, David B. Gun trigger mechanism. 5,548,914, Cl. 42-66.000.
Anderson, Delsmore L., to Willknight, Inc. All weather mechanically reciprocatable roll top cover apparatus. 5,549,347, Cl. 296-98.000.
Anderson, Howard: *See*—
Garrity, Doug; Anderson, David; Anderson, Howard; Gunter, Brad; and Bersch, Danny, 5,550,503, Cl. 327-437.000.
Anderson, Kenneth M.: *See*—
Min, Xiaoyi; Mongeon, Luc R.; Mehra, Rahul; Anderson, Kenneth M.; DeGroot, Paul J.; and Hill, Michael R. S., 5,549,642, Cl. 607-5.000.
Anderson, Stephen; and Ryan, Raymond, to Rutgers, The State University of New Jersey. Inhibitors of urokinase plasminogen activator. 5,550,213, Cl. 530-324.000.
Anderson, Waston A. Magnetically supported cathode X-ray source. 5,550,890, Cl. 378-136.000.
Anderson, William E.; Davis, Donald M.; and Curzon, Jon L. Pellet extruding machine. 5,548,960, Cl. 62-605.000.
Anderson, William J., to Nastec, Inc. Resilient mount pad journal bearing. 5,549,392, Cl. 384-117.000.
Ando, Kazuhiro: *See*—
Ohmi, Shinichiro; Imai, Hiroyuki; Ando, Kazuhiro; and Suematsu, Takayuki, 5,550,756, Cl. 364-514.00R.
Ando, Nobuhiko: *See*—
Hineno, Satoshi; and Ando, Nobuhiko, 5,550,798, Cl. 369-110.000.
Ando, Toshinori: *See*—
Nakanishi, Hiroshi; Saito, Norihisa; Ando, Toshinori; and Morinaga, Hisakazu, 5,549,855, Cl. 264-2.500.
Andriash, Myke D.; and Keightley, John. Laser sheet perforator. 5,550,346, Cl. 219-121.720.
Andruska, Donald L.; and Ruvarac, Thomas C., to Lucent Technologies Inc. Method for identifying the originating network at the terminating network for transnetwork calls. 5,550,904, Cl. 379-127.000.
Angeion Corporation: *See*—
Kroll, Mark W.; and Smith, Charles U., 5,549,643, Cl. 607-7.000.
Anjum, Mohammed; Burki, Ibrahim K.; and Christian, Craig W., to Advanced Micro Devices, Inc. Integrated circuit fabrication using a metal silicide having a sputterdeposited metal nitride layer. 5,550,084, Cl. 437-200.000.
Annecharico, Robert L.; and Campbell, Norman. Device for superheating steam. 5,549,078, Cl. 122-132.000.
Anneser, Douglas L., to United Technologies Corporation. Isolated MOSFET gate drive. 5,550,412, Cl. 307-125.000.
Anzai, Shoji: *See*—
Kageyama, Shuhei; Anzai, Shoji; and Mitsuya, Yoshihide, 5,549,404, Cl. 401-75.000.
Aoki, Hidemitsu: *See*—
Kitajima, Hiroshi; Aoki, Hidemitsu; Hamano, Haruto; Morita, Makoto; Shiramizu, Yoshimi; Nakamori, Masaharu; Watanabe, Kaori; Seo, Hirofumi; Shimizu, Yuji; Iuchi, Makoto; Sasaki, Yasushi; and Ohta, Nahomi, 5,549,798, Cl. 204-222.000.
Aoki, Hidenao; Tsutsumi, Shigehisa; Fukushima, Takehiro; and Sakai, Zenji, to IMV Corporation. Vibration testing apparatus with increased rigidity in static pressure bearing. 5,549,005, Cl. 73-663.000.
Aoki, Hiroshi; and Inokuchi, Michihiro, to Mitsubishi Chemical Corporation. Compression molded tablet fertilizer and method the production thereof. 5,549,730, Cl. 71-64.030.
Aoki, Yoichi; Sato, Yasuo; Ito, Chiaki; Nishiuchi, Hitoshi; Nakamoto, Makoto; Yamaguchi, Syoji; Mio, Haruhiko; Koyata, Kazuhiro; and Miyazawa, Yoshinori, to Fujitsu Limited. Data processing device that enables mouse-operated application programs to be operated from an operation pad, and an operation pad for use with the same. 5,550,562, Cl. 345-163.000.
Aoyagi, Akihiko; Boutaghou, Zine-Eddine; Khanna, Vijayeshwar D.; Kumar, Suresh; and Sri-Jayantha, Muthuthamby, to International Business Machines Corporation. Crash stop shock ring for the protection of disk drive motor bearings. 5,550,688, Cl. 360-99.080.
Aoyagi, Toshitaka; Watanabe, Hitoshi; Miyazaki, Yasunori; and Isshiki, Kunihiko, to Mitsubishi Denki Kabushiki Kaisha. Optical modulator. 5,550,855, Cl. 372-50.000.
Aoyama, Shigeru: *See*—
Nishizaki, Osamu; and Aoyama, Shigeru, 5,550,663, Cl. 359-95.000.
Apax Corporation: *See*—
Schroeder, Hubert J.; and Zivkovic, Jovan, 5,549,783, Cl. 156-542.000.
Appalachian Electronic Instruments, Inc.: *See*—
Nickell, Larry C., 5,550,384, Cl. 250-559.450.
Appel, James J.; and Dunn, Susan E., to Xerox Corporation. Multispot polygon ROS with maximized line separation depth of focus. 5,550,668, Cl. 359-204.000.
Appelbaum, Peter F.: *See*—
Perkins, James T.; Appelbaum, Peter F.; and Painter, John A., 5,549,139, Cl. 137-884.000.
Apple Computer, Inc.: *See*—
Baxter, Michael A., 5,551,017, Cl. 395-550.000.
Brewer, Gregory S.; and Commons, Peter, 5,550,967, Cl. 395-155.000.
Lyon, Richard F., 5,550,487, Cl. 326-33.000.
Applewhite, John: *See*—
Johnson, Lonnie G.; and Applewhite, John, 5,549,497, Cl. 446-52.000.
Applied Materials, Inc.: *See*—
Guo, Xin S., 5,549,802, Cl. 204-298.110.
Jinbo, Takeshi; and Takahama, Hiroyuki, 5,548,964, Cl. 62-55.500.
Sorensen, Carl A.; and Blonigan, Wendell T., 5,549,756, Cl. 118-715.000.
Aqua tec Coatings Corporation: *See*—
Ely, Richard W.; Gilson, James P.; and Pawelski, Cathy, 5,550,182, Cl. 524-557.000.
Arai, Akihiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Focal point correction apparatus. 5,550,612, Cl. 354-400.000.
Arai, Yuji; Ishiguro, Takashi; and Watanabe, Toshio, to Sony Corporation; and Taiyo Yuden Co., Ltd. Optical information medium and method for printing on the surface of the medium. 5,549,952, Cl. 428-64.400.
Arakawa, Michio: *See*—
Akiyama, Akira; Arakawa, Michio; Ogawa, Hisashi; and Kiessig, Hartmut M., 5,549,350, Cl. 296-204.000.
Aramata, Mikio: *See*—
Fukushima, Motoo; Aramata, Mikio; and Mori, Shigeru, 5,549,851, Cl. 252-519.000.
Aranovsky, Anatoly, to GEC Plessey Semiconductors, Inc. Control circuit and method for thin film head writed river. 5,550,502, Cl. 327-423.000.
Araoka, Manabu: *See*—
Miyazaki, Yoshihiro; Takahashi, Yoshiaki; Araoka, Manabu; Takaya, Soichi; and Fukumaru, Hiroaki, 5,551,007, Cl. 395-47.500.
Araya, Shinichi: *See*—
Takahashi, Tetsuo; Miyauchi, Eisaku; Mogi, Kunio; and Araya, Shinichi, 5,549,716, Cl. 29-25.010.
Arch Development Corp.: *See*—
Teng, BaBie; Davidson, Nicholas O.; and Burant, Charles F., 5,550,034, Cl. 435-69.100.
Archambault, Gervais: *See*—
Langlais, Daniel; and Archambault, Gervais, 5,549,482, Cl. 439-369.000.
Archibald, Kenneth R.; and Scott, Melvyn L., Jr., to Hayes Wheels International, Inc. Method of manufacturing a full face wheel assembly. 5,548,896, Cl. 29-894.322.
Arco Chemical Technology, L.P.: *See*—

Kinkelaar, Mark R.; Cavender, Keith D.; Lambach, James L.; Brasington, Robert D.; and Critchfield, Frank E., 5,549,841, Cl. 252-182.270.

Argomed Ltd.: *See—*
Eshel, Uzi, 5,549,559, Cl. 604-113.000.

Arima, Toshiyuki: *See—*
Nishijima, Takayuki; Kawamachi, Kanehiro; Muto, Takao; Yamazaki, Mitsuo; and Arima, Toshiyuki, 5,549,344, Cl. 296-70.000.

Aritake, Hirokazu: *See—*
Kayashima, Shigeo; Hasegawa, Shinya; Maeda, Satoshi; and Aritake, Hirokazu, 5,550,655, Cl. 359-17.000.

Armbruster, June M.; Bastiaens, Willem V.; Callahan, Joseph P., Jr.; Moris, Steve W.; and Stegink, David W., to Minnesota Mining and Manufacturing Company. Frame assembly and composite inclusive thereof. 5,549,267, Cl. 248-442.200.

Arnold, Erich C.; Gagliardi, Olivia M.; Hyatt, Wayne E.; Mayka, Lawrence G.; and Morgan, Todd C., to Lucent Technologies Inc. Method and apparatus for inter-object communication in an object-oriented program controlled system. 5,551,035, Cl. 395-650.000.

Arnold, Michael J. Method for the preparation of pure carboxyethyl germanium sesquioxide. 5,550,266, Cl. 556-89.000.

Arnott, Randy M.: *See—*
Rosich, Mitchell N.; Noya, Eric S.; and Arnott, Randy M., 5,551,002, Cl. 395-461.000.

Arthur Cox & Sons, Inc.: *See—*
Ryczek, William F., 5,548,869, Cl. 16-93.00R.

Aruga, Tamotsu: *See—*
Shimada, Tomoyuki; Sasaki, Masaomi; and Aruga, Tamotsu, 5,550,293, Cl. 564-426.000.

Asa, Hironori: *See—*
Konaga, Naoji; Inagaki, Mitsuo; Asa, Hironori; and Tanahashi, Toshitaka, 5,549,371, Cl. 303-152.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Shohji, Kohichi; Ikeda, Masataka; and Kishimoto, Yasushi, 5,549,964, Cl. 428-224.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Abe, Tetsuya; Hasushita, Sachio; and Ito, Takayuki, 5,550,674, Cl. 359-422.000.
Arai, Akihiro, 5,550,612, Cl. 354-400.000.
Ishikawa, Yutaka; Ito, Takeru; and Sato, Tsutomu, 5,549,401, Cl. 400-618.000.
Miyadera, Shunichi, 5,550,587, Cl. 348-223.000.

Asai, Kazuyoshi: *See—*
Hirano, Makoto; Asai, Kazuyoshi; Imai, Yuhki; Tokumitsu, Masami; Tokumitsu, Tsuneo; and Toyoda, Ichihiko, 5,550,068, Cl. 437-41.000.

Asai, Shuji, to NEC Corporation. Substrate with a compound semiconductor surface layer and method for preparing the same. 5,549,749, Cl. 117-90.000.

Ash Grove Cement Company: *See—*
Tutt, James R., 5,549,058, Cl. 110-226.000.

Ashford Concrete, Inc.: *See—*
Hauri, Edward D., 5,549,322, Cl. 280-704.000.

Ashi, Yoshihiro: *See—*
Takatori, Masahiro; Nakano, Yukio; and Ashi, Yoshihiro, 5,550,805, Cl. 370-16.100.

Ashman, J. Leonard. Apparatus for mounting a cycle wheel. 5,549,315, Cl. 280-279.000.

Askins, William E.; Stewart, Michael W.; Roulston, Gary; and Fiore, Joseph F., Jr., to Woodstream Corporation. Collapsible cage. 5,549,073, Cl. 119-474.000.

Asmussen, Hans P. Paper towel dispenser. 5,549,218, Cl. 221-282.000.

Aso, Kenichi; Sato, Hideaki; Eguchi, Hiroshi; Kafuku, Komei; and Takiguchi, Ryohei, to Dai Nippon Printing Co., Ltd. Thermal transfer sheet. 5,550,098, Cl. 503-227.000.

Astbury, Richard: *See—*
Searle, Leanne; Astbury, Richard; and Eaves, Philip, 5,549,508, Cl. 451-141.000.

Astec Industries, Inc.: *See—*
Standard, Thomas A., 5,549,734, Cl. 95-279.000.

Astra Aktiebolag: *See—*
Trofast, Eva A.; Wetterlin, Kjell I. L.; and Virtanen, Risto K. V., 5,549,101, Cl. 128-203.150.

Asulab S.A.: *See—*
Born, Jean-Jacques; and Bornand, Etienne, 5,550,794, Cl. 368-11.000.

Aszkenas, Marvin J. Guard rail and fender formed of motor vehicle tires. 5,549,279, Cl. 256-13.100.

AT & T Corp.: *See—*
Chanda, Rajat; Dib, Hani M.; and Heinsius, Steven T., 5,550,909, Cl. 379-220.000.

AT&T Corp.: *See—*
Akinpelu, Akinwale A.; Bhagat, Promod K.; and Garoutte, Dana L., 5,550,912, Cl. 379-221.000.
Alesio, Thomas, 5,550,551, Cl. 342-457.000.
D'Ambrogio, William J.; McCourt, Karen M.; Phillips, Wayne D.; Saleh, Patricia D.; and Seip, Barry S., 5,550,834, Cl. 370-110.100.

AT&T Global Information Solutions Company: *See—*
Bauer, Eric; and Schaffer, Russel W., 5,550,981, Cl. 395-200.060.
DuLac, Keith B., 5,550,986, Cl. 395-280.000.
Erkocevic, Nedim, 5,550,554, Cl. 343-828.000.

Atalla, Rajai H.; Weinstock, Ira A.; Hill, Craig L.; and Reiner, Richard S., to United States of America, Agriculture; and Emory University. Oxidation of lignin and polysaccharides mediated by polyoxometalate treatment of wood pulp. 5,549,789, Cl. 162-65.000.

Atkins, William A.: *See—*
Selby, Theodore W.; Wolfe, Kevin J.; and Atkins, William A., 5,548,994, Cl. 73-54.280.

Atlantic Richfield Company: *See—*
Klein, James D., 5,550,473, Cl. 324-338.000.

Atlas Telecom International Ltd.: *See—*
Charland, Claude, 5,550,894, Cl. 379-2.000.

Atohaas Bolding C.V.: *See—*
Banyay, Harold R.; Cholod, Michael S.; Kolanko, Laurence M.; and Smith, Bonnie V., 5,549,941, Cl. 428-34.100.

Atsugi Unisia Corporation: *See—*
Kakizaki, Shinobu; and Kasajima, Kimihisa, 5,548,999, Cl. 73-493.000.

Audia, James E.; and Neubauer, Blake L., to Eli Lilly and Company. Methods for inhibiting bone loss. 5,550,134, Cl. 514-284.000.

Aulagner, Michel; and Esteveny, Serge, to Entre-Prises; and Centre Stephanois de Recherches Mecaniques Hydromecaniques et Frottement. Movable surface with articulated plates. 5,549,195, Cl. 198-850.000.

Aust, Rainer: *See—*
Ohlendorf, Rolf; Strauber, Hans-Jürgen; Aust, Rainer; and Strobel, Wolfgang, 5,549,081, Cl. 123-90.160.

Australian Nuclear Science & Technology Organization: *See—*
Smith, Suzanne V.; Lambrecht, Richard M.; Schmidt, Peter F.; and Lee, Fook-Thean, 5,550,160, Cl. 514-563.000.

Avanta Orthopaedics: *See—*
Hollister, Anne; Truman, Mari S.; Bodell, Leonard; and Focht, Louise, 5,549,690, Cl. 623-21.000.

Averill, Robert G.; and Cohen, Robert C., to Implex Corp. Prosthetic acetabular cup and method of implant. 5,549,698, Cl. 623-22.000.

Averitt, Marnie C.: *See—*
Sherlock, Mary F.; Averitt, Marnie C.; and Dowling, Thomas W., 5,548,841, Cl. 2-15.000.

Averst, Douglas I.: *See—*
Liberti, Joseph C., Jr.; Averst, Douglas I.; Branch, Tony R.; and Carsello, Stephen R., 5,550,872, Cl. 375-347.000.

Avery Dennison Corporation: *See—*
Miekka, Richard G.; Fotland, Richard A.; Miekka, Frederick N.; Fitch, John J.; and Josephy, Karl, 5,549,774, Cl. 156-209.000.
Scholz, William F., 5,550,181, Cl. 524-460.000.

Axis USA, Inc.: *See—*
Domenichini, Carlo; and Tarchi, Mauro, 5,550,477, Cl. 324-545.000.

Aya, Yoichiro: *See—*
Sano, Keiichi; Aya, Yoichiro; Terada, Norihiro; and Harata, Yasuki, 5,549,763, Cl. 136-255.000.

Aydil, Eray: *See—*
Sutcu, Maz; Gentelia, John S.; and Aydil, Eray, 5,549,604, Cl. 606-45.000.

Ayers, Gregory M.; and Alferness, Clifton A., to InControl, Inc. Atrial fibrillation type selective cardiovertor and method. 5,549,641, Cl. 607-4.000.

Ayers, Ray R.: *See—*
Ju, Gwo-Tarng; Goudy, Eric S.; and Ayers, Ray R., 5,549,417, Cl. 405-211.000.

Azadegan, Faramarz, to Kabushiki Kaisha Toshiba. Trick-play VCR for digitally coded video. 5,550,643, Cl. 358-335.000.

Azuma, Taiki: *See—*
Enomoto, Kazuhisa; Yamazaki, Takao; Azuma, Taiki; and Tarutani, Shinji, 5,550,801, Cl. 369-178.000.

B&W Nuclear Technologies, Inc.: *See—*
Bowles, Cary R.; Jones, Sidney D.; and Peters, Gary A., 5,549,831, Cl. 210-650.000.

Babcock & Wilcox Company, The: *See—*
Johnston, Jesse C., Jr.; Kulig, James S.; Lewis, Steven F.; Collet, Eric C.; Sepela, Mark J.; and Meuller, Michael L., 5,549,079, Cl. 122-379.000.

Bagcraft Corporation of America: *See—*
Marsik, Ronald, 5,549,538, Cl. 493-218.000.

Baggett, William C.; Baines, Elliot A., Jr.; Filus, Wayne S.; Gilland, Dianne W.; Kluska, Theodore E.; Larsen, Wayne D.; Spaulding, Mark G.; and Starace, Jeremia P., to Lucent Technologies Inc. Connector module with test and jumper access. 5,549,489, Cl. 439-709.000.

Bahr, Dennis E.: *See—*
Flax, Stephen W.; and Bahr, Dennis E., 5,551,020, Cl. 395-600.000.

Bahr, Jeffrey A.: *See—*
Cottone, Andrew J.; Saperstein, Zalman P.; Tait, Ronald D.; Parkhill, Richard G.; and Bahr, Jeffrey A., 5,549,927, Cl. 427-191.000.

Bailey, Brian L.; and Clayman, Harvey L., to TeamNet, Inc. System for recording and analyzing vehicle trip data. 5,550,738, Cl. 364-424.040.

Baillif, Christian, to Bull S.A. Data input/output device for displaying information, and method for employing such a device. 5,550,567, Cl. 345-203.000.

Baines, Elliot A., Jr.: *See—*
Baggett, William C.; Baines, Elliot A., Jr.; Filus, Wayne S.; Gilland, Dianne W.; Kluska, Theodore E.; Larsen, Wayne D.; Spaulding, Mark G.; and Starace, Jeremia P., 5,549,489, Cl. 439-709.000.

Baird, Randall B.: *See—*
Long, James E.; Gang, Joseph M., Jr.; Bedard, Charles J.; Baird, Randall B.; and Edwards, David A., 5,550,982, Cl. 395-200.130.

Baist, Bernhard, to MELZER Maschinenbau GmbH. Laminating apparatus. 5,549,782, Cl. 156-540.000.

Baker, Donald L., to Westech Geophysical, Inc. Downhole instrument power supply system using shunt voltage regulation. 5,550,411, Cl. 307-100.000.

Baker Hughes Incorporated: *See—*
Brooks, Robert T., 5,549,165, Cl. 166-386.000.
Gomez, Alfredo; Richards, William M.; and Murray, Douglas J., 5,549,161, Cl. 166-255.100.

Baker, James A., Jr.: *See—*
Lundquist, Ingemar H.; Edwards, Stuart D.; Sharkey, Hugh R.; Lax, Ronald G.; Baker, James A., Jr.; and Sommer, Phillip R., 5,549,644, Cl. 604-22.000.

Baker, John S.; and Baker, Joyce V. Combination lawn feeder and sprinkler device. 5,549,248, Cl. 239-251.000.

Baker, Joyce V.: *See—*
Baker, John S.; and Baker, Joyce V., 5,549,248, Cl. 239-251.000.

Baker, Robert J.: *See—*
Mihalisin, John R.; Corrigan, John; Baker, Robert J.; Leonard, Eric L.; and Vandersluis, Jay L., 5,549,765, Cl. 148-428.000.

Baker, Robert K.: *See—*
Rupprecht, Kathleen M.; Baker, Robert K.; Ok, Hyun O.; and Parsons, William H., 5,550,233, Cl. 540-456.000.

Baker, Roy S., to Sundstrand Corporation. Standby generator pulse excitation system and electric power generating system for use therein. 5,550,455, Cl. 322-23.000.

Bal, Jasbinder S.: *See—*
Hammond, Timothy; and Bal, Jasbinder S., 5,550,173, Cl. 523-122.000.

Bala, Frank, Jr.: *See—*
Mondin, Myriam; Loth, Myriam; Broze, Guy; Mehreteab, Ammanuel; Thomas, Barbara; Adamy, Steven; and Bala, Frank, Jr., 5,549,840, Cl. 510-365.000.

Balan, Isadore: *See—*
Bloemer, John M.; Balan, Isadore; Bonnell, Thomas A.; Bengtson, Alan D.; Giose, Robert C.; Reid, Mary J.; Fiumefreddo, John A.; and Kurth, Michael J., 5,548,854, Cl. 4-541.600.

Baldock, Michael J. Rolled vinyl siding. 5,548,940, Cl. 53-430.000.

Bales, Michael E.; Noel, Paul D.; and Schatz, Steve M., to Maytag Corporation. Glass range top-seal system. 5,549,098, Cl. 126-211.000.

Bales, Thomas O.: *See—*
Ryan, Dana W.; Giurtino, Joel F.; and Bales, Thomas O., 5,549,565, Cl. 604-167.000.

Balogh, Gábor: *See—*
Mahó, Sándor; Tuba, Zoltán; Sánta, Csaba; Balogh, Gábor; Czajlikné Csizér, Éva; Lovasné Marsai, Mária; and Gálik, György, 5,550,240, Cl. 544-295.000.

Balzers Aktiengesellschaft: *See—*
Schertler, Roman, 5,549,435, Cl. 414-217.000.
Schulz, Hans; and Maushart, Josef, 5,549,975, Cl. 428-553.000.

Bamba, Noriko: *See—*
Someya, Jun; Chiba, Kazuhiro; Watabu, Kazuyoshi; Yamamoto, Yoshie; Inamura, Mamoru; Nagayama, Takeshi; Bamba, Noriko; and Sunada, Noboru, 5,550,936, Cl. 382-263.000.

Ban, Hiroyuki: *See—*
Yamamoto, Tomohisa; Hayakawa, Junji; and Ban, Hiroyuki, 5,550,465, Cl. 324-143.000.

Bane, Ronald L.: *See—*
Goldsmith, Eric S.; Klingberg, Jeffrey W.; Bane, Ronald L.; and Ehmann, Charles M., 5,551,068, Cl. 455-89.000.

Banyay, Harold R.; Cholod, Michael S.; Kolanko, Laurence M.; and Smith, Bonnie V., to Atohaas Bolding C.V. Craze resistant transparent sheet. 5,549,941, Cl. 428-34.100.

Banyu Pharmaceutical Co., Ltd.: *See—*
Nakagawa, Susumu; Kato, Shinji; Murase, Satoshi; Okamoto, Osamu; Mitomo, Ryuji; Yamamoto, Katsumi; Yamada, Koji; and Fukatsu, Hiroshi, 5,550,121, Cl. 514-210.000.

Baran, Paul, to Com 21, Inc. Multiple protocol personal communications network system. 5,550,820, Cl. 370-60.100.

Barber, James C. Processes for the disposal and recovery of phossy water. 5,549,878, Cl. 423-304.000.

Barbet, Anthony F.: *See—*
McGuire, Travis C.; Palmer, Guy H.; Barbet, Anthony F.; and Davis, William C., 5,549,898, Cl. 424-269.100.

Barbosa-Canovas, Gustavo V.: *See—*
Zhang, Qinghua; Qin, Bai-Lin; Barbosa-Canovas, Gustavo V.; Swanson, Barry G.; and Pedrow, Patrick D., 5,549,041, Cl. 99-451.000.

Barenkamp, Stephen J.; and St. Geme, Joseph W., III, to St. Louis University; and Washington University. High molecular weight surface proteins of non-typeable haemophilus. 5,549,897, Cl. 424-256.00N.

Baril, Marc: *See—*
Browne, Ronnie A.; and Baril, Marc, 5,549,134, Cl. 137-606.000.

Barker, Robert J., to United States of America, Air Force. Smart adaptive vacuum electronics. 5,550,432, Cl. 315-5.000.

Barlow, Christopher R.: *See—*
Henderson, Kenneth R.; Koski, Robert E.; and Barlow, Christopher R., 5,550,976, Cl. 395-200.060.

Barlow, J. Jeffrey: *See—*
Florio, Joseph J.; Bornzin, Gene A.; Levine, Paul A.; and Barlow, J. Jeffrey, 5,549,649, Cl. 607-15.000.

Barnes, Donald W., to Barnes, Donald W.; and Dunham, Dennis N. Heated ice-melting blocks for steps. 5,550,350, Cl. 219-213.000.

Barnes, Eric S.; Eldridge, George L.; Nguyen, Uoc; Shah, Ajit; and Weir, Ronald E., to Xerox Corporation. Data bus protocol for high speed chip to chip data transfer. 5,551,052, Cl. 395-800.000.

Barney, Howard: *See—*
Park, Eric Y.; Knaub, David; Thorpe, David; Barney, Howard; and Hoyt, Joshua, 5,549,010, Cl. 73-861.790.

Barreau, Eric L. P.; Honnorat, Yves C. L. A.; Martinou, Robert L.; and Richin, Catherine M. H., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "Snecma". Method for hardening metallic elements. 5,549,809, Cl. 205-222.000.

Barrera, David D.; Rastegar, Bahador; and Rossbach, Paul C., to Motorola, Inc.; and International Business Machines. Memory cache with automatic alliased entry invalidation and method of operation. 5,550,995, Cl. 395-403.000.

Barrow, Jeffrey. Sonic drilling method and apparatus. 5,549,170, Cl. 175-55.000.

Bartsch, Régine: *See—*
Frost, Jonathan; George, Pascal; Pasau, Patrick; Bartsch, Régine; Rousselle, Corinne; Williams, Paul H.; and Muller, Jean C., 5,550,162, Cl. 514-617.000.
George, Pascal; Frost, Jonathan; Pasau, Patrick; Rousselle, Corinne; Bartsch, Régine; Williams, Paul Howard; and Muller, Jean Claude, 5,550,125, Cl. 514-230.500.

Baruschke, Wilhelm; Lochmahr, Karl; and Rojnica, Werner, to Behr GmbH & Co. Device for cooling drive components and heating a passenger compartment of an electric vehicle. 5,549,153, Cl. 165-42.000.

Barzuza, Ytzhak, to Filtration Ltd.; and Barzuza, Ytzhak. Liquid filter structure. 5,549,825, Cl. 210-411.000.

BASF Aktiengesellschaft: *See—*
Beckmann, Stefan; Etzbach, Karl-Heinz; Siemensmeyer, Karl; and Seus, Ruediger, 5,549,853, Cl. 252-582.000.

BASF Magnetics GmbH: *See—*
Thiele, Hartmut; Brandstetter, Hermann; Toral, Jose; Hiller, Rainald; Scholtysik, Bernd; Lutz, Gottfried; and Liepold, August, 5,549,198, Cl. 206-307.000.

Bastiaens, Willem V.: *See—*
Armbruster, June M.; Bastiaens, Willem V.; Callahan, Joseph P., Jr.; Moris, Steve W.; and Stegink, David W., 5,549,267, Cl. 248-442.200.

Batdorf, David B.; and Schryver, Charles A., to Specialty Silicone Fabricators. Unitary drain and method for making. 5,549,579, Cl. 604-264.000.

Batich, Christopher D.: *See—*
Thomas, William C., Jr.; Batich, Christopher D.; and Purich, Daniel L., 5,550,259, Cl. 549-274.000.

Batson, Richard G., to Technology Finance Corporation (Proprietary) Limited. Process for treating a suspension of solid particles in a carrier liquid. 5,549,827, Cl. 210-519.000.

Battist, Gerald E.: *See—*
Cherukuri, Subraman R.; Battist, Gerald E.; and Perkins, James H., 5,549,917, Cl. 426-96.000.

Bauer, Donald L., to Westinghouse Electric Corporation. Apparatus for applying a known axial force to a valve stem. 5,548,997, Cl. 73-168.000.

Bauer, Eric; and Schaffer, Russel W., to AT&T Global Information Solutions Company. Dynamic binding of network identities to locally-meaningful identities in computer networks. 5,550,981, Cl. 395-200.060.

Bauer, Hans J.: *See—*
Lidgren, Lars Å A.; and Bauer, Hans J., 5,549,380, Cl. 366-139.000.

Baughman, Stephen G.: *See—*
Wozniak, Elizabeth M.; and Baughman, Stephen G., 5,549,728, Cl. 71-6.000.

Baur, Rudolph J.: *See—*
Cawthon, Albert V.; and Baur, Rudolph J., 5,549,345, Cl. 296-70.000.

Baxter International Inc.: *See—*
Brown, Richard L., 5,549,834, Cl. 210-806.000.
Chapman, Arthur S.; and Afflerbaugh, Richard L., 5,549,458, Cl. 417-360.000.
Hata, Cary; Tu, Roger; Sung, Hsing-Wea; and Shen, Shih-Hwa, 5,549,666, Cl. 623-2.000.
Moore, Glenn; and Ellis, Caryl, 5,549,540, Cl. 494-20.000.
Neuenfeldt, Steven; Brauker, James; Clarke, Robert; and Carr-Brendel, Victoria, 5,549,675, Cl. 623-11.000.
West, Richard L., 5,549,264, Cl. 248-157.000.

Baxter, Michael A., to Apple Computer, Inc. Polycyclic timing and apparatus for pipelined computer operation. 5,551,017, Cl. 395-550.000.

Bayer Aktiengesellschaft: *See—*
Kluth, Joachim; and Müller, Klaus-Helmut, 5,550,244, Cl. 546-153.000.
Rechner, Johann; Wagner, Paul; Buysch, Hans-Josef; and Klausner, Alexander, 5,550,278, Cl. 558-277.000.
Stoltefuss, Jürgen; Goldmann, Siegfried; Straub, Alexander; Bechem, Martin; Gross, Rainer; Hebisch, Siegbert; Hütter, Joachim; and Rounding, Howard-Paul, 5,550,245, Cl. 546-167.000.

Bayer Corporation: *See—*
Boger, David L.; Jaichandra, Doraiswami; Jaworski, Donald L.; and Perry, Joseph E., 5,550,059, Cl. 436-54.000.

Beach, Donald W.: *See—*
Bounnakhom, Alan S.; Berman, Claude; and Beach, Donald W., 5,549,821, Cl. 210-232.000.

Beakes, John M.; Clemenz, Gary E.; Dolgas, Patrick A.; Heaton, Mark T.; and Newman, Lawrence E., to Globe Products Inc. Stator winding apparatus. 5,549,253, Cl. 242-432.300.

VOI
1189
ISS
4
AG
27
1996
UMI

Beale, Bradford W., to Smith & Nephew Richards Inc. Phonosurgery implant instruments and a system and method of implantation. 5,549,673, Cl. 623-9.000.

Beale, Jeffrey P., to Beale, Jeffrey P. Dispensing system for refueling transport containers with cryogenic liquids. 5,549,142, Cl. 141-49.000.

Bearden, Herman G. Balancing skid for tree harvesting machine. 5,549,145, Cl. 144-34.100.

Beauducel, Claude; Frot, Didier; and Gonzalez, Pierre, to Institut Francais du Petrole. Device and method for characterizing a medium comprising at least a conductive part. 5,549,008, Cl. 73-861.040.

Beauducel, Claude: *See*—
Laurent, Jean; Meynier, Patrick; Cretin, Jacques; and Beauducel, Claude, 5,550,785, Cl. 367-25.000.

Beaulieu, Pierre L.; Guindon, Yvan; and Wernic, Dominik M., to Bio-Mega/Boehringer Ingelheim Research, Inc. Process for key intermediates for HIV protease inhibitors. 5,550,291, Cl. 564-357.000.

Beausoleil, William F.; Ng, Tak-Kwong; and Palmer, Harold R., to International Business Machines Corporation. Multiprocessor for hardware emulation. 5,551,013, Cl. 395-500.000.

Béchard, Geneviève: *See*—
Gould, W. Douglas; Lortie, Lyne; and Béchard, Geneviève, 5,550,141, Cl. 514-363.000.

Bechem, Martin: *See*—
Stoltefuss, Jürgen; Goldmann, Siegfried; Straub, Alexander; Bechem, Martin; Gross, Rainer; Hebisch, Siegbert; Hütter, Joachim; and Rounding, Howard-Paul, 5,550,245, Cl. 546-167.000.

Becker, Craig H., to White Consolidated Industries, Inc. Mounting device for dishwasher insulation. 5,549,760, Cl. 134-25.200.

Becker, Kent, to White Consolidated Industries, Inc. Retractable enclosure for vehicle awning. 5,549,129, Cl. 135-88.150.

Becker, Raimund, to Blaupunkt-Werke GmbH. Vehicle radio automatic volume adjustment system. 5,550,922, Cl. 381-57.000.

Beckmann, Stefan; Etzbach, Karl-Heinz; Siemensmeyer, Karl; and Sens, Ruediger, to BASF Aktiengesellschaft. Linked azo dyes. 5,549,853, Cl. 252-582.000.

Becton Dickinson and Company: *See*—
Giambattista, Lucio; and Siuta, Theodore, 5,549,575, Cl. 604-232.000.
Walker, G. Terrance, 5,550,025, Cl. 435-6.000.

Bedard, Charles J.: *See*—
Long, James E.; Gang, Joseph M., Jr.; Bedard, Charles J.; Baird, Randall B.; and Edwards, David A., 5,550,982, Cl. 395-200.130.

Beeley, Nigel R. A.; and Millican, Thomas A., to Celltech Therapeutics Limited. Phenylaminocarbonyl derivatives. 5,550,137, Cl. 514-354.000.

Beer, Paul D.: *See*—
Moore, Christopher P.; Wear, Trevor J.; Beer, Paul D.; and Goulden, Alistair J., 5,550,268, Cl. 556-145.000.

Beethe, Douglas C., to Hewlett-Packard Company. Wait for service request in an iconic programming system. 5,551,041, Cl. 395-733.000.

Begel, Yannick: *See*—
Bredoux, François J.; Begel, Yannick; and Freisz, Henri, 5,550,010, Cl. 430-393.000.

Begemann, Ulrich; Heinzmann, Helmut; Ruf, Wolfgang; Egelhof, Dieter; and Kinzler, Gernot, to J. M. Voith GmbH. Headbox for a paper machine. 5,549,792, Cl. 162-216.000.

Beggs, Ronald L.: *See*—
Elsik, Cutis M.; and Beggs, Ronald L., 5,550,180, Cl. 524-430.000.

Behar, Alain; Amiel, Pierre; and Bougamont, Jean-Louis, to SOFAB. Method for assembling dispenser with plunging sleeve. 5,548,943, Cl. 53-473.000.

Behr GmbH & Co.: *See*—
Baruschke, Wilhelm; Lochmahr, Karl; and Rojnica, Werner, 5,549,153, Cl. 165-42.000.

Behringwerke Aktiengesellschaft: *See*—
Duchene, Michael; von Specht, Ulrich; and Domdey, Horst, 5,550,223, Cl. 536-23.700.

Belcher, Donald K., to Harris Corporation. RF signal distribution scheme. 5,550,824, Cl. 370-71.000.

Bell Communications Research, Inc.: *See*—
Brackett, Charles A.; Chang, Gee-Kung; and Iqbal, Muhammed Z., 5,550,818, Cl. 370-60.000.

Bell, David M.; Bryan, Joseph K.; and Black, Stephen B., to Harris Corporation. Mechanism for registering digital images obtained from multiple sensors having diverse image collection geometries. 5,550,937, Cl. 382-293.000.

Bell, James P.; Iroh, Jude O.; Scola, Daniel A.; and Liang, Jengli, to University of Connecticut, The. Thermoplastic composites formed by electropolymerization of N-substituted methacrylamide monomers. 5,549,807, Cl. 205-50.000.

Bell, John M., to Rhone-Poulenc Inc. Polymer composition as detergent builder. 5,549,852, Cl. 510-299.000.

Bellamy, Alain; Reh, Denis; and Petit, Pascal, to Hutchinson. Hydraulic antivibration supports. 5,549,283, Cl. 267-140.120.

Bellegarda, Jerome R.; Nahamoo, David; and Nathan, Krishna S., to International Business Machines Corporation. Automatic handwriting recognition using both static and dynamic parameters. 5,550,931, Cl. 382-187.000.

Bellin, Michael; Laplace, Carl J.; and Trainor, Jack, to Siemens Energy & Automation, Inc. Voltage regulator control system with multiple control programs. 5,550,460, Cl. 323-255.000.

Belt, Steven L.: *See*—
Foster, Mark J.; Fakhruddin, Saifuddin T.; Walker, James L.; Mendelow, Matthew B.; Sun, Jiming; Brahman, Rodman S.; Krau, Michael P.; Willoughby, Brian D.; Maddix, Michael D.; Belt, Steven L.; Hovey, Scott A.; and Ruthenbeck, Mark A., 5,551,033, Cl. 395-650.000.

Belvederi, Bruno: *See*—
Portaro, Antonio; Gigante, Antonio; Sassi, Fabio; and Belvederi, Bruno, 5,548,941, Cl. 53-444.000.

Bemis, Claude E.: *See*—
Labrie, Craig B.; McCooey, David R.; and Bemis, Claude E., 5,549,324, Cl. 280-728.300.

Ben Gurion University of Negev Research & Development Authority: *See*—
Marcus, Arie, 5,549,903, Cl. 424-408.000.

Benarrouch, Jacques, to Boiron. Device for withdrawing spherical products of the same dimensions, such as granules. 5,549,217, Cl. 221-155.000.

Benchmark Foam, Inc.: *See*—
Devine, John P.; and Holmquest, John H., 5,549,418, Cl. 405-258.000.

Benditt, David G.: *See*—
Lurie, Keith G.; Benditt, David G.; Shultz, Jeffrey J.; Ockuly, John D.; and Fleischhacker, John J., 5,549,581, Cl. 604-282.000.

Bengmark, Stig: *See*—
Herslöf, Bengt; Larsson, Kåre; and Bengmark, Stig, 5,550,263, Cl. 554-78.000.

Bengtson, Alan D.: *See*—
Bloemer, John M.; Balan, Isadore; Bonnell, Thomas A.; Bengtson, Alan D.; Giose, Robert C.; Reid, Mary J.; Fiumefreddo, John A.; and Kurth, Michael J., 5,548,854, Cl. 4-541.600.

Benkalowycz, Nancy C.: *See*—
Cirjak, Larry M.; Lemanski, Michael F.; Wagner, David R.; Benkalowycz, Nancy C.; Blum, Patricia R.; Pepera, Marc A.; and Paparizos, Christos, 5,550,281, Cl. 560-245.000.

Bennett, Donald B., to Unisys Corporation. Apparatus and method for residual error clock skew bound, and clocking therewith. 5,550,875, Cl. 375-356.000.

Bennett, LaVon L. Collet chuck. 5,549,308, Cl. 279-50.000.

Bennett, Michael J., to Mikohn Gaming Corporation. Time and attendance system and method therefor. 5,550,359, Cl. 235-382.000.

Bennett, Richard E.: *See*—
Bredahl, Timothy D.; Leverty, Harold; Smith, Robert L.; Bennett, Richard E.; Yarusso, David J.; Munson, Daniel C.; and Piepys, Anthony R., 5,550,175, Cl. 523-348.000.

Bennett, Steven N.: *See*—
Clarke, David A.; and Bennett, Steven N., 5,550,914, Cl. 379-230.000.

Benson, Bradley J.; Chen, Xiannong; Cianciolo, George J.; Diaz, Jose-Luis; Ishaq, Khalid S.; Morris-Natschke, Susan L.; Uhing, Ronald J.; and Wong, Henry, to University of North Carolina; and Macronex, Inc. Hydroxyalkylammonium-pyrimidines or purines and nucleoside derivatives, useful as inhibitors of inflammatory cytokines. 5,550,132, Cl. 514-269.000.

Benson, Donald J.: *See*—
Buchanan, David L.; and Benson, Donald J., 5,549,274, Cl. 251-129.140.

Benson, Paul H., IV: *See*—
Crump, Dwayne T.; Pancoast, Steven T.; Benson, Paul H., IV; and Steelman, Herbert S., 5,551,043, Cl. 395-750.000.

Bentz, Hanne: *See*—
Rhee, Woonza; Wallace, Donald G.; Michaels, Alan S.; Burns, Ramon A., Jr.; Fries, Louis; DeLustro, Frank; and Bentz, Hanne, 5,550,188, Cl. 525-54.100.

Ben-Zur, Raanan: *See*—
Rahamim, Uriel; Minobe, Randy; Chahrour, Ahmad A.; and Ben-Zur, Raanan, 5,550,710, Cl. 361-687.000.

Berfield, Robert C.; and Kaufman, Alan D., to Shop Vac Corporation. Pilot and detent apparatus for a vacuum device. 5,548,868, Cl. 15-339.000.

Berg, Richard A.: *See*—
Rhee, Woonza M.; Berg, Richard A.; Rosenblatt, Joel S.; Tefft, Jacqueline A.; Braga, Larry J.; and Smestad, Thomas L., 5,550,187, Cl. 525-54.100.

Berg Technology, Inc.: *See*—
Elco, Richard A.; and Williams, Curt A., 5,549,479, Cl. 439-67.000.

Berg, William C.: *See*—
Voll, Robert; Berg, William C.; Sergent, Brad; and Stevens, Sam, 5,551,028, Cl. 395-600.000.

Berger, Dan M.: *See*—
Powell, Dennis; Paul, Rolf; Hallett, William A.; Berger, Dan M.; and Dutia, Minu D., 5,550,149, Cl. 514-416.000.

Bergeron, Raymond J., to University of Florida Research Foundation, Inc. Anti-neoplastic, anti-viral and ribonucleotide reductase activity affecting pharmaceutical compositions and methods of treatment. 5,550,144, Cl. 514-374.000.

Bergquist, Eric A.: *See*—
Bohne, William C.; and Bergquist, Eric A., 5,550,453, Cl. 320-22.000.

Bergsten, Par: *See*—
Skarby, Ulf; Bergsten, Par; and Hedberg, Bo, 5,551,070, Cl. 455-126.000.

Berlin, Michael J.: *See*—
Scheibelhoffer, Anthony S.; Berlin, Michael J.; Sahni, Atam P.; Dusek, Dianna B.; and Hart, Donald P., 5,549,929, Cl. 427-282.000.

Berman, Claude: *See*—
Bounnakhom, Alan S.; Berman, Claude; and Beach, Donald W., 5,549,821, Cl. 210-232.000.

Berman, Eric R.; Abdala, Luis F. T.; and Eller, Marlin, to Microsoft Corporation. Method and system for training a handwriting recognizer at the time of misrecognition. 5,550,930, Cl. 382-187.000.

Bernadic, Thomas; and Wayne, Steven F., to Valenite Inc. Indexable threading and turning insert with pressed-in chip breakers. 5,549,424, Cl. 407-100.000.

Bernadic, Thomas; Lowe, Tony; and Patterson, John, to Valenite Inc. Indexable threading insert with pressed-in chip breaker. 5,549,425, Cl. 407-114.000.

Bernard, Bruce: *See*—
Lu, Daozheng; Shagrin, Ceril T.; Thomas, William L.; Lee, Morris; Bernard, Bruce; and Zhang, Jia, 5,550,928, Cl. 382-116.000.

Bernaud, Maurice; and Maquet, Freddy, to Alcatel Telspace. Electrical ground connection between a coaxial connector and a microwave circuit bottom plate. 5,550,521, Cl. 333-260.000.

Berndt, Curtis G.; Van Dyk, Daniel R.; Van Dyk, David A.; Deer, Steven C.; and Kent, Royal A., to Pent Products, Inc. Electrical assembly with multiple arrangement. 5,549,488, Cl. 439-680.000.

Berney, Jean-Claude. "Golf Counter" device and watch combined with such a device. 5,550,884, Cl. 377-5.000.

Bernus, Christophe; Jamain, Patrice; and Roland, Jean-Pierre, to Aerospatiale Societe Nationale Industrielle. Elongate torque motor and angular displacement control device incorporating it. 5,550,413, Cl. 310-36.000.

Berrier, Arthur L.; and Kanga, Rustom S., to W. R. Grace & Co.-Conn. Photosensitive elastomer polymer compositions for flexographic printing plates. 5,550,005, Cl. 430-286.100.

Bersch, Danny: *See*—
Garrity, Doug; Anderson, David; Anderson, Howard; Gunter, Brad; and Bersch, Danny, 5,550,503, Cl. 327-437.000.

Beryozkin, Vladimir; and Rudshteyn, Alexander. Portable vehicle barrier. 5,549,410, Cl. 404-6.000.

Berzins, Leon: *See*—
Hagans, Karla; Berzins, Leon; Galkowski, Joseph; and Seng, Rita, 5,550,636, Cl. 356-437.000.

Bessler, Marc; Mintz, Max R.; and Sutherland, Byron C., to Sutherland, Byron C.; Mintz, Hava Mattea; and Conley, Rose & Tayon, P.C. Apparatus and method for performing vertical banded gastroplasty. 5,549,621, Cl. 606-151.000.

Bettarini, Franco; Capuzzi, Luigi; La Porta, Piero; Massimini, Sergio; and Caprioli, Vincenzo, to Ministero Dell 'Universita' e Della Ricerca Scientifica e Tecnologica. Oxa(thia)diazol- and triazol-ones(thiones) having a miticide and insecticide activity. 5,550,140, Cl. 514-363.000.

Bevington, Jack T., to McNeil (Ohio) Corporation. System for cooling a centrifugal pump. 5,549,447, Cl. 415-115.000.

Beyer, Douglas H.; Williams, Eugene V.; and Alvarez, Jose A., to Richmond Technology, Inc. Particle free ionization bar. 5,550,703, Cl. 361-229.000.

Bezzi, Paul G. Boat propulsion and rudder device of the type having a surface propeller. 5,549,493, Cl. 440-61.000.

Bhagat, Promod K.; Moe, Warren R.; and Shampine, William T., to Lucent Technologies Inc. Adjunct call handling for accessing adjunct-based capabilities platform. 5,550,911, Cl. 379-220.000.

Bhagat, Promod K.: *See*—
Akinpelu, Akinwale A.; Bhagat, Promod K.; and Garoutte, Dana L., 5,550,912, Cl. 379-221.000.

Bhattacharya, Arup K.; and Haider, Syed S., to Lucent Technologies Inc. Method and apparatus for transforming a multi-dimensional matrix of coefficents representative of a signal. 5,550,765, Cl. 364-725.000.

Bhattacharya, Raghu N., to Davis, Joseph & Negley. Electrodeposition process for forming superconducting ceramics. 5,550,104, Cl. 505-472.000.

Bhinde, Manoj V.; Lyons, James E.; and Ellis, Paul E., Jr., to Sun Company, Inc. (R&M). Dried catalytic systems for decomposition of organic hydroperoxides. 5,550,301, Cl. 568-835.000.

Bianchetti, George. Headwear with detachable brim. 5,548,846, Cl. 2-209.120.

Bianco, James S. Means and method for reading indicia on a skewed substrate. 5,550,929, Cl. 382-135.000.

Bibeau, Joyce A.: *See*—
Harris, Rodney M.; Shalati, Mohamad D.; and Bibeau, Joyce A., 5,550,195, Cl. 525-285.000.

BICC Public Limited Comapany: *See*—
Edwards, Peter P.; Hu, Shu-Fen; Liu, Ru-Shi; and Jefferson, David A., 5,550,105, Cl. 505-120.000.

Biltgen, Gary L.; Burris, Kenneth W.; Nenne, Timothy M.; Shankwitz, Phil J.; and Walenta, John B., to Caterpillar Inc. Wear resistant coated steel article. 5,549,764, Cl. 148-222.000.

Bio-Mega/Boehringer Ingelheim Research, Inc.: *See*—
Beaulieu, Pierre L.; Guindon, Yvan; and Wernic, Dominik M., 5,550,291, Cl. 564-357.000.

Bio-Vascular, Inc.: *See*—
Cooper, Joel; Winegar-Hentges, Sally L.; Nelson, Robert P.; Schankereli, Kemal; and Teich, Kristine M., 5,549,628, Cl. 606-220.000.

Bioglan AB: *See*—
Ölund, Karin; Lütz, Lena-Karin; Bryland, Rickard; and Lindahl, Åke, 5,550,145, Cl. 514-396.000.

Biomet, Inc.: *See*—
Gordon, Jeffrey D., 5,549,680, Cl. 623-18.000.

Biostar, Inc.: *See*—
Bogart, Gregory R., 5,550,063, Cl. 436-518.000.

Biotechnology Research & Development Corporation: *See*—
Rothschild, Max F.; Tuggle, Christopher K.; Jacobson, Carol D.; Vaske, David A.; Mileham, Alan J.; and Plastow, Graham S., 5,550,024, Cl. 435-6.000.

Bircoll, Mel, to Very Inventive Physicians, Inc. Balloon dissector. 5,549,625, Cl. 606-192.000.

Bischoff, Gabriel: *See*—
Razdan, Rahul; Bischoff, Gabriel; and Ulrich, Ernst G., 5,550,760, Cl. 364-578.000.

Bishop, Arthur E., to A. E. Bishop & Associates Pty Limited. Manufacture of rotary valves. 5,549,504, Cl. 451-28.000.

Bishop, Jean: *See*—
Simpkins, James W.; and Bishop, Jean, 5,550,029, Cl. 435-14.000.

Bitler, George W.: *See*—
Subramaniam, Chitoor S.; John, Thomas V.; Colvin, David; and Bitler, George W., 5,550,299, Cl. 568-591.000.

Bjerklie, John W.: *See*—
Swenson, Paul F.; and Bjerklie, John W., 5,549,096, Cl. 123-564.000.

Black & Decker Inc.: *See*—
Cuneo, Giuseppe; and Bonacina, Sergio, 5,549,014, Cl. 74-424.840.
Ferragina, Rosario, 5,550,448, Cl. 318-569.000.

Black, Michael J.; Willows, Keith S.; Stiles, William P.; and Gallagher, Patrick M., to Fluke Corporation. Environmental sealing system for electronic instruments. 5,550,324, Cl. 174-52.300.

Black, Stephen B.: *See*—
Bell, David M.; Bryan, Joseph K.; and Black, Stephen B., 5,550,937, Cl. 382-293.000.

Blaeser, David: *See*—
Ressemann, Thomas V.; Stivland, Timothy; and Blaeser, David, 5,549,553, Cl. 604-96.000.

Blaker, David M.; Ellard, Gregory S.; and Mobin, Mohammad S., to Lucent Technologies Inc. Viterbi processor. 5,550,870, Cl. 375-341.000.

Blandford, Joseph W., to Seahorse Equipment Corporation. Method and apparatus for production of subsea hydrocarbon formations. 5,549,164, Cl. 166-344.000.

Blatt, Leland D.: *See*—
Crorey, David J., 5,549,442, Cl. 414-751.000.

Blaupunkt-Werke GmbH: *See*—
Becker, Raimund, 5,550,922, Cl. 381-57.000.

Blaw-Knox Construction Equipment Corporation: *See*—
Malone, Kerry, 5,549,412, Cl. 404-84.100.

Blaylock, Thomas F.; and Schroeder, Marvin C., to Pierce Companies, Inc. Method for encoding MICR documents. 5,550,932, Cl. 382-139.000.

Blazer, Dorman S. Train tire profile. 5,549,343, Cl. 295-34.000.

Blewett, Charles D., to Lucent Technologies Inc. Methods and apparatus for specifying the contexts of names in callback-style programming. 5,551,040, Cl. 395-700.000.

Bley, Robert: *See*—
Maddock, Julie; Bley, Robert; and Altavilla, Patricia, 5,549,672, Cl. 623-8.000.

Bleyman, Oleg I.: *See*—
Failli, Amedeo A.; Bleyman, Oleg I.; Kao, Wenling; and Abou-Gharbia, Magid A., 5,550,133, Cl. 514-291.000.

Bloch, Nicolas; Guyomard, Yvon; and Jounenc, Michel, to L'air Liquide/Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Subassembly of network of gas conduits and anesthetic apparatus comprising such a subassembly. 5,549,105, Cl. 128-203.120.

Bloemer, John M.; Balan, Isadore; Bonnell, Thomas A.; Bengtson, Alan D.; Giose, Robert C.; Reid, Mary J.; Fiumefreddo, John A.; and Kurth, Michael J., to Kohler Co. Hydro-massage tub control system. 5,548,854, Cl. 4-541.600.

Blomgren, James S.: *See*—
Cohen, Earl T.; Tilleman, Russell W.; Pattin, Jay C.; and Blomgren, James S., 5,551,001, Cl. 395-449.000.

Blong, Thomas J.; and Lavallée, Claude, to Minnesota Mining and Manufacturing Company. Melt-processable fluoroplastic. 5,549,948, Cl. 428-36.900.

Blonigan, Wendell T.: *See*—
Sorensen, Carl A.; and Blonigan, Wendell T., 5,549,756, Cl. 118-715.000.

Blount, David H.; and Blount, James O. Electronic ignition system for combustion engines. 5,549,090, Cl. 123-414.000.

Blount, James O.: *See*—
Blount, David H.; and Blount, James O., 5,549,090, Cl. 123-414.000.

Blum, Kenneth; Noble, Ernest P.; and Sheridan, Peter J., to Board of Regents, The University of Texas System; and University of California, Regents of the. Allelic diagnosis of susceptibility to compulsive disorder. 5,550,021, Cl. 435-6.000.

Blum, Patricia R.: *See*—
Cirjak, Larry M.; Lemanski, Michael F.; Wagner, David R.; Benkalowycz, Nancy C.; Blum, Patricia R.; Pepera, Marc A.; and Paparizos, Christos, 5,550,281, Cl. 560-245.000.

Board of Regents, The University of Texas System: *See*—
Blum, Kenneth; Noble, Ernest P.; and Sheridan, Peter J., 5,550,021, Cl. 435-6.000.

Board of Trustees Of The University Of Illinois: *See*—
Holonyak, Nick, Jr.; Maranowski, Steven A.; and Kish, Fred A., 5,550,081, Cl. 437-129.000.

Bober, Thomas W.; Pearl, Terry W.; Vacco, Dominick; and Yeaw, David C., to Eastman Kodak Company. Apparatus for removing a component from solution. 5,549,820, Cl. 210-199.000.

Boccuzzi, Joseph, to Lucent Technologies Inc. π/4-DQPSK delay spread detection and compensation apparatus and method. 5,550,868, Cl. 375-330.000.

Bodell, Leonard: *See—*
Hollister, Anne; Truman, Mari S.; Bodell, Leonard; and Focht, Louise, 5,549,690, Cl. 623-21.000.

Boehringer Ingelheim Pharmaceuticals, Inc.: *See—*
Hargrave, Karl D.; Cullen, Ernest; Proudfoot, John R.; Grozinger, Karl G.; Pal, Kollol; and Adams, Julian, 5,550,117, Cl. 514-81.000.
Hargrave, Karl D.; Schmidt, Gunther, deceased, 5,550,122, Cl. 514-211.000.

Boehringer Mannheim GmbH: *See—*
Chakraborty, Trinad; Goebel, Werner; and Notermans, Servatius H. W., 5,550,022, Cl. 435-6.000.

Boeing Company, The: *See—*
Garrigus, Darryl F., 5,549,850, Cl. 252-518.000.
Hedges, Daniel E.; Meserole, Jere S., Jr.; and Rorabaugh, Michael E., 5,548,953, Cl. 60-202.000.
Lubowitz, Hyman R.; and Sheppard, Clyde H., 5,550,204, Cl. 528-125.000.

Bogart, Gregory R., to Biostar, Inc. Methods for production of an optical assay device. 5,550,063, Cl. 436-518.000.

Boger, David L.; Jaichandra, Doraiswami; Jaworski, Donald L.; and Perry, Joseph E., to Bayer Corporation. Fluid sensing pipette. 5,550,059, Cl. 436-54.000.

Bogin, Zohar: *See—*
Shah, Nilesh V.; Rabe, Jeffrey L.; and Bogin, Zohar, 5,551,044, Cl. 395-750.000.

Bohne, William C.; and Bergquist, Eric A., to Motorola, Inc. Battery charging method and apparatus. 5,550,453, Cl. 320-22.000.

Bohnert, Larry J.; Ellis, Richard R.; and Marchini, Michael G., to Honeywell Inc. Switch mountable to a panel without additional fasteners. 5,550,341, Cl. 200-296.000.

Boiron: *See—*
Benarrouch, Jacques, 5,549,217, Cl. 221-155.000.

Boisson, Michel: *See—*
Piclin, Jean-Jacques; Thibaut, Gilbert; and Boisson, Michel, 5,549,562, Cl. 604-134.000.

Bolden, Gary A. Multi-use concrete finishing apparatus. 5,549,413, Cl. 404-93.000.

Bolder, Antonius J. J.: *See—*
Dekkers, Bernadus H. J.; DeMan, Ronald J. J.; Bolder, Antonius J. J.; and Sluyterman, Albertus A. S., 5,550,522, Cl. 335-213.000.

Bollen, Romain, to AGFA-Gevaert, N.V. Method for providing hard copies of radiological images. 5,549,996, Cl. 430-21.000.

Bolton, Benjamin A.: *See—*
Richardson, Joel A.; Poppe, Wassily; Bolton, Benjamin A.; and Paschke, Edward E., 5,550,208, Cl. 528-335.000.

Bolton, Richard D.; and MacArthur, Duncan W., to University California, The Regents of the. Event counting alpha detector. 5,550,381, Cl. 250-380.000.

Bomba, Fidelis. Snow protection and removal system. 5,550,349, Cl. 219-213.000.

Bonacina, Sergio: *See—*
Cuneo, Giuseppe; and Bonacina, Sergio, 5,549,014, Cl. 74-424.840.

Bond, James W.; and Schlosser, Thomas W., to United States of America, Navy. Adaptive parameter kernel processor. 5,550,759, Cl. 364-574.000.

Bongini, Dino; Duri, Sandro; and Stopponi, Andrea, to Merloni Elettrodomestici S.p.A. Front loading washing machine. 5,548,978, Cl. 68-17.00R.

Bonhoff, Norbert: *See—*
Rüsche, Heinz-Josef; and Bonhoff, Norbert, 5,549,327, Cl. 280-751.000.

Bonn, Fred H., to Motorola, Inc. Circuit and method of series biasing a single-ended mixer. 5,551,076, Cl. 455-333.000.

Bonnell, Thomas A.: *See—*
Bloemer, John M.; Balan, Isadore; Bonnell, Thomas A.; Bengtson, Alan D.; Giose, Robert C.; Reid, Mary J.; Fiumefreddo, John A.; and Kurth, Michael J., 5,548,854, Cl. 4-541.600.

Bonnet, Jacqueline: *See—*
Brion, Jean-Daniel; Chollet, Anne-Marie; Demuynck, Luc; De Montarby, Lucy; Rollard, Yves; Bonnet, Jacqueline; Ghezzi, Pietro; and Fradin, Armel, 5,550,143, Cl. 514-367.000.

Bonutti, Peter M. Method and apparatus for anchoring a suture. 5,549,630, Cl. 606-232.000.

Bonutti, Peter M. Method of closing discontinuity in tissue. 5,549,631, Cl. 606-232.000.

Bonutti, Peter M. Anthroplasty component. 5,549,683, Cl. 623-20.000.

Borden, B. Michael. Shock absorber & Wiper. 5,549,156, Cl. 166-84.200.

Borderiou, Arnaud: *See—*
Petitcollin, Jean-Marc; Lesage, Jean-Luc; and Borderiou, Arnaud, 5,549,726, Cl. 65-106.000.

Börger, Georg; and Kamprath, Karl-Heinz, to Braun Aktiengesellschaft. Switch for electrically powered apparatus. 5,550,343, Cl. 200-569.000.

Borgni, Roberto, to Simmel Difesa S.p.A. Submunition fuse with a nondelay self-destruct firing device. 5,549,047, Cl. 102-256.000.

Borland International, Inc.: *See—*
Davoust, Paul, 5,550,964, Cl. 395-140.000.
Hansen, Kurt, 5,551,018, Cl. 395-600.000.

Born, Jean-Jacques; and Bornand, Etienne, to Asulab S.A. Watch including an arrangement indicating the magnetic north. 5,550,794, Cl. 368-11.000.

Bornand, Etienne: *See—*
Born, Jean-Jacques; and Bornand, Etienne, 5,550,794, Cl. 368-11.000.

Bornhorst, Randy J.: *See—*
Boutaghou, Zine-Eddine; Bornhorst, Randy J.; and Johnson, Douglas W., 5,550,690, Cl. 360-99.120.

Bornzin, Gene A.; McClure, Kelly H.; Mouchawar, Gabriel; and Moberg, Sheldon B., to Pacesetter, Inc. System and method for providing hemodynamically optimal pacing therapy. 5,549,650, Cl. 607-24.000.

Bornzin, Gene A.: *See—*
Florio, Joseph J.; Bornzin, Gene A.; Levine, Paul A.; and Barlow, J. Jeffrey, 5,549,649, Cl. 607-15.000.

Bos, Philip J., to Tektronix, Inc. Color liquid crystal display having a wide viewing angle. 5,550,662, Cl. 359-73.000.

Bosmans, Jean-Paul R. M. A.: *See—*
Janssen, Marcel A. C.; Van Daele, Georges H. P.; Bosmans, Jean-Paul R. M. A.; Verdonck, Marc G. C.; and Janssen, Paul A. J., 5,550,135, Cl. 514-313.000.

Botka, Julius K., to Hewlett-Packard Company. Hinged conduit for routing cables in an electronic circuit tester. 5,550,466, Cl. 324-158.100.

Bottomley, Gregory E.; and Dent, Paul W., to Ericsson GE Mobile Communications, Inc. Multiple access coding using bent sequences for mobile radio communications. 5,550,809, Cl. 370-18.000.

Bouchard, Alain: *See—*
Danby, Roger; and Bouchard, Alain, 5,551,011, Cl. 395-500.000.

Bouchard, Hervé; Bourzat, Jean-Dominique; and Commercon, Alain, to Rhone-Poulenc Rorer S.A. Taxoids, their preparation and pharmaceutical compositions containing them. 5,550,261, Cl. 549-510.000.

Boudjouk, Philip; and Kloos, Steven D., to North Dakota State University Research Foundation. Method for redistribution of trichlorosilane. 5,550,269, Cl. 512-415.000.

Bougamont, Jean-Louis: *See—*
Behar, Alain; Amiel, Pierre; and Bougamont, Jean-Louis, 5,548,943, Cl. 53-473.000.

Boughner, Derek: *See—*
Vesely, Ivan; Krucinski, Slawomir; Campbell, Gordon; Boughner, Derek; and Dokainish, Mohan, 5,549,665, Cl. 623-2.000.

Bougis, Jean-Claude, to Framatome. Vessel of a nuclear reactor, including means for holding its lower internals and method of adjusting the holding means. 5,550,883, Cl. 376-302.000.

Bouix, Jean: *See—*
Abiven, Henri; Picquet, Lionel; Claveyrolas, Gilles; Viala, Jean-Claude; and Bouix, Jean, 5,549,976, Cl. 428-608.000.

Bounnakhom, Alan S.; Berman, Claude; and Beach, Donald W., to Fleetguard, Inc. Fluid filter assembly for vehicles. 5,549,821, Cl. 210-232.000.

Boury, Bechara E.: *See—*
Amini, Nader; Boury, Bechara E.; Brannon, Sherwood; and Lohman, Terence J., 5,551,009, Cl. 395-492.000.

Bourzat, Jean-Dominique: *See—*
Bouchard, Hervé; Bourzat, Jean-Dominique; and Commercon, Alain, 5,550,261, Cl. 549-510.000.

Boutaghou, Zine-Eddine; Cossette, Luke A.; and Luoma, Richard W., to International Business Machines Corporation. Magnetic fluid seal and ground path for low profile disk drives. 5,550,689, Cl. 360-99.080.

Boutaghou, Zine-Eddine; Bornhorst, Randy J.; and Johnson, Douglas W., to International Business Machines Corporation. Resilient compliant clamp for data storage disk drives. 5,550,690, Cl. 360-99.120.

Boutaghou, Zine-Eddine: *See—*
Aoyagi, Akihiko; Boutaghou, Zine-Eddine; Khanna, Vijayeshwar D.; Kumar, Suresh; and Sri-Jayantha, Muthuthamby, 5,550,688, Cl. 360-99.080.

Boutaud, Frederic: *See—*
Ehlig, Peter N.; Boutaud, Frederic; and Hollander, James F., 5,550,993, Cl. 395-375.000.

Bouwman, Lambertus J. M.; Hermes, Guillaume M. P. G.; and Janson, Cornellis J., to U.S. Philips Corporation. Electric lamp. 5,550,722, Cl. 362-221.000.

Bovy, Philippe R.; Garland, Robert B.; Miyano, Masateru; Rico, Joseph G.; Rogers, Thomas E.; and Zablocki, Jeffery A., to G. D. Searle & Co. Peptide mimics useful as platelet aggregation inhibitors. 5,550,159, Cl. 514-563.000.

Bower, Hadley H., Jr., to Lucent Technologies Inc. Tool for stripping center conductors of subminiature ribbon coaxial cable. 5,549,021, Cl. 81-9.510.

Bowles, Cary R.; Jones, Sidney D.; and Peters, Gary A., to B&W Nuclear Technologies, Inc. Method for processing chemical cleaning solvent waste. 5,549,831, Cl. 210-650.000.

Bowles, Ray: *See—*
Hahn, Roger; Bowles, Ray; and Phelps, Wendel, 5,549,752, Cl. 118-234.000.

Bownes, Dan; and Wiltse, Darren, to National-Oilwell Canada Ltd. Downhole progressing cavity pump rotor valve. 5,549,160, Cl. 166-250.080.

Boxall, Godfrey J.; and Kilner, David N., to Shell Oil Company. Road-surfacing vehicle. 5,549,414, Cl. 404-101.000.

Boyd, Kenneth J.: *See—*
Novak, Stanley J.; and Boyd, Kenneth J., 5,549,321, Cl. 280-689.000.

Boyette, James E., Jr.; Hammond, James M.; Lo, Jiann-Chang; Mahlbacher, James C.; Servedio, Michael; and Taheri, Ali R., to International Business Machines. High speed test probe positioning system. 5,550,483, Cl. 324-758.000.

Bozler, Carl O.; Fan, John C. C.; and McClelland, Robert W., to Massachusetts Institute of Technology. Method of producing sheets of crystalline material and devices made therefrom. 5,549,747, Cl. 117-43.000.

Bozych, Dennis E.: *See—*
Harris, Bernard; and Bozych, Dennis E., 5,549,772, Cl. 156-154.000.

BP Chemicals Limited: *See—*

Maunders, Harry M.; and Partington, Stephen R., 5,550,309, Cl. 585-654.000.

Brabander, Herbert J.: *See—*
Trybulski, Eugene J.; Kramss, Richard H.; and Brabander, Herbert J., 5,550,257, Cl. 548-550.000.

Brackett, Charles A.; Chang, Gee-Kung; and Iqbal, Muhammed Z., to Bell Communications Research, Inc. System for wavelength division multiplexing/asynchronous transfer mode switching for network communication. 5,550,818, Cl. 370-60.000.

Bradnock, Brian R. D. P.: *See—*
Young, Michael J. R.; and Bradnock, Brian R. D. P., 5,549,544, Cl. 601-2.000.

Braeuning, Johannes, to Braeuning, Johannes; and Schueller, Stefan. Apparatus and method for examining visual functions. 5,550,602, Cl. 351-243.000.

Braga, Larry J.: *See—*
Rhee, Woonza M.; Berg, Richard A.; Rosenblatt, Joel S.; Tefft, Jacqueline A.; Braga, Larry J.; and Smestad, Thomas L., 5,550,187, Cl. 525-54.100.

Brahman, Rodman S.: *See—*
Foster, Mark J.; Fakhruddin, Saifuddin T.; Walker, James L.; Mendelow, Matthew B.; Sun, Jiming; Brahman, Rodman S.; Krau, Michael P.; Willoughby, Brian D.; Maddix, Michael D.; Belt, Steven L.; Hovey, Scott A.; and Ruthenbeck, Mark A., 5,551,033, Cl. 395-650.000.

Branch, Tony R.: *See—*
Liberti, Joseph C., Jr.; Averst, Douglas I.; Branch, Tony R.; and Carsello, Stephen R., 5,550,872, Cl. 375-347.000.

Brandon, Jeffrey J.; and Moder, Thomas R., to Motorola, Inc. Method and apparatus for establishing a private conversation for more than two mobile units in a trunked system. 5,551,063, Cl. 455-54.200.

Brandstetter, Hermann: *See—*
Thiele, Hartmut; Brandstetter, Hermann; Toral, Jose; Hiller, Rainald; Scholtysik, Bernd; Lutz, Gottfried; and Liepold, August, 5,549,198, Cl. 206-307.000.

Brann, William A. Foot operated electronic musical apparatus. 5,550,321, Cl. 84-721.000.

Brannon, Sherwood: *See—*
Amini, Nader; Boury, Bechara E.; Brannon, Sherwood; and Lohman, Terence J., 5,551,009, Cl. 395-492.000.

Branstad, Mark W.; Brech, Brad L.; Byrn, Jonathan W.; Delp, Gary S.; and Montalvo, Rafael M., to International Business Machines Corporation. System and method for management a communications buffer. 5,550,806, Cl. 370-17.000.

Brantschen, Stefan: *See—*
Glück, Reinhard; and Brantschen, Stefan, 5,549,896, Cl. 424-226.100.

Brasington, Robert D.: *See—*
Kinkelaar, Mark R.; Cavender, Keith D.; Lambach, James L.; Brasington, Robert D.; and Critchfield, Frank E., 5,549,841, Cl. 252-182.270.

Braude, Laurence S. Package for dental floss. 5,549,201, Cl. 206-388.000.

Brauer, Michael L.; Reed, Paul A.; and Duncan, John L., to Motorola, Inc. Memory cache with low power consumption and method of operation. 5,550,774, Cl. 365-189.020.

Brauker, James: *See—*
Neuenfeldt, Steven; Brauker, James; Clarke, Robert; and Carr-Brendel, Victoria, 5,549,675, Cl. 623-11.000.

Braun Aktiengesellschaft: *See—*
Börger, Georg; and Kamprath, Karl-Heinz, 5,550,343, Cl. 200-569.000.

Brazier, Matthew J.: *See—*
O'Reilly, Daniel L.; and Brazier, Matthew J., 5,551,025, Cl. 395-600.000.

Brech, Brad L.: *See—*
Branstad, Mark W.; Brech, Brad L.; Byrn, Jonathan W.; Delp, Gary S.; and Montalvo, Rafael M., 5,550,806, Cl. 370-17.000.

Bredahl, Timothy D.; Leverty, Harold; Smith, Robert L.; Bennett, Richard E.; Yarusso, David J.; Munson, Daniel C.; and Plepys, Anthony R., to Minnesota Mining and Manufacturing Company. Solventless compounding and coating of non-thermoplastic hydrocarbon elastomers. 5,550,175, Cl. 523-348.000.

Bredoux, François J.; Begel, Yannick; and Freisz, Henri, to Eastman Kodak Company. Method for processing photographic products comprising a fine-grain top layer. 5,550,010, Cl. 430-393.000.

Breed Automotive Technology, Inc.: *See—*
Ramaswamy, Coodly P., 5,549,769, Cl. 149-26.000.

Bregen, Michael F.: *See—*
Regula, Donald W.; Cooper, Kevin; Bregen, Michael F.; Huxel, Shawn T.; and Rosenman, Daniel C., 5,550,172, Cl. 523-118.000.

Bremer, Paul. Brain surgery with craniotomy pin. 5,549,620, Cl. 606-151.000.

Brenco, Incorporated: *See—*
Sink, Danny R., 5,549,395, Cl. 384-477.000.

Bretz, Richard I.: *See—*
Lewis, Irwin C.; Pirro, Terrence A.; Greinke, Ronald A.; Bretz, Richard I.; and Kampe, Dennis J., 5,550,176, Cl. 524-6.000.

Brewer, Gregory S.; and Commons, Peter, to Apple Computer, Inc. Method and apparatus for generating and displaying visual cues on a graphic user interface. 5,550,967, Cl. 395-155.000.

Brewer, John C.: *See—*
Liu, Cheng-Kung; and Brewer, John C., 5,549,907, Cl. 424-443.000.

Bridgestone Corporation: *See—*
Shibata, Tadashi; and Fujio, Ryota, 5,550,200, Cl. 526-174.000.
Yata, Tatsuo; and Kinoshita, Hideya, 5,550,169, Cl. 521-112.000.

Briggs & Stratton Corporation: *See—*
Sandefur, Parrish A.; and Kindness, William M., 5,548,955, Cl. 60-299.000.

Brigham and Women's Hospital: *See—*
Eberlein, Timothy J.; Peoples, George E.; Yoshino, Ichiro; and Goedegebuure, Peter, 5,550,214, Cl. 530-328.000.

Bringley, Joseph F.; Smith, Kyle E.; and Lambert, Patrick M., to Eastman Kodak Company. Radiographic phosphor panel, phosphor and phosphor modification method. 5,549,844, Cl. 252-301.40H.

Bringley, Joseph F.: *See—*
Smith, Kyle E.; Bringley, Joseph F.; Lambert, Patrick M.; Trauernicht, David P.; Bryan, Philip S.; Hoderlein, Paul M.; and Hyde, Andrea M., 5,549,843, Cl. 252-301.40H.

Brinkmeier, Friedhelm; and Feldkämper, Richard, to Windmoeller & Hoelscher. Adhesive applicator. 5,549,751, Cl. 118-216.000.

Brion, Jean-Daniel; Chollet, Anne-Marie; Demuynck, Luc; De Montarby, Lucy; Rolland, Yves; Bonnet, Jacqueline; Ghezzi, Pietro; and Fradin, Armel, to Adir et Compagnie. Heterocyclic compounds. 5,550,143, Cl. 514-367.000.

Bristol-Myers Squibb Company: *See—*
Humora, Michael J.; Modi, Sandeep P.; Srivastava, Sushi K.; and Williams, Andrew D., 5,550,239, Cl. 544-295.000.
Petschow, Bryon W.; and Lee, Yung-Hsiung, 5,550,106, Cl. 514-2.000.

British-American Tobacco Company Limited: *See—*
White, Peter R., 5,549,125, Cl. 131-342.000.

British Technology Group, Ltd.: *See—*
Byrne, Phillip O.; Sisson, Penelope R.; and Ingham, Harry R., 5,549,572, Cl. 604-198.000.

British Telecommunications public limited company: *See—*
Rodgers, Paul M.; Moodie, David G.; and Wake, David, 5,550,939, Cl. 385-8.000.

Brixner, Diana I.: *See—*
Srinivasan, Ananthachari; Vrudhula, Vivekananda M.; and Brixner, Diana I., 5,549,883, Cl. 424-1.450.

Broadband Communications Products: *See—*
Toy, James W.; and Casper, Paul W., 5,550,864, Cl. 375-293.000.

Broeckl, Heinz: *See—*
Gammer, Peter; Broeckl, Heinz; and Dietl, Hans, 5,549,712, Cl. 623-60.000.

Brois, Stanley J., to Exxon Research and Engineering Company. Adducts of cyclic carbonyl monomers and substituted alkens. 5,550,241, Cl. 544-302.000.

Brokowski, Andrzej; and Szelążek, Jacek, to Instytut Podstawowych Problemów Techniki. Set of ultrasonic probeheads for measurements of times of flight of ultrasonic pulses. 5,549,001, Cl. 73-597.000.

Brooker, David A. Fabrication of body containing lengths of fiber embedded therein. 5,549,771, Cl. 156-153.000.

Brooks, Robert T., to Baker Hughes Incorporated. Valve for inflatable packer system. 5,549,165, Cl. 166-386.000.

Broome, William S., to Grau Limited. Braking systems. 5,549,362, Cl. 303-3.000.

Brossart, Richard, to LSI Logic Corporation. Process for bonding a semiconductor die to a variable die size inner lead layout. 5,550,087, Cl. 437-217.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Hattori, Hiroshi, 5,550,958, Cl. 395-115.000.
Murakami, Masahiro, 5,550,637, Cl. 358-296.000.
Muto, Mitsuru, 5,548,894, Cl. 29-890.100.
Sakuragi, Shoji; Nakahigashi, Sachiyo; Kanda, Sachie; and Sawada, Akihiro, 5,549,399, Cl. 400-63.000.

Brown, Daniel P., to Insta-Foam Products, Inc. Attachment system for fluent product dispensers. 5,549,228, Cl. 222-570.000.

Brown, Gregory C.: *See—*
Lenz, Gary A.; Brown, Gregory C.; and Warrior, Jogesh, 5,549,137, Cl. 137-486.000.

Brown, Louis S. Apparatus for placing golf ball on tee. 5,549,299, Cl. 473-133.000.

Brown, Peter S.: *See—*
McIntyre, John; Brown, Peter S.; and Morse, Stephen A., 5,549,601, Cl. 606-15.000.

Brown, Richard I., to Baxter International Inc. Systems and methods for reducing the number of leukocytes in cellular products like platelets harvested for therapeutic purposes. 5,549,834, Cl. 210-806.000.

Brown, Winthrop K.; Diatschenko, Victor; and Stoy, James R., to Texaco, Inc. Passive acoustic detection of pipeline pigs. 5,549,000, Cl. 73-587.000.

Browne, H. Lee: *See—*
Yurt, Paul; and Browne, H. Lee, 5,550,863, Cl. 375-240.000.

Browne, Ronnie A.; and Baril, Marc, to MarcValve Corporation. Diaphragm valve. 5,549,134, Cl. 137-606.000.

Broze, Guy: *See—*
Mondin, Myriam; Loth, Myriam; Broze, Guy; Mehreteab, Ammanuel; Thomas, Barbara; Adamy, Steven; and Bala, Frank, Jr., 5,549,840, Cl. 510-365.000.

Bruce, Richard H.: *See—*
Sprague, Robert A.; Bruce, Richard H.; and Silverstein, Louis D., 5,550,656, Cl. 359-40.000.

Brugger, Franz: *See—*
Rump, Siegfried; Steiner, Manfred; Brugger, Franz; Klarer, Martin; Knoff, Bernd; and Eckl, Albrecht, 5,549,369, Cl. 303-125.000.

Brumbaugh, John A.: *See—*

Middendorf, Lyle R.; Brumbaugh, John A.; and Jang, Gi Y., 5,549,805, Cl. 204-461.000.

Brüning, Hans-Joachim: *See—*
Heinrich, Karl; Brüning, Hans-Joachim; and Gebauer, Elke, 5,549,965, Cl. 428-229.000.

Brunken, Dieter, to Ethicon, Inc. Sealing cap for guide tubes or reducing sleeves for the introduction of surgical instruments. 5,549,594, Cl. 606-1.000.

Brunner, Hans; McCandless, Timothy P.; Sparks, Randall B.; Cuthbertson, Robert J.; Durand, Jacques; and Fogel, Steven M., to U S West Technologies, Inc. Method and system for generating a user interface adaptable to various database management systems. 5,550,971, Cl. 395-161.000.

Bruno, Ralph J.: *See—*
Yun, Young W.; Martel, Lawrence B.; Janick, Keith; and Bruno, Ralph J., 5,549,331, Cl. 280-843.000.

Brunsman, Elaine: *See—*
Majetich, Sara; McHenry, Michael; Scott, John H.; Brunsman, Elaine; and Kirkpatrick, Scott, 5,549,973, Cl. 428-403.000.

Brunswick Container Corporation: *See—*
Cheng, Jizu J., 5,549,210, Cl. 215-375.000.

Bruxvoort, Wesley J.: *See—*
Haas, John D.; Christianson, Todd J.; and Bruxvoort, Wesley J., 5,549,961, Cl. 428-143.000.

Bryan, Joseph K.: *See—*
Bell, David M.; Bryan, Joseph K.; and Black, Stephen B., 5,550,937, Cl. 382-293.000.

Bryan, Philip S.: *See—*
Smith, Kyle E.; Bringley, Joseph F.; Lambert, Patrick M.; Trauernicht, David P.; Bryan, Philip S.; Hoderlein, Paul M.; and Hyde, Andrea M., 5,549,843, Cl. 252-301.40H.

Bryant, Johnnie J. Quick cleaning gutter system. 5,548,931, Cl. 52-11.000.

Bryant, Philip, to Select Service & Supply Co., Inc. Octopus skipping rope device. 5,549,528, Cl. 482-81.000.

Bryant, William E., to M+IND (Model + Instrument Development). Prosthetic foot and keel therefor having progressive stiffening under increasing load. 5,549,711, Cl. 623-53.000.

Bryce, Daniel P.: *See—*
Fleenor, Richard P.; and Bryce, Daniel P., 5,549,618, Cl. 606-148.000.

Bryland, Rickard: *See—*
Ölund, Karin; Lütz, Lena-Karin; Bryland, Rickard; and Lindahl, Åke, 5,550,145, Cl. 514-396.000.

Buch, Kiran B.; Law, Edwin S.; and Chu, Jakong J., to Xilinx, Inc. Mask-programmed integrated circuits having timing and logic compatibility to user-configured logic arrays. 5,550,839, Cl. 371-22.100.

Buchanan, David L.; and Benson, Donald J., to Cummins Engine Company, Inc. Ball guide for an electronically actuated control valve. 5,549,274, Cl. 251-129.140.

Buchanan, Harry C., Jr.; and Zhou, Peter S., to ITT Automotive Electrical Systems, Inc. Motor locking unit. 5,549,183, Cl. 188-265.000.

Buchanan, Scott J.: *See—*
Lee, Chong S.; and Buchanan, Scott J., 5,549,719, Cl. 51-298.000.

Buckley, Donna: *See—*
Mark, David A.; Twyman, Diana; and Buckley, Donna, 5,549,905, Cl. 424-439.000.

Buckley, James P. Charging regime for secondary lithium batteries. 5,550,454, Cl. 320-22.000.

Buetas, Eduardo R. Modular connector system. 5,549,490, Cl. 439-724.000.

Bukoschek, Romuald L.; Prandl, Reinhard; and Sonnek, Martin, to U.S. Philips Corporation. Domestic appliance for making ice-cream. 5,549,042, Cl. 99-455.000.

Bull S.A.: *See—*
Baillif, Christian, 5,550,567, Cl. 345-203.000.

Buller, James F.: *See—*
Jones, Stephen A.; Garg, Shyam G.; Buller, James F.; and Santana, Miguel, Jr., 5,549,786, Cl. 156-662.100.

Bülow, Henning: *See—*
Krimmel, Heinz; Bülow, Henning; Heidemann, Rolf; and Otterbach, Jürgen, 5,550,667, Cl. 359-180.000.

Bultitude, John: *See—*
Chu, Mike S.-H.; Bultitude, John; and Hood, Christopher, 5,550,092, Cl. 501-137.000.

Bultman, Robert M.: *See—*
Johnson, Richard D.; Bultman, Robert M.; and Newcomer, Kevin L., 5,549,157, Cl. 166-105.000.

Burant, Charles F.: *See—*
Teng, BaBie; Davidson, Nicholas O.; and Burant, Charles F., 5,550,034, Cl. 435-69.100.

Burban, John H.: *See—*
Pennaz, Thomas J.; and Burban, John H., 5,549,741, Cl. 106-20.00R.

Burbury, Robert L.; and Cutter, James W., to Olympic Controls Corp. Positioning apparatus for X-ray source. 5,550,891, Cl. 378-197.000.

Burdett, Ronald K.: *See—*
Weisburn, James T.; Gallagher, Christopher G.; and Burdett, Ronald K., 5,549,203, Cl. 206-472.000.

Burdette, Everette C. Ultrasound device for use in a thermotherapy apparatus. 5,549,638, Cl. 607-97.000.

Burge, Gregory L., to Supra Products, Inc. Access control system. 5,550,529, Cl. 340-296.000.

Burkhardt, Dennis E.: *See—*
Pascucci, Gregory A.; Rasmussen, David E.; Decious, Gaylon M.; Garbe, James R.; Hyzer, Susan M.; Woest, Karen L.; Vairavan, Vairavan; Koch, David L.; Gottschalk, Donald A., Jr.; Burkhardt, Dennis E.; Standish, Darrell E.; Madaus, Paul W.; Spacek, Dan J.; Nesler, Clay,G.; Stark, James K.; Mageland, Otto M.; Singers, Robert R.; and Wagner, Michael E., 5,550,980, Cl. 395-200.050.

Burki, Ibrahim K.: *See—*
Anjum, Mohammed; Burki, Ibrahim K.; and Christian, Craig W., 5,550,084, Cl. 437-200.000.

Burleson, David B.: *See—*
McMullan, Jay C., Jr.; Burleson, David B.; Huntley, Donald R.; and Schaubs, Randolph J., 5,550,825, Cl. 370-73.000.

Burlington Industries, Inc.: *See—*
Padgett, William P., III, 5,549,064, Cl. 112-410.000.

Burns & Russell Company of Baltimore City, The: *See—*
McClinton, John; and Rich, Russell P., 5,548,936, Cl. 52-284.000.

Burns, Carmen D.; Roane, Jerry; and Cady, James W., to Staktek Corporation. Ultra high density integrated circuit packages. 5,550,711, Cl. 361-728.000.

Burns, David W.; and Zook, J. David, to Honeywell Inc. Integrated resonant microbeam sensor and transistor oscillator. 5,550,516, Cl. 331-65.000.

Burns, Ramon A., Jr.: *See—*
Rhee, Woonza; Wallace, Donald G.; Michaels, Alan S.; Burns, Ramon A., Jr.; Fries, Louis; DeLustro, Frank; and Bentz, Hanne, 5,550,188, Cl. 525-54.100.

Burnworth, Scott; and Johnson, Phillip L., to Extreme Sports, Inc. Side entry life vest. 5,549,495, Cl. 441-108.000.

Burr, Geofrrey W.; Mok, Fai H.; and Psaltis, Demetri, to California Institute of Technology. Holographic memory with angle, spatial and out-of-plane multiplexing. 5,550,779, Cl. 365-216.000.

Burrill, James T.; and Anastos, William, to Rule Industries, Inc. Automatic pump control system with variable test cycle initiation frequency. 5,549,456, Cl. 417-12.000.

Burris, Kenneth W.: *See—*
Biltgen, Gary L.; Burris, Kenneth W.; Nenne, Timothy M.; Shankwitz, Phil J.; and Walenta, John B., 5,549,764, Cl. 148-222.000.

Burrows, Ralph M.: *See—*
Hart, Jack E.; Burrows, Ralph M.; and Marquardt, Michael E., 5,549,258, Cl. 244-118.100.

Burson, Kyle L.; Chang, Yum C.; Fok, Wilson; Leland, Kenneth W.; Orlando, Denis P.; and Partyka, Andrzej, to Lucent Technologies Inc. Bimodal portable telephone. 5,550,895, Cl. 379-59.000.

Busico, Kathleen; and McCreery, Cynthia C. Metal particle sweeper. 5,549,207, Cl. 209-614.000.

Bustos, Rafael T., to L & P Property Management Company. Merchandising display with modular shelves. 5,549,373, Cl. 312-135.000.

Butterfield, Eric J.; Cockram, George R.; Harmon, Stewart M.; and Talbot, Roy, to Emco Wheaton, Inc. Convertible fuel dispensing nozzle. 5,549,132, Cl. 137-270.000.

Buysch, Hans-Josef: *See—*
Rechner, Johann; Wagner, Paul; Buysch, Hans-Josef; and Klausner, Alexander, 5,550,278, Cl. 558-277.000.

Byers, Joseph L.; Flint, W. Toriran; and Kerr, Richard C., to Reeves Brothers, Inc. Compressible fabric substrate. 5,549,968, Cl. 428-241.000.

Byrn, Jonathan W.: *See—*
Branstad, Mark W.; Brech, Brad L.; Byrn, Jonathan W.; Delp, Gary S.; and Montalvo, Rafael M., 5,550,806, Cl. 370-17.000.

Byrne, Phillip O.; Sisson, Penelope R.; and Ingham, Harry R., to British Technology Group, Ltd. Safety device for hypodermic needle or the like. 5,549,572, Cl. 604-198.000.

Byrne, Rodger J. Binding equipment. 5,549,433, Cl. 412-39.000.

C. Calvin Hansen Trust U/A: *See—*
Hansen, C. Calvin, 5,549,180, Cl. 187-347.000.

C. R. Bard, Inc.: *See—*
Patterson, Frank; Zhang, John; and Purtell, George, 5,549,576, Cl. 604-247.000.
Stern, David R.; Gauderer, Michael; and Solbjor, Albert N., 5,549,657, Cl. 604-283.000.

C.V. Buchan Limited: *See—*
Thomas, Norman S.; and Smith, Christopher R., 5,549,416, Cl. 405-153.000.

Cable, Jesse F., III: *See—*
Stillman, Robert A.; Way, James A.; Cable, Jesse F., III; Cooper, David; and Koskinen, James, 5,551,066, Cl. 455-69.000.

Cabot Corporation: *See—*
Whitehouse, Robert S., 5,550,174, Cl. 523-215.000.

Cacharelis, Philip J.; Perry, Jeffrey R.; and Narahari, Narasimha, to National Semiconductor Corporation. Method of fabrication of integrated circuit chip containing EEPROM and capacitor. 5,550,072, Cl. 437-43.000.

Cadence Design Systems, Inc.: *See—*
Xiong, Xiao-Ming, 5,550,748, Cl. 364-488.000.

Cadence Environmental Energy, Inc.: *See—*
Tutt, James R., 5,549,058, Cl. 110-226.000.

Cadillac Products, Inc.: *See—*
Jordan, Richard A.; Jacoby, James W., Jr.; and Gosnell, Raymond H., 5,549,056, Cl. 108-51.100.

Cady, James W.: *See—*
Burns, Carmen D.; Roane, Jerry; and Cady, James W., 5,550,711, Cl. 361-728.000.

Cai, Lujing; and Dagdeviren, Nuri R., to Lucent Technologies Inc. Modem communications interoperability with services equipped to provide calling party identity delivery with call waiting. 5,550,908, Cl. 379-215.000.

Cala, Francis R.: *See—*
Winston, Anthony E.; Dunn, Steven E.; Cala, Francis R.; Vinci, Alfredo; Lajoie, M. Stephen; and Jorgensen, Robert C., 5,549,761, Cl. 134-40.000.

Caldarise, Salvatore, to Johnson & Johnson Professional, Inc. Hip joint prostheses and methods for manufacturing the same. 5,549,697, Cl. 623-22.000.

Calderini, Gabriella: *See—*
Della Valle, Francesco; Lorenzi, Silvana; and Calderini, Gabriella, 5,550,249, Cl. 548-303.700.

Calgene, Inc.: *See—*
Goodman, Robert M.; Knauf, Vic C.; Houck, Catherine M.; and Comai, Luca, 5,550,038, Cl. 435-70.100.

California Institute of Technology: *See—*
Burr, Geofrrey W.; Mok, Fai H.; and Psaltis, Demetri, 5,550,779, Cl. 365-216.000.

Callahan, Joseph P., Jr.: *See—*
Armbruster, June M.; Bastiaens, Willem V.; Callahan, Joseph P., Jr.; Moris, Steve W.; and Stegink, David W., 5,549,267, Cl. 248-442.200.

Campbell, Donald W. F.: *See—*
Panther, Gyles; Williams, J. Peter; and Campbell, Donald W. F., 5,551,079, Cl. 455-347.000.

Campbell, Gordon: *See—*
Vesely, Ivan; Krucinski, Slawomir; Campbell, Gordon; Boughner, Derek; and Dokainish, Mohan, 5,549,665, Cl. 623-2.000.

Campbell, Matthew W. Weightlifting machine with safety device. 5,549,531, Cl. 482-106.000.

Campbell, Michael L.: *See—*
Meyer, Richard S.; Campbell, Michael L.; Winter, Daryl B.; and Root, Jeffrey M., 5,550,220, Cl. 536-18.500.

Campbell, Norman: *See—*
Annecharico, Robert L.; and Campbell, Norman, 5,549,078, Cl. 122-132.000.

Campbell, Russell; Shannon, Terrence M.; and Poppenga, Burton H., to Hewlett-Packard Company. Image processing load balancing for a host processor with a connected binary level image printer. 5,550,954, Cl. 395-106.000.

Campbell Soup Company: *See—*
Spica, Salvatore J.; Kuhn, John P.; Keller, Steven R.; and Winoker, Joseph A., 5,549,143, Cl. 141-144.000.

Camus, Otto: *See—*
Herklotz, Günter; Frey, Thomas; and Camus, Otto, 5,549,810, Cl. 205-259.000.

Cancellieri, Jorge, to Gillette Company. Assembly or set of different color inks and an assembly of writing instruments. 5,549,742, Cl. 106-22.00B.

Cannata, Vincenzo; Merli, Valeriano; and Dal Santo, Claudio, to Zambon Group S.p.A. Process for the preparation and purification of iodinated contrast agents. 5,550,287, Cl. 564-153.000.

Canon Kabushiki Kaisha: *See—*
Fujimoto, Ryo, 5,550,645, Cl. 358-335.000.
Fukushima, Hisashi, 5,550,616, Cl. 355-208.000.
Hori, Taizou; Fujimoto, Hideaki; Mogi, Hirokazu; and Ono, Yasumasa, 5,550,925, Cl. 381-98.000.
Ikeda, Nobuhiro, 5,550,822, Cl. 370-60.100.
Ikeda, Yoshinori; Ichikawa, Hiroyuki; Kurita, Mitsuru; Hayashi, Kimiyoshi; Honma, Toshio; and Horie, Yoshiko, 5,550,638, Cl. 358-296.000.
Ip, Tony K.; and Kuver, Walter D., 5,550,997, Cl. 395-430.000.
Ishii, Kazuyoshi, 5,550,796, Cl. 369-13.000.
Kawabata, Takashi, 5,550,628, Cl. 356-3.110.
Kimura, Yoichi; Kumada, Isao; Hasegawa, Takashi; and Tamura, Satoshi, 5,550,620, Cl. 355-273.000.
Kurata, Mitsuru; Kanemitsu, Shinji; Nomura, Akihiro; Ebata, Tokihide; Takeda, Akio; Miyauchi, Yasuo; Uchida, Haruo; and Onoda, Shigeyoshi, 5,550,570, Cl. 347-49.000.
Matsuoka, Hidetoshi; Hashimoto, Kouji; and Kobayashi, Junji, 5,550,686, Cl. 360-85.000.
Misumi, Yoshinori, 5,550,568, Cl. 347-12.000.
Nakanishi, Hiroshi; Saito, Norihisa; Ando, Toshinori; and Morinaga, Hisakazu, 5,549,855, Cl. 264-2.500.
Nishimura, Michiyo, 5,550,393, Cl. 257-192.000.
Odagawa, Kazuyoshi; and Sasaki, Shinichi, 5,550,617, Cl. 355-210.000.
Saitoh, Kenji; Sentoku, Koichi; and Matsumoto, Takahiro, 5,550,635, Cl. 356-401.000.
Serizawa, Yoji; and Ushio, Yukihide, 5,550,573, Cl. 347-246.000.
Sugawara, Saburo, 5,550,679, Cl. 359-689.000.
Sugita, Shigeru, 5,550,639, Cl. 358-302.000.
Takahashi, Katsuhiko; and Kurabayashi, Yutaka, 5,549,740, Cl. 106-20.00R.
Terajima, Hisao, 5,550,651, Cl. 358-496.000.
Watanabe, Yutaka; and Hayashida, Masami, 5,549,994, Cl. 430-5.000.
Yamada, Takahisa, 5,548,885, Cl. 29-596.000.

Canon Seiki Kabushiki Kaisha: *See—*
Yamada, Takahisa, 5,548,885, Cl. 29-596.000.

Canopus Co., Ltd.: *See—*
Yamada, Hiroshi, 5,550,584, Cl. 348-153.000.

Cantarini, William F., to International Rectifier Corporation. Photovoltaic generator with dielectric isolation and bonded, insulated wafer layers. 5,549,762, Cl. 136-249.000.

Cantrill, Dean A.: *See—*
Coffield, Kelly M.; Cantrill, Dean A.; McCulloh, Kevin G.; and Mickelson, Sammy K., 5,549,736, Cl. 96-133.000.

Cantrill, James E.; and Doyle, Thomas R., to Novacor Chemicals (International) S.A. Particle sizing. 5,550,186, Cl. 525-52.000.

Canvik A/S: *See—*
Strout, D. Wayne; Crandall, Thomas L.; Slater, Michael J.; and Malmrose, Erik, 5,549,023, Cl. 82-112.000.

Capodicci, Vincent: *See—*
Szarmach, Michael; and Capodicci, Vincent, 5,548,915, Cl. 42-70.110.

Capretta, Richard; Chen, Colin; Czernik, Daniel E.; Morris, Robert H., Jr.; and Pavel, Richard J., to Fel-Pro Incorporated. Multi-layer metal gasket with double beaded combustion seal. 5,549,307, Cl. 277-235.00B.

Caprioli, Vincenzo: *See—*
Bettarini, Franco; Capuzzi, Luigi; La Porta, Piero; Massimini, Sergio; and Caprioli, Vincenzo, 5,550,140, Cl. 514-363.000.

Capuzzi, Luigi: *See—*
Bettarini, Franco; Capuzzi, Luigi; La Porta, Piero; Massimini, Sergio; and Caprioli, Vincenzo, 5,550,140, Cl. 514-363.000.

Cardiac Mariners, Incorporated: *See—*
Skillicorn, Brian; and Pastrone, Giovanni, 5,550,378, Cl. 250-367.000.

Cardona, Antonio C.: *See—*
Colombo, Paolo; Cardona, Antonio C.; and Pifferi, Giorgio, 5,549,913, Cl. 424-472.000.

Carichner, Karla, to LSI Logic Corporation. Improved laminate package for an integrated circuit and integrated circuit having such a package. 5,550,403, Cl. 257-702.000.

Carl Zeiss, Inc.: *See—*
Petersen, Christopher L.; and Hellmuth, Thomas, 5,549,114, Cl. 128-691.000.

Carl-Zeiss-Stiftung: *See—*
Schmal, Günter; and Rudolph, Dietbert, 5,550,887, Cl. 378-43.000.

Carlisle, Daniel A.: *See—*
Waybright, Richard S.; and Carlisle, Daniel A., 5,549,671, Cl. 623-8.000.

Carlsen, Ralph, to Lucent Technologies Inc. Personal communication using intelligent terminals. 5,550,907, Cl. 379-207.000.

Carlson, Gerald I., II, to Kimberly-Clark Corporation. Method of sterilizing an article. 5,549,868, Cl. 422-1.000.

Carmen & Thomas Rapisarda Enterprises: *See—*
Rapisarda, Thomas C., 5,550,721, Cl. 362-205.000.

Carmical, Clifton. Adjustable insert for use with concrete or steel. 5,548,939, Cl. 52-707.000.

Carmody, Kevin F.; Charvat, Peter K.; and Vandentop, Gilroy J., to Intel Corporation. Method for etching silicon oxide films in a reactive ion etch system to prevent gate oxide damage. 5,549,784, Cl. 156-643.100.

Carnegie Mellon University: *See—*
Majetich, Sara; McHenry, Michael; Scott, John H.; Brunsman, Elaine; and Kirkpatrick, Scott, 5,549,973, Cl. 428-403.000.

Carobolante, Francesco, to SGS-Thomson Microelectronics, Inc. Power driver circuit with reduced turnoff time. 5,550,497, Cl. 327-110.000.

Carothers, Terrell W.: *See—*
Lewis, Larry N.; and Carothers, Terrell W., 5,550,272, Cl. 556-479.000.

Carr-Brendel, Victoria: *See—*
Neuenfeldt, Steven; Brauker, James; Clarke, Robert; and Carr-Brendel, Victoria, 5,549,675, Cl. 623-11.000.

Carroll, Grant A. Artificial christmas tree with electric separable segments. 5,550,720, Cl. 362-123.000.

Carrozzeria Japan Co., Ltd.: *See—*
Namura, Genji; and Takasawa, Masao, 5,549,849, Cl. 252-503.000.

Carsello, Stephen R.: *See—*
Liberti, Joseph C., Jr.; Averst, Douglas I.; Branch, Tony R.; and Carsello, Stephen R., 5,550,872, Cl. 375-347.000.

Carver, David R.; Prout, Timothy R.; Workman, Christopher T.; and Hughes, Charles L., to NaPro BioTherapeutics, Inc. Reverse osmosis and ultrafiltration methods for solutions to isolate desired solutes including taxane. 5,549,830, Cl. 210-641.000.

Case Corporation: *See—*
Kale, Satish L., 5,549,185, Cl. 192-12.00C.
Orbach, Abraham; Panoushek, Dale W.; and Schubert, William L., 5,549,166, Cl. 172-4.000.

Casper, Paul W.: *See—*
Toy, James W.; and Casper, Paul W., 5,550,864, Cl. 375-293.000.

Caspers, Carl A. Hypobarically-Controlled artificial limb for amputees. 5,549,709, Cl. 623-24.000.

Castellanos, Frederic; Cavezzan, Jacques; Fouassier, Jean-Pierre; and Priou, Christian, to Rhone-Poulenc Chimie. Onium borates/borates of organometallic complexes and cationic initiation of polymerization therewith. 5,550,265, Cl. 556-7.000.

Castillo, Jose J.: *See—*
Flores, Abel G.; Marriott, Gerald R.; and Castillo, Jose J., 5,549,457, Cl. 404-84.050.

Castine, Raymon J.: *See—*
Favreau, David J., 5,549,057, Cl. 110-218.000.

Castro, Salvatore: *See—*
Green, David T.; Sienkiewicz, Henry R.; Ratcliff, Keith; Castro, Salvatore; and Manzo, Scott E., 5,549,617, Cl. 606-144.000.

Caterpillar Inc.: *See—*
Biltgen, Gary L.; Burris, Kenneth W.; Nenne, Timothy M.; Shankwitz, Phil J.; and Walenta, John B., 5,549,764, Cl. 148-222.000.

Cattani, Carlo, to Marposs S.p.A. Apparatus for the dynamical balancing of a rotating body. 5,549,019, Cl. 74-573.00R.

Caux, Christian; and Gamand, Patrice, to U.S. Philips Corporation. Semiconductor device including a plurality of interconnected functional integrated circuit blocks operating at high and ultrahigh frequencies, each having a DC distribution line. 5,551,075, Cl. 455-333.000.

Cavallaro, Eric S.; Adams, Jay J.; Troy, Stanton E.; and Daugherty, James R., to Delco Electronics Corporation. Battery dock for portable communication devices. 5,549,486, Cl. 439-500.000.

Cavender, Keith D.: *See*—
Kinkelaar, Mark R.; Cavender, Keith D.; Lambach, James L.; Brasington, Robert D.; and Critchfield, Frank E., 5,549,841, Cl. 252-182.270.

Cavezzan, Jacques: *See*—
Castellanos, Frederic; Cavezzan, Jacques; Fouassier, Jean-Pierre; and Priou, Christian, 5,550,265, Cl. 556-7.000.

Cawthon, Albert V.; and Baur, Rudolph J. Dashboard vent cover. 5,549,345, Cl. 296-70.000.

CCS, LLC: *See*—
Rodgers, Robert E., Jr., 5,549,526, Cl. 482-57.000.

Cegelec: *See*—
Herz, Dominique, 5,551,034, Cl. 395-650.000.

Celltech Therapeutics Limited: *See*—
Beeley, Nigel R. A.; and Millican, Thomas A., 5,550,137, Cl. 514-354.000.

Censtor Corp.: *See*—
Hamiton, Harold J., 5,550,691, Cl. 360-103.000.

Centre d'Etude et de Realisations d'Equipment et de Materiel: *See*—
Sirand, Joseph, 5,549,099, Cl. 126-92.00B.

Centre National de la Recherche Scientifique (C.N.R.S.): *See*—
Lerouge, Patrice; Roche, Philippe; Faucher, Catherine; Maillet, Fabienne; Denarie, Jean; Promé, Jean-Claude; and Truchet, Georges, 5,549,718, Cl. 47-57.600.
Montagnier, Luc; Rey, Françoise; Krust, Bernard; and Clavel, François, 5,550,052, Cl. 435-240.260.

Centre Stephanois de Recherches Mecaniques Hydromecaniques et Frottement: *See*—
Aulagner, Michel; and Esteveny, Serge, 5,549,195, Cl. 198-850.000.

Century Manufacturing Company: *See*—
Ische, Kenneth W.; Johnson, Michael W.; Dea, William S.; and Chandler, Thomas D., 5,549,832, Cl. 210-694.000.

Cephalon, inc.: *See*—
Iqbal, Mohamed; Diebold, James L.; Siman, Robert; Chatterjee, Sankar; and Kauer, James C., 5,550,262, Cl. 554-57.000.

Ceram Incorporated: *See*—
Harrington, Gary L., 5,550,849, Cl. 371-37.100.

Ceresia, Norma J. Protective glove. 5,548,844, Cl. 2-161.700.

Ceri, Howard: *See*—
Olson, Merle E.; Ceri, Howard; and Morck, Douglas W., 5,549,899, Cl. 424-269.100.

Cha, Byung-Heon: *See*—
Lee, Jong-Min; Cha, Byung-Heon; Kim, Sung-Ho; and Ko, Do-Kyeong, 5,550,850, Cl. 372-16.000.

Chahrour, Ahmad A.: *See*—
Rahamim, Uriel; Minobe, Randy; Chahrour, Ahmad A.; and Ben-Zur, Raanan, 5,550,710, Cl. 361-687.000.

Chain Foog Toys Co., Ltd.: *See*—
Jow, Jin-Long, 5,549,501, Cl. 446-460.000.

Chakraborty, Trinad; Goebel, Werner; and Notermans, Servatius H. W., to Boehringer Mannheim GmbH. Method for the determination of pathogenic listeria bacteria. 5,550,022, Cl. 435-6.000.

Chakravarthy, Debashish: *See*—
Smith, Daniel J.; and Chakravarthy, Debashish, 5,549,908, Cl. 424-444.000.

Chambers, Randall P.; Gfesser, James J.; Holmes, Martin E.; and Oberman, Kevin S., to Motorola, Inc. Radio frequency connector. 5,551,080, Cl. 455-348.000.

Chambers, Sheryl A.: *See*—
Adams, Thomas R.; Chambers, Sheryl A.; Daines, Richard J.; Gordon-Kamm, William J.; Kausch, Albert P.; Lemaux, Peggy G.; Mackey, Catherine J.; Mangano, Mary L.; O'Brien, James V.; Rice, Thomas B.; Spencer, T. Michael; Start, William G.; and Willetts, Nancy G., 5,550,318, Cl. 800-205.000.

Chan, Demonder; Fultz, Robert B.; and Krishan, Baldev, to Novalink Technologies, Inc. Modular PCMCIA modem and pager. 5,550,861, Cl. 375-222.000.

Chan, Shun S.; Heinrich, Harley K.; Kandlur, Dilip D.; and Krishna, Arvind, to International Business Machines Corporation. Multiple item radio frequency tag identification protocol. 5,550,547, Cl. 342-42.000.

Chanda, Rajat; Dib, Hani M.; and Heinsius, Steven T., to AT & T Corp. International toll-free calling process. 5,550,909, Cl. 379-220.000.

Chandler, Thomas D.: *See*—
Ische, Kenneth W.; Johnson, Michael W.; Dea, William S.; and Chandler, Thomas D., 5,549,832, Cl. 210-694.000.

Chandler, William C. Industrial solvent based on a processed citrus oil for cleaning up petroleum waste products. 5,549,839, Cl. 510-365.000.

Chandrashekar, Venkatramana: *See*—
Sheth, Paresh J.; Chandrashekar, Venkatramana; and Kolm, Roger R., 5,550,192, Cl. 525-194.000.

Chang, Chuan-Chuen, to Lucent Technologies Inc. Method for monitoring telephone completion data. 5,550,903, Cl. 379-115.000.

Chang, David L., to Reckitt & Colman Inc. Thickened alkali metal hypochlorite composition. 5,549,842, Cl. 510-191.000.

Chang, Gee-Kung: *See*—
Brackett, Charles A.; Chang, Gee-Kung; and Iqbal, Muhammed Z., 5,550,818, Cl. 370-60.000.

Chang, Hsiu-Ching: *See*—
Reinherz, Ellis; Sayre, Peter; Chang, Hsiu-Ching; and Richardson, Neil, 5,550,055, Cl. 435-240.200.

Chang, Hyokang, to Telogy Networks, Inc. Adaptive differential pulse code modulation system with transmission error compensation. 5,550,837, Cl. 371-5.500.

Chang, Ki-Son; Park, Moon-Bae; and Kang, Dong-Hwan, to Samsung Electronics Co., Ltd. Color video printer for double side printing. 5,550,572, Cl. 347-171.000.

Chang, Mark S.: *See*—
Cheung, Robin W.; and Chang, Mark S., 5,550,405, Cl. 257-642.000.

Chang, Po-neng. Golf practicing device. 5,549,522, Cl. 473-279.000.

Chang, Wen-Hsiung. Spring fixing structure for a hairgrip. 5,549,127, Cl. 132-277.000.

Chang, Yum C.: *See*—
Burson, Kyle L.; Chang, Yum C.; Fok, Wilson; Leland, Kenneth W.; Orlando, Denis P.; and Partyka, Andrzej, 5,550,895, Cl. 379-59.000.

Chao, Keith: *See*—
Garza, Mario; and Chao, Keith, 5,549,934, Cl. 427-489.000.

Chapman, Arthur S.; and Afflerbaugh, Richard L., to Baxter International Inc. Peristaltic pump with quick release rotor head assembly. 5,549,458, Cl. 417-360.000.

Chapman, Graham: *See*—
Godfrey-Phillips, Arthur H.; and Chapman, Graham, 5,549,048, Cl. 102-466.000.

Chappet, Philippe: *See*—
Vernier, Jean-Pierre; Perret, Marc; Garret, Didier; and Chappet, Philippe, 5,549,365, Cl. 303-20.000.

Charland, Claude, to Atlas Telecom International Ltd. Device for sequentially altering a communication line for remote diagnostic checks. 5,550,894, Cl. 379-2.000.

Charlesworth, David; Underwood, Christopher J.; and Chian, Kerm S., to PolyMedica Industries, Inc. Method of forming a vascular prosthesis. 5,549,860, Cl. 264-139.000.

Charlot, Daniel: *See*—
Accorsi, Antoinette; and Charlot, Daniel, 5,549,870, Cl. 422-90.000.

Charpentier, Pierre E.: *See*—
Rizet, Laurent; and Charpentier, Pierre E., 5,549,811, Cl. 205-602.000.

Charvat, Peter K.: *See*—
Carmody, Kevin F.; Charvat, Peter K.; and Vandentop, Gilroy J., 5,549,784, Cl. 156-643.100.

Chase, David D.; Shumate, Gary D.; Joslin, Joel A.; and Meunchen, Paul K., to Chase Ergonomics Inc. Back support with means to secure the belt on the wearer while in an open position. 5,548,843, Cl. 2-102.000.

Chase Ergonomics Inc.: *See*—
Chase, David D.; Shumate, Gary D.; Joslin, Joel A.; and Meunchen, Paul K., 5,548,843, Cl. 2-102.000.

Chase, Williams L.; and Perkins, David W., to Paper Systems, Inc. Apparatus for securing contained material. 5,549,341, Cl. 294-68.100.

Chasin, Mark: *See*—
Oshlack, Benjamin; Chasin, Mark; Minogue, John J.; and Kaiko, Robert F., 5,549,912, Cl. 424-468.000.

Chatterjee, Amit: *See*—
Patrick, Stuart R.; and Chatterjee, Amit, 5,550,972, Cl. 395-164.000.

Chatterjee, Sankar: *See*—
Iqbal, Mohamed; Diebold, James L.; Siman, Robert; Chatterjee, Sankar; and Kauer, James C., 5,550,262, Cl. 554-57.000.

Chatterjee, Shyam S.: *See*—
Nöldner, Michael; Chatterjee, Shyam S.; and Hauer, Hermann, 5,550,129, Cl. 514-253.000.

Chau, Toan; and Heffner, Ronald E., to Lucent Technologies Inc. Telecommunications feature server. 5,550,906, Cl. 379-207.000.

Chauvin, Yves; Einloft, Sandra; and Olivier, Helene, to Institut Francais Du Petrole. Nickel-containing composition for catalysis and olefin dimerisation and oligomerisation process. 5,550,304, Cl. 585-512.000.

Chauvin, Yves; Einloft, Sandra; and Olivier, Helene, to Institut Francais du Petrole. Catalytic process for the dimerization of olefins. 5,550,306, Cl. 585-514.000.

Chavez, David L., Jr., to Lucent Technologies Inc. Authentication hierarchical structure of switching nodes for storage of authentication information. 5,550,896, Cl. 379-59.000.

Cheer, John: *See*—
Sanford, Adam; Cheer, John; and Wood, James, 5,549,583, Cl. 604-283.000.

Chen, Benjamin T. K.; and Lok, Roger, to Eastman Kodak Company. High chloride emulsions having high sensitivity and low fog and improved photographic responses of HIRF, higher gamma, and shoulder density. 5,550,013, Cl. 430-567.000.

Chen, Chih-Chinh, to Eric-Cambridge Co., Ltd. Electric terminal device. 5,549,484, Cl. 439-417.000.

Chen, Chung-Zen, to Vanguard International Semiconductor Corp. Method of manufacture of coaxial capacitor for dram memory cell and cell manufactured thereby. 5,550,076, Cl. 437-52.000.

Chen, Colin: *See*—
Capretta, Richard; Chen, Colin; Czernik, Daniel E.; Morris, Robert H., Jr.; and Pavel, Richard J., 5,549,307, Cl. 277-235.00B.

Chen, Howard Z.; and Cho, Alfred Y., to Lucent Technologies Inc. Binary stratified structures for periodically pumped semiconductor lasers. 5,550,854, Cl. 372-45.000.

Chen, Juin-Hwey; and Watkins, Craig R., to Lucent Technologies Inc. Frame erasure or packet loss compensation method. 5,550,543, Cl. 341-94.000.

Chen, Limin; and Radichio, Arthur J., to Spectronics Corporation. Multicavity evaporator. 5,548,965, Cl. 62-66.000.

Chen, Min-chi. Door structure. 5,548,928, Cl. 49-381.000.

Chen, Shih-Oh: *See*—
Yen, Yeouchung; Chen, Shih-Oh; and Hu, Hung-Kwei, 5,550,404, Cl. 257-530.000.

Chen, Stephen L. Device and method of direct water cooling for horizontal submarine gel electrophoresis. 5,549,806, Cl. 204-621.000.

Chen, Xiannong: *See*—
Benson, Bradley J.; Chen, Xiannong; Cianciolo, George J.; Diaz, Jose-Luis; Ishaq, Khalid S.; Morris-Natschke, Susan L.; Uhing, Ronald J.; and Wong, Henry, 5,550,132, Cl. 514-269.000.

Cheng, Jizu J., to Brunswick Container Corporation. Wide stance footed bottle with radially non-uniform circumference footprint. 5,549,210, Cl. 215-375.000.

Cheng, Julian, to University of New Mexico. Electro-optical device. 5,550,856, Cl. 372-50.000.

Cheng, Lee M., to Tongrand Limited. Unitary connector allowing laterally variant positions of mating contacts of complementary connector. 5,549,480, Cl. 439-79.000.

Cheng, Seng H.; Marshall, John; Gregory, Richard J.; and Rafter, Patrick W., to Genzyme Corporation. Antibodies specific for cystic fibrosis transmembrane conductance regulator and uses therefor. 5,550,056, Cl. 435-240.270.

Chernobilsky, Ivsey N.: *See*—
Jansen, Wilbert F., Jr.; and Chernobilsky, Ivsey N., 5,550,606, Cl. 354-94.000.

Chernyakov, Sergei V.: *See*—
Volkonsky, Viktor A.; Dvukhsherstnov, Sergei D.; and Chernyakov, Sergei V., 5,549,915, Cl. 424-490.000.

Cherri, Allan, to Cherri, Allan. Video inter-view system. 5,550,585, Cl. 348-207.000.

Chetukuri, Subraman R.; Battist, Gerald E.; and Perkins, James H., to Fuisz Technologies Ltd. Flash flow formed solloid delivery systems. 5,549,917, Cl. 426-96.000.

Chesebrough-Pond's USA Co., Division of Conopco, Inc.: *See*—
Cowan, Kevin; Eimer, John; and Turbett, James, 5,549,200, Cl. 206-362.000.

Cheung, Robin W.; and Chang, Mark S., to Advanced Micro Devices, Incorporated. Processing techniques for achieving production-worthy, low dielectric, low interconnect resistance and high performance ICS. 5,550,405, Cl. 257-642.000.

Chevallier, Bruno: *See*—
Lormeau, Jean Claude; Chevallier, Bruno; Salomé, Marc L. V.; and Tenaille d'Estais, Guy E. M., 5,550,116, Cl. 514-56.000.

Chevron Chemical Company: *See*—
Hope, Kenneth D.; Ho, Ting C.; and Cupples, Barrett L., 5,550,307, Cl. 585-525.000.

Chian, Kerm S.: *See*—
Charlesworth, David; Underwood, Christopher J.; and Chian, Kerm S., 5,549,860, Cl. 264-139.000.

Chiang, Douglas. Bicycle crank axle. 5,549,396, Cl. 384-545.000.

Chiang, George C.; Davis, Richard F.; and Temeng, Kwaku O., to Du Pont de Nemours, E. I., and Company. Process for preparing sulfonylureas. 5,550,238, Cl. 544-211.000.

Chiang, Yulin: *See*—
Glamkowski, Edward J.; and Chiang, Yulin, 5,550,130, Cl. 514-254.000.
Hamer, R. Richard L.; Helsley, Grover C.; Glamkowski, Edward J.; and Chiang, Yulin, 5,550,253, Cl. 548-429.000.
Hamer, R. Richard L.; Helsley, Grover C.; Glamkowski, Edward J.; and Chiang, Yulin, 5,550,254, Cl. 548-429.000.

Chiao, Richard Y.: *See*—
Howard, Patrick J.; and Chiao, Richard Y., 5,549,002, Cl. 73-602.000.

Chiba, Issei: *See*—
Ohe, Makoto; and Chiba, Issei, 5,550,676, Cl. 359-599.000.

Chiba, Kazuhiro: *See*—
Someya, Jun; Chiba, Kazuhiro; Watabu, Kazuyoshi; Yamamoto, Yoshie; Inamura, Mamoru; Nagayama, Takeshi; Bamba, Noriko; and Sunada, Noboru, 5,550,936, Cl. 382-263.000.

Chien Sheng Machine Industrial Co., Ltd.: *See*—
Hsu, Kun-Chung, 5,550,420, Cl. 310-339.000.

Chigusa, Kisaku: *See*—
Takagaki, Tadao; and Chigusa, Kisaku, 5,549,389, Cl. 383-202.000.

Chimote, R. S.: *See*—
Sharma, Tribhuvan P.; and Chimote, R. S., 5,548,933, Cl. 52-192.000.

Chimoto, Hiroyuki, to Kabushiki Kaisha Toshiba. Image processing apparatus and method of controlling the same. 5,550,961, Cl. 395-133.000.

Chin, Steven S.: *See*—
Spence, Bridget A.; Southwick, Jeffrey G.; Chin, Steven S.; and Hoxmeier, Ronald J., 5,550,196, Cl. 525-314.000.

Chishima, Masamitsu; and Noro, Yutaka, to Sumitomo Wiring Systems, Ltd. Fitting jig for a flat cable connector. 5,549,485, Cl. 439-495.000.

Chiu, Ramen; Taylor, Joseph W.; Cooke, David L.; Goyal, Shivendra K.; and Oswin, Robert E., to Novacor Chemicals Ltd. Melt fracture elimination in film production. 5,550,193, Cl. 525-199.000.

Cho, Alfred Y.: *See*—
Chen, Howard Z.; and Cho, Alfred Y., 5,550,854, Cl. 372-45.000.

Cho, George, to Cynosure, Inc. Surgical laser probe with thermal cutting. 5,549,600, Cl. 606-15.000.

Cho, Yoshiki: *See*—
Tashiro, Tetsu; and Cho, Yoshiki, 5,550,994, Cl. 395-375.000.

Chockalingam, Kannappan: *See*—
Layman, William J., Jr.; Chockalingam, Kannappan; and Lecouvé, Jean-Pierre, 5,550,285, Cl. 562-565.000.

Choe, Gyu S.: *See*—
Kim, Jung C.; Oh, Dong Y.; Choe, Gyu S.; Hong, Kyung S.; Kim, Kyung H.; Lee, Joo H.; Lee, Ha I.; Park, Kyeong B.; Gil, Dong S.; Kwon, Oh H.; and Kwon, Byoung H., 5,548,980, Cl. 68-133.000.

Cholakon, Rifka; Errera, Tracy C.; and Zeno, Joseph R., to ACS Industries, Inc. Fast-make coupler for attaching a work implement to a prime mover. 5,549,440, Cl. 414-723.000.

Chollet, Anne-Marie: *See*—
Brion, Jean-Daniel; Chollet, Anne-Marie; Demuynck, Luc; De Montarby, Lucy; Rolland, Yves; Bonnet, Jacqueline; Ghezzi, Pietro; and Fradin, Armel, 5,550,143, Cl. 514-367.000.

Cholod, Michael S.: *See*—
Banyay, Harold R.; Cholod, Michael S.; Kolanko, Laurence M.; and Smith, Bonnie V., 5,549,941, Cl. 428-34.100.

Choudhury, Gour S., to University of Alaska. Extrusion inactivation of protease enzyme in fish and fish food products. 5,549,920, Cl. 426-516.000.

Chow, Lu, to Eastman Kodak Company. Process for pulse flow double-jet precipitation. 5,549,879, Cl. 423-491.000.

Choy, David M.; and Mohan, Chandrasekaran, to International Business Machines Corporation. Multi-tiered indexing method for partitioned data. 5,551,027, Cl. 395-600.000.

Chrastil, Joseph, to United States of America, Agriculture. Spectrophotometric method for structural analysis of organic compounds, polymers, nucleotides and peptides. 5,550,630, Cl. 356-300.000.

Christensen, James D.: *See*—
Allison, Greg R.; Christensen, James D.; and Folsom, Thomas L., 5,550,440, Cl. 315-294.000.

Christian, Craig W.: *See*—
Anjum, Mohammed; Burki, Ibrahim K.; and Christian, Craig W., 5,550,084, Cl. 437-200.000.

Christianson, Donald D.: *See*—
Fanta, George F.; and Christianson, Donald D., 5,550,177, Cl. 524-47.000.

Christianson, Todd J.: *See*—
Haas, John D.; Christianson, Todd J.; and Bruxvoort, Wesley J., 5,549,961, Cl. 428-143.000.

Christidis, Yani; and Meier, Michael, to Hoechst AG. Process for the preparation of aromatic carboxamides from aromatic carboxylic acids and urea. 5,550,286, Cl. 564-139.000.

Christidis, Yani: *See*—
Schouteeten, Alain; and Christidis, Yani, 5,550,250, Cl. 548-311.100.

Christopher Designs, Inc.: *See*—
Slowinski, Christopher, 5,548,976, Cl. 63-28.000.

Chronomed, Inc.: *See*—
Saunders, Alexander; Summerfield, Frank W.; and Zarowitz, Michael A., 5,550,060, Cl. 436-63.000.

Chrysler Corporation: *See*—
Corporon, Max A.; Wehner, Tim J.; and Gunderia, Ashutosh, 5,549,349, Cl. 276-188.000.
Grabowski, Norbert E., 5,549,229, Cl. 224-321.000.
Kopera, John J. C., 5,550,478, Cl. 324-654.000.
Loughlin, Neil W., 5,549,034, Cl. 92-187.000.

Chu, Gilbert; Vollrath, Douglas; and Davis, Ron, to Leland Stanford Junior University, The Board of Trustees of the. Electrophoresis using contour-clamped electric fields. 5,549,796, Cl. 204-457.000.

Chu, Jakong J.: *See*—
Buch, Kiran B.; Law, Edwin S.; and Chu, Jakong J., 5,550,839, Cl. 371-22.100.

Chu, Mike S.-H.; Bultitude, John; and Hood, Christopher, to Tam Ceramics Inc. Ceramic dielectrics compositions. 5,550,092, Cl. 501-137.000.

Chu, Peter L.: *See*—
Helf, Brant M.; and Chu, Peter L., 5,550,924, Cl. 381-94.000.

Chu, Tam-Anh, to Cirrus Logic, Inc. Two cycle asynchronous FIFO queue. 5,550,780, Cl. 365-221.000.

Chuang, Te-Chih; Liao, Yunn-Hung; Wei, Lung; and Lee, Yi-Hsien, to Acer Incorporated. Single socket upgradeable computer motherboard with automatic detection and socket reconfiguration for inserted CPU chip. 5,551,012, Cl. 395-500.000.

Chumakov, Konstantin: *See*—
Levenbook, Inessa; Chumakov, Konstantin; Powers, Laurie; and Roninson, Igor, 5,550,018, Cl. 435-5.000.

Chun, Christopher K. Y.: *See*—
Lebby, Michael S.; Chun, Christopher K. Y.; Kuo, Shun-Meen; and Hansen, Kent W., 5,550,941, Cl. 385-49.000.

Chung, Jong-Won, to Mando Machinery Corp. Ltd. Alternator for use in an automobile. 5,550,418, Cl. 310-239.000.

Church & Dwight Co., Inc.: *See*—
Winston, Anthony E.; Dunn, Steven E.; Cala, Francis R.; Vinci, Alfredo; Lajoie, M. Stephen; and Jorgensen, Robert C., 5,549,761, Cl. 134-40.000.

Cianciolo, George J.: *See*—
Benson, Bradley J.; Chen, Xiannong; Cianciolo, George J.; Diaz, Jose-Luis; Ishaq, Khalid S.; Morris-Natschke, Susan L.; Uhing, Ronald J.; and Wong, Henry, 5,550,132, Cl. 514-269.000.

Ciba-Geigy Corporation: *See*—
De Lombaert, Stéphane; Jeng, Arco Y.; and Ksander, Gary M., 5,550,119, Cl. 514-92.000.

Goliro, Martine; Holer, Martin; and Gati, Sandor, 5,549,847, Cl. 252-394.000.
Trottmann, Martin, 5,550,217, Cl. 534-732.000.
Wirth, Hermann O.; Friedrich, Hans-Helmut; and Gröninger, Kay S., 5,550,276, Cl. 558-177.000.

Cieslinski, Deborah A.: *See—*
Humes, H. David; and Cieslinski, Deborah A., 5,549,674, Cl. 623-11.000.

Cignetti, Nicolas P.: *See—*
Peysakhovich, Vitaly; Cignetti, Nicolas P.; Heine, Hans G.; and Mortimer, John H., 5,550,353, Cl. 219-672.000.

Cipolla, Jeffrey L.; and Waclawik, Ronald E., to United States of America, Navy. Water vehicle and a directional control device therefor. 5,549,065, Cl. 114-23.000.

Circon Corporation: *See—*
Muller, Richard P., 5,549,541, Cl. 600-105.000.

Cirjak, Larry M.; Lemanski, Michael F.; Wagner, David R.; Benkalowycz, Nancy C.; Blum, Patricia R.; Pepera, Marc A.; and Paparizos, Christos. Fluid bed process for the acetoxylation of ethylene in the production of vinyl acetate. 5,550,281, Cl. 560-245.000.

Cirrus Logic, Inc.: *See—*
Chu, Tam-Anh, 5,550,780, Cl. 365-221.000.

Clark, Dexter M. Rotating platform apparatus. 5,549,536, Cl. 482-146.000.

Clark, Terri R.; and Long, Thomas C., to AlliedSignal Inc. Optical phase retardation film. 5,550,661, Cl. 359-073.000.

Clarke, David A.; and Bennett, Steven N. Communications signalling network apparatus. 5,550,914, Cl. 379-230.000.

Clarke, Ian C.: *See—*
Amino, Hirokazu; and Clarke, Ian C., 5,549,684, Cl. 623-20.000.

Clarke, Robert: *See—*
Neuenfeldt, Steven; Brauker, James; Clarke, Robert; and Carr-Brendel, Victoria, 5,549,675, Cl. 623-11.000.

Clauser, Donald E., to Witt, C. Joyce. Coupon inserter. 5,549,233, Cl. 225-100.000.

Clavel, François: *See—*
Montagnier, Luc; Rey, Françoise; Krust, Bernard; and Clavel, François, 5,550,052, Cl. 435-240.260.

Claveyrolas, Gilles: *See—*
Abiven, Henri; Picquet, Lionel; Claveyrolas, Gilles; Viala, Jean-Claude; and Bouix, Jean, 5,549,976, Cl. 428-608.000.

Clayman, Harvey L.: *See—*
Bailey, Brian L.; and Clayman, Harvey L., 5,550,738, Cl. 364-424.040.

Clayman, Michael: *See—*
Peacock, James C., III; Hyde, Gregory M.; Samson, Wilfred J.; and Clayman, Michael, 5,549,551, Cl. 604-96.000.

Clayton, R. Dallas: *See—*
Grenci, Charles; and Clayton, R. Dallas, 5,548,895, Cl. 29-890.141.

Cleavinger, Richard C.: *See—*
Willis, Daniel J.; and Cleavinger, Richard C., 5,550,998, Cl. 395-441.000.

Clemenz, Gary E.: *See—*
Beakes, John M.; Clemenz, Gary E.; Dolgas, Patrick A.; Heaton, Mark T.; and Newman, Lawrence E., 5,549,253, Cl. 242-432.300.

Clemson University: *See—*
Nordine, Paul C., 5,549,971, Cl. 428-364.000.

Cliff, Richard G.; Cope, L. Todd; McClintock, Cameron R.; Leong, William; Watson, James A.; Huang, Joseph; and Ahanin, Bahram, to Altera Corporation. Programmable logic array integrated circuits. 5,550,782, Cl. 365-230.030.

Cline, Carl F.; Wilkins, Mark W.; and Hare, Alan W. Preparation of solid aggregates of high density boron nitride crystals. 5,549,731, Cl. 75-244.000.

Cline, Troy L.; Isensee, Scott H.; and Poston, Ricky L., to International Business Machines Corporation. Method and system for allocating resources. 5,550,970, Cl. 395-161.000.

Clinical Product Development Limited: *See—*
Peters, Joseph L.; and Kerr, James W., 5,549,619, Cl. 606-151.000.

Clintec Nutrition Co.: *See—*
Mark, David A.; Twyman, Diana; and Buckley, Donna, 5,549,905, Cl. 424-439.000.

Clinton, Eric L.; Pao, Hsien C.; Allen, William R.; and Nita, Valerian M., to Ford Motor Company. Method and apparatus for detecting the angular position of a variable position camshaft. 5,548,995, Cl. 73-116.000.

Cloonan, Thomas J.; and Richards, Gaylord W., to Lucent Technologies Inc. Apparatus and method for reducing data losses in a growable packet switch. 5,550,815, Cl. 370-54.000.

Cloud Corporation: *See—*
Dworak, Adam J.; and Hartman, Donn A., 5,549,144, Cl. 141-146.000.

Clough, Thomas J.; Grosvenor, Victor L.; and Pinsky, Naum, to Ensci Inc. Battery element containing porous particles. 5,549,990, Cl. 429-204.000.

Co, Ramon: *See—*
Liang, Jui; Co, Ramon; and Gui, Ann, 5,550,515, Cl. 331-11.000.

Coates, Bradley J.; and Fosco, Dominic R., to Wright Medical Technology, Inc. Retrofit posterior stabilizing housing implant for replacement knee prosthesis. 5,549,687, Cl. 623-20.000.

Cockburn, Donald: *See—*
Cockburn, John F.; and Cockburn, Donald, 5,549,112, Cl. 128-662.050.

Cockburn, John F.; and Cockburn, Donald. Medical needle for use in ultrasound imaging and method of enhancing the visibility of such a needle to ultrasound. 5,549,112, Cl. 128-662.050.

Cockram, George R.: *See—*
Butterfield, Eric J.; Cockram, George R.; Harmon, Stewart M.; and Talbot, Roy, 5,549,132, Cl. 137-270.000.

Code 80250, Post: *See—*
Hong, Wong Y., 5,549,234, Cl. 227-119.000.

Codman & Shurtleff, Inc.: *See—*
Yapp, Ronald A.; and Worrick, Charles B., III, 5,549,612, Cl. 606-69.000.

Cody, Wayne L.; Doherty, Annette M.; and Topliss, John G., to Warner-Lambert Company. Endothelin Antagonists II. 5,550,110, Cl. 514-17.000.

Coffield, Kelly M.; Cantrill, Dean A.; McCulloh, Kevin G.; and Mickelson, Sammy K., to Litton Systems, Inc. Modular, stackable pressure swing absorption concentrator. 5,549,736, Cl. 96-133.000.

Cohen, Abner B. No-bind page lifter clip. 5,549,406, Cl. 402-80.00L.

Cohen, Earl T.; Tilleman, Russell W.; Pattin, Jay C.; and Blomgren, James S., to Exponential Technology, Inc. Master-slave cache system for instruction and data cache memories. 5,551,001, Cl. 395-449.000.

Cohen, Herbert; Solar, Matthew S.; and Slater, Charles R., to Symbiosis Corporation. Flexible tube having a tapered diameter portion for use with endoscopic irrigation instruments. 5,549,547, Cl. 604-30.000.

Cohen, Robert C.: *See—*
Averill, Robert G.; and Cohen, Robert C., 5,549,698, Cl. 623-22.000.

Cohen, Yechiel. Clamping device particularly useful for dental handpieces. 5,549,474, Cl. 433-129.000.

Coherent Communications Systems Corp.: *See—*
Williams, Arthur B., 5,550,901, Cl. 379-93.000.

Cole, Barrett E.; Fritz, Bernard S.; and Horning, Robert D., to Honeywell Inc. Fabry-Perot micro filter-detector. 5,550,373, Cl. 250-338.100.

Cole, Christopher R.: *See—*
Wright, J. Nelson; Cole, Christopher R.; Gee, Albert; Larsen, Hugh G.; and Maslak, Samuel H., 5,549,111, Cl. 128-742.000.

Cole, Clinton: *See—*
Morgan, Carlton B.; Cole, Clinton; and Powers, Daniel J., 5,549,115, Cl. 128-696.000.

Colgate-Palmolive Co.: *See—*
Mondin, Myriam; Loth, Myriam; Broze, Guy; Mehreteab, Ammanuel; Thomas, Barbara; Adamy, Steven; and Bala, Frank, Jr., 5,549,840, Cl. 510-365.000.
Weissman, Neal V.; and McKinney, James C., 5,549,209, Cl. 215-228.000.

Collagen Corporation: *See—*
Rhee, Woonza; Wallace, Donald G.; Michaels, Alan S.; Burns, Ramon A., Jr.; Fries, Louis; DeLustro, Frank; and Bentz, Hanne, 5,550,188, Cl. 525-54.100.
Rhee, Woonza M.; Berg, Richard A.; Rosenblatt, Joel S.; Tefft, Jacqueline A.; Braga, Larry J.; and Smestad, Thomas L., 5,550,187, Cl. 525-54.100.

Collet, Eric C.: *See—*
Johnston, Jesse C., Jr.; Kulig, James S.; Lewis, Steven F.; Collet, Eric C.; Sepela, Mark J.; and Meuller, Michael L., 5,549,079, Cl. 122-379.000.

Collins, Michael J., to Enidine, Inc. Wire rope isolator with crimp bar and method for making same. 5,549,285, Cl. 267-148.000.

Colombo, Paolo; Cardona, Antonio C.; and Pifferi, Giorgio, to Inverni Della Beffa S.p.A. Multilayer matrix systems for the controlled release of active principles. 5,549,913, Cl. 424-472.000.

Colorado Leisure Sportswear Corporation: *See—*
Gallup, James A., 5,548,845, Cl. 2-195.200.

Colvin, David: *See—*
Subramaniam, Chitoor S.; John, Thomas V.; Colvin, David; and Bitler, George W., 5,550,299, Cl. 568-591.000.

Com 21, Inc.: *See—*
Baran, Paul, 5,550,820, Cl. 370-60.100.

Comai, Luca: *See—*
Goodman, Robert M.; Knauf, Vic C.; Houck, Catherine M.; and Comai, Luca, 5,550,038, Cl. 435-70.100.

Commercon, Alain: *See—*
Bouchard, Hervé; Bourzat, Jean-Dominique; and Commercon, Alain, 5,550,261, Cl. 549-510.000.

Commissariat a l'Energie Atomique: *See—*
Accorsi, Antoinette; and Charlot, Daniel, 5,549,870, Cl. 422-90.000.
Doche, Claude, 5,549,205, Cl. 206-710.000.
Loridon, Joël; Ma, Jean-Luc; Marini, Alain; and Latu, Michel, 5,550,382, Cl. 250-390.040.

Commons, Peter: *See—*
Brewer, Gregory S.; and Commons, Peter, 5,550,967, Cl. 395-155.000.

Compans, Richard W., to Emory University. Anti-paramyxovirus screening method and vaccine. 5,550,017, Cl. 435-5.000.

Composite Development Corporation: *See—*
Quigley, Peter A.; Nolet, Steven C.; and Gallagher, James L., 5,549,947, Cl. 428-36.200.

Compton, Stephen F., to W. R. Grace & Co.-Conn. Perforated film with prepunched tube holes. 5,549,959, Cl. 428-131.000.

Comstream Corporation: *See—*
Gurantz, Itzhak; Goldenberg, Yoav; and Raghavan, Sree A., 5,550,869, Cl. 375-340.000.

Concept Outdoor Advertising, Inc.: *See—*
Maloney, Peter E., 5,549,072, Cl. 114-363.000.

Condea Vista Company: *See—*
Elsik, Cutis M.; and Beggs, Ronald L., 5,550,180, Cl. 524-430.000.

Conlee, Ralph B. Flexible tube end-lap retainer. 5,549,221, Cl. 222-103.000.

Conley, Rose & Tayon, P.C.: *See—*

Bessler, Marc; Mintz, Max R.; and Sutherland, Byron C., 5,549,621, Cl. 606-151.000.

Conmed Corporation: *See—*
Sutcu, Maz; Gentelia, John S.; and Aydil, Eray, 5,549,604, Cl. 606-45.000.

Connell, Lawrence E.; Paitl, Kenneth A.; Roeckner, William J.; and Haddad, Kenneth R., to Motorola, Inc. Apparatus and method for minimizing the turn on time for a receiver operating in a discontinuous receive mode. 5,551,078, Cl. 455-343.000.

Consolidated Natural Gas Service Company, Inc.: *See—*
Swenson, Paul F.; and Bjerklie, John W., 5,549,096, Cl. 123-564.000.

Constar Plastics Inc.: *See—*
Mitchell, Monroe S.; and Loos, Vinson A., 5,549,468, Cl. 425-526.000.

Contico International, Inc.: *See—*
Foster, Donald D.; and Nelson, Philip L., 5,549,249, Cl. 239-463.000.

Continental Aktiengesellschaft: *See—*
Trabandt, Hagen; and Ramcke, Uwe, 5,549,146, Cl. 152-154.200.

Contour Fabricators, Inc.: *See—*
Weaver, Richard A., 5,549,707, Cl. 604-317.000.

Cook, Lacy G., to Hughes Electronics. Off-axis three-mirror anastignat having corrector mirror. 5,550,672, Cl. 359-365.000.

Cooke, David L.: *See—*
Chiu, Ramen; Taylor, Joseph W.; Cooke, David L.; Goyal, Shivendra K.; and Oswin, Robert E., 5,550,193, Cl. 525-199.000.

Cooke, Steven E.: *See—*
Petrillo, Michael J.; Cooke, Steven E.; and Valentino, Frank C., 5,550,377, Cl. 250-363.090.

Coope, Janet L.: *See—*
Madison, Stephen A.; and Coope, Janet L., 5,550,256, Cl. 548-473.000.

Cooper, David: *See—*
Stillman, Robert A.; Way, James A.; Cable, Jesse F., III; Cooper, David; and Koskinen, James, 5,551,066, Cl. 455-69.000.

Cooper Industries, Inc.: *See—*
Urban, Paul L., 5,549,240, Cl. 228-264.000.

Cooper, J. Carl; Wallen, David; Vojnovic, Mirko; and Loveless, Howard, to Pixel Instruments Corp. Apparatus and method for synchronizing asynchronous signals. 5,550,594, Cl. 348-513.000.

Cooper, Joel; Winegar-Hentges, Sally L.; Nelson, Robert P.; Schankereli, Kemal; and Teich, Kristine M., to Bio-Vascular, Inc. Soft tissue stapling buttress. 5,549,628, Cl. 606-220.000.

Cooper, Kevin: *See—*
Regula, Donald W.; Cooper, Kevin; Bregen, Michael F.; Huxel, Shawn T.; and Rosenman, Daniel C., 5,550,172, Cl. 523-118.000.

Coors Brewing Company: *See—*
Hahn, Roger; Bowles, Ray; and Phelps, Wendel, 5,549,752, Cl. 118-234.000.

Cope, L. Todd: *See—*
Cliff, Richard G.; Cope, L. Todd; McClintock, Cameron R.; Leong, William; Watson, James A.; Huang, Joseph; and Ahanin, Bahram, 5,550,782, Cl. 365-230.030.

Copeland Corporation: *See—*
Tinsler, Theodore E., 5,548,966, Cl. 62-77.000.

Coppom, Rex R. Electrostatic fibrous filter. 5,549,735, Cl. 96-63.000.

Coral Medical: *See—*
Fleenor, Richard P.; and Bryce, Daniel P., 5,549,618, Cl. 606-148.000.

Corby, Nelson R., Jr.; Meenan, Peter M.; Solanas, Claude H., III; and Vickerman, David C., to General Electric Company. Augmented reality maintenance system with flight planner. 5,550,758, Cl. 364-571.030.

Cordis Corporation: *See—*
Cottone, Robert J., Jr., 5,549,663, Cl. 623-1.000.
Diaz, Juan C., 5,549,580, Cl. 604-280.000.
Solar, Ronald J., 5,549,119, Cl. 128-772.000.

Corio, Mark A.; and Leary, James F., to University of Rochester. System for flexibly sorting particles. 5,550,058, Cl. 436-63.000.

Cork, Michael S.: *See—*
Williams, Douglas; Shea, Jeff; and Cork, Michael S., 5,549,949, Cl. 428-36.900.

Cornils, Curtis: *See—*
Silverthorn, Lee; Cornils, Curtis; Kirchner, Mark L.; Stephens, Susan D.; and Crouse, Parker E., 5,551,051, Cl. 395-800.000.

Corporon, Max A.; Wehner, Tim J.; and Gunderia, Ashutosh, to Chrysler Corporation. Side impact protection system. 5,549,349, Cl. 276-188.000.

Correia, Bernard A., II; and Kirk, Philip B., II. Stirrer for food preparation. 5,549,382, Cl. 366-144.000.

Correll, John D. Interlock for stackable boxes. 5,549,241, Cl. 229-120.010.

Corrigan, John: *See—*
Mihalisin, John R.; Corrigan, John; Baker, Robert J.; Leonard, Eric L.; and Vandersluis, Jay L., 5,549,765, Cl. 148-428.000.

Cossette, Luke A.: *See—*
Boutaghou, Zine-Eddine; Cossette, Luke A.; and Luoma, Richard W., 5,550,689, Cl. 360-99.080.

Cottone, Andrew J.; Saperstein, Zalman P.; Tait, Ronald D.; Parkhill, Richard G.; and Bahr, Jeffrey A., to Modine Manufacturing Company. Modified substrate surface and method. 5,549,927, Cl. 427-191.000.

Cottone, Robert J., Jr., to Cordis Corporation. Endoprosthesis having graft member and exposed welded end junctions, method and procedure. 5,549,663, Cl. 623-1.000.

Cottrell, Peter R., to Vickers Shipbuilding & Engineering Limited. Structures subject to loading. 5,550,555, Cl. 343-878.000.

Council of Scientific & Industrial Research: *See—*
Dattatraya, Sathaye S.; Raghu, Patil K.; and Vinayak, Paranjape D., 5,549,931, Cl. 427-376.200.
Sharma, Tribhuvan P.; and Chimote, R. S., 5,548,933, Cl. 52-192.000.

Counts, David M.; and Stevens, Rex W., to Quickie Designs Inc. Adjustable backrest apparatus for wheelchairs. 5,549,357, Cl. 297-354.130.

Coveley, Michael. Power supply connected in parallel with solid state switch for phase control of average power to a load. 5,550,463, Cl. 323-300.000.

Covington, Edward A.: *See—*
Zemaitis, Walter A.; Covington, Edward A.; Lanier, Roland V., Jr.; and Hovis, Gary U., 5,549,722, Cl. 55-463.000.

Cowan, Kevin; Eimer, John; and Turbett, James, to Chesebrough-Pond's USA Co., Division of Conopco, Inc. Swab dispenser. 5,549,200, Cl. 206-362.000.

Cragun, Brian J., to International Business Machines Corporation. Self cleaning touch screen display mechanism. 5,550,564, Cl. 345-173.000.

Crainich, Lawrence. Articulated medical instrument. 5,549,637, Cl. 606-207.000.

Crandall, F. Anthony; Jorgensen, Kevin V.; Grose, Brian L.; and Tyler, Monroe, to EDO Western Corp. Sliced phased array doppler sonar system. 5,550,792, Cl. 367-155.000.

Crandall, Thomas L.: *See—*
Strout, D. Wayne; Crandall, Thomas L.; Slater, Michael J.; and Malmmose, Erik, 5,549,023, Cl. 82-112.000.

Crane, Peter, to Seagate Technology, Inc. Proximity recording air bearing slider design with waist offset. 5,550,692, Cl. 360-103.000.

Crayford, Ian S.; and Lo, William, to Advanced Micro Devices, Inc. Method and system for increasing network information carried in a data packet via packet tagging. 5,550,803, Cl. 370-13.000.

Creative Integration & Design, Inc.: *See—*
Johnson, Bruce C., 5,549,103, Cl. 128-200.240.

Creative Toy Corporation: *See—*
Adams, Theodore P.; Kroll, Mark W.; and Kroll, Karl, 5,549,933, Cl. 427-421.000.

Cremers, Louis M. G.: *See—*
Van Vliembergen, Eduardus J. W.; Heemels, Robertus P. E. H.; Cremers, Louis M. G.; Hommersom, Frederik J.; and Gerritsen, Jan, 5,550,934, Cl. 382-229.000.

Cretin, Jacques: *See—*
Laurent, Jean; Meynier, Patrick; Cretin, Jacques; and Beauducel, Claude, 5,550,785, Cl. 367-25.000.

Cripps, Peter K., to National Semiconductor Corporation. Frequency modulator for data transceiver. 5,550,865, Cl. 375-295.000.

Critchfield, Frank E.: *See—*
Kinkelaar, Mark R.; Cavender, Keith D.; Lambach, James L.; Brasington, Robert D.; and Critchfield, Frank E., 5,549,841, Cl. 252-182.270.

Crockett, Robert J., to NCR Corporation. Apparatus for containing and supporting electronic components. 5,550,712, Cl. 361-752.000.

Cronin, John E.; and Rutten, Matthew J., to International Business Machines Corporation. Variable travel carrier device and method for planarizing semiconductor wafers. 5,549,511, Cl. 451-281.000.

Crorey, David J., to Blatt, Leland D. Article transfer apparatus. 5,549,442, Cl. 414-751.000.

Crosby Valve & Gage Company: *See—*
Eminger, Harry E., 5,549,138, Cl. 137-876.000.

Crouse, Parker E.: *See—*
Silverthorn, Lee; Cornils, Curtis; Kirchner, Mark L.; Stephens, Susan D.; and Crouse, Parker E., 5,551,051, Cl. 395-800.000.

Cruce, Christopher J.; and Ripatti, Jorma P. Plastic open frame basket construction and method of making the same. 5,549,215, Cl. 220-676.000.

Cruchelow, Albert; and Masters, Rodney H. In-water dry dock system. 5,549,070, Cl. 114-263.000.

Crump, Dwayne T.; Pancoast, Steven T.; Benson, Paul H., IV; and Steelman, Herbert S., to International Business Machines Corporation. Standby checkpoint to prevent data loss. 5,551,043, Cl. 395-750.000.

Crump, Kevin E.; Gard, Jimmie D.; and Oleson, Richard A., to E. D. Bullard Company. Air delivery and exhalation exhaust system for protective helmets. 5,549,104, Cl. 128-201.250.

Cserhati, Zsuzsa: *See—*
Segmüller, Gottfried; Sennwald, Gontran; Cserhati, Zsuzsa; and Schaap, Gerard R., 5,549,681, Cl. 623-18.000.

CSR Limited: *See—*
Hawkins, David J. D., 5,549,411, Cl. 404-25.000.

CTS Corporation: *See—*
Haugh, James E., 5,550,339, Cl. 200-5.00A.

Cubalchini, Joseph, to Gabriel Ride Control Products, Inc. Roll control system. 5,549,328, Cl. 280-772.000.

Cullen, Ernest: *See—*
Hargrave, Karl D.; Cullen, Ernest; Proudfoot, John R.; Grozinger, Karl G.; Pal, Kollol; and Adams, Julian, 5,550,117, Cl. 514-81.000.

Cullen, Hugh L.: *See—*
Cullen, Susan J.; and Cullen, Hugh L., 5,549,298, Cl. 473-272.000.

Cullen, Susan J.; and Cullen, Hugh L. Golf alignment apparatus. 5,549,298, Cl. 473-272.000.

Culler, Scott R.: *See—*
Holmes, Gary L.; Culler, Scott R.; Hardy, David H.; Harmon, Kimberly K.; Heiti, Robert V.; Hendrickson, William A.; Klun, Thomas P.; Spurgeon, Kathryn M.; and Studiner, Charles J., III, 5,549,962, Cl. 428-144.000.

Cullinan, George J., to Eli Lilly and Company. Methods for inhibiting bone prosthesis degeneration. 5,550,123, Cl. 514-214.000.

Cullinan, George J., to Eli Lilly Company. Methods of reducing scarring in wound healing. 5,550,151, Cl. 514-445.000.
Cummins Engine Company, Inc.: *See—*
Buchanan, David L.; and Benson, Donald J., 5,549,274, Cl. 251-129.140.
Cunanan, Crystal M.: *See—*
Young, Craig; Sussman, Glenn R.; and Cunanan, Crystal M., 5,549,670, Cl. 623-6.000.
Cuneo, Giuseppe; and Bonacina, Sergio, to Black & Decker Inc. Workcentre. 5,549,014, Cl. 74-424.840.
Cunningham, Patrick J.: *See—*
Platus, David L.; and Cunningham, Patrick J., 5,549,270, Cl. 248-619.000.
Cunningham, Robert A., Jr.; and Rutledge, Phillip R., to NRG Industries Inc. Air handling system. 5,548,970, Cl. 62-271.000.
Cupples, Barrett L.: *See—*
Hope, Kenneth D.; Ho, Ting C.; and Cupples, Barrett L., 5,550,307, Cl. 585-525.000.
Curcio, Joseph A., Jr.: *See—*
Albrecht, Alan; Goody, Steven H.; Spratt, Michael P.; Curcio, Joseph A., Jr.; and Dove, Daniel J., 5,550,836, Cl. 370-85.200.
Current Logic Systems, Inc.: *See—*
Wong, John J.; and Lui, Paul S., 5,550,649, Cl. 358-479.000.
Curtice-Burns, Inc.: *See—*
Meyer, Richard S.; Campbell, Michael L.; Winter, Daryl B.; and Root, Jeffrey M., 5,550,220, Cl. 536-18.500.
Curtis, R. Thomas, III: *See—*
Steinke, Thomas A.; Gulachenski, Joseph; and Curtis, R. Thomas, III, 5,549,557, Cl. 604-103.000.
Curtis, Sandra. Cleaning utensil. 5,548,862, Cl. 15-118.000.
Curzon, Jon L.: *See—*
Anderson, William E.; Davis, Donald M.; and Curzon, Jon L., 5,548,960, Cl. 62-605.000.
Cuthbertson, Robert J.: *See—*
Brunner, Hans; McCandless, Timothy P.; Sparks, Randall B.; Cuthbertson, Robert J.; Durand, Jacques; and Fogel, Steven M., 5,550,971, Cl. 395-161.000.
Cutter, James W.: *See—*
Burbury, Robert L.; and Cutter, James W., 5,550,891, Cl. 378-197.000.
Cycolor Imaging, Inc.: *See—*
Dowler, James A.; Whitaker, Tyson B.; King, Julius D., Jr.; Murayama, Fumitaka; Takizawa, Satoru; Gomi, Masaao; and Itoh, Fumiyoshi, 5,550,627, Cl. 355-326.00M.
Cynosure, Inc.: *See—*
Cho, George, 5,549,600, Cl. 606-15.000.
Cyrix Corporation: *See—*
Eitrheim, John K., 5,550,499, Cl. 327-175.000.
Cytec Technology Corp.: *See—*
Hillhouse, John H., 5,550,295, Cl. 568-14.000.
CytoTherapeutics, Inc.: *See—*
Holland, Laura M.; Hammang, Joseph P.; Rudnick, Seth A.; Lysaght, Michael J.; and Dionne, Keith E., 5,550,050, Cl. 435-240.200.
Cytozyme Laboratories, Inc.: *See—*
Wozniak, Elizabeth M.; and Baughman, Stephen G., 5,549,728, Cl. 71-6.000.
Czajlikné Csizér, Éva: *See—*
Mahó, Sándor; Tuba, Zoltán; Sánta, Csaba; Balogh, Gábor; Czajlikné Csizér, Éva; Lovasné Marsai, Mária; and Gálik, György, 5,550,240, Cl. 544-295.000.
Czernik, Daniel E.: *See—*
Capretta, Richard; Chen, Colin; Czernik, Daniel E.; Morris, Robert H., Jr.; and Pavel, Richard J., 5,549,307, Cl. 277-235.00B.
Czernik, Roman: *See—*
Long, Douglas G.; and Czernik, Roman, 5,549,290, Cl. 271-166.000.
Daab-Krzykowski, Andre: *See—*
Mazer, Terrence B.; Walton, Joseph E.; Geckle, Ronita K.; Piontek, Carl J.; Duel, Susan B.; Daab-Krzykowski, Andre; Joseph, Robert L.; Pierson, William G.; Loughrin, Thomas D.; and Osip, Thomas W., 5,549,550, Cl. 604-83.000.
Dade International Inc.: *See—*
Lee, Ted C. K.; Pelzer, Franz H.; and Motley, Leslie A., 5,550,028, Cl. 435-13.000.
Daewoo Electronics Co., Ltd.: *See—*
Park, Chan-Kyu, 5,550,368, Cl. 250-201.500.
So, Myung-Kook, 5,550,644, Cl. 358-335.000.
Yoon, Dong-Seon, 5,550,680, Cl. 359-850.000.
Dag, Heinrich, to Joh. Winklhofer & Sohne. Accumulating conveyor chain. 5,549,194, Cl. 198-845.000.
Dagdeviren, Nuri R.: *See—*
Cai, Lujing; and Dagdeviren, Nuri R., 5,550,908, Cl. 379-215.000.
Dage, Gerhard A.: *See—*
Davis, Leighton I., Jr.; Sieja, Thomas F.; Dage, Gerhard A.; and Matteson, Robert W., 5,549,152, Cl. 165-201.000.
Dahl, Ernest A. Battery electrolyte-level and electrolyte-stratification sensing system. 5,550,474, Cl. 324-432.000.
Dai Nippon Printing Co., Ltd.: *See—*
Aso, Kenichi; Sato, Hideaki; Eguchi, Hiroshi; Kafuku, Komei; and Takiguchi, Ryohei, 5,550,098, Cl. 503-227.000.
Ohshima, Katsuyuki; Ueno, Takeshi; Yamauchi, Mineo; and Kita, Tatsuya, 5,550,099, Cl. 503-227.000.
Takano, Atsushi; Utsumi, Minoru; and Obata, Hiroyuki, 5,550,370, Cl. 250-225.000.
Dai, Pei-Shing E.; Tsang, Chih-Hao M.; Neff, Laurence D.; and Petty, Randall H. FCC process employing low unit cell size y-zeolites. 5,549,813, Cl. 208-120.000.
Dai, Pei-Shing E.: *See—*
Taylor, Robert J., Jr.; Dai, Pei-Shing E.; and Knifton, John F., 5,550,300, Cl. 568-698.000.
Daicel Chemical Industries, Ltd.: *See—*
Inoue, Shohei; Aida, Takuzo; and Akatsuka, Masaki, 5,550,209, Cl. 528-361.000.
Yano, Takashi; and Miura, Hiroyuki, 5,550,279, Cl. 558-277.000.
Daig Corporation: *See—*
Lurie, Keith G.; Benditt, David G.; Shultz, Jeffrey J.; Ockuly, John D.; and Fleischhacker, John J., 5,549,581, Cl. 604-282.000.
Daigle, Kenneth P.; and Harbaugh, Mark E., to Smith & Nephew Richards Inc. Orthopedic prosthesis apparatus with improved taper locking connection. 5,549,703, Cl. 623-23.000.
Daikin Industries, Ltd.: *See—*
Sada, Shinri, 5,548,968, Cl. 62-175.000.
Daimler-Benz Aerospace AG: *See—*
Luger, Peter; Grafwallner, Franz; Peller, Helmuth; Müller, Martin; Malyshev, Valentin V.; Logvinlouk, Viacheslav P.; Ozeretskovsky, Vladmimir S.; and Shengardt, Alexander S., 5,548,962, Cl. 62-50.100.
Daimler-Benz AG: *See—*
Maly-Schreiber, Martha; and Huggins, Robert A., 5,549,981, Cl. 429-7.000.
Daines, Richard J.: *See—*
Adams, Thomas R.; Chambers, Sheryl A.; Daines, Richard J.; Gordon-Kamm, William J.; Kausch, Albert P.; Lemaux, Peggy G.; Mackey, Catherine J.; Mangano, Mary L.; O'Brien, James V.; Rice, Thomas B.; Spencer, T. Michael; Start, William G.; and Willetts, Nancy G., 5,550,318, Cl. 800-205.000.
Dakota Way: *See—*
Weltikol, Larry E.; and Grossman, Paul T., 5,548,860, Cl. 15-50.100.
Dalebout, William T.: *See—*
Olson, Michael L.; and Dalebout, William T., 5,549,533, Cl. 482-137.000.
Dalrymple, David C.: *See—*
Ho, Win-Sow W.; Sartori, Guido; Thaler, Warren A.; and Dalrymple, David C., 5,550,199, Cl. 525-423.000.
Dal Santo, Claudio: *See—*
Cannata, Vincenzo; Merli, Valeriano; and Dal Santo, Claudio, 5,550,287, Cl. 564-153.000.
D'Ambrogio, William J.; McCourt, Karen M.; Phillips, Wayne D.; Saleh, Patricia D.; and Seip, Barry S., to AT&T Corp. Method and apparatus for providing ISDN access. 5,550,834, Cl. 370-110.100.
Dana Corporation: *See—*
Pardee, James A., 5,549,186, Cl. 192-18.00R.
Yarnell, James A., 5,549,188, Cl. 192-53.332.
Zemaitis, Walter A.; Covington, Edward A.; Lanier, Roland V., Jr.; and Hovis, Gary U., 5,549,722, Cl. 55-463.000.
Dana-Farber Cancer Institute: *See—*
Reinherz, Ellis; Sayre, Peter; Chang, Hsiu-Ching; and Richardson, Neil, 5,550,055, Cl. 435-240.200.
Danby, Roger; and Bouchard, Alain, to Huyck Licensco, Inc. Computerized system for simulating paper sheet formation and the appearance of print thereon. 5,551,011, Cl. 395-500.000.
Dancault, Claude: *See—*
Sain, Mohini M.; and Daneault, Claude, 5,549,787, Cl. 162-5.000.
Danek, Daniel J.; Etters, Harry N., Jr.; Genz, Earl J.; Johnston, Brigg A.; Littman, Iran R.; Long, John N.; Meadors, Anthony W.; Mercadante, Nicholas J.; Orrico, Mario M.; Schramme, Stephan H.; and Shedore, Charles J., to Illinois Tool Works Inc. Method and apparatus for an electrical switch assembly. 5,550,342, Cl. 200-448.000.
Dao-Cong, Dong; and Harrison, William A., to Uniroyal Chemical Ltd./Uniroyal Chemical Ltee. Hindered aromatic ester compounds useful as anti-viral agents. 5,550,280, Cl. 558-415.000.
Daoud, Bassel H., to Lucent Technologies Inc. Telecommunicaations equipment terminal. 5,550,916, Cl. 379-399.000.
Darcy, John J.: *See—*
Swain, Eugene A.; and Darcy, John J., 5,549,999, Cl. 430-127.000.
Darredeau, Bernard: *See—*
Rieth, Norbert; Darredeau, Bernard; and Lehman, Jean-Yves, 5,548,975, Cl. 62-646.000.
Darrow, Doug: *See—*
Kocian, Thomas A.; and Darrow, Doug, 5,550,398, Cl. 257-434.000.
Das, Satyendranath. High efficiency satellite multibeam equally loaded transmitters. 5,550,550, Cl. 342-353.000.
Dassanayake, Mahendra S.; and Erion, Jeffrey A., to Ford Motor Company. Reduced package depth low profile headlamp. 5,550,716, Cl. 362-32.000.
Datavision Technologies: *See—*
Slade, Michael G.; and LaBatt, Darren J., 5,550,735, Cl. 364-401.00R.
Dattatraya, Sathaye S.; Raghu, Patil K.; and Vinayak, Paranjape D., to Council of Scientific & Industrial Research. Process for the preparation of uniform ultra thin films of metal oxide, metal chalco-genides and metal halides. 5,549,931, Cl. 427-376.200.
Daugherty, James R.: *See—*
Cavallaro, Eric S.; Adams, Jay J.; Troy, Stanton E.; and Daugherty, James R., 5,549,486, Cl. 439-500.000.

Dautartas, Mindaugas F.; and Wong, Yiu-Huen, to Lucent Technologies Inc. Fabrication process for a self-aligned optical subassembly. 5,550,088, Cl. 437-225.000.
Davidson, James A., to Smith & Nephew Richards, Inc. Mechanical heart with wear resistant coatings of reduced thrombogenicity. 5,549,667, Cl. 623-3.000.
Davidson, Nicholas O.: *See—*
Teng, BaBie; Davidson, Nicholas O.; and Burant, Charles F., 5,550,034, Cl. 435-69.100.
Davidson, Peter S., Jr.; Rafferty, Francis D., Jr.; and Songer, Gail M., to Lexmark International, Inc. Multiple virtual printer network interface. 5,550,957, Cl. 395-114.000.
Davidson Textron Inc.: *See—*
Labrie, Craig B.; McCooey, David R.; and Bemis, Claude E., 5,549,324, Cl. 280-728.300.
Davis, David J., to Winget, Larry J. Plastic air bag cover having an integrated occupant-sensing sensor module. 5,549,323, Cl. 280-728.300.
Davis, Donald M.: *See—*
Anderson, William E.; Davis, Donald M.; and Curzon, Jon L., 5,548,960, Cl. 62-605.000.
Davis, Jimmy D. Recreational practice apparatus for soccer players. 5,549,304, Cl. 273-396.000.
Davis, Joseph & Negley: *See—*
Bhattacharya, Raghu N., 5,550,104, Cl. 505-472.000.
Davis, Leighton I., Jr.; Sieja, Thomas F.; Dage, Gerhard A.; and Matteson, Robert W., to Ford Motor Company. Method and system for modifying a linear control algorithm which controls an automotive HVAC system. 5,549,152, Cl. 165-201.000.
Davis, Lloyd C.: *See—*
Ginder, John M.; Elie, Larry D.; and Davis, Lloyd C., 5,549,837, Cl. 252-62.520.
Davis, Mark E.: *See—*
Matheny, John R.; White, Christopher; and Davis, Mark E., 5,551,055, Cl. 395-882.000.
Davis, Richard F.: *See—*
Chiang, George C.; Davis, Richard F.; and Temeng, Kwaku O., 5,550,238, Cl. 544-211.000.
Davis, Ron: *See—*
Chu, Gilbert; Vollrath, Douglas; and Davis, Ron, 5,549,796, Cl. 204-457.000.
Davis, William C.: *See—*
McGuire, Travis C.; Palmer, Guy H.; Barbet, Anthony F.; and Davis, William C., 5,549,898, Cl. 424-269.100.
Davoust, Paul, to Borland International, Inc. System and methods for intelligent analytical graphing. 5,550,964, Cl. 395-140.000.
Dea, William S.: *See—*
Ische, Kenneth W.; Johnson, Michael W.; Dea, William S.; and Chandler, Thomas D., 5,549,832, Cl. 210-694.000.
Dead Sea Works: *See—*
Zisner, Tuvia; Holdengraber, Curt; and Lampert, Shalom, 5,549,876, Cl. 423-199.000.
Dean, Walter L.: *See—*
Herron, Carlisle M.; and Dean, Walter L., 5,549,791, Cl. 162-157.600.
Deandrea, Giorgio, to Fata Automation S.p.A. Disk-type adjustable supporting device for overhead runways. 5,549,049, Cl. 104-111.000.
Debregeas, Patrice: *See—*
Leduc, Gérard; and Debregeas, Patrice, 5,549,911, Cl. 424-458.000.
de Cambray, Elisabeth L. F. C.; and Vicogne, Laurent M., to Societe Hispano Suiza. Turbojet engine thrust reverser with rear support structure. 5,548,954, Cl. 60-226.200.
DeCarlo, Alfred F., Jr.: *See—*
Noiles, Douglas G.; and DeCarlo, Alfred F., Jr., 5,549,694, Cl. 623-22.000.
Decious, Gaylon M.: *See—*
Pascucci, Gregory A.; Rasmussen, David E.; Decious, Gaylon M.; Garbe, James R.; Hyzer, Susan M.; Woest, Karen L.; Vairavan, Vairavan; Koch, David L.; Gottschalk, Donald A., Jr.; Burkhardt, Dennis E.; Standish, Darrell E.; Madaus, Paul W.; Spacek, Dan J.; Nesler, Clay G.; Stark, James K.; Mageland, Otto M.; Singers, Robert R.; and Wagner, Michael E., 5,550,980, Cl. 395-200.050.
DeCrosta, Michelle A.; and Jagnandan, Indradat, to Schering Corporation. Method for removing residual additives from elastomeric articles. 5,550,211, Cl. 528-480.000.
Deer, Steven C.: *See—*
Berndt, Curtis G.; Van Dyk, Daniel R.; Van Dyk, David A.; Deer, Steven C.; and Kent, Royal A., 5,549,488, Cl. 439-680.000.
Deere & Company: *See—*
Peterson, Rudolph A., Jr., 5,549,084, Cl. 123-179.170.
Schick, Jeffrey C.; and Wisor, Donald R., 5,549,060, Cl. 111-178.000.
De Fazio, Thomas J.: *See—*
Tarter, Fred B.; Greene, Jeffrey M.; De Fazio, Thomas J.; Peck, Jan; Wylie, L. Stephen; Magnotte, Mark M.; Hall, Del; and Tarter, Scott A., 5,550,734, Cl. 364-401.00R.
Defoort, Frank C. M.: *See—*
Verbiest, Willem J. A.; Voeten, Bart F.; Vermeulen, Christophe D. G.; Van der Putten, Frank O.; and Defoort, Frank C. M., 5,550,577, Cl. 348-7.000.
Defossa, Elisabeth: *See—*
Fischer, Gerd; Defossa, Elisabeth; Gerlach, Uwe; Hörlein, Rolf; Krass, Norbert; Lattrell, Rudolf; Stache, Ulrich; Wollmann, Theodor; and Isert, Dieter, 5,550,232, Cl. 540-230.000.
DeGroot, Paul J.: *See—*
Min, Xiaoyi; Mongeon, Luc R.; Mehra, Rahul; Anderson, Kenneth M.; DeGroot, Paul J.; and Hill, Michael R. S., 5,549,642, Cl. 607-5.000.
Degussa Austria GmbH: *See—*
Olip, Vinzenz, 5,549,715, Cl. 8-110.000.
DeJager, Dale S., to Lucent Technologies Inc. End-User communications device with automatic carrier selection capability for intraLATA toll calls. 5,550,910, Cl. 379-220.000.
Dekalb Genetics Corporation: *See—*
Adams, Thomas R.; Chambers, Sheryl A.; Daines, Richard J.; Gordon-Kamm, William J.; Kausch, Albert P.; Lemaux, Peggy G.; Mackey, Catherine J.; Mangano, Mary L.; O'Brien, James V.; Rice, Thomas B.; Spencer, T. Michael; Start, William G.; and Willetts, Nancy G., 5,550,318, Cl. 800-205.000.
Dekkers, Bernadus H. J.; DeMan, Ronald J. J.; Bolder, Antonius J. J.; and Sluyterman, Albertus A. S., to U.S. Phillips Corporation. Deflection unit having a ring with field correction elements, and cathode ray tube provided with said unit. 5,550,522, Cl. 335-213.000.
Delco Electronics Corporation: *See—*
Cavallaro, Eric S.; Adams, Jay J.; Troy, Stanton E.; and Daugherty, James R., 5,549,486, Cl. 439-500.000.
Della Valle, Francesco; Lorenzi, Silvana; and Calderini, Gabriella, to Lifegroup, S.p.A. Water soluble derivatives of biotin and related therapeutical compositions. 5,550,249, Cl. 548-303.700.
De Lombaert, Stéphane; Jeng, Arco Y.; and Ksander, Gary M., to Ciba-Geigy Corporation. Phosphono substituted tetrazole derivatives as ECE inhibitors. 5,550,119, Cl. 514-92.000.
Delp, Gary S.: *See—*
Branstad, Mark W.; Brech, Brad L.; Byrn, Jonathan W.; Delp, Gary S.; and Montalvo, Rafael M., 5,550,806, Cl. 370-17.000.
Delta Systems, Inc.: *See—*
Williams, Thomas D., 5,548,888, Cl. 29-622.000.
DeLustro, Frank: *See—*
Rhee, Woonza; Wallace, Donald G.; Michaels, Alan S.; Burns, Ramon A., Jr.; Fries, Louis; DeLustro, Frank; and Bentz, Hanne, 5,550,188, Cl. 525-54.100.
Deluxe Corporation: *See—*
Pennaz, Thomas J.; and Burban, John H., 5,549,741, Cl. 106-20.00R.
Delvart, Bernard: *See—*
Rouet, Pascal; and Delvart, Bernard, 5,550,523, Cl. 336-221.000.
DeMan, Ronald J. J.: *See—*
Dekkers, Bernadus H. J.; DeMan, Ronald J. J.; Bolder, Antonius J. J.; and Sluyterman, Albertus A. S., 5,550,522, Cl. 335-213.000.
DeMarco, Frank G. System for creating special effect images in the out-of-focus highlights of photographs. 5,550,610, Cl. 354-295.000.
Demoise, Thomas J.: *See—*
Kanjo, Wajih; Smith, Eric; Demoise, Thomas J.; Girotti, Michael; McCabe, Thomas; Fessler, Charles B.; and Natschke, Scott, 5,549,363, Cl. 303-7.000.
De Montarby, Lucy: *See—*
Brion, Jean-Daniel; Chollet, Anne-Marie; Demuynck, Luc; De Montarby, Lucy; Rolland, Yves; Bonnet, Jacqueline; Ghezzi, Pietro; and Fradin, Armel, 5,550,143, Cl. 514-367.000.
Demuynck, Luc: *See—*
Brion, Jean-Daniel; Chollet, Anne-Marie; Demuynck, Luc; De Montarby, Lucy; Rolland, Yves; Bonnet, Jacqueline; Ghezzi, Pietro; and Fradin, Armel, 5,550,143, Cl. 514-367.000.
Denarie, Jean: *See—*
Lerouge, Patrice; Roche, Philippe; Faucher, Catherine; Maillet, Fabienne; Denarie, Jean; Promé, Jean-Claude; and Truchet, Georges, 5,549,718, Cl. 47-57.600.
Deng, Xiaoming, to Ford Motor Company. Integrated depressed park and snow pack mechanism for windshield wiper system. 5,548,863, Cl. 15-250.160.
Dent, Paul W.: *See—*
Bottomley, Gregory E.; and Dent, Paul W., 5,550,809, Cl. 370-18.000.
Desai, Neil P.; Soon-Shiong, Patrick; Sandford, Paul A.; and Heintz, Roswitha E., to VivoRx, Inc. Process for encapsulating biologics using crosslinkable biocompatible encapsulation system. 5,550,178, Cl. 524-56.000.
DesMarais, Thomas A., to Procter & Gamble Company, The. Absorbent foams made from high internal phase emulsions useful for acquiring aqueous fluids. 5,550,167, Cl. 521-50.000.
Desroches, Alan R., to Hewlett-Packard Company. High speed I/O circuit having a small voltage swing and low power dissipation for high I/O count applications. 5,550,496, Cl. 327-108.000.
Detweilwer, Mark B. Methods of surgical mammalian vessel anastomosis. 5,549,122, Cl. 128-898.000.
Deutsche Aerospace AG: *See—*
Ermert, Klaus; Röder, Arno; and Zimmermann, Klaus, 5,550,335, Cl. 181-207.000.
Luger, Peter; Grafwallner, Franz; Peller, Helmuth; Müller, Martin; Malyshev, Valentin V.; Galperin, Sergey B.; and Logvinlouk, Viacheslav P., 5,548,961, Cl. 62-47.100.
Deutsche Thomson-Brandt GmbH: *See—*
Zucker, Friedhelm, 5,550,800, Cl. 369-116.000.
Devices for Vascular Intervention, Inc.: *See—*
McIntyre, John; Brown, Peter S.; and Morse, Stephen A., 5,549,601, Cl. 606-15.000.
Devine, John P.; and Holmquest, John H., to Benchmark Foam, Inc. Expanded polystyrene lightweight fill. 5,549,418, Cl. 405-258.000.

Devito, Gerald M., to Xerox Corporation. Printer with multiple-sized sheets duplex tray assembly. 5,549,291, Cl. 271-182.000.

Dexide, Inc.: *See*—
Freitas, Michael W., 5,549,595, Cl. 606-1.000.
Sharpe, Leslie A.; and Peterson, Francis C., 5,549,623, Cl. 606-171.000.

Dey, Sujit; and Potkonjak, Miodrag, to NEC USA, Inc. High level circuit design synthesis using transformations. 5,550,749, Cl. 364-489.000.

Deych, Ruvin: *See*—
Dobbs, John; and Deych, Ruvin, 5,550,886, Cl. 378-19.000.

D'Heureuse, Walter; and Kusch, Hans-Jürgen, to Heidelberger Druckmaschinen AG. Method and device for conveying flexible printing forms. 5,549,045, Cl. 101-477.000.

Diatschenko, Victor: *See*—
Brown, Winthrop K.; Diatschenko, Victor; and Stoy, James R., 5,549,000, Cl. 73-587.000.

Diaz, Carlos H., to Hewlett-Packard Co. Hot plug tolerant ESD protection for an IC. 5,550,699, Cl. 361-56.000.

Diaz, Jose-Luis: *See*—
Benson, Bradley J.; Chen, Xiannong; Cianciolo, George J.; Diaz, Jose-Luis; Ishaq, Khalid S.; Morris-Natschke, Susan L.; Uhing, Ronald J.; and Wong, Henry, 5,550,132, Cl. 514-269.000.

Diaz, Juan C., to Cordis Corporation. Catheter having a flexible distal tip and method of manufacturing. 5,549,580, Cl. 604-280.000.

Dib, Hani M.: *See*—
Chanda, Rajat; Dib, Hani M.; and Heinsius, Steven T., 5,550,909, Cl. 379-220.000.

Dickens, Duane: *See*—
Samson, Gene; Vegh, Gabriel B.; Dickens, Duane; and Rettke, Herbert G., 5,549,109, Cl. 128-642.000.

Dicklow, M. B.: *See*—
Zuckerman, Bert M.; Dicklow, M. B.; and Marban-Mendoza, Nahum, 5,549,889, Cl. 424-93.430.

Didier OFU Engineering GmbH: *See*—
Windhaus, Ernst; Seiler, Bernard; Meyer, Peter; Erwig, Peter; Mathejka, Horst W.; Patalon, Heinrich; Holz, Peter, deceased, 5,548,882, Cl. 29-336.000.

Didier Royaerts: *See*—
Royaerts, Didier, 5,549,958, Cl. 428-95.000.

Diebold, James L.: *See*—
Iqbal, Mohamed; Diebold, James L.; Siman, Robert; Chatterjee, Sankar; and Kauer, James C., 5,550,262, Cl. 554-57.000.

Dietl, Hans: *See*—
Gammer, Peter; Broeckl, Heinz; and Dietl, Hans, 5,549,712, Cl. 623-60.000.

Digital Call Alert: *See*—
Randolph, Robert H., 5,550,832, Cl. 370-95.300.

Digital Equipment Corporation: *See*—
Razdan, Rahul; Bischoff, Gabriel; and Ulrich, Ernst G., 5,550,760, Cl. 364-578.000.
Rosich, Mitchell N.; Noya, Eric S.; and Arnott, Randy M., 5,551,002, Cl. 395-461.000.
Steely, Simon C., Jr., 5,551,048, Cl. 395-800.000.
Wissell, Daniel, 5,550,729, Cl. 363-65.000.

Dillow, Brian, to Misomex Aktiebolag. Method and apparatus for exposing light sensitive material by means of a copying machine having a vertically movable laser unit. 5,550,574, Cl. 347-262.000.

Dinamec, Naamloze Vennootschap: *See*—
Geeroms, André, 5,550,352, Cl. 219-497.000.

Ding, Shulin; Pallo, Robert J.; Tien, Walter L.; and Olejnik, Orest, to Allergan, Inc. Method for reducing filtrate waste in a manufacturing process of a pharmaceutical product containing benzalkonium chloride. 5,550,163, Cl. 514-643.000.

Dionne, Keith E.: *See*—
Holland, Laura M.; Hammang, Joseph P.; Rudnick, Seth A.; Lysaght, Michael J.; and Dionne, Keith E., 5,550,050, Cl. 435-240.200.

DiPaolo, Nunzio; and Ferguson, Daniel J., to International Business Machines Corporation. Process and apparatus for contamination-free processing of semiconductor parts. 5,550,351, Cl. 219-390.000.

Dixie Septic Tank, Inc.: *See*—
Evans, Kelvin T., 5,549,415, Cl. 405-43.000.

Dobbs, John; and Deych, Ruvin, to Analogic Corporation. X-Ray focal spot movement compensation system. 5,550,886, Cl. 378-19.000.

Dobrin, G. Chris: *See*—
Langdon, Fred M.; and Dobrin, G. Chris, 5,549,777, Cl. 156-244.180.

Doche, Claude, to Commissariat a l'Energie Atomique. Flat box for confining a flat article under a special atmosphere. 5,549,205, Cl. 206-710.000.

Doherty, Annette M.: *See*—
Cody, Wayne L.; Doherty, Annette M.; and Topliss, John G., 5,550,110, Cl. 514-17.000.

Dokainish, Mohan: *See*—
Vesely, Ivan; Krucinski, Slawomir; Campbell, Gordon; Boughner, Derek; and Dokainish, Mohan, 5,549,665, Cl. 623-2.000.

Dolby Laboratories Licensing Corporation: *See*—
Todd, Craig C., 5,550,541, Cl. 341-51.000.

Dolev, Danny; Reischuk, Rüdiger K.; and Strong, Hovey R., to International Business Machines Corporation. Processing system for use as a network node for performing anonymous time synchronization in a network. 5,550,873, Cl. 375-354.000.

Dolezal, Franklin A.: *See*—
Gregoire, Daniel J.; Harvey, Robin J.; Dolezal, Franklin A.; and Williamson, Weldon S., 5,549,795, Cl. 204-164.000.

Dolgas, Patrick A.: *See*—
Beakes, John M.; Clemenz, Gary E.; Dolgas, Patrick A.; Heaton, Mark T.; and Newman, Lawrence E., 5,549,253, Cl. 242-432.300.

Doll, John A. Diagnostic system for electronic automotive system. 5,550,762, Cl. 364-579.000.

Domancic, Tomislav. Fin drive for a watercraft. 5,549,491, Cl. 440-15.000.

Domdey, Horst: *See*—
Duchene, Michael; von Specht, Ulrich; and Domdey, Horst, 5,550,223, Cl. 536-23.700.

Domenichini, Carlo; and Tarchi, Mauro, to Axis USA, Inc. Methods and apparatus for testing armature coils and coil lead connections using resistance measurements. 5,550,477, Cl. 324-545.000.

Domenig, Georg, to Grass America, Inc. Snap-in bracket for mounting a drawer guide in a desk or cabinet. 5,549,376, Cl. 312-334.500.

Donaldson, Jeffrey E.; and Sullivan, Andrew J., to Virtual Industries, Inc. Manhole debris catcher. 5,549,342, Cl. 294-77.000.

Donaldson, William B. M. Method and apparatus for ocular motility testing. 5,550,601, Cl. 351-209.000.

Dong A Electric Parts Co., Ltd.: *See*—
Lee, Woo Y., 5,550,527, Cl. 338-50.000.

Donnelly Corporation: *See*—
Schofield, Kenneth; and Larson, Mark, 5,550,677, Cl. 359-604.000.

Dorier, Regis G.; and Staszak, Daniel, to Eastman Kodak Company. Blank for easily opened box and the box formed from such blank. 5,549,243, Cl. 229-244.000.

Dorner, Friedrich: *See*—
Mundt, Wolfgang; Woehrer, Wilfried; Dorner, Friedrich; and Eibl, Johann, 5,550,051, Cl. 435-240.200.

Dornier GmbH: *See*—
Kurzweil, Peter; Schmid, Barbara; and Schmid, Ottmar, 5,550,706, Cl. 361-502.000.

Dorsey, David A. Water filter for cigarettes. 5,549,124, Cl. 131-337.000.

Doshi, Bharat T.; Ejzak, Richard P.; and Nanda, Sanjiv, to Lucent Technologies Inc. Signaling protocol for a noisy communications channel. 5,550,848, Cl. 371-33.000.

Dosho, Shiro: *See*—
Sakiyama, Shiro; Dosho, Shiro; Maruyama, Masakatsu; Nakahira, Hiroyuki; Shono, Toshiyuki; and Matsuzawa, Akira, 5,550,544, Cl. 341-155.000.

Doucet, Pierre, to Equipement Precibec Inc. Gear reducer. 5,549,523, Cl. 475-298.000.

Dougherty, Thomas J., to Globe-Union Inc. Control and indicator circuit for a dual battery system. 5,549,984, Cl. 429-61.000.

Dove, Daniel J.: *See*—
Albrecht, Alan; Goody, Steven H.; Spratt, Michael P.; Curcio, Joseph A., Jr.; and Dove, Daniel J., 5,550,836, Cl. 370-85.200.

Dover, B. Troy: *See*—
Engel, John F.; Kamienski, Conrad W.; Schwindeman, James A.; Hall, Randy W.; Morrison, Robert C.; and Dover, B. Troy, 5,550,203, Cl. 526-336.000.

Dowler, James A.; Whitaker, Tyson B.; King, Julius D., Jr.; Murayama, Fumitaka; Takizawa, Satoru; Gomi, Masaao; and Itoh, Fumiyoshi, to Cycolor Imaging, Inc. Exposure and pressure applicator device for printing an image. 5,550,627, Cl. 355-326.00M.

Dowling, Thomas W.: *See*—
Sherlock, Mary F.; Averitt, Marnie C.; and Dowling, Thomas W., 5,548,841, Cl. 2-15.000.

Doyle, Thomas R.: *See*—
Cantrill, James E.; and Doyle, Thomas R., 5,550,186, Cl. 525-52.000.

Dr. Ing. h.c.F. Porsche AG: *See*—
Seidel, Willi; and Petersmann, Joseph, 5,549,519, Cl. 477-125.000.

Dr. Johannes Heidenhain GmbH: *See*—
Ernst, Alfons, 5,548,902, Cl. 33-561.000.

Drabbels, Bastiaan W. J. E. J.: *See*—
van den Nieuwelaar, Adrianus J.; Janssen, Petrus C. M.; Teurlinx, Engelbert J. J.; van Harskamp, Cornelius D.; and Drabbels, Bastiaan W. J. E. J., 5,549,521, Cl. 452-118.000.

Drake, Samuel; Griefer, Allan D.; Powers, John T., Jr.; and Thomas, John G., to International Business Machines Corporation. Automated presentation capture, storage and playback system. 5,550,966, Cl. 395-154.000.

Drescher, Klaus: *See*—
Holzer, Joseph C.; Korb, Harold W.; and Drescher, Klaus, 5,550,374, Cl. 250-339.070.

Drescher-Krasicka, Ewa, to United States of America, Commerce. Method and apparatus for visualization of internal stresses in solid non-transparent materials by ultrasonic techniques and ultrasonic computer tomography of stress. 5,549,003, Cl. 73-606.000.

Dresser-Rand Company: *See*—
Morrison, Darrell R.; Nessa, James L.; and McClurg, James J., 5,550,417, Cl. 310-183.000.

Drocco, Luca; and Drocco, Mario, to Dromont Meccanica S.r.l. Metering valve for automatic fluid metering devices, particularly for industrial ink and paint. 5,549,136, Cl. 137-872.000.

Drocco, Mario: *See*—
Drocco, Luca; and Drocco, Mario, 5,549,136, Cl. 137-872.000.

Dromont Meccanica S.r.l.: *See*—
Drocco, Luca; and Drocco, Mario, 5,549,136, Cl. 137-872.000.

Drouin, David M., to Syquest Technology, Inc. Method for applying an adaptive feed-forward algorithm as a frequency selective filter in a closed loop disk drive servo system in order to compensate for periodic perturbations which otherwise appear in the servo system position error signal. 5,550,685, Cl. 360-77.080.

Drozt, Peter M.; Rozenstrauch, Alexander; and Lo, Bin. Method for enhancing communication acces· in a radio communication system. 5,551,062, Cl. 455-54.200.

Du Pont de Nemours, E. I., and Company: *See*—
Chiang, George C.; Davis, Richard F.; and Temeng, Kwaku O., 5,550,238, Cl. 544-211.000.
Halling, Robert A., 5,550,184, Cl. 524-837.000.
Hsu, Che-Hsiung; and Sweeny, Wilfred, 5,549,972, Cl. 428-398.000.
Pittman, Gary M.; Senior, Kenneth A.; Strunk, John N.; and Thondukolam, Krishnan R., 5,549,276, Cl. 251-214.000.
Wiseman, Timothy R., Sr., 5,548,842, Cl. 2-69.000.

Duault, Maurice, to International Business Machines Corporation. Method of transferring structured data of constant bit rate traffic in an ATM network. 5,550,819, Cl. 370-60.100.

Dubé, Ghyslain; Dupuis, Claude; Langlais, Joseph; Lavoie, Serge; Rompre, Stephane; Trottier, Sylvain; and Turcotte, Gilles, to Alcan International Limited. Production of granules of reactive metals, for example magnesium and magnesium alloy. 5,549,732, Cl. 75-331.000.

DuBois, Donna A.: *See*—
Hoxmeier, Ronald J.; Job, Robert C.; Spence, Bridget A.; and DuBois, Donna A., 5,550,194, Cl. 525-250.000.

Dubuit, Jean-Louis, to Societe d'Exploitation des Machines Dubuit. Loader for machine for printing objects from a stack. 5,549,444, Cl. 414-796.700.

Ducharme, Yves; Gauthier, Jacques Y.; Prasit, Petpiboon; Leblanc, Yves; Wang, Zhaoyin; Leger, Serge; and Therien, Michel, to Merck Frosst Canada Inc. Phenyl heterocycles as cox-2 inhibitors. 5,550,142, Cl. 514-365.000.

Duchene, Michael; von Specht, Ulrich; and Domdey, Horst, to Behringwerke Aktiengesellschaft. Lipoprotein I (ompi) of pseudomonas aeruginosa. 5,550,223, Cl. 536-23.700.

Duel, Susan B.: *See*—
Mazer, Terrence B.; Walton, Joseph E.; Geckle, Ronita K.; Piontek, Carl J.; Duel, Susan B.; Daab-Krzykowski, Andre; Joseph, Robert L.; Pierson, William G.; Loughrin, Thomas D.; and Osip, Thomas W., 5,549,550, Cl. 604-83.000.

Duerr, Walter; and Kirsch, Axel, to Eberle Medizintechnische Elements GmbH; and IMZ Fertigungs-und Vertriebsgesellschaft fuer dentale Technologie mbH. Enossal single-tooth implant. 5,549,475, Cl. 433-173.000.

Dufilie, Pierre, to Thomson-CSF. Unidirectional wave transducer. 5,550,793, Cl. 367-164.000.

Duggan, George L.; and Goodman, David A., to Osram Sylvania Inc. High pressure arc discharge lamp having barium hafnate impregnated electrodes. 5,550,431, Cl. 313-630.000.

Duke University: *See*—
Stetten, George D., 5,550,933, Cl. 382-199.000.

DuLac, Keith B., to AT&T Global Information Solutions Company; Hyundai Electronics America; and Symbios Logic Inc. Data storage device matrix architecture. 5,550,986, Cl. 395-280.000.

Duncan, John K.: *See*—
Stumphauzer, William C.; Groth, Hugh F.; and Duncan, John K., 5,549,037, Cl. 99-323.100.

Duncan, John L.: *See*—
Brauer, Michael L.; Reed, Paul A.; and Duncan, John L., 5,550,774, Cl. 365-189.020.

Dunham, Dennis N.: *See*—
Barnes, Donald W., 5,550,350, Cl. 219-213.000.

Dunkle, Gary L., to Harper Truck, Inc. Foldable hand truck apparatus. 5,549,317, Cl. 280-652.000.

Dunn, James M.: *See*—
Gallie, Brenda L.; Dunn, James M.; and Stevens, John K., 5,550,020, Cl. 435-6.000.

Dunn, Steven E.: *See*—
Winston, Anthony E.; Dunn, Steven E.; Cala, Francis R.; Vinci, Alfredo; Lajoie, M. Stephen; and Jorgensen, Robert C., 5,549,761, Cl. 134-40.000.

Dunn, Susan E.: *See*—
Appel, James J.; and Dunn, Susan E., 5,550,668, Cl. 359-204.000.

DuPont (U.K.) Limited: *See*—
Wade, John R.; Pratt, Michael J.; Johnstone, Robert A. W.; and Smith, David I., 5,550,001, Cl. 430-157.000.

Dupuis, Claude: *See*—
Dubé, Ghyslain; Dupuis, Claude; Langlais, Joseph; Lavoie, Serge; Rompre, Stephane; Trottier, Sylvain; and Turcotte, Gilles, 5,549,732, Cl. 75-331.000.

Durand, Jacques: *See*—
Brunner, Hans; McCandless, Timothy P.; Sparks, Randall B.; Cuthbertson, Robert J.; Durand, Jacques; and Fogel, Steven M., 5,550,971, Cl. 395-161.000.

Durham, Christopher M.; Kodali, Visweswara R.; and Shah, Salim A., to International Business Machines Corporation. Single-rail self-resetting logic circuitry. 5,550,490, Cl. 326-98.000.

Duri, Sandro: *See*—
Bongini, Dino; Duri, Sandro; and Stopponi, Andrea, 5,548,978, Cl. 68-17.00R.

Dürr, Walter; and Kirsch, Axel, to Durr, Walter; and Kirsch, Axel. Implant with pressing surface. 5,549,677, Cl. 623-16.000.

Dusek, Dianna B.: *See*—
Scheibelhoffer, Anthony S.; Berlin, Michael J.; Sahni, Atam P.; Dusek, Dianna B.; and Hart, Donald P., 5,549,929, Cl. 427-282.000.

Dussinger, Thomas E.: *See*—
Smart, David C.; and Dussinger, Thomas E., 5,550,608, Cl. 354-174.000.

Dutia, Minu D.: *See*—
Powell, Dennis; Paul, Rolf; Hallett, William A.; Berger, Dan M.; and Dutia, Minu D., 5,550,149, Cl. 514-416.000.

Dutta, Niloy K.; Fischer, Russell J.; Hunt, Neil E. J.; Passlack, Matthias; Schubert, Erdmann F.; and Zydzik, George J., to Lucent Technologies Inc. Gallium oxide coatings for optoelectronic devices using electron beam evaporation of a high purity single crystal $Gd_3Ga_5O_{12}$ source.. 5,550,089, Cl. 437-225.000.

Dvukhsherstnov, Sergei D.: *See*—
Volkonsky, Viktor A.; Dvukhsherstnov, Sergei D.; and Chernyakov, Sergei V., 5,549,915, Cl. 424-490.000.

Dworak, Adam J.; and Hartman, Donn A., to Cloud Corporation. Compression filler for aerateable powders. 5,549,144, Cl. 141-146.000.

Dwyer, Aaron P.: *See*—
Dwyer, Benjamin T.; Dwyer, Karen K.; and Dwyer, Aaron P., 5,549,438, Cl. 414-559.000.

Dwyer, Benjamin T.; Dwyer, Karen K.; and Dwyer, Aaron P. Universal covered trailer. 5,549,438, Cl. 414-559.000.

Dwyer, Karen K.: *See*—
Dwyer, Benjamin T.; Dwyer, Karen K.; and Dwyer, Aaron P., 5,549,438, Cl. 414-559.000.

Dynamic Engineering, Inc.: *See*—
Reed, Wilmer H., III, 5,549,260, Cl. 244-195.000.

E. D. Bullard Company: *See*—
Crump, Kevin E.; Gard, Jimmie D.; and Oleson, Richard A., 5,549,104, Cl. 128-201.250.

E. Khashoggi Industries: *See*—
Andersen, Per J.; and Hodson, Simon K., 5,549,859, Cl. 264-102.000.

E. R. Squibb & Sons, Inc.: *See*—
Johnsen, Kenneth A., 5,549,588, Cl. 604-339.000.
Misra, Raj N., 5,550,248, Cl. 548-236.000.

Eales, Ian: *See*—
Martin, B. Morgan; and Eales, Ian, 5,550,755, Cl. 364-514.00R.

Earle, Stephen R., to WABCO Automotive U.K. Limited. High speed vacuum pump with reduced exhaust noise. 5,549,454, Cl. 417-312.000.

Eastman Kodak Company: *See*—
Bober, Thomas W.; Pearl, Terry W.; Vacco, Dominick; and Yeaw, David C., 5,549,820, Cl. 210-199.000.
Bredoux, François J.; Begel, Yannick; and Freisz, Henri, 5,550,010, Cl. 430-393.000.
Bringley, Joseph F.; Smith, Kyle E.; and Lambert, Patrick M., 5,549,844, Cl. 252-301.40H.
Chen, Benjamin T. K.; and Lok, Roger, 5,550,013, Cl. 430-567.000.
Chow, Lu, 5,549,879, Cl. 423-491.000.
Dorier, Regis G.; and Staszak, Daniel, 5,549,243, Cl. 229-244.000.
Erdem, Arif T.; Sezan, Muhammed I.; and Ozkan, Mehmet K., 5,550,935, Cl. 382-260.000.
Fant, Alfred B.; Wang, Yongcai; Smith, Dennis E.; Kestner, Melvin M.; and Visconte, Gary W., 5,550,011, Cl. 430-496.000.
Greene, William J.; Matoushek, Robert J.; Gorman, Harry A.; and Weigand, John G., 5,549,864, Cl. 264-280.000.
Haye, Shirleyanne E.; and Reyes, Mayra B., 5,550,009, Cl. 430-393.000.
Jansen, Wilbert F., Jr.; and Chernobilsky, Ivsey N., 5,550,606, Cl. 354-94.000.
Koren, Norman L., 5,550,683, Cl. 360-46.000.
Moore, Christopher P.; Wear, Trevor J.; Beer, Paul D.; and Goulden, Alistair J., 5,550,268, Cl. 556-145.000.
Reinke, Stephen M., 5,549,441, Cl. 414-744.600.
Smart, David C.; and Dussinger, Thomas E., 5,550,608, Cl. 354-174.000.
Smith, Kyle E.; Bringley, Joseph F.; Lambert, Patrick M.; Trauernicht, David P.; Bryan, Philip S.; Hoderlein, Paul M.; and Hyde, Andrea M., 5,549,843, Cl. 252-301.40H.
Stephany, Thomas M., 5,550,609, Cl. 354-275.000.
Tang, Ching W.; and Hseih, Biay C., 5,550,066, Cl. 437-40.000.
Tang, Manh; Kordovich, Vlade J.; and Maslanka, Daniel C., 5,549,400, Cl. 400-236.000.
Tixier, Jean P.; and Legrand, Annie F., 5,549,846, Cl. 252-315.010.
Young, David J., 5,549,845, Cl. 252-312.000.

Easton, Paul D.: *See*—
John, Erwin R.; and Easton, Paul D., 5,549,118, Cl. 128-731.000.

Eaton Corporation: *See*—
Kyrtsos, Christos T., 5,550,743, Cl. 364-449.000.
Nadolski, Gregory L.; and Satula, Keith O., 5,551,053, Cl. 395-829.000.

Eaves, Philip: *See*—
Searle, Leanne; Astbury, Richard; and Eaves, Philip, 5,549,508, Cl. 451-141.000.

EBARA Corporation: *See*—
Kamiya, Ichiro; Shinjo, Ryoichi; Murakami, Takeshi; Nishioka, Yukiko; and Harada, Minoru, 5,549,874, Cl. 422-186.040.

Ebata, Tokihide: *See*—
Kurata, Mitsuru; Kanemitsu, Shinji; Nomura, Akihiro; Ebata, Tokihide; Takeda, Akio; Miyauchi, Yasuo; Uchida, Haruo; and Onoda, Shigeyoshi, 5,550,570, Cl. 347-49.000.

Eberle Medizintechnische Elements GmbH: *See*—

Duerr, Walter; and Kirsch, Axel, 5,549,475, Cl. 433-173.000.

Eberlein, Timothy J.; Peoples, George E.; Yoshino, Ichiro; and Goedegebuure, Peter, to Brigham and Women's Hospital. Isolated antigenic oncogene peptide fragments and uses. 5,550,214, Cl. 530-328.000.

Ebert, Charles D.; Heiber, Werner; Good, William R.; and Venkateshwaran, Srinivasan, to TheraTech, Inc. Transdermal delivery system with adhesive overlay and peel seal disc. 5,549,909, Cl. 424-447.000.

Ebihara, Yukihiko: *See*—
Hori, Mitsuaki; Ebihara, Yukihiko; and Wadano, Katsumi, 5,549,336, Cl. 285-333.000.

Eckert, Alfred: *See*—
Hoffmann, Michael; and Eckert, Alfred, 5,550,739, Cl. 364-424.050.

Eckl, Albrecht: *See*—
Rump, Siegfried; Steiner, Manfred; Brugger, Franz; Klarer, Martin; Knoff, Bernd; and Eckl, Albrecht, 5,549,369, Cl. 303-125.000.

Eclipse Combustion, Inc.: *See*—
Wild, Gary G.; and Eley, John D., 5,549,469, Cl. 431-75.000.

Edem, Brian C.: *See*—
Worsley, Debra J.; Rangan, Geetha N. K.; Edem, Brian C.; and Evans, Michael S., 5,550,802, Cl. 370-13.000.

Edmonds, John M.: *See*—
Monogioudis, Pantelis N.; and Edmonds, John M., 5,550,810, Cl. 370-18.000.

EDO Western Corp.: *See*—
Crandall, F. Anthony; Jorgensen, Kevin V.; Grose, Brian L.; and Tyler, Monroe, 5,550,792, Cl. 367-155.000.

Edwards, David A.: *See*—
Long, James E.; Gang, Joseph M., Jr.; Bedard, Charles J.; Baird, Randall B.; and Edwards, David A., 5,550,982, Cl. 395-200.130.

Edwards, Peter P.; Hu, Shu-Fen; Liu, Ru-Shi; and Jefferson, David A., to BICC Public Limited Comapany. Superconducting compositions. 5,550,105, Cl. 505-120.000.

Edwards, Stuart D.; Kordis, Thomas F.; and Swanson, David K., to EP Technologies, Inc. Cardiac mapping and ablation systems. 5,549,108, Cl. 128-642.000.

Edwards, Stuart D.: *See*—
Lundquist, Ingemar H.; Edwards, Stuart D.; Sharkey, Hugh R.; Lax, Ronald G.; Baker, James A., Jr.; and Sommer, Phillip R., 5,549,644, Cl. 604-22.000.

Effervescent Products, LLC: *See*—
Stumphauzer, William C.; Groth, Hugh F.; and Duncan, John K., 5,549,037, Cl. 99-323.100.

Ege, Hans-Jürgen; Horsak, Günther; and Wiggermann, Peter, to ZF Friedrichshafen AG. Process for driving electric, current-controlled actuators. 5,550,449, Cl. 318-632.000.

Egelhof, Dieter: *See*—
Begemann, Ulrich; Heinzmann, Helmut; Ruf, Wolfgang; Egelhof, Dieter; and Kinzler, Gernot, 5,549,792, Cl. 162-216.000.

Eguchi, Hiroshi: *See*—
Aso, Kenichi; Sato, Hideaki; Eguchi, Hiroshi; Kafuku, Komei; and Takiguchi, Ryohei, 5,550,098, Cl. 503-227.000.

Ehlig, Peter N.; Boutaud, Frederic; and Hollander, James F., to Texas Instruments Incorporated. Data processor with sets of two registers where both registers receive identical information and when context changes in one register the other register remains unchanged. 5,550,993, Cl. 395-375.000.

Ehlig, Peter N.; and Swoboda, Gary L., to Texas Instruments Incorporated. System and method using synchronized processors to perform real time internal monitoring of a data processing device. 5,551,050, Cl. 395-800.000.

Ehmann, Charles M.: *See*—
Goldsmith, Eric S.; Klingberg, Jeffrey W.; Bane, Ronald L.; and Ehmann, Charles M., 5,551,068, Cl. 455-89.000.

Ehrlich, Karl F. Method and apparatus for in Situ water purification including sludge reduction within water bodies by biofiltration and for hypolimnetic aeration of lakes. 5,549,828, Cl. 210-602.000.

Ehrnsberger, Manfred; Mayer, Dieter; and Siegner, Helge, to Suspa Compart Aktiengesellschaft. Frictional damper, in particular for spinner-type washing machines. 5,549,182, Cl. 188-129.000.

Eibl, Johann; Pichler, Ludwig; and Schwarz, Hans P., to Immuno Aktiengesellschaft. Use of protein C in the treatment of purpura fulminans. 5,549,893, Cl. 424-94.640.

Eibl, Johann: *See*—
Mundt, Wolfgang; Woehrer, Wilfried; Dorner, Friedrich; and Eibl, Johann, 5,550,051, Cl. 435-240.200.

Eimer, John: *See*—
Cowan, Kevin; Eimer, John; and Turbett, James, 5,549,200, Cl. 206-362.000.

Einloft, Sandra: *See*—
Chauvin, Yves; Einloft, Sandra; and Olivier, Helene, 5,550,304, Cl. 585-512.000.
Chauvin, Yves; Einloft, Sandra; and Olivier, Helene, 5,550,306, Cl. 585-514.000.

Eisen- und Drahtwerk Erlau Aktiengesellschaft: *See*—
Müller, Anton, 5,549,358, Cl. 297-452.640.

Eitrheim, John K., to Cyrix Corporation. Single delay line adjustable duty cycle clock generator. 5,550,499, Cl. 327-175.000.

Ejzak, Richard P.: *See*—
Doshi, Bharat T.; Ejzak, Richard P.; and Nanda, Sanjiv, 5,550,848, Cl. 371-33.000.

El Mos Electronik In Mos Technologie GmbH: *See*—
Roth, Walter, 5,550,069, Cl. 437-41.000.

Elco, Richard A.; and Williams, Curt A., to Berg Technology, Inc. Zero insertion force connector system for a flexible circuit. 5,549,479, Cl. 439-67.000.

Elderstig, Håkan; and Vieider, Christian, to Stiftelsen Institutet For Mikroelektronik. Unitary, double-ended connector for optical fibres. 5,550,943, Cl. 385-71.000.

Eldridge, George L.: *See*—
Barnes, Eric S.; Eldridge, George L.; Nguyen, Uoc; Shah, Ajit; and Weir, Ronald E., 5,551,052, Cl. 395-800.000.

Electro-Pro, Inc.: *See*—
Skell, Daniel G.; and Skell, Eric D., 5,550,369, Cl. 250-222.100.

Electronics Diversified, Inc.: *See*—
Allison, Greg R.; Christensen, James D.; and Folsom, Thomas L., 5,550,440, Cl. 315-294.000.

Electroplating Engineers of Japan, Limited: *See*—
Kitada, Katsutsugu; and Yarita, Soumei, 5,549,738, Cl. 106-1.210.

Eley, John D.: *See*—
Wild, Gary G.; and Eley, John D., 5,549,469, Cl. 431-75.000.

Elf Aquitaine: *See*—
Pauchon, Christian; Ferschneider, Gilles; and Ferre, Daniel, 5,550,761, Cl. 364-578.000.

Elgarhy, Yassin M.; and Knowlton, Barry R., to Trichromatic Carpet Inc. Polyamide materials with durable stain resistance. 5,549,963, Cl. 428-224.000.

Eli Lilly and Company: *See*—
Amos, Jane G.; Heath, Perry C.; Prather, Douglas E.; and Toth, John E., 5,550,231, Cl. 540-205.000.
Audia, James E.; and Neubauer, Blake L., 5,550,134, Cl. 514-284.000.
Cullinan, George J., 5,550,123, Cl. 514-214.000.
Fontana, Steven A., 5,550,150, Cl. 514-443.000.
Fontana, Steven A., 5,550,164, Cl. 514-648.000.
Grinnell, Brian W., 5,550,036, Cl. 435-69.100.
Jakubowski, Joseph A.; Palkowitz, Alan D.; and Sigmund, Sandra K., 5,550,118, Cl. 514-89.000.
Townsend, Michael W., 5,549,574, Cl. 604-232.000.

Eli Lilly Company: *See*—
Cullinan, George J., 5,550,151, Cl. 514-445.000.

Elias, Allen M.; Frederick, Warren P.; and Kramer, David E., to Abbott Laboratories. Valved intravenous fluid line infusion device. 5,549,566, Cl. 604-167.000.

Elie, Larry D.: *See*—
Ginder, John M.; Elie, Larry D.; and Davis, Lloyd C., 5,549,837, Cl. 252-62.520.

Ellard, Gregory S.: *See*—
Blaker, David M.; Ellard, Gregory S.; and Mobin, Mohammad S., 5,550,870, Cl. 375-341.000.

Eller, Marlin: *See*—
Berman, Eric R.; Abdala, Luis F. T.; and Eller, Marlin, 5,550,930, Cl. 382-187.000.

Elley, Dayton: *See*—
Matsuo, Giichi; Sakai, Akira; Rains, Jeral; and Elley, Dayton, 5,548,986, Cl. 72-204.000.

Ellingsen, Svein, to PACCAR Inc. Combined vehicle suspension torque rod and sway bar. 5,549,320, Cl. 280-689.000.

Ellis, Caryl: *See*—
Moore, Glenn; and Ellis, Caryl, 5,549,540, Cl. 494-20.000.

Ellis, Denis, to Analog Devices, Inc. Charge pump converter structure. 5,550,728, Cl. 363-60.000.

Ellis, Martin K.; Lindstedt, Sven T.; Lock, Edward A.; Markstedt, Maj E. H.; Mutter, Linda C.; and Prisbylla, Michael P., to Zeneca Limited. Pharmaceutical compositions for the treatment of hereditary tyosinemia type I. 5,550,165, Cl. 514-676.000.

Ellis, Paul E., Jr.: *See*—
Bhinde, Manoj V.; Lyons, James E.; and Ellis, Paul E., Jr., 5,550,301, Cl. 568-835.000.

Ellis, Richard R.: *See*—
Bohnert, Larry J.; Ellis, Richard R.; and Marchini, Michael G., 5,550,341, Cl. 200-296.000.

Elpatronic AG: *See*—
Meier, Markus; Urech, Werner; and Wueger, Karl, 5,550,345, Cl. 219-121.630.

Elsasser, A. Fred, to Henkel Corporation. Process for the removal of dissolved metallic catalyst from ester products. 5,550,264, Cl. 554-176.000.

Elsik, Cutis M.; and Beggs, Ronald L., to Condea Vista Company. "Alumina thickened latex formulations". 5,550,180, Cl. 524-430.000.

Elsner, Norbert B.; and Ghamaty, Saeid, to Hi-Z Corporation. Superlattice quantum well material. 5,550,387, Cl. 257-15.000.

Ely, Richard W.; Gilson, James P.; and Pawelski, Cathy, to Aqua tec Coatings Corporation. Masking composition for protecting vehicle surface from overspray. 5,550,182, Cl. 524-557.000.

Ema, Taiji; and Ikeda, Toshimi, to Fujitsu Limited. Semiconductor device and process of producing same. 5,550,395, Cl. 257-306.000.

Emco Wheaton, Inc.: *See*—
Butterfield, Eric J.; Cockram, George R.; Harmon, Stewart M.; and Talbot, Roy, 5,549,132, Cl. 137-270.000.

Emerson Electric Co.: *See*—
Schroeder, James D.; and Hendrix, George E., 5,549,507, Cl. 451-121.000.

Emhart Glass Machinery Investments Inc.: *See*—
Meyer, Willi, 5,549,727, Cl. 65-225.000.

Emi, Shigenori: *See*—
Suzuki, Yuzuru; Takii, Yukio; Yamamoto, Kazumi; Nishiya, Yoshiaki; Sogabe, Atsushi; Sogabe, Yukihiro; and Emi, Shigenori, 5,550,046, Cl. 435-202.000.

Eminger, Harry E., to Crosby Valve & Gage Company. Changeover valve system. 5,549,138, Cl. 137-876.000.

Emory University: *See*—
Atalla, Rajai H.; Weinstock, Ira A.; Hill, Craig L.; and Reiner, Richard S., 5,549,789, Cl. 162-65.000.
Compans, Richard W., 5,550,017, Cl. 435-5.000.

Enact Health Management Systems: *See*—
Tacklind, Christopher A.; Sanders, Matthew H.; and Walne, Geoffrey B., 5,549,117, Cl. 128-716.000.

Endgate Corporation: *See*—
Mohwinkel, Clifford A., 5,550,518, Cl. 333-33.000.

Endo, Yasushi: *See*—
Kawamata, Toshio; Hayakawa, Satoru; and Endo, Yasushi, 5,549,955, Cl. 428-65.300.

Endorecherche Inc.: *See*—
Labrie, Fernand, 5,550,107, Cl. 514-11.000.

Endress + Hauser, Inc.: *See*—
Perdue, Kenneth L., 5,550,537, Cl. 340-870.010.

Endrigo, David A. Deflector insert for air filters. 5,549,085, Cl. 123-184.210.

Energy Innovations, Inc.: *See*—
Gourdine, Meredith C., 5,548,907, Cl. 34-448.000.

Engbersen, Gerhard; Greiner, Heinz; and Schorscher, Peter, to Hydrel AG. Linear antifriction bearing and cage therefor. 5,549,391, Cl. 384-51.000.

Engel, John F.; Kamienski, Conrad W.; Schwindeman, James A.; Hall, Randy W.; Morrison, Robert C.; and Dover, B. Troy, to FMC Corporation. Functionalized amine initiators for anionic polymerization. 5,550,203, Cl. 526-336.000.

Engel Maschinenbau Gesselschaft mbH: *See*—
Steinbichler, Georg, 5,550,744, Cl. 364-476.010.

Enichem Synthesis S.p.A.: *See*—
Neri, Carlo; and Landoni, Gianluigi, 5,550,207, Cl. 528-287.000.

Enidine, Inc.: *See*—
Collins, Michael J., 5,549,285, Cl. 267-148.000.

Enomoto, Kazuhisa; Yamazaki, Takao; Azuma, Taiki; and Tarutani, Shinji, to Pioneer Electronic Corporation. Linear arrayed disc changer with shiftable guide projections. 5,550,801, Cl. 369-178.000.

Ensci Inc: *See*—
Clough, Thomas J.; Grosvenor, Victor L.; and Pinsky, Naum, 5,549,990, Cl. 429-204.000.

Ensor, Myra L.; Grewe, Anthony J.; and Singer, Howard M., to Lucent Technologies Inc. Apparatus and method for routing messages in a telephone message center. 5,550,900, Cl. 379-67.000.

Entre-Prises: *See*—
Aulagner, Michel; and Esteveny, Serge, 5,549,195, Cl. 198-850.000.

Environmental Systems Products, Inc.: *See*—
Tedeschi, Rinaldo, 5,550,737, Cl. 364-424.030.

EOLAS-The Irish Science & Technology Agency: *See*—
Reinhardt, Robert C.; and Humphreys, Richard M., 5,549,421, Cl. 406-3.000.

EP Technologies, Inc.: *See*—
Edwards, Stuart D.; Kordis, Thomas F.; and Swanson, David K., 5,549,108, Cl. 128-642.000.
Kordis, Thomas F.; Swanson, David K.; Jackson, Jerome; and Spraker, Terry E., 5,549,661, Cl. 607-99.000.

Eppstein, Deborah A.; Felgner, Philip L.; Gadek, Thomas R.; Jones, Gordon H.; and Roman, Richard B., to Syntex (U.S.A.) Inc. N-(1,(1-1)-dialkyloxy)-and N-(1,(1-1)-dialkenyloxy alk-1-yl-N-N,N-tetrasubstituted ammonium lipids and uses therefor. 5,550,289, Cl. 564-293.000.

Epstein, Norman; and Zelicof, Steven B. Prosthetic knee. 5,549,689, Cl. 623-20.000.

Equipement Precibec Inc.: *See*—
Doucet, Pierre, 5,549,523, Cl. 475-298.000.

Erdem, Arif T.; Sezan, Muhammed I.; and Ozkan, Mehmet K., to Eastman Kodak Company. Method for multiframe Wiener restoration of noisy and blurred image sequences. 5,550,935, Cl. 382-260.000.

Erdogan, Turan; and Mizrahi, Victor, to Lucent Technologies Inc. Method for forming, in optical media, refractive index perturbations having reduced birefringence. 5,550,654, Cl. 359-3.000.

Ergonomix Armdec Pty. Ltd.: *See*—
Grout, John E., 5,549,053, Cl. 108-147.000.

Eric Cambridge Co., Ltd.: *See*—
Chen, Chih-Chinh, 5,549,484, Cl. 439-417.000.

Erickson, Donald J., to Medtronic, Inc. Method and apparatus for synchronized treatment of obstructive sleep apnea. 5,549,655, Cl. 607-42.000.

Ericsson GE Mobile Communications, Inc.: *See*—
Bottomley, Gregory E.; and Dent, Paul W., 5,550,809, Cl. 370-18.000.

Ericsson Inc.: *See*—
Sammarco, Anthony J., 5,551,073, Cl. 455-89.000.

Erion, Jeffrey A.: *See*—
Dassanayake, Mahendra S.; and Erion, Jeffrey A., 5,550,716, Cl. 362-32.000.

Erkocevic, Nedim, to AT&T Global Information Solutions Company. Antenna apparatus. 5,550,554, Cl. 343-828.000.

Ernert, Klaus; Röder, Arno; and Zimmermann, Klaus, to Deutsche Aerospace AG. Resonance absorber. 5,550,335, Cl. 181-207.000.

Ernst, Alfons, to Dr. Johannes Heidenhain GmbH. Multi-coordinate probe. 5,548,902, Cl. 33-561.000.

Errera, Tracy C.: *See*—
Cholakon, Rifka; Errera, Tracy C.; and Zeno, Joseph R., 5,549,440, Cl. 414-723.000.

Errico, Joseph P.; Errico, Thomas J.; and Ralph, James D., to Fastenetix, L.L.C. Advanced polyaxial locking screw and coupling element device for use with rod fixation apparatus. 5,549,608, Cl. 606-61.000.

Errico, Thomas J.: *See*—
Errico, Joseph P.; Errico, Thomas J.; and Ralph, James D., 5,549,608, Cl. 606-61.000.

Erwig, Peter: *See*—
Windhaus, Ernst; Seiler, Bernard; Meyer, Peter; Erwig, Peter; Mathejka, Horst W.; Patalon, Heinrich; Holz, Peter, deceased, 5,548,882, Cl. 29-336.000.

ESAB Group, Inc., The: *See*—
Winterfeldt, Duane N., 5,550,344, Cl. 219-121.390.

Eschbach, Florence O.: *See*—
Reichert, Veronica R.; Venugopal, Ganesh; and Eschbach, Florence O., 5,549,988, Cl. 429-192.000.

Esec Sempac S.A.: *See*—
Nicklaus, Karl, 5,550,402, Cl. 257-669.000.

Eshel, Uzi, to Argomed Ltd. Thermal treatment apparatus. 5,549,559, Cl. 604-113.000.

Essilor International: *See*—
Nauche, Michel; and Guillermin, Laurent, 5,549,503, Cl. 451-11.000.

Esteveny, Serge: *See*—
Aulagner, Michel; and Esteveny, Serge, 5,549,195, Cl. 198-850.000.

Etablissements Proteor: *See*—
Vera, Bernard; and Pierron, Olivier, 5,549,710, Cl. 623-38.000.

Ethicon, Inc.: *See*—
Brunken, Dieter, 5,549,594, Cl. 606-1.000.
Regula, Donald W.; Cooper, Kevin; Bregen, Michael F.; Huxel, Shawn T.; and Rosenman, Daniel C., 5,550,172, Cl. 523-118.000.

Etoh, Yoshihiko: *See*—
Matsushima, Asao; Ooshiba, Takeo; Etoh, Yoshihiko; Kinoshita, Akira; Suzuki, Tomoko; and Sakimura, Tomoo, 5,549,997, Cl. 430-59.000.

Etters, Harry N., Jr.: *See*—
Danek, Daniel J.; Etters, Harry N., Jr.; Genz, Earl J.; Johnston, Brigg A.; Littman, Iran R.; Long, John N.; Meadors, Anthony W.; Mercadante, Nicholas J.; Orrico, Mario M.; Schramme, Stephan H.; and Shedore, Charles J., 5,550,342, Cl. 200-448.000.

Etzbach, Karl-Heinz: *See*—
Beckmann, Stefan; Etzbach, Karl-Heinz; Siemensmeyer, Karl; and Sens, Ruediger, 5,549,853, Cl. 252-582.000.

Euro-Celtique, S.A.: *See*—
Oshlack, Benjamin; Chasin, Mark; Minogue, John J.; and Kaiko, Robert F., 5,549,912, Cl. 424-468.000.

Eustathios, Vassiliou; Schaefer, Walter R.; and Guinto, Joseph F., to Rollins Environmental Services, Inc. Control of protective layer thickness in kilns by utilizing two laser beams. 5,549,472, Cl. 432-103.000.

Evans, Anthony C., to Kelsey-Hayes Company. Brake shoe retractor clip for disc brake assembly. 5,549,181, Cl. 188-72.300.

Evans, Douglas; and Nash, John E., to Kensey Nash Corporation. Apparatus and methods of use for preventing blood seepage at a percutaneous puncture site. 5,549,633, Cl. 606-139.000.

Evans, Kelvin T., to Dixie Septic Tank, Inc. Septic tank drainfield installation device and method. 5,549,415, Cl. 405-43.000.

Evans, Michael, to Westinghouse Brake and Signal Holdings Limited. Semiconductor switching devices. 5,550,392, Cl. 257-170.000.

Evans, Michael S.: *See*—
Worsley, Debra J.; Rangan, Geetha N. K.; Edem, Brian C.; and Evans, Michael S., 5,550,802, Cl. 370-13.000.

Evers, Larry J.: *See*—
Puzic, Olga; Evers, Larry J.; Williamson, Kenneth E.; Gorbaty, Martin L.; and Nahas, Nicholas C., 5,549,744, Cl. 106-274.000.

Exponential Technology, Inc.: *See*—
Cohen, Earl T.; Tilleman, Russell W.; Pattin, Jay C.; and Blomgren, James S., 5,551,001, Cl. 395-449.000.

Extreme Sports, Inc.: *See*—
Burnworth, Scott; and Johnson, Phillip L., 5,549,495, Cl. 441-108.000.

Exxon Research and Engineering Company: *See*—
Brois, Stanley J., 5,550,241, Cl. 544-302.000.
Ho, Win-Sow W.; Sartori, Guido; Thaler, Warren A.; and Dalrymple, David C., 5,550,199, Cl. 525-423.000.
Puzic, Olga; Evers, Larry J.; Williamson, Kenneth E.; Gorbaty, Martin L.; and Nahas, Nicholas C., 5,549,744, Cl. 106-274.000.
Vaughan, David E. W.; and Strohmaier, Karl G., 5,549,881, Cl. 423-703.000.
Wachter, William A., 5,549,815, Cl. 208-164.000.

FAAC S.p.A.: *See*—
Manini, Michelangelo, 5,549,033, Cl. 92-136.000.

Fahlstroem, Ulf: *See*—
Larsson, Rolf; and Fahlstroem, Ulf, 5,549,582, Cl. 604-283.000.

Faidi, Zayd. Enclosure for shielding moored water vessel hull from direct contact with water. 5,549,069, Cl. 114-222.000.

Failli, Amedeo A.; Bleyman, Oleg L; Kao, Wenling; and Abou-Gharbia, Magid A., to American Home Products Corporation. Carbamates of rapamycin. 5,550,133, Cl. 514-291.000.

Fakhruddin, Saifuddin T.: *See*—

VOL. 1189 ISS. 4 AG 27 1996 UMI

Foster, Mark J.; Fakhruddin, Saifuddin T.; Walker, James L.; Mendelow, Matthew B.; Sun, Jiming; Brahman, Rodman S.; Krau, Michael P.; Willoughby, Brian D.; Maddix, Michael D.; Belt, Steven L.; Hovey, Scott A.; and Ruthenbeck, Mark A., 5,551,033, Cl. 395-650.000.

Falk, Dean A. Multifunction alternator testing device. 5,550,485, Cl. 324-772.000.

Fallin, Thomas W.: *See—*
Ries, Michael D.; Tokish, Leonard J., Jr.; and Fallin, Thomas W., 5,549,702, Cl. 623-23.000.

Fan, John C. C.: *See—*
Bozler, Carl O.; Fan, John C. C.; and McClelland, Robert W., 5,549,747, Cl. 117-43.000.
Gale, Ronald P.; McClullough, Richard; and Fan, John C. C., 5,550,604, Cl. 353-31.000.

Fanchang, We C.; and Hsueh, Hsueh W. Control mechanism of revolving speed of an electric tool. 5,550,416, Cl. 310-83.000.

Fant, Alfred B.; Wang, Yongcai; Smith, Dennis E.; Kestner, Melvin M.; and Visconte, Gary W., to Eastman Kodak Company. Photographic elements containing matte particles of bimodal size distribution. 5,550,011, Cl. 430-496.000.

Fanta, George F.; and Christianson, Donald D., to United States of America, Agriculture. Starch and poly (ethlene-co-acrylic acid) pastes and gels, and method for their making. 5,550,177, Cl. 524-47.000.

Fanuc Ltd.: *See—*
Kamiguchi, Masao; and Neko, Noriaki, 5,549,857, Cl. 264-40.100.
Matsuura, Hitoshi; and Tsukamoto, Osamu, 5,550,330, Cl. 178-18.000.
Nihei, Ryo; Terada, Akihiro; and Sasaki, Yasuo, 5,549,018, Cl. 74-490.030.

Fanucci, Allan A.: *See—*
Wellen, Alexander B.; and Fanucci, Allan A., 5,549,294, Cl. 273-67.00B.

Farber, Elliott, to Sween Corporation. Heat stable wound care gel. 5,549,914, Cl. 424-487.000.

Farkas, Paul S. Endoscopic laser therapy plume and effluent collection device. 5,549,602, Cl. 606-15.000.

Farooq, Mukta S.; Kaja, Suryanarayana; Perfecto, Eric D.; and White, George E., to International Business Machines Corporation. Method for forming capped copper electrical interconnects. 5,549,808, Cl. 205-123.000.

Farrington, Richard W.; and Gardiner, William P., to Lucent Technologies Inc. Low-loss snubber for a power factor corrected boost converter. 5,550,458, Cl. 323-222.000.

Fast Industries, Inc.: *See—*
Lewis, Kirk, 5,549,054, Cl. 108-152.000.

Fastenetix, L.L.C.: *See—*
Errico, Joseph P.; Errico, Thomas J.; and Ralph, James D., 5,549,608, Cl. 606-61.000.

Fata Automation S.p.A.: *See—*
Deandrea, Giorgio, 5,549,049, Cl. 104-111.000.

Faucher, Catherine: *See—*
Lerouge, Patrice; Roche, Philippe; Faucher, Catherine; Maillet, Fabienne; Denarie, Jean; Promé, Jean-Claude; and Truchet, Georges, 5,549,718, Cl. 47-57.600.

Favreau, David J., to Castine, Raymon J. Dryer and combustible pellet system. 5,549,057, Cl. 110-218.000.

Federspiel, Clifford C., to Johnson Service Company. Method and apparatus for estimating the rate at which a gas is generated within a plurality of zones. 5,550,752, Cl. 364-505.000.

Feiring, Andrew J. Method and apparatus for inducing the permeation of medication into internal tissue. 5,549,603, Cl. 604-21.000.

Fel-Pro Incorporated: *See—*
Capretta, Richard; Chen, Colin; Czernik, Daniel E.; Morris, Robert H., Jr.; and Pavel, Richard J., 5,549,307, Cl. 277-235.00B.

Feld, Peter, to Siemens Aktiengesellschaft. Antenna cable for a diagnostic magnetic resonance apparatus. 5,550,471, Cl. 324-318.000.

Feldkämper, Richard: *See—*
Brinkmeier, Friedhelm; and Feldkämper, Richard, 5,549,751, Cl. 118-216.000.

Felgner, Philip L.: *See—*
Eppstein, Deborah A.; Felgner, Philip L.; Gadek, Thomas R.; Jones, Gordon H.; and Roman, Richard B., 5,550,289, Cl. 564-293.000.

Feltz, Kristi T.: *See—*
McLeod, Clark E.; Hogan, Steven J.; Feltz, Kristi T.; Murdock, Douglas R.; and Hanson, Van E., 5,550,899, Cl. 379-67.000.

Fenyvesy, Thomas P. Outdoor illuminator. 5,550,727, Cl. 362-386.000.

Ferguson, Daniel J.: *See—*
DiPaolo, Nunzio; and Ferguson, Daniel J., 5,550,351, Cl. 219-390.000.

Ferguson, George E. Shower filter apparatus. 5,549,822, Cl. 210-238.000.

Ferguson, Robert M.: *See—*
Schlueter, Edward L., Jr.; Parker, Thomas C.; Ferguson, Robert M.; and Finsterwalder, Robert N., 5,549,193, Cl. 198-844.200.

Fernström, Kenneth G., to Telefonaktiebolaget LM Ericsson. Control of the interchange of data packets in a network. 5,550,827, Cl. 370-94.100.

Ferragina, Rosario, to Black & Decker Inc. Method and apparatus for controlling the movement of a tool. 5,550,448, Cl. 318-569.000.

Ferre, Daniel: *See—*
Pauchon, Christian; Ferschneider, Gilles; and Ferre, Daniel, 5,550,761, Cl. 364-578.000.

Ferro Corporation: *See—*
Scheibelhoffer, Anthony S.; Berlin, Michael J.; Sahni, Atam P.; Dusek, Dianna B.; and Hart, Donald P., 5,549,929, Cl. 427-282.000.

Ferschneider, Gilles: *See—*
Pauchon, Christian; Ferschneider, Gilles; and Ferre, Daniel, 5,550,761, Cl. 364-578.000.

Fessler, Charles B.: *See—*
Kanjo, Wajih; Smith, Eric; Demoise, Thomas J.; Girotti, Michael; McCabe, Thomas; Fessler, Charles B.; and Natschke, Scott, 5,549,363, Cl. 303-7.000.

Feugier, Alain: *See—*
Gateau, Paul; Maute, Michel; and Feugier, Alain, 5,549,877, Cl. 423-245.300.

Feuling, James J. Method and apparatus for clean cold starting of internal combustion engines. 5,549,083, Cl. 123-179.500.

Fiberweb North America, Inc.: *See—*
Gessner, Scott L.; and Fowells, William, 5,549,867, Cl. 264-555.000.

Fibre Glass-Evercoat Company, Inc.: *See—*
Parish, David M., 5,549,969, Cl. 428-241.000.

Fifield, John A.; and Heller, Lawrence G., to International Business Machines Corporation. Self timed driver. 5,550,488, Cl. 326-58.000.

Figarella, Luis: *See—*
Klancnik, Mihael; and Figarella, Luis, 5,550,365, Cl. 235-462.000.

Figueiredo, Pedro; Verdon, Larry; and Valea, Norberto, to Wrono Enterprise Corp. Blade for accordion storm shutter. 5,549,148, Cl. 160-183.000.

Filan, Finbarr J.: *See—*
Maher, Pascal J.; Filan, Finbarr J.; and Shaw, Christian, 5,549,585, Cl. 604-317.000.

Fillman, Alan R.: *See—*
Snell, Wayne A.; and Fillman, Alan R., 5,549,089, Cl. 123-352.000.

Filtration Ltd.: *See—*
Barzuza, Ytzhak, 5,549,825, Cl. 210-411.000.

Filus, Wayne S.: *See—*
Baggett, William C.; Baines, Elliot A., Jr.; Filus, Wayne S.; Gilland, Dianne W.; Kluska, Theodore E.; Larsen, Wayne D.; Spaulding, Mark G.; and Starace, Jeremia P., 5,549,489, Cl. 439-709.000.

Fincham, Kevin R.; Seaward, David R.; Shirley, Graham L.; and Vernon, Geoffrey W., to Thomas J. Lipton Co. Apparatus and method for producing packets. 5,548,947, Cl. 53-551.000.

Finnochiaro, Eugene T., to Opta Food Ingredients, Inc. Starch containing reduced fat peanut butter and method of manufacture. 5,549,923, Cl. 426-633.000.

Finsterwalder, Robert N.: *See—*
Schlueter, Edward L., Jr.; Parker, Thomas C.; Ferguson, Robert M.; and Finsterwalder, Robert N., 5,549,193, Cl. 198-844.200.

Fiore, Joseph F., Jr.: *See—*
Askins, William E.; Stewart, Michael W.; Roulston, Gary; and Fiore, Joseph F., Jr., 5,549,073, Cl. 119-474.000.

Firdaus, Vaseem: *See—*
Ali, Ahmed H.; Firdaus, Vaseem; Geoghegan, Tomas A.; Kissin, Yury V.; and Mink, Robert I., 5,550,094, Cl. 502-115.000.

Firma Carl Freudenberg: *See—*
Hamaekers, Arno, 5,549,271, Cl. 248-621.000.

Fisch, Matthew: *See—*
Sarangdhar, Nitin V.; Wang, Wen-Hann; and Fisch, Matthew, 5,551,005, Cl. 395-472.000.

Fischer, Gerd; Defossa, Elisabeth; Gerlach, Uwe; Hörlein, Rolf; Krass, Norbert; Lattrell, Rudolf; Stache, Ulrich; Wollmann, Theodor; and Isert, Dieter, to Hoechst Aktiengesellschaft. Diastereomers of 1-(isopropoxycarbonyloxy) ethyl 3-cephem 4-carboxylate. 5,550,232, Cl. 540-230.000.

Fischer, Russell J.: *See—*
Dutta, Niloy K.; Fischer, Russell J.; Hunt, Neil E. J.; Passlack, Matthias; Schubert, Erdmann F.; and Zydzik, George J., 5,550,089, Cl. 437-225.000.

Fisher, Delmer D.: *See—*
Hoarty, W. Leo; Soske, Joshua W.; Lauder, Gary M.; Snell, Stephen C.; Fisher, Delmer D.; and North, John, 5,550,578, Cl. 348-7.000.

Fitch, John J.: *See—*
Miekka, Richard G.; Fotland, Richard A.; Miekka, Frederick N.; Fitch, John J.; and Josephy, Karl, 5,549,774, Cl. 156-209.000.

Fitz, Charles E., Jr., to Whitaker Corporation, The. Machine for assembling an insulation displacement connector and terminating a conductor thereto. 5,548,892, Cl. 29-866.000.

Fiumefreddo, John A.: *See—*
Bloemer, John M.; Balan, Isadore; Bonnell, Thomas A.; Bengtson, Alan D.; Giose, Robert C.; Reid, Mary J.; Fiumefreddo, John A.; and Kurth, Michael J., 5,548,854, Cl. 4-541.600.

Flax, Stephen W.; and Bahr, Dennis E., to Flextech Systems, Inc. System for the compacting and logical linking of data blocks in files to optimize available physical storage. 5,551,020, Cl. 395-600.000.

Flaxl, Thomas J., to Texas Instruments Deutschland GmbH. Circuit frequency following technique transponder resonant. 5,550,536, Cl. 340-825.540.

Fleenor, Richard P.; and Bryce, Daniel P., to Coral Medical. Knot tying method and apparatus. 5,549,618, Cl. 606-148.000.

Fleetguard, Inc.: *See—*
Bounnakhom, Alan S.; Berman, Claude; and Beach, Donald W., 5,549,821, Cl. 210-232.000.

Fleischhacker, John J.: *See—*
Lurie, Keith G.; Benditt, David G.; Shultz, Jeffrey J.; Ockuly, John D.; and Fleischhacker, John J., 5,549,581, Cl. 604-282.000.

Fleming, Stephen S.: *See—*
Torres, Robert J.; and Fleming, Stephen S., 5,550,969, Cl. 395-159.000.

Fletcher, James D.; and Harris, Terry L. Bicycle carrier for motor vehicles. 5,549,231, Cl. 224-536.000.

Flextech Systems, Inc.: *See—*
Flax, Stephen W.; and Bahr, Dennis E., 5,551,020, Cl. 395-600.000.

Flint, W. Toriran: *See—*
Byers, Joseph L.; Flint, W. Toriran; and Kerr, Richard C., 5,549,968, Cl. 428-241.000.

Flores, Abel G.; Marriott, Gerald R.; and Castillo, Jose J., to Manhole Adjucting Contractors Inc. Pavement sprayer having movable spray guard. 5,549,457, Cl. 404-84.050.

Florio, Joseph J.; Bornzin, Gene A.; Levine, Paul A.; and Barlow, J. Jeffrey, to Pacesetter, Inc. Programmable pacemaker including an atrial rate filter for deriving a filtered atrial rate used for switching pacing modes. 5,549,649, Cl. 607-15.000.

Fluke Corporation: *See—*
Black, Michael J.; Willows, Keith S.; Stiles, William P.; and Gallagher, Patrick M., 5,550,324, Cl. 174-52.300.

FMC Corporation: *See—*
Engel, John F.; Kamienski, Conrad W.; Schwindeman, James A.; Hall, Randy W.; Morrison, Robert C.; and Dover, B. Troy, 5,550,203, Cl. 526-336.000.
Vegega, Alexander M.; and Manissero, Claudio E., 5,550,157, Cl. 514-557.000.

Focht, Louise: *See—*
Hollister, Anne; Truman, Mari S.; Bodell, Leonard; and Focht, Louise, 5,549,690, Cl. 623-21.000.

Focke & Co. (GmbH & Co.): *See—*
Focke, Heinz; and Granz, Helmut, 5,549,537, Cl. 493-162.000.

Focke, Heinz; and Granz, Helmut, to Focke & Co. (GmbH & Co.). Apparatus for the shaping treatment of blanks, especially for hinge-lid packs. 5,549,537, Cl. 493-162.000.

Foffano, Massimo; Foscaro, Giancarlo; and Lucchetta, Faustino, to Nordica S.p.A. Sports shoe having an asymmietrical opening. 5,548,909, Cl. 36-117.600.

Fogel, Steven M.: *See—*
Brunner, Hans; McCandless, Timothy P.; Sparks, Randall B.; Cuthbertson, Robert J.; Durand, Jacques; and Fogel, Steven M., 5,550,971, Cl. 395-161.000.

Fok, Wilson: *See—*
Burson, Kyle L.; Chang, Yum C.; Fok, Wilson; Leland, Kenneth W.; Orlando, Denis P.; and Partyka, Andrzej, 5,550,895, Cl. 379-59.000.

Foley, Geoffrey M. T.: *See—*
Herbert, William G.; Mishra, Satchidanand; Post, Richard L.; VonHoene, Donald C.; Yu, Robert C. U.; Foley, Geoffrey M. T.; and Limburg, William W., 5,550,618, Cl. 355-211.000.

Folsom, Mark F. Fiber-reinforced plastic springs with helical fiber wind. 5,549,370, Cl. 267-149.000.

Folsom, Thomas L.: *See—*
Allison, Greg R.; Christensen, James D.; and Folsom, Thomas L., 5,550,440, Cl. 315-294.000.

Fontana, Steven A., to Eli Lilly and Company. Methods of inhibiting the symptoms of premenstrual syndrome/late luteal phase dysphoric disorder. 5,550,150, Cl. 514-443.000.

Fontana, Steven A., to Eli Lilly and Company. Method for inhibiting uterine fibroid disease with 1,1,2-triphenylbut-1-ene derivatives. 5,550,164, Cl. 514-648.000.

Fontenot, Mark G. Device and method for enhancement of wound healing. 5,549,640, Cl. 607-149.000.

Foo, Onn F., to Mass Technology (H.K.) Ltd. Method of producing a low-pressure mercury vapor discharge lamp. 5,549,496, Cl. 445-26.000.

Ford Motor Company: *See—*
Clinton, Eric L.; Pao, Hsien C.; Allen, William R.; and Nita, Valerian M., 5,548,995, Cl. 73-116.000.
Dassanayake, Mahendra S.; and Erion, Jeffrey A., 5,550,716, Cl. 362-32.000.
Davis, Leighton I., Jr.; Sieja, Thomas F.; Dage, Gerhard A.; and Matteson, Robert W., 5,549,152, Cl. 165-201.000.
Deng, Xiaoming, 5,548,863, Cl. 15-250.160.
Gaston, Robert D.; and Yu, DeQuan, 5,549,446, Cl. 415-55.100.
Ginder, John M.; Elie, Larry D.; and Davis, Lloyd C., 5,549,837, Cl. 252-62.520.
Janotik, Adam M.; and Kazyak, Lawrence P., 5,549,352, Cl. 296-209.000.
Novak, Stanley J.; and Boyd, Kenneth J., 5,549,321, Cl. 280-689.000.
Posa, Andrew W., 5,549,348, Cl. 296-146.400.

Fordenbacher, Paul J., to SciMed Life Systems, Inc. Expandable stent using sliding members. 5,549,662, Cl. 623-1.000.

Forman, Ira R.; and Madduri, Hari H., to International Business Machines Corporation. System and method for failure recovery in a shared resource system having a moving write lock. 5,550,973, Cl. 395-182.030.

Forte, Mark: *See—*
MacMahon, Edward B.; and Forte, Mark, 5,549,699, Cl. 623-22.000.

Foscaro, Giancarlo: *See—*
Foffano, Massimo; Foscaro, Giancarlo; and Lucchetta, Faustino, 5,548,909, Cl. 36-117.600.

Fosco, Dominic R.: *See—*
Coates, Bradley J.; and Fosco, Dominic R., 5,549,687, Cl. 623-20.000.

Foskey, Jean C.: *See—*
Foskey, Jere N.; and Foskey, Jean C., 5,549,499, Cl. 446-268.000.

Foskey, Jere N.; and Foskey, Jean C. Adjustable doll stand. 5,549,499, Cl. 446-268.000.

Fosmer, William F. Inboard motorboat engine flusher. 5,549,494, Cl. 440-88.000.

Foster, Donald D.; and Nelson, Philip L., to Contico International, Inc. Fluid spinner and nozzle head assembly with controlled fluid flood path. 5,549,249, Cl. 239-463.000.

Foster, Holly A.: *See—*
Smith, Scott C.; Smith, Julie T.; and Foster, Holly A., 5,548,948, Cl. 54-66.000.

Foster, Mark J.; Fakhruddin, Saifuddin T.; Walker, James L.; Mendelow, Matthew B.; Sun, Jiming; Brahman, Rodman S.; Krau, Michael P.; Willoughby, Brian D.; Maddix, Michael D.; Belt, Steven L.; Hovey, Scott A.; and Ruthenbeck, Mark A., to Zenith Data Systems Corporation. Apparatus for maintaining one interrupt mask register in conformity with another in a manner invisible to an executing program. 5,551,033, Cl. 395-650.000.

Fotland, Richard A.: *See—*
Miekka, Richard G.; Fotland, Richard A.; Miekka, Frederick N.; Fitch, John J.; and Josephy, Karl, 5,549,774, Cl. 156-209.000.

Fotouhi, Bahram, to Sierra Semiconductor Corporation. All MOS voltage to current converter. 5,550,495, Cl. 327-103.000.

Fouassier, Jean-Pierre: *See—*
Castellanos, Frederic; Cavezzan, Jacques; Fouassier, Jean-Pierre; and Priou, Christian, 5,550,265, Cl. 556-7.000.

Fowells, William: *See—*
Gessner, Scott L.; and Fowells, William, 5,549,867, Cl. 264-555.000.

Fowler, Glenn S.; Korn, David G.; Koutsofios, Eleftherios; and North, Stephen C., to Lucent Technologies Inc. Apparatus and methods for visualizing operation of a system of processes. 5,551,037, Cl. 395-700.000.

Fox Chase Cancer Center: *See—*
Mintz, Beatrice, 5,550,316, Cl. 800-2.000.

Fradin, Armel: *See—*
Brion, Jean-Daniel; Chollet, Anne-Marie; Demuynck, Luc; De Montarby, Lucy; Rolland, Yves; Bonnet, Jacqueline; Ghezzi, Pietro; and Fradin, Armel, 5,550,143, Cl. 514-367.000.

Framatome: *See—*
Bougis, Jean-Claude, 5,550,883, Cl. 376-302.000.

Framatome Connectors International: *See—*
Morlion, Danny; and Joncicheere, Luc, 5,549,481, Cl. 439-108.000.

Francavilla, Antonio T.; Hagiya, Michio; and Starzl, Thomas E., to University of Pittsburgh; and Toyobo Co. Ltd. Mammalian augmenter of liver regeneration (ALR): human and rat. 5,550,037, Cl. 435-69.100.

France Telecom Etablissement Autonome De Droit Public: *See—*
Tallec, Ronan, 5,550,917, Cl. 379-442.000.

France/Scott Fetzer Company: *See—*
Hopkins, William T.; and Smith, Alan M., 5,550,437, Cl. 315-209.00R.

Frankel, Victor H.; and Kummer, Frederick J., to Hospital for Joint Diseases. Bone fixation for fractures of the upper ulna. 5,549,609, Cl. 606-64.000.

Franz, Jeffrey S., to Futurestar Corporation, The. Fluid flow controller and meter. 5,549,277, Cl. 251-223.000.

Freadman, Tommyca, to Sparkomatic. Stereo sound source for portable computer. 5,550,921, Cl. 381-24.000.

Frean, Robert G. Lifting device for cylindrical objects. 5,549,339, Cl. 294-31.200.

Frederick, Warren P.: *See—*
Elias, Allen M.; Frederick, Warren P.; and Kramer, David E., 5,549,566, Cl. 604-167.000.

Freed, Brian S.: *See—*
Tegeler, John J.; Rauckman, Barbara S.; Harner, Russell R. L.; Freed, Brian S.; and Merriman, Gregory H., 5,550,247, Cl. 546-314.000.

Freeman, Arvie E.; and Shindler, Franz A., to Freeman Marine Equipment, Inc. Closure latching mechanism. 5,549,068, Cl. 114-117.000.

Freeman, Gerald C.; and Talmadge, Paul C., to Pitney Bowes Inc. Electronic scale recalibrating device consisting of a moveable calibration weight. 5,550,328, Cl. 177-50.000.

Freeman, Kyle G., to Novalogic, Inc. Technique and system for the real-time generation of perspective images. 5,550,959, Cl. 395-127.000.

Freeman Marine Equipment, Inc.: *See—*
Freeman, Arvie E.; and Shindler, Franz A., 5,549,068, Cl. 114-117.000.

Freisz, Henri: *See—*
Bredoux, François J.; Begel, Yannick; and Freisz, Henri, 5,550,010, Cl. 430-393.000.

Freitas, Michael W., to Dexide, Inc. Gear activated trocar assembly. 5,549,595, Cl. 606-1.000.

Fresia, Mauro, to Fresia S.p.A. Tractor for towing aircraft through its central front steering wheels, which may be lifted or not. 5,549,436, Cl. 414-426.000.

Fresia S.p.A.: *See—*
Fresia, Mauro, 5,549,436, Cl. 414-426.000.

Freund, Melvin A. Sootblower packing gland. 5,549,305, Cl. 277-106.000.

Frey, James R. Peritoneal dialysis catheter clip and method. 5,549,645, Cl. 604-29.000.

Frey, Thomas: *See—*
Herklotz, Günter; Frey, Thomas; and Camus, Otto, 5,549,810, Cl. 205-259.000.

Friedman, BethAnn; and Hayes, Michael, to Genzyme Corporation. Enhanced in vivo uptake of glucocerebrosidase. 5,549,892, Cl. 424-94.610.

Friedmann, James J.: *See—*
Pressler, Stephen M.; Friedmann, James J.; and Sloan, Donald L., 5,550,713, Cl. 361-818.000.

Friedrich, Hans-Helmut: *See—*
Wirth, Hermann O.; Friedrich, Hans-Helmut; and Gröninger, Kay S., 5,550,276, Cl. 558-177.000.

Fries, Donald M.; Huntoon, Andrew E.; and Long, Andrew M., to Kimberly-Clark Corporation. Absorbent article with a laminated tape. 5,549,592, Cl. 604-389.000.

Fries, Louis: *See*—
Rhee, Woonza; Wallace, Donald G.; Michaels, Alan S.; Burns, Ramon A., Jr.; Fries, Louis; DeLustro, Frank; and Bentz, Hanne, 5,550,188, Cl. 525-54.100.

Friezen, Robert: *See*—
James, Jay; Zak, Roger; Loeffler, Michael; and Friezen, Robert, 5,549,313, Cl. 280-221.000.

Fritz, Bernard S.: *See*—
Cole, Barrett E.; Fritz, Bernard S.; and Horning, Robert D., 5,550,373, Cl. 250-338.100.

Frohning, Carl D.: *See*—
Horn, Gerhardt; and Frohning, Carl D., 5,550,297, Cl. 564-493.000.

Froment, Jacques: *See*—
Pavone, Didier; Froment, Jacques; and Thesee, Eddy, 5,550,788, Cl. 367-25.000.

Frontec Incorporated: *See*—
Fukuda, Koichi; Oba, Tomofumi; Miyazaki, Masanori; Fukui, Hirofumi; Iwasaki, Chisato; Kasama, Yasuhiko; Ohmi, Tadahiro; Kubota, Masaru; Kitagawa, Hitoshi; Nakano, Akira; and Yoshida, Osamu, 5,550,091, Cl. 437-241.000.
Mitsumori, Kenichi; and Kikuchi, Koji, 5,550,484, Cl. 324-769.000.

Frontier Plastics (South Wales) Limited: *See*—
Harris, John, 5,549,214, Cl. 220-339.000.

Frost, Jonathan; George, Pascal; Pasau, Patrick; Bartsch, Régine; Rousselle, Corinne; Williams, Paul H.; and Muller, Jean C., to SYNTHELABO. N-(3-aminopropyl)-N-phenyl-5,6,7,8-tetrahydro-naphthalene-2-carboxamide derivatives, their preparation and their therapeutic use. 5,550,162, Cl. 514-617.000.

Frost, Jonathan: *See*—
George, Pascal; Frost, Jonathan; Pasau, Patrick; Rousselle, Corinne; Bartsch, Régine; Williams, Paul Howard; and Muller, Jean Claude, 5,550,125, Cl. 514-230.500.

Frot, Didier: *See*—
Beauducel, Claude; Frot, Didier; and Gonzalez, Pierre, 5,549,008, Cl. 73-861.040.

Fuerst, Thomas R.: *See*—
Moss, Bernard; Studier, F. William; Fuerst, Thomas R.; and Niles, Edward G., 5,550,035, Cl. 435-69.100.

Fuisz Technologies Ltd.: *See*—
Cherukuri, Subraman R.; Battist, Gerald E.; and Perkins, James H., 5,549,917, Cl. 426-96.000.

Fuji Photo Film Co., Ltd.: *See*—
Hasegawa, Takeshi; and Yamamoto, Takashi, 5,550,613, Cl. 355-41.000.
Inoue, Nobuaki, 5,550,003, Cl. 430-264.000.
Kawamata, Toshio; Hayakawa, Satoru; and Endo, Yasushi, 5,549,955, Cl. 428-65.300.
Kojima, Yasushi; and Matsumoto, Hiroshi, 5,550,386, Cl. 250-588.000.
Maruyama, Yoichi; and Ihama, Mikio, 5,550,014, Cl. 430-567.000.
Morikawa, Seiichiro, 5,550,955, Cl. 395-109.000.
Nanami, Shoji; and Yasuda, Hiroaki, 5,550,385, Cl. 250-584.000.
Shibasaki, Souhei; Sawano, Yukio; and Nagashima, Hiroto, 5,550,097, Cl. 503-201.000.
Shoji, Takashi, 5,550,571, Cl. 347-133.000.
Suga, Yoichi, 5,550,012, Cl. 430-567.000.

Fuji Xerox Co., Ltd.: *See*—
Ogawahara, Norio, 5,550,621, Cl. 355-285.000.
Takamatsu, Masahiro; and Ito, Masao, 5,550,625, Cl. 355-326.00R.
Takegawa, Ichiro; Hashiba, Shigeto; Miyamoto, Hiroshi; and Ichizawa, Nobuyuki, 5,550,000, Cl. 430-131.000.

Fujieda, Ichiro; and Kaneko, Setsuo, to NEC Corporation. Active matrix liquid crystal display having a spatial coordinates input function. 5,550,659, Cl. 359-54.000.

Fuju, Takao; and Abe, Tatsuhiko, to Zexel Corporation. Navigation system. 5,550,538, Cl. 340-995.000.

Fujii, Tatsuya: *See*—
Izawa, Yasuhiro; Fujii, Tatsuya; Shiraishi, Naoto; Fukushima, Masanobu; and Nakajima, Tatsuya, 5,551,019, Cl. 395-600.000.

Fujii, Teruya; and Sakamoto, Masayuki, to Nippon Telegraph and Telephone Corporation. Structure of cells within a mobile communication system. 5,551,060, Cl. 455-33.400.

Fujii, Toshiro: *See*—
Murakami, Kazuo; Fujii, Toshiro; and Kato, Yuichi, 5,549,453, Cl. 417-269.000.

Fujikoshi Machinery Corp.: *See*—
Tanaka, Kohichi; Hashimoto, Hiromasa; Inada, Yasuo; and Nakajima, Makoto, 5,549,502, Cl. 451-8.000.

Fujimoto, Hideaki: *See*—
Hori, Taizou; Fujimoto, Hideaki; Mogi, Hirokazu; and Ono, Yasumasa, 5,550,925, Cl. 381-98.000.

Fujimoto, Ryo, to Canon Kabushiki Kaisha. Image signal recording apparatus having high-fineness recording mode and normal recording mode. 5,550,645, Cl. 358-335.000.

Fujio, Ryota: *See*—
Shibata, Tadashi; and Fujio, Ryota, 5,550,200, Cl. 526-174.000.

Fujisawa Pharmaceutical Co., Ltd.: *See*—
Matsuo, Masaaki; Tsuji, Kiyoshi; Ogino, Takashi; and Konishi, Nobukiyo, 5,550,147, Cl. 514-406.000.

Fujisawa, Yukio, to Mitsubishi Denki Kabushiki Kaisha; and Mitsubishi Electric Semiconductor Software Co., Ltd. Unique word detecting apparatus and unique word detecting method. 5,550,833, Cl. 370-105.400.

Fujisawa, Yukio: *See*—
Sohda, Takashi; Terashita, Zen-ichi; Momose, Yu; Fujisawa, Yukio; and Mizoguchi, Junji, 5,550,138, Cl. 514-361.000.

Fujishima, Kazuyasu: *See*—
Hidaka, Hideto; Fujishima, Kazuyasu; and Matsuda, Yoshio, 5,550,769, Cl. 365-63.000.

Fujita, Kouichi: *See*—
Mori, Tomoyuki; Fujita, Kouichi; and Hinoishi, Hiroki, 5,550,302, Cl. 568-881.000.

Fujita, Yatsuka: *See*—
Ueno, Ryuzo; Fujita, Yatsuka; Nagamura, Yoshiaki; Kamino, Yuji; and Tabata, Akihiko, 5,549,919, Cl. 426-335.000.

Fujitsu Limited: *See*—
Akiyoshi, Hitomi, 5,550,821, Cl. 370-60.100.
Aoki, Yoichi; Sato, Yasuo; Ito, Chiaki; Nishiuchi, Hitoshi; Nakamoto, Makoto; Yamaguchi, Syoji; Mio, Haruhiko; Koyata, Kazuhiro; and Miyazawa, Yoshinori, 5,550,562, Cl. 345-163.000.
Ema, Taiji; and Ikeda, Toshimi, 5,550,395, Cl. 257-306.000.
Hiraizumi, Maki, 5,550,977, Cl. 395-200.010.
Iino, Hideyuki; and Takahashi, Hiromasa, 5,551,010, Cl. 395-496.000.
Kayashima, Shigeo; Hasegawa, Shinya; Maeda, Satoshi; and Aritake, Hirokazu, 5,550,655, Cl. 359-17.000.
Koide, Masateru; and Kawamura, Yasuo, 5,550,083, Cl. 437-183.000.
Kuroshita, Kazumasa, 5,550,807, Cl. 370-17.000.
Matsuda, Shinji, 5,550,325, Cl. 174-250.000.
Matsumoto, Takashi, 5,550,695, Cl. 360-105.000.
Saito, Teruhiko, 5,550,517, Cl. 331-111.000.
Tanahashi, Katsuhiko, 5,550,831, Cl. 370-95.300.
Tanaka, Akira; Mesaki, Yoshinori; Sotokawa, Akio; Tomatsu, Masahiro; and Kaiwa, Kazumasa, 5,550,657, Cl. 359-49.000.
Wakana, Shinichi; Ozaki, Kazuyuki; Goto, Yoshiro; and Umehara, Yasutoshi, 5,550,479, Cl. 324-750.000.
Yokoyama, Hiromitsu; Takeuchi, Katsuto; Soekawa, Koji; Abe, Ken-ichiro; Hattori, Syouichi; Suzuki, Hitoshi; and Okada, Nobuhide, 5,549,778, Cl. 156-246.000.
Yoshida, Kazuhiro; and Sato, Noriaki, 5,551,014, Cl. 395-500.000.

Fujitsu VLSI Limited: *See*—
Saito, Teruhiko, 5,550,517, Cl. 331-111.000.
Yoshida, Kazuhiro; and Sato, Noriaki, 5,551,014, Cl. 395-500.000.

Fujiyama, Toshiki: *See*—
Kawamoto, Kohji; Shimazu, Yukihiko; and Fujiyama, Toshiki, 5,551,045, Cl. 395-775.000.

Fukada, Tsuyoshi: *See*—
Sakai, Minekazu; Fukada, Tsuyoshi; Terada, Masakazu; Watanabe, Shinsuke; and Nishida, Minoru, 5,549,785, Cl. 156-644.100.

Fukahori, Kiyoshi, to Silicon Systems, Inc. Method for offset voltage trim for automatic gain controls. 5,550,512, Cl. 330-254.000.

Fukami, Toshiyuki: *See*—
Mizuta, Yasufumi; Tanaka, Masashi; Muto, Nariaki; Fukami, Toshiyuki; Nakamori, Hideo; Kakui, Mikio; Saito, Sakae; Shiomi, Hiroshi; Sumida, Keisuke; and Uchida, Maki, 5,550,290, Cl. 564-309.000.

Fukatsu, Hiroshi: *See*—
Nakagawa, Susumu; Kato, Shinji; Murase, Satoshi; Okamoto, Osamu; Mitomo, Ryuji; Yamamoto, Katsumi; Yamada, Koji; and Fukatsu, Hiroshi, 5,550,121, Cl. 514-210.000.

Fukuda, Koichi; Oba, Tomofumi; Miyazaki, Masanori; Fukui, Hirofumi; Iwasaki, Chisato; Kasama, Yasuhiko; Ohmi, Tadahiro; Kubota, Masaru; Kitagawa, Hitoshi; Nakano, Akira; and Yoshida, Osamu, to Frontec Incorporated; and Ohmi, Tadahiro. Method of sputtering a silicon nitride film. 5,550,091, Cl. 437-241.000.

Fukuda, Misao; Hayami, Yoshihiro; Ueda, Toshihiro; and Iwaki, Shoichi, to Mitsuboshi Belting Ltd. Endless power transmission belt processing apparatus, a grinding wheel therefor, and a method of using the endless power transmission belt processing apparatus. 5,549,510, Cl. 451-246.000.

Fukuhara, Hiroyuki: *See*—
Hori, Tatsuya; Fukuhara, Hiroyuki; Muramatsu, Shigeru; and Yamada, Sadayuki, 5,549,466, Cl. 418-55.100.

Fukui, Hirofumi: *See*—
Fukuda, Koichi; Oba, Tomofumi; Miyazaki, Masanori; Fukui, Hirofumi; Iwasaki, Chisato; Kasama, Yasuhiko; Ohmi, Tadahiro; Kubota, Masaru; Kitagawa, Hitoshi; Nakano, Akira; and Yoshida, Osamu, 5,550,091, Cl. 437-241.000.

Fukumaru, Hiroaki: *See*—
Miyazaki, Yoshihiro; Takahashi, Yoshiaki; Araoka, Manabu; Takaya, Soichi; and Fukumaru, Hiroaki, 5,551,007, Cl. 395-47.500.

Fukushi, Hideto: *See*—
Sugihara, Hirosada; Terashita, Zenichi; and Fukushi, Hideto, 5,550,131, Cl. 514-255.000.

Fukushima, Hisashi, to Canon Kabushiki Kaisha. Image forming apparatus including means for controlling image forming condition in accordance with ambient condition and patch density detection. 5,550,616, Cl. 355-208.000.

Fukushima, Masanobu: *See*—
Izawa, Yasuhiro; Fujii, Tatsuya; Shiraishi, Naoto; Fukushima, Masanobu; and Nakajima, Tatsuya, 5,551,019, Cl. 395-600.000.

Fukushima, Motoo; Aramata, Mikio; and Mori, Shigeru, to Shin-Etsu Chemical Co., Ltd. Conductive polymer composition. 5,549,851, Cl. 252-519.000.

Fukushima, Takehiro: *See*—
Aoki, Hidenao; Tsutsumi, Shigehisa; Fukushima, Takehiro; and Sakai, Zenji, 5,549,005, Cl. 73-663.000.

Fulbright, David J.: *See*—
Smith, Walter J.; and Fulbright, David J., 5,548,889, Cl. 29-715.000.

Fulks, Kent, to Fulks, Kent. Compact weight lifting machine. 5,549,530, Cl. 482-100.000.

Fultz, Robert B.: *See*—
Chan, Demonder; Fultz, Robert B.; and Krishan, Baldev, 5,550,861, Cl. 375-222.000.

Funai, Takashi; Makita, Naoki; Yamamoto, Yoshitaka; and Morita, Tatsuo, to Sharp Kabushiki Kaisha. Method for producing crystalline semiconductor film having reduced concentration of catalyst elements for crystallization and semiconductor device having the same. 5,550,070, Cl. 437-41.000.

Furlan, Gilbert; Rissanen, Jorma J.; and Sheinvald, Dafna, to International Business Machines Corporation. Distributed coding and prediction by use of contexts. 5,550,540, Cl. 341-51.000.

Furukawa Denchi Kabushiki Kaisha: *See*—
Iwane, Noriyasu; and Sawa, Haruo, 5,549,992, Cl. 429-223.000.

Furukawa, Takashi: *See*—
Iwasaki, Tomonori; Suzuki, Masaya; Furukawa, Takashi; Tsushima, Kazunori; Ishiwatari, Takao; and Tsuchiya, Toru, 5,550,258, Cl. 549-78.000.

Furuta, Koichiro, to NEC Corporation. Current-mode logic circuit. 5,550,491, Cl. 326-115.000.

Furuya, Atsushi: *See*—
Masaie, Norio; Tachibana, Tomoyuki; Shimizu, Hiroyuki; Ito, Kazuhiko; Matsuguchi, Akira; Sasa, Yoshikazu; and Furuya, Atsushi, 5,550,348, Cl. 219-145.220.

Furuya, Masatoshi; Sasaki, Toshiro; and Komura, Fuminobu, to Hitachi, Ltd. Scheduled motion planning method and apparatus for a vehicle. 5,550,742, Cl. 364-449.000.

Futurestar Corporation, The: *See*—
Franz, Jeffrey S., 5,549,277, Cl. 251-223.000.

G. D. Searle & Co.: *See*—
Bovy, Philippe R.; Garland, Robert B.; Miyano, Masateru; Rico, Joseph G.; Rogers, Thomas E.; and Zablocki, Jeffery A., 5,550,159, Cl. 514-563.000.
Khanna, Ish K.; Mueller, Richard A.; and Weier, Richard M., 5,550,243, Cl. 546-116.000.

G.D Societa' Per Azioni: *See*—
Portaro, Antonio; Gigante, Antonio; Sassi, Fabio; and Belvederi, Bruno, 5,548,941, Cl. 53-444.000.

Gaa, Karl; and Zäh, Matthias, to Hoechst Aktiengesellschaft. Polyalkylpiperidine compounds. 5,550,234, Cl. 540-466.000.

Gaa, Karl; and Zäh, Matthias, to Hoechst Aktiengesellschaft. Process for the preparation of polyalkyl-1-oxa-diazaspirodecane compounds. 5,550,242, Cl. 548-19.000.

Gabbe, John D.; Ginsberg, Allen; and Robinson, Bethany S., to Lucent Technologies Inc. Method and system for operating a data processor to index primary data in real time with iconic table of contents. 5,550,965, Cl. 395-154.000.

Gabriel Ride Control Products, Inc.: *See*—
Cubalchini, Joseph, 5,549,328, Cl. 280-772.000.

Gabriele, Valentino: *See*—
Pardo, Warren A.; and Gabriele, Valentino, 5,549,386, Cl. 366-331.000.

Gadek, Thomas R.: *See*—
Eppstein, Deborah A.; Felgner, Philip L.; Gadek, Thomas R.; Jones, Gordon H.; and Roman, Richard B., 5,550,289, Cl. 564-293.000.

Gagliardi, Olivia M.: *See*—
Arnold, Erich C.; Gagliardi, Olivia M.; Hyatt, Wayne E.; Mayka, Lawrence G.; and Morgan, Todd C., 5,551,035, Cl. 395-650.000.

Gainey, Trevor C., to LSI Logic Corporation. Mounting of electronic devices. 5,550,323, Cl. 174-52.100.

Gale, Ronald P.; McClullough, Richard; and Fan, John C. C., to Kopin Corporation. Compact high resolution light valve projector. 5,550,604, Cl. 353-31.000.

Gálik, György: *See*—
Mahó, Sándor; Tuba, Zoltán; Sánta, Csaba; Balogh, Gábor; Czajlikné Csizér, Éva; Lovasné Marsai, Mária; and Gálik, György, 5,550,240, Cl. 544-295.000.

Galileo Electro-Optics Corporation: *See*—
Gregory, Christopher C., 5,550,945, Cl. 385-116.000.

Galkowski, Joseph: *See*—
Hagans, Karla; Berzins, Leon; Galkowski, Joseph; and Seng, Rita, 5,550,636, Cl. 356-437.000.

Gallagher, Christopher G.: *See*—
Weisburn, James T.; Gallagher, Christopher G.; and Burdett, Ronald K., 5,549,203, Cl. 206-472.000.

Gallagher, James L.: *See*—
Quigley, Peter A.; Nolet, Steven C.; and Gallagher, James L., 5,549,947, Cl. 428-36.200.

Gallagher, Patrick M.: *See*—
Black, Michael J.; Willows, Keith S.; Stiles, William P.; and Gallagher, Patrick M., 5,550,324, Cl. 174-52.300.

Galleguillos, Ramiro; Panitch, Maximo M.; and Jadav, Anjana K., to Helene Curtis, Inc. Antiperspirant deodorant compositions. 5,549,887, Cl. 424-66.000.

Gallie, Brenda L.; Dunn, James M.; and Stevens, John K., to Visible Genetics Inc.; and HSC Research & Development. Method, reagents and kit for diagnosis and targeted screening for retinoblastoma. 5,550,020, Cl. 435-6.000.

Gallina, Damian J., to Patent Biopharmaceutics, Inc. Hyaluronic acid-urea pharmaceutical compositions and uses. 5,550,112, Cl. 514-54.000.

Gallup, James A., to Colorado Leisure Sportswear Corporation. Adjustable closed-back cap. 5,548,845, Cl. 2-195.200.

Galperin, Sergey B.: *See*—
Luger, Peter; Grafwallner, Franz; Peller, Helmuth; Müller, Martin; Malyshev, Valentin V.; Galperin, Sergey B.; and Logvinicouk, Viacheslav P., 5,548,961, Cl. 62-47.100.

Gamand, Patrice: *See*—
Caux, Christian; and Gamand, Patrice, 5,551,075, Cl. 455-333.000.

Gamay, Aly, to Alpine Lace Brands, Inc. Process for preparing low fat cheese products. 5,549,916, Cl. 426-39.000.

Gammer, Peter; Broeckl, Heinz; and Dietl, Hans, to Otto Bock Orthopaedische Industrie Besitz- und Verwaltungs-Kommanditgesellschaft. Forearm lifter. 5,549,712, Cl. 623-60.000.

Ganesan, Apparajan: *See*—
Sweeney, Frank J.; and Ganesan, Apparajan, 5,550,486, Cl. 326-14.000.

Gang, Joseph M., Jr.: *See*—
Long, James E.; Gang, Joseph M., Jr.; Bedard, Charles J.; Baird, Randall B.; and Edwards, David A., 5,550,982, Cl. 395-200.130.

Gantzer, Christian, to Kuhn S.A. Hay making machine with carrying wheels. 5,548,949, Cl. 56-367.000.

GAP Technologies, Inc.: *See*—
Plesko, George A., 5,550,367, Cl. 235-472.000.

Garakani, Arman: *See*—
Michael, David J.; Koljonen, Juha; and Garakani, Arman, 5,550,763, Cl. 364-582.000.

Garbe, James R.: *See*—
Pascucci, Gregory A.; Rasmussen, David E.; Decious, Gaylon M.; Garbe, James R.; Hyzer, Susan M.; Woest, Karen L.; Vairavan, Vairavan; Koch, David L.; Gottschalk, Donald A., Jr.; Burkhardt, Dennis E.; Standish, Darrell E.; Madaus, Paul W.; Spacek, Dan J.; Nesler, Clay G.; Stark, James K.; Mageland, Otto M.; Singers, Robert R.; and Wagner, Michael E., 5,550,980, Cl. 395-200.050.

Gard, Jimmie D.: *See*—
Crump, Kevin E.; Gard, Jimmie D.; and Oleson, Richard A., 5,549,104, Cl. 128-201.250.

Gard, Michael F.; Gravelle, Stephen W.; Hsieh, Jiang; Lu, Quan N.; Newman, John W.; Toth, Thomas L.; and Wu, Michael A., to General Electric. Alignment of an x-ray tube focal spot using a deflection coil. 5,550,889, Cl. 378-113.000.

Gardiner, William P.: *See*—
Farrington, Richard W.; and Gardiner, William P., 5,550,458, Cl. 323-222.000.

Gardner, John P.: *See*—
West, Brett; and Gardner, John P., 5,550,575, Cl. 348-5.500.

Garg, Shyam G.: *See*—
Jones, Stephen A.; Garg, Shyam G.; Buller, James F.; and Santana, Miguel, Jr., 5,549,786, Cl. 156-662.100.

Garland, Robert B.: *See*—
Bovy, Philippe R.; Garland, Robert B.; Miyano, Masateru; Rico, Joseph G.; Rogers, Thomas E.; and Zablocki, Jeffery A., 5,550,159, Cl. 514-563.000.

Garoutte, Dana L.: *See*—
Akinpelu, Akinwale A.; Bhagat, Promod K.; and Garoutte, Dana L., 5,550,912, Cl. 379-221.000.

Garraffe, Dean R.; and Toth, Douglas J., to Under Sea Industries, Inc. Second stage scuba diving regulator. 5,549,107, Cl. 128-204.260.

Garret, Didier: *See*—
Vernier, Jean-Pierre; Perret, Marc; Garret, Didier; and Chappet, Philippe, 5,549,365, Cl. 303-20.000.

Garrigus, Darryl F., to Boeing Company, The. $LaMnO_3$-coated ceramics. 5,549,850, Cl. 252-518.000.

Garrity, Doug; Anderson, David; Anderson, Howard; Gunter, Brad; and Bersch, Danny, to Motorola, Inc. Circuits and method for reducing voltage error when charging and discharging a capacitor through a transmission gate. 5,550,503, Cl. 327-437.000.

Garst, Roger H.; Mueninghoff, Jane C.; and Schwan, Matthew C., to Henkel Corporation. Biologically active composition. 5,550,115, Cl. 514-25.000.

Gartner, Georg, to U.S. Philips Corporation. Method of plasma-activated reactive deposition of electrically conducting multicomponent material from a gas phase. 5,549,937, Cl. 427-576.000.

Garvert, Clarence F. Truck tailgate step attachment. 5,549,312, Cl. 280-166.000.

Garza, Mario; and Chao, Keith, to LSI Logic Corporation. Process of curing hydrogen silsesquioxane coating to form silicon oxide layer. 5,549,934, Cl. 427-489.000.

Gas Guard West, Inc.: *See*—
Schuster, Yoel, 5,549,130, Cl. 137-39.000.

Gaston, Robert D.; and Yu, DeQuan, to Ford Motor Company. In-tank fuel pump for highly viscous fuels. 5,549,446, Cl. 415-55.100.

Gateau, Paul; Maute, Michel; and Feugier, Alain, to Institut Francais du Petrole. Device and process for manufacturing synthesis gases through combustion and its application. 5,549,877, Cl. 423-245.300.

Gati, Sandor: *See*—
Goliro, Martine; Holer, Martin; and Gati, Sandor, 5,549,847, Cl. 252-394.000.

Xu
1189
55
4
AG
27
1996
UMI

Gauderer, Michael: *See*—
Stern, David R.; Gauderer, Michael; and Solbjor, Albert N., 5,549,657, Cl. 604-283.000.
Gaudet, Pierre; and Léveillé, Nathalie, to 3156729 Canada Inc. Car seat mat. 5,549,353, Cl. 297-182.000.
Gaus, Richard C., Jr., to General Electric Company. Frequency shift keying (FSK) demodulator for use in low signal-to-noise ratio environments. 5,550,505, Cl. 329-300.000.
Gauthier, Jacques Y.: *See*—
Ducharme, Yves; Gauthier, Jacques Y.; Prasit, Petpiboon; Leblanc, Yves; Wang, Zhaoyin; Leger, Serge; and Therien, Michel, 5,550,142, Cl. 514-365.000.
Gay, Paul M., Jr. Stringed musical instrument. 5,549,026, Cl. 84-292.000.
Gebauer, Elke: *See*—
Heinrich, Karl; Brüning, Hans-Joachim; and Gebauer, Elke, 5,549,965, Cl. 428-229.000.
GEC Alsthon Transport SA: *See*—
Vernier, Jean-Pierre; Perret, Marc; Garret, Didier; and Chappet, Philippe, 5,549,365, Cl. 303-20.000.
GEC Plessey Semiconductors, Inc.: *See*—
Aranovsky, Anatoly, 5,550,502, Cl. 327-423.000.
Geckle, Ronita K.: *See*—
Mazer, Terrence B.; Walton, Joseph E.; Geckle, Ronita K.; Piontek, Carl J.; Duel, Susan B.; Daab-Krzykowski, Andre; Joseph, Robert L.; Pierson, William G.; Loughrin, Thomas D.; and Osip, Thomas W., 5,549,550, Cl. 604-83.000.
Gee, Albert: *See*—
Wright, J. Nelson; Cole, Christopher R.; Gee, Albert; Larsen, Hugh G.; and Maslak, Samuel H., 5,549,111, Cl. 128-742.000.
Gee, Kelvin W., to University of Southern California. Use of peripheral-type benzodiazpine sites for treatment of CNS trauma or disease. 5,550,124, Cl. 514-221.000.
Geeham, Calvin T. Toilet with two flush modalities. 5,548,850, Cl. 4-326.000.
Geeroms, André, to Dinamec, Naamloze Vennootschap. Method and device for the thermal cleaning of objects. 5,550,352, Cl. 219-497.000.
Gelb, Edward J., to Matsushita Electric Corporation of America. Security system for preventing unauthorized communications between networks by translating communications received in ip protocol to non-ip protocol to remove address and routing services information. 5,550,984, Cl. 395-200.170.
Gemplus Card International: *See*—
Kowalski, Jacek, 5,550,919, Cl. 380-23.000.
General Chemical Corporation: *See*—
Shepard, James M., 5,549,422, Cl. 406-48.000.
General Dynamics Land Systems, Inc.: *See*—
Widner, Melvin M.; Raleigh, Michael; Goldstein, Yeshayahu S. A.; and Greig, Joseph R., 5,549,046, Cl. 102-202.700.
General Electric: *See*—
Gard, Michael F.; Gravelle, Stephen W.; Hsieh, Jiang; Lu, Quan N.; Newman, John W.; Toth, Thomas L.; and Wu, Michael A., 5,550,889, Cl. 378-113.000.
General Electric Company: *See*—
Abdel-Malek, Aiman A.; Hershey, John E.; Kliman, Gerald B.; and Koegl, Rudolph A. A., 5,550,880, Cl. 375-376.000.
Corby, Nelson R., Jr.; Meenan, Peter M.; Solanas, Claude H., III; and Vickerman, David C., 5,550,758, Cl. 364-571.030.
Gaus, Richard C., Jr., 5,550,505, Cl. 329-300.000.
Gupta, Rajiv; Noble, Julia A.; Hartley, Richard I.; and Schmitz, Andrea M., 5,550,376, Cl. 250-360.100.
Hershey, John E., 5,550,879, Cl. 375-376.000.
Howard, Patrick J.; and Chiao, Richard Y., 5,549,002, Cl. 73-602.000.
Howe, Thomas E.; Taccone, David M.; and Hartmann, Robert H., 5,548,989, Cl. 72-298.000.
Klappert, Willi, 5,548,887, Cl. 29-609.000.
Lewis, Larry N.; and Carothers, Terrell W., 5,550,272, Cl. 556-479.000.
Ryan, Kiernan F.; Sribar, Rok; and Savkar, Sudhir D., 5,548,979, Cl. 68-23.200.
Sakashita, Takeshi; Shimoda, Tomoaki; and Nagai, Takashi, 5,550,205, Cl. 528-176.000.
Scott, Curtis E.; Strok, Jack M.; and Levinson, Lionel M., 5,549,746, Cl. 117-4.000.
Stein, Judith, 5,550,271, Cl. 556-440.000.
General Hospital Corporation, The: *See*—
Latina, Mark A., 5,549,596, Cl. 606-4.000.
Genesis Composites, L.C.: *See*—
Pearce, Tony M., 5,549,743, Cl. 106-122.000.
Genesis Microchip Inc.: *See*—
Mandl, Peter, 5,550,764, Cl. 364-724.100.
GenTech Corporation: *See*—
Shashua, Amnon; and Poggio, Tomaso, 5,550,641, Cl. 358-335.000.
Gentelia, John S.: *See*—
Sutcu, Maz; Gentelia, John S.; and Aydil, Eray, 5,549,604, Cl. 606-45.000.
Genz, Earl J.: *See*—
Danek, Daniel J.; Etters, Harry N., Jr.; Genz, Earl J.; Johnston, Brigg A.; Littman, Iran R.; Long, John N.; Meadors, Anthony W.; Mercadante, Nicholas J.; Orrico, Mario M.; Schramme, Stephan H.; and Shedore, Charles J., 5,550,342, Cl. 200-448.000.
Genzyme Corporation: *See*—
Cheng, Seng H.; Marshall, John; Gregory, Richard J.; and Rafter, Patrick W., 5,550,056, Cl. 435-240.270.
Friedman, BethAnn; and Hayes, Michael, 5,549,892, Cl. 424-94.610.
Geoghegan, Tomas A.: *See*—
Ali, Ahmed H.; Firdaus, Vaseem; Geoghegan, Tomas A.; Kissin, Yury V.; and Mink, Robert I., 5,550,094, Cl. 502-115.000.
George, John B., to Thomson Consumer Electronics Inc. Parabolic correction signal amplitude control loop. 5,550,441, Cl. 315-371.000.
George Mason University: *See*—
Isbister, Jenefir D., 5,550,032, Cl. 435-39.000.
George, Pascal; Frost, Jonathan; Pasau, Patrick; Rousselle, Corinne; Bartsch, Régine; Williams, Paul Howard; and Muller, Jean Claude, to Synthelabo. 3-(2-aminomethyl)-4-[3-trifluoromethyl)benzoyl]-3-4 dihydro-2h-1,4-benzoxazine derivatives and their therapeutic application. 5,550,125, Cl. 514-230.500.
George, Pascal: *See*—
Frost, Jonathan; George, Pascal; Pasau, Patrick; Bartsch, Régine; Rousselle, Corinne; Williams, Paul H.; and Muller, Jean C., 5,550,162, Cl. 514-617.000.
Georges, Michael K.; Veregin, Richard P. N.; Kazmaier, Peter M.; and Hamer, Gordon K., to Xerox Corporation. Polymerization process and toner compositions therefrom. 5,549,998, Cl. 430-109.000.
Georgiou, Christos J.; Larsen, Thor A.; and Lee, Ki W., to International Business Machines Corporation. Digital phase alignment and integrated multichannel transceiver employing same. 5,550,860, Cl. 375-220.000.
Gerard, Robert D.: *See*—
Sambrook, Joseph F.; Madison, Edwin L.; Goldsmith, Elizabeth J.; Gething, Maryjane H.; and Gerard, Robert D., 5,550,042, Cl. 435-172.100.
Gerlach, Uwe: *See*—
Fischer, Gerd; Defossa, Elisabeth; Gerlach, Uwe; Hörlein, Rolf; Krass, Norbert; Lattrell, Rudolf; Stache, Ulrich; Wollmann, Theodor; and Isert, Dieter, 5,550,232, Cl. 540-230.000.
Gerrard, Barbara. Card game using cards having pictures of scenes and activities associated with different rooms in a home. 5,549,301, Cl. 273-305.000.
Gerritsen, Jan: *See*—
Van Vliembergen, Eduardus J. W.; Heemels, Robertus P. E. H.; Cremers, Louis M. G.; Hommersom, Frederik J.; and Gerritsen, Jan, 5,550,934, Cl. 382-229.000.
Gerszberg, Irwin: *See*—
Abbasi, Salman Y.; Gerszberg, Irwin; Kendig, Eugene T.; Martin, Jeffrey S.; and Oplinger, Thomas M., 5,550,898, Cl. 379-59.000.
Gertel, Maurice; and Haynes, Robert G. Gas spring assembly. 5,549,269, Cl. 248-562.000.
Gessner, Scott L.; and Fowells, William, to Fiberweb North America, Inc. Distribution enhanced polyolefin meltspinning process and product. 5,549,867, Cl. 264-555.000.
Gething, Maryjane H.: *See*—
Sambrook, Joseph F.; Madison, Edwin L.; Goldsmith, Elizabeth J.; Gething, Maryjane H.; and Gerard, Robert D., 5,550,042, Cl. 435-172.100.
Gfesser, James J.: *See*—
Chambers, Randall P.; Gfesser, James J.; Holmes, Martin E.; and Oberman, Kevin S., 5,551,080, Cl. 455-348.000.
Ghamaty, Saeid: *See*—
Elsner, Norbert B.; and Ghamaty, Saeid, 5,550,387, Cl. 257-15.000.
Ghelman, Bernard: *See*—
Miller, Theodore T.; and Ghelman, Bernard, 5,549,626, Cl. 606-200.000.
Ghezzi, Pietro: *See*—
Brion, Jean-Daniel; Chollet, Anne-Marie; Demuynck, Luc; De Montarby, Lucy; Rolland, Yves; Bonnet, Jacqueline; Ghezzi, Pietro; and Fradin, Armel, 5,550,143, Cl. 514-367.000.
Ghiraldi, Alberto, to N.R. Development Limited. Method and apparatus for absorbing heat and preserving fresh products at a predetermined temperature ensuring optimal conditions of same. 5,548,967, Cl. 62-99.000.
Giambattista, Lucio; and Siuta, Theodore, to Becton Dickinson and Company. Cartridge retainer assembly for medication delivery pen. 5,549,575, Cl. 604-232.000.
Gigante, Antonio: *See*—
Portaro, Antonio; Gigante, Antonio; Sassi, Fabio; and Belvederi, Bruno, 5,548,941, Cl. 53-444.000.
Gil, Dong S.: *See*—
Kim, Jung C.; Oh, Dong Y.; Choe, Gyu S.; Hong, Kyung S.; Kim, Kyung H.; Lee, Joo H.; Lee, Ha I.; Park, Kyeong B.; Gil, Dong S.; Kwon, Oh H.; and Kwon, Byoung H., 5,548,980, Cl. 68-133.000.
Gilbert, Peter J., to Acushnet Company. Golf club sole configuration. 5,549,296, Cl. 473-290.000.
Gill, Manzur, to National Semiconductor Corporation. Memory array utilizing multi-state memory cells. 5,550,772, Cl. 365-185.030.
Gilland, Dianne W.: *See*—
Baggett, William C.; Baines, Elliot A., Jr.; Filus, Wayne S.; Gilland, Dianne W.; Kluska, Theodore E.; Larsen, Wayne D.; Spaulding, Mark G.; and Starace, Jeremia P., 5,549,489, Cl. 439-709.000.
Gillett, Anthony F.: *See*—
Thomas, John F.; and Gillett, Anthony F., 5,549,513, Cl. 454-365.000.
Gillette Company: *See*—
Cancellieri, Jorge, 5,549,742, Cl. 106-22.00B.
Gilson, James P.: *See*—
Ely, Richard W.; Gilson, James P.; and Pawelski, Cathy, 5,550,182, Cl. 524-557.000.
Gimeno, D. Emilio M., to Iberoamericana Del Embalaje S.A. Stackable container with reinforced corners. 5,549,242, Cl. 229-191.000.

Ginder, John M.; Elie, Larry D.; and Davis, Lloyd C., to Ford Motor Company. Magnetic fluid-based magnetorheological fluids. 5,549,837, Cl. 252-62.520.
Ginsberg, Allen: *See*—
Gabbe, John D.; Ginsberg, Allen; and Robinson, Bethany S., 5,550,965, Cl. 395-154.000.
Giordano, Salvatore, to Officine Giordano S.R.L. Device for distributing oil under pressure and hydraulic hammer provided with said device. 5,549,031, Cl. 91-284.000.
Giose, Robert C.: *See*—
Bloemer, John M.; Balan, Isadore; Bonnell, Thomas A.; Bengtson, Alan D.; Giose, Robert C.; Reid, Mary J.; Fiumefreddo, John A.; and Kurth, Michael J., 5,548,854, Cl. 4-541.600.
Girotti, Michael: *See*—
Kanjo, Wajih; Smith, Eric; Demoise, Thomas J.; Girotti, Michael; McCabe, Thomas; Fessler, Charles B.; and Natschke, Scott, 5,549,363, Cl. 303-7.000.
Girts, Robert D.: *See*—
Hay, Rick H.; Smith, Clarence S.; Girts, Robert D.; and Yount, Larry J., 5,550,736, Cl. 364-424.030.
Giurtino, Joel F.: *See*—
Ryan, Dana W.; Giurtino, Joel F.; and Bales, Thomas O., 5,549,565, Cl. 604-167.000.
Glamkowski, Edward J.; and Chiang, Yulin, to Hoechst-Roussel Pharmaceuticals, Inc. 1-[(1,4-benzodioxanyl)alkyl]-4-(heteroaryl)piperidines and related compounds and their therapeutic utility. 5,550,130, Cl. 514-254.000.
Glamkowski, Edward J.: *See*—
Hamer, R. Richard L.; Helsley, Grover C.; Glamkowski, Edward J.; and Chiang, Yulin, 5,550,253, Cl. 548-429.000.
Hamer, R. Richard L.; Helsley, Grover C.; Glamkowski, Edward J.; and Chiang, Yulin, 5,550,254, Cl. 548-429.000.
Glas-Craft, Inc.: *See*—
Kukesh, Timothy S., 5,549,246, Cl. 239-9.000.
Gleichmann, Darin L. Multi-line in-line roller skate, multi-line in-line roller skate frame. 5,549,309, Cl. 280-7.100.
Globe Products Inc.: *See*—
Beakes, John M.; Clemenz, Gary E.; Dolgas, Patrick A.; Heaton, Mark T.; and Newman, Lawrence E., 5,549,253, Cl. 242-432.300.
Globe-Union Inc.: *See*—
Dougherty, Thomas J., 5,549,984, Cl. 429-61.000.
Heiman, Jerome R.; and Slayton, Gerald D., 5,549,986, Cl. 429-175.000.
Glück, Reinhard; and Brantschen, Stefan, to Schweiz. Serum- & Impfinstitut Bern. Hepatitis a virus strain, method for the isolation of new hepatitis a virus strains and hepatitis a vaccines. 5,549,896, Cl. 424-226.100.
Go, Hitoshi: *See*—
Uematsu, Takao; Shoji, Mitsuyoshi; Nakakawaji, Takayuki; Komatsuzaki, Shigeki; Ito, Yutaka; Morihara, Atsushi; Sato, Koji; Zushi, Shizuo; and Go, Hiroshi, 5,549,835, Cl. 508-204.000.
Goble, E. Marlowe; Luman, David P.; and Martins, Harold M., to Mitek Surgical Products, Inc. Modular surgical drill. 5,549,613, Cl. 606-80.000.
Gochnauer, Daniel B.: *See*—
Hodgson, David O.; and Gochnauer, Daniel B., 5,550,566, Cl. 345-202.000.
Godfrey-Phillips, Arthur H.; and Chapman, Graham, to Kent Cartridge Manufacturing Company Limited, The. Biodegradable shot-gun cartridge case. 5,549,048, Cl. 102-466.000.
Godiard, Laurence; Marco, Yves; Pontier, Dominique; and Roby, Dominique, to Sandoz Ltd. Hyper-sensitivity related gene. 5,550,228, Cl. 536-24.100.
Goebel, Werner: *See*—
Chakraborty, Trinad; Goebel, Werner; and Notermans, Servatius H. W., 5,550,022, Cl. 435-6.000.
Goedegebuure, Peter: *See*—
Eberlein, Timothy J.; Peoples, George E.; Yoshino, Ichiro; and Goedegebuure, Peter, 5,550,214, Cl. 530-328.000.
Goettelmann, John C.; and Macey, Christopher J., to Lucent Technologies Inc. Method and apparatus for direct conversion of programs in object code form between different hardware architecture computer systems. 5,551,015, Cl. 395-500.000.
Göhler, Peter: *See*—
Schingnitz, Manfred; Göhler, Peter; and Martin, Heinz, 5,550,312, Cl. 588-205.000.
Going Tokyo Co., Ltd.: *See*—
Mochida, Kazuomi, 5,549,724, Cl. 55-521.000.
Gold, Peter. Auto windshield molding with improved crown. 5,549,346, Cl. 296-93.000.
Golden, James B. Automatic bird feeder. 5,549,075, Cl. 119-57.920.
Goldenberg, J. Mel: *See*—
Michielli, Michael; Kashuba, Glen; Goldenberg, J. Mel; and Klippel, Jon I., 5,549,705, Cl. 623-23.000.
Goldenberg, Yoav: *See*—
Gurantz, Itzhak; Goldenberg, Yoav; and Raghavan, Sree A., 5,550,869, Cl. 375-340.000.
Goldmann, Siegfried: *See*—
Stoltefuss, Jürgen; Goldmann, Siegfried; Straub, Alexander; Bechem, Martin; Gross, Rainer; Hebisch, Siegbert; Hütter, Joachim; and Rounding, Howard-Paul, 5,550,245, Cl. 546-167.000.
Goldring, Michael W. Multi-level rotatable concentric ring marble game. 5,549,295, Cl. 273-123.00R.
Goldshdeyn, Alexsey: *See*—
Hellstrom, Ake A.; and Goldshdeyn, Alexsey, 5,549,793, Cl. 162-258.000.
Goldsmith, Elizabeth J.: *See*—
Sambrook, Joseph F.; Madison, Edwin L.; Goldsmith, Elizabeth J.; Gething, Maryjane H.; and Gerard, Robert D., 5,550,042, Cl. 435-172.100.
Goldsmith, Eric S.; Klingberg, Jeffrey W.; Bane, Ronald L.; and Ehmann, Charles M., to Motorola, Inc. Method and apparatus for communication variable length messages between register modeled radio devices. 5,551,068, Cl. 455-89.000.
Goldstar Co., Ltd.: *See*—
Jun, Gun S.; and Lee, Sang Y., 5,549,379, Cl. 312-408.000.
Kim, Jung C.; Oh, Dong Y.; Choe, Gyu S.; Hong, Kyung S.; Kim, Kyung H.; Lee, Joo H.; Lee, Ha I.; Park, Kyeong B.; Gil, Dong S.; Kwon, Oh H.; and Kwon, Byoung H., 5,548,980, Cl. 68-133.000.
Park, Kyung S., 5,550,652, Cl. 358-498.000.
Rim, Chai Y.; and Hong, Seong W., 5,550,591, Cl. 348-413.000.
Goldstein, Pinchas. Spyhole viewer. 5,550,673, Cl. 359-367.000.
Goldstein, Yeshayahu S. A.: *See*—
Widner, Melvin M.; Raleigh, Michael; Goldstein, Yeshayahu S. A.; and Greig, Joseph R., 5,549,046, Cl. 102-202.700.
Goliro, Martine; Holer, Martin; and Gati, Sandor, to Ciba-Geigy Corporation. Flowable aqueous dispersions of polycarboxylic acid corrosion inhibitors. 5,549,847, Cl. 252-394.000.
Gomez, Alfredo; Richards, William M.; and Murray, Douglas J., to Baker Hughes Incorporated. Overpull shifting tool. 5,549,161, Cl. 166-255.100.
Gomi, Masaao: *See*—
Dowler, James A.; Whitaker, Tyson B.; King, Julius D., Jr.; Murayama, Fumitaka; Takizawa, Satoru; Gomi, Masaao; and Itoh, Fumiyoshi, 5,550,627, Cl. 355-326.00M.
Goncalves, Antonin, to L'Oreal. Device for air-sheltered preparation of a paste for cosmetic use. 5,549,385, Cl. 366-314.000.
Gonzalez, Pierre: *See*—
Beauducel, Claude; Frot, Didier; and Gonzalez, Pierre, 5,549,008, Cl. 73-861.040.
Good, William R.: *See*—
Ebert, Charles D.; Heiber, Werner; Good, William R.; and Venkateshwaran, Srinivasan, 5,549,909, Cl. 424-447.000.
Goodman, Daniel E.: *See*—
Hoetzl, Max; and Goodman, Daniel E., 5,550,858, Cl. 373-110.000.
Goodman, David A.: *See*—
Duggan, George L.; and Goodman, David A., 5,550,431, Cl. 313-630.000.
Goodman, Robert M.; Knauf, Vic C.; Houck, Catherine M.; and Comai, Luca, to Calgene, Inc. Molecular farming. 5,550,038, Cl. 435-70.100.
Goody, Steven H.: *See*—
Albrecht, Alan; Goody, Steven H.; Spratt, Michael P.; Curcio, Joseph A., Jr.; and Dove, Daniel J., 5,550,836, Cl. 370-85.200.
Goossens, Andre F. L., to ITT Automotive Europe GmbH. Sensor including a follower for engaging the rotating portion of a bearing and having a sliding layer applied to the housing and encoder ring. 5,550,467, Cl. 324-173.000.
Gorbaty, Martin L.: *See*—
Puzic, Olga; Evers, Larry J.; Williamson, Kenneth E.; Gorbaty, Martin L.; and Nahas, Nicholas C., 5,549,744, Cl. 106-274.000.
Gordon, Jeffrey D., to Biomet, Inc. Apparatus for total temporomandibular joint replacement. 5,549,680, Cl. 623-18.000.
Gordon-Kamm, William J.: *See*—
Adams, Thomas R.; Chambers, Sheryl A.; Daines, Richard J.; Gordon-Kamm, William J.; Kausch, Albert P.; Lemaux, Peggy G.; Mackey, Catherine J.; Mangano, Mary L.; O'Brien, James V.; Rice, Thomas B.; Spencer, T. Michael; Start, William G.; and Willetts, Nancy G., 5,550,318, Cl. 800-205.000.
Gorman, Harry A.: *See*—
Greene, William J.; Matoushek, Robert J.; Gorman, Harry A.; and Weigand, John G., 5,549,864, Cl. 264-280.000.
Gosnell, Raymond H.: *See*—
Jordan, Richard A.; Jacoby, James W., Jr.; and Gosnell, Raymond H., 5,549,056, Cl. 108-51.100.
Goto, Toru: *See*—
Ito, Seiichi; Goto, Toru; and Kawamura, Kazuhiro, 5,549,039, Cl. 99-340.000.
Goto, Tsuyoshi; and Sugimoto, Hiroyuki, to Mazda Motor Corporation. Power train having supercharged engine. 5,549,095, Cl. 123-559.100.
Goto, Yoshiro: *See*—
Wakana, Shinichi; Ozaki, Kazuyuki; Goto, Yoshiro; and Umehara, Yasutoshi, 5,550,479, Cl. 324-750.000.
Gottschalk, Donald A., Jr.: *See*—
Pascucci, Gregory A.; Rasmussen, David E.; Decious, Gaylon M.; Garbe, James R.; Hyzer, Susan M.; Woest, Karen L.; Vairavan, Vairavan; Koch, David L.; Gottschalk, Donald A., Jr.; Burkhardt, Dennis E.; Standish, Darrell E.; Madaus, Paul W.; Spacek, Dan J.; Nesler, Clay G.; Stark, James K.; Mageland, Otto M.; Singers, Robert R.; and Wagner, Michael E., 5,550,980, Cl. 395-200.050.
Goudy, Eric S.: *See*—
Ju, Gwo-Tarng; Goudy, Eric S.; and Ayers, Ray R., 5,549,417, Cl. 405-211.000.
Gould, W. Douglas; Lortie, Lyne; and Béchard, Geneviève, to Natural Resources - Canada. Method for inhibiting the formation of acid mine drainage. 5,550,141, Cl. 514-363.000.
Goulden, Alistair J.: *See*—

Moore, Christopher P.; Wear, Trevor J.; Beer, Paul D.; and Goulden, Alistair J., 5,550,268, Cl. 556-145.000.

Gourdine, Meredith C., to Energy Innovations, Inc. Method and apparatus for transferring heat, mass, and momentum between a fluid and a surface. 5,548,907, Cl. 34-448.000.

Goyal, Shivendra K.: *See*—
Chiu, Ramen; Taylor, Joseph W.; Cooke, David L.; Goyal, Shivendra K.; and Oswin, Robert E., 5,550,193, Cl. 525-199.000.

Grabher, Guenter, to Grass AG. Panel adjustment component for adjusting the incline of drawers pull-outs, or other similar items. 5,549,378, Cl. 312-348.400.

Grabowski, Norbert E., to Chrysler Corporation. Luggage rack. 5,549,229, Cl. 224-321.000.

Grafwalliner, Franz: *See*—
Luger, Peter; Grafwalliner, Franz; Peller, Helmuth; Müller, Martin; Malyshev, Valentin V.; Logvinlouk, Viacheslav P.; Ozeretskovsky, Vladmimir S.; and Shengardt, Alexander S., 5,548,962, Cl. 62-50.100.

Grafwallner, Franz: *See*—
Luger, Peter; Grafwallner, Franz; Peller, Helmuth; Müller, Martin; Malyshev, Valentin V.; Galperin, Sergey B.; and Logvinlouk, Viacheslav P., 5,548,961, Cl. 62-47.100.

Graham, John W.; McTighe, Timothy; and Mraz, Paul, to Ortho Development Corporation. Segmented prosthetic articulation. 5,549,700, Cl. 623-22.000.

Graham, Malcolm: *See*—
Hung, Ju M.; and Graham, Malcolm, 5,550,191, Cl. 525-92.00C.

Grahm, Norman B. Method for increasing the strength, flexibility and span of a hand. 5,549,520, Cl. 432-47.000.

Graindorge, Hervé; Mondet, Jean-Claude; and Vincent, Charles-Henry, to Societe Nationale Des Poudres Et Explosifs. Process for the synthesis of haloalkylferrocenes. 5,550,267, Cl. 556-144.000.

Grant, Robert C.: *See*—
Laughlin, Timothy E.; and Grant, Robert C., 5,549,875, Cl. 422-266.000.

Granz, Helmut: *See*—
Focke, Heinz; and Granz, Helmut, 5,549,537, Cl. 493-162.000.

Gras, Rainer; and Wolf, Elmar, to Huels Aktiengesellschaft. Polyamines containing urea groups. 5,550,206, Cl. 528-229.000.

Grass AG: *See*—
Grabher, Guenter, 5,549,378, Cl. 312-348.400.
Grass, Alfred, sen., 5,548,870, Cl. 16-254.000.

Grass, Alfred, sen., to Grass AG. Hinge cup with releasable fastener in a cabinet component. 5,548,870, Cl. 16-254.000.

Grass America, Inc.: *See*—
Domenig, Georg, 5,549,376, Cl. 312-334.500.

Grasselli, Robert K.: *See*—
Agaskar, Pradyot A.; and Grasselli, Robert K., 5,550,308, Cl. 585-623.000.

Grau Limited: *See*—
Broome, William S., 5,549,362, Cl. 303-3.000.

Gravelle, Stephen W.: *See*—
Gard, Michael F.; Gravelle, Stephen W.; Hsieh, Jiang; Lu, Quan N.; Newman, John W.; Toth, Thomas L.; and Wu, Michael A., 5,550,889, Cl. 378-113.000.

Graveston, Mark G.: *See*—
Llewellyn, Laurence; Graveston, Mark G.; Kandasamy, Ispran S.; and Hale, Peter G., 5,550,947, Cl. 385-134.000.

Gray, Charles L., Jr.; and Hellman, Karl H., to United States of America, Environmental Protection Agency. Combined cycle engine. 5,549,087, Cl. 123-254.000.

Gray, Mark F., to TRW Vehicle Safety Systems Inc. Child restraint system. 5,549,356, Cl. 297-256.150.

Green, David T.; Sienkiewicz, Henry R.; Ratcliff, Keith; Castro, Salvatore; and Manzo, Scott E., to United States Surgical Corporation. Apparatus and method for applying and adjusting an anchoring device. 5,549,617, Cl. 606-144.000.

Green, Donald E., to Oral-D. Substituted orally effective ION chelators related to deferoxamine. 5,550,161, Cl. 514-616.000.

Green, Gina. Hair coloring device. 5,549,126, Cl. 132-270.000.

Green, John D.; and Pitel, Ira J., to Holophane Corporation. System and method for controlling DC to AC voltage inverter. 5,550,697, Cl. 361-18.000.

Green, Michael J.: *See*—
Tompkins, Michael E.; and Green, Michael J., 5,550,753, Cl. 364-505.000.

Greene, Jeffrey M.: *See*—
Tarter, Fred B.; Greene, Jeffrey M.; De Fazio, Thomas J.; Peck, Jan; Wylie, L. Stephen; Magnotte, Mark M.; Hall, Del; and Tarter, Scott A., 5,550,734, Cl. 364-401.00R.

Greene, William J.; Matoushek, Robert J.; Gorman, Harry A.; and Weigand, John G., to Eastman Kodak Company. Process for decurling a strip of photosensitive material. 5,549,864, Cl. 264-280.000.

Greenmaster Industrial Corp.: *See*—
Wang, Leao; and Wu, Peter, 5,549,535, Cl. 482-138.000.

Greenwood, Brian F.: *See*—
Nykanen, Tuomo S.; Greenwood, Brian F.; Gullichsen, Johan; Kiiskila, Erkki; Mattelmaki, Esko; Phillips, Joseph R.; Richardsen, Jan T.; Ryham, Rolf; Soderman, Jarmo; and Wiklund, Karl G., 5,549,788, Cl. 162-29.000.

Gregoire, Daniel J.; Harvey, Robin J.; Dolezal, Franklin A.; and Williamson, Weldon S., to Hughes Aircraft Company. Corona source for producing corona discharge and fluid waste treatment with corona discharge. 5,549,795, Cl. 204-164.000.

Gregory, Christopher C., to Galileo Electro-Optics Corporation. Integrated image conduit and illumination. 5,550,945, Cl. 385-116.000.

Gregory, Richard J.: *See*—
Cheng, Seng H.; Marshall, John; Gregory, Richard J.; and Rafter, Patrick W., 5,550,056, Cl. 435-240.270.

Greig, Joseph R.: *See*—
Widner, Melvin M.; Raleigh, Michael; Goldstein, Yeshayahu S. A.; and Greig, Joseph R., 5,549,046, Cl. 102-202.700.

Greig, Kevin M.: *See*—
Johnson, Todd S.; and Greig, Kevin M., 5,549,686, Cl. 623-20.000.

Greiner, Heinz: *See*—
Engbersen, Gerhard; Greiner, Heinz; and Schorscher, Peter, 5,549,391, Cl. 384-51.000.

Greinke, Ronald A.: *See*—
Lewis, Irwin C.; Pirro, Terrence A.; Greinke, Ronald A.; Bretz, Richard I.; and Kampe, Dennis J., 5,550,176, Cl. 524-6.000.

Grenci, Charles; and Clayton, R. Dallas. Method of connecting a clean socket fit connection. 5,548,895, Cl. 29-890.141.

Grewe, Anthony J.: *See*—
Ensor, Myra L.; Grewe, Anthony J.; and Singer, Howard M., 5,550,900, Cl. 379-67.000.

Griefer, Allan D.: *See*—
Drake, Samuel; Griefer, Allan D.; Powers, John T., Jr.; and Thomas, John G., 5,550,966, Cl. 395-154.000.

Gries, Patrick J.; and Nguyen, Quoc, to Motorola, Inc. Method of handing off a communication unit in a cellular communication system. 5,550,828, Cl. 370-95.100.

Grifols Lucas, Victor. Process of making a flow regulation device. 5,549,866, Cl. 264-451.000.

Grimes, Stephen H.: *See*—
Steinberger, Richard N.; and Grimes, Stephen H., 5,549,027, Cl. 84-297.00R.

Grinnell, Brian W., to Eli Lilly and Company. Method for co-amplification of human protein C genes in human cells. 5,550,036, Cl. 435-69.100.

Grollier, Jean F., to L'Oreal. Photostable filtering cosmetic composition. 5,549,886, Cl. 424-59.000.

Grondalski, Richard A.: *See*—
Acosta, Phyllis J. B.; Grondalski, Richard A.; Liebrecht, Jeffrey W.; and Reynolds, Patricia A., 5,550,146, Cl. 514-400.000.

Gröninger, Kay S.: *See*—
Wirth, Hermann O.; Friedrich, Hans-Helmut; and Gröninger, Kay S., 5,550,276, Cl. 558-177.000.

Grose, Brian L.: *See*—
Crandall, F. Anthony; Jorgensen, Kevin V.; Grose, Brian L.; and Tyler, Monroe, 5,550,792, Cl. 367-155.000.

Gross, James R., to Kendall Company, The. Apparatus for removing fluid from a wound. 5,549,584, Cl. 604-313.000.

Gross, James R.: *See*—
Qin, Jian; Gross, James R.; Mui, William J.; Ning, Xin; Schroeder, Wen Z.; and Sun, Tong, 5,550,189, Cl. 525-54.300.

Gross, Rainer: *See*—
Stoltefuss, Jürgen; Goldmann, Siegfried; Straub, Alexander; Bechem, Martin; Gross, Rainer; Hebisch, Siegbert; Hütter, Joachim; and Rounding, Howard-Paul, 5,550,245, Cl. 546-167.000.

Grossman, Paul T.: *See*—
Weltikol, Larry E.; and Grossman, Paul T., 5,548,860, Cl. 15-50.100.

Grosvenor, Victor L.: *See*—
Clough, Thomas J.; Grosvenor, Victor L.; and Pinsky, Naum, 5,549,990, Cl. 429-204.000.

Groth, Hugh F.: *See*—
Stumphauzer, William C.; Groth, Hugh F.; and Duncan, John K., 5,549,037, Cl. 99-323.100.

Grouffal, Christian: *See*—
Rialan, Joseph; and Grouffal, Christian, 5,550,787, Cl. 367-77.000.

Grout, John E., to Ergonomix Armdec Pty. Ltd. Desk frame. 5,549,053, Cl. 108-147.000.

Greutas, William C., to Wichita State University, The. Serine protease inhibitors. 5,550,139, Cl. 514-362.000.

Grozinger, Karl G.: *See*—
Hargrave, Karl D.; Cullen, Ernest; Proudfoot, John R.; Grozinger, Karl G.; Pal, Kollol; and Adams, Julian, 5,550,117, Cl. 514-81.000.

Gruenke, Roger A.; and Trimble, Russell L., to Puritan-Bennett Corporation. Inspiratory airway pressure system using constant pressure and measuring flow signals to determine airway patency. 5,549,106, Cl. 128-204.230.

Gstrein, Hippolit, to Huyck Licensco, Inc. Papermakers' press fabric with increased contact area. 5,549,967, Cl. 428-229.000.

Guch, Steve, Jr.; and Hovis, Floyd, to Litton Systems, Inc. Laser system decontamination method and apparatus. 5,550,851, Cl. 372-33.000.

Guests, John D. Method for manufacture of an elastomeric tube coupling body. 5,549,865, Cl. 264-318.000.

Gui, Ann: *See*—
Liang, Jui; Co, Ramon; and Gui, Ann, 5,550,515, Cl. 331-11.000.

Guillermin, Laurent: *See*—
Nauche, Michel; and Guillermin, Laurent, 5,549,503, Cl. 451-11.000.

Guindon, Yvan: *See*—
Beaulieu, Pierre L.; Guindon, Yvan; and Wernic, Dominik M., 5,550,291, Cl. 564-357.000.

Guinto, Joseph F.: *See*—
Eustathios, Vassiliou; Schaefer, Walter R.; and Guinto, Joseph F., 5,549,472, Cl. 432-103.000.

Gulachenski, Joseph: *See*—

Steinke, Thomas A.; Gulachenski, Joseph; and Curtis, R. Thomas, III, 5,549,557, Cl. 604-103.000.

Gullichsen, Johan: *See*—
Nykanen, Tuomo S.; Greenwood, Brian F.; Gullichsen, Johan; Kiiskila, Erkki; Mattelmaki, Esko; Phillips, Joseph R.; Richardsen, Jan T.; Ryham, Rolf; Soderman, Jarmo; and Wiklund, Karl G., 5,549,788, Cl. 162-29.000.

Gunderia, Ashutosh: *See*—
Corporon, Max A.; Wehner, Tim J.; and Gunderia, Ashutosh, 5,549,349, Cl. 276-188.000.

Gundrum, William W. Automotive manual transmission shifting mechanism. 5,549,020, Cl. 74-606.00R.

Gunter, Brad: *See*—
Garrity, Doug; Anderson, David; Anderson, Howard; Gunter, Brad; and Bersch, Danny, 5,550,503, Cl. 327-437.000.

Gunya, Robert E.; and Jackson, Otto V., to Milieu Systems Corp. Containment vessels for handling and disposing of liquid waste. 5,549,586, Cl. 604-319.000.

Guo, Xin S., to Applied Materials, Inc. Cleaning of a PVD chamber containing a collimator. 5,549,802, Cl. 204-298.110.

Guo, Yili, to Rohm and Haas Company. Methods of using manganese chloride for improving the wetting of particulates. 5,550,100, Cl. 504-116.000.

Gupta, Rajiv; Noble, Julia A.; Hartley, Richard I.; and Schmitz, Andrea M., to General Electric Company. Method of calibration of imaging devices. 5,550,376, Cl. 250-360.100.

Gurantz, Itzhak; Goldenberg, Yoav; and Raghavan, Sree A., to Comstream Corporation. Demodulator for consumer uses. 5,550,869, Cl. 375-340.000.

Gustafson, Per: *See*—
Ostlund, Ake; Oscarsson, Ulf; Gustafson, Per; and Akesson, Leif, 5,549,980, Cl. 428-698.000.

Guthrie, John: *See*—
Kneafsey, Brendan J.; and Guthrie, John, 5,550,201, Cl. 526-204.000.

Guyonard, Yvon: *See*—
Bloch, Nicolas; Guyomard, Yvon; and Jouneno, Michel, 5,549,105, Cl. 128-203.120.

H-O-H Research Inc.: *See*—
Mar, Michael W., 5,549,794, Cl. 202-169.000.

Haas, John D.; Christianson, Todd J.; and Bruxvoort, Wesley J., to Minnesota Mining and Manufacturing Company. Abrasive article, a process for its manufacture, and a method of using it to reduce a workpiece surface. 5,549,961, Cl. 428-143.000.

Häberlein, Peter; and Link, Hans, to Institut Dr. Friedrich Forster Prufgerätebau GmbH & Co. KG. Method and apparatus for adjusting the operating diameter of a probe in a rotating testing head. 5,550,468, Cl. 324-225.000.

Hach Company: *See*—
Harp, Daniel L.; Johnson, Gary; and Myers, Joe, 5,549,816, Cl. 210-120.000.

Haddad, Kenneth R.: *See*—
Connell, Lawrence E.; Paitl, Kenneth A.; Roeckner, William J.; and Haddad, Kenneth R., 5,551,078, Cl. 455-343.000.

Hagans, Karla; Berzins, Leon; Galkowski, Joseph; and Seng, Rita, to United States of America, Energy. Self-tuning method for monitoring the density of a gas vapor component using a tunable laser. 5,550,636, Cl. 356-437.000.

Hagimori, Kenji; Abe, Yuzuru; and Kanke, Tetsuo, to Toshin Chemical Industry Co., Ltd. Method of decomposing hydrogen peroxide. 5,549,833, Cl. 210-757.000.

Hagiya, Michio: *See*—
Francavilla, Antonio T.; Hagiya, Michio; and Starzl, Thomas E., 5,550,037, Cl. 435-69.100.

Haglund, John R.: *See*—
Shih, Lionel C.; and Haglund, John R., 5,550,684, Cl. 360-48.000.

Hahn, Roger; Bowles, Ray; and Phelps, Wendel, to Coors Brewing Company. Apparatus for coating strip material. 5,549,752, Cl. 118-234.000.

Hahnen, Kevin F., to Symbiosis Corporation. Roller electrodes for electrocautery probes for use with a resectoscope. 5,549,605, Cl. 606-46.000.

Haider, Syed S.: *See*—
Bhattacharya, Arup K.; and Haider, Syed S., 5,550,765, Cl. 364-725.000.

Haldar, Pradeep: *See*—
Motowidlo, Leszek; and Haldar, Pradeep, 5,550,103, Cl. 505-430.000.

Hale, Peter G.: *See*—
Llewellyn, Laurence; Graveston, Mark G.; Kandasamy, Ispran S.; and Hale, Peter G., 5,550,947, Cl. 385-134.000.

Hall, Del: *See*—
Tarter, Fred B.; Greene, Jeffrey M.; De Fazio, Thomas J.; Peck, Jan; Wylie, L. Stephen; Magnotte, Mark M.; Hall, Del; and Tarter, Scott A., 5,550,734, Cl. 364-401.00R.

Hall, Dieter; and Sassen, Klaus, to Robert Bosch GmbH. Process and device for controlling an internal combustion engine. 5,550,740, Cl. 364-431.010.

Hall, G. Gordon. Liquid spring for punch press. 5,549,281, Cl. 267-119.000.

Hall, Randy W.: *See*—
Engel, John F.; Kamienski, Conrad W.; Schwindeman, James A.; Hall, Randy W.; Morrison, Robert C.; and Dover, B. Troy, 5,550,203, Cl. 526-336.000.

Halleck, Michael D.; James, Donald N.; and Halleck, Michael E., to I Am Fine, Inc. Apparatus and method for remote monitoring of physiological parameters. 5,549,113, Cl. 128-671.000.

Halleck, Michael E.: *See*—
Halleck, Michael D.; James, Donald N.; and Halleck, Michael E., 5,549,113, Cl. 128-671.000.

Hallett, Brian H.; and Hartley, Michael S., to United States of America, Energy. Leak test adapter for containers. 5,548,992, Cl. 73-49.200.

Hallett, William A.: *See*—
Powell, Dennis; Paul, Rolf; Hallett, William A.; Berger, Dan M.; and Dutia, Minu D., 5,550,149, Cl. 514-416.000.

Halling, Robert A., to Du Pont de Nemours, E. I., and Company. Hydrolyzed silane emulsions and their use as surface coatings. 5,550,184, Cl. 524-837.000.

Hama, Kaoru: *See*—
Takagi, Mariko; Yoshii, Ichiro; Hama, Kaoru; Ikeda, Naoki; and Yasuda, Hiroaki, 5,550,400, Cl. 257-530.000.

Hamaekers, Arno, to Firma Carl Freudenberg. Vibration canceler. 5,549,271, Cl. 248-621.000.

Hamamatsu Photonics K.K.: *See*—
Sugawara, Takeo; Hino, Toshihiko; and Suzuki, Makoto, 5,550,380, Cl. 250-370.110.

Hamamatsu Photonics K.K.: *See*—
Miyakawa, Atsuo; Hirano, Masahiko; and Kamiya, Kiyoshi, 5,550,031, Cl. 435-29.000.

Hamano, Haruto: *See*—
Kitajima, Hiroshi; Aoki, Hidemitsu; Hamano, Haruto; Morita, Makoto; Shiramizu, Yoshimi; Nakamori, Masaharu; Watanabe, Kaori; Seo, Hirofumi; Shimizu, Yuji; Iuchi, Makoto; Sasaki, Yasushi; and Ohta, Nahomi, 5,549,798, Cl. 204-222.000.

Hamano, Masahisa: *See*—
Kai, Kazuyuki; Hamano, Masahisa; Homma, Hitoshi; Mori, Akira; and Masuko, Takashi, 5,549,244, Cl. 236-34.500.

Hamer, Gordon K.: *See*—
Georges, Michael K.; Veregin, Richard P. N.; Kazmaier, Peter M.; and Hamer, Gordon K., 5,549,998, Cl. 430-109.000.

Hamer, R. Richard L.; Helsley, Grover C.; Glamkowski, Edward J.; and Chiang, Yulin, to Hoechst-Roussel Pharmaceuticals, Inc. Memory enhancing and analgestic 1,2,3,3A,8,8A-hexahydro-3A,8(and 1,3A,8)-di (and tri)methylpyrrolo[2,3-b]-indoles. 5,550,253, Cl. 548-429.000.

Hamer, R. Richard L.; Helsley, Grover C.; Glamkowski, Edward J.; and Chiang, Yulin, to Hoechst-Roussel Pharmaceuticals, Inc. Memory enhancing and analgesic 1,2,3,3A,8,8A-hexahydro-3A,8 (and 1,3A,8)-di (and tri) methylpyrrolo[2,3-B] indoles. 5,550,254, Cl. 548-429.000.

Hamilton, Harold J., to Censtor Corp. Size-independent, rigid-disk, magnetic, digital-information storage system with localized read/write enhancements. 5,550,691, Cl. 360-103.000.

Hamm, Valery. Device for supplying power to and monitoring an electric fence. 5,550,530, Cl. 340-564.000.

Hammang, Joseph P.: *See*—
Holland, Laura M.; Hammang, Joseph P.; Rudnick, Seth A.; Lysaght, Michael J.; and Dionne, Keith E., 5,550,050, Cl. 435-240.200.

Hammerslag, Julius G. Battery charging and transfer system. 5,549,443, Cl. 414-786.000.

Hammond, James M.: *See*—
Boyette, James E., Jr.; Hammond, James M.; Lo, Jiann-Chang; Mahlbacher, James C.; Servedio, Michael; and Taheri, Ali R., 5,550,483, Cl. 324-758.000.

Hammond, Timothy; and Bal, Jasbinder S., to Zeneca Limited. Polyester composition. 5,550,173, Cl. 523-122.000.

Handwerker, Gary. Heat reflective blanket. 5,549,956, Cl. 428-73.000.

Hann, Edward H.: *See*—
Johansen, Curt C.; Moore, Mark P.; and Hann, Edward H., 5,549,659, Cl. 607-60.000.

Hannah, Eric C., to Intel Corporation. Apparatus and method for motion estimation with enhanced camera interface. 5,550,595, Cl. 348-552.000.

Hans Oetiker AG Maschinen- und Apparatefabrik: *See*—
Oetiker, Hans, 5,548,872, Cl. 24-20.0CW.
Oetiker, Hans, 5,548,876, Cl. 24-271.000.

Hansen, C. Calvin, to C. Calvin Hansen Trust U/A. Emergency escape apparatus. 5,549,180, Cl. 187-347.000.

Hansen, Kent W.: *See*—
Lebby, Michael S.; Chun, Christopher K. Y.; Kuo, Shun-Meen; and Hansen, Kent W., 5,550,941, Cl. 385-49.000.

Hansen, Kurt, to Borland International, Inc. Method of storing national language support text by presorting followed by insertion sorting. 5,551,018, Cl. 395-600.000.

Hanson, Van E.: *See*—
McLeod, Clark E.; Hogan, Steven J.; Feltz, Kristi T.; Murdock, Douglas R.; and Hanson, Van E., 5,550,899, Cl. 379-67.000.

Hara, Yoshifusa: *See*—
Kato, Mutsuno; Hara, Yoshifusa; and Takada, Masao, 5,550,275, Cl. 558-140.000.

Hara, Yoshihiro: *See*—
Ishida, Tokuji; Nakanishi, Yasuo; Ishimura, Toshihiko; Katoh, Takehiro; Ishibashi, Kenji; Hara, Yoshihiro; Kondo, Takashi; and Yoshino, Hiroshi, 5,550,611, Cl. 354-400.000.

Harada, Hisayuki; and Tomita, Toshitsugu, to Olympus Optical Co., Ltd. Image storing managing apparatus and method for retreiving and displaying merchandise and customer specific sales information. 5,551,021, Cl. 395-600.000.

Harada, Minoru: *See*—
Kamiya, Ichiro; Shinjo, Ryoichi; Murakami, Takeshi; Nishioka, Yukiko; and Harada, Minoru, 5,549,874, Cl. 422-186.040.

Harada, Seiji: *See*—
Nakano, Yasuyoshi; and Harada, Seiji, 5,551,071, Cl. 455-161.200.

Haraguchi, Yoshio; and Okuda, Minoru, to Sony Corporation. Optical element rotating device for liquid-crystal. 5,550,605, Cl. 353-81.000.
Harata, Hiroaki. Method for evaluating gloss and brightness character of coated paint film. 5,550,632, Cl. 356-446.000.
Harata, Yasuki: *See*—
Sano, Keiichi; Aya, Yoichiro; Terada, Norihiro; and Harata, Yasuki, 5,549,763, Cl. 136-255.000.
Harb, Mitchell A. Burial compartment. 5,548,880, Cl. 27-2.000.
Harbaugh, Mark E.: *See*—
Daigle, Kenneth P.; and Harbaugh, Mark E., 5,549,703, Cl. 623-23.000.
Hardin, Bert A. Ladder bracing for gutters. 5,549,261, Cl. 248-48.200.
Hardwick, Ken; and Stone, Geoffrey C., to Storage Technology Corporation. Method and apparatus for virtual switching. 5,550,816, Cl. 370-60.000.
Hardy, David H.: *See*—
Holmes, Gary L.; Culler, Scott R.; Hardy, David H.; Harmon, Kimberly K.; Heiti, Robert V.; Hendrickson, William A.; Klun, Thomas P.; Spurgeon, Kathryn M.; and Studiner, Charles J., III, 5,549,962, Cl. 428-144.000.
Hare, Alan W.: *See*—
Cline, Carl F.; Wilkins, Mark W.; and Hare, Alan W., 5,549,731, Cl. 75-244.000.
Harel, Avikam: *See*—
Mendes, Emanuel; Iron, Gideon; and Harel, Avikam, 5,549,660, Cl. 607-088.000.
Hargrave, Karl D.; Cullen, Ernest; Proudfoot, John R.; Grozinger, Karl G.; Pal, Kollol; and Adams, Julian, to Boehringer Ingelheim Pharmaceuticals, Inc. Dipyrido[3,2-B:2 ',3'-E][1,4]Diaqzepines and their use in the treatment of HIV infection. 5,550,117, Cl. 514-81.000.
Hargrave, Karl D.; Schmidt, Gunther, deceased (by Margaret Schmidt, legal representative), to Boehringer Ingelheim Pharmaceuticals, Inc. Pyrido[2,3-b][1,5]benzoxazepin (and thiazepin)-5(6H)-ones and thiones and their use on the treatment of HIV infection. 5,550,122, Cl. 514-211.000.
Harmon, Kimberly K.: *See*—
Holmes, Gary L.; Culler, Scott R.; Hardy, David H.; Harmon, Kimberly K.; Heiti, Robert V.; Hendrickson, William A.; Klun, Thomas P.; Spurgeon, Kathryn M.; and Studiner, Charles J., III, 5,549,962, Cl. 428-144.000.
Harmon, Stewart M.: *See*—
Butterfield, Eric J.; Cockram, George R.; Harmon, Stewart M.; and Talbot, Roy, 5,549,132, Cl. 137-270.000.
Harner, Russell R. L.: *See*—
Tegeler, John J.; Rauckman, Barbara S.; Harner, Russell R. L.; Freed, Brian S.; and Merriman, Gregory H., 5,550,247, Cl. 546-314.000.
Harnischfeger Corporation: *See*—
Luebke, Roger D.; and Khoury, Randy H., 5,549,799, Cl. 204-222.000.
Harp, Daniel L.; Johnson, Gary; and Myers, Joe, to Hach Company. Re-usable piston filter system. 5,549,816, Cl. 210-120.000.
Harper Truck, Inc: *See*—
Dunkle, Gary L., 5,549,317, Cl. 280-652.000.
Harrington, Gary L., to Ceram Incorporated. Method and apparatus for detecting single or multiple bit errors instorage devices. 5,550,849, Cl. 371-37.100.
Harris, Bernard; and Bozych, Dennis E., to Rexnord Corporation. Manufacturing process for filament wound thrust bearing. 5,549,772, Cl. 156-154.000.
Harris Corporation: *See*—
Belcher, Donald K., 5,550,824, Cl. 370-71.000.
Bell, David M.; Bryan, Joseph K.; and Black, Stephen B., 5,550,937, Cl. 382-293.000.
Procter, James A., Jr.; and Otto, James C., 5,550,549, Cl. 342-47.000.
Harris, John, to Frontier Plastics (South Wales) Limited. Closure devices. 5,549,214, Cl. 220-339.000.
Harris, Rodney M.; Shalati, Mohamad D.; and Bibeau, Joyce A., to Sherwin-Williams Company, The. Graft copolymers having anhydride functionality. 5,550,195, Cl. 525-285.000.
Harris, Rodney M.: *See*—
Valpey, Richard S., III; Shalati, Mohamad D.; Harris, Rodney M.; and Yokoyama, Thomas W., 5,550,197, Cl. 525-327.400.
Harris, Terry L.: *See*—
Fletcher, James D.; and Harris, Terry L., 5,549,231, Cl. 224-536.000.
Harrison, Peter D.; and Hodgkinson, Sarah, to Nokia Mobile Phones Ltd. Radio apparatus having a combined antenna and clip. 5,551,069, Cl. 455-90.000.
Harrison, William A.: *See*—
Dao-Cong, Dong; and Harrison, William A., 5,550,280, Cl. 558-415.000.
Hart, Charles M., to J. M. Huber Corporation. Field installed slotted rod guide and method. 5,549,158, Cl. 166-241.400.
Hart, Cornelis M.: *See*—
Woerlee, Pierre H.; and Hart, Cornelis M., 5,550,773, Cl. 365-185.230.
Hart, Courtney L.; Tischer, Brian F.; and Lloyd, David G. Safety snap. 5,548,875, Cl. 24-265.00H.
Hart, Donald P.: *See*—
Scheibelhoffer, Anthony S.; Berlin, Michael J.; Sahni, Atam P.; Dusek, Dianna B.; and Hart, Donald P., 5,549,929, Cl. 427-282.000.
Hart, Jack E.; Burrows, Ralph M.; and Marquardt, Michael E., to Heath Tecna Aerospace Company. Retrofit luggage bin assembly compatible with existing aircraft bin supports. 5,549,258, Cl. 244-118.100.
Hart, Lemuel R. Steering wheel lock. 5,548,983, Cl. 70-209.000.
Hartley, Michael S.: *See*—
Hallett, Brian H.; and Hartley, Michael S., 5,548,992, Cl. 73-49.200.
Hartley, Richard I.: *See*—
Gupta, Rajiv; Noble, Julia A.; Hartley, Richard I.; and Schmitz, Andrea M., 5,550,376, Cl. 250-360.100.
Hartman, Brian W.; Juranovic, Lillian R.; Scannell, Stephen C.; and Williams, Rogers B., to Recot, Inc. Monolayer curl-salting process and apparatus. 5,549,918, Cl. 426-291.000.
Hartman, Donn A.: *See*—
Dworak, Adam J.; and Hartman, Donn A., 5,549,144, Cl. 141-146.000.
Hartmann, Robert H.: *See*—
Howe, Thomas E.; Taccone, David M.; and Hartmann, Robert H., 5,548,989, Cl. 72-298.000.
Haruyama, Junzi, to NEC Corporation. Heterojunction FET having barrier layer consisting of two layers between channel and buffer layers. 5,550,388, Cl. 257-24.000.
Harvey, Robin J.: *See*—
Gregoire, Daniel J.; Harvey, Robin J.; Dolezal, Franklin A.; and Williamson, Weldon S., 5,549,795, Cl. 204-164.000.
Harwin, Steven F. Acetabular cup. 5,549,691, Cl. 623-22.000.
Hasegawa, Haruhiro: *See*—
Nishino, Toshikazu; Hatano, Mutsuko; Hasegawa, Haruhiro; Nakane, Hideaki; Kawabe, Ushio; Saitoh, Kazuo; Suga, Mitsuo; and Takagi, Kazumasa, 5,550,389, Cl. 257-30.000.
Hasegawa, Ko; Teramoto, Toshio; Nakajima, Tatsuo; and Konomoto, Takeyoshi, to Japan Synthetic Rubber Co., Ltd.; and NTN Corporation. Thermoplastic elastomer composition. 5,550,190, Cl. 525-92.00A.
Hasegawa, Shinya: *See*—
Kayashima, Shigeo; Hasegawa, Shinya; Maeda, Satoshi; and Aritake, Hirokazu, 5,550,655, Cl. 359-17.000.
Hasegawa, Takashi: *See*—
Kimura, Yoichi; Kumada, Isao; Hasegawa, Takashi; and Tamura, Satoshi, 5,550,620, Cl. 355-273.000.
Hasegawa, Takeshi; and Yamamoto, Takashi, to Fuji Photo Film Co., Ltd. Negative carrier for photographic printer. 5,550,613, Cl. 355-41.000.
Hasegawa, Yusuke; Komoriya, Isao; Akazaki, Shusuke; Maki, Hidetaka; and Abe, Satoru, to Honda Giken Kogyo Kabushiki Kaisha. Fuel metering control system in internal combustion engine. 5,549,092, Cl. 123-478.000.
Hashemi, Majid M.; Tehrani, Saied N.; and Norton, Patricia A., to Motorola. Method of fabricating self-aligned FET structure having a high temperature stable T-shaped Schottky gate contact. 5,550,065, Cl. 437-39.000.
Hashiba, Shigeto: *See*—
Takegawa, Ichiro; Hashiba, Shigeto; Miyamoto, Hiroshi; and Ichizawa, Nobuyuki, 5,550,000, Cl. 430-131.000.
Hashimoto, Hiromasa: *See*—
Tanaka, Kohichi; Hashimoto, Hiromasa; Inada, Yasuo; and Nakajima, Makoto, 5,549,502, Cl. 451-8.000.
Hashimoto, Koji; Yoshioka, Hideaki; and Kawashima, Asahi, to Koji Hashimoto; and YKK Corporation. Highly corrosion-resistant amorphous alloys. 5,549,797, Cl. 204-192.110.
Hashimoto, Kouji: *See*—
Matsuoka, Hidetoshi; Hashimoto, Kouji; and Kobayashi, Junji, 5,550,686, Cl. 360-85.000.
Hashimoto, Susumu: *See*—
Iwasaki, Hitoshi; Ohsawa, Yuichi; Kondoh, Reiko; Hashimoto, Susumu; Sawabe, Atsuhito; Kamiguchi, Yuzo; and Sahashi, Masashi, 5,549,978, Cl. 428-692.000.
Hashimoto, Tadao, to NEC Corporation. Transmission timing control in a base station for cellular TDMA mobile communication by receiving an up-link signal for a different base station. 5,550,992, Cl. 375-355.000.
Haskell, Douglas A. Remoldable thermoplastic radiation shield for use during radiation therapy. 5,550,383, Cl. 250-519.100.
Haskell, Weston W., to Shell Oil Company. Method of producing ketones. 5,550,296, Cl. 568-314.000.
Hassan, Ahmad M.; Johnston, Russel R.; and Krejci, John C., to Lucent Technologies Inc. Image communication system and method. 5,550,646, Cl. 358-442.000.
Hastings, Roy A.: *See*—
Schmidt, Thomas A.; and Hastings, Roy A., 5,550,702, Cl. 361-103.000.
Hasushita, Sachio: *See*—
Abe, Tetsuya; Hasushita, Sachio; and Ito, Takayuki, 5,550,674, Cl. 359-422.000.
Hata, Cary; Tu, Roger; Sung, Hsing-Wen; and Shen, Shih-Hwa, to Baxter International Inc. Natural tissue valve prostheses having variably complaint leaflets. 5,549,666, Cl. 623-2.000.
Hatano, Mutsuko: *See*—
Nishino, Toshikazu; Hatano, Mutsuko; Hasegawa, Haruhiro; Nakane, Hideaki; Kawabe, Ushio; Saitoh, Kazuo; Suga, Mitsuo; and Takagi, Kazumasa, 5,550,389, Cl. 257-30.000.
Hatori, Fumitoshi, to Kabushiki Kaisha Toshiba. Programmable semiconductor integrated circuit. 5,550,771, Cl. 365-174.000.
Hatsumi, Masaaki: *See*—
Tanabe, Toru; Seki, Kazuhide; and Hatsumi, Masaaki, 5,550,469, Cl. 324-251.000.
Hattori, Hiroshi, to Brother Kogyo Kabushiki Kaisha. Printer with extension memory capacity that provides instructions regarding memory installation. 5,550,958, Cl. 395-115.000.
Hattori, Syouichi: *See*—
Yokoyama, Hiromitsu; Takeuchi, Katsuto; Soekawa, Koji; Abe, Kenichiro; Hattori, Syouichi; Suzuki, Hitoshi; and Okada, Nobuhide, 5,549,778, Cl. 156-246.000.
Hauer, Hermann: *See*—

Nöldner, Michael; Chatterjee, Shyam S.; and Hauer, Hermann, 5,550,129, Cl. 514-253.000.
Haugh, James E., to CTS Corporation. Variable speed tactile switch. 5,550,339, Cl. 200-5.00A.
Hauri, Edward D., to Ashford Concrete, Inc. Vehicle lift axle. 5,549,322, Cl. 280-704.000.
Hauser, René; and Sandoz, Yvan, to Sulzer Medizinaltechnik AG; and Allo Pro AG. Two-part hipjoint socket for anchoring in the pelvic bone. 5,549,692, Cl. 623-22.000.
Häusler, Karl H., to Mannesmann Aktiengesellschaft. Roll mandrel monitoring arrangement in cold pilger mills. 5,548,987, Cl. 72-208.000.
Häussler, Bernd; Meyer, Benno; and Münk, German, to Temic Telefunken Microelectronic GmbH; and Mercedes Benz AG. Data bus system. 5,550,804, Cl. 370-16.000.
Havey, Gary D.: *See*—
Schoess, Jeffrey N.; and Havey, Gary D., 5,549,803, Cl. 204-404.000.
Hawkins, Claude D., to Modern Bridge Forming Co., Inc. Bridge construction machinery and method for constructing bridges. 5,549,176, Cl. 182-63.000.
Hawkins, David J. D., to CSR Limited. Manhole cover frame spacing arrangement. 5,549,411, Cl. 404-25.000.
Hawkins, Jeffrey C., to Palm Computing, Inc. External light source for backlighting display. 5,550,715, Cl. 362-31.000.
Hay, Rick H.; Smith, Clarence S.; Girts, Robert D.; and Yount, Larry J., to Honeywell Inc. Fail-operational fault tolerant flight critical computer architecture and monitoring method. 5,550,736, Cl. 364-424.030.
Hayakawa, Junji: *See*—
Yamamoto, Tomohisa; Hayakawa, Junji; and Ban, Hiroyuki, 5,550,465, Cl. 324-143.000.
Hayakawa, Satoru: *See*—
Kawamata, Toshio; Hayakawa, Satoru; and Endo, Yasushi, 5,549,955, Cl. 428-65.300.
Hayakawa, Tomohiko; and Tashima, Toshihiro, to Omron Corporation. Cordless image scanner. 5,550,938, Cl. 382-313.000.
Hayama, Hidekazu; Miura, Yasunori; Suzuki, Atsushi; and Ishiai, Keizou, to Matsushita Electronics Corporation. Display device. 5,550,429, Cl. 313-479.000.
Hayami, Yoshihiro: *See*—
Fukuda, Misao; Hayami, Yoshihiro; Ueda, Toshihiro; and Iwaki, Shoichi, 5,549,510, Cl. 451-246.000.
Hayashi, Hisao, to NEC Corporation. Data input device and data input method for inputting image data from camera to memory. 5,550,588, Cl. 348-231.000.
Hayashi, Kazuhiko: *See*—
Nakai, Yoshihiro; Sawada, Kazuo; Hayashi, Kazuhiko; and Nishio, Masanobu, 5,550,102, Cl. 505-420.000.
Hayashi, Kazumasa: *See*—
Komakine, Hiroshi; Terada, Hiroshi; Yamamoto, Hajime; Hayashi, Kazumasa; and Aizawa, Masahiro, 5,550,619, Cl. 355-246.000.
Hayashi, Kimiyoshi: *See*—
Ikeda, Yoshinori; Ichikawa, Hiroyuki; Kurita, Mitsuru; Hayashi, Kimiyoshi; Honma, Toshio; and Horie, Yoshiko, 5,550,638, Cl. 358-296.000.
Hayashi, Nobuyuki: *See*—
Shiga, Tsutomu; Hayashi, Nobuyuki; Ohmi, Masanori; and Nagao, Yasuhiro, 5,549,011, Cl. 74-7.00E.
Hayashi, Shigenori: *See*—
Koinuma, Hideomi; Shiraishi, Tadashi; Inoue, Tohru; Inomata, Kiyoto; Hayashi, Shigenori; Miyanaga, Akiharu; and Yamazaki, Shunpei, 5,549,780, Cl. 156-345.000.
Hayashi, Yoshihiro, to NEC Corporation. Substrate contact electrode having refractory metal bump structure with reinforcement sidewall film. 5,550,427, Cl. 313-355.000.
Hayashida, Masami: *See*—
Watanabe, Yutaka; and Hayashida, Masami, 5,549,994, Cl. 430-5.000.
Hayden, Christopher G., to Institute of Gas Technology. Treatment of norm-containing materials for minimization and disposal. 5,550,313, Cl. 588-256.000.
Haye, Shirleyanne E.; and Reyes, Mayra B., to Eastman Kodak Company. Stabilized peroxide bleaching solutions and their use for processing of photographic elements. 5,550,009, Cl. 430-393.000.
Hayes, Fred O.: *See*—
TeWinkle, Scott L.; Hosier, Paul A.; and Hayes, Fred O., 5,550,653, Cl. 358-514.000.
Hayes, Kevin B., to Zimmer, Inc. Augmentation for an orthopaedic implant. 5,549,685, Cl. 623-20.000.
Hayes, Michael: *See*—
Friedman, BethAnn; and Hayes, Michael, 5,549,892, Cl. 424-94.610.
Hayes Wheels International, Inc.: *See*—
Archibald, Kenneth R.; and Scott, Melvyn L., Jr., 5,548,896, Cl. 29-894.322.
Hayner, David A.: *See*—
Wang, Shay-Ping T.; Teng, Dan; and Hayner, David A., 5,550,732, Cl. 364-148.000.
Haynes, Robert G.: *See*—
Gertel, Maurice; and Haynes, Robert G., 5,549,269, Cl. 248-562.000.
Hays, Greta J.; Kleeman, Michael W.; and Vish, Ronald J. Method and apparatus for mixing polymeric bone cement components. 5,549,381, Cl. 366-139.000.
Hazen, James L. Guar as a drift control agent. 5,550,224, Cl. 536-114.000.
Heartstream, Inc.: *See*—
Morgan, Carlton B.; Cole, Clinton; and Powers, Daniel J., 5,549,115, Cl. 128-696.000.
Heath, Perry C.: *See*—
Amos, Jane G.; Heath, Perry C.; Prather, Douglas E.; and Toth, John E., 5,550,231, Cl. 540-205.000.
Heath Tecna Aerospace Company: *See*—
Hart, Jack E.; Burrows, Ralph M.; and Marquardt, Michael E., 5,549,258, Cl. 244-118.100.
Heaton, Mark T.: *See*—
Beakes, John M.; Clemenz, Gary E.; Dolgas, Patrick A.; Heaton, Mark T.; and Newman, Lawrence E., 5,549,253, Cl. 242-432.300.
Hebisch, Siegbert: *See*—
Stoltefuss, Jürgen; Goldmann, Siegfried; Straub, Alexander; Bechem, Martin; Gross, Rainer; Hebisch, Siegbert; Hütter, Joachim; and Rounding, Howard-Paul, 5,550,245, Cl. 546-167.000.
Hedberg, Bo: *See*—
Skarby, Ulf; Bergsten, Par; and Hedberg, Bo, 5,551,070, Cl. 455-126.000.
Hedberg, Ernest J.: *See*—
Robinson, Frederick L.; Hedberg, Ernest J.; Kuhni, Michael A.; and Ramsdell, Everett L., 5,549,921, Cl. 426-573.000.
Heddon, Will. Bowling lane constructions and methods employing compressible foam. 5,549,516, Cl. 473-115.000.
Hedges, Daniel E.; Meserole, Jere S., Jr.; and Rorabaugh, Michael E., to Boeing Company, The. Carbon-carbon grid elements for ion thruster ion optics. 5,548,953, Cl. 60-202.000.
Heemels, Robertus P. E. H.: *See*—
Van Vliembergen, Eduardus J. W.; Heemels, Robertus P. E. H.; Cremers, Louis M. G.; Hommersom, Frederik J.; and Gerritsen, Jan, 5,550,934, Cl. 382-229.000.
Heffner, Ronald E.: *See*—
Chau, Toan; and Heffner, Ronald E., 5,550,906, Cl. 379-207.000.
Heiber, Werner: *See*—
Ebert, Charles D.; Heiber, Werner; Good, William R.; and Venkateshwaran, Srinivasan, 5,549,909, Cl. 424-447.000.
Heidari, Alireza R., to Nokia Mobile Phones Limited. Speech compensation in dual-mode telephone. 5,550,893, Cl. 379-59.000.
Heidelberger Druckmaschinen AG: *See*—
D'Heureuse, Walter; and Kusch, Hans-Jürgen, 5,549,045, Cl. 101-477.000.
Laubscher, Hans J., 5,549,288, Cl. 270-52.140.
Heidemann, Rolf: *See*—
Krimmel, Heinz; Bülow, Henning; Heidemann, Rolf; and Otterbach, Jürgen, 5,550,667, Cl. 359-180.000.
Heiman, Jerome R.; and Slayton, Gerald D., to Globe-Union, Inc. Battery cover and manifold system providing spew resistance and explosion attenuation capabilities. 5,549,986, Cl. 429-175.000.
Heine, Hans G.: *See*—
Peysakhovich, Vitaly; Cignetti, Nicolas P.; Heine, Hans G.; and Mortimer, John H., 5,550,353, Cl. 219-672.000.
Heinrich, Harley K.: *See*—
Chan, Shun S.; Heinrich, Harley K.; Kandlur, Dilip D.; and Krishna, Arvind, 5,550,547, Cl. 342-42.000.
Heinrich, Karl; Brüning, Hans-Joachim; and Gebauer, Elke, to Hoechst Aktiengesellschaft. Textile sheet-like structure comprising reinforcing fibers and thermoplastic aramid matrix fibers and composite material made therefrom. 5,549,965, Cl. 428-229.000.
Heinrich, Lothar: *See*—
Peters, Ralf-Peter; Rogner, Arnd; Ünal, Nezih; Heinrich, Lothar; Landwehr, Dierk; and Heyde, Wolfgang A. D., 5,550,375, Cl. 250-343.000.
Heinsius, Steven T.: *See*—
Chanda, Rajat; Dib, Hani M.; and Heinsius, Steven T., 5,550,909, Cl. 379-220.000.
Heintz, Roswitha E.: *See*—
Desai, Neil P.; Soon-Shiong, Patrick; Sandford, Paul A.; and Heintz, Roswitha E., 5,550,178, Cl. 524-56.000.
Heinzmann, Helmut: *See*—
Begemann, Ulrich; Heinzmann, Helmut; Ruf, Wolfgang; Egelhof, Dieter; and Kinzler, Gernot, 5,549,792, Cl. 162-216.000.
Heisner, Thomas; Naubik, Jürgen; and Juras, Karl-Heinz, to Schott Glaswerke. Plate of glass ceramic as component of a cooking appliance. 5,549,100, Cl. 126-39.00J.
Heiti, Robert V.: *See*—
Holmes, Gary L.; Culler, Scott R.; Hardy, David H.; Harmon, Kimberly K.; Heiti, Robert V.; Hendrickson, William A.; Klun, Thomas P.; Spurgeon, Kathryn M.; and Studiner, Charles J., III, 5,549,962, Cl. 428-144.000.
Helene Curtis, Inc.: *See*—
Galleguillos, Ramiro; Panitch, Maximo M.; and Jadav, Anjana K., 5,549,887, Cl. 424-66.000.
Helf, Brant M.; and Chu, Peter L., to PictureTel Corporation. Reduction of background noise for speech enhancement. 5,550,924, Cl. 381-94.000.
Heller, Bernard F.; Schmidt, Craig L.; Nutzman, Thomas M.; and Lessar, Joseph F., to Medtronic, Inc. Method of assembling electrochemical cells of novel construction. 5,549,985, Cl. 429-157.000.
Heller, Lawrence G.: *See*—
Fifield, John A.; and Heller, Lawrence G., 5,550,488, Cl. 326-58.000.
Hellman, Karl H.: *See*—
Gray, Charles L., Jr.; and Hellman, Karl H., 5,549,087, Cl. 123-254.000.
Hellmuth, Thomas: *See*—

Petersen, Christopher L.; and Hellmuth, Thomas, 5,549,114, Cl. 128-691.000.

Hellstrom, Ake A.; and Goldshdeyn, Alexsey, to ABB Industrial Systems, Inc. Control of dilution lines in a dilution headbox of a paper making machine. 5,549,793, Cl. 162-258.000.

Helsley, Grover C.: *See*—
Hamer, R. Richard L.; Helsley, Grover C.; Glamkowski, Edward J.; and Chiang, Yulin, 5,550,253, Cl. 548-429.000.
Hamer, R. Richard L.; Helsley, Grover C.; Glamkowski, Edward J.; and Chiang, Yulin, 5,550,254, Cl. 548-429.000.

Henderson, Donald J.: *See*—
Sills, Arthur A.; Kilbourn, Frederick A.; Nelson, Brian K.; and Henderson, Donald J., 5,549,149, Cl. 160-201.000.

Henderson, John E.; and Narasaki, John K., to Northrop Grumman Corporation. Woven preform/magnetic press process for thermoplastic honeycomb cores. 5,549,773, Cl. 156-173.000.

Henderson, Kenneth R.; Koski, Robert E.; and Barlow, Christopher R., to Sun Hydraulics Corporation. Decentralized distributed asynchronous object oriented system and method for electronic data management, storage, and communication. 5,550,976, Cl. 395-200.060.

Henderson, Richard W. Anti-flareup device for liquid fuel burners. 5,549,470, Cl. 431-302.000.

Hendrickson, William A.: *See*—
Holmes, Gary L.; Culler, Scott R.; Hardy, David H.; Harmon, Kimberly K.; Heiti, Robert V.; Hendrickson, William A.; Klun, Thomas P.; Spurgeon, Kathryn M.; and Studiner, Charles J., III, 5,549,962, Cl. 428-144.000.

Hendriks, Ferdinand; and Robert, Michel P., to International Business Machines Corporation. Air bearing slider having projections that provide minimal actual contact area. 5,550,693, Cl. 360-103.000.

Hendrix, George E.: *See*—
Schroeder, James D.; and Hendrix, George E., 5,549,507, Cl. 451-121.000.

Hengeveld, John A.: *See*—
Siegel, Roy I.; and Hengeveld, John A., 5,550,963, Cl. 395-140.000.

Henkel Corporation: *See*—
Elsasser, A. Fred, 5,550,264, Cl. 554-176.000.
Garst, Roger H.; Mueninghoff, Jane C.; and Schwan, Matthew C., 5,550,115, Cl. 514-25.000.

Henning, Rainer: *See*—
Urbach, Hansjörg; Henning, Rainer; and Hertzsch, Winfried, 5,550,255, Cl. 548-452.000.

Henofer, James J.: *See*—
Maxwell, Horace J.; Sirchio, Ronald J.; and Henofer, James J., 5,549,131, Cl. 137-115.180.

Herbert, William G.; Mishra, Satchidanand; Post, Richard L.; VonHoene, Donald C.; Yu, Robert C. U.; Foley, Geoffrey M. T.; and Limburg, William W., to Xerox Corporation. Drum imaging structure with photosensitive member. 5,550,618, Cl. 355-211.000.

Herkel, Peter L.; and Spielbauer, Hans K., to Otis Elevator Company. Cost effective control of the main switches of an elevator drive motor. 5,549,179, Cl. 187-298.000.

Herklotz, Günter; Frey, Thomas; and Camus, Otto, to W.C. Heraeus GmbH. Bath for the electrodeposition of palladium-silver alloys. 5,549,810, Cl. 205-259.000.

Herlik, Edward C. Innovative airtankers and innovative methods for aerial fire fighting. 5,549,259, Cl. 244-136.000.

Hermes, Guillaume M. P. G.: *See*—
Bouwman, Lambertus J. M.; Hermes, Guillaume M. P. G.; and Janson, Cornelis J., 5,550,722, Cl. 362-221.000.

Herron, Carlisle M.; and Dean, Walter L., to Procter & Gamble Company, The. Individualized cellulosic fibers crosslinked with polyacrylic acid polymers. 5,549,791, Cl. 162-157.600.

Hershey, John E., to General Electric Company. Motor current signal processor including phase locked and delta modulated loops. 5,550,879, Cl. 375-376.000.

Hershey, John E.: *See*—
Abdel-Malek, Aiman A.; Hershey, John E.; Kliman, Gerald B.; and Koegl, Rudolph A. A., 5,550,880, Cl. 375-376.000.

Herslöf, Bengt; Larsson, Kåre; and Bengmark, Stig, to Karlshamns LipidTeknik AB. X-ray contrast agent. 5,550,263, Cl. 554-78.000.

Hertzsch, Winfried: *See*—
Urbach, Hansjörg; Henning, Rainer; and Hertzsch, Winfried, 5,550,255, Cl. 548-452.000.

Herz, Dominique, to Cegelec. System for synchronizing replicated tasks. 5,551,034, Cl. 395-650.000.

Hewlett, Gregory J.: *See*—
Markandey, Vishal; and Hewlett, Gregory J., 5,550,592, Cl. 348-448.000.

Hewlett-Packard Company: *See*—
Albrecht, Alan; Goody, Steven H.; Spratt, Michael P.; Curcio, Joseph A., Jr.; and Dove, Daniel J., 5,550,836, Cl. 370-85.200.
Beethe, Douglas C., 5,551,041, Cl. 395-733.000.
Botka, Julius K., 5,550,466, Cl. 324-158.100.
Campbell, Russell; Shannon, Terrence M.; and Poppenga, Burton H., 5,550,954, Cl. 395-106.000.
Desroches, Alan R., 5,550,496, Cl. 327-108.000.
Diaz, Carlos H., 5,550,699, Cl. 361-56.000.
Miller, Warren L.; and Noyes, Harold B., 5,550,985, Cl. 395-750.000.
Newman, James P., Jr., 5,550,747, Cl. 364-485.000.
Nickerson, Mark A., 5,549,819, Cl. 210-198.200.
Sonnenburg, Dennis; and Wilcox, Darren W., 5,549,289, Cl. 271-121.000.

Heyde, Wolfgang A. D.: *See*—
Peters, Ralf-Peter; Rogner, Arnd; Ünal, Nezih; Heinrich, Lothar; Landwehr, Dierk; and Heyde, Wolfgang A. D., 5,550,375, Cl. 250-343.000.

Hi-Z Corporation: *See*—
Elsner, Norbert B.; and Ghamaty, Saeid, 5,550,387, Cl. 257-15.000.

Hibino, Toshiro: *See*—
Nagano, Masakazu; Tanaka, Kunihiro; Hibino, Toshiro; and Sato, Hiroshi, 5,550,999, Cl. 395-442.000.

Hicks, Carl E. Mini-planar trolling board. 5,548,919, Cl. 43-43.130.

Hidaka, Hideto; Fujishima, Kazuyasu; and Matsuda, Yoshio, to Mitsubishi Denki Kabushiki Kaisha. Bit line structure for semiconductor memory device. 5,550,769, Cl. 365-63.000.

Hielscher, Peter, to Matec Holding AG. Disposable thermal shield. 5,550,338, Cl. 181-290.000.

Hiestand, Karl. Device for transferring a pressure medium. 5,549,427, Cl. 409-233.000.

Higa, Jack; and Higa, Lawrence R. Apparatus for supporting and containing a dental prosthesis during the micro-etching thereof. 5,549,506, Cl. 451-89.000.

Higa, Lawrence R.: *See*—
Higa, Jack; and Higa, Lawrence R., 5,549,506, Cl. 451-89.000.

Higgins, Frank P.: *See*—
Amir, Israel; and Higgins, Frank P., 5,550,583, Cl. 348-126.000.

Hill, Craig L.: *See*—
Atalla, Rajai H.; Weinstock, Ira A.; Hill, Craig L.; and Reiner, Richard S., 5,549,789, Cl. 162-65.000.

Hill, Michael R. S.: *See*—
Min, Xiaoyi; Mongeon, Luc R.; Mehra, Rahul; Anderson, Kenneth M.; DeGroot, Paul J.; and Hill, Michael R. S., 5,549,642, Cl. 607-5.000.

Hiller, Rainald: *See*—
Thiele, Hartmut; Brandstetter, Hermann; Toral, Jose; Hiller, Rainald; Scholtysik, Bernd; Lutz, Gottfried; and Liepold, August, 5,549,198, Cl. 206-307.000.

Hillhouse, John H., to Cytec Technology Corp. Preparation of arylalkyl phosphines, phosphine oxides or phosphine sulfides. 5,550,295, Cl. 568-14.000.

Hilti Aktiengesellschaft: *See*—
Reitberger, Rudolf, 5,549,390, Cl. 384-44.000.

Hindle, Clive R., to Zexel USA Corporation. Heat exchanger brazing tray. 5,549,238, Cl. 228-183.000.

Hineno, Satoshi; and Ando, Nobuhiko, to Sony Corporation. Enhanced optical beam splitter to increase the kerr rotation angle. 5,550,798, Cl. 369-110.000.

Hino, Toshihiko: *See*—
Sugawara, Takeo; Hino, Toshihiko; and Suzuki, Makoto, 5,550,380, Cl. 250-370.110.

Hinoishi, Hiroki: *See*—
Mori, Tomoyuki; Fujita, Kouichi; and Hinoishi, Hiroki, 5,550,302, Cl. 568-881.000.

Hirai, Takahiro: *See*—
Tsutai, Akihiko; Hirai, Takahiro; and Sakurada, Shinya, 5,549,766, Cl. 148-301.000.

Hiraizumi, Maki, to Fujitsu Limited. Multi-media mailing method and apparatus. 5,550,977, Cl. 395-200.010.

Hirano, Makoto; Asai, Kazuyoshi; Imai, Yuhki; Tokumitsu, Masami; Tokumitsu, Tsuneo; and Toyoda, Ichihiko, to Nippon Telegraph And Telephone Corporation. Process of fabricating a circuit element for transmitting microwave signals. 5,550,068, Cl. 437-41.000.

Hirano, Masahiko: *See*—
Miyakawa, Atsuo; Hirano, Masahiko; and Kamiya, Kiyoshi, 5,550,031, Cl. 435-29.000.

Hirano, Sayoko, to Kabushiki Kaisha Kawai Gakki Seisakusho. Electronic sound generating device for generating musical sound by adding volume fluctuation to predetermined harmonics. 5,550,320, Cl. 84-623.000.

Hirano, Yoji: *See*—
Ito, Masahiro; and Hirano, Yoji, 5,550,501, Cl. 327-374.000.

Hirata, Yoshimi; Kaneko, Noriaki; Moriwaki, Masahiro; and Oura, Kanetake, to UBE Industries, Ltd. Artificial blood vessel. 5,549,664, Cl. 623-1.000.

Hiromachi, Yoshio; and Kawahara, Tsunehisa, to Ushio U-Tech Inc. Automatic control system for lighting projector. 5,550,726, Cl. 362-383.000.

Hirose, Tsuyoshi: *See*—
Sakurai, Yohji; Kurahashi, Nobuyuki; Hirose, Tsuyoshi; Miwa, Takashi; Mori, Atsushi; and Nishi, Takao, 5,550,292, Cl. 564-399.000.

Hiroshige, Eiichi: *See*—
Shirai, Ichiro; Yamagami, Hitoshi; Hiroshige, Eiichi; and Kubo, Koichi, 5,550,452, Cl. 320-2.000.

Hirotomi, Jun: *See*—
Takakura, Akira; and Hirotomi, Jun, 5,550,795, Cl. 368-157.000.

Hirs, Gene. System for purifying a soluble oil emulsion. 5,549,823, Cl. 210-265.000.

Hirschmann, Ralph; Leahy, Ellen; and Sprengeler, Paul, to University of Pennsylvania, The Trustees of the. Alicyclic peptidomimetics. 5,550,251, Cl. 548-312.100.

Hirst, Donald L.; and Wiand, Richard K., to Inland Craft Products Co. Grinding apparatus with touch-top work surface. 5,549,509, Cl. 451-178.000.

Hitachi Chemical Co., Ltd.: *See*—
Tai, Seiji; Takusari, Hisanori; Tanaka, Hiroyuki; Moribe, Isamu; and Ohdoi, Chie, 5,550,202, Cl. 526-286.000.

Hitachi Computer Products (America), Inc.: *See*—
Rahamim, Uriel; Minobe, Randy; Chahrour, Ahmad A.; and Ben-Zur, Raanan, 5,550,710, Cl. 361-687.000.

Hitachi Construction Machinery Co., Ltd.: *See*—
Tada, Nobuhiko; Miyanagi, Naoki; Shimomura, Yoshiaki; Sakurai, Shigeyuki; Okumura, Shinya; and Nagano, Yoshinari, 5,548,890, Cl. 29-827.000.

Hitachi, Ltd.: *See*—
Furuya, Masatoshi; Sasaki, Toshiro; and Komura, Fuminobu, 5,550,742, Cl. 364-449.000.
Ichinomiya, Hiroshi; Satoh, Takao; and Yamamoto, Akira, 5,550,975, Cl. 395-185.040.
Kiyama, Tadahiro; Mase, Hisao; Tsuji, Hiroshi; and Kinukawa, Hiroshi, 5,551,036, Cl. 395-700.000.
Kobayashi, Shinya; Miyasaka, Toru; and Satoh, Kunio, 5,550,626, Cl. 355-326.00R.
Kudo, Yoshimichi; Kinugasa, Toshiro; and Imaide, Takuya, 5,550,586, Cl. 348-222.000.
Kuroda, Kenichi, 5,550,770, Cl. 365-145.000.
Miyazaki, Yoshihiro; Takahashi, Yoshiaki; Araoka, Manabu; Takaya, Soichi; and Fukumaru, Hiroaki, 5,551,007, Cl. 395-47.500.
Mutoh, Nobuyoshi; Masaki, Ryoso; Miyazaki, Taizou; Tajima, Fumio; and Ohmae, Tsutomu, 5,549,172, Cl. 180-65.100.
Nakamura, Shouji; Kimura, Shinji; Sugita, Yumiko; Yamamoto, Reki; Koda, Eriko; Kuwana, Toshiyuki; and Manda, Masato, 5,550,962, Cl. 395-133.000.
Nakamura, Takao; Sekiyama, Nobuya; Tani, Hiroshi; and Kato, Yoshiki, 5,549,211, Cl. 216-11.000.
Nishino, Toshikazu; Hatano, Mutsuko; Hasegawa, Haruhiro; Nakane, Hideaki; Kawabe, Ushio; Saitoh, Kazuo; Suga, Mitsuo; and Takagi, Kazumasa, 5,550,389, Cl. 257-30.000.
Sugawara, Ken; Sakairi, Shigeru; Matoba, Mikio; Sasaki, Toshio; Shimohigashi, Katsuhiro; and Kimura, Katsutaka, 5,550,781, Cl. 365-222.000.
Sukegawa, Shunichi; Nasu, Takumi; and Iwai, Hidetoshi, 5,550,394, Cl. 257-209.000.
Tadokoro, Hiroyuki, 5,550,956, Cl. 395-113.000.
Takahashi, Yasuhiro; and Hoshi, Tohru, 5,550,978, Cl. 395-200.010.
Takatori, Masahiro; Nakano, Yukio; and Ashi, Yoshihiro, 5,550,805, Cl. 370-16.100.
Tsuboi, Yukitoshi; Oku, Masuo; Takahashi, Masaru; and Ichige, Kenji, 5,550,640, Cl. 358-335.000.
Uematsu, Takao; Shoji, Mitsuyoshi; Nakakawaji, Takayuki; Komatsuzaki, Shigeki; Ito, Yutaka; Morihara, Atsushi; Sato, Koji; Zushi, Shizuo; and Go, Hiroshi, 5,549,835, Cl. 508-204.000.

Hitachi Maxell, Ltd.: *See*—
Sugawara, Ken; Sakairi, Shigeru; Matoba, Mikio; Sasaki, Toshio; Shimohigashi, Katsuhiro; and Kimura, Katsutaka, 5,550,781, Cl. 365-222.000.

Hitachi Microcomputer System Ltd.: *See*—
Ichinomiya, Hiroshi; Satoh, Takao; and Yamamoto, Akira, 5,550,975, Cl. 395-185.040.

Hitachi Zosen Corporation: *See*—
Kasuya, Tadashi; Shinada, Koichi; Horii, Yukihiko; and Miyazaki, Tateo, 5,550,347, Cl. 219-137.00R.

Hjertman, Birger, to Pharmacia AB. Injection cartridge arrangement. 5,549,561, Cl. 604-131.000.

Ho, Ching-Feng. Trolley with luggage securing device. 5,549,318, Cl. 280-654.000.

Ho, Ting C.: *See*—
Hope, Kenneth D.; Ho, Ting C.; and Cupples, Barrett L., 5,550,307, Cl. 585-525.000.

Ho, Win-Sow W.; Sartori, Guido; Thaler, Warren A.; and Dalrymple, David C., to Exxon Research and Engineering Company. Diepoxide crosslinked/esterified polyimide-aliphatic polyester copolymers. 5,550,199, Cl. 525-423.000.

Hoarty, W. Leo; Soske, Joshua W.; Lauder, Gary M.; Snell, Stephen C.; Fisher, Delmer D.; and North, John, to ICTV, Inc. Interactive and conventional television information system. 5,550,578, Cl. 348-7.000.

Hocherl, Manfred; and Reinhardt, Jorg, to VascoMed institut fur Kathetertechnologie GmbH. Method and apparatus for extracting pacemaker electrodes embedded in the heart. 5,549,615, Cl. 606-108.000.

Hoderlein, Paul M.: *See*—
Smith, Kyle E.; Bringley, Joseph F.; Lambert, Patrick M.; Trauernicht, David P.; Bryan, Philip S.; Hoderlein, Paul M.; and Hyde, Andrea M., 5,549,843, Cl. 252-301.40H.

Hodge, David: *See*—
Shekhawat, Sampat; Liebermann, Eli; Scherzinger, William M.; Silvestro, Gayton L.; Suttora, Nick; and Hodge, David, 5,550,456, Cl. 322-25.000.

Hodgkinson, Sarah: *See*—
Harrison, Peter D.; and Hodgkinson, Sarah, 5,551,069, Cl. 455-90.000.

Hodgson, David O.; and Gochnauer, Daniel B., to Media Vision, Inc. Video capture expansion card. 5,550,566, Cl. 345-202.000.

Hodson, Simon K.: *See*—
Andersen, Per J.; and Hodson, Simon K., 5,549,859, Cl. 264-102.000.

Hoechst AG.: *See*—
Christidis, Yani; and Meier, Michael, 5,550,286, Cl. 564-139.000.

Hoechst Aktiengesellschaft: *See*—
Fischer, Gerd; Defossa, Elisabeth; Gerlach, Uwe; Hörlein, Rolf; Krass, Norbert; Lattrell, Rudolf; Stache, Ulrich; Wollmann, Theodor; and Isert, Dieter, 5,550,232, Cl. 540-230.000.
Gaa, Karl; and Zäh, Matthias, 5,550,234, Cl. 540-466.000.
Gaa, Karl; and Zäh, Matthias, 5,550,242, Cl. 548-19.000.
Heinrich, Karl; Brüning, Hans-Joachim; and Gebauer, Elke, 5,549,965, Cl. 428-229.000.
Horn, Gerhardt; and Frohning, Carl D., 5,550,297, Cl. 564-493.000.
Huber, Bernd; and Kinseher, Richard, 5,549,861, Cl. 264-187.000.
Schlosser, Hubert; Wingen, Rainer; and Manero, Javier, 5,550,236, Cl. 544-238.000.
Urbach, Hansjörg; Henning, Rainer; and Hertzsch, Winfried, 5,550,255, Cl. 548-452.000.

Hoechst-Roussel Pharmaceuticals, Inc.: *See*—
Glamkowski, Edward J.; and Chiang, Yulin, 5,550,130, Cl. 514-254.000.
Hamer, R. Richard L.; Helsley, Grover C.; Glamkowski, Edward J.; and Chiang, Yulin, 5,550,253, Cl. 548-429.000.
Hamer, R. Richard L.; Helsley, Grover C.; Glamkowski, Edward J.; and Chiang, Yulin, 5,550,254, Cl. 548-429.000.
Tegeler, John J.; Rauckman, Barbara S.; Harner, Russell R. L.; Freed, Brian S.; and Merriman, Gregory H., 5,550,247, Cl. 546-314.000.

Hoechst Schering AgrEvo GmbH: *See*—
Vermehren, Jan, 5,550,237, Cl. 544-159.000.

Hoesch Suspensions, Inc.: *See*—
Noll, Robert A., Jr., 5,548,898, Cl. 29-896.910.

Hoetzl, Max; and Goodman, Daniel E., to Surface Combustion, Inc. Heat treat furnace with multi-bar high convective gas quench. 5,550,858, Cl. 373-110.000.

Hoffman, D. Stephen, to Ultra-Mek Corporation. Table with movable top surface. 5,549,052, Cl. 108-139.000.

Hoffman-La Roche Inc.: *See*—
Purohit, Ashok P.; and Silver, Sheryl B., 5,550,040, Cl. 435-91.200.

Hoffmann-La Roche Inc.: *See*—
Trachtenberg, Elizabeth A., 5,550,039, Cl. 435-91.200.

Hoffmann, Michael; and Eckert, Alfred, to Alfred Teves GmbH. Semi-active suspension control system. 5,550,739, Cl. 364-424.050.

Hogan, Steven J.: *See*—
McLeod, Clark E.; Hogan, Steven J.; Feltz, Kristi T.; Murdock, Douglas R.; and Hanson, Van E., 5,550,899, Cl. 379-67.000.

Holdengraber, Curt: *See*—
Zisner, Tuvia; Holdengraber, Curt; and Lampert, Shalom, 5,549,876, Cl. 423-199.000.

Holer, Martin: *See*—
Goliro, Martine; Holer, Martin; and Gati, Sandor, 5,549,847, Cl. 252-394.000.

Holland, Laura M.; Hammang, Joseph P.; Rudnick, Seth A.; Lysaght, Michael J.; and Dionne, Keith E., to CytoTherapeutics, Inc. Method for implanting encapsulated cells in a host. 5,550,050, Cl. 435-240.200.

Hollander, James F.: *See*—
Ehlig, Peter N.; Boutaud, Frederic; and Hollander, James F., 5,550,993, Cl. 395-375.000.

Hollister, Anne; Truman, Mari S.; Bodell, Leonard; and Focht, Louise, to Avanta Orthopaedics. Prosthetic thumb joint and method of manufacture. 5,549,690, Cl. 623-21.000.

Holman, Dany F.: *See*—
Kocache, Riad M. A.; Holman, Dany F.; and Swan, James, 5,549,871, Cl. 422-95.000.

Holmes, Christopher P., to AFFYMAX Technologies NV. Methods for the solid phase synthesis of thiazolidinones, metathiazanones, and derivatives thereof. 5,549,974, Cl. 428-403.000.

Holmes, Christopher P. Polymer reversal on solid surfaces. 5,550,215, Cl. 530-334.000.

Holmes, Frederick F., Jr.: *See*—
Holmes, Frederick J.; and Holmes, Frederick F., Jr., 5,550,481, Cl. 324-754.000.

Holmes, Frederick J.; and Holmes, Frederick F., Jr., to Semco Machine Corporation. Circuit board test fixture apparatus with cam rotably mounted in slidable cam block and method for making.. 5,550,481, Cl. 324-754.000.

Holmes, Gary L.; Culler, Scott R.; Hardy, David H.; Harmon, Kimberly K.; Heiti, Robert V.; Hendrickson, William A.; Klun, Thomas P.; Spurgeon, Kathryn M.; and Studiner, Charles J., III, to Minnesota Mining and Manufacturing Company. Precisely shaped particles and method of making the same. 5,549,962, Cl. 428-144.000.

Holmes, Martin E.: *See*—
Chambers, Randall P.; Gfesser, James J.; Holmes, Martin E.; and Oberman, Kevin S., 5,551,080, Cl. 455-348.000.

Holmquest, John H.: *See*—
Devine, John P.; and Holmquest, John H., 5,549,418, Cl. 405-258.000.

Holonyak, Nick, Jr.; Maranowski, Steven A.; and Kish, Fred A., to Board of Trustees Of The University Of Illinois. Method of fabricating a semiconductor device by oxidizing aluminum-bearing III-V semiconductor in water vapor environment. 5,550,081, Cl. 437-129.000.

Holophane Corporation: *See*—
Green, John D.; and Patel, Ira J., 5,550,697, Cl. 361-18.000.

Holub, Manfred, to Klockner Hansel Tevopharm B.V. Flowpacker and tool assembly therefor. 5,548,946, Cl. 53-550.000.

Holwadel, David L. Lobster prod with legal size gauge. 5,548,917, Cl. 43-1.000.

Holz, Hannelore, heir: *See*—

Windhaus, Ernst; Seiler, Bernard; Meyer, Peter; Erwig, Peter; Mathejka, Horst W.; Patalon, Heinrich; Holz, Peter, deceased, 5,548,882, Cl. 29-336.000.

Holz, Peter, deceased (by Hannelore Holz, heir): *See*—
Windhaus, Ernst; Seiler, Bernard; Meyer, Peter; Erwig, Peter; Mathejka, Horst W.; Patalon, Heinrich; Holz, Peter, deceased, 5,548,882, Cl. 29-336.000.

Holzer, Joseph C.; Korb, Harold W.; and Drescher, Klaus, to MEMC Electronic Materials, Inc. Methods and apparatus for determining interstitial oxygen content of relatively large diameter silicon crystals by infrared spectroscopy. 5,550,374, Cl. 250-339.070.

Homma, Hitoshi: *See*—
Kai, Kazuyuki; Hamano, Masahisa; Homma, Hitoshi; Mori, Akira; and Masuko, Takashi, 5,549,244, Cl. 236-34.500.

Hommersom, Frederik J.: *See*—
Van Vliembergen, Eduardus J. W.; Heemels, Robertus P. E. H.; Cremers, Louis M. G.; Hommersom, Frederik J.; and Gerritsen, Jan, 5,550,934, Cl. 382-229.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Hasegawa, Yusuke; Komoriya, Isao; Akazaki, Shusuke; Maki, Hidetaka; and Abe, Satoru, 5,549,092, Cl. 123-478.000.
Matsuto, Takushi, 5,549,367, Cl. 303-114.100.
Tsunoda, Masaki; Kuwabara, Shigeaki; and Shidara, Sadafumi, 5,549,091, Cl. 123-476.000.
Yamaguchi, Tadashi; Nosaki, Katsutoshi; Akihisa, Inoue; and Masumoto, Tsuyoshi, 5,549,951, Cl. 428-565.000.

Honda, Kenji, to OCG Microelectronic Materials, Inc. Chemically amplified radiation-sensitive composition. 5,550,004, Cl. 430-270.100.

Honeywell Inc.: *See*—
Bohnert, Larry J.; Ellis, Richard R.; and Marchini, Michael G., 5,550,341, Cl. 200-296.000.
Burns, David W.; and Zook, J. David, 5,550,516, Cl. 331-65.000.
Cole, Barrett E.; Fritz, Bernard S.; and Horning, Robert D., 5,550,373, Cl. 250-338.100.
Hay, Rick H.; Smith, Clarence S.; Girts, Robert D.; and Yount, Larry J., 5,550,736, Cl. 364-424.030.
Schoess, Jeffrey N.; and Havey, Gary D., 5,549,803, Cl. 204-404.000.
Tran, My; and Rasinski, John E., 5,549,477, Cl. 434-5.000.

Hong, Cary, to United Microelectronics Corporation. Method for manufacturing an EEPROM cell. 5,550,073, Cl. 437-43.000.

Hong, Gary: *See*—
Hsu, Chen-Chung; and Hong, Gary, 5,550,075, Cl. 437-48.000.

Hong, Kyung S.: *See*—
Kim, Jung C.; Oh, Dong Y.; Choe, Gyu S.; Hong, Kyung S.; Kim, Kyung H.; Lee, Joo H.; Lee, Ha I.; Park, Kyeong B.; Gil, Dong S.; Kwon, Oh H.; and Kwon, Byoung H., 5,548,980, Cl. 68-133.000.

Hong, Seong W.: *See*—
Rim, Chai Y.; and Hong, Seong W., 5,550,591, Cl. 348-413.000.

Hong, Wong Y. (Post Code 80250). Fastener system. 5,549,234, Cl. 227-119.000.

Honma, Toshio: *See*—
Ikeda, Yoshinori; Ichikawa, Hiroyuki; Kurita, Mitsuru; Hayashi, Kimiyoshi; Honma, Toshio; and Horie, Yoshiko, 5,550,638, Cl. 358-296.000.

Honnorat, Yves C. L. A.: *See*—
Barreau, Eric L. P.; Honnorat, Yves C. L. A.; Martinou, Robert L.; and Richin, Catherine M. H., 5,549,809, Cl. 205-222.000.

Honore, David. Wireless solar entertainment system. 5,551,065, Cl. 455-66.000.

Hood, Christopher: *See*—
Chu, Mike S.-H.; Bultitude, John; and Hood, Christopher, 5,550,092, Cl. 501-137.000.

Hood, Kevin H.: *See*—
Loeb, Gerald E.; Young, Roy A.; and Hood, Kevin H., 5,551,016, Cl. 395-550.000.

Honver Company, The: *See*—
Reed, Gary A.; and Symensma, Kenneth L., 5,548,866, Cl. 15-320.000.

Hope, Kenneth D.; Ho, Ting C.; and Cupples, Barrett L., to Chevron Chemical Company. Increased dimer yield of olefin oligomers through catalyst modifications. 5,550,307, Cl. 585-525.000.

Hopkins, William T.; and Smith, Alan M., to France/Scott Fetzer Company. Electronic dimmable gas tube power supply with overvoltage protection. 5,550,437, Cl. 315-209.00R.

Hopwood, Jeffrey J. Apparatus and method for holding paper. 5,549,268, Cl. 248-442.200.

Hori, Mitsuaki; Ebihara, Yukihiko; and Wadano, Katsumi, to NKK Corporation. High torque tool joint. 5,549,336, Cl. 285-333.000.

Hori, Nobuaki, to Toyo Seikan Kaisha, Ltd. Pump with back suction phase. 5,549,223, Cl. 222-153.130.

Hori, Taizou; Fujimoto, Hideaki; Mogi, Hirokazu; and Ono, Yasumasa, to Canon Kabushiki Kaisha. Sound processing device. 5,550,925, Cl. 381-98.000.

Hori, Tatsuya; Fukuhara, Hiroyuki; Muramatsu, Shigeru; and Yamada, Sadayuki, to Matsushita Electric Industrial Co., Ltd; and Matsushita Seiko Co., Ltd. Scroll compressor having a centering recess for assembly. 5,549,466, Cl. 418-55.100.

Horie, Yoshiko: *See*—
Ikeda, Yoshinori; Ichikawa, Hiroyuki; Kurita, Mitsuru; Hayashi, Kimiyoshi; Honma, Toshio; and Horie, Yoshiko, 5,550,638, Cl. 358-296.000.

Horii, Yukihiko: *See*—
Kasuya, Tadashi; Shinada, Koichi; Horii, Yukihiko; and Miyazaki, Tateo, 5,550,347, Cl. 219-137.00R.

Horiuchi, Yoshiro: *See*—
Kume, Hisao; and Horiuchi, Yoshiro, 5,550,428, Cl. 313-407.000.

Horl, Manfred, to U.S. Philips Corporation. Demodulator employing cyclic switching of the gain factor of an operational amplifier between different predetermined values. 5,550,507, Cl. 329-361.000.

Hörlein, Rolf: *See*—
Fischer, Gerd; Defossa, Elisabeth; Gerlach, Uwe; Hörlein, Rolf; Krass, Norbert; Lattrell, Rudolf; Stache, Ulrich; Wollmann, Theodor; and Isert, Dieter, 5,550,232, Cl. 540-230.000.

Horn, Gerhardt; and Frohning, Carl D., to Hoechst Aktiengesellschaft. Process for the preparation of alcohols or amines. 5,550,297, Cl. 564-493.000.

Horney, James C.; and Noel, John R., to Procter & Gamble Company, The. Fluid distribution member for absorbent articles exhibiting high suction and high capacity. 5,549,589, Cl. 604-366.000.

Horning, Robert D.: *See*—
Cole, Barrett E.; Fritz, Bernard S.; and Horning, Robert D., 5,550,373, Cl. 250-338.100.

Horsak, Günther: *See*—
Ege, Hans-Jürgen; Horsak, Günther; and Wiggermann, Peter, 5,550,449, Cl. 318-632.000.

Horsley, Scott W.; and Platz, Winfried, to Stormtreat Systems, Inc. Stormwater treatment system/apparatus. 5,549,817, Cl. 210-122.000.

Horwell, David C.; Hughes, John; and Woodruff, Geoff N., to Merck Sharp and Dohme Limited. Central cholecystokinin antagonists having pharmaceutical activity. 5,550,126, Cl. 514-237.500.

Hoshi, Tohru: *See*—
Takahashi, Yasuhiro; and Hoshi, Tohru, 5,550,978, Cl. 395-200.010.

Hosier, Paul A.: *See*—
TeWinkle, Scott L.; Hosier, Paul A.; and Hayes, Fred O., 5,550,653, Cl. 358-514.000.

Hosoi, Haruzi: *See*—
Hosokawa, Yutaka; and Hosoi, Haruzi, 5,549,177, Cl. 184-6.220.

Hosokawa, Yutaka; and Hosoi, Haruzi, to Toshiba Kikai Kabushiki Kaisha. System for lubricating and cooling main spindle head of machine tool. 5,549,177, Cl. 184-6.220.

Hosoya, Yasuhiko; and Kuroda, Toshiki, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for purifying engine exhaust gas. 5,549,872, Cl. 422-173.000.

Hospital for Joint Diseases: *See*—
Frankel, Victor H.; and Kummer, Frederick J., 5,549,609, Cl. 606-64.000.

Hoss, Gregg M.; Thompson, James E.; Johnson, Thomas F.; Kirbie, Martin; and Speer, Andrew J., III, to JHC Ventures, L.P. Dual use materials transport vehicle with end-dumping and improved belly-dumping capabilities and method of construction. 5,549,359, Cl. 298-35.00M.

Hotaling, Bryan: *See*—
Rossman, Jon R.; and Hotaling, Bryan, 5,549,247, Cl. 239-57.000.

Hotea, Gheorghe, to Whitaker Corporation, The. Electrical terminal with lead strain relief means. 5,549,483, Cl. 439-399.000.

Hotvet, David A., to Minnesota Mining and Manufacturing Company. Directional ear device with adaptive bandwidth and gain control. 5,550,923, Cl. 381-72.000.

Hötzel, Gerhard; Neumann, Harald; Strassner, Walter; and Riegel, Johann, to Robert Bosch GmbH. Arrangement for detecting the oxygen content in the exhaust gas of an internal combustion engine. 5,549,804, Cl. 204-425.000.

Houck, Catherine M.: *See*—
Goodman, Robert M.; Knauf, Vic C.; Houck, Catherine M.; and Comai, Luca, 5,550,038, Cl. 435-70.100.

Houk, Talbott M., to International Rectifier Corporation. MOS gate driver integrated circuit for ballast circuits. 5,550,436, Cl. 315-209.00R.

Houk, Talbott M.: *See*—
Nadd, Bruno C.; and Houk, Talbott M., 5,550,701, Cl. 361-103.000.

Hourizadeh, Richard. Cappuccino making apparatus. 5,549,036, Cl. 99-286.000.

House Ear Institute: *See*—
Shannon, Robert V.; Loeb, Gerald E.; and Zeng, Fan-Gang, 5,549,658, Cl. 607-57.000.

Hovey, Scott A.: *See*—
Foster, Mark J.; Fakhruddin, Saifuddin T.; Walker, James L.; Mendelow, Matthew B.; Sun, Jiming; Brahman, Rodman S.; Krau, Michael P.; Willoughby, Brian D.; Maddix, Michael D.; Belt, Steven L.; Hovey, Scott A.; and Ruthenbeck, Mark A., 5,551,033, Cl. 395-650.000.

Hovis, Floyd: *See*—
Guch, Steve, Jr.; and Hovis, Floyd, 5,550,851, Cl. 372-33.000.

Hovis, Gary U.: *See*—
Zemaitis, Walter A.; Covington, Edward A.; Lanier, Roland V., Jr.; and Hovis, Gary U., 5,549,722, Cl. 55-463.000.

Howard, Patrick J.; and Chiao, Richard Y., to General Electric Company. Method for detecting and characterizing flaws in engineering materials. 5,549,002, Cl. 73-602.000.

Howe, Thomas E.; Taccone, David M.; and Hartmann, Robert H., to General Electric Company. AC coil former. 5,548,989, Cl. 72-298.000.

Howmedica Inc.: *See*—
McCarthy, Thomas F., 5,549,706, Cl. 623-23.000.
Michaelli, Michael; Kashuba, Glen; Goldenberg, J. Mel; and Klippel, Jon L., 5,549,705, Cl. 623-23.000.

Howmet Corporation: *See*—

Mihalisin, John R.; Corrigan, John; Baker, Robert J.; Leonard, Eric L.; and Vandersluis, Jay L., 5,549,765, Cl. 148-428.000.

Hoxmeier, Ronald J.; Job, Robert C.; Spence, Bridget A.; and DuBois, Donna A., to Shell Oil Company. Process for making graft block copolymers by grafting anionic polymer chains onto functionalized polyolefins. 5,550,194, Cl. 525-250.000.

Hoxmeier, Ronald J.: *See*—
Spence, Bridget A.; Southwick, Jeffrey G.; Chin, Steven S.; and Hoxmeier, Ronald J., 5,550,196, Cl. 525-314.000.

Hoyt, Joshua: *See*—
Park, Eric Y.; Knaub, David; Thorpe, David; Barney, Howard; and Hoyt, Joshua, 5,549,010, Cl. 73-861.790.

HPR Corporation: *See*—
Young, Robert, 5,550,311, Cl. 588-19.000.

HSC Research & Development: *See*—
Gallie, Brenda L.; Dunn, James M.; and Stevens, John K., 5,550,020, Cl. 435-6.000.

Hseih, Biay C.: *See*—
Tang, Ching W.; and Hseih, Biay C., 5,550,066, Cl. 437-40.000.

Hsieh, Jiang: *See*—
Gard, Michael F.; Gravelle, Stephen W.; Hsieh, Jiang; Lu, Quan N.; Newman, John W.; Toth, Thomas L.; and Wu, Michael A., 5,550,889, Cl. 378-113.000.

Hsu, Che-Hsiung; and Sweeny, Wilfred, to Du Pont de Nemours, E. I., and Company. Silver-plated fibers of poly(p-phenylene terephthalamide) and a process for making them. 5,549,972, Cl. 428-398.000.

Hsu, Chen-Chung; and Hong, Gary, to United Microelectronics Corporation. Ion implanted programmable cell for read only memory applications. 5,550,075, Cl. 437-48.000.

Hsu, Kun-Chung, to Chien Sheng Machine Industrial Co., Ltd. Electronic ignition apparatus. 5,550,420, Cl. 310-339.000.

Hsueh, Hsueh W.: *See*—
Fanchang, We C.; and Hsueh, Hsueh W., 5,550,416, Cl. 310-83.000.

Hu, Hung-Kwei: *See*—
Yen, Yeouchung; Chen, Shih-Oh; and Hu, Hung-Kwei, 5,550,404, Cl. 257-530.000.

Hu, Shu-Fen: *See*—
Edwards, Peter P.; Hu, Shu-Fen; Liu, Ru-Shi; and Jefferson, David A., 5,550,105, Cl. 505-120.000.

Huang, Harrison. Silencer for tape dispenser. 5,549,255, Cl. 242-422.500.

Huang, James P. S. Apparatus for producing heat energy without combustion using non-fuel fluid matter. 5,550,357, Cl. 219-772.000.

Huang, Joseph: *See*—
Cliff, Richard G.; Cope, L. Todd; McClintock, Cameron R.; Leong, William; Watson, James A.; Huang, Joseph; and Ahanin, Bahram, 5,550,782, Cl. 365-230.030.

Huang, Li-chu C. Armrest and handle assembly for a stroller. 5,549,311, Cl. 280-47.360.

Huang, Wei-hsing: *See*—
Wu, Ko-hsiang; and Huang, Wei-hsing, 5,549,224, Cl. 222-158.000.

Huber, Bernd; and Kinseher, Richard, to Hoechst Aktiengesellschaft. Process for the production of shaped structures of cellulose. 5,549,861, Cl. 264-187.000.

Huck Patents, Inc.: *See*—
Smith, Walter J.; and Fulbright, David J., 5,548,889, Cl. 29-715.000.

Huels Aktiengesellschaft: *See*—
Gras, Rainer; and Wolf, Elmar, 5,550,206, Cl. 528-229.000.
Träger, Michael; Wirobski, Reinhard; and Leven, Thomas, 5,550,170, Cl. 521-143.000.

Huggins, Robert A.: *See*—
Maly-Schreiber, Martha; and Huggins, Robert A., 5,549,981, Cl. 429-7.000.

Hughes Aircraft Company: *See*—
Gregoire, Daniel J.; Harvey, Robin J.; Dolezal, Franklin A.; and Williamson, Weldon S., 5,549,795, Cl. 204-164.000.

Hughes, Charles L.: *See*—
Carver, David R.; Prout, Timothy R.; Workman, Christopher T.; and Hughes, Charles L., 5,549,830, Cl. 210-641.000.

Hughes Electronics: *See*—
Cook, Lacy G., 5,550,672, Cl. 359-365.000.

Hughes, Gustav G.: *See*—
Langenohl, Mark C.; and Hughes, Gustav G., 5,549,745, Cl. 106-692.000.

Hughes, John: *See*—
Horwell, David C.; Hughes, John; and Woodruff, Geoff N., 5,550,126, Cl. 514-237.500.

Hughes Missile Systems Company: *See*—
Madjerec, Michael T., 5,549,925, Cl. 427-8.000.
Schotter, Daniel K., 5,549,781, Cl. 156-443.000.
Skertic, Matthew M., 5,548,963, Cl. 62-51.200.

Hui, Cheng C. Water drinking device for pets. 5,549,074, Cl. 119-477.000.

Huis, Heinrich; and Schuder, Bernd, to Amphenol-Tuchel Electronics GmbH. Card reader contacts and non-contact coils on a printed circuit board. 5,550,361, Cl. 235-440.000.

Hukuba, Hiroshi. Adhering cleaning tool. 5,548,861, Cl. 15-104.002.

Hulkko, Jaakko; Matero, Jorma; and Vilmi, Toivo, to Nokia Mobile Phones Ltd. Amplifier control system. 5,551,067, Cl. 455-88.000.

Huls America Inc.: *See*—
Subramaniam, Chitoor S.; John, Thomas V.; Colvin, David; and Bitler, George W., 5,550,299, Cl. 568-591.000.

Hulthom, Stig-Erik; Lilja, Launo L.; Mäkitalo, Valto J.; and Nyman, Bror G., to Outokumpu Engineering Contractors Oy. Method and apparatus for forming controlled vortexes and for recirculating gas. 5,549,854, Cl. 261-87.000.

Humes, H. David; and Cieslinski, Deborah A., to University of Michigan, The Regents of The. Methods and compositions of a bioartificial kidney suitable for use in vivo or ex vivo. 5,549,674, Cl. 623-11.000.

Humora, Michael J.; Modi, Sandeep P.; Srivastava, Sushi K.; and Williams, Andrew D., to Bristol-Myers Squibb Company. Process for large-scale production of indolyl alkyl pyrimidinyl piperazine compounds. 5,550,239, Cl. 544-295.000.

Humphreys, Richard M.: *See*—
Reinhardt, Robert C.; and Humphreys, Richard M., 5,549,421, Cl. 406-3.000.

Hung, Ju M.; and Graham, Malcolm, to National Starch and Chemical Investment Holding Corporation. Catalyst for reactive hot melt adhesives. 5,550,191, Cl. 525-92.00C.

Hunt, Neil E. J.: *See*—
Dutta, Niloy K.; Fischer, Russell J.; Hunt, Neil E. J.; Passlack, Matthias; Schubert, Erdmann F.; and Zydzik, George J., 5,550,089, Cl. 437-225.000.

Hunt, Terrence J., to Allergan, Inc. Disinfecton formulations and methods using D-enantiomeric anti-microbial peptides. 5,549,894, Cl. 424-94.640.

Hunt-Grubbe, Robert H. Measuring instruments. 5,548,900, Cl. 33-302.000.

Huntley, Donald R.: *See*—
McMullan, Jay C., Jr.; Burleson, David B.; Huntley, Donald R.; and Schaubs, Randolph J., 5,550,825, Cl. 370-73.000.

Huntoon, Andrew E.: *See*—
Fries, Donald M.; Huntoon, Andrew E.; and Long, Andrew M., 5,549,592, Cl. 604-389.000.

Hunziker, Ernst B.: *See*—
Juergensen, Kay; Aeschlimann, Daniel; and Hunziker, Ernst B., 5,549,904, Cl. 424-423.000.

Hutcheson, Jonathan E.; Natarajan, Kadathur S.; and Leopold, Raymond J., to Motorola, Inc. Method and system for intelligent cell selection using location data in cellular systems. 5,551,058, Cl. 455-33.200.

Hutcheson, Jonathan E.; Natarajan, Kadathur S.; and Leopold, Raymond J., to Motorola, Inc. Method and system for intelligent cell selection using doppler data in cellular systems. 5,551,059, Cl. 455-33.200.

Hutchinson: *See*—
Bellamy, Alain; Reh, Denis; and Petit, Pascal, 5,549,283, Cl. 267-140.120.

Hütter, Joachim: *See*—
Stoltefuss, Jürgen; Goldmann, Siegfried; Straub, Alexander; Bechem, Martin; Gross, Rainer; Hebisch, Siegbert; Hütter, Joachim; and Rounding, Howard-Paul, 5,550,245, Cl. 546-167.000.

Huxel, Shawn T.: *See*—
Regula, Donald W.; Cooper, Kevin; Bregen, Michael F.; Huxel, Shawn T.; and Rosenman, Daniel C., 5,550,172, Cl. 523-118.000.

Huybrechts, Robert. Mouldable composition and method of making it. 5,548,848, Cl. 2-425.000.

Huyck Licensco, Inc.: *See*—
Danby, Roger; and Bouchard, Alain, 5,551,011, Cl. 395-500.000.
Gstrein, Hippolit, 5,549,967, Cl. 428-229.000.

Hwang, Jin-Sung; and Sohn, Jin-Seung, to Samsung Electronics Co., Ltd. Vibroisolating apparatus of vacuum cleaner. 5,548,867, Cl. 15-339.000.

Hyatt, Wayne E.: *See*—
Arnold, Erich C.; Gagliardi, Olivia M.; Hyatt, Wayne E.; Mayka, Lawrence G.; and Morgan, Todd C., 5,551,035, Cl. 395-650.000.

HybriVet Systems, Inc.: *See*—
Stone, Marcia J., 5,550,061, Cl. 436-73.000.

Hycomp, Inc.: *See*—
Nowak, Bernard E.; and Reardon, Joseph P., 5,549,394, Cl. 384-282.000.

Hyde, Andrea M.: *See*—
Smith, Kyle E.; Bringley, Joseph F.; Lambert, Patrick M.; Trauernicht, David P.; Bryan, Philip S.; Hoderlein, Paul M.; and Hyde, Andrea M., 5,549,843, Cl. 252-301.40H.

Hyde, Darryl L., to Western Digital Corporation. Magnetic memory disk storage system. 5,550,694, Cl. 360-104.000.

Hyde, Gregory M.: *See*—
Peacock, James C., III; Hyde, Gregory M.; Samson, Wilfred J.; and Clayman, Michael, 5,549,551, Cl. 604-96.000.

Hydrel AG: *See*—
Engbersen, Gerhard; Greiner, Heinz; and Schorscher, Peter, 5,549,391, Cl. 384-51.000.

Hyomi, Kyoko: *See*—
Otsuka, Haruhiko; Murayama, Yuzo; Tashiro, Akihiko; Hyomi, Kyoko; and Ishimaru, Naohiko, 5,549,954, Cl. 428-65.300.

Hyundai Electronics America: *See*—
DuLac, Keith B., 5,550,986, Cl. 395-280.000.

Hyundai Electronics Industries Co., Ltd.: *See*—
Kim, Suk S., 5,550,080, Cl. 437-60.000.
Lee, Jin-Seok, 5,550,871, Cl. 375-344.000.
Ryou, Eui K., 5,550,071, Cl. 437-41.000.

Hyundai Motor Company: *See*—
Lee, Hyosang, 5,549,284, Cl. 267-140.140.

Hyundai Motor Company, Ltd.: *See*—
Park, Young-Hwan, 5,549,351, Cl. 296-207.000.

Hyzer, Susan M.: *See*—

Pascucci, Gregory A.; Rasmussen, David E.; Decious, Gaylon M.; Garbe, James R.; Hyzer, Susan M.; Woest, Karen L.; Vairavan, Vairavan; Koch, David L.; Gottschalk, Donald A., Jr.; Burkhardt, Dennis E.; Standish, Darrell E.; Madaus, Paul W.; Spacek, Dan J.; Nesler, Clay G.; Stark, James K.; Mageland, Otto M.; Singers, Robert R.; and Wagner, Michael E., 5,550,980, Cl. 395-200.050.

I Am Fine, Inc.: *See*—
Halleck, Michael D.; James, Donald N.; and Halleck, Michael E., 5,549,113, Cl. 128-671.000.

Iberoamericana Del Embalaje S.A.: *See*—
Gimeno, D. Emilio M., 5,549,242, Cl. 229-191.000.

IBM Corporation: *See*—
Taborn, Michael P.; and Yuan, John K., 5,550,767, Cl. 364-745.000.

Ichige, Kenji: *See*—
Tsuboi, Yukitoshi; Oku, Masuo; Takahashi, Masaru; and Ichige, Kenji, 5,550,640, Cl. 358-335.000.

Ichikawa, Hiroyuki: *See*—
Ikeda, Yoshinori; Ichikawa, Hiroyuki; Kurita, Mitsuru; Hayashi, Kimiyoshi; Honma, Toshio; and Horie, Yoshiko, 5,550,638, Cl. 358-296.000.

Ichimura, Isao: *See*—
Yoshimura, Shunji; Akiyama, Yoshiyuki; Ohsata, Kiyoshi; Ichimura, Isao; Watanabe, Toshio; and Katsuramoto, Shinji, 5,550,603, Cl. 352-27.000.

Ichinomiya, Hiroshi; Satoh, Takao; and Yamamoto, Akira, to Hitachi, Ltd.; and Hitachi Microcomputer System Ltd. Disk array controller. 5,550,975, Cl. 395-185.040.

Ichizawa, Nobuyuki: *See*—
Takegawa, Ichiro; Hashiba, Shigeto; Miyamoto, Hiroshi; and Ichizawa, Nobuyuki, 5,550,000, Cl. 430-131.000.

Icon Health & Fitness, Inc.: *See*—
Olson, Michael L.; and Dalebout, William T., 5,549,533, Cl. 482-137.000.

ICTV, Inc.: *See*—
Hoarty, W. Leo; Soske, Joshua W.; Lauder, Gary M.; Snell, Stephen C.; Fisher, Delmer D.; and North, John, 5,550,578, Cl. 348-7.000.

Igarashi, Minoru: *See*—
Inoue, Yoshio; Takahashi, Masaharu; Sekiguchi, Susumu; and Igarashi, Minoru, 5,550,185, Cl. 524-847.000.

Igarasi, Tosihiro: *See*—
Aiso, Katsuyosi; Adati, Sakasi; Igarasi, Tosihiro; Tanoue, Sin; Kumamoto, Satosi; and Wakuda, Masanori, 5,549,015, Cl. 74-424.80B.

IGC/Advanced Superconductors, Inc.: *See*—
Motowidlo, Leszek; and Haldar, Pradeep, 5,550,103, Cl. 505-430.000.

Ihama, Mikio: *See*—
Maruyama, Yoichi; and Ihama, Mikio, 5,550,014, Cl. 430-567.000.

Iino, Hideyuki; and Takahashi, Hiromasa, to Fujitsu Limited. Arithmetic operation unit and memory accessing device for accessing primary and secondary cache memories independently of a CPU. 5,551,010, Cl. 395-496.000.

Ikeda, Kiyoko: *See*—
Ikeda, Masahiko, 5,549,282, Cl. 267-136.000.

Ikeda, Masahiko, to Ikeda, Kiyoko. Vibration proofing structure. 5,549,282, Cl. 267-136.000.

Ikeda, Masataka: *See*—
Shohji, Kohichi; Ikeda, Masataka; and Kishimoto, Yasushi, 5,549,964, Cl. 428-224.000.

Ikeda, Naoki: *See*—
Takagi, Mariko; Yoshii, Ichiro; Hama, Kaoru; Ikeda, Naoki; and Yasuda, Hiroaki, 5,550,400, Cl. 257-530.000.

Ikeda, Nobuhiro, to Canon Kabushiki Kaisha. Private branch exchange. 5,550,822, Cl. 370-60.100.

Ikeda, Toshimi: *See*—
Ema, Taiji; and Ikeda, Toshimi, 5,550,395, Cl. 257-306.000.

Ikeda, Yoshinori; Ichikawa, Hiroyuki; Kurita, Mitsuru; Hayashi, Kimiyoshi; Honma, Toshio; and Horie, Yoshiko, to Canon Kabushiki Kaisha. Feature detection with enhanced edge discrimination. 5,550,638, Cl. 358-296.000.

Ikemoto Shatai Kogyo Co., Ltd.: *See*—
Ikemoto, Yasuyuki, 5,549,517, Cl. 473-134.000.

Ikemoto, Yasuyuki, to Ikemoto Shatai Kogyo Co., Ltd. Golf ball setting apparatus. 5,549,517, Cl. 473-134.000.

Ikuta, Toshio: *See*—
Tanahashi, Masao; Shiba, Tekeshi; and Ikuta, Toshio, 5,548,899, Cl. 30-43.920.

Illinois Tool Works Inc.: *See*—
Danek, Daniel J.; Etters, Harry N., Jr.; Genz, Earl J.; Johnston, Brigg A.; Littman, Iran R.; Long, John N.; Meadors, Anthony W.; Mercadante, Nicholas J.; Orrico, Mario M.; Schramme, Stephan H.; and Shedore, Charles J., 5,550,342, Cl. 200-448.000.
Kish, Frederick A., 5,549,245, Cl. 238-283.000.

Illulian, Khosro. Fitted furniture cover. 5,549,355, Cl. 297-224.000.

Illumination Technologies, Inc.: *See*—
Muehlemann, Michael M.; and Noble, J. Donald, 5,550,946, Cl. 385-121.000.

Ilyin, Mary: *See*—
Lau, Ken; Yee, Jimmie; Mayeda, Rodger; Riccomini, Julian; and Ilyin, Mary, 5,550,476, Cl. 324-522.000.

Imai, Chizuko: *See*—
Ozawa, Toshikazu; Imai, Chizuko; and Matsumoto, Hiromitsu, 5,549,086, Cl. 123-193.600.

Imai, Hiroyuki: *See*—
Ohmi, Shinichiro; Imai, Hiroyuki; Ando, Kazuhiro; and Suematsu, Takayuki, 5,550,756, Cl. 364-514.00R.

Imai, Yuhki: *See*—
Hirano, Makoto; Asai, Kazuyoshi; Imai, Yuhki; Tokumitsu, Masami; Tokumitsu, Tsuneo; and Toyoda, Ichihiko, 5,550,068, Cl. 437-41.000.

Imai, Yutaka: *See*—
Koide, Yoshinao; Nakane, Seiji; and Imai, Yutaka, 5,550,041, Cl. 435-119.000.

Imaide, Takuya: *See*—
Kudo, Yoshimichi; Kinugasa, Toshiro; and Imaide, Takuya, 5,550,586, Cl. 348-222.000.

Imamura, Masamichi, to Unisia Jecs Corporation. Traction control for automotive vehicle. 5,549,093, Cl. 123-481.000.

Imaura, Toshihiro: *See*—
Tanaka, Shigeo; Yamazaki, Hiroshi; Osakabe, Yoshio; Kotabe, Noriko; Iwamoto, Koji; Souma, Yoko; Imaura, Toshihiro; and Maki, Shigeru, 5,550,826, Cl. 370-85.800.

Immuno Aktiengesellschaft: *See*—
Eibl, Johann; Pichler, Ludwig; and Schwarz, Hans P., 5,549,893, Cl. 424-94.640.
Mundt, Wolfgang; Woehrer, Wilfried; Dorner, Friedrich; and Eibl, Johann, 5,550,051, Cl. 435-240.200.

Immuno Japan Inc.: *See*—
Okamoto, Hiroaki, 5,550,016, Cl. 435-5.000.

Implex Corp.: *See*—
Averill, Robert G.; and Cohen, Robert C., 5,549,698, Cl. 623-22.000.

IMV Corporation: *See*—
Aoki, Hidenao; Tsutsumi, Shigehisa; Fukushima, Takehiro; and Sakai, Zenji, 5,549,005, Cl. 73-663.000.

IMZ Fertigungs-und Vertriebsgesellschaft fuer dentale Technologie mbH: *See*—
Duerr, Walter; and Kirsch, Axel, 5,549,475, Cl. 433-173.000.

Ina, Toshikazu: *See*—
Kiribayashi, Shinichi; and Ina, Toshikazu, 5,549,325, Cl. 280-735.000.

Inada, Yasuo: *See*—
Tanaka, Kohichi; Hashimoto, Hiromasa; Inada, Yasuo; and Nakajima, Makoto, 5,549,502, Cl. 451-8.000.

Inagaki, Mitsuo: *See*—
Konaga, Naoji; Inagaki, Mitsuo; Asa, Hironori; and Tanahashi, Toshitaka, 5,549,371, Cl. 303-152.000.

Inamura, Mamoru: *See*—
Someya, Jun; Chiba, Kazuhiro; Watabu, Kazuyoshi; Yamamoto, Yoshie; Inamura, Mamoru; Nagayama, Takeshi; Bamba, Noriko; and Sunada, Noboru, 5,550,936, Cl. 382-263.000.

InControl, Inc.: *See*—
Ayers, Gregory M.; and Alferness, Clifton A., 5,549,641, Cl. 607-4.000.

Indian Head Industries: *See*—
Juriga, Duane M., 5,549,776, Cl. 156-228.000.

Indresco Inc.: *See*—
Langenohl, Mark C.; and Hughes, Gustav G., 5,549,745, Cl. 106-692.000.

Inductotherm Corp.: *See*—
Peysakhovich, Vitaly; Cignetti, Nicolas P.; Heine, Hans G.; and Mortimer, John H., 5,550,353, Cl. 219-672.000.

Industrial Sound Technologies, Inc.: *See*—
Walter, Bruno H., 5,549,252, Cl. 241-264.000.

Industrial Technology Research Institute: *See*—
Kwan, Khang-Shen; Tsay, Chean-Lung; and Wu, Li-Ming, 5,550,498, Cl. 327-175.000.

Influence, Inc.: *See*—
Sohn, Ze'ev, 5,549,555, Cl. 604-101.000.

Ing. A. Maurer SA: *See*—
Trumpf, Rudolf; and Jost, Hans, 5,549,824, Cl. 210-323.100.

Ingham, Harry R.: *See*—
Byrne, Phillip O.; Sisson, Penelope R.; and Ingham, Harry R., 5,549,572, Cl. 604-198.000.

Ingram, Ronald W. Method for altering the curvature of the cornea. 5,549,622, Cl. 606-166.000.

Ingredient Technology Corporation: *See*—
Morano, James R., 5,549,757, Cl. 127-42.000.

Inland Craft Products Co.: *See*—
Hirst, Donald L.; and Wiand, Richard K., 5,549,509, Cl. 451-178.000.

Inniss, Daryl; Vengsarkar, Ashish M.; and Zhong, Qian, to Lucent Technologies Inc. Method of determining changes in the refractive index of an optical waveguide. 5,550,948, Cl. 385-147.000.

Innovative Sweeteners Incorporated: *See*—
Morano, James R., 5,549,757, Cl. 127-42.000.

Innoventions: *See*—
Rood, John D., 5,548,904, Cl. 34-82.000.

Inokuchi, Michihiro: *See*—
Aoki, Hiroshi; and Inokuchi, Michihiro, 5,549,730, Cl. 71-64.030.

Inomata, Kiyoto: *See*—
Koinuma, Hideomi; Shiraishi, Tadashi; Inoue, Tohru; Inomata, Kiyoto; Hayashi, Shigenori; Miyanaga, Akiharu; and Yamazaki, Shunpei, 5,549,780, Cl. 156-345.000.

Inoue, Akihisa: *See*—
Yamaguchi, Tadashi; Nosaki, Katsutoshi; Akihisa, Inoue; and Masumoto, Tsuyoshi, 5,549,951, Cl. 428-565.000.

Inoue, Akira; Kobayashi, Motonobu; and Ono, Tetsuji, to Nippon Shokubai Koguko Kogyo Co., Ltd. Catalyst for purifying nitrogen oxides from exhaust and waste gases. 5,550,096, Cl. 502-217.000.

Inoue, Akiyoshi; Taniguchi, Shoji; Kawano, Eisaku; Yanagawa, Naoharu; and Suzuki, Hiroshi, to Pioneer Electronic Corporation. Device for and method of calibrating optimum recording power for recordable optical disc recording apparatus. 5,550,799, Cl. 369-116.000.

Inoue, Hitoshi: *See*—
Sanda, Kenji; and Inoue, Hitoshi, 5,549,257, Cl. 242-580.000.

Inoue, Kunimi; Yamada, Yoshiyuki; Amatsu, Kazumi; Mimura, Yukiteru; Nakaguchi, Yasunori; Shinmura, Hiroyuki; Ono, Yasuyuki; Osawa, Yutaka; Mizutaki, Shoichi; Kasai, Masaji; and Tomioka, Shinji, to Kyowa Hakko Kogyo Co., Ltd. Process for producing alanylglutamine. 5,550,283, Cl. 562-561.000.

Inoue, Nobuaki, to Fuji Photo Film Co., Ltd. Silver halide photographic photosensitive materials and a method of image formation in which they are used. 5,550,003, Cl. 430-264.000.

Inoue, Shohei; Aida, Takuzo; and Akatsuka, Masaki, to Daicel Chemical Industries, Ltd. Monodispersed polymer or copolymer and a preparation process thereof. 5,550,209, Cl. 528-361.000.

Inoue, Shuji, to Matsushita Electric Corporation of America. Variable length code look-up table having separate code length determination. 5,550,542, Cl. 341-67.000.

Inoue, Soichi: *See*—
Tanaka, Satoshi; Inoue, Soichi; and Nakamura, Hiroko, 5,549,995, Cl. 430-5.000.

Inoue, Tadashi; and Tsujimura, Tetsuzo, to Nippon Suisan Kaisha, Ltd.; Kyowa Tecnos Co., Ltd.; and Inoue, Tadashi. Wood modifier composition. 5,549,739, Cl. 106-15.050.

Inoue, Tohru: *See*—
Koinuma, Hideomi; Shiraishi, Tadashi; Inoue, Tohru; Inomata, Kiyoto; Hayashi, Shigenori; Miyanaga, Akiharu; and Yamazaki, Shunpei, 5,549,780, Cl. 156-345.000.

Inoue, Yoshio; Takahashi, Masaharu; Sekiguchi, Susumu; and Igarashi, Minoru, to Shin-Etsu Chemical Co., Ltd. Silicone rubber composition. 5,550,185, Cl. 524-847.000.

Insta-Foam Products, Inc.: *See*—
Brown, Daniel P., 5,549,228, Cl. 222-570.000.

Institut Dr. Friedrich Forster Prufgeratebau GmbH & Co. KG: *See*—
Häberlein, Peter; and Link, Hans, 5,550,468, Cl. 324-225.000.

Institut Francais du Petrole: *See*—
Beauducel, Claude; Frot, Didier; and Gonzalez, Pierre, 5,549,008, Cl. 73-861.040.
Chauvin, Yves; Einloft, Sandra; and Olivier, Helene, 5,550,304, Cl. 585-512.000.
Chauvin, Yves; Einloft, Sandra; and Olivier, Helene, 5,550,306, Cl. 585-514.000.
Gateau, Paul; Maute, Michel; and Feugier, Alain, 5,549,877, Cl. 423-245.300.
Laurent, Jean; Meynier, Patrick; Cretin, Jacques; and Beauducel, Claude, 5,550,785, Cl. 367-25.000.
Pauchon, Christian; Ferschneider, Gilles; and Ferre, Daniel, 5,550,761, Cl. 364-578.000.
Pavone, Didier; Froment, Jacques; and Thesee, Eddy, 5,550,788, Cl. 367-25.000.

Institut National de la Recherche Agronomique (I.N.R.A.): *See*—
Lerouge, Patrice; Roche, Philippe; Faucher, Catherine; Maillet, Fabienne; Denarie, Jean; Promé, Jean-Claude; and Truchet, Georges, 5,549,718, Cl. 47-57.600.

Institut National de l'Environnement Industriel et des Risques: *See*—
Accorsi, Antoinette; and Charlot, Daniel, 5,549,870, Cl. 422-90.000.

Institut Pasteur: *See*—
Montagnier, Luc; Rey, Françoise; Krust, Bernard; and Clavel, François, 5,550,052, Cl. 435-240.260.

Institute of Gas Technology: *See*—
Hayden, Christopher G., 5,550,313, Cl. 588-256.000.

Instytut Podstawowych Problemów Techniki: *See*—
Brokowski, Andrzej; and Szelążek, Jacek, 5,549,001, Cl. 73-597.000.

Intel Corporation: *See*—
Carmody, Kevin F.; Charvat, Peter K.; and Vandentop, Gilroy J., 5,549,784, Cl. 156-643.100.
Hannah, Eric C., 5,550,595, Cl. 348-552.000.
Kulkarni, Upendra M., 5,551,006, Cl. 395-473.000.
Pawlowski, Stephen S., 5,550,533, Cl. 340-825.200.
Sarangdhar, Nitin V.; and Lai, Konrad K., 5,550,988, Cl. 395-293.000.
Sarangdhar, Nitin V.; Wang, Wen-Hann; and Fisch, Matthew, 5,551,005, Cl. 395-472.000.
Shah, Nilesh V.; Rabe, Jeffrey L.; and Bogin, Zohar, 5,551,044, Cl. 395-750.000.

Intermec Corporation: *See*—
Rudeen, Robert W., 5,550,364, Cl. 235-462.000.
Sherman, David M., 5,550,362, Cl. 235-455.000.

Intermedics, Inc.: *See*—
Stotts, Lawrence J.; Paul, Patrick J.; and Prutchi, David, 5,549,653, Cl. 607-4.000.

International Business Machines Corporation: *See*—
Furlan, Gilbert; Rissanen, Jorma J.; and Sheinvald, Dafna, 5,550,540, Cl. 341-51.000.

International Business Machines: *See*—
Barrera, David D.; Rastegar, Bahador; and Rossbach, Paul C., 5,550,995, Cl. 395-403.000.
Boyette, James E., Jr.; Hammond, James M.; Lo, Jiann-Chang; Mahlbacher, James C.; Servedio, Michael; and Taheri, Ali R., 5,550,483, Cl. 324-758.000.

International Business Machines Corporation: *See*—
Amini, Nader; Boury, Bechara E.; Brannon, Sherwood; and Lohmar, Terence J., 5,551,009, Cl. 395-492.000.
Aoyagi, Akihiko; Boutaghou, Zine-Eddine; Khanna, Vijayeshwar D.; Kumar, Suresh; and Sri-Jayantha, Muthuthamby, 5,550,688, Cl. 360-99.080.
Beausoleil, William F.; Ng, Tak-Kwong; and Palmer, Harold R., 5,551,013, Cl. 395-500.000.
Bellegarda, Jerome R.; Nahamoo, David; and Nathan, Krishna S., 5,550,931, Cl. 382-187.000.
Boutaghou, Zine-Eddine; Cossette, Luke A.; and Luoma, Richard W., 5,550,689, Cl. 360-99.080.
Boutaghou, Zine-Eddine; Bornhorst, Randy J.; and Johnson, Douglas W., 5,550,690, Cl. 360-99.120.
Branstad, Mark W.; Brech, Brad L.; Byrn, Jonathan W.; Delp, Gary S.; and Montalvo, Rafael M., 5,550,806, Cl. 370-17.000.
Chan, Shun S.; Heinrich, Harley K.; Kandlur, Dilip D.; and Krishna, Arvind, 5,550,547, Cl. 342-42.000.
Choy, David M.; and Mohan, Chandrasekaran, 5,551,027, Cl. 395-600.000.
Cline, Troy L.; Isensee, Scott H.; and Poston, Ricky L., 5,550,970, Cl. 395-161.000.
Cragun, Brian J., 5,550,564, Cl. 345-173.000.
Cronin, John E.; and Rutten, Matthew J., 5,549,511, Cl. 451-281.000.
Crump, Dwayne T.; Pancoast, Steven T.; Benson, Paul H., IV; and Steelman, Herbert S., 5,551,043, Cl. 395-750.000.
DiPaolo, Nunzio; and Ferguson, Daniel J., 5,550,351, Cl. 219-390.000.
Dolev, Danny; Reischuk, Rüdiger K.; and Strong, Hovey R., 5,550,873, Cl. 375-354.000.
Drake, Samuel; Griefer, Allan D.; Powers, John T., Jr.; and Thomas, John G., 5,550,966, Cl. 395-154.000.
Duault, Maurice, 5,550,819, Cl. 370-60.100.
Durham, Christopher M.; Kodali, Visweswara R.; and Shah, Salim A., 5,550,490, Cl. 326-98.000.
Farooq, Mukta S.; Kaja, Suryanarayana; Perfecto, Eric D.; and White, George E., 5,549,808, Cl. 205-123.000.
Fifield, John A.; and Heller, Lawrence G., 5,550,488, Cl. 326-58.000.
Forman, Ira R.; and Madduri, Hari H., 5,550,973, Cl. 395-182.030.
Georgiou, Christos J.; Larsen, Thor A.; and Lee, Ki W., 5,550,860, Cl. 375-220.000.
Hendriks, Ferdinand; and Robert, Michel P., 5,550,693, Cl. 360-103.000.
Isensee, Scott H.; and Poston, Ricky L., 5,550,559, Cl. 345-124.000.
Kanada, Yoshihisa; Kawachiya, Kiyokuni; and Shiio, Ichiro, 5,550,560, Cl. 345-156.000.
Keener, Don S.; McNeill, Andrew B.; Newsom, Thomas H.; Scheiern, Kevin L.; Voorhees, Richard W.; and Wachtel, Edward I., 5,550,990, Cl. 395-309.000.
Keener, Don S.; Moore, Gregory J.; and Voorhees, Richard W., 5,550,991, Cl. 395-309.000.
Kirk, Richard D., 5,548,981, Cl. 70-58.000.
Kuczynski, Joseph P., 5,550,171, Cl. 522-31.000.
Linden, Thomas M.; Reinke, Jon D.; and Schmuck, Frank B., 5,551,030, Cl. 395-600.000.
Lyon, Leonard E.; and Teed, Richard L., 5,551,032, Cl. 395-600.000.
M. Cheng, Josephine; Mohan, Chandrasekaran; and Pirahesh, Mir H., 5,551,031, Cl. 395-600.000.
Martin, Andrew R., 5,551,038, Cl. 395-700.000.
Mattson, Richard L.; and Menon, Jaishankar M., 5,551,003, Cl. 395-463.000.
Miller, Steven M.; and Redpath, Richard J., 5,550,968, Cl. 395-157.000.
Mohan, Chandrasekaran; and Narang, Inderpal S., 5,551,046, Cl. 395-800.000.
Nguyen, Thao A., 5,550,696, Cl. 360-135.000.
Nguyen, Thao N.; Oehrlein, Gottlieb S.; and Weinberg, Zeev A., 5,549,935, Cl. 427-490.000.
Ogilvie, Clarence R.; and Stabler, Paul C., 5,550,768, Cl. 364-748.000.
Santos, Gregory N., 5,550,989, Cl. 395-306.000.
Staiger, Dieter E., 5,550,846, Cl. 371-27.000.
Torres, Robert J.; and Fleming, Stephen S., 5,550,969, Cl. 395-159.000.

International Rectifier Corporation: *See*—
Cantarini, William F., 5,549,762, Cl. 136-249.000.
Houk, Talbott M., 5,550,436, Cl. 315-209.00R.
Nadd, Bruno C.; and Houk, Talbott M., 5,550,701, Cl. 361-103.000.

Inverni Della Beffa S.p.A.: *See*—
Colombo, Paolo; Cardona, Antonio C.; and Pifferi, Giorgio, 5,549,913, Cl. 424-472.000.

Iowa State University Research Foundation, Inc.: *See*—
Lyon, Wanda J.; Olson, Dennis G.; and Murano, Elsa A., 5,549,895, Cl. 424-115.000.
Rothschild, Max F.; Tuggle, Christopher K.; Jacobson, Carol D.; Vaske, David A.; Mileham, Alan J.; and Plastow, Graham S., 5,550,024, Cl. 435-6.000.

Ip, Tony K.; and Kuver, Walter D., to Canon Kabushiki Kaisha. In an interactive network board, a method and apparatus for preventing inadvertent loading of a programmable read only memory. 5,550,997, Cl. 395-430.000.

Iqbal, Mohamed; Diebold, James L.; Siman, Robert; Chatterjee, Sankar; and Kauer, James C., to Cephalon, inc. Multicatalytic protease inhibitors. 5,550,262, Cl. 554-57.000.

Iqbal, Muhammed Z.: *See*—

Brackett, Charles A.; Chang, Gee-Kung; and Iqbal, Muhammed Z., 5,550,818, Cl. 370-60.000.
Irie, Yasuhito; and Yamada, Kenji, to NEC Corporation. Method and apparatus for performing priority control for cells in output buffer type ATM switch. 5,550,823, Cl. 370-60.100.
Iroh, Jude O.: *See*—
Bell, James P.; Iroh, Jude O.; Scola, Daniel A.; and Liang, Jengli, 5,549,807, Cl. 205-50.000.
Iron, Gideon: *See*—
Mendes, Emanuel; Iron, Gideon; and Harel, Avikam, 5,549,660, Cl. 607-088.000.
Isaka, Yoshiharu, to Yamaha Hatsudoki Kabushiki Kaisha. Induction system for engine. 5,549,088, Cl. 123-308.000.
Isbister, Jenefir D., to George Mason University. Biological assay for microbial contamination. 5,550,032, Cl. 435-39.000.
Ische, Kenneth W.; Johnson, Michael W.; Dea, William S.; and Chandler, Thomas D., to Century Manufacturing Company. Vehicle coolant recycling. 5,549,832, Cl. 210-694.000.
Isegawa, Hiroyuki: *See*—
Komine, Kenji; and Isegawa, Hiroyuki, 5,548,973, Cl. 62-469.000.
Isensee, Scott H.; and Poston, Ricky L., to International Business Machines Corporation. Method and apparatus for locating a point in a list. 5,550,559, Cl. 345-124.000.
Isensee, Scott H.: *See*—
Cline, Troy L.; Isensee, Scott H.; and Poston, Ricky L., 5,550,970, Cl. 395-161.000.
Isert, Dieter: *See*—
Fischer, Gerd; Defossa, Elisabeth; Gerlach, Uwe; Hörlein, Rolf; Krass, Norbert; Lattrell, Rudolf; Stache, Ulrich; Wollmann, Theodor; and Isert, Dieter, 5,550,232, Cl. 540-230.000.
Ishaq, Khalid S.: *See*—
Benson, Bradley J.; Chen, Xiannong; Cianciolo, George J.; Diaz, Jose-Luis; Ishaq, Khalid S.; Morris-Natschke, Susan L.; Uhing, Ronald J.; and Wong, Henry, 5,550,132, Cl. 514-269.000.
Ishiai, Keizou: *See*—
Hayama, Hidekazu; Miura, Yasunori; Suzuki, Atsushi; and Ishiai, Keizou, 5,550,429, Cl. 313-479.000.
Ishibashi, Hideo: *See*—
Oshima, Toshiyuki; Ishibashi, Hideo; Minamino, Hiromasa; Yamamoto, Satoshi; Izumo, Takaharu; and Kaneko, Mitsuharu, 5,550,198, Cl. 525-404.000.
Ishibashi, Kenji: *See*—
Ishida, Tokuji; Nakanishi, Yasuo; Ishimura, Toshihiko; Katoh, Takehiro; Ishibashi, Kenji; Hara, Yoshihiro; Kondo, Takashi; and Yoshino, Hiroshi, 5,550,611, Cl. 354-400.000.
Ishida, Tatsuaki: *See*—
Tohma, Kiyhokazu; Yoshimoto, Kazunari; Sugita, Ryuji; and Ishida, Tatsuaki, 5,549,936, Cl. 427-566.000.
Ishida, Tokuji; Nakanishi, Yasuo; Ishimura, Toshihiko; Katoh, Takehiro; Ishibashi, Kenji; Hara, Yoshihiro; Kondo, Takashi; and Yoshino, Hiroshi, to Minolta Camera Kabushiki Kaisha. Camera. 5,550,611, Cl. 354-400.000.
Ishidoya, Masahiro; Shibato, Kishio; Komoto, Keiji; Shibamoto, Kenji; Mashita, Mitsuyuki; and Ohe, Osamu, to Nippon Oil and Fats Company, Limited. Thermosetting compositions, methods of coating and coated articles. 5,549,932, Cl. 427-385.500.
Ishiguro, Takashi: *See*—
Arai, Yuji; Ishiguro, Takashi; and Watanabe, Toshio, 5,549,952, Cl. 428-64.400.
Ishii, Kazuyoshi, to Canon Kabushiki Kaisha. Magnetic head and magneto-optical recording apparatus. 5,550,796, Cl. 369-13.000.
Ishikawa, Yutaka; Ito, Takeru; and Sato, Tsutomu, to Asahi Kogaku Kogyo Kabushiki Kaisha. Continuous form printer. 5,549,401, Cl. 400-618.000.
Ishimaru, Naohiko: *See*—
Otsuka, Haruhiko; Murayama, Yuzo; Tashiro, Akihiko; Hyomi, Kyoko; and Ishimaru, Naohiko, 5,549,954, Cl. 428-65.300.
Ishimura, Toshihiko: *See*—
Ishida, Tokuji; Nakanishi, Yasuo; Ishimura, Toshihiko; Katoh, Takehiro; Ishibashi, Kenji; Hara, Yoshihiro; Kondo, Takashi; and Yoshino, Hiroshi, 5,550,611, Cl. 354-400.000.
Ishiwatari, Takao: *See*—
Iwasaki, Tomonori; Suzuki, Masaya; Furukawa, Takashi; Tsushima, Kazunori; Ishiwatari, Takao; and Tsuchiya, Toru, 5,550,258, Cl. 549-78.000.
Isler, David J. Centering tool for cylinder gauge. 5,548,901, Cl. 33-542.100.
Israelson, Ronald J., to Minnesota Mining and Manufacturing Company. Firestop apparatus for allowing pipe movement. 5,548,934, Cl. 52-220.800.
Isshiki, Kunihiko: *See*—
Aoyagi, Toshitaka; Watanabe, Hitoshi; Miyazaki, Yasunori; and Isshiki, Kunihiko, 5,550,855, Cl. 372-50.000.
Ito, Chiaki: *See*—
Aoki, Yoichi; Sato, Yasuo; Ito, Chiaki; Nishiuchi, Hitoshi; Nakamoto, Makoto; Yamaguchi, Syoji; Mio, Haruhiko; Koyata, Kazuhiro; and Miyazawa, Yoshinori, 5,550,562, Cl. 345-163.000.
Ito, Ikuo: *See*—
Sato, Toshio; Ito, Ikuo; Maeda, Kazuhiko; Yokota, Keiichi; Namekata, Takeshi; and Nemoto, Akihiko, 5,550,284, Cl. 562-467.000.
Ito, Kazuhiko: *See*—
Masaie, Norio; Tachibana, Tomoyuki; Shimizu, Hiroyuki; Ito, Kazuhiko; Matsuguchi, Akira; Sasa, Yoshikazu; and Furuya, Atsushi, 5,550,348, Cl. 219-145.220.
Ito, Kazumasa: *See*—
Tazaki, Hiroshi; Ito, Kazumasa; and Sugawara, Atsushi, 5,550,337, Cl. 181-235.000.
Ito, Masahiro; and Hirano, Yoji, to NEC Corporation. Current buffer circuit with enhanced response speed to input signal. 5,550,501, Cl. 327-374.000.
Ito, Masao: *See*—
Takamatsu, Masahiro; and Ito, Masao, 5,550,625, Cl. 355-326.00R.
Ito, Seiichi; Goto, Toru; and Kawamura, Kazuhiro, to Nippon Sanso Corporation. Heat-insulating cooking container. 5,549,039, Cl. 99-340.000.
Ito, Takayuki: *See*—
Abe, Tetsuya; Hasushita, Sachio; and Ito, Takayuki, 5,550,674, Cl. 359-422.000.
Ito, Takeru: *See*—
Ishikawa, Yutaka; Ito, Takeru; and Sato, Tsutomu, 5,549,401, Cl. 400-618.000.
Ito, Yutaka: *See*—
Uematsu, Takao; Shoji, Mitsuyoshi; Nakakawaji, Takayuki; Komatsuzaki, Shigeki; Ito, Yutaka; Morihara, Atsushi; Sato, Koji; Zushi, Shizuo; and Go, Hiroshi, 5,549,835, Cl. 508-204.000.
Itoh, Fumiyoshi: *See*—
Dowler, James A.; Whitaker, Tyson B.; King, Julius D., Jr.; Murayama, Fumitaka; Takizawa, Satoru; Gomi, Masaao; and Itoh, Fumiyoshi, 5,550,627, Cl. 355-326.00M.
Itoh, Kosaku; Yokoyama, Ikuro; Prochut, Richard; Löfstedt, Jörgen; and Nilsson, Christer, to Tetra Laval Holdings & Finance S.A. Apparatus for transferring containers to a moving conveyor. 5,549,191, Cl. 198-432.000.
Itoh, Masateru; and Kawamura, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Convergence adjustment circuit and projection type display apparatus. 5,550,598, Cl. 348-807.000.
Itoh, Mitsuhiro; and Matsui, Hideo, to Mitsubishi Denki Kabushiki Kaisha. Microcomputer with built-in motor control circuit. 5,550,451, Cl. 318-811.000.
Itoh, Takashi: *See*—
Iura, Kazuo; Onishi, Yasuhiko; and Itoh, Takashi, 5,549,946, Cl. 428-35.800.
ITT Automotive Electrical Systems, Inc.: *See*—
Buchanan, Harry C., Jr.; and Zhou, Peter S., 5,549,183, Cl. 188-265.000.
ITT Automotive Europe GmbH: *See*—
Goossens, Andre F. L., 5,550,467, Cl. 324-173.000.
Iuchi, Makoto: *See*—
Kitajima, Hiroshi; Aoki, Hidemitsu; Hamano, Haruto; Morita, Makoto; Shiramizu, Yoshimi; Nakamori, Masaharu; Watanabe, Kaori; Seo, Hirofumi; Shimizu, Yuji; Iuchi, Makoto; Sasaki, Yasushi; and Ohta, Nahomi, 5,549,798, Cl. 204-222.000.
Iura, Kazuo; Onishi, Yasuhiko; and Itoh, Takashi, to Sumitomo Wiring Systems, Ltd. Varnish-coated heat-resistant roll for copying machine, and method of producing the same. 5,549,946, Cl. 428-35.800.
IVAC Corporation: *See*—
O'Leary, Stephen H., 5,549,460, Cl. 417-474.000.
Siegel, Geoffrey S.; and Leinsing, Karl R., 5,549,577, Cl. 604-256.000.
Iversen, Arthur H. Low cost power switchgear. 5,550,707, Cl. 361-617.000.
Iwai, Hidetoshi: *See*—
Sukegawa, Sbunichi; Nasu, Takumi; and Iwai, Hidetoshi, 5,550,394, Cl. 257-209.000.
Iwakawa, Toru, to Nippon Eisei Center Co., Ltd. Method of creating a barrier to wood materials and wooden structures from attack by humidity, fungi and insects. 5,549,869, Cl. 422-40.000.
Iwaki, Shoichi: *See*—
Fukuda, Missao; Hayami, Yoshihiro; Ueda, Toshihiro; and Iwaki, Shoichi, 5,549,510, Cl. 451-246.000.
Iwamoto, Koji: *See*—
Tanaka, Shigeo; Yamazaki, Hiroshi; Osakabe, Yoshio; Kotabe, Noriko; Iwamoto, Koji; Souma, Yoko; Imaura, Toshihiro; and Maki, Shigeru, 5,550,826, Cl. 370-85.800.
Iwane, Noriyasu; and Sawa, Harauo, to Furukawa Denchi Kabushiki Kaisha. Preparing method for a nickel hydroxide for a nickel electrode, a manufacturing method for the nickel electrode, and an alkaline secondary battery incorporating the nickel electrode therein. 5,549,992, Cl. 429-223.000.
Iwasaki, Chisato: *See*—
Fukuda, Koichi; Oba, Tomofumi; Miyazaki, Masanori; Fukui, Hirofumi; Iwasaki, Chisato; Kasama, Yasuhiko; Ohmi, Tadahiro; Kubota, Masaru; Kitagawa, Hitoshi; Nakano, Akira; and Yoshida, Osamu, 5,550,091, Cl. 437-241.000.
Iwasaki, Hiroshi, to Kabushiki Kaisha Toshiba. External storage device. 5,550,709, Cl. 361-684.000.
Iwasaki, Hitoshi; Ohsawa, Yuichi; Kondoh, Reiko; Hashimoto, Susumu; Sawabe, Atsuhito; Kamiguchi, Yuzo; and Sahashi, Masashi, to Kabushiki Kaisha Toshiba. Magnetoresistance effect element. 5,549,978, Cl. 428-692.000.
Iwasaki, Tameo; Kondo, Kazuhiko; and Ohmizu, Hiroshi, to Tanabe Seiyaku Co., Ltd. Alkylation process for preparing azetidinone compound and starting compound therefor. 5,550,229, Cl. 540-200.000.
Iwasaki, Tomonori; Suzuki, Masaya; Furukawa, Takashi; Tsushima, Kazunori; Ishiwatari, Takao; and Tsuchiya, Toru, to Sumitomo Chemical Company, Limited. Ester compound, active agent for controlling noxious insect pests containing the same as active ingredient, intermediate for production of the ester compound, and process for producing the intermediate. 5,550,258, Cl. 549-78.000.
Iwasaki, Tomonori: *See*—
Tsushima, Kazunori; Iwasaki, Tomonori; Suzuki, Masaya; and Matsuo, Noritada, 5,550,260, Cl. 549-421.000.

Iwata, Yosihiro. System for obtaining fresh water from seawater. 5,549,800, Cl. 204-242.000.
Izawa, Yasuhiro; Fujii, Tatsuya; Shiraishi, Naoto; Fukushima, Masanobu; and Nakajima, Tatsuya, to Ricoh Company, Ltd. Methods and systems for sorting multiplying indexed data. 5,551,019, Cl. 395-600.000.
Izumo, Takaharu: *See*—
Oshima, Toshiyuki; Ishibashi, Hideo; Minamino, Hiromasa; Yamamoto, Satoshi; Izumo, Takaharu; and Kaneko, Mitsuharu, 5,550,198, Cl. 525-404.000.
J.C. Pardo & Sons: *See*—
Pardo, Warren A.; and Gabriele, Valentino, 5,549,386, Cl. 366-331.000.
J. M. Huber Corporation: *See*—
Hart, Charles M., 5,549,158, Cl. 166-241.400.
J. M. Voith GmbH: *See*—
Begemann, Ulrich; Heinzmann, Helmut; Ruf, Wolfgang; Egelhof, Dieter; and Kinzler, Gernot, 5,549,792, Cl. 162-216.000.
Jackson, Colleen J. Vanity for use with a bathtub. 5,548,855, Cl. 4-559.000.
Jackson, Douglas O'Brien. Method and apparatus for implementing a databus voter to select the command signals from one of several redundant asynchronous digital processing units. 5,550,731, Cl. 364-133.000.
Jackson, Jerome: *See*—
Kordis, Thomas F.; Swanson, David K.; Jackson, Jerome; and Spraker, Terry E., 5,549,661, Cl. 607-99.000.
Jackson, Meyer B. Regulating neuropeptide hormone secretion. 5,550,120, Cl. 514-169.000.
Jackson, Otto V.: *See*—
Gunya, Robert E.; and Jackson, Otto V., 5,549,586, Cl. 604-319.000.
Jacobs, Herbert H., to American Greetings Corporation. Method and apparatus for storing and selectively retrieving product data by correlating customer selection criteria with optimum product designs based on embedded expert judgments. 5,550,746, Cl. 364-479.010.
Jacobs, Robert T.; Ohnmacht, Cyrus J.; and Trainor, Diane A., to Zeneca Limited. Methanoanthrancenyl piperidyl antipsychotics. 5,550,136, Cl. 514-322.000.
Jacobson, Carol D.: *See*—
Rothschild, Max F.; Tuggle, Christopher K.; Jacobson, Carol D.; Vaske, David A.; Mileham, Alan J.; and Plastow, Graham S., 5,550,024, Cl. 435-6.000.
Jacoby, James W., Jr.: *See*—
Jordan, Richard A.; Jacoby, James W., Jr.; and Gosnell, Raymond H., 5,549,056, Cl. 108-51.100.
Jadav, Anjana K.: *See*—
Galleguillos, Ramiro; Panitch, Maximo M.; and Jadav, Anjana K., 5,549,887, Cl. 424-66.000.
Jaeggi, Jean-Pierre, to Speno International SA. Installation for the reprofiling of tracks carried out on a railway line. 5,549,505, Cl. 451-69.000.
Jaffe, Steven T.: *See*—
Strolle, Christopher H.; and Jaffe, Steven T., 5,550,596, Cl. 348-607.000.
Jagadish, Hosagrahar V.; and Qian, Xiaolei, to Lucent Technologies Inc. Method for associating integrity maintenance constraints with data object classes in an object-oriented database. 5,551,029, Cl. 395-600.000.
Jaggy, Peter: *See*—
Krauss, Werner; Zwingenberger, Jan; and Jaggy, Peter, 5,549,110, Cl. 128-661.010.
Jagnandan, Indradat: *See*—
DeCrosta, Michelle A.; and Jagnandan, Indradat, 5,550,211, Cl. 528-480.000.
Jaichandra, Doraiswami: *See*—
Boger, David L.; Jaichandra, Doraiswami; Jaworski, Donald L.; and Perry, Joseph E., 5,550,059, Cl. 436-54.000.
Jakubowski, Joseph A.; Palkowitz, Alan D.; and Sigmund, Sandra K., to Eli Lilly and Company. Polyhydronorharman synthase inhibitors. 5,550,118, Cl. 514-89.000.
Jamain, Patrice: *See*—
Bernus, Christophe; Jamain, Patrice; and Roland, Jean-Pierre, 5,550,413, Cl. 310-36.000.
James, Donald N.: *See*—
Halleck, Michael D.; James, Donald N.; and Halleck, Michael E., 5,549,113, Cl. 128-671.000.
James, Jay; Zak, Roger; Loeffler, Michael; and Friezen, Robert. Velocipede with protective padded shell and soft removable cover. 5,549,313, Cl. 280-221.000.
Jang, Gi Y.: *See*—
Middendorf, Lyle R.; Brumbaugh, John A.; and Jang, Gi Y., 5,549,805, Cl. 204-461.000.
Jang, Tae-Seong: *See*—
Seo, Dong-il; and Jang, Tae-Seong, 5,550,776, Cl. 365-200.000.
Janick, Keith: *See*—
Yun, Young W.; Martel, Lawrence B.; Janick, Keith; and Bruno, Ralph J., 5,549,331, Cl. 280-843.000.
Jankoski, Constance A.: *See*—
Sinclair, James D.; and Jankoski, Constance A., 5,549,512, Cl. 454-58.000.
Jannard, James H., to Oakley, Inc. Surface modified lens. 5,550,599, Cl. 351-159.000.
Janotik, Adam M.; and Kazyak, Lawrence P., to Ford Motor Company. Split joint construction for a space frame. 5,549,352, Cl. 296-209.000.
Jansen, Peter, to Pharmacia AB. Intraocular lens having haptics with non-symmetrical cross-section. 5,549,669, Cl. 623-6.000.
Jansen, Thomas J.: *See*—
Nechvatal, Timothy M.; and Jansen, Thomas J., 5,549,059, Cl. 110-346.000.
Jansen, Wilbert F., Jr.; and Chernobilsky, Ivsey N., to Eastman Kodak Company. Camera with magnetically movable light blocking shield. 5,550,606, Cl. 354-94.000.
Janson, Cornellis J.: *See*—
Bouwman, Lambertus J. M.; Hermes, Guillaume M. P. G.; and Janson, Cornellis J., 5,550,722, Cl. 362-221.000.
Janssen, Marcel A. C.; Van Daele, Georges H. P.; Bosmans, Jean-Paul R. M. A.; Verdonck, Marc G. C.; and Janssen, Paul A. J., to Janssen Pharmaceutica N.V. Heterocycle-substituted benzenemethanamine derivatives. 5,550,135, Cl. 514-313.000.
Janssen, Paul A. J.: *See*—
Janssen, Marcel A. C.; Van Daele, Georges H. P.; Bosmans, Jean-Paul R. M. A.; Verdonck, Marc G. C.; and Janssen, Paul A. J., 5,550,135, Cl. 514-313.000.
Janssen, Petrus C. M.: *See*—
van den Nieuwelaar, Adrianus J.; Janssen, Petrus C. M.; Teurlinx, Engelbert J. J.; van Harskamp, Cornelius D.; and Drabbels, Bastiaan W. J. E. J., 5,549,521, Cl. 452-118.000.
Janssen Pharmaceutica N.V.: *See*—
Janssen, Marcel A. C.; Van Daele, Georges H. P.; Bosmans, Jean-Paul R. M. A.; Verdonck, Marc G. C.; and Janssen, Paul A. J., 5,550,135, Cl. 514-313.000.
Japan as represented by Director General of Agency of Industrial Science and Technology: *See*—
Taguchi, Yoichi; Oishi, Akihiro; Shibuya, Isao; and Tsuchiya, Tohru, 5,550,230, Cl. 540-203.000.
Japan Synthetic Rubber Co., Ltd.: *See*—
Hasegawa, Ko; Teramoto, Toshio; Nakajima, Tatsuo; and Konomoto, Takeyoshi, 5,550,190, Cl. 525-92.00A.
Jaroszewski, Conrad: *See*—
Lapsker, Irving; Lapsker, Jeffry G.; and Jaroszewski, Conrad, 5,549,302, Cl. 273-346.000.
Jaskiw, George E.: *See*—
Weinberger, Daniel R.; Lipska, Barbara K.; and Jaskiw, George E., 5,549,884, Cl. 424-9.200.
Jasper, Wyman & Sons: *See*—
Robinson, Frederick L.; Hedberg, Ernest J.; Kuhni, Michael A.; and Ramsdell, Everett L., 5,549,921, Cl. 426-573.000.
Jaster, Paul A.: *See*—
Lea, Michael C.; and Jaster, Paul A., 5,551,042, Cl. 359-742.000.
Jaworski, Donald L.: *See*—
Boger, David L.; Jaichandra, Doraiswami; Jaworski, Donald L.; and Perry, Joseph E., 5,550,059, Cl. 436-54.000.
Jefferson, David A.: *See*—
Edwards, Peter P.; Hu, Shu-Fen; Liu, Ru-Shi; and Jefferson, David A., 5,550,105, Cl. 505-120.000.
Jelinek, Victor E.: *See*—
Torborg, Kevin; and Jelinek, Victor E., 5,548,908, Cl. 34-601.000.
Jeng, Arco Y.: *See*—
De Lombaert, Stéphane; Jeng, Arco Y.; and Ksander, Gary M., 5,550,119, Cl. 514-92.000.
Jennrich, Irene; Weber, Lothar; and Niegel, Andreas, to Robert Bosch GmbH. Spark plug for internal combustion engines. 5,550,424, Cl. 313-130.000.
JHC Ventures, L.P.: *See*—
Hoss, Gregg M.; Thompson, James E.; Johnson, Thomas F.; Kirbie, Martin; and Speer, Andrew J., III, 5,549,359, Cl. 298-35.00M.
Jin, Sungho; McCormack, Mark T.; and Ramesh, Ramamoorthy, to Lucent Technologies Inc. Article comprising magnetoresistive material. 5,549,977, Cl. 428-692.000.
Jinbo, Takeshi; and Takahama, Hiroyuki, to Applied Materials, Inc. Method and apparatus for cooling a vacuum device. 5,548,964, Cl. 62-55.500.
Job, Robert C.: *See*—
Hoxmeier, Ronald J.; Job, Robert C.; Spence, Bridget A.; and DuBois, Donna A., 5,550,194, Cl. 525-250.000.
Jobson, Brian: *See*—
Larson, Gary D.; Jobson, Brian; Johnson, James A.; and Sturni, Lance C., 5,550,006, Cl. 430-311.000.
Joerg Zaschel: *See*—
Zaschel, Jörg, 5,549,009, Cl. 73-861.355.
Joh. Winklhofer & Sohne: *See*—
Dag, Heinrich, 5,549,194, Cl. 198-845.000.
Johann, Stephen V.; van Zeijl, Marja; and O'Hara, Bryan M., to American Cyanamid Company. Nucleic acid molecule encoding the amphotropic virus receptor. 5,550,221, Cl. 536-23.500.
Johansen, Curt C.; Moore, Mark P.; and Hann, Edward H., to Physio-Control Corporation. Communication interface for transmitting and receiving serial data between medical instruments. 5,549,659, Cl. 607-60.000.
Johansen, Hanne R.; Van Der Straten-Ponthoz, Ariane A.; and Rosenberg, Martin, to SmithKline Beecham Corporation. Expression of heterologous proteins in Drosophila cells. 5,550,043, Cl. 435-172.300.
John, Erwin R.; and Easton, Paul D., to New York University. Simultaneous testing of two motor capabilities of a human subject. 5,549,118, Cl. 128-731.000.
John, Thomas V.: *See*—
Subramaniam, Chitoor S.; John, Thomas V.; Colvin, David; and Bitler, George W., 5,550,299, Cl. 568-591.000.
Johns Hopkins University, The: *See*—
Kinzler, Kenneth W.; and Vogelstein, Bert, 5,550,023, Cl. 435-7.100.

Johnsen, Kenneth A., to E. R. Squibb & Sons, Inc. Coupling device for ostomy pouch. 5,549,588, Cl. 604-339.000.
Johnson & Johnson Professional, Inc.: *See*—
Caldarise, Salvatore, 5,549,697, Cl. 623-22.000.
Johnson, Bruce C., to Creative Integration & Design, Inc. Nasal dilator having an adhesive void to allow relative movement. 5,549,103, Cl. 128-200.240.
Johnson, Douglas W.: *See*—
Boutaghou, Zine-Eddine; Bornhorst, Randy J.; and Johnson, Douglas W., 5,550,690, Cl. 360-99.120.
Johnson, Gary: *See*—
Harp, Daniel L.; Johnson, Gary; and Myers, Joe, 5,549,816, Cl. 210-120.000.
Johnson, George H.; and Johnson, Lillian D. Wrench selector. 5,548,903, Cl. 33-810.000.
Johnson, James A.: *See*—
Larson, Gary B.; Jobson, Brian; Johnson, James A.; and Sturni, Lance C., 5,550,006, Cl. 430-311.000.
Johnson, Lanny L. Biological replacement ligament. 5,549,676, Cl. 623-13.000.
Johnson, Lillian D.: *See*—
Johnson, George H.; and Johnson, Lillian D., 5,548,903, Cl. 33-810.000.
Johnson, Lonnie G.; and Applewhite, John, to Johnson Research Development Company, Inc. Toy rocket with velocity dependent chute release. 5,549,497, Cl. 446-52.000.
Johnson, Loraine. Shampooing device. 5,548,853, Cl. 4-523.000.
Johnson, Michael W.: *See*—
Ische, Kenneth W.; Johnson, Michael W.; Dea, William S.; and Chandler, Thomas D., 5,549,832, Cl. 210-694.000.
Johnson, Phillip L.: *See*—
Burnworth, Scott; and Johnson, Phillip L., 5,549,495, Cl. 441-108.000.
Johnson Research Development Company, Inc.: *See*—
Johnson, Lonnie G.; and Applewhite, John, 5,549,497, Cl. 446-52.000.
Johnson, Richard D.; Bultman, Robert M.; and Newcomer, Kevin L., to QED Enviromental Systems, Inc. Electronic counter with pump-mounted sensor for cycle indication. 5,549,157, Cl. 166-105.000.
Johnson Service Company: *See*—
Federspiel, Clifford C., 5,550,752, Cl. 364-505.000.
Kautz, Thomas O., 5,549,272, Cl. 251-118.000.
Pascucci, Gregory A.; Rasmussen, David E.; Decious, Gaylon M.; Garbe, James R.; Hyzer, Susan M.; Woest, Karen L.; Vairavan, Vairavan; Koch, David L.; Gottschalk, Donald A., Jr.; Burkhardt, Dennis E.; Standish, Darrell E.; Madaus, Paul W.; Spacek, Dan J.; Nesler, Clay G.; Stark, James K.; Mageland, Otto M.; Singers, Robert R.; and Wagner, Michael E., 5,550,980, Cl. 395-200.050.
Johnson, Thomas F.: *See*—
Hoss, Gregg M.; Thompson, James E.; Johnson, Thomas F.; Kirbie, Martin; and Speer, Andrew J., III, 5,549,359, Cl. 298-35.00M.
Johnson, Todd S.; and Greig, Kevin M., to Zimmer, Inc. Knee prosthesis having a tapered cam. 5,549,686, Cl. 623-20.000.
Johnston, Brigg A.: *See*—
Danek, Daniel J.; Etters, Harry N., Jr.; Genz, Earl J.; Johnston, Brigg A.; Littman, Iran R.; Long, John N.; Meadors, Anthony W.; Mercadante, Nicholas J.; Orrico, Mario M.; Schramme, Stephan H.; and Shedore, Charles J., 5,550,342, Cl. 200-448.000.
Johnston, Jesse C., Jr.; Kulig, James S.; Lewis, Steven F.; Collet, Eric C.; Sepela, Mark J.; and Meuller, Michael L., to Babcock & Wilcox Company, The. Open beam sootblower. 5,549,079, Cl. 122-379.000.
Johnston, Russel R.: *See*—
Hassan, Ahmad M.; Johnston, Russel R.; and Krejci, John C., 5,550,646, Cl. 358-442.000.
Johnstone, Robert A. W.: *See*—
Wade, John R.; Pratt, Michael J.; Johnstone, Robert A. W.; and Smith, David I., 5,550,001, Cl. 430-157.000.
Joint Medical Products Corporation: *See*—
Noiles, Douglas G.; and DeCarlo, Alfred F., Jr., 5,549,694, Cl. 623-22.000.
Jolin, Gérald. Floatable luggage carrier for pickup trucks and snowmobiles, convertible into a camper and a trimaran. 5,549,067, Cl. 114-61.000.
Jonckheere, Luc: *See*—
Morlion, Danny; and Jonckheere, Luc, 5,549,481, Cl. 439-108.000.
Jones, Gordon H.: *See*—
Eppstein, Deborah A.; Felgner, Philip L.; Gadek, Thomas R.; Jones, Gordon H.; and Roman, Richard B., 5,550,289, Cl. 564-293.000.
Jones, Kyle D.: *See*—
Murch, Bruce P.; Roselle, Brian J.; and Jones, Kyle D., 5,549,758, Cl. 134-6.000.
Jones, Robert B. Trailer hitch guide. 5,549,316, Cl. 280-477.000.
Jones, Sidney D.: *See*—
Bowles, Cary R.; Jones, Sidney D.; and Peters, Gary A., 5,549,831, Cl. 210-650.000.
Jones, Stephen: *See*—
Pigeon, Charles; and Jones, Stephen, 5,549,071, Cl. 114-286.000.
Jones, Stephen A.; Garg, Shyam G.; Buller, James F.; and Santana, Miguel, Jr., to Advanced Micro Devices, Inc. Highly selective, highly uniform plasma etch process for spin-on glass. 5,549,786, Cl. 156-662.100.
Jordan, Richard A.; Jacoby, James W., Jr.; and Gosnell, Raymond H., to Cadillac Products, Inc. Load distributor for pallets. 5,549,056, Cl. 108-51.100.
Jorgensen, Kevin V.: *See*—
Crandall, F. Anthony; Jorgensen, Kevin V.; Grose, Brian L.; and Tyler, Monroe, 5,550,792, Cl. 367-155.000.
Jorgensen, Robert C.: *See*—
Winston, Anthony E.; Dunn, Steven E.; Cala, Francis R.; Vinci, Alfredo; Lajoie, M. Stephen; and Jorgensen, Robert C., 5,549,761, Cl. 134-40.000.
Joseph, Robert L.: *See*—
Mazer, Terrence B.; Walton, Joseph E.; Geckle, Ronita K.; Piontek, Carl J.; Duel, Susan B.; Daab-Krzykowski, Andre; Joseph, Robert L.; Pierson, William G.; Loughrin, Thomas D.; and Osip, Thomas W., 5,549,550, Cl. 604-83.000.
Josephy, Karl: *See*—
Miekka, Richard G.; Fotland, Richard A.; Miekka, Frederick N.; Fitch, John J.; and Josephy, Karl, 5,549,774, Cl. 156-209.000.
Joslin, Joel A.: *See*—
Chase, David D.; Shumate, Gary D.; Joslin, Joel A.; and Meunchen, Paul K., 5,548,843, Cl. 2-102.000.
Jost, Hans: *See*—
Trumpf, Rudolf; and Jost, Hans, 5,549,824, Cl. 210-323.100.
Jounenc, Michel: *See*—
Bloch, Nicolas; Guyomard, Yvon; and Jounenc, Michel, 5,549,105, Cl. 128-203.120.
Jow, Jin-Long, to Chain Fong Toys Co., Ltd. Toy car with a liftable steering wheel assembly. 5,549,501, Cl. 446-460.000.
J's Pacific Enterprise, Inc.: *See*—
Lespron, Angel, 5,549,030, Cl. 89-14.300.
Ju, Gwo-Tarng; Goudy, Eric S.; and Ayers, Ray R., to Shell Oil Company. Subsea pipeline shroud. 5,549,417, Cl. 405-211.000.
Juchem, Franz-Josef, to Juchem GmbH. Method of making flour-containing edible semifinished products. 5,549,922, Cl. 426-618.000.
Juchem GmbH: *See*—
Juchem, Franz-Josef, 5,549,922, Cl. 426-618.000.
Judson, Nancy L. Travel planner. 5,549,332, Cl. 283-34.000.
Juergensen, Kay; Aeschlimann, Daniel; and Hunziker, Ernst B., to Orthogene, Inc. Biological adhesive composition and method of promoting adhesion between tissue surfaces. 5,549,904, Cl. 424-423.000.
Juki Corporation: *See*—
Kato, Shigemasa; and Shiina, Takayuki, 5,549,063, Cl. 112-258.000.
Oda, Yo; Minakawa, Tadayoshi; Sibuya, Shyoichi; and Shiina, Takayuki, 5,549,061, Cl. 112-220.000.
Yamashita, Takashi; and Wada, Minoru, 5,549,062, Cl. 112-220.000.
Julian, Vincent D. Mobile sanitation station. 5,548,856, Cl. 4-664.000.
Jun, Gun S.; and Lee, Sang Y., to Goldstar Co., Ltd. Shelf device for a refrigerator. 5,549,379, Cl. 312-408.000.
Jung, Kyung-Han, to Samsung Electronics Co., Ltd. Microwave oven driving control method and apparatus thereof. 5,550,355, Cl. 219-709.000.
Juranovic, Lillian R.: *See*—
Hartman, Brian W.; Juranovic, Lillian R.; Scannell, Stephen C.; and Williams, Rogers B., 5,549,918, Cl. 426-291.000.
Juras, Karl-Heinz: *See*—
Heisner, Thomas; Naubik, Jürgen; and Juras, Karl-Heinz, 5,549,100, Cl. 126-39.00J.
Juriga, Duane M., to Indian Head Industries. Self-supporting impact resistant laminate. 5,549,776, Cl. 156-228.000.
K-2 Corporation: *See*—
Meibock, Antonin A.; and Svensson, John E., 5,549,310, Cl. 280-11.220.
Kaarstad, Charles. Device for use in a rearing unit. 5,549,076, Cl. 119-223.000.
Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo: *See*—
Yoneyama, Masaru; Shibuya, Takashi; and Miyake, Toshio, 5,550,226, Cl. 536-123.130.
Kabushiki Kaisha Kawai Gakki Seisakusho: *See*—
Hirano, Sayoko, 5,550,320, Cl. 84-623.000.
Kabushiki Kaisha Kenwood: *See*—
Sakamoto, Yoshio, 5,550,332, Cl. 181-148.000.
Kabushiki Kaisha Kobe Seiko Sho: *See*—
Masaie, Norio; Tachibana, Tomoyuki; Shimizu, Hiroyuki; Ito, Kazuhiko; Matsuguchi, Akira; Sasa, Yoshikazu; and Furuya, Atsushi, 5,550,348, Cl. 219-145.220.
Kabushiki Kaisha Kyowa Kogyosho: *See*—
Naramura, Michiyuki, 5,549,040, Cl. 099-349.000.
Kabushiki Kaisha Sankyo Seiki Seisakusho: *See*—
Sakashita, Hiroshi; and Katagiri, Masayuki, 5,550,414, Cl. 310-67.00R.
Kabushiki Kaisha Seibu Giken: *See*—
Kuma, Toshimi; and Kakuya, Shinji, 5,548,905, Cl. 34-92.000.
Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See*—
Ogawa, Tomoharu, 5,550,340, Cl. 200-295.000.
Kabushiki Kaisha Toshiba: *See*—
Azadegan, Faramarz, 5,550,643, Cl. 358-335.000.
Chimoto, Hiroyuki, 5,550,961, Cl. 395-133.000.
Hatori, Fumitoshi, 5,550,771, Cl. 365-174.000.
Iwasaki, Hiroshi, 5,550,709, Cl. 361-684.000.
Iwasaki, Hitoshi; Ohsawa, Yuichi; Kondoh, Reiko; Hashimoto, Susumu; Sawabe, Atsuhito; Kamiguchi, Yuzo; and Sahashi, Masashi, 5,549,978, Cl. 428-692.000.
Komine, Kenji; and Isegawa, Hiroyuki, 5,548,973, Cl. 62-469.000.
Muraoka, Yoshinori, 5,550,360, Cl. 239-384.000.
Ogihara, Masaki, 5,550,504, Cl. 327-537.000.
Okazaki, Motoya, 5,550,399, Cl. 257-529.000.
Saito, Toshimitsu, 5,551,008, Cl. 395-488.000.
Seki, Nagataka, 5,550,730, Cl. 363-132.000.
Shiba, Masue; and Nakata, Shigeharu, 5,550,996, Cl. 395-421.030.

Takagi, Mariko; Yoshii, Ichiro; Hama, Kaoru; Ikeda, Naoki; and Yasuda, Hiroaki, 5,550,400, Cl. 257-530.000.
Tanaka, Koichi, 5,550,987, Cl. 395-286.000.
Tanaka, Satoshi; Inoue, Soichi; and Nakamura, Hiroko, 5,549,995, Cl. 430-5.000.
Tsutai, Akihiko; Hirai, Takahiro; and Sakurada, Shinya, 5,549,766, Cl. 148-301.000.
Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Murakami, Kazuo; Fujii, Toshiro; and Kato, Yuichi, 5,549,453, Cl. 417-269.000.
Kabushiki Kaisha Ueno Seiyaku Oyo Kenkyujo: *See*—
Ueno, Ryuzo; Fujita, Yatsuka; Nagamura, Yoshiaki; Kamino, Yuji; and Tabata, Akihiko, 5,549,919, Cl. 426-335.000.
Kabushiki Kaisha Yaskawa Denki: *See*—
Nakako, Toru; Tanimura, Hideki; and Tukuda, Kouji, 5,549,016, Cl. 74-490.020.
Kafuku, Komei: *See*—
Aso, Kenichi; Sato, Hideaki; Eguchi, Hiroshi; Kafuku, Komei; and Takiguchi, Ryohei, 5,550,098, Cl. 503-227.000.
Kageyama, Shuhei; Anzai, Shoji; and Mitsuya, Yoshihide, to Kotobuki & Co., Ltd. Stick-shaped material drive container and supply cassette. 5,549,404, Cl. 401-75.000.
Kai, Kazuyuki; Hamano, Masahisa; Homma, Hitoshi; Mori, Akira; and Masuko, Takashi, to Nippon Thermostat Co., Ltd. Thermally controlled valve for internal combustion engines. 5,549,244, Cl. 236-34.500.
Kaiko, Robert F.: *See*—
Oshlack, Benjamin; Chasin, Mark; Minogue, John J.; and Kaiko, Robert F., 5,549,912, Cl. 424-468.000.
Kaiwa, Kazumasa: *See*—
Tanaka, Akira; Mesaki, Yoshinori; Sotokawa, Akio; Tomatsu, Masahiro; and Kaiwa, Kazumasa, 5,550,657, Cl. 359-49.000.
Kaja, Suryanarayana: *See*—
Farooq, Mukta S.; Kaja, Suryanarayana; Perfecto, Eric D.; and White, George E., 5,549,808, Cl. 205-123.000.
Kakizaki, Shinobu; and Kasajima, Kimihisa, to Atsugi Unisia Corporation. Mounting arrangement for acceleration detector element. 5,548,999, Cl. 73-493.000.
Kaku, Tomoya; and O'Regan, Sean, to NEC Corporation. Sync acquisition and tracking circuit for DS/CDMA receiver. 5,550,811, Cl. 370-18.000.
Kakui, Mikio: *See*—
Mizuta, Yasufumi; Tanaka, Masashi; Muto, Nariaki; Fukami, Toshiyuki; Nakamori, Hideo; Kakui, Mikio; Saito, Sakae; Shiomi, Hiroshi; Sumida, Keisuke; and Uchida, Maki, 5,550,290, Cl. 564-309.000.
Kakuya, Shinji: *See*—
Kuma, Toshimi; and Kakuya, Shinji, 5,548,905, Cl. 34-92.000.
Kale, Satish L., to Case Corporation. Power take off torque limiting control system. 5,549,185, Cl. 192-12.00C.
Kamen, Yakov: *See*—
Shirman, Leon A.; and Kamen, Yakov, 5,550,960, Cl. 395-130.000.
Kamienski, Conrad W.: *See*—
Engel, John F.; Kamienski, Conrad W.; Schwindeman, James A.; Hall, Randy W.; Morrison, Robert C.; and Dover, B. Troy, 5,550,203, Cl. 526-336.000.
Kamiguchi, Masao; and Neko, Noriaki, to Fanuc Ltd. Injection pressure monitoring method. 5,549,857, Cl. 264-40.100.
Kamiguchi, Yuzo: *See*—
Iwasaki, Hitoshi; Ohsawa, Yuichi; Kondoh, Reiko; Hashimoto, Susumu; Sawabe, Atsuhito; Kamiguchi, Yuzo; and Sahashi, Masashi, 5,549,978, Cl. 428-692.000.
Kamino, Yuji: *See*—
Ueno, Ryuzo; Fujita, Yatsuka; Nagamura, Yoshiaki; Kamino, Yuji; and Tabata, Akihiko, 5,549,919, Cl. 426-335.000.
Kamiya, Ichiro; Shinjo, Ryoichi; Murakami, Takeshi; Nishioka, Yukiko; and Harada, Minoru, to EBARA Corporation. Discharge reactor. 5,549,874, Cl. 422-186.040.
Kamiya, Kiyoshi: *See*—
Miyakawa, Atsuo; Hirano, Masahiko; and Kamiya, Kiyoshi, 5,550,031, Cl. 435-29.000.
Kamiya, Saburo, to Nikon Corporation. Optical measuring apparatus having a partitioning wall for dividing gas flow in an environmental chamber. 5,550,633, Cl. 356-358.000.
Kampe, Dennis J.: *See*—
Lewis, Irwin C.; Pirro, Terrence A.; Greinke, Ronald A.; Bretz, Richard I.; and Kampe, Dennis J., 5,550,176, Cl. 524-6.000.
Kamprath, Karl-Heinz: *See*—
Börger, Georg; and Kamprath, Karl-Heinz, 5,550,343, Cl. 200-569.000.
Kanada, Yoshihisa; Kawachiya, Kiyokuni; and Shiio, Ichiro, to International Business Machines Corporation. Image displaying apparatus. 5,550,560, Cl. 345-156.000.
Kanamori, Junichiro: *See*—
Matsumura, Masafumi; and Kanamori, Junichiro, 5,549,169, Cl. 173-176.000.
Kanda, Sachie: *See*—
Sakuragi, Shoji; Nakahigashi, Sachiyo; Kanda, Sachie; and Sawada, Akihiro, 5,549,399, Cl. 400-63.000.
Kandasamy, Ispran S.: *See*—
Llewellyn, Laurence; Graveston, Mark G.; Kandasamy, Ispran S.; and Hale, Peter G., 5,550,947, Cl. 385-134.000.
Kandlur, Dilip D.: *See*—
Chan, Shun S.; Heinrich, Harley K.; Kandlur, Dilip D.; and Krishna, Arvind, 5,550,547, Cl. 342-42.000.
Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Tsunemi, Hidenari; and Nakata, Toshinobu, 5,550,282, Cl. 560-301.000.
Kaneko, Mitsuharu: *See*—
Oshima, Toshiyuki; Ishibashi, Hideo; Minamino, Hiromasa; Yamamoto, Satoshi; Izumo, Takaharu; and Kaneko, Mitsuharu, 5,550,198, Cl. 525-404.000.
Kaneko, Noriaki: *See*—
Hirata, Yoshimi; Kaneko, Noriaki; Moriwaki, Masahiro; and Oura, Kanetake, 5,549,664, Cl. 623-1.000.
Kaneko, Setsuo: *See*—
Fujieda, Ichiro; and Kaneko, Setsuo, 5,550,659, Cl. 359-54.000.
Kanemitsu, Shinji: *See*—
Kurata, Mitsuru; Kanemitsu, Shinji; Nomura, Akihiro; Ebata, Tokihide; Takeda, Akio; Miyauchi, Yasuo; Uchida, Haruo; and Onoda, Shigeyoshi, 5,550,570, Cl. 347-49.000.
Kang, Dong-Hwan: *See*—
Chang, Ki-Son; Park, Moon-Bae; and Kang, Dong-Hwan, 5,550,572, Cl. 347-171.000.
Kang, Yih-Ming: *See*—
Wan, Ben-Zu; and Kang, Yih-Ming, 5,550,093, Cl. 502-74.000.
Kanga, Rustom S.: *See*—
Berrier, Arthur L.; and Kanga, Rustom S., 5,550,005, Cl. 430-286.100.
Kanjo, Wajih; Smith, Eric; Demoise, Thomas J.; Girotti, Michael; McCabe, Thomas; Fessler, Charles B.; and Natschke, Scott, to Westinghouse Air Brake Company. Railway braking apparatus. 5,549,363, Cl. 303-7.000.
Kanke, Tetsuo: *See*—
Hagimori, Kenji; Abe, Yuzuru; and Kanke, Tetsuo, 5,549,833, Cl. 210-757.000.
Kanoh, Hiroshi; Nishida, Shinichi; and Mizobata, Eishi, to NEC Corporation. Method for forming rough surface with controlled convex shape. 5,549,212, Cl. 216-24.000.
Kansei Corporation: *See*—
Nishijima, Takayuki; Kawamachi, Kanehiro; Muto, Takao; Yamazaki, Mitsuo; and Arima, Toshiyuki, 5,549,344, Cl. 296-70.000.
Kao, Wenling: *See*—
Failli, Amedeo A.; Bleyman, Oleg L; Kao, Wenling; and Abou-Gharbia, Magid A., 5,550,133, Cl. 514-291.000.
Kaplan, Ronald M.; and Kay, Martin, to Xerox Corporation. Stored mapping data with information for skipping branches while keeping count of suffix endings. 5,551,026, Cl. 395-600.000.
Kaplan, Ronald M.; and Kay, Martin, to Xerox Corporation. Thesaurus with compactly stored word groups. 5,551,049, Cl. 395-800.000.
Kapoor, Mohan L.; and Rebeschi, Thomas J., to Northrop Grumman. Symmetric drive for an electroluminscent display panel. 5,550,557, Cl. 345-76.000.
Karlshamns LipidTeknik AB: *See*—
Herslöf, Bengt; Larsson, Kåre; and Bengmark, Stig, 5,550,263, Cl. 554-78.000.
Karlsson, Kjell: *See*—
Persson, Lars; Karlsson, Kjell; and Lundgren, Lise-Lotte, 5,549,120, Cl. 128-842.000.
Karthäuser, Silvia, to Agfa-Gevaert AG. Production of silver halide emulsions comprising tabular grains. 5,550,015, Cl. 430-569.000.
Kasai, Masaji: *See*—
Inoue, Kunimi; Yamada, Yoshiyuki; Amatsu, Kazumi; Mimura, Yukiteru; Nakaguchi, Yasunori; Shinmura, Hiroyuki; Ono, Yasuyuki; Osawa, Yutaka; Mizutaki, Shoichi; Kasai, Masaji; and Tomioka, Shinji, 5,550,283, Cl. 562-561.000.
Kasai, Yoshiyuki; Kumazawa, Kazuhiko; and Kotani, Wataru, to NGK Insulators, Ltd. Cordierite ceramic filter. 5,549,725, Cl. 55-523.000.
Kasajima, Kimihisa: *See*—
Kakizaki, Shinobu; and Kasajima, Kimihisa, 5,548,999, Cl. 73-493.000.
Kasama, Yasuhiko: *See*—
Fukuda, Koichi; Oba, Tomofumi; Miyazaki, Masanori; Fukui, Hirofumi; Iwasaki, Chisato; Kasama, Yasuhiko; Ohmi, Tadahiro; Kubota, Masaru; Kitagawa, Hitoshi; Nakano, Akira; and Yoshida, Osamu, 5,550,091, Cl. 437-241.000.
Kasashima, Hirokazu: *See*—
Mori, Kinji; Orimo, Masayuki; Kasashima, Hirokazu; and Kim, K. H., 5,551,047, Cl. 395-800.000.
Kashem, Mohammed A.; Venot, Andre P.; and Smith, Richard, to Alberta Research Council. Methods for the synthesis of monofucosylated oligosaccharides terminating in di-N-acetyllactosaminyl structures. 5,550,155, Cl. 514-540.000.
Kashiyama Industry Co., Ltd.: *See*—
Ozawa, Osamu, 5,549,463, Cl. 418-3.000.
Kashuba, Glen: *See*—
Michielli, Michael; Kashuba, Glen; Goldenberg, J. Mel; and Klippel, Jon L., 5,549,705, Cl. 623-23.000.
Kassman, Leon B. Condom applicator and packaging. 5,549,196, Cl. 206-69.000.
Kastner, Thomas J. Liquid-shooting target game. 5,549,303, Cl. 273-349.000.
Kasuya, Tadashi; Shinada, Koichi; Horii, Yukihiko; and Miyazaki, Tateo, to Nippon Steel Corporation; and Hitachi Zosen Corporation. Method of reducing welding distortion in one side welding for joining plates. 5,550,347, Cl. 219-137.00R.
Katagiri, Masayuki: *See*—
Sakashita, Hiroshi; and Katagiri, Masayuki, 5,550,414, Cl. 310-67.00R.
Kato, Mutsuno; Hara, Yoshifusa; and Takada, Masao, to Nippon Chemical Industrial Co., Ltd. Method of preparing diarylchlorophosphate. 5,550,275, Cl. 558-140.000.

Kato, Shigemasa; and Shiina, Takayuki, to Juki Corporation. Frame structure for a sewing machine arm. 5,549,063, Cl. 112-258.000.

Kato, Shinji: *See—*
Nakagawa, Susumu; Kato, Shinji; Murase, Satoshi; Okamoto, Osamu; Mitomo, Ryuji; Yamamoto, Katsumi; Yamada, Koji; and Fukatsu, Hiroshi, 5,550,121, Cl. 514-210.000.

Kato, Yoshiki: *See—*
Nakamura, Takao; Sekiyama, Nobuya; Tani, Hiroshi; and Kato, Yoshiki, 5,549,211, Cl. 216-11.000.

Kato, Yuichi: *See—*
Murakami, Kazuo; Fujii, Toshiro; and Kato, Yuichi, 5,549,453, Cl. 417-269.000.

Katoh, Takehiro: *See—*
Ishida, Tokuji; Nakanishi, Yasuo; Ishimura, Toshihiko; Katoh, Takehiro; Ishibashi, Kenji; Hara, Yoshihiro; Kondo, Takashi; and Yoshino, Hiroshi, 5,550,611, Cl. 354-400.000.

Katsevich, Alexander J.; and Ramm, Alexander G., to University of California, The Regents of the. Enhanced local tomography. 5,550,892, Cl. 378-210.000.

Katsuramoto, Shinji: *See—*
Yoshimura, Shunji; Akiyama, Yoshiyuki; Ohsata, Kiyoshi; Ichimura, Isao; Watanabe, Toshio; and Katsuramoto, Shinji, 5,550,603, Cl. 352-27.000.

Katsuyama, Akira: *See—*
Tanaka, Shigeo; Yamazaki, Hiroshi; Kotabe, Noriko; Sugiyama, Kouichi; Sato, Makoto; Katsuyama, Akira; Osakabe, Yoshio; and Kusagaya, Yasuo, 5,550,979, Cl. 395-200.050.

Katz, Samuel M.; and Schloss, Harold C., to Pacesetter, Inc. Periodic electrical lead intergrity testing system and method for implantable cardiac stimulating devices. 5,549,646, Cl. 607-8.000.

Kauer, James C.: *See—*
Iqbal, Mohamed; Diebold, James L.; Siman, Robert; Chatterjee, Sankar; and Kauer, James C., 5,550,262, Cl. 554-57.000.

Kaufman, Alan D.: *See—*
Berfield, Robert C.; and Kaufman, Alan D., 5,548,868, Cl. 15-339.000.

Kausch, Albert P.: *See—*
Adams, Thomas R.; Chambers, Sheryl A.; Daines, Richard J.; Gordon-Kamm, William J.; Kausch, Albert P.; Lemaux, Peggy G.; Mackey, Catherine J.; Mangano, Mary L.; O'Brien, James V.; Rice, Thomas B.; Spencer, T. Michael; Start, William G.; and Willetts, Nancy G., 5,550,318, Cl. 800-205.000.

Kautz, Thomas O., to Johnson Service Company. Combination pressure pulsation damper and check valve depressor. 5,549,272, Cl. 251-118.000.

Kawabata, Kazunari: *See—*
Yamaki, Kazuhisa; and Kawabata, Kazunari, 5,550,553, Cl. 343-785.000.

Kawabata, Takashi, to Canon Kabushiki Kaisha. Distance measuring device. 5,550,628, Cl. 356-3.110.

Kawabe, Ushio: *See—*
Nishino, Toshikazu; Hatano, Mutsuko; Hasegawa, Haruhiro; Nakane, Hideaki; Kawabe, Ushio; Saitoh, Kazuo; Suga, Mitsuo; and Takagi, Kazumasa, 5,550,389, Cl. 257-30.000.

Kawachiya, Kiyokuni: *See—*
Kanada, Yoshihisa; Kawachiya, Kiyokuni; and Shiio, Ichiro, 5,550,560, Cl. 345-156.000.

Kawahara, Hiroto, to Taimei Kinzoku Kogyo Co., Ltd. Ball Valve. 5,549,135, Cl. 137-614.170.

Kawahara, Tsunehisa: *See—*
Hiromachi, Yoshio; and Kawahara, Tsunehisa, 5,550,726, Cl. 362-383.000.

Kawamachi, Kanehiro: *See—*
Nishijima, Takayuki; Kawamachi, Kanehiro; Muto, Takao; Yamazaki, Mitsuo; and Arima, Toshiyuki, 5,549,344, Cl. 296-70.000.

Kawamata, Toshio; Hayakawa, Satoru; and Endo, Yasushi, to Fuji Photo Film Co., Ltd. Magnetic recording disk. 5,549,955, Cl. 428-65.300.

Kawamoto, Kohji; Shimazu, Yukihiko; and Fujiyama, Toshiki, to Mitsubishi Denki Kabushiki Kaisha. Microprocessor with reset execution from an arbitrary address. 5,551,045, Cl. 395-775.000.

Kawamura, Hiroshi: *See—*
Itoh, Masateru; and Kawamura, Hiroshi, 5,550,598, Cl. 348-807.000.

Kawamura, Kazuhiro: *See—*
Ito, Seiichi; Goto, Toru; and Kawamura, Kazuhiro, 5,549,039, Cl. 99-340.000.

Kawamura, Yasuo: *See—*
Koide, Masateru; and Kawamura, Yasuo, 5,550,083, Cl. 437-183.000.

Kawano, Eisaku: *See—*
Inoue, Akiyoshi; Taniguchi, Shoji; Kawano, Eisaku; Yanagawa, Naoharu; and Suzuki, Hiroshi, 5,550,799, Cl. 369-116.000.

Kawashima, Asahi: *See—*
Hashimoto, Koji; Yoshioka, Hideaki; and Kawashima, Asahi, 5,549,797, Cl. 204-192.110.

Kay, Martin: *See—*
Kaplan, Ronald M.; and Kay, Martin, 5,551,026, Cl. 395-600.000.
Kaplan, Ronald M.; and Kay, Martin, 5,551,049, Cl. 395-800.000.

Kayahara, Kenji, to Kyokado Engineering Co., Ltd. Grouting liquid for injection into a ground. 5,549,419, Cl. 405-263.000.

Kayashima, Shigeo; Hasegawa, Shinya; Maeda, Satoshi; and Aritake, Hirokazu, to Fujitsu Limited. Laser beam optical scanner. 5,550,655, Cl. 359-17.000.

Kazmaier, Peter M.: *See—*
Georges, Michael K.; Veregin, Richard P. N.; Kazmaier, Peter M.; and Hamer, Gordon K., 5,549,998, Cl. 430-109.000.

Kazyak, Lawrence P.: *See—*
Janotik, Adam M.; and Kazyak, Lawrence P., 5,549,352, Cl. 296-209.000.

Keener, Don S.; McNeill, Andrew B.; Newsom, Thomas H.; Scheiern, Kevin L.; Voorhees, Richard W.; and Wachtel, Edward I., to International Business Machines Corporation. Physical partitioning of logically continuous bus. 5,550,990, Cl. 395-309.000.

Keener, Don S.; Moore, Gregory J.; and Voorhees, Richard W., to International Business Machines Corporation. Personal computer system having high speed local processor bus and storage controller with FIFO memory coupled directly thereto. 5,550,991, Cl. 395-309.000.

Keightley, John: *See—*
Andriash, Myke D.; and Keightley, John, 5,550,346, Cl. 219-121.720.

Keith, Carl W.: *See—*
Mensa-Wilmot, Graham; and Keith, Carl W., 5,549,171, Cl. 175-431.000.

Keller, Forrest K.: *See—*
Larsen, Douglas C.; Keller, Forrest K.; and Warren, Lawrence L., 5,548,929, Cl. 49-441.000.

Keller, Steven R.: *See—*
Spica, Salvatore J.; Kuhn, John P.; Keller, Steven R.; and Winoker, Joseph A., 5,549,143, Cl. 141-144.000.

Kelley, Thomas P., to Norfolk Scientific, Inc., *d/b/a* Statspin Technologies. Disposable slide holder. 5,549,750, Cl. 118-55.000.

Kelsey-Hayes Company: *See—*
Evans, Anthony C., 5,549,181, Cl. 188-72.300.

Kelsey-Hayes Corporation: *See—*
Sorensen, Ronald L., 5,549,361, Cl. 303-3.000.

Kendall Company, The: *See—*
Gross, James R., 5,549,584, Cl. 604-313.000.

Kendig, Eugene T.: *See—*
Abbasi, Salman Y.; Gerszberg, Irwin; Kendig, Eugene T.; Martin, Jeffrey S.; and Oplinger, Thomas M., 5,550,898, Cl. 379-59.000.

Kennedy, Bob: *See—*
Manoah, Ron, 5,549,500, Cl. 446-385.000.

Kennedy, James R.: *See—*
Negola, Edward J.; and Kennedy, James R., 5,549,957, Cl. 428-92.000.

Kensey Nash Corporation: *See—*
Evans, Douglas; and Nash, John E., 5,549,633, Cl. 606-139.000.

Kent Cartridge Manufacturing Company Limited, The: *See—*
Godfrey-Phillips, Arthur H.; and Chapman, Graham, 5,549,048, Cl. 102-466.000.

Kent, Royal A.: *See—*
Berndt, Curtis G.; Van Dyk, Daniel R.; Van Dyk, David A.; Deer, Steven C.; and Kent, Royal A., 5,549,488, Cl. 439-680.000.

KenTech Plastics, Inc.: *See—*
Mitchell, Alton D.; Ruby, Keith D.; Miles, Ronald W.; and Naas, Robert L., 5,549,266, Cl. 248-205.100.

Keperling, Kevin M., Sr.; and Moore, Michael T. Hill maker hoe. 5,549,167, Cl. 172-381.000.

Kerr, James W.: *See—*
Peters, Joseph L.; and Kerr, James W., 5,549,619, Cl. 606-151.000.

Kerr, Richard C.: *See—*
Byers, Joseph L.; Flint, W. Toriran; and Kerr, Richard C., 5,549,968, Cl. 428-241.000.

Kerz, Phillip D. Method for treating heartworm-infected canines. 5,550,153, Cl. 514-460.000.

Kesel, Bradley K., to Parker-Hannifin Corporation. Heat dissipator for electronic components. 5,550,326, Cl. 174-16.300.

Kestner, Melvin M.: *See—*
Fant, Alfred B.; Wang, Yongcai; Smith, Dennis E.; Kestner, Melvin M.; and Visconte, Gary W., 5,550,011, Cl. 430-496.000.

Keystone International Holdings Corp.: *See—*
Maxwell, Horace J.; Sirchio, Ronald J.; and Henofer, James J., 5,549,131, Cl. 137-115.180.

Khanna, Ish K.; Mueller, Richard A.; and Weier, Richard M., to G. D. Searle & Co. B preparation of 2- and 3- azido derivates of 1, 5-iminosugars. 5,550,243, Cl. 546-116.000.

Khanna, Vijayeshwar D.: *See—*
Aoyagi, Akihiko; Boutaghou, Zine-Eddine; Khanna, Vijayeshwar D.; Kumar, Suresh; and Sri-Jayantha, Muthuthamby, 5,550,688, Cl. 360-99.080.

Khoury, Randy H.: *See—*
Luebke, Roger D.; and Khoury, Randy H., 5,549,799, Cl. 204-222.000.

Kieffer, Joseph W., to Wagner Spray Tech Corporation. Turbine sound reducer. 5,550,336, Cl. 181-230.000.

Kiessig, Hartmut M.: *See—*
Akiyama, Akira; Arakawa, Michio; Ogawa, Hisashi; and Kiessig, Hartmut M., 5,549,350, Cl. 296-204.000.

Kieturakis, Maciej J. Surgical instruments and method for applying progressive intracorporeal traction. 5,549,627, Cl. 606-206.000.

Kiiskila, Erkki: *See—*
Nykanen, Tuomo S.; Greenwood, Brian P.; Gullichsen, Johan; Kiiskila, Erkki; Mattelmaki, Esko; Phillips, Joseph R.; Richardsen, Jan T.; Ryham, Rolf; Soderman, Jarmo; and Wiklund, Karl G., 5,549,788, Cl. 162-29.000.

Kikuchi, Koji: *See—*
Mitsumori, Kenichi; and Kikuchi, Koji, 5,550,484, Cl. 324-769.000.

Kilbourn, Frederick A.: *See—*
Sills, Arthur A.; Kilbourn, Frederick A.; Nelson, Brian K.; and Henderson, Donald J., 5,549,149, Cl. 160-201.000.

Kilner, David N.: *See—*
Boxall, Godfrey J.; and Kilner, David N., 5,549,414, Cl. 404-101.000.

Kim, Il G. Laparoscopic defogging apparatus. 5,549,543, Cl. 600-169.000.

Kim, Il U., to Samsung Electronics Co., Ltd. Method of manufacturing a known good die array. 5,548,884, Cl. 29-593.000.

Kim, Jung C.; Oh, Dong Y.; Choe, Gyu S.; Hong, Kyung S.; Kim, Kyung H.; Lee, Joo H.; Lee, Ha I.; Park, Kyeong B.; Gil, Dong S.; Kwon, Oh H.; and Kwon, Byoung H., to Goldstar Co., Ltd. Washing tub for low frequency vibration type washing machine. 5,548,980, Cl. 68-133.000.

Kim, K. H.: *See—*
Mori, Kinji; Orimo, Masayuki; Kasashima, Hirokazu; and Kim, K. H., 5,551,047, Cl. 395-800.000.

Kim, Kyung H.: *See—*
Kim, Jung C.; Oh, Dong Y.; Choe, Gyu S.; Hong, Kyung S.; Kim, Kyung H.; Lee, Joo H.; Lee, Ha I.; Park, Kyeong B.; Gil, Dong S.; Kwon, Oh H.; and Kwon, Byoung H., 5,548,980, Cl. 68-133.000.

Kim, Paul S. Method for skin tissue expansion. 5,549,713, Cl. 623-66.000.

Kim, Suk S., to Hyundai Electronics Industries Co., Ltd. Method for fabricating capacitors of semiconductor device. 5,550,080, Cl. 437-60.000.

Kim, Sung J.; and Schick, Alfred J., to Thomson Consumer Electronics, Inc. VCR control of a cable converter unit. 5,550,642, Cl. 358-335.000.

Kim, Sung-Ho: *See—*
Lee, Jong-Min; Cha, Byung-Heon; Kim, Sung-Ho; and Ko, Do-Kyeong, 5,550,850, Cl. 372-16.000.

Kimbara, Masahiko, to Three-D Composites Research Corporation. Stepping actuator. 5,549,013, Cl. 74-129.000.

Kimberly-Clark Corporation: *See—*
Carlson, Gerald I., II, 5,549,868, Cl. 422-1.000.
Fries, Donald M.; Huntoon, Andrew E.; and Long, Andrew M., 5,549,592, Cl. 604-389.000.
Odorzynski, Thomas W., 5,549,775, Cl. 156-227.000.
Qin, Jian; Gross, James R.; Mui, William J.; Ning, Xin; Schroeder, Wen Z.; and Sun, Tong, 5,550,189, Cl. 525-54.300.

Kimura, Katsutaka: *See—*
Sugawara, Ken; Sakairi, Shigeru; Matoba, Mikio; Sasaki, Toshio; Shimohigashi, Katsuhiro; and Kimura, Katsutaka, 5,550,781, Cl. 365-222.000.

Kimura, Masanori; and Yamagishi, Hirotoshi, to Shin-Etsu Handotai Co., Ltd. High-frequency induction heating coil. 5,550,354, Cl. 219-673.000.

Kimura, Motoi; Yoshimura, Shunji; and Suzuki, Kyoko, to Sony Corporation. Optical reproduction signal processing circuit for producing an RF signal and a servo signal with a high signal to noise ratio even though the RF signal component and the servo signal component partially overlap in frequency distribution. 5,550,797, Cl. 369-44.410.

Kimura, Shinji: *See—*
Nakamura, Shouji; Kimura, Shinji; Sugita, Yumiko; Yamamoto, Reki; Koda, Eriko; Kuwana, Toshiyuki; and Manda, Masato, 5,550,962, Cl. 395-133.000.

Kimura, Yoichi; Kumada, Isao; Hasegawa, Takashi; and Tamura, Satoshi, to Canon Kabushiki Kaisha. Image forming apparatus with attraction charger having first and second electrodes. 5,550,620, Cl. 355-273.000.

Kindness, William M.: *See—*
Sandefur, Parrish A.; and Kindness, William M., 5,548,955, Cl. 60-299.000.

King, Julius D., Jr.: *See—*
Dowler, James A.; Whitaker, Tyson B.; King, Julius D., Jr.; Murayama, Fumitaka; Takizawa, Satoru; Gomi, Masaao; and Itoh, Fumiyoshi, 5,550,627, Cl. 355-326.00M.

King, Kenneth J.; Zawislak, Robert M.; and Vokoun, Richard C., to Northrop Corporation. Boost-mode energization and modulation circuit for an arc lamp. 5,550,434, Cl. 315-160.000.

Kings, Donald H. M.; Sommers, Robin A.; and Usher, John D., to Vesuvius Crucible Company. Probe system for reliably monitoring a condition in a metallurgical process. 5,549,280, Cl. 266-78.000.

Kingsbury, Robert P. Triangular boat hull apparatus. 5,549,066, Cl. 114-56.000.

Kinkelaar, Mark R.; Cavender, Keith D.; Lambach, James L.; Brasington, Robert D.; and Critchfield, Frank E., to Arco Chemical Technology, L.P. Process for manufacturing foam with improved wet set properties. 5,549,841, Cl. 252-182.270.

Kinoshita, Akira: *See—*
Matsushima, Asao; Ooshiba, Takeo; Etoh, Yoshihiko; Kinoshita, Akira; Suzuki, Tomoko; and Sakimura, Tomoo, 5,549,997, Cl. 430-59.000.

Kinoshita, Hideya: *See—*
Yata, Tatsuo; and Kinoshita, Hideya, 5,550,169, Cl. 521-112.000.

Kinseher, Richard: *See—*
Huber, Bernd; and Kinseher, Richard, 5,549,861, Cl. 264-187.000.

Kinsel, Hagen; and Niemand, Rudolf. Device for loading weapons fitted with a cylinder. 5,548,916, Cl. 42-89.000.

Kinugasa, Toshiro: *See—*
Kudo, Yoshimichi; Kinugasa, Toshiro; and Imaide, Takuya, 5,550,586, Cl. 348-222.000.

Kinukawa, Hiroshi: *See—*
Kiyama, Tadahiro; Mase, Hisao; Tsuji, Hiroshi; and Kinukawa, Hiroshi, 5,551,036, Cl. 395-700.000.

Kinzler, Gernot: *See—*
Begemann, Ulrich; Heinzmann, Helmut; Ruf, Wolfgang; Egelhof, Dieter; and Kinzler, Gernot, 5,549,792, Cl. 162-216.000.

Kinzler, Kenneth W.; and Vogelstein, Bert, to Johns Hopkins University, The. Amplification of human MDM2 gene in human tumors. 5,550,023, Cl. 435-7.100.

Kirbie, Martin: *See—*
Hoss, Gregg M.; Thompson, James E.; Johnson, Thomas F.; Kirbie, Martin; and Speer, Andrew J., III, 5,549,359, Cl. 298-35.00M.

Kirby, Richard C. High sound quality game call. 5,549,498, Cl. 446-193.000.

Kirchner, Mark L.: *See—*
Silverthorn, Lee; Cornils, Curtis; Kirchner, Mark L.; Stephens, Susan D.; and Crouse, Parker E., 5,551,051, Cl. 395-800.000.

Kiribayashi, Shinichi; and Ina, Toshikazu, to Nippondenso Co., Ltd. Activating device in a passenger protection apparatus. 5,549,325, Cl. 280-735.000.

Kirk, Philip B., II: *See—*
Correia, Bernard A., II; and Kirk, Philip B., II, 5,549,382, Cl. 366-144.000.

Kirk, Richard D., to International Business Machines Corporation. Lock assembly for a personal computer system enclosure. 5,548,981, Cl. 70-58.000.

Kirkpatrick, Scott: *See—*
Majetich, Sara; McHenry, Michael; Scott, John H.; Brunsman, Elaine; and Kirkpatrick, Scott, 5,549,973, Cl. 428-403.000.

Kirol, Lance D.: *See—*
Rockenfeller, Uwe; and Kirol, Lance D., 5,548,971, Cl. 62-324.200.

Kirsch, Axel: *See—*
Dürr, Walter; and Kirsch, Axel, 5,549,677, Cl. 623-16.000.
Duerr, Walter; and Kirsch, Axel, 5,549,475, Cl. 433-173.000.

Kirwan, Stephen A.: *See—*
McMaster, Samuel; and Kirwan, Stephen A., 5,550,913, Cl. 379-230.000.

Kish, Fred A.: *See—*
Holonyak, Nick, Jr.; Maranowski, Steven A.; and Kish, Fred A., 5,550,081, Cl. 437-129.000.

Kish, Frederick A., to Illinois Tool Works Inc. Composite pad useful between railroad rail and railroad tie. 5,549,245, Cl. 238-283.000.

Kishi, Mitsuhiro, to Nikken Corporation. Fork lift truck loading mechanism. 5,549,437, Cl. 414-462.000.

Kishimoto, Yasushi: *See—*
Shohji, Kohichi; Ikeda, Masataka; and Kishimoto, Yasushi, 5,549,964, Cl. 428-224.000.

Kissin, Yury V.: *See—*
Ali, Ahmed H.; Firdaus, Vaseem; Geoghegan, Tomas A.; Kissin, Yury V.; and Mink, Robert I., 5,550,094, Cl. 502-115.000.

Kistler-Morse Corporation: *See—*
Velamoor, Sesh; and Mesterton, Kai P., 5,550,790, Cl. 367-140.000.

Kita, Tatsuya: *See—*
Ohshima, Katsuyuki; Ueno, Takeshi; Yamauchi, Mineo; and Kita, Tatsuya, 5,550,099, Cl. 503-227.000.

Kitada, Katsutsugu; and Yarita, Soumei, to Electroplating Engineers of Japan, Limited. Platinum electroforming bath. 5,549,738, Cl. 106-1.210.

Kitagawa, Hitoshi: *See—*
Fukuda, Koichi; Oba, Tomofumi; Miyazaki, Masanori; Fukui, Hirofumi; Iwasaki, Chisato; Kasama, Yasuhiko; Ohmi, Tadahiro; Kubota, Masaru; Kitagawa, Hitoshi; Nakano, Akira; and Yoshida, Osamu, 5,550,091, Cl. 437-241.000.

Kitajima, Hiroshi; Aoki, Hidemitsu; Hamano, Haruto; Morita, Makoto; Shiramizu, Yoshimi; Nakamori, Masaharu; Watanabe, Kaori; Seo, Hirofumi; Shimizu, Yuji; Iuchi, Makoto; Sasaki, Yasushi; and Ohta, Nahomi, to NEC Corporation. Wet processing apparatus having individual reactivating feedback paths for anode and cathode water. 5,549,798, Cl. 204-222.000.

Kitayama, Yoshifumi: *See—*
Kunitomo, Yoshinobu; Nozu, Makoto; Sakashita, Yasuyuki; Tsukamoto, Masahide; Nakatani, Seichi; Saeki, Keiji; and Kitayama, Yoshifumi, 5,550,408, Cl. 257-737.000.

Kiyama, Tadahiro; Mase, Hisao; Tsuji, Hiroshi; and Kinukawa, Hiroshi, to Hitachi, Ltd. Method and system for generating operation specification object information. 5,551,036, Cl. 395-700.000.

Klancnik, Mihael; and Figarella, Luis, to United Parcel Service of America, Inc. Method and apparatus for decoding bar code symbols using subpixel interpolation. 5,550,365, Cl. 235-462.000.

Klappert, Willi, to General Electric Company. Method of making a transformer core from strips of amorphous steel. 5,548,887, Cl. 29-609.000.

Klarer, Martin: *See—*
Rump, Siegfried; Steiner, Manfred; Brugger, Franz; Klarer, Martin; Knoff, Bernd; and Eckl, Albrecht, 5,549,369, Cl. 303-125.000.

Klausner, Alexander: *See—*
Rechner, Johann; Wagner, Paul; Buysch, Hans-Josef; and Klausner, Alexander, 5,550,278, Cl. 558-277.000.

Kleeman, Michael W.: *See—*
Hays, Greta J.; Kleeman, Michael W.; and Vish, Ronald J., 5,549,381, Cl. 366-139.000.

Klein, James D., to Atlantic Richfield Company. Method for locating thin bed hydrocarbon reserves utilizing electrical anisotropy. 5,550,473, Cl. 324-338.000.

Kleisath, William. Method and apparatus for gassing gophers. 5,548,921, Cl. 43-124.000.

Kliman, Gerald B.: *See—*
Abdel-Malek, Aiman A.; Hershey, John E.; Kliman, Gerald B.; and Koegl, Rudolph A. A., 5,550,880, Cl. 375-376.000.

Klingberg, Jeffrey W.: *See—*

Goldsmith, Eric S.; Klingberg, Jeffrey W.; Bane, Ronald L.; and Ehmann, Charles M., 5,551,068, Cl. 455-89.000.
Klingseis, James E. Spike guard for golf shoes. 5,548,910, Cl. 36-135.000.
Klippel, Jon I.: *See*—
Michielli, Michael; Kashuba, Glen; Goldenberg, J. Mel; and Klippel, Jon I., 5,549,705, Cl. 623-23.000.
Klockner Hansel Tevopharm B.V.: *See*—
Holub, Manfred, 5,548,946, Cl. 53-550.000.
Kloos, Steven D.: *See*—
Boudjouk, Philip; and Kloos, Steven D., 5,550,269, Cl. 512-415.000.
Klosterman, Brian L., to StarSight Telecast Incorporated. Method and apparatus for merging television program schedule information received from multiple television schedule information sources. 5,550,576, Cl. 348-6.000.
Klotz, James. Bidirectional dispenser. 5,549,227, Cl. 22-461.000.
Klun, Thomas P.: *See*—
Holmes, Gary L.; Culler, Scott R.; Hardy, David H.; Harmon, Kimberly K.; Heiti, Robert V.; Hendrickson, William A.; Klun, Thomas P.; Spurgeon, Kathryn M.; and Studiner, Charles J., III, 5,549,962, Cl. 428-144.000.
Kluska, Theodore E.: *See*—
Baggett, William C.; Baines, Elliot A., Jr.; Filus, Wayne S.; Gilland, Dianne W.; Kluska, Theodore E.; Larsen, Wayne D.; Spaulding, Mark G.; and Starace, Jeremia P., 5,549,489, Cl. 439-709.000.
Kluth, Joachim; and Müller, Klaus-Helmut, to Bayer Aktiengesellschaft. Process for preparing sulphonylaminocarbonyltriazolinones. 5,550,244, Cl. 546-153.000.
Knaub, David: *See*—
Park, Eric Y.; Knaub, David; Thorpe, David; Barney, Howard; and Hoyt, Joshua, 5,549,010, Cl. 73-861.790.
Knauf, Vic C.: *See*—
Goodman, Robert M.; Knauf, Vic C.; Houck, Catherine M.; and Comai, Luca, 5,550,038, Cl. 435-70.100.
Kneafsey, Brendan J.; and Guthrie, John, to Loctite (Ireland) Limited. Air activatable polymerizable compositions containing tetrazoles. 5,550,201, Cl. 526-204.000.
Knifton, John F.: *See*—
Taylor, Robert J., Jr.; Dai, Pei-Shing E.; and Knifton, John P., 5,550,300, Cl. 568-698.000.
Knight Industries, Inc.: *See*—
Zaguroli, James, Jr., 5,549,192, Cl. 198-795.000.
Knobel AG Lichttechnische Komponenten: *See*—
Tobler, Felix, 5,550,433, Cl. 315-94.000.
Knoch, Martin: *See*—
Lintl, Andreas; and Knoch, Martin, 5,549,102, Cl. 128-200.210.
Knoff, Bernd: *See*—
Rump, Siegfried; Steiner, Manfred; Brugger, Franz; Klarer, Martin; Knoff, Bernd; and Eckl, Albrecht, 5,549,369, Cl. 303-125.000.
Knoll, Arno; Weihrich, Gerhard; and Wobbe, Hans, to Werner & Pfleiderer, GmbH. Screw-type extrusion machine with heating elements. 5,549,383, Cl. 366-149.000.
Knorr-Bremse Systeme fur Nutzfahrzeuge GmbH: *See*—
Mayr-Fröhlich, Mathias; and Utzt, Alfred, 5,549,364, Cl. 303-9.690.
Knowlton, Barry R.: *See*—
Elgarhy, Yassin M.; and Knowlton, Barry R., 5,549,963, Cl. 428-224.000.
Knox, Bernard J. Closed end box line wrench. 5,549,022, Cl. 81-124.200.
Knox, Granville S. Valve with adjustably pressurized sealing gaskets. 5,549,275, Cl. 251-170.000.
Ko, Do-Kyeong: *See*—
Lee, Jong-Min; Cha, Byung-Heon; Kim, Sung-Ho; and Ko, Do-Kyeong, 5,550,850, Cl. 372-16.000.
Koba, Masayoshi: *See*—
Nagata, Masaya; Nojima, Hideo; and Koba, Masayoshi, 5,550,101, Cl. 505-162.000.
Kobayashi, Junji: *See*—
Matsuoka, Hidetoshi; Hashimoto, Kouji; and Kobayashi, Junji, 5,550,686, Cl. 360-85.000.
Kobayashi, Kevin W., to TRW Inc. Monolithic HBT active tuneable band-pass filter. 5,550,520, Cl. 333-213.000.
Kobayashi, Koji: *See*—
Miyazaki, Shinji; Takai, Mitsuru; and Kobayashi, Koji, 5,549,979, Cl. 428-694.00T.
Kobayashi, Motonobu: *See*—
Inoue, Akira; Kobayashi, Motonobu; and Ono, Tetsuji, 5,550,096, Cl. 502-217.000.
Kobayashi, Shinya; Miyasaka, Toru; and Satoh, Kunio, to Hitachi, Ltd. Image forming device for creating a color image having pixel elements of different thicknesses. 5,550,626, Cl. 355-326.00R.
Kobayashi, Yoshinao, to Sumitomo Wiring Systems, Ltd. Air vent structure for plug cap. 5,549,082, Cl. 123-143.00C.
Kocache, Riad M. A.; Holman, Dany F.; and Swan, James, to Servomex PLC. Sensor for combustible gases. 5,549,871, Cl. 422-95.000.
Koch, David L.: *See*—
Pascucci, Gregory A.; Rasmussen, David E.; Decious, Gaylon M.; Garbe, James R.; Hyzer, Susan M.; Woest, Karen L.; Vairavan, Vairavan; Koch, David L.; Gottschalk, Donald A., Jr.; Burkhardt, Dennis E.; Standish, Darrell E.; Madaus, Paul W.; Spacek, Dan J.; Nesler, Clay G.; Stark, James K.; Mageland, Otto M.; Singers, Robert R.; and Wagner, Michael E., 5,550,980, Cl. 395-200.050.
Koch, Kevin; Melvin, Lawrence S., Jr.; Reiter, Lawrence A.; and Ruggeri, Sally G., to Pfizer Inc. Benzopyran and related LTB_4 antagonists. 5,550,152, Cl. 514-458.000.
Kocian, Thomas A.; and Darrow, Doug, to Texas Instruments Incorporated. Hermetic packaging with optical. 5,550,398, Cl. 257-434.000.
Koda, Eriko: *See*—
Nakamura, Shouji; Kimura, Shinji; Sugita, Yumiko; Yamamoto, Reki; Koda, Eriko; Kuwana, Toshiyuki; and Manda, Masato, 5,550,962, Cl. 395-133.000.
Kodali, Visweswara R.: *See*—
Durham, Christopher M.; Kodali, Visweswara R.; and Shah, Salim A., 5,550,490, Cl. 326-98.000.
Koegl, Rudolph A. A.: *See*—
Abdel-Malek, Aiman A.; Hershey, John E.; Kliman, Gerald B.; and Koegl, Rudolph A. A., 5,550,880, Cl. 375-376.000.
Koelfgen, Douglas F. Spin-on oil filter replacement element. 5,548,893, Cl. 29-888.011.
Kofler, Hansjörg, to Steyr-Daimler-Puch AG. Free-wheeling coupling sensitive to the direction of rotation. 5,549,187, Cl. 192-35.000.
Koga, Toshio: *See*—
Shiojiri, Hirohisa; and Koga, Toshio, 5,550,589, Cl. 348-387.000.
Kohler Co.: *See*—
Bloemer, John M.; Balan, Isadore; Bonnell, Thomas A.; Bengtson, Alan D.; Giose, Robert C.; Reid, Mary J.; Fiumefreddo, John A.; and Kurth, Michael J., 5,548,854, Cl. 4-541.600.
Kohno, Yoshio: *See*—
Okada, Teruhiko; Kuriyama, Hirotada; and Kohno, Yoshio, 5,550,390, Cl. 257-66.000.
Koide, Masateru; and Kawamura, Yasuo, to Fujitsu Limited. Process of wirebond pad repair and reuse. 5,550,083, Cl. 437-183.000.
Koide, Yoshinao; Nakane, Seiji; and Imai, Yutaka, to Amano Pharmaceutical Co., Ltd. Caffeine demethylate gene-containing DNA fragment and microbial process for producing 3-methyl-7-alkylxanthine. 5,550,041, Cl. 435-119.000.
Koike, Kazumasa, to Ricoh Company, Ltd. Image processing apparatus for converting a multilevel image signal into a bi-level image signal. 5,550,647, Cl. 358-462.000.
Koinuma, Hideomi; Shiraishi, Tadashi; Inoue, Tohru; Inomata, Kiyoto; Hayashi, Shigenori; Miyanaga, Akiharu; and Yamazaki, Shunpei, to Semiconductor Energy Laboratory Co., Ltd. Method for plasma processing and apparatus for plasma processing. 5,549,780, Cl. 156-345.000.
Koji Hashimoto: *See*—
Hashimoto, Koji; Yoshioka, Hideaki; and Kawashima, Asahi, 5,549,797, Cl. 204-192.110.
Kojima, Makoto: *See*—
Abe, Wataru; Yamamoto, Akihiro; Nakajima, Takehiko; and Kojima, Makoto, 5,550,775, Cl. 365-189.110.
Kojima, Naoto; Watanabe, Takashi; Takahashi, Hiroyuki; and Mishima, Akio, to Sony Corporation. Method of manufacturing floating magnetic head device. 5,548,886, Cl. 29-603.100.
Kojima, Seiichi: *See*—
Toda, Hiroshi; Nishii, Michiharu; Kusano, Akihito; Noda, Yoshiki; Kuromitsu, Hiromu; Terazawa, Tadashi; and Kojima, Seiichi, 5,549,366, Cl. 303-113.200.
Kojima, Yasuo; Sasa, Nobumasa; and Akiyama, Takeo, to Konica Corporation. Method of producing a printing plate. 5,550,002, Cl. 430-258.000.
Kojima, Yasushi; and Matsumoto, Hiroshi, to Fuji Photo Film Co., Ltd. Method for erasing remaining radiation image and device. 5,550,386, Cl. 250-588.000.
Koksbang, Rene. Method of making lithium-vanadium-oxide active material. 5,549,880, Cl. 423-593.000.
Kokusai Denshin Denwa Kabushiki Kaisha: *See*—
Sakazawa, Shigeyuki; and Wada, Masahiro, 5,550,590, Cl. 348-387.000.
Kolanko, Laurence M.: *See*—
Banyay, Harold R.; Cholod, Michael S.; Kolanko, Laurence M.; and Smith, Bonnie V., 5,549,941, Cl. 428-34.100.
Koljonen, Juha: *See*—
Michael, David J.; Koljonen, Juha; and Garakani, Arman, 5,550,763, Cl. 364-582.000.
Kolm, Roger R.: *See*—
Sheth, Paresh J.; Chandrashekar, Venkatramana; and Kolm, Roger R., 5,550,192, Cl. 525-194.000.
Kolvites, Albert, to Market Forge Industries. Modulated steam cooker. 5,549,038, Cl. 99-330.000.
Komakine, Hiroshi; Terada, Hiroshi; Yamamoto, Hajime; Hayashi, Kazumasa; and Aizawa, Masahiro, to Matsushita Electric Industrial Co., Ltd. Electrophotographic apparatus of improved low image density. 5,550,619, Cl. 355-246.000.
Komatsu, Nobuko, to NEC Corporation. Semiconductor light receiving apparatus. 5,550,675, Cl. 359-514.000.
Komatsuzaki, Shigeki: *See*—
Uematsu, Takao; Shoji, Mitsuyoshi; Nakakawaji, Takayuki; Komatsuzaki, Shigeki; Ito, Yutaka; Morihara, Atsushi; Sato, Koji; Zushi, Shizuo; and Go, Hiroshi, 5,549,835, Cl. 508-204.000.
Komine, Kenji; and Isegawa, Hiroyuki, to Kabushiki Kaisha Toshiba. Sealed type compressor and refrigerating cycle. 5,548,973, Cl. 62-469.000.
Komoriya, Isao: *See*—
Hasegawa, Yusuke; Komoriya, Isao; Akazaki, Shusuke; Maki, Hidetaka; and Abe, Satoru, 5,549,092, Cl. 123-478.000.
Komoto, Keiji: *See*—

Ishidoya, Masahiro; Shibato, Kishio; Komoto, Keiji; Shibamoto, Kenji; Mashita, Mitsuyuki; and Ohe, Osamu, 5,549,932, Cl. 427-385.500.
Komura, Fuminobu: *See*—
Furuya, Masatoshi; Sasaki, Toshiro; and Komura, Fuminobu, 5,550,742, Cl. 364-449.000.
Konaga, Naoji; Inagaki, Mitsuo; Asa, Hironori; and Tanahashi, Toshitaka, to Nippondenso Co., Ltd.; and Nippon Soken, Inc. Braking force controller and control method for electric car. 5,549,371, Cl. 303-152.000.
Kondo, Hiroshi, to Tenyo Co., Ltd. Coin-magic device. 5,549,515, Cl. 472-71.000.
Kondo, Kazuhiko: *See*—
Iwasaki, Tameo; Kondo, Kazuhiko; and Ohmizu, Hiroshi, 5,550,229, Cl. 540-200.000.
Kondo, Takashi: *See*—
Ishida, Tokuji; Nakanishi, Yasuo; Ishimura, Toshihiko; Katoh, Takehiro; Ishibashi, Kenji; Hara, Yoshihiro; Kondo, Takashi; and Yoshino, Hiroshi, 5,550,611, Cl. 354-400.000.
Kondoh, Reiko: *See*—
Iwasaki, Hitoshi; Ohsawa, Yuichi; Kondoh, Reiko; Hashimoto, Susumu; Sawabe, Atsuhito; Kamiguchi, Yuzo; and Sahashi, Masashi, 5,549,978, Cl. 428-692.000.
Konica Corporation: *See*—
Kojima, Yasuo; Sasa, Nobumasa; and Akiyama, Takeo, 5,550,002, Cl. 430-258.000.
Matsushima, Asao; Ooshiba, Takeo; Etoh, Yoshihiko; Kinoshita, Akira; Suzuki, Tomoko; and Sakimura, Tomoo, 5,549,997, Cl. 430-59.000.
Mizoguchi, Shuri, 5,550,607, Cl. 354-149.110.
Konishi, Nobukiyo: *See*—
Matsuo, Masaaki; Tsuji, Kiyoshi; Ogino, Takashi; and Konishi, Nobukiyo, 5,550,147, Cl. 514-406.000.
Konomoto, Takeyoshi: *See*—
Hasegawa, Ko; Teramoto, Toshio; Nakajima, Tatsuo; and Konomoto, Takeyoshi, 5,550,190, Cl. 525-92.00A.
Kopera, John J. C., to Chrysler Corporation. Housing for flexible fuel sensor. 5,550,478, Cl. 324-654.000.
Kopin Corporation: *See*—
Gale, Ronald P.; McClullough, Richard; and Fan, John C. C., 5,550,604, Cl. 353-31.000.
Koponen, Pekka; and Suonvieri, Jukka, to Nokia Telecommunications Oy. Method for securing the operation of a telecommunications network in a cellular radio system and a base station arrangement. 5,551,056, Cl. 455-8.000.
Kopp, Volker. Device for operating devices for propellant cans. 5,549,226, Cl. 222-402.130.
Korb, Harold W.: *See*—
Holzer, Joseph C.; Korb, Harold W.; and Drescher, Klaus, 5,550,374, Cl. 250-339.070.
Kordis, Thomas F.; Swanson, David K.; Jackson, Jerome; and Spraker, Terry E., to EP Technologies, Inc. Systems and methods for creating complex lesion patterns in body tissue. 5,549,661, Cl. 607-99.000.
Kordis, Thomas F.: *See*—
Edwards, Stuart D.; Kordis, Thomas F.; and Swanson, David K., 5,549,108, Cl. 128-642.000.
Kordovich, Vlade J.: *See*—
Tang, Manh; Kordovich, Vlade J.; and Maslanka, Daniel C., 5,549,400, Cl. 400-236.000.
Korea Atomic Energy Research Institute: *See*—
Lee, Jong-Min; Cha, Byung-Heon; Kim, Sung-Ho; and Ko, Do-Kyeong, 5,550,850, Cl. 372-16.000.
Yun, Ji-Seop; Park, Byung-Seok; Lee, Jae-Seol; and Park, Hyun-Su, 5,550,733, Cl. 364-174.000.
Korea Electric Power Corporation: *See*—
Lee, Jong-Min; Cha, Byung-Heon; Kim, Sung-Ho; and Ko, Do-Kyeong, 5,550,850, Cl. 372-16.000.
Koren, Norman L., to Eastman Kodak Company. Magnetic recording channel employing a non-ideal d.c.-free equalizer and a d.c.-free modulation code. 5,550,683, Cl. 360-46.000.
Korn, David G.: *See*—
Fowler, Glenn S.; Korn, David G.; Koutsofios, Elefterios; and North, Stephen C., 5,551,037, Cl. 395-700.000.
Korpela, Juha, to LK-Products OY. Dielectric resonator having a frequency tuning element extending into the resonator hole. 5,550,519, Cl. 333-207.000.
Kortenbach, Jurgen A.: *See*—
McBrayer, Michael S.; Kortenbach, Jurgen A.; and Slater, Charles R., 5,549,606, Cl. 606-51.000.
Kosak, Kenneth M.; and Kosak, Matthew K. Preparation of wax beads containing a reagent using liquid nitrogen for cooling and solidifying. 5,550,044, Cl. 435-177.000.
Kosak, Matthew K.: *See*—
Kosak, Kenneth M.; and Kosak, Matthew K., 5,550,044, Cl. 435-177.000.
Kosinski, Andrew J.: *See*—
Mumford, Stephen E.; and Kosinski, Andrew J., 5,548,951, Cl. 60-39.230.
Koski, Robert E.: *See*—
Henderson, Kenneth R.; Koski, Robert E.; and Barlow, Christopher R., 5,550,976, Cl. 395-200.060.
Koskinen, James: *See*—
Stillman, Robert A.; Way, James A.; Cable, Jesse F., III; Cooper, David; and Koskinen, James, 5,551,066, Cl. 455-69.000.
Kotabe, Noriko: *See*—
Tanaka, Shigeo; Yamazaki, Hiroshi; Osakabe, Yoshio; Kotabe, Noriko; Iwamoto, Koji; Souma, Yoko; Imaura, Toshihiro; and Maki, Shigeru, 5,550,826, Cl. 370-85.800.
Tanaka, Shigeo; Yamazaki, Hiroshi; Kotabe, Noriko; Sugiyama, Kouichi; Sato, Makoto; Katsuyama, Akira; Osakabe, Yoshio; and Kusagaya, Yasuo, 5,550,979, Cl. 395-200.050.
Kotani, Wataru: *See*—
Kasai, Yoshiyuki; Kumazawa, Kazuhiko; and Kotani, Wataru, 5,549,725, Cl. 55-523.000.
Kotobuki & Co., Ltd.: *See*—
Kageyama, Shuhei; Anzai, Shoji; and Mitsuya, Yoshihide, 5,549,404, Cl. 401-75.000.
Koutsofios, Elefterios: *See*—
Fowler, Glenn S.; Korn, David G.; Koutsofios, Elefterios; and North, Stephen C., 5,551,037, Cl. 395-700.000.
Kovalcheck, Steven W., to Life Medical Technologies, Inc. Deflectable endoscope. 5,549,542, Cl. 600-146.000.
Kowalski, Jacek, to Gemplus Card International. Method and device for limiting the number of authentication operations of a chip card chip. 5,550,919, Cl. 380-23.000.
Koyata, Kazuhiro: *See*—
Aoki, Yoichi; Sato, Yasuo; Ito, Chiaki; Nishiuchi, Hitoshi; Nakamoto, Makoto; Yamaguchi, Syoji; Mio, Haruhiko; Koyata, Kazuhiro; and Miyazawa, Yoshinori, 5,550,562, Cl. 345-163.000.
Kraft, Thomas L.: *See*—
Meador, James W.; Kraft, Thomas L.; and Miller, Thomas G., 5,549,141, Cl. 141-1.000.
Krahn, Gilbert H. Heel-shaped ergonomic writing instrument. 5,549,405, Cl. 401-195.000.
Kramer, David E.: *See*—
Elias, Allen M.; Frederick, Warren P.; and Kramer, David E., 5,549,566, Cl. 604-167.000.
Kramss, Richard H.: *See*—
Trybulski, Eugene J.; Kramss, Richard H.; and Brabander, Herbert J., 5,550,257, Cl. 548-550.000.
Krass, Norbert: *See*—
Fischer, Gerd; Defossa, Elisabeth; Gerlach, Uwe; Hörlein, Rolf; Krass, Norbert; Lattrell, Rudolf; Stache, Ulrich; Wollmann, Theodor; and Isert, Dieter, 5,550,232, Cl. 540-230.000.
Krau, Michael P.: *See*—
Foster, Mark J.; Fakhruddin, Saifuddin T.; Walker, James L.; Mendelow, Matthew B.; Sun, Jiming; Brahman, Rodman S.; Krau, Michael P.; Willoughby, Brian D.; Maddix, Michael D.; Belt, Steven L.; Hovey, Scott A.; and Ruthenbeck, Mark A., 5,551,033, Cl. 395-650.000.
Krauss, Werner; Zwingenberger, Jan; and Jaggy, Peter, to Richard Wolf GmbH. Device for generating sound impulses for medical applications. 5,549,110, Cl. 128-661.010.
Krcova, Zuzana: *See*—
Sulc, Jiri S.; and Krcova, Zuzana, 5,549,891, Cl. 424-94.400.
Krejci, John C.: *See*—
Hassan, Ahmad M.; Johnston, Russel R.; and Krejci, John C., 5,550,646, Cl. 358-442.000.
Krimmel, Heinz; Bülow, Henning; Heidemann, Rolf; and Otterbach, Jürgen, to Alcatel N.V. Optical transmitter. 5,550,667, Cl. 359-180.000.
Kring, James T., to L & W Engineering Company. Toe-in angle adjustment for vehicle wheels. 5,549,319, Cl. 280-661.000.
Krishan, Baldev: *See*—
Chan, Demonder; Fultz, Robert B.; and Krishan, Baldev, 5,550,861, Cl. 375-222.000.
Krishna, Arvind: *See*—
Chan, Shun S.; Heinrich, Harley K.; Kandlur, Dilip D.; and Krishna, Arvind, 5,550,547, Cl. 342-42.000.
Krivec, Bert, to Snap-on Technologies, Inc. Modular cabinet and drawer assembly. 5,549,374, Cl. 312-257.100.
Krivec, Bert, to Snap-on Technologies, Inc. Corrugated three-piece drawer slide assembly. 5,549,377, Cl. 312-334.800.
Kroll, Karl: *See*—
Adams, Theodore P.; Kroll, Mark W.; and Kroll, Karl, 5,549,933, Cl. 427-421.000.
Kroll, Mark W.; and Smith, Charles U., to Angeion Corporation. Optimal pulse defibrillator. 5,549,643, Cl. 607-7.000.
Kroll, Mark W.: *See*—
Adams, Theodore P.; Kroll, Mark W.; and Kroll, Karl, 5,549,933, Cl. 427-421.000.
Kronner, Richard F. Reinforcing insert for uterine manipulator. 5,549,563, Cl. 604-164.000.
Kropp, Daniel P. Portable elastic resistance exercise device. 5,549,532, Cl. 482-126.000.
Krotseng, Kathryn G., to Manni-Kit, Inc. Silicone foam symmetrical inversion molding process. 5,549,858, Cl. 264-46.400.
Krucinski, Slawomir: *See*—
Vesely, Ivan; Krucinski, Slawomir; Campbell, Gordon; Boughner, Derek; and Dokainish, Mohan, 5,549,665, Cl. 623-2.000.
Krumdieck, Carlos. Mold plunger and method for embedding tissue samples. 5,550,033, Cl. 435-40.520.
Krupp Polysius AG: *See*—
Tegtmeier, Gert; and Strohbusch, Manfred, 5,549,471, Cl. 432-77.000.
Krust, Bernard: *See*—
Montagnier, Luc; Rey, Françoise; Krust, Bernard; and Clavel, François, 5,550,052, Cl. 435-240.260.

VU 1189 SS 4 AG 27 1996 UMI

Ksander, Gary M.: *See—*
De Lombaert, Stéphane; Jeng, Arco Y.; and Ksander, Gary M., 5,550,119, Cl. 514-92.000.

Kubo, Kazuhiro, to AHC, Inc. Animal feed containing *Bacillus subtilis* FERM BP-3418 that decomposes aflatoxin. 5,549,890, Cl. 424-93.462.

Kubo, Koichi: *See—*
Shirai, Ichiro; Yamagami, Hitoshi; Hiroshige, Eiichi; and Kubo, Koichi, 5,550,452, Cl. 320-2.000.

Kubota, Masaru: *See—*
Fukuda, Koichi; Oba, Tomofumi; Miyazaki, Masanori; Fukui, Hirofumi; Iwasaki, Chisato; Kasama, Yasuhiko; Ohmi, Tadahiro; Kubota, Masaru; Kitagawa, Hitoshi; Nakano, Akira; and Yoshida, Osamu, 5,550,091, Cl. 437-241.000.

Kuczynski, Joseph P., to International Business Machines Corporation. Polymeric sulfonium salt photoinitiators. 5,550,171, Cl. 522-31.000.

Kudo, Yoshimichi; Kinugasa, Toshiro; and Imaide, Takuya, to Hitachi, Ltd. Video camera and image input device connected through signal line for transferring multiplex data, and image input system using them. 5,550,586, Cl. 348-222.000.

Kuhn, John P.: *See—*
Spica, Salvatore J.; Kuhn, John P.; Keller, Steven R.; and Winoker, Joseph A., 5,549,143, Cl. 141-144.000.

Kuhn S.A.: *See—*
Gantzer, Christian, 5,548,949, Cl. 56-367.000.

Kuhni, Michael A.: *See—*
Robinson, Frederick L.; Hedberg, Ernest J.; Kuhni, Michael A.; and Ramsdell, Everett L., 5,549,921, Cl. 426-573.000.

Kuhr, Wolfgang; and Zinnen, Nobert, to Uniroyal Englebert Reifen GmbH. Pneumatic tire including profiled elements. 5,549,147, Cl. 152-209.00R.

Kukesh, Timothy S., to Glas-Craft, Inc. External mix application system and nozzle assembly. 5,549,246, Cl. 239-9.000.

Kulessa, Gerhard: *See—*
Proske, Manfred; and Kulessa, Gerhard, 5,548,988, Cl. 72-252.500.

Kulig, James S.: *See—*
Johnston, Jesse C., Jr.; Kulig, James S.; Lewis, Steven F.; Collet, Eric C.; Sepela, Mark J.; and Meuller, Michael L., 5,549,079, Cl. 122-379.000.

Kulite Semiconductor Products, Inc.: *See—*
Kurtz, Anthony D., 5,549,006, Cl. 73-708.000.

Kulkarni, Upendra M., to Intel Corporation. Low cost writethrough cache coherency apparatus and method for computer systems without a cache supporting bus. 5,551,006, Cl. 395-473.000.

Kuma, Toshimi; and Kakuya, Shinji, to Kabushiki Kaisha Seibu Giken. Rapid dehydrating and drying method and device usable in low temperature. 5,548,905, Cl. 34-92.000.

Kumada, Isao: *See—*
Kimura, Yoichi; Kumada, Isao; Hasegawa, Takashi; and Tamura, Satoshi, 5,550,620, Cl. 355-273.000.

Kumamoto, Satosi: *See—*
Aiso, Katsuyosi; Adati, Sakasi; Igarasi, Tosihiro; Tanoue, Sin; Kumamoto, Satosi; and Wakuda, Masanori, 5,549,015, Cl. 74-424.80B.

Kumar, Suresh: *See—*
Aoyagi, Akihiko; Boutaghou, Zine-Eddine; Khanna, Vijayeshwar D.; Kumar, Suresh; and Sri-Jayantha, Muthuthamby, 5,550,688, Cl. 360-99.080.

Kumazawa, Kazuhiko: *See—*
Kasai, Yoshiyuki; Kumazawa, Kazuhiko; and Kotani, Wataru, 5,549,725, Cl. 55-523.000.

Kume, Hisao; and Horiuchi, Yoshiro, to Sony Corporation. Frame structure of aperture grille with higher long-side frames. 5,550,428, Cl. 313-407.000.

Kummer, Frederick J.: *See—*
Frankel, Victor H.; and Kummer, Frederick J., 5,549,609, Cl. 606-64.000.

Kunieda, Yoshinori: *See—*
Yamamoto, Yuuri; Takahashi, Kenichi; Ohnishi, Hiroshi; Kunieda, Yoshinori; and Matsubara, Naoki, 5,550,867, Cl. 375-324.000.

Kunitomo, Yoshinobu; Nozu, Makoto; Sakashita, Yasuyuki; Tsukamoto, Masahide; Nakatani, Seichi; Saeki, Keiji; and Kitayama, Yoshifumi, to Matsushita Electronics Corporation. Semiconductor device. 5,550,408, Cl. 257-737.000.

Kuo, Shang-Tai. Screw driver with a flashlight. 5,550,719, Cl. 362-120.000.

Kuo, Shun-Meen: *See—*
Lebby, Michael S.; Chun, Christopher K. Y.; Kuo, Shun-Meen; and Hansen, Kent W., 5,550,941, Cl. 385-49.000.

Kurabayashi, Yutaka: *See—*
Takahashi, Katsuhiko; and Kurabayashi, Yutaka, 5,549,740, Cl. 106-20.00R.

Kurahashi, Nobuyuki: *See—*
Sakurai, Yohji; Kurahashi, Nobuyuki; Hirose, Tsuyoshi; Miwa, Takashi; Mori, Atsushi; and Nishi, Takao, 5,550,292, Cl. 564-399.000.

Kurata, Mitsuru; Kanemitsu, Shinji; Nomura, Akihiro; Ebata, Tokihide; Takeda, Akio; Miyauchi, Yasuo; Uchida, Haruo; and Onoda, Shigeyoshi, to Canon Kabushiki Kaisha. Ink jet cartridge mounting device and method. 5,550,570, Cl. 347-49.000.

Kurata, Yasuhiko; Akiyama, Yuichi; and Michihira, Osamu, to Naldec Corporation; and Mazda Motor Corporation. Multiplex transmission apparatus and method. 5,550,830, Cl. 370-95.200.

Kurita, Mitsuru: *See—*
Ikeda, Yoshinori; Ichikawa, Hiroyuki; Kurita, Mitsuru; Hayashi, Kimiyoshi; Honma, Toshio; and Horie, Yoshiko, 5,550,638, Cl. 358-296.000.

Kuriyama, Hirotada: *See—*
Okada, Teruhiko; Kuriyama, Hirotada; and Kohno, Yoshio, 5,550,390, Cl. 257-66.000.

Kuriyama, Toshihide; and Makishima, Hideo, to NEC Corporation. Field emission cathode apparatus. 5,550,435, Cl. 315-169.100.

Kuroda, Kenichi, to Hitachi, Ltd. Semiconductor memory device having ferroelectric capacitor memory cells with reading, writing and forced refreshing functions and a method of operating the same. 5,550,770, Cl. 365-145.000.

Kuroda, Toru: *See—*
Naito, Hiroyuki; Otani, Masato; Oh-Kita, Motomu; and Kuroda, Toru, 5,550,095, Cl. 502-211.000.

Kuroda, Toshiki: *See—*
Hosoya, Yasuhiko; and Kuroda, Toshiki, 5,549,872, Cl. 422-173.000.

Kuromitsu, Hiromu: *See—*
Toda, Hiroshi; Nishii, Michiharu; Kusano, Akihito; Noda, Yoshiki; Kuromitsu, Hiromu; Terazawa, Tadashi; and Kojima, Seiichi, 5,549,366, Cl. 303-113.200.

Kuroshita, Kazumasa, to Fujitsu Limited. Method of measuring distance between equipments on lan and distance measuring apparatus. 5,550,807, Cl. 370-17.000.

Kuroyanagi, Akira; Tomatsu, Yutaka; and Tsuzuki, Yasuaki, to Nippondenso Co., Ltd. Method for producing semiconductor device having DMOS and NMOS elements formed in the same substrate. 5,550,067, Cl. 437-41.000.

Kurpaska, S. Michael: *See—*
Pietruska, Norman; and Kurpaska, S. Michael, 5,549,767, Cl. 148-512.000.

Kurth, Michael J.: *See—*
Bloemer, John M.; Balan, Isadore; Bonnell, Thomas A.; Bengtson, Alan D.; Giose, Robert C.; Reid, Mary J.; Fiumefreddo, John A.; and Kurth, Michael J., 5,548,854, Cl. 4-541.600.

Kurtz, Anthony D., to Kulite Semiconductor Products, Inc. Temperature compensated silicon carbide pressure transducer and method for making the same. 5,549,006, Cl. 73-708.000.

Kurusu, Kyoko: *See—*
Adachi, Katsumi; and Kurusu, Kyoko, 5,550,415, Cl. 310-68.00R.

Kurzweil, Peter; Schmid, Barbara; and Schmid, Ottmar, to Dornier GmbH. Electrode with a long-time stability and a double-layer capacitor formed thereof. 5,550,706, Cl. 361-502.000.

Kusagaya, Yasuo: *See—*
Tanaka, Shigeo; Yamazaki, Hiroshi; Kotabe, Noriko; Sugiyama, Kouichi; Sato, Makoto; Katsuyama, Akira; Osakabe, Yoshio; and Kusagaya, Yasuo, 5,550,979, Cl. 395-200.050.

Kusano, Akihito: *See—*
Toda, Hiroshi; Nishii, Michiharu; Kusano, Akihito; Noda, Yoshiki; Kuromitsu, Hiromu; Terazawa, Tadashi; and Kojima, Seiichi, 5,549,366, Cl. 303-113.200.

Kusase, Shin; Mitani, Kenzo; Umeda, Atsushi; and Sato, Hirohide, to Nippondenso Co., Ltd. Electric power generating device for vehicles. 5,550,457, Cl. 322-29.000.

Kusch, Dieter. Underframe for tabletops for single and multiple tables. 5,549,055, Cl. 100-153.000.

Kusch, Hans-Jürgen: *See—*
D'Heureuse, Walter; and Kusch, Hans-Jürgen, 5,549,045, Cl. 101-477.000.

Kuslich, Stephen D. Expandable fabric implant for stabilizing the spinal motion segment. 5,549,679, Cl. 623-17.000.

Kuver, Walter D.: *See—*
Ip, Tony K.; and Kuver, Walter D., 5,550,997, Cl. 395-430.000.

Kuwabara, Shigeaki: *See—*
Tsunoda, Masaki; Kuwabara, Shigeaki; and Shidara, Sadafumi, 5,549,091, Cl. 123-476.000.

Kuwabara, Toshio: *See—*
Miki, Masatoshi; Kuwabara, Toshio; and Tamura, Manabu, 5,550,539, Cl. 341-20.000.

Kuwana, Toshiyuki: *See—*
Nakamura, Shouji; Kimura, Shinji; Sugita, Yumiko; Yamamoto, Reki; Koda, Eriko; Kuwana, Toshiyuki; and Manda, Masato, 5,550,962, Cl. 395-133.000.

KVM Technologies, Inc.: *See—*
Meador, James W.; Kraft, Thomas L.; and Miller, Thomas G., 5,549,141, Cl. 141-1.000.

Kwan, Khang-Shen; Tsay, Chean-Lung; and Wu, Li-Ming, to Industrial Technology Research Institute. Method and apparatus for charge pulse-width modulation control. 5,550,498, Cl. 327-175.000.

Kwon, Byoung H.: *See—*
Kim, Jung C.; Oh, Dong Y.; Choe, Gyu S.; Hong, Kyung S.; Kim, Kyung H.; Lee, Joo H.; Lee, Ha I.; Park, Kyeong B.; Gil, Dong S.; Kwon, Oh H.; and Kwon, Byoung H., 5,548,980, Cl. 68-133.000.

Kwon, Oh H.: *See—*
Kim, Jung C.; Oh, Dong Y.; Choe, Gyu S.; Hong, Kyung S.; Kim, Kyung H.; Lee, Joo H.; Lee, Ha I.; Park, Kyeong B.; Gil, Dong S.; Kwon, Oh H.; and Kwon, Byoung H., 5,548,980, Cl. 68-133.000.

Kwong, Robert W.: *See—*
Tan, Juay K.; and Kwong, Robert W., 5,551,000, Cl. 395-445.000.

Kyle, David J., to Martek Corporation. Microbial oil mixtures and uses thereof. 5,550,156, Cl. 514-547.000.

Kyocera Corporation: *See—*
Amino, Hirokazu; and Clarke, Ian C., 5,549,684, Cl. 623-20.000.

Kyokado Engineering Co., Ltd.: *See—*
Kayahara, Kenji, 5,549,419, Cl. 405-263.000.

Kyowa Hakko Kogyo Co., Ltd.: *See—*

Inoue, Kunimi; Yamada, Yoshiyuki; Amatsu, Kazumi; Mimura, Yukiteru; Nakaguchi, Yasunori; Shinmura, Hiroyuki; Ono, Yasuyuki; Osawa, Yutaka; Mizutaki, Shoichi; Kasai, Masaji; and Tomioka, Shinji, 5,550,283, Cl. 562-561.000.

Kyowa Tecnos Co., Ltd.: *See—*
Inoue, Tadashi; and Tsujimura, Tetsuzo, 5,549,739, Cl. 106-15.050.

Kyrtsos, Christos T., to Eaton Corporation. Geographic locator of a vehicle using GPS and angles between pairs of adjacent boundary coordinate points. 5,550,743, Cl. 364-449.000.

Kyushu Hitachi Maxell, Ltd.: *See—*
Shirai, Ichiro; Yamagami, Hitoshi; Hiroshige, Eiichi; and Kubo, Koichi, 5,550,452, Cl. 320-2.000.

L & P Property Management Company: *See—*
Bustos, Rafael T., 5,549,373, Cl. 312-135.000.
Richmond, Darrell A., 5,548,857, Cl. 5-263.000.

L & W Engineering Company: *See—*
Kring, James T., 5,549,319, Cl. 280-661.000.

L.H. Carbide Corporation: *See—*
Neuenschwander, Thomas R., 5,550,327, Cl. 177-25.140.

La Jolla Cancer Research Foundation: *See—*
Reed, John C., 5,550,019, Cl. 435-6.000.

LaBatt, Darren J.: *See—*
Slade, Michael G.; and LaBatt, Darren J., 5,550,735, Cl. 364-401.00R.

Laboratoires Des Produits Ethiques Ethypharm: *See—*
Leduc, Gérard; and Debregeas, Patrice, 5,549,911, Cl. 424-458.000.

Labrie, Craig B.; McCooey, David R.; and Bemis, Claude E., to Davidson Textron Inc. Construction and method of forming a door assembly for an air system. 5,549,324, Cl. 280-728.300.

Labrie, Fernand, to Endorecherche Inc. Combination therapy for the treatment of estrogen-sensitive disease. 5,550,107, Cl. 514-11.000.

Lai, Konrad K.: *See—*
Sarangdhar, Nitin V.; and Lai, Konrad K., 5,550,988, Cl. 395-293.000.

Lai, Shui T., to Novatec Laser Systems, Inc. Method and apparatus for ophthalmic surgery. 5,549,632, Cl. 606-5.000.

L'air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See—*
Bloch, Nicolas; Guyomard, Yvon; and Jounenc, Michel, 5,549,105, Cl. 128-203.120.
Marot, Christine; Petit, Pierre; and Vigor, Xavier, 5,549,733, Cl. 95-100.000.
Rieth, Norbert; Darredeau, Bernard; and Lehman, Jean-Yves, 5,548,975, Cl. 62-646.000.

Lajoie, M. Stephen: *See—*
Winston, Anthony E.; Dunn, Steven E.; Cala, Francis R.; Vinci, Alfredo; Lajoie, M. Stephen; and Jorgensen, Robert C., 5,549,761, Cl. 134-40.000.

Lambach, James L.: *See—*
Kinkelaar, Mark R.; Cavender, Keith D.; Lambach, James L.; Brasington, Robert D.; and Critchfield, Frank E., 5,549,841, Cl. 252-182.270.

Lambert, Patrick M.: *See—*
Bringley, Joseph F.; Smith, Kyle E.; and Lambert, Patrick M., 5,549,844, Cl. 252-301.40H.
Smith, Kyle E.; Bringley, Joseph F.; Lambert, Patrick M.; Trauernicht, David P.; Bryan, Philip S.; Hoderlein, Paul M.; and Hyde, Andrea M., 5,549,843, Cl. 252-301.40H.

Lambrecht, Richard M.: *See—*
Smith, Suzanne V.; Lambrecht, Richard M.; Schmidt, Peter F.; and Lee, Fook-Thean, 5,550,160, Cl. 514-563.000.

Lampert, Shalom: *See—*
Zisner, Tuvia; Holdengraber, Curt; and Lampert, Shalom, 5,549,876, Cl. 423-199.000.

Lancaster, William G. Method and apparatus for cooling and preparing a beverage. 5,549,219, Cl. 222-1.000.

Lancer Corporation: *See—*
Schroeder, Alfred A., 5,549,222, Cl. 222-129.100.

Landoni, Gianluigi: *See—*
Neri, Carlo; and Landoni, Gianluigi, 5,550,207, Cl. 528-287.000.

Landvogt, Brigitte, to Procter & Gamble Company, The. Adhesive/mechanical fastener systems for disposable articles. 5,549,591, Cl. 604-389.000.

Landwehr, Dierk: *See—*
Peters, Ralf-Peter; Rogner, Arnd; Ünal, Nezih; Heinrich, Lothar; Landwehr, Dierk; and Heyde, Wolfgang A. D., 5,550,375, Cl. 250-343.000.

Langdon, Fred M.; and Dobrin, G. Chris, to Procter & Gamble Company, The. Three-dimensional, macroscopically expanded, apertured laminate webs and method for making. 5,549,777, Cl. 156-244.180.

Langenohl, Mark C.; and Hughes, Gustav G., to Indresco Inc. Non-slumping, pumpable castable and method of applying the same. 5,549,745, Cl. 106-692.000.

Langlais, Daniel; and Archambault, Gervais. Apparatus for securing together an attachment plug with an electric receptacle. 5,549,482, Cl. 439-369.000.

Langlais, Joseph: *See—*
Dubé, Ghyslain; Dupuis, Claude; Langlais, Joseph; Lavoie, Serge; Rompre, Stephane; Trottier, Sylvain; and Turcotte, Gilles, 5,549,732, Cl. 75-331.000.

Langley, Andrew J., to Noise Cancellation Technologies, Inc. Actively sound reduced muffler having a venturi effect configuration. 5,550,334, Cl. 181-206.000.

Langston, Todd A., to United Technolgies Corporation. Variable stator vane liakage system and method. 5,549,448, Cl. 415-149.400.

Lanier, Roland V., Jr.: *See—*
Zemaitis, Walter A.; Covington, Edward A.; Lanier, Roland V., Jr.; and Hovis, Gary U., 5,549,722, Cl. 55-463.000.

Lanxide Technology Company, LP: *See—*
Yang, Chwen-Chih, 5,549,151, Cl. 164-97.000.

Laplace, Carl J., to Siemens Energy & Automation, Inc. Tap position determination based on regular impedance characteristics. 5,550,459, Cl. 323-255.000.

Laplace, Carl J.: *See—*
Bellin, Michael; Laplace, Carl J.; and Trainor, Jack, 5,550,460, Cl. 323-255.000.

Lapoint, John H., Jr. Filtration bag. 5,549,826, Cl. 210-489.000.

La Porta, Piero: *See—*
Bettarini, Franco; Capuzzi, Luigi; La Porta, Piero; Massimini, Sergio; and Caprioli, Vincenzo, 5,550,140, Cl. 514-363.000.

Lapsker, Irving; Lapsker, Jeffry G.; and Jaroszewski, Conrad. Athletic projectile and target training device. 5,549,302, Cl. 273-346.000.

Lapsker, Jeffry G.: *See—*
Lapsker, Irving; Lapsker, Jeffry G.; and Jaroszewski, Conrad, 5,549,302, Cl. 273-346.000.

Larker, Hans; Lundberg, Robert; Mattsson, Bertil; Nilsson, Jan; and Pejryd, Lars, to Volvo Aero Corporation. Method for manufacturing composites. 5,549,770, Cl. 156-89.000.

Larkin, Mark E.: *See—*
Lynn, Lawrence A.; and Larkin, Mark E., 5,549,569, Cl. 604-191.000.

Larsen, Douglas C.; Keller, Forrest K.; and Warren, Lawrence L., to Standard Products Company, The. Window sealing assembly. 5,548,929, Cl. 49-441.000.

Larsen, Hugh G.: *See—*
Wright, J. Nelson; Cole, Christopher R.; Gee, Albert; Larsen, Hugh G.; and Maslak, Samuel H., 5,549,111, Cl. 128-742.000.

Larsen, Thor A.: *See—*
Georgiou, Christos J.; Larsen, Thor A.; and Lee, Ki W., 5,550,860, Cl. 375-220.000.

Larsen, Wayne D.: *See—*
Baggett, William C.; Baines, Elliot A., Jr.; Filus, Wayne S.; Gilland, Dianne W.; Kluska, Theodore E.; Larsen, Wayne D.; Spaulding, Mark G.; and Starace, Jeremia P., 5,549,489, Cl. 439-709.000.

Larson, Christopher R.: *See—*
Peters, Jeffrey J.; Ren, Brooke Q.; and Larson, Christopher R., 5,549,552, Cl. 604-96.000.

Larson, Gary B.; Jobson, Brian; Johnson, James A.; and Sturni, Lance C., to MacDermid, Incorporated; and PPG Industries, Inc. Phosphating compositions and processes, particularly for use in fabrication of printed circuits utilizing organic resists. 5,550,006, Cl. 430-311.000.

Larson, Mark: *See—*
Schofield, Kenneth; and Larson, Mark, 5,550,677, Cl. 359-604.000.

Larsson, Kåre: *See—*
Herslöf, Bengt; Larsson, Kåre; and Bengmark, Stig, 5,550,263, Cl. 554-78.000.

Larsson, Rolf, to Siemens Elema AB. Procedure and device for flushing a catheter. 5,549,548, Cl. 604-35.000.

Larsson, Rolf; and Fahlstroem, Ulf, to Siemans Elema AB. Restriction device and coupling for selectively connecting multiple conduits meeting at a common connection location. 5,549,582, Cl. 604-283.000.

Laser Physics, Inc.: *See—*
Ostler, Kevin D., 5,550,853, Cl. 372-34.000.

Latina, Mark A., to General Hospital Corporation, The. Selective laser targeting of pigmented ocular cells. 5,549,596, Cl. 606-4.000.

Lattrell, Rudolf: *See—*
Fischer, Gerd; Defossa, Elisabeth; Gerlach, Uwe; Hörlein, Rolf; Krass, Norbert; Lattrell, Rudolf; Stache, Ulrich; Wollmann, Theodor; and Isert, Dieter, 5,550,232, Cl. 540-230.000.

Latu, Michel: *See—*
Loridon, Joël; Ma, Jean-Luc; Marini, Alain; and Latu, Michel, 5,550,382, Cl. 250-390.040.

Lau, Ken; Yee, Jimmie; Mayeda, Rodger; Riccomini, Julian; and Ilyin, Mary, to Pacific Gas and Electric Company. Fault sensor device with radio transceiver. 5,550,476, Cl. 324-522.000.

Laubscher, Hans J., to Heidelberger Druckmaschinen AG. Methods for bringing together folded products. 5,549,288, Cl. 270-52.140.

Lauder, Gary M.: *See—*
Hoarty, W. Leo; Soske, Joshua W.; Lauder, Gary M.; Snell, Stephen C.; Fisher, Delmer D.; and North, John, 5,550,578, Cl. 348-7.000.

Laughlin, Joe A.; and Thyssen, Larry C. Method of environmentally stabilizing lead paint contaminated debris. 5,550,314, Cl. 588-256.000.

Laughlin, Timothy E.; and Grant, Robert C., to Sunburst Chemicals, Inc. Detergent dispenser for use with solid cast detergent. 5,549,875, Cl. 422-266.000.

Laurent, Jean; Meynier, Patrick; Cretin, Jacques; and Beauducel, Claude, to Institut Francais du Petrole. Mobile seismic system of great length for wells. 5,550,785, Cl. 367-25.000.

Lavallée, Claude: *See—*
Blong, Thomas J.; and Lavallée, Claude, 5,549,948, Cl. 428-36.900.

Lavoie, Serge: *See—*
Dubé, Ghyslain; Dupuis, Claude; Langlais, Joseph; Lavoie, Serge; Rompre, Stephane; Trottier, Sylvain; and Turcotte, Gilles, 5,549,732, Cl. 75-331.000.

Law, Edwin S.: *See—*
Buch, Kiran B.; Law, Edwin S.; and Chu, Jakong J., 5,550,839, Cl. 371-22.100.

Lax, Ronald G.: *See—*

Lundquist, Ingemar H.; Edwards, Stuart D.; Sharkey, Hugh R.; Lax, Ronald G.; Baker, James A., Jr.; and Sommer, Phillip R., 5,549,644, Cl. 604-22.000.

Layman, William J., Jr.; Chockalingam, Kannappan; and Lecouvé, Jean-Pierre. Method for producing calcium salts of [S,S]-ethylenediamine-N,N'-disuccinic acid. 5,550,285, Cl. 562-565.000.

Le, Minh Son, to Northwest Water Group PLC. Membrane filtration system. 5,549,829, Cl. 210-636.000.

Lea, Michael C.; and Jaster, Paul A., to Minnesota Mining and Manufacturing Company. Structured films and use thereof for daylight illumination. 5,551,042, Cl. 359-742.000.

Leahy, Ellen: *See*—
Hirschmann, Ralph; Leahy, Ellen; and Sprengeler, Paul, 5,550,251, Cl. 548-312.100.

Leary, James F.: *See*—
Corio, Mark A.; and Leary, James F., 5,550,058, Cl. 436-63.000.

Lebby, Michael S.; Chun, Christopher K. Y.; Kuo, Sbun-Meen; and Hansen, Kent W., to Motorola. Optoelectronic interface module. 5,550,941, Cl. 385-49.000.

Leblanc, Yves: *See*—
Ducharme, Yves; Gauthier, Jacques Y.; Prasit, Petpiboon; Leblanc, Yves; Wang, Zhaoyin; Leger, Serge; and Therien, Michel, 5,550,142, Cl. 514-365.000.

Lechevalier, Michel M. A. A., to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation "SNECMA" . Adjustment valve for injecting fuel for a turbojet engine. 5,548,959, Cl. 60-734.000.

Lecouvé, Jean-Pierre: *See*—
Layman, William J., Jr.; Chockalingam, Kannappan; and Lecouvé, Jean-Pierre, 5,550,285, Cl. 562-565.000.

Lednum, Eugene E.: *See*—
Navaroli, Henry D.; and Lednum, Eugene E., 5,550,430, Cl. 313-589.000.

Leduc, Gérard; and Debregeas, Patrice, to Laboratoires Des Produits Ethiques Ethypharm. Galenic form of 5-nitromidazole derivatives which is effective for the treatment of parasitoses and infections of the entire gastrointestinal tract. 5,549,911, Cl. 424-458.000.

Lee, Chong S.; and Buchanan, Scott J., to Minnesota Mining and Manufacturing Company. Coated abrasive having an overcoating of an epoxy resin coatable from water. 5,549,719, Cl. 51-298.000.

Lee, Dae Sung; and Shin, Ho Keun. Vaporizing and concentration drying apparatus and method. 5,548,906, Cl. 34-338.000.

Lee, Fook-Thean: *See*—
Smith, Suzanne V.; Lambrecht, Richard M.; Schmidt, Peter F.; and Lee, Fook-Thean, 5,550,160, Cl. 514-563.000.

Lee, Ha I.: *See*—
Kim, Jung C.; Oh, Dong Y.; Choe, Gyu S.; Hong, Kyung S.; Kim, Kyung H.; Lee, Joo H.; Lee, Ha I.; Park, Kyeong B.; Gil, Dong S.; Kwon, Oh H.; and Kwon, Byoung H., 5,548,980, Cl. 68-133.000.

Lee, Hyosang, to Hyundai Motor Company. Hydraulically controlled engine mounting device of an automotive vehicle. 5,549,284, Cl. 267-140.140.

Lee, Jae-Seol: *See*—
Yun, Ji-Seop; Park, Byung-Seok; Lee, Jae-Seol; and Park, Hyun-Su, 5,550,733, Cl. 364-174.000.

Lee, Jin-Seok, to Hyundai Electronics Industries, Co., Ltd. Satellite communication receiving apparatus. 5,550,871, Cl. 375-344.000.

Lee, Ji-Young, to SamSung Electronics Co., Ltd. Automatic beam current control circuit for multimode monitor and method thereof. 5,550,443, Cl. 315-383.000.

Lee, Jong-Min; Cha, Byung-Heon; Kim, Sung-Ho; and Ko, Do-Kyeong, to Korea Atomic Energy Research Institute; and Korea Electric Power Corporation. Apparatus and method for precisely wavelength-tuning single longitudinal mode tunable laser beams by utilizing wedge prism. 5,550,850, Cl. 372-16.000.

Lee, Joo H.: *See*—
Kim, Jung C.; Oh, Dong Y.; Choe, Gyu S.; Hong, Kyung S.; Kim, Kyung H.; Lee, Joo H.; Lee, Ha I.; Park, Kyeong B.; Gil, Dong S.; Kwon, Oh H.; and Kwon, Byoung H., 5,548,980, Cl. 68-133.000.

Lee, Ki W.: *See*—
Georgiou, Christos J.; Larsen, Thor A.; and Lee, Ki W., 5,550,860, Cl. 375-220.000.

Lee, Kun B., to Samsung Electronics Co., Ltd. Method for controlling rotation speed of a compressor for a refrigerator. 5,548,969, Cl. 62-228.400.

Lee, Morris: *See*—
Lu, Daozheng; Shagrin, Ceril T.; Thomas, William L.; Lee, Morris; Bernard, Bruce; and Zhang, Jia, 5,550,928, Cl. 382-116.000.

Lee, Sang Y.: *See*—
Jun, Gun S.; and Lee, Sang Y., 5,549,379, Cl. 312-408.000.

Lee, Sim-Ho, to LG Information & Communications, Ltd. Clock synchronizing circuit of data transmission system. 5,550,874, Cl. 375-354.000.

Lee, Ted C. K.; Pelzer, Franz H.; and Motley, Leslie A., to Dade International Inc. Tetrahydroxyquinone as an activator component for activated partial thromboplastin time test of blood coagulation. 5,550,028, Cl. 435-13.000.

Lee, Woo Y., to Dong A Electric Parts Co., Ltd. Resistor device for controlling a rotational speed of a motor. 5,550,527, Cl. 338-50.000.

Lee, Yi-Hsien: *See*—
Chuang, Te-Chih; Liao, Yunn-Hung; Wei, Lung; and Lee, Yi-Hsien, 5,551,012, Cl. 395-500.000.

Lee, Yung-Hsiung: *See*—
Petschow, Bryon W.; and Lee, Yung-Hsiung, 5,550,106, Cl. 514-2.000.

Leger, Serge: *See*—
Ducharme, Yves; Gauthier, Jacques Y.; Prasit, Petpiboon; Leblanc, Yves; Wang, Zhaoyin; Leger, Serge; and Therien, Michel, 5,550,142, Cl. 514-365.000.

Legrand, Annie F.: *See*—
Tixier, Jean P.; and Legrand, Annie F., 5,549,846, Cl. 252-315.010.

Lehman, Jean-Yves: *See*—
Rieth, Norbert; Darredeau, Bernard; and Lehman, Jean-Yves, 5,548,975, Cl. 62-646.000.

Lehmann, Wilfried: *See*—
Mann, Ralf; Lehmann, Wilfried; and Müller, Hermann, 5,549,450, Cl. 415-214.100.

Lehnert, Robert A.; Quinn, Robert D.; Sisley, Steven E.; and Thomas, Brandon D., to Vectra Technologies, Inc. Containers for transportation and storage of spent nuclear fuel. 5,550,882, Cl. 376-272.000.

Leinsing, Karl R.: *See*—
Siegel, Geoffrey S.; and Leinsing, Karl R., 5,549,577, Cl. 604-256.000.

Leland, Kenneth W.: *See*—
Burson, Kyle L.; Chang, Yum C.; Fok, Wilson; Leland, Kenneth W.; Orlando, Denis P.; and Partyka, Andrzej, 5,550,895, Cl. 379-59.000.

Leland Stanford Junior University, The Board of Trustees of the: *See*—
Chu, Gilbert; Vollrath, Douglas; and Davis, Ron, 5,549,796, Cl. 204-457.000.

Lemanski, Michael F.: *See*—
Cirjak, Larry M.; Lemanski, Michael F.; Wagner, David R.; Benkalowycz, Nancy C.; Blum, Patricia R.; Pepera, Marc A.; and Paparizos, Christos, 5,550,281, Cl. 560-245.000.

Lemaux, Peggy G.: *See*—
Adams, Thomas R.; Chambers, Sheryl A.; Daines, Richard J.; Gordon-Kamm, William J.; Kausch, Albert P.; Lemaux, Peggy G.; Mackey, Catherine J.; Mangano, Mary L.; O'Brien, James V.; Rice, Thomas B.; Spencer, T. Michael; Start, William G.; and Willetts, Nancy G., 5,550,318, Cl. 800-205.000.

Lenhart, Ronald A., to Simplimatic Engineering Company. Damperless controlled speed air conveyor. 5,549,423, Cl. 406-86.000.

Lenz, Gary A.; Brown, Gregory C.; and Warrior, Jogesh, to Rosemount Inc. Valve positioner with pressure feedback, dynamic correction and diagnostics. 5,549,137, Cl. 137-486.000.

Leonard, Eric L.: *See*—
Mihalisin, John R.; Corrigan, John; Baker, Robert J.; Leonard, Eric L.; and Vandersluis, Jay L., 5,549,765, Cl. 148-428.000.

Leong, William: *See*—
Cliff, Richard G.; Cope, L. Todd; McClintock, Cameron R.; Leong, William; Watson, James A.; Huang, Joseph; and Ahanin, Bahram, 5,550,782, Cl. 365-230.030.

Leopold, Raymond J.: *See*—
Hutcheson, Jonathan E.; Natarajan, Kadathur S.; and Leopold, Raymond J., 5,551,058, Cl. 455-33.200.
Hutcheson, Jonathan E.; Natarajan, Kadathur S.; and Leopold, Raymond J., 5,551,059, Cl. 455-33.200.

Lepinski, Jerald L. Method for operating a musical instrument. 5,549,029, Cl. 84-483.200.

Lerouge, Patrice; Roche, Philippe; Faucher, Catherine; Maillet, Fabienne; Denarie, Jean; Promé, Jean-Claude; and Truchet, Georges, to Centre National de la Recherche Scientifique (C.N.R.S.); and Institut National de la Recherche Agronomique (I.N.R.A.). Substance with lipo-oligosaccharide structure capable of acting as plant-specific symbiotic signals, processes for producing them and their applications. 5,549,718, Cl. 47-57.600.

Lesage, Jean-Luc: *See*—
Petitcollin, Jean-Marc; Lesage, Jean-Luc; and Borderiou, Arnaud, 5,549,726, Cl. 65-106.000.

Lespron, Angel, to J's Pacific Enterprise, Inc. Automatic pistol with integral compensator. 5,549,030, Cl. 89-14.300.

Lessar, Joseph F.: *See*—
Heller, Bernard F.; Schmidt, Craig L.; Nutzman, Thomas M.; and Lessar, Joseph F., 5,549,985, Cl. 429-157.000.

Lester, David J.: *See*—
Shlenker, Robin R. T.; Lester, David J.; and Solomons, Clive C., 5,549,924, Cl. 427-2.300.

Lesyna, David A.: *See*—
Schulte, Reinhard W.; Lesyna, David A.; Wicks, William J.; and Meinass, Helmut J., 5,549,616, Cl. 606-130.000.

Léveillé, Nathalie: *See*—
Gaudet, Pierre; and Léveillé, Nathalie, 5,549,353, Cl. 297-182.000.

Leven, Thomas: *See*—
Träger, Michael; Wirobski, Reinhard; and Leven, Thomas, 5,550,170, Cl. 521-143.000.

Levenbook, Inessa; Chumakov, Konstantin; Powers, Laurie; and Roninson, Igor, to United States of America, Health and Human Services. Test for virulent genomic nucleotide 472 revertants in attenuated live poliovirus type 3 vaccines. 5,550,018, Cl. 435-5.000.

Lever Brothers Company, Division of Conopco, Inc.: *See*—
Madison, Stephen A.; and Coope, Janet L., 5,550,256, Cl. 548-473.000.

Leverty, Harold: *See*—
Bredahl, Timothy D.; Leverty, Harold; Smith, Robert L.; Bennett, Richard E.; Yarusso, David J.; Munson, Daniel C.; and Plepys, Anthony R., 5,550,175, Cl. 523-348.000.

Levi, Avraham Y.; and Quarberg, Craig D., to Structron Corporation. Locking mechanism for telescoping tubular poles. 5,549,407, Cl. 403-109.000.

Levine, Paul A.: *See*—

Florio, Joseph J.; Bornzin, Gene A.; Levine, Paul A.; and Barlow, J. Jeffrey, 5,549,649, Cl. 607-15.000.

Levinson, Lionel M.: *See*—
Scott, Curtis E.; Strok, Jack M.; and Levinson, Lionel M., 5,549,746, Cl. 117-4.000.

Lewis, Irwin C.; Pirro, Terrence A.; Greinke, Ronald A.; Bretz, Richard I.; and Kampe, Dennis J., to UCAR Carbon Technology Corporation. Room temperature setting carbonaceous cement with increased electrical conductivity and flexural strength. 5,550,176, Cl. 524-6.000.

Lewis, Kirk, to Fast Industries, Inc. Shelf extender. 5,549,054, Cl. 108-152.000.

Lewis, Larry N.; and Carothers, Terrell W., to General Electric Company. Method for hydrosilating unsaturated monomers. 5,550,272, Cl. 556-479.000.

Lewis, Michael W. Skill crane cabinet. 5,549,372, Cl. 312-114.000.

Lewis, Steven F.: *See*—
Johnston, Jesse C., Jr.; Kulig, James S.; Lewis, Steven F.; Collet, Eric C.; Sepela, Mark J.; and Meuller, Michael L., 5,549,079, Cl. 122-379.000.

Lewis, W. Stan. Waste heat recovery system. 5,548,958, Cl. 60-693.000.

Lexmark International, Inc.: *See*—
Davidson, Peter S., Jr.; Rafferty, Francis D., Jr.; and Songer, Gail M., 5,550,957, Cl. 395-114.000.

Leyden House Limited: *See*—
Rossman, Jon R.; and Hotaling, Bryan, 5,549,247, Cl. 239-57.000.

LG Electronics, Inc.: *See*—
Nam, Keyoung T.; and Sung, Hong E., 5,550,885, Cl. 377-27.000.

LG Information & Communications, Ltd.: *See*—
Lee, Sim-Ho, 5,550,874, Cl. 375-354.000.

Li, Lehmann K., to Li Medical Technologies Inc. Surgical grasper with articulated fingers. 5,549,636, Cl. 606-206.000.

Li, Li, to National Research Council of Canada. Optical recording media having optically-variable security properties. 5,549,953, Cl. 428-64.100.

Li Medical Technologies Inc.: *See*—
Li, Lehmann K., 5,549,636, Cl. 606-206.000.

Liang, Jengli: *See*—
Bell, James P.; Iroh, Jude O.; Scola, Daniel A.; and Liang, Jengli, 5,549,807, Cl. 205-50.000.

Liang, Jui; Co, Ramon; and Gui, Ann, to Opti, Inc. Multiphase clock synthesizer having a plurality of phase shifted inputs to a plurality of phase comparators in a phase locked loop. 5,550,515, Cl. 331-11.000.

Liao, Winner. Direction turning device for a headlight of an automobile. 5,550,717, Cl. 362-41.000.

Liao, Yunn-Hung: *See*—
Chuang, Te-Chih; Liao, Yunn-Hung; Wei, Lung; and Lee, Yi-Hsien, 5,551,012, Cl. 395-500.000.

Liberti, Joseph C., Jr.; Averst, Douglas I.; Branch, Tony R.; and Carsello, Stephen R., to Motorola, Inc. Method and apparatus for Fast Fourier Transform based maximal ratio combining. 5,550,872, Cl. 375-347.000.

Licht, Stuart L.; and Marsh, Catherine L., to United States of America, Navy. Aluminum permanganate battery. 5,549,991, Cl. 429-218.000.

Lidgren, Lars Å A.; and Bauer, Hans J., to MIT AB. Mixing device for manufacturing bone cement. 5,549,380, Cl. 366-139.000.

Liebermann, Eli: *See*—
Shekhawat, Sampat; Liebermann, Eli; Scherzinger, William M.; Silvestro, Gayton L.; Suttora, Nick; and Hodge, David, 5,550,456, Cl. 322-25.000.

Liebrecht, Jeffrey W.: *See*—
Acosta, Phyllis J. B.; Grondalski, Richard A.; Liebrecht, Jeffrey W.; and Reynolds, Patricia A., 5,550,146, Cl. 514-400.000.

Liedberg, Nils P. Å., to Telefonaktiebolaget LM Ericsson. Digital controlled xtal osc. 5,550,514, Cl. 331-1.00A.

Liepold, August: *See*—
Thiele, Hartmut; Brandstetter, Hermann; Toral, Jose; Hiller, Rainald; Scholtysik, Bernd; Lutz, Gottfried; and Liepold, August, 5,549,198, Cl. 206-307.000.

Life-Link International, Inc.: *See*—
Wuerslin, Peter C.; Liu, Frederick E.; and Maslow, Andrew D., 5,549,329, Cl. 280-821.000.

Life Medical Technologies, Inc.: *See*—
Kovalcheck, Steven W., 5,549,542, Cl. 600-146.000.

Lifegroup, S.p.A.: *See*—
Della Valle, Francesco; Lorenzi, Silvana; and Calderini, Gabriella, 5,550,249, Cl. 548-303.700.

Lifshitz, Nadia; and Luryi, Serge, to Lucent Technologies Inc. Metal oxide semiconductor transistors having a polysilicon gate electrode with non-uniform doping in source-drain direction. 5,550,397, Cl. 257-412.000.

Lignotock GmbH: *See*—
Rüsche, Heinz-Josef; and Bonhoff, Norbert, 5,549,327, Cl. 280-751.000.

Lii, Liang-Kuen. Adjustable C clamp. 5,549,225, Cl. 222-192.000.

Lilja, Launo L.: *See*—
Hulthorn, Stig-Erik; Lilja, Launo L.; Mäkitalo, Valto J.; and Nyman, Bror G., 5,549,854, Cl. 261-87.000.

Limburg, William W.: *See*—
Herbert, William G.; Mishra, Satchidanand; Post, Richard L.; VonHoene, Donald C.; Yu, Robert C. U.; Foley, Geoffrey M. T.; and Limburg, William W., 5,550,618, Cl. 355-211.000.

Lin, Frank. Brake lever for motorcycle. 5,549,017, Cl. 74-558.500.

Lin, Jengping, to United Microelectronics Corp. Process for fabricating MOS transistors having anti-punchthrough implant regions formed by the use of a phase-shift mask. 5,550,074, Cl. 437-44.000.

Lin, Jengping, to Top Team/Microelectronics Corp. Method for fabricating silicide shunt of dual-gate CMOS device. 5,550,079, Cl. 437-56.000.

Lin, Ronny W.; Allen, Robert H.; and Overstreet, Andrew D., to Amoco Corporation. High efficiency olefin displacement process. 5,550,303, Cl. 585-328.000.

Lin, Wen-Huey: *See*—
Paciorek, Kazimiera J. L.; Lin, Wen-Huey; Masuda, Steven R.; and Nakahara, James H., 5,550,277, Cl. 558-194.000.

Lind, Bruce B. Absorbent mat. 5,549,945, Cl. 428-35.500.

Lindahl, Åke: *See*—
Ölund, Karin; Lütz, Lena-Karin; Bryland, Rickard; and Lindahl, Åke, 5,550,145, Cl. 514-396.000.

Lindblom, Bo, to Texo AB. Back rest arrangement for controlling warp thread tension. 5,549,140, Cl. 139-114.000.

Linden, Thomas M.; Reinke, Jon D.; and Schmuck, Frank B., to International Business Machines Corporation. Method and apparatus for integrating applications in a graphical user interface environment with a rules database. 5,551,030, Cl. 395-600.000.

Lindsay, Joseph A. Compact disc storage case. 5,549,199, Cl. 206-308.100.

Lindstedt, Sven T.: *See*—
Ellis, Martin K.; Lindstedt, Sven T.; Lock, Edward A.; Markstedt, Maj E. H.; Mutter, Linda C.; and Prisbylla, Michael P., 5,550,165, Cl. 514-676.000.

Link, Hans: *See*—
Häberlein, Peter; and Link, Hans, 5,550,468, Cl. 324-225.000.

Link, Terry G. Method of fabricating lightweight ink transfer roll. 5,548,897, Cl. 29-895.320.

Lintl, Andreas; and Knoch, Martin, to Paul Ritzau Pari-Werk GmbH. Nebulizer, especially for application in devices for inhalation therapy. 5,549,102, Cl. 128-200.210.

Lipeles, Jay L. Minimum weight wheel rim. 5,549,360, Cl. 301-64.700.

Lipska, Barbara K.: *See*—
Weinberger, Daniel R.; Lipska, Barbara K.; and Jaskiw, George E., 5,549,884, Cl. 424-9.200.

Liquid Carbonic Corporation: *See*—
Rhoades, George D., 5,548,974, Cl. 62-604.000.

Lithander, Erik J., to Niagara Tube Washing Systems AB. Method and apparatus for cleaning cylindrical components which are transversely rotated in a drum during liquid treatment. 5,549,759, Cl. 134-22.110.

Little-Lowry, Cheryl G. Motorized boat-mounted signaling device for water skiers. 5,550,531, Cl. 340-573.000.

Littman, Iran R.: *See*—
Danek, Daniel J.; Etters, Harry N., Jr.; Genz, Earl J.; Johnston, Brigg A.; Littman, Iran R.; Long, John N.; Meadors, Anthony W.; Mercadante, Nicholas J.; Orrico, Mario M.; Schramme, Stephan H.; and Shedore, Charles J., 5,550,342, Cl. 200-448.000.

Litton Systems, Inc.: *See*—
Coffield, Kelly M.; Cantrill, Dean A.; McCulloh, Kevin G.; and Mickelson, Sammy K., 5,549,736, Cl. 96-133.000.
Guch, Steve, Jr.; and Hovis, Floyd, 5,550,851, Cl. 372-33.000.
Navaroli, Henry D.; and Lednum, Eugene E., 5,550,430, Cl. 313-589.000.

Liu, Cheng-Kung; and Brewer, John C., to United States Surgical Corporation. Ionomeric suture and its method of manufacture. 5,549,907, Cl. 424-443.000.

Liu, Frederick E.: *See*—
Wuerslin, Peter C.; Liu, Frederick E.; and Maslow, Andrew D., 5,549,329, Cl. 280-821.000.

Liu, Jian Ho. Water filled crystal ball structure with driven steel balls. 5,548,912, Cl. 40-430.000.

Liu, Min-Sea, to Winbond Electronics Corp. Method for making a buried contact. 5,550,085, Cl. 437-203.000.

Liu, Ru-Shi: *See*—
Edwards, Peter P.; Hu, Shu-Fen; Liu, Ru-Shi; and Jefferson, David A., 5,550,105, Cl. 505-120.000.

LK-Products OY: *See*—
Korpela, Juha, 5,550,519, Cl. 333-207.000.

Llewellyn, Laurence; Graveston, Mark G.; Kandasamy, Ispran S.; and Hale, Peter G., to Pirelli General plc. Slidable optical fiber interconnecting tray with flexible fiber guiding tubes. 5,550,947, Cl. 385-134.000.

Lloyd, David G.: *See*—
Hart, Courtney L.; Tischer, Brian F.; and Lloyd, David G., 5,548,875, Cl. 24-265.00H.

Lo, Bin: *See*—
Drozt, Peter M.; Rozenstrauch, Alexander; and Lo, Bin, 5,551,062, Cl. 455-54.200.

Lo, Jiann-Chang: *See*—
Boyette, James E., Jr.; Hammond, James M.; Lo, Jiann-Chang; Mahlbacher, James C.; Servedio, Michael; and Taheri, Ali R., 5,550,483, Cl. 324-758.000.

Lo, Wei W. Connector for built-up toy furniture. 5,549,408, Cl. 403-218.000.

Lo, William: *See*—
Crayford, Ian S.; and Lo, William, 5,550,803, Cl. 370-13.000.

Lochmahr, Karl: *See*—
Baruschke, Wilhelm; Lochmahr, Karl; and Rojnica, Werner, 5,549,153, Cl. 165-42.000.

Lock, Edward A.: *See*—
Ellis, Martin K.; Lindstedt, Sven T.; Lock, Edward A.; Markstedt, Maj E. H.; Mutter, Linda C.; and Prisbylla, Michael P., 5,550,165, Cl. 514-676.000.

Loctite (Ireland) Limited: *See*—

Kneafsey, Brendan J.; and Guthrie, John, 5,550,201, Cl. 526-204.000.
Loeb, Gerald E.; Young, Roy A.; and Hood, Kevin H., to Queen's University at Kingston. Monitoring system and interface apparatus therefor. 5,551,016, Cl. 395-550.000.
Loeb, Gerald E.: *See—*
Shannon, Robert V.; Loeb, Gerald E.; and Zeng, Fan-Gang, 5,549,658, Cl. 607-57.000.
Loeff, Thomas: *See—*
McCulloch, William C., 5,549,337, Cl. 292-225.000.
Loeffler, Michael: *See—*
James, Jay; Zak, Roger; Loeffler, Michael; and Friezen, Robert, 5,549,313, Cl. 280-221.000.
Löffler, Alfons; and Schwarz, Josef, to ZF Friedrichshafen AG. Hydrodynamic converter with a bridging coupling. 5,549,184, Cl. 192-3.300.
Löfstedt, Jörgen: *See—*
Itoh, Kosaku; Yokoyama, Ikuro; Prochut, Richard; Löfstedt, Jörgen; and Nilsson, Christer, 5,549,191, Cl. 198-432.000.
Prochut, Richard; Löfstedt, Jörgen; and Nilsson, Christer, 5,548,944, Cl. 53-511.000.
Logviniouk, Viacheslav P.: *See—*
Luger, Peter; Grafwallner, Franz; Peller, Helmuth; Müller, Martin; Malyshev, Valentin V.; Galperin, Sergey B.; and Logviniouk, Viacheslav P., 5,548,961, Cl. 62-47.100.
Luger, Peter; Grafwalliner, Franz; Peller, Helmuth; Müller, Martin; Malyshev, Valentin V.; Logviniouk, Viacheslav P.; Ozeretskovsky, Vladmimir S.; and Shengardt, Alexander S., 5,548,962, Cl. 62-50.100.
Lohman, Terence J.: *See—*
Amini, Nader; Boury, Bechara E.; Brannon, Sherwood; and Lohman, Terence J., 5,551,009, Cl. 395-492.000.
Lohr & Bromkamp GmbH: *See—*
Welschof, Hans-Heinrich, 5,549,514, Cl. 464-145.000.
Lok, Roger: *See—*
Chen, Benjamin T. K.; and Lok, Roger, 5,550,013, Cl. 430-567.000.
Loma Linda University Medical Center: *See—*
Schulte, Reinhard W.; Lesyna, David A.; Wicks, William J.; and Meinass, Helmut J., 5,549,616, Cl. 606-130.000.
London Health Association: *See—*
Vesely, Ivan; Krucinski, Slawomir; Campbell, Gordon; Boughner, Derek; and Dokainish, Mohan, 5,549,665, Cl. 623-2.000.
Long, Andrew M.: *See—*
Fries, Donald M.; Huntoon, Andrew E.; and Long, Andrew M., 5,549,592, Cl. 604-389.000.
Long, Douglas G.; and Czernik, Roman, to Pitney Bowes Inc. Curved envelope hopper. 5,549,290, Cl. 271-166.000.
Long, James E.; Gang, Joseph M., Jr.; Bedard, Charles J.; Baird, Randall B.; and Edwards, David A., to Starlight Networks. Video application server. 5,550,982, Cl. 395-200.130.
Long, John N.: *See—*
Danek, Daniel J.; Etters, Harry N., Jr.; Genz, Earl J.; Johnston, Brigg A.; Littman, Iran R.; Long, John N.; Meadors, Anthony W.; Mercadante, Nicholas J.; Orrico, Mario M.; Schramme, Stephan H.; and Shedore, Charles J., 5,550,342, Cl. 200-448.000.
Long, Otto V. Low-pollution high-power external combustion engine. 5,549,032, Cl. 91-502.000.
Long, Thomas C.: *See—*
Clark, Terri R.; and Long, Thomas C., 5,550,661, Cl. 359-073.000.
Longsderff, Richard W.: *See—*
Meyer, George A., IV; Toth, Jerome E.; and Longsderff, Richard W., 5,549,155, Cl. 165-104.330.
Loos, Vinson A.: *See—*
Mitchell, Monroe S.; and Loos, Vinson A., 5,549,468, Cl. 425-526.000.
L'Oreal: *See—*
Goncalves, Antonin, 5,549,385, Cl. 366-314.000.
Grollier, Jean F., 5,549,886, Cl. 424-59.000.
Philippe, Michel, 5,550,225, Cl. 536-115.000.
Lorenz, Perry S., to National Semiconductor Corporation. Current switch with built-in current source. 5,550,464, Cl. 323-315.000.
Lorenzi, Silvana: *See—*
Della Valle, Francesco; Lorenzi, Silvana; and Calderini, Gabriella, 5,550,249, Cl. 548-303.700.
Loridon, Joël; Ma, Jean-Luc; Marini, Alain; and Latu, Michel, to Commissariat A L'Energie Atomique. Process and apparatus for compacting informations to be stored and processing said compacted informations. 5,550,382, Cl. 250-390.040.
Lormeau, Jean Claude; Chevallier, Bruno; Salomé, Marc L. V.; and Tenaille d'Estais, Guy E. M., to Sanofi. N,O-sulphated heparosans and pharmaceutical compositions containing them. 5,550,116, Cl. 514-56.000.
Lortie, Lyne: *See—*
Gould, W. Douglas; Lortie, Lyne; and Béchard, Geneviève, 5,550,141, Cl. 514-363.000.
Loth, Myriam: *See—*
Mondin, Myriam; Loth, Myriam; Broze, Guy; Mehreteab, Ammanuel; Thomas, Barbara; Adamy, Steven; and Bala, Frank, Jr., 5,549,840, Cl. 510-365.000.
Loucks, Howard C. Automobile body parts holder assembly. 5,549,287, Cl. 269-17.000.
Loughlin, Neil W., to Chrysler Corporation. Wrist pin for piston and connecting rod assembly. 5,549,034, Cl. 92-187.000.
Loughrin, Thomas D.: *See—*
Mazer, Terrence B.; Walton, Joseph E.; Geckle, Ronita K.; Piontek, Carl J.; Duel, Susan B.; Daab-Krzykowski, Andre; Joseph, Robert L.; Pierson, William G.; Loughrin, Thomas D.; and Osip, Thomas W., 5,549,550, Cl. 604-83.000.
Lovasné Marsai, Mária: *See—*
Mahó, Sándor; Tuba, Zoltán; Sánta, Csaba; Balogh, Gábor; Czajlikné Csizér, Éva; Lovasné Marsai, Mária; and Gálik, György, 5,550,240, Cl. 544-295.000.
Loveless, Howard: *See—*
Cooper, J. Carl; Wallen, David; Vojnovic, Mirko; and Loveless, Howard, 5,550,594, Cl. 348-513.000.
Lowe, Tony: *See—*
Bernadic, Thomas; Lowe, Tony; and Patterson, John, 5,549,425, Cl. 407-114.000.
LRA Laboratories, Inc.: *See—*
Raymond, Louis, 5,549,007, Cl. 73-856.000.
LSI Logic Corporation: *See—*
Brossart, Richard, 5,550,087, Cl. 437-217.000.
Carichner, Karla, 5,550,403, Cl. 257-702.000.
Gainey, Trevor C., 5,550,323, Cl. 174-52.100.
Garza, Mario; and Chao, Keith, 5,549,934, Cl. 427-489.000.
McCormick, John, 5,550,406, Cl. 257-666.000.
O'Brien, Mark, 5,550,840, Cl. 371-22.100.
O'Brien, Mark, 5,550,841, Cl. 371-22.100.
Lu, Chih-Yuan: *See—*
Tseng, Horng-Huei; and Lu, Chih-Yuan, 5,550,077, Cl. 437-52.000.
Lu, Daozheng; Shagrin, Ceril T.; Thomas, William L.; Lee, Morris; Bernard, Bruce; and Zhang, Jia, to A.C. Nielsen Company. Audience measurement system and method. 5,550,928, Cl. 382-116.000.
Lu, Li-Hsin D.: *See—*
Schlager, Karl M.; and Lu, Li-Hsin D., 5,550,446, Cl. 318-439.000.
Lu, Quan N.: *See—*
Gard, Michael F.; Gravelle, Stephen W.; Hsieh, Jiang; Lu, Quan N.; Newman, John W.; Toth, Thomas L.; and Wu, Michael A., 5,550,889, Cl. 378-113.000.
Lube Corporation: *See—*
Uchida, Kazuya, 5,548,977, Cl. 66-8.000.
Lubowitz, Hyman R.; and Sheppard, Clyde H., to Boeing Company, The. Ether and ester oligomers with multidimensional morphology. 5,550,204, Cl. 528-125.000.
Lucas, Brian K., to Proteus Corporation. Printed circuit board fault injection circuit. 5,550,844, Cl. 371-22.600.
Lucchetta, Faustino: *See—*
Foffano, Massimo; Foscaro, Giancarlo; and Lucchetta, Faustino, 5,548,909, Cl. 36-117.600.
Lucent Technologies Inc.: *See—*
Abbasi, Salman Y.; Gerszberg, Irwin; Kendig, Eugene T.; Martin, Jeffrey S.; and Oplinger, Thomas M., 5,550,898, Cl. 379-59.000.
Amir, Israel; and Higgins, Frank P., 5,550,583, Cl. 348-126.000.
Andruska, Donald L.; and Ruvarac, Thomas C., 5,550,904, Cl. 379-127.000.
Arnold, Erich C.; Gagliardi, Olivia M.; Hyatt, Wayne E.; Mayka, Lawrence G.; and Morgan, Todd C., 5,551,035, Cl. 395-650.000.
Baggett, William C.; Baines, Elliot A., Jr.; Filus, Wayne S.; Gilland, Dianne W.; Kluska, Theodore E.; Larsen, Wayne D.; Spaulding, Mark G.; and Starace, Jeremia P., 5,549,489, Cl. 439-709.000.
Bhagat, Promod K.; Moe, Warren R.; and Shampine, William T., 5,550,911, Cl. 379-220.000.
Bhattacharya, Arup K.; and Haider, Syed S., 5,550,765, Cl. 364-725.000.
Blaker, David M.; Ellard, Gregory S.; and Mobin, Mohammad S., 5,550,870, Cl. 375-341.000.
Blewett, Charles D., 5,551,040, Cl. 395-700.000.
Boccuzzi, Joseph, 5,550,868, Cl. 375-330.000.
Bower, Hadley H., Jr., 5,549,021, Cl. 81-9.510.
Burson, Kyle L.; Chang, Yum C.; Fok, Wilson; Leland, Kenneth W.; Orlando, Denis P.; and Partyka, Andrzej, 5,550,895, Cl. 379-59.000.
Cai, Lujing; and Dagdeviren, Nuri R., 5,550,908, Cl. 379-215.000.
Carlsen, Ralph, 5,550,907, Cl. 379-207.000.
Chang, Chuan-Chuen, 5,550,903, Cl. 379-115.000.
Chau, Toan; and Heffner, Ronald E., 5,550,906, Cl. 379-207.000.
Chavez, David L., Jr., 5,550,896, Cl. 379-59.000.
Chen, Howard Z.; and Cho, Alfred Y., 5,550,854, Cl. 372-45.000.
Chen, Juin-Hwey; and Watkins, Craig R., 5,550,543, Cl. 341-94.000.
Cloonan, Thomas J.; and Richards, Gaylord W., 5,550,815, Cl. 370-54.000.
Daoud, Bassel H., 5,550,916, Cl. 379-399.000.
Dautartas, Mindaugas F.; and Wong, Yiu-Huen, 5,550,088, Cl. 437-225.000.
DeJager, Dale S., 5,550,910, Cl. 379-220.000.
Doshi, Bharat T.; Ejzak, Richard P.; and Nanda, Sanjiv, 5,550,848, Cl. 371-33.000.
Dutta, Niloy K.; Fischer, Russell J.; Hunt, Neil E. J.; Passlack, Matthias; Schubert, Erdmann F.; and Zydzik, George J., 5,550,089, Cl. 437-225.000.
Ensor, Myra L.; Grewe, Anthony J.; and Singer, Howard M., 5,550,900, Cl. 379-67.000.
Erdogan, Turan; and Mizrahi, Victor, 5,550,654, Cl. 359-3.000.
Farrington, Richard W.; and Gardiner, William P., 5,550,458, Cl. 323-222.000.
Fowler, Glenn S.; Korn, David G.; Koutsofios, Elefterios; and North, Stephen C., 5,551,037, Cl. 395-700.000.

Gabbe, John D.; Ginsberg, Allen; and Robinson, Bethany S., 5,550,965, Cl. 395-154.000.
Goettelmann, John C.; and Macey, Christopher J., 5,551,015, Cl. 395-500.000.
Hassan, Ahmad M.; Johnston, Russel R.; and Krejci, John C., 5,550,646, Cl. 358-442.000.
Inniss, Daryl; Vengsarkar, Ashish M.; and Zhong, Qian, 5,550,948, Cl. 385-147.000.
Jagadish, Hosagrahar V.; and Qian, Xiaolei, 5,551,029, Cl. 395-600.000.
Jin, Sungho; McCormack, Mark T.; and Ramesh, Ramamoorthy, 5,549,977, Cl. 428-692.000.
Lifshitz, Nadia; and Luryi, Serge, 5,550,397, Cl. 257-412.000.
Mitra, Debasis, 5,551,057, Cl. 455-33.100.
Moore, Wayne T.; and Scarmalis, John, 5,550,700, Cl. 361-101.000.
Mottahed, Behzad D., 5,550,526, Cl. 338-22.00R.
Nagaraj, Krishnaswamy, 5,550,510, Cl. 330-253.000.
Offord, Glen E.; and Sonntag, Jeffrey L., 5,550,528, Cl. 340-146.200.
Partridge, B. Waring, III, 5,550,915, Cl. 379-355.000.
Pouzoullic, Gérard, 5,550,461, Cl. 323-269.000.
Seshadri, Nambirajan, 5,550,859, Cl. 375-216.000.
Silverman, David P., 5,550,905, Cl. 379-142.000.
Simpson, Jay R.; Wagener, Jefferson L.; and Walker, Kenneth L., 5,550,671, Cl. 359-337.000.
Sinclair, James D.; and Jankoski, Constance A., 5,549,512, Cl. 454-58.000.
Taylor, Gary N.; and Wheeler, David R., 5,550,007, Cl. 430-314.000.
Urbansky, Ralph, 5,550,876, Cl. 375-371.000.
Vella-Coleiro, George P., 5,550,813, Cl. 370-24.000.
Vengsarkar, Ashish M.; and Walker, Kenneth L., 5,550,940, Cl. 385-28.000.
Zhou, Yong, 5,550,580, Cl. 348-15.000.
Zhou, Yong, 5,550,581, Cl. 348-17.000.
Zirngibl, Martin, 5,550,666, Cl. 359-125.000.
Ludwig, Legl, to Textilmaschinenfabrik Dr. Ernst Fehrer Aktiengesellschaft. Apparatus for needling a nonwoven web with a rocking needle board. 5,548,881, Cl. 28-114.000.
Luebke, Roger D.; and Khoury, Randy H., to Harnischfeger Corporation. Hoist apparatus for positioning anode in smelting furnace. 5,549,799, Cl. 204-222.000.
Luger, Peter; Grafwallner, Franz; Peller, Helmuth; Müller, Martin; Malyshev, Valentin V.; Galperin, Sergey B.; and Logviniouk, Viacheslav P., to Deutsche Aerospace AG; and Tupolev AG. Temperature stratification-free storage of cryogenic liquids. 5,548,961, Cl. 62-47.100.
Luger, Peter; Grafwalliner, Franz; Peller, Helmuth; Müller, Martin; Malyshev, Valentin V.; Logviniouk, Viacheslav P.; Ozeretskovsky, Vladmimir S.; and Shengardt, Alexander S., to Daimler-Benz Aerospace AG; and Tupolev AG. Refueling process for cryogenic liquids. 5,548,962, Cl. 62-50.100.
Lui, Paul S.: *See—*
Wong, John J.; and Lui, Paul S., 5,550,649, Cl. 358-479.000.
Luman, David P.: *See—*
Goble, E. Marlowe; Luman, David P.; and Martins, Harold M., 5,549,613, Cl. 606-80.000.
Lundberg, Robert: *See—*
Larker, Hans; Lundberg, Robert; Mattsson, Bertil; Nilsson, Jan; and Pejryd, Lars, 5,549,770, Cl. 156-89.000.
Lundgren, Lise-Lotte: *See—*
Persson, Lars; Karlsson, Kjell; and Lundgren, Lise-Lotte, 5,549,120, Cl. 128-842.000.
Lundquist, Ingemar H.; Edwards, Stuart D.; Sharkey, Hugh R.; Lax, Ronald G.; Baker, James A., Jr.; and Sommer, Phillip R., to Vidamed, Inc. Transurethral needle ablation device with cystoscope and method for treatment of the prostate. 5,549,644, Cl. 604-22.000.
Luoma, Richard W.: *See—*
Boutaghou, Zine-Eddine; Cossette, Luke A.; and Luoma, Richard W., 5,550,689, Cl. 360-99.080.
Lunc, Keith G.; Benditt, David G.; Shultz, Jeffrey J.; Ockuly, John D.; and Fleischhacker, John J., to Daig Corporation. Coronary sinus catheter. 5,549,581, Cl. 604-282.000.
Luryi, Serge: *See—*
Lifshitz, Nadia; and Luryi, Serge, 5,550,397, Cl. 257-412.000.
Lutz, Gottfried: *See—*
Thiele, Hartmut; Brandstetter, Hermann; Toral, Jose; Hiller, Rainald; Scholtysik, Bernd; Lutz, Gottfried; and Liepold, August, 5,549,198, Cl. 206-307.000.
Lütz, Lena-Karin: *See—*
Ölund, Karin; Lütz, Lena-Karin; Bryland, Rickard; and Lindahl, Åke, 5,550,145, Cl. 514-396.000.
Lyco Manufacturing, Inc.: *See—*
Zittel, David R.; and Wornson, Douglas P., 5,550,927, Cl. 382-110.000.
Lyda, Eldon L., Jr. Impelling apparatus. 5,549,451, Cl. 415-218.100.
Lynn, Lawrence A.; and Larkin, Mark E., to Lynn, Lawrence A. Ex vivo blood isolation system. 5,549,569, Cl. 604-191.000.
Lynn, Lawrence A. Luer-receiving medical valve and fluid transfer method. 5,549,651, Cl. 604-283.000.
Lyon, Leonard E.; and Teed, Richard L., to International Business Machines Corporation. Method for file transfer. 5,551,032, Cl. 395-600.000.
Lyon, Richard F., to Apple Computer, Inc. Apparatus and method for allowing a synamic logic gate to operate statically. 5,550,487, Cl. 326-33.000.
Lyon, Wanda J.; Olson, Dennis G.; and Murano, Elsa A., to Iowa State University Research Foundation, Inc. Method and colicin composition for inhibiting *Escherichia coli* 0157:H7 in food products. 5,549,895, Cl. 424-115.000.
Lyondell Petrochemical Company: *See—*
Sheth, Paresh J.; Chandrashekar, Venkatramana; and Kolm, Roger R., 5,550,192, Cl. 525-194.000.
Lyons, James E.: *See—*
Bhinde, Manoj V.; Lyons, James E.; and Ellis, Paul E., Jr., 5,550,301, Cl. 568-835.000.
Lysaght, Michael J.: *See—*
Holland, Laura M.; Hammang, Joseph P.; Rudnick, Seth A.; Lysaght, Michael J.; and Dionne, Keith E., 5,550,050, Cl. 435-240.200.
M. H. Segan Limited Partnership: *See—*
Segan, Marc H.; and Newsome, Michael, 5,550,319, Cl. 84-103.000.
Ma, Jean-Luc: *See—*
Loridon, Joël; Ma, Jean-Luc; Marini, Alain; and Latu, Michel, 5,550,382, Cl. 250-390.040.
Maack, Hanss-Ingo: *See—*
Neitzel, Ulrich; Maack, Hanss-Ingo; and Pralow, Thomas, 5,550,888, Cl. 378-98.700.
Maag Pump Systems AG: *See—*
Mischler, Eduard; and Stehr, Roger, 5,549,462, Cl. 418-1.000.
MacArthur, Duncan W.: *See—*
Bolton, Richard D.; and MacArthur, Duncan W., 5,550,381, Cl. 250-380.000.
MacDermid, Incorporated: *See—*
Larson, Gary B.; Jobson, Brian; Johnson, James A.; and Sturni, Lance C., 5,550,006, Cl. 430-311.000.
Macey, Christopher J.: *See—*
Goettelmann, John C.; and Macey, Christopher J., 5,551,015, Cl. 395-500.000.
Macias, Isreal A. Self-locking cleat for rope, cable and the like. 5,548,873, Cl. 24-134.00R.
Mackey, Catherine J.: *See—*
Adams, Thomas R.; Chambers, Sheryl A.; Daines, Richard J.; Gordon-Kamm, William J.; Kausch, Albert P.; Lemaux, Peggy G.; Mackey, Catherine J.; Mangano, Mary L.; O'Brien, James V.; Rice, Thomas B.; Spencer, T. Michael; Start, William G.; and Willetts, Nancy G., 5,550,318, Cl. 800-205.000.
MacMahon, Edward B.; and Forte, Mark, to Osteotech of Virginia. Bony fixation and support of a prosthesis. 5,549,699, Cl. 623-22.000.
Macronex, Inc.: *See—*
Benson, Bradley J.; Chen, Xiannong; Cianciolo, George J.; Diaz, Jose-Luis; Ishaq, Khalid S.; Morris-Natschke, Susan L.; Uhing, Ronald J.; and Wong, Henry, 5,550,132, Cl. 514-269.000.
Madaus, Paul W.: *See—*
Pascucci, Gregory A.; Rasmussen, David E.; Decious, Gaylon M.; Garbe, James R.; Hyzer, Susan M.; Woest, Karen L.; Vairavan, Vairavan; Koch, David L.; Gottschalk, Donald A., Jr.; Burkhardt, Dennis E.; Standish, Darrell E.; Madaus, Paul W.; Spacek, Dan J.; Nesler, Clay G.; Stark, James K.; Mageland, Otto M.; Singers, Robert R.; and Wagner, Michael E., 5,550,980, Cl. 395-200.050.
Maddix, Michael D.: *See—*
Foster, Mark J.; Fakhruddin, Saifuddin T.; Walker, James L.; Mendelow, Matthew B.; Sun, Jiming; Brahman, Rodman S.; Krau, Michael P.; Willoughby, Brian D.; Maddix, Michael D.; Belt, Steven L.; Hovey, Scott A.; and Ruthenbeck, Mark A., 5,551,033, Cl. 395-650.000.
Maddock, Julie; Bley, Robert; and Altavilla, Patricia, to Mentor Corporation. Method and apparatus for filling mammary prostheses and tissue expanders. 5,549,672, Cl. 623-8.000.
Madduri, Hari H.: *See—*
Forman, Ira R.; and Madduri, Hari H., 5,550,973, Cl. 395-182.030.
Madison, Edwin L.: *See—*
Sambrook, Joseph F.; Madison, Edwin L.; Goldsmith, Elizabeth J.; Gething, Maryjane H.; and Gerard, Robert D., 5,550,042, Cl. 435-172.100.
Madison, Stephen A.; and Coope, Janet L., to Lever Brothers Company, Division of Conopco, Inc. Imine quaternary salts as bleach catalysts. 5,550,256, Cl. 548-473.000.
Madjerec, Michael T., to Hughes Missile Systems Company. Hybrid microcircuit glass-to-metal seal repair process. 5,549,925, Cl. 427-8.000.
Maeda, Kazuhiko: *See—*
Sato, Toshio; Ito, Ikuo; Maeda, Kazuhiko; Yokota, Keiichi; Namekata, Takeshi; and Nemoto, Akihiko, 5,550,284, Cl. 562-467.000.
Maeda, Satoshi: *See—*
Kayashima, Shigeo; Hasegawa, Shinya; Maeda, Satoshi; and Aritake, Hirokazu, 5,550,655, Cl. 359-17.000.
Maeda, Takayuki, to Texas Instruments Incorporated. Lead on chip semiconductor device having bus bars and crossing leads. 5,550,401, Cl. 257-666.000.
Maeng, Seop. Support stand for golf bag. 5,549,263, Cl. 248-96.000.
Magainin Pharmaceuticals Inc.: *See—*
Schonwetter, Barry S.; and Zasloff, Michael A., 5,550,109, Cl. 514-12.000.
Mageland, Otto M.: *See—*

Pascucci, Gregory A.; Rasmussen, David E.; Decious, Gaylon M.; Garbe, James R.; Hyzer, Susan M.; Woest, Karen L.; Vairavan, Vairavan; Koch, David L.; Gottschalk, Donald A., Jr.; Burkhardt, Dennis E.; Standish, Darrell E.; Madaus, Paul W.; Spacek, Dan J.; Nesler, Clay G.; Stark, James K.; Mageland, Otto M.; Singers, Robert R.; and Wagner, Michael E., 5,550,980, Cl. 395-200.050.

Magnetic Delivered Therapeutics, Inc.: *See*—
Volkonsky, Viktor A.; Dvukhsherstnov, Sergei D.; and Chernyakov, Sergei V., 5,549,915, Cl. 424-490.000.

Magnotte, Mark M.: *See*—
Tarter, Fred B.; Greene, Jeffrey M.; De Fazio, Thomas J.; Peck, Jan; Wylie, L. Stephen; Magnotte, Mark M.; Hall, Del; and Tarter, Scott A., 5,550,734, Cl. 364-401.00R.

Mahaffey, Steven J. Golf club iron with vibration dampening ramp bar. 5,549,297, Cl. 473-290.000.

Maher, Pascal J.; Filan, Finbarr J.; and Shaw, Christian, to Abbott Laboratories. Gelling treatment for suction drainage system. 5,549,585, Cl. 604-317.000.

Mahlbacher, James C.: *See*—
Boyette, James E., Jr.; Hammond, James M.; Lo, Jiann-Chang; Mahlbacher, James C.; Servedio, Michael; and Taheri, Ali R., 5,550,483, Cl. 324-758.000.

Mahó, Sándor; Tuba, Zoltán; Sánta, Csaba; Balogh, Gábor; Czajlikné Csizér, Éva; Lovasné Marsai, Mária; and Gálik, György, to Richter Gedeon Vegyeszeti Gyar Rt. Piperazinyl-bis(alkylamino)pyrimidine derivatives and process for preparing same. 5,550,240, Cl. 544-295.000.

Mahoney, Murray W., to Rockwell International Corporation. Process for imparting a localized fine grain microstructure in edge surfaces of aluminum alloy sheets. 5,549,768, Cl. 148-695.000.

Maillet, Fabienne: *See*—
Lerouge, Patrice; Roche, Philippe; Faucher, Catherine; Maillet, Fabienne; Denarie, Jean; Promé, Jean-Claude; and Truchet, Georges, 5,549,718, Cl. 47-57.600.

Majetich, Sara; McHenry, Michael; Scott, John H.; Brunsman, Elaine; and Kirkpatrick, Scott, to Carnegie Mellon University. Metal, alloy, or metal carbide nanoparticles and a process for forming same. 5,549,973, Cl. 428-403.000.

Majima, Toshihiko: *See*—
Tomita, Kan; Majima, Toshihiko; Tagawa, Toshiya; and Sumida, Hiroyasu, 5,550,623, Cl. 355-311.000.

Maki, Hidetaka: *See*—
Hasegawa, Yusuke; Komoriya, Isao; Akazaki, Shusuke; Maki, Hidetaka; and Abe, Satoru, 5,549,092, Cl. 123-478.000.

Maki, Shigeru: *See*—
Tanaka, Shigeo; Yamazaki, Hiroshi; Osakabe, Yoshio; Kotabe, Noriko; Iwamoto, Koji; Souma, Yoko; Imaura, Toshihiro; and Maki, Shigeru, 5,550,826, Cl. 370-85.800.

Makishima, Hideo: *See*—
Kuriyama, Toshihide; and Makishima, Hideo, 5,550,435, Cl. 315-169.100.

Makita, Naoki: *See*—
Funai, Takashi; Makita, Naoki; Yamamoto, Yoshitaka; and Morita, Tatsuo, 5,550,070, Cl. 437-41.000.

Mäkitalo, Valto J.: *See*—
Hulthom, Stig-Erik; Lilja, Launo L.; Mäkitalo, Valto J.; and Nyman, Bror G., 5,549,854, Cl. 261-87.000.

Malmmose, Erik: *See*—
Strout, D. Wayne; Crandall, Thomas L.; Slater, Michael J.; and Malmmose, Erik, 5,549,023, Cl. 82-112.000.

Malone, Kerry, to Blaw-Knox Construction Equipment Corporation. Position referencing, measuring and paving method and apparatus for a profiler and paver. 5,549,412, Cl. 404-84.100.

Maloney, Peter E., to Concept Outdoor Advertising, Inc. Boat seat stand. 5,549,072, Cl. 114-363.000.

Maly-Schreiber, Martha; and Huggins, Robert A., to Daimler-Benz AG. Electrochemical storage device. 5,549,981, Cl. 429-7.000.

Malyshev, Valentin V.: *See*—
Luger, Peter; Grafwallner, Franz; Peller, Helmuth; Müller, Martin; Malyshev, Valentin V.; Galperin, Sergey B.; and Logvinlouk, Viacheslav P., 5,548,961, Cl. 62-47.100.
Luger, Peter; Grafwalliner, Franz; Peller, Helmuth; Müller, Martin; Malyshev, Valentin V.; Logvinlouk, Viacheslav P.; Ozeretskovsky, Vladimir S.; and Shengardt, Alexander S., 5,548,962, Cl. 62-50.100.

Manda, Masato: *See*—
Nakamura, Shouji; Kimura, Shinji; Sugita, Yumiko; Yamamoto, Reki; Koda, Eriko; Kuwana, Toshiyuki; and Manda, Masato, 5,550,962, Cl. 395-133.000.

Mandl, Peter, to Genesis Microchip Inc. Image filtering with an efficient implementation of high order decimation digital filters. 5,550,764, Cl. 364-724.100.

Mando Machinery Corp. Ltd.: *See*—
Chung, Jong-Won, 5,550,418, Cl. 310-239.000.

Manero, Javier: *See*—
Schlosser, Hubert; Wingen, Rainer; and Manero, Javier, 5,550,236, Cl. 544-238.000.

Mangano, Mary L.: *See*—
Adams, Thomas R.; Chambers, Sheryl A.; Daines, Richard J.; Gordon-Kamm, William J.; Kausch, Albert P.; Lemaux, Peggy G.; Mackey, Catherine J.; Mangano, Mary L.; O'Brien, James V.; Rice, Thomas B.; Spencer, T. Michael; Start, William G.; and Willetts, Nancy G., 5,550,318, Cl. 800-205.000.

Manhole Adjucting Contractors Inc.: *See*—
Flores, Abel G.; Marriott, Gerald R.; and Castillo, Jose J., 5,549,457, Cl. 404-84.050.

Manini, Michelangelo, to FAAC S.p.A. Hydraulic gate movement device comprising separate support and gate-movement units. 5,549,033, Cl. 92-136.000.

Manissero, Claudio E.: *See*—
Vegega, Alexander M.; and Manissero, Claudio E., 5,550,157, Cl. 514-557.000.

Mann, Morris A. Blood sugar regulating composition and methods relating thereto. 5,550,113, Cl. 514-54.000.

Mann, Ralf; Lehmann, Wilfried; and Müller, Hermann, to Sihi GmbH & Co KG. Centrifugal pump of the sectional-casing design. 5,549,450, Cl. 415-214.100.

Mannesmann Aktiengesellschaft: *See*—
Häusler, Karl H., 5,548,987, Cl. 72-208.000.
Proske, Manfred; and Kulessa, Gerhard, 5,548,988, Cl. 72-252.500.

Manni-Kit, Inc.: *See*—
Krotseng, Kathryn G., 5,549,858, Cl. 264-46.400.

Mano, Kimihiro, to NEC Corporation. Supervisory image communication system through an integrated service digital network. 5,550,835, Cl. 370-110.100.

Manoah, Ron, to Kennedy, Bob. Animatian figurine. 5,549,500, Cl. 446-385.000.

Mansur Industries Inc.: *See*—
Mansur, Pierre G., 5,549,128, Cl. 134-104.100.

Mansur, Pierre G., to Mansur Industries Inc. General parts washer. 5,549,128, Cl. 134-104.100.

Manzo, Scott E.: *See*—
Green, David T.; Sienkiewicz, Henry R.; Ratcliff, Keith; Castro, Salvatore; and Manzo, Scott E., 5,549,617, Cl. 606-144.000.

Maquet, Freddy: *See*—
Bernaud, Maurice; and Maquet, Freddy, 5,550,521, Cl. 333-260.000.

Mar, Michael W., to H-O-H Research Inc. Continuous linear-torroidal extraction-distillation apparatus. 5,549,794, Cl. 202-169.000.

Maranowski, Steven A.: *See*—
Holonyak, Nick, Jr.; Maranowski, Steven A.; and Kish, Fred A., 5,550,081, Cl. 437-129.000.

Marban-Mendoza, Nahum: *See*—
Zuckerman, Bert M.; Dicklow, M. B.; and Marban-Mendoza, Nahum, 5,549,889, Cl. 424-93.430.

Marchini, Michael G.: *See*—
Bohnert, Larry J.; Ellis, Richard R.; and Marchini, Michael G., 5,550,341, Cl. 200-296.000.

Marco, Yves: *See*—
Godiard, Laurence; Marco, Yves; Pontier, Dominique; and Roby, Dominique, 5,550,228, Cl. 536-24.100.

Marcus, Arie, to Ben Gurion University of Negev Research & Development Aurthority. Microencapsulated composition containing chlorpyrifos or endosulfsan. 5,549,903, Cl. 424-408.000.

MarcValve Corporation: *See*—
Browne, Ronnie A.; and Baril, Marc, 5,549,134, Cl. 137-606.000.

Margulies, Marcel: *See*—
Schawe, Jürgen; and Margulies, Marcel, 5,549,387, Cl. 374-10.000.

Marini, Alain: *See*—
Loridon, Joël; Ma, Jean-Luc; Marini, Alain; and Latu, Michel, 5,550,382, Cl. 250-390.040.

Mark, David A.; Twyman, Diana; and Buckley, Donna, to Clintec Nutrition Co. Enternal composition for pediatric patients. 5,549,905, Cl. 424-439.000.

Markandey, Vishal; and Hewlett, Gregory J., to Texas Instruments Incorporated. Film mode progressive scan conversion. 5,550,592, Cl. 348-448.000.

Market Forge Industries: *See*—
Kolvites, Albert, 5,549,038, Cl. 99-330.000.

Markstedt, Maj E. H.: *See*—
Ellis, Martin K.; Lindstedt, Sven T.; Lock, Edward A.; Markstedt, Maj E. H.; Mutter, Linda C.; and Prishylla, Michael P., 5,550,165, Cl. 514-676.000.

Marocco, Norbert. Toggle connector for shutter control bar. 5,548,925, Cl. 49-74.100.

Marot, Christine; Petit, Pierre; and Vigor, Xavier, to L'air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Process for the production of a gas by adsorption. 5,549,733, Cl. 95-100.000.

Marposs S.p.A.: *See*—
Cattani, Carlo, 5,549,019, Cl. 74-573.00R.

Marquardt, Michael E.: *See*—
Hart, Jack E.; Burrows, Ralph M.; and Marquardt, Michael E., 5,549,258, Cl. 244-118.100.

Marriott, Gerald R.: *See*—
Flores, Abel G.; Marriott, Gerald R.; and Castillo, Jose J., 5,549,457, Cl. 404-84.050.

Marsh, Catherine L.: *See*—
Licht, Stuart L.; and Marsh, Catherine L., 5,549,991, Cl. 429-218.000.

Marshall, Glen R., to Shell Oil Company. Method and device for containing fuel spills and leaks. 5,550,532, Cl. 340-604.000.

Marshall, John: *See*—
Cheng, Seng H.; Marshall, John; Gregory, Richard J.; and Rafter, Patrick W., 5,550,056, Cl. 435-240.270.

Marsik, Ronald, to Bagcraft Corporation of America. Process for manufacturing flap-style square-bottom bags. 5,549,538, Cl. 493-218.000.

Martek Corporation: *See*—
Kyle, David J., 5,550,156, Cl. 514-547.000.

Martel, Lawrence B.: *See*—
Yun, Young W.; Martel, Lawrence B.; Janick, Keith; and Bruno, Ralph L., 5,549,331, Cl. 280-843.000.

Martin, Andrew R., to International Business Machines Corporation. Directory based computer environment. 5,551,038, Cl. 395-700.000.

Martin, B. Morgan; and Eales, Ian. Apparatus and method for patch recording and recall. 5,550,755, Cl. 364-514.00R.

Martin, Heinz: *See*—
Schingnitz, Manfred; Göhler, Peter; and Martin, Heinz, 5,550,312, Cl. 588-205.000.

Martin, Jeffrey S.: *See*—
Abbasi, Salman Y.; Gerszberg, Irwin; Kendig, Eugene T.; Martin, Jeffrey S.; and Oplinger, Thomas M., 5,550,898, Cl. 379-59.000.

Martin Marietta Corporation: *See*—
Patel, Bhikhu, 5,550,669, Cl. 359-224.000.

Martin, Robin P. Self sheathing safety needle. 5,549,558, Cl. 604-110.000.

Martinez, Louis, to Radio Telecom & Technology, Inc. Two-way cable tv conversion system. 5,550,579, Cl. 348-12.000.

Martinou, Robert L.: *See*—
Barreau, Eric L. P.; Honnorat, Yves C. L. A.; Martinou, Robert L.; and Richin, Catherine M. H., 5,549,809, Cl. 205-222.000.

Martins, Harold M.: *See*—
Goble, E. Marlowe; Luman, David P.; and Martins, Harold M., 5,549,613, Cl. 606-80.000.

Martisala, Jaime. Machine for automatically positioning and aligning containers. 5,549,189, Cl. 198-380.000.

Maruyama, Masakatsu: *See*—
Sakiyama, Shiro; Dosho, Shiro; Maruyama, Masakatsu; Nakahira, Hiroyuki; Shono, Toshiyuki; and Matsuzawa, Akira, 5,550,544, Cl. 341-155.000.

Maruyama, Yoichi; and Ihama, Mikio, to Fuji Photo Film Co., Ltd. Silver halide photographic emulsion, method of manufacturing the same, and photographic light sensitive material. 5,550,014, Cl. 430-567.000.

Masaie, Norio; Tachibana, Tomoyuki; Shimizu, Hiroyuki; Ito, Kazuhiko; Matsuguchi, Akira; Sasa, Yoshikazu; and Furuya, Atsushi, to Kabushiki Kaisha Kobe Seiko Sho. Flux-cored wire and solid wire for arc welding. 5,550,348, Cl. 219-145.220.

Masaki, Ryoso: *See*—
Mutoh, Nobuyoshi; Masaki, Ryoso; Miyazaki, Taizou; Tajima, Fumio; and Ohmae, Tsutomu, 5,549,172, Cl. 180-65.100.

Mase, Hisao: *See*—
Kiyama, Tadahiro; Mase, Hisao; Tsuji, Hiroshi; and Kinukawa, Hiroshi, 5,551,036, Cl. 395-700.000.

Mashita, Mitsuyuki: *See*—
Ishidoya, Masahiro; Shibato, Kishio; Komoto, Keiji; Shibamoto, Kenji; Mashita, Mitsuyuki; and Ohe, Osamu, 5,549,932, Cl. 427-385.500.

Maslak, Samuel H.: *See*—
Wright, J. Nelson; Cole, Christopher R.; Gee, Albert; Larsen, Hugh G.; and Maslak, Samuel H., 5,549,111, Cl. 128-742.000.

Maslanka, Daniel C.: *See*—
Tang, Manh; Kordovich, Vlade J.; and Maslanka, Daniel C., 5,549,400, Cl. 400-236.000.

Maslow, Andrew D.: *See*—
Wuerslin, Peter C.; Liu, Frederick E.; and Maslow, Andrew D., 5,549,329, Cl. 280-821.000.

Mass Technology (H.K.) Ltd.: *See*—
Foo, Onn F., 5,549,496, Cl. 445-26.000.

Massachusetts Institute of Technology: *See*—
Bozler, Carl O.; Fan, John C. C.; and McClelland, Robert W., 5,549,747, Cl. 117-43.000.

Massimini, Sergio: *See*—
Bettarini, Franco; Capuzzi, Luigi; La Porta, Piero; Massimini, Sergio; and Caprioli, Vincenzo, 5,550,140, Cl. 514-363.000.

Masters, Rodney H.: *See*—
Cruchelow, Albert; and Masters, Rodney H., 5,549,070, Cl. 114-263.000.

Masuda, Steven R.: *See*—
Paciorek, Kazimiera J. L.; Lin, Wen-Huey; Masuda, Steven R.; and Nakahara, James H., 5,550,277, Cl. 558-194.000.

Masui, Ryuichi: *See*—
Nagai, Shigekazu; Sakurai, Shuuzou; and Masui, Ryuichi, 5,549,340, Cl. 294-64.100.

Masuko, Takashi: *See*—
Kai, Kazuyuki; Hamano, Masahisa; Homma, Hitoshi; Mori, Akira; and Masuko, Takashi, 5,549,244, Cl. 236-34.500.

Masumoto, Tsuyoshi: *See*—
Yamaguchi, Tadashi; Nosaki, Katsutoshi; Akihisa, Inoue; and Masumoto, Tsuyoshi, 5,549,951, Cl. 428-565.000.

Matec Holding AG: *See*—
Hielscher, Peter, 5,550,338, Cl. 181-290.000.

Matero, Jorma: *See*—
Hulkko, Jaakko; Matero, Jorma; and Vilmi, Toivo, 5,551,067, Cl. 455-88.000.

Mathejka, Horst W.: *See*—
Windhaus, Ernst; Seiler, Bernard; Meyer, Peter; Erwig, Peter; Mathejka, Horst W.; Patalon, Heinrich; Holz, Peter, deceased, 5,548,882, Cl. 29-336.000.

Matheny, John R.; and White, Christopher, to Taligent, Inc. Interaction framework system. 5,550,563, Cl. 345-168.000.

Matheny, John R.; White, Christopher; and Davis, Mark E., to Taligent, Inc. System for providing locale dependent user interface for presenting control graphic which has different contents or same contents displayed in a predetermined order. 5,551,055, Cl. 395-882.000.

Matoba, Mikio: *See*—
Sugawara, Ken; Sakairi, Shigeru; Matoba, Mikio; Sasaki, Toshio; Shimohigashi, Katsuhiro; and Kimura, Katsutaka, 5,550,781, Cl. 365-222.000.

Matoushek, Robert J.: *See*—
Greene, William J.; Matoushek, Robert J.; Gorman, Harry A.; and Weigand, John G., 5,549,864, Cl. 264-280.000.

Matsubara, Naoki: *See*—
Yamamoto, Yuuri; Takahashi, Kenichi; Ohnishi, Hiroshi; Kunieda, Yoshinori; and Matsubara, Naoki, 5,550,867, Cl. 375-324.000.

Matsubayashi, Katsuyoshi, to NEC Corporation. Apparatus for driving a resistance film type input device. 5,550,329, Cl. 178-18.000.

Matsuda, Shinji, to Fujitsu Limited. Printed-circuit board including circuit pattern having location to be cut if necessary. 5,550,325, Cl. 174-250.000.

Matsuda, Yoshio: *See*—
Hidaka, Hideto; Fujishima, Kazuyasu; and Matsuda, Yoshio, 5,550,769, Cl. 365-63.000.

Matsuguchi, Akira: *See*—
Masaie, Norio; Tachibana, Tomoyuki; Shimizu, Hiroyuki; Ito, Kazuhiko; Matsuguchi, Akira; Sasa, Yoshikazu; and Furuya, Atsushi, 5,550,348, Cl. 219-145.220.

Matsui, Hideo: *See*—
Itoh, Mitsuhiro; and Matsui, Hideo, 5,550,451, Cl. 318-811.000.

Matsumoto, Hiromitsu: *See*—
Ozawa, Toshikazu; Imai, Chizuko; and Matsumoto, Hiromitsu, 5,549,086, Cl. 123-193.600.

Matsumoto, Hiroshi: *See*—
Kojima, Yasushi; and Matsumoto, Hiroshi, 5,550,386, Cl. 250-588.000.

Matsumoto, Naoki: *See*—
Torii, Akito; Matsumoto, Naoki; and Takeda, Shigeru, 5,549,175, Cl. 180-209.000.

Matsumoto, Takahiro: *See*—
Saitoh, Kenji; Sentoku, Koichi; and Matsumoto, Takahiro, 5,550,635, Cl. 356-401.000.

Matsumoto, Takashi, to Fujitsu Limited. Magnetic disk apparatus including magnetic head unloading mechanism. 5,550,695, Cl. 360-105.000.

Matsumura, Masafumi; and Kanamori, Junichiro, to Nippondenso Co., Ltd. Screw tightening apparatus. 5,549,169, Cl. 173-176.000.

Matsuo, Giichi; Sakai, Akira; Rains, Jeral; and Elley, Dayton, to Structural Metals, Inc.; and NKK Corporation. Method and apparatus for simultaneously forming at least four metal rounds. 5,548,986, Cl. 72-204.000.

Matsuo, Masaaki; Tsuji, Kiyoshi; Ogino, Takashi; and Konishi, Nobukiyo, to Fujisawa Pharmaceutical Co., Ltd. Pyrazole derivatives, processes for preparation thereof and pharmaceutical composition comprising the same. 5,550,147, Cl. 514-406.000.

Matsuo, Noritada: *See*—
Tsushima, Kazunori; Iwasaki, Tomonori; Suzuki, Masaya; and Matsuo, Noritada, 5,550,260, Cl. 549-421.000.

Matsuoka, Hidetoshi; Hashimoto, Kouji; and Kobayashi, Junji, to Canon Kabushiki Kaisha. Apparatus for tape loading device. 5,550,686, Cl. 360-85.000.

Matsushima, Asao; Ooshiba, Takeo; Etoh, Yoshihiko; Kinoshita, Akira; Suzuki, Tomoko; and Sakimura, Tomoo, to Konica Corporation. Electrophotographic photoreceptor. 5,549,997, Cl. 430-59.000.

Matsushita Electric Corporation of America: *See*—
Gelb, Edward J., 5,550,984, Cl. 395-200.170.
Inoue, Shuji, 5,550,542, Cl. 341-67.000.

Matsushita Electric Industrial Co., Ltd: *See*—
Hori, Tatsuya; Fukuhara, Hiroyuki; Muramatsu, Shigeru; and Yamada, Sadayuki, 5,549,466, Cl. 418-55.100.
Komakine, Hiroshi; Terada, Hiroshi; Yamamoto, Hajime; Hayashi, Kazumasa; and Aizawa, Masahiro, 5,550,619, Cl. 355-246.000.
Nakajima, Akiko, 5,550,741, Cl. 364-419.140.
Nishiyama, Tamotsu, 5,550,714, Cl. 364-490.000.
Ohmi, Shinichiro; Imai, Hiroyuki; Ando, Kazuhiro; and Suematsu, Takayuki, 5,550,756, Cl. 364-514.00R.
Sakemi, Shoji; and Nishinaka, Teruaki, 5,548,891, Cl. 29-842.000.
Sakiyama, Shiro; Dosho, Shiro; Maruyama, Masakatsu; Nakahira, Hiroyuki; Shono, Toshiyuki; and Matsuzawa, Akira, 5,550,544, Cl. 341-155.000.
Tanaka, Shigeo; Yamazaki, Hiroshi; Osakabe, Yoshio; Kotabe, Noriko; Iwamoto, Koji; Souma, Yoko; Imaura, Toshihiro; and Maki, Shigeru, 5,550,826, Cl. 370-85.800.
Tohma, Kiyhokazu; Yoshimoto, Kazunari; Sugita, Ryuji; and Ishida, Tatsuaki, 5,549,936, Cl. 427-566.000.
Ueyama, Toshinari; and Nagagata, Nobuyoshi, 5,550,442, Cl. 315-371.000.
Yamamoto, Yuuri; Takahashi, Kenichi; Ohnishi, Hiroshi; Kunieda, Yoshinori; and Matsubara, Naoki, 5,550,867, Cl. 375-324.000.

Matsushita Electric Works, Ltd.: *See*—
Tanahashi, Masao; Shiba, Tekeshi; and Ikuta, Toshio, 5,548,899, Cl. 30-43.920.

Matsushita Electronics Corporation: *See*—
Abe, Wataru; Yamamoto, Akihiro; Nakajima, Takehiko; and Kojima, Makoto, 5,550,775, Cl. 365-189.110.
Hayama, Hidekazu; Miura, Yasunori; Suzuki, Atsushi; and Ishiai, Keizou, 5,550,429, Cl. 313-479.000.

Kunitomo, Yoshinobu; Nozu, Makoto; Sakashita, Yasuyuki; Tsukamoto, Masahide; Nakatani, Seichi; Saeki, Keiji; and Kitayama, Yoshifumi, 5,550,408, Cl. 257-737.000.

Matsushita Seiko Co., Ltd.: *See*—
Hori, Tatsuya; Fukuhara, Hiroyuki; Muramatsu, Shigeru; and Yamada, Sadayuki, 5,549,466, Cl. 418-55.100.

Matsuto, Takushi, to Honda Giken Kogyo Kabushiki Kaisha. Liquid pressure controller. 5,549,367, Cl. 303-114.100.

Matsuura, Hitoshi; and Tsukamoto, Osamu, to Fanuc Limited. Digitizing control apparatus. 5,550,330, Cl. 178-18.000.

Matsuzawa, Akira: *See*—
Sakiyama, Shiro; Dosho, Shiro; Maruyama, Masakatsu; Nakahira, Hiroyuki; Shono, Toshiyuki; and Matsuzawa, Akira, 5,550,544, Cl. 341-155.000.

Mattelmaki, Esko: *See*—
Nykanen, Tuomo S.; Greenwood, Brian F.; Gullichsen, Johan; Kiiskila, Erkki; Mattelmaki, Esko; Phillips, Joseph R.; Richardsen, Jan T.; Ryham, Rolf; Soderman, Jarmo; and Wiklund, Karl G., 5,549,788, Cl. 162-29.000.

Matteson, Robert W.: *See*—
Davis, Leighton I., Jr.; Sieja, Thomas F.; Dage, Gerhard A.; and Matteson, Robert W., 5,549,152, Cl. 165-201.000.

Matthews, Kent R.; Schakel, Eric G.; Morton, Lowell K.; and Young, James F., to Schuller International, Inc. Apparatus for coating a molded fibrous workpiece. 5,549,753, Cl. 118-316.000.

Mattson, Richard L.; and Menon, Jaishankar M., to International Business Machines Corporation. System for managing log structured array (LSA) of DASDS by managing segment space availability and reclaiming regions of segments using garbage collection procedure. 5,551,003, Cl. 395-463.000.

Mattsson, Bertil: *See*—
Larker, Hans; Lundberg, Robert; Mattsson, Bertil; Nilsson, Jan; and Pejryd, Lars, 5,549,770, Cl. 156-89.000.

Mauer, Mary B., to Texas Children's Hospital. Vest for the physiological monitoring of children. 5,549,116, Cl. 128-696.000.

Maunders, Harry M.; and Partington, Stephen R., to BP Chemicals Limited. Process for dehydrogenation of hydrocarbon feeds. 5,550,309, Cl. 585-654.000.

Maushart, Josef: *See*—
Schulz, Hans; and Maushart, Josef, 5,549,975, Cl. 428-553.000.

Maute, Michel: *See*—
Gateau, Paul; Maute, Michel; and Feugier, Alain, 5,549,877, Cl. 423-245.300.

Maxcess Technologies, Inc.: *See*—
Mead, Bruce E., 5,548,932, Cl. 52-126.600.

Maxwell, Horace J.; Sirchio, Ronald J.; and Henofer, James J., to Keystone International Holdings Corp. Automatic recirculation valve. 5,549,131, Cl. 137-115.180.

Mayeda, Rodger: *See*—
Lau, Ken; Yee, Jimmie; Mayeda, Rodger; Riccomini, Julian; and Ilyin, Mary, 5,550,476, Cl. 324-522.000.

Mayer, Dieter: *See*—
Ehrnsberger, Manfred; Mayer, Dieter; and Siegner, Helge, 5,549,182, Cl. 188-129.000.

Mayka, Lawrence G.: *See*—
Arnold, Erich C.; Gagliardi, Olivia M.; Hyatt, Wayne E.; Mayka, Lawrence G.; and Morgan, Todd C., 5,551,035, Cl. 395-650.000.

Mayr-Fröhlich, Mathias; and Utzt, Alfred, to Knorr-Bremse Systeme fur Nutzfahrzeuge GmbH. Method and device for adjusting the brake force distribution between a towing vehicle and a trailer. 5,549,364, Cl. 303-9.690.

Maytag Corporation: *See*—
Bales, Michael E.; Noel, Paul D.; and Schatz, Steve M., 5,549,098, Cl. 126-211.000.

Mazarac, Kevin P. Rear-mounted vehicle mirror. 5,550,681, Cl. 359-872.000.

Mazda Motor Corporation: *See*—
Goto, Tsuyoshi; and Sugimoto, Hiroyuki, 5,549,095, Cl. 123-559.100.
Kurata, Yasuhiko; Akiyama, Yuichi; and Michihira, Osamu, 5,550,830, Cl. 370-95.200.

Mazer, Terrence B.; Walton, Joseph E.; Geckle, Ronita K.; Piontek, Carl J.; Duel, Susan B.; Daab-Krzykowski, Andre; Joseph, Robert L.; Pierson, William G.; Loughrin, Thomas D.; and Osip, Thomas W., to Abbott Laboratories. Method of adding marker dye to nutritional product during enteral tube feeding. 5,549,550, Cl. 604-83.000.

McBrayer, Michael S.; Kortenbach, Jurgen A.; and Slater, Charles R., to Symbiosis Corporation. Endoscopic bipolar electrocautery instruments. 5,549,606, Cl. 606-51.000.

McCabe, Thomas: *See*—
Kanjo, Wajih; Smith, Eric; Demoise, Thomas J.; Girotti, Michael; McCabe, Thomas; Fessler, Charles B.; and Natschke, Scott, 5,549,363, Cl. 303-7.000.

McCandless, Timothy P.: *See*—
Brunner, Hans; McCandless, Timothy P.; Sparks, Randall B.; Cuthbertson, Robert J.; Durand, Jacques; and Fogel, Steven M., 5,550,971, Cl. 395-161.000.

McCarthy, Thomas F., to Howmedica Inc. Modular hip prosthesis. 5,549,706, Cl. 623-23.000.

McClelland, Robert W.: *See*—
Bozler, Carl O.; Fan, John C. C.; and McClelland, Robert W., 5,549,747, Cl. 117-43.000.

McClintock, Cameron R.: *See*—
Cliff, Richard G.; Cope, L. Todd; McClintock, Cameron R.; Leong, William; Watson, James A.; Huang, Joseph; and Ahanin, Bahram, 5,550,782, Cl. 365-230.030.

McClinton, John; and Rich, Russell P., to Burns & Russell Company of Baltimore City, The. Composite for turning a corner or forming a column, mold and method for producing glazed unit for such. 5,548,936, Cl. 52-284.000.

McClullough, Richard: *See*—
Gale, Ronald P.; McClullough, Richard; and Fan, John C. C., 5,550,604, Cl. 353-31.000.

McClure, David C., to SGS-Thomson Microelectronics, Inc. Structure which renders faulty data of a cache memory uncacheable in order that a partially functional cache memory may be utilized. 5,551,004, Cl. 395-465.000.

McClure, Kelly H.; and Moberg, Sheldon B., to Pacesetter, Inc. Cardiac wall motion-based automatic capture verification system and method. 5,549,652, Cl. 607-28.000.

McClure, Kelly H.: *See*—
Bornzin, Gene A.; McClure, Kelly H.; Mouchawar, Gabriel; and Moberg, Sheldon B., 5,549,650, Cl. 607-24.000.

McClurg, James J.: *See*—
Morrison, Darrell R.; Nessa, James L.; and McClurg, James J., 5,550,417, Cl. 310-183.000.

McCooey, David R.: *See*—
Labrie, Craig B.; McCooey, David R.; and Bemis, Claude E., 5,549,324, Cl. 280-728.300.

McCormack, Mark T.: *See*—
Jin, Sungho; McCormack, Mark T.; and Ramesh, Ramamoorthy, 5,549,977, Cl. 428-692.000.

McCormick, John, to LSI Logic Corporation. Multi-layer tab tape having distinct signal, power and ground planes and wafer probe card with multi-layer substrate. 5,550,406, Cl. 257-666.000.

McCourt, Karen M.: *See*—
D'Ambrogio, William J.; McCourt, Karen M.; Phillips, Wayne D.; Saleh, Patricia D.; and Seip, Barry S., 5,550,834, Cl. 370-110.100.

McCreery, Cynthia C.: *See*—
Busico, Kathleen; and McCreery, Cynthia C., 5,549,207, Cl. 209-614.000.

McCulloch, William C., to Loeff, Thomas. Motor actuated latch mechanism. 5,549,337, Cl. 292-225.000.

McCulloh, Kevin G.: *See*—
Coffield, Kelly M.; Cantrill, Dean A.; McCulloh, Kevin G.; and Mickelson, Sammy K., 5,549,736, Cl. 96-133.000.

McGhan Medical Corporation: *See*—
Waybright, Richard S.; and Carlisle, Daniel A., 5,549,671, Cl. 623-8.000.

McGrew, Henry E., Jr. Sewage treatment system. 5,549,818, Cl. 210-195.400.

McGuire, David. Universal trailer light locator. 5,549,478, Cl. 439-35.000.

McGuire, Travis C.; Palmer, Guy H.; Barbet, Anthony F.; and Davis, William C. Immunogenic anaplasma marginale surface antigens, compositions, and methods of use. 5,549,898, Cl. 424-269.100.

M. Cheng, Josephine; Mohan, Chandrasekaran; and Pirahesh, Mir H., to International Business Machines Corporation. Program storage device and computer program product for outer join operations using responsibility regions assigned to inner tables in a relational database. 5,551,031, Cl. 395-600.000.

McHenry, Michael: *See*—
Majetich, Sara; McHenry, Michael; Scott, John H.; Brunsman, Elaine; and Kirkpatrick, Scott, 5,549,973, Cl. 428-403.000.

MCI Communications Corporation: *See*—
McLeod, Clark E.; Hogan, Steven J.; Feltz, Kristi T.; Murdock, Douglas R.; and Hanson, Van E., 5,550,899, Cl. 379-67.000.
O'Reilly, Daniel L.; and Brazier, Matthew J., 5,551,025, Cl. 395-600.000.

McInerney, William L.; Osborn, Norbert L.; and Schruf, Gerhard M., to WRR Industries, Inc. Turbomachinery incorporating heat transfer reduction features. 5,549,449, Cl. 415-177.000.

McIntyre, John; Brown, Peter S.; and Morse, Stephen A., to Devices for Vascular Intervention, Inc. Delivery of intracorporeal probes. 5,549,601, Cl. 606-15.000.

McKinney, James C.: *See*—
Weissman, Neal V.; and McKinney, James C., 5,549,209, Cl. 215-228.000.

McLeod, Clark E.; Hogan, Steven J.; Feltz, Kristi T.; Murdock, Douglas R.; and Hanson, Van E., to MCI Communications Corporation. Long distance telephone switching system with enhanced subscriber services. 5,550,899, Cl. 379-67.000.

McManus, James W., to Merck & Co., Inc. Process for the preparation of α-aminoacylanilides. 5,550,288, Cl. 564-194.000.

McMaster, Samuel; and Kirwan, Stephen A., to Post Office, The. Network terminating unit for connecting analog and digital communication systems to a digital network. 5,550,913, Cl. 379-230.000.

McMullan, Jay C., Jr.; Burleson, David B.; Huntley, Donald R.; and Schaubs, Randolph J., to Scientific-Atlanta, Inc. Headend processing for a digital transmission system. 5,550,825, Cl. 370-73.000.

McNeil (Ohio) Corporation: *See*—
Bevington, Jack T., 5,549,447, Cl. 415-115.000.

McNeill, Andrew B.: *See*—
Keener, Don S.; McNeill, Andrew B.; Newsom, Thomas H.; Scheiern, Kevin L.; Voorhees, Richard W.; and Wachtel, Edward I., 5,550,990, Cl. 395-309.000.

McNelley, Steve; and Williams, Eric, to Videoptic Research. Teleconferencing camcorder. 5,550,754, Cl. 364-514.00A.

McTighe, Timothy: *See*—
Graham, John W.; McTighe, Timothy; and Mraz, Paul, 5,549,700, Cl. 623-22.000.

Mead, Bruce E., to Maxcess Technologies, Inc. Adjustable cable tray support system. 5,548,932, Cl. 52-126.600.

Mead, Ralph T.: *See*—
Takeuchi, Esther S.; and Mead, Ralph T., 5,549,717, Cl. 29-623.200.

Meador, James W.; Kraft, Thomas L.; and Miller, Thomas G., to KVM Technologies, Inc. Liquid container sample transfer method and apparatus. 5,549,141, Cl. 141-1.000.

Meadors, Anthony W.: *See*—
Danek, Daniel J.; Etters, Harry N., Jr.; Genz, Earl J.; Johnston, Brigg A.; Littman, Iran R.; Long, John N.; Meadors, Anthony W.; Mercadante, Nicholas J.; Orrico, Mario M.; Schramme, Stephan H.; and Shedore, Charles J., 5,550,342, Cl. 200-448.000.

Mecaplast Sam: *See*—
Morando, Patrick, 5,548,930, Cl. 49-502.000.

Med Serve Group, Inc.: *See*—
Reiss, Hans W., 5,549,656, Cl. 607-48.000.

Medhekar, Ajit K.: *See*—
Stephens, Michael C., Jr.; and Medhekar, Ajit K., 5,550,500, Cl. 327-261.000.
Stephens, Michael C., Jr.; and Medhekar, Ajit K., 5,550,783, Cl. 365-233.000.

Media Vision, Inc.: *See*—
Hodgson, David O.; and Gochnauer, Daniel B., 5,550,566, Cl. 345-202.000.

Medtronic, Inc.: *See*—
Erickson, Donald J., 5,549,655, Cl. 607-42.000.
Heller, Bernard F.; Schmidt, Craig L.; Nutzman, Thomas M.; and Lessar, Joseph F., 5,549,985, Cl. 429-157.000.
Min, Xiaoyi; Mongeon, Luc R.; Mehra, Rahul; Anderson, Kenneth M.; DeGroot, Paul J.; and Hill, Michael R. S., 5,549,642, Cl. 607-5.000.
Ndondo-Lay, Robert; and Rupp, Garry E., 5,549,556, Cl. 604-102.000.
Powell, Richard M., 5,549,654, Cl. 607-32.000.
Steinke, Thomas A.; Gulachenski, Joseph; and Curtis, R. Thomas, III, 5,549,557, Cl. 604-103.000.

Meenan, Peter M.: *See*—
Corby, Nelson R., Jr.; Meenan, Peter M.; Solanas, Claude H., III; and Vickerman, David C., 5,550,758, Cl. 364-571.030.

Mehra, Rahul: *See*—
Min, Xiaoyi; Mongeon, Luc R.; Mehra, Rahul; Anderson, Kenneth M.; DeGroot, Paul J.; and Hill, Michael R. S., 5,549,642, Cl. 607-5.000.

Mehreteab, Ammanuel: *See*—
Mondin, Myriam; Loth, Myriam; Broze, Guy; Mehreteab, Ammanuel; Thomas, Barbara; Adamy, Steven; and Bala, Frank, Jr., 5,549,840, Cl. 510-365.000.

Meibock, Antonin A.; and Svensson, John E., to K-2 Corporation. In-line roller skate with improved frame assembly. 5,549,310, Cl. 280-11.220.

Meier, Markus; Urech, Werner; and Wueger, Karl, to Elpatronic AG. Process and device for welding sheets by laser to form compound sheets. 5,550,345, Cl. 219-121.630.

Meier, Michael: *See*—
Christidis, Yani; and Meier, Michael, 5,550,286, Cl. 564-139.000.

Meinass, Helmut J.: *See*—
Schulte, Reinhard W.; Lesyna, David A.; Wicks, William J.; and Meinass, Helmut J., 5,549,616, Cl. 606-130.000.

Mekler, Dan. Method and receptacles for growing plants, particularly tissue culture plant precursors. 5,548,924, Cl. 47-69.000.

Melvin, Lawrence S., Jr.: *See*—
Koch, Kevin; Melvin, Lawrence S., Jr.; Reiter, Lawrence A.; and Ruggeri, Sally G., 5,550,152, Cl. 514-458.000.

MELZER Maschinenbau GmbH: *See*—
Baist, Bernhard, 5,549,782, Cl. 156-540.000.

MEMC Electronic Materials, Inc.: *See*—
Holzer, Joseph C.; Korb, Harold W.; and Drescher, Klaus, 5,550,374, Cl. 250-339.070.

Mendelow, Matthew B.: *See*—
Foster, Mark J.; Fakhruddin, Saifuddin T.; Walker, James L.; Mendelow, Matthew B.; Sun, Jiming; Brahman, Rodman S.; Krau, Michael P.; Willoughby, Brian D.; Maddix, Michael D.; Belt, Steven L.; Hovey, Scott A.; and Ruthenbeck, Mark A., 5,551,033, Cl. 395-650.000.

Mendes, Emanuel; Iron, Gideon; and Harel, Avikam, to Amron, Ltd. Method of treating acne. 5,549,660, Cl. 607-088.000.

Menegatto, Carlo, to Menegatto S.r.l. Device for cutting yarn when inserting yarn on a yarn-holder cop in automated winding apparatus. 5,549,254, Cl. 242-19.000.

Menegatto S.r.l.: *See*—
Menegatto, Carlo, 5,549,254, Cl. 242-19.000.

Menon, Jaishankar M.: *See*—
Mattson, Richard L.; and Menon, Jaishankar M., 5,551,003, Cl. 395-463.000.

Mensa-Wilmot, Graham; and Keith, Carl W., to Smith International, Inc. Drill bit with performance-improving cutting structure. 5,549,171, Cl. 175-431.000.

Mentor Corporation: *See*—
Maddock, Julie; Bley, Robert; and Altavilla, Patricia, 5,549,672, Cl. 623-8.000.

Mentor Graphics Corporation: *See*—
Voll, Robert; Berg, William C.; Sergent, Brad; and Stevens, Sam, 5,551,028, Cl. 395-600.000.
Wolff, Daniel W., 5,550,750, Cl. 364-491.000.

Mercadante, Nicholas J.: *See*—
Danek, Daniel J.; Etters, Harry N., Jr.; Genz, Earl J.; Johnston, Brigg A.; Littman, Iran R.; Long, John N.; Meadors, Anthony W.; Mercadante, Nicholas J.; Orrico, Mario M.; Schramme, Stephan H.; and Shedore, Charles J., 5,550,342, Cl. 200-448.000.

Mercedes Benz AG: *See*—
Häussler, Bernd; Meyer, Benno; and Münk, German, 5,550,804, Cl. 370-16.000.
Ohlendorf, Rolf; Strauber, Hans-Jürgen; Aust, Rainer; and Strobel, Wolfgang, 5,549,081, Cl. 123-90.160.
Reinhardt, Rudolf, 5,549,236, Cl. 228-114.500.
Rump, Siegfried; Steiner, Manfred; Brugger, Franz; Klarer, Martin; Knoff, Bernd; and Eckl, Albrecht, 5,549,369, Cl. 303-125.000.

Merchel, Horst, to Vendoret Holding S.A. Receiving member for a pledge lock of a shopping trolley. 5,549,409, Cl. 403-306.000.

Merck & Co., Inc: *See*—
Van Der Ploeg, Leonardus H. T.; and Warmke, Jeffrey W., 5,550,049, Cl. 435-240.100.

Merck & Co., Inc.: *See*—
McManus, James W., 5,550,288, Cl. 564-194.000.
Rupprecht, Kathleen M.; Baker, Robert K.; Ok, Hyun O.; and Parsons, William H., 5,550,233, Cl. 540-456.000.

Merck Frosst Canada Inc.: *See*—
Ducharme, Yves; Gauthier, Jacques Y.; Prasit, Petpiboon; Leblanc, Yves; Wang, Zhaoyin; Leger, Serge; and Therien, Michel, 5,550,142, Cl. 514-365.000.

Merck Sharp and Dohme Limited: *See*—
Horwell, David C.; Hughes, John; and Woodruff, Geoff N., 5,550,126, Cl. 514-237.500.

Merli, Valeriano: *See*—
Cannata, Vincenzo; Merli, Valeriano; and Dal Santo, Claudio, 5,550,287, Cl. 564-153.000.

Merloni Elettrodomestici S.p.A.: *See*—
Bongini, Dino; Duri, Sandro; and Stopponi, Andrea, 5,548,978, Cl. 68-17.00R.

Merriman, Gregory H.: *See*—
Tegeler, John J.; Rauckman, Barbara S.; Harner, Russell R. L.; Freed, Brian S.; and Merriman, Gregory H., 5,550,247, Cl. 546-314.000.

Mesaki, Yoshinori: *See*—
Tanaka, Akira; Mesaki, Yoshinori; Sotokawa, Akio; Tomatsu, Masahiro; and Kaiwa, Kazumasa, 5,550,657, Cl. 359-49.000.

Meserole, Jere S., Jr.: *See*—
Hedges, Daniel E.; Meserole, Jere S., Jr.; and Rorabaugh, Michael E., 5,548,953, Cl. 60-202.000.

Mesterton, Kai P.: *See*—
Velamoor, Sesh; and Mesterton, Kai P., 5,550,790, Cl. 367-140.000.

Meuller, Michael L.: *See*—
Johnston, Jesse C., Jr.; Kulig, James S.; Lewis, Steven F.; Collet, Eric C.; Sepela, Mark J.; and Meuller, Michael L., 5,549,079, Cl. 122-379.000.

Meunchen, Paul K.: *See*—
Chase, David D.; Shumate, Gary D.; Joslin, Joel A.; and Meunchen, Paul K., 5,548,843, Cl. 2-102.000.

Meyer, Benno: *See*—
Häussler, Bernd; Meyer, Benno; and Münk, German, 5,550,804, Cl. 370-16.000.

Meyer, George A., IV; Toth, Jerome E.; and Longsderff, Richard W., to Thermacore, Inc. Integrated circuit cooling apparatus. 5,549,155, Cl. 165-104.330.

Meyer, Peter: *See*—
Windhaus, Ernst; Seiler, Bernard; Meyer, Peter; Erwig, Peter; Mathejka, Horst W.; Patalon, Heinrich; Holz, Peter, deceased, 5,548,882, Cl. 29-336.000.

Meyer, Richard S.; Campbell, Michael L.; Winter, Daryl B.; and Root, Jeffrey M., to Curtice-Burns, Inc. Alkyl glycoside fatty acid polyester fat substitute food compositions and process to produce the same. 5,550,220, Cl. 536-18.500.

Meyer, Willi, to Emhart Glass Machinery Investments Inc. Trough assembly. 5,549,727, Cl. 65-225.000.

Meynier, Patrick: *See*—
Laurent, Jean; Meynier, Patrick; Cretin, Jacques; and Beauducel, Claude, 5,550,785, Cl. 367-25.000.

MFd Enterprises, Inc.: *See*—
Sherlock, Mary F.; Averitt, Marnie C.; and Dowling, Thomas W., 5,548,841, Cl. 2-15.000.

MGF Maschinen- und Geraete-Fabrik GmbH: *See*—
Sadler, Richard A.; and Paffhausen, Johannes H., 5,549,168, Cl. 173-49.000.

Michael, David J.; Koljonen, Juha; and Garakani, Arman. Using cone shaped search models to locate ball bonds on wire bonded devices. 5,550,763, Cl. 364-582.000.

Michaels, Alan S.: *See*—
Rhee, Woonza; Wallace, Donald G.; Michaels, Alan S.; Burns, Ramon A., Jr.; Fries, Louis; DeLustro, Frank; and Bentz, Hanne, 5,550,188, Cl. 525-54.100.

Michaels, John M.: *See*—
Moody, Michael J.; Yesudas, Michael; and Michaels, John M., 5,549,162, Cl. 166-264.000.
Shwe, Than; and Michaels, John M., 5,549,159, Cl. 166-250.020.

JUL 1189 SS 4 AG 27 1996 UMI

Michaluk, Mitchell W., III: *See*—
Tripp, Gregory A.; and Michaluk, Mitchell W., III, 5,550,356, Cl. 219-734.000.

Michielli, Michael; Kashuba, Glen; Goldenberg, J. Mel; and Klippel, Jon I., to Howmedica, Inc. Prosthesis with integral proximal spacer. 5,549,705, Cl. 623-23.000.

Michihira, Osamu: *See*—
Kurata, Yasuhiko; Akiyama, Yuichi; and Michihira, Osamu, 5,550,830, Cl. 370-95.200.

Mickelson, Sammy K.: *See*—
Coffield, Kelly M.; Cantrill, Dean A.; McCulloh, Kevin G.; and Mickelson, Sammy K., 5,549,736, Cl. 96-133.000.

microParts: *See*—
Peters, Ralf-Peter; Rogner, Arnd; Ünal, Nezih; Heinrich, Lothar; Landwehr, Dierk; and Heyde, Wolfgang A. D., 5,550,375, Cl. 250-343.000.

Microsensor Systems, Inc.: *See*—
Wohltjen, Henry; and Poziomek, Edward J., 5,550,062, Cl. 436-155.000.

Microsoft Corporation: *See*—
Berman, Eric R.; Abdala, Luis F. T.; and Eller, Marlin, 5,550,930, Cl. 382-187.000.
Patrick, Stuart R.; and Chatterjee, Amit, 5,550,972, Cl. 395-164.000.
Waters, Anthony B., 5,551,024, Cl. 395-600.000.

Midas Rex Pneumatic Tools, Inc.: *See*—
Scott, Tony D.; Umber, Ray; and Vaughn, William J., 5,549,634, Cl. 606-170.000.

Middendorf, Lyle R.; Brumbaugh, John A.; and Jang, Gi Y., to University of Nebraska, The Board of Regents of the. Digital DNA typing. 5,549,805, Cl. 204-461.000.

Miekka, Frederick N.: *See*—
Miekka, Richard G.; Fotland, Richard A.; Miekka, Frederick N.; Fitch, John J.; and Josephy, Karl, 5,549,774, Cl. 156-209.000.

Miekka, Richard G.; Fotland, Richard A.; Miekka, Frederick N.; Fitch, John J.; and Josephy, Karl, to Avery Dennison Corporation. Method of enhancing the visibility of diffraction pattern surface embossment. 5,549,774, Cl. 156-209.000.

Mihalisin, John R.; Corrigan, John; Baker, Robert J.; Leonard, Eric L.; and Vandersluis, Jay L., to Howmet Corporation. Clean single crystal nickel base superalloy. 5,549,765, Cl. 148-428.000.

Mikhail, W. E. Michael. Acetabular cup. 5,549,701, Cl. 623-22.000.

Miki, Masatoshi; Kuwabara, Toshio; and Tamura, Manabu, to Shin Caterpillar Mitsubishi Ltd. Joy stick type operating lever device. 5,550,539, Cl. 341-20.000.

Mikohn Gaming Corporation: *See*—
Bennett, Michael J., 5,550,359, Cl. 235-382.000.

Mileham, Alan J.: *See*—
Rothschild, Max F.; Tuggle, Christopher K.; Jacobson, Carol D.; Vaske, David A.; Mileham, Alan J.; and Plastow, Graham S., 5,550,024, Cl. 435-6.000.

Miles, Ronald W.: *See*—
Mitchell, Alton D.; Ruby, Keith D.; Miles, Ronald W.; and Naas, Robert L., 5,549,266, Cl. 248-205.100.

Milieu Systems Corp.: *See*—
Gunya, Robert E.; and Jackson, Otto V., 5,549,586, Cl. 604-319.000.

Miller Compressing Company: *See*—
Siesco, Leonard E., Jr., 5,549,206, Cl. 209-17.000.

Miller, David B.: *See*—
Shemitz, Sylvan R.; Miller, David B.; and Moler, Gregory L., 5,550,725, Cl. 362-282.000.

Miller, Gregory R.; Adriance, Kyle; and Philipak, Stanley, to Nellcor Puritan-Bennett Incorporated. Filter. 5,549,720, Cl. 55-324.000.

Miller Pipeline Corporation: *See*—
Zeisler, Kurt E.; and Miller, Ralph E., 5,549,334, Cl. 285-189.000.

Miller, Ralph E.: *See*—
Zeisler, Kurt E.; and Miller, Ralph E., 5,549,334, Cl. 285-189.000.

Miller, Steven M.; and Redpath, Richard J., to International Business Machines Corporation. Method and system for providing access security to controls in a graphical user interface. 5,550,968, Cl. 395-157.000.

Miller, Theodore T.; and Ghelman, Bernard, to New York Society For The Ruptured And Crippled Maintaining The Hospital For Special Surgery. Vena caval filter. 5,549,626, Cl. 606-200.000.

Miller, Thomas G.: *See*—
Meador, James W.; Kraft, Thomas L.; and Miller, Thomas G., 5,549,141, Cl. 141-1.000.

Miller, Warren L.; and Noyes, Harold B., to Hewlett-Packard Company. Special purpose computer for demonstrating peripheral devices such as printers in which power is withdrawn from the port connection of the peripheral device. 5,550,985, Cl. 395-750.000.

Millican, Thomas A.: *See*—
Beeley, Nigel R. A.; and Millican, Thomas A., 5,550,137, Cl. 514-354.000.

Milovich, Robert; Schroeder, Ronald R.; Parmentar, William F.; Molnar, Julius J.; and Penick, Jack, to Nordson Corporation. Apparatus for supplying conductive coating materials including transfer units having a combined shuttle and pumping device. 5,549,755, Cl. 118-629.000.

Mimura, Yukiteru: *See*—
Inoue, Kunimi; Yamada, Yoshiyuki; Amatsu, Kazumi; Mimura, Yukiteru; Nakaguchi, Yasunori; Shinmura, Hiroyuki; Ono, Yasuyuki; Osawa, Yutaka; Mizutaki, Shoichi; Kasai, Masaji; and Tomioka, Shinji, 5,550,283, Cl. 562-561.000.

Min, Xiaoyi; Mongeon, Luc R.; Mehra, Rahul; Anderson, Kenneth M.; DeGroot, Paul J.; and Hill, Michael R. S., to Medtronic, Inc. Atrial defibrillator and method of use. 5,549,642, Cl. 607-5.000.

Minakawa, Tadayoshi: *See*—
Oda, Yo; Minakawa, Tadayoshi; Sibuya, Shyoichi; and Shiina, Takayuki, 5,549,061, Cl. 112-220.000.

Minamino, Hiromasa: *See*—
Oshima, Toshiyuki; Ishibashi, Hideo; Minamino, Hiromasa; Yamamoto, Satoshi; Izumo, Takaharu; and Kaneko, Mitsuharu, 5,550,198, Cl. 525-404.000.

Minchey, Richard L.; and Surface, William E., to Sunbeam Products, Inc. Method and apparatus for assembling table legs. 5,549,265, Cl. 248-188.200.

M+IND (Model + Instrument Development): *See*—
Bryant, William E., 5,549,711, Cl. 623-53.000.

Minergy Corp.: *See*—
Nechvatal, Timothy M.; and Jansen, Thomas J., 5,549,059, Cl. 110-346.000.

Ministero Dell 'Universita' e Della Ricerca Scientifica e Tecnologica: *See*—
Bettarini, Franco; Capuzzi, Luigi; La Porta, Piero; Massimini, Sergio; and Caprioli, Vincenzo, 5,550,140, Cl. 514-363.000.

Mink, Robert I.: *See*—
Ali, Ahmed H.; Firdaus, Vaseem; Geoghegan, Tomas A.; Kissin, Yury V.; and Mink, Robert I., 5,550,094, Cl. 502-115.000.

Minnesota Mining and Manufacturing Company: *See*—
Armbruster, June M.; Bastiaens, Willem V.; Callahan, Joseph P., Jr.; Moris, Steve W.; and Stegink, David W., 5,549,267, Cl. 248-442.200.
Blong, Thomas J.; and Lavallée, Claude, 5,549,948, Cl. 428-36.900.
Bredahl, Timothy D.; Leverty, Harold; Smith, Robert L.; Bennett, Richard E.; Yarusso, David J.; Munson, Daniel C.; and Plepys, Anthony R., 5,550,175, Cl. 523-348.000.
Haas, John D.; Christianson, Todd J.; and Bruxvoort, Wesley J., 5,549,961, Cl. 428-143.000.
Holmes, Gary L.; Culler, Scott R.; Hardy, David H.; Harmon, Kimberly K.; Heiti, Robert V.; Hendrickson, William A.; Klun, Thomas P.; Spurgeon, Kathryn M.; and Studiner, Charles J., III, 5,549,962, Cl. 428-144.000.
Hotvet, David A., 5,550,923, Cl. 381-72.000.
Israelson, Ronald J., 5,548,934, Cl. 52-220.800.
Lea, Michael C.; and Jaster, Paul A., 5,551,042, Cl. 359-742.000.
Lee, Chong S.; and Buchanan, Scott J., 5,549,719, Cl. 51-298.000.
Savu, Patricia M., 5,550,273, Cl. 558-54.000.

Minobe, Randy: *See*—
Rahamim, Uriel; Minobe, Randy; Chahrour, Ahmad A.; and Ben-Zur, Raanan, 5,550,710, Cl. 361-687.000.

Minogue, John J.: *See*—
Oshlack, Benjamin; Chasin, Mark; Minogue, John J.; and Kaiko, Robert F., 5,549,912, Cl. 424-468.000.

Minolta Camera Kabushiki Kaisha: *See*—
Ishida, Tokuji; Nakanishi, Yasuo; Ishimura, Toshihiko; Katoh, Takehiro; Ishibashi, Kenji; Hara, Yoshihiro; Kondo, Takashi; and Yoshino, Hiroshi, 5,550,611, Cl. 354-400.000.

Minolta Co., Ltd.: *See*—
Tange, Keigo, 5,550,622, Cl. 355-299.000.

Mintz, Beatrice, to Fox Chase Cancer Center. Transgenic animal model system for human cutaneous melanoma. 5,550,316, Cl. 800-2.000.

Mintz, Hava Mattea: *See*—
Bessler, Marc; Mintz, Max R.; and Sutherland, Byron C., 5,549,621, Cl. 606-151.000.

Mintz, Max R.: *See*—
Bessler, Marc; Mintz, Max R.; and Sutherland, Byron C., 5,549,621, Cl. 606-151.000.

Minus K Technology, Inc.: *See*—
Platus, David L.; and Cunningham, Patrick J., 5,549,270, Cl. 248-619.000.

Mio, Haruhiko: *See*—
Aoki, Yoichi; Sato, Yasuo; Ito, Chiaki; Nishiuchi, Hitoshi; Nakamoto, Makoto; Yamaguchi, Syoji; Mio, Haruhiko; Koyata, Kazuhiro; and Miyazawa, Yoshinori, 5,550,562, Cl. 345-163.000.

Miraki, Manouchehr, to Advanced Cardiovascular Systems, Inc. Catheters having separable reusable components. 5,549,554, Cl. 604-101.000.

Mirigian, Gregory E.; and Van, Nga T., to Target Therapeutics, Inc. Fibered vasoocclusive coils. 5,549,624, Cl. 606-191.000.

Mischler, Eduard; and Stehr, Roger, to Maag Pump Systems AG. Gear pump and its uses. 5,549,462, Cl. 418-1.000.

Mishima, Akio: *See*—
Kojima, Naoto; Watanabe, Takashi; Takahashi, Hiroyuki; and Mishima, Akio, 5,548,886, Cl. 29-603.100.

Mishina, Jyoji; and Tanabe, Masahiro, to Takata Corporation. Tongue assembly for seat belt device. 5,548,874, Cl. 24-170.000.

Mishra, Satchidanand: *See*—
Herbert, William G.; Mishra, Satchidanand; Post, Richard L.; VonHoene, Donald C.; Yu, Robert C. U.; Foley, Geoffrey M. T.; and Limburg, William W., 5,550,618, Cl. 355-211.000.

Misomex Aktiebolag: *See*—
Dillow, Brian, 5,550,574, Cl. 347-262.000.

Misra, Raj N., to E.R. Squibb & Sons, Inc. Substituted stryl heterocyclic amido prostaglandin analogs. 5,550,248, Cl. 548-236.000.

Misumi, Yoshinori, to Canon Kabushiki Kaisha. Ink jet recording with time-division driving. 5,550,568, Cl. 347-12.000.

MIT AB: *See*—

Lidgren, Lars Å A.; and Bauer, Hans J., 5,549,380, Cl. 366-139.000.

Mita Industrial Co. Ltd.: *See*—
Mizuta, Yasufumi; Tanaka, Masashi; Muto, Nariaki; Fukami, Toshiyuki; Nakamori, Hideo; Kakui, Mikio; Saito, Sakae; Shiomi, Hiroshi; Sumida, Keisuke; and Uchida, Maki, 5,550,290, Cl. 564-309.000.

Mitani, Kenzo: *See*—
Kusase, Shin; Mitani, Kenzo; Umeda, Atsushi; and Sato, Hirohide, 5,550,457, Cl. 322-29.000.

Mitchell, Alton D.; Ruby, Keith D.; Miles, Ronald W.; and Naas, Robert L., to KenTech Plastics, Inc. Mounting bracket with water deflector. 5,549,266, Cl. 248-205.100.

Mitchell, Monroe S.; and Loos, Vinson A., to Constar Plastics Inc. Heating lamp assembly. 5,549,468, Cl. 425-526.000.

Mitek Surgical Products, Inc.: *See*—
Goble, E. Marlowe; Luman, David P.; and Martins, Harold M., 5,549,613, Cl. 606-80.000.

Mitomo, Ryuji: *See*—
Nakagawa, Susumu; Kato, Shinji; Murase, Satoshi; Okamoto, Osamu; Mitomo, Ryuji; Yamamoto, Katsumi; Yamada, Koji; and Fukatsu, Hiroshi, 5,550,121, Cl. 514-210.000.

Mitra, Debasis, to Lucent Technologies Inc. Cellular mobile radio system power control. 5,551,057, Cl. 455-33.100.

Mitsubishi Chemical Corporation: *See*—
Aoki, Hiroshi; and Inokuchi, Michihiro, 5,549,730, Cl. 71-64.030.
Mori, Tomoyuki; Fujita, Kouichi; and Hinoishi, Hiroki, 5,550,302, Cl. 568-881.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Adachi, Katsumi; and Kurusu, Kyoko, 5,550,415, Cl. 310-68.00R.
Aoyagi, Toshitaka; Watanabe, Hitoshi; Miyazaki, Yasunori; and Isshiki, Kunihiko, 5,550,855, Cl. 372-50.000.
Fujisawa, Yukio, 5,550,833, Cl. 370-105.400.
Hidaka, Hideto; Fujishima, Kazuyasu; and Matsuda, Yoshio, 5,550,769, Cl. 365-63.000.
Hosoya, Yasuhiko; and Kuroda, Toshiki, 5,549,872, Cl. 422-173.000.
Itoh, Masateru; and Kawamura, Hiroshi, 5,550,598, Cl. 348-807.000.
Itoh, Mitsuhiro; and Matsui, Hideo, 5,550,451, Cl. 318-811.000.
Kawamoto, Kohji; Shimazu, Yukihiko; and Fujiyama, Toshiki, 5,551,045, Cl. 395-775.000.
Miyashita, Miyo, 5,550,511, Cl. 330-253.000.
Morita, Shingo; and Ohashi, Yutaka, 5,550,704, Cl. 361-263.000.
Nomura, Takashi, 5,550,920, Cl. 381-1.000.
Oda, Tateru, 5,551,077, Cl. 455-343.000.
Okada, Teruhiko; Kuriyama, Hirotada; and Kohno, Yoshio, 5,550,390, Cl. 257-66.000.
Shinjo, Izuru, 5,548,996, Cl. 73-116.000.
Someya, Jun; Chiba, Kazuhiro; Watabu, Kazuyoshi; Yamamoto, Yoshie; Inamura, Mamoru; Nagayama, Takeshi; Bamba, Noriko; and Sunada, Noboru, 5,550,936, Cl. 382-263.000.
Tabuchi, Masayuki, 5,550,698, Cl. 361-56.000.
Tashiro, Tetsu; and Cho, Yoshiki, 5,550,994, Cl. 395-375.000.
Tsutsumi, Kazuhito, 5,550,396, Cl. 257-330.000.
Wada, Ryukichi; Suzuki, Fumio; and Ohtsuru, Yoshisuke, 5,550,597, Cl. 348-708.000.
Yamaguchi, Takehisa; and Oda, Hidekazu, 5,550,409, Cl. 257-757.000.
Yasue, Takao, 5,550,372, Cl. 250-310.000.

Mitsubishi Electric Semiconductor Software Co., Ltd.: *See*—
Fujisawa, Yukio, 5,550,833, Cl. 370-105.400.

Mitsubishi Rayon Co., Ltd.: *See*—
Naito, Hiroyuki; Otani, Masato; Oh-Kita, Motomu; and Kuroda, Toru, 5,550,095, Cl. 502-211.000.
Ohé, Makoto; and Chiba, Issei, 5,550,676, Cl. 359-599.000.

Mitsuboshi Belting Ltd.: *See*—
Fukuda, Misao; Hayami, Yoshihiro; Ueda, Toshihiro; and Iwaki, Shoichi, 5,549,510, Cl. 451-246.000.

Mitsumori, Kenichi; and Kikuchi, Koji, to Frontec Incorporated. Apparatus and method for inspecting thin film transistor. 5,550,484, Cl. 324-769.000.

Mitsuya, Yoshihide: *See*—
Kageyama, Shuhei; Anzai, Shoji; and Mitsuya, Yoshihide, 5,549,404, Cl. 401-75.000.

Miura, Hiroyuki: *See*—
Yano, Takashi; and Miura, Hiroyuki, 5,550,279, Cl. 558-277.000.

Miura, Yasunori: *See*—
Hayama, Hidekazu; Miura, Yasunori; Suzuki, Atsushi; and Ishiai, Keizou, 5,550,429, Cl. 313-479.000.

Miwa, Takashi: *See*—
Sakurai, Yohji; Kurahashi, Nobuyuki; Hirose, Tsuyoshi; Miwa, Takashi; Mori, Atsushi; and Nishi, Takao, 5,550,292, Cl. 564-399.000.

Mixich, Johann; Rapp, Knut M.; and Vogel, Manfred, to Südzucker AG Mannheim/Ochsenfurt. Method for the preparation of rhamnose monohydrate from rhamnolipids. 5,550,227, Cl. 536-124.000.

Miyadera, Shunichi, to Asahi Kogaku Kogyo Kabushiki Kaisha. White balance adjustment device for a still-video camera having an electronic flash. 5,550,587, Cl. 348-223.000.

Miyagawa, Toru; Okada, Mitsuo; and Osumi, Tomomasa, to Nippon Oil Co., Ltd. Hydraulic working oil composition for buffers. 5,549,838, Cl. 252-75.000.

Miyakawa, Atsuo; Hirano, Masahiko; and Kamiya, Kiyoshi, to Hamamatsu Photonics K.K.; and Miyakawa, Atsuo. Method of optimizing equilibrium constants and fluorescence coefficients for measuring intracellular ion concentration using fluorescence probe dyes with triple wave length photometry. 5,550,031, Cl. 435-29.000.

Miyake, Toshio: *See*—
Yoneyama, Masaru; Shibuya, Takashi; and Miyake, Toshio, 5,550,226, Cl. 536-123.130.

Miyake, Yoshio: *See*—
Yamaguchi, Ken; and Miyake, Yoshio, 5,550,026, Cl. 435-7.100.

Miyamoto, Hiroshi: *See*—
Takegawa, Ichiro; Hashiba, Shigeto; Miyamoto, Hiroshi; and Ichizawa, Nobuyuki, 5,550,000, Cl. 430-131.000.

Miyamoto, Makoto, to Murata Manufacturing Co., Ltd. Manufacturing method of electronic part. 5,549,926, Cl. 427-100.000.

Miyanaga, Akiharu: *See*—
Koinuma, Hideomi; Shiraishi, Tadashi; Inoue, Tohru; Inomata, Kiyoto; Hayashi, Shigenori; Miyanaga, Akiharu; and Yamazaki, Shunpei, 5,549,780, Cl. 156-345.000.

Miyanagi, Naoki: *See*—
Tada, Nobuhiko; Miyanagi, Naoki; Shimomura, Yoshiaki; Sakurai, Shigeyuki; Okumura, Shinya; and Nagano, Yoshinari, 5,548,890, Cl. 29-827.000.

Miyanishi, Hideji, to Ricoh Company Ltd. Potential comparing circuit having an offset correcting circuit. 5,550,493, Cl. 327-66.000.

Miyano, Masateru: *See*—
Bovy, Philippe R.; Garland, Robert B.; Miyano, Masateru; Rico, Joseph G.; Rogers, Thomas E.; and Zablocki, Jeffery A., 5,550,159, Cl. 514-563.000.

Miyasaka, Toru: *See*—
Kobayashi, Shinya; Miyasaka, Toru; and Satoh, Kunio, 5,550,626, Cl. 355-326.00R.

Miyashita, Miyo, to Mitsubishi Denki Kabushiki Kaisha. Differential amplifier having single phase input and two output phases. 5,550,511, Cl. 330-253.000.

Miyatsu, Takayoshi. Locking/unlocking state confirming device. 5,548,984, Cl. 70-276.000.

Miyauchi, Eisaku: *See*—
Takahashi, Tetsuo; Miyauchi, Eisaku; Mogi, Kunio; and Araya, Shinichi, 5,549,716, Cl. 29-25.010.

Miyauchi, Yasuo: *See*—
Kurata, Mitsuru; Kanemitsu, Shinji; Nomura, Akihiro; Ebata, Tokihide; Takeda, Akio; Miyauchi, Yasuo; Uchida, Haruo; and Onoda, Shigeyoshi, 5,550,570, Cl. 347-49.000.

Miyazaki, Kaoru, to Oriental Yeast Co., Ltd. Gelatinase A inhibitor, and analytical reagent thereof for the determination of gelatinase A. 5,550,216, Cl. 530-395.000.

Miyazaki, Masanori: *See*—
Fukuda, Koichi; Oba, Tomofumi; Miyazaki, Masanori; Fukui, Hirofumi; Iwasaki, Chisato; Kasama, Yasuhiko; Ohmi, Tadahiro; Kubota, Masaru; Kitagawa, Hitoshi; Nakano, Akira; and Yoshida, Osamu, 5,550,091, Cl. 437-241.000.

Miyazaki, Shinji; Takai, Mitsuru; and Kobayashi, Koji, to TDK Corporation. Magnetic recording medium. 5,549,979, Cl. 428-694.00T.

Miyazaki, Taizou: *See*—
Mutoh, Nobuyoshi; Masaki, Ryoso; Miyazaki, Taizou; Tajima, Fumio; and Ohmae, Tsutomu, 5,549,172, Cl. 180-65.100.

Miyazaki, Tateo: *See*—
Kasuya, Tadashi; Shinada, Koichi; Horii, Yukihiko; and Miyazaki, Tateo, 5,550,347, Cl. 219-137.00R.

Miyazaki, Yasunori: *See*—
Aoyagi, Toshitaka; Watanabe, Hitoshi; Miyazaki, Yasunori; and Isshiki, Kunihiko, 5,550,855, Cl. 372-50.000.

Miyazaki, Yoshihiro; Takahashi, Yoshiaki; Araoka, Manabu; Takaya, Soichi; and Fukumaru, Hiroaki, to Hitachi, Ltd. Method for controlling multiple common memories and multiple common memory system. 5,551,007, Cl. 395-47.500.

Miyazawa, Yoshinori: *See*—
Aoki, Yoichi; Sato, Yasuo; Ito, Chiaki; Nishiuchi, Hitoshi; Nakamoto, Makoto; Yamaguchi, Syoji; Mio, Haruhiko; Koyata, Kazuhiro; and Miyazawa, Yoshinori, 5,550,562, Cl. 345-163.000.

Mizobata, Eishi: *See*—
Kanoh, Hiroshi; Nishida, Shinichi; and Mizobata, Eishi, 5,549,212, Cl. 216-24.000.

Mizoguchi, Junji: *See*—
Sohda, Takashi; Terashita, Zen-ichi; Momose, Yu; Fujisawa, Yukio; and Mizoguchi, Junji, 5,550,138, Cl. 514-361.000.

Mizoguchi, Shuri, to Konica Corporation. Lens-fitted photographic film unit with electronic flash equipment. 5,550,607, Cl. 354-149.110.

Mizomoto, Hiroyuki: *See*—
Shigaki, Seiichiro; Shimizu, Hiroaki; and Mizomoto, Hiroyuki, 5,550,878, Cl. 375-373.000.

Mizrahi, Victor: *See*—
Erdogan, Turan; and Mizrahi, Victor, 5,550,654, Cl. 359-3.000.

Mizuta, Yasufumi; Tanaka, Masashi; Muto, Nariaki; Fukami, Toshiyuki; Nakamori, Hideo; Kakui, Mikio; Saito, Sakae; Shiomi, Hiroshi; Sumida, Keisuke; and Uchida, Maki, to Mita Industrial Co. Ltd. Benzidine derivative and electrophotosensitive material using the same. 5,550,290, Cl. 564-309.000.

Mizutaki, Shoichi: *See*—
Inoue, Kunimi; Yamada, Yoshiyuki; Amatsu, Kazumi; Mimura, Yukiteru; Nakaguchi, Yasunori; Shinmura, Hiroyuki; Ono, Yasuyuki; Osawa, Yutaka; Mizutaki, Shoichi; Kasai, Masaji; and Tomioka, Shinji, 5,550,283, Cl. 562-561.000.

Moberg, Sheldon B.: *See*—

VOI 1189 ISS 4 AG 27 1996 UMI

Bornzin, Gene A.; McClure, Kelly H.; Mouchawar, Gabriel; and Moberg, Sheldon B., 5,549,650, Cl. 607-24.000.
McClure, Kelly H.; and Moberg, Sheldon B., 5,549,652, Cl. 607-28.000.

Mobil Oil Corporation: *See*—
Ali, Ahmed H.; Firdaus, Vaseem; Geoghegan, Tomas A.; Kissin, Yury V.; and Mink, Robert I., 5,550,094, Cl. 502-115.000.
Allen, Kenneth P., 5,550,786, Cl. 367-48.000.

Mobin, Mohammad S.: *See*—
Blaker, David M.; Ellard, Gregory S.; and Mobin, Mohammad S., 5,550,870, Cl. 375-341.000.

Mochida, Kazuomi, to Going Tokyo Co., Ltd. Filter element of air cleaner unit. 5,549,724, Cl. 55-521.000.

Moder, Thomas R.: *See*—
Brandon, Jeffrey J.; and Moder, Thomas R., 5,551,063, Cl. 455-54.200.

Modern Bridge Forming Co., Inc.: *See*—
Hawkins, Claude D., 5,549,176, Cl. 182-63.000.

Modi, Sandeep P.: *See*—
Humora, Michael J.; Modi, Sandeep P.; Srivastava, Sushi K.; and Williams, Andrew D., 5,550,239, Cl. 544-295.000.

Modine Manufacturing Company: *See*—
Cottone, Andrew J.; Saperstein, Zalman P.; Tait, Ronald D.; Parkhill, Richard G.; and Bahr, Jeffrey A., 5,549,927, Cl. 427-191.000.

Moe, Warren R.: *See*—
Bhagat, Promod K.; Moe, Warren R.; and Shampine, William T., 5,550,911, Cl. 379-220.000.

Mogi, Hirokazu: *See*—
Hori, Taizou; Fujimoto, Hideaki; Mogi, Hirokazu; and Ono, Yasumasa, 5,550,925, Cl. 381-98.000.

Mogi, Kunio: *See*—
Takahashi, Tetsuo; Miyauchi, Eisaku; Mogi, Kunio; and Araya, Shinichi, 5,549,716, Cl. 29-25.010.

Mohan, Chandrasekaran; and Narang, Inderpal S., to International Business Machines Corporation. Method for non-hierarchical lock management in a multi-system shared data environment. 5,551,046, Cl. 395-800.000.

Mohan, Chandrasekaran: *See*—
Choy, David M.; and Mohan, Chandrasekaran, 5,551,027, Cl. 395-600.000.
M. Cheng, Josephine; Mohan, Chandrasekaran; and Pirahesh, Mir H., 5,551,031, Cl. 395-600.000.

Mohwinkel, Clifford A., to Endgate Corporation. Miniature active conversion between microstrip and coplanar wave guide. 5,550,518, Cl. 333-33.000.

Mok, Fai H.: *See*—
Burr, Geoffrey W.; Mok, Fai H.; and Psaltis, Demetri, 5,550,779, Cl. 365-216.000.

Moler, Gregory L.: *See*—
Shemitz, Sylvan R.; Miller, David B.; and Moler, Gregory L., 5,550,725, Cl. 362-282.000.

Molnar, Julius J.: *See*—
Milovich, Robert; Schroeder, Ronald R.; Parmentar, William F.; Molnar, Julius J.; and Penick, Jack, 5,549,755, Cl. 118-629.000.

Molnlycke AB: *See*—
Ygge, Birgitta; and Vigmo, Terje, 5,549,593, Cl. 604-391.000.

Momose, Yu: *See*—
Sohda, Takashi; Terashita, Zen-ichi; Momose, Yu; Fujisawa, Yukio; and Mizoguchi, Junji, 5,550,138, Cl. 514-361.000.

Moncrieff, J. Peter. Electrical terminal connection employing plural materials. 5,550,705, Cl. 361-313.000.

Mondet, Jean-Claude: *See*—
Graindorge, Hervé; Mondet, Jean-Claude; and Vincent, Charles-Henry, 5,550,267, Cl. 556-144.000.

Mondin, Myriam; Loth, Myriam; Broze, Guy; Mehreteab, Ammanuel; Thomas, Barbara; Adamy, Steven; and Bala, Frank, Jr., to Colgate-Palmolive Co. Cleaning composition in microemulsion, liquid crystal or aqueous solution form comprising mixture of partially esterified, full esterified and non-esterified ethoxylated polyhydric alcohols. 5,549,840, Cl. 510-365.000.

Mongeon, Luc R.: *See*—
Min, Xiaoyi; Mongeon, Luc R.; Mehra, Rahul; Anderson, Kenneth M.; DeGroot, Paul J.; and Hill, Michael R. S., 5,549,642, Cl. 607-5.000.

Monier Roof Tile Inc.: *See*—
Thomas, John F.; and Gillett, Anthony F., 5,549,513, Cl. 454-365.000.

Monogioudis, Pantelis N.; and Edmonds, John M., to U.S. Philips Corporation. Direct sequence code division multiple access (DS-CDMA) communication system and a receiver for use in such a system. 5,550,810, Cl. 370-18.000.

Montagnier, Luc; Rey, Françoise; Krust, Bernard; and Clavel, François, to Institut Pasteur; and Centre National de la Recherche Scientifique. Hybrid cell line formed between T4 lymphocytes and tumoral lymphoid type cells. 5,550,052, Cl. 435-240.260.

Montalvo, Rafael M.: *See*—
Branstad, Mark W.; Brech, Brad L.; Byrn, Jonathan W.; Delp, Gary S.; and Montalvo, Rafael M., 5,550,806, Cl. 370-17.000.

Moodie, David G.: *See*—
Rodgers, Paul M.; Moodie, David G.; and Wake, David, 5,550,939, Cl. 385-8.000.

Moody, Michael J.; Yesudas, Michael; and Michaels, John M., to Western Atlas International, Inc. Electric wireline formation testing tool having temperature stabilized sample tank. 5,549,162, Cl. 166-264.000.

Moore, Christopher P.; Wear, Trevor J.; Beer, Paul D.; and Goulden, Alistair J., to Eastman Kodak Company. Ion-sensitive compounds. 5,550,268, Cl. 556-145.000.

Moore, Glenn; and Ellis, Caryl, to Baxter International Inc. Centrifuge insert for support of fluid containing bags. 5,549,540, Cl. 494-20.000.

Moore, Gregory J.: *See*—
Keener, Don S.; Moore, Gregory J.; and Voorhees, Richard W., 5,550,991, Cl. 395-309.000.

Moore, Mark P.: *See*—
Johansen, Curt C.; Moore, Mark P.; and Hann, Edward H., 5,549,659, Cl. 607-60.000.

Moore, Michael T.: *See*—
Keperling, Kevin M., Sr.; and Moore, Michael T., 5,549,167, Cl. 172-381.000.

Moore, Wayne T.; and Scarmalis, John, to Lucent Technologies Inc. Interchange circuit overload protection using driver current limiting. 5,550,700, Cl. 361-101.000.

Morando, Jorge A., to Alphatech, Inc. Self-aligning bearing for high temperature applications. 5,549,393, Cl. 384-203.000.

Morando, Patrick, to Mecaplast Sam. Vehicle door mounting plate integrating several functions and assembly method. 5,548,930, Cl. 49-502.000.

Morano, James R., to Ingredient Technology Corporation; and Innovative Sweeteners Incorporated. Process for recrystallizing sugar and product thereof. 5,549,757, Cl. 127-42.000.

Morby, Derek J., to Siemens Medical Systems, Inc. Focussing collimator of the Platz-Heinzelmann type and method of making Platz-Heinzelmann type collimators. 5,550,678, Cl. 359-641.000.

Morck, Douglas W.: *See*—
Olson, Merle E.; Ceri, Howard; and Morck, Douglas W., 5,549,899, Cl. 424-269.100.

Morgan, Carlton B.; Cole, Clinton; and Powers, Daniel J., to Heartstream, Inc. Method and apparatus for gathering event data using a removable data storage medium and clock. 5,549,115, Cl. 128-696.000.

Morgan, Todd C.: *See*—
Arnold, Erich C.; Gagliardi, Olivia M.; Hyatt, Wayne E.; Mayka, Lawrence G.; and Morgan, Todd C., 5,551,035, Cl. 395-650.000.

Mori, Akira: *See*—
Kai, Kazuyuki; Hamano, Masahisa; Homma, Hitoshi; Mori, Akira; and Masuko, Takashi, 5,549,244, Cl. 236-34.500.

Mori, Atsushi: *See*—
Sakurai, Yohji; Kurahashi, Nobuyuki; Hirose, Tsuyoshi; Miwa, Takashi; Mori, Atsushi; and Nishi, Takao, 5,550,292, Cl. 564-399.000.

Mori, Kinji; Orimo, Masayuki; Kasashima, Hirokazu; and Kim, K. H., to Univeristy of California, The Regents of the. Method for distributed redundant execution of program modules. 5,551,047, Cl. 395-800.000.

Mori, Shigeru: *See*—
Fukushima, Motoo; Aramata, Mikio; and Mori, Shigeru, 5,549,851, Cl. 252-519.000.

Mori, Tomoyuki; Fujita, Kouichi; and Hinoishi, Hiroki, to Mitsubishi Chemical Corporation. Method for producing an alcohol and catalyst precursor useful for the method. 5,550,302, Cl. 568-881.000.

Moribe, Isamu: *See*—
Tai, Seiji; Takusari, Hisanori; Tanaka, Hiroyuki; Moribe, Isamu; and Obdoi, Chie, 5,550,202, Cl. 526-286.000.

Morich, Michael A.: *See*—
Richard, Mark A.; Morich, Michael A.; and Petropoulos, Labros S., 5,550,472, Cl. 324-320.000.

Morihara, Atsushi: *See*—
Uematsu, Takao; Shoji, Mitsuyoshi; Nakakawaji, Takayuki; Komatsuzaki, Shigeki; Ito, Yutaka; Morihara, Atsushi; Sato, Koji; Zushi, Shizuo; and Go, Hiroshi, 5,549,835, Cl. 508-204.000.

Morikawa, Seiichiro, to Fuji Photo Film Co., Ltd. Method and apparatus for digitally processing an image based on a random number and a multiplier corresponding to input image data. 5,550,955, Cl. 395-109.000.

Morin, Sandra M.: *See*—
Scholz, John A.; and Morin, Sandra M., 5,550,421, Cl. 313-25.000.

Morinaga, Hisakazu: *See*—
Nakanishi, Hiroshi; Saito, Norihisa; Ando, Toshinori; and Morinaga, Hisakazu, 5,549,855, Cl. 264-2.500.

Moris, Steve W.: *See*—
Armbruster, June M.; Bastiaens, Willem V.; Callahan, Joseph P., Jr.; Moris, Steve W.; and Stegink, David W., 5,549,267, Cl. 248-442.200.

Morita, Makoto: *See*—
Kitajima, Hiroshi; Aoki, Hidemitsu; Hamano, Haruto; Morita, Makoto; Shiramizu, Yoshimi; Nakamori, Masaharu; Watanabe, Kaori; Seo, Hirofumi; Shimizu, Yuji; Iuchi, Makoto; Sasaki, Yasushi; and Ohta, Nahomi, 5,549,798, Cl. 204-222.000.

Morita, Shingo; and Ohashi, Yutaka, to Mitsubishi Denki Kabushiki Kaisha. Ignition coil including inorganic insulator exhibiting higher conductivity along its surface than perpendicular to its surface. 5,550,704, Cl. 361-263.000.

Morita, Tatsuo: *See*—
Funai, Takashi; Makita, Naoki; Yamamoto, Yoshitaka; and Morita, Tatsuo, 5,550,070, Cl. 437-41.000.

Moriwake, Katsuakira: *See*—
Shiraishi, Toshihiro; and Moriwake, Katsuakira, 5,550,565, Cl. 345-190.000.

Moriwaki, Masahiro: *See*—
Hirata, Yoshimi; Kaneko, Noriaki; Moriwaki, Masahiro; and Oura, Kanetake, 5,549,664, Cl. 623-1.000.

Morley, Edward J.; and Syslak, Morten, to Norsk Hydro a.s. Method of providing particle retaining metal surfaces and flux retaining metal components. 5,549,239, Cl. 228-207.000.

Morlion, Danny; and Jonckheere, Luc, to Framatome Connectors International. Connector assembly for printed circuit boards. 5,549,481, Cl. 439-108.000.

Morris, Robert H., Jr.: *See*—
Capretta, Richard; Chen, Colin; Czernik, Daniel E.; Morris, Robert H., Jr.; and Pavel, Richard J., 5,549,307, Cl. 277-235.00B.

Morris-Natschke, Susan L.: *See*—
Benson, Bradley J.; Chen, Xiannong; Cianciolo, George J.; Diaz, Jose-Luis; Ishaq, Khalid S.; Morris-Natschke, Susan L.; Uhing, Ronald J.; and Wong, Henry, 5,550,132, Cl. 514-269.000.

Morrison, Darrell R.; Nessa, James L.; and McClurg, James J., to Dresser-Rand Company. Amortisseur winding arrangement, in a rotor for electrical, rotating equipment. 5,550,417, Cl. 310-183.000.

Morrison, Robert C.: *See*—
Engel, John F.; Kamienski, Conrad W.; Schwindeman, James A.; Hall, Randy W.; Morrison, Robert C.; and Dover, B. Troy, 5,550,203, Cl. 526-336.000.

Morse, Stephen A.: *See*—
McIntyre, John; Brown, Peter S.; and Morse, Stephen A., 5,549,601, Cl. 606-15.000.

Mortimer, John H.: *See*—
Peysakhovich, Vitaly; Cignetti, Nicolas P.; Heine, Hans G.; and Mortimer, John H., 5,550,353, Cl. 219-672.000.

Morton, Lowell K.: *See*—
Matthews, Kent R.; Schakel, Eric G.; Morton, Lowell K.; and Young, James F., 5,549,753, Cl. 118-316.000.

Moses, David L. Versatile mineral oil-free aqueous lubricant compositions. 5,549,836, Cl. 508-183.000.

Moss, Bernard; Studier, F. William; Fuerst, Thomas R.; and Niles, Edward G., to Research Foundation of State University of New York, The. Prokaryotic expression in eukaryotic cells. 5,550,035, Cl. 435-69.100.

Motley, Leslie A.: *See*—
Lee, Ted C. K.; Pelzer, Franz H.; and Motley, Leslie A., 5,550,028, Cl. 435-13.000.

Motorola: *See*—
Hashemi, Majid M.; Tehrani, Saied N.; and Norton, Patricia A., 5,550,065, Cl. 437-39.000.
Lebby, Michael S.; Chun, Christopher K. Y.; Kuo, Shun-Meen; and Hansen, Kent W., 5,550,941, Cl. 385-49.000.
Smith, Robert T.; and Ageno, Scott K., 5,550,426, Cl. 313-336.000.

Motorola, Inc.: *See*—
Anani, Anaba A., 5,549,989, Cl. 429-193.000.
Barrera, David D.; Rastegar, Bahador; and Rossbach, Paul C., 5,550,995, Cl. 395-403.000.
Bohne, William C.; and Bergquist, Eric A., 5,550,453, Cl. 320-22.000.
Bonn, Fred H., 5,551,076, Cl. 455-333.000.
Brandon, Jeffrey J.; and Moder, Thomas R., 5,551,063, Cl. 455-54.200.
Brauer, Michael L.; Reed, Paul A.; and Duncan, John L., 5,550,774, Cl. 365-189.020.
Chambers, Randall P.; Gfesser, James J.; Holmes, Martin E.; and Oberman, Kevin S., 5,551,080, Cl. 455-348.000.
Connell, Lawrence E.; Paitl, Kenneth A.; Roeckner, William J.; and Haddad, Kenneth R., 5,551,078, Cl. 455-343.000.
Garrity, Doug; Anderson, David; Anderson, Howard; Gunter, Brad; and Bersch, Danny, 5,550,503, Cl. 327-437.000.
Goldsmith, Eric S.; Klingberg, Jeffrey W.; Bane, Ronald L.; and Ehmann, Charles M., 5,551,068, Cl. 455-89.000.
Gries, Patrick J.; and Nguyen, Quoc, 5,550,828, Cl. 370-95.100.
Hutcheson, Jonathan E.; Natarajan, Kadathur S.; and Leopold, Raymond J., 5,551,058, Cl. 455-33.200.
Hutcheson, Jonathan E.; Natarajan, Kadathur S.; and Leopold, Raymond J., 5,551,059, Cl. 455-33.200.
Liberti, Joseph C., Jr.; Averst, Douglas I.; Branch, Tony R.; and Carsello, Stephen R., 5,550,872, Cl. 375-347.000.
Nelson, Randall D.; and Westbrook, Gregory L., 5,550,480, Cl. 324-754.000.
Nobbe, Dan W.; and Royer, Ronald L., 5,551,064, Cl. 455-62.000.
Pennington, Artie; and Ueda, Makoto, 5,550,974, Cl. 395-183.180.
Reichert, Veronica R.; Venugopal, Ganesh; and Eschbach, Florence O., 5,549,988, Cl. 429-192.000.
Ristic, Ljubisa; and Shemansky, Frank A., Jr., 5,550,090, Cl. 437-228.000.
Schwendeman, Robert J., 5,551,061, Cl. 455-51.100.
Silverthorn, Lee; Cornils, Curtis; Kirchner, Mark L.; Stephens, Susan D.; and Crouse, Parker E., 5,551,051, Cl. 395-800.000.
Sridhar, Manickam R.; and Sheer, Neil, 5,550,881, Cl. 375-377.000.
Tariq, M. Hasan; and Ostler, Michael R., 5,551,022, Cl. 395-600.000.
Venugopal, Ganesh; Reichert, Veronica R.; and Zhang, Jinshan, 5,549,987, Cl. 429-188.000.
Wang, Shay-Ping T.; Teng, Dan; and Hayner, David A., 5,550,732, Cl. 364-148.000.
Wang, Zhonghe, 5,550,829, Cl. 370-95.100.
Zhu, Qin-Fan, 5,550,847, Cl. 371-32.000.

Motowidlo, Leszek; and Haldar, Pradeep, to IGC/Advanced Superconductors, Inc. Superconductor tapes and coils and method of manufacture. 5,550,103, Cl. 505-430.000.

Motoyama, Tetsuro, to Ricoh Company, Ltd.; and Ricoh Corporation. Method and system for detecting and distinguishing between blank pages within a reproduction job. 5,550,614, Cl. 355-206.000.

Mottahed, Behzad D., to Lucent Technologies Inc. Thermal detection elements with heater. 5,550,526, Cl. 338-22.00R.

Mouchawar, Gabriel: *See*—
Bornzin, Gene A.; McClure, Kelly H.; Mouchawar, Gabriel; and Moberg, Sheldon B., 5,549,650, Cl. 607-24.000.

Moulton, Herbert F. Electrod housing and cap assembly. 5,550,724, Cl. 362-267.000.

Mraz, Paul: *See*—
Graham, John W.; McTighe, Timothy; and Mraz, Paul, 5,549,700, Cl. 623-22.000.

Muehlemann, Michael M.; and Noble, J. Donald, to Illumination Technologies, Inc. Modular fiber optic light line unit. 5,550,946, Cl. 385-121.000.

Mueller, Richard A.: *See*—
Khanna, Ish K.; Mueller, Richard A.; and Weier, Richard M., 5,550,243, Cl. 546-116.000.

Mueninghoff, Jane C.: *See*—
Garst, Roger H.; Mueninghoff, Jane C.; and Schwan, Matthew C., 5,550,115, Cl. 514-25.000.

Mui, William J.: *See*—
Qin, Jian; Gross, James R.; Mui, William J.; Ning, Xin; Schroeder, Wen Z.; and Sun, Tong, 5,550,189, Cl. 525-54.300.

Mulder, Carel, to University of Massachusetts. Oligonucleotides with anti-Epstein-Barr virus activity. 5,550,047, Cl. 435-238.000.

Müller, Anton, to Eisen- und Drahtwerk Erlau Aktiengesellschaft. Seat. 5,549,358, Cl. 297-452.640.

Müller, Hermann: *See*—
Mann, Ralf; Lehmann, Wilfried; and Müller, Hermann, 5,549,450, Cl. 415-214.100.

Muller, Jean C.: *See*—
Frost, Jonathan; George, Pascal; Pasau, Patrick; Bartsch, Régine; Rousselle, Corinne; Williams, Paul H.; and Muller, Jean C., 5,550,162, Cl. 514-617.000.

Muller, Jean Claude: *See*—
George, Pascal; Frost, Jonathan; Pasau, Patrick; Rousselle, Corinne; Bartsch, Régine; Williams, Paul Howard; and Muller, Jean Claude, 5,550,125, Cl. 514-230.500.

Müller, Klaus-Helmut: *See*—
Kluth, Joachim; and Müller, Klaus-Helmut, 5,550,244, Cl. 546-153.000.

Müller, Leo, to Rieter Automatik GmbH. Cutting strip with a cutting edge made of highly wear-resistant material. 5,549,025, Cl. 83-694.000.

Müller, Martin: *See*—
Luger, Peter; Grafwallner, Franz; Peller, Helmuth; Müller, Martin; Malyshev, Valentin V.; Galperin, Sergey B.; and Logvinlouk, Viacheslav P., 5,548,961, Cl. 62-47.100.
Luger, Peter; Grafwalliner, Franz; Peller, Helmuth; Müller, Martin; Malyshev, Valentin V.; Logvinlouk, Viacheslav P.; Ozeretskovsky, Vladmimir S.; and Shengardt, Alexander S., 5,548,962, Cl. 62-50.100.

Muller, Richard P., to Circon Corporation. Continuous flow cystoscope. 5,549,541, Cl. 600-105.000.

Multifastener Corporation: *See*—
Takahashi, Takao; and Takehara, Niroshi, 5,549,430, Cl. 411-179.000.

MultiVideo Labs, Inc.: *See*—
Wu, Chin T.; and Samuels, James V., 5,550,556, Cl. 345-14.000.

Mumford, Stephen E.; and Kosinski, Andrew J., to Westinghouse Electric Corporation. System for controlling combustion in a gas combustion-type turbine. 5,548,951, Cl. 60-39.230.

Mundt, Wolfgang; Woehrer, Wilfried; Dorner, Friedrich; and Eibl, Johann, to Immuno Aktiengesellschaft. Avian embryo cell aggregate biomass for producing virus/virus antigen and method for producing virus/virus antigen. 5,550,051, Cl. 435-240.200.

Münk, German: *See*—
Häussler, Bernd; Meyer, Benno; and Münk, German, 5,550,804, Cl. 370-16.000.

Munnerlyn, Charles R.: *See*—
Shimmick, John K.; and Munnerlyn, Charles R., 5,549,597, Cl. 606-5.000.

Munson, Daniel C.: *See*—
Bredahl, Timothy D.; Leverty, Harold; Smith, Robert L.; Bennett, Richard E.; Yarusso, David J.; Munson, Daniel C.; and Plepys, Anthony R., 5,550,175, Cl. 523-348.000.

Murakami, Kazuo; Fujii, Toshiro; and Kato, Yuichi, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Reciprocating-piston-type compressor having piston entering discharge chamber. 5,549,453, Cl. 417-269.000.

Murakami, Masahiro, to Brother Kogyo Kabushiki Kaisha. Power-saving printer which controls fixing device based on print data presence. 5,550,637, Cl. 358-296.000.

Murakami, Takeshi: *See*—
Kamiya, Ichiro; Shinjo, Ryoichi; Murakami, Takeshi; Nishioka, Yukiko; and Harada, Minoru, 5,549,874, Cl. 422-186.040.

Muramatsu, Shigeru: *See*—
Hori, Tatsuya; Fukuhara, Hiroyuki; Muramatsu, Shigeru; and Yamada, Sadayuki, 5,549,466, Cl. 418-55.100.

Murano, Elsa A.: *See*—
Lyon, Wanda J.; Olson, Dennis G.; and Murano, Elsa A., 5,549,895, Cl. 424-115.000.

Muraoka, Yoshinori, to Kabushiki Kaisha Toshiba. Automatic addfare machine. 5,550,360, Cl. 239-384.000.

Murase, Satoshi: *See*—
Nakagawa, Susumu; Kato, Shinji; Murase, Satoshi; Okamoto, Osamu; Mitomo, Ryuji; Yamamoto, Katsumi; Yamada, Koji; and Fukatsu, Hiroshi, 5,550,121, Cl. 514-210.000.

Murata Manufacturing Co., Ltd.: *See*—
Miyamoto, Makoto, 5,549,926, Cl. 427-100.000.

Okuhara, Shizuo, 5,549,754, Cl. 118-500.000.
Yamaki, Kazuhisa; and Kawabata, Kazunari, 5,550,553, Cl. 343-785.000.

Murayama, Fumitaka: *See*—
Dowler, James A.; Whitaker, Tyson B.; King, Julius D., Jr.; Murayama, Fumitaka; Takizawa, Satoru; Gomi, Masaao; and Itoh, Fumiyoshi, 5,550,627, Cl. 355-326.00M.

Murayama, Yuzo: *See*—
Otsuka, Haruhiko; Murayama, Yuzo; Tashiro, Akihiko; Hyomi, Kyoko; and Ishimaru, Naohiko, 5,549,954, Cl. 428-65.300.

Murch, Bruce P.; Roselle, Brian J.; and Jones, Kyle D., to Procter & Gamble Company, The. Cleaning methods and compositions for produce. 5,549,758, Cl. 134-6.000.

Murden, Frank, to Analog Devices, Inc. Analog to digital converter using complementary differential emitter pairs. 5,550,492, Cl. 327-65.000.

Murdock, Douglas R.: *See*—
McLeod, Clark E.; Hogan, Steven J.; Feltz, Kristi T.; Murdock, Douglas R.; and Hanson, Van E., 5,550,899, Cl. 379-67.000.

Murolo, David. Flexible waterproof applique for accurate mounting directly to swimming pools and the like. 5,549,950, Cl. 428-41.700.

Murray, Douglas J.: *See*—
Gomez, Alfredo; Richards, William M.; and Murray, Douglas J., 5,549,161, Cl. 166-255.100.

Musters, Wouter; Stam, Hein; Suykerbuyk, Maria E.; Visser, Jacob; and Verbakel, Johannes M., to Unilever Patent Holdings, B.V. Cloning and expression of DNA encoding a ripening form of a polypeptide having rhamnogalcturonase activity. 5,550,045, Cl. 435-201.000.

Muto, Mitsuru, to Brother Kogyo Kabushiki Kaisha. Ink jet head having ink-jet holes partially formed by laser-cutting, and method of manufacturing the same. 5,548,894, Cl. 29-890.100.

Muto, Nariaki: *See*—
Mizuta, Yasufumi; Tanaka, Masashi; Muto, Nariaki; Fukami, Toshiyuki; Nakamori, Hideo; Kakui, Mikio; Saito, Sakae; Shiomi, Hiroshi; Sumida, Keisuke; and Uchida, Maki, 5,550,290, Cl. 564-309.000.

Muto, Takao: *See*—
Nishijima, Takayuki; Kawamachi, Kanehiro; Muto, Takao; Yamazaki, Mitsuo; and Arima, Toshiyuki, 5,549,344, Cl. 296-70.000.

Mutoh, Nobuyoshi; Masaki, Ryoso; Miyazaki, Taizou; Tajima, Fumio; and Ohmae, Tsutomu, to Hitachi, Ltd. Electric vehicle drive system and drive method. 5,549,172, Cl. 180-65.100.

Mutter, Linda C.: *See*—
Ellis, Martin K.; Lindstedt, Sven T.; Lock, Edward A.; Markstedt, Maj E. H.; Mutter, Linda C.; and Prisbylla, Michael P., 5,550,165, Cl. 514-676.000.

Myer, Randolph C. Adjustable post or botanical collar apparatus. 5,548,923, Cl. 47-25.000.

Myers, Joe: *See*—
Harp, Daniel L.; Johnson, Gary; and Myers, Joe, 5,549,816, Cl. 210-120.000.

Myers, Roy A. Shopping cart sign for display of advertising and product index. 5,548,911, Cl. 40-308.000.

Myers, Thomas R. Computerized magnetic key programmer. 5,550,534, Cl. 340-825.340.

N.R. Development Limited: *See*—
Ghiraldi, Alberto, 5,548,967, Cl. 62-99.000.

Naas, Robert L.: *See*—
Mitchell, Alton D.; Ruby, Keith D.; Miles, Ronald W.; and Naas, Robert L., 5,549,266, Cl. 248-205.100.

Nadd, Bruno C.; and Houk, Talbott M., to International Rectifier Corporation. Power MOSFET with overcurrent and over-temperature protection and control circuit decoupled from body diode. 5,550,701, Cl. 361-103.000.

Nadolski, Gregory L.; and Satula, Keith O., to Eaton Corporation. System and Method for assigning addresses to I/O devices in a control network and for verifying the assigned address of the devices. 5,551,053, Cl. 395-829.000.

Nagagata, Nobuyoshi: *See*—
Ueyama, Toshinari; and Nagagata, Nobuyoshi, 5,550,442, Cl. 315-371.000.

Nagai, Shigekazu; Sakurai, Shuuzou; and Masui, Ryuichi, to SMC Kabushiki Kaisha. Suction pad. 5,549,340, Cl. 294-64.100.

Nagai, Takashi: *See*—
Sakashita, Takeshi; Shimoda, Tomoaki; and Nagai, Takashi, 5,550,205, Cl. 528-176.000.

Nagamura, Yoshiaki: *See*—
Ueno, Ryuzo; Fujita, Yatsuka; Nagamura, Yoshiaki; Kamino, Yuji; and Tabata, Akihiko, 5,549,919, Cl. 426-335.000.

Nagano, Masakazu; Tanaka, Kunihiro; Hibino, Toshiro; and Sato, Hiroshi, to Nintendo Co., Ltd. Information processing system which can check secondary storage medium having prescribed relation therewith and secondary storage device therefor. 5,550,999, Cl. 395-442.000.

Nagano, Yoshinari: *See*—
Tada, Nobuhiko; Miyanagi, Naoki; Shimomura, Yoshiaki; Sakurai, Shigeyuki; Okumura, Shinya; and Nagano, Yoshinari, 5,548,890, Cl. 29-827.000.

Nagao, Yasuhiro: *See*—
Shiga, Tsutomu; Hayashi, Nobuyuki; Ohmi, Masanori; and Nagao, Yasuhiro, 5,549,011, Cl. 74-7.00E.

Nagaraj, Krishnaswamy, to Lucent Technologies Inc. Constant transconductance CMOS amplifier input stage with rail-to-rail input common mode voltage range. 5,550,510, Cl. 330-253.000.

Nagashima, Hiroto: *See*—
Shibasaki, Souhei; Sawano, Yukio; and Nagashima, Hiroto, 5,550,097, Cl. 503-201.000.

Nagata, Masaya; Nojima, Hideo; and Koba, Masayoshi, to Sharp Kabushiki Kaisha. Superconducting magnetoresistive element having a plurality of weak-coupling portions and a method of fabricating the same. 5,550,101, Cl. 505-162.000.

Nagayama, Takeshi: *See*—
Someya, Jun; Chiba, Kazuhiro; Watabu, Kazuyoshi; Yamamoto, Yoshie; Inamura, Mamoru; Nagayama, Takeshi; Bamba, Noriko; and Sunada, Noboru, 5,550,936, Cl. 382-263.000.

Nahamoo, David: *See*—
Bellegarda, Jerome R.; Nahamoo, David; and Nathan, Krishna S., 5,550,931, Cl. 382-187.000.

Nahapetiance, Henri: *See*—
Patel, Rushikesh M.; Nahapetiance, Henri; and Agarwal, Rajiv, 5,550,852, Cl. 372-33.000.

Nahas, Nicholas C.: *See*—
Puzic, Olga; Evers, Larry J.; Williamson, Kenneth E.; Gorbaty, Martin L.; and Nahas, Nicholas C., 5,549,744, Cl. 106-274.000.

Nair, Indira G.: *See*—
Nair, Madhavan G.; Nair, Indira G.; and Pati, Ratna, 5,550,128, Cl. 514-249.000.

Nair, Madhavan G.; Nair, Indira G.; and Pati, Ratna. Enantiomers of gamma methylene 10-deaza aminopterin and process for preparing the same. 5,550,128, Cl. 514-249.000.

Naito, Hiroyuki; Otani, Masato; Oh-Kita, Motomu; and Kuroda, Toru, to Mitsubishi Rayon Co., Ltd. Process for producing catalyst used for synthesis of methacrylic acid. 5,550,095, Cl. 502-211.000.

Nakabayashi, Jiro, to Sharp Kabushiki Kaisha. Multiplex communication system using separated and multiplexed data. 5,550,593, Cl. 348-465.000.

Nakagawa, Susumu; Kato, Shinji; Murase, Satoshi; Okamoto, Osamu; Mitomo, Ryuji; Yamamoto, Katsumi; Yamada, Koji; and Fukatsu, Hiroshi, to Banyu Pharmaceutical Co., Ltd. Aminoalkylpyrrolidinylthiocarbapenem derivatives. 5,550,121, Cl. 514-210.000.

Nakaguchi, Yasunori: *See*—
Inoue, Kunimi; Yamada, Yoshiyuki; Amatsu, Kazumi; Mimura, Yukiteru; Nakaguchi, Yasunori; Shinmura, Hiroyuki; Ono, Yasuyuki; Osawa, Yutaka; Mizutaki, Shoichi; Kasai, Masaji; and Tomioka, Shinji, 5,550,283, Cl. 562-561.000.

Nakahara, James H.: *See*—
Paciorek, Kazimiera J. L.; Lin, Wen-Huey; Masuda, Steven R.; and Nakahara, James H., 5,550,277, Cl. 558-194.000.

Nakahigashi, Sachiyo: *See*—
Sakuragi, Shoji; Nakahigashi, Sachiyo; Kanda, Sachie; and Sawada, Akihiro, 5,549,399, Cl. 400-63.000.

Nakahira, Hiroyuki: *See*—
Sakiyama, Shiro; Dosho, Shiro; Maruyama, Masakatsu; Nakahira, Hiroyuki; Shono, Toshiyuki; and Matsuzawa, Akira, 5,550,544, Cl. 341-155.000.

Nakai, Yoshihiro; Sawada, Kazuo; Hayashi, Kazuhiko; and Nishio, Masanobu, to Sumitomo Electric Industries, Ltd. Superconductor and method of manufacturing the same. 5,550,102, Cl. 505-420.000.

Nakajima, Akiko, to Matsushita Electric Industrial Co., Ltd. Document creation assistance device. 5,550,741, Cl. 364-419.140.

Nakajima, Akio, to Sharp Kabushiki Kaisha. Regulated power supply circuit and an emitter follower output current limiting circuit. 5,550,462, Cl. 323-277.000.

Nakajima, Makoto: *See*—
Tanaka, Kohichi; Hashimoto, Hiromasa; Inada, Yasuo; and Nakajima, Makoto, 5,549,502, Cl. 451-8.000.

Nakajima, Takehiko: *See*—
Abe, Wataru; Yamamoto, Akihiro; Nakajima, Takehiko; and Kojima, Makoto, 5,550,775, Cl. 365-189.110.

Nakajima, Tatsuo: *See*—
Hasegawa, Ko; Teramoto, Toshio; Nakajima, Tatsuo; and Konomoto, Takeyoshi, 5,550,190, Cl. 525-92.00A.

Nakajima, Tatsuya: *See*—
Izawa, Yasuhiro; Fujii, Tatsuya; Shiraishi, Naoto; Fukushima, Masanobu; and Nakajima, Tatsuya, 5,551,019, Cl. 395-600.000.

Nakakawaji, Takayuki: *See*—
Uematsu, Takao; Shoji, Mitsuyoshi; Nakakawaji, Takayuki; Komatsuzaki, Shigeki; Ito, Yutaka; Morihara, Atsushi; Sato, Koji; Zushi, Shizuo; and Go, Hiroshi, 5,549,835, Cl. 508-204.000.

Nakako, Toru; Tanimura, Hideki; and Tukuda, Kouji, to Kabushiki Kaisha Yaskawa Denki. Wrist mechanism for an industrial robot. 5,549,016, Cl. 74-490.020.

Nakamori, Hideo: *See*—
Mizuta, Yasufumi; Tanaka, Masashi; Muto, Nariaki; Fukami, Toshiyuki; Nakamori, Hideo; Kakui, Mikio; Saito, Sakae; Shiomi, Hiroshi; Sumida, Keisuke; and Uchida, Maki, 5,550,290, Cl. 564-309.000.

Nakamori, Masaharu: *See*—
Kitajima, Hiroshi; Aoki, Hidemitsu; Hamano, Haruto; Morita, Makoto; Shiramizu, Yoshimi; Nakamori, Masaharu; Watanabe, Kaori; Seo, Hirofumi; Shimizu, Yuji; Iuchi, Makoto; Sasaki, Yasushi; and Ohta, Nahomi, 5,549,798, Cl. 204-222.000.

Nakamoto, Makoto: *See*—
Aoki, Yoichi; Sato, Yasuo; Ito, Chiaki; Nishiuchi, Hitoshi; Nakamoto, Makoto; Yamaguchi, Syoji; Mio, Haruhiko; Koyata, Kazuhiro; and Miyazawa, Yoshinori, 5,550,562, Cl. 345-163.000.

Nakamura, Hiroko: *See*—

Tanaka, Satoshi; Inoue, Soichi; and Nakamura, Hiroko, 5,549,995, Cl. 430-5.000.

Nakamura, Kazunari: *See*—
Takasugi, Kei; and Nakamura, Kazunari, 5,550,582, Cl. 348-65.000.

Nakamura, Masaharu, to Tokyo Seimitsu Co., Ltd. Semiconductor manufacturing system with self-diagnosing function and self-diagnosing method thereof. 5,550,634, Cl. 356-401.000.

Nakamura, Satoshi; and Shirahata, Hirokatsu, to Nisshinbo Industries, Inc. Process for producing modified polyisocyanurate foams. 5,550,168, Cl. 521-108.000.

Nakamura, Shouji; Kimura, Shinji; Sugita, Yumiko; Yamamoto, Reki; Koda, Eriko; Kuwana, Toshiyuki; and Manda, Masato, to Hitachi, Ltd. System for selectively performing parallel or sequential drawing processing. 5,550,962, Cl. 395-133.000.

Nakamura, Takao; Sekiyama, Nobuya; Tani, Hiroshi; and Kato, Yoshiki, to Hitachi, Ltd. Method of producing magnetic disk. 5,549,211, Cl. 216-11.000.

Nakane, Hideaki: *See*—
Nishino, Toshikazu; Hatano, Mutsuko; Hasegawa, Haruhiro; Nakane, Hideaki; Kawabe, Ushio; Saitoh, Kazuo; Suga, Mitsuo; and Takagi, Kazumasa, 5,550,389, Cl. 257-30.000.

Nakane, Seiji: *See*—
Koide, Yoshinao; Nakane, Seiji; and Imai, Yutaka, 5,550,041, Cl. 435-119.000.

Nakanishi, Hiroshi; Saito, Norihisa; Ando, Toshinori; and Morinaga, Hisakazu, to Canon Kabushiki Kaisha. Optical element molding method. 5,549,855, Cl. 264-2.500.

Nakanishi, Yasuo: *See*—
Ishida, Tokuji; Nakanishi, Yasuo; Ishimura, Toshihiko; Katoh, Takehiro; Ishibashi, Kenji; Hara, Yoshihiro; Kondo, Takashi; and Yoshino, Hiroshi, 5,550,611, Cl. 354-400.000.

Nakano, Akira: *See*—
Fukuda, Koichi; Oba, Tomofumi; Miyazaki, Masanori; Fukui, Hirofumi; Iwasaki, Chisato; Kasama, Yasuhiko; Ohmi, Tadahiro; Kubota, Masaru; Kitagawa, Hitoshi; Nakano, Akira; and Yoshida, Osamu, 5,550,091, Cl. 437-241.000.

Nakano, Yasuyoshi; and Harada, Seiji, to Uniden Corp.; and Uniden America Corporation. Channel sorting scanning receiver. 5,551,071, Cl. 455-161.200.

Nakano, Yukio: *See*—
Takatori, Masahiro; Nakano, Yukio; and Ashi, Yoshihiro, 5,550,805, Cl. 370-16.100.

Nakata, Shigeharu: *See*—
Shiba, Masue; and Nakata, Shigeharu, 5,550,996, Cl. 395-421.030.

Nakata, Toshinobu: *See*—
Tsunemi, Hidenari; and Nakata, Toshinobu, 5,550,282, Cl. 560-301.000.

Nakatani, Seichi: *See*—
Kunitomo, Yoshinobu; Nozu, Makoto; Sakashita, Yasuyuki; Tsukamoto, Masahide; Nakatani, Seichi; Saeki, Keiji; and Kitayama, Yoshifumi, 5,550,408, Cl. 257-737.000.

Nakayama, Norio. Retaining wall structure and method of constructing same. 5,549,420, Cl. 405-286.000.

Naldec Corporation: *See*—
Kurata, Yasuhiko; Akiyama, Yuichi; and Michihira, Osamu, 5,550,830, Cl. 370-95.200.

Nam, Keyoung T.; and Sung, Hong E., to LG Electronics, Inc. Control device for power saving. 5,550,885, Cl. 377-27.000.

Namekata, Takeshi: *See*—
Sato, Toshio; Ito, Ikuo; Maeda, Kazuhiko; Yokota, Keiichi; Namekata, Takeshi; and Nemoto, Akihiko, 5,550,284, Cl. 562-467.000.

Namura, Genji; and Takasawa, Masao, to Carrozzeria Japan Co., Ltd. Conductive and exothermic fluid material. 5,549,849, Cl. 252-503.000.

Nanami, Shoji; and Yasuda, Hiroaki, to Fuji Photo Film Co., Ltd. Method and apparatus for detecting abnormal image patterns. 5,550,385, Cl. 250-584.000.

Nanda, Sanjiv: *See*—
Doshi, Bharat T.; Ejzak, Richard P.; and Nanda, Sanjiv, 5,550,848, Cl. 371-33.000.

Nanomotion Ltd.: *See*—
Zumeris, Jona, 5,550,419, Cl. 310-323.000.

NaPro BioTherapeutics, Inc.: *See*—
Carver, David R.; Prout, Timothy R.; Workman, Christopher T.; and Hughes, Charles L., 5,549,830, Cl. 210-641.000.

Narahari, Narasimha: *See*—
Cacharelis, Philip J.; Perry, Jeffrey R.; and Narahari, Narasimha, 5,550,072, Cl. 437-43.000.

Naramura, Michiyuki, to Kabushiki Kaisha Kyowa Kogyosho. Food material beating mechanism. 5,549,040, Cl. 099-349.000.

Narang, Inderpal S.: *See*—
Mohan, Chandrasekaran; and Narang, Inderpal S., 5,551,046, Cl. 395-800.000.

Narasaki, John K.: *See*—
Henderson, John E.; and Narasaki, John K., 5,549,773, Cl. 156-173.000.

Nash, John E.: *See*—
Evans, Douglas; and Nash, John E., 5,549,633, Cl. 606-139.000.

Nastec, Inc.: *See*—
Anderson, William J., 5,549,392, Cl. 384-117.000.

Nasu, Takumi: *See*—
Sukegawa, Shunichi; Nasu, Takumi; and Iwai, Hidetoshi, 5,550,394, Cl. 257-209.000.

Natarajan, Kadathur S.: *See*—
Hutcheson, Jonathan E.; Natarajan, Kadathur S.; and Leopold, Raymond J., 5,551,058, Cl. 455-33.200.
Hutcheson, Jonathan E.; Natarajan, Kadathur S.; and Leopold, Raymond J., 5,551,059, Cl. 455-33.200.

Nathan, Krishna S.: *See*—
Bellegarda, Jerome R.; Nahamoo, David; and Nathan, Krishna S., 5,550,931, Cl. 382-187.000.

National-Oilwell Canada Ltd.: *See*—
Bownes, Dan; and Wiltse, Darren, 5,549,160, Cl. 166-250.080.

National Research Council of Canada: *See*—
Li, Li, 5,549,953, Cl. 428-64.100.

National Science Council: *See*—
Wan, Ben-Zu; and Kang, Yih-Ming, 5,550,093, Cl. 502-74.000.

National Semiconductor Corporation: *See*—
Cacharelis, Philip J.; Perry, Jeffrey R.; and Narahari, Narasimha, 5,550,072, Cl. 437-43.000.
Cripps, Peter K., 5,550,865, Cl. 375-295.000.
Gill, Manzur, 5,550,772, Cl. 365-185.030.
Lorenz, Perry S., 5,550,464, Cl. 323-315.000.
Worsley, Debra J.; Rangan, Geetha N. K.; Edem, Brian C.; and Evans, Michael S., 5,550,802, Cl. 370-13.000.

National Starch and Chemical Investment Holding Corporation: *See*—
Hung, Ju M.; and Graham, Malcolm, 5,550,191, Cl. 525-92.00C.

Natschke, Scott: *See*—
Kanjo, Wajih; Smith, Eric; Demoise, Thomas J.; Girotti, Michael; McCabe, Thomas; Fessler, Charles B.; and Natschke, Scott, 5,549,363, Cl. 303-7.000.

Natural Resources - Canada: *See*—
Gould, W. Douglas; Lortie, Lyne; and Béchard, Geneviève, 5,550,141, Cl. 514-363.000.

Naubik, Jürgen: *See*—
Heisner, Thomas; Naubik, Jürgen; and Juras, Karl-Heinz, 5,549,100, Cl. 126-39.00J.

Nauche, Michel; and Guillermin, Laurent, to Essilor International. Ophthalmic lens grinding machine. 5,549,503, Cl. 451-11.000.

Navaroli, Henry D.; and Lednum, Eugene E., to Litton Systems, Inc. Gas discharge closing switch with unitary ceramic housing. 5,550,430, Cl. 313-589.000.

NCR Corporation: *See*—
Crockett, Robert J., 5,550,712, Cl. 361-752.000.

Ndondo-Lay, Robert; and Rupp, Garry E., to Medtronic, Inc. Rapid exchange catheter with external wire lumen. 5,549,556, Cl. 604-102.000.

NEC Corporation: *See*—
Asai, Shuji, 5,549,749, Cl. 117-90.000.
Fujieda, Ichiro; and Kaneko, Setsuo, 5,550,659, Cl. 359-54.000.
Furuta, Koichiro, 5,550,491, Cl. 326-115.000.
Haruyama, Junzi, 5,550,388, Cl. 257-24.000.
Hashimoto, Tadao, 5,550,992, Cl. 375-355.000.
Hayashi, Hisao, 5,550,588, Cl. 348-231.000.
Hayashi, Yoshihiro, 5,550,427, Cl. 313-355.000.
Irie, Yasuhito; and Yamada, Kenji, 5,550,823, Cl. 370-60.100.
Ito, Masahiro; and Hirano, Yoji, 5,550,501, Cl. 327-374.000.
Kaku, Tomoya; and O'Regan, Sean, 5,550,811, Cl. 370-18.000.
Kanoh, Hiroshi; Nishida, Shinichi; and Mizobata, Eishi, 5,549,212, Cl. 216-24.000.
Kitajima, Hiroshi; Aoki, Hidemitsu; Hamano, Haruto; Morita, Makoto; Shiramizu, Yoshimi; Nakamori, Masaharu; Watanabe, Kaori; Seo, Hirofumi; Shimizu, Yuji; Iuchi, Makoto; Sasaki, Yasushi; and Ohta, Nahomi, 5,549,798, Cl. 204-222.000.
Komatsu, Nobuko, 5,550,675, Cl. 359-514.000.
Kuriyama, Toshihide; and Makishima, Hideo, 5,550,435, Cl. 315-169.100.
Mano, Kimihiro, 5,550,835, Cl. 370-110.100.
Matsubayashi, Katsuyoshi, 5,550,329, Cl. 178-18.000.
Shigaki, Seiichiro; Shimizu, Hiroaki; and Mizomoto, Hiroyuki, 5,550,878, Cl. 375-373.000.
Shiojiri, Hirohisa; and Koga, Toshio, 5,550,589, Cl. 348-387.000.
Suzuki, Takahiro, 5,550,687, Cl. 360-98.080.
Takahashi, Hiroyuki, 5,550,778, Cl. 365-207.000.
Takai, Yasuhiro, 5,550,784, Cl. 365-233.000.
Tsumura, Soichi, 5,550,506, Cl. 329-304.000.
Wada, Koji; and Sato, Kouichi, 5,550,648, Cl. 358-448.000.
Watanabe, Nozomu, 5,551,072, Cl. 455-226.200.

NEC USA, Inc.: *See*—
Dey, Sujit; and Potkonjak, Miodrag, 5,550,749, Cl. 364-489.000.

Nechvatal, Timothy M.; and Jansen, Thomas J., to Minergy Corp. Converting paper mill sludge or the like. 5,549,059, Cl. 110-346.000.

Neff, Laurence D.: *See*—
Dai, Pei-Shing E.; Tsang, Chih-Hao M.; Neff, Laurence D.; and Petty, Randall H., 5,549,813, Cl. 208-120.000.

Negola, Edward J.; and Kennedy, James R. Bulked continuous filament carpet yarn. 5,549,957, Cl. 428-92.000.

Neitzel, Ulrich; Maack, Hanss-Ingo; and Pralow, Thomas, to U.S. Philips Corporation. Method of displaying notably a digital X-ray image as a visible image, and device for carrying out the method. 5,550,888, Cl. 378-98.700.

Neko, Noriaki: *See*—
Kamiguchi, Masao; and Neko, Noriaki, 5,549,857, Cl. 264-40.100.

Nellcor Puritan-Bennett Incorporated: *See*—
Miller, Gregory R.; Adriance, Kyle; and Philipak, Stanley, 5,549,720, Cl. 55-324.000.

170–654 O.G.–96–30: QL3

JUL 1189 SS 4 AG 27 1996 UMI

Nelson, Brian K.: *See*—
Sills, Arthur A.; Kilbourn, Frederick A.; Nelson, Brian K.; and Henderson, Donald J., 5,549,149, Cl. 160-201.000.

Nelson, Philip L.: *See*—
Foster, Donald D.; and Nelson, Philip L., 5,549,249, Cl. 239-463.000.

Nelson, Randall D.; and Westbrook, Gregory L., to Motorola, Inc. Method and means for controlling movement of a chuck in a test apparatus. 5,550,480, Cl. 324-754.000.

Nelson, Robert P.: *See*—
Cooper, Joel; Winegar-Hentges, Sally L.; Nelson, Robert P.; Schankereli, Kemal; and Teich, Kristine M., 5,549,628, Cl. 606-220.000.

Nemoto, Akihiko: *See*—
Sato, Toshio; Ito, Ikuo; Maeda, Kazuhiko; Yokota, Keiichi; Namekata, Takeshi; and Nemoto, Akihiko, 5,550,284, Cl. 562-467.000.

Nenne, Timothy M.: *See*—
Biltgen, Gary L.; Burris, Kenneth W.; Nenne, Timothy M.; Shankwitz, Phil J.; and Walenta, John B., 5,549,764, Cl. 148-222.000.

NeoRx Corporation: *See*—
Srinivasan, Ananthachari; Vrudhula, Vivekananda M.; and Brixner, Diana I., 5,549,883, Cl. 424-1.450.

Neri, Carlo; and Landoni, Gianluigi, to Enichem Synthesis S.p.A. Linear copolyester containing phosphorous, procedure for its preparation and its use as a flame-resistant additive. 5,550,207, Cl. 528-287.000.

Nesbitt, Gregg G. Removable camouflage. 5,549,938, Cl. 428-17.000.

Nesler, Clay G.: *See*—
Pascucci, Gregory A.; Rasmussen, David E.; Decious, Gaylon M.; Garbe, James R.; Hyzer, Susan M.; Woest, Karen L.; Vairavan, Vairavan; Koch, David L.; Gottschalk, Donald A., Jr.; Burkhardt, Dennis E.; Standish, Darrell E.; Madaus, Paul W.; Spacek, Dan J.; Nesler, Clay G.; Stark, James K.; Mageland, Otto M.; Singers, Robert R.; and Wagner, Michael E., 5,550,980, Cl. 395-200.050.

Nessa, James L.: *See*—
Morrison, Darrell R.; Nessa, James L.; and McClurg, James J., 5,550,417, Cl. 310-183.000.

Neubauer, Blake L.: *See*—
Audia, James E.; and Neubauer, Blake L., 5,550,134, Cl. 514-284.000.

Neuenfeldt, Steven; Brauker, James; Clarke, Robert; and Carr-Brendel, Victoria, to Baxter International, Inc. Method for implanting tissue in a host. 5,549,675, Cl. 623-11.000.

Neuenschwander, Thomas R., to L.H. Carbide Corporation. Coreweighing system for closed-loop stock gauging control. 5,550,327, Cl. 177-25.140.

Neumann, Harald: *See*—
Hötzel, Gerhard; Neumann, Harald; Strassner, Walter; and Riegel, Johann, 5,549,804, Cl. 204-425.000.

New York Society For The Ruptured And Crippled Maintaining The Hospital For Special Surgery: *See*—
Miller, Theodore T.; and Ghelman, Bernard, 5,549,626, Cl. 606-200.000.

New York University: *See*—
John, Erwin R.; and Easton, Paul D., 5,549,118, Cl. 128-731.000.

Newcomer, Kevin L.: *See*—
Johnson, Richard D.; Bultman, Robert M.; and Newcomer, Kevin L., 5,549,157, Cl. 166-105.000.

Newland, George. Peristaltic pump attachment for slurry mixers. 5,549,461, Cl. 417-477.110.

Newman, James P., Jr., to Hewlett-Packard Company. Unbounded marker for spectrum analysis. 5,550,747, Cl. 364-485.000.

Newman, John W.: *See*—
Gard, Michael F.; Gravelle, Stephen W.; Hsieh, Jiang; Lu, Quan N.; Newman, John W.; Toth, Thomas L.; and Wu, Michael A., 5,550,889, Cl. 378-113.000.

Newman, Lawrence E.: *See*—
Beakes, John M.; Clemenz, Gary E.; Dolgas, Patrick A.; Heaton, Mark T.; and Newman, Lawrence E., 5,549,253, Cl. 242-432.300.

Newsom, Thomas H.: *See*—
Keener, Don S.; McNeill, Andrew B.; Newsom, Thomas H.; Scheiern, Kevin L.; Voorhees, Richard W.; and Wachtel, Edward I., 5,550,990, Cl. 395-309.000.

Newsome, Michael: *See*—
Segan, Marc H.; and Newsome, Michael, 5,550,319, Cl. 84-103.000.

Ng, Tak-Kwong: *See*—
Beausoleil, William F.; Ng, Tak-Kwong; and Palmer, Harold R., 5,551,013, Cl. 395-500.000.

NGK Insulators, Ltd.: *See*—
Kasai, Yoshiyuki; Kumazawa, Kazuhiko; and Kotani, Wataru, 5,549,725, Cl. 55-523.000.

NGK Spark Plug Co., Ltd.: *See*—
Okuyama, Masahiko; Okada, Kohji; and Yamagiwa, Katsuya, 5,549,123, Cl. 128-898.000.

Nguyen, Quoc: *See*—
Gries, Patrick J.; and Nguyen, Quoc, 5,550,828, Cl. 370-95.100.

Nguyen, Thao A., to International Business Machines Corporation. Magnetic recording disk having textured test band for controlling texture in the slider landing zone. 5,550,696, Cl. 360-135.000.

Nguyen, Thao N.; Oehrlein, Gottlieb S.; and Weinberg, Zeev A., to International Business Machines Corporation. Adhesion promotion of fluorocarbon films. 5,549,935, Cl. 427-490.000.

Nguyen, Uoc: *See*—
Barnes, Eric S.; Eldridge, George L.; Nguyen, Uoc; Shah, Ajit; and Weir, Ronald E., 5,551,052, Cl. 395-800.000.

Niagara Tube Washing Systems AB: *See*—
Lithander, Erik J., 5,549,759, Cl. 134-22.110.

Nickell, Larry C., to Appalachian Electronic Instruments, Inc. Method and apparatus of automatically scanning for density defects in carpets. 5,550,384, Cl. 250-559.450.

Nickerson, Mark A., to Hewlett-Packard Company. Portable extraction instrument. 5,549,819, Cl. 210-198.200.

Nicklaus, Karl, to Esec Sempac S.A. Electronic module of extra-thin construction. 5,550,402, Cl. 257-669.000.

Nicolaou, K. C.; and Pitsinos, Emmanuel N., to Scripps Research Institute, The. Calicheamicin mimics. 5,550,246, Cl. 546-300.000.

Nidek Co., Ltd.: *See*—
Sumiya, Toshifumi, 5,549,599, Cl. 606-10.000.

Niegel, Andreas: *See*—
Jennrich, Irene; Weber, Lothar; and Niegel, Andreas, 5,550,424, Cl. 313-130.000.

Niemand, Rudolf: *See*—
Kinsel, Hagen; and Niemand, Rudolf, 5,548,916, Cl. 42-89.000.

Nihei, Ryo; Terada, Akihiro; and Sasaki, Yasuo, to Fanuc Ltd. Small-locus machining apparatus. 5,549,018, Cl. 74-490.030.

Nii, Yoshihide, to Toyota Jidosha Kabushiki Kaisha. Generator controller and controlling method for hybrid vehicle. 5,550,445, Cl. 318-153.000.

Nikken Corporation: *See*—
Kishi, Mitsuhiro, 5,549,437, Cl. 414-462.000.

Nikon Corporation: *See*—
Kamiya, Saburo, 5,550,633, Cl. 356-358.000.
Ueno, Yasunori, 5,550,600, Cl. 351-159.000.

Niles, Edward G.: *See*—
Moss, Bernard; Studier, F. William; Fuerst, Thomas R.; and Niles, Edward G., 5,550,035, Cl. 435-69.100.

Nilssen, Ole K. Electronic ballast having pulsating output voltage. 5,550,439, Cl. 315-244.000.

Nilsson, Christer: *See*—
Itoh, Kosaku; Yokoyama, Ikuro; Prochut, Richard; Löfstedt, Jörgen; and Nilsson, Christer, 5,549,191, Cl. 198-432.000.
Prochut, Richard; Löfstedt, Jörgen; and Nilsson, Christer, 5,548,944, Cl. 53-511.000.

Nilsson, Jan: *See*—
Larker, Hans; Lundberg, Robert; Mattsson, Bertil; Nilsson, Jan; and Pejryd, Lars, 5,549,770, Cl. 156-89.000.

Nimberger, Spencer M., to PGI International, Ltd. Vehicular fuel control system and method. 5,549,097, Cl. 123-690.000.

Ning, Xin: *See*—
Qin, Jian; Gross, James R.; Mui, William J.; Ning, Xin; Schroeder, Wen Z.; and Sun, Tong, 5,550,189, Cl. 525-54.300.

Nintendo Co., Ltd.: *See*—
Nagano, Masakazu; Tanaka, Kunihiro; Hibino, Toshiro; and Sato, Hiroshi, 5,550,999, Cl. 395-442.000.
Shirai, Ichiro; Yamagami, Hitoshi; Hiroshige, Eiichi; and Kubo, Koichi, 5,550,452, Cl. 320-2.000.

Nippes, Helmut, to Teepack Spezialmaschinen GmbH & Co. KG. Device for packing stacks of filled tea bags. 5,548,945, Cl. 53-540.000.

Nippon Chemical Industrial Co., Ltd.: *See*—
Kato, Mutsuno; Hara, Yoshifusa; and Takada, Masao, 5,550,275, Cl. 558-140.000.

Nippon Eisei Center Co., Ltd.: *See*—
Iwakawa, Toru, 5,549,869, Cl. 422-40.000.

Nippon Oil and Fats Company, Limited: *See*—
Ishidoya, Masahiro; Shibato, Kishio; Komoto, Keiji; Shibamoto, Kenji; Mashita, Mitsuyuki; and Ohe, Osamu, 5,549,932, Cl. 427-385.500.

Nippon Oil Co., Ltd.: *See*—
Miyagawa, Toru; Okada, Mitsuo; and Osumi, Tomomasa, 5,549,838, Cl. 252-75.000.

Nippon Paint Co., Ltd.: *See*—
Oshima, Toshiyuki; Ishibashi, Hideo; Minamino, Hiromasa; Yamamoto, Satoshi; Izumo, Takaharu; and Kaneko, Mitsuharu, 5,550,198, Cl. 525-404.000.

Nippon Pillar Packing Co., Ltd.: *See*—
Ueda, Takahisa, 5,549,306, Cl. 277-230.000.

Nippon Sanso Corporation: *See*—
Ito, Seiichi; Goto, Toru; and Kawamura, Kazuhiro, 5,549,039, Cl. 99-340.000.

Nippon Shokubai Koguko Kogyo Co., Ltd.: *See*—
Inoue, Akira; Kobayashi, Motonobu; and Ono, Tetsuji, 5,550,096, Cl. 502-217.000.

Nippon Soken, Inc.: *See*—
Konaga, Naoji; Inagaki, Mitsuo; Asa, Hironori; and Tanahashi, Toshitaka, 5,549,371, Cl. 303-152.000.

Nippon Steel Corporation: *See*—
Kasuya, Tadashi; Shinada, Koichi; Horii, Yukihiko; and Miyazaki, Tateo, 5,550,347, Cl. 219-137.00R.
Sawada, Kikuzo, 5,550,494, Cl. 327-69.000.

Nippon Suisan Kaisha, Ltd.: *See*—
Inoue, Tadashi; and Tsujimura, Tetsuzo, 5,549,739, Cl. 106-15.050.

Nippon Telegraph and Telephone Corporation: *See*—
Fujii, Teruya; and Sakamoto, Masayuki, 5,551,060, Cl. 455-33.400.
Hirano, Makoto; Asai, Kazuyoshi; Imai, Yuhki; Tokumitsu, Masami; Tokumitsu, Tsuneo; and Toyoda, Ichihiko, 5,550,068, Cl. 437-41.000.

Nippon Thermostat Co., Ltd.: *See*—
Kai, Kazuyuki; Hamano, Masahisa; Homma, Hitoshi; Mori, Akira; and Masuko, Takashi, 5,549,244, Cl. 236-34.500.

Nippondenso Co., Ltd.: *See*—

Kiribayashi, Shinichi; and Ina, Toshikazu, 5,549,325, Cl. 280-735.000.

Konaga, Naoji; Inagaki, Mitsuo; Asa, Hironori; and Tanahashi, Toshitaka, 5,549,371, Cl. 303-152.000.

Kuroyanagi, Akira; Tomatsu, Yutaka; and Tsuzuki, Yasuaki, 5,550,067, Cl. 437-41.000.

Kusase, Shin; Mitani, Kenzo; Umeda, Atsushi; and Sato, Hirohide, 5,550,457, Cl. 322-29.000.

Matsumura, Masafumi; and Kanamori, Junichiro, 5,549,169, Cl. 173-176.000.

Obata, Kenzo, 5,550,363, Cl. 235-462.000.

Sakai, Minekazu; Fukada, Tsuyoshi; Terada, Masakazu; Watanabe, Shinsuke; and Nishida, Minoru, 5,549,785, Cl. 156-644.100.

Shiga, Tsutomu; Hayashi, Nobuyuki; Ohmi, Masanori; and Nagao, Yasuhiro, 5,549,011, Cl. 74-7.00E.

Torii, Akito; Matsumoto, Naoki; and Takeda, Shigeru, 5,549,175, Cl. 180-209.000.

Yamamoto, Tomohisa; Hayakawa, Junji; and Ban, Hiroyuki, 5,550,465, Cl. 324-143.000.

Nishi, Takao: *See*—
Sakurai, Yohji; Kurahashi, Nobuyuki; Hirose, Tsuyoshi; Miwa, Takashi; Mori, Atsushi; and Nishi, Takao, 5,550,292, Cl. 564-399.000.

Nishida, Minoru: *See*—
Sakai, Minekazu; Fukada, Tsuyoshi; Terada, Masakazu; Watanabe, Shinsuke; and Nishida, Minoru, 5,549,785, Cl. 156-644.100.

Nishida, Shinichi: *See*—
Kanoh, Hiroshi; Nishida, Shinichi; and Mizobata, Eishi, 5,549,212, Cl. 216-24.000.

Nishii, Michiharu: *See*—
Toda, Hiroshi; Nishii, Michiharu; Kusano, Akihito; Noda, Yoshiki; Kuromitsu, Hiromu; Terazawa, Tadashi; and Kojima, Seiichi, 5,549,366, Cl. 303-113.200.

Nishijima, Takayuki; Kawamachi, Kanehiro; Muto, Takao; Yamazaki, Mitsuo; and Arima, Toshiyuki, to Kansei Corporation. Structure of instrument panel portion for use in vehicles. 5,549,344, Cl. 296-70.000.

Nishimura, Michiyo, to Canon Kabushiki Kaisha. Semiconductor layer structure having distributed strain and optical semiconductor device including such strained layer. 5,550,393, Cl. 257-192.000.

Nishinaka, Teruaki: *See*—
Sakemi, Shoji; and Nishinaka, Teruaki, 5,548,891, Cl. 29-842.000.

Nishino, Toshikazu; Hatano, Mutsuko; Hasegawa, Haruhiro; Nakane, Hideaki; Kawabe, Ushio; Saitoh, Kazuo; Suga, Mitsuo; and Takagi, Kazumasa, to Hitachi, Ltd. Superconducting device. 5,550,389, Cl. 257-30.000.

Nishio, Masanobu: *See*—
Nakai, Yoshihiro; Sawada, Kazuo; Hayashi, Kazuhiko; and Nishio, Masanobu, 5,550,102, Cl. 505-420.000.

Nishioka, Yukiko: *See*—
Kamiya, Ichiro; Shinjo, Ryoichi; Murakami, Takeshi; Nishioka, Yukiko; and Harada, Minoru, 5,549,874, Cl. 422-186.040.

Nishiuchi, Hitoshi: *See*—
Aoki, Yoichi; Sato, Yasuo; Ito, Chiaki; Nishiuchi, Hitoshi; Nakamoto, Makoto; Yamaguchi, Syoji; Mio, Haruhiko; Koyata, Kazuhiro; and Miyazawa, Yoshinori, 5,550,562, Cl. 345-163.000.

Nishiya, Yoshiaki: *See*—
Suzuki, Yuzuru; Takii, Yukio; Yamamoto, Kazumi; Nishiya, Yoshiaki; Sogabe, Atsushi; Sogabe, Yukihiro; and Emi, Shigenori, 5,550,046, Cl. 435-202.000.

Nishiyama, Tamotsu, to Matsushita Electric Industrial Co. Ltd. Schematic generator and schematic generating method. 5,550,714, Cl. 364-490.000.

Nishizaki, Osamu; and Aoyama, Shigeru, to Omron Corporation. Method of manufacturing optical low-pass filter. 5,550,663, Cl. 359-95.000.

Niskanen, Juhani; and Vähäpesola, Jari, to Valmet Corporation. Method for heating a roll and a heatable roll. 5,549,154, Cl. 165-89.000.

Nisshinbo Industries, Inc.: *See*—
Nakamura, Satoshi; and Shirahata, Hirokatsu, 5,550,168, Cl. 521-108.000.

Nita, Valerian M.: *See*—
Clinton, Eric L.; Pao, Hsien C.; Allen, William R.; and Nita, Valerian M., 5,548,995, Cl. 73-116.000.

Nitsche, Torsten M., to Nitsche, Torsten M. Rotary lock for releasably connecting corner fittings of containers stacked one upon the other. 5,548,877, Cl. 24-287.000.

Nixon, Donald R., to Westinghouse Electric Corporation. Radial bearing assembly for a high intertia flywheel of a canned motor pump. 5,549,459, Cl. 417-423.120.

NKK Corporation: *See*—
Hori, Mitsuaki; Ebihara, Yukihiko; and Wadano, Katsumi, 5,549,336, Cl. 285-333.000.
Matsuo, Giichi; Sakai, Akira; Rains, Jeral; and Elley, Dayton, 5,548,986, Cl. 72-204.000.

Nobbe, Dan W.; and Royer, Ronald L., to Motorola, Inc. Method and apparatus for communication unit frequency assignment. 5,551,064, Cl. 455-62.000.

Noble, Ernest P.: *See*—
Blum, Kenneth; Noble, Ernest P.; and Sheridan, Peter J., 5,550,021, Cl. 435-6.000.

Noble, J. Donald: *See*—
Muehlemann, Michael M.; and Noble, J. Donald, 5,550,946, Cl. 385-121.000.

Noble, Julia A.: *See*—
Gupta, Rajiv; Noble, Julia A.; Hartley, Richard I.; and Schmitz, Andrea M., 5,550,376, Cl. 250-360.100.

Noda, Yoshiki: *See*—
Toda, Hiroshi; Nishii, Michiharu; Kusano, Akihito; Noda, Yoshiki; Kuromitsu, Hiromu; Terazawa, Tadashi; and Kojima, Seiichi, 5,549,366, Cl. 303-113.200.

Noe, Raymond J.: *See*—
Sulcs, Juris; and Noe, Raymond J., 5,550,422, Cl. 313-25.000.

Noel, John R.: *See*—
Horney, James C.; and Noel, John R., 5,549,589, Cl. 604-366.000.

Noel, Paul D.: *See*—
Bales, Michael E.; Noel, Paul D.; and Schatz, Steve M., 5,549,098, Cl. 126-211.000.

Noell-DBI Energie-Und Entsorgungstechnik GmbH: *See*—
Schingnitz, Manfred; Göhler, Peter; and Martin, Heinz, 5,550,312, Cl. 588-205.000.

Noiles, Douglas G.; and DeCarlo, Alfred F., Jr., to Joint Medical Products Corporation. Acetabular prosthesis with apertures sealed with deformable discs and method. 5,549,694, Cl. 623-22.000.

Noise Cancellation Technologies, Inc.: *See*—
Langley, Andrew J., 5,550,334, Cl. 181-206.000.

Nojima, Hideo: *See*—
Nagata, Masaya; Nojima, Hideo; and Koba, Masayoshi, 5,550,101, Cl. 505-162.000.

Nokia Mobile Phones Ltd.: *See*—
Harrison, Peter D.; and Hodgkinson, Sarah, 5,551,069, Cl. 455-90.000.
Heidari, Alireza R., 5,550,893, Cl. 379-59.000.
Hulkko, Jaakko; Matero, Jorma; and Vilmi, Toivo, 5,551,067, Cl. 455-88.000.

Nokia Telecommunications Oy: *See*—
Koponen, Pekka; and Suonvieri, Jukka, 5,551,056, Cl. 455-8.000.

Nöldner, Michael; Chatterjee, Shyam S.; and Hauer, Hermann, to Willmar Schwabe GmbH & Co. Benzopyranones, processes for their preparation and their use. 5,550,129, Cl. 514-253.000.

Nolet, Steven C.: *See*—
Quigley, Peter A.; Nolet, Steven C.; and Gallagher, James L., 5,549,947, Cl. 428-36.200.

Noll, Robert A., Jr., to Hoesch Suspensions, Inc. Method for providing a flexible covering for a portion of a tapered coil spring. 5,548,898, Cl. 29-896.910.

Nomura, Akihiro: *See*—
Kurata, Mitsuru; Kanemitsu, Shinji; Nomura, Akihiro; Ebata, Tokihide; Takeda, Akio; Miyauchi, Yasuo; Uchida, Haruo; and Onoda, Shigeyoshi, 5,550,570, Cl. 347-49.000.

Nomura, Takashi, to Mitsubishi Denki Kabushiki Kaisha. Voice canceler with simulated stereo output. 5,550,920, Cl. 381-1.000.

Noneman, Mark E.; and Porter, Donald A., to TRW Inc. Advanced parameter encoder with dual integrated pulse present detection and channel/sector arbitration. 5,550,546, Cl. 342-13.000.

Noone, Robert P. Stock motor vehicle outfitted with a sports theme kit. 5,549,940, Cl. 428-31.000.

Nordica S.p.A.: *See*—
Foffano, Massimo; Foscaro, Giancarlo; and Lucchetta, Faustino, 5,548,909, Cl. 36-117.600.

Nordine, Paul C., to Clemson University. Laser assisted fiber growth. 5,549,971, Cl. 428-364.000.

Nordson Corporation: *See*—
Milovich, Robert; Schroeder, Ronald R.; Parmentar, William F.; Molnar, Julius J.; and Penick, Jack, 5,549,755, Cl. 118-629.000.

Norfolk Scientific, Inc., d/b/a Statspin Technologies: *See*—
Kelley, Thomas F., 5,549,750, Cl. 118-55.000.

Noro, Yutaka: *See*—
Chishima, Masamitsu; and Noro, Yutaka, 5,549,485, Cl. 439-495.000.

Norsk Hydro a.s: *See*—
Morley, Edward J.; and Syslak, Morten, 5,549,239, Cl. 228-207.000.

North Dakota State University Research Foundation: *See*—
Boudjouk, Philip; and Kloos, Steven D., 5,550,269, Cl. 512-415.000.

North, John: *See*—
Hoarty, W. Leo; Soske, Joshua W.; Lauder, Gary M.; Snell, Stephen C.; Fisher, Delmer D.; and North, John, 5,550,578, Cl. 348-7.000.

North, Stephen C.: *See*—
Fowler, Glenn S.; Korn, David G.; Koutsofios, Elefterios; and North, Stephen C., 5,551,037, Cl. 395-700.000.

Northedge, Ronald. Methods and systems for calibrating flow meters. 5,548,990, Cl. 73-3.000.

Northern Telecom Limited: *See*—
Wong, Thomas Y., 5,550,513, Cl. 330-286.000.

Northrop Corporation: *See*—
King, Kenneth J.; Zawislak, Robert M.; and Vokoun, Richard C., 5,550,434, Cl. 315-160.000.

Northrop Grumman: *See*—
Kapoor, Mohan L.; and Rebeschi, Thomas J., 5,550,557, Cl. 345-76.000.

Northrop Grumman Corporation: *See*—
Henderson, John E.; and Narasaki, John K., 5,549,773, Cl. 156-173.000.

Northwest Water Group PLC: *See*—
Le, Minh Son, 5,549,829, Cl. 210-636.000.

Northwestern University: *See*—
Teng, BaBie; Davidson, Nicholas O.; and Burant, Charles F., 5,550,034, Cl. 435-69.100.

Nortier, Richard A., to Sloan Valve Company. Splashproof enclosure for electronic faucet. 5,549,487, Cl. 439-521.000.

Norton, Patricia A.: *See*—
Hashemi, Majid M.; Tehrani, Saied N.; and Norton, Patricia A., 5,550,065, Cl. 437-39.000.
Norton, Walter L. Ostomy bag. 5,549,587, Cl. 604-333.000.
Nosaki, Katsutoshi: *See*—
Yamaguchi, Tadashi; Nosaki, Katsutoshi; Akihisa, Inoue; and Masumoto, Tsuyoshi, 5,549,951, Cl. 428-565.000.
Notermans, Servatius H. W.: *See*—
Chakraborty, Trinad; Goebel, Werner; and Notermans, Servatius H. W., 5,550,022, Cl. 435-6.000.
Novacor Chemicals Ltd.: *See*—
Chiu, Ramen; Taylor, Joseph W.; Cooke, David L.; Goyal, Shivendra K.; and Oswin, Robert E., 5,550,193, Cl. 525-199.000.
Novacor Chemicals (International) S.A.: *See*—
Cantrill, James E.; and Doyle, Thomas R., 5,550,186, Cl. 525-52.000.
Novak, Stanley J.; and Boyd, Kenneth J., to Ford Motor Company. Tilt control apparatus for an automotive suspension. 5,549,321, Cl. 280-689.000.
Novalink Technologies, Inc.: *See*—
Chan, Demonder; Fultz, Robert B.; and Krishan, Baldev, 5,550,861, Cl. 375-222.000.
Novalogic, Inc.: *See*—
Freeman, Kyle G., 5,550,959, Cl. 395-127.000.
Novatec Laser Systems, Inc.: *See*—
Lai, Shui T., 5,549,632, Cl. 606-5.000.
Novatron Oy: *See*—
Tervahauta, Jukka, 5,550,757, Cl. 364-560.000.
Novavax, Inc.: *See*—
Wright, D. Craig, 5,549,901, Cl. 424-401.000.
Novo Nordisk A/S: *See*—
West, Robert R.; Van Ness, Jeffrey; and Varming, Annemarie R., 5,550,148, Cl. 514-408.000.
Nowak, Bernard E.; and Reardon, Joseph P., to Hycomp, Inc. Bearing arrangement having a polyimide graphite-fiber reinforced composite embedded therein. 5,549,394, Cl. 384-282.000.
Noya, Eric S.: *See*—
Rosich, Mitchell N.; Noya, Eric S.; and Arnott, Randy M., 5,551,002, Cl. 395-461.000.
Noyes, Harold B.: *See*—
Miller, Warren L.; and Noyes, Harold B., 5,550,985, Cl. 395-750.000.
Nozu, Makoto: *See*—
Kunitomo, Yoshinobu; Nozu, Makoto; Sakashita, Yasuyuki; Tsukamoto, Masahide; Nakatani, Seichi; Sacki, Keiji; and Kitayama, Yoshifumi, 5,550,408, Cl. 257-737.000.
Nozue, Toshihiro: *See*—
Yamamoto, Manabu; Ogasawara, Takio; and Nozue, Toshihiro, 5,549,492, Cl. 440-53.000.
NRG Industries Inc.: *See*—
Cunningham, Robert A., Jr.; and Rutledge, Phillip R., 5,548,970, Cl. 62-271.000.
NTN Corporation: *See*—
Hasegawa, Ko; Teramoto, Toshio; Nakajima, Tatsuo; and Konomoto, Takeyoshi, 5,550,190, Cl. 525-92.00A.
Nugent, Michael J. Hand held tube wall thickness ultrasonic measurement probe and system. 5,549,004, Cl. 73-622.000.
Nutzman, Thomas M.: *See*—
Heller, Bernard F.; Schmidt, Craig L.; Nutzman, Thomas M.; and Lessar, Joseph F., 5,549,985, Cl. 429-157.000.
Nykanen, Tuomo S.; Greenwood, Brian F.; Gullichsen, Johan; Kiiskila, Erkki; Mattelmaki, Esko; Phillips, Joseph R.; Richardsen, Jan T.; Ryham, Rolf; Soderman, Jarmo; and Wiklund, Karl G., to A. Ahlstrom Corporation. Minimal effluents discharge pulp mill with chemical recovery. 5,549,788, Cl. 162-29.000.
Nyman, Bror G.: *See*—
Hulthorn, Stig-Erik; Lilja, Launo L.; Mäkitalo, Valto J.; and Nyman, Bror G., 5,549,854, Cl. 261-87.000.
Oakley, Inc.: *See*—
Jannard, James H., 5,550,599, Cl. 351-159.000.
Oba, Tomofumi: *See*—
Fukuda, Koichi; Oba, Tomofumi; Miyazaki, Masanori; Fukui, Hirofumi; Iwasaki, Chisato; Kasama, Yasuhiko; Ohmi, Tadahiro; Kubota, Masaru; Kitagawa, Hitoshi; Nakano, Akira; and Yoshida, Osamu, 5,550,091, Cl. 437-241.000.
Obata, Hiroyuki: *See*—
Takano, Atsushi; Utsumi, Minoru; and Obata, Hiroyuki, 5,550,370, Cl. 250-225.000.
Obata, Kenzo, to Nippondenso Co., Ltd. Optical information reading apparatus. 5,550,363, Cl. 235-462.000.
Oberg, Lorri; and Weiss, Pamela R. Method and apparatus for preventing soiled clothes from becoming permanently stained. 5,548,859, Cl. 8-150.000.
Oberman, Kevin S.: *See*—
Chambers, Randall P.; Gfesser, James J.; Holmes, Martin E.; and Oberman, Kevin S., 5,551,080, Cl. 455-348.000.
O'Brien, James V.: *See*—
Adams, Thomas R.; Chambers, Sheryl A.; Daines, Richard J.; Gordon-Kamm, William J.; Kausch, Albert P.; Lemaux, Peggy G.; Mackey, Catherine J.; Mangano, Mary L.; O'Brien, James V.; Rice, Thomas B.; Spencer, T. Michael; Start, William G.; and Willetts, Nancy G., 5,550,318, Cl. 800-205.000.
O'Brien, Mark, to LSI Logic Corporation. Noise suppression in large three state busses during test. 5,550,840, Cl. 371-22.100.
O'Brien, Mark, to LSI Logic Corporation. Method for failure analysis of megachips using scan techniques. 5,550,841, Cl. 371-22.100.
Oce-Nederland B.V.: *See*—
Van Vliembergen, Eduardus J. W.; Heemels, Robertus P. E. H.; Cremers, Louis M. G.; Hommersom, Frederik J.; and Gerritsen, Jan, 5,550,934, Cl. 382-229.000.
OCG Microelectronic Materials, Inc.: *See*—
Honda, Kenji, 5,550,004, Cl. 430-270.100.
Ochiai, Koji: *See*—
Saijo, Juzo; and Ochiai, Koji, 5,548,883, Cl. 29-243.500.
Ockuly, John D.: *See*—
Lurie, Keith G.; Benditt, David G.; Shultz, Jeffrey J.; Ockuly, John D.; and Fleischhacker, John J., 5,549,581, Cl. 604-282.000.
Oda, Hidekazu: *See*—
Yamaguchi, Takehisa; and Oda, Hidekazu, 5,550,409, Cl. 257-757.000.
Oda, Tateru, to Mitsubishi Denki Kabushiki Kaisha. Portable telephone equipment with condition restoration. 5,551,077, Cl. 455-343.000.
Oda, Yo; Minakawa, Tadayoshi; Sibuya, Shyoichi; and Shiina, Takayuki, to Juki Corporation. Drive force transmission for a shuttle section in a sewing machine. 5,549,061, Cl. 112-220.000.
Odagawa, Kazuyoshi; and Sasaki, Shinichi, to Canon Kabushiki Kaisha. Process cartridge and image forming apparatus. 5,550,617, Cl. 355-210.000.
O'Donnell, Francis E., Jr. Glaucoma laser trabeculodissection. 5,549,598, Cl. 606-6.000.
O'Donnell, Francis E., Jr. In vivo modification of refractive power of an intraocular lens implant. 5,549,668, Cl. 623-6.000.
Odorzynski, Thomas W., to Kimberly-Clark Corporation. Method of forming an absorbent article. 5,549,775, Cl. 156-227.000.
Oeftering, Richard C.; and Smith, Floyd A., to United States of America, National Aeronautics and Space Administration. Apparatus and method for cold welding thin wafers to hard substrates. 5,549,237, Cl. 228-116.000.
Oehrlein, Gottlieb S.: *See*—
Nguyen, Thao N.; Oehrlein, Gottlieb S.; and Weinberg, Zeev A., 5,549,935, Cl. 427-490.000.
Oetiker, Hans, to Hans Oetiker AG Maschinen- und Apparatefabrik. Reinforced ear structure for clamps. 5,548,872, Cl. 24-20.0CW.
Oetiker, Hans, to Hans Oetiker AG Maschinen- und Apparatefabrik. Lever-type clamp. 5,548,876, Cl. 24-271.000.
Officine Giordano S.R.L.: *See*—
Giordano, Salvatore, 5,549,031, Cl. 91-284.000.
Offord, Glen E.; and Sonntag, Jeffrey L., to Lucent Technologies Inc. Matching of digital patterns using analog logic. 5,550,528, Cl. 340-146.200.
Ogasawara, Takio: *See*—
Yamamoto, Manabu; Ogasawara, Takio; and Nozue, Toshihiro, 5,549,492, Cl. 440-53.000.
Ogashiwa, Toshinori, to Tanaka Denshi Kogyo Kabushiki Kaisha. Semiconductor device having an aluminum alloy wiring line. 5,550,407, Cl. 257-737.000.
Ogawa, Hisashi: *See*—
Akiyama, Akira; Arakawa, Michio; Ogawa, Hisashi; and Kiessig, Hartmut M., 5,549,350, Cl. 296-204.000.
Ogawa, Tomoharu, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Switch device. 5,550,340, Cl. 200-295.000.
Ogawahara, Norio, to Fuji Xerox Co., Ltd. Toner image fusing device with optimized control of cooling a pressure roller. 5,550,621, Cl. 355-285.000.
Ogihara, Masaki, to Kabushiki Kaisha Toshiba. Dram using word line potential control circuit. 5,550,504, Cl. 327-537.000.
Ogilvie, Clarence R.; and Stabler, Paul C., to International Business Machines Corporation. Rounding normalizer for floating point arithmetic operations. 5,550,768, Cl. 364-748.000.
Ogino, Takashi: *See*—
Matsuo, Masaaki; Tsuji, Kiyoshi; Ogino, Takashi; and Konishi, Nobukiyo, 5,550,147, Cl. 514-406.000.
Oh, Dong Y.: *See*—
Kim, Jung C.; Oh, Dong Y.; Choe, Gyu S.; Hong, Kyung S.; Kim, Kyung H.; Lee, Joo H.; Lee, Ha I.; Park, Kyeong B.; Gil, Dong S.; Kwon, Oh H.; and Kwon, Byoung H., 5,548,980, Cl. 68-133.000.
O'Hara, Bryan M.: *See*—
Johann, Stephen V.; van Zeijl, Marja; and O'Hara, Bryan M., 5,550,221, Cl. 536-23.500.
Ohashi, Yutaka: *See*—
Morita, Shingo; and Ohashi, Yutaka, 5,550,704, Cl. 361-263.000.
Ohdoi, Chie: *See*—
Tai, Seiji; Takusari, Hisanori; Tanaka, Hiroyuki; Moribe, Isamu; and Ohdoi, Chie, 5,550,202, Cl. 526-286.000.
Ohe, Makoto; and Chiba, Issei, to Mitsubishi Rayon Co., Ltd. Surface light source element. 5,550,676, Cl. 359-599.000.
Ohe, Osamu: *See*—
Ishidoya, Masahiro; Shibato, Kishio; Komoto, Keiji; Shibamoto, Kenji; Mashita, Mitsuyuki; and Ohe, Osamu, 5,549,932, Cl. 427-385.500.
Ohki, Makoto: *See*—
Tanaka, Shigenori; Tamura, Hiroshi; and Ohki, Makoto, 5,550,030, Cl. 435-23.000.
Oh-Kita, Motomu: *See*—
Naito, Hiroyuki; Otani, Masato; Oh-Kita, Motomu; and Kuroda, Toru, 5,550,095, Cl. 502-211.000.
Ohlendorf, Rolf; Strauber, Hans-Jürgen; Aust, Rainer; and Strobel, Wolfgang, to Mercedes-Benz AG. Arrangement for operating valves of an internal combustion engine. 5,549,081, Cl. 123-90.160.

Ohmae, Tsutomu: *See*—
Mutoh, Nobuyoshi; Masaki, Ryoso; Miyazaki, Taizou; Tajima, Fumio; and Ohmae, Tsutomu, 5,549,172, Cl. 180-65.100.
Ohmi, Masanori: *See*—
Shiga, Tsutomu; Hayashi, Nobuyuki; Ohmi, Masanori; and Nagao, Yasuhiro, 5,549,011, Cl. 74-7.00E.
Ohmi, Shinichiro; Imai, Hiroyuki; Ando, Kazuhiro; and Suematsu, Takayuki, to Matsushita Electric Industrial Co., Ltd. Transmitting device, receiving device, system, and method for transmitting image at high efficiency. 5,550,756, Cl. 364-514.00R.
Ohmi, Tadahiro: *See*—
Fukuda, Koichi; Oba, Tomofumi; Miyazaki, Masanori; Fukui, Hirofumi; Iwasaki, Chisato; Kasama, Yasuhiko; Ohmi, Tadahiro; Kubota, Masaru; Kitagawa, Hitoshi; Nakano, Akira; and Yoshida, Osamu, 5,550,091, Cl. 437-241.000.
Ohmizu, Hiroshi: *See*—
Iwasaki, Tameo; Kondo, Kazuhiko; and Ohmizu, Hiroshi, 5,550,229, Cl. 540-200.000.
Ohnishi, Hiroshi: *See*—
Yamamoto, Yuuri; Takahashi, Kenichi; Ohnishi, Hiroshi; Kunieda, Yoshinori; and Matsubara, Naoki, 5,550,867, Cl. 375-324.000.
Ohnmacht, Cyrus J.: *See*—
Jacobs, Robert T.; Ohnmacht, Cyrus J.; and Trainor, Diane A., 5,550,136, Cl. 514-322.000.
Ohsata, Kiyoshi: *See*—
Yoshimura, Shunji; Akiyama, Yoshiyuki; Ohsata, Kiyoshi; Ichimura, Isao; Watanabe, Toshio; and Katsuramoto, Shinji, 5,550,603, Cl. 352-27.000.
Ohsawa, Yuichi: *See*—
Iwasaki, Hitoshi; Ohsawa, Yuichi; Kondoh, Reiko; Hashimoto, Susumu; Sawabe, Atsuhito; Kamiguchi, Yuzo; and Sahashi, Masashi, 5,549,978, Cl. 428-692.000.
Ohshima, Katsuyuki; Ueno, Takeshi; Yamauchi, Mineo; and Kita, Tatsuya, to Dai Nippon Printing Co., Ltd. Image forming method, image forming apparatus and image forming member. 5,550,099, Cl. 503-227.000.
Ohta, Nahomi: *See*—
Kitajima, Hiroshi; Aoki, Hidemitsu; Hamano, Haruto; Morita, Makoto; Shiramizu, Yoshimi; Nakamori, Masaharu; Watanabe, Kaori; Seo, Hirofumi; Shimizu, Yuji; Iuchi, Makoto; Sasaki, Yasushi; and Ohta, Nahomi, 5,549,798, Cl. 204-222.000.
Ohtsuru, Yoshisuke: *See*—
Wada, Ryukichi; Suzuki, Fumio; and Ohtsuru, Yoshisuke, 5,550,597, Cl. 348-708.000.
Oishi, Akihiro: *See*—
Taguchi, Yoichi; Oishi, Akihiro; Shibuya, Isao; and Tsuchiya, Tohru, 5,550,230, Cl. 540-203.000.
Ok, Hyun O.: *See*—
Rupprecht, Kathleen M.; Baker, Robert K.; Ok, Hyun O.; and Parsons, William H., 5,550,233, Cl. 540-456.000.
Okada, Kohji: *See*—
Okuyama, Masahiko; Okada, Kohji; and Yamagiwa, Katsuya, 5,549,123, Cl. 128-898.000.
Okada, Mitsuo: *See*—
Miyagawa, Toru; Okada, Mitsuo; and Osumi, Tomomasa, 5,549,838, Cl. 252-75.000.
Okada, Nobuhide: *See*—
Yokoyama, Hiromitsu; Takeuchi, Katsuto; Soekawa, Koji; Abe, Kenichiro; Hattori, Syouichi; Suzuki, Hitoshi; and Okada, Nobuhide, 5,549,778, Cl. 156-246.000.
Okada, Teruhiko; Kuriyama, Hirotada; and Kohno, Yoshio, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device and manufacturing method thereof. 5,550,390, Cl. 257-66.000.
Okajima, Susumu, to Rohm Co., Ltd. Method for testing characteristics of a semiconductor memory device in a series of steps. 5,550,838, Cl. 371-21.200.
Okamoto, Hiroaki, to Immuno Japan Inc. Oligonucleotides of HCV, primers and probes therefrom, method of determining HCV genotypes and method of detecting HCV in samples. 5,550,016, Cl. 435-5.000.
Okamoto, Osamu: *See*—
Nakagawa, Susumu; Kato, Shinji; Murase, Satoshi; Okamoto, Osamu; Mitomo, Ryuji; Yamamoto, Katsumi; Yamada, Koji; and Fukatsu, Hiroshi, 5,550,121, Cl. 514-210.000.
Okazaki, Motoya, to Kabushiki Kaisha Toshiba. Integrated circuit with windowed fuse element and contact pad. 5,550,399, Cl. 257-529.000.
Oki Electric Industry Co., Ltd.: *See*—
Shimokoshi, Kiyoshi, 5,550,808, Cl. 370-17.000.
Oklahoma Medical Research Foundation: *See*—
Sims, Peter J.; and Wiedmer, Therese, 5,550,108, Cl. 514-21.000.
Oku, Masuo: *See*—
Tsuboi, Yukitoshi; Oku, Masuo; Takahashi, Masaru; and Ichige, Kenji, 5,550,640, Cl. 358-335.000.
Okuda, Minoru: *See*—
Haraguchi, Yoshio; and Okuda, Minoru, 5,550,605, Cl. 353-81.000.
Okuhara, Shizuo, to Murata Manufacturing Co., Ltd. Lead frame bolder. 5,549,754, Cl. 118-500.000.
Okumura, Shinya: *See*—
Tada, Nobuhiko; Miyanagi, Naoki; Shimomura, Yoshiaki; Sakurai, Shigeyuki; Okumura, Shinya; and Nagano, Yoshinari, 5,548,890, Cl. 29-827.000.
Okuyama, Masahiko; Okada, Kohji; and Yamagiwa, Katsuya, to NGK Spark Plug Co., Ltd. Process for producing biocompatible implant material by firing a mixture of a granulated powder and a combustible substance. 5,549,123, Cl. 128-898.000.
Olafsson, Sverrir, to Rockwell International Corporation. Method and apparatus for centering equalizer taps. 5,550,862, Cl. 375-229.000.
O'Leary, Stephen H., to IVAC Corporation. IV fluid delivery system. 5,549,460, Cl. 417-474.000.
Olejnik, Orest: *See*—
Ding, Shulin; Pallo, Robert J.; Tien, Walter L.; and Olejnik, Orest, 5,550,163, Cl. 514-643.000.
O'Lenick, Anthony J., Jr., to Siltech Inc. Silicone polymers. 5,550,219, Cl. 536-1.110.
Oleson, Richard A.: *See*—
Crump, Kevin E.; Gard, Jimmie D.; and Oleson, Richard A., 5,549,104, Cl. 128-201.250.
Olin Corporation: *See*—
Whitman, Peter J., 5,550,294, Cl. 564-451.000.
Olip, Vinzenz, to Degussa Austria GmbH. Method for bleaching textile material. 5,549,715, Cl. 8-110.000.
Olivier, Helene: *See*—
Chauvin, Yves; Einloft, Sandra; and Olivier, Helene, 5,550,304, Cl. 585-512.000.
Chauvin, Yves; Einloft, Sandra; and Olivier, Helene, 5,550,306, Cl. 585-514.000.
Olson, Carlton D.; and Urbanski, Mark G., to Alphatec Manufacturing, Inc,. Apparatus for spinal fixation system. 5,549,607, Cl. 606-61.000.
Olson, Dennis G.: *See*—
Lyon, Wanda J.; Olson, Dennis G.; and Murano, Elsa A., 5,549,895, Cl. 424-115.000.
Olson, Merle E.; Ceri, Howard; and Morck, Douglas W., to University Technologies International, Inc. Giardia vaccine. 5,549,899, Cl. 424-269.100.
Olson, Michael L.; and Dalebout, William T., to Icon Health & Fitness, Inc. Combined leg press/leg extension machine. 5,549,533, Cl. 482-137.000.
Ölund, Karin; Lütz, Lena-Karin; Bryland, Rickard; and Lindahl, Åke, to Bioglan AB. Potentiation of antimicrobial effects. 5,550,145, Cl. 514-396.000.
Olympic Controls Corp.: *See*—
Burbury, Robert L.; and Cutter, James W., 5,550,891, Cl. 378-197.000.
Olympus Optical Co., Ltd.: *See*—
Harada, Hisayuki; and Tomita, Toshitsugu, 5,551,021, Cl. 395-600.000.
Takasugi, Kei; and Nakamura, Kazunari, 5,550,582, Cl. 348-65.000.
Omron Corporation: *See*—
Hayakawa, Tomohiko; and Tashima, Toshihiro, 5,550,938, Cl. 382-313.000.
Nishizaki, Osamu; and Aoyama, Shigeru, 5,550,663, Cl. 359-95.000.
Onishi, Yasuhiko: *See*—
Iura, Kazuo; Onishi, Yasuhiko; and Itoh, Takashi, 5,549,946, Cl. 428-35.800.
Ono, Tetsuji: *See*—
Inoue, Akira; Kobayashi, Motonobu; and Ono, Tetsuji, 5,550,096, Cl. 502-217.000.
Ono, Yasumasa: *See*—
Hori, Taizou; Fujimoto, Hideaki; Mogi, Hirokazu; and Ono, Yasumasa, 5,550,925, Cl. 381-98.000.
Ono, Yasuyuki: *See*—
Inoue, Kunimi; Yamada, Yoshiyuki; Amatsu, Kazumi; Mimura, Yukiteru; Nakaguchi, Yasunori; Shinmura, Hiroyuki; Ono, Yasuyuki; Osawa, Yutaka; Mizutaki, Shoichi; Kasai, Masaji; and Tomioka, Shinji, 5,550,283, Cl. 562-561.000.
Onoda, Shigeyoshi: *See*—
Kurata, Mitsuru; Kanemitsu, Shinji; Nomura, Akihiro; Ebata, Tokihide; Takeda, Akio; Miyauchi, Yasuo; Uchida, Haruo; and Onoda, Shigeyoshi, 5,550,570, Cl. 347-49.000.
Ooshiba, Takeo: *See*—
Matsushima, Asao; Ooshiba, Takeo; Etoh, Yoshihiko; Kinoshita, Akira; Suzuki, Tomoko; and Sakimura, Tomoo, 5,549,997, Cl. 430-59.000.
Oplinger, Thomas M.: *See*—
Abbasi, Salman Y.; Gerszberg, Irwin; Kendig, Eugene T.; Martin, Jeffrey S.; and Oplinger, Thomas M., 5,550,898, Cl. 379-59.000.
Opta Food Ingredients, Inc.: *See*—
Finnochiaro, Eugene T., 5,549,923, Cl. 426-633.000.
Opti, Inc.: *See*—
Liang, Jui; Co, Ramon; and Gui, Ann, 5,550,515, Cl. 331-11.000.
Opto Power Corporation: *See*—
Patel, Rushikesh M.; Nahapetiance, Henri; and Agarwal, Rajiv, 5,550,852, Cl. 372-33.000.
Oral-D: *See*—
Green, Donald E., 5,550,161, Cl. 514-616.000.
Orbach, Abraham; Panoushek, Dale W.; and Schubert, William L., to Case Corporation. Hitch assembly control system. 5,549,166, Cl. 172-4.000.
O'Regan, Sean: *See*—
Kaku, Tomoya; and O'Regan, Sean, 5,550,811, Cl. 370-18.000.
O'Reilly, Daniel L.; and Brazier, Matthew J., to MCI Communications Corporation. Relational database system for storing different types of data. 5,551,025, Cl. 395-600.000.
Oriental Yeast Co., Ltd.: *See*—
Miyazaki, Kaoru, 5,550,216, Cl. 530-395.000.
Orimo, Masayuki: *See*—

Mori, Kinji; Orimo, Masayuki; Kasashima, Hirokazu; and Kim, K. H., 5,551,047, Cl. 395-800.000.

Orlando, Denis P.: *See*—
Burson, Kyle L.; Chang, Yum C.; Fok, Wilson; Leland, Kenneth W.; Orlando, Denis P.; and Partyka, Andrzej, 5,550,895, Cl. 379-59.000.

Orrico, Mario M.: *See*—
Danek, Daniel J.; Etters, Harry N., Jr.; Genz, Earl J.; Johnston, Brigg A.; Littman, Iran R.; Long, John N.; Meadors, Anthony W.; Mercadante, Nicholas J.; Orrico, Mario M.; Schramme, Stephan H.; and Shedore, Charles I., 5,550,342, Cl. 200-448.000.

Ortho Development Corporation: *See*—
Graham, John W.; McTighe, Timothy; and Mraz, Paul, 5,549,700, Cl. 623-22.000.

Orthogene, Inc.: *See*—
Juergensen, Kay; Aeschlimann, Daniel; and Hunziker, Ernst B., 5,549,904, Cl. 424-423.000.

Orthosonics Ltd.: *See*—
Young, Michael J. R.; and Bradnock, Brian R. D. P., 5,549,544, Cl. 601-2.000.

Osaka Gas Co., Ltd.: *See*—
Akagi, Kosuke, 5,549,982, Cl. 429-30.000.

Osakabe, Yoshio: *See*—
Tanaka, Shigeo; Yamazaki, Hiroshi; Osakabe, Yoshio; Kotabe, Noriko; Iwamoto, Koji; Souma, Yoko; Imaura, Toshihiro; and Maki, Shigeru, 5,550,826, Cl. 370-85.800.
Tanaka, Shigeo; Yamazaki, Hiroshi; Kotabe, Noriko; Sugiyama, Kouichi; Sato, Makoto; Katsuyama, Akira; Osakabe, Yoshio; and Kusagaya, Yasuo, 5,550,979, Cl. 395-200.050.

Osawa, Yutaka: *See*—
Inoue, Kunimi; Yamada, Yoshiyuki; Amatsu, Kazumi; Mimura, Yukiteru; Nakaguchi, Yasunori; Shinmura, Hiroyuki; Ono, Yasuyuki; Osawa, Yutaka; Mizutaki, Shoichi; Kasai, Masaji; and Tomioka, Shinji, 5,550,283, Cl. 562-561.000.

Osborn, Norbert L.: *See*—
McInerney, William L.; Osborn, Norbert L.; and Schruf, Gerhard M., 5,549,449, Cl. 415-177.000.

Oscarsson, Ulf: *See*—
Ostlund, Ake; Oscarsson, Ulf; Gustafson, Per; and Akesson, Leif, 5,549,980, Cl. 428-698.000.

O'Shell, Michael V. Multi-element writing instrument. 5,549,403, Cl. 401-31.000.

Oshima, Toshiyuki; Ishibashi, Hideo; Minamino, Hiromasa; Yamamoto, Satoshi; Izumo, Takaharu; and Kaneko, Mitsuharu, to Nippon Paint Co., Ltd. Polyurethane resin composition. 5,550,198, Cl. 525-404.000.

Oshlack, Benjamin; Chasin, Mark; Minogue, John J.; and Kaiko, Robert F., to Euro-Celtique, S.A. Controlled release oxycodone compositions. 5,549,912, Cl. 424-468.000.

Osip, Thomas W.: *See*—
Mazer, Terrence B.; Walton, Joseph E.; Geckle, Ronita K.; Piontek, Carl J.; Duel, Susan B.; Daab-Krzykowski, Andre; Joseph, Robert L.; Pierson, William G.; Loughrin, Thomas D.; and Osip, Thomas W., 5,549,550, Cl. 604-83.000.

Osram Sylvania Inc.: *See*—
Duggan, George L.; and Goodman, David A., 5,550,431, Cl. 313-630.000.
Oughton, Andre R., 5,550,423, Cl. 313-112.000.
Scholz, John A.; and Morin, Sandra M., 5,550,421, Cl. 313-25.000.

Osteotech of Virginia: *See*—
MacMahon, Edward B.; and Forte, Mark, 5,549,699, Cl. 623-22.000.

Ostler, Kevin D., to Laser Physics, Inc. Integral laser head and power supply. 5,550,853, Cl. 372-34.000.

Ostler, Michael R.: *See*—
Tariq, M. Hasan; and Ostler, Michael R., 5,551,022, Cl. 395-600.000.

Ostlund, Ake; Oscarsson, Ulf; Gustafson, Per; and Akesson, Leif, to Sandvik AB. Cemented carbide with binder phase enriched surface zone. 5,549,980, Cl. 428-698.000.

Ostlund, Richard E.; and Sherman, William R. Pinitol and derivatives thereof for the treatment of metabolic disorders. 5,550,166, Cl. 514-715.000.

Osumi, Tomomasa: *See*—
Miyagawa, Toru; Okada, Mitsuo; and Osumi, Tomomasa, 5,549,838, Cl. 252-75.000.

Oswin, Robert E.: *See*—
Chiu, Ramen; Taylor, Joseph W.; Cooke, David L.; Goyal, Shivendra K.; and Oswin, Robert E., 5,550,193, Cl. 525-199.000.

Otani, Masato: *See*—
Naito, Hiroyuki; Otani, Masato; Oh-Kita, Motomu; and Kuroda, Toru, 5,550,095, Cl. 502-211.000.

Otis Elevator Company: *See*—
Herkel, Peter L.; and Spielbauer, Hans K., 5,549,179, Cl. 187-298.000.
Palko, Joseph; and Zeranski, Robert R., 5,550,450, Cl. 318-800.000.

Otsuka, Haruhiko; Murayama, Yuzo; Tashiro, Akihiko; Hyomi, Kyoko; and Ishimaru, Naohiko, to AG Technology Co., Ltd. Magnetic disc. 5,549,954, Cl. 428-65.300.

Otsuka Pharmaceutical Co., Ltd.: *See*—
Sakurai, Yohji; Kurahashi, Nobuyuki; Hirose, Tsuyoshi; Miwa, Takashi; Mori, Atsushi; and Nishi, Takao, 5,550,292, Cl. 564-399.000.

Otterbach, Jürgen: *See*—
Krimmel, Heinz; Bülow, Henning; Heidemann, Rolf; and Otterbach, Jürgen, 5,550,667, Cl. 359-180.000.

Otto Bock Orthopaedische Industrie Besitz- und Verwaltungs-Kommanditgesellschaft: *See*—
Gammer, Peter; Broeckl, Heinz; and Dietl, Hans, 5,549,712, Cl. 623-60.000.

Otto, James C.: *See*—
Procter, James A., Jr.; and Otto, James C., 5,550,549, Cl. 342-47.000.

Oughton, Andre R., to Osram Sylvania Inc. Optical coating and lamp employing same. 5,550,423, Cl. 313-112.000.

Oura, Kanetake: *See*—
Hirata, Yoshimi; Kaneko, Noriaki; Moriwaki, Masahiro; and Oura, Kanetake, 5,549,664, Cl. 623-1.000.

Outokumpu Engineering Contractors Oy: *See*—
Hulthorn, Stig-Erik; Lilja, Launo L.; Mäkitalo, Valto J.; and Nyman, Bror G., 5,549,854, Cl. 261-87.000.

Overstreet, Andrew D.: *See*—
Lin, Ronny W.; Allen, Robert H.; and Overstreet, Andrew D., 5,550,303, Cl. 585-328.000.

Oxley, L. Thomas, to Oxley, L. Thomas. Radiation shield. 5,550,552, Cl. 343-702.000.

Ozaki, Kazuyuki: *See*—
Wakana, Shinichi; Ozaki, Kazuyuki; Goto, Yoshiro; and Umehara, Yasutoshi, 5,550,479, Cl. 324-750.000.

Ozawa, Osamu, to Kashiyama Industry Co., Ltd. Composite dry vacuum pump having roots and screw rotors. 5,549,463, Cl. 418-3.000.

Ozawa, Toshikazu; Imai, Chizuko; and Matsumoto, Hiromitsu, to Yamaha Hatsudoki Kabushiki Kaisha. Sliding contact-making structures in internal combustion engine. 5,549,086, Cl. 123-193.600.

Ozeretskovsky, Vladmimir S.: *See*—
Luger, Peter; Grafwalliner, Franz; Peller, Helmuth; Müller, Martin; Malyshev, Valentin V.; Logvinioukk, Viacheslav P.; Ozeretskovsky, Vladmimir S.; and Shengardt, Alexander S., 5,548,962, Cl. 62-50.100.

Ozkan, Mehmet K.: *See*—
Erdem, Arif T.; Sezan, Muhammed I.; and Ozkan, Mehmet K., 5,550,935, Cl. 382-260.000.

PACCAR Inc.: *See*—
Ellingsen, Svein, 5,549,320, Cl. 280-689.000.

Pacesetter, Inc.: *See*—
Bornzin, Gene A.; McClure, Kelly H.; Mouchawar, Gabriel; and Moberg, Sheldon B., 5,549,650, Cl. 607-24.000.
Florio, Joseph J.; Bornzin, Gene A.; Levine, Paul A.; and Barlow, J. Jeffrey, 5,549,649, Cl. 607-15.000.
Katz, Samuel M.; and Schloss, Harold C., 5,549,646, Cl. 607-8.000.
McClure, Kelly H.; and Moberg, Sheldon B., 5,549,652, Cl. 607-28.000.

Pacific Gas and Electric Company: *See*—
Lau, Ken; Yee, Jimmie; Mayeda, Rodger; Riccomini, Julian; and Ilyin, Mary, 5,550,476, Cl. 324-522.000.

Paciorek, Kazimiera J. L.; Lin, Wen-Huey; Masuda, Steven R.; and Nakahara, James H. Perfluoroalkyl and perfluoroalkylether substituted aromatic phosphates, phosphonates and related compositions. 5,550,277, Cl. 558-194.000.

Packer, John S., to Adaptec, Inc. Page mode buffer controller for transferring Nb byte pages between a host and buffer memory without interruption except for refresh. 5,551,054, Cl. 395-843.000.

Padgett, William P., III, to Burlington Industries, Inc. Textured surface effect fabric. 5,549,064, Cl. 112-410.000.

Paffhausen, Johannes H.: *See*—
Sadler, Richard A.; and Paffhausen, Johannes H., 5,549,168, Cl. 173-49.000.

Pagani, Elio, to VDM S.r.l. Floor cloth bucket and wringer device. 5,548,865, Cl. 15-262.000.

Pagliaccio, Joseph A. Computer storage drawer system. 5,549,375, Cl. 312-319.100.

Painter, John A.: *See*—
Perkins, James T.; Appelbaum, Peter F.; and Painter, John A., 5,549,139, Cl. 137-884.000.

Paitl, Kenneth A.: *See*—
Connell, Lawrence E.; Paitl, Kenneth A.; Roeckner, William J.; and Haddad, Kenneth R., 5,551,078, Cl. 455-343.000.

Pal, Kollol: *See*—
Hargrave, Karl D.; Cullen, Ernest; Proudfoot, John R.; Grozinger, Karl G.; Pal, Kollol; and Adams, Julian, 5,550,117, Cl. 514-81.000.

Palko, Joseph; and Zeranski, Robert R., to Otis Elevator Company. Dead-time effect compensation for pulse-width modulated inverters and converters. 5,550,450, Cl. 318-800.000.

Palkowitz, Alan D.: *See*—
Jakubowski, Joseph A.; Palkowitz, Alan D.; and Sigmund, Sandra K., 5,550,118, Cl. 514-89.000.

Pallo, Robert J.: *See*—
Ding, Shulin; Pallo, Robert J.; Tien, Walter L.; and Olejnik, Orest, 5,550,163, Cl. 514-643.000.

Palm Computing, Inc.: *See*—
Hawkins, Jeffrey C., 5,550,715, Cl. 362-31.000.

Palmen, Isedore D. M. H. Luggage carrier for motorcars. 5,549,230, Cl. 224-520.000.

Palmer, Guy H.: *See*—
McGuire, Travis C.; Palmer, Guy H.; Barbet, Anthony F.; and Davis, William C., 5,549,898, Cl. 424-269.100.

Palmer, Harold R.: *See*—
Beausoleil, William F.; Ng, Tak-Kwong; and Palmer, Harold R., 5,551,013, Cl. 395-500.000.

Pan, Alfred A.: *See*—
Winkler, Martin A.; and Pan, Alfred A., 5,550,027, Cl. 435-7.220.

Pan, Ampere, to Primax Electronics Ltd. Sheet-feed scanner for transmissive and reflective documents. 5,550,650, Cl. 358-474.000.

Panasonic Technologies, Inc.: *See*—
Alonso, Rafael, 5,551,023, Cl. 395-600.000.

Pancoast, Steven T.: *See*—
Crump, Dwayne T.; Pancoast, Steven T.; Benson, Paul H., IV; and Steelman, Herbert S., 5,551,043, Cl. 395-750.000.

Panitch, Maximo M.: *See*—
Gallegguillos, Ramiro; Panitch, Maximo M.; and Jadav, Anjana K., 5,549,887, Cl. 424-66.000.

Panoushek, Dale W.: *See*—
Orbach, Abraham; Panoushek, Dale W.; and Schubert, William L., 5,549,166, Cl. 172-4.000.

Pantano, James A. Method of treatment for eiph in racing stock. 5,550,127, Cl. 514-248.000.

Panther, Gyles; Williams, J. Peter; and Campbell, Donald W. F., to Silcom Research Limited. Radio pager holster assembly. 5,551,079, Cl. 455-347.000.

Pao, Hsien C.: *See*—
Clinton, Eric L.; Pao, Hsien C.; Allen, William R.; and Nita, Valerian M., 5,548,995, Cl. 73-116.000.

Paparizos, Christos: *See*—
Cirjak, Larry M.; Lemanski, Michael F.; Wagner, David R.; Benkalowycz, Nancy C.; Blum, Patricia R.; Pepera, Marc A.; and Paparizos, Christos, 5,550,281, Cl. 560-245.000.

Paper Systems, Inc.: *See*—
Chase, Williams L.; and Perkins, David W., 5,549,341, Cl. 294-68.100.

Pardee, James A., to Dana Corporation. Clutch/brake assembly. 5,549,186, Cl. 192-18.00R.

Pardo, Warren A.; and Gabriele, Valentino, to J.C. Pardo & Sons. Idler bearing mount. 5,549,386, Cl. 366-331.000.

Parish, David M., to Fibre Glass-Evercoat Company, Inc. Enhanced surface for glass fiber reinforced plastics. 5,549,969, Cl. 428-241.000.

Park, Byung-Seok: *See*—
Yun, Ji-Seop; Park, Byung-Seok; Lee, Jae-Seol; and Park, Hyun-Su, 5,550,733, Cl. 364-174.000.

Park, Chan-Kyu, to Daewoo Electronics Co., Ltd. Method of detecting focusing error in an optical pickup system employing a reflective knife edge to separate the optical signal for comparison. 5,550,368, Cl. 250-201.500.

Park, Eric Y.; Knaub, David; Thorpe, David; Barney, Howard; and Hoyt, Joshua, to Ziba Design, Inc. Readily serviceable ancillary fluid filtration system having visual flow rate indicator and quick-release fluid hose fitting. 5,549,010, Cl. 73-861.790.

Park, Hyun-Su: *See*—
Yun, Ji-Seop; Park, Byung-Seok; Lee, Jae-Seol; and Park, Hyun-Su, 5,550,733, Cl. 364-174.000.

Park, Kyeong B.: *See*—
Kim, Jung C.; Oh, Dong Y.; Choe, Gyu S.; Hong, Kyung S.; Kim, Kyung H.; Lee, Joo H.; Lee, Ha I.; Park, Kyeong B.; Gil, Dong S.; Kwon, Oh H.; and Kwon, Byoung H., 5,548,980, Cl. 68-133.000.

Park, Kyung S., to Goldstar Co., Ltd. Automatic document feeder for a facsimile machine. 5,550,652, Cl. 358-498.000.

Park Medical Systems Inc.: *See*—
Schreck, Zoltan; and Venne, Benoit, 5,550,379, Cl. 250-369.000.

Park, Mike C., to Seiko Communications Holding N.V. Bank balance notification by wristwatch pager. 5,550,535, Cl. 340-825.440.

Park, Moon-Bae: *See*—
Chang, Ki-Son; Park, Moon-Bae; and Kang, Dong-Hwan, 5,550,572, Cl. 347-171.000.

Park, Young-Hwan, to Hyundai Motor Company, Ltd. Guide bumper device of automobile tailgate. 5,549,351, Cl. 296-207.000.

Parker-Hannifin Corporation: *See*—
Kesel, Bradley K., 5,550,326, Cl. 174-16.300.

Parker, Thomas C.: *See*—
Schlueter, Edward L., Jr.; Parker, Thomas C.; Ferguson, Robert M.; and Finsterwalder, Robert N., 5,549,193, Cl. 198-844.200.

Parkhill, Richard G.: *See*—
Cottone, Andrew J.; Saperstein, Zalman P.; Tait, Ronald D.; Parkhill, Richard G.; and Bahr, Jeffrey A., 5,549,927, Cl. 427-191.000.

Parmentar, William F.: *See*—
Milovich, Robert; Schroeder, Ronald R.; Parmentar, William F.; Molnar, Julius J.; and Penick, Jack, 5,549,755, Cl. 118-629.000.

Parsons, William H.: *See*—
Rupprecht, Kathleen M.; Baker, Robert K.; Ok, Hyun O.; and Parsons, William H., 5,550,233, Cl. 540-456.000.

Partington, Stephen R.: *See*—
Maunders, Harry M.; and Partington, Stephen R., 5,550,309, Cl. 585-654.000.

Partridge, B. Waring, III, to Lucent Technologies, Inc. Apparatus for use in completing telephone calls. 5,550,915, Cl. 379-355.000.

Partyka, Andrzej: *See*—
Burson, Kyle L.; Chang, Yum C.; Fok, Wilson; Leland, Kenneth W.; Orlando, Denis P.; and Partyka, Andrzej, 5,550,895, Cl. 379-59.000.

Parviainen, Arno. Spine rehabilitation apparatus. 5,549,534, Cl. 482-137.000.

Pasau, Patrick: *See*—
Frost, Jonathan; George, Pascal; Pasau, Patrick; Bartsch, Régine; Rousselle, Corinne; Williams, Paul H.; and Muller, Jean C., 5,550,162, Cl. 514-617.000.
George, Pascal; Frost, Jonathan; Pasau, Patrick; Rousselle, Corinne; Bartsch, Régine; Williams, Paul Howard; and Muller, Jean Claude, 5,550,125, Cl. 514-230.500.

Paschke, Edward E.: *See*—
Richardson, Joel A.; Poppe, Wassily; Bolton, Benjamin A.; and Paschke, Edward E., 5,550,208, Cl. 528-335.000.

Pascucci, Gregory A.; Rasmussen, David E.; Decious, Gaylon M.; Garbe, James R.; Hyzer, Susan M.; Woest, Karen L.; Vairavan, Vairavan; Koch, David L.; Gottschalk, Donald A., Jr.; Burkhardt, Dennis E.; Standish, Darrell E.; Madaus, Paul W.; Spacek, Dan J.; Nesler, Clay G.; Stark, James K.; Mageland, Otto M.; Singers, Robert R.; and Wagner, Michael E., to Johnson Service Company. Networked facilities management system with optical coupling of local network devices. 5,550,980, Cl. 395-200.050.

Passlack, Matthias: *See*—
Dutta, Niloy K.; Fischer, Russell J.; Hunt, Neil E. J.; Passlack, Matthias; Schubert, Erdmann F.; and Zydzik, George J., 5,550,089, Cl. 437-225.000.

Pastrone, Giovanni: *See*—
Skillicorn, Brian; and Pastrone, Giovanni, 5,550,378, Cl. 250-367.000.

Patalon, Heinrich: *See*—
Windhaus, Ernst; Seiler, Bernard; Meyer, Peter; Erwig, Peter; Mathejka, Horst W.; Patalon, Heinrich; Holz, Peter, deceased, 5,548,882, Cl. 29-336.000.

Patel, Bhikhu, to Martin Marietta Corporation. Flexure design for a fast steering scanning mirror. 5,550,669, Cl. 359-224.000.

Patel, Rushikesh M.; Nahapetiance, Henri; and Agarwal, Rajiv, to Opto Power Corporation. Laser package with reversed laser diode. 5,550,852, Cl. 372-33.000.

Patent Biopharmaceutics, Inc.: *See*—
Gallina, Damian J., 5,550,112, Cl. 514-54.000.

Pati, Ratna: *See*—
Nair, Madhavan G.; Nair, Indira G.; and Pati, Ratna, 5,550,128, Cl. 514-249.000.

Patrick, Stuart R.; and Chatterjee, Amit, to Microsoft Corporation. Method and apparatus for efficient transfer of data to memory. 5,550,972, Cl. 395-164.000.

Patterson, Frank; Zhang, John; and Purtell, George, to C. R. Bard, Inc. Vascular introducer valve with proximal self-lubrication. 5,549,576, Cl. 604-247.000.

Patterson, John: *See*—
Bernadic, Thomas; Lowe, Tony; and Patterson, John, 5,549,425, Cl. 407-114.000.

Pattin, Jay C.: *See*—
Cohen, Earl T.; Tilleman, Russell W.; Pattin, Jay C.; and Blomgren, James S., 5,551,001, Cl. 395-449.000.

Pauchon, Christian; Ferschneider, Gilles; and Ferre, Daniel, to Institut Francais du Petrole; Total; and Elf Aquitaine. Method for modelling multiphase flows in pipelines. 5,550,761, Cl. 364-578.000.

Paul, Patrick J.: *See*—
Stotts, Lawrence J.; Paul, Patrick J.; and Prutchi, David, 5,549,653, Cl. 607-4.000.

Paul Ritzau Pari-Werk GmbH: *See*—
Lintl, Andreas; and Knoch, Martin, 5,549,102, Cl. 128-200.210.

Paul, Rolf: *See*—
Powell, Dennis; Paul, Rolf; Hallett, William A.; Berger, Dan M.; and Dutia, Minu D., 5,550,149, Cl. 514-416.000.

Pavel, Richard J.: *See*—
Capretta, Richard; Chen, Colin; Czernik, Daniel E.; Morris, Robert H., Jr.; and Pavel, Richard J., 5,549,307, Cl. 277-235.00B.

Pavone, Didier; Froment, Jacques; and Thesee, Eddy, to Institut Francais du Petrole. Method and system of analysis of the behavior of a drill string. 5,550,788, Cl. 367-25.000.

Paweletz, Anton, to SKF Textilmaschinen-Komponenten GmbH. Motor for a shaftless spinning rotor for an open-end spinning machine. 5,548,950, Cl. 057-406.000.

Pawelski, Cathy: *See*—
Ely, Richard W.; Gilson, James P.; and Pawelski, Cathy, 5,550,182, Cl. 524-557.000.

Pawlowski, Stephen S., to Intel Corporation. High bandwidth self-timed data clocking scheme for memory bus implementation. 5,550,533, Cl. 340-825.200.

Peacock, James C., III; Hyde, Gregory M.; Samson, Wilfred J.; and Clayman, Michael, to Advanced Cardiovascular Systems, Inc. Adjustable length balloon catheter. 5,549,551, Cl. 604-96.000.

Pearce, Tony M., to Genesis Composites, L.C. Composite microsphere and lubricant mixture. 5,549,743, Cl. 106-122.000.

Pearl, Terry W.: *See*—
Bober, Thomas W.; Pearl, Terry W.; Vacco, Dominick; and Yeaw, David C., 5,549,820, Cl. 210-199.000.

Pearlstein, Leonard: *See*—
Suskind, Stuart; and Pearlstein, Leonard, 5,549,590, Cl. 604-368.000.

Peck, Jan: *See*—
Tarter, Fred B.; Greene, Jeffrey M.; De Fazio, Thomas J.; Peck, Jan; Wylie, L. Stephen; Magnotte, Mark M.; Hall, Del; and Tarter, Scott A., 5,550,734, Cl. 364-401.00R.

Peddycoart, Mark J. Fishing lure. 5,548,920, Cl. 43-44.200.

Pedrow, Patrick D.: *See*—
Zhang, Qinghua; Qin, Bai-Lin; Barbosa-Canovas, Gustavo V.; Swanson, Barry G.; and Pedrow, Patrick D., 5,549,041, Cl. 99-451.000.

Peerless of America, Incorporated: *See*—
Wohrstein, Franz X., 5,549,335, Cl. 285-286.000.

Pejryd, Lars: *See—*
Larker, Hans; Lundberg, Robert; Mattsson, Bertil; Nilsson, Jan; and Pejryd, Lars, 5,549,770, Cl. 156-89.000.

Peller, Helmuth: *See—*
Luger, Peter; Grafwallner, Franz; Peller, Helmuth; Müller, Martin; Malyshev, Valentin V.; Galperin, Sergey B.; and Logvinlouk, Viacheslav P., 5,548,961, Cl. 62-47.100.
Luger, Peter; Grafwalliner, Franz; Peller, Helmuth; Müller, Martin; Malyshev, Valentin V.; Logvinlouk, Viacheslav P.; Ozeretskovsky, Vladmimir S.; and Shengardt, Alexander S., 5,548,962, Cl. 62-50.100.

Peloquin, Mark S., to United States of America, Navy. Composite hydrophone array assembly and shading. 5,550,791, Cl. 367-153.000.

Pelzer, Franz H.: *See—*
Lee, Ted C. K.; Pelzer, Franz H.; and Motley, Leslie A., 5,550,028, Cl. 435-13.000.

Penick, Jack: *See—*
Milovich, Robert; Schroeder, Ronald R.; Parmentar, William F.; Molnar, Julius J.; and Penick, Jack, 5,549,755, Cl. 118-629.000.

Pennaz, Thomas J.; and Burban, John H., to Deluxe Corporation. Ink varnish composition. 5,549,741, Cl. 106-20.00R.

Pennington, Artie; and Ueda, Makoto, to Motorola, Inc. Testable memory array which is immune to multiple wordline assertions during scan testing. 5,550,974, Cl. 395-183.180.

Pent Products, Inc.: *See—*
Berndt, Curtis G.; Van Dyk, Daniel R.; Van Dyk, David A.; Deer, Steven C.; and Kent, Royal A., 5,549,488, Cl. 439-680.000.

Peoples, George E.: *See—*
Eberlein, Timothy J.; Peoples, George E.; Yoshino, Ichiro; and Goedegebuure, Peter, 5,550,214, Cl. 530-328.000.

Pepera, Marc A.: *See—*
Cirjak, Larry M.; Lemanski, Michael F.; Wagner, David R.; Benkalowycz, Nancy C.; Blum, Patricia R.; Pepera, Marc A.; and Paparizos, Christos, 5,550,281, Cl. 560-245.000.

Pepper, John R.: *See—*
Russell, Thomas A.; and Pepper, John R., 5,549,610, Cl. 606-64.000.

Pequignot, Michel: *See—*
Roux, Christiane; and Pequignot, Michel, 5,549,693, Cl. 623-22.000.

Perdue, Kenneth L., to Endress + Hauser, Inc. Apparatus and method for measuring mass flow rate of a moving medium. 5,550,537, Cl. 340-870.010.

Perego, Luciano, to Tapematic U.S.A., Inc. Continuous feed and discharge flow through cassette loading apparatus. 5,549,256, Cl. 242-532.100.

Perego, Luciano, to Tapematic, U.S.A., Inc. Cassette feed system and method. 5,549,434, Cl. 414-416.000.

Perfecto, Eric D.: *See—*
Farooq, Mukta S.; Kaja, Suryanarayana; Perfecto, Eric D.; and White, George E., 5,549,808, Cl. 205-123.000.

Perkin-Elmer Corporation, The: *See—*
Schawe, Jürgen; and Margulies, Marcel, 5,549,387, Cl. 374-10.000.

Perkins, David W.: *See—*
Chase, Williams L.; and Perkins, David W., 5,549,341, Cl. 294-68.100.

Perkins, James H.: *See—*
Cherukuri, Subraman R.; Battist, Gerald E.; and Perkins, James H., 5,549,917, Cl. 426-96.000.

Perkins, James T.; Appelbaum, Peter F.; and Painter, John A., to Storz Instrument Company. Pneumatic controls for ophthalmic surgical system. 5,549,139, Cl. 137-884.000.

Perlich, Frank J.; Tix, Ron; and Alexander, Graeme, to Quadna, Inc. Edge strip for electrolytic-cell electrode. 5,549,801, Cl. 204-279.000.

Perret, Marc: *See—*
Vernier, Jean-Pierre; Perret, Marc; Garret, Didier; and Chappet, Philippe, 5,549,365, Cl. 303-20.000.

Perry, Jeffrey R.: *See—*
Cacharelis, Philip J.; Perry, Jeffrey R.; and Narahari, Narasimha, 5,550,072, Cl. 437-43.000.

Perry, Joseph E.: *See—*
Boger, David L.; Jaichandra, Doraiswami; Jaworski, Donald L.; and Perry, Joseph E., 5,550,059, Cl. 436-54.000.

Persson, Lars; Karlsson, Kjell; and Lundgren, Lise-Lotte. Apparatus for applying an elastic protective sheath on an elongate bodily membrane, and protective aid article having such. an apparatus. 5,549,120, Cl. 128-842.000.

Peters, Gary A.: *See—*
Bowles, Cary R.; Jones, Sidney D.; and Peters, Gary A., 5,549,831, Cl. 210-650.000.

Peters, Jeffrey J.; Ren, Brooke Q.; and Larson, Christopher R., to SCIMED Life Systems, Inc. Balloon dilation catheter with improved pushability, trackability and crossability. 5,549,552, Cl. 604-96.000.

Peters, Joseph L.; and Kerr, James W., to Clinical Product Development Limited. Medical/surgical devices. 5,549,619, Cl. 606-151.000.

Peters, Ralf-Peter; Rogner, Arnd; Ünal, Nezih; Heinrich, Lothar; Landwehr, Dierk; and Heyde, Wolfgang A. D., to microParts. Infrared-spectrometric sensor for gases. 5,550,375, Cl. 250-343.000.

Petersen, Christopher L.; and Hellmuth, Thomas, to Carl Zeiss, Inc. Short coherence length, doppler velocimetry system. 5,549,114, Cl. 128-691.000.

Petersmann, Joseph: *See—*
Seidel, Willi; and Petersmann, Joseph, 5,549,519, Cl. 477-125.000.

Peterson, Francis C.: *See—*
Sharpe, Leslie A.; and Peterson, Francis C., 5,549,623, Cl. 606-171.000.

Peterson, Rudolph A., Jr., to Deere & Company. Fuel shut-off solenoid pull-in coil current limiter. 5,549,084, Cl. 123-179.170.

Petit, Pascal: *See—*
Bellamy, Alain; Reh, Denis; and Petit, Pascal, 5,549,283, Cl. 267-140.120.

Petit, Pierre: *See—*
Marot, Christine; Petit, Pierre; and Vigor, Xavier, 5,549,733, Cl. 95-100.000.

Petitcollin, Jean-Marc; Lesage, Jean-Luc; and Borderiou, Arnaud, to Saint-Gobain Vitrage International. Process for bending glass sheets using fluid barrier. 5,549,726, Cl. 65-106.000.

Petrillo, Michael J.; Cooke, Steven E.; and Valentino, Frank C., to Picker International, Inc. Technique for balancing anger cameras using an externally irradiated crystal and single tube data. 5,550,377, Cl. 250-363.090.

Petropoulos, Labros S.: *See—*
Richard, Mark A.; Morich, Michael A.; and Petropoulos, Labros S., 5,550,472, Cl. 324-320.000.

Petschow, Bryon W.; and Lee, Yung-Hsiung, to Bristol-Myers Squibb Company. Low buffer nutritional composition. 5,550,106, Cl. 514-2.000.

Petty, Randall H.: *See—*
Dai, Pei-Shing E.; Tsang, Chih-Hao M.; Neff, Laurence D.; and Petty, Randall H., 5,549,813, Cl. 208-120.000.

Peysakhovich, Vitaly; Cignetti, Nicolas P.; Heine, Hans G.; and Mortimer, John H., to Inductotherm Corp. Induction heating coil assembly for prevent of circulating current in induction heating lines for continuous-cast products. 5,550,353, Cl. 219-672.000.

Pfizer Inc.: *See—*
Koch, Kevin; Melvin, Lawrence S., Jr.; Reiter, Lawrence A.; and Ruggeri, Sally G., 5,550,152, Cl. 514-458.000.

Pfleiderer, Wolfgang: *See—*
Suhadolnik, Robert J.; and Pfleiderer, Wolfgang, 5,550,111, Cl. 514-44.000.

PGI International, Ltd.: *See—*
Nimberger, Spencer M., 5,549,097, Cl. 123-690.000.

Phan, Dean V.: *See—*
Trokhan, Paul D.; and Phan, Dean V., 5,549,928, Cl. 427-265.000.

Pharmacia AB: *See—*
Hjertman, Birger, 5,549,561, Cl. 604-131.000.
Jansen, Peter, 5,549,669, Cl. 623-6.000.
Santus, Gian C., 5,549,906, Cl. 424-440.000.

Pharmacy Fund, Inc., The: *See—*
Tarter, Fred B.; Greene, Jeffrey M.; De Fazio, Thomas J.; Peck, Jan; Wylie, L. Stephen; Magnotte, Mark M.; Hall, Del; and Tarter, Scott A., 5,550,734, Cl. 364-401.00R.

Phelps, Wendel: *See—*
Hahn, Roger; Bowles, Ray; and Phelps, Wendel, 5,549,752, Cl. 118-234.000.

Philipak, Stanley: *See—*
Miller, Gregory R.; Adriance, Kyle; and Philipak, Stanley, 5,549,720, Cl. 55-324.000.

Philippe, Michel, to L'Oreal. Process for preparing monoesters predominantly in the 6 position of d-maltose, their use in cosmetic, buccal-dental, pharmaceutical and food compositions. 5,550,225, Cl. 536-115.000.

Philips, Norbert J. L., to U.S. Philips Corporation. System for broadcasting and receiving digital data, receiver and transmitter for use in such system. 5,550,812, Cl. 370-19.000.

Phillips, Joseph R.: *See—*
Nykanen, Tuomo S.; Greenwood, Brian F.; Gullichsen, Johan; Kiiskila, Erkki; Mattelmaki, Esko; Phillips, Joseph R.; Richardsen, Jan T.; Ryham, Rolf; Soderman, Jarmo; and Wiklund, Karl G., 5,549,788, Cl. 162-29.000.

Phillips, Van L. Symes foot prosthesis. 5,549,714, Cl. 623-33.000.

Phillips, Wayne D.: *See—*
D'Ambrogio, William J.; McCourt, Karen M.; Phillips, Wayne D.; Saleh, Patricia D.; and Seip, Barry S., 5,550,834, Cl. 370-110.100.

Phipps, Kevin J.: *See—*
Shapanus, Vincent F.; and Phipps, Kevin J., 5,550,629, Cl. 356-72.000.
Shapanus, Vincent F.; and Phipps, Kevin J., 5,550,631, Cl. 356-300.000.

Physio-Control Corporation: *See—*
Johansen, Curt C.; Moore, Mark P.; and Hann, Edward H., 5,549,659, Cl. 607-60.000.

Pichler, Ludwig: *See—*
Eibl, Johann; Pichler, Ludwig; and Schwarz, Hans P., 5,549,893, Cl. 424-94.640.

Pickart, Loren R., to ProCyte Corporation. Metal-peptide compositions and methods for stimulating hair growth. 5,550,183, Cl. 514-6.000.

Picker International, Inc.: *See—*
Petrillo, Michael J.; Cooke, Steven E.; and Valentino, Frank C., 5,550,377, Cl. 250-363.090.
Richard, Mark A.; Morich, Michael A.; and Petropoulos, Labros S., 5,550,472, Cl. 324-320.000.

Piclin, Jean-Jacques; Thibaut, Gilbert; and Boisson, Michel, to A.D.E.C.E.F. Self-contained drip apparatus. 5,549,562, Cl. 604-134.000.

Picquet, Lionel: *See—*
Abiven, Henri; Picquet, Lionel; Claveyrolas, Gilles; Viala, Jean-Claude; and Bouix, Jean, 5,549,976, Cl. 428-608.000.

PictureTel Corporation: *See—*
Helf, Brant M.; and Chu, Peter L., 5,550,924, Cl. 381-94.000.

Pierce Companies, Inc.: *See—*
Blaylock, Thomas F.; and Schroeder, Marvin C., 5,550,932, Cl. 382-139.000.

Pierron, Olivier: *See—*
Vera, Bernard; and Pierron, Olivier, 5,549,710, Cl. 623-38.000.

Pierson, William G.: *See—*
Mazer, Terrence B.; Walton, Joseph E.; Geckle, Ronita K.; Piontek, Carl J.; Duel, Susan B.; Daab-Krzykowski, Andre; Joseph, Robert L.; Pierson, William G.; Loughrin, Thomas D.; and Osip, Thomas W., 5,549,550, Cl. 604-83.000.

Pietruska, Norman; and Kurpaska, S. Michael, to United Technologies Corporation. Heat treatment and repair of cobalt base superalloy articles. 5,549,767, Cl. 148-512.000.

Pifferi, Giorgio: *See—*
Colombo, Paolo; Cardona, Antonio C.; and Pifferi, Giorgio, 5,549,913, Cl. 424-472.000.

Pigeon, Charles; and Jones, Stephen, to Tige Boats. Ski tow boat with wake control device and method for operation. 5,549,071, Cl. 114-286.000.

Pinsky, Naum: *See—*
Clough, Thomas J.; Grosvenor, Victor L.; and Pinsky, Naum, 5,549,990, Cl. 429-204.000.

Pioneer Electronic Corporation: *See—*
Enomoto, Kazuhisa; Yamazaki, Takao; Azuma, Taiki; and Tarutani, Shinji, 5,550,801, Cl. 369-178.000.
Inoue, Akiyoshi; Taniguchi, Shoji; Kawano, Eisaku; Yanagawa, Naoharu; and Suzuki, Hiroshi, 5,550,799, Cl. 369-116.000.

Piontek, Carl J.: *See—*
Mazer, Terrence B.; Walton, Joseph E.; Geckle, Ronita K.; Piontek, Carl J.; Duel, Susan B.; Daab-Krzykowski, Andre; Joseph, Robert L.; Pierson, William G.; Loughrin, Thomas D.; and Osip, Thomas W., 5,549,550, Cl. 604-83.000.

Pirahesh, Mir H.: *See—*
M. Cheng, Josephine; Mohan, Chandrasekaran; and Pirahesh, Mir H., 5,551,031, Cl. 395-600.000.

Pirelli General plc: *See—*
Llewellyn, Laurence; Graveston, Mark G.; Kandasamy, Ispran S.; and Hale, Peter G., 5,550,947, Cl. 385-134.000.

Pirro, Terrence A.: *See—*
Lewis, Irwin C.; Pirro, Terrence A.; Greinke, Ronald A.; Bretz, Richard I.; and Kampe, Dennis J., 5,550,176, Cl. 524-6.000.

Pitel, Ira J.: *See—*
Green, John D.; and Pitel, Ira J., 5,550,697, Cl. 361-18.000.

Pitney Bowes Inc.: *See—*
Freeman, Gerald C.; and Talmadge, Paul C., 5,550,328, Cl. 177-50.000.
Long, Douglas G.; and Czernik, Roman, 5,549,290, Cl. 271-166.000.

Pitsinos, Emmanuel N.: *See—*
Nicolaou, K. C.; and Pitsinos, Emmanuel N., 5,550,246, Cl. 546-300.000.

Pittman, Gary M.; Senior, Kenneth A.; Strunk, John N.; and Thondukolam, Krishnan R., to Du Pont de Nemours, E. I., and Company. Valve with perfluoroelastomer packing. 5,549,276, Cl. 251-214.000.

Pixel Instruments Corp.: *See—*
Cooper, J. Carl; Wallen, David; Vojnovic, Mirko; and Loveless, Howard, 5,550,594, Cl. 348-513.000.

Place, Donald E., to Therm-O-Disc, Incorporated. Switch with bimetallic element. 5,550,525, Cl. 337-363.000.

Plain, Margaret C., to Xerox Corporation. Sheet stacking and reversing separator. 5,549,292, Cl. 271-291.000.

Plascon Technologies (Proprietary) Limited: *See—*
Symons, Michael W., 5,549,863, Cl. 264-257.000.

Plastow, Graham S.: *See—*
Rothschild, Max F.; Tuggle, Christopher K.; Jacobson, Carol D.; Vaske, David A.; Mileham, Alan J.; and Plastow, Graham S., 5,550,024, Cl. 435-6.000.

Platus, David L.; and Cunningham, Patrick J., to Minus K Technology, Inc. Vibration isolation system. 5,549,270, Cl. 248-619.000.

Platz, Winfried: *See—*
Horsley, Scott W.; and Platz, Winfried, 5,549,817, Cl. 210-122.000.

Plepys, Anthony R.: *See—*
Bredahl, Timothy D.; Leverty, Harold; Smith, Robert L.; Bennett, Richard E.; Yarusso, David J.; Munson, Daniel C.; and Plepys, Anthony R., 5,550,175, Cl. 523-348.000.

Plesko, George A., to GAP Technologies, Inc. System for extending the operating range of a beam scanner. 5,550,367, Cl. 235-472.000.

Ploem, Sven. Collision-Free control system for a multi-axially controllable manipulator. 5,549,439, Cl. 414-680.000.

PMC Specialties Group, Inc.: *See—*
Preiser, Marvin F.; and Vogt, Peter F., 5,549,902, Cl. 424-405.000.

Poggio, Tomaso: *See—*
Shashua, Amnon; and Poggio, Tomaso, 5,550,641, Cl. 358-335.000.

PolyMedica Industries, Inc.: *See—*
Charlesworth, David; Underwood, Christopher J.; and Chian, Kerm S., 5,549,860, Cl. 264-139.000.

Pontier, Dominique: *See—*
Godiard, Laurence; Marco, Yves; Pontier, Dominique; and Roby, Dominique, 5,550,228, Cl. 536-24.100.

Poppe, Wassily: *See—*
Richardson, Joel A.; Poppe, Wassily; Bolton, Benjamin A.; and Paschke, Edward E., 5,550,208, Cl. 528-335.000.

Poppenga, Burton H.: *See—*
Campbell, Russell; Shannon, Terrence M.; and Poppenga, Burton H., 5,550,954, Cl. 395-106.000.

Portaro, Antonio; Gigante, Antonio; Sassi, Fabio; and Belvederi, Bruno, to G.D Societa' Per Azioni. Method of feeding groups of tobacco items, in particular cigarettes, to a continuous packing machine. 5,548,941, Cl. 53-444.000.

Porter, Donald A.: *See—*
Noneman, Mark E.; and Porter, Donald A., 5,550,546, Cl. 342-13.000.

Posa, Andrew W., to Ford Motor Company. Door closer mechanism for a vehicle. 5,549,348, Cl. 296-146.400.

Post Office, The: *See—*
McMaster, Samuel; and Kirwan, Stephen A., 5,550,913, Cl. 379-230.000.

Post, Richard L.: *See—*
Herbert, William G.; Mishra, Satchidanand; Post, Richard L.; VonHoene, Donald C.; Yu, Robert C. U.; Foley, Geoffrey M. T.; and Limburg, William W., 5,550,618, Cl. 355-211.000.

Poston, Ricky L.: *See—*
Cline, Troy L.; Isensee, Scott H.; and Poston, Ricky L., 5,550,970, Cl. 395-161.000.
Isensee, Scott H.; and Poston, Ricky L., 5,550,559, Cl. 345-124.000.

Potkonjak, Miodrag: *See—*
Dey, Sujit; and Potkonjak, Miodrag, 5,550,749, Cl. 364-489.000.

Pott, Ekkehard, to Volkswagen AG. Exhaust gas converter arrangement. 5,549,873, Cl. 422-180.000.

Pouzoullic, Gérard, to Lucent Technologies Inc. System for operating a plurality of power supply modules in parallel. 5,550,461, Cl. 323-269.000.

Powell, Dennis; Paul, Rolf; Hallett, William A.; Berger, Dan M.; and Dutia, Minu D., to American Cyanamid Company. MDR reversal agents. 5,550,149, Cl. 514-416.000.

Powell, Richard M., to Medtronic, Inc. Interactive interpretation of event markers in body-implantable medical device. 5,549,654, Cl. 607-32.000.

Powers, Daniel J.: *See—*
Morgan, Carlton B.; Cole, Clinton; and Powers, Daniel J., 5,549,115, Cl. 128-696.000.

Powers, John T., Jr.: *See—*
Drake, Samuel; Griefer, Allan D.; Powers, John T., Jr.; and Thomas, John G., 5,550,966, Cl. 395-154.000.

Powers, Laurie: *See—*
Levenbook, Inessa; Chumakov, Konstantin; Powers, Laurie; and Ronlinson, Igor, 5,550,018, Cl. 435-5.000.

Poziomek, Edward J.: *See—*
Wohltjen, Henry; and Poziomek, Edward J., 5,550,062, Cl. 436-155.000.

PPG Industries, Inc.: *See—*
Larson, Gary B.; Jobson, Brian; Johnson, James A.; and Sturni, Lance C., 5,550,006, Cl. 430-311.000.

Pralow, Thomas: *See—*
Neitzel, Ulrich; Maack, Hanss-Ingo; and Pralow, Thomas, 5,550,888, Cl. 378-98.700.

Prandl, Reinhard: *See—*
Bukoschek, Romuald L.; Prandl, Reinhard; and Sonnek, Martin, 5,549,042, Cl. 99-455.000.

Prasit, Petpiboon: *See—*
Ducharme, Yves; Gauthier, Jacques Y.; Prasit, Petpiboon; Leblanc, Yves; Wang, Zhaoyin; Leger, Serge; and Therien, Michel, 5,550,142, Cl. 514-365.000.

Prather, Douglas E.: *See—*
Amos, Jane G.; Heath, Perry C.; Prather, Douglas E.; and Toth, John E., 5,550,231, Cl. 540-205.000.

Pratt, Michael J.: *See—*
Wade, John R.; Pratt, Michael J.; Johnstone, Robert A. W.; and Smith, David I., 5,550,001, Cl. 430-157.000.

Preiser, Marvin F.; and Vogt, Peter F., to PMC Specialties Group, Inc. Bird aversion compounds. 5,549,902, Cl. 424-405.000.

Pressler, Stephen M.; Friedmann, James J.; and Sloan, Donald I., to Aironet Wireless Communications, Inc. Electromagnetic shielding assembly for printed circuit board. 5,550,713, Cl. 361-818.000.

Price, Daniel T. Cable restrained reciprocating blade system for energy extraction from moving body of water. 5,548,956, Cl. 60-369.000.

Primax Electronics Ltd.: *See—*
Pan, Ampere, 5,550,650, Cl. 358-474.000.

Priou, Christian: *See—*
Castellanos, Frederic; Cavezzan, Jacques; Fouassier, Jean-Pierre; and Priou, Christian, 5,550,265, Cl. 556-7.000.

Prisbylla, Michael P.: *See—*
Ellis, Martin K.; Lindstedt, Sven T.; Lock, Edward A.; Markstedt, Maj E. H.; Mutter, Linda C.; and Prisbylla, Michael P., 5,550,165, Cl. 514-676.000.

Prochut, Richard: Löfstedt, Jörgen; and Nilsson, Christer, to Tetra Laval Holdings & Finance S.A. Vacuum operated processing station having a liquid separating system. 5,548,944, Cl. 53-511.000.

Prochut, Richard: *See—*
Itoh, Kosaku; Yokoyama, Ikuro; Prochut, Richard; Löfstedt, Jörgen; and Nilsson, Christer, 5,549,191, Cl. 198-432.000.

Procter & Gamble: *See—*
Venkateswaran, Ananthanarayan, 5,549,888, Cl. 424-78.020.

Procter & Gamble Company, The: *See—*
DesMarais, Thomas A., 5,550,167, Cl. 521-50.000.
Herron, Carlisle M.; and Dean, Walter L., 5,549,791, Cl. 162-157.600.
Horney, James C.; and Noel, John R., 5,549,589, Cl. 604-366.000.
Landvogt, Brigitte, 5,549,591, Cl. 604-389.000.
Langdon, Fred M.; and Dobrin, G. Chris, 5,549,777, Cl. 156-244.180.
Murch, Bruce P.; Roselle, Brian J.; and Jones, Kyle D., 5,549,758, Cl. 134-6.000.
Trokhan, Paul D.; and Phan, Dean V., 5,549,928, Cl. 427-265.000.
Van Phan, Dean, 5,549,790, Cl. 162-109.000.

VOL 1189 SS 4 AG 27 1996 UMI

Procter, James A., Jr.; and Otto, James C., to Harris Corporation. Transponder system and method. 5,550,549, Cl. 342-47.000.
ProCyte Corporation: *See*—
Pickart, Loren R., 5,550,183, Cl. 514-6.000.
Promé, Jean-Claude: *See*—
Lerouge, Patrice; Roche, Philippe; Faucher, Catherine; Maillet, Fabienne; Denarie, Jean; Promé, Jean-Claude; and Truchet, Georges, 5,549,718, Cl. 47-57.600.
Proske, Manfred; and Kulessa, Gerhard, to Mannesmann Aktiengesellschaft. Multi-stand roll train. 5,548,988, Cl. 72-252.500.
Prostkoff, Melvin E. Cranial prosthesis. 5,549,678, Cl. 623-16.000.
Proteus Corporation: *See*—
Lucas, Brian K., 5,550,844, Cl. 371-22.600.
Proudfoot, John R.: *See*—
Hargrave, Karl D.; Cullen, Ernest; Proudfoot, John R.; Grozinger, Karl G.; Pal, Kollol; and Adams, Julian, 5,550,117, Cl. 514-81.000.
Prout, Timothy R.: *See*—
Carver, David R.; Prout, Timothy R.; Workman, Christopher T.; and Hughes, Charles L., 5,549,830, Cl. 210-641.000.
Provost, Robert S. Pulverizer throat assembly. 5,549,251, Cl. 241-119.000.
Prutchi, David: *See*—
Stotts, Lawrence J.; Paul, Patrick J.; and Prutchi, David, 5,549,653, Cl. 607-4.000.
Psaltis, Demetri: *See*—
Burr, Geoffrey W.; Mok, Fai H.; and Psaltis, Demetri, 5,550,779, Cl. 365-216.000.
Purich, Daniel L.: *See*—
Thomas, William C., Jr.; Batich, Christopher D.; and Purich, Daniel L., 5,550,259, Cl. 549-274.000.
Puritan-Bennett Corporation: *See*—
Gruenke, Roger A.; and Trimble, Russell L., 5,549,106, Cl. 128-204.230.
Purohit, Ashok P.; and Silver, Sheryl B., to Hoffman-La Roche Inc. Method, reagents and kits for the detection of *Neisseria gonorrhoeae*. *5,550,040, Cl. 435-91.200.*
Purtell, George: *See*—
Patterson, Frank; Zhang, John; and Purtell, George, 5,549,576, Cl. 604-247.000.
Puzic, Olga; Evers, Larry J.; Williamson, Kenneth E.; Gorbaty, Martin L.; and Nahas, Nicholas C., to Exxon Research and Engineering Company. Pavement Binder. 5,549,744, Cl. 106-274.000.
QED Enviromental Systems, Inc.: *See*—
Johnson, Richard D.; Bultman, Robert M.; and Newcomer, Kevin L., 5,549,157, Cl. 166-105.000.
Qian, Xiaolei: *See*—
Jagadish, Hosagrahar V.; and Qian, Xiaolei, 5,551,029, Cl. 395-600.000.
Qin, Bai-Lin: *See*—
Zhang, Qinghua; Qin, Bai-Lin; Barbosa-Canovas, Gustavo V.; Swanson, Barry G.; and Pedrow, Patrick D., 5,549,041, Cl. 99-451.000.
Qin, Jian; Gross, James R.; Mui, William J.; Ning, Xin; Schroeder, Wen Z.; and Sun, Tong, to Kimberly-Clark Corporation. Modified polysaccharides having improved absorbent properties and process for the preparation thereof. 5,550,189, Cl. 525-54.300.
Quadna, Inc.: *See*—
Perlich, Frank J.; Tix, Ron; and Alexander, Graeme, 5,549,801, Cl. 204-279.000.
Quantum Corporation: *See*—
Raab, Michael L., 5,550,489, Cl. 326-93.000.
Quarberg, Craig D.: *See*—
Levi, Avraham Y.; and Quarberg, Craig D., 5,549,407, Cl. 403-109.000.
Queen's University at Kingston: *See*—
Loeb, Gerald E.; Young, Roy A.; and Hood, Kevin H., 5,551,016, Cl. 395-550.000.
Quickie Designs Inc.: *See*—
Counts, David M.; and Stevens, Rex W., 5,549,357, Cl. 297-354.130.
Quickie Manufacturing Corporation: *See*—
Vosbikian, Peter; and Vartanian, Haig, 5,548,864, Cl. 15-257.700.
Quigley, Peter A.; Nolet, Steven C.; and Gallagher, James L., to Composite Development Corporation. Composite shaft structure and manufacture. 5,549,947, Cl. 428-36.200.
Quinn, Robert D.: *See*—
Lehnert, Robert A.; Quinn, Robert D.; Sisley, Steven E.; and Thomas, Brandon D., 5,550,882, Cl. 376-272.000.
Raab, Michael L., to Quantum Corporation. Secondary clock source for low power, fast response clocking. 5,550,489, Cl. 326-93.000.
Rabe, Jeffrey L.: *See*—
Shah, Nilesh V.; Rabe, Jeffrey L.; and Bogin, Zohar, 5,551,044, Cl. 395-750.000.
Radichio, Arthur J.: *See*—
Chen, Limin; and Radichio, Arthur J., 5,548,965, Cl. 62-66.000.
Radio Local Area Networks, Inc.: *See*—
Stillman, Robert A.; Way, James A.; Cable, Jesse F., III; Cooper, David; and Koskinen, James, 5,551,066, Cl. 455-69.000.
Radio Telecom & Technology, Inc.: *See*—
Martinez, Louis, 5,550,579, Cl. 348-12.000.
Rafferty, Francis D., Jr.: *See*—
Davidson, Peter S., Jr.; Rafferty, Francis D., Jr.; and Songer, Gail M., 5,550,957, Cl. 395-114.000.
Rafter, Patrick W.: *See*—
Cheng, Seng H.; Marshall, John; Gregory, Richard J.; and Rafter, Patrick W., 5,550,056, Cl. 435-240.270.
Raghavan, Sree A.: *See*—
Gurantz, Itzhak; Goldenberg, Yoav; and Raghavan, Sree A., 5,550,869, Cl. 375-340.000.
Raghu, Patil K.: *See*—
Dattatraya, Sathaye S.; Raghu, Patil K.; and Vinayak, Paranjape D., 5,549,931, Cl. 427-376.200.
Rahamim, Uriel; Minobe, Randy; Chahrour, Ahmad A.; and Ben-Zur, Raanan, to Hitachi Computer Products (America), Inc. Packaging and cooling structure for the personal processor module. 5,550,710, Cl. 361-687.000.
Rains, Jeral: *See*—
Matsuo, Giichi; Sakai, Akira; Rains, Jeral; and Elley, Dayton, 5,548,986, Cl. 72-204.000.
Raleigh, Michael: *See*—
Widner, Melvin M.; Raleigh, Michael; Goldstein, Yeshayahu S. A.; and Greig, Joseph R., 5,549,046, Cl. 102-202.700.
Ralph, James D.: *See*—
Errico, Joseph P.; Errico, Thomas J.; and Ralph, James D., 5,549,608, Cl. 606-61.000.
Ramaswamy, Coodly P., to Breed Automotive Technology, Inc. High temperature stable, low imput energy primer/detonator. 5,549,769, Cl. 149-26.000.
Ramcke, Uwe: *See*—
Trabandt, Hagen; and Ramcke, Uwe, 5,549,146, Cl. 152-154.200.
Ramesh, Ramamoorthy: *See*—
Jin, Sungho; McCormack, Mark T.; and Ramesh, Ramamoorthy, 5,549,977, Cl. 428-692.000.
Ramm, Alexander G.: *See*—
Katsevich, Alexander J.; and Ramm, Alexander G., 5,550,892, Cl. 378-210.000.
Ramsdell, Everett L.: *See*—
Robinson, Frederick L.; Hedberg, Ernest J.; Kuhni, Michael A.; and Ramsdell, Everett L., 5,549,921, Cl. 426-573.000.
Randolph, Curtis D.: *See*—
Randolph, Steven J.; and Randolph, Curtis D., 5,548,913, Cl. 40-491.000.
Randolph, Robert H., to Digital Call Alert. Time division multiple access radio transmission activated receiver switch. 5,550,832, Cl. 370-95.300.
Randolph, Steven J.; and Randolph, Curtis D. Apparatus and method for displaying a representation of a wheeled vehicle in various poses with respect to a pictorial scene. 5,548,913, Cl. 40-491.000.
Rangan, Geetha N. K.: *See*—
Worsley, Debra J.; Rangan, Geetha N. K.; Edem, Brian C.; and Evans, Michael S., 5,550,802, Cl. 370-13.000.
Rapisarda, Thomas C., to Carmen & Thomas Rapisarda Enterprises. Motion sensitive light and battery assembly switched on and off by the oscillation of a helical spring. 5,550,721, Cl. 362-205.000.
Rapp, Knut M.: *See*—
Mixich, Johann; Rapp, Knut M.; and Vogel, Manfred, 5,550,227, Cl. 536-124.000.
Rasinski, John E.: *See*—
Tran, My; and Rasinski, John E., 5,549,477, Cl. 434-5.000.
Rasmussen, Aaron P. Traction sled exercise machine. 5,549,529, Cl. 482-96.000.
Rasmussen, David E.: *See*—
Pascucci, Gregory A.; Rasmussen, David E.; Decious, Gaylon M.; Garbe, James R.; Hyzer, Susan M.; Woest, Karen L.; Vairavan, Vairavan; Koch, David L.; Gottschalk, Donald A., Jr.; Burkhardt, Dennis E.; Standish, Darrell E.; Madaus, Paul W.; Spacek, Dan J.; Nesler, Clay G.; Stark, James K.; Mageland, Otto M.; Singers, Robert R.; and Wagner, Michael E., 5,550,980, Cl. 395-200.050.
Rastegar, Bahador: *See*—
Barrera, David D.; Rastegar, Bahador; and Rossbach, Paul C., 5,550,995, Cl. 395-403.000.
Ratcliff, Keith: *See*—
Green, David T.; Sienkiewicz, Henry R.; Ratcliff, Keith; Castro, Salvatore; and Manzo, Scott E., 5,549,617, Cl. 606-144.000.
Rauckman, Barbara S.: *See*—
Tegeler, John J.; Rauckman, Barbara S.; Harner, Russell R. L.; Freed, Brian S.; and Merriman, Gregory H., 5,550,247, Cl. 546-314.000.
Rautenberg, Horst, to Windmoeller & Hoelscher. Device for grooving continuously-fed flat workplace. 5,549,539, Cl. 493-402.000.
Rawling, James. Security bolt for T-handle assembly with retrofit capability. 5,548,982, Cl. 70-208.000.
Rawlings, David: *See*—
Witte, Owen; Tsukada, Satoshi; Saffran, Douglas; and Rawlings, David, 5,550,054, Cl. 435-240.200.
Ray, Freddie W. Ornamental device for metal structure. 5,549,939, Cl. 428-31.000.
Raymond, Louis, to LRA Laboratories, Inc. Rising step-load test apparatus. 5,549,007, Cl. 73-856.000.
Razdan, Rahul; Bischoff, Gabriel; and Ulrich, Ernst G., to Digital Equipment Corporation. Simulation of circuits. 5,550,760, Cl. 364-578.000.
Read, John C. Angle oscillating power drive for rotating or swinging a hinged member. 5,549,012, Cl. 74-60.000.
Reardon, Joseph P.: *See*—
Nowak, Bernard E.; and Reardon, Joseph P., 5,549,394, Cl. 384-282.000.
Rebeschi, Thomas J.: *See*—

Kapoor, Mohan L.; and Rebeschi, Thomas J., 5,550,557, Cl. 345-76.000.
Rechner, Johann; Wagner, Paul; Buysch, Hans-Josef; and Klausner, Alexander, to Bayer Aktiengesellschaft. Process for working up the liquid reaction products from the cu-catalysed preparation of dimethyl carbonate. 5,550,278, Cl. 558-277.000.
Reckitt & Colman Inc.: *See*—
Chang, David L., 5,549,842, Cl. 510-191.000.
Recot, Inc.: *See*—
Hartman, Brian W.; Juranovic, Lillian R.; Scannell, Stephen C.; and Williams, Rogers B., 5,549,918, Cl. 426-291.000.
Redpath, Richard J.: *See*—
Miller, Steven M.; and Redpath, Richard J., 5,550,968, Cl. 395-157.000.
Reed, Gary A.; and Symensma, Kenneth L., to Hoover Company, The. Cleaning solution applicator. 5,548,866, Cl. 15-320.000.
Reed, John C., to La Jolla Cancer Research Foundation. Methods of identifying compounds which alter apoptosis. 5,550,019, Cl. 435-6.000.
Reed, Paul A.: *See*—
Brauer, Michael L.; Reed, Paul A.; and Duncan, John L., 5,550,774, Cl. 365-189.020.
Reed, Wilmer H., III, to Dynamic Engineering, Inc. Active control device for aircraft tail buffet alleviation. 5,549,260, Cl. 244-195.000.
Reeves Brothers, Inc.: *See*—
Byers, Joseph L.; Flint, W. Toriran; and Kerr, Richard C., 5,549,968, Cl. 428-241.000.
Regula, Donald W.; Cooper, Kevin; Bregen, Michael F.; Huxel, Shawn T.; and Rosenman, Daniel C., to Ethicon, Inc. Utilization of biocompatible adhesive/sealant materials for securing surgical devices. 5,550,172, Cl. 523-118.000.
Reh, Denis: *See*—
Bellamy, Alain; Reh, Denis; and Petit, Pascal, 5,549,283, Cl. 267-140.120.
Reichert, Veronica R.; Venugopal, Ganesh; and Eschbach, Florence O., to Motorola, Inc. Polymer electrolytes and electrochemical cells using same. 5,549,988, Cl. 429-192.000.
Reichert, Veronica R.: *See*—
Venugopal, Ganesh; Reichert, Veronica R.; and Zhang, Jinshan, 5,549,987, Cl. 429-188.000.
Reid, Mary J.: *See*—
Bloemer, John M.; Balan, Isadore; Bonnell, Thomas A.; Bengtson, Alan D.; Giose, Robert C.; Reid, Mary J.; Fiumefreddo, John A.; and Kurth, Michael J., 5,548,854, Cl. 4-541.600.
Reierson, Robert L. In-situ phosphation reagent process. 5,550,274, Cl. 558-110.000.
Reijnaerts, Jozef H., to U.S. Philips Corporation. Circuit arrangement. 5,550,438, Cl. 315-219.000.
Reiner, Richard S.: *See*—
Atalla, Rajai H.; Weinstock, Ira A.; Hill, Craig L.; and Reiner, Richard S., 5,549,789, Cl. 162-65.000.
Reinhardt, Jorg: *See*—
Hocherl, Manfred; and Reinhardt, Jorg, 5,549,615, Cl. 606-108.000.
Reinhardt, Robert C.; and Humphreys, Richard M., to EOLAS-The Irish Science & Technology Agency. Method and apparatus for conveying ice lumps. 5,549,421, Cl. 406-3.000.
Reinhardt, Rudolf, to Mercedes-Benz AG. Method and apparatus for positive, torsion-proof holding during friction welding. 5,549,236, Cl. 228-114.500.
Reinherz, Ellis; Sayre, Peter; Chang, Hsiu-Ching; and Richardson, Neil, to Dana-Farber Cancer Institute. Recombinant DNA-produced T11 and fragments thereof. 5,550,055, Cl. 435-240.200.
Reinke, Jon D.: *See*—
Linden, Thomas M.; Reinke, Jon D.; and Schmuck, Frank B., 5,551,030, Cl. 395-600.000.
Reinke, Stephen M., to Eastman Kodak Company. Apparatus for moving objects from location and placing them in another. 5,549,441, Cl. 414-744.600.
Reis, Gianluigi. Recovery system for dissipated energy of an engine motor vehicle during its running conditions. 5,549,174, Cl. 180-165.000.
Reischuk, Rüdiger K.: *See*—
Dolev, Danny; Reischuk, Rüdiger K.; and Strong, Hovey R., 5,550,873, Cl. 375-354.000.
Reiss, Hans W., to Med Serve Group, Inc. Combination neuromuscular stimulator and electromyograph system. 5,549,656, Cl. 607-48.000.
Reitberger, Rudolf, to Hilti Aktiengesellschaft. Guide rail. 5,549,390, Cl. 384-44.000.
Reiter, Lawrence A.: *See*—
Koch, Kevin; Melvin, Lawrence S., Jr.; Reiter, Lawrence A.; and Ruggeri, Sally G., 5,550,152, Cl. 514-458.000.
Ren, Brooke Q.: *See*—
Peters, Jeffrey J.; Ren, Brooke Q.; and Larson, Christopher R., 5,549,552, Cl. 604-96.000.
Reneau, Phillip G., to Winzeler Stamping Company. Composite coupling nut and method of making same. 5,549,432, Cl. 411-432.000.
Rentschler, Gunter: *See*—
Schneider, Herbert; and Rentschler, Gunter, 5,549,546, Cl. 604-26.000.
Research Corporation Technologies, Inc.: *See*—
Zuckerman, Bert M.; Dicklow, M. B.; and Marban-Mendoza, Nahum, 5,549,889, Cl. 424-93.430.
Research Foundation of State University of New York, The: *See*—
Moss, Bernard; Studier, F. William; Fuerst, Thomas R.; and Niles, Edward G., 5,550,035, Cl. 435-69.100.
Ressemann, Thomas V.; Stivland, Timothy; and Blaeser, David, to SciMed Life Systems, Inc. Dilation ballon for a single operator exchange intravascular catheter or similar device. 5,549,553, Cl. 604-96.000.
Rettke, Herbert G.: *See*—
Samson, Gene; Vegh, Gabriel B.; Dickens, Duane; and Rettke, Herbert G., 5,549,109, Cl. 128-642.000.
Rexnord Corporation: *See*—
Harris, Bernard; and Bozych, Dennis E., 5,549,772, Cl. 156-154.000.
Rey, Françoise: *See*—
Montagnier, Luc; Rey, Françoise; Krust, Bernard; and Clavel, François, 5,550,052, Cl. 435-240.260.
Reyes, Mayra B.: *See*—
Haye, Shirleyanne E.; and Reyes, Mayra B., 5,550,009, Cl. 430-393.000.
Reynolds, Augustus T. Mixer with helically extending blades. 5,549,384, Cl. 366-299.000.
Reynolds, Patricia A.: *See*—
Acosta, Phyllis J. B.; Grondalski, Richard A.; Liebrecht, Jeffrey W.; and Reynolds, Patricia A., 5,550,146, Cl. 514-400.000.
Reysis, Moisei. Dryer and top coat for nail polish. 5,549,930, Cl. 427-337.000.
Rhee, Woonza; Wallace, Donald G.; Michaels, Alan S.; Burns, Ramon A., Jr.; Fries, Louis; DeLustro, Frank; and Bentz, Hanne, to Collagen Corporation. Polymer conjugates ophthalmic devices comprising collagen-polymer conjugates. 5,550,188, Cl. 525-54.100.
Rhee, Woonza M.; Berg, Richard A.; Rosenblatt, Joel S.; Tefft, Jacqueline A.; Braga, Larry J.; and Smestad, Thomas L., to Collagen Corporation. Method of preparing crosslinked biomaterial compositions for use in tissue augmentation. 5,550,187, Cl. 525-54.100.
Rhoades, George D., to Liquid Carbonic Corporation. Method and apparatus for making CO_2 snow blocks. 5,548,974, Cl. 62-604.000.
Rhodes, Arthur B. Load carrying unit for a conveyor system. 5,549,050, Cl. 104-172.300.
Rhone-Poulenc Chimie: *See*—
Castellanos, Frederic; Cavezzan, Jacques; Fouassier, Jean-Pierre; and Priou, Christian, 5,550,265, Cl. 556-7.000.
Rhone-Poulenc Inc.: *See*—
Bell, John M., 5,549,852, Cl. 510-299.000.
Rhone-Poulenc Rorer S.A.: *See*—
Bouchard, Hervé; Bourzat, Jean-Dominique; and Commercon, Alain, 5,550,261, Cl. 549-510.000.
Rialan, Joseph; and Grouffal, Christian. Seismic acquisition system with decentralized processing means. 5,550,787, Cl. 367-77.000.
Ricci, Donato L. Clamshell pipe lathe having improved bearing arrangement. 5,549,024, Cl. 82-113.000.
Riccomini, Julian: *See*—
Lau, Ken; Yee, Jimmie; Mayeda, Rodger; Riccomini, Julian; and Ilyin, Mary, 5,550,476, Cl. 324-522.000.
Rice, Thomas B.: *See*—
Adams, Thomas R.; Chambers, Sheryl A.; Daines, Richard J.; Gordon-Kamm, William J.; Kausch, Albert P.; Lemaux, Peggy G.; Mackey, Catherine J.; Mangano, Mary L.; O'Brien, James V.; Rice, Thomas B.; Spencer, T. Michael; Start, William G.; and Willetts, Nancy G., 5,550,318, Cl. 800-205.000.
Rich, Russell P.: *See*—
McClinton, John; and Rich, Russell P., 5,548,936, Cl. 52-284.000.
Richard, Mark A.; Morich, Michael A.; and Petropoulos, Labros S., to Picker International, Inc. Combined radio frequency coil with integral magnetic field shim set. 5,550,472, Cl. 324-320.000.
Richard Wolf GmbH: *See*—
Krauss, Werner; Zwingenberger, Jan; and Jaggy, Peter, 5,549,110, Cl. 128-661.010.
Schneider, Herbert; and Rentschler, Gunter, 5,549,546, Cl. 604-26.000.
Richards, Gaylord W.: *See*—
Cloonan, Thomas J.; and Richards, Gaylord W., 5,550,815, Cl. 370-54.000.
Richards, Ray S., to Stir-Melter, Inc. Method for waste for vitrification. 5,550,310, Cl. 588-11.000.
Richards, Ray S., to Stir-Melter, Inc. Method and apparatus for waste vitrification. 5,550,857, Cl. 373-27.000.
Richards, William M.: *See*—
Gomez, Alfredo; Richards, William M.; and Murray, Douglas J., 5,549,161, Cl. 166-255.100.
Richardsen, Jan T.: *See*—
Nykanen, Tuomo S.; Greenwood, Brian F.; Gullichsen, Johan; Kiiskila, Erkki; Mattelmaki, Esko; Phillips, Joseph R.; Richardsen, Jan T.; Ryham, Rolf; Soderman, Jarmo; and Wiklund, Karl G., 5,549,788, Cl. 162-29.000.
Richardson, Joel A.; Poppe, Wassily; Bolton, Benjamin A.; and Paschke, Edward E., to Amoco Corporation. Polycondensation process. 5,550,208, Cl. 528-335.000.
Richardson, Neil: *See*—
Reinherz, Ellis; Sayre, Peter; Chang, Hsiu-Ching; and Richardson, Neil, 5,550,055, Cl. 435-240.200.
Richin, Catherine M. H.: *See*—
Barreau, Eric L. P.; Honnorat, Yves C. L. A.; Martinou, Robert L.; and Richin, Catherine M. H., 5,549,809, Cl. 205-222.000.
Richmond, Darrell A., to L & P Property Management Company. Box spring having snap-on clip for spring securement. 5,548,857, Cl. 5-263.000.
Richmond Technology, Inc.: *See*—
Beyer, Douglas H.; Williams, Eugene V.; and Alvarez, Jose A., 5,550,703, Cl. 361-229.000.

Richter Gedeon Vegyeszeti Gyar Rt.: *See*—
Mahó, Sándor; Tuba, Zoltán; Sánta, Csaba; Balogh, Gábor; Czajlikné Csizér, Éva; Lovasné Marsai, Mária; and Gálik, György, 5,550,240, Cl. 544-295.000.

Rico, Joseph G.: *See*—
Bovy, Philippe R.; Garland, Robert B.; Miyano, Masateru; Rico, Joseph G.; Rogers, Thomas E.; and Zablocki, Jeffery A., 5,550,159, Cl. 514-563.000.

Ricoh Company, Ltd.: *See*—
Izawa, Yasuhiro; Fujii, Tatsuya; Shiraishi, Naoto; Fukushima, Masanobu; and Nakajima, Tatsuya, 5,551,019, Cl. 395-600.000.
Koike, Kazumasa, 5,550,647, Cl. 358-462.000.
Miyanishi, Hideji, 5,550,493, Cl. 327-66.000.
Motoyama, Tetsuro, 5,550,614, Cl. 355-206.000.
Shimada, Tomoyuki; Sasaki, Masaomi; and Aruga, Tamotsu, 5,550,293, Cl. 564-426.000.
Tomita, Kan; Majima, Toshihiko; Tagawa, Toshiya; and Sumida, Hiroyasu, 5,550,623, Cl. 355-311.000.
Yamaguchi, Kiyoshi, 5,550,391, Cl. 257-96.000.

Ricoh Corporation: *See*—
Motoyama, Tetsuro, 5,550,614, Cl. 355-206.000.

Riegel, Johann: *See*—
Hötzel, Gerhard; Neumann, Harald; Strassner, Walter; and Riegel, Johann, 5,549,804, Cl. 204-425.000.

Ries, Michael; and Schumacher, Brian, to Smith & Nephew Richards Inc. Asymmetric femoral prosthesis. 5,549,688, Cl. 623-20.000.

Ries, Michael D.; Tokish, Leonard J., Jr.; and Fallin, Thomas W., to Smith & Nephew Richards Inc. Flexible orthopaedic stem apparatus. 5,549,702, Cl. 623-23.000.

Rieter Automatik GmbH: *See*—
Müller, Leo, 5,549,025, Cl. 83-694.000.

Rieth, Norbert; Darredeau, Bernard; and Lehman, Jean-Yves, to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation des Procedes Georges Claude. Process and installation for the separation of a gaseous mixture by cryogenic distillation. 5,548,975, Cl. 62-646.000.

Rim, Chai Y.; and Hong, Seong W., to Goldstar Co., Ltd. Motion compensator for digital image restoration. 5,550,591, Cl. 348-413.000.

Ripatti, Jorma P.: *See*—
Cruce, Christopher J.; and Ripatti, Jorma P., 5,549,215, Cl. 220-676.000.

Rissanen, Jorma J.: *See*—
Furlan, Gilbert; Rissanen, Jorma J.; and Sheinvald, Dafna, 5,550,540, Cl. 341-51.000.

Ristic, Ljubisa; and Shemansky, Frank A., Jr., to Motorola Inc. Method for fabricating a monolithic semiconductor device with integrated surface micromachined structures. 5,550,090, Cl. 437-228.000.

Ritson, Marc J. Permeameter probe. 5,548,991, Cl. 73-38.000.

Riverwood International Corporation: *See*—
Sutherland, Robert L., 5,549,197, Cl. 206-158.000.

Rizet, Laurent; and Charpentier, Pierre E., to Unimetal Societe Francaise des Aciers Longs. Process for decontamination soils polluted with metals. 5,549,811, Cl. 205-602.000.

Roane, Jerry: *See*—
Burns, Carmen D.; Roane, Jerry; and Cady, James W., 5,550,711, Cl. 361-728.000.

Robbins, Edward S., III; and Schumann, Ronald, to Robbins, III, Edward S. Reusable re-collapsible container and resealable cap. 5,549,213, Cl. 220-8.000.

Robert Bosch GmbH: *See*—
Hötzel, Gerhard; Neumann, Harald; Strassner, Walter; and Riegel, Johann, 5,549,804, Cl. 204-425.000.
Hall, Dieter; and Sassen, Klaus, 5,550,740, Cl. 364-431.010.
Jennrich, Irene; Weber, Lothar; and Niegel, Andreas, 5,550,424, Cl. 313-130.000.

Robert, Michel P.: *See*—
Hendriks, Ferdinand; and Robert, Michel P., 5,550,693, Cl. 360-103.000.

Roberts, John A., to Smith Meters Limited. Gas meter having selectivity chargeable covers. 5,548,998, Cl. 73-263.000.

Robinson, Bethany S.: *See*—
Gabbe, John D.; Ginsberg, Allen; and Robinson, Bethany S., 5,550,965, Cl. 395-154.000.

Robinson, Frederick L.; Hedberg, Ernest J.; Kuhni, Michael A.; and Ramsdell, Everett L., to Jasper, Wyman & Sons. Method for forming small diameter ropes of gelled aqueous product. 5,549,921, Cl. 426-573.000.

Roby, Dominique: *See*—
Godiard, Laurence; Marco, Yves; Pontier, Dominique; and Roby, Dominique, 5,550,228, Cl. 536-24.100.

Roche, Philippe: *See*—
Lerouge, Patrice; Roche, Philippe; Faucher, Catherine; Maillet, Fabienne; Denarie, Jean; Promé, Jean-Claude; and Truchet, Georges, 5,549,718, Cl. 47-57.600.

Rockenfeller, Uwe; and Kirol, Lance D., to Rocky Research. Method for use of liquid/vapor ammonia absorption systems in unitary HVAC systems. 5,548,971, Cl. 62-324.200.

Rockwell International Corporation: *See*—
Mahoney, Murray W., 5,549,768, Cl. 148-695.000.
Olafsson, Sverrir, 5,550,862, Cl. 375-229.000.
White, Stanley A., 5,550,866, Cl. 375-316.000.

Rocky Research: *See*—
Rockenfeller, Uwe; and Kirol, Lance D., 5,548,971, Cl. 62-324.200.

Rode, John E., to Temper Corporation. Adapter sleeve and an adjustable spacer with radial extension useable thereon. 5,549,397, Cl. 384-551.000.

Röder, Arno: *See*—
Ermert, Klaus; Röder, Arno; and Zimmermann, Klaus, 5,550,335, Cl. 181-207.000.

Rodgers, Paul M.; Moodie, David G.; and Wake, David, to British Telecommunications public limited company. High speed optical switching device including a capacitance structure. 5,550,939, Cl. 385-8.000.

Rodgers, Paula M.: *See*—
Zeheb, Ron; and Rodgers, Paula M., 5,549,848, Cl. 252-408.100.

Rodgers, Robert E., Jr., to CCS, LLC. Stationary exercise apparatus. 5,549,526, Cl. 482-57.000.

Rodriguez Ramos, Jose L., to TRW Vehicle Safety Systems Inc. Air bag. 5,549,326, Cl. 280-743.100.

Roeckner, William J.: *See*—
Connell, Lawrence E.; Paitl, Kenneth A.; Roeckner, William J.; and Haddad, Kenneth R., 5,551,078, Cl. 455-343.000.

Rogalsky, Alena. Medical needle unit. 5,549,570, Cl. 604-198.000.

Rogers, Thomas E.: *See*—
Bovy, Philippe R.; Garland, Robert B.; Miyano, Masateru; Rico, Joseph G.; Rogers, Thomas E.; and Zablocki, Jeffery A., 5,550,159, Cl. 514-563.000.

Rogner, Arnd: *See*—
Peters, Ralf-Peter; Rogner, Arnd; Ünal, Nezih; Heinrich, Lothar; Landwehr, Dierk; and Heyde, Wolfgang A. D., 5,550,375, Cl. 250-343.000.

Rohm and Haas Company: *See*—
Guo, Yili, 5,550,100, Cl. 504-116.000.

Rohm Co., Ltd.: *See*—
Okajima, Susumu, 5,550,838, Cl. 371-21.200.

Rojnica, Werner: *See*—
Baruschke, Wilhelm; Lochmahr, Karl; and Rojnica, Werner, 5,549,153, Cl. 165-42.000.

Roland, Jean-Pierre: *See*—
Bernus, Christophe; Jamain, Patrice; and Roland, Jean-Pierre, 5,550,413, Cl. 310-36.000.

Rolland, Yves: *See*—
Brion, Jean-Daniel; Chollet, Anne-Marie; Demuynck, Luc; De Montarby, Lucy; Rolland, Yves; Bonnet, Jacqueline; Ghezzi, Pietro; and Fradin, Armel, 5,550,143, Cl. 514-367.000.

Rollins Environmental Services, Inc.: *See*—
Eustathios, Vassiliou; Schaefer, Walter R.; and Guinto, Joseph F., 5,549,472, Cl. 432-103.000.

Romagnoli, Joseph D. Load spreading belt with buckle closure. 5,548,878, Cl. 24-306.000.

Roman, Richard B.: *See*—
Eppstein, Deborah A.; Felgner, Philip L.; Gadek, Thomas R.; Jones, Gordon H.; and Roman, Richard B., 5,550,289, Cl. 564-293.000.

Rompre, Stephane: *See*—
Dubé, Ghyslain; Dupuis, Claude; Langlais, Joseph; Lavoie, Serge; Rompre, Stephane; Trottier, Sylvain; and Turcotte, Gilles, 5,549,732, Cl. 75-331.000.

Roninson, Igor: *See*—
Levenbook, Inessa; Chumakov, Konstantin; Powers, Laurie; and Roninson, Igor, 5,550,018, Cl. 435-5.000.

Rood, John D., to Innoventions. Article catcher for clothes dryer. 5,548,904, Cl. 34-82.000.

Root, Jeffrey M.: *See*—
Meyer, Richard S.; Campbell, Michael L.; Winter, Daryl B.; and Root, Jeffrey M., 5,550,220, Cl. 536-18.500.

Rorabaugh, Michael E.: *See*—
Hedges, Daniel E.; Meserole, Jere S., Jr.; and Rorabaugh, Michael E., 5,548,953, Cl. 60-202.000.

Roselle, Brian J.: *See*—
Murch, Bruce P.; Roselle, Brian J.; and Jones, Kyle D., 5,549,758, Cl. 134-6.000.

Rosemount Inc.: *See*—
Lenz, Gary A.; Brown, Gregory C.; and Warrior, Jogesh, 5,549,137, Cl. 137-486.000.

Rosen, Steven B. Reflective seat shield for use with infant retaining devices. 5,549,354, Cl. 297-184.130.

Rosenberg, Martin: *See*—
Johansen, Hanne R.; Van Der Straten-Ponthoz, Ariane A.; and Rosenberg, Martin, 5,550,043, Cl. 435-172.300.

Rosenblatt, Joel S.: *See*—
Rhee, Woonza M.; Berg, Richard A.; Rosenblatt, Joel S.; Tefft, Jacqueline A.; Braga, Larry J.; and Smestad, Thomas L., 5,550,187, Cl. 525-54.100.

Rosenman, Daniel C.: *See*—
Regula, Donald W.; Cooper, Kevin; Bregen, Michael F.; Huxel, Shawn T.; and Rosenman, Daniel C., 5,550,172, Cl. 523-118.000.

Rosich, Mitchell N.; Noya, Eric S.; and Arnott, Randy M., to Digital Equipment Corporation. System for controlling a write cache and merging adjacent data blocks for write operations. 5,551,002, Cl. 395-461.000.

Ross, Michael P., to Sandia Corporation. Non-invasive hyperthermia apparatus including coaxial applicator having a non-invasive radiometric receiving antenna incorporated therein and method of use thereof. 5,549,639, Cl. 607-101.000.

Rossbach, Paul C.: *See*—
Barrera, David D.; Rastegar, Bahador; and Rossbach, Paul C., 5,550,995, Cl. 395-403.000.

Rossman, Jon R.; and Hotaling, Bryan, to Leyden House Limited. Scented liquid nebulizer. 5,549,247, Cl. 239-57.000.

Roth, Walter, to El Mos Electronik In Mos Technologie GmbH. Method for producing a PMOS transistor. 5,550,069, Cl. 437-41.000.

Rothschild, Max F.; Tuggle, Christopher K.; Jacobson, Carol D.; Vaske, David A.; Mileham, Alan J.; and Plastow, Graham S., to Biotechnology Research & Development Corporation; and Iowa State University Research Foundation, Inc. Genetic markers for pig litter size. 5,550,024, Cl. 435-6.000.

Rouet, Pascal; and Delvart, Bernard, to U.S. Philips Corporation. Inductor. 5,550,523, Cl. 336-221.000.

Roulston, Gary: *See*—
Askins, William E.; Stewart, Michael W.; Roulston, Gary; and Fiore, Joseph F., Jr., 5,549,073, Cl. 119-474.000.

Rounding, Howard-Paul: *See*—
Stoltefuss, Jürgen; Goldmann, Siegfried; Straub, Alexander; Bechem, Martin; Gross, Rainer; Hebisch, Siegbert; Hütter, Joachim; and Rounding, Howard-Paul, 5,550,245, Cl. 546-167.000.

Rousselle, Corinne: *See*—
Frost, Jonathan; George, Pascal; Pasau, Patrick; Bartsch, Régine; Rousselle, Corinne; Williams, Paul H.; and Muller, Jean C., 5,550,162, Cl. 514-617.000.
George, Pascal; Frost, Jonathan; Pasau, Patrick; Rousselle, Corinne; Bartsch, Régine; Williams, Paul Howard; and Muller, Jean Claude, 5,550,125, Cl. 514-230.500.

Roustaei, Alexander. Optical scanner with automatic activation. 5,550,366, Cl. 235-462.000.

Roux, Christiane; and Pequignot, Michel. Cotyloidal prostheses. 5,549,693, Cl. 623-22.000.

Rowe, Lee R. Portable spa unit. 5,548,852, Cl. 4-509.000.

Roy, Stephen C. Shoulder joint prosthesis with angular adjustment. 5,549,682, Cl. 623-19.000.

Royaerts, Didier, to Didier Royaerts; and Societe Duret. Composite material for the manufacture of seats, seat backs and like objects comprising a differentially woven fabric of warp threads and weft wires. 5,549,958, Cl. 428-95.000.

Royer, Ronald L.: *See*—
Nobbe, Dan W.; and Royer, Ronald L., 5,551,064, Cl. 455-62.000.

Royle, Ian A. Tube screw fastener. 5,549,431, Cl. 411-389.000.

Rozenstrauch, Alexander: *See*—
Drozt, Peter M.; Rozenstrauch, Alexander; and Lo, Bin, 5,551,062, Cl. 455-54.200.

RTI Technologies, Inc.: *See*—
Strout, D. Wayne; Crandall, Thomas L.; Slater, Michael J.; and Malmrose, Erik, 5,549,023, Cl. 82-112.000.

Ruby, Keith D.: *See*—
Mitchell, Alton D.; Ruby, Keith D.; Miles, Ronald W.; and Naas, Robert L., 5,549,266, Cl. 248-205.100.

Rudeen, Robert W., to Intermec Corporation. Method and apparatus for spotter beam formation using a partitioned optical element. 5,550,364, Cl. 235-462.000.

Rudnick, Seth A.: *See*—
Holland, Laura M.; Hammang, Joseph P.; Rudnick, Seth A.; Lysaght, Michael J.; and Dionne, Keith E., 5,550,050, Cl. 435-240.200.

Rudolph, Dietbert: *See*—
Schmal, Günter; and Rudolph, Dietbert, 5,550,887, Cl. 378-43.000.

Rudshteyn, Alexander: *See*—
Beryozkin, Vladimir; and Rudshteyn, Alexander, 5,549,410, Cl. 404-6.000.

Ruf, Wolfgang: *See*—
Begemann, Ulrich; Heinzmann, Helmut; Ruf, Wolfgang; Egelhof, Dieter; and Kinzler, Gernot, 5,549,792, Cl. 162-216.000.

Ruggeri, Sally G.: *See*—
Koch, Kevin; Melvin, Lawrence S., Jr.; Reiter, Lawrence A.; and Ruggeri, Sally G., 5,550,152, Cl. 514-458.000.

Rule Industries, Inc.: *See*—
Burrill, James T.; and Anastos, William, 5,549,456, Cl. 417-12.000.

Rump, Siegfried; Steiner, Manfred; Brugger, Franz; Klarer, Martin; Knoff, Bernd; and Eckl, Albrecht, to Mercedes-Benz AG. Method for automatic braking of motor vehicles with an anti-lock brake system. 5,549,369, Cl. 303-125.000.

Rupp, Garry E.: *See*—
Ndondo-Lay, Robert; and Rupp, Garry E., 5,549,556, Cl. 604-102.000.

Rupprecht, Kathleen M.; Baker, Robert K.; Ok, Hyun O.; and Parsons, William H., to Merck & Co., Inc. Aryl, alkyl, alkenyl and alkynylmacrolides having immunosuppressive activity. 5,550,233, Cl. 540-456.000.

Rüsche, Heinz-Josef; and Bonhoff, Norbert, to Lignotock GmbH. Shock absorber for improving safety in passenger compartments in motor vehicles. 5,549,327, Cl. 280-751.000.

Russell, B. Don, to Texas A & M University System, The. Expert system for detecting high impedance faults. 5,550,751, Cl. 364-492.000.

Russell, Thomas A.; and Pepper, John R., to Smith & Nephew Richards Inc. Femoral intramedullary nail. 5,549,610, Cl. 606-64.000.

Rutgers, The State University of New Jersey: *See*—
Anderson, Stephen; and Ryan, Raymond, 5,550,213, Cl. 530-324.000.

Ruthenbeck, Mark A.: *See*—
Foster, Mark J.; Fakhruddin, Saifuddin T.; Walker, James L.; Mendelow, Matthew B.; Sun, Jiming; Brahman, Rodman S.; Krau, Michael P.; Willoughby, Brian D.; Maddix, Michael D.; Belt, Steven L.; Hovey, Scott A.; and Ruthenbeck, Mark A., 5,551,033, Cl. 395-650.000.

Rutledge, Phillip R.: *See*—
Cunningham, Robert A., Jr.; and Rutledge, Phillip R., 5,548,970, Cl. 62-271.000.

Rutten, Matthew J.: *See*—
Cronin, John E.; and Rutten, Matthew J., 5,549,511, Cl. 451-281.000.

Ruvarac, Thomas C.: *See*—
Andruska, Donald L.; and Ruvarac, Thomas C., 5,550,904, Cl. 379-127.000.

Ryan, Dana W.; Giurtino, Joel F.; and Bales, Thomas O., to Symbiosis Corporation. Reusable surgical trocar with disposable valve assembly. 5,549,565, Cl. 604-167.000.

Ryan, Kiernan F.; Sribar, Rok; and Savkar, Sudhir D., to General Electric Company. Horizontal axis clothes washing machine with tub suspension. 5,548,979, Cl. 68-23.200.

Ryan, Raymond: *See*—
Anderson, Stephen; and Ryan, Raymond, 5,550,213, Cl. 530-324.000.

Ryczek, William F., to Arthur Cox & Sons, Inc. Adjustable pivot door assembly. 5,548,869, Cl. 16-93.00R.

Rydel, Charles, to Valeo Electronique. Electronic circuit having a linearised and symmetrized response, an oscillator having such a circuit, and a telecontrol transmitter having such an oscillator. 5,550,545, Cl. 341-176.000.

Ryham, Rolf: *See*—
Nykanen, Tuomo S.; Greenwood, Brian F.; Gullichsen, Johan; Kiiskila, Erkki; Mattelmaki, Esko; Phillips, Joseph R.; Richardsen, Jan T.; Ryham, Rolf; Soderman, Jarmo; and Wiklund, Karl G., 5,549,788, Cl. 162-29.000.

Ryou, Eui K., to Hyundai Electronics Industries Co., Ltd. Method for forming micro contacts of semiconductor device. 5,550,071, Cl. 437-41.000.

S. C. Johnson & Son, Inc.: *See*—
Wefler, Mark E., 5,548,922, Cl. 43-131.000.

Sada, Shinri, to Daikin Industries, Ltd. Refrigeration apparatus. 5,548,968, Cl. 62-175.000.

Sadler, Richard A.; and Paffhausen, Johannes H., to MGF Maschinen- und Geraete-Fabrik GmbH. Pile driving apparatus. 5,549,168, Cl. 173-49.000.

Saeki, Keiji: *See*—
Kunitomo, Yoshinobu; Nozu, Makoto; Sakashita, Yasuyuki; Tsukamoto, Masahide; Nakatani, Seichi; Saeki, Keiji; and Kitayama, Yoshifumi, 5,550,408, Cl. 257-737.000.

Saffran, Douglas: *See*—
Witte, Owen; Tsukada, Satoshi; Saffran, Douglas; and Rawlings, David, 5,550,054, Cl. 435-240.200.

Sahashi, Masashi: *See*—
Iwasaki, Hitoshi; Ohsawa, Yuichi; Kondoh, Reiko; Hashimoto, Susumu; Sawabe, Atsuhito; Kamiguchi, Yuzo; and Sahashi, Masashi, 5,549,978, Cl. 428-692.000.

Sahni, Atam P.: *See*—
Scheibelhoffer, Anthony S.; Berlin, Michael J.; Sahni, Atam P.; Dusek, Dianna B.; and Hart, Donald P., 5,549,929, Cl. 427-282.000.

Saijo, Juzo; and Ochiai, Koji, to Sanyo Machine Works, Ltd. Apparatus for executing hemming process. 5,548,883, Cl. 29-243.500.

Sain, Mohini M.; and Daneault, Claude. Treatment of waste printed papers with surface active polymeric compositions to produce brighter pulp. 5,549,787, Cl. 162-5.000.

Saint-Gobain Vitrage International: *See*—
Petitcollin, Jean-Marc; Lesage, Jean-Luc; and Borderiou, Arnaud, 5,549,726, Cl. 65-106.000.

Saito, Masao: *See*—
Tomo, Yoichi; and Saito, Masao, 5,550,008, Cl. 430-325.000.

Saito, Norihisa: *See*—
Nakanishi, Hiroshi; Saito, Norihisa; Ando, Toshinori; and Morinaga, Hisakazu, 5,549,855, Cl. 264-2.500.

Saito, Sakae: *See*—
Mizuta, Yasufumi; Tanaka, Masashi; Muto, Nariaki; Fukami, Toshiyuki; Nakamori, Hideo; Kakui, Mikio; Saito, Sakae; Shiomi, Hiroshi; Sumida, Keisuke; and Uchida, Maki, 5,550,290, Cl. 564-309.000.

Saito, Teruhiko, to Fujitsu Limited; and Fujitsu VLSI Limited. Oscillation circuit having hysteresis inverter coupled to a delay circuit. 5,550,517, Cl. 331-111.000.

Saito, Toshimitsu, to Kabushiki Kaisha Toshiba. Method and system for resuming data processing in computer. 5,551,008, Cl. 395-488.000.

Saitoh, Kazuo: *See*—
Nishino, Toshikazu; Hatano, Mutsuko; Hasegawa, Haruhiro; Nakane, Hideaki; Kawabe, Ushio; Saitoh, Kazuo; Suga, Mitsuo; and Takagi, Kazumasa, 5,550,389, Cl. 257-30.000.

Saitoh, Kenji; Sentoku, Koichi; and Matsumoto, Takahiro, to Canon Kabushiki Kaisha. Rotational deviation detecting method and system using a periodic pattern. 5,550,635, Cl. 356-401.000.

Sak, Robert F. Butterfly assembly with retractable needle cannula. 5,549,571, Cl. 604-198.000.

Sakai, Akira: *See*—
Matsuo, Giichi; Sakai, Akira; Rains, Jeral; and Elley, Dayton, 5,548,986, Cl. 72-204.000.

Sakai, Minekazu; Fukada, Tsuyoshi; Terada, Masakazu; Watanabe, Shinsuke; and Nishida, Minoru, to Nippondenso Co., Ltd. Method of producing a semiconductor dynamic sensor. 5,549,785, Cl. 156-644.100.

Sakai, Zenji: *See*—
Aoki, Hidenao; Tsutsumi, Shigehisa; Fukushima, Takehiro; and Sakai, Zenji, 5,549,005, Cl. 73-663.000.

Sakairi, Shigeru: *See*—
Sugawara, Ken; Sakairi, Shigeru; Matoba, Mikio; Sasaki, Toshio; Shimohigashi, Katsuhiro; and Kimura, Katsutaka, 5,550,781, Cl. 365-222.000.

Sakamoto, Masayuki: *See*—

Fujii, Teruya; and Sakamoto, Masayuki, 5,551,060, Cl. 455-33.400.
Sakamoto, Yoshio, to Kabushiki Kaisha Kenwood. Loudspeaker assembly. 5,550,332, Cl. 181-148.000.
Sakashita, Hiroshi; and Katagiri, Masayuki, to Kabushiki Kaisha Sankyo Seiki Seisakusho. Motor. 5,550,414, Cl. 310-67.00R.
Sakashita, Takeshi; Shimoda, Tomoaki; and Nagai, Takashi, to General Electric Company. Copolycarbonates and manufacturing method for them. 5,550,205, Cl. 528-176.000.
Sakashita, Yasuyuki: *See—*
Kunitomo, Yoshinobu; Nozu, Makoto; Sakashita, Yasuyuki; Tsukamoto, Masahide; Nakatani, Seichi; Saeki, Keiji; and Kitayama, Yoshifumi, 5,550,408, Cl. 257-737.000.
Sakazawa, Shigeyuki; and Wada, Masahiro, to Kokusai Denshin Denwa Kabushiki Kaisha. Bit rate controller for multiplexer of encoded video. 5,550,590, Cl. 348-387.000.
Sakemi, Shoji; and Nishinaka, Teruaki, to Matsushita Electric Industrial Co., Ltd. Method of automatically mounting electronic connector onto an end of printed circuit board. 5,548,891, Cl. 29-842.000.
Sakimura, Tomoo: *See—*
Matsushima, Asao; Ooshiba, Takeo; Etoh, Yoshihiko; Kinoshita, Akira; Suzuki, Tomoko; and Sakimura, Tomoo, 5,549,997, Cl. 430-59.000.
Sakiyama, Shiro; Dosho, Shiro; Maruyama, Masakatsu; Nakahira, Hiroyuki; Shono, Toshiyuki; and Matsuzawa, Akira, to Matsushita Electric Industrial Co., Ltd. Signal converter, noise shaper, AD converter and DA converter. 5,550,544, Cl. 341-155.000.
Sakurada, Shinya: *See—*
Tsutai, Akihiko; Hirai, Takahiro; and Sakurada, Shinya, 5,549,766, Cl. 148-301.000.
Sakuragi, Shoji; Nakahigashi, Sachiyo; Kanda, Sachie; and Sawada, Akihiro, to Brother Kogyo Kabushiki Kaisha. Tape printing method and apparatus having horizontal and rotated printing modes. 5,549,399, Cl. 400-63.000.
Sakurai, Shigeyuki: *See—*
Tada, Nobuhiko; Miyanagi, Naoki; Shimomura, Yoshiaki; Sakurai, Shigeyuki; Okumura, Shinya; and Nagano, Yoshinari, 5,548,890, Cl. 29-827.000.
Sakurai, Shuuzou: *See—*
Nagai, Shigekazu; Sakurai, Shuuzou; and Masui, Ryuichi, 5,549,340, Cl. 294-64.100.
Sakurai, Yohji; Kurahashi, Nobuyuki; Hirose, Tsuyoshi; Miwa, Takashi; Mori, Atsushi; and Nishi, Takao, to Otsuka Pharmaceutical Co., Ltd. Benzylamine derivatives. 5,550,292, Cl. 564-399.000.
Salam, Hassan Paddy A., to Unisplay S.A. Display matrix. 5,550,558, Cl. 345-111.000.
Saleh, Patricia D.: *See—*
D'Ambrogio, William J.; McCourt, Karen M.; Phillips, Wayne D.; Saleh, Patricia D.; and Seip, Barry S., 5,550,834, Cl. 370-110.100.
Salemie, Bernard. Recovery of power from low level heat sources. 5,548,957, Cl. 60-641.800.
Salomé, Marc L. V.: *See—*
Lormeau, Jean Claude; Chevallier, Bruno; Salomé, Marc L. V.; and Tenaille d'Estais, Guy E. M., 5,550,116, Cl. 514-56.000.
Salpeter, Jerome, to SI Industrial Instruments, Inc. Method of calibrating an automatic chemical analyzer. 5,550,053, Cl. 436-8.000.
Sambrook, Joseph F.; Madison, Edwin L.; Goldsmith, Elizabeth J.; Gething, Maryjane H.; and Gerard, Robert D., to University of Texas System, The Board of Regents of The. Serine protease mutants of the chymotrypsin superfamily resistant to inhibition by their cognate inhibitors and genes encoding the same and serine protease inhibitor mutants and genes encoding the same. 5,550,042, Cl. 435-172.100.
Sammarco, Anthony J., to Ericsson Inc. Authentication key entry in cellular radio system. 5,551,073, Cl. 455-89.000.
Samson, Gene; Vegh, Gabriel B.; Dickens, Duane; and Rettke, Herbert G., to Target Therapeutics, Inc. Sheathed multipolar catheter and multipolar guidewire for sensing cardiac electrical activity. 5,549,109, Cl. 128-642.000.
Samson, Wilfred J.: *See—*
Peacock, James C., III; Hyde, Gregory M.; Samson, Wilfred J.; and Clayman, Michael, 5,549,551, Cl. 604-96.000.
Samsung Electronics Co., Ltd.: *See—*
Chang, Ki-Son; Park, Moon-Bae; and Kang, Dong-Hwan, 5,550,572, Cl. 347-171.000.
Hwang, Jin-Sung; and Sohn, Jin-Seung, 5,548,867, Cl. 15-339.000.
Jung, Kyung-Han, 5,550,355, Cl. 219-709.000.
Kim, Il U., 5,548,884, Cl. 29-593.000.
Lee, Ji-Young, 5,550,443, Cl. 315-383.000.
Lee, Kun B., 5,548,969, Cl. 62-228.400.
Seo, Dong-il; and Jang, Tae-Seong, 5,550,776, Cl. 365-200.000.
Seo, Jong-Soo; and Shin, Ki-Ho, 5,550,682, Cl. 360-27.000.
Song, Kyung-eui, 5,548,927, Cl. 49-193.000.
Samuels, James V.: *See—*
Wu, Chin T.; and Samuels, James V., 5,550,556, Cl. 345-14.000.
Sanda, Kenji; and Inoue, Hitoshi, to Tokusen Kogyo Co., Ltd. Metal wire winding reel. 5,549,257, Cl. 242-580.000.
Sandefur, Parrish A.; and Kindness, William M., to Briggs & Stratton Corporation. Catalytic converter having a venturi formed from two stamped components. 5,548,955, Cl. 60-299.000.
Sanders, Matthew H.: *See—*
Tacklind, Christopher A.; Sanders, Matthew H.; and Walne, Geoffrey B., 5,549,117, Cl. 128-716.000.
Sandford, Paul A.: *See—*
Desai, Neil P.; Soon-Shiong, Patrick; Sandford, Paul A.; and Heintz, Roswitha E., 5,550,178, Cl. 524-56.000.
Sandia Corporation: *See—*
Ross, Michael P., 5,549,639, Cl. 607-101.000.
Stormont, John C., 5,550,315, Cl. 588-259.000.
Sandoz Ltd.: *See—*
Altermatt, Ruedi, 5,550,218, Cl. 534-852.000.
Godiard, Laurence; Marco, Yves; Pontier, Dominique; and Roby, Dominique, 5,550,228, Cl. 536-24.100.
Sandoz, Yvan: *See—*
Hauser, René; and Sandoz, Yvan, 5,549,692, Cl. 623-22.000.
Sandvik AB: *See—*
Ostlund, Ake; Oscarsson, Ulf; Gustafson, Per; and Akesson, Leif, 5,549,980, Cl. 428-698.000.
Sanford, Adam; Cheer, John; and Wood, James, to Adam Spence Corporation. Surgical connector. 5,549,583, Cl. 604-283.000.
Sano, Keiichi; Aya, Yoichiro; Terada, Norihiro; and Harata, Yasuki, to Sanyo Electric Co., Ltd. Photovoltaic device. 5,549,763, Cl. 136-255.000.
Sano, Kunio, to Tokyo Electron Kabushiki Kaisha; and Tokyo Electron Yamanashi Kabushiki Kaisha. Probe device. 5,550,482, Cl. 324-758.000.
Sanofi: *See—*
Lormeau, Jean Claude; Chevallier, Bruno; Salomé, Marc L. V.; and Tenaille d'Estais, Guy E. M., 5,550,116, Cl. 514-56.000.
Sanshin Kogyo Kabushiki Kaisha: *See—*
Tazaki, Hiroshi; Ito, Kazumasa; and Sugawara, Atsushi, 5,550,337, Cl. 181-235.000.
Yamamoto, Manabu; Ogasawara, Takio; and Nozue, Toshihiro, 5,549,492, Cl. 440-53.000.
Sánta, Csaba: *See—*
Mahó, Sándor; Tuba, Zoltán; Sánta, Csaba; Balogh, Gábor; Czajlikné Csizér, Éva; Lovasné Marsai, Mária; and Gálik, György, 5,550,240, Cl. 544-295.000.
Santana, Miguel, Jr.: *See—*
Jones, Stephen A.; Garg, Shyam G.; Buller, James F.; and Santana, Miguel, Jr., 5,549,786, Cl. 156-662.100.
Santos, Gregory N., to International Business Machines Corporation. Bridge circuit that can eliminate invalid data during information transfer between buses of different bitwidths. 5,550,989, Cl. 395-306.000.
Santus, Gian C., to Pharmacia AB. Nicotine lozenge and therapeutic method for smoking cessation. 5,549,906, Cl. 424-440.000.
Sanyo Electric Co., Ltd.: *See—*
Sano, Keiichi; Aya, Yoichiro; Terada, Norihiro; and Harata, Yasuki, 5,549,763, Cl. 136-255.000.
Sanyo Machine Works, Ltd.: *See—*
Saijo, Juzo; and Ochiai, Koji, 5,548,883, Cl. 29-243.500.
Saperstein, Zalman P.: *See—*
Cottone, Andrew J.; Saperstein, Zalman P.; Tait, Ronald D.; Parkhill, Richard G.; and Bahr, Jeffrey A., 5,549,927, Cl. 427-191.000.
Sarangdhar, Nitin V.; and Lai, Konrad K., to Intel Corporation. Apparatus and method for performing error correction in a multi-processor system. 5,550,988, Cl. 395-293.000.
Sarangdhar, Nitin V.; Wang, Wen-Hann; and Fisch, Matthew, to Intel Corporation. Apparatus and method of handling race conditions in mesi-based multiprocessor system with private caches. 5,551,005, Cl. 395-472.000.
Sardarian, Seroj. Method of playing a blackjack card game. 5,549,300, Cl. 273-292.000.
Sartori, Guido: *See—*
Ho, Win-Sow W.; Sartori, Guido; Thaler, Warren A.; and Dalrymple, David C., 5,550,199, Cl. 525-423.000.
Sasa, Nobumasa: *See—*
Kojima, Yasuo; Sasa, Nobumasa; and Akiyama, Takeo, 5,550,002, Cl. 430-258.000.
Sasa, Yoshikazu: *See—*
Masaie, Norio; Tachibana, Tomoyuki; Shimizu, Hiroyuki; Ito, Kazuhiko; Matsuguchi, Akira; Sasa, Yoshikazu; and Furuya, Atsushi, 5,550,348, Cl. 219-145.220.
Sasaki, Masaomi: *See—*
Shimada, Tomoyuki; Sasaki, Masaomi; and Aruga, Tamotsu, 5,550,293, Cl. 564-426.000.
Sasaki, Shinichi: *See—*
Odagawa, Kazuyoshi; and Sasaki, Shinichi, 5,550,617, Cl. 355-210.000.
Sasaki, Toshio: *See—*
Sugawara, Ken; Sakairi, Shigeru; Matoba, Mikio; Sasaki, Toshio; Shimohigashi, Katsuhiro; and Kimura, Katsutaka, 5,550,781, Cl. 365-222.000.
Sasaki, Toshiro: *See—*
Furuya, Masatoshi; Sasaki, Toshiro; and Komura, Fuminobu, 5,550,742, Cl. 364-449.000.
Sasaki, Yasuo: *See—*
Nihei, Ryo; Terada, Akihiro; and Sasaki, Yasuo, 5,549,018, Cl. 74-490.030.
Sasaki, Yasushi: *See—*
Kitajima, Hiroshi; Aoki, Hidemitsu; Hamano, Haruto; Morita, Makoto; Shiramizu, Yoshimi; Nakamori, Masaharu; Watanabe, Kaori; Seo, Hirofumi; Shimizu, Yuji; Iuchi, Makoto; Sasaki, Yasushi; and Ohta, Nahomi, 5,549,798, Cl. 204-222.000.
Sassa, Robert L., to W. L. Gore & Associates, Inc. Fabric of commingled fiberglass and polytetrafluoroethylene. 5,549,966, Cl. 428-229.000.
Sassen, Klaus: *See—*
Hall, Dieter; and Sassen, Klaus, 5,550,740, Cl. 364-431.010.
Sassi, Fabio: *See—*

Portaro, Antonio; Gigante, Antonio; Sassi, Fabio; and Belvederi, Bruno, 5,548,941, Cl. 53-443.000.
Sassi, Michel; and Talo, Jean-Louis. Non-circular front chain wheel for crank gear. 5,549,314, Cl. 280-259.000.
Sato, Hideaki: *See—*
Aso, Kenichi; Sato, Hideaki; Eguchi, Hiroshi; Kafuku, Komei; and Takiguchi, Ryohei, 5,550,098, Cl. 503-227.000.
Sato, Hirohide: *See—*
Kusase, Shin; Mitani, Kenzo; Umeda, Atsushi; and Sato, Hirohide, 5,550,457, Cl. 322-29.000.
Sato, Hiroshi: *See—*
Nagano, Masakazu; Tanaka, Kunihiro; Hibino, Toshiro; and Sato, Hiroshi, 5,550,999, Cl. 395-442.000.
Sato, Koji: *See—*
Uematsu, Takao; Shoji, Mitsuyoshi; Nakakawaji, Takayuki; Komatsuzaki, Shigeki; Ito, Yutaka; Morihara, Atsushi; Sato, Koji; Zushi, Shizuo; and Go, Hiroshi, 5,549,835, Cl. 508-204.000.
Sato, Kouichi: *See—*
Wada, Koji; and Sato, Kouichi, 5,550,648, Cl. 358-448.000.
Sato, Makoto: *See—*
Tanaka, Shigeo; Yamazaki, Hiroshi; Kotabe, Noriko; Sugiyama, Kouichi; Sato, Makoto; Katsuyama, Akira; Osakabe, Yoshio; and Kusagaya, Yasuo, 5,550,979, Cl. 395-200.050.
Sato, Noriaki: *See—*
Yoshida, Kazuhiro; and Sato, Noriaki, 5,551,014, Cl. 395-500.000.
Sato, Toshio; Ito, Ikuo; Maeda, Kazuhiko; Yokota, Keiichi; Namekata, Takeshi; and Nemoto, Akihiko, to Sumikin Chemical Co., Ltd. Production method for alkoxynaphthalenecarboxylic acid. 5,550,284, Cl. 562-467.000.
Sato, Tsutomu: *See—*
Ishikawa, Yutaka; Ito, Takeru; and Sato, Tsutomu, 5,549,401, Cl. 400-618.000.
Sato, Yasuo: *See—*
Aoki, Yoichi; Sato, Yasuo; Ito, Chiaki; Nishiuchi, Hitoshi; Nakamoto, Makoto; Yamaguchi, Syoji; Mio, Haruhiko; Koyata, Kazuhiro; and Miyazawa, Yoshinori, 5,550,562, Cl. 345-163.000.
Satoh, Kunio: *See—*
Kobayashi, Shinya; Miyasaka, Toru; and Satoh, Kunio, 5,550,626, Cl. 355-326.00R.
Satoh, Takao: *See—*
Ichinomiya, Hiroshi; Satoh, Takao; and Yamamoto, Akira, 5,550,975, Cl. 395-185.040.
Satula, Keith O.: *See—*
Nadolski, Gregory L.; and Satula, Keith O., 5,551,053, Cl. 395-829.000.
Saunders, Alexander; Summerfield, Frank W.; and Zarowitz, Michael A., to Chronomed, Inc. Method and procedure for preparing red blood fractions. 5,550,060, Cl. 436-63.000.
Savkar, Sudhir D.: *See—*
Ryan, Kiernan F.; Sribar, Rok; and Savkar, Sudhir D., 5,548,979, Cl. 68-23.200.
Savu, Patricia M., to Minnesota Mining and Manufacturing Company. Process for preparing fluorocarbon fluoroalkanesulfonates. 5,550,273, Cl. 558-54.000.
Sawa, Harauo: *See—*
Iwane, Noriyasu; and Sawa, Harauo, 5,549,992, Cl. 429-223.000.
Sawabe, Atsuhito: *See—*
Iwasaki, Hitoshi; Ohsawa, Yuichi; Kondoh, Reiko; Hashimoto, Susumu; Sawabe, Atsuhito; Kamiguchi, Yuzo; and Sahashi, Masashi, 5,549,978, Cl. 428-692.000.
Sawada, Akihiro: *See—*
Sakuragi, Shoji; Nakahigashi, Sachiyo; Kanda, Sachie; and Sawada, Akihiro, 5,549,399, Cl. 400-63.000.
Sawada, Kazuo: *See—*
Nakai, Yoshihiro; Sawada, Kazuo; Hayashi, Kazuhiko; and Nishio, Masanobu, 5,550,102, Cl. 505-420.000.
Sawada, Kikuzo, to Nippon Steel Corporation. Voltage selecting device for receiving a plurality of inputs and selectively outputting one thereof. 5,550,494, Cl. 327-69.000.
Sawano, Yukio: *See—*
Shibasaki, Souhei; Sawano, Yukio; and Nagashima, Hiroto, 5,550,097, Cl. 503-201.000.
Sayre, Peter: *See—*
Reinherz, Ellis; Sayre, Peter; Chang, Hsiu-Ching; and Richardson, Neil, 5,550,055, Cl. 435-240.200.
Scannell, Stephen C.: *See—*
Hartman, Brian W.; Juranovic, Lillian R.; Scannell, Stephen C.; and Williams, Rogers B., 5,549,918, Cl. 426-291.000.
Scarmalis, John: *See—*
Moore, Wayne T.; and Scarmalis, John, 5,550,700, Cl. 361-101.000.
Schaap, Gerard R.: *See—*
Segmüller, Gottfried; Sennwald, Gontran; Cserhati, Zsuzsa; and Schaap, Gerard R., 5,549,681, Cl. 623-18.000.
Schaefer, Walter R.: *See—*
Eustathios, Vassiliou; Schaefer, Walter R.; and Guinto, Joseph F., 5,549,472, Cl. 432-103.000.
Schaffer, Russel W.: *See—*
Bauer, Eric; and Schaffer, Russel W., 5,550,981, Cl. 395-200.060.
Schakel, Eric G.: *See—*
Matthews, Kent R.; Schakel, Eric G.; Morton, Lowell K.; and Young, James F., 5,549,753, Cl. 118-316.000.
Schally, Andrew V.: *See—*
Zarandi, Marta; and Schally, Andrew V., 5,550,212, Cl. 530-324.000.
Schankereli, Kemal: *See—*
Cooper, Joel; Winegar-Heatges, Sally L.; Nelson, Robert P.; Schankereli, Kemal; and Teich, Kristine M., 5,549,628, Cl. 606-220.000.
Schatz, Steve M.: *See—*
Bales, Michael E.; Noel, Paul D.; and Schatz, Steve M., 5,549,098, Cl. 126-211.000.
Schaubs, Randolph J.: *See—*
McMullan, Jay C., Jr.; Burleson, David B.; Huntley, Donald R.; and Schaubs, Randolph J., 5,550,825, Cl. 370-73.000.
Schawe, Jürgen; and Margulies, Marcel, to Perkin-Elmer Corporation, The. Apparatus and method for differential analysis using real and imaginary signal components. 5,549,387, Cl. 374-10.000.
Scheibelhoffer, Anthony S.; Berlin, Michael J.; Sahni, Atam P.; Dusek, Dianna B.; and Hart, Donald P., to Ferro Corporation. Screen printable decorative coating composition. 5,549,929, Cl. 427-282.000.
Scheiern, Kevin L.: *See—*
Keener, Don S.; McNeill, Andrew B.; Newsom, Thomas H.; Scheiern, Kevin L.; Voorhees, Richard W.; and Wachtel, Edward I., 5,550,990, Cl. 395-309.000.
Scheiwiller, René. Set of masonry blocks. 5,548,938, Cl. 52-604.000.
Schering Corporation: *See—*
DeCrosta, Michelle A.; and Jagnandan, Indradat, 5,550,211, Cl. 528-480.000.
Schertler, Roman, to Balzers Aktiengesellschaft. Chamber and a chamber combination for a vacuum facility and a method for transporting through at least one workpiece. 5,549,435, Cl. 414-217.000.
Scherzinger, William M.: *See—*
Shekhawat, Sampat; Liebermann, Eli; Scherzinger, William M.; Silvestro, Gayton L.; Suttora, Nick; and Hodge, David, 5,550,456, Cl. 322-25.000.
Schick, Alfred J.: *See—*
Kim, Sung J.; and Schick, Alfred J., 5,550,642, Cl. 358-335.000.
Schick, Jeffrey C.; and Wisor, Donald R., to Deere & Company. Mechanical seed meter. 5,549,060, Cl. 111-178.000.
Schingnitz, Manfred; Göhler, Peter; and Martin, Heinz, to Noell-DBI Energie-Und Entsorgungstechnik GmbH. Method of thermal utilization of waste materials. 5,550,312, Cl. 588-205.000.
Schlager, Karl M.; and Lu, Li-Hsin D., to SGS-Thomson Microelectronics, Inc. Dual slew rate circuit for driver transistors in disk drives. 5,550,446, Cl. 318-439.000.
Schloss, Harold C.: *See—*
Katz, Samuel M.; and Schloss, Harold C., 5,549,646, Cl. 607-8.000.
Schlosser, Hubert; Wingen, Rainer; and Manero, Javier, to Hoechst Aktiengesellschaft. Process for cross-coupling aromatic boronic acids with aromatic halogen compounds or perfluoroalkylsulfonates. 5,550,236, Cl. 544-238.000.
Schlosset, Thomas W.: *See—*
Bond, James W.; and Schlosset, Thomas W., 5,550,759, Cl. 364-574.000.
Schlueter, Edward L., Jr.; Parker, Thomas C.; Ferguson, Robert M.; and Finsterwalder, Robert N., to Xerox Corporation. Endless seamed belt. 5,549,193, Cl. 198-844.200.
Schmal, Günter; and Rudolph, Dietbert, to Carl-Zeiss-Stiftung. Phase contrast X-ray microscope. 5,550,887, Cl. 378-43.000.
Schmid, Barbara: *See—*
Kurzweil, Peter; Schmid, Barbara; and Schmid, Ottmar, 5,550,706, Cl. 361-502.000.
Schmid, Ottmar: *See—*
Kurzweil, Peter; Schmid, Barbara; and Schmid, Ottmar, 5,550,706, Cl. 361-502.000.
Schmidt, Craig L.: *See—*
Heller, Bernard F.; Schmidt, Craig L.; Nutzman, Thomas M.; and Lessar, Joseph F., 5,549,985, Cl. 429-157.000.
Schmidt, Gunther, deceased (by Margaret Schmidt, legal representative): *See—*
Hargrave, Karl D.; Schmidt, Gunther, deceased, 5,550,122, Cl. 514-211.000.
Schmidt, Margaret, legal representative: *See—*
Hargrave, Karl D.; Schmidt, Gunther, deceased, 5,550,122, Cl. 514-211.000.
Schmidt, Peter F.: *See—*
Smith, Suzanne V.; Lambrecht, Richard M.; Schmidt, Peter F.; and Lee, Fook-Thean, 5,550,160, Cl. 514-563.000.
Schmidt, Thomas A.; and Hastings, Roy A., to Texas Instruments Incorporated. Adaptive duty-cycle limiting for overload protection of integrated circuits. 5,550,702, Cl. 361-103.000.
Schmitz, Andrea M.: *See—*
Gupta, Rajiv; Noble, Julia A.; Hartley, Richard I.; and Schmitz, Andrea M., 5,550,376, Cl. 250-360.100.
Schmuck, Frank B.: *See—*
Linden, Thomas M.; Reinke, Jon D.; and Schmuck, Frank B., 5,551,030, Cl. 395-600.000.
Schneider, Herbert; and Rentschler, Gunter, to Richard Wolf GmbH. Insufflation device. 5,549,546, Cl. 604-26.000.
Schoess, Jeffrey N.; and Havey, Gary D., to Honeywell Inc. Smart fastener. 5,549,803, Cl. 204-404.000.
Schofield, Kenneth; and Larson, Mark, to Donnelly Corporation. Automatic rearview mirror system using a photosensor array. 5,550,677, Cl. 359-604.000.
Scholfield, Richard P. Paper roll note pad. 5,549,232, Cl. 225-46.000.
Scholl, Robert. Paint holder and delivery device. 5,549,216, Cl. 220-695.000.
Scholtysik, Bernd: *See—*

Thiele, Hartmut; Brandstetter, Hermann; Toral, Jose; Hiller, Rainald; Scholtysik, Bernd; Lutz, Gottfried; and Liepold, August, 5,549,198, Cl. 206-307.000.

Scholz, John A.; and Morin, Sandra M., to Osram Sylvania Inc. Discharge lamp with enhanced performance and improved containment. 5,550,421, Cl. 313-25.000.

Scholz, William F., to Avery Dennison Corporation. Repulpable splicing tape. 5,550,181, Cl. 524-460.000.

Schonwetter, Barry S.; and Zasloff, Michael A., to Magainin Pharmaceuticals Inc. Inducible defensin peptide from mammalian epithelia. 5,550,109, Cl. 514-12.000.

Schorscher, Peter: *See*—
Engbersen, Gerhard; Greiner, Heinz; and Schorscher, Peter, 5,549,391, Cl. 384-51.000.

Schott Glaswerke: *See*—
Heisner, Thomas; Naubik, Jürgen; and Juras, Karl-Heinz, 5,549,100, Cl. 126-39.00J.

Schotter, Daniel K., to Hughes Missile Systems Company. Coil winding apparatus incorporating a flexible winding flange. 5,549,781, Cl. 156-443.000.

Schouteeten, Alain; and Christidis, Yani, to Societe Francaise Hoechst. Preparation process for 2 formyl imidazole acetals. 5,550,250, Cl. 548-311.100.

Schramme, Stephan H.: *See*—
Danek, Daniel J.; Etters, Harry N., Jr.; Genz, Earl J.; Johnston, Brigg A.; Littman, Iran R.; Long, John N.; Meadors, Anthony W.; Mercadante, Nicholas J.; Orrico, Mario M.; Schramme, Stephan H.; and Shedore, Charles J., 5,550,342, Cl. 200-448.000.

Schreck, Zoltan; and Venne, Benoit, to Park Medical Systems Inc. Zero gain setting for discrete event processing. 5,550,379, Cl. 250-369.000.

Schremp, Edward J. Macro-engineering process and system for all-weather at-sea wind-energy extraction. 5,549,445, Cl. 415-2.100.

Schroeder, Alfred A., to Lancer Corporation. Beverage dispensing nozzle. 5,549,222, Cl. 222-129.100.

Schroeder, Hubert J.; and Zivkovic, Jovan, to Apax Corporation. Apparatus and method for automatically applying adhesive-backed labels to moving articles. 5,549,783, Cl. 156-542.000.

Schroeder, James D.; and Hendrix, George E., to Emerson Electric Co. Combined motor and mechanical drive for use in oscillating spindle sander. 5,549,507, Cl. 451-121.000.

Schroeder, Marvin C.: *See*—
Blaylock, Thomas F.; and Schroeder, Marvin C., 5,550,932, Cl. 382-139.000.

Schroeder, Ronald R.: *See*—
Milovich, Robert; Schroeder, Ronald R.; Parmentar, William F.; Molnar, Julius J.; and Penick, Jack, 5,549,755, Cl. 118-629.000.

Schroeder, Wen Z.: *See*—
Qin, Jian; Gross, James R.; Mui, William J.; Ning, Xin; Schroeder, Wen Z.; and Sun, Tong, 5,550,189, Cl. 525-54.300.

Schruf, Gerhard M.: *See*—
McInerney, William L.; Osborn, Norbert L.; and Schruf, Gerhard M., 5,549,449, Cl. 415-177.000.

Schryver, Charles A.: *See*—
Batdorf, David B.; and Schryver, Charles A., 5,549,579, Cl. 604-264.000.

Schubert, Erdmann F.: *See*—
Dutta, Niloy K.; Fischer, Russell J.; Hunt, Neil E. J.; Passlack, Matthias; Schubert, Erdmann F.; and Zydzik, George J., 5,550,089, Cl. 437-225.000.

Schubert, William L.: *See*—
Orbach, Abraham; Panoushek, Dale W.; and Schubert, William L., 5,549,166, Cl. 172-4.000.

Schuder, Bernd: *See*—
Huis, Heinrich; and Schuder, Bernd, 5,550,361, Cl. 235-440.000.

Schueller, Stefan: *See*—
Braeuning, Johannes, 5,550,602, Cl. 351-243.000.

Schuermann, Josef H., to Texas Instruments Deutschland GmbH. Interrogator for detecting adjacent transponders. 5,550,548, Cl. 342-42.000.

Schuller International, Inc.: *See*—
Matthews, Kent R.; Schakel, Eric G.; Morton, Lowell K.; and Young, James F., 5,549,753, Cl. 118-316.000.

Schulte, Reinhard W.; Lesyna, David A.; Wicks, William J.; and Meinass, Helmut J., to Loma Linda University Medical Center. Vacuum-assisted stereotactic fixation system with patient-activated switch. 5,549,616, Cl. 606-130.000.

Schultz, George A. Apparatus for cutting ellipses from dough. 5,549,467, Cl. 425-298.000.

Schulz, Hans; and Maushart, Josef, to Balzers Aktiengesellschaft. Coated tool and cutting process. 5,549,975, Cl. 428-553.000.

Schumacher, Brian: *See*—
Ries, Michael; and Schumacher, Brian, 5,549,688, Cl. 623-20.000.

Schumann, Ronald: *See*—
Robbins, Edward S., III; and Schumann, Ronald, 5,549,213, Cl. 220-8.000.

Schuster, Yoel, to Gas Guard West, Inc. Gas appliance upset shutoff valve. 5,549,130, Cl. 137-39.000.

Schwan, Matthew C.: *See*—
Garst, Roger H.; Mueninghoff, Jane C.; and Schwan, Matthew C., 5,550,115, Cl. 514-25.000.

Schwan-Stabilo Schwanhaeusser GmbH & Co.: *See*—
Stoecklein, Thomas, 5,549,779, Cl. 156-293.000.

Schwarz, Hans P.: *See*—
Eibl, Johann; Pichler, Ludwig; and Schwarz, Hans P., 5,549,893, Cl. 424-94.640.

Schwarz, Josef: *See*—
Löffler, Alfons; and Schwarz, Josef, 5,549,184, Cl. 192-3.300.

Schweiz. Serum- & Impfinstitut Bern: *See*—
Glück, Reinhard; and Brantschen, Stefan, 5,549,896, Cl. 424-226.100.

Schwendeman, Robert J., to Motorola, Inc. Apparatus and method in a radio communication system for distinguishing an identifier of a nearby transmitter from that of a more distant transmitter. 5,551,061, Cl. 455-51.100.

Schwindeman, James A.: *See*—
Engel, John F.; Kamienski, Conrad W.; Schwindeman, James A.; Hall, Randy W.; Morrison, Robert C.; and Dover, B. Troy, 5,550,203, Cl. 526-336.000.

Scientific-Atlanta, Inc.: *See*—
McMullan, Jay C., Jr.; Burleson, David B.; Huntley, Donald R.; and Schaubs, Randolph J., 5,550,825, Cl. 370-73.000.

SciMed Life Systems, Inc.: *See*—
Fordenbacher, Paul J., 5,549,662, Cl. 623-1.000.
Peters, Jeffrey J.; Ren, Brooke Q.; and Larson, Christopher R., 5,549,552, Cl. 604-96.000.
Ressemann, Thomas V.; Stivland, Timothy; and Blaeser, David, 5,549,553, Cl. 604-96.000.

Scola, Daniel A.: *See*—
Bell, James P.; Iroh, Jude O.; Scola, Daniel A.; and Liang, Jengli, 5,549,807, Cl. 205-50.000.

Scott, Curtis E.; Strok, Jack M.; and Levinson, Lionel M., to General Electric Company. Solid state thermal conversion of polycrystalline alumina to sapphire using a seed crystal. 5,549,746, Cl. 117-4.000.

Scott, John H.: *See*—
Majetich, Sara; McHenry, Michael; Scott, John H.; Brunsman, Elaine; and Kirkpatrick, Scott, 5,549,973, Cl. 428-403.000.

Scott, Melvyn L., Jr.: *See*—
Archibald, Kenneth R.; and Scott, Melvyn L., Jr., 5,548,896, Cl. 29-894.322.

Scott, Tony D.; Umber, Ray; and Vaughn, William J., to Midas Rex Pneumatic Tools, Inc. Surgical instrument with swivel member. 5,549,634, Cl. 606-170.000.

Scripps Research Institute, The: *See*—
Nicolaou, K. C.; and Pitsinos, Emmanuel N., 5,550,246, Cl. 546-300.000.

Seagate Technology, Inc.: *See*—
Crane, Peter, 5,550,692, Cl. 360-103.000.

Seahorse Equipment Corporation: *See*—
Blandford, Joseph W., 5,549,164, Cl. 166-344.000.

Searle, Leanne; Astbury, Richard; and Eaves, Philip, to Supreme Mowing Limited. Sharpening lawn mower blades. 5,549,508, Cl. 451-141.000.

Seaward, David R.: *See*—
Fincham, Kevin R.; Seaward, David R.; Shirley, Graham L.; and Vernon, Geoffrey W., 5,548,947, Cl. 53-551.000.

Segan, Marc H.; and Newsome, Michael, to M. H. Segan Limited Partnership. Decorative display and ornament therefor. 5,550,319, Cl. 84-103.000.

Segmüller, Gottfried; Sennwald, Gontran; Cserhati, Zsuzsa; and Schaap, Gerard R., to Cserhati, Zsuzsa. Articulated prosthesis. 5,549,681, Cl. 623-18.000.

Seidel, Willi; and Petersmann, Joseph, to Dr. Ing. h.c.F. Porsche AG. Method for control of an automatic transmission of a motor vehicle. 5,549,519, Cl. 477-125.000.

Seiderman, Abe. Cellular telephone calling system using credit card validation. 5,550,897, Cl. 379-59.000.

Seifert, Mark A. Basketball game with playing board. 5,549,293, Cl. 273-1.50R.

Seikagaku Kogyo Kabushiki Kaisha (Seikagaku Corporation): *See*—
Tanaka, Shigenori; Tamura, Hiroshi; and Ohki, Makoto, 5,550,030, Cl. 435-23.000.

Seiko Communications Holding N.V.: *See*—
Park, Mike C., 5,550,535, Cl. 340-825.440.

Seiko Epson Corporation: *See*—
Yamaguchi, Naoto, 5,549,402, Cl. 400-708.000.

Seiko Instruments Inc.: *See*—
Takakura, Akira; and Hirotomi, Jun, 5,550,795, Cl. 368-157.000.

Seiler, Bernard: *See*—
Windhaus, Ernst; Seiler, Bernard; Meyer, Peter; Erwig, Peter; Mathejka, Horst W.; Patalon, Heinrich; Holz, Peter, deceased, 5,548,882, Cl. 29-336.000.

Seip, Barry S.: *See*—
D'Ambrogio, William J.; McCourt, Karen M.; Phillips, Wayne D.; Saleh, Patricia D.; and Seip, Barry S., 5,550,834, Cl. 370-110.100.

Seki, Kazuhide: *See*—
Tanabe, Toru; Seki, Kazuhide; and Hatsumi, Masaaki, 5,550,469, Cl. 324-251.000.

Seki, Nagataka, to Kabushiki Kaisha Toshiba. Power converting apparatus for system interconnection. 5,550,730, Cl. 363-132.000.

Sekiguchi, Susumu: *See*—
Inoue, Yoshio; Takahashi, Masaharu; Sekiguchi, Susumu; and Igarashi, Minoru, 5,550,185, Cl. 524-847.000.

Sekiyama, Nobuya: *See*—
Nakamura, Takao; Sekiyama, Nobuya; Tani, Hiroshi; and Kato, Yoshiki, 5,549,211, Cl. 216-11.000.

Selby, Theodore W.; Wolfe, Kevin J.; and Atkins, William A., to Tannas Co. Stator connector. 5,548,994, Cl. 73-54.280.

Select Service & Supply Co., Inc.: *See*—
Bryant, Philip, 5,549,528, Cl. 482-81.000.

Semco Machine Corporation: *See*—
Holmes, Frederick J.; and Holmes, Frederick F., Jr., 5,550,481, Cl. 324-754.000.

Semiconductor Energy Laboratory Co., Ltd.: *See*—
Koinuma, Hideomi; Shiraishi, Tadashi; Inoue, Tohru; Inomata, Kiyoto; Hayashi, Shigenori; Miyanaga, Akiharu; and Yamazaki, Shunpei, 5,549,780, Cl. 156-345.000.

Seng, Rita: *See*—
Hagans, Karla; Berzins, Leon; Galkowski, Joseph; and Seng, Rita, 5,550,636, Cl. 356-437.000.

Sengupta, Suvankar: *See*—
Todt, Volker R.; Sengupta, Suvankar; and Shi, Donglu, 5,549,748, Cl. 117-53.000.

Senior, Kenneth A.: *See*—
Pittman, Gary M.; Senior, Kenneth A.; Strunk, John N.; and Thondukolam, Krishnan R., 5,549,276, Cl. 251-214.000.

Sennwald, Gontran: *See*—
Segmüller, Gottfried; Sennwald, Gontran; Cserhati, Zsuzsa; and Schaap, Gerard R., 5,549,681, Cl. 623-18.000.

Sens, Ruediger: *See*—
Beckmann, Stefan; Etzbach, Karl-Heinz; Siemensmeyer, Karl; and Sens, Ruediger, 5,549,853, Cl. 252-582.000.

Sentoku, Koichi: *See*—
Saitoh, Kenji; Sentoku, Koichi; and Matsumoto, Takahiro, 5,550,635, Cl. 356-401.000.

Seo, Dong-il; and Jang, Tae-Seong, to Samsung Electronics Co., Ltd. Semiconductor memory device capable of driving word lines at high speed. 5,550,776, Cl. 365-200.000.

Seo, Hirofumi: *See*—
Kitajima, Hiroshi; Aoki, Hidemitsu; Hamano, Haruto; Morita, Makoto; Shiramizu, Yoshimi; Nakamori, Masaharu; Watanabe, Kaori; Seo, Hirofumi; Shimizu, Yuji; Iuchi, Makoto; Sasaki, Yasushi; and Ohta, Nahomi, 5,549,798, Cl. 204-222.000.

Seo, Jong-Soo; and Shin, Ki-Ho, to Samsung Electronics Co., Ltd. Mode discrimination circuit for an image recording/playback system utilizing peak detectors. 5,550,682, Cl. 360-27.000.

Sepela, Mark J.: *See*—
Johnston, Jesse C., Jr.; Kulig, James S.; Lewis, Steven F.; Collet, Eric C.; Sepela, Mark J.; and Meuller, Michael L., 5,549,079, Cl. 122-379.000.

Seraji, Homayoun, to United States of America, National Aeronautics and Space Administration. On-line method and apparatus for coordinated mobility and manipulation of mobile robots. 5,550,953, Cl. 395-98.000.

Sergent, Brad: *See*—
Voll, Robert; Berg, William C.; Sergent, Brad; and Stevens, Sam, 5,551,028, Cl. 395-600.000.

Sergent, Delores A. Ratchet-operating tool for strap-tightening mechanism. 5,549,429, Cl. 410-96.000.

Serizawa, Yoji; and Ushio, Yukihide, to Canon Kabushiki Kaisha. Image forming apparatus using a photosensitive drum and having light quantity adjustment. 5,550,573, Cl. 347-246.000.

Servedio, Michael: *See*—
Boyette, James E., Jr.; Hammond, James M.; Lo, Jiann-Chang; Mahlbacher, James C.; Servedio, Michael; and Taheri, Ali R., 5,550,483, Cl. 324-758.000.

Servomex PLC: *See*—
Kocache, Riad M. A.; Holman, Dany F.; and Swan, James, 5,549,871, Cl. 422-95.000.

Seshadri, Nambirajan, to Lucent Technologies Inc. Recovering analog and digital signals from superimposed analog and digital signals using linear prediction. 5,550,859, Cl. 375-216.000.

Sezan, Muhammed I.: *See*—
Erdem, Arif T.; Sezan, Muhammed I.; and Ozkan, Mehmet K., 5,550,935, Cl. 382-260.000.

SGS-Thomson Microelectronics, Inc.: *See*—
Carobolante, Francesco, 5,550,497, Cl. 327-110.000.
McClure, David C., 5,551,004, Cl. 395-465.000.
Schlager, Karl M.; and Lu, Li-Hsin D., 5,550,446, Cl. 318-439.000.

Shafer, Timothy M. Programmable battery charge indicator. 5,550,475, Cl. 324-433.000.

Shagrin, Ceril T.: *See*—
Lu, Daozheng; Shagrin, Ceril T.; Thomas, William L.; Lee, Morris; Bernard, Bruce; and Zhang, Jia, 5,550,928, Cl. 382-116.000.

Shah, Ajit: *See*—
Barnes, Eric S.; Eldridge, George L.; Nguyen, Uoc; Shah, Ajit; and Weir, Ronald E., 5,551,052, Cl. 395-800.000.

Shah, Nilesh V.; Rabe, Jeffrey L.; and Bogin, Zohar, to Intel Corporation. Method and apparatus for interrupt/SMI# ordering. 5,551,044, Cl. 395-750.000.

Shah, Salim A.: *See*—
Durham, Christopher M.; Kodali, Visweswara R.; and Shah, Salim A., 5,550,490, Cl. 326-98.000.

Shalati, Mohamad D.: *See*—
Harris, Rodney M.; Shalati, Mohamad D.; and Bibeau, Joyce A., 5,550,195, Cl. 525-285.000.
Valpey, Richard S., III; Shalati, Mohamad D.; Harris, Rodney M.; and Yokoyama, Thomas W., 5,550,197, Cl. 525-327.400.

Shampine, William T.: *See*—
Bhagat, Pramod K.; Moe, Warren R.; and Shampine, William T., 5,550,911, Cl. 379-220.000.

Shankwitz, Phil J.: *See*—
Biltgen, Gary L.; Burris, Kenneth W.; Nenne, Timothy M.; Shankwitz, Phil J.; and Walenta, John B., 5,549,764, Cl. 148-222.000.

Shannon, Robert V.; Loeb, Gerald E.; and Zeng, Fan-Gang, to Advanced Bionics Corporation; and House Ear Institute. Four-Channel cochlear system with a passive, non-hermetically sealed implant. 5,549,658, Cl. 607-57.000.

Shannon, Terrence M.: *See*—
Campbell, Russell; Shannon, Terrence M.; and Poppenga, Burton H., 5,550,954, Cl. 395-106.000.

Shapanus, Vincent F.; and Phipps, Kevin J. Method and apparatus for optically monitoring an electrical generator. 5,550,629, Cl. 356-72.000.

Shapanus, Vincent F.; and Phipps, Kevin J. Insulation doping system for monitoring the condition of electrical insulation. 5,550,631, Cl. 356-300.000.

Sharkey, Hugh R.: *See*—
Lundquist, Ingemar H.; Edwards, Stuart D.; Sharkey, Hugh R.; Lax, Ronald G.; Baker, James A., Jr.; and Sommer, Phillip R., 5,549,644, Cl. 604-22.000.

Sharma, Tribhuvan P.; and Chimote, R. S., to Council Of Scientific & Industrial Research. Fixed roof type flammable liquid storage tank. 5,548,933, Cl. 52-192.000.

Sharp Corporation: *See*—
Takatori, Sunao; and Yamamoto, Makoto, 5,550,949, Cl. 395-2.150.
Takatori, Sunao; and Yamamoto, Makoto, 5,550,950, Cl. 395-221.000.

Sharp Kabushiki Kaisha: *See*—
Funai, Takashi; Makita, Naoki; Yamamoto, Yoshitaka; and Morita, Tatsuo, 5,550,070, Cl. 437-41.000.
Nagata, Masaya; Nojima, Hideo; and Koba, Masayoshi, 5,550,101, Cl. 505-162.000.
Nakabayashi, Jiro, 5,550,593, Cl. 348-465.000.
Nakajima, Akio, 5,550,462, Cl. 323-277.000.
Tsuda, Kazuhiko; Shinomiya, Tokihiko; and Yamagishi, Shinji, 5,550,664, Cl. 359-102.000.
Yoshihiro, Shirai, 5,550,658, Cl. 359-49.000.

Sharpe, Leslie A.; and Peterson, Francis C., to Dexide, Inc. Endodissector surgical instrument. 5,549,623, Cl. 606-171.000.

Shashua, Amnon; and Poggio, Tomaso, to GenTech Corporation. System and method for rendering images. 5,550,641, Cl. 358-335.000.

Shaw, Christian: *See*—
Maher, Pascal J.; Filan, Finbarr J.; and Shaw, Christian, 5,549,585, Cl. 604-317.000.

Shchipachev, Viktor. Cell for gas cleaning. 5,549,721, Cl. 55-393.000.

Shea, Jeff: *See*—
Williams, Douglas; Shea, Jeff; and Cork, Michael S., 5,549,949, Cl. 428-36.900.

Shedore, Charles J.: *See*—
Danek, Daniel J.; Etters, Harry N., Jr.; Genz, Earl J.; Johnston, Brigg A.; Littman, Iran R.; Long, John N.; Meadors, Anthony W.; Mercadante, Nicholas J.; Orrico, Mario M.; Schramme, Stephan H.; and Shedore, Charles J., 5,550,342, Cl. 200-448.000.

Sheem, Sang K. Micromachined holes for optical fiber connection. 5,550,942, Cl. 385-53.000.

Sheer, Neil: *See*—
Sridhar, Manickam R.; and Sheer, Neil, 5,550,881, Cl. 375-377.000.

Sheinvald, Dafna: *See*—
Furlan, Gilbert; Rissanen, Jorma J.; and Sheinvald, Dafna, 5,550,540, Cl. 341-51.000.

Shekhawat, Sampat; Liebermann, Eli; Scherzinger, William M.; Silvestro, Gayton L.; Suttora, Nick; and Hodge, David, to AlliedSignal Inc. Voltage/current controlled voltage regulator to eliminate exciter field saturation. 5,550,456, Cl. 322-25.000.

Shelden, Ronald; and Stringaro, Jean-Paul, to Sulzer Brothers Limited. Device for carrying out catalyzed reactions. 5,550,298, Cl. 568-494.000.

Shell Oil Company: *See*—
Boxall, Godfrey J.; and Kilner, David N., 5,549,414, Cl. 404-101.000.
Haskell, Weston W., 5,550,296, Cl. 568-314.000.
Hoxmeier, Ronald J.; Job, Robert C.; Spence, Bridget A.; and DuBois, Donna A., 5,550,194, Cl. 525-250.000.
Ju, Gwo-Tarng; Goudy, Eric S.; and Ayers, Ray R., 5,549,417, Cl. 405-211.000.
Marshall, Glen R., 5,550,532, Cl. 340-604.000.
Spence, Bridget A.; Southwick, Jeffrey G.; Chin, Steven S.; and Hoxmeier, Ronald J., 5,550,196, Cl. 525-314.000.

Shemansky, Frank A., Jr.: *See*—
Ristic, Ljubisa; and Shemansky, Frank A., Jr., 5,550,090, Cl. 437-228.000.

Shemitz, Sylvan R.; Miller, David B.; and Moler, Gregory L., to Sylvan R. Shemitz Designs, Inc. Adjustable luminaire and mounting system therefor. 5,550,725, Cl. 362-282.000.

Shen, Shih-Hwa: *See*—
Hata, Cary; Tu, Roger; Sung, Hsing-Wen; and Shen, Shih-Hwa, 5,549,666, Cl. 623-2.000.

Shengardt, Alexander S.: *See*—
Luger, Peter; Grafwallner, Franz; Peller, Helmuth; Müller, Martin; Malyshev, Valentin V.; Logviniouk, Viacheslav P.; Ozeretskovsky, Vladmimir S.; and Shengardt, Alexander S., 5,548,962, Cl. 62-50.100.

Shepard, James M., to General Chemical Corporation. Automatic water flushing method for a hydrator. 5,549,422, Cl. 406-48.000.

Sheppard, Clyde H.: *See*—

1189
4
AG
27
1996
UMI

Lubowitz, Hyman R.; and Sheppard, Clyde H., 5,550,204, Cl. 528-125.000.
Sheridan, Peter J.: *See—*
Blum, Kenneth; Noble, Ernest P.; and Sheridan, Peter J., 5,550,021, Cl. 435-6.000.
Sherlock, Mary F.; Averitt, Marnie C.; and Dowling, Thomas W., to MFd Enterprises, Inc. Headband magnifier. 5,548,841, Cl. 2-15.000.
Sherman, David M., to Intermec Corporation. Method and apparatus for calibrating a bar code scanner. 5,550,362, Cl. 235-455.000.
Sherman, William R.: *See—*
Ostlund, Richard E.; and Sherman, William R., 5,550,166, Cl. 514-715.000.
Sherwin-Williams Company, The: *See—*
Harris, Rodney M.; Shalati, Mohamad D.; and Bibeau, Joyce A., 5,550,195, Cl. 525-285.000.
Valpey, Richard S., III; Shalati, Mohamad D.; Harris, Rodney M.; and Yokoyama, Thomas W., 5,550,197, Cl. 525-327.400.
Sheth, Paresh J.; Chandrashekar, Venkatramana; and Kolm, Roger R., to Lyondell Petrochemical Company. Dyeable polyolefin compositions and dyeing polyolefin compositions. 5,550,192, Cl. 525-194.000.
Shi, Donglu: *See—*
Todt, Volker R.; Sengupta, Suvankar; and Shi, Donglu, 5,549,748, Cl. 117-53.000.
Shiba, Masue; and Nakata, Shigeharu, to Kabushiki Kaisha Toshiba. ROM burst transfer continuous read-out extension method and a microcomputer system with a built-in ROM using this method. 5,550,996, Cl. 395-421.030.
Shiba, Tekeshi: *See—*
Tanahashi, Masao; Shiba, Tekeshi; and Ikuta, Toshio, 5,548,899, Cl. 30-43.920.
Shibamoto, Kenji: *See—*
Ishidoya, Masahiro; Shibato, Kishio; Komoto, Keiji; Shibamoto, Kenji; Mashita, Mitsuyuki; and Ohe, Osamu, 5,549,932, Cl. 427-385.500.
Shibasaki, Souhei; Sawano, Yukio; and Nagashima, Hiroto, to Fuji Photo Film Co., Ltd. Color recording method and device. 5,550,097, Cl. 503-201.000.
Shibata, Tadashi; and Fujio, Ryota, to Bridgestone Corporation. Method of producing conjugated diene-aromatic vinyl hydrocarbon copolymers. 5,550,200, Cl. 526-174.000.
Shibato, Kishio: *See—*
Ishidoya, Masahiro; Shibato, Kishio; Komoto, Keiji; Shibamoto, Kenji; Mashita, Mitsuyuki; and Ohe, Osamu, 5,549,932, Cl. 427-385.500.
Shibuya, Isao: *See—*
Taguchi, Yoichi; Oishi, Akihiro; Shibuya, Isao; and Tsuchiya, Tohru, 5,550,230, Cl. 540-203.000.
Shibuya, Takashi: *See—*
Yoneyama, Masaru; Shibuya, Takashi; and Miyake, Toshio, 5,550,226, Cl. 536-123.130.
Shidara, Sadafumi: *See—*
Tsunoda, Masaki; Kuwabara, Shigeaki; and Shidara, Sadafumi, 5,549,091, Cl. 123-476.000.
Shieh, Wen, to American Maize-Products Company. Process for producing gamma-cyclodextrin. 5,550,222, Cl. 536-103.000.
Shields, Jack W. Elastomeric needle shield and hub-cap. 5,549,568, Cl. 604-192.000.
Shiga, Tsutomu; Hayashi, Nobuyuki; Ohmi, Masanori; and Nagao, Yasuhiro, to Nippondenso Co., Ltd. Starter. 5,549,011, Cl. 74-7.00E.
Shigaki, Seiichiro; Shimizu, Hiroaki; and Mizomoto, Hiroyuki, to NEC Corporation. Phase comparator. 5,550,878, Cl. 375-373.000.
Shih, Lionel C.; and Haglund, John R. Data recording system having improved bookkeeping capability. 5,550,684, Cl. 360-48.000.
Shiina, Takayuki: *See—*
Kato, Shigemasa; and Shiina, Takayuki, 5,549,063, Cl. 112-258.000.
Oda, Yo; Minakawa, Tadayoshi; Sibuya, Shyoichi; and Shiina, Takayuki, 5,549,061, Cl. 112-220.000.
Shiio, Ichiro: *See—*
Kanada, Yoshihisa; Kawachiya, Kiyokuni; and Shiio, Ichiro, 5,550,560, Cl. 345-156.000.
Shimada, Tomoyuki; Sasaki, Masaomi; and Aruga, Tamotsu, to Ricoh Company, Ltd. Electrophotographic photoconductors and tertiary amine compounds having condensed polycyclic group for use in the same. 5,550,293, Cl. 564-426.000.
Shimazaki, Yoshinori: *See—*
Takarada, Mitsuhiro; and Shimazaki, Yoshinori, 5,550,270, Cl. 556-440.000.
Shimazu, Yukihiko: *See—*
Kawamoto, Kohji; Shimazu, Yukihiko; and Fujiyama, Toshiki, 5,551,045, Cl. 395-775.000.
Shimizu, Hiroaki: *See—*
Shigaki, Seiichiro; Shimizu, Hiroaki; and Mizomoto, Hiroyuki, 5,550,878, Cl. 375-373.000.
Shimizu, Hiroyuki: *See—*
Masaie, Norio; Tachibana, Tomoyuki; Shimizu, Hiroyuki; Ito, Kazuhiko; Matsuguchi, Akira; Sasa, Yoshikazu; and Furuya, Atsushi, 5,550,348, Cl. 219-145.220.
Shimizu, Yuji: *See—*
Kitajima, Hiroshi; Aoki, Hidemitsu; Hamano, Haruto; Morita, Makoto; Shiramizu, Yoshimi; Nakamori, Masaharu; Watanabe, Kaori; Seo, Hirofumi; Shimizu, Yuji; Iuchi, Makoto; Sasaki, Yasushi; and Ohta, Nahomi, 5,549,798, Cl. 204-222.000.
Shimmick, John K.; and Munnerlyn, Charles R., to Visx Incorporated. In situ astigmatism axis alignment. 5,549,597, Cl. 606-5.000.
Shimoda, Tomoaki: *See—*
Sakashita, Takeshi; Shimoda, Tomoaki; and Nagai, Takashi, 5,550,205, Cl. 528-176.000.
Shimohigashi, Katsuhiro: *See—*
Sugawara, Ken; Sakairi, Shigeru; Matoba, Mikio; Sasaki, Toshio; Shimohigashi, Katsuhiro; and Kinura, Katsutaka, 5,550,781, Cl. 365-222.000.
Shimokoshi, Kiyoshi, to Oki Electric Industry Co., Ltd. Window-based ATM cell stream regulator. 5,550,808, Cl. 370-17.000.
Shimomura, Yoshiaki: *See—*
Tada, Nobuhiko; Miyanagi, Naoki; Shimomura, Yoshiaki; Sakurai, Shigeyuki; Okumura, Shinya; and Nagano, Yoshinari, 5,548,890, Cl. 29-827.000.
Shimonohara, Takeshige. Method of jointing members and a jointing structure. 5,548,937, Cl. 52-586.100.
Shin Caterpillar Mitsubishi Ltd.: *See—*
Miki, Masatoshi; Kuwabara, Toshio; and Tamura, Manabu, 5,550,539, Cl. 341-20.000.
Shin-Etsu Chemical Co., Ltd.: *See—*
Fukushima, Motoo; Aramata, Mikio; and Mori, Shigeru, 5,549,851, Cl. 252-519.000.
Inoue, Yoshio; Takahashi, Masaharu; Sekiguchi, Susumu; and Igarashi, Minoru, 5,550,185, Cl. 524-847.000.
Takarada, Mitsuhiro; and Shimazaki, Yoshinori, 5,550,270, Cl. 556-440.000.
Shin-Etsu Handotai Co., Ltd.: *See—*
Kimura, Masanori; and Yamagishi, Hirotoshi, 5,550,354, Cl. 219-673.000.
Tanaka, Kohichi; Hashimoto, Hiromasa; Inada, Yasuo; and Nakajima, Makoto, 5,549,502, Cl. 451-8.000.
Shin, Ho Keun: *See—*
Lee, Dae Sung; and Shin, Ho Keun, 5,548,906, Cl. 34-338.000.
Shin, Ki-Ho: *See—*
Seo, Jong-Soo; and Shin, Ki-Ho, 5,550,682, Cl. 360-27.000.
Shinada, Koichi: *See—*
Kasuya, Tadashi; Shinada, Koichi; Horii, Yukihiko; and Miyazaki, Tateo, 5,550,347, Cl. 219-137.00R.
Shindler, Franz A.: *See—*
Freeman, Arvie E.; and Shindler, Franz A., 5,549,068, Cl. 114-117.000.
Shinjo, Izuru, to Mitsubishi Denki Kabushiki Kaisha. Sensor for automobile. 5,548,996, Cl. 73-116.000.
Shinjo, Ryoichi: *See—*
Kamiya, Ichiro; Shinjo, Ryoichi; Murakami, Takeshi; Nishioka, Yukiko; and Harada, Minoru, 5,549,874, Cl. 422-186.040.
Shinmura, Hiroyuki: *See—*
Inoue, Kunimi; Yamada, Yoshiyuki; Amatsu, Kazumi; Mimura, Yukiteru; Nakaguchi, Yasunori; Shinmura, Hiroyuki; Ono, Yasuyuki; Osawa, Yutaka; Mizutaki, Shoichi; Kasai, Masaji; and Tomioka, Shinji, 5,550,283, Cl. 562-561.000.
Shinomiya, Tokihiko: *See—*
Tsuda, Kazuhiko; Shinomiya, Tokihiko; and Yamagishi, Shinji, 5,550,664, Cl. 359-102.000.
Shiojiri, Hirohisa; and Koga, Toshio, to NEC Corporation. Method of adaptively multiplexing a plurality of video channel data using channel data assignment information obtained from a look-up table. 5,550,589, Cl. 348-387.000.
Shiomi, Hiroshi: *See—*
Mizuta, Yasufumi; Tanaka, Masashi; Muto, Nariaki; Fukami, Toshiyuki; Nakamori, Hideo; Kakui, Mikio; Saito, Sakae; Shiomi, Hiroshi; Sumida, Keisuke; and Uchida, Maki, 5,550,290, Cl. 564-309.000.
Shirahata, Hirokatsu: *See—*
Nakamura, Satoshi; and Shirahata, Hirokatsu, 5,550,168, Cl. 521-108.000.
Shirai, Ichiro; Yamagami, Hitoshi; Hiroshige, Eiichi; and Kubo, Koichi, to Nintendo Co., Ltd.; and Kyushu Hitachi Maxell, Ltd. Induction charging apparatus. 5,550,452, Cl. 320-2.000.
Shiraishi, Naoto: *See—*
Izawa, Yasuhiro; Fujii, Tatsuya; Shiraishi, Naoto; Fukushima, Masanobu; and Nakajima, Tatsuya, 5,551,019, Cl. 395-600.000.
Shiraishi, Tadashi: *See—*
Koinuma, Hideomi; Shiraishi, Tadashi; Inoue, Tohru; Inomata, Kiyoto; Hayashi, Shigenori; Miyanaga, Akiharu; and Yamazaki, Shunpei, 5,549,780, Cl. 156-345.000.
Shiraishi, Toshihiro; and Moriwake, Katsuakira, to Sony Corporation. Image transformation apparatus. 5,550,565, Cl. 345-190.000.
Shiramizu, Yoshimi: *See—*
Kitajima, Hiroshi; Aoki, Hidemitsu; Hamano, Haruto; Morita, Makoto; Shiramizu, Yoshimi; Nakamori, Masaharu; Watanabe, Kaori; Seo, Hirofumi; Shimizu, Yuji; Iuchi, Makoto; Sasaki, Yasushi; and Ohta, Nahomi, 5,549,798, Cl. 204-222.000.
Shirley, Graham L.: *See—*
Fincham, Kevin R.; Seaward, David R.; Shirley, Graham L.; and Vernon, Geoffrey W., 5,548,947, Cl. 53-551.000.
Shirman, Leon A.; and Kamen, Yakov, to Son Microsystems, Inc. Method and apparatus for performing dynamic texture mapping for complex surfaces. 5,550,960, Cl. 395-130.000.
Shlenker, Robin Renee Thill: *See—*
Shlenker, Robin R. T.; Lester, David J.; and Solomons, Clive C., 5,549,924, Cl. 427-2.300.

Shlenker, Robin R. T.; Lester, David J.; and Solomons, Clive C., to Shlenker, Robin Renee Thill. Method of forming a membrane, especially a latex or polymer membrane, including a deactivating barrier and indicating layer. 5,549,924, Cl. 427-2.300.
Shoa, Yong F. Information exhibiting single use sleeping bag. 5,548,858, Cl. 5-413.00R.
Shohji, Kohichi; Ikeda, Masataka; and Kishimoto, Yasushi, to Asahi Kasei Kogyo Kabushiki Kaisha. Stretchable nonwoven fabric and method of manufacturing the same. 5,549,964, Cl. 428-224.000.
Shoji, Mitsuyoshi: *See—*
Uematsu, Takao; Shoji, Mitsuyoshi; Nakakawaji, Takayuki; Komatsuzaki, Shigeki; Ito, Yutaka; Morihara, Atsushi; Sato, Koji; Zushi, Shizuo; and Go, Hiroshi, 5,549,835, Cl. 508-204.000.
Shoji, Takashi, to Fuji Photo Film Co., Ltd. Method of and apparatus for thermally recording images. 5,550,571, Cl. 347-133.000.
Shonan Gosei - Jushi Seisakusho K.K.: *See—*
Yokoshima, Yasuhiro, 5,549,856, Cl. 264-36.000.
Shono, Toshiyuki: *See—*
Sakiyama, Shiro; Dosho, Shiro; Maruyama, Masakatsu; Nakahira, Hiroyuki; Shono, Toshiyuki; and Matsuzawa, Akira, 5,550,544, Cl. 341-155.000.
Shop Vac Corporation: *See—*
Berfield, Robert C.; and Kaufman, Alan D., 5,548,868, Cl. 15-339.000.
Shultz, Jeffrey J.: *See—*
Lurie, Keith G.; Benditt, David G.; Shultz, Jeffrey J.; Ockuly, John D.; and Fleischhacker, John J., 5,549,581, Cl. 604-282.000.
Shumate, Gary D.: *See—*
Chase, David D.; Shumate, Gary D.; Joslin, Joel A.; and Meunchen, Paul K., 5,548,843, Cl. 2-102.000.
Shwe, Than; and Michaels, John M., to Western Atlas International, Inc. Formation testing method and apparatus using multiple radially-segmented fluid probes. 5,549,159, Cl. 166-250.020.
Shy, Jack. Third brake light for automobiles. 5,550,718, Cl. 362-80.100.
SI Industrial Instruments, Inc.: *See—*
Salpeter, Jerome, 5,550,053, Cl. 436-8.000.
Sibuya, Shyoichi: *See—*
Oda, Yo; Minakawa, Tadayoshi; Sibuya, Shyoichi; and Shiina, Takayuki, 5,549,061, Cl. 112-220.000.
Sidler, Hans-Jörg, to Sistag. Parallel-slide gate valve. 5,549,278, Cl. 251-328.000.
Sieber, Bobby G. Piston sleeve valve for use with oilfield fishing operations. 5,549,163, Cl. 166-319.000.
Siegel, Geoffrey S.; and Leinsing, Karl R., to Ivac Corporation. Needleless connector. 5,549,577, Cl. 604-256.000.
Siegel, Irving C.: *See—*
Tompkins, Michael E.; and Green, Michael J., 5,550,753, Cl. 364-505.000.
Siegel, Roy I.; and Hengeveld, John A., to Tektronix, Inc. Graded display of digitally compressed waveforms. 5,550,963, Cl. 395-140.000.
Siegner, Helge: *See—*
Ehrnsberger, Manfred; Mayer, Dieter; and Siegner, Helge, 5,549,182, Cl. 188-129.000.
Sieja, Thomas F.: *See—*
Davis, Leighton I., Jr.; Sieja, Thomas F.; Dage, Gerhard A.; and Matteson, Robert W., 5,549,152, Cl. 165-201.000.
Siemans Elema AB: *See—*
Larsson, Rolf; and Fahlstroem, Ulf, 5,549,582, Cl. 604-283.000.
Siemens Aktiengesellschaft: *See—*
Feld, Peter, 5,550,471, Cl. 324-318.000.
Traub, Karl, 5,550,845, Cl. 371-27.000.
Siemens Elema AB: *See—*
Larsson, Rolf, 5,549,548, Cl. 604-35.000.
Siemens Energy & Automation, Inc.: *See—*
Bellin, Michael; Laplace, Carl J.; and Trainor, Jack, 5,550,460, Cl. 323-255.000.
Laplace, Carl J., 5,550,459, Cl. 323-255.000.
Siemens Medical Systems, Inc.: *See—*
Morby, Derek J., 5,550,678, Cl. 359-641.000.
Siemens Nixdorf Informationssysteme Aktiengesellschaft: *See—*
Wachtler, Rudolf, 5,550,624, Cl. 355-319.000.
Siemensmeyer, Karl: *See—*
Beckmann, Stefan; Etzbach, Karl-Heinz; Siemensmeyer, Karl; and Sens, Ruediger, 5,549,853, Cl. 252-582.000.
Siems, Steven L. Remote access disconnect and fusing arrangement. 5,550,708, Cl. 361-642.000.
Sienkiewicz, Henry R.: *See—*
Green, David T.; Sienkiewicz, Henry R.; Ratcliff, Keith; Castro, Salvatore; and Manzo, Scott E., 5,549,617, Cl. 606-144.000.
Sierra Semiconductor Corporation: *See—*
Fotouhi, Bahram, 5,550,495, Cl. 327-103.000.
Siesco, Leonard E., Jr., to Miller Compressing Company. Nonferrous metal separator. 5,549,206, Cl. 209-17.000.
Sigelakis, George. Security device and system for preventing unauthorized access to and operation of fire hydrants. 5,549,133, Cl. 137-296.000.
Sigmund, Sandra K.: *See—*
Jakubowski, Joseph A.; Palkowitz, Alan D.; and Sigmund, Sandra K., 5,550,118, Cl. 514-89.000.
Sihi GmbH & Co KG: *See—*
Mann, Ralf; Lehmann, Wilfried; and Müller, Hermann, 5,549,450, Cl. 415-214.100.
Silcom Research Limited: *See—*
Panther, Gyles; Williams, J. Peter; and Campbell, Donald W. F., 5,551,079, Cl. 455-347.000.
Silicon Systems, Inc.: *See—*
Fukahori, Kiyoshi, 5,550,512, Cl. 330-254.000.
Sills, Arthur A.; Kilbourn, Frederick A.; Nelson, Brian K.; and Henderson, Donald J., to Siltech Products Incorporated. Door with membrane attached to tambour slats guided by a track. 5,549,149, Cl. 160-201.000.
Siltech Inc.: *See—*
O'Lenick, Anthony J., Jr., 5,550,219, Cl. 536-1.110.
Siltech Products Incorporated: *See—*
Sills, Arthur A.; Kilbourn, Frederick A.; Nelson, Brian K.; and Henderson, Donald J., 5,549,149, Cl. 160-201.000.
Silver, Sheryl B.: *See—*
Purohit, Ashok P.; and Silver, Sheryl B., 5,550,040, Cl. 435-91.200.
Silverman, David P., to Lucent Technologies Inc. Method and apparatus for delivering calls and caller identification information to multi-line users. 5,550,905, Cl. 379-142.000.
Silverstein, Louis D.: *See—*
Sprague, Robert A.; Bruce, Richard H.; and Silverstein, Louis D., 5,550,656, Cl. 359-40.000.
Silverstien, Abraham, to United States of America, Navy. Water turbulence detector. 5,550,789, Cl. 367-94.000.
Silverthorn, Lee; Cornils, Curtis; Kirchner, Mark L.; Stephens, Susan D.; and Crouse, Parker E., to Motorola, Inc. Isolated multiprocessing system having tracking circuit for verifyng only that the processor is executing set of entry instructions upon initiation of the system controller program. 5,551,051, Cl. 395-800.000.
Silvestro, Gayton L.: *See—*
Shekhawat, Sampat; Liebermann, Eli; Scherzinger, William M.; Silvestro, Gayton L.; Suttora, Nick; and Hodge, David, 5,550,456, Cl. 322-25.000.
Siman, Robert: *See—*
Iqbal, Mohamed; Diebold, James L.; Siman, Robert; Chatterjee, Sankar; and Kauer, James C., 5,550,262, Cl. 554-57.000.
Simatelex Manufactory Co., Ltd.: *See—*
Wing-Chung, Li, 5,549,035, Cl. 99-281.000.
Simmel Difesa S.p.A.: *See—*
Borgni, Roberto, 5,549,047, Cl. 102-256.000.
Simpkins, James W.; and Bishop, Jean, to University of Florida. Method for diagnosing estrogen responsiveness. 5,550,029, Cl. 435-14.000.
Simplimatic Engineering Company: *See—*
Lenhart, Ronald A., 5,549,423, Cl. 406-86.000.
Simpson, Jay R.; Wagener, Jefferson L.; and Walker, Kenneth L., to Lucent Technologies Inc. Intra-cavity optical four-wave mixer and optical communications system using the same. 5,550,671, Cl. 359-337.000.
Sims, Peter J.; and Wiedmer, Therese, to Oklahoma Medical Research Foundation. Inhibition of complement mediated inflammatory response. 5,550,108, Cl. 514-21.000.
Sinclair, James D.; and Jankoski, Constance A., to Lucent Technologies Inc. Minienvironment for hazardous process tools. 5,549,512, Cl. 454-58.000.
Singer, Howard M.: *See—*
Ensor, Myra L.; Grewe, Anthony J.; and Singer, Howard M., 5,550,900, Cl. 379-67.000.
Singers, Robert R.: *See—*
Pascucci, Gregory A.; Rasmussen, David E.; Decious, Gaylon M.; Garbe, James R.; Hyzer, Susan M.; Woest, Karen L.; Vairavan, Vairavan; Koch, David L.; Gottschalk, Donald A., Jr.; Burkhardt, Dennis E.; Standish, Darrell E.; Madaus, Paul W.; Spacek, Dan J.; Nesler, Clay G.; Stark, James K.; Mageland, Otto M.; Singers, Robert R.; and Wagner, Michael E., 5,550,980, Cl. 395-200.050.
Sink, Danny R., to Brenco, Incorporated. Shaft journal bearing having improved seal wear ring. 5,549,395, Cl. 384-477.000.
Sirand, Joseph, to Centre d'Etude et de Realisations d'Equipment et de Materiel. Injection and regulation device for atmospheric gas burners for heating appliance, in particular of the infra-red type. 5,549,099, Cl. 126-92.00B.
Sirchio, Ronald J.: *See—*
Maxwell, Horace J.; Sirchio, Ronald J.; and Henofer, James J., 5,549,131, Cl. 137-115.180.
Sisley, Steven E.: *See—*
Lehnert, Robert A.; Quinn, Robert D.; Sisley, Steven E.; and Thomas, Brandon D., 5,550,882, Cl. 376-272.000.
Sisson, Penelope R.: *See—*
Byrne, Phillip O.; Sisson, Penelope R.; and Ingham, Harry R., 5,549,572, Cl. 604-198.000.
Sistag: *See—*
Sidler, Hans-Jörg, 5,549,278, Cl. 251-328.000.
Siuta, Theodore: *See—*
Giambattista, Lucio; and Siuta, Theodore, 5,549,575, Cl. 604-232.000.
Sjöholm, Jarmo. Hinge arrangement, and use thereof. 5,548,926, Cl. 49-127.000.
Skarby, Ulf; Bergsten, Par; and Hedberg, Bo, to Telefonaktiebolaget LM Ericsson. Cartesian multicarrier feedback. 5,551,070, Cl. 455-126.000.
Skell, Daniel G.; and Skell, Eric D., to Electro-Pro, Inc. Triangulation position detection method and apparatus. 5,550,369, Cl. 250-222.100.
Skell, Eric D.: *See—*
Skell, Daniel G.; and Skell, Eric D., 5,550,369, Cl. 250-222.100.
Skertic, Matthew M., to Hughes Missile Systems Company. Joule-Thompson cryostat for use with multiple coolants. 5,548,963, Cl. 62-51.200.
SKF Industrial Trading & Development Company B.V.: *See—*

Van Brakel, Ronaldus J.; Wardle, Frank P.; and Verburgh, Martin, 5,549,398, Cl. 384-571.000.
SKF Textilmaschinen-Komponenten GmbH: *See—*
Paweletz, Anton, 5,548,950, Cl. 057-406.000.
Skillicorn, Brian; and Pastrone, Giovanni, to Cardiac Mariners, Incorporated. X-ray detector. 5,550,378, Cl. 250-367.000.
Slade, Michael G.; and LaBatt, Darren J., to Datavision Technologies. Compiling system and method for mass producing individually customized media. 5,550,735, Cl. 364-401.00R.
Slater, Charles R.: *See—*
Cohen, Herbert; Solar, Matthew S.; and Slater, Charles R., 5,549,547, Cl. 604-30.000.
McBrayer, Michael S.; Kortenbach, Jurgen A.; and Slater, Charles R., 5,549,606, Cl. 606-51.000.
Slater, Michael J.: *See—*
Strout, D. Wayne; Crandall, Thomas L.; Slater, Michael J.; and Malmrose, Erik, 5,549,023, Cl. 82-112.000.
Slayton, Gerald D.: *See—*
Heiman, Jerome R.; and Slayton, Gerald D., 5,549,986, Cl. 429-175.000.
Sloan, Donald I.: *See—*
Pressler, Stephen M.; Friedmann, James J.; and Sloan, Donald I., 5,550,713, Cl. 361-818.000.
Sloan Valve Company: *See—*
Nortier, Richard A., 5,549,487, Cl. 439-521.000.
Slowinski, Christopher, to Christopher Designs, Inc. Precious stone mounting and method therefor. 5,548,976, Cl. 63-28.000.
Sluyterman, Albertus A. S.: *See—*
Dekkers, Bernadus H. J.; DeMan, Ronald J. J.; Bolder, Antonius J. J.; and Sluyterman, Albertus A. S., 5,550,522, Cl. 335-213.000.
Smart, David C.; and Dussinger, Thomas E., to Eastman Kodak Company. Apparatus and method for closing a film cassette and unloading the closed cassette from a camera. 5,550,608, Cl. 354-174.000.
SMC Kabushiki Kaisha: *See—*
Nagai, Shigekazu; Sakurai, Shuuzou; and Masui, Ryuichi, 5,549,340, Cl. 294-64.100.
Smestad, Thomas L.: *See—*
Rhee, Woonza M.; Berg, Richard A.; Rosenblatt, Joel S.; Tefft, Jacqueline A.; Braga, Larry J.; and Smestad, Thomas L., 5,550,187, Cl. 525-54.100.
Smith, Alan M.: *See—*
Hopkins, William T.; and Smith, Alan M., 5,550,437, Cl. 315-209.00R.
Smith & Nephew Richards Inc.: *See—*
Beale, Bradford W., 5,549,673, Cl. 623-9.000.
Daigle, Kenneth P.; and Harbaugh, Mark E., 5,549,703, Cl. 623-23.000.
Davidson, James A., 5,549,667, Cl. 623-3.000.
Ries, Michael; and Schumacher, Brian, 5,549,688, Cl. 623-20.000.
Ries, Michael D.; Tokish, Leonard J., Jr.; and Fallin, Thomas W., 5,549,702, Cl. 623-23.000.
Russell, Thomas A.; and Pepper, John R., 5,549,610, Cl. 606-64.000.
Smith, Bonnie V.: *See—*
Banyay, Harold R.; Cholod, Michael S.; Kolanko, Laurence M.; and Smith, Bonnie V., 5,549,941, Cl. 428-34.100.
Smith, Charles U.: *See—*
Kroll, Mark W.; and Smith, Charles U., 5,549,643, Cl. 607-7.000.
Smith, Christopher R.: *See—*
Thomas, Norman S.; and Smith, Christopher R., 5,549,416, Cl. 405-153.000.
Smith, Clarence S.: *See—*
Hay, Rick H.; Smith, Clarence S.; Girts, Robert D.; and Yount, Larry J., 5,550,736, Cl. 364-424.030.
Smith, Daniel J.; and Chakravarthy, Debashish, to University of Akron, The. Hydrolytically labile microspheres of polysaccharide crosslinked with cyanogen halide and their application in wound dressings. 5,549,908, Cl. 424-444.000.
Smith, David I.: *See—*
Wade, John R.; Pratt, Michael J.; Johnstone, Robert A. W.; and Smith, David I., 5,550,001, Cl. 430-157.000.
Smith, Dennis E.: *See—*
Fant, Alfred B.; Wang, Yongcai; Smith, Dennis E.; Kestner, Melvin M.; and Visconte, Gary W., 5,550,011, Cl. 430-496.000.
Smith, Eric: *See—*
Kanjo, Wajih; Smith, Eric; Demoise, Thomas J.; Girotti, Michael; McCabe, Thomas; Fessler, Charles B.; and Natschke, Scott, 5,549,363, Cl. 303-7.000.
Smith, Floyd A.: *See—*
Oeftering, Richard C.; and Smith, Floyd A., 5,549,237, Cl. 228-116.000.
Smith International, Inc.: *See—*
Mensa-Wilmot, Graham; and Keith, Carl W., 5,549,171, Cl. 175-431.000.
Smith, Julie T.: *See—*
Smith, Scott C.; Smith, Julie T.; and Foster, Holly A., 5,548,948, Cl. 54-66.000.
Smith, Kyle E.; Bringley, Joseph F.; Lambert, Patrick M.; Trauernicht, David P.; Bryan, Philip S.; Hoderlein, Paul M.; and Hyde, Andrea M., to Eastman Kodak Company. Annealed alkaline earth metal fluorohalide storage phosphor, preparation method, and radiation image storage panel. 5,549,843, Cl. 252-301.40H.
Smith, Kyle E.: *See—*
Bringley, Joseph F.; Smith, Kyle E.; and Lambert, Patrick M., 5,549,844, Cl. 252-301.40H.
Smith Meters Limited: *See—*
Roberts, John A., 5,548,998, Cl. 73-263.000.
Smith, Richard: *See—*
Kashem, Mohammed A.; Venot, Andre P.; and Smith, Richard, 5,550,155, Cl. 514-540.000.
Smith, Robert L.: *See—*
Bredahl, Timothy D.; Leverty, Harold; Smith, Robert L.; Bennett, Richard E.; Yarusso, David J.; Munson, Daniel C.; and Plepys, Anthony R., 5,550,175, Cl. 523-348.000.
Smith, Robert T.; and Ageno, Scott K., to Motorola. Field emission device. 5,550,426, Cl. 313-336.000.
Smith, Scott C.; Smith, Julie T.; and Foster, Holly A. Inflatable saddle support apparatus. 5,548,948, Cl. 54-66.000.
Smith, Suzanne V.; Lambrecht, Richard M.; Schmidt, Peter F.; and Lee, Fook-Thean, to Australian Nuclear Science & Technology Organization. Metal complexes of hydroxyaryl containing aminocarboxylic acid chelating agents. 5,550,160, Cl. 514-563.000.
Smith, Walter J.; and Fulbright, David J., to Huck Patents, Inc. Fastener system including a swage fastener and tool for installing same. 5,548,889, Cl. 29-715.000.
SmithKline Beecham Corporation: *See—*
Johansen, Hanne R.; Van Der Straten-Ponthoz, Ariane A.; and Rosenberg, Martin, 5,550,043, Cl. 435-172.300.
Snap-on Technologies, Inc.: *See—*
Krivec, Bert, 5,549,374, Cl. 312-257.100.
Krivec, Bert, 5,549,377, Cl. 312-334.800.
Snell, Stephen C.: *See—*
Hoarty, W. Leo; Soske, Joshua W.; Lauder, Gary M.; Snell, Stephen C.; Fisher, Delmer D.; and North, John, 5,550,578, Cl. 348-7.000.
Snell, Wayne A.; and Fillman, Alan R., to Textron Inc. Engine maximum speed limiter. 5,549,089, Cl. 123-352.000.
So, Myung-Kook, to Daewoo Electronics Co., Ltd. Video cassette recorder capable of automatically setting a television receiver. 5,550,644, Cl. 358-335.000.
Societe d'Exploitation des Machines Dubuit: *See—*
Dubuit, Jean-Louis, 5,549,444, Cl. 414-796.700.
Tranin, Frédéric, 5,549,043, Cl. 101-126.000.
Societe Duret: *See—*
Royaerts, Didier, 5,549,958, Cl. 428-95.000.
Societe Europeenne de Propulsion: *See—*
Valentian, Dominique, 5,549,473, Cl. 432-239.000.
Societe Francaise Hoechst: *See—*
Schouteeten, Alain; and Christidis, Yani, 5,550,250, Cl. 548-311.100.
Societe Hispano Suiza: *See—*
de Cambray, Elisabeth L. F. C.; and Vicogne, Laurent M., 5,548,954, Cl. 60-226.200.
Societe Nationale Des Poudres Et Explosifs: *See—*
Graindorge, Hervé; Mondet, Jean-Claude; and Vincent, Charles-Henry, 5,550,267, Cl. 556-144.000.
Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "Snecma": *See—*
Barreau, Eric L. P.; Honnorat, Yves C. L. A.; Martinou, Robert L.; and Richin, Catherine M. H., 5,549,809, Cl. 205-222.000.
Lechevalier, Michel M. A. A., 5,548,959, Cl. 60-734.000.
Soderman, Jarmo: *See—*
Nykanen, Tuomo S.; Greenwood, Brian F.; Gullichsen, Johan; Kiiskila, Erkki; Mattelmaki, Esko; Phillips, Joseph R.; Richardsen, Jan T.; Ryham, Rolf; Soderman, Jarmo; and Wiklund, Karl G., 5,549,788, Cl. 162-29.000.
Soekawa, Koji: *See—*
Yokoyama, Hiromitsu; Takeuchi, Katsuto; Soekawa, Koji; Abe, Kenichiro; Hattori, Syouichi; Suzuki, Hitoshi; and Okada, Nobuhide, 5,549,778, Cl. 156-246.000.
SOFAB: *See—*
Behar, Alain; Amiel, Pierre; and Bougamont, Jean-Louis, 5,548,943, Cl. 53-473.000.
Sogabe, Atsushi: *See—*
Suzuki, Yuzuru; Takii, Yukio; Yamamoto, Kazumi; Nishiya, Yoshiaki; Sogabe, Atsushi; Sogabe, Yukihiro; and Emi, Shigenori, 5,550,046, Cl. 435-202.000.
Sogabe, Yukihiro: *See—*
Suzuki, Yuzuru; Takii, Yukio; Yamamoto, Kazumi; Nishiya, Yoshiaki; Sogabe, Atsushi; Sogabe, Yukihiro; and Emi, Shigenori, 5,550,046, Cl. 435-202.000.
Sohda, Takashi; Terashita, Zen-ichi; Momose, Yu; Fujisawa, Yukio; and Mizoguchi, Junji, to Takeda Chemical Industries, Ltd. Condensed thiadiazole derivative, method of its production, and use thereof. 5,550,138, Cl. 514-361.000.
Sohn, Jin-Seung: *See—*
Hwang, Jin-Sung; and Sohn, Jin-Seung, 5,548,867, Cl. 15-339.000.
Sohn, Ze'ev, to Influence, Inc. Balloon catheter. 5,549,555, Cl. 604-101.000.
Solanas, Claude H., III: *See—*
Corbyn, Nelson R., Jr.; Meenan, Peter M.; Solanas, Claude H., III; and Vickerman, David C., 5,550,758, Cl. 364-571.030.
Solar, Matthew S.: *See—*
Cohen, Herbert; Solar, Matthew S.; and Slater, Charles R., 5,549,547, Cl. 604-30.000.
Solar, Rita & Gaterud, Ltd.: *See—*
Solar, Ronald J., 5,549,635, Cl. 606-198.000.
Solar, Ronald J., to Cordis Corporation. Vibrating tip catheter. 5,549,119, Cl. 128-772.000.

Solar, Ronald J., to Solar, Rita & Gaterud, Ltd. Non-deformable self-expanding parallel flow endovascular stent and deployment apparatus therefore. 5,549,635, Cl. 606-198.000.
Solbjor, Albert N.: *See—*
Stern, David R.; Gauderer, Michael; and Solbjor, Albert N., 5,549,657, Cl. 604-283.000.
Solomons, Clive C.: *See—*
Shlenker, Robin R. T.; Lester, David J.; and Solomons, Clive C., 5,549,924, Cl. 427-2.300.
Someya, Jun; Chiba, Kazuhiro; Watabu, Kazuyoshi; Yamamoto, Yoshie; Inamura, Mamoru; Nagayama, Takeshi; Bamba, Noriko; and Sunada, Noboru, to Mitsubishi Denki Kabushiki Kaisha. Image processing system. 5,550,936, Cl. 382-263.000.
Sommer, Phillip R.: *See—*
Lundquist, Ingemar H.; Edwards, Stuart D.; Sharkey, Hugh R.; Lax, Ronald G.; Baker, James A., Jr.; and Sommer, Phillip R., 5,549,644, Cl. 604-22.000.
Sommers, Robin A.: *See—*
Kings, Donald H. M.; Sommers, Robin A.; and Usher, John D., 5,549,280, Cl. 266-78.000.
Song, Kyung-eui, to Samsung Electronics Co., Ltd. Door opening and closing apparatus. 5,548,927, Cl. 49-193.000.
Songer, Gail M.: *See—*
Davidson, Peter S., Jr.; Rafferty, Francis D., Jr.; and Songer, Gail M., 5,550,957, Cl. 395-114.000.
Sonnek, Martin: *See—*
Bukoschek, Romuald L.; Prandl, Reinhard; and Sonnek, Martin, 5,549,042, Cl. 99-455.000.
Sonnenburg, Dennis; and Wilcox, Darren W., to Hewlett-Packard Company. Paper separator spring assembly for facsimile or copy machine. 5,549,289, Cl. 271-121.000.
Sonntag, Jeffrey L.: *See—*
Offord, Glen E.; and Sonntag, Jeffrey L., 5,550,528, Cl. 340-146.200.
Sony Corporation: *See—*
Arai, Yuji; Ishiguro, Takashi; and Watanabe, Toshio, 5,549,952, Cl. 428-64.400.
Haraguchi, Yoshio; and Okuda, Minoru, 5,550,605, Cl. 353-81.000.
Hineno, Satoshi; and Ando, Nobuhiko, 5,550,798, Cl. 369-110.000.
Kimura, Motoi; Yoshimura, Shunji; and Suzuki, Kyoko, 5,550,797, Cl. 369-44.410.
Kojima, Naoto; Watanabe, Takashi; Takahashi, Hiroyuki; and Mishima, Akio, 5,548,886, Cl. 29-603.100.
Kume, Hisao; and Horiuchi, Yoshiro, 5,550,428, Cl. 313-407.000.
Shiraishi, Toshihiro; and Moriwake, Katsuakira, 5,550,565, Cl. 345-190.000.
Tanaka, Shigeo; Yamazaki, Hiroshi; Osakabe, Yoshio; Kotabe, Noriko; Iwamoto, Koji; Souma, Yoko; Imaura, Toshihiro; and Maki, Shigeru, 5,550,826, Cl. 370-85.800.
Tanaka, Shigeo; Yamazaki, Hiroshi; Kotabe, Noriko; Sugiyama, Kouichi; Sato, Makoto; Katsuyama, Akira; Osakabe, Yoshio; and Kusagaya, Yasuo, 5,550,979, Cl. 395-200.050.
Tomo, Yoichi; and Saito, Masao, 5,550,008, Cl. 430-325.000.
Yoshimura, Shunji; Akiyama, Yoshiyuki; Ohsata, Kiyoshi; Ichimura, Isao; Watanabe, Toshio; and Katsuramoto, Shinji, 5,550,603, Cl. 352-27.000.
Soon-Shiong, Patrick: *See—*
Desai, Neil P.; Soon-Shiong, Patrick; Sandford, Paul A.; and Heintz, Roswitha E., 5,550,178, Cl. 524-56.000.
Sorensen, Carl A.; and Blonigan, Wendell T., to Applied Materials, Inc. Optical pyrometer for a thin film deposition system. 5,549,756, Cl. 118-715.000.
Sorensen, Ronald L., to Kelsey-Hayes Corporation. Electronic-hydraulic brake boost using a power steering supply. 5,549,361, Cl. 303-3.000.
Soske, Joshua W.: *See—*
Hoarty, W. Leo; Soske, Joshua W.; Lauder, Gary M.; Snell, Stephen C.; Fisher, Delmer D.; and North, John, 5,550,578, Cl. 348-7.000.
Sotokawa, Akio: *See—*
Tanaka, Akira; Mesaki, Yoshinori; Sotokawa, Akio; Tomatsu, Masahiro; and Kaiwa, Kazumasa, 5,550,657, Cl. 359-49.000.
Souma, Yoko: *See—*
Tanaka, Shigeo; Yamazaki, Hiroshi; Osakabe, Yoshio; Kotabe, Noriko; Iwamoto, Koji; Souma, Yoko; Imaura, Toshihiro; and Maki, Shigeru, 5,550,826, Cl. 370-85.800.
Southwick, Jeffrey G.: *See—*
Spence, Bridget A.; Southwick, Jeffrey G.; Chin, Steven S.; and Hoxmeier, Ronald J., 5,550,196, Cl. 525-314.000.
Spacek, Dan J.: *See—*
Pascucci, Gregory A.; Rasmussen, David E.; Decious, Gaylon M.; Garbe, James R.; Hyzer, Susan M.; Woest, Karen L.; Vairavan, Vairavan; Koch, David L.; Gottschalk, Donald A., Jr.; Burkhardt, Dennis E.; Standish, Darrell E.; Madaus, Paul W.; Spacek, Dan J.; Nesler, Clay G.; Stark, James K.; Mageland, Otto M.; Singers, Robert R.; and Wagner, Michael E., 5,550,980, Cl. 395-200.050.
Sparkomatic: *See—*
Freadman, Tommyca, 5,550,921, Cl. 381-24.000.
Sparks, Randall B.: *See—*
Brunner, Hans; McCandless, Timothy P.; Sparks, Randall B.; Cuthbertson, Robert J.; Durand, Jacques; and Fogel, Steven M., 5,550,971, Cl. 395-161.000.
Spaulding, Mark G.: *See—*
Baggett, William C.; Baines, Elliot A., Jr.; Filus, Wayne S.; Gilland, Dianne W.; Kluska, Theodore E.; Larsen, Wayne D.; Spaulding, Mark G.; and Starace, Jeremia P., 5,549,489, Cl. 439-709.000.
Specialized Health Products, Inc.: *See—*
Thorne, Gale H.; Thorne, David L.; and Thorne, Sandra A., 5,549,708, Cl. 604-110.000.
Specialty Silicone Fabricators: *See—*
Batdorf, David B.; and Schryver, Charles A., 5,549,579, Cl. 604-264.000.
Spector, George: *See—*
Stock, Theodore; and Spector, George, 5,548,952, Cl. 60-39.465.
Spectronics Corporation: *See—*
Chen, Limin; and Radichio, Arthur J., 5,548,965, Cl. 62-66.000.
Speer, Andrew J., III: *See—*
Hoss, Gregg M.; Thompson, James E.; Johnson, Thomas F.; Kirbie, Martin; and Speer, Andrew J., III, 5,549,359, Cl. 298-35.00M.
Speer, Stephen R., to Aerostar Marine Corporation. Through the hub exhaust flow improvements for marine variable pitch propeller. 5,549,455, Cl. 416-93.00A.
Spence, Bridget A.; Southwick, Jeffrey G.; Chin, Steven S.; and Hoxmeier, Ronald J., to Shell Oil Company. Low viscosity adhesive compositions containing asymmetric radial polymers. 5,550,196, Cl. 525-314.000.
Spence, Bridget A.: *See—*
Hoxmeier, Ronald J.; Job, Robert C.; Spence, Bridget A.; and DuBois, Donna A., 5,550,194, Cl. 525-250.000.
Spencer, T. Michael: *See—*
Adams, Thomas R.; Chambers, Sheryl A.; Daines, Richard J.; Gordon-Kamm, William J.; Kausch, Albert P.; Lemaux, Peggy G.; Mackey, Catherine J.; Mangano, Mary L.; O'Brien, James V.; Rice, Thomas B.; Spencer, T. Michael; Start, William G.; and Willetts, Nancy G., 5,550,318, Cl. 800-205.000.
Speno International SA: *See—*
Jaeggi, Jean-Pierre, 5,549,505, Cl. 451-69.000.
Spica, Salvatore J.; Kuhn, John P.; Keller, Steven R.; and Winoker, Joseph A., to Campbell Soup Company. Apparatus with vacuum recovery for adding flavor materials to beverages. 5,549,143, Cl. 141-144.000.
Spicijaric, John. Cap with a picture retaining pocket. 5,548,847, Cl. 2-209.130.
Spielbauer, Hans K.: *See—*
Herkel, Peter L.; and Spielbauer, Hans K., 5,549,179, Cl. 187-298.000.
Spotorno, Lorenzo; and Willi, Roland, to Sulzer Medizinaltechnic AG. Composite artificial socket and hip joint prosthesis. 5,549,695, Cl. 623-22.000.
Sprague, Robert A.; Bruce, RIchard H.; and Silverstein, Louis D., to Xerox Corporation. Full color display with plural two-dimensional planar arrays of lenslets. 5,550,656, Cl. 359-40.000.
Spraker, Terry E.: *See—*
Kordis, Thomas F.; Swanson, David K.; Jackson, Jerome; and Spraker, Terry E., 5,549,661, Cl. 607-99.000.
Spratt, Michael P.: *See—*
Albrecht, Alan; Goody, Steven H.; Spratt, Michael P.; Curcio, Joseph A., Jr.; and Dove, Daniel J., 5,550,836, Cl. 370-85.200.
Sprengeler, Paul: *See—*
Hirschmann, Ralph; Leahy, Ellen; and Sprengeler, Paul, 5,550,251, Cl. 548-312.100.
Spurgeon, Kathryn M.: *See—*
Holmes, Gary L.; Culler, Scott R.; Hardy, David H.; Harmon, Kimberly K.; Heiti, Robert V.; Hendrickson, William A.; Klun, Thomas P.; Spurgeon, Kathryn M.; and Studiner, Charles J., III, 5,549,962, Cl. 428-144.000.
Sribar, Rok: *See—*
Ryan, Kiernan F.; Sribar, Rok; and Savkar, Sudhir D., 5,548,979, Cl. 68-23.200.
Sridhar, Manickam R.; and Sheer, Neil, to Motorola, Inc. Automatic modulation mode selecting unit and method for modems. 5,550,881, Cl. 375-377.000.
Sri-Jayantha, Muthuthamby: *See—*
Aoyagi, Akihiko; Boutaghou, Zine-Eddine; Khanna, Vijayeshwar D.; Kumar, Suresh; and Sri-Jayantha, Muthuthamby, 5,550,688, Cl. 360-99.080.
Srinivasan, Ananthachari; Vrudhula, Vivekananda M.; and Brixner, Diana I., to NeoRx Corporation. Chemically defined polymeric carriers for release of covalently linked agents. 5,549,883, Cl. 424-1.450.
Srivastava, Sushi K.: *See—*
Humora, Michael J.; Modi, Sandeep P.; Srivastava, Sushi K.; and Williams, Andrew D., 5,550,239, Cl. 544-295.000.
Srourian, Nichan. Water based lacquer compositions and method of making and using same. 5,550,179, Cl. 524-210.000.
St. Louis University: *See—*
Barenkamp, Stephen J.; and St. Geme, Joseph W., III, 5,549,897, Cl. 424-256.00N.
Stabler, Paul C.: *See—*
Ogilvie, Clarence R.; and Stabler, Paul C., 5,550,768, Cl. 364-748.000.
Stache, Ulrich: *See—*
Fischer, Gerd; Defossa, Elisabeth; Gerlach, Uwe; Hörlein, Rolf; Krass, Norbert; Lattrell, Rudolf; Stache, Ulrich; Wollmann, Theodor; and Isert, Dieter, 5,550,232, Cl. 540-230.000.
Staiger, Dieter E., to International Business Machines Corp. Circuit for generating an output sequence of values. 5,550,846, Cl. 371-27.000.
Staktek Corporation: *See—*

Burns, Carmen D.; Roane, Jerry; and Cady, James W., 5,550,711, Cl. 361-728.000.

Stam, Hein: *See—*
Musters, Wouter; Stam, Hein; Suykerbuyk, Maria E.; Visser, Jacob; and Verbakel, Johannes M., 5,550,045, Cl. 435-201.000.

Standard Products Company, The: *See—*
Larsen, Douglas C.; Keller, Forrest K.; and Warren, Lawrence L., 5,548,929, Cl. 49-441.000.

Standard, Thomas A., to Astec Industries, Inc. Baghouse cleaning method. 5,549,734, Cl. 95-279.000.

Standish, Darrell E.: *See—*
Pascucci, Gregory A.; Rasmussen, David E.; Decious, Gaylon M.; Garbe, James R.; Hyzer, Susan M.; Woest, Karen L.; Vairavan, Vairavan; Koch, David L.; Gottschalk, Donald A., Jr.; Burkhardt, Dennis E.; Standish, Darrell E.; Madaus, Paul W.; Spacek, Dan J.; Nesler, Clay G.; Stark, James K.; Mageland, Otto M.; Singers, Robert R.; and Wagner, Michael E., 5,550,980, Cl. 395-200.050.

Stanley Electric Co., Ltd.: *See—*
Tanabe, Toru; Seki, Kazuhide; and Hatsumi, Masaaki, 5,550,469, Cl. 324-251.000.

Starace, Jeremia P.: *See—*
Baggett, William C.; Baines, Elliot A., Jr.; Filus, Wayne S.; Gilland, Dianne W.; Kluska, Theodore E.; Larsen, Wayne D.; Spaulding, Mark G.; and Starace, Jeremia P., 5,549,489, Cl. 439-709.000.

Stark, James K.: *See—*
Pascucci, Gregory A.; Rasmussen, David E.; Decious, Gaylon M.; Garbe, James R.; Hyzer, Susan M.; Woest, Karen L.; Vairavan, Vairavan; Koch, David L.; Gottschalk, Donald A., Jr.; Burkhardt, Dennis E.; Standish, Darrell E.; Madaus, Paul W.; Spacek, Dan J.; Nesler, Clay G.; Stark, James K.; Mageland, Otto M.; Singers, Robert R.; and Wagner, Michael E., 5,550,980, Cl. 395-200.050.

Starlight Networks: *See—*
Long, James E.; Gang, Joseph M., Jr.; Bedard, Charles J.; Baird, Randall B.; and Edwards, David A., 5,550,982, Cl. 395-200.130.

StarSight Telecast Incorporated: *See—*
Klosterman, Brian L., 5,550,576, Cl. 348-6.000.

Start, William G.: *See—*
Adams, Thomas R.; Chambers, Sheryl A.; Daines, Richard J.; Gordon-Kamm, William J.; Kausch, Albert P.; Lemaux, Peggy G.; Mackey, Catherine J.; Mangano, Mary L.; O'Brien, James V.; Rice, Thomas B.; Spencer, T. Michael; Start, William G.; and Willetts, Nancy G., 5,550,318, Cl. 800-205.000.

Starzl, Thomas E.: *See—*
Francavilla, Antonio T.; Hagiya, Michio; and Starzl, Thomas E., 5,550,037, Cl. 435-69.100.

Staszak, Daniel: *See—*
Dorier, Regis G.; and Staszak, Daniel, 5,549,243, Cl. 229-244.000.

State University of N.Y., The Research Foundation of the: *See—*
Vegega, Alexander M.; and Manissero, Claudio E., 5,550,157, Cl. 514-557.000.

Steelman, Herbert S.: *See—*
Crump, Dwayne T.; Pancoast, Steven T.; Benson, Paul H., IV; and Steelman, Herbert S., 5,551,043, Cl. 395-750.000.

Steely, Simon C., Jr., to Digital Equipment Corporation. Ring based distributed communication bus for a multiprocessor network. 5,551,048, Cl. 395-800.000.

Stegink, David W.: *See—*
Armbruster, June M.; Bastiaens, Willem V.; Callahan, Joseph P., Jr.; Moris, Steve W.; and Stegink, David W., 5,549,267, Cl. 248-442.200.

Stehr, Roger: *See—*
Mischler, Eduard; and Stehr, Roger, 5,549,462, Cl. 418-1.000.

Stein, Judith, to General Electric Company. Bis(bis-silylalkyl) dicarboxylates as adhesion promoters and compositions containing them. 5,550,271, Cl. 556-440.000.

Steinberger, Ned. Chromatic tuner display providing guitar note and precision tuning information. 5,549,028, Cl. 84-454.000.

Steinberger, Richard N.; and Grimes, Stephen H. Stringed acoustic musical instrument. 5,549,027, Cl. 84-297.00R.

Steinbichler, Georg, to Engel Maschinenbau Gesselschaft mbH. Method of controlling a machine for the manufacture of products, in particular for controlling an injection molding machine. 5,550,744, Cl. 364-476.010.

Steiner, Manfred: *See—*
Rump, Siegfried; Steiner, Manfred; Brugger, Franz; Klarer, Martin; Knoff, Bernd; and Eckl, Albrecht, 5,549,369, Cl. 303-125.000.

Steinke, Thomas A.; Gulachenski, Joseph; and Curtis, R. Thomas, III, to Medtronic, Inc. Catheter balloon proximal heat bond on extended shaft. 5,549,557, Cl. 604-103.000.

Stephany, Thomas M., to Eastman Kodak Company. Film cartridge with film movement indicator, and associated indicator sensing device. 5,550,609, Cl. 354-275.000.

Stephens, Michael C., Jr.; and Medhekar, Ajit K., to Alliance Semiconductor Corporation. Timing delay modulation scheme for integrated circuits. 5,550,500, Cl. 327-261.000.

Stephens, Michael C., Jr.; and Medhekar, Ajit K., to Alliance Semiconductor Corporation. Phase shift correction circuit for monolithic random access memory. 5,550,783, Cl. 365-233.000.

Stephens, Susan D.: *See—*
Silverthorn, Lee; Cornils, Curtis; Kirchner, Mark L.; Stephens, Susan D.; and Crouse, Parker E., 5,551,051, Cl. 395-800.000.

Stern, David R.; Gauderer, Michael; and Solbjor, Albert N., to C.R. Bard, Inc. Low profile adaptor for gastrostomy feeding tube. 5,549,657, Cl. 604-283.000.

Stern, Sylvan S. Method for making dental restorations and the dental restoration made thereby. 5,549,476, Cl. 433-223.000.

Stetten, George D., to Duke University. Quadrature shape detection using the flow integration transform. 5,550,933, Cl. 382-199.000.

Stevens, John K.: *See—*
Gallie, Brenda L.; Dunn, James M.; and Stevens, John K., 5,550,020, Cl. 435-6.000.

Stevens, Rex W.: *See—*
Counts, David M.; and Stevens, Rex W., 5,549,357, Cl. 297-354.130.

Stevens, Sam: *See—*
Voll, Robert; Berg, William C.; Sergent, Brad; and Stevens, Sam, 5,551,028, Cl. 395-600.000.

Stewart, Michael W.: *See—*
Askins, William E.; Stewart, Michael W.; Roulston, Gary; and Fiore, Joseph F., Jr., 5,549,073, Cl. 119-474.000.

Steyr-Daimler-Puch AG: *See—*
Kofler, Hansjörg, 5,549,187, Cl. 192-35.000.

St. Geme, Joseph W., III: *See—*
Barenkamp, Stephen J.; and St. Geme, Joseph W., III, 5,549,897, Cl. 424-256.00N.

Stiftelsen Institutet For Mikroelektronik: *See—*
Elderstig, Håkan; and Vieider, Christian, 5,550,943, Cl. 385-71.000.

Stiles, William P.: *See—*
Black, Michael J.; Willows, Keith S.; Stiles, William P.; and Gallagher, Patrick M., 5,550,324, Cl. 174-52.300.

Stillman, Robert A.; Way, James A.; Cable, Jesse F., III; Cooper, David; and Koskinen, James, to Radio Local Area Networks, Inc. Network link controller for dynamic designation of master nodes. 5,551,066, Cl. 455-69.000.

Stir-Melter, Inc.: *See—*
Richards, Ray S., 5,550,310, Cl. 588-11.000.
Richards, Ray S., 5,550,857, Cl. 373-27.000.

Stivland, Timothy: *See—*
Ressemann, Thomas V.; Stivland, Timothy; and Blaeser, David, 5,549,553, Cl. 604-96.000.

Stock, Theodore; and Spector, George. Hydrogen jet-phase engine. 5,548,952, Cl. 60-39.465.

Stoecklein, Thomas, to Schwan-Stabilo Schwanhaeusser GmbH & Co. Process for the production of a pencil. 5,549,779, Cl. 156-293.000.

Stoltefuss, Jürgen; Goldmann, Siegfried; Straub, Alexander; Bechem, Martin; Gross, Rainer; Hebisch, Siegbert; Hütter, Joachim; and Rounding, Howard-Paul, to Bayer Aktiengesellschaft. 3-quinolyl-substituted dihydropyridines, processes for their preparation and their use in medicaments. 5,550,245, Cl. 546-167.000.

Stone, Geoffrey C.: *See—*
Hardwick, Ken; and Stone, Geoffrey C., 5,550,816, Cl. 370-60.000.

Stone, Marcia J., to HybriVet Systems, Inc. Test swab and method of using same. 5,550,061, Cl. 436-73.000.

Stoop, Gustaaf A. P.; van Gemert, Marijn; and van Zanten, Paul V., to Vitatron Medical, B.V. Pacemaker with improved far field R wave sensing and suppression. 5,549,647, Cl. 607-9.000.

Stoop, Gustaaf A. P., to Vitatron Medical, B.V. Pacemaker system and method with improved detection of end of retrograde conduction. 5,549,648, Cl. 607-9.000.

Stopponi, Andrea: *See—*
Bongini, Dino; Duri, Sandro; and Stopponi, Andrea, 5,548,978, Cl. 68-17.00R.

Storage Technology Corporation: *See—*
Hardwick, Ken; and Stone, Geoffrey C., 5,550,816, Cl. 370-60.000.
Willis, Daniel J.; and Cleavinger, Richard C., 5,550,998, Cl. 395-441.000.

Stork Ketels B.V.: *See—*
Wiemer, Willem, 5,549,737, Cl. 96-204.000.

Stork PMT B.V.: *See—*
van den Nieuwelaar, Adrianus J.; Janssen, Petrus C. M.; Teurlinx, Engelbert J. J.; van Harskamp, Cornelius D.; and Drabbels, Bastiaan W. J. E. J., 5,549,521, Cl. 452-118.000.

Stormont, John C., to Sandia Corporation. Anisotropic capillary barrier for waste site surface covers. 5,550,315, Cl. 588-259.000.

Stormtreat Systems, Inc.: *See—*
Horsley, Scott W.; and Platz, Winfried, 5,549,817, Cl. 210-122.000.

Storz Instrument Company: *See—*
Perkins, James T.; Appelbaum, Peter F.; and Painter, John A., 5,549,139, Cl. 137-884.000.

Stotts, Lawrence J.; Paul, Patrick J.; and Prutchi, David, to Intermedics, Inc. Muscle stimulation electrode for implantable cardial stimulation device with warning system. 5,549,653, Cl. 607-4.000.

Stoy, James R.: *See—*
Brown, Winthrop K.; Diatschenko, Victor; and Stoy, James R., 5,549,000, Cl. 73-587.000.

Strassner, Walter: *See—*
Hötzel, Gerhard; Neumann, Harald; Strassner, Walter; and Riegel, Johann, 5,549,804, Cl. 204-425.000.

Straub, Alexander: *See—*
Stoltefuss, Jürgen; Goldmann, Siegfried; Straub, Alexander; Bechem, Martin; Gross, Rainer; Hebisch, Siegbert; Hütter, Joachim; and Rounding, Howard-Paul, 5,550,245, Cl. 546-167.000.

Strauber, Hans-Jürgen: *See—*

Ohlendorf, Rolf; Strauber, Hans-Jürgen; Aust, Rainer; and Strobel, Wolfgang, 5,549,081, Cl. 123-90.160.

Strayer, David S., to Thomas Jefferson University. Epidermal growth factor inhibitor. 5,550,114, Cl. 514-21.000.

Stricker, Urban. Process and device for sorting thermoplastic materials from a mixed flow. 5,549,250, Cl. 241-23.000.

Stringaro, Jean-Paul: *See—*
Shelden, Ronald; and Stringaro, Jean-Paul, 5,550,298, Cl. 568-494.000.

Strobel, Wolfgang: *See—*
Ohlendorf, Rolf; Strauber, Hans-Jürgen; Aust, Rainer; and Strobel, Wolfgang, 5,549,081, Cl. 123-90.160.

Strohbusch, Manfred: *See—*
Tegtmeier, Gert; and Strohbusch, Manfred, 5,549,471, Cl. 432-77.000.

Strohmaier, Karl G.: *See—*
Vaughan, David E. W.; and Strohmaier, Karl G., 5,549,881, Cl. 423-703.000.

Strok, Jack M.: *See—*
Scott, Curtis E.; Strok, Jack M.; and Levinson, Lionel M., 5,549,746, Cl. 117-4.000.

Strolle, Christopher H.; and Jaffe, Steven T. Digital television signal processing system including a co-channel rejection filter. 5,550,596, Cl. 348-607.000.

Strong, Hovey R.: *See—*
Dolev, Danny; Reischuk, Rüdiger K.; and Strong, Hovey R., 5,550,873, Cl. 375-354.000.

Strout, D. Wayne; Crandall, Thomas L.; Slater, Michael J.; and Malmmose, Erik, to RTI Technologies, Inc.; and Canvik A/S. On-car disc brake lathe. 5,549,023, Cl. 82-112.000.

Structron Corporation: *See—*
Levi, Avraham Y.; and Quarberg, Craig D., 5,549,407, Cl. 403-109.000.

Structural Metals, Inc.: *See—*
Matsuo, Giichi; Sakai, Akira; Rains, Jeral; and Elley, Dayton, 5,548,986, Cl. 72-204.000.

Strunk, John N.: *See—*
Pittman, Gary M.; Senior, Kenneth A.; Strunk, John N.; and Thondukolam, Krishnan R., 5,549,276, Cl. 251-214.000.

Studier, F. William: *See—*
Moss, Bernard; Studier, F. William; Fuerst, Thomas R.; and Niles, Edward G., 5,550,035, Cl. 435-69.100.

Studiner, Charles J., III: *See—*
Holmes, Gary L.; Culler, Scott R.; Hardy, David H.; Harmon, Kimberly K.; Heiti, Robert V.; Hendrickson, William A.; Klun, Thomas P.; Spurgeon, Kathryn M.; and Studiner, Charles J., III, 5,549,962, Cl. 428-144.000.

Stumphauzer, William C.; Groth, Hugh F.; and Duncan, John K., to Effervescent Products, LLC. Gas generator attachment. 5,549,037, Cl. 99-323.100.

Sturni, Lance C.: *See—*
Larson, Gary B.; Jobson, Brian; Johnson, James A.; and Sturni, Lance C., 5,550,006, Cl. 430-311.000.

Subramaniam, Chitoor S.; John, Thomas V.; Colvin, David; and Bitler, George W., to Huls America Inc. Method of preparing 1,1-dialkoxycycloalkanes. 5,550,299, Cl. 568-591.000.

Subramanian, Ramaswamy, to Akzo Nobel N.V. Imaging infectious foci with human IgM 16.88. 5,549,882, Cl. 424-1.110.

Südzucker AG Mannheim/Ochsenfurt: *See—*
Mixich, Johann; Rapp, Knut M.; and Vogel, Manfred, 5,550,227, Cl. 536-124.000.

Suematsu, Takayuki: *See—*
Ohmi, Shinichiro; Imai, Hiroyuki; Ando, Kazuhiro; and Suematsu, Takayuki, 5,550,756, Cl. 364-514.00R.

Suga, Mitsuo: *See—*
Nishino, Toshikazu; Hatano, Mutsuko; Hasegawa, Haruhiro; Nakane, Hideaki; Kawabe, Ushio; Saitoh, Kazuo; Suga, Mitsuo; and Takagi, Kazumasa, 5,550,389, Cl. 257-30.000.

Suga, Yoichi, to Fuji Photo Film Co., Ltd. Silver halide emulsion and silver halide photographic light-sensitive material using the same. 5,550,012, Cl. 430-567.000.

Sugawara, Atsushi: *See—*
Tazaki, Hiroshi; Ito, Kazumasa; and Sugawara, Atsushi, 5,550,337, Cl. 181-235.000.

Sugawara, Ken; Sakairi, Shigeru; Matoba, Mikio; Sasaki, Toshio; Shimohigashi, Katsuhiro; and Kimura, Katsutaka, to Hitachi Maxell, Ltd.; and Hitachi, Ltd. Semiconductor apparatus with two activating modes of different number of selected word lines at refreshing. 5,550,781, Cl. 365-222.000.

Sugawara, Saburo, to Canon Kabushiki Kaisha. Projection lens apparatus having a plurality of lens groups to perform zooming. 5,550,679, Cl. 359-689.000.

Sugawara, Takeo; Hino, Toshihiko; and Suzuki, Makoto, to Hamamatsu Photonics K.K. Radiation image detecting apparatus including bundled optical fibers. 5,550,380, Cl. 250-370.110.

Sugeta, Naoki; and Tsuyuguchi, Hiroshi, to TEAC Corporation. Pulse generating system responding to instruction pulses for generating driving pulses for diving motor. 5,550,447, Cl. 318-439.000.

Sugihara, Hirosada; Terashita, Zenichi; and Fukushi, Hideto, to Takeda Chemical Industries, Ltd. 2-piperazinone compounds and their use. 5,550,131, Cl. 514-255.000.

Sugimoto, Hiroyuki: *See—*
Goto, Tsuyoshi; and Sugimoto, Hiroyuki, 5,549,095, Cl. 123-559.100.

Sugita, Ryuji: *See—*
Tohma, Kiyhokazu; Yoshimoto, Kazunari; Sugita, Ryuji; and Ishida, Tatsuaki, 5,549,936, Cl. 427-566.000.

Sugita, Shigeru, to Canon Kabushiki Kaisha. Recording apparatus having different modes for reading and photographing documents. 5,550,639, Cl. 358-302.000.

Sugita, Yumiko: *See—*
Nakamura, Shouji; Kimura, Shinji; Sugita, Yumiko; Yamamoto, Reki; Koda, Eriko; Kuwana, Toshiyuki; and Manda, Masato, 5,550,962, Cl. 395-133.000.

Sugiyama, Kouichi: *See—*
Tanaka, Shigeo; Yamazaki, Hiroshi; Kotabe, Noriko; Sugiyama, Kouichi; Sato, Makoto; Katsuyama, Akira; Osakabe, Yoshio; and Kusagaya, Yasuo, 5,550,979, Cl. 395-200.050.

Suhadolnik, Robert J.; and Pfleiderer, Wolfgang, to Temple University-Of The Commonwealth System Of Higher Education. Dual action 2',5'-oligoadenylate antiviral derivatives and uses thereof. 5,550,111, Cl. 514-44.000.

Sukegawa, Shunichi; Nasu, Takumi; and Iwai, Hidetoshi, to Texas Instruments Incorporated; and Hitachi, Ltd. Semiconductor memory device and defective memory cell correction circuit. 5,550,394, Cl. 257-209.000.

Sulc, Jiri S.; and Krcova, Zuzana, to Allergan. Method for disinfecting contact lens with catalase compositions. 5,549,891, Cl. 424-94.400.

Sulcs, Juris; and Noe, Raymond J., to Venture Lighting International, Inc. High intensity arc discharge lamp having clip member to secure base to outer lamp envelope. 5,550,422, Cl. 313-25.000.

Sulit, Antonio M. Water conservation device and a method of installing the same in a toilet tank. 5,548,849, Cl. 4-325.000.

Sullivan, Andrew J.: *See—*
Donaldson, Jeffrey E.; and Sullivan, Andrew J., 5,549,342, Cl. 294-77.000.

Sulzer Brothers Limited: *See—*
Shelden, Ronald; and Stringaro, Jean-Paul, 5,550,298, Cl. 568-494.000.

Sulzer Medizinaltechnic AG: *See—*
Spotorno, Lorenzo; and Willi, Roland, 5,549,695, Cl. 623-22.000.

Sulzer Medizinaltechnik AG: *See—*
Hauser, René; and Sandoz, Yvan, 5,549,692, Cl. 623-22.000.
Willi, Roland, 5,549,696, Cl. 623-22.000.

Sulzer Papertec Krefeld GmbH: *See—*
Zajec, Jozef-Franc, 5,548,942, Cl. 53-465.000.

Sumida, Hiroyasu: *See—*
Tomita, Kan; Majima, Toshihiko; Tagawa, Toshiya; and Sumida, Hiroyasu, 5,550,623, Cl. 355-311.000.

Sumida, Keisuke: *See—*
Mizuta, Yasufumi; Tanaka, Masashi; Muto, Nariaki; Fukami, Toshiyuki; Nakamori, Hideo; Kakui, Mikio; Saito, Sakae; Shiomi, Hiroshi; Sumida, Keisuke; and Uchida, Maki, 5,550,290, Cl. 564-309.000.

Sumikin Chemical Co., Ltd.: *See—*
Sato, Toshio; Ito, Ikuo; Maeda, Kazuhiko; Yokota, Keiichi; Namekata, Takeshi; and Nemoto, Akihiko, 5,550,284, Cl. 562-467.000.

Sumitomo Bakelite Company, Limited: *See—*
Takagaki, Tadao; and Chigusa, Kisaku, 5,549,389, Cl. 383-202.000.

Sumitomo Chemical Company, Limited: *See—*
Iwasaki, Tomonori; Suzuki, Masaya; Furukawa, Takashi; Tsushima, Kazunori; Ishiwatari, Takao; and Tsuchiya, Toru, 5,550,258, Cl. 549-78.000.
Tsushima, Kazunori; Iwasaki, Tomonori; Suzuki, Masaya; and Matsuo, Noritada, 5,550,260, Cl. 549-421.000.

Sumitomo Electric Industries, Ltd.: *See—*
Nakai, Yoshihiro; Sawada, Kazuo; Hayashi, Kazuhiko; and Nishio, Masanobu, 5,550,102, Cl. 505-420.000.
Yasuzumi, Kazumi, 5,549,368, Cl. 303-122.080.

Sumitomo Precision Products Co., Ltd.: *See—*
Tomita, Ryoichi, 5,549,173, Cl. 180-417.000.

Sumitomo Wiring Systems, Ltd.: *See—*
Chishima, Masamitsu; and Noro, Yutaka, 5,549,485, Cl. 439-495.000.
Iura, Kazuo; Onishi, Yasuhiko; and Itoh, Takashi, 5,549,946, Cl. 428-35.800.
Kobayashi, Yoshinao, 5,549,082, Cl. 123-143.00C.

Sumiya, Toshifumi, to Nidek Co., Ltd. Apparatus for laser surgery on a cornea. 5,549,599, Cl. 606-10.000.

Summerfield, Frank W.: *See—*
Saunders, Alexander; Summerfield, Frank W.; and Zarowitz, Michael A., 5,550,060, Cl. 436-63.000.

Sun Company, Inc. (R&M): *See—*
Bhinde, Manoj V.; Lyons, James E.; and Ellis, Paul E., Jr., 5,550,301, Cl. 568-835.000.

Sun Hydraulics Corporation: *See—*
Henderson, Kenneth R.; Koski, Robert E.; and Barlow, Christopher R., 5,550,976, Cl. 395-200.060.

Sun, Jiming: *See—*
Foster, Mark J.; Fakhruddin, Saifuddin T.; Walker, James L.; Mendelow, Matthew B.; Sun, Jiming; Brahman, Rodman S.; Krau, Michael P.; Willoughby, Brian D.; Maddix, Michael D.; Belt, Steven L.; Hovey, Scott A.; and Ruthenbeck, Mark A., 5,551,033, Cl. 395-650.000.

Sun Microsystems, Inc.: *See—*
Shirman, Leon A.; and Kamen, Yakov, 5,550,960, Cl. 395-130.000.
Tan, Juay K.; and Kwong, Robert W., 5,551,000, Cl. 395-445.000.

Sun, Tong: *See—*
Qin, Jian; Gross, James R.; Mui, William J.; Ning, Xin; Schroeder, Wen Z.; and Sun, Tong, 5,550,189, Cl. 525-54.300.

Sunada, Noboru: *See—*

Someya, Jun; Chiba, Kazuhiro; Watabu, Kazuyoshi; Yamamoto, Yoshie; Inamura, Mamoru; Nagayama, Takeshi; Bamba, Noriko; and Sunada, Noboru, 5,550,936, Cl. 382-263.000.

Sunbeam Products, Inc.: *See*—
Minchey, Richard L.; and Surface, William E., 5,549,265, Cl. 248-188.200.

Sunburst Chemicals, Inc.: *See*—
Laughlin, Timothy E.; and Grant, Robert C., 5,549,875, Cl. 422-266.000.

Suncast Corporation: *See*—
Whitehead, Stephen P., 5,549,262, Cl. 248-87.000.

Sundstrand Corporation: *See*—
Baker, Roy S., 5,550,455, Cl. 322-23.000.

Sung, Hong E.: *See*—
Nam, Keyoung T.; and Sung, Hong E., 5,550,885, Cl. 377-27.000.

Sung, Hsing-Wen: *See*—
Hata, Cary; Tu, Roger; Sung, Hsing-Wen; and Shen, Shih-Hwa, 5,549,666, Cl. 623-2.000.

Sung, Janmye, to Vanguard International Semiconductor Corp. Reduced mask DRAM process. 5,550,078, Cl. 437-52.000.

Suonvieri, Jukka: *See*—
Koponen, Pekka; and Suonvieri, Jukka, 5,551,056, Cl. 455-8.000.

Supra Products, Inc.: *See*—
Burge, Gregory L., 5,550,529, Cl. 340-296.000.

Supreme Mowing Limited: *See*—
Searle, Leanne; Astbury, Richard; and Eaves, Philip, 5,549,508, Cl. 451-141.000.

Surface Combustion, Inc.: *See*—
Hoetzl, Max; and Goodman, Daniel E., 5,550,858, Cl. 373-110.000.

Surface, William E.: *See*—
Minchey, Richard L.; and Surface, William E., 5,549,265, Cl. 248-188.200.

Suskind, Stuart; and Pearlstein, Leonard, to Pearlstein, Leonard. High performance absorbent particles and methods of preparation. 5,549,590, Cl. 604-368.000.

Suspa Compart Aktiengesellschaft: *See*—
Ehrnsberger, Manfred; Mayer, Dieter; and Siegner, Helge, 5,549,182, Cl. 188-129.000.

Sussman, Glenn R.: *See*—
Young, Craig; Sussman, Glenn R.; and Cunanan, Crystal M., 5,549,670, Cl. 623-6.000.

Sutcu, Maz; Gentelia, John S.; and Aydil, Eray, to Conmed Corporation. Non-Stick electroconductive amorphous silica coating. 5,549,604, Cl. 606-45.000.

Sutherland, Byron C.: *See*—
Bessler, Marc; Mintz, Max R.; and Sutherland, Byron C., 5,549,621, Cl. 606-151.000.

Sutherland, Robert L., to Riverwood International Corporation. Wrap-around carrier with bottle neck retainer tabs. 5,549,197, Cl. 206-158.000.

Sutter, Franz. Universsal joint prosthesis. 5,549,704, Cl. 623-23.000.

Suttora, Nick: *See*—
Shekhawat, Sampat; Liebermann, Eli; Scherzinger, William M.; Silvestro, Gayton L.; Suttora, Nick; and Hodge, David, 5,550,456, Cl. 322-25.000.

Suykerbuyk, Maria E.: *See*—
Musters, Wouter; Stam, Hein; Suykerbuyk, Maria E.; Visser, Jacob; and Verbakel, Johannes M., 5,550,045, Cl. 435-201.000.

Suzuki, Atsushi: *See*—
Hayama, Hidekazu; Miura, Yasunori; Suzuki, Atsushi; and Ishiai, Keizou, 5,550,429, Cl. 313-479.000.

Suzuki, Fumio: *See*—
Wada, Ryukichi; Suzuki, Fumio; and Ohtsuru, Yoshisuke, 5,550,597, Cl. 348-708.000.

Suzuki, Hiroshi: *See*—
Inoue, Akiyoshi; Taniguchi, Shoji; Kawano, Eisaku; Yanagawa, Naoharu; and Suzuki, Hiroshi, 5,550,799, Cl. 369-116.000.

Suzuki, Hitoshi: *See*—
Yokoyama, Hiromitsu; Takeuchi, Katsuto; Soekawa, Koji; Abe, Kenichiro; Hattori, Syouichi; Suzuki, Hitoshi; and Okada, Nobuhide, 5,549,778, Cl. 156-246.000.

Suzuki, Kyoko: *See*—
Kimura, Motoi; Yoshimura, Shunji; and Suzuki, Kyoko, 5,550,797, Cl. 369-44.410.

Suzuki, Makoto: *See*—
Sugawara, Takeo; Hino, Toshihiko; and Suzuki, Makoto, 5,550,380, Cl. 250-370.110.

Suzuki, Masaya: *See*—
Iwasaki, Tomonori; Suzuki, Masaya; Furukawa, Takashi; Tsushima, Kazunori; Ishiwatari, Takao; and Tsuchiya, Toru, 5,550,258, Cl. 549-78.000.
Tsushima, Kazunori; Iwasaki, Tomonori; Suzuki, Masaya; and Matsuo, Noritada, 5,550,260, Cl. 549-421.000.

Suzuki, Takahiro, to NEC Corporation. Magnetic disk drive capable of reducing distortions of disks. 5,550,687, Cl. 360-98.080.

Suzuki, Tomoko: *See*—
Matsushima, Asao; Ooshiba, Takeo; Etoh, Yoshihiko; Kinoshita, Akira; Suzuki, Tomoko; and Sakimura, Tomoo, 5,549,997, Cl. 430-59.000.

Suzuki, Yuzuru; Takii, Yukio; Yamamoto, Kazumi; Nishiya, Yoshiaki; Sogabe, Atsushi; Sogabe, Yukihiro; and Emi, Shigenori, to Toyo Boseki Kabushiki Kaisha. DNA encoding α-glucosidase and method of producing same by genetic engineering. 5,550,046, Cl. 435-202.000.

Svensson, John E.: *See*—
Meibock, Antonin A.; and Svensson, John E., 5,549,310, Cl. 280-11.220.

Swain, Eugene A.; and Darcy, John J., to Xerox Corporation. Process for coating belt seams. 5,549,999, Cl. 430-127.000.

Swan, James: *See*—
Kocache, Riad M. A.; Holman, Dany F.; and Swan, James, 5,549,871, Cl. 422-95.000.

Swanson, Barry G.: *See*—
Zhang, Qinghua; Qin, Bai-Lin; Barbosa-Canovas, Gustavo V.; Swanson, Barry G.; and Pedrow, Patrick D., 5,549,041, Cl. 99-451.000.

Swanson, David K.: *See*—
Edwards, Stuart D.; Kordis, Thomas F.; and Swanson, David K., 5,549,108, Cl. 128-642.000.
Kordis, Thomas F.; Swanson, David K.; Jackson, Jerome; and Spraker, Terry E., 5,549,661, Cl. 607-99.000.

Sween Corporation: *See*—
Farber, Elliott, 5,549,914, Cl. 424-487.000.

Sweeney, Frank J.; and Ganesan, Apparajan, to Texas Instruments Incorporated. Circuit and method for providing a known logic state at insufficient supply voltage. 5,550,486, Cl. 326-14.000.

Sweeny, Wilfred: *See*—
Hsu, Che-Hsiung; and Sweeny, Wilfred, 5,549,972, Cl. 428-398.000.

Swenson, Paul F.; and Bjerklie, John W., to Consolidated Natural Gas Service Company, Inc. Load control of a spare ignited engine without throttling and method of operation. 5,549,096, Cl. 123-564.000.

Swoboda, Gary L.: *See*—
Ehlig, Peter N.; and Swoboda, Gary L., 5,551,050, Cl. 395-800.000.

Sylvan R. Shemitz Designs, Inc.: *See*—
Shemitz, Sylvan R.; Miller, David B.; and Moler, Gregory L., 5,550,725, Cl. 362-282.000.

Symbios Logic Inc.: *See*—
DuLac, Keith B., 5,550,986, Cl. 395-280.000.

Symbiosis Corporation: *See*—
Cohen, Herbert; Solar, Matthew S.; and Slater, Charles R., 5,549,547, Cl. 604-30.000.
Hahnen, Kevin F., 5,549,605, Cl. 606-46.000.
McBrayer, Michael S.; Kortenbach, Jurgen A.; and Slater, Charles R., 5,549,606, Cl. 606-51.000.
Ryan, Dana W.; Giurtino, Joel F.; and Bales, Thomas O., 5,549,565, Cl. 604-167.000.

Symensma, Kenneth L.: *See*—
Reed, Gary A.; and Symensma, Kenneth L., 5,548,866, Cl. 15-320.000.

Symons, Michael W., to Plascon Technologies (Proprietary) Limited. Composite board. 5,549,863, Cl. 264-257.000.

Syntex (U.S.A.) Inc.: *See*—
Eppstein, Deborah A.; Felgner, Philip L.; Gadek, Thomas R.; Jones, Gordon H.; and Roman, Richard B., 5,550,289, Cl. 564-293.000.

SYNTHELABO: *See*—
Frost, Jonathan; George, Pascal; Pasau, Patrick; Bartsch, Régine; Rousselle, Corinne; Williams, Paul H.; and Muller, Jean C., 5,550,162, Cl. 514-617.000.
George, Pascal; Frost, Jonathan; Pasau, Patrick; Rousselle, Corinne; Bartsch, Régine; Williams, Paul Howard; and Muller, Jean Claude, 5,550,125, Cl. 514-230.500.

Syquest Technology, Inc.: *See*—
Drouin, David M., 5,550,685, Cl. 360-77.080.

Syslak, Morten: *See*—
Morley, Edward J.; and Syslak, Morten, 5,549,239, Cl. 228-207.000.

Szarmach, Michael; and Capodicci, Vincent. Universal firearm disabling and alarm system. 5,548,915, Cl. 42-70.110.

Szelążek, Jacek: *See*—
Brokowski, Andrzej; and Szelążek, Jacek, 5,549,001, Cl. 73-597.000.

Szlucha, Thomas F., to Xerox Corporation. Toner concentration adjustment method and apparatus. 5,550,615, Cl. 355-208.000.

Szoka, Francis C., Jr., to University of California, The Regents of the. Preparation of liposome and lipid complex compositions. 5,549,910, Cl. 424-450.000.

Tabata, Akihiko: *See*—
Ueno, Ryuzo; Fujita, Yatsuka; Nagamura, Yoshiaki; Kamino, Yuji; and Tabata, Akihiko, 5,549,919, Cl. 426-335.000.

Taborn, Michael P.; and Yuan, John K., to IBM Corporation. Method and apparatus for detecting underflow and overflow. 5,550,767, Cl. 364-745.000.

Tabuchi, Masayuki, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device. 5,550,698, Cl. 361-56.000.

Taccone, David M.: *See*—
Howe, Thomas E.; Taccone, David M.; and Hartmann, Robert H., 5,548,989, Cl. 72-298.000.

Tachibana, Tomoyuki: *See*—
Masaie, Norio; Tachibana, Tomoyuki; Shimizu, Hiroyuki; Ito, Kazuhiko; Matsuguchi, Akira; Sasa, Yoshikazu; and Furuya, Atsushi, 5,550,348, Cl. 219-145.220.

Tacklind, Christopher A.; Sanders, Matthew H.; and Walne, Geoffrey B., to Enact Health Management Systems. System for monitoring and reporting medical measurements. 5,549,117, Cl. 128-716.000.

Tada, Nobuhiko; Miyanagi, Naoki; Shimomura, Yoshiaki; Sakurai, Shigeyuki; Okumura, Shinya; and Nagano, Yoshinari, to Hitachi Construction Machinery Co., Ltd. Lead frame processing method. 5,548,890, Cl. 29-827.000.

Tadokoro, Hiroyuki, to Hitachi, Ltd. Color printer. 5,550,956, Cl. 395-113.000.

Tagawa, Toshiya: *See*—

Tomita, Kan; Majima, Toshihiko; Tagawa, Toshiya; and Sumida, Hiroyasu, 5,550,623, Cl. 355-311.000.

Taguchi, Yoichi; Oishi, Akihiro; Shibuya, Isao; and Tsuchiya, Tohru, to Japan as represented by Director General of Agency of Industrial Science and Technology. 7-Substituted-2-oxa-7-azabicyclo [3.2.0.]heptan-6-one compound and method for the preparation thereof. 5,550,230, Cl. 540-203.000.

Taheri, Ali R.: *See*—
Boyette, James E., Jr.; Hammond, James M.; Lo, Jiann-Chang; Mahlbacher, James C.; Servedio, Michael; and Taheri, Ali R., 5,550,483, Cl. 324-758.000.

Tai, George. Ceramic chip form semiconductor diode fabrication method. 5,550,086, Cl. 437-209.000.

Tai, Seiji; Takusari, Hisanori; Tanaka, Hiroyuki; Moribe, Isamu; and Ohdoi, Chie, to Hitachi Chemical Co., Ltd. Coating resin and antifouling coating composition. 5,550,202, Cl. 526-286.000.

Taimei Kinzoku Kogyo Co., Ltd.: *See*—
Kawahara, Hiroto, 5,549,135, Cl. 137-614.170.

Tait, Elizabeth M.: *See*—
Tait, Robert A. R.; and Tait, Elizabeth M., 5,550,358, Cl. 235-380.000.

Tait, Robert A. R.; and Tait, Elizabeth M. Non-contacting transaction system. 5,550,358, Cl. 235-380.000.

Tait, Ronald D.: *See*—
Cottone, Andrew J.; Saperstein, Zalman P.; Tait, Ronald D.; Parkhill, Richard G.; and Bahr, Jeffrey A., 5,549,927, Cl. 427-191.000.

Taiyo Yuden Co., Ltd.: *See*—
Arai, Yuji; Ishiguro, Takashi; and Watanabe, Toshio, 5,549,952, Cl. 428-64.400.

Tajima, Fumio: *See*—
Mutoh, Nobuyoshi; Masaki, Ryoso; Miyazaki, Taizou; Tajima, Fumio; and Ohmae, Tsutomu, 5,549,172, Cl. 180-65.100.

Takada, Masao: *See*—
Kato, Mutsuno; Hara, Yoshifusa; and Takada, Masao, 5,550,275, Cl. 558-140.000.

Takagaki, Tadao; and Chigusa, Kisaku, to Sumitomo Bakelite Company, Limited. Outlet stopper for pouch-type fluid containers. 5,549,389, Cl. 383-202.000.

Takagi, Kazumasa: *See*—
Nishino, Toshikazu; Hatano, Mutsuko; Hasegawa, Haruhiro; Nakane, Hideaki; Kawabe, Ushio; Saitoh, Kazuo; Suga, Mitsuo; and Takagi, Kazumasa, 5,550,389, Cl. 257-30.000.

Takagi, Mariko; Yoshii, Ichiro; Hama, Kaoru; Ikeda, Naoki; and Yasuda, Hiroaki, to Kabushiki Kaisha Toshiba. Semiconductor device equipped with antifuse elements and a method for manufacturing an FPGA. 5,550,400, Cl. 257-530.000.

Takahama, Hiroyuki: *See*—
Jinbo, Takeshi; and Takahama, Hiroyuki, 5,548,964, Cl. 62-55.500.

Takahashi, Hiromasa: *See*—
Iino, Hideyuki; and Takahashi, Hiromasa, 5,551,010, Cl. 395-496.000.

Takahashi, Hiroyuki, to NEC Corporation. Semiconductor integrated circuit device implemented by bipolar and field effect transistors and having stable sense amplifier. 5,550,778, Cl. 365-207.000.

Takahashi, Hiroyuki: *See*—
Kojima, Naoto; Watanabe, Takashi; Takahashi, Hiroyuki; and Mishima, Akio, 5,548,886, Cl. 29-603.100.

Takahashi, Katsuhiko; and Kurabayashi, Yutaka, to Canon Kabushiki Kaisha. Liquid composition, ink set and image forming method and apparatus using the composition and ink set. 5,549,740, Cl. 106-20.00R.

Takahashi, Kenichi: *See*—
Yamamoto, Yuuri; Takahashi, Kenichi; Ohnishi, Hiroshi; Kunieda, Yoshinori; and Matsubara, Naoki, 5,550,867, Cl. 375-324.000.

Takahashi, Masaharu: *See*—
Inoue, Yoshio; Takahashi, Masaharu; Sekiguchi, Susumu; and Igarashi, Minoru, 5,550,185, Cl. 524-847.000.

Takahashi, Masaru: *See*—
Tsuboi, Yukitoshi; Oku, Masuo; Takahashi, Masaru; and Ichige, Kenji, 5,550,640, Cl. 358-335.000.

Takahashi, Takao; and Takehara, Niroshi, to Multifastener Corporation. Self-attaching fastener and installation die. 5,549,430, Cl. 411-179.000.

Takahashi, Tetsuo; Miyauchi, Eisaku; Mogi, Kunio; and Araya, Shinichi, to TDK Corporation. Process for manufacturing integrated circuits using an automated multi-station apparatus including an adhesive dispenser and apparatus therefor. 5,549,716, Cl. 29-25.010.

Takahashi, Yasuhiro; and Hoshi, Tohru, to Hitachi, Ltd. Multiprocessor system having switches for routing cells in parallel among processors by splitting data into blocks having numbers of cells equals to proccessor bus width. 5,550,978, Cl. 395-200.010.

Takahashi, Yoshiaki: *See*—
Miyazaki, Yoshihiro; Takahashi, Yoshiaki; Araoka, Manabu; Takaya, Soichi; and Fukumaru, Hiroaki, 5,551,007, Cl. 395-47.500.

Takai, Mitsuru: *See*—
Miyazaki, Shinji; Takai, Mitsuru; and Kobayashi, Koji, 5,549,979, Cl. 428-694.00T.

Takai, Yasuhiro, to NEC Corporation. Semiconductor memory device with synchronous dram whose speed grade is not limited. 5,550,784, Cl. 365-233.000.

Takakura, Akira; and Hirotomi, Jun, to Seiko Instruments Inc. Electronic timepiece and a method of driving a stepping motor of electronic timepiece. 5,550,795, Cl. 368-157.000.

Takamatsu, Masahiro; and Ito, Masao, to Fuji Xerox Co., Ltd. Color image forming apparatus providing registration control for individual color images. 5,550,625, Cl. 355-326.00R.

Takano, Atsushi; Utsumi, Minoru; and Obata, Hiroyuki, to Dai Nippon Printing Co., Ltd. Potential sensor employing electrooptic crystal and potential measuring method. 5,550,370, Cl. 250-225.000.

Takarada, Mitsuhiro; and Shimazaki, Yoshinori, to Shin-Etsu Chemical Co., Ltd. Organopolysiloxanes and process of making. 5,550,270, Cl. 556-440.000.

Takasawa, Masao: *See*—
Namura, Genji; and Takasawa, Masao, 5,549,849, Cl. 252-503.000.

Takasugi, Kei; and Nakamura, Kazunari, to Olympus Optical Co., Ltd. Endoscope-image processing apparatus for performing image processing of emphasis in endoscope image by pigment concentration distribution. 5,550,582, Cl. 348-65.000.

Takata Corporation: *See*—
Mishina, Jyoji; and Tanabe, Masahiro, 5,548,874, Cl. 24-170.000.

Takatori, Masahiro; Nakano, Yukio; and Ashi, Yoshihiro, to Hitachi, Ltd. Failure restoration method in a mesh network. 5,550,805, Cl. 370-16.100.

Takatori, Sunao; and Yamamoto, Makoto, to Yozan Inc.; and Sharp Corporation. Method for compressing voice data by dividing extracted voice frequency domain parameters by weighting values. 5,550,949, Cl. 395-2.150.

Takatori, Sunao; and Yamamoto, Makoto, to Yozan Inc.; and Sharp Corporation. Voice transfer system with low-error voice signal regeneration. 5,550,950, Cl. 395-221.000.

Takaya, Soichi: *See*—
Miyazaki, Yoshihiro; Takahashi, Yoshiaki; Araoka, Manabu; Takaya, Soichi; and Fukumaru, Hiroaki, 5,551,007, Cl. 395-47.500.

Takeda, Akio: *See*—
Kurata, Mitsuru; Kanemitsu, Shinji; Nomura, Akihiro; Ebata, Tokihide; Takeda, Akio; Miyauchi, Yasuo; Uchida, Haruo; and Onoda, Shigeyoshi, 5,550,570, Cl. 347-49.000.

Takeda Chemical Industries, Ltd.: *See*—
Sohda, Takashi; Terashita, Zen-ichi; Momose, Yu; Fujisawa, Yukio; and Mizoguchi, Junji, 5,550,138, Cl. 514-361.000.
Sugihara, Hirosada; Terashita, Zenichi; and Fukushi, Hideto, 5,550,131, Cl. 514-255.000.

Takeda, Shigeru: *See*—
Torii, Akito; Matsumoto, Naoki; and Takeda, Shigeru, 5,549,175, Cl. 180-209.000.

Takegawa, Ichiro; Hashiba, Shigeto; Miyamoto, Hiroshi; and Ichizawa, Nobuyuki, to Fuji Xerox Co., Ltd. Process for producing electrophotographic photoreceptor. 5,550,000, Cl. 430-131.000.

Takehara, Niroshi: *See*—
Takahashi, Takao; and Takehara, Niroshi, 5,549,430, Cl. 411-179.000.

Takeuchi, Esther S.; and Mead, Ralph T., to Wilson Greatbatch Ltd. Method of making prismatic cell. 5,549,717, Cl. 29-623.200.

Takeuchi, Katsuto: *See*—
Yokoyama, Hiromitsu; Takeuchi, Katsuto; Soekawa, Koji; Abe, Kenichiro; Hattori, Syouichi; Suzuki, Hitoshi; and Okada, Nobuhide, 5,549,778, Cl. 156-246.000.

Takiguchi, Ryohei: *See*—
Aso, Kenichi; Sato, Hideaki; Eguchi, Hiroshi; Kafuku, Kornei; and Takiguchi, Ryohei, 5,550,098, Cl. 503-227.000.

Takii, Yukio: *See*—
Suzuki, Yuzuru; Takii, Yukio; Yamamoto, Kazumi; Nishiya, Yoshiaki; Sogabe, Atsushi; Sogabe, Yukihiro; and Emi, Shigenori, 5,550,046, Cl. 435-202.000.

Takizawa, Satoru: *See*—
Dowler, James A.; Whitaker, Tyson B.; King, Julius D., Jr.; Murayama, Fumitaka; Takizawa, Satoru; Gomi, Masao; and Itoh, Fumiyoshi, 5,550,627, Cl. 355-326.00M.

Takusari, Hisanori: *See*—
Tai, Seiji; Takusari, Hisanori; Tanaka, Hiroyuki; Moribe, Isamu; and Ohdoi, Chie, 5,550,202, Cl. 526-286.000.

Talbot, Roy: *See*—
Butterfield, Eric J.; Cockram, George R.; Harmon, Stewart M.; and Talbot, Roy, 5,549,132, Cl. 137-270.000.

Taligent, Inc.: *See*—
Matheny, John R.; and White, Christopher, 5,550,563, Cl. 345-168.000.
Matheny, John R.; White, Christopher; and Davis, Mark E., 5,551,055, Cl. 395-882.000.

Tallec, Ronan, to France Telecom Etablissement Autonome De Droit Public. Interface device between a public telephone and an external terminal. 5,550,917, Cl. 379-442.000.

Talmadge, Paul C.: *See*—
Freeman, Gerald C.; and Talmadge, Paul C., 5,550,328, Cl. 177-50.000.

Talo, Jean-Louis: *See*—
Sassi, Michel; and Talo, Jean-Louis, 5,549,314, Cl. 280-259.000.

Tam Ceramics Inc.: *See*—
Chu, Mike S.-H.; Bultitude, John; and Hood, Christopher, 5,550,092, Cl. 501-137.000.

Tamura, Hiroshi: *See*—
Tanaka, Shigenori; Tamura, Hiroshi; and Ohki, Makoto, 5,550,030, Cl. 435-23.000.

Tamura, Manabu: *See*—
Miki, Masatoshi; Kuwabara, Toshio; and Tamura, Manabu, 5,550,539, Cl. 341-20.000.

Tamura, Satoshi: *See*—
Kimura, Yoichi; Kumada, Isao; Hasegawa, Takashi; and Tamura, Satoshi, 5,550,620, Cl. 355-273.000.

Tan, Juay K.; and Kwong, Robert W., to Sun Microsystems, Inc. I/O cache with dual tag arrays. 5,551,000, Cl. 395-445.000.

VOL 1189 ISS 4 AG 27 1996 UMI

Tanabe, Masahiro: *See*—
Mishina, Jyoji; and Tanabe, Masahiro, 5,548,874, Cl. 24-170.000.

Tanabe Seiyaku Co., Ltd.: *See*—
Iwasaki, Tameo; Kondo, Kazubiko; and Ohmizu, Hiroshi, 5,550,229, Cl. 540-200.000.

Tanabe, Toru; Seki, Kazuhide; and Hatsumi, Masaaki, to Stanley Electric Co., Ltd. Hall-effect device driver with temperature-dependent sensitivity compensation. 5,550,469, Cl. 324-251.000.

Tanahashi, Katsuhiko, to Fujitsu Limited. TDMA satellite communication system for transmitting serial subsignal data. 5,550,831, Cl. 370-95.300.

Tanahashi, Masao; Shiba, Tekeshi; and Ikuta, Toshio, to Matsushita Electric Works, Ltd. Reciprocatory dry shaver. 5,548,899, Cl. 30-43.920.

Tanahashi, Toshitaka: *See*—
Konaga, Naoji; Inagaki, Mitsuo; Asa, Hironori; and Tanahashi, Toshitaka, 5,549,371, Cl. 303-152.000.

Tanaka, Akira; Mesaki, Yoshinori; Sotokawa, Akio; Tomatsu, Masahiro; and Kaiwa, Kazumasa, to Fujitsu Limited. Liquid crystal display device having an optimized ridged layer to improve luminosity. 5,550,657, Cl. 359-49.000.

Tanaka Denshi Kogyo Kabushiki Kaisha: *See*—
Ogashiwa, Toshinori, 5,550,407, Cl. 257-737.000.

Tanaka, Hiroyuki: *See*—
Tai, Seiji; Takusari, Hisanori; Tanaka, Hiroyuki; Moribe, Isamu; and Ohdoi, Chie, 5,550,202, Cl. 526-286.000.

Tanaka, Kohichi; Hashimoto, Hiromasa; Inada, Yasuo; and Nakajima, Makoto, to Fujikoshi Machinery Corp.; and Shin-Etsu Handotai Co., Ltd. Polishing apparatus. 5,549,502, Cl. 451-8.000.

Tanaka, Koichi, to Kabushiki Kaisha Toshiba. Data transfer device. 5,550,987, Cl. 395-286.000.

Tanaka, Kunihiro: *See*—
Nagano, Masakazu; Tanaka, Kunihiro; Hibino, Toshiro; and Sato, Hiroshi, 5,550,999, Cl. 395-442.000.

Tanaka, Masashi: *See*—
Mizuta, Yasufumi; Tanaka, Masashi; Muto, Nariaki; Fukami, Toshiyuki; Nakamori, Hideo; Kakui, Mikio; Saito, Sakae; Shiomi, Hiroshi; Sumida, Keisuke; and Uchida, Maki, 5,550,290, Cl. 564-309.000.

Tanaka, Satoshi; Inoue, Soichi; and Nakamura, Hiroko, to Kabushiki Kaisha Toshiba. Photomask and method of manufacturing the same. 5,549,995, Cl. 430-5.000.

Tanaka, Shigenori; Tamura, Hiroshi; and Ohki, Makoto, to Seikagaku Kogyo Kabushiki Kaisha (Seikagaku Corporation). Reagent for endotoxin–specific assay. 5,550,030, Cl. 435-23.000.

Tanaka, Shigeo; Yamazaki, Hiroshi; Osakabe, Yoshio; Kotabe, Noriko; Iwamoto, Koji; Souma, Yoko; Imaura, Toshihiro; and Maki, Shigeru, to Sony Corporation; and Matsushita Electric Industrial Co., Limited. Communication protocol for communicating image data. 5,550,826, Cl. 370-85.800.

Tanaka, Shigeo; Yamazaki, Hiroshi; Kotabe, Noriko; Sugiyama, Kouichi; Sato. Makoto; Katsuyama, Akira; Osakabe, Yoshio; and Kusagaya, Yasuo, to Sony Corporation. Audio video system. 5,550,979, Cl. 395-200.050.

Tang, Ching W.; and Hseih, Biay C., to Eastman Kodak Company. Method of fabricating a TFT-EL pixel. 5,550,066, Cl. 437-40.000.

Tang, Manh; Kordovich, Vlade J.; and Maslanka, Daniel C., to Eastman Kodak Company. High precision dye donor web positioning in a thermal color printer. 5,549,400, Cl. 400-236.000.

Tange, Keigo, to Minolta Co., Ltd. Flexible blade cleaning device used in an image forming apparatus. 5,550,622, Cl. 355-299.000.

Tani, Hiroshi: *See*—
Nakamura, Takao; Sekiyama, Nobuya; Tani, Hiroshi; and Kato, Yoshiki, 5,549,211, Cl. 216-11.000.

Taniguchi, Shoji: *See*—
Inoue, Akiyoshi; Taniguchi, Shoji; Kawano, Eisaku; Yanagawa, Naoharu; and Suzuki, Hiroshi, 5,550,799, Cl. 369-116.000.

Tanimura, Hideki: *See*—
Nakako, Toru; Tanimura, Hideki; and Tukuda, Kouji, 5,549,016, Cl. 74-490.020.

Tannas Co.: *See*—
Selby, Theodore W.; Wolfe, Kevin J.; and Atkins, William A., 5,548,994, Cl. 73-54.280.

Tanoue, Sin: *See*—
Aiso, Katsuyosi; Adati, Sakasi; Igarasi, Tosihiro; Tanoue, Sin; Kumamoto, Satosi; and Wakuda, Masanori, 5,549,015, Cl. 74-424.80B.

Tapematic U.S.A., Inc.: *See*—
Perego, Luciano, 5,549,256, Cl. 242-532.100.
Perego, Luciano, 5,549,434, Cl. 414-416.000.

Tarchi, Mauro: *See*—
Domenichini, Carlo; and Tarchi, Mauro, 5,550,477, Cl. 324-545.000.

Target Therapeutics, Inc.: *See*—
Mirigian, Gregory E.; and Van, Nga T., 5,549,624, Cl. 606-191.000.
Samson, Gene; Vegh, Gabriel B.; Dickens, Duane; and Rettke, Herbert G., 5,549,109, Cl. 128-642.000.

Tariq, M. Hasan; and Ostler, Michael R., to Motorola, Inc. Nodal tree data structure for storing, consolidating, and displaying microbiological laboratory results. 5,551,022, Cl. 395-600.000.

Tarter, Fred B.; Greene, Jeffrey M.; De Fazio, Thomas J.; Peck, Jan; Wylie, L. Stephen; Magnotte, Mark M.; Hall, Del; and Tarter, Scott A., to Pharmacy Fund, Inc., The. Computerized healthcare accounts receivable purchasing collections securitization and management system. 5,550,734, Cl. 364-401.00R.

Tarter, Scott A.: *See*—
Tarter, Fred B.; Greene, Jeffrey M.; De Fazio, Thomas J.; Peck, Jan; Wylie, L. Stephen; Magnotte, Mark M.; Hall, Del; and Tarter, Scott A., 5,550,734, Cl. 364-401.00R.

Tarutani, Shinji: *See*—
Enomoto, Kazuhisa; Yamazaki, Takao; Azuma, Taiki; and Tarutani, Shinji, 5,550,801, Cl. 369-178.000.

Tashima, Toshihiro: *See*—
Hayakawa, Tomohiko; and Tashima, Toshihiro, 5,550,938, Cl. 382-313.000.

Tashiro, Akihiko: *See*—
Otsuka, Haruhiko; Murayama, Yuzo; Tashiro, Akihiko; Hyomi, Kyoko; and Ishimaru, Naohiko, 5,549,954, Cl. 428-65.300.

Tashiro, Tetsu; and Cho, Yoshiki, to Mitsubishi Denki Kabushiki Kaisha. Condition decision circuit for a microcomputer. 5,550,994, Cl. 395-375.000.

Taylor, Gary N.; and Wheeler, David R., to Lucent Technologies Inc. Surface-imaging technique for lithographic processes for device fabrication. 5,550,007, Cl. 430-314.000.

Taylor, Joseph W.: *See*—
Chiu, Ramen; Taylor, Joseph W.; Cooke, David L.; Goyal, Shivendra K.; and Oswin, Robert E., 5,550,193, Cl. 525-199.000.

Taylor, Robert J., Jr.; Dai, Pei-Shing E.; and Knifton, John F., to Texaco Chemical Inc. Gradient catalyst system for the integrated production of isopropyl alcohol and diisopropyl ethers. 5,550,300, Cl. 568-698.000.

Tazaki, Hiroshi; Ito, Kazumasa; and Sugawara, Atsushi, to Sanshin Kogyo Kabushiki Kaisha. Exhaust system for a small planing craft. 5,550,337, Cl. 181-235.000.

TDK Corporation: *See*—
Miyazaki, Shinji; Takai, Mitsuru; and Kobayashi, Koji, 5,549,979, Cl. 428-694.00T.
Takahashi, Tetsuo; Miyauchi, Eisaku; Mogi, Kunio; and Araya, Shinichi, 5,549,716, Cl. 29-25.010.

TEAC Corporation: *See*—
Sugeta, Naoki; and Tsuyuguchi, Hiroshi, 5,550,447, Cl. 318-439.000.

TeamNet, Inc.: *See*—
Bailey, Brian L.; and Clayman, Harvey L., 5,550,738, Cl. 364-424.040.

Technology Finance Corporation (Proprietary) Limited: *See*—
Batson, Richard G., 5,549,827, Cl. 210-519.000.

Tedeschi, Rinaldo, to Environmental Systems Products, Inc. Method for analysis of vehicle performance characteristics. 5,550,737, Cl. 364-424.030.

Teed, Richard L.: *See*—
Lyon, Leonard E.; and Teed, Richard L., 5,551,032, Cl. 395-600.000.

Teepack Spezialmaschinen GmbH & Co. KG: *See*—
Nippes, Helmut, 5,548,945, Cl. 53-540.000.

Tefft, Jacqueline A.: *See*—
Rhee, Woonza M.; Berg, Richard A.; Rosenblatt, Joel S.; Tefft, Jacqueline A.; Braga, Larry J.; and Smestad, Thomas L., 5,550,187, Cl. 525-54.100.

Tegeler, John J.; Rauckman, Barbara S.; Harner, Russell R. L.; Freed, Brian S.; and Merriman, Gregory H., to Hoechst Roussel Pharmaceuticals Inc. 1-alkyl-, 1-alkenyl-, and 1-alkynlaryl-2-amino-1, 3-propanediols and related compounds. 5,550,247, Cl. 546-314.000.

Tegtmeier, Gert; and Strohbusch, Manfred, to Krupp Polysius AG. Cooler grate for a reciprocating grate cooler. 5,549,471, Cl. 432-77.000.

Tehrani, Saied N.: *See*—
Hashemi, Majid M.; Tehrani, Saied N.; and Norton, Patricia A., 5,550,065, Cl. 437-39.000.

Teich, Kristine M.: *See*—
Cooper, Joel; Winegar-Hentges, Sally L.; Nelson, Robert P.; Schankereli, Kemal; and Teich, Kristine M., 5,549,628, Cl. 606-220.000.

Tektronix, Inc.: *See*—
Bos, Philip J., 5,550,662, Cl. 359-73.000.
Siegel, Roy I.; and Hengeveld, John A., 5,550,963, Cl. 395-140.000.
Yang, Kei-Wean C., 5,550,660, Cl. 359-63.000.

Telefonaktiebolaget LM Ericsson: *See*—
Fernström, Kenneth G., 5,550,827, Cl. 370-94.100.
Liedberg, Nils P. Å., 5,550,514, Cl. 331-1.00A.
Skarby, Ulf; Bergsten, Par; and Hedberg, Bo, 5,551,070, Cl. 455-126.000.

Telogy Networks, Inc.: *See*—
Chang, Hyokang, 5,550,837, Cl. 371-5.500.

Temeng, Kwaku O.: *See*—
Chiang, George C.; Davis, Richard F.; and Temeng, Kwaku O., 5,550,238, Cl. 544-211.000.

Temic Telefunken Microelectronic GmbH: *See*—
Häussler, Bernd; Meyer, Benno; and Münk, German, 5,550,804, Cl. 370-16.000.

Temp Top Container Systems, Inc.: *See*—
Wallace, Mark W., 5,548,972, Cl. 62-371.000.

Temper Corporation: *See*—
Rode, John E., 5,549,397, Cl. 384-551.000.

Temple University-Of The Commonwealth System Of Higher Education: *See*—
Suhadolnik, Robert J.; and Pfleiderer, Wolfgang, 5,550,111, Cl. 514-44.000.

Tenaille d'Estais, Guy E. M.: *See*—
Lormeau, Jean Claude; Chevallier, Bruno; Salomé, Marc L. V.; and Tenaille d'Estais, Guy E. M., 5,550,116, Cl. 514-56.000.

Teng, BaBie; Davidson, Nicholas O.; and Burant, Charles F., to Arch Development Corp.; and Northwestern University. Apolipoprotein B mRNA editing protein compositions and methods. 5,550,034, Cl. 435-69.100.

Teng, Dan: *See*—
Wang, Shay-Ping T.; Teng, Dan; and Hayner, David A., 5,550,732, Cl. 364-148.000.

Tennies, Lisa A.: *See*—
Weinberg, Tobias M.; Tennies, Lisa A.; and Vasilevsky, Alexander D., 5,551,039, Cl. 395-700.000.

Tenyo Co., Ltd: *See*—
Kondo, Hiroshi, 5,549,515, Cl. 472-71.000.

Terada, Akihiro: *See*—
Nihei, Ryo; Terada, Akihiro; and Sasaki, Yasuo, 5,549,018, Cl. 74-490.030.

Terada, Hiroshi: *See*—
Komakine, Hiroshi; Terada, Hiroshi; Yamamoto, Hajime; Hayashi, Kazumasa; and Aizawa, Masahiro, 5,550,619, Cl. 355-246.000.

Terada, Masakazu: *See*—
Sakai, Minekazu; Fukada, Tsuyoshi; Terada, Masakazu; Watanabe, Shinsuke; and Nishida, Minoru, 5,549,785, Cl. 156-644.100.

Terada, Norihiro: *See*—
Sano, Keiichi; Aya, Yoichiro; Terada, Norihiro; and Harata, Yasuki, 5,549,763, Cl. 136-255.000.

Terajima, Hisao, to Canon Kabushiki Kaisha. Image reading apparatus having a plurality of image sensors for reading a portion of an image a plurality of times. 5,550,651, Cl. 358-496.000.

Teramoto, Toshio: *See*—
Hasegawa, Ko; Teramoto, Toshio; Nakajima, Tatsuo; and Konomoto, Takeyoshi, 5,550,190, Cl. 525-92.00A.

Terashita, Zen-ichi: *See*—
Sohda, Takashi; Terashita, Zen-ichi; Momose, Yu; Fujisawa, Yukio; and Mizoguchi, Junji, 5,550,138, Cl. 514-361.000.
Sugihara, Hirosada; Terashita, Zenichi; and Fukushi, Hideto, 5,550,131, Cl. 514-255.000.

Terazawa, Tadashi: *See*—
Toda, Hiroshi; Nishii, Michiharu; Kusano, Akihito; Noda, Yoshiki; Kuromitsu, Hiromu; Terazawa, Tadashi; and Kojima, Seiichi, 5,549,366, Cl. 303-113.200.

Terry, Daniel J. Filter cap. 5,549,723, Cl. 55-493.000.

Terumo Corporation: *See*—
Yamaguchi, Ken; and Miyake, Yoshio, 5,550,026, Cl. 435-7.100.

Tervahauta, Jukka, to Novatron Oy. Method for determination of the position of an elongated piece. 5,550,757, Cl. 364-560.000.

Tetra Laval Holdings & Finance S.A.: *See*—
Itoh, Kosaku; Yokoyama, Ikuro; Prochut, Richard; Löfstedt, Jörgen; and Nilsson, Christer, 5,549,191, Cl. 198-432.000.
Prochut, Richard; Löfstedt, Jörgen; and Nilsson, Christer, 5,548,944, Cl. 53-511.000.

Teurlings, Lucas G. C.: *See*—
van Woesik, Theodorus C. M.; Teurlings, Lucas G. C.; and Vermeulen, Willem S. J., 5,550,944, Cl. 385-73.000.

Teurlinx, Engelbert J. J.: *See*—
van den Nieuwelaar, Adrianus J.; Janssen, Petrus C. M.; Teurlinx, Engelbert J. J.; van Harskamp, Cornelius D.; and Drabbels, Bastiaan W. J. E. J., 5,549,521, Cl. 452-118.000.

TeWinkle, Scott L.; Hosier, Paul A.; and Hayes, Fred O., to Xerox Corporation. Color sensor array and system for scanning simple color documents. 5,550,653, Cl. 358-514.000.

Texaco Chemical Inc.: *See*—
Taylor, Robert J., Jr.; Dai, Pei-Shing E.; and Knifton, John F., 5,550,300, Cl. 568-698.000.

Texaco, Inc.: *See*—
Brown, Winthrop K.; Diatschenko, Victor; and Stoy, James R., 5,549,000, Cl. 73-587.000.

Texas A & M University System, The: *See*—
Russell, B. Don, 5,550,751, Cl. 364-492.000.

Texas Children's Hospital: *See*—
Mauer, Mary B., 5,549,116, Cl. 128-696.000.

Texas Instruments Deutschland GmbH: *See*—
Flaxl, Thomas J., 5,550,536, Cl. 340-825.540.
Schuermann, Josef H., 5,550,548, Cl. 342-42.000.

Texas Instruments Incorporated: *See*—
Ehlig, Peter N.; Boutaud, Frederic; and Hollander, James F., 5,550,993, Cl. 395-375.000.
Ehlig, Peter N.; and Swoboda, Gary L., 5,551,050, Cl. 395-800.000.
Kocian, Thomas A.; and Darrow, Doug, 5,550,398, Cl. 257-434.000.
Maeda, Takayuki, 5,550,401, Cl. 257-666.000.
Markandey, Vishal; and Hewlett, Gregory J., 5,550,592, Cl. 348-448.000.
Schmidt, Thomas A.; and Hastings, Roy A., 5,550,702, Cl. 361-103.000.
Sukegawa, Shunichi; Nasu, Takumi; and Iwai, Hidetoshi, 5,550,394, Cl. 257-209.000.
Sweeney, Frank J.; and Ganesan, Apparajan, 5,550,486, Cl. 326-14.000.
Tran, Hiep V., 5,550,777, Cl. 365-205.000.

Texo AB: *See*—
Lindblom, Bo, 5,549,140, Cl. 139-114.000.

Textilmaschinenfabrik Dr. Ernst Fehrer Aktiengesellschaft: *See*—
Ludwig, Legl, 5,548,881, Cl. 28-114.000.

Textron Inc.: *See*—
Soell, Wayne A.; and Fillman, Alan R., 5,549,089, Cl. 123-352.000.

Thaler, Warren A.: *See*—
Ho, Win-Sow W.; Sartori, Guido; Thaler, Warren A.; and Dalrymple, David C., 5,550,199, Cl. 525-423.000.

TheraTech, Inc.: *See*—
Ebert, Charles D.; Heiber, Werner; Good, William R.; and Venkateshwaran, Srinivasan, 5,549,909, Cl. 424-447.000.

Therien, Michel: *See*—
Ducharme, Yves; Gauthier, Jacques Y.; Prasit, Petpiboon; Leblanc, Yves; Wang, Zhaoyin; Leger, Serge; and Therien, Michel, 5,550,142, Cl. 514-365.000.

Therm-O-Disc, Incorporated: *See*—
Place, Donald E., 5,550,525, Cl. 337-363.000.

Thermacore, Inc.: *See*—
Meyer, George A., IV; Toth, Jerome E.; and Longsderff, Richard W., 5,549,155, Cl. 165-104.330.

Thesee, Eddy: *See*—
Pavone, Didier; Froment, Jacques; and Thesee, Eddy, 5,550,788, Cl. 367-25.000.

Thibaut, Gilbert: *See*—
Piclin, Jean-Jacques; Thibaut, Gilbert; and Boisson, Michel, 5,549,562, Cl. 604-134.000.

Thiele, Hartmut; Brandstetter, Hermann; Toral, Jose; Hiller, Rainald; Scholtysik, Bernd; Lutz, Gottfried; and Liepold, August, to BASF Magnetics GmbH. Multipack for recording media in tape form wound onto hubs. 5,549,198, Cl. 206-307.000.

Thinking Machines Corporation: *See*—
Weinberg, Tobias M.; Tennies, Lisa A.; and Vasilevsky, Alexander D., 5,551,039, Cl. 395-700.000.

Thomas, Barbara: *See*—
Mondin, Myriam; Loth, Myriam; Broze, Guy; Mehreteab, Ammanuel; Thomas, Barbara; Adamy, Steven; and Bala, Frank, Jr., 5,549,840, Cl. 510-365.000.

Thomas, Brandon D.: *See*—
Lehnert, Robert A.; Quinn, Robert D.; Sisley, Steven E.; and Thomas, Brandon D., 5,550,882, Cl. 376-272.000.

Thomas J. Lipton Co.: *See*—
Fincham, Kevin R.; Seaward, David R.; Shirley, Graham L.; and Vernon, Geoffrey W., 5,548,947, Cl. 53-551.000.

Thomas, James L.: *See*—
Wingfield, Andy Q.; and Thomas, James L., 5,549,338, Cl. 292-292.000.

Thomas Jefferson University: *See*—
Strayer, David S., 5,550,114, Cl. 514-21.000.

Thomas, John F.; and Gillett, Anthony F., to Monier Roof Tile Inc. Roof ventilation device. 5,549,513, Cl. 454-365.000.

Thomas, John G.: *See*—
Drake, Samuel; Griefer, Allan D.; Powers, John T., Jr.; and Thomas, John G., 5,550,966, Cl. 395-154.000.

Thomas, Norman S.; and Smith, Christopher R., to C.V. Buchan Limited. Device for joining two members together. 5,549,416, Cl. 405-153.000.

Thomas, Stacy I.; and Akerman, Rose. Apparatus for covering a surgical needle to protect the user. 5,549,629, Cl. 606-223.000.

Thomas, William C., Jr.; Batich, Christopher D.; and Purich, Daniel L., to University of Florida, The. Clinical marker and therapeutic agent in kidney stone disease and methods of use. 5,550,259, Cl. 549-274.000.

Thomas, William L.: *See*—
Lu, Daozheng; Shagrin, Ceril T.; Thomas, William L.; Lee, Morris; Bernard, Bruce; and Zhang, Jia, 5,550,928, Cl. 382-116.000.

Thompson, Jack T., to Westech Geophysical, Inc. System and method of protecting instruments from down-hole fluids. 5,550,331, Cl. 181-102.000.

Thompson, James E.: *See*—
Hoss, Gregg M.; Thompson, James E.; Johnson, Thomas F.; Kirbie, Martin; and Speer, Andrew J., III, 5,549,359, Cl. 298-35.00M.

Thomson Consumer Electronics Inc.: *See*—
George, John B., 5,550,441, Cl. 315-371.000.
Kim, Sung J.; and Schick, Alfred J., 5,550,642, Cl. 358-335.000.

Thomson-CSF: *See*—
Dufilie, Pierre, 5,550,793, Cl. 367-164.000.

Thondukolam, Krishnan R.: *See*—
Pittman, Gary M.; Senior, Kenneth A.; Strunk, John N.; and Thondukolam, Krishnan R., 5,549,276, Cl. 251-214.000.

Thorne, David L.: *See*—
Thorne, Gale H.; Thorne, David L.; and Thorne, Sandra A., 5,549,708, Cl. 604-110.000.

Thorne, Gale H.; Thorne, David L.; and Thorne, Sandra A., to Specialized Health Products, Inc. Self retracting medical needle apparatus and methods. 5,549,708, Cl. 604-110.000.

Thorne, Sandra A.: *See*—
Thorne, Gale H.; Thorne, David L.; and Thorne, Sandra A., 5,549,708, Cl. 604-110.000.

Thorpe, David: *See*—
Park, Eric Y.; Knaub, David; Thorpe, David; Barney, Howard; and Hoyt, Joshua, 5,549,010, Cl. 73-861.790.

Three-D Composites Research Corporation: *See*—
Kimbara, Masahiko, 5,549,013, Cl. 74-129.000.

Thyssen, Larry C.: *See*—
Laughlin, Joe A.; and Thyssen, Larry C., 5,550,314, Cl. 588-256.000.

Tien, Walter L.: *See*—
Ding, Shulin; Pallo, Robert J.; Tien, Walter L.; and Olejnik, Orest, 5,550,163, Cl. 514-643.000.

Tige Boats: *See*—
Pigeon, Charles; and Jones, Stephen, 5,549,071, Cl. 114-286.000.

VOL 1189 ISS 4 AG 27 1996 UMI

Tilleman, Russell W.: *See*—
Cohen, Earl T.; Tilleman, Russell W.; Pattin, Jay C.; and Blomgren, James S., 5,551,001, Cl. 395-449.000.
Tinsler, Theodore E., to Copeland Corporation. Refrigerant recovery system. 5,548,966, Cl. 62-77.000.
Tischer, Brian F.: *See*—
Hart, Courtney L.; Tischer, Brian P.; and Lloyd, David G., 5,548,875, Cl. 24-265.00H.
Titus, Charles H. Gas turbine electrical power generation scheme utilizing remotely located fuel sites. 5,550,410, Cl. 290-52.000.
Tix, Ron: *See*—
Perlich, Frank J.; Tix, Ron; and Alexander, Graeme, 5,549,801, Cl. 204-279.000.
Tixier, Jean P.; and Legrand, Annie F., to Eastman Kodak Company. Method for the continuous preparation of vanadium pentoxide gels and apparatus for implementing the method. 5,549,846, Cl. 252-315.010.
Tobler, Felix, to Knobel AG Lichttechnische Komponenten. Driver circuit for discharge lamps. 5,550,433, Cl. 315-94.000.
Toda, Hiroshi; Nishii, Michiharu; Kusano, Akihito; Noda, Yoshiki; Kuromitsu, Hiromu; Terazawa, Tadashi; and Kojima, Seiichi, to Aisin Seiki Kabushiki Kaisha. Hydraulic brake system for vehicle. 5,549,366, Cl. 303-113.200.
Todd, Craig C., to Dolby Laboratories Licensing Corporation. Compact source coding tables for encoder/decoder system. 5,550,541, Cl. 341-51.000.
Todt, Volker R.; Sengupta, Suvankar; and Shi, Donglu, to University of Chicago. Method for harvesting single crystals from a peritectic melt. 5,549,748, Cl. 117-53.000.
Tohma, Kiyhokazu; Yoshimoto, Kazunari; Sugita, Ryuji; and Ishida, Tatsuaki, to Matsushita Electric Industrial Co., Ltd. Manufacturing method of magnetic recording medium. 5,549,936, Cl. 427-566.000.
Tokish, Leonard J., Jr.: *See*—
Ries, Michael D.; Tokish, Leonard J., Jr.; and Fallin, Thomas W., 5,549,702, Cl. 623-23.000.
Tokumitsu, Masami: *See*—
Hirano, Makoto; Asai, Kazuyoshi; Imai, Yuhki; Tokumitsu, Masami; Tokumitsu, Tsuneo; and Toyoda, Ichihiko, 5,550,068, Cl. 437-41.000.
Tokumitsu, Tsuneo: *See*—
Hirano, Makoto; Asai, Kazuyoshi; Imai, Yuhki; Tokumitsu, Masami; Tokumitsu, Tsuneo; and Toyoda, Ichihiko, 5,550,068, Cl. 437-41.000.
Tokusen Kogyo Co., Ltd.: *See*—
Sanda, Kenji; and Inoue, Hitoshi, 5,549,257, Cl. 242-580.000.
Tokyo Electron Kabushiki Kaisha: *See*—
Sano, Kunio, 5,550,482, Cl. 324-758.000.
Tokyo Electron Yamanashi Kabushiki Kaisha: *See*—
Sano, Kunio, 5,550,482, Cl. 324-758.000.
Tokyo Seimitsu Co., Ltd.: *See*—
Nakamura, Masaharu, 5,550,634, Cl. 356-401.000.
Tomatsu, Masahiro: *See*—
Tanaka, Akira; Mesaki, Yoshinori; Sotokawa, Akio; Tomatsu, Masahiro; and Kaiwa, Kazumasa, 5,550,657, Cl. 359-49.000.
Tomatsu, Yutaka: *See*—
Kuroyanagi, Akira; Tomatsu, Yutaka; and Tsuzuki, Yasuaki, 5,550,067, Cl. 437-41.000.
Tomioka, Shinji: *See*—
Inoue, Kunimi; Yamada, Yoshiyuki; Amatsu, Kazumi; Mimura, Yukiteru; Nakaguchi, Yasunori; Shinmura, Hiroyuki; Ono, Yasuyuki; Osawa, Yutaka; Mizutaki, Shoichi; Kasai, Masaji; and Tomioka, Shinji, 5,550,283, Cl. 562-561.000.
Tomisawa, Naoki, to Unisia Jecs Corporation. Fuel vapor control for internal combustion engine. 5,549,094, Cl. 123-520.000.
Tomita, Kan; Majima, Toshihiko; Tagawa, Toshiya; and Sumida, Hiroyasu, to Ricoh Company, Ltd. Digital copying machine having selective paper feed based on copy productivity. 5,550,623, Cl. 355-311.000.
Tomita, Ryoichi, to Sumitomo Precision Products Co., Ltd. Control device for hydraulic actuator used in steering. 5,549,173, Cl. 180-417.000.
Tomita, Toshitsugu: *See*—
Harada, Hisayuki; and Tomita, Toshitsugu, 5,551,021, Cl. 395-600.000.
Tomo, Yoichi; and Saito, Masao, to Sony Corporation. Method for making a dry etching resistant positive and negative photoresist. 5,550,008, Cl. 430-325.000.
Tompkins, Michael E.; and Green, Michael J., to Siegel, Irving C. Microcomputer SPA control system. 5,550,753, Cl. 364-505.000.
Tonen Corporation: *See*—
Yamaguchi, Ken; and Miyake, Yoshio, 5,550,026, Cl. 435-7.100.
Tongrand Limited: *See*—
Cheng, Lee M., 5,549,480, Cl. 439-79.000.
Top Team/Microelectronics Corp.: *See*—
Lin, Jengping, 5,550,079, Cl. 437-56.000.
Topliss, John G.: *See*—
Cody, Wayne L.; Doherty, Annette M.; and Topliss, John G., 5,550,110, Cl. 514-17.000.
Toral, Jose: *See*—
Thiele, Hartmut; Brandstetter, Hermann; Toral, Jose; Hiller, Rainald; Scholtysik, Bernd; Lutz, Gottfried; and Liepold, August, 5,549,198, Cl. 206-307.000.
Torborg, Kevin; and Jelinek, Victor E., to White Consolidated Industries, Inc. Bulkhead and expanded drum without rollers. 5,548,908, Cl. 34-601.000.
Torchinsky, Alick. Chlorhexidine and glutaraldehyde mouthwash. 5,549,885, Cl. 424-54.000.
Toren Consulting Pty. Ltd.: *See*—
Toren, Thomas, 5,549,204, Cl. 206-539.000.
Toren, Thomas, to Toren Consulting Pty. Ltd. Blister packs. 5,549,204, Cl. 206-539.000.
Torii, Akito; Matsumoto, Naoki; and Takeda, Shigeru, to Nippondenso Co., Ltd. Control system for carriage. 5,549,175, Cl. 180-209.000.
Torres, Robert J.; and Fleming, Stephen S., to International Business Machines Corporation. Graphical method of indicating the position of and performing an operation on a plurality of selected objects in a computer system. 5,550,969, Cl. 395-159.000.
Toshiba Kikai Kabushiki Kaisha: *See*—
Aiso, Katsuyosi; Adati, Sakasi; Igarasi, Tosihiro; Tanoue, Sin; Kumamoto, Satosi; and Wakuda, Masanori, 5,549,015, Cl. 74-424.80B.
Hosokawa, Yutaka; and Hosoi, Haruzi, 5,549,177, Cl. 184-6.220.
Toshin Chemical Industry Co., Ltd.: *See*—
Hagimori, Kenji; Abe, Yuzuru; and Kanke, Tetsuo, 5,549,833, Cl. 210-757.000.
Total: *See*—
Pauchon, Christian; Ferschneider, Gilles; and Ferre, Daniel, 5,550,761, Cl. 364-578.000.
Toth, Douglas J.: *See*—
Garraffe, Dean R.; and Toth, Douglas J., 5,549,107, Cl. 128-204.260.
Toth, Jerome E.: *See*—
Meyer, George A., IV; Toth, Jerome E.; and Longsderff, Richard W., 5,549,155, Cl. 165-104.330.
Toth, John E.: *See*—
Amos, Jane G.; Heath, Perry C.; Prather, Douglas E.; and Toth, John E., 5,550,231, Cl. 540-205.000.
Toth, Thomas L.: *See*—
Gard, Michael F.; Gravelle, Stephen W.; Hsieh, Jiang; Lu, Quan N.; Newman, John W.; Toth, Thomas L.; and Wu, Michael A., 5,550,889, Cl. 378-113.000.
Townsend, Michael W., to Eli Lilly and Company. Cartridge assembly for use in a pen-type medicament injector. 5,549,574, Cl. 604-232.000.
Toy, James W.; and Casper, Paul W., to Broadband Communications Products. Bit rate-insensitive mechanism for transmitting integrated clock and data signals over digital communication link. 5,550,864, Cl. 375-293.000.
Toyo Boseki Kabushiki Kaisha: *See*—
Suzuki, Yuzuru; Takii, Yukio; Yamamoto, Kazumi; Nishiya, Yoshiaki; Sogabe, Atsushi; Sogabe, Yukihiro; and Emi, Shigenori, 5,550,046, Cl. 435-202.000.
Toyo Seikan Kaisha, Ltd.: *See*—
Hori, Nobuaki, 5,549,223, Cl. 222-153.130.
Toyobo Co. Ltd.: *See*—
Francavilla, Antonio T.; Hagiya, Michio; and Starzl, Thomas E., 5,550,037, Cl. 435-69.100.
Toyoda, Ichihiko: *See*—
Hirano, Makoto; Asai, Kazuyoshi; Imai, Yuhki; Tokumitsu, Masami; Tokumitsu, Tsuneo; and Toyoda, Ichihiko, 5,550,068, Cl. 437-41.000.
Toyota Jidosha Kabushiki Kaisha: *See*—
Akiyama, Akira; Arakawa, Michio; Ogawa, Hisashi; and Kiessig, Hartmut M., 5,549,350, Cl. 296-204.000.
Nii, Yoshihide, 5,550,445, Cl. 318-153.000.
Trabandt, Hagen; and Ramcke, Uwe, to Continental Aktiengesellschaft. Vehicle tire with wiper rib member. 5,549,146, Cl. 152-154.200.
Trachtenberg, Elizabeth A., to Hoffmann-La Roche Inc. Oligonucleotide primers for HLA class I B locus DNA typing. 5,550,039, Cl. 435-91.200.
Träger, Michael; Wirobski, Reinhard; and Leven, Thomas, to Huels Aktiengesellschaft. Process for the production of foam beads. 5,550,170, Cl. 521-143.000.
Trainor, Diane A.: *See*—
Jacobs, Robert T.; Ohnmacht, Cyrus J.; and Trainor, Diane A., 5,550,136, Cl. 514-322.000.
Trainor, Jack: *See*—
Bellin, Michael; Laplace, Carl J.; and Trainor, Jack, 5,550,460, Cl. 323-255.000.
Tran, Hiep V., to Texas Instruments Incorporated. High speed, low power clocking sense amplifier. 5,550,777, Cl. 365-205.000.
Tran, My; and Rasinski, John E., to Honeywell Inc. Integrated aircraft survivability equipment in-flight simulation. 5,549,477, Cl. 434-5.000.
Tran, Nghia, to Altera Corporation. EEPROM verification circuit with PMOS transistors. 5,550,842, Cl. 371-21.400.
Tranin, Frédéric, to Societe d'Exploitation des Machines Dubuit. Numerically controlled printing machine with rectilinear print line. 5,549,043, Cl. 101-126.000.
Traub, Karl, to Siemens Aktiengesellschaft. Method for dynamic testing of digital logic circuits. 5,550,845, Cl. 371-27.000.
Trauernicht, David P.: *See*—
Smith, Kyle E.; Bringley, Joseph F.; Lambert, Patrick M.; Trauernicht, David P.; Bryan, Philip S.; Hoderlein, Paul M.; and Hyde, Andrea M., 5,549,843, Cl. 252-301.40H.
Trentino, Salvatore J. Phase inverter selection apparatus for tone alteration in a tube-type audio amplifier. 5,550,508, Cl. 330-59.000.
Trentino, Salvatore J. Output power selection apparatus for a tube-type audio amplifier. 5,550,509, Cl. 330-127.000.
Trethewey, Brig E. A. Bundling strap. 5,548,871, Cl. 24-16.00R.
Trichromatic Carpet Inc.: *See*—
Elgarhy, Yassin M.; and Knowlton, Barry R., 5,549,963, Cl. 428-224.000.
Trimble, Russell L.: *See*—

Gruenke, Roger A.; and Trimble, Russell L., 5,549,106, Cl. 128-204.230.
Tripp, Gregory A.; and Michaluk, Mitchell W., III. Food covering device for use with a microwave oven. 5,550,356, Cl. 219-734.000.
Tristrata, Inc.: *See*—
Yu, Ruey J.; and Van Scott, Eugene J., 5,550,154, Cl. 514-473.000.
Yu, Ruey J.; and Van Scott, Eugene J., 5,550,158, Cl. 514-557.000.
Trofast, Eva A.; Wetterlin, Kjell I. L.; and Virtanen, Risto K. V., to Astra Aktiebolag. Dosage inhalator with indicating/interrupting means. 5,549,101, Cl. 128-203.150.
Trokhan, Paul D.; and Phan, Dean V., to Procter & Gamble Company, The. Process of making absorbent structures and absorbent structures produced thereby. 5,549,928, Cl. 427-265.000.
Trottier, Sylvain: *See*—
Dubé, Ghyslain; Dupuis, Claude; Langlais, Joseph; Lavoie, Serge; Rompre, Stephane; Trottier, Sylvain; and Turcotte, Gilles, 5,549,732, Cl. 75-331.000.
Trottmann, Martin, to Ciba-Geigy Corporation. Azo dyes. 5,550,217, Cl. 534-732.000.
Troy, Stanton E.: *See*—
Cavallaro, Eric S.; Adams, Jay J.; Troy, Stanton E.; and Daugherty, James R., 5,549,486, Cl. 439-500.000.
Truchet, Georges: *See*—
Lerouge, Patrice; Roche, Philippe; Faucher, Catherine; Maillet, Fabienne; Denarie, Jean; Promé, Jean-Claude; and Truchet, Georges, 5,549,718, Cl. 47-57.600.
Truman, Mari S.: *See*—
Hollister, Anne; Truman, Mari S.; Bodell, Leonard; and Focht, Louise, 5,549,690, Cl. 623-21.000.
Trumpf, Rudolf; and Jost, Hans, to Ing. A. Maurer SA. Filter apparatus including stacked intake and discharge plates. 5,549,824, Cl. 210-323.100.
TRW Inc.: *See*—
Kobayashi, Kevin W., 5,550,520, Cl. 333-213.000.
Noneman, Mark E.; and Porter, Donald A., 5,550,546, Cl. 342-13.000.
TRW Vehicle Safety Systems Inc.: *See*—
Gray, Mark F., 5,549,356, Cl. 297-256.150.
Rodriguez Ramos, Jose L., 5,549,326, Cl. 280-743.100.
Trybulski, Eugene J.; Kramss, Richard H.; and Brabander, Herbert J., to American Cyanamid Company. Substituted oxotremorine derivatives. 5,550,257, Cl. 548-550.000.
Tsang, Chih-Hao M.: *See*—
Dai, Pei-Shing E.; Tsang, Chih-Hao M.; Neff, Laurence D.; and Petty, Randall H., 5,549,813, Cl. 208-120.000.
Tsao, Ye-Ming. Overlap sound case. 5,550,926, Cl. 381-188.000.
Tsay, Chean-Lung: *See*—
Kwan, Khang-Shen; Tsay, Chean-Lung; and Wu, Li-Ming, 5,550,498, Cl. 327-175.000.
Tseng, Horng-Huei; and Lu, Chih-Yuan, to Vanguard International Semiconductor Corporation. DRAM cell with a comb-type capacitor. 5,550,077, Cl. 437-52.000.
Tsuboi, Yukitoshi; Oku, Masuo; Takahashi, Masaru; and Ichige, Kenji, to Hitachi, Ltd. Digital video signal recording and reproducing apparatus and method for setting a number of compression blocks according to different operational modes. 5,550,640, Cl. 358-335.000.
Tsuchiya, Tohru: *See*—
Taguchi, Yoichi; Oishi, Akihiro; Shibuya, Isao; and Tsuchiya, Tohru, 5,550,230, Cl. 540-203.000.
Tsuchiya, Toru: *See*—
Iwasaki, Tomonori; Suzuki, Masaya; Furukawa, Takashi; Tsushima, Kazunori; Ishiwatari, Takao; and Tsuchiya, Toru, 5,550,258, Cl. 549-78.000.
Tsuda, Kazuhiko; Shinomiya, Tokihiko; and Yamagishi, Shinji, to Sharp Kabushiki Kaisha. Liquid crystal display device. 5,550,664, Cl. 359-102.000.
Tsuji, Hiroshi: *See*—
Kiyama, Tadahiro; Mase, Hisao; Tsuji, Hiroshi; and Kinukawa, Hiroshi, 5,551,036, Cl. 395-700.000.
Tsuji, Kiyoshi: *See*—
Matsuo, Masaaki; Tsuji, Kiyoshi; Ogino, Takashi; and Konishi, Nobukiyo, 5,550,147, Cl. 514-406.000.
Tsujimura, Tetsuzo: *See*—
Inoue, Tadashi; and Tsujimura, Tetsuzo, 5,549,739, Cl. 106-15.050.
Tsukada, Satoshi: *See*—
Witte, Owen; Tsukada, Satoshi; Saffran, Douglas; and Rawlings, David, 5,550,054, Cl. 435-240.200.
Tsukamoto, Masahide: *See*—
Kumitomo, Yoshinobu; Nozu, Makoto; Sakashita, Yasuyuki; Tsukamoto, Masahide; Nakatani, Seichi; Saeki, Keiji; and Kitayama, Yoshifumi, 5,550,408, Cl. 257-737.000.
Tsukamoto, Osamu: *See*—
Matsuura, Hitoshi; and Tsukamoto, Osamu, 5,550,330, Cl. 178-18.000.
Tsumura, Soichi, to NEC Corporation. DQPSK demodulator capable of improving a symbol error rate without decreasing a transmission rate. 5,550,506, Cl. 329-304.000.
Tsunemi, Hidenari; and Nakata, Toshinobu, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Bifunctional aromatic cyanates, prepolymers and electrical laminates made therefrom. 5,550,282, Cl. 560-301.000.
Tsunoda, Masaki; Kuwabara, Shigeaki; and Shidara, Sadafumi, to Honda Giken Kogyo Kabushiki Kaisha. 4-cycle engine and magnetic sensor. 5,549,091, Cl. 123-476.000.
Tsushima, Kazunori; Iwasaki, Tomonori; Suzuki, Masaya; and Matsuo, Noritada, to Sumitomo Chemical Company, Limited. Process for the production of a cyclopentenol derivative. 5,550,260, Cl. 549-421.000.
Tsushima, Kazunori: *See*—
Iwasaki, Tomonori; Suzuki, Masaya; Furukawa, Takashi; Tsushima, Kazunori; Ishiwatari, Takao; and Tsuchiya, Toru, 5,550,258, Cl. 549-78.000.
Tsutai, Akihiko; Hirai, Takahiro; and Sakurada, Shinya, to Kabushiki Kaisha Toshiba. Magnetic material. 5,549,766, Cl. 148-301.000.
Tsutsumi, Kazuhito, to Mitsubishi Denki Kabushiki Kaisha. Vertical field effect transistor with a trench structure. 5,550,396, Cl. 257-330.000.
Tsutsumi, Shigehisa: *See*—
Aoki, Hidenao; Tsutsumi, Shigehisa; Fukushima, Takehiro; and Sakai, Zenji, 5,549,005, Cl. 73-663.000.
Tsuyuguchi, Hiroshi: *See*—
Sugeta, Naoki; and Tsuyuguchi, Hiroshi, 5,550,447, Cl. 318-439.000.
Tsuzuki, Yasuaki: *See*—
Kuroyanagi, Akira; Tomatsu, Yutaka; and Tsuzuki, Yasuaki, 5,550,067, Cl. 437-41.000.
Tu, Roger: *See*—
Hata, Cary; Tu, Roger; Sung, Hsing-Wen; and Shen, Shih-Hwa, 5,549,666, Cl. 623-2.000.
Tuba, Zoltán: *See*—
Mahó, Sándor; Tuba, Zoltán; Sánta, Csaba; Balogh, Gábor; Czajlikné Csizér, Éva; Lovasné Marsai, Mária; and Gálik, György, 5,550,240, Cl. 544-295.000.
Tuggle, Christopher K.: *See*—
Rothschild, Max F.; Tuggle, Christopher K.; Jacobson, Carol D.; Vaske, David A.; Mileham, Alan J.; and Plastow, Graham S., 5,550,024, Cl. 435-6.000.
Tukuda, Kouji: *See*—
Nakako, Toru; Tanimura, Hideki; and Tukuda, Kouji, 5,549,016, Cl. 74-490.020.
Tulane Educational Fund, The Administrators of the: *See*—
Zarandi, Marta; and Schally, Andrew V., 5,550,212, Cl. 530-324.000.
Tunis, Scott W. Apparatus for folding flexible intraocular lenses. 5,549,614, Cl. 606-107.000.
Tupolev AG: *See*—
Luger, Peter; Grafwallner, Franz; Peller, Helmuth; Müller, Martin; Malyshev, Valentin V.; Galperin, Sergey B.; and Logviniouk, Viacheslav P., 5,548,961, Cl. 62-47.100.
Luger, Peter; Grafwalliner, Franz; Peller, Helmuth; Müller, Martin; Malyshev, Valentin V.; Logviniouk, Viacheslav P.; Ozeretskovsky, Vladmimir S.; and Shengardt, Alexander S., 5,548,962, Cl. 62-50.100.
Turbett, James: *See*—
Cowan, Kevin; Eimer, John; and Turbett, James, 5,549,200, Cl. 206-362.000.
Turchan, Manuel C. Adiabatic transfer device for an dry diamond milling system. 5,549,190, Cl. 198-403.000.
Turcotte, Gilles: *See*—
Dubé, Ghyslain; Dupuis, Claude; Langlais, Joseph; Lavoie, Serge; Rompre, Stephane; Trottier, Sylvain; and Turcotte, Gilles, 5,549,732, Cl. 75-331.000.
Tutt, James R., to Cadence Environmental Energy, Inc.; and Ash Grove Cement Company. Method and apparatus for charging a bulk material supplemental fuel into a long cement kiln. 5,549,058, Cl. 110-226.000.
Twix Equipment AG: *See*—
Zeller, Mathias, 5,550,444, Cl. 318-139.000.
Twyman, Diana: *See*—
Mark, David A.; Twyman, Diana; and Buckley, Donna, 5,549,905, Cl. 424-439.000.
Tyler, Monroe: *See*—
Crandall, F. Anthony; Jorgensen, Kevin V.; Grose, Brian L.; and Tyler, Monroe, 5,550,792, Cl. 367-155.000.
Tynan, Joseph. Electrical outlet box. 5,550,322, Cl. 174-48.000.
U S West Technologies, Inc.: *See*—
Brunner, Hans; McCandless, Timothy P.; Sparks, Randall B.; Cuthbertson, Robert J.; Durand, Jacques; and Fogel, Steven M., 5,550,971, Cl. 395-161.000.
UBE Industries, Ltd.: *See*—
Hirata, Yoshimi; Kaneko, Noriaki; Moriwaki, Masahiro; and Oura, Kanetake, 5,549,664, Cl. 623-1.000.
UCAR Carbon Technology Corporation: *See*—
Lewis, Irwin C.; Pirro, Terrence A.; Greinke, Ronald A.; Bretz, Richard I.; and Kampe, Dennis J., 5,550,176, Cl. 524-6.000.
Uchida, Haruo: *See*—
Kurata, Mitsuru; Kanemitsu, Shinji; Nomura, Akihiro; Ebata, Tokihide; Takeda, Akio; Miyauchi, Yasuo; Uchida, Haruo; and Onoda, Shigeyoshi, 5,550,570, Cl. 347-49.000.
Uchida, Kazuya, to Lube Corporation. Lubricating method and apparatus for a circular knitting machine. 5,548,977, Cl. 66-8.000.
Uchida, Maki: *See*—
Mizuta, Yasufumi; Tanaka, Masashi; Muto, Nariaki; Fukami, Toshiyuki; Nakamori, Hideo; Kakui, Mikio; Saito, Sakae; Shiomi, Hiroshi; Sumida, Keisuke; and Uchida, Maki, 5,550,290, Cl. 564-309.000.
Uchikawa, Akira, to Unisia Jecs Corporation. Apparatus and method for diagnosing occurrence of failure in variable valve timing control system for internal combustion engine. 5,549,080, Cl. 123-90.160.
Ueda, Makoto: *See*—
Pennington, Artie; and Ueda, Makoto, 5,550,974, Cl. 395-183.180.

JU 1189 4 AG 27 1996 UMI

Ueda, Takahisa, to Nippon Pillar Packing Co., Ltd. Knitting yarn for gland packing and gland packing made of said knitting yarn. 5,549,306, Cl. 277-230.000.
Ueda, Toshihiro: *See—*
Fukuda, Misao; Hayami, Yoshihiro; Ueda, Toshihiro; and Iwaki, Shoichi, 5,549,510, Cl. 451-246.000.
Uematsu, Takao; Shoji, Mitsuyoshi; Nakakawaji, Takayuki; Komatsuzaki, Shigeki; Ito, Yutaka; Morihara, Atsushi; Sato, Koji; Zushi, Shizuo; and Go, Hiroshi, to Hitachi, Ltd. Apparatus equipped with a cooling block unit having sliding parts and a compound used to the same. 5,549,835, Cl. 508-204.000.
Ueno, Ryuzo; Fujita, Yatsuka; Nagamura, Yoshiaki; Kamino, Yuji; and Tabata, Akihiko, to Kabushiki Kaisha Ueno Seiyaku Oyo Kenkyujo. Preservation of foods by the combined action of a natural antimocrobial agent and separately packaged deoxidizing agent. 5,549,919, Cl. 426-335.000.
Ueno, Takeshi: *See—*
Ohshima, Katsuyuki; Ueno, Takeshi; Yamauchi, Mineo; and Kita, Tatsuya, 5,550,099, Cl. 503-227.000.
Ueno, Yasunori, to Nikon Corporation. Ophthalmic lens having a negative refractive power. 5,550,600, Cl. 351-159.000.
Ueyama, Toshinari; and Nagagata, Nobuyoshi, to Matsushita Electric Industrial Co., Ltd. Horizontal deflection circuit. 5,550,442, Cl. 315-371.000.
Uherek, Brain: *See—*
Uherek, Robert J., Sr.; Uherek, Paul J.; and Uherek, Brain, 5,549,333, Cl. 285-45.000.
Uherek, Paul J.: *See—*
Uherek, Robert J., Sr.; Uherek, Paul J.; and Uherek, Brain, 5,549,333, Cl. 285-45.000.
Uherek, Robert J., Sr.; Uherek, Paul J.; and Uherek, Brain. Blast joint. 5,549,333, Cl. 285-45.000.
Uhing, Ronald J.: *See—*
Benson, Bradley J.; Chen, Xiannong; Cianciolo, George J.; Diaz, Jose-Luis; Ishaq, Khalid S.; Morris-Natschke, Susan L.; Uhing, Ronald J.; and Wong, Henry, 5,550,132, Cl. 514-269.000.
Ullman, Allan. Apparatus and method for retrofitting incandescent lighting fixtures. 5,550,723, Cl. 362-260.000.
Ulrich, Ernst G.: *See—*
Razdan, Rahul; Bischoff, Gabriel; and Ulrich, Ernst G., 5,550,760, Cl. 364-578.000.
Ultra-Mek Corporation: *See—*
Hoffman, D. Stephen, 5,549,052, Cl. 108-139.000.
Umber, Ray: *See—*
Scott, Tony D.; Umber, Ray; and Vaughn, William J., 5,549,634, Cl. 606-170.000.
Umeda, Atsushi: *See—*
Kusase, Shin; Mitani, Kenzo; Umeda, Atsushi; and Sato, Hirohide, 5,550,457, Cl. 322-29.000.
Umehara, Yasutoshi: *See—*
Wakana, Shinichi; Ozaki, Kazuyuki; Goto, Yoshiro; and Umehara, Yasutoshi, 5,550,479, Cl. 324-750.000.
Ünal, Nezih: *See—*
Peters, Ralf-Peter; Rogner, Arnd; Ünal, Nezih; Heinrich, Lothar; Landwehr, Dierk; and Heyde, Wolfgang A. D., 5,550,375, Cl. 250-343.000.
Under Sea Industries, Inc.: *See—*
Garraffe, Dean R.; and Toth, Douglas J., 5,549,107, Cl. 128-204.260.
Underwood, Christopher J.: *See—*
Charlesworth, David; Underwood, Christopher J.; and Chian, Kerm S., 5,549,860, Cl. 264-139.000.
Uniden America Corporation: *See—*
Nakano, Yasuyoshi; and Harada, Seiji, 5,551,071, Cl. 455-161.200.
Uniden Corp.: *See—*
Nakano, Yasuyoshi; and Harada, Seiji, 5,551,071, Cl. 455-161.200.
Unilever Patent Holdings, B.V.: *See—*
Musters, Wouter; Stam, Hein; Suykerbuyk, Maria E.; Visser, Jacob; and Verbakel, Johannes M., 5,550,045, Cl. 435-201.000.
Unimetal Societe Francaise des Aciers Longs: *See—*
Rizet, Laurent; and Charpentier, Pierre E., 5,549,811, Cl. 205-602.000.
Uniroyal Chemical Ltd./ Uniroyal Chemical Ltee: *See—*
Dao-Cong, Dong; and Harrison, William A., 5,550,280, Cl. 558-415.000.
Uniroyal Englebert Reifen GmbH: *See—*
Kuhr, Wolfgang; and Zinnen, Nobert, 5,549,147, Cl. 152-209.00R.
Unisia Jecs Corporation: *See—*
Imamura, Masamichi, 5,549,093, Cl. 123-481.000.
Tomisawa, Naoki, 5,549,094, Cl. 123-520.000.
Uchikawa, Akira, 5,549,080, Cl. 123-90.160.
Unisplay S.A.: *See—*
Salam, Hassan Paddy A., 5,550,558, Cl. 345-111.000.
Unisys Corporation: *See—*
Bennett, Donald B., 5,550,875, Cl. 375-356.000.
United Microelectronics Corporation: *See—*
Hong, Cary, 5,550,073, Cl. 437-43.000.
Hsu, Chen-Chung; and Hong, Gary, 5,550,075, Cl. 437-48.000.
Lin, Jengping, 5,550,074, Cl. 437-44.000.
Yang, Sheng-Hsing, 5,550,064, Cl. 437-34.000.
United Parcel Service of America, Inc.: *See—*
Klancnik, Mihael; and Figarella, Luis, 5,550,365, Cl. 235-462.000.
United States of America
Agriculture: *See—*
Atalla, Rajai H.; Weinstock, Ira A.; Hill, Craig L.; and Reiner, Richard S., 5,549,789, Cl. 162-65.000.
Chrastil, Joseph, 5,550,630, Cl. 356-300.000.
Fanta, George F.; and Christianson, Donald D., 5,550,177, Cl. 524-47.000.
Air Force: *See—*
Barker, Robert J., 5,550,432, Cl. 315-5.000.
Commerce: *See—*
Drescher-Krasicka, Ewa, 5,549,003, Cl. 73-606.000.
Energy: *See—*
Hagans, Karla; Berzins, Leon; Galkowski, Joseph; and Seng, Rita, 5,550,636, Cl. 356-437.000.
Hallett, Brian H.; and Hartley, Michael S., 5,548,992, Cl. 73-49.200.
Environmental Protection Agency: *See—*
Gray, Charles L., Jr.; and Hellman, Karl H., 5,549,087, Cl. 123-254.000.
Health and Human Services: *See—*
Levenbook, Inessa; Chumakov, Konstantin; Powers, Laurie; and Roninson, Igor, 5,550,018, Cl. 435-5.000.
Weinberger, Daniel R.; Lipska, Barbara K.; and Jaskiw, George E., 5,549,884, Cl. 424-9.200.
National Aeronautics and Space Administration: *See—*
Oeftering, Richard C.; and Smith, Floyd A., 5,549,237, Cl. 228-116.000.
Seraji, Homayoun, 5,550,953, Cl. 395-98.000.
Navy: *See—*
Bond, James W.; and Schlosset, Thomas W., 5,550,759, Cl. 364-574.000.
Cipolla, Jeffrey L.; and Waclawik, Ronald E., 5,549,065, Cl. 114-23.000.
Licht, Stuart L.; and Marsh, Catherine L., 5,549,991, Cl. 429-218.000.
Peloquin, Mark S., 5,550,791, Cl. 367-153.000.
Silverstien, Abraham, 5,550,789, Cl. 367-94.000.
Woodall, Roger L., 5,550,951, Cl. 395-21.000.
Yoder, Max N., 5,550,425, Cl. 313-141.000.
U.S. Philips Corporation: *See—*
Bouwman, Lambertus J. M.; Hermes, Guillaume M. P. G.; and Janson, Cornellis J., 5,550,722, Cl. 362-221.000.
Bukoschek, Romuald L.; Prandl, Reinhard; and Sonnek, Martin, 5,549,042, Cl. 99-455.000.
Caux, Christian; and Gamand, Patrice, 5,551,075, Cl. 455-333.000.
Gartner, Georg, 5,549,937, Cl. 427-576.000.
Horl, Manfred, 5,550,507, Cl. 329-361.000.
Monogioudis, Pantelis N.; and Edmonds, John M., 5,550,810, Cl. 370-18.000.
Neitzel, Ulrich; Maack, Hanss-Ingo; and Pralow, Thomas, 5,550,888, Cl. 378-98.700.
Philips, Norbert J. L., 5,550,812, Cl. 370-19.000.
Reijnaerts, Jozef H., 5,550,438, Cl. 315-219.000.
Rouet, Pascal; and Delvart, Bernard, 5,550,523, Cl. 336-221.000.
Woerlee, Pierre H.; and Hart, Cornelis M., 5,550,773, Cl. 365-185.230.
U.S. Phillips Corporation: *See—*
Dekkers, Bernadus H. J.; DeMan, Ronald J. J.; Bolder, Antonius J. J.; and Sluyterman, Albertus A. S., 5,550,522, Cl. 335-213.000.
United States Surgical Corporation: *See—*
Green, David T.; Sienkiewicz, Henry R.; Ratcliff, Keith; Castro, Salvatore; and Manzo, Scott E., 5,549,617, Cl. 606-144.000.
Liu, Cheng-Kung; and Brewer, John C., 5,549,907, Cl. 424-443.000.
United Technolgies Corporation: *See—*
Langston, Todd A., 5,549,448, Cl. 415-149.400.
United Technologies Corporation: *See—*
Anneser, Douglas L., 5,550,412, Cl. 307-125.000.
Pietruska, Norman; and Kurpaska, S. Michael, 5,549,767, Cl. 148-512.000.
Univeristy of California, The Regents of the: *See—*
Mori, Kinji; Orimo, Masayuki; Kasashima, Hirokazu; and Kim, K. H., 5,551,047, Cl. 395-800.000.
University California, The Regents of the: *See—*
Bolton, Richard D.; and MacArthur, Duncan W., 5,550,381, Cl. 250-380.000.
University of Akron, The: *See—*
Smith, Daniel J.; and Chakravarthy, Debashish, 5,549,908, Cl. 424-444.000.
University of Alaska: *See—*
Choudhury, Gour S., 5,549,920, Cl. 426-516.000.
University of California, Regents of the: *See—*
Blum, Kenneth; Noble, Ernest P.; and Sheridan, Peter J., 5,550,021, Cl. 435-6.000.
Katsevich, Alexander J.; and Ramm, Alexander G., 5,550,892, Cl. 378-210.000.
Szoka, Francis C., Jr., 5,549,910, Cl. 424-450.000.
Witte, Owen; Tsukada, Satoshi; Saffran, Douglas; and Rawlings, David, 5,550,054, Cl. 435-240.200.
University of Chicago: *See—*
Todt, Volker R.; Sengupta, Suvankar; and Shi, Donglu, 5,549,748, Cl. 117-53.000.
University of Connecticut, The: *See—*
Bell, James P.; Iroh, Jude O.; Scola, Daniel A.; and Liang, Jengli, 5,549,807, Cl. 205-50.000.
University of Florida: *See—*
Simpkins, James W.; and Bishop, Jean, 5,550,029, Cl. 435-14.000.

Thomas, William C., Jr.; Batich, Christopher D.; and Purich, Daniel L., 5,550,259, Cl. 549-274.000.
University of Florida Research Foundation, Inc.: *See—*
Bergeron, Raymond J., 5,550,144, Cl. 514-374.000.
University of Houston System, The: *See—*
Wolfe, John C.; and Zagozdzon-Wosik, Wanda, 5,550,082, Cl. 437-168.000.
University of Massachusetts: *See—*
Mulder, Carel, 5,550,047, Cl. 435-238.000.
University of Michigan, The Regents of The: *See—*
Humes, H. David; and Cieslinski, Deborah A., 5,549,674, Cl. 623-11.000.
University of Nebraska, The Board of Regents of the: *See—*
Middendorf, Lyle R.; Brumbaugh, John A.; and Jang, Gi Y., 5,549,805, Cl. 204-461.000.
University of New Mexico: *See—*
Cheng, Julian, 5,550,856, Cl. 372-50.000.
University of North Carolina: *See—*
Benson, Bradley J.; Chen, Xiannong; Cianciolo, George J.; Diaz, Jose-Luis; Ishaq, Khalid S.; Morris-Natschke, Susan L.; Uhing, Ronald J.; and Wong, Henry, 5,550,132, Cl. 514-269.000.
University of Pennsylvania, The Trustees of the: *See—*
Hirschmann, Ralph; Leahy, Ellen; and Sprengeler, Paul, 5,550,251, Cl. 548-312.100.
University of Pittsburgh: *See—*
Francavilla, Antonio T.; Hagiya, Michio; and Starzl, Thomas E., 5,550,037, Cl. 435-69.100.
University of Rochester: *See—*
Corio, Mark A.; and Leary, James F., 5,550,058, Cl. 436-63.000.
University of Southern California: *See—*
Gee, Kelvin W., 5,550,124, Cl. 514-221.000.
University of Texas System, The Board of Regents of The: *See—*
Sambrook, Joseph F.; Madison, Edwin L.; Goldsmith, Elizabeth J.; Gething, Maryjane H.; and Gerard, Robert D., 5,550,042, Cl. 435-172.100.
University Technologies International, Inc.: *See—*
Olson, Merle E.; Ceri, Howard; and Morck, Douglas W., 5,549,899, Cl. 424-269.100.
UOP: *See—*
Zinke, Randy J., 5,549,814, Cl. 208-150.000.
Urbach, Hansjörg; Henning, Rainer; and Hertzsch, Winfried, to Hoechst Aktiengesellschaft. Cis, endo-2-azabicycloalkane-3-carboxylic acid derivatives. 5,550,255, Cl. 548-452.000.
Urban, Paul L., to Cooper Industries, Inc. Surface mount device removal tool. 5,549,240, Cl. 228-264.000.
Urbanski, Mark G.: *See—*
Olson, Carlton D.; and Urbanski, Mark G., 5,549,607, Cl. 606-61.000.
Urbansky, Ralph, to Lucent Technologies Inc. Measuring device for a synchronous transmission system. 5,550,876, Cl. 375-371.000.
Urech, Werner: *See—*
Meier, Markus; Urech, Werner; and Wueger, Karl, 5,550,345, Cl. 219-121.630.
Usher, John D.: *See—*
Kings, Donald H. M.; Sommers, Robin A.; and Usher, John D., 5,549,280, Cl. 266-78.000.
Ushio U-Tech Inc.: *See—*
Hiromachi, Yoshio; and Kawahara, Tsunehisa, 5,550,726, Cl. 362-383.000.
Ushio, Yukihide: *See—*
Serizawa, Yoji; and Ushio, Yukihide, 5,550,573, Cl. 347-246.000.
Utsumi, Minoru: *See—*
Takano, Atsushi; Utsumi, Minoru; and Obata, Hiroyuki, 5,550,370, Cl. 250-225.000.
Utzt, Alfred: *See—*
Mayr-Fröhlich, Mathias; and Utzt, Alfred, 5,549,364, Cl. 303-9.690.
Vacca, Frédéric, to Valeo Systemes D'Essuyage. Windshield wiper device having an angle damper, in particular for a motor vehicle. 5,549,286, Cl. 267-154.000.
Vacco, Dominick: *See—*
Bober, Thomas W.; Pearl, Terry W.; Vacco, Dominick; and Yeaw, David C., 5,549,820, Cl. 210-199.000.
Vähäpesola, Jari: *See—*
Niskanen, Juhani; and Vähäpesola, Jari, 5,549,154, Cl. 165-89.000.
Vail, Donald R. Method for fabricating a one piece coved backsplash. 5,549,862, Cl. 264-238.000.
Vairavan, Vairavan: *See—*
Pascucci, Gregory A.; Rasmussen, David E.; Decious, Gaylon M.; Garbe, James R.; Hyzer, Susan M.; Woest, Karen L.; Vairavan, Vairavan; Koch, David L.; Gottschalk, Donald A., Jr.; Burkhardt, Dennis E.; Standish, Darrell E.; Madaus, Paul W.; Spacek, Dan J.; Nesler, Clay G.; Stark, James K.; Mageland, Otto M.; Singers, Robert R.; and Wagner, Michael E., 5,550,980, Cl. 395-200.050.
Valea, Norberto: *See—*
Figueiredo, Pedro; Verdon, Larry; and Valea, Norberto, 5,549,148, Cl. 160-183.000.
Valenite Inc.: *See—*
Bernadic, Thomas; and Wayne, Steven F., 5,549,424, Cl. 407-100.000.
Bernadic, Thomas; Lowe, Tony; and Patterson, John, 5,549,425, Cl. 407-114.000.
Valentian, Dominique, to Societe Europeenne de Propulsion. Loader device for an automatic space furnace. 5,549,473, Cl. 432-239.000.
Valentino, Frank C.: *See—*
Petrillo, Michael J.; Cooke, Steven E.; and Valentino, Frank C., 5,550,377, Cl. 250-363.090.
Valeo Electronique: *See—*
Rydel, Charles, 5,550,545, Cl. 341-176.000.
Valeo Systemes D'Essuyage: *See—*
Vacca, Frédéric, 5,549,286, Cl. 267-154.000.
Valmet Corporation: *See—*
Niskanen, Juhani; and Vähäpesola, Jari, 5,549,154, Cl. 165-89.000.
Valpey, Richard S., III; Shalati, Mohamad D.; Harris, Rodney M.; and Yokoyama, Thomas W., to Sherwin-Williams Company, The. Hydrogenated polymers having anhydride functionality. 5,550,197, Cl. 525-327.400.
Van, Nga T.: *See—*
Mirigian, Gregory E.; and Van, Nga T., 5,549,624, Cl. 606-191.000.
Van Brakel, Ronaldus J.; Wardle, Frank P.; and Verburgh, Martin, to SKF Industrial Trading & Development Company B.V. Bearing arrangement, roller bearings for use therein, and a method for the manufacture of a part of the bearing arrangement. 5,549,398, Cl. 384-571.000.
Van Daele, Georges H. P.: *See—*
Janssen, Marcel A. C.; Van Daele, Georges H. P.; Bosmans, Jean-Paul R. M. A.; Verdonck, Marc G. C.; and Janssen, Paul A. J., 5,550,135, Cl. 514-313.000.
van den Nieuwelaar, Adrianus J.; Janssen, Petrus C. M.; Teurlinx, Engelbert J. J.; van Harskamp, Cornelius D.; and Drabbels, Bastiaan W. J. E. J., to Stork PMT B.V. Method and device for processing a cluster of organs from a slaughtered animal. 5,549,521, Cl. 452-118.000.
Vandentop, Gilroy J.: *See—*
Carmody, Kevin F.; Charvat, Peter K.; and Vandentop, Gilroy J., 5,549,784, Cl. 156-643.100.
Van Der Ploeg, Leonardus H. T.; and Warmke, Jeffrey W., to Merck & Co., Inc. Process for identifying para cation channel modulators. 5,550,049, Cl. 435-240.100.
Van der Putten, Frank O.: *See—*
Verbiest, Willem J. A.; Voeten, Bart F.; Vermeulen, Christophe D. G.; Van der Putten, Frank O.; and Defoort, Frank C. M., 5,550,577, Cl. 348-7.000.
Vandersluis, Jay L.: *See—*
Mihalisin, John R.; Corrigan, John; Baker, Robert J.; Leonard, Eric L.; and Vandersluis, Jay L., 5,549,765, Cl. 148-428.000.
Van Der Straten-Ponthoz, Ariane A.: *See—*
Johansen, Hanne R.; Van Der Straten-Ponthoz, Ariane A.; and Rosenberg, Martin, 5,550,043, Cl. 435-172.300.
Van de Wijdeven, Gijsbertus G. P. Apparatus and method for injecting a pharmaceutical preparation in solid form. 5,549,560, Cl. 604-130.000.
Van Dyk, Daniel R.: *See—*
Berndt, Curtis G.; Van Dyk, Daniel R.; Van Dyk, David A.; Deer, Steven C.; and Kent, Royal A., 5,549,488, Cl. 439-680.000.
Van Dyk, David A.: *See—*
Berndt, Curtis G.; Van Dyk, Daniel R.; Van Dyk, David A.; Deer, Steven C.; and Kent, Royal A., 5,549,488, Cl. 439-680.000.
van Gemert, Marijn: *See—*
Stoop, Gustaaf A. P.; van Gemert, Marijn; and van Zanten, Paul V., 5,549,647, Cl. 607-9.000.
Vanguard International Semiconductor Corp.: *See—*
Chen, Chung-Zen, 5,550,076, Cl. 437-52.000.
Sung, Janmye, 5,550,078, Cl. 437-52.000.
Tseng, Horng-Huei; and Lu, Chih-Yuan, 5,550,077, Cl. 437-52.000.
van Harskamp, Cornelius D.: *See—*
van den Nieuwelaar, Adrianus J.; Janssen, Petrus C. M.; Teurlinx, Engelbert J. J.; van Harskamp, Cornelius D.; and Drabbels, Bastiaan W. J. E. J., 5,549,521, Cl. 452-118.000.
Vanmaele, Luc, to Agfa-Gevaert, N. V. 2-Amino-imidazole derivatives. 5,550,252, Cl. 548-332.100.
Van Ness, Jeffrey: *See—*
West, Robert R.; Van Ness, Jeffrey; and Varming, Annemarie R., 5,550,148, Cl. 514-408.000.
Van Phan, Dean, to Procter & Gamble Company, The. Multi-region paper structures having a transition region interconnecting relatively thinner regions disposed at different elevations, and apparatus and process for making the same. 5,549,790, Cl. 162-109.000.
Van Scott, Eugene J.: *See—*
Yu, Ruey J.; and Van Scott, Eugene J., 5,550,154, Cl. 514-473.000.
Yu, Ruey J.; and Van Scott, Eugene J., 5,550,158, Cl. 514-557.000.
Van Vliembergen, Eduardus J. W.; Heemels, Robertus P. E. H.; Cremers, Louis M. G.; Hommersom, Frederik J.; and Gerritsen, Jan, to Oce-Nederland B.V. Apparatus and method for syntactic signal analysis. 5,550,934, Cl. 382-229.000.
van Woesik, Theodorus C. M.; Teurlings, Lucas G. C.; and Vermeulen, Willem S. J., to Whitaker Corporation, The. Fibre optic connector. 5,550,944, Cl. 385-73.000.
van Zanten, Paul V.: *See—*
Stoop, Gustaaf A. P.; van Gemert, Marijn; and van Zanten, Paul V., 5,549,647, Cl. 607-9.000.
van Zeijl, Marja: *See—*
Johann, Stephen V.; van Zeijl, Marja; and O'Hara, Bryan M., 5,550,221, Cl. 536-23.500.
Varadan, Rajan. Drive arrangement for progressing cavity pump. 5,549,464, Cl. 418-48.000.
Varadan, Rajan. Drive arrangement for progressing cavity pump. 5,549,465, Cl. 418-48.000.

VOL 1189 ISS 4 AG 27 1996 UMI

Varming, Annemarie R.: *See*—
West, Robert R.; Van Ness, Jeffrey; and Varming, Annemarie R., 5,550,148, Cl. 514-408.000.

Varrichione, Andy. Fishing line saver. 5,548,918, Cl. 43-25.000.

Vartanian, Haig: *See*—
Vosbikian, Peter; and Vartanian, Haig, 5,548,864, Cl. 15-257.700.

VascoMed Institut fur Kathetertechnologie GmbH: *See*—
Hocherl, Manfred; and Reinhardt, Jorg, 5,549,615, Cl. 606-108.000.

Vasilevsky, Alexander D.: *See*—
Weinberg, Tobias M.; Tennies, Lisa A.; and Vasilevsky, Alexander D., 5,551,039, Cl. 395-700.000.

Vaske, David A.: *See*—
Rothschild, Max F.; Tuggle, Christopher K.; Jacobson, Carol D.; Vaske, David A.; Mileham, Alan J.; and Plastow, Graham S., 5,550,024, Cl. 435-6.000.

Vaughan, David E. W.; and Strohmaier, Karl G., to Exxon Research and Engineering Company. Process for preparing a seeded high-silica zeolite having the faujasite topology. 5,549,881, Cl. 423-703.000.

Vaughn, William J.: *See*—
Scott, Tony D.; Umber, Ray; and Vaughn, William J., 5,549,634, Cl. 606-170.000.

VDM S.r.l.: *See*—
Pagani, Elio, 5,548,865, Cl. 15-262.000.

Vectra Technologies, Inc.: *See*—
Lehnert, Robert A.; Quinn, Robert D.; Sisley, Steven E.; and Thomas, Brandon D., 5,550,882, Cl. 376-272.000.

Vegega, Alexander M.; and Manissero, Claudio E., to FMC Corporation; and State University of N.Y., The Research Foundation of the. Method for controlling Dreissenidae mussels. 5,550,157, Cl. 514-557.000.

Vegh, Gabriel B.: *See*—
Samson, Gene; Vegh, Gabriel B.; Dickens, Duane; and Rettke, Herbert G., 5,549,109, Cl. 128-642.000.

Velamoor, Sesh; and Mesterton, Kai P., to Kistler-Morse Corporation. Acoustic transducer for level measurement in corrosive chemical environments. 5,550,790, Cl. 367-140.000.

Vella-Coleiro, George P., to Lucent Technologies Inc. Cellular base station transmit-receive system. 5,550,813, Cl. 370-24.000.

Vendoret Holding S.A.: *See*—
Merchel, Horst, 5,549,409, Cl. 403-306.000.

Vengsarkar, Ashish M.; and Walker, Kenneth L., to Lucent Technologies Inc. Optical tapping filters employing long period gratings. 5,550,940, Cl. 385-28.000.

Vengsarkar, Ashish M.: *See*—
Inniss, Daryl; Vengsarkar, Ashish M.; and Zhong, Qian, 5,550,948, Cl. 385-147.000.

Venkateshwaran, Srinivasan: *See*—
Ebert, Charles D.; Heiber, Werner; Good, William R.; and Venkateshwaran, Srinivasan, 5,549,909, Cl. 424-447.000.

Venkateswaran, Ananthanarayan, to Procter & Gamble. Aqueous topical anti-acne compositions of low pH. 5,549,888, Cl. 424-78.020.

Venne, Benoit: *See*—
Schreck, Zoltan; and Venne, Benoit, 5,550,379, Cl. 250-369.000.

Venot, Andre P.: *See*—
Kashem, Mohammed A.; Venot, Andre P.; and Smith, Richard, 5,550,155, Cl. 514-540.000.

Ventana Medical Systems, Inc.: *See*—
Zeheb, Ron; and Rodgers, Paula M., 5,549,848, Cl. 252-408.100.

Venture Lighting International, Inc.: *See*—
Sulcs, Juris; and Noe, Raymond J., 5,550,422, Cl. 313-25.000.

Venugopal, Ganesh; Reichert, Veronica R.; and Zhang, Jinshan, to Motorola, Inc. Polyurethane based electrolytes for electrochemical cells and electrochemical cells using same. 5,549,987, Cl. 429-188.000.

Venugopal, Ganesh: *See*—
Reichert, Veronica R.; Venugopal, Ganesh; and Eschbach, Florence O., 5,549,988, Cl. 429-192.000.

Vera, Bernard; and Pierron, Olivier, to Etablissements Proteor. System for assembling two components of a prosthesis in a plurality of adjustable positions. 5,549,710, Cl. 623-38.000.

Verbakel, Johannes M.: *See*—
Musters, Wouter; Stam, Hein; Suykerbuyk, Maria E.; Visser, Jacob; and Verbakel, Johannes M., 5,550,045, Cl. 435-201.000.

Verbiest, Willem J. A.; Voeten, Bart F.; Vermeulen, Christophe D. G.; Van der Putten, Frank O.; and Defoort, Frank C. M., to Alcatel N.V. Video on demand network, including a central video server and distributed video servers with random access read/write memories. 5,550,577, Cl. 348-7.000.

Verburgh, Martin: *See*—
Van Brakel, Ronaldus J.; Wardle, Frank P.; and Verburgh, Martin, 5,549,398, Cl. 384-571.000.

Verdon, Larry: *See*—
Figueiredo, Pedro; Verdon, Larry; and Valea, Norberto, 5,549,148, Cl. 160-183.000.

Verdonck, Marc G. C.: *See*—
Janssen, Marcel A. C.; Van Daele, Georges H. P.; Bosmans, Jean-Paul R. M. A.; Verdonck, Marc G. C.; and Janssen, Paul A. J., 5,550,135, Cl. 514-313.000.

Veregin, Richard P. N.: *See*—
Georges, Michael K.; Veregin, Richard P. N.; Kazmaier, Peter M.; and Hamer, Gordon K., 5,549,998, Cl. 430-109.000.

Vermehren, Jan, to Hoechst Schering AgrEvo GmbH. Process for the preparation of carboxyarenesulfonic acids and their carboxylic acid derivatives. 5,550,237, Cl. 544-159.000.

Vermeulen, Christophe D. G.: *See*—
Verbiest, Willem J. A.; Voeten, Bart F.; Vermeulen, Christophe D. G.; Van der Putten, Frank O.; and Defoort, Frank C. M., 5,550,577, Cl. 348-7.000.

Vermeulen, Willem S. J.: *See*—
van Woesik, Theodorus C. M.; Teurlings, Lucas G. C.; and Vermeulen, Willem S. J., 5,550,944, Cl. 385-73.000.

Vernier, Jean-Pierre; Perret, Marc; Garret, Didier; and Chappet, Philippe, to GEC Alsthon Transport SA. Control device and method for traction or braking. 5,549,365, Cl. 303-20.000.

Vernon, Geoffrey W.: *See*—
Fincham, Kevin R.; Seaward, David R.; Shirley, Graham L.; and Vernon, Geoffrey W., 5,548,947, Cl. 53-551.000.

Very Inventive Physicians, Inc.: *See*—
Bircoll, Mel, 5,549,625, Cl. 606-192.000.

Vesely, Ivan; Krucinski, Slawomir; Campbell, Gordon; Boughner, Derek; and Dokainish, Mohan, to London Health Association. Bioprostethic valve. 5,549,665, Cl. 623-2.000.

Vesuvius Crucible Company: *See*—
Kings, Donald H. M.; Sommers, Robin A.; and Usher, John D., 5,549,280, Cl. 266-78.000.

Viala, Jean-Claude: *See*—
Abiven, Henri; Picquet, Lionel; Claveyrolas, Gilles; Viala, Jean-Claude; and Bouix, Jean, 5,549,976, Cl. 428-608.000.

Vice, Michael W., to Watkins-Johnson Company. Balanced reflection transformer. 5,551,074, Cl. 455-326.000.

Vicik, Stephen J., to Viskase Corporation. Heat shrinkable nylon food casing with a polyolefin core layer. 5,549,943, Cl. 428-34.800.

Vickerman, David C.: *See*—
Corby, Nelson R., Jr.; Meenan, Peter M.; Solanas, Claude H., III; and Vickerman, David C., 5,550,758, Cl. 364-571.030.

Vickers Shipbuilding & Engineering Limited: *See*—
Cottrell, Peter R., 5,550,555, Cl. 343-878.000.

Vicogne, Laurent M.: *See*—
de Cambray, Elisabeth L. F. C.; and Vicogne, Laurent M., 5,548,954, Cl. 60-226.200.

Vidamed, Inc.: *See*—
Lundquist, Ingemar H.; Edwards, Stuart D.; Sharkey, Hugh R.; Lax, Ronald G.; Baker, James A., Jr.; and Sommer, Phillip R., 5,549,644, Cl. 604-22.000.

Videoptic Research: *See*—
McNelley, Steve; and Williams, Eric, 5,550,754, Cl. 364-514.00A.

Vieider, Christian: *See*—
Elderstig, Håkan; and Vieider, Christian, 5,550,943, Cl. 385-71.000.

Vigmo, Terje: *See*—
Ygge, Birgitta; and Vigmo, Terje, 5,549,593, Cl. 604-391.000.

Vigor, Xavier: *See*—
Marot, Christine; Petit, Pierre; and Vigor, Xavier, 5,549,733, Cl. 95-100.000.

Vilmi, Toivo: *See*—
Hulkko, Jaakko; Matero, Jorma; and Vilmi, Toivo, 5,551,067, Cl. 455-88.000.

Vinayak, Paranjape D.: *See*—
Dattatraya, Sathaye S.; Raghu, Patil K.; and Vinayak, Paranjape D., 5,549,931, Cl. 427-376.200.

Vincent, Charles-Henry: *See*—
Graindorge, Hervé; Mondet, Jean-Claude; and Vincent, Charles-Henry, 5,550,267, Cl. 556-144.000.

Vinci, Alfredo: *See*—
Winston, Anthony E.; Dunn, Steven E.; Cala, Francis R.; Vinci, Alfredo; Lajoie, M. Stephen; and Jorgensen, Robert C., 5,549,761, Cl. 134-40.000.

Vinci, Vincent A. Surgical arm support. 5,549,121, Cl. 128-878.000.

Virtanen, Risto K. V.: *See*—
Trofast, Eva A.; Wetterlin, Kjell I. L.; and Virtanen, Risto K. V., 5,549,101, Cl. 128-203.150.

Virtual Industries, Inc.: *See*—
Donaldson, Jeffrey E.; and Sullivan, Andrew J., 5,549,342, Cl. 294-77.000.

Visconte, Gary W.: *See*—
Fant, Alfred B.; Wang, Yongcai; Smith, Dennis E.; Kestner, Melvin M.; and Visconte, Gary W., 5,550,011, Cl. 430-496.000.

Vish, Ronald J.: *See*—
Hays, Greta J.; Kleeman, Michael W.; and Vish, Ronald J., 5,549,381, Cl. 366-139.000.

Visible Genetics Inc.: *See*—
Gallie, Brenda L.; Dunn, James M.; and Stevens, John K., 5,550,020, Cl. 435-6.000.

Viskase Corporation: *See*—
Vicik, Stephen J., 5,549,943, Cl. 428-34.800.

Visser, Jacob: *See*—
Musters, Wouter; Stam, Hein; Suykerbuyk, Maria E.; Visser, Jacob; and Verbakel, Johannes M., 5,550,045, Cl. 435-201.000.

Visx Incorporated: *See*—
Shimmick, John K.; and Munnerlyn, Charles R., 5,549,597, Cl. 606-5.000.

Vitatron Medical, B.V.: *See*—
Stoop, Gustaaf A. P.; van Gemert, Marijn; and van Zanten, Paul V., 5,549,647, Cl. 607-9.000.
Stoop, Gustaaf A. P., 5,549,648, Cl. 607-9.000.

VivoRx, Inc.: *See*—

Desai, Neil P.; Soon-Shiong, Patrick; Sandford, Paul A.; and Heintz, Roswitha E., 5,550,178, Cl. 524-56.000.

VLSI Technology, Inc.: *See*—
Waters, Michael R., 5,550,877, Cl. 375-372.000.

Voeten, Bart F.: *See*—
Verbiest, Willem J. A.; Voeten, Bart F.; Vermeulen, Christophe D. G.; Van der Putten, Frank O.; and Defoort, Frank C. M., 5,550,577, Cl. 348-7.000.

Vogel, Manfred: *See*—
Mixich, Johann; Rapp, Knut M.; and Vogel, Manfred, 5,550,227, Cl. 536-124.000.

Vogelstein, Bert: *See*—
Kinzler, Kenneth W.; and Vogelstein, Bert, 5,550,023, Cl. 435-7.100.

Vogt, Peter F.: *See*—
Preiser, Marvin F.; and Vogt, Peter F., 5,549,902, Cl. 424-405.000.

Vogt, Richard, to ZF Friedrichshafen AG. Double pump. 5,549,452, Cl. 417-199.100.

Vojnovic, Mirko: *See*—
Cooper, J. Carl; Wallen, David; Vojnovic, Mirko; and Loveless, Howard, 5,550,594, Cl. 348-513.000.

Vokoun, Richard C.: *See*—
King, Kenneth J.; Zawislak, Robert M.; and Vokoun, Richard C., 5,550,434, Cl. 315-160.000.

Volkonsky, Viktor A.; Dvukhsherstnov, Sergei D.; and Chernyakov, Sergei V., to Magnetic Delivered Therapeutics, Inc. Magnetically responsive composition for carrying biologically active substances and methods of production. 5,549,915, Cl. 424-490.000.

Volkswagen AG: *See*—
Pott, Ekkehard, 5,549,873, Cl. 422-180.000.

Voll, Robert; Berg, William C.; Sergent, Brad; and Stevens, Sam, to Mentor Graphics Corporation. Design data management system and associated method. 5,551,028, Cl. 395-600.000.

Vollrath, Douglas: *See*—
Chu, Gilbert; Vollrath, Douglas; and Davis, Ron, 5,549,796, Cl. 204-457.000.

Volvo Aero Corporation: *See*—
Larker, Hans; Lundberg, Robert; Mattsson, Bertil; Nilsson, Jan; and Pejryd, Lars, 5,549,770, Cl. 156-89.000.

VonHoene, Donald C.: *See*—
Herbert, William G.; Mishra, Satchidanand; Post, Richard L.; VonHoene, Donald C.; Yu, Robert C. U.; Foley, Geoffrey M. T.; and Limburg, William W., 5,550,618, Cl. 355-211.000.

von Specht, Ulrich: *See*—
Duchene, Michael; von Specht, Ulrich; and Domdey, Horst, 5,550,223, Cl. 536-23.700.

Voorhees, Richard W.: *See*—
Keener, Don S.; McNeill, Andrew B.; Newsom, Thomas H.; Scheiern, Kevin L.; Voorhees, Richard W.; and Wachtel, Edward I., 5,550,990, Cl. 395-309.000.
Keener, Don S.; Moore, Gregory J.; and Voorhees, Richard W., 5,550,991, Cl. 395-309.000.

Vosbikian, Peter; and Vartanian, Haig, to Quickie Manufacturing Corporation. Tube and biased drift pin combination and dustpan incorporating same. 5,548,864, Cl. 15-257.700.

Vrudhula, Vivekananda M.: *See*—
Srinivasan, Ananthachari; Vrudhula, Vivekananda M.; and Brixner, Diana L., 5,549,883, Cl. 424-1.450.

W.C. Heraeus GmbH: *See*—
Herklotz, Günter; Frey, Thomas; and Camus, Otto, 5,549,810, Cl. 205-259.000.

W. L. Gore & Associates, Inc.: *See*—
Sassa, Robert L., 5,549,966, Cl. 428-229.000.

W. R. Grace & Co.-Conn.: *See*—
Berrier, Arthur L.; and Kanga, Rustom S., 5,550,005, Cl. 430-286.100.
Compton, Stephen F., 5,549,959, Cl. 428-131.000.

WABCO Automotive U.K. Limited: *See*—
Earle, Stephen R., 5,549,454, Cl. 417-312.000.

Wachtel, Edward I.: *See*—
Keener, Don S.; McNeill, Andrew B.; Newsom, Thomas H.; Scheiern, Kevin L.; Voorhees, Richard W.; and Wachtel, Edward I., 5,550,990, Cl. 395-309.000.

Wachter, William A., to Exxon Research and Engineering Company. Method for fluidizing a dense phase bed of solids. 5,549,815, Cl. 208-164.000.

Wachtler, Rudolf, to Siemens Nixdorf Informationssysteme Aktiengesellschaft. Electrophotographic printing device for the simultaneous printing of both sides of a recording medium. 5,550,624, Cl. 355-319.000.

Waclawik, Ronald E.: *See*—
Cipolla, Jeffrey L.; and Waclawik, Ronald E., 5,549,065, Cl. 114-23.000.

Wada, Koji; and Sato, Kouichi, to NEC Corporation. System for filling outlines by addition and subtraction according to start and end positions of the outlines. 5,550,648, Cl. 358-448.000.

Wada, Masahiro: *See*—
Sakazawa, Shigeyuki; and Wada, Masahiro, 5,550,590, Cl. 348-387.000.

Wada, Minoru: *See*—
Yamashita, Takashi; and Wada, Minoru, 5,549,062, Cl. 112-220.000.

Wada, Ryukichi; Suzuki, Fumio; and Ohtsuru, Yoshisuke, to Mitsubishi Denki Kabushiki Kaisha. Signal processing method and signal processing device. 5,550,597, Cl. 348-708.000.

Wadano, Katsumi: *See*—
Hori, Mitsuaki; Ebihara, Yukihiko; and Wadano, Katsumi, 5,549,336, Cl. 285-333.000.

Wade, John R.; Pratt, Michael J.; Johnstone, Robert A. W.; and Smith, David I., to DuPont (U.K.) Limited. Lithographic printing plates containing functional groups capable of reacting with a silane compound. 5,550,001, Cl. 430-157.000.

Wagener, Jefferson L.: *See*—
Simpson, Jay R.; Wagener, Jefferson L.; and Walker, Kenneth L., 5,550,671, Cl. 359-337.000.

Wagner, David R.: *See*—
Cirjak, Larry M.; Lemanski, Michael F.; Wagner, David R.; Benkalowycz, Nancy C.; Blum, Patricia R.; Pepera, Marc A.; and Paparizos, Christos, 5,550,281, Cl. 560-245.000.

Wagner, Michael E.: *See*—
Pascucci, Gregory A.; Rasmussen, David E.; Decious, Gaylon M.; Garbe, James R.; Hyzer, Susan M.; Woest, Karen L.; Vairavan, Vairavan; Koch, David L.; Gottschalk, Donald A., Jr.; Burkhardt, Dennis E.; Standish, Darrell E.; Madaus, Paul W.; Spacek, Dan J.; Nesler, Clay G.; Stark, James K.; Mageland, Otto M.; Singers, Robert R.; and Wagner, Michael E., 5,550,980, Cl. 395-200.050.

Wagner, Paul: *See*—
Rechner, Johann; Wagner, Paul; Buysch, Hans-Josef; and Klausner, Alexander, 5,550,278, Cl. 558-277.000.

Wagner Spray Tech Corporation: *See*—
Kieffer, Joseph W., 5,550,336, Cl. 181-230.000.

Wakana, Shinichi; Ozaki, Kazuyuki; Goto, Yoshiro; and Umehara, Yasutoshi, to Fujitsu Limited; and Advantest Corporation. Signal measuring apparatus and signal measuring method. 5,550,479, Cl. 324-750.000.

Wake, David: *See*—
Rodgers, Paul M.; Moodie, David G.; and Wake, David, 5,550,939, Cl. 385-8.000.

Wakuda, Masanori: *See*—
Aiso, Katsuyosi; Adati, Sakasi; Igarasi, Tosihiro; Tanoue, Sin; Kumamoto, Satosi; and Wakuda, Masanori, 5,549,015, Cl. 74-424.80B.

Walenta, John B.: *See*—
Biltgen, Gary L.; Burris, Kenneth W.; Nenne, Timothy M.; Shankwitz, Phil J.; and Walenta, John B., 5,549,764, Cl. 148-222.000.

Walker, G. Terrance, to Becton, Dickinson and Company. Detection of hydrophobic amplification products by extraction into an organic phase. 5,550,025, Cl. 435-6.000.

Walker, James L.: *See*—
Foster, Mark J.; Fakhruddin, Saifuddin T.; Walker, James L.; Mendelow, Matthew B.; Sun, Jiming; Brahman, Rodman S.; Krau, Michael P.; Willoughby, Brian D.; Maddix, Michael D.; Belt, Steven L.; Hovey, Scott A.; and Ruthenbeck, Mark A., 5,551,033, Cl. 395-650.000.

Walker, Kenneth L.: *See*—
Simpson, Jay R.; Wagener, Jefferson L.; and Walker, Kenneth L., 5,550,671, Cl. 359-337.000.
Vengsarkar, Ashish M.; and Walker, Kenneth L., 5,550,940, Cl. 385-28.000.

Wallace, Donald G.: *See*—
Rhee, Woonza; Wallace, Donald G.; Michaels, Alan S.; Burns, Ramon A., Jr.; Fries, Louis; DeLustro, Frank; and Bentz, Hanne, 5,550,188, Cl. 525-54.100.

Wallace, Mark W., to Temp Top Container Systems, Inc. Floating insulator top for pallet sized container. 5,548,972, Cl. 62-371.000.

Wallen, David: *See*—
Cooper, J. Carl; Wallen, David; Vojnovic, Mirko; and Loveless, Howard, 5,550,594, Cl. 348-513.000.

Walne, Geoffrey B.: *See*—
Tacklind, Christopher A.; Sanders, Matthew H.; and Walne, Geoffrey B., 5,549,117, Cl. 128-716.000.

Walter, Bruno H., to Industrial Sound Technologies, Inc. Water-hammer actuated crusher. 5,549,252, Cl. 241-264.000.

Walton, Joseph E.: *See*—
Mazer, Terrence B.; Walton, Joseph E.; Geckle, Ronita K.; Piontek, Carl J.; Duel, Susan B.; Daab-Krzykowski, Andre; Joseph, Robert L.; Pierson, William G.; Loughrin, Thomas D.; and Osip, Thomas W., 5,549,550, Cl. 604-83.000.

Wan, Ben-Zu; and Kang, Yih-Ming, to National Science Council. Preparation of supported gold catalysts for carbon monoxide oxidation. 5,550,093, Cl. 502-74.000.

Wang, Austin. Golf ball dispensing device with lightly-actuated pivotal track. 5,549,518, Cl. 473-137.000.

Wang, Leao; and Wu, Peter, to Greenmaster Industrial Corp. Body building station. 5,549,535, Cl. 482-138.000.

Wang, Shay-Ping T.; Teng, Dan; and Hayner, David A., to Motorola, Inc. Controller for nonlinear systems. 5,550,732, Cl. 364-148.000.

Wang, Wen-Hann: *See*—
Sarangdhar, Nitin V.; Wang, Wen-Hann; and Fisch, Matthew, 5,551,005, Cl. 395-472.000.

Wang, Yongcai: *See*—
Fant, Alfred B.; Wang, Yongcai; Smith, Dennis E.; Kestner, Melvin M.; and Visconte, Gary W., 5,550,011, Cl. 430-496.000.

Wang, Zhaoyin: *See*—
Ducharme, Yves; Gauthier, Jacques Y.; Prasit, Petpiboon; Leblanc, Yves; Wang, Zhaoyin; Leger, Serge; and Therien, Michel, 5,550,142, Cl. 514-365.000.

Wang, Zhonghe, to Motorola, Inc. Method for reallocation frame assignments of receives in a communication system. 5,550,829, Cl. 370-95.100.

Wardle, Frank P.: *See*—
Van Brakel, Ronaldus J.; Wardle, Frank P.; and Verburgh, Martin, 5,549,398, Cl. 384-571.000.

VOI
1189
ISS
4
AG
27
1996
UMI

Warmke, Jeffrey W.: *See*—
Van Der Ploeg, Leonardus H. T.; and Warmke, Jeffrey W., 5,550,049, Cl. 435-240.100.
Warner-Lambert Company: *See*—
Cody, Wayne L.; Doherty, Annette M.; and Topliss, John G., 5,550,110, Cl. 514-17.000.
Warren, Lawrence L.: *See*—
Larsen, Douglas C.; Keller, Forrest K.; and Warren, Lawrence L., 5,548,929, Cl. 49-441.000.
Warrior, Jogesh: *See*—
Lenz, Gary A.; Brown, Gregory C.; and Warrior, Jogesh, 5,549,137, Cl. 137-486.000.
Washington State University Research Foundation: *See*—
Zhang, Qinghua; Qin, Bai-Lin; Barbosa-Canovas, Gustavo V.; Swanson, Barry G.; and Pedrow, Patrick D., 5,549,041, Cl. 99-451.000.
Washington University: *See*—
Barenkamp, Stephen J.; and St. Geme, Joseph W., III, 5,549,897, Cl. 424-256.00N.
Waskönig, Wilhelm. Syringe. 5,549,573, Cl. 604-218.000.
Watabu, Kazuyoshi: *See*—
Someya, Jun; Chiba, Kazuhiro; Watabu, Kazuyoshi; Yamamoto, Yoshie; Inamura, Mamoru; Nagayama, Takeshi; Bamba, Noriko; and Sunada, Noboru, 5,550,936, Cl. 382-263.000.
Watanabe, Hitoshi: *See*—
Aoyagi, Toshitaka; Watanabe, Hitoshi; Miyazaki, Yasunori; and Isshiki, Kunihiko, 5,550,855, Cl. 372-50.000.
Watanabe, Kaori: *See*—
Kitajima, Hiroshi; Aoki, Hidemitsu; Hamano, Haruto; Morita, Makoto; Shiramizu, Yoshimi; Nakamori, Masaharu; Watanabe, Kaori; Seo, Hirofumi; Shimizu, Yuji; Iuchi, Makoto; Sasaki, Yasushi; and Ohta, Nahomi, 5,549,798, Cl. 204-222.000.
Watanabe, Nozomu, to NEC Corporation. Reception field detection apparatus. 5,551,072, Cl. 455-226.200.
Watanabe, Shinsuke: *See*—
Sakai, Minekazu; Fukada, Tsuyoshi; Terada, Masakazu; Watanabe, Shinsuke; and Nishida, Minoru, 5,549,785, Cl. 156-644.100.
Watanabe, Takashi: *See*—
Kojima, Naoto; Watanabe, Takashi; Takahashi, Hiroyuki; and Mishima, Akio, 5,548,886, Cl. 29-603.100.
Watanabe, Toshio: *See*—
Arai, Yuji; Ishiguro, Takashi; and Watanabe, Toshio, 5,549,952, Cl. 428-64.400.
Yoshimura, Shunji; Akiyama, Yoshiyuki; Ohsata, Kiyoshi; Ichimura, Isao; Watanabe, Toshio; and Katsuramoto, Shinji, 5,550,603, Cl. 352-27.000.
Watanabe, Yutaka; and Hayashida, Masami, to Canon Kabushiki Kaisha. Exposure apparatus and reflection type mask to be used in the same. 5,549,994, Cl. 430-5.000.
Waters, Anthony B., to Microsoft Corporation. System for identifying data records in a database using a data structure with linked parameters in a search range. 5,551,024, Cl. 395-600.000.
Waters, Michael R., to VLSI Technology, Inc. Method and apparatus for attenuating jitter in a digital transmission line. 5,550,877, Cl. 375-372.000.
Watkins, Craig R.: *See*—
Chen, Juin-Hwey; and Watkins, Craig R., 5,550,543, Cl. 341-94.000.
Watkins-Johnson Company: *See*—
Vice, Michael W., 5,551,074, Cl. 455-326.000.
Watson, James A.: *See*—
Cliff, Richard G.; Cope, L. Todd; McClintock, Cameron R.; Leong, William; Watson, James A.; Huang, Joseph; and Ahanin, Bahram, 5,550,782, Cl. 365-230.030.
Watts, Anthony. Sealed ductboard. 5,549,942, Cl. 428-34.500.
Way, James A.: *See*—
Stillman, Robert A.; Way, James A.; Cable, Jesse F., III; Cooper, David; and Koskinen, James, 5,551,066, Cl. 455-69.000.
Waybright, Richard S.; and Carlisle, Daniel A., to McGhan Medical Corporation. Adjunctive filler material for fluid-filled prosthesis. 5,549,671, Cl. 623-8.000.
Wayne, Steven F.: *See*—
Bernadic, Thomas; and Wayne, Steven F., 5,549,424, Cl. 407-100.000.
Wear, Trevor J.: *See*—
Moore, Christopher P.; Wear, Trevor J.; Beer, Paul D.; and Goulden, Alistair J., 5,550,268, Cl. 556-145.000.
Weaver, Richard A., to Contour Fabricators, Inc. Fluid collection apparatus. 5,549,707, Cl. 604-317.000.
Weber, Lothar: *See*—
Jennrich, Irene; Weber, Lothar; and Niegel, Andreas, 5,550,424, Cl. 313-130.000.
Wefler, Mark E., to S. C. Johnson & Son, Inc. Insect bait station. 5,548,922, Cl. 43-131.000.
Wehner, Tim J.: *See*—
Corporon, Max A.; Wehner, Tim J.; and Gunderia, Ashutosh, 5,549,349, Cl. 276-188.000.
Wei, Lung: *See*—
Chuang, Te-Chih; Liao, Yunn-Hung; Wei, Lung; and Lee, Yi-Hsien, 5,551,012, Cl. 395-500.000.
Weier, Richard M.: *See*—
Khanna, Ish K.; Mueller, Richard A.; and Weier, Richard M., 5,550,243, Cl. 546-116.000.
Weigand, John G.: *See*—
Greene, William J.; Matoushek, Robert J.; Gorman, Harry A.; and Weigand, John G., 5,549,864, Cl. 264-280.000.
Weihrich, Gerhard: *See*—
Knoll, Arno; Weihrich, Gerhard; and Wobbe, Hans, 5,549,383, Cl. 366-149.000.
Weinberg, Tobias M.; Tennies, Lisa A.; and Vasilevsky, Alexander D., to Thinking Machines Corporation. Compiling a source code vector instruction by generating a subgrid loop for iterataively processing array elements by plural processing elements. 5,551,039, Cl. 395-700.000.
Weinberg, Zeev A.: *See*—
Nguyen, Thao N.; Oehrlein, Gottlieb S.; and Weinberg, Zeev A., 5,549,935, Cl. 427-490.000.
Weinberger, Daniel R.; Lipska, Barbara K.; and Jaskiw, George E., to United States of America, Health and Human Services. Rat or mouse exhibiting behaviors associated with human schizophrenia. 5,549,884, Cl. 424-9.200.
Weinstock, Ira A.: *See*—
Atalla, Rajai H.; Weinstock, Ira A.; Hill, Craig L.; and Reiner, Richard S., 5,549,789, Cl. 162-65.000.
Weir, Ronald E.: *See*—
Barnes, Eric S.; Eldridge, George L.; Nguyen, Uoc; Shah, Ajit; and Weir, Ronald E., 5,551,052, Cl. 395-800.000.
Weisburn, James T.; Gallagher, Christopher G.; and Burdett, Ronald K., to Alpha Enterprises, Inc. Container for video game and booklet. 5,549,203, Cl. 206-472.000.
Weiser, Gerhard: *See*—
Zielinski, Erich; and Weiser, Gerhard, 5,550,670, Cl. 359-248.000.
Weiss, Pamela R.: *See*—
Oberg, Lorri; and Weiss, Pamela R., 5,548,859, Cl. 8-150.000.
Weissman, Neal V.; and McKinney, James C., to Colgate-Palmolive Company. Closure brush. 5,549,209, Cl. 215-228.000.
Wellen, Alexander B.; and Fanucci, Allan A. Hand paddle. 5,549,294, Cl. 273-67.00B.
Wells, Galen. Quick release ski pole and strap system. 5,549,330, Cl. 280-822.000.
Welschof, Hans-Heinrich, to Lohr & Bromkamp GmbH. Constant velocity universal ball joint. 5,549,514, Cl. 464-145.000.
Weltikol, Larry E.; and Grossman, Paul T., to Dakota Way. Ultra-speed conversion means for floor treating machines. 5,548,860, Cl. 15-50.100.
Wendel, Peter, to ZF Friedrichshafen. Electronic control process for an automatic transmission. 5,549,525, Cl. 477-93.000.
Werner & Pfleiderer, GmbH: *See*—
Knoll, Arno; Weihrich, Gerhard; and Wobbe, Hans, 5,549,383, Cl. 366-149.000.
Wernic, Dominik M.: *See*—
Beaulieu, Pierre L.; Guindon, Yvan; and Wernic, Dominik M., 5,550,291, Cl. 564-357.000.
West, Brett; and Gardner, John P. Viewer discretion television program control system. 5,550,575, Cl. 348-5.500.
West, Richard L., to Baxter International Inc. Support pole lift mechanism. 5,549,264, Cl. 248-157.000.
West, Robert R.; Van Ness, Jeffrey; and Varming, Annemarie R., to Zymo-Genetics, Inc.; and Novo Nordisk A/S. PAF synthesis modulators. 5,550,148, Cl. 514-408.000.
Westbrook, Gregory L.: *See*—
Nelson, Randall D.; and Westbrook, Gregory L., 5,550,480, Cl. 324-754.000.
Westech Geophysical, Inc.: *See*—
Baker, Donald L., 5,550,411, Cl. 307-100.000.
Thompson, Jack T., 5,550,331, Cl. 181-102.000.
Western Atlas International, Inc.: *See*—
Moody, Michael J.; Yesudas, Michael; and Michaels, John M., 5,549,162, Cl. 166-264.000.
Shwe, Than; and Michaels, John M., 5,549,159, Cl. 166-250.020.
Western Digital Corporation: *See*—
Hyde, Darryl L., 5,550,694, Cl. 360-104.000.
Westinghouse Air Brake Company: *See*—
Kanjo, Wajih; Smith, Eric; Demoise, Thomas J.; Girotti, Michael; McCabe, Thomas; Fessler, Charles B.; and Natschke, Scott, 5,549,363, Cl. 303-7.000.
Westinghouse Brake and Signal Holdings Limited: *See*—
Evans, Michael, 5,550,392, Cl. 257-170.000.
Westinghouse Electric Corporation: *See*—
Bauer, Donald L., 5,548,997, Cl. 73-168.000.
Mumford, Stephen E.; and Kosinski, Andrew J., 5,548,951, Cl. 60-39.230.
Nixon, Donald R., 5,549,459, Cl. 417-423.120.
Wetterlin, Kjell I. L.: *See*—
Trofast, Eva A.; Wetterlin, Kjell I. L.; and Virtanen, Risto K. V., 5,549,101, Cl. 128-203.150.
Whalen, Patrick J. Non-lethal device for self-defense. 5,549,220, Cl. 222-1.000.
Wheeler, David R.: *See*—
Taylor, Gary N.; and Wheeler, David R., 5,550,007, Cl. 430-314.000.
Whitaker Corporation, The: *See*—
Fitz, Charles E., Jr., 5,548,892, Cl. 29-866.000.
Hotea, Gheorghe, 5,549,483, Cl. 439-399.000.
van Woesik, Theodorus C. M.; Teurlings, Lucas G. C.; and Vermeulen, Willem S. J., 5,550,944, Cl. 385-73.000.
Whitaker, Tyson B.: *See*—

Dowler, James A.; Whitaker, Tyson B.; King, Julius D., Jr.; Murayama, Fumitaka; Takizawa, Satoru; Gomi, Masaao; and Itoh, Fumiyoshi, 5,550,627, Cl. 355-326.00M.
White, Christopher: *See*—
Matheny, John R.; and White, Christopher, 5,550,563, Cl. 345-168.000.
Matheny, John R.; White, Christopher; and Davis, Mark E., 5,551,055, Cl. 395-882.000.
White Consolidated Industries, Inc.: *See*—
Becker, Craig H., 5,549,760, Cl. 134-25.200.
Becker, Kent, 5,549,129, Cl. 135-88.150.
Torborg, Kevin; and Jelinek, Victor E., 5,548,908, Cl. 34-601.000.
White, George E.: *See*—
Farooq, Mukta S.; Kaja, Suryanarayana; Perfecto, Eric D.; and White, George E., 5,549,808, Cl. 205-123.000.
White, Peter R., to British-American Tobacco Company Limited. Relating to smoking articles. 5,549,125, Cl. 131-342.000.
White, Stanley A., to Rockwell International Corporation. Digital demodulator reference signal generator having DC blocker and first Hilbert transformation with quadrature output followed by gain staging and combination for second Hilbert transformation quadrature output. 5,550,866, Cl. 375-316.000.
Whitehead, Stephen P., to Suncast Corporation. Hose guide. 5,549,262, Cl. 248-87.000.
Whitehouse, Robert S., to Cabot Corporation. Carbon black compositions and improved polymer compositions. 5,550,174, Cl. 523-215.000.
Whiteman Industries, Inc.: *See*—
Whiteman, Marvin E., Jr., 5,550,333, Cl. 181-204.000.
Whiteman, Marvin E., Jr., to Whiteman Industries, Inc. Reduced noise trailerable engine. 5,550,333, Cl. 181-204.000.
Whiteside, Michael. Packaging container blank. 5,549,202, Cl. 206-436.000.
Whitman, Peter J., to Olin Corporation. Method of increasing hydrogenation rate of aromatic amines. 5,550,294, Cl. 564-451.000.
Wiand, Richard K.: *See*—
Hirst, Donald L.; and Wiand, Richard K., 5,549,509, Cl. 451-178.000.
Wichita State University, The: *See*—
Groutas, William C., 5,550,139, Cl. 514-362.000.
Wicks, William J.: *See*—
Schulte, Reinhard W.; Lesyna, David A.; Wicks, William J.; and Meinass, Helmut J., 5,549,616, Cl. 606-130.000.
Widner, Melvin M.; Raleigh, Michael; Goldstein, Yeshayahu S. A.; and Greig, Joseph R., to General Dynamics Land Systems, Inc. Plasma generator for electrothermal gun cartridge. 5,549,046, Cl. 102-202.700.
Wiedmer, Therese: *See*—
Sinu, Peter J.; and Wiedmer, Therese, 5,550,108, Cl. 514-21.000.
Wiemer, Willem, to Stork Ketels B.V. Spray degasser. 5,549,737, Cl. 96-204.000.
Wien, Joshua D.; and Wien, Noah E. Aquatic safety slide and wading pool. 5,548,851, Cl. 4-506.000.
Wien, Noah E.: *See*—
Wien, Joshua D.; and Wien, Noah E., 5,548,851, Cl. 4-506.000.
Wiggermann, Peter: *See*—
Ege, Hans-Jürgen; Horsak, Günther; and Wiggermann, Peter, 5,550,449, Cl. 318-632.000.
Wiklund, Karl G.: *See*—
Nykanen, Tuomo S.; Greenwood, Brian F.; Gullichsen, Johan; Kiiskila, Erkki; Mattelmaki, Esko; Phillips, Joseph R.; Richardsen, Jan T.; Ryham, Rolf; Soderman, Jarmo; and Wiklund, Karl G., 5,549,788, Cl. 162-29.000.
Wilcox, Darren W.: *See*—
Sonnenburg, Dennis; and Wilcox, Darren W., 5,549,289, Cl. 271-121.000.
Wild, Gary G.; and Eley, John D., to Eclipse Combustion, Inc. Multiple burner control system. 5,549,469, Cl. 431-75.000.
Wilkes, Kenneth R. Pleated sterilization pouch. 5,549,388, Cl. 383-84.000.
Wilkins, Mark W.: *See*—
Cline, Carl F.; Wilkins, Mark W.; and Hare, Alan W., 5,549,731, Cl. 75-244.000.
Willetts, Nancy G.: *See*—
Adams, Thomas R.; Chambers, Sheryl A.; Daines, Richard J.; Gordon-Kamm, William J.; Kausch, Albert P.; Lemaux, Peggy G.; Mackey, Catherine J.; Mangano, Mary L.; O'Brien, James V.; Rice, Thomas B.; Spencer, T. Michael; Start, William G.; and Willetts, Nancy G., 5,550,318, Cl. 800-205.000.
Willi, Roland, to Sulzer Medizinaltechnik AG. Inner shell for a hip joint socket. 5,549,696, Cl. 623-22.000.
Willi, Roland: *See*—
Spotorno, Lorenzo; and Willi, Roland, 5,549,695, Cl. 623-22.000.
Williams, Andrew D.: *See*—
Humora, Michael J.; Modi, Sandeep P.; Srivastava, Sushi K.; and Williams, Andrew D., 5,550,239, Cl. 544-295.000.
Williams, Arthur B., to Coherent Communications Systems Corp. Full-duplex adapter for PBX telephone system. 5,550,901, Cl. 379-93.000.
Williams, Curt A.: *See*—
Elco, Richard A.; and Williams, Curt A., 5,549,479, Cl. 439-67.000.
Williams, Douglas; Shea, Jeff; and Cork, Michael S. Fume duct circumferential joint sealant. 5,549,949, Cl. 428-36.900.
Williams, Eric: *See*—
McNelley, Steve; and Williams, Eric, 5,550,754, Cl. 364-514.00A.
Williams, Eugene V.: *See*—
Beyer, Douglas H.; Williams, Eugene V.; and Alvarez, Jose A., 5,550,703, Cl. 361-229.000.
Williams, Fred G. Glass porch enclosure. 5,549,150, Cl. 160-201.000.
Williams, J. Peter: *See*—
Panther, Gyles; Williams, J. Peter; and Campbell, Donald W. F., 5,551,079, Cl. 455-347.000.
Williams, Paul H.: *See*—
Frost, Jonathan; George, Pascal; Pasau, Patrick; Bartsch, Régine; Rousselle, Corinne; Williams, Paul H.; and Muller, Jean C., 5,550,162, Cl. 514-617.000.
Williams, Paul Howard: *See*—
George, Pascal; Frost, Jonathan; Pasau, Patrick; Rousselle, Corinne; Bartsch, Régine; Williams, Paul Howard; and Muller, Jean Claude, 5,550,125, Cl. 514-230.500.
Williams, Rogers B.: *See*—
Hartman, Brian W.; Juranovic, Lillian R.; Scannell, Stephen C.; and Williams, Rogers B., 5,549,918, Cl. 426-291.000.
Williams, Thomas D., to Delta Systems, Inc. Method of securing a quick-install seat switch. 5,548,888, Cl. 29-622.000.
Williamson, Kenneth E.: *See*—
Puzic, Olga; Evers, Larry J.; Williamson, Kenneth E.; Gorbaty, Martin L.; and Nahas, Nicholas C., 5,549,744, Cl. 106-274.000.
Williamson, Weldon S.: *See*—
Gregoire, Daniel J.; Harvey, Robin J.; Dolezal, Franklin A.; and Williamson, Weldon S., 5,549,795, Cl. 204-164.000.
Willis, Daniel J.; and Cleavinger, Richard C., to Storage Technology Corporation. Pre-seeking process for enhancing reading and writing performance in a mass storage system having multiple individual disk drives. 5,550,998, Cl. 395-441.000.
Willknight, Inc.: *See*—
Anderson, Delsmore L., 5,549,347, Cl. 296-98.000.
Willmar Schwabe GmbH & Co.: *See*—
Nöldner, Michael; Chatterjee, Shyam S.; and Hauer, Hermann, 5,550,129, Cl. 514-253.000.
Willoughby, Brian D.: *See*—
Foster, Mark J.; Fakhruddin, Saifuddin T.; Walker, James L.; Mendelow, Matthew B.; Sun, Jiming; Brahman, Rodman S.; Krau, Michael P.; Willoughby, Brian D.; Maddix, Michael D.; Belt, Steven L.; Hovey, Scott A.; and Ruthenbeck, Mark A., 5,551,033, Cl. 395-650.000.
Willows, Keith S.: *See*—
Black, Michael J.; Willows, Keith S.; Stiles, William P.; and Gallagher, Patrick M., 5,550,324, Cl. 174-52.300.
Wilson Greatbatch Ltd.: *See*—
Takeuchi, Esther S.; and Mead, Ralph T., 5,549,717, Cl. 29-623.200.
Wilson, James M., to Xerox Corporation. Apparatus for forming several polygons together. 5,549,426, Cl. 409-138.000.
Wiltse, Darren: *See*—
Bownes, Dan; and Wiltse, Darren, 5,549,160, Cl. 166-250.080.
Winbond Electronics Corp.: *See*—
Liu, Min-Sea, 5,550,085, Cl. 437-203.000.
Windhaus, Ernst; Seiler, Bernard; Meyer, Peter; Erwig, Peter; Mathejka, Horst W.; Patalon, Heinrich; Holz, Peter, deceased (by Hannelore Holz, heir), to Didier OFU Engineering GmbH. Storage oven for thin slab casting. 5,548,882, Cl. 29-336.000.
Windmoeller & Hoelscher: *See*—
Brinkmeier, Friedhelm; and Feldkämper, Richard, 5,549,751, Cl. 118-216.000.
Rautenberg, Horst, 5,549,539, Cl. 493-402.000.
Windmöller & Hölscher: *See*—
Achelpohl, Fritz, 5,549,044, Cl. 101-216.000.
Winegar-Hentges, Sally L.: *See*—
Cooper, Joel; Winegar-Hentges, Sally L.; Nelson, Robert P.; Schankereli, Kemal; and Teich, Kristine M., 5,549,628, Cl. 606-220.000.
Wing-Chung, Li, to Simatelex Manufactory Co., Ltd. Coffee making machines. 5,549,035, Cl. 99-281.000.
Wingen, Rainer: *See*—
Schlosser, Hubert; Wingen, Rainer; and Manero, Javier, 5,550,236, Cl. 544-238.000.
Winget, Larry J.: *See*—
Davis, David J., 5,549,323, Cl. 280-728.300.
Wingfield, Andy Q.; and Thomas, James L., to Access Protection Manufacturing, LLC. Keyless lock. 5,549,338, Cl. 292-292.000.
Winkler, Martin A.; and Pan, Alfred A., to Abbott Laboratories. Assay for *Trypansoma cruzi* antibodies which specifically bind three different antigens. 5,550,027, Cl. 435-7.220.
Winoker, Joseph A.: *See*—
Spica, Salvatore J.; Kuhn, John P.; Keller, Steven R.; and Winoker, Joseph A., 5,549,143, Cl. 141-144.000.
Winston, Anthony E.; Dunn, Steven E.; Cala, Francis R.; Vinci, Alfredo; Lajoie, M. Stephen; and Jorgensen, Robert C., to Church & Dwight Co., Inc. Method for removing rosin soldering flux from a printed wiring board. 5,549,761, Cl. 134-40.000.
Winter, Daryl B.: *See*—
Meyer, Richard S.; Campbell, Michael L.; Winter, Daryl B.; and Root, Jeffrey M., 5,550,220, Cl. 536-18.500.
Winterfeldt, Duane N., to ESAB Group, Inc., The. Mounting apparatus for a cutting torch having soft touch height control. 5,550,344, Cl. 219-121.390.
Winzeler Stamping Company: *See*—
Reneau, Phillip G., 5,549,432, Cl. 411-432.000.
Wirobski, Reinhard: *See*—
Träger, Michael; Wirobski, Reinhard; and Leven, Thomas, 5,550,170, Cl. 521-143.000.

Wirth, Hermann O.; Friedrich, Hans-Helmut; and Gröninger, Kay S., to Ciba-Geigy Corporation. Phosphonic acid derivatives and thionophosphonic acid derivatives. 5,550,276, Cl. 558-177.000.
Wiseman, Timothy R., Sr., to Du Pont de Nemours, E. I., and Company. Protective garment with harness access. 5,548,842, Cl. 2-69.000.
Wisor, Donald R.: *See*—
Schick, Jeffrey C.; and Wisor, Donald R., 5,549,060, Cl. 111-178.000.
Wissell, Daniel, to Digital Equipment Corporation. Power sequencing control. 5,550,729, Cl. 363-65.000.
Witt, C. Joyce: *See*—
Clauser, Donald E., 5,549,233, Cl. 225-100.000.
Witt a.k.a. Witte, Willi, to WT Wassertechnologie GmbH. Process and apparatus for processing industrial waste water by electrolysis. 5,549,812, Cl. 205-744.000.
Witte, Owen; Tsukada, Satoshi; Saffran, Douglas; and Rawlings, David, to University of California, The Regents of the. Hematopoietic restricted tyrosine kinase (BPK). 5,550,054, Cl. 435-240.200.
Wobbe, Hans: *See*—
Knoll, Arno; Weihrich, Gerhard; and Wobbe, Hans, 5,549,383, Cl. 366-149.000.
Woehrer, Wilfried: *See*—
Mundt, Wolfgang; Woehrer, Wilfried; Dorner, Friedrich; and Eibl, Johann, 5,550,051, Cl. 435-240.200.
Woerlee, Pierre H.; and Hart, Cornelis M., to U.S. Philips Corporation. Semiconductor memory having thin film field effect selection transistors. 5,550,773, Cl. 365-185.230.
Woest, Karen L.: *See*—
Pascucci, Gregory A.; Rasmussen, David E.; Decious, Gaylon M.; Garbe, James R.; Hyzer, Susan M.; Woest, Karen L.; Vairavan, Vairavan; Koch, David L.; Gottschalk, Donald A., Jr.; Burkhardt, Dennis E.; Standish, Darrell E.; Madaus, Paul W.; Spacek, Dan J.; Nesler, Clay G.; Stark, James K.; Mageland, Otto M.; Singers, Robert R.; and Wagner, Michael E., 5,550,980, Cl. 395-200.050.
Wohltjen, Henry; and Poziomek, Edward J., to Microsensor Systems, Inc. Method and apparatus for chemical detection by pyrolysis. 5,550,062, Cl. 436-155.000.
Wohrstein, Franz X., to Peerless of America, Incorporated. Solderless metallurgical joint. 5,549,335, Cl. 285-286.000.
Wolf, Elmar: *See*—
Gras, Rainer; and Wolf, Elmar, 5,550,206, Cl. 528-229.000.
Wolfe, John C.; and Zagozdzon-Wosik, Wanda, to University of Houston System, The. Method and apparatus for doping silicon wafers using a solid dopant source and rapid thermal processing. 5,550,082, Cl. 437-168.000.
Wolfe, Kevin J.: *See*—
Selby, Theodore W.; Wolfe, Kevin J.; and Atkins, William A., 5,548,994, Cl. 73-54.280.
Wolff, Daniel W., to Mentor Graphics Corporation. Method and system for integrating component analysis with multiple component placement. 5,550,750, Cl. 364-491.000.
Wollmann, Theodor: *See*—
Fischer, Gerd; Defossa, Elisabeth; Gerlach, Uwe; Hörlein, Rolf; Krass, Norbert; Lattrell, Rudolf; Stache, Ulrich; Wollmann, Theodor; and Isert, Dieter, 5,550,232, Cl. 540-230.000.
Wolman, Michael. Infusion adminstering catheter holder. 5,549,567, Cl. 604-179.000.
Wong, Henry: *See*—
Benson, Bradley J.; Chen, Xiannong; Cianciolo, George J.; Diaz, Jose-Luis; Ishaq, Khalid S.; Morris-Natschke, Susan L.; Uhing, Ronald J.; and Wong, Henry, 5,550,132, Cl. 514-269.000.
Wong, John J.; and Lui, Paul S., to Current Logic Systems, Inc. Multifunction telecommunications instrument. 5,550,649, Cl. 358-479.000.
Wong, Thomas Y., to Northern Telecom Limited. High frequency, differential limiting distributed amplifier. 5,550,513, Cl. 330-286.000.
Wong, Yiu-Huen: *See*—
Dautartas, Mindaugas F.; and Wong, Yiu-Huen, 5,550,088, Cl. 437-225.000.
Wood, James: *See*—
Sanford, Adam; Cheer, John; and Wood, James, 5,549,583, Cl. 604-283.000.
Woodall, Roger L., to United States of America, Navy. Metrics for specifying and/or testing neural networks. 5,550,951, Cl. 395-21.000.
Woodruff, Geoff N.: *See*—
Horwell, David C.; Hughes, John; and Woodruff, Geoff N., 5,550,126, Cl. 514-237.500.
Woodstream Corporation: *See*—
Askins, William E.; Stewart, Michael W.; Roulston, Gary; and Fiore, Joseph F., Jr., 5,549,073, Cl. 119-474.000.
Workman, Christopher T.: *See*—
Carver, David R.; Prout, Timothy R.; Workman, Christopher T.; and Hughes, Charles L., 5,549,830, Cl. 210-641.000.
Wornson, Douglas P.: *See*—
Zittel, David R.; and Wornson, Douglas P., 5,550,927, Cl. 382-110.000.
Worrick, Charles B., III: *See*—
Yapp, Ronald A.; and Worrick, Charles B., III, 5,549,612, Cl. 606-69.000.
Worsley, Debra J.; Rangan, Geetha N. K.; Edem, Brian C.; and Evans, Michael S., to National Semiconductor Corporation. Data communication network with management port for isochronous switch. 5,550,802, Cl. 370-13.000.
Wozniak, Elizabeth M.; and Baughman, Stephen G., to Cytozyme Laboratories, Inc. Urea-containing fertilizer with reduced rate of ammonia release. 5,549,728, Cl. 71-6.000.
Wright, D. Craig, to Novavax, Inc. Antimicrobial oil-in-water emulsions. 5,549,901, Cl. 424-401.000.
Wright, J. Nelson; Cole, Christopher R.; Gee, Albert; Larsen, Hugh G.; and Maslak, Samuel H., to Acuson Corporation. Method and apparatus for adjustable frequency scanning in ultrasound imaging. 5,549,111, Cl. 128-742.000.
Wright, Joseph D., to Xerox Corporation. Image processing for ink-jet printing with fast-and slow-drying inks. 5,550,569, Cl. 347-15.000.
Wright Medical Technology, Inc.: *See*—
Coates, Bradley J.; and Fosco, Dominic R., 5,549,687, Cl. 623-20.000.
Wrono Enterprise Corp.: *See*—
Figueiredo, Pedro; Verdon, Larry; and Valea, Norberto, 5,549,148, Cl. 160-183.000.
WRR Industries, Inc.: *See*—
McInerney, William L.; Osborn, Norbert L.; and Schruf, Gerhard M., 5,549,449, Cl. 415-177.000.
WT Wassertechnologie GmbH: *See*—
Witt a.k.a. Witte, Willi, 5,549,812, Cl. 205-744.000.
Wu, Chen-Chuan. Fastener device. 5,548,879, Cl. 24-625.000.
Wu, Chin T.; and Samuels, James V., to MultiVideo Labs, Inc. Transmitting data and commands to display monitors. 5,550,556, Cl. 345-14.000.
Wu, Feng-Jung, to Amoco Corporation. Ethylene trimerization. 5,550,305, Cl. 585-513.000.
Wu, Ko-hsiang; and Huang, Wei-hsing. Liquid medicine container structure. 5,549,224, Cl. 222-158.000.
Wu, Li-Ming: *See*—
Kwan, Khang-Shen; Tsay, Chean-Lung; and Wu, Li-Ming, 5,550,498, Cl. 327-175.000.
Wu, Michael A.: *See*—
Gard, Michael F.; Gravelle, Stephen W.; Hsieh, Jiang; Lu, Quan N.; Newman, John W.; Toth, Thomas L.; and Wu, Michael A., 5,550,889, Cl. 378-113.000.
Wu, Peter: *See*—
Wang, Leao; and Wu, Peter, 5,549,535, Cl. 482-138.000.
Wueger, Karl: *See*—
Meier, Markus; Urech, Werner; and Wueger, Karl, 5,550,345, Cl. 219-121.630.
Wuerslin, Peter C.; Liu, Frederick E.; and Maslow, Andrew D., to Life-Link International, Inc. Ski pole and removable hand grip. 5,549,329, Cl. 280-821.000.
Wurz, Albert, to Accu-Sort Systems, Inc. Moveable label printer-applicator/conveyor loader assembly. 5,550,745, Cl. 364-478.030.
Wylie, L. Stephen: *See*—
Tarter, Fred B.; Greene, Jeffrey M.; De Fazio, Thomas J.; Peck, Jan; Wylie, L. Stephen; Magnotte, Mark M.; Hall, Del; and Tarter, Scott A., 5,550,734, Cl. 364-401.00R.
Xerox Corporation: *See*—
Appel, James J.; and Dunn, Susan E., 5,550,668, Cl. 359-204.000.
Barnes, Eric S.; Eldridge, George L.; Nguyen, Uoc; Shah, Ajit; and Weir, Ronald E., 5,551,052, Cl. 395-800.000.
Devito, Gerald M., 5,549,291, Cl. 271-182.000.
Georges, Michael K.; Veregin, Richard P. N.; Kazmaier, Peter M.; and Hamer, Gordon K., 5,549,998, Cl. 430-109.000.
Herbert, William G.; Mishra, Satchidanand; Post, Richard L.; VonHoene, Donald C.; Yu, Robert C. U.; Foley, Geoffrey M. T.; and Limburg, William W., 5,550,618, Cl. 355-211.000.
Kaplan, Ronald M.; and Kay, Martin, 5,551,026, Cl. 395-600.000.
Kaplan, Ronald M.; and Kay, Martin, 5,551,049, Cl. 395-800.000.
Plain, Margaret C., 5,549,292, Cl. 271-291.000.
Schlueter, Edward L., Jr.; Parker, Thomas C.; Ferguson, Robert M.; and Finsterwalder, Robert N., 5,549,193, Cl. 198-844.200.
Sprague, Robert A.; Bruce, Richard H.; and Silverstein, Louis D., 5,550,656, Cl. 359-40.000.
Swain, Eugene A.; and Darcy, John J., 5,549,999, Cl. 430-127.000.
Szlucha, Thomas F., 5,550,615, Cl. 355-208.000.
TeWinkle, Scott L.; Hosier, Paul A.; and Hayes, Fred O., 5,550,653, Cl. 358-514.000.
Wilson, James M., 5,549,426, Cl. 409-138.000.
Wright, Joseph D., 5,550,569, Cl. 347-15.000.
Xilinx, Inc.: *See*—
Buch, Kiran B.; Law, Edwin S.; and Chu, Jakong J., 5,550,839, Cl. 371-22.100.
Yee, Wilson K., 5,550,843, Cl. 371-22.300.
Xiong, Xiao-Ming, to Cadence Design Systems, Inc. Region search for delay routing and signal net matching. 5,550,748, Cl. 364-488.000.
Yamada, Hiroshi, to Canopus Co., Ltd. Bus-line network communication system. 5,550,584, Cl. 348-153.000.
Yamada, Kenji: *See*—
Irie, Yasuhito; and Yamada, Kenji, 5,550,823, Cl. 370-60.100.
Yamada, Koji: *See*—
Nakagawa, Susumu; Kato, Shinji; Murase, Satoshi; Okamoto, Osamu; Mitomo, Ryuji; Yamamoto, Katsumi; Yamada, Koji; and Fukatsu, Hiroshi, 5,550,121, Cl. 514-210.000.
Yamada, Sadayuki: *See*—
Hori, Tatsuya; Fukuhara, Hiroyuki; Muramatsu, Shigeru; and Yamada, Sadayuki, 5,549,466, Cl. 418-55.100.

Yamada, Takahisa, to Canon Seiki Kabushiki Kaisha; and Canon Kabushiki Kaisha. Method of manufacturing stator for stepping motor. 5,548,885, Cl. 29-596.000.
Yamada, Yoshiyuki: *See*—
Inoue, Kunimi; Yamada, Yoshiyuki; Amatsu, Kazumi; Mimura, Yukiteru; Nakaguchi, Yasunori; Shinmura, Hiroyuki; Ono, Yasuyuki; Osawa, Yutaka; Mizutaki, Shoichi; Kasai, Masaji; and Tomioka, Shinji, 5,550,283, Cl. 562-561.000.
Yamagami, Hitoshi: *See*—
Shirai, Ichiro; Yamagami, Hitoshi; Hiroshige, Eiichi; and Kubo, Koichi, 5,550,452, Cl. 320-2.000.
Yamagishi, Hirotoshi: *See*—
Kimura, Masanori; and Yamagishi, Hirotoshi, 5,550,354, Cl. 219-673.000.
Yamagishi, Shinji: *See*—
Tsuda, Kazuhiko; Shinomiya, Tokihiko; and Yamagishi, Shinji, 5,550,664, Cl. 359-102.000.
Yamagiwa, Katsuya: *See*—
Okuyama, Masahiko; Okada, Kohji; and Yamagiwa, Katsuya, 5,549,123, Cl. 128-898.000.
Yamaguchi, Ken; and Miyake, Yoshio, to Tonen Corporation; Terumo Corporation; and Yamguchi, Ken. Antibodies to human gastrin-releasing peptide precursor and use thereof. 5,550,026, Cl. 435-7.100.
Yamaguchi, Kiyoshi, to Ricoh Company, Ltd. Light-emitting diode and light-emitting diode array. 5,550,391, Cl. 257-96.000.
Yamaguchi, Naoto, to Seiko Epson Corporation. Printing apparatus. 5,549,402, Cl. 400-708.000.
Yamaguchi, Syoji: *See*—
Aoki, Yoichi; Sato, Yasuo; Ito, Chiaki; Nishiuchi, Hitoshi; Nakamoto, Makoto; Yamaguchi, Syoji; Mio, Haruhiko; Koyata, Kazuhiro; and Miyazawa, Yoshinori, 5,550,562, Cl. 345-163.000.
Yamaguchi, Tadashi; Nosaki, Katsutoshi; Akihisa, Inoue; and Masumoto, Tsuyoshi, to YKK Corporation; Masumoto, Tsuyoshi; Inoue, Akihisa; and Honda Giken Kogyo Kabushiki Kaisha. Composite ultrafine particles of nitrides, method for production and sintered article thereof. 5,549,951, Cl. 428-565.000.
Yamaguchi, Takehisa; and Oda, Hidekazu, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device having internal wire and method of fabricating the same. 5,550,409, Cl. 257-757.000.
Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Isaka, Yoshiharu, 5,549,088, Cl. 123-308.000.
Ozawa, Toshikazu; Imai, Chizuko; and Matsumoto, Hiromitsu, 5,549,086, Cl. 123-193.600.
Yamaki, Kazuhisa; and Kawabata, Kazunari, to Murata Manufacturing Co., Ltd. Dielectric rod antenna. 5,550,553, Cl. 343-785.000.
Yamamoto, Akihiro: *See*—
Abe, Wataru; Yamamoto, Akihiro; Nakajima, Takehiko; and Kojima, Makoto, 5,550,775, Cl. 365-189.110.
Yamamoto, Akira: *See*—
Ichinomiya, Hiroshi; Satoh, Takao; and Yamamoto, Akira, 5,550,975, Cl. 395-185.040.
Yamamoto, Hajime: *See*—
Komakine, Hiroshi; Terada, Hiroshi; Yamamoto, Hajime; Hayashi, Kazumasa; and Aizawa, Masahiro, 5,550,619, Cl. 355-246.000.
Yamamoto, Katsumi: *See*—
Nakagawa, Susumu; Kato, Shinji; Murase, Satoshi; Okamoto, Osamu; Mitomo, Ryuji; Yamamoto, Katsumi; Yamada, Koji; and Fukatsu, Hiroshi, 5,550,121, Cl. 514-210.000.
Yamamoto, Kazumi: *See*—
Suzuki, Yuzuru; Takii, Yukio; Yamamoto, Kazumi; Nishiya, Yoshiaki; Sogabe, Atsushi; Sogabe, Yukihiro; and Emi, Shigenori, 5,550,046, Cl. 435-202.000.
Yamamoto, Makoto: *See*—
Takatori, Sunao; and Yamamoto, Makoto, 5,550,949, Cl. 395-2.150.
Takatori, Sunao; and Yamamoto, Makoto, 5,550,950, Cl. 395-221.000.
Yamamoto, Manabu; Ogasawara, Takio; and Nozue, Toshihiro, to Sanshin Kogyo Kabushiki Kaisha. Outboard motor. 5,549,492, Cl. 440-53.000.
Yamamoto, Reki: *See*—
Nakamura, Shouji; Kimura, Shinji; Sugita, Yumiko; Yamamoto, Reki; Koda, Eriko; Kuwana, Toshiyuki; and Manda, Masato, 5,550,962, Cl. 395-133.000.
Yamamoto, Satoshi: *See*—
Oshima, Toshiyuki; Ishibashi, Hideo; Minamino, Hiromasa; Yamamoto, Satoshi; Izumo, Takaharu; and Kaneko, Mitsuharu, 5,550,198, Cl. 525-404.000.
Yamamoto, Takashi: *See*—
Hasegawa, Takeshi; and Yamamoto, Takashi, 5,550,613, Cl. 355-41.000.
Yamamoto, Tomohisa; Hayakawa, Junji; and Ban, Hiroyuki, to Nippondenso Co., Ltd. Driving apparatus for cross-coil type analog indicating instrument. 5,550,465, Cl. 324-143.000.
Yamamoto, Yoshie: *See*—
Someya, Jun; Chiba, Kazuhiro; Watabu, Kazuyoshi; Yamamoto, Yoshie; Inamura, Mamoru; Nagayama, Takeshi; Bamba, Noriko; and Sunada, Noboru, 5,550,936, Cl. 382-263.000.
Yamamoto, Yoshitaka: *See*—
Funai, Takashi; Makita, Naoki; Yamamoto, Yoshitaka; and Morita, Tatsuo, 5,550,070, Cl. 437-41.000.
Yamamoto, Yuuri; Takahashi, Kenichi; Ohnishi, Hiroshi; Kunieda, Yoshinori; and Matsubara, Naoki, to Matsushita Electric Industrial Co., Ltd. Complex angle converter. 5,550,867, Cl. 375-324.000.
Yamanis, Jean, to AlliedSignal Inc. Coflow planar fuel cell stack construction for solid electrolytes. 5,549,983, Cl. 429-32.000.
Yamashita, Takashi; and Wada, Minoru, to Juki Corporation. Shuttle hook driving device for a sewing machine. 5,549,062, Cl. 112-220.000.
Yamashita, Thomas T. Method and composition for promoting and controlling growth of plants. 5,549,729, Cl. 71-26.000.
Yamauchi, Mineo: *See*—
Ohshima, Katsuyuki; Ueno, Takeshi; Yamauchi, Mineo; and Kita, Tatsuya, 5,550,099, Cl. 503-227.000.
Yamazaki, Hiroshi: *See*—
Tanaka, Shigeo; Yamazaki, Hiroshi; Osakabe, Yoshio; Kotabe, Noriko; Iwamoto, Koji; Souma, Yoko; Imaura, Toshihiro; and Maki, Shigeru, 5,550,826, Cl. 370-85.800.
Tanaka, Shigeo; Yamazaki, Hiroshi; Kotabe, Noriko; Sugiyama, Kouichi; Sato, Makoto; Katsuyama, Akira; Osakabe, Yoshio; and Kusagaya, Yasuo, 5,550,979, Cl. 395-200.050.
Yamazaki, Mitsuo: *See*—
Nishijima, Takayuki; Kawamachi, Kanchiro; Muto, Takao; Yamazaki, Mitsuo; and Arima, Toshiyuki, 5,549,344, Cl. 296-70.000.
Yamazaki, Shunpei: *See*—
Koinuma, Hideomi; Shiraishi, Tadashi; Inoue, Tohru; Inomata, Kiyoto; Hayashi, Shigenori; Miyanaga, Akiharu; and Yamazaki, Shunpei, 5,549,780, Cl. 156-345.000.
Yamazaki, Takao: *See*—
Enomoto, Kazuhisa; Yamazaki, Takao; Azuma, Taiki; and Tarutani, Shinji, 5,550,801, Cl. 369-178.000.
Yamguchi, Ken: *See*—
Yamaguchi, Ken; and Miyake, Yoshio, 5,550,026, Cl. 435-7.100.
Yanagawa, Naoharu: *See*—
Inoue, Akiyoshi; Taniguchi, Shoji; Kawano, Eisaku; Yanagawa, Naoharu; and Suzuki, Hiroshi, 5,550,799, Cl. 369-116.000.
Yang, Chwen-Chih, to Lanxide Technology Company, LP. Method for making graded composite bodies and bodies produced thereby. 5,549,151, Cl. 164-97.000.
Yang, Kei-Wean C., to Tektronix, Inc. STN displays having high contrast, with purple polarizer and residual birefringence causing greenish-gold or purplish-blue coloring. 5,550,660, Cl. 359-63.000.
Yang, Sheng-Hsing, to United Microelectronics Corporation. Method for fabricating high-voltage complementary metal-oxide-semiconductor transistors. 5,550,064, Cl. 437-34.000.
Yang, Tai-Her. Multiple functioned combined power system. 5,549,524, Cl. 477-3.000.
Yano, Takashi; and Miura, Hiroyuki, to Daicel Chemical Industries, Ltd. Method of controlling reactions. 5,550,279, Cl. 558-277.000.
Yapp, Ronald A. Rod bender for forming surgical implants in the operating room. 5,548,985, Cl. 72-149.000.
Yapp, Ronald A.; and Worrick, Charles B., III, to Codman & Shurtleff, Inc. Osteosynthesis plate system. 5,549,612, Cl. 606-69.000.
Yarita, Soumei: *See*—
Kitada, Katsutsugu; and Yarita, Soumei, 5,549,738, Cl. 106-1.210.
Yarnell, James A., to Dana Corporation. Split pin for transmission synchronizer assembly. 5,549,188, Cl. 192-53.332.
Yarusso, David J.: *See*—
Bredahl, Timothy D.; Leverty, Harold; Smith, Robert L.; Bennett, Richard E.; Yarusso, David J.; Munson, Daniel C.; and Plepys, Anthony R., 5,550,175, Cl. 523-348.000.
Yasuda, Hiroaki: *See*—
Nanami, Shoji; and Yasuda, Hiroaki, 5,550,385, Cl. 250-584.000.
Takagi, Mariko; Yoshii, Ichiro; Hama, Kaoru; Ikeda, Naoki; and Yasuda, Hiroaki, 5,550,400, Cl. 257-530.000.
Yasue, Takao, to Mitsubishi Denki Kabushiki Kaisha. Apparatus and method for analyzing foreign matter on semiconductor wafers and for controlling the manufacturing process of semiconductor devices. 5,550,372, Cl. 250-310.000.
Yasuzumi, Kazumi, to Sumitomo Electric Industries, Ltd. ABS main microprocessor malfunction determinaton based on pressure reduction or holding periods. 5,549,368, Cl. 303-122.080.
Yata, Tatsuo; and Kinoshita, Hideya, to Bridgestone Corporation. Preparation of water-impermeable polyurethane foam. 5,550,169, Cl. 521-112.000.
Yeatts, Ben R. Truck bed liner anti-skid device. 5,549,428, Cl. 410-94.000.
Yeaw, David C.: *See*—
Bober, Thomas W.; Pearl, Terry W.; Vacco, Dominick; and Yeaw, David C., 5,549,820, Cl. 210-199.000.
Yee, Jimmie: *See*—
Lau, Ken; Yee, Jimmie; Mayeda, Rodger; Riccomini, Julian; and Ilyin, Mary, 5,550,476, Cl. 324-522.000.
Yee, Wilson K., to Xilinx, Inc. Programmable scan chain testing structure and method. 5,550,843, Cl. 371-22.300.
Yen, Yeouchung; Chen, Shih-Oh; and Hu, Hung-Kwei, to Actel Corporation. Electrically programmable antifuse having stair aperture. 5,550,404, Cl. 257-530.000.
Yesudas, Michael: *See*—
Moody, Michael J.; Yesudas, Michael; and Michaels, John M., 5,549,162, Cl. 166-264.000.
Ygge, Birgitta; and Vigmo, Terje, to Molnlycke AB. Device for the support of an absorbent article. 5,549,593, Cl. 604-391.000.
YKK Corporation: *See*—
Hashimoto, Koji; Yoshioka, Hideaki; and Kawashima, Asahi, 5,549,797, Cl. 204-192.110.
Yamaguchi, Tadashi; Nosaki, Katsutoshi; Akihisa, Inoue; and Masumoto, Tsuyoshi, 5,549,951, Cl. 428-565.000.

Yoder, Max N., to United States of America, Navy. Negative electron affinity spark plug. 5,550,425, Cl. 313-141.000.
Yokoshima & Company: *See*—
Yokoshima, Yasuhiro, 5,549,856, Cl. 264-36.000.
Yokoshima, Yasuhiro, to Shonan Gosei - Jushi Seisakusho K.K.; and Yokoshima & Company. Method of repairing a pipeline with an injected resin. 5,549,856, Cl. 264-36.000.
Yokota, Keiichi: *See*—
Sato, Toshio; Ito, Ikuo; Maeda, Kazuhiko; Yokota, Keiichi; Namekata, Takeshi; and Nemoto, Akihiko, 5,550,284, Cl. 562-467.000.
Yokoyama, Hiromitsu; Takeuchi, Katsuto; Soekawa, Koji; Abe, Kenichiro; Hattori, Syouichi; Suzuki, Hitoshi; and Okada, Nobuhide, to Fujitsu Limited. Manufacturing method for multilayer ceramic substrate. 5,549,778, Cl. 156-246.000.
Yokoyama, Ikuro: *See*—
Itoh, Kosaku; Yokoyama, Ikuro; Prochut, Richard; Löfstedt, Jörgen; and Nilsson, Christer, 5,549,191, Cl. 198-432.000.
Yokoyama, Thomas W.: *See*—
Valpey, Richard S., III; Shalati, Mohamad D.; Harris, Rodney M.; and Yokoyama, Thomas W., 5,550,197, Cl. 525-327.400.
Yoneyama, Masaru; Shibuya, Takashi; and Miyake, Toshio, to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo. Saccharide in the form of powder, and its preparation and use. 5,550,226, Cl. 536-123.130.
Yoo, Tae W. Moxibusting implement. 5,549,960, Cl. 428-139.000.
Yoon, Dong-Seon, to Daewoo Electronics Co., Ltd. Thin film actuated mirror array having an improved optical efficiency. 5,550,680, Cl. 359-850.000.
Yoon, InBae. Safety penetrating instrument. 5,549,564, Cl. 604-165.000.
Yoshida, Kazuhiro; and Sato, Noriaki, to Fujitsu Ltd.; and Fujitsu VLSI Ltd. Method and apparatus for designing integrated circuits according to master slice approach. 5,551,014, Cl. 395-500.000.
Yoshida, Osamu: *See*—
Fukuda, Koichi; Oba, Tomofumi; Miyazaki, Masanori; Fukui, Hirofumi; Iwasaki, Chisato; Kasama, Yasuhiko; Ohmi, Tadahiro; Kubota, Masaru; Kitagawa, Hitoshi; Nakano, Akira; and Yoshida, Osamu, 5,550,091, Cl. 437-241.000.
Yoshihiro, Shirai, to Sharp Kabushiki Kaisha. Reflector for liquid crystal display having a non-precious metal layer and a precious metal layer successively formed on a plastic film. 5,550,658, Cl. 359-49.000.
Yoshii, Ichiro: *See*—
Takagi, Mariko; Yoshii, Ichiro; Hama, Kaoru; Ikeda, Naoki; and Yasuda, Hiroaki, 5,550,400, Cl. 257-530.000.
Yoshimoto, Kazunari: *See*—
Tohma, Kiyhokazu; Yoshimoto, Kazunari; Sugita, Ryuji; and Ishida, Tatsuaki, 5,549,936, Cl. 427-566.000.
Yoshimura, Shunji; Akiyama, Yoshiyuki; Ohsata, Kiyoshi; Ichimura, Isao; Watanabe, Toshio; and Katsuramoto, Shinji, to Sony Corporation. Motion picture film with digital sound track. 5,550,603, Cl. 352-27.000.
Yoshimura, Shunji: *See*—
Kimura, Motoi; Yoshimura, Shunji; and Suzuki, Kyoko, 5,550,797, Cl. 369-44.410.
Yoshino, Hiroshi: *See*—
Ishida, Tokuji; Nakanishi, Yasuo; Ishimura, Toshihiko; Katoh, Takehiro; Ishibashi, Kenji; Hara, Yoshihiro; Kondo, Takashi; and Yoshino, Hiroshi, 5,550,611, Cl. 354-400.000.
Yoshino, Ichiro: *See*—
Eberlein, Timothy J.; Peoples, George E.; Yoshino, Ichiro; and Goedegebuure, Peter, 5,550,214, Cl. 530-328.000.
Yoshioka, Hideaki: *See*—
Hashimoto, Koji; Yoshioka, Hideaki; and Kawashima, Asahi, 5,549,797, Cl. 204-192.110.
Young, Craig; Sussman, Glenn R.; and Cunanan, Crystal M., to Allergan, Inc. IOL for reducing secondary opacification. 5,549,670, Cl. 623-6.000.
Young, David J., to Eastman Kodak Company. Dispersions and emulsions comprising a fatty acid ester to reduce viscosity. 5,549,845, Cl. 252-312.000.
Young, James F.: *See*—
Matthews, Kent R.; Schakel, Eric G.; Morton, Lowell K.; and Young, James F., 5,549,753, Cl. 118-316.000.
Young, Michael J. R.; and Bradnock, Brian R. D. P., to Orthosonics Ltd. Apparatus for ultrasonic therapeutic treatment. 5,549,544, Cl. 601-2.000.
Young, Robert, to HPR Corporation. Method and apparatus for thermal decomposition and separation of components within an aqueous stream. 5,550,311, Cl. 588-19.000.
Young, Roy A.: *See*—
Loeb, Gerald E.; Young, Roy A.; and Hood, Kevin H., 5,551,016, Cl. 395-550.000.
Yount, Larry J.: *See*—
Hay, Rick H.; Smith, Clarence S.; Girts, Robert D.; and Yount, Larry J., 5,550,736, Cl. 364-424.030.
Yozan Inc.: *See*—
Takatori, Sunao; and Yamamoto, Makoto, 5,550,949, Cl. 395-2.150.
Takatori, Sunao; and Yamamoto, Makoto, 5,550,950, Cl. 395-221.000.
Yu, DeQuan: *See*—
Gaston, Robert D.; and Yu, DeQuan, 5,549,446, Cl. 415-55.100.
Yu, Hui-Nan. Stationary bike. 5,549,527, Cl. 482-57.000.
Yu, Robert C. U.: *See*—
Herbert, William G.; Mishra, Satchidanand; Post, Richard L.; VonHoene, Donald C.; Yu, Robert C. U.; Foley, Geoffrey M. T.; and Limburg, William W., 5,550,618, Cl. 355-211.000.
Yu, Ruey J.; and Van Scott, Eugene J., to Tristrata, Inc. Method of treating wrinkles using glucuronic acid or glucuronolactone. 5,550,154, Cl. 514-473.000.
Yu, Ruey J.; and Van Scott, Eugene J., to Tristrata, Inc. Method of treating wrinkles using glucoheptonic acid. 5,550,158, Cl. 514-557.000.
Yuan, John K.: *See*—
Taborn, Michael P.; and Yuan, John K., 5,550,767, Cl. 364-745.000.
Yuhas, Gary R. Oil absorbent pad. 5,549,178, Cl. 184-106.000.
Yun, Ji-Seop; Park, Byung-Seok; Lee, Jae-Seol; and Park, Hyun-Su, to Korea Atomic Energy Research Institute. Velocity control method for preventing oscillations in crane. 5,550,733, Cl. 364-174.000.
Yun, Young W.; Martel, Lawrence B.; Janick, Keith; and Bruno, Ralph J. Inline skateboard. 5,549,331, Cl. 280-843.000.
Yurga, Donald C. Adjustable target holder. 5,549,208, Cl. 211-207.000.
Yurt, Paul; and Browne, H. Lee, to Browne, H. Lee. Audio and video transmission and receiving system. 5,550,863, Cl. 375-240.000.
Zablocki, Jeffery A.: *See*—
Bovy, Philippe R.; Garland, Robert B.; Miyano, Masateru; Rico, Joseph G.; Rogers, Thomas E.; and Zablocki, Jeffery A., 5,550,159, Cl. 514-563.000.
Zagozdzon-Wosik, Wanda: *See*—
Wolfe, John C.; and Zagozdzon-Wosik, Wanda, 5,550,082, Cl. 437-168.000.
Zaguroli, James, Jr., to Knight Industries, Inc. Return mechanism for gravity conveyor. 5,549,192, Cl. 198-795.000.
Zäh, Matthias: *See*—
Gaa, Karl; and Zäh, Matthias, 5,550,234, Cl. 540-466.000.
Gaa, Karl; and Zäh, Matthias, 5,550,242, Cl. 548-19.000.
Zajec, Jozef-Franc, to Sulzer Papertec Krefeld GmbH. Method and apparatus for packaging a roll of material. 5,548,942, Cl. 53-465.000.
Zak, Roger: *See*—
James, Jay; Zak, Roger; Loeffler, Michael; and Friezen, Robert, 5,549,313, Cl. 280-221.000.
Zambon Group S.p.A.: *See*—
Cannata, Vincenzo; Merli, Valeriano; and Dal Santo, Claudio, 5,550,287, Cl. 564-153.000.
Zarandi, Marta; and Schally, Andrew V., to Tulane Educationai Fund, The Administrators of the. Analogues of hGH-RH(1-29)NH_2 having antagonistic activity. 5,550,212, Cl. 530-324.000.
Zarowitz, Michael A.: *See*—
Saunders, Alexander; Summerfield, Frank W.; and Zarowitz, Michael A., 5,550,060, Cl. 436-63.000.
Zaschel, Jörg, to Joerg Zaschel. Apparatus for determining and dosing mass flows. 5,549,009, Cl. 73-861.355.
Zasloff, Michael A.: *See*—
Schonwetter, Barry S.; and Zasloff, Michael A., 5,550,109, Cl. 514-12.000.
Zawislak, Robert M.: *See*—
King, Kenneth J.; Zawislak, Robert M.; and Vokoun, Richard C., 5,550,434, Cl. 315-160.000.
Zdanov, Olga. Carrying case for hygienic telephone sheilds. 5,550,918, Cl. 379-452.000.
Zeheb, Ron; and Rodgers, Paula M., to Ventana Medical Systems, Inc. High temperature evaporation inhibitor liquid. 5,549,848, Cl. 252-408.100.
Zeisler, Kurt E.; and Miller, Ralph E., to Miller Pipeline Corporation. Retaining band assembly for internal pipe seals. 5,549,334, Cl. 285-189.000.
Zelicof, Steven B.: *See*—
Epstein, Norman; and Zelicof, Steven B., 5,549,689, Cl. 623-20.000.
Zeller, Mathias, to Twix Equipment AG. Device and process for the reversible storage of electric energy by its reversible conversion to kinetic energy. 5,550,444, Cl. 318-139.000.
Zemaitis, Walter A.; Covington, Edward A.; Lanier, Roland V., Jr.; and Hovis, Gary U., to Dana Corporation. Air filter assemblies and a frustoconical air filter element for use with the assemblies. 5,549,722, Cl. 55-463.000.
Zeneca Limited: *See*—
Ellis, Martin K.; Lindstedt, Sven T.; Lock, Edward A.; Markstedt, Maj E. H.; Mutter, Linda C.; and Prisbylla, Michael P., 5,550,165, Cl. 514-676.000.
Hammond, Timothy; and Bal, Jasbinder S., 5,550,173, Cl. 523-122.000.
Jacobs, Robert T.; Ohnmacht, Cyrus J.; and Trainor, Diane A., 5,550,136, Cl. 514-322.000.
Zeng, Fan-Gang: *See*—
Shannon, Robert V.; Loeb, Gerald E.; and Zeng, Fan-Gang, 5,549,658, Cl. 607-57.000.
Zenith Data Systems Corporation: *See*—
Foster, Mark J.; Fakhruddin, Saifuddin T.; Walker, James L.; Mendelow, Matthew B.; Sun, Jiming; Brahman, Rodman S.; Krau, Michael P.; Willoughby, Brian D.; Maddix, Michael D.; Belt, Steven L.; Hovey, Scott A.; and Ruthenbeck, Mark A., 5,551,033, Cl. 395-650.000.
Zeno, Joseph R.: *See*—
Cholakon, Rifka; Errera, Tracy C.; and Zeno, Joseph R., 5,549,440, Cl. 414-723.000.
Zeranski, Robert R.: *See*—
Palko, Joseph; and Zeranski, Robert R., 5,550,450, Cl. 318-800.000.
Zexel Corporation: *See*—
Fujii, Takao; and Abe, Tatsuhiko, 5,550,538, Cl. 340-995.000.
Zexel USA Corporation: *See*—
Hindle, Clive R., 5,549,238, Cl. 228-183.000.
ZF Friedrichshafen: *See*—
Wendel, Peter, 5,549,525, Cl. 477-93.000.

ZF Friedrichshafen AG: *See*—
Ege, Hans-Jürgen; Horsak, Günther; and Wiggermann, Peter, 5,550,449, Cl. 318-632.000.
Löffler, Alfons; and Schwarz, Josef, 5,549,184, Cl. 192-3.300.
Vogt, Richard, 5,549,452, Cl. 417-199.100.
Zhang, Jia: *See*—
Lu, Daozheng; Shagrin, Ceril T.; Thomas, William L.; Lee, Morris; Bernard, Bruce; and Zhang, Jia, 5,550,928, Cl. 382-116.000.
Zhang, Jinshan: *See*—
Venugopal, Ganesh; Reichert, Veronica R.; and Zhang, Jinshan, 5,549,987, Cl. 429-188.000.
Zhang, John: *See*—
Patterson, Frank; Zhang, John; and Purtell, George, 5,549,576, Cl. 604-247.000.
Zhang, Qinghua; Qin, Bai-Lin; Barbosa-Canovas, Gustavo V.; Swanson, Barry G.; and Pedrow, Patrick D., to Washington State University Research Foundation. Batch mode food treatment using pulsed electric fields. 5,549,041, Cl. 99-451.000.
Zhong, Qian: *See*—
Inniss, Daryl; Vengsarkar, Ashish M.; and Zhong, Qian, 5,550,948, Cl. 385-147.000.
Zhou, Peter S.: *See*—
Buchanan, Harry C., Jr.; and Zhou, Peter S., 5,549,183, Cl. 188-265.000.
Zhou, Yong, to Lucent Technologies Inc. Low bit rate audio-visual communication system having integrated perceptual speech and video coding. 5,550,580, Cl. 348-15.000.
Zhou, Yong, to Lucent Technologies Inc. Low bit rate audio-visual communication system having integrated perceptual speech and video coding. 5,550,581, Cl. 348-17.000.
Zhu, Qin-Fan, to Motorola, Inc. Device and method of signal loss recovery for realtime and/or interactive communications. 5,550,847, Cl. 371-32.000.
Ziarno, Witold A. Display cursor controlling device for reading card information from an information bearing credit or debit card. 5,550,561, Cl. 345-163.000.
Ziba Design, Inc.: *See*—
Park, Eric Y.; Knaub, David; Thorpe, David; Barney, Howard; and Hoyt, Joshua, 5,549,010, Cl. 73-861.790.
Zielinski, Erich; and Weiser, Gerhard, to Alcatel N.V. Electro-optic modulator using multiple quantum well structure having stark-effect quantum Barriers and non-stark-effect quantum barriers sandwiched therebetween. 5,550,670, Cl. 359-248.000.
Zimmer, Inc.: *See*—
Hayes, Kevin B., 5,549,685, Cl. 623-20.000.
Johnson, Todd S.; and Greig, Kevin M., 5,549,686, Cl. 623-20.000.
Zimmerman, Harvey. Three piece hinge type drop-leaf support. 5,549,051, Cl. 108-81.000.
Zimmerman, Ralph W. Thermostat range limit device. 5,550,524, Cl. 337-1.000.
Zimmermann, Klaus: *See*—
Ernert, Klaus; Röder, Arno; and Zimmermann, Klaus, 5,550,335, Cl. 181-207.000.
Zinke, Randy J., to UOP. FCC stripper with spoke arrangement for bi-directional catalyst stripping. 5,549,814, Cl. 208-150.000.
Zinnen, Nobert: *See*—
Kuhr, Wolfgang; and Zinnen, Nobert, 5,549,147, Cl. 152-209.00R.
Zimgibl, Martin, to Lucent Technologies Inc. Wavelength division multiplexed multi-frequency optical source and broadband incoherent optical source. 5,550,666, Cl. 359-125.000.
Zisner, Tuvia; Holdengraber, Curt; and Lampert, Shalom, to Dead Sea Works. Production of potassium sulfate using differential contacting. 5,549,876, Cl. 423-199.000.
Zittel, David R.; and Wornson, Douglas P., to Lyco Manufacturing, Inc. Vegetable peel fraction inspection apparatus. 5,550,927, Cl. 382-110.000.
Zivkovic, Jovan: *See*—
Schroeder, Hubert J.; and Zivkovic, Jovan, 5,549,783, Cl. 156-542.000.
Zook, J. David: *See*—
Burns, David W.; and Zook, J. David, 5,550,516, Cl. 331-65.000.
Zucker, Friedhelm, to Deutsche Thomson-Brandt GmbH. Pick-up with adaptation. 5,550,800, Cl. 369-116.000.
Zuckerman, Bert M.; Dicklow, M. B.; and Marban-Mendoza, Nahum, to Research Corporation Technologies, Inc. Nematocidal and fungicidal *Streptomyces dicklowii* biopesticide. 5,549,889, Cl. 424-93.430.
Zumeris, Jona, to Nanomotion Ltd. Ceramic motor. 5,550,419, Cl. 310-323.000.
Zushi, Shizuo: *See*—
Uematsu, Takao; Shoji, Mitsuyoshi; Nakakawaji, Takayuki; Komatsuzaki, Shigeki; Ito, Yutaka; Morihara, Atsushi; Sato, Koji; Zushi, Shizuo; and Go, Hiroshi, 5,549,835, Cl. 508-204.000.
Zwingenberger, Jan: *See*—
Krauss, Werner; Zwingenberger, Jan; and Jaggy, Peter, 5,549,110, Cl. 128-661.010.
Zydzik, George J.: *See*—
Dutta, Niloy K.; Fischer, Russell J.; Hunt, Neil E. J.; Passlack, Matthias; Schubert, Erdmann F.; and Zydzik, George J., 5,550,089, Cl. 437-225.000.
ZymoGenetics, Inc.: *See*—
West, Robert R.; Van Ness, Jeffrey; and Varming, Annemarie R., 5,550,148, Cl. 514-408.000.
3156729 Canada Inc.: *See*—
Gaudet, Pierre; and Léveillé, Nathalie, 5,549,353, Cl. 297-182.000.

VOL 1189 ISS 4 AG 27 1996 UMI

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 27th DAY OF AUGUST, 1996

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Agata, Mitsuzi: *See*—
Inukai, Sinji; Agata, Mitsuzi; Umezawa, Manami; Horio, Yoshihiro; Ootake, Yasuhiro; Sawaki, Shohei; and Goto, Masayoshi, Re. 35,321, Cl. 514-381.000.

Arizona Board of Regents, The: *See*—
Lindsay, Stuart M., Re. 35,317, Cl. 250-307.000.

Asai, Naoki: *See*—
Yamada, Masahiko; Ito, Yoshikazu; and Asai, Naoki, Re. 35,319, Cl. 400-605.000.

Bayer Corporation: *See*—
Negersmith, Kent M.; and Farrell, Gregory A., Re. 35,316, Cl. 210-798.000.

CPC International Inc.: *See*—
Kinnersley, Alan M.; Scott, Taylor C., III; Yopp, John H.; and Whitten, George H., Re. 35,320, Cl. 504-161.000.

Farrell, Gregory A.: *See*—
Negersmith, Kent M.; and Farrell, Gregory A., Re. 35,316, Cl. 210-798.000.

Goto, Masayoshi: *See*—
Inukai, Sinji; Agata, Mitsuzi; Umezawa, Manami; Horio, Yoshihiro; Ootake, Yasuhiro; Sawaki, Shohei; and Goto, Masayoshi, Re. 35,321, Cl. 514-381.000.

Horio, Yoshihiro: *See*—
Inukai, Sinji; Agata, Mitsuzi; Umezawa, Manami; Horio, Yoshihiro; Ootake, Yasuhiro; Sawaki, Shohei; and Goto, Masayoshi, Re. 35,321, Cl. 514-381.000.

Inukai, Sinji; Agata, Mitsuzi; Umezawa, Manami; Horio, Yoshihiro; Ootake, Yasuhiro; Sawaki, Shohei; and Goto, Masayoshi, to Wakamoto Pharmaceutical Co., Ltd. Tetrazoleacetic acid derivatives having aldose reductase inhibitory activity. Re. 35,321, Cl. 514-381.000.

Ito, Yoshikazu: *See*—
Yamada, Masahiko; Ito, Yoshikazu; and Asai, Naoki, Re. 35,319, Cl. 400-605.000.

Kinnersley, Alan M.; Scott, Taylor C., III; Yopp, John H.; and Whitten, George H., to CPC International Inc. Method for regulating plant growth. Re. 35,320, Cl. 504-161.000.

Lindsay, Stuart M., to Arizona Board of Regents, The. Potentiostatic preparation of molecular adsorbates for scanning probe microscopy. Re. 35,317, Cl. 250-307.000.

Negersmith, Kent M.; and Farrell, Gregory A., to Bayer Corporation. Method for filtering a fluid sample using an in-line fluid filter for an automated analyzer. Re. 35,316, Cl. 210-798.000.

Ootake, Yasuhiro: *See*—
Inukai, Sinji; Agata, Mitsuzi; Umezawa, Manami; Horio, Yoshihiro; Ootake, Yasuhiro; Sawaki, Shohei; and Goto, Masayoshi, Re. 35,321, Cl. 514-381.000.

Sawaki, Shohei: *See*—
Inukai, Sinji; Agata, Mitsuzi; Umezawa, Manami; Horio, Yoshihiro; Ootake, Yasuhiro; Sawaki, Shohei; and Goto, Masayoshi, Re. 35,321, Cl. 514-381.000.

Scott, Taylor C., III: *See*—
Kinnersley, Alan M.; Scott, Taylor C., III; Yopp, John H.; and Whitten, George H., Re. 35,320, Cl. 504-161.000.

Seiko Epson Corporation: *See*—
Yamada, Masahiko; Ito, Yoshikazu; and Asai, Naoki, Re. 35,319, Cl. 400-605.000.

Umezawa, Manami: *See*—
Inukai, Sinji; Agata, Mitsuzi; Umezawa, Manami; Horio, Yoshihiro; Ootake, Yasuhiro; Sawaki, Shohei; and Goto, Masayoshi, Re. 35,321, Cl. 514-381.000.

Wakamoto Pharmaceutical Co., Ltd.: *See*—
Inukai, Sinji; Agata, Mitsuzi; Umezawa, Manami; Horio, Yoshihiro; Ootake, Yasuhiro; Sawaki, Shohei; and Goto, Masayoshi, Re. 35,321, Cl. 514-381.000.

Warman, William J. Viewing screen protective shield. Re. 35,318, Cl. 313-479.000.

Whitten, George H.: *See*—
Kinnersley, Alan M.; Scott, Taylor C., III; Yopp, John H.; and Whitten, George H., Re. 35,320, Cl. 504-161.000.

Yamada, Masahiko; Ito, Yoshikazu; and Asai, Naoki, to Seiko Epson Corporation. Printer accommodating two types of printing sheets. Re. 35,319, Cl. 400-605.000.

Yopp, John H.: *See*—
Kinnersley, Alan M.; Scott, Taylor C., III; Yopp, John H.; and Whitten, George H., Re. 35,320, Cl. 504-161.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Chaban, Richard: *See*—
Rutenberg, Mark R.; Hall, Thomas L.; Domes, Robert; Chaban, Richard; Dulak, Thomas; Herriman, James M.; Porzio, John; Luck, Randall L.; and Knapp, James, B1 5,287,272, Cl. 364-413.010.

Domes, Robert: *See*—
Rutenberg, Mark R.; Hall, Thomas L.; Domes, Robert; Chaban, Richard; Dulak, Thomas; Herriman, James M.; Porzio, John; Luck, Randall L.; and Knapp, James, B1 5,287,272, Cl. 364-413.010.

Dulak, Thomas: *See*—
Rutenberg, Mark R.; Hall, Thomas L.; Domes, Robert; Chaban, Richard; Dulak, Thomas; Herriman, James M.; Porzio, John; Luck, Randall L.; and Knapp, James, B1 5,287,272, Cl. 364-413.010.

Environmental Dynamics, Inc.: *See*—
Tharp, Charles E., B1 4,563,277, Cl. 210-220.000.

Hall, Thomas L.: *See*—
Rutenberg, Mark R.; Hall, Thomas L.; Domes, Robert; Chaban, Richard; Dulak, Thomas; Herriman, James M.; Porzio, John; Luck, Randall L.; and Knapp, James, B1 5,287,272, Cl. 364-413.010.

Herriman, James M.: *See*—
Rutenberg, Mark R.; Hall, Thomas L.; Domes, Robert; Chaban, Richard; Dulak, Thomas; Herriman, James M.; Porzio, John; Luck, Randall L.; and Knapp, James, B1 5,287,272, Cl. 364-413.010.

Honda Giken Kogyok Kabushiki Kaisha: *See*—
Tsujii, Gen; and Yanagisawa, Takashi, B1 4,571,669, Cl. 363-144.000.

Killion, Mead C., to Knowles Electronics, Inc. Class D hearing aid amplifier. B1 4,689,819, Cl. 381-68.000.

Knapp, James: *See*—
Rutenberg, Mark R.; Hall, Thomas L.; Domes, Robert; Chaban, Richard; Dulak, Thomas; Herriman, James M.; Porzio, John; Luck, Randall L.; and Knapp, James, B1 5,287,272, Cl. 364-413.010.

Knowles Electronics, Inc.: *See*—
Killion, Mead C., B1 4,689,819, Cl. 381-68.000.

Luck, Randall L.: *See*—
Rutenberg, Mark R.; Hall, Thomas L.; Domes, Robert; Chaban, Richard; Dulak, Thomas; Herriman, James M.; Porzio, John; Luck, Randall L.; and Knapp, James, B1 5,287,272, Cl. 364-413.010.

Neuromedical Systems, Inc.: *See*—
Rutenberg, Mark R.; Hall, Thomas L.; Domes, Robert; Chaban, Richard; Dulak, Thomas; Herriman, James M.; Porzio, John; Luck, Randall L.; and Knapp, James, B1 5,287,272, Cl. 364-413.010.

Pall Corporation: *See*—
Pall, David B., B1 4,340,479, Cl. 210-490.000.

Pall, David B., to Pall Corporation. Process for preparing hydrophilic polyamide membrane filter media and product. B1 4,340,479, Cl. 210-490.000.

Porzio, John: *See*—
Rutenberg, Mark R.; Hall, Thomas L.; Domes, Robert; Chaban, Richard; Dulak, Thomas; Herriman, James M.; Porzio, John; Luck, Randall L.; and Knapp, James, B1 5,287,272, Cl. 364-413.010.

Rutenberg, Mark R.; Hall, Thomas L.; Domes, Robert; Chaban, Richard; Dulak, Thomas; Herriman, James M.; Porzio, John; Luck, Randall L.; and Knapp, James, to Neuromedical Systems, Inc. Automated cytological specimen classification system and method. B1 5,287,272, Cl. 364-413.010.

Tharp, Charles E., to Environmental Dynamics, Inc. Apparatus for aerating and mixing waste water. B1 4,563,277, Cl. 210-220.000.

Tsujii, Gen; and Yanagisawa, Takashi, to Honda Giken Kogyok Kabushiki Kaisha. Transformer with rectifier. B1 4,571,669, Cl. 363-144.000.

Yanagisawa, Takashi: *See*—
Tsujii, Gen; and Yanagisawa, Takashi, B1 4,571,669, Cl. 363-144.000.

LIST OF DESIGN PATENTEES

Acer America Corporation: *See*—
Barthelemy, Matthew; Goh, Garry; Harden, Daniel K.; Lenart, Christopher; and Sauceda, Barbara, 373,117, Cl. D14-100.000.

Adams, Terry; Ambrosio, Neil J.; Bratton, William E.; Hatton, Bruce E.; Kinder, Larry L.; and Swat, William A., to Progressive Games, Inc. Ashtray. 373,217, Cl. D27-102.000.

Airey, Charles W., to Envisionairey Products, Inc. Detachable anchor bracket for a pool cover. 373,068, Cl. D8-349.000.

Akaiwa, Masao; and Nakazawa, Shinobu, to Seiko Epson Corporation. Data imprinting device for a camera. 373,131, Cl. D16-219.000.

Alberti, V. Vic. Portable cellular phone carrier. 373,018, Cl. D3-218.000.

Allegre, Jean P., to Allegre Puericulture Hygiene S.A. Dinner plate. 373,053, Cl. D7-587.000.

Allegre Puericulture Hygiene S.A.: *See*—
Allegre, Jean P., 373,053, Cl. D7-587.000.

Allied Wholesale, Inc.: *See*—
Bennett, Jeffrey E., 373,090, Cl. D10-72.000.

Aloys F. Dornbracht GmbH & Co. KG: *See*—
Sieger, Dieter, 373,179, Cl. D23-241.000.

Ambrosio, Neil J.: *See*—
Adams, Terry; Ambrosio, Neil J.; Bratton, William E.; Hatton, Bruce E.; Kinder, Larry L.; and Swat, William A., 373,217, Cl. D27-102.000.

Amyx, Daniel A.: *See*—
Theroux, Claire J.; and Amyx, Daniel A., 373,225, Cl. D29-114.000.

Anderson, Steven A.; Pilosi, Paul A.; and Schoenert, Richard C., to Wagner Spray Tech Corporation. Stain sprayer. 373,172, Cl. D23-225.000.

André, Bartley K.; and Ive, Jonathan P., to Apple Computer, Inc. Computer display. 373,120, Cl. D14-113.000.

Apple Computer, Inc.: *See*—
André, Bartley K.; and Ive, Jonathan P., 373,120, Cl. D14-113.000.
Deluliis, Daniele; and Ive, Jonathan P., 373,121, Cl. D14-114.000.

Arrow Plastic Manufacturing Co.: *See*—
Brewer, Charles A.; Cohen, Bruce S.; Cohen, James A.; Kleckauskas, Robert J.; Rustemeyer, Jeffrey A.; and Thuma, Michael C., 373,050, Cl. D7-505.000.

Asics Corporation: *See*—
Nozu, Hiroshi; Inoue, Nobutane; and Yoshikawa, Kazumasa, 373,012, Cl. D2-954.000.

Atelier Sen, Inc.: *See*—
Chung, Matchy L. C., 373,108, Cl. D13-103.000.

Backstrom, Mikael: *See*—
Herbst, Walter B.; Backstrom, Mikael; and Lazar, Ralph, 373,058, Cl. D8-50.000.

Baillie-Hamilton, John W.; and Weakley, Alastair J. Diffuser for photographic flashlamp. 373,132, Cl. D16-237.000.

Bain, Stephen E., to Forest Technology Corporation. Fireplace grate. 373,186, Cl. D23-398.000.

Bajer Design & Marketing, Inc.: *See*—
Kellogg, Michael S., 373,073, Cl. D8-373.000.

Barthelemy, Matthew; Goh, Garry; Harden, Daniel K.; Lenart, Christopher; and Sauceda, Barbara, to Acer America Corporation. Computer housing. 373,117, Cl. D14-100.000.

Baskent, Feyyaz O.: *See*—
Bonaddio, Vincenzo A.; and Baskent, Feyyaz O., 373,042, Cl. D6-601.000.

Béhar, Yves; and Lee, Eok-nyun, to Taihan Electric Wire Co., Ltd. Combined cordless hand phone and charger. 373,124, Cl. D14-148.000.

Bengtsson, Per: *See*—
Kornfalt, Sven; and Bengtsson, Per, 373,203, Cl. D25-136.000.

Bennett, Jeffrey E., to Allied Wholesale, Inc. Tape measure case. 373,090, Cl. D10-72.000.

Bergagaini, Norberto, to Sandberg & Sikorski Diamond Corp. Finger ring. 373,096, Cl. D11-28.000.

Bertani, Alberto: *See*—
Decursu, Giorgio; and Bertani, Alberto, 373,064, Cl. D8-308.000.

Bertram, Randal L.; and Swansey, John D., to International Business Machines Corporation. Musical keyboard. 373,134, Cl. D17-1.000.

Better, Charles: *See*—
Keller, Diane; Keller, Frank; Better, Charles; and Pettersen, Edwin, 373,035, Cl. D6-477.000.

Beyer, Douglas H., to Richmond Technology, Inc. Air ionizing ring. 373,183, Cl. D23-364.000.

Black & Decker Inc.: *See*—
Santarsiero, Paul S., 373,210, Cl. D26-43.000.

Blain, Roger. Vacuum connected floor mat. 373,204, Cl. D25-138.000.

Bloom, David S.; Bloom, Michael A.; Bloom, Drucella A.; and Bloom, Timothy K. Combined multi-chute bird feeder with recapture bin. 373,226, Cl. D30-124.000.

Bloom, Drucella A.: *See*—
Bloom, David S.; Bloom, Michael A.; Bloom, Drucella A.; and Bloom, Timothy K., 373,226, Cl. D30-124.000.

Bloom, Michael A.: *See*—
Bloom, David S.; Bloom, Michael A.; Bloom, Drucella A.; and Bloom, Timothy K., 373,226, Cl. D30-124.000.

Bloom, Timothy K.: *See*—
Bloom, David S.; Bloom, Michael A.; Bloom, Drucella A.; and Bloom, Timothy K., 373,226, Cl. D30-124.000.

Bobby Grace Golf Design, Inc.: *See*—
Grace, Bobby, 373,160, Cl. D21-217.000.

Bolam, Kenneth M.: *See*—
Ribando, Philip P.; Bolam, Kenneth M.; and Peeler, Donald H., 373,191, Cl. D24-129.000.

Bonaddio, Vincenzo A.; and Baskent, Feyyaz O., to FOAMEX L.P. Synthetic foam pillow with integral neckroll. 373,042, Cl. D6-601.000.

Booda Products, Inc.: *See*—
O'Rourke, Anthony; and Byrne, Charles, 373,229, Cl. D30-160.000.

Booth, Walter; and Levin, Alan R., to H-Tech, Inc. Combined valve indicator and handle. 373,176, Cl. D23-233.000.

Boots Company PLC, The: *See*—
Dickinson, Jeffrey; and Khan, Karrar A., 373,187, Cl. D24-103.000.

Bouchard, Robert C.: *See*—
Murphy, David L.; and Bouchard, Robert C., 373,192, Cl. D24-129.000.

Bouteiller, Christian, to Telemecanique. Front panel of an electrical contactor. 373,111, Cl. D13-159.000.

Bowman, Samuel L. Amusement r.v. camper. 373,157, Cl. D21-140.000.

Bratton, William E.: *See*—
Adams, Terry; Ambrosio, Neil J.; Bratton, William E.; Hatton, Bruce E.; Kinder, Larry L.; and Swat, William A., 373,217, Cl. D27-102.000.

Breen, John D.; and Casteel, Stephen P., to Rubbermaid Incorporated. Storage container. 373,021, Cl. D3-276.000.

Brewer, Charles A.; Cohen, Bruce S.; Cohen, James A.; Kleckauskas, Robert J.; Rustemeyer, Jeffrey A.; and Thuma, Michael C., to Arrow Plastic Manufacturing Co. Bowl. 373,050, Cl. D7-505.000.

Bridger, Gordon B. Combined portable food and condiment container. 373,081, Cl. D9-430.000.

BRK Brands, Inc.: *See*—
Fenne, Kenneth R., 373,093, Cl. D10-106.000.

Brown, Charles W. Computerized music recording and playback system. 373,109, Cl. D14-167.000.

Brown, David W. Garment for covering an animal. 373,228, Cl. D30-145.000.

Bruce Kirby, Inc.: *See*—
Kirby, Bruce R. W., 373,156, Cl. D21-130.000.

Brunner, Merlin A.; and Draheim, Harvey J., to Simmons Juvenile Products Company, Inc. Crib endboard. 373,036, Cl. D6-508.000.

Buffalo Bag LLC, The: *See*—
Guidi, Randolph J., 373,106, Cl. D12-423.000.

Bulgari, Paolo, to Bulgari S.p.A. Necklace. 373,095, Cl. D11-6.000.

Bulgari S.p.A.: *See*—
Bulgari, Paolo, 373,095, Cl. D11-6.000.

Bustamante, Julito A.: *See*—
Wandler, Donald; Bustamante, Julito A.; Solberg, Kent; and Ternberg, Cory, 373,206, Cl. D26-63.000.

Byars, Tammye L.: *See*—
Lund, Doug M.; Ford, John M. B.; and Byars, Tammye L., 373,220, Cl. D28-77.000.

Byrne, Charles: *See*—
O'Rourke, Anthony; and Byrne, Charles, 373,229, Cl. D30-160.000.

Caeran, Francesco: *See*—
Edauw, Peter; and Caeran, Francesco, 373,165, Cl. D21-226.000.
Edauw, Peter; and Caeran, Francesco, 373,166, Cl. D21-226.000.

Caley, Malcolm, to McKechnie UK Limited. Tile edging strip. 373,205, Cl. D25-164.000.

Canon Kabushiki Kaisha: *See*—
Tokuda, Hiroyuki; Takenouchi, Masanori; Kotaki, Yasuo; and Hamasaki, Yuji, 373,138, Cl. D18-56.000.

Carsello, Anthony J., to Emhart Inc. Cylinder portion of a lever type lockset. 373,063, Cl. D8-308.000.

Carter, Randy B. Motorcycle trailer. 373,100, Cl. D12-102.000.

Casteel, Stephen P.: *See*—
Breen, John D.; and Casteel, Stephen P., 373,021, Cl. D3-276.000.

Chen, Benjamin M. J., to Regitar Power Tools Co., Ltd. Electric stapler. 373,057, Cl. D8-49.000.

Chen, Chao K. Chair. 373,030, Cl. D6-341.000.

Chen, Hsi C. Lipstick case. 373,222, Cl. D28-87.000.

Chen, Joe. Bathroom cabinet. 373,038, Cl. D6-561.000.

Cheng, Kui-Eng. Hat gift box. 373,078, Cl. D9-320.000.

Chiang, Wei-Feng. Sock. 373,014, Cl. D2-980.000.

Chiu, Li-Mei. Figurine. 373,097, Cl. D11-160.000.

Choi, James H. Octagonal wire spoke wire wheels. 373,102, Cl. D12-213.000.
Choi, Young R., to Pacific Corporation. Cosmetic cream container. 373,084, Cl. D9-504.000.
Chrysler Corporation: *See*—
Magic, Andrew D.; Muccioli, James P.; Kifer, Harlan E.; and Wielgat, Michael W., 373,128, Cl. D14-258.000.
Chung, Matchy L. C., to Atelier Sen, Inc. Battery pack. 373,108, Cl. D13-103.000.
Ciesko, Mark J.: *See*—
Sebor, Pavel; Phillipson, Brian H.; Ciesko, Mark J.; and Murrell, Spencer B., 373,230, Cl. D32-1.000.
Cimock, Benjamin J., to I & K Trading. Toy flashlight. 373,155, Cl. D21-120.000.
Clark, Foy. Earthquake evacuation light. 373,212, Cl. D26-74.000.
Coca-Cola Company, The: *See*—
Fahlen, Eden, 373,079, Cl. D9-346.000.
Cohen, Bruce S.: *See*—
Brewer, Charles A.; Cohen, Bruce S.; Cohen, James A.; Kleckauskas, Robert J.; Rustemeyer, Jeffrey A.; and Thuma, Michael C., 373,050, Cl. D7-505.000.
Cohen, James A.: *See*—
Brewer, Charles A.; Cohen, Bruce S.; Cohen, James A.; Kleckauskas, Robert J.; Rustemeyer, Jeffrey A.; and Thuma, Michael C., 373,050, Cl. D7-505.000.
Cohen, Milton L.; and Siegel, Jeff, to Lifetime Hoan Corporation. Display basket. 373,039, Cl. D6-566.000.
Colitto, Domenic, to Royal Extrusions Limited. Window jamb. 373,200, Cl. D25-124.000.
Cosmair, Inc.: *See*—
Gavin, Ellen, 373,219, Cl. D28-76.000.
Crawford, Clark W.: *See*—
Jones, Brent R.; Crawford, Clark W.; and Wright, John A., 373,139, Cl. D18-56.000.
Criscuolo, James M.: *See*—
Molzon, William R.; and Criscuolo, James M., 373,099, Cl. D12-16.000.
Crow, Christy; and Higginbotham, John. Game board. 373,148, Cl. D21-29.000.
D. B. Hueber Golf Company: *See*—
Hueber, David B., 373,056, Cl. D8-13.000.
Das, Satyendranath. Combined pour spout and cap for a container. 373,083, Cl. D9-447.000.
De'Armond, Robert, to Newell Operating Company. Knob. 373,065, Cl. D8-310.000.
De'Armond, Robert, to Newell Operating Company. Knob. 373,066, Cl. D8-310.000.
De'Armond, Robert, to Newell Operating Company. Pull. 373,067, Cl. D8-317.000.
Decursu, Giorgio; and Bertani, Alberto, to Elesa S.p.A. Hand wheel with foldable crank arm. 373,064, Cl. D8-308.000.
Deluliis, Daniele; and Ive, Jonathan P., to Apple Computer, Inc. Cradle for a personal digital assistant. 373,121, Cl. D14-114.000.
Delebreau, Peter J.; and Schmidt, Bradley G., to Fort Howard Corporation. One side of a paper wipe product. 373,026, Cl. D5-20.000.
Delta International Machinery Corp.: *See*—
Wixey, Barry D.; Young, Ronald E.; and Hollinger, David N., 373,129, Cl. D15-133.000.
Design Ideas, Ltd.: *See*—
Milroy, Craig, 373,040, Cl. D6-566.000.
Di Biase, Anthony P. Cocktail dish. 373,052, Cl. D7-555.000.
Dickinson, Jeffrey; and Khan, Karrar A., to Boots Company PLC, The. Pharmaceutical tablet. 373,187, Cl. D24-103.000.
Dixon, Edvenar. Bear sculpture. 373,158, Cl. D21-159.000.
Dolbow, Maureen V. Line guide indicator. 373,141, Cl. D19-34.000.
Donaldson Company, Inc.: *See*—
Monson, Donald R., 373,190, Cl. D24-112.000.
Draheim, Harvey J.: *See*—
Brunner, Merlin A.; and Draheim, Harvey J., 373,036, Cl. D6-508.000.
Dudley, James P.; and Fields, Kyle D., to OP-D-OP, Inc. Ratchet link. 373,077, Cl. D8-499.000.
Durante, Paul M. Lace hook. 373,072, Cl. D8-367.000.
Edauw, Peter; and Caeran, Francesco, to Nordica S.p.A.; and Rollerblade, Inc. Roller skate. 373,165, Cl. D21-226.000.
Edauw, Peter; and Caeran, Francesco, to Nordica S.p.A.; and Rollerblade, Inc. Roller skate. 373,166, Cl. D21-226.000.
Elesa S.p.A.: *See*—
Decursu, Giorgio; and Bertani, Alberto, 373,064, Cl. D8-308.000.
Emhart Inc.: *See*—
Carsello, Anthony J., 373,063, Cl. D8-308.000.
Envisionairey Products, Inc.: *See*—
Airey, Charles W., 373,068, Cl. D8-349.000.
Eskandry, Ezra D. Steering wheel cover. 373,101, Cl. D12-177.000.
Fahlen, Eden, to Coca-Cola Company, The. Bottle carrier. 373,079, Cl. D9-346.000.
Fenne, Kenneth R., to BRK Brands, Inc. Detector housing. 373,093, Cl. D10-106.000.
Ferrara, Daniel A., Jr., to Precision Valve Corporation. Composite overcap and delivery head for a container. 373,082, Cl. D9-447.000.
Fields, Kyle D.: *See*—
Dudley, James P.; and Fields, Kyle D., 373,077, Cl. D8-499.000.
Fleming, Catherine. Doll. 373,159, Cl. D21-171.000.
FOAMEX L.P.: *See*—
Bonaddio, Vincenzo A.; and Baskent, Feyyaz O., 373,042, Cl. D6-601.000.
Ford, John M. B.: *See*—
Lund, Doug M.; Ford, John M. B.; and Byars, Tammye L., 373,220, Cl. D28-77.000.
Ford, Thomas C., to Guccio Gucci S.p.A. Handbag. 373,019, Cl. D3-243.000.
Forest Technology Corporation: *See*—
Bain, Stephen E., 373,186, Cl. D23-398.000.
Fort Howard Corporation: *See*—
Delebreau, Peter J.; and Schmidt, Bradley G., 373,026, Cl. D5-20.000.
Franson, Jeffrey R., to Mikron Industries. Window component extrusion. 373,201, Cl. D25-124.000.
Friedrich Grohe Aktiengesellschaft: *See*—
Gottwald, Adolf, 373,178, Cl. D23-238.000.
Gottwald, Adolf, 373,180, Cl. D23-254.000.
Fu-Chi Plastics Co.: *See*—
Lee, Hong-Jen, 373,202, Cl. D25-130.000.
Fukao, Yasuyoshi; Sekimori, Toshiyuki; Kuno, Hiromichi; Yoshioka, Nobuaki; Hasegawa, Toshiaki; and Inaba, Shigemitsu, to Yazaki Sogyo K.K.; and Toyota Jidosha K.K. Electrical charging plug. 373,110, Cl. D13-146.000.
Gavin, Ellen, to Cosmair, Inc. Eyeliner container. 373,219, Cl. D28-76.000.
General Binding Corporation: *See*—
Herbst, Walter B.; Backstrom, Mikael; and Lazar, Ralph, 373,058, Cl. D8-50.000.
Gillette Company, The: *See*—
Shurtleff, Jill M.; and Simms, Graham J., 373,218, Cl. D28-47.000.
Godee, Joost; and Harden, Daniel, to Proteq Technologies Pte. Ltd. Telephone headset. 373,127, Cl. D14-248.000.
Goh, Garry: *See*—
Barthelemy, Matthew; Goh, Garry; Harden, Daniel K.; Lenart, Christopher; and Sauceda, Barbara, 373,117, Cl. D14-100.000.
Goldstar Electric Machinery Co., Ltd.: *See*—
Kim, Dong H., 373,112, Cl. D13-159.000.
Goto, Takao, to Gotoh Gut Yugen Kaisha. Bridge device for a stringed instrument. 373,136, Cl. D17-21.000.
Gotoh Gut Yugen Kaisha: *See*—
Goto, Takao, 373,136, Cl. D17-21.000.
Gottwald, Adolf, to Friedrich Grohe Aktiengesellschaft. Bidet faucet. 373,178, Cl. D23-238.000.
Gottwald, Adolf, to Friedrich Grohe Aktiengesellschaft. Combined handle and escutcheon. 373,180, Cl. D23-254.000.
Goulet Mauboussin, Jean, to Mauboussin - Successeur de Noury. Watch casing without face and watchband. 373,087, Cl. D10-30.000.
Grace, Bobby, to Bobby Grace Golf Design, Inc. Golf putter head. 373,160, Cl. D21-217.000.
Grifka, Joachim, to Otto Bock Orthopaedische Industrie Besitz-und Verwaltungs-Kommanditgesellschaft. Ankle joint brace. 373,194, Cl. D24-192.000.
GSL Rechargeable Products, Ltd.: *See*—
Heun, Ping H., 373,092, Cl. D10-104.000.
Heun, Ping H., 373,211, Cl. D26-44.000.
Guadalupi, Riccardo, to VIN Service S.r.l. Dispensing unit for soft-drinks. 373,045, Cl. D7-300.000.
Guccio Gucci S.p.A.: *See*—
Ford, Thomas C., 373,019, Cl. D3-243.000.
Guidi, Randolph J., to Buffalo Bag LLC, The. Flexible storage container for cargo bed of a pickup truck. 373,106, Cl. D12-423.000.
H-Tech, Inc.: *See*—
Booth, Walter; and Levin, Alan R., 373,176, Cl. D23-233.000.
Hakuba Photo Industry Co., Ltd.: *See*—
Usui, Hisaichi; and Tomioka, Hisashi, 373,133, Cl. D16-244.000.
Hamasaki, Yuji: *See*—
Tokuda, Hiroyuki; Takenouchi, Masanori; Kotaki, Yasuo; and Hamasaki, Yuji, 373,138, Cl. D18-56.000.
Hansen, Alice M. Mathematic teaching rack. 373,144, Cl. D19-62.000.
Harden, Daniel: *See*—
Godee, Joost; and Harden, Daniel, 373,127, Cl. D14-248.000.
Harden, Daniel K.: *See*—
Barthelemy, Matthew; Goh, Garry; Harden, Daniel K.; Lenart, Christopher; and Sauceda, Barbara, 373,117, Cl. D14-100.000.
Hasegawa, Toshiaki: *See*—
Fukao, Yasuyoshi; Sekimori, Toshiyuki; Kuno, Hiromichi; Yoshioka, Nobuaki; Hasegawa, Toshiaki; and Inaba, Shigemitsu, 373,110, Cl. D13-146.000.
Hashida, Noriko Y.: *See*—
Kawamura, Seijiro; and Hashida, Noriko Y., 373,182, Cl. D23-285.000.
Hatton, Bruce E.: *See*—
Adams, Terry; Ambrosio, Neil J.; Bratton, William E.; Hatton, Bruce E.; Kinder, Larry L.; and Swat, William A., 373,217, Cl. D27-102.000.
Helmstetter, Richard C.: *See*—
Schmidt, Glenn H.; and Helmstetter, Richard C., 373,161, Cl. D21-219.000.
Hendler, Lewis M.: *See*—
Menaged, Neal M., 373,034, Cl. D6-466.000.
Henredon Furniture Industries, Inc.: *See*—
Rosebrock, Paul A., 373,033, Cl. D6-445.000.
Henri Studio, Inc.: *See*—
Prosperi, Mario; and Prosperi, Dennis, 373,080, Cl. D9-418.000.

Herbst, Walter B.; Backstrom, Mikael; and Lazar, Ralph, to General Binding Corporation. Stapler. 373,058, Cl. D8-50.000.
Heun, Ping H., to GSL Rechargeable Products, Ltd. Electronic signalling transmitter for the retrieval of animals. 373,092, Cl. D10-104.000.
Heun, Ping H., to GSL Rechargeable Products, Ltd. Flashlight with pivoting head. 373,211, Cl. D26-44.000.
Hewlett-Packard Company: *See*—
Laidlaw, Anthony G., 373,114, Cl. D13-169.000.
Higginbotham, John: *See*—
Crow, Christy; and Higginbotham, John, 373,148, Cl. D21-29.000.
Hill, Bryan D.; and Hwang, David H. Mobile cleaning station for sanitizing needles. 373,198, Cl. D24-230.000.
Hirato, Eriko, to Shiseido Company, Ltd. Combined cosmetic bottle and closure. 373,086, Cl. D9-540.000.
Hodges, Douglas. Snap ring insertion tool. 373,059, Cl. D8-51.000.
Hoff, Richard. Massage tool. 373,195, Cl. D24-211.000.
Holgate, Patrick T. Inflatable girth strap. 373,227, Cl. D30-134.000.
Hollinger, David N.: *See*—
Wixey, Barry D.; Young, Ronald E.; and Hollinger, David N., 373,129, Cl. D15-133.000.
Howard, David. Combined curb and drainage system. 373,181, Cl. D23-261.000.
Hueber, David B., to D. B. Hueber Golf Company. Rake for golf course sand traps. 373,056, Cl. D8-13.000.
Huff, Robert C.: *See*—
Valley, Harold J.; and Huff, Robert C., 373,173, Cl. D23-226.000.
Valley, Harold J.; and Huff, Robert C., 373,174, Cl. D23-226.000.
Valley, Harold J.; and Huff, Robert C., 373,175, Cl. D23-226.000.
Hulback, Brad S.; and Jacobson, Lester L., to Star Windo. Baseball card display glove. 373,027, Cl. D6-303.000.
Hwang, David H.: *See*—
Hill, Bryan D.; and Hwang, David H., 373,198, Cl. D24-230.000.
I & K Trading: *See*—
Cimock, Benjamin J., 373,155, Cl. D21-120.000.
Iino, Masaaki; and Okuyama, Tooru, to Kabushiki Kaisha Toshiba. Unit for extending the functions of electronic computers. 373,119, Cl. D14-107.000.
Ikeda, Yasuhiko, to Nifco Inc. Strap fastener. 373,076, Cl. D8-383.000.
Imotani Industry Co., Ltd.: *See*—
Imotani, Mitsuru, 373,105, Cl. D12-406.000.
Imotani, Mitsuru, to Imotani Industry Co., Ltd. Container for a carrier on a car-roof. 373,105, Cl. D12-406.000.
Inaba, Shigemitsu: *See*—
Fukao, Yasuyoshi; Sekimori, Toshiyuki; Kuno, Hiromichi; Yoshioka, Nobuaki; Hasegawa, Toshiaki; and Inaba, Shigemitsu, 373,110, Cl. D13-146.000.
Inoue, Nobutane: *See*—
Noizu, Hiroshi; Inoue, Nobutane; and Yoshikawa, Kazumasa, 373,012, Cl. D2-954.000.
INTERLEGO AG: *See*—
Madsen, Hans, 373,153, Cl. D21-108.000.
Mathiesen, Thomas, 373,151, Cl. D21-108.000.
Riis, Geir K., 373,154, Cl. D21-108.000.
Thomasen, Anna M., 373,152, Cl. D21-108.000.
International Business Machines Corporation: *See*—
Bertram, Randal L.; and Swansey, John D., 373,134, Cl. D17-1.000.
Werse, Klaus, 373,116, Cl. D14-100.000.
Isabelle, Paul: *See*—
Pernicka, Martin; and Isabelle, Paul, 373,223, Cl. D29-110.000.
Pernicka, Martin; and Isabelle, Paul, 373,224, Cl. D29-110.000.
Isenga, Steven R.: *See*—
Miller, James H.; and Isenga, Steven R., 373,104, Cl. D12-317.000.
ITC Incorporated: *See*—
Miller, James H.; and Isenga, Steven R., 373,104, Cl. D12-317.000.
Ive, Jonathan P.: *See*—
André, Bartley K.; and Ive, Jonathan P., 373,120, Cl. D14-113.000.
Deluliis, Daniele; and Ive, Jonathan P., 373,121, Cl. D14-114.000.
Jacobson, Lester L.: *See*—
Hulback, Brad S.; and Jacobson, Lester L., 373,027, Cl. D6-303.000.
Jado Bathroom and Hardware Manufacturing Corp.: *See*— „
Jans, Franz W., 373,177, Cl. D23-238.000.
Jagger, Vivienne D., to Little People Limited. Grip for a writing implement. 373,143, Cl. D19-55.000.
Jans, Franz W., to Jado Bathroom and Hardware Manufacturing Corp. Faucet. 373,177, Cl. D23-238.000.
Jen, Jyh-Horng. Glass shade. 373,216, Cl. D26-133.000.
Jin, Byeong-Uk, to Samsung Aerospace Industries, Ltd. Camera. 373,130, Cl. D16-218.000.
Jobst Institute, Inc.: *See*—
Ribando, Philip P.; Bolam, Kenneth M.; and Peeler, Donald H., 373,191, Cl. D24-129.000.
Joergensen, Carsten, to PI-Design AG. Combined carving and breadboard. 373,054, Cl. D7-698.000.
John Manufacturing Limited: *See*—
Yuen, Se K., 373,208, Cl. D26-38.000.
Yuen, Se K., 373,209, Cl. D26-42.000.
Yuen, Se Kit, 373,207, Cl. D26-38.000.
Jones, Brent R.; Crawford, Clark W.; and Wright, John A., to Tektronix, Inc. Solid ink stick for a color printer. 373,139, Cl. D18-56.000.
Kabushiki Kaisha Toshiba: *See*—
Iino, Masaaki; and Okuyama, Tooru, 373,119, Cl. D14-107.000.
Kabushiki Kaishi Toshiba/Toshiba Corporation: *See*—
Naruki, Masatomo, 373,118, Cl. D14-100.000.
Kahn, Michael. Floatation vest. 373,168, Cl. D21-238.000.
Kain, James M., to Lisco, Inc. Frame for an infant car seat. 373,028, Cl. D6-333.000.
Kawamura, Seijiro; and Hashida, Noriko Y., to Toto, Ltd. Combined toilet basin, toilet seat and seat cover. 373,182, Cl. D23-285.000.
Kawasaki, Eiichi, to SNK Corporation. Pad controller attachment for a CD ROM video game player. 373,149, Cl. D21-48.000.
Keller, Diane; Keller, Frank; Better, Charles; and Pettersen, Edwin, to Kinney Shoe Corporation. Display stand. 373,035, Cl. D6-477.000.
Keller, Frank: *See*—
Keller, Diane; Keller, Frank; Better, Charles; and Pettersen, Edwin, 373,035, Cl. D6-477.000.
Kellogg, Michael S., to Bajer Design & Marketing, Inc. Organizer hanger. 373,073, Cl. D8-373.000.
Kendall Company, The: *See*—
Murphy, David L.; and Bouchard, Robert C., 373,192, Cl. D24-129.000.
Keter Plastic Ltd.: *See*—
Sagol, Sami, 373,022, Cl. D3-279.000.
Khan, Karrar A.: *See*—
Dickinson, Jeffrey; and Khan, Karrar A., 373,187, Cl. D24-103.000.
Khoo, Bee L., to Motorola, Inc. Portable data communication receiver. 373,125, Cl. D14-191.000.
Kifer, Harlan E.: *See*—
Magic, Andrew D.; Muccioli, James P.; Kifer, Harlan E.; and Wielgat, Michael W., 373,128, Cl. D14-258.000.
Kikuchi, Ryoko, to Sony Corporation. Case for videocassette. 373,044, Cl. D6-632.000.
Kim, Dong H., to Goldstar Electric Machinery Co., Ltd. Magnetic contactor. 373,112, Cl. D13-159.000.
Kinder, Larry L.: *See*—
Adams, Terry; Ambrosio, Neil J.; Bratton, William E.; Hatton, Bruce E.; Kinder, Larry L.; and Swat, William A., 373,217, Cl. D27-102.000.
Kinney Shoe Corporation: *See*—
Keller, Diane; Keller, Frank; Better, Charles; and Pettersen, Edwin, 373,035, Cl. D6-477.000.
Kirby, Bruce R. W., to Bruce Kirby, Inc. Model sailboat. 373,156, Cl. D21-130.000.
Kleckauskas, Robert J.: *See*—
Brewer, Charles A.; Cohen, Bruce S.; Cohen, James A.; Kleckauskas, Robert J.; Rustemeyer, Jeffrey A.; and Thuma, Michael C., 373,050, Cl. D7-505.000.
Knoebel, Timothy G. Adaptive fork for the physically impaired. 373,048, Cl. D7-401.200.
Kokko, Kenneth E. Gimbal assembly for archery sight yaw calibration. 373,169, Cl. D22-107.000.
Kornfalt, Sven; and Bengtsson, Per, to Perstorp Flooring AB. Profile molding. 373,203, Cl. D25-136.000.
Kosa, Karl J. Device for grasping and pulling arrows from targets. 373,170, Cl. D22-115.000.
Kotaki, Yasuo: *See*—
Tokuda, Hiroyuki; Takenouchi, Masanori; Kotaki, Yasuo; and Hamasaki, Yuji, 373,138, Cl. D18-56.000.
Kraige, Ghalen. Skin massager. 373,196, Cl. D24-214.000.
Kramer, Jeffrey A.; and Rosenfeld, William W. Travel coffee mug. 373,051, Cl. D7-536.000.
Kriegstein, Stewart B. Rotatable concrete spacer. 373,070, Cl. D8-354.000.
Kuno, Hiromichi: *See*—
Fukao, Yasuyoshi; Sekimori, Toshiyuki; Kuno, Hiromichi; Yoshioka, Nobuaki; Hasegawa, Toshiaki; and Inaba, Shigemitsu, 373,110, Cl. D13-146.000.
L. D. Kichler Co., The: *See*—
Porter, David H., 373,213, Cl. D26-84.000.
Lai, Chin C. Cosmetic kit. 373,221, Cl. D28-83.000.
Laidlaw, Anthony G., to Hewlett-Packard Company. Recessed rocker switch. 373,114, Cl. D13-169.000.
Latiri, Mondher: *See*—
Wang, Kuen-Yi; and Latiri, Mondher, 373,089, Cl. D10-65.000.
Lazar, Ralph: *See*—
Herbst, Walter B.; Backstrom, Mikael; and Lazar, Ralph, 373,058, Cl. D8-50.000.
Leader Industries Inc.: *See*—
Pernicka, Martin; and Isabelle, Paul, 373,223, Cl. D29-110.000.
Pernicka, Martin; and Isabelle, Paul, 373,224, Cl. D29-110.000.
LeBoeuf, Sharon M. Weight scale. 373,091, Cl. D10-93.000.
Lecoule, Thierry, to PDP Parfums de Paris S.A. Combined bottle and closure. 373,085, Cl. D9-516.000.
Lee, Eok-nyun: *See*—
Béhar, Yves; and Lee, Eok-nyun, 373,124, Cl. D14-148.000.
Lee, Hong-Jen, to Fu-Chi Plastics Co. Fence post. 373,202, Cl. D25-130.000.
Lee, Richard E.: *See*—
Lee, Shirley; and Lee, Richard E., 373,098, Cl. D11-215.000.
Lee, Shirley; and Lee, Richard E. Bra clip. 373,098, Cl. D11-215.000.
Lenart, Christopher: *See*—
Barthelemy, Matthew; Goh, Garry; Harden, Daniel K.; Lenart, Christopher; and Sauceda, Barbara, 373,117, Cl. D14-100.000.
le Rouzic, Claude, to Magimix. Bowl with cover for a food processor. 373,049, Cl. D7-413.000.
Levin, Alan R.: *See*—
Booth, Walter; and Levin, Alan R., 373,176, Cl. D23-233.000.

Lewis, Craig E. Key fob. 373,017, Cl. D3-207.000.
Lewis, Sally S. Floor lamp. 373,215, Cl. D26-110.000.
Lifetime Hoan Corporation: *See*—
Cohen, Milton L.; and Siegel, Jeff, 373,039, Cl. D6-566.000.
Lisco, Inc.: *See*—
Kain, James M., 373,028, Cl. D6-333.000.
Mariol, John V.; and Meeker, Paul K., 373,029, Cl. D6-339.000.
Little People Limited: *See*—
Jagger, Vivienne D., 373,143, Cl. D19-55.000.
Lo, Johnson, to Primax Electronics Ltd. Computer mouse. 373,122, Cl. D14-114.000.
LOCALTouch Brand Company: *See*—
Owens, Jacquelyn A.; and Smith, Robert D., 373,140, Cl. D19-26.000.
Logan, Charles. Novelty magnet. 373,115, Cl. D13-183.000.
Lotti, Giovanni. Container/dispenser for make-up removing pads. 373,037, Cl. D6-515.000.
Lund, Doug M.; Ford, John M. B.; and Byars, Tammye L., to Maybelline Intermediate Co. Combination cosmetic container and applicator package. 373,220, Cl. D28-77.000.
Luther, James W., to Surviva Link Corporation. Defibrillator. 373,193, Cl. D24-167.000.
Macor, Richard J., to Proprietary Technologies, Inc. Screwdriver. 373,061, Cl. D8-85.000.
Madsen, Hans, to INTERLEGO AG. Toy building element. 373,153, Cl. D21-108.000.
Magic, Andrew D.; Muccioli, James P.; Kifer, Harlan E.; and Wielgat, Michael W., to Chrysler Corporation. Combined front surface and control knobs for a radio. 373,128, Cl. D14-258.000.
Magimix: *See*—
le Rouzic, Claude, 373,049, Cl. D7-413.000.
Marderosian, Raffi L. Vehicle locator. 373,094, Cl. D10-109.000.
Mariol, John V.; and Meeker, Paul K., to Lisco, Inc. Adjustable high chair. 373,029, Cl. D6-339.000.
Martin, Helen L. Organizer for assorted small articles. 373,020, Cl. D3-273.000.
Martin, Leo, to Miami Metal Products, Inc. Arm chair. 373,031, Cl. D6-380.000.
Mathiesen, Thomas, to Interlego AG. Toy building element. 373,151, Cl. D21-108.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
Yukikado, Koji; and Shimose, Norihiko, 373,123, Cl. D14-129.000.
Mauboussin - Successeur de Noury: *See*—
Goulet Mauboussin, Jean, 373,087, Cl. D10-30.000.
Maybelline Intermediate Co.: *See*—
Lund, Doug M.; Ford, John M. B.; and Byars, Tammye L., 373,220, Cl. D28-77.000.
McCarthy, John. Insert for mounting a decorative figure onto an antenna. 373,069, Cl. D8-354.000.
McCrary, David N.; and McCrary, Fred L. Baseball helmet barbeque grill. 373,047, Cl. D7-334.000.
McCrary, Fred L.: *See*—
McCrary, David N.; and McCrary, Fred L., 373,047, Cl. D7-334.000.
McKechnie UK Limited: *See*—
Caley, Malcolm, 373,205, Cl. D25-164.000.
Meeker, Paul K.: *See*—
Mariol, John V.; and Meeker, Paul K., 373,029, Cl. D6-339.000.
Menaged, Neal M., to Hendler, Lewis M. Merchandise holder. 373,034, Cl. D6-466.000.
Meyer, Dean E.; and Vinyard, Jeffrey L. Golf putter head. 373,162, Cl. D21-219.000.
Miami Metal Products, Inc.: *See*—
Martin, Leo, 373,031, Cl. D6-380.000.
Miansian, James K. Spinner for wheels. 373,103, Cl. D12-213.000.
Michaelson, Howard W. Shower curtain. 373,041, Cl. D6-575.000.
Mikron Industries: *See*—
Franson, Jeffrey R., 373,201, Cl. D25-124.000.
Miller, James H.; and Isenga, Steven R., to ITC Incorporated. Water ski tow fixture for securing a water ski tow rope to a boat. 373,104, Cl. D12-317.000.
Milroy, Craig, to Design Ideas, Ltd. Letter holder. 373,040, Cl. D6-566.000.
Miyashita, Muneharu, to Yazaki Industrial Chemical Co., Ltd. Joint for a rack frame. 373,074, Cl. D8-382.000.
Miyashita, Muneharu, to Yazaki Industrial Chemical Co., Ltd. Joint for a rack frame. 373,075, Cl. D8-382.000.
Modern Faucet Mfg. Co.: *See*—
Valley, Harold J.; and Huff, Robert C., 373,173, Cl. D23-226.000.
Valley, Harold J.; and Huff, Robert C., 373,174, Cl. D23-226.000.
Valley, Harold J.; and Huff, Robert C., 373,175, Cl. D23-226.000.
Molzon, William R.; and Criscuolo, James M., to Textron Inc. Golf car. 373,099, Cl. D12-16.000.
Monson, Donald R., to Donaldson Company, Inc. Smoke evacuator for an electrocautery scalpel. 373,190, Cl. D24-112.000.
Mooney, Edward. Underhood accessory container. 373,107, Cl. D12-425.000.
Motorola, Inc.: *See*—
Khoo, Bee L., 373,125, Cl. D14-191.000.
Muccioli, James P.: *See*—
Magic, Andrew D.; Muccioli, James P.; Kifer, Harlan E.; and Wielgat, Michael W., 373,128, Cl. D14-258.000.
Murphy, David L.; and Bouchard, Robert C., to Kendall Company, The. Connector for a device for applying compressive pressure to the leg. 373,192, Cl. D24-129.000.
Murrell, Spencer B.: *See*—
Sebor, Pavel; Phillipson, Brian H.; Ciesko, Mark J.; and Murrell, Spencer B., 373,230, Cl. D32-1.000.
N. V. Bekaert S.A.: *See*—
Vanthournout, Rafael, 373,199, Cl. D25-50.000.
Nakada, Tsutomu, to Yamaha Corporation. Music sequencer. 373,137, Cl. D17-24.000.
Nakazawa, Shinobu: *See*—
Akaiwa, Masao; and Nakazawa, Shinobu, 373,131, Cl. D16-219.000.
Naruki, Masatomo, to Kabushiki Kaishi Toshiba/Toshiba Corporation. Electronic computer. 373,118, Cl. D14-100.000.
Negreanu, Mihai. Rod attached fish strike indicator. 373,171, Cl. D22-139.000.
Neron, Alain P., to Wichard. Pocket knife. 373,062, Cl. D8-99.000.
Newell Operating Company: *See*—
De'Armond, Robert, 373,065, Cl. D8-310.000.
De'Armond, Robert, 373,066, Cl. D8-310.000.
De'Armond, Robert, 373,067, Cl. D8-317.000.
Newnan, Brian D. Coffee bean roaster with transparent display column. 373,046, Cl. D7-323.000.
Nifco Inc.: *See*—
Ikeda, Yasuhiko, 373,076, Cl. D8-383.000.
Nishizawa, Keisuke, to Seibo International, Inc. Ventilator. 373,184, Cl. D23-370.000.
Nordica S.p.A.: *See*—
Edauw, Peter; and Caeran, Francesco, 373,165, Cl. D21-226.000.
Edauw, Peter; and Caeran, Francesco, 373,166, Cl. D21-226.000.
Nozu, Hiroshi; Inoue, Nobutane; and Yoshikawa, Kazumasa, to Asics Corporation. Shoe sole. 373,012, Cl. D2-954.000.
Ödmark, Ola, to Pricer Norden AB. Price display holder for store shelves. 373,146, Cl. D20-43.000.
Okuyama, Tooru: *See*—
Iino, Masaaki; and Okuyama, Tooru, 373,119, Cl. D14-107.000.
OP-D-OP, Inc.: *See*—
Dudley, James P.; and Fields, Kyle D., 373,077, Cl. D8-499.000.
O'Rourke, Anthony; and Byrne, Charles, to Booda Products, Inc. Chew toy for dogs. 373,229, Cl. D30-160.000.
Otero, Christopher A.; and Otero, Mark E. Toothpaste dispensing toothbrush. 373,023, Cl. D4-108.000.
Otero, Mark E.: *See*—
Otero, Christopher A.; and Otero, Mark E., 373,023, Cl. D4-108.000.
Otto Bock Orthopaedische Industrie Besitz-und Verwaltungs-Kommanditgesellschaft: *See*—
Grifka, Joachim, 373,194, Cl. D24-192.000.
Owens, Jacquelyn A.; and Smith, Robert D., to LOCALTouch Brand Company. Set of front and back cover panels for a directory. 373,140, Cl. D19-26.000.
Pacific Corporation: *See*—
Choi, Young R., 373,084, Cl. D9-504.000.
Pacific Investment Company International Limited: *See*—
Protopappas, Aristoteli D.; Schilperoort, Kees A.; and Penaluna, Donovan P., 373,163, Cl. D21-220.000.
PDP Parfums de Paris S.A.: *See*—
Lecoule, Thierry, 373,085, Cl. D9-516.000.
Peeler, Donald H.: *See*—
Ribando, Philip P.; Bolam, Kenneth M.; and Peeler, Donald H., 373,191, Cl. D24-129.000.
Penaluna, Donovan P.: *See*—
Protopappas, Aristoteli D.; Schilperoort, Kees A.; and Penaluna, Donovan P., 373,163, Cl. D21-220.000.
Pernicka, Martin; and Isabelle, Paul, to Leader Industries Inc. Visor shield for sports headgear. 373,223, Cl. D29-110.000.
Pernicka, Martin; and Isabelle, Paul, to Leader Industries Inc. Visor shield for sports headgear. 373,224, Cl. D29-110.000.
Perstorp Flooring AB: *See*—
Kornfalt, Sven; and Bengtsson, Per, 373,203, Cl. D25-136.000.
Pettersen, Edwin: *See*—
Keller, Diane; Keller, Frank; Better, Charles; and Pettersen, Edwin, 373,035, Cl. D6-477.000.
Pettus, James. Video advertising display module. 373,145, Cl. D20-19.000.
Phillips, Frank W. Brush. 373,025, Cl. D4-134.000.
Phillipson, Brian H.: *See*—
Sebor, Pavel; Phillipson, Brian H.; Ciesko, Mark J.; and Murrell, Spencer B., 373,230, Cl. D32-1.000.
PI-Design AG: *See*—
Joergensen, Carsten, 373,054, Cl. D7-698.000.
Pilosi, Paul A.: *See*—
Anderson, Steven A.; Pilosi, Paul A.; and Schoenert, Richard C., 373,172, Cl. D23-225.000.
Polimeros Industriales Compania Anonima Polimes C.A.: *See*—
Segura, Hernando M., 373,055, Cl. D7-709.000.
Porter, David H., to L. D. Kichler Co., The. Chandelier. 373,213, Cl. D26-84.000.
Precision Valve Corporation: *See*—
Ferrara, Daniel A., Jr., 373,082, Cl. D9-447.000.
Pricer Norden AB: *See*—
Ödmark, Ola, 373,146, Cl. D20-43.000.
Primax Electronics Ltd.: *See*—
Lo, Johnson, 373,122, Cl. D14-114.000.
Progressive Games, Inc.: *See*—

Adams, Terry; Ambrosio, Neil J.; Bratton, William E.; Hatton, Bruce E.; Kinder, Larry L.; and Swat, William A., 373,217, Cl. D27-102.000.
Proprietary Technologies, Inc.: *See*—
Macor, Richard J., 373,061, Cl. D8-85.000.
Prosperi, Dennis: *See*—
Prosperi, Mario; and Prosperi, Dennis, 373,080, Cl. D9-418.000.
Prosperi, Mario; and Prosperi, Dennis, to Henri Studio, Inc. Lawn statuary box. 373,080, Cl. D9-418.000.
Proteq Technologies Pte. Ltd.: *See*—
Godee, Joost; and Harden, Daniel, 373,127, Cl. D14-248.000.
Protopappas, Aristoteli D.; Schilperoort, Kees A.; and Penaluna, Donovan P., to Pacific Investment Company International Limited. Golf club head. 373,163, Cl. D21-220.000.
R. P. Scherer Corporation: *See*—
Schurig, Gregory A.; and Williams, David G., 373,189, Cl. D24-104.000.
Williams, David G., 373,188, Cl. D24-104.000.
R&S Sales Company, Inc.: *See*—
Rosetta, Papini, 373,013, Cl. D2-961.000.
Regitar Power Tools Co., Ltd.: *See*—
Chen, Benjamin M. J., 373,057, Cl. D8-49.000.
Ribando, Philip P.; Bolam, Kenneth M.; and Peeler, Donald H., to Jobst Institute, Inc. Multi-channel conduit connector for treating deep vein thrombosis. 373,191, Cl. D24-129.000.
Richmond Technology, Inc.: *See*—
Beyer, Douglas H., 373,183, Cl. D23-364.000.
Riis, Geir K., to INTERLEGO AG. Toy building element. 373,154, Cl. D21-108.000.
Rippel, Thomas E. Belt. 373,011; Cl. D2-627.000.
Rollerblade, Inc.: *See*—
Edauw, Peter; and Caeran, Francesco, 373,165, Cl. D21-226.000.
Edauw, Peter; and Caeran, Francesco, 373,166, Cl. D21-226.000.
Rosebrock, Paul A., to Henredon Furniture Industries, Inc. Dresser. 373,033, Cl. D6-445.000.
Rosenfeld, William W.: *See*—
Kramer, Jeffrey A.; and Rosenfeld, William W., 373,051, Cl. D7-536.000.
Rosetta, Papini, to R&S Sales Company, Inc. Inner sole. 373,013, Cl. D2-961.000.
Royal Extrusions Limited: *See*—
Colitto, Domenic, 373,200, Cl. D25-124.000.
Rubbermaid Incorporated: *See*—
Breen, John D.; and Casteel, Stephen P., 373,021, Cl. D3-276.000.
Rustemeyer, Jeffrey A.: *See*—
Brewer, Charles A.; Cohen, Bruce S.; Cohen, James A.; Kleckauskas, Robert J.; Rustemeyer, Jeffrey A.; and Thuma, Michael C., 373,050, Cl. D7-505.000.
Ruud Lighting, Inc.: *See*—
Wandler, Donald; Bustamante, Julito A.; Solberg, Kent; and Ternberg, Cory, 373,206, Cl. D26-63.000.
Sagol, Sami, to Keter Plastic Ltd. Storage box. 373,022, Cl. D3-279.000.
Samsung Aerospace Industries, Ltd.: *See*—
Jin, Byeong-Uk, 373,130, Cl. D16-218.000.
Sandberg & Sikorski Diamond Corp.: *See*—
Bergagnini, Norberto, 373,096, Cl. D11-28.000.
Santarsiero, Paul S., to Black & Decker Inc. Head for a flashlight. 373,210, Cl. D26-43.000.
Santos, James D. Holder for spikes for golf shoes. 373,167, Cl. D21-234.000.
Sauceda, Barbara: *See*—
Barthelemy, Matthew; Goh, Garry; Harden, Daniel K.; Lenart, Christopher; and Sauceda, Barbara, 373,117, Cl. D14-100.000.
Schepper, Richard. Deep tissue massager. 373,197, Cl. D24-214.000.
Schilperoort, Kees A.: *See*—
Protopappas, Aristoteli D.; Schilperoort, Kees A.; and Penaluna, Donovan P., 373,163, Cl. D21-220.000.
Schmidt, Bradley G.: *See*—
Delebreau, Peter J.; and Schmidt, Bradley G., 373,026, Cl. D5-20.000.
Schmidt, Glenn H.; and Helmstetter, Richard C. Golf putter head with face plate insert. 373,161, Cl. D21-219.000.
Schoenert, Richard C.: *See*—
Anderson, Steven A.; Pilosi, Paul A.; and Schoenert, Richard C., 373,172, Cl. D23-225.000.
Schurig, Gregory A.; and Williams, David G., to R. P. Scherer Corporation. Softgel capsule. 373,189, Cl. D24-104.000.
Schwartz, Mark A. Folding sweep sport fan. 373,015, Cl. D3-2.000.
Sebor, Pavel; Phillipson, Brian H.; Ciesko, Mark J.; and Murrell, Spencer B., to Sebor, Pavel. Submersible self-propelled pool cleaner. 373,230, Cl. D32-1.000.
Segura, Hernando M., to Polimeros Industriales Compania Anonima Polimes C.A. Food caddy. 373,055, Cl. D7-709.000.
Seibo International, Inc.: *See*—
Nishizawa, Keisuke, 373,184, Cl. D23-370.000.
Seiko Epson Corporation: *See*—
Akaiwa, Masao; and Nakazawa, Shinobu, 373,131, Cl. D16-219.000.
Sekimori, Toshiyuki: *See*—
Fukao, Yasuyoshi; Sekimori, Toshiyuki; Kuno, Hiromichi; Yoshioka, Nobuaki; Hasegawa, Toshiaki; and Inaba, Shigemitsu, 373,110, Cl. D13-146.000.
Severin Montres AG (Severin Montres SA) Severin Montres Ltd.: *See*—
Wunderman, Severin S., 373,088, Cl. D10-39.000.
Shepherd, Charles G. Brush head. 373,024, Cl. D4-132.000.
Shimose, Norihiko: *See*—
Yukikado, Koji; and Shimose, Norihiko, 373,123, Cl. D14-129.000.
Shiseido Company, Ltd.: *See*—
Hirato, Eriko, 373,086, Cl. D9-540.000.
Shurtleff, Jill M.; and Simms, Graham J., to Gillette Company, The. Safety razor cartridge. 373,218, Cl. D28-47.000.
Siegel, Jeff: *See*—
Cohen, Milton L.; and Siegel, Jeff, 373,039, Cl. D6-566.000.
Sieger, Dieter, to Aloys F. Dornbracht GmbH & Co. KG. Faucet. 373,179, Cl. D23-241.000.
Simmons Juvenile Products Company, Inc.: *See*—
Brunner, Merlin A.; and Draheim, Harvey J., 373,036, Cl. D6-508.000.
Simms, Graham J.: *See*—
Shurtleff, Jill M.; and Simms, Graham J., 373,218, Cl. D28-47.000.
Smith, Robert D.: *See*—
Owens, Jacquelyn A.; and Smith, Robert D., 373,140, Cl. D19-26.000.
SNK Corporation: *See*—
Kawasaki, Eikichi, 373,149, Cl. D21-48.000.
Solberg, Kent: *See*—
Wandler, Donald; Bustamante, Julito A.; Solberg, Kent; and Ternberg, Cory, 373,206, Cl. D26-63.000.
Sony Corporation: *See*—
Kikuchi, Ryoko, 373,044, Cl. D6-632.000.
Taniguchi, Shuhei, 373,126, Cl. D14-198.000.
Star Windo: *See*—
Hulback, Brad S.; and Jacobson, Lester L., 373,027, Cl. D6-303.000.
Steelcase Inc.: *See*—
Stringer, Christopher J., 373,113, Cl. D13-169.000.
Stringer, Christopher J., to Steelcase Inc. Switch. 373,113, Cl. D13-169.000.
Surviva Link Corporation: *See*—
Luther, James W., 373,193, Cl. D24-167.000.
Swansey, John D.: *See*—
Bertram, Randal L.; and Swansey, John D., 373,134, Cl. D17-1.000.
Swat, William A.: *See*—
Adams, Terry; Ambrosio, Neil J.; Bratton, William E.; Hatton, Bruce E.; Kinder, Larry L.; and Swat, William A., 373,217, Cl. D27-102.000.
Taihan Electric Wire Co., Ltd.: *See*—
Béhar, Yves; and Lee, Eok-nyun, 373,124, Cl. D14-148.000.
Takenouchi, Masanori: *See*—
Tokuda, Hiroyuki; Takenouchi, Masanori; Kotaki, Yasuo; and Hamasaki, Yuji, 373,138, Cl. D18-56.000.
Taniguchi, Shuhei, to Sony Corporation. Radio receiver. 373,126, Cl. D14-198.000.
Tejera, Domingo C. Guitar. 373,135, Cl. D17-14.000.
Tektronix, Inc.: *See*—
Jones, Brent R.; Crawford, Clark W.; and Wright, John A., 373,139, Cl. D18-56.000.
Telemecanique: *See*—
Bouteiller, Christian, 373,111, Cl. D13-159.000.
Ternberg, Cory: *See*—
Wandler, Donald; Bustamante, Julito A.; Solberg, Kent; and Ternberg, Cory, 373,206, Cl. D26-63.000.
Textron Inc.: *See*—
Molzon, William R.; and Criscuolo, James M., 373,099, Cl. D12-16.000.
Theroux, Claire J.; and Amyx, Daniel A. Finger shield. 373,225, Cl. D29-114.000.
Thomasen, Anna M., to INTERLEGO AG. Toy building element. 373,152, Cl. D21-108.000.
Thuma, Michael C.: *See*—
Brewer, Charles A.; Cohen, Bruce S.; Cohen, James A.; Kleckauskas, Robert J.; Rustemeyer, Jeffrey A.; and Thuma, Michael C., 373,050, Cl. D7-505.000.
Tokuda, Hiroyuki; Takenouchi, Masanori; Kotaki, Yasuo; and Hamasaki, Yuji, to Canon Kabushiki Kaisha. Ink tank for printer. 373,138, Cl. D18-56.000.
Tomioka, Hisashi: *See*—
Usui, Hisaichi; and Tomioka, Hisashi, 373,133, Cl. D16-244.000.
Toto, Ltd.: *See*—
Kawamura, Seijiro; and Hashida, Noriko Y., 373,182, Cl. D23-285.000.
Toyota Jidosha K.K.: *See*—
Fukao, Yasuyoshi; Sekimori, Toshiyuki; Kuno, Hiromichi; Yoshioka, Nobuaki; Hasegawa, Toshiaki; and Inaba, Shigemitsu, 373,110, Cl. D13-146.000.
Tseng, Tsung-Ming. Combined ceiling fan and light. 373,185, Cl. D23-377.000.
Usui, Hisaichi; and Tomioka, Hisashi, to Hakuba Photo Industry Co., Ltd. Tripod for a camera. 373,133, Cl. D16-244.000.
Valley, Harold J.; and Huff, Robert C., to Modern Faucet Mfg. Co. Spray valve. 373,173, Cl. D23-226.000.
Valley, Harold J.; and Huff, Robert C., to Modern Faucet Mfg. Co. Spray valve. 373,174, Cl. D23-226.000.
Valley, Harold J.; and Huff, Robert C., to Modern Faucet Mfg. Co. Spray valve. 373,175, Cl. D23-226.000.
Vanthournout, Rafael, to N. V. Bekaert S.A. Sliding gate for a fence. 373,199, Cl. D25-50.000.
Varga, George. Game target. 373,147, Cl. D21-5.000.
VIN Service S.r.l.: *See*—
Guadalupi, Riccardo, 373,045, Cl. D7-300.000.
Vinyard, Jeffrey L.: *See*—
Meyer, Dean E.; and Vinyard, Jeffrey L., 373,162, Cl. D21-219.000.

Vogels, Henricus H., to Vogel's Holding B.V. TV support. 373,071, Cl. D8-363.000.
Vogel's Holding B.V.: *See*—
Vogels, Henricus H., 373,071, Cl. D8-363.000.
Wagner Spray Tech Corporation: *See*—
Anderson, Steven A.; Pilosi, Paul A.; and Schoenert, Richard C., 373,172, Cl. D23-225.000.
Wandler, Donald; Bustamante, Julito A.; Solberg, Kent; and Ternberg, Cory, to Ruud Lighting, Inc. Low-voltage track lighting fixture. 373,206, Cl. D26-63.000.
Wang, Kuen-Yi; and Latiri, Mondher. Golf club head surveying instrument. 373,089, Cl. D10-65.000.
Wang, Ming-Ho. Golf club head. 373,164, Cl. D21-220.000.
Weakley, Alastair J.: *See*—
Baillie-Hamilton, John W.; and Weakley, Alastair J., 373,132, Cl. D16-237.000.
Welsh, Barbara M. Portable holder for a beverage container. 373,016, Cl. D3-202.000.
Werse, Klaus, to International Business Machines Corporation. Combined production data acquisition unit and bar code reader. 373,116, Cl. D14-100.000.
Wichard: *See*—
Neron, Alain P., 373,062, Cl. D8-99.000.
Wielgat, Michael W.: *See*—
Magic, Andrew D.; Muccioli, James P.; Kifer, Harlan E.; and Wielgat, Michael W., 373,128, Cl. D14-258.000.
Wilcox, Timothy A. Hammerhead for installing sheathing panels. 373,060, Cl. D8-78.000.
Williams, David G., to R. P. Scherer Corporation. Softgel capsule. 373,188, Cl. D24-104.000.
Williams, David G.: *See*—
Schurig, Gregory A.; and Williams, David G., 373,189, Cl. D24-104.000.
Williamson-Markman, Judith A. Tiered storage unit. 373,032, Cl. D6-437.000.
Wixey, Barry D.; Young, Ronald E.; and Hollinger, David N., to Delta International Machinery Corp. Sliding compound miter saw and stand. 373,129, Cl. D15-133.000.
Wright, John A.: *See*—
Jones, Brent R.; Crawford, Clark W.; and Wright, John A., 373,139, Cl. D18-56.000.
Wunderman, Severin S., to Severin Montres AG (Severin Montres SA) Severin Montres Ltd. Watch. 373,088, Cl. D10-39.000.
Yamaha Corporation: *See*—
Nakada, Tsutomu, 373,137, Cl. D17-24.000.
Yazaki Industrial Chemical Co., Ltd.: *See*—
Miyashita, Muneharu, 373,074, Cl. D8-382.000.
Miyashita, Muneharu, 373,075, Cl. D8-382.000.
Yazaki Sogyo K.K.: *See*—
Fukao, Yasuyoshi; Sekimori, Toshiyuki; Kuno, Hiromichi; Yoshioka, Nobuaki; Hasegawa, Toshiaki; and Inaba, Shigemitsu, 373,110, Cl. D13-146.000.
Yoshikawa, Kazumasa: *See*—
Nozu, Hiroshi; Inoue, Nobutane; and Yoshikawa, Kazumasa, 373,012, Cl. D2-954.000.
Yoshioka, Nobuaki: *See*—
Fukao, Yasuyoshi; Sekimori, Toshiyuki; Kuno, Hiromichi; Yoshioka, Nobuaki; Hasegawa, Toshiaki; and Inaba, Shigemitsu, 373,110, Cl. D13-146.000.
Young, Ronald E.: *See*—
Wixey, Barry D.; Young, Ronald E.; and Hollinger, David N., 373,129, Cl. D15-133.000.
Yuen, Se K., to John Manufacturing Limited. Rechargeable radio lantern with hinged handle. 373,208, Cl. D26-38.000.
Yuen, Se K., to John Manufacturing Ltd. Combined fluorescent lantern and flashlight. 373,209, Cl. D26-42.000.
Yuen, Se Kit, to John Manufacturing Limited. Combined flashlight and radio. 373,207, Cl. D26-38.000.
Yukikado, Koji; and Shimose, Norihiko, to Matsushita Electric Industrial Co., Ltd. Television receiver with video tape recorder. 373,123, Cl. D14-129.000.
Zaksenberg, Issac, to Zaksenberg, Issac. Noisemaker. 373,150, Cl. D21-64.000.
Zilinsky, Patricia R. Decorative book holder. 373,142, Cl. D19-34.100.
Zumbo, Michael S.; and Zumbo, Renee H. Perforated roll of placemats. 373,043, Cl. D6-613.000.
Zumbo, Renee H.: *See*—
Zumbo, Michael S.; and Zumbo, Renee H., 373,043, Cl. D6-613.000.

LIST OF PLANT PATENTEES

Conard-Pyle Company, The: *See*—
Meilland, Alain A., 9,636, Cl. Plt.-20.000.
De Ruiter's New Roses: *See*—
Pouw, Antonius A., 9,634, Cl. Plt.-10.000.
Pouw, Antonius A., 9,635, Cl. Plt.-10.000.
DeRuiter's New Roses: *See*—
Pouw, Antonius A., 9,633, Cl. Plt.-10.000.
Meilland, Alain A., to Conard-Pyle Company, The Hybrid tea rose plant named Meibolnay. 9,636, Cl. Plt.-20.000.
Pouw, Antonius A., to DeRuiter's New Roses. Miniature rose plant named 'Ruidodo'. 9,633, Cl. Plt.-10.000.
Pouw, Antonius A., to De Ruiter's New Roses. Miniature rose plant named 'Ruikalla'. 9,634, Cl. Plt.-10.000.
Pouw, Antonius A., to De Ruiter's New Roses. Miniature rose plant named 'Ruijef'. 9,635, Cl. Plt.-10.000.

UMI 1189 AUG 27 1996

CLASSIFICATION OF PATENTS

ISSUED AUGUST 27, 1996

NOTE—First number, class; second number, subclass; third number, patent number

CLASS 2

15	5,548,841
69	5,548,842
102	5,548,843
161.7	5,548,844
195.2	5,548,845
209.12	5,548,846
209.13	5,548,847
425	5,548,848

CLASS 4

325	5,548,849
326	5,548,850
506	5,548,851
509	5,548,852
523	5,548,853
541.6	5,548,854
559	5,548,855
664	5,548,856

CLASS 5

263	5,548,857
413 R	5,548,858

CLASS 8

110	5,549,715
150	5,548,859

CLASS 15

50.1	5,548,860
104.002	5,548,861
118	5,548,862
250.16	5,548,863
257.7	5,548,864
262	5,548,865
320	5,548,866
339	5,548,867
	5,548,868

CLASS 16

93 R	5,548,869
254	5,548,870

CLASS 22

461	5,549,227

CLASS 24

16 R	5,548,871
20 CW	5,548,872
134 R	5,548,873
170	5,548,874
265 H	5,548,875
271	5,548,876
287	5,548,877
306	5,548,878
625	5,548,879

CLASS 27

2	5,548,880

CLASS 28

114	5,548,881

CLASS 29

25.01	5,549,716
243.5	5,548,883
336	5,548,882
593	5,548,884
596	5,548,885
603.1	5,548,886
609	5,548,887
622	5,548,888
623.2	5,549,717
715	5,548,889
827	5,548,890
842	5,548,891
866	5,548,892
888.011	5,548,893
890.1	5,548,894
890.141	5,548,895
894.322	5,548,896
895.32	5,548,897
896.91	5,548,898

CLASS 30

43.92	5,548,899

CLASS 33

302	5,548,900
542.1	5,548,901
561	5,548,902
810	5,548,903

CLASS 34

82	5,548,904
92	5,548,905
338	5,548,906
448	5,548,907
601	5,548,908

CLASS 36

117.6	5,548,909
135	5,548,910

CLASS 40

308	5,548,911
430	5,548,912
491	5,548,913

CLASS 42

66	5,548,914
70.11	5,548,915
89	5,548,916

CLASS 43

1	5,548,917
25	5,548,918
43.13	5,548,919
44.2	5,548,920
124	5,548,921
131	5,548,922

CLASS 47

25	5,548,923
57.6	5,549,718
69	5,548,924

CLASS 49

74.1	5,548,925
127	5,548,926
193	5,548,927
381	5,548,928
441	5,548,929
502	5,548,930

CLASS 51

298	5,549,719

CLASS 52

11	5,548,931
126.6	5,548,932
192	5,548,933
220.8	5,548,934
284	5,548,936
586.1	5,548,937
604	5,548,938
707	5,548,939

CLASS 53

430	5,548,940
444	5,548,941
465	5,548,942
473	5,548,943
511	5,548,944
540	5,548,945
550	5,548,946
551	5,548,947

CLASS 54

66	5,548,948

CLASS 55

324	5,549,720
393	5,549,721
463	5,549,722
493	5,549,723
521	5,549,724
523	5,549,725

CLASS 56

367	5,548,949

CLASS 057

406	5,548,950

CLASS 60

39.23	5,548,951
39.465	5,548,952
202	5,548,953
226.2	5,548,954
299	5,548,955
369	5,548,956
641.8	5,548,957
693	5,548,958
734	5,548,959

CLASS 62

47.1	5,548,961
50.1	5,548,962
51.2	5,548,963
55.5	5,548,964
66	5,548,965
77	5,548,966
99	5,548,967
175	5,548,968
228.4	5,548,969
271	5,548,970
324.2	5,548,971
371	5,548,972
469	5,548,973
604	5,548,974
605	5,548,960
646	5,548,975

CLASS 63

28	5,548,976

CLASS 65

106	5,549,726
225	5,549,727

CLASS 66

8	5,548,977

CLASS 68

17 R	5,548,978
23.2	5,548,979
133	5,548,980

CLASS 70

58	5,548,981
208	5,548,982
209	5,548,983
276	5,548,984

CLASS 71

6	5,549,728
26	5,549,729
64.03	5,549,730

CLASS 72

149	5,548,985
204	5,548,986
208	5,548,987
252.5	5,548,988
298	5,548,989

CLASS 73

3	5,548,990
38	5,548,991
49.2	5,548,992
49.5	5,548,993
54.28	5,548,994
116	5,548,995
	5,548,996
168	5,548,997
263	5,548,998
493	5,548,999
587	5,549,000
597	5,549,001
602	5,549,002
606	5,549,003
622	5,549,004
663	5,549,005
708	5,549,006
856	5,549,007
861.04	5,549,008
861.355	5,549,009
861.79	5,549,010

CLASS 74

7 E	5,549,011
60	5,549,012
129	5,549,013
424.8 B	5,549,015
424.84	5,549,014
490.02	5,549,016
490.03	5,549,018
598.5	5,549,017
573 R	5,549,019
606 R	5,549,020

CLASS 75

244	5,549,731
331	5,549,732

CLASS 81

9.51	5,549,021
124.2	5,549,022

CLASS 82

112	5,549,023
113	5,549,024

CLASS 83

694	5,549,025

CLASS 84

103	5,550,319
292	5,549,026
297 R	5,549,027
454	5,549,028
483.2	5,549,029
623	5,550,320
721	5,550,321

CLASS 89

14.3	5,549,030

CLASS 91

284	5,549,031
502	5,549,032

CLASS 92

136	5,549,033
187	5,549,034

CLASS 95

100	5,549,733
279	5,549,734

CLASS 96

63	5,549,735
133	5,549,736
204	5,549,737

CLASS 99

281	5,549,035
286	5,549,036
323.1	5,549,037
330	5,549,038
340	5,549,039
349	5,549,040
451	5,549,041
455	5,549,042

CLASS 100

153	5,549,055

CLASS 101

126	5,549,043
216	5,549,044
477	5,549,045

CLASS 102

202.7	5,549,046
256	5,549,047
466	5,549,048

CLASS 104

111	5,549,049
172.3	5,549,050

CLASS 106

1.21	5,549,738
15.05	5,549,739
20 R	5,549,740
	5,549,741
22 B	5,549,742
122	5,549,743
274	5,549,744
692	5,549,745

CLASS 108

51.1	5,549,056
81	5,549,051
139	5,549,052
147	5,549,053
152	5,549,054

CLASS 110

218	5,549,057
226	5,549,058
346	5,549,059

CLASS 111

178	5,549,060

CLASS 112

220	5,549,061
	5,549,062
258	5,549,063
410	5,549,064

CLASS 114

23	5,549,065
56	5,549,066
61	5,549,067
117	5,549,068
222	5,549,069
263	5,549,070
286	5,549,071
363	5,549,072

CLASS 117

4	5,549,746
43	5,549,747
53	5,549,748
90	5,549,749

CLASS 118

55	5,549,750
216	5,549,751
234	5,549,752
316	5,549,753
500	5,549,754
629	5,549,755
715	5,549,756

CLASS 119

57.92	5,549,075
223	5,549,076
474	5,549,073
477	5,549,074

CLASS 122

132	5,549,078
379	5,549,079

CLASS 123

90.16	5,549,080
	5,549,081
143 C	5,549,082
179.17	5,549,084
179.5	5,549,083
184.21	5,549,085
193.6	5,549,086
254	5,549,087
308	5,549,088
352	5,549,089
414	5,549,090
476	5,549,091
478	5,549,092
481	5,549,093
520	5,549,094
559.1	5,549,095
564	5,549,096
690	5,549,097

CLASS 126

39J	5,549,100
92 B	5,549,099
211	5,549,098

CLASS 127

42	5,549,757

CLASS 128

200.21	5,549,102
200.24	5,549,103
201.25	5,549,104
203.12	5,549,105
203.15	5,549,101
204.23	5,549,106
204.26	5,549,107
642	5,549,108
	5,549,109
661.01	5,549,110
662.05	5,549,112
671	5,549,113
691	5,549,114
696	5,549,115
	5,549,116
716	5,549,117
731	5,549,118
742	5,549,111
772	5,549,119
842	5,549,120
878	5,549,121
898	5,549,122
	5,549,123

CLASS 131

337	5,549,124
342	5,549,125

CLASS 132

270	5,549,126
277	5,549,127

CLASS 134

6	5,549,758
22.11	5,549,759
25.2	5,549,760
40	5,549,761
104.1	5,549,128

CLASS 135

88.15	5,549,129

CLASS 136

249	5,549,762
255	5,549,763

CLASS 137

39	5,549,130
115.18	5,549,131
270	5,549,132
296	5,549,133
486	5,549,137
606	5,549,134
614.17	5,549,135
872	5,549,136
876	5,549,138
884	5,549,139

CLASS 139

114	5,549,140

CLASS 141

1	5,549,141
49	5,549,142
144	5,549,143
146	5,549,144

CLASS 144

34.1	5,549,145

CLASS 148

222	5,549,764
301	5,549,766
428	5,549,765
512	5,549,767
695	5,549,768

CLASS 149

26	5,549,769

CLASS 152

154.2	5,549,146
209 R	5,549,147

CLASS 156

89	5,549,770
153	5,549,771
154	5,549,772
173	5,549,773
209	5,549,774
227	5,549,775
228	5,549,776
244.18	5,549,777
246	5,549,778
293	5,549,779
345	5,549,780
443	5,549,781
540	5,549,782
542	5,549,783
643.1	5,549,784
644.1	5,549,785
662.1	5,549,786

CLASS 160

183	5,549,148
201	5,549,149
	5,549,150

CLASS 162

5	5,549,787
29	5,549,788
65	5,549,789
109	5,549,790
157.6	5,549,791
216	5,549,792
258	5,549,793

CLASS 164

97	5,549,151

CLASS 165

42 5,549,153
89 5,549,154
104.33 5,549,155
201 5,549,152

CLASS 166

84.2 5,549,136
105 5,549,157
241.4 5,549,158
250.02 5,549,159
250.08 5,549,160
255.1 5,549,161
264 5,549,162
319 5,549,163
344 5,549,164
386 5,549,165

CLASS 172

4 5,549,166
381 5,549,167

CLASS 173

49 5,549,168
176 5,549,169

CLASS 174

16.3 5,550,326
48 5,550,322
52.1 5,550,323
52.3 5,550,324
250 5,550,325

CLASS 175

55 5,549,170
431 5,549,171

CLASS 177

23.14 5,550,327
50 5,550,328

CLASS 178

18 5,550,329
5,550,330

CLASS 180

65.1 5,549,172
165 5,549,174
209 5,549,175
417 5,549,173

CLASS 181

102 5,550,331
148 5,550,332
204 5,550,333
206 5,550,334
207 5,550,335
230 5,550,336
235 5,550,337
290 5,550,338

CLASS 182

63 5,549,176

CLASS 184

6.22 5,549,177
106 5,549,178

CLASS 187

298 5,549,179
347 5,549,180

CLASS 188

72.3 5,549,181
129 5,549,182
265 5,549,183

CLASS 192

3.3 5,549,184
12 C 5,549,185
18 R 5,549,186
35 5,549,187
53.332 5,549,188

CLASS 198

380 5,549,189
403 5,549,190
432 5,549,191
795 5,549,192
844.2 5,549,193
845 5,549,194
850 5,549,195

CLASS 200

5 A 5,550,339
295 5,550,340
296 5,550,341
448 5,550,342
569 5,550,343

CLASS 202

169 5,549,794

CLASS 204

164 5,549,795
192.11 5,549,797
222 5,549,798
5,549,799
242 5,549,800
279 5,549,801
298.11 5,549,802
404 5,549,803
425 5,549,804
457 5,549,796
461 5,549,805
621 5,549,806

CLASS 205

50 5,549,807
123 5,549,808
222 5,549,809
259 5,549,810
602 5,549,811
744 5,549,812

CLASS 206

69 5,549,196
158 5,549,197
307 5,549,198
308.1 5,549,199
362 5,549,200
388 5,549,201
436 5,549,202
472 5,549,203
539 5,549,204
710 5,549,205

CLASS 208

120 5,549,813
150 5,549,814
164 5,549,815

CLASS 209

17 5,549,206
614 5,549,207

CLASS 210

120 5,549,816
122 5,549,817
195.4 5,549,818
198.2 5,549,819
199 5,549,820
220 B1 4,563,277
232 5,549,821
238 5,549,822
265 5,549,823
323.1 5,549,824
411 5,549,825
489 5,549,826
490 B1 4,340,479
519 5,549,827
602 5,549,828
636 5,549,829
641 5,549,830
650 5,549,831
694 5,549,832
757 5,549,833
798 Re.35,316
806 5,549,834

CLASS 211

207 5,549,208

CLASS 215

228 5,549,209
375 5,549,210

CLASS 216

11 5,549,211
24 5,549,212

CLASS 219

121.39 5,550,344
121.63 5,550,345
121.72 5,550,346
137 R 5,550,347
145.22 5,550,348
213 5,550,349
5,550,350
390 5,550,351
497 5,550,352
672 5,550,353
673 5,550,354
709 5,550,355
734 5,550,356
772 5,550,357

CLASS 220

8 5,549,213
339 5,549,214
676 5,549,215
695 5,549,216

CLASS 221

155 5,549,217
282 5,549,218

CLASS 222

1 5,549,219
5,549,220
103 5,549,221
129.1 5,549,222
153.13 5,549,223
158 5,549,224
192 5,549,225
402.13 5,549,226
570 5,549,228

CLASS 224

321 5,549,229
520 5,549,230
536 5,549,231

CLASS 225

46 5,549,232
100 5,549,233

CLASS 227

119 5,549,234

CLASS 228

114.5 5,549,236
116 5,549,237
183 5,549,238
207 5,549,239
264 5,549,240

CLASS 229

120.01 5,549,241
191 5,549,242
244 5,549,243

CLASS 235

380 5,550,358
382 5,550,359
440 5,550,361
455 5,550,362
462 5,550,363
5,550,364
5,550,365
5,550,366
472 5,550,367

CLASS 236

34.5 5,549,244

CLASS 238

283 5,549,245

CLASS 239

9 5,549,246
57 5,549,247
251 5,549,248
384 5,550,360
463 5,549,249

CLASS 241

23 5,549,250
119 5,549,251
264 5,549,252

CLASS 242

19 5,549,254
422.5 5,549,255
432.3 5,549,253
532.1 5,549,256
580 5,549,257

CLASS 244

118.1 5,549,258
136 5,549,259
195 5,549,260

CLASS 248

48.2 5,549,261
87 5,549,262
96 5,549,263
157 5,549,264
188.2 5,549,265
205.1 5,549,266
442.2 5,549,267
5,549,268
562 5,549,269
619 5,549,270
621 5,549,271

CLASS 250

201.5 5,550,368
222.1 5,550,369
225 5,550,370
307 Re.35,317
310 5,550,372
338.1 5,550,373
339.07 5,550,374
343 5,550,375
360.1 5,550,376
363.09 5,550,377
367 5,550,378
369 5,550,379
370.11 5,550,380
380 5,550,381
390.04 5,550,382
519.1 5,550,383
559.45 5,550,384
584 5,550,385
588 5,550,386

CLASS 251

118 5,549,272
129.04 5,549,273
129.14 5,549,274
170 5,549,275
214 5,549,276
223 5,549,277
328 5,549,278

CLASS 252

62.52 5,549,837
75 5,549,838
182.27 5,549,841
301.4 H 5,549,843
5,549,844
312 5,549,845
315.01 5,549,846
394 5,549,847
408.1 5,549,848
503 5,549,849
518 5,549,850
519 5,549,851
582 5,549,853

CLASS 256

13.1 5,549,279

CLASS 257

15 5,550,387
24 5,550,388
30 5,550,389
66 5,550,390
96 5,550,391
170 5,550,392
192 5,550,393
209 5,550,394
306 5,550,395
330 5,550,396
412 5,550,397
434 5,550,398
529 5,550,399
530 5,550,400
5,550,404
642 5,550,405
666 5,550,401
5,550,406
669 5,550,402
702 5,550,403
737 5,550,407
5,550,408
757 5,550,409

CLASS 261

87 5,549,854

CLASS 264

2.5 5,549,855
36 5,549,856
40.1 5,549,857
46.4 5,549,858
102 5,549,859
139 5,549,860
187 5,549,861
238 5,549,862
257 5,549,863
280.000 5,549,864
318 5,549,865
451 5,549,866
555 5,549,867

CLASS 266

78 5,549,280

CLASS 267

119 5,549,281
136 5,549,282
140.12 5,549,283
140.14 5,549,284
148 5,549,285
149 5,549,370
154 5,549,286

CLASS 269

17 5,549,287

CLASS 270

52.14 5,549,288

CLASS 271

121 5,549,289
166 5,549,290
182 5,549,291
291 5,549,292

CLASS 273

1.5 R 5,549,293
67 B 5,549,294
123 R 5,549,295
292 5,549,300
305 5,549,301
346 5,549,302
349 5,549,303
396 5,549,304

CLASS 276

188 5,549,349

CLASS 277

106 5,549,305
230 5,549,306
235 B 5,549,307

CLASS 279

50 5,549,308

CLASS 280

7.1 5,549,309
11.22 5,549,310
47.36 5,549,311
166 5,549,312
221 5,549,313
259 5,549,314
279 5,549,315
477 5,549,316
632 5,549,317
654 5,549,318
661 5,549,319
689 5,549,320
5,549,321
704 5,549,322
728.3 5,549,323
5,549,324
735 5,549,325
743.1 5,549,326
751 5,549,327
772 5,549,328
821 5,549,329
822 5,549,330
843 5,549,331

CLASS 283

34 5,549,332

CLASS 285

45 5,549,333
189 5,549,334
286 5,549,335
333 5,549,336

CLASS 290

52 5,550,410

CLASS 292

225 5,549,337
292 5,549,338

CLASS 294

31.2 5,549,339
64.1 5,549,340
68.1 5,549,341
77 5,549,342

CLASS 295

34 5,549,343

CLASS 296

70 5,549,344
5,549,345
93 5,549,346
98 5,549,347
146.4 5,549,348
204 5,549,350
207 5,549,351
209 5,549,352

CLASS 297

182 5,549,353
184.13 5,549,354
224 5,549,355
256.15 5,549,356
354.13 5,549,357
452.64 5,549,358

CLASS 298

35 M 5,549,359

CLASS 301

64.7 5,549,360

CLASS 303

3 5,549,361
5,549,362
7 5,549,363
9.69 5,549,364
20 5,549,365
113.2 5,549,366
114.1 5,549,367
122.08 5,549,368
125 5,549,369
152 5,549,371

CLASS 307

100.000 5,550,411
123 5,550,412

CLASS 310

36 5,550,413
67 R 5,550,414
68 R 5,550,415
83 5,550,416
183 5,550,417
239 5,550,418
323 5,550,419
339 5,550,420

CLASS 312

114 5,549,372
135 5,549,373
257.1 5,549,374
319.1 5,549,375
334.5 5,549,376
334.8 5,549,377
348.4 5,549,378
408 5,549,379

CLASS 313

25 5,550,421
5,550,422
112 5,550,423
130 5,550,424
141 5,550,425
336 5,550,426
355 5,550,427
407 5,550,428
479 Re.35,318
5,550,429
589 5,550,430
630 5,550,431

CLASS 315

5 5,550,432
94 5,550,433
160 5,550,434
169.1 5,550,435
209 R 5,550,436
5,550,437
219 5,550,438
244 5,550,439
294 5,550,440
371 5,550,441
5,550,442
383 5,550,443

CLASS 318

139 5,550,444
153 5,550,445
439 5,550,446
5,550,447
569 5,550,448
632 5,550,449
800 5,550,450
811 5,550,451

CLASS 320

2 5,550,452
22 5,550,453
5,550,454

CLASS 322

23 5,550,455
25 5,550,456
29 5,550,457

CLASS 323

222 5,550,458
255 5,550,459
5,550,460
269 5,550,461
277 5,550,462
300 5,550,463
315 5,550,464

CLASS 324

143 5,550,465
158.1 5,550,466
173 5,550,467
225 5,550,468
251 5,550,469
318 5,550,471
320 5,550,472
338 5,550,473
432 5,550,474
433 5,550,475
522 5,550,476
545 5,550,477
654 5,550,478
750 5,550,479
754 5,550,480
5,550,481
758 5,550,482
5,550,483
769 5,550,484

772 5,550,485

CLASS 326

14 5,550,486
33 5,550,487
58 5,550,488
93 5,550,489
98 5,550,490
115 5,550,491

CLASS 327

65 5,550,492
66 5,550,493
69 5,550,494
103 5,550,495
108 5,550,496
110 5,550,497
175 5,550,498
5,550,499
261 5,550,500
374 5,550,501
423 5,550,502
437 5,550,503
537 5,550,504

CLASS 329

300 5,550,505
304 5,550,506
361 5,550,507

CLASS 330

59 5,550,508
127 5,550,509
253 5,550,510
5,550,511
254 5,550,512
286 5,550,513

CLASS 331

1 A 5,550,514
11 5,550,515
65 5,550,516
111 5,550,517

CLASS 333

33 5,550,518
207 5,550,519
213 5,550,520
260 5,550,521

CLASS 335

213 5,550,522

CLASS 336

221 5,550,523

CLASS 337

1 5,550,524
363 5,550,525

CLASS 338

22 R 5,550,526
50 5,550,527

CLASS 340

146.2 5,550,528
296 5,550,529
564 5,550,530
573 5,550,531
604 5,550,532
825.2 5,550,533
825.34 5,550,534
825.440 5,550,535
825.540 5,550,536
870.01 5,550,537
995 5,550,538

CLASS 341

20 5,550,539
51 5,550,540
5,550,541
67 5,550,542
94 5,550,543
155 5,550,544
176 5,550,545

CLASS 342

13 5,550,546
42 5,550,547
5,550,548
47 5,550,549
353 5,550,550
457 5,550,551

CLASS 343

702 5,550,552
785 5,550,553
828 5,550,554
878 5,550,555

CLASS 345

14 5,550,556
76 5,550,557
111 5,550,558
124 5,550,559
136 5,550,560
163 5,550,561
5,550,562
168 5,550,563
173 5,550,564
190 5,550,565
202 5,550,566
203 5,550,567

CLASS 347

12 5,550,568
15 5,550,569
49 5,550,570
133 5,550,571
171 5,550,572
246 5,550,573
262 5,550,574

CLASS 348

5.5 5,550,575
6 5,550,576
7 5,550,577
5,550,578
12 5,550,579
15 5,550,580
17 5,550,581
65 5,550,582
126 5,550,583
153 5,550,584
207 5,550,585
222 5,550,586
223 5,550,587
231 5,550,588
387 5,550,589
5,550,590
413 5,550,591
448 5,550,592
465 5,550,593
513 5,550,594
552 5,550,595
607 5,550,596
708 5,550,597
807 5,550,598

CLASS 351

159 5,550,599
5,550,600
209 5,550,601
243 5,550,602

CLASS 352

27 5,550,603

CLASS 353

31 5,550,604
81 5,550,605

CLASS 354

94 5,550,606
149.11 5,550,607
174 5,550,608
275 5,550,609
295 5,550,610
400 5,550,611
5,550,612

CLASS 355

41 5,550,613
206 5,550,614
208 5,550,615
5,550,616
210 5,550,617
211 5,550,618
246 5,550,619
273 5,550,620
285 5,550,621
299 5,550,622
311 5,550,623
319 5,550,624
326 M 5,550,627
326 R 5,550,625
5,550,626

CLASS 356

3.11 5,550,628
72 5,550,629
300 5,550,630
5,550,631
358 5,550,633
401 5,550,634
5,550,635
437 5,550,636
446 5,550,632

CLASS 358

296 5,550,637
5,550,638
302 5,550,639
335 5,550,640
5,550,641
5,550,642
5,550,643
5,550,644
5,550,645
442 5,550,646
448 5,550,648
462 5,550,647
474 5,550,650
479 5,550,649
496 5,550,651
498 5,550,652
514 5,550,653

CLASS 359

3 5,550,654
17 5,550,655
40 5,550,656
49 5,550,657
5,550,658
5,550,659
5,550,660
073 5,550,662
95 5,550,663
102 5,550,664
125 5,550,666
180 5,550,667
204 5,550,668
224 5,550,669
248 5,550,670
337 5,550,671
365 5,550,672
367 5,550,673
422 5,550,674
514 5,550,675
599 5,550,676
604 5,550,677
641 5,550,678
689 5,550,679
742 5,551,042
850 5,550,680
872 5,550,681

CLASS 360

27 5,550,682
46 5,550,683
48 5,550,684
77.08 5,550,685
85 5,550,686
98.08 5,550,687
99.08 5,550,688
5,550,689
99.12 5,550,690
103 5,550,691
5,550,692
104 5,550,693
105 5,550,694
135 5,550,695
5,550,696

CLASS 361

18 5,550,697
56 5,550,698
5,550,699
101 5,550,700
103 5,550,701
5,550,702
229 5,550,703
263 5,550,704
313 5,550,705
502 5,550,706
617 5,550,707
642 5,550,708
684 5,550,709
687 5,550,710
728 5,550,711
752 5,550,712
818 5,550,713

CLASS 362

31 5,550,715
32 5,550,716
41 5,550,717
80.1 5,550,718
120 5,550,719
123 5,550,720
205 5,550,721
221 5,550,722
260 5,550,723
267 5,550,724
282 5,550,725
383 5,550,726
386 5,550,727

CLASS 363

60 5,550,728
65 5,550,729
132 5,550,730
144 B1 4,571,669

CLASS 364

133 5,550,731
148 5,550,732
174 5,550,733
401 R 5,550,734
5,550,735
413.01 B1 5,287,272
419.14 5,550,741
424.03 5,550,736
5,550,737
424.04 5,550,738
424.05 5,550,739
431.01 5,550,740
449 5,550,742
5,550,743
476.01 5,550,744
478.03 5,550,745
479.01 5,550,746
485 5,550,747
488 5,550,748
489 5,550,749
490 5,550,714
491 5,550,750
492 5,550,751
505 5,550,752
5,550,753
514 A 5,550,754
514 R 5,550,755
5,550,756
560 5,550,757
571.03 5,550,758
574 5,550,759
578 5,550,760
5,550,761
579 5,550,762
582 5,550,763
724.1 5,550,764
725 5,550,765
728.03 5,550,766
745 5,550,767
748 5,550,768

CLASS 365

63 5,550,769
145 5,550,770
174 5,550,771
185.03 5,550,772
185.23 5,550,773
189.02 5,550,774
189.11 5,550,775
200 5,550,776
205 5,550,777
207 5,550,778
216 5,550,779
221 5,550,780
222 5,550,781
230.03 5,550,782
233 5,550,783
5,550,784

CLASS 366

139 5,549,380
5,549,381
144 5,549,382
149 5,549,383
299 5,549,384
314 5,549,385
331 5,549,386

CLASS 367

25 5,550,785
5,550,788
48 5,550,786
77 5,550,787
94 5,550,789
140 5,550,790
153 5,550,791
155 5,550,792
164 5,550,793

CLASS 368

11 5,550,794
157 5,550,795

CLASS 369

13 5,550,796
44.41 5,550,797
110 5,550,798
116 5,550,799
5,550,800
178 5,550,801

CLASS 370

13 5,550,802
5,550,803
16 5,550,804
16.1 5,550,805
17 5,550,806
5,550,807
2 5,550,808
59 5,550,810
5,550,811
18.000 5,550,809
19 5,550,812
24 5,550,813
54 5,550,815
60 5,550,816
60.1 5,550,818
5,550,819
5,550,820
5,550,821
5,550,822
5,550,823
71 5,550,824
73 5,550,825
85.2 5,550,826
85.8 5,550,827
94.1 5,550,828
95.1 5,550,829
95.2 5,550,830
95.3 5,550,831
5,550,832
105.4 5,550,833
110.1 5,550,834
5,550,835

CLASS 371

5.5 5,550,837
21.2 5,550,838
21.4 5,550,842
22.1 5,550,839
5,550,840
5,550,841
22.3 5,550,843
22.6 5,550,844
27 5,550,845
5,550,846
32 5,550,847
33 5,550,848
37.1 5,550,849

CLASS 372

16 5,550,850
33 5,550,851
5,550,852
34 5,550,853
45 5,550,854
50 5,550,855
5,550,856

CLASS 373

27 5,550,857
110 5,550,858

CLASS 374

10 5,549,387

CLASS 375

216 5,550,859
220 5,550,860
222 5,550,861
229 5,550,862
240 5,550,863
293 5,550,864
295 5,550,865
316 5,550,866
324 5,550,867
330 5,550,868
340 5,550,869
341 5,550,870
344 5,550,871
347 5,550,872
354 5,550,873
5,550,874
355 5,550,992
356 5,550,875
371 5,550,876
372 5,550,877
373 5,550,878
376 5,550,879
5,550,880
377 5,550,881

CLASS 376

272 5,550,882
302 5,550,883

CLASS 377

5 5,550,884
27 5,550,885

CLASS 378

19 5,550,886
43 5,550,887
98.7 5,550,888
113 5,550,889
136 5,550,890
197 5,550,891
210 5,550,892

CLASS 379

2 5,550,894
59 5,550,893
5,550,895
5,550,896
5,550,897
5,550,898
5,550,899
67 5,550,900
93 5,550,901
106 5,550,902
115 5,550,903
127 5,550,904
142 5,550,905
207 5,550,906
5,550,907
215 5,550,908
220 5,550,909
5,550,910
5,550,911
221 5,550,912
230 5,550,913
5,550,914
355 5,550,915
399 5,550,916
442 5,550,917
452 5,550,918

CLASS 380

23 5,550,919

CLASS 381

1 5,550,920
24 5,550,921
57 5,550,922
72 5,550,923
94 5,550,924
98 5,550,925
188 5,550,926

CLASS 382

110 5,550,927
116 5,550,928
135 5,550,929
139 5,550,930
187 5,550,931
5,550,933
199 5,550,934
229 5,550,935
260 5,550,936
263 5,550,937
293 5,550,938

CLASS 383

84 5,549,388
202 5,549,389

CLASS 384

44 5,549,390
51 5,549,391
117 5,549,392
203 5,549,393
282 5,549,394
477 5,549,395
545 5,549,396
551 5,549,397
571 5,549,398

CLASS 385

8 5,550,939
28 5,550,940
49 5,550,941
53 5,550,942
71 5,550,943
116 5,550,945
121 5,550,946
134 5,550,947
147 5,550,948

CLASS 395

2.15 5,550,949
21 5,550,951
47.5 5,551,007
98 5,550,953
106 5,550,954
109 5,550,955
113 5,550,956
114 5,550,957
115 5,550,958
127 5,550,959
130 5,550,960
133 5,550,961
5,550,962
140 5,550,963
5,550,964
154 5,550,965
5,550,966
155 5,550,967
157 5,550,968
159 5,550,969
161 5,550,970
5,550,971
164 5,550,972
182.03 5,550,973
183.18 5,550,974
185.04 5,550,975
200.01 5,550,977
5,550,978
200.05 5,550,979
5,550,980

200.06 5,550,976
5,550,981
200.13 5,550,982
200.17 5,550,984
221 5,550,950
280 5,550,986
286 5,550,987
293 5,550,988
306 5,550,989
309 5,550,990
5,550,991
375 5,550,993
5,550,994
403 5,550,995
421.03 5,550,996
430 5,550,997
441 5,550,998
442 5,550,999
445 5,551,000
449 5,551,001
461 5,551,002
463 5,551,003
465 5,551,004
472 5,551,005
473 5,551,006
488 5,551,008
492 5,551,009
496 5,551,010
500 5,551,011
5,551,012
5,551,013
5,551,014
5,551,015
550 5,551,016
5,551,017
600 5,551,018
5,551,019
5,551,020
5,551,021
5,551,022
5,551,023
5,551,024
5,551,025
5,551,026
5,551,027
5,551,028
5,551,029
5,551,030
5,551,031
5,551,032
650 5,551,033
5,551,034
5,551,035
700 5,551,036
5,551,037
5,551,038
5,551,039
5,551,040
733 5,551,041
750 5,550,985
5,551,044
775 5,551,045
800 5,551,046
5,551,047
5,551,048
5,551,049
5,551,050
5,551,051
5,551,052
829 5,551,053
843 5,551,054
882 5,551,055

CLASS 400

63 5,549,399
236 5,549,400
605 Re.35,319
618 5,549,401
708 5,549,402

CLASS 401

31 5,549,403
75 5,549,404
195 5,549,405

CLASS 402

80 L 5,549,406

CLASS 403

109 5,549,407
218 5,549,408
306 5,549,409

CLASS 404

6 5,549,410
25 5,549,411
84.05 5,549,457
84.1 5,549,412
93 5,549,413
101 5,549,414

CLASS 405

43 5,549,415
153 5,549,416
211 5,549,417
258 5,549,418
263 5,549,419
286 5,549,420

CLASS 406

3 5,549,421
48 5,549,422
86 5,549,423

CLASS 407

100 5,549,424
114 5,549,425

CLASS 409

138 5,549,426
233 5,549,427

CLASS 410

94 5,549,428
96 5,549,429

CLASS 411

179 5,549,430
389 5,549,431
432 5,549,432

CLASS 412

39 5,549,433

CLASS 414

217 5,549,435
416 5,549,434
426 5,549,436
462 5,549,437
559 5,549,438
680 5,549,439
723 5,549,440
744.6 5,549,441
751 5,549,442
786 5,549,443
796.7 5,549,444

CLASS 415

2.1 5,549,445
55.1 5,549,446
115 5,549,447
149.4 5,549,448
177 5,549,449
214.1 5,549,450
218.1 5,549,451

CLASS 416

93 A 5,549,455

CLASS 417

12 5,549,456
199.1 5,549,452
269 5,549,453
312 5,549,454
360 5,549,458
423.12 5,549,459
474 5,549,460
477.11 5,549,461

CLASS 418

1 5,549,462
3 5,549,463
48 5,549,464
5,549,465
55.1 5,549,466

CLASS 422

1.000 5,549,868
40 5,549,869
90 5,549,870
95 5,549,871
173 5,549,872
180 5,549,873
186.04 5,549,874
266 5,549,875

CLASS 423

199 5,549,876
245.3 5,549,877
304 5,549,878
491 5,549,879
593 5,549,880
703 5,549,881

CLASS 424

1.11 5,549,882
1.45 5,549,883
9.2 5,549,884
54 5,549,885
59 5,549,886
66 5,549,887
78.02 5,549,888
93.43 5,549,889
93.462 5,549,890
94.4 5,549,891
94.61 5,549,892
94.64 5,549,893
5,549,894
115 5,549,895
226.1 5,549,896
256 N 5,549,897
269.1 5,549,898
5,549,899
401 5,549,901
405 5,549,902
408 5,549,903
423 5,549,904
439 5,549,905
440 5,549,906
443 5,549,907
444 5,549,908
450 5,549,910
458 5,549,911
468 5,549,912
472 5,549,913
487 5,549,914
490 5,549,915

CLASS 425

298 5,549,467
526 5,549,468

CLASS 426

39 5,549,916
96 5,549,917
291 5,549,918
335 5,549,919
516 5,549,920
573 5,549,921
618 5,549,922
633 5,549,923

CLASS 427

2.3 5,549,924
8 5,549,925
100 5,549,926
191 5,549,927
265 5,549,928
282 5,549,929
337 5,549,930
376.2 5,549,931
385.5 5,549,932
421 5,549,933
489 5,549,934
490 5,549,935
566 5,549,936
576 5,549,937

CLASS 428

17 5,549,938
31 5,549,939
5,549,940
34.1 5,549,941
34.5 5,549,942
34.8 5,549,943
35.2 5,549,944
35.5 5,549,945
35.8 5,549,946
36.2 5,549,947
36.9 5,549,948
5,549,949
41.7 5,549,950
64.1 5,549,953
64.4 5,549,952
65.3 5,549,954
5,549,955
73 5,549,956
92 5,549,957
95 5,549,958
131 5,549,959
139 5,549,960
143 5,549,961
144 5,549,962
224 5,549,963
5,549,964
229 5,549,965
5,549,966
5,549,967
241 5,549,968
5,549,969
364 5,549,971
398 5,549,972
403 5,549,973
5,549,974
553 5,549,975
565 5,549,951
608 5,549,976
692 5,549,977
5,549,978
694 T 5,549,979
698 5,549,980

CLASS 429

7 5,549,981
30 5,549,982
32 5,549,983
61 5,549,984
157 5,549,985
175 5,549,986
188 5,549,987
192 5,549,988
193 5,549,989
204 5,549,990
218 5,549,991
223 5,549,992

CLASS 430

5 5,549,994
5,549,995
21 5,549,996
59 5,549,997
109 5,549,998
127 5,549,999
131 5,550,000
157 5,550,001
258 5,550,002
264 5,550,003
270.1 5,550,004
286.1 5,550,005
311 5,550,006
314 5,550,007
325 5,550,008
393 5,550,009
5,550,010
496 5,550,011
567 5,550,012
5,550,013
5,550,014
569 5,550,015

CLASS 431

75 5,549,469
302 5,549,470

CLASS 432

47 5,549,520
77 5,549,471
103 5,549,472
239 5,549,473

CLASS 433

129 5,549,474
173 5,549,475
223 5,549,476

CLASS 434

5 5,549,477

CLASS 435

5 5,550,016
5,550,017
5,550,018
6 5,550,019
5,550,020
5,550,021
5,550,022
5,550,024
5,550,025
7.1 5,550,023
5,550,026
7.22 5,550,027
13 5,550,028
14 5,550,029
23 5,550,030
29 5,550,031
39 5,550,032
40.52 5,550,033
69.1 5,550,034
5,550,035
5,550,036
5,550,037
70.1 5,550,038
91.2 5,550,039
5,550,040
119 5,550,041
172.1 5,550,042
172.3 5,550,043
177 5,550,044
201 5,550,045
202 5,550,046
238 5,550,047
240.1 5,550,049
240.2 5,550,050
5,550,051
5,550,054
5,550,055
240.26 5,550,052
240.27 5,550,056

CLASS 436

8 5,550,053
54 5,550,059
63 5,550,058
5,550,060
73 5,550,061
155 5,550,062
518 5,550,063

CLASS 437

34 5,550,064
39 5,550,065
40 5,550,066
41 5,550,067
5,550,068
5,550,069
5,550,070
5,550,071
43 5,550,072
5,550,073
44 5,550,074
48 5,550,075
52 5,550,076
5,550,077
5,550,078
56 5,550,079
60 5,550,080
129 5,550,081
168 5,550,082
183 5,550,083
200 5,550,084
203 5,550,085
209 5,550,086
217 5,550,087
225 5,550,088
5,550,089
228 5,550,090
241 5,550,091

CLASS 439

35 5,549,478
67 5,549,479
79 5,549,480
108 5,549,481
369 5,549,482
399 5,549,483
417 5,549,484
495 5,549,485
500 5,549,486
521 5,549,487
680 5,549,488
709 5,549,489
724 5,549,490

CLASS 440

15 5,549,491
53 5,549,492
61 5,549,493
88 5,549,494

CLASS 441

108 5,549,495

CLASS 445

26 5,549,496

CLASS 446

52 5,549,497
193 5,549,498
268 5,549,499
385 5,549,500
460 5,549,501

CLASS 451

8 5,549,502
11 5,549,503
28 5,549,504
69 5,549,505
89 5,549,506
121 5,549,507
141 5,549,508
178 5,549,509
246 5,549,510
281 5,549,511

CLASS 452

118 5,549,521

CLASS 454

58 5,549,512
365 5,549,513

CLASS 455

8 5,551,056
33.1 5,551,057
33.2 5,551,058
5,551,059
33.4 5,551,060
51.1 5,551,061
54.2 5,551,062
5,551,063
62 5,551,064
66 5,551,065
69 5,551,066
88 5,551,067
89 5,551,068
5,551,073
90 5,551,069
126 5,551,070
161.2 5,551,071
226.2 5,551,072
326 5,551,074
333 5,551,075
5,551,076
343 5,551,077
5,551,078
347 5,551,079
348 5,551,080

CLASS 464

145 5,549,514

CLASS 472

71 5,549,515

CLASS 473

115 5,549,516
133 5,549,299
134 5,549,517
137 5,549,518
272 5,549,298
279 5,549,522
290 5,549,296
5,549,297

CLASS 475

298 5,549,523

CLASS 477

3 5,549,524
93 5,549,525
125 5,549,519

CLASS 482

57 5,549,526
5,549,527
81 5,549,528
96 5,549,529
100 5,549,530
106 5,549,531
126 5,549,532
137 5,549,533
5,549,534
138 5,549,535
146 5,549,536

CLASS 493

162 5,549,537
218 5,549,538
402 5,549,539

CLASS 494

20 5,549,540

CLASS 501

137 5,550,092

CLASS 502

74 5,550,093
115 5,550,094
211 5,550,095
217 5,550,096

CLASS 503

201 5,550,097
227 5,550,098
5,550,099

CLASS 504

116 5,550,100
161 Re.35,320

CLASS 505

120 5,550,105
162 5,550,101
420 5,550,102
430 5,550,103
472 5,550,104

CLASS 508

183 5,549,836
204 5,549,835

CLASS 510

191 5,549,842
299 5,549,852
365 5,549,839
5,549,840

CLASS 512

415 5,550,269

CLASS 514

2 5,550,106
6 5,550,183
11 5,550,107
12 5,550,109
17 5,550,110
21 5,550,108
5,550,114
25 5,550,115
44 5,550,111
54 5,550,112
5,550,113
56 5,550,116
81 5,550,117
89 5,550,118

92 5,550,119
169 5,550,120
210 5,550,121
211 5,550,122
214 5,550,123
221 5,550,124
230.5 5,550,125
237.5 5,550,126
248 5,550,127
249 5,550,128
253 5,550,129
254 5,550,130
255 5,550,131
269 5,550,132
284 5,550,134
291 5,550,133
313 5,550,135
322 5,550,136
354 5,550,137
361 5,550,138
362 5,550,139
363 5,550,140
5,550,141
365 5,550,142
367 5,550,143
374 5,550,144
381 Re.35,321
396 5,550,145
400 5,550,146
406 5,550,147
408 5,550,148
416 5,550,149
443 5,550,150
445 5,550,151
458 5,550,152
460 5,550,153
473 5,550,154
540 5,550,155
547 5,550,157
557 5,550,158
563 5,550,159
5,550,160
616 5,550,161
617 5,550,162
643 5,550,163
648 5,550,164
676 5,550,165
715 5,550,166

CLASS 521

50 5,550,167
108 5,550,168
112 5,550,169
143 5,550,170

CLASS 522

31 5,550,171

CLASS 523

118 5,550,172
122 5,550,173
215 5,550,174
348 5,550,175

CLASS 524

6 5,550,176
47 5,550,177
56 5,550,178
210 5,550,179
430 5,550,180
460 5,550,181
557 5,550,182
837 5,550,184
847 5,550,185

CLASS 525

52 5,550,186
54.1 5,550,187
5,550,188
5,550,189
54.3 5,550,190
92 A 5,550,191
92 C 5,550,192
194 5,550,193
199 5,550,194
250 5,550,195
285 5,550,196
314 5,550,197
327.4 5,550,198
404 5,550,199
423 5,550,199

CLASS 526

174 5,550,200
204 5,550,201
286 5,550,202
336 5,550,203

CLASS 528

125 5,550,204
176 5,550,205
229 5,550,206
287 5,550,207
335 5,550,208
361 5,550,209
480 5,550,211

CLASS 530

324 5,550,212
5,550,213
328 5,550,214
334 5,550,215
395 5,550,216

CLASS 534

732 5,550,217
852 5,550,218

CLASS 536

1.110 5,550,219
18.5 5,550,220
23.5 5,550,221
23.7 5,550,223
24.1 5,550,228
103 5,550,222
114 5,550,224
115 5,550,225
123.13 5,550,226
124 5,550,227

CLASS 540

200 5,550,229
203 5,550,230
205 5,550,231
230 5,550,232
456 5,550,233
466 5,550,234

CLASS 544

159 5,550,237
211 5,550,238
238 5,550,236
295 5,550,239
5,550,240
302 5,550,241

CLASS 546

116 5,550,243
153 5,550,244
167 5,550,245
300 5,550,246
314 5,550,247

CLASS 548

19 5,550,242
236 5,550,248
303.7 5,550,249
311.1 5,550,250
312.1 5,550,251
332.1 5,550,252
429 5,550,253
5,550,254
452 5,550,255
473 5,550,256
550 5,550,257

CLASS 549

78 5,550,258
274 5,550,259
421 5,550,260
510 5,550,261

CLASS 554

57 5,550,262
78 5,550,263
176 5,550,264

CLASS 556

7 5,550,265
89 5,550,266
144 5,550,267
145 5,550,268
440 5,550,270
5,550,271
479 5,550,272

CLASS 558

54 5,550,273
110 5,550,274
140 5,550,275
177 5,550,276
194 5,550,278
277 5,550,279
5,550,280

CLASS 560

245 5,550,281
301 5,550,282

CLASS 562

467 5,550,284
561 5,550,283
565 5,550,285

CLASS 564

139 5,550,286
153 5,550,287
194 5,550,288
293 5,550,289
309 5,550,290
357 5,550,291
399 5,550,292
426 5,550,293
451 5,550,294
493 5,550,297

CLASS 568

14 5,550,295
314 5,550,296
494 5,550,298
591 5,550,299
698 5,550,300
835 5,550,301
881 5,550,302

CLASS 585

328 5,550,303
512 5,550,304
513 5,550,305
514 5,550,306
525 5,550,307
623 5,550,308
654 5,550,309

CLASS 588

11 5,550,310
19 5,550,311
205 5,550,312
256 5,550,313
5,550,314
259 5,550,315

CLASS 600

105 5,549,541
146 5,549,542
169 5,549,543

CLASS 601

2 5,549,544

CLASS 604

21 5,549,603
22 5,549,644
26 5,549,546
29 5,549,645
30 5,549,547
35 5,549,548
83 5,549,550
96 5,549,551
5,549,552
5,549,553
101 5,549,554
5,549,555
102 5,549,556
103 5,549,557
110 5,549,558
5,549,708
113 5,549,559
130 5,549,560
131 5,549,561
134 5,549,562
164 5,549,563
165 5,549,564
167 5,549,565
5,549,566
179 5,549,567
191 5,549,569
192 5,549,568
198 5,549,570
5,549,571
5,549,572
218 5,549,573
232 5,549,574
5,549,575
5,549,576
247 5,549,577
256 5,549,579
264 5,549,580
282 5,549,581
283 5,549,582
5,549,583
5,549,651
5,549,657
313 5,549,584
317 5,549,585
5,549,707
319 5,549,586
333 5,549,587
339 5,549,588
366 5,549,589
368 5,549,590
389 5,549,591
5,549,592
391 5,549,593

CLASS 606

1 5,549,594
5,549,595
4 5,549,596
5 5,549,597
5,549,632
6 5,549,598
10 5,549,599
15 5,549,600
5,549,601
5,549,602
45 5,549,604
46 5,549,605
51 5,549,606
61 5,549,607
5,549,608
64 5,549,609
5,549,610
69 5,549,612
80 5,549,613
107 5,549,614
108 5,549,615
130 5,549,616
139 5,549,633
144 5,549,617
148 5,549,618
151 5,549,619
5,549,620
5,549,621
166 5,549,622
170 5,549,634
171 5,549,623
191 5,549,624
192 5,549,625
198 5,549,635
200 5,549,626
206 5,549,627
5,549,636
207 5,549,637
220 5,549,628
223 5,549,629
232 5,549,630
5,549,631

CLASS 607

4 5,549,641
5,549,653
5 5,549,642
7 5,549,643
8 5,549,646
9 5,549,647
5,549,648
15 5,549,649
24 5,549,650
28 5,549,652
32 5,549,654
42 5,549,655
48 5,549,656
57 5,549,658
60 5,549,659
088 5,549,660
97 5,549,638
99 5,549,661
101 5,549,639
149 5,549,640

CLASS 623

1 5,549,662
5,549,663
5,549,664
2 5,549,665
5,549,666
3 5,549,667
6 5,549,668
5,549,669
5,549,670
8 5,549,671
5,549,672
9 5,549,673
11 5,549,674
5,549,675
13 5,549,676
16 5,549,677
5,549,678
17 5,549,679
18 5,549,680
5,549,681
19 5,549,682
20 5,549,683
5,549,684
5,549,685
5,549,686
5,549,687
5,549,688
5,549,689
21 5,549,690
22 5,549,691
5,549,692
5,549,693
5,549,694
5,549,695
5,549,696
5,549,697
5,549,698
5,549,699
5,549,700
5,549,701
23 5,549,702
5,549,703
5,549,704
5,549,705
5,549,706
24 5,549,709
33 5,549,714
38 5,549,710
53 5,549,711
60 5,549,712
66 5,549,713

CLASS 800

2 5,550,316
205 5,550,318

CLASSIFICATION OF DESIGNS

D2— 627 373,011
954 373,012
961 373,013
980 373,014
D3— 2 373,015
202 373,016
207 373,017
218 373,018
243 373,019
273 373,020
276 373,021
279 373,022
D4— 108 373,023
132 373,024
134 373,025
D5— 20 373,026
D6— 303 373,027
333 373,028
339 373,029
341 373,030
380 373,031
437 373,032
445 373,033
466 373,034
477 373,035
508 373,036
515 373,037
561 373,038
566 373,039
373,040
575 373,041
601 373,042
613 373,043
632 373,044
D7— 300 373,045
323 373,046
334 373,047
401.2 373,048
413 373,049
505 373,050
536 373,051
555 373,052
587 373,053
698 373,054
709 373,055
D8— 13 373,056
49 373,057
50 373,058
51 373,059
78 373,060
85 373,061
99 373,062
308 373,063
373,064
310 373,065
D10— 30 373,087
39 373,088
65 373,089
72 373,090
93 373,091
104 373,092
106 373,093
109 373,094
382 373,074
373,075
383 373,076
499 373,077
D9— 320 373,078
346 373,079
418 373,080
430 373,081
447 373,082
373,083
504 373,084
516 373,085
540 373,086
D11— 6 373,095
28 373,096
160 373,097
215 373,098
D12— 16 373,099
102 373,100
177 373,101
213 373,102
373,103
317 373,104
406 373,105
423 373,106
425 373,107
D13— 103 373,108
146 373,110
159 373,111
373,112
169 373,113
373,114
183 373,115
D14— 100 373,116
373,117
373,118
107 373,119
113 373,120
114 373,121
373,122
129 373,123
148 373,124
167 373,109
191 373,125
198 373,126
248 373,127
258 373,128
D15— 133 373,129
D16— 218 373,130
219 373,131
237 373,132
244 373,133
D17— 1 373,134
14 373,135
21 373,136

CLASSIFICATION OF PATENTS

	24	373,137			373,154		139	373,171		104	373,188		164	373,205	D29—	110	373,223
D18—	56	373,138		120	373,155	D23—	225	373,172			373,189	D26—	38	373,207			373,224
		373,139		130	373,156		226	373,173		112	373,190			373,208		114	373,225
D19—	26	373,140		140	373,157			373,174		129	373,191		42	373,209	D30—	124	373,226
	34	373,141		159	373,158			373,175			373,192		43	373,210		134	373,227
	34.1	373,142		171	373,159		233	373,176		167	373,193		44	373,211		145	373,228
	55	373,143		217	373,160		238	373,177		192	373,194		63	373,206		160	373,229
	62	373,144		219	373,161			373,178		211	373,195		74	373,212	D32—	1	373,230
D20—	19	373,145			373,162		241	373,179		214	373,196		84	373,213			
	43	373,146		220	373,163		254	373,180			373,197		110	373,215			
D21—	5	373,147			373,164		261	373,181		230	373,198		133	373,216			
	29	373,148		226	373,165		285	373,182	D25—	50	373,199	D27—	102	373,217			
	48	373,149			373,166		364	373,183		124	373,200	D28—	47	373,218			
	64	373,150		234	373,167		370	373,184			373,201		76	373,219			
	108	373,151		238	373,168		377	373,185		130	373,202		77	373,220			
		373,152	D22—	107	373,169		398	373,186		136	373,203		83	373,221			
		373,153		115	373,170	D24—	103	373,187		138	373,204		87	373,222			

CLASSIFICATION OF PLANTS

P.—	10	9,633	I		9,634	I		9,635	I	20	9,636	I		I					

GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01	:	5,549,213		5,548,997		5,549,556		5,550,038		5,550,531		5,550,820							
		5,549,528		5,549,007		5,549,557		5,550,039		5,550,534		5,550,836							
		5,549,878		5,549,012		5,549,568		5,550,054		5,550,538		5,550,839							
		5,550,033		5,549,030		5,549,579		5,550,060		5,550,540		5,550,840							
		5,550,128		5,549,036		5,549,597		5,550,072		5,550,541		5,550,841							
02	:	5,549,026		5,549,069		5,549,601		5,550,087		5,550,546		5,550,842							
		5,549,313		5,549,083		5,549,607		5,550,124		5,550,550		5,550,843							
		5,549,920		5,549,090		5,549,616		5,550,161		5,550,551		5,550,852							
		5,550,350		5,549,107		5,549,624		5,550,163		5,550,563		5,550,861							
04	:	Re.35,317		5,549,108		5,549,625		5,550,165		5,550,566		5,550,865							
		Re.35,318		5,549,109		5,549,627		5,550,178		5,550,576		5,550,866							
		5,548,904		5,549,111		5,549,632		5,550,179		5,550,578		5,550,869							
		5,548,985		5,549,114		5,549,635		5,550,181		5,550,579		5,550,873							
		5,549,448		5,549,117		5,549,644		5,550,187		5,550,585		5,550,877							
		5,549,478		5,549,119		5,549,646		5,550,188		5,550,594		5,550,882							
		5,549,532		5,549,170		5,549,649		5,550,204		5,550,595		5,550,890							
		5,549,781		5,549,207		5,549,650		5,550,215		5,550,614		5,550,893							
		5,549,801		5,549,215		5,549,652		5,550,246		5,550,636		5,550,932							
		5,549,848		5,549,231		5,549,656		5,550,266		5,550,649		5,550,942							
		5,549,925		5,549,270		5,549,658		5,550,277		5,550,656		5,550,953							
		5,550,065		5,549,275		5,549,661		5,550,289		5,550,672		5,550,959							
		5,550,090		5,549,289		5,549,666		5,550,331		5,550,683		5,550,960							
		5,550,113		5,549,293		5,549,671		5,550,366		5,550,684		5,550,964							
		5,550,426		5,549,296		5,549,672		5,550,378		5,550,685		5,550,966							
		5,550,480		5,549,298		5,549,684		5,550,387		5,550,691		5,550,967							
		5,550,503		5,549,301		5,549,690		5,550,403		5,550,694		5,550,982							
		5,550,724		5,549,315		5,549,714		5,550,404		5,550,696		5,550,997							
		5,550,736		5,549,354		5,549,729		5,550,405		5,550,699		5,551,000							
		5,550,863		5,549,355		5,549,731		5,550,406		5,550,701		5,551,001							
		5,550,941		5,549,357		5,549,756		5,550,411		5,550,703		5,551,003							
		5,551,022		5,549,370		5,549,762		5,550,436		5,550,705		5,551,006							
		5,551,051		5,549,372		5,549,768		5,550,446		5,550,707		5,551,017							
		5,551,058		5,549,426		5,549,771		5,550,454		5,550,710		5,551,018							
		5,551,059		5,549,429		5,549,783		5,550,464		5,550,715		5,551,026							
		5,551,076		5,549,443		5,549,795		5,550,466		5,550,721		5,551,027							
05	:	5,548,931		5,549,457		5,549,796		5,550,474		5,550,735		5,551,030							
		5,548,939		5,549,458		5,549,802		5,550,476		5,550,746		5,551,031							
		5,549,381		5,549,460		5,549,859		5,550,487		5,550,747		5,551,032							
		5,548,859		5,549,461		5,549,862		5,550,489		5,550,748		5,551,044							
06	:	5,548,873		5,549,464		5,549,867		5,550,495		5,550,754		5,551,046							
		5,548,875		5,549,465		5,549,880		5,550,496		5,550,755		5,551,047							
		5,548,910		5,549,480		5,549,891		5,550,497		5,550,759		5,551,049							
		5,548,911		5,549,495		5,549,894		5,550,500		5,550,772		5,551,052							
		5,548,913		5,549,506		5,549,910		5,550,502		5,550,779		5,551,054							
		5,548,914		5,549,513		5,549,934		5,550,508		5,550,780		5,551,055							
		5,548,921		5,549,529		5,549,949		5,550,509		5,550,782		5,551,065							
		5,548,958		5,549,542		5,549,974		5,550,515		5,550,783		5,551,066							
		5,548,963		5,549,551		5,549,990		5,550,518		5,550,802		5,551,074							
		5,548,991		5,549,554		5,550,019		5,550,520		5,550,803		08	:	5,548,845					

5,548,895
5,548,956
5,549,029
5,549,113
5,549,423
5,549,618
5,549,735
5,549,752
5,549,753
5,549,816
5,549,830
5,549,924
5,550,063
5,550,104
5,550,849
5,550,896
5,550,906
5,550,971
5,550,998
5,551,025
5,551,041
09 :
5,548,869
5,548,915
5,549,078
5,549,200
5,549,290
5,549,617
5,549,636
5,549,694
5,549,767
5,549,807
5,549,842
5,549,907
5,550,006
5,550,103
5,550,117
5,550,122
5,550,152
5,550,294
5,550,318
5,550,328
5,550,365
5,550,440
5,550,450
5,550,557
5,550,575
5,550,725
5,550,737
5,550,791
5,550,793
5,550,929
5,550,951
10 : 5,549,151
5,549,259
5,549,422
5,549,472
5,549,629
5,549,966
5,549,972
5,550,136
5,550,184
5,550,238
11 : 5,549,884
12 : 5,548,850
5,548,851
5,548,852
5,548,903
5,548,917
5,548,918
5,548,951
5,548,952
5,548,981
5,549,128
5,549,148
5,549,168
5,549,176
5,549,232
5,549,248
5,549,251
5,549,279
5,549,299
5,549,302
5,549,309
5,549,333
5,549,360
5,549,415
5,549,494
5,549,516
5,549,547
5,549,565
5,549,571
5,549,580
5,549,605
5,549,606
5,549,614
5,549,620
5,549,663
5,549,682
5,549,839
5,549,987
5,549,988
5,549,989
5,550,028
5,550,029
5,550,144
5,550,259
5,550,483
5,550,524
5,550,549
5,550,669
5,550,700
5,550,708
5,550,824
13 : 5,548,960
5,548,982
5,549,064
5,549,197
5,549,261
5,549,373
5,549,468
5,549,489
5,549,497
5,549,499
5,549,500
5,549,657
5,549,852
5,549,868
5,549,945
5,549,957
15 : 5,549,124
16 : 5,550,333
5,550,954
5,550,985
17 : 5,548,855
5,548,862
5,548,944
5,548,974
5,549,075
5,549,144
5,549,166
5,549,185
5,549,191
5,549,201
5,549,228
5,549,233
5,549,245
5,549,262
5,549,264
5,549,307
5,549,328
5,549,335
5,549,363
5,549,412
5,549,469
5,549,487
5,549,538
5,549,566
5,549,630
5,549,631
5,549,638
5,549,675
5,549,683
5,549,748
5,549,764
5,549,772
5,549,814
5,549,834
5,549,887
5,549,905
5,549,943
5,549,956
5,550,027
5,550,043
5,550,081
5,550,153
5,550,177
5,550,195
5,550,197
5,550,208
5,550,243
5,550,342
5,550,434
5,550,439
5,550,453
5,550,455
5,550,552
5,550,561
5,550,678
5,550,732
5,550,815
5,550,828
5,550,891
5,550,904
5,550,928
5,551,035
5,551,062
5,551,078
5,551,080
18 : 5,549,098
5,549,129
5,549,246
5,549,274
5,549,317
5,549,432
5,549,486
5,549,488
5,549,531
5,549,587
5,549,680
5,549,685
5,549,686
5,550,036
5,550,059
5,550,106
5,550,118
5,550,123
5,550,134
5,550,150
5,550,151
5,550,164
5,550,222
5,550,231
5,550,327
5,550,339
5,550,383
5,550,441
5,550,537
5,550,642
19 : 5,548,908
5,549,060
5,549,341
5,549,413
5,549,736
5,549,895
5,550,024
5,550,899
20 : 5,549,106
5,549,180
5,549,312
5,550,139
5,550,986
21 : 5,548,898
5,549,050
5,549,072
5,549,104
5,549,219
5,549,266
5,549,520
5,550,062
5,550,762
5,550,957
22 : 5,548,853
5,549,145
5,549,199
5,549,220
5,549,640
5,549,815
5,549,818
5,549,938
5,550,212
5,550,285
5,550,303
5,550,305
5,550,630
5,550,681
23 : 5,549,670
5,549,826
5,549,921
24 : 5,548,936
5,548,957
5,549,003
5,549,150
5,549,386
5,549,406
5,549,564
5,549,882
5,549,901
5,550,005
5,550,018
5,550,023
5,550,032
5,550,034
5,550,035
5,550,156
5,550,629
5,550,631
5,550,789
5,550,837
25 : 5,548,923
5,548,993
5,549,142
5,549,247
5,549,269
5,549,297
5,549,456
5,549,574
5,549,584
5,549,596
5,549,600
5,549,602
5,549,612
5,549,697
5,549,721
5,549,747
5,549,750
5,549,774
5,549,817
5,549,889
5,549,892
5,549,923
5,549,947
5,549,991
5,550,047
5,550,055
5,550,056
5,550,061
5,550,174
5,550,186
5,550,214
5,550,326
5,550,421
5,550,423
5,550,481
5,550,604
5,550,641
5,550,729
5,550,760
5,550,763
5,550,847
5,550,881
5,550,886
5,550,924
26 : 5,548,863
5,548,896
5,548,919
5,548,929
5,548,932
5,548,994
5,548,995
5,549,034
5,549,046
5,549,056
5,549,057
5,549,087
5,549,149
5,549,152
5,549,157
5,549,181
5,549,188
27 : 5,548,893
5,548,920
5,548,934
5,548,940
5,548,972
5,549,103
5,549,137
5,549,277
5,549,342
5,549,347
5,549,407
5,549,552
5,549,553
5,549,581
5,549,623
5,549,642
5,549,643
5,549,654
5,549,655
5,549,662
5,549,679
5,549,709
5,549,719
5,549,741
5,549,803
5,549,832
5,549,875
5,549,914
5,549,933
5,549,948
5,549,961
5,549,962
5,549,985
5,550,171
5,550,175
5,550,273
5,550,336
5,550,373
5,550,417
5,550,516
5,550,564
5,550,688
5,550,689
5,550,690
5,550,692
5,550,806
5,550,875
5,550,902
5,550,923
5,551,042
28 : 5,548,878
5,549,703
5,550,460
5,548,857
5,549,054
5,549,139
5,549,249
5,549,507
5,549,598
5,549,628
5,549,668
5,549,720
5,549,883
5,549,897
5,549,971
5,550,159
5,550,166
5,550,374
4,563,277
31 : 5,549,126
5,549,805
32 : 5,548,971
5,549,300
5,549,939
5,550,359
33 : 5,549,066
5,549,134
5,549,324
5,549,576
5,549,637
5,549,678
5,550,412
5,550,431
5,551,048
34 : 5,548,864
5,549,004
5,549,006
5,549,121
5,549,210
5,549,216
5,549,345
5,549,512
5,549,575
5,549,583
5,549,588
5,549,621
5,549,698
5,549,705
5,549,706
5,549,744
5,549,757
5,549,761
5,549,765
5,549,840
5,549,881
5,549,917
5,549,977
5,549,983
5,550,007
5,550,040
5,550,049
35 : 5,548,843
5,549,337
5,549,477
5,549,639
5,550,315
5,550,381
5,550,856
5,550,892
36 : Re.35,316
5,548,844
5,548,846
5,548,847
5,548,965
5,548,976
5,548,979
5,549,027
5,549,028
5,549,048
5,549,051
5,549,118
5,549,133
5,549,193
5,549,196
5,549,209
5,549,285
5,549,287
5,549,291
5,549,292
5,549,295
5,549,322
5,549,332
5,549,346

5,549,375
5,549,387
5,549,397
5,549,400
5,549,410
5,549,441
5,549,498
5,549,541
5,549,570
5,549,604
5,549,608
5,549,609
5,549,626
5,549,688
5,549,689
5,549,691
5,549,702
5,549,717
5,549,788
5,549,808
5,549,820 38 :
5,549,843
5,549,844
5,549,864 39 :
5,549,879
5,549,902
5,549,912
5,549,935
5,549,950
5,549,999
5,550,009
5,550,011
5,550,013
5,550,053
5,550,058
5,550,066
5,550,092
5,550,149
5,550,221
5,550,256
5,550,271
5,550,272
5,550,319
5,550,351
5,550,376
5,550,399
5,550,505
5,550,547
5,550,606
5,550,608
5,550,609
5,550,610
5,550,615
5,550,618
5,550,653
5,550,668
5,550,693
5,550,723
5,550,734
5,550,758
5,550,860
5,550,868
5,550,879
5,550,880
5,550,901
5,550,918
5,550,921
5,550,931
5,550,935
5,550,946
5,551,013
4,340,479
5,287,272
37 : 5,548,880
5,548,887
5,548,897
5,549,052
5,549,376
5,549,384
5,549,388
5,549,577
5,549,722
5,549,760
5,549,776
5,550,025
5,550,132
5,550,203
5,550,459
5,550,492
5,550,809
5,550,933
5,550,968
5,551,011
5,551,073
5,548,860
5,549,438
5,550,269
5,548,866
5,548,888
5,548,901
5,548,966
5,549,002
5,549,037
5,549,041
5,549,079
5,549,096
5,549,132
5,549,148
5,549,183
5,549,203
5,549,237
5,549,253
5,549,305
5,549,310
5,549,334
5,549,392
5,549,394
5,549,440
5,549,447
5,549,550
5,549,569
5,549,589
5,549,645
5,549,651
5,549,700
5,549,701
5,549,746
5,549,755
5,549,758
5,549,777
5,549,790
5,549,791
5,549,793
5,549,908
5,549,928
5,549,929
5,549,930
5,549,969
5,550,115
5,550,146
5,550,167
5,550,176
5,550,264
5,550,281
5,550,310
5,550,377
5,550,422
5,550,472
40 : 5,549,021
5,549,156
5,549,304
5,550,108
5,550,889
41 : 5,549,010
5,549,032
5,549,068
5,549,343
5,549,536
5,549,563
5,549,784
5,549,806
5,550,364
5,550,529
5,550,533
5,550,535
5,550,660
5,550,662
5,550,750
5,550,816
5,550,963
5,550,988
5,551,005
5,551,028
42 : 5,548,868
5,548,892
5,548,989
5,548,992
5,549,020
5,549,022
5,549,023
5,549,038
5,549,073
5,549,122
5,549,131
5,549,143
5,549,155
5,549,167
5,549,208
5,549,280
5,549,294
5,549,303
5,549,459
5,549,479
5,549,543
5,549,586
5,549,590
5,549,633
5,549,713
5,549,745
5,549,769
5,549,819
5,549,940
5,549,941
5,549,973
5,550,037
5,550,088
5,550,100
5,550,109
5,550,111
5,550,112
5,550,114
5,550,127
5,550,154
5,550,158
5,550,191
5,550,211
44 : 5,549,065
5,549,138
5,550,004
5,550,050
5,549,240
5,549,470
5,549,959
5,549,968
5,550,344
5,550,627
5,550,712
5,549,418
5,550,475
45 : 5,549,470
5,549,563
5,549,806
5,550,364
5,550,529
5,550,533
5,550,535
5,550,660
5,550,662
46 : 5,549,418
5,550,475
47 : Re.35,320
5,549,221
5,549,265
5,549,610
5,549,667
5,549,673
5,549,687
5,549,734
5,549,821
5,550,437
48 : 5,548,841
5,548,889
5,548,907
5,548,948
5,548,970
5,548,986
5,549,000
5,549,058
5,549,070
5,549,071
5,549,097
5,549,116
5,549,141
5,549,158
5,549,159
5,549,161
5,549,162
5,549,163
5,549,164
5,549,165
5,549,171
5,549,222
5,549,238
5,549,276
5,549,338
5,549,359
5,549,382
5,549,403
5,549,417
5,549,428
5,549,431
5,549,449
5,549,451
5,549,467
5,549,526
5,549,530
5,549,558
5,549,595
5,549,622
49 : 5,548,856
5,549,308
5,549,533
5,549,613
5,549,708
5,549,728
5,549,743
5,549,773
5,550,044
5,550,792
5,550,853
50 : 5,549,511
5,550,488
5,550,768
5,548,842
5,548,858
5,548,983
5,549,260
5,549,395
5,549,445
5,549,699
5,549,831
5,549,634
5,549,653
5,549,786
5,549,813
5,549,918
5,550,021
5,550,042
5,550,082
5,550,084
5,550,094
5,550,180
5,550,192
5,550,194
5,550,196
5,550,296
5,550,300
5,550,307
5,550,313
5,550,314
5,550,398
5,550,458
5,550,473
5,550,486
5,550,490
5,550,499
5,550,532
5,550,559
5,550,592
5,550,702
5,550,711
5,550,720
5,550,673
5,550,687
5,550,751
5,550,753
5,550,767
5,550,774
5,550,777
5,550,786
5,550,969
5,550,970
5,550,973
5,550,974
5,550,993
5,550,995
5,551,004
5,551,038
5,551,050
5,551,064
5,551,071
51 : 5,548,842
5,549,417
5,549,428
5,549,431
5,549,449
5,549,451
5,549,467
5,549,526
5,549,530
5,549,558
5,549,595
5,549,622
52 : 5,549,699
5,549,831
5,549,858
5,550,321
5,550,425
5,550,432
53 : 5,548,953
5,549,085
5,549,115
5,549,258
5,549,268
5,549,316
5,549,320
5,549,330
5,549,455
5,549,641
5,549,659
5,549,711
5,549,723
5,549,794
5,549,836
5,549,850
5,549,898
5,550,148
5,550,183
5,550,220
5,550,311
5,550,324
5,550,362
5,550,599
5,550,731
5,550,790
5,550,930
5,550,972
5,551,024
54 : 5,549,841
5,549,942
5,550,384
55 : 5,548,854
5,548,922
5,548,955
5,549,024
5,549,059
5,549,064
5,549,089
5,549,186
5,549,206
5,549,218
5,549,267
5,549,272
5,549,331
5,549,374
5,549,377
5,549,405
5,549,592
5,549,603
5,549,775
5,549,789
5,549,799
5,549,916
5,549,927
5,549,984
5,549,986
5,550,120
5,550,182
5,550,189
5,550,341
5,550,369
5,550,485
5,550,752
5,550,927
5,550,980
5,551,020
5,551,053
56 : 5,549,329

DESIGN PATENTS

01 : 373,148
04 : 373,226
06 : 373,018
373,040
373,043
373,046
373,059
373,063
373,069
373,070
373,072
373,077
373,083
373,088
373,090
373,098
373,102
373,103
373,106
373,113
373,117
373,120
373,121
373,124
373,127
373,144
373,161
373,168
373,169
373,173
373,174
373,175
373,183
373,195
373,212
373,215
373,229
08 : 373,140
09 : 373,171
373,082
373,156
373,210
12 : 373,031
373,051
373,056
373,101
373,155
373,159
373,160
373,188
373,189
373,217
373,225
373,230
13 : 373,047
373,060
373,141
16 : 373,114
17 : 373,050
373,058
373,080
373,093
373,142
373,162
18 : 373,157
22 : 373,091
373,158
25 : 373,192
373,193
373,204
373,218
26 : 373,099
373,104
373,128
27 : 373,107
373,172
373,190
32 : 373,032
373,196
34 : 373,038
373,052
373,061
373,176
373,219
35 : 373,023
36 : 373,035
373,039
373,041
373,068
373,079
373,096
373,150
373,197
373,033
373,100
373,134
373,145
373,191
373,198
39 : 373,015
373,021
373,028
373,029
373,065
373,066
373,067
373,081
373,094
373,186
373,213
41 : 373,139
42 : 373,016
373,034
373,042

373,048			373,227	49	:	373,020			373,201		373,036
373,129	45	:	373,109	53	:	373,115	55	:	373,026		373,073
373,170	47	:	373,220			373,167			373,027		373,206

CHANGE OF ADDRESS FORM

NAME– FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

Mail this form to: NEW ADDRESS

Superintendent of Documents
Government Printing Office SSOM
Washington, D.C. 20402

Attach last subscription label here.

VOL 1189 '55 4 AG 27 1996 UMI

JUN
1189
AG
4
AG
27
1996
UMI

Superintendent of Documents **Subscription** Order Form

Order Processing Code:
*** 5606**

❑ **YES,** enter _____ subscription(s) to **Official Gazette of the U.S. Patent and Trademark Office: Patents** (OG) for $549 per year ($686.25 foreign).

The total cost of my order is $_____. Price includes regular shipping and handling and is subject to change. International customers please add 25%.

Company or personal name (Please type or print)

Additional address/attention line

Street address

City, State, Zip code

Daytime phone including area code

Purchase order number (optional)

Charge your order. It's easy!

For privacy protection, check the box below:
❑ Do not make my name available to other mailers

Fax your orders (202) 512–2250

Check method of payment:
❑ Check payable to Superintendent of Documents
❑ GPO Deposit Account ☐☐☐☐☐☐–☐
❑ VISA ❑ MasterCard

☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

☐☐☐☐ (expiration date)

Phone your orders (202) 512–1800

Thank you for your order!

Authorizing signature 4/95

Mail To: Superintendent of Documents
P.O. Box 371954, Pittsburgh, PA 15250–7954

Important: Please be sure to include this completed order form with your remittance.

XOF
1189
SE
4
AG
27
1996
UMI

Superintendent of Documents **Subscription** Order Form

Order Processing Code:
*** 5606**

❑ **YES,** enter _____ subscription(s) to **Official Gazette of the U.S. Patent and Trademark Office: Patents** (OG) for $549 per year ($686.25 foreign).

The total cost of my order is $_____. Price includes regular shipping and handling and is subject to change. International customers please add 25%.

Company or personal name (Please type or print)

Additional address/attention line

Street address

City, State, Zip code

Daytime phone including area code

Purchase order number (optional)

Charge your order. It's easy!

For privacy protection, check the box below:
❑ Do not make my name available to other mailers

Fax your orders (202) 512–2250

Check method of payment:
❑ Check payable to Superintendent of Documents
❑ GPO Deposit Account ☐☐☐☐☐☐–☐
❑ VISA ❑ MasterCard

☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

☐☐☐☐ (expiration date)

Phone your orders (202) 512–1800

Thank you for your order!

Authorizing signature 4/95

Mail To: Superintendent of Documents
P.O. Box 371954, Pittsburgh, PA 15250–7954

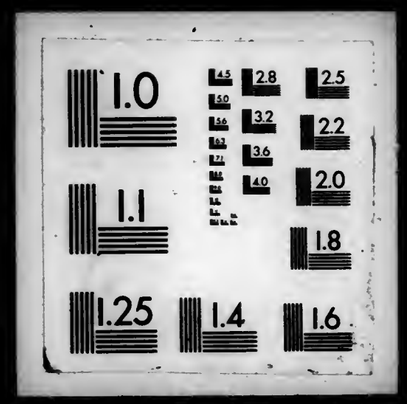
Important: Please be sure to include this completed order form with your remittance.

VOL
1189
SE
4
AG
27
1996
UMI

VOL
1189
4
AG
27
1996
UMI







END